PROJECT MANUAL

for

PARSHALL HOTEL and LAUNDROMAT

Parshall, ND



MHA NATION

Mandan, Hidatsa and Arikara Nation | Three Affiliated Tribes

BID PACKAGE 2.0R1

GENERAL CONSTRUCTION

VOLUME 2 of 3

Divisions 02-14: General Construction

Divisions 31-33 Earthwork, Site Improvements and Utilities

Issue for Rebid Date: 05/04/2026

RML Project Number: 22-1004

Rebid Documents

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DOCUMENT 00 0101 - PROJECT TEAM LIST

OWNER
MHA Nation | Three Affiliated Tribes
Mandan, Hidatsa & Arikara Nation
Fort Berthold Reservation
307 5th Avenue
New Town, ND 58763
Contact: Brianna Foote, Special Projects Mgr.
Phone: 701-421-2004
E-mail: bfoote@mhanation.com

ARCHITECT OF RECORD
RML ARCHITECTS, LLC
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275 Market Street, Suite 313
Minneapolis, MN 55405-1624
Contact:
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AIA, LEED, AP, NCARB
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Project Manager: James P. Horwath, R.A.
Senior Architect
Phone: 612-247-5499
E-mail: JHorwath@rml-architects.com

STRUCTURAL ENGINEER
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3202 W Main Street, Suite C
Rapid City, SD 57702
Contact: David Leppert, P.E., Principal
Phone: 605-343-9606
E-mail: david@albertsonengineering.com

MECHANICAL & PLUMBING ENGINEER
SMITH & BOUCHER ENGINEERS
25618 W 103rd Street
Olathe, KS 66061
Contact: Matt Pellman, PD, CGD, Associate
Phone: 913-344-0046
E-mail: mpellman@smithboucher.com

CIVIL ENGINEER
SWENSON, HAGEN & COMPANY P.C.
3002 Airway Avenue
Bismarck, ND 58504
Contact: Tyrel Rebel, P.E.
Phone: 701-223-2600
E-mail: trebel@swensonhagen.com

ELECTRICAL ENGINEER
SMITH & BOUCHER ENGINEERS
25618 W 103rd Street
Olathe, KS 66061
Contact: Matt Pellman, PD, CGD, Associate
Phone: 913-344-0046
E-mail: mpellman@smithboucher.com

LANDSCAPE DESIGNER
SWENSON, HAGEN & COMPANY P.C.
3002 Airway Avenue
Bismarck, ND 58504
Contact: Tyrel Rebel, P.E.
Phone: 701-223-2600
E-mail: trebel@swensonhagen.com

Rebid Documents

MODULAR FABRICATOR
AVA (Advanced Volumetric Alliance)
6757 Karmen Avenue, NE
Albertville, MN 55301
Contact: Brian Nicholson, CEO
Phone: 612-325-6520
E-mail: bjn@headwaters.build

MODULAR ERECTOR
TO BE DETERMINED

INTERIOR DESIGNER
HEADWATERS DEVELOPMENT
6757 Karmen Avenue, NE
Albertville, MN 55301
Contact: Carissa Pouliot, CID, Vice President
Phone: 612-600-3285
E-mail: CLP@Headwaters.build

FOOD SERVICE DESIGNER
BOELTER FOOD SERVICE DESIGN
7120 Northland Terrace North
Minneapolis, MN 55428
Contact: Dennis Hahn
Phone: 612-851-2309
E-mail: dhahn@boelter.com

END OF DOCUMENT 00 0101

Rebid Documents

DOCUMENT 00 0107 - SEALS PAGE, VOLUME 2

SEALS, SIGNATURES AND DATES OF DESIGN PROFESSIONALS OF RECORD	
Project Title:	Parshall Hotel and Laundromat
Project Location:	Parshall, ND

(Seal and Signature)

Architect Professional Certification:

I hereby certify that these documents were prepared or approved by me and that I am a duly registered Architect in the State of North Dakota.

Randall M. Lindemann
(Printed Name)

3052
License No.

(Seal and Signature)

Civil Engineer Professional Certification:

I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer in the State of North Dakota.

Tyrel J. Rebel
(Printed Name)

PE-27185
License No.

Rebid Documents

(Seal and Signature)

Structural Engineer Professional Certification:

I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer in the State of North Dakota.

David E. Leppert
(Printed Name)

PE-27790
License No.

END OF DOCUMENT 00 0107

Rebid Documents

DOCUMENT 00 0112 – TABLE OF CONTENTS VOLUME 2

Includes: Divisions 02 - 14: General Construction Specifications
Divisions 31 - 33: Earthwork, Exterior Improvements and Utilities

Bid Pkg				
1.0	2.0R	2.0R1		
			INTRODUCTORY INFORMATION	
X	X	X	00 0101	Project Team List
X	X	X	00 0107	Seals Page Volume 2
X	X	X	00 0112	Table of Contents Volume 2
			DIVISION 02 – EXISTING CONDITIONS	
X	X	X	02 4119	Selective Demolition (Issued for Reference Only as part of Bid Package 2.0R1)
			DIVISION 03 – CONCRETE	
	X	X	03 3000	Cast-In-Place Concrete
	X	X	03 4100	Precast Structural Concrete
			DIVISION 04 – MASONRY	
	X	X	04 2613	Masonry Veneer
	X	X	04 7200	Cast Stone Masonry
			DIVISION 05 – METALS	
	X	X	05 1200	Structural Steel Framing
	X	X	05 5000	Metal Fabrications
	X	X	05 7300	Decorative Metal Railings
			DIVISION 06 – WOODS, PLASTICS AND COMPOSITES	
	X	X	06 1000	Rough Carpentry
	X	X	06 1600	Sheathing
	X	X	06 1713	Laminated Veneer Lumber
	X	X	06 1753	Shop-Fabricated Wood Trusses
	X	X	06 4023	Interior Architectural Woodwork
	X	X	064113	Wood-Veneer-Faced Architectural Cabinets

Rebid Documents

Bid Pkg				
1.0	2.0R	2.0R1		
	X	X	06 4116	Plastic-Laminate-Clad Architectural Cabinets
	X	X	06 6119	Cast Marble Shower Wall Panels
	X	X	06 6400	Plastic Paneling

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

	X	X	07 1326	Self-Adhering Sheet Waterproofing
	X	X	07 1913	Silane Water Repellent
	X	X	07 2100	Thermal Insulation
	X	X	07 3113	Asphalt Shingles
	X	X	07 4643	Engineered Wood Siding
	X	X	07 5323	Ethylene-Propylene-Diene Monomer (EPDM) Roofing
	X	X	07 7100	Roof Specialties
	X	X	07 7200	Roof Accessories
	X	X	07 8400	Firestopping

DIVISION 08 – OPENINGS

	X	X	08 1113	Hollow Metal Doors and Frames
	X	X	08 1423	Clad Wood Doors
	X	X	08 1433	Stile and Rail MDF Doors
	X	X	08 3113	Access Doors and Frames
	X	X	08 3123	Floor Doors
	X	X	08 3323	Overhead Coiling Doors
	X	X	08 3516	Folding Grilles
	X	X	08 4113	Aluminum-Framed Entrances and Storefronts
	X	X	08 4229.23	Sliding Automatic Entrances
	X	X	08 5413	Fiberglass Windows
	X	X	08 7100	Door Hardware
	X	X	08 8000	Glazing
	X	X	08 8300	Mirrors
	X	X	08 9119	Fixed Louvers

Rebid Documents

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1.0	2.0R	2.0R1

DIVISION 09 – FINISHES

	X	X	09 2116.23	Gypsum Board Shaft Wall Assemblies
	X	X	09 2900	Gypsum Board
	X	X	09 3013	Ceramic Tiling
	X	X	09 5113	Acoustical Panel Ceilings
	X	X	09 6513	Resilient Base and Accessories
	X	X	09 6516	Resilient Sheet Flooring
	X	X	09 6519	Resilient Tile Flooring
	X	X	09 6813	Tile Carpeting
	X	X	09 6816	Sheet Carpeting
	X	X	09 9100	Painting

DIVISION 10 – SPECIALTIES

	X	X	10 1419	Dimensional Letter Signage
	X	X	10 2239.13	Folding Glass-Panel Partitions
	X	X	10 2600	Wall and Door Protection
	X	X	10 2800	Toilet, Bath and Laundry Accessories
	X	X	10 3100	Manufactured Fireplaces
	X	X	10 4300	Emergency Aid Specialties
	X	X	10 4400	Fire Protection Specialties
	X	X	10 5723.14	Fixed Wire Shelving
	X	X	10 7313.13	Metal Awnings
	X	X	10 7313.23	Fabric Awnings

DIVISION 11 – EQUIPMENT

	X	X	11 2123	Vending Equipment
	X	X	11 2124	Money Changing Machines
	X	X	11 2300	Commercial Laundry Equipment
	X	X	11 3013	Residential Appliances
	X	X	11 4000	Foodservice Equipment
				With Attachment: "Food Service Equipment Cutbook"

Rebid Documents

Bid Pkg		
1.0	2.0R	2.0R1

DIVISION 12 – FURNISHINGS

	X	X	12 2413	Roller Window Shades
	X	X	12 3661.19	Quartz Agglomerate Countertops

DIVISION 14 – CONVEYING EQUIPMENT

	X	X	14 2400	Hydraulic Elevators

DIVISION 31 – EARTHWORK

X	X	X	31 1000	Site Clearing
X	X	X	31 2200	Grading
X	X	X	31 2316	Excavation
X	X	X	31 2316.13	Trenching
X	X	X	31 2316.26	Rock Removal
X	X	X	31 2323	Fill

DIVISION 32 – EXTERIOR IMPROVEMENTS

X	X	X	32 1123	Aggregate Base Courses
	X	X	32 1216	Asphalt Paving
X	X	X	32 1313	Concrete Paving
	X	X	32 1723.13	Pavement Markings
	X	X	32 3100	Composite Fences and Gates
		X	32 3110	Chain Link Fences and Gates
	X	X	32 9219	Seeding
	X	X	32 9223	Sodding

DIVISION 33 – UTILITIES

	X	X	33 0513	Manholes and Structures
	X	X	33 0514	Castings and Adjustments
	X	X	33 1116	Site Water Utility Distribution Piping
	X	X	33 1300	Disinfecting of Water Utility Distribution
X	X	X	33 3111	Site Sanitary Utility Sewerage Piping
	X	X	33 4600	Foundation Drainage

Rebid Documents

SECTION 02 4119 - SELECTIVE DEMOLITION

(Issued for Reference Only as part of Bid Package 2.0R1)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Demolition and removal of selected site elements.

B. Related Requirements:
   1. Section 01 1000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
   2. Section 01 7419 “Construction Waste Management and Disposal” for administrative and procedural requirements for salvaging, recycling and disposal of demolition and construction waste.
   3. Section 31 1000 "Site Clearing" for site clearing and removal of above- and below-grade improvements not part of selective demolition.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Pre-demolition Conference
   1. Contractor
      a. Arrange and conduct a pre-demolition conference, held at the Project site prior to commencement of the work of this Section. Provide at least 72 hours advance notice to participants prior to convening conference.
      b. Record discussions of conference including decisions and agreements reached, and disagreements, and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved, and set date for reconvening conference.

Rebid Documents

2. Required attendance unless otherwise indicated, includes Contractor, a qualified representative of the demolition firm, the steel erection subcontractor, mechanical subcontractor, electrical subcontractor, other contractors affected by the demolition work, Architect and Architect's consultant if desired, Owner's representative and Owner's insurance representative at Owner's discretion.
3. Review required submittals both completed and yet to be completed.
4. Review and finalize demolition schedule related work
5. Verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
6. Perform a thorough inspect and discuss condition of construction to be demolished.
7. Review existing materials, methods and procedures related to demolition. Review structural load limitations of existing structure.
8. Examine existing substrates, penetrations, and other preparatory work performed by other trades.
9. Review procedures for removal, protection, and retention of products and materials to be reinstalled or turned over to Owner.
10. Review current and forecasted weather conditions, and procedures for coping with unfavorable weather conditions, including temporary requirements. Review notification procedures for weather or non-working days.
11. Review observation, protection and repair procedures after demolition.
12. Review requirements of demolition work performed by other trades.

1.5 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.6 SUBMITTALS

A. Submit the following to the Contractor prior to performing demolition:
1. Procedural Submittals: Two copies of the proposed demolition work providing a detailed sequence of demolition and removal of materials, temporary interruption of utility services, and shutoff, capping, or re-routing of utility services.
2. Permits
   a. For demolition work, and;
   b. For transport and disposal of debris.
   c. Certificates: Refrigerant Recovery Certificate

1.7 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

Rebid Documents

B. Comply with laws, rules and regulations of governmental authorities having jurisdiction over the demolition work, including the Environmental Protection Agency.

C. Provide protection for all persons and property in accordance with ANSI A10.6 and NFPA 241.

D. Provide rodent control.

1.8 FIELD CONDITIONS

A. Existing Conditions:
   1. Occupancy: Structures to be demolished will be vacated and discontinued in use prior to start of work.
   2. Condition of Structures: Owner assumes no responsibility for the actual condition of areas and structures to be demolished.
      a. Conditions existing at time of inspection for bidding purposes, will be maintained by Owner as far as practical.
      b. Before building demolition, Owner will remove the following items:
         1) Personal property.

B. Hazardous Materials
   1. Hazardous materials will be removed by Owner before start of the Work.
   2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

C. Access
   1. Maintain access to, and do not close or obstruct streets, walks, corridors or other occupied or used facilities without permission from authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
   3. Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

D. Environmental Requirements
   1. Comply with governing regulations pertaining to environmental protection.
   2. Use water sprinkling, temporary enclosures, and other suitable methods to control dust and dirt in the air.
   3. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, or pollution.

E. Explosives: Use of explosives will not be permitted.

1.9 SEQUENCING AND SCHEDULING

A. Do not proceed with selective demolition operations until schedule has been reviewed and approved by the Owner and the Contractor.
   1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.

Rebid Documents

2. Comply with requirements specified in Section 011100 for phasing of demolition work and new construction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soils: Comply with requirements in the Soils Report for backfill materials, for filling excavations left by demolition operations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, under which the selective demolition work is to be performed, with demolition contractor present, for compliance with requirements for demolition and other conditions affecting performance. Notify the Contractor of conditions detrimental to performance of the Work and recommended corrections. Where the demolition work and its completion may be delayed due to existing conditions, follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.
   1. Notify Contractor and Architect immediately upon encountering unexpected, concealed conditions and, except in an emergency, before the encountered conditions are disturbed.

B. Review Project Record Documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Inventory and record the condition of items to be removed, and items to be removed and salvaged.

D. Verify that hazardous materials have been remediated before proceeding with demolition operations.

3.2 PREPARATION

A. Existing Utilities
   1. Protect and maintain existing utility lines which are to remain in service to avoid interruption of these lines.
      a. If uncharted or incorrectly charted piping or other utilities are encountered during demolition, consult Engineer immediately for procedural instructions. Cooperate with Owner, and public and private utility companies in keeping services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
      b. If interruption of utilities is unavoidable, obtain written authorization of the utility owner prior to commencement of Work. Provide temporary services during interruptions to existing utilities as acceptable to the utility owner.

Rebid Documents

2. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be demolished.
   a. Arrange to shut off indicated utilities with utility companies.
   b. If utility services are required to be removed, relocated, or abandoned, before proceeding with demolition, provide temporary utilities that bypass area of demolition and maintain continuity of service to other parts of building.
   c. Cut off pipe or conduit a minimum of 24" below grade. Cap, valve, or plug and seal remaining portion of utility lines terminated by demolition work approved by governmental authorities and utility companies having jurisdiction.
   d. Coordinate with Division 21, 22, 23, 26, 27 and 28 specification Sections for shutting off, disconnecting, removing, and sealing or capping utilities within building prior to commencement of demolition. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PROTECTIONS

A. Ensure minimum interference with road, streets, driveways, sidewalks, and adjacent facilities. Do not close or obstruct streets, sidewalks, alleys, or passageways without permission from authorities having jurisdiction. Maintain regular traffic flow around the site unless otherwise directed.

B. Temporary Protections: Provide temporary barricades, canopies, fences, railings, platforms, lights, sheds, and similar temporary construction, required to protect persons from injury due to the demolition work. Provide free and safe passage of persons to and from buildings and facilities.

C. Fire Protection
   1. Perform demolition work to prevent fires. Remove debris promptly. Do not burn materials on the site.
   2. Maintain portable fire-suppression devices during flame-cutting operations.
   3. Maintain fire watch during and after flame cutting operations.

3.4 DEMOLITION AND REMOVAL

A. Demolish paving, walks, and curbs completely and remove from site. Use methods required to complete work within limitations of governing regulations.
   1. Below-Grade Construction: Demolish and completely remove below-grade construction including basement foundation walls and slabs.
   2. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures indicated on Drawings, unless Drawings indicate utilities to be abandoned in place or to remain.
      a. Piping: Disconnect piping at unions, flanges, valves, or fittings.
      b. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.
   3. Wet down piled materials and materials being discharged into vehicles.
   4. Do not use cutting torches until work area is cleared of flammable materials. Maintain adequate ventilation when using cutting torches.
   5. Salvage: Items to be removed and salvaged are indicated on Drawings.

Rebid Documents

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove materials resulting from the demolition work from the site to avoid creating a nuisance. Dispose of materials from the site on a daily basis to locations determined by the Contractor, at no additional cost to the Owner. Take possession of salvageable material and equipment as property of the Contractor and promptly remove from the site, unless otherwise designated on the Drawings or specified to be retained by Owner.

B. Burning: Do not burn demolished materials on project site.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.6 SITE RESTORATION

A. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials specified in Soils Report.

B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

C. Comply with requirements in Section 312323 for back fill placement and compaction requirements for filling excavations left by demolition operations.

3.7 REPAIR AND CLEANING

A. Promptly repair damage to property of Owner which is to remain in use, or that of any person, or persons on or off the site caused by the demolition work without additional expense to the Owner.

B. Promptly repair damage to adjacent properties caused by the demolition work without additional expense to the Owner.

C. Clean adjacent structures and improvements of dust, dirt and debris caused by demolition operations, as directed by Architect or governing authorities. Return adjacent areas to condition existing prior to start of work.

END OF SECTION 02 4119

Rebid Documents

SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes and the following:
   a. Cast-in-place spread footings and foundation walls.
   b. Cast-in-place floor slabs-on-grade
   c. Stoop slabs supported on foundation walls.
   d. Exterior slabs-on-grade at transformer and trash enclosures.
   e. Interior and exterior equipment pads.
   f. Concrete bases at electrical light standards.
   g. Miscellaneous concrete for pipe bollards.

2. Formwork.
3. Steel reinforcement and accessories for cast-in-place-concrete.
4. Grout and grouting of base plates.
5. Placement of under slab insulation specified elsewhere.
6. Under slab moisture/vapor barrier.
7. Under slab granular fill (cushion) below slabs
8. Sealed concrete floor finishes.
9. Epoxy grout for patching and anchoring.
10. Concrete curing, sealing and densifier/hardener.
11. Testing and inspection.
12. Liquid and solid wastes management.

B. Related Requirements:
1. Document 003123 “Geotechnical Report”.
2. Section 014523 “Testing and Inspections” for conventional and special structural testing and inspections services for concrete work.
3. Section 042613 “Masonry Veneer”.
4. Section 051200 “Structural Steel Framing”.
5. Section 072100 “Thermal Insulation” for under slab-on-grade insulation, and foundation insulation.
6. Division 22 “Plumbing” for floor drains and trench drains installed in slabs.
7. Division 32 “Exterior Improvements” for exterior concrete paving, curbs, gutters and walks.
8. Section 33 4600 “Foundation Drainage” for installation of perimeter foundation drain.

Rebid Documents

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

C. Concrete Surface Categories (CSC-__): Unless otherwise indicated on the Drawings, the following Concrete Surface Categories as defined in ACI 347.R3 applies to the Work of this Section. Concrete Surface Categories (CSC) define the intended concrete surfaces, their appearance criteria and evaluation of surfaces.
   1. CSC 1: Concrete surfaces below-grade concealed by earth, concrete surfaces above grade not visible to occupied spaces, and concrete surfaces above grade concealed by other applied finished work.
   2. CSC 2: Concrete surfaces exposed to view in utilitarian rooms or spaces which will remain unfinished or undecorated.
   3. CSC 3: Concrete surfaces exposed to view in public rooms or spaces which will be decorated, and above grade exterior concrete which may or may not receive a decorative finish or texture.
   4. CSC 4: Concrete surfaces of high prominent building feature, of high visual importance, exposed to view in public rooms or spaces and above-grade exterior concrete.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
   1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
      a. Contractor's superintendent.
      b. Independent testing agency responsible for concrete design mixtures.
      c. Ready-mix concrete manufacturer.
      d. Concrete Subcontractor.

   2. Review the following:
      a. Special inspection and testing and inspecting agency procedures for field quality control.
      b. Construction joints, control joints, isolation joints, and joint-filler strips.
      c. Semirigid joint fillers.
      d. Vapor-retarder installation.
      e. Anchor rod and anchorage device installation tolerances.
      f. Cold and hot weather concreting procedures.
      g. Concrete finishes and finishing.
      h. Curing procedures.
      i. Forms and form-removal limitations.
      j. Shoring and reshoring procedures.
      k. Methods for achieving specified floor and slab flatness and levelness.
      l. Floor and slab flatness and levelness measurements.
      m. Concrete repair procedures.
      n. Concrete protection.
      o. Initial curing and field curing of field test cylinders (ASTM C31/C31M.)

Rebid Documents

p. Protection of field cured field test cylinders.

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
1. Product Data: For each type of product indicated.
2. Design Mixtures: For each concrete class as designated by the Construction Documents.
   a. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials.
   b. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
   c. Indicate amounts of mixing water to be withheld for later addition at Project site.
   d. Indicate amounts of mixing water to be withheld for later addition at Project site.
   e. Indicate quantities of fly ash, ground granulated blast furnace slag, silica fume, or other materials used as Portland cement replacements.
   f. Indicate types and quantities of admixture.
   g. Indicate aggregate sizes and quantities used in each concrete design mix.

3. Joint Layout Plan: Indicated slab-on-grade and slab-on-insulation control and construction joint layout plans, as applicable, for review three weeks minimum prior to slab pour.
4. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
   a. Slab-on-grade reinforcing shop drawings shall be submitted concurrently with related control/construction joint plans.

5. Samples: Not less than 12" square piece of moisture/vapor barrier specified.
6. Qualification Data for Installer as specified in Paragraph 1.6A.
7. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
   a. Aggregates.

8. Material Certificates: For each of the following, signed by manufacturers:
   a. Cementitious materials.
   b. Admixtures.
   c. Form materials and form-release agents.
   d. Steel reinforcement and accessories.
   e. Curing compounds.
   f. Floor and slab treatments.
   g. Bonding agents.
   h. Moisture Barriers / Vapor Retarders.
   i. Semirigid joint filler.
   j. Joint-filler strips.
   k. Repair materials.

B. Submit Test Reports in accordance with Section 01 4523 "Testing and Inspections":
1. Floor flatness and levelness test reports specified in PART 3, under “FINISHING CONCRETE”.

Rebid Documents

2. Test and observation reports specified in PART 3, under FIELD QUALITY CONTROL.
3. Include in Closeout Documents.

C. General Contractor: Submit copies of Concrete Design Mixtures, Batch Tickets, Material Test Reports, and Floor Test Reports to the Mandan, Hidatsa and Arikara Nation, Construction Management Office (CMO).

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician or an ACI Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

D. Concrete Testing Service: Owner will engage a qualified independent testing agency to perform material evaluation tests, design concrete mixtures, perform field tests, perform special inspections and prepare reports.
1. For Special Structural Testing and Inspections refer to Section 01 4523 "Testing and Inspections", and the Program Summary Schedule, and tests specified in this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement:
1. Properly label bars with weatherproof tags to facilitate identification.
2. Deliver, store, and handle steel reinforcement to prevent bending and damage. Store reinforcing steel on supports above ground level.
3. Do not incorporate damaged or otherwise unsuitable material into the Project. Replace with new at no additional cost to the Owner.

B. Concrete Materials:
1. Deliver materials and products to the Project site in manufacturer's original containers, clearly marked with proper identification with manufacturer's name, equipment type, model numbers.
2. Store in accordance with manufacturer's instructions, above ground, and protected from weather, construction activities, and other causes of damage.
3. Handle materials at the Project site to prevent damage in accordance with manufacturer's requirements.
4. Do not incorporate damaged or otherwise unsuitable material into the Project. Replace with new at no additional cost to the Owner.

C. Comply with ASTM C94/C94M and ACI 301.

Rebid Documents

1.8 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and as follows.
   1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
   2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
   3. Do not use frozen materials or materials containing ice or snow.
   4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.
   5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
   1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.
   2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Where the titles shown below introduce lists in Part 2 articles, the following requirements apply to product selection:
   1. Acceptable Products: Subject to compliance with requirements, products that may be incorporated into the Work include only products specified.
   2. Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include only manufacturers specified.
   3. Substitutions:
      a. During The Procurement/Bidding Phase: Refer to Document 00 2600 “Procurement Substitution Procedures” for requirements for submitting substitution requests for materials, products, equipment and methods of construction from those required by the bidding documents, during the procurement phase and prior to execution of the Owner/Contractor Agreement.
      b. After Award of Contracts and During Construction: Refer to Section 01 2500 “Substitution Procedures” for requesting acceptance of substitute products or manufacturers, during construction, not otherwise specified or previously approved and published via Addenda during bidding.

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
   1. Plywood, metal, or other approved panel materials.
   2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and for providing the following finishes:

Rebid Documents

a. For Concrete Surface Category CSC 1 and CSC 2
   1) Structural 1 Plywood, B-B (Concrete Form), Class 1 or better with mill release agent treated and edge sealed.
   2) Plywood B (Concrete Form), Class 1 or better with mill release agent treated and edge sealed.
   3) Medium density overlay, Class 1 or better with mill release agent treated and edge sealed.

b. For Concrete Surface Category CSC 3
   1) Medium density overlay, Class 1 or better with mill release agent treated and edge sealed.

c. For Concrete Surface Category CSC 4
   1) High density overlay, Class 1 or better.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Slab Forms
   1. Edge Forms: Removable metal, or molded fiber of type and size required. Where concrete is exposed to view, forms shall be new or like new, as selected and approved.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
   1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: Factory-fabricated, removable, or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
   1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
   2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

2.3 STEEL REINFORCEMENT

A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than twenty-five (25) percent.

B. Materials:
   1. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
   2. Low-Alloy-Steel Reinforcing Bars: ASTM A 706, deformed.
   3. Plain-Steel Wire: ASTM A 82, as drawn.
   4. Plain-Steel Welded Wire Reinforcement: ASTM A1064, plain, fabricated from as-drawn steel wire into flat sheets.
   5. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.
   6. Galvanized-Steel Welded Wire Reinforcement: ASTM A1064, plain, fabricated from galvanized-steel wire into flat sheets.

Rebid Documents

2.4 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615, Grade 60, plain-steel bars, cut bars true to length with ends square and free of burrs.

B. Epoxy-Coated Joint Dowel Bars: ASTM A615, Grade 60, plain-steel bars, ASTM A775 epoxy coated.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."
   1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.5 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
   1. Portland Cement: ASTM C 150, IL gray normal Portland cement, or Type III (High-early strength cement) if approved by the Structural Engineer

B. Portland Cement Replacement Materials:
   1. Silica Fume: ASTM C 1240, amorphous silica.
   2. Fly Ash: ASTM C 618, Class C or F.
   3. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

C. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
   1. Maximum Coarse-Aggregate Size 3/4-inch nominal.
   2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Water: ASTM C 94 and potable.

2.6 ADMIXTURES

A. Air-Entraining Admixture: ASTM C 260; For addition to normal Portland cement concrete to meet requirements specified for air content.

B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
   1. Water-Reducing Admixture: ASTM C 494, Type A.
   2. Hydration Stabilizer (Set Retarding) Admixture: ASTM C 494, Type B; Extended-time set-retarding liquid admixture for use during hot weather or extended pumping operations. Non-corrosive and free of added chloride ions.

Rebid Documents

3. Non-Chloride Set Accelerating Admixture: ASTM C494, Type C and E; Accelerating and water-reducing admixture for use when increased initial set is required without corrosive effect on metals.
4. Set Accelerating, Corrosion Inhibiting Admixture: ASTM C494, Type C; Anodic inhibitor, or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
5. Water-Reducing and Retarding Admixture: ASTM C 494, Type D for use when high temperatures, placing, or humidity conditions dictate.
6. High-Range, Water-Reducing Admixture: ASTM C 494, Type F; Superplasticizers; For use in high temperature conditions, for concrete with high slump and minimum water/cement ratio and for self-consolidating concrete.
7. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G; For compensation and reduction of shrinkage for Portland cement concrete, complying with ACI 223 requirements.
8. Shrinkage Reducing Admixture: ASTM C494, Type S; Used to lower shrinkage in concrete through reduction of surface tension in the mix water.

2.7 MOISTURE BARRIERS / VAPOR RETARDERS

A. Sheet Moisture Barrier: ASTM E 1745, Class A nonreinforced, 15 mils thick minimum, water vapor transmission rate of not more than 0.01 Perms. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. "VB-350", 16 mil, (Barrier-Bac, Inc.)
b. "Viper VaporCheck II", 16 mil, (Insulation Solutions, Inc.)
c. "Vapor Block 15", (Raven Industries, Inc.)
d. "Stego Wrap Vapor Barrier",15 mil, (Stego Industries, LLC)
e. "Perminator", 15 mil, (W.R. Meadows, Inc.)

B. Under Slab Granular Fill: Unless otherwise specified in the Geotechnical Report, free-draining (less than 5% passing the U.S. No. 200 sieve) crushed aggregate or sand.

2.8 RELATED MATERIALS

A. Fiber Expansion Joint Fillers
1. Expansion Joint Filler: ASTM D1751, non-extruding type, fiberboard with asphalt binder.
2. Board Cap: Removable plastic cap designed to fit over top of expansion and isolation joint filler strips, 3/8-inch-wide x 1/2 inch deep.

C. Semi-Rigid Polyurea Joint Filler: Two-component, semi-rigid, 100 percent solids, UV resistant aromatic polyurea with a Type A shore durometer hardness range of 90 to 95 according to ASTM D2240, and meeting requirements and recommendations of ACI 302.
1. For use at exposed concrete joint edges in SERVICE BAYS, WASH BAYS, and PROPERTY STORAGE.

Rebid Documents

E. Waterstop: Hydrophilic, self-adhering, self-healing, pre-molded, flexible joint material, rectangular or trapezoidal strip of butyl rubber with sodium bentonite, adhesively bonding to concrete. Approximately 3/4" by 1".
1. "CCW Mirastop", (Carlisle Coatings & Waterproofing, Inc.)
2. "Water Stop RX", (CETCO)
3. "Swellstop" or "Hydrotite", (Greenstreak, Inc.)
4. "Hydro Flex", (Henry Company)

G. Nonslip Abrasive: Sintered aluminum oxide graded to pass a No. 12 sieve but retained on a
1. No. 24 sieve. Minimum aluminum oxide content shall be 75 percent.

H. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

I. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements.

2.9 MISCELLANEOUS MATERIALS

A. Grouts
1. Non-shrink, nonmetallic, nongaseous type, premixed grout, complying with ASTM C1107, for structural base plates.
2. Sand-cement grout: Portland cement, ASTM C150, Type 1, and clean, natural sand ASTM C144; for grouting around field cut openings in precast concrete deck.
~~a.~~ Mix at ratio of one part cement to 2-1/2 parts sand by volume, with minimum water required for placement and hydration~~.~~

B. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109.

C. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping overlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping overlayment manufacturer.

Rebid Documents

4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

D. Trowelable polymer modified cement-based underlayment: Portland cement-based underlayment capable of going from feather edge up to 2 inches in depth with minimum comprssive strength of 5000 psi at 28 days per ASTM C109.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Arden Feather Finish – Gray; Arden Engineered Cements.
   b. ProSpec Trowel Grade Underlayment; Bonsal American.
   c. Sure Patch; Dayton Superior.
   d. Rightstone Cement Based Flooring Underlayment; Right Pointe Co.
   ~~e.~~ B-1 Trowel Grade Leveler; Sakrete~~.~~

2.10 FLOOR AND SLAB TREATMENTS

A. VOC Content: Liquid floor treatments shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Penetrating Liquid Densifier, Sealer and Hardener Floor Treatment (CON-2): Clear, low VOC, chemically reactive solution consisting of lithium silicate chemical ions in a non-acid penetrant; that penetrates, hardens and densifies concrete surfaces, and is compatible with curing compound.
1. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.
2. Euclid Chemical Company; Ultrasil Li+.
3. L&M Construction Chemicals, Inc.; LiON Hard.
4. Nox-Crete Products Group, Kinsman Corporation; Duro-Nox LS.

2.11 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Clear, Waterborne, Membrane-Forming Dissipating Curing Compound (CON-1): ASTM C309, Type 1, Class B, dissipating.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. BASF Construction Chemicals - Building Systems; Kure 200.
   b. ChemMasters; Safe-Cure Clear.
   c. Conspec by Dayton Superior; W.B. Resin Cure.
   d. Dayton Superior Corporation; Day-Chem Rez Cure (J-11-W).
   e. Edoco by Dayton Superior; Res X Cure WB.
   f. Euclid Chemical Company (The), an RPM company; Kurez W VOX; TAMMSCURE WB 30C.
   g. L&M Construction Chemicals, Inc.; L&M Cure R.

Rebid Documents

h. Meadows, W. R., Inc.; 1100-CLEAR.
i. TK Products, Division of Sierra Corporation; TK-2519 DC WB

2.12 CONCRETE MIXTURE AND MIXING

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

C. Normal-Weight Coarse Aggregate Sizes: Nominal maximum sizes in accordance with ASTM C33, Table 2.
1. Footings, Foundations, and Walls: 1".
2. Slabs-on-Grade and Suspended Slabs: 3/4"
3. Concrete Toppings: 3/8".
4. All other members: 3/4".

D. Portland Cement Replacement Materials: Limit use of cementitious materials other than Portland cement in concrete as follows, unless noted otherwise on the drawings:
1. Cementitious replacement materials may only be used for concrete that will be concealed from view. Cementitious replacement materials are not allowed for exterior concrete or concrete exposed to view in the finish work.
2. Fly Ash: 25 percent.

E. Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

F. Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: As indicated on the Drawings at 28 days.
2. Maximum Water-Cementitious Materials Ratio: As indicated on the Drawings.
3. Slump Limit: As indicated on Drawings and as follows:
a. For concrete containing High-Range Water Reducing Admixture: 8".
b. For concrete containing a Mid-Range Water Reducing Admixture: 6".

4. Air Content: As indicated on the Drawings.

Rebid Documents

2.13 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to ACI 301, Section 3, and CRSI's "Manual of Standard Practice."
   1. In case of fabricating errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.
   2. Reinforcement with the following defects will not be permitted in the work:
   3. Bar lengths, depths, and bends exceeding specified fabrication tolerances;
   4. Bend and kinks not indicated on Drawings and final shop drawings, and;
   5. Bars with reduced cross-section due to excessive rusting and other causes.

2.14 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and furnish batch ticket information.
   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg , reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify that surfaces to receive concrete are relatively uniform and level, have been compacted as specified, and are free of standing water, debris, or other deleterious materials. Verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
   1. Notify the Construction Manager of conditions detrimental to performance of the Work, recommended corrections, and follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Coordinate the work of this Section with the work of the other trades, to allow reasonable time to set sleeves, inserts and other accessories, which must be in position before concrete is placed.

C. Prepare surfaces to receive concrete topping:
   1. Mechanically remove laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, or other contaminants that might impair bond of topping to concrete substrates.
   2. Repair holes or deep depressions with specified repair materials. Seal joints between precast joints.
   3. Refer to ACI 302.1R, including portion of this Standard which describes the requirements for preparation of the precast concrete deck prior to installation of structural bonded topping.

Rebid Documents

3.2 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
1. Class A, 1/8 incH for smooth-formed finished surfaces.
2. Class B, 1/4 incfor rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

I. Chamfer Strips: Provide chamfered edges at exposed outside corners unless otherwise shown. At chamfered corners, insert polyvinyl chloride or neoprene extruded corner strips in the forms. Do not chamfer corners which abut concrete or masonry walls. Construct splices and joints in chamfer strips in accordance with the manufacturer's instructions.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

M. Equipment Bases and Foundations: Provide machine and equipment bases and foundations where indicated on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

Rebid Documents

N. Concrete Bases at Site Lighting Standards: Provide bases where indicated on Drawings. Coordinate with Electrical subcontractor for base locations, setting conduits, setting anchor bolts for light standards and electrical outlets at correct elevations, complying with diagrams or templates from manufacturer furnishing equipment.

3.3 REMOVING AND REUSING FORMS

A. General: Comply with ACI 318 for removal and reuse of forms. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
   1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
   2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
   2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

B. Cast-in Anchors, Inserts, Plates, Angles, and Other Anchorage Hardware: Fabricate anchorage hardware with sufficient anchorage and embedment to comply with design requirements. Accurately position for attachment of loose hardware, and secure in place during casting operations. Locate anchorage hardware where it does not affect position of main reinforcement or concrete placement.
   1. Weld-headed studs and deformed bar anchors used for anchorage according to AWS D1.1/D1.1M and AWS C5.4, "Recommended Practices for Stud Welding."

C. Self-Expanding Strip Waterstop: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

Rebid Documents

3.5 MOISTURE BARRIERS, VAPOR RETARDERS AND UNDER-SLAB INSULATION

A. Granular Fill Course: Install granular fill to thickness indicated, moisten, and compact with mechanical equipment to elevation tolerances as recommended in the Geotechnical Report.

B. Sheet Moisture Barriers: Place, protect, and repair according to ASTM E 1643 and manufacturer's written instructions.
   1. Install under all slab-on-grade areas, directly over granular fill and below under-slab insulation.
   2. Lap joints 6 inches and seal with manufacturer's recommended tape.
   3. Terminate the Moisture Barrier per manufacturer’s instructions. Extend moisture/vapor barrier to perimeter of slabs and turn up to top of slab elevation, otherwise to a point where obstructed by impediments, such as dowels, waterstops, or any other site condition requiring early termination of moisture/vapor retarder.
   4. Seal all joints and penetrations per manufacturer’s instructions. Seal entire perimeter of moisture/vapor retarder to foundation walls, grade beams and other vertical surfaces. Seal all terminations, laps, splices, joints, and penetrations with manufacturer's recommended pressure sensitive tape to provide a completely sealed retarder without holes, voids or open edges.
   5. Certification: Prior to placing concrete, provide an installer's certificate on company letterhead, cosigned by the General Contractor, stating that the moisture/vapor barrier was installed in accordance with these Specifications, or; provide construction photographs of easily recognizable views, clearly showing the moisture/vapor barrier, and including seam laps and tape treatment, repairs, slab edge terminations, and similar details to confirm that the moisture/vapor barrier was installed in accordance with these Specifications.

C. Under-Slab Insulation: Refer to Section 07 2100 “Thermal Insulation” for under-slab insulation materials.
   1. Minimum insulation thickness indicated on Drawings.
   2. Install under all interior slab-on-grade areas as indicated on the Drawings, loose-laid directly over sheet moisture barrier prior to placing concrete.
   3. Neatly cut insulation panels to fit around penetrations and projections.
   4. Install insulation panels in 2 layers where total insulation thickness exceeds 2". Provide additional thickness of insulation if required to form sloped slabs
   5. Butt insulation panels tightly together with less than 1/8" between edges. Reset panels or repair joints wider than 1/8" with insulation.
   6. Do not place more insulation system than can be covered with concrete prior to the onset of inclement weather, unless area is protected.
   7. Protect insulation, moisture barrier and granular base from water intrusion prior to placing concrete.

3.6 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
   1. Do not cut or puncture Moisture Barrier. Repair damage and reseal Moisture Barrier before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

Rebid Documents

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
   1. Where chairs and other accessories are in contact with the formwork of exposed concrete, provide stainless steel legged, or plastic tipped accessories.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Welded Wire Fabric: Install in accordance with ACI 301, Section 3.

G. Welding Reinforcing Steel: Welding of reinforcing steel is NOT permitted.

3.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness by one of the following methods:
   1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
   2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips with cap at slab junctions with vertical surfaces, such as columns, walls, grade beams, and other locations, as indicated.
   1. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated
   2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Construction Joints: Install minimum number 4 size dowel bars and support assemblies at all construction joints and where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
   1. Verify moisture barrier is complete under floor slabs where required.

Rebid Documents

B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
   1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
   1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
   2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
   3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
   1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   2. Maintain reinforcement in position on chairs during concrete placement.
   3. Screed slab surfaces with a straightedge and strike off to correct elevations.
   4. Slope surfaces uniformly to drains where required.
   5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleed water appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
   1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
   2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

F. Hot-Weather Placement: Comply with ACI 301, ACI 305R, and as follows:
   1. Maintain concrete temperature below 90 degrees F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

Rebid Documents

3.9 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
   1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
   1. Apply to concrete surfaces exposed to public view, to receive a rubbed finish, to be covered with a coating or covering material applied directly to concrete.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
   1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.10 FINISHING FLOOR AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.
   1. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
   1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic, or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
   1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.

Rebid Documents

E. Fine to Medium Broom Finish: Apply a fine to medium broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
   1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

F. Floor Flatness (F_f) and Floor Levelness (F_l) Requirements for Floor Slabs: Determine values in accordance with ASTM E1155, measured within 24 hours.
   1. Definitions
      a. Specified Overall Value (SOV): Specified goal for tolerances.
      b. Minimum Local Value (MLV): Minimum acceptable localized value.

   2. For floors scheduled to receive thin set tile, vinyl or rubber flooring, and floors exposed to view in decorated spaces:

Flatness:	Levelness:
SOV: 35	SOV: 25
MLV: 24	MLV: 17

   3. For floors scheduled to receive carpeting:

Flatness:	Levelness:
SOV: 25	SOV: 25
MLV: 17	MLV: 15

   4. For floors scheduled to receive ceramic and quarry tiles set in conventional mortar bed, or substrates for sand bed terrazzo:

Flatness:	Levelness:
SOV: 20	SOV: 15
MLV: 15	MLV: 10

3.11 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Interior Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Pads: Provide machine and equipment bases and pads as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

D. Exposed Concrete Stair Treads and Ramps: Provide nonslip abrasive on exposed concrete stair treads and ramps. Embed the nonslip material in the concrete surface with the final troweling in accordance with the manufacturer's instructions. Unless otherwise directed embed approximately 1/4 lb. of abrasive per sq. ft. of surface area. After curing, lightly work surface of concrete with a steel brush, or abrasive stone, and water to expose the abrasive aggregate.

Rebid Documents

3.12 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
   1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray.
      c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers. Cure for not less than 7 days.

   2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than 7 days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
   3. Chemical curing compound: install uniform coating strictly according to manufacturer’s printed instructions. Cure for not less than 7 days.

E. Curing Methods for Floor Slabs and Toppings shall be as follows:
   1. Adhesive Applied Floor Coverings: Moisture retaining covers or curing compound that will not interfere with bonding of floor covering.
   2. Cementitious Applied Floor Coverings and Toppings: Moisture cure or moisture retaining covers.
   3. Adhesive Type Coverings and Coatings such as paints and resinous coatings: Moisture retaining covers.
   4. Penetrating Treatments such as hardeners and sealers: Moisture cure or moisture retaining covers.
   5. Non-Bonding Coverings with Slip Sheets: Any of the curing methods.
   6. Exposed Concrete Floors with No Hardeners or Sealers: Curing and sealing compound

3.13 FLOOR TREATMENTS

A. Penetrating Liquid Densifier, Sealer and Hardener Floor Treatment: Prepare, apply, and finish penetrating liquid densifier, sealer, and hardener floor treatment according to manufacturer's written instructions.
   1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants. Complete surface repairs.

Rebid Documents

2. Clean floor in accordance with manufacturer's instructions.
3. Do not apply to concrete that is less than three days old.
4. Apply liquid until surface is saturated, maintaining a wet surface sheen. Apply more material to areas that are more porous and absorb material. Redistribute excess material and allow to dry. After drying remove any excess material in accordance with manufacturer's recommendations.

3.14 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
   1. Defer joint filling until concrete has aged at least one month.
   2. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Semi Rigid Joint Filler Installation: Install semirigid joint filler full depth in saw cut joints and at least 2" deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening. Concave joints are not acceptable.

3.15 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one-part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling, and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
   1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
   2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
   3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Finishes for Formed Concrete Surfaces are defined in Article 1.3 - DEFINITIONS.
   1. Finishes CSC 1 and CSC 2: Apply epoxy type bonding agent and specified repair mortar to form tie holes, aggregate pockets, honeycomb and defective areas.

Rebid Documents

a. Where exposed to view, blend standard portland cement and white portland cement, amounts determined by trial patches, so that final color of dry mortar will match adjacent surfaces.

2. Finish CSC 3: For Surfaces Which Will Be Decorated (Painted or Otherwise Covered with a Thin Applied Finish) and in Utilitarian Spaces or Areas
   a. In addition to patching specified for Finishes CSC 1 and CSC 2, remove fins, form joint marks, rough spots and other defects by grinding or rubbing with a carborundum stone, until these defects and rough areas are completely removed and surfaces are free from imperfections so as to present a dense, smooth, uniform finish.

3. Finish CSC 4: For Surfaces Which Will Remain Unfinished in Decorated Spaces, Unless the Desired Appearance Is "Industrial".
   a. In addition to concrete repair specified for Finishes CSC 1 and CSC 2, thoroughly wet concrete surfaces and apply patching mortar to coat entire surface and fill small holes. Remove excess mortar by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

E. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
   1. Repair finished surfaces containing defects. Surface defects include spalls, pop outs, honeycombs, rock pockets, crazing and cracks in excess of 0.06 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
   2. After concrete has cured at least 14 days, correct high areas by grinding.
   3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
   4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
   5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
   6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
   7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

Rebid Documents

F. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

G. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.16 FIELD QUALITY CONTROL

A. Testing and Special Inspections: Owner will engage a qualified testing and inspection agency to perform field tests and special inspections and prepare reports in accordance with the provisions of Section 014523 “Testing and Inspections”.

B. Special Testing and Inspection Services herein include items required by Chapter 17 of the International Building Code (IBC), 2021 edition, and other items which in the professional judgement of the Structural Engineer of Record, are critical to the integrity of the building structure.

C. Special inspection of concrete work specified below is not required for the following:
1. Isolated spread footings of buildings 3 stories or less in height that are fully supported on earth or rock.
2. Strip footings of buildings 3 stories or less in height that are fully supported on earth or rock, where the footings support walls of light frame construction, the footings are designed in accordance with Table 1805.4.2, or the footing structural design is based on a f 'c no greater than 2500 psi.
3. Nonstructural slabs-on-grade, including prestressed slabs-on-grade when effective prestress in concrete is less than 150 psi.
4. Concrete foundation walls constructed in accordance with IBCTable 1805.5(5).
5. Concrete patios, driveways, and sidewalks on grade.

D. Definitions for Special Inspectors; Structural and Technical
1. Special Inspector - Structural
   a. Structural I: Graduate civil/structural engineer, or other personnel acceptable to the SER, with experience in the design of structural systems of this type. Inspections shall be performed under the direct supervision of a Structural II.
   b. Structural II: Civil/structural engineer regularly engaged in the design of structural systems of this type, licensed in the State in which the Project is located. The licensed engineer shall review and approve all inspection reports.

2. Special Inspector – Technical
   a. Technical I: ACI Certified Grade I inspector. Inspector shall be employed by a testing laboratory, under the direct supervision of a Technical III.
   b. Technical II: ACI Certified Grade II inspector. Inspector shall be employed by a testing laboratory, under the direct supervision of a Technical III.
   c. Technical III: A civil/structural engineer regularly engaged in this type of work, with a minimum of 4 years' experience and licensed in the State in which the Project is located and is an employee of a qualified and approved testing laboratory. The licensed engineer shall review and approve all reports.

E. Formwork Structural Testing and Special Inspection Requirements

Rebid Documents

1. On a periodic basis, verify formwork shape, location, and dimensions for all concrete; performed by Structural I.
2. On a periodic basis, verify in-situ concrete strength prior to removal of shores and forms from beams and slabs; performed by Structural I.

F. Reinforcement Structural Testing and Special Inspection Requirements
1. On a periodic basis, inspect reinforcement for all cast-in-place concrete; performed by Structural I, including the following.
   a. Verify reinforcing bar grade.
   b. Verify reinforcing bars are free of dirt, excessive rust, and damage.
   c. Verify reinforcing bars are adequately tied, chaired, and supported to prevent displacement during concrete placement.
   d. Verify proper clear distances between bars and to surfaces of concrete.
   e. Verify reinforcing bar size and placement.
   f. Verify bar laps for proper length and stagger.
   g. Verify mechanical splices are placed in accordance with the Drawings and Specifications and reviewed shop drawings.
   h. Verify weldability of reinforcing steel, other than ASTM A706. Verify welding of reinforcing bars meets requirements set forth in Section 051200.
   i. Verify epoxy coating is present at locations noted on the Drawings and specifications, include tie wires, chairs, bolsters, etc. Verify coating damage is repaired in accordance with the Contract Documents.

G. Concrete Special Inspections: Visual inspection to include the following:
1. Steel reinforcement placement.
2. Headed bolts and studs
3. Verification of use of required design mixture.
4. Concrete placement, including conveying and depositing.
5. Curing procedures and maintenance of curing temperature.

H. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
   a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.

Rebid Documents

b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

6. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
8. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

3.17 PROTECTION OF FLOOR TREATMENTS

A. Protect floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by floor treatments installer.

3.18 CLEANING

A. Liquid and Solid Wastes Management
1. Containment: Containing of liquid and solid wastes generated by concrete washout operations may be retained in a leak proof containment facility or impermeable liner. A compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner.
2. Retaining: Do not allow liquid and solid wastes to contact the ground. Do not allow the liquid and solid wastes to runoff from the concrete washout operations or containment areas.
3. Signage: Provide a sign adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

Rebid Documents

END OF SECTION 03 3000

Rebid Documents

SECTION 03 4100 - PRECAST STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Precast concrete hollow deck.
2. Plates, anchors and inserts cast into concrete members.
3. Coordination with plumbing and electrical work.
4. Testing and inspection of precast structural concrete.

B. Related Requirements:
1. Section 01 4523 “Testing and Inspections” for conventional and special structural testing and inspections.
2. Section 03 3000 "Cast-in-Place Concrete" for concrete topping and placing connection anchors in concrete and for filling of voids and grouting around field cut openings.
3. Section 05 5000 "Metal Fabrications" for steel anchorage devices built into concrete and masonry work.
4. Section 07 9200 “Joint Sealants” for caulking material and installation requirements.

1.3 REFERENCES

A. American Concrete Institute (ACI): Latest editions, unless otherwise specified.
1. ACI 301, Specifications for Structural Concrete
2. ACI 318, Building Code Requirements for Structural Concrete

B. American Concrete Institute/The Masonry Society (ACI/TMS): Latest editions, unless otherwise specified.
1. ACI 216.1/TMS 0216.1, Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies

C. American Welding Society (AWS): Latest editions, unless otherwise specified.
1. AWS D1.1, Structural Welding Code - Steel
2. AWS D1.4, Structural Welding Code - Reinforcing Steel

D. ASTM International (ASTM): Latest editions, unless otherwise specified.
1. ASTM A36, Standard Specification for Carbon Structural Steel
2. ASTM A82, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
3. ASTM A185, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete

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4. ASTM A416, Standard Specification for Steel Strand, Uncoated Seven-Wire for Prestressed Concrete
5. ASTM A497, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete
6. ASTM A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
7. ASTM A706, Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
8. ASTM A996, Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
9. ASTM C33, Standard Specification for Concrete Aggregates
10. ASTM C144, Standard Specification for Aggregate for Masonry Mortar
11. ASTM C150, Standard Specification for Portland Cement
12. ASTM C260, Standard Specification for Air-Entraining Admixtures for Concrete
13. ASTM C494, Standard Specification for Chemical Admixtures for Concrete
14. ASTM C1107, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)

F. ICBO Evaluation Service, Inc. (ICBO)
1. ICBO Report No. PFC-2790

G. Prestressed Concrete Institute (PCI)
1. PCI Manual MNL 116, Manual for Quality Control for Plants and Production of Precast, Prestressed Concrete Products
2. PCI Manual MNL 120, PCI Design Handbook - Precast and Prestressed Concrete
3. PCI Manual MNL 124, Design for Fire Resistance of Precast Prestressed Concrete
4. PCI's Plant Certification Programs for Group C
   a. Category C1 - Precast Concrete Products (no prestressed reinforcement)
   b. Category C2 - Prestressed Hollow core and Repetitively Produced Products
   c. Category C3 - Prestressed Straight-Strand Structural Members
   d. Category C4 - Prestressed Deflected-Strand Structural Members

I. Underwriters’ Laboratories, Inc. (UL)

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
1. Product Data: Manufacturer's materials description and installation instructions.
2. Shop Drawings, general, including:
   a. Dimensions
   b. Design camber
   c. Details of inserts, anchors, connections, accessories, joints and openings.
   d. Chamfer, and radius of corners.
   e. Lifting positions or devices
   f. Reinforcement and tendons
   g. Welds
   h. Tensioning and detensioning sequence and schedule.
   i. Location of precast prestressed sections with same identification marks used in fabrication.

Rebid Documents

j. Design calculations certified by a professional engineer registered in the State in which the Project is located.
k. Manufacturer's erection plan, including handling, transporting, sequence of erection and type of erection equipment to be used.

3. Precast Deck Shop Drawings
   a. Show dead loads, live loads, and other applicable loads, setting plans, openings, reinforcing, details of slab construction and support, location and details of anchors, weld plates, alignment plates and angle header assemblies.
   b. Schedule slabs on the shop drawings to correspond with marks placed on the slabs in the plant. Indicate anticipated camber on the drawings.
   c. Coordinate drawings with mechanical and electrical shop drawings, to show required openings and penetrations for that work.

4. Test Reports: Reports of tests on concrete.
5. Certificates: Manufacturer's certificates of material compliance with specifications.

1.5 QUALITY ASSURANCE

A. Precast Work: Conform with the following, except when in conflict with the applicable building code in force; in such event the building code shall govern.
   1. American Concrete Institute
      a. ACI 301
      b. ACI 318

   2. American Welding Society
      a. AWS D1.1
      b. AWS D1.4

   3. Prestressed Concrete Institute
      a. PCI Manual MNL 116

   4. ASTM International
      a. ASTM, where specified.

   6. Underwriters' Laboratories, Inc. (UL), fire resistance rated design as specifically indicated.

B. Design Standards: Comply with ACI 318 and design recommendations in PCI MNL 120.
   1. PCI Design Handbook – Precast and Prestressed Concrete, applicable to types of precast structural concretes units indicated.

C. Precast Manufacturer
   1. Have at least 5 years' experience in this kind of work, with experienced personnel, physical facilities and management capability to execute the particular work proposed.
   2. Quality-Control Standard: For manufacturing procedures and testing requirements, quality-control recommendations, and dimensional tolerances for types of units required, comply with PCI MNL 116, Manual for Quality Control for Plants and Production of Structural Precast Concrete Products.

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3. Specifier: Select the highest Categories required for this project in the Paragraph below, but do not list those which are not required as this could restrict the number of available bidders; coordinate with Subparagraph 1.3.E.4
4. Be Certified by the Precast/Prestressed Concrete Institute, Plant Certification Program, in Group C, Categories C1, C2, C3, or C4 at the time of bidding.

D. Erector Qualifications: A precast concrete erector with minimum 5 years' experience and regularly engaged in the erection of precast structural concrete similar to the requirements of this Project, and Qualified by PCI to erect the work specified.
1. If requested by the Architect, submit a current Qualification of Compliance furnished by PCI for the designated system.

E. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1, Structural Welding Code - Steel
2. AWS D1.4, Structural Welding Code - Reinforcing Steel

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver planks to the Project site scheduled for erection in sequence. Deliver other materials to the Project site manufacturer's original containers, clearly marked with proper identification with manufacturer's name, material types, model numbers.

B. Store in accordance with manufacturer's instructions, above ground, and protected from construction activities, and other causes of damage. Separate stacked units by battens across full width of each unit.

C. Handle materials at the Project site to prevent damage. Lift and support precast units only at points designed to resist resulting forces.

D. Immediately remove from the Project site damaged and otherwise unsuitable material when determined and replace with new at no additional cost to the Owner. Do not incorporate damaged or otherwise unsuitable material into the Project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
1. Andrews Prestressed Concrete, Inc., Clear Lake, IA
2. Concrete Industries, Inc., Lincoln, NE
3. County Materials Corp.. Roberts, WI
4. Gage Brothers Concrete Products, Inc., Sioux Falls, SD
5. Molin Concrete Products Co., Lino Lakes, MN
6. Montana Prestressed Concrete, Billings, MT
7. Missoula Concrete Construction, Missoula, MT
8. Wells Concrete Products, Inc., MN and ND locations

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2.2 PERFORMANCE REQUIREMENTS

A. Precast Concrete Members Fire Ratings: Where indicated, provide precast structural concrete members whose fire-resistance meets UL fire-resistant testing or meets the requirements of IBC or has been calculated according to PCI Manual MNL 124, and is acceptable to authorities having jurisdiction for the following rates:
   1. Hollow Core and Solid Core Deck
      a. Floor: 1-hour.

   2. Hollow Core and Solid Core Deck: ICBO equivalent rated 1-hour in accordance with Report No. PFC-2790.

2.3 MATERIALS

A. Portland Cement: ASTM C150, Type I or III.

B. Normal Weight Aggregates: ASTM C33.
   1. Coarse aggregate exposed to damp conditions shall contain NO iron oxides.
   2. Lightweight aggregate are not acceptable.

C. Water: Clean, free from deleterious substances.

D. Admixtures
   1. Air-entraining Admixtures: ASTM C260.
   2. Water Reducing, Retarding, Accelerating, and High Range Water Reducing Admixtures: ASTM C494.

E. Reinforcing Steel
   1. Bars
      a. Deformed Billet Steel: ASTM A615
      b. Deformed Rail Steel: ASTM A996
      c. Deformed Axle Steel: ASTM A996
      d. Deformed Low-Alloy Steel: ASTM A706

   2. Wire: Cold-drawn steel, ASTM A82
   3. Wire Fabric
      a. Welded Steel: ASTM A185
      b. Welded Deformed Steel: ASTM A497

F. Prestressing Strands: Uncoated, 7-wire, stress-relieved or low-relaxation strand, ASTM A416, Grade 250K or 270K.

G. Embedded Steel and Anchors
   1. ASTM A36 structural steel, shop primed, unless otherwise specified.

H. Grout
   1. Packaged Grout: Non-shrink, nonmetallic, nongaseous type, premixed grout, complying with ASTM C1107 or CRD-C 621.
      a. "MasterFlow 100", (formerly Construction Grout), (BASF Building Systems - Master Builders Technologies)

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b. "Euro Pre-Cast Grout", (Euclid Chemical Co.)
c. "Five Star Grout", (Five Star Products, Inc.)
d. "Duragrout", (L&M Construction Chemicals Co.)
e. "SikaGrout 212", (Sika Corp.)

2. Sand-Cement Grout: Portland cement, ASTM C150, Type I, and clean, natural sand, ASTM C144. Mix at ratio of one part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

I. Coatings and Primers
1. Bituminous Paint: Asphalt emulsion ASTM D1187.
2. Ferrous Metal Primer: Iron oxide, zinc oxide, raw linseed oil or alkyd rust-inhibiting primer, Type I or Type II in accordance with SSPC-Paint 25, containing no-lead-bearing components, and having a VOC content as calculated according to 40 CFR 59, Subpart D (EPA method 24).
3. Galvanized Primer: Zinc-rich, rust-inhibiting primer, Type I Inorganic or Type II Organic, in accordance with SSPC-Paint 20, containing no-lead-bearing components, and having a VOC content as calculated according to 40 CFR 59, Subpart D (EPA method 24).

J. Bearing Pads: One of the following selected by the fabricator:
1. Elastomeric Pads: AASHTO M251, plain, vulcanized, 100 percent polychloroprene (neoprene) elastomer.
a. Surface Hardness: 50 to 70 Shore A durometer in accordance with ASTM D2240.
b. Minimum Tensile Strength: 2250 psi in accordance with ASTM D412.

2. Random-Oriented, Fiber-Reinforced Elastomeric Pads: Preformed, randomly oriented synthetic fibers set in elastomer.
a. Surface Hardness: 70 to 90 Shore A durometer in accordance with ASTM D2240.
b. Minimum Compressive Stress: 3000 psi with no cracking, splitting or delaminating in the internal portions of the pad.

3. Cotton-Duck-Fabric-Reinforced Elastomeric Pads: Preformed, horizontally layered cotton-duck fabric bonded to an elastomer.
a. Conforming to Division II, Section 18.10.2 of AASHTO LRFD Bridge Design Specifications or Military Specification, MIL-C-882E.
b. Surface hardness of 80 to 100 Shore A durometer according to ASTM D 2240.

4. Frictionless Pads: Polytetrafluoroethylene (PTFE), glass-fiber reinforced, bonded to stainless or mild-steel plates, or random-oriented, fiber-reinforced elastomeric pads, of type required for in-service stress.
5. High-Density Plastic: Multimonomer, non-leaching, plastic strip capable of supporting loads with no visible overall expansion.
6. Tempered hardboard strips are not acceptable.

K. Sealants: Provide sealants and related materials in accordance with Section 07 9200 “Joint Sealants”.

Rebid Documents

2.4 FABRICATION

A. Formwork
1. Construct forms to withstand tensioning and detensioning operations.
2. Construct forms to maintain units within specified tolerances with radius or chamfer at corners.
3. Securely attach anchorage devices to formwork in locations not affecting position of main reinforcement and placing or concrete.

B. Pretension tendons by single or multi-strand tensioning method.

C. Place concrete in continuous operation to prevent formation of seams.

D. Consolidate placed concrete by internal vibration without dislocation and damage to reinforcement and built-in items.
1. Vigorously vibrate concrete as it is being placed in forms in the manufacturer's plant.

E. Provide permanent markings in precast units to identify pick-up points and location in structure.

F. Curing Prestressed Units
1. Cure by immersion in hot water, with live steam or by radiant heat. Heat curing water to a temperature slightly higher than the internal temperature of the concrete. Protect steam cured and radiation cured units with adequate vapor barrier to prevent evaporation and shrinkage cracking.
2. Allow a minimum of 3 weeks between casting of units and erection in final position.

G. Detensioning
1. Delay detensioning of prestressed units until corresponding concrete test cylinder has attained a minimum compressive strength of 3500 psi.
2. Detension pretensioned tendons by gradual release of tensioning jacks or heat cutting tendons in sequence and pattern to prevent shock and unbalanced loading.

H. Concrete Mix Designs
1. Compressive Strength: 5,000 psi at 28 days minimum.
3. Water to Cementitious Materials Ratio: 0.40 maximum by weight.
5. Water Soluble Chloride Ion Content
   a. For Prestressed Components: 0.06 percent by weight of cement maximum.
   b. Other Components: 0.15 percent by weight of cement maximum.

I. End of Section Exposed to View: Fill ends of tendons, recessed and recesses with prepackaged non-shrink grout.

J. Protective Coatings
1. Paint metal work which is to be in contact with, but not fully embedded in, concrete with a heavy coat of bituminous paint. Coat dissimilar metals which are or will be in contact with one another with a heavy coat of bituminous paint. Do not extend onto surfaces which will be exposed to view in the finished work.
2. Apply 2 heavy coats of bituminous coating to steel surfaces in contact with soil.

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2.5 FINISHES

A. Commercial (Structural) Finishes: In accordance with PCI finish standards for Categories C1, C2, C3, or C4
   1. Exposed Surfaces, for EXPOSED DECORATIVE FINISH: "Standard Grade", in those areas, indicated in the Room Finish Schedule, where planks beams and columns will to be used as the finish and painted or spray texture is applied. Produce finish in molds that impart a smooth finish to concrete.
      a. Surface holes smaller than 1/2" caused by air bubbles, normal color variations, form joint marks, and minor chips and spalls are permitted.
      b. Fill air holes greater than 1/4" in width that occur more than once per 2 sq. in.
      c. Major or unsightly imperfections, honeycombs, or structural defects are not permitted.
      d. Limit joint offsets to 1/8".

   2. Color: As-cast concrete grey.

2.6 SOURCE QUALITY CONTROL

A. Comply with Prestressed Concrete Institute Manual MNL 116 for manufacturing, testing procedures and dimensional tolerances for all prestressed, precast sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Notify the General Contractor of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Examine bearing surfaces of structure to assure they are smooth, level and free of debris. Verify that required inserts and anchors for connection to precast prestressed sections have been installed.

3.2 INSTALLATION

A. Perform erection by trained installer approved by the manufacturer. Do not install warped, cracked, or broken sections.

B. Install clips, hangers, bearing pads, and other accessories required for connecting precast structural concrete units to supporting members and backup materials.

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C. Handle units by means of erection inserts and other approved devices to avoid damage and imparting excessive stresses and strains to the members. Locate lifting devices as close as possible to the in-place bearing points of the members

D. Erect precast structural concrete level, plumb, and square within specified allowable tolerances. Provide temporary structural framing, supports, and bracing as required to maintain position, stability, and alignment of units until permanent connection.
   1. Install temporary steel or plastic spacing shims or bearing pads as precast structural concrete units are being erected. Tack weld steel shims to each other to prevent shims from separating.
   2. Maintain horizontal and vertical joint alignment and uniform joint width as erection progresses.

E. Connect precast structural concrete units in position by bolting, welding, grouting, or as otherwise indicated on Shop Drawings. Remove temporary shims, wedges, and spacers as soon as practical after connecting and grouting are completed.

F. Fasteners: Do not use drilled or powder-actuated fasteners for attaching accessory items to precast, prestressed concrete units.

G. Welding: Comply with applicable AWS D1.1 and AWS D1.4 for welding, welding electrodes, appearance, quality of welds, and methods used in correcting welding work.
   1. Protect precast structural concrete units and bearing pads from damage by field welding or cutting operations, and provide noncombustible shields as required.
   2. Clean weld-affected steel surfaces with chipping hammer followed by brushing and apply a minimum 4.0-mil thick coat of galvanized repair paint to galvanized surfaces according to ASTM A780.
   3. Clean weld-affected steel surfaces with chipping hammer followed by brushing and reprime damaged painted surfaces.
   4. Remove, reweld, or repair incomplete and defective welds.

H. At bolted connections, use lock washers, tack welding, or other approved means to prevent loosening of nuts after final adjustment.
   1. Where slotted connections are used, verify bolt position and tightness.
   2. For sliding connections, properly secure bolt but allow bolt to move within connection slot.
   3. For friction connections, apply specified bolt torque and check 25 percent of bolts at random by calibrated torque wrench.

I. Level slabs, keeping units tight and at right angles to bearing locations. Align and level slabs by standard method and using equipment recommended or supplied by the manufacturer.
   1. Minimum Bearing: 4" on concrete and masonry and 3" on steel, unless otherwise indicted on the Structural Drawings.
   2. Provide bearing strips materials recommended by fabricator on masonry walls, and as detailed on Structural Drawings.

J. Provide openings for other trades including mechanical trades in accordance with their shop drawings. Do not cut prestressing reinforcing. Cooperate with other trades to permit inserting anchors, hanger, and other inserts. Install hangers before units are grouted

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K. Grouting: Grout connections and joints and open spaces at all keyways, connections, and joints. Retain grout in place until hard enough to support itself. Pack spaces with stiff grout material, tamping until voids are completely filled.
   1. Place grout to finish smooth, level, and plumb with adjacent concrete surfaces.
   2. Fill joints completely without seepage to other surfaces.
   3. Trowel top of grout joints smooth and uniform. Finish transitions between different surface levels not steeper than 1 to 12.
   4. Grouting Cores: Grout all end cores of hollow-core slabs that are exposed to view after erection, but prior to erection of other construction.
      a. End Caps or Dams: Place grout end cap or dam in voids at ends of hollow-core slabs. Place end caps or dam 6" from slab ends at voids without pour slots, and place 2 feet from slab ends at voids with pour slots.

   5. Tendon Ends: When end of a section is to be exposed to view, ends of tendons shall be recessed and recess filled with non-shrink cement grout.
   6. Lifting Devices: Remove projecting lifting devices and grout fill voids within recessed lifting devices flush with surface of adjacent precast surfaces when recess is exposed.
   7. Promptly remove grout material from exposed surfaces before it affects finishes or hardens.
   8. Keep grouted joints damp for not less than 24 hours after initial set.

L. Interior Joints
   1. Where wall panels, planks are exposed to view in the finish work caulk joints between panels and between members by method approved by precast manufacturer.
   2. Caulking Materials: Refer to Section 07 9200 for sealant materials and installation requirements.
      a. Caulk joints with caulking compound C1.

   3. Where erection results in joints between precast members, and between precast members and adjacent construction, which are not shown on the Drawings to be filled, install backer rod and caulking compound C1 to fill the entire joint regardless of size.
   4. Joint Profile: Raked flat, resulting in 3/4" consistent joint depth. Maintain 2:1 width to depth of sealant ratio.

3.3 ERECTION TOLERANCES

A. Erect precast structural concrete units level, plumb, square, and in alignment without exceeding the noncumulative erection tolerances of PCI MNL 135.

B. Minimize variations between adjacent slab members by jacking, loading, or other method recommended by fabricator and approved by Architect.

3.4 FIELD QUALITY CONTROL

A. General
   1. Special Structural Testing and Inspection shall be performed by qualified parties as specified herein, and in accordance with the provisions of Section 01 4523 “Testing and Inspections”.
   2. Special Structural Testing and Inspection Services herein include items required by the Chapter 17 of the International Building Code (IBC), 2021 edition, and other items which

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in the professional judgment of the Structural Engineer of Record are critical to the integrity of the building structure

3. Conventional Testing and Inspection Services specified herein describe those items not specifically required by IBC but are considered essential to the proper performance of the building systems.

B. Definitions
1. Refer to Section 014523 “Testing and Inspections” for standard definitions.
2. Special Inspector - Technical
   a. Technical I: Technician shall be under the direct supervision of a registered civil/structural engineer regularly engaged in testing and inspection of this type of work. The registered engineer shall review and approve all inspection reports.
   b. Technical II: Graduate civil/structural engineer, with experience in this type of work. Supervised by a registered civil/structural engineer. The registered engineer shall review and approve all inspection reports.

3. Special Inspector - Structural
   a. Structural I: Graduate civil/structural engineer, or other personnel acceptable to the SER, with experience in the design of structural systems of this type. Inspections shall be performed under the direct supervision of a registered civil/structural engineer.
   b. Structural II: Civil/structural engineer regularly engaged in the design of structural systems of this type, registered in the state in which the project is located. The registered engineer shall review and approve all inspection reports.
   c. Special Inspector - Structural may be an employee of the SER.

C. Special Structural Testing and Inspection Requirements
1. Erection of precast structural concrete members.
2. Field welds will be subject to visual inspections and nondestructive testing according to ASTM E165 or ASTM E709. High-strength bolted connections will be subject to inspections.
3. Repair or remove and replace work where tests and inspections indicate that it does not comply with specified requirements.
4. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.5 ADJUSTING CLEANING

A. After erection, field welds, scratched and abraded areas finished in shop prime coat which will not be encased in concrete shall be cleaned and primed with the same paint used for the shop coat.

END OF SECTION 03 4100

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SECTION 04 2613 - MASONRY VENEER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions. and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Brick.
2. Mortar materials.
3. Ties and anchors.
4. Embedded flashing.
5. Accessories.
6. Mortar mixes.

B. Products Installed but not Furnished under This Section:
1. Cast-stone trim in masonry veneer.
2. Steel lintels in masonry veneer.

C. Related Requirements:
1. Section 01 4523 “Testing and Inspections”.
2. Section 04 7200 “Cast Stone Masonry” for cast stone, sills, trim and profiles.
3. Section 05 5000 “Metal Fabrications” for steel lintels supporting brick veneer and precast sills.
4. Section 07 9200 “Joint Sealants”.

1.3 REFERENCES

A. American Concrete Institute (ACI): latest edition, unless otherwise specified.
1. ACI 530.1. Specifications for Masonry Structures

B. ASTM International (ASTM): latest editions, unless otherwise specified.
1. ASTM C143, Standard Test Method for Slump of Hydraulic-Cement Concrete.
2. ASTM C144, Standard Specification for Aggregate for Masonry Mortar.
3. ASTM C150, Standard Specification for Portland Cement.
4. ASTM C207-06, Standard Specification for Hydrated Lime for Masonry Purposes
5. ASTM C270, Standard Specification for Mortar for Unit Masonry
6. ASTM C404, Standard Specification for Aggregates for Masonry Grout.
7. ASTM C476, Standard Specification for Grout for Masonry.
8. ASTM C216, Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).

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9. ASTM C979-10, Standard Specification for Pigments for Integrally Colored Concrete.
10. ASTM C1019-11, Standard Test Method for Sampling and Testing Grout.
11. ASTM C1329-05, Standard Specification for Mortar Cement.
12. ASTM D1056, Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
13. ASTM D2000, Standard Classification System for Rubber Products in Automotive Applications.

C. Brick Industry Association (BIA): latest editions, unless otherwise specified.
1. Technical Notes 1, Cold and Hot Weather Construction
2. Technical Notes 8A, Standard Specifications for Portland Cement - Lime Mortar for Brick Masonry.
3. Technical Notes 18A, Accommodating Expansion of Brickwork.

D. International Building Code (IBC): 2021 Edition.

E. Masonry Industry Council (MIC)
1. MIC, Hot & Cold Weather Masonry Construction.

F. Portland Cement Association (PCA)
1. PCA Trowel Tips IS243, Hot Weather Masonry Construction.
2. PCA Trowel Tips IS248, Cold Weather Masonry Construction.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
1. Product Data: For each type of product.
a. Materials description and installation instructions for ties, anchors, joint reinforcement, and joint materials.
b. Brick manufacturer's recommended cleaning procedures for each brick type furnished.

2. Masonry Unit Samples
a. Brick Units: Furnish 5 bricks of each type proposed, through range of color. At least one brick shall represent the worst condition that brick delivered to the site and incorporated in the work will exhibit.

3. Other Samples
a. Masonry Veneer Ties: One tie assembly of each type, size, and finish specified.
b. Through-wall Flashing: One 12" minimum square piece of membrane flashing with manufacturer's name imprinted on one side.
c. Weeps/cavity vents.
d. Cavity Drainage Material: One 12" minimum length by full height piece of material in size required for cavity depth.

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4. Brick Manufacturer's Test Reports
   a. For each type of brick indicating:
      1) Compressive strength
      2) 24-hour cold water absorption
      3) 5-hour boil absorption
      4) Saturation coefficient
      5) Initial rate of absorption (suction)

5. Certification: Written certification that ties, anchors and joint reinforcement comply with specified requirements.

B. Submit the following in accordance with Section 014523:
   1. Test reports as specified in PART 3, under "Field Quality Control."

C. Shop Drawings: For the following:
   1. Masonry Units: Indicate sizes, profiles, coursing, and locations of special shapes.
   2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

1.6 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type and size of the following:
   1. Masonry units.
      a. Include data on material properties.
      b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
      c. For exposed brick, include test report for efflorescence in accordance with ASTM C67/C67M.
      d. For surface-coated brick, include test report for durability of surface appearance after 50 cycles of freezing and thawing in accordance with ASTM C67/C67M.
   2. Cementitious materials. Include name of manufacturer, brand name, and type.
   3. Mortar admixtures.
   4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
   5. Anchors, ties, and metal accessories.

B. Qualification Statements: For testing agency.

C. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.
   1. Include test reports for mortar mixes required to comply with property specification. Test in accordance with ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.

D. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.7 QUALITY ASSURANCE

A. Comply with laws, ordinances, rules regulations and orders of public authorities having jurisdiction over this part of the work.

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B. Faces of unit masonry exposed to view in the finished work, shall be of uniform texture and free of chips, cracks and other imperfections detracting from the appearance of the finished work.

C. Mockup: Before starting exterior masonry construct a sample wall panel minimum 8 feet long and 8 feet high incorporating back-up construction including vapor/air membrane, etc., anchors and ties, flashing and drainage methods, a sealant joint, using all exterior masonry and stone units specified, and representing the proposed color range (if any), texture, bond, mortar color, joint treatment, and representing overall workmanship, for approval by the Architect.
1. Erect sample panel facing Southwest or West in direct sunlight.
2. Include through-wall flashing installed for a 24" length in corner of mockup approximately16" down from top of mockup, with a 12" length of flashing left exposed to view (omit masonry above half of flashing).
3. Include weep construction, vents, and cavity drainage material, if specified.
4. Include anchors and ties specified, properly spaced.
5. Include a sealant-filled joint at least 16" long in mockup.
6. Clean sample panel prior to review.
7. Panel shall not be a part of the finished work but shall remain at the Project site protected during the work with weather-resistant membrane, and removed when directed, or upon completion of the work.

D. Where masonry construction is indicated on Drawings and where required by code to have fire-resistant construction, provide masonry materials and methods of installation necessary to obtain the required rating.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

C. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.9 FIELD CONDITIONS

A. Environmental Requirements:
1. General: Unless otherwise indicated or required by the Building Code in effect, when ambient temperature rises above 90 degrees F., or is below or is expected to fall below 40 degrees F., comply with recommended practices for hot, cold, and wet weather masonry construction indicated in ACI 530.1, BIA Technical Notes 1, MIC Hot & Cold Weather Masonry Construction, NCMA TEK 3-1B, or PCA Trowel Tips IS243 and 1S248, whichever is most stringent for the weather conditions present or forecasted.

B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry. Immediately remove grout, mortar, and soil that comes in contact with masonry.

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1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. For exposed masonry units and cementitious mortar components, obtain each color and grade from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects will be exposed in the completed Work.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

2.3 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units.
1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
3. Faces of brick units shall be free of cracks and other imperfections detracting from their appearance when viewed from a distance of 10 feet for rough brick and 12 feet for smooth brick.

B. Clay Face Brick: Facing brick complying with ASTM C216, Grade SW, Type FBS**.**
1. Efflorescence: Provide brick that has been tested in accordance with ASTM C67/C67M and is rated "not effloresced."
2. Size: Standard Modular, 4 inches wide by 2-2/3 inches high by 8 inches long nominal.
3. Colors and Textures:
   a. Face Brick 1: “Misty Grey”; velour texture by Hebron Brick.

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b. Face Brick 2: “Onyx Ironspot”; velour texture by Hebron Brick.

4. Provide solid brick units with finished ends where cores of brick would be exposed to view in the finished work.
5. Provide special shapes where necessary.
6. Faces of brick units shall be free of cracks and other imperfections detracting from their appearance when viewed from a distance of 10 feet for rough brick and 12 feet for smooth brick.

2.4 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I. Provide natural color or white cement as required to produce mortar color indicated.
1. Masonry cements, fly ash, slag and pozzolans are NOT allowed.
2. Alkali content will not be more than 0.1 percent when tested in accordance with ASTM C114.

B. Hydrated Lime: ASTM C207, Type S, containing no air entrainment.

C. Mortar Cement: ASTM C1329, complying with the requirements of the mortar types specified.
1. Products: Subject to compliance with the requirements, available products that may be incorporated into the Work include the following:
a. Lafarge Mortar Cements, (a brand of Holcim, US).
b. Approved substitutions.

D. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979. Use only pigments with a record of satisfactory performance in masonry mortar.
1. “True Tone Mortar Colors” (Davis Colors).
2. “DCS Mortar Colors” (Dynamic Color Solutions, Inc. (DCS))
3. “SGS Mortar Colors” (Solomon Colors Inc.)
4. Color(s): Selected by Architect from manufacturer’s full range of colors.

E. Aggregate for Mortar: ASTM C144.
1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

F. Water: Clean potable, free from deleterious amounts of acids, alkalis and organic materials.

G. Admixtures:
1. Calcium chloride is not allowed in mortar or grout.
2. Admixtures or other chemicals containing thyocyanates, calcium chloride or more than 0.1 percent chloride ions are not allowed.
3. Water repellent admixtures are not allowed unless otherwise specified herein.

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2.5 TIES AND ANCHORS

A. General: Ties and anchors extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
   1. Stainless Steel Wire: ASTM A580/A580M, Type 304.
   2. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304 Steel Plates, Shapes and Bars: ASTM A36.

C. Adjustable Masonry-Veneer Anchors:
   1. General: Provide anchors that allow vertical adjustment but resist a 100 lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.
   2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.1094-inch- thick, stainless steel sheet.
   3. Fabricate wire ties from 0.187-inch-diameter, stainless steel wire unless otherwise indicated.
   4. Contractor's Option: Unless otherwise indicated, provide any of the adjustable masonry-veneer anchors specified.

   5. Masonry-Veneer Anchors; Slotted Plate: Sheet metal anchor section, with screw holes at top and bottom; and raised rib-stiffened strap, stamped into center to provide a slot between strap and base for wire tie. Use self-adhering tape to seal penetration behind anchor plate.
      a. Basis-of-Design Product: Subject to compliance with requirements, provide products by Heckmann Building Products, Inc.
         1) Anchor plate: “Screw-On Anchor Plate”, Part # 315-D (Heckmann)
         2) Wire tie: “Triangular Wire Tie”, Part # 316 (Heckmann)

      b. Approved substitutions.

2.6 EMBEDDED FLASHING

A. Flexible Flashing: Use the following unless otherwise indicated:
   1. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 40 mil.
      a. "CCW-705-TWF" (Carlisle Coatings & Waterproofing, Inc.)
      b. "Perm-A-Barrier Wall Flashing" (Grace Construction Products (GCP).
      c. “Blueskin TWF” (Henry Company).
      d. "TextroFlash" (Hohmann & Barnard, Inc.).
      e. "P.W. 100/40 Air/Vapor Barrier-Thru Wall Flashing" (Protecto Wrap Co.)
      f. “Air-Shield Thru-Wall Flashing” (W.R. Meadows).
      g. Provide flashing manufacturer's recommended adhesives, primers, and seam tapes for bonding flashing sheets to each other and to substrates, and as required for a complete installation.
      h. Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

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B. Elastomeric Sealant: ASTM C920, chemically curing sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and remain watertight.

C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

D. Termination Bars for Flexible Flashing, Flanged: Stainless steel sheet 0.019 inch by 1-1/2 inches with a 3/8-inch flange at top and pre-drilled or punched for fasteners at 8”, 12” or 16” o.c. having a maximum distance of 8” from the ends.

E. Sealant: ASTM C920, chemically curing urethane or silicone sealant of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

2.7 DRIP EDGES

A. Drip Edge: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.01875 inch (26 ga) thick.
2. Fabricate in sections 96 inches long minimum, but not exceeding 12 ft.
3. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.

2.8 ACCESSORIES

A. Compressible Filler Strips: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Weep/Vent Products: Use the following unless otherwise indicated:
1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
   a. “Mortar Maze Weep Vent” (Advanced Building Products, Inc.)
   b. “Quadro-Vent” (Hohmann & Barnard, Inc.)
   c. “CellVent” (Keene Building Products)

C. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
1. Mortar Deflector: Strips, full depth of cavity and 16 inches high by 8 foot long sections, with dovetail-shaped notches that prevent clogging with mortar droppings.
   a. Mortar Break DT” (Advanced Building Products, Inc.)
   b. “#85 Cell Vent” (Heckman Building Products)
   c. “Mortar Trap”, (Hohman & Barnard, Inc.)
   d. “Mortar Net” (Mortar Net USA Ltd.).

D. Proprietary Acidic Masonry Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new

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masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. "Sure Klean 600" (Prosoco, Inc.)
2. "NMD 80" (EaCo Chem)
3. "Efflorescence Remover" (Envirosafe Manufacturing Corp.)
4. "SB 2020 Detergent Masonry Cleaner" (Shore Corporation)
5. Approved substitutions.

2.9 MORTAR MIXES, MIXING AND USES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar unless otherwise indicated.
3. Comply with ACI 530.1 and recommendations for mortar selection and preparation during hot and cold weather, contained in the following publications:
    a. BIA, Technical Notes 1 – All-Weather Construction.
    b. MIC, Hot & Cold Weather Masonry Construction Manual.
    c. NCMA, TEX 3-1C – All-Weather Concrete Masonry Construction.

B. Mortar for Unit Masonry: Comply with ASTM C270, Proportion (Volume) Specification.

1. Natural Mortar (No Color Pigment)
    a. Type M, Natural: 1 part Portland cement, 1/4-part lime and 3-3/4 parts sand.
    b. Type S, Natural: 1 part Portland cement, over 1/4-to-1/2-part lime and 4-1/2 parts sand.
    c. Type N, Natural: 1 part Portland cement, over 1/2 to 1-1/4 part lime and 6 parts sand.

2. Colored Mortar (Pigmented)
    a. Type M, Colored: 1 part Portland cement, ¼ part lime and 3-3/4 parts sand with color pigment added.
    b. Type S, Colored:1 part Portland cement, over 1/4-to-1/2 part lime and 4-1/2 parts sand with color pigment added.
    c. Type N, Color: 1 part Portland cement, over 1/2 to 1-1/4 part lime and 6 parts sand with color pigment added.
    d. Pigment Volume
        1) For colored Portland cement mortar use the minimum quantity of color pigments to produce desired result. Premix color with the Portland cement in large, controlled quantities.
        2) Mix to match Architect's approved color sample.
        3) Pigments shall not exceed 10 percent of Portland cement by weight.
        4) Pigments shall not exceed 5 percent of mortar cement by weight.

C. At Contractor's option, mortar cement may be substituted for the Portland cement and lime in accordance with Table 2103.7(1) of the IBC.

D. Mortar Mixing: Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270.

1. Use the same source of mortar materials throughout the Project.

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2. Use a consistent mixing sequence to maintain color consistency.
3. Do not use admixtures in mortar, unless approved by the Architect.
4. Do not use antifreeze compounds.
5. If water is lost by evaporation, retemper mortar within 2 hours of mixing.
   a. Do not retemper mortar after 2 hours.
   b. Do not retemper colored mortar.

E. Mortar Uses
1. Type M: For masonry below grade or in contact with earth.
2. Type S: For reinforced masonry.
3. Type N: For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Notify the Contractor of conditions detrimental to performance of the Work and recommended corrections. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordination: Review installation procedures and coordinate with other work that must be integrated with masonry.

3.3 INSTALLATION, GENERAL

A. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.

B. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

C. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

3.4 TOLERANCES

A. Unit masonry construction shall be within the following tolerances:
1. Maximum variation from plumb in vertical lines and surfaces of columns, walls and arises.

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a. 1/4" in 10 feet .
b. 3/8" in a story height not to exceed 20 feet.

2. Maximum variation from plumb for external corners, expansion joints and other conspicuous lines.
   a. 1/4" in any story or 20 feet maximum.
   b. 1/2" in 40 feet or more.

3. Maximum variation from level of grades for exposed lintels, sills, parapets, horizontal reveals and other conspicuous lines.
   a. 1/4" in any bay or 20 feet.
   b. 1/2" in 40 feet or more.

4. Maximum variation from plan location of related portions of columns, walls and partitions.
   a. 1/2" in any bay or 20 feet.
   b. 3/4" in 40 feet or more.

5. Maximum variation in cross-section dimensions of columns and thicknesses of walls from dimensions shown on Drawings.
   a. Minus 1/4".
   b. Plus 1/2".

B. Joints:
1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.5 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond unless otherwise indicated on the drawings; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive

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mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

3.6 MORTAR BEDDING AND JOINTING

A. Bond and Joint Aesthetic Characteristics.
1. Standard running bond.
2. Header course bond.
3. Joint Profile: Concave, except tool joints flush where surfaces of mortar joints are concealed by abutting construction and are shown to receive sealant against mortar joint.

B. Mortar Bedding.
1. Lay brick masonry units with mortars of types and strengths specified. Install each masonry unit with full mortar coverage on all adjoining ends, backs, and bearing surfaces, as required to provide completely solid bed joints, head joints and collar joints. Mortar shall not be slushed into joints between units after laying. Keep voids clean and unobstructed of mortar and debris, including expansion joints, control joints, chases and similar spaces.

C. Mortar Joints.
1. Lay brick masonry units with solid mortar joints of uniform 3/8" width, unless otherwise shown. While setting mortar is still damp, firmly compact as required to obtain uniform concave-tooled joints at exposed surfaces.

D. Drips, Flashing and Weeps.
1. Build in drips, flashing, weeps and cavity drainage material. Install each component as the work progresses.
   a. Drip Edges: Install metal drip edges beneath membrane flashing, extend to rear of cavity and turn up 3/4" minimum.
   b. Self-Adhering Membrane Flashing: Prime surfaces to receive membrane flashing in accordance with manufacturer's recommendations. Extend flashing up wall surfaces 16" unless otherwise shown; use manufacturer's recommended adhesive tape or termination bar against gypsum or plywood sheathing and cover top of flashing or termination bar with a bead of sealant. Turn flashing up 2-1/2” minimum at ends to form dams above and below openings in walls. Lap ends of flashing sheets 2" and roll to form continuous watertight seam. Trim flashing flush with face of wall after masonry wall construction is completed.
   c. Install flashings only when face brick erection is scheduled to proceed in a timely fashion, to avoid damage to flashing from exposure to the elements.
   d. At Contractor's option, provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.

2. Weeps Vents
   a. Install weep vents in head joints of first course of masonry immediately above embedded flashing.
      1) Use specified weep cavity vent products to form weep holes.
      2) Space weep holes 24 inches o.c. unless otherwise indicated.

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3) Place cavity drainage material in airspace behind weep vents and embedded flashing to comply with configuration requirements for cavity drainage material in "Accessories" Article.

b. Install vents at shelf angles, ledges, and other obstructions to promote upward flow of air in cavities, and where indicated.

E. Demonstration.
1. Notify Architect in advance of constructing cavity walls of brick. Demonstrate proposed methods of keeping cavities clean between rear face of brick and back-up construction.

F. Set cast-stone trim units in full bed of mortar with full vertical joints. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water. Allow cleaned surfaces to dry before setting. Wet joint surfaces thoroughly before applying mortar.

3.7 ANCHORED MASONRY VENEERS

A. Anchor masonry veneers to wall framing with masonry-veneer anchors to comply with the following requirements:
1. Fasten anchors with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
2. Embed in masonry joints.
3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
4. Space anchors as indicated, but not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.

B. Provide not less than 1 inch of airspace between back of masonry veneer and face of sheathing or continuous exterior sheathing, whichever has its faced exposed within the wall cavity.
1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace. Do not attempt to trowel or remove mortar fins protruding into airspace.

C. Do not use metal reinforcing and ties having loose rust and other coatings, including ice, which will reduce or destroy bond.

3.8 EXPANSION JOINTS

A. General: Install expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span expansion joints without provision to allow for in-plane wall or partition movement.

B. Expansion Joints: Construct expansion joints for brick masonry walls using soft joint, with compressible joint filler. Keep head joints free and clear of mortar, install backer rod and sealant. Locate expansion joints as indicated on the Drawings, and elsewhere in accordance with Brick Industry Association (BIA) Technical Note 18A “Accommodating Expansion of Brickwork.”

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3.9 LINTELS

A. Install steel lintels where indicated.

B. Provide offset angle supports where indicated and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are indicated without structural steel or other supporting lintels.

C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements will be at Contractor's expense.

B. General
1. Special Structural Testing and Inspection shall be performed by qualified parties as specified herein, and in accordance with the provisions of Section 014523.
2. Special Structural Testing and Inspection Services herein include items required by the 2021 IBC as adopted by the current North Dakota State Building Code, and other items which in the professional judgement of the Structural Engineer of Record are critical to the integrity of the building structure.
3. Conventional Testing and Inspection Services specified herein describe those items not specifically required by IBC Section 1701, as adopted by the current North Dakota State Building Code but are considered essential to the proper performance of the building systems.

C. Definitions
1. Special Inspector – Technical:
   a. Technical I: Technician shall be under the direct supervision of a Technical III regularly engaged in testing and inspection of this type of work. The licensed engineer shall review and approve all inspection reports.
   b. Technical III: A civil/structural engineer, regularly engaged in this type of work with a minimum of 4 years' experience, licensed in the State in which the Project is located, and is an employee of a qualified and approved testing laboratory. The licensed engineer shall review and approve all reports.

2. Special Inspector – Structural
   a. Structural I: Graduate civil/structural engineer, or other personnel acceptable to the SER, with experience in the design of structural systems of this type. Inspections shall be performed under the direct supervision of a Structural II.
   b. Structural II: Civil/structural engineer regularly engaged in the design of structural systems of this type, licensed in the state in which the Project is located. The licensed engineer shall review and approve all inspection reports.
   c. Special Inspector - Structural may be an employee of the SER.

D. Structural Testing and Special Inspection Requirements - **Level 1**
1. Samples and Tests for Special Inspections; **performed by Technical I.**

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2. Prism Tests: Performed in accordance with ACI 530.1, as follows:
   a. A set of 3 masonry prisms for each masonry type requiring testing, shall be built and tested in accordance with ASTM C1314 prior to the start of construction.
   b. During construction, a set of 3 masonry prisms shall be built and tested in accordance with ASTM C1314 for each 5,000 sq. ft. of wall area in question, but not less than one set of 3 masonry prisms for the Project.
   c. The compressive strength of masonry determined in accordance with ASTM C1314 for each set of prisms shall equal or exceed specified f'm.

3. Masonry Preparation and Placement; **performed by Technical I.**
   a. On a periodic basis, verify that masonry bearing surfaces are clean.
   b. On a periodic basis, verify that masonry units are clean, sound, and dry.
   c. On a periodic basis, verify proportions of prepared mortar are consistent with previously submitted materials.

4. Masonry Preparation and Placement; **performed by Structural I.**
   a. On a periodic basis, inspect laying of masonry units for nominal unit widths, stack or running bond, size and location of structural elements, proper thickness and tooling of mortar joints, and acceptable depth of furrowing of bed joints. Note temperature at time of inspection.
   b. On a continuous basis, observe selection of samples for masonry unit tests or preparation, storage, and handling of test prisms, depending on method used. (Contractor shall provide labor and materials to construct all prism tests.)
   c. On a periodic basis, inspect construction, expansion and contraction joints for location and continuity of steel.
   d. On a periodic basis, verify hot and cold weather procedures are followed.
   e. On a periodic basis, verify wall cavities are protected against entry of precipitation.

5. Masonry Reinforcement: **performed by Structural I.**
   a. On a periodic basis, inspect ties in masonry for type, straightness, embedment, spacing and size.
   b. On a periodic basis, inspect the type, size, location, and installation of masonry anchorage to structural members, frames, and other construction.

6. General Compliance; **performed by Structural I.**
   a. On a periodic basis, verify that work is being performed in accordance with the Contract Documents and the approved submittals, and that materials used are consistent with prior submittals.

E. Conventional Testing
   1. Submit field test reports for tensile bond strength (between face brick and mortar) in exterior walls.

F. Mortar Testing
   1. Perform preconstruction testing specified in Article 1.05, and the following:
      a. Prepare and test mortar specimens in accordance with ASTM C780.
      b. Take one mortar test specimen for each 5,000 square feet of masonry wall constructed and take a minimum of one set of mortar test specimens for each day that masonry construction is done. Take test specimens for 7-day test and 28-day test.

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c. Strength level of mortar will be considered satisfactory if no individual 28-day mortar test specimen result is less than 2200 psi for Type M and 1800 psi for Type S.

2. The water-soluble alkali content of the cement used in the mortar shall be tested in accordance with ASTM C114, or suitable certification furnished by the manufacturer of the cement, to establish that total water-soluble alkali content does not exceed 0.1 percent of the alkalis present.

3.11 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels. Presoak wall by saturating with water and flush off loose mortar and dirt. Scrub down wall with stiff fiber brush and a solution of 1/2 cup of trisodium phosphate and 1/2 cup of household detergent dissolved in one gallon of water. Rinse walls by washing off cleaning solution, dirt and mortar crumbs using clean, pressurized water.
   a. Acid cleaning of masonry will NOT be permitted.
   b. Verify cleaning procedure with unit masonry and mortar manufacturers before beginning.

E. At the conclusion of masonry work, remove scaffolding and equipment used in the work, clean up debris, refuse and surplus material and remove same from premises.'

3.12 PROTECTION

A. Protect masonry materials during storage and construction against wetting by rain, snow and ground water, and against soilage and intermixture with earth and other types of materials.

B. During erection, at the end of each day's work, during a shutdown, and during adverse weather conditions, cover tops of walls, projections and sills, with strong nonstaining waterproof membrane. Cover partially completed walls when work is not in progress. Extend cover 24" down both sides and secure in place.
1. WALLS LEFT UNPROTECTED OR NOT PROPERLY PROTECTED MAY BE SUBJECT TO REJECTION, SUBSEQUENT REMOVAL, AND REPLACEMENT AT NO ADDITIONAL COST TO OWNER.

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C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
   1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
   2. Protect sills, ledges, and projections from mortar droppings.
   3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
   4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Protect masonry work from damage. Brace walls as necessary during construction. Protect against staining.

E. Protect masonry work from excessive changes in temperature when protective shelters are removed. Changes in temperature of the masonry shall be as uniform as possible and shall not exceed 5 degrees F. in any one hour, and 50 degrees F. in any 24-hour period.

END OF SECTION 04 2613

Rebid Documents

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Rebid Documents

SECTION 04 7200 - CAST STONE MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Trim units.
2. Decorative elements.
3. Accessories.

B. Related Requirements:
1. Section 04 2613 “Masonry Veneer” for cast stone masonry installed in conjunction with brick masonry veneer, mortar materials and mortar mixes.
2. Section 07 1916 “Silane Water Repellent

1.2 REFERENCES

A. American Concrete Institute (ACI): latest edition, unless otherwise specified.
1. ACI 318 – Building Code Requirements for Reinforced Concrete.

B. ASTM International (ASTM): latest editions, unless otherwise specified.
1. ASTM A615/A615M – Standard Specification for Deformed and Plain Billet-Steel Bars for Reinforced Concrete.
2. ASTM A1064 / A1064M – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
3. ASTM C33 – Standard Specification for Concrete Aggregates.
4. ASTM C150 - Standard Specification for Portland Cement.
5. ASTM C595/C595M - Specification for Blended Hydraulic Cements
6. ASTM C1157/C1157M - Performance Specification for Hydraulic Cement
7. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volume Method.
8. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
9. ASTM C260 - Standard Specification for Air-Entrained Admixtures for Concrete.
10. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
11. ASTM C426 – Standard Test Method for Linear Shrinkage of Concrete Masonry Units.
12. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
13. ASTM C618 – Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
14. ASTM C666/666M – Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
15. ASTM C979 - Standard Specification for Coloring Pigments for Integrally Colored Concrete.
16. ASTM C989 – Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete.
17. ASTM C1116 – Standard Specification for Fiber Reinforced Concrete and Shotcrete.

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18. ASTM C1194 - Standard Test Method for Compressive Strength of Architectural Cast Stone.
19. ASTM C1195 - Standard Test Method for Absorption of Architectural Cast Stone.
20. ASTM C1364 - Standard Specification for Architectural Cast Stone.
21. ASTM D1729 - Practice for Visual Appraisal of Colors and Color Differences of Diffusely Illuminated Opaque Materials.
22. ASTM D2244 – Standard Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
23. ASTM D7957/D7957M – Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement.

C. Cast Stone Institute® Technical Manual (Current Edition)

D. The Masonry Society (TMS): latest edition, unless otherwise specified.
1. TMS 404-504-604- Standards for Architectural Cast Stone Design – Fabrication – Installation.

1.3 DEFINITIONS

A. Cast Stone: A refined architectural concrete building unit intended to simulate natural cut stone, used in unit masonry applications.
1. Wet Cast Concrete Products: Manufactured from measurable slump concrete.
a. Wet Casting Method: Manufactured from measurable slump concrete and vibrated into a mold until it becomes densely consolidated.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
1. Product Data
a. Manufacturer's materials description and installation instructions for ties, anchors, joint reinforcement, and joint materials.
b. Manufacturer's recommend cleaning procedures for each cast stone type furnished.

2. Shop Drawings: Show complete information for fabrication and installation of cast stone units, including:
a. Member dimensions and cross-section; location, size and type of reinforcement, including special reinforcement and lifting devices necessary for handling and erection. Include erection procedure for cast stone units, sequence of erection, and required handling equipment.
b. Layout, dimensions, and identification of each unit corresponding to sequence and procedure of installation. Detail inserts, connections, and joints, including accessories.
c. Location and details of anchorage devices that are to be embedded in other construction.
d. Erection procedures and accessories required for a complete installation.
e. Sealant type and joint configurations.

3. Samples

Rebid Documents

a. Initial Samples: Submit three 4" square sections of cast stone samples to illustrate quality, texture of surface finish, edge treatment, in the 3 colors indicating a range from light to dark for the Architects selection.
b. Final Samples: Submit one 4" square section of actual units selected by the Architect for this Project.

4. Manufacturer's Test Reports indicating:
   a. Compressive strength.
   b. Cold water absorption.
   c. Boil water absorption.
   d. Air-entrainment content.
   e. Freeze-thaw cycle results.

1.5 QUALITY ASSURANCE

A. Comply with the requirements of the Cast Stone Institute, Technical Manual and the Contract Documents. Where conflicts occur, notify the Architect in writing prior to fabrication.

B. Fabricator's Qualifications
   1. A producing member of the Cast Stone Institute.
   2. Produce cast stone units at fabricating plant engaged primarily in manufacturing similar units with a minimum of 5 years of experience.
   3. Submit a list of at least 3 completed projects of a similar size and scope to the requirements for this Project prior to fabrication, including project name, architect and their telephone number, and the date of fabrication or completion.

C. Installer: An experienced installer having a minimum of 5 years' experience and a minimum of 10 years of successfully completed installations using cast stone masonry systems similar in material, design, and extent of that specified for this Project.

D. Mockup: Refer to Section 04 2613 for field mockup of all masonry types.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver cast stone units to Project site in quantities and at time to assure continuity of installation, and to minimize the need for on-site storage. Coordinate delivery of cast stone units with other unit masonry work. Mark each unit with suitable mark conforming to approved shop drawings.

B. Deliver and store units at Project site to prevent cracking, distortion, warping, staining, and other physical damage, and with markings visible. Lift and support units only at designated lifting or supporting points as shown on final Shop Drawings.

1.7 FIELD CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements in TMS 602.

Rebid Documents

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until cast stone has dried, but no fewer than seven days after completing cleaning.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements in TMS 602.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: For basis-of -design and reference purposes American Artstone, Inc. caststone products are specified. Subject to compliance with specified requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
1. American Artstone, Inc.
2. Continental Cast Stone Manufacturing Inc. a Marcstone Company
3. Custom Cast Stone Inc.
4. Edwards Cast Stone Co.
5. Approved substitution

2.2 PERFORMANCE REQUIREMENTS

A. Physical Properties of Cast Stone Units:
1. Compressive strength in accordance with ASTM C1194: 6,500 psi (minimum) at 28 days.
2. Water absorption in accordance with ASTM C1195: 6 percent (maximum) by cold water method, or 10 percent (maximum) by the boiling method at 28 days.
3. Air-entrainment content in accordance with ASTM C173 or ASTM C231.
   a. For wet cast units exposed to freeze-thaw environments: 4 to 6 percent.
   b. Air entrainment is not required for VDT products.

4. Freeze-Thaw Cycles in accordance with ASTM C1364: CPWL shall be less than 5 percent after 300 cycles of freezing and thawing.

B. Design, engineer, fabricate, and install cast panel assembly capable of meeting the following requirements when tested in accordance with the specified standards:
1. Structural Load Requirements: Chapter 16 of the specified IBC.
   a. Basic Wind Speed: 110 mph
   b. Surface Roughness Category: B
   c. Exposure: B
   d. Occupancy Category II
   e. Importance Factor: 1.0.

2.3 CAST STONE MATERIALS

A. General: Concrete materials shall be clean and properly graded.

Rebid Documents

B. Portland Cement: ASTM C150/C150M, Type I or Type III, containing not more than 0.60 percent total alkali when tested according to ASTM C114. Provide natural color or white cement as required to produce cast stone color indicated.

C. Coarse Aggregates: Granite, quartz, or limestone complying with ASTM C33/C33M; gradation and colors as needed to produce required cast stone textures and colors.

D. Fine Aggregates: Natural sand or crushed stone complying with ASTM C33/C33M, gradation and colors as needed to produce required cast stone textures and colors.

E. Water: Clean, free from deleterious substances.

F. Color Pigment: ASTM C979/C979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

G. Admixtures:
1. Admixtures containing calcium chloride, except as allowed in the manufacturing of the admixtures shall NOT be used.
2. Air-Entraining Admixture: ASTM C260/C260M.
3. Water-Reducing Admixture: ASTM C494/C494M, Type A.
4. Water-Reducing, Retarding Admixture: ASTM C494/C494M, Type D.
5. Water-Reducing, Accelerating Admixture: ASTM C494/C494M, Type E.

H. Forms: Provide forms and, where required, form facing materials of metal, plastic, wood, or other acceptable material that is non-reactive with concrete and will produce required finish surfaces.

I. Reinforcement:
1. Deformed steel bars complying with ASTM A615/A615M, Grade 60. Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches of cast stone material.
a. Epoxy Coating: ASTM A775/A775M.
b. Galvanized Coating: ASTM A767/A767M.

2. Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.

J. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666, Type 304.

2.4 CAST STONE UNITS

A. Cast Stone Units: Comply with ASTM C1364.
1. Trim units including window sills having profiles as indicated on the Drawings.
2. Decorative elements including medallions having sizes and designs as indicated on the Drawings.

B. Fabricate units with sharp arris and accurately reproduced details, with indicated texture on all exposed surfaces unless otherwise indicated.

Rebid Documents

1. Slope exposed horizontal surfaces 1:12 to drain unless otherwise indicated.
2. Provide drips on projecting elements unless otherwise indicated.

C. Fabrication Tolerances:
1. Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch.
2. Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch, whichever is greater, but in no case by more than 1/4 inch.
3. Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch, whichever is greater.
4. Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch on formed surfaces of units and 3/8 inch on unformed surfaces.

D. Cure Units as Follows:
1. Cure units in enclosed, moist curing room at 95 percent relative humidity and temperature of 100 deg F for 12 hours or 70 deg F for 16 hours.
2. Keep units damp and continue curing to comply with one of the following:
   a. No fewer than five days at mean daily temperature of 70 deg F or above.
   b. No fewer than seven days at mean daily temperature of 50 deg F or above.
3. Protect cured units from moisture evaporation after casting.

E. Acid etch units after curing to remove cement film from surfaces to be exposed to view.

F. Colors and Textures: As selected by Architect from manufacturer's full range.

2.5 MORTAR MATERIALS

A. Provide mortar materials that comply with Section 04 2613 "Masonry Veneer."

2.6 ACCESSORIES

A. Anchors: Type and size determined and recommended by the fabricator for conditions shown on the Drawings, fabricated from Type 304 stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666.

B. Dowels: 1/2-inch-diameter round bars, fabricated from Type 304 stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666.

C. Proprietary Acidic Cleaner: Provide cleaning agent that complies with Section 04 2613 "Masonry Veneer."

2.7 MORTAR MIXES

A. Comply with requirements in Section 04 2613 "Masonry Veneer" for mortar mixes.

Rebid Documents

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Notify the Contractor of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordination: Review installation procedures and coordinate with other masonry work that must be integrated with cast stone units.

3.3 INSTALLATION

A. Refer to Section 042613 for additional installation requirements and coordination with adjacent materials.
   1. Set cast stone units accurately in locations indicated on Drawings with edges and faces aligned according to established relationships and specified tolerances.
   2. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units.
   3. Wet joint surfaces thoroughly before applying mortar or setting in mortar.
   4. Set units in full bed of mortar with full head joints, unless otherwise indicated.
      a. Build anchors and ties into mortar joints as units are set.
      b. Fill dowel holes and anchor slots with mortar.
      c. Fill collar joints solid as units are set.
      d. Build concealed flashing into mortar joints as units are set.
      e. Keep head joints in coping and other units with exposed horizontal surfaces open to receive sealant.
      f. Keep joints at shelf angles open to receive sealant.

   5. Mortared Joints
      a. Sizes: 3/8".
      b. Style: Concave, when thumbprint hard.
      c. Remove mortar fins and smears before tooling joints.
      d. Rake out mortar joint to a uniform minimum depth of 3/4", and clean cast stone units for tuckpointing.
      e. Point mortar joints by placing and compacting mortar in layers not greater than 3/8". Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.

   6. Sealant Joints
      a. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated. Keep joints free of mortar and other rigid materials.

Rebid Documents

b. Prepare joints indicated to receive sealant and apply sealant of type and at locations indicated to comply with applicable requirements in Section 079200.
c. Prime cast stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant, unless otherwise indicated.
d. Remove excess sealant immediately, including spills, smears, and spatter.

3.4 INSTALLATION TOLERANCES

A. Variation from Plumb: Do not exceed 1/8 inch in 10 ft., 1/4 inch in 20 ft. maximum.

B. Variation from Level: Do not exceed 1/8 inch in 10 ft., 1/4 inch in 20 ft. or 1/2 inch maximum.

C. Variation in Joint Width: Do not vary joint thickness more than plus 1/16 inch, or minus 1/8 inch.

D. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/8 inch, except where variation is due to warpage of units within tolerances specified.

3.5 ADJUSTING AND CLEANING

A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Architect.

B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.

C. After mortar is thoroughly set and cured, clean exposed cast stone using materials and methods recommended by the cast stone fabricator.

D. Clean exposed cast stone using materials and methods recommended by the cast stone fabricator.

3.6 APPLICATION OF WATER REPELLANT

A. Apply water repellant after cast stone is thoroughly cleaned, pointed, patched and fully dry.

B. Before applying water repellant to entire surface of cast stone, test by applying in a inconspicuous area to ensure desired results. Notify Architect of any changes to appearance of cast stone after applying test coat including darkening or enhancements to surfaces.

C. Apply water repellent in strict accordance with manufacturer's instructions and recommendations.

END OF SECTION 04 7200

Rebid Documents

SECTION 05 1200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Structural steel.
   2. Bolts, connectors and anchors.
   3. Shrinkage-resistant grout.

B. Related Requirements:
   1. Section 01 4523 "Testing and Inspections" for structural testing and inspections.
   2. Section 03 3000 “Cast-In-Place Concrete” for grouting of base plates, and installation of anchor bolts and embeds for anchoring structural steel to concrete.
   3. Section 055000 "Metal Fabrications" for steel lintels and shelf angles not attached to structural-steel frame, miscellaneous steel fabrications and other steel items not defined as structural steel.
   4. Section 06 1000 “Rough Carpentry” for coordination with lumber framing.

1.3 REFERENCE

A. American Institute of Steel Construction (AISC)
   1. ISC Manual of Steel Construction, latest edition with errata incorporated as of September 4, 2001.

B. ASTM International references throughout this specification. Latest editions unless otherwise specified

C. American Welding Society (AWS): Latest editions, unless otherwise specified.
   1. AWS D1.1, Structural Welding Code – Steel.

D. International Building Code (IBC), 2021 edition.

E. National Ornamental & Miscellaneous Metals Association (NOMMA)
   1. Guideline 1: Joint Finishes

F. Society of Protective Coatings (SSPC), latest editions, for cleaning and preparing steel for priming; Latest editions unless otherwise specified.
   1. SSPC-SP 2, Hand Tool Cleaning
   2. SSPC-SP 3, Power Tool Cleaning

Rebid Documents

3. SSPC-SP 6 / NACE No. 3, Commercial Blasting
4. SSPC-PA 1, Shop, Field, and Maintenance Painting of Steel

1.4 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," that support design loads.

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Product Data: For each type of product indicated.
   2. Shop Drawings: Show fabrication of structural-steel components.
      a. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
      b. Include embedment Drawings.
      c. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
      d. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
   3. Qualification Data: For fabricator.
   4. Welding certificates.

B. Field quality-control reports.
   1. Submit the following in accordance with Section 01 4523 “Testing and Inspections”:
      a. Test reports specified in PART 3, under “Special Testing and Inspections.”

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).
   1. Fabricators not meeting the requirements above must be pre-approved before bidding the Project. Submit qualifications, including a list of similar projects, description of facilities, personnel qualifications, and quality assurance plan and procedures to the Architect a minimum of 10 days prior to Bid date.

B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1 – “Structural Steel Welding Code – Steel”.
   1. Re-certification: At Contractor’s expense.

C. Comply with applicable provisions of the following specifications and documents:
   1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."
   2. AISC S348 “Specification for Structural Joints Using ASTM A325 or A490 Bolts.”

Rebid Documents

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
   1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
   2. Store fasteners in a protected place in sealed containers with manufacturer's labels intact. Clean and relubricate bolts and nuts that become dry or rusty before use.
   3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

1.8 COORDINATION

A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A992.

B. Channels, Angles**,** M-Shapes: ASTM A36**.**

C. Plate and Bar: ASTM A36.

D. Cold-Formed Hollow Structural Sections: ASTM A500, Grade B structural tubing.

E. Steel Pipe: ASTM A53, Type E or Type S, Grade B.

F. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS AND CONNECTORS

A. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125, Grade F1852, Type 1, heavy-hex head assemblies, consisting of steel structural bolts with splined ends; ASTM A563, Grade DH heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers.
   1. Finish: Plain.

2.3 RODS

A. Headed Anchor Rods: ASTM F1554, Grade 36, straight.

Rebid Documents

1. Nuts: ASTM A563 heavy-hex carbon steel.
2. Plate Washers: ASTM A36 carbon steel.
3. Washers: ASTM F436, Type 1, hardened carbon steel.
4. Finish: Plain, unless noted otherwise on the Drawings.

B. Threaded Rods: ASTM A36.
1. Nuts: ASTM A63 heavy-hex carbon steel.
2. Washers: ASTM F436, Type 1, hardened carbon steel.
3. Finish: Plain, unless noted otherwise on the Drawings.

2.4 FORGED-STEEL STRUCTURAL HARDWARE

A. Clevises and Turnbuckles: Made from cold-finished carbon-steel bars, ASTM A108, AISI C-1035.

B. Eye Bolts and Nuts: Made from cold-finished carbon-steel bars, ASTM A108, AISI C-1030.

C. Sleeve Nuts: Made from cold-finished carbon-steel bars, ASTM A108, AISI C-1018.

2.5 PRIMER AND PAINT

A. Steel Primer: Fabricator's standard lead- and chromate-free, non-asphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

B. Galvanizing Repair Paint: ASTM D 520, Type III high purity grade zinc dust.

C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers

2.6 SHRINKAGE-RESISTANT GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107 factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.7 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design and Load and Resistance Factor Design Specification for Structural Steel Buildings."
1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel in accordance with ASTM A6 and maintain markings until structural-steel framing has been erected.
4. Mark and match-mark materials for field assembly.

Rebid Documents

5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 2 “Hand Tool Cleaning.”

F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.
1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.8 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
1. Joint Type: Pretensioned.

B. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
1. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
2. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.
3. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances.
a. Grind butt welds flush.
b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.

2.9 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123.
1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
2. Galvanize lintels and shelf angles located in exterior walls.

Rebid Documents

2.10 SHOP PRIMING

A. Shop prime steel surfaces, except the following:
   1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
   2. Surfaces to be field welded.
   3. Surfaces of high-strength bolted, slip-critical connections.

B. Surface Preparation of Steel: Clean steel which is exposed but concealed from public view, and steel to be primed. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces in accordance with the following specifications and standards, unless otherwise specified:
   1. SSPC-SP 2.
   2. SSPC-SP 3.

C. Surface Preparation of Galvanized Steel: Prepare galvanized-steel surfaces for shop priming by thoroughly cleaning steel of grease, dirt, oil, flux, and other foreign matter, and treating with etching cleaner.

D. Priming:
   1. Apply a 1-coat, non-asphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils (0.038 mm).

E. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M.
   1. Fill vent holes and grind smooth after galvanizing.
   2. Galvanize items as indicated.

F. Protective Bituminous Paint Coatings
   1. Apply heavy coat of bituminous paint to metal work in contact with but not fully embedded in concrete and masonry.
   2. Apply heavy coat of bituminous paint to dissimilar metals which are or will be in contact with one another. Do not extend onto surfaces which will be exposed.
   3. Apply 2 heavy coats of bituminous coating to steel surfaces at exterior applications and in contact with soil.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

Rebid Documents

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.
   1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and in accordance with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design and Load and Resistance Factor Design Specification for Structural Steel Buildings."

B. Baseplates and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
   1. Set plates for structural members on wedges, shims, or setting nuts as required.
   2. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
   3. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.

C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
   1. Level and plumb individual members of structure.
   2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

Rebid Documents

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
   1. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design" for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
   2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
   3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.5 REPAIR

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780/A780M.

B. Touchup Painting:
   1. Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
      a. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Bolted Connections: Shop bolted connections will be tested and inspected in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Welded Connections: Field welds will be visually inspect field welds in accordance with AWS D1.1.

D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.7 SPECIAL TESTING AND INSPECTIONS

A. General
   1. Testing and Inspection Services shall be performed by qualified parties as specified herein, and in accordance with the provisions of Section 01 4523 “Testing and Inspections”.
   2. Structural Testing and Special Inspection Services herein include items required by the 2021 IBC, and other items which in the professional judgement of the Structural Engineer of Record, are critical to the integrity of the building structure.
   3. Conventional Testing and Inspection Services specified herein describe those items not specifically required by IBC but may be considered essential to the proper performance of the building systems.

Rebid Documents

B. Definitions
   1. Special Inspector - Technical: Shall be employed by a testing agency and shall be supervised by an AWS/CWI with a minimum of 10 years' experience or an ASNT Level III with a minimum of 10 years' experience. Individuals shall satisfy the following requirements:
      a. Technical I: Nondestructive Testing Technician ASNT TC-1A Level I, and/or
      b. AWS Certified Associate Weld Inspector (CAWI)
      c. Technical II: Nondestructive Testing Technician ASNT TC-1A Level II, (NDE Technician II), AWS/CAWI, with minimum 3 years' experience, or an AWS/CWI.
      d. Technical III: ASNT Level III with minimum 10 years' experience, or an AWS/CWI with minimum 10 years' experience.

   2. Special Inspector - Structural
      a. Structural I: Graduate civil/structural engineer, or other personnel acceptable to the SER, with experience in the design of structural systems of this type. Inspections shall be performed under the direct supervision of a Structural II.
      b. Structural II: Civil/structural engineer regularly engaged in the design of structural systems of this type, licensed in the State in which the Project is located. The licensed engineer shall review and approve all inspection reports.
      c. Special Inspector - Structural may be an employee of the SER.

C. High Strength Bolting (Field Installed)
   1. General; performed by Technical II.
      a. On a periodic basis, verify material conforms to specified ASTM Standards.
      b. On a periodic basis, visually inspect mating surfaces and bolt type for all slip-critical bolted connections for general conformance with the Contract Documents prior to bolting.
      c. On a periodic basis, verify that the requirements for bolts, nuts, washers, paint, and installation/tightening standards are met.
      d. On a continuous basis, observe calibration procedures when such procedures are required by the installation method or in the Contract Documents.

   2. Slip-Critical Bolts and Tension Bolts; performed by Technical II.
      a. On a continuous basis, verify that selected procedure is used to tighten bolts.
      b. On a continuous basis, monitor bolt installation when the calibrated wrench method or turn-of-the-nut method without match marking is used.
      c. On a periodic basis, monitor bolt installation if the turn-of-the-nut method with match marking, direct tension indicator, or "twist off bolt" methods are used. Visually verify tightening of all bolts.

   3. Bearing Bolts; performed by Technical II.
      a. On a periodic basis, visually inspect to verify all plies of connected elements have been brought into contact, at 100 percent of connections. (Applies only to bolts designed for values not requiring exclusion of threads from failure plane; all other bolts require testing as for tension bolts.)

D. High Strength Bolting (Shop Installed); performed by Technical II.
   1. For shop fabricated work, perform tests required for field installation, except that bolt testing may be reduced or deleted, if fabrication shop satisfies AISC Quality Certification Program - Category I, or more stringent criteria, or is approved by building official and SER.

Rebid Documents

E. Welding (General); performed by Technical II.
   1. Prior to start of fabrication, determine if fabrication shop meets the criteria for exempting shop welds from inspection and confirm in writing to building official and SER.
   2. Prior to start of fabrication, verify qualifications of all welders as AWS certified.
   3. Prior to start of fabrication, verify manufacturer's certificate of compliance for weld filler materials.
   4. Prior to start of fabrication, verify proposed welding procedures and materials meet AWS requirements.
   5. On a periodic basis, verify adequate preparation of faying surfaces.
   6. On a periodic basis, verify preheat and interpass temperatures of steel, proper technique and sequence of welding, and cleaning and number of passes are provided as required.

F. Welding (Field)
   1. Fillet Welds; performed by Technical II.
      a. On a periodic basis, visually inspect 100 percent of all fillet welds 5/16" or less, for size, length, and quality, per AWS D1.1.
      b. On a continuous basis, inspect welding process for all multi-pass fillet welds and single pass fillet welds greater than 5/16".

   2. Partial Penetration Welds; performed by Technical II.
      a. On a continuous basis, inspect welding process for all partial penetration groove welds.
      b. Test 100 percent of all partial penetration welds exceeding 5/16", using Ultrasonic Testing per AWS D1.1. Test 25 percent of all partial penetration welds less than 5/16", using Magnetic Particle Testing per ASTM E709, performed on root pass and on finished weld.

   3. Full Penetration Welds; performed by Technical II.
      a. On a continuous basis, inspect welding process for all full penetration groove welds.
      b. Test 100 percent of all full penetration welds exceeding 5/16", using Ultrasonic Testing per AWS D1.1. Test 25 percent of all full penetration welds less than 5/16", using Magnetic Particle Testing per ASTM E709, performed on root pass and on finished weld.

   4. Stud Shear Connector Welds; performed by Technical I.
      a. Visually inspect 100 percent of installed studs for full 360 degree flash. Test all questionable studs, not showing full 360 degree flash by bending studs to 15 degrees from vertical, away from weld discontinuity, per AWS D1.1.
      b. Randomly test all other studs by bending to 15 degrees from vertical as indicated below:
         1) Studs welded through deck: 15 percent.
         2) Studs welded to bare steel: 5 percent.
         3) Alternatively, sound 100 percent of installed studs, for full penetration weld, using an 8 lb. maul. Test questionable studs as specified above.

      c. Verify all welding ferrules have been removed.

G. Welding (Shop): Perform inspections as for field welding except weld testing may be reduced or deleted, if fabrication shop satisfies AISC Quality Certification Program - Category I, or more stringent criteria, and is approved by building official and SER.

Rebid Documents

H. Post-Installed Concrete Mechanical Fasteners (Miscellaneous); performed by Technical I.
   1. On a continuous basis, visually inspect specified size, spacing, hole preparation, embedment, and location.

I. Structural Configuration
   1. Materials: On a periodic basis, verify materials delivered to site, comply with Contract Documents and approved shop drawings. Materials include structural steel, bolts, electrodes, steel deck gage; performed by Technical I.
   2. Detail Compatibility on a periodic basis; performed by Structural I.:
      a. Review Project documents affecting integrity of the structure, including Contract Documents and pertinent submittals (approved shop drawings).
      b. Visit site at intervals appropriate to the stage of construction, to perform review of the structure and visually confirm general compliance with the Project documents.
      c. Inspect the following to verify member orientation, configuration, type, and size comply with details indicated on the Contract Documents and approved shop drawings:
         1) Bracing and stiffening members
         2) Proper applications of joint details at connections for structural members.
         3) Other work critical to the integrity of the building structure.

END OF SECTION 05 1200

Rebid Documents

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Rebid Documents

SECTION 05 5000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Steel framing and supports for operable partitions.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Shapes for Elevators.
    a. Elevator machine beams**,** hoist beams.
    b. Steel shapes for supporting elevator door sills.
    c. Attachment plates, brackets and other steel for fastening guide rail brackets.
    d. Pit ladders.
    e. Elevator pit sump covers.
4. Slotted channel framing.
5. Metal ships' ladders.
6. Steel pipe bollards.
7. Loose bearing and leveling plates for applications where they are not specified in other Sections.

B. Products furnished, but not installed, under this Section include the following:
1. Loose steel lintels.
2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.

C. Related Requirements:
1. Section 033000 “Cast-in-place Concrete” for concrete fill for pipe bollards.
2. Section 042000 "Unit Masonry" for installing loose lintels, anchor bolts, and other items built into unit masonry.
3. Section 051200 "Structural Steel Framing" for structural steel elements or systems essential to support the building design loads.
4. Section 09 99100 “Painting” for field painting.
5. Section 10 2239.13 “Folding Glass-Panel Partitions” for steel framing support.
6. Section 142423 “Hydraulic Passenger Elevators” for elevator coordination with metal fabrications for elevators.

Rebid Documents

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

C. Coordinate installation of steel weld plates and angles for casting into concrete or building into masonry that are specified in this Section but required for work of another Section. Deliver such items to Project site or fabrication plant in time for installation.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Product Data for primers and paints.
      a. Manufacturer's literature, including materials description, and application and maintenance instructions.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.
   1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   2. Provide templates for anchors and bolts specified for installation under other Sections.
   3. Include the design engineers seal and signature on each sheet of the shop drawings.

C. Delegated-Design Submittal: For ship’s ladders, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
   2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
   3. AWS D1.3, “Structural Welding Code - Sheet Steel”.

B. Structural Designer Qualifications:
   1. Professional Engineer experienced in design of this work and licensed in the State of North Dakota, or personnel under direct supervision of such engineer.

C. Welding for Metal Fabrications: Comply with the following requirements, and as otherwise specified in this section, in accordance with NOMMA Guideline 1: Joint Finishes, Examples A, B, C, and D for applicable profiles, in Finishes No. 1, No.2, No.3 and No. 4:
   1. Finish No.1 - No evidence of a welded joint.
   2. Finish No. 2 - Completely sanded joint, some undercutting and pinholes okay.
   3. Finish No. 3 - Partially dressed weld with spatter removed.
   4. Finish No. 4 - Good quality, uniform dressed weld with minimal splatter.

Rebid Documents

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.
   1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
   2. Provide allowance for trimming and fitting at site.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.2 FERROUS METALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

B. Steel W Shapes: ASTM A992/A992M.

C. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

D. High Strength, Low Alloy Steel Plate, Shape and Bars: ASTM A 572/A 572M Grade 50.

E. Steel Tubing: ASTM A 500, cold-formed steel tubing.

F. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

G. Slotted Channel Framing: Cold-formed metal channels with continuous slot complying with MFMA-4, “Unistrut”, or other manufacturers complying with the following:
   1. Material: Galvanized steel, ASTM A653, structural steel, Grade 33, with G90 coating; 0.064-inch minimum (16 gauge minimum) nominal thickness, or greater to support loads.
   2. For supporting miscellaneous items on walls, trusses, joists, or countertop supports.
      a. Channels Size: 1-5/8 by 1-5/8 inches

   3. For supporting elevator guide rails on concrete and masonry walls.
      a. Channel Size: 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c.

   4. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B633, Class Fe/Zn 5, as needed for fastening to inserts.

Rebid Documents

H. Cast Iron: ASTM A 48/A 48M, Class 30, unless another class is indicated or required by structural loads.

I. Homogenous Tool Resisting Steel Round Bars: ASTM A 627.

J. Homogenous Tool Resisting Steel Flat Bars: ASTM A 629.

2.3 ELEVATOR FABRICATIONS

A. A.Structural Steel Shapes and Plates: ASTM A36

B. Hoistway Divider Beams and Hoist Beams: Size and location indicated on the Drawings. Verify size and location on shop drawings and with manufacturer prior to start of fabrication. Indicate dimensions and location on the final approved shop drawings.
   1. Hoist Beam Capacity: 5,000 lbs. minimum. Centered right-to-left over hoistway.
   2. 2" minimum clear top of beam to structure above to receive elevator service equipment.

C. Steel Plates to be Bent or Formed Cold: ASTM A203

D. Cold-finished Steel Bars: ASTM A108

E. Steel Pipe: Welded or seamless, ASTM A53, black and hot dipped galvanized.

F. Elevator Sill Angles: ASTM A36 steel.

G. Pit Ladder
   1. Vertical Side Rails: 3/8" x 2" ASTM A36 steel, spaced 24" apart
      a. Brackets: ASTM A203 steel bent plates, 4" x 8" x 3/8", 3" long vertical dimension to hold ladder 7" away from walls.
      b. Extend rails at the top of ladder to 48" above first floor landing above pit.

   2. Rungs:
      a. 3/4-inch diameter or square steel ASTM A108 steel bars, extending through the center of the rails, with connections plug-welded and ground flush; spaced at 12 inches o.c.
      b. Coat the top surface of each rung with a safety aluminum oxide abrasive, using epoxy adhesive.
      c. Subject to compliance with requirements of the Contract Documents, the following acceptable manufacturers are as follows:
         1) Item Number: LSA34, (Brown-Campbell Company)
         2) Item Number: 6MLR347010, (McNichols Co.)

H. Elevator Door Sight Guards: Furnished with all doors; painted to match painted doors, painted black for stainless steel doors.

I. Elevator Shaft Cants and Fascia Guard: Furnished with all elevators at all protrusions into hoistway. Painted to match painted doors, painted black for stainless steel doors.

Rebid Documents

2.4 SHIPS' LADDERS

A. Prefabricated Steel Treads and Landings for Ships Ladders: Welded steel bar grating with closed ends. Unless otherwise detailed on the Drawings, fabricate ships ladder as follows and in accordance with ANSI A14.3:
   1. Manufacturers: As a Basis-of-Design McNichols Co. products and model numbers are specified. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
      a. Brown-Campbell Company
      b. McNichols Co.
      c. Approved substitution

   2. Bearing Surfaces: Open rectangular bar bearing surfaces with Serrated top finish.
      a. Tread and landing dimensions as shown on the Drawings.
      b. Prefabricated Treads and Landings: Type GW-2 Series, (McNichols Co.); spaced equally at 8" o.c. minimum to 12" o.c. maximum.
      c. Bearing bar size and spacing as required to meet the specified Performance Requirements.
      d. Nosings: Bent plate with cast abrasive coating, Type C, "Cast Abrasive Nosing", (McNichols Co.).
      e. Finish: Factory applied hot-dipped galvanized with temporary protective coating.

   3. Steel Channel Stringers: 8" wide (minimum) channels or tubes
   4. Stringer Angle from Horizontal: Not less than 50 degrees nor greater than 60 degrees measured from the horizontal with treads parallel to the floor.
   5. Railings and Handrails: Provide 1-1/2" diameter (maximum) steel pipe railing on both sides of ladder.
   6. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type Finish #2 welds: completely sanded joint, some undercutting and pinholes okay.

2.5 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
   1. Provide stainless steel fasteners for fastening aluminum.
   2. Select fasteners for type, grade, and class required.
   3. Provide bronze fasteners for fastening bronze.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563 and, where indicated, flat washers.
   1. For interior and normally dry applications.

C. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 3, heavy-hex steel structural bolts; ASTM A563, Grade DH3, heavy-hex carbon-steel nuts; and where indicated, flat washers.
   1. For interior areas exposed to weather and water, such as Service and Wash Bays.
   2. For exterior applications.

Rebid Documents

D. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.
   1. For interior areas exposed to weather and water, such as Service and Wash Bays.
   2. For exterior applications.

E. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
   1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Eyebolts: ASTM A 489.

G. Machine Screws: ASME B18.6.3 (ASME B18.6.7M).

H. Lag Screws: ASME B18.2.1.

I. Wood Screws: Flat head, ASME B18.6.1.

J. Plain Washers: Round, ASME B18.22.1.

K. Lock Washers: Helical, spring type, ASME B18.21.1.

L. Anchor Bolts: ASTM F1554, Grade 36.
   1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

M. Post-Installed Anchors: Torque-controlled expansion anchors chemical anchors.
   1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
   2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 steel bolts, ASTM F593, and nuts, ASTM F594.

N. Security Fasteners and Anchors: Operable only by tools produced for use on specific type of fastener by fastener manufacturer or other licensed fabricator. Drive system type, head style, material, and protective coating as required for assembly, installation, and strength, and as follows:
   1. Drive System Types: Pinned Torx-Plus or pinned Torx.
      a. Socket Flat Countersunk Head Fasteners:
         1) Heat-treated alloy steel, ASTM F 835 (ASTM F 835M).
         2) Stainless steel, ASTM F 879 (ASTM F 879M), Group 1 CW.

   2. Socket Button Head Fasteners:
      a. Heat-treated alloy steel, ASTM F 835 (ASTM F 835M).
      b. Stainless steel, ASTM F 879 (ASTM F 879M), Group 1 CW.

   3. Socket Head Cap Fasteners:
      a. Heat-treated alloy steel, ASTM A 574 (ASTM A 574M).
      b. Stainless steel, ASTM F 837 (ASTM F 837M), Group 1 CW.

   4. Protective Coatings for Heat-Treated Alloy Steel:
      a. Zinc chromate, ASTM F 1135, Grade 3 or 4.

Rebid Documents

5. Products: Subject to compliance with requirements, provide one of the following:
   a. Camcar Textron Inc.
   b. Holo-Krome; a Danaher Corporation.
   c. Safety Socket Screw Corporation.
   d. Tamper-Pruf Screws, Inc.
   e. Tanner Bolt & Nut Co.
   f. Bryer Fastener Co., Inc.

2.6 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
   1. Use primer with a VOC content of 250 g/L or less when calculated according to EPA Method 24, Code of Federal Regulations, Title 40, Part 60, Appendix A.
   2. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

E. Non-Metallic, Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

F. Concrete: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 3000 psi.

2.7 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

Rebid Documents

2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.8 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is placed.

C. Fabricate supports for operable partitions from continuous steel beams of sizes indicated on the Drawings with attached bearing plates, anchors, and braces as recommended by partition manufacturer. Drill or punch bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.

D. Galvanize miscellaneous framing and supports where indicated.

2.9 ELEVATOR PIT SUMP COVERS

A. Fabricate from 3/16-inch rolled-steel floor plate with four 1-inch-diameter holes for water drainage and for lifting.

B. Provide steel angle supports unless otherwise indicated.

2.10 METAL BOLLARDS

A. Fabricate metal bollards from Schedule 80 steel pipe.

Rebid Documents

1. Where bollards are indicated to receive controls for door operators, provide cutouts for controls and holes for wire.
2. Where bollards are indicated to receive light fixtures, provide cutouts for fixtures and holes for wire.

B. Prime steel bollards with zinc-rich primer.

2.11 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize bearing and leveling plates.

C. Prime plates with zinc-rich primer where items are located in interior walls.

2.12 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches unless otherwise indicated on the Drawings.

C. Galvanize loose steel lintels located in exterior walls.

2.13 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.14 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize all exterior items, at exterior openings, and interior items where indicated.

D. Prime interior miscellaneous steel trim with zinc-rich primer.
1. Bolts.

Rebid Documents

2.15 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.16 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.
   1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
   2. Provide hot-dipped galvanized metal fabrications in the following locations, but not necessarily limited to:
   3. Exterior wall assemblies;
   4. Interior wet areas exposed to moisture, including but not limited to garages, toilet rooms, kitchens.
   5. Garage door openings
   6. Mechanical rooms;
   7. Items cast into concrete;
   8. Exterior exposed steel fabrications, and;
   9. Where indicated on Drawings and details.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

D. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning.":
   1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
   2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
   3. Items Indicated to Receive Primers Specified in Section 099600 "High-Performance Coatings": SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
   4. Other Steel Items: SSPC-SP 3, "Power Tool Cleaning."

E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
   1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

Rebid Documents

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.3 INSTALLATION OF METAL BOLLARDS

A. Anchor bollards in concrete in formed or core-drilled holes not less than 42 inches deep and 3/4 inch larger than OD of bollard. Fill annular space around bollard solidly with shrinkage-resistant grout; mixed and placed to comply with grout manufacturer's written instructions. Slope grout up approximately 1/8 inch toward bollard.

B. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

Rebid Documents

C. Fill bollards solidly with concrete by Division 03 Section “Cast-in-Place Concrete, mounding top surface to shed water.

3.4 INSTALLATION OF BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with shrinkage-resistant grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.5 REPAIRS

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 “Painting”.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 05 5000

Rebid Documents

SECTION 05 7300 - DECORATIVE METAL RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General, Supplementary Conditions, Special Conditions and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Aluminum decorative railings**.**

B. Related Requirements:
   1. Section 06 1000 “Rough Carpentry” for railing attachment to wood framing.

1.3 REFERENCES

A. American National Standards Institute (ANSI)
   1. ANSI A1264.1 - Safety Requirements for Workplace Floor and Wall Openings, Stairs, and Railing Systems.

B. ASTM International
   1. ASTM B 211 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod,Wire.
   2. ASTM B 247 - Standard Specification for Aluminum and Aluminum Die Forgings, Hand Forgings and rolled Ring Forgings.
   3. ASTM B 429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
   4. ASTM E 935 - Standard Test Methods for Permanent Metal Railing Systems and Rails for Buildings.

C. Occupational Safety and Health Administration (OSHA)
   1. OSHA – 29CFR 1910.3 – Guarding Floor and Wall Openings.

1.4 SUBMITTALS

A. Product Data:
   1. Manufacturer's product lines of decorative metal railings assembled from standard components.
   2. Fasteners.
   3. Post-installed anchors.

Rebid Documents

B. Shop Drawings: Include plans, elevations, sections, and attachment details.

C. Product Test Reports: For tests on railings performed by a qualified testing agency, in accordance with ASTM E894 and ASTM E935.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain aluminum decorative railing components from single source from single manufacturer.

B. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces of railings from damage by applying a strippable, temporary protective covering before shipping.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements specified, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
1. Alumina Railing Products, Inc.
2. Ametco Manufacturing Corporation
3. Digger Specialties, Inc.
4. Greco Railings
5. Keylink
6. Superior Aluminum Products
7. Wagner, Inc.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:
a. Uniform load of 50 lbf/ft. applied in any direction.
b. Concentrated load of 200 lbf at the tip rail applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:
a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.

Rebid Documents

b. Infill load and other loads need not be assumed to act concurrently.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior railings by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
1. Temperature Change: 120 deg F, ambient; 180 deg F material surfaces.

2.3 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Same metal and finish as supported rails unless otherwise indicated.

C. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with strength and durability properties for each aluminum form required not less than that of alloy and temper designated below.

D. Plate and Sheet: ASTM B209, Alloy 6061-T6.

E. Die and Hand Forgings: ASTM B247, Alloy 6061-T6.

F. Castings: ASTM B26/B26M, Alloy A356.0-T6

2.4 ALUMINUM DECORATIVE RAILINGS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Superior Aluminum Products “Aluminum Picket Railing: Series 9P” or comparable product.
1. Top Rail: Style A, 2 inch wide by 1-5/8 inch high.
a. Attached between posts with brackets matching finish.

2. Bottom Rail: Style A, 1-5/8 inch wide by 1-1/2 inch high.
a. Attached between posts with brackets matching finish.

3. Posts: Square, 2-1/2 inch.
a. Attached to L-brackets matching finish.

4. Post Brackets: Hanging L-Brackets with factory-drilled holes for side mounting railing posts.

5. Pickets: Square, 3/4 inch at 4-1/2 inch maximum centers
a. Installed between top and bottom rail with fasteners concealed by a screw cover in matching finish.

6. Post Caps: Manufacturer’s standard cap for specified post size.
7. Height: As indicated on the Drawings.
8. Base and Brackets: L- brackets.

Rebid Documents

2.5 FASTENERS

A. Fastener Materials:
   1. Aluminum Railing Components: Type 304 stainless steel fasteners.
   2. Dissimilar Metal Railing Components: Type 304 stainless steel fasteners.

B. Fasteners for Anchoring to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction and capable of withstanding design loads.

C. Provide concealed fasteners for interconnecting railing components and for attaching railings to other work unless otherwise indicated.

D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, in accordance with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193.
   1. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593 and nuts, ASTM F594.

2.6 FABRICATION

A. Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.
   1. Clearly mark units for reassembly and coordinated installation.
   2. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately.
   1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
   2. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water.
   1. Provide weep holes where water may accumulate.
   2. Locate weep holes in inconspicuous locations.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with mechanical connections unless otherwise indicated.

H. Mechanical Connections: Connect members with concealed mechanical fasteners and fittings.
   1. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
   2. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.

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I. Close exposed ends of hollow railing members with prefabricated cap and end fittings of same metal and finish as railings.

J. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, handrail brackets, miscellaneous fittings, and anchors to interconnect railing members to other Work unless otherwise indicated.

2.7 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.

2.8 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
   1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Install in accordance with manufacturer's instructions.

B. Perform cutting, drilling, and fitting required for installing railings.
   1. Fit exposed connections together to form tight, hairline joints.
   2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
   3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
   4. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
   5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
   6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
   1. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

Rebid Documents

E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws, using plastic cement filler colored to match finish of railings.

3.3 ATTACHMENT OF BRACKETS, POSTS AND RAILINGS

A. Secure L-brackets with predrilled holes for exposed bolt anchorage to wood construction with lag bolts set into wood studs of backing between studs.
   1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

B. Attachment of Posts:
   1. Fit posts and align between factory pre-drilled L-brackets and mark posts for holes to be drilled for through-bolts.
   2. Securely fasten posts to L-Brackets with through bolts.

C. Attachment of Railings:
   1. Connect railing components in accordance with manufacturer’s instructions.
   2. Tighten all fasteners so that completed railing is rigid and free of play at joints and component attachments.

3.4 TOLERENCES

A. Install railings plumb and level, securely fastened, with vertical members plumb.
   1. Maximum variation from plumb: 1/4 inch.
   2. Maximum misalignment from true position: 1/4 inch.
   3. Maximum misalignment between adjacent separated members: 1/8 inch.

3.5 CLEANING

A. Clean aluminum by washing thoroughly with clean water and soap, rinsing with clean water, and wiping dry.

3.6 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

Rebid Documents

B. Restore finishes damaged during installation and construction period, so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit or provide new units.

END OF SECTION 05 7300

Rebid Documents

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Rebid Documents

SECTION 06 1000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Framing with dimension lumber for load-bearing and non-load-bearing construction.
2. Framing with engineered wood products.
3. Rooftop equipment bases and support curbs.
4. Wood blocking , cants**,** and nailers.
5. Wood furring and grounds.
6. Utility shelving.
7. Plywood backing panels.

B. Related Requirements:
1. Section 06 1600 "Sheathing" for sheathing, subflooring, and underlayment.
2. Section 06 1713 “Laminated Veneer Lumber”
3. Section 06 1753 "Shop-Fabricated Wood Trusses" for shop-fabricated nail-plate wood trusses made from dimension lumber.
4. Section 10 7300 “Protective Covers” for framing required to support pre-engineered canopies.
5. Division 26 and 28 Sections for electrical and security equipment requiring plywood backing panels.

1.3 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

B. Exposed Framing: Framing not concealed by other construction.

C. OSB: Oriented strand board.

D. Lumber grading agencies, and abbreviations used to reference them, include the following:
1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. SPIB: The Southern Pine Inspection Bureau.
4. WCLIB: West Coast Lumber Inspection Bureau.
5. WWPA: Western Wood Products Association.

Rebid Documents

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3000 “Submittal Procedures”:

B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
   1. Wood-Preservative Treatment: Include data from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
      a. Include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

   2. Fire-Retardant Treatment: Include data from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
      a. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5664.

C. Warranties: Include copies of warranties from chemical treatment manufacturers for each type of treatment.

D. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

E. Evaluation Reports: For the following, from ICC-ES:
   1. Wood-preservative-treated wood.
   2. Fire-retardant-treated wood.
   3. Sill sealer gasket/termite barrier.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: Comply with DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
   1. Factory mark each piece of lumber with grade stamp of grading agency.

Rebid Documents

2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry wood products.
4. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD PRESERVATIVE-TREATED LIMBER

A. Preservative Treatment by Pressure Process: AWPA U1
1. Use Category UC2[for interior construction not in contact with ground.
2. Use Category UC3b for exterior construction not in contact with ground.
3. Use Category UC4a for items in contact with ground.
4. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
5. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat as follows:
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

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2.3 FIRE-RETARDANT TREATMENT MATERIALS

A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
   1. Treatment shall not promote corrosion of metal fasteners.
   2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
   3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.

C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

E. Application: Treat items indicated on Drawings, and the following:
   1. Concealed blocking.
   2. Plywood backing panels.

2.4 DIMENSION LUMBER FRAMING

A. Lumber Species: Species listed that meet specified requirements, except those not available in Project's location, are acceptable for Dimensional Lumber Framing. Species groups are listed in order of decreasing modulus of elasticity, with some species groups overlapping others.
   1. Hem-fir (north); NLGA.
   2. Southern pine; SPIB.
   3. Douglas fir-larch; WCLIB or WWPA.
   4. Douglas fir-larch (north); NLGA.
   5. Mixed southern pine; SPIB.
   6. Spruce-pine-fir; NLGA.
   7. Hem-fir; WCLIB or WWPA.
   8. Douglas fir-south; WWPA.
   9. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
   10. Northern species; NLGA.
   11. Eastern softwoods, includes spruce-pine-fir (south).
   12. Eastern softwoods; NeLMA.
   13. Western woods; WCLIB or WWPA.

Rebid Documents

B. Non-Load-Bearing Interior Partitions by Grade: Construction or No. 2 grade.
   1. Application: Interior partitions not indicated as load bearing.

C. Load-Bearing Partitions by Grade: No. 2 or better grade.
   1. Application: Exterior walls and interior load-bearing partitions.
   2. Species: As indicated on the Drawings.

D. Ceiling Joists: Construction or No. 2 or better grade.
   1. Species: As indicated on the Drawings.

E. Joists, Rafters, and Other Framing by Grade: No. 2 or better grade.
   1. Species: As indicated on the Drawings.

2.5 MISCELLANEOUS LUMBER

A. Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
   1. Blocking.
   2. Nailers.
   3. Rooftop equipment bases and support curbs.
   4. Cants.
   5. Furring.
   6. Grounds.
   7. Utility shelving.

B. For items of dimension lumber size, provide No. 2 or better grade lumber of any species specified above.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
   1. Mixed southern pine or southern pine; No. 2 grade; SPIB.
   2. Eastern softwoods; No. 2 Common grade; NeLMA.
   3. Northern species; No. 2 Common grade; NLGA.
   4. Western woods; No. 2 Common grade; WCLIB or WWPA.

D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.6 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

Rebid Documents

1. Plywood shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.7 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
   1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of one of the following:
      a. Hot-dip zinc coating complying with ASTM A653 Type A or Type B (HSLAS Type A or Type B; G185 coating designation not less than 0.036 inch thick.
      b. Type 304 stainless steel.
   2. For pressure-preservative-treated wood, use stainless steel fasteners.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1.

F. Bolts: Steel bolts complying with ASTM A307, Grade A; with ASTM A563 hex nuts and, where indicated, flat washers.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
   1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
   2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

2.8 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Cleveland Steel Specialty Co.
   2. KC Metals Products, Inc.
   3. Phoenix Metal Products, Inc.
   4. Simpson Strong-Tie Co., Inc.
   5. USP Structural Connectors.

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, shall meet or exceed those of products of manufacturers listed. Manufacturer's

Rebid Documents

published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.
   1. Use for interior locations unless otherwise indicated.

D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.
   1. Use for wood-preservative-treated lumber and where indicated.

E. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
   1. Use for exterior locations and where indicated.

F. Provide anchor types and sizes as indicated on the drawings.

2.9 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets:
   1. Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.

B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

C. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.

D. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient for treating ends of posts and beams exposed to water or used in exterior applications.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

Rebid Documents

C. Set work to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction; scribe and cope as needed for accurate fit, Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.

E. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

F. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

G. Do not splice structural members between supports unless otherwise indicated.

H. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
   1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

I. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
   1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
   2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal thickness.
   3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below partitions.
   4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c., unless noted otherwise on the Drawings.

J. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

K. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
   1. Use inorganic boron for items that are continuously protected from liquid water.
   2. Use copper naphthenate for items not continuously protected from liquid water.

L. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
   1. NES NER-272 for power-driven fasteners.
   2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).

Rebid Documents

M. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 INSTALLATION OF WOOD FURRING

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal-size furring 16 inches o.c.

C. Furring to Receive: Install 1-by-2-inch nominal-size furring vertically at 16 inches o.c.

3.4 INSTALLATION OF WALL AND PARTITION FRAMING

A. General: Provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions and for load-bearing partitions where framing members bearing on partition are located directly over studs. Fasten plates to supporting construction unless otherwise indicated.
   1. For exterior and interior walls, provide sizes of wood studs and spaced as indicated on the Drawings.
   2. Provide continuous horizontal blocking at mid-height of partitions more than 96 inches high, using members of 2-inch nominal thickness and of same width as wall or partitions.

B. Construct corners and intersections with three or more studs, except that two studs may be used for interior non-load-bearing partitions.

C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.
   1. For non-load-bearing partitions, provide double-jamb studs and headers not less than the following depths:
      a. 4-inch nominal depth for openings 48 inches and less in width.

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b. 6-inch nominal depth for openings 48 to 72 inches in width.
c. 8-inch nominal depth for openings 72 to 120 inches in width.
d. 10-inch nominal depth for openings 10 to 12 feet in width.

2. For load-bearing walls, provide double-jamb studs for openings 60 inches and less in width, and triple-jamb studs for wider openings. Provide headers of depth indicated on the Drawings.

D. Provide diagonal bracing at 45-degree angle, full-story height unless otherwise indicated. Use 1-by-4-inch nominal-size boards, let-in flush with faces of studs or metal wall bracing, let into studs in saw kerf.

3.5 INSTALLATION OF FLOOR JOIST FRAMING

A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches of bearing on wood or metal, or 3 inches on masonry. Attach floor joists as follows:
1. Where supported on wood members, by toe nailing or by using metal framing anchors.
2. Where framed into wood supporting members, by using metal joist hangers.

B. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches.

C. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than one-third depth of joist; do not locate closer than 2 inches from top or bottom.

D. Provide solid blocking of 2-inch nominal thickness by depth of joist at ends of joists unless nailed to header or band.

E. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches or securely tie opposing members together. Provide solid blocking of 2-inch nominal thickness by depth of joist over supports.

F. Provide solid blocking between joists under jamb studs for openings.

G. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.
1. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures.

H. Provide bridging of type as indicated on the Drawings.

3.6 INSTALLATION OF CEILING JOIST AND RAFTER FRAMING

A. Ceiling Joists: Install with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.

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B. Rafters: Notch to fit exterior wall plates use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

C. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.7 INSTALLATION OF STAIR FRAMING

A. Provide stair framing members of size, space, and configuration indicated or, if not indicated, to comply with the following requirements:
   1. Size: 2-by-12-inch nominal- size, minimum.
   2. Material: Laminated-veneer lumber parallel-strand lumber or solid lumber, unless otherwise detailed on the Drawings.
   3. Notching: Notch rough carriages to receive treads, risers, and supports; leave at least 3-1/2 inches of effective depth.
   4. Spacing: At least three framing members for each 36-inch clear width of stair.

B. Provide stair framing with no more than 3/16-inch variation between adjacent treads and risers and no more than 3/8-inch variation between largest and smallest treads and risers within each flight.

3.8 PROTECTION

A. Protect fire-retardant treated wood from weather. If, despite protection, fire-retardant treated wood becomes wet, remove wood from Project and replace with new.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet, do not install. Place wet wood on a dry area above ground an protected allowing wood to dry..

END OF SECTION 06 1000

Rebid Documents

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Rebid Documents

SECTION 06 1600 - SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Non-insulated wall sheathing.
2. Composite insulating wall sheathing.
3. Roof sheathing.
4. Parapet sheathing.
5. Composite nail base insulated roof sheathing.
6. Subflooring.
7. Accessories for composite insulating wall sheathing.

B. Related Requirements:
1. Section 06 1000 "Rough Carpentry" for plywood backing panels.
2. Section 06 1713 “Laminated Veneer Lumber
3. Section 07 2100 “Thermal Insulation”
4. Section 06 1753 "Shop-Fabricated Wood Trusses"

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3000 “Submittal Procedures”:
1. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
a. Wood-Preservative Treatment: Include data from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
1) For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

b. Fire-Retardant Treatment: Include data from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
1) Include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5516.

Rebid Documents

c. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

2. Evaluation Reports: For the following, from ICC-ES:
   a. Wood-preservative-treated plywood.
   b. Fire-retardant-treated plywood.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications:
   1. For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: As tested according to ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 WOOD PANEL PRODUCTS

A. Plywood: Either DOC PS 1 or DOC PS 2 unless otherwise indicated.

B. Oriented Strand Board: DOC PS 2.

C. Thickness: As needed to comply with specified requirements, but not less than thickness indicated.

D. Factory mark panels to indicate compliance with applicable standard

2.3 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1;
   1. Use Category UC2 for interior construction not in contact with ground
   2. Use Category UC3b for exterior construction not in contact with ground.

Rebid Documents

3. Use Category UC4a for items in contact with ground.
4. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.4 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
1. Use treatment that does not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber plywood shall be tested according to ASTM D5516 and design value adjustment factors shall be calculated according to ASTM D6305. Span ratings after treatment shall be not less than span ratings specified. For roof sheathing and where high-temperature fire-retardant treatment is indicated, span ratings for temperatures up to 170 deg F shall be not less than span ratings specified.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat plywood indicated on Drawings.

2.5 NON-INSULATED WALL SHEATHING

A. Plywood Wall Sheathing: Exterior, Structural I sheathing.
1. Span Rating: Not less than 24/0.
2. Nominal Thickness: Not less than 7/16 inch.

B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1, Structural I sheathing.

Rebid Documents

1. Span Rating: Not less than 24/0.
2. Nominal Thickness: Not less than 7/16 inch.

2.6 COMPOSITE INSULATING WALL SHEATHING

A. Source Limitations: Obtain composite insulating wall sheathing and accessories from single source from single manufacturer.

B. Basis-of-of Design: Huber Engineered Woods, LLC "Zip Systems R-Sheathing".
1. Approved equal products, subject to compliance with the design and performance of this specification and as approved by architect.

C. Oriented-Strand-Board-Surfaced, Polyisocyanurate-Foam Sheathing: ASTM C1289, Type V with DOC PS 2, Exposure 1 oriented strand board on one face and rigid insulating board laminated to interior face.
1. Total Panel Thickness: Nominal 1-1/2 inch
   a. Polyisocyanurate-Foam Thickness: 1 inch.
   b. Oriented-Strand-Board Nominal Thickness: 7/16 inch.
2. Span Rating: Not less than 24/16; 7/16 Performance Category.
3. Thermal Resistivity (R-Value): 6 deg F x h x sq. ft./Btu x in. at 75 deg F.

D. Performance Requirements
1. Air-Barrier Assembly Air Leakage: Less than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.2 L/s x sq. m at 75 Pa), per ASTM E2357 – Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
2. Water-Vapor Permeance, Facer: Minimum 12 perms (689 ng/Pa x s x sq. m), when tested in accordance with ASTM E96/E96M – Standard Test Methods for Water Vapor Transmission of Materials.
3. Water Resistance of Coatings: Pass 14 day exposure test in accordance with ASTM D2247 – Standard Practice for Testing Water Resistance of Coatings in 100 percent Relative Humidity.

E. Materials
1. Oriented Strand Board: US Department of Commerce DOC PS 2 - Performance Standard for Wood-Based Structural Panels
   a. Panels made with binder containing no added urea formaldehyde.
2. Weather Barrier Facer: Medium-density, phenolic-impregnated polymer-modified sheet material.
3. Rigid Foam Plastic Insulating Board: Rigid polyisocyanurate foam core complying with ICC-ES AC12 – Foam Plastic Insulation, with coated glass fiber facers on both sides:
   a. Insulation Classifications: Type II, Class 2 in accordance with ASTM C1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
   b. Nominal Density: 2.0 pcf.
   c. Compressive Strength: Not less than 20 psi in accordance with ASTM D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics

Rebid Documents

d. Vapor Permeance: Less than 1.0 perm in accordance with ASTM E96/E96M – Standard Test Methods for Water Vapor Transmission of Materials
e. Edge Configuration: Square finished

2.7 ROOF SHEATHING

A. Plywood Sheathing: Exterior, Structural I sheathing.
1. APA Span Rating: Not less than 40/20.
2. Thickness: 19/32".

B. Oriented-Strand-Board Sheathing: DOC PS 2, Exterior**,** Structural I sheathing.
1. APA Span Rating: Not less than 40/20**.**
2. Thickness: 19/32".

2.8 SUBFLOORING

A. Plywood Subflooring: Either DOC PS 1 or DOC PS 2, single-floor panels or sheathing.
1. Span Rating: Not less than 24 inches on center or 48/24.
2. Nominal Thickness: Not less than 23/32 inch.
3. Edge Detail: Tongue and groove.

B. Oriented-Strand-Board Subflooring: DOC PS 2, Exposure 1
1. Span Rating: Not less than 24 or 48/24.
2. Nominal Thickness: Not less than 23/32 inch.
3. Edge Detail: Tongue and groove.

2.9 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
1. For roof sheathing, wall sheathing and floor sheathing: One of the following:
a. Hot-dip zinc coating complying with ASTM A653 Type A or Type B (HSLAS Type A or Type B); G185 coating designation not less than 0.036 inch thick.
b. Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners:. NES NER-272

D. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.

E. Wood Screws: ASMA B18.6.1.

Rebid Documents

2.10 ACCESSORIES AND MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with APA AFG-01 or ASTM D3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

B. Accessories for Composite Insulating Wall Sheathing:
   1. Self-adhering Seam and Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive, meeting ICC-ES AC148 – Acceptance Criteria for Flexible Flashing Materials, and tested as part of an assembly meeting performance requirements.
      a. Basis-of-Design: Huber Engineered Woods; ZIP System™ flashing tape.
      b. Characteristics
         1) Adhesive type: Acrylic
         2) Thickness: 0.012 inch (0.3 mm).
         3) Tensile Strength: 938 psi
         4) Elongation: 400-800 percent
         5) Complies with AAMA 711 – Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration and ICC-ES AC148 – Acceptance Criteria for Flexible Flashing Materials.

   2. Self-Adhering Flexible Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive; tested as part of an assembly meeting performance requirements.
      a. Basis-of-Design: Huber Engineered Woods; ZIP System™ stretch tape.
      b. Characteristics
      c. Adhesive type: Acrylic
      d. Thickness: 0.042 inch (1.067 mm).
      e. Tensile Strength: 225 psi
      f. Elongation: 800-1200 percent
      g. Complies with AAMA 711 – Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration and ICC-ES AC148 – Acceptance Criteria for Flexible Flashing Materials.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:
   1. NES NER-272 for power-driven fasteners.
   2. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.

Rebid Documents

D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

E. Coordinate wall, parapet and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:
   1. Subflooring:
      a. Glue and nail to wood framing.
      b. Screw to cold-formed metal framing.
      c. Space panels 1/8 inch apart at edges and ends.

   2. Wall and Roof Sheathing:
      a. Nail to wood framing (staple not allowed). Apply a continuous bead of glue to framing members at edges of wall sheathing panels.
      b. Space panels 1/8 inch apart at edges and ends.

3.3 COMPOSITE INSULATING WALL SHEATHING INSTALLATION

A. Do not bridge expansion joints; allow joint spacing equal to spacing of structural supports.

B. Install panels with laminated facer to exterior. Stagger end joints of adjacent panel runs. Support all panel edges.

C. Panel Edge Spacing: In accordance with sheathing panel manufacturer recommendations.

3.4 SEAM AND PENETRATION TREATMENT INSTALLATION

A. For Composite Insulating Wall Sheathing:
   1. Assembly continuity: Coordinate sheathing installation with flashing and joint sealant sequencing and installation and with adjacent building air and moisture barrier components to provide complete, continuous air- and moisture- barrier.

Rebid Documents

2. Tape panel seams, penetrations, and facer defects or cracks with self-adhering seam tape to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of ICC-ES applicable to tape application.
3. Tape window and doors openings and radius penetrations with self-adhering flexible flashing tape to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of ICC-AC applicable to tape application.

END OF SECTION 06 1600

Rebid Documents

SECTION 06 1713 – LAMINATED VENEER LUMBER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section

1.2 SUMMARY

A. Section Includes:
   1. Laminated veneer lumber (LVL) beams and headers for concealed locations.
   2. Connectors, embeds, anchors, fasteners and accessories.

B. Related Requirements:
   1. Section 06 1000 “Rough Carpentry”.
   2. Section 06 1600 “Sheathing”.
   3. Section 06 1753 “Shop-Fabricated Wood Trusses”.

1.3 REFERENCES

A. ASTM International (ASTM): Latest editions, unless otherwise specified.
   1. ASTM D2559, Standard Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions
   2. ASTM D5456, Standard Specification for Evaluation of Structural Composite Lumber Products.
   3. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.

B. International Code Council (ICC), Evaluation Service, Inc. (ES)
   1. ICC ES Report No. ESR-1040, issued September 1, 2010, "Versa-Lam® and Versa-Rim Laminated Veneer Lumber", (Boise-Cascade Corporation).
   2. ICC ES Report No. ESR-2909, issued September 1, 2009, "Pacific Woodtech and Georgia-Pacific G-P Lam® Laminated Veneer Lumber (LVL)", (Pacific Woodtech Corporation a Georgia-Pacific Corporation).
   3. ICC ES Report No. ESR-2403, issued February 1, 2011, "LP Solidstart", (Louisiana Pacific).
   4. ICC ES Report No. ESR-1387, issued February 1, 2011, "Structural Composite Lumber Microllam Laminated Veneer Lumber (LVL) and Microllam® LVL Rim Board" (Weyerhaeuser Business).
   5. ICC ES Report No. ESR-2993, issued January 1, 2011, "Structural Composite Lumber: Redlam™ Laminated Veneer Lumber (LVL) (RedBuilt LLC).

C. International Building Code (IBC), 2021 Edition

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
   1. Product Data: Manufacturer’s material data covering composition, thicknesses, dimensions, loading, fabrication details, handling and erection instructions.
   2. Shop Drawings: Indicate sections of products, member layouts, member profiles, bearing elevations, anchors and fasteners and their spacing and full details of accessories and finishes, blocking, bridging and cutting for work by others.
   3. Warranty: Sample copy of manufacturer's intended warranties for this Project, stating obligations, remedies, limitations, and exclusions of warranty.

B. Submit in accordance with Section 01 7700 “Closeout Procedures”:
   1. Warranty: Manufacturer’s fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.

1.5 QUALITY ASSURANCE

A. Comply with all laws, ordinances, rules, regulations, and orders of governing authorities having jurisdiction over this part of the Work.

B. Manufacture LVL lumber in accordance with ICC ES Reports specified in Article 1.3 above.

C. Each LVL member shall be identified with a stamp indicating the manufacturer's name, manufacturing plant location, product designation, grade, veneer species, evaluation report number and name of the quality control agency, in accordance with ES Reports or NES Reports specified in Article 1.3 above.
   1. In lieu of each uncut member being identified with certification stamp submit manufacturer's letter of certification indicating the manufacturer's name, manufacturing plant location, product designation, grade, veneer species, evaluation report number and name of the quality control agency.

D. Installer Qualifications: Experienced in performing work of this section, have not less than 3 years’ experience, and has specialized in installation of work of a similar or larger size than the requirements of this Project, using the products specified.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Bundle or load wrap members with water resistant reinforced kraft paper. Secure wrapping with suitable materials that will not mar the exposed surfaces.

B. Use nonmarring slings for loading, unloading and handling members to prevent damage to surfaces and wrapping. Unload at site, place on level supports, off ground, suitable and adequately covered and protected from the elements. Damaged and otherwise unsuitable items, when so determined, shall be immediately removed from the Project site.

Rebid Documents

1.7 WARRANTY

A. Contractor: Warrant the LVL lumber members to be free of faults and defects in accordance with General Conditions, except extend warranty by manufacturer's limited life-time warranty for adequacy of its design for the normal and expected life of the building.

B. Provide warranty on manufacturer's preprinted warranty form, signed by an authorized corporate officer of the manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
1. Boise-Cascade Corporation
2. Georgia-Pacific Corporation
3. Louisiana-Pacific
4. RedBuilt, LLC
5. Roseburg Forest Products Co.
6. Weyerhaeuser

2.2 PERFORMANCE REQUIREMENTS

A. Design Requirements: Allowable stresses for beams as indicated on the Structural Drawings.

2.3 MATERIALS

A. Prefabricated Laminated Veneer Lumber (LVL) Wood Beams and Headers
1. Construction Characteristics: 1-3/4" (or multiples of 1-3/4") thick pressure bonded, scarf-jointed wood veneers, with grain of veneers running parallel in the long direction.

B. Accessories
1. Fasteners: 16d common nails and 1/2" bolts.
2. Framing Connectors: Manufacturer and type in accordance with manufacturer's recommendations.

D. Temporary Sealer: Manufacturer's recommended temporary construction sealer. Manufacturer's standard, transparent, penetrating wood sealer that is compatible with indicated finish.

F. Shop Finish: Manufacturer's standard shop finish.

2.4 FABRICATION

A. Fabricate LVL lumber in accordance with the ICC ES Reports specified in Article 1.3 above.

Rebid Documents

C. Surface Dressing: Mill Grade.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Notify the Construction Manager of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

A. Comply with manufacturer’s instructions for installation.

B. Install members with suitable equipment.

C. Install all connectors, including those for related solid members, and keeping members braced until secured in accordance with manufacturer's instructions.

D. Temporary construction loads that cause stresses beyond design limits are NOT permitted.

E. Except for cutting to length, additional cutting, holes, hole reaming, or notches not previously approved by manufacturer's engineers are NOT permitted.

3.3 REPAIRS AND CLEANING

A. Protect installed product and finish surfaces from damage during handling, storage and after installation in accordance with manufacturer's instructions.

B. Wrapping used for protection of individually wrapped members during transportation shall be left in place during erection and until the members are enclosed within the building. If wrapping is removed at certain connection points for erection, reinstall wrap after connection is made to prevent deterioration of member.

END OF SECTION 06 1713

Rebid Documents

SECTION 06 1753 - SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Wood roof trusses.
   2. Wood floor trusses.
   3. Wood girder trusses.

B. Related Requirements:
   1. Section 061600 "Sheathing" for roof sheathing and subflooring.
   2. Section 06 1713 “Laminated Veneer Lumber

1.3 DEFINITIONS

A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3000 “Submittal Procedures”:
   1. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.

B. Shop Drawings: Show fabrication and installation details for trusses.
   1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
   2. Indicate sizes, stress grades, and species of lumber.
   3. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
   4. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
   5. Show splice details and bearing details.

C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

Rebid Documents

1. Design Calculations: To the extent engineering design considerations are indicated as fabricator's responsibility, submit design analysis and test reports indicating loading, section modulus, assumed allowable stress, stress diagrams and calculations, and similar information needed for analysis and to ensure that trusses comply with requirements.
2. The design analysis shall be prepared and signed by a registered structural engineer, registered in the state where the project is located.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For metal connector-plate manufacturer and fabricator.

B. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss-fabricating firm.

1.6 QUALITY ASSURANCE

A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program, complies with quality-control procedures in TPI 1, and involves third-party inspection by an independent testing and inspecting agency**.**

1.7 DELIVERY, STORAGE, AND HANDLING

A. Handle and store trusses to comply with recommendations in SBCA BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."
1. Schedule delivery and erection of trusses to avoid extended on-site storage and to avoid delaying work of other trades whose work must follow erection of trusses.
2. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
3. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
4. Provide for air circulation around stacks and under coverings.

B. Immediately remove from the Project site damaged and otherwise unsuitable material when determined and replace with new. Do not incorporate damaged or otherwise unsuitable material into the Project and replace with new at no additional cost to the Owner.

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PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design metal-plate-connected wood trusses.

B. Structural Performance: Metal-plate-connected wood trusses shall be capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.
   1. Design Loads: As indicated on the Structural Drawings.
   2. Maximum Deflection under Design Loads:
      a. Roof Trusses: As indicated on the Structural Drawings.
      b. Floor Trusses: As indicated on the Structural Drawings.

C. Comply with applicable requirements and recommendations of the following publications, latest editions, unless otherwise specified.
   1. TPI 1"National Design Standard for Metal Plate Connected Wood Truss Construction."
   2. TPI DSB "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."
   3. BCSI "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

2.2 DIMENSION LUMBER

A. Lumber: DOC PS 20 and applicable rules of any rules-writing agency certified by the American Lumber Standard Committee (ALSC) Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
   1. Factory mark each piece of lumber with grade stamp of grading agency.
   2. Provide dressed lumber, S4S.
   3. Provide dry lumber with 19 percent maximum moisture content at time of dressing.

B. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Section 061000 "Rough Carpentry."

2.3 FIRE-RETARDANT-TREATED WOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products according to test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, with no evidence of significant progressive

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combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Exterior and Interior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
3. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D5664, and design value adjustment factors shall be calculated according to ASTM D6841.

C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

E. Application: Treat items indicated on Drawings.

2.4 METAL CONNECTOR PLATES

A. Source Limitations: Obtain metal connector plates from single manufacturer.

B. Fabricate connector plates to comply with TPI 1.

C. Hot-Dip Galvanized-Steel Sheet: ASTM A653/A653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 coating designation; and not less than 0.036 inch thick.

1. Use for interior locations unless otherwise indicated.

2.5 FASTENERS

A. Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
2. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.

B. Nails, Brads, and Staples: ASTM F1667.

2.6 METAL FRAMING ANCHORS AND ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cleveland Steel Specialty Co.
2. KC Metals Products, Inc.
3. Phoenix Metal Products, Inc.

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4. Simpson Strong-Tie Co., Inc.
5. USP Structural Connectors.

B. Allowable Design Loads: Provide products that meet or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.
1. Use for interior locations unless otherwise indicated.

D. Roof Truss Clips: As indicated on the Structural Drawings.

E. Floor Truss Hangers: As indicated on the Structural Drawings.

2.7 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20, with dry film containing a minimum of 92 percent zinc dust by weight.

2.8 FABRICATION

A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly, with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
1. Fabricate wood trusses within manufacturing tolerances in TPI 1.

D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

2.9 SOURCE QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform special inspections and prepare reports in accordance with the provisions of Section 01 4523 “Testing and Inspections”.
1. Provide special inspector with access to fabricator's documentation of detailed fabrication and quality-control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards.
2. Provide special inspector with access to places where wood trusses are being fabricated to perform inspections.

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B. Special Testing and Inspection Services herein include items required by Chapter 17 of the International Building Code (IBC), 2021 edition, and other items which in the professional judgement of the Structural Engineer of Record, are critical to the integrity of the building structure.

C. Structural Testing and Special Inspection Requirements
   1. On a periodic basis, verify trusses shape, dimensions, metal plate connectors, truss locations, anchors; performed by Structural I.
   2. On a periodic basis, verify in-situ truss connection to bearing plates and metal anchors and fasteners used; performed by Structural I.

D. Correct deficiencies in Work that special inspections indicate do not comply with the Contract Documents.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wood trusses only after supporting construction is in place and is braced and secured.

B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

D. Install and brace trusses according to TPI recommendations and as indicated.

E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.

F. Space trusses not less than 16 inches o.c. unless otherwise indicated on the Drawings.; adjust and align trusses in location before permanently fastening.

G. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.

H. Securely connect each truss ply required for forming built-up girder trusses.
   1. Anchor trusses to girder trusses as indicated.

I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
   1. Install bracing to comply with Section 06 1000 "Rough Carpentry."
   2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.

J. Install wood trusses within installation tolerances in TPI 1.

K. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.

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L. Replace wood trusses that are damaged or do not comply with requirements.
   1. Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

3.2 REPAIRS AND PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect wood trusses from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

C. Repair damaged galvanized coatings on exposed surfaces according to ASTM A780/A780M and manufacturer's written instructions.

END OF SECTION 06 1753

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SECTION 06 4023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Interior standing and running trim.
2. Closet and utility shelving.
3. Preservative-treated-wood materials.
4. Fire-retardant-treated-wood materials.
5. Interior frames and jambs.
6. Interior railings and brackets.
7. Interior pre-assembled box beams.
8. Wood furring, blocking, shims, and hanging strips for installing interior architectural woodwork items that are not concealed within other construction.
9. Shop priming of interior architectural woodwork.
10. Shop finishing of interior architectural woodwork.

B. Related Requirements:
1. Section 061053 "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing interior architectural woodwork that are concealed within other construction before interior architectural woodwork installation.

1.3 REFERENCES

A. American National Standard
1. ANSI A208.2 – “Medium Density Fiberboard for Interior Use”; 2022.

B. Architectural Woodwork Institute
1. AWI (QSI) – “Architectural Woodwork Quality Standards Illustrated; Edition 2.0”, April 2016.

C. American National Standards Institute
1. ANSI/AWI 0641-2019 – “Architectural Wood Casework Standard”.
2. ANSI/AWI 0620-2018 – “Finish Carpentry/Installation Standard”.

D. National Hardwood Lumber Association
1. NHLA G-101 – “Rules for the Measurement & Inspection of Hardwood & Cypress”

E. National Institute of Standards and Technology
1. Voluntary Product Standard PS 20-20 – “American Softwood Lumber Standard”, October 2021.

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1.4 SUBMITTALS

A. Submit the following in accordance with Section 013300 “Submittal Procedures.”
   1. Product Data: For the following:
      a. Anchors.
      b. Adhesives.
      c. Shop finishing materials.
      d. Wood-Preservative Treatment:
         1) Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
            a) Indicate type of preservative used and net amount of preservative retained.

      e. Include chemical-treatment manufacturer's written instructions for finishing treated material and manufacturer's written warranty.
      f. Waterborne Treatments: For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

   2. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
      a. Show locations and sizes of furring, blocking, and hanging strips, including blocking and reinforcement concealed by construction and specified in other Sections.
      b. Show locations, sizes of cutouts and holes for items installed in architectural woodwork.
      c. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

B. Samples: For initial selection.
   1. Lumber Products: Not less than 6 inches square long, for each species and cut, finished on one side and one edge.

C. Samples for Verification: For the following:
   1. Lumber for Transparent Finish: Not less than 6 inches square for each species and cut, finished on one side and one edge.
   2. Veneer Leaves: Representative of and selected from flitches to be used for transparent-finished interior architectural woodwork.
   3. Lumber and Panel Products with Shop-Applied Opaque Finish: not less than 6 inches square for lumber and for panels, for each finish system and color.
      a. Finish entire exposed surface.

D. Qualification Data: For fabricator.

E. Product Certificates: For each type of product, signed by product manufacturer.

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1.5 QUALITY ASSURANCE

A. Fabricator's Qualifications: A shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence-matched wood veneers

C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver interior architectural woodwork until painting and similar finish operations that might damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article

1.7 PROJECT CONDITIONS

A. Environmental Limitations without Humidity Control: Do not deliver or install interior architectural woodwork until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of the construction period.

B. Field Measurements: Where interior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.
   1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction and indicate measurements on Shop Drawings.

C. Established Dimensions: Where interior architectural woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that architectural woodwork can be supported and installed as indicated.

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PART 2 - PRODUCTS

2.1 ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

2.2 WOOD TRIM AND MILLWORK

A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Hardwoods for Transparent Finish and Opaque Finish: Refer to Interior Finish Legend on Interior Drawings for manufacturers, styles, species, grade, cut, color, and matching.

C. Products: Comply with the following:
1. AWS Grade: Custom
2. Low-Emitting Materials: Composite wood products shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
3. Hardboard: AHA A135.4.
4. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.
5. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea formaldehyde.
6. Wood Veneers: Conforming to ANSI/HPVA HP-1.
   a. Cut: Plain sliced, with grain filler, vertical grain
   b. Matching: Slip or running matched.

2.3 INTERIOR WOOD STAIRS AND RAILINGS

A. Architectural Woodwork Standards Grade: Premium.

B. Wood for Transparent Finish:
1. Species and cut:
   a. Railings: Red oak, plain sawn.
   b. Wood Moisture Content: 5 to 10 percent.

C. Handrail Brackets: Cast nickel-silver with wall flange drilled for exposed anchor and with support arm for screwing to underside of rail. Size to provide 1-1/2-inch clearance between handrail and face of wall.

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2.4 INTERIOR PRE-ASSEMBLED BOX BEAMS

A. Pre-Assembled Box Beams: Hollow wood box beams pre-assembled from 3/4-inch MDF panels with a stained wood veneer. Box beams can be mounted to wood blocking or attached to a 15/16" drywall grid system.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide 5th Wall Designs "Miter Fold Beam, Product #5W-MF868".
      a. Beam dimension: 6" wide x 8" high.
      b. Panel core: 3/4-inch MDF.
      c. Veneer species: As selected by the Architect from the Manufacturer's full range.
      d. Veneer stain color: Per the Architect's direction.
      e. Beam Lengths: Standard lengths of 8 feet and 10 feet.
      f. Fire Rating: Class A (0-25 flame spread per ASTM E-84/IBC).

2.5 HARDWOOD SHEET MATERIALS

A. Composite Wood Products: Provide materials that comply with requirements of the Architectural Woodwork Standards for each type of interior architectural woodwork and quality grade specified unless otherwise indicated.
   1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.
   2. Particleboard: ANSI A208.1, Grade M-2.
   3. Softwood Plywood: DOC PS 1**,** medium-density overlay.
   4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

2.6 PRESERVATIVE-TREATED-WOOD MATERIALS

A. Preservative-Treated-Wood Materials: Provide with water-repellent preservative treatment complying with AWPA N1 (dip, spray, flood, or vacuum-pressure treatment).
   1. Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.

B. Extent of Preservative-Treated Wood Materials: Treat interior architectural woodwork in contact with concrete or masonry.

2.7 FIRE-RETARDANT-TREATED WOOD MATERIALS

A. Fire-Retardant-Treated Wood Materials: Where fire-retardant-treated materials are indicated, use materials complying with requirements that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products in accordance with test method indicated by a qualified testing agency.
   1. Use treated materials that comply with requirements of the Architectural Woodwork Standards. Do not use materials that are warped, discolored, or otherwise defective.
   2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.

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3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

B. Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested in accordance with ASTM E84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
1. Kiln-dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
2. For items indicated to receive a stained, transparent, or natural finish, use organic resin chemical formulation.
3. Mill lumber before treatment and implement procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.

C. Fire-Retardant Particleboard: Made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture, to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less in accordance with ASTM E84.
1. For panels 3/4 inch thick and less, comply with ANSI A208.1 for Grade M-2 except for the following minimum properties: modulus of rupture, 1600 psi; modulus of elasticity, 300,000 psi; internal bond, 80 psi; and screw-holding capacity on face and edge, 250 and 225 lbf, respectively.
2. Product: Subject to compliance with requirements, provide "Duraflake FR" by Weyerhaeuser.

D. Fire-Retardant Fiberboard: Medium-density fiberboard panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture, to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less in accordance with ASTM E84.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. “Pyroblock Platinum”, (Panel Source International, Inc.).
   b. “Medite FR”, (Sierra, a Roseburg Company).

2.8 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Provide self-drilling screws for metal-framing supports, as recommended by metal-framing manufacturer.

C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.
1. Provide metal expansion sleeves or expansion bolts for post-installed anchors.
2. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls, at floors and elsewhere as required fir corrosion resistance.
3. Provide toothed-steel or lead expansion sleeves for drilled in place anchors.

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D. Adhesives: Use only adhesives and sealants formulated for specified products and recommended by their manufacturer for the intended application.
   1. Color: Match each material color.
   2. Low-Emitting Materials: Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
   3. Adhesive for Bonding Plastic Laminate: As selected by the Woodwork Fabricator.
   4. Adhesive for Bonding Edges: Hot-melt adhesive.

E. Fasteners: For exposed fasteners, match hardware finish.
   1. Use only stainless steel attachment devices in direct contact with quartz, fabricated from stainless steel, ASTM A666, Type 304.

2.9 FABRICATION

A. Fabricate custom woodwork to dimensions, profiles, and details indicated.
   1. Grade: Premium.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
   1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

D. Fabricate custom woodwork in accordance with ANSI/AWI 0620-2018 - Finish Carpentry / Installation Standard

2.10 SHOP PRIMING

A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.

B. Interior Architectural Woodwork for Opaque Finish: Shop prime with one coat of wood primer as specified in Section 09 9100 "Painting."
   1. Backpriming: Apply one coat of primer, compatible with finish coats, to concealed surfaces of woodwork.

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C. Interior Architectural Woodwork for Transparent Finish: Shop-seal concealed surfaces with required pretreatments and first coat of finish as specified in Section 09 9100 "Painting."
   1. Backpriming: Apply one coat of sealer, compatible with finish coats, to concealed surfaces of woodwork.

2.11 SHOP FINISHING

A. Finish interior architectural woodwork at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation. with finish as specified in Section 09 9100 "Painting."

B. Preparation for Finishing: Comply with Architectural Woodwork Standards, Section 5 for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.
   1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of interior architectural woodwork. Apply two coats to end-grain surfaces.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition interior architectural woodwork to humidity conditions in installation areas for not less than 72 hours prior to beginning of installation.

B. Before installing interior architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming of concealed surfaces.

3.2 INSTALLATION

A. Install interior architectural woodwork to comply with ANSI/AWI 0620-2018 - Finish Carpentry/Installation Standard .
   1. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.

B. Assemble interior architectural woodwork and complete fabrication at Project site to the extent that it was not completed during shop fabrication.

C. Install interior architectural woodwork level, plumb, true in line, and without distortion.
   1. Shim as required with concealed shims.
   2. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut interior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Preservative-Treated Wood: Where cut or drilled in field, treat cut ends and drilled holes in accordance with AWPA M4.

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F. Fire-Retardant-Treated Wood: Handle, store and install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.

G. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates.
1. Secure with countersunk, concealed fasteners and blind nailing.
2. Use fine finishing nails for exposed fastening, countersunk and filled flush with interior architectural woodwork.
3. For shop-finished items, use filler matching finish of items being installed.

H. Wood Trim and Millwork:
1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.
2. Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary.
3. Scarf running joints and stagger in adjacent and related members.
4. Fill gaps, if any, between top of base and wall with latex sealant, painted to match wall.
5. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

3.3 REPAIR

A. Repair damaged and defective interior architectural woodwork, where possible, to eliminate functional and visual defects.

B. Where not possible to repair, replace defective woodwork.

C. Shop Finish: Touch up finishing work specified in this Section after installation of interior architectural woodwork.
1. Fill nail holes with matching filler where exposed.
2. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

3.4 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance. Clean, lubricate, and adjust hardware.

B. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06 4023

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Rebid Documents

SECTION 06 4113 - WOOD-VENEER-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Wood cabinets for opaque finish.
   2. Cabinet hardware and accessories.
   3. Wood furring, blocking, shims, and hanging strips for installing architectural cabinets that are not concealed within other construction.
   4. Shop finishing.

B. Related Requirements:
   1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.
   2. Section 112013 “Residential Appliances” for appliances integrated with and attached to cabinetry.
   3. Section 123661.19 “Quartz Agglomerate Countertops” for coordinating the installation of countertops with cabinetry.
   4. Section 224000 “Plumbing Fixtures” for coordinating the installation of sinks within countertops and cabinetry.
   5. Division 26 “Electrical” for coordinating the installation of electrical switches and lighting within and attached to cabinetry.

1.3 REFERENCES

A. American National Standards Institute (ANSI)
   1. A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2022.

B. Architectural Woodwork Institute (AWI)
   1. Architectural Woodwork Quality Standards Illustrated (AWI QSI); Architectural Woodwork Institute, Edition 2.0, April 2016.
      a. ANSI/AWI 0641-2019 - Architectural Wood Casework Standard
      b. ANSI/AWI 0620-2018 - Finish Carpentry/Installation Standard

C. National Hardwood: Lumber Association (NHLA)
   1. G-101 - Rules for the Measurement & Inspection of Hardwood & Cypress; National Hardwood Lumber Association.

Rebid Documents

2. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2021.

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

1.5 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For architectural cabinets.
1. Include plans, elevations, sections, and attachment details.
2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
3. Show locations and sizes of cutouts and holes for items installed in architectural cabinets.
4. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

C. Samples: For each exposed product and for each color and finish specified, in manufacturer's standard size.
1. Lumber and Panel Products with Shop-Applied Opaque Finish: 5 inches wide by 12 inches long for lumber and 8 by 10 inches for panels, for each finish system and color.
   a. Finish entire surface of one side of sample and all edges. Leave opposite side unfinished.

2. Thermally Fused Laminate (TFL) Panels: 8 by 10 inches for each color, pattern, and surface finish.
   a. Provide edge banding on one edge.

D. Product Certificates: For the following:
1. Composite wood products.
2. Thermally fused laminate panels.
3. Glass.
4. Adhesives.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence-matched wood veneers

Rebid Documents

C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

D. Accessibility Requirements: The following special requirements shall be met typically throughout the Project, where required by Code. Cabinets shall be in compliance with ADAABAAG and as follows:
   1. At locations indicated on the Drawings for accessibility:
      a. Countertop Height: With or without cabinet below, not to exceed a height of 34 inches above finished floor, at a surface depth of 24 inches unless noted otherwise.
      b. Knee space Clearance: Shall be minimum 27 inches above finished floor at apron, and 30 inches minimum clear span width.
      c. Sink Cabinet Clearances: In addition to required knee space clearance, upper knee space frontal depth shall be no less than 8 inches, and lower toe frontal depth shall be no less than 11 inches, at a point 9 inches above finished floor, and as further described in ADA Section 306.3.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.8 FIELD CONDITIONS

A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction and indicate measurements on Shop Drawings.

C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

Rebid Documents

PART 2 - PRODUCTS

2.1 ARCHITECTURAL CABINET MANUFACTURERS

A. Source Limitations: Engage a qualified woodworking firm to assume responsibility for production of architectural cabinets.

B. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Smart Cabinetry, a Cabinetworks Group company.

C. Comparable products of other manufacturers may be submitted for review and approval by the Architect, provided they meet the criteria and intent of this specification.

2.2 CABINETS, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of architectural cabinets indicated for construction, finishes, installation, and other requirements.

2.3 WOOD CABINETS FOR OPAQUE FINISH

A. Wood-Veneer-Faced Architectural Cabinets: Wall and base cabinets fully enclosed with backs, bottoms, sides, and tops on all wall cabinets. Pre-finished wood door and drawer fronts, complete with shelving, hardware and mounting assemblies complying with the following and with other requirements specified.

B. Basis of Design: “Sheffield” cabinets by Smart Cabinetry.
1. Architectural Woodwork Standards Grade: Custom.
2. Wood Species: Maple.
3. Cabinet Construction: Face Frame
   a. Stiles and Rails; 3/4-inch thick x 1-1/2-inch wide hardwood.
   b. Wall and Base Backs: 1/2-inch particle board with TFL laminate finish; stapled and glued into rabbeted ends.
   c. Wall and Base Sides: 1/2-inch particle board with TFL laminate.
   d. Base Bottoms: 1/2-inch particle board with TFL laminate; hot-glued into dados on four sides.
   e. Wall Tops and Bottoms: ½-inch particle board with TFL laminate; hot-glued into dados on four sides.
   f. Countertop Attachment Rails: 1/2-inch particle board; hot-glued into face frame, sides and cabinet back.
   g. Toe Kicks: 1/2-inch particle board; 3-1/2-inches deep x 4-1/2-inches high.
4. Door and Drawer-Front Style: Standard overlay; 1” reveal.
5. Door Construction:
   a. Panel: 5/8-inch HDF (high-density fiberboard); flat panel.
      1) Edge Profile: Reverse
   b. Door Rails: 2-1/4-inch wide HDF.

Rebid Documents

6. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
   a. Drawer Front: 5/8-inch high-density fiberboard (HDF); flat slab.
   b. Sides and Back: 5/8-inch solid hardwood; four sided glued dovetail construction.
   c. Bottom: 1/4-inch MDF bottom with laminate matching drawer sides and back.

7. Shelf Construction
   a. 3/4-inch particle board with TFL laminate with an edgeband finish to match shelf.

8. Finish:
   a. Factory-painted finish on exposed faces.
   b. Color: As selected by Architect from manufacturer's full range.

2.4 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
   1. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
   1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde**.**
   2. Particleboard (Medium Density): ANSI A208.1, Grade M-2-Exterior Glue, made with binder containing no urea formaldehyde.
   3. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.
   4. Thermally Fused Laminate (TFL) Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.5 CABINET HARDWARE AND ACCESSORIES

A. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 100 degrees of opening**,** 6-way adjustable, self-closing.

B. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.
   1. Style: As indicated on the Interior Materials Schedule on the Drawings.

C. Shelf Rests: ANSI/BHMA A156.9, B04013; plastic with shelf hold-down clip.

D. Drawer Slides: ANSI/BHMA A156.9.
   1. Standard Duty (Grade 1 and Grade 2): Side mount.
      a. Type: Full extension.
      b. Material: Epoxy-coated polymer slides.

E. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.

Rebid Documents

F. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for BHMA finish number indicated.
   1. Satin Nickel Plated: ANSI/BHMA 619.

G. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.6 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesives: Use only adhesives and sealants formulated for specified products and recommended by their manufacturer for the intended application.
   1. Color: Match each material color.
   2. Low-Emitting Materials: Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
   3. Adhesive for Bonding Plastic Laminate: As selected by the Woodwork Fabricator.
   4. Adhesive for Bonding Edges: Hot-melt adhesive.

D. Fasteners: For exposed fasteners, match hardware finish.
   1. Manufactured Quartz Material or Molded Solid Surface Material Anchors and Attachments: Use only stainless steel attachment devices in direct contact with quartz, fabricated from stainless steel, ASTM A666, Type 304.

2.7 FABRICATION

A. Fabricate architectural cabinets to dimensions, profiles, and details indicated. Ease edges and corners to 1/16-inch radius unless otherwise indicated.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

Rebid Documents

2.8 SHOP FINISHING

A. General: Finish architectural cabinets at manufacturer's shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural cabinets, as applicable to each unit of work.
   1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of cabinets.

C. Opaque Finish:
   1. Architectural Woodwork Standards Grade: Same as item to be finished.
   2. Finish: Manufacturer’s standard.
   3. Color: “Elegant White” (Smart Cabinetry)
   4. Sheen: Manufacturer’s standard.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.2 INSTALLATION

A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.

B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with cabinet surface.
   1. For shop-finished items, use filler matching finish of items being installed.

D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
   1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
   2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   3. Maintain veneer sequence matching of cabinets with transparent finish.

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4. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips**.**

E. Shop Finishes: Touch up after installation of architectural cabinets. Fill nail holes with matching filler.
   1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean cabinets on exposed and semi exposed surfaces. Touch up finishes to restore damaged or soiled areas.

END OF SECTION 06 4113

Rebid Documents

SECTION 06 4116 - PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Plastic-laminate-clad architectural cabinets.
2. Cabinet hardware and accessories.
3. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-clad architectural cabinets that are not concealed within other construction.

B. Related Requirements:
1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.
2. Section 12 3361.19 “Quartz Agglomerate Countertops” for coordinating the installation of simulated stone countertops with cabinetry.
3. Section 22 400 “Plumbing Fixtures”.
4. Division 26 “Electrical.

1.3 REFERENCES

A. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2022.

B. AWI (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute, Edition 2.0, April 2016.
1. ANSI/AWI 0641-2019 - Architectural Wood Casework Standard
2. ANSI/AWI 0620-2018 - Finish Carpentry/Installation Standard

C. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.

D. NHLA G-101 - Rules for the Measurement & Inspection of Hardwood & Cypress; National Hardwood Lumber Association.

E. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2021.

Rebid Documents

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: For high-pressure decorative laminate, adhesive for bonding plastic laminate, PVC edge material, solid-surfacing material, quartz surfacing material and cabinet hardware and accessories.

B. Shop Drawings:
   1. Include plans, elevations, sections, and attachment details.
   2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
   3. Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.

C. Samples: For each exposed product and for each color and texture specified, for the following:
   1. Plastic Laminates: 8 by 10 inches for each type, color, pattern, and surface finish required.
      a. Provide one sample applied to core material with specified edge material applied to one edge.

   2. Thermally Fused Laminate (TFL) Panels: 8 by 10 inches for each color, pattern, and surface finish.
      a. Provide edge banding on one edge.

D. Qualification Data: For manufacturer.

E. Product Certificates: For each type of product.

1.6 QUALITY ASSURANCE

A. Fabricator’s Qualifications: A shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork with sequence-matched wood veneers.

C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

D. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination.

Rebid Documents

E. Accessibility Requirements: The following special requirements shall be met typically throughout the Project, where required by Code. Cabinets shall be in compliance with ADAABAAG and as follows:
   1. Countertop Height: With or without cabinet below, not to exceed a height of 34 inches above finished floor, at a surface depth of 24 inches unless noted otherwise.
   2. Knee-space Clearance: Shall be minimum 27 inches above finished floor at apron, and 30 inches minimum clear span width.
   3. Sink Cabinet Clearances: In addition to above, upper knee-space frontal depth shall be no less than 8 inches, and lower toe frontal depth shall be no less than 11 inches, at a point 9 inches above finished floor, and as further described in ADA Section 306.3.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.8 FIELD CONDITIONS

A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.

B. Architectural Woodwork Standards Grade: Custom.

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C. Type of Construction: Face frame.

D. AWI Type of Cabinet Construction: Partial reveal overlay.

E. Cabinets: Sized as indicated on Drawings. Provide complete with hardware.
1. Wall cabinets: Nominal 12 inches deep, uless noted otherwise on Drawings.
2. Base cabinets: Nominal 24 inches deep by 36 inches high to top of counter, unless noted otherwise on Drawings.
3. Shelves: Nominal full depth of wall cabinets and half depth of base cabinets.

F. Core Materials: ANSI A208.2, Medium Density Fiberboard (MDF)
1. Standard Grade: ANSI A208.2, Grade 130, MR10 moisture rating, for dry and non-wet areas.
2. Moisture-Resistant (MR MDF): ANSI A208.2, Grade 155, MR50 moisture rating, for wet areas; kitchens, toilet rooms,
3. Products: Subject to compliance with requirements, provide one of the following:
   a. "Medex", (Sierra, a Roseburg Company)
   b. "UltraStock MR MDF"' (Georgia Pacific Wood Products LLC).

4. Cabinet bodies: 3/4" thick minimum.

G. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
1. Plastic Laminate Tops: HGS, 1.2 mm thick.
2. Horizontal Surfaces Other Than Tops: Grade HGL, 1.0 mm thick.
3. Vertical Surfaces: Grade VGS, 0.7 mm thick.
4. Backer (Balance) Sheet, Horizontal and Vertical Surfaces, (BKH and BKV) 0.048", 0.039", or 0.028" thick; for cabinets and countertops.
5. Cabinet Body Edges: PVC tape, 0.020 inch (0.51 mm) minimum thickness, matching laminate in color, pattern, and finish.
6. Door and Drawer Edges: PVC edge banding, 0.12 inch (3 mm) thick, matching laminate in color, pattern, and finish if available.
7. Refer to Interior Materials Schedule on Interiors Drawings for laminate manufacturers, styles, and colors.
8. PVC Edging colors to match laminate colors as selected by Architect from manufacturer's full range of colors.

H. Materials for Semi-exposed Surfaces:
1. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.
   a. Edges of Plastic-Laminate Shelves: PVC edge banding 0.04 inch (1 mm) thick, matching shelf color.
   b. For semi-exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, Grade CLS.

2. Drawer Sides and Backs: Thermoset decorative panels.
3. Drawer Bottoms: Thermoset decorative panels.

I. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.

Rebid Documents

J. Drawer Construction: Fabricate with exposed fronts fastened to sub-front with mounting screws from interior of body.
   1. Join sub-fronts, backs, and sides with glued dovetail joints.

K. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

L. Shop cut openings to greatest extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
   1. Seal edges of openings with a coat of varnish.

2.2 CABINET HARDWARE AND ACCESSORIES

A. Cabinet Door and Drawer Hardware: Acceptable Manufacturers:
   1. Amerock.
   2. Accuride International, Inc.
   3. Grass America Inc.
   4. Knape & Vogt Manufacturing Company

B. See Architectural and Interior Drawings for location and quantity of the following cabinet door and drawer hardware

C. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 110 degrees of opening

D. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.
   1. Style: Refer to Interior Materials Schedule for manufacturer and style.

E. Catches: Magnetic catches, ANSI/BHMA A156.9, B03141.

F. Adjustable Shelf Standards and Supports: ANSI/BHMA A156.9, B04071; with shelf rests, B04081.
   1. For shelving concealed behind cabinet doors.

G. Shelf Rests: ANSI/BHMA A156.9, B04013; metal.
   1. For shelving that is exposed to view.

H. Drawer Slides: ANSI/BHMA A156.9.
   1. Standard Duty (Grade 1 and Grade 2): Side mount.

I. Door Locks: ANSI/BHMA A156.11, E07121.

J. Drawer Locks: ANSI/BHMA A156.11, E07041.

K. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.

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L. Grommets for Cable Passage: 1-1/4-inch OD, molded-plastic grommets and matching plastic caps with slot for wire passage.
   1. Color: As selected by Architect from manufacturer’s full range.

M. Exposed Cabinet Legs: ASTM A240, Type 304 Stainless Steel
   1. Diameter: 2 inches flared.
   2. Height: 6” with adjustment up to 1-7/16 inch.
   3. Finish: Brushed.
   4. Load Rating: 2,000 pounds each leg.

N. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.
   1. Satin Chromium Plated: ANSI/BHMA 626 for brass or bronze base; ANSI/BHMA 652 for steel base.

O. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.3 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesives: Use only adhesives and sealants formulated for specified products and recommended by their manufacturer for the intended application.
   1. Color: Match each material color.
   2. Low-Emitting Materials: Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
   3. Adhesive for Bonding Plastic Laminate: As selected by the Woodwork Fabricator.
   4. Adhesive for Bonding Edges: Hot-melt adhesive.

D. Fasteners: For exposed fasteners, match hardware finish.
   1. Manufactured Quartz Material or Molded Solid Surface Material Anchors and Attachments: Use only stainless-steel attachment devices in direct contact with quartz, fabricated from stainless steel, ASTM A666, Type 304.

2.4 FABRICATION

A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for

Rebid Documents

shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.2 INSTALLATION

A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.

B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.

D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
   1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
   2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean cabinets on exposed and semi exposed surfaces.

END OF SECTION 06 4116

Rebid Documents

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Rebid Documents

SECTION 06 6113 – CAST MARBLE SHOWER WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Cast marble shower wall panels.
   2. Cast marble accessory shelves and ledges.

B. Related Requirements:
   1. Section 06 1000 "Rough Carpentry".
   2. Section 07 9200 “Joint Sealants”.
   3. Section 09 2900 “Gypsum Board”.
   4. Section 10 2800 “Toilet, Bath and Laundry Accessories” for shower seats and grab bar installation in accessible showers.
   5. Division 22 “Plumbing” for plumbing fixtures within showers.
   6. Section 22 4223 “Cast Marble Shower Bases”.

1.3 REFERENCES

A. ANSI Z-124.1 - American National Standard for Plastic Fabrications; American National Standards Institute.

B. ASTM International (ASTM) E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Product Data: For each type of product.
   2. Shop Drawings: Indicate shower surround locations, plans, elevations, dimensions, and
   3. relationship to adjacent construction.

B. Pattern and Color Samples: 12” x 12” samples showing surround pattern, color and finish.

C. Informational Submittals: Certificate of Compliance: Certification from an independent testing laboratory that shower surrounds meet fire hazard classification requirements.

D. Closeout Submittals: Maintenance Data including recommended cleaning products and procedures.

Rebid Documents

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Member of International Cast Polymer Alliance (ICPA), with not less than five years of experience in manufacturing products similar to those required for this project.

B. Installer Qualifications: Not less than five installations of comparable scope within the past three years

1.6 DELIVERY, STORAGE AND HANDLING

A. Do not deliver cast marble materials until painting and similar operations that could damage the cast marble have been completed in installation areas.

B. Packing and Shipping: Pack countertops, tub and shower surrounds, and other flat products in wooden crates to minimize shipping damage. Palletize other components.

C. Check for shipping damage during unloading at site and notify manufacturer immediately of any obvious damage.

D. Store products under shelter, off the ground, and protected from moisture. Materials must be at room temperature prior to installation. Handle products to prevent physical damage. Protect surfaces from staining, scratching, and other damage during handling and installation.
1. Do not store in temperatures below 32 degrees Fahrenheit.

1.7 WARRANTY

A. Manufacturer's five-year limited warranty on defective material.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: For basis-of-design and reference purposes cast marble wall panels by Mincey Marble Manufacturing Inc. are specified.

B. Comparable products of other manufacturers may be submitted for review and approval by the Architect, provided they meet the criteria and intent of this specification.

C. Source Limitations: Obtain cast marble panels and accessories from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E84. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: 25 or less.

Rebid Documents

2. Smoke-Developed Index: 450 or less.

2.3 CAST MARBLE SHOWER WALL PANELS

A. Cast Marble Wall Panels (**CMWP-1**): Non-porous and groutless wall panels comprised from a mixture of polyester resin, crushed marble dust and pigments.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Mincey Marble “TS-OWC/13x20-SS, Staggered Stone” shower wall panels.
   2. Nominal Thickness: Not less than 0.25 inch.
   3. Surface Finish: Textured.
   4. Pattern: Staggered block pattern.
   5. Color: White.

2.4 ACCESSORIES

A. Cast Marble Shelf (**CMSH-1**): One-piece cast marble shelf mounted to cast marble shower wall panels
   1. Model: Mincey Marble “SS-03-27”.
   2. Type: Wall mount.
   3. Length: 27 inches.
   4. Depth: 3 inches.
   5. Thickness: 1 1/2 inches.
   6. Finish: Matte.
   7. Color: White.

B. Adhesive: As recommended by cast marble shower wall pane manufacturer.

C. Sealant: Sealant recommended by cast marble shower wall manufacturer and complying with requirements in Section 07 9200 "Joint Sealants."

2.5 FABRICATION

A. Use molds materials, methods, and procedures that will result in proper texture and finish.

B. Fabricate to required profiles and dimensions. To the greatest extent possible, fabricate each unit as a continuous piece, without joints, and configured to minimize on-site cutting or other modifications.

C. Ease all edges and sand smooth; provide uniform finish on all exposed surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

Rebid Documents

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Condition the cast marble to a temperature of 65 degrees Fahrenheit or above before handling.

B. Substrate:
1. Prepare substrate by sanding high spots and filling low spots as needed to provide flat, even surface for panel installation.
2. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.

3.3 INSTALLATION

A. Shower pan must be set in place prior to installation cast marble shower wall panels.

B. Shower Panels:
1. Layout and install panels as shown on the Shop Drawings and per the manufacturer's directions.
    a. Use the largest single-piece panel offered by the manufacturer for each wall to limit the number of joints.
    b. To the greatest extent possible, joints between panels to occur at interior corners of shower stall.
    c. Install components plumb, level and tight to substrate. Scribe to adjacent finishes.
    d. Remove all dust and other contaminants from back of panels prior to
        1) Do not use water or denatured alcohol to clean back of panel.
        2) Use a clean dry cloth to wipe dust and contaminate from back of panel.

2. Adhere panels to wall using the manufacturer's recommended adhesive specifically formulated for cast marble.
3. Shower wall panels must cover the shower pan flange without bowing at the bottom.
4. Brace panels in place until adhesive is set.
5. Caulk all joints using the manufacturer's recommended products.

C. Shelves and Ledges
1. Install shelves and ledges per the directions of the manufacturer.

END OF SECTION 06 6113

Rebid Documents

SECTION 06 6400 - PLASTIC PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Standard plastic sheet paneling for food safe environments and custodial areas.
2. Decorative plastic sheet paneling.

B. Related Requirements:
1. Section 07 9200 “Joint Sealants”.
2. Section 09 2900 “Gypsum Board” for paneling substrates.

1.3 DEFINITIONS AND REFERENCES

A. ASTM International (ASTM): Latest editions, unless otherwise specified.
1. ASTM D5319, Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.
2. ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3000 “Submittal Procedures”:
1. Product Data: For each type of product.
2. Samples: For plastic paneling in manufacturer's standard sizes.

1.5 QUALITY ASSURANCE

A. Materials shall meet FDA and USDA minimum applicable requirements.

B. Installer Qualifications
1. At least 5 years’ experience in installation of fiberglass reinforced panels matching size, type and complexity of this project.

Rebid Documents

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original cartons clearly identified, and store indoors protected from the weather and exposure to the sunlight. Prior to installation, re-stack panels on solid flat surface to minimize package distortion.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install plastic paneling until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with specified requirements, products available from the following manufacturers may be incorporated into the Work:
1. Crane Composites, Inc.
2. Marlite.
3. Glasteel, A Division of Stabilt America
4. Nudo, A Verzatec Company

2.2 PERFORMANCE REQUIREMENTS

A. Materials shall meet USDA and FDA minimum applicable requirements.

B. Surface-Burning Characteristics: Class A, when determined by testing in accordance with ASTM E84.
1. Flame-Spread Index: 25.
2. Smoke-Developed Index: 450

2.3 STANDARD PLASTIC SHEET PANELING

A. Glass-Fiber-Reinforced Plastic Paneling (**FRP-1**): Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319. Panels shall be USDA accepted for incidental food contact.
1. Panel Size: 4’ x 8’ long (minimum) or as otherwise required to all no horizontal joints except at floor (base), and ceiling unless otherwise detailed.
2. Nominal Thickness: Not less than 0.09 inch.
3. Surface Finish: Molded pebble texture,
4. Color: White.

Rebid Documents

B. Products:
   1. "Glasbord Fire-X (FX)" with "Surfaseal" (Crane Composites, Inc.)
   2. "Standard FRP" (Marlite)
   3. "Glasliner" (Glasteel, A Division of Stabilt America)
   4. "Fiberlite FRP" (Nudo, A Verzatec Company)

2.4 DECORATIVE PLASTIC SHEET PANELING

A. Glass-Fiber-Reinforced Decorative Plastic Paneling (**FRP-2**): Fiberglass reinforced thermosetting polyester resin panel sheets complying with complying with ASTM D5319. Panels shall be USDA accepted for incidental food contact.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide "Symmetrix Smart Seam FRP with Sani-Coat Sealer" by Marlite, Inc.
      a. Comparable products of other manufacturers may be submitted for review and approval by the Architect, provided they meet the criteria and intent of this specification.

   2. Nominal Thickness: Not less than 0.09 inch (2.3 mm).
   3. Surface Finish, Pattern and Color: As indicated on the Interior Materials Schedule on the Interiors Drawings.

2.5 ACCESSORIES

A. Trim Accessories: Manufacturer's standard vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal edges.
   1. Color: Match panels.

B. Exposed Fasteners: Nylon drive rivets recommended by panel manufacturer.

C. Concealed Mounting Splines: Continuous, H-shaped aluminum extrusions designed to fit into grooves routed in edges of factory-laminated panels and to be fastened to substrate.

D. Adhesive: As recommended by plastic paneling manufacturer.

E. Sealant: As recommended by plastic paneling manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Notify the General Contractor of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing

Rebid Documents

conditions, follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.

B. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.

3.3 INSTALLATION

A. Install plastic paneling according to manufacturer's written instructions.

B. Cut panels as necessary to fit wall conditions with as few joints between panels as practicable.
   1. Panels forming corners in rooms shall not be less than 12” wide.

C. Install panels in a full spread of adhesive.

D. Install trim accessories with adhesive.

E. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.

F. Maintain uniform space between panels and wall fixtures. Fill space with sealant.

3.4 ADJUSTING AND CLEANING

A. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 06 6400

Rebid Documents

SECTION 07 1326 - SELF-ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:

1. Modified bituminous (rubberized asphalt) sheet membrane waterproofing for below-grade cast-in-place concrete foundation walls.
2. Molded-sheet drainage panels.

B. Related Requirements:
1. Section 03 3000 “Cast-In-Place Concrete” for footing and foundation concrete.
2. Section 07 2100 “Thermal Insulation” for below grade rigid insulation as a protection board for water proofing system.
3. Section 07 1716 “Bentonite Composite Sheet Waterproofing” for waterproofing at elevator pits.
4. Section 07 2500 “Weather Barriers” for coordination with foundation waterproofing.
5. Section 31 2323 “Fill” for foundation back fill and compaction requirements.
6. Section 33 4613 “Foundation Drainage” for perimeter foundation drainage system.

1.3 REFERENCES

A. Sheet Membrane
1. ASTM D5385 - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.
2. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
3. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
4. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
5. ASTM D1876 – Standard Test Method for Peel Resistance of Adhesives. (T-Peel Test).
6. ASTM E96 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.
7. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.

B. Molded-Sheet Drainage Panels
1. ASTM D1621 (modified) – Standard Test Method for Compressive Properties of Rigid Cellular Plastics.

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2. ASTM D1777 - Standard Test Method for Thickness of Textile Materials.
3. ASTM D3776 - Standard Test Methods for Mass Per Unit Area (Weight) of Fabric.
4. ASTM D3786 - Standard Test Method for Hydraulic Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method.
5. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
6. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
7. ASTM D4716 – Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
8. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile

1.4 PREINSTALLATION MEETINGS

A. General Contractor
1. Arrange and conduct a preinstallation conference, held at the Project site prior to commencement of the work of this Section. Provide at least 72 hours advance notice to participants prior to convening preinstallation conference.
2. Record discussions of conference including decisions and agreements reached, and disagreements, and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved, and set date for reconvening conference.

B. Attendance
1. Unless otherwise indicated, attendance is required by the General Contractor, the installing subcontractor, the manufacturer’s representative, the Architect and the Architect’s consultant. Attendance by the Owner’s representative and Owner’s insurance representative is optional and at the Owner’s discretion.

C. Items for Review
1. Perform a thorough review of details, materials and methods of installation, and warranties.
2. Review required submittals both completed and yet to be completed.
3. Review and finalize construction schedule related to work, and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review required inspection, testing, certifying, and material usage accounting procedures.
5. Examine the substrate, penetrations, and other preparatory work performed by other trades.
6. Review weather and forecasted weather conditions, and procedures for coping with unfavorable weather conditions, including temporary requirements.
7. Review notification procedures for weather or non-working days.
8. Review observation, protection and repair procedures after installation.

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:

Rebid Documents

1. Product Data: Manufacturer's materials description and installation instructions.
2. Certification: At completion of work, submit waterproofing membrane manufacturer's certification that waterproofing was installed in accordance with manufacturer's requirements.
3. Warranty: Copy of manufacturer's warranty indicating exact obligations, remedies, limitations and exclusions of warranty specified for this Project.

B. Submit in accordance with Section 01 7700 “Closeout Procedures”:
1. Warranty: Manufacturer's fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.

1.6 QUALITY ASSURANCE

A. Installer
1. Certified by manufacturer of membrane waterproofing system, having not less than 5 years of experience in installation of membrane waterproofing and having performed not less than 3 installations of a similar or larger size than requirements of this Project, using membrane waterproofing system specified.

B. Manufacturer’s Authorized Representative or Direct Factory Representative
1. Provide on-site supervision of installation of membrane waterproofing system.
2. Review substrate prepared to receive water repellent application.
3. Upon completion of the installation but prior to covering membrane waterproofing, inspect membrane to ascertain that the waterproofing has been installed in accordance with published specifications and details.

C. Mockups
1. Build for each typical waterproofing installation including vertical, horizontal and footing accessories to demonstrate surface preparation, crack and joint treatments, inside and outside corner treatments, and protection.
   a. Size: 100 sq. ft. in area to be determined between the installer, General Contractor and Architect.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. Source Limitations for Waterproofing System: Obtain waterproofing materials and molded-sheet drainage panels from single source from single manufacturer.

1.7 FIELD CONDITIONS

A. Proceed with work only when weather conditions permit unrestricted use of materials and quality control of the work being installed, complying with the requirements and recommendations of the materials manufacturer.
1. Do not apply sheet membrane waterproofing in wet weather.

Rebid Documents

2. Do not apply sheet membrane waterproofing when atmospheric temperature is below manufacturer's recommended installation temperatures, unless special procedures are used as recommended by the manufacturer.
   a. When necessary, provide manufacturer's recommended low temperature product.

3. Do not apply sheet membrane waterproofing when the temperature of substrate is below manufacturer's recommended temperatures. Provide supplemental heat when necessary.

1.8 WARRANTY

A. Manufacturer's Warranty:
   1. Waterproofing Warranty: Manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.

B. Installer's Special Warranty: In addition to the manufacturer's warranty, the installer shall warrant the sheet membrane waterproofing installation to be free of faults and defects for 2 years against installation defects.
   1. Warranty includes
      a. Removal and reinstallation of new membrane
      b. Removal and reinstallation of drainage panels, and removal and reinstallation of insulation.
      c. Removal and reinstallation of new adjacent surrounding and abutting materials
      d. Excavation and backfilling operations.

   2. Provide warranty in writing on Installer's preprinted letterhead and signed by an executive of the installation company.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Waterproofing System: Obtain waterproofing materials, molded-sheet drainage panels from single source from single manufacturer.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:
   1. Carlisle Coatings & Waterproofing, Inc. (Carlisle)
   2. GCP Allied Technologies (GCP)
   3. Henry Company (Henry)
   4. Polyguard Products, Inc. (Polyguard)
   5. W.R. Meadows, Inc. (W.R. Meadows)

Rebid Documents

2.2 MODIFIED BITUMINOUS SHEET WATERPROOFING

A. Modified Bituminous Sheet Waterproofing (**SWM-1**): Minimum 60-mil nominal thickness, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated on one side to a 4-mil-thick, polyethylene-film reinforcement, and with release liner on adhesive side.

B. Acceptable Manufacturers: Subject to compliance with specified requirements, available products that may be incorporated into the Work include:
   1. Standard Products
      a. CCW MiraDri 860 (Carlisle)
      b. Bituthene 3000 (GCP)
      c. Henry Blueskin WP 200 (Henry, a Carlisle Company)
      d. Polyguard 650 (Polyguard)
      e. Mel-Rol (W.R. Meadows)

   2. Low Temperature Products
      a. CCW MiraDri 860-ULT (Carlisle)
      b. Bituthene 3000 Low Temperature (GCP)
      c. Henry Blueskin WP 200 (Henry, a Carlisle Company)
      d. Polyguard 650LT (Polyguard)
      e. Mel-Rol Low Temp or Mel-Rol XLT (W.R. Meadows)

C. Physical Properties:
   1. Tensile Strength, Membrane: 250 psi minimum; ASTM D412, Die C, modified.
   2. Ultimate Elongation: 300 percent minimum; ASTM D412, Die C, modified.
   3. Low-Temperature Flexibility: Pass at minus 20 deg F; ASTM D1970/D1970M.
   4. Crack Cycling: Unaffected after 100 cycles of 1/8-inch movement; ASTM C836/C836M.
   5. Puncture Resistance: 40 lbf minimum; ASTM E154/E154M.
   6. Water Absorption: 0.2 percent weight-gain maximum after 48-hour immersion at 70 deg F ASTM D570.
   7. Water Vapor Permeance: 0.05 perm maximum; ASTM E96/E96M, Water Method.
   8. Hydrostatic-Head Resistance: 200 feet minimum; ASTM D5385.
   9. Sheet Strips: Self-adhering, rubberized-asphalt strips of same material and thickness as sheet waterproofing.

2.3 AUXILIARY MATERIALS

A. Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.

B. Primer: Liquid primer recommended for substrate and ambient temperature at time of application by sheet waterproofing material manufacturer.

C. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, of trowel grade or low viscosity.

D. Substrate Patching Membrane: Low-viscosity, two-component, modified asphalt coating.

E. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch, predrilled at 9-inch centers.

Rebid Documents

2.4 MOLDED-SHEET DRAINAGE PANELS

A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel without Polymeric Film (**MDP-1**): Composite subsurface drainage panel acceptable to waterproofing manufacturer and consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 sieve laminated to one side of the core, without a polymeric film bonded to the other side; and with a vertical flow rate through the core of 9 to 21 gpm per ft.
1. "Henry MiraDRAIN 6000", (Henry, a Carlisle Company)
2. "Hydroduct 220", (GCP)
3. "Polyguard Flow 15", (Polyguard)
4. "Mel-Drain 5035", (W.R. Meadows)

2.5 INSULATION BOARDS

A. Extruded polystyrene insulation board (**INSUL-1**) for use as a protection board for sheet waterproofing membrane is furnished as specified in Section 07 21 00 “Thermal Insulation”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of waterproofing. Notify the General Contractor of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Manufacturer's Technical Field Representative
1. Examine surface prepared for waterproofing.
2. Examine Drawings, and Specifications affecting the work of this Section.

C. Do not proceed with installation until certification from manufacturer's authorized technical field representative that surfaces to be waterproofed, and Drawings and Specifications, are consistent with the manufacturer's recommendations.

3.2 PREPARATION

A. Do not proceed with this part of the Work until piping, conduit, vents, ducts and other projections through the substrate have been installed.

B. Verify concrete and mortar are cured and surfaces are broom clean, free of voids, loose aggregate, sharp protrusions, curing agents, and other contaminants.

C. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

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D. Fill form tie holes, honeycomb, aggregate pockets, holes, and other voids.

E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D4258.

F. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions.

3.3 INSTALLATION OF MODIFIED BITUMINOUS SHEET WATERPROOFING

A. Install membrane waterproofing system in strict accordance with manufacturer's printed instructions and recommendations.

B. Prime concrete and masonry surfaces as recommended by the manufacturer. Allow primer to set in accordance with manufacturer's printed instructions. Reprime surfaces when installation of sheet membrane is delayed beyond manufacturer's requirements. Do not prime metal surfaces but provide metal surfaces clean, dry, free of grease, oil, dust, and other contaminants. Prime permanent wood surfaces.

C. Apply membrane sheet to prepared and primed surfaces. Lay sheets vertically, overlap each strip a minimum of 2-1/2" and roll down firmly and completely. Extend waterproofing across footing to edge of face and seal raw edges. For wall heights exceeding the length of the membrane sheet, apply successive sheets in shingle fashion beginning at the bottom of the wall and seal lapped edges. For horizontal applications, lay membrane sheets from low points or drains toward high points in shingle fashion.
   1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.

D. Corners, Joints, Cracks, Drains and Protrusions
   1. Prior to installation of full sheets of membrane waterproofing, apply a 12-inch wide (min) membrane strip centered along the axis of inside corners, outside corners and footing-to-wall intersections. Install a 3/4-inch fillet of liquid membrane at all corners
   2. Install sheet strips of width according to manufacturer's written instructions and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch.
   3. Install sheet strips at areas around drains, posts, and other protrusions. Liberally coat with mastic 6" minimum in each direction after application of the membrane.

E. Seal vertical and horizontal edges of sheet waterproofing terminations with mastic.

F. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches beyond repaired areas in all directions.

3.4 INSTALLATION OF INSULATION BOARDS

A. Cover membrane with specified insulation course.

Rebid Documents

1. Install insulation courses horizontally, over waterproofing membrane complying with requirements of membrane waterproofing manufacturer for installation. Cut and fit tight to projections and penetrations.
2. Form a continuous overall protective layer. Butt edges, stagger end joints and cut to fit intersecting construction.
3. Do not apply insulation over waterproofing membrane until membrane has been tested and inspected by manufacturer's technical field representative.
4. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates and reapply waterproofing components.

3.5 INSTALLATION OF MOLDED-SHEET DRAINAGE PANELS

A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, according to manufacturer's written instructions. Use adhesive or another method that does not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.
   1. For vertical applications, install board insulation before installing drainage panels.
   2. Install drainage panel starting at bottom of slope in shingle fashion, and placing dimples of top layer over preceding layer, ensuring drainage channels are aligned and free of obstructions.
   3. Coordinate installation of waterproofing membrane and drainage composite mat with backfill operations specified in Section 31 2323 “Fill” for the building structure.
   4. Where perimeter drain tube is indicated, position the drainage panel between the perimeter drain tube and the insulation/building foundation wall.
   5. Extend a portion of the geotextile fabric from the drainage panel to completely wrap backfill gravel that encases the drain tube to prevent soil intrusion into drainage tube.
   6. At top of foundation wall, extend and wrap additional length of filter fabric behind the top edge of the drainage mat. Terminate top edge of drainage mat and filter fabric system at top of wall to prevent soil intrusion into or behind drainage mat system. Backfill with compacted soil directly against the filter fabric.

3.6 COORDINATION

A. Coordinate installation of waterproofing membrane and drainage panels with installation of foundation drain tube specified in Section 33 4613 “Foundation Drainage”.

3.7 PROTECTION, REPAIR, AND CLEANING

A. Protect waterproofing from damage and wear during remainder of construction period.

B. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 07 1326

Rebid Documents

SECTION 07 1916 – SILANE WATER REPELLENT

1.1 RELATED DOCUMENTS

A. The Drawings the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section includes penetrating water-repellent treatments for the following vertical and horizontal surfaces:
   1. Cast stone.

B. Related Requirements:
   1. Section 04 7200 “Cast Stone Masonry”.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
   1. Product Data: For each type of product including material descriptions and application instructions.
   2. Material Safety Data Sheets (MSDS): For chemicals or compounds incorporated in or used in the performance of the Work.
   3. Warranty: Copy of manufacturer's warranty indicating exact obligations, remedies, limitations and exclusions of warranty specified for this Project.

B. Submit the following in accordance with Section 01 7700 “Closeout Procedures”:
   1. Warranty: Fully executed manufacturer's warranty indicating exact obligations, remedies limitations and exclusions of warranty specified for this Project.

1.4 QUALITY ASSURANCE

A. Applicator:
   1. Approved by the manufacturer of the water repellent, have not less than 3 years’ experience in the application of water repellents, and not less than 3 applications of a similar or larger size than the requirements of this Project, using a water repellent similar to that specified.
   2. Do not proceed with the work until such review has been done and additional preparation has been completed and approved by the representative.
   3. Do not proceed with the work until sample area has been approved.

B. Manufacturer's Authorized Representative or Direct Factory Representative: Review substrate prepared to receive water repellent application.

Rebid Documents

C. Sample Panel: Apply water repellent to a sample area of each material to be treated, minimum 4 feet square, where designated by Architect or Owner, before proceeding with application.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to job site in sealed containers with manufacturer's name and type of materials identified.

B. Store materials in area protected from rain and standing water, where temperatures are not less than -10 degrees F. or over 100 degrees F., with adequate ventilation, unless otherwise authorized by manufacturer.

1.6 FIELD CONDITIONS

A. Environmental Requirements:
   1. Do not proceed with application of materials if ambient temperature is below -10 degrees and if ice or frost are covering the substrate.
   2. Do not proceed with application if ambient temperature and surface temperature exceeds 100 degrees F.
   3. Do not proceed with application of materials in rainy conditions or if heavy rain is anticipated within 2 hours after application. Material may be applied on damp substrates.

B. The surface should be sufficiently dry to observe the spray pattern during application.

1.7 WARRANTY

A. Contractor: Warrant water repellent materials to be free of faults and defects in accordance with General Conditions except extend warranty by manufacturer's 10-year material and labor warranty.
   1. Provide warranty in writing on manufacturer's preprinted letter head and signed by the Contractor and water repellent manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain water repellents from a single source manufacturer.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:
   1. ChemMasters, Inc.
   2. The Euclid Chemical Company.
   3. Evonik Industries AG
   4. Precora Corporation.
   5. Prosoco, Inc.
   6. Sika Corporation.

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2.2 PENETRATING WATER REPELLENTS

A. Silane/Siloxane-Blend, Penetrating Water Repellent: Clear, silane and siloxane blend with 400 g/L or less of VOCs.
   1. “PowerSeal SS Plus” (ChemMasters).
   2. “Chemstop WB Regular, Regular” (Euclid Chemical).
   3. “Protectosil AQUA-TRETE 40” (Evonik).
   4. “KlereSEAL 920-W (Precora Corporation).
   5. "Sure Klean Weather Seal Siloxane PD " (Prosoco).
   6. “Sikagard-740 W” (Sika).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.
   1. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements. Check moisture content in three representative locations by method recommended by manufacturer.
   2. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
   3. Verify that required repairs are complete, cured, and dry before applying water repellent.

B. Test pH level according to water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. New Construction and Repairs: Allow concrete and other cementitious materials to age before application of water repellent, according to repellent manufacturer's written instructions.

B. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions and as follows:
   1. Cast Stone: Remove oil, curing compounds, laitance, and other substances that inhibit penetration or performance of water repellents according to ASTM E1857.

C. Protect adjoining work, including mortar and sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live vegetation.

D. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.

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E. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
   1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

3.3 APPLICATION

A. Apply water repellent in strict accordance with manufacturer's instructions and recommendations.

B. Apply water repellent with low pressure airless fan spray coarse nozzle, flooding surface to obtain uniform coverage, from the bottom up, allowing material to run down 6" to 8" below the spray pattern.

C. Apply water repellent materials at the following coverage rates, or as otherwise required to meet warranty provisions:
   1. Cast Stone: Do not exceed 125 sq. ft. per gallon.

3.4 CLEANING

A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application, as approved by Architect.

B. Comply with manufacturer's written cleaning instructions.

END OF SECTION 07 1916

Rebid Documents

SECTION 07 2100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General, Supplementary Conditions, Special Conditions and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Extruded polystyrene foam-plastic board insulation (XPS).
2. Foil Faced polyisocyanurate foam-plastic board insulation.
3. Glass-fiber blanket insulation.
4. Mineral-wool blanket insulation used as draft stopping.
5. Loose-fill insulation.

B. Related Requirements:
1. Section 03 3300 “Cast-in-Place Concrete” for installation of board insulation beneath concrete slabs.
2. Section 06 1600 "Sheathing” for foam-plastic board sheathing installed directly over wood or steel framing.
3. Section 07 1326 "Self-Adhering Sheet Waterproofing" for installation of below grade rigid foundation insulation as protection board for waterproofing membrane..
4. Section 07 1700 “Bentonite Waterproofing” for insulation installed as a protection board for bentonite sheet waterproofing.
5. Section 07 2600 “Vapor Retarders”.
6. Section 07 8400 “Firestopping”.
7. Section 07 5323 "Single-Ply Membrane Roofing" for insulation specified as part of roofing construction.
8. Section 09 2900 "Gypsum Board" for sound attenuation blanket used as acoustic insulation.

1.3 REFERENCES

A. ASTM International (ASTM): Latest edition, unless otherwise specified.
1. ASTM C209, Standard Test Methods for Cellulosic Fiber Insulating Board
2. ASTM C356, Standard Test Method for Linear Shrinkage of Preformed High-Temperature Thermal Insulation Subjected to Soaking Heat
3. ASTM C518, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
4. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
5. ASTM C612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation

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6. ASTM C665, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
7. ASTM C795, Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel
8. ASTM C1104, Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation
9. ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials
10. ASTM E96, Standard Test Methods for Water Vapor Transmission of Materials
11. ASTM E136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: Manufacturer's materials description and recommended installation instruction for each type insulation, adhesive and fastener.
   2. Test Reports: Manufacturers shall maintain a third-party certification program which supports through testing that the molded polystyrene insulation satisfies model building code mandatory requirements for foam plastics.
      a. Test reports shall be dated within 24 months of the product manufacture date.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver insulation to the Project site prior to the time of its installation.

B. Store under cover and above ground. Do not allow insulation to become wet, soiled, and covered with ice and snow. Protect rigid insulation from exposure to high ambient temperatures, excessive exposure to sunlight, and contact with hot surfaces and materials (in excess of the safe temperature below the melting point indicated by the manufacturer).

C. Handle and store material to prevent damage. Immediately remove from the Project site damaged and otherwise unsuitable materials, when so determined.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION (XPS)

A. Extruded Polystyrene Board Insulation, Type IV (**INSUL-1**): ASTM C578, Type IV, 25-psi minimum compressive strength; unfaced for installation at perimeter foundation and interior slabs.
   1. Acceptable Manufacturers: Subject to compliance with specified requirements, available manufacturers offering products that may be incorporated into the Work include:
      a. Dow Chemical Company (The)
      b. DuPont
      c. Kingspan Insulation LLC, a division of Kingspan Group, PLC
      d. Owens Corning

Rebid Documents

2. Thermal Resistance: R-value of 5.0 (k-value of 0.20) per inch at a mean temperature of 75 degrees Fahrenheit.
3. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
4. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
5. Thickness: As indicated on Drawings.

2.2 POLYISOCYANURATE FOAM-PLASTIC BOARD INSULATION

A. Polyisocyanurate Board Insulation, Foil Faced **(INSUL-1A)**: ASTM C1289, foil faced, Type I, Class 1 or 2 for installation at underside of wood floor trusses over crawlspace and within modular ceiling / floor cassettes at exterior walls as indicated on the Drawings.
1. Acceptable Manufacturers: Subject to compliance with specified requirements, available manufacturers offering products that may be incorporated into the Work include:
   a. Dow Chemical Company (The)
   b. DuPont
   c. Kingspan Insulation LLC, a division of Kingspan Group, PLC
   d. Owens Corning

2. Thermal Resistance: Minimum R-value of 6.0 per inch at a mean temperature of 75 degrees Fahrenheit.
3. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.3 GLASS-FIBER BLANKET INSULATION

A. Glass-Fiber Blanket Insulation, Unfaced **(INSUL-2)**: ASTM C665, Type I; passing ASTM E136 for combustion characteristics.
1. Acceptable Manufacturers: Subject to compliance with specified requirements, available manufacturers offering products that may be incorporated into the Work include:
   a. CertainTeed Corporation
   b. Knauf Insulation, Inc.
   c. Johns Manville
   d. Owens Corning

2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
4. Combustion: Passing ASTM E136.
5. Thickness: As indicated on Drawings.

2.4 MINERAL-WOOL BLANKET INSULATION

A. Mineral-Wool Blanket Insulation, Unfaced **(INSUL-3**): ASTM C665, Type I (blankets without membrane facing); consisting of fibers; passing ASTM E136 for combustion characteristics.
1. Acceptable Products and Manufacturers: Subject to compliance with specified requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
   a. “Safe ‘n’ Sound” (Rockwool Group)
   b. “Sound & Fireblock” (Johns Manville).

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c. "Thermafiber SAFB (Sound Attenuation Fire Blanket)" (Thermafiber, Inc, an Owens Corning company)

2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.5 LOOSE-FILL INSULATION

A. Glass-Fiber Loose-Fill Insulation (**INSUL-4**): ASTM C764, Type I for pneumatic application.
1. Acceptable Manufacturers: Subject to compliance with specified requirements, available manufacturers offering products that may be incorporated into the Work include:
a. CertainTeed Corporation
b. Knauf Imsulation, Inc.
c. Johns Manville
d. Owens Corning

2. Flame-Spread Index: Not more than 5 when tested in accordance with ASTM E84.
3. Smoke-Developed Index: Not more than 5 when tested in accordance with ASTM E84.
Installed Depth: As indicated on Drawings.

2.6 ACCESSORIES

A. Insulation for Miscellaneous Voids:
1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
2. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.

B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

C. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Notify the Contractor of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to

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existing conditions, follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Review safety precautions, operating procedures and environmental requirements with the Contractor and manufacturer's representative before proceeding with the installation.

3.3 INSTALLATION, GENERAL

A. Install insulation system according to manufacturer’s instructions, including compliance with instructions for safety, preparation, and application of products.
   1. Comply with local code requirements, and 2021 IECC requirements indicated on Table 402.4.2 Air Barrier and Insulation Inspection Component Criteria.
   2. Do not install insulation on top of or within 3 inches of recessed light fixtures unless the fixtures are approved for such use.
   3. Install exterior thermal envelope insulation for framed walls in substantial contact and in continuous alignment with building envelope vapor retarder or air barrier.
   4. Install vapor retarder air barrier in dropped ceilings and soffits in substantial alignment with insulation.
   5. Within exterior wall framing, install insulation between pipes and backside of sheathing. Cut insulation material as required to fit around wiring and plumbing.
   6. Where plumbing fixtures are located on exterior walls, install insulation and vapor retarder air barrier between units and exterior.
   7. Insulation Thicknesses: Refer to Drawings.

3.4 INSTALLATION OF SLAB INSULATION

A. Refer to Section 03 3000 “Cast-in-Place Concrete” for installation of building interior under slab-on-grade insulation.

3.5 INSTALLATION OF FOUNDATION WALL INSULATION

A. Install insulation boards on vertical surfaces using spot adhesive as necessary to temporarily hold insulation in place, butting panels tightly together.

B. Where insulation is installed as insulation and protection board over the membrane waterproofing system, comply with the requirements of the membrane waterproofing manufacturer for installation.
   1. Refer to Section 07 1326 “Self-Adhered Sheet Waterproofing” for installation of below grade rigid foundation insulation installed at waterproofing system.

3.6 INSTALLATION OF FOIL FACED INSULATION

A. General:
   1. Install sheet reflective insulation according to ASTM C727.

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2. Install sheet radiant barriers according to ASTM C1744.

B. At Crawl Spaces:
1. Install foil faced board insulation at the underside of floor trusses over crawlspaces with the foil side facing the interior (toward the subfloor decking).
2. Tape seams with tape approved by the foil faced board insulation manufacturer to provide an air tight system.
3. Cover the board insulation with approved thermal barrier to meet the required fire rating.

C. At Modular Ceiling and Floor Cassettes:
1. Install foil faced board insulation at uninsulated areas at the perimeter rim joists between the floor and ceiling joists of the modular cassettes. Install with the foil side facing the interior.
2. Tape seams with tape approved by the foil faced board insulation manufacturer to provide an air tight system.

3.7 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug friction-fit between edges of insulation and adjoining abutting construction. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.
2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

C. Loose-Fill Insulation: Apply according to ASTM C1015 and manufacturer's written instructions.
1. Level horizontal applications to uniform thickness as indicated on the Drawings, lightly settle to uniform density, but do not compact excessively.

3.8 PROTECTION

A. Protect installed insulation and vapor barriers from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

Rebid Documents

3.9 CLEANING

A. Remove protective plastic film coverings from adjacent materials.

B. Clean unintended sealant materials, equipment, and fixtures.

C. Remove damaged materials, equipment, and fixtures if sealant cannot be cleaned without blemish and install new materials, equipment, and fixtures identical to item before damage occurred.

D. Remove waste materials and recycle empty containers and packaging.

END OF SECTION 07 2100

Rebid Documents

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Rebid Documents

SECTION 07 3113 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings the provisions of the Contract, including the General Conditions, Supplementary Conditions, Special Conditions and Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Glass-fiber-reinforced asphalt shingles.
2. Underlayment materials including ice and water shield.
3. Ridge vents.
4. Metal flashing and trim.

B. Related Requirements:
1. Section 07 7100 “Roof Specialties” for roof edge drainage systems.

1.3 REFERENCES

A. ASTM International (ASTM)
1. ASTM A 653/A 653M – Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron-Alloy-Coated (Galvannealed) by the Hot-Dip Process
2. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
3. ASTM B 370 – Standard Specification for Copper Sheet and Strip for Building Construction.
4. ASTM D 225 – Standard Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules.
5. ASTM D 226 – Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
6. ASTM D 1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials used as Steep Roofing Underlayment for Ice Dam Protection.
7. ASTM D 3018 – Standard Specification for Class A Shingles Surfaced with Mineral Granules.
8. ASTM D 3161 – Standard Test Method for Wind Resistance of Asphalt Shingles (Fan-Induced Method).
9. ASTM D 3462 – Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
10. ASTM D 4586 – Standard Specification for Asphalt Roof Cement, Asbestos-Free.
11. ASTM D-4869 – Standard Specification for Asphalt-Saturated Organic Felt Shingle Underlayment Used in Roofing.

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12. ASTM D 6757 – Standard Specification for Inorganic Underlayment for Use with Steep Slope Roofing Products.
13. ASTM D7158 – Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method)
14. ASTM E 108 – Standard Test Methods for Fire Test of Roof Coverings
15. ASTM G 21 – Determining Resistance of Synthetic Polymers to Fungi

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
1. Product Data: For the following:
   a. Asphalt shingles.
   b. Underlayment materials.
   c. Ridge vents.
   d. Asphalt roofing cement.
   e. Elastomeric flashing sealant.

2. Manufacturer’s Installation Instructions: Provide published instructions that indicate preparation required and installation procedures.

3. Shop Drawings: Indicate specially configured metal flashing, jointing methods and locations, fastening methods and locations and installation details as required by project conditions indicated.
4. Product Test Reports: For each type of asphalt shingle and underlayment product indicated, for tests performed by a qualified testing agency.
5. Certificate of Compliance: Provide Certificate of Compliance from an independent laboratory indicating that the asphalt fiberglass shingles made in normal production meet or exceed the requirements of the following:
   a. ASTM E 108/UL 790 Class A Fire Resistance
   b. ASTM D 3161/D 7158/UL 997 Wind Resistance.
   c. ASTM D 3462

6. Maintenance Data: For asphalt shingles to include in maintenance manuals.

7. Warranties
   a. Materials warranties.
   b. Roofing Installer's warranty.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Asphalt Shingles: 100 sq. ft. of each type and in each color and blend, in unbroken bundles.

Rebid Documents

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An installer having not less than 5 years' experience in installation of specified roofing system and not less than 3 installations of a similar or larger size that requirements of this Project.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture in accordance with manufacturer's written instructions.

B. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double-stack rolls.

C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing Work is not in progress.

D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit product installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.
   1. Install self-adhering, polymer-modified bitumen sheet underlayment within the range of ambient and substrate temperatures recommended in writing by manufacturer.

1.9 WARRANTY

A. Materials Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Manufacturing defects.

   2. Materials Warranty Period: 30 years from date of Substantial Completion, prorated, with first 10 years non-prorated.
   3. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds of up to 110 mph for 15 years from date of Substantial Completion.
   4. Algae-Resistance Warranty Period: Asphalt shingles will not discolor for 15 years from date of Substantial Completion.

Rebid Documents

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements specified, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
   1. CertainTeed
   2. GAF
   3. Owens-Corning

2.2 SOURCE LIMITATION

A. Obtain each type of product from single source from single manufacturer.

2.3 PERFORMANCE REQUIREMENTS

A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance in accordance with ASTM E108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

B. Wind Resistance: Provide asphalt shingles that comply with requirements of ASTM D3161/D3161M, Class F, and with ASTM D7158/D7158M, Class H.

2.4 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

A. Impact-Resistant, Laminated-Strip Asphalt Shingles: ASTM D3462/D3462M, laminated, multi-ply overlay construction; glass-fiber reinforced, mineral-granule surfaced, and self-sealing; with impact resistance complying with UL 2218, Class 4.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide CertainTeed Corporation “Landmark Premium AR” asphalt fiberglass shingles or comparable product.
      a. Strip Size: Manufacturer's standard.
      b. Weight: 300 pounds per square (100 square feet)
      c. Algae Resistance: Granules resist algae discoloration.
      d. Color and Blends: As selected by Architect from manufacturer's full range.

B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.5 UNDERLAYMENT MATERIALS

A. Synthetic Underlayment: UV-resistant polypropylene, polyolefin, or polyethylene polymer fabric with surface coatings or treatments to improve traction underfoot and abrasion resistance; evaluated and documented to be suitable for use as a roof underlayment under applicable codes by a testing and inspecting agency acceptable to authorities having jurisdiction.

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1. Basis-of-Design Product: Subject to compliance with requirements, provide CertainTeed Corporation “DiamondDeck” underlayment or comparable product.

B. Ice & Water Shield: Self-Adhering, Polymer-Modified Bitumen Sheet: ASTM D1970/D1970M, minimum 40-mil-thick sheet; glass-fiber-mat-reinforced, polymer-modified asphalt; with slip-resistant top surface and release backing; cold applied.
1. Basis-of-Design Product: Subject to compliance with requirements, provide CertainTeed Corporation “Vycor Ice & Water Shield” waterproofing underlayment comparable product.

2.6 RIDGE VENTS

A. Rigid Ridge Vent: Manufacturer's standard, rigid-section, high-density, UV-stabilized plastic ridge vent for use under ridge shingles.
1. Basis-of-Design Product: Subject to compliance with requirements, provide CertainTeed Corporation “Ridge Vent, 12” Filtered” or comparable product.
2. Minimum Net Free Area: 18 sq. in. per linear foot.
3. Width: 12 inches
4. Features:
a. Nonwoven geotextile filter strips.
b. External deflector baffles.

2.7 ACCESSORIES

A. Asphalt Roofing Cement: ASTM D4586/D4586M Type II, asbestos free.

B. Elastomeric Flashing Sealant: ASTM C920, Type S, Grade NS, one-part, non-sag, elastomeric polymer sealant; of class and use classifications required to seal joints and remain watertight; recommended in writing by manufacturer for installation of flashing systems.

C. Roofing Nails: ASTM F1667, aluminum, stainless steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch-diameter, sharp-pointed, with a 3/8- to 7/16-inch-diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through sheathing less than 3/4 inch thick.
1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

D. Underlayment Nails: Aluminum, stainless steel, or hot-dip galvanized-steel wire nails with low-profile metal or plastic caps, 1-inch-minimum diameter.

2.8 METAL FLASHING AND TRIM

A. Comply with requirements in Section 07 6200 "Sheet Metal Flashing and Trim."
1. Sheet Metal: Aluminum, prefinished.

B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item unless otherwise specified in this Section or indicated on Drawings.

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1. Apron Flashings: Fabricate with lower flange a minimum of 4 inches over and 4 inches beyond each side of downslope asphalt shingles and 6 inches up the vertical surface.
2. Step Flashings: Fabricate with a headlap of 2 inches and a minimum extension of 4 inches over the underlying asphalt shingle and up the vertical surface.
3. Cricket and Backer Flashings: Fabricate with concealed flange extending a minimum of 18 inches beneath upslope asphalt shingles and 6 inches beyond each side of chimney or vertical element and 6 inches above the roof plane.
4. Counterflashing: Fabricate to cover 4 inches of base flashing measured vertically; and in lengths required so that no step exceeds 8 inches and overall length is no more than 10 feet.
   a. Provide metal receivers for installation.
5. Open-Valley Flashings: Fabricate from metal sheet not less than 24 inches wide in lengths not exceeding 10 feet with 1-inch-high, inverted-V profile water diverter at center of valley and equal flange widths of not less than 11 inches.
   a. Hem flange edges for fastening with metal cleats.
   b. Add stiffening ribs in flashings to promote drainage.
6. Drip Edges: Fabricate in lengths not exceeding 10 feet with minimum 2-inch roof-deck flange and 1-1/2-inch fascia flange with 3/8-inch drip at lower edge.
7. Vent-Pipe Flashings: ASTM B749, Type L51121, at least 1/16 inch thick. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof, and extending at least 4 inches pipe onto roof.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
   1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
   2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provisions have been made for flashings and penetrations through asphalt shingles.
   3. Verify that vent stacks and other penetrations through roofing are installed and securely fastened.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF UNDERLAYMENT MATERIALS

A. Comply with asphalt shingle and underlayment manufacturers' written installation instructions and with recommendations in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof

Rebid Documents

Systems" applicable to products and applications indicated unless more stringent requirements are specified in this Section or indicated on Drawings.

B. Synthetic Underlayment:
   1. Install on roof deck parallel with and starting at the eaves.
      a. Lap sides and ends as recommended in writing by manufacturer, but not less than 2 inches for side laps and 6 inches for end laps.
      b. Stagger end laps between succeeding courses at interval recommended in writing by manufacturer, but not less than 72 inches.
      c. Fasten with underlayment nails in accordance with manufacturer's written instructions.
      d. Cover underlayment within period recommended in writing by manufacturer.

   2. Install in single layer on roofs sloped at 4:12 and greater.
   3. Install in double layer on roofs sloped at less than 4:12.
   4. Install synthetic underlayment on roof deck not covered by self-adhering, polymer-modified bitumen sheet unless otherwise specified in this Section or indicated on Drawings.
      a. Lap sides of underlayment over self-adhering sheet not less than 4 inches in direction to shed water.
      b. Lap ends of underlayment not less than 6 inches over self-adhering sheet.

   5. Terminate synthetic underlayment extended up not less than 4 inches against sidewalls, curbs, chimneys, and other roof projections.

C. Self-Adhering, Polymer-Modified Bitumen Sheet (Ice & Water Shield): Install, wrinkle free, on roof deck.
   1. Comply with low-temperature installation restrictions of underlayment manufacturer.
   2. Install lapped in direction that sheds water.
      a. Lap sides not less than 4 inches.
      b. Lap ends not less than 6 inches, staggered 24 inches between succeeding courses.
      c. Roll laps with roller.

   3. Eaves: Extend from edges of eaves 36 inches beyond interior face of exterior wall.
   4. Rakes: Extend from edges of rakes 36 inches beyond interior face of exterior wall.
   5. Valleys: Extend from lowest to highest point 18 inches on each side of centerline.
   6. Hips: Extend 18 inches on each side.
   7. Ridges: Extend 36 inches on each side without obstructing continuous ridge vent slot.
   8. Sidewalls: Extend 18 inches beyond sidewalls and return vertically against sidewalls not less than 4 inches.
   9. Dormers, Chimneys, Skylights, and Other Roof-Penetrating Elements: Extend 18 inches beyond penetrating elements and return vertically against penetrating elements not less than 4 inches.
   10. Roof-Slope Transitions: Extend 18 inches on each roof slope.
   11. Cover underlayment within seven days.

D. Metal-Flashed, Open-Valley Underlayment: Install two layers of minimum 36-inch-wide underlayment centered in valley.
   1. Use same underlayment as installed on field of roof.
   2. Stagger end laps between layers at least 72 inches.

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3. Lap ends of each layer at least 12 inches in direction that sheds water, and seal with asphalt roofing cement.
4. Fasten each layer to roof deck with underlayment nails located as far from valley center as possible and only to extent necessary to hold underlayment in place until installation of valley flashing.
5. Lap roof-deck underlayment over first layer of valley underlayment at least 6 inches.

3.3 INSTALLATION OF METAL FLASHING AND TRIM

A. Install metal flashings and trim to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."
1. Install metal flashings in accordance with recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
2. Bed flanges of metal flashings using asphalt roofing cement or elastomeric flashing sealant.

B. Apron Flashings: Extend lower flange over and beyond each side of downslope asphalt shingles and up the vertical surface.

C. Step Flashings: Install with a headlap of 2 inches and extend over underlying shingle and up the vertical face.
1. Install with lower edge of flashing just upslope of, and concealed by, butt of overlying shingle.
2. Fasten to roof deck only.

D. Cricket and Backer Flashings: Install against roof-penetrating elements extending concealed flange beneath upslope asphalt shingles and beyond each side.

E. Counterflashings: Coordinate with installation of base flashing and fit tightly to base flashing. Lap joints a minimum of 4 inches secured in a waterproof manner.
1. Install in reglets or receivers.

F. Open-Valley Flashings: Install centered in valleys, lapping ends at least 8 inches in direction that sheds water. Fasten upper end of each length to roof deck beneath overlap.
1. Secure hemmed flange edges into metal cleats spaced 12 inches apart and fastened to roof deck.
2. Adhere minimum 9-inch-wide strips of self-adhering, polymer-modified bitumen sheet to metal flanges and to underlying self-adhering sheet, polymer-modified bitumen sheet.
a. Place strips parallel to and over flanges so that they will be just concealed by installed shingles.

3. Provide a closure at the end of the inverted-V profile of the valley metal to minimize water and ice infiltration.

G. Rake Drip Edges: Install over underlayment materials and fasten to roof deck.

H. Eave Drip Edges: Install below underlayment materials and fasten to roof deck.

I. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

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3.4 INSTALLATION OF ASPHALT SHINGLES

A. Install asphalt shingles in accordance with manufacturer's written instructions and recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."

B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip with tabs removed at least 7 inches with self-sealing strip face up at roof edge.
   1. Extend asphalt shingles 1/2 inch over fasciae at eaves and rakes.
   2. Install starter strip along rake edge.

C. Install first and remaining courses of laminated asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

D. Fasten asphalt shingle strips with a minimum of four roofing nails, but not less than the number indicated in manufacturer's written instructions for roof slope and design wind speed indicated on Drawings and for warranty requirements specified in this Section.
   1. Locate fasteners in accordance with manufacturer's written instructions.
   2. When ambient temperature during installation is below 50 deg F, hand seal self-sealing asphalt shingles by applying asphalt roofing cement spots between course overlaps after nailing the upper course.

E. Open Valleys: Cut and fit asphalt shingles at open valleys, trimming upper concealed corners of shingle strips.
   1. Maintain uniform width of exposed open valley from highest to lowest point.
   2. Extend shingle a minimum of 4 inches over valley metal.
   3. Set valley edge of asphalt shingles in a 3-inch-wide bed of asphalt roofing cement.
   4. Do not nail asphalt shingles to metal open-valley flashings.

F. Ridge Vents: Install continuous ridge vents over asphalt shingles in accordance with manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.

G. Hip and Ridge Shingles: Maintain same exposure of cap shingles as roofing-shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds.
   1. Fasten with roofing nails of sufficient length to penetrate sheathing.
   2. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

END OF SECTION 07 3113

Rebid Documents

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Rebid Documents

SECTION 07 4643 – ENGINEERED WOOD SIDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Engineered wood siding.
2. Engineered wood panels.
3. Engineered wood trim.
4. Accessories including flashing,

B. Related Requirements
1. Section 04 2613 “Masonry Veneer” for coordination with brick veneer.
2. Section 04 7200 “Cast Stone Masonry” for coordination with cast stone sills.
Section 06 1000 “Rough Carpentry”.
3. Section 06 1600 “Sheathing” for coordination with exterior sheathing.
4. Section 076200 "Sheet Metal Flashing and Trim" for metal flashing and trim installed with siding.
5. Section 07 9200 “Joint Sealants”.

1.3 DEFINITIONS

A. Treated Engineered Wood: Engineered wood products manufactured for exterior use treated with manufacturer's proprietary process to resist fungal decay and termite damage.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
1. Product Data: Manufacturer’s materials description and recommended installation instructions for each type of siding, trim and panels including fasteners and sealants.
a. Installation methods, including nailing patterns.
b. Siding manufacturer's requirements for products to be installed by others.
c. Maintenance and periodic inspection recommendations.

2. Samples for Verification: For the following products, of sizes indicated, to verify color and finish selected.
a. 6-inch-long samples of engineered wood siding and trim.

Rebid Documents

3. Product Test Reports: For each product, APA tests performed by a qualified testing agency.
4. Evaluation Reports: For engineered wood siding system, from ICC-ES in compliance with AC321.
5. Sample warranties

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For siding to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: Furnish extra materials, from the same production run, to Owner that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Engineered wood siding: 100 sq. ft. of each type, finish, and color in unbroken bundles.
2. Engineered wood panels: 100 sq. ft. of each type, finish, and color in unbroken bundles.
3. Engineered wood trim: 24 linear feet of each type, finish, and color in unbroken bundles.
4. Manufacturer’s metal pan flashing: 25 of each type.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An installer having not less than 5 years’ experience in installation of specified siding system and not less than 3 installations of a similar or larger size that is similar in the scope requirements of this Project.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components and other manufactured items so as not to be damaged or deformed. Package components for protection during transportation and handling with manufacturer's name and identification of products.

B. Unload, store, and erect components in a manner to prevent bending, warping, twisting, and surface damage. Maintain slip sheet until piece is being prepared for installation.

C. Store components on flat surfaces clear of the ground. Store under roof or covered with suitable weathertight and ventilated covering, and in accordance with manufacturers' written instructions.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit siding installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.

Rebid Documents

1.10 WARRANTY

A. Manufacturer's Trim and Siding Limited Warranty: Manufacturer agrees to repair or replace components of engineered wood siding against substrate damage within specified warranty period.
   1. Substrate Limited Warranty: 50 years from date of installation and written to Owner on date of Substantial Completion
      a. Substrate damage is defined as deterioration, buckling, or overlay issues caused by manufacturing defects or termite damage.
      b. Hail damage is defined as cracks or chips in the surface overlay or dent in the substrate of the product that exceeds 3/8 inch in length or diameter and is caused by hail.

   2. Limited Warranty for Finish: 15 years from date of installation and communicated to Owner on date of Substantial Completion.
      a. Finish damage is defined as, under normal conditions and use, discoloring due to chalking, peeling, blisters, cracks; erosion to the extent of exposing the substrate; or yellowing or color fade change from light exposure not to exceed 5 Delta E CMC (2:1).

B. Accessories and Non-Standard Applications Limited Warranty: Manufacturer agrees to repair or replace components of manufacturer's accessories and when used in approved non-standard applications against substrate and finish damage within specified warranty period.
   1. Limited Warranty Period for Substrate and Finish: 10 years from date of installation and communicated to Owner on date of Substantial Completion

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Louisiana-Pacific Corporation; LP® SmartSide® Siding and Trim with ExpertFinish or comparable product by one of the following:
   1. KWP Engineered Wood Products.

B. Requests for substitutions will be considered in accordance with the provisions in Document 00 2600 “Procurement Substitution Procedures (During the Procurement/Bidding Phase).

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide engineered wood siding system tested to APA PS2 and PRP 108, in compliance with IBC Section 2308.9.3, Table 2308.9.3(5), and certified to be without permanent deformation or failure of structural members in accordance with design wind velocities for Project geographic location and probability of occurrence based on data from wind velocity maps provided in ASCE 7 and as approved by authorities having jurisdiction (AHJ).
   1. Design Loads: As indicated on Drawings.

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B. Structural: Test in accordance with FL TAS 202 as follows:
   1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
   2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
   3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

C. Surface-Burning Characteristics: Provide engineered wood siding system with a Class C flame-spread index of 76 to 200 or less and a smoke-developed index of 0 to 450 or less when tested in accordance with ASTM E84 and UL 723.

D. Thermal Movement Performance: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.

E. Certified Wood: Wood products to be labeled in accordance with the AF&PA's Sustainable Forestry Initiative or be certified and labeled in accordance with the standards of the Programme for Endorsement of Forest Certification.

F. Certified Wood: Wood products to be certified in accordance with the American Tree Farm System's "AFF Standard," the AF&PA's Sustainable Forestry Initiative, or the standards of the Programme for Endorsement of Forest Certification.

G. Composite Wood Products: Products to be made using ultra-low-emitting formaldehyde resins as defined in the California Air Resources Board's "Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products" or made with no added formaldehyde.

H. Composite Wood Products: Products to be made without added urea formaldehyde.

2.3 ENGINEERED WOOD NICKEL GAP SIDING

A. Treated Engineered Wood Nickel Siding: Exterior-grade, resin-saturated, paper overlay laminated to EPA-registered zinc-borate-treated engineered wood siding with acrylic finish. Siding to have locking flanges and grooves to conceal fasteners and having exposed edges sealed for moisture resistance.

B. Treated Engineered Wood Nickel Gap Siding **WNS-1**:
   1. LP® Smartside® Nickel Gap Siding
      a. Thickness: 0.495 inches (1/2 inch nominal).
      b. Width: 7.88 inches (8 inches nominal).
      c. Reveal: 7 inches.
      d. Length: 16 ft
      e. Color and Texture: **Cavern Steel; Cedar Texture**

C. Treated Engineered Wood Nickel Gap Siding **WNS-2**:
   1. LP® Smartside® Nickel Gap Siding
      a. Thickness: 0.495 inches (1/2 inch nominal).
      b. Width: 7.88 inches (8 inches nominal).

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c. Reveal: 7 inches.
d. Length: 16 ft.
e. Color and Texture: **Sand Dunes; Cedar Texture**

2.4 ENGINEERED WOOD PANEL SIDING (FOR USE AT ROOF EAVE FASCIAS)

A. Treated Engineered Wood Panel Siding: Exterior-grade, resin-saturated, paper overlay laminated to EPA-registered zinc-borate-treated engineered panel wood siding with acrylic finish.

B. Treated Engineered Wood Panel Siding **WPS-1:**
1. LP® Smartside® 76 Series Panel, No Groove
a. Thickness: 0.354 inches (7/16 inches nominal).
b. Width: 48.56 inches (48 inches nominal).
c. Length(s): 8 ft., 9 ft. and 10 ft.
d. Color and Texture: **Sand Dunes; Cedar Texture.**

2.5 ENGINEERED WOOD VENTED SOFFIT PANELS

A. Treated Engineered Wood Vented Soffit Panel: Exterior-grade, resin-saturated, paper overlay laminated to EPA-registered zinc-borate-treated engineered wood soffit panels with built-in vents to promote attic airflow. Exposed edges beveled and sealed for moisture resistance. Manufacturer's acrylic finish.

B. Treated Engineered Wood Vented Soffit Panel **WVS-1**:
1. LP® Smartside® 38 Series Vented Soffit
a. Thickness: 0.4354 inches (3/8 inches nominal).
b. Width(s): 23.94 inches (24” nominal) and 11.94 inches (12” nominal).
c. Length: 16 ft.
d. Color and Texture: **Sand Dunes; Cedar Texture.**

2.6 TRIM

A. Treated Engineered Wood Trim: Provide manufacturer's standard trim, angles, and similar components at corners, transitions, and rough openings meeting the performance requirements.

B. Treated Engineered Wood Trim **WT-1**:
1. LP® Smartside® 540 Series Trim
a. Thickness: 0.970inches (1 inch nominal).
b. Width: 1.50 inches.
c. Length: 16 ft.
d. Color and Texture: **Cavern Steel; Cedar Texture.**

C. Treated Engineered Wood Trim **WT-2**:
1. LP® Smartside® 540 Series Trim
a. Thickness: 0.970inches (1 inch nominal).
b. Width: 1.50 inches.
c. Length: 16 ft.

d. Color and Texture: **Sand Dunes; Cedar Texture.**

D. Treated Engineered Wood Trim **WT-3**:
1. LP® Smartside® 540 Series Trim
   a. Thickness: 0.970 inches (1 inch nominal).
   b. Width: 3.50
   c. Length: 16 ft.
   d. Color and Texture: **Cavern Steel; Cedar Texture.**

E. Treated Engineered Wood Trim **WT-4**:
1. LP® Smartside® 540 Series Trim
   a. Thickness: 0.970 inches (1 inch nominal).
   b. Width: 3.50
   c. Length: 16 ft.
   d. Color and Texture: **Sand Dunes; Cedar Texture.**

F. Treated Engineered Wood Trim **WT-5**:
1. LP® Smartside® 540 Series Trim
   a. Thickness: 0.970 inches (1 inch nominal).
   b. Width: 5.50 inches
   c. Length: 16 ft.
   d. Color and Texture: **Sand Dunes; Cedar Texture.**

G. Treated Engineered Wood Trim **WT-6**:
1. LP® Smartside® 540 Series Trim
   a. Thickness: 0.970 inches (1 inch nominal).
   b. Width: 7.21 inches
   c. Length: 16 ft.
   d. Color and Texture: **Sand Dunes; Cedar Texture**

2.7 MOUNTING BLOCKS

A. Mounting Blocks: Mounting blocks used for mounting light fixtures, electrical outlets, cameras, faucets and alike. Exterior-grade, phenolic resin-saturated, paper overlay laminated to EPA-registered zinc-borate preservative-treated engineered wood siding. Exposed edges sealed for moisture resistance. Manufacturer's standard acrylic latex primer finish.

B. LP® Smartside® J-Block
1. Thickness: 0.970 inch total thickness.
2. Width: 7.21 inches.
3. Length: 7.21 inches.
4. Edges: Square.
5. Color and Texture: Matching the color and texture of the field of siding in which the J-block is installed.

C. LP® Smartside® Mini-Splits
1. Thickness: 0.970 inch (24.6 mm) total thickness.
2. Width: 7.21 inches.
3. Length: 6.75 inches.
4. Edges: Square.

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5. Color and Texture: Matching the color and texture of the field of siding in which the Mini-Split is installed.

2.8 ACCESSORIES

A. Fasteners: Hot-dipped galvanized nails, with 0.092-inch diameter shank, in length required to penetrate wood structural panels and structural framing a minimum of 1-1/2 inches, as recommended in writing by composite siding system manufacturer suitable for and compatible with system materials. Larger diameter fasteners may be required depending on wind pressure, wind speed, and wind exposure category limitations for structures in product approvals PR-N124 or ESR-1301.

B. Sealant: ASTM C920, minimum Class 25 sealant.

C. Flashing
1. Pan Flashing for Nickel Gap Siding: LP® SmartFlash® Pan Flashing.
   a. Provide prefinished metal pan flashing at butt joints of nickel gap siding.
   b. Size: 4” x 10”.

2. Flashing for Window and Door Heads:
   a. Provide flashing at window and door heads and where indicated on Drawings. Refer to Section 076200 “Sheet Metal Flashing and Trim” for sheet metal flashing.
   b. Material: Aluminum.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions with Installer present, for compliance with requirements for installation tolerances, engineered wood siding system supports, and other conditions affecting performance of the Work.
1. Examine wall framing to verify that support members and anchorage have been installed within alignment tolerances required by engineered wood siding manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by engineered wood siding manufacturer.
   a. Verify that air and moisture barrier has been installed over sheathing substrate to prevent air infiltration and water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install engineered wood siding in accordance with manufacturer's written instructions in orientation, sizes, and locations indicated. Anchor engineered wood siding and other components of the Work securely in place.
1. Shim or otherwise plumb substrates receiving engineered wood siding system.

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2. Flashing:
   a. Flash engineered wood siding at perimeter of all openings.
   b. Flash nickel gap siding at butt joints with prefinished metal pan flashing.
   c. Install flashing and trim as engineered wood siding work proceeds.

3. Locate and space fasteners in uniform vertical and horizontal alignment.
4. Seal engineered wood substrates exposed to weather to prevent moisture intrusion and water buildup.
   a. Seal around penetrations.
   b. Seal each exposed cut of siding and trim. It is not recommended to field spray-applied coatings on cuts.
   c. Seal each butt joint from weather by covering with joint moldings, sealant, or factory prefinished ends.

5. Align bottoms of engineered wood siding.
6. Provide weathertight escutcheons for pipe-and conduit-penetrating engineered wood siding system.

B. Metal Protection: Where dissimilar metal flashings contact each other or corrosive substrates, protect against galvanic action as recommended in writing by siding manufacturer.

C. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

D. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level. Install work with laps, joints, and seams that are permanently watertight.
   1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.

E. Replace engineered wood siding components that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 4643

Rebid Documents

SECTION 07 5323 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements Sections, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Adhered ethylene-propylene-diene-terpolymer (EPDM) roofing system.
2. Sheet Base flashing.
3. Metal termination bars.
4. Substrate board (thermal barrier).
5. Vapor retarder.
6. Roof insulation.
7. Cover board.
8. Roof traffic pads.

B. Related Requirements:
1. Section 06 1000 "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 06 1600 "Sheathing" for wood-based, structural-use roof deck panels.
3. Section 07 2100 "Thermal Insulation" for insulation beneath the roof deck.
4. Section 07 6200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
5. Section 07 7100 "Roof Specialties" for manufactured copings.
6. Section 07 7200 “Roof Accessories” for roof curbs, equipment supports, roof hatches, pipe and duct supports, pipe portals and preformed flashing sleeves.
7. Section 07 9200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
8. Divison 22 “Plumbing” for plumbing penetrations at roof.
9. Division 23 “Heating, Ventilating and Air Conditioning (HVAC).

1.3 REFERENCES

A. ASTM International (ASTM): Latest editions, unless otherwise specified.
1. ASTM C208, Standard Specification for Cellulosic Fiber Insulating Board
2. ASTM C1289, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board1
3. ASTM C1303, Test Method for Estimating the Long-Term Change in the Thermal Resistance of Unfaced Rigid Closed Cell Plastic Foams by Slicing and Scaling Under Controlled Laboratory Conditions
4. ASTM C1177, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing

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5. ASTM D471, Standard Test Method for Rubber Property-Effect of Liquids
6. ASTM D573, Standard Test Method for Rubber
7. ASTM D751, Standard Test Methods for Coated Fabrics
8. ASTM D1149, Standard Test Method for Rubber Deterioration-Surface Ozone Cracking in a Chamber
9. ASTM D1204, Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature
10. ASTM D2137, Standard Test Methods for Rubber Property-Brittleness Point of Flexible Polymers and Coated Fabrics
11. ASTM D6878-08e1, Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing

B. National Roofing Contractors Association (NRCA): Latest edition.
1. The NRCA Roofing and Waterproofing Manual.

C. Society for Protective Coatings (SSPC): Latest editions.
1. SSPC-Paint 20, Zinc-Rich Primers (Type I, Inorganic, and Type II, Organic)
2. SSPC-Paint 29, Zinc Dust Sacrificial Primer, Performance-Based

D. International Code Council
1. International Building Code (IBC), 2021 Edition.

E. Underwriters Laboratory (UL)
1. ANSI/UL 1897 - Standard Test Method for Uplift Tests for Roof Covering Systems.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Pre-roofing Conference
1. General Contractor
a. Arrange and conduct a pre-roofing conference, held prior to commencement of the work of this Section. Provide at least 72 hours advance notice to participants prior to convening pre-roofing conference.
b. Record discussions of conference including decisions and agreements reached, and disagreements, and furnish copy of record to each party attending. If substantial disagreements exist at the conclusion of conference, determine how disagreements will be resolved, and set date for reconvening conference.

2. Required Attendance: General Contractor, roofing subcontractor, roofing manufacturers' technical field representative, plumbing, HVAC and electrical subcontractors, steel and concrete deck erectors, Architect.
a. Additional Attendees: Include sheet metal fabricator/installer and manufactured metal coping fabricator in pre installation conference.
b. Additional Attendees at their discretion: Owner's representative, and Owner's insurance representative.

3. Perform a thorough review of details, materials and methods of installation, and warranties.
a. Include review of all sheet metal fabrication and manufactured metal coping installation in pre installation conference.

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4. Examine deck substrates, roof drains, curbs, penetrations, and other preparatory work performed by other trades.
5. Review required submittals both completed and yet to be completed.
6. Review and finalize construction schedule related to roofing work, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
7. Review required inspection, testing, certifying, and material usage accounting procedures.
8. Review weather and forecasted weather conditions, and procedures for coping with unfavorable weather conditions, including temporary roofing requirements.
9. Review notification procedures for weather or non-working days.

B. Inspection: Upon completion of the installation, an inspection shall be made by roof membrane manufacturer's representative, to determine that the roofing system has been installed in accordance with published specifications and final Shop Drawings.

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 1300 “Submittal Procedures.”
1. Product Data: Manufacturer's materials description, including technical information, installation instructions, and recommendations for each type of roofing product required. Include data substantiating that materials comply with specified requirements.
2. Shop Drawings
   a. Shop drawings shall be required prior to the pre-roofing conference and for final inspection of the warranted roof. Shop drawings shall be made by the roof membrane manufacturer, or authorized representative. Shop drawings shall be approved and assigned a number by membrane manufacturer. Manufacturer's standard pre-printed details are NOT acceptable as shop drawings.
      1) Free-hand sketches are NOT acceptable as shop drawings.
      2) Roof membrane shop drawings shall include: Outline of roof and roof size, roof slopes, seam layout, location, and type of penetrations, perimeter, and penetration details, special details, and bill of material.
      3) Tapered roof insulation system shop drawings shall include: Layout of units with valleys, hips, ridges, crickets, and other variations. Identify each insulation board, show sequence of laying roof slopes and thicknesses of insulation; show details at drains, curbs, walls, and roof terminations.

   b. Approved installer shall supply roof membrane manufacturer with a record shop drawing for final inspection. Record shop drawings shall be approved and given a shop drawing number by roof membrane manufacturer.

3. Certifications
   a. List of at least 2 similar completed installations using the elastic sheet roofing system specified for this Project if requested by the Architect.
   b. At completion of work, submit roofing and insulation manufacturer's certification that roofing system was installed in accordance with manufacturer's requirements.

4. Warranties
   a. Sample copy of roofing manufacturer's intended warranty for this Project, stating obligations, remedies, limitations, and exclusions of warranty.

Rebid Documents

B. Submit in accordance with Section 01 7700 “Closeout Procedures.”
   1. Fully executed warranties stating obligations, remedies, limitations, and exclusions of warranty.

1.6 QUALITY ASSURANCE

A. Installed System: Comply with laws, ordinances, rules, and regulations of the public authorities having jurisdiction over the Work.

B. All materials furnished shall be the product of one manufacturer or a product purchased by and approved by the prime manufacturer.

C. Roofing Contractor/Installer
   1. Certified by the manufacturer of the single-ply roofing systems.
   2. Have a minimum of 5 years of experience installing the roofing system specified, and not less than 3 installations of a similar or larger size than the requirements of this Project, using the single-ply roofing systems specified.
   3. Engage experienced and qualified Subcontractors to perform any part of the roofing work which roofing contractor is not equipped or qualified to perform properly with its own forces.
   4. Comply with the latest published specifications of the insulation manufacturer for the installation of the primary roofing materials as a total system.
   5. Comply with the latest printed recommendations of the membrane and flashing manufacturers for the handling and the particulars of joining together the respective roofing materials.
   6. Installer's Field Supervision: Provided a full time Supervisor/Foreman on job site during installation of all phases of the roofing system.
      a. Supervisor/Foreman: Maintain proper supervision of the workmen. A copy of the roofing specification shall be in the possession of the Supervisor/Foreman, and on the roof at all times.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer’s unopened containers identified to show name, brand, type. Comply with manufacturer’s instructions for storage and handling.

B. Do not deliver insulation to the Project site prior to the time of its installation. Handle and store material to prevent damage. Store under cover and above ground. Damaged and otherwise unsuitable material, when so determined, shall be immediately removed from the Project site.

C. Do not allow insulation to become wet, soiled or covered with ice or snow. Protect rigid insulation from exposure to high ambient temperatures, excessive exposure to sunlight. Cover factory protective-wrapped insulation with waterproof tarps.

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1.8 FIELD CONDITIONS

A. Proceed with roofing work only when weather conditions are in compliance with manufacturer's recommended limitations and when conditions will permit the work to proceed in accordance with requirements and the manufacturer's recommendations.

B. Do not apply insulation and roofing materials when the roof deck is wet, and when frost, ice and snow is present on the deck. Allow surfaces to thoroughly dry before commencing work after rain, snow, and other conditions causing dampness.

1.9 WARRANTY

A. EPDM Membrane
1. Installing Contractor: Warrant single-ply roofing system to be free of faults and defects in accordance with the General Conditions, except extend warranty by manufacturer's Twenty (20) year NDL, non-prorated written warranty of water tightness.
a. Include coverage for Increased Wind Speed Attachment Requirements as specified.
b. Manufacturer's warranty shall be fully paid by the roofing contractor.
c. Warranty shall cover both labor and material, including that required to repair roof leaks caused by standing water on roofing membrane.
d. Warranty shall be signed by the installer and roof manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Elastic Sheet Roofing Membrane Materials: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
1. Carlisle Syntec Systems, a Division of Carlisle Building Materials
2. Elevate, a brand of Holcim (formerly Firestone Building Products Co.)
3. Henry, a Carlisle Company
4. Johns Manville
5. Versico, a division of Carlisle Construction Materials

B. As a basis of quality and detailing, "Carlisle SynTec Systems" roofing details are shown on the Drawings. Should referenced manufacturer's details be revised (updated) prior to installation and should details of other acceptable manufacturers differ from those shown and be required to obtain manufacturer's warranty, such details shall be submitted for review, and following approval, be incorporated in the Work at no additional cost to the Owner.

C. For Other System Components: As specified herein.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing system and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to

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defective manufacture, fabrication, installation, or other defects in construction. Roofing and flashings shall remain watertight.

1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272, or the Resistance to Foot Traffic Test in FM Approvals 4470.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

C. Structural Load Requirements: IBC Chapter 16 and Chapter 26 of ASCE / SEI 7.
1. Basic Wind Speed: 120 mph
2. Surface Roughness Category: C
3. Exposure C
4. Risk Category III
5. Internal Pressure Coefficient: 0.18
6. Wind Uplift Pressures: 33 psf

D. Wind Uplift Resistance:
1. Roof assembly shall comply with IBC Table 1609.6.2 when tested in accordance with ANSI/UL 1897 for the roof covering assembly.
2. Increased Wind Speed Attachment Requirements: Provide mechanical attachment and adhering of roofing system where specified for a Peak Gust Wind Speed of 75 mph.

2.3 ETHYLENE-PROPYLENE-DIENE-TERPOLYMER (EPDM) ROOFING

A. EPDM Sheet: ASTM D4637/D4637M, Type I, nonreinforced, EPDM sheet.
1. Minimum physical properties unless noted otherwise.
   a. Thickness: 60 mils, nominal.
   b. Exposed Face Color: Black.
   c. ASTM D412
      1) Tolerance on Nominal Thickness: ± 10 percent
      2) Tensile Strength: 1305 psi
      3) Elongation: 300 percent
   d. ASTM D624
      1) Tear Resistance: 150 pli
   e. ASTM D1149
      1) Ozone Resistance: No cracks
   f. ASTM D573 Heat Aging
      1) Tensile Strength: 1205 psi
      2) Elongation: 200 percent (minimum)
      3) Tear Resistance: 125 pli (minimum)
   g. ASTM D746
      1) Brittleness Temperature: -75 degree F.(maximum)

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h. ASTM D471
   1) Resistance to Water: 4 percent (minimum)

i. ASTM D297
   1) Sheet Composition
      a) Weight percent of polymer that is EPDM: 100 percent (minimum)
      b) Weight percent of sheet that is EPDM polymer: 30 percent (minimum)

j. ASTM G155
   1) Resistance to Outdoor (Ultraviolet) Weathering: No Cracks or Crazing

2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
   1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.

B. Sheet Base Flashing: 60-mil-thick EPDM, partially cured or cured, according to application.

C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer, of same material and color as sheet membrane.

D. Bonding Adhesives, Primers and Sealants: Manufacturer's standard adhesive, splice tape, primers, lap sealant, water-block seal, pourable sealer and night sealant (quick setting).

E. Metal Termination Bars: Manufacturer's standard, 1” x 0.098” thick (minimum) 6063 aluminum bar, pre-drilled or punched for fasteners at 6” o.c. or 12” o.c. and free of burrs and sharp edges.

F. Galvanized Primer and Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 or SSPC-Paint 29, and compatible with top coats, and having a VOC content as calculated according to 40 CFR 59, Subpart D (EPA method 24).

2.5 SUBSTRATE BOARDS (THERMAL BARRIER)

A. Substrate Board: ASTM C1177/C1177M, glass-mat, water-resistant gypsum board or ASTM C1278/C1278M, fiber-reinforced gypsum board.
   1. Subject to compliance with requirements of the membrane manufacturer, products that may be incorporated into the Work include the following:
      a. “GlasRoc Roof Board” (CertainTeed Corporation).
      b. “Dens-Deck Roof Board” (Georgia Pacific Corporation).
      c. “Gold Bond DEXcell FA Glass Mat Roof Board” (National Gypsum Company).
      d. “Securock Brand Ultralite Coated Glass-Mat Roof Board” (USG Corporation).

   2. Thickness: 1/2 inch.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate panel to roof deck.

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2.6 VAPOR RETARDER

A. Self-Adhering-Sheet Vapor Retarder: ASTM D1970/D1970M, polyethylene film laminated to layer of rubberized asphalt adhesive, minimum 40-mil-total thickness; maximum permeance rating of 0.1 perm; cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor retarder manufacturer.
   1. Subject to compliance with requirements of the membrane manufacturer, products that may be incorporated into the Work include the following:
      a. “VapAir Seal 725TR Air and Vapor Barrier (Carlisle).
      b. “V-Force Vapor Barrier Membrane” (Elevate).
      c. “Blueskin SA” (Henry)
      d. “JM Vapor Barrier SA” (Johns Manville).

2.7 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by EPDM roof membrane manufacturer.

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
   1. Density: 2pcf
   2. Maximum R-Value: 5.56 per inch determined in accordance with ASTM C1303
      a. Insulation R-Value shall be based on the total thickness of insulation multiplied by the maximum R-Value specified above.

   3. 1” minimum starting thickness, unless otherwise specified or indicated on Drawings.

C. Tapered Insulation: Provide factory-tapered insulation boards matching roof insulation, sloped at 1/4 inch per foot unless otherwise indicated.
   1. Tapered isocyanurate insulation board shall be factory cut boards not exceeding 4 feet x 4 feet with top surfaces cut to provide a continuous slope.
   2. Thickness per layer shall not exceed 6”.
   3. Where overall thickness of tapered insulation exceeds 6” provide 2 feet x 4 feet starter blocks and 4 feet x 4 feet filler blocks to assure the staggering of vertical joints both ways between layers of foam.
   4. Miters: Factory fabricated, consisting of 2 diagonally cut blocks with edges matching in thickness with the abutting blocks.
   5. Identify each piece of tapered insulation board in accordance with Shop Drawings.
   6. Maintain manufacturer’s recommended minimum starting thickness for the insulation board.

D. Drainage “Saddles” or “Crickets”: Isocyanurate as specified above uniformly tapered at 1/4” per foot. Provide protection board over saddles and crickets.

E. Compressible Foam Insulation Expansion Joint Filler: ASTM D1752, Type II, closed cell foam insulation composed of a synthetic foam of isomeric polymers with vinyl wrap on one side conforming to the following standards:
   1. ASTM D545 using a 1/2" thick test specimen.
   2. Compression: 13 psi
   3. Extrusion: 0.1"

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4. Resiliency Recovery: 99.21 percent
5. Water Absorption by Volume: 0.246 percent
6. "CERAMAR Flexible Foam Expansion Joint Filler", (W. R. MEADOWS)
7. Thickness, width, and face dimensions required to completely fill expansion joint when foam material is folded in half and placed in the expansion joint.

F. Insulation Adhesives: Manufacturer's recommended cold fluid-applied or spray-applied, full coverage, construction grade, insulation adhesive used for attaching isocyanurate and expanded polystyrene insulation boards to each other and attaching protection board to insulation board.

2.8 COVER BOARD

A. Cover Board: ASTM C1177/C1177M, glass-mat, water-resistant gypsum substrate, or ASTM C1278/C1278M, fiber-reinforced gypsum board.
1. Subject to compliance with requirements of the membrane manufacturer, products that may be incorporated into the Work include the following:
a. "GlasRoc Roof Board" (CertainTeed Corporation).
b. "Dens-Deck Roof Board" (Georgia Pacific Corporation).
c. "Gold Bond DEXcell FA Glass Mat Roof Board" (National Gypsum Company).
d. "Securock Brand Ultralite Coated Glass-Mat Roof Board" (USG Corporation).

B. Thickness: 1/2 inch.

2.9 FASTENERS

A. Insulation Materials: As recommended by the manufacturer, but not less than factory-coated steel fasteners and metal or plastic plates complying with corrosion resistance provisions in FM Approvals 4470, designed for fastening insulation boards to roof deck.

B. For Lumber:
1. Lumber to Lumber: Cement coated or annular thread nails with minimum 1-1/4" penetration into adjoining member.
2. Plywood to Lumber: Ring shank or annular thread nails with minimum 1-1/4" penetration into adjoining member.
3. Lumber or Plywood to Concrete or Masonry: Tapcon or Gripcon anchors, minimum 1/4" diameter with 1" penetration; minimum 300 lb. per anchor installed withdrawal resistance. Other corrosion resistant drilled-in type masonry anchors may be used if equivalent in pull-out strength.

2.10 ROOF TRAFFIC PADS

A. Flexible Roof Traffic Pads: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick and acceptable to roofing system manufacturer.

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PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
   1. Notify the General Contractor of conditions detrimental to performance of the Work and recommend corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Roof Drains:
   1. Coordinate with roof drain installing subcontractor for setting proper elevation of new roof drains and roof drain leaders to new insulation heights.
   2. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 INSTALLATION OF ROOFING, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions, SPRI's Directory of Roof Assemblies assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.4 INSTALLATION OF SUBSTRATE BOARD (THERMAL BARRIER)

A. Install substrate board with long joints in continuous straight lines, with end joints staggered not less than 24 inches in adjacent rows.
   1. Tightly butt substrate boards together.
   2. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.
   3. Fasten substrate board to roof deck according to recommendations in SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29.

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3.5 INSTALLATION OF VAPOR RETARDER

A. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 and 6 inches, respectively.
   1. Extend vertically up parapet walls and projections to a minimum height equal to height of insulation and cover board.
   2. Seal laps by rolling.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.6 INSTALLATION OF INSULATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Installation Over **Wood Panel** Decking:
   1. Base Layer
      a. Install base layer of insulation with end joints staggered not less than 12 inches in adjacent rows.
      b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
      c. Make joints between adjacent insulation boards not more than 1/4 inch in width.
      d. Fill gaps exceeding 1/4 inch with insulation.
      e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
      f. Mechanically attach base layer of insulation and substrate board using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to wood panel decks.
         1) Fasten insulation according to requirements in SPRI's Directory of Roof Assemblies for specified Wind Uplift Load Capacity.
   2. Upper Layers
      a. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.
      b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
      c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
      d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
      e. Fill gaps exceeding 1/4 inch with insulation.
      f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
      g. Adhere each layer of insulation to substrate using adhesive according SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
         1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

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3.7 INSTALLATION OF COVER BOARDS

A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.
   1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
   2. Cut and fit cover board tight to nailers, projections, and penetrations.
   3. Adhere cover board to substrate using adhesive according to SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

3.8 INSTALLATION OF ADHERED ROOF MEMBRANE

A. General: Comply with manufacturer's instructions for the installation of Fully-Adhered Membrane, including seaming, self-flashing, reinforcement (if any) and surfacing. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

B. Placement: Loose-lay roof membrane over the cover board substrate and allow to relax before installing. Place adjoining membrane sheets in the same manner, overlapping edges appropriately to provide for the minimum splice width in accordance with the manufacturer’s warranty requirements

C. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.

D. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeters.

E. Cut membrane sheets to the maximum size possible, in order to minimize seams and to accommodate contours of roof deck and proper drainage across shingled sheet laps.

F. Tape Seam Installation: Lap membrane sheets and bond joints using seaming tape recommended by the manufacturer.
   1. Clean and prime both faces of splice areas, apply splice tape.
   2. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
   3. Test lapped edges with probe to verify seam weld continuity.
   4. Apply lap sealant and seal exposed edges of roofing terminations.

G. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

H. Bond sheets to vertical surfaces at edges of the membrane and at penetrations through the membrane. Bond or clamp the membrane into rain drainage work as indicated. Apply matching adhesive tape where recommended to reinforce the attachment.

I. Water cut-offs shall be made by extending the membrane beyond the insulation and setting the end of the membrane in 4" of plastic roofing cement. Temporary water cut-offs shall be

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removed prior to proceeding with the next work period, by cutting off that portion of the membrane that has been in contact with plastic roofing cement and disposing of it.

J. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.9 SECUREMENT OF ADDITIONAL MEMBRANE

A. Secure membrane at the perimeter of each roof level, roof section, expansion joint, curb, skylight, interior wall, penthouse, etc., at any angle change which exceeds 2" in one horizontal foot, and at other penetrations in accordance with manufacturer’s details. Secure additional membrane with manufacturer’s seaming tapes or fastener plates. Securement may be provided by pressure-sensitive reinforced universal securement strip or seam fastening plates.

3.10 INSTALLATION OF SUPPORTS FOR PIPES, DUCTS AND EQUIPMENT

A. Where required to support pipe runs, ductwork and equipment, supports shall be separated from roof membrane to prevent damage to membrane.

B. Fully adhere a protective sheet of minimum 60 mil roof membrane directly below each support or foot used to support pipes, ducts and equipment. Neatly cut sheet membrane and ensure the size is large enough to extend beyond the edges of supports at least 4" in all directions unless otherwise recommended by the roof membrane manufacturer.

3.11 INSTALLATION OF BASE FLASHING

A. Install flashing at intersections of roof with sloped and vertical surfaces, roof interruptions and penetrations in accordance with manufacturer's currently published drawings, and final Shop Drawings, consistent with job conditions.

B. Extend base flashing up vertical surfaces not less than 8" and onto the horizontal roof surface not less than 3", except as otherwise indicated on Drawings.

C. Terminate edges of membrane with continuous aluminum bar fastened 12" o.c. with predrilled expansion anchors and screws. Seal edge with lap sealant and water-block seal.

3.12 INSTALLATION OF ROOF TRAFFIC PADS

A. Flexible Roof Traffic Pads: Install walkway products according to manufacturer's written instructions.
   1. Install flexible walkways at the following locations:
      a. Perimeter of each rooftop unit.
      b. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
      c. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.

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d. Locations indicated on Drawings.
e. As required by roof membrane manufacturer's warranty requirements.

2. Provide 6-inch clearance between adjoining pads.
3. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.13 FIELD QUALITY CONTROL

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.

B. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.14 MANUFACTURER'S INSPECTIONS

A. Roofing Manufacturer's Technical Field Representative: Provide the following during installation of the roofing system:
1. Start of Installation: Upon commencement of installation of roofing system, roof manufacturer's technical field representative shall conduct an inspection to determine that roofing system is being installed in accordance with published specifications, final shop drawings and manufacturer's instruction.
2. Inform Contractor as to progress, and quality of work as observed.
3. Prepare report, and submit copies to the installer, Contractor, and the Architect.
4. Report to Contractor in writing, copied to Architect, any failure or refusal of the roofing installer to correct unacceptable practices called to the installer's attention.
5. Final Report: Upon completion of the installation, prepare final report, confirming, based on manufacturer's observation and tests, that manufacturer has observed no application procedures in conflict with specifications, manufacturer's requirements, and final shop drawings, other than those previously reported and corrected.
6. Submit inspection report to Contractor for inclusion in contract closeout documents.

3.15 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
1. in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of

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the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

END OF SECTION 07 5323

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SECTION 07 7100 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:

1. Manufactured copings.
2. Roof-edge drainage systems.
3. Reglets and counterflashings.

B. Related Requirements:
1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 07 3113 “Asphalt Roofing” for rake and eave drip edges.
3. Section 076200 "Sheet Metal Flashing and Trim" for custom- and site-fabricated sheet metal flashing and trim.
4. Section 077200 "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.
5. Section 079200 "Joint Sealants" for field-applied sealants between roof specialties and adjacent materials.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
1. Product Data: Manufacturer's materials description, dimensions, profiles, finishes and installation instructions for factory fabricated metal configurations.
2. Shop Drawings: For roof specialties.
   a. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.
   b. Include details for expansion and contraction; locations of expansion joints, including direction of expansion and contraction.
   c. Indicate profile and pattern of seams and layout of fasteners, cleats, clips, and other attachments.
   d. Detail termination points and assemblies, including fixed points.
   e. Include details of special conditions.

3. Samples: Two 3” x 6” paint samples of manufacturer’s prefinished sheet metal or actual prefinished metal samples if no color is specified.

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4. Warranties: Sample copy of manufacturer's and installer's intended warranties for this Project, stating obligations, remedies, limitations and exclusions of warranty.

B. Submit in accordance with Section 01 7700 "Closeout Procedures."
1. Warranties: Fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer offering products meeting requirements that are SPRI ES-1 tested to specified design pressure.

B. Source Limitations: Obtain each type of sheet metal fabrication from a single fabricator, using sheet metal from a single source manufacturer of prefinished sheet metal coil stock materials.

C. Installer: A firm having not less than 5 years' experience, and not less than 3 successful installations of similar or larger size than the requirements of this Project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.

B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof-specialty installation.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify profiles and tolerances of roof-specialty substrates by field measurements before fabrication and indicate measurements on Shop Drawings.

B. Coordination: Coordinate roof specialties with flashing, trim, and construction of parapets, roof deck, roof and wall panels, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.7 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 30 years from date of Substantial Completion.

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B. Special Wind Warranty for Manufactured Copings
   1. Warranted in wind conditions up to 120 mph with a 20 year wind warranty.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
   1. Structural Load Requirements: Chapter 35 of the NFPA 5000, and Chapter 26 of ASCE/SEI 7.
      a. Basic Wind Speed: 110 mph
      b. Surface Roughness Category: D
      c. Exposure C
      d. Risk Category II
      e. Internal Pressure Coefficient: 0.18
      f. Wind Uplift Pressures: 33 psf

   2. Wind Uplift Resistance:
      a. Increased Wind Speed Attachment Requirements: Provide manufactured roof coping system for a Peak Gust Wind Speed of 75 mph.

B. SPRI Wind Design Standard: Manufacture and install copings tested according to SPRI ES-1 and capable of resisting the following design pressures:
   1. Roof Edge Flashing System: Tested on horizontal surfaces, exceed horizontal design wind pressure calculated in accordance with the ANSI/SPRI Standard ES-1 Test Method RE-2.
   2. Coping System: Tested simultaneously on horizontal and vertical surfaces and exceed horizontal and vertical design wind pressure calculated in accordance with the ANSI/SPRI Standard ES-1 Test Method RE-3.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F , material surfaces.

2.2 MANUFACTURED COPINGS

A. Acceptable Manufacturers: Subject to compliance with requirements specified, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
   1. ATAS International, Inc.
   2. Drexel Metals Inc.
   3. Hickman Edge Systems, LLC
   4. Metal-Era, LLC

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5. Pac-Clad Petersen
6. Versico

B. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet, concealed anchorage; with corner units, end cap units, and concealed splice plates capable of draining water with finish matching coping caps.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Hickman Edge Systems, LLC “PermaSnap Coping” or comparable product.
      a. Coping Material: G90 galvanized carbon steel sheets, complying with ASTM A653, factory primed and finished, and protected with strippable plastic film.
      b. Coping Width: Refer to wall sections and details on the Drawings.
         1) Coping Widths Up to 12" Wide: 24-gage (minimum) steel
         2) Coping Widths Greater Than12" Wide: 22-gage (minimum) steel.

      c. Outside Face Height: Refer to wall sections and details on the Drawings.
      d. Inside (Rear) Face Height: Refer to wall sections and details on the Drawings.
      e. Cover Lengths: 12'-0" with matching concealed joint splice plates.
      f. Finish: Two-coat fluoropolymer
      g. Color: As selected by Architect from manufacturer's full range.

   2. Splice Plates: Same material, shape, finish, and color as fascia covers; manufacturer's standard width with integral gutter to channel water back to roof.
      a. Width: 6 inches.

   3. Compression Type Anchor Cleats and Supports: 12" wide, 20-gage (minimum) G90 galvanized steel spring-loaded, locking-anchoring cleats, and manufacturer's standard method of supporting system with integral drainage system.

2.3 ROOF-EDGE DRAINAGE SYSTEMS

A. Acceptable Manufacturers: Subject to compliance with requirements specified, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
   1. ATAS International, Inc.
   2. Drexel Metals Inc.
   3. Hickman Edge Systems, LLC
   4. Holcim Elevate (formerly Firestone).
   5. K&M Sheet Metal & Gutter Supply
   6. Metal-Era, LLC
   7. Pac-Clad Petersen
   8. Versico

B. Gutters: Manufactured in uniform section lengths not exceeding 12 feet with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch above front edge. Furnish flat-stock gutter straps, gutter brackets, expansion joints, and expansion-joint covers fabricated from same metal as gutters.
   1. Zinc-Coated Steel: Nominal 24 gauge thickness.
   2. Gutter Profile: Style I according to SMACNA's "Architectural Sheet Metal Manual."
   3. Corners: Factory mitered and mechanically clinched and sealed watertight.
   4. Gutter Supports: 1” wide internal gutter brackets; mill finish aluminum at 24” o.c.

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5. Concealed splice plates matching finish and color of gutter; 6” wide.

C. Downspouts: Open-face rectangular complete with mitered elbows, manufactured from the following exposed metal. Furnish with metal hangers, from same material as downspouts, and anchors.
1. Material: Zinc-Coated Steel: Nominal 24 gauge thickness.
2. Formed Lengths: 12’-0”
3. Seams: Double seam lock.
4. Attachment straps: Wrapped around front face of downspout; 3 straps per 12’-0” length of downspout.

D. Parapet Scuppers: Manufactured with closure flange trim to exterior, 4-inch-wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof.
1. Zinc-Coated Steel: Nominal 24 gauge thickness.

E. Conductor Heads: Manufactured conductor heads, each with flanged back and stiffened top edge, and of dimensions and shape indicated, complete with outlet tube that nests into upper end of downspout, exterior flange trim.
1. Zinc-Coated Steel: Nominal 24 gauge thickness.

F. Zinc-Coated Steel Finish: Two-coat fluoropolymer.
1. Color: As selected by Architect from manufacturer's full range.

2.4 REGLETS AND COUNTERFLASHINGS

A. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
1. Zinc-Coated Steel: Nominal 24 gauge thickness.
2. Corners: Factory mitered and mechanically clinched and sealed watertight.
3. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.

B. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches and in lengths not exceeding 12 feet designed to snap into reglets and compress against base flashings with joints lapped, from the following exposed metal:
1. Zinc-Coated Steel: Nominal 24 gauge thickness.

C. Accessories:
1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.
2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

D. Zinc-Coated Steel Finish: Two-coat fluoropolymer.
1. Color: As selected by Architect from manufacturer's full range.

Rebid Documents

2.5 MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 coating designation.

2.6 UNDERLAYMENT MATERIALS

A. Polyethylene Sheet: 6-mil-thick polyethylene sheet complying with ASTM D 4397.

B. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

C. Slip Sheet: Rosin-sized building paper, 3-lb/100 sq. ft. minimum.

2.7 MISCELLANEOUS MATERIALS

A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
   1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
   2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A153/A153M or ASTM F2329.

B. Elastomeric Sealant: ASTM C920, elastomeric polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

C. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.

D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.8 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Coil-Coated Galvanized-Steel Sheet Finishes:
   1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with ASTM A755/A755M and coating and resin manufacturers' written instructions.

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a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
b. Concealed Surface Finish: Apply pretreatment and manufacturer's standard acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Examine walls, roof edges, and parapets for suitable conditions for roof specialties.

C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage where applicable, and securely anchored.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.
1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
2. Provide uniform, neat seams with minimum exposure of solder and sealant.
3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
4. Torch cutting of roof specialties is not permitted.
5. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
1. Coat concealed side of uncoated aluminum and stainless steel roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.

C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
1. Space movement joints at a maximum of 12 feet with no joints within 18 inches of corners or intersections unless otherwise indicated on Drawings.

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2. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

D. Fastener Sizes: Use fasteners of sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.

E. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.

F. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F.

3.3 INSTALLATION OF COPINGS

A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.

B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at manufacturer's required spacing that meets performance requirements.

3.4 INSTALLATION OF ROOF-EDGE DRAINAGE-SYSTEM

A. Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.

B. Gutters: Join and seal gutter lengths. Allow for thermal expansion. Attach gutters to firmly anchored gutter supports spaced not more than 24 inches apart. Attach ends with rivets and seal with sealant to make watertight. Slope to downspouts.
1. Install gutter with expansion joints at locations indicated but not exceeding 50 feet apart. Install expansion-joint caps.

C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch away from walls; locate fasteners at top and bottom and with 3 fasteners minimum for every 12 feet of downspout length.
1. Connect downspouts to underground drainage system indicated.

D. Parapet Scuppers: Install scuppers through parapet where indicated. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
1. Primary scuppers with conductor head:
a. Anchor scupper closure trim flange to exterior wall and seal or solder to scupper.
b. Loosely lock front edge of scupper with conductor head.

2. Overflow scuppers without a conductor head:

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a. Anchor scupper closure trim flange to exterior wall and seal or solder to scupper.

3. Conductor Heads: Anchor securely to wall with elevation of conductor top edge 1 inch below scupper discharge.

3.5 INSTALLATION OF REGLETS AND COUNTERFLASHINGS

A. Coordinate installation of reglets and counterflashings with installation of base flashings.

B. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches over top edge of base flashings.

C. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches and bed with butyl sealant. Fit counterflashings tightly to base flashings.

3.6 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.

B. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 07 7100

Rebid Documents

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Rebid Documents

SECTION 07 7200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Roof curbs.
2. Equipment supports.
3. Roof hatches.
4. Pipe and duct supports.
5. Pipe portals.
6. Preformed flashing sleeves.

B. Related Requirements:
1. Section 055000 "Metal Fabrications" for metal vertical ladders, ships' ladders, and stairs for access to roof hatches.
2. Section 076200 "Sheet Metal Flashing and Trim" for shop- and field-formed metal flashing, roof-drainage systems, roof expansion-joint covers, and miscellaneous sheet metal trim and accessories.
3. Section 077100 "Roof Specialties" for manufactured fasciae, copings, gravel stops, gutters and downspouts, and counterflashing.
4. Division 23 “Heating, Ventilating and Air Conditioning (HVAC)” for package roof top air conditioning units and roof-mounted split system air-conditioners.

1.3 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300:
1. Product Data: For each type of roof accessory.

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a. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

2. Sample Warranties: For manufacturer's special warranties.
3. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

1.5 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

2.2 ROOF CURBS

A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, straight sides, stepped integral metal cant raised the thickness of roof insulation, and integrally formed deck-mounting flange at perimeter bottom.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Aladdin Metal Products, Inc.
2. Architectural Specialties, Inc.
3. Curbco, LLC
4. Greencheck Fan Corporation
5. MGM Products, Inc.
6. The Pate Company
7. Roof Products, Inc.
8. RPS (Roof Products & Systems), a brand of Duravent Group
9. Thybar Coporation

Rebid Documents

C. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

D. Supported Load Capacity: Coordinate load capacity with information on Shop Drawings of equipment to be supported.

E. Material: Zinc-coated (galvanized) steel sheet, 18-gauge thickness.
   1. Finish: Mill phosphatized.

F. Construction:
   1. Curb Profile: Manufacturer's standard compatible with roofing system.
   2. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.
   3. Top Surface: Level top of curb, with roof slope accommodated by sloping deck-mounting flange or by use of leveler frame.
   4. Sloping Roofs: Where roof slope exceeds 1:48, fabricate curb with perimeter curb height tapered to accommodate roof slope so that top surface of perimeter curb is level. Equip unit with water diverter or cricket on side that obstructs water flow.
   5. Insulation: Factory insulated with 1-1/2-inch-thick glass-fiber board insulation.
   6. Liner: Same material as curb, of manufacturer's standard thickness and finish.
   7. Nailer: Factory-installed treated wood nailer along top flange of curb, continuous around curb perimeter.
   8. Platform Cap: Where portion of roof curb is not covered by equipment, provide weathertight platform cap formed from 3/4-inch-thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
   9. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as curb.

2.3 EQUIPMENT SUPPORTS

A. Equipment Supports: Strut Rail-type metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, and integrally formed structure-mounting flange at bottom.

B. Manufacturers:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Greenlink Enginneering (Knucklehead Mechanical Support Kits)
      b. Miro Industries
      c. nVent Caddy
      d. Rooftop Support Systems

C. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

D. Supported Load Capacity: Coordinate load capacity with information on Shop Drawings of equipment to be supported.

Rebid Documents

E. Strut Rail Material: Zinc-coated (galvanized), 12 gauge thickness minimum.

F. Deck Base Material: Polycarbonate.

2.4 ROOF HATCHES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Babcock-Davis
   2. The Bilco Company
   3. Milcor, a brand of the Duravent Group
   4. Nystrom, Inc.

B. Roof Hatches: Thermally broken metal roof-hatch units with lids and insulated single-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, straight sides, and integrally formed deck-mounting flange at perimeter bottom.
   1. Acceptable Products and Manufacturers: Subject to compliance with specified requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
      a. “ThermalMAX™ Roof Hatch, Model BRHTA”, (Babcock-Davis).
      b. “Thermally Broken Roof Hatch – Type NB 50TB”, (The Bilco Co.).
      c. “Thermal Pro-24, Model 3501-244”, (Milcor).
      d. “ThermalMAX™ Roof Hatch, Model RHTA,” (Nystrom, Inc.).

C. Type and Size: Single-leaf lid, 30 by 54 inches.

D. Loads: Minimum 40-lbf/sq. ft. external live load and 20-lbf/sq. ft. internal uplift load.

E. Hatch Material: Aluminum sheet.
   1. Thickness: Manufacturer's standard thickness for hatch size indicated.
   2. Finish: Baked enamel or powder coat.
   3. Color: As selected by Architect from manufacturer's full range.

F. Construction:
   1. Insulation: 3-inch-thick, polyisocyanurate board.
      a. R-Value: 20.0 minimum according to ASTM C1363.
   2. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
   3. Curb Liner: Manufacturer's standard, of same material and finish as metal curb.
   4. Fabricate curbs to minimum height of 12 inches roofing surface unless otherwise indicated.
   5. Sloping Roofs: Where slope or roof deck exceeds 1:48, fabricate curb with perimeter curb height that is tapered to accommodate roof slope so that top surfaces of perimeter curb are level. Equip hatch with water diverter or cricket on side that obstructs water flow.

G. Hardware: Spring operators, hold-open arm, galvanized steel spring latch with turn handles, stainless steel butt- or pintle-type hinge system, and padlock hasps inside and outside.

Rebid Documents

2.5 PIPE AND DUCT SUPPORTS

A. Fixed-Height Cradle-Type Pipe Supports: Polycarbonate pipe stand accommodating up to 1-1/2-inch-diameter pipe or conduit; with provision for pipe retainer and with manufacturer's support pad or deck plate as recommended for penetration-free installation over roof membrane type; as required for quantity of pipe runs and sizes.

2.6 PIPE PORTALS

A. Curb-Mounted Pipe Portal: Insulated roof-curb units with welded or mechanically fastened and sealed corner joints, straight sides, integral metal cant, and integrally formed deck-mounting flange at perimeter bottom; with weathertight curb cover with single or multiple collared openings and pressure-sealed conically shaped EPDM protective rubber caps sized for piping indicated, with stainless steel snaplock swivel clamps.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Greencheck Fan Corporation
   2. The Pate Company
   3. Portals Plus, a brand of Duravent Group
   4. RPS (Roof Products & Systems), a brand of Duravent Group
   5. Thybar Coporation

2.7 PREFORMED FLASHING SLEEVES

A. Vent Stack Flashing: Metal flashing sleeve, uninsulated, with integral deck flange.
   1. Metal: Aluminum sheet, 0.063 inch thick.
   2. Height: 7 inches minimum.
   3. Diameter: As indicated on Drawings.
   4. Finish: Manufacturer's standard.

2.8 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 coating designation and mill phosphatized for field painting where indicated.
   1. Mill-Phosphatized Finish: Manufacturer's standard for field painting.

B. Aluminum Sheet: ASTM B209, manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.
   1. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

C. Aluminum Extrusions and Tubes: ASTM B221, manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.

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D. Steel Shapes: ASTM A36/A36M, hot-dip galvanized according to ASTM A123/A123M unless otherwise indicated.

2.9 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Polyisocyanurate Board Insulation: ASTM C1289, thickness and thermal resistivity as indicated.

C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.

D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

E. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:
   1. Fasteners for Zinc-Coated or Aluminum-Zinc Alloy-Coated Steel: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A153/A153M or ASTM F2329.
   2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
   3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.

F. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

G. Elastomeric Sealant: ASTM C920, elastomeric polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

H. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

2.10 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

Rebid Documents

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install roof accessories according to manufacturer's written instructions.
   1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
   2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
   3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
   4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
   1. Coat concealed side of uncoated aluminum and stainless steel roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
   2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
   3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

C. Roof Curb Installation: Install each roof curb so top surface is level.

D. Equipment Support Installation: Install equipment supports so top surfaces are level with each other.

E. Roof-Hatch Installation:
   1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
   2. Attach safety railing system to roof-hatch curb.
   3. Attach ladder-assist post according to manufacturer's written instructions.

Rebid Documents

F. Pipe Support Installation: Comply with MSS SP-58 and MSS SP-89. Install supports and attachments as required to properly support piping. Arrange for grouping of parallel runs of horizontal piping, and support together.
   1. Pipes of Various Sizes: Space supports for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.

G. Preformed Flashing-Sleeve and Flashing Pipe Portal Installation: Secure flashing sleeve to roof membrane according to flashing-sleeve manufacturer's written instructions; flash sleeve flange to surrounding roof membrane according to roof membrane manufacturer's instructions.

H. Seal joints with elastomeric or butyl sealant as required by roof accessory manufacturer.

3.3 REPAIR AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A780/A780M.

B. Clean exposed surfaces according to manufacturer's written instructions.

C. Clean off excess sealants.

D. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 07 7200

Rebid Documents

SECTION 07 8400 - FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Firestop systems consisting of a material, or combination of materials installed to retain the integrity of fire-resistance rated construction by maintaining an effective barrier against the spread of flame, smoke, and/or hot gases through penetrations, blank openings, construction joints, or at the gap that is created at the building perimeter of the horizontal fire resistance rated assembly and exterior wall and in or adjacent to either fire-resistance or non-fire-resistance rated barriers in accordance with the requirements of the Building Code for this project.
   2. Firestop systems shall be used in locations including, but not limited to, the following:
      a. Penetrations through fire-resistance-rated floor, roof and wall assemblies requiring protected openings including both empty openings and openings that contain penetrations.
      b. Membrane penetrations in fire-resistance-rated wall assemblies where items penetrate the sides of the barrier.
      c. Joints in fire-resistance-rated assemblies to allow independent movement.
      d. Perimeter of the horizontal fire-resistance rated assembly and exterior wall between a rated floor / roof and an exterior wall assembly.
      e. Joints, through penetrations and membrane penetrations in Smoke Barriers, Smoke Partitions and those assemblies required to limit, restrict the passage of smoke.

1.3 RELATED WORK

A. Examine Contract Documents for requirements that affect Work of this Section.

B. Specification divisions and sections directly related to the Work of this section include, but are not limited to:
   1. Division 01 “Testing and Inspections” for inspection requirements.
   2. Division 03 Concrete
   3. Division 04 Masonry
   4. Division 05 Metals
   5. Division 07 Thermal and Moisture Protection
      a. Section 07 2100 “Thermal Insulation” for fire-safing insulation

   6. Division 08 Openings

Rebid Documents

7. Division 09 Finishes

1.4 REFERENCES

A. Firestopping Systems shall comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.

1. ASTM International (ASTM): latest editions, unless otherwise specified.
   a. ASTM E814, Standard Test Method for Fire Tests of Penetration Fire Stop Systems
   b. ASTM E2174, Standard Practice for On-Site Inspection of Installed Firestops
   c. E 84, Test Method for Surface Burning Characteristics of Building Materials,
   d. E 119, Test Method for Fire Tests of Building Construction and Materials,
   e. E 136, Test Method for Behavior of Materials in a Vertical Tube Furnace at 750F.
   f. E 814, Fire Tests of Through-Penetration Fire Stops,
   g. E 1399, Cyclic Movement and Measuring Minimum and Maximum Joint Widths.
   h. E 1966, Test Method for Resistance of Building Joint,
   i. E 2174, Standard Practice for On-Site Inspection of Installed Fire Stops
   j. E 2393, Standard Practice for On-Site Inspection of Installed Fire Stop Joint Systems
   k. E 2307, Standard Test Method for Determining the Fire Endurance of Perimeter Fire Barrier Systems Using the Intermediate-Scale, Multi Story Test Apparatus (ISMA)
   l. E 3038, Standard Practice for Assessing and Qualifying Candidates as Inspectors of Firestop Systems and Fire-Resistive Joint Systems.

2. Factory Mutual (FM) Approvals:
   a. FM Approval Standard of Firestop Contractors – Class 4991
   b. FM Approvals FM Firestop Exam
   c. FM Approvals Standard for Firestops – Class 4990

3. International Firestop Council (IFC):
   a. Ref. 1 Recommended IFC Guidelines for Evaluating Firestop Engineering Judgments
   b. Ref. 2 Inspectors Field Pocket Guide

4. National Fire Protection Association (NFPA)
   a. NFPA 101, 2021 Life Safety Code (LSC)
   b. NFPA 70 - National Electric Code
   c. NFPA 221 - Fire Walls and Fire Barriers (preliminary to be released)
   d. NFPA 251 - Fire Tests of Building Construction and Materials

5. Building Code:
   a. International Building Code (IBC), 2021 Edition

6. Underwriters Laboratories, Inc.
   a. Building Materials Directory
   b. UL Qualified Firestop Contractor Program
   c. UL 263 Fire Tests of Building Construction and Materials
   d. UL 723 Surface Burning Characteristics of Building Materials
   e. UL 1479, Standard for Fire Tests of Through-Penetration Firestops, May 2003.
   f. UL 2079 Tests for Fire Resistance of Building Joint Systems

Rebid Documents

1.5 SYSTEM PERFORMANCE REQUIREMENTS

A. Penetrations: Provide and install firestopping products that once installed to the tested and listed system or engineering judgment become firestop systems that are produced to resist the spread of fire, and the passage of smoke and other gases according to requirements indicated, including but not limited to the following:
   1. Firestop all penetrations passing through fire resistance rated wall and floor assemblies and other locations as indicated on the drawings.
   2. Provide and install complete penetration firestopping systems that have been tested and approved by a nationally recognized third-party testing agency.
   3. F - Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings indicated, as determined by ASTM E 814 or UL 1479, but not less than one hour or the fire-resistance rating of the construction being penetrated.
   4. T - Rated Through-Penetration Firestop Systems: Provide firestop systems with T ratings, in addition to F ratings, as determined by ASTM E 814 or UL 1479, where indicated.
   5. L - Rated Through-Penetration Firestop Systems: Provide firestop systems with L ratings, in addition to F and T ratings, as determined by UL 1479, where indicated.
   6. W - Rated Through-Penetration Firestop Systems: Provide firestop systems with W Water Resistance ratings, in addition to F, T and L ratings, as determined by UL 1479, where indicated.

B. Perimeter Fire Containment Systems:
   1. Provide interior perimeter fire containment systems with fire-resistance ratings indicated, as determined by ASTM E 2307, but not less than the fire-resistance rating of the floor construction.

C. Fire-Resistive Joints: Provide joint systems with fire-resistance ratings indicated, as determined by ASTM E 1966 and ASTM E 1399, or UL 2079, but not less than the fire-resistance rating of the construction in which the joint occurs.

D. For firestopping exposed to view, traffic, moisture, and physical damage, firestop systems for these conditions that meet conditions expected as communicated through construction documents.

E. Where there is no specific third party tested and listed, classified firestop system available for a particular firestop configuration, the firestopping contractor shall obtain from the firestop manufacturer, an Engineering Judgment (EJ) for submittal.

1.6 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: Manufacturer's materials description and installation instructions.
   2. Shop Drawings: Show material installation details including reinforcement, anchoring, fastening and supporting test reference.
   3. Sample: One sample of manufacturer's standard printed warning label, identifying a firestop condition.

B. Submit Manufacturers Product Data Sheets for each type of product selected. Certify that Firestop Material shall be asbestos free and complies with local regulations.

Rebid Documents

1. Certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOC's) and are nontoxic to building occupants.

C. Submit system design listings, including illustrations from a nationally recognized testing agency that is applicable to each firestop configuration.
1. Where there is no specific third party tested and classified Firestop System available for particular firestop configuration from any manufacturer, the firestopping contractor shall obtain from the firestop manufacturer an Engineering Judgment (EJ) for submittal.

D. Submit contractor qualifications as noted in Part 1.7 Quality Assurance.

E. Product Certificates: For each type of product, signed by product manufacturer.

1.7 QUALITY ASSURANCE

A. Installer Qualifications
1. A firm with not less than Two (2) years of successful experience installing penetration firestopping similar in material, design, and to the extent indicated for this Project, whose work has resulted in construction with a record of successful performance.
2. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements, as follows:
a. FM Approved in accordance with FM Standard 4991 – Approval of Firestop Contractors, or.
b. UL Qualified Firestop Contractor, and;
c. Licensed by the State or local authority, where applicable.
d. Each installer trained by a direct manufacturer's representative.
e. Shown to have successfully completed not less than 5 comparable scale projects.

B. Manufacturer's Limitation: Manufacturer's willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification of the buyer.

C. Materials: Meet the requirements of ASTM E814 testing for fire and hose stream exposure and be listed as an approved material in the UL "Building Materials Directory" for use in the applicable through-penetration firestop system.

D. Special Inspection Agency Qualifications: Special Inspection agencies shall be:
1. ASTM E699 Standard Practice for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating of Building Components.

E. Special Inspector Credentials:
1. ASTM E3038 Standard Practice for Assessing and Qualifying Candidates as Inspectors of Firestop Systems and Fire-Resistive Joint Systems.
2. IFC Premier Certificate of Achievement.
3. Intertek IQP
4. FM Firestop Exam, Or
5. UL/ULC Firestop Exam

Rebid Documents

F. Single Source Responsibility: Obtain firestop systems for each kind of penetration and construction condition indicated from a single primary firestop systems manufacturer to the greatest extent possible.
   1. Materials of different manufacture than allowed by the tested and listed system shall not be intermixed in the same firestop system or opening.
   2. Tested and listed, classified firestop systems are to be used. If another manufacturer has a tested and listed system, then that system shall be used prior to an Engineering Judgment (EJ).

G. Field Constructed Mockup: Prior to installing firestopping, erect mockups for each different firestop system indicated to verify selections made and to demonstrate qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for final installations.
   1. Locate mockups on site in locations indicated or, if not indicated, as directed by Architect. Include mockups for each type of system.
   2. Notify Architect in advance of the dates and times when mockups will be installed.
   3. Obtain Architect and AHJ's acceptance of mockups before start of Work.
   4. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging completed unit of Work. Accepted mockups in an undisturbed condition at time of Substantial Completion may become part of completed unit of Work.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original, unopened packages bearing name of manufacturer and product identification. Reject damaged packages found unsuitable for use and remove from Project site.

B. Store materials in clean, dry, ventilated area within temperature range of 40 degrees F. to 90 degrees F. Protect from soiling and moisture in accordance with manufacturer's instructions.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside the limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.10 SEQUENCING AND SCHEDULING

A. Project coordination is essential to inform and educate all the parties involved with the firestopping process of their role and how they can affect firestopping on the project. A pre-construction meeting shall be scheduled and required for all parties involved prior to the start of construction.

1.11 ENVIRONMENTAL REGULATIONS

A. All materials shall be asbestos free and comply with local VOC Regulations.

Rebid Documents

B. If required, hazardous disposal of firestop materials shall be strictly observed as noted on the individual SDS.

PART 2 - PRODUCTS

2.1 FIRESTOPPING, GENERAL

A. Systems listed by approved testing agencies, as identified in part 1 above, may be used, providing they conform to the construction type, penetration type, physical properties, annular and concealed space requirements, and fire rating requirements in each separate instance.

B. Manufacturer of firestop products shall have been successfully producing and supplying these products for a period of not less than Three (3) years and be able to show evidence of at least Ten (10) projects where similar products have been installed and accepted.

2.2 FIRESTOPPING - MANUFACTURERS

A. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
1. A/D Fire Protection Systems Inc., an RPM International Inc. brand.
2. BALCO, Inc., a CSW Industrials Company.
3. 3M Fire Protection Products.
4. GCP Applied Technologies, Inc.
5. Hilti, Inc.
6. Johns Manville.
7. Nelson Thermal Insulation and Firestopping (Formerly Nelson Firestopping).
8. RectorSeal Corp., a CSW Industrials Company.
9. Rockwool Group.
10. Specified Technologies, Inc.
11. Thermafiber, Inc., an Owens Corning Company.
12. Thermal Ceramics, Inc., a business of Morgan Advanced Materials.
13. Tremco Construction Products Group (CPG), Inc.
14. USG Corporation.

2.3 SYSTEMS

A. General: Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.

B. Fill Materials
1. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
2. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

Rebid Documents

3. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized-steel sheet.
4. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
5. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
6. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a non-shrinking, homogeneous mortar.
7. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
8. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, non-shrinking foam.
9. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
    a. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and non-sag formulation for openings in vertical and sloped surfaces, unless indicated firestopping limits use of non-sag grade for both opening conditions.

C. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.
1. Permanent forming/damming/backing materials, including the following:
    a. Slag-wool-fiber or rock-wool-fiber insulation.
    b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
    c. Fire-rated form board.
    d. Fillers for sealants.

2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Notify the Contractor of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, immediately follow with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

Rebid Documents

3.2 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.

3.3 PREPARATION

A. Clean substrate and penetration components of dirt, dust, grease, oil, loose particles, frost, and other matter which would affect bond of the firestopping material.

B. Protection: Provide ventilation to prevent localized build-up of fumes. Keep away from sparks and open flame. Provide fire extinguisher and post caution signs warning against smoking and open flame when working with flammable materials.

C. Do NOT install firestopping materials when material temperature is below 32 degrees F. Warm frozen materials to at least 32 degrees F before applying.

D. Priming: Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

E. Masking: Prevent penetration firestopping from contacting adjoining surfaces that will remain exposed upon completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove masking as soon as possible without disturbing the firestopping seal with substrates.

3.4 INSTALLING PENETRATION FIRESTOPS

A. General: Comply with the "System Performance Requirements" article in Part 1 and the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.
   1. Coordinate with other trades to ensure that all pipes, conduit, cable, and other items, which penetrate fire-rated construction, have been permanently installed prior to installation of firestop assemblies
   2. Schedule the work to assure that partitions and all other construction that conceals penetrations are not erected prior to the installation of firestop and smoke seals.

B. Install packing/backing/forming materials and other accessories in accordance with manufacturers installation instructions, tested and listed, classified systems

C. Install fill, void and cavity materials for through-penetration firestop systems by proven techniques as recommended by the manufacturer, tested and listed, classified system and tooled to produce the following results:
   1. Clean surfaces as recommended by manufacturers’ written instructions.
   2. Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.

Rebid Documents

3. Install materials so they contact and adhere to substrates formed by openings and penetrating items.
4. Finish to produce smooth, uniform surfaces as recommended by manufacturer’s installation instructions and tested and listed, classified system requirements.

3.5 INSTALLING FIRESTOP JOINT SYSTEMS

A. General: Comply with the "System Performance Requirements" article in Part 1 and with the firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.
   1. Install joint forming materials to provide support of firestop materials during application and at the position required to produce the cross-sectional shapes and depths of installed firestop material relative to joint widths that allow optimum sealant movement capability and develop fire-resistance rating required.

B. Install tested and listed, classified systems and non-tested engineering judgments that result in firestop materials:
   1. Directly contacting and fully wetting joint substrates.
   2. Completely filling recesses provided for each joint configuration,
   3. Providing uniform, cross-sectional shapes and depths relative to joint width that optimize movement capability and meet tested and listed system requirements.

C. Tool or smooth non-sag firestop materials immediately after their application and prior to the time of skinning or begin as stated in the manufacturer’s installation instructions. Form smooth, uniform beads of configuration indicated or required to:
   1. produce fire-resistance rating.
   2. to eliminate air pockets
   3. to ensure contact and adhesion with sides of joint.

3.6 INSTALLING PERIMETER FIRE BARRIER SYSTEMS

A. General: Comply with “System Performance Requirements” in Part 1 and with the firestop manufacture’s installation instructions and drawings pertaining to products and applications indicated.

B. Install metal framing, curtain wall insulation, mechanical attachments, safing materials and other firestop system components as applicable within the system design.

3.7 IDENTIFICATION

A. Install firestopping systems in strict accordance with manufacturer's instructions to seal holes, cracks and voids in fire-resistance rated floors and walls, and in non-fire-resistance rated assemblies, to prevent the transfer of flame, smoke, and gas across assembly.

B. Following installation of EACH firestop condition, permanently attach the manufacturer's high visibility, printed label, indicating that a firestop system has been installed at the condition.
   1. Locate labels within 6" of the firestopping condition; identical conditions in close proximity may be served by one label.

Rebid Documents

2. Label may be adhesive-backed plastic, or metal secured with mechanical fasteners.
3. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop installation, label joints every 30 feet and within 12 inches of each intersection, where labels will be visible to anyone seeking to remove penetrating items or firestop systems.
4. The label shall clearly indicate manufacturer's name and the system number, the installing firm's name, telephone number, and a contact within that firm who can provide information regarding the installation, and the date of the installation.

3.8 LABELING

A. An acceptable example of a label is shown below.

W A R N I N G FIRESTOP SYSTEM
DO NOT DISTURB
PROMPTLY NOTIFY BUILDING MANAGEMENT OF ANY DAMAGE

MANUFACTURER:

SYSTEM #
INSTALLATION CONTRACTOR:
INSTALLATION DATE:
XYZ Firestop Co.
Address
Telephone

For Information Contact:
Telephone:

B. Exclude labeling in areas that will not be visible at completion of construction. i.e., concealed floor penetration inside a wall cavity.

3.9 CLEANING

A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.

3.10 PROTECTION

A. Protect firestopping during and after curing period from contact with contaminating substances. If damage caused by others, Owner and general contractor to instruct firestop contractor to make appropriate repairs and charge to appropriate trades.

END OF SECTION 07 8400

Rebid Documents

SECTION 08 1113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
1. Interior standard steel doors and frames.
2. Exterior standard steel doors and frames.
3. Tornado-safe steel doors and frames.
4. Knocked-down (KD) site-assembled steel door frames.

B. Related Requirements:
1. Section 08 1423 “Clad Wood Doors”.
2. Section 08 1433 “Stile and Rail MDF Doors”.
3. Section 08 7100 "Door Hardware" for door hardware for hollow-metal doors.
4. Section 08 8000 “Glazing for glass view panels in hollow metal doors and frames.
5. Section 09 9100 “Painting” for field painting hollow metal doors and frames.

1.3 CODES AND REFERENCES

A. Comply with the version adopted by the Authority having Jurisdiction.
1. American National Standards Institute (ANSI)
a. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
b. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
c. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
d. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
e. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
f. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
g. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
h. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.

2. ASTM International (ASTM)
a. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

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b. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
c. ASTM C1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.

3. Federal Emergency management Agency (FEMA)
   a. FEMA P-361, April 2021, Fourth Edition, “Safe Rooms for Tornados and Hurricanes”.

4. International Code Council (ICC)
   a. ICC 500, 2020 edition, “Standard for the Design and Construction of Storm Shelters”

5. National Fire Protection Association (NFPA)
   a. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.

6. Steel Door Institute (SDI)
   a. SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

7. Underwriters Laboratories (UL)
   a. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
   b. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Requirements.”
   1. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
   2. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
   3. Shop Drawings: Include the following:
      a. Elevations of each door type.
      b. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
      c. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
      d. Locations of reinforcement and preparations for hardware.

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e. Details of each different wall opening condition.
f. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
g. Details of anchorages, joints, field splices, and connections.
h. Details of accessories.
i. Details of moldings, removable stops, and glazing.
j. Details of conduit and preparations for power, signal, and control systems.

B. Samples for Verification:
1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

C. Product Schedule: For hollow metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

D. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

E. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the “Design Intent” of the system/assembly and hardware requirements are understood and can be reviewed together.
1. Section 08 0671 “Door Hardware Schedule”.
2. Section 08 1423 “Clad Wood Doors”.
3. Section 08 1433 “Stile and Rail MDF Doors”.
4. Section 08 71 00 “Door Hardware”.
5. Section 28 3100 “Access Control System”.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

Rebid Documents

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from one of the following manufacturers:
1. CECO Door Products (C), an Assa Abloy Company
2. Curries Company (CU), an Assa Abloy Company.
3. Republic Doors (R) and Frames, an Allegion Brand
4. Steelcraft (S), an Allegion Brand
5. Timley Frames, A Division of SDS Industries, Inc.

2.2 MATERIALS

A. Cold-Rolled and Metallic-Coated Steel Sheet: As specified for each type of door and frame.

B. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

C. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

D. Glazing: Comply with requirements in Section 08 8000 "Glazing."

2.3 INTERIOR STANDARD STEEL DOORS

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors (**HM-F**): ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Steelcraft “LW-Series” doors or comparable product.
2. Interior Doors:
   a. Type: As indicated in the Door and Frame Schedule.
   b. Thickness: 1-3/4 inches.
   c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch (18 gauge) that complies with ASTM 1008A/1008M.
   d. Vertical Edge Construction: Model 2, Seamless. Edges to have face sheets welded ground and dressed smooth.

Rebid Documents

1) Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches.

e. Top and Bottom Edge Construction: 2, Seamless. Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
f. Hinge Reinforcement: Minimum 7-gauge (3/16") plate 1-1/4" x 9" or minimum 14-gauge continuous channel with pierced holes, drilled and tapped.
g. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
h. Core: Manufacturer's standard.
i. Fire-Rated Core: Manufacturer's standard for fire-rated and temperature-rise-rated doors.

3. Exposed Finish: Prime.

2.4 EXTERIOR STANDARD STEEL DOORS

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors (**HM-F-INS**): ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Steelcraft “L-Series (L16)” doors or comparable product.
2. Exterior Doors (Energy Efficient):
a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches.
c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch (16 gauge), with minimum A60 coating.
d. Edge Construction: 2, Seamless. Vertical edges to be mechanically interlocked with hairline seam.
1) Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches.

e. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
1) Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
2) Seal joints against water penetration.
3) Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.

f. Hinge Reinforcement: Minimum 7-gauge (3/16") plate 1-1/4" x 9".

g. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

Rebid Documents

h. Core: Polyurethane. Minimum U-value of 0.38.
i. Exposed Finish: Prime.

2.5 TORNADO-SAFE STEEL DOORS

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Maximum-Duty Doors (**HM-F**): ANSI/SDI A250.8, Level 4; ANSI/SDI A250.4, Level A.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Steelcraft "PW14 Paladian Series" doors or comparable product.
2. Tornado-Safe Doors:
   a. Type: As indicated in the Door and Frame Schedule.
   b. Thickness: 1-3/4 inches.
3. Face: Uncoated steel sheet, minimum thickness of 0.067 inch (14 gauge).
4. Vertical Edge Construction: Model 2, Seamless. Edges to have face sheets welded ground and dressed smooth.
   a. Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches.
5. Top and Bottom Edges: 0.067 inch (14 gauge) inverted top and bottom channels with flush channel top cap.
6. Hinge and Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
7. Core: Vertical steel stiffener.
8. Fire-Rated Core: Manufacturer's standard vertical steel stiffener core for fire-rated and temperature-rise-rated doors.
9. Exposed Finish: Prime.

2.6 STANDARD STEEL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Weather-stripped Frames: Subject to the same compliance standards and requirements as standard hollow metal frames, provide where indicated weather-stripped profiles with 1/8" integral kerf formed into the frame soffit able to receive manufacturer's listed gasket material. Available for use in both masonry and drywall construction, with fire rating up to 3 hours complying with NFPA 105, UL 1784, and ASTM E-283 Test criteria.

C. Interior Standard Knocked-Down (**KD-1 and KD-2**) Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Timely "C-Series (18 gauge)" frames or comparable product.
2. Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.
3. Materials: Metallic-coated steel sheet, minimum thickness of 0.042 (18-gauge).
4. Sidelite Frames: Fabricated from same thickness material as adjacent door frame.
5. Fire-Rated Frames: Conform to ASTM E152, NFPA 252, UL 10B and 10C.
6. Installed Frame Assembly: Conform to NFPA 80.

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7. Construction: Knocked down
8. Fame Throat Opening: As required to suit finished wall thickness.
9. Exposed Finish: Factory finished with color as selected by Architect from manufacturer's full range.

D. Exterior Standard Frames (**HM-1; HM-2**): SDI A250.8.
1. Materials: Metallic-coated steel sheet, minimum thickness of 0.067 inch (14 gauge), with minimum A60 (ZF180) coating.
2. Construction: Thermally broken, full profile welded.
3. Exposed Finish: Prime.

E. Tornado-Safe Frames (**HM-1**): SDI A250.8.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Steelcraft "FP1414 Paladian Series" frames or comparable product.
2. Materials: Metallic-coated steel sheet, minimum thickness of 0.067 inch (14 gauge), with minimum A60 (ZF180) coating.
3. Construction: Full profile welded.
4. Exposed Finish: Factory.

2.7 FRAME ANCHORS

A. Jamb Anchors:
1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated, not less than 0.042 inches thick.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet .
3. Post-Installed Expansion Anchor: Minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor formed from A60 metallic-coated material not less than 0.042 inches thick.

C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

2.8 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

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D. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

F. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

G. Glazing: Comply with requirements in Section 08 8000 "Glazing."

2.9 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:
1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
3. Astragals: Provide overlapping astragals as noted in door hardware sets in Section 08 7100 "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
4. Continuous Hinge Reinforcement: Provide welded continuous 12-gauge strap for continuous hinges specified in hardware sets in Section 08 7100 "Door Hardware".
5. Electrical Raceways: Provide hollow metal doors to receive electrified hardware with concealed wiring harness and standardized Molex™ plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the through-wire transfer hardware or wiring harness specified in hardware sets in Section 08 7100 "Door Hardware" and Division 28 for "Access Control System" hardware. Wire nut connections are not acceptable.

D. Hollow Metal Frames:
1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

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a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

3. Knocked-down (KD) Frames: Fabricate KD frames with mitered or coped corners knocked-down for field assembly.
4. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
5. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
6. Continuous Hinge Reinforcement: Provide welded continuous 12-gauge straps for continuous hinges specified in hardware sets in Section 08 7100 "Door Hardware".
7. Knocked-down (KD) Frames Standard Reinforcing: Provide manufacturer's standard hinge reinforcing and standard field-applied reinforcement for surface mounted hardware.
8. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
9. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
10. Jamb Anchors: Provide number and spacing of anchors as follows:
    a. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.
        3) Five anchors per jamb from 90 to 96 inches high.
        4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
        5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.

11. Door Silencers: Except on weather-stripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Section 08 7100 "Door Hardware".

E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Section 08 7100" Door Hardware."
1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
    a. Coordinate locations of conduit and wiring boxes for electrical connections with Divisions 26 and 28 Sections

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2.10 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
   1. Shop Primer: Manufacturer's standard, fast-curing, lead, and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 REPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
   1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set

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and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
3. Solidly pack mineral-fiber insulation inside frames.

C. Knocked-down (KD) Frames: Use pre-fit template door or actual door in opening to ensure proper alignment and clearances. Align frame parts with each other to provide tight miters, proper fit, and desired performance.
1. Sleeve frames over drywall construction, anchor frames with one drywall screw adjacent to each casing clip and apply snap-on casing to conceal fasteners.

D. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Standard Steel Doors:
   a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
   b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
   c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
   d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

E. Field Glazing: Comply with installation requirements in Section 08 8000 "Glazing" and with hollow metal manufacturer's written instructions.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION 08 1113

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SECTION 08 1423 - CLAD WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions. and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Solid-core flush wood doors with high pressure clad (HPL) decorative laminate faces.

B. Related Requirements:
   1. Section 08 1113 “Hollow Metal Doors and Frames” for hollow metal frames to receive wood doors.
   2. Section 08 7100 “Door Hardware”.
   3. Section 08 8000 "Glazing" for glass view panels in clad wood doors.

1.3 REFERENCES

A. ADA Standards for Accessible Design, 2010

B. American National Standards Institute (ANSI): Latest editions, unless otherwise specified.
   1. ANSI A208.1 - Urea-formaldehyde Emissions.

C. Architectural Woodwork Institute (AWI): Latest editions, unless otherwise specified.
   1. Architectural Woodwork Standards – Section 09 “Doors”

D. ASTM International (ASTM): Latest editions, unless otherwise specified.
   1. ASTM D1037 “Standard Methods for Evaluating the Properties of Wood-Based Fiber and Particle Board Panel Material”.
   2. ASTM E 152-81a “Standard Methods of Fire Tests of Door Assemblies”.

E. National Fire Protection Association (NFPA): Latest editions, unless otherwise specified.
   1. NFPA 80 “Fire Doors and Windows”.
   2. NFPA 105 “Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives”.
   3. NFPA 252 “Standard Methods of Fire Tests for fire Door Assemblies”.

F. Window and Door Manufacturers Association (WDMA)
   1. WDMA I.S. 1A-21 “Interior Architectural Wood Flush Doors”

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1.4 ACTION SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
   1. Product Data: For each type of product, including the following:
      a. Door core materials and construction, edge construction, trim for openings and factory-finishing specifications.

B. Shop Drawings: Indicate location, size, elevation, door hand, construction details. Location, extent of hardware blocking, fire protection ratings and other pertinent data for each type of door.

C. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the design intent of the system/assembly is understood and can be reviewed together.
   1. Section 08 1113 “Hollow Metal Doors and Frames”.
   2. Section 08 1423 “Clad Wood Doors”
   3. Section 08 7100 “Door Hardware”.

D. Samples for Verification:
   1. Plastic laminate, 6 inches square, for each color, texture, and pattern selected.

E. Warranty: Sample copy of manufacturer’s intended warranties for this Project, stating obligations, remedies, limitations, and exclusions of warranty.

F. Submit in accordance with Section 01 7700 “Closeout Procedures”:
   1. Warranty: Manufacturer’s fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies limitations, and exclusions of warranty and date of Substantial Completion.

1.5 CLOSEOUT SUBMITTALS

A. Submit in accordance with Section 01 7700 “Closeout Procedures”:
   1. Warranty: Manufacturer’s fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies limitations, and exclusions of warranty and date of Substantial Completion.

1.6 QUALITY ASSURANCE

A. Manufacturer: Shall be a company specializing in the manufacture of doors specified in this section for a minimum of 10 years. All doors specified in this section, MDF, and Wood and Fire-Rated doors shall be supplied and manufactured by one company.

B. Quality Standard: Except as otherwise specified herein, clad wood doors shall comply with Architectural Woodwork Standards (AWS), Section 09 “Doors” and WDMA I.S. 1A-21.

C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
   1. Positive Pressure Rating: When tested, after 5 minutes into the test, the neutral pressure level in furnace shall be established at 40 inches or less above the sill.

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2. Maximum Temperature Rise Rating: At exit enclosures, doors shall have a maximum temperature-rise rating of 450 degrees F in 30 minutes of fire exposure.
3. Doors and frames shall bear the appropriate UL labels for required fire protection rating and maximum temperature rise rating.
4. Plant-ons for fire doors will not be accepted.

D. Smoke and draft control door and frame assemblies that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, shall comply with the requirements of NFPA Standard No. 105 or UL Standard for Safety No. 1784.
1. Smoke and draft control door and frame shall bear the appropriate UL labels for smoke and draft control.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Mark each door on top and bottom rail with opening number used on Shop Drawings.

C. Stack doors flat on pallets, separated from each other by nonabsorbent spacers, protective wrapped by the manufacturer.

D. Do not deliver doors to the Project site until building has been closed-in and environmental conditions are at levels required by AWI and WDMA.

E. Do not remove doors from manufacturer's protective packaging until painting and other interior finishing work has been completed.

F. Damaged and otherwise unsuitable doors, when so determined, shall be immediately removed from the Project site.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels required by AWI and WDMA for the remainder of construction period.

1.9 WARRANTY

A. Contractor: Warrant solid core clad wood doors to be free of faults and defects in accordance with the General Conditions, except, extend warranty by door manufacturer's warranty for life of original installation.
1. Defects include, but are not limited to, warp in excess of that permitted by WDMA Industry Standard, and other defects which may affect the operation of the door.
2. Door Manufacturer or Door Manufacturer's Authorized Representative
   a. Responsible for inspecting installation of doors before issuance of warranty.
   b. Note on warranty that doors have been installed in accordance with manufacturer's recommendations.

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3. Warranty shall be in writing on the manufacturer's preprinted letterhead and signed by an executive of the door manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Forte Opening Solutions (Formerly Masonite Architectural)
   2. Lynden Door Inc.
   3. Oshkosh Door Company
   4. VT Industries, Inc.

2.2 SOLID-CORE FLUSH WOOD DOORS WITH HIGH PRESSURE DECORATIVE LAMINATE FACES

A. Clad Interior Doors:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide VT Industries, Inc. “Heritage Collection High-Pressure Decorative Laminate” doors or comparable product.
      a. Performance Grade: ANSI/WDMA I.S. 1A Extra Heavy Duty.
      b. Grade: Premium.
      c. Door Thickness: 1-3/4 inches.
      d. STC Rating: STC 32 minimum.
      e. Plastic-Laminate Faces: High-pressure decorative laminates complying with NEMA LD 3, Grade HGS**.**
         1) Colors, Patterns, and Finishes: As indicated on the Interior Materials Schedule on the Drawings.

      f. Exposed Vertical Edges: Plastic laminate that matches faces, applied before faces.
         1) Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.
         2) Fire-Rated Pairs of Doors: Provide formed-steel edges and astragals with intumescent seals.
            a) Finish steel edges and astragals with baked enamel same color as doors.

         3) Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
            a) Screw-Holding Capability: 550 lbf in accordance with WDMA T.M. 10.

      g. Core for Non-Fire-Rated Doors:
         1) ANSI A208.1, Grade 1-LD-2 particleboard.

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a) Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.

h. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.
1) ANSI A208.1, Grade 1-LD-2 particleboard.
2) Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as needed to eliminate through-bolting hardware.

i. Doors shall bear the appropriate UL labels for required fire protection rating and maximum temperature rise rating.
1) Label Requirements for Fire-Rated Doors:
2) 20 minute FD1/3
3) 30 minute FD1/2
4) C label 45 minute FD3/4
5) B label 60 minute FD1
6) B label 90 minutes FD1-1/2

j. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before faces and crossbands are applied.

2.3 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated.
1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
2. Comply with NFPA 80 requirements for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied.
1. Locate hardware to comply with DHI-WDHS-3.
2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
3. Provide wood blocking within interior construction of door for attachment of surface mounted and mortised hardware for non-rated and fire-rated clad wood doors. Thru-bolting is NOT acceptable.
4. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
5. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
6. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

C. Openings: Factory cut and trim openings through doors.
1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 08 8000 "Glazing."

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2.4 FACTORY SEALING

A. Seal tops and bottoms (raw edges) of clad wood doors to reduce moisture mitigation during site storage.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.
   1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Section 087100 "Door Hardware."

B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
   1. Install fire-rated doors and frames in accordance with NFPA 80.
   2. Install smoke- and draft-control doors in accordance with NFPA 105.

C. Job-Fitted Doors:
   1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
      a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.

   2. Machine doors for hardware.
   3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
   4. Clearances:
      a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
      b. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
      c. Where threshold is shown or scheduled, provide1/4 inch from bottom of door to top of threshold unless otherwise indicated.
      d. Comply with NFPA 80 for fire-rated doors.

   5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
   6. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

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3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 1423

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Rebid Documents

SECTION 08 1433 - STILE AND RAIL MDF DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions. and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Interior stile and rail MDF doors.
2. Factory fitting stile and rail MDF doors to frames and factory machining for hardware.
3. Factory priming.

B. Related Requirements:
1. Section 08 1113 “Hollow Metal Doors and Frames” for hollow metal frames to receive stile and rail wood doors.
2. Section 08 1423 “Clad Wood Doors”.
3. Section 08 7100 “Door Hardware”.
4. Section 09 9100 “Painting”.

1.3 REFERENCES

A. American National Standards Institute (ANSI)
1. ANSI A208.1 - Urea-formaldehyde Emissions.

B. Americans with Disabilities Act (ADA)
1. ADA Standards for Accessible Design, 2010.

C. ASTM International
1. ASTM D1037: American Society for Testing and Materials: Standard Methods for Evaluating the Properties of Wood-Based Fiber and Particle Board Panel Material.
2. ASTM E 152-81a - Standard Methods of Fire Tests of Door Assemblies.

D. Window and Door Manufacturers Association (WDMA)
1. WDMA I.S.6-A-07 - Window and Door Manufacturers Association.

E. Architectural Woodwork Institute (AWI)
1. Architectural Woodwork Standards, latest edition, published jointly by the Architectural Woodwork Institute, the Architectural Woodwork Manufacturer Association of Canada, and the Woodwork Institute.

Rebid Documents

1.4 SUBMITTALS

A. Product Data: For each type of product, including the following:
   1. Details of construction.
   2. Door frame construction.
   3. Factory-machining criteria.
   4. Factory-priming specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking); and other pertinent data, including the following:
   1. Door elevations, and dimensions
   2. Details of frame for each frame type, including dimensions and profile.
   3. Location and extent of hardware blocking.
   4. Dimensions and locations of mortises and holes for hardware.
   5. Clearances and undercuts.
   6. Doors to be factory primed and application requirements.

C. Sample Warranty: For special warranty.

D. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "Design Intent" of the system/assembly and hardware requirements are understood and can be reviewed together.
   1. Section 08 1113 “Hollow Metal Doors and Frames”.
   2. Section 08 1423 “Clad Wood Doors”.
   3. Section 08 7100 “Door Hardware”.

1.5 QUALITY ASSURANCE

A. Manufacturer: Shall be a company specializing in the manufacture of doors specified in this section for a minimum of 10 years. All doors specified in this section shall be supplied and manufactured by one company. All details including panels, sticking and profiles shall match.

B. Quality Standard: In addition to requirements specified, comply with AWI's "Architectural Woodwork Quality Standards Illustrated

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in opaque plastic bags or cardboard cartons.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and

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maintaining temperature and relative humidity levels designed for building occupants for the remainder of construction period.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors and frames that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Delamination.
      b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
      c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

   2. Warranty Period for Interior Doors: Life of installation from date of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain stile and rail MDF doors from single manufacturer.

B. Acceptable Manufacturers: Subject to compliance with requirements, provide TruStile Doors, a Marvin Brand.
   1. Approved equal products, subject to compliance with the design and performance of this specification and as approved by architect.

2.2 MATERIALS

A. Use only materials that comply with referenced standards and other requirements specified.
   1. Assemble interior doors, including components, with either dry-use or wet-use adhesives complying with ASTM D5572 for finger joints and with ASTM D5751 for joints other than finger joints.

B. Panel Products: Any of the following unless otherwise indicated:
   1. Medium-density fiberboard (MDF,) complying with ANSI A208.2, Grade 130.
   2. WDMA I.S. 6A and grade specified.

2.3 INTERIOR STILE AND RAIL MDF DOORS

A. Interior Stile and Rail MDF Doors (**MDF-SR**): Interior stock doors complying with WDMA I.S. 6A and with other requirements specified.
   1. Basis of Design: “TS Series TS2020” MDF doors by TruStile, a Marvin Brand.
   2. Stile Thickness: 1-3/8”.
   3. Sticking: Square Sticking (SS).
   4. Panel Type: Raised Panel.

Rebid Documents

a. Panels shall be constructed of 48-pound density MDF routed to profile specified. Panels shall float inside the sticking in true stile and rail construction. Panels shall be held in place by the sticking and flexible bumper shall be installed inside sticking to keep panel centered.

5. Panel Thickness: 5/8”
6. Door Top Type: Square Top.
7. Stile Construction:
   a. Interior core material to be constructed of 2 pieces of 48-pound density MDF laminated with PVC adhesive or 1/8” MDF over LVL.
   b. Stiles are to be constructed for improved screw holding by use of hardwood wedge or edge to extend the entire height of door.
8. Prime Finish: Factory primed.
9. Field Finish: Refer to Interior Materials Schedule for paint color.

B. Pre-Hung Wood Frames for Hinged Doors: From the same manufacturer of MDF doors.
   1. Flat jamb with round-over edges and applied stops, beveled on the strike side.
      a. Wood species: Poplar.
      b. Thickness: 3/4-inch.
      c. Applied stops: Bullnose profile
      d. Finish: Factory primed.
   2. Hinges for pre-hung hinged doors:
      a. Type: Square corner, ball bearing, 5-knuckle, full-mortise.
      b. Size: 3-1/2-inch
      c. Quantity: 3 hinges per door.
      d. Finish: US32D

2.4 STILE AND RAIL MDF DOOR FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels unless otherwise indicated:
   1. Clearances:
      a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
      b. Provide 1/2 inch from bottom of door to top of decorative floor finish or covering.
      c. Where threshold is shown on Drawings or scheduled, provide not more than 3/8 inch from bottom of door to top of threshold.
      d. Comply with NFPA 80 requirements for fire-rated doors.
   2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.

B. Factory machine doors for hardware that is not surface applied.
   1. Locate hardware to comply with DHI-WDHS-3.
   2. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.

Rebid Documents

2.5 FACTORY PRIMING

A. Doors for Opaque Finish: Shop prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in Section 09 9100 “Painting”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.
   1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Section 087100 "Door Hardware."

B. Install doors and frames to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

C. Job-Fitted Doors:
   1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
      a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.
   2. Machine doors for hardware.
   3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
   4. Clearances:
      a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
      b. Provide 1/2 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
      c. Where threshold is shown on Drawings or scheduled, provide 3/8 inch from bottom of door to top of threshold unless otherwise indicated.
   5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.

D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

END OF SECTION 08 1433

Rebid Documents

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Rebid Documents

SECTION 08 3113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Non-rated access doors and frames for access openings in rated assemblies.
2. Fire-rated access doors and frames for access openings in rated assemblies.

B. Related Requirements:
1. Section 07 7222 "Roof Hatches" for roof hatches.
2. Section 083123 "Floor Doors" for doors installed in floors.
3. Section 09 2900 “Gypsum Board” for finishing around openings in walls and ceilings.
4. Divisions 22 through 28 for mechanical and electrical equipment requiring access openings.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
1. Product Data: For each type of product.
2. Shop Drawings: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
3. Product Schedule: For access doors and frames.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 tested according to the following test methods:
1. NFPA 252 or UL 10B for fire-rated access door assemblies installed vertically.
2. NFPA 288 for fire-rated access door assemblies installed horizontally.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

Rebid Documents

1. J. L. Industries, Inc. (a brand of Activar Construction Products Group)
2. Karp Associates, Inc.
3. Larsen's Manufacturing Company.
4. Milcor Inc.
5. Nystrom, Inc.

2.3 NON-RATED ACCESS DOORS AND FRAMES

A. Flush Access Doors with Exposed Flanges (**AD-1**):
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Activar Construction Products Group, Inc. - JL Industries; “TM Series” or comparable product.
      a. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
      b. Locations: Where required.
      c. Door size: As indicated on Drawings or as required to access equipment within or behind walls and ceilings.
      d. Locking mechanism: Universal turn ring and key lock.
      e. Finish: Manufacturer’s standard white powder coat.
      f. Quantities: As determined by the General Contractor in coordination with the subcontractors in addition to those indicated on Drawings.

2.4 FIRE-RATED ACCESS DOORS AND FRAMES

A. Flush Access Doors with Exposed Flanges (**AD-2**):
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Activar Construction Products Group, Inc. - JL Industries; “FD Series” or comparable product.
      a. Assembly Description: Fabricate door to fit flush to frame, with a core of mineral-fiber insulation enclosed in sheet metal. Provide self-latching door with automatic closer and interior latch release. Provide manufacturer's standard-width exposed flange, proportional to door size.
      b. Locations: Where required.
      c. Door size: As indicated on Drawings or as required to access equipment within or behind walls and ceilings.
      d. Locking mechanism: Universal turn ring and key lock.
      e. Fire-Resistance Rating: One Hour, or not less than that of adjacent construction.
      f. Finish: Manufacturer’s standard white powder coat.
      g. Quantities: As determined by the General Contractor in coordination with the subcontractors in addition to those indicated on Drawings.

2.5 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

Rebid Documents

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.

D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling. Provide access sleeves for each latch operator and install in holes cut through finish.

E. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

C. Install blocking for access panels

3.3 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 08 3113

Rebid Documents

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Rebid Documents

SECTION 08 3123 - FLOOR DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section

1.2 SUMMARY

A. Section Includes:
1. Aluminum floor doors.
2. Steel floor doors.
3. Stainless steel floor doors.

B. Related Requirements:
1. Section 077200 "Roof Accessories" for roof hatches.
2. Section 083113 "Access Doors and Frames" for wall- and ceiling-mounted access doors and frames.
3. Section 09 6813 “Tile Carpeting” for application within door leaf pan.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
1. Product Data: For each type of product.
2. Shop Drawings: Include construction details, fire ratings, materials, individual components and profiles, and finishes.
3. Closeout Documents:
a. Manufacturer's Installation Instructions and Operation & Maintenance
1) Indicate installation, operation and maintenance requirements and rough-in dimensions.

4. Warranty: Sample copy of manufacturer's intended warranties for this Project, stating obligations, remedies, limitations, and exclusions of warranty.

1.4 QUALITY ASSURANCE

A. Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies shall meet the qualifications set forth in NFPA 80, Section 5.2.3.1.

Rebid Documents

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Acudor Products, Inc.
   2. Babcock-Davis, a brand of Nystrom, Inc.
   3. The Bilco Company, a brand of Quanex Custom Solutions.
   4. JL Industries, part of Activar Product Construction Products Group Inc.
   5. Nystrom, Inc.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Floor Doors: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency according to NFPA 288.

2.3 ALUMINUM FLOOR DOORS

A. Fire-Rated Recessed Cover Aluminum Floor Door:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Babcock-Davis “Model BFDF” or comparable product.
   2. Clear unobstructed opening size: 30 inches by 30 inches
   3. Frame: Mill finish aluminum, angle profile.
   4. Installation: Bolt-in.
   5. Door: Single leaf; 1/4-inch-thick aluminum plate with 1/8-inch-deep recess for application of finish materials.
   6. Loading Capacity: 250-lbf/sq. ft. live load and maximum deflection of L/150.
   7. Insulation: Manufacturer's standard with liner pan.
   8. Hardware:
      a. Material and Finish: Type 316 stainless steel, including latch and lifting mechanism assemblies, hold-open arms, and brackets, hinges, pins, and fasteners.
      b. Hinges: Heavy-duty butt hinges with stainless steel pins.
      c. Operating Mechanism: Heavy-duty hold-open arm that automatically locks door open at 90 degrees with fusible-link to automatically close door in event of fire, release handle with vinyl grip that allows for one-handed closure, adjustable counterbalancing springs, and recessed lift handle.
      d. Latch: Stainless steel slam latch with internal pull release cable and outside removable square L-handle.
      e. Lock: Keyed deadbolt lock with threaded protection plug.
   9. Fire-Resistance Rating: Not less than 1 hour as tested and labeled by Warnock Hersey according to NFPA 288.

2.4 MATERIALS

A. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.

Rebid Documents

B. Aluminum-Alloy Rolled Tread Plate: ASTM B632/B632M, Alloy 6061-T6.

C. Aluminum Sheet: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

D. Frame Anchors: Same material as door face.

E. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.5 FABRICATION

A. General: Provide floor doors manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure floor doors to types of supports indicated.

D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.
   1. For cylinder locks, furnish two keys per lock and key all locks alike.
   2. For recessed panel doors, provide access sleeves for each locking device. Furnish plastic grommets and install in holes cut through finish.

E. Aluminum: After fabrication, apply manufacturer's standard protective coating on aluminum that comes in contact with concrete.

2.6 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

E. Prime Painted Steel: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

F. Stainless Steel Finish: Bright, cold-rolled, unpolished ASTM A480/A480M No. 2B finish.

Rebid Documents

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions for installing floor doors.

B. Install frames plumb and level in opening, in proper alignment with floor surface for flush installation. Secure rigidly in place.

C. Position units to provide convenient access to concealed Work requiring access.

3.3 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.

B. Inspections:
1. Fire-Rated Door Inspections: Inspect each fire-rated floor door in accordance with NFPA 80, Section 5.2.

C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

E. Prepare and submit separate inspection report for each fire-rated floor door indicating compliance with each item listed in NFPA 80.

3.4 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 08 3123

Rebid Documents

SECTION 08 3323 - OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Electric operated, automatic closing, overhead rolling doors.

B. Related Requirements:
   1. Section 055000 "Metal Fabrications" for door opening jamb and head members.
   2. Section 08 3113 “Access Doors and Frames” for access doors providing access to coiling door equipment.
   3. Division 26 “Electrical” for electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, installation of control station and wiring and connection to alarm systems.

C. Products Supplied Under this Section but Not Installed Under This Section:
   1. Control Station.
   2. Annunciator.

1.3 REFERENCES

A. American National Standards Institute (ANSI)
   1. ANSI/DASMA 108 - American National Standards Institute Standard Method For Testing Sectional Garage Doors and Rolling Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference.
   2. ANSI/DASMA 203 - American National Standards Institute Specifications for non-rated fire rolling doors published by Door & Access Systems Manufacturers Association International.

B. ASTM International (ASTM)
   1. ASTM A 123 - Zinc hot-dipped galvanized coatings on iron and steel products.
   2. ASTM A 229 - Steel wire, oil-tempered for mechanical springs.
   3. ASTM A 653 - Steel sheet, zinc-coated galvanized by the hot-dipped process, commercial quality.
   4. ASTM E 330 - Structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference.

C. International Code Council (ICC)

Rebid Documents

1. ICC-500-2020, Standard for the Design and Construction of Storm Shelters
2. FEMA P-361, Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms.

1.4 SUBMITTALS

A. Product Data: For each type and size of overhead coiling door and accessory.
   1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
   2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
   3. Include description of automatic-closing device and testing and resetting instructions.

B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
   1. Include plans, elevations, sections, and mounting details.
   2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
   3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
   4. For exterior components, include details of provisions for assembly expansion and contraction and for excluding and draining moisture to the exterior.
   5. Include diagrams for power, signal, and control wiring.

C. Qualification Data: For Installer and testing and inspecting agency.

D. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Special warranty.

B. Maintenance Data: For overhead coiling doors to include in maintenance manuals.

C. Record Documents

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: ISO 9001:2015 registered and a minimum of five years' experience in producing fire and smoke control units of the type specified.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.
   1. Maintenance Proximity: Not more than four hours' normal travel time from Installer's place of business to Project site.

Rebid Documents

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of doors that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.
   1. Obtain operators and controls from overhead coiling-door manufacturer.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:
   1. Clopay
   2. Cookson Door, part of CornellCookson.
   3. Cornell Iron Works, part of CornellCookson.
   4. McKeon Rolling Steel Door Co., Inc.
   5. Overhead Door Corporation.
   6. Wayne Dalton, a division of Overhead Door Corporation.

2.2 PERFORMANCE REQUIREMENTS

A. Windborne-Debris Impact Resistance: Provide impact-protective overhead coiling doors that pass ASTM E1886 missile-impact and cyclic-pressure tests according to ASTM E1996 for Wind Zone 4 for basic protection.
   1. Large-Missile Test: For overhead coiling doors located within 30 ft. of grade.

B. Seismic Performance: Overhead coiling doors shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
   1. Component Importance Factor: 1.0.

C. Wind Loading: Supply doors to withstand at least 250 psf design wind load (tornado)

2.3 OVERHEAD COILING STORM DOOR ASSEMBLY

A. Coiling Storm Door: Overhead coiling door formed with curtain of interlocking metal slats capable of withstanding impacts and wind loading as specified in this Section installed as part of a storm shelter
   1. Basis-of-Design Product: Subject to compliance with requirements, provide “StormDefender” Model PSD361, by Cookson or comparable product.

B. Operation Cycles: Door components and operators capable of operating for not less than 20,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.

Rebid Documents

C. Air Infiltration: Maximum rate of 0.4 cfm/sq. ft. at 15 and 25 mph when tested according to ASTM E283.

D. Door Curtain Material: Galvanized steel.

E. Door Curtain Slats: Flat profile slats of 4-inch center-to-center height.

F. Bottom Bar: Formed steel angles fabricated from hot-dip galvanized steel and finished to match door.

G. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.

H. Hood: Galvanized steel.
1. Shape: Square.
2. Mounting: Face of wall.

I. Electric Door Operator:
1. Usage Classification: Medium duty, up to 12 cycles per hour and up to 50 cycles per day.
2. Operator Location: Concealed within the door shaft assembly.
3. Motor Exposure: Interior.
4. Motor Electrical Characteristics:
a. Horsepower: 1/2hp.
b. Voltage: 115 V ac, single phase, 60 Hz.

5. Emergency Manual Operation: Push-up type.
6. Obstruction-Detection Device: Automatic electric sensor edge on bottom bar.
a. Sensor Edge Bulb Color: Black.

7. Control Station(s): Interior mounted and where indicated on Drawings.
8. Other Equipment: Audible and visual signals.

J. Curtain Accessories: Equip door with weatherseals, bottom bar astragal, push/pull handles and automatic-closing device.

K. Door Finish:
1. Baked-Enamel or Powder-Coated Finish: Color as selected by Architect from manufacturer's full range.
2. Factory Prime Finish: Manufacturer's standard color.
3. Interior Curtain-Slat Facing: Match finish of exterior curtain-slat face. Finish as selected by Architect from manufacturer's full range.

2.4 MATERIALS, GENERAL

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Rebid Documents

2.5 DOOR CURTAIN MATERIALS AND CONSTRUCTION

A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
   1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653/A653M, with G90 zinc coating; minimum sheet thickness (coated) of 0.1084 inch (12 gauge).
   2. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face, with minimum steel thickness of 0.1084 inch (12 gauge).

B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.6 HOODS

A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.
   1. Galvanized Steel: Nominal 0.028-inch-thick, hot-dip galvanized-steel sheet with G90 zinc coating, complying with ASTM A653/A653M.

2.7 CURTAIN ACCESSORIES

A. Weatherseals for Exterior Doors: Equip each exterior door with weather-stripping gaskets fitted to entire exterior perimeter of door for a weather-resistant installation unless otherwise indicated.
   1. At door head, use 1/8-inch- thick, replaceable, continuous-sheet baffle secured to inside of hood or field-installed on the header.
   2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch-thick seals of flexible vinyl, rubber, or neoprene.

B. Astragal for Interior Doors: Equip each door bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.

C. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.

D. Automatic-Closing Device: Equip each storm-rated door with an automatic-closing device or holder-release mechanism and governor unit and an easily tested and reset release mechanism**.** Release mechanism for motor-operated doors shall allow testing without mechanical release of the door. Automatic-closing device shall be designed for activation by the following:
   1. Manual guarded station.
   2. An extended power outage exceeding four hours.

Rebid Documents

2.8 COUNTERBALANCE MECHANISM

A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. of span under full load.

C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.

D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.

E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.9 ELECTRIC DOOR OPERATORS

A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and operation-cycles requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide “Alarmgard Tube Motor Operator”, by Cookson or comparable product.
   2. Comply with NFPA 70.
   3. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V ac or dc.

B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.

C. Door Operator Location(s): Operator location indicated for each door.
   1. Concealed within the door shaft assembly.

D. Motors: Reversible-type motor with controller (disconnect switch) for motor exposure indicated for each door assembly.
   1. Electrical Characteristics: Minimum as indicated for each door assembly. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. and not more than 12 in./sec., without exceeding nameplate ratings or service factor.
   2. Operating Controls, Controllers, Disconnect Switches, Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.

Rebid Documents

3. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.

E. Limit Switches: Equip each motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

F. Obstruction-Detection Devices: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of door opening. For non-fire-rated doors, activation of device immediately stops and reverses downward door travel.
1. Electric Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable.

G. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure push-button control labeled "Close."
1. Guarded control station.

H. Emergency Manual Operation: Equip each electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 30 lbf .

I. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

J. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

K. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with the accessibility standard.

2.10 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.11 STEEL AND GALVANIZED-STEEL FINISHES

A. Factory Prime Finish: Manufacturer's standard primer, compatible with field-applied finish. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

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B. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.
   1. Color as selected by Architect from manufacturer’s standard color range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.

B. Examine locations of electrical connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.

C. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with the accessibility standard.

D. Power-Operated Doors: Install according to UL 325.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and to furnish reports to Architect.

B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
   1. Test door release, closing, and alarm operations when activated by control system. Test manual operation of closed door. Reset door-closing mechanism after successful test.

C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

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3.4 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. After electrical circuitry has been energized, operate doors to confirm proper motor rotation and door performance.
3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.5 ADJUSTING

A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.

B. Lubricate bearings and sliding parts as recommended by manufacturer.

C. Adjust seals to provide tight fit around entire perimeter.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 08 3323

Rebid Documents

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Rebid Documents

SECTION 08 3516 - FOLDING GRILLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Side folding grilles.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
   1. Product Data: For each type of product, including construction details, material descriptions, dimensions of individual components and profiles, and finishes for folding grilles.
   2. Shop Drawings:
      a. Include plans, elevations, sections, and installation details.
      b. Include clearances required for operation, operating and control mechanisms, access requirements, storage pockets and pocket doors, and accessory items.

B. Submit the following in accordance with Section 01 7700 “Closeout Procedures”:
   1. Warranty: Fully executed manufacturer's warranty indicating exact obligations, remedies limitations and exclusions of warranty specified for this Project.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For folding doors to include in operation and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: Minimum of five years’ experience in producing side-folding grilles of the type specified.

B. Installer Qualifications: Minimum of five years’ experience in installing side-folding grilles of the type specified.

Rebid Documents

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install folding doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for building occupants after completion of construction during the remainder of the construction period.

1.7 WARRANTY

A. Standard Warranty: Two years from date of shipment against defects in material and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain water repellents from a single source manufacturer.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:
1. Clopay
2. Cookson Door, part of CornellCookson.
3. Cornell Iron Works, part of CornellCookson.
4. Dynamic Closures Corporation.
5. Overhead Door Corporation.
6. Wayne Dalton, a division of Overhead Door Corporation.

2.2 FOLDING GRILLES

A. Description: Top-supported, horizontal-sliding, manually operated accordion folding grilles, with horizontal chains controlling the spacing of vertical and supported by an overhead track.
1. Basis-of-Design Product: Subject to compliance with requirements, provide “VisionGlide, Model ESG-30” by Cookson Door or comparable product.

B. Operation: Manual push/pull.

C. Dimensions and Weight:
1. Maximum Width: 30’-0”
2. Maximum Height: 12’-0”
3. Weight: 0.8 lbs. per sq. ft.

D. Curtain:
1. Vertical Tubes: 5/16-inch diameter, 6063 T5 aluminum alloy, 3.5 inches on center.
2. Tube Spacers: 7/16-inch outside diameter aluminum tubes to maintain horizontal chain spacing.
3. Horizontal Chains: Aluminum links, 1/8 inch x 5/8 inch x 7-3/4 inches. Links to be vertically spaced at 12 inches on center in a straight pattern.

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4. Hinge Panels: 2 inch high continuous interlocking aluminum panels at the top and bottom of the closure.
5. Leading End Member: 1-5/16 inch x 2-3/8 inch x 1/8 inch thick extruded aluminum tube with recess for attaching curtain sections.
    a. Provide concealed master keyable, cylinder operated top and bottom ratcheted rod member with lock operable from public side of curtain. Supply dustproof floor sockets for all drop bolts. Provide rubber bumper at the edge of the locking member.

6. Intermediate Member(s): 1-5/16 inch x 2-3/8 inch x 1/8 inch thick extruded aluminum tube with recess for attaching curtain sections.
7. Trailing End Member: 1 5/16 x 2 3/8 x 1/8 inch (33 x 60 x 3 mm) thick extruded aluminum tube with recess for attaching curtain sections.
    a. Provide fixed end member.

E. Trolleys: 1-1/8 inch diameter nylon tired ball bearing wheels; two wheel assembly at each hanger; three wheel assembly at all vertical members.

F. Track: 1.3 inch x 1.8 inch thick extruded aluminum section with continuous recess for splice tongues and pins.

G. Finishes: Dark Bronze.

H. Pocket Door(s):
1. Door:
    a. Material: A36 HR steel.
    b. Thickness: USS 12-gauge.
    c. Finish: Manufacturer’s baked-on polyester powder coat, color as selected by architect from manufacturer’s standard color range.
    d. Size: Rough opening minus 13/16”.

2. Frame:
    a. Material: A36 HR steel.
    b. Thickness: USS 12-gauge steel.
    c. Finish: Manufacturer’s baked-on polyester powder coat, color as selected by architect from manufacturer’s standard color range.
    d. Size: Overlaps opening 2” with a 5/8” projection from wall.
    e. Hinges : 3” non-mortise type.
    f. Lock: 1” security mortise cylinder.

I. Stacking Configuration: As indicated on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

Rebid Documents

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. For folding doors supported by or anchored to permanent construction, advise installers of specific requirements for placement of anchorage devices. Furnish installers of other work with templates and drawings indicating locations of anchorage devices and similar items.

B. Permanent construction for supporting the grille to be designed to carry the weight of a fully stacked grille at any point along its length.

3.3 INSTALLATION

A. General: Install folding doors complying with manufacturer's written installation instructions. Install track in one piece.

B. Standard Floor Clearances: 1-1/2 inches above floor finish.

3.4 ADJUSTING

A. Adjust units to ensure smooth, quiet operation without warping or binding. Adjust hardware to function smoothly. Confirm that latches engage accurately and securely without forcing or binding.

B. Pocket Doors: Adjust to operate smoothly and easily, without binding or warping. Adjust hardware to function smoothly. Confirm that latches and locks engage accurately and securely without forcing or binding.

END OF SECTION 08 3516

Rebid Documents

SECTION 08 4113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Aluminum-framed storefront systems.
   2. Aluminum-framed entrance door systems.

B. Related Requirements:
   1. Section 07 9200 “Joint Sealants”.
   2. Section 08 4229.23 “Sliding Automatic Entrances”.
   3. Section 08 7100 “Door Hardware” for hardware not specified in this section.
      a. All door hardware is specified in Section 08 7100 for consistency in selection and evaluation of hardware requirements.
      b. Door hardware for manually operated aluminum doors, including cylinders, but excluding weatherstripping and sweeps, furnished by Section 08 7100 for installation by Section 08 4113.
      c. Weatherstripping and sweeps provided by aluminum door and frame manufacturer.
   4. Section 08 8000 “Glazing” for glazing installed but not furnished under this section.
   5. Division 26 “Electrical” for coordinating with power source and electrical connections for electrified door hardware.
   6. Division 28 “Safety and Security Systems” for coordination with electronic door hardware and building security system at aluminum doors.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum-framed systems.
   2. Shop Drawings: For aluminum-framed systems. Include plans, elevations, sections, details, and attachments to other work.
      a. Include details of provisions for system expansion and contraction and for drainage of moisture in the system to the exterior.
      b. Show glass thickness and glazing details.
      c. Show dimensions, detail fabrication, installation and erection details, including connections, fasteners and welds.

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d. For entrance doors, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.
e. Erection procedures and accessories required for a complete installation.
f. Indicate sealant type and joint configurations.

3. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
4. Special Submittal Requirements:
   a. Combine submittals of this Section for the aluminum doors with Sections listed below to ensure the "Design Intent" of the system/assembly is understood and can be reviewed together.
      1) Section 08 1113 “Hollow Metal Doors and Frames”
      2) Section 08 1423 “Clad Wood Doors”
      3) Section 08 71 00 “Door Hardware”

   b. Coordinate door hardware submittal requirements prior to submitting doors, frames, and hardware schedules for review. Clearly indicate any deviations from hardware specified and reasons why deviations are required. Unaccepted or incorrect materials that are ordered, that will not fit aluminum frames or doors for its intended use will be removed and replaced with specified and approved materials at no additional cost to the Owner.

5. Design Submittal: For aluminum-framed systems indicated to comply with performance requirements and design criteria.
6. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for aluminum-framed systems, indicating compliance with performance requirements.
7. Warranties: Sample of special warranties.

B. Submit in accordance with Section 01 7700 “Closeout Procedures.”
1. Warranty: Manufacturer's fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.
2. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Qualifications:
1. Installers: An entity that employs installers and supervisors who are trained and approved by manufacturer and that employs a qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors.

B. Engineering Responsibility: Prepare data for aluminum-framed systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated for this Project.

C. Accessible Entrances: Comply with applicable provisions in the U.S. Architectural Transportation Barriers Compliance Board’s ADA-ABA Accessibility Guidelines.

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D. Source Limitations for Aluminum-Framed Systems: Obtain from single source from single manufacturer.

E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.2, "Structural Welding Code - Aluminum."

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures, including, but not limited to, excessive deflection.
      b. Noise or vibration created by wind and thermal and structural movements.
      c. Deterioration of metals and other materials beyond normal weathering.
      d. Water penetration through fixed glazing and framing areas.
      e. Failure of operating components.

   2. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.
   1. Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Delta E units when tested in accordance with ASTM D 2244.
      b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D 4214.
      c. Cracking, peeling, or chipping.

   2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design aluminum-framed entrances and storefronts.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this

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Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:
    a. Deflection exceeding specified limits.
    b. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
    c. Noise or vibration created by wind and thermal and structural movements.
    d. Loosening or weakening of fasteners, attachments, and other components.
    e. Sealant failure.
    f. Failure of operating units.

C. Structural Loads:
1. Wind Loads: Basic Wind Speed: 120 mph.

D. Deflection of Framing Members Supporting Glass: At design wind load, as follows:
1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane shall not exceed L/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to L/360 of clear span or 1/8-inch, whichever is smaller.

E. Structural Performance: Test in accordance with ASTM E330/E330M as follows:
1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:
1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. .

G. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:
1. Thermal Transmittance (U-factor):
    a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.41 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.
    b. Entrance Doors: U-factor of not more than 0.68 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.

2. Solar Heat-Gain Coefficient (SHGC):
    a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.40 as determined in accordance with NFRC 200.
    b. Entrance Doors: SHGC of not more than 0.40 as determined in accordance with NFRC 200.

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3. Air Leakage:
   a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft. when tested in accordance with ASTM E283.
   b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft..

4. Condensation Resistance Factor (CRF):
   a. Fixed Glazing and Framing Areas: CRF for the system of not less than 45 as determined in accordance with AAMA 1503.
   b. Entrance Doors: CRF of not less than 57 as determined in accordance with AAMA 1503.

H. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 STOREFRONT SYSTEMS

A. Basis of Design: For basis-of-design and reference purposes Tubelite, Inc. systems are specified.
1. Thermally broken framing for exterior applications: Tubelite, Inc, “T14000 Series Center Glaze Storefront”.
   a. Size: Nominal 2” wide by 4 1/2” deep horizontal and vertical sections.

B. Other Acceptable Manufacturers: Products and systems by the following may be acceptable, subject to conformance with requirements:
1. Oldcastle Building Envelope.

C. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
1. Exterior Framing Construction: Thermally broken.
2. Glazing System: Retained mechanically with gaskets on four sides.
3. Glazing Plane: Center.
4. Finish: Color anodic finish.
   a. Color: Dark Bronze.
5. Fabrication Method: Field-fabricated stick system.

D. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

E. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 ENTRANCE DOOR SYSTEMS

A. Basis of Design: For basis-of-design and reference purposes Tubelite, Inc. systems are specified.

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1. Thermally broken framing with an insulating polyamide barrier: Tubelite, Inc, “Thermal Wide Stile Entrance”.
2. Size: 1-3/4” by 5” vertical stiles and top rail, 10” bottom rail for ADA compliance.
3. Finish: Match adjacent storefront framing finish.
4. Steel tension rods of 0.375-inch diameter shall run the full width of the top and bottom rails and shall be fixed with steel plates and lock nuts, or welding at manufacturer’s option.

B. Other Acceptable Manufacturers: Products and systems by the following may be acceptable, subject to conformance with requirements:
1. Oldcastle Building Envelope.

2.5 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware.".

B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.

C. Weather Stripping: Manufacturer's standard replaceable components.
1. Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC.
2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

D. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

2.6 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

C. Glazing Sealants: Comply with Section 088000 "Glazing."

2.7 MATERIALS

A. Sheet and Plate: ASTM B209.

B. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
1. Sheet and Plate: ASTM B 209 (ASTM B 209M).
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308/B 308M.

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C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:
1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.8 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

2.9 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from interior for vision glass and exterior for spandrel glazing or metal panels.

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6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
1. At interior and exterior doors, provide compression weather stripping at fixed stops.

F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.10 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm (7 mils) or thicker.
1. Color: Dark bronze.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

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F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:
1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

I. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.

J. Install joint filler behind sealant as recommended by sealant manufacturer.

K. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF GLAZING

A. Install glazing as specified in Section 088000 "Glazing."

3.4 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

A. Install entrance doors to produce smooth operation and tight fit at contact points.
1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.5 ERECTION TOLERANCES

A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:
1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:
a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

Rebid Documents

3.6 ADJUSTING

A. Adjust operating entrance door hardware to function smoothly as recommended by manufacturer.
   1. For entrance doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch, measured to the leading door edge.

END OF SECTION 08 4113

Rebid Documents

SECTION 08 4229.23 - SLIDING AUTOMATIC ENTRANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions. and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Exterior, bi-parting, sliding automatic entrances.

B. Related Requirements:
   1. Section 07 9200 “Joint Sealants”.
   2. Section 08 7100 “Door Hardware” for hardware not specified in this section.
   3. Section 08 8000 “Glazing” for glazing installation requirements for automatic entrances.
   4. Division 26 “Electrical” for electrical connections provided separately, including conduit and wiring, for power to, and control of, automatic entrances.

1.3 REFERENCES

A. Underwriters Laboratories (UL):
   1. UL 325: Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

B. American National Standards Institute (ANSI) / Builders’ Hardware Manufacturers Association (BHMA):
   1. ANSI/BHMA A156.10: Standard for Power Operated Pedestrian Doors
   2. ANSI/BHMA A156.5: Standard for Auxiliary Locks and Associated Products.

C. American Society for Testing and Materials (ASTM):
   1. ASTM B221: Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
   2. ASTM B209: Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

D. American Association of Automatic Door Manufacturers (AAADM):

E. National Fire Protection Association (NFPA):
   1. NFPA 101: Life Safety Code.
   2. NFPA 70: National Electric Code.

F. International Code Council (ICC):
   1. IBC: International Building Code.

Rebid Documents

G. International Organization for Standardization (ISO):
   1. ISO 9001: Quality Management Systems.

H. National Association of Architectural Metal Manufacturers (NAAMM):
   1. Metal Finishes Manual for Architectural and Metal Products.

I. American Architectural Manufacturers Association (AAMA):
   1. AAMA 606.1: Integral Color Anodic Finishes for Architectural Aluminum.]
   2. AAMA 611: Voluntary Specification for Anodized Architectural Aluminum.
   3. AAMA 701: Voluntary Specification for Pile Weatherstripping and Replaceable Fenestration Weatherseals.

1.4 DEFINITIONS

A. AAADM: American Association of Automatic Door Manufacturers.

B. Activation Device: A control that, when actuated, sends an electrical signal to the door operator to open the door.

C. Safety Device: A control that, to avoid injury, prevents a door from opening or closing.

D. For automatic door terminology, refer to BHMA A156.10 for definitions of terms.

1.5 COORDINATION

A. Coordinate sizes and locations of recesses in concrete floors for recessed sliding tracks that control automatic entrances. Concrete, reinforcement, and formwork requirements are specified elsewhere.

B. Templates: Distribute for doors, frames, and other work specified to be factory prepared for installing automatic entrances.

C. Coordinate hardware with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish. Coordinate hardware for automatic entrances with hardware required for rest of Project.

D. Electrical System Roughing-in: Coordinate layout and installation of automatic entrances with connections to power supplies.

E. System Integration: Integrate sliding automatic entrances with other systems as required for a complete working installation.

1.6 SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for automatic entrances.

Rebid Documents

2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For sliding automatic entrances.
1. Include plans, elevations, sections, hardware mounting heights, and attachment details.
2. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.
4. Indicate locations of activation and safety devices.
5. Include hardware schedule and indicate hardware types, functions, quantities, and locations.

C. Sample Warranties: For manufacturer's special warranties.

D. Closeout Submittals
1. Operation and Maintenance Data: For automatic entrances, safety devices, and control systems to include in operation and maintenance manuals.
2. Warranties

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation and maintenance of units required for this Project.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of automatic entrances that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
a. Structural failures including, but not limited to, excessive deflection.
b. Faulty operation of operators, controls, and hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal

2. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. ASSA ABLOY Entrance Systems
2. Horton Automatics
3. Record USA
4. Stanley Access Technologies

Rebid Documents

2.2 AUTOMATIC ENTRANCE ASSEMBLIES

A. Source Limitations: Obtain sliding automatic entrances from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Power-Operated Door Standard: BHMA A156.10.

2.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Automatic entrances shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated in accordance with ASCE/SEI 7.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

C. Operating Temperature Range: Automatic entrances shall operate within minus 30 to plus 130 deg F**.**

D. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of 1.25 cfm/sq. ft. of fixed entrance-system area when tested in accordance with ASTM E283 at a minimum static-air-pressure difference of 1.57 lbf/sq. ft**.**

E. Opening Force:
1. Power-Operated Doors: Not more than 50 lbf required to manually set door in motion if power fails, and not more than 15 lbf required to open door to minimum required width.
2. Breakaway Device for Power-Operated Doors: Not more than 50 lbf required for a breakaway door or panel to open.

F. Entrapment-Prevention Force:
1. Power-Operated Sliding Doors: Not more than 30 lbf required to prevent stopped door from closing.

2.4 SLIDING AUTOMATIC ENTRANCES

A. General: Provide manufacturer's standard automatic entrances, including doors, sidelites, framing, headers, carrier assemblies, roller tracks, door operators, controls, and accessories required for a complete installation.

B. Aluminum Sliding, Bi-Parting Automatic Entrance **(A-SL-BP)**
1. Basis-of-Design Product: Subject to compliance with requirements, provide Stanley Access Technologies “Dura-Glide 2000” automatic entrance.
2. Configuration, Biparting-Sliding: Biparting-sliding doors with two sliding leaves and sidelites on each side.
a. Traffic Pattern: Two way.

Rebid Documents

b. Emergency Breakaway Capability: Sliding leaves only.
c. Mounting: Between jambs.

3. Comparable products of other manufacturers may be submitted for review and approval by the Architect, provided they meet the criteria and intent of this specification.

C. Aluminum Sliding, Single -Sliding Automatic Entrance **(A-SL-S)**
1. Basis-of-Design Product: Subject to compliance with requirements, provide Stanley Access Technologies “Dura-Glide 2000” automatic entrance.
2. Configuration, Single-Sliding: Single-sliding door with one sliding leaf and sidelite.
a. Traffic Pattern: Two way.
b. Emergency Breakaway Capability: Sliding leaves only.
c. Mounting: Between jambs.

3. Comparable products of other manufacturers may be submitted for review and approval by the Architect, provided they meet the criteria and intent of this specification.

D. Operator Features:
a. Power opening and closing.
b. Drive System: Belt.
c. Adjustable opening and closing speeds.
d. Adjustable hold-open time between zero and 30 seconds.
e. Obstruction recycle.
f. On-off/hold-open switch to control electric power to operator**,** key operated.

E. Sliding-Door Carrier Assemblies and Overhead Roller Tracks: Carrier assembly that allows vertical adjustment; consisting of nylon- or delrin-covered, ball-bearing-center steel wheels operating on a continuous roller track, or ball-bearing-center steel wheels operating on a nylon- or delrin-covered, continuous roller track. Support doors from carrier assembly by cantilever and pivot assembly.
1. Rollers: Minimum of two ball-bearing roller wheels and two antirise rollers for each active leaf.

F. Sliding-Door Threshold: Threshold members and bottom-guide-track system with stainless steel, ball-bearing-center roller wheels.
1. Configuration, Threshold: Saddle-type threshold across door opening and surface-mounted guide-track system at sidelites.
a. Square edge to interior and bevel to exterior

G. Controls: Activation and safety devices in accordance with BHMA standards.

H. Finish: Finish framing, door(s), and header with Class I, color anodic finish.
1. Color: Dark bronze.

2.5 ENTRANCE COMPONENTS

A. Framing Members: Extruded aluminum, minimum 0.125 inch thick and reinforced as required to support imposed loads.
1. Nominal Size: 1-3/4 by 4-1/2 inches.
2. Extruded Glazing Stops and Applied Trim: Minimum 0.062-inch wall thickness.

Rebid Documents

B. Stile and Rail Doors: 1-3/4-inch-thick, glazed doors with minimum 0.125-inch-thick, extruded-aluminum tubular stile and rail members. Mechanically fasten corners with reinforcing brackets that are welded, or incorporate concealed tie-rods that span full length of top and bottom rails.
   1. Glazing Stops and Gaskets: Beveled , snap-on, extruded-aluminum stops and preformed gaskets.
   2. Stile Design: Medium stile, 3-1/2-inch nominal width.
   3. Bottom Rail Design: 10-inch nominal height.
   4. Muntin Bars: Horizontal tubular rail member for each door; match stile design and finish.

C. Sidelite(s): 1-3/4-inch-deep sidelite(s) with minimum 0.125-inch-thick, extruded-aluminum tubular stile and rail members matching door design.
   1. Glazing Stops and Gaskets: Same materials and design as for stile and rail door.
   2. Muntin Bars: Horizontal tubular rail members for each sidelite; match stile design.

D. Headers: Fabricated from minimum 0.125-inch-thick extruded aluminum and extending full width of automatic entrance units to conceal door operators and controls. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.
   1. Mounting: Concealed, with one side of header flush with framing.
   2. Capacity: Capable of supporting doors of up to 200 lb per leaf over spans of up to 14 feet without intermediate supports.

E. Brackets and Reinforcements: High-strength aluminum with nonstaining, nonferrous shims for aligning system components.

F. Signage: As required by cited BHMA standard.
   1. Application Process: Decals

2.6 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
   1. Headers, stiles, rails, and frames: 6063-T6.
   2. Extrusions: ASTM B221.
   3. Sheet: ASTM B209.

B. Steel Reinforcement: Reinforcement with corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Use surface preparation methods in accordance with recommendations in SSPC-SP COM and prepare surfaces in accordance with applicable SSPC standard.

C. Stainless Steel Bars: ASTM A276/A276M or ASTM A666, type 304.

D. Stainless Steel Tubing: ASTM A554, Grade MT 304.

E. Glazing: As specified in Section 088000 "Glazing."

F. Sealants and Joint Fillers: As specified in Section 079200 "Joint Sealants."

Rebid Documents

G. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout; complying with ASTM C1107/C1107M; of consistency suitable for application.

H. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

I. Fasteners and Accessories: Corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

2.7 DOOR OPERATORS

A. General: Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, operation under normal traffic load for type of occupancy indicated.

B. Electromechanical Operators: Self-contained overhead unit powered by a minimum of 1/4 horsepower, permanent-magnet DC motor with gear reduction drive, microprocessor controller; and encoder.
   1. Operation: Power opening and power closing.
   2. Features
      a. Adjustable opening and closing speeds.
      b. Adjustable open check and close check speeds.
      c. Adjustable hold-open time between zero and 30 seconds.
      d. Obstruction recycle.
      e. On-off/hold-open switch to control electric power to operator, key operated.
      f. Energy conservation switch that reduces door-opening width.
      g. Closed loop speed control with active braking and acceleration.
      h. Adjustable obstruction recycle time delay.
      i. Self-adjusting stop position.
      j. Self-adjusting closing compression force.
      k. Onboard sensor power supply.
      l. Onboard sensor monitoring.
      m. Optional Switch to open/Switch to close operation.
      n. Fire alarm interface, configurable to safely open or close the entrance on signal from fire alarm system
      o. Drive System: belt.

C. Electrical service to door operators shall be provided under Division 26 Electrical. Minimum service to be 120 VAC, 5 amps.

D. Electrical service to door operators shall be provided under Division 26 Electrical. Minimum service to be 120 VAC, 5 amps.

2.8 ELECTRICAL CONTROLS

A. Electrical Control System: Electrical control system shall include a microprocessor controller and a high-resolution position encoder. The encoder shall monitor revolutions of the operator shaft and send signals to microprocessor controller to define door position and speed.
   1. The high-resolution encoder shall have a resolution of not less than 1024 counts per revolution. Systems utilizing external magnets and magnetic switches are not acceptable.

Rebid Documents

2. Electrical control system shall include a 24 VDC auxiliary output rated at 1 amp.

B. Performance Data: The microprocessor shall collect, and store performance data as follows:
1. Counter: A non-resettable counter to track operating cycles.
2. Event Reporting: Unit shall include non-volatile event and error recording including number of occurrences of events and errors, and cycle count of most recent events and errors.
3. LED Display: Display presenting the current operating state of the controller.

C. Controller Protection: The microprocessor controller shall incorporate the following features to ensure trouble free operation:
1. Automatic Reset Upon Power Up.
2. Main Fuse Protection.
3. Electronic Surge Protection.
4. Internal Power Supply Protection.
5. Resettable sensor supply fuse protection.
6. Motor Protection, over-current protection.

D. Soft Start/Stop: A “soft-start” “soft-stop” motor driving circuit shall be provided for smooth normal opening and recycling.

E. Obstruction Recycle: Provide system to recycle the sliding panels when an obstruction is encountered during the closing cycle. If an obstruction is detected, the system shall search for that object on the next closing cycle by reducing door closing speed prior to the previously encountered obstruction location and will continue to close in check speed until doors are fully closed, at which time the doors will reset to normal speed. If obstruction is encountered again, the door will come to a full stop. The doors shall remain stopped until obstruction is removed and operate signal is given, resetting the door to normal operation.

F. Programmable Controller: Microprocessor controller shall be field programmable.
1. The following parameters may be adjusted:
a. Operating speeds and forces as required to meet specified ANSI/BHMA standard.
b. Adjustable and variable features specified.
c. Reduced opening position.

2. Manual programming shall be available through local interface which has a two-digit display with a selection control including three push buttons.

2.9 ACTIVATION AND SAFETY DEVICES

A. Combined Activation and Safety Sensors: Combined activation and safety sensors shall, in a single housing, detect motion and presence in accordance with ANSI/BHMA A156.10. Motion shall be detected using K-band microwave technology, presence by active infrared reflection technology.
1. Mounting Height: Up to 11.5 feet above finish floor
2. Temperature Range: Between -31°F and 131°F in all environmental conditions
3. Relays: Form C, 50V at 0.3A for both activation and safety. Hold time of less than 0.5 seconds.
4. Detection Pattern: When detection is made in the activation zone, and the entrance opens, the safety zone shall extend through the threshold on each side; creating an X-pattern.

Rebid Documents

When activation and safety zones are cleared and the entrance closes the sensor will ignore the X-pattern safety zones.

5. Combined motion and presence sensors shall be equal to or better than X-Zone Sensor by Optex.

B. Photoelectric Beams: In addition to the threshold sensor include a minimum of two (2) doorway holding beams. Photoelectric beams shall be pulsed infrared type, including sender receiver assemblies for recessed mounting.

C. Presence Sensor Monitoring: Sliding automatic entrances control system shall include a means to verify the functionality of all active presence sensors in accordance with ANSI/BHMA A156.10. A detected fault shall cause automatic operation to cease until the fault is corrected.

2.10 HARDWARE

A. General: Provide units in sizes and types recommended by automatic entrance and hardware manufacturers for entrances and uses indicated. Finish exposed parts to match door finish.

B. Breakaway Device for Power-Operated Doors: Device that allows door to swing out in direction of egress to full 90 degrees from any operating position. Maximum force to open door shall be as stipulated in "Performance Requirements" Article. Interrupt powered operation of door operator while in breakaway mode.

1. Include one adjustable detent device mounted at the top of each breakaway panel to control breakaway force.
    a. Limit Arms: Limit swing to 90 degrees, spring loaded with adjustable friction damping.

C. Automatic Locking: Electrically controlled device mounted in header that automatically locks sliding door in closed position, preventing door panels from sliding manually. Provide fail-secure operation if power fails.

1. Power Interruption: Lock shall be engaged, preventing doors from sliding manually.
2. Means of Egress: Standard breakaway feature.

D. Control Switch: Provide manufacturer’s standard header mounted rocker switches and door position switch to allow for full control of the automatic entrance door. Controls to include, but are not limited to:

1. One-way traffic
2. Reduced Opening
3. Open/Closed/Automatic

E. Power Switch: Sliding automatic entrances shall be equipped with a two position On/Off rocker switch to control power to the door.

F. Uninterrupted Power Supply: UL 1778, fully integrated unit mounted within header.

1. Power Interruption: Supply power to operator, controls, activation device, and safety systems of sliding automatic door for up to **1.5** hours of normal operation.
2. Include low-battery shutdown feature to safely open or close door prior to complete battery discharge.
3. Include audible battery replacement alarm to indicate that battery will no longer accept a charge and replacement is required.

Rebid Documents

G. Weather Stripping: Replaceable components.
   1. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

H. Weather Sweeps: Manufacturer's standard adjustable nylon brush sweep mounted to underside of door bottom.

2.11 FABRICATION

A. General: Factory fabricate automatic entrance components to designs, sizes, and thicknesses indicated and to comply with indicated standards.
   1. Form aluminum shapes before finishing.
   2. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
   3. Use concealed fasteners to greatest extent possible. Where exposed fasteners are required, use countersunk Phillips flat-head machine screws**,** finished to match framing.
      a. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
      b. Reinforce members as required to receive fastener threads.
   4. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.

B. Framing: Provide automatic entrances as prefabricated assemblies. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to Project site.
   1. Fabricate tubular and channel frame assemblies with welded or mechanical joints. Provide subframes and reinforcement as required for a complete system to support required loads.
   2. Perform fabrication operations in manner that prevents damage to exposed finish surfaces.
   3. Form profiles that are sharp, straight, and free of defects or deformations.
   4. Provide components with concealed fasteners and anchor and connection devices.
   5. Fabricate components with accurately fitted joints, with ends coped or mitered to produce hairline joints free of burrs and distortion.
   6. Fabricate exterior components to drain water passing joints, condensation occurring within framing members, and moisture migrating within system to exterior. Provide anchorage and alignment brackets for concealed support of assembly from building structure.
   7. Allow for thermal expansion of exterior units.

C. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.

D. Door Operators: Factory fabricated and installed in headers, including adjusting and testing.

E. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated, in accordance with GANA's "Glazing Manual."

Rebid Documents

F. Hardware: Factory install hardware to greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site. Cut, drill, and tap for factory-installed hardware before applying finishes.
   1. Provide sliding-type weather stripping, mortised into door, at perimeter of doors.

G. Controls:
   1. General: Factory install activation and safety devices in doors and headers as required by BHMA A156.10 for type of door and direction of travel.

2.12 ALUMINUM FINISHES

A. General: Comply with NAAMM Metal Finishes Manual for Architectural and Metal Products for recommendations for applying and designing finishes. Finish designations prefixed by AA comply with system established by Aluminum Association for designing finishes

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine conditions for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of automatic entrances. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install automatic entrances according to manufacturer's written instructions and cited BHMA A156.10 for direction of pedestrian travel, including signage, controls, wiring, and connection to the building's power supply.
   1. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.
   2. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
   3. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous coating.

B. Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
   1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
   2. Set headers, carrier assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.
   3. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within system to exterior.
   4. Level recesses for recessed thresholds using non-shrink grout.

C. Door Operators: Connect door operators to electrical power distribution system.

Rebid Documents

D. Controls: Install and adjust activation and safety devices according to manufacturer's written instructions and cited BHMA standard for direction of pedestrian travel. Connect control wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

E. Glazing: Install glazing as specified in Section 088000 "Glazing."

F. Sealants: Comply with requirements specified in Section 079200 "Joint Sealants" to provide weathertight installation.
   1. Set thresholds, framing members and flashings in full sealant bed.
   2. Seal perimeter of framing members with sealant.

G. Signage: Apply signage on both sides of each door as required by cited BHMA standard for direction of pedestrian travel.

H. Wiring within Automatic Entrance Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's written limitations on bending radii. Provide and use lacing bars and distribution spools.

3.3 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
   1. Test and inspect each automatic entrance, using AAADM inspection forms, to determine compliance of installed systems with applicable BHMA standards.

B. Automatic entrances will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.4 ADJUSTING AND CLEANING

A. Adjust hardware, moving parts, door operators, and controls to function smoothly, and lubricate as recommended by manufacturer; comply with requirements of applicable BHMA standards.
   1. Adjust exterior doors for tight closure.

B. Readjust door operators and controls after repeated operation of completed installation equivalent to three days' use by normal traffic (100 to 300 cycles).

C. Clean glass and metal surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Repair damaged finish to match original finish.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain automatic entrances.

END OF SECTION 08 4229.23

Rebid Documents

SECTION 08 5413 - FIBERGLASS WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section includes fiberglass-framed windows.

1.3 REFERENCES

A. ASTM International (ASTM):
1. E283: Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
2. E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference
3. E547: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Cyclic Air Pressure Difference
4. E2190: Standard Specification for Insulating Glass Unit Performance and Evaluation
5. C1036: Standard Specification for Flat Glass
6. E2112: Standard Practice for Installation of Exterior Windows, Doors, and Skylights

B. North American Fenestration Standard (NAFS) - American Architectural Manufacturer's Association/Window and Door Manufacturer's Association/Canadian Standards Association (AAMA/WDMA/CSA 101/I.S.2/A440):
1. AAMA/WDMA/CSA 101/I.S.2/A440-17: NAFS: North American Fenestration, Standard/Specification for windows, doors, and skylights

C. Window and Door Manufacturers Association (WDMA)
1. WDMA I.S.4: Industry Standard for Water Repellent Preservative Treatment for Millwork
2. WDMA I.S.2: Hallmark Certification Program

D. Insulating Glass Certification Council (IGCC) and Fenestration Glazing Industry Alliance (FGIA) Glass Products Council (GPC)

E. Fenestration Glazing Industry Alliance (FGIA) – note: AAMA combined with IGMA and formed FGIA as of 08/01/2019
1. AAMA 2605: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels

Rebid Documents

F. National Fenestration Rating Council (NFRC):
   1. NFRC 101: Procedure for Determining Fenestration Product Thermal Properties
   2. NFRC 200: Procedure for Determining Solar Heat Gain Coefficients at Normal Incidence

G. Window Covering
   1. WCMA A100.0: American National Standard for Safety of Window Covering Products

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Product Data: For each type of product.
   2. Shop Drawings:
      a. Showing methods of installation, plans, sections, elevations and details of walls, specified loads, flashings, vents, sealants, and interfaces with all materials not supplied by the window manufacturer, and identification of proposed component parts and finishes.

   3. Samples:
      a. Selection and verification samples for finishes, colors and textures. Submit two complete sample sets of each type of material required.

   4. Certificates: Signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.
   5. Test and Evaluation Reports: Showing compliance with specified performance characteristics and physical properties.
   6. Sample Warranties: For manufacturer's warranties.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating fiberglass windows that meet or exceed performance requirements indicated and of documenting this performance by test reports and calculations.
   1. Minimum five years’ experience in the commercial installation of products required for the Project.
   2. Experience on at least five projects of similar size, type and complexity as the Project.

1.6 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace fiberglass windows that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure to meet performance requirements.
      b. Structural failures including excessive deflection, water leakage, and air infiltration.
      c. Faulty operation of movable sash and hardware.
      d. Deterioration of materials and finishes beyond normal weathering.
      e. Failure of insulating glass.

Rebid Documents

2. Warranty Period:
   a. Window: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fiberglass windows from single source from single manufacturer.

2.2 WINDOW PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
   1. Window Certification: WDMA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
   1. Minimum Performance Class: LC
   2. Minimum Performance Grade: 25.

C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.30 Btu/sq. ft. x h x deg F.

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.40.

E. Sound Transmission Class (STC): Rated for not less than 26 STC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E413.

F. Outside-Inside Transmission Class (OITC): Rated for not less than 21OITC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E1332.

2.3 FIBERGLASS WINDOWS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Marvin Windows, “Essential Series” or comparable product by one of the following:
   1. Pella Corporation, “Impervia Series”.
   2. Milgard “650 Ultra Series”.

B. Operating Types: Provide the following operating types in locations indicated on Drawings:
   1. Single hung.
   2. Fixed.
   3. Mulled windows as indicated on the Drawings.

C. Frames and Sashes: Pultruded fiberglass complying with AAMA/WDMA/CSA 101/I.S.2/A440 and with exposed exterior fiberglass surfaces finished with manufacturer's standard enamel coating complying with AAMA 623.
   1. Exterior Color: Ebony

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2. Interior Finish: Matching exterior color and finish.

D. Accessories
   a. Jamb Extension: None.
   b. Brick Mold: Manufacturer's standard 2 inch brick mold; color to match window frame.
      1) Concealed corner connectors and wall connectors as required for a complete installation

E. Insulating-Glass Units: ASTM E2190.
   1. Glass: ASTM C1036, Type 1, Class 1, q3.
      a. Tint: Clear.

   2. Filling: Fill space between glass lites with argon.
   3. Low-E Coating: Sputtered on second surface.

F. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

G. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
   1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 FABRICATION

A. Fabricate fiberglass windows in sizes indicated. Include a complete system for installing and anchoring windows.

B. Glaze fiberglass windows in the factory.

C. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.

D. Window Assemblies: Provide fixed units in configuration indicated. Provide window frames, sashes, hardware, and other trim and components necessary for a complete, secure, and weathertight installation.

E. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

Rebid Documents

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
   1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.

B. Testing Services: Testing and inspecting of installed windows shall take place as follows:
   1. Testing Methodology: Testing of windows for air infiltration and water resistance shall be performed according to AAMA 502.
   2. Air-Infiltration Testing:
      a. Test Pressure: That required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance class indicated.
      b. Allowable Air-Leakage Rate: 1.5 times the applicable AAMA/WDMA/CSA 101/I.S.2/A440 rate for product type and performance class rounded down to one decimal place.

   3. Water-Resistance Testing:
      a. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance grade indicated.
      b. Allowable Water Infiltration: No water penetration.

Rebid Documents

4. Testing Extent: Three windows of each type as selected by Architect and a qualified independent testing and inspecting agency. Windows shall be tested after perimeter sealants have cured.
5. Test Reports: Prepared according to AAMA 502.

C. Windows will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.4 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

B. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.
1. Keep protective films and coverings in place until final cleaning.

C. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.

D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION 08 5413

Rebid Documents

SECTION 08 7100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS AND CONDITIONS

A. Drawings and general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 Specification Sections, apply to this Section.

B. This section includes all material, and related service necessary to furnish all finish hardware indicated on the drawings or specified herein.

C. Furnish UL listed hardware for all labeled and 20 min. openings in conformance with the requirements for the class of opening scheduled. Underwriters' requirements shall have precedence over specification where conflicts exist.

D. All work shall be in accordance with all applicable state and local building codes. Code requirements shall have precedence over this specification where conflicts exist.

1.2 SUMMARY

A. Section Includes:
1. Furnish door hardware (for hollow metal, wood and aluminum doors) specified herein, listed in the hardware schedule, and/or required by the drawings.
2. Cylinders for Aluminum Doors
3. Thresholds and Weather-stripping (Aluminum frame seals to be provided by aluminum door supplier)
4. Electro-Mechanical Devices
5. Access Control components and or systems specified within this section.

B. Where items of hardware are not definitely or correctly specified and are required for the intended service, such omission, error or other discrepancy should be directed to the Architect prior to the bid date for clarification by addendum. Otherwise furnish such items in the type and quantity established by this specification for the appropriate service intended.

C. Related Requirements:
1. Division 06 Section "Finish Carpentry".
2. Division 06 Section "Cabinet Hardware"
3. Division 08 Section "Hollow Metal Doors and Frames".
4. Division 08 Section "Wood Doors"
5. Division 08 Section “Storm Doors”
6. Division 08 Section "Aluminum Entrances and Storefronts"
7. Division 26 Sections “Electrical”
8. Division 28 Sections "Electronic Safety and Security".

Rebid Documents

1.3 REFERENCES

A. Publications of agencies and organizations listed below form a part of this specification section to the extent referenced.
   1. DHI – Installation Guide for Doors and Hardware (2020).
   2. NFPA 80 - Standards for Fire Doors and Windows.
   3. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures.
   4. UL - Building Material Directory.
   5. DHI - Door and Hardware Institute
   6. WHI - Warnock Hersey
   7. BHMA - Builders Hardware Manufacturers Association
   8. ANSI – American National Standards Institute
   9. ANSI ICC500 – Standard for the Design and Construction of Storm Shelters
   10. IBC - International Building Code 2021 Edition (as adopted and amended by local building code)

1.4 SUBMITTALS

A. Within ten days after award of contract, submit detailed hardware schedule in quantities as required by Division 01 - General Requirements.

B. Schedule format shall be consistent with recommendations for a vertical format as set forth in the Door & Hardware Institute's (DHI) publication "Sequence and Format for the Hardware Schedule". Hardware sets shall be consolidated to group multiple door openings which share similar hardware requirements. Schedule shall include the following information:
   1. Door number, location, size, handing, and rating.
   2. Door and frame material, handing.
   3. Degree of swing.
   4. Manufacturer
   5. Product name and catalog number
   6. Function, type and style
   7. Size and finish of each item
   8. Mounting heights
   9. Explanation of abbreviations, symbols, etc.
   10. Numerical door index, indicating the hardware set/ group number for each door.

C. When universal type door closers are to be provided, the schedule shall indicate the application method to be used for installation at each door: (regular arm, parallel arm, or top jamb).

D. The schedule will be prepared under the direct supervision of a certified Architectural Hardware Consultant (AHC), or certified Door Hardware Consultant (DHC) employed by the hardware distributor. The hardware schedule shall be signed and embossed or stamped with the DHI certification seal of the supervising AHC or DHC. The supervising AHC or DHC shall attend any meetings related to the project when requested by the architect.

E. Check the specified hardware for suitability and adaptability to the details and surrounding conditions.

Rebid Documents

F. Review drawings from related trades as required to verify compatibility with specified hardware. Indicate unsuitable or in compatible items, and proposed substitutions in the hardware schedule.

G. Provide documentation for all hardware to be furnished on labeled fire doors indicating compliance with positive pressure fire testing UL 10C.

H. Furnish manufacturers' catalog data for each item of hardware in quantities as required by Division 01 - General Requirements.

I. Submit a sample of each type of hardware requested by the architect. Samples shall be of the same finish, style, and function as specified herein. Tag each sample with its permanent location so that it may be used in the final work.

J. Furnish with first submittal, a list of required lead times for all hardware items.

K. After final approved schedule is returned, transmit corrected copies for distribution and field use in quantities as required by Division 01 - General Requirements.

L. Furnish approved hardware schedules, template lists, and pertinent templates as requested by related trades.

M. Furnish necessary diagrams, schematics, voltage and amperage requirements for all electro-mechanical devices or systems as required by related trades. Wiring diagrams shall be opening specific and include both a riser diagram and point to point diagram showing all wiring terminations.

N. After receipt of approved hardware schedule, Hardware supplier shall initiate a meeting including the owner’s representative to determine keying requirements. Upon completion of initial key meeting, hardware supplier shall prepare a proposed key schedule with symbols and abbreviations as set forth in the door and hardware institute’s publication “Keying Procedures, Systems, and Nomenclature”. Submit copies of owner approved key schedule for review and field use in quantities as required by Division 01 - General Requirements. Wiring diagrams shall be included in final submittals transmitted for distribution of field use.

1.5 QUALITY ASSURANCE

A. Manufacturers and model numbers listed are to establish a standard of function and quality. Similar items by approved manufacturers that are equal in design, function, and quality, may be considered for prior approval of the architect, provided the required data and physical samples are submitted for approval as set forth in Division 01 - General Requirements.

B. Where indicated in this specification, products shall be independently certified by ANSI for compliance with relevant ANSI/BHMA standards A156.1 - A156.36 – Standards for Hardware and Specialties. All products shall meet or exceed certification requirements for the respective grade indicated within this specification. Supplier shall provide evidence of certification when requested by the architect.

Rebid Documents

C. Obtain each type of hardware (hinges, latch & locksets, exit devices, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.

D. Electrical drawings and electrical specifications are based on the specific electrified hardware components specified in hardware sets. When electronic hardware components other than those indicated in hardware sets are provided, the supplier shall be responsible for all costs incurred by the design team and their consultants to review and revise electrical drawings and electrical specifications. Supplier shall also be responsible for any additional costs associated with required changes in related equipment, materials, installation, or final hook up to ensure the system will operate and function as indicated in the construction documents, including hardware set operational / functional descriptions.

E. All hardware items shall be manufactured no earlier than 6 months prior to delivery to site.

F. Installation of hardware shall be installed or directly supervised and inspected by a skilled installer certified by the manufacturer of locksets, door closers, and exit devices used on the project, or with not less than 3 years' experience in successful completion of projects similar in size and scope.

G. Provide hardware for all labeled fire doors, which complies with positive pressure fire testing UL 10C.

H. Comply with all applicable provisions of the standards referenced within section 1.4 of this specification.

I. Hardware supplier shall participate when reasonably requested to meet with the contractor and or architect to inspect any claim for incorrect or non-functioning materials; following such inspection, the hardware supplier shall provide a written statement documenting the cause and proposed remedy of any unresolved items.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Hardware supplier shall deliver hardware to the job site unless otherwise specified.

B. All hardware shall be delivered in manufacturers' original cartons and shall be clearly marked with set and door number.

C. Coordinate with contractor prior to hardware delivery and recommend secure storage and protection against loss and damage at job site.

D. Contractor shall receive all hardware and provide secure and proper protection of all hardware items to avoid delays caused by lost or damaged hardware. Contractor shall report shortages to the Architect and hardware supplier immediately after receipt of material at the job site.

E. Coordinate with related trades under the direction of the contractor for delivery of hardware items necessary for factory installation.

Rebid Documents

1.7 PRE-INSTALLATION MEETING

A. Schedule a hardware pre-installation meeting on site to review and discuss required door operating clearances and the installation of continuous hinges, locksets, door closers, exit devices, overhead stops, and electromechanical door hardware.

B. Meeting attendees shall be notified 7 days in advance and shall include: Architect, Contractor, Door Hardware Installers (including low voltage hardware), Manufacturers representatives for above hardware items, and any other effected subcontractors or suppliers.

C. All attendees shall be prepared to distribute installation manuals, hardware schedules, templates, and physical hardware samples.

1.8 WARRANTY

A. All hardware items shall be warranted against defects in material and workmanship as set forth in Division 01 - General Requirements.

B. Repair, replace, or otherwise correct deficient materials and workmanship without additional cost to owner.

PART 2 - PRODUCTS

2.1 FASTENERS

A. All exposed fasteners shall be Phillips head or as otherwise specified and shall match the finish of the adjacent hardware. All fasteners exposed to the weather shall be non-ferrous or stainless steel. Furnish correct fasteners to accommodate surrounding conditions.
1. Coordinate required reinforcements for doors and frames. Seek approval of the architect prior to furnishing through-bolts. Furnish through-bolts as required for materials not readily reinforced.

2.2 BUTT HINGES

A. Acceptable manufacturers and respective catalog numbers:

		Ives	Stanley	Hager	McKinney
1.	Standard Weight, Plain Bearing	5PB1	F179	****	T2714
2.	Standard Weight, Ball Bearing	5BB1	BB179	BB1279	TB2714
3.	Standard Weight, Ball Bearing, Non-Ferrous	5BB1	FBB191	BB1191	TB2314
4.	Heavy Weight, Ball Bearing	5BB1HW	FBB168	BB1168	T4B3786
5.	Heavy Weight, Ball Bearing, Non-Ferrous	5BB1HW	FBB199	BB1199	T4B3386

B. Hinges shall be independently certified by ANSI for compliance with ANSI A156.1 (2006). Hinges shall meet or exceed the following ANSI grade requirements as indicated below:
1. Standard Weight, Plain Bearing Hinges: Grade 3
2. Standard Weight, 2 Ball Bearing Hinges: Grade 2

Rebid Documents

3. Heavy Weight, 4 Ball Bearing Hinges: Grade 1

C. Unless otherwise specified, furnish the following hinge quantities for each door leaf.
1. 3 hinges for doors up to 90 inches.
2. 1 additional hinge for every 30 inches on doors over 90 inches.
3. 4 hinges for Dutch door applications.

D. Unless otherwise specified, top and bottom hinges shall be located as specified in Division 08 Section "Hollow Metal Doors and Frames". Intermediate hinges shall be located equidistant from others.

E. Unless otherwise specified, furnish hinge weight and type as follows:
1. Standard weight: plain bearing hinge 5PB1 or ball bearing hinge 5BB1 for interior openings through 36 inches wide without a door closer.
2. Standard weight: ball bearing hinge 5BB1 for interior opening over 36 through 40 inches wide without a door closer, and for interior openings through 40 inches wide with a door closer.
3. Heavyweight: 4 ball bearing hinge 5BB1HW for interior openings over 40 inches wide, and for all vestibule doors.
4. Heavyweight: 4 ball bearing hinge 5BB1HWss for exterior openings unless otherwise listed in groups.
5. Heavyweight: 4 ball bearing hinge 5BB1HWss 5” for all exterior doors or 4 ball bearing hinge 5BB1HW 5” for interior doors, that have an automatic operator.

F. At existing frames receiving new hinges, match existing hinge size and weight.

G. Unless otherwise specified, furnish brass, bronze, or stainless-steel base metal for hinges at exterior doors. Unless otherwise specified, furnish steel base metal for hinges at interior and labeled doors.

H. Furnish stainless steel base metal for hinges at showers, pools, and wash bay doors.

I. Unless otherwise specified, furnish hinges in the following sizes:

1.	5" x 5"	2-1/4" thick doors
2.	4-1/2" x 4-1/2"	1-3/4" thick doors
3.	3-1/2" x 3-1/2"	1-3/8" thick doors

J. Furnish hinges with width to accommodate trim and allow for 180-degree swing.

K. Unless otherwise specified, furnish hinges with flat button tips with non-rising pins at interior doors, non-removable loose pins (NRP) at exterior, and out-swinging lockable interior doors.

L. Unless otherwise specified, furnish all hinges to template standards.

2.3 CONTINUOUS PIN AND BARREL HINGES

A. Acceptable manufacturers and respective catalog numbers:

		Ives	Markar	Stanley
1.	Edge Mount Pin & Barrel Stainless Steel Continuous Hinge	700 Series	300 Series	650 Series

Rebid Documents

B. Hinges shall be independently certified by ANSI for compliance with ANSI A156.26, Grade 1 (2012).

C. Continuous hinges shall be full height pin and barrel type hinge providing full height door support up to 600 lbs. Edge mount (unless noted otherwise).

D. Construct hinges of heavy-duty 14-gauge material. The stainless internal pin shall have a diameter of 0.25 and the exterior barrel diameter of 0.438.

E. Hinge shall be non-handed with symmetrical template hole pattern and factory drilled. Hinge must accept a minimum of 21 fasteners on the door and 21 fasteners on the frame.

F. Each knuckle to be 2 inches, including split nylon bearing at each separation for quiet, smooth, self-lubricating operation.

G. Hinge to be able to carry Warnock Hersey Int. or UL for fire rated doors and frames up to 3 hours.

H. Provide machine screws for doors which have been reinforced to accept machine screws.

I. Note: Fire label for doors and frames should be placed on the header and top rail of fire rated doors and frames.

2.4 POWER TRANSFERS

A. Acceptable manufacturers and respective catalog numbers:

		Von Duprin	ASSA
1.	Concealed Two Wire	EPT-2	CEPT-10
2.	Concealed Ten Wire	EPT-10	CEPT-10

B. Concealed power transfers shall be concealed in the door and frame when the door is closed.

C. Concealed power transfers shall have a steel tube to protect wires from being cut.

D. Concealed power transfers with spring tubes shall be rejected.

E. Concealed power transfers shall be supplied with a mud box to house all terminations.

2.5 FLUSH BOLTS AND DUST PROOF STRIKES

A. Acceptable manufacturers and respective catalog numbers:

		Ives	Trimco	Hager
1.	Auto Flush Bolt (Metal Door)	FB31P	3810	292D
2.	Auto Flush Bolt (Wood Door)	FB41P	3815L	291D

B. Unless otherwise specified, provide 12" rods for manual flush bolts for door 7'6" or less, 24" top rods for doors over 7'6" to 8'6".

Rebid Documents

C. Unless otherwise specified, provide doors over 8'6" with automatic top bolts.

D. Provide automatic flush bolts where required to maintain fire door listing and or egress requirements on pairs of doors.

E. All flush-bolt applications shall be UL listed to be installed with top flush-bolt only. Provide auxiliary fire bolt as required for fire rated openings where less bottom bolt has been specified.

F. Provide all bottom flush bolts with non-locking dust proof strikes.

2.6 EXIT DEVICES

A. Acceptable manufacturers and respective catalog numbers:

		Von Duprin	Falcon	Detex
1.	Wide Stile, Push Pad	78 Series	25 Series	Advantex (Wide Stile)
2.	Lever Trim	780L Series	510L/511L Series	“D/DM” Trim
3.	Pull Trim	785 Series	512 Series	“C” Trim

B. Exit devices shall be independently certified by ANSI for compliance with ANSI A156.3, Grade 1 (2008).

C. Obtain exit devices from a single manufacturer, although several may be indicated as offering products complying with requirements.

D. All exit devices shall be equipped with a sound-dampening feature to reduce touch pad return noise.

E. All exit devices shall be provided with flush end caps to reduce potential damage from impact.

F. All exit devices shall be provided with dead-locking latch bolts to ensure security.

G. All exit devices shall be U.L. listed for accident hazard. Exit device for use on fire doors shall also be U.L. listed for fire exit hardware.

H. Provide optional strikes, special length rods, and adapter plates to accommodate door and frame conditions. Provide narrow style series devices in lieu of wide stile series devices where optional strikes will not accommodate door and frame conditions.

I. Coordinate with related trades to ensure adequate clearance and reinforcement is provided in doors and frames. Provide thru bolts as required.

J. Refer to hardware groups for exit device applications utilizing the option of: "less bottom rod and floor strike" (LBR)

K. All exit devices shall be provided with optional trim designs to match other lever and pull designs used on the project.

L. Unless specific exit device dogging options are noted within hardware sets, provide dogging options as follows:
   1. Fire Rated devices: Dogging not permitted.

Rebid Documents

2. Non-Rated Exit Only functions not equipped with outside trim or pull: Less Dogging.
3. Non-Rated Classroom functions: Less Dogging.
4. Non-Rated devices utilizing electric latch retraction or electrified outside trim: Less Dogging.
5. All Other Non-Rated devices: Cylinder Dogging utilizing interchangeable core cylinders. Cylinder keyway shall match locksets furnished on this project.

M. Provide glass bead kits as required to accommodate door conditions. Screws shall not be visible through full glass doors.

N. Where specified, provide compatible keyed mullions with cylinder for pairs of doors.

2.7 TORNADO RESISTANT STORM DOOR EXIT DEVICES

A. Acceptable manufacturers and respective catalog numbers:

		Von Duprin
1.	Wide Stile, Push Pad	WS-T-99 Series
2.	Lever Trim	996 Series
3.	Pull Trim	990 Series
4.	Latch Guard	WS-LGO

B. Exit devices shall be independently certified by ANSI for compliance with ANSI A156.3-2008, Grade 1 (2008).

C. Exit devices shall be FEMA 361 and ICC500 certified.

D. Exit device shall be a tested and approved for compliance and compatibility with manufacture's tested assembly.

E. Obtain windstorm exit devices from a single manufacturer, although several may be indicated as offering products complying with requirements.

F. All exit devices shall be equipped with a sound-dampening feature to reduce touch pad return noise.

G. All exit devices shall be provided with flush end caps to reduce potential damage from impact.

H. All exit devices shall be provided with dead-locking latch bolts to ensure security.

I. All exit devices shall be U.L. listed for accident hazard. Exit device for use on fire doors shall also be U.L. listed for fire exit hardware.

J. Coordinate with related trades to ensure adequate clearance and reinforcement is provided in doors and frames.

K. All exit devices shall be provided with optional trim designs to match other lever and pull designs used on the project.

Rebid Documents

2.8 LOCKS AND LATCHES

A. Acceptable manufacturers and respective catalog numbers:

		Schlage	Falcon	Corbin
1.	Grade 1 Mortise	L Series 06A	MA Series DG	ML2000 NSA
2.	Grade 1 Cylindrical	ND Series RHO	T Series D	CLX3300 NZD
3.	Grade 2 Tubular	F Series ELA	W Series D	****

B. Bored locks shall be independently certified by ANSI for compliance with ANSI A156.2 (2011). Mortise locks shall be independently certified by ANSI for compliance with ANSI A156.13 (2012).

C. Unless otherwise specified, all locks and latches to have:
1. 2-3/4" Backset
2. 1/2" minimum throw latchbolt
3. 1" throw deadbolt
4. ANSI A115.2 strikes

D. Provide guarded latch bolts for all locksets, and latch bolts with throw to maintain fire rating of both single and paired door assemblies.

E. Provide strike with lip length adequate to clear surrounding trim.

F. Provide wrought boxes for strikes at inactive doors, wood frames, and metal frames without integral mortar covers.

2.9 PULLS, PUSH BARS, PUSH/PULL PLATES

A. Acceptable manufacturers and respective catalog numbers:

		Ives	Burns	Trimco
1.	Offset Door Pull (1" dia., 10" CTC)	8190-0	39C	1191-3

B. Adjust dimensions of push plates to accommodate stile and rail dimensions, lite and louver cutouts, and adjacent hardware. Where required by adjacent hardware, push plates shall be factory drilled for cylinders or other mortised hardware. All push plates shall be beveled 4 sides and counter sunk.

C. Where required on wide stile doors, install straight pull offset of cylinder to allow for access to cylinder.

D. Where possible, provide back-to-back, and concealed mounting for pulls and push bars. Push bar length shall be 3" less door width, or center of stile to center of stile for stile & rail or full glass doors.

2.10 COORDINATORS

A. Acceptable manufacturers and respective catalog numbers:

Rebid Documents

		Ives	Trimco	Hager
1.	Bar Coordinator	COR x FL	3094	297D x 297F
2.	Mounting Bracker	MB Series	3095/3096	297 Series

B. Provide coordinators at all pairs of doors having automatic flush bolts and closers on the inactive leaf, and for pairs of doors having vertical rod/mortise exit device combinations with overlapping astragals.

C. Provide appropriate filler bars, closer mounting brackets, carry bars, and special top latch preparations as required by adjacent hardware.

2.11 CLOSERS

A. Acceptable manufacturers and respective catalog numbers:

	LCN	Norton	Falcon
1.	4050A / 4050A EDA	R7500 / PR7500	SC70A/SC70A FA HD
3.	1250 SLIM	1600 P	SC60A SLIM

B. Door closers shall be independently certified by ANSI for compliance with ANSI A156.4, Grade 1 (2013).

C. Obtain door closers from a single manufacturer, although several may be indicated as offering products complying with requirements.

D. Provide extra heavy-duty arm (EDA / HD) when closer is to be installed using parallel arm mounting.

E. Hardware supplier shall coordinate with related trades to ensure aluminum frame profiles will accommodate specified door closers.

F. Closers shall use aluminum cylinders.

G. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with standards UL10C.

H. Unless otherwise specified, all door closers shall have full covers and separate adjusting valves for sweeps, latch, and backcheck.

I. Provide closers for all labeled doors. Provide closer series and type consistent with other closers for similar doors specified elsewhere on the project.

J. Provide closers with adjustable spring power. Size closers to ensure exterior and fire rated doors will consistently close and latch doors under existing conditions. Size all other door closers to allow for reduced opening force not to exceed 5 lbs.

K. Install closers on the room side of corridor doors, stair side of stairways and interior side of exterior doors.

Rebid Documents

L. Closers shall be furnished complete with all mounting brackets and cover plates as required by door and frame conditions, and by adjacent hardware.

M. Door closers shall be provided with a powder coat finish to provide superior protection against the effects of weathering. Powder coat finish shall successfully pass a 100-hour salt spray test.

2.12 KICK PLATES AND MOP PLATES

A. Furnish protective plates as specified in hardware groups.

B. Where specified, provide 10" kick plates, 34" armor plates, and 4" mop plates. Unless otherwise specified, metal protective plates shall be .050" thick; plastic plates shall be 1/8" thick.

C. Protective plates shall be 2" less door width, or 1" less door width at pairs. All protective plates shall be beveled 4 sides and counter sunk.

D. Protection plates over 16" shall not be provided for labeled doors unless specifically approved by door manufacturers listing. When protection plates over 16” are provided for labeled doors, the plate shall be labeled.

E. Where specified, provide surface mounted door edges. Edges shall butt to protective plates. Provide edges with cutouts as required adjacent hardware.

F. Adjust dimensions of protection plates to accommodate stile and rail dimensions, lite and louver cutouts, and adjacent hardware. Where required by adjacent hardware, protection plates shall be factory drilled for cylinders or other mortised hardware.

2.13 OVERHEAD STOPS

A. Acceptable manufacturers and respective catalog numbers:

		Glynn-Johnson	Rixson	Sargent
1.	Heavy Duty Surface Mount	GJ900 Series	9 Series	590
2.	Heavy Duty Concealed Mount	GJ100 Series	1 Series	690

B. Unless otherwise specified, furnish GJ900 series overhead stop for hollow metal or 1-3/4” solid core doors equipped with regular arm surface type closers that swing more than 140 degrees before striking a wall, for hollow metal or 1-3/4” solid core doors that open against equipment, casework, sidelights, or other objects that would make wall bumpers inappropriate, and as specified in hardware groups.

C. Furnish sex bolt attachments for wood and mineral core doors unless doors are supplied with proper reinforcing blocks.

D. Provide special stop only (“SE” suffix) overhead stops when used in conjunction with electronic hold open closers.

E. Do not provide holder function for labeled doors.

Rebid Documents

2.14 WALL STOPS AND HOLDERS

A. Acceptable manufacturers and respective catalog numbers:

		Ives	Trimco	Burns
1.	Wrought Concave Wall Stop	WS406CCV	1270CV	575

B. Furnish a stop or holder for all doors.

C. Provide concave style wall stop at all adjacent integral push button locks; provide convex style wall stop at all other locations.

D. Where wall stops are not applicable, furnish overhead stops.

E. Furnish floor stops or hinge pin stops only where specified in hardware sets.

F. Do not provide holder function for labeled doors.

2.15 DOOR STOPS (Unit Entry and Unit Interior Doors)

A. Acceptable manufacturers and respective catalog numbers.

		Ives	Trimco	Burns	Perfect Products
1.	Wrought Concave Wall Stop	WS406CCV	1270CV	575	****
2.	Flexible Door Stop	060	42F	509	****
3.	Hinge Pin Stop	70	****	****	DoorSaver II

B. Where solid core doors are utilized, provide door stops as follows:

C. Provide Ives WS406/407 wall stop where lever shaft will contact wall, or where adjacent stub wall would permit wall stop to be placed such that it would make contact with the face of the door at a point greater than 75% of door width when measured from the hinge edge of the door.

D. Provide additional Ives RB series roller bumper for each leaf where necessary to prevent contact with an adjacent door swinging into the same area. Provide Ives RB470 where two doors open against each other; provide Ives RB471/RB472 where two doors meet each other back-to-back. Hardware supplier shall coordinate with related trades to determine optimum roller bumper style and location for each door. Hardware supplier shall coordinate with related trades to ensure any door that will potentially come in contact with a roller bumper is constructed with adequate top rail blocking to prevent damage from roller bumper.

E. Where hollow core doors are utilized, provide door stops as follows:
1. Provide Ives WS406/407 wall stop where lever shaft will contact wall, or where adjacent stub wall would permit wall stop to be placed such that it would make contact with the face of the door at a point greater than 50% of door width when measured from the hinge edge of the door.
2. Provide hinge pin stop where wall stops, and floor stops are not applicable.

Rebid Documents

2.16 MAGNETIC HOLD OPENS

A. Acceptable manufacturers and respective catalog numbers:

		LCN	ABH	Edwards
1.	Wall Holder	SEM 7800	2000	1500

B. Magnetic hold opens shall be independently certified by ANSI for compliance with ANSI A156.15, Grade 1 (2006).

C. Magnetic holder's housing and armature shall be constructed of a die cast zinc material.

D. Provide types as listed in groups.

E. Where wall conditions do not permit the armature to reach the magnet, provide extensions.

F. Provide proper voltage and power consumption as required by Division 16.

G. Coordinate electrical requirements and mounting locations with other trades.

2.17 WEATHERSTRIP, GASKETING

A. Acceptable manufacturers and respective catalog numbers:

		Zero	Pemko	NGP	Reese
1.	Weatherstrip	429	2891_PK	700NA	755
2.	Adhesive Gasket	188	S88	5050	797
3.	Sweep w/ drip	8198	345_N	C627	354
4.	Drip Cap	142	346	16	R201

B. Weatherstrip and gasketing shall be independently certified by ANSI for compliance with ANSI A156.22 (2005).

C. Where specified in the hardware groups, furnish the above products unless otherwise detailed in groups.

D. Provide weatherstripping all exterior doors and where specified.

E. Provide intumescent and other required edge sealing systems as required by individual fire door listings to comply with positive pressure standards UL 10C.

F. Provide Zero 188 smoke gaskets at all fire rated doors and smoke and draft control assemblies.

G. Provide gasketing for all meeting edges on pairs of fire doors. Gasketing shall be compatible with astragal design provided by door supplier as required for specific fire door listings.

2.18 THRESHOLDS

A. Acceptable manufacturers and respective catalog numbers:

Zero	Pemko	NGP	Reese

Rebid Documents

1.	Saddle Thresholds	8655	171	425	S205
2.	Half Saddle Thresholds	1674	227	324	S239
3.	Interlocking Threshold	74A	114	442-5	T550
4.	¼" Saddle Thresholds	63	151	411	S263
5.	Threshold	653	169	****	****

B. Thresholds shall be independently certified by ANSI for compliance with ANSI A156.21 (2001).

C. Hardware supplier shall verify all finish floor conditions and coordinate proper threshold as required to ensure a smooth transition between threshold and interior floor finish.

D. Threshold Types:
1. Unless otherwise specified, provide saddle threshold similar to Zero 8655 for all exterior openings with an interior floor finish less than or equal to 1/4" in height.
2. Unless otherwise specified, provide half saddle threshold similar to Zero 1674 for all exterior openings with an interior floor finish greater than 1/4" in height. Threshold height shall match thickness of interior floor finish.

2.19 ELECTRIC STRIKES

A. Acceptable manufacturers and respective catalog numbers:

		Von Duprin	HES
1.	Type 1	6200 Series	4500C Series
2.	Type 1	6300 Series	9500 Series

B. Provide electric strikes compatible with the type of locks shown at each opening where specified.

C. Electric strikes shall be UL listed as Burglary-Resistant Electric Door Strikes and where required shall be UL listed as Electric Strike for Fire Doors.

D. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.

2.20 OFF-LINE COMPUTER MANAGED LOCKS

A. Acceptable manufacturers and respective catalog numbers:

		Schlage Electronics
1.	Cylindrical Locksets	CO200-CY Series
2.	Software Programming Kit	SUS-A Kit

B. Bored locks shall be independently certified by ANSI for compliance with ANSI A156.2, Grade 1 (2011). Mortise locks shall be independently certified by ANSI for compliance with ANSI A156.13, Grade 1 (2012).

C. Lockset to meet or exceed ANSI Standard Grade 1 strength and operational requirements and ANSI/BHMA Grade 1 Operation and Security Requirements.

Rebid Documents

D. Lockset shall be compliant with ICC / ANSI A117.1, NFPA 101, NFPA 80, and Industry Canada RSS-210, and shall be listed to UL294.

E. Provide functions and modular credential reader types, such as keypad, mag stripe, proximity, smart card, and multi-technology readers called out in hardware sets.

F. Provide all off-line access control devices with the following modular credential reader type:

Credential reader capabilities for SMS Express Software will include and may not be limited to:

1. 125 kHz Proximity card credentials: Schlage, XceedID, HID, GE/CASI ProxLite, and AWID.
2. Dual credential reading capabilities credential card/fob + pin.
3. 12 button keypad with backlit buttons.
4. Magnetic card triple track reader capable of reading tracks 1, 2 or 3 per configuration in field.
5. Full insertion reader capable of reading information along full length of magnetic stripe.

Credential reader capabilities for SMS Select/Premier/Enterprise Software or 3rd Party Partner integrated software may include and may not be limited to:

6. 13.56 MHz Smart card credentials:
7. Secure section (Multi-Technology and Smartcard): Schlage, XceedID ISO-X, MIFARE, ISO-X Lite, my-d, DESFire 8-EV1.
8. 13.56 MHz Serial number only (Multi-Technology and Smartcard): MIFARE, DESfire, iClass, Inside Pictotag, ST Micro, TI Tagit.
9. 125 kHz Proximity card credentials: Schlage, XceedID, HID, GE/CASI ProxLite and AWID.
10. Multi-Technology readers that read both 13.56 MHz Smart Cards + 125 kHz Prox cards.
11. Dual credential reading capabilities credential card/fob + pin.
12. 12 button keypad with backlit buttons.
13. Magnetic card triple track reader capable of reading tracks 1, 2 or 3 per configuration in field.
14. Full insertion reader capable of reading information along full length of magnetic stripe.

G. Lever trim shall match locksets when available.
1. Provide cylinders as required.

H. Provide optional tamper torx screws on inside escutcheon for Higher Security.

I. Lockset to be modular in design, to have the ability to be upgraded in the field from a standalone battery powered solution to a hard-wired network solution. Lockset to have the ability to be upgraded in the field form a standalone battery powered solution to a wireless networked solution without being removed from the door. Lockset to have the ability to change credential reader technologies without being removed from door.

J. Furnish locks with following functions that are field configurable without taking the lock off the door: Classroom / Storeroom, Apartment, Office, Privacy.

K. Lockset to have a on board processor with memory capacity of 5,000 users, 5,000 event audit history, up to 16 time zones and up to 32 calendar events.

Rebid Documents

L. Lockset to have the following standard switches provided: Door Position Switch, Interior Cover Tamper Guard, Mechanical Key Override, Request to Exit, Request to Enter, and Clutch Position.
   1. Lockset powered by [four] or [eight] AA batteries and shall have the ability to communicate Battery Status.
   2. Lockset to have visual tri-colored LED indicators that indicate activation, operational systems status, system error conditions and low power conditions. Lockset to have audible feedback that can be enabled or disabled.

M. The lockset will have the ability to utilize emergency mechanical key.

N. Exterior lever to be designed with ability to rotate freely while door remains securely locked, preventing damage to internal lock components from vandalism by excessive force. Lever trim to be non-handed, and to operate independently of non-locking levers for extended life cycles.

O. Exit device lever trim to release the latch bolt for the following exit device applications: rim, surface vertical rod, concealed vertical rod and mortise. Exit device lever trim to be non-handed and field reversible.

P. Off-line access control locks and exit device trim shall be programmed by the owner both manually (when used with keypad option), and by utilizing a compatible Android device (provided by others) with the SUS mobile application.

Q. Provide all optional cables & adaptors as required to permit communication with all provided off-line devices.

R. Preloaded utility software shall permit programming of the following lock features:
   1. Configure Credential Reader Format
   2. Configure Lock Function
   3. Configure Unlock Period
   4. Configure Power Failure Mode
   5. Configure Audible Alarm On/Off
   6. Validate Battery Status
   7. Validate Hardware and Software Revision
   8. Validate Troubleshooting Status Signals
   9. Configure Special Access Delay (Ada)
   10. Configure Delayed Egress (Release Delay)
   11. Configure Door Propped Open Delay
   12. Configure Lockdown Cancel Delay Time Out Between Credential And Pim
   13. Configure Number of Key Presses Without Valid Pin Before Lockout
   14. Configure Current Date/Time
   15. Configure Enable/Disable Manual Programming
   16. Upload Firmware Updates and Door Files To Device
   17. Download Audit Files from Device

S. Hardware supplier shall be factory trained and certified by the manufacturer to provide and support all computer managed locks and system components.

T. Hardware supplier shall provide onsite training to the end user as required by the manufacturer.

Rebid Documents

2.21 FINISHES AND BASE MATERIALS

A. Unless otherwise indicated in the hardware groups or herein, hardware finishes shall be applied over base metals (steel-based at labeled doors) as specified in the following finish schedule:

	HARDWARE ITEM	BHMA FINISH AND BASE MATERIAL
1.	Butt Hinges: Exterior, or Non-Ferrous	630 (US32D - Satin Stainless Steel)
2.	Butt Hinges: Interior or Ferrous	652 (US26D - Satin Chromium on Steel)
3.	Continuous Hinges	630 (US32D - Satin Stainless Steel)
4.	Flush Bolts	626 (US26D - Satin Chromium)
5.	Exit Devices	626 (US26D - Satin Chromium)
6.	Locks and Latches	626 (US26D - Satin Chromium)
7.	Pulls and Push Plates/Bars	630 (US32D - Satin Stainless Steel)
8.	Coordinators	600 (Prime painted or mill alum.)
9.	Closers	689 (Powder Coat Aluminum)
10.	Protective Plates	630 (US32D - Satin Stainless Steel)
11.	Overhead Stops	630 (US32D - Satin Stainless Steel)
12.	Wall Stops and Holders	630 (US32D - Satin Stainless Steel)
13.	Thresholds	719 (Mill Aluminum)
14.	Weather-strip, Sweeps Drip Caps	Aluminum Anodized
15.	Weather-strip, Sweeps Drip Caps (aluminum doors)	Match finish of aluminum doors.
16.	Magnetic Holders	689 (Powder Coat Aluminum)
17.	Miscellaneous	626 (US26D - Satin Chromium)

2.22 KEYING

A. Provide all cylinders in keyways as required to accommodate owners existing key system.

B. All locks under this section shall be keyed as directed by the owner to an existing Master Key System.

C. Furnish a total of 2 keys per cylinder. Actual cut keys to be determined by owner.

D. Master keys, control keys, and change keys shall be delivered by registered mail to the owner. Construction keys shall be delivered to the contractor.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to installation of hardware, installer shall examine door frame installation to ensure frames have been set square and plumb. Installer shall examine doors, door frames, and adjacent wall, floor, and ceiling for conditions, which would adversely affect proper operation and function of door assemblies. Do not proceed with hardware installation until such deficiencies have been corrected.

Rebid Documents

3.2 INSTALLATION

A. Before hardware installation, general contractor/construction manager shall coordinate a hardware installation seminar with a 1 week notice to all parties involved. The seminar is to be conducted on the installation of hardware, specifically of locksets, closers, exit devices, continuous hinges and overhead stops. Manufacturer's representative of the above products to present seminar. Seminar to be held at the job site and attended by installers of hardware (including low voltage hardware) for aluminum, hollow metal and wood doors. Training to include use of installation manuals, hardware schedule, templates and physical products samples.

B. Shim doors as required to maintain proper operating clearance between door and frame.

C. Install all hardware in accordance with the approved hardware schedule and manufacturer’s instructions for installation and adjustment.

D. Set units level, plumb and true to the line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

E. Provide blocking or reinforcement for all hardware mounted to drywall construction, including wall mounted door stops and holders.

F. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accord with industry standards.

G. Drill appropriate size pilot holes for all hardware attached to wood doors and frames.

H. Unless otherwise specified, locate all hardware in accordance with the recommended locations for builders hardware for standard doors and frames as published by the Door and Hardware Institute (TDH-007-20).

I. Use only fasteners supplied by or approved by the manufacturer for each respective item of hardware.

J. Mortise and cut to close tolerance and conceal evidence of cutting in the finished work.

K. Conceal push and pull bar fasteners where possible. Do not install through bolts through push plates.

L. Install hardware on UL labeled openings in accordance with manufacturer's requirements to maintain the label.

M. Apply self-adhesive gasketing on frame stop at head & latch side and on rabbet of frame at hinge side.

N. Install hardware in accordance with supplemental "S" label instructions on all fire rated openings.

O. Install wall stops to contact lever handles or pulls. Do not mount wall stops on casework, or equipment.

Rebid Documents

P. Where necessary, adjust doors and hardware as required to eliminate binding between strike and latchbolt. Doors should not rattle.

Q. Overhead stops used in conjunction with electrified hold open closers shall be templated and installed to coincide with engagement of closer hold open position.

R. Install door closers on corridor side of lobby doors, room side of corridor doors, and stair side of stairways.

S. Adjust spring power of door closers to the minimum force required to ensure exterior and fire rated doors will consistently close and latch doors under existing conditions. Adjust all other door closers to ensure opening force does not to exceed 5 lbs.

T. Adjust "sweep", "latch", & "back check" valves on all door closers to properly control door throughout the opening and closing cycle. Adjust total closing speed as required to comply with all applicable state and local building codes.

U. Install "hardware compatible" (bar stock) type weatherstripping continuously for an uninterrupted seal. Adjust templating for parallel arm door closers, exit devices, etc., as required to accommodate weatherstripping.

V. Unless otherwise specified or detailed, install thresholds with the bevel in vertical alignment with the outside door face. Notch and closely fit thresholds to frame profile. Set thresholds in full bed of sealant.

W. Compress sweep during installation as recommended by sweep manufacturer to facilitate a water-resistant seal.

X. Deliver to the owner 1 complete set of installation and adjustment instructions, and tools as furnished with the hardware.

3.3 FIELD QUALITY CONTROL

A. After installation has been completed, the hardware supplier for locksets, door closers, exit devices, and overhead stops shall check the project and verify compliance with installation instructions, adjustment of all hardware items, and proper application according to the approved hardware schedule. Hardware representative shall submit a list of all hardware that has not been installed correctly.

B. After installation has been completed, the hardware supplier shall meet with the owner to explain the functions, uses, adjustment, and maintenance of each item of hardware. Hardware supplier shall provide the owner with a copy of all wiring diagrams. Wiring diagrams shall be opening specific and include both a riser diagram and point to point diagram showing all wiring terminations.

Rebid Documents

3.4 ADJUSTMENT AND CLEANING

A. At final completion, and when H.V.A.C. equipment is in operation, installer shall make final adjustments to and verify proper operation of all door closers and other items of hardware. Lubricate moving parts with type lubrication recommended by the manufacturer.

B. At final completion, and when H.V.A.C. equipment is in operation, installer shall make final adjustments to and verify proper operation of all door closers and other items of hardware. Lubricate moving parts with type lubrication recommended by the manufacturer.

3.5 DOOR HARDWARE SCHEDULE

A. The following schedule of hardware groups are intended to describe opening function. The hardware supplier is cautioned to refer to the preamble of this specification for a complete description of all materials and services to be furnished under this section.

HW SET 01

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	PASSAGE SET	T101	FAL
1	EA	WALL STOP	WS406/407CCV	IVE

FUNCTION: (F75) PASSAGE LATCH. LATCH RETRACTED BY LEVER EITHER SIDE. BOTH LEVERS ALWAYS UNLOCKED.

HW SET 03

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	PASSAGE SET	T101	FAL
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: (F75) PASSAGE LATCH. LATCH RETRACTED BY LEVER EITHER SIDE. BOTH LEVERS ALWAYS UNLOCKED.

Rebid Documents

HW SET 05

QTY		DESCRIPTION	CATALOG NUMBER	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	IVE
2	EA	FIRE EXIT HARDWARE	WS-T-9927-L-BE-F-2SI-377TKC	VON
2	EA	LATCH GAURD	WS-LGO (X DOOR WIDTH)	VON
4	EA	IC CYLINDER	AS REQUIRED	
2	EA	SURFACE CLOSER	SC71A SS	FAL
1	EA	GASKETING	488S PSA @ HEAD & JAMBS	ZER
1	EA	MEETING STILE SEAL	8193 (1 EA LEAF)	ZER

-FOR USE WITH STEELCRAFT PALADIN DOOR ASSEMBLY.
-MEETS ICC 500-2020 AND FEMA 320/361.
-MAXIMUM DOOR SIZE 4'0 X 8'0 (SINGLE) AND 8'0 X 8'0 (PAIR).
-IF ANOTHER DOOR MFR. IS USED CONSULT WITH THEM FOR APPROVED HARDWARE, DOORS AND HARDWARE ARE SOLD AS A COMPLETE TESTED ASSEMBLY.
-GC TO PROVIDE SIGNAGE THAT MEETS ICC 500-2020 REQUIREMENTS, AS NEEDED.

-2SI "UNLOCKED":
-OUTSIDE LEVER IS ACTIVE WHEN -2SI IS SET TO "UNLOCKED" STATE.
-INGRESS BY OUTSIDE LEVER.
-FREE EGRESS BY THE PUSH PADS.

-2SI "LOCKED":
-OUTSIDE LEVER IS RIGID WHEN -2SI IS SET TO "LOCKED" STATE.
-THUMBTURN IS RIGID.
-INGRESS BY KEY OVERRIDE.
-TURN KEY TO ACTIVATE CYLINDER CONTROL.
-ROTATE CYLINDER CONTROL THUMBTURN TO RETRACT LATCHBOLTS.
-PULL RIGID LEVER TO OPEN DOOR.
-CANNOT REMOVE KEY IN 377T-KC (KEY CAPTURE) CYLINDER CONTROL WHILE ACTIVATED.
-FREE EGRESS BY THE PUSH PADS.

HW SET 06

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	PRIVACY LOCK	MA321 OCCUPIED/VACANT	FAL
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	PERIMETER SEAL	188S	ZER

FUNCTION: (F22) PRIVACY LOCK. OUTSIDE LEVER LOCKED BY INSIDE TURN. OUTSIDE LEVER UNLOCKED BY INSIDE TURN, INSIDE LEVER, OUTSIDE EMERGENCY KEY, OR CLOSING DOOR. INSIDE LEVER ALWAYS UNLOCKED. OUTSIDE INDICATOR DISPLAYS OCCUPIED/VACANT STATUS.

Rebid Documents

HW SET 07

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	ELEC OFFICE LOCK	CO-200-CY-50-KP	SCE
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: WIRELESS KEYPAD LOCK. LATCH RETRACTED BY KEY. OUTSIDE LEVER UNLOCKED BY PIN. INSIDE LEVER ALWAYS UNLOCKED FOR EGRESS. UPON LOSS OF POWER, OUTSIDE LEVER REMAINS LOCKED.

HW SET 07A

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	ELEC STOREROOM LOCK	CO-200-CY-70-KP	SCE
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: WIRELESS KEYPAD LOCK. LATCH RETRACTED BY KEY. OUTSIDE LEVER UNLOCKED BY PIN. INSIDE LEVER ALWAYS UNLOCKED FOR EGRESS. UPON LOSS OF POWER, OUTSIDE LEVER REMAINS LOCKED.

HW SET 07B

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	ELEC STOREROOM LOCK	CO-200-CY-70-KP	SCE
1	EA	OH STOP	90S	GLY
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	ARMOR PLATE	8400 32"	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: WIRELESS KEYPAD LOCK. LATCH RETRACTED BY KEY. OUTSIDE LEVER UNLOCKED BY PIN. INSIDE LEVER ALWAYS UNLOCKED FOR EGRESS. UPON LOSS OF POWER, OUTSIDE LEVER REMAINS LOCKED.

Rebid Documents

HW SET 07C

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	ELEC STOREROOM LOCK	CO-200-CY-70-KP	SCE
1	EA	SURFACE CLOSER	SC61A SLIM	FAL
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: WIRELESS KEYPAD LOCK. LATCH RETRACTED BY KEY. OUTSIDE LEVER UNLOCKED BY PIN. INSIDE LEVER ALWAYS UNLOCKED FOR EGRESS. UPON LOSS OF POWER, OUTSIDE LEVER REMAINS LOCKED.

HW SET 07D

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	ELEC STOREROOM LOCK	CO-200-CY-70-KP	SCE
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	ARMOR PLATE	8400 32"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: WIRELESS KEYPAD LOCK. LATCH RETRACTED BY KEY. OUTSIDE LEVER UNLOCKED BY PIN. INSIDE LEVER ALWAYS UNLOCKED FOR EGRESS. UPON LOSS OF POWER, OUTSIDE LEVER REMAINS LOCKED.

HW SET 07E

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	ELEC STOREROOM LOCK	CO-200-CY-70-KP	SCE
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	ARMOR PLATE	8400 30"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: WIRELESS KEYPAD LOCK. LATCH RETRACTED BY KEY. OUTSIDE LEVER UNLOCKED BY PIN. INSIDE LEVER ALWAYS UNLOCKED FOR EGRESS. UPON LOSS OF POWER, OUTSIDE LEVER REMAINS LOCKED.

Rebid Documents

HW SET 08A

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	CLASSROOM LOCK	T561	FAL
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: (F84) CLASSROOM LOCK. LATCH RETRACTED BY LEVER EITHER SIDE. OUTSIDE KEY LOCKS/UNLOCKS OUTSIDE LEVER. INSIDE LEVER ALWAYS UNLOCKED.

HW SET 09

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	T581	FAL
1	EA	LOCK GUARD	LG	IVE
1	EA	OH STOP	90S	GLY
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	RAIN DRIP	142	ZER
1	SET	GASKETING	429 (MOUNT PRIOR TO CLOSER)	ZER
1	EA	DOOR SWEEP W/DRIP	8198	ZER
1	EA	THRESHOLD	AS REQUIRED	ZER

FUNCTION: (F86) STOREROOM LOCK. FIXED OUTSIDE TRIM - OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. INSIDE LEVER ALWAYS UNLOCKED.

HW SET 10

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	T581	FAL
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: (F86) STOREROOM LOCK. FIXED OUTSIDE TRIM - OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. INSIDE LEVER ALWAYS UNLOCKED.

Rebid Documents

HW SET 10A

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	T581	FAL
1	EA	SURFACE CLOSER	SC71A SS	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: (F86) STOREROOM LOCK. FIXED OUTSIDE TRIM - OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. INSIDE LEVER ALWAYS UNLOCKED.

HW SET 11

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	T581	FAL
1	EA	LOCK GUARD	LG	IVE
1	EA	SURFACE CLOSER	SC71A SS	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	RAIN DRIP	142	ZER
1	SET	GASKETING	429 (MOUNT PRIOR TO CLOSER)	ZER
1	EA	DOOR SWEEP W/DRIP	8198	ZER
1	EA	THRESHOLD	AS REQUIRED	ZER

FUNCTION: (F86) STOREROOM LOCK. FIXED OUTSIDE TRIM - OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. INSIDE LEVER ALWAYS UNLOCKED.

HW SET 12

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HARDWARE	BY DOOR SUPPLIER	B/O

Rebid Documents

HW SET 13

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	T581	FAL
1	EA	ELECTRIC STRIKE	6211 FSE	VON
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER
1	EA	CREDENTIAL READER	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	BY SECURITY SUPPLIER	B/O
1	EA	WIRING DIAGRAMS	RISER & POINT-TO-POINT (BY HARDWARE SUPPLIER)	

FUNCTION: (F86) STOREROOM LOCK. FIXED OUTSIDE TRIM - OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. INSIDE LEVER ALWAYS UNLOCKED. ELECTRIC STRIKE UNLOCKED BY ACCESS CONTROL SYSTEM FOR PUSH/PULL OPERATION.

HW SET 15

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	T581	FAL
1	EA	ELECTRIC STRIKE	6211 FS	VON
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	CREDENTIAL READER	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	BY SECURITY SUPPLIER	B/O
1	EA	WIRING DIAGRAMS	RISER & POINT-TO-POINT (BY HARDWARE SUPPLIER)	

FUNCTION: (F86) STOREROOM LOCK. FIXED OUTSIDE TRIM - OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. INSIDE LEVER ALWAYS UNLOCKED. ELECTRIC STRIKE UNLOCKED BY ACCESS CONTROL SYSTEM FOR PUSH/PULL OPERATION.

Rebid Documents

HW SET 17

QTY		DESCRIPTION	CATALOG NUMBER	MFR
1	EA	CONT. HINGE	700	IVE
1	EA	PANIC HARDWARE	LD-25-R-EO	FAL
1	EA	WIRELESS ELECTRONIC EXIT TRIM	BY SECURITY SUPPLIER	
1	EA	ELECTRIC STRIKE	6300 FSE	VON
1	EA	OH STOP	100S	GLY
1	EA	SURFACE CLOSER	SC71A FA HD	FAL
1	EA	RAIN DRIP	142	ZER
1	EA	WEATHERSTRIPPING	BY DOOR SUPPLIER	B/O
1	EA	DOOR SWEEP W/DRIP	8198	ZER
1	EA	THRESHOLD	AS REQUIRED	ZER
1	EA	CREDENTIAL READER	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	BY SECURITY SUPPLIER	B/O
1	EA	WIRING DIAGRAMS	RISER & POINT-TO-POINT (BY HARDWARE SUPPLIER)	

FUNCTION: EXIT-ONLY PANIC HARDWARE - WITH WIRELESS ELECTRONIC OUTSIDE TRIM. INSIDE PUSH PAD RETRACTS LATCH FOR EGRESS. ELECTRIC STRIKE UNLOCKED BY CREDENTIAL READER FOR PUSH/PULL OPERATION

HW SET 18

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	PANIC HARDWARE	LD-25-R-L-BE	FAL
1	EA	SURFACE CLOSER	SC71A / SC71A FA HD	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: PASSAGE LEVER PANIC HARDWARE. OUTSIDE LEVER ALWAYS UNLOCKED. INSIDE PUSH PAD RETRACTS LATCH FOR FREE EGRESS.

Rebid Documents

HW SET 19

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	PANIC HARDWARE	LD-25-R-NL	FAL
1	EA	IC CYLINDER	AS REQUIRED	
1	EA	ELECTRIC STRIKE	6300 FSE	VON
1	EA	SURFACE CLOSER	SC71A SS	FAL
1	EA	KICK PLATE	8400 10"	IVE
1	EA	RAIN DRIP	142	ZER
1	SET	GASKETING	429 (MOUNT PRIOR TO CLOSER)	ZER
1	EA	DOOR SWEEP W/DRIP	8198	ZER
1	EA	THRESHOLD	AS REQUIRED	ZER
1	EA	CREDENTIAL READER	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	BY SECURITY SUPPLIER	B/O
1	EA	WIRING DIAGRAMS	RISER & POINT-TO-POINT (BY HARDWARE SUPPLIER)	

FUNCTION: NIGHT LATCH PANIC HARDWARE. FIXED OUTSIDE TRIM - LATCH RETRACTED BY KEY. INSIDE PUSH PAD RETRACTS LATCH FOR EGRESS. ELECTRIC STRIKE UNLOCKED BY CREDENTIAL READER FOR PUSH/PULL OPERATION.

HW SET 20

QTY		DESCRIPTION	CATALOG NUMBER	MFR
2	EA	SLIDING DOOR HARDWARE	C-411-W KIT	KNC
2	EA	DOOR PULL PAIR, 3/4" RND	PR 8102HD 6" J	IVE

FUNCTION: SLIDING POCKET DOOR.

HW SET 21

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	BY DOOR SUPPLIER	
1	EA	PRIVACY LOCK	W301	FAL
1	EA	HINGE PIN STOP	70	IVE
1	EA	WALL STOP	WS406/407CCV	IVE

FUNCTION: (F76) PRIVACY LOCK. OUTSIDE LEVER LOCKED BY INSIDE BUTTON. OUTSIDE LEVER UNLOCKED BY INSIDE LEVER, OUTSIDE EMERGENCY BUTTON, OR CLOSING DOOR. INSIDE LEVER ALWAYS UNLOCKED.
PROVIDE HINGE PIN STOP WHERE DOOR DOES NOT SWING AGAINST WALL OR WHERE WALLSTOP STOP CANNOT OTHERWISE BE USED.

Rebid Documents

HW SET 22

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	BY DOOR SUPPLIER	
1	EA	PASSAGE SET	W101	FAL
1	EA	BASEBOARD SPRING STOP	060	IVE

FUNCTION: (F75) PASSAGE LATCH. LATCH RETRACTED BY LEVER EITHER SIDE. BOTH LEVERS ALWAYS UNLOCKED.

HW SET 23

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	WIRELESS ELECTRONIC LOCK	BY SECURITY SUPPLIER	
1	EA	SURFACE CLOSER	SC61A SLIM	FAL
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER
1	EA	DOOR SWEEP	39	ZER
1	EA	THRESHOLD	63	ZER
1	EA	DOOR GUARD	484	IVE
1	EA	DOOR VIEWER	U698	IVE

FUNCTION: WIRELESS STOREROOM LOCK.
PROVIDE SECOND VIEWER AT 43" AFF AT ACCESSIBLE UNITS.

HW SET 25

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	BY DOOR SUPPLIER	
2	EA	ROLLER LATCH	RL36	IVE
2	EA	SINGLE DUMMY TRIM	W12	FAL
2	EA	HINGE PIN STOP	70	IVE

FUNCTION: DUMMY TRIM WITH ROLLER LATCH.

HW SET 26

QTY		DESCRIPTION	CATALOG NUMBER	MFR
1	SET	FOLDING HARDWARE SET	100FD	JOH
1	EA	FLUSH PULL	223	IVE

BIFOLD DOORS

END OF SECTION 08 7100

Rebid Documents

SECTION 08 8000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section includes furnishing and installation of non-rated glazing, fire-protection-rated and fire-resistance-rated glazing for the following applications:
   1. Exterior aluminum doors and frames.
   2. Interior hollow metal doors and frames.
   3. Interior wood doors in hollow metal frames.

B. Related Requirements:
   1. Section 08 1113 “Hollow Metal Doors and Frames”.
   2. Section 08 1423 “Clad Wood Doors”.
   3. Section 08 4313 “Aluminum-Framed Storefronts”
   4. Section 08 5213 “Metal-Clad Windows”
   5. Section 088300 "Mirrors."

1.3 DEFINITIONS

A. Fire-Protection-Rated Glazing: Glazing in rated doors and openings up to 45 minutes, limited in size, and not capable of blocking radiant heat.

B. Fire-Resistance-Rated Glazing: Glazing that prevents spread of fire and smoke and radiant heat; used in rated wall and door applications 60 minutes and above without size limitations.

C. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

D. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

E. IBC: International Building Code.

F. Interspace: Space between lites of an insulating-glass unit.

1.4 REFERENCES

A. American Architectural Manufacturers Association:
   1. AAMA 800: Voluntary Specifications and Test Methods for Sealants.

Rebid Documents

B. American National Standards Institute (ANSI):
   1. CPSC 16 CFR 1201 Cat. I & II: Safety Standard for Architectural Glazing Materials.

C. ASTM International (ASTM):
   1. ASTM C 509: Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.
   2. ASTM C 864: Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
   3. ASTM C 920: Specification for Elastomeric Joint Sealants.
   4. ASTM C 1036: Specification for Flat Glass.
   5. ASTM C 1048: Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
   6. ASTM C 1087: Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.
   7. ASTM C 1115: Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories.
   8. ASTM C 1172: Specification for Laminated Architectural Flat Glass.
   9. ASTM C 1281: Specification for Preformed Tape Sealants for Glazing Applications.
   10. ASTM C 1330: Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
   11. ASTM C 1376: Specification for Pyrolytic and Vacuum Deposition Coatings on Glass.
   12. ASTM E152: Methods of Fire Tests of Door Assemblies
   13. ASTM E163: Methods of Fire Tests of Window Assemblies
   14. ASTM E 774: Specification for the Classification of the Durability of Sealed Insulating Glass Units.
   15. ASTM E 1300: Practice for Determining Load Resistance of Glass in Buildings.
   16. ASTM E2074-00: Methods of Fire Tests of Door Assemblies, including Positive Pressure Testing of Side-hinged and Pivoted Swinging Door Assemblies.
   17. ASTM E2010-01: Standard Test for Positive Pressure of Fire Tests of Window Assemblies.
   18. ASTM E 2190: Standard Specification for Insulating Glass Unit Performance and Evaluation.

D. Code of Federal Regulations:
   1. 16 CFR 1201: Safety Standard for Architectural Glazing Materials.

E. Glass Association of North America (GANA):
   1. Glazing Manual.
   2. Laminated Glass Design Guide.
   3. Engineering Standards Manual.

F. The Insulating Glass Manufacturers Alliance (IGMA):
   1. IGMA TB-3001: Sloped Glazing Guidelines.
   2. IGMA TM-3000: Glazing Guidelines for Sealed Insulating Glass Units.

G. Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; Building Technologies Department; Windows & Daylighting Group, windows.lbl.gov/software:
   1. "LBNL Window 5.0 (or higher) - A PC Program for Analyzing Window Thermal and Optical Performance.

H. National Fenestration Rating Council (NFRC):

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1. NFRC 100: Procedure for Determining Fenestration Product Thermal Properties.
2. NFRC 200: Procedure for Determining Fenestration Product Solar Heat Gain Coefficients at Normal Incidence.
3. NFRC 300: Procedures for Determining Solar Optical Properties of Simple Fenestration Products.

I. National Fire Protection Association (NFPA):
1. NFPA 80: Fire Doors and Windows.
2. NFPA 252: Fire Tests of Door Assemblies.
3. NFPA 257: Fire Test for Window and Glass Block Assemblies

J. Underwriters Laboratories, Inc. (UL):
1. UL 9: Standard for Safety of Fire Tests of Window Assemblies.
2. UL 10B: Standard for Safety of Fire Tests of Door Assemblies.
3. UL 10C: Standard for Safety of Positive Pressure Tests of Door Assemblies.

K. International Building Code: Current edition adopted by Authority Having Jurisdiction.

1.5 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
1. Vertical Glazing: For glass surfaces sloped 15 degrees or less from vertical, design glass to resist design wind pressure based on glass type factors for short-duration load.

B. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on most current non-beta version of LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F.
2. Solar Heat-Gain Coefficient (SHGC) and Visible Transmittance (VLT): Center-of-glazing values, in accordance with NFRC 200 and based on most current non-beta version of LBL's WINDOW computer program.
3. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

1.6 SUBMITTALS

A. Product Data: For each type of glass product and glazing material indicated.

B. Product Certificates: For glass and glazing products from manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for insulating glass glazing sealants and glazing gaskets.

Rebid Documents

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved by coated-glass manufacturer.

B. Source Limitations for Glass: Obtain glass from single source from single manufacturer for each glass type.

C. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

D. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, whether glazing is for use in fire doors or other openings, whether or not glazing passes hose-stream test, whether or not glazing has a temperature rise rating of 450 deg F (250 deg C), and the fire-resistance rating in minutes.

E. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1.10 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
   1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written

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instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
1. Warranty Period: Five years from date of Substantial Completion.

C. Manufacturer's Special Warranty for Tempered Glazing Units with Clear Intumescent Interlayer: Manufacturer agrees to replace units that deteriorate within specified warranty period. Deterioration of tempered glazing units with clear intumescent interlayer is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning glass contrary to manufacturer's written instructions. Evidence of failure is air bubbles within units, or obstruction of vision by contamination or deterioration of intumescent interlayer.
1. Warranty Period: 10 years from date of Substantial Completion.

D. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.
1. Warranty Period: 10 years from date of Substantial Completion.

E. Manufacturer's Special Warranty for Heat-Soaked Tempered Glass: Manufacturer agrees to replace heat-soaked tempered glass units that spontaneously break due to nickel sulfide (NiS) inclusions at a rate exceeding 0.3 percent (3/1000) within specified warranty period. Coverage for any other cause is excluded.
1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products by one of the following:
1. Cardinal Glass Industries, Inc.
2. Guardian Glass, a Guardian Industries company.
3. Oldcastle Building Envelope
4. Pilkington North America, part of the NSG Group
5. SaftiFirst
6. Schott
7. Vetrotech Saint-Gobain North America
8. Viracon, an Apogee Industries Company
9. Vitro Architectural Glass (formerly PPG Glass.)

B. Source Limitations for Glass: Obtain glass from single source from single manufacturer.

C. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

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2.2 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3 unless otherwise indicated.

B. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3,

C. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3, Type I, Condition C (other coated glass).

2.3 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.
   1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
   2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
   3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.4 FIRE-PROTECTION-RATED GLAZING

A. Fire-Protection-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on positive-pressure testing in accordance with NFPA 257 or UL 9, including hose-stream test, and shall comply with NFPA 80.
   1. Fire-protection-rated glazing required to have a fire-protection rating of 20 minutes shall be exempt from hose-stream test.

B. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name; test standard; whether glazing is permitted to be used in doors or openings; if permitted in openings, whether glazing has passed hose-stream test; whether glazing meets 450 deg F temperature-rise limitation; and fire-resistance rating in minutes.

C. Fire-Protection-Rated Tempered Glass**:** 1/4-inch (6-mm) thickness; fire-protection-rated tempered glass; complying with 16 CFR 1201, Category II.
   1. Basis-of-Design Product: “SuperLite I” 20 Minute Fire Protective Glazing by SaftiFirst.

D. Fire-Protection-Rated Monolithic Glass for Doors and Protected Openings: 3/4-inch (19-mm) thickness; low-iron fire-protection-rated glass; complying with 16 CFR 1201, Category II. UL listed and tested in accordance with NFPA 252 for fire-rated doors and NFPA 257 for protected openings with hose-stream testing.
   1. Basis-of-Design Product: “SuperLite X-45/60/90” Fire Protective Glazing by SaftiFirst.

Rebid Documents

2.5 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
   1. EPDM complying with ASTM C 864.
   2. Silicone complying with ASTM C 1115.
   3. Thermoplastic polyolefin rubber complying with ASTM C 1115.

B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned EPDM, silicone, or thermoplastic polyolefin rubber gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.
   1. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.

2.6 GLAZING SEALANTS

A. General:
   1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
   2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
   3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

B. Neutral-Curing Silicone Glazing Sealant, Class 100/50: Complying with ASTM C920, Type S, Grade NS, Use NT.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Dow Corning Corporation; 790.
      b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
      c. May National Associates, Inc.; Bondaflex Sil 290.
      d. Pecora Corporation; 890.
      e. Sika Corporation, Construction Products Division; SikaSil-C990.
      f. Tremco Incorporated; Spectrem 1.

C. Neutral-Curing Silicone Glazing Sealant, Class 25: Complying with ASTM C920, Type S, Grade NS, Use NT.

2.7 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
   1. AAMA 804.3 tape, where indicated.

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2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.8 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with Shore A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

2.9 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
a. Temperature Change: 120 deg F ambient; 180 deg , material surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

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B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.
   1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
   2. Provide 1/8-inch- minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

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J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant where indicated.

G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to

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produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass.

B. Do not apply markers to glass surface.

C. Remove nonpermanent labels and clean surfaces.

D. Protect glass from contact with contaminating substances resulting from construction operations.

E. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.

F. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

G. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

H. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion.

I. Wash glass as recommended in writing by glass manufacturer.

3.8 MONOLITHIC GLASS SCHEDULE

A. Clear Glass Type **GL-1**: Annealed float glass.
   1. Minimum Thickness: 1/4 inch (6 mm).

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B. Clear Glass Type **GL-1T**: Fully tempered float glass.
   1. Minimum Thickness: 1/4 inch (6 mm).
   2. Provide safety glazing labeling.

3.9 INSULATING GLASS SCHEDULE

A. Glass Type **GL-2**: Low-E-coated, clear insulating glass.
   1. Overall Unit Thickness: 1 inch (25 mm).
   2. Thickness of Each Glass Lite: 1/4-inch (6.0 mm), 2 panes.
   3. Air Space: 1/2-inch
   4. Outdoor Lite: Clear heat-strengthened float glass.
   5. Indoor Lite: Clear float glass.

B. Glass Type **GL-2T**: Low-E-coated, clear insulating safety glass.
   1. Overall Unit Thickness: 1 inch (25 mm).
   2. Thickness of Each Glass Lite: 1/4-inch (6.0 mm), 2 panes.
   3. Air Space: 1/2-inch
   4. Outdoor Lite: Clear fully tempered float glass.
   5. Indoor Lite: Clear fully tempered float glass.
   6. Provide safety glazing labeling.

3.10 FIRE-PROTECTION-RATED GLAZING SCHEDULE

A. Glass Type **GL-3**: 20-minute fire-protection-rated glazing without hose-stream test; fire-protection-rated tempered glass.

B. Glass Type **GL-4**: 60-minute fire-protection-rated glazing; fire-protection-rated monolithic glass.

END OF SECTION 08 8000

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SECTION 08 8300 – MIRRORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions. and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Silvered flat glass mirrors.

B. Related Requirements:
   1. Section 10 2800 "Toilet, Bath, and Laundry Accessories" for metal-framed mirrors.

1.3 SUBMITTALS

A. Product Data: For each type of product.
   1. Mirrors: Include description of materials and process used to produce each type of silvered flat glass mirror specified that indicates sources of glass, glass coating components, edge sealer, and quality-control provisions.

B. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachment details.

C. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For mirrors to include in maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect mirrors in accordance with mirror manufacturer's written instructions and as needed to prevent damage to mirrors from moisture, condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with mirror manufacturer's written instructions for shipping, storing, and handling mirrors as needed to prevent deterioration of silvering, damage to edges, and abrasion of glass surfaces and applied coatings. Store indoors.

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1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not install mirrors until ambient temperature and humidity conditions are maintained at levels indicated for final occupancy.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.
   1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Avalon Glass and Mirror Company
   2. Binswanger Glass
   3. D & W Incorporated.
   4. Donisi Mirror Company.
   5. Gardner Glass Products, Inc.
   6. Gilded Mirrors, Inc.
   7. Guardian Glass
   8. Lenoir Mirror Company.
   9. Virginia Mirror Company, Inc.

B. Source Limitations for Mirrors: Obtain mirrors from single source from single manufacturer.

C. Source Limitations for Mirror Accessories: Obtain mirror-glazing accessories from single source.

2.2 SILVERED FLAT GLASS MIRRORS

A. Mirrors, General: ASTM C1503.

B. Tempered Glass Mirrors: Mirror Glazing Quality for blemish requirements and complying with ASTM C1048 for Kind FT, Condition A, tempered float glass before silver coating is applied; clear.
   1. Nominal Thickness: 6.0 mm.

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2.3 MISCELLANEOUS MATERIALS

A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

B. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.

C. Mirror Mastic: An adhesive setting compound, asbestos-free, produced specifically for setting mirrors and certified by both mirror and mastic manufacturer as compatible with glass coating and substrates on which mirrors will be installed.

2.4 MIRROR HARDWARE

A. Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of mirrors in a single piece.
   1. Aluminum J Channel Bottom Trim: J-channels formed with front leg and back leg not less than 3/8 and 7/8 inch in height, respectively, and a thickness of not less than 0.04 inch.
   2. Aluminum J Channel Top Trim: J-channels formed with front leg and back leg not less than 5/8 and 1 inch in height, respectively, and a thickness of not less than 0.04 inch.
   3. Finish: Clear bright anodized.

B. Fasteners: Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture where fasteners are exposed.

C. Anchors and Inserts: Provide devices as required for mirror hardware installation. Provide toothed or lead-shield, expansion-bolt devices for drilled-in-place anchors. Provide galvanized anchors and inserts for applications on inside face of exterior walls and where indicated.

2.5 FABRICATION

A. Shop fabricate mirrors to greatest extent possible.

B. Fabricate cutouts for notches and holes in mirrors without marring visible surfaces. Locate and size cutouts, so they fit closely around penetrations in mirrors.

C. Mirror Edge Treatment: Rounded polished (pencil polished).
   1. Seal edges of mirrors with edge sealer after edge treatment to prevent chemical or atmospheric penetration of glass coating.
   2. Require mirror manufacturer to perform edge treatment and sealing in factory immediately after cutting to final sizes.

Rebid Documents

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.

B. Verify compatibility with and suitability of substrates, including compatibility of existing finishes or primers with mirror mastic.

C. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 INSTALLATION

A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced National Glass Association (NGA) publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.
   1. NGA Publications: Glazing Manual" and "Installation Techniques Designed to Prolong the Life of Flat Glass Mirrors."

B. Provide a minimum airspace of 1/8 inch between back of mirrors and mounting surface for air circulation between back of mirrors and face of mounting surface.

C. Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install

   1. Aluminum J-Channels: Provide setting blocks 1/8 inch thick by 4 inches long at quarter points. To prevent trapping water, provide, between setting blocks, two slotted weeps not less than 1/4 inch wide by 3/8 inch long at bottom channel.
   2. Install mastic as follows:
      a. Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
      b. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
      c. After mastic is applied, align mirrors and press into place while maintaining a minimum airspace of 1/8 inch between back of mirrors and mounting surface.

3.3 CLEANING AND PROTECTION

A. Protect mirrors from breakage and contaminating substances resulting from construction operations.

B. Do not permit edges of mirrors to be exposed to standing water.

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C. Maintain environmental conditions that prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.

D. Clean exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Clean mirrors as recommended in writing by mirror manufacturer and NGA's publication "Proper Procedures for Cleaning Flat Glass Mirrors."

END OF SECTION 08 8300

Rebid Documents

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Rebid Documents

SECTION 08 9119 - FIXED LOUVERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 Specification Sections, apply to the Work in this Section.

1.2 SUMMARY

A. Section Includes:
   1. Fixed extruded-aluminum louvers.

B. Related Requirements:
   1. Section 099113 "Exterior Painting" for field painting exterior louvers.
   2. Section 07 9200 “Joint Sealants” for sealants between louver frame and adjoining construction.
   3. Division 23 Sections for louvers and vents that are a part of mechanical equipment and for sheet metal duct connections to louvers, and requirements for blank-off panels.

1.3 DEFINITIONS

A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.

B. Horizontal Louver: Louver with horizontal blades (i.e., the axis of the blades are horizontal).

C. Windborne-Debris-Impact-Resistant Louver: Louver that provides specified windborne-debris-impact resistance, as determined by testing according to AMCA 540.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: For each type of product.
      a. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.
   1. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.
   2. Show mullion profiles and locations.

C. Samples for Verification: For each type of metal finish required.

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D. Product Test Reports: Based on evaluation of comprehensive tests performed according to AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.

E. Windborne-debris-impact-resistance test reports.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain louvers and vents from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.
   1. Welding Qualifications: Qualify procedures and personnel according to AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 WARRANTY

A. Special Finish Warranty: Manufacturer agrees to repair or replace components on which finishes fail in materials or workmanship within specified warranty period.
   1. Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

   2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fixed louvers from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

B. Manufacturers: Subject to compliance requirements, provide products by one of the following:
   1. The Airolite Company, LLC.
   2. American Warming and Ventilating (AWV), a Mestek, Inc. company.
   3. Arrow United Industries, a Mestek, Inc. company.
   4. Construction Specialties, Inc.
   5. Greencheck Fan Corporation.
   6. Industrial Louvers, Inc. (ILI)
   7. Reliable Products, Inc.
   8. Ruskin Company; Tomkins PLC.

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2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act normal to the face of the building.
   1. Wind Loads: Determine loads based on a uniform pressure of 30 lbf/sq. ft. acting inward or outward.

B. Windborne-Debris-Impact Resistance: Louvers located within 30 feet of grade shall pass basic protection, when tested according to AMCA 540.

C. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

D. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

2.3 FIXED EXTRUDED-ALUMINUM LOUVERS

A. Horizontal Non-drainable-Blade Louver:
   1. Louver Depth: 6 inches.
   2. Blade Profile: Blade with center baffle (K-style) positioned 45º on approximately 6 inch centers.
   3. Frame and Blade Nominal Thickness: Not less than 0.080 inch.
   4. Louver Performance Ratings:
      a. Free Area: Not less than 8.0 sq. ft. for 48-inch-wide by 48-inch-high louver.
      b. Point of Beginning Water Penetration: Not less than 700 fpm.
      c. Air Performance: Not more than 0.10-inch wg static pressure drop at 700-fpm free-area intake velocity.

B. Horiziontal, Wind-Driven-Rain-Resistant, Windborne-Debris-Impact-Resistant Louver:
   1. FEMA-Approved Louver.
   2. Louver Depth: 5.5 inches.
   3. Blade Profile: Chevron design positioned 45º on approximately 2 inch centers.
   4. Frame and Blade Nominal Thickness: Not less than 0.025 inches.
   5. Louver Performance Ratings:
      a. Free Area: Not less than 27%.
      b. Air Performance: Not more than 0.18-inch wg static pressure drop at 1250-fpm free-area intake velocity.
      c. Wind-Driven Rain Performance: Not less than 99 percent effectiveness when subjected to a rainfall rate of 3 inches per hour and a wind speed of 29 mph.

2.4 LOUVER SCREENS

A. General: Provide screen at each exterior louver.
   1. Screen Location for Fixed Louvers: Interior face.

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2. Screening Type: Bird screening.

B. Secure screen frames to louver frames with stainless-steel machine screws spaced a maximum of 6 inches from each corner and at 12 inches o.c.

C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.
1. Metal: Same type and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
2. Finish: Mill finish unless otherwise indicated.
3. Type: Non-rewirable, U-shaped frames.

D. Louver Screening for Aluminum Louvers:
1. Bird Screening: Aluminum, 1/2-inch-square mesh, 0.063-inch wire.

2.5 MATERIALS

A. Aluminum Extrusions : ASTM B221 Alloy 6063-T5, T-52, or T6.

B. Aluminum Sheet: ASTM B209, Alloy 3003 or 5005, with temper as required for forming, or as otherwise recommended by metal producer for required finish.

C. Fasteners: Use types and sizes to suit unit installation conditions.
1. Use hex-head or Phillips pan-head screws for exposed fasteners unless otherwise indicated.
2. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners.
3. For color-finished louvers, use fasteners with heads that match color of louvers.

D. Post-installed Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, fabricated from stainless-steel components, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing according to ASTM E488/E488M conducted by a qualified testing agency.

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.6 FABRICATION

A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.

1. Frame Type: Channel unless otherwise indicated.

C. Include supports, anchorages, and accessories required for complete assembly.

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D. Provide vertical mullions of type and at spacings indicated, but not more than is recommended by manufacturer, or 72 inches o.c., whichever is less.
   1. Exposed Mullions: Where indicated, provide units with exposed mullions of same width and depth as louver frame. Where length of louver exceeds fabrication and handling limitations, provide interlocking split mullions designed to permit expansion and contraction.
   2. Exterior Corners: Prefabricated corner units with mitered and welded blades and with fully recessed mullions at corners.

E. Provide subsills made of same material as louvers or extended sills for recessed louvers.

F. Join frame members to each other and to fixed louver blades with fillet welds, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

G. Coordinate louver fabrication with mechanical work indicated on Mechanical Drawings and specifications in Division 23 for motor operated dampers.

2.7 ALUMINUM FINISHES

A. Finish louvers after assembly.

B. High-Performance Organic Finish: Three-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
   1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.

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B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

E. Protect unpainted galvanized- and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

F. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 07 9200 "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.

B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

C. Restore louvers damaged during installation and construction, so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

END OF SECTION 08 9119

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SECTION 09 2116.23 - GYPSUM BOARD SHAFT WALL ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, and general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Gypsum board shaft wall assemblies.

1.3 SUBMITTALS

A. Product Data: For each component of gypsum board shaft wall assembly including steel framing and gypsum board shaft liner.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and support them on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with gypsum-shaftliner-board manufacturer's written instructions.

B. Do not install finish panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, or mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Metal Stud Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
1. Allsteel & Gypsum Products Inc., Ft. Lauderdale, FL.
2. California Expanded Metal Products Co. (CEMCO), City of Industry, CA.
3. ClarkDietrich Building Systems, West Chester, OH.
4. Craco Manufacturing Inc., York, SC.
5. Custom Steelcraft,, Lakeville, MN.
6. Marino\Ware, South Plainfield, NJ.
7. The Steel Network (TSN), Durham, NC.
8. Telling Industries, Mentor, OH
9. The Steel Network (TSN), Durham, NC.

B. Gypsum Board Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. CertainTeed Corp.
2. Georgia-Pacific Gypsum LLC.
3. Lafarge North America Inc.
4. National Gypsum Company.
5. USG Corporation

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.

B. STC-Rated Assemblies: Provide materials and construction identical to those of assemblies tested according to ASTM E90 and classified according to ASTM E413 by a testing and inspecting agency.

2.3 GYPSUM BOARD SHAFT WALL ASSEMBLIES

A. Fire-Resistance Rating: As indicated on Drawings**.**

B. Gypsum Shaftliner Board:

1. Type X: ASTM C1396/C1396M; manufacturer's proprietary fire-resistive liner panels with paper faces, 1 inch thick, with double beveled long edges.

C. Non-Load-Bearing Steel Framing, General: Complying with ASTM C645 requirements for metal unless otherwise indicated and complying with requirements for fire-resistance-rated assembly indicated.
1. Protective Coating: Coating with equivalent corrosion resistance of ASTM A653/A653M, G40.

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D. Studs: Manufacturer's standard profile for repetitive, corner, and end members as follows:
   1. Depth: As indicated on the Drawings.
   2. Minimum Base-Metal Thickness: 0.018 inch (25 ga).

E. Runner Tracks: Manufacturer's standard J-profile track with manufacturer's standard long-leg length, but at least 2 inches long and matching studs in depth.
   1. Minimum Base-Metal Thickness: Matching steel studs.

F. Finish Panels: Gypsum board as specified in Section 092900 "Gypsum Board."

G. Sound Attenuation Blankets: As specified in Section 092900 "Gypsum Board."

2.4 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with shaft wall manufacturer's written instructions.

B. Trim Accessories: Cornerbead, edge trim, and control joints of material and shapes as specified in Section 09 2900 "Gypsum Board" that comply with gypsum board shaft wall assembly manufacturer's written instructions for application indicated.

C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.

D. Track Fasteners: Power-driven fasteners of size and material required to withstand loading conditions imposed on shaft wall assemblies without exceeding allowable design stress of track, fasteners, or structural substrates in which anchors are embedded.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install gypsum board shaft wall assemblies to comply with requirements of fire-resistance-rated assemblies indicated and manufacturer's written installation instructions.

B. Do not bridge building expansion joints with shaft wall assemblies; frame both sides of expansion joints with furring and other support.

C. Install supplementary framing in gypsum board shaft wall assemblies around openings and as required for blocking, bracing, and support of gravity and pullout loads of fixtures, equipment,

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services, heavy trim, furnishings, wall-mounted door stops, and similar items that cannot be supported directly by shaft wall assembly framing.

D. Penetrations: At penetrations in shaft wall, maintain fire-resistance rating of shaft wall assembly by installing supplementary steel framing around perimeter of penetration and fire protection behind boxes containing wiring devices, elevator call buttons and floor indicators, and similar items.

E. Control Joints: Install control joints at locations indicated on Drawings while maintaining fire-resistance rating of gypsum board shaft wall assemblies.

F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.3 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, or mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092116.23

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SECTION 09 2900 - GYPSUM BOARD

PART 1 - GENERAL

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Interior gypsum board.
2. Tile backing panels.
3. Texture finishes.
4. Trim Accessories and Joint Sealants.
5. Sound Blankets and Acoustic Sealant.
6. Resilient Furring Channels

B. Related Requirements:
1. Section 06 100 Rough Carpentry" for wood blocking materials.
2. Section 0 92116.23 "Gypsum Board Shaft Wall Assemblies" for metal shaft-wall framing, Retain subparagraph below if tile backing panels are not specified in this Section.
3. Section 09 9100 "Painting" for priming and painting of gypsum panels.

1.3 REFERENCES

A. ASTM International (ASTM): Latest editions, unless otherwise specified.
1. ASTM C475, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board
2. ASTM C665, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
3. ASTM C834, Standard Specification for Latex Sealants
4. ASTM C840, Standard Specification for Application and Finishing of Gypsum Board
5. ASTM C954, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
6. ASTM C1002, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
7. ASTM C1047, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
8. ASTM C1288, Standard Specification for Fiber-Cement Interior Substrate Sheets
9. ASTM C1325, Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units
10. ASTM C1177, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing

Rebid Documents

11. ASTM C1396, Standard Specification for Gypsum Board
12. ASTM D3273, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
13. ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
14. ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials
15. ASTM E413, Classification for Rating Sound Insulation

B. Gypsum Association (GA)
1. GA-214-2010, Recommended Levels of Gypsum Board Finish; jointly published by AWCI, CISCA, GA, and PDCA.
2. GA-216-2013, Application and Finishing of Gypsum Panel Products
3. GA-226-2008, Application of Gypsum Board to Form Curved Surfaces
4. GA-253-2012, Application of Gypsum Sheathing
5. GA-600-2012, Fire Resistance Design Manual

C. International Building Code (IBC), 2021 edition

1.4 ACTION SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
1. Product Data: For each type of product specified.

B. Samples for Verification: For the following products:
1. Textured Finishes: 12 inches by 12 inches for each textured finish indicated and on same backing indicated for Work.

1.5 QUALITY ASSURANCE

A. To the greatest extent possible, obtain materials from one manufacturer to promote single source responsibility.

B. Where gypsum board systems with fire-resistance ratings are indicated and where required to comply with governing regulations, provide materials and installations identical with applicable assemblies which have been tested and listed by recognized authorities.

C. Mockups: Build mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and to set quality standards for materials and execution.
1. Build mockups for the following:
a. Each texture finish indicated.

2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

Rebid Documents

1.6 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, and mold damaged.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

B. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. CertainTeed Corp.
   2. Georgia-Pacific Gypsum LLC.
   3. Lafarge North America Inc.
   4. National Gypsum Company.
   5. USG Corporation.

Rebid Documents

2.4 INTERIOR GYPSUM BOARD

A. Gypsum Wallboard (**GWB-1**): ASTM C1396/C1396M.
   1. Thickness: 1/2 inch.
   2. Long Edges: Tapered.
   3. At locations indicated on the Drawings.

B. Gypsum Board, Type X (**GWB-1**): ASTM C1396/C1396M.
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered**.**

C. Mold-Resistant Gypsum Board (**GWB-2**): ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.
   1. Core: 5/8 inch, Type X.
   2. Long Edges: Tapered.
   3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.5 SPECIALTY GYPSUM BOARD

A. Gypsum Board, Type C (**GWB-3**): ASTM C1396/C1396M. Manufactured to have increased fire-resistive capability.
   1. Thickness: As required by fire-resistance-rated assembly indicated on Drawings.
   2. Long Edges: Tapered.

2.6 TILE BACKING PANELS

A. Cementitious Backer Units (**CWB-1**): ANSI A118.9 and ASTM C1288 or ASTM C1325, with manufacturer's standard edges.
   1. Thickness: As indicated on the Drawings.
   2. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.7 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.
   1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
   2. Shapes:
      a. Cornerbead.
      b. Bullnose bead.
      c. LC-Bead: J-shaped; exposed long flange receives joint compound.
      d. L-Bead: L-shaped; exposed long flange receives joint compound.
      e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      f. Expansion (control) joint.

2.8 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

Rebid Documents

B. Joint Tape:
   1. Interior Gypsum Board: Paper.
   2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
   2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping or drying-type, all-purpose compound.
      a. Use setting-type compound for installing paper-faced metal trim accessories.
   3. Subsequent Coats: use setting-type, sandable topping or drying-type, all-purpose.

D. Joint Compound for Tile Backing Panels:
   1. Cementitious Backer Units: As recommended by backer unit manufacturer.

E. Joint Compound for Mold-Resistant Gypsum Board:
   1. Joint compound specially formulated to resist mold growth as recommended by manufacturer.

2.9 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
   1. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

D. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
   1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

E. Resilient Furring Channels: 1/2-inch-deep, steel sheet members designed to reduce sound transmission.
   1. Configuration: Asymmetrical.

F. Acoustical Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

G. Thermal Insulation: As specified in Section 07 2100 "Thermal Insulation."

H. Vapor Retarder: As specified in Section 07 2600 "Vapor Retarders."

Rebid Documents

2.10 TEXTURE FINISHES

A. Primer: As recommended by textured finish manufacturer.

B. Non-Aggregate Finish: Premixed, vinyl texture finish for spray application.
   1. Texture: Spatter knock-down, light.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

A. Comply with ASTM C840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.

Rebid Documents

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.

J. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

K. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
1. Wallboard Type: As indicated on Drawings.
2. Type X: As indicated on Drawings
3. Mold-Resistant Type: On all walls and ceilings in hotel guest room bathrooms and as otherwise indicated on Drawings.
4. Type C: Where required for specific fire-resistance-rated assembly indicated.

B. Single-Layer Application:
1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) or horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:
1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.

Rebid Documents

2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

D. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 INSTALLATION OF TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLATION OF TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use where indicated.
4. U-Bead: Use at exposed panel edges.

3.6 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints**,** rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

Rebid Documents

3.7 GYPSUM BOARD FINISH LEVELS

A. General: Finish panels to levels indicated below and according to ASTM C840 and GA-214:

B. **Level 5**: On walls and ceilings where gloss, semi-gloss or enamel paints are specified in Section 09 9100 “Interior Painting” on walls, ceilings that are to receive knock-down texturing.
   1. Final Appearance: Entire surface shall receive a skim coat of compound and primer before painting or texturing.
   2. Joints and interior angles treated as in Level 4.
   3. Accessories and fasteners treated as in Level 4.
   4. Surfaces shall be skim coated and primed before painting or texturing.

C. **Level 4**: At panel surfaces that will be painted with flat or eggshell finish and exposed to view, unless otherwise indicated.
   1. Final Appearance: Joints and surfaces shall have no marks or ridges and be ready for priming, followed by wall coverings, flat paints or light textures.
   2. Joints and interior angles shall receive two separate coats of compound over Level 2.
   3. Accessories / fasteners shall receive three separate coats of compound.
   4. Joints shall be filled and smoothed, surfaces shall be primed before painting or texturing.

D. **Level 3**: Ceiling areas indicated to receive medium texture finished.
   1. Final Appearance: Joints and surfaces shall have no marks or ridges.
   2. Joints and interior angles shall receive one separate coat of compound over Level 2.
   3. Accessories / fasteners shall receive two separate coats of compound.
   4. Joints shall be filled and smoothed, surfaces shall be primed before painting or texturing.

E. **Level 2**: Panels that are substrate for tile, walls of storage, mechanical, electrical, and utility rooms scheduled without paint.
   1. Final Appearance: Tool marks and ridges are acceptable. Thin coating of compound covers tape and fastener heads.
   2. Joints and interior angles shall receive one coat of compound, wiped to leave thin coating of compound over tape.
   3. Accessories and fasteners shall receive one coat of compound.
   4. Surfaces shall be free of excess compound.

F. **Level 1**: Ceiling plenum areas, concealed areas, and where indicated.
   1. Final Appearance: Tool marks and ridges are acceptable. Thin coating of compound covers tape and fastener heads.
   2. Joints and interior angles shall receive one coat of compound.
   3. Accessories and fasteners; one coat of compound optional.
   4. Surfaces shall be free of excess compound.

G. **Level 0**: Unfinished where indicated. This finish is not allowed at any fire rated walls, ceilings, or fire rated assemblies.
   1. Final Appearance: Unfinished.
   2. Joints and interior angles shall receive no treatment.
   3. Accessories and fasteners shall receive no treatment.
   4. Surface shall be unfinished

Rebid Documents

3.8 INSTALLATION OF TEXTURE FINISHES

A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture matching approved mockup and free of starved spots or other evidence of thin application or of application patterns.

C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written instructions.

3.9 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 2900

Rebid Documents

SECTION 09 3013 - CERAMIC TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Ceramic floor tile and wall tile.
2. Waterproof and crack isolation membranes.
3. Setting materials.
4. Grout materials.
5. Adhesive materials.
6. Tim and accessories.

B. Related Requirements:
1. Section 07 9200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
2. Section 09 2900 "Gypsum Board" for cementitious backer units.

1.3 REFERENCES

A. TCNA Handbook for Ceramic, Glass, and Stone Tile Installation, 2023

B. ANSI A137.1-2022, American National Standard Specifications for Ceramic Tile

C. ANSI A108 Series/A118 Series/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium)

1.4 ACTION SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
1. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives..
2. Shop Drawings: Show locations of each type of tile and tile pattern, color arrangements, perimeter conditions and junctions with dissimilar materials. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces. Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
3. Samples:

Rebid Documents

a. Full-size units of each type and composition of tile and for each color and finish required.
b. Grout samples
c. Full-size units of each type of trim and accessory**.**
d. Stone thresholds in 6-inch lengths.
e. Metal edge strips in 6-inch lengths.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated**.**
2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.
3. Deliver to Owner at time of final inspection for work under this Section and store where directed in the building.

1.6 QUALITY ASSURANCE

A. Maintain one copy of TCA Handbook and ANSI A108 Series/A118 Series on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum 5 years of documented experience.

C. Installer Qualifications: Company specializing in performing tile installation which has at least 5 years' of documented experience in tile installation similar to the requirements of this Project.

D. Single Source Materials: Provide setting, grouting, waterproofing, crack isolation underlayment materials from a single manufacturer unless otherwise approved and acceptable to the manufacturer to ensure total tile setting system responsibility.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

Rebid Documents

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

B. Do not install adhesives in an unventilated environment.

C. Maintain ambient and substrate temperature of 50 degrees F during installation of mortar materials unless otherwise specified by material manufacturer.

PART 2 - PRODUCTS

2.1 TILE PRODUCTS

A. Ceramic Floor Tile (**CFT-__**): Refer to “Interior Materials Schedule” on Interior Drawings for manufacturers, styles, sizes, colors, and layout patterns.

B. Ceramic Wall Tile (**CWT-__**): Refer to “Interior Materials Schedule” on Interior Drawings for manufacturers, styles, sizes, colors, and layout patterns.

C. Ceramic Trim Units: Refer to “Interior Materials Schedule” on Interior Drawings for manufacturers, styles, sizes, colors, and layout patterns.

2.2 WATERPROOF AND CRACK ISOLATION MEMBRANES

A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Waterproof Membrane, Fluid-Applied: Thin-set, self-bonding and load-bearing liquid-latex rubber or elastomeric polymer that produces a flexible, seamless membrane with anti-microbial protection to inhibit the growth of mold and mildew.
   1. Provide manufacturer's recommended reinforcing mesh.
   2. Thickness: Recommended by manufacturer, but not less than 40 mil (minimum) DFT.
   3. Provide manufacturer's primer applied to gypsum underlayment, if required.
   4. One of the following:
      a. "Hydroment Ultra-Set Advanced", (Bostik)
      b. "Trowel & Seal Waterproofing and Anti Fracture Membrane", (Custom)
      c. "Laticrete 9235 Waterproof Membrane", (Laticrete)
      d. "PRP M19", (Mapei)
      e. Triple Flex Waterproofing (TEC)

2.3 SETTING MATERIALS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:

Rebid Documents

1. Bonsal American, Inc.
2. Bostik, Inc.
3. Custom Building Products.
4. Laticrete International.
5. Mapei Corporation.
6. TEC Specialty Products, LLC
7. Approved Substitutions: Refer to Document 00 2600 “Procurement Substitution Procedures”.

B. Standard Dry-Set Mortar (Thinset): ANSI A118.1.

C. Modified Dry-Set Mortar (Thinset): Latex-Modified Dry-Set Portland Cement Mortar for Porcelain Ceramic Floor and Wall Tiles, and Glass Mosaic Wall Tiles, complying with ANSI A118.4.
1. Thinset mortar for tiles smaller than 15 inches on all sides.

D. Improved Modified Dry-Set Mortar (Thinset): Latex-Portland Cement Mortar for Large-Format and Heavy Floor and Wall Tiles (LHT).
1. Polymer modified, dry-set cement mortar, complying with ANSI A118.4. and A118.15, for horizontal and vertical applications with non-slumping formula to minimize lippage and leveling requirements, in thicknesses from 3/32" to 1/2" setting bed after tile embedment.
   a. Required for tile measuring 15 inches or more on any one side (large format) and tile weighing more than 5 lbs. per sq. ft. (heavy) ceramic or porcelain tile, natural stone, clay pavers, or other thin or medium bed applications.

2. One of the following:
   a. Big Tile & Stone (Bostik, Inc.)
   b. ProLite Large Format Tile & Stone Mortar (Custom Building Products)
   c. 255 MULTIMAX (Laticrete International)
   d. Large Format Tile Mortar (Mapei Corporation)
   e. Ultimate Large Tile Mortar (TEC Specialty Products)

2.4 GROUT MATERIALS

A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.

B. High-Performance Tile Grout: Polymer modified cement grout, sanded or un-sanded as specified in ANSI A118.7.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:
   a. Ardex Group.
   b. Custom Building Products.
   c. Laticrete International.
   d. Mapei Corporation.
   e. Approved Substitutions: Refer to Document 00 2600 “Procurement Substitution Procedures”.

Rebid Documents

C. Water-Cleanable Epoxy Grout: 100 percent solids commercial epoxy grout providing chemical and stain resistance and fast cure times exceeding ANSI A118.3.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:
      a. Ardex Group.
      b. Custom Building Products.
      c. Laticrete International.
      d. Mapei Corporation.
      e. Approved Substitutions: Refer to Document 00 2600 “Procurement Substitution Procedures”.

2.5 ADHESIVE MATERIALS

A. Acrylic based, multi-purpose ceramic and marble tile adhesive complying with ANSI A136.1, Type II specification.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include:
      a. Bonsal American, Inc.
      b. Bostik, Inc.
      c. Custom Building Products.
      d. Laticrete International.
      e. Mapei Corporation
      f. Approved Substitutions: Refer to Document 00 2600 “Procurement Substitution Procedures”.

2.6 TRIM AND ACCESSORIES

A. Metal Edge Transitions, Finishing, Protection, and Control Joint Strips: Aluminum profiles with integral provision for anchorage to mortar bed or substrate, unless otherwise indicated, (Schlüter Systems LP).
   1. Metal Profiles: Refer to “Interior Materials Schedule” on Interior Drawings for model numbers, sizes, profiles and finishes.
   2. Applications:
      a. Unless otherwise described on the “Interior Materials Schedule” or detailed on the Drawings, use in the following locations:
         1) Open edges of floor tile.
         2) Top edges of wall tile wainscot.
         3) Transition between floor finishes of different heights.
         4) Floor tile to wall corner transitions.

2.7 MISCELLANEOUS MATERIALS

A. Concrete Substrates: Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

Rebid Documents

B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

C. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

2.8 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
   1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
   2. Verify that concrete substrates for tile floors comply with surface finish requirements in ANSI A108.01 for installations indicated.
      a. Test concrete slab for moisture emission rate and alkalinity to verify results are within the limits recommended by the tile manufacturer and setting material manufacturer. If the test results do not comply with their requirements, do not proceed with installation until instructions are obtained from both manufacturers.
      b. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
      c. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
   3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
   4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

Rebid Documents

3.2 PREPARATION

A. Vacuum clean surfaces and damp clean.

B. Prepare concrete substrates for tile floors installations with thin set repair mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
   1. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

C. Waterproof and Crack Isolation/Anti-Fracture Membrane System: Install on substrates scheduled to receive floor tile in wet areas above occupied space below, including but not limited to Toilets, Kitchens, Janitors, etc. NO EXCEPTION.
   1. Install complying with ANSI A108.17 for waterproofing and crack isolation/anti-fracture membrane, and in accordance with manufacturer's written instructions to produce waterproofing and crack isolation/anti-fracture membrane of uniform thickness bonded securely to substrate. Install at the following locations:
   2. Extend over entire area to receive floor tile.
   3. Extend membrane 6" up vertical surfaces around entire perimeter of area to be waterproofed. If wall tile base is less than 6" without wall tile above, extend membrane to height of tile base.
   4. Extend membrane to outer edge of floor tile at door opening

3.3 INSTALLATION, GENERAL

A. Install wall tile, floor tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108 Series/A118 Series/A136.1, manufacturer's instructions, and TCNA Handbook recommendations.
   1. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
   2. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
   3. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
   4. Form internal angles square and external angles bullnosed.
   5. Install non-ceramic trim in accordance with manufacturer's instructions.
   6. Install thresholds where indicated.
   7. Sound tile after setting. Replace hollow sounding units.
   8. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
   9. Allow tile to set for a minimum of 48 hours prior to grouting.
   10. Grout tile joints. Use standard grout unless otherwise indicated.
   11. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.4 INSTALLATION OF TILE BACKING PANELS

A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated.

Rebid Documents

3.5 INSTALLATION OF WATERPROOF AND CRACK ISOLATION MEMBRANES

A. Install on substrates scheduled to receive floor tile in wet areas above occupied space below, including but not limited to Toilets, Kitchens, Janitors, etc. NO EXCEPTION.

B. Install waterproof membrane to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate. Install at the following locations:
   1. Extend over entire area to receive floor tile.
   2. Extend membrane 6" up vertical surfaces around entire perimeter of area to be waterproofed. If wall tile base is less than 6" without wall tile above then extend membrane to height of tile base.

C. Extend membrane to outer edge of floor tile at door openings.

D. Allow membrane to cure before installing tile or setting materials over it.

3.6 INSTALLATION OF CERAMIC FLOOR TILE

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

B. TCNA Method F113: On-Ground Concrete for Thin-Set Ceramic Tile; Latex-Portland cement bond coat with epoxy grout.
   1. Thin-Bed Dry-Set Mortar for tile units smaller than 15 inch dimension on all sides.
   2. Large and Heavy Tile (LHT) Mortar for tile units 15 inches and larger dimension on any side.
   3. Epoxy grout.

C. TCNA Method F122A: Above-Ground Concrete, Thin Set Mortar Bed with Waterproof Membrane for Ceramic Tile; Latex-Portland cement bond coat with epoxy grout.
   1. Thin-Bed Dry-Set Mortar for tile units smaller than 15 inch dimension on all sides.
   2. Large and Heavy Tile (LHT) Mortar for tile units 15 inches and larger dimension on any side.
   3. Epoxy grout.

3.7 INSTALLATION OF CERAMIC WALL TILE

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

Rebid Documents

B. TCNA Method W243: Wood or Metal Studs, Gypsum Board, Cementitious Bond Coat for Ceramic Tile; Latex-Portland cement bond coat with Polymer modified cement grout, un-sanded.
   1. Dry areas ONLY, not subject to moisture.

C. TCNA Method W244C: Wood or Metal Studs, Cementitious Backer Unit, Ceramic Tile; Latex-Portland cement bond coat with Polymer modified cement grout, un-sanded.
   1. Plumbing Walls, but NOT Showers.

3.8 INSTALLATION OF JOINTS

A. Joints
   1. Construct expansion or control joints in accordance with TCNA Method EJ171.
   2. Joint Width: Match grouted joints but not less than 1/8" for ceramic tile and 1/4" for porcelain paver tile.
   3. Location
      a. If locations of such joints are not shown, provide joints at restraining surfaces, such as walls, curbs, columns, pipes, etc., over expansion joints in backing and at changes in backing material. Do not saw-cut joints after installing tiles.
      b. In large interior tiled areas, expansion joints shall occur not more than 36 ft. o.c. each way.
      c. To the greatest extent, locate joints in tile surfaces directly above joints in concrete substrates.

3.9 CLEANING

A. Upon completion of tile work in each area, including work specified under other Sections, clean all tile surfaces with warm water and cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned.

B. Sponge and wash tile thoroughly, working diagonally across joints; polish with dry cloths.

C. Removing Surface Grout: Leave face of all tile clean and free from grout or other stains.
   1. Remove surface laitance and excess grout with dry polishing cloths, or in accordance with tile and grout manufacturers' instructions.
   2. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
   3. Damp mop grouted floors twice daily for not less than 7 days following installation.
   4. Clean grouted walls and ceilings twice daily for not less than 7 days following installation.

D. Immediately prior to occupancy by the Owner, wash tile surfaces again, and perform additional grouting that may be necessary.

Rebid Documents

3.10 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
   1. If tiled floor areas must be used for walkways during construction, protect the tile with plywood or board structure that does not make direct contact with the tile surfaces,

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

END OF SECTION 09 3013

Rebid Documents

SECTION 09 5113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to this Section.

1.2 SUMMARY

A. Section includes acoustical panels and exposed suspension systems for interior ceilings.

1.3 RELATED SECTIONS

A. Section 03 4100 “Precast Structural Concrete” for suspension of acoustical ceiling panel system from precast concrete planks.

B. Section 09 2900 “Gypsum Board”.

C. Division 23 “HVAC Air Distribution” for HVAC items installed within acoustical ceiling panels.

D. Division 26 “Electrical” for electrical items installed within acoustical ceiling panels.

1.4 REFERENCES

A. American Society for Testing and Materials (ASTM):
1. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
2. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
3. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
4. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
5. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface. of Interior Coatings in an Environmental Chamber.
6. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
7. ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.
8. ASTM E 488-22 Standard Test Methods for Strength of Anchors in Concrete Elements.
9. ASTM E 1190-21 Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members.

Rebid Documents

10. ASTM E 1264 Classification for Acoustical Ceiling Products.
11. ASTM E 1512-01(2105) Standard Test Methods of Testing Bond Performance of Bonded Anchors.

B. Ceilings & Interior Systems Construction Association (CISCA)
1. CISCA Ceiling Systems Handbook, latest edition.

C. International Building Code

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”

B. Product Data: For each type of product.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:
1. Acoustical Panels: Set of 6-inch-square Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch-Samples of each type, finish, and color.

D. Product Test Reports: For each acoustical panel.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

B. Warranty: Manufacturer's fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials**,** from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Acoustical Ceiling Units: Full-size panels equal to **2** percent of quantity installed.
2. Suspension-System Components: Quantity of each exposed component equal to **2** percent of quantity installed.
3. Hold-Down Clips: Equal to **2** percent of quantity installed.

1.8 QUALITY ASSURANCE

A. Installer: Engage an installation firm, which has at least 5 years’ successful experience in ceiling panel installations similar in size and type to the requirements of this Project and authorized or otherwise approved by the ceiling panel manufacturer to install specified materials, using manufacturer’s recommended installation methods.

Rebid Documents

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Provide environmental conditions where the temperature is between 50 degrees F. and 86 degrees F., and relative humidity levels maintained between 25 and 55 percent. Maintain these conditions during the installation period and throughout the lifetime of the warranty.

1.11 WARRANTY

A. Warranty for Acoustical Ceiling Systems: Manufacturer agrees to repair or replace ceiling components that fail in materials or workmanship within specified warranty period.
   1. Failures do not include ceiling components which are exposed to abnormal conditions, including chemical fumes, corrosive agents such as chlorine, moisture from conditions such as building leaks or condensation, excessive humidity, or excessive dirt or dust buildup.
   2. In addition to the abnormal conditions specified above, this warranty does not cover damage from vibrations, fire, water, freezing temperatures, accident or any form of abuse.

B. Warranty Period: 30 years from date of Substantial Completion when manufacturer's ceiling panels and manufacturer's suspension grid system are utilized together as one system in the installation.

C. Provide warranty signed by an officer of the manufacturer authorized to execute warranties. Furnish warranty in accordance with Section 01 7700 “Closeout Procedures

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

Rebid Documents

B. Acceptable Manufacturers: subject to compliance with requirements, provide products by the following:
   1. Armstrong World Industries
   2. CertainTeed Saint-Gobain
   3. USG Interiors, Inc.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Flame-Spread Index: Class A according to ASTM E1264.
   2. Smoke-Developed Index: 50 or less.

B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

2.3 ACOUSTICAL PANELS **ACP-1**

A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries “Optima Lay-In and Tegular, Product 3250” or comparable product.
   1. Type and Form: Type XII, glass-fiber base with membrane-faced overlay; Form 2, cloth Binder shall not contain urea formaldehyde.
   2. Pattern: E (fine fissured)
   3. Color: White
   4. Light Reflectance (LR): Not less than 0.85.
   5. Ceiling Attenuation Class (CAC): Not less than 25.
   6. Noise Reduction Coefficient (NRC): Not less than 0.90.
   7. Articulation Class (AC): Not less than 180.
   8. Edge/Joint Detail: Reveal sized to fit flange of exposed suspension-system members (square tegular edge).
   9. Thickness: 1 inch.
   10. Modular Size: 24 by 24 inches.

2.4 ACOUSTICAL PANELS **ACP-2**

A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries “Ceramaguard Unperforated with ClimaPlus Performance, Product 605” or comparable product.
   1. Type and Form: Type XX, high-density, ceramic- and mineral-base panels with scrubbable finish, resistant to heat, moisture, and corrosive fumes.
   2. Pattern: Unperforated.
   3. Color: White.

Rebid Documents

4. Light Reflectance (LR): Not less than 0.85.
5. Ceiling Attenuation Class (CAC): Not less than 35.
6. Noise Reduction Coefficient (NRC): Not less than 0.50.
7. Edge/Joint Detail: Square.
8. Thickness: 5/8 inch.
9. Modular Size: 24 by 24 inches.

2.5 ACOUSTICAL PANELS **ACP-3**

A. Basis-of-Design Product: Same panel type as ACP-1 with the use of extruded perimeter trim for floating suspended ceiling applications.
   1. Perimeter trim specified in Article 2.9 “Metal Edge Moldings and Trim”.

2.6 METAL SUSPENSION SYSTEM **PSS-1**

A. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.

B. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries “Prelude XL 15/16” Exposed Tee” or comparable product.
   1. Wide-Face, Capped, Double-Web, Hot-Dip Galvanized, G60, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G60 coating designation; with prefinished, 15/16-inch-wide metal caps on flanges.
      a. Structural Classification: Intermediate-duty system.
      b. Face Design: Flat, flush.
      c. Cap Finish: Cold-rolled steel, white.

C. For use with ACP-1 and ACP-3

2.7 METAL SUSPENSION SYSTEM PSS-2

A. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.

B. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries “Prelude XL 15/16” Exposed Tee” or comparable product.
   1. Wide-Face, Aluminum-Capped, Double-Web, Hot-Dip Galvanized, G60, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G60 coating designation; with prefinished, 15/16-inch-wide aluminum caps on flanges.
      a. Structural Classification: Intermediate-duty system.
      b. Face Design: Flat, flush.
      c. Cap Finish: Aluminum, white.

C. For use with ACP-2

Rebid Documents

2.8 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
   1. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E1190, conducted by a qualified testing and inspecting agency.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:
   1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
   2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch-diameter wire.

C. Hold-Down Clips: Manufacturer's standard hold-down.

2.9 METAL EDGE MOLDINGS AND TRIM

A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries “AXIOM Classic Straight Perimeter Trim” or comparable product.
   1. Size: 4-inch wide face (vertical leg) with 3/4-inch horizontal leg.
   2. Color: Coordinate with metal suspension system.

B. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements.
   1. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C635/C635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

C. Connectors, Corners and Accessories: As needed for a full and complete installation of a floating suspended ceiling.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

Rebid Documents

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.

B. Suspend ceiling hangers from building's structural members and as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
6. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Screw-attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.

D. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.

Rebid Documents

1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
2. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
3. Install hold-down clips in areas indicated; space according to panel manufacturer's written instructions unless otherwise indicated.
    a. Hold-Down Clips: Space 24 inches o.c. on all cross runners.
    b. Install hold down clips at the following locations:
        1) For ceiling panels weighing less than one lb. per sq. ft.
        2) For ceiling panels within a 10-foot radius of exterior doors of the building without vestibules.
        3) For ceiling panels within vestibules.
        4) At other locations indicated on Drawings.

3.4 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5113

Rebid Documents

SECTION 09 6513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Vinyl base.
   2. Vinyl molding accessories.

B. Related Requirements:
   1. Section 096519 “Resilient Tile Flooring” for installation with resilient tile flooring.
   2. Section 096813 "Tile Carpeting" for installation with tile carpeting.

1.3 REFERENCES

A. ASTM International (ASTM):
   1. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
   2. ASTM E648 Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
   3. ASTM E662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
   4. ASTM F710 Standard Practice for Preparing Concrete to Receive Resilient Flooring
   5. ASTM F1861 Standard Specification for Resilient Wall Base
   6. ASTM F386 Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces

B. National Fire Protection Association (NFPA):
   1. NFPA 253 Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source
   2. NFPA 258 Test Method for Specific Density of Smoke Generated by Solid Materials
   3. NFPA 255 Test Method of Test of Surface Burning Characteristics of Building Materials

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: Manufacturer’s technical data and installation instructions for each type of product intended to be installed.

Rebid Documents

a. Provide Product Data for adhesive.
b. Manufacturer's product literature including care and maintenance data.

2. Shop Drawings: Show locations of each wall base and transition type.
3. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.
4. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

B. Submit the following in accordance with Section 01 7700 "Closeout Procedures".
1. Maintenance Materials: Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
a. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 QUALITY ASSURANCE

A. Manufacturer: Provide each type of resilient base and accessories, produced by a single manufacturer, including recommended primers, adhesives, sealants and leveling compounds unless otherwise specified.

B. Installer Qualifications: Authorized or otherwise approved by the manufacturer to install specified material having a minimum of 5 years' successful experience in the installation resilient base and accessories for projects of similar magnitude and complexity.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's undamaged packaging with manufacturer's seals and labels intact.

B. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.7 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F , in spaces to receive resilient products during the following periods:
1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. When solvent-based adhesives are used, the space shall be ventilated. Use spark-proof fans if natural ventilation is inadequate.

Rebid Documents

C. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F .

D. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. For Manufacturers, Products, Colors, Styles, Profiles and Contact personnel, refer to “Interior Materials Schedule” on the Interiors Drawings.

2.2 VINYL BASE (**VB-__**)

A. Product Standard: ASTM F1861, Type TV (vinyl, thermoplastic).
   1. Group: I (solid, homogeneous).
   2. Style and Location:
      a. Style A, Straight: Provide in areas with carpet.
      b. Style B, Cove: Provide in areas with resilient floor coverings .

B. Minimum Thickness: 0.125 inch.

C. Height: As indicated on the Interior Materials Schedule on the Interior Drawings.

D. Lengths: Coils in manufacturer's standard length.

E. Inside and Outside Corners: Job formed**.**

F. Colors and Patterns: As indicated on the Interior Materials Schedule on the Interior Drawings.

2.3 VINYL MOLDING ACCESSORIES

A. Vinyl accessories as required for stair nosing protection and transitions between flooring materials.
   1. Vinyl stair-tread nosing.
   2. Vinyl reducer strip for resilient floor covering.
   3. Vinyl joiner for tile and carpet
   4. Vinyl transition strips

B. Profile and Dimensions: As indicated on the Interior Materials Schedule on the Interior Drawings.

C. Locations: Provide vinyl molding accessories in areas indicated on the Drawings.

D. Colors and Patterns: As indicated on the Interior Materials Schedule on the Interior Drawings.

Rebid Documents

2.4 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
   1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
   1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
   1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

Rebid Documents

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. Job-Formed Corners:
   1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
      a. Form without producing discoloration (whitening) at bends.

   2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
      a. Mitered corners are not allowed.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Stair Accessories:
   1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
   2. Tightly adhere to substrates throughout length of each piece.

C. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:
   1. Remove adhesive and other blemishes from surfaces.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 09 6513

Rebid Documents

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Rebid Documents

SECTION 09 6516 - RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Vinyl sheet flooring with backing.

B. Related Requirements:
   1. Section 03 3000 “Cast-In-Place Concrete” for coordination of resilient sheet flooring requirements installed over concrete substrates.
   2. Section 06 1600 “Sheathing” for coordination of resilient sheet flooring requirements installed over wood substrates.
   3. Section 06 6400 “Plastic Paneling” for transition of resilient sheet flooring coved base with plastic wall paneling.
   4. Section 09 3013 “Ceramic Tiling” for transition of resilient sheet flooring coved base with ceramic wall tile.
   5. Section 09 6513 “Resilient Base and Accessories” for transition strips between resilient sheet flooring and other floor finish materials.

1.3 REFERENCES

A. ASTM
   1. ASTM D 2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
   2. ASTM E 648/NFPA 253, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
   3. ASTM E662, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
   4. ASTM F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
   5. ASTM F 970, Standard Test Method for Static Load Limit.
   6. ASTM F1482, Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring.
   7. ASTM F1303, Standard Specification for Sheet Vinyl Floor Covering with Backing.
   8. ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

B. American Concrete Institute

Rebid Documents

1. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Product Data: For each type of product including installation instructions.
   2. Shop Drawings: For each type of resilient sheet flooring.
      a. Include sheet flooring layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
      b. Show details of special patterns.
      c. Details of wall caps and transitions to other materials.
   3. Samples for Verification: For each type of resilient sheet flooring, in manufacturer's standard size, but not less than 6-by-9-inch sections of each color, texture, and pattern required.
   4. For heat-welding bead, manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.
   5. Welded-Seam Samples: For seamless-installation technique indicated and for each resilient sheet flooring product, color, and pattern required; with seam running lengthwise and in center of 6-by-9-inch Sample applied to a rigid backing and prepared by Installer for this Project.
   6. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of resilient sheet flooring to include in maintenance manuals. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.6 QUALITY ASSURANCE

A. Installer: Engage a carpet installation firm, which has at least 5 years’ successful experience in resilient sheet vinyl installations similar in size and type to the requirements using the manufacturer’s recommended installation methods.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store resilient sheet flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F . Store rolls upright.

B. Store materials by protecting from exposure to weather conditions and at temperatures and humidity conditions recommended by manufacturer.

Rebid Documents

1.8 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F more than 85 deg F , in spaces to receive resilient sheet flooring during the following periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.

C. Close spaces to traffic during resilient sheet flooring installation.

D. Close spaces to traffic for 48 hours after resilient sheet flooring installation.

E. Install resilient sheet flooring after other finishing operations, including painting, have been completed.

1.9 WARRANTY

A. Manufacturer's standard warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Altro USA, Inc.
   2. Armstrong Flooring.
   3. Forbo Flooring Systems
   4. Protect-All Flooring (a brand of Holcim Solutions and Products US, LLC)
   5. Tarkett

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.3 VINYL SHEET FLOORING WITH BACKING **(VSF-__)**

A. Basis-of-Design Product: Subject to compliance with requirements, provide Altro "Classic 25" slip-resistant sheet vinyl flooring or comparable product.

B. Product Standard: ASTM F1303.

Rebid Documents

1. Type (Binder Content): Type II, minimum binder content of 34 percent.
2. Wear-Layer Thickness: Grade 1.
3. Overall Thickness: Minium 2.0 mm.
4. Interlayer Material: None.
5. Backing Class: Class A (fibrous).

C. Wearing Surface: Smooth with embedded abrasives.

D. Slip Resistance: R11

E. Sheet Width: As standard with manufacturer.

F. Seamless-Installation Method: Heat welded.

G. Colors and Patterns: As indicated in the Interior Materials Schedule on the Interiors Drawings.

2.4 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient sheet flooring manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit resilient sheet flooring and substrate conditions indicated.

C. Seamless-Installation Accessories:
1. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
   a. Colors: As indicated in the Interior Materials Schedule on the Interiors Drawings.

D. Integral-Flash-Cove-Base Accessories:
1. Cove Strip: 1-inch radius provided or approved by resilient sheet flooring manufacturer.
2. Cap Strip: Square metal, vinyl, or rubber cap provided or approved by resilient sheet flooring manufacturer for use as a transition between coved base and wall tiles/ cladding.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting resilient sheet flooring performance.

B. Notify the General Contractor and Architect of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report.

Rebid Documents

C. Do not install resilient sheet flooring or other floor coverings until it has been determined that the chemical treatment on substrates will not interfere with the successful application of the materials.

D. Examine resilient sheet flooring for type, color, pattern, and potential defects.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.

B. Concrete Slabs: Verify that finishes comply with requirements specified in Section 03 3000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
   1. Moisture Testing: Test concrete floors for excessive moisture in accordance with ASTM F1869.
      a. Perform at least one test for each concrete pour made but not less than 500 sq. ft.
      b. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

   2. Alkalinity Testing: Test floors for alkalinity in accordance with ASTM F710.
      a. A pH range of 6 to 8 is considered satisfactory.
      b. Perform corrective procedures in accordance with the adhesive manufacturer’s recommendations for test results which show a pH level above 8.

C. Wood Subfloors: Verify the following:
   1. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.
   2. Subfloors conform to ASTM F-1482 Standard Guide to Wood Substrates. Wood subfloors shall have a minimum 18-inch of cross-ventilated space beneath the bottom of the joist. The floor must be rigid, free of movement.
   3. Single wood and tongue and groove subfloors shall be covered with a minimum 1/4 inch, 3/8 inch or 1/2 inch APA approved underlayment plywood as follows.
      a. Use 1/4 inch thick underlayment panels for boards with a face width of 3 inches or less.
      b. Use 1/2 inch thick underlayment panels for boards with a face width wider than 3 inches.

   4. Do not install directly on OSB (Oriented Strand Board), particleboard, chipboard, Luan or composite type panels unless specifically designed and approved by the panel manufacturer for use as a resilient flooring underlayment.

D. Do not install resilient sheet flooring until materials are the same temperature as space where they are to be installed.
   1. At least 48 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.

Rebid Documents

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

3.3 RESILIENT SHEET FLOORING INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient sheet flooring.

B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.

C. Lay out resilient sheet flooring as follows:
1. Maintain uniformity of flooring direction.
2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.
3. Match edges of flooring for color shading at seams.
4. Avoid cross seams.

D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.

G. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

H. Install drain rings at floor drains per manufacturer’s instructions.

I. Seamless Installation:
1. Heat-Welded Seams: Comply with ASTM F1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.
2. Chemically Bonded Seams: Bond seams with chemical-bonding compound to fuse sections permanently into a seamless flooring installation. Prepare seams and apply compound to produce tightly fitted seams without gaps, overlays, or excess bonding compound on flooring surfaces.

J. Integral-Flash-Cove Base: Cove resilient sheet flooring 4 inches up vertical surfaces. Support flooring at horizontal and vertical junction with cove strip. Butt at top against cap strip.
1. Install cove base at locations indicated on the Drawings.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient sheet flooring.

Rebid Documents

B. Perform the following operations immediately after completing resilient sheet flooring installation:
   1. Remove adhesive and other blemishes from surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.

C. Protect resilient sheet flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient sheet flooring until Substantial Completion.

END OF SECTION 09 6516

Rebid Documents

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Rebid Documents

SECTION 09 6519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Conditions, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Solid vinyl floor tile.
2. Rubber floor tile.

B. Related Requirements:
1. Section 03 3000 “Cast-In-Place-Concrete” for resilient tile flooring installed over concrete and moisture and alkalinity requirements.
2. Section 09 6513 "Resilient Base and Accessories" for resilient wall base and accessories installed with resilient flooring.
3. Section 09 6516 “Resilient Sheet Flooring”.
4. Section 09 6813 "Tile Carpeting" for transitions with tile carpeting.
5. Section 09 6816 "Sheet Carpeting" for transitions with sheet carpeting.

1.3 REFERECES

A. ASTM International:
1. ASTM F1700, Standard Specification for Solid Vinyl Floor Tile.
2. ASTM F1859, Standard Specification for Rubber Sheet Floor Covering without Backing.
3. F1066-04 (2018), Standard Specification for Vinyl Composition Floor Tile
4. ASTM E648-19ae1, Standard Test Method for Critical Radiant Flux of Flooring Systems using a Radiant Energy Source
5. ASTM E662-21ae1, Standard Test Method for Specific Density of Smoke Generated by Solid Materials
6. ASTM F970-22, Standard Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading
7. ASTM D2047-17, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
8. ASTM D2240, Standard Test Method for Rubber Property – Durometer Hardness.
9. ASTM 1869-22, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
10. ASTM F2170-19a, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

Rebid Documents

1.4 PREINSTALLATION CONFERENCE

A. Preinstallation Conference for All Resilient Flooring
   1. Construction Manager: Arrange and conduct a preinstallation conference, held at the Project site prior to commencement of the work of this Section. Record discussions of conference including decisions and agreements reached, and disagreements, and furnish copy of record to each party attending.
   2. Required Attendance: Construction Manager, installing subcontractor, manufacturers' representatives, Owner's representative and Architect.
   3. Review of details, materials and methods of installation, and warranties. Review required submittals.
   4. Examine substrate, penetrations, and other preparatory work performed by other trades.
   5. Review required inspections, testing, certifications, and repair procedures.

1.5 SUBMITALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Product Data: For each type of product including adhesive and moisture mitigation systems.
   2. Shop Drawings: Showing locations of each resilient flooring type and related resilient edging, Show details of special patterns.

B. Samples for Verification: Full-size units of each color and pattern of floor tile required.

1.6 CLOSEOUT SUBMITTALS

A. Submit the following in accordance with Section 01 7700 “Closeout Procedures”.
   1. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run**,** that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are who are trained and experienced in necessary crafts and are familiar with specified requirements and methods needed for proper installation of products provided under this Section.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver materials to site in original, unopened containers with labels intact and legible at time of use.

Rebid Documents

B. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.10 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F ,in spaces to receive floor tile during the following periods:
1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F .

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For Manufacturers, Products, Colors, Styles, Profiles and Contact personnel, refer to “Interior Materials Schedule” on the Interiors Drawings

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.3 SOLID VINYL FLOOR TILE **(LVT- ___)**

A. Tile Standard: ASTM F1700.
1. Class: Class III, Printed Film Vinyl Tile.
2. Thickness: As indicated on the Interior Materials Schedule on the Interior Drawings.
3. Size: As indicated on the Interior Materials Schedule on the Interior Drawings.
4. Colors and Patterns: As indicated on the Interior Materials Schedule on the Interior Drawings.

2.4 RUBBER FLOOR TILE (**RFT-___)**

A. Tile Standard: ASTM F1344, Class I-B, Homogeneous Rubber Tile, through mottled.

Rebid Documents

1. Wearing Surface: Smooth.
2. Thickness: 3/8 inch.
3. Size: As indicated on the Interior Materials Schedule on the Interior Drawings.
4. Colors and Patterns: As indicated on the Interior Materials Schedule on the Interior Drawings.

2.5 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Examine substrates for compliance with product manufacturer’s requirements for maximum moisture and alkalinity content, required tolerances, and other conditions that would affect the Work.
1. Correct conditions detrimental to proper and timely completion of Work.
2. Do not proceed until unsatisfactory conditions have been corrected.
3. Start of preparation for installing resilient flooring shall indicate acceptance of subfloor conditions

3.2 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F710.
1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.

Rebid Documents

4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
   a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
   b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Cleaning and Preparing Subfloors:
1. Prior to flooring installation, broom clean and vacuum surfaces to be covered and inspect subfloors.
2. Remove from subfloor surfaces, coatings that would prevent bond of adhesive. Coatings may include paint, oils, waxes, sealers, curing compounds, and other conditions which would prevent a successful installation.
3. Prepare concrete slabs and stair surfaces for installation of new resilient flooring materials as recommended by each flooring material manufacturer.

D. Correcting Deficiencies in Subfloor:
1. Use trowelable leveling and patching compound as recommended by flooring manufacturer for filling cracks, holes, and depressions in subfloors.
2. Remove bumps, ridges, and high areas.
3. Surface of subfloors shall be uniform and smooth.

E. Prime Subfloors:
1. Prior to application of adhesive to concrete floors, apply concrete primer on concrete subfloors, if recommended by flooring material manufacturer.
2. Prior to application of adhesive to subfloors at stairs, apply primer recommended by flooring material manufacturer.
3. Apply primer in accordance with manufacturer’s instructions.

3.3 TILE INSTALLATION

A. General Requirements:
1. Project Conditions:
   a. Install resilient flooring and accessories only after most other finishing operations, including painting, have been completed and permanent heating system is operating.
   b. Moisture content of concrete slabs, building air temperature, and relative humidity are to be within limits recommended by flooring material manufacturer.
   c. Do not start installation of resilient products until they are at the same temperature as area to receive products. Store products for not less than 48 hours in area where products will be installed.

B. Comply with manufacturer's written instructions for installing floor tile.

C. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

Rebid Documents

1. Lay tiles square with room axis unless otherwise shown or noted on the Drawings.

D. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
   1. Lay tiles with grain running in one direction unless otherwise shown or noted on the Drawings**.**

E. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

F. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

H. Adhere floor tiles to substrates in strict accordance with flooring and adhesive manufacturer's recommendations. Installation shall be complete without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

I. Handroll flooring at perimeter of each covered area to assure adhesion.

J. Installed broken, cracked, chipped, or deformed tiles are not acceptable.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Perform the following operations immediately after completing floor tile installation:
   1. Remove adhesive and other blemishes from surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish. Apply polishes using methods and materials recommended by the manufacturer. Consult the Owner prior to ordering and applying floor polish material

E. Cover floor tile until Substantial Completion.

END OF SECTION 09 6519

Rebid Documents

SECTION 09 6813 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Modular carpet tile as designated in the “Interior Materials Schedule” on the Interiors Drawings.

B. Related Requirements:
   1. Section 08 3123 “Floor Doors” for tile carpeting installed on floor doors.
   2. Section 096513 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.
   3. Section 096519 "Resilient Tile Flooring".
   4. Section 096816 "Sheet Carpeting" for carpet roll goods.

1.3 REFERENCES

A. ASTM International (ASTM): Latest editions, unless otherwise specified.
   1. ASTM E648, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
   2. ASTM E662, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
   3. ASTM F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
   4. ASTM F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
   5. ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Slabs Using in-situ Probes.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Product Data: Manufacturer’s materials description and installation instructions for each type of product.
   2. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

Rebid Documents

a. Carpet Tile: Full-size Sample.

3. Certification: Submit manufacturer's certification stating that carpet materials furnished comply with specified requirements.
4. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Submit the following in accordance with Section 01 7700 “Closeout Procedures”.
1. Maintenance Data: For carpet tiles to be included in maintenance manuals. Include the following:
a. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
b. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.
a. Package carpet with protective covering for storage and identify with labels describing contents.
b. Deliver to Owner at time of final inspection of work under this Section and store where directed in the building.

1.7 QUALITY ASSURANCE

A. Installer: Engage a carpet installation firm, which has at least 5 years’ successful experience in carpet installations similar in size and type to the carpeting requirements of this Project and authorized or otherwise approved by the carpet manufacturer to install specified materials, using carpet manufacturer’s recommended installation methods.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with the Carpet and Rug Institute's CRI 104.

B. Deliver carpet in original mill protective covering with mill register numbers and tags attached.

1.9 FIELD CONDITIONS

A. Comply with the Carpet and Rug Institute's CRI 104 for temperature, humidity, and ventilation limitations.

Rebid Documents

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

1.10 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
   1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
   2. Failures include, but are not limited to, the following:
      a. More than 10 percent edge raveling, snags, and runs.
      b. Dimensional instability.
      c. Excess static discharge.
      d. Loss of tuft-bind strength.
      e. Loss of face fiber.
      f. Delamination.

   3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For Carpet Manufacturers, Products, Colors, Styles, Profiles and Contact personnel, refer to “Interior Materials Schedule” on the Interiors Drawings.

B. Carpet Cushion: Polyurethane foam cushion provided or approved by carpet manufacturer for applications indicated.

C. Installation Adhesive: Water-resistant, non-staining type as recommended by carpet manufacturer, for application at entry vestibules, and which complies with flammability requirements for installed carpet.

D. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by carpet manufacturer for applications indicated.

E. Miscellaneous Materials: As recommended by manufacturers of carpet, and other carpeting products; and selected by installer to meet project circumstance and requirements.

Rebid Documents

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.

B. Notify the General Contractor and Architect of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report.

C. Do not install carpet or other floor coverings until it has been determined that the chemical treatment on substrates will not interfere with the successful application of the flooring materials.

D. Examine carpet tile for type, color, pattern, and potential defects.

E. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
   1. Moisture Testing: Test concrete floors for excessive moisture in accordance with ASTM F1869.
      a. Perform at least one test for each concrete pour made but not less than 500 sq. ft.
      b. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

   2. Alkalinity Testing: Test floors for alkalinity in accordance with ASTM F710.
      a. A pH range of 6 to 8 is considered satisfactory.
      b. Perform corrective procedures in accordance with the adhesive manufacturer’s recommendations for test results which show a pH level above 8.

F. Wood Subfloors: Verify the following:
   1. Underlayment over subfloor complies with requirements specified in Section 061600 "Sheathing."
   2. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

G. Metal Subfloors: Verify the following:
   1. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

3.2 PREPARATION

A. Subfloors shall be level and free of irregularities. Irregularities in the subfloor height shall be gradually raised with troweled underlayment.

Rebid Documents

B. Where carpet meets other applied floor finishes and joiner or transition strips are not shown, gradually raise floor heights with troweled underlayment to produce level transition.

C. Just prior to installation of carpeting, subfloors shall be dry, free of cracks, ridges, depressions, scale, coatings, grease, oils, rust and foreign deposits or concrete treatment that may interfere with adhesion of carpeting.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

E. Measure each space to receive carpeting, as a basis of supplying, cutting and seaming the carpet. Do not scale the Drawings or calculate sizes from dimensions shown.

3.3 INSTALLATION

A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.

B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.

C. Maintain dye-lot integrity. Do not mix dye lots in same area.

D. Maintain pile-direction patterns recommended in writing by carpet tile manufacturer.

E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

G. Install pattern parallel to walls and borders.

H. On completion the carpet shall be free of wrinkles and buckles; seams and cross-joints shall be straight, close and well made.

I. Coordinate installation of transition and reducer strips with the installers of adjacent finish flooring materials.

3.4 CLEANING AND PROTECTION

A. Rubbish, wrapping paper, and salvages shall be removed from the Project site. Excess pieces of usable carpet shall be left with the Owner for future repairs.

B. Perform the following operations immediately after installing carpet tile:
   1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
   2. Remove yarns that protrude from carpet tile surface.
   3. Vacuum carpet tile using commercial machine with face-beater element.

Rebid Documents

3.5 PROTECTION

A. Protect installed carpet tile to comply with the Carpet and Rug Institute's CRI 104, Section 13.7.

B. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

C. Damaged carpeting will be rejected and shall be replaced with new carpet at no additional cost to the Owner.

END OF SECTION 09 6813

Rebid Documents

SECTION 09 6816 - SHEET CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Sheet carpeting as designated in the “Interiors Materials Schedule” on the Interiors Drawings.
2. Carpet cushion.

B. Related Requirements:

1. Section 024119 "Selective Demolition" for removing existing floor coverings.
2. Section 096513 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet.
3. Section 096519 "Resilient Tile Flooring".
4. Section 096813 "Tile Carpeting" for modular carpet tiles.

1.3 REFERENCES

A. ASTM International (ASTM): Latest editions, unless otherwise specified.
1. ASTM E648, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
2. ASTM E662, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
3. ASTM F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
4. ASTM F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
5. ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Slabs Using in-situ Probes.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
1. Product Data: Manufacturer's materials description and installation instructions For each type of product.

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2. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
   a. Carpet: 12-inch-square Sample for each carpet specified.
   b. Carpet Cushion: 6-inch-square Sample.

3. Certification: Submit manufacturer's certification stating that carpet materials furnished comply with specified requirements.
4. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Submit the following in accordance with Section 01 7700 “Closeout Procedures”.
   1. Maintenance Data: For carpet to be included in maintenance manuals. Include the following:
      a. Methods for maintaining carpet, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
      b. Precautions for cleaning materials and methods that could be detrimental to carpet and carpet cushion.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Carpet: Full-width rolls equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.
      a. Package carpet with protective covering for storage and identify with labels describing contents.
      b. Deliver to Owner at time of final inspection of work under this Section and store where directed in the building.

1.7 QUALITY ASSURANCE

A. Installer: Engage a carpet installation firm, which has at least 5 years’ successful experience in carpet installations similar in size and type to the carpeting requirements of this Project and authorized or otherwise approved by the carpet manufacturer to install specified materials, using carpet manufacturer’s recommended installation methods.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with the Carpet and Rug Institute's CRI 104.

B. Deliver carpet in original mill protective covering with mill register numbers and tags attached.

Rebid Documents

1.9 FIELD CONDITIONS

A. Comply with the Carpet and Rug Institute's CRI 104 for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet and carpet cushion until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.

C. Do not install carpet over concrete slabs until slabs have cured, are sufficiently dry to bond with adhesive, and have pH range recommended by carpet manufacturer.

1.10 WARRANTY

A. Special Warranty for Carpet: Manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period.
   1. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse.
   2. Failures include, but are not limited to, the following:
      a. More than 10 percent loss of face fiber, edge raveling, snags, and runs.
      b. Loss of tuft bind strength.
      c. Excess static discharge**.**
      d. Delamination.

   3. Warranty Period: Manufacturer’s 10 years from date of Substantial Completion.

B. Special Warranty for Carpet Cushion: Manufacturer agrees to repair or replace components of carpet cushion installation that fail in materials or workmanship within specified warranty period.
   1. Warranty includes removal and replacement of carpet and accessories required by replacement of carpet cushion.
   2. Warranty does not include deterioration or failure of carpet cushion due to unusual traffic, failure of substrate, vandalism, or abuse.
   3. Failure includes, but is not limited to, permanent indentation or compression.
   4. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For Carpet Manufacturers, Products, Colors, Styles, Profiles and Contact personnel, refer to “Interior Materials Schedule” on the Interiors Drawings.

B. Carpet Cushion: Polyurethane foam cushion provided or approved by carpet manufacturer for applications indicated.

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C. Installation Adhesive: Water-resistant, non-staining type as recommended by carpet manufacturer, for application at entry vestibules, and which complies with flammability requirements for installed carpet.

D. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by carpet manufacturer for applications indicated.

E. Miscellaneous Materials: As recommended by manufacturers of carpet, and other carpeting products; and selected by installer to meet project circumstance and requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet performance.

B. Notify the General Contractor and Architect of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report.

C. Do not install carpet or other floor coverings until it has been determined that the chemical treatment on substrates will not interfere with the successful application of the flooring materials.

D. Examine carpet for type, color, pattern, and potential defects.

E. Concrete Slabs: Verify that finishes comply with requirements specified in Section 03 3000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
   1. Moisture Testing: Test concrete floors for excessive moisture in accordance with ASTM F1869.
      a. Perform at least one test for each concrete pour made but not less than 500 sq. ft.
      b. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.

   2. Alkalinity Testing: Test floors for alkalinity in accordance with ASTM F710.
      a. A pH range of 6 to 8 is considered satisfactory.
      b. Perform corrective procedures in accordance with the adhesive manufacturer’s recommendations for test results which show a pH level above 8.

F. Wood Subfloors: Verify the following:
   1. Underlayment over subfloor complies with requirements specified in Section 06 1600 "Sheathing."
   2. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

Rebid Documents

3.2 PREPARATION

A. Subfloors shall be level and free of irregularities. Irregularities in the subfloor height shall be gradually raised with troweled underlayment.

B. Where carpet meets other applied floor finishes and joiner or transition strips are not shown, gradually raise floor heights with troweled underlayment to produce level transition.

C. Just prior to installation of carpeting, subfloors shall be dry, free of cracks, ridges, depressions, scale, coatings, grease, oils, rust and foreign deposits or concrete treatment that may interfere with adhesion of carpeting.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

E. Measure each space to receive carpeting, as a basis of supplying, cutting and seaming the carpet. Do not scale the Drawings or calculate sizes from dimensions shown.

3.3 INSTALLATION

A. Comply with the Carpet and Rug Institute's CRI 104 and carpet manufacturer's written installation instructions for the following:
1. Direct-glue-down installation.
2. Carpet with attached-cushion installation.
3. Stretch-in installation.
4. Stair installation.

B. Comply with carpet manufacturer's written instructions and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.
1. Stretch-in Carpet Installation: Install carpet cushion seams at 90-degree angle with carpet seams.

C. Install pattern parallel to walls and borders complying with CRI 104, Section 15 “Patterned Carpet Installations” and with carpet manufacturer’s written recommendations**.**

D. Install borders with mitered corner seams.

E. Do not bridge building expansion joints with carpet.

F. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.

G. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

H. On completion the carpet shall be free of wrinkles and buckles; seams and cross-joints shall be straight, close and well made.

Rebid Documents

I. Coordinate installation of transition and reducer strips with the installers of adjacent finish flooring materials.

3.4 ADJUSTING AND CLEANING

A. Rubbish, wrapping paper, and salvages shall be removed from the Project site. Excess pieces of usable carpet shall be left with the Owner for future repairs.

B. Perform the following operations immediately after installing carpet tile:
   1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
   2. Remove yarns that protrude from carpet tile surface.
   3. Vacuum carpet tile using commercial machine with face-beater element.

C. At the completion of the Work when directed by the Owner, the protective covering specified in Article 3.5 shall be removed, the carpeting vacuumed and soiling removed to the satisfaction of the Owner.

3.5 PROTECTION

A. Carpeting shall be adequately covered and protected against damage of any kind during the remainder of the construction period, and until acceptance by Owner.

B. Protect installed carpet tile to comply with the Carpet and Rug Institute's CRI 104, Section 13.7.

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

D. Damaged carpeting will be rejected and shall be replaced with new carpet at no additional cost to the Owner.

END OF SECTION 09 6816

Rebid Documents

SECTION 09 9100 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section includes surface preparation and the application of paint and stain systems on the following interior and exterior substrates
   1. Concrete Substrates
   2. CMU Substrates
   3. Galvanized and Non-Galvanized Ferrous Metal Substrates
   4. Aluminum Substrates
   5. Wood Substrates
   6. Gypsum Board Substrates

B. Related Requirements:
   1. Section 03 3000 “Cast-In-Place Concrete” for concrete floor sealers.
   2. Section 05 1200 "Structural Steel Framing" for shop priming structural steel.
   3. Section 05 5000 "Metal Fabrications" for shop priming metal fabrications.
   4. Section 08 1113 “Hollow Metal Doors and Frames” for factory priming hollow metal doors and frames.
   5. Section 08 1433 “Stile and Rail Wood Doors” for factory priming stile and rail wood doors.
   6. Section 09 2900 “Gypsum Board” for texture finishes applied to wall surfaces.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: For each type of product indicated including:
      a. Product characteristics.
      b. Surface preparation instructions and recommendation.
      c. Primer requirements and finish specifications.
      d. Storage and handling requirements and recommendations.
      e. Application methods.
      f. Cleanup Information.
      g. VOC content.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
   1. Submit Samples on rigid backing, 8 inches square.
   2. Apply coats on Samples in steps to show each coat required for system.

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3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product Schedule:
1. For each product indicated:
   a. Cross reference to paint system and locations pf application areas.
   b. Use same designations indicated on Drawings and in schedules.
   c. Clearly indicate surfaces to be finished, primer, paint or stain product, manufacturer's name, and names of products to be used.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Paint Products: 5 percent, but not less than 2 gal. of each material and color applied.

1.5 QUALITY ASSURANCE

A. Painting and Decorating Contractors of America (PDCA) Industry Standards: Preparation and Workmanship: Comply with requirements in PDCA for paint systems indicated.

B. Single Source Responsibility: Provide primers and undercoat products produced by the same manufacturer as the finish coat products. Provide finish coats which are compatible with prime paints used. Use only thinners approved by the paint manufacturer and use only within recommended limits.

C. Paint Coordination: Review other Sections of these Specifications in which prime paints are provided by other applicators or by fabricators to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information on characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime as required. Notify the Architect, in writing, of anticipated problems using specified coating systems with substrates primed by others.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.
3. Product Labels: Each product container shall bear manufacturer's legible label indicating manufacturer's name, type of material, product number, batch number, color, and instructions for reducing where applicable.

Rebid Documents

1.7 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide primers, paints. and stains products by one of the following:
1. Benjamin Moore & Co.
2. PPG Architectural Coatings, Inc.
3. Pratt & Lambert Paints (P&L)
4. Sherwin-Williams Company
5. Valspar

2.2 PAINT PRODUCTS, GENERAL

A. Material Compatibility:
1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

B. VOC Content:
1. Products shall comply with VOC limits of authorities having jurisdiction and for interior pants and coatings applied at Project site, the following, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24). ing VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
a. Flat Paints and Coatings: 50 g/L.
b. Non-flat Paints and Coatings: 150 g/L.
c. Dry-Fog Coatings: 400 g/L.
d. Primers, Sealers, and Undercoaters: 200 g/L.
e. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
f. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
g. Pretreatment Wash Primers: 420 g/L.
h. Floor Coatings: 100 g/L.
i. Shellacs, Clear: 730 g/L.

C. Colors: See Interior Materials Schedule on the Drawings for interior paint colors.

Rebid Documents

2.3 INTERIOR PRIMERS / SEALERS

A. Interior/Exterior Latex Block Filler: Water-based, high-solids, emulsion coating formulated to bridge and fill porous surfaces of exterior concrete masonry units in preparation for specified subsequent coatings.
   1. Basis of Design: Sherwin-Williams “Moisture Vapor Barrier Interior Latex Primer/Sealer”.

B. Interior Latex Primer Sealer: Water-based latex sealer used on new interior plaster, concrete, and gypsum wallboard surfaces.
   1. Basis of Design: Sherwin-Williams “ProMar 200 Zero VOC Latex Primer”

C. Interior Alkyd Primer Sealer: Water-based, alkyd-type, primer/sealer for new interior wood, plaster, and porous surfaces.
   1. Basis of Design: Sherwin-Williams All Surface Enamel Interior/Exterior Acrylic-Latex Primer.

2.4 METAL PRIMERS

A. Rust-Inhibitive Acrylic Primer:
   1. Basis of Design: Sherwin-Williams, one of the following:
      a. “All Surface Enamel Interior/Exterior Acrylic/Latex Primer”.
      b. “Pro Industrial DTM Acrylic Primer/Finish”.
      c. “Pro Industrial Pro Cryl Universal Primer”.

B. Rust-Inhibitive Alkyd Primer:
   1. Basis of Design: Sherwin-Williams “Pro Industrial Urethane Alkyd Enamel”.

2.5 LATEX PAINTS

A. High Performance Architectural Interior Latex (Eggshell and Semigloss):
   1. Basis of Design: Sherwin-Williams “ProMar 200 Zero VOC Latex”.

B. Dry Fall-Out Latex (Semi-gloss)
   1. Basis of Design: Sherwin-Williams “SW Pro Industrial Water-based Acrylic Dry Fall, Semi-gloss”.

2.6 ALKYD PAINTS

A. Interior/Exterior Alkyd Enamel (Gloss):
   1. Basis of Design: Sherwin-Williams “Duration Exterior Acrylic Latex”.

B. Interior Alkyd Enamel (Semi-Gloss):
   1. Basis of Design: Sherwin-Williams, one of the following:
      a. “ProClassic Alkyd Interior Enamel”.
      b. “ProMar 200 Interior Alkyd Enamel”.

Rebid Documents

2.7 EPOXY COATINGS

A. Water-Based Epoxy: (Semi-gloss):
1. Basis of Design: Sherwin-Williams “Pro Industrial Pre-Catalyzed Water-based Epoxy”.

B. Moisture and Mold-Resistant Epoxy (Semi-gloss):
1. Basis of Design: Sherwin-Williams “Pro Industrial Pre-Catalyzed Water-based Epoxy”.

2.8 INTERIOR WOOD FINISHES

A. Transparent Finishes
1. High-build Sanding Sealer:
a. Basis of Design: Sherwin-Williams “Minwax Performance Series Fast-Dry Sanding Sealer” (Solvent-Based).

B. Semi-Transparent Finishes
1. Wood Stain:
a. Basis of Design: Sherwin-Williams “Minwax Wood Finish, Water-Based Semi-Transparent Stain”.

C. Topcoats
1. Urethane Varnish (Satin):
a. Basis of Design: Sherwin-Williams, one of the following:
1) “Minwax Water-Based Helmsman Indoor/Outdoor Spar Urethane”
2) “Minwax Performance Series Fast-Dry Varnish”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
1. Concrete: 12 percent.
2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMUs): 12 percent.
4. Wood: 15 percent.
5. Gypsum Board: 12 percent.
6. Plaster: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Plaster Substrates: Verify that plaster is fully cured.

E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.

Rebid Documents

F. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

G. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
1. SSPC-SP 2, “Hand Tool Cleaning”.
2. SSPC-SP 3, “Power Tool Cleaning”.
3. SSPC-SP 7/NACE No. 4, “Brush-off Blast Cleaning”.
4. SSPC-SP 11, “Power Tool Cleaning to Bare Metal”.

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Aluminum Substrates: Remove loose surface oxidation.

J. Wood Substrates:
1. Scrape and clean knots and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.

Rebid Documents

3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

K. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.
1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire-Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in equipment rooms:
   a. Equipment, including panelboards.
   b. Uninsulated metal piping.
   c. Uninsulated plastic piping.
   d. Pipe hangers and supports.
   e. Metal conduit.
   f. Plastic conduit.
   g. Tanks that do not have factory-applied final finishes.
   h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
   i. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
   j. Other items as directed by Architect.

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2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

F. Painting Fire and/or Smoke Ratings on Walls: Indicate fire rating and/or smoke rating on all fire and/or smoke rated walls by painting in 2-inch-high block lettering the fire and/or smoke rating of the wall as indicated on the code plans in the drawings.
1. Use same designation for wall rating as indicated on the code plans in the drawings, examples as follows:
   a. Code plan designation “SP”. Wall labeling “SMOKE PARTITION”.
   b. Code plan designation “1-FB”. Wall labeling “1-HOUR FIRE BARRIER”.
   c. Code plan designation “1-SB”. Wall labeling “1-HOUR SMOKE BARRIER”.

2. Locate painted rating above ceiling line or 12 feet above floor where no ceiling exists.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
3. Allow empty paint cans to dry before disposal.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING AND STAINING SCHEDULE

A. Concrete Substrates, (Poured in Place Concrete, Structural Precast Concrete Elements):
1. High-Performance Architectural Latex System:
   a. Prime Coat: As specified for substrate types in Part 2.3.
   b. Intermediate Coat: High-performance Architectural Latex matching topcoat.
   c. Topcoat: High-Performance Architectural Latex.
   d. Sheen: Eggshell typical, semi-gloss in toilet rooms and utility spaces.

B. CMU Substrates:
1. High-Performance Architectural Latex System:
   a. Block Filler: Interior/exterior latex block filler, as specified in Part 2.3.
   b. Intermediate Coat: High-Performance Architectural Latex matching topcoat.
   c. Topcoat: High-Performance Architectural Latex.

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d. Sheen: Eggshell typical, semi-gloss in toilet rooms and utility spaces.

C. Steel Substrates (Exposed Structural Steel, Miscellaneous Metal Fabrications, Steel Bollard, Ships Ladders, Steel Stairs, Steel Doors and Frames, Exposed Ducts, Electrical Conduit, Piping without labels or prefinished):
1. Ferrous, Galvanized Metal, unless otherwise noted:
   a. Prime Coat: Rust-Inhibitive Acrylic Primer (in addition to shop primer).
   b. Intermediate Coat: High-Performance Architectural Latex matching topcoat.
   c. Topcoat: High-Performance Architectural Latex.
   d. Sheen: Semi-gloss

2. Ferrous, Non-Galvanized Metal:
   a. Prime Coat: Rust-Inhibitive Alkyd Primer.
   b. Intermediate Coat: Interior/Exterior Alkyd Enamel Matching topcoat.
   c. Topcoat: Topcoat: Interior Latex, High-Performance Architectural Coating.
   d. Sheen: Semi-gloss

D. Aluminum (Not Anodized or Otherwise Coated) Substrates:
1. High-Performance Architectural Latex System
   a. Prime Coat: High-Performance Architectural Latex matching topcoat.
   b. Topcoat: High-Performance Architectural Latex.
   c. Sheen: Semi-gloss

E. Painted Wood Substrates (Wood trim, Doors, Windows, and, Wood board paneling):
1. Latex over Alkyd Primer System
   a. Prime Coat: Interior alkyd primer sealer.
   b. Intermediate Coat: Matching topcoat.
   c. Topcoat: High-Performance Architectural Latex.
   d. Sheen: Semigloss

F. Stained Wood Substrates (Wood Trim, Architectural Woodwork, Doors, Windows, Wood Board Paneling):
1. Semi-Transparent Finish
   a. Water-Based Varnish over Stain System
      1) Stain Coat: Stain, semitransparent, for interior wood.
      2) First Intermediate Coat: Water-based varnish matching topcoat.
      3) Second Intermediate Coat: Water-based varnish matching topcoat.
      4) Topcoat: Varnish, water based, clear.
      5) Sheen: Satin

2. Clear Finish
   a. Polyurethane Varnish over Sanding Sealer
      1) Primary Coat: Sanding Sealer
      2) First Intermediate Coat: Polyurethane varnish matching topcoat.
      3) Second Intermediate Coat: Polyurethane varnish matching topcoat.
      4) Topcoat: Polyurethan varnish.
      5) Sheen: Satin.

G. Gypsum Board Substrates (Walls, Ceilings, Soffits):
1. High-Performance Architectural Latex System:
   a. Prime Coat: Interior latex primer sealer.

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b. Intermediate Coat: High-Performance Architectural Latex matching topcoat.
c. Topcoat: High-Performance Architectural Latex.
d. Sheen: Eggshell typical, semigloss in toilet rooms and utility spaces.

H. Existing Surfaces:
1. Verify existing finishes before applying systems specified above.
2. Alternative primers and finish coats may be necessary to provide compatibility with existing finishes.

3.6 EXTERIOR PAINTING AND STAINING SCHEDULE

A. Steel Substrates (Exposed Structural Steel, Miscellaneous Metal Fabrications, Steel Bollard, Ships Ladders, Steel Stairs, Steel Doors and Frames, Exposed Ducts, Electrical Conduit, Piping without labels or prefinished):
1. Ferrous, Galvanized Metal, unless otherwise noted:
a. Prime Coat: Rust-Inhibitive Acrylic Primer (in addition to shop primer).
b. Intermediate Coat: High-Performance Architectural Latex matching topcoat.
c. Topcoat: High-Performance Architectural Latex.
d. Sheen: Semi-gloss

2. Ferrous, Non-Galvanized Metal:
3. Prime Coat: Rust-Inhibitive Alkyd Primer.
4. Intermediate Coat: Interior/Exterior Alkyd Enamel Matching topcoat.
5. Topcoat: Topcoat: Interior Latex, High-Performance Architectural Coating.
6. Sheen: Semi-gloss

B. Existing Surfaces:
1. Verify existing finishes before applying systems specified above.
2. Alternative primers and finish coats may be necessary to provide compatibility with existing finishes.

END OF SECTION 09 9100

Rebid Documents

SECTION 10 1419 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Exterior front-lighted illuminated, fabricated channel dimensional characters.
   2. Exterior and Interior back-lighted illuminated, fabricated channel dimensional characters.

B. Related Requirements:
   1. Section 04 2613 “Masonry Veneer”.
   2. Section 06 1000 “Rough Carpentry”.
   3. Section 10 1423 “Interior Panel Signage” for code required signage.
   4. Division 26 “Electrical” for coordination of building power to signage location.

1.3 REFERENCES

A. Americal Architectural Manufacturers Association (AAMA)
   1. AAMA 611 – Voluntary Standards for Anodized Architectural Aluminum.

B. ASTM International (ASTM)
   1. ASTM B26 – Standard Specification for Aluminum-Alloy Sand Castings
   2. ASTM B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

C. International Building Code – 2021 Edition.

D. National Fire Protection Agency (NFPA)
   1. NFPA70 – National Electrical Code (NEC), Latest Edition

1.4 ALLOWANCES

A. Allowances for items specified in this section are specified in Section 012100 "Allowances."

1.5 DEFINITIONS

A. Illuminated: Illuminated by lighting source integrally constructed as part of the sign unit.

Rebid Documents

1.6 COORDINATION

A. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.7 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
   1. Product Data: For each type of product.
      a. Shop Drawings: For signs.
         1) Include fabrication and installation details and attachments to other work.
            a) Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
      b. Show message list, typestyles, graphic elements, and layout for each sign.
         1) Show locations of electrical service connections.
         2) Include diagrams for power, signal, and control wiring.

      c. Samples for Initial Selection: For each type of sign assembly, minimum 6” square piece of exposed finish metal and each exposed component.
      d. Samples for Verification: For each type of sign assembly indicated on the Drawings, submit all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
         1) Dimensional Characters: One full-size sample of one dimensional character.
         2) Exposed Accessories: One each full-size sample of each accessory type.

   2. Sign Schedule: For dimensional letter signs. Use same designations indicated on Drawings or specified.
   3. Delegated Design Submittal: For signs indicated in "Performance Requirements" Article.
      a. Include structural analysis calculations for signs indicated to comply with design loads; signed and sealed by the qualified professional engineer responsible for their preparation.

B. Sample Warranty: For special warranty.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: A firm with not less than 10 years’ successful experience in the fabrication and installation of signage systems similar to that specified, and with at least 5 successful projects of similar size and scope of the Project.

Rebid Documents

1.10 FIELD CONDITIONS

A. Field Measurements: Verify locations of electrical service embedded in permanent construction by other installers by field measurements before fabrication and indicate measurements on Shop Drawings.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of finishes beyond normal weathering.
      b. Separation or delamination of sheet materials and components.
      c. Electrical components including lighting.

   2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design sign structure and anchorage of dimensional character sign type(s) according to structural performance requirements.

B. Structural Performance: Signs and supporting elements shall withstand the effects of gravity and other loads within limits and under conditions indicated.
   1. Structural Load Requirements: Chapter 16 of the specified IBC.
      a. Ultimate Wind Speed: 110 mph
      b. Wind Exposure Category: C
      c. Surface Roughness Category: D
      d. Other Design Load: As indicated on Drawings.

C. Thermal Movements: For exterior fabricated channel dimensional characters allow for thermal movements from ambient and surface temperature changes.
   1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 DIMENSIONAL CHARACTERS

A. Fabricated Channel Characters **SIGN-1**: Translucent face with metal side returns, formed free from warp and distortion; with uniform faces, sharp corners, and precisely formed lines and profiles; internally braced for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners; and as follows.

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1. Illuminated Characters: Frontlighted character resulting in direct illumination from the front face of the characters, constructed with LED lighting, including transformers, insulators, and other accessories for operability, with provision for servicing and concealing connections to building electrical system. Use tight or sealed joint construction to prevent unintentional light leakage. Space lamps apart from each other and away from character surfaces as needed to illuminate evenly.
   a. Power: 120 V, 60 Hz, 1 phase, 15 A.
   b. Weeps: Provide weep holes to drain water at lowest part of exterior characters.

2. Character Material: Sheet or plate aluminum.
3. Material Thickness: 0.100 inch.
4. Translucent Face Sheet: Acrylic sheet with integral color as selected by Architect from manufacturer's full range
   a. Sheet Thickness: Manufacturer's standard thickness for size of character.

5. Character Height: As coordinated with the Architect.
6. Character Depth: As coordinated with the Architect.
7. Finishes:
   a. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard, in color as selected by Architect from manufacturer's full range.
   b. Overcoat: Manufacturer's standard baked-on clear coating.

8. Mounting: Projecting studs.
   a. Hold characters at 2-inch distance from wall surface.

9. Typeface: As coordinated with the Architect.

B. Fabricated Channel Characters **SIGN-2:** Metal face and side returns, formed free from warp and distortion; with uniform faces, sharp corners, and precisely formed lines and profiles; internally braced for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners; and as follows.
   1. Illuminated Characters: Backlighted character resulting in a glowing effect from behind and around the characters, constructed with LED lighting, including transformers, insulators, and other accessories for operability, with provision for servicing and concealing connections to building electrical system. Use tight or sealed joint construction to prevent unintentional light leakage. Space lamps apart from each other and away from character surfaces as needed to illuminate evenly.
      a. Power: 120 V, 60 Hz, 1 phase, 15 A**.**
      b. Weeps: Provide weep holes to drain water at lowest part of exterior characters.

   2. Character Material: Sheet or plate aluminum.
   3. Material Thickness: 0.100 inch.
   4. Character Height: As coordinated with the Architect.
   5. Character Depth: As indicated on Drawings.
   6. Finishes:
      a. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard, in color as selected by Architect from manufacturer's full range.
      b. Overcoat: Manufacturer's standard baked-on clear coating**.**

   7. Mounting: Projecting studs.
      a. Hold characters at 2-inch distance from wall surface.

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8. Typeface: As coordinated with the Architect.

2.3 DIMENSIONAL CHARACTER MATERIALS

A. Aluminum Sheet and Plate: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Aluminum Extrusions: ASTM B221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

C. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

D. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish stainless steel devices unless otherwise indicated.
3. Exposed Metal-Fastener Components, General:
   a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
   b. Fastener Heads: For nonstructural connections, use flathead or oval countersunk screws and bolts with tamper-resistant Allen-head slots unless otherwise indicated.
4. Sign Mounting Fasteners:
   a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
   b. Projecting Studs: Threaded studs with sleeve spacer, welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
   c. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, installed in predrilled holes.

B. Adhesive: As recommended by sign manufacturer.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.5 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly

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mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.

2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
5. Internally brace dimensional characters for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.
6. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
7. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

2.6 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.7 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

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C. Verify that electrical service is correctly sized and located to accommodate signs.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF DIMENSIONAL CHARACTERS

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
   1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
   2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
   3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Mounting Methods:
   1. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
      a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.
      b. Thin or Hollow Surfaces: Place spacers on studs, place sign in position with spacers pinched between sign and substrate and install washers and nuts on stud ends projecting through opposite side of surface, and tighten.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 10 1419

Rebid Documents

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Rebid Documents

SECTION 10 2239.13 - FOLDING GLASS-PANEL PARTITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes manually operated, glass-panel partitions.

B. Related Requirements:
1. Section 055000 "Metal Fabrications" for supports that attach supporting tracks to overhead structural system.
2. Section 06 1000 “Rough Carpentry” for coordination with framing and blocking.
3. Section 09 9100 “Painting” for stain finishing of wood panels and frames.

1.3 REFERENCES

A. Reference Standards in accordance with Division 01 and current editions from the following:
1. AAMA. American Architectural Manufacturers Association; www.aamanet.org
   a. AAMA 205-15, In-Plant Testing Guidelines for Manufacturers and Independent Laboratories.
   b. AAMA 502, Voluntary Specification for Field Testing of Newly Installed Fenestration Products.
   c. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum.
   d. AAMA 920-11, Specification for Operating Cycle Performance of Side-Hinged Door System.
   e. AAMA/WDMA/CSA 101/I.S.2/A440-17, NAFS, North American Fenestration Standard Specification for Windows, Doors, and Skylights.

2. ANSI. American National Standards Institute; www.ansi.org
   a. ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.

3. ASTM. ASTM International; www.astm.org
   a. ASTM C1036, Standard Specification for Flat Glass.
   b. ASTM C1048, Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.
   c. ASTM E90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
   d. ASTM E413-16, Classification for Rating Sound Insulation.
   e. ASTM E1332, Standard Classification for Rating Outdoor-Indoor Sound Attenuation.

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f. ASTM E2068-00 (2016), Standard Test Method for Determination of Operating Force of Sliding Windows and Doors.
g. ASTM E987-88 (2017), Standard Test Methods for Deglazing Force of Fenestration Products.

4. CPSC. Consumer Product Safety Commission; www.cpsc.gov
   a. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials

1.4 ACTION SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
   1. Product Data: For each type of product.

B. Shop Drawings: For operable glass-panel partitions.
   1. Include plans, elevations, sections, details and attachments to other work.
   2. Indicate stacking and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.

C. Samples for: For each type of exposed material, finish, covering, or facing, prepared on Samples of size indicated below:
   1. Panel Edge Material: Not less than 3 inches long.

D. Product Certificates: For each type of operable glass-panel partition.

E. Product Test Reports: For each operable glass-panel partition, for tests performed by a qualified testing agency.

F. Sample Warranty: For manufacturer's special warranty.

G. Operation and Maintenance Data: For operable glass-panel partitions to include in maintenance manuals.
   1. In addition to items specified in Section 01 7823 "Operation and Maintenance Data," include the following:
   2. Panel finish and finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance.
   3. Seals, hardware, track, track switches, carriers, and other operating components.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer capable of providing complete, precision built, engineered, pre-fitted units with a minimum thirty (30) years’ experience in the sale of folding-sliding door systems for large openings in the North American market.

B. Installer Qualifications: Installer experienced in the installation of manufacturer’s products or other similar products for large openings. Installer to provide reference list of at least three (3) projects of similar scale and complexity successfully completed in the last three (3) years.
   1. Installer to be trained and certified by manufacturer.

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C. Single Source Responsibility: Furnish Folding Glass Partition system materials from one manufacturer for entire Project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's instructions and recommendations, Section 01 6000 requirements, and as follows:
   1. Deliver materials to job site in sealed, unopened cartons or crates.
      a. Upon receipt, inspect the shipment to ensure it is complete, in good condition and meets project requirements.
   2. Condition wood components to average prevailing relative humidity before installation. Do not subject wood components to extreme or rapid changes in heat or humidity.
   3. Do not use forced heat to dry out building.
   4. Store flat in a well-ventilated area out of direct sunlight under cover in a clean and dry location, protecting units against weather and defacement or damage from construction activities, especially to the edges of panels.

1.7 WARRANTY

A. Manufacturer Warranty: Provide Folding Glass Partition system manufacturer's standard limited warranty as per manufacturer's published warranty document in force at time of purchase, subject to change, against defects in materials and workmanship.
   1. Warranty Period beginning with the earliest of 120 days from Date of Delivery or Date of Substantial Completion:
      a. Rollers and Glass Seal Failure: Ten (10) years
      b. All Other Components: Ten (10) years
         1. Exception: Five (5) years if NOT installed by manufacturer's specific system approved or certified trained installer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: For basis-of-design and reference purposes folding glass walls by Nana Wall Systems, Inc. are specified.
   1. Representative Contact: Katie Stombaugh
      Aluma Spec
      1540 Humboldt Avenue
      St. Paul, MN 55118
      E-mail: kstombaugh@alumaspec.com
      Phone: (651) 451-9522

B. Comparable products of other manufacturers may be submitted for review and approval by the Architect, provided they meet the criteria and intent of this specification.

Rebid Documents

2.2 PERFORMANCE REQUIREMENTS

A. Performance Criteria: Minimal Surface Mounted Flush Sill and Flush Sill – Inward Opening
1. Swing Panel Operation: 500,000 cycles.
2. System Life Cycle: 20,000 cycles.
3. Operating Force (ASTM E2068)
   a. Swing Panel: Open 1 lbf and Close 1 lbf
   b. Folding Panel Initiate Motion: Open 4 lbf and Close 3 lbf.
   c. Maintain Motion: Open 1 lbf and Close 1 lbf.

4. Forced Entry (AAMA 1304): Pass.
5. Forced Entry Resistance (ASTM F842, AMMA 1304, CAWM 300): Meets Grade 40: +F2.
6. Unit Burglary Resistance: EN ISO 1627-30, Class RC2/RC2N certified.

2.3 FOLDING GLASS-PANEL PARTITIONS (**WD-FP**)

A. Operable Glass Panels: Wood-framed glass-panel partition system, including panels, seals, suspension system, operators, and accessories.
1. Basis of Design: “NW Acoustic 545” by Nanawall Systems, Inc.
   a. Unit Size: 16’-4” wide x 8’-0” high.
   b. Configuration: Outward 1 left, Outward 4 right
   c. Panel Operation: Manual, adjustable sliding and folding hardware with top and bottom tracks.
   d. Mounting Type: Floor track supported with upper guide track.
   e. Stack Storage Configuration: Outswing type and stack storge inside jamb.
   f. Swing Panel Type: With Entry/Egress panel hinged to side jamb.
   g. Panel Pairing: Bi-folding panels hinged to side jamb.
   h. Panels: Single lite; standard.

B. Materials
1. Wood clad aluminum frame and running astragals, threshold, wood framed panels, sliding-folding and locking hardware, seals, glass and glazing, panel catch, and accessories as required for complete working installation
2. Panels:
   a. Size: As indicated on the Drawings.
   b. Rail Depth: 3-3/8 inch.
   c. Top Rail Width: 2-1/2 inches.
   d. Stile Width: 2-5/8 inch.
   e. Hinged Panels Bottom Rail Width: 2-3/8 inch.
   f. Swing Door Panel Bottom Rail Width: 10 inches.
   g. Frame (including running astragals): Wood cladding on both sides.
   h. Top track width 2 13/16 inch standard.
   i. Side jamb width: 2-13/16 inch.
   j. Aluminum Extrusion: 6063-T5; 0.78 inch nominal thickness.

3. Wood:
   a. Species: Red Grandis

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b. Finish: Provide factory water-based, open pore clear sanding sealer for stain or base coat applied for paint with one additional clear coat; See Section 09 90 00 for field finish.

4. Glazing:
   a. Manufacturer's 1-7/16 inch STC 42 laminated glass, dry-glazed with glass stops on the interior side.
   b. Glass type: Standard, reduced iron.

5. Hardware:
   a. Locking Hardware and Handles:
      1) Swing panel: One-point locking with latch, deadbolt and lever handles on both sides of primary swing panel only.
         a) Thumbturn on inside and key cylinder on outside.
         b) One motion operation.
         c) Stainless steel GU Rondo lever handle with brushed satin finish.

      2) Hinged panels:
         a) 2-point locking with flat handle stainless steel, brush satin finish,
         b) Locking rods with standard end caps at the top and bottom. Rods to have a stroke of 15/16 inch.
         c) Panel Catch: Panel catch to hold swing panel to adjacent folding panel to prevent incorrect operation when moving the panel.

   b. Hinge Finish: Clear anodized.
   c. Sound Gasketing:
      1) Manufacturer's double layer EPDM between panels and EPDM gasket, Q-Ion gasket, or brush seal between panel and frame, or brush seals with a two-layer fiberglass reinforced polyamide fin attached at both inner and outer edge of bottom of door panels with a recessed sill or on frame for sealing between panels and between panel and frame

   d. Aluminum Sill:
      1) Surface mounted flush sill.
      2) Finish: Clear anodized

   e. Sliding-Folding Hardware:
      1) Provide manufacturer's standard combination sliding and folding hardware with top and bottom tracks and threshold. All running carriages to be with sealed, self-lubricating, double ball bearing multi-rollers. Surface mounted hinges and running carriages NOT acceptable.

   f. Fasteners:
      1) Installation plates for connecting frame components made of stainless steel with sealing cushion to avoid thermal connectivity.

Rebid Documents

2.4 FABRICATION

A. Folding Glass Wall: Extruded aluminum frame and panel profiles, corner connectors and hinges, sliding and folding hardware, locking hardware and handles, glass and glazing and components needed to construct a folding glass wall.
   1. Each unit factory pre-assembled and shipped with complete system components, installation mounting plates, and installation instructions.
   2. Exposed work to be carefully matched to produce continuity of line and design with all joints.
   3. No raw edges visible at joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination and Acceptance of Conditions per Section 01 70 00 and as follows:
   1. Carefully examine rough openings with Installer present, for compliance with requirements affecting Work performance.
      a. Examine surfaces of openings and verify dimensions; verify rough openings are level, plumb, and square with no unevenness, bowing, or bumps on the floor; and other conditions as required by the manufacturer for readiness to receive Work.
      b. Verify structural integrity of the header for deflection with live and dead loads limited to the lesser of L/720 of the span or 1/4 inch. Provide structural support for lateral loads, and both wind load and eccentric load when the panels are stacked open.

   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install folding glass-panel partition system in accordance with the Drawings, approved submittals, manufacturer's recommendations, and installation instructions, and as follows:
   1. Properly seal around opening perimeter to reduce sound infiltration from surroundings.
   2. Securely attach anchorage devices to rigidly fit frame in place, level, straight, plumb, and square. Install frame in proper elevation, plane, and location, and in proper alignment with other work.
   3. Wood Finishing: Field finish wood under Section 09 9000, Painting and Coating; seal and finish promptly after installation and prior to exposure.
   4. Install panels, handles, lockset, gasketing and other accessories in accordance with manufacturer's recommendations and instructions.

3.3 ADJUSTING

A. Field Tests and Inspections per Section 01 4000 of the following:
   1. Verify the Folding Glass Partition system operates and functions properly. Adjust hardware for proper operation.

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B. Non-Conforming Work: Repair or replace non-conforming work as directed by the Architect; see General and Supplementary Conditions, and Division 01, General Requirements.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable glass-panel partitions.

END OF SECTION 10 2239.13

Rebid Documents

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Rebid Documents

SECTION 10 2600 - WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Corner guards.

B. Related Requirements:
   1. Section 087100 "Door Hardware" for metal protective trim units, according to BHMA A156.6, used for armor, kick, mop, and push plates.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: For each type of product, detailed specifications for each system component and installation accessory required.
   2. Shop Drawings: Showing locations, extent and installation details of corner guards. Show method of attachment to adjoining construction.

B. Samples for Verification: For each type of exposed finish on the following products, prepared on Samples of size indicated below:
   1. Wall Guards: 12 inches long.

C. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of wall and door protection product to include in maintenance manuals.
   1. Include recommended methods and frequency of maintenance for maintaining best condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to finishes and performance.

Rebid Documents

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Wall guards and Related Accessory Components: No fewer than two, 48-inch-long units and mounting and accessory components proportional to the quantities of extra materials. Package mounting and accessory components with each extra material.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage an installer who has no less than 3 years' experience in installation of systems similar in complexity to those required for this project.

B. Manufacturer's Qualifications: Not less than 5 years' experience in the production of specified products and a record of successful in-service performance.

C. Code Compliance: Assemblies should conform to all applicable codes including IBCNFPA and Life Safety.

D. Fire Performance Characteristics: Provide metal components tested in accordance with ASTM E84 for Class A/1 fire characteristics.

E. Source Limitations: Provide all components of the protection system products manufactured by the same company to ensure compatibility of color, texture, and physical properties.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store wall and door protection in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
   1. Maintain room temperature within storage area at not less than 70 deg F during the period plastic materials are stored.
   2. Keep plastic materials out of direct sunlight.
   3. Store plastic wall- and door-protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F.
      a. Store corner-guard covers in a vertical position.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of wall- and door-protection units that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including detachment of components from each other or from the substrates, delamination, and permanent deformation beyond normal use.
      b. Deterioration of metals, metal finishes, plastics, and other materials beyond normal use.

   2. Warranty Period: Five years from date of Substantial Completion.

Rebid Documents

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: For stainless steel corner guard products: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Babcok Davis
   2. The C/S Group of Companies, a division of Construction Specialties, Inc.
   3. Hiawatha, of Activar, Inc. Construction Products Group
   4. InPro Corporation
   5. J.L. Industries, of Activar, Inc. Construction Products Group

B. Source Limitations: Obtain wall- and door-protection products of each type from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Flame-Spread Index: 25 or less.
   2. Smoke-Developed Index: 450 or less.

2.3 CORNER GUARDS

A. Surface-Mounted, Metal Corner Guards (**WCG-1**): Fabricated as one piece from formed or extruded metal with formed edges; with 90- or 135-degree turn to match wall condition.

B. Basis-of-Design Product: Subject to compliance with requirements, provide CS Acrovyn "Model CO-9 90º" or comparable product.
   1. Material: Stainless-steel sheet, Type 304.
      a. Thickness: Minimum 16 gauge
      b. Finish: Directional satin, No. 4.
      c. Wing Size: Nominal 2 inches by 2 inch.
      d. Height: 48 inches.
      e. Corner Radius: 3/16" inch.
      f. Mounting: Adhesive as recommended by manufacturer.

2.4 FABRICATION

A. Fabricate wall and door protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.

Rebid Documents

2.5 FINISHES

A. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of the Work.

B. Examine walls to which wall and door protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
   1. For wall and door protection attached with adhesive, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Complete finishing operations, including painting, before installing wall and door protection. Clean substrate to remove dust, debris and loose particles.

B. INSTALLATION

C. Installation Quality: Install wall and door protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

D. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings. If not indicated on Drawings, install at heights indicated below:
   1. Corner Guards: Mount bottom of corner guard from the top of the wall base.

3.3 CLEANING

A. Immediately after completion of installation, clean protection item and adhesives recommended in writing by manufacturer.

END OF SECTION 10 2600

Rebid Documents

SECTION 10 2800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Owner-furnished materials.
      a. Toilet tissue dispenser.
      b. Automatic Paper Towel (Roll) Dispenser.

   2. Public-use and staff washroom accessories.
      a. Grab bars.
      b. Toilet tissue dispenser.
      c. Soap Dispenser**.**
      d. Hook for back of hinged doors.
      e. Childcare accessories.
      f. Underlavatory guards.
      g. Hand dryers.
      h. Childcare accessories.
      i. Underlavatory guards.

   3. Private-use bathroom accessories including lighted mirrors.
      a. Private-Use Toilet Tissue Dispenser.
      b. Private-Use Straight and Curved Shower Curtain Rods.
      c. Private-Use Shower Seat.
      d. Private-Use Robe Hook.
      e. Private-Use Towel Bar.
      f. Private-Use Lighted Mirror

   4. Custodial, Utility and Service Area accessories.
      a. Custodial Utility Shelf with Mop and Broom Holder.

B. Related Requirements:
   1. Section 06 1000 “Rough Carpentry” for blocking inside walls for support of accessories.
   2. Division 26 “Electrical” for coordination with lighted mirrors, electric hand dryers and automatic paper towel dispensers.

Rebid Documents

1.3 REFERENCES

A. American National Standards Institute (ANSI):
   1. ANSI A 117.1 - Accessible and Usable Buildings and Facilities.

B. ASTM International (formerly American Society for Testing and Materials) (ASTM)
   1. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
   2. ASTM A 1008/A 1008M- Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened and Bake Hardenable.
   3. ASTM B 456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
   4. ASTM C 1503 - Standard Specification for Silvered Flat Glass Mirror.
   5. ASTM D2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
   6. ASTM D3359 - Standard Test Methods for Rating Adhesion by Tape Test.
   7. ASTM F446, Standard Consumer Safety Specification for Grab Bars and Accessories Installed in the Bathing Area

C. U.S Architectural & Transportation Barriers Compliance Board
   1. Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG). Adopted in 1991; continual revisions.

1.4 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Product Data: For each type of product indicated, include the following:
      a. Construction details, material descriptions, dimensions of individual components and profiles, and finishes.
      b. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
      c. Electrical characteristics and requirements.

   2. Manufacturer’s warranty.
   3. Maintenance Data: For accessories to be included in maintenance manuals.

Rebid Documents

1.6 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
   1. Plate Glass Mirrors: Failures include, but are not limited to, visible silver spoilage defects.
      a. Warranty Period: 15 years from date of Substantial Completion.

   2. Lighted Mirrors: Failures on electronic components and against silver spoilage under normal indoor atmospheric conditions.
      a. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.

B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.

C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch minimum nominal thickness.

D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.

E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

H. Mirrors: ASTM C 1503, Mirror Glazing Quality, tempered clear-glass mirrors, nominal 1/4 inches thick.

I. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 OWNER-FURNISHED MATERIALS

A. Owner-Furnished Materials:
   1. Vendor-Supplied Toilet Tissue Dispenser **TACC-11 :**
      a. Public restrooms in hotel and laundromat.
      b. Staff toilet in hotel.

   2. Vendor-Supplied Automatic Paper Towel (Roll) Dispenser **TACC-12:**
      a. Laundromat customer service sink and hotel kitchen.

Rebid Documents

2.3 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Structural Performance: Design accessories and fasteners to comply with the following requirements:
   1. Grab Bars: Installed units able to resist 250 lbf concentrated load applied in any direction and at any point.
   2. Shower Seats: Installed units able to resist 250 lbf applied in any direction and at any point.

2.4 MANUFACTURERS

A. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
   1. Public-use washrooms:
      a. American Specialties, Inc.
      b. Bobrick Washroom Equipment, Inc.
      c. Bradley Corporation.
      d. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
      e. Koala Kare Products; a division of Bobrick Washroom Equipment, Inc.

   2. Private-use bathrooms:
      a. Gatco, Inc.
      b. Richelieu Hardware
      c. Lighted Mirrors
         1) Electric Mirror, Inc.
         2) Illuminated Bathroom Mirror (IBMirror)
         3) Matrix Mirrors.

2.5 PUBLIC-USE WASHROOM ACCESSORIES

A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.
   1. Exceptions: Diaper changing stations, hand dryers, under lavatory guards.

B. Grab Bar **TACC-21**:
   1. Grab Bars: Straight bar, 1-1/2 inch diameter concealed flange with snap cover from one of the following:
      a. “3800 Series” (ASI)
      b. “B-6806 Series” (Bobrick)
      c. “Model 812” (Bradley Corporation)
      d. “Model 150C Series Concealed (GAMCO)

   2. Configuration and Length: As indicated on Drawings.

C. Toilet Tissue (Roll) Dispenser **TACC-22**:

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1. Description: Surface-mounted, roll-in-reserve dispenser with hinged front secured with tumbler lockset from one of the following:
   a. "Model 0030" (ASI)
   b. "B-2888" (Bobrick)
   c. "Model 5402" (Bradly Corporation)
   d. "Model TTD-5" (GAMCO)

D. Soap Dispenser **TACC-23**:
1. Description: Wall-mounted dispenser designed for manual operation and dispensing soap in liquid or lotion form from one of the following:
   a. "Model 0347" (ASI)
   b. "B-2111" (Bobrick)
   c. "Model 6563" (Bradly Corporation)
   d. "Model G-16AP" (GAMCO)

E. Mirror Unit **TACC-24**:
1. Description: Stainless angle frame mirror, 24" x 30" from one of the following:
   a. "0600-2436" (ASI)
   b. "B-165 2430" (Bobrick)
   c. "Model 780-2436" (Bradly Corporation)
   d. "Model A-24 x 30" (GAMCO)

F. Hook for back of hinged doors **TACC-25**:
1. Description: Robe hook (single), satin finish from one of the following:
   a. "Model 7340-S" (ASI)
   b. "B-76717" (Bobrick)
   c. "Model 9114" (Bradly Corporation)
   d. "Model 76717 (formerly 5153)" (GAMCO)

G. Multiple-Airflow Hand Dryer **TACC-26**:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Dyson "Airblade V" electric hand dryers manufactured by Dyson Inc.,
2. Description: Multiple-airflow hand dryer, using two or more airstreams for rapid hand drying.
   a. Mounting: Surface mounted.
   b. Operation: Electronic sensor activated with timed power cut-off switch.
   c. Average Dry Time: 12 seconds.
   d. Maximum Sound Level: 80 dB.
   e. Water Collection: Removable reservoir.
   f. Filter: 99.97 percent at 0.3 microns particulate efficiency HEPA filter.
   g. Cover Material and Finish: Nickel.
   h. Electrical Requirements: 115 V, 15 A, 1725 W.

H. Waste Receptacle **TACC-27**:
1. Description: Recessed waste receptable with push flap door, 2.5-gallon minimum capacity; service door secured with a fill-length piano hinge and equipped with a tumbler lock; stainless steel finish from one of the following:
   a. "Model 04733" (ASI)
   b. "B-35633" (Bobrick)
   c. "Model 3257" (Bradley Corporation)

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I. Diaper Changing Station **TACC-28**:
   1. Description: Surface mounted horizontal unit projecting no more than 4 inches from wall when closed that opens by folding down from stored position and with child-protection strap; material HDPE from one of the following:
      a. Model "9014" (ASI)
      b. Model "KB300" (Koal Kare)
      c. Plastic Baby Changing Station (Bradley Corporation)
      d. Surface-Mounted Baby Changing Station (GAMCO)

J. Under lavatory Guard **TACC-29**:
   1. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings from one of the following:
      a. Oatey "Dearborn Safety Series"
      b. Plumberex "Handy-Shield MAXX"
      c. Truebro (IPS Corporation) "Lav Guard 2 E-Z Series"

2.6 PRIVATE-USE BATHROOM ACCESSORIES

A. Private-Use Toilet Tissue Dispenser **TACC-31** :
   1. Description: **Double-**roll dispenser designed for 4 1/2 -or 5-inch-diameter rolls with a polished chrome finish.
   2. Acceptable manufacturers.
      a. Manufacturer: Gatco Inc.
      b. Product: "Latitude^2 Suite Double Tissue Holder", Item #4243A

B. Private-Use Toilet Tissue Dispenser **TACC-32** :
   1. Description: **Single-**roll dispenser designed for 4 1/2 -or 5-inch-diameter rolls with a polished chrome finish.
   2. Acceptable manufacturers.
      a. Manufacturer: Gatco Inc.
      b. Product: "Latitude^2 Euro Tissue Holder", Item #4243

C. Private-Use Straight Shower Curtain Rod **TACC-33**:
   1. Description: 1 inch outside diameter, straight rod fabricated from solid brass; stainless steel ASTM A480 No. 4 (satin) finish mounting flanges designed for concealed fastening in material and finish matching rod.
   2. Acceptable manufacturers.
      a. Manufacturer: Gatco, Inc.
      b. Product: "Shower Rod Set 829SN".

D. Private-Use Folding Shower Seat **TACC-34**:
   1. Description: Wall-mounted hinged, solid phenolic shower seat able to support up to a static load of 500 pounds and can fold up when not in use from one of the following:
      a. "Model 8203-28" (ASI)
      b. "B-5193" (Bobrick)
      c. "Model 9562" (Bradly Corporation)

E. Private-Use Robe Hook **TACC-35:**

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1. Description: Single-prong unit, stainless steel, ASTM A480 No.4 finish (satin); mounting flange designed for concealed fastening in material and finish matching robe hook.
2. Acceptable manufacturers.
   a. Manufacturer: Richelieu Hardware
   b. Product: “Bathroom Hook – Bridgeport Collection, NB1090570”.

F. Private-Use Towel Bar **TACC-36**:
1. Description: Round tube; 609 mm (24 inches) in length with a projection of 69 mm (2-3/4 inch) stainless steel, ASTM A480 No.4 finish (satin); mounting flange designed for concealed fastening in material and finish matching towel bar.
2. Acceptable manufacturers.
   a. Manufacturer: Richelieu Hardware
   b. Product: “Towel Bar – Bridgeport Collection, NB1092470”.

G. Private-Use Lighted Mirror **TACC-37**:
1. Basis-of-Design Product: Subject to compliance with requirements, provide “Silhouette Lighted Mirror” by Electric Mirror Inc.
2. Comparable products of other manufacturers may be submitted for review and approval by the Architect, provided they meet the criteria and intent of this specification.
3. Mounting: Surface mounted.
4. Size: 36 inches by 36 inches.
5. Color Temperature: 3000K.
6. Options: Fog-free mirror surface.
7. Electrical Requirements: 120V, 88W

2.7 CUSTODIAL, UTILITY AND SERVICE AREA ACCESSORIES

A. Source Limitations: Obtain custodial, utility and service area accessories from single source from single manufacturer.
1. Exception due to availability: Automatic paper towel (roll) dispenser.

B. Custodial Utility Shelf with Mop and Broom Holder **TACC-41**:
1. Custodian Utility Shelf: Combination shelf/mop-broom holder with (3) rag hooks (2); from one of the following:
   a. “Model 1315-4” (ASI)
   b. “Model B-224 x 36” (Bobrick)
   c. “Model 9984” (Bradley)
   d. “Model US-2” (GAMCO)

2.8 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

Rebid Documents

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Install accessories where indicated on drawings and schedules, and at heights and locations in accordance with ADAABAAG requirements.

C. Grab Bars: Anchor grab bars to solid blocking between studs with stainless steel screws, or to masonry walls with stainless steel expansion anchors. Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 10 2800

Rebid Documents

SECTION 10 3100 – MANUFACTURED FIREPLACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Manufactured electric fireplaces.

B. Related Requirements
   1. Section 06 1000 “Rough Carpentry”.
   2. Division 26 “Electrical”.

1.3 REFEREENCES

A. National Fire Protection Association
   1. NFPA - 70 - National Electric Code.

B. Underwriters Laboratories
   1. UL 2021 (4th Edition) - Standard for Fixed and Location-Dedicated Electric Room Heater

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
   1. Product Data: For each type of product.
      a. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electric fireplace.
   2. Shop Drawings: For electric fireplaces including clearances, rough-in enclosure, utilities, attachment and details.
   3. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

1. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking and adjustment and periodic cleaning and maintenance of all components.

Rebid Documents

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer with a minimum of 5 years' documented experience with the types of products specified.

B. Installer Qualifications: Installer with a minimum of 2 years' documented experience with the type of products specified.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products in covered area, well protected from weather.

1.8 PROJECT CONDITIONS

A. Verify dimensions by field measurements before fabrication and indicate on Shop Drawings.

B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.9 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of fireplace that fail in materials or workmanship within specified warranty period, without monetary limitation.
1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ELECTRIC FIREPLACES

A. Electric Fireplace: Recessed linear electric fireplace with LED technology allowing for customizable flames, ember bed colors and brightness settings. Includes sound effects. Operation and control of fireplace via hidden controls, remote and Wi-Fi/Smart App.

B. Manufacturer: SimpliFire by Hearth and Home Technologies
1. Model: Triton Electric Fireplace, "Triton 65".
a. Dimensions:
1) Width: 65-5/16".
2) Height: 26-11/16".
3) Depth: 12 7/16".
4) Viewing Area: 65-5/16" x 20".

b. Lighting, Flame and Sound Effects:
1) Multi-colored LED backlighting.
2) Multiple flame intensity adjustments.

Rebid Documents

c. Sound Effects: Two crackling fire sounds.
d. Media: Black glass embers & clear crystal media.
e. Accessories: XL Birch Log Set
f. Trim: Black
g. Controls: Independent controls for flame and heat.
   1) Remote control.
   2) Wi-Fi/Smart app.
   3) Hidden controls on fireplace unit.

h. Electrical:
   1) Voltage: 120V/240V AC
   2) Frequency: 60 Hz
   3) Amperage: 15A for 120V or 20A for 240V
   4) Watts: 1400W/2800W

i. Heat: Electric air heater with variable heat settings with heater shut-off switch.
   1) 5,000 BTU for 120V, 15A connection.
   2) 10,000 BTU for 240V, 20A connection

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify proper power supply source is available.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions, and the requirements of authorities having jurisdiction.

B. Use manufacturer's guidelines for minimum clearances to combustibles, walls, and finishes.

C. Set fireplace units plumb, level, and rigid.

D. Anchor all components firmly in position.

E. Connect to power supply and control wiring in accordance with NFPA 70.

F. Upon completion of installation, visually inspect all exposed surfaces. Touch up scratches and abrasions with touch up paint recommended by the manufacturer; make imperfections invisible to the unaided eye from 5 feet.

Rebid Documents

3.3 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 10 3100

Rebid Documents

SECTION 10 4300 – EMERGENCY AID SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Automated external defibrillators (AEDs).
   2. Automated external defibrillator (AED) cabinets.

B. Related Requirements:
   1. Section 10 400 "Fire Protection Specialties" for portable, hand-carried fire extinguishers, fire extinguisher cabinets and emergency keyboxes.

1.3 REFERENCES

A. American Heart Association (AHA):
   1. American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care - current Edition.

B. International Code Council (ICC)
   1. International Building Code (IBC) – 2021 edition.

C. Underwriters Laboratories, Inc. (UL)

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 "Submittal Procedures."
   1. Product Data: For each type of product.
      a. Automated External Defibrillator (AED)
      b. Cabinets: Materials description for defibrillator cabinets include roughing-in dimensions, details showing mounting methods, relationships to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, door style and materials.
      c. Installation instructions for each product specified.

   2. Shop Drawings: For fire-protection cabinets.
      a. Small-scale plans showing locations of defibrillator cabinets.
      b. Indicate installation procedures and accessories required for a complete installation.

Rebid Documents

3. Warranty: Sample of special warranty.

B. Submit in accordance with Section 01 7700 “Closeout Procedures.”
1. Operation and Maintenance Data: For automated external defibrillators and automated external defibrillator cabinets to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish additional plastic replacement cams for each cabinet specified with theft-deterrent locks.
1. Replacement Cams: Furnish 6 cams for each cabinet

1.6 COORDINATION

A. Coordinate size of automated external defibrillator cabinets to ensure that type and capacity of automated external defibrillators indicated are accommodated.

B. Coordinate sizes and locations of automated external defibrillator cabinets with wall depths.

1.7 QUALITY ASSURANCE

A. Provide cabinets and accessories produced by a single manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and protect defibrillator cabinets, AED’s and related materials using means and methods that will prevent damage, deterioration, or loss.

B. Deliver components in manufacturer's original packaging, properly labeled for identification

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace automated external defibrillators that fail in materials or workmanship within specified warranty period.
1. Warranty Period: 8 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements specified, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
1. Automated External Defibrillators (AEDs):

Rebid Documents

a. HeartSine Technologies Ltd., a brand of Stryker Corp.
b. Philips.
c. Physio-Control, a brand of Stryker Corp.

2. Automated External Defibrillator (AED) cabinets:
a. JL Industries, part of Activar Construction Products Group Inc.
b. Comparable products subject to approval by Architect.

2.2 AUTOMATED EXTERNAL DEFIBRILLATOR (AED)

A. Automated External Defibrillator: Portable automated external defibrillator capable of automatically diagnosing life-threatening cardiac arrhythmias, suitable for use on adult or pediatric patients. Audible and visual with illuminated display icons and, on/off button operation.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Activar Construction Products Group, Inc. - JL Industries; HeartSine Samaritan PAD 360P or comparable product.

2. Model: PAD.
3. Storage Case: Manufacturer's standard.

4. Battery Capacity: 6 hours.

5. Standby Life: 3.5 years.

6. Optional Accessories: Pediatric Pad-Pak.

2.3 NON-RATED AUTOMATED EXTERNAL DEFIBRILLATOR (AED) CABINET

A. Semi-Recessed Automated External Defibrillator (AED) Cabinet Type: Mountable AED cabinet of suitable type, size and capacity for automated external defibrillator.
1. Subject to compliance with requirements, provide JL Industries AED cabinets or comparable products.
2. “LifeStart 1400 Series AED Cabinet” (JL Industries)
a. Model: 1426G11

B. Cabinet
1. Rating: Non-rated.
2. Material: Aluminum sheet.

C. Door:
1. Construction: Flush doors with 5/8 inch doorstop attached by continuous hinge and equipped with zinc-plated pull and roller catch.
2. Material: Aluminum sheet.
3. Style: Full Glazing with theft-deterrent lock.
4. Glazing: Clear acrylic with black silkscreen lettering.
5. Door Pull: Painted to match door color
6. Other Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

Rebid Documents

D. Square-Edge Trim: 1-1/2 inch backbend depth.

E. Accessories:
1. Door Lock: Theft-deterrent cam lock that allows door to be opened during emergency by pulling sharply on door handle.
2. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.
a. Identify automatic external defibrillator in cabinet with the words "AED".
1) Location: Applied to cabinet door glazing.
2) Lettering Color: Black

F. Materials:
1. Aluminum: ASTM B221 for extruded shapes and aluminum sheet, with strength and durability characteristics of not less than Alloy 6063-T5 for aluminum sheet.
a. Finish: Dark bronze anodic.

2. Transparent Acrylic Sheet: ASTM D4802, Category A-1 (cell-cast sheet), 1.5mm thick, with Finish 1 (smooth or polished).

2.4 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where semi recessed cabinets will be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for semi recessed automated external defibrillator cabinets as required by type and size of cabinet and trim style.

Rebid Documents

3.3 INSTALLATION

A. General: Install automated external defibrillator cabinets in locations and at mounting heights indicated or, if not indicated, at height indicated below:
   1. Automated External Defibrillator Cabinets: 48 inches above finished floor to top of door pull.

B. Automated External Defibrillator Cabinets: Fasten cabinets to structure, square and plumb.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as automated external defibrillator cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust automated external defibrillator cabinets doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of automated external defibrillator cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace automated external defibrillator cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.

E. Replace automated external defibrillator cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 10 4300

Rebid Documents

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Rebid Documents

SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section

1.2 SUMMARY

A. Section Includes:
   1. Fire-protection cabinets for the following:
      a. Portable fire extinguishers and mounting brackets for fire extinguishers.
      b. Fire extinguisher cabinets.
      c. Emergency access keybox.
      d. Fire extinguisher schedule.

B. Related Requirements:
   1. Section 09 9200 “Gypsum Board” for installation of recessed fire extinguisher cabinets in gypsum board partitions.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Product Data: For each type of product.
      a. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semi recessed-, or surface-mounting method and relationships of box and trim to surrounding construction.

   2. Shop Drawings: For fire extinguisher cabinets and emergency access keybox.
      a. Include plans, elevations, sections, details, and attachments to other work.

   3. Closeout Submittals:
      a. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish additional plastic replacement cams for each cabinet specified with theft-deterrent locks.
   1. Replacement Cams: Furnish 6 cams for each cabinet.

Rebid Documents

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
   1. J.L. Industries (part of Activar Construction Products Group).
   2. Larsen's Manufacturing Co. (a division of Morris Group International).
   3. Nystrom Inc.
   4. The Knox Company.

B. Source Limitations: Obtain fire-protection cabinets, accessories, and fire extinguishers from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.

B. Fire Extinguishers:
   1. Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
   2. Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

2.3 PORTABLE HAND-CARRIED FIRE EXTINGUISHERS (**FE-__)**

A. Fire Extinguishers, General: Type, size, and capacity for each indicated.
   1. Extinguisher bodies and valve assemblies shall be all metal construction. Plastic components are NOT acceptable.
   2. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Multipurpose Dry-Chemical Type in Steel Container (**FE-1):** Extinguisher unit containing monoammonium phosphate-based dry chemical.
   1. Effectiveness (Rating): Class A, B and C fires.
   2. UL Rating: 3A:40B:C
   3. Capacity: 5-lb nominal.
   4. Models:
      a. “Cosmic 5E” (J.L. Industries)
      b. “MP-5A” (Larsen’s Manufacturing Co.)
      c. “EX-3005-3” (Nystrom, Inc.)

   5. Finish: Factory Powder-coated paint
      a. Color: Red

Rebid Documents

C. Multipurpose Dry-Chemical Type in Steel Container (**FE-2)**: Extinguisher unit containing monoammonium phosphate-based dry chemical.
   1. Effectiveness (Rating): Class A, B and C fires.
   2. UL Rating: 3A:40B:C
   3. Capacity: 6-lb nominal.
   4. Models:
      a. “Cosmic 6E” (J.L. Industries)
      b. “MP-6” (Larsen’s Manufacturing Co.)
      c. “EX-3006” (Nystrom, Inc.)

   5. Finish: Factory Powder-coated paint.
      a. Color: Red

D. Multipurpose Wet-Chemical Type in Steel Container **(FE-3)**: Extinguisher unit containing potassium acetate based, low PH agent chemical.
   1. Effectiveness (Rating): Class A and K fires.
   2. UL Rating: 2A:K
   3. Capacity: 2.5 gallons.
   4. Models:
      a. “Saturn 25” (J.L. Industries)
      b. “WC2½” (Larsen’s Manufacturing Co.)
      c. “EX-3262” (Nystrom, Inc.)

   5. Finish: Stainless steel.

E. Clean-Agent Type in Steel Container **(FE-4)**: Extinguisher unit containing the clean extinguishing agent Halotron® 1.
   1. Effectiveness (Rating): Class A, B and C fires.
   2. UL Rating: 1A-10B:C
   3. Capacity: 11 lbs.
   4. Models:
      a. “Mercury 11 (FM11C)” (J.L. Industries)
      b. “HT11” (Larsen’s Manufacturing Co.)
      c. “EX-3111” (Nystrom, Inc.)

   5. Finish: Factory-coated corrosion-resistant paint.
      a. Color: Red

2.4 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.
   1. Source Limitations: Obtain mounting brackets and fire extinguishers from single source from single manufacturer.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
   1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

Rebid Documents

2.5 NON-RATED FIRE-PROTECTION CABINET **FEC-1**

A. Semi-Recessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
   1. "Academy Series 1027W17", Dark Bronze Anodized Aluminum (JL Industries)
   2. "AL2409-6R", Dark Bronze Anodized Aluminum (Laren's)
   3. "FC-7033-DV-VR", Dark Bronze Anodized Aluminum (Nystrom)

B. Cabinet
   1. Rating: Non-rated.
   2. Material: Aluminum sheet.

C. Door:
   1. Material: Aluminum sheet.
   2. Style: Vertical duo panel with frame.
   3. Glazing: Tempered float glass (clear).
   4. Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

D. Rolled-Edge Trim: 3-inch backbend depth.

E. Accessories:
   1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
   2. Door Lock: Theft deterrent cam lock that allows door to be opened during emergency by pulling sharply on door handle.
   3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.
      a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER".
         1) Location: Applied to cabinet door
         2) Application Process: Pressure-sensitive vinyl letters.
         3) Lettering Color: Red.
         4) Orientation: Vertical.

F. Materials:
   1. Aluminum: ASTM B221 for extruded shapes and aluminum sheet, with strength and durability characteristics of not less than Alloy 6063-T5 for aluminum sheet.
      a. Finish: Dark bronze.

   2. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.6 RATED FIRE-PROTECTION CABINET **FEC-2**

A. Semi-Recessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
   1. "Academy Series Fire FX2 1027W17", Dark Bronze Anodized Aluminum (JL Industries)
   2. "FS AL2409-6R", Dark Bronze Anodized Aluminum (Larsen's)

Rebid Documents

3. "FRC-7033-DV-VR", Dark Bronze Anodized Aluminum (Nystrom)

B. Cabinet
1. Rating: One-hour fire-rated
   a. Construct fire-rated cabinets with double walls lined with minimum 5/8-inch-thick fire-barrier material meeting the requirements of UBC Standard 43-6 and ASTM E-814. Provide factory-drilled mounting holes.
   b. Material: Aluminum sheet.

C. Door:
1. Material: Aluminum sheet.
2. Style: Vertical duo panel with frame.
3. Glazing: Tempered float glass (clear).
4. Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

D. Rolled-Edge Trim: 3-inch backbend depth.

E. Accessories:
1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Door Lock: Theft deterrent cam lock that allows door to be opened during emergency by pulling sharply on door handle.
3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.
   a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER".
      1) Location: Applied to cabinet door
      2) Application Process: Pressure-sensitive vinyl letters.
      3) Lettering Color: Red.
      4) Orientation: Vertical.

F. Materials:
1. Aluminum: ASTM B221 for extruded shapes and aluminum sheet, with strength and durability characteristics of not less than Alloy 6063-T5 for aluminum sheet.
   a. Finish: Dark bronze.

2. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.7 EMERGENCY ACCESS KEY BOX

A. Emergency Access Key Box: High security emergency access key storage box for fire/police rapid entry. Provide the following where indicated on the Drawings:

A. Surface Mounted: "3200 Series KnoxBox" by The Knox Co. (**EKB-1**)
1. Exterior Dimensions:4" H x 5" W x 3-3/4" D.
2. Lock: UL Listed. Double-action rotating tumblers and hardened steel pins accessed by a biased cut key.

Rebid Documents

3. Provide inside switch for use on electrical doors.
4. Finish: Manufacturer's proprietary finishing process.
5. Color: Black

B. Recessed Mounted: 3200 series "KNOX-BOX". Stainless Steel Hinged Door. (**EKB-2**)
1. Exterior Dimensions: 4" H x 5" W x 3-3/4" D.
2. Recessed Mount Flange: 7" H x 7" W
3. Recessed Mounting Kit (RMK) for recessed models to be cast-in-place within new concrete or masonry construction.
4. Lock: UL Listed. Double-action rotating tumblers and hardened steel pins accessed by a biased cut key.
5. Provide inside switch for use on electrical doors.
6. Finish: Manufacturer's proprietary finishing process.
7. Color: Black

C. General Contractor is responsible for contacting local Fire Official to confirm keying and final installation location.

2.8 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.
1. Remove and replace damaged, defective, or undercharged fire extinguishers

B. Examine walls and partitions for suitable framing depth and blocking where **semi recessed** cabinets will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

Rebid Documents

3.2 INSTALLATION

A. General: Install portable hand-carried fire extinguishers and fire-protection cabinets in locations shown on the Drawings and at mounting heights indicated or, if not indicated, at height indicated below:
   1. Portable, Hand-Carried Fire Extinguishers Mounting Height: 42 inches above finished floor to top of fire extinguisher.
   2. Fire-Protection Cabinet Mounting Height: 48 inches above finished floor to center of cabinet of pull handle.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
   1. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.
      a. sealant as specified in Section 078413 "Penetration Firestopping."

   2. Identification:
      a. Apply vinyl lettering to face of cabinet door..

C. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

3.3 FIRE EXTINGUISHER SCHEDULE

A. **Multipurpose Dry-Chemical Type (FE-1):**
   1. Locate in areas that may involve ordinary combustible materials, such as cloth, wood, paper, rubber, and plastics.
   2. Locate in areas that may involve flammable and combustible liquids such as gasoline, alcohol, oil-based paints, lacquers.

B. **Multipurpose Dry-Chemical Type (FE-2):**
   1. Locate in hazardous areas such as boiler rooms and electrical rooms.

C. **Multipurpose Wet-Chemical Type (FE-3):**
   1. Locate in food preparation areas where the use of fats, greases and oils occur.

D. **Clean-Agent Type (FE-4):**
   1. Locate in areas requiring a clean extinguishing agent including IT rooms, data centers, electronics laboratories, telecommunication rooms, clean rooms, computer rooms and any space where dry chemical fire extinguishers could cause unacceptable damage or contamination.

END OF SECTION 10 4400

Rebid Documents

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Rebid Documents

SECTION 10 5723.14 – FIXED WIRE SHELVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions. and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. PVC-coated, fixed wire shelving systems.

B. Related Requirements:
   1. Section 06 1000 "Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view**.**

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

B. Shop Drawings:
   1. Include plans, elevations, sections, and details.
   2. Show shelving and accessory layout.
   3. Indicate products by description and item part number.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in the installation of the products specified in this section with a minimum of five years' demonstrated experience in installing products of the same type and scope as specified.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack panel products flat with spacers between each bundle to provide air circulation.
   1. Protect materials from weather by covering with waterproof sheeting, securely anchored.
   2. Provide for air circulation around stacks and under coverings.

B. Deliver materials only when environmental conditions comply with requirements specified for installation areas. If materials must be stored in other than installation areas, store only where environmental conditions comply with requirements specified for installation areas.

Rebid Documents

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install materials until building is enclosed and weatherproof, wet-work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Do not install materials that are wet, moisture damaged, or mold damaged.
   1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of closet and utility shelving systems that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of metals, metal finishes, and other materials beyond normal wear.

   2. Warranty Period: Ten (10) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Closet Maid, LLC

2.2 MATERIALS, GENERAL

A. Wire: Grade C-1006 bright, basic, cold-drawn steel wire with average tensile strength of 100,000 psi.

B. Wire Coating: Heavy-duty polyvinyl chloride (PVC) formula resin, plasticizers, stabilizers, pigments and other additives.
   1. Thickness: 7 to 17 mil
   2. Classification: No ingredients listed as hazardous per OSHA 29CFR1910.0017

2.3 PVC-COATED, FIXED WIRE SHELVING SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide ClosetMaid “SuperSlide/Linen Wire Shelving System”.

B. Wire Shelving:
   1. Fabricate wire-shelving units square, rigid, flat, and free of dents or distortion with connections forming rigid structure, free of buckling and warping. Resistance weld steel wire at intersections of cross-deck wires spaced at 1 inch increments, and trim smooth.
   2. Shelving Types:

Rebid Documents

a. Depth: 12 inches.
b. Length: As indicated on Drawings.
c. Color: White PVC-coated.

3. Closet Rod:
a. Size: 3/4-inch diameter

C. Mounting System: Manufacturer's standard hardware and accessories necessary for a complete mounting system for securely attaching shelving system to substrate, supporting designed loading capability.
1. Mounting Heights: As indicated on Drawings.
2. Mounting Configurations: As indicated on Drawings.
3. Brackets: Provide wall and corner support brackets for shelving spans of 30 inches or longer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of shelving systems.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install shelving units, accessories, and system components after other finishing operations, including painting, have been completed in area of installation.

B. Attach shelving units, accessories, and system components to substrates at locations indicated on Drawings in accordance with manufacturer's written instructions.
1. Level and plumb shelving units to a tolerance of 1/8 inch in 96 inches.

C. Cut shelves 1/2-inch to 1 3/8-inches shorter than actual wall measurements. Cap all exposed ends.

D. Drill holes where required using sharp bit. Do not punch.
1. Drywall: Drill 1/4-inch hole and insert manufacturer’s wall clip. Use manufacturer’s recommended pin to expand anchor if unloaded.
2. Wood: Drill 1/4-inch hole into wood. Secure with manufacturer’s recommended screws.
3. Concrete: Drill 1/4-inch hole with masonry bit. Insert manufacturer’s recommended wall anchor and secure with manufacturer’s recommended screws.

3.3 CLEANING AND PROTECTING

A. Repair or remove and replace defective work as directed on completion of installation.

Rebid Documents

B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

C. Protect installed products from damage during remainder of construction period.

END OF SECTION 10 5723

Rebid Documents

SECTION 10 7313.13 – METAL AWNINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Pre-engineered fixed metal awnings.

B. Related Requirements:
   1. Section 06 1000 “Rough Carpentry” for wood blocking and support for metal canopies.
   2. Section 07 7100 “Roof Specialties” for downspouts connected to metal canopies.
   3. Section 10 7313.13 “Fabric Awnings”.

1.3 REFERENCES

A. Aluminum Association (AA)DAF 45 - DesignationSystem for Aluminum Finishes.

B. American Architectural manufacturers Association (AAMA)
   1. 2603 – Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Architectural Extrusions and Panels.

C. American Society of Civil Engineers (ASCE) 7 – Minimum Design Loads for Buildings and Other Structures.

D. ASTM International (ASTM)
   1. B221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods. Wire, Profiles and Tubes.
   2. B429 – Standard Specification for Aluminum-Alloy Extruded Pipe and Tube.

1.4 PERFORMANCE REQUIREMENTS

A. Structural Load Requirements:
   1. Basic Wind Speed: 110 mph
   2. Surface Roughness Category: D
   3. Exposure C
   4. Risk Category II
   5. Internal Pressure Coefficient: 0.18

B. Wind Uplift Pressures: 33 psf.

Rebid Documents

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: Manufacturer’s styles, material descriptions, construction details, fabrication details, dimensions of individual components and profiles, hardware, fittings, mounting accessories, features, and finishes for awnings.
   2. Shop Drawings:
      a. Include plans, elevations, sections, mounting heights, and attachment details.
      b. Show locations for blocking, reinforcement, and supplementary structural support.
   3. Engineering Data: Submit engineering drawings and data indicating that wall and assembly comply with structural performance requirements and design criteria indicated.
      a. Engineered stamped calculations are required and must be signed and sealed by an engineer licensed within the state canopy is installed.
   4. Samples: For each exposed product and for each color and texture specified.
      a. 3” x 3” coating samples in specified color.
   5. Sample Warranty: Sample copy of manufacturer’s and installer’s intended warranties for this Project, stating obligations, remedies, limitations and exclusions of warranty.

B. Submit in accordance with Section 01 7700 “Closeout Procedures.”
   1. Warranties: Fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project with a minimum of 5 years’ of documented experience.

B. Installer Qualifications: Company specializing in performing the Work of this section with a minimum of 2 years documented experience with projects of similar scope and complexity.

C. Source Limitations: Obtain each type of product from a single fabricator.

1.7 DELIVERY STORAGE AND HANDLING

A. Deliver materials in manufacturer's original protective coverings and packaging with corresponding labels and identifying information.

B. Protect materials against damage during transit, delivery, storage, and installation at site. Protect against bending, warping, twisting or surface damage. Store in accordance with manufacturers written instructions and in a dry location.

C. Inspect materials upon delivery for damage. Repair damage to be indistinguishable from undamaged areas; if damage cannot be repaired to be indistinguishable from undamaged parts and finishes, replace damaged items.

Rebid Documents

D. Deliver materials to project site ready for erection.

1.8 WARRANTY

A. Special Warranty: Manufacturer and fabricator agree to repair or replace components of awnings that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including framework.
      b. Deterioration of finishes.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

   2. 2-Coat Kynar Finish Warranty Period: 10 years from date of Substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements specified, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
   1. Datum Wholesale Shade Structures.
   2. FenWall Fabrication and Manufacturing.
   3. Lawrence Fabric & Metal Structures.
   4. Mapes Architectural Canopies.
   5. MASA Architectural Canopies
   6. Mitchell Metals, LLC.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide pre-engineered awnings capable of withstanding the effects of gravity, wind, seismic, thermal and other project specific load conditions as required by the current building code for the site-specific location where canopy is installed.
   1. Minimum design loads per ASCE 7.

B. Project Structural Load Requirements:
   1. Basic Wind Speed: 110 mph
   2. Surface Roughness Category: D
   3. Exposure C
   4. Risk Category II
   5. Internal Pressure Coefficient: 0.18
   6. Wind Uplift Pressures: 33 psf.

C. Thermal Movements: Provide pre-engineered canopies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.

Rebid Documents

1. Temperature Change: 120 deg F ambient; 180 deg F, material surfaces.

2.3 FIXED METAL AWNING

A. Pre-Engineered: Aluminum framed awning anchored to the building consisting of extruded aluminum framing members, extruded fasciae, soffit panels, internal rainwater gutters and hanger rods used to suspend from the building.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide "Super Lumideck" by Mapes Architectural or comparable product.
   2. Components:
      a. Framing members: Extruded aluminum, alloy 6063-T6 in manufacturer's standard profiles and thickness.
      b. Fascia: Extruded aluminum, alloy 6063-T6
         1) Profile and Size: 8 inch, J style, 0.125 inches thick.
         2) Finish: 2-coat Kynar, Black

      c. Decking: 3 inch extruded flat soffit, 0.078 inches thick.
         1) Finish: 2-coat Kynar, Black

      d. Hanger Rods:
         1) Standard configuration
         2) Finish: Hagder rods and hardware powder coated to match canopy.

      e. Escutcheon Plate: Square; powder coated to match canopy.
      f. Downspout: From rear gutter with leader by others.

2.4 FABRICATION

A. Fabricate assemblies to comply with requirements indicated for design, dimensions, membe sizes and spacing, details, finish and anchorage, but not less than required to support structural loads.

B. Fabricate in accordance with approved shop drawings and manufacturer's written instructions. Form work true to line and level with accurate angles and surfaces.

C. Assemble in the shop to greatest extent possible to minimize field splicing and assembly.

D. Cut, and drill metals cleanly and accurately. Remove burrs and ease edges, unless allowed for specific metal types and finishes. Remove sharp or rough areas on exposed surfaces.

E. Cut, reinforce, drill and tap as indicated to receive finish hardware, screws and similar items.

F. Use grommets, bushings and washers or methods as recommended by the manufacturer for separation of dissimilar metals.

G. Provide a complete system ready for erection at project site.

H. Perform welding in accordance with AWS D1.1/D1.1M.

Rebid Documents

2.5 MATERIALS

A. Metal Surfaces: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations or blemishes, unless allowed for specific metal type and finishes.

B. Aluminium Extrusions : ASTM B221M, Alloy 6063-T6.

C. Fasteners: ASTM F593 stainless steel or ASTM A307 carbon steel.
1. Use types and sizes to suit unit installation conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for supporting members, blocking, inserts, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Locate and mount awnings level, plumb, and at indicated alignment with adjacent work.

B. Use fastening and mounting methods in accordance with manufacturer instructions.

C. Anchoring to In-Place Construction: Use anchors, fasteners, fittings, hardware, and installation accessories where necessary for securing awnings to structural support and for properly transferring load to in-place construction.

D. Use concealed anchorages where possible, with locations as directed by manufacturer instructions.

E. Corrosion Protection: Coat concealed surfaces of aluminum that come in contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

F. Coordinate awning installation with flashing and joint-sealant installation so these materials are installed in sequence and in a manner that prevents exterior moisture from passing through completed exterior wall and roof assemblies.

3.3 CLEANING AND PROTECTION

A. Touch up factory-applied finishes to restore damaged or soiled areas.

B. Protection: The General Contractor shall protect the installed product's finish surfaces from damage during construction.

Rebid Documents

END OF SECTION 10 7313.13

Rebid Documents

SECTION 10 7313.23 – FABRIC AWNINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Conditions apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Fixed fabric awnings.

B. Related Requirements:
   1. Section 10 7313.13 “Metal Awnings” for pre-engineered, building supported metal awnings.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: For each type of product.
   2. Include styles, material descriptions, construction details, fabrication details, dimensions of individual components and profiles, hardware, fittings, mounting accessories, features, and finishes for awnings.

   3. Shop Drawings:
      a. Include plans, elevations, sections, mounting heights, and attachment details.
      b. Detail fabrication and assembly of awnings, including seam layout, spacing, and orientation of awning fabric.
      c. Show locations for blocking, reinforcement, and supplementary structural support.
      d. Graphics: Show text message, font, character sizes, and other graphic forms; character, word, and line spacing; margin widths; position of copy; and other information related to graphic design.

   4. Samples: For each exposed product and for each color and texture specified.
   5. Welding certificates.
   6. Sample Warranty: For special warranty.

B. Submit in accordance with Section 01 7700 “Closeout Procedures.”
   1. Warranties: Fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.

Rebid Documents

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications: Fabricator of products.

C. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.5 WARRANTY

A. Special Warranty: Manufacturer and fabricator agree to repair or replace components of awnings that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Structural failures including framework.
      b. Deterioration of fabric including seam failure.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   2. Awning Warranty Period: Five years from date of Substantial Completion.
   3. Fabric Warranty Period: Ten years from date of Substantial Completion.
   4. Thread Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
   1. Temperature Change: 120 deg F ambient; 180 deg F, material surfaces.

B. Fire-Test-Response Characteristics: Provide awning fabrics with the fire-test-response characteristics indicated, as determined by testing identical products according to test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
   1. Flame-Resistance Ratings: Passes NFPA 701.
   2. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency for Flame-Spread Index of 25 or less.
   3. Permanently attach label to each awning fabric indicating whether fabric is inherently and permanently flame resistant or is treated with flame-retardant chemicals, and whether it requires retreatment after designated time period or cleaning.

Rebid Documents

2.2 FABRIC

A. Acceptable Manufacturers: Subject to compliance with requirements specified, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
   1. Dickson, a brand of Glen Raven, Inc.
   2. Herculite, Inc.
   3. Serge Ferrari
   4. Saint Clair Textiles
   5. Snyder Manufacturing
   6. Sunbrella, a brand of Glen Raven, Inc.

B. Fabric:
   1. Fiber Content: Vinyl-laminated or -coated polyester.
   2. Mildew Resistance: Showing no growth when tested according to ASTM G21.
   3. Pattern and Color: As selected by Architect from manufacturer's full range.

2.3 AWNING FRAME AND ACCESSORY MATERIALS

A. Aluminum: Alloy and temper recommended by awning manufacturer for type of use and finish indicated and with not less than the strength and durability properties of alloy and temper required by structural loads.
   1. Aluminum Plate and Sheet: ASTM B209.
   2. Aluminum Extrusions: ASTM B221.
   3. Drawn Seamless Tubing: ASTM B210.

B. Anchors, Fasteners, Fittings, Hardware, and Installation Accessories: Complying with performance requirements indicated and suitable for exposure conditions, supporting structure, anchoring substrates, and installation methods indicated. Corrosion-resistant or noncorrodible units; weather-resistant, compatible, nonstaining materials. Provide as required for awning assembly, mounting, and secure attachment. Number as needed to comply with performance requirements and to maintain uniform appearance; evenly spaced. Where exposed to view, provide finish and color as selected by Architect from manufacturer's full range.
   1. Wood Screws: ASME B18.6.1.
   2. Lag Bolts: ASME B18.2.1.
   3. Zinc-Coated High-Strength Bolts, Nuts, and Washers:
      ASTM F3125/F3125M,Grade A325, Type 1, heavy-hex steel structural bolts;
      ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers, zinc coated.
   4. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing according to ASTM E488 conducted by a qualified independent testing and inspecting agency.
      a. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.
   5. Grommets: Zinc-coated brass, No. 2.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

Rebid Documents

2.4 AWNING FABRIC FABRICATION

A. Fabrication: Reinforce wear points and hardware attachment points with nonwoven webbing. Seam fabrics as follows:
   1. Fabric Edges and Seams: Fold and stitch selvedge and cut fabric edges.
   2. Fabric Edges and Seams: Manufacturer's standard hemming and seaming methods.
   3. Fabric Attachment: Manufacturer's standard attachment method that does not expose screws or other fasteners on the outside face of the awning frame and produces a tight and smooth installation of the fabric.

2.5 FIXED AWNING FABRICATION

A. Frame Fabrication: Fabricate awning frames from aluminum. Preassemble in shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

B. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

C. Weld corners and connections continuously. Obtain fusion without undercut or overlap. Remove welding flux immediately. At exposed corners and connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure awnings in place and to properly transfer loads.

E. Aluminum Finish: Baked-enamel or powder-coat finish complying with finish manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.
   1. Color: Black.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for supporting members, blocking, inserts, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

Rebid Documents

3.2 INSTALLATION

A. General: Install awnings at locations and in position indicated, securely connected to supports, free of rack, and in proper relation to adjacent construction. Use mounting methods of types described and in compliance with Shop Drawings and fabricator's written instructions.

B. Install awnings after other finishing operations, including joint sealing and painting, have been completed.

C. Weld frame connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
   1. Field Welding: Comply with the following requirements:
      a. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
      b. Obtain fusion without undercut or overlap.
      c. Remove welding flux immediately.
      d. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Anchoring to In-Place Construction: Use anchors, fasteners, fittings, hardware, and installation accessories where necessary for securing awnings to structural support and for properly transferring load to in-place construction.

E. Corrosion Protection: Coat concealed surfaces of aluminum that come in contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

F. Coordinate awning installation with flashing and joint-sealant installation so these materials are installed in sequence and in a manner that prevents exterior moisture from passing through completed exterior wall and roof assemblies.

3.3 CLEANING AND PROTECTION

A. Touch up factory-applied finishes to restore damaged or soiled areas.

END OF SECTION 10 7313.23

Rebid Documents

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Rebid Documents

SECTION 11 2123 – VENDING EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Laundry vending machines.

B. Related Requirements:
   1. Section 06 1000 “Rough Carpentry” for coordination with wood framing and blocking.
   2. Division 26 “Electrical” for coordination with power.
   3. Division 27 “Communications” for coordination with data networking connections.
   4. Division 28 “Electronic Safety and Security” for integration with security systems.

1.3 REFERENCES

A. Americans with Disabilities Act-Architectural Barriers Act Accessibility Guidelines (ADA-ABA)

B. International Code Council (ICC):
   1. International Building Code (IBC) – 2021 edition.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: For each type of product.
      a. Include installation details, material descriptions, dimensions of individual components, and finishes.
      b. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.

   2. Shop drawings: For each type of product.
      a. Include plans, elevations, large-scale details and coordination with adjacent construction,

   3. Qualification Data: For manufacturer.
   4. Sample Warranties: For manufacturers' standard warranties.

B. Submit in accordance with Section 01 7700 “Closeout Procedures”:

Rebid Documents

1. Operation and Maintenance Data: For operation, maintenance and troubleshooting of equipment.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified with a minimum of 10 years of experience.

B. Regulatory Requirements: Comply with all applicable federal, state and local ordinances,

1.6 WARRANTY

A. Provide manufacturer's standard warranty for vending machines guaranteeing against defects in materials and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: Subject to compliance with requirements, provide "VendMaster 240n" by Vend-Rite Mfg., Corp.

2.2 LAUNDRY VENDING MACHNINES

A. Laundry Vending Machine: 8-column, networked electronic high-capacity metal vending machine dispensing soap, detergent, softeners, and other cleaning products offering multi-payment methods. Mounting options include wall surface-mounted, wall recessed-mounted and pedestal base. Cabinet is lockable.

B. VendMaster 240n
   1. Cabinet Construction:
      a. Cabinet: Welded steel; white powder coated.
         1) Service Door: Welded steel with full continuous hinge and lock; white power coated.
            a) Two upper doors for service access to product magazines.
            b) One Lower door for product display and service access to internal lockable cash box.

      b. Dimensions: 30.625" W x 45.125" H x 11.5" D.
      c. Weight: 210 lbs. when empty.
      d. Graphics: On front face/door of cabinet.

   2. Vending Capacity: 232 vends.

   3. Operation: Pushbutton for product dispensing after payment.
   4. Multi-Payment Methods: Coin, bill and card (MDB).

Rebid Documents

a. Imonex R7 coin drop with quarter / dollar acceptance. Does not give change.
b. LCD display shows product pricing, machine status and programming messages while in program mode.

5. Electrical Requirements:
   a. Voltage: 110-120 Volts AC.
   b. Frequency: 50/60Hz.
   c. Amperage: 15-amp or 20-amop dedicated circuit.
   d. GFCI protected outlet.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.

B. Examine walls, ceilings and soffits for suitable conditions where machine(s) will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install machine(s) according to manufacturer's written instructions.

B. Coordinate installation with electrical, communications and security connections.

C. Securely anchor units to structural blocking or set upon wall framing for proper support of machine and security of unit.

D. Unless indicated otherwise on the Drawings, mount machine with bill acceptor at a maximum height of 4’-0” above the finished floor.

3.3 FIELD QUALITY CONTROL

A. Test to ensure all functions operate correctly (e.g., power, change dispensing, security alarms, interface with building management systems).

3.4 CLEANING AND PROTECTION

A. Ensure the unit and surrounding area are clean upon completion of installation.

B. Protect installed unit(s) until final completion of project.

C. Touch-up, repair or replace damaged products before Substantial Completion.

Rebid Documents

END OF SECTION 11 2123

Rebid Documents

SECTION 11 2124 – MONEY CHANGING MACHINES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Money changing machines.

B. Related Requirements:
   1. Section 06 1000 “Rough Carpentry” for coordination with wood framing and blocking.
   2. Division 26 “Electrical” for coordination with power.
   3. Division 27 “Communications” for coordination with data networking connections.
   4. Division 28 “Electronic Safety and Security” for integration with security systems.

1.3 REFERENCES

A. Americans with Disabilities Act-Architectural Barriers Act Accessibility Guidelines (ADA-ABA)

B. International Code Council (ICC):
   1. International Building Code (IBC) – 2021 edition.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: For each type of product.
      a. Include installation details, material descriptions, dimensions of individual components, and finishes.
      b. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.

   2. Shop drawings: For each type of product.
      a. Include plans, elevations, large-scale details and coordination with adjacent construction,

   3. Qualification Data: For manufacturer.
   4. Sample Warranties: For manufacturers' standard warranties.

B. Submit in accordance with Section 01 7700 “Closeout Procedures”:

1. Operation and Maintenance Data: For operation, maintenance and troubleshooting of equipment.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified with a minimum of 10 years' of experience.

B. Regulatory Requirements: Comply with all applicable federal, state and local ordinances,

1.6 WARRANTY

A. Provide manufacturer's standard warranty for money changing machines guaranteeing against defects in materials and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: Subject to compliance with requirements, provide "AC1002 Front Load Bill Changer" by American Changer Corporation.
   1. Requests for substitutions will be considered in accordance with the provisions in Document 00 2600 "Procurement Substitution Procedures" (During the Procurement/Bidding Phase).

B. Acceptable Manufacturers: Subject to compliance with requirements specified, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
   1. American Changer Corporation
   2. Hamilton Manufacturing Corporation.
   3. Rowe Bill Changers, a brand of American Changer Corporation.
   4. Standard Change-Makers.
   5. Triad, a brand of American Changer Corporation.

2.2 FRONT LOAD BILL CHANGER

A. Front Load Bill Changer: High security bill changer accepting multiple bill denominations having a validator that dispenses coins or tokens from a single hopper.

B. American Changer AC1002
   1. Cabinet Construction:
      a. Cabinet:12 gauge welded steel; black powder coated.
      b. Door: 7 gauge welded steel with full continuous hinge; black power coated.
      c. Dimensions: 10 1/2" W x 26" H x 13" D.
      d. Weight: 75 lbs.
      e. Graphics: Customizable vinyl on front face/door of cabinet.

Rebid Documents

f. High-security, drill-resistant T-handle lock.

2. Bill Validator and Stacker:
   a. CPI Validator: MARS/MEI accepting denominations of $1, $5, $10 and $20 holding up to 500 notes.

3. Electronic Coin Acceptor: High security. IDX brand programmable coin acceptor.
4. Cashless Payment: NAYAX ethernet or cellular credit card system.
5. Coin Hopper:
   a. Capacity: Up to 2,600 coins/tokens and 1,600 $1 coins dispensing 4 coins per second on average.

6. Control Board, Power Supply and Electrical Requirements
   a. Switchable input: 115/230 volt, 50/60 Hz.
   b. Various plug configurations
   c. Board power: 15W maximum.
   d. Hopper power: 20W maximum.
   e. Validator power: 50W maximum.

7. Audit printer: Built-in thermal printer for recording detailed transaction records.
8. Remote Access: For monitoring machine status including remote auditing and alerts for machine failure that is connected via cellular network or internet connection to communicate with a cloud-based management platform.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.

B. Examine walls, ceilings, and roofs for suitable conditions where machine(s) will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install machine(s) according to manufacturer's written instructions.

B. Coordinate installation with electrical, communications and security connections.
   1. Hardwire unit via electrical conduit.

C. Securely anchor units to structural blocking using the unit’s pre-drilled holes on the back, sides and bottom of the cabinet for proper support of machine and security of unit.

D. Unless indicated otherwise on the Drawings, mount change machine with bill acceptor at a maximum height of 4’-0” above the finished floor.

3.3 FIELD QUALITY CONTROL

A. Test to ensure all functions operate correctly (e.g., power, change dispensing, security alarms, interface with building management systems).

3.4 CLEANING AND PROTECTION

A. Ensure the unit and surrounding area are clean upon completion of installation.

B. Protect installed unit(s) until final completion of project.

C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 11 2124

Rebid Documents

SECTION 1 2300 – COMMERCIAL LAUNDRY EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Vended and non-vended softmount washer extractors.
   2. Vended and non-vended electric stack dryers.
   3. Laundromat washer bulkhead.

B. Related Requirements:
   1. Section 11 3013 “Residential Appliances” for clothes washer/dryer combinations for residential dwellings.
   2. Division 22 “Plumbing” for coordination with plumbing rough-in and connections.
   3. Division 23 “HVAC” for coordination with ventilation rough-in and connections.
   4. Division 26 “Electrical” for coordination with electrical power supply and connections.

1.3 REFERENCES

A. UL Certification: Provide electric equipment and components that are evaluated by UL for fire, and electric shock according to applicable safety standards and that are UL certified for compliance and labeled for intended use.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
   1. Product Data: For each type of product.
      a. Include installation details, material descriptions, dimensions of individual components, and finishes for each appliance.
      b. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
   2. Shop Drawings: Include plans, elevations, sections, roughing-in dimensions, fabrication details, utility service requirements, and attachments to other work.
   3. Coordination Drawings: Indicate locations of laundry equipment and connections to utilities, and clearance requirements for equipment access and maintenance.
   4. Product Certificates: For each type of appliance.
   5. Sample Warranties: For manufacturers' special warranties.

Rebid Documents

B. Submit in accordance with Section 01 7700 “Closeout Procedures”:
   1. Operation and Maintenance Data: For laundry equipment to include in emergency, operation, and maintenance manuals. Include a schedule with the following:
      a. Designation indicated on Drawings.
      b. Manufacturer's name and model number.
      c. List of factory-authorized service agencies including their addresses and telephone numbers.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain commercial laundry equipment from single source.

B. Manufacturer Qualifications: Maintains, within 300 miles of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the site in manufacturer’s unopened cartons clearly marked with manufacturer’s name brand type, model number, color, and other information specific to product(s) within.

B. Provide secure storage for appliances delivered but not yet installed.

1.7 WARRANTY

A. Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period**.**
   1. Warranty Period: Three years from date of Substantial Completion.

B. Washer Extractor Parts Only, Mainframe, Cylinder Shaft Assembly, and Bearings Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace main frame, bearing, cylinder shaft assembly that fails within specified warranty period.
   1. Warranty Period: Five years from date of Substantial Completion.

C. Dryer Tumbler Parts Only: Manufacturer's standard form in which manufacturer agrees to repair or replace any part of the equipment assembly that fails within specified warranty period.
   1. Warranty Period: Three years from date of Substantial Completion.

D. Provide warranties on manufacturer’s preprinted warranty form signed by and authorized personnel of the manufacturer.

Rebid Documents

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements specified, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
   1. Electrolux Professional, a brand of Laundrylux.
   2. Encore Pro, a brand of Laundrylux.
   3. Huebsch, a brand of Alliance Laundry Systems, LLC.
   4. Maytag Commercial, a brand of Whirlpool Corporation.
   5. Speed Queen Commercial, a brand of Alliance Laundry Systems, LLC.
   6. Wascomat, a brand of Laundrylux

B. Basis-of-Design: For basis-of-design and reference purposes, Speed Queen Commercial equipment is specified.
   1. Requests for substitutions will be considered in accordance with the provisions in Document 002600 “Procurement Substitution Procedures (During the Procurement/Bidding Phase).

2.2 PERFORMANCE REQUIREMENTS

A. Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Accessibility: Comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design.

2.3 VENDED 30 POUND SOFTMOUNT WASHER EXTRACTOR (**W1**):

A. Vended Softmount Washer Extractor: Heavy duty commercial front-load washer extractor featuring stainless steel construction, high speed water extraction, internal suspension system isolating the drum from the frame and provisions for multiple payment methods.
   1. Model: SYT030 “Quantum® Touch”.
   2. Capacity: 30 lbs.
   3. Construction:
      a. Stainless steel front, side and top panels
      b. Chrome door.

   4. Actuation and Control:
      a. Multi-payment methods:
         1) Single coin drop;
         2) Credit/debit card;
         3) Prep for App Pay

      b. Control:
         1) Connectivity: Networked connectivity with off-site management capabilities.

Rebid Documents

2) User Interface: 7" full-color touch screen.

5. Dimensions and Weight:
   a. Overall: 31.29" x 36.81" x 49.02" (W x D x H).
   b. Net Weight: 563 lbs.

6. Wash Cylinder:
   a. Diameter: 24.4 inches.
   b. Depth: 17.72 inches.
   c. Volume: 4.77 cu ft.

7. Door:
   a. Opening Size: 16.14 inches.
   b. Door Bottom to Floor: 13.46 inches.

8. Speed and Extraction:
   a. Wash Speed: 49 rpm
   b. Extractor Speed: 1075 rpm.
   c. Extract G-Force: 400.

9. Piping:
   a. Water Inlet Connection: Two, 0.75 inches.
   b. Steam Inlet Connection: 0.5 inches.
   c. Drain Diameter: 3 inches.

10. Electrical:
    a. Motor Power Consumption: 2.01 hp.
    b. Voltage Wires - Circuit Breaker: Operates on 1 or 3 phase systems as 1 phase.
    c. Single Phase: 200-240/50/60/1/3 - 15-10.
    d. Three Phase: 200-240/50/60/1/3 - 15-10.

2.4 VENDED 55 POUND SOFTMOUNT WASHER EXTRACTOR (**W2**):

A. Vended Softmount Washer Extractor: Heavy duty commercial front-load washer extractor featuring stainless steel construction, high speed water extraction, internal suspension system isolating the drum from the frame and provisions for multiple payment methods.
   1. Model: SYT055 "Quantum® Touch".
   2. Capacity: 55 lbs.
   3. Construction:
      a. Stainless steel front, side and top panels
      b. Chrome door.

   4. Actuation and Control:
      a. Multi-payment methods:
         1) Single coin drop;
         2) Credit/debit card;
         3) Prep for App Pay

      b. Control:

Rebid Documents

1) Connectivity: Networked connectivity with off-site management capabilities.
2) User Interface: 7" full-color touch screen.

5. Dimensions and Weight:
   a. Overall: 38.18" x 43.5" x55.51" (W x D x H).
   b. Net Weight: 948 lbs.

6. Wash Cylinder:
   a. Diameter: 29.53 inches.
   b. Depth: 21.46 inches.
   c. Volume: 8.5 cu ft.

7. Door:
   a. Opening Size: 18.11 inches.
   b. Door Bottom to Floor: 18.77 inches.

8. Speed and Extraction:
   a. Wash Speed: 42 rpm.
   b. Extractor Speed: 980 rpm.
   c. Extract G-Force: 400.

9. Piping:
   a. Water Inlet Connection: Two, 0.75 inches.
   b. Steam Inlet Connection: 0.5 inches.
   c. Drain Diameter: 3 inches.

10. Electrical:
    a. Motor Power Consumption: 4.02 hp.
    b. Voltage Wires - Circuit Breaker: Operates on 1 or 3 phase systems as 1 phase.
    c. Single Phase: 200-240/50/60/1/3 - 20-15.
    d. Three Phase: 200-240/50/60/1/3 - 20-15.
    e. Single Phase: 400-480/50/60/3 – 10-7.1.

2.1 55 POUND SOFTMOUNT WASHER EXTRACTOR (**W3**):

A. Softmount Washer Extractor: Heavy duty commercial front-load washer extractor featuring stainless steel construction, high speed water extraction and an internal suspension system isolating the drum from the frame.
   1. Model: SYN055
   2. Capacity: 55 lbs.
   3. Construction:
      a. Stainless steel front, side and top panels
      b. Chrome door.

   4. Control: Fully programmable microprocessor.
      a. Connectivity: PC programming and audit data retrieval.
      b. Cycle Programming: Customizable preset programs.
      c. User Interface: Computer control with multilingual display.

Rebid Documents

5. Dimensions and Weight:
   a. Overall: 38.18” x 43.5” x55.51” (W x D x H).
   b. Net Weight: 948 lbs.

6. Wash Cylinder:
   a. Diameter: 29.53 inches.
   b. Depth: 21.46 inches.
   c. Volume: 8.5 cu ft.

7. Door:
   a. Opening Size: 18.11 inches.
   b. Door Bottom to Floor: 18.77 inches.

8. Speed and Extraction:
   a. Wash Speed: 42 rpm.
   b. Extractor Speed: 980 rpm.
   c. Extract G-Force: 400.

9. Piping:
   a. Water Inlet Connection: Two, 0.75 inches.
   b. Steam Inlet Connection: 0.5 inches.
   c. Drain Diameter: 3 inches.

10. Electrical:
    a. Motor Power Consumption: 4.02 hp.
    b. Voltage Wires - Circuit Breaker: Operates on 1 or 3 phase systems as 1 phase.
    c. Single Phase: 200-240/50/60/1/3 - 20-15.
    d. Three Phase: 200-240/50/60/1/3 - 20-15.
    e. Single Phase: 400-480/50/60/3 – 10-7.1.

2.2 VENDED ELECTRIC 30 POUND STACKED TUMBLE DRYER (**D1**):

A. Stacked Electric Tumble Dryer: Heavy duty commercial vertically stacked front-load tumble dryer for high-volume use featuring two drying cylinders, dual controls, stainless steel construction, axial airflow and provisions for multiple payment methods.
   1. Model: STT30 with “Quantum® Touch”.
   2. Capacity: 30 lbs. for each drying cylinder.
   3. Construction:
      a. Stainless steel front, side and top panels.
      b. Stainless steel door.

   4. Actuation and Control (for each cylinder):
      a. Multi-payment methods:
      b. Single coin drop;
      c. Credit/debit card;
      d. Prep for App Pay

   5. Control (for each cylinder):
      a. Connectivity: Networked connectivity with off-site management capabilities.
      b. User Interface: 7” full-color touch screen.

Rebid Documents

6. Dimensions and Weight:
   a. Overall: 31.5” x 42.8” x 76.3” (W x D x H).
   b. Net Weight, Electric: 660 lbs.

7. Drying Cylinder:
   a. Diameter: 30.0 inches.
   b. Depth: 26.0 inches.
   c. Volume: 10.6 cu ft.
   d. Reversing cylinder standard.

8. Door Opening Size: 22.6 inches.
9. Heat and Air:
   a. Heat Input Power, Electric: 21 kW per pocket.
   b. Air Outlet: 8 inches oval.
   c. Airflow: 400 cfm each cylinder

10. Motor:
    a. Fan: 0.5 hp each cylinder
    b. Cylinder: 0.3 hp each

11. Electrical Requirements: Circuit Breaker, 3 phase system.
    a. 200-208V/50/60/3: 61 Amps each.
    b. 230-240V/50/60/3: 52 Amps each.
    c. 440V/50/60/3: 29 Amps each.
    d. 460-480V/50/60/3: 27 Amps each.

2.1 VENDED ELECTRIC 55 POUND STACKED TUMBLE DRYER (**D2**):

A. Stacked Electric Tumble Dryer: Heavy duty commercial vertically stacked front-load tumble dryer for high-volume use featuring two drying cylinders, dual controls, stainless steel construction, axial airflow and provisions for multiple payment methods.
   1. Model: STT055 with “Quantum® Touch”.
   2. Capacity: 55 lbs. for each drying cylinder.
   3. Construction:
      a. Stainless steel front, side and top panels.
      b. Stainless steel door.

   4. Actuation and Control (for each cylinder):
      a. Multi-payment methods:
         1) Single coin drop;
         2) Credit/debit card;
         3) Prep for App Pay

      b. Control:
         1) Connectivity: Networked connectivity with off-site management capabilities.
         2) User Interface: 7” full-color touch screen.

   5. Dimensions and Weight:
      a. Overall: 34.5” x 54.4” x 80.9” (W x D x H).

Rebid Documents

b. Net Weight, Electric: 737 lbs.

6. Drying Cylinder:
   a. Diameter: 33.0 inches.
   b. Depth: 35.0 inches.
   c. Volume: 17.3 cu ft.
   d. Reversing cylinder standard.

7. Door Opening Size: 26.9 inches.
8. Heat and Air:
   a. Heat Input Power, Electric: 30.77 kW per pocket.
   b. Air Outlet: 10 inches oval.
   c. Airflow: 600 cfm each cylinder

9. Motor:
   a. Fan: 0.5 hp each cylinder
   b. Cylinder: 0.5 hp each

10. Electrical Requirements: Circuit Breaker, 3 phase system.
    a. 200-240V/50/60/3

2.2 ELECTRIC 75 POUND SINGLE TUMBLE DRYER (**D3**):

A. Stacked Electric Tumble Dryer: Heavy duty commercial vertically stacked front-load tumble dryer for high-volume use featuring two drying cylinders, dual controls, stainless steel construction, axial airflow and provisions for multiple payment methods.
   1. Model: ST075 with “Quantum® Gold”.
   2. Capacity: 75 lbs.
   3. Construction:
      a. Stainless steel front, side and top panels.
      b. Stainless steel door.

   4. Control:
      a. Connectivity: Networked connectivity with off-site management capabilities.
      b. Programmable cycles.

   5. Dimensions and Weight:
      a. Overall: 38.5” x 53.0” x 77.3” (W x D x H).
      b. Net Weight, Electric with Steam: 720 lbs.

   6. Drying Cylinder:
      a. Diameter: 37.0 inches.
      b. Depth: 36.0 inches.
      c. Volume: 22.4 cu ft.

   7. Door Opening Size: 26.9 inches.
   8. Heat and Air:
      a. Heat Input Power, Electric: 36 Kw.
      b. Air Outlet: 8 inches.
      c. Airflow: 800 cfm.

Rebid Documents

9. Steam Plumbing Connections: 0.75 inch NPT.

10. Motor:
    a. Fan: 0.5 hp each cylinder
    b. Cylinder: 0.5 hp each

11. Electrical Requirements: Circuit Breaker, 3 phase system.
    a. 200-208V/50/60/3: 103 Amps.
    b. 230-240V/50/60/3: 90 Amps.

2.3 LAUNDROMAT WASHER BULKHEAD

A. Laundromat Washer Bulkhead: Prefabricated laundry bulkhead system designed to house plumbing, drain troughs and electrical services for commercial washer-extractors. Bulkhead shall have a self-supporting structural frame with plastic laminate-faced wall panels and removable top cover and locking maintenance access doors.

B. Quality Assurance: Comply with the following:
1. UL listed.
2. Listed and labeled as defined in NFPA 70.
3. ASME 112.6.3 and International Plumbing Codes 406.1 and 1003.6.

C. Manufacturer: Subject to compliance with requirements, provide Highmark Manufacturing, Inc. laundromat washer bulkhead.

D. General Construction:
1. Size and Configuration: As indicated on the Drawings.
2. Structural Frame: Zinc-coated (galvanized) tubular steel or angle complying with ASTM A653, with G90 zinc coating.
3. Panels and Doors: 3/4-inch wood panels with high-pressure decorative laminate (HPDL) facing on the exterior and melamine facing on the interior.
    a. Top panel to be removable for equipment access.
    b. Maintenance doors to be locking with full piano hinge at locations as indicated on the Drawings.
    c. Laminate style and color as selected by Architect.

E. Water Distribution:
1. Integrated copper manifolds.
2. All copper water lines.
3. Quarter-turn stainless steel ball valves.

F. Drain System:
1. Drain Troughs: Complying with ASME 112.6.3 and International Plumbing Codes 406.1 and 1003.6.
    a. Constructed of 3/8-inch ABS plastic trough with removable top able to withstand light foot traffic and hinged top providing maintenance access to lint screen. Sized to contain full drainage of all equipment.
    b. 1/4-inch PVC lint screen with 3/8” diameter holes and overflow cutouts.
    c. Able to be drained from the end or bottom.

Rebid Documents

G. Electrical Devices and Lighting:
   1. Electrical panel mounted within bulkhead.
   2. GFI outlets mounted within bulkhead for equipment service or electronic components.
   3. Switch LED lighting within bulkhead for use during maintenance.

2.4 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.

B. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install appliances according to manufacturer's written instructions.

B. Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

C. Coordinate installation with plumbing, mechanical, and electrical subcontractors for rough-in services and final connections.

3.3 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
   1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturers' written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.

Rebid Documents

2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: After installation, start units to confirm proper operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.

B. Commercial laundry equipment will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.4 DEMONSTRATION

A. Engage a local manufacturer’s representative to train Owner's maintenance personnel to adjust, operate, and maintain laundry equipment.

3.5 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 11 2300

Rebid Documents

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Rebid Documents

SECTION 11 3013 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 General Conditions, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Cooking appliances.
2. Kitchen exhaust ventilation.
3. Refrigeration appliances.
4. Cleaning appliances.

B. Related Requirements:
1. Division 22 “Plumbing” for coordination with plumbing rough-in and connections.
2. Division 23 “HVAC” for coordination with ventilation rough-in and connections.
3. Division 26 “Electrical” for coordination with electrical power supply and connections.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
1. Product Data: For each type of product.
   a. Include installation details, material descriptions, dimensions of individual components, and finishes for each appliance.
   b. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.

2. Product Certificates: For each type of appliance.
3. Sample Warranties: For manufacturers' special warranties.

B. Submit in accordance with Section 01 7700 “Closeout Procedures”:

C. Operation and Maintenance Data: For each residential appliance to include in operation and maintenance manuals.

1.4 WARRANTY

A. Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified Manufacturer’s warranty period for each precut specified.

Rebid Documents

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
   1. Danby
   2. Fridgidaire
   3. General Electric
   4. LG
   5. Whirlpool

B. Source Limitations: Obtain each type of residential appliance from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.3 RANGES

A. Electric Range (**RNG-1):** Freestanding electric range with air fry mode; one oven and complying with AHAM ER-1.
   1. Basis-of-design Product: Subject to compliance with requirements, provide Whirlpool WFE550S0LZ Electric Range.
   2. Dimensions:
      a. Width: 29-7/8 inches.
      b. Depth: 27-3/4 inches.
      c. Height: 47-7/8 inches

   3. Electric Burner Elements: Five
   4. Oven Features:
      a. Capacity: 5.3 cu. ft.
      b. Operation: Baking with air-fry mode.
      c. Broiler: Located in top of oven.
      d. Oven Door(s): Counterbalanced, removable, with observation window and full-width handle.
      e. Electric Power Rating:
         1) Oven 2400 W
         2) Broiler: 3400 W**.**

      f. Controls: Digital panel controls and timer display, located on splash panel at rear of range top.

   5. Anti-Tip Device: Manufacturer's standard.
   6. Electric Power Supply: 240 V, 60 Hz, 1 phase, 40 A.
   7. Material: Stainless steel with manufacturer's standard ceramic-glass top**.**

Rebid Documents

2.4 OVER-THE-RANGE MICROWAVE OVENS

A. Microwave Oven (**MO-1**): Over-the-range microwave oven; recirculating vent with removable charcoal filter.
   1. Basis-of-design Product: Subject to compliance with requirements, provide Whirlpool WMH31017HS Microwave.
   2. Mounting: Undercabinet.
   3. Type: Conventional.
   4. Dimensions:
      a. Width: 29-15/16 inches.
      b. Depth: 15-9/16 inches.
      c. Height: 17-1/8 inches.
   5. Capacity: 1.7 cu. ft.
   6. Oven Door: Door with observation window and pull handle**.**
   7. Exhaust Fan: Two-speed fan, non-vented, recirculating type with charcoal filter and with 300-cfm capacity.
   8. Microwave Power Rating: 1000 W.
   9. Electric Power Supply: 120 V, 60 Hz, 1 phase, 16 A.
   10. Controls: Digital panel controls and timer display.
   11. Material: Stainless steel.

2.5 COUNTERTOP MICROWAVE OVENS

A. Microwave Oven (**MO-2**): Countertop microwave.
   1. Basis-of-design Product: Subject to compliance with requirements, provide Danby DBMW0924BBS Microwave.
   2. Mounting: Countertop.
   3. Type: Conventional.
   4. Dimensions:
      a. Width: 19.1 inches.
      b. Depth: 14.9 inches.
      c. Height: 11.6 inches.
   5. Capacity: 0.9 cu. ft.
   6. Microwave Power Rating: 900 W.
   7. Voltage: 115 V.
   8. Material: Stainless steel.

2.6 FREE STANDING REFRIGERATOR/FREEZERS

A. Refrigerator/Freezer (**REF-1):** Single-door refrigerator with freezer compartment pull-out drawer on bottom and complying with AHAM HRF-1.
   1. Basis-of-design Product: Subject to compliance with requirements, provide Whirlpool WRB322DMBM refrigerator.
   2. Type: Freestanding.
   3. Dimensions:
      a. Width: 32-5/8 inches.
      b. Depth: 33-3/8 inches.

Rebid Documents

c. Height: 69 inches

4. Appliance Color/Finish: Stainless steel.
5. Refrigerator Accessories: Icemaker Supply Hose
   a. PROFLO PFX146205 stainless steel 60” double reinforced icemaker supply hose.

2.7 COMPACT REFRIGERATOR/FREEZERS

A. Refrigerator/Freezer (**REF-2**): Two-door compact refrigerator with freezer compartment on top
1. Basis-of-design Product: Subject to compliance with requirements, provide Danby DCR031B1BSLDD refrigerator.
2. Type: Undercounter.
3. Dimensions:
   a. Width: 18.69 inches.
   b. Depth: 20.19 inches.
   c. Height: 33.69 inches

4. Storage Capacity:
   a. Refrigeration Compartment Volume: 2.23 cu. ft.
   b. Freezer Volume: 0.87 cu. ft.

5. Appliance Color/Finish: Stainless steel.

2.8 DISHWASHERS

A. Dishwasher (**DW-1)** Complying with AHAM DW-1.
1. Basis-of-design Product: Subject to compliance with requirements, provide Whirpool WDT750SAKZ Dishwasher.
2. Type: Built-in undercounter .
3. Dimensions:
   a. Width: 23-7/8 inches
   b. Depth: 26-3/4 inches
   c. Height: 33-5/8 inches

4. Appliance Color/Finish: Fingerprint Resistant Stainless steel.

2.9 CLOTHES WASHER/DRYER COMBINATIONS

A. Clothes Washer/Dryer Combination (**CWD-1**) : Complying with AHAM HLW-1.
1. Basis-of-design Product: Subject to compliance with requirements, provide Whirpool WET4027HW Electric Stacked Laundry Center.
2. Type: Freestanding washer/dryer unit with dual-drum design and electric dryer; washer is top loading.
3. Dimensions:
   a. Width: 27-1/4 inches.
   b. Depth: 32-7/16 inches.
   c. Height: 75-1/2 inches.

Rebid Documents

4. Washer and Dryer Drums: Manufacturer's standard.
   a. Washer-Drum Capacity: 3.5 cu. ft.
   b. Dryer-Drum Capacity: 5.9 cu. ft.

5. Washer Controls: Rotary-dial controls for water-fill levels, wash/rinse water temperatures, and variable-speed and fabric selectors.
6. Dryer Controls: Rotary-dial controls for drying cycle, temperatures, and fabric selectors.
7. Electric Washer/Dryer Power: 240 V, 60 Hz, 1 phase, 30 A.
8. Motor: Manufacturer's standard with built-in overload protector.
9. Appliance Finish: Enamel.
   a. Color: White.

2.10 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.

B. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install appliances according to manufacturer's written instructions.

B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.

C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

Rebid Documents

D. Range Anti-Tip Device: Install at each range according to manufacturer's written instructions.

END OF SECTION 11 3013

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Rebid Documents

SECTION 11 4000 - FOODSERVICE EQUIPMENT

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Drawings and general provisions of the Contract, including Division 00 Procurement and Contracting Requirements, 01 General Requirements Specification and Division 02 Existing Conditions Sections, apply to this section.

B. Work shall include all equipment, labor, materials needed to perform all operations and execution in connection with ordering, delivery and assembly of the kitchen equipment as outlined in section 11 40 00. And as represented in the drawings and specifications. All equipment is to be installed in accordance with manufacturer guidelines and to meet all applicable codes.

C. Work under this section shall be under a separate sub-contract or a prime contract and shall report to the Construction Manager or Prime Contractor. Foodservice Contractor (FSC) Shall coordinate the Foodservice Installation with all other subcontractors that have related work.

D. Receive, Store, and consolidate equipment. Deliver and receive on site to include unloading, uncrating, assembly, and installation of equipment. All items to be set in place, leveled and secured as required. This shall include all and any brackets and fittings needed to secure equipment to the building.

E. Qualified Labor and workforce to perform the needed duties required under this section of work scope to complete delivery and installation of foodservice equipment. The equipment installer shall be experienced, trained, and have manufacturer authorization for installation of equipment outlined for the project. If factory supervision, certified installation and/or assembly is required, the Foodservice Contractor (FSC) shall be responsible for all costs related to the assembly and installation of the equipment.

F. All permits, tests, licenses, and inspections required by Authorized Having Jurisdiction (AHJ) are related to the construction and installation of foodservice equipment.

G. Foodservice Contractor (FSC) shall provide a project manager with not less than five years of experience and shall be the primary point of contact for the Construction Manager, Architect, Owner, and Foodservice Designer. During installation, the Foodservice Contractor (FSC) shall always provide a Foreman on site when workforce is on site during all stages of delivery and/or installation. The Foreman shall report to the Construction Manager (CM) of the daily workforce on site. The Foodservice Contractor (FSC) Shall provide the Construction Manager (CM) with a monthly report as to the status of work in section 11 40 00.
   1. Foodservice Contractor (FSC) and Installation sub-contractors shall provide a safety manual that outlines all safety training and standards, that they shall adhere while on providing labor and workforce on site.
   2. When required the Foodservice Contractor (FSC) and sub-contractor shall attend all safety, Foreman and coordination meetings as outlined by the Construction Manager (CM).

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H. Foodservice Contractor (FSC) shall provide equipment and installation in a timely manner in accordance with the project schedule with the approval of the Construction Manager or Prime Contractor.

I. Foodservice Contractor (FSC) Shall have no less than Five years of experience and shall have operated for at least three years under current ownership.

J. All equipment shall be installed according to the Manufacturers' written instructions and applicable codes.

K. Foodservice Contractor (FSC) shall provide start-ups and commission kitchen equipment by authorized service providers. Shall provide factory representative training on proper use and care of the equipment.

L. Foodservice Contractor (FSC) shall request in writing any clarifications where specifications and drawings contain any conflict. FSC shall provide the greater quantity of work and/or material.

M. Foodservice Contractor (FSC) shall provide a one-year warranty labor and material on all equipment and a 5-year compressor warranty on all refrigeration items under this work scope.

N. Foodservice Contractor (FSC) shall provide close out items as outlined in section 3. But not limited to the requirements of the Construction Manager and/or Owner.

O. Foodservice Contractor (FSC) provides equipment plans, schedule, special conditions plan, plumbing rough-in, mechanical rough-in, electrical rough-in plans for the project as per section 11 40 00-1.05.

1.02 RELATED WORK

A. Foodservice Contractor (FSC) General conditions as outlined in the drawings and specifications, addendums and/or instructions to bidders. Division 00 and 01 shall apply to the Foodservice Contractor (FSC).

1. Foodservice Contractor (FSC) shall review and verify compliance with all project documents including specifications, drawings manufacturer requirements, site conditions, building type and construction. FSC to verify compliance with delivery and installation of the foodservice equipment. This includes but is not limited to verification of quantities, clearances, dimensions, building access, door openings, direction of operation, utilities and required methods needed to complete the work under this contract.
2. Foodservice Contractor (FSC) shall coordinate rough-in with plumbing, mechanical and electrical contractors. Shall verify room dimensions at the time of framing and/or wall construction. Coordinate floor recess, sleeves, wall openings, service line runs for refrigeration and/or any special services required to complete equipment installation. Coordinate and verify building openings temporary or permanent to allow for delivery equipment.
3. Foodservice Contractor (FSC) to coordinate and provide opening(s) and/or access for the equipment required for Division #22 and Division #26 to complete service connections or inter connections.
4. The Foodservice Contractor (FSC) shall verify the operation of any existing foodservice equipment to be relocated. Note and inform the Construction Manager (CM) of any

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operational issues or service issues prior to removing the unit. The FSC shall remove, store and/or protect the existing equipment during construction until the time to re-install.

5. Roof top equipment: Foodservice Contractor (FSC) to provide support roof rails, curbs, or support rack to support outdoor refrigeration equipment. Provide roof vault when roof services are required.
6. Delivery, unloading, assembly and installation of equipment outlined in the project shall be provided by the Foodservice Contractor (FSC).

B. Division #22 - Plumbing: Refer to Division 22 specifications for requirements for material and labor required for the plumbing and mechanical contractors and services needed to complete the service connections to the foodservice equipment to include but not limited to.

1. The Plumbing Contractor (PC) shall provide all pipes, fittings, valves, backflow prevention, pressure reducing devices, line traps, indirect drain, vents, airgaps, arrestors, floor drains, floor sinks, grease traps, as required by documents and code.
2. The Plumbing Contractor (PC) shall provide all gas piping, extensions, manifolds, regulators, and valves required to provide proper operation of water column pressure for equipment. All final connections as required by the documents and code.
3. The Plumbing Contractor (PC) shall provide softened hot and/or cold water for equipment when called for and as specified.
4. The Plumbing Contractor (PC) shall provide material and labor install all faucets, drains, disposers, dishwashers, gas disconnects, appliance regulators, fire system gas valves, water filters and steam assemblies provided by Foodservice Contractor (FSC) in accordance with the manufacturer guidelines.
5. Final connections to be extended from building rough-in and inter connection were called for on foodservice rough-in plans or manufacturer shop drawings.
6. The Plumbing Contractor (PC) shall include all permits and inspection fees required to complete installation of services related to the foodservice equipment.
7. The Plumbing Contractor (PC) shall extend all indirect waste from the connection point on the equipment to the floor sink or floor drain. If a pump drain is required, Plumbing Contractor (PC) provides drain connection per manufacturer approved outline and as per code.
8. The Foodservice Contractor (FSC) shall provide and install all condensate drain lines on walk-in cooler and walk-in freezer coils, including heat tape to protect drain lines from freezing.
9. Where the existing equipment is to be relocated: The Plumbing Contractor (PC) shall disconnect all plumbing services to the item being reused. Plumbing contractor to retain and keep all parts necessary for reconnection when item has been re-installed.
10. Existing Equipment to be disposed of: The Plumbing Contractor (PC) is responsible for disconnecting existing plumbing services from the equipment which is to be removed by the demolition contractor.

C. Division #23 - Mechanical: Refer to Division 23 specifications for requirements for material and labor required for the ventilation mechanical services needed to complete the equipment installation to include but not limited to the following.

1. Provide kitchen Type I grease cooking exhaust hood (s) and type II condensate hood (s). Provide all st. stl. trim and enclosures. Hoods are to be of the proper size to cover and exhaust per the equipment being provided and installed by the FSC.
2. Provide and install st. stl. wall panels below hoods per required code and to meet NFPA requirements. Unless noted otherwise on room finish schedule.

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3. Provide all materials and labor to provide final connections to Type I and Type II exhaust hoods including but not limited to: Duct insulation and fire wrap required by code. All back draft dampers in condensate duct connections.
4. Where existing hoods are to be relocated: The HVAC contractor shall disconnect all ducts. HVAC to retain and keep all the parts necessary for reconnection when item has been re-installed.
5. Existing Hoods to be disposed of: The HVAC contractor is responsible for disconnecting existing services from the equipment which is to be removed by the demolition contractor.

D. Division #26 - Electrical: Refer to Division 26 specifications for requirements for material and labor required for the electrical services needed to complete the equipment installation and service connections to the food service equipment to include but not limited to the following.
1. Provide all labor and materials such as but not limited to service panels, conduits, wiring, disconnects, switches, outlets, controls, to provide electrical services as outlined in the project documents and code to service the foodservice equipment.
2. Provide interconnections and final connections for equipment to include electrical service connections, low-voltage, alarm, data service connections for controls and/or Building Management System.
3. Where the existing equipment is to be relocated: The Electrical Contractor (EC) shall disconnect all electrical services to the item being reused. Electrical Contractor to retain and keep all the parts necessary for reconnection when item has been re-installed.
4. Existing Equipment to be disposed of: The Electrical Contractor (EC) is responsible for disconnecting existing electrical services from the equipment which is to be removed by the demolition contractor.

1.03 DEFINITIONS / ABBREVIATIONS

A. Foodservice Contractor (FSC). The company contracted to provide and install the foodservice equipment for section 11 40 00.

B. Furnish: To provide ordering, shipping, and delivery of goods to the site. Includes the material only.

C. Provide: To order, deliver to site, unload remove packaging, assemble, set-in place, level and/or secure equipment to make ready for service connections. Coordination of services with trades. Re-set and anchor, seal and/or trim. Include accessories, adjust for operation. Test after all services have been completed and demonstrate to Owner.

D. Buy-Out: Standard catalog item that has a specific model type. Manufacturers can provide specification sheets to identify features, accessories, options, and finishes.

E. Fabricated Item: Nonstandard equipment which requires a shop drawing. Item is built to project size and specifications.

F. Exposed: Visible side, surface or edge of item that can be seen at any angle.

G. Per Code: All work and materials shall comply with the latest Health Department area codes along with all federal, state, and local laws, ordinances, and codes. Shall include the following but not limited to as the local building codes and AHJ shall have jurisdiction.

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H. Safe Draining Water: Shall be lead free faucets and fixtures as per applicable codes and requirements.

I. Materials and work shall comply with the most current public health service local laws and ordinances, federal and local building codes, regulations, and interpretations of the local AHJ.

1.	AHJ	Authorities Having Jurisdiction
2.	ADA	Americans with Disabilities Act
3.	AGA	American Gas Association
4.	ARI	Air Condition and Refrigeration Institute
5.	ANSI	American National Standard Institute
6.	ASME	American Society of Mechanical Engineers
7.	ASHRAE	American Society of Heating, Refrigeration & Air Conditioning Engineers
8.	ASTM	American Society for Testing and Materials
9.	AWS	American Welding Society
10.	CSA	Canadian Standards Association
11.	DOE	Department of Energy
12.	EISA	Energy Independence and Security Act of 2007
13.	ETL	Environmental Testing Laboratories
14.	NEC	National Electrical Code
15.	NFPA	National Fire Protection Association
16.	NSF	National Sanitation Foundation
17.	SMACNA	Sheet Metal and Air Conditioning Contractors National Association's
18.	SNAP	Significant New Alternative Policy
19.	UL	Underwriters Laboratories
20.	OSHA	Occupational Safety and Health Administration
21.	PC	Plumbing Contractor
22.	UL	Underwriters Laboratories

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer to perform work of this Section who specializes in installing foodservice equipment, who has completed installations similar in design and extent to that indicated for this Project, and who has a record of successful in-service performance.

B. When the Construction Documents call for higher standards or larger sizes than the regulations, the Construction Documents shall govern. When the regulations require higher standards or larger sizes than the Construction Documents, the regulations shall govern. Rulings and interpretations of the enforcing agencies shall be considered part of the regulations. No additional amounts shall be paid for compliance.

C. When the requirements of the drawings exceed the written specifications, the drawings shall govern and vice versa.

D. Model number changes and manufacturer sales or bankruptcies: If an item becomes no longer available due to the manufacturer discontinuing it or due to bankruptcies the Foodservice Designer and Owner reserves the right to accept or reject the vendor replacement item. The FSC shall provide replacement items at no additional cost to the Owner.

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E. If because of jurisdictional trade agreements or other conditions, any work specified in the Construction Documents must be completed by others, sublet such work only to those who are qualified to do such work or make other arrangements at the expense of the Foodservice Contractor (FSC), subject to approval by the Architect.

1.05 SUBMITTALS

A. Submit foodservice equipment plan, rough-in plans, shop drawings and specification brochure booklet within 30 days of award of contract or as required by Architect. Submit one set photocopy print and one electronic PDF set to Food Service Consultant for review and approval. Corrected electronic documents will be returned to Foodservice Contractor (FSC) for revision if necessary. Provide an area on each sheet for three review and approval stamps to include CM/GC, Architect and Foodservice Designer.

B. When drawings are approved, Foodservice Contractor (FSC) shall submit assembled sets of plans as required by Architect.

C. When specification brochure booklets are approved submit assembled copies in quantity required by Architect. Each item shall have a cover page is to be numbered and sequenced corresponding to the itemized specifications. Brochures are to include accessories and components used with each item.

D. Provide fully dimensioned rough-in plans at ¼" = 1'-0" scale showing all required services including electrical, plumbing, mechanical and any related special conditions. Drawings sheet size to conform to the architectural sheet size used for the bid documents.
1. Plans are to indicate location, elevation, size and type of water supplies, drains, gas lines, floor drains, site drains, electrical supplies, outlets, switches, duct's locations, exhaust and supply CFM and static pressure, etc. Include on each page a legend of commonly used symbols and abbreviations.
2. Special conditions shall include, but not be limited to, curbs, bases, recesses, sleeves, refrigeration lines, concealed wall backing, pass through openings, trenches, etc.
3. Foodservice Contractor (FSC) may not use rough-in plans prepared by the Foodservice Consultant for submittal with the required Construction Documents without permission from the Foodservice Consultant. When such plans are re-used for Construction Documents it shall be the responsibility of Foodservice Contractor (FSC) to verify all dimensions as well as electrical, plumbing, and mechanical rough-ins and prevailing codes as they relate to the project.

E. Submit shop drawings showing plans, elevations and details for all fabricated items drawn at minimum ¾" scale. Provide equipment information to include unit weight, point load locations, service locations and sizes, clearance requirements required for service. And any other critical information related to the item and/or project. Manufacturers shall review project scope and advise if there are any conflicts in the design and note them on the shop drawing submittal prior to the review process.

F. After all drawings and buy out brochures have been approved and received by the Owner and Architect, fabrication may begin. Approval shall not relieve Foodservice Contractor (FSC) of responsibility for conformance with the construction documents unless written approval is obtained from the Owner and Architect. Also, approvals shall not relieve Foodservice Contractor (FSC) from conformance to state and local health code requirements.

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G. Foodservice Contractor (FSC) shall provide color samples when Are called out for special finish, laminate or wood finish are called for.

H. Substitutions: Request in writing at least ten days prior to the bid date and time to the Construction Manager and/or Project Architect. Submittal shall include description of proposed substitution, drawings, equipment specification sheet, performance data and any other information required for a proper evaluation.
   1. Approval or rejection of submitted substitution shall be up to the Foodservice Consultant with Owner vested interest. The determination may or may not be expressed for the final decision. If approved, it shall be released by Addendum during the bidding of the project. If the request is after the bid award a Proposal Request (PR) shall be issued.

PART 2 - PRODUCTS

2.01 GENERAL

A. Except as may be specified otherwise under individual item specification in “Equipment List” or “Equipment Schedule”, all items of standard manufactured equipment furnished shall be complete in accordance with manufacturer’s standard specifications for specific unit or model called for, including finishes, components, attachments, appurtenances, etc.

B. Qualified Custom Stainless Fabricators include:
   1. Infinity Metal Fabrication
      446 South Birch Street
      Royalton, MN 56373
      Ph. (952) 943-8288

2.02 FABRICATION OF METALWORK

A. Sanitation Standards
   1. All equipment shall be produced in accordance with the National Sanitation Foundation (NSF) Standard 2 and bear the NSF seal.

B. Materials and Workmanship
   1. All material shall be new, of prime quality and without flaws. The completed products shall be delivered to the owner in undamaged condition.
   2. Stainless Steel shall conform to American Society for Testing and Materials (ASTM) specification, Type 304, hardest workable temper, polished to a #4 satin finish on exterior and rolled finish on interior. Working surfaces, including welds, shall be smooth, free of warps, buckles, cracks, pits, and scratches.
   3. Steel other than stainless steel, where specified to body enclosures shall be prime grade, with steel sheet bonderized and zinc coated.
   4. Grain shall run in the same direction on all horizontal and all vertical surfaces; where table or sink tops join at right angles, terminate the finish in a mitered edge; polish grain consistent in direction throughout the length of the backsplash and sink compartment.
   5. Sound Deadening - underside of all stainless-steel top for tables, counters, sinks, dish tables with angle or channel framework shall be coated with 1/8” thick waterproof mastic material, non-asphalt base and NSF approved.

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6. Reinforce metal at locations of hardware, anchorages, and accessory attachments; wherever metal is less than 14-gauge or requires mortised application. Conceal reinforcements to the greatest extent possible. Weld in place on concealed faces.
7. Welding and Soldering
   a. Materials 18-gauge or heavier shall be welded.
   b. Seams and joints shall be welded and soldered in the field unless otherwise indicated in item specifications.
   c. Welds must be ground smooth and polished to match the original finish.
   d. Where galvanizing has been burned off, the weld shall be cleaned and touched up with high-grade aluminum paint.

8. Provide removable panels for access to mechanical and electrical service connections, which are concealed behind or within foodservice equipment, but only where access is not possible.
9. Provide closures where ends of fixtures, back splashes, shelves, etc. are open. Fill by forming the metal or welding sections if necessary to close off entire opening flush to walls or adjoining fixtures.
10. Reinforce work surfaces 30 inches on center (vertical and horizontal), with galvanizing or stainless steel concealed structural members. Reinforce members which are not self-reinforced, by formed edges.
11. Metal tops shall be one-piece welded construction, including field joints. Secure to a full perimeter channel frame and fasten top with stud bolts or tack welds.
12. Field Joints Dry Use Areas: Any field joints required because of size of fixture; butt joint, reinforce on underside with angles of same material, bolt together with non-corrosive bolts and nuts, field weld, grind, and polish.
13. Field Joint Wet Use Areas: Where it is possible make field joint on 90-degree edges of sink or other part of the assembly. All field joints are to be fully welded and polished to match countertop finish and grain.

C. Metal and Gauges
1. Fabricate the following components in stainless steel from the gauge of metal as indicated:

a.	Table and counter tops	14-gauge
b.	Sinks and drainboards	14-gauge
c.	Shelves	16-gauge
d.	Front drawer and door panels	18-gauge (double pan type)
e.	Single pan doors and drawer fronts	16-gauge
f.	Enclosed base cabinets	18-gauge
g.	Enclosed wall cabinets	18-gauge
h.	Pan-type inserts and trays	16-gauge
i.	Removable covers and panels	18-gauge
j.	Skirts and enclosure panels	18-gauge
k.	Closure and trim strips over 4” wide	18-gauge
l.	Hardware reinforcement	12-gauge
m.	Gusset plates	10-gauge

D. Pipe Bases
1. Construct pipe bases of 1-5/8” diameter, 16-gauge stainless steel tubing. Fit legs with polished stainless steel adjustable bullet feet to provide adjustment of approximately 1-1/2”, without exposed threads.

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2. Space legs provide ample support for tops, precluding any possibility of deflection or sagging and in no case more than 5'-0" centers.

E. Legs and Crossrails per detail FD-20
1. Legs and crossrails shall be 1-5/8" diameter stainless steel tubing. All intersections of rails and legs shall be welded and finished smoothly. Bolts, screws, or tack welds shall not be acceptable.
2. Where a removable undershelf is called out, a horizontal crossrail at the front and back is required to support shelf. Shelf is to be notched to set on cross rails.
3. Leg sockets shall be 2" outside diameter (OD) stainless steel with set screw to secure the leg to the socket. They shall be welded to 14-gauge transverse top support channels.
4. Adjustable st. stl. feet shall be Component Hardware A10-0881-C and wall flanges shall be A10-0884-C.

F. Shelves
1. Construct solid shelves under pipe base tables of 16-gauge stainless steel, with 1 ½" turned down and under edges on exposed sides, and 2" turn up against walls or equipment. Fully welded to legs.
2. In fixtures with enclosed bases, turn up shelves on back and sides with ¼" minimum radius and feather slightly to ensure a tight fit to enclosure panels.
3. When called out for removable shelves. No shelf shall be wider than 24" and shall be supported by 1-5/8" horizontal tube cross stretcher at the front and back of leg assembly.

G. Sinks and Drainboards
1. All sinks and drainboards shall be constructed of 14-gauge stainless steel, unless otherwise specified, with all joints welded, ground and polished so no evidence of welding appears.
2. All vertical and horizontal corners shall be rounded to meet NSF approved radius requirements with intersections meeting in spherical sections. Multiple compartment sinks shall be divided with double wall partitions having fully rounded corners. All corners of drainboards shall be rounded on inside to NSF approved radius. All back and end splashes shall be rounded on inside to meet NSF approved radius. The front corners of rolled rim shall be fully rounded on the outside roll and be concentric with inside of roll.
3. The front face of multiple sinks shall be one continuous piece with no overlapping joints or open spaces between compartments.
4. Drainboards shall be pitched 1/8" per 12" toward sink compartments. Sinks and drainboards shall have back splashes (see a and b below) and end splashes where appropriate. Back splashes shall be level and continuous and not follow pitch of drainboards.
   a. 6" high back splashes at preparation, worktable, and island table configurations. See detail FD-2.
   b. 3" high back splashes at dishtables, pot and pan sinks table configurations. See detail FD-2.
   c. Raw splash as required at hand sink locations within table. See detail FD-2.

5. Bottom of each compartment shall pitch to drain and be fitted with a cast brass 2" lever operated waste outlet, provided with a stainless-steel strainer plate. Set lever waste into stamped recess in sink bottom to facilitate drainage.

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6. All sinks will be in range of 5” deep to 14” deep unless otherwise specified on drawings or in item specifications.
7. All sinks that call for lever drain, provide lever drain support bracket.

H. Sinks set into Worktable or Work Counter
1. 1. Sinks shall be constructed of 14-gauge stainless steel, unless otherwise specified, with all joints welded, ground and polished so no evidence of welding appears.
2. Bottom of sink compartment shall have vertical and horizontal corners rounded to ¾” radius and pitch to drain with size and type as indicated on plan and item specifications.

I. Dishtables
1. Top reinforcement and support shall consist of 14-gauge stainless steel transverse leg support channels and 14-gauge stainless steel longitudinal reinforcing channel. Also refer to 2.2 Section B for reinforcement detail.
2. When tables enter dish machines or pot washing machines provide turn down into machine as recommended by manufacturer and a flange at both the front and back splash forming a watertight joint across bottom and up both sides to top edge of dishtable.
3. Provide sound deadening as directed in 2.2 Section B for underside of dishtables.
4. Follow construction details as directed in 2.2 Section G.

J. Worktables
1. Top reinforcement and support shall consist of 14-gauge galvanized transverse leg support channels and 14-gauge galvanized longitudinal reinforcing channel. Also refer to 2.2 Section B for reinforcement detail.
2. Where stainless steel tops are specified furnish 14-gauge polished stainless steel, finished in a #4 satin finish with all exposed edges rounded with no burrs. Tops shall be turned down 1 ½” and under ½” in channel shape on all exposed sides unless otherwise specified.
3. Where tables are located at building walls, they shall have minimum 6” high by 1” returned at 90 degrees to wall and turned down 1” at 90 degrees with all exposed ends closed ground and polished smooth. Provide heavy-duty “Z” clips for securing building walls.
4. Provide sound deadening as directed in 2.2 Section B for underside of worktables

K. Wood Tabletops
1. When wood tabletops are specified, top shall be 1-¾” thick, sectional, hard rock, kiln dried maple construction. Top shall have 5” by 1” thick coved maple riser on back and ends unless otherwise indicated on plan or item specifications. Top shall be fully approved by NSF.
2. The tabletop shall be mounted on 14-gauge channels as indicated in 2.2 Section J.

L. Cabinet Base Construction per detail FD-21
1. All cabinet type bases shall be of 16-gauge stainless steel, single wall, pan type, one piece welded construction with no visible joints or screw attachments showing. Entire unit to be braced with 14-gauge channels as indicated in 2.2 Section J.

M. Hinged Doors per detail FD-26
1. Hinged doors for cabinet base counters shall be 1” thick urethane sound dampening insulation to be constructed of 18-gauge stainless steel front with 18-gauge stainless steel pan shaped backs, with all corners welded, ground and polished.
2. Unless otherwise specified shall have a continuous door pull with ¾” pull with 1” recess.

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3. All doors to be furnished with chrome plated heavy duty type Component M75-1002 pin type hinges.
4. Door shall be held in closed position with magnet door catch Component Hardware M30-5920

N. Drawer Assemblies per detail FD-25
1. Drawer assemblies shall consist of removable drawer body mounted in a ball bearing slide assembly with fully enclosed housing.
2. Slide assembly shall consist of one pair of 200-pound stainless steel roller bearing extension slides, with side and back enclosure panels, front spacer angle, two drawer carrier angles, secured to slides and stainless front.
3. Drawer bodies for general storage shall be 18-gauge stainless steel shall be 18-gauge st. stl. Enclosure per detail FD-25
4. Type Drawer to be 12” x 20” x 4” with 17” x 7-1/2” drawer front. Equal with
5. Type B drawer to be 15” x 20” x 5” with a 20” x 7-1/2” drawer front. Equal by Component Hardware S90-0015N-N drawer assembly when lock is called for a S90-0015-C-N.
6. Type C drawer to be 20” x 20” x 5” with 25” x 7-1/2” drawer face. Equal by Component Hardware S90-0020-N drawer assembly when lock is called for a S90-0020C-N.

O. Wall Shelves per detail FD-31 and Over Shelves per FD-3
1. Shelves shall be constructed of 16-gauge stainless steel with working sides turned down 1-½” and ½” under in channel shape with resulting corners welded, ground and polished.
2. Back of Wall Shelves shall be turned up 1-½” and coved. When 1-½” turn up is specified at Back and Ends, Front edge of End splash shall be rounded and finished smooth.
3. Slant rack shelves used for dish racks shall have rolled front edge and 6” turn up at rear. (per detail FD-33)
4. Brackets shall be 14-gauge stainless steel and be spaced to support the shelf with its intended contents.

P. Wall Cabinets per detail FD-34
1. Wall cabinets shall be of length and depth as shown on plans or indicated in item specifications. Cabinets to be 30” high, unless otherwise specified with sloped, dust proof tops. Exterior bottoms shall be of flush type construction.
2. The cabinet shall be constructed of 18-gauge stainless steel, all welded construction. Cabinet interiors shall be fabricated with fixed bottom and intermediate shelf unless otherwise specified.
3. Where specified doors shall be double wall construction with chrome plated pulls as per detail FD-26 and 11 40 00-2.2-M.
4. Adjustable shelves to be fabricated of 16-gauge st. stl. Supported by T21-0024 standards and clips.

Q. Electrical: Prewire all internal services per Underwriters Laboratories (UL) listed and to comply with National Electrical Code (NEC). The Fabricator shall provide all plugs, receptacles as outlined in the documents to service counter and associated equipment. Services to be pre-wired to j-box and electrical distribution panel as allowed by UL and NEC.
1. Load Centers when called for are to be pre-wired all electrical components built into the counter panel. Conceal all conduit, center and wiring to be UL listed and meet NEC requirements. Size each breaker for 125% of the connected load to include two each, 120/1 20.0-amp spare circuits. Balance service loads on each phase. Panel to be 3-phase where possible.

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2. Built-in Equipment: Install and interconnect each item with controls, switches, fans and/or all accessories and options outlined.
3. Conduit shall be UL listed assemblies and shall be concealed.
4. Cover Plates shall be stainless steel.

2.03 FABRICATION OF MILLWORK AND CASE WORK – NOT USED

2.04 REFRIGERATION REQUIREMENTS – NOT USED

2.05 WALK-IN BOX CONSTRUCTION –EVERIDGE- NOT USED

2.06 PLUMBING FIXTURES

A. Foodservice Contractor (FSC) Shall furnish drain for all sinks and other fixtures specified with each item. T&S Brass Company.
1. (Type 1) Three Compartment Sink: Shall have 2” twist handle drain T&S Brass Company Model B-3952-01 with overflow. Waste Valve, twist handle, 3-1/2" sink opening, 2" drain outlet with overflow assembly.
2. (Type 2) Prep sink and General use sinks shall have 2” twist handle drain T&S Brass Company Model B-3952. Waste Valve, twist handle, 3-1/2" sink opening, 2" drain outlet.
3. (Type 3) Sinks with shallow front to back depth shall have 2” twist handle drain T&S Brass Company Model B-3952-XS. Waste Drain Valve, 3-1/2" sink hole, short twist handle, 1-1/2" NPT female outlet, 2" NPT male outlet.
4. (Type 4) Scupper drains shall have a basket drain by FMP (Franklin Mechanic Products) 102-1130. Drain and Basket, 1-7/8" sink opening, 1-1/2" NPS, 2-13/16"D top, stainless steel.

B. Foodservice Contractor (FSC) Shall furnish faucets for all sinks and other fixtures specified with each item. T&S Brass Company to meet ANSI/NSF Standard 61, Section 9 for drinking water.
1. (Type 1) General Sink: T&S Brass Company Model B-0331-VF22-EL Faucet, wall mount, 8" adjustable centers, 6" swivel gooseneck (with lock washer for rigid application), quarter-turn Eterna compression cartridges with spring checks, lever handles with color coded indexes, 0.35 GPM vandal resistant non-aerated spray device, polished chrome-plated brass faucet body, includes B-0230-K installation kit, 1/2" NPT female inlets, cCSAus, ADA Compliant.
2. (Type 2) Prep Sink: T&S Brass Company Model B-0231-V22-CREK Mixing Faucet, wall mount, 8" adjustable centers, quarter-turn Cerama cartridges with check valves, lever handles with color-coded indexes, 12" swing nozzle with vandal resistant 2.2 GPM aerator, includes lock washer for rigid application, polished chrome-plated brass body, 1/2" female inlets, 1/2" male supply elbows, low lead compliant, ADA Compliant, cCSAu, includes B-0230-K installation kit, 1/2" NPT female inlets,
3. (Type 3) Prep Sink with Rinse: T&S Brass Company Model B-0231-U12-CR UltraRinse 8” wall mount mixing faucet with polished chrome plated brass body, 12” swing nozzle with stream regulator outlet, 10 3/8" 1.5 GPM multiple tip sprayer arm, cerama cartridges with spring checks, lever handles, and 1/2” NPT female inlets. Certified to ASME

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A112.18.1/CSA B125.1, NSF 61-Section 9 and NSF 372. Meets ADA ANSI/ICC A117.1 requirements. includes B-0230-K installation kit, 1/2" NPT female inlets.

4. (Type 4) Three Compartment Sink Faucet: T&S Brass Company Model B-0290-0427 Pot Sink Mixing Faucet, wall mount, 8" adjustable centers, 12" Big-Flo swing nozzle with plain end outlet, 4-arm kitchen handles with color coded indexes, 00LL street elbows with 3/4" female NPT inlets, B-0427 supply nipple kits, ADA Compliant.
5. (Type 5) Three Compartment Sink Spray Rinse: T&S Brass Company Model B-0287-427-BC Big-Flow Pre-Rinse Unit, wall mount, 8" centers, 12" add-on swing nozzle, 4-arm handles, .65 GPM spray valve, 3/4" NPT, EPAct2005 compliant (B-0107-C). 00LL street elbows with 3/4" female NPT inlets, B-0427 supply nipple kits, ADA Compliant.
6. (Type 6) Scraping Area Spray Rinse: T&S Brass Company Model B-0133-CR-B08SK EasyInstall Pre-Rinse Unit, 8" wall mount, quarter-turn cerama cartridges with check valves, lever handles, EasyInstall 18" riser, 44" flexible stainless-steel hose, 1.07 GPM JeTSpray valve with swivel (B-0108), 6" wall bracket, 1/2" NPT male inlets, installation kit (B-0230-K), low lead, NSF.
7. (Type 7) Hand Sink Electronic Operation: T&S Brass Company Model EC-3105-VF12 / TMV ChekPoint™ Electronic Faucet, wall mount, 4" centers, rigid gooseneck spout, 1.2 GPM vandal resistant non-aerated spray device, AC/DC control module with internal flow control, temperature control mixing valve with integral check valves, chrome-plated brass, flexible stainless steel supply hoses, ADA Compliant. With TMV Equip Thermostatic Temperature Mixing Valve, integral check valves, hot and cold inlets with filter screens, brass, 1/2" male NPSM, low lead.
8. (Type 8) Hand Sink Manual Operation: T&S Brass Company Model B-1115-132XAW4K. Workboard Faucet, wall mount, 4" centers, 2-11/16" swivel gooseneck nozzle with 2.2 GPM VR aerator, quarter-turn Eterna cartridges with spring checks, 4" wrist action handles with color coded indexes, 1/2" NPT male inlet elbows, low lead, cCSAus, ADA Compliant, NSF. Inlet Kit, 1/2" NPT nipple, close elbows, 24" flex supply hoses

C. Gas Quick Disconnects: T&S Brass Company HG-4 series gas hose assembly: Safe-T-Link Gas Connector Kit, ½”, ¾”, 1” and 1-1/4” " connection, 60" hose, stainless steel braiding with extruded coating, (2) SwiveLink fittings, 360° rotatable hex nut, with 90° elbow and installation kit (includes restraining cable and ball valve), Posi-Set. When appliance is on casters provide Safe-T-Link Posi-Set Appliance Locating Device, for positive placement of mobile kitchen equipment, includes set of (2) units, mounting screws (#10-24) and screw anchors, heat and impact resistant plastic. (See Item for Specific Model)

D. Water Quick Disconnect: T&S Brass Company HW-4 series Safe-T-Link Water Connector Hose, 3/8” 1/2", 3/4", 1” dia., 36 to 72" long, stainless steel braided hose with extruded blue coating, NPT male fittings and reverse quick disconnect, low lead content, NSF, cCSAus. (See Item for Specific Model).

2.07 HOODS – NOT USED

2.08 FIRE SYSTEM- NOT USED

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2.09 ITEMIZED EQUIPMENT SPECIFICATIONS

1) Item #1 Mop Sink Cabinet
   1. Quantity: One (1)
   2. Manufacturer: John Boos
   3. Model: Sample, PBJC-224884-R-X Janitor Cabinet, 48"W x 22-1/2"D x 84"H overall size, enclosed cabinet with open back for plumbing, (2) lockable louvered swing doors, right side includes: 20" x 16" x 12" deep mop sink with 3-1/2" drain, (1) over head shelf, (2) side mounted mop/broom holder with locking cam and panel-less back, left side includes: (3) shelves and bottom storage area, includes (1) service faucet with vacuum breaker and 120" hose, 18/300 stainless steel, NSF.
   4. Services:
      a. 2” Direct Waste
      b. ½” Hot & Cold Water

2) Item #2 Work Table
   1. Quantity: One (1)
   2. Manufacturer: Infinity
   3. Model: Stainless Steel fabricated worktable as per plans and elevations 2/FS300. And as specifications 11 40 00 – 2.2-B. Provide with the following:
      a. One (1) Table edge front and sides to be A/FD-1
      b. One (1) 6” high wall splash per A/FD-2
      c. Two (2) St. Stl. Legs per FD-12
      d. One (1) Removable undershelf

3) Item #3 Wall Shelf
   1. Quantity: Two (2)
   2. Manufacturer: Infinity
   3. Model: Stainless Steel fabricated wall shelf to be 12” deep for general use as per plans and elevations 2/FS300 and detail FD-30 and as specifications 11 40 00 – 2.2-B. Provide with the following:
      a. Install shelf 18” above working surface unless otherwise noted on elevations.

4) Item #4 Track Shelving
   1. Quantity: One (1)
   2. Manufacturer: Metro

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3. Model: TT12-E2160M2160P Top-Track® EZ Order Model, nominal 12 ft. system length x 5 ft. width, consists of (1) 7-1/2 ft. track set, (8) 86" posts, (1) 221" tie bar end kit, (12) 74" Top-Track® mobile posts, (3) 21" mobile kits (stainless steel casters, bumpers, rollers), (12) 21"D x 60"W shelves, (8) 21"D x 60"W shelves, Super Erecta Pro polymer/wire shelving, NSF.

5) Item #5 Spare Number

6) Item #6 Two Door Reach-in Freezer
1. Quantity: One (1)
2. Manufacturer: True
3. Model: STG2F-2S-HC SPEC SERIES® Freezer, reach-in, two-section, -10°F, (2) stainless steel doors with locks, cam-lift hinges, digital temperature control, (6) gray shelves, LED interior lights, stainless steel front, aluminum sides, aluminum interior, 5" castors, R290 Hydrocarbon refrigerant, 1-1/4 HP, 115v/60/1-ph, 9.4 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA, ENERGY STAR.
   a. One (1) 7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
   b. One (1) Left door hinged left, right door hinged right standard
   c. One (1) (3) vinyl shelves & shelf supports standard per section
   d. One (1) 5" castors (set of 4), standard

4. Services:
   a. 120 Volt, 1-Phase

7) Item #7 Two Door Reach-in Freezer
1. Quantity: One (1)
2. Manufacturer: True
3. Model: STG2F-2S-HC SPEC SERIES® Freezer, reach-in, two-section, -10°F, (2) stainless steel doors with locks, cam-lift hinges, digital temperature control, (6) gray shelves, LED interior lights, stainless steel front, aluminum sides, aluminum interior, 5" castors, R290 Hydrocarbon refrigerant, 1-1/4 HP, 115v/60/1-ph, 9.4 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA, ENERGY STAR.
   a. One (1) 7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
   b. One (1) Left door hinged left, right door hinged right standard
   c. One (1) (3) vinyl shelves & shelf supports standard per section
   d. One (1) 5" castors (set of 4), standard

4. Services:

Rebid Documents

a. 120 Volt, 1-Phase

8) Item #8 Combi Oven
1. Quantity: One (1)
2. Manufacturer: Rational
3. Model: ICP 6-HALF E 208/240V 3 PH (LM100BE) (CB1ERRA.0000212) iCombi Pro® 6-Half Size Combi Oven, electric, (6) 13" x 18" sheet pan or (6) 12" x 20" steam pan or (6) 1/1 GN pan capacity, intelligent cooking system with (4) assistants; iDensityControl, iCookingSuite, iProductionManager, & iCareSystem, (6) operating modes, (5) cooking methods, (3) manual operating modes, 85° to 572°F temperature range, quick clean, care control, eco mode, 6-point core temperature probe, retractable hand shower, Ether
4. net inter
5. face, Wi-Fi enabled, 208/240v/60Hz/3-ph, 30.0/26.0 amps, 10.8 kW, CE, IPX5, UL, cULus, NSF, ENERGY STAR-®
   a. One (1) Model ICARESYSTEM AUTODOSE iCareSystem AutoDose, Integrated autonomous cleaning and storage system for iCombi Pro tabletop units. Uses RATIONAL Active Green and Care cartridges.
   b. One (1) 2 years parts and labor, 5 years steam generator warranty
   c. One (1) Model CAP Chef Assistance Program, a RATIONAL certified Chef conducts 4 hours/location specialized application training with personnel.
   d. d. One (1) Model 9999.2100 Commissioning iCombi Electric – for one (1) electric iCombi when not installed and commissioned by trained technicians.
   e. One (1) Model 8720.1552US Installation Kit, for electric iCombi/SCC/CMP 61 (208/60Hz/3 & 240/60Hz/3); electric iCombi/SCC/CMP 101 (440/60Hz/3 & 480/60Hz/3); electric iCombi/SCC/CMP 62
   f. One (1) Model 1900.1159US Water Filtration Single Cartridge System, for any single combi model, or XS & half-size Combi-Duos, or iVario includes: (1) single head with pressure gauge, R95-CLX filter & (1) filter installation kit.
   g. One (1) Note: The RATIONAL Water Filtration Systems helps provide consistent high-quality water to your RATIONAL cooking systems. The patented carbon block technology reduces the effects of sediment, chloramines, and chlorine while delivering the required flow rates.
   h. One (1) Model 60.31.103 Stand II Mobile Oven Stand, 27-1/2”H, (14) supporting rails, side panels and top closed, rear panel open, stainless steel construction, height adjustable casters, for iCombi 6- and 10-half size Classic/Pro
   i. One (1) Model 87.00.732US Safety-Set, Equipment placement system for all casters-mounted equipment, allows precise, consistent equipment placement for drain lines to floor sinks and under the fire suppression in ventilation sys-

Rebid Documents

tems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes tow (2) pieces and installation pack.

j. One (1) Model 60.76.177 UltraVent® Plus Ventless Recirculating Condensation Hood, with HEPA filter for smoke capture, for single or Combi-Duo, for 6- and 10-half size (electric), 120v/50/60Hz/1-ph, 170 watts, 6' cord, NEMA 5-15P.
k. One (1) Model 87.01.432 Safety Door Lock, retrofit kit recommended with all
l. UltraVents with Certified Installation, prevents rapid door opening, requires 2-step pressing of the door handle (factory option not needed).
m. One (1) Model 60.75.210P UltraVent Plus HEPA Filter, for iCombi, (2 pack service agent required.
n. One (1) Model 20.02.550P Door Gasket, for iCombi 6-half size Classic/Pro & SelfCookingCenter/CombiMaster Plus 61
o. One (1) Model 40.05.424P Air Inlet Filter, for iCombi 6-half, 6-full, 10-half, or 10-full size Classic/Pro.

6. Services:
   a. 2" Ind Waste
   b. ¾" Cold Water
   c. 208 Volt, 3 Phase
   d. 120 Volt, 1 Phase

9) Item #9 Prep Table w/Sink
1. Quantity: One (1)
2. Manufacturer: Infinity
3. Model: Stainless Steel fabricated prep sink assembly with sinks. Fabricate per plans and elevations 1/FS300 and section 11 40 00-2.2 and per fabrication details. Provide with the following:
   a. One (1) Table edge a to be type A/FD-1
   b. One (1) 6" high wall back and right end splash per A/FD-2
   c. One (1) 20" wide x 20" deep x 10" depth sink per FD-12.
   d. One (1) Lever drain without overflow per 11 40 00 -2.6-A-2.
   e. One (1) Prep sink faucet per 11 40 00 -2.6-B-3.
   f. Two (2) St. Stl. Legs per FD-12
   g. One (1)) Removable undershelf
   h. One (1) Cabinet base with tier of 3 each, Type B drawers per FD-25

4. Services:
   a. 2" Indirect Waste
   b. ½" Hot & Cold Water

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10) Item #10 Spare Number

11) Item #11 Microwave Wall Shelf
1. Quantity: Two (2)
2. Manufacturer: Infinity
3. Model: Stainless Steel fabricated 16-gauge wall microwave shelf with an open inverted back to be 24” wide x 21” deep per plans and elevations 2/FS300 and detail FD-30 and as specifications 11 40 00 – 2.2-B. Provide with the following. Provide with the following:
   a. Install shelf 18” above working surface unless otherwise noted on elevations

12) Item #12 Microwave Oven
1. Quantity: One (1)
2. Manufacturer: Menumaster
3. Model: MCS10TS Menumaster® Commercial Microwave Oven, 1000 watts, 1.2 cu. ft. capacity, stackable, medium volume, stainless steel exterior wrap & interior, 4-stage cooking, (5) power levels, (100) memory settings, ADA compliant braille touch pads, sealed in ceramic shelf, side hinged door with glass window, stationary air filter, power consumption 120v/60/1-ph, 1550 total watts, 13.0 amps, cord, NEMA 5-15P, cETLus, ETL.
   a. One (1) 3-year limited warranty (1 year full)
4. Services:
   a. 120 Volt, 1-Phase

13) Item #13 Wall Shelf
1. Quantity: Two (2)
2. Manufacturer: Infinity
3. Model: Stainless Steel fabricated wall shelf to be 12” deep for general use as per plans and elevations 1/FS300 and detail FD-30 and as specifications 11 40 00 – 2.2-B. Provide with the following:
   a. Install shelf 18” above working surface unless otherwise noted on elevations

14) Item #14 Shelving Unit
1. Quantity: One (1)
2. Manufacturer: Metro
3. Model: 5A537K3 Super Adjustable Super Erecta® Starter Shelving Unit, 36"W x 24"D x 74"H, (5) wire shelves, (4) posts, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, KD, NSF

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15) Item #15 Spare Number

16) Item #16 Four Compartment Sink
1. Quantity: One (1)
2. Manufacturer: Infinity
3. Model: Stainless Steel four compartment sink per plans and elevation 2/FS300. Fabricate per section 11 40 00-2.2 and per fabrication details. Provide with the following:
   a. One (1) Table edge and drain board area around sink with a type D/FD-1. With drop edge at front of sink components.
   b. One (1) 10” high wall splash per A/FD-2
   c. Three (3) 20” wide x 26-1/2” deep x 14” depth sink per FD-14
   d. Three (3) Lever Drain with overflow per 11 40 00 -2.6-A-1.
   e. One (1) 20” wide x 26-1/2” deep x 7” depth sink per FD-4 with welded in collar for disposer item #15 with removable rack slide.
   f. Two (2) High flow sink faucet per 11 40 00 -2.6-B-4.
   g. Three (3) St. Stl. Sink banding.
   h. Disposer control mounting chase per FD-4
   i. Four (4) Sets St. Stl. Legs per FD-20

4. Services:
   a. Three (3) 2” Direct Waste
   b. Two (2) 3/4” Hot and Cold Water

17) Item #17 Pre-Rinse with Add-on Faucet
1. Quantity: One (1)
2. Manufacturer: T&S
3. Model: TYPE 5 (B-0287-427-BC) See Section 11 40 000 -2.06-B; Big-Flow Pre-Rinse Unit, wall mount, 8" centers, 12" add-on swing nozzle, 4-arm handles, .65 GPM spray valve, 3/4" NPT, EPAct2005 compliant (B-0107-C)

4. Services:
   a. ¾” Hot & Cold Water

18) Item #18 Disposer
1. Quantity: One (1)
2. Manufacturer: In-Sink-Erator

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3. Model: SS-100-5-MRS-16 Complete Disposer Package, sink mount system, with #5 adaptor for 3.5" to 4" sink opening, 1 HP motor, stainless steel construction, includes syphon breaker, solenoid valve, flow control valve, manual reverse switch.
   a. One (1) (1) year parts & labor warranty from date of installation (standard)
   b. One (1) 208v/60/3-ph, 2.0 amps
   c. One (1) Model SYPHON 45DEG Syphon breaker upgrade, chrome, 45° fittings (replace with 13412)

4. Services:
   a. 2" Direct Waste
   b. ¾" Cold Water
   c. 208 Volt, 3-Phase

19) Item #19 Dishwasher
1. Quantity: One (1)
2. Manufacturer: In-Sink-Erator
3. Model: LXNR-2 Advansys™ Dishwasher, undercounter with 17" door opening height, 120/208-240(3W)/60/1, accommodates optional two-level racking accessory, high temperature sanitizing, Steam elimination and Energy Recovery, 30, 24, 13 Racks/Hour, (48 racks / hour with second level rack), Fresh Water Rinse, .62 gal/rack, Complete Delime™ with Delime Notification, Auto Dispensing, and Booster Guard™, 3 selectable cycles - light, normal, heavy (Pot & Pan cycle on heavy cycle), smart touchscreen controls with SmartConnect™ app, Service Diagnostics, Chemical Pumps with Auto Prime, 23-15/16"Wx 26-13/16"D x 33-1/4"H, cULus, NSF, ENERGY STAR®
   a. Standard warranty - 1-Year parts, labor & travel time during normal working hours
   b. One (1) Model CORD-PWRKIT-H3LX Power Cord Kit - LXE, 120/208-240(3w)/60/1, NEMA 14-50P, plug included
   c. One (1) Model TWOLEVELKIT-LX Two Level Racking Kit - Rack support, (1) 2nd level wire rack, (2) silverware baskets (only compatible with LXNR, LXNH, LXNC, LXER -H & -C models built after July 1, 2022)
   d. One (1) Model WTRHAM-ARREST Water Hammer Arrestor Kit - Includes 3/4" brass presure regulator valve
   e. One (1) Model PRESREG-3/40BR 3/4" brass pressure regulator
   f. One (1) Model DOORLOCK-LXN Automated door lock prevents opening of door before cycle is complete for LXnR models
   g. One (1) Model ACC-INSTALL-HOB Accessory Installation - For installations within 100 miles (accessible by public roadway) of a Hobart Service Office during normal business hours with appropriate notice; Installation beyond 100

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miles locations in Alaska, Hawaii or New York City or those not accessible by public roadway will be quoted by Service. Includes installation of this item only, final electrical or plumbing connections by others. Recommendation: coordinate accessory installation with machine assembly/ installation (NET)

h. One (1) Model PUMPDRN-AIRGAP Pumped Drain Air Gap Kit

4. Services:
   a. 5/8 Direct Waste with Air Gap
   b. 1/2” Cold Water
   c. 208 Volt, 1-Phase

20) Item #20 Hand Sink

1. Quantity: One (1)
2. Manufacturer: John Boos / T & S
3. Model: PBHS-W-1410-SSLR-X Pro-Bowl Hand Sink, wall mount, 14"W x 10" front-to-back x 5" deep bowl, splash mount faucet holes with 4" centers, 1-7/8" drain opening with basket drain, with left & right side splashes, includes mounting bracket, all stainless-steel construction, NSF, CSA-Sanitation. Provide this item with the following options:
   a. One (1) T&S Brass Model TYPE 8 (B-1115-132XAW4K) See Section 11 40 000 -2.06-B;Workboard Faucet, wall mount, 4" centers, 2-11/16" swivel gooseneck nozzle with 2.2 GPM VR aerator, quarter-turn Eterna cartridges with spring checks, 4" wrist action handles with color coded indexes, 1/2" NPT male inlet elbows, low lead, cCSAus, ADA Compliant, NSFOne (1) T&S Brass 1 year limited warranty, standard
   b. One (1) T&S Brass Model B-0230-KIT Inlet Kit, 1/2" NPT nipple, close elbows, 24" flex supply hoses
   c. One (1) Advance Tabco Model K-170 Eye Wash Attachment, attaches to standard pout, adjustable aerated outlet heads, float-off dust covers, pull knob activation, removable aerator on bottom, chrome plated forged brass body (Not to be used with foot or knee operated units or electronic faucets)

4. Services:
   a. 1-1/2” Direct Waste
   b. 1/2” Hot & Cold Water
   c. 120 Volt, 1-Phase

21) Item #21 Glass door refrigerator

1. Quantity: One (1)
2. Manufacturer: True

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3. Model: FLM-27~TSL01 Full Length Refrigerated Merchandiser, one-section, True standard look version 01, (4) shelves, (1) double pane thermal insulated glass swing door, LED interior lights, powder coated exterior, white interior with stainless steel floor, R290 Hydrocarbon refrigerant, 1/4 HP, 115v/60/1-ph, 2.3 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA.
   a. One (1) 7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
   b. One (1) Exterior: Black powder coated steel, standard
   c. One (1) Interior: White aluminum, with white shelving, standard
   d. One (1) Left door hinged left, right door hinged right standard
   e. One (1) Barrel lock factory installed, one door model
   f. One (1) (4) Solid cantilever shelves, standard
   g. One (1) Sign, (Blank)" silver graphic in lieu of standard

4. Services:
   a. 20 Volt, 1-Phase

22) Item #22 Induction Top Range Warmer
1. Quantity: Two (2)
2. Manufacturer: Hatco
3. Model: IRNG-BXC1-14-QS (QUICK SHIP MODEL) Boxer® Induction Range, countertop, single burner, manual dial controls, digital time & temperature display, black glass ceramic top, automatic shut-off, stainless steel housing, 1440 watts, 120v/60/1-ph, NEMA 5-15P, Ecoization, cULus, UL EPH Classified:
   a. Two (2) American Metalcraft, Evolution™ Chafer, 7 qt., 20-1/2"L x 20"W x 12"H, round, induction ready, slow-release glass lid, built-in spoon rest, stainless steel (For use on induction units greater than 1800).

4. Services
   a. 120 Volt, 1-Phase

23) Item #23 Heated Display Case
1. Quantity: One (1)
2. Manufacturer: Hatco
3. Model: Glo-Ray™ Curved Merchandising Warmer, 26" wide, deck & shelf, mirrored glass back panel, humidified bottom shelf with (5) cup reservoir, individual thermostatic controls with rocker off/on switch, Xenon light, specify finish, cULus, UL EPH Classified, Made in USA.
   a. One (1) One year on-site parts & labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements

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b. b. 120v/60/1-ph, 1660 watts, 13.8 amps, NEMA 5-15P (domestic voltage), standard
c. One (1) Model BLACK Black, designer color

4. Services
   a. 120 Volt, 1-Phase

24) Item #24 Hot Water Dispenser
1. Quantity: One (1)
2. Manufacturer: Bunn
3. Model: 02500.0001 02500.0001 HW2 Hot Water Dispenser, 2-gallon capacity, 4.2 gallon/hr capacity, 200° setting, includes drip tray, stainless steel exterior, plumbed, 120v/60/1-ph, 1800w, 15amps, NEMA 5-15P, UL, NSF
   a. One (1) Model 56000.0034 56000.0034 System, WEQ-35(3).2L

4. Services:
   a. 120 Volt, 1-Phase
   b. ¼" Cold Water

25) Item #25 Spare Number

26) Item #26 Rethermalizer
1. Quantity: One (1)
2. Manufacturer: Vollrath
3. Model: 74110110 Mirage® Induction Soup Rethermalizer, 11 quart, dry use, temperature control in °F or °C, (4) soup presets, stir indicator LED, solid state controls with locking function, includes: induction ready inset & inset cover, natural & black finish, 800W, 6.7 amps, cord with NEMA 5-15P, 120v/50/60/1-ph, cU-Lus, NSF, FCC, Provide with the following:
   a. One (1) Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
   b. One (1) Model 88204 Inset, 11-quart, induction ready, for Mirage induction
   c. rethermalizer, NSF (Refer to vollrathfoodservice.com for full warranty policy)
   d. One (1) Model 47490 Kool-Touch Hinged Cover, stainless with black phenolic knob, fits 78204 Inset & 77110 Double Boiler, imported (Refer to vollrathfoodservice.com for full warranty policy)
   e. One (1) Model 4980422 Ergo Grip® Ladle, 4 oz., 3-1/8" bowl dia., 13-1/8"L OAL, equipped with all-natural antimicrobial, 3 oz., stainless steel, 13-1/8" OA length, Kool-Touch™one-piece black construction offset handle, safe up to 225°F (107.2°C), fully functional to 350°F (176.6°C), integrated handle

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stopper, Jacob's Pride® Collection, Limited Lifetime Warranty, NSF (Refer to vollrathfoodservice.com for full warranty policy)

4. Services:
   a. 120 Volt, 1-Phase

27) Item #27 Conveyor Toaster
1. Quantity: One (1)
2. Manufacturer: Hatco
3. Model: TQ-10 Toast-Qwik® Conveyor Toaster, horizontal conveyor, countertop design, all bread types toaster, approximately 5 slices/min capacity, painted steel top & aluminized steel construction, 4" legs, 1.8kW, CE, cULus, UL EPH Classified, Made in USA
   a. One year on-site parts & labor warranty, plus one additional year parts only warranty on all Toast-Qwik metal sheathed elements
   b. One (1) 120v/60/1-ph, 1800 watts, 15.0 amps, NEMA 5-15P (domestic voltage), standard

4. Services:
   a. 120 Volt, 1-Phase

28) Item #28 Spare Number

29) Item #29 Cereal Dispenser
1. Quantity: One (1)
2. Manufacturer: Cal-Mil
3. Model: 1499-15 Eco Modern Cereal Dispenser, 18-1/4"W x 13-1/4"D x 24-1/2"H, (3) 2.7L capacity bins, clear acrylic, white wood accents, silver wire frame, BPA Free

30) Item #30 Spare Number

31) Item #31 Display Case
1. Quantity: One (1)
2. Manufacturer: Cal-Mil
3. Model: 22414-110 Aspen Display Case, 15-1/4" x 20-3/4"H x 22"H, ambient, (3) tier, gray-washed pine wood.
   a. One (1) Model 22400-13 Merchandising Display Light Bar, 7-1/2" x 1-1/2" x 5"H, LED, rechargeable, with magnetic strip, for illuminating bakery cases & shelving unit displays.

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4. Services:
   a. 120 Volt, 1-Phase

32) Item #31 Drop-in Cold Well Unit
1. Quantity: One (1)
2. Manufacturer: Hatco
3. Model: CWBP2290-QS Drop-In Refrigerated Well, (2) pan size, top mount, electronic temperature control, condenser unit (cannot be rotated), sight glass, service valves, dryer/filter, insulated with drain, aluminized steel housing, stainless steel bezel, R-290, 1/5 HP, cULus, Made in USA

4. Services:
   a. 120 Volt, 1-Phase

33) Item #33 Breath Guard
1. Quantity: One (1)
2. Manufacturer: Premier Metal & Glass
3. Model: CHOICE™ Adjustable Dual-Service Sneeze Guard, single guard with top shelf, tempered glass with polished edges, adjustable end panels, front mount, 1” OD round stainless support posts with 644/1 narrow above counter surface mount, NSF & cULs listed.
   a. One (1) (Contact Premier Sales Department for Pricing)
   b. One (1) Flat black (049/80350) (Contact Premier Sales Department for Pricing), NSF
   c. One (1) 3/8" Glass, max 60" span (Contact Premier Sales Department for Pricing)
   d. One (1) Both end panels, standard (Contact Premier Sales Department for Pricing)
   e. One (1) Coordinate width of guard with Item 32

34) Item #34 Spare Number

35) Item #35 Spare Number

36) Item #36 Waffle Maker
1. Quantity: Two (2)
2. Manufacturer: Hatco
3. Model FWM1B.515 (Quick Ship) Hatco/Suntec Flip Waffle Maker, 7" round Belgian plate, LED display, on/off, timer/temperature toggle, heavy-duty stainless-

Rebid Documents

steel construction with Teflon® coated aluminum plates, 120v/60/1-ph, 1350 watts, 11.3 amps, NEMA 5-15P.

4. Services:
   a. 120 Volt, 1-Phase

37) Item #37 Hot Food Dispenser (Syrup Dispenser)
1. Quantity: One (1)
2. Manufacturer: Server Products
3. Model: 85480 SY 1.5, SYRUP WARMER & SERVER, 1-1/2-gallon, spigot faucet, thermostat senses food temperature and turns heating element on or off as needed, with thermostat lock, stainless steel, 350 watts, 120V/60/1-ph, 2.9 amps, cord, NEMA 5-15P, NSF, cULus.

4. Services:
   a. 120 Volt, 1-Phase

38) Item #38 Batter Dispenser
1. Quantity: One (1)
2. Manufacturer: Warning
3. Model WBD2GBatter Dispenser, 2-gallon capacity, with base, dishwasher safe, removable stainless steel drip saucer, Tomlison® Spigot, non-skid feet, 304 stainless steel.

39) Item #39 Automatic Pancake Unit (By Vendor, NIC)
1. Quantity: One (1)
2. Manufacturer: Verify
3. Model: Countertop automatic pancake unit, to be provided by vendor
4. Services:
   a. 120 Volt, 1-Phase

40) Item #40 Spare Number

41) Item #41 Coffee maker)
1. Quantity: One (1)
2. Manufacturer: Bunn
3. Model 38700.0013 38700.0013 AXIOM® Twin APS Airpot Coffee Brewer, brews 15 gallon per hour capacity, twin brew head system, LCD display, hot water faucet, digital temperature control, electronic diagnostics, stainless steel fun-

Rebid Documents

nel, brews into 1.9 to 3 liter airpots (sold separately), energy-saver mode, 120/240v/60/1-ph, 6100w, 26 amps, UL, NSF.

a. Eight (8) Model 32130.0000 32130.0000 Airpot, 3.0 liter (102 oz.), lever-action, stainless steel liner, ETL
b. One (1) Model 35728.0005 35728.0005 UNIV-6 APR Universal Airpot Rack, (3) lower & upper racks, displays (6) push-button or lever-action airpots (not included), sponge-lined tray, carbon-steel wire construction
c. One (1) Model 20115.0000 20115.0000 Paper Filters, 9-3/4" x 4-1/4", regular, white (for 12-cup decanter brewers) (1000 each per case, price based on 1-229 lbs total weight - call for price on greater quantities).

4. Services:
   a. 120/208 Volt, 1 Phase
   b. ¼" cold water

42) Item #42 Silverware Tower
1. Quantity: One (1)
2. Manufacturer: Cal-Mil
3. Model 1016-3 Classic Cylinder Display, 5-1/2"W x 8"D x 20"H, 3-tier, vertical, single tower, accommodates (3) cylinders, ABS-plastic, black (cylinders sold separately).
   a. Six (6) St. St. Silverware Cylinders

43) Item #43 Spare Number

44) Item #44 Condiment Organizer and Cup Holder
1. Quantity: One (1)
2. Manufacturer: Cal-Mil
3. Model: SoHo Condiment Organizer, 15-3/4"W x 11-3/4"D x 12"H, (6) compartment, accommodates cups/lids up to 3.75" dia., acrylic insert for stir sticks and packets, black, BPA Free

45) Item #45 Spare Number

46) Item #46 Plate Rack
1. Quantity: Two (2)
2. Manufacturer: Cal-Mil
3. Model: 1236 Plate Holder, 9-1/2"W x 9-1/2"D x 6-1/2"H, accommodates plates up to 8" dia., black wire frame, iron, BPA Free

Rebid Documents

47) Item #46 Napkin Holder
1. Quantity: One (1)
2. Manufacturer: Cal-Mil
3. Model: 1234 Napkin Display, 9-1/2"W x 4-3/4"D x 2"H, accommodates napkin size 4"W x 8"H, bamboo, BPA Free.

48) Item #48 Spare Number

49) Item #49 Ice Maker/Dispenser
1. Quantity: Two (2)
2. Manufacturer: Manitowoc
3. Model IYT0620A Indigo NXT™ Series Ice Maker, cube-style, air-cooled, self-contained condenser, 22"W x 24-1/2"D x 21-1/2"H, production capacity up to 575 lb/24 hours at 70°/50° (465 lb AHRI certified at 90°/70°), easyTouch display with 13 different language options, date/time stamp display, automatic reminder/alert icon, one touch asset information, automatic detection of accessories, continuous operating status, programmable production options (time, weight, day or night), one touch cleaning with displayed instructions, Alpha-San anti-microbial protection, acoustical ice sensing probe, self-diagnostic technology, DuraTech™ exterior, half-dice size cubes, R410 refrigerant, NSF, cULus, CE, ENERGY STAR®.
   a. Two (2) Model WARRANTY-ICE-SC 3 year parts & labor (Machine), 5 year parts & labor (Evaporator), 5 year parts & 3 years labor (Compressor), standard
   b. Two (2) (-161) 115v/60/1-ph, 12.2 amps
   c. Two (2) Model AR-10000-P Arctic Pure® Plus Primary Water Filter Assembly, includes head, shroud, hardware, mounting assembly, & (1) filter cartridge, 15,000 gallon capacity, 0-600 lbs./ice per day
   d. d. Two (2) Model WARRANTY-ARCPURE 3 year parts & labor warranty on cap, housing, hardware, & mounting assembly (does not refer to filter cartridge), standard
   e. eTwo (2) Model SPA162 Vending Ice Dispenser, touchless lever, floor model, 22"W x 31-3/16"D x 54"H, AHRI certified 120-lb capacity, designed for dice or half-dice ice type, bucket filling, stainless steel exterior with vinyl trim, accepts 22" dice or half-dice machines, cULus, CE, NSF, ADA compliant
   f. Two (2) Model WARRANTY-BIN/DISP 3 year parts & labor warranty, standard
   g. Two (2) (-161) 115v/60/1-ph, 1.6 amps, NEMA 5-15P, standard.

4. Services:
   a. Four (2) ¾” Ind Waste

Rebid Documents

b. Two (2) ½" Cold Water
c. Four (2) 120 Volt, 1 Phase

50) Item #50 Spare Number

51) Item #51 Merchandiser Refrigerator
1. Quantity: One (1)
2. Manufacturer: True
3. Model: GDM-12-HC~TSL01 Refrigerated Merchandiser, one-section, True standard look version 01, (3) shelves, (1) Low-E thermal glass hinged door, LED interior lights, powder coated steel exterior, white interior with stainless steel floor, R290 Hydrocarbon refrigerant, 1/6 HP, 115v/60/1-ph, 2.0 amps, NEMA 5-15P, (depth does not include 1" for rear bumpers), cULus, UL EPH Classified, Made in USA'
   a. One (1) 7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
   b. One (1) Self-contained refrigeration standard
   c. One (1) Exterior: Black powder coated steel, standard
   d. One (1) Interior: White aluminum, with white shelving, standar
   e. One (1) Left door hinging
   f. One (1) Lock factory installed, one door model
   g. One (1) Sign, "Self-Serve" blue graphic in lieu of standard
   h. Four (4) TrueFlex bottle organizer
   i. One (1) Castors, 2-1/2"

4. Services:
   a. 120 Volt, 1 Phase

52) Item #51 Merchandiser Refrigerator
1. Quantity: One (1)
2. Manufacturer: True
3. Model: GDM-12F-HC~TSL01 Freezer Merchandiser, one-section, True standard look version 01, -10°F, (3) shelves, (1) triple-pane thermal glass hinged door, LED interior lights, powder coated steel exterior, white interior with stainless steel floor, R290 Hydrocarbon refrigerant, 1/2 HP, 115v/60/1-ph, 4.5 amps, NEMA 5-15P, (depth does not include 1" for rear bumpers), cULus, UL EPH Classified, Made in USA.
   a. One (1) 7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
   b. One (1) Self-contained refrigeration standard

Rebid Documents

c. One (1) Exterior: Black powder coated steel
d. One (1) Interior: White aluminum, with white shelving, standard
e. One (1) Door hinged left standard
f. One (1) Lock factory installed, one door model
g. One (1) Sign, "Frozen Food" silver graphic in lieu of standard
h. One (1) Castors, 2-1/2"

4. Services:
   a. 120 Volt, 1 Phase

PART 3 - EXECUTION

3.01 SUPERVISION

A. Foodservice Contractor (FSC) shall always have a competent supervisor present during progress of the Contractors work.

B. Verify the site conditions prior to installation and notify the Architect and/ or CM/ GC. in writing, of unsatisfactory conditions for proper installation of foodservice equipment.

C. Verify wall, column, door, window and ceiling locations and dimensions prior to approval of shop drawings. Fabrication and setting in place of custom equipment should not proceed until the dimensions and conditions have been coordinated with fabrication details.

D. Verify that wall backing has been provided and is correct for wall supported equipment. Coordinate location for wall backing with CM/ GC. as required prior to installation of equipment.

E. Verify that ventilation ducts are of the correct characteristics and in the required locations as indicated on foodservice plans.

F. Verify that all utilities are available, of the correct characteristics and in the proper locations for final connections of the equipment.

3.02 EXISTING EQUIPMENT – NOT USED

3.03 ASSEMBLY AND SETTING IN PLACE

A. Coordinate sequential setting in place and assembly of all equipment to ensure all utility connections are achieved.

B. Coordinate work and cooperate with other trades working at site toward the orderly progress of the project.

Rebid Documents

C. Keep premises free from accumulation of waste material and rubbish daily. Provide and maintain coverings or other appropriate protection for finished surfaces and other parts of equipment subject to damage during installation.

D. All foodservice equipment shall be assembled and set in place in accordance with the manufacturer's instructions.

E. Set non mobile items securely in place, level and adjust to the correct height. Anchor to finished floor and/ or wall were indicated and where required for sustained operation and use without shifting or dislocation. Conceal anchorages wherever possible.

F. Complete field assembly joints by welding, bolting and gasketing, or similar methods as specified. Grind welds smooth and polish.

G. Provide closure plates and strips where required as per health code requirements. The trim shall match the finish of adjacent equipment and finishes.

H. Provide access holes and/or ferrules on equipment for piping, drains, electrical outlets, conduits, etc., as required to coordinate installation of kitchen and Foodservice equipment work of the other contractors on project.

I. Provide sealants, Dow Corning 732 RTV or equal white and grey silicone equipment to make joints airtight, waterproof, vermin proof and sanitary per health code requirements. Wipe excess out of joint to fillet radius.

J. Repair of all damage to premises as result of this installation, and removal of all debris left by those engaged in installation.

K. Protect equipment from damage during construction and installation. Take proper precautions to protect counter tops and finished items.

L. Provide factory supervision and/or factory authorized supervision for installation of items such as conveyors, flight dish machines, pulpers, etc.

3.04 CLEANING

A. Upon completion of installation in foodservice areas, remove protective coverings on equipment.

B. Collect any warranty cards and operation and maintenance manuals attached to or inside of equipment and submit them to CM/ GC as described in Section III, 3.5.

C. Have all Foodservice equipment fixtures broom cleaned and ready for operation when the building is turned over to Owner. All sanitizing of equipment shall be completed by the Owner unless otherwise indicated.

Rebid Documents

3.05 ADJUSTMENT, TESTING AND TRAINING

A. Commission, Test, and adjust equipment, controls, and safety devices to ensure proper working order and conditions.

B. Repair or replace equipment which is found to be defective.

C. When cleaning, testing, and adjusting have been completed, arrange for demonstration times at Owner's convenience, but during normal working hours. Demonstrations shall be done by competent, trained personnel, thoroughly familiar with the operation, techniques of usage, capacities, and maintenance of the equipment.

3.06 OPERATION AND MAINTENANCE MANUALS

A. Commission, Test, and adjust equipment, controls, and safety devices to ensure proper working order and conditions. Repair or replace equipment which is found to be defective. When cleaning, testing, and adjusting have been completed, arrange for demonstration times at Owner's convenience, but during normal working hours. Demonstrations shall be done by competent, trained personnel, thoroughly familiar with the operation, techniques of usage, capacities, and maintenance of the equipment.

3.07 WARRANTY

A. Equipment, parts, and labor under this contract shall be warranted for a period of one (1) calendar year from the date of final completion.

B. Condensing units shall be further warranted on a prorated basis for an additional four- (4) years, exclusive of labor. Refrigeration warranties shall include replacement of refrigerant caused by a fault or leak in the system.

END OF SECTION 11 4000

Rebid Documents

01/05/2026

Boelter
Foodservice Design, Equipment & Supply

Project:
Parshall Hotel 100% CD
26.01.05
Parshall, ND

From:
Boelter
Dennis Hahn
7120 Northland Ter N
Minneapolis, MN 55428
612-851-2309 (Contact)

To:

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 1 - MOP SINK CABINET (1 EA REQ'D)

John Boos PBJC-224884-R-X

Janitor Cabinet, 48"W x 22-1/2"D x 84"H overall size, enclosed cabinet with open back for plumbing, (2) lockable louvered swing doors, right side includes: 20" x 16" x 12" deep mop sink with 3-1/2" drain, (1) over head shelf, (2) side mounted mop/broom holder with locking cam and panel-less back, left side includes: (3) shelves and bottom storage area, includes (1) service faucet with vacuum breaker and 120" hose, 18/300 stainless steel, NSF (Available in Effingham and Nevada)

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1									

WASTE

	INDIRECT SIZE	DIRECT SIZE
1		

PLUMBING 1 REMARKS

3-1/2" drain opening

Rebid Documents

SPEC SHEET

"PBJC-48" JANITOR CABINET

16GA Sink Bowl



FEATURES:

- 18 GA Type 300 Stainless Steel With #4 Polish Satin Finish
- (2) Vented Swing Doors With Lock Handles
- Available In Left Side or Right Side Configuration
- MOP SINK Compartment Side Includes:
  - (1) Oversized Mop Sink 20"x16"x12" with 3-1/2" Drain
  - (1) Overhead Storage Shelf With Panel Backing
  - (2) Mop/Broom Holders With Locking Cam On Front Shelf
  - Panel-Less Back
- Storage Compartment Side Includes:
  - (3) Storage Shelves
  - Bottom Storage Area
- Includes (1) Heavy Duty Service Faucet (PBF-SS-6-X)
- Includes (1) 10' Service Faucet Hose (PB-HOSE-120-X)

SPECIFICATIONS:

- Cabinet: Stainless Steel Cabinets TIG Welded, Exposed Edges Are Polished To Match Adjacent Surface
- Cabinet: 18GA Type 300 Stainless Steel With #4 Polish, Satin Finish
- 18GA Type 300 Cabinet
- 16GA Type 300 Sink Bowl And Deck

CERTIFICATIONS:

NSF



PBF-SS-6



PB-HOSE-120

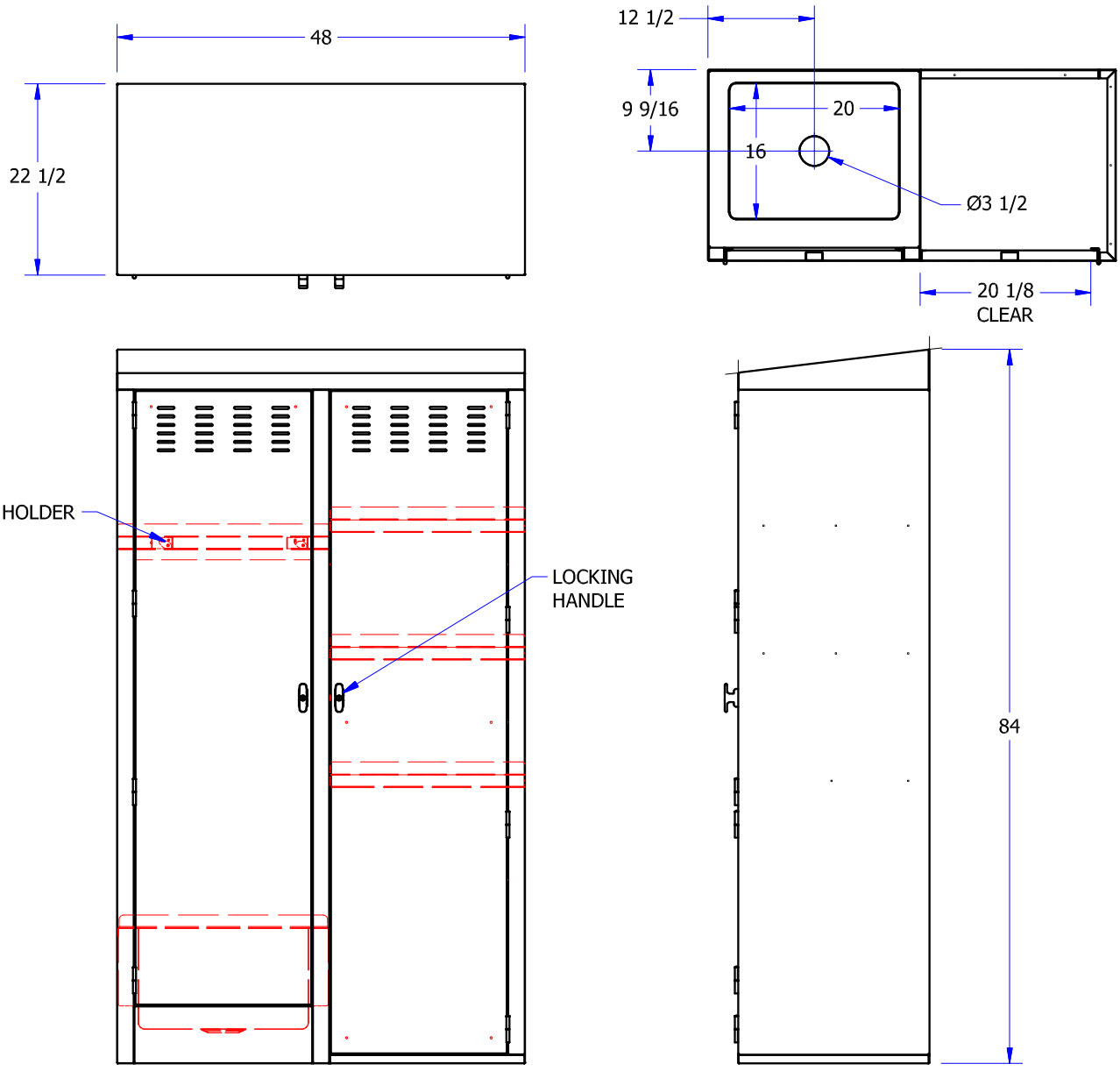


"PBJC-48" JANITOR CABINET

MODEL	DESCRIPTION	OVERALL SIZE (L X W X H)	MOP SINK SIZE	WEIGHT (LBS)
PBJC-224884-L	Left Hand	48"x22"x84"	20"x16"x12"	292
PBJC-224884-R	Right Hand	48"x22"x84"	20"x16"x12"	292

ALL DIMENSIONS ARE TYPICAL. TOLERANCE +/- .500". JOHN BOOS & CO. RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

DETAILED SPECIFICATIONS



"PBJC-48" JANITOR CABINET

MODEL	DESCRIPTION	OVERALL SIZE (L X W X H)	MOP SINK SIZE	WEIGHT (LBS)
PBJC-224884-L	Left Hand	48"x22"x84"	20"x16"x12"	292
PBJC-224884-R	Right Hand	48"x22"x84"	20"x16"x12"	292

ALL DIMENSIONS ARE TYPICAL. TOLERANCE +/- .500". JOHN BOOS & CO. RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 2 - WORK TABLE (1 EA REQ'D)

Custom Fab ST. STL.

Stainless Steel fabricated worktable as per plans and elevations 2/FS300. And as specifications 11 40 00 – 2.2-B.
Provide with the following:
One (1) Table edge front and sides to be A/FD-1
One (1) 6” high wall splash per A/FD-2
Two (2) St. Stl. Legs per FD-12
One (1) Removable undershelf

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

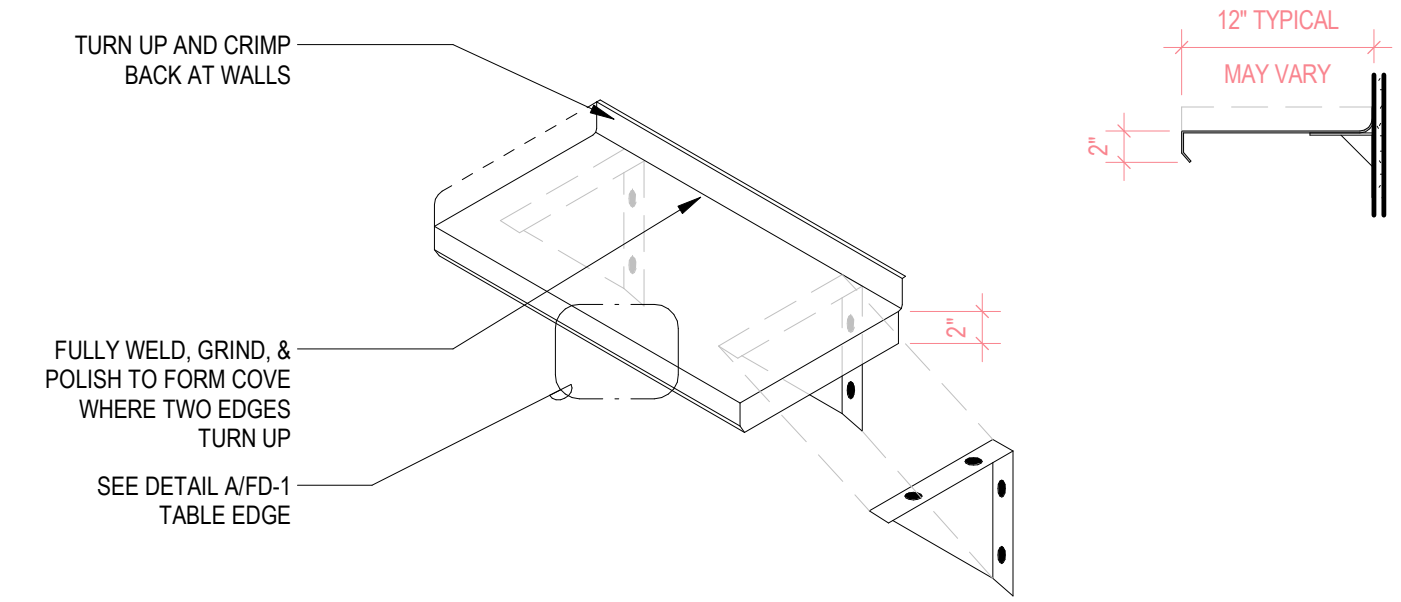
01/05/2026

ITEM# 3 - WALL SHELF (2 EA REQ'D)

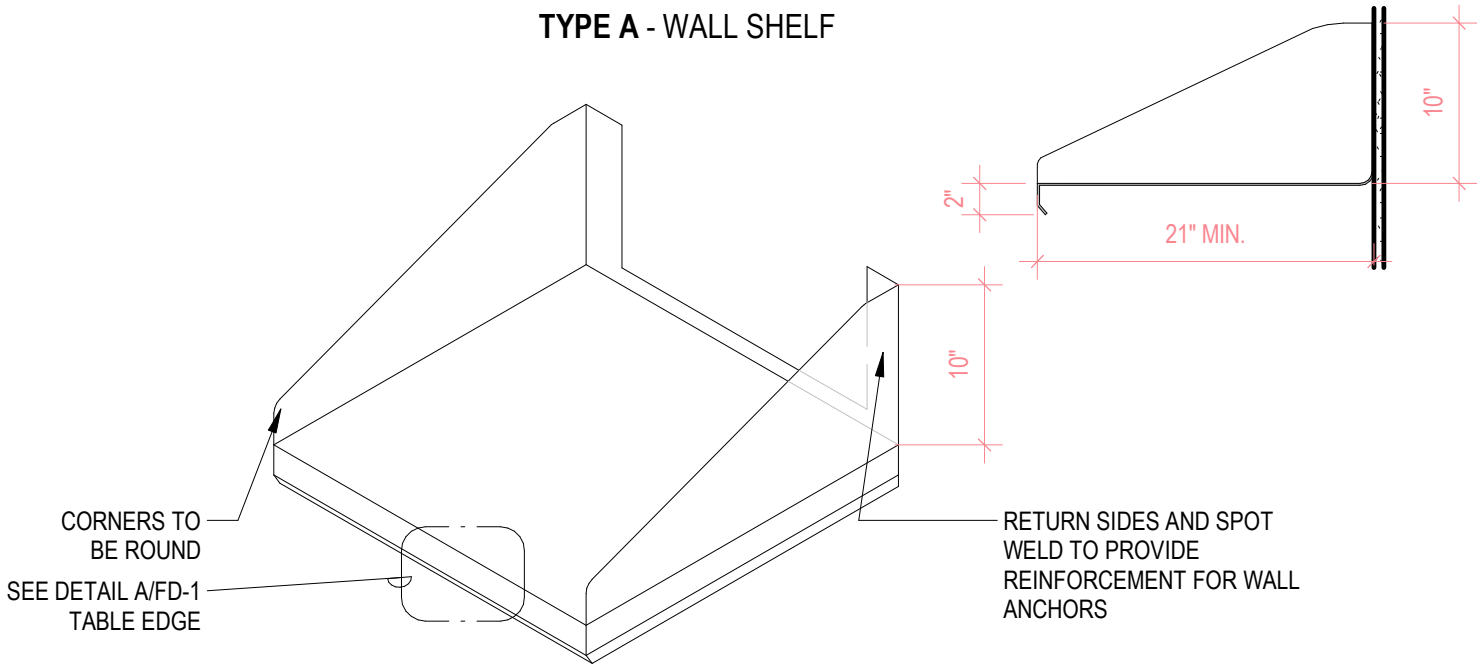
Custom Fab ST. STL.

Stainless Steel fabricated wall shelf to be 12” deep for general use as per plans and elevations 2/FS300 and detail FD-30 and as specifications 11 40 00 – 2.2-B. Provide with the following:
Install shelf 18” above working surface unless otherwise noted on elevations.

Rebid Documents



TYPE A - WALL SHELF



TYPE B - MICROWAVE SHELF

GENERAL CONSTRUCTION NOTES:

1. CONSTRUCTION MEETS NSF STANDARD 2.
2. WALL SHELF TO BE 12" DEEP UNLESS OTHERWISE NOTES IN SPECIFICATIONS.
3. MICROWAVE SHELF DEPTH AND WIDTH TO ACCOMMODATE MICROWAVE; SEE SPECIFICATIONS SECTION 11 40 00.
4. 16-GUAGE STAINLESS STEEL WALL SHELF AND MICROWAVE SHELF.
5. 14-GAUGE STAINLESS STEEL BRACKET @ 60" O.C. MAX.
6. INSTALL SHELF 18" ABOVE COUNTER TOP OR AS SPECIFIED ON ELEVATION.
7. SECURE BRACKET TO WALL WITH STAINLESS STEEL FASTENERS.
8. SECURE BRACKET TO SHELF WITH STAINLESS STEEL STUDS, LOCK WASHERS, AND CAP NUTS.

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WALL SHELVES

Rebid Documents

REFERENCE ONLY

FD-30

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 4 - TRACK SHELVING SYSTEM (1 KT REQ'D)

Metro TT12-E2460M2160P

Top-Track® EZ Order Model, nominal 12 ft. system length x 5 ft. width, consists of (1) 7-1/2 ft. track set, (8) 86" posts, (1) 24" tie bar end kit, (12) 74" Top-Track® mobile posts, (3) 21" mobile kits (stainless steel casters, bumpers, rollers), (12) 21"D x 60"W shelves, (8) 21"D x 60"W shelves, Super Erecta Pro polymer/wire shelving, NSF

{11.12}

Super Erecta® Top-Track™ High-Density Storage

For Super Erecta® (wire, solid, drop mat, baskets), Super Adjustable Super Erecta®, and Super Erecta Pro®



TB TrackBuilder

- **Maximizes Storage Capacity:** Top-Track™ can increase the storage capacity of a given area up to 40%. The system allows more storage units to fit in a defined space. A movable, open aisle allows full access to each entire shelving unit thus eliminating hard to reach or "dead" spaces.
- **Easy Access:** The overhead track system guides the mobile units and opens an access aisle between any two units, whenever it is needed. The track is above the storage units enabling easy access for employees or for utility carts, simplifying the material handling task.
- **Cost-Saving Performance:** This efficient utilization of space addresses the storage needs of new or growing operations. In a new facility, less square footage would have to be dedicated to storage. In growing operations, MetroMax® Top-Track™ can eliminate the need to expand the facility to handle increasing storage requirements, greatly reducing the costs associated with a growing business's needs.
- **Clean Design:** Guide tracks are installed overhead enabling easy cleaning of floors.
- **Increased Productivity:** With reduced square footage dedicated to storage, Top-Track maximizes the amount of productive "front of the house" space available, increasing daily revenues. The system compensates for uneven floor surfaces. Floor should be smooth and free from large cracks or raised obstacles.
- **Uniquely Interchangeable:** Mix and match Super Erecta shelf styles to optimize the storage space. (Note Spec Sheet #)

Super Erecta wire	(#10.01)
Super Erecta solid	(#10.20)
Super Erecta drop mat	(#10.12)
Super Erecta basket shelf	(#10.85)
Super Adjustable (quick adjust)	(#10.01A)
Super Erecta Pro (polyme rshelf mats)	(#10.80)

NSF

All Metro Catalog Sheets are available on our website: **metro.com**

LO2-039 | 12/24

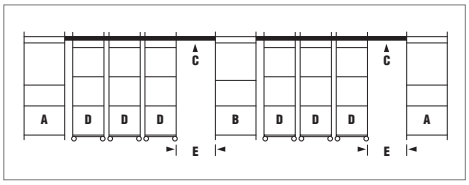
Information and specifications are subject to change without notice.
Please confirm at time of order.
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metro.com
North Washington Street, Wilkes-Barre, PA 18705
Product Information. U.S. and Canada: 1.800.992.1776
Outside U.S. and Canada: metro.com/contactus

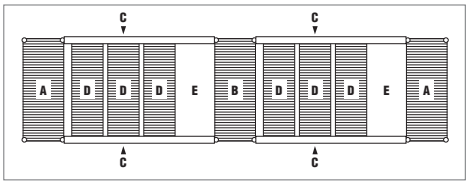
{11.12} Super Erecta® Top-Track™ High-Density Storage

SYSTEM COMPONENTS
- **A** = Stationary End Units
- **B** = Stationary Intermediate Unit (Optional)
- **C** = Track Set
- **D** = Mobile Units
- **E** = Open Aisle

FRONT VIEW



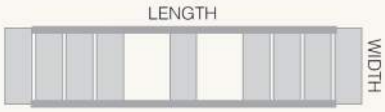
OVERHEAD VIEW



System Measurements

- Actual length: Nominal track length + nominal width of each end unit + 2" (51mm)
- Actual width: Nominal Shelf length + 3-1/2" (89mm)
- Actual height of system is approximately 87" (2210mm)

It is recommended that the tracks are installed at least 5" (127mm) from the wall.



Mobile Unit Measurements

To accommodate bumpers, the actual size of a mobile unit is 2.5" (63.5 mm) wider than the shelf width shown. For example, an 18" (457 mm) wide unit is actually 20.5" (521 mm).

Choosing shelves: All end, intermediate, and mobile units must be 18" (457 mm) or wider.

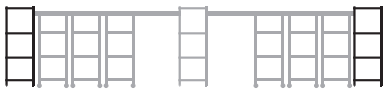
Choose from Super Erecta and Super Adjustable options.
Super Adjustable shelves must be combined with top and bottom Super Erecta round collar shelves for Top-Track.

Stationary End Unit Kit (Choose one kit for each system)

Includes 86" high posts (2184mm) high stationary posts, and hardware necessary for connecting stationary end units to tracks. Shelves are sold separately.

Fits Shelf Width (in.)	mm	Approx. Pkd. Wt. (lbs.)	(kg).	Chrome Cat. No.	Metroseal Green Cat. No.	Metroseal Gray Cat No.	Stainless Steel Cat. No
18	457	50.0	22.7	**TTE18C**	**TTE18K3**	**TTE18K4**	**TTE18S**
21	530	50.5	22.9	**TTE21C**	**TTE21K3**	**TTE21K4**	**TTE21S**
24	610	51.0	23.1	**TTE24C**	**TTE24K3**	**TTE24K4**	**TTE24S**

Note: All kits come with plated foot plates. Stainless Steel Foot plates must be ordered separately



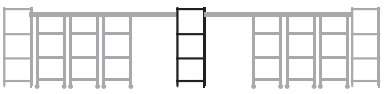
Traditional Configuration with stationary end units. ONE End Unit Kit is required per system. Shelves are ordered separately.

Stationary Intermediate Units

Required when overall desired track length exceeds 21' (6405mm). Optional when track length is under 21' (6405mm). Includes 86" high posts (2184mm) high stationary posts, and hardware necessary for connecting one stationary intermediate unit to tracks. Shelves are sold separately.

Fits Shelf Width (in.)	mm	Approx. Pkd. Wt. (lbs.)	(kg).	Chrome Cat. No.	Metroseal Green Cat. No.	Metroseal Gray Cat No.	Stainless Steel Cat. No
18	457	27.1	12.3	**TTA18C**	**TTA18K3**	**TTA18K4**	**TTA18S**
21	530	27.6	12.5	**TTA21C**	**TTA21K3**	**TTA21K4**	**TTA21S**
24	610	28.1	12.7	**TTA24C**	**TTA24K3**	**TTA24K4**	**TTA24S**

Note: All kits come with plated foot plates. Stainless Steel Foot plates must be ordered separately



ONE Intermediate Kit (see rules). Shelves are ordered separately.

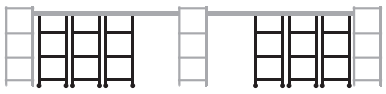
Mobile Units (One kit required per mobile unit)

Includes four 74" (1880mm) high mobile posts, four casters, donut bumpers, guide rollers, and other hardware to assemble a mobile unit. Shelves are sold separately.

Using 18" (457mm) wide mobile units: Maximum allowable shelf length is 60" (1524mm). Maximum of five 18" (457mm) units are allowable between two stationary units.

Fits Shelf Width (in.)	mm	Approx. Pkd. Wt. (lbs.)	(kg).	Chrome Cat. No.	Metroseal Green Cat. No.	Metroseal Gray Cat No.	Stainless Steel Cat. No
18	457	32.0	14.5	**TTM18C**	**TTM18K3**	**TTM18K4**	**TTM18S**
21	530	33.0	15.0	**TTM21C**	**TTM21K3**	**TTM21K4**	**TTM21S**
24	610	34.0	15.4	**TTM24C**	**TTM24K3**	**TTM24K4**	**TTM24S**

Note: All chrome kits come with chrome plated casters. All Metroseal and Stainless kits come with stainless casters.



ONE Mobile kit per mobile unit. Example: (6) needed in the above picture. Shelves are ordered separately.

Under normal conditions, aisle width of 30"-36" (760-914mm) is recommended. The storage of very large objects within the system, however, may require an aisle width larger than 36" (914mm).

{11.12} Super Erecta® Top-Track™ High-Density Storage

Track Sets

Includes tracks and hardware needed to assemble track runs up to 21' (6400mm).

Dimensions Length (ft.)	(mm)	Approx. Pkd. Wt. (lbs.)	(kg)	Super Erecta Brite Cat. No.
2.5	762	15.0	6.8	**TTS2.5NA**
6	1828	40.5	18.2	**TTS6NA**
7	2135	47.5	21.3	**TTS7NA**
8	2440	56.0	25.2	**TTS8NA**
9	2743	62.5	28.1	**TTS9NA**
10	3048	69.5	31.2	**TTS10NA**
11	3352	76.5	34.4	**TTS11NA**
12	3657	83.5	37.5	**TTS12NA**
13	3962	92.0	41.4	**TTS13NA**

Dimensions Length (ft.)	(mm)	Approx. Pkd. Wt. (lbs.)	(kg)	Chrome Cat. No.
14	4267	98.0	44.1	**TTS14NA**
15	4572	106.5	47.9	**TTS15NA**
16	4877	113.5	51.0	**TTS16NA**
17	5182	121.0	54.4	**TTS17NA**
18	5486	128.0	58.0	**TTS18NA**
19	5791	135.0	60.7	**TTS19NA**
20	6096	142.0	63.9	**TTS20NA**
21	6400	149.0	67.0	**TTS21NA**

Note: TTS2.5NA includes a joining kit to connect the tracks to other track sets.

For best performance on heavily loaded systems:

1. For configurations using shelves 60" (1524mm) or longer and managing heavier loads choose a more rigid shelving option. Wire shelving – Use all Super Erecta or Super Erecta Pro round collar shelves.
2. Mobile Units: If 18" (457mm) wide mobile units are planned, the maximum allowable size shelf is 60" (1524mm) long. If 18" (457mm) wide by 60" (1524mm) long mobile units are planned, a maximum of five 18" (457mm) mobile units are allowable between two stationary units. 18" (457mm), 21" (530mm) and 24" (610mm) wide mobile units can be intermixed in a given system. The standard system requires 74" (1880mm) posts on the mobile units.
3. Weight capacities (evenly distributed) - Mobile Units. Super Erecta, Super Erecta Pro - up to 900lbs. (408kg)
4. When using long tracks, 13ft or longer, securing the stationary units to the floor will help to keep the system in alignment.

Additional Configuration Notes

1. Standard Top-Track models include 86" (2185mm) stationary posts and 74" (1880mm) Top-Track mobile posts. If a taller system or shorter system is required, consult Metro Engineering.
2. Existing Metro Super Erecta, Super Adjustable, and Super Erecta Pro can be retrofitted as part of a Top-Track installation.

Installation Guidelines

1. It is recommended that the tracks are installed a minimum of 5" (127mm) from the wall.
2. It is the discretion of the user to install the end units to the floor.
3. Floor should be level, smooth, and free from cracks and raised objects.
4. For new construction, it is recommended that flooring of suitable durability is used in areas where Top-Track will be installed. When such flooring is not an option, floor pad protectors are recommended to protect soft flooring materials from wear and tear.
5. Enclosure panels may be used on mobile units. Panels must be mounted to ensure they do not interfere with the tracks.

Replacement Parts	Model No.
Rollers (bag of 4)	**HDWE-TTROLL**
Bumpers for mobile units	**9992DB**
Caster*	**5MPOR** (plated stem/horn); **5MPORSA** (stainless steel stem/horn)
Track joining kits	**HDWE-TTJOIN**
Hardware for track	**RPHDWE-TTECAP**
Footplates*	**9993Z** (zinc plated), **9993S** (Stainless Steel)

For older Top-Track systems installed prior to 2002, consult your Metro representative.

{11.12}

Super Erecta® Top-Track™ High-Density Storage

Top-Track Floor Pad Protectors

- Compensate for soft flooring materials by protecting the floor from normal wear and tear from mobile units.
- To make more applicable for sterile environments a bead of silicone (not included) is recommended to seal the seam between the floor pads and the floor.
- Material: aluminum

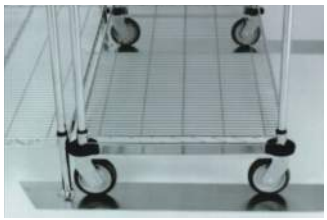
For Track Length (ft)	(mm)	Model No.	For Track Length (ft)	(mm)	Model No.
6	1828	**FPS6N**	14	4267	**FPS14N**
7	2135	**FPS7N**	15	4572	**FPS15N**
8	2440	**FPS8N**	16	4877	**FPS16N**
9	2743	**FPS9N**	17	5182	**FPS17N**
10	3048	**FPS10N**	18	5486	**FPS18N**
11	3353	**FPS11N**	19	5791	**FPS19N**
12	3657	**FPS12N**	20	6096	**FPS20N**
13	3962	**FPS13N**	21	6400	**FPS21N**

Top-Track Wall Mount Bracket

Used to attach one set of tracks to the wall. Eliminates the need for a stationary end unit. Includes one pair of plated wall brackets. Hardware to attach the brackets to the wall is NOT included.
Model No. TTWM



TTWM



Top-Track® Floor Protectors

Top-Track Stop Plate Kit

Used in conjunction with the Wall Mount Bracket kit. The aluminum stop plates bolt to the underside of the track next to the wall brackets to prevent mobile units from bumping into the wall.
Model No. TTSTP



TTSTP

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 5 - SPARE NO.

<Spare No.>

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 6 - REACH-IN FREEZER (1 EA REQ'D)

True Mfg. - General Foodservice STG2F-2S-HC

SPEC SERIES® Freezer, reach-in, two-section, -10°F, (2) stainless steel doors with locks, cam-lift hinges, digital temperature control, (6) gray shelves, LED interior lights, stainless steel front, aluminum sides, aluminum interior, 5" castors, R290 Hydrocarbon refrigerant, 1-1/4 HP, 115v/60/1-ph, 9.4 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA, ENERGY STAR®

ACCESSORIES

Mfr	Qty	Model	Spec
True Mfg. - General Foodservice	1		7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
True Mfg. - General Foodservice	1		Left door hinged left, right door hinged right standard
True Mfg. - General Foodservice	1		(3) vinyl shelves & shelf supports standard per section
True Mfg. - General Foodservice	1		5" castors (set of 4), standard

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	115	60	1	Cord & Plug		5-15P	9.4		1-1/4		15.0

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ph. 636.240.2400 • toll free 800.325.6152 • fax 636.272.2408 • parts fax 636.272.9471 • www.truemfg.com

Project Name	Location		AIA #
Item #	Qty	Model #	SIS #

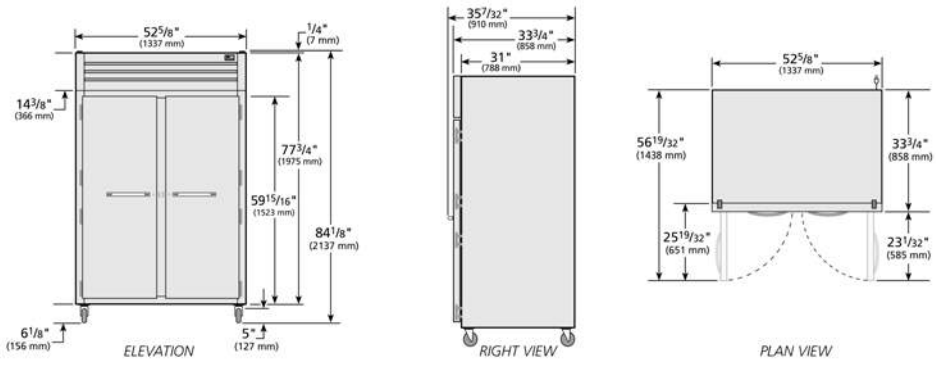
SPEC SERIES®

REACH-IN SOLID SWING DOOR FREEZERS WITH HYDROCARBON REFRIGERANT

models	STR2F-2S-HC	STA2F-2S-HC	STG2F-2S-HC



plan view



Specifications subject to change without notice.
Chart dimensions are roundedup to the nearest ⅛" (millimeters rounded up to the next whole number).

STR2F-2S-HC

Exterior	Stainless steel door, front & sides.
Interior	Stainless steel side walls, back, floor, door liner, & ceiling.
Shelving	(1) Interior kit option included per full section, factory installed.

STA2F-2S-HC

Exterior	Stainless steel door, front & sides.
Interior	Aluminum side walls & back. Stainless steel floor & ceiling.
Shelving	(3) Heavy duty, chrome plated, wire shelves per section.

STG2F-2S-HC

Exterior	Stainless steel door & front, with matching aluminum sides.
Interior	Aluminum side walls & back. Stainless steel floor & ceiling.
Shelving	(3) Heavy duty, PVC coated, wire shelves per section.

SPECIFICATIONS

Dimensions	in.	mm.
Length	52⅝	1337
Depth	33¾	858
Height	77¾	1975
Electrical	**U.S.**	**International**
Horsepower	1¼	N/A
Amps	9.4	N/A
Voltage	115/60/1	
NEMA	5-15P	
Cord Length	9 ft.	2.74 M.

115/60/1
NEMA-5-15R

* Height does not include 6⅛" (156 mm) for castors or 6" (153 mm) for optional legs. Height does not include ¼" (7mm) for system mechanical components.
† Depth does not include 1½ for door handle.

MADE WITH INNOVATION IN THE USA · 7 YEAR COMPRESSOR WARRANTY USA and Canada · ENERGY STAR · c UL us · natural refrigerant.

6/20 Printed in U.S.A.

Approvals

Available at

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Project Name	Location		AIA #
Item #	Qty	Model #	SIS #

SPEC SERIES®

REACH-IN SOLID SWING DOOR FREEZERS WITH HYDROCARBON REFRIGERANT

models	STR2F-2S-HC	STA2F-2S-HC	STG2F-2S-HC



standard features

REFRIGERATION SYSTEM
- Factory engineered, self-contained, capillary tube system using environmentally friendly R290 hydrocarbon refrigerant that has zero (0) ozone depletion potential (ODP), & three (3) global warming potential (GWP).
- High capacity, factory balanced refrigeration system that maintains -10°F (-23.3°C) temperatures. Ideal for both frozen foods and ice cream.
- State of the art, electronically commutated evaporator and condenser fan motors. ECM motors operate at higher peak efficiencies and move a more consistent volume of air which produces less heat, reduces energy consumption and provides greater motor reliability.
- Top mounted refrigeration system with evaporator positioned out of food zone to maximize capacity.
- Automatic defrost system time-initiated, temperature-terminated. Saves energy consumption and provides shortest possible defrost cycle.
- Automatic evaporator fan motor delay during defrost cycle.

CABINET CONSTRUCTION
- Insulation - entire cabinet structure and solid door are foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- 5" (127 mm) diameter plate castors - locks provided on front set.

DOORS
- Lifetime guaranteed bolt style door locks standard.
- Lifetime guaranteed heavy duty all metal working door handles.
- Positive seal self-closing door with 120° stay open feature. Lifetime guaranteed external cam lift door hinges, four (4) per door section.
- Magnetic door gaskets of one piece construction, removable without tools for ease of cleaning.

SHELVING
- One (1) factory installed interior kit option. Four (4) different interior kits available (see Kit Options). Pilasters and tray slides are factory installed at no charge.

LIGHTING
- LED interior lighting, safety shielded.

MODEL FEATURES
- Exterior digital temperature display, available with either °F or °C .
- Evaporator epoxy coated to eliminate the potential of corrosion
- Curb mounting ready.
- NSF/ANSI Standard 7 compliant for open food product.

ELECTRICAL
- Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.

OPTIONAL FEATURES/ ACCESSORIES
(upcharge & lead times may apply)
- 6" (153 mm) standard legs.
- 6" (153 mm) seismic/flanged legs.
- 6" (153 mm) stainless steel legs.
- Field reversible hinge.
- Additional shelves.
- Stainless back. (STR, STA, STG)
- Security package.

SHELVING KIT OPTIONS
- STR series kits factory installed at no charge. STA & STG series kits field installed, upcharge applies, lead times may apply.
- Kit #1: Nine (9) sets of #1 type tray slides and pilasters (field installed), bottom support of one (1) 18"L x 26"D (458 mm x 661 mm) pan or two (2) 14"L x 18"D (356 mm x 458 mm) pans.
- Kit #2: One (1) set half-section #2 steel rod tray slides and pilasters (field installed), rim support of one (1) 18"L x 26"D (458 mm x 661 mm) pan.
- Kit #3: Six (6) sets of universal type tray slides and pilasters (field installed), bottom support of one (1) 18"L x 26"D (458 mm x 661 mm) pan, two (2) 14"L x 18"D (356 mm x 458 mm) pans or two (2) 12"L x 20"D (305 mm x 508 mm) pans.
- Kit #4: Three (3) chrome shelves 26 5/16"L x 21 9/16"D (669 mm x 548 mm). Optional wall mounted shelf support pilasters (field installed) with four (4) shelf clips per shelf available; adjustable on ½" (13 mm) increments (must order at time of cabinet order).
- Additional kit option components available individually.

3 YEAR PARTS + LABOR 7 YEAR COMPRESSOR WARRANTY
(U.S.A. and Canada only)

METRIC DIMENSIONS ROUNDED UP TO THE NEAREST WHOLE MILLIMETER

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

KCL	Model	Elevation	Right	Plan	3D	Back
	ST( )2F-2S-HC					

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 7 - REACH-IN REFRIGERATOR (1 EA REQ'D)

True Mfg. - General Foodservice STG2R-2S-HC

SPEC SERIES® Refrigerator, reach-in, two-section, (2) stainless steel doors with locks, cam-lift hinges, digital temperature control, (6) gray shelves, LED interior lights, stainless steel front, aluminum sides, aluminum interior, 5" castors, R290 Hydrocarbon refrigerant, 1/2 HP, 115v/60/1-ph, 5.9 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA

ACCESSORIES

Mfr	Qty	Model	Spec
True Mfg. - General Foodservice	1		7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
True Mfg. - General Foodservice	1		Left door hinged left, right door hinged right standard
True Mfg. - General Foodservice	1		(3) vinyl shelves & shelf supports standard per section
True Mfg. - General Foodservice	1		5" castors (set of 4), standard

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	115		1	Cord & Plug		5-15P	5.9		1/2		

Rebid Documents

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Project Name	Location		AIA #
Item #	Qty	Model #	SIS #

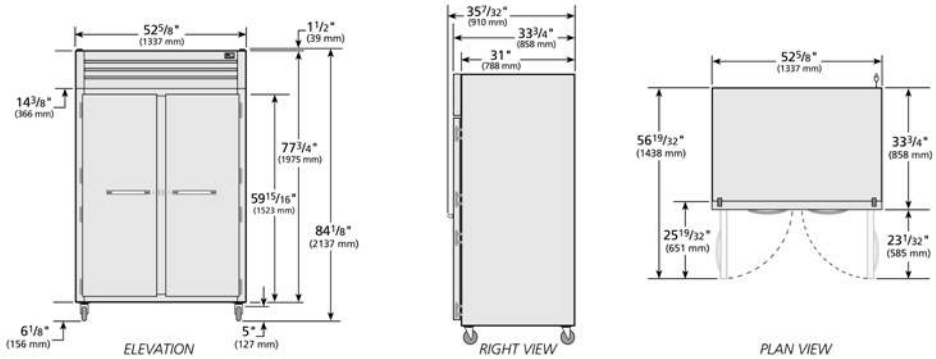
SPEC SERIES®

REACH-IN SOLID SWING DOOR REFRIGERATOR WITH HYDROCARBON REFRIGERANT

models	STR2R-2S-HC	STA2R-2S-HC	STG2R-2S-HC



plan view



STR2R-2S-HC

Exterior	Stainless steel door, front & sides.
Interior	Stainless steel side walls, back, floor, door liner, & ceiling.
Shelving	(1) Interior kit option included per full section.

STA2R-2S-HC

Exterior	Stainless steel door, front & sides.
Interior	Aluminum side walls & back. Stainless steel floor & ceiling.
Shelving	(3) Heavy duty, crome plated, wire shelves per section.

STG2R-2S-HC

Exterior	Stainless steel door, with matching aluminum sides.
Interior	Aluminum side walls & back. Stainless steel floor & ceiling.
Shelving	(3) Heavy duty, PVC coated, wire shelves per section.

SPECIFICATIONS

Dimensions	in.	mm.
Length	52⅝	1337
Depth	33¾	858
Height	77¾	1975
Electrical	**U.S.**	**International**
Horsepower	½	N/A
Amps	5.9	N/A
Voltage	115/60/1	
NEMA	5-15P	
Cord Length	9 ft.	2.74 M.

115/60/1
NEMA-5-15R

* Height does not include 6⅛" (156 mm) for castors or 6" (153 mm) for optional legs.
† Depth does not include 1½ for door handle.

Specifications subject to change without notice.
Chart dimensions are roundedup to the nearest ⅛" (millimeters rounded up to the next whole number).

MADE WITH INNOVATION IN THE USA · 7 YEAR COMPRESSOR WARRANTY USA and Canada · ENERGY STAR · c UL us · natural refrigerant.

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Approvals

Available at

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Project Name	Location		AIA #
Item #	Qty	Model #	SIS #

SPEC SERIES®

REACH-IN SOLID SWING DOOR REFRIGERATOR WITH HYDROCARBON REFRIGERANT

models	STR2R-2S-HC	STA2R-2S-HC	STG2R-2S-HC



standard features

REFRIGERATION SYSTEM

- Factory engineered, self-contained, capillary tube system using environmentally friendly R290 hydrocarbon refrigerant that has zero (0) ozone depletion potential (ODP), & three (3) global warming potential (GWP).
- High capacity, factory balanced refrigeration system that maintains cabinet temperatures of 33°F to 38°F (.5°C to 3.3°C) for the best in food preservation.
- State of the art, electronically commutated evaporator and condenser fan motors. ECM motors operate at higher peak efficiencies and move a more consistent volume of air which produces less heat, reduces energy consumption and provides greater motor reliability.
- Top mounted refrigeration system with evaporator positioned out of food zone to maximize capacity.
- Electronic control.

CABINET CONSTRUCTION

- Insulation - entire cabinet structure and solid door are foamed-in-place using Ecomate. A high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- 5" (127 mm) diameter plate castors - locks provided on front set.

DOORS

- Lifetime guaranteed bolt style door locks.
- Lifetime guaranteed heavy duty all metal working door handles.
- Positive seal self-closing doors with 120° stay open feature. Lifetime guaranteed external cam lift door hinges, four (4) per door section.
- Magnetic door gaskets of one piece construction, removable without tools for ease of cleaning.

LIGHTING

- LED interior lighting, safety shielded.

MODEL FEATURES

- Exterior digital temperature display, available with either °F or °C .
- Evaporator epoxy coated to eliminate the potential of corrosion.
- Curb mounting ready.
- NSF/ANSI Standard 7 compliant for open food product.

ELECTRICAL

- Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.

OPTIONAL FEATURES/ ACCESSORIES

(upcharge & lead times may apply)

- 6" (153 mm) standard legs.
- 6" (153 mm) seismic/flanged legs.
- 6" (153 mm) stainless steel legs.
- Field reversible hinge.
- Additional shelves.
- Stainless back. (STR, STA, STG)
- Security package.

SHELVING KIT OPTIONS

- STR series kits factory installed at no charge. STA & STG series kits field installed, upcharge applies, lead times may apply.
- Kit #1: Nine (9) sets of #1 type tray slides and pilasters (field installed), bottom support of one (1) 18"L x 26"D (458 mm x 661 mm) pan or two (2) 14"L x 18"D (356 mm x 458 mm) pans.
- Kit #2: One (1) set half-section #2 steel rod tray slides and pilasters (field installed), rim support of one (1) 18"L x 26"D (458 mm x 661 mm) pan.
- Kit #3: Six (6) sets of universal type tray slides and pilasters (field installed), bottom support of one (1) 18"L x 26"D (458 mm x 661 mm) pan, two (2) 14"L x 18"D (356 mm x 458 mm) pans or two (2) 12"L x 20"D (305 mm x 508 mm) pans.
- Kit #4: Three (3) chrome shelves 26 5/16"L x 21 9/16"D (669 mm x 548 mm). Optional wall mounted shelf support pilasters (field installed) with four (4) shelf clips per shelf available; adjustable on ½" (13 mm) increments (must order at time of cabinet order).
- Additional kit option components available individually.

3 YEAR PARTS + LABOR 7 YEAR COMPRESSOR WARRANTY (U.S.A. and Canada only)

METRIC DIMENSIONS ROUNDED UP TO THE NEAREST WHOLE MILLIMETER

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

KCL	Model	Elevation	Right	Plan	3D	Back
	ST( )2R-2S-HC					

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 8 - COMBI OVEN, ELECTRIC (1 EA REQ'D)

RATIONAL ICP 6-HALF E 208/240V 3 PH (LM100BE)

(CB1ERRA.0000212) iCombi Pro® 6-Half Size Combi Oven, electric, (6) 13" x 18" sheet pan or (6) 12" x 20" steam pan or (6) 1/1 GN pan capacity, intelligent cooking system with (4) assistants; iDensityControl, iCookingSuite, iProductionManager, & iCareSystem, (6) operating modes, (5) cooking methods, (3) manual operating modes, 85° to 572°F temperature range, quick clean, care control, eco mode, 6-point core temperature probe, retractable hand shower, Ethernet interface, Wi-Fi enabled, 208/240v/60Hz/3-ph, 30.0/26.0 amps, 10.8 kW, CE, IPX5, UL, cULus, NSF, ENERGY STAR®

ACCESSORIES

Mfr	Qty	Model	Spec
RATIONAL	1	ICARESYSTEM AUTODOSE	iCareSystem AutoDose, Integrated autonomous cleaning and storage system for iCombi Pro tabletop units. Uses RATIONAL Active Green and Care cartridges
RATIONAL	1		2 years parts and labor, 5 years steam generator warranty
RATIONAL	1	CAP	Chef Assistance Program, a RATIONAL certified Chef conducts 4 hours/location specialized application training with personnel, no charge
RATIONAL	1	9999.2100	Commissioning iCombi Electric – for one(1) electric iCombi when not installed and commissioned by trained technicians. Includes 100 miles (200 miles round-trip).
RATIONAL	1	8720.1552US	Installation Kit, for electric iCombi/SCC/CMP 61 (208/60Hz/3 & 240/60Hz/3); electric iCombi/SCC/CMP 101 (440/60Hz/3 & 480/60Hz/3); electric iCombi/SCC/CMP 62
RATIONAL	1	1900.1159US	Water Filtration Single Cartridge System, for any single combi model, or XS & half-size Combi-Duos, or iVario includes: (1) single head with pressure gauge, R95-CLX filter & (1) filter installation kit
RATIONAL	1		Note: The RATIONAL Water Filtration Systems helps provide consistent high-quality water to your RATIONAL cooking systems. The patented carbon block technology reduces the effects of sediment, chloramines, and chlorine while delivering the required flow rates.
RATIONAL	1	60.31.103	Stand II Mobile Oven Stand, 27-1/2"H, (14) supporting rails, side panels and top closed, rear panel open, stainless steel construction, height adjustable casters, for iCombi 6- and 10-half size Classic/Pro
RATIONAL	1	87.00.732US	Safety-Set, Equipment placement system for all casters-mounted equipment, allows precise, consistent equipment placement for drain lines to floor sinks and under the fire suppression in ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes tow (2) pieces

Rebid Documents

			and installation pack.
RATIONAL	1	60.76.177	UltraVent® Plus Ventless Recirculating Condensation Hood, with HEPA filter for smoke capture, for single or Combi-Duo, for 6- and 10-half size (electric), 120v/50/60Hz/1-ph, 170 watts, 6' cord, NEMA 5-15P
RATIONAL	1	87.01.432	Safety Door Lock, retrofit kit recommended with all UltraVents with Certified Installation, prevents rapid door opening, requires 2-step pressing of the door handle (factory option not needed)
RATIONAL	1	60.75.210P	UltraVent Plus HEPA Filter, for iCombi, (2 pack), service agent required
RATIONAL	1	20.02.550P	Door Gasket, for iCombi 6-half size Classic/Pro & SelfCookingCenter/CombiMaster Plus 61
RATIONAL	1	40.05.424P	Air Inlet Filter, for iCombi 6-half, 6-full, 10-half, or 10-full size Classic/Pro

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	208/240	60	3	Direct			30.0/26.0	10.8			
2	120	50/60	1	Cord & Plug		5-15P	1.6	.17			

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1				3/4" GHT					
2				3/4" GHT					

WASTE

	INDIRECT SIZE	DIRECT SIZE
1	2"	
2		

PLUMBING 1 REMARKS

1/2" ID

PLUMBING 2 REMARKS

Water filters include Y splitters to feed 2 devices

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Spec sheet

iCombi® Pro 6-half size E/G



Capacity
> Six (6) Half-size sheet pans or Six (6) Steam table pans or Six (6) 1/1 GN accessories
> Removable standard hinging rack with 2 5/8 inch rack spacing (68 mm)
> Large selection of accessories for various cooking procedures, such as grilling, braising or baking
> For use with 1/1, 1/2, 2/3, 1/3 GN accessories and optional baker's standard accessories (400 x 600 mm)

Combi-steamer mode
> Steaming 86 °F - 266 °F
> Convection 86 °F – 572 °F
> Combination of steam and convection 86 °F – 572 °F

Description
Intelligent, connectable cooking system with the operating modes poultry, meat, fish, egg dishes/desserts, side dishes/vegetables, baked goods and finishing as well as the cooking methods roasting, cooking, baking and grilling.
> Combi steamer as per DIN 18866 (in manual mode).
> For most cooking processes used in commercial kitchens.
> For using steam and convection, individually, one after the other, or combined.

Ventilation approvals: The electrical appliance conforms to the EPA 202 test in accordance with ANSI/NFPA 96 "Ventilation Control and Fire Protection of Commercial Cooking Operations" Refer to UL Listing KNLZ.E148536 (America) or KNLZ7.E148536 (Canada).
The following intelligent assistants are available:

Intelligent assistant
iDensityControl iProductionManager iCookingSuite iCareSystem

iDensityControl
iDensityControl is the iCombi Pro's intelligent climate management. The interaction among intelligent sensors, a high-performance heating system and fresh steam generator, and active dehumidification ensures that the right cooking cabinet climate is always available. Intelligent air circulation ensures the best possible energy input into the food. Consequently, this ensures extraordinary productivity while maintaining high levels of food quality, even cooking and minimum energy consumption.

iCookingSuite
The iCookingSuite is the iCombi Pro's cooking intelligence. The user starts by selecting the right cooking path for the food, choosing from among 6 operating modes and / or 5 cooking methods. Users also specify the desired cooking result. The unit suggests settings for browning and degree of doneness. Intelligent sensors detect the size, quantity and condition of the food. While the cooking path is in progress, the system adjusts key parameters like cooking cabinet temperature, airspeed, and cooking time accurately to the second. The selected desired results are achieved, yielding the best possible quality in the shortest possible time. It is possible to optionally influence the cooking sequence and adapt the cooking result. Users can change to iProductionManager or manual mode at any time. Thanks to iCookingSuite you can simply save time, raw materials, and energy while maintaining a standardized food quality without having to check the procedure.

iProductionManager
iProductionManager intelligently and flexibly organizes the production process. This includes which products can be prepared together on different trays, the ideal sequence of dishes, and monitoring the cooking sequence. iProductionManager supports users with prompts to load or unload dishes. Depending on kitchen processes you can freely position orders (up to two per level) or schedule them on the basis of a certain target time. iProductionManager arranges the sequence of dishes accordingly and automatically specifies the correct settings. Users decide whether dishes are cooked based on optimum energy consumption or a certain target time. Simple monitoring activities are no longer required, saving you working time and energy.

iCareSystem
The iCareSystem is the intelligent iCombi Pro cleaning and descaling system. It recommends the amount of chemicals and ideal cleaning stage from the nine available programs based on usage and any limescale in the steam generator. Ultra-fast interim cleaning cleans iCombi Pro in only 12 minutes, all cleaning programs can also run overnight without the need for supervision. The iCareSystem is particularly efficient and environmentally friendly, consuming small quantities of phosphate-free care products, water, and energy. This means that the iCombi Pro is always hygienically clean without manual work and at minimal costs.

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Unit description and functions

Intelligent functions

> Intelligent climate management that measures, adjusts and controls the humidity down to the exact percentage
> The actual measured humidity in the cooking cabinet can be adjusted and viewed
> Dynamic air circulation in the cooking cabinet thanks to intelligent, reversible, high-performance five-speed fan with intelligent activation and manual programming capabilities
> Intelligent cooking path regulation and automatic adjustment of cooking steps in order to achieve the target results, e.g., browning and degree of doneness, safely and efficiently - regardless of product size, load quantity, or who is using the unit
> Monitoring accurate to the second and calculation of browning on the basis of the Maillard reaction to reproduce ideal cooking results
> Adjust intelligent cooking methods or switch between iCookingSuite and iProductionManager for maximum flexibility
> Intelligent cooking step to proof baked goods
> Individual, intuitive programming of up to 1,200 cooking programs with up to 12 steps using drag-and-drop.
> Easy transfer of cooking programs to other cooking systems through secure cloud connection with ConnectedCooking or via USB stick
> iProductionManager, the automated, intelligent planning and controlling tool, organizes multiple cooking processes and mixed loads perfectly. Automatic closing of planning gaps. Automatically optimize schedules and energy consumption in planning and target time preparation to start or end cooking dishes at the same time. Activateable speed mode for preparing individual portions in rapid succession.
> Visual indication of loading and removal requests using energy-saving LED lighting
> Automatically resumes and optimally completes cooking processes following power outages lasting less than 15 minutes
> Intelligent cleaning system suggests cleaning programs and the required amount of care products based on the degree of soiling within the cooking system
> Display of the current cleaning and descaling status
> Intelligent VarioSmokers control (accessory) by the cooking methods
> Condensation/exhaust air hoods (accessories) with situational adjustment of the extraction performance and transfer of service messages.

Cooking functions

> High-performance steam generator for optimal steaming performance even at low temperatures below 212°F
> Power-steam function: increased steaming power available for Asian applications
> Integrated, maintenance-free grease separation system without an additional grease filter
> Cool-down function to quickly cool down the cooking cabinet; additional fast cooling using internal water nozzle
> Core temperature probe with six measuring points and automatic error correction in the event of incorrect positioning. Optional positioning tool for soft or very small cooking products (accessory)
> Delta-T cooking for extremely gentle preparation with minimal cooking losses
> Precise burst-steam injection; water quantities can be set to 4 different levels within a temperature range of 85°F – 500°F for convection or steam-convection combination modes
> Digital temperature display, can be set to °C or °F, displays target and actual values
> Cooking cabinet humidity and time displayed digitally; displays target and actual values
> Time can be set to display in 12- or 24-hour format
> 24-hour real-time clock with automatic adjustment for daylight savings time when connected to ConnectedCooking
> Automatic pre-selected starting time with variable date and time
> Integrated hand shower with automatic retraction and switchable spray/jet function
> Energy-saving, long-lasting LED lighting in the cooking cabinet, with excellent color fidelity to allow quick determination of cooking progress
> No-charge 4-hour RATIONAL certified chef assistance program

Occupational and operating safety

> Electronic safety temperature limiter for steam generator and convection heating
> Integrated fan wheel brake
> Contact temperature of the cooking cabinet door max. 163 °F
> Use of Active Green cleaning tabs and Care tabs (solid cleaning agent) for ideal occupational safety levels
> HACCP data storage and output via USB or optional storage and management in the cloud-based networking solution ConnectedCooking
> Tested according to national and international standards for unsupervised operation
> Maximum tray height must not exceed 63 inch when using a RATIONAL stand
> Ergonomic door handle with right- / left-handed door opening and swing-shut function

Networking

> Integrated, IP-protected Ethernet interface for wired connection to the cloud-based ConnectedCooking networking solution
> Integrated Wi-Fi interface for wireless connection to the cloud-based networking solution ConnectedCooking
> Integrated USB interface for local data exchange
> Cloud-based ConnectedCooking solution allows central unit management; recipe, shopping cart and program management; HACCP data management; maintenance management

Cleaning and care

> Automatic, water pressure-independent cleaning and maintenance system for cooking cabinet and steam generator
> Nine cleaning programs for unsupervised cleaning, also overnight, with automatic cleaning and removal of limescale deposits within the steam generator
> Ultrafast cleaning in only 12 minutes for practically uninterrupted, hygienic production
> Automatic cleaning routine following power outages, ensuring that cooking cabinet remains free of cleaning agents even after the cleaning process has been canceled
> Hygienic setup that is flush with the counter without feet for simple, safe cleaning

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> Triple glass pane cooking cabinet door with rear ventilation, thermally reflecting special coating and swiveling glass panes for easy cleaning
> Inside and outside material: stainless steel DIN 1.4301, seamless hygienic cooking cabinet with rounded corners and optimized air flow
> Glass and stainless steel surfaces allow easy, safe external cleaning; IPX5-class protection against spraying water in all directions
> Monitoring option for automatic cleaning using the cloud-based ConnectedCooking networking solution

Operation

> High-resolution 10.1 inch TFT color display and capacitative touchscreen with self-explanatory icons for simple, intuitive operation with gestures like swiping and dragging
> Acoustic prompts and visual messages when user action is required
> Central dial with Push function for intuitive selection and confirmation of entries
> User interface and help function can be set to over 55 languages
> Basic national cuisine preferences can be selected regardless of language settings. Possible to select additional, local cuisine
> Specially adapted cooking parameters for international or country-specific dishes can be selected and started regardless of unit language settings
> Extensive search function including all cooking paths, application examples and settings
> Context-sensitive support that always shows the current help content for the displayed screen content
> Start application examples from help file
> Simple selection of cooking paths using six operating modes and/or five cooking methods
> Cockpit function to display information about the processes within a cooking path
> Customization and control of user profiles to prevent operator errors
> Interactive notifications regarding cooking paths, requested actions, intelligent functions and warnings thanks to Messenger

Installation, maintenance and environment

> Professional installation by RATIONAL-certified technicians recommended
> Rear in-direct floor drain with air gap is required, and should be supplied in alignment with local code.
> Adaptation to the installation site (height above sea level) through automatic calibration
> Operation without water softener and without additional manual descaling possible
> Installation flush with the floor and wall through connection in the base area *
> Service diagnostic system with automatic messages, self test function for actively testing cooking system functions
> Remote diagnosis via ConnectedCooking by certified RATIONAL service partners
> 2-year RATIONAL warranty including parts, labor, and travel**
> Regular maintenance is recommended. Servicing by RATIONAL service partner according to manufacturer recommendations
> Energy efficiency in accordance with ENERGY STAR tested and passed. Published at www.energystar.gov

* See the installation or planner manual for details

** Terms and conditions apply, see manufacturer warranty statement at www.rational-online.com

Options

> Hinging rack and air baffle for baker's standard accessories (400 x 600 mm)
> Cooking cabinet door, left-hinged
> MarineLine - marine version
> SecurityLine – prison / security version
> MobilityLine – mobile variant
> HeavyDutyLine – particularly heavy-duty version
> Integrated fat drain
> Mobile oven rack package
> Protection for control panel
> Safety door lock
> Lockable control panel

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Technical specifications

Dimensions and weights

Dimensions (W x H x D)	
Cooking system (body)	33 1/2 x 29 5/8 x 30 1/2 inches
Cooking system (total)	33 1/2 x 31 5/8 x 33 1/8 inches
Cooking system with packaging	36 3/4 x 37 3/4 x 37 5/8 inches
Maximum working height of top level*	≤ 5 ft. 2 7/8 inches

*When using an original RATIONAL stand

Weights	
Maximum load size per level	33 lb
Maximum total load capacity	66 lb
Weight - electric unit without packaging	220 lb
Weight - electric unit with packaging	262 lb

Electrical connection conditions

Voltage 3 ph 208 V / 240 V	
Connected loads - electric	10.8 kW
Steam power	9 kW
Convection power	10.25 kW
Breaker	35 A
Running AMPS	30 A (208 V) / 26 A (240 V)
Cable diameter	AWG 8 140°F
Voltage 3 ph 440 V / 480 V	
Connected loads - electric	10.8 kW
Steam power	9 kW
Convection power	10.25 kW
Breaker	20 A
Running AMPS	14.2 A (440 V) / 13 A (480 V)
Cable diameter	AWG 14 140°F
Voltage 1 ph 208 V / 240 V	
Connected loads - electric	10.8 kW
Steam power	9 kW
Convection power	10.25 kW
Breaker	60 A
Running AMPS	52 A (208 V) / 45 A (240 V)
Cable diameter	AWG 4 140°F

Not supplied with cable connection

Connected loads - gas

Natural gas G20	
Nominal heat load, total	49500 BTU
Nominal heat load, Steam mode	45500 BTU
Nominal heat load, Hot Air mode	49500 BTU
Required connection flow pressure	6.5 – 10 inch w.c.
Liquid gas	
Nominal heat load, total	48500 BTU
Nominal heat load, Steam mode	44500 BTU
Nominal heat load, Hot Air mode	48500 BTU
Required connection flow pressure	10 – 15 inch w.c.

3/4" NPT with 3/4" gas shut off
Additional gas types and voltages available on request

Connected loads - gas

Voltage 1 ph 208 V	
Connected loads - gas	0.6 kW
Breaker	15 A
Running AMPS	2.9 A
Voltage 1 ph 120 V	
Connected loads - gas	0.6 kW
Breaker	15 A
Running AMPS	5.0 A

All gas units are supplied with a 6 ft cord.

Connection conditions water

Connection	3/4" GHT
Supply minimum	1/2" ID Drinking Quality Cold
Water pressure (flow pressure), each	14.5-87.0 psi
Maximum flow rate per cooking system	3 gal/min
Water drain, each	2" OD
Max short-term amount of wastewater	0.11 gal/sec

Use only high-temperature resistant drain pipe

Water quality requirements
Untreated water can be 0 to 24.5 gr/gal (0 to 420ppm) hardness. We do not recommend treated water hardness < 5 gr/gal (86ppm) because the water could be corrosive. Sodium ion exchangers are not recommended; H+ Ion exchange systems are recommended. Water that does not meet the following minimum standards will require the proper conditioning

Contaminant	Water Requirements	If > than recommended
Sand / Particles	< 15 µm	Particle filter
Chlorine (Cl2)	< 0.012 gr/gal (0.2 ppm)	Active carbon filter
Chloride (Cl-)	< 4.68 gr/gal (80 ppm)	RO

All RATIONAL iCombi Pro & Classic models meet the requirements for LEED, IGCC and any local codes that have adopted them, based on water consumption and efficiency.

Model	XS	6 half size	6 full size	10 half size	10 full size	20 half size	20 full size
gal/hr	0.9	1.8	3.5	3.3	5.9	6.4	9.2
gal/hr/pan	0.3	0.3	0.3	0.3	0.3	0.3	0.2

Connected loads - exhaust air and thermal load

Latent heat load	1943 BTU
Sensible heat emission	2391 BTU
Sound level (electric)	55 dBA
Sound level (gas)	60 dBA

Connection loads - data

LAN data interface	RJ45
WiFi data interface	IEEE 802.11 a/g/n

Minimum distances at installation
Clearance Requirements
To facilitate servicing, we recommend leaving a 20" (500 mm) gap on the left-hand side of the unit. If there is not 20" (500 mm) left side clearance available, provisions for moving the unit to the left for service access must be made. Such provisions include, but are not limited to, having quick connections (water, gas, etc.) and lengthened electrical connections with flexible cords.

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If there are no external heat sources acting on the unit, there should be at least 2" (50 mm) of clearance on either side of the unit. On the back, single units and electric Combi-Duo vent pipe can be mounted flush with the wall. 2" rear clearance from the gas Combi-Duo exhaust gas box.
If a high temperature heat source is on the left or right side of the unit, clearance of at least 14" (350 mm) must be maintained on the respective side. This clearance may be reduced to 2" (50 mm) if a heat shield is used (see accessories).

Recommended clearance from unobstructed rear exhaust pipes and any surface collecting grease or flammable material; 16" (400 mm) gas, 10" (254 mm) electric. It is recommended to have a hood overhang of 6" (150 mm) to 18" (450 mm) at the front of the unit and 6" (150 mm) on the sides if installed at the end of the cooking line. Please refer to the Installation Manual for additional technical data and for instructions on installation and setup.

Installation conditions

> Observe all local and country-specific standards and regulations regarding the installation and operation of commercial cooking appliances. The local standards and regulations for interior ventilation systems must also be taken into account.
> To use ConnectedCooking, an RJ45 network socket or a WLAN connection option (IEEE 802.11 a/g/n) must be in place on-site. For optimal performance, a data rate of at least 100 MB/s is required.
> Do not connect to any receptacle that local code requires protection by a UL 943 listed Class A GFCI. The device is approved for field hardwiring per local code.

Approvals

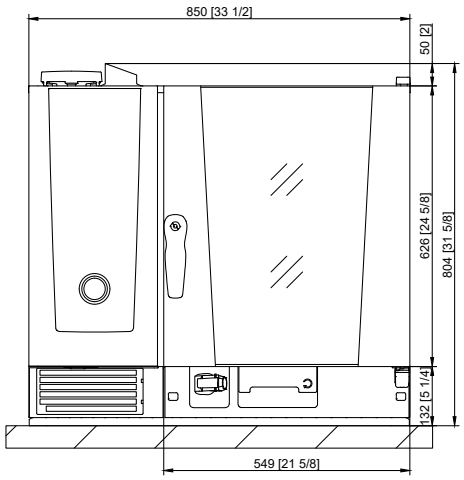
NSF Certification

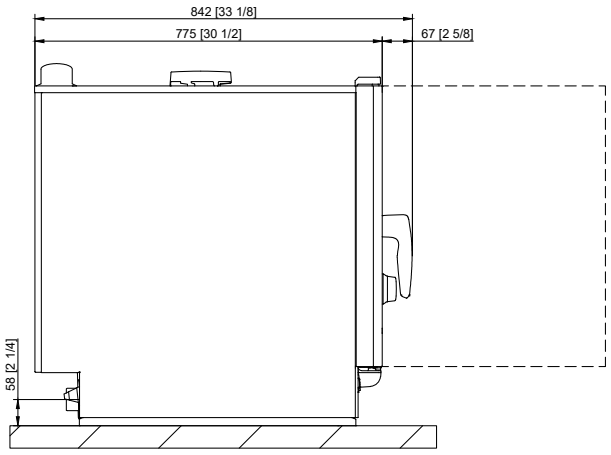
iCombi Pro (LM100) and iCombi Classic (LM200) are NSF-certified, shown on the NSF list.

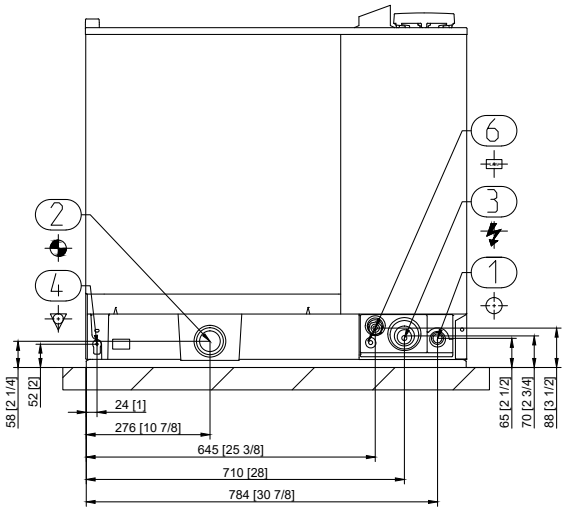
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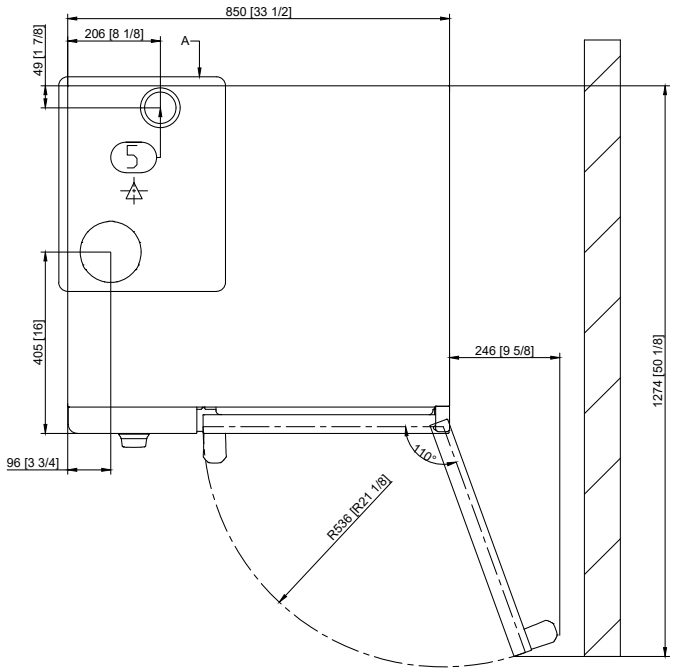
Rebid Documents

Technical drawing, electrical









1	Water inlet
2	Water drain
3	Electrical connection
4	Equipotential bonding
5	Ventilation pipe

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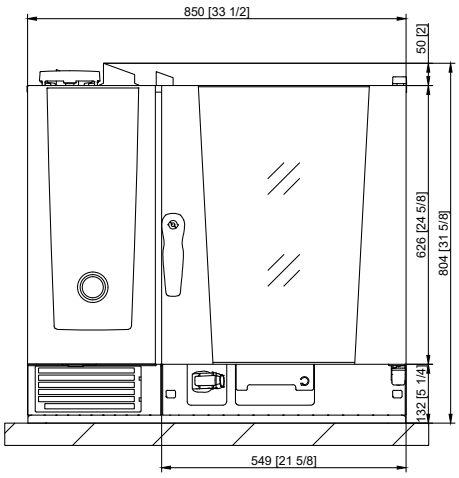
Rebid Documents

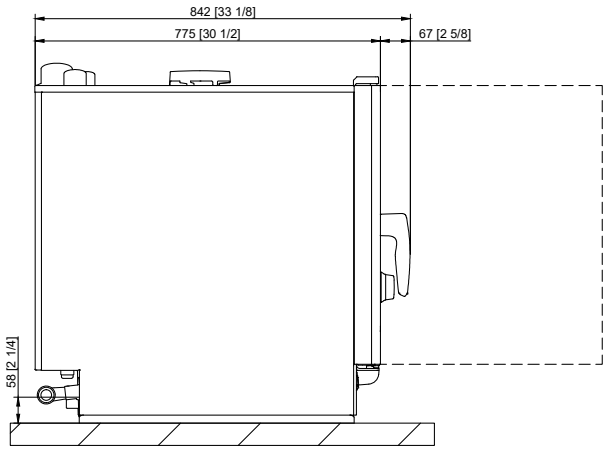
6	Ethernet interface

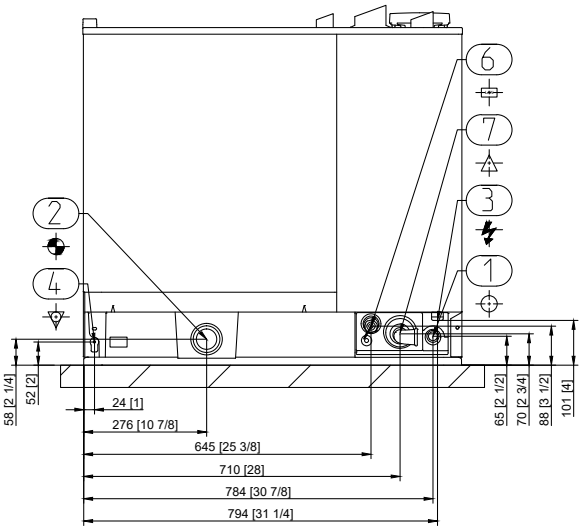
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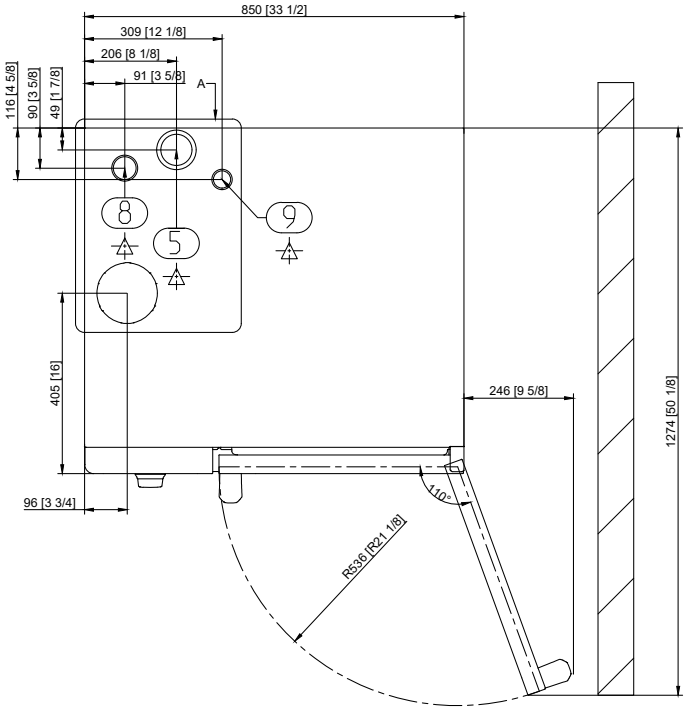
Rebid Documents

Technical drawing, gas









1	Water inlet
2	Water drain
3	Electrical connection
4	Equipotential bonding
5	Ventilation pipe

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RATIONAL iCombi Pro 6-half size E/G

6	Ethernet interface
7	Gas connection
8	Exhaust pipe gas (steam)
9	Exhaust pipe gas (convection)

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Rebid Documents

Accessories

Accessories	Item number
RATIONAL Active Green cleaning agent tabs – guarantee the best cleaning performance	Item no. 56.01.535
RATIONAL Care tabs – effectively prevent limescale deposits	Item no. 56.00.562
Stands are available in various versions - standard, with casters, or with anchorable stainless steel feet	See Cooking Systems and Accessories catalog
Run-in rail for mobile rack and mobile plate rack Size 6-half size, 10-half size	Item no. 60.75.115
Condensation breaker – diverts steam and vapors to an existing exhaust air system Sizes 6-half size, 10-half size, 6-full size and 10-full size	Item no. 60.72.592
RATIONAL USB stick – to securely transfer cooking programs and HACCP data	Item no. 42.00.162
Finishing system for banquets Size 6-half size, 20 plates	Item no. 60.61.741
Hinging racks - Size 6-half size	Item no. 7 racks 60.61.624 Item no. 5 racks 60.61.615
Heat shield – for installing a unit near a heat source, e.g. a grill - Size 6-half size	Item no. left side 60.75.110 Item no. right side 60.75.113
Mobile catering stand - especially for heavy mobile catering usage	Item no. 60.31.164
Mobile oven rack and mobile plate oven rack – for simple loading outside the cooking system	See Cooking Systems and Accessories catalog
Transport trolley for mobile rack and mobile plate rack - height-adjustable - Sizes 6-full size, 10-full size	Item no. 60.75.606
Transport trolley for mobile rack and mobile plate rack - standard - Sizes 6-half size, 10-half size	Item no. 60.74.000
UltraVent recirculating hood - for Size 6-half size, 10-half size electric units only	Item no. 60.67.179
UltraVent Plus recirculating hood - for Size 6-half size, 10-half size electric units only	Item no. 60.76.177
Stackable Combi-Duo kit Size 6-half size E/G on Size 6-half size E or Size 10-half size E	Item no. 60.73.991
Stackable Combi-Duo kit - Size 6-half size E/G on Size 6-half size G	Item no. right-side hinges 60.75.751 Item no. left-side hinges 60.75.753
RATIONAL Single Water Filter - for all single models and Combi-Duo XS/XS, 6-half size/6-half size and 6-half size/10-half size	Item no. 1900.1154US

We offer a wide range of cooking accessories to help you achieve ideal cooking results; for more information, please consult our accessories brochure, ask your dealer, or visit www.rational-online.com

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Planner	RATIONAL USA Inc.
	1701 Golf Road, Suite C-120, Commercium Rolling Meadows, IL 60008 Toll Free: 888-320-7274 Fax: 847-755-9583 Email: info@rational-online.com Visit us on the internet: www.rational-online.com

Rebid Documents

Installation Information Form.

To ensure maximum customer satisfaction and proper future service support.
Dealer is responsible for completing this form.

Submit this form with every PO.

Project Name (required)

Phone Number Project Location (required)

Street Address (required)

City/State/Zip Code (required)

Location Contact Name (required)

Phone Number Location Contact (required)

Location Contact Email (required)

RATIONAL PO Number

Please select one of the shipping options for your order below (required). If RATIONAL does not receive any notice, we will proceed with the requested shipping date noted below.

- ☐ Ship ASAP. Ships 2 to 3 days after confirmation by RATIONAL (with or without Pre-Installation Site Consultation).
- ☐ Ship after Pre-Installation Site Consultation is complete. Ship no later than
- ☐ Ship by date (with or without Pre-Installation Site Consultation).
- ☐ Hold until confirmation to ship. Estimated shipping date.

List your preferred RATIONAL Service Provider, or RATIONAL will select an RSP based on location.

☐ New Construction

☐ Replacement

Approximate Pre-Installation Site Consultation Date (If Purchased):

Approximate Installation Date:

Dealer:

Contact at Dealer:

Phone Number:

Email:

Signature:

Date:

The ship date will be the date indicated on the sales confirmation. This date may be subject to change.

1701 Golf Road Suite C-120, Commercium Rolling Meadows, IL 60008
Phone (224) 366-3500 Fax (847) 755-9583

Rebid Documents

23.855 · V-01 · DP/Ad · 03/25 · en_US

Installation Kit
Article no. 8720.1552US

The RATIONAL Installation Kit ensures that the installer has all the essential connection materials on hand at the time of install. Not all parts are used in every installation.

RATIONAL Combi Oven 6-half size (208/60/3ph & 240/60/3ph)
RATIONAL Combi Oven 10-half size (440/60/3ph & 480/60/3ph)
RATIONAL Combi Oven 6-full size (440/60/3ph & 480/60/3ph)

The Installation Kit for the above models includes:

40	feet	THHN 8 AWG black stranded wire
12	feet	THHM 10 AWG Green stranded wire
10	feet	3/4" SEALTITE flexible conduit
2	ea	3/4" minnies
2	ea	2" minnies
1	ea	3/4" SEALTITE conn straight w/o ins
1	ea	3/4" SEALTITE 90 degree conn w/o ins
2	ea	3/4" Water Connector Hose, 5/8" ID, 3/4" female hose thread both ends, 60" long rubber coated, NSF approved
1	ea	Male union 3/4" × 3/4" MHT
2	ea	90 deg Fresh water elbow
8	feet	2" copper pipe (two 4' pieces)
2	ea	2" copper pipe 90 degree elbow
1	ea	2" copper pipe T fitting
2	ea	2" copper pipe 45 degree elbow
1	ea	2" copper pipe 90 degree elbow female to male
1	ea	2" copper pipe 90 degree long sweep
1	ea	2" copper pipe coupling

Please note that installation kits are non-discountable.

8720.1552US · V-02 · DP/Ad · 11/25 · en_US

Water Filtration Products.

R195-CLX



R195-CLX

RATIONAL Water Filtration Products Model R195-CLX single cartridge water filtration system helps provide consistent high quality water for your RATIONAL combi by reducing the effects of sediment, chloramines, chlorine, taste & odor while providing the required flow rates for any single Combi model or Combi-Duo models 6-half size/6-half size or 6-half size/10-half size or XS/XS.

Product Benefits

- Carbon block technology effectively reduces chloramines, chlorine, taste, and odor for better equipment protection.
- NSF Standard 42 and FDA CFR-21 compliant materials.
- Sanitary Quick Change (SQC) encapsulated cartridge design allows for fast and easy cartridge change-outs with ¼" turn.
- ½" FNPT horizontal inlet and outlet ports allow direct or easily adaptable connections to existing plumbing lines.

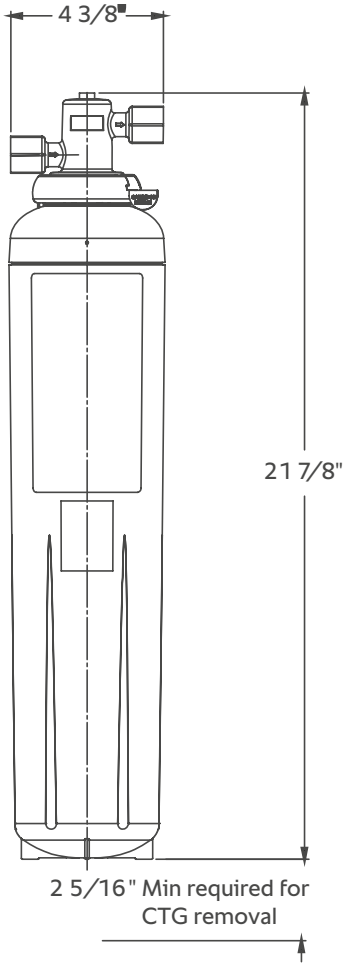
Model Number	Article No.	Reduction Claims	Nominal Micron Rating	Capacity	Replacement Cartridge	Service Flow Rate
R195-CLX	1900.1159US	Chlorine, Taste and Odor Chloramines	5.0 [1]	54,000 gallons (204,412 liters)	R95-CLX 1900.1155US	5 gpm (18.92 lpm) 1.5 gpm (5.68 lpm)

[1] NSF Certified for Particulate Reduction

Visit www.nsf.org for the claims associated with products that are NSF listed.

Water Filtration Products.

R195-CLX



Application Guide

› Any single RATIONAL combi
› XS/XS Combi-Duo
› 6-half size/6-half size Combi-Duo
› 6-half size/10-half size Combi-Duo

Important: Installation Tips

These installation tips are for informational purposes only and are not intended to be used as actual installation instructions. Caution: To reduce the risk associated with property damage due to water leakage:

› Read and follow Use Instructions before installation and use of this system.
› Installation and use must comply with all state and local plumbing codes.
› Protect from freezing, remove filter cartridge when temperatures are expected to drop below 40°F (4.4°C).
› Do not install on hot water supply lines. The maximum operating water temperature of this filter system is 100°F (37.8°C).
› Water pressure range- minimum 25 to maximum 80 psi (172-552 kPa). If your water pressure exceeds 80 psi (552 kPa), you must install a pressure limiting valve. Contact a plumbing professional if you are uncertain how to check your water pressure.
› Do not install where water hammer conditions may occur. If water hammer conditions exist you must install a water hammer arrester. Contact a plumbing professional if you are uncertain how to check for this condition.
› The disposable filter cartridge must be replaced every 12 months, at the rated capacity or sooner if a noticeable reduction in flow rate occurs.

Warning

To reduce the risk associated with the ingestion of contaminants:
Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

RATIONAL recommends regularly scheduled maintenance and replacement of the filter cartridge(s) in order for the product to perform as advertised/sold. RATIONAL shall not be liable for system failures due to improper maintenance.

RATIONAL USA
1701 Golf Road
Suite C-120, Commercium
Rolling Meadows, IL 60008

Tel. 888-320-7274 (Toll Free)
Fax 847-755-9583

info@rational-online.us
rationalusa.com

Limited Warranty
RATIONAL warrants this Product will be free from defects in material and manufacture for five (5) years from the date of purchase: The filter cartridge or filter membrane is warranted to be free from defects in material and manufacture for one (1) year. This warranty does not cover failures resulting from abuse, misuse, alteration or damage not caused by RATIONAL Water Filters or failure to follow installation and use instructions. No warranty is given as to the service life of any filter cartridge or membrane as it will vary with local water conditions and water consumption. RATIONAL MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOMER OR USAGE OF TRADE. If the Product fails to satisfy this Limited Warranty during the warranty period, RATIONAL will replace the Product or refund your Product purchase price. This warranty does not cover labor. The remedy stated in this paragraph is Customer's sole remedy and RATIONAL exclusive obligation. For additional information, see the entire Limited Warranty located in the product Installation and Operating Instruction Manual.
Limitation of Liability. RATIONAL will not be liable for any loss or damage arising from this RATIONAL product, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability. Some states and countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

21.055 · V-04 · DP/Ad · 08/24 · en_US

Specification/Datasheet
Safety-Set

Article number
87.00.732US

Description


Equipment placement system for all caster-mounted equipment. Allows precise, consistent equipment placement for drain lines to floor sinks and under the fire suppression in ventilation systems. Correct placement of cooking equipment is important to effectively protect kitchen staff and guarantee safety standards.

Easily return the cooking equipment to the correct location again after cleaning or maintenance.

Intended use
This product is intended exclusively for professional use, such as in restaurant kitchens or catering operations for schools, hospitals, or delis. Any other use runs counter to its intended purpose, and could be dangerous. RATIONAL AG assumes no liability for consequences of improper use.

Features
- Satisfies NFPA-Codes 17A (5.6.4) and 96 (12.1.2.3)
- Compatible with 4", 5" and 6" inch casters
- Open floor wheel channel allows casters to rest level
- Center alignment positioning guides
- Ideal for new and existing locations
- Certified to NSF/ANSI Standard 169 - Special Purpose Food Equipment & Devices
- Flexible, tough, injection molded Thermoplastic Polyurethane (TPU) with an antimicrobial additive
- Able to withstand 1,000 lbs of crush force

Dimensions and weights

Width (W):	3 5/8 in
Depth (D):	7 1/2 in
Weight:	1 lb

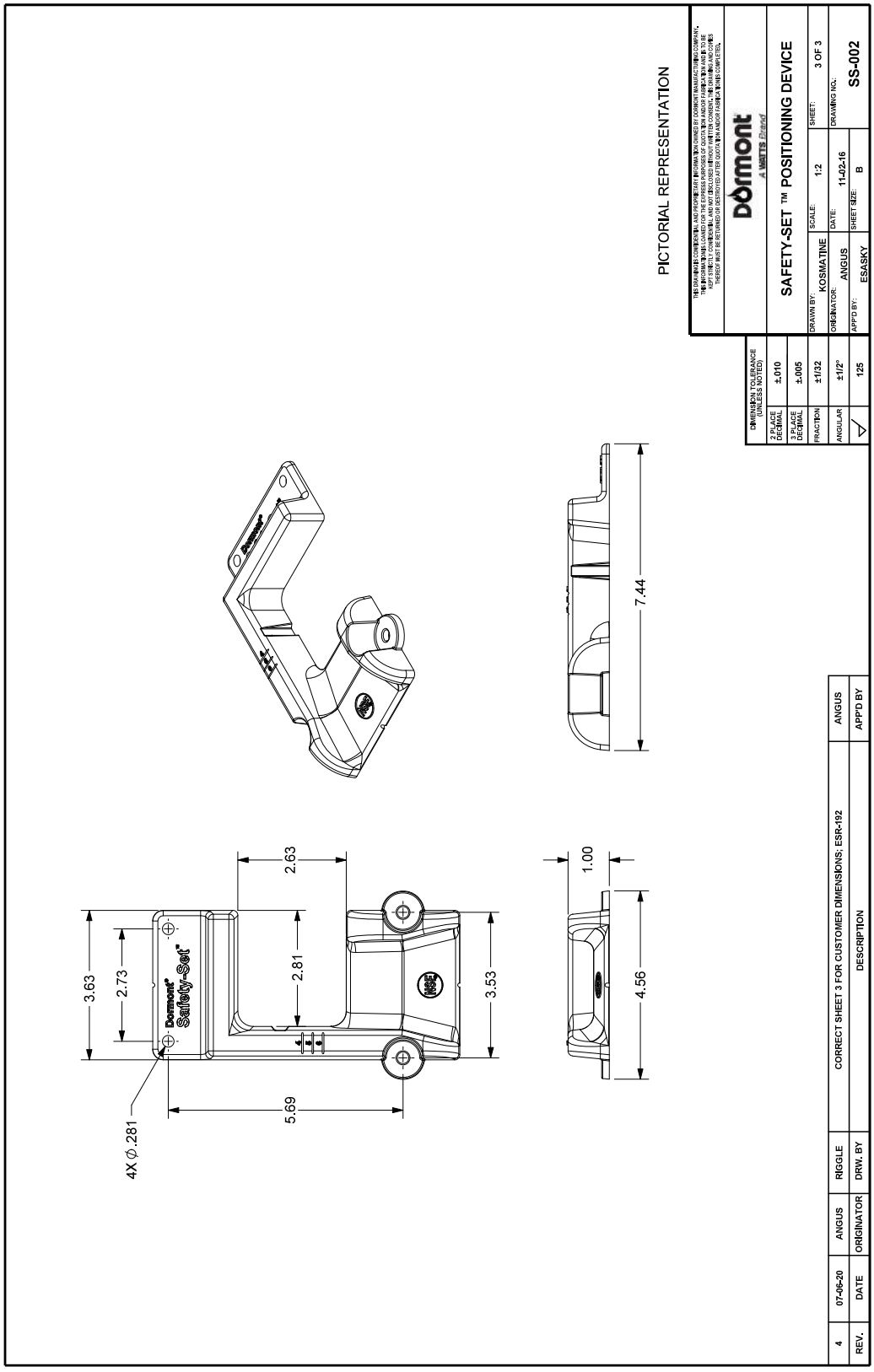
Equipment/Scope of delivery
- Includes 2 pieces
- Installation pack included with 2 options

  Option 1: adhesive foam tape

  Option 2: thumb screw hardware pack

Rebid Documents

Specification/Datasheet
Safety-Set



Rebid Documents

Specification/Datasheet

UltraVent Plus Types 6-half size, 10-half size

Article number

60.76.177

Description

The UltraVent Plus gets rid of the steam emitted with its condensation technology. No connection to the outside or extension of an existing exhaust system is necessary with this air recirculation hood.

It is also equipped with special filter technology which reduces lingering smoke, which can be created with fatty/oily products at high temperature.

Intended use

This product is intended exclusively for professional use, such as in restaurant kitchens or catering operations for schools, hospitals, or delis. Any other use runs counter to its intended purpose, and could be dangerous. RATIONAL AG assumes no liability for consequences of improper use.

Features

- Intelligent control with automatic, continuously variable adjustment of the capture power to the quantity of steam produced
- Automatically boosts extraction rate when cooking cabinet door is opened
- Reduces lingering steam and vapors. These are captured and condensed in the hood
- Wastewater discharged by the device - no additional discharge line needed
- Easy to install and retrofit
- Issue of service notifications on the display of the iCombi Pro and iCombi Classic
- Easy to clean stainless steel grease baffles, dishwasher safe
- Special filter technology with a replacable HEPA H13 main filter to reduce smoke
- Connects to both cooking systems in a Combi-Duo

Technical specifications

Supplied with an 8 ft 2 in (2.5 m) power cable with 5-15 P-connector

Connection:	120 V - 1 ph
Frequency:	60 Hz
Connected load:	180 W
Running Amps (A):	1.6 A
Extraction capacity:	415 ft^3/min
Operating noise level:	50-65 dB(A)

Dimensions and weights

Width (W):	33 5/8 in
Height (H):	15 7/8 in
Depth (D):	34 7/8 in
Weight:	143.3 lb

Material

Stainless steel (CNS 1.4301/AISI 304)

Equipment/Scope of delivery

- The condensation hood includes an adapter kit for optional installation on a Combi-Duo

Rebid Documents

Specification/Datasheet

UltraVent Plus Types 6-half size, 10-half size

Note

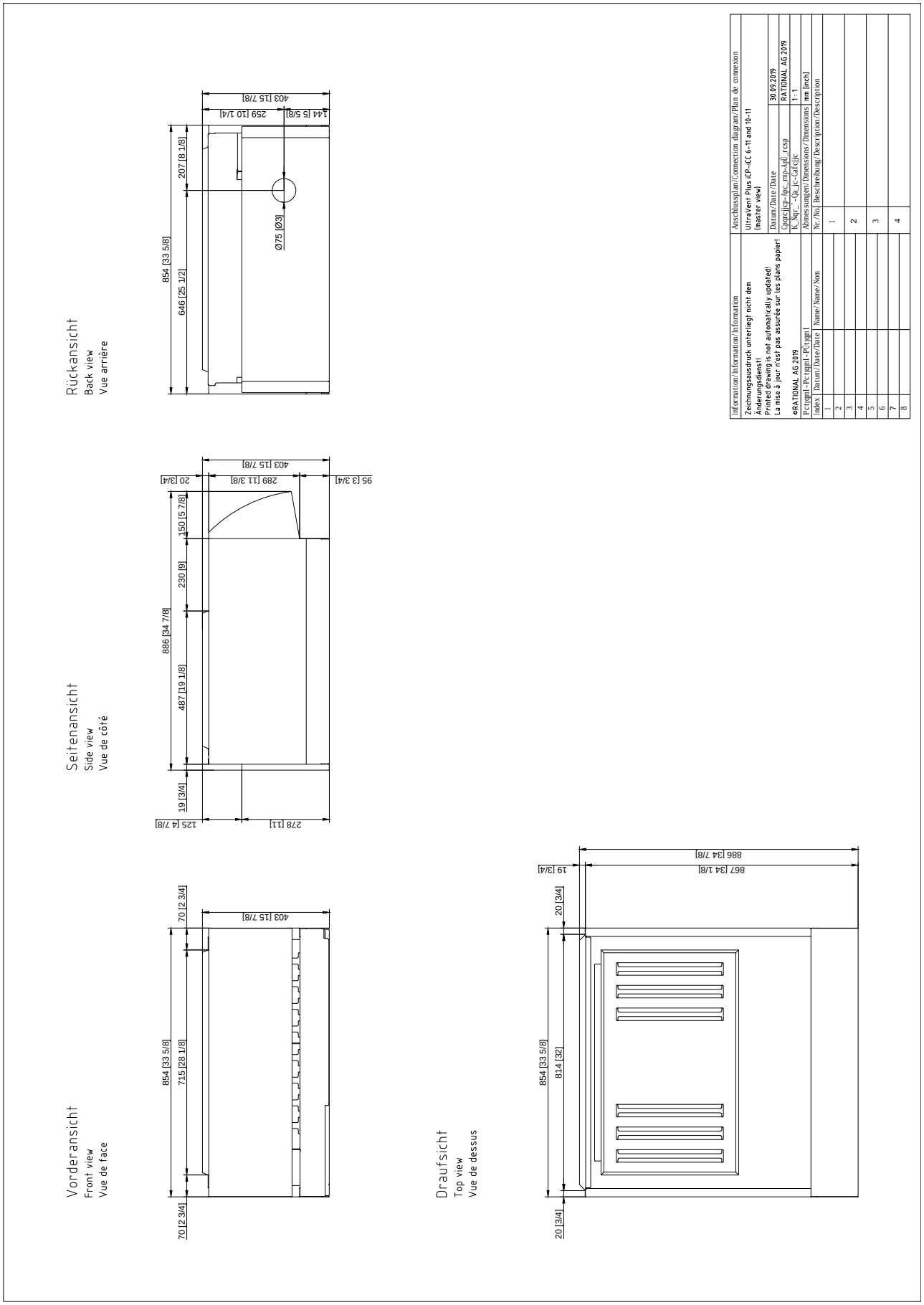
- To install an UltraVent or UltraVent Plus on a SelfCookingCenter (from 04/2004) or CombiMaster Plus, a corresponding adapter kit is required
- The local standards and regulations for ventilation systems must be adhered to
- Only permitted for installation on electrical units
- We recommend maintaining an overhead clearance of at least 18" (450 mm) for all cooking systems and Combi-Duos using an UltraVent or an UltraVent Plus
- In individual cases involving Model 10-half size or smaller tabletop cooking systems, this clearance cab be reduced to a minimum of 10" (250 mm) following expert evaluation of local framework conditions
- Not to be used with VarioSmoker

Approvals

Rebid Documents

Specification/Datasheet

UltraVent Plus Types 6-half size, 10-half size



Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 9 - PREP TABLE W/SINK (1 EA REQ'D)

INFINITY ST. STL.

Stainless Steel fabricated prep sink assembly with sinks. Fabricate per section 11 40 00-2.2 and per fabrication details. Provide with the following:
One (1) Table edge a to be type A/FD-1
One (1) 6” high wall back and right end splash per A/FD-2
One (1) 20” wide x 20” deep x 10” depth sink per FD-12.
One (1) Lever drain without overflow per 11 40 00 -2.6-A-2.
One (1) Prep sink faucet per 11 40 00 -2.6-B-2.
Two (2) St. Stl. Legs per FD-12
One (1)) Removable undershelf
One (1_ Cabinet base with tier of 3 each Type B drawers per FD-25
Services:
2” Inirect Waste
½” Hot and Cold Water

ACCESSORIES

Mfr	Qty	Model	Spec
T&S Brass	1	TYPE 1 (B-3952-01)	See 11 40 000 -2.06-A: Waste Valve, twist handle, 3-1/2" sink opening, 2" drain outlet with overflow assembly .
T&S Brass	1	TYPE 3 (B-0231-U12-CR)	See Section 11 40 000 -2.06-B; UltraRinse 8” wall mount mixing faucet with polished chrome plated brass body, 12” swing nozzle with stream regulator outlet, 10 3/8" 1.5 GPM multiple tip sprayer arm, cerama cartridges with spring checks, lever handles, and 1/2” NPT female inlets. Certified to ASME A112.18.1/CSA B125.1, NSF 61-Section 9 and NSF 372. Meets ADA ANSI/ICC A117.1 requirements. Services: 1/2" Hot and Cold Water

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1									

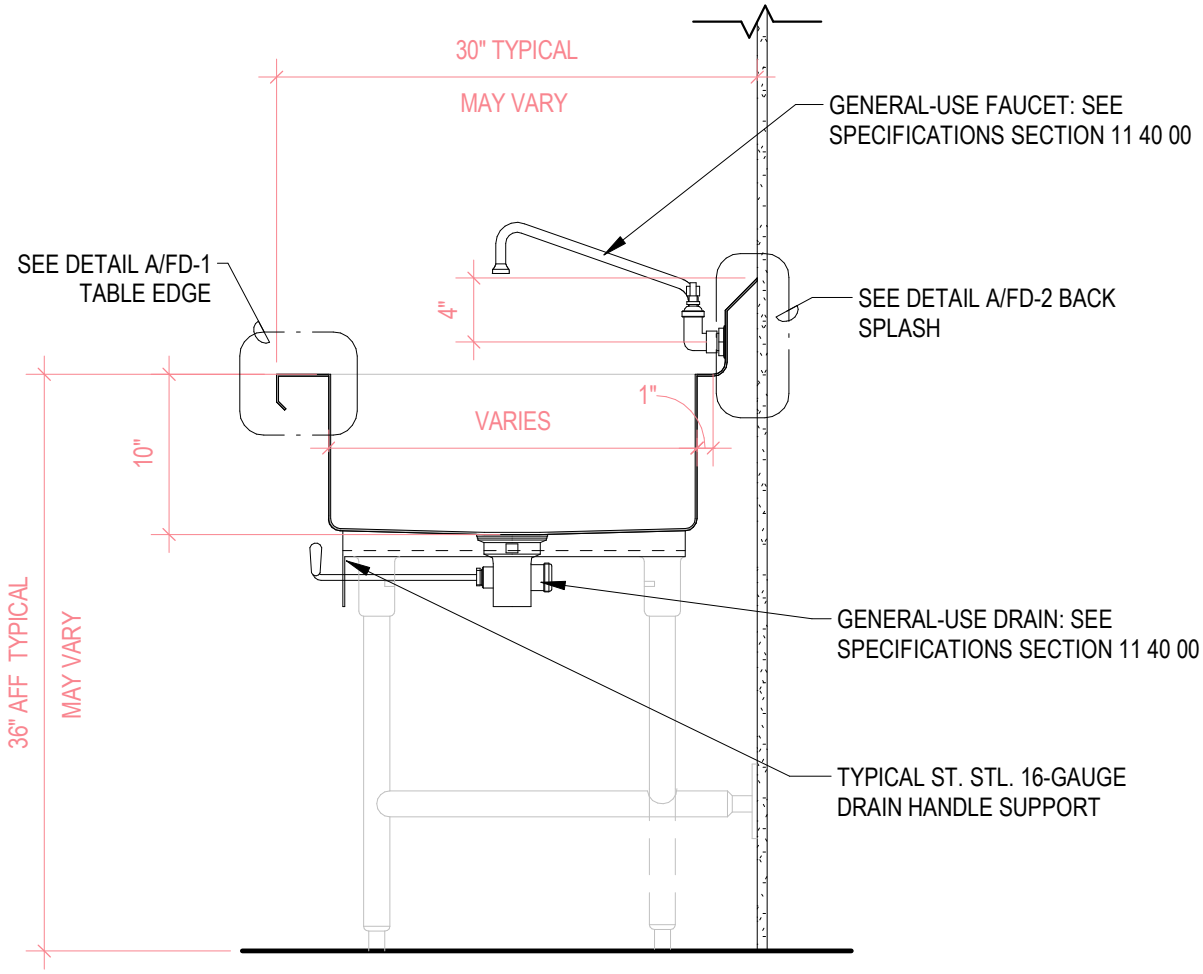
WASTE

	INDIRECT SIZE	DIRECT SIZE
1	1-1/2" to 2"	

PLUMBING 1 REMARKS

2" NPT Male Thread, 1-1/2 NPT Female Thread Outlet

Rebid Documents



ENERAL CONSTRUCTION NOTES:

CONSTRUCTION MEETS NSF STANDARD 2.
14-GAUGE STAINLESS STEEL THROUGH-OUT WITH 14-GUAGE GUSSET PLATES AT SINK.
SEAT DRAIN IN DIE-STAMPED DEPRESSION.
FULLY WELDED SINK TO TOP WITHOUT OVERLAPPING JOINTS.
ALL SINK WELDED COVE CORNER CONSTRUCTION WITH 3/4" RADIUS VERTICAL & HORIZONTAL CORNERS.
PITCH SINK TO WASTE OPENINGS.
SEAT DRAIN IN DIE-STAMPED DEPRESSION.
PROVIDE FAUCET & DRAIN LOOSE BY FSC AND INSTALLED BY PLUMBING CONTRACTOR.
WHEN MULTIPLE LARGE SINKS WELD DOUBLE WALL PARTITIONS. PARTITIONS TO FORM COVED SINKS. FRONT TO BE FLUSH WITH NO INDENTATIONS. BANDING WHEN SPECIFIED.

NOTE: *SHOWN ABOVE WITH LEGS HOWEVER THIS SINK MAYBE USED IN OTHER STYLE OF SUPPORTS; SEE SPECIFICATIONS SECTION 11 40 00*

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VEGETABLE PREPERATION SINK

REFERENCE ONLY

FD-12

Rebid Documents

T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No.
B-3952-01

Item No.

This Space for Architect/Engineer Approval

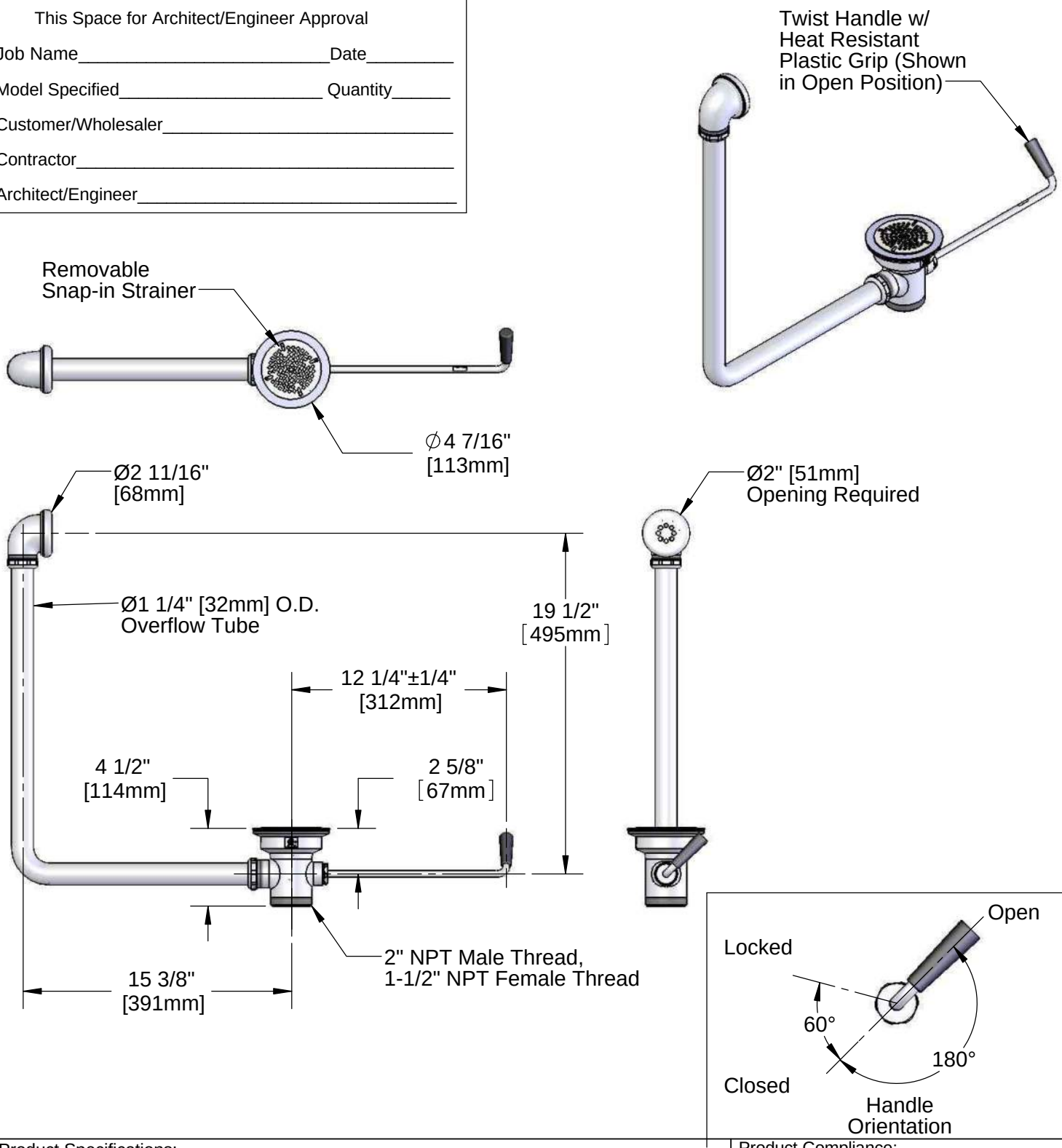
Job Name_____Date_____

Model Specified_____ Quantity_____

Customer/Wholesaler_____

Contractor_____

Architect/Engineer_____



Product Specifications:
Rotary Waste Drain Valve w/ Twist Handle, 3 1/2" Sink Opening, 2" Male NPT / 1-1/2" Female NPT Outlet & Overflow Tube & Head

Product Compliance:
ASME A112.18.2 / CSA B125.2

Drawn: KJG	Checked: JRM	Approved: JHB	Date: 08/28/14	Scale: 1:8	Sheet: 1 of 2

Rebid Documents

T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

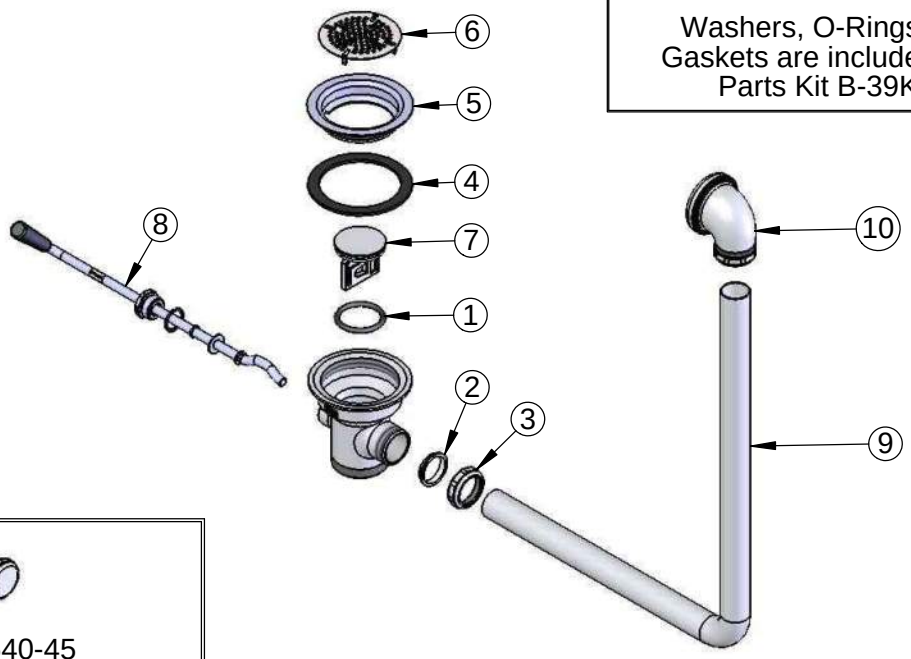
Model No.
B-3952-01

Item No.

ITEM	SALE NO.	DESCRIPTION
1	010389-45	O-Ring, Plunger
2	010390-45	Ferrule, Coupling Nut
3	010391-45	Nut, Coupling for Twist Drain
4	010382-45	Gasket, 3 1/2" Face Flange
5	010384-45	Flange, 3 1/2" Face
6	010386-45	Strainer, 3 1/2" Snap-in Removable
7	010388-45	Plunger, Lever and Twist Drain
8	010393-45	Handle, Rotary Waste Valve Twist
9	011355-45	Tube, Overflow Elbow
10	011356-45	Head, Overflow Tube



Washers, O-Rings & Gaskets are included in Parts Kit B-39K





012640-45
Waste Drain Overflow Cap w/ Sealing Washer (Included)

Product Specifications:
Rotary Waste Drain Valve w/ Twist Handle, 3 1/2" Sink Opening, 2" Male NPT / 1-1/2" Female NPT Outlet & Overflow Tube & Head

Product Compliance:
ASME A112.18.2 / CSA B125.2

Drawn: KJG	Checked: JRM	Approved: JHB	Date: 08/28/14	Scale: NTS	Sheet: 2 of 2

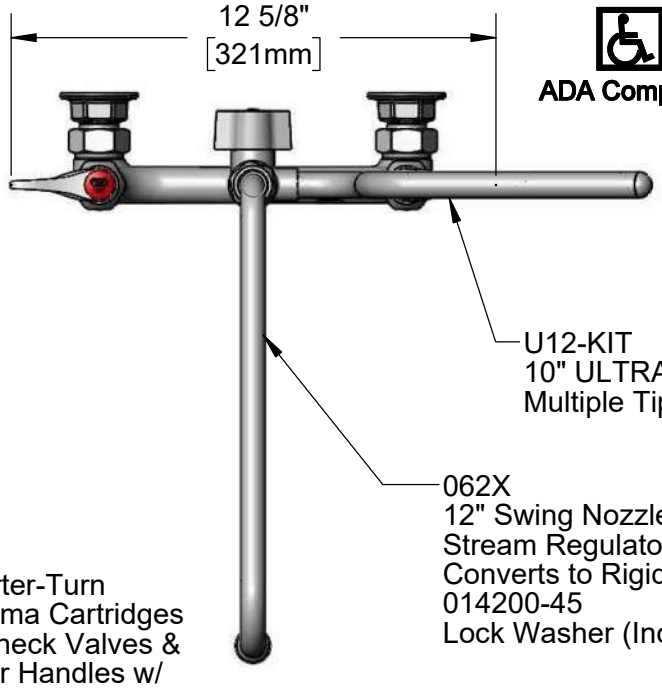
Rebid Documents

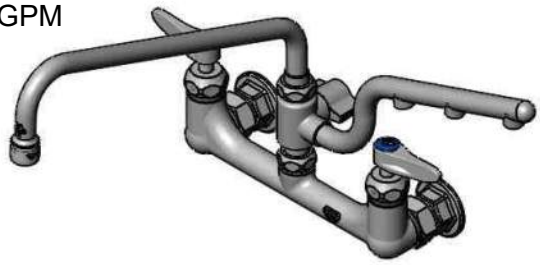
T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

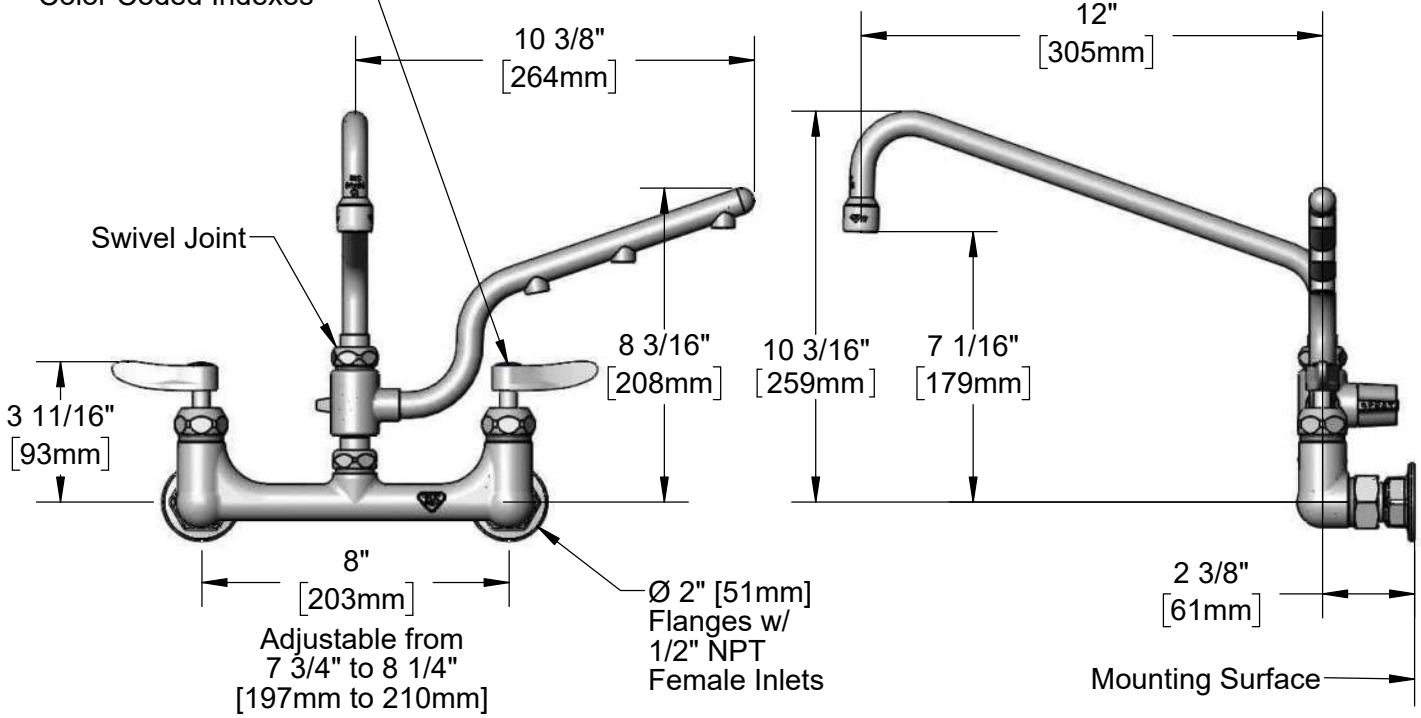
Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No.
B-0231-U12-CR
Item No.

This Space for Architect/Engineer Approval
Job Name_____Date_____
Model Specified_____ Quantity_____
Customer/Wholesaler_____
Contractor_____
Architect/Engineer_____







Product Specifications:
8" Wall Mount Mixing Faucet, Quarter-Turn Cerama Cartridges w/ Check Valves, Lever Handles, 1.5 GPM 10" ULTRARINSE Multiple Tip Spray Arm, 12" Swing Nozzle w/ Stream Regulator Outlet & 1/2" NPT Female Inlets

Product Compliance:
ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)
ANSI A117.1 (ADA)

Drawn: JBB	Checked: JRM	Approved: JHB	Date: 10/08/21	Scale: 1:5	Sheet: 1 of 2

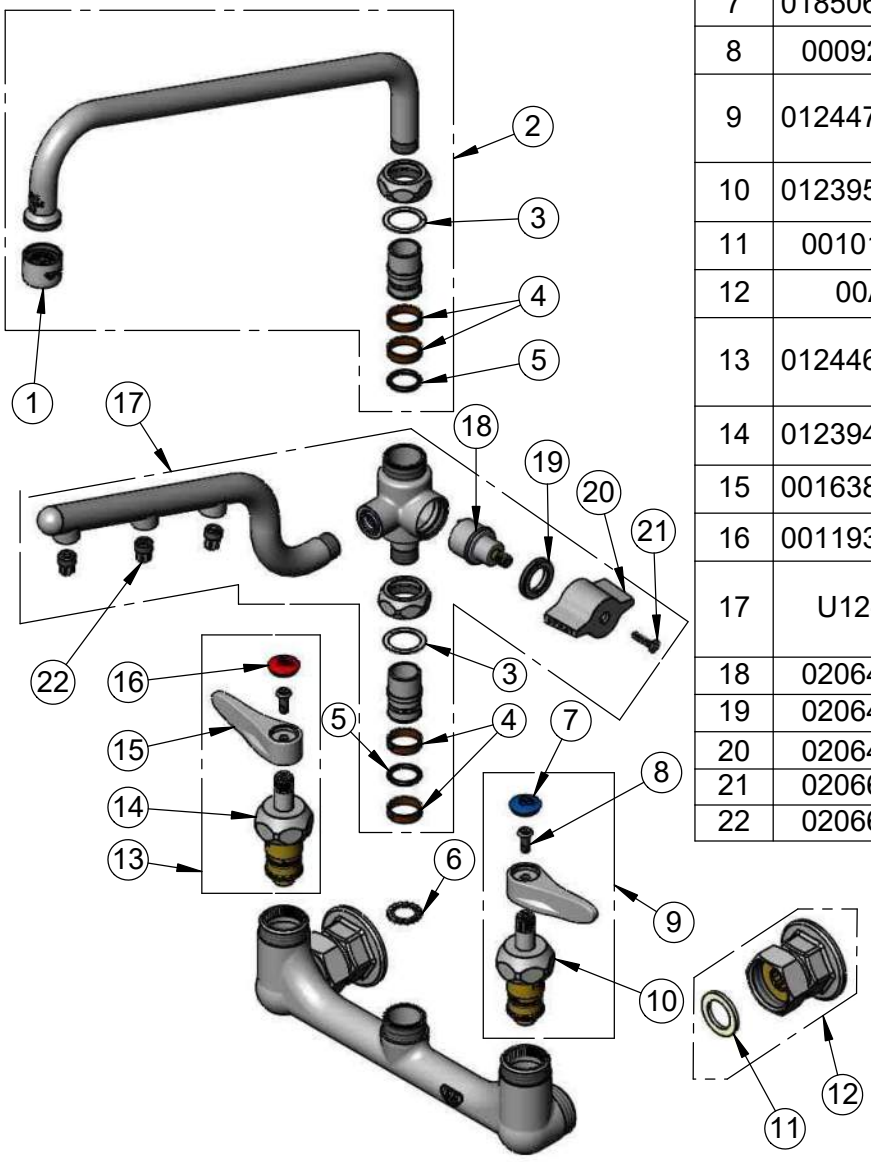
Rebid Documents

T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No.
B-0231-U12-CR

Item No.



ITEM NO.	SALES NO.	DESCRIPTION
1	B-PT	Full Flow Stream Regulator, 55/64-27
2	062X	12" Swing Nozzle
3	009538-45	Swivel Washer
4	011429-45	Swivel Sleeves (2)
5	001074-45	O-Ring
6	014200-45	Star Washer, Anti-Rotation
7	018506-19NS	Blue Button Index, Press-in
8	000925-45	Lab Handle Screw
9	012447-25NS	Quarter-Turn Cerama Cartridge w/ Check Valve, Handle, Blue Index & Screw, LTC
10	012395-25NS	Quarter-Turn Cerama Cartridge w/ Check Valve, LTC
11	001019-45	Coupling Nut Washer
12	00AA	1/2" NPT Female Eccentric Flange
13	012446-25NS	Quarter-Turn Cerama Cartridge w/ Check Valve, Handle, Red Index & Screw, RTC
14	012394-25NS	Quarter-Turn Cerama Cartridge w/ Check Valve, RTC
15	001638-45NS	Lever Handle (New Style)
16	001193-19NS	Red Button Index, Press-in
17	U12-KIT	10" ULTRARINSE 1.5 GPM Sprayer Arm
18	020641-45	ULTRARINSE Diverter Cartridge
19	020645-45	Diverter Cartridge Nut
20	020642-45	ULTRARINSE Diverter Handle
21	020669-45	M4 Screw, 17mm Long
22	020667-25	0.5 GPM Spray Tip

Product Specifications:
8" Wall Mount Mixing Faucet, Quarter-Turn Cerama Cartridges w/ Check Valves, Lever Handles, 1.5 GPM 10" ULTRARINSE Multiple Tip Spray Arm, 12" Swing Nozzle w/ Stream Regulator Outlet & 1/2" NPT Female Inlets

Product Compliance:
ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)
ANSI A117.1 (ADA)

Drawn:	Checked:	Approved:	Date:	Scale:	Sheet:
JBB	JRM	JHB	10/08/21	NTS	2 of 2

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 10 - SPARE NO.

<Spare No.>

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

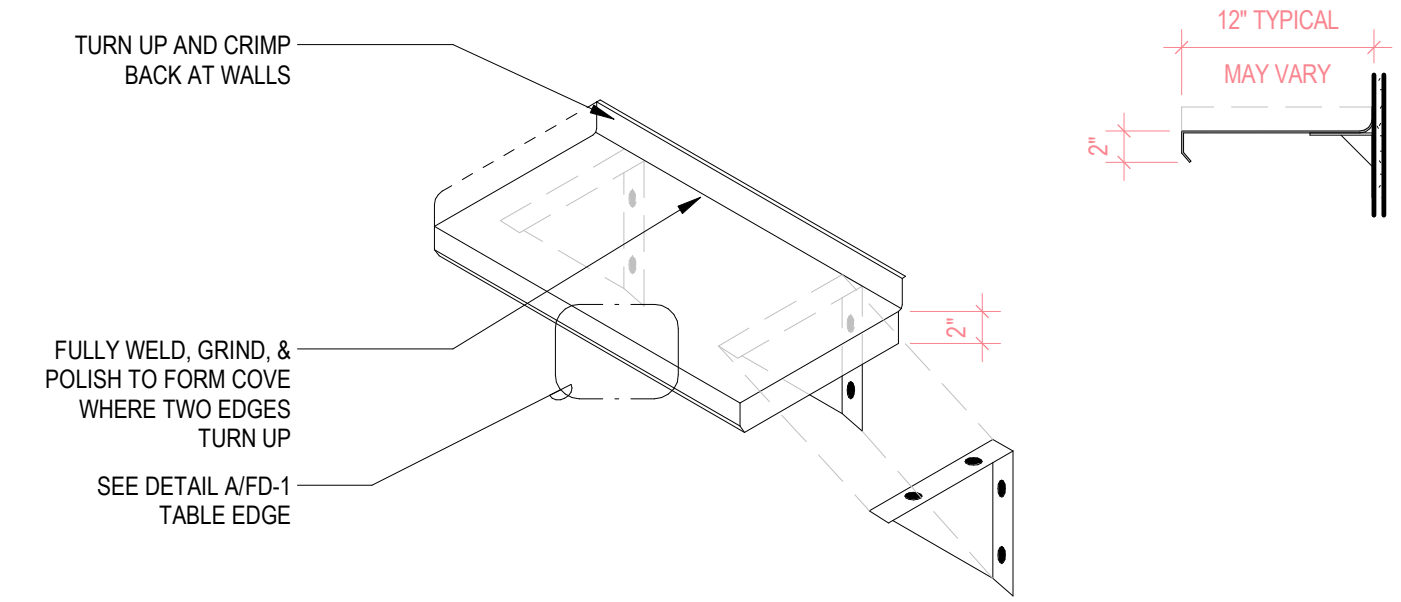
01/05/2026

ITEM# 11 - MICROWAVE SHELF (1 EA REQ'D)

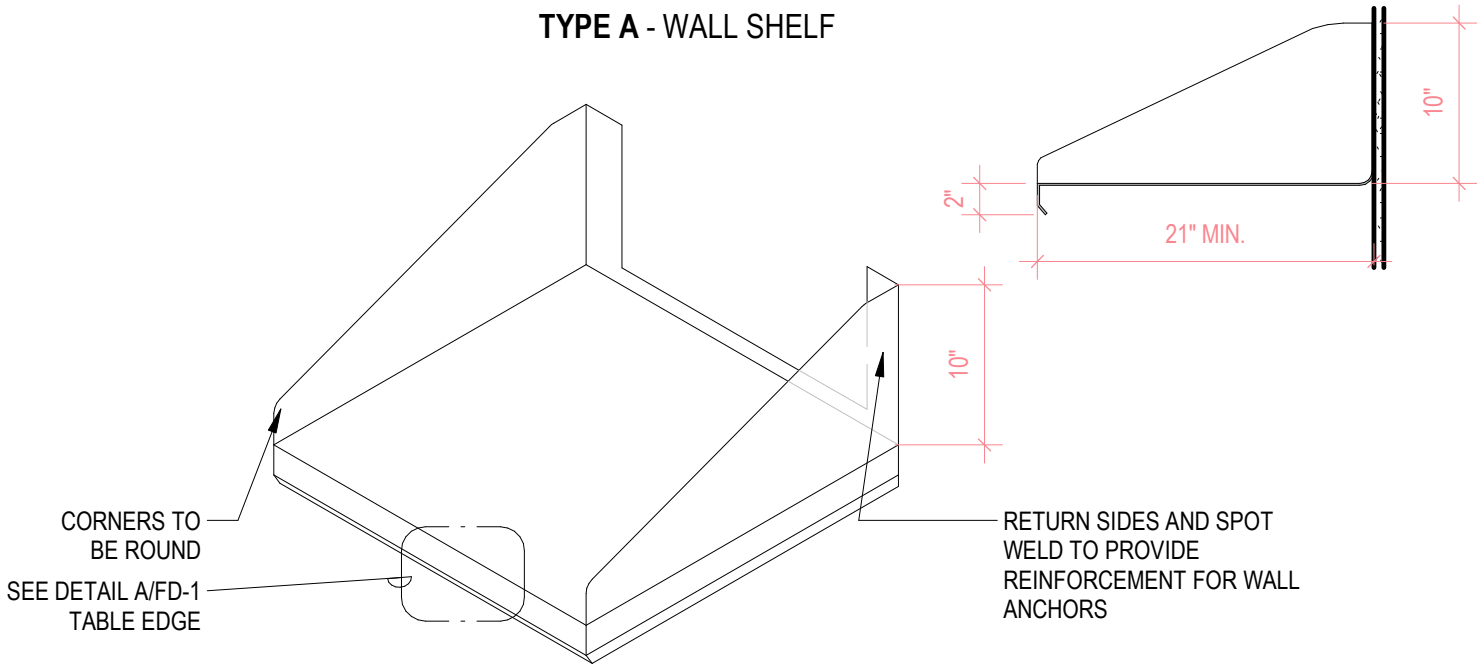
Custom Fab ST. STL.

Stainless Steel fabricated 16-gauge wall microwave shelf with an open inverted back to be 24” wide x 21” deep per plans and elevations 2/FS300 and detail FD-30 and as specifications 11 40 00 – 2.2-B. Provide with the following: Install shelf 18” above working surface unless otherwise noted on elevations.

Rebid Documents



TYPE A - WALL SHELF



TYPE B - MICROWAVE SHELF

GENERAL CONSTRUCTION NOTES:

1. CONSTRUCTION MEETS NSF STANDARD 2.
2. WALL SHELF TO BE 12" DEEP UNLESS OTHERWISE NOTES IN SPECIFICATIONS.
3. MICROWAVE SHELF DEPTH AND WIDTH TO ACCOMMODATE MICROWAVE; SEE SPECIFICATIONS SECTION 11 40 00.
4. 16-GUAGE STAINLESS STEEL WALL SHELF AND MICROWAVE SHELF.
5. 14-GAUGE STAINLESS STEEL BRACKET @ 60" O.C. MAX.
6. INSTALL SHELF 18" ABOVE COUNTER TOP OR AS SPECIFIED ON ELEVATION.
7. SECURE BRACKET TO WALL WITH STAINLESS STEEL FASTENERS.
8. SECURE BRACKET TO SHELF WITH STAINLESS STEEL STUDS, LOCK WASHERS, AND CAP NUTS.

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WALL SHELVES

Rebid Documents

REFERENCE ONLY

FD-30

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 12 - MICROWAVE OVEN (1 EA REQ'D)

Menumaster MCS10TS

Menumaster® Commercial Microwave Oven, 1000 watts, 1.2 cu. ft. capacity, stackable, medium volume, stainless steel exterior wrap & interior, 4-stage cooking, (5) power levels, (100) memory settings, ADA compliant braille touch pads, sealed in ceramic shelf, side hinged door with glass window, stationary air filter, power consumption 120v/60/1-ph, 1550 total watts, 13.0 amps, cord, NEMA 5-15P, cETLus, ETL

ACCESSORIES

Mfr	Qty	Model	Spec
Menumaster	1		Note: Sale of this product must comply with Menumaster's Minimum Resale Price Policy; consult order acknowledgement for details.
Menumaster	1		3-year limited warranty (1 year full)

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120	60	1	Cord & Plug		5-15P	13	1.55			

MENUMASTER® Commercial

Project #: _____

Item #: _____

AIA File #:

Specification #:



Model MCS10TS shown

Medium Volume

This category of microwave is ideal for...

Applications:

- Pizza restaurants
- Casual dining
- Clubs
- Deli

Defrost:

- Defrosts most frozen food products

All ACP, Inc. commercial ovens are backed by our Culinary Center. Call us with any question regarding food preparation, menu development and cooking times. 866-426-2621.

Medium Volume

Menumaster Commercial Microwave Model MCS10TS

Power Output

- 1000 watts of power.
- Five power levels for consistent, delicious results for frozen, refrigerated and fresh foods - from the freezer to table in minutes.

Easy to Use

- Up to 100 programmable menu items simplifies cooking and ensures consistent results.
- Four stage cooking option for easy one-touch cooking.
- Multiple quantity pad calculates the proper cooking times for multiple portions.
- User friendly touch controls are easy to use.
- Time entry option for added flexibility.
- Digital display with countdown timer for simple operation and "at-a-glance" monitoring.
- Braille touch pads are ADA compliant.
- See-through door and lighted interior for monitoring without opening the door.
- 1.2 cubic ft. (34 liter) capacity accommodates a 14" (356 mm) platter, prepackaged foods and single servings.
- Stackable to save valuable counter space.

Easy to Maintain

- Stainless steel exterior and interior for easy cleaning and a professional look.
- Non-removable air filter protects oven components.
- Constructed to withstand the foodservice environment.
- Backed by the ACP, Inc. 24/7 ComServ Support Center, 866-426-2621.
- ETL Listed.

Intertek Intertek

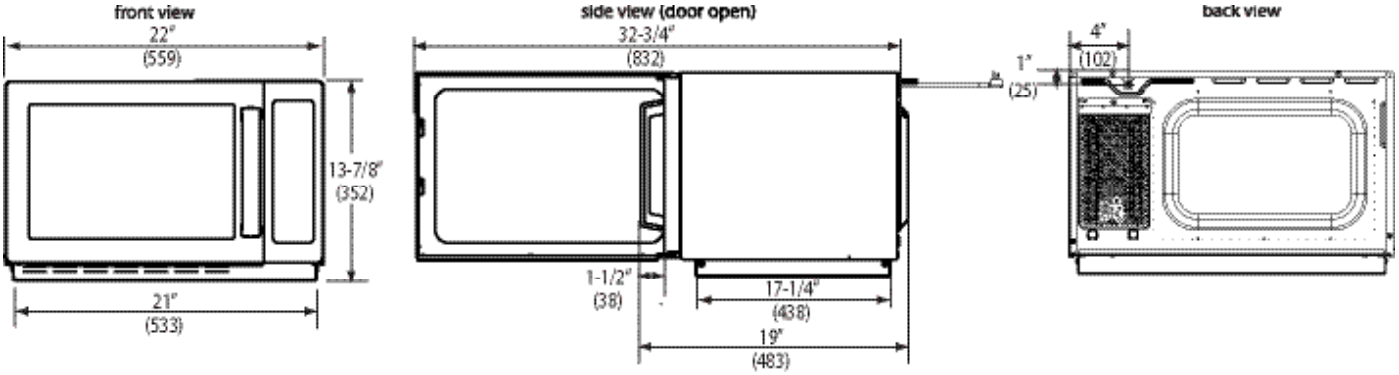
Part No. 20154727
Updated 6/16/16
Original Instructions

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Cedar Rapids, Iowa 52404

225 49th Ave. Dr. SW Cedar Rapids, IA 52404 U.S.A. | 800-233-2366 | 319-368-8120 | Fax: 319-368-8198 | www.acpsolutions.com

Rebid Documents

Menumaster Commercial Microwave Model MCS10TS | Medium Volume



Installation Clearances - Top: 2" (51), Sides: 1" (25), Back: None

Drawings available from KCL CADlog - techs@kclcad.com

Specification #:

AIA File #:

Specifications			
Model	MCS10TS	UPC Code 728028020748	
Configuration	Countertop		
Control System	Touch		
Programmable Control	10		
Settings Programmable	100		
Braille	Yes		
Max. Cooking Time	60:00		
Power Levels	5		
Defrost	Yes		
Time Entry Option	Yes		
Microwave Distribution	Rotating antenna, top		
Magnetron(s)	1		
Display	VFD		
Stackable	Yes		
Stage Cooking	Yes, 4		
Interior Light	Yes		
Door Handle	Grab & Go		
Signal	End of cycle, adjustable		
Air Filter	Non-removable with cleaning reminder		
Multiple Portion Setting	Yes, X2		
Exterior Dimensions	H 13 ⅞" (352)	W 22" (559)	D*19" (483)
Cavity Dimensions	H 8 ½" (216)	W 14 ½" (368)	D 15" (381)
Door Depth	32 ¾" (832), 90°+ door open		
Usable Cavity Space	1.2 cubic ft. (34 liter)		
Exterior Finish	Stainless steel		
Interior Finish	Stainless steel		
Power Consumption	1550 W, 13 A		
Power Output**	1000 W** Microwave		
Power Source	120V, 60 Hz, 15 A single phase		
Plug Configuration / Cord	NEMA 5-15	5 ft. (1.5m)	
Frequency	2450 MHz		
Product Weight	41 lbs. (18.6 kg.)		
Ship weight (approx.)	48 lbs. (21.8 kg.)		
Shipping Carton Size	H 16 ⅝" (422)	W 25 ⅜" (640)	D 19 ¾" (502)
UPS Shippable	Yes		

Measurements in ( ) are millimeters
* Includes handle
** IEC 60705 Tested

Specifications
Commercial microwave 10 touch pad control panel shall be programmable with the ability to program up to 100 menu items with two multiple portions. Touch pad shall include Braille for ADA compliance. Cooking timer shall be 60 minute, countdown style with a time entry option and an adjustable end of cycle audible signal. There shall be 5 power levels, including defrost and 4 cooking stages. Microwave output shall be 1000 watts distributed by one magnetron with a rotating top antenna to provide superior even heating throughout the cavity. Durable door shall have a tempered glass window and a grab and go handle with a 90°+ opening for easy access. An interior light shall facilitate monitoring without opening the door. The large 1.2 cubic ft. (34 liter) cavity shall accommodate a 14" (356 mm) platter. Interior ceramic shelf shall be sealed and recessed on oven bottom to reduce plate-to-shelf edge impact. Oven shall have a stainless steel interior and exterior and be stackable to save counter and shelf space. Front air filter shall be permanently affixed to the front of the oven and have a clean filter reminder. Microwave oven shall comply with standards set by the U.S Department of Health and Human Services, UL923 for safety and NSF4 for sanitation.

Warranty
Warranty Certificate for this product can be found on the ACP, Inc. website at:
www.acpsolutions.com/warranty

Service
All products are backed by the ACP, Inc. 24/7 ComServ Support Center.

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Cedar Rapids, Iowa 52404

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Rebid Documents

MCS Series

RESTAURANT LINE

MCS10TS - 1000 Watts, Touch pad control
MCS10DSE - 1000 Watts, Dial control

FEATURES AND BENEFITS

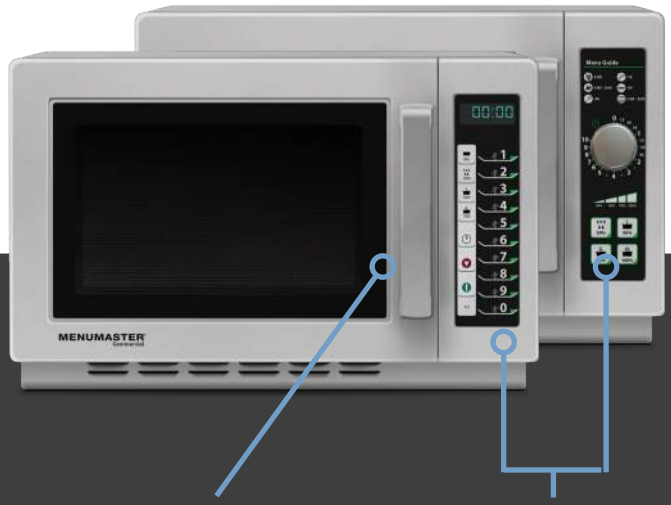
- 1000 watts of cooking power
  - Quick heating for consistent results
- 1.2 cubic ft. (34 L) oven capacity
  - Accommodates a 14" (356 mm) platter
- Motor driven top antenna
  - Reliable distribution of energy for consistent heating results
- Non-removable front air filter
  - Cools componentry, extends life of oven

TOUCH CONTROL MODELS

- 100 programmable menu items, 4 cooking stages, 5 power levels
- Braille touch pads
- Versatile program options
- One-touch cooking

DIAL CONTROL MODELS

- 10:00 light up dial timer
- 4 power levels
- Automatic reset to zero when cooking cycle is interrupted (manual reset available as user option)



Reliable, long lasting Grab 'n Go handle with no moving parts

Available with touch pad or dial controls



IDEAL APPLICATIONS

- Server stations
- Convenience stores
- Coffee shops
- Concessions
- Breakrooms

Fabricated and Assembled in the USA

BOOST HEATS AND RE-THERMS IN SECONDS!

- Breakfast sandwich reheats in 1:00
- Stage cooking perfectly prepares instant oatmeal in 1:30

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 13 - WALL SHELF (2 EA REQ'D)

INFINITY ST. STL.

Stainless Steel fabricated wall shelf to be 12” deep for general use as per plans and elevations 2/FS300 and detail FD-30 and as specifications 11 40 00 – 2.2-B. Provide with the following:
right end to have raw end splash
Install shelf 18” above working surface unless otherwise noted on elevations.

The spec sheet for this item can be viewed on item 3)

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 14 - WIRE SHELVING UNIT (1 EA REQ'D)

Metro 5A537K3

Super Adjustable Super Erecta® Starter Shelving Unit, 36"W x 24"D x 74"H, (5) wire shelves, (4) posts, Metroseal 3™ epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, KD, NSF

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 15 - SPARE NO.

<Spare No.>

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 15 - DISHTABLE SORTING SHELF (2 EA REQ'D)

John Boos PB-SRW-21-X

Sorting Shelf, 21"W x 15-3/8"D X 16-1/2"H, holds (1) rack, wall mounted, solid, includes brackets, 18/300 stainless steel, NSF (Available in Effingham and Nevada)

SPEC SHEET

"PB-SRW" SORTING SHELVES

Solid Construction, Wall Mounted

FEATURES:
- Solid Sorting Wall Shelf
- Drainage Tube In Corner

SPECIFICATIONS:
- TIG Welded With Exposed Surfaces Blended To Match
- Brackets: 18GA Type 300 Stainless Steel
- Shelf: 18GA Type 300 Stainless Steel

CERTIFICATIONS:



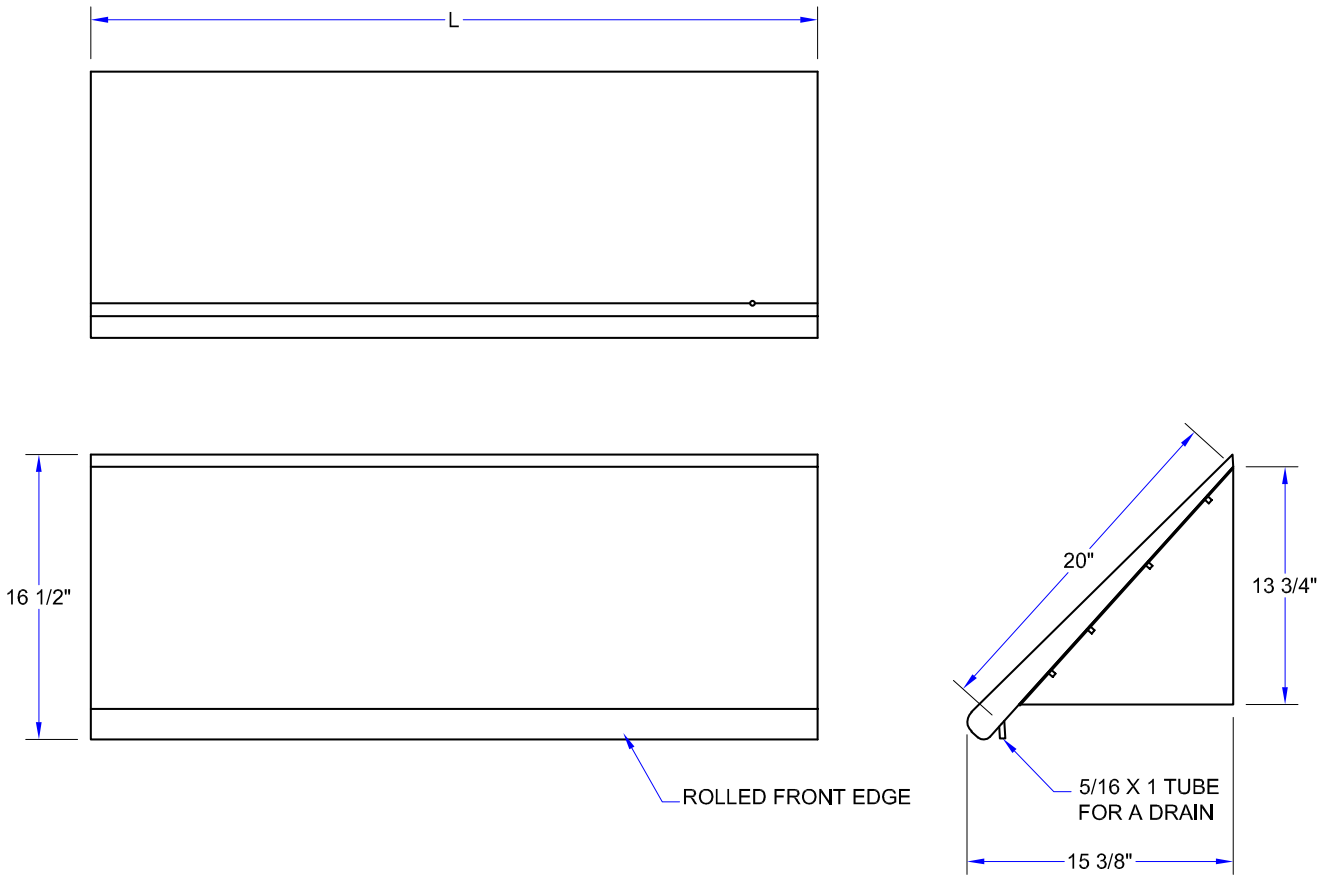
PB-SRW-21

"PB-SRW" SORTING SH ELVES

MODEL	SIZE (LXWXH)	WEIGHT (LBS)
PB-SRW-21	21"x15-3/8"x16-1/2"	5
PB-SRW-42	42"x15-3/8"x16-1/2"	10
PB-SRW-63	63"x15-3/8"x16-1/2"	28

ALL DIMENSIONS ARE TYPICAL. TOLERANCE +/- .500". JOHN BOOS & CO. RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

DETAILED SPECIFICATIONS



"PB-SRW" SORTING SHELVES

MODEL	SIZE (LXWXH)	WEIGHT (LBS)
PB-SRW-21	21"x15-3/8"x16-1/2"	5
PB-SRW-42	42"x15-3/8"x16-1/2"	10
PB-SRW-63	63"x15-3/8"x16-1/2"	28

ALL DIMENSIONS ARE TYPICAL. TOLERANCE +/- .500". JOHN BOOS & CO. RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 16 - FOUR COMPARMENT SINK (1 EA REQ'D)

Custom Fab ST. STL.

Stainless Steel four compartment sink per plans and elevation 7/FS300. Fabricate per section 11 40 00-2.2 and per fabrication details. Provide with the following:
One (1) Table edge and drain board area around sink with a type D/FD-1. With drop edge at front of sink components.
One (1) 10” high wall splash per A/FD-2
Three (3) 20” wide x 26-1/2” deep x 14” depth sink per FD-14
Three (3) Lever Drain with overflow per 11 40 00 -2.6-A-1.
One (1) 20” wide x 26-1/2” deep x 7” depth sink per FD-4 with welded in collar for disposer item #15 with removable rack slide.
Two (2) High flow sink faucet per 11 40 00 -2.6-B-4.
Three (3) St. Stl. Sink banding.
Disposer control mounting chase per FD-4
Four (4) Sets St. Stl. Legs per FD-20
Services:
Three (3) 2” Direct Waste
Two (2) 3/4” Hot and Cold Water

ACCESSORIES

Mfr	Qty	Model	Spec
T&S Brass	3	B-3952-01	Waste Valve, twist handle, 3-1/2" sink opening, 2" drain outlet with overflow assembly (replaces B-3917-01)
T&S Brass	2	B-0290-0427	Kettle & Pot Sink Mixing Faucet, wall mount, 8" adjustable centers, 12" Big-Flo swing nozzle with plain end outlet, 4-arm kitchen handles with color coded indexes, 00LL street elbows with 3/4" female NPT inlets, B-0427 supply nipple kits, ADA Compliant

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1	3/4"			3/4"					

WASTE

	INDIRECT SIZE	DIRECT SIZE
1	1-1/2" to 2"	

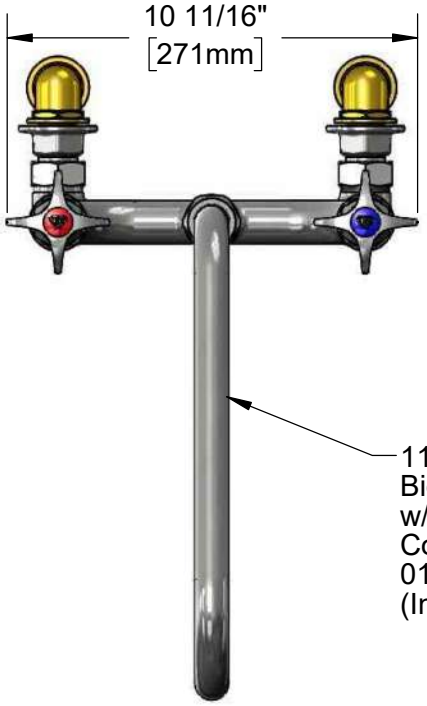
PLUMBING 1 REMARKS

2" NPT Male Thread, 1-1/2 NPT Female Thread Outlet

Rebid Documents

T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690
Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No.
B-0290-0427
Item No.

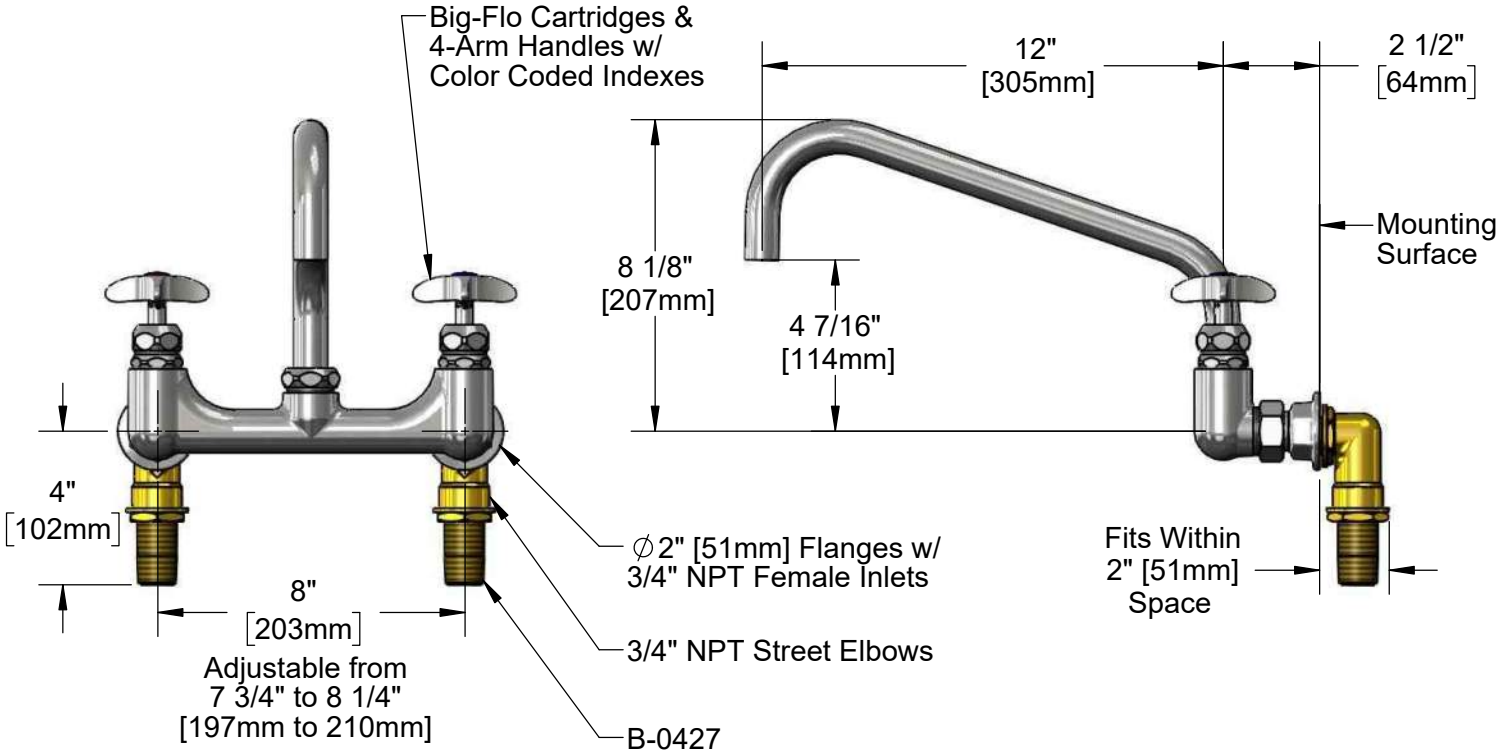


ADA Compliant

This Space for Architect/Engineer Approval
Job Name_____Date_____
Model Specified_____ Quantity_____
Customer/Wholesaler_____
Contractor_____
Architect/Engineer_____

114X
Big-Flo 12" Swing Nozzle
w/ Plain End Outlet.
Converts to Rigid with
016807-45 Lock Washer
(Included)





Rough-In Requirement:
∅1 1/4" [32mm] Mounting Holes

Product Specifications:
8" Wall Mount Big-Flo Mixing Faucet, Big-Flo Cartridges, 4-Arm Handles, 12" Big-Flo Swing Nozzle, 3/4" Street Elbows & 3/4" Supply Nipple Kits

Product Compliance:
ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)
ANSI A117.1 (ADA)

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Rebid Documents

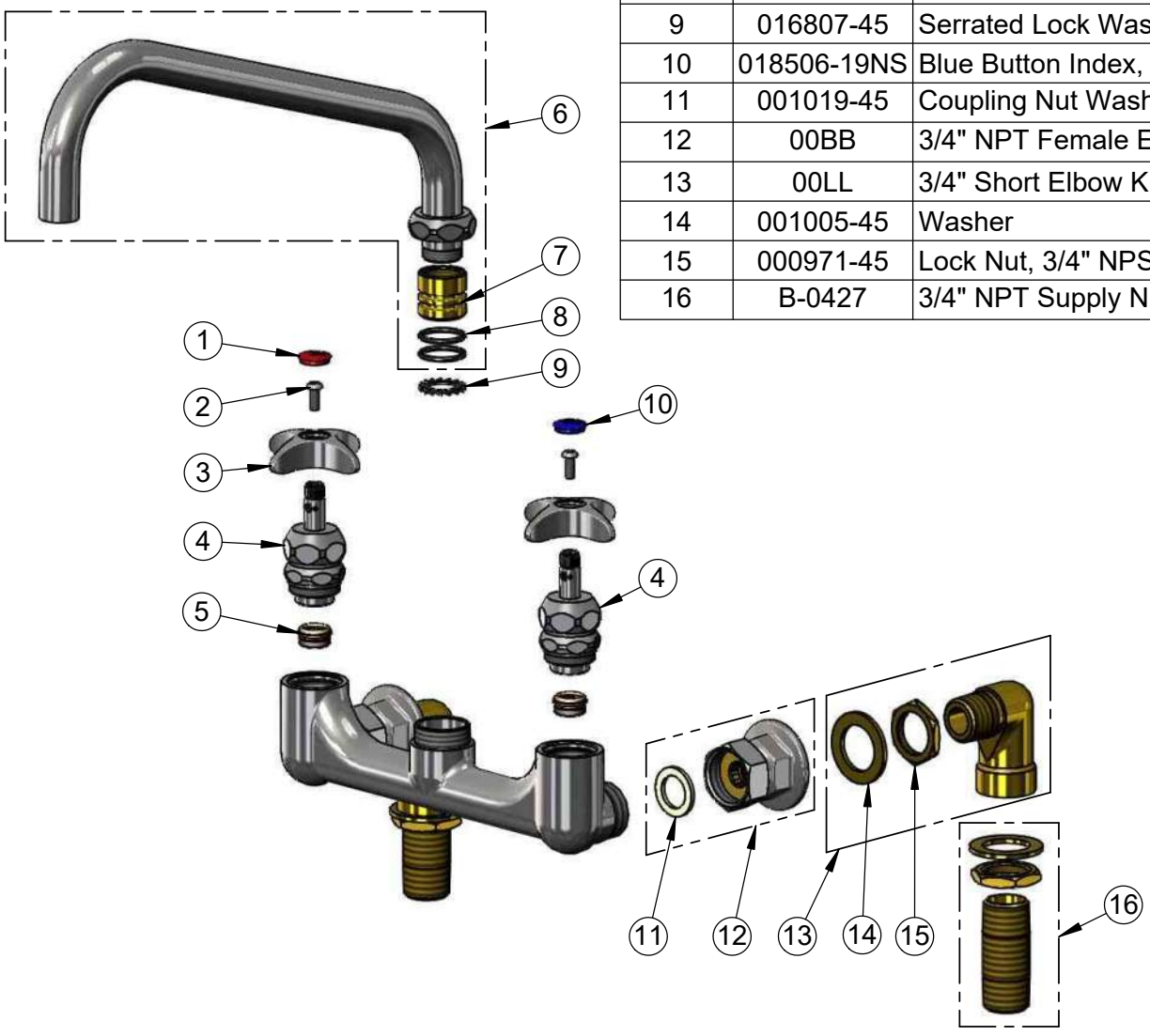
T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No.
B-0290-0427

Item No.

ITEM NO.	SALES NO.	DESCRIPTION
1	001193-19NS	Red Button Index, Press-in
2	000925-45	Lab Handle Screw
3	002521-45NS	4-Arm Handle (New Style)
4	006482-40NS	Big-Flo Cartridge, RTC
5	000764-20	Seat, Big-Flo
6	114X	12" Big-Flo Swing Nozzle
7	000847-20	Big-Flo Swivel Piece
8	001068-45	O-ring
9	016807-45	Serrated Lock Washer
10	018506-19NS	Blue Button Index, Press-in
11	001019-45	Coupling Nut Washer
12	00BB	3/4" NPT Female Eccentric Flange
13	00LL	3/4" Short Elbow Kit
14	001005-45	Washer
15	000971-45	Lock Nut, 3/4" NPSM
16	B-0427	3/4" NPT Supply Nipple Kit



Product Specifications:
8" Wall Mount Big-Flo Mixing Faucet, Big-Flo Cartridges, 4-Arm Handles, 12" Big-Flo Swing Nozzle, 3/4" Street Elbows & 3/4" Supply Nipple Kits

Product Compliance:
ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)
ANSI A117.1 (ADA)

Drawn:	Checked:	Approved:	Date:	Scale:	Sheet:
DMH	JRM	JHB	06/15/18	NTS	2 of 2

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 17 - PRE-RINSE FAUCET ASSEMBLY, WITH ADD ON FAUCET 3-COMP SINK (1 EA REQ'D)

T&S Brass TYPE 5 (B-0287-427-BC)

See Section 11 40 000 -2.06-B; Big-Flow Pre-Rinse Unit, wall mount, 8" centers, 12" add-on swing nozzle, 4-arm handles, .65 GPM spray valve, 3/4" NPT, EPAct2005 compliant (B-0107-C).
Services:
3/4" Hot and Cold Water

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1				3/4"					

WASTE

	INDIRECT SIZE	DIRECT SIZE
1		

Rebid Documents

T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No.
B-0287-427-BC

Item No.

This Space for Architect/Engineer Approval

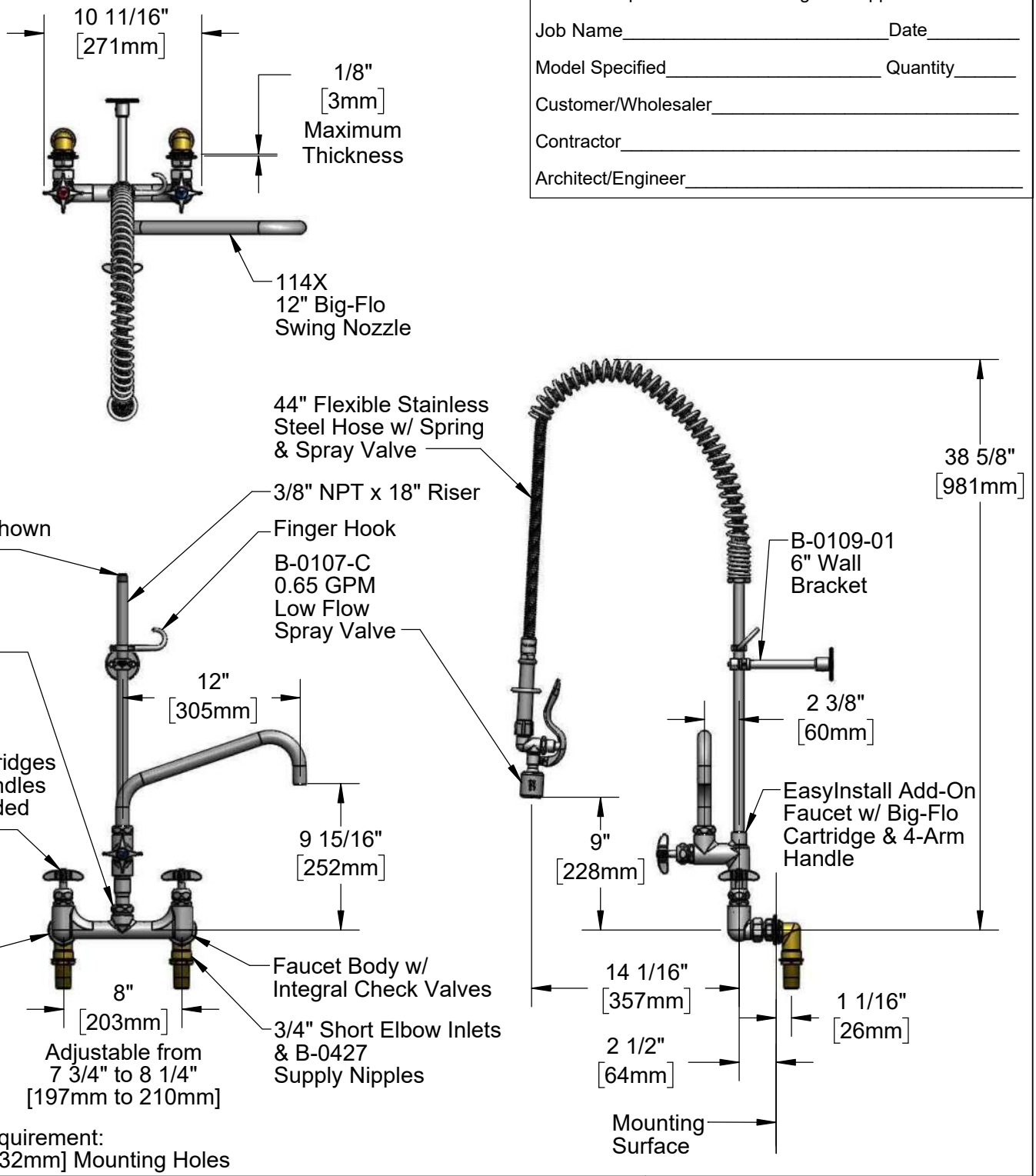
Job Name_____Date_____

Model Specified_____ Quantity_____

Customer/Wholesaler_____

Contractor_____

Architect/Engineer_____



Rough-In Requirement:
(2) Ø 1 1/4" [32mm] Mounting Holes

Product Specifications:

Pre-Rinse Unit: EasyInstall 8" Wall Mount Big-Flo Mixing Faucet, Big-Flo Cartridges, Check Valves, 4-Arm Handles, Big-Flo Add-On Faucet, 12" Swing Nozzle, 0.65 GPM Low Flow Spray Valve, 44" Flexible Stainless Steel Hose, 6" Wall Bracket, 3/4" Short Elbow Inlets & Supply Nipples

Product Compliance:

ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)
2019 DOE PRSV - Class I

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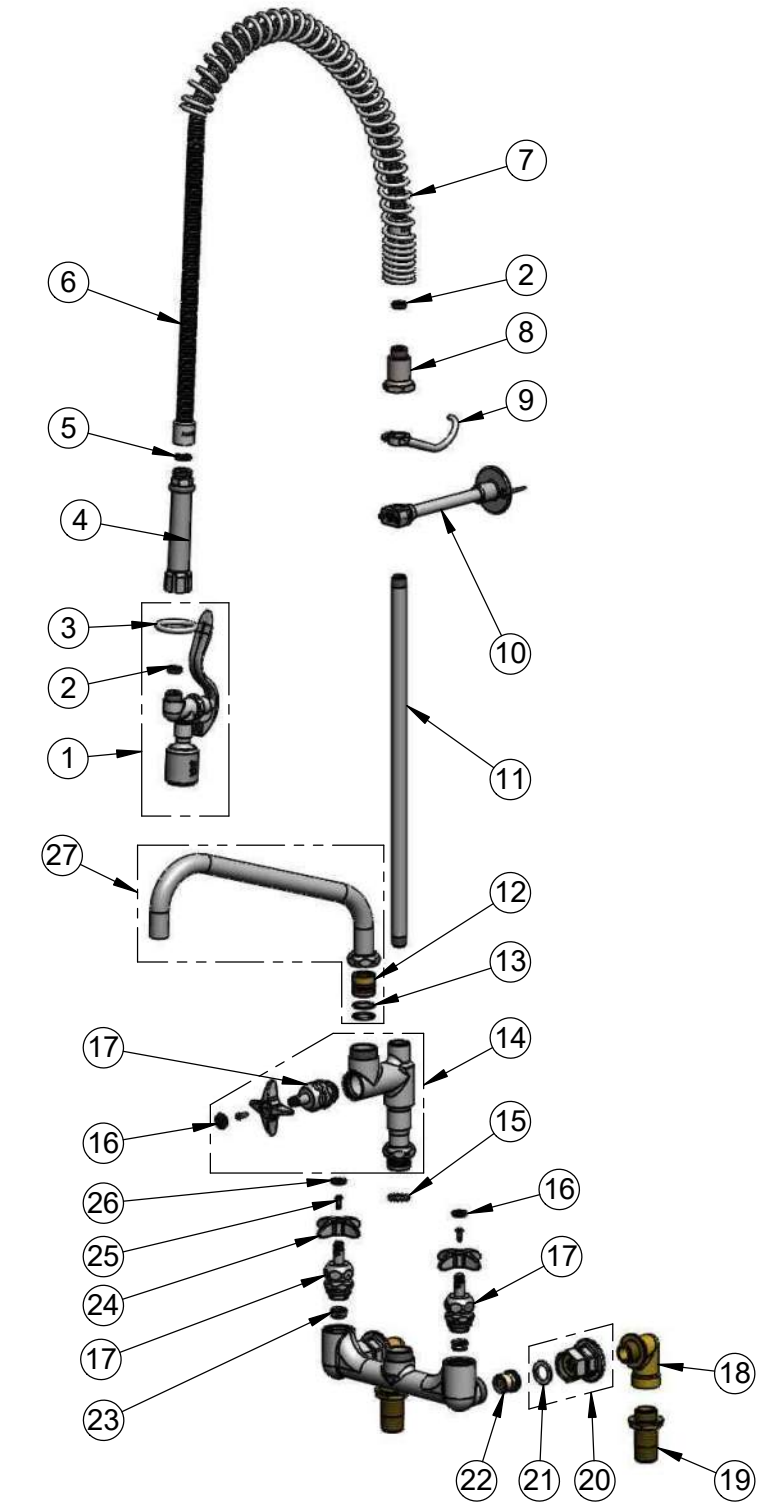
Rebid Documents

T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No.
B-0287-427-BC

Item No.



ITEM NO.	SALES NO.	DESCRIPTION
1	B-0107-C	0.65 GPM Low Flow Spray Valve
2	010476-45	#27 Washer
3	000907-45	Spray Valve Hold Down Ring
4	002987-40	Grip Handle
5	001014-45	Washer, B-0100 Hose Barrel
6	B-0044-H2A	44" Flexible Stainless Steel Hose, Less Handle
7	000888-45	EasyInstall Overhead Spring
8	000821-40	Spring Body
9	004R	Finger Hook
10	B-0109-01	6" Wall Bracket
11	000369-40	3/8" NPT x 18" Riser
12	000847-20	Big-Flo Swivel Piece
13	001068-45	O-ring
14	B-0286-LNEZ	EasyInstall Big-Flo Add-On Faucet
15	016807-45	Serrated Lock Washer
16	018506-19NS	Blue Button Index, Press-in
17	006482-40NS	Big-Flo Cartridge, RTC
18	00LL	3/4" Short Elbow Inlet
19	B-0427	3/4" NPT Supply Nipple Kit
20	00BB	3/4" NPT Female Eccentric Flange
21	001019-45	Coupling Nut Washer
22	016902-20	Big-Flo Check Valve
23	000764-20	Seat, Big-Flo
24	002521-45NS	4-Arm Handle (New Style)
25	000925-45	Lab Handle Screw
26	001193-19NS	Red Button Index, Press-in
27	114X	12" Big-Flo Swing Nozzle

Product Specifications:
Pre-Rinse Unit: EasyInstall 8" Wall Mount Big-Flo Mixing Faucet, Big-Flo Cartridges, Check Valves, 4-Arm Handles, Big-Flo Add-On Faucet, 12" Swing Nozzle, 0.65 GPM Low Flow Spray Valve, 44" Flexible Stainless Steel Hose, 6" Wall Bracket, 3/4" Short Elbow Inlets & Supply Nipples

Product Compliance:
ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)
2019 DOE PRSV - Class I

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LSA	JRM	JHB	09/20/19	NTS	2 of 2

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 18 - DISPOSER (1 EA REQ'D)

InSinkErator SS-100-5-MRS

SS-100™ Complete Disposer Package, sink mount system, with #5 adaptor for 3.5" to 4" sink opening, 1 HP motor, stainless steel construction, includes syphon breaker, solenoid valve, flow control valve, manual reverse switch

ACCESSORIES

Mfr	Qty	Model	Spec
InSinkErator	1		(1) year parts & labor warranty from date of installation (standard)
InSinkErator	1		208v/60/3-ph, 2.0 amps
InSinkErator	1	SYPHON 45DEG	Syphon breaker upgrade, chrome, 45° fittings (replace with 13412)

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	208	60	3				2		1		

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1				1/2"					

WASTE

	INDIRECT SIZE	DIRECT SIZE
1		1-1/2"

Rebid Documents

PROJECT: _____ **ITEM NO.:** _____

SS SERIES FOOD WASTE DISPOSERS

Food waste disposers are a hygienic and environmentally sustainable way to manage pre- and post-consumer scraps in a foodservice establishment. The SS Series disposers are ideal for heavy-duty applications such as restaurants, schools and universities, healthcare facilities and hospitals, and government facilities.

PRODUCT FEATURES & SPECIFICATIONS



SS-SERIES

- Whether you serve 25 or 2,500 people, there is an InSinkErator disposer that's designed for your operation. From the small-capacity SS-100™ model to our large-capacity SS-1000™ workhorse, InSinkErator disposers deliver superior performance, quiet operation, maximum energy efficiency, and reliable service.

SYSTEM OVERVIEW

- Stainless steel and chrome-plated finish
- Corrosion-resistant, stainless steel grind chamber
- Heavy-duty induction motor with built-in thermal overload protection
- Enclosure provides protection against outside moisture with controlled power air flow to cool motor
- Extremely durable shredding elements
- Double-tapered Timken roller bearings provide a shock-absorbing cushion
- Triple lip seal protects motor from water damage
- Secondary spring-loaded oil seal provides double protection against water and loss of grease

CLEANING

- Disposers are easy to clean and maintain
- Wipe down exterior surfaces with a wet cloth
- Use warm soapy water on the splashguard

Commercial Disposer Sizing Chart

To determine the proper size disposer, use this recommended sizing chart. Sizing recommendations are given in general terms; actual capacities vary depending on the volume and type of food waste.

Volume Processed / Application	Light Majority Fruits & Vegetables	Medium 50/50 Mixture	Heavy Majority Meats & Seafood
High Buffet/Cafeteria Government	SS-300	SS-300/ SS-500	SS-500	SS-500/ SS-1000	SS-500/ SS-1000 (2,500 MEALS)
Medium Full Service Restaurant	SS-200	SS-300	SS-300/ SS-500	SS-500	SS-500/ SS-1000
Low Limited Service Restaurant/Café/ Fast Casual	SS-100	SS-200	SS-300	SS-300/ SS-500	SS-1000
(100 MEALS)	SS-100	SS-100	SS-200	SS-300	SS-300/ SS-500

Food Waste Composition

A complete collection of our product drawings is available for download at the **InSinkErator Revit/CAD** Library, which can be found at www.insinkerator.com/foodservice. Product information is also accessible on ***The KCL CADalog***. More information is available from KCL at www.kclcad.com.

1250 International Drive
Mount Pleasant, WI 53177
TEL: 800-845-8345

www.insinkerator.com/foodservice

c UL us LISTED ISO 9001 QUALITY SYSTEMS CERTIFIED

Rebid Documents

WHAT'S INCLUDED

- Base disposer: 1 mounting gasket
- Disposer packages: 1 mounting/bowl assembly, 1 electrical control, 1 syphon breaker, 1 solenoid valve, and 1 flow control valve (the standard flow control valve will be sent with the unit unless the optional valve is specified)

MODEL & HORSEPOWER/ELECTRICAL REQUIREMENTS (CHOOSE ONE)

Small Capacity Disposers



☐ **SS-100**
1 HP

	☐ 115/208-230V, 60 Hz, 1 Ph, 11.6/5.1/5.7 amps, **cULus** ☐ 208-230/460V, 60 Hz, 3 Ph, 2.0/2.4/1.2 amps, **cULus**	☐ 120/208-240V, 60 Hz, 1 Ph, 11.6/5.1/5.7 amps, **NOM** ☐ 100/200-230V, 50/60 Hz, 1 Ph, 10.4/5.2/5.4 amps
Water Usage:	☐ 5 GPM (18.9 LPM) standard water flow	☐ 3 GPM (11.4 LPM) reduced water flow (optional)

Medium Capacity Disposer



☐ **SS-200**
2 HP

	☐ 115/208-230V, 60 Hz, 1 Ph, 17.4/7.7/8.7 amps, **cULus** ☐ 208-230/460V, 60 Hz, 3 Ph, 3.6/4.4/2.2 amps, **cULus** ☐ 115/208-230V, 60 Hz, 1 Ph, 17.4/7.7/8.7 amps, **cULus**, **short body**	☐ 208-230/460V, 60 Hz, 3 Ph, 3.6/4.4/2.2 amps, **cULus**, **short body** ☐ 208-240/460V, 60 Hz, 3 Ph, 3 Ph, 3.6/4.4/2.2 amps, **NOM** ☐ 380V, 50/60 Hz, 3 Ph, 2.3 amps
Water Usage:	☐ 7 GPM (26.5 LPM) standard water flow	☐ 5 GPM (18.9 LPM) reduced water flow (optional)

Large Capacity Disposers



☐ **SS-300**
3 HP

	☐ 208-230/460V, 60 Hz, 3 Ph, 6.0/7.4/3.7 amps, **CUL** ☐ 208-230/460V, 60 Hz, 3 Ph, 6.0/7.4/3.7 amps, **CUL**, **short body** ☐ 208-230/460V, 60 Hz, 3 Ph, 7.0/8.6/3.7 amps, **NOM**	☐ 415V, 50 Hz, 3 Ph, 4.9 amps ☐ 220V, 50 Hz, 3 Ph, 7.2 amps ☐ 380V, 50/60 Hz, 3 Ph, 4.1 amps
Water Usage:	☐ 8 GPM (30.3 LPM) standard water flow	☐ 7 GPM (26.5 LPM) reduced water flow (optional)

☐ **SS-500**
5 HP

	☐ 208-230/460V, 60 Hz, 3 Ph, 8.6/8.8/4.4 amps, **CUL** ☐ 208-230/460V, 60 Hz, 3 Ph, 8.6/8.8/4.4 amps, **CUL**, **short body** ☐ 230/460V, 50 Hz, 3 Ph, 9.0/4.5 amps	☐ 415V, 50 Hz, 3 Ph, 6.0 amps ☐ 380V, 50 Hz, 3 Ph, 8.9 amps
Water Usage:	☐ 8 GPM (30.3 LPM) standard water flow	☐ 7 GPM (26.5 LPM) reduced water flow (optional)

☐ **SS-1000**
10 HP

	☐ 208-230/460V, 60 Hz, 3 Ph, 11.0/13.0/6.5 amps, **CUL** ☐ 208-230/460V, 60 Hz, 3 Ph, 11.0/13.0/6.5 amps, **CUL**, **short body**
Water Usage:	☐ 10 GPM (37.9 LPM) standard water flow

DISPOSER MOUNTING ASSEMBLIES (CHOOSE ONE)

Sink Collar Mounts



☐ **#5 Sink Flange Kit**
for 3-1/2"–4" (88.9 mm–101.6 mm) sink opening (support legs are recommended)

#5 adaptors only available on small and medium capacity disposers.



☐ **#6 Collar Adaptor Kit**
for welding into trough, for 6-5/8" (168.3 mm) opening, includes splash baffle



☐ **#7 Collar Adaptor Kit**
for welding into sink, for 6-5/8" (168.3 mm) opening, includes splash baffle and stopper

Sink Bowl Mounts

Bowl Size

- ☐ 12" (304.8 mm) with one adjustable water nozzle
- ☐ 15" (381.0 mm) with one adjustable water nozzle
- ☐ 18" (457.2 mm) with two adjustable water nozzles

Kit Type



☐ **Type A Sink Bowl Assembly**
- bowl
- water nozzle(s)
- bowl cover
- splash baffle



☐ **Type B Sink Bowl Assembly**
- bowl
- water nozzle(s)
- silver guard
- splash baffle

Rebid Documents

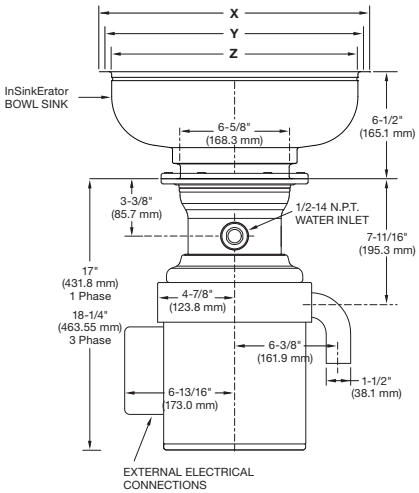
ELECTRICAL CONTROLS (CHOOSE ONE)

☐ AS-101 Control Center AquaSaver®	☐ CC-101 Control Center	☐ CC-202 Control Center	☐ Manual Reverse Switch	☐ Manual Switch
				
• Automatically changes direction • Stainless-steel housing • Automatic shut-off with power loss • Line disconnect • Programmable post-flush • Timed run • Automatically regulates water flow to grind load	• Automatically changes direction • Stainless-steel housing • Automatic shut-off with power loss • Line disconnect • Programmable post-flush • Timed run	• Automatically changes direction • Stainless-steel housing • Automatic shut-off with power loss	• Manually changes direction • Stainless-steel housing • Automatic shut-off with power loss	• Single direction • Polycarbonate housing • Automatic shut-off with power loss

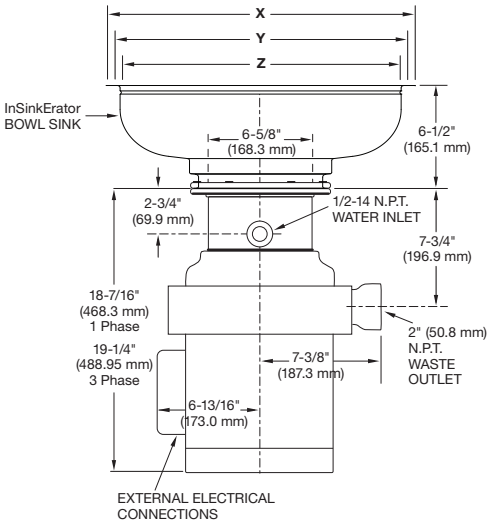
DISPOSER DIMENSIONS

Standard models shown. A short body model is available on medium and large capacity disposers. Short body models reduce overall height by 1" (25.4 mm) on medium capacity disposers and by 3" (76.2 mm) on large capacity disposers.

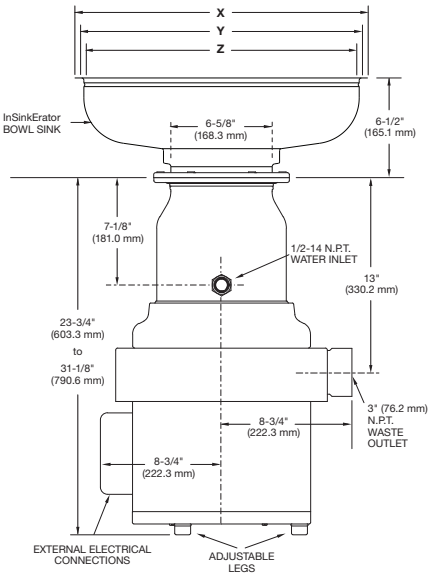
Small Capacity



Medium Capacity



Large Capacity

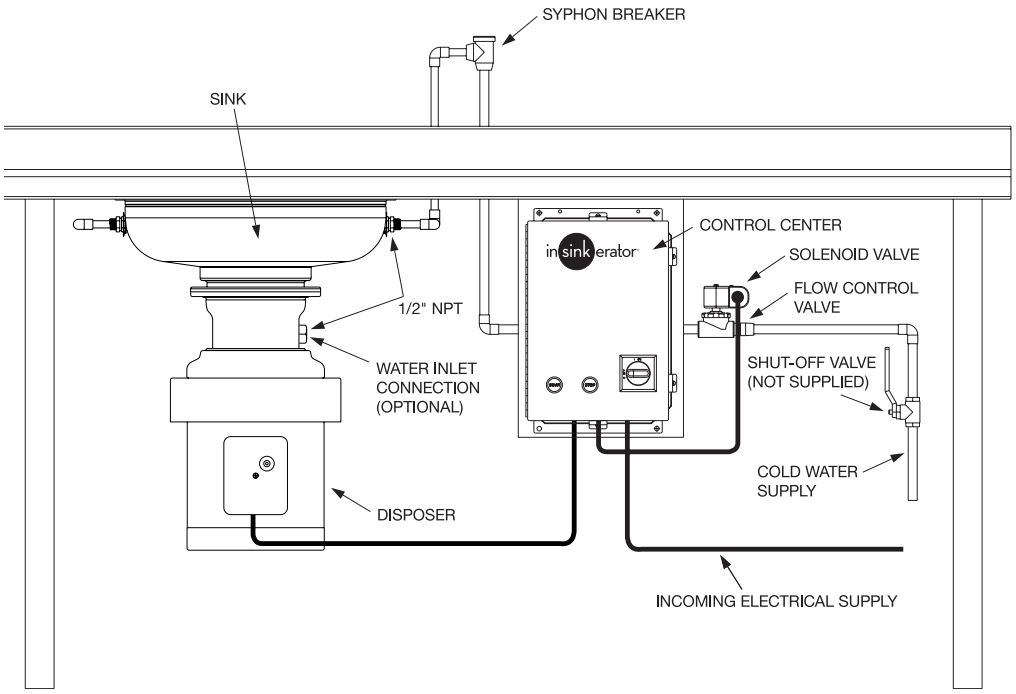


If mounting directly to a sink, use dimension chart below for adaptor height in place of InSinkErator bowl sink height.
IMPORTANT: #5 adaptors only available on small and medium capacity disposers.

Bowl Mounts	Flange O.D. X	Work Table Hole Y	Flange I.D. Z	Height
12" (304.8 mm)	13-1/2" (342.9 mm)	12-1/4" (311.2 mm)	12" (304.8 mm)	6-1/2" (165.1 mm)
15" (381 mm)	16-1/2" (419.1 mm)	15-1/4" (387.4 mm)	15" (381.0 mm)	6-1/2" (165.1 mm)
18" (457.2 mm)	19-1/2" (495.3 mm)	18-1/4" (463.6 mm)	18" (457.2 mm)	6-1/2" (165.1 mm)
Collar Mounts	**X**	**Y**	**Z**	**Height**
#5	Fits Standard Sink Opening: 3-1/2" – 4" (88.9 mm – 101.6 mm)			2-3/4" (69.9 mm)
#6	7-13/16" (198.4 mm)	6-7/8" (174.6 mm)	6-5/8" (168.3 mm)	1-3/16" (30.2 mm)
#7	9-1/8" (231.8 mm)	7-7/8" (200.0 mm)	7-5/8" (193.7 mm)	2-1/16" (52.4 mm)

Rebid Documents

TYPICAL INSTALLATION - BOWL



REPLACING A COMPETITIVE DISPOSER

- Refer to the Mounting Adaptor Guide or Video for adaptors that fit competitor sink bowls or cones.
- Have sink bowl/cone type with appropriate dimensions available when contacting Customer Service with questions or to place an order.

SAMPLE SPECIFICATION

InSinkErator Food Waste Disposer. Food waste grinding system with _____ HP disposer, _____ control panel. _____ Volts, _____ Hz, _____ Phase operation. _____ disposer mount. Syphon breaker with 1/2" NPT connections; flow control valve; (1) 24V water solenoid.

PROJECT INFORMATION

Item Number: _____

Quantity: _____

Manufacturer: InSinkErator

Model Number: _____

Electrical Requirements: _____volts _____phase

Project: _____

Address: _____

City/State/Zip: _____

Contact: _____

Phone: _____

Dealer: _____

City/State/Zip: _____

Contact: _____

Phone: _____

Installer: _____

Contact: _____

Phone: _____

Consultant: _____

Contact: _____

Phone: _____

PROJECT: _____ **ITEM NO.:** _____

ACCESSORIES



ADJUSTABLE SUPPORT LEGS

- Recommended for all disposer installations & mountings
- Sold in sets of two legs
- Two support legs can be added to small disposer orders
- Two support legs included with Medium disposers, but not installed
- Three support legs are included and installed on Large disposers.
- P/N 11757C



FLANGE FOOT

- Provides secure floor mounting option for commercial disposers
- Use anywhere extra stability or security is a concern
- Flange foot is sold individually and includes one set screw
- Order two feet for medium size units and three feet for large units
- P/N 14394



THROAT GUARD

- Throat Guard mounts at the throat opening of the disposer
- Keeps hands safely away from disposer grind chamber
- Cannot be removed while disposer is installed on sink or trough
- Fits any disposer with a standard $6^{5}/_{8}$" throat opening
- Includes gasket and mounting bolts
- P/N 13620



TAMPER-PROOF CONTROL PANEL SCREWS

- Replaces standard closure screws on disposer control panels
- Eliminates unauthorized entry into control panel for safety and security
- For use with CC-101, CC-202, AS-101, WX-101 and PR-101 disposer control panels
- Includes four control panel replacement screws and matching wrench
- P/N 13946



MAGNETIC SILVER SAVER

- Mounts to any trough system
- To order, specify part# 13983
- One Trough Magnetic Silver Saver approximately 18 inches from disposer hole is recommended. Additional magnets along length of trough are optional.

Our products appear on ***The KCL CADalog***
More information is available from
Kochman Consultants, Ltd. at www.kclcad.com.

1250 International Dr.
Mount Pleasant, WI 53177
TEL: 800-845-8345

www.insinkerator.com/foodservice

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Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 19 - DISHWASHER, UNDERCOUNTER (1 EA REQ'D)

Hobart LXNR-2

Advansys™ Dishwasher, undercounter with 17” door opening height, 120/208-240(3W)/60/1, accommodates optional two-level racking accessory, high temperature sanitizing, Steam elimination and Energy Recovery, 30, 24, 13 Racks/Hour, (48 racks / hour with second level rack), Fresh Water Rinse, .62 gal/rack, Complete Delime™ with Delime Notification, Auto Dispensing, and Booster Guard™, 3 selectable cycles - light, normal, heavy (Pot & Pan cycle on heavy cycle), smart touchscreen controls with SmartConnect™ app, Service Diagnostics, Chemical Pumps with Auto Prime, 23-15/16"W x 26-13/16"D x 33-1/4"H, cULus, NSF, ENERGY STAR®. Factory Startup - Free for installations within 100 miles (accessible by public roadway) of a Hobart Service Office during normal business hours with appropriate notice; Installation beyond 100 miles or those not accessible by public roadway will be quoted by Service.

ACCESSORIES

Mfr	Qty	Model	Spec
Hobart	1		Standard warranty - 1-Year parts, labor & travel time during normal working hours
Hobart	1	CORD-PWRKIT-H3LX	Power Cord Kit - LXE, 120/208-240(3w)/60/1, NEMA 14-50P, plug included
Hobart	1	TWOLEVELKIT-LX	Two Level Racking Kit - Rack support, (1) 2nd level wire rack, (2) silverware baskets (only compatible with LXNR, LXNH, LXNC, LXER -H & -C models built after July 1, 2022)
Hobart	1	WTRHAM-ARREST	Water Hammer Arrestor Kit - Includes 3/4" brass presure regulator valve
Hobart	1	PRESREG-3/40BR	3/4" brass pressure regulator
Hobart	1	DOORLOCK-LXN	Automated door lock prevents opening of door before cycle is complete for LXnR models
Hobart	1	ACC-INSTALL-HOB	Accessory Installation - For installations within 100 miles (accessible by public roadway) of a Hobart Service Office during normal business hours with appropriate notice; Installation beyond 100 miles locations in Alaska, Hawaii or New York City or those not accessible by public roadway will be quoted by Service. Includes installation of this item only, final electrical or plumbing connections by others. Recommendation: coordinate accessory installation with machine assembly/ installation (NET)
Hobart	1	PUMPDRN-AIRGAP	Pumped Drain Air Gap Kit

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120/208-240			Direct							
2	120/208-240					14-50P					

ELECTRICAL 1 REMARKS

Rebid Documents

Requires 3-wire power connection

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1				3/4"					

WASTE

	INDIRECT SIZE	DIRECT SIZE
1	5/8"	

Rebid Documents

HOBART

Project _____

AIA # _____ SIS # _____

Item # _____ Quantity _____ C.S.I. Section 114000

COMMERCIAL DISHWASHERS

LXnR advansys
HIGH TEMPERATURE
Undercounter Dishwashing Machine



c UL us NSF ENERGY STAR

SPECIFIER STATEMENT

Specified unit will be a NSF rated high temperature Advansys™ ventless undercounter dishwasher operating on a cold water supply with steam elimination and energy recovery. Features two-level racking capability, Complete Delime™ with Delime Notification, Auto Dispensing and Booster Guard™, AutoClean, a 17" door opening, snap-in revolving upper and lower rinse arms, three selectable cycle times, 2-stage filtration, up to 30 racks per hour, .62 gallons per cycle, color touchscreen with Wi-Fi and SmartConnect App connectivity, low temperature and chemical alerts, advanced diagnostics and service connection, NSF certified pot and pan mode, detergent, rinse aid and delime pumps. Constructed of stainless steel.

1 year parts and labor warranty.

STANDARD FEATURES

+ Racks per hour – Light 30 / Normal 24 / Heavy 13
+ .62 gallons of water per cycle
+ Two-level racking capability
+ High temperature sanitization unit
+ User-friendly smart touchscreen controls
+ Wi-Fi connectivity
+ SmartConnect App with machine status, temperature logs, error code reporting, and usage analysis
+ Steam elimination and energy recovery
+ AutoClean cycle washes down inside of machine at shutdown
+ NSF certified pot and pan cycle on heavy cycle
+ 17" door opening
+ Temperature and chemical alerts (lockouts available)
+ Sense-A-Temp™ 70°F rise electric booster heater
+ Chemical pumps with auto-prime for detergent and rinse-aid
+ Soft start to protect glassware
+ Advanced diagnostics and service connection
+ Complete Delime™ with Delime Notification, Auto Dispensing and Booster Guard™
+ Deep drawn stainless steel tank
+ Revolving upper and lower anti-clogging interchangeable wash arms
+ Snap-in revolving upper and lower interchangeable rinse arms
+ 2-stage wash tank filtration
+ Energy saver mode
+ Automatic pumped rinse and drain
+ Automatic fill
+ Electric tank heat
+ Combination rack
+ Peg rack (excludes LXnR-2L)
+ Two-level rack kit (LXnR-2L only)

OPTIONS & ACCESSORIES (Available at extra cost)

❑ Hobart exclusive two-level racking kit boosts capacity up to 48 racks per hour
❑ Door lock (keeps door locked until condensing cycle is complete)
❑ Power cord kit
❑ 6" stainless steel legs
❑ 17" stainless steel stand with storage
❑ External height adjustable casters
❑ Internal height adjustable casters (3")
❑ Drain water tempering kit
❑ Water hammer arrestor kit
❑ Splash reduction panel
❑ Trim strip
❑ Pressure regulator valve
❑ Pumped drain air gap kit

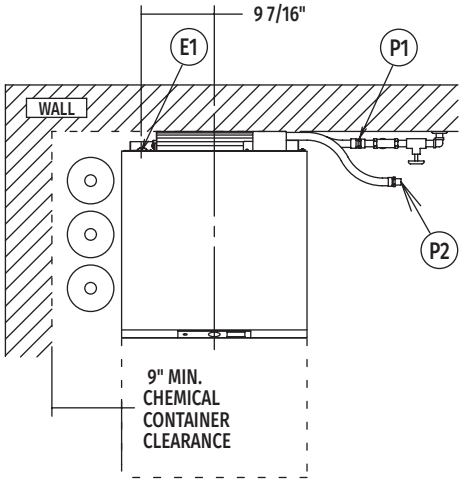
LXn SERIES – LXnR advansys HIGH TEMPERATURE

Approved by_____ Date_____ Approved by_____ Date_____

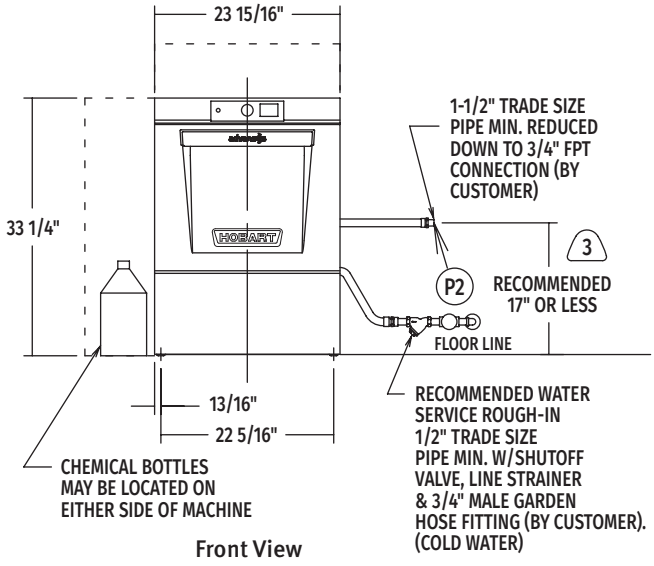
Rebid Documents

HOBART

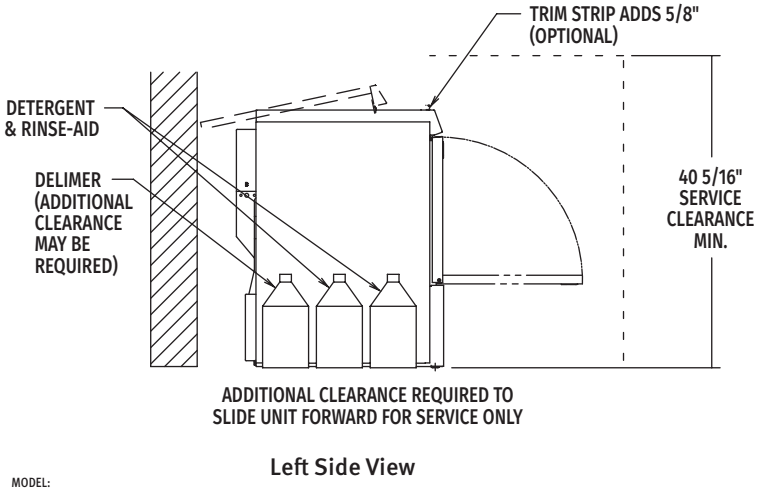
LXnR advansys HIGH TEMPERATURE
Undercounter Dishwashing Machine



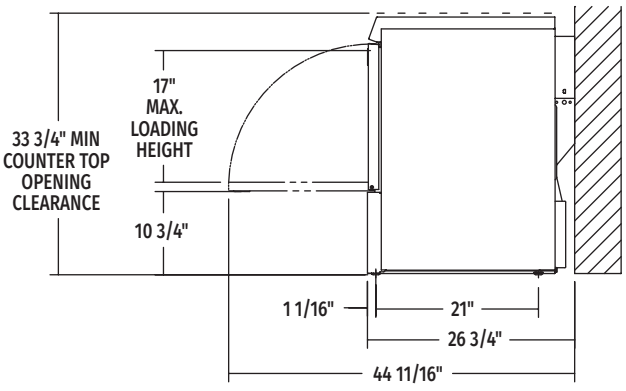
Top View



Front View



Left Side View



Right Side View

MODEL:
LXnR
00-563661
REV: A5

CAD and/or Revit Files Available

HOBART

LXnR advansys HIGH TEMPERATURE
Undercounter Dishwashing Machine

LEGEND

Electrical Connections	
E1	Electrical connection: 1-3/8" dia. hole for 1" trade size conduit; 4-5/8" AFF.
Plumbing Connections	
P1	Single fill and rinse connection: 3/4" female garden hose fitting on 6' long hose supplied with machine; 55-80°F (cold) recommended for LXnR.
P2	Common drain connection: 5/8" barb fitting with 6' long hose supplied with machine.

WARNING: Electrical and grounding connections must comply with the applicable portions of the National Electrical Code and/or other local electrical codes.

Plumbing connections must comply with applicable sanitary, safety and plumbing codes. Drain and fill line configurations vary, some methods are shown on this drawing.

NOTICE

Required flowing water pressure to the dishmachine is 15-65 PSIG. If pressures higher than 65 PSIG are present, a pressure regulating valve must be installed in the water line to the dishmachine (by others).

Pressure gauge not required on pumped rinse machines.

Important: Chemical containers should be placed no higher than 10" above floor.

If chemical containers are to be placed in cabinet adjacent to machine, a 1/2" dia. hole is required in the cabinet to run chemical supply line.

Notes:

1. All vertical machine dimensions taken from floor may be increased by 1".
2. Moist air escapes from the door. Use only moisture resistant materials adjacent to dishmachine sides and top.
3. A vent hood is not recommended above the undercounter dishmachine since it does not produce excessive vapors.

Plumbing Notes:

1. Water hammer arrestor (meeting ASSE-1010 Standard or equivalent) to be supplied (by others) in common water supply line at service connection.
2. Recommended water hardness to be 3 grains or less for best results.
3. If drain hose is looped above a sink, the loop must not exceed 38" AFF.
4. Backflow prevention provided by NSF-approved air gap device.

Miscellaneous Note:

1. For optimal performance, Hobart recommends maintaining a dishroom temperature of 65°F (18°C) or higher, as lower temperatures may hinder the machine's capacity to operate effectively (with lower performance as ambient temperature decreases).

SPECIFICATIONS

Capacities
- Cycle Time (seconds) . . . . . Light 119 / Normal 148 / Heavy 278
- Racks per Hour . . . . . Light 30 / Normal 24 / Heavy 13
- Tank Capacity – Gallons 2.9

Motor Horsepower
- Wash 0.85
- Rinse 0.19

Water Consumption
- U.S. Gallons per Cycle 0.62
- U.S. Gallons per Hour (maximum use) 18.6
- Peak Drain Flow – U.S. Gallons (gallons per minute). 4.0

Temperatures °F
- Wash 150
- Rinse 180
- Incoming Water Temperature (minimum recommended) . 55-80

Heating
- Tank Heat, electric (kW) 1.8
- Electric Booster (kW) 4.9

Standard 20" x 20" Rack Complement
- Combination 1
- Peg (excludes LXnR-2L) 1
- Two Level (LXnR-2L only) 1

Shipping Weight (approximate) . . . . . 215 lbs.

Crated Dimensions . . . . . 27"W x 30"L x 40"H

Heat Output, BTU/Hour	
Latent	Sensible
1,100	2,000

(E1) Standard Electrical Options

Tank Heat, Booster, Pump & Controls			
Voltage	Rated Amps	Minimum Supply Circuit Ampacity	Maximum Protective Device
208-240/60/1	33.7	40	40
120/208-240(3W)60/1*	34.0	40	40
208-240/60/3	24.9	30	30
220-240/50/1	33.4	40	40
120/208(3W)60/1*,**	23.7	30	30

NOTE: For supply connections, use copper wire only rated at 90°C minimum.

*This system requires three power wires which includes a current carrying neutral, an additional fourth wire must be provided for machine ground.

**Booster and tank heater not energized concurrently.

Dishmachine not provided with internal GFCI protection.

As continued product improvement is a policy of Hobart, specifications are subject to change without notice.

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 20 - HAND SINK W/ FAUCET (1 EA REQ'D)

John Boos PBHS-W-1410-SSLR-X

Pro-Bowl Hand Sink, wall mount, 14"W x 10" front-to-back x 5" deep bowl, splash mount faucet holes with 4" centers, 1-7/8" drain opening with basket drain, with left & right side splashes, includes mounting bracket, all stainless steel construction, NSF, CSA-Sanitation. Provide this item with the following options:
Services:
120 volt, 1 phase
2” Direct Waste
½” Hot & Cold Water

ACCESSORIES

Mfr	Qty	Model	Spec
T&S Brass	1	TYPE 8 (B-1115-132XAW4K)	See Section 11 40 000 -2.06-B; Workboard Faucet, wall mount, 4" centers, 2-11/16" swivel gooseneck nozzle with 2.2 GPM VR aerator, quarter-turn Eterna cartridges with spring checks, 4" wrist action handles with color coded indexes, 1/2" NPT male inlet elbows, low lead, cCSAus, ADA Compliant, NSF.
T&S Brass	1		1 year limited warranty, standard
T&S Brass	1	B-0230-KIT	Inlet Kit, 1/2" NPT nipple, close elbows, 24" flex supply hoses
Advance Tabco	1	K-170	Eye Wash Attachment, attaches to standard spout, adjustable aerated outlet heads, float-off dust covers, pull knob activation, removable aerator on bottom, chrome plated forged brass body (Not to be used with foot or knee operated units or electronic faucets)

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1	1/2"			1/2"					

WASTE

	INDIRECT SIZE	DIRECT SIZE
1		

PLUMBING 1 REMARKS

(1) set of 1" faucet holes, 4" centers, 1-7/8" drain opening; 1-1/2" drain connection

Rebid Documents

John BOOS® SINCE 1887

SPEC SHEET

"PBHS-14-SS" PRO-BOWL HAND SINKS

Wall Mount, (1) 14"x10"x5" Deep Bowl w/Side Splashes

FEATURES:

- One Piece Deep Drawn Bowl
- All Sink Bowls Have Large Liberal Radii Corners
- Includes Basket Drain
- Splash Mount Faucet Holes 4" On-Center

SPECIFICATIONS:

- Bowl: Stainless Steel Tops Are TIG Welded, Exposed Welds Are Polished To Match Adjacent Surface
- Bowl: Type 300 Stainless Steel Polish, Satin Finish
- Bracket: Type 300 Stainless Steel Polish, Satin Finish
- Drain: 2" Drain Opening, With 1-1/2" NPS Outlet Connection

CERTIFICATIONS:



PBHS-W-1410-P-SSLR



PBHS-W-1410-SSLR



PBHS-W-1410-SSR

ACCESSORIES

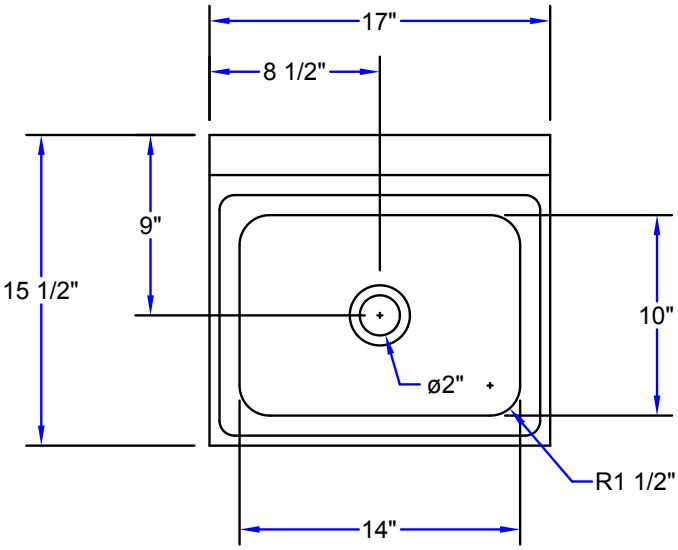
MODEL
Faucets
ADA Wrist Blades
Towel Dispenser
Lever Wastes
Over Flows
P-Traps

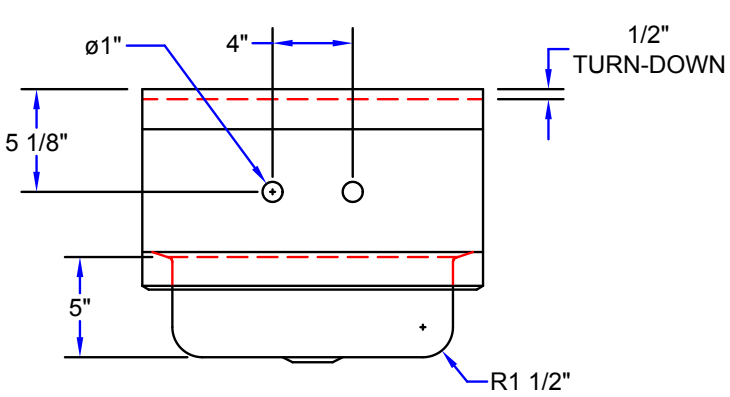
"PBHS-14-SS" PRO-BOWL HAND SINKS

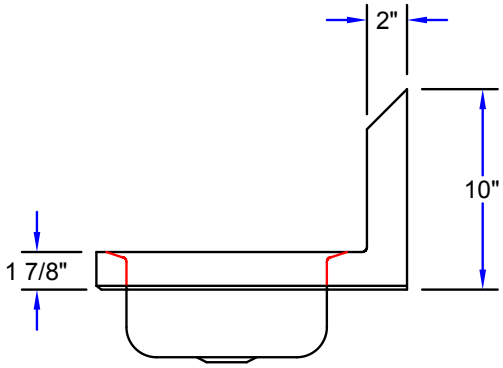
MODEL	BOWL SIZE (L X W X H)	OVERALL SINK SIZE (L X W X H)	SIDE SPLASH	FAUCET	WEIGHT (LBS)
PBHS-W-1410-SSLR	14"x10"x5"	17"x15-1/2"x13-1/8"	LH & RH	N/A	9
PBHS-W-1410-P-SSLR	14"x10"x5"	17"x15-1/2"x13-1/8"	LH & RH	PBF-4-S-LF	13
PBHS-W-1410-SSL	14"x10"x5"	17"x15-1/2"x13-1/8"	LH Only	N/A	9
PBHS-W-1410-SSR	14"x10"x5"	17"x15-1/2"x13-1/8"	RH Only	N/A	9

ALL DIMENSIONS ARE TYPICAL. TOLERANCE +/- .500". JOHN BOOS & CO. RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

DETAILED SPECIFICATIONS







"PBHS-14-SS" PRO-BOWL HAND SINKS

MODEL	BOWL SIZE (L X W X H)	OVERALL SINK SIZE (L X W X H)	SIDE SPLASH	FAUCET	WEIGHT (LBS)
PBHS-W-1410-SSLR	14"x10"x5"	17"x15-1/2"x13-1/8"	LH & RH	N/A	9
PBHS-W-1410-P-SSLR	14"x10"x5"	17"x15-1/2"x13-1/8"	LH & RH	PBF-4-S-LF	13
PBHS-W-1410-SSL	14"x10"x5"	17"x15-1/2"x13-1/8"	LH Only	N/A	9
PBHS-W-1410-SSR	14"x10"x5"	17"x15-1/2"x13-1/8"	RH Only	N/A	9

ALL DIMENSIONS ARE TYPICAL. TOLERANCE +/- .500". JOHN BOOS & CO. RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No. B-1115-132XAW4K

Item No.

ADA Compliant

This Space for Architect/Engineer Approval

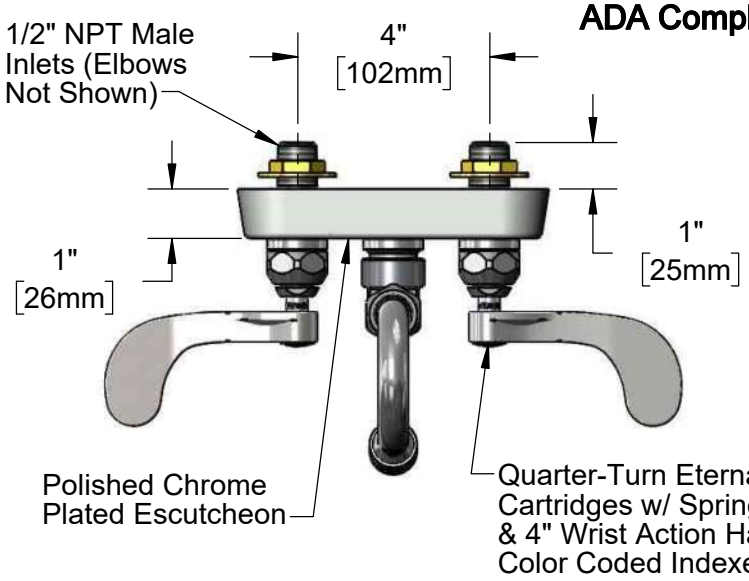
Job Name_____Date_____

Model Specified_____ Quantity_____

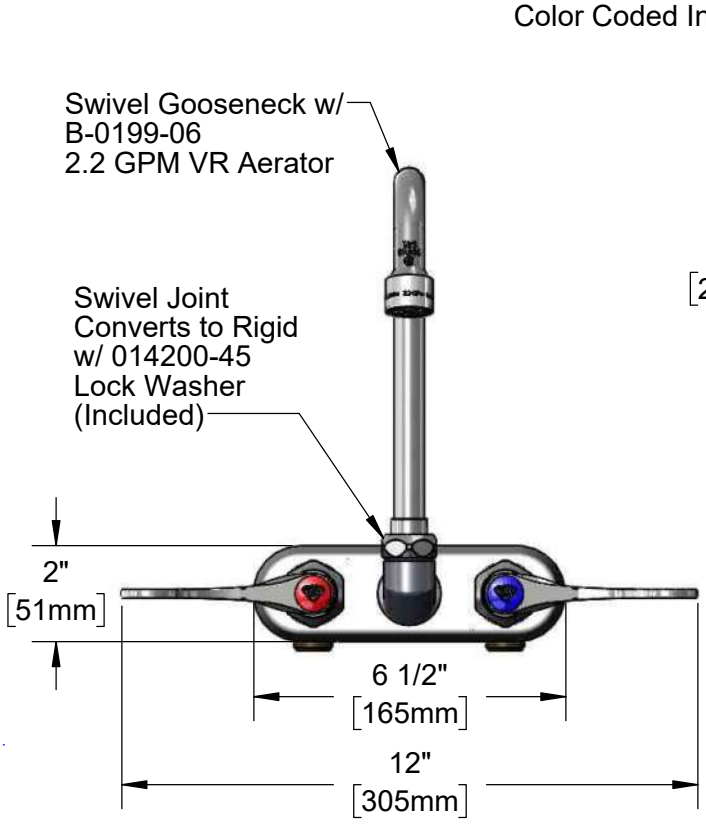
Customer/Wholesaler_____

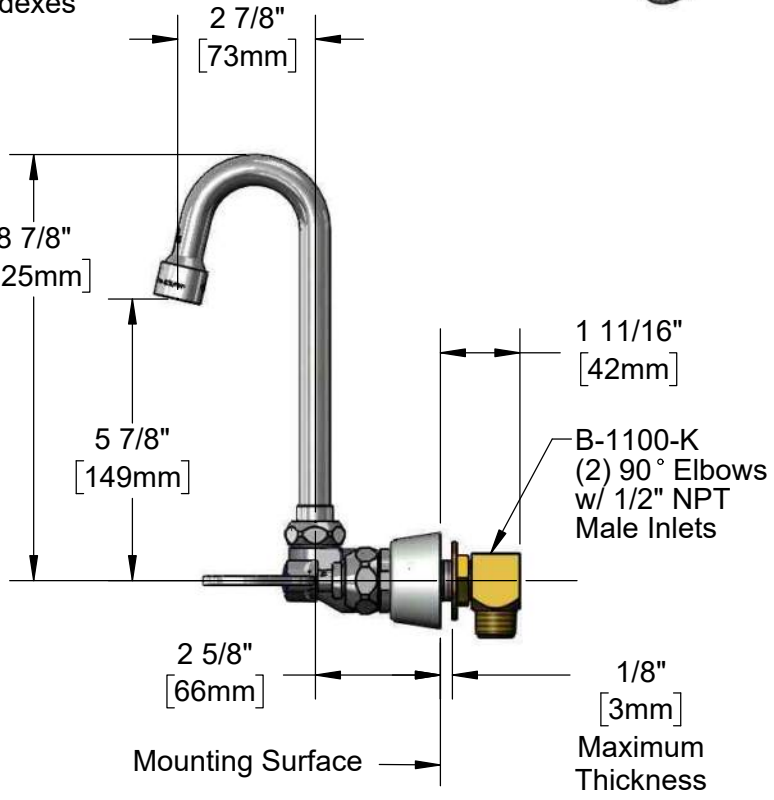
Contractor_____

Architect/Engineer_____









Rough-In Requirement:
(2) ∅1" [25mm] Mounting Holes

Product Specifications:
4" Wall Mount Workboard Faucet, Quarter-Turn Eterna Cartridges w/ Spring Checks, 4" Wrist Action Handles, 2 11/16" Swivel Gooseneck, 2.2 GPM VR Aerator & 1/2" NPT Male Inlet Elbows

Product Compliance:
ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)
ANSI A117.1 (ADA)

Drawn: KJG	Checked: DMH	Approved: JHB	Date: 05/11/18	Scale: 1:4	Sheet: 1 of 2

Rebid Documents

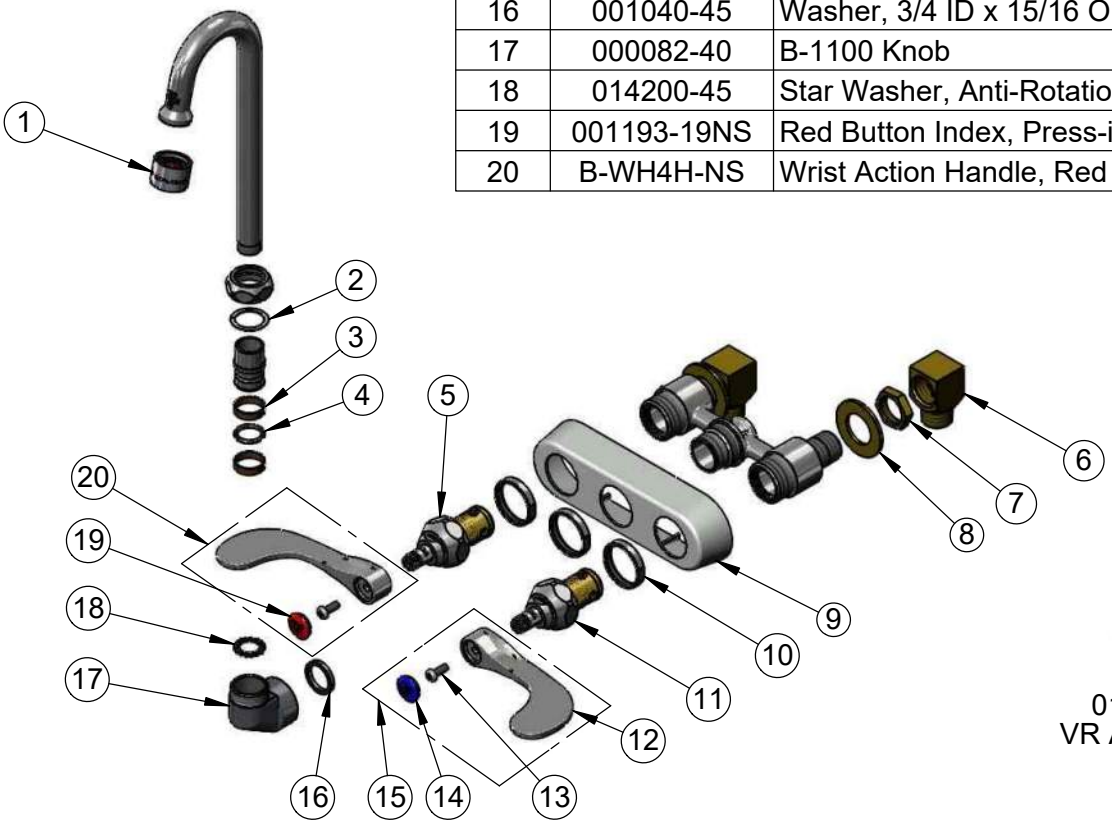
T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No. B-1115-132XAW4K

Item No.

ITEM NO.	SALES NO.	DESCRIPTION
1	B-0199-06	VR 2.2 GPM Aerator, 55/64-27 UN Female w/ Key
2	009538-45	Swivel Washer
3	011429-45	Swivel Sleeves (2)
4	001074-45	O-Ring
5	012442-40NS	Quarter-Turn Eterna Cartridge w/ Spring Check, LTC
6	B-1100-K	1/2" NPT Male Inlet Elbow
7	002954-45	Shank Lock Nut
8	000999-45	Brass Lock Washer
9	019374-40	B-1110 Eterna Workboard Escutcheon
10	019376-40	Escutcheon Lock Nut
11	012443-40NS	Quarter-Turn Eterna Cartridge w/ Spring Check, RTC
12	B-WH4-NS	Wrist Action Handle (New Style)
13	000925-45	Lab Handle Screw
14	018506-19NS	Blue Button Index, Press-in
15	B-WH4C-NS	Wrist Action Handle, Blue Index & Screw
16	001040-45	Washer, 3/4 ID x 15/16 OD x 1/8 thick
17	000082-40	B-1100 Knob
18	014200-45	Star Washer, Anti-Rotation
19	001193-19NS	Red Button Index, Press-in
20	B-WH4H-NS	Wrist Action Handle, Red Index & Screw





015425-45
VR Aerator Key

Product Specifications:
4" Wall Mount Workboard Faucet, Quarter-Turn Eterna Cartridges w/ Spring Checks, 4" Wrist Action Handles, 2 11/16" Swivel Gooseneck, 2.2 GPM VR Aerator & 1/2" NPT Male Inlet Elbows

Product Compliance:
ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)
ANSI A117.1 (ADA)

Drawn: KJG	Checked: DMH	Approved: JHB	Date: 05/11/18	Scale: NTS	Sheet: 2 of 2

Rebid Documents

T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No.
B-0230-KIT

Item No.

This Space for Architect/Engineer Approval

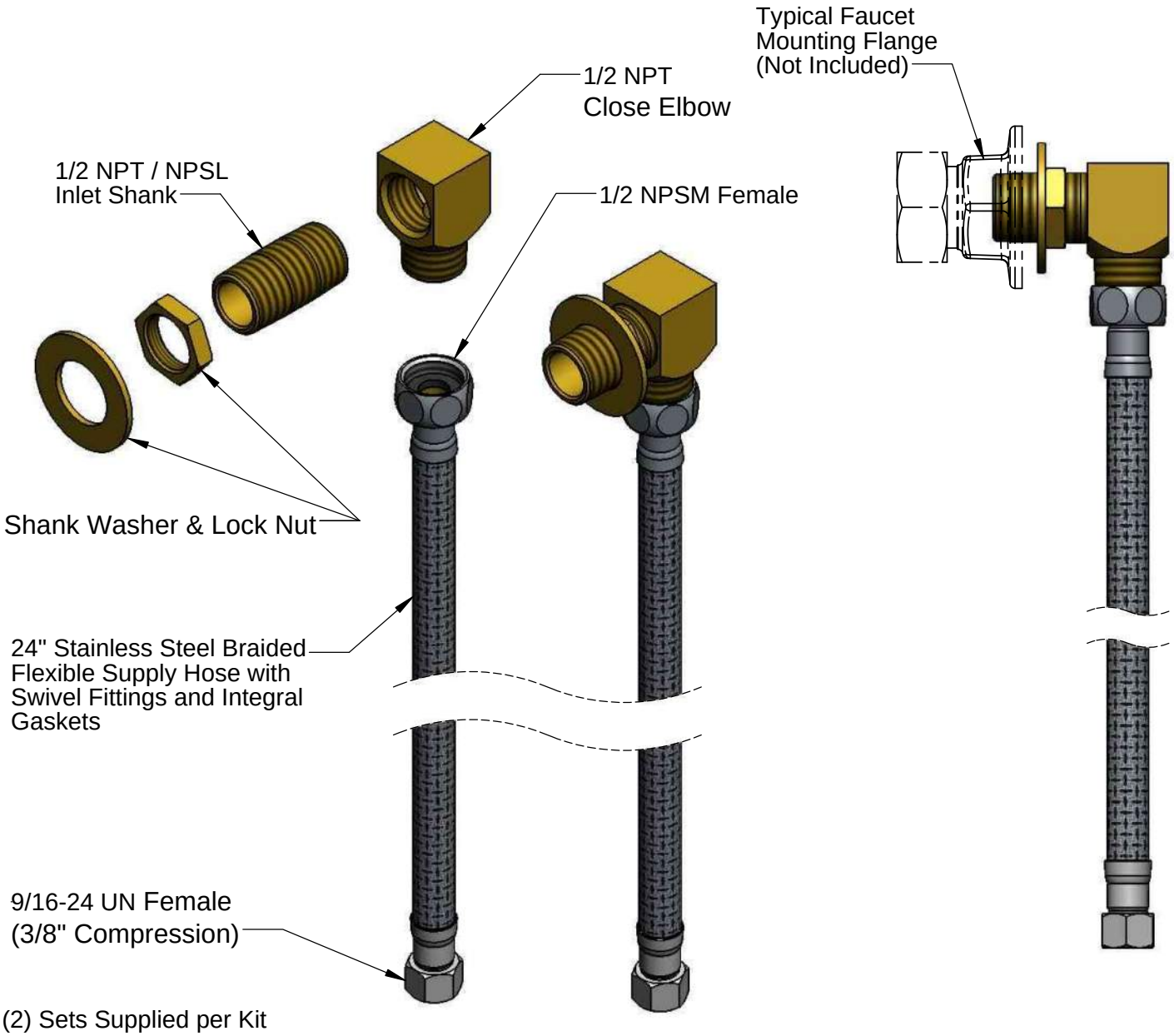
Job Name_____Date_____

Model Specified_____ Quantity_____

Customer/Wholesaler_____

Contractor_____

Architect/Engineer_____



(2) Sets Supplied per Kit

Product Specifications:
Inlet Kit:
1/2" Inlet Shanks, Close Elbows
and 24" Flexible Supply Hoses

Product Compliance:

ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)

Drawn: JBC	Checked: JRM	Approved: JHB	Date: 02/23/16	Scale: 1:4	Sheet: 1 of 2

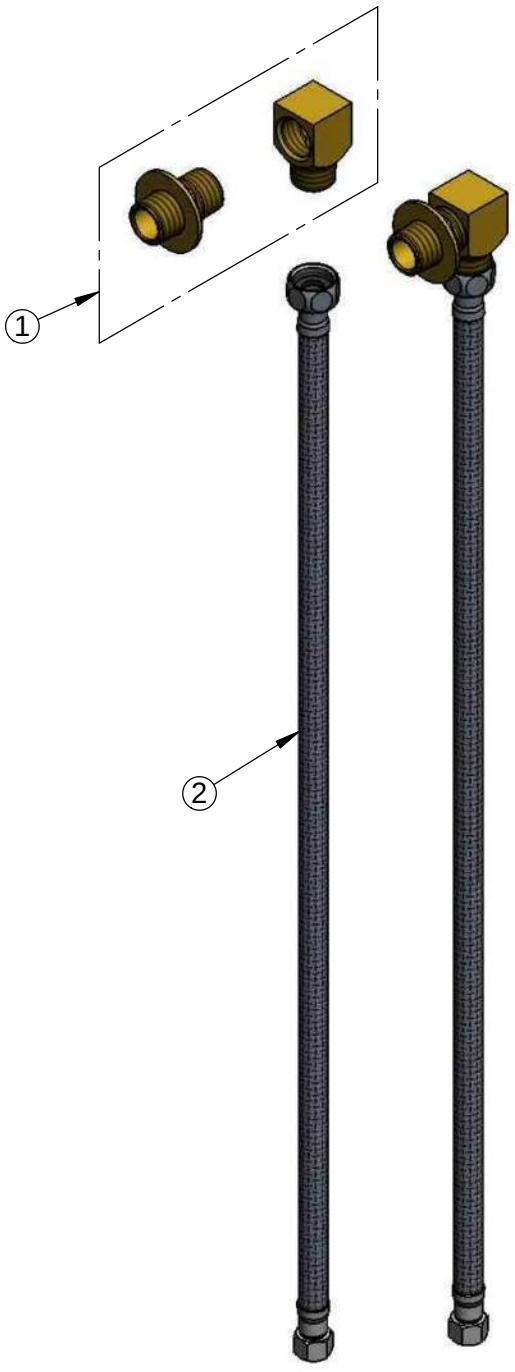
Rebid Documents

T&S BRASS AND BRONZE WORKS, INC.
2 Saddleback Cove / P.O. Box 1088
Travelers Rest, SC 29690

Travelers Rest, SC: 800-476-4103 • Simi Valley, CA: 800-423-0150 • Fax: 864-834-3518 • www.tsbrass.com

Model No.
B-0230-KIT

Item No.



ITEM NO.	SALES NO.	DESCRIPTION
1	B-0230-K	1/2" Inlet Assembly Kit (2 Sets per Kit)
2	017420-45	24" Flexible Supply Hose (Sold Individually)

Product Specifications:
Inlet Kit:
1/2" Inlet Shanks, Close Elbows and 24" Flexible Supply Hoses

Product Compliance:

ASME A112.18.1 / CSA B125.1
NSF 61 - Section 9
NSF 372 (Low Lead Content)

Drawn:	Checked:	Approved:	Date:	Scale:	Sheet:
JBC	JRM	JHB	02/23/16	NTS	2 of 2

Rebid Documents

K-170
EYE WASH ATTACHMENT

Conforms To NSF 61/9 Lead Free Requirements



SEE IMPORTANT NOTE BELOW*



Click This Link To View Assembly Sheet

Item #: _____ Qty #: _____

Model #: _____

Project #: _____

FEATURES:

Attaches to standard spout.
Adjustable aerated outlet heads.
Float-off dust covers to protect outlet heads.
Pull knob to activate eyewash.
Removable aerator on bottom.

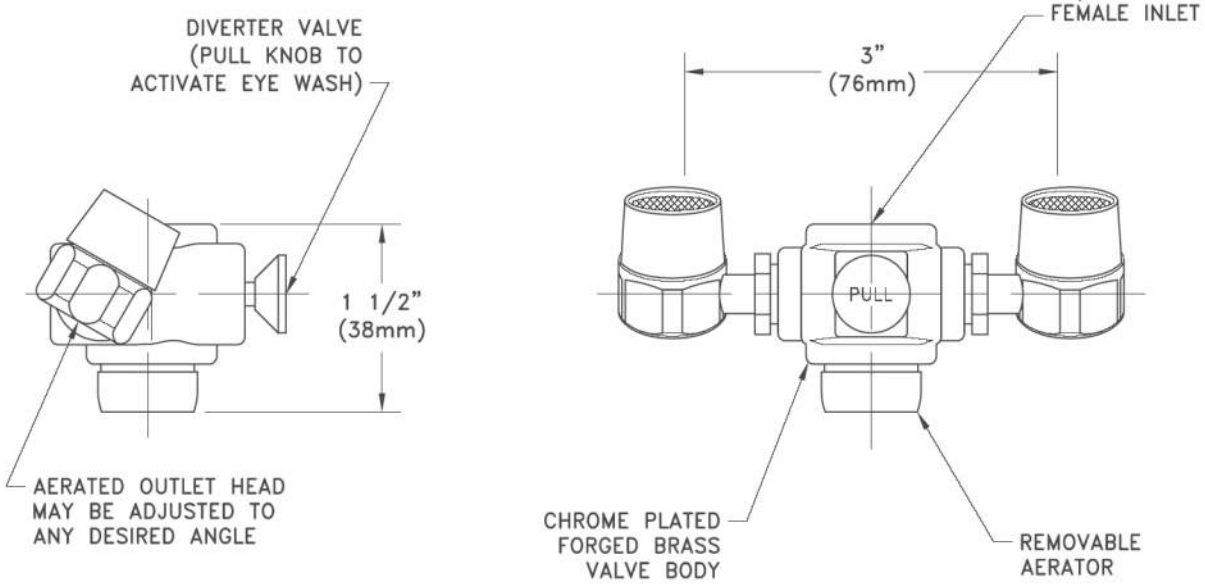
MATERIAL:

Chrome plated forged brass body.

⚠WARNING:

Faucet(s) on this page may expose you to chemicals, including lead, that are known to the State of California to cause cancer or birth defects or other reproductive harm. For more Info.,visit www.p65warnings.ca.gov.

DIMENSIONS and SPECIFICATIONS



***IMPORTANT:** Faucet-mounted eyewashes require two motions to operate (turn on water, pull knob to activate eyewash flow). Therefore, **Advance Tabco does not believe that these units meet the provisions of ANSI Z358.1-2004 as eyewash units**. These units are intended solely as supplemental units in addition to dedicated, plumbed eyewash equipment installed in the workplace. Faucet-mounted eyewashes should be used with cold or warm water only. Use of hot water might cause scalding. Eyewash Faucets not to be used with Foot Operated or Knee Operated Units or Electronic Faucets.

ADVANCE TABCO SMART FABRICATION™
www.advancetabco.com

Customer Service Available To Assist You 1-800-645-3166 8:30 am - 8:00 pm E.S.T.

For Orders & Customer Service:
Email: customer@advancetabco.com or **Fax:** 631-242-6900

For Smart Fabrication™ Quotes:
Email: smartfab@advancetabco.com or **Fax:** 631-586-2933

ADVANCE TABCO is constantly engaged in a program of improving our products. Therefore, we reserve the right to change specifications without prior notice. © ADVANCE TABCO, AUG. 2018 REF-G

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 21 - REFRIGERATED MERCHANDISER (1 EA REQ'D)

True Mfg. - General Foodservice FLM-27~TSL01

Full Length Refrigerated Merchandiser, one-section, True standard look version 01, (4) shelves, (1) double pane thermal insulated glass swing door, LED interior lights, powder coated exterior, white interior with stainless steel floor, R290 Hydrocarbon refrigerant, 1/4 HP, 115v/60/1-ph, 2.3 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA

ACCESSORIES

Mfr	Qty	Model	Spec
True Mfg. - General Foodservice	1		7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
True Mfg. - General Foodservice	1		Exterior: Black powder coated steel, standard
True Mfg. - General Foodservice	1		Interior: White aluminum, with white shelving, standard
True Mfg. - General Foodservice	1		Left door hinging
True Mfg. - General Foodservice	1		Barrel lock factory installed, one door model
True Mfg. - General Foodservice	1		(4) Solid cantilever shelves, standard
True Mfg. - General Foodservice	1		Sign, "No Copy(Blank)" silver graphic in lieu of standard

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	115	60	1	Cord & Plug		5-15P	2.3		1/4		

TRUE MANUFACTURING CO., INC.
U.S.A. FOODSERVICE DIVISION
2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400
Fax (636)272-2408 • Toll Free (800)325-6152 • Intl Fax# (001)636-272-7546
Parts Dept. (800)424-TRUE • Parts Dept. Fax# (636)272-9471 • www.truemfg.com

Project Name: _____
Location: _____
Item #: _____ *Qty:* _____
Model #: _____

AIA #
SIS #

Model:
FLM-27~TSL01

Full Length Merchandiser:
Swing Door Refrigerator with Hydrocarbon Refrigerant~True Standard Look Version 01



FLM-27~TSL01

- The world's #1 manufacturer of glass door merchandisers.
- Factory engineered, self-contained, capillary tube system using environmentally friendly R290 hydro carbon refrigerant that has zero (0) ozone depletion potential (ODP), & three (3) global warming potential (GWP).
- High capacity, factory balanced, refrigeration system holds 33°F to 38°F (.5°C to 3.3°C) for best food preservation in extreme conditions.
- Exterior - non-peel or chip black powder coated cold rolled steel ends with black aluminum cabinet top and back; durable and permanent.
- Interior - attractive, NSF approved, white aluminum interior liner with stainless steel floor.
- Double pane thermal insulated glass swing doors with black powder coated frames.
- Full length doors for maximum product capacity.
- Self closing doors. Positive seal, torsion type closure system.
- LED interior lighting provides more even lighting throughout the cabinet. Safety shielded.
- Entire cabinet structure is foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).

Bottom mounted units feature:

- "No stoop" lower shelf to maximize product visibility.
- Storage on top of cabinet.
- Easily accessible condenser coil for cleaning.

Exterior Color Options


Standard Black Exterior


Optional White Exterior


Optional Stainless Exterior

ROUGH-IN DATA

Specifications subject to change without notice.
Chart dimensions rounded up to the nearest ⅛" (millimeters rounded up to next whole number).

Model	Doors	Shelves	Cabinet Dimensions (inches) (mm) W	D†	H	HP	Voltage	Amps	NEMA Config.	Cord Length (total ft.) (total m)	Crated Weight (lbs.) (kg)
FLM-27~TSL01	1	4	27 686	30⅜ 772	79 2007	¼ N/A	115/60/1	2.3 N/A	5-15P	9 2.74	355 161

† Depth does not include 1⅝" (42 mm) for door handles.

MADE WITH INNOVATION IN THE USA · 7 YEAR COMPRESSOR WARRANTY USA and Canada · c UL us · CLASSIFIED UL EPA · natural refrigerant.

10/21 Printed in U.S.A.

APPROVALS:

AVAILABLE AT:

Model:
FLM-27~TSL01

Full Length Merchandiser:
Swing Door Refrigerator with Hydrocarbon Refrigerant~True Standard Look Version 01

STANDARD FEATURES

DESIGN
- True's commitment to using the highest quality materials and oversized refrigeration systems provides the user with colder product temperatures, and lower utility costs in an attractive merchandiser that brilliantly displays packaged food and beverages.

REFRIGERATION SYSTEM
- Factory engineered, self-contained, capillary tube system using environmentally friendly R290 hydrocarbon refrigerant that has zero (0) ozone depletion potential (ODP), & three (3) global warming potential (GWP).
- High capacity, factory balanced refrigeration system that maintains cabinet temperatures of 33°F to 38°F (.5°C to 3.3°C) for the best in food preservation.
- State of the art, electronically commutated evaporator and condenser fan motors. ECM motors operate at higher peak efficiencies and move a more consistent volume of air which produces less heat, reduces energy consumption and provides greater motor reliability.
- Bottom mounted condensing unit positioned for easy maintenance. "No stoop" lower shelf maximizes visibility by raising merchandised product to higher level.

CABINET CONSTRUCTION
- Exterior - non-peel or chip black powder coated cold rolled steel ends with black aluminum cabinet top and back; durable and permanent.
- Interior - attractive, white aluminum liner with stainless steel floor.
- Insulation - entire cabinet structure is foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- Welded, heavy duty steel frame rail, black powder coated for corrosion protection.
- Frame rail fitted with leg levelers.

DOOR
- Double pane thermal insulated glass swing door with black powder coated frame.
- Door sign decal. Variety of decal options available.
- Door fitted with 12" (305 mm) long extruded handle.
- Self closing door. Positive seal, torsion type closure system.
- Magnetic door gaskets of one piece construction, removable without tools for ease of cleaning.

SHELVING
- Four (4) adjustable, solid white powder coated cantilever shelves, adjustable for up to 15° tilt in 5° increments. One (1) white PVC coated wire floor racks.
- Shelves are 22⅜"L X 21"D (569 mm x 534 mm). Floor rack is 22⅝"L X 20½"D (575mm x 591mm)

LIGHTING
- LED interior lighting provides more even lighting throughout the cabinet. Safety shielded.

MODEL FEATURES
- Evaporator is epoxy coated to eliminate the potential of corrosion.
- See our website www.truemfg.com for latest color and sign offerings.
- Convenient clean-out drain built in cabinet floor.
- NSF/ANSI Standard 7 compliant for open food product.

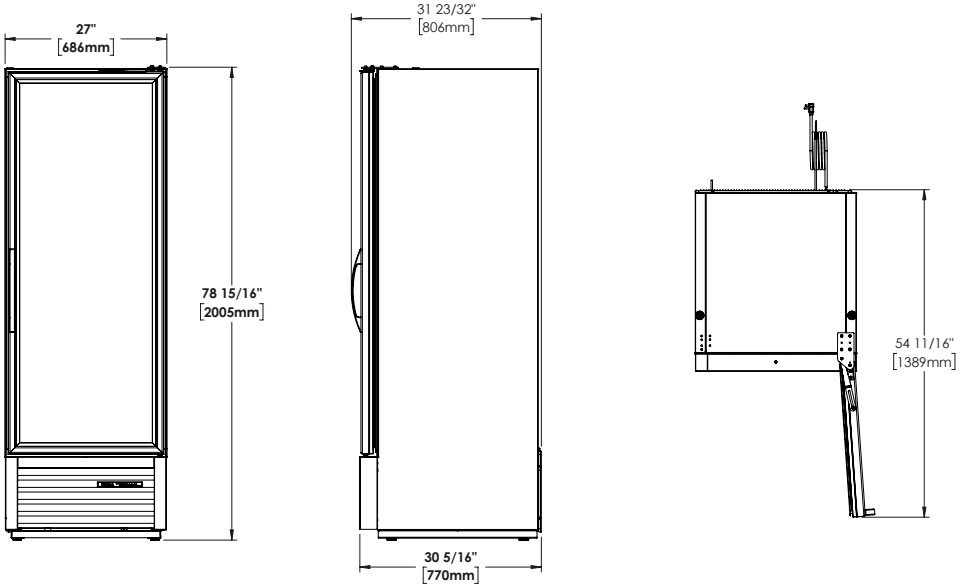
ELECTRICAL
- Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.



115/60/1
NEMA-5-15R

OPTIONAL FEATURES/ACCESSORIES
Upcharge and lead times may apply.
- ❑ White exterior.
- ❑ Stainless steel exterior.
- ❑ Black aluminum interior liner with black shelving.
- ❑ Clear aluminum interior liner.
- ❑ Stainless steel interior liner.
- ❑ All left hinge doors.
- ❑ All right hinge doors.
- ❑ Wired cantilever shelves.
- ❑ Barrel locks - located in grill assembly (requires one per door)
- ❑ Additional shelves.
- ❑ Product ID strips on shelves and floor racks.

PLAN VIEW



3 YEAR PARTS + LABOR 7 YEAR COMPRESSOR
WARRANTY
(U.S.A. and Canada only)

METRIC DIMENSIONS ROUNDED UP TO THE NEAREST WHOLE MILLIMETER

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Model	Elevation	Right	Plan	3D	Back
FLM-27~TSL01					

TRUE MANUFACTURING CO., INC.
2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400 • Fax (636)272-2408 • Toll Free (800)325-6152 • Intl. Fax# (001)636-272-7546 • www.truemfg.com

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 22 - INDUCTION RANGE WARMER, COUNTERTOP (2 EA REQ'D)

Hatco IRNG-BXC1-14-QS

(QUICK SHIP MODEL) Boxer® Induction Range, countertop, single burner, manual dial controls, digital time & temperature display, black glass ceramic top, automatic shut-off, stainless steel housing, 1440 watts, 120v/60/1-ph, NEMA 5-15P, Ecoization, cULus, UL EPH Classified

ACCESSORIES

Mfr	Qty	Model	Spec
American Metalcraft	2	REVLRD20	Evolution™ Chafer, 7 qt., 20-1/2"L x 20"W x 12"H, round, induction ready, slow-release glass lid, built-in spoon rest, stainless steel (For use on induction units greater than 1800)

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120	60	1	Cord & Plug		5-15P		1.44			

Rebid Documents

Project _____

Item # _____

Quantity _____

Boxer® Countertop Induction Ranges

Models: IRNG-BXC1-14, -18

Hatco's Boxer® Induction Range has all the same power as our Hatco line of induction ranges, but with no frills. This economy model is simple to operate and has the Magnetic Power System (MPS), delivering the highest power in its class!

This unit has all the basics for the rigors of commercial foodservice use, as well as a timer with convenient power and temperature modes.



IRNG-BXC1-14



Close up of patterned black glass-ceramic top – helps prevent noticeable scratches due to heavy use

Standard features:

- Heavy gauge stainless steel housing with side impact protection for the top
- Large control knob is adaptive and adjusts to user input. From precise, fine control (slow turns) to spanning the full range in a single twist (fast turns)
- Display instantly advises the operator of precise power, temperature (˚F or ˚C) and time control (30 seconds to 1 hour)
- Black, glass-ceramic top is durable and easy to clean – fully sealed top and conformal-coated boards add extra protection against grease or moisture
- Suitable for front of the house use with an ultra-quiet cooling fan
- Safety and convenience features, such as automatic shut-off, to prevent overheatings
- 71" (1800 mm) cord with plug

ANSI/NSF 4

For operation, location and safety information, please refer to the Installation and Operating Manual.

HATCO CORPORATION | P.O. Box 340500 Milwaukee, WI 53234-0500 U.S.A. | (414) 671-6350

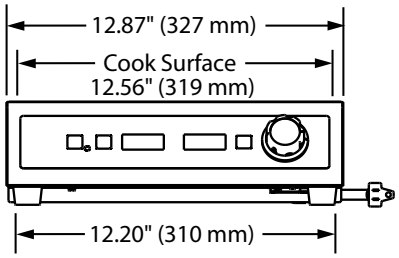
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Rebid Documents

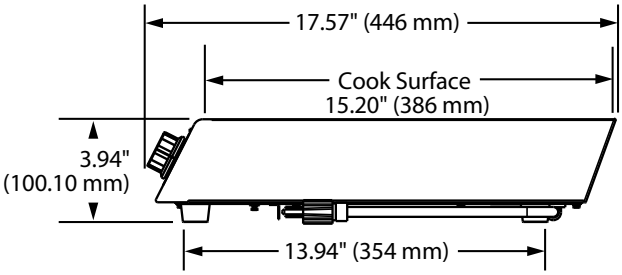
Boxer® Countertop Induction Ranges

Models: IRNG-BXC1-14, -18

IRNG-BXC1 Model



FRONT VIEW



SIDE VIEW

SPECIFICATIONS
Countertop Induction Ranges

Model	Dimensions (Width x Depth x Height)	Volts	Phase	Watts	Hz	Amps	Plug	Cord Location	Approx. Ship Weight
IRNG-BXC1-14	12.87" x 17.57" x 3.94" (327 x 446 x 100 mm)	120	Single	1440	50-60	12.0	NEMA 5-15P	Rear right bottom base corner	17 lbs. (8 kg)
IRNG-BXC1-18	12.87" x 17.57" x 3.94" (327 x 446 x 100 mm)	120	Single	1800	50-60	15.0	NEMA 5-15P♣	Rear right bottom base corner	18 lbs. (8 kg)

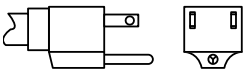
♣ Not available for Canada.

PAN SIZE

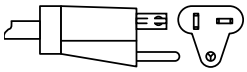
Maximum Pan Size: 11.8" diameter (300 mm), Minimum Pan Size: 4" diameter (102 mm)

PLUG CONFIGURATIONS

NEMA 5-15P



NEMA 5-20P



PRODUCT SPECS
Boxer® Induction Ranges

The Countertop Induction Range shall be a Boxer® model, manufactured by the Hatco Corporation, Milwaukee, WI 53234 U.S.A.
The Induction Range shall be rated at ... watts, ... volts, single phase and be ... inches (millimeters) in overall width. The Countertop Induction Range shall consist of a stainless steel housing with an aluminum base with a single generator coil and a glass ceramic top surface. It includes a digital display for power or temperature and a separate digital display for the timer, an infinite control for power, temperature or timer control and a 71" (1800 mm) cord and plug.

Warranty consists of 24/7 parts and service assistance (US and Canada only).

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 23 - DISPLAY CASE, HEATED DELI, COUNTERTOP (1 EA REQ'D)

Hatco GRCMW-1DH

Glo-Ray™ Curved Merchandising Warmer, 26" wide, deck & shelf, mirrored glass back panel, humidified bottom shelf with (5) cup reservoir, individual thermostatic controlls with rocker off/on switch, Xenon light, specify finish, cULus, UL EPH Classified, Made in USA

ACCESSORIES

Mfr	Qty	Model	Spec
Hatco	1		NOTE: Sale of this product must comply with Hatco's Minimum Resale Price Policy; consult order acknowledgement for details
Hatco	1		NOTE: Includes 24/7 parts & service assistance, call 414-671-6350
Hatco	1		One year on-site parts & labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
Hatco	1		120v/60/1-ph, 1660 watts, 13.8 amps, NEMA 5-15P (domestic voltage), standard
Hatco	1	BLACK	Black, designer color (available at time of purchase only)

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120	60	1	Cord & Plug		5-15P	13.8	1.66			

Rebid Documents

Project _____

Item # _____

Quantity _____

Glo-Ray® Curved Merchandising Warmers

Models: GRCMW-1, -1D, -1DH

The Glo-Ray® Curved Merchandising Warmer offers a unique and attractive solution for impulse merchandising a wide variety of food products. The unit's attractive design holds wrapped or fresh food product for any restaurant, hotel, convenience store or grab-n-go retail market setting.

Standard features

- Single shelf and dual shelf units come standard with mirrored glass back panel
- Halogen lighting allows for optimal food product display. Export voltage models use halogen lighting
- The Hatco GRCMW-1 single shelf unit is controlled by a main switch making start up and shut down a one touch operation. The warmer comes standards with a food stop, side glass enclosures and back mirror glass panel that are removable for cleaning
- The Hatco GRCMW-1D, -1DH dual shelf units feature one lower front polycarbonate access door, side glass enclosures and an upper sneeze guard. The top shelf holds two ½ size pans or one full size pan. The bottom shelf holds two ½ size pans, with or without humidity
- The GRCMW-1DH model has a water reservoir capacity of 5 cups (1.18 liters)
- All models are shipped with 1" (25 mm) adjustable legs and factory attached 6' (1829 mm) cord and plug
- Models with Simulated Stone are Swanstone®



GRCMW-1 in Designer Black with food pans (not included)



GRCMW-1DH in Designer Black with food pans (not included)

Options (available at time of purchase only)

Designer Colors – (Unit's painted surface)
Non-standard colors are non-returnable – Black standard
☐ Warm Red ☐ Gray Granite ☐ White Granite
☐ Navy Blue ☐ Hunter Green ☐ Antique Copper

Stone Colors – (Unit's painted surface and Simulated Stone decorative trim inserts)
Non-standard colors are non-returnable
☐ Gray Granite ☐ Bermuda Sand ☐ Night Sky

☐ Top and Bottom Shelf Flip-Up Doors on server's side in lieu of Mirrored Back Panel (GRCMW-1D, -1DH models only)

☐ Top Shelf Flip-Up Door on customer side in lieu of Sneeze Guard (GRCMW-1D, -1DH models only)

WATER QUALITY REQUIREMENTS
Water supply in excess of 3.0 grains of hardness per gallon (GPG) (.75 grains of hardness per liter) must be treated and softened before being used. Water containing over 3.0 GPG (.75 GPL) will decrease the efficiency and reduce the operating life of the unit.
Note: Product failure caused by liming or sediment buildup is not covered under warranty.

IFS anti-microbial coatings use naturally-occurring, environmentally sustainable, silver ions to help inhibit the growth of microbes on the powder coated surface. See www.hatcocorp.com/antimicrobial-paint for more information.

For operation, location and safety information, please refer to the Installation and Operating Manual.

c UL us ANSI/NSF 4

MADE IN THE USA

HATCO CORPORATION | P.O. Box 340500 Milwaukee, WI 53234-0500 U.S.A. | (414) 671-6350

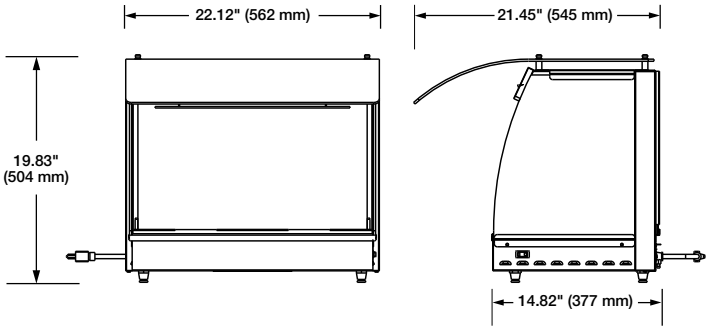
www.hatcocorp.com | support@hatcocorp.com | Find a Hatco Rep | Image Library | Document Library | Patents | Chat

Rebid Documents

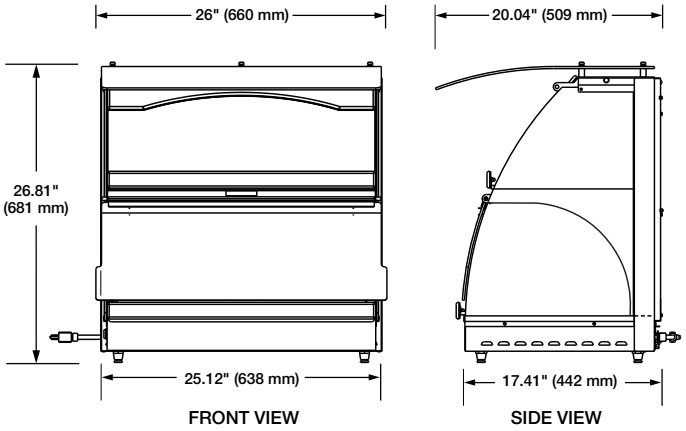
Glo-Ray® Curved Merchandising Warmers

Models: GRCMW-1, -1D, -1DH

GRCMW-1



GRCMW-1D, -1DH



Single Shelf — Curved Merchandising Warmer

The shaded areas contain electrical information for International models

Model	Dimensions (W x D x H)	Useable Heated Shelf Space (W x D)	Volts Single Phase	Watts	Amps	Plug	Approx. Ship Weight
GRCMW-1	22.12" x 21.45" x 19.83" (562 x 545 x 504 mm)	19.75" x 13" (501 x 330 mm)	120	670	5.6	NEMA 5-15P	56 lbs. (26 kg)
			220-230	619-676	2.8-2.9	CEE 7/7 Schuko	
			230-240	615-670	2.7-2.8	BS-1363	

Dual Shelf — Curved Merchandising Warmer

Model	Dimensions (W x D x H) Height includes 1" (25 mm) legs	Useable Heated Shelf Space (W x D)	Volts Single Phase	Watts	Amps	Plug	Approx. Ship Weight
GRCMW-1D	26" x 20.04" x 26.81" (660 x 509 x 681 mm)	Top: 22.75" x 12.37" (577 x 314 mm) Bottom: 22.75" x 15.62" (577 x 396 mm)	120	1540	12.8	NEMA 5-15P, NEMA 5-20P	92 lbs. (42 kg)
			220-230	1294-1414	5.9-6.1	CEE 7/7 Schuko	
			230-240	1414-1540	6.1-6.4	BS-1363 or AS-3112	

Dual Shelf with Humidity — Curved Merchandising Warmer

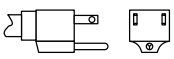
Model	Dimensions (W x D x H) Height includes 1" (25 mm) legs	Useable Heated Shelf Space (W x D)	Volts Single Phase	Watts	Amps	Plug	Approx. Ship Weight
GRCMW-1DH	26" x 20.04" x 26.81" (660 x 509 x 681 mm)	Top: 22.75" x 12.37" (577 x 314 mm) Bottom: 22.75" x 15.62" (577 x 396 mm)	120	1660	13.8	NEMA 5-15P, NEMA 5-20P	100 lbs. (46 kg)
			220-230	1395-1525	6.3-6.6	CEE 7/7 Schuko	
			230-240	1525-1660	6.6-6.9	BS-1363 or AS-3112	

CORD LOCATION

Control side at right base corner.

PLUG CONFIGURATIONS

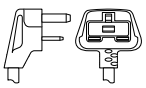
NEMA 5-15P



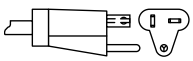
CEE 7/7 Schuko



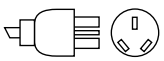
BS-1363



NEMA 5-20P



AS-3112



PRODUCT SPECS

Glo-Ray® Curved Merchandising Warmers

The Curved Merchandising Warmer shall be a Glo-Ray® Model ... as manufactured by the Hatco Corporation, Milwaukee, WI 53234 U.S.A.

The warmer shall be rated at ... watts, ... volts and be ... inches (millimeters) in overall width. It shall consist of a thermostatically-controlled heated base, full view tempered glass sides, and xenon display lights. Export voltage models use halogen lights.

The infrared heating element shall be tubular metal sheathed and the warmer shall have a cord with plug attached.

Warranty consists of 24/7 parts and service assistance (US and Canada only).

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 24 - HOT WATER DISPENSER (1 EA REQ'D)

BUNN 02500.0001

02500.0001 HW2 Hot Water Dispenser, 2 gallon capacity, 4.2 gallon/hr capacity, 200° setting, includes drip tray, stainless steel exterior, plumbed, 120v/60/1-ph, 1800w, 15amps, NEMA 5-15P, UL, NSF

ACCESSORIES

Mfr	Qty	Model	Spec
BUNN	1		Prices include applicable tariffs
BUNN	1	56000.0034	56000.0034 System, WEQ-35(3).2L
BUNN	1		Prices include applicable tariffs

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120	60	1	Cord & Plug		5-15P	15	1.8			

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1				1/4"					

WASTE

	INDIRECT SIZE	DIRECT SIZE
1		

Rebid Documents

HW2 SST

23.8" x 14.3" x 7.0"
(60.5cm x 36.3cm x 17.8cm)

- 2gal (7.57L) of hot water in a space-saving machine just 7.1" (18.03cm) wide to fit any counter
- Includes drip tray
- High quality, easy-to-clean stainless steel exterior and tank for a long, dependable life
- Fresh, hot water is always available since the HW2 is plumbed to your water line



Servers and airpots sold separately

Agency:

Specifications

Product #: 02500.0001

Finish: Stainless

Faucet: Upper

Temp. Setting: 200°F (93.333°C)

Water Access: Plumbed

Additional Features

Capacity at 60° F

Electrical & Capacity

Volts	Amps	Watts	Cord Attached	Plug Type	8oz cups/hr 236ml cups/hr	Input H²O Temp.	Phase	# Wires plus Ground	Hertz
120	15	1800	Yes	NEMA 5-15P	-	60°F (15.5°C)	1	2	60

Plumbing Requirements

PSI	kPa	Fitting Supplied	Water Flow Required (GPM)
20-90	138-621	1/4" Male Flare Fitting	-

CAD Drawings

2D	Revit	KLC
●		

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and other info visit bunn.com

Created on: 08/31/2017

Unit				Shipping				
	Width	Height	Depth	Width	Height	Depth	Weight	Volume
English	7.0 in.	23.8 in.	14.3 in.	10.9 in.	32.9 in.	16.6 in.	20.150 lbs	3.111 ft³
Metric	17.8 cm	60.5 cm	36.3 cm	27.7 cm	83.6 cm	42.2 cm	9.140 kgs	0.088 m³

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Created on: 08/31/2017

Rebid Documents

Related Products & Accessories: HW2 SST(02500.0001)



DRIP TRAY KIT (2.5"HT-HW2)

Product #: 02497.0000



DRIP TRAY

Product #: 02545.0000



COVER, DRIP TRAY-PERFORATED

Product #: 02546.0000

FOOT, RUBBER

Product #: 02547.0000

PATAS

Product #: 02547.0000



WATER FILTER SYSTEM,EQ-17-TL

Product #: 30200.1000



WATER FILTER,IN LINE ED-17-TL

Product #: 30201.1001

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Created on: 08/31/2017

Rebid Documents

WEQ-35(3).2L

Height: 16.98" (43.1cm) Width: 6.12" (15.5cm) Depth: 5.54" (14.1cm)



- Designed for medium volume applications using a unique blend of catalytic coconut shell carbon rated to reduce chlorine taste and odor for consistent, great tasting cold and hot beverages, hot water, and ice
- Protects downstream equipment with exceptional sediment holding capacity and reduces health contaminants such as cyst with 0.2 Microns mechanical filtration
- Save on maintenance and service costs with a scale control blend that's up to 8 times more scale control capacity, specifically engineered to match the entire chlorine capacity life resulting in reduced scale build-up on evaporator plates and heating coils in both ice machines and coffee brewers
- Certified to NSF Standard 53 for Cyst and Standard 42 for Sediment, Chlorine Taste and Odor reduction
- Sanitary quick connect valve-in-head design simultaneously shuts off and vents water with ¼ turn, allowing for simple cartridge change-outs and maintenance times
- Unique modular filter head manifold design allows for simple installation, customization, and future system expansion
- Auto-leveling technology ensures perfect installation every time
- Includes single stage filter head assembly with manifold bracket, 3/8" MNPT fittings and 1/4" quick-connect rinse valve

NOTE: Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

Specifications

Product #: 56000.0034

Cartridge Type: Quick Change

Application(s): Tea, Ice, Coffee, Backroom Package/Combo System

Replacement Cartridge: 56000.0126

Filtration Type: Sediment, Lime Inhibitor, Cyst Reduction, Chlorine Taste & Odor

Filter Change Frequency: Annual

Capacity

Micron Rating	Service Flow Rate	Water Filter Capacity *Chlorine Reduction*	Water Filter Capacity *Chloramine Reduction*	Water Filter Capacity *Softening*
0.2	3.0 gal/min (11.4 L/min)	35000 gal. (132487.0 L)	-	- -

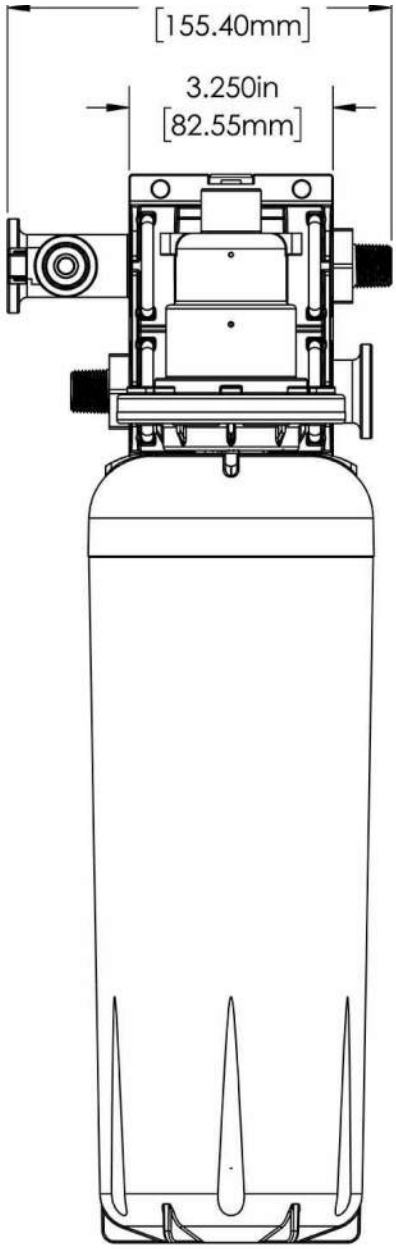
Plumbing Requirements

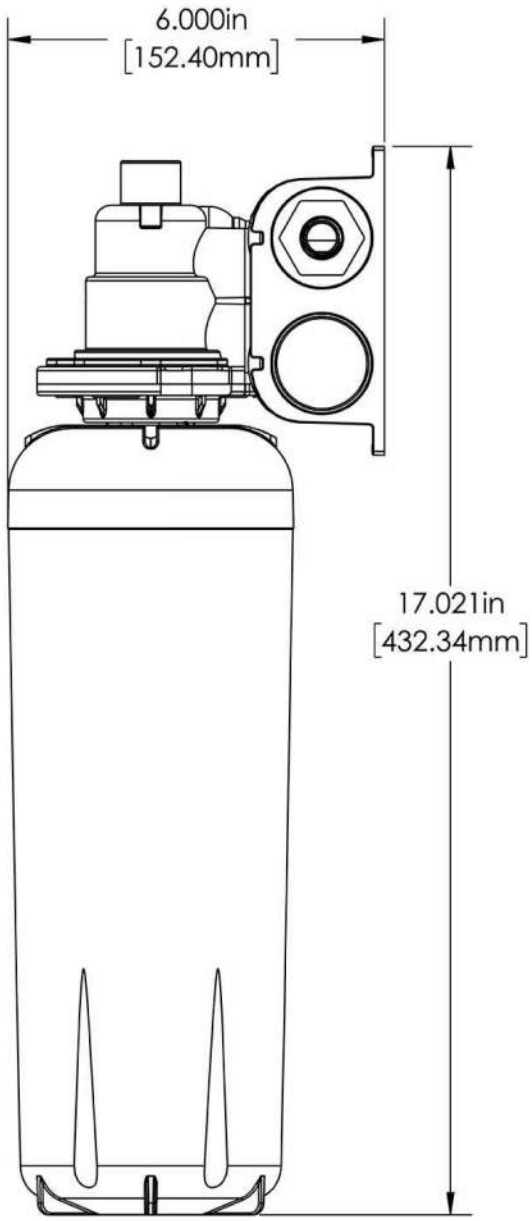
Inlet Connection	Outlet Connection	Min Operating Pressure	Max Operating Pressure	Min Operating Temperature	Max Operating Temperature
3/8 IN	3/8 IN	20 psi (138 kPa)	125 psi (862 kPa)	40°F(4°C)	100°F(38°C)

⚠ **WARNING:**

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and other info visit bunn.com

Last Updated: 01/26/2022





Dimensions of Filter System *(filter head with filter cartridge)*				Installed Dimensions *(Installation with wall mounting)*			Cartridge Dimensions *(filter cartridge only)*		
	Height	**Width**	**Depth**	**Height**	**Width**	**Depth**	**Height**	**Width**	**Depth**
English	16.98 in.	6.12 in.	5.54 in.	-	-	-	14.49 in.	4.53 in.	4.53 in.
Metric	43.1 cm	15.5 cm	14.1 cm	-	-	-	36.8 cm	11.5 cm	11.5 cm

Weight			Shipping				
	Dry	**Wet**	**Height**	**Width**	**Depth**	**Weight**	**Volume**
English	0.0 lbs	0.0 lbs	8.00 in.	15.00 in.	20.00 in.	6.920 lbs	-
Metric	-	-	20.3 cm	38.1 cm	50.8 cm	3.139 kgs	-

WARRANTY: BUNN High Performance Water Filtration Solutions Systems by BUNN® (excluding water filters and water treatment replacement cartridges) are covered by a limited warranty against defects in material and workmanship for a period of five years after date of purchase, under normal use and service, and when installed in accordance with manufacturer's recommendations outlined in the filtration systems owner's manual. BUNN replaceable elements (water treatment cartridges, filter elements, and feeder elements) are covered by a limited warranty against defects in material and workmanship for a period of one year after date of purchase or the remainder of the original warranty, whichever is longer. See printed warranty for full details. BUNN will provide a copy of the warranty upon request.

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and other info visit bunn.com.

Last Updated: 01/26/2022

Rebid Documents

Related Products & Accessories: WEQ-35(3).2L(56000.0034)



CARTRIDGE, WEQ-35 (3).2L

Product #: 56000.0126



HEAD ASSEMBLY, WEQ-SINGLE

Product #: 56000.0201

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and other info visit bunn.com.

Last Updated: 01/26/2022

Rebid Documents

Model Compatibility: WEQ-35(3).2L(56000.0034)

Serving and Holding selections are currently unavailable. Please contact your sales representative to find out more information.

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and other info visit bunn.com.

Last Updated: 01/26/2022

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 25 - SPARE NO.

<Spare No.>

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 26 - INDUCTION RETHERMALIZER (1 EA REQ'D)

Vollrath 74110110

Mirage® Induction Soup Rethermalizer, 11 quart, dry use, temperature control in °F or °C, (4) soup presets, stir indicator LED, solid state controls with locking function, includes: induction ready inset & inset cover, natural & black finish, 800W, 6.7 amps, cord with NEMA 5-15P, 120v/50/60/1-ph, cULus, NSF, FCC, imported (cover not NSF) (Refer to vollrathfoodservice.com for full warranty policy)

ACCESSORIES

Mfr	Qty	Model	Spec
Vollrath	1		Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
Vollrath	1	88204	Inset, 11 quart, induction ready, for Mirage induction rethermalizer, NSF (Refer to vollrathfoodservice.com for full warranty policy)
Vollrath	1	47490	Kool-Touch Hinged Cover, stainless with black phenolic knob, fits 78204 Inset & 77110 Double Boiler, imported (Refer to vollrathfoodservice.com for full warranty policy)
Vollrath	1	4980422	Ergo Grip® Ladle, 4 oz., 3-1/8" bowl dia., 13-1/8"L OAL, equipped with all-natural antimicrobial, 3 oz., stainless steel, 13-1/8" OA length, Kool-Touch™ one-piece black construction offset handle, safe up to 225°F (107.2°C), fully functional to 350°F (176.6°C), integrated handle stopper, Jacob's Pride® Collection, Limited Lifetime Warranty, NSF (Refer to vollrathfoodservice.com for full warranty policy)

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120	50/60	1	Cord & Plug		5-15P	6.7	.8			

Rebid Documents

VOLLRATH®

Project:

Item Number:

Quantity:

MIRAGE® INDUCTION COUNTERTOP RETHERMALIZER



7470110



74110140

DESCRIPTION

Mirage® Induction Countertop Rethermalizers use innovative technology to run dry (without water) to improve food quality and minimize waste, while using a fraction of the energy. They ship with an induction-ready inset and improved ergonomic cover so they are ready to use upon arrival.

PERFORMANCE CRITERIA

Mirage® Induction Countertop Rethermalizers are designed to take a container of cooked food from a chilled state (below 40.0 °F [4.4 °C]) through the HACCP "danger zone" of 165 °F [73.9 °C]) in less than 90 minutes. The performance standard is measured using the NSF mixture chilled to 35 °F (1.7 °C). The electric unit will raise the temperature of this product above 165 °F (73.9 °C) in less than 90 minutes. The temperature will be maintained above 150 °F (65.6 °C) when the food product and pan or inset are used with a standard pan or inset cover, and the food product is stirred regularly.

AGENCY LISTINGS

c UL us LISTED

NSF

Cover is not NSF.

FC

This device complies with Part 18 FCC Rules

WARRANTY

All models shown come with a Vollrath® standard warranty against defects in materials and workmanship. For full warranty details, please refer to vollrathfoodservice.com.
NOTICE: Use only Vollrath induction-ready insets; failure to do so voids the warranty.

Due to continued product improvement, please consult vollrathfoodservice.com for current product specifications.

ITEMS

Item	Description (Products for US and Canada)	
7470110	7-qt., Silver	Includes 1 Inset and 1 Lid
7470140	7-qt., Red	
74110110	11-qt., Silver	
74110140	11 -qt., Red	
Accessories	**Description**	
47493	7-qt. Cover	
47494	11-qt. Cover	
88184	7 qt. Inset	
88204	11 qt. Inset	
88184NS*	7¼ qt. Nonstick Induction Inset	
88204NS*	11 qt. Nonstick Induction Inset	
*Nonstick insets are made to order; call Vollrath for minimums and lead time.		

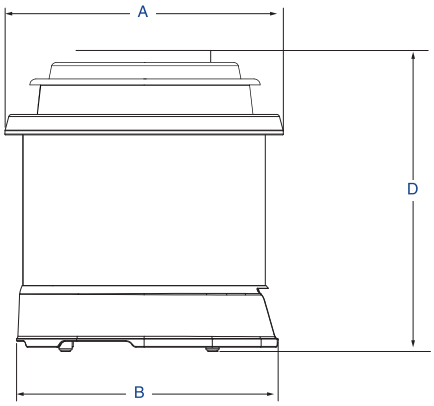
FEATURES & BENEFITS

- 800-watt 3D induction coil heats food evenly and efficiently.
- Units operate without water, eliminating well refilling.
- Sensors in three locations activate the Stir Light.
- Stir Light reminds user to mix to reduce burning and waste.
- Advanced controls have highly-visibility LEDs.
- Temperature setting includes °F and °C.
- Four presets for soups and mac and cheese simplify use.
- Locking function prevents unauthorized setting changes.
- Temperature limit of 190 °F decreases burning and waste.
- New easy-to-grip cover handles enhance user experience.
- Included cover and inset provide what is needed for use.
- Additional covers and insets for pre-filling are sold separately.
- Meets NSF4 Performance Requirements for rethermalization and hot-food-holding equipment.
- 6' cord plugs into any NEMA 5-15R 15 or 20 amp 120V receptacle.

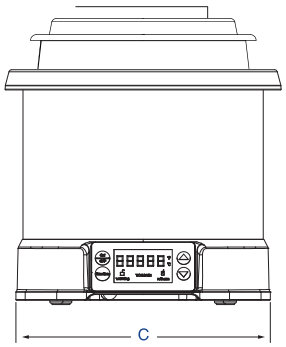
CLEARANCE & REQUIREMENTS

- Install unit adjacent to non-combustibles in a flat location.
- Use only Vollrath induction-ready insets; failure to do so could cause damage and void the warranty.
- All models require unrestricted air intake and exhaust for proper operation.
- Ensure unit is level to avoid damage during operation.
- Ambient temperatures must be at or below 110 °F (43 °C) and are measured while all kitchen appliances are in operation.
- Minimum clearance of 4" (10.2cm) is required at the rear and 1" (2.5 cm) at the bottom.

- To avoid damage, plug the unit into a properly grounded electrical supply that matches the nameplate rating.



Front View



Side View

SPECIFICATIONS

DIMENSIONS shown in inches (cm)

Item	Description qt. (L)	Volts	Watts	Amps	Hz	Dimensions				Shipping Weight & Dimensions (Including Pallet)				Plug (Included) & Receptacle
						Rim Depth (A)	Base Depth (B)	Width (C)	Height (D)	Weight lb (kg)	W	H	D	
7470110	7 (6.6), Natural	120	800	6.7	50/60	11⅞ (30.3)	11 3/16 (30.2)	11 (27.9)	13½ (34.2)	12.2 (5.6)	14¾ (37.5)	15¼ (38.7)	14¾ (37.5)	5-15P (plug) 5-15R (receptacle) 
7470140	7 (6.6), Red													
74110110	11 (10.4), Natural					13⅞ (35.3)	13 3/16 (35.2)	13 3/16		14.1 (6.4)				
74110140	11 (10.4), Red													

VOLLRATH

The Vollrath Company, L.L.C.
1236 North 18th Street
Sheboygan, WI 53081-3201 U.S.A.
Main Tel: 800.624.2051 or 920.457.4851
Main Fax: 800.752.5620 or 920.459.6573
Customer Service: 800.628.0830
Canada Customer Service: 800.695.8560

Technical Services
techservicereps@vollrathco.com
Induction Products: 800.825.6036
Countertop Warming Products: 800.354.1970
All Other Products: 800.628.0832

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Rebid Documents

Countertop Rethermalizers



- Ships with induction-ready inset and hinged cover
- Set temperature in F° or C° for soup, cream soup, mac & cheese, or chili
- REFERENCE OUR SERVING SYSTEMS & COMPONENTS CATALOG FOR DROP-IN STYLES

NACUFS IICE INDUSTRY INNOVATION AND CREATIVE EXCELLENCE AWARD

ITEM #	DESCRIPTION	COLOR	DIMENSIONS IN (CM)	FREQUENCY	VOLTAGE	WATTS	AMPS	PLUG	CASE LOT
7470110	7 qt induction rethermalizer	Silver	11⅞ x 13½ (30.3 x 34.2)	50/60hZ	120	800	6.7	5-15P	1
7470140	7 qt induction rethermalizer	Red	11⅞ x 13½ (30.3 x 34.2)	50/60hZ	120	800	6.7	5-15P	1
74110110	11 qt induction rethermalizer	Silver	13⅞ x 13½ (35.3 x 34.2)	50/60hZ	120	800	6.7	5-15P	1
74110140	11 qt induction rethermalizer	Red	13⅞ x 13½ (35.3 x 34.2)	50/60hZ	120	800	6.7	5-15P	1

REPLACEMENT INSET ITEM #	REPLACEMENT INSET	REPLACEMENT COVERS	DESCRIPTION
88184	7 qt induction inset	47488	Hinged inset cover, fits 7 qt inset
88204	11 qt induction inset	47490	Hinged inset cover, fits 11 qt inset
88184NS*	7¼ qt nonstick induction inset	88184NS*	7¼ qt nonstick induction inset
88204NS*	11 qt nonstick induction inset	88204NS*	11 qt nonstick induction inset

**Nonstick insets are made to order; call Vollrath for minimums and lead time.*

For 7 quart International models with 220-240V, change the fifth digit to "2" for Schuko, "3" for UK, "4" for China, or "5" for Australia (e.g., Schuko 7470110 to 7470210)
For 11 quart International models with 220-240V, change the sixth digit to "2" for Schuko, "3" for UK, "4" for China, or "5" for Australia (e.g., Schuko 74110110 to 74110210)

NEW Contemporary Hinged Inset Lids

IMPROVED INSET COVER DESIGN

- Welded handle is permanently attached and stays secured to cover
- Handle serves as kickstand, keeping cover open for easy access to food
- No friction-fit tabs to lose
- Design of handle dissipates heat, keeping it cooler to the touch
- Fits most 7-quart and 11-quart insets
- Large opening for easy access





ITEM #	DESCRIPTION	OVERALL DIAMETER: IN (CM)	HEIGHT: IN (CM)	CASE LOT
47493	Hinged inset lid – 7¼ qt	9⅜ (25.3)	2¾ (7)	1
47494	Hinged inset lid – 11 qt	11⅛ (30)	2¾ (7)	1

DROP-IN PRODUCTS

REFERENCE OUR SERVING SYSTEMS & COMPONENTS CATALOG FOR DROP-IN STYLES.



KOOL-TOUCH® LADLES WITH HIGH TEMPERATURE JUST GOT COOLER

- Kool-Touch® Handles are color safe up to 225°F (107.2°C)
- Fully functional to 350°F (176.6°C)
- Insulated coating permanently bonded to utensil – will not slip or peel
- Provides cool, comfortable grip

See page 143-144 for product details.





Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 27 - CONVEYOR TOASTER (1 EA REQ'D)

Hatco TQ-10

Toast-Qwik® Conveyor Toaster, horizontal conveyor, countertop design, all bread types toaster, approximately 5 slices/min capacity, painted steel top & aluminized steel construction, 4" legs, 1.8kW, CE, cULus, UL EPH Classified, Made in USA

ACCESSORIES

Mfr	Qty	Model	Spec
Hatco	1		One year on-site parts & labor warranty, plus one additional year parts only warranty on all Toast-Qwik metal sheathed elements
Hatco	1		120v/60/1-ph, 1800 watts, 15.0 amps, NEMA 5-15P (domestic voltage), standard

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120	60	1	Cord & Plug		5-15P	15	1.8			

There's only one #1™

Project _____

Item # _____

Quantity _____

Toast-Qwik® Electric Conveyor Toasters

Models: TQ-10, -400, -405, -400BA, -400H

The Hatco Toast-Qwik® is an economical conveyor toaster with fast, dependable and versatile toasting. These toasters utilize conveyor speed, not temperature to determine toasting color.



Standard features

- Hatco's ColorGuard sensing system assures toast uniformity. (excludes TQ-10)
- Optional power save mode with indicator light saves energy and money during slow periods
- Efficient design of front or rear discharge allows Toast-Qwik to be placed where it is most convenient – for sending product to operator side or customer/server
- BA models toast one side only and are for bagels and buns only, cut side up
- Opening height is 2" (51 mm) and for H models is 3" (76 mm)
- Insulation and an interior fan provide cool surface temperatures
- TQ-10 has a durable painted steel top and aluminized steel construction with powdercoated black top or lower side covers
- Toast storage area keeps bread warm and dry
- Permanently lubricated ball bearing motor and heating elements guaranteed against burnout and breakage for two years

Options (available at time of purchase only)

☐ Automatic Power Save Mode (TQ-400 Series only)

Accessories

☐ Additional extended feed guide (Add 3" [76 mm])

☐ Security Package

IFS anti-microbial coatings use naturally-occurring, environmentally sustainable, silver ions to help inhibit the growth of microbes on the powder coated surface. See www.hatcocorp.com/antimicrobial-paint for more information.

For operation, location and safety information, please refer to the Installation and Operating Manual.

ANSI/NSF 4

MADE IN THE USA

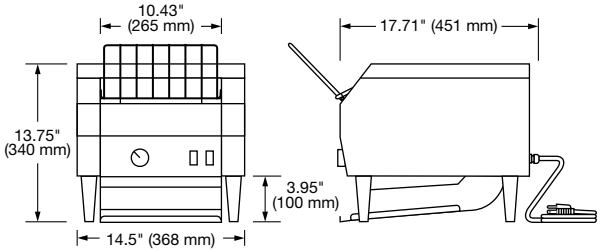
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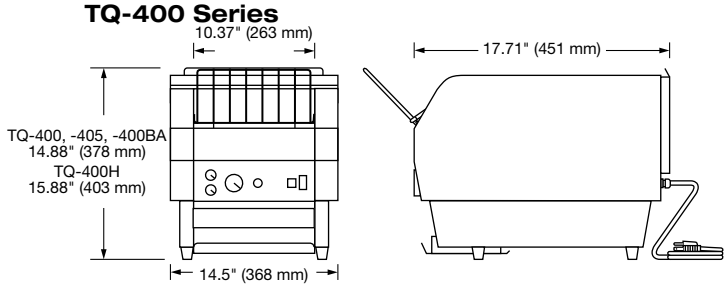
Toast Qwik® Electric Conveyor Toasters

Models: TQ-10, -400, -405, -400BA, -400H

TQ-10



TQ-400 Series



SPECIFICATIONS
Toast-Qwik® Conveyor Toasters

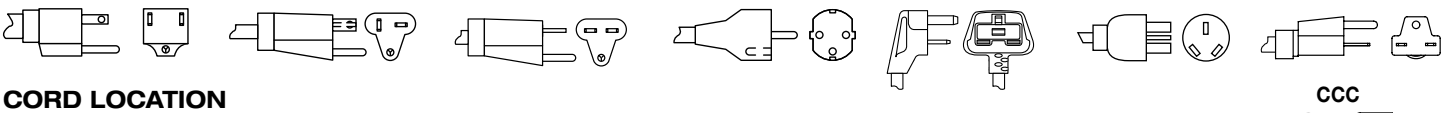
The shaded areas contain electrical information for International models

Model	Dimensions (W x D x H*)	Volts	Hertz	Phase	Watts	Amps	Plug	Ship Weight*
TQ-10	14.5" x 17.71" x 13.75" (368 x 451 x 340 mm)	120	60	Single	1800	15.0	NEMA 5-15P•	42 lbs. (19 kg)
		208			1830	8.8	NEMA 6-15P	
		240				7.6		
		200	50/60	Single	2070	10.4	AS 3112	42 lbs. (19 kg
		220-230 (CE)			1866-2048	8.5-8.9	CEE 7/7, BS-1363, or AS 3112	
		230-240 (CE)			2048-2221	8.9-9.3		
TQ-400	14.5" x 17.71" x 14.88" (368 x 451 x 378 mm)	120	60	Single	1790	14.9	NEMA 5-15P•	46 lbs. (21 kg)
		208			2230	10.7	NEMA 6-15P	
		240				9.3		
		200	50/60	Single	2064	10.3	6-15 PSE	46 lbs. (21 kg)
		220-230 (CE)			1860-2030	8.5-8.8	CEE 7/7, BS-1363, AS 3112, or CCC	
		230-240 (CE)			2030-2210	8.8-9.2		
TQ-405	14.5" x 17.71" x 14.88" (368 x 451 x 378 mm)	220-230 (CE)	50-60	Single	2131-2330	9.7-10.1	CEE 7/7, BS-1363, or AS 3112	46 lbs. (21 kg)
		230-240 (CE)			2030-2210	8.8-9.2		
TQ-400H	14.5" x 17.71" x 15.88" (368 x 451 x 403 mm) Tray extends 2.5" (64 mm) in rear	208	60	Single	2230	10.7	NEMA 6-15P	46 lbs. (21 kg)
		240				9.3		
		200	50/60	Single	2064	10.3	6-15 PSE	46 lbs. (21 kg)
		220-230 (CE)			2131-2330	9.7-10.1	CEE 7/7, BS-1363, AS 3112 or CCC	
		230-240 (CE)			2030-2210	8.8-9.2		
TQ-400BA	14.5" x 17.71" x 14.88" (368 x 451 x 378 mm)	120	60	Single	1780	14.8	NEMA 5-15P•	46 lbs. (21 kg)
		208			1880	9.0	NEMA 6-15P	
		240				7.8		
		200	50/60	Single	1848	9.2	6-15 PSE	46 lbs. (21 kg)
		220-230 (CE)			1765-1930	8.0-8.4	CEE 7/7, BS-1363, AS 3112 or CCC	
		230-240 (CE)			1930-2100	8.4-8.8		

* TQ-400 and -400BA, add 2.5" (64 mm) to depth if using tray extension in rear. Height includes legs.
* Shipping weight includes packaging. • Canadian models use NEMA 5-20P.

PLUG CONFIGURATIONS

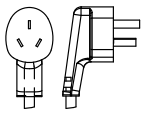
NEMA 5-15P | NEMA 5-20P | NEMA 6-15P | CEE 7/7 Schuko | BS-1363 | AS-3112 | 6-15 PSE



CORD LOCATION

Back of unit, lower right corner.

CCC



PRODUCT SPECS
Conveyor Toasters

The electric Toast-Qwik® Conveyor Toaster with ColorGuard sensing system (excludes TQ-10) shall be a Hatco model ... as manufactured by the Hatco Corporation, Milwaukee, WI 53234 U.S.A.

The Toaster shall have the capacity to toast up to ... pieces per minute and it shall be rated at ... kW, ... volts, single phase. The toaster shall be of stainless steel design and shall include a front mounted control panel with a toast selector knob, variable speed control knob, and an aluminum toast collector pan (excluding TQ-10). The toaster will have multiple metal sheathed heating elements and an impedance protected motor. It shall be complete with factory attached UL listed 4' (102 mm) cord and plug.

Warranty consists of 24/7 parts and service assistance (U.S. and Canada only).

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Rebid Documents

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Submittal Sheet

01/05/2026

ITEM# 28 - (1 EA REQ'D)

Cal-Mil 467059 (1146-13)

SPO Bread Case, 14"W x 14-3/4"D x 15-3/4"H, - Packed By 1EA

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 28 - SPARE NO.

<Spare No.>

Rebid Documents

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Submittal Sheet

01/05/2026

ITEM# 29 - DISPENSER, DRY PRODUCTS (1 EA REQ'D)

Cal-Mil 1499-15

Eco Modern Cereal Dispenser, 18-1/4"W x 13-1/4"D x 24-1/2"H, (3) 2.7L capacity bins, clear acrylic, white wood accents, silver wire frame, BPA Free

Rebid Documents



1471



1478
Bin w/ Cover

1479
Bread Bin w/
3 Drawers

1471-SET

1471
Frame

BAMBOO MERCHANDISERS

Pieces Sold Individually or as a Set.
Set Includes Frame, Bread Bin w/ Drawers, and Bin w/ Cover.

COMPLETE SETS

ITEM 1471-SET | 21Wx13Dx13H - Set/Bamboo

ITEM 1471-15SET | 21Wx13Dx13H - Set/White

COMPONENTS

ITEM 1471 | Frame Only

ITEM 1478 | Bin with Cover

ITEM 1479 | Bread Bin with Drawers

ITEM 1479DRAWER | Replacement Drawer



BAMBOO CEREAL DISPENSERS

Features Pull & Serve Mechanism.

ITEM 1499 | 18¼Wx13¼Dx24½H - Bamboo

ITEM 1499-15 | 18¼Wx13¼Dx24½H - White



BAMBOO 3 SECTION CEREAL DISPENSER

375 Cubic Inch Capacity Per Cylinder.

ITEM 3823-60 | 17¼Wx9½Dx23½H



BAMBOO ROOM SERVICE TRAY

ITEM 958-1-60 | 22½Wx17Dx1½H



BAMBOO TRAYS

ITEM 1367-10-60 | 12Wx9¾Dx1¼H

ITEM 1367-12-60 | 19¾Wx11¾Dx1¼H



BAMBOO TRAY

Fits Standard Muffin Pan.

ITEM 1339-60 | 16Wx11Dx2H | Bamboo Tray

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Submittal Sheet

01/05/2026

ITEM# 30 - SPARE NO.

<Spare No.>

Rebid Documents

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Submittal Sheet

01/05/2026

ITEM# 31 - DISPLAY CASE, NON-REFRIGERATED BAKERY (1 EA REQ'D)

Cal-Mil 22414-110

Aspen Display Case, 15-1/4" x 20-3/4"H x 22"H, ambient, (3) tier, gray-washed pine wood

ACCESSORIES

Mfr	Qty	Model	Spec
Cal-Mil	1	22400-13	Merchandising Display Light Bar, 7-1/2" x 1-1/2" x 5"H, LED, rechargable, with magnetic strip, for illuminating bakery cases & shelving unit displays

Rebid Documents



ASPEN PANELED BAKERY CASE
Includes 3 - 13x18 Clear Trays.

ITEM 3621-110 | 25Wx17Dx23H

ITEM 325-13-12 | Replacement Tray



ASPEN BAKERY CASE
Featuring 3 Hinged Doors For Easy Access.
Accessories Sold Separately.

ITEM 22414-110 | 20¾Wx15¼Dx22H



ASPEN SLANTED DISPLAY CASE
Includes 3 - 13" x 18" Clear trays.
Available In Attendant And Self Serve.

ITEM 3432-110 | Attendant Serve | 21Wx21½Dx21½H

ITEM 3432-S-110 | Self Serve | 21Wx21½Dx21½H

ITEM 325-13-12 | Replacement Tray



ASPEN PRESENTATION CASE
Features Hinged Front Door For Easy Access.
Accessories Sold Separately.

ITEM 3648-1520-110 | 20Wx15Dx8H

ITEM 3648-1520-110ND | 20Wx15Dx8H



ASPEN BREAD DISPLAY
Includes 3 Clear Drawers.
Can be Used Vertically or Horizontally.

ITEM 1204-110 | 8Wx13Dx20½H

ITEM 1204DRAWER | Replacement Drawer



22400-13

Recommended Upgrade!
Rechargable LED Accent Light
Includes Double Sided Tape and Magnetic Strip

ITEM 22400-13 | 7½Wx1½Dx½H



ASPEN DISPLAY CASE
Accessories Sold Separately. Ships Truck Only.

ITEM 22322-110 | 44Wx19½Dx23½H

Please visit www.calmil.com/legal for a complete list of California Proposition 65 related items.

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Submittal Sheet

01/05/2026

ITEM# 32 - DROP-IN REFRIGERATED WELL (1 EA REQ'D)

Hatco CWBP2290-QS

(QUICK SHIP MODEL) Drop-In Refrigerated Well, (2) pan size, top mount, electronic temperature control, condenser unit (cannot be rotated), sight glass, service valves, dryer/filter, insulated with drain, aluminized steel housing, stainless steel bezel, R-290, 1/5 HP, cULus, Made in USA

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120	60	1	Cord & Plug		5-15P			1/5		

Project _____

Item # _____

Quantity _____

R-290 Refrigerated Drop-In Wells

Models: CWBP-1, -2, -3, -4, -5, -6

Hatco's R-290 Refrigerated Drop-In Well keeps pre-chilled food products at safe serving temperatures, with environmentally friendly refrigerant. Unique top-angled inside wall design allows cold air to effectively blanket your food product to keep the food optimally cold and fresh.

This top mount unit holds full-size pans, available in one- through six-pan configurations. The electronic control assembly can be conveniently mounted to either side of the condensing unit or remotely mounted up to 4 feet (1219 mm) from the unit (cannot be mounted over condensing coil).



Model CWBP-6 with accessory (hotel) food pans

Standard features

- Top mount unit holds full-size pans in 1- to-6 pan configurations
- NSF 7 Component approved cold wall construction utilizes a refrigerant that keeps food product cold without drying it out



The unique angled inside wall design provides easy access and clear views. The greater surface area of the angled wall and the placement of the coils allow cold air to more effectively blanket your food product.

- Condenser utilizes environmentally friendly R-290 refrigerant
- Auto-defrost is activated through an advanced electronic controller programmed at customer location
- Optimal insulation on sides and bottom ensure better cold retention
- Environmentally friendly insulation used throughout
- Matches the Hatco line of Heated Wells for a fully integrated look
- 1" brass drain simplifies cleaning

Options (available at time of purchase only)

☐ Additional Four-Year Parts Only Warranty on the Compressor at Time of Unit Purchase (Not available for export voltages)

☐ Slant Kit to give Cold Wells a 5° tilt

☐ Gasket (Factory installed and eliminates the need for silicone or other sealants)

Accessories

Pan Support Bars

☐ 12" (305 mm), hangs from 20" (508 mm) Pan Support Bar
☐ 20" (508 mm), hangs from pan shelf

Stainless Steel Food Pans:

☐ Third-Size (2.5" [64 mm] H)
☐ Full-Size (2.5" [64 mm] H)
☐ Full-Size (6" [152 mm] H)
☐ Half-Size (2.5" [64 mm] H)
☐ Full-Size (4" [101 mm] H)

☐ False Bottom (perforated false bottom)

☐ Condensate Evaporator Pan (1.75 QT)

Trivets:

☐ Half-Size (10.19" [259 mm] W x 7.625 [194 mm] D)
☐ Full-Size (10.125" [259 mm] W x 18" [457 mm] D)

For operation, location and safety information, please refer to the Installation and Operating Manual.

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Rebid Documents

R-290 Refrigerated Drop-In Wells

Models: CWBP-1, -2, -3, -4, -5, -6

Ordering Instructions:

Please specify the following with each order:

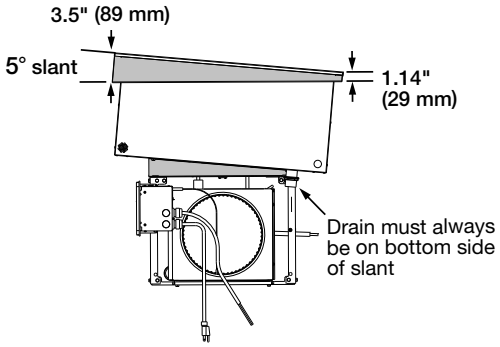
1. **Desired Voltage and Hz:** 120 (60 Hz), 220, 230 or 240V (50 or 60 Hz)
2. **Number of Drop-In Wells Required:** 1-, 2-, 3-, 4-, 5-, or 6-pan as rectangular, full-size, 12" x 20" (305 mm x 508 mm)
3. **Electronic Control Assembly** can be mounted on either side of the Condensing Unit or remotely mounted up to 4 feet (1219 mm) from the unit (cannot be mounted over the condensing unit)

Option

1. **Slant Option** for CWBP-1, -2, -3, -4, -5 or -6
2. **Gasket** to eliminate need for silicone or other sealants

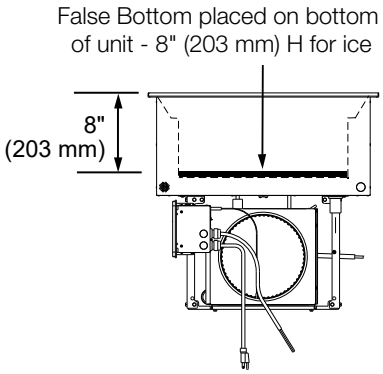
All Models Slant Option

(gray highlight)

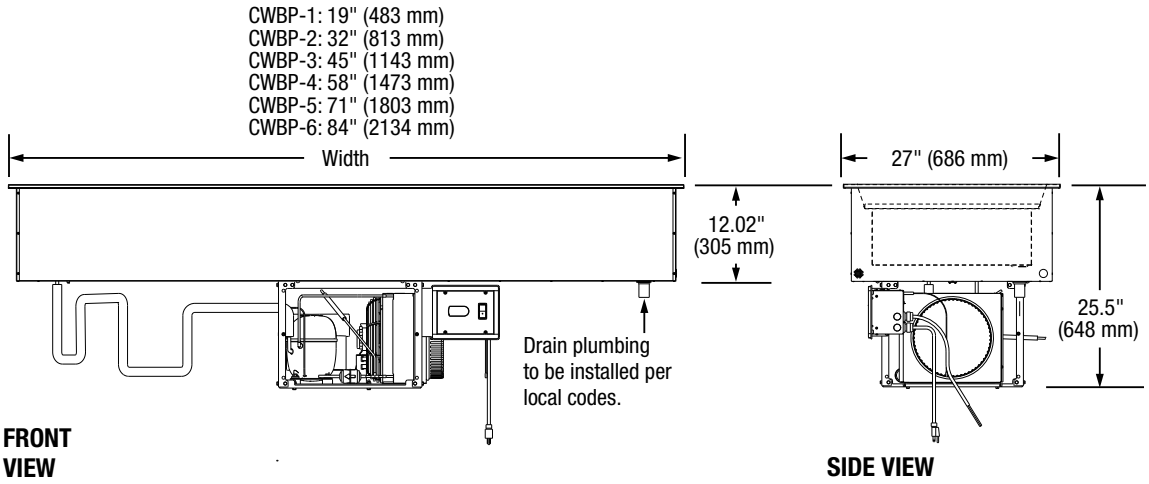


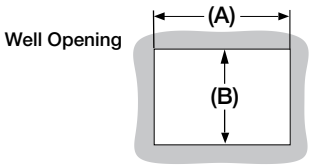
All Models
False Bottom Accessory

1-part, 2- or 3-part, depending on pan size



Model CWBP-1, -2, -3, -4, -5, -6 Series





Cutout Dimensions for R-290 Refrigerated Drop-In Wells

Model	Minimum Width (A)	Maximum Width (A)	Minimum Depth (B)	Maximum Depth (B)
CWBP-1	17.125" (435 mm)	18" (457 mm)	25.19" (640 mm)	26" (660 mm)
CWBP-2	30.125" (765 mm)	31" (787 mm)		
CWBP-3	43.125" (1095 mm)	44" (1118 mm)		
CWBP-4	56.125" (1426 mm)	57" (1448 mm)		
CWBP-5	69.125" (1756 mm)	70" (1778 mm)		
CWBP-6	82.125" (2086 mm)	83" (2108 mm)		

Rebid Documents

R-290 Refrigerated Drop-In Wells

Models: CWBP-1, -2, -3, -4, -5, -6

SPECIFICATIONS
R-290 Refrigerated Drop-In Wells

The shaded areas contain electrical information for International models

Model[1]	Dimensions (Width x Depth x Height, (12" [305 mm] Well Height)	Voltage	HP Compressor Size	Hz	Watts	Amps	Plug	Total Heat of Rejection (BTU/Hr)	Approx. Ship Weight
CWBP-1	19" x 27" x 32.04" (483 x 686 x 814 mm)	120	1/5	60	345	5.2	NEMA 5-15P	1441	127 lbs. (58 kg)
		220/230/240	1/3	50	333/364/396	3.0/3.2/3.3	BS-1363, CEE 7/7 Schuko, AS 3112	1615	
				60	333/364/396	3.0/3.2/3.3	BS-1363, CEE 7/7 Schuko	1615	
CWBP-2	32" x 27" x 32.04" (813 x 686 x 814 mm)	120	1/5	60	345	5.2	NEMA 5-15P	1681	150 lbs. (68 kg)
		220/230/240	1/3	50	333/364/396	3.0/3.2/3.3	BS-1363, CEE 7/7 Schuko, AS 3112	1855	
				60	333/364/396	3.0/3.2/3.3	BS-1363, CEE 7/7 Schuko	1855	
CWBP-3	45" x 27" x 25.5" (1143 x 686 x 648 mm)	120	1/5	60	345	5.2	NEMA 5-15P	1921	173 lbs. (78 kg)
		220/230/240	1/3	50	333/364/396	3.0/3.2/3.3	BS-1363, CEE 7/7 Schuko, AS 3112	2095	
				60	333/364/396	3.0/3.2/3.3	BS-1363, CEE 7/7 Schuko	2095	
CWBP-4	58" x 27" x 25.5" (1473 x 686 x 648 mm)	120	1/3	60	440	6.5	NEMA 5-15P	2485	211 lbs. (96 kg)
		220/230/240	3/8	50	333/364/396	3.0/3.2/3.3	BS-1363, CEE 7/7 Schuko, AS 3112	2335	
			1/3	60	333/364/396	3.0/3.2/3.3	BS-1363, CEE 7/7 Schuko	2335	
CWBP-5	71" x 27" x 25.5" (1803 x 686 x 648 mm)	120	1/2	60	560	9.3	NEMA 5-15P	3135	245 lbs. (111 kg)
		220/230/240	1/2	50	454/496/540	4.1/4.3/4.5	BS-1363, CEE 7/7 Schuko, AS 3112	3067	
			5/8	60	484/529/576	4.4/4.6/4.8	BS-1363, CEE 7/7 Schuko	3189	
CWBP-6	84" x 27" x 25.5" (2134 x 686 x 648 mm)	120	1/2	60	560	9.3	NEMA 5-15P	3375	292 lbs. (132 kg)
		220/230/240	1/2	50	454/496/540	4.1/4.3/4.5	BS-1363, CEE 7/7 Schuko, AS 3112	3307	
			5/8	60	484/529/576	4.4/4.6/4.8	BS-1363, CEE 7/7 Schuko	3429	

[1] Single phase only

R-290 REFRIGERANT OPERATING SPECIFICATIONS in 75°F (24°C) AMBIENT

Refer to the Installation section in the Installation and Operating Manual on the Hatco website

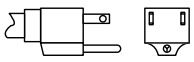
- Suction Pressure: 13-23 PSIG (0.9-1.6 Bar)
- Discharge Pressure : 140-180 PSIG (9.7-12.4 Bar)
- Superheat: 4-10° F (2.2° to 5.6 °C)
- Subcooling: 5-10° F (2.8° to 5.6 °C)

FACTORY FILL RATES for R-290 REFRIGERANT

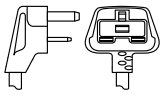
Model	Fill Weight
CWBP-1	4.2 oz. (119.068 g)
CWBP-2	4.5 oz. (127.573 g)
CWBP-3	4.8 oz. (136.078 g)
CWBP-4	4.6 oz. (130.408 g)
CWBP-5	5.1 oz. (144.583 g)
CWBP-6	5.2 oz. (147.418 g)

PLUG CONFIGURATIONS

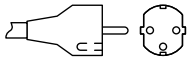
NEMA 5-15P



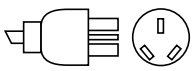
BS 1363



CEE 7-7 SCHUKO



AS 3112



PRODUCT SPECS
R-290 Refrigerated Drop-In Wells

The NSF 7 approved R-290 Refrigerated Drop-In Well shall be a Model ... as manufactured by the Hatco Corporation, Milwaukee, WI 53234 U.S.A.

The R-290 Refrigerated Drop-In Well shall be rated at ... watts, ... volts, ... hp, and be .... inches (millimeters) in overall width and be ... inches (millimeters) in overall depth. It shall utilize R-290 refrigerant and consist of aluminized steel housing with a stainless bezel, an electronic temperature control, pan support bars for full-size pans, condensing unit, compressor, refrigerant lines, and filter-dryer.

Accessories may include pan support bars, false bottom, and stainless steel food pans.

Warranty consists of 24/7 parts and service assistance (U.S. and Canada only).

HATCO CORPORATION | P.O. Box 340500 Milwaukee, WI 53234-0500 U.S.A. | (414) 671-6350

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Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 33 - SNEEZE GUARD, STATIONARY (1 EA REQ'D)

Premier Metal & Glass FM2N-A

CHOICE™ Adjustable Dual-Service Sneeze Guard, single sided guard with top shelf, tempered glass with polished edges, adjustable end panels, front mount, 1" OD round stainless support posts, NSF & cULus listed (Contact Premier Sales Department for Pricing)

ACCESSORIES

Mfr	Qty	Model	Spec
Premier Metal & Glass	1		Specify Length: _____
Premier Metal & Glass	1		Flat black (049/80350) (Contact Premier Sales Department for Pricing), NSF
Premier Metal & Glass	1		3/8" Glass, max 60" span (Contact Premier Sales Department for Pricing)
Premier Metal & Glass	1		Both end panels, standard (Contact Premier Sales Department for Pricing)

PMG | PREMIER METAL & GLASS

MODEL: FM2N-A

PROJECT NAME: _____
ITEM NUMBER: _____
QUANTITY: _____
LENGTH: _____

CHOICE™

CHOICE™ SUPPORT:

❑ 1" OD Stainless Steel
Contact factory for additional tubing options

NSF LISTED FINISHES:

❑ Brushed (#4)
❑ Polished (#8)
❑ No Smudge Silver (049/92790)
❑ Black Matte Fine (049/80830)
❑ RAL#_____
❑ Copper (049/63130)
❑ Bronze (049/66220)
❑ Low Light Bronze (049/61120)
❑ Flat Black (049/80350)
❑ Black Smoke Transparent (049/80375)



FULL SERVICE ADJUSTABLE

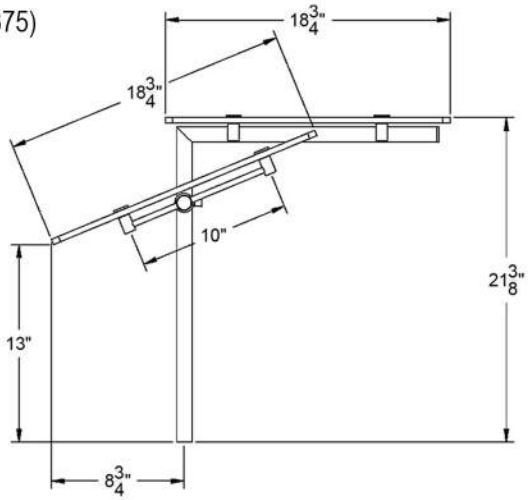
GLASS:

❑ 1/4" Glass - 48" Max. Span
❑ 3/8" Glass - 60" Max. Span
Contact factory for spans exceeding max.

END PANELS:

❑ Both (Std.) ❑ Right Only
❑ None ❑ Left Only

As required by NSF/ANSI 2 standards, all food shields will be quoted with side end panels unless customer requests otherwise. Standards available upon request.



Advise counter thickness and material

MOUNTING OPTIONS:

Some mounting options may not be available on some cantilevered/counter substrate combinations. Refer to mounting cut-sheet or contact factory for additional information.

❑ 641/1 Above counter Surface Mount
❑ 644/1 Narrow Above counter Surface Mount
❑ 223 Through Counter Mount (standard when rear legs are not possible)
❑ 644B-3/1 Above Counter Surface Mount with Stainless Flange Cover
❑ Custom Mounting Options Available

ELECTRICAL COMPONENTS:

LIGHTS ONLY

❑ Ultra-Slim™ LED Display Light 4000k (Std.)
Ideal over refrigerated product areas

HEAT STRIP ONLY

❑ Hatco GRNM Narrow Max Watt Heat Lamp (Std.)*
(Other Hatco heat strips available)

HEAT/LIGHT COMBO

❑ Hatco GRNM Narrow Max Watt Heat Lamp and Ultra-slim™ LED Lights 4000k(Std.)(with external driver)*
(other Hatco heat/combo units available)

Please see electrical cut sheet for additional options and wiring diagram.

*Contact factory for heat options

Specifications for reference only and may be changed without notice. All orders require approved shop drawings prior to release to production. Products are drawn and built to meet NSF Standard 2. It is the responsibility of the customer to ensure product meets local health board standards.

WWW.PMG-INC.com
info@pmg-inc.com
1-800-251-5800
1-800-251-2515

NSF c UL us LISTED

Printed in the USA (06/2019)
Premier Metal and Glass Ventures, Inc.
1835 MacArthur Blvd., NW
Atlanta, GA 30318

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 34 - SPARE NO.

<Spare No.>

Rebid Documents

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Submittal Sheet

01/05/2026

ITEM# 35 - SPARE NO.

<Spare No.>

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 36 - WAFFLE MAKER / BAKER (2 EA REQ'D)

Hatco FWM1B.515

(Quick Ship) Hatco/Suntec Flip Waffle Maker, 7" round Belgian plate, LED display, on/off, timer/temperature toggle, heavy duty stainless steel construction with Teflon® coated aluminum plates, 120v/60/1-ph, 1350 watts, 11.3 amps, NEMA 5-15P

ACCESSORIES

Mfr	Qty	Model	Spec
Hatco	1		NOTE: Your order will be shipped the same day if you place it before 12 noon Central Standard Time, or the next business day if ordered after 12 noon. All orders are subject to credit approval.

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120										

Rebid Documents

Project _____

Item # _____

Quantity _____

Hatco®/Suntec Flip Waffle Makers

Model: FWM-1B

Hatco®/Suntec Flip Waffle Makers produce excellent, authentic 1¼" (32 mm) thick, round Belgian waffles. Their unique heating elements and 180° swivel mechanism ensure even cooking, while a thermostatic control and a programmable timer deliver consistent, repeatable results. Adjustments to temperature and time can be made to suit any batter and the unit is memory retentive so you may only have to program it once.

Standard features

- Commercial food service quality – designed for many hours of continuous use, every day
- Heavy duty stainless steel construction with Teflon® coated aluminum plates
- Simple push-button control panel features a stand-by on/off, timer/temperature toggle, higher/lower selection, and start
- Easy to see bright red LED display shows settings and countdown when cooking
- Timer starts automatically when waffle maker is closed and resets when opened, while a beeper signals the end of a cooking cycle
- Fast initial heat up time, excellent heat retention and recovery delivers high productivity
- Models shipped with NEMA 5-15P plug and cord (attached)



FWM-1B

Standard Round Belgian Plate 7" (178 mm) diameter



Mini Round Waffle Plate available as accessory Four 3 5/32 (80 mm) diameter



Accessories

☐ Waffle Brush - For easy cleaning

☐ Waffle Fork

☐ Mini Waffle Plate

For operation, location and safety information, please refer to the Installation and Operating Manual.

ANSI/NSF 4

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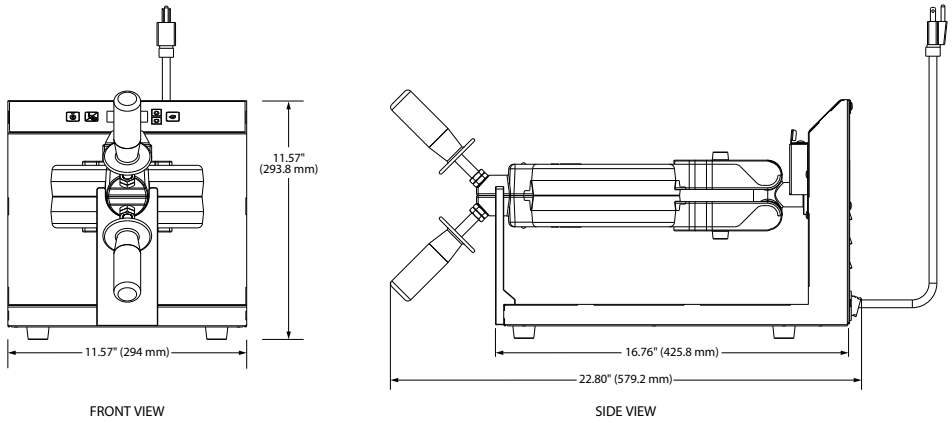
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Rebid Documents

Hatco®/Suntec Flip Waffle Maker

Models: FWM-1B

FWM-1B



SPECIFICATIONS
Flip Waffle Maker

Model	Item No.	Description	Dimensions (W x D x H)	Voltage	Watts	Amps	HZ	Plug	Ship Weight*
FWM-1B	FWM1B.515	single, round	11.57" x 22.80 " x 11.57" (294 x 579 x 294 mm)	120	1350	11.3	50-60	NEMA 5-15P	26.5 lbs. (12 kg)
				100	1350	13.5	50-60		
				220-240	1235-1470	5.7-6.2	50-60		
				220	1235	5.7	60		

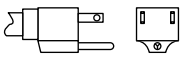
* Shipping weight includes packaging.

CORD LOCATION

Bottom center of unit.

PLUG CONFIGURATION

NEMA 5-15P



PRODUCT SPECS
Waffle Makers

The Waffle Makers shall be Model ... as distributed by the Hatco Corporation, Milwaukee, WI 53234 U.S.A.

The Waffle Maker shall be rated at ... watts, ... volts, and be ... inches (millimeters) in overall width.

It shall consist of stainless steel frame and cast iron waffle plates. Waffle Makers feature removable cast iron waffle plate for Belgian waffles. Also, an adjustable Temperature Control and a power indicator. All units are equipped with a factory attached 6' (1829 mm) power cord and plug.

Accessories shall include a waffle brush, waffle fork and mini waffle plate.

Warranty consists of 24/7 parts and service assistance (US and Canada only).

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Rebid Documents

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Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 37 - HOT FOOD DISPENSER (1 EA REQ'D)

Server Products 85480

SY 1.5, SYRUP WARMER & SERVER, 1-1/2 gallon, spigot faucet, thermostat senses food temperature and turns heating element on or off as needed, with thermostat lock, stainless steel, 350 watts, 120V/60/1-ph, 2.9 amps, cord, NEMA 5-15P, NSF, cULus

ACCESSORIES

Mfr	Qty	Model	Spec
Server Products	1		2 Year warranty

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120	60	1	Cord & Plug		5-15P	2.9	.35			

Rebid Documents

SERVER ESSENTIALS

Specialty Warmers
SYRUP WARMERS/SERVERS

SPECIFICATION SHEET



FAST FACTS

Syrup Warmers/Servers warm and serve breakfast syrup or specialty sauces in less than 10 inches of counter space while a temperature-sensing thermostat provides accurate control with locking design to prevent accidental changes and keep content ready for service throughout the day.



APPLICATIONS

- Keep syrups and sauces warm away from the kitchen; perfect for buffet lines
- Large capacity is ideal for multi-daypart use and for specialty drinks such as mulled wine and apple cider

DETAILS

- Simplify warming and serving high volumes of specialty sauces and syrups – server holds up to 3 gallons
- Multi-daypart use – switch from breakfast syrup to ciders or mulled wine
- No more sticky bottles or dispensers – faucet keeps area clean
- Compact design uses minimal counter space

85480



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SERVER • ESSENTIALS •

Happiness Is Served.

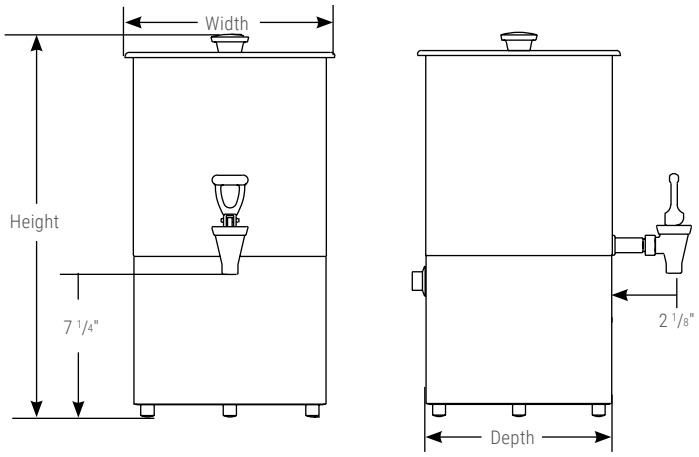
DISPENSES KEY — SEE TABLE FOR APPLICABLE TRAITS BY MODEL
- THIN: fountain syrups • oils • hot sauce
- THICK: ketchup • mustard • mayo • bbq
- THICKER: tartar sauce • crafted sauces

APP KEY: AMBIENT | COLD | HOT

SYRUP WARMER/SERVER MODELS: SY 1.5 & SY

Server Syrup Warmer models SY 1.5 and SY are constructed of stainless steel with a brushed finish. Warmers have a 1 ½ or 3 gallon capacity. Traditional faucet style spigot is made of black plastic. Adjustable thermostat controls a 350 watt heating element precalibrated at 140°F (60°C) – temps range from 80°F to 180°F. 72" electrical cord standard. Thermostat lock prevents accidental changes. NSF listed. C-UL-US listed. Two-year warranty.

NSF c UL us LISTED 2 YEAR WARRANTY



order amt	dispenses	model/item	app	description	capacity	dims (H x W x D)	weight	plug	voltage	watts/amps
☐	thin	SY 1.5 85480	hot	syrup warmer, faucet dispense	1 ½ gal	16 ½" x 8 ⅛" x 7 ¼"	8 lb	5-15P	120 AC	350W 2.9A
☐	thin	SY 84190	hot		3 gal	19 5/16" x 9 7/8" x 9"	10 lb			

RELATED ITEMS

MNS 05578

The Server Mix-N-Serve™ Warmer/Mixer continuously stirs using a magnetic agitator to keep contents from separating. A removable melting basket suspends butter solids for replenishing throughout the day.



SERVE GOODNESS ALL DAY WITH SYRUP SERVERS/WARMERS
SERVER-PRODUCTS.COM | 800.558.8722 | 262.628.5600

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Syrup Warmers/Servers

- Neatly warm and serve syrup for breakfast menu items or a buffet line
- Temperature-sensing thermostat provides accurate heat control with locking design to prevent accidental changes
- Compact, stainless steel syrup warmers with lift-off lid include:
  – 1 ½ gallon capacity
  – 3 gallon capacity

NSF c UL US LISTED



	model/item	description	capacity	dimensions (HxWxD)	plug	voltage	watts	weight
b	SY 1.5 85480	syrup warmer, faucet dispense	1 ½ gal	16 ½" x 8 ⅛" x 10 ¾"	5-15P	120 AC	350	8 lb
c	SY 84190	syrup warmer, faucet dispense	3 gal	19 5/16" x 9 ⅞" x 12 ⅝"	5-15P	120 AC	350	10 lb

Mix-N-Serve™ Warmer/Mixer

- Ideal for drawn butter, hot chocolate and other foods that should be continuously stirred
- Compact, stainless steel warming dispenser transfers labor from cook line to wait station
- Temperature-controlled thermostat provides accurate heat control with locking design to prevent accidental changes
- Removable melting basket suspends butter solids from stirring agitator
- Separate switches control stir and heat functions
- Spigot-style faucet and removable, 5 ½ quart food vessel

NSF c UL US LISTED



	model/item	description	capacity	dimensions (HxWxD)	plug	voltage	watts	weight
a	MNS 05550	Mix-N-Serve™ warmer	5 ½ qt	16 3/16" x 9 ¼" x 8 ¾"	5-15P	120 AC	450	20 lb



42%

of consumers said they'd like to eat more seafood as a replacement for meat.

Datassential, 2019



SERVER PRODUCTS LIMITED WARRANTY

SCOPE OF WARRANTY. Server Products Inc. ("Server Products") warrants that, for a period of two (2) years from the date of purchase (the "Warranty Period"), the equipment manufactured by it will be free from defects in workmanship and materials provided the equipment is used in the manner and in the environment for which they were manufactured.

DISCLAIMERS AND LIMITATIONS. OTHER THAN AS SET FORTH ABOVE, SERVER PRODUCTS SPECIFICALLY DISCLAIMS ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE OR USE. This warranty does not extend to repairs or alterations undertaken without the prior written consent of Server Products or for goods that are misused, abused or neglected or if the goods are not properly stored, maintained, installed or operated. SERVER PRODUCTS SHALL NOT BE LIABLE FOR INCIDENTAL, SPECIAL, INDIRECT, EXEMPLARY, PUNITIVE OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE GOODS OR ARISING OUT OF ANY BREACH OF THIS WARRANTY; INCLUDING BUT NOT LIMITED TO DAMAGE TO PROPERTY OR LOSS OF PROFITS OR REVENUE.

CLAIMS ADMINISTRATION. All warranty claims must be made by calling our customer service department for a return authorization during the Warranty Period and any alleged defective unit must be returned to Server Products factory, freight prepaid. Upon receipt of any defective unit, Server Products, at its option, may either: (i) replace any equipment proved to be defective, (ii) remedy or repair such defect or (iii) refund the purchase price of the defective equipment in the form of a credit applicable to future purchases. Server Products obligation and Buyer's sole remedy will be limited to these options. In the case of units or parts purchased by Server Products from a third-party supplier, Server Products' obligation and Buyer's sole remedy against Server Products or Server Product's suppliers shall not exceed the settlement which Server Products is able to obtain from its supplier.

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 38 - BATTER DISPENSER (1 EA REQ'D)

Waring WBD2G

Batter Dispenser, 2 gallon capacity, with base, dishwasher safe, removable stainless steel drip saucer, Tomlinson® Spigot, non-skid feet, 304 stainless steel

Rebid Documents

WBD2G

2-Gallon Batter Dispenser

COOK



MAIN FEATURES

- Industry-approved Tomlinson® spigot*
- 304 stainless steel housing and cover
- Fits up to 2 gallons of batter
- Spigot is removable for easy cleaning
- Stainless steel drip saucer is removable for easy cleaning
- Container removes from the base
- Base features nonskid feet for safe and stable operation
- All parts are dishwasher-safe
- Built for use with waffle, pancake and crepe batters
- Limited 90-Day Warranty

*Tomlinson® is a registered trademark of the Meyer Company, Cleveland, OH.

SALES FEATURES

With fresh-made waffles in high demand, your operation needs an easy way to dispense waffle batter. Perfect for front- and back-of-the-house usage, this 2-gallon batter dispenser is efficient and low maintenance. A removable Tomlinson® spigot releases batter with an even pour. Built to last, the stainless steel container sits in a sturdy base and features a removable top for easy filling. A stainless steel drip saucer prevents mess.

NSF

2-Gallon Batter Dispenser

WBD2G

@waringcommercial

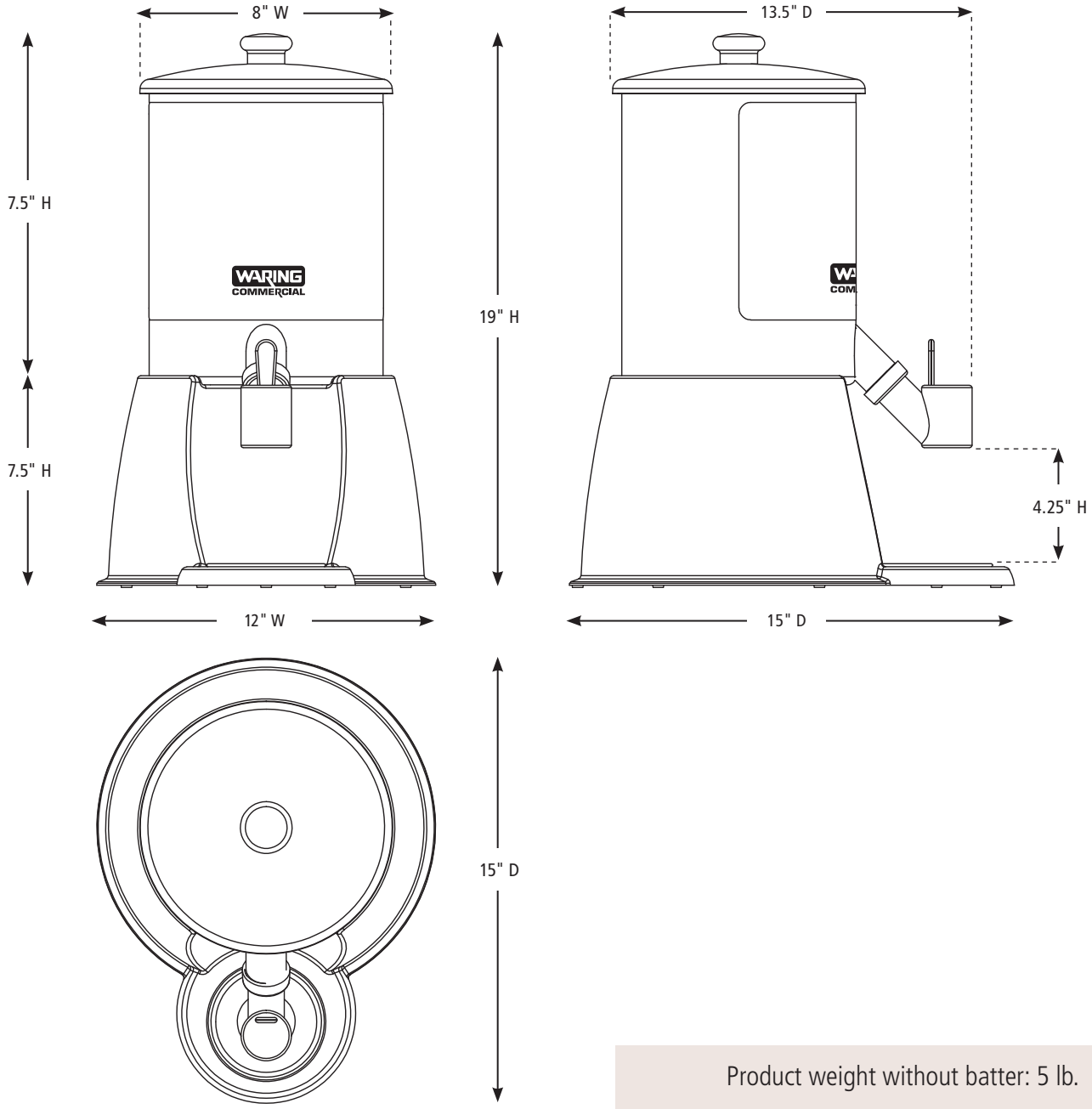
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314 Ella T. Grasso Avenue, Torrington, CT 06790
Tel. 800-492-7464 • Fax 860-496-9008

waringcommercialproducts.com

Rebid Documents

2-Gallon Batter Dispenser
WBD2G

DIMENSIONS



Product weight without batter: 5 lb.

ORDERING INFORMATION	#STD. PKG.	GIFTBOX WEIGHT	CUBIC FEET	BOX DIMENSIONS D X W X H	UPC	CASE PKG.	MC WEIGHT	MC DIMENSIONS D X W X H	MBC
WBD2G – 2-Gallon Batter Dispenser	1	7.03	1.279	16.375" x 12.750" x 17.750"	040072091377	1	7.03	16.375" x 12.750" x 17.750"	10040072091374

@waringcommercial

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Tel. 800-492-7464 • Fax 860-496-9008

waringcommercialproducts.com

20WC074577 / REV 10/20

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 39 - PANCAKE MAKER (1 EA REQ'D)

Custom VERIFY

Pancake Maker

<TBD>

Rebid Documents

This Self-Serve Pancakes Machine



Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 40 - SPARE NO.

<Spare No.>

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 41 - COFFEE BREWER (1 EA REQ'D)

BUNN 38700.0013

38700.0013 AXIOM® Twin APS Airpot Coffee Brewer, brews 15 gallon per hour capacity, twin brew head system, LCD display, hot water faucet, digital temperature control, electronic diagnostics, stainless steel funnel, brews into 1.9 to 3 liter airpots (sold separately), energy-saver mode, 120/240v/60/1-ph, 6100w, 26 amps, UL, NSF

ACCESSORIES

Mfr	Qty	Model	Spec
BUNN	8	32130.0000	32130.0000 Airpot, 3.0 liter (102 oz.), lever-action, stainless steel liner, ETL
BUNN	1	35728.0005	35728.0005 UNIV-6 APR Universal Airpot Rack, (3) lower & upper racks, displays (6) push-button or lever-action airpots (not included), sponge-lined tray, carbon-steel wire construction
BUNN	1	20115.0000	20115.0000 Paper Filters, 9-3/4" x 4-1/4", regular, white (for 12-cup decanter brewers) (1000 each per case, price based on 1-229 lbs total weight - call for price on greater quantities)

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	120/240	60	1				26	6.1			

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1				3/8"					

WASTE

	INDIRECT SIZE	DIRECT SIZE
1		

Rebid Documents

AXIOM®-TWIN-APS

Height: 23.5" (59.7cm) Width: 16.0" (40.6cm) Depth: 22.2" (56.4cm)



- Adjusts automatically to varying water pressure
- Electronic diagnostics and built-in tank drain make service easier
- For high lime areas, BrewLOGIC® technology calculates flow rate and adjusts brew time to maintain consistent pot levels
- Large 200oz. (5.9L) tank provides back-to-back brewing capacity
- Ensure coffee quality with programming for brew level, cold brew lock- out and tank temperature, set easily from the front of the machine
- Coffee extraction controlled with programmable pre-infusion, pulse brew and digital temperature precision
- Brews directly into 1.9 to 3L airpots
- Energy-saver mode reduces tank temperature during idle periods
- Hot water faucet
- SplashGard® funnels deflect hot liquids away from the hand
- Twin brew head system
- PROP 65 Warning Decal included in packaging with equipment
- Servers not included unless otherwise noted

Server(s) sold separately

Agency:

NSF UL LISTED

Specifications

Product #: 38700.0013

Faucet: Upper

Water Access: Plumbed

Finish: Stainless

Funnel: Stainless Steel

Additional Features

DBC

Electrical & Capacity

Volts*	Amps	Watts	Cord Attached	Plug Type	8oz cups/hr 236ml cups/hr	Input H²O Temp.	Phase	# Wires plus Ground	Hertz
120/240	26	6100	No	-	240	60°F (15.5°C)	1	3	60

*When a BUNN is machine rated 120/208-240V, 120/208V or 120/240V, the higher voltage is the supply voltage needed to power the machine. The 120V is there to supply power to some components rated 120V in the machine, but it is not the supply voltage and would not power the machine if the machine is marked with the before mentioned ratings.

Plumbing Requirements

PSI	kPa	Fitting Supplied	Water Flow Required (GPM)
20-90	138-621	1/4" Male Flare Fitting	-

CAD Drawings

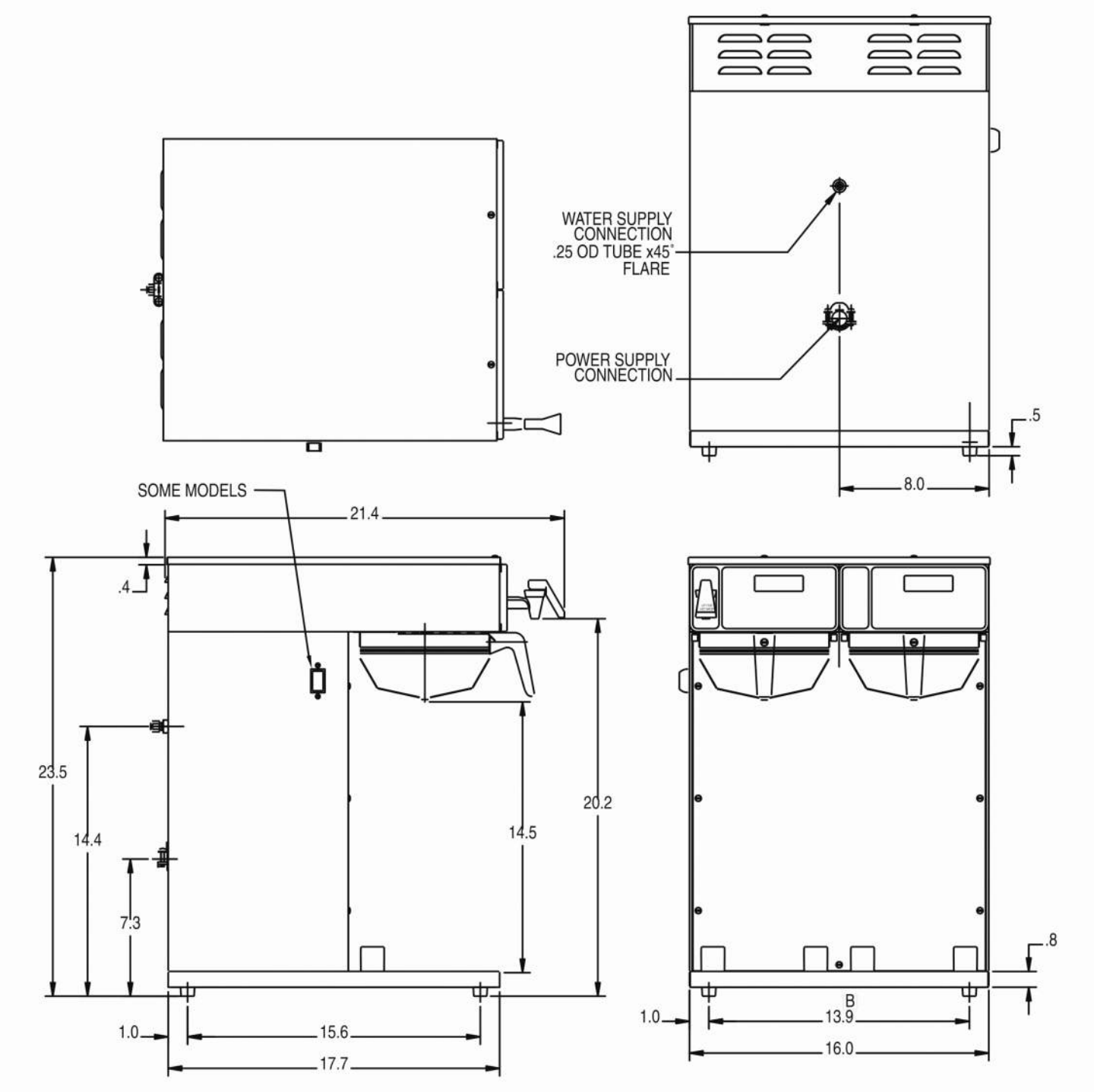
2D	Revit	KLC
●		

WARNING: This product can expose you to chemicals including Bisphenol A (BPA), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and drawing documents

Last Updated: 08/04/2023

Rebid Documents



Unit				Shipping				
	Height	Width	Depth	Height	Width	Depth	Weight	Volume
English	23.5 in.	16.0 in.	22.2 in.	28.5 in.	19.9 in.	25.8 in.	52.950 lbs	8.462 ft³
Metric	59.7 cm	40.6 cm	56.4 cm	72.4 cm	50.5 cm	65.6 cm	24.018 kgs	0.240 m³

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Last Updated: 08/04/2023

Rebid Documents

Related Products & Accessories: AXIOM®-TWIN-APS(38700.0013)



FUNNEL W/DECAL,PPK NAR BLK(SM)

Product #: 02774.0011



FUNNEL W/DECAL,PPK NAR BLK(LG)

Product #: 04274.0012



FILTERS,REGULAR1M 500/2 50/CL

Product #: 20115.0000



FUNNEL ASSY, SST-BLK HDL(7.12

Product #: 20216.0000



FUNNEL ASSY,SST-BLK HDL(7.62

Product #: 20217.0000



FUNNEL ASSY, SST-PP BLK HNDL

Product #: 29151.0000



FUNNEL ASSY,SST-PP ORANGE HDL

Product #: 29151.0001



FUNNEL AY,W/DECAL GRT "C"7.12

Product #: 34559.0000



WATER FILTER, EQHP-10L

Product #: 39000.0001



WATER FILTER, EQHP-10

Product #: 39000.0004



WATER FILTER, SCALE-PRO

Product #: 39000.0010



SYSTEM, WQ-55(2)5L

Product #: 56000.0001



SYSTEM, WQ-55(2)5

Product #: 56000.0004



SYSTEM, WQ-SCALE-PRO.X-150(15)

Product #: 56000.0010



SYSTEM, WEQ-10(1.5)5L

Product #: 56000.0024



SYSTEM, WEQ-10(1.5)5

Product #: 56000.0027



SYSTEM, WEQ-SCALE-PRO.X

Product #: 56000.0033



CARTRIDGE, WQ-55(2)5L

Product #: 56000.0101



CARTRIDGE, WQ-55(2)5

Product #: 56000.0104



CARTRIDGE, WQ-SCALE-PRO.X-150(15)

Product #: 56000.0110

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and drawings, visit www.bunn.com

Last Updated: 08/04/2023

Rebid Documents

Related Products & Accessories: AXIOM®-TWIN-APS(38700.0013)



CARTRIDGE, WEQ-SCALE-PRO.X

Product #: 56000.0120



CARTRIDGE, WEQ-10 (1.5)5L

Product #: 56000.0121



CARTRIDGE, WEQ-10 (1.5)5

Product #: 56000.0122

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and drawings, please visit www.bunn.com

Last Updated: 08/04/2023

Rebid Documents

Serving & Holding Options: AXIOM®-TWIN-APS(38700.0013)



AIRPOT, 2.5L GL PB SINGLE PK

Product #:13041.0001



AIRPOT, 2.5L GL PB 6/ CASE

Product #:13041.0101



AIRPOT, 2.2L GL PB SINGLE PK

Product #:28696.0002

NO IMAGE AVAILABLE

AIRPOT, 2.2L GL PB 6/ CASE

Product #:28696.0006



AIRPOT, 2.5L SST LA SINGLE PK

Product #:32125.0000



AIRPOT, 2.5L SST LA 6/ CASE

Product #:32125.0100



AIRPOT, 3.0L SST LA SINGLE PK

Product #:32130.0000



AIRPOT, 3.0L SST LA 6/ CASE

Product #:32130.0100



AIRPOT, 2.2L GL LA 6/ CASE

Product #:32700.0000



AIRPOT, 3.8L SST LA SINGLE PK

Product #:36725.0000



AIRPOT, 3.8L SST LA 6/ CASE

Product #:36725.0100



AIRPOT, 2.2L SST LA SINGLE PK

Product #:44311.0000

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Last Updated: 08/04/2023

Rebid Documents

3.0L Lever Action Airpot (1pk)

15.8" x 9.0" x 6.3"
(40.1cm x 22.9cm x 16.0cm)

Feature points are currently unavailable.

Agency:

Specifications

Product #: 32130.0000
Finish: Stainless/Black
Liner: Stainless Steel
Dispense: Lever Action
Lid Color: Black

Additional Features

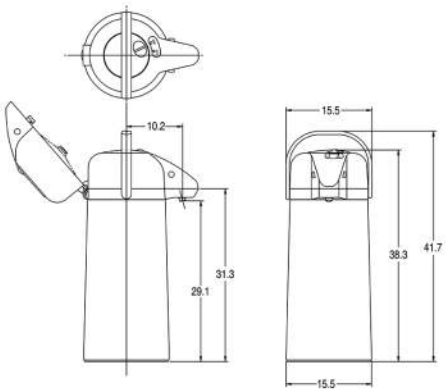
Holding Capacity

English	Metric
-	-

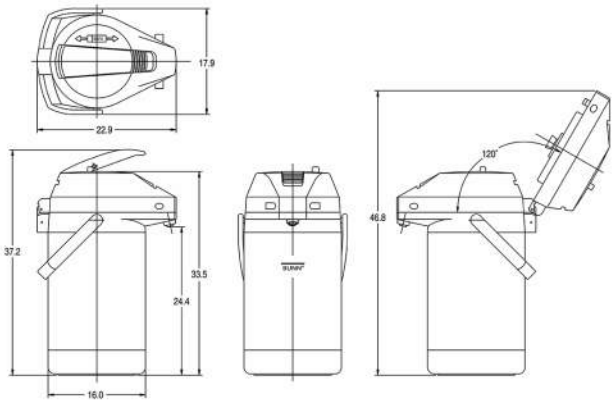
BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and other info visit bunn.com.

Created on: 08/16/2017

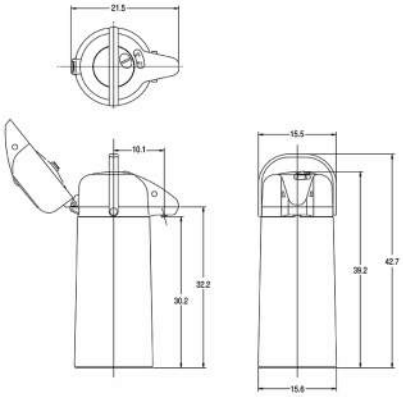
Rebid Documents



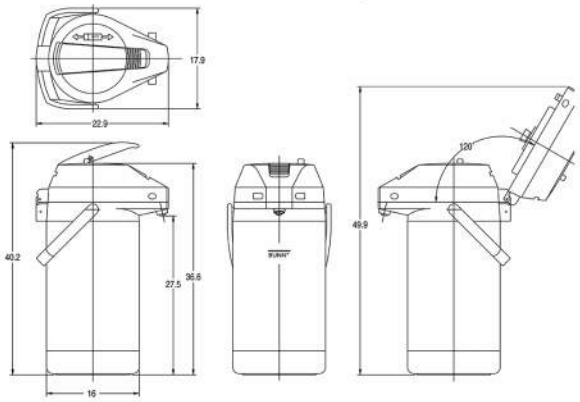
2.2 litre Push-Button Airpot



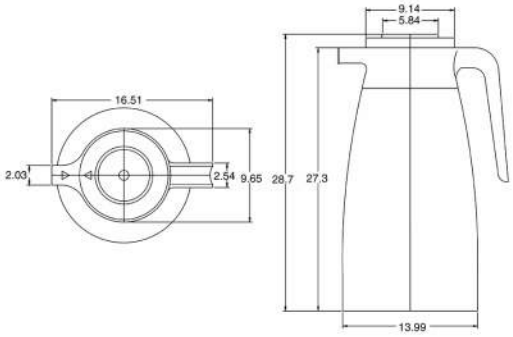
2.5 litre Lever-Action Airpot



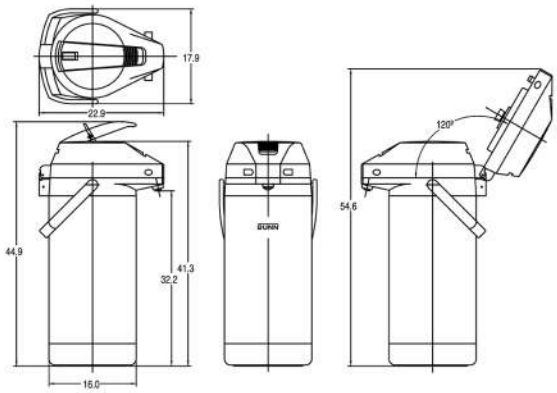
2.5 litre Push-Button Airpot



3.0 litre Lever-Action Airpot



1.9 liter Thermal Pitcher



3.8 litre Lever-Action Airpot

Unit				Shipping				
	Width	**Height**	**Depth**	**Width**	**Height**	**Depth**	**Weight**	**Volume**
English	6.3 in.	15.8 in.	9.0 in.	-	-	-	5.450 lbs	0.777 ft³
Metric	16.0 cm	40.1 cm	22.9 cm	-	-	-	2.472 kgs	0.022 m³

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Created on: 08/16/2017

Rebid Documents

Related Products & Accessories: 3.0L Lever Action Airpot (1pk)(32130.0000)

RACK ASSY,UNIV-2 APR-1 L/1U

Product #: 35728.0000

RACK ASSY,UNIV-2-APR 2 L

Product #: 35728.0001

RACK ASSY,UNIV-3 APR-3 L

Product #: 35728.0002

RACK ASSY,UNIV-4 APR-2 L/2U

Product #: 35728.0003

RACK ASSY,UNIV-5 APR-2 L/3U

Product #: 35728.0004

RACK ASSY,UNIV-6 APR-3 L/3U

Product #: 35728.0005

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Created on: 08/16/2017

Rebid Documents

UNIV-6 APR

14.0" x 24.9" x 22.9"
(35.6cm x 63.2cm x 58.2cm)

Feature points are currently unavailable.



Agency:

Specifications

Product #: 35728.0005

Finish: Black

Additional Features

3 Upper/3 Lower

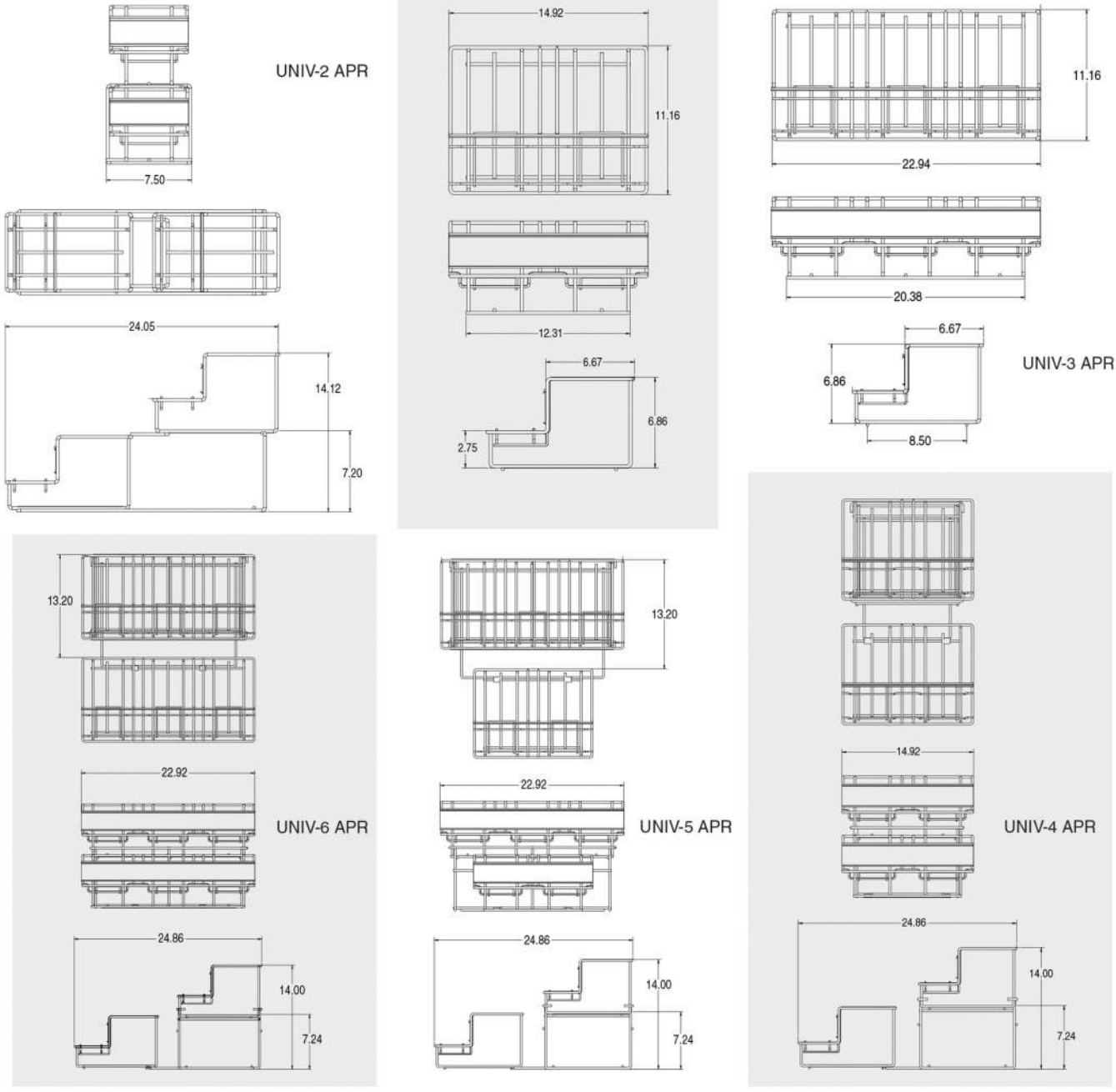
Holding Capacity

English	Metric
-	-

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and other info visit bunn.com

Created on: 08/08/2017

Rebid Documents



Unit				Shipping				
	Width	**Height**	**Depth**	**Width**	**Height**	**Depth**	**Weight**	**Volume**
English	22.9 in.	14.0 in.	24.9 in.	-	-	-	16.000 lbs	4.090 ft³
Metric	58.2 cm	35.6 cm	63.2 cm	-	-	-	7.258 kgs	0.116 m³

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Created on: 08/08/2017

Rebid Documents

Related Products & Accessories: UNIV-6 APR(35728.0005)



AIRPOT, 2.5L GL PB SINGLE PK

Product #: 13041.0001



AIRPOT, 2.5L GL PB 6/ CASE

Product #: 13041.0101



AIRPOT, 2.2L GL PB SINGLE PK

Product #: 28696.0002



AIRPOT, 2.2L GL PB 6/ CASE

Product #: 28696.0006



AIRPOT, 2.5L SST LA SINGLE PK

Product #: 32125.0000



TERMO

Product #: 32125.0000



AIRPOT, 2.5L SST LA 6/ CASE

Product #: 32125.0100



TERMO

Product #: 32125.0100



AIRPOT, 3.0L SST LA SINGLE PK

Product #: 32130.0000



TERMO

Product #: 32130.0000



AIRPOT, 3.0L SST LA 6/ CASE

Product #: 32130.0100



TERMO

Product #: 32130.0100



AIRPOT, 2.2L GL LA 6/ CASE

Product #: 32700.0000



AIRPOT, 3.8L SST LA SINGLE PK

Product #: 36725.0000



TERMO

Product #: 36725.0000



AIRPOT, 3.8L SST LA 6/ CASE

Product #: 36725.0100



PITCHER,SST 1.9L TALL-SNGL PK

Product #: 39430.0000



PITCHER,SST 1.9L TALL-6/CASE

Product #: 39430.0100



JARRAS

Product #: 39430.0100



AIRPOT, 2.2L SST LA SINGLE PK

Product #: 44311.0000

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Created on: 08/08/2017

Rebid Documents

Related Products & Accessories: UNIV-6 APR(35728.0005)



AIRPOT, 2.2L SST LA 6/ CASE

Product #: 44311.0100

BUNN® reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, improvements, additions or replacements for previously purchased equipment. For most current specifications and other info visit bunn.com.

Created on: 08/08/2017

Rebid Documents

Regular Paper Filters 1000/case

Diameter: Flat -- 9.75" (24.77 cm)
Base -- 4.25" (10.80 cm)

Feature points are currently unavailable.



Specifications

Product #: 20115.0000

Additional Features

Packing Info

Number per Bag	Bags per Case	Number in Cluster	Packed per Case
500	2	50	-

Dimensions

	Unit		Shipping			
	Flat Diameter	**Base Diameter**	**Cases Per Skid**	**Cases per Tier on Skid**	**Weight per Case**	**Volume per Case**
English	9.75 in.	4.25 in.	-	15	4.000 lbs	0.539 ft
Metric	24.77 cm	10.80 cm	-	-	1.814 kgs	0.015 kgs

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Created on: 09/14/2017

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 42 - FLATWARE HOLDER, UTENSIL HOLDER DISPLAY CADDY (1 EA REQ'D)

Cal-Mil 1016-3

Classic Cylinder Display, 5-1/2"W x 8"D x 20"H, 3-tier, vertical, single tower, accommodates (3) cylinders, ABS-plastic, black (cylinders sold separately)

Rebid Documents

FLATWARE & CONDIMENT DISPLAYS



SOHO CYLINDER DISPLAY
Cylinders Sold Separately.
ITEM 1583-13 | 8¾Wx8½Dx21H



BROOKLYN CYLINDER DISPLAY **NEW**
ITEM 3411-13 | 7¼Wx7¾Dx20½H



CLASSIC FLATWARE DISPLAY
Cylinders Sold Separately.
Made with Durable ABS.
ITEM 1016-3 | 5½Wx8Dx20H | 3 Cylinder
ITEM 1016-6 | 11Wx8Dx20H | 6 Cylinder



1016-3-60



1016-3-96

BAMBOO/MIDNIGHT CYLINDER DISPLAY
Cylinders Sold Separately.
ITEM 1016-3-60 | 6¼Wx9½Dx22¾H
ITEM 1016-3-96 | 6¼Wx9½Dx22¾H



NEWPORT VERTICAL CYLINDER DISPLAY
Cylinders Sold Separately.
ITEM 3411-113 | 7¼Wx7¾Dx20½H



ASPEN VERTICAL CYLINDER DISPLAY
Cylinders Sold Separately.
ITEM 3411-110 | 7¼Wx7¾Dx20½H



MADERA VERTICAL CYLINDER DISPLAY
Cylinders Sold Separately.
ITEM 3411-99 | 7¼Wx7¾Dx20½H



HERITAGE VERTICAL CYLINDER DISPLAY
Cylinders Sold Separately.
ITEM 3411-112 | 7¼Wx7¾Dx20½H



ASHWOOD FLATWARE/ CONDIMENT ORGANIZER
Plastic Liner Removable For Cleaning.
ITEM 3802-83 | 13¾Wx10Dx6H



MADERA FLATWARE/ CONDIMENT ORGANIZER
Plastic Liner Removable For Cleaning.
ITEM 3613-3-99 | 13¾Wx10Dx5¼H



CINDERWOOD FLATWARE/ CONDIMENT ORGANIZER
Plastic Liner Removable For Cleaning.
ITEM 3802-87 | 13¾Wx10Dx6H

Please visit www.calmil.com/legal for a complete list of California Proposition 65 related items.

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 43 - SPARE NO.

<Spare No.>

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 44 - CONDIMENT CADDY (1 EA REQ'D)

Cal-Mil 1594-13

SoHo Condiment Organizer, 15-3/4"W x 11-3/4"D x 12"H, (6) compartment, accommodates cups/lids up to 3.75" dia., acrylic insert for stir sticks and packets, black, BPA Free

Rebid Documents



RESIN PACKET ORGANIZERS **NEW**
Specify Color: Black Swirl (-124), White Cloud (-126).
ITEM 1246 | 9½Wx4½Dx2¼H



LUXE THREE COMPARTMENT CONDIMENT ORGANIZER
ITEM 3014-55 | 9¼Wx4½Dx2½H



SQUARED PACKET ORGANIZER
ITEM 1611-55 | 9½Wx4½Dx2H



CLASSIC COFFEE STATION ORGANIZER **NEW**
ITEM 23818-13 | 8¾Wx6Dx4¼H



WHITE CLASSIC COFFEE STATION ORGANIZER **NEW**
ITEM 23818-15 | 9½Wx4½Dx2¼



RENEW CONDIMENT ORGANIZER
ITEM 23427-122 | 17Wx5Dx6H



IRON PACKET ORGANIZER
Removable Frost Inserts.
ITEM 1252 | 8½Wx6¾Dx4H



PACKET AND STRAW ORGANIZER
Bamboo (60), Midnight Bamboo (96),
ITEM 796 | 9Wx6¼Dx4½H
ITEM 796 | 9Wx6¼Dx4½H



ASPEN CONDIMENT ORGANIZER
ITEM 796-110 | 9Wx6¼Dx4½H



BAMBOO CONDIMENT STATION
Includes 9 Round Melamine Jars.
ITEM 3638-60 | 14½Wx13Dx12¼H

OPTIONAL JARS & CROCKS
ITEM 1950-16-13 | Round Black Melamine Crock
ITEM 1950-16-15 | Round White Melamine Crock
ITEM C4X4GLCN | Square Glass Jar
ITEM C4X4-60 | Square Bamboo Bin



IRON COFFEE CONDIMENT DISPLAY
Holds up to 3.75" Diameter Cups & Lids.
ITEM 1453 | 12Wx10½Dx14½H



SOHO CONDIMENT ORGANIZERS
Holds up to 3.75" Diameter Cups & Lids. Includes Acrylic Insert for Stir Sticks and Packets.
Specify Color: Black (13), Silver (74).
ITEM 1594 | 15¾Wx11¾Dx12H

Please visit www.calmil.com/legal for a complete list of California Proposition 65 related items.

Parshall Hotel 100% CD 26.01.05 Rebid Documents Page: 156

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 45 - SPARE NO.

<Spare No.>

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 46 - PLATE RACK (2 EA REQ'D)

Cal-Mil 1236

Plate Holder, 9-1/2"W x 9-1/2"D x 6-1/2"H, accommodates plates up to 8" dia., black wire frame, iron, BPA Free

Rebid Documents

IRON COLLECTION



IRON PAPER TOWEL HOLDER
ITEM 808-13 | 4Wx8H | Napkin Size



IRON NAPKIN HOLDER
ITEM 4314-13 | 4x8 Napkin Size



IRON NAPKIN HOLDER
ITEM 1243 | 5Wx5H | Napkin Size



IRON NAPKIN & PLATE DISPLAY
ITEM 1455 | 9½Wx14Dx10H



IRON CONDIMENT ORGANIZER
ITEM 1252 | 8½W8¾Dx4H



3 TIER ROUND BOWL STAND
Frame Only, Bowls Sold Separately.
ITEM C1222-8 | 8Wx16Dx18H | Black
ITEM C1222-10 | 10Wx18Dx18H | Black
ITEM C1223-8 | 8Wx16Dx18H | Chrome

ROUND MELAMINE BOWLS
Specify Color: Black (13), White (15).
ITEM 418-8 | 8" Round Bowl
ITEM 418-10 | 10" Round Bowl



IRON COFFEE CONDIMENT DISPLAY
Holds up to 3.75" Diameter Cups & Lids.
ITEM 1453 | 12Wx10½Dx14½H



IRON BEVERAGE DISPENSER
1.5 and 3 Gallon Capacity.
Drip Tray and Ice Chamber Included.
Specify Glass or Acrylic.
ITEM 1112-1-13 | 7Wx9Dx19 | Glass
ITEM 1112-3-13 | 7Wx9Dx26½H | Glass
ITEM 1112-1A-13 | 7Wx9Dx19H | Acrylic
ITEM 1112-3A-13 | 7Wx9Dx26½H | Acrylic



IRON BOWL & PLATE HOLDER
ITEM 1236 | 9½Wx9½Dx6½H | Black
ITEM 1237 | 6½Wx6½Dx8H | Black
ITEM 23404-49 | 6½Wx6½Dx7½H | Chrome



IRON CUP & LID DISPLAY
Holds up to 3.75" Diameter Cups & Lids.
ITEM 1452 | 8Wx12Dx15H

Please visit www.calmil.com/legal for a complete list of California Proposition 65 related items.

Parshall Hotel 100% CD 26.01.05 Rebid Documents Boettcher Page: 159

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 47 - NAPKIN HOLDER (2 EA REQ'D)

Cal-Mil 1234

Napkin Display, 9-1/2"W x 4-3/4"D x 2"H, accommodates napkin size 4"W x 8"H, bamboo, BPA Free

Rebid Documents



IRON SINGLE RING CYLINDER DISPLAY

Cylinder Included.
Cylinder Style: Perforated (39), (Solid).
Frame Colors: Black (13), Platinum (39).

ITEM 1226-13-PERF | 6Wx6Dx6H

ITEM 1226-13-SOLID | 6Wx6Dx6H

ITEM 1226-39-SOLID | 6Wx6Dx6H



EMPIRE CYLINDER DISPLAY

Cylinders Sold Separately.
Specify Color: Black (90) White (15).

ITEM 22086 | 7Wx7¼Dx18½H



IRON CYLINDER DISPLAYS

Cylinders Sold Separately.
Specify Frame Color: Black (13), Platinum (39).

ITEM 1025-3 | 4¾Wx8Dx20H | N/A IN BLACK

ITEM 1025-6 | 9½Wx8Dx20H



MISSION SLOPED & VERTICAL DISPLAYS

Cylinders Sold Separately.
Specify Frame Color: Black (13), Platinum (39).

ITEM 1746-3 | 7Wx13Dx10¾H

ITEM 1747-3 | 7Wx13Dx13H



24020-5-13 24020-4-13

OPTIONAL CYLINDERS

Stainless Steel Style: Perforated (39), (SOLID).
Colored Melamine: Black (13), White (15), Blush (108), Terra Cotta (62), Matcha (63), Ash (102), Extra Deep: White (8-15).

ITEM 1017-39 | 4½DIAx5½H

ITEM 1017-SOLID | 4½DIAx5½H



SYDNEY FLATWARE HOLDER

Specify Color: Oak (21), Walnut (78)

ITEM 23186 | 10Wx14Dx8¼H



RENEW FLATWARE ORGANIZER

ITEM 22354-122 | 13Wx4½Dx6H



SQUARED STAINLESS CYLINDER STAND

Cylinders Sold Separately.

ITEM 1608-55 | 16Wx5¼Dx6H

Parshall Hotel 100% CD 26.01.05 Rebid Documents Page: 161

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 48 - MILLWORK (1 EA REQ'D)

Custom VERIFY

Millwork counter by Others

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 49 - ICE MAKER, CUBE-STYLE (2 EA REQ'D)

Manitowoc IYT0620A

Indigo NXT™ Series Ice Maker, cube-style, air-cooled, self-contained condenser, 22"W x 24-1/2"D x 21-1/2"H, production capacity up to 575 lb/24 hours at 70°/50° (465 lb AHRI certified at 90°/70°), easyTouch display with 13 different language options, date/time stamp display, automatic reminder/alert icon, one touch asset information, automatic detection of accessories, continuous operating status, programmable production options (time, weight, day or night), one touch cleaning with displayed instructions, Alpha-San anti-microbial protection, acoustical ice sensing probe, self-diagnostic technology, DuraTech™ exterior, half-dice size cubes, R410 refrigerant, NSF, cULus, CE, ENERGY STAR®

ACCESSORIES

Mfr	Qty	Model	Spec
Manitowoc	2	WARRANTY-ICE-SC	3 year parts & labor (Machine), 5 year parts & labor (Evaporator), 5 year parts & 3 years labor (Compressor), standard (nc)
Manitowoc	2		(-161) 115v/60/1-ph, 12.2 amps
Manitowoc	2	AR-10000-P	Arctic Pure® Plus Primary Water Filter Assembly, includes head, shroud, hardware, mounting assembly, & (1) filter cartridge, 15,000 gallon capacity, 0-600 lbs./ice per day
Manitowoc	2	WARRANTY-ARCPURE	3 year parts & labor warranty on cap, housing, hardware, & mounting assembly (does not refer to filter cartridge), standard (nc)
Manitowoc	2	SPA162	Vending Ice Dispenser, touchless lever, floor model, 22"W x 31-3/16"D x 54"H, AHRI certified 120-lb capacity, designed for dice or half-dice ice type, bucket filling, stainless steel exterior with vinyl trim, accepts 22" dice or half-dice machines, cULus, CE, NSF, ADA compliant
Manitowoc	2	WARRANTY-BIN/DISP	3 year parts & labor warranty, standard (nc)
Manitowoc	2		(-161) 115v/60/1-ph, 1.6 amps, NEMA 5-15P, standard

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	115	60	1				12.2				
2	115	60	1			5-15P	1.6				

WATER

	HOT SIZE	HOT AFF	HOT GPH	COLD SIZE	COLD AFF	FILTERED SIZE	FILTERED AFF	CONDENSER INLET SIZE	CONDENSER OUTLET SIZE
1				3/8"					

WASTE

	INDIRECT SIZE	DIRECT SIZE
1	1/2"	

PLUMBING 1 REMARKS

Drain for ice maker

Rebid Documents

Manitowoc

INDIGO NXT

iT0620 Ice Cube Machine

iT0620 Ice Cube Machine

Models

☐ IRT0620A ☐ IDT0620A ☐ IYT0620A ☐ IDT0620W ☐ IYT0620W

ENERGY STAR



Indigo NXT Series iT0620
Ice Machine on D420 Bin
*Ice machine and Bin sold separately

Designed for operators who know that ice is critical to their business, the Indigo®w Series ice machine's preventative diagnostics continually monitor itself for reliable ice production. Improvements in cleanability and programmability make your ice machine easy to own and less expensive to operate.

- **Space-Saving Design** – Measures only 16.5" high (42 cm) and 30" wide (76.20 cm) allowing it to fit on top of dispensers when a low ceiling is an issue.
- **easyTouch® Display**- New icon based touch screen takes the guess work out of owning and operating an ice machine.
- **Programmable Ice Production** – Now its super easy to program your ice machine to be off at certain times of the day to save money with fluctuating electrical rates. Also programmable by daily ice production volume and night time programming.
- **Easy to Clean Foodzone** – Hinged front door swings out for easy access. Removable water-trough, distribution tube, curtain, and sensing probes for fast and efficient cleaning. Select components made with AlphaSan® antimicrobial.
- **Intelligent Diagnostics** – Provide 24 hour preventative maintenance and diagnostic feedback for trouble free operation.
- **Acoustical Ice Sensing Probe** – Unique patented technology allows for reliable operation in challenging water conditions and environments.
- **DuraTech™ Exterior** – Provides superior corrosion resistant above stainless steel. Innovative clear-coat resists fingerprints and dirt making it easier to keep clean.
- **Available LuminIce II Virus and Bacteria Inhibitor**- Controls viruses, bacteria, mold and yeast within the food zone to keep the ice machine clean longer. A new sanitation icon lets you know the operational status.
- **Active sense** - Insures consistent ice harvest in all environmental conditions. This software solution works in conjunction with the acoustical ice sensing probe improving reliability and performance.

Ice Machine Electric

115/60/1 standard
(208-230/60/1also available)

Minimum circuit ampacity:
Air-cooled: 12.2, 115v 5.9, 208-230V
Water-cooled: 11.6,-115v, 5.6,-208-230v

Maximum fuse size:
Air-cooled: 20A for 115v, 15A for 208-230v
Water-cooled: 20A, 115v and 15A, 208-230v

COMMERCIAL WARRANTY

ICE MAKER	EVAPORATOR	COMPRESSOR
3 YEAR PARTS AND LABOR	5 YEAR	5 YEAR PARTS 3 YEAR LABOR

Specifications

BTU Per Hour:
5,400 (average),
and 6,300 (peak)

Refrigerant:
R410A CFS - Free
Lowers global warming by 48%

Operating Limits:

- Ambient Temperature Range: 40 to 110 F (4.4 to 43.3 C)
  Water Temperature Range: 40 to 90 F (4.4 to 32.2 C)
- Potable Water Pressure: Min. 20 psi (137.9 kPA) Max. 80 psi (551.1 kPA)
- Condenser Water Pressure: Min. 20 psi (137.9 kPA) Max. 276 psi (1902.95 kPA)

Ice Shape



Dice
⅞" x ⅞" x ⅞"
(2.22 x 2.22 x 2.22 cm)



Half Dice
⅜" x 1⅛" x ⅞"
(.95 x 2.86 x 2.22 cm)



Regular
1⅛" x 1⅛" x ⅞"
(2.86 x 2.86 x 2.22 cm)

CALIFORNIA LOW LEAD QUALIFIED Conforms to NSF-61 Annex G | ANSI CERTIFIED | NSF c UL US LISTED | CE | AQ | ISO 9001:2015 Certification

2110 South 26th Street
Manitowoc, WI 54220

Tel: 1.920.682.0161
Fax: 1.920.683.7589

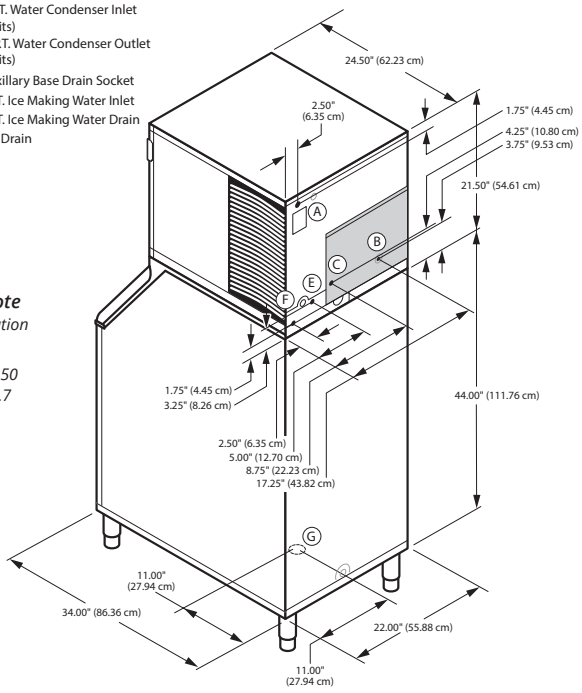
www.manitowocice.com

Manitowoc®

Indigo® NXT™ iT0620 Ice Cube Machine

iT0620 on D420 Storage Bin

Ⓐ Electrical Entrance (2) Options
Ⓑ 3/8" (0.95 cm) F.P.T. Water Condenser Inlet (water-cooled units)
Ⓒ 1/2" (1.27 cm) F.P.T. Water Condenser Outlet (water-cooled units)
Ⓓ 1/2" (1.27 cm) Auxillary Base Drain Socket
Ⓔ 3/8" (0.95 cm) F.P.T. Ice Making Water Inlet
Ⓕ 1/2" (1.27 cm) F.P.T. Ice Making Water Drain
Ⓖ 3/4" (1.91 cm) Bin Drain



Installation Note
Minimum installation clearance:

Top/side: 12" (30.50 cm)Back is 5" (12.7 cm)

Space-Saving Design



	iT0620 D-400	iT0620 D-420
Height	59.50" 151.13 cm	71.50" 181.61 cm
Width	30.00" 76.20 cm	22.00" 55.88 cm
Depth	34.00" 86.30 cm	34.00" 86.30 cm
Bin Storage	365 lbs. 166 kgs.	383 lbs. 174 kgs.

Height includes adjustable bin legs 6.00" to 8.00", (15.24 to 20.32 cm) set at 6.00" (15.24 cm).
Bin capacity is based on 90% of the volume x 33 lbs/ft3 average density of ice.

K00443 bin adapter required for D400 bin. Sold separately

Specifications

	Model	Ice Shape	Ice Production 24 Hours 70°Air/ 50°F Water	Ice Production 24 Hours 90°Air/ 70°F Water	Power Usage kWh/100 lbs. @90°Air/70°F 1 Ph	Potable Water Usage/100 lbs. 45.4 kgs. of Ice
AIR COOLED	IRT0620A	regular	525 lbs.	410 lbs.	5.29	19.9 Gal.
			238 kgs	186 kgs		75.3 L
	IDT0620A	dice	560 lbs.	450 lbs.	5.18 ★	19.9 Gal.
			254 kgs	204 kgs		75.3 L
	IYT0620A	half-dice	575 lbs.	465 lbs.	4.87 ★	19.9 Gal.
			261 kgs	211 kgs		75.3 L
WATER COOLED	IDT0620W	dice	530 lbs.	450 lbs.	4.13	19.9 Gal.
			240 kgs	204 kgs		75.3 L
	IYT0620W	half-dice	560 lbs.	485 lbs.	3.87	19.9 Gal.
			254 kgs.	220 kgs		75.3 L
	-Water-cooled Condenser Water Usage / 100 lbs. /45.4 kgs. Of Ice: 140 gal/ 530 L. -Water-cooled models are excluded from ENERGY STAR qualification.					

Order separately: Ice storage bin for all units
★ *ENERGY STAR® 3.0 qualified*

Accessories

LuminIce® II Viruses and Bacteria Inhibitor
controls viruses and bacteria in the ice machine



External Scoop holder
protect the ice scoop with the NSF approved versatile scoop holder.



Arctic Pure® Plus
reduce sediments and chlorine contaminants down to .5 microns.
Use with Pre-filter recommended



iAuCS®
schedules and performs routine ice machine cleaning automatically.



Manitowoc Ice reserves the right to make changes to the design or specifications without prior notice.

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Fax: 1.920.683.7589

www.manitowocice.com
6408D 6/22

Manitowoc

INDIGO NXT

50Hz

iT0620 Ice Cube Machine

Indigo® NXT™ iT0620 Ice Cube Machine

Models

☐ IRT0620A ☐ IDT0620A ☐ IYT0620A ☐ IDT0620W ☐ IYT0620W ☐ IRT0620W



Indigo NXT Series iT0620 Ice Machine on D420 Bin

*Ice machine and bin sold separately

Designed for operators who know that ice is critical to their business, the Indigo NXT Series ice machine's preventative diagnostics continually monitor itself for reliable ice production. Improvements in cleanability and programmability make your ice machine easy to own and less expensive to operate.

- **New levels of Performance** – Showcasing an average of 31% lower energy consumption, 16% reduction in in potable water usage and a 32% reduction in condenser water usage. This translates into lower cost of ownership over the life of your machine.
- **easyTouch® Display** - New icon based touch screen takes the guess work out of owning and operating an ice machine.
- **Multiple Language Capability** - The easyTouch display is available in multiple languages selected in the initial start-up installation Wizard.
- **Programmable Ice Production** – Now its super easy to program your ice machine to be off at certain times of the day to save money with fluctuating electrical rates. Also programmable by daily ice production volume and night time programming.
- **Easy to Clean Foodzone** – Hinge front door swing out for easy access. Removable water-trough, distribution tube, curtain, water probe and water pump for fast and efficient cleaning. Selected components are made with AlphaSan® antimicrobial.
- **Intelligent Diagnostics** – Provides 24 hour preventative maintenance and diagnostic feedback for trouble free operation.
- **Acoustical Ice Sensing Probe** – Unique patented technology allows for reliable operation in challenging water conditions and environments
- Available **LuminIce® II Virus and Bacteria Inhibitor** – Controls viruses, bacteria, mold and yeast within the food zone to keep the machine clean longer. A new sanitation icon lets you know the operational status.
- **Active Sense -** insures consistent ice harvest in all environmental conditions. This software solution works in conjunction with the acoustical ice sensing probe improving reliability and performance.



Ice Machine Electric

230/50/1

Minimum circuit ampacity:
Air-cooled: 5.6
Water-cooled: 5.4

Maximum fuse size:
Air-cooled: 15A
Water-cooled: 15A

Specifications

BTU Per Hour:
5,400 (average),
and 6,300 (peak)

Refrigerant:
R410A CFS - Free
Lowers global warming by 48%

Operating Limits:

- Ambient Temperature Range: 40 to 110 F (4.4 to 43.3 C) Water Temperature Range: 40 to 90 F (4.4 to 32.2 C)
- Potable Water Pressure: Min. 20 psi (137.9 kPA) Max. 80 psi (551.1 kPA)
- Condenser Water Pressure: Min. 20 psi (137.9 kPA) Max. 276 psi (1902.95 kPA)

Ice Shape



Dice
⅞" x ⅞" x ⅞"
(2.22 x 2.22 x 2.22 cm)
Cube weight 8.5 g



Half Dice
⅜" x 1⅛" x ⅞"
(.95 x 2.86 x 2.22 cm)
Cube weight 5.7 g



Regular
1⅛" x 1⅛" x ⅞"
(2.86 x 2.86 x 2.22 cm)
Cube weight 14.2 g

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welbilt.com.de

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Old Portsmouth RdGuildford GU3
1LR United Kingdom
Tel.:
+44 1483 464900
www.welbilt.uk

Redd Documents

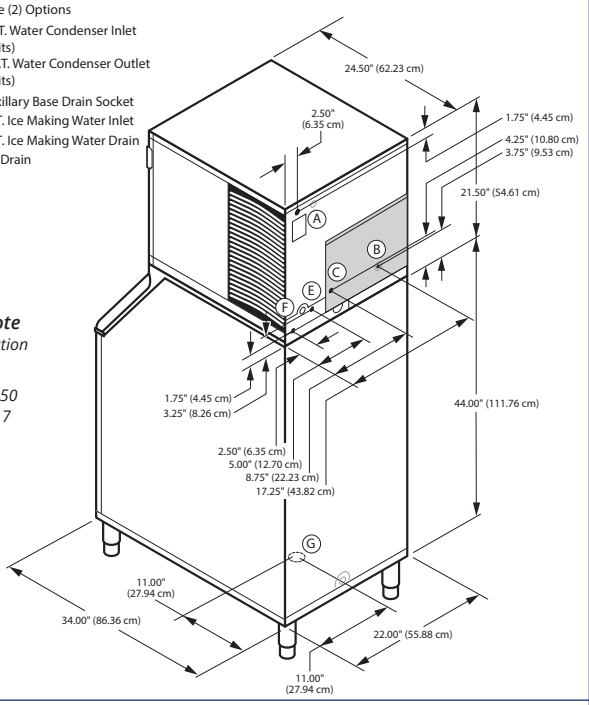
Manitowoc®

50Hz

Indigo® NXT™ iT0620 Ice Cube Machine

iT0620 on D420 Storage Bin

Ⓐ Electrical Entrance (2) Options
Ⓑ 3/8" (0.95 cm) F.P.T. Water Condenser Inlet (water-cooled units)
Ⓒ 1/2" (1.27 cm) F.P.T. Water Condenser Outlet (water-cooled units)
Ⓓ 1/2" (1.27 cm) Auxillary Base Drain Socket
Ⓔ 3/8" (0.95 cm) F.P.T. Ice Making Water Inlet
Ⓕ 1/2" (1.27 cm) F.P.T. Ice Making Water Drain
Ⓖ 3/4" (1.91 cm) Bin Drain



Installation Note
Minimum installation clearance:

Top/side: 12" (30.50 cm)Back is 5" (12.7 cm)

Space-Saving Design



	iT0620 D-400	iT0620 D-420
Height	59.50" 151.13 cm	71.50" 181.61 cm
Width	30.00" 76.20 cm	22.00" 55.88 cm
Depth	34.00" 86.30 cm	34.00" 86.30 cm
Bin Storage	365 lbs. 166 kgs.	383 lbs. 174 kgs.

Height includes adjustable bin legs 6.00" to 8.00", (15.24 to 20.32 cm) set at 6.00" (15.24 cm).
Bin capacity is based on 90% of the volume x 33 lbs/ft3 average density of ice.

K00443 bin adapter required for D400 bin. Sold separately

Specifications

Order separately: Ice storage bin for all units. This product is hermetically sealed and contains fluorinated greenhouse gas R410A

	Model	Ice Shape	Ice Production 24 Hours: 21°Air /10°C Water 70°Air/ 50°F Water	Ice Production 24 Hours: 32°Air / 21°C Water 90°Air/ 70°F Water	Power Usage kWh 45.4 kg / 100 lbs @ 32°Air / 21°C Water 90°Air / 70°F Water: 1 Ph	Potable Water Usage/100 lbs. 45.4 kgs. of Ice
AIR COOLED	IRT0620A	regular	505 lbs.	390 lbs.	5.29	19.9 Gal.
			229 kgs	177 kgs		75.3 L
	IDT0620A	dice	535 lbs.	430 lbs.	5.18	19.9 Gal.
			243 kgs	195 kgs		75.3 L
	IYT0620A	half-dice	535 lbs.	430 lbs.	4.97	19.9 Gal.
			243 kgs	195 kgs		75.3 L
WATER COOLED	IDT0620W	dice	510 lbs.	430 lbs.	4.13	19.9 Gal.
			231 kgs	195 kgs		75.3 L
	IYT0620W	half-dice	495 lbs.	460 lbs.	4.04	19.9 Gal.
			225 kgs.	290 kgs		75.3 L
	IRT0620W	regular	485 lbs.	400 lbs.	4.20	19 Gal.
			220 kgs	181 kgs		75.4 L

* Water-cooled Condenser Water Usage / 100 lbs. /45.4 kgs. Of Ice: 140 gal/ 530 L.

Accessories

LuminIce® II Virus and Bacteria Inhibitor
controls viruses and bacteria inside the ice machine.



External Scoop holder
protect the ice scoop with the NSF approved versatile scoop holder.



Arctic Pure® Plus Water Filters
reduce sediments and chlorine contaminants down to .5 microns. Use with a Pre-filter is recommended.



6648C 06/22

Manitowoc Ice reserves the right to make changes to the design or specifications without prior notice.

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Ashbourne HouseThe Guildway, Old Portsmouth RdGuildford GU3 1LRUnited KingdomTel.: +44 1483 464900
www.welbilt.uk

Rebid Documents

Manitowoc

ICE MACHINE WARRANTY

Manitowoc Ice, Inc. (hereinafter referred to as the "COMPANY") warrants for a period of thirty-six months from the installation date (except as limited below) that new ice machines manufactured by the COMPANY shall be free of defects in material or workmanship under normal and proper use and maintenance as specified by the COMPANY and upon proper installation and start-up in accordance with the instruction manual supplied with the ice machine. The COMPANY'S warranty hereunder with respect to the compressor shall apply for an additional twenty-four months, excluding all labor charges, and with respect to the evaporator for an additional twenty-four months, including labor charges.

The obligation of the COMPANY under this warranty is limited to the repair or replacement of parts, components, or assemblies that in the opinion of the COMPANY are defective. This warranty is further limited to the cost of parts, components or assemblies and standard straight time labor charges at the servicing location.

Time and hourly rate schedules, as published from time to time by the COMPANY, apply to all service procedures. Additional expenses including without limitation, travel time, overtime premium, material cost, accessing or removal of the ice machine, or shipping are the responsibility of the owner, along with all maintenance, adjustments, cleaning, and ice purchases. Labor covered under this warranty must be performed by a COMPANY Contracted Service Representative or a refrigeration service agency as qualified and authorized by the COMPANY'S local Distributor. The COMPANY'S liability under this warranty shall in no event be greater than the actual purchase price paid by customer for the ice machine.

The foregoing warranty shall not apply to (1) any part or assembly that has been altered, modified, or changed; (2) any part or assembly that has been subjected to misuse, abuse, neglect, or accidents; (3) any ice machine that has been installed and/or maintained inconsistent with the technical instructions provided by the COMPANY; or (4) any ice machine initially installed more than five years from the serial number production date. This warranty shall not apply if the Ice Machine's refrigeration system is modified with a condenser, heat reclaim device, or parts and assemblies other than those manufactured by the COMPANY, unless the COMPANY approves these modifications for specific locations in writing.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR GUARANTEES OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

In no event shall the COMPANY be liable for any special, indirect, incidental or consequential damages. Upon the expiration of the warranty period, the COMPANY'S liability under this warranty shall terminate.

The foregoing warranty shall constitute the sole liability of the COMPANY and the exclusive remedy of the customer or user. To secure prompt and continuing warranty service, the warranty registration card or register on line within five (5) days from the installation date.

MANITOWOC ICE, INC.
2110 So. 26th St., P.O. Box 1720, Manitowoc, WI 54221-1720
Telephone: 920-682-0161 • Fax: 920-683-7585
Web Site - www.manitowocice.com
Form 80-0373-3 Rev. 01/02

Rebid Documents

Manitowoc

Arctic Pure Plus

Premium Water Filters for Ice Machines

arctic pure+

Arctic Pure Plus

Premium Water Filters for Ice Machines

Models ☐ AR-PRE-P ☐ AR-10000-P ☐ AR-20000-P ☐ AR-40000-P



AR-PRE-P

- Pre-filter, removes hard sediments, sand, dirt and rust from water, and protects solenoids, valves and inlets to the ice maker
- Compatible with **all** models



AR-10000-P

- Chlorine Reduction
- SLOW PHOS scale inhibitor
- 0.5 Microns filtration
- 15,000 gallon capacity
- Models 0-600 lbs/day



AR-20000-P

- Chlorine Reduction
- SLOW PHOS scale inhibitor
- 0.5 Microns filtration
- 20,000 gallon capacity
- Models 601-1000 lbs/day



AR-40000-P

- Chlorine Reduction
- SLOW PHOS scale inhibitor
- 0.5 Microns filtration
- 40,000 gallon capacity
- Models 1001-2500 lbs/day

Standard Features and Benefits

- 95% average reduction of chlorine from incoming water supply assures the ice tastes and smells fresher, clearer and more enjoyable
- Silver impregnated carbon block provides antimicrobial protection against potential bacteria microorganisms, algae, mold and slime on ice machine surfaces
- Engineered with SLOW PHOS (slowly soluble polyphosphate) to inhibit scale formation and corrosion
- Reduces dirt, submicron particles (down to 0.5 microns) and eliminates contaminates such as cryptosporidium and giardia cysts.
- Ultra-fine filtration (0.5 Microns) with silver impregnated carbon block and slowly soluble polyphosphates provides triple protection from harmful contaminates that can affect your ice machine's performance
- Reduces ice machine cost and maintenance frequency by reducing scale, impurities, and contaminates that can enter the machine.
- Extends the life of the ice machine, when the filters are changed every 6 months or when water pressure is below 20 psi.
- Optimizes the daily performance of the machine, allowing it run at full capacity producing the freshest and purist ice possible
- Cartridges are easy to install, safe, sanitary and can be changed out rapidly, "on the fly" without turning off the water supply
- **Certified to NSF/ANSI Standard 42, 53, 372, and CSA B483.1** by IAPMO and meets CUPC requirements.

IAPMO R&T Certifications

System Model #	Replace. Cartridge	Std. 42 Claims	Std. 53 Claims	Chlorine Red. Cap
AR-PRE-P	K00496	Part. Class 3	None	None
AR-10000-P	K00493	Chlorine & Part. Class 1	Cyst	15,000 gal
AR-20000-P	K00494	Chlorine & Part. Class 1	Cyst	20,000 gal
AR-40000-P	K00495	Chlorine & Part. Class 1	Cyst	40,000 gal

- CSAB483.1:For Canadian water standards
- *NSF/ANSI 53 cyst claim only valid at or below rated flow rate
- Warning : Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfections before or after the unit. For cold water use only. Not for residential use.

Note on Pre-filter: A pre-filter is recommended for all applications to achieve maximum filtration efficiency and cartridge life.

Warranty

3-Year parts and labor warranty on head, shroud, hardware, and mounting assembly.
(water filter cartridge not included).
Residential Warranty - 1 Year

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Manitowoc, WI 54220

Tel: 1.920.682.0161
Fax: 1.920.683.7589

www.manitowocice.com

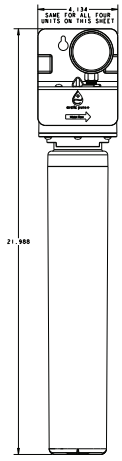
Manitowoc

arctic pure+

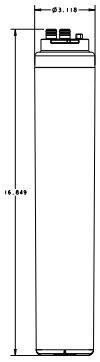
Arctic Pure Plus

Premium Water Filters for Ice Machines

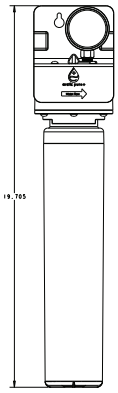
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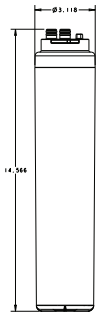
AR-PRE-P SYSTEM
4.13"W x 4.48"D x 22"H
10.5 x 11.37 x 55.9 cm



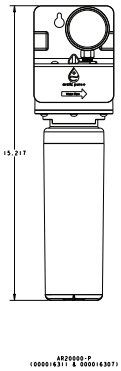
K00496 REP. CART.
3.1"W x 3.1"D x 16.8"H
7.9 x 7.9 x 42.6 cm



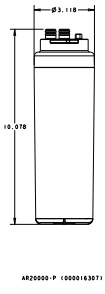
AR-10000-P SYSTEM
4.13"W x 4.48"D x 19.7"H
10.5 x 11.37 x 50.04 cm



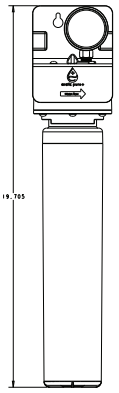
K00493 REP. CART.
3.1"W x 3.1"D x 14.6"H
7.9 x 7.9 x 37.08 cm



AR-20000-P SYSTEM
4.13"W x 4.48"D x 15.2"H
10.5 x 11.37 x 38.6 cm



K00494 REP. CART.
3.1"W x 3.1"D x 10.1"H
7.9 x 7.9 x 25.6 cm



AR-40000-P SYSTEM
4.13"W x 4.48"D x 19.7"H
10.5 x 11.37 x 50.04 cm



K00495 REP. CART.
3.1"W x 3.1"D x 14.6"H
7.9 x 7.9 x 37.08 cm

Usage Matrix

Filter System (Replacement Cartridges)	AR-PRE-P (K00496)	AR-10000-P (K00493)	AR-20000-P (K00494)	AR-40000-P (K00495)
All Under Counters (Cubers, Flakers & Nuggets) Counter Top Nugget	X	X		
Modular Cubers: IT0300-IT750, IBF0620 Modular Flaker: RFF0320 Modular Nugget: RNF320	X	X		
Modular Cubers: IT0900, IBF0820C & IBT1020C Modular Flaker: RFF0620 RFF1220C, RFF1300 Modular Nuggets: RNF0620, RNF1020C, RNF1100	X		X	
Modular Cubers: IT1200, IT1500 & IT1900, IF1400C &IF1800C Modular Flaker: RFF2200C Modular Nugget: RNF2000C	X			X

Specifications and Shipping

System	Replacement Cartridge	Filtration level	Capacity gal	Service Flow Rate (max. gpm (lpm)	Operating Air Temp F (C)	Operating Water Temp F (C)	Operating Pressure psi (bar)	Mtg. Holes from Center in (cm)	Approx. Shipping Weight lbs (kg)	Qty System Lots	Qty Cartridge Lots
AR-PRE-P	K00496	5 Micron	NA	1.5 (5.7)	40°-110°F (4.4°- 43.3°)	40°-90°F (4.4°- 32.2°)	35 -125 (2.41-8.61)	1.5 (3.81)	4 (1.81)	6	12
AR-10000-P	K00493	0.5 Microns	15,000	0.75 (2.84)				1.5 (3.81)	5 (2.26)	6	12
AR-20000-P	K00494	0.5 Microns	20,000	1.25 (4.73)				1.5 (3.81)	4 (1.81)	6	12
AR-40000-P	K00495	0.5 Microns	40,000	2.0 (7.6)				1.5 (3.81)	5 (2.26)	6	12

Installation Tips

- Install vertically with cartridge hanging down
- Allow 2.5" (6.35cm) clearance below the cartridge for easy replacement
- Flush cartridge by running water through filter for ten (10) minutes
- Use copper or polyethylene 3/8" hose for Quick Connect fitting
- Always follow local plumping codes

Operation Tips

- Change cartridge every 6 months or when pressure gauge indicates below 35 psi (which ever comes first)
- Twist 1/4 turn to left to remove cartridge. Twist 1/4 turn to the right to install cartridge (Water can be left on)
- Protect from freezing—Failure to do so may result in cracking of the filter housing and cause water leakage
- When using non-Manitowoc ice makers, consult the ice machine's manufactures for water supply usage requirements.
- It is recommended to have your water supply tested by a professional to determine your water treatment needs.

Manitowoc Ice reserves the right to make changes to the design or specifications without prior notice.

2110 South 26th Street
Manitowoc, WI 54220

Tel: 1.920.682.0161
Fax: 1.920.683.7589

www.manitowocice.com
7805B_ArcticPurePlus
06/22

ArcticPure™ Accessory Warranty

Manitowoc Ice, Inc. (hereinafter referred to as the "COMPANY") warrants for a period of thirty-six months from the installation date (except as limited below) that new ArcticPure™ Accessory sold by the COMPANY shall be free of defects in material or workmanship under normal and proper use and maintenance as specified by the COMPANY and upon proper installation and start-up in accordance with the instruction manual supplied with the ArcticPure™ Accessory.

The obligation of the COMPANY under this warranty is limited to the repair or replacement of parts, components, or assemblies that in the opinion of the COMPANY are defective. This warranty is further limited to the cost of parts, components or assemblies and standard straight time labor charges at the servicing location.

Time and hourly rate schedules, as published from time to time by the COMPANY, apply to all service procedures. Additional expenses including without limitation, travel time, overtime premium, material cost, accessing or removal of the ArcticPure™ Accessory, or shipping are the responsibility of the owner, along with all maintenance, adjustments, and cleaning costs. Labor covered under this warranty must be performed by a COMPANY Contracted Service Representative or a refrigeration service agency as qualified and authorized by the COMPANY'S local Distributor. The COMPANY'S liability under this warranty shall in no event be greater than the actual purchase price paid by the customer for the ArcticPure™ Accessory.

The foregoing warranty shall not apply to (1) any part or assembly that has been altered, modified, or changed; (2) any part or assembly that has been subjected to misuse, abuse, neglect, or accidents; (3) wear items such as cartridges or o-rings; (4) any ArcticPure™ Accessory that has been installed and/or maintained inconsistent with the technical instructions provided by the COMPANY; or (5) any ArcticPure™ Accessory initially installed more than five years from the serial number production date.

The ArcticPure™ Accessory is designed to operate only with COMPANY'S ice machines.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR GUARANTEES OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. In no event shall the COMPANY be liable for any special, indirect, incidental or consequential damages. Upon the expiration of the warranty period, the COMPANY'S liability under this warranty shall terminate. The foregoing warranty shall constitute the sole liability of the COMPANY and the exclusive remedy of the customer or user.

To secure prompt and continuing warranty service, the warranty registration card must be completed and sent to the COMPANY within five (5) days from the installation date.

Complete the following and retain for your record:

Distributor/Dealer _____

Model Number _____ Serial Number _____

Installation Date _____

MANITOWOC ICE, INC.
2110 So. 26th St., P.O. Box 1720, Manitowoc, WI 54221-1720
Telephone: 920-682-0161 · Fax: 920-683-7585
Web Site - www.manitowocice.com
Form 80-1464-3 06/03

SPA-162 • SFA-192 Touchless Ice Dispensers

Model ☐ SPA-162 ☐ SFA-192 ADA Compliant

ONLY 22" WIDE

SPA Model

Designed for filling both i buckets and glasses. The touch-less lever activated ice chute means the ice bucket or glass is used to dispense ice, not a hand. Clearance from the grate to the bottom of the chut 9.5 " (24.13cm).

Coupled with an Indigo NXT ice machine, you can program the ice machine to be off at night so that while the hotel guests are sleeping, the ice machine can be too!



Indigo NXT iT0620 Ice Machine
SPA-162 Ice Dispenser
(Ice Machine and Dispenser sold separately)



Indigo NXT iT0620 Ice Machine
SFA-192 Ice & Water Dispenser
(Ice Machine and Dispenser sold separately)

SFA Model

Designed for filling both ice buckets and glasses with a built in Water Valve. The touch-less lever activated ice chute means the ice bucket or glass is used to dispense ice, not a hand. Clearance from grate to bottom of chute 9.5" (24.13 cm) .



Standard Features

- 120 lbs. (54.4 kgs.) ice storage capacity. Accepts 22" (55.88 cm) wide Manitowoc ice machine.
- Only 22" (55.88 cm) wide, 31" (78.7 cm) deep, and 75.5" high (191.77 cm).
- The touch-less lever eliminates the need to touch a hand to the machine to dispense ice.
- Efficient built-in agitator assures 100% dispensing. Oversized drain pan collects larger quantity of ice overflow.
- DuraTech™ exterior provides superior corrosion resistance. Stainless finish with innovative clear-coat resists fingerprints and dirt.

Warranty

- 5-year parts and 5-year labor coverage on ice machine evaporator.
- 5-year parts and 3-year labor coverage on ice machine compressor.
- 3-year parts-and-labor coverage on all other ice machine and dispenser components.

Ice Shape



Half Dice
⅜" x 1⅛" x ⅞"
(.95 x 2.86 x 2.22 cm)



Dice
⅞" x ⅞" x ⅞"
(2.22 x 2.22 x 2.22 cm)

NSF c UL US LISTED CE AQ ISO

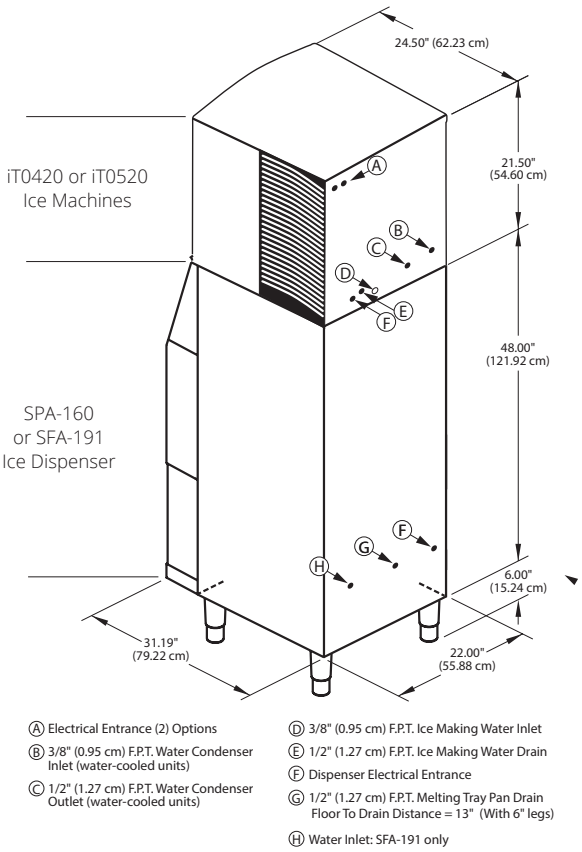
SPA-162 • SFA-192 Touchless Ice Dispensers

2110 South 26th Street
Manitowoc, WI 54220

Tel: 1.920.682.0161
Fax: 1.920.683.7589

www.manitowocice.com

SPA-162 • SFA-192 Touchless Ice Dispensers



Installation Note *- Dispensers have no minimum clearance, when installing an ice machine/ dispenser combination follow the clearance requirements for the ice machine being installed.*

Ice Machine Electric

Note: Dispenser will accept single 22" wide ice machine. Ice machine ordered separately. Choose Dice or Half Dice cube size. Refer to ice machine specification sheet for electrical and complete AHRI standard ratings.

Dispenser Electric:
115/60/1. (208-230/60/1 and 230/50/1 also available.)

Maximum Circuit Fuse Size:
15.0 amps. HACR-type circuit breakers can be used in place of fuses.

Dispenser Electrical Connection:
6' power cord, rated 125 VAC, 16-3 conductors with standard 3-prong, straight-blade, ground-type plug (NEMA configuration 5-15P).

Motor:
1.6 amps maximum. Permanently lubricated.

Service Access:
Dispenser door removes easily to access components.

Model Options:
SPA-162 touch-less activated lever only
SFA-192 touch-less activated lever with water valve

Series iT0420 (115 volt)

Model	Ice Shape	Ice Production 24 Hours			
		70°Air/50°F Water		90°Air/70°F Water	
		lbs.	kgs.	lbs.	kgs.
IDT-0420A	dice	470	213	375	170
IDT-0420W	dice	454	206	400	181
IYT-0420A	half-dice	460	209	375	170
IYT-0420W	half-dice	490	222	425	193

Series iT0620 (115 volt)

Model	Ice Shape	Ice Production 24 Hours			
		70°Air/50°F Water		90°Air/70°F Water	
		lbs.	kgs.	lbs.	kgs.
IDT-0620A	dice	560	254	450	204
IDT-0620W	dice	530	240	450	204
IYT-0620A	half-dice	575	261	465	211
IYT-0620W	half-dice	560	254	485	220

LuminIce® II Virus and Bacteria Inhibitor
controls viruses and bacteria inside the ice machine



Arctic Pure Plus Water Filters

AR-Pre-P
Filters dirt, rust, and hard sediments down to 5 micron.



AR-10000-P
Ultra-fine filtration reduces chlorine & contaminants down to .5 microns. Use of pre-filter recommended.



Manitowoc Ice reserves the right to make changes to the design or specifications without prior notice.

2110 South 26th Street
Manitowoc, WI 54220

Tel: 1.920.682.0161
Fax: 1.920.683.7589

www.manitowocice.com
4358O
5/22

Rebid Documents

Manitowoc

LIMITED WARRANTY FOR ICE STORAGE BIN & DISPENSERS

LIMITED WARRANTY

Manitowoc Ice a division of Manitowoc FSG Operations, LLC, ("Company") warrants that new Ice Storage Bins or Dispensers sold by Company shall be free of defects in material or workmanship under normal and proper use and maintenance as specified by the Company and upon proper installation and start-up in accordance with the instruction manual supplied.

WHAT IS COVERED

- Parts and Labor for a period of three (3) years.
- Accessory Ice Transport Carts for two (2) years parts and labor.

The Ice Storage Bin / Dispenser warranty begins on the date of the original installation. This warranty shall not apply to any Ice Storage Bin or Dispenser initially installed more than five (5) years from the serial number production date.

The obligation of the Company under this warranty is limited to the repair or replacement of parts, components, or assemblies that in the sole opinion of the Company are defective. This warranty is further limited to the cost of parts, components or assemblies and standard straight time labor charges at the servicing location.

Time and hourly rate schedules, as published from time to time by the Company, apply to all service procedures. Additional expenses including without limitation, travel time, overtime premium, material cost, accessing or removal of the Ice Storage Bin / Dispenser, or shipping are the responsibility of the purchaser, along with all maintenance, adjustments, cleaning, and ice purchases. Labor covered under this warranty must be performed by an approved Company contracted Service Representative or a refrigeration service agency as qualified and authorized by the Company's local Distributor. The Company's liability under this warranty shall in no event be greater than the actual purchase price paid by purchaser for the Ice Storage Bin or Dispenser.

EXCLUSIONS FROM COVERAGE

- Repair or replacement of parts required because of misuse, improper care or storage, negligence, alteration, use of incompatible supplies or lack of specified maintenance shall be excluded.
- Normal maintenance items.
  Failures caused by adverse environmental, water conditions, or improper drainage.
- Improper or unauthorized repair.
- Any Ice Storage Bin / Dispenser that has been installed and/or maintained inconsistent with the instructions provided by the Company.
- Parts subject to damage beyond the control of Company, or to Ice Storage Bin's / Dispenser's which have been subject to accidents, damage in shipment, fire, floods, other hazards or acts of God that are beyond the control of the Company.
- This Limited Warranty shall not apply if the Ice Storage Bin / Dispenser is modified with parts and assemblies other than those manufactured by the Company, unless the Company approves these modifications for specific locations in writing prior to the commencement of such modification.

LIMITATIONS OF LIABILITY

The preceding paragraphs set forth the exclusive remedy for all claims based on failure of, or defect in, Ice Storage Bins or Dispensers sold hereunder, whether the failure or defect arises before or during the warranty period, and whether a claim, however instituted, is based on contract, indemnity, warranty, tort (including negligence), strict liability, implied by statute, common-law or otherwise , and Company and agents shall not be liable for any claims for personal injuries or consequential damages or loss, howsoever caused. Upon the expiration of the warranty period, all such liability shall terminate. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL, IMPLIED OR STATUTORY NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY, COMPANY DOES NOT WARRANT ANY PRODUCTS OR SERVICES OF OTHERS

REMEDIES

The liability of Company for breach of any warranty obligation hereunder is limited to: (i) the repair or replacement of the Ice Storage Bin or Dispenser on which the liability is based, or with respect to services, re-performance of the services; or (ii) at Company's option, the refund of the amount paid for said equipment or services. Any breach by Company with respect to any item or unit of equipment or services shall be deemed a breach with respect to that item or unit or service only

WARRANTY CLAIM PROCEDURE

Customer shall be responsible to:

- Complete and return warranty registration card or register on line within five (5) days from the installation date.
- All warranty service must be preformed by an approved Manitowoc contracted or authorized Service Representative. To schedule a service appointment contact your local Manitowoc Service Representative or visit us at www.manitowocice.com to find a Service Representative near you.

GOVERNING LAW

This Limited Warranty shall be governed by the laws of the state of Wisconsin, USA, excluding their conflicts of law principles. The United Nations Convention on Contracts for the International Sale of Goods is hereby excluded in its entirety from application to this Limited Warranty

COMPLETE AND RETAIN FOR YOUR RECORD:

Distributor/Dealer _____

Model Number _____

Serial Number _____

Installation Date _____

Manitowoc Ice
2110 South 26th Street
P.0. Box 1720
Manitowoc, WI 54221-1720
Web site: www.manitowocice.com

Rev 2 1/2/2012

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 50 - SPARE NO.

<Spare No.>

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 51 - REFRIGERATED MERCHANDISER (1 EA REQ'D)

True Mfg. - General Foodservice GDM-12-HC~TSL01

Refrigerated Merchandiser, one-section, True standard look version 01, (3) shelves, (1) Low-E thermal glass hinged door, LED interior lights, powder coated steel exterior, white interior with stainless steel floor, R290 Hydrocarbon refrigerant, 1/6 HP, 115v/60/1-ph, 2.0 amps, NEMA 5-15P, (depth does not include 1" for rear bumpers), cULus, UL EPH Classified, Made in USA

ACCESSORIES

Mfr	Qty	Model	Spec
True Mfg. - General Foodservice	1		7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
True Mfg. - General Foodservice	1		Self-contained refrigeration standard
True Mfg. - General Foodservice	1		Exterior: Black powder coated steel, standard
True Mfg. - General Foodservice	1		Interior: White aluminum, with white shelving, standard
True Mfg. - General Foodservice	1		Left door hinging
True Mfg. - General Foodservice	1		Lock factory installed, one door model
True Mfg. - General Foodservice	1		Sign, "Self Serve" blue graphic in lieu of standard
True Mfg. - General Foodservice	4		TrueFlex bottle organizer
True Mfg. - General Foodservice	1		Castors, 2-1/2"

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	115	60	1	Cord & Plug		5-15P	2		1/6		

TRUE MANUFACTURING CO., INC.
U.S.A. FOODSERVICE DIVISION
2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400
Fax (636)272-2408 • Toll Free (800)325-6152 • Intl Fax# (001)636-272-7546
Parts Dept. (800)424-TRUE • Parts Dept. Fax# (636)272-9471 • www.truemfg.com

Project Name: _____ *AIA #*

Location: _____

Item #: _____ *Qty:* _____ *SIS #*

Model #: _____

Model:
GDM-12-HC~TSL01

Glass Door Merchandiser:
Swing Door Refrigerator with Hydrocarbon Refrigerant~True Standard Look Version 01



GDM-12-HC~TSL01

- The world's #1 manufacturer of glass door merchandisers.
- Environmentally friendly R290 hydrocarbon refrigerant. Zero (0) ozone depletion potential (ODP) & three (3) global warming potential.
- Energy efficient, factory balanced, refrigeration system holds 33°F to 38°F (.5°C to 3.3°C).
- Exterior - non-peel or chip black powder coated cold rolled steel; durable and permanent.
- Interior - attractive, NSF approved, white aluminum interior liner with stainless steel floor.
- Self closing door. Positive seal, torsion type closure system.
- "Low-E", double pane thermal insulated glass door assembly with mitered plastic channel frame. The latest in energy efficient technology.
- LED interior lighting provides more even lighting throughout the cabinet. Safety shielded.
- Entire cabinet structure is foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).

Bottom mounted units feature

- "No stoop" lower shelf to maximize product visibility.
- Easily accessible condenser coil for cleaning.

Exterior Color Options



Standard Black Exterior



Optional White Exterior



Optional Stainless Exterior

ROUGH-IN DATA

Specifications subject to change without notice.
Chart dimensions rounded up to the nearest ⅛" (millimeters rounded up to next whole number).

Model	Doors	Shelves	Cabinet Dimensions (inches) (mm) W	D†	H	HP	Voltage	Amps	NEMA Config.	Cord Length (total ft.) (total m)	Crated Weight (lbs.) (kg)
GDM-12-HC~TSL01	1	3	24⅞ 632	23⅛ 588	62⅜ 1585	⅙ N/A	115/60/1	2.0 N/A	5-15P	9 2.74	195 89

† Depth does not include 1⅝" (42 mm) for door handle or 1" (26mm) for rear bumpers

MADE WITH INNOVATION IN THE USA · 5 YEAR COMPRESSOR WARRANTY USA · c UL us · CLASSIFIED UL EPH · natural refrigerant.

9/18 Printed in U.S.A.

APPROVALS:

AVAILABLE AT:

Model:
GDM-12-HC~TSL01

Glass Door Merchandiser:
Swing Door Refrigerator with Hydrocarbon Refrigerant~True Standard Look Version 01

STANDARD FEATURES

DESIGN
- True's commitment to using the highest quality materials and oversized refrigeration systems provides the user with colder product temperatures, and lower utility costs in an attractive merchandiser that brilliantly displays packaged food and beverages.

REFRIGERATION SYSTEM
- Factory engineered, self-contained, capillary tube system using environmentally friendly R290 hydrocarbon refrigerant that has zero (0) ozone depletion potential (ODP), & three (3) global warming potential (GWP).
- High capacity, factory balanced refrigeration system that maintains cabinet temperatures of 33°F to 38°F (.5°C to 3.3°C) for the best in food preservation.
- State of the art, electronically commutated evaporator and condenser fan motors. ECM motors operate at higher peak efficiencies and move a more consistent volume of air which produces less heat, reduces energy consumption and provides greater motor reliability.
- Bottom mounted condensing unit positioned for easy maintenance. "No stoop" lower shelf maximizes visibility by raising merchandised product to higher level.

CABINET CONSTRUCTION
- Exterior - non-peel or chip black powder coated cold rolled steel; durable and permanent.
- Interior - attractive, NSF approved, white aluminum liner with stainless steel floor.
- Insulation - entire cabinet structure is foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- Welded, heavy duty steel frame rail, black powder coated for corrosion protection.
- Frame rail fitted with leg levelers.
- Door sign decal. Variety of decal options available.

DOOR
- "Low-E", double pane thermal insulated glass door assembly with mitered plastic channel frame. The latest in energy efficient technology.
- Door fitted with 12" (305 mm) long integrated handle.
- Self closing door. Positive seal, torsion type closure system.
- Magnetic door gasket of one piece construction, removable without tools for ease of cleaning.

SHELVING
- Three (3) adjustable, heavy duty PVC coated wire shelves 20⅝"L x 17½"D (524 mm x 445 mm). Four (4) chrome plated shelf clips included per shelf.
- Shelf support pilasters made of same material as cabinet interior; shelves are adjustable on ½" (13 mm) increments.

LIGHTING
- LED interior lighting provides more even lighting throughout the cabinet. Safety shielded.

MODEL FEATURES
- Evaporator is epoxy coated to eliminate the potential of corrosion.
- See our website www.truemfg.com for latest color and sign offerings.
- Convenient clean-out drain built in cabinet floor.
- Listed under NSF/ANSI Standard 7 for the storage and/or display of packaged or bottled product.

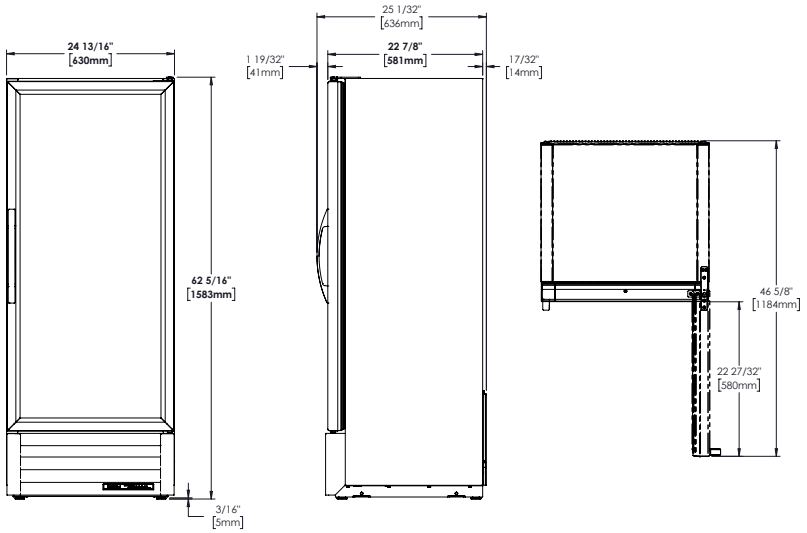
ELECTRICAL
- Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.



115/60/1
NEMA-5-15R

OPTIONAL FEATURES/ACCESSORIES
Upcharge and lead times may apply.
- ❑ White exterior.
- ❑ Stainless steel exterior.
- ❑ Black aluminum interior liner with black shelving.
- ❑ Stainless steel interior liner.
- ❑ 2½" (64 mm) diameter castors.
- ❑ Red wine thermostat.
- ❑ White wine thermostat.
- ❑ Chocolate thermostat.
- ❑ Barrel Locks located in grill assembly (requires one per door)
- ❑ Additional shelves.
- ❑ TrueFlex gravity feed organizers.
- ❑ Pricing strips.

PLAN VIEW



WARRANTY
Three year warranty on all parts and labor and an additional 2 year warranty on compressor. (U.S.A. only)

METRIC DIMENSIONS ROUNDED UP TO THE NEAREST WHOLE MILLIMETER

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Model	Elevation	Right	Plan	3D	Back
GDM-12-HC~TSL01					

TRUE MANUFACTURING CO., INC.
2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400 • Fax (636)272-2408 • Toll Free (800)325-6152 • Intl. Fax# (001)636-272-7546 • www.truemfg.com

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# 52 - FREEZER MERCHANDISER (1 EA REQ'D)

True Mfg. - General Foodservice GDM-12F-HC~TSL01

Freezer Merchandiser, one-section, True standard look version 01, -10°F, (3) shelves, (1) triple-pane thermal glass hinged door, LED interior lights, powder coated steel exterior, white interior with stainless steel floor, R290 Hydrocarbon refrigerant, 1/2 HP, 115v/60/1-ph, 4.5 amps, NEMA 5-15P, (depth does not include 1" for rear bumpers), cULus, UL EPH Classified, Made in USA

ACCESSORIES

Mfr	Qty	Model	Spec
True Mfg. - General Foodservice	1		7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.
True Mfg. - General Foodservice	1		Self-contained refrigeration standard
True Mfg. - General Foodservice	1		Exterior: Black powder coated steel
True Mfg. - General Foodservice	1		Interior: White aluminum, with white shelving, standard
True Mfg. - General Foodservice	1		Left door hinging
True Mfg. - General Foodservice	1		Lock factory installed, one door model
True Mfg. - General Foodservice	1		Sign, "Frozen Food" silver graphic in lieu of standard
True Mfg. - General Foodservice	1		Castors, 2-1/2"

ELECTRICAL

	VOLTS	CYCLE	PHASE	CONN	AFF	NEMA	AMPS	KW	HP	MCA	MOCP
1	115	60	1	Cord & Plug		5-15P	4.5		1/2		15.0

Rebid Documents

TRUE MANUFACTURING CO., INC.
U.S.A FOODSERVICE DIVISION
2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400
Fax (636)272-2408 • Toll Free (800)325-6152 • Intl Fax# (001)636-272-7546
Parts Dept. (800)424-TRUE • Parts Dept. Fax# (636)272-9471 • www.truemfg.com

Project Name: _____
Location: _____
Item #: _____ *Qty:* _____
Model #: _____

AIA #
SIS #

Model:
GDM-12F-HC~TSL01

Glass Door Merchandiser:
Swing Door Freezer with Hydrocarbon Refrigerant~True Standard Look Version 01



GDM-12F-HC~TSL01

- The world's #1 manufacturer of glass door merchandisers.
- Designed using the highest quality materials and components to provide the user with an attractive, point of purchase merchandiser that brilliantly displays frozen food and ice cream, resulting in high impulse sales.
- Factory engineered, self-contained, capillary tube system using environmentally friendly R290 hydro carbon refrigerant that has zero (0) ozone depletion potential (ODP), & three (3) global warming potential (GWP).
- High capacity, factory balanced refrigeration system that maintains -10°F (-23.3°C) temperatures. Ideal for both frozen foods and ice cream.
- Exterior - non-peel or chip white powder coated cold rolled steel; durable and permanent.
- Interior - attractive, NSF approved, white aluminum interior liner with stainless steel floor.
- Self closing door. Positive seal, torsion type closure system.
- Triple pane thermal glass door assembly with mitered plastic channel frame.
- LED interior lighting provides more even lighting throughout the cabinet. Safety shielded.
- Entire cabinet structure is foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).

Bottom mounted units feature

- "No stoop" lower shelf to maximize product visibility.
- Easily accessible condenser coil for cleaning.

ROUGH-IN DATA

Specifications subject to change without notice.
Chart dimensions rounded up to the nearest ⅛" (millimeters rounded up to next whole number).

Model	Doors	Shelves	Cabinet Dimensions (inches) (mm) W	D†	H*	HP	Voltage	Amps	NEMA Config.	Cord Length (total ft.) (total m)	Crated Weight (lbs.) (kg)
GDM-12F-HC~TSL01	1	3	24⅞ 632	23⅜ 594	62⅜ 1585	½ N/A	115/60/1	4.5 N/A	5-15P	9 2.74	TBD TBD

† Depth does not include 1" (26 mm) for rear bumpers.

MADE WITH INNOVATION IN THE USA · 5 YEAR COMPRESSOR WARRANTY USA · c UL us · natural refrigerant.

9/18 Printed in U.S.A.

APPROVALS:

AVAILABLE AT:

Model:
GDM-12F-HC~TSL01

Glass Door Merchandiser:
Swing Door Freezer with Hydrocarbon Refrigerant~True Standard Look Version 01

STANDARD FEATURES

DESIGN
- True's glass door freezers are designed with enduring quality that protects your long term investment.
- True's commitment to using the highest quality materials and oversized refrigeration systems provides the user with colder product temperatures, and lower utility costs in an attractive merchandiser that brilliantly displays frozen food and ice cream.

REFRIGERATION SYSTEM
- Factory engineered, self-contained, capillary tube system using environmentally friendly R290 hydrocarbon refrigerant that has zero (0) ozone depletion potential (ODP), & three (3) global warming potential (GWP).
- High capacity, factory balanced refrigeration system that maintains -10°F (-23.3°C) temperatures. Ideal for both frozen foods and ice cream.
- State of the art, electronically commutated evaporator and condenser fan motors. ECM motors operate at higher peak efficiencies and move a more consistent volume of air which produces less heat, reduces energy consumption and provides greater motor reliability.
- Bottom mounted condensing unit positioned for easy maintenance. "No stoop" lower shelf maximizes visibility by raising merchandised product to higher level.
- Automatic defrost system time-initiated, temperature-terminated. Saves energy consumption and provides shortest possible defrost cycle.

CABINET CONSTRUCTION
- Exterior - non-peel or chip white powder coated cold rolled steel; durable and permanent.
- Interior - attractive, NSF approved, white aluminum liner with stainless steel floor.
- Insulation - entire cabinet structure is foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- Welded, heavy duty steel frame rail, black powder coated for corrosion protection.
- Frame rail fitted with leg levelers.
- Door sign decal. Variety of decal options available.

DOOR
- Triple pane thermal insulated glass door assembly with mitered plastic channel frame.
- Door fitted with 12" (305 mm) long integrated handle.
- Self closing door. Positive seal, torsion type closure system.
- Magnetic door gaskets of one piece construction, removable without tools for ease of cleaning.

SHELVING
- Three (3) adjustable, heavy duty PVC coated wire shelves 20 13/16"L x 16 3/4"D (529 mm x 426 mm). Four (4) chrome plated shelf clips included per shelf.
- Shelf support pilasters made of same material as cabinet interior; shelves are adjustable on ½" (13 mm) increments.

LIGHTING
- LED interior lighting provides more even lighting throughout the cabinet. Safety shielded.

MODEL FEATURES
- Evaporator is epoxy coated to eliminate the potential of corrosion.
- See our website www.truemfg.com for latest color and sign offerings.
- Backguard and floor rack ensure optimum airflow.
- Listed under NSF/ANSI Standard 7 for the storage and/or display of packaged or bottled product.

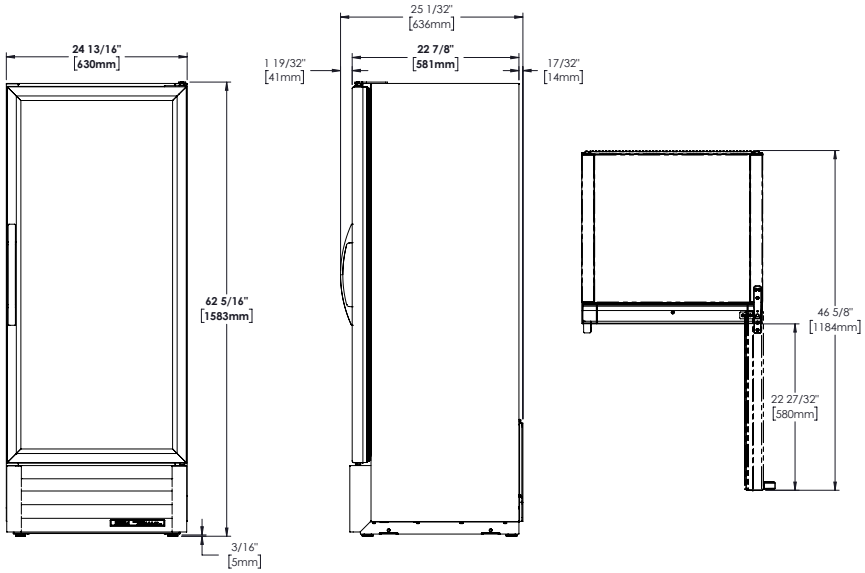
ELECTRICAL
- Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.



115/60/1
NEMA-5-15R

OPTIONAL FEATURES/ACCESSORIES
Upcharge and lead times may apply.
- ❑ Black exterior.
- ❑ Stainless exterior.
- ❑ Black aluminum interior liner with black shelving.
- ❑ Stainless interior liner.
- ❑ 2½" (64 mm) diameter castors.
- ❑ Novelty baskets.
- ❑ Pricing strips.
- ❑ Barrel Locks – located in grill assembly (requires one per door)

PLAN VIEW



WARRANTY
Three year warranty on all parts and labor and an additional 2 year warranty on compressor. (U.S.A. only)

METRIC DIMENSIONS ROUNDED UP TO THE NEAREST WHOLE MILLIMETER

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Model	Elevation	Right	Plan	3D	Back
GDM-12F-HC~TSL01					

TRUE MANUFACTURING CO., INC.
2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400 • Fax (636)272-2408 • Toll Free (800)325-6152 • Intl. Fax# (001)636-272-7546 • www.truemfg.com

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# ZZ500 - IN COMING FREIGHT (1 EA REQ'D)

FREIGHT

All freight costs from Manufacturer to storage facility

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# ZZ501 - OUT GOING FREIGHT (1 EA REQ'D)

FREIGHT

Freight from storage to Job Site

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# ZZ502 - DIRECT SHIPPMENT (1 EA REQ'D)

FREIGHT

Item directly shipped from Factory to job site

<Included>

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# ZZ504 - INSTALLATION (1 EA REQ'D)

BOELTER DELIVERY

Installation of equipment

Rebid Documents

Boelter
Foodservice Design, Equipment & Supply

Submittal Sheet

01/05/2026

ITEM# ZZ508 - BONDING (1 EA REQ'D)

BOELTER

Labor and Material Bond for Project

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Rebid Documents

SECTION 12 2413 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Manually operated roller shades with single rollers.
2. Manually operated roller shades with double rollers.
3. Shadeband materials.

B. Related Requirements:
1. Section 061000 "Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
2. Section 079200 "Joint Sealants" for sealing the perimeters of installation accessories for light-blocking shades with a sealant.
3. Section 09 2900 “Gypsum Board” for coordination with installation of brackets and related accessories.
4. Section 09 9100 “Painting”.

1.3 REFERENCES

A. ASTM International (ASTM): Latest editions, unless otherwise specified.
1. ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials
2. ASTM G21, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

B. National Fire Protection Association (NFPA)
1. NFPA 70-08, National Electrical Code
2. NFPA 701-04, Std. Methods of Fire Tests for Flame Propagation of Textiles and Films.

C. Underwriters Laboratories (UL)
1. UL2818, GREENGUARD Gold Certified for Low Chemical Emissions

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.

Rebid Documents

B. Product Data: Manufacturer's materials description and installation instructions for each shade type indicated.
   1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating and maintenance instructions.

C. Shop Drawings: Show fabrication and installation details for roller shades, including the following.
   1. Window Shade Schedule: List rooms, field verified window dimensions, quantities, type of shade, fabric, and color.
   2. Elevations, sections, details, and dimensions not shown in Product Data.
   3. Installation details, mountings, attachments to other work, operational clearances, and relationship to adjoining work.

D. Samples: For each exposed product and for each color and texture specified.
   1. Shade Cloth: Not less than 8" x 11" section of each fabric, from dye lot used for the Work, with specified treatments applied. Show complete pattern repeat, if any.
      a. Mark face of material to indicate interior faces.

   2. Shade Components: One complete unassembled set of shade components in selected finishes selected or specified.
      a. Valance (If specified): Full-size unit, not less than 12" long.

E. Product Certificates: For each type of shadeband material.

F. Product Test Reports: For each type of shadeband material, for tests performed by manufacturer and witnessed by a qualified testing agency.

G. Warranty: Sample copy of manufacturer's intended warranties for this Project, stating obligations, remedies, limitations, and exclusions of warranty.

1.5 CLOSEOUT SUBMITTALS

A. Submit the following in accordance with Section 01 7700 “Closeout Procedures”.
   1. Operation and Maintenance Data: For roller shades to be included in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Roller Shades: Full-size units equal to 5 percent of quantity installed for each size, color, and shadeband material indicated, but no fewer than two units.

1.7 QUALITY ASSURANCE

A. Single Source: Obtain each shade system through one source from a single manufacturer responsible for performance of manual cordless and motorized roller shade systems, design,

Rebid Documents

engineering, and installation of manual cordless and motorized roller shade systems, motors, controls, and low voltage electrical control wiring specified in this section.

B. Manufacturer Qualifications: A manufacturer with not less than 10 years of experience in the production of specified products, and a minimum of 5 projects of similar scope and size comparable to those specified in this section

C. Installer Qualifications: Engage an installation firm, which has at least 5 years' successful experience in installations similar in size and type to the requirements of this Project and authorized or otherwise approved by the roller window shade manufacturer to install specified materials.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver shades until building is enclosed and construction within spaces where shades will be installed is substantially complete. Deliver products in manufacturer's original, unopened, undamaged containers with labels intact and identified according to Window Shade Schedule.

B. Store materials in a cool dry place, protected from damage and from the elements in accordance with manufacturer's instructions.

C. Immediately remove from the Project site damaged and otherwise unsuitable materials when so determined. Do not incorporate damaged or otherwise unsuitable material into the Project.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.10 WARRANTY

A. Shade hardware and Fabrics: Limited Lifetime Warranty per manufacturer standard.
   1. Chain is not included, as it is a normal maintenance item.

Rebid Documents

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Factory assembled, manually operated solar shade sunscreen system designed, developed, and manufactured as a totally integrated operating system, chain drive mechanism, roller tubes, cassette valance, hem bars, installation brackets, hardware, and shade fabric materials, furnished by a single manufacturer, and installed as a complete system

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Draper, Inc.
2. Hunter Douglas Group.
3. Lutron.
4. Mechoshade Systems, Inc., a brand of Springs Window Fashions.
5. SWFcontract, a brand of Springs Window Fashions.

B. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.3 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS (**SH-1**)

A. Basis-of-Design Product: Subject to compliance with requirements, provide SWFcontact “True Performance Manual Solar Shades”.

B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.
1. Bead Chains: 10 pound stainless steel.
a. Loop Length: Full length of roller shade.
b. Limit Stops: Provide upper and lower round nickel-plated steel ball stops.
c. Chain-Retainer Type: Chain tensioner, jamb mounted.
1) Compliant with ANSI A100.1 “Standard for Safety of Corded Window Covering Products.”
2) Non-locking P-Clip is not acceptable.

2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller shade weight and for lifting heavy roller shades.
a. Provide for shadebands that weigh more than 10 lb or for shades as recommended by manufacturer, whichever criterion is more stringent.

C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
1. Roller Drive-End Location: As indicated on Drawings.
2. Direction of Shadeband Roll: Regular, from back (exterior face) of roller.
3. Shadeband-to-Roller Attachment: Removable spline fitting into integral channel in tube.

Rebid Documents

D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

E. Shadebands:
1. Shadeband Material: Light-blocking fabric.
2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
a. Type: Exposed with endcaps.
b. Color and Finish: As selected by Architect from manufacturer's full range.

F. Installation Accessories:
1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.
a. Shape: L-shaped.
b. Height: Manufacturer's standard height required to conceal roller and shadeband assembly when shade is fully open, but not less than 3.5 inches.

2. Endcap Covers: To cover exposed endcaps.

3. Closure Panel and Wall Clip: Removable aluminum panel designed for installation at bottom of site-constructed ceiling recess or pocket and for snap-in attachment to wall clip without fasteners.
a. Closure-Panel Width: 2 inches.

4. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.4 SHADEBAND MATERIALS

A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Light-Blocking Fabric: Opaque fabric, stain and fade resistant.
1. Source: Roller shade manufacturer.
2. Type: Polyester with foamed-acrylic backing**.**
3. Thickness: 0.018 inches.
4. Roll Width: As indicated on the Drawings
5. Orientation on Shadeband: Up the bolt
6. Style and Color: As indicated on the Interior Materials Schedule on the Interiors Drawings.

2.5 ROLLER SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg :
1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch.

Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.

C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible, except as follows:
   1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.
   2. Skylight Shades: Provide battens and seams at uniform spacings along shadeband as required to ensure shadeband tracking and alignment through its full range of movement without distortion or sag of material.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Notify the Contractor of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
   1. Opaque Shadebands: Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.

B. Roller Shade Locations: As indicated on Drawings.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

Rebid Documents

C. Remove and replace damaged roller shade components or entire unit as required to provide units in thoer original, undamaged condition.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION 12 2413

Rebid Documents

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Rebid Documents

SECTION 12 3661.19 - QUARTZ AGGLOMERATE COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and Division 01 Specification Sections, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Quartz agglomerate fabrications for countertops, work surfaces, back splashes, end splashes and apron fronts.

B. Related Requirements:
1. Section 06 1053 “Miscellaneous Rough Carpentry” for coordination with wall blocking and plywood backing.
2. Section 06 4023 “Interior Architectural Woodwork” for installation coordination of quartz agglomerate fabrications with woodwork support systems.
3. Section 06 4116 “Plastic-Laminate-Clad Architectural Cabinets for installation of quartz agglomerate countertops on plastic-laminate-clad cabinets.
4. Section 07 9200 “Joint Sealants”.
5. Section 06 4113 “Wood-Veneer-Faced Architectural Cabinets” for installation of quartz agglomerate countertops on manufactured wood-veneer-faced cabinets.
6. Division 22 “Plumbing” for coordination with plumbing fixtures.
7. Division 26 “Electrical” for coordination with electrical outlets and other fixtures

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
1. Product Data: Manufacturer’s product literature including care and maintenance data.
2. Show Drawings: Include countertop layout, dimensions, required locations of support and blocking members, edge profiles, cutouts and attachments.

B. Samples for Verification: For the following products:
1. Countertop material, Two (2), 6 inch square samples of manufactured quartz surfacing for approval

C. Qualification Data: For fabricator.

Rebid Documents

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For quartz agglomerate countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

B. Submit in accordance with Section 01 7700 “Closeout Procedures.”
   1. Fabricator/Installer: Provide commercial care and maintenance information specified in Article 3.5.
   2. Maintenance Data: Include in maintenance manuals product data for quartz surfacing and solid surfacing care products used or recommended by fabricator, and names, addresses, and telephone numbers of local sources for products.
   3. Warranties: Fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.

1.5 QUALITY ASSURANCE

A. Quartz Surfacing Manufacturer Qualifications: Licensed, trained and skilled to utilize vibro-compression under vacuum process, known as Bretonstone™ technology and equipment.

B. Quartz Surfacing Fabricator Qualifications: Fabricator with minimum 5 years’ experience and employing skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance and certified in writing by quartz surfacing manufacturers specified.

C. Installer’s Qualifications: Minimum of 2 years’ successful experience in the installation of quartz surfacing and solid surfacing fabrications similar to units required for this Project, and authorized and approved by the manufacturers.

1.6 DELIVERY, STORAGE AND HANDLING

A. Observe manufacturer’s recommendations and handle in a manner to prevent breakage. Brace parts if necessary. Transport in near vertical position with finished face toward finished face. Do not allow finished surfaces to rub during shipping and handling.

B. Store in racks in near vertical position. Prevent warpage and breakage. Store inside away from direct exposure to sunlight and at temperature between 25 and 130 degrees F.

C. Immediately remove from the Project site damaged and otherwise unsuitable material when determined and replace with new. Do not incorporate damaged or otherwise unsuitable material into the Project and replace with new at no additional cost to the Owner.

1.7 WARRANTIES

A. Manufacturers’ Warranties: Warrant quartz surfacing materials to be free of faults and defects in accordance with the General Conditions, except extend the warranties by manufacturers’ 10-

Rebid Documents

year warranties against defects in materials. Provide warranties for material to repair or replace defective materials.

1. Provide warranties in writing on manufacturers' letterheads and signed by quartz surfacing.

B. Contractors' Warranties: Warrant quartz surfacing installations to be free of faults and defects in accordance with the General Conditions, except extend the warranties by installers for 2 years warranty against defects in installation.

1. Provide warranties for labor to repair or replace defective installation on Installer's letterhead and signed by Installer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufactured Quartz Agglomerate Surfacing_Acceptable Manufacturer:_For basis-of-design and reference purposes Manufacturers, Products, Colors, Styles and Profiles refer to the "Interior Materials Schedule" on the Interior Drawings.

1. Subject to compliance with specified requirements, products available from the following manufacturers may be incorporated into the Work upon receipt of prior approval for their products by the Architect when a substitution request is submitted during the Bidding Phase in accordance with the Document 00 2600 "Procurement Substitution Procedures":
   a. Cambria ("Cambria Quartz")
   b. Caesarstone USA, Inc. ("Ceasartone")
   c. Constentino Group ("Silestone")
   d. Dupont ("Corian Quartz", (formerly Zodiaq))
   e. Hyundai L&C USA ("HanStone Quartz")
   f. Wilsonart LLC ("Wilsonart Quartz")

2.2 QUARTZ AGGLOMERATE COUNTERTOP MATERIALS

A. Quartz Agglomerate (**SSQ-**): Solid sheets consisting of quartz aggregates bound together with a matrix of filled plastic resin and complying with ICPA SS-1, except for composition.

1. Thickness: 3 cm unless otherwise detailed.
2. Identification: Labeled material with manufacturer's identifying mark.
3. Color: As indicated on the "Interior Materials Schedule" on the Interior Drawings.
4. Finish: As indicated on the "Interior Materials Schedule" on the Interior Drawings.
5. Exposed Edges and Corners: Countertops, backsplash, and other surface applications profiles as detailed.
6. Minimum Properties:
   a. Moisture Absorption, ASTM C97: 0.02 percent.
   b. Modulus of Rupture, ASTM C99: 6,800 psi.
   c. Compressive Strength, ASTM C170: 24,750 psi.
   d. Abrasion Resistance, ASTM C501: 223
   e. Bond Strength, ASTM C482: 205 psi.
   f. Thermal Shock, ASTM 484: Passes at no less than 5 cycles.
   g. Coefficient of Thermal Expansion, ASTM C531: 1.2x10-5 inch/degree °F.
   h. Breaking Strength of Tile, ASTM C648: 3,661 lbf.

Rebid Documents

i. Resistance to Freeze Thaw Cycling, ASTM C1026: unaffected at 15 cycles.
j. Coefficient of Friction Pull Method, ASTM C1028: 0.75 average dry; 0.55 average wet.
k. Surface Burning Characteristics, ASTM E84: 17.
1) Smoke Density, ASTM E662: flaming 196, non-flaming 69
2) Stain Resistance, ANSI Z124.6: Unaffected

2.3 ACCESSORIES

A. Manufactured Quartz Surfacing Material:
1. Mounting Adhesive: Structural grade, 50-year, silicone or epoxy adhesive.
a. Acceptable silicone manufacturers:
1) GE Silicone;
2) Dow Corning; or
3) Approved substitution.

b. Acceptable epoxy manufactures:
1) Cambria Two Part Acrylic Adhesive;
2) Akemi North America;
3) Bonstone Material Corporation; or
4) Tenax USA.

2. Surface Adhesive:
a. Provide epoxy or polyester adhesive of type recommended by manufacturer for application and conditions of use.
b. Acceptable manufacturers:
1) Cambria Two Part Acrylic Adhesive.
2) Akemi North America.
3) Bonstone Material Corporation.
4) Tenax USA.

c. Tint adhesive that will be visible in finished work to match quartz surface.

3. Joint Sealant:
a. Clear sealant of type recommended by manufacturer for application and use.
b. Anti-bacterial in toilet, bath, and food preparation areas.
c. Acceptable manufacturers:
1) Dow Corning;
2) GE Sealants; or
3) Approved substitution.

4. Solvent: Denatured alcohol for cleaning quartz surfacing to assure adhesion of adhesives and sealants.
5. Cleaning Agents: Mild soap and water.

B. Anchors and Attachments: Use only attachment devices fabricated from Type 304 stainless steel complying with ASTM A666 in direct contact with quartz and solid surfacing materials.

C. Wire-Management Grommets: Circular, molded-plastic grommets and matching plastic caps with slot for wire passage.

Rebid Documents

1. Acceptable manufacturers:
   a. Doug Mockett & Company, Inc.
   b. Outwater Plastics Ind., Inc. & Architectural Products
   c. Approved substitutions

2. Outside Diameter: 2 inches.
3. Color: As selected by Architect from manufacturer's full range.

2.4 FABRICATION

A. Fabricate countertops according to quartz agglomerate manufacturer's written instructions and the AWI/AWMAC/WI's "Architectural Woodwork Standards."

B. Quartz Agglomerate:
   1. Layout surface to minimize joints and avoid L-shaped pieces of quartz surfacing. Layout and fabricate with hairline joints.
   2. Inspect materials for defects prior to fabrication
   3. Cut and polish with water cooled powered tools.
   4. Cutouts: Drill holes in fabrications for plumbing fittings, and for toilet accessories in the shop.
      a. Cutouts shall have no less than 3/8-inch radius.
      b. Where edges of cutouts will be exposed in finished work, polish edges.

   5. Laminate layers of quartz surfacing as required to create built up edges following procedures recommended by the manufacturer.
   6. Horizontal Surfaces
      a. Thickness: 3/4 inch and 1-1/8 inch thicknesses, where indicated on the Drawings, laminated to 3/4 inch thick preservative treated plywood.
      b. Edge Profile: Square edge, eased, unless otherwise indicated on the Drawings.
      c. Refer to Drawings for additional edged detailing.

   7. Splashes: 3/4 inch thick, "Set-on" backsplash and end splash, 4 inch high, unless otherwise detailed on Drawings.
      a. Top Edges and Corner Edge Profiles: Square edge, eased, unless otherwise indicated on the Drawings.

   8. Aprons: 3/4 inch thick, vertical dimensions indicated on Drawings.
      a. Edge Profile: Square edge, eased, unless otherwise indicated on the Drawings.

C. Cutout and Mountings:
   1. Refer to Plumbing Drawings and Food Service Drawings for sink types, food service equipment, dimensions and configurations for cutouts.
      a. Undercounter Sinks: Make cutouts for undercounter sinks in shop using templates or patterns furnished by sink manufacturer. Form cutouts to smooth, even curves with edges at right angles to top. Smooth vertical surfaces of cutouts to match countertop surfaces. Form cutout edges to match edges of tops.
      b. Counter Mounted Sinks and Food Service Equipment: Prepare countertops in shop for field cutting openings for counter mounted sinks and food service equipment. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.

Rebid Documents

c. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.
d. Edge Profiles of all Cutouts: Square edge, eased, unless otherwise indicated on the Drawings.

2. Joints: Fabricate without joints in their length or width, insofar as practicable.
3. Prevent galvanic and other forms of corrosion and staining by isolating dissimilar metals and other materials from direct contact with incompatible materials. Use materials that do not stain exposed surfaces of quartz and joint materials.
4. Rout out underside of fabrications to fit around in place hardware that may interfere with installation of fabrications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site Verification:
1. Verify dimensions by field measurements prior to installation.
2. Verify that supporting substrates are plumb, level and flat to within 1/8 inch in 10 feet and that necessary supports and blocking are in place.
3. Base Cabinets are secured to adjoining units.

B. Inspect of Quartz and Solid Surface materials for defects prior to installation.

3.2 PREPARATION

A. Clean surfaces prior to installation.

B. Protect finished Quartz and Solid Surface Materials from scratches. Apply masking where necessary. Take necessary precautions to prevent dirt, grit, dust and debris from other trades from contacting surface.

3.3 INSTALLATION

A. Quartz Agglomerate: Install materials in accordance with manufacturer's instructions and approved Shop Drawings.
1. Preliminary Installation:
a. Position materials to verify correct size.
b. If size adjustments or additional fabrication is necessary, use water cooled tools. Protect jobsite and surface from dust and water. Perform work away from installation site if possible.
c. Allow gaps for expansion of not less than 1/8 inch per 10 feet when installed between walls or other fixed structure.

2. Permanent Installation:

Rebid Documents

a. After verification of fit and finish, clean substrate; remove loose and foreign matter which may interfere with adhesion. Clean quartz surface backside and joints with denatured alcohol.
b. Horizontal surface: Apply continuous bead of mounting adhesive around perimeter of structural substrate and supports.
c. Vertical surface: Apply continuous bead of mounting adhesive around perimeter. In addition, apply 3/4 inch mounting adhesive bead every 8 inches on vertical center.
d. Install quartz surfacing plumb, level, square and flat to within 1/8 inch in 10 Feet, non- cumulative.
e. Align adjacent pieces in same plane.

3. Joints between adjacent pieces of Quartz Surfacing:
   a. Provide flush, tight fitting, level and neat joints.
      1) Securely join adjacent pieces with Cambria Two Part Acrylic Adhesive.
      2) Fill joints level to polished surface.

   b. Secure adjacent quartz surfaces with vacuum clamps until adhesive hardens.

4. Joints between Quartz Surface and walls:
   a. Provide flush, tight fitting, level and neat joints.
      1) Seal with 50-year, silicone sealant.

5. Install components plumb, level, rigid, scribed to adjacent finishes in accordance with reviewed Shop Drawings and Product installation details.
6. Fabricate field joints using manufacturer's recommended adhesive, with joints being inconspicuous in finished work. Exposed joints/seams are not permitted. Keep components and hands clean when making joints. Reinforce field joints as specified herein. Cut and finish component edges with clean, sharp returns.
7. Route radii and contours to template. Anchor securely to base component or other supports. Align adjacent components and form seams to comply with manufacturer’s written recommendations using adhesive in color to match work. Carefully dress joints smooth, remove surface scratches and clean entire surface.
8. Install countertops with no more than 1/8" sag, bow or other variation from a straight line.
9. Provide backsplashes and end splashes as indicated on Drawings. Adhere to countertops using a standard color-coordinated silicone sealant. Adhere applied side splashes to countertops using a standard color-matched silicone sealant. Provide coved backsplashes and side splashes at walls and adjacent millwork. Fabricate radius cove at intersection of counters with backsplashes to dimensions shown on reviewed Shop Drawings. Adhere to countertops using manufacturer’s standard color-coordinated joint adhesive.
10. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Ensure components are clean on date of Substantial Completion of the Work.
11. Coordinate connections of plumbing fixtures with Division 22.

3.4 REPAIR, CLEANING AND PROTECTION

A. Repair damaged material in a satisfactory manner or remove and install new material.

Rebid Documents

B. Remove masking, excessive adhesive and sealants. Clean exposed surfaces in accordance with manufacturer's instructions.

C. Protect installed fabrications with non-staining sheet coverings.

3.5 DEMONSTRATION

A. Review maintenance procedures and warranty details with the director of maintenance upon completion of project.

END OF SECTION 12 3661.19

Rebid Documents

SECTION 14 2400 - HYDRAULIC ELEVATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Hydraulic passenger elevators.

B. Related Requirements:
   1. Section 03 3000 "Cast-in-Place Concrete" for setting sleeves, inserts, and anchoring devices in concrete.
   2. Section 05 1200 "Structural Steel Framing" for the following:
      a. Hoist beams.
   3. Section 05 5000 "Metal Fabrications" for the following:
      a. Attachment plates and angle brackets for supporting guide-rail brackets.
      b. Structural-steel shapes for subsills.
      c. Pit ladders.
   4. Section 09 6516 “Resilient Tile Flooring” for finish flooring in elevator cars.
   5. Section 09 9123 "Interior Painting" for field painting of hoistway entrance doors and frames.
   6. Division 22 “Plumbing” for sump pumps, sumps, and sump covers in elevator pits.
   7. Division 26 “Electrical” for for providing electrical service and components for elevator operation, not provided by elevator manufacturer, and for coordinating heat and smoke detection with elevator operation.
   8. Division 28 “Electronic Safety and Security” for coordination with service and components for addition elevator features, not provided by elevator manufacturer.

1.3 REFERENCES

A. Americans with Disabilities Act-Architectural Barriers Act Accessibility Guidelines (ADA-ABA)
   1. Section 407 in the Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines, September 15, 2010, and amended through September 16, 2014.

B. American Society of Mechanical Engineers (ASME)
   1. ASME A17.1 - 2022, Handbook on Safety Code for Elevators and Escalators.

Rebid Documents

2. ASME A17.7 - 2022, Performance-Based Safety Code for Elevators and Escalators.

C. ASTM International (ASTM): Latest editions, unless otherwise specified.
1. ASTM A240, Standard Specification for Chromium and Chromium Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
2. ASTM B151, Standard Specification for Copper Nickel Zinc Alloy (Nickel Silver) and Copper Nickel Rod and Bar

D. International Code Council (ICC)
1. ICC/ANSI A117.1-March 2017, Standard on Accessible and Usable Buildings and Facilities
2. International Building Code (IBC), 2021 edition.

E. National Fire Protection Association (NFPA)
1. ANSI/NFPA 70, National Electrical Code.
2. ANSI/NFPA 80, Fire Doors and Windows.

F. Underwriters Laboratory (UL)
1. ANSI/UL 10B, Fire Tests of Door Assemblies.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
1. Product Data
a. Manufacturer's literature including capacities, sizes, performances, operations, safety features, finishes, and similar information. Include product data for car enclosures, hoistway entrances, and operation, control, and signal systems.
1. Controlled Access: Include elevator manufacturer's literature for coordination with card reader access control system specified in Division 28.

b. Materials and equipment descriptions, load data, parts list, wiring diagrams, installation instructions, and color selection charts.

2. Shop Drawings
a. Complete layout of elevator, car enclosure, hoistway entrances, machinery, coordination with adjacent construction, etc.
b. Plans, elevations, sections, wall openings, and large-scale details indicating service at each landing, control closet layout, coordination with building structure, relationships with other construction, and locations of equipment, and locations of permanent hoistway lift beams, hoistway divider beams and other components inside hoistways.
c. Large-scale layout of car-control station.
d. Maximum dynamic and static loads imposed on building structure at points of support, and maximum and average power demands.
e. Indicate locations of temporary hoistway wall openings and temporary hoisting beams for construction access and work.
f. Controlled Access: Indicate location and provisions for installing card reader access control system into elevator control panel specified in Division 28.

3. Samples

Rebid Documents

a. Initial Selection: For finishes involving color selection.
b. Verification: For exposed car, hoistway door and frame, and signal equipment finishes; 3" square samples of sheet materials and 4" lengths of running trim members.

4. Certificates: Furnish evidence of the following, each certificate signed by the manufacturer:
   a. Certification of required fire endurance rating;
   b. Certification of UL label and listing, or that of other acceptable testing agency, and;
   c. Manufacturer has provided equipment of the same general type as specified, and that such equipment has been in successful operation for at least 5 years.
   d. Certification that hoistway, pit, and machine closet layout and dimensions, as shown on Drawings, and electrical service including auxiliary (standby) operation as shown and specified are adequate for elevator system being provided.

5. Warranties: Sample copy of manufacturer's intended warranties for this Project, stating obligations, remedies, limitations, and exclusions of warranty.

B. Submit in accordance with Section 01 7700 “Closeout Procedures”:
1. Warranties: Manufacturer's fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.

2. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.

3. Operation and Maintenance Data: For elevators to include in emergency, operation, and maintenance manuals.

4. Maintenance Agreements
   a. Initial Maintenance Agreement: Fully executed maintenance and call-back service agreements.
   b. Continuing Maintenance Proposal: Submit a continuing maintenance proposal from Installer to Owner with terms, conditions, and obligations and stated as, "Draft of Elevator Maintenance Agreement", starting on date initial maintenance service is concluded.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Elevator manufacturer or an authorized representative who is trained and approved by manufacturer.

B. Perform the work, provide materials and components in accordance with the following:
1. Accessibility Requirements: U.S. ADA-ABA Accessibility Guidelines and with ICC/ANSI A117.1.
2. Elevator Regulatory Requirements
   a. ASME A17.1
   b. International Building Code (IBC).
   c. North Dakota State Building Code, incorporating the IBC listed above.

Rebid Documents

d. NFPA 70, National Electrical Code (NEC)

C. Code Changes: If changes made in applicable codes and rulings by applicable code-enforcing authorities extend the application of these codes, subsequent to the date of the contract, the Work and materials necessary to make the installation comply with such changes shall be performed as a change to the Contract Sum and Contract Time.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials, components and equipment in manufacturer's protective packaging, clearly marked with proper identification with manufacturer's name, equipment type, model numbers.

B. Store in accordance with manufacturer's instructions, above ground, and protected from weather, wetting, stains, construction activities, and other causes of damage.

C. Handle materials at the Project site in accordance with manufacturer's requirements to prevent damage.

D. Immediately remove from the Project site damaged and otherwise unsuitable material when determined and replace with new at no additional cost to the Owner. Do not incorporate damaged or otherwise unsuitable material into the Project.

E. Contractor's Responsibilities
1. Provide a suitable (protected, dry and secured) storage area on the construction Project premises for receipt, storage and protection of elevator equipment at the agreed upon date.
2. If the construction Project premises or building is not prepared to receive the elevator equipment, Construction Manager shall provide a suitable off-site storage area, at no additional cost to the Owner or to the elevator manufacturer.
3. If off-site storage is required, and elevator manufacturer has not delivered elevator equipment to the Project site, elevator manufacturer, upon notification from the Construction Manager, will deliver equipment to off-site storage.
4. If the elevator equipment has already been delivered to Project site, Construction Manager shall transport elevator equipment to off-site storage area. Construction Manager shall be responsible for transporting elevator equipment from off-site storage to Project location.

1.7 FIELD CONDITIONS

A. Prohibited Use of Elevators: Do NOT use elevator for temporary service, or for any other purpose, during the construction period prior to Substantial Completion and acceptance by the Owner, except as otherwise agreed upon, in writing, between the Owner, Construction Manager and Elevator Installing Contractor.

Rebid Documents

1.8 WARRANTY

A. Contractor: Warrant elevator to be free of faults and defects in accordance with the General Conditions.

B. Manufacturer: Warrant complete assembly to be free of defects including materials, design, and workmanship under normal use in service and replace, without charge, parts which may develop defects during the period of one year following approved installation.
   1. Failures include, but are not limited to, operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

C. Warranties, guarantees, and service contracts commence on date of Substantial Completion of the overall Project, EXCEPT;
   1. If elevators are accepted by Owner and put into service for the Owner's use prior to date of Substantial Completion, the warranties, guarantees, and service contracts commence on the date of Owner acceptance.

D. Workmanship and functional operation of installed equipment is subject to approval and acceptance by Architect. Final inspection and certificate of acceptance shall not be unreasonably delayed or withheld.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. For basis-of-design and reference purposes, hydraulic passenger elevators by Otis Elevator Company are specified. Subject to compliance with specified requirements, comparable products available from the following specified manufacturers may be incorporated into the Work.
   1. Schindler Elevator Corp.
   2. ThyssenKrupp Elevator Corp.

2.2 ELEVATORS

A. Elevator System, General: Manufacturer's standard elevator systems having the entire hydraulic system and controller located within the hoistway and not requiring a separate machine room. Unless otherwise indicated, manufacturers' standard components are used, as included in standard elevator systems and as required for complete system.

B. Elevator Description:
   1. Basis-of-design Product: Otis Elevator Company “Hydrofit 3500 lb., 100 F.P.M., Machine Room-Less Hydraulic Elevator”.
   2. Type:
      a. Under-the-car single cylinder.

Rebid Documents

3. Rated Load: 3500 lb.
4. Rated Speed: 100 fpm.
5. Operation System: Single automatic operation.
6. Auxiliary Operations:
   a. Battery-powered lowering.

7. Car Enclosures:
   a. Inside Width: 6'-5 9/16" from side wall to side wall from side wall to side wall.
   b. Inside Depth: 5'-5 9/16" from back wall to front wall (return panels).
   c. Inside Height: Not less than 93 inches to underside of ceiling.
   d. Front Walls (Return Panels): Satin stainless steel, ASTM A480/A480M, No. 4 finish with integral car door frames.
   e. Car Fixtures: Satin stainless steel, ASTM A480/A480M, No. 4 finish.
   f. Side and Rear Wall Panels: Enameled or powder-coated steel with raised plastic laminate panels.
   g. Reveals: Satin stainless steel, ASTM A480/A480M, No. 4 finish**.**
   h. Door Faces (Interior): Satin stainless steel, ASTM A480/A480M, No. 4 finish.
   i. Door Sills: Aluminum.
   j. Ceiling: Satin stainless steel, ASTM A480/A480M, No. 4 finish.
   k. Handrails: 1/2 by 2 inches rectangular at sides and rear of car.
   l. Floor prepared to receive resilient flooring (specified in Section 09 6516 "Resilient Tile Flooring").
      1) Flooring Thickness, Including Setting Materials: 0.197 inches (5 mm) above plywood subfloor.

8. Hoistway Entrances:
   a. Width: 42 inches.
   b. Height: 84 inches.
   c. Type: Single-speed side sliding.
   d. Frames Satin stainless steel, ASTM A480/A480M, No. 4 finish.
   e. Doors: Satin stainless steel, ASTM A480/A480M, No. 4 finish.
   f. Sills: Aluminum.

9. Hall Fixtures: Satin stainless steel, ASTM A480/A480M, No. 4 finish.
10. Additional Requirements:
    a. Provide hooks for protective pads and one complete set(s) of full-height protective pads.

2.3 SYSTEMS AND COMPONENTS

A. Pump Units: Positive-displacement type with a maximum of 10 percent variation between no load and full load and with minimum pulsations.
   1. Pump is submersible type with submersible squirrel-cage induction motor, and shall be suspended inside oil tank from vibration isolation mounts.
   2. Motor has variable-voltage, variable-frequency control.

B. Hydraulic Silencers: System has hydraulic silencer containing pulsation-absorbing material in blowout-proof housing at pump unit.

Rebid Documents

C. Piping: Size, type, and weight of piping as recommended by elevator manufacturer, with flexible connectors to minimize sound and vibration transmissions from power unit.

D. Hydraulic Fluid: Elevator manufacturer's standard fluid with additives as needed to prevent oxidation of fluid, corrosion of cylinder and other components, and other adverse effects.

E. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work. Device installation is specified in another Section.

F. Car Frame and Platform: Welded steel units.

G. Guides: Roller guides. Provide guides at top and bottom of car frame.

2.4 OPERATION SYSTEMS

A. Provide manufacturer's standard microprocessor operation system as required to provide type of operation indicated.

B. Auxiliary Operations:
1. Single-Car Battery-Powered Lowering:
   a. When power fails, car is lowered to the lowest floor, opens its doors, and shuts down. System includes rechargeable battery and automatic recharging system.

2. Automatic Operation of Lights and Fan: When elevator is stopped and unoccupied with doors closed, lighting, ventilation fan, and cab displays are de-energized after 5 minutes and are re-energized before car doors open.

2.5 DOOR-REOPENING DEVICES

A. Infrared Array: Provide door-reopening device with uniform array of 36 or more microprocessor-controlled, infrared light beams projecting across car entrance. Interruption of one or more light beams causes doors to stop and reopen.

2.6 CAR ENCLOSURES

A. Provide steel-framed car enclosures with nonremovable wall panels, with car roof, access doors, power door operators, and ventilation.
1. Provide standard railings complying with ASME A17.1/CSA B44 on car tops where required by ASME A17.1/CSA B44.

B. Materials and Finishes: Manufacturer's standards, but not less than the following:
1. Subfloor:
   a. Exterior, underlayment-grade plywood, not less than 5/8-inch nominal thickness.

2. Floor Finish:
   a. Specified in 09 Section 09 6516 “Resilient Tile Flooring”.

Rebid Documents

3. Enameled- or Powder-Coated-Steel Wall Panels: Flush, formed-metal construction; fabricated from cold-rolled steel sheet. Provide with factory-applied enamel or powder-coat finish; colors as selected by Architect from manufacturer's full range.
4. Plastic-Laminate Wall Panels: Plastic laminate adhesively applied to manufacturer's standard panels with plastic-laminate panel backing and manufacturer's standard protective edge trim. Panels have a flame-spread index of 25 or less, when tested according to ASTM E84. Plastic-laminate color, texture, and pattern as selected by Architect from plastic-laminate manufacturer's full range.
5. Fabricate car with recesses and cutouts for signal equipment.
6. Fabricate car door frame integrally with front wall of car.
7. Stainless Steel Doors: Flush, hollow-metal construction; fabricated from stainless steel sheet.
8. Sills: Extruded or machined metal, with grooved surface, 1/4 inch thick.
9. Metal Ceiling: Flush panels, with LED downlights in the center of each panel.
    a. Ceiling Panel Finish: Satin stainless steel, ASTM A480/A480M, No. 4 finish.

2.7 HOISTWAY ENTRANCES

A. Hoistway Entrance Assemblies: Manufacturer's standard horizontal-sliding, door-and-frame hoistway entrances complete with track systems, hardware, sills, and accessories. Frame size and profile accommodate hoistway wall construction.
    1. Where gypsum board wall construction is indicated, frames are self-supporting with reinforced head sections.

B. Fire-Rated Hoistway Entrance Assemblies: Door-and-frame assemblies comply with NFPA 80 and be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing at as close-to-neutral pressure as possible according to NFPA 252.
    1. Fire-Protection Rating: 1 hour.

C. Materials and Fabrication: Manufacturer's standards, but not less than the following:
    1. Primed or Powder-Coated-Steel Frames: Formed from cold- or hot-rolled steel sheet. Provide with factory-applied, rust-resistant primer or powder coating for field painting.
    2. Stainless Steel Frames: Formed from stainless steel sheet.
    3. Stainless Steel Doors : Flush, hollow-metal construction; fabricated from stainless steel sheet.
    4. Sills: Extruded or machined metal, with grooved surface, 1/4 inch thick.
    5. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M.

2.8 SIGNAL EQUIPMENT

A. Provide hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Provide buttons and lighted elements illuminated with LEDs.

B. Car-Control Stations: Provide manufacturer's standard recessed car-control stations. Mount in return panel adjacent to car door unless otherwise indicated.
    1. Mark buttons and switches for required use or function. Use both tactile symbols and Braille.

Rebid Documents

2. Provide "No Smoking" sign matching car-control station, either integral with car-control station or mounted adjacent to it, with text and graphics as required by authorities having jurisdiction.

C. Emergency Communication System: Two-way voice communication system, with visible signal, which dials preprogrammed number of monitoring station and does not require handset use. System is contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.

D. Car Position Indicator: Provide digital-type car position indicator, located above car door or above car-control station. Also, provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served. Include travel direction arrows if not provided in car-control station.

E. Hall Push-Button Stations: Provide one hall push-button station at each landing.
1. Provide jamb-mounted units.
2. Equip units with buttons for calling elevator and for indicating applicable direction of travel.

F. Hall Lanterns: Units with illuminated arrows; however, provide single arrow at terminal landings. Provide the following:
1. Manufacturer's standard wall-mounted units, for mounting above entrance frames.

G. Hall Annunciator: With each hall lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down.
1. At manufacturer's option, audible signals may be placed on cars.

H. Hall Position Indicators: Provide digital-display-type position indicators, located above hoistway entrance at ground floor.

I. Emergency Pictorial Signs: Fabricate from materials matching hall push-button stations, with text and graphics as required by authorities having jurisdiction, indicating that in case of fire, elevators are out of service and exits should be used instead. Provide one sign at each hall push-button station unless otherwise indicated.

2.9 FINISH MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, commercial steel, Type B, exposed, matte finish.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, commercial steel, Type B, pickled.

C. Stainless Steel Sheet: ASTM A240/A240M, Type 304.

D. Stainless Steel Bars: ASTM A276, Type 304.

E. Aluminum Extrusions: ASTM B221, Alloy 6063.

F. Plastic Laminate: High-pressure type complying with NEMA LD 3, Type HGS for flat applications and Type BKV for panel backing.

Rebid Documents

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Verify critical dimensions and examine supporting structure and other conditions under which elevator work is to be installed. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 COORDINATION

A. Coordinate installation of sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.

B. Furnish well casing and coordinate delivery with related excavation work.

C. Coordinate locations and dimensions of other work relating to elevators including pit ladders; sumps and floor drains in pits; entrance subsills; electrical service; and electrical outlets, lights, and switches in hoistways, pits, and machine location.

D. Coordinate penetrations of pit wall and floor with installation of below grade waterproofing, specified in Section 07 1326 and Section 07 1716. Specifier: Insert other waterproofing specification sections as required by project requirements.

3.3 PREPARATION

A. Hoistway
   1. Properly constructed and enclosed legal hoistway, including venting as required by the governing code or authority.
   2. Design and construct hoistway walls in accordance with the required fire rating, including where penetrated by elevator fixture boxes and to include adequate fastening to hoistway entrance assemblies. Do not construct front entrance walls until after door frames and sills are in place.
   3. Provide cutting, including cutouts to accommodate hall signal fixtures, patching and finishing of walls, floors and partitions.
   4. Adequate rail bracket supports, bracket spacing as required by governing code. Separator beams where required.
   5. Dry pit reinforced to sustain normal vertical forces from rails and impact loads from buffer and cylinder.
   6. Adequate support for sill angle across full width of hoistway at each landing. Vertical surfaces of entrance sill supports to be plumb, one above the other, and square with the hoistway. Finished floor and grout, if required, between door frames to sill line.

Rebid Documents

7. Ventilation Requirements: Properly ventilation to maintain temperature at the top of the hoistway (machine space) between 40 degrees F and 100 degrees F. and maintain relative humidity not to exceed 95 percent non-condensing.

B. Pit Requirements: Provide adequate pit drainage, and discharge into sump adjacent and separate from the pit.

C. Electrical Requirements
1. Electric power for light, tools, hoists, etc. during erection as well as electric current for starting, testing and adjusting the elevator.
2. A fused disconnect switch or circuit breaker for each elevator per the National Electrical Code with feeder or branch wiring to controller. Size as required by Elevator Installing Contractor.
3. AC 120-volt, 20-amp, single phase power supply with fused SPST disconnect switch for each elevator, with feeder wiring to each controller for car lights.

D. Light Fixtures and Outlets
1. Top of Hoistway: Provide light and convenience outlets at top of hoistway. Locate light switch close to the elevator entrance.
2. Top Landing: Provide light and convenience outlets at top landing entrance near the controller space. Locate light switches located within 18" of jamb side of hoistway door.
3. Pit: Provide convenience outlet and light fixture in pit with switch located adjacent to the access door. Locate light switch in accordance with elevator manufacturer layout.

E. Communications:
1. Telephone instrument, or means within the car for communicating, or signaling to an accessible point outside the hoistway or central exchange system or approved emergency service; unless stated elsewhere in the Specifications.
2. Video wiring or cabling for connection to Owner's security system.

F. Smoke sensing devices at each lobby.

3.4 INSTALLATION

A. Install elevator equipment in accordance with manufacturer's directions, ANSI A17.1 and final Shop Drawings.

B. Hoistway Guarding and Protection: Erect and maintain hoistway guarding and protection of hoistway during construction. Provide minimum solid panels surrounding each hoistway opening at each floor, minimum of 48" high. Remove at completion of construction.

C. Comply with all applicable codes for work required during installation of elevator.

D. Install cylinder plumb and accurately centered for elevator car position and travel. Anchor securely in place, supported at pit floor and braced at intervals as needed to maintain alignment. Anchor cylinder guides at spacing needed to maintain alignment and avoid overstressing guides.

E. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment,

Rebid Documents

inspection, maintenance, and replacement of worn parts. Comply with AWS workmanship and welding operator qualification standards.

F. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts to minimize vibration transmission to structure and structure-borne noise due to elevator system.

G. Lubricate operating parts of systems as recommended by manufacturers.

H. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with car. Where possible, delay installation of sills and frames until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.

I. Leveling Tolerance: 1/4 inch up or down, regardless of load and travel direction.

J. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.

K. Locate hall signal equipment for elevators as follows unless otherwise indicated:
1. Mount hall lanterns at a minimum of 72 inches above finished floor.

3.5 FIELD QUALITY CONTROL

A. Provide personnel, equipment, and instruments required for inspection and testing. Arrange for acceptance inspection required by local authority performed by enforcing agency.

B. In addition to inspection and tests required by local authority, perform all applicable inspections and tests contained in ANSI A17.2.

C. Upon completion of installation and before final approval and final payment, make a contract load test in the presence of the Architect with full maximum load on car to determine whether the equipment as installed meets the speed, capacity and all other requirements of the Specifications.

3.6 ADJUSTING AND CLEANING

A. Adjust brakes, controllers, leveling switches, generators, limit switches, stopping switches, and safety governors to operate within accepted design tolerances. Adjust car leveling devices so car stops within +/- 1/8" of finished floor.

B. Lubricate equipment in accordance with accepted manufacturer's instructions.

C. Remove from hoistway surfaces loose materials and filings resulting from this work. Clean machine area and pit floor of dirt, oil and grease.

D. Remove crating and packing materials from premises.

Rebid Documents

3.7 PROTECTION

A. Temporary Use: If authorized in writing by the Owner, temporary use of the elevator may proceed only upon compliance with the following requirements for elevator used for construction purposes. Do NOT use elevator unless written authorization is obtained from the Owner.
   1. Provide car with temporary enclosure, either within finished car or in place of finished car, to protect finishes from damage.
   2. Provide strippable protective film on entrance and car doors and frames.
   3. Provide padded wood bumpers on entrance door frames covering jambs and frame faces.
   4. Provide other protective coverings, barriers, devices, signs, and procedures as needed to protect elevator and elevator equipment.
   5. Do not load elevators beyond their rated weight capacity.
   6. Engage elevator Installer to provide full maintenance service. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleanup, and adjustment as necessary for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
   7. Engage elevator Installer to restore damaged work, if any, so no evidence remains of correction. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to operate elevator(s).

B. Check operation of elevator with Owner's personnel present before date of Substantial Completion and again not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

3.9 MAINTENANCE

A. Maintenance Service: Elevator Subcontractor shall furnish standard maintenance and call-back service for a period of 12 months on each elevator after it is completed and placed in operation.

B. Provide emergency service on a daily, -hour basis. Work shall be performed by trained employees during regular working hours of the trade.
   1. Renewal or repair necessitated by misuse, negligence or other conditions beyond installers' control shall not be included as cost-free maintenance.
   2. The maintenance and call-back service is in addition to and not in lieu of the guarantees required by the Contract Documents.

END OF SECTION 14 2400

Rebid Documents

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Rebid Documents

SECTION 31 1000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Clearing and protection of vegetation.
2. Removal of existing debris.
3. Removal of root systems

B. Related Requirements:
1. Section 31 2200 “Grading” for removal of topsoil.
2. Section 31 2323 “Fill” for material used for filling holes, pits and excavations generated as a result of removal operations.

1.3 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.

B. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Protect existing site improvements to remain from damage during construction.

Rebid Documents

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion-and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Drawings and requirements of authorities having jurisdiction.

B. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 EXISTING UTILITIES AND BUILT ELEMENTS

A. Utilities
1. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.
   a. Arrange with utility companies to shut off indicated utilities.

2. Interrupting Existing Utilities:
   a. Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
      1) Notify Architect and Owner not less than Two (2) days in advance of proposed utility interruptions.
      2) Do not proceed with utility interruptions without Architect's written permission.

   b. Do not disrupt public utilities without notification to and permit obtainment from the Authority Having Jurisdiction.

3. Protect existing utilities to remain from damage.

B. Built Elements
1. Protect existing structures and other built elements that are to remain.

3.4 CLEARING AND GRUBBING

A. Obstructions General:
1. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction including, but not limited to, new buildings, athletic fields, parking areas, lawns and planting beds.

B. Vegetation to be removed:
1. Do not begin clearing until vegetation identified to be relocated has been removed.
2. Do not remove or damage any vegetation beyond the limits indicated on drawings.

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3. In areas where vegetation must be removed but no construction will occur, other than pervious paving, remove vegetation with minimum disturbance of the subsoil.
4. Do not burn, bury, landfill or site-stockpile vegetation identified to be removed except as indicated below:
   a. Chipping, grinding, crushing or shredding of vegetation for mulching, composting or other purposes. Preference to be given to on-site uses.

5. Trees: Treat as specified for other vegetation to be removed. Remove to a depth of 24 inches.
6. Stumps: Treat as specified for other vegetation to be removed Remove to a depth of 24 inches.
7. Sod: Treat as specified for other vegetation to be removed
8. Dead wood and brush: Remove all dead trees (standing or downed), limbs, and dry brush on entire site. Treat as specified for other vegetation identified to be removed
9. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

C. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated. Make top surface neat in appearance and smooth enough not to constitute a hazard to pedestrians.

3.5 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

3.6 WARRANTY

A. Existing plant life and concrete / asphalt to remain within 10 feet of the area being cleared shall be replaced by the Contractor if death or damage resulting from contact during construction occurs within 1 year after final acceptance by Owner

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 31 1000

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SECTION 31 2200 – GRADING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Removal of topsoil.
2. Rough grading and soil corrections.
3. Replacement of topsoil and finish grading.
4. Protection of trees to remain.

B. Related Requirements:
1. Document 00 3132 “Geotechnical Data.”
2. Section 31 1000 "Site Clearing" for site stripping, grubbing, stripping topsoil, and removal of above- and below-grade improvements and utilities.
3. Section 31 2316 “Excavation.”
4. Section 31 2316.13 “Trenching” for trenching and backfilling for utilities.
5. Section 31 2316.26 “Rock Removal.”
6. Section 31 2323 “Fill” for filling and compaction densities.
7. Section 32 9219 "Seeding" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.
8. Section 32 9300 “Plants” for topsoil placed on planting beds and pits.

1.3 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during grading operations.
1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

C. Do not commence grading operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 31 1000 "Site Clearing" are in place.

D. Do not commence earth-moving operations until plant-protection measures are in place.

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E. The following practices are prohibited within protection zones:
   1. Storage of construction materials, debris, or excavated material.
   2. Parking vehicles or equipment.
   3. Foot traffic.
   4. Erection of sheds or structures.
   5. Impoundment of water.
   6. Excavation or other digging unless otherwise indicated.
   7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

F. Do not direct vehicle or equipment exhaust towards protection zones.

G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS (NOT USED)

2.1 SOIL MATERIALS

A. Topsoil: Naturally occurring surface soil, typically the upper most 4 to 12 inches of soil, that contains a mixture of mineral particles, organic matter, microorganisms, and nutrients capable of sustaining plant growth.
   1. Topsoil shall be free of subsoil, debris, rocks larger than 1 inch in diameter, toxic substances, and other foreign materials

B. Other Fill Materials: See Section 31 2323 “Fill”.

C. Protection-Zone Fencing: Fencing: Fencing fixed in position and meeting the following requirements:
   1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches apart.
      a. Height: 48 inches.
      b. Color: High-visibility orange, nonfading.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that survey benchmarks and intended elevations for the Work are as indicated.

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3.2 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate and identify above-grade and below-grade utilities that are to remain and protect from damage.

D. Protect benchmarks and survey control points.

E. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by grading operations.

F. Protect and maintain erosion and sedimentation controls during earth-moving operations.

G. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

H. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.

I. Protect plants; lawns; rock outcroppings; and other features to remain as a portion of final landscaping.

3.3 TREE PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones in a manner that will prevent people from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Architect. Install one sign spaced approximately every 20 feet on protection-zone fencing, but no fewer than four signs with each facing a different direction.

3.4 ROUGH GRADING

A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

B. Do not remove topsoil when wet.

C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.

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E. When excavating through roots, perform work by hand and cut roots with sharp axe.

F. See Section 31 323 “Fill” for filling procedures.

G. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.

H. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

3.5 SOIL REMOVING AND STOCKPILING

A. Remove and dispose of all topsoil from the project site.

B. Stockpile excavated topsoil on site to be re-used on site. Leave excess topsoil within a stockpile in a mowable condition with slopes no steeper than 3H to 1V.
1. Remove and dispose of excess subsoil from site.

C. Stockpiles: Use areas designated on site and protect from erosion.

3.6 FINISH GRADING

A. Verify the following prior to commencing finish grading activities:
1. Verify building and trench backfilling have been inspected.
2. Verify subgrade has been contoured and compacted.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.

C. Where topsoil is to be placed, scarify surface to a depth of 3 inches.

D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.

E. Place topsoil in areas indicated.

F. Place topsoil where required to level finish grade.

G. Place topsoil to thickness indicated.

H. Place topsoil during dry weather.

I. Remove roots, weeds, rocks, and foreign material while spreading.

J. Spread topsoil manually near plants to prevent damage.

K. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

L. Lightly compact placed topsoil.

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3.7 TOLERANCES

A. Top surface of general subgrade shall not vary by more than 0.10 feet from the required elevation.

B. Top surface of subgrade under paved areas shall not vary by more than 0.04 feet from the required elevation.

C. Top surface of finished grade shall not vary by more than 0.10 feet from the required elevation.

3.8 REPAIR AND RESTORATION

A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds. If root damage has occurred, obtain instructions from Engineer as to remedy.

C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.9 FIELD QUALITY CONTROL

A. See Section 31 2323 “Fill” for compaction density testing.

3.10 CLEANING

A. Reshape excess stockpiled topsoil and subsoil. Leave stockpiles in a mowable condition. No steeper than 3H to 1V slope.

B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION 31 2200

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SECTION 31 2316 - EXCAVATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Excavation for site grading and paving elements.
2. Trenching for utilities outside the building to utility main connections.

B. Related Requirements:
1. Document 00 3132 “Geotechnical Report” for bore hole locations and findings of subsurface materials.
2. Section 01 4000 “Quality Requirements” for administration procedures of general testing and inspection required by the work in this Section.
3. Section 31 2200 “Grading” for soil removal from site surface.
4. Section 31 2316.13 “Trenching” for utility trenching and backfilling.
5. Section 31 2316.26 “Rock Removal”.
6. Section 31 2323 “Fill” for fill materials, filling and compacting.

1.3 PROJECT CONDITIONS

A. Verify that survey benchmarks and intended elevations for the work are as indicated.

B. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

C. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

D. Do not commence excavation operations until temporary site fencing and erosion- and sedimentation-control measures are in place.

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that survey benchmarks and intended elevations for the work are as indicated.

3.2 PREPARATION

A. Protect benchmarks and survey control points.

B. Identify required lines, levels, contours, and datum locations.

C. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavation.

D. Protect and maintain erosion and sedimentation controls during earth-moving operations.

E. Protect plants, lawns, rock outcroppings, and other features to remain.

3.3 EXCAVATION

A. Underpin adjacent structures that could be damaged by excavating work.

B. Excavate to accommodate new structures and construction operations.

C. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

D. All excavation and trenching shall conform to current OSHA requirements and standards.

E. Do not interfere with 45 degree bearing splay of foundations.

F. Hand trim excavations for bell and spigot pipe joints and other appurtenant items. Remove or compact all loose soil under pipe to form firm bedding.

G. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. See Section 31 2316.26 “Rock Removal” for removal of larger material.

H. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323 “Fill.”

I. Grade top perimeter of excavation to prevent surface water from draining into excavation.

J. Remove and dispose of excavated material that is unsuitable for re-use from site.

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K. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200 “Grading”.

3.4 FIELD QUALITY CONTROL

A. Testing: See Division 01 for testing requirements

B. Provide for visual inspection of load-bearing excavated surfaces before placement of foundations.

3.5 PROTECTION

A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION 31 2316

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SECTION 31 2316.13 – TRENCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Trenching for utilities at a distance 5’-0” and greater from the building to main connections.
2. Backfilling and compacting of utility trenches.

B. Related Requirements:
1. Document 00 3132 “Geotechnical Report” for bore hole locations and findings of subsurface materials.
2. Section 01 4000 “Quality Requirements” for administration procedures of general testing and inspection required by the work in this section.
3. Section 31 2200 “Grading” for site grading.
4. Section 31 2316 “Excavation” for building and foundation excavation.
5. Section 31 2316.26 “Rock Removal” for removal of rock during excavation.
6. Section 31 2323 “Fill” for fill material classification for backfilling at building, foundations and utility trenches.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

C. Fill: Soil materials used to raise existing grades.

D. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

E. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

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F. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.4 1.04 REFERENCES

A. ASTM International (ASTM): latest editions, unless otherwise specified.
1. ASTM C136 “Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.”
2. ASTM D698 “Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3).”
3. ASTM D1556 “Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.”
4. ASTM D1557 “Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3).”
5. ASTM D2167 “Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.”
6. ASTM D2487 “Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).”
7. ASTM D3017 “Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).”
8. ASTM D4318 “Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.”
9. ASTM D6938 “Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).”

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
1. Samples: 10-pound sample of each type of fill. Submit in air-tight containers to testing laboratory.
2. Material Sources: Submit name of each imported materials source.
3. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.

B. Field Compaction Density Reports

1.6 DELIVERY, STORAGE AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where indicated.
1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

1.7 FIELD CONDITIONS

A. Verify that survey benchmarks and intended elevations for the Work are as indicated.

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B. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during trenching operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

C. Utility Locator Service: Notify utility locator service for area where Project is located before beginning trenching operations.

D. Do not commence trenching operations until temporary site fencing and erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. See Section 31 2323 “Fill” for fill material types.

2.2 SOURCE QUALITY CONTROL

A. See Section 01 4000 “Quality Requirements” for general requirements for testing and analysis of soil material.

B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
   1. If tests indicate materials do not meet specified requirements, change material and retest.
   2. Provide materials of each type from same source throughout the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that survey benchmarks and intended elevations for the Work are as indicated.

3.2 PREPARATION

A. Protect benchmarks and survey control points.

B. Identify required lines, levels, contours, and datum locations.

C. See Section 31 2200 “Grading” for additional requirements.

D. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from damage caused by settlement, lateral movement, undermining, washout excavating equipment, vehicular traffic and other hazards created by trenching.

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E. Protect and maintain erosion and sedimentation controls during earth-moving operations.

F. Protect plants, lawns, rock outcroppings, and other features to remain

3.3 TRENCHING

A. General:
1. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
2. All excavation and trenching shall conform to current OSHA requirements and standards.
3. Excavate trenches to indicated gradients, lines, depths, and elevations.
4. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
5. Do not interfere with 45 degree bearing splay of foundations.
6. Hand trim excavations for bell and spigot pipe joints and other appurtenant items. Remove or compact all loose soil under pipe to form firm bedding.
7. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
8. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. See Section 31 2316.26 “Rock Removal” for removal of larger material.
9. Remove and dispose of excavated material that is unsuitable for re-use from site.
10. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200 “Grading”.

B. Trench Bottoms:
1. For trench bottoms <u>not</u> requiring a bedding Course:
   a. Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
   b. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
   c. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
   d. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
   e. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

2. For trench bottoms requiring a bedding course:
   a. Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.
   b. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

C. Trenches in Tree- and Plant-Protection Zones:

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1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.

3.4 PREPARTION FOR UTILITY PLACEMENT

A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.5 TRENCH BACKFILL

A. Backfill to contours and elevations indicated using unfrozen materials.

B. Fill trench to subgrade or finish grade elevations unless otherwise indicated.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density. Moisture content variance from optimum shall be per the Report of Geotechnical Exploration Program.

E. Pipe Bedding – Fill Type 3: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.

F. General Fill – Fill Type 1: Place and compact material in equal continuous layers not exceeding 6 inches compacted depth.

G. Slope grade away from building minimum 3 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

H. Correct areas that are over-excavated. Fill with acceptable materials and compact to requirements outlined within the Report of Geotechnical Exploration Program.

I. Compaction Density: Unless otherwise specified or indicated, compaction density shall follow the recommendations outlined in the Geotechnical Report.

J. Reshape and re-compact fill subjected to vehicular traffic.

3.6 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 0.10 feet from required elevations.

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B. Top Surface of Backfilling Under Paved Areas: Plus or minus 0.04 feet from required elevations.

3.7 FIELD QUALITY CONTROL

A. See Section 014000 “Quality Requirements”, for general administration procedures for field inspection and testing requirements specified herein.

B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D3017, or ASTM D6938.

C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 (“Standard Proctor”)

D. If tests indicate work does not meet specified requirements, remove work, replace and retest. Contractor shall be responsible for all costs associated with additional testing required as a result of failed tests and/or substandard work.

E. Frequency of Tests: One compaction test per 100 feet (horizontal) of trench per 18 inches of backfill and a minimum of one (1) test per service line, between 2 feet above pipe to 1 foot below finished grades, or as directed by Engineer.

3.8 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION 31 216.13

Rebid Documents

SECTION 31 2316.26 – ROCK REMOVAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Removal of rock discovered during excavation.

B. Related Requirements:
   1. Document 00 3132 “Geotechnical Report” for bore hole locations and findings of subsurface materials.
   2. Section 31 2200 “Grading”.
   3. Section 31 2316 “Excavation”.
   4. Section 31 2323 “Fill” for fill material classification.

1.3 DEFINITIONS

A. Rock: All solid mineral material of a size that cannot be removed without drilling or blasting. All solid mineral material of a size not allowed to be placed as backfill or fill

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify site conditions and note subsurface irregularities affecting work of this section.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum.

3.3 ROCK REMOVAL

A. Excavate and remove rock by mechanical methods only; use of explosives is prohibited.

Rebid Documents

1. If rock cannot be removed by other than the use of explosives, promptly notify the Engineer

B. Mechanical Methods: Drill holes and utilize expansive tools, wedges, or mechanical disintegration compound to fracture rock.

C. Form level bearing at bottom of excavations.

D. Remove shaled layers to provide sound and unshattered base for footings and foundations.

E. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter

F. Remove excavated materials and stockpile on site as indicated.

G. Correct unauthorized rock removal per direction by Engineer.

3.4 FIELD QUALITY CONTROL

A. Provide for visual inspection of foundation bearing surfaces and cavities formed by removed rock.

END OF SECTION 31 2316.26

Rebid Documents

SECTION 31 2323 – FILL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Filling, backfilling and compacting to bring the site to subgrade or finished grade.
2. Backfilling and compacting for utilities outside the building to utility main connections.
3. Filling holes, pits, and excavations generated as a result of removal operations.

B. Related Requirements:
1. Document 00 3132 “Geotechnical Report” for bore hole locations and findings of subsurface materials.
2. Section 01 4000 “Quality Requirements” for administration procedures of general testing and inspection required by the Work in this section.
3. Section 31 1000 "Site Clearing" for site stripping, grubbing, stripping topsoil, and removal of above- and below-grade improvements and utilities.
4. Section 31 2200 “Grading” for site grading and removal and handing of soil to be re-used.
5. Section 31 2316 “Excavation” for removal and handing of soil to be re-used.
6. Section 31 2316.13 “Trenching” for excavation of utility trenches,
7. Section 31 2316.26 “Rock Removal” for removal of rock during excavating.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Fill: Soil materials used to raise existing grades.

1.4 REFERENCE STANDARDS

A. American Society for Testing and Materials International (ASTM): latest editions, unless otherwise specified.
1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

Rebid Documents

2. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
   ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
7. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
8. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Samples: 10-pound sample of each type of fill. Submit in air-tight containers to testing laboratory.
   2. Material Sources: Submit name of each imported materials source.
   3. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
   4. Compaction Density Reports.

1.6 DELIVERY, STORAGE AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where indicated.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. Fill Type 1: General Fill
   1. Material excavated on site.
      a. Follow recommendations of Geotechnical Evaluation Report for acceptable materials.

B. Fill Type 2: Granular Fill

Rebid Documents

1. Coarse aggregate, conforming to the State of North Dakota Department of Transportation standard for Class 5 Aggregate Base: to be used as foundation fill and as aggregate base.

C. Fill Type 3: Utility Bedding
   1. Granular material graded in Accordance with ASTM C136, with the following limits.
      a. 1/2" sieve: 100 percent passing
      b. 1” sieve: 90 to 100 percent passing
      c. 3/4" sieve: 80 to 100 percent passing
      d. No. 4 sieve: 30 to 90 percent passing
      e. No. 30 sieve: 10 to 60 percent passing
      f. No. 200 sieve: 0 to 15 percent passing

   2. Sand or gravel material excavated which is acceptable to the Engineer.
   3. Pipe bedding shall conform to and be installed per manufacturers requirements.

D. Fill Type 4: Topsoil
   1. See Section 312200 “Grading”.

E. Fill Type 5: Drainage Aggregate
   1. Aggregate material shall meet the requirements of NDDOT Standard Specifications for Class 2 or Class 43 aggregate.

2.2 ACCESSORIES

A. Non-Woven Geotextile Fabric: For use as separation fabric.
   1. Non-woven separation fabric shall be US180NW manufactured by US Fabrics, Inc., MIRAFI 170N manufactured by Propex Geosolutions, or approved equal.

2.3 SOURCE QUALITY CONTROL

A. See Section 01 400 “Quality Requirements” for general requirements for testing and analysis of soil material.

B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
   1. If tests indicate materials do not meet specified requirements, change material and retest.
   2. Provide materials of each type from same source throughout the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that survey benchmarks and intended elevations for the Work are as indicated.

B. Identify required lines, levels, contours, and datum locations.

C. See Section 31 2200 “Grading” for additional requirements.

Rebid Documents

3.2 PREPARATION

A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.3 FILLING

A. Fill to contours and elevations indicated using unfrozen materials.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Install geotextile fabric where indicated on plans.

F. Pipe Bedding: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth. Bedding shall extend 6” below and 6” above buried utilities, or per manufacturer’s requirements.

G. General Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.

H. Slope grade away from building minimum 3 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

I. Correct areas that are over-excavated.
   1. Other areas: Use general fill, flush to required elevation, compact to requirements outlined within the Report of Geotechnical Exploration Program.

J. Compaction Density Unless Otherwise Specified or Indicated: shall be per the recommendations outlined within the Report of Geotechnical Exploration Program.

K. Reshape and re-compact fills subjected to vehicular traffic.

3.4 TOLERANCES

A. Top Surface of General Filling: Plus or minus 0.10 feet from required elevations.

B. Top Surface of Filling Under Paved Areas: Plus or minus 0.04 feet from required elevations.

Rebid Documents

3.5 FIELD QUALITY CONTROL

A. Comply with Section 014000 “Quality Requirements” for general requirements for field inspection and testing.

B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D3017, or ASTM D6938.

C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 (“Standard Proctor”).

D. If tests indicate work does not meet specified requirements, remove work, replace and retest. Contractor shall be responsible for all costs associated with additional testing required as a result of failed tests and/or substandard work.

E. Frequency of Tests: Provide one passing density test for every 2500 square feet of embankment per 24 inches of vertical feet of fill which equals one test per each 185 cubic yards of embankment for areas other than trenches.

F. Prior to placing aggregate base course, the subgrade shall be proof-rolled by the Contractor using a minimum gross weight of 44,000 lbs on a tandem axle truck with

G. four tires per axle before placing and/or spreading operations. Any ruts or soft yielding areas shall be corrected at the Contractor’s expense before the next course of material is placed thereon.

3.6 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION 31 2323

Rebid Documents

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Rebid Documents

SECTION 32 1123 – AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Aggregate base courses.
2. Paving aggregates.

B. Related Requirements:
1. Document 00 3132 “Geotechnical Data” and accompanying Geotechnical Report.
2. Section 31 200 “Grading”.
3. Section 31 2316.13 “Trenching” for compacted fill over utility trenches under base courses.
4. Section 31 2323 “Fill”.
5. Section 32 1216 “Asphalt Paving” for binder and finish asphalt courses.
6. Section 32 1313 “Concrete Paving” for finishes on concrete surface courses.
7. Section 33 0513 “Manholes and Structures”.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO) latest edition, unless otherwise specified.
1. AASHTO M 147 “Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses”.
2. AASHTO T 180 “Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop”.

B. American Society for Testing and Materials International (ASTM) latest edition unless otherwise specified.
1. ASTM C136 “Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates”.
2. ASTM D698 “Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3))”.
3. ASTM D1556 “Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method”.
4. ASTM D1557 “Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3))” .
5. ASTM D2167 “Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method”.

Rebid Documents

6. ASTM D2487 “Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)”.
7. ASTM D3017 “Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)”.
8. ASTM D4318 “Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils”.
9. ASTM D6938 “Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)”.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 013300 “Submittal Procedures”.
1. Samples: 10 lb. sample of each type of fill; submit in air-tight containers to testing laboratory.
2. Materials Sources: Submit name of imported materials source.
3. Aggregate Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
4. Field Compaction Density Reports.

1.5 DELIVERY, STORAGE AND HANDLING

A. When necessary, store materials on site in advance of need.

B. Aggregate Storage, General:
1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aggregate materials shall meet the requirements of North Dakota Department of Transportation (NDDOT) Standard Specifications for the class of aggregate specified on the plan or elsewhere herein.

B. Unless otherwise stated all aggregate base course shall be North Dakota Department of Transportation (NDDOT) Class 5.

C. Geotextile Separation Fabric: See Section 312323 “Fill”.

2.2 SOURCE QUALITY CONTROL

A. See Section 01 4000 “Quality Requirements” for general requirements for testing and analysis of aggregate materials.

Rebid Documents

B. Where aggregate materials are specified using ASTM D2487 classification, test and analyze samples for compliance before delivery to site.

C. If tests indicate materials do not meet specified requirements, change material and retest.

D. Provide materials of each type from same source throughout the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that survey benchmarks and intended elevations for the work are as indicated.

B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.2 PREPARATION

A. Subgrade:
1. The subgrade shall be compacted by approved compaction equipment. Approved compaction equipment shall include sheepsfoot rollers, pneumatic packers, mechanical packers, mechanical rammers, vibratory equipment, trucks, tractors, scrapers, motor graders, and all other types of equipment used in excavating, transporting, and placing subgrade.
2. Subgrade preparation depths specified on plans or special provisions or the minimum of 6 inches required below the surface of the finished subgrade shall be compacted to the recommendations outlined within the Geotechnical Report. The surface after compaction shall be true to line, grade, and cross section.
3. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
4. Prior to placing aggregate base course, the subgrade shall be proof rolled by the Contractor using a minimum gross weight of 44,000 lbs. on a tandem axle truck with four tires per axle before placing and/or spreading operations. Any ruts or soft yielding areas shall be corrected at the Contractor’s expense before the next course of material is placed thereon.
5. Non-woven Geotextile Separation Fabric shall be installed above subgrade where indicated prior to placement of aggregate base course.
6. Do not place aggregate on soft, muddy, or frozen surfaces.
7. Compaction control tests shall be performed at a rate of one test per 500 square yards of surface area per lift.

3.3 INSTALLATION

A. Spread aggregate over prepared substrate to a total compacted thickness as indicated on the Drawings.

B. Place aggregate in maximum 6-inch layers and compact to 100 percent of maximum dry density.

Rebid Documents

C. Level and contour surfaces to elevations and gradients indicated.

D. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.4 TOLERANCES

A. Flatness: Maximum variation of 1/2 inch measured with 10-foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation From Design Elevation: Within 1/2 inch.

3.5 FIELD QUALITY CONTROL

A. See Section 014000 “Quality Requirements” for general requirements for field inspection and testing.

B. Compaction density testing shall be performed on compacted aggregate base course in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.

C. Results Shall be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 (“Standard Proctor”)

D. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

E. Frequency of Tests:
   1. The Owner shall engage an independent soil testing laboratory to determine the soil proctors and perform the required compaction testing. The Contractor shall coordinate with the Owner’s independent soil testing laboratory for scheduling all required testing. Additional testing required due to failed testing and/or substandard work shall be done at no cost to the Owner.
   2. Compaction control tests shall be performed at a rate of one test per 500 square yards of surface area per lift.

F. Proof roll compacted aggregate at surfaces with a tandem axle truck with a minimum gross weight of 44,000 lbs. and four tires per axle. Any ruts or soft yielding areas shall be corrected at the Contractor’s expense before the next course of material is placed thereon.

3.6 CLEANING

A. Remove unused materials from the project site unless indicated otherwise. Clean areas used for storage of materials. Grade storage areas to prevent standing surface water.

Rebid Documents

B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION 32 1123

Rebid Documents

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Rebid Documents

SECTION 32 1216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Bituminous concrete paving.

B. Related Requirements:
   1. Section 01 2300 “Alternates” for descriptions of alternates affecting the Work of this Section.
   2. Section 01 4000 “Quality Requirements” for administration procedures of general testing and inspection required by the work in this Section.
   3. Section 31 2200 “Grading” for preparation of site for paving and base.
   4. Section 31 2323 “Fill” for compacted subgrade for paving.
   5. Section 32 1123 “Aggregate Base Courses”.
   6. Section 32 1313 "Concrete Paving" for concrete pavement and for separate concrete curbs, gutters, and driveway aprons.
   7. Section 32 1723.13 “Painted Pavement Markings.”
   8. Section 33 0513 “Manholes and Structures” for manholes, manhole frames, gutter drainage grates, covers and other frame placement by this Section.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO): latest edition, unless otherwise specified.
   1. AASHTO T 2 – Sampling of Aggregates.
   2. AASHTO T 11 – Materials Finer than No. 200 Sieve by Washing.
   3. AASHTO T 27 – Sieve Analysis of Fine and Coarse Aggregates.
   4. AASHTO T 209 – Standard Method of Test for Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures.

B. American Society for Testing and Materials International (ASTM): latest editions, unless otherwise specified.
   1. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
   2. ASTM D2172 – Standard Test Methods for Quantitative Extraction of Asphalt Binder from Asphalt Mixtures.

Rebid Documents

3. ASTM D2950 – Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.

C. North Dakota Department of Transportation (NDDOT) Standard Specification for Road and Bridge Construction, latest edition, unless otherwise specified.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with NDDOT Standard Specifications.

B. Provide Engineer with Manufacturers written certification that each transport load of asphalt cement (A.C.) that meets the requirements of the specification.

C. Mixing Plant: Conform to NDDOT Standard Specifications.

D. Obtain asphaltic mix materials (aggregate and bitumen) from same source throughout entire project. Provide new mix design any time a change in source is made.

1.5 REGULATORY REQUIREMENTS

A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of applicable codes for asphalt paving work on public property.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
1. Minimum ambient air or surface temperature of 40 deg F or less.
2. Frozen or wet surfaces.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aggregate for Mix: Conform to the requirements of Section 430.03B of the NDDOT Standard Specifications.

B. Asphalt Cement: ASTM D946/D946M and in accordance with the requirements of Section 818 of the NDDOT Standard Specifications (PG 58-28).

C. Tack Coat: Emulsified asphalt, SS-1H or CSS-1H emulsion.

2.2 ASPHALT PAVING MIXES AND MIX DESIGN

A. Use dry material to avoid foaming. Mix uniformly.

Rebid Documents

B. Superpave FAA 42.

C. Submit proposed mix design of each class of mix for review prior to beginning of work.

2.3 SOURCE QUALITY CONTROL

A. Test mix design and samples in accordance with Section 430 of the NDDOT Standard Specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that compacted subgrade and granular base is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.2 PREPARATION – TACK COAT

A. Apply tack coat in accordance with NDDOT Standard Specifications.

B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 0.1 gal/sq yd.

C. Apply tack coat to contact surfaces of curbs and gutters.

D. Coat surfaces of manhole and catch basin frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

E. Sweep and clean surface to be tack coated throughout the course of operations.

F. Do not apply more tack coating than can be covered by the same day's operation.

3.3 ASPHAL PAVEMENT PLACEMENT

A. Place asphalt within 24 hours of applying primer or tack coat.

B. Place asphalt in lifts between 1.5 and 3.0 inches of compacted thickness. Leveling courses may be placed with a compacted thickness less than 1.5 inches.

C. Do not place bituminous mixture on a damp pavement surface, on frozen roadbed, or when weather conditions prevent proper handling and finishing of the bituminous mixtures.

D. Use bituminous pavers to spread and finish mixtures to the required section leaving the mixture uniformly dense, smooth, and free from irregularities. In locations where it is impractical to use normal laydown equipment, other methods may be used if approved by the Engineer.

Rebid Documents

E. Remove and replace material that is visibly segregated. If a paver placed the material, remove the segregated material to the full width of the paver. If the material was placed by hand, remove the full area of segregate material, plus an addition 6 inches around the entire segregated area.

F. Place pavement uniformly against the surface or edge of curb, gutters, manholes or structures, and a such an elevation so that the pavement is 1/4 inch higher than the edge of the structure after the pavement has been compacted.

G. Adjust any casting that is not 1/4 inch below the top of the finished surface. Adjust casting upward if greater than 1/4 inch below the top of the finished surface.

H. Maintain a mix laydown temperature of no less than 230 degrees F when ambient temperature is 60 degrees F or higher. When ambient temperature is below 60 degrees F, place mix with a minimum laydown temperature of 250 degrees F.

I. Allow asphalt lift to be cool to 130 degrees F before placing subsequent lift.

J. Compact pavement in accordance with Sections 430.04H and 430.04L of the NDDOT Standard Specifications.

K. Tack all joints and coordinate vertical construction joints in successive courses so the joints do not fall on the same vertical plane.

3.4 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce thickness indicated within the following tolerances:
   1. Flatness: Maximum variation of 3/8 inch measured with 10-foot straight edge.
   2. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.
   3. Variation from True Elevation: Within 1/4 inch.

3.5 FIELD QUALITY CONTROL

A. See Section 01 4000 – Quality Requirements, for general requirements for quality control.

B. The Owner shall engage an independent testing laboratory to perform the required testing. The Contractor shall coordinate with independent testing laboratory for scheduling all required testing.
   1. Additional testing required due to failed testing and/or substandard work shall be done at no cost to Owner.

C. Compaction density testing shall be performed on compacted asphalt lifts in accordance with ASTM 2950.
   1. The average asphalt density compared to the daily maximum theoretical density determined in accordance with AASHTO T 209 shall be a minimum of 91%.
   2. Compaction control test shall be performed at a rate of one test per 500 square yards of surface area per lift.

Rebid Documents

D. Dry belt samples shall be taken in accordance with AASHTO T 2 and tested for gradation per AASHTO T 27 and fine aggregate angularity per AASHTO T 11.
   1. Samples shall be taken and tested for each increment of 1,000 tons of bituminous pavement produced with a minimum of one sample per project.

E. Bituminous mixture sample shall be taken in accordance with AASHTO T 2.
   1. Test bituminous mixture sample for Theoretical Maximum Specific Gravity AASHTO T 209, Bulk Specific Gravity per AASHTO T 166 and Air Voids.
   2. Test bituminous mixture to determine the bitumen content by extraction in accordance with ASTM D2172. Gradation of the mineral aggregate shall also be determined after the extraction is made.
   3. Each test shall be taken in increments of 1000 tons of bituminous pavement produced with a minimum of one sample per project.

F. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

3.6 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury until surface temperature is less than 140 degrees F (60 degrees C).

B. Do not allow traffic on the completed surfacing until the mat has been compacted and has cooled sufficiently to prevent damage.

C. Damage to the asphalt pavement due to inadequate protection shall be repaired by the Contractor to the satisfactions of the Engineer at no cost to the Owner.

END OF SECTION 32 1216

Rebid Documents

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Rebid Documents

SECTION 32 1313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes Concrete Paving Including the Following:
1. Driveways.
2. Access Roads.
3. Parking lots.
4. Integral curbs
5. Gutters.
6. Walks.

B. Related Requirements:
1. Section 31 200 “Grading” for preparation of site for paving and base.
2. Section 31 23223 “Fill” for compacted subgrade for paving.
3. Section 32 1123 “Aggregate Base Courses
4. Section 33 0513 “Manholes and Structures” for manholes and frames, gutter drainage grates and frames for placement by this Section.

1.3 REFERENCE STANDARDS

A. American Concrete Institute (ACI): latest editions, unless otherwise specified.
1. ACI 117 “Standard Specifications for Tolerance for Concrete Construction and Materials”.
2. ACI 301 “Specifications for Structural Concrete for Buildings”.
3. ACI 302.1R “Guide for Concrete Floor and Slab Construction”.
4. ACI 304R “Guide for Measuring, Mixing, Transporting, and Placing Concrete”.
5. ACI 305R “Hot Weather Concreting”.
6. ACI 306R “Cold Weather Concreting”.
7. ACI 308R “Guide to Curing Concrete”.
8. ACI 318 “Building Code Requirements for Structural Concrete and Commentary”.
9. ACI 347 “Guide to Formwork for Concrete”.

B. American Society for Testing and Materials International (ASTM): latest editions, unless otherwise specified.
1. ASTM C33 “Standard Specification for Concrete Aggregates”.
2. ASTM C39 “Standard Test Method for Compressing Strength of Cylindrical Concrete Specimens”.

Rebid Documents

3. ASTM C143 “Standard Test Method for Slump of Hydraulic-Cement Concrete”.
4. ASTM C150 “Standard Specification for Portland Cement”.
5. ASTM C1059 “Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete”.
6. ASTM C1107 “Standard Specification for Packaged Dry, Hydraulic Cement Grout”.
7. ASTM D1751 “Specifications for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction”.

1.4 SUBMITTALS

A. See Section 01 3300 “Submittal Procedures”.

B. Product Data: For each type of product.
1. Joint filler.
2. Admixtures.
3. Curing compound.

C. Concrete Batches
1. Concrete Supplier shall provide Owner’s on-site representative with an electronically generated load ticket for each batch of concrete delivered to the site. Ticket shall include at a minimum the following:
a. Class of material being batched.
b. Begin batch time and quantities of materials added.
c. Quantities of materials added, included coarse and fine aggregate, water, cement and admixtures, and target quantities of materials to be added per mix design.
d. Time cement added to water.
e. End batching-mixing time.
f. Drum revolutions for batching/mixing.
g. Time arrived on site, time begin pour, and time end pour.
h. Drum revolutions upon arrival on site, at begin pour, and at end pour.

PART 2 - PRODUCTS

2.1 PAVING ASSEMBLIES

A. Concrete sidewalks, pavements, valley gutters, stairs, curb and gutter, and all other miscellaneous concrete, shall be: 4,500 psi at 28 days, unless specified elsewhere. Thickness, section and reinforcement as indicated on plans.

2.2 STEEL REINFORCEMENT

A. Reinforcing Steel: ASTM A615 Grade 60; deformed billet steel; unfinished finish.

B. Steel Welded Wire Reinforcement: Plain type, ASTM A185; in flat sheets; unfinished. Mesh size and gauge as indicated on the Drawings.

C. Dowels: ASTM A615 Grade 60; deformed billet steel; unfinished finish.

Rebid Documents

2.3 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project.

B. Portland Cement: ASTM C150/C150M, gray portland cement Type II or Type IIA.

C. Fly Ash: The Contractor shall have the option of substituting fly ash for Portland cement in the concrete mixture up to a maximum of 25 percent by weight.
1. Each source of fly ash shall be approved by the Engineer prior to use.
2. Fly ash shall conform to the requirements of ASTM C311, ASTM C618, and ASTM C684, Class C fly ash, or Class F fly ash.
3. Class C and Class F fly ash chemical and physical specifications shall be as follows:

Chemical Requirements		
Description	Class C	Class F
Silicon dioxide (SiO_2) plus aluminum oxide (Al_2O_3) plus iron oxide (Fe_2O_3), min %	50.0	66.0
Sulfur Trioxide (SO_3), max %	5.0	5.0
Moisture content, max %	3.0	3.0
Loss on ignition, max %	5.0	5.0
Available alkalis, as Na_2O, max %	1.5	1.5

Physical Requirements		
Description	Class C	Class F
Fineness: Amount retained with wet sieve (No. 325 sieve), max %	34.0	34.0
Pozzolanic activity index: With Portland Cement, at 28 days, min, percent of control	75.0	75.0
Water requirement, max %	10.0	105.0
Soundness: Autoclave expansion or contraction, max %	0.8	0.8
Uniformity requirements: The specific gravity and fineness of individual samples shall not vary from the average established by the 10 preceding test, or by all preceding tests if the number is less than 10, by more than: Specific gravity, max variation from average, %	5.0	5.0
Available alkalis, as Na_2O, max %	5.0	5.0

Rebid Documents

Supplementary Optional Physical Requirements		
Description	Class C	Class F
Increase of drying shrinkage of mortar bars at 28 days, max %	0.03	66.0
Uniformity requirements: In addition when air-entraining concrete is specified, the quantity of air-entraining agent required to produce an air content of 18.0 Vol % of mortar shall not vary from the average established by the 10 preceding tests or by all preceding tests if less than 10, by more than, 1%	20.0	20.0
Reactivity of Cement Alkalis: Mortar expansion at 14 days, mix %	100	100

4. Fly ash that fails to meet the requirements of the tests shall not be used unless specified otherwise by the Engineer.
5. A complete chemical and physical analysis must be submitted to the Engineer for approval Fourteen (14) days prior to use. A recent complete chemical and physical analysis shall be submitted each month during its use after approval.
6. A test result of loss on ignition and amount retained on No. 325 wet sieve must accompany every 25 tons delivered, and these results must be on file at the ready-mix producer's office. Random checks and samples shall be taken to ensure testing accuracy. Any extensive error in test results could cause the materials to be discontinued.
7. No fly ash will be allowed which contains oil residue or chemical pollution control contaminates.
8. Each source of fly ash shall be approved by the Engineer prior to use. If more than one source of fly ash is used on a project, each shall be stored and used separately.
9. Fly ash shall not be substituted for portland cement on any work after September 15 of any calendar year, unless requested by the Contractor and approved by the Engineer.
10. The Engineer shall have the right to sample and test the fly ash as deemed necessary during the construction season. The fly ash shall be tested in accordance with ASTM C311.

D. Coarse Aggregate: Except as noted herein, the coarse aggregate used shall conform to the requirements of ASTM C33, Class 4M.
   1. Coarse aggregate shall consist of gravel or broken stone composed of strong, hard, durable, uncoated pebbles or rock fragments washed clean and free from injurious amounts of shale, coal, clay lumps, soft fragments, dirt, glass, organic, or any other deleterious substances.
   2. Coarse Aggregate shall be graded from coarse to fine within the limits in the following table, when tested in conformity with ASTM C136. If the coarse aggregate size is not designated in the contract, either gradation may be used, but once adopted, no change in gradation will be made during the course of the work.

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Coarse Aggregate Size		
Sieve Size	% by Weight Passing	% by Weight Passing
1-1/2”	100	---
1”	95-100	100
3/4"	---	90-100
1/2"	25-60	---
3/8”	---	20-55
No. 4	0-10	0-10
No. 8	0-5	0-5
No. 200	0-1	0-1
Shale*	0-1	0-1
Iron oxide, coal and soft particles*	0-5	0-5
*Maximum % by weight of the plus No.4 fraction.		

E. Fine Aggregate: Except as noted herein, the fine aggregate shall conform to the requirements of ASTM C 33.

1. Fine aggregate shall be natural sand, consisting of hard, strong, sharp, uncoated grains, free of dust, lumps, mica, shale, organic matter, or other deleterious substances.
2. Fine aggregate shall be graded within the limits of the following table when tested in conformity with ASTM C 136.

Fine Aggregate Size			
Mortar Sand		Concrete Sand	
Square Mesh Sieve Size	% by Weight Passing	Square Mesh Sieve Size	% by Weight Passing
No. 4	100	3/8”	100
No. 8	95-100	No. 4	95-100
---	---	No. 16	45-80
---	---	No. 50	10-30
No. 100	25 (max)	No. 100	0-10
No. 200	10 (max)	No. 200	0.3

3. The quality, sampling, and testing of mortar sand for use in cement mortar shall conform to ASTM C144.

F. Water: Water used in mixing concrete shall be clean and shall not contain deleterious amounts of acids, alkalis, or organic materials. Water shall be subject to test and approval by the Engineer.

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G. Admixtures: Substances other than cement, water, aggregates, and air entraining agents shall not be used in the concrete except as otherwise required or when permitted in writing by the Engineer.
   1. Air-entraining admixtures shall conform to ASTM C260.
   2. Unless otherwise provided in the plans or special provisions, no reduction will be made in the specified cement content of the concrete mixture by reason of using any admixtures.
   3. Admixtures containing calcium chloride must be preapproved and conform to ASTM D98.
   4. No admixture shall be used, which interferes with proper control of the entrained air content of concrete.
   5. Permission to use any admixtures may be withdrawn at any time if the properties of the admixture are not uniform or if satisfactory results are not obtained.
   6. Should the Contractor request and obtain permission to use admixtures for its own benefit, no additional compensation will be allowed for the cost of furnishing the admixtures and incorporating them into the concrete mixture.

H. Macro Synthetic Structural Fibers: Macro synthetic structural fibers shall conform to ASTM 1116/C 1116M, Type III. Dosage shall be as specified on the Drawings.

2.4 CONCRETE MIXTURES

A. Designs and tests for each concrete mix to be used under the contract shall be made using aggregates which have been approved for this work.
   1. Except as otherwise specified, mixes shall be designed in accordance with ACI 613 to attain the required strengths using the various slumps (including the maximum allowable), the various size aggregates expected to be used in the work, and the admixtures as called for by the Engineer.
   2. The concrete mixes shall be designed by an independent testing laboratory, approved by the Engineer and shall be incidental to other items.

B. Advance tests of each of the proposed mixes shall be made in accordance with ASTM C192.
   1. A set of six (6) standard 6-inch or 4-inch diameter compression test cylinders shall be made for each mix design.
      a. Three (3) cylinders each shall be tested for compressive strength at each of the following intervals: at 7 days and at 28 days.

   2. The high early-strength concrete mix design shall have nine (9) standard 6-inch or 4-inch diameter compression test cylinders made.
      a. Three (3) cylinders shall be tested at each of the following intervals: 3 days, 7 days, and 28 days.

   3. Concrete tested shall contain all required and/or proposed admixtures and in addition to the testing required by ASTM C192 shall be tested for air content by ASTM C231.

   4. The advance mix designs and the results of cylinders made from advance mix designs are required before work of concrete placing is started. Tests for aggregates as required in Section 321313, Article 2.3 may be made as part of these tests if suitably referenced on the reports which shall be issued at 7 and 28 days.

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C. Two (2) additional aggregate samples are to be submitted throughout the construction season to an independent testing laboratory and shall be in accordance with Section 321313, Article 2.3.

D. The contractor shall pay for all advance design and testing as required per this section, including tests for aggregates and flexural strength.

E. The above tests shall be repeated, if necessary, due to changes in materials or unsatisfactory results.

F. The mix design and the advance testing of aggregates specification may be waived at the request of the Contractor and with the Engineer's approval if a mix design is being produced by an established ready-mix plant with suitable records of mixes and testing, and if the plant certifies that it will continue to use the same materials involved in the recorded testing.

2.5 CONCRETE MIXING

A. Mixing shall be per North Dakota Department of Transportation (NDDOT) standard specifications.

2.6 ACCESSORIES

A. Expansion Joint Materials
1. Pre-molded Bituminous Fiber Expansion Joint Material: Used in expansion joints and shall consist of pre-formed strips of one continuous piece per joint which have been formed from cane or other suitable fibers of cellular nature securely bound together and uniformly impregnated with a suitable asphaltic binder.
   a. Bituminous expansion joint materials shall conform to ASTM D 1751.
   b. Thickness: 1/2".

2. Flexible Cellular Expansion Joint Material: Closed cell polyethylene expansion joint filler
   a. Polyethylene expansion joint materials shall conform to ASTM D1056.
   b. Thickness: 1/2".

B. Joint Sealing Material: Joint sealing material shall conform to the following:

Type of Sealant	ASTM or NDDOT Specification
Hot-poured, elastic	D1190
Hot-poured, Polymeric asphalt based	D3405 or NDDOT 826.02A, Type 2
Hot-poured, elastomeric	D3406
Cold applied elastomeric	C920
Preformed polychloroprene elastomeric	D2628 (6 celled)
Silicone Sealant	D5893 or NDDOT 826.02B, Type 5

C. Non-Shrink Cementitious Grout: Premixed compound consisting of no-metallic aggregate, cement, water reducing and plasticizing agents.

D. Non-Woven Geotextile Fabric: See Section 312323 "Fill".

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E. Curing Compounds: Curing compounds shall conform to ASTM C309, Type 2 white pigmented.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify compacted subgrade and granular base is acceptable and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.2 SUB-BASE

A. A.See Section 321123 “Aggregate Base Course” for construction of base course for work of this Section.

3.3 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Coat surfaces of manhole and catch basin frames with oil to prevent bond with concrete pavement.

3.4 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient in accordance with ACI 347.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure formwork during concrete placement.

3.5 REINFORCEMENT

A. Place reinforcement as indicated on the Drawings.

3.6 CONCRETE PLACEMENT

A. Place concrete in accordance with ACI 304R.

B. In accordance with ACI specifications, concrete that has not been discharged within 90 minutes from when cementitious materials were first added to water, and/or after drum revolutions have exceeded 300 from when cementitious materials were first added to water, shall be rejected and

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shall not be incorporated into the work. No payment shall be made for concrete that has been rejected for non-conformance with the aforementioned.

C. Do not place concrete when base surface is saturated or ponding water.

D. Ensure reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.

E. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

3.7 JOINTS

A. Align curb, gutter, and sidewalk joints.

B. Place 1/2-inch wide expansion joints to separate paving from vertical surfaces and other components
   1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
   2. Secure to resist movement by wet concrete.

C. Provide scored joints:
   1. Between sidewalks and curbs.
   2. Between curbs and pavement.

D. Provide keyed joints as indicated.

E. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

F. Joint spacing:
   1. Joint spacing shall typically be spaced at one and a half (1.5) times the thickness of pavement (measured in inches) in feet. Example 4” concrete shall have a typical joint spacing of 6 feet.
   2. In no case shall the joint spacing exceed two (2) times the thickness of pavement (measured in inches) in feet. Example 4” concrete shall have a maximum joint spacing of 8 feet.
   3. Joint spacing shall be per the Drawings. Where not explicitly indicated, a minimum spacing of 4 feet shall be used.

3.8 FINISHING

A. Area Paving: Light broom, texture perpendicular to pavement direction.

B. Sidewalk Paving: Light broom, texture perpendicular to pavement direction of travel with troweled and radiused edge 1/4 inch radius.

C. Curb and Gutters: Light broom, texture parallel to pavement direction.

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D. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.9 TOLERENCES

A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

B. Maximum Variation from True Position: 1/4 inch.

3.10 FIELD QUALITY CONTROL

A. Owner shall obtain an independent testing agency to perform field quality control tests, as specified in Division 01. Contractor to coordinate with the Owner's independent testing agency for scheduling required testing.
   1. Provide free access to concrete operations at project site and cooperate with appointed firm.
   2. Contractor shall pay for and provide proposed mix design, to be submitted to Engineer for review prior to commencement of concrete operations.
   3. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
   4. Contractor shall complete all additional tests and inspections required due to failing work and/or test at no cost to the Owner.

B. Compressive Strength Tests: ASTM C39. For each test, mold and cure four concrete test cylinders. At a minimum, obtain test samples from the first load of every pour and for every 50 cu yd of each class of concrete placed thereafter.
   1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
   2. The cylinders comprising one set will be made from the same sample of concrete and one cylinder tested at seven days, and three at 28 days.

C. Slump Testing: Slump tests shall be performed in accordance with ASTM C143 for each sample taken. The maximum allowable slump of the concrete mix shall be 4 inches.

D. Air Entrainment: Air content in accordance with ASTM C231 shall also be tested and recorded for each sample of concrete used in making test cylinders. The air content shall fall within the range of 5 percent to 7 percent.

E. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

F. Test Results: The testing agency shall report test results in writing to the Engineer within 24 hours of test.

3.11 DEFECTIVE CONCRETE

A. Defective Concrete:

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1. Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
2. Concrete failing to meet specifications for compressive strength, air entrainment, consistency (slump) and/or composition.
3. Concrete that is excessively honey-combed or contains embedded debris.
4. concrete that is spalling, experiencing surface delamination, and/or any other form of premature degradation.

B. Any concrete not meeting the requirements of this Section 321313 “Concrete Paving”, or any other requirements of the contract documents shall be replaced by the Contractor to the satisfaction of the Engineer at no cost to the Owner. Replaced concrete shall be tested at the same schedule as other concrete such testing shall be incidental.

3.12 REPAIR AND PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian or vehicular traffic over pavement for 7 days minimum after finishing or until concrete has reached 75 percent of the specified 28-day compressive strength.

END OF SECTION 32 1313

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Rebid Documents

SECTION 32 1723.13 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Painted markings applied to asphalt paving and concrete surfaces including parking bays, crosswalks, handicapped symbols and curb markings.

B. Related Requirements:
   1. Section 32 1216 “Asphalt Paving”.
   2. Section 32 1313 “Concrete Paving”.

1.3 REFERENCES

A. FS TT-P-1952 - Paint, Traffic Black, and Airfield Marking, Waterborne.

B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com.

C. FHWA MUTCD - Manual on Uniform Traffic Control Devices for Streets and Highways; U.S. Department of Transportation, Federal Highway Administration; http://mutcd.fhwa.dot.gov; current edition.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3000 “Submittal Procedures”:
   1. Product Data: Include technical data and tested physical and performance properties for each product.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver paint in containers of at least 5 gallons accompanied by batch certificate.

B. Store products in manufacturer's unopened packaging until ready for installation.

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C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.6 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 PAVEMENT-MARKING PAINT

A. Line and Zone Marking Paint: MPI No. 97 Latex Traffic Marking Paint; color(s) as indicated.
1. Parking Lots: Yellow.
2. Handicapped Symbols: Blue.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that pavement-marking substrate is dry and in suitable condition to begin pavement marking in accordance with manufacturer's written instructions.

B. If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Allow new pavement surfaces to cure for a period of not less than 14 days before application of marking materials.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Clean surfaces thoroughly prior to installation.
1. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods.
2. Completely remove rubber deposits, existing paint markings, and other coatings adhering to the pavement, by scraping, wire brushing, sandblasting, mechanical abrasion, or approved chemicals.
3. Sandblasting: Use equipment of size and capacity necessary, providing not less than 150 cfm of air at pressure not less than 90 psi at each nozzle used.

D. Where oil or grease are present, scrub affected areas with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application; after cleaning, seal oil-soaked areas with cut shellac to prevent bleeding through the new paint.

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E. Establish survey control points to determine locations and dimensions of markings; provide templates to control paint application by type and color at necessary intervals.

F. Temporary Pavement Markings: When required or directed by Engineer, apply temporary markings of the color(s), width(s) and length(s) as indicated or directed.
   1. After temporary marking has served its purpose, remove temporary marking by carefully controlled sandblasting, approved grinding equipment, or other approved method so that surface to which the marking was applied will not be damaged.
   2. At Contractor's option, temporary marking tape may be used in lieu of temporary painted marking; remove unsatisfactory tape and replace with painted markings at no additional cost to Owner.

3.3 INSTALLATION

A. Begin pavement marking as soon as practicable after surface has been cleaned and dried.

B. Do not apply paint if temperature of surface to be painted or the atmosphere is less than 50 degrees F or more than 95 degrees F.

C. Apply in accordance with manufacturer's instructions using an experienced technician that is thoroughly familiar with equipment, materials, and marking layouts.

D. Comply with FHWA MUTCD manual (http://mutcd.fhwa.dot.gov) for details not shown.

E. Apply markings in locations determined by measurement from survey control points; preserve control points until after markings have been accepted.

F. Apply uniformly painted markings of color(s), lengths, and widths as indicated on the drawings true, sharp edges and ends.
   1. Apply paint in one coat only.
   2. Wet Film Thickness: 0.015 inch, minimum.
   3. Length Tolerance: Plus or minus 3 inches.
   4. Width 4 inches:
   5. Width Tolerance: Plus or minus 1/8 inch.

G. Parking Lots: Apply parking space lines, entrance and exit arrows, painted curbs, and other markings indicated on drawings.
   1. Mark the International Handicapped Symbol at indicated parking spaces.
   2. Hand application by pneumatic spray is acceptable.

H. Symbols: Use a suitable template that will provide a pavement marking with true, sharp edges and ends, of the design and size indicated.

3.4 DRYING, PROTECTION AND REPLACEMENT

A. Protect newly painted markings so that paint is not picked up by tires, smeared, or tracked.

B. Provide barricades, warning signs, and flags as necessary to prevent traffic crossing newly painted markings.

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C. Allow paint to dry at least the minimum time specified by the applicable paint standard and not less than that recommended by the manufacturer.

D. Remove and replace markings that are applied at less than minimum material rates; deviate from true alignment; exceed length and width tolerances; or show light spots, smears, or other deficiencies or irregularities.

E. Remove markings in manner to avoid damage to the surface to which the marking was applied, using carefully controlled sand blasting, approved grinding equipment, or other approved method.

F. Replace removed markings at no additional cost to Owner.

END OF SECTION 32 1723.13

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SECTION 32 3100 – COMPOSITE FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:

1. Composite fences and gates

B. Related Requirements:
1. Section 03 3000 "Cast-in-Place Concrete" for concrete post concrete fill.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include sizes, profiles, surface finishes and performance characteristics.

B. Shop Drawings: For fencing and gates.
1. Include plans, elevations, sections, gate locations, post spacing, and mounting attachment details.
2. Wiring Diagrams: Include diagrams for power, signal, and control wiring.

C. Samples: For each fence material and for each color specified.
1. Provide Samples 9 inches minimum in length for linear materials.

1.4 CLOSEOUT SUBMITTALS

A. Submit in accordance with Section 01 7700 “Closeout Procedures.”
1. Maintenance Data: Instructions on care and cleaning of composite wood products.
2. Warranties: Fully executed warranty forms with authorized signatures and endorsements indicating obligations, remedies, limitations, and exclusions of warranty and date of Substantial Completion.

1.5 PERFORMANCE REQUIREMENTS

A. Wind Loading:
1. Fence Height: 0 to 15 feet.
2. Wind Exposure Category: C.

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3. Design Wind Speed: 110 mph.
4. Design Wind Pressure: As indicated on the Drawings.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of product from a single manufacturer having not less than 10 years' experience in the fabrication of composite products.

B. Installer: A firm having not less than 5 years' experience, and not less than 3 successful installations of similar or larger size than the requirements of this Project.

1.7 DELIVERY STORAGE AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's instructions.

B. Store level and flat, off ground or floor, with supports at each end and maximum 24 inches on center.

C. Do not stack wood composite over 8 feet high.

D. Cover wood composite with waterproof covering, vented to prevent moisture buildup.

1.8 WARRANTY

A. Provide manufacturer's 10 year commercial warranty providing coverage against checking, splitting, splintering, rotting, structural damage from termites, and fungal decay of wood composite.

PART 2 - PRODUCTS

A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. FenceTrac.
2. Fiberon (a brand of Fortune Brands Innovations).
3. Simtek (a brand of Old Castle APG).
4. Timbertech (a brand of The AZEK Company).
5. The Trex Company, Inc.

2.2 COMPOSITE FENCES AND GATES

A. Composite Fences: Reclaimed wood and plastic with integral coloring; free from toxic chemicals and preservatives.
1. Basis-of-Design Product: Subject to compliance with requirements, provide "Trex Fencing Seclusions" vertical picket fence system by The Trex Company Inc. or comparable product.
2. Fence height: 8 feet unless otherwise indicated on the Drawings.
3. Components:
   a. Posts: 5" x 5".

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1) Reinforced gate posts for installation of hinges.

b. Post Caps: As selected by Architect from manufacturer's standard options.
c. Top and Bottom Rails.
1) Mid rail as required by manufacturer for support of pickets.

d. Vertical Pickets.

4. Surface Texture and Color: as selected by Architect from manufacturer's standard options.

2.3 ACCESSORIES AND HARDWARE

A. Fasteners: Galvanized or corrosion-resistant coated steel. Provide finish nails where applicable.

B. Gate Hardware:
1. Two hinges minimum for each gate leaf at single leaf and double leaf gates. Install hinge size appropriate to carry gate loads.
2. Provide center gate stop and drop rod for double leaf gates.
3. Provide latching mechanism at each gate.
4. Provide padlock provisions at each gate.

2.4 MISCELLANEOUS MATERIALS

A. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Section 033000 "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 2500 psi 3-inch slump, and 1-inch maximum aggregate size or dry, packaged, normal-weight concrete mix complying with ASTM C387/C387M mixed with potable water according to manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.

B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

Rebid Documents

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 COMPOSITE FENCE INSTALLATION

A. Install fences according to manufacturer's written instructions.

B. Install fences by setting posts as indicated and fastening rails and infill panels.

C. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth of not less than 24 inches plus 3 inches for each foot or fraction of a foot that fence height exceeds 4 feet. In locations where frost conditions occur, excavate post holes to a depth to prevent heaving. Installer to verify local frost depths.

D. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
   2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
      a. Concealed Concrete: Top 2 inches below grade to allow covering with surface material. Slope top surface of concrete to drain water away from post.
   3. Space posts uniformly at a maximum space as required by the manufacturer.

3.4 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.5 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

3.6 CLEANING

A. Clean composite fencing and gates to remove stains:
   1. Mold, mildew, berry and leaf stains, rust, ground-in dirt and oil/grease: Clean surfaces with detergents or degreasing agents as recommended by the manufacturer.

Rebid Documents

END OF SECTION 32 3100

Rebid Documents

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Rebid Documents

SECTION 32 3113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Chain-link fences.
2. Swing gates.
3. Privacy slats.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For each type of fence and gate assembly. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each exposed product and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of chain-link fence, and gate.

B. Product Test Reports.

C. Sample Warranty: For special warranty.

1.5 FIELD CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.6 WARRANTY

A. Special Warranty: Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

Rebid Documents

1. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 4000 "Quality Requirements," to design chain-link fence and gate frameworks.

B. Structural Performance: Chain-link fence and gate frameworks shall withstand the design wind loads and stresses for fence height(s) and under exposure conditions indicated according to ASCE/SEI 7.
1. Design Wind Load: 120 mph.

C. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified.

2.2 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:
1. Fabric Height: As indicated on Drawings.
2. Steel Wire for Fabric: Wire diameter of 0.192 inch.
   a. Mesh Size: 2-1/8 inches.
   b. Polymer-Coated Fabric: ASTM F668, Class 1 over aluminum or zinc-coated steel wire.
      1) Color: Black, according to ASTM F934.

3. Selvage: Knuckled at both selvages.

2.3 FENCE FRAMEWORK

A. Posts and Rails: ASTM F1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F1043 or ASTM F1083 based on the following:
1. Fence Height: As indicated on Drawings.
2. Pipe Size: As determined by the qualified professional responsible for their design and preparation per Delegated Design.
3. Horizontal Framework Members: T**op** rails according to ASTM F1043.
4. Brace Rails at Corners and Gates: ASTM F1043.
5. Metallic Coating for Steel Framework: Any of the following.
   a. Type A: Not less than minimum 2.0-oz./sq. ft. average zinc coating according to ASTM A123/A123M or 4.0-oz./sq. ft. zinc coating according to ASTM A653/A653M.

Rebid Documents

b. Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
c. External, Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil-thick, zinc-pigmented coating.
d. Type C: Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating.

6. Polymer coating over metallic coating.
a. Color: Black, according to ASTM F934.

2.4 TENSION WIRE

A. Wire: As determined by the qualified professional responsible for their design and preparation per Delegated Design.

2.5 SWING GATES

A. General: ASTM F900 for gate posts and swing gate types.
1. Gate Leaf Width: indicated on the Drawings.
2. Framework Member Sizes and Strength: Based on gate fabric height as indicated on the Drawings.

B. Pipe and Tubing:
1. Zinc-Coated Steel: ASTM F1043 and ASTM F1083; protective coating and finish to match fence framework.
2. Gate Posts: Round tubular steel.
3. Gate Frames and Bracing: Round tubular steel or rectangular tubular steel.

C. Frame Corner Construction: Welded.

D. Standard Gate Hardware (Basis-of Design):
1. Hinges: Hinges: Nationwide Industries “Bulldog” pressed steel industrial hinge.
a. Color: Black - match chain-link fabric according to ASTM F 934
b. 180-degree inward and 180-degree outward swing as indicated on the Drawings.

2. Latch: DAC Industries “Strong Arm” commercial grade chain link gate latch for round frame.
a. Permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.
b. Color: Black powder coat finish.

2.6 FITTINGS

A. Provide fittings according to ASTM F626.

B. Finish:

Rebid Documents

1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.
   a. Polymer coating over metallic coating.

2.7 PRIVACY SLATS

A. Tubular Polyethylene Slats: Minimum 0.023-inch-thick tubular polyethylene, manufactured for chain-link fences from virgin polyethylene with UV inhibitor, sized to fit mesh specified for direction indicated.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide PrivacyLink Top-Locking double wall privacy slats or comparable product.
      a. Flat tubular shape with inside reinforced legs.
      b. Provide slats according to ASTN Designation F3000/F3000M
      c. Color: As selected by Architect from manufacturer's full range.

2.8 GROUT AND ANCHORING CEMENT

A. Non-shrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Anchoring Cement: Factory-packaged, non-shrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating, and that is recommended in writing by manufacturer for exterior applications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 CHAIN-LINK FENCE INSTALLATION

A. Install chain-link fencing according to ASTM F567 and more stringent requirements specified.
   1. Install fencing on established boundary lines inside property line or as otherwise indicated on the Drawings.

Rebid Documents

B. Mechanically Driven Posts: Set posts by mechanically driving into soil at indicated spacing into firm, undisturbed soil.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
   2. Drive into soil to minimum depth of 48 inches. Protect post top to prevent distortion.

C. Concrete Set Posts:
   1. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

   2. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
      a. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting of concrete with mechanical devices.
      b. Extend footings to frost protection level or to depth determined by the installer and as indicated on the Shop Drawing Submittal.
      c. Concrete Footings: Place concrete around posts to dimensions determined by the installer and as indicated on the Shop Drawing Submittal.
      d. Vibrate or tamp footings for consolidation. Protect above-ground portion of posts from concrete splatter.
      e. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.

D. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more. For runs exceeding 500 feet, space pull posts an equal distance between corner or end posts.

E. Line Posts: Space line posts uniformly at maximum on-center distances as determined by the installer responsible for their placement and as indicated on the Shop Drawing Submittal.

F. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1-inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

G. Privacy Slats: Install slats in direction indicated, securely locked in place.
   1. Vertically, for privacy factor of 70 to 75.

3.4 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

3.5 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

Rebid Documents

B. Lubricate hardware and other moving parts.

END OF SECTION 32 3113

Rebid Documents

SECTION 32 9219 - SEEDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Preparation of subsoil for seeding.
2. Placing topsoil for seeding.
3. Seeding, mulching, and fertilizer.

B. Related Requirements:
1. Section 31 2200 “Grading” for topsoil material, preparation of subsoils and placement of topsoil in preparation for the work in this Section.

1.3 DEFINITIONS

A. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

B. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3000 “Submittal Procedures”:
1. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
2. Product Certificates: For fertilizers, from manufacturer.

1.5 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

Rebid Documents

1.6 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened waterproof containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

PART 2 - PRODUCTS

2.1 SEED MIXTURE

A. Refer to the Drawings for seed mixtures and application rates.

2.2 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer recommended for grass, with fifty percent of the element derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil. Fertilizer shall be 10-10-10 and applied at a rate of 4 lbs. per 1,000 sq ft.

2.3 MULCHES

A. Refer to the Drawings for mulching materials and application rates.

2.4 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Refer to the Drawings for indicated erosion-control blankets.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
   1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
   3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

Rebid Documents

3.2 PREPARATION

A. Prepare subgrade and place topsoil in accordance with Section 31 2200 “Grading”.

3.3 PREPARATION FOR EROSION-CONTROL MATERIALS

A. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

B. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.4 FERTILIZING

A. Apply fertilizer in accordance with manufacturer's instructions.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Mix thoroughly into upper 2 inches of topsoil.

E. Lightly water to aid the dissipation of fertilizer.

3.5 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.

B. Sow seed at a rate appropriate to seed type as indicated on the Drawings.

C. Do not seed areas in excess of that which can be mulched on same day.

D. Do not sow immediately following rain, when ground is too dry, or during windy periods.

E. Immediately following seeding and compacting, apply mulch uniformly over the area at the rate indicated on plans.

F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

G. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 inches by 4 inches.

Rebid Documents

3.6 MAINTENANCE

A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition. Contractor shall provide maintenance until seed stand reaches at least 30 seedlings per square foot of area.

B. Immediately re-seed areas that show bare spots.

END OF SECTION 32 9219

Rebid Documents

SECTION 32 9223 - SODDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Preparation of subsoil for sodding
   2. Placing topsoil for sodding
   3. Sod installation and fertilization.

B. Related Requirements:
   1. Section 31 2200 “Grading” for topsoil material, preparation of subsoils and placement of topsoil in preparation for the work in this Section.

1.3 DEFINITIONS

A. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

B. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.4 REFERENCES

A. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding; Turfgrass Producers International; 2006.

1.5 SUBMITTALS

A. Submit the following in accordance with Section 01 3000 “Submittal Procedures”:
   1. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
   2. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.

Rebid Documents

B. Product Certificates: For fertilizers, from manufacturer.

1.6 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.
   1. Deliver sod on pallets or in rolls. Protect exposed roots from dehydration.
   2. Do not deliver more sod than can be laid within 24 hours.

PART 2 - PRODUCTS

2.1 SOD

A. Sod: Consisting mostly of Kentucky blue grass with a lesser consistency of creeping red fescue or an approved hard fescue.
   1. Sod shall have been grown in a USDA plant hardiness zone not more than 4.
   2. Sod shall be relatively weed free, shall contain a minimum of 1.5” of healthy root and soil mass, and shall display good blade development and color.
   3. Sod shall be strong enough to support its own weight and retain size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.

2.2 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer recommended for grass, with fifty percent of the element derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil. Fertilizer shall be 10-10-10 and applied at a rate of 4 lbs. per 1,000 sq ft.

2.3 ACCESSORIES

A. Wood Pegs: Softwood, sufficient size and length to ensure anchorage of sod on slope.

2.4 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Refer to the Drawings for indicated erosion-control blankets.

Rebid Documents

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
   1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
   3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

A. Prepare subgrade and place topsoil in accordance with Section 31 2200 “Grading”.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 PREPARATION FOR EROSION-CONTROL MATERIALS

A. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

B. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.4 FERTILIZING

A. Apply fertilizer in accordance with manufacturer's instructions.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Mix thoroughly into upper 2 inches of topsoil.

E. Lightly water to aid the dissipation of fertilizer.

Rebid Documents

3.5 SODDING

A. Moisten prepared surface immediately prior to laying sod.

B. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

C. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger end joints 12 inches minimum. Avoid damage to soil or sod during installation.

D. Where new sod adjoins existing grass areas, align top surfaces.

E. Where sod is placed adjacent to hard surfaces, such as curbs, pavements, etc., place top elevation of sod 1/2 inches below top of hard surface.

F. On slopes 6 inches per foot and steeper, lay sod perpendicular to slope and secure sod using wire mesh and wood pegs.

G. Water sodded areas immediately after installation. Saturate sod to 4 inches of soil.

H. After sod and soil have dried, roll the areas to ensure good bond between sod and soil and to remove minor depressions and irregularities.

I. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

3.6 MAINTENANCE

A. Provide maintenance at no extra cost to Owner.

B. Provide maintenance of sodded areas for three months from Date of Substantial Completion

C. Maintain sodded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.

D. Neatly trim edges and hand clip where necessary.

E. Water to prevent grass and soil from drying out.

F. Roll surface to remove irregularities.

G. Control growth of weeds. Apply herbicides in accordance with manufacturer’s instructions. Remedy damage resulting from improper use of herbicides.

H. Immediately replace sod to areas that show deterioration or bare spots.

I. Protect sodded areas with warning signs during maintenance period.

END OF SECTION 32 9223

Rebid Documents

SECTION 33 0513 – MANHOLES AND STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Monolithic concrete manholes with masonry transition to lid frame, covers, anchorage, and accessories.
   2. Modular precast concrete manhole sections with tongue-and-groove joints with masonry transition to lid frame, covers, anchorage, and accessories.
   3. Cleanouts.
   4. Catch Basins.

B. Related Requirements:
   1. Section 32 1313 “Concrete Paving: for concrete for structures.

1.3 REFERENCE STANDARDS

A. American Concrete Institute (ACI): latest editions, unless otherwise specified.
   1. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International.

B. American Society for Testing and Materials International (ASTM): latest editions, unless otherwise specified.
   1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
   2. ASTM C55 - Standard Specification for Concrete Building Brick.
   3. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
   4. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”:
   1. Product Data: Information for manholes, catch basins, cleanouts, frames, lids and covers including component construction, connectors, features, configurations, and dimensions.
   2. Shop Drawings: Indicate manhole locations, elevations, pipe sizes, and elevations of penetrations shall be submitted to the Engineer for approval prior to casting.

Rebid Documents

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' documented experience.

B. Manufacturers must certify in writing, if requested by Engineer, that all manholes, cleanouts and appurtenances be constructed within the guidelines of the appropriate ASTM specifications.

C. Precast sections shall be legibly stamped with casting date.

1.6 FIELD CONDITIONS

A. Maintain materials and surrounding air temperature to minimum 50 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 - PRODUCTS

2.1 PRECAST REINFORCED CONCRETE PIPE MANHOLES

A. Reinforced precast concrete manhole risers and top sections shall conform to ASTM C478.

B. All barrel-to-barrel joints shall be sealed using a P2 gasketed joint, a CX-4 joint, or an exterior seal by Press-Seal Gasket Corporation EZ Wrap and EZ Stik No. 4 primer or approved equal. The height and diameter of the manhole shall be shown on the plans or larger if recommended by the manhole fabricator and approved by the Engineer.

C. Steps shall not be placed in any structure unless specified.

2.2 PRECAST REINFORCED CONCRETE PIPE MANHOLES WITH MONOLITHIC BASE

A. Precast reinforced concrete risers and top section shall conform to ASTM C478.

B. Manhole bases shall extend a minimum of 6 inches past the exterior manhole wall.

C. The base and bottom section shall be cast monolithically with precast flow lines. The pipe connections to the manhole shall be Press-Seal Gasket Corporation model Press-Boot or an approved equal.

D. All barrel-to-barrel joints shall be sealed using a P2 gasketed joint, a CX-4 joint, or an exterior seal by Press-Seal Gasket Corporation EZ Wrap and EZ Stik No. 4 primer or approved equal. The height and diameter of the manhole shall be as shown on the plans or larger if recommended by the manhole fabricator and approved by the Engineer.

2.3 CLEANOUT FRAMES AND LIDS

A. Cleanout Frames and Lids: As indicated on the Drawings.

Rebid Documents

2.4 MANHOLE ADJUSTMENT RING

A. Manhole Adjustment Rings: Modular reinforced precast concrete rings.

2.5 SEALANT

A. Sealant: Extruded rubber, 1”x1” in roll form on paper, equal to “E-Z Stik” as manufactured by Press-Seal Gasket Company.

2.6 MORTAR

A. Mortar by Volume: Type M
   1. 1 part Portland Cement or masonry cement
   2. 1/4 part hydrated line
   3. 2-3/4 to 3-3/4 parts sand.

2.7 MANHOLE INVERT

A. Manhole Invert: Portland cement concrete made from a 6-bag mix and have a 28-day compressive strength of 3000 PSI.

2.8 CASTINGS

A. Lid and frame casting shall be manufactured by Neenah Foundry, Inc., or approved equal, and as indicated on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify items provided by other sections of Work are properly sized and located.

B. Verify that built-in items are in proper location, and ready for roughing into Work.

C. Verify excavation for manholes is correct.

D. Verify height of structure; account for a minimum of 2 adjusting rings.

3.2 PREPARATION

A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

Rebid Documents

3.3 MANHOLES

A. Place precast base or monolithic bottom on stable, leveled and compacted aggregate base.

B. Place manhole sections plumb and level.

C. Install joint sealant between all manhole sections.

D. Backfill and compact uniformly around manhole or cleanout to required density.

E. Set adjusting rings, frame and cover to correct elevation. Allow for grout between rings. Coordinate with other adjacent work as necessary.

F. Lay adjusting rings in full bed of mortar, uniformly jointed with the manhole section. Adjust and level to meet finished grade.

G. Form inverts with cast in place concrete, carefully finishing and troweling to true shape of the lower half of the sewer pipe and sloping up the manhole, providing positive drainage to the flow line effluent.

H. Plug all lift holes with mortar.

I. Coordinate with other sections of work to provide correct size, shape, and location.

3.4 TOLERANCES

A. Final elevation for inverts and rim shall be within plus or minus 1/2 inch of the specified elevation.

B. Finished manhole elevations shall always be 1/4 inch lower than finished paved elevation.

3.5 FIELD QUALITY CONTROL

A. Provide proper compaction around manholes and cleanouts.

B. Check for proper invert flow.

C. Check for infiltration and exfiltration and correct if necessary.

D. Regularly check temporary sewage handling equipment and piping (if in use) to avoid spills or backup.

3.6 CLEANUP AND PROJECT CLOSEOUT

A. Clean all debris from manholes and cleanouts. Individually remove cover and check each one.

B. Properly adjust all frames to the proposed grade.

Rebid Documents

END OF SECTION 33 0513

Rebid Documents

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Rebid Documents

SECTION 33 0514 – CASTINGS AND ADJUSTMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the general provisions of the Contract, including General Conditions, Supplementary Conditions, Special Conditions and the Division 01 General Requirements, apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Resetting manhole frames and covers, inlet frames and grates, valve boxes, or other accessories requiring adjustment to new lines and grades.

B. Related Requirements:
   1. Section 32 1216 “Asphalt Paving”
   2. Section 32 1313 “Concrete Paving: for concrete for structures.

1.3 REFERENCE STANDARDS

A. American Society for Testing and Materials International (ASTM): latest editions, unless otherwise specified.
   1. ASTM D1752 – Standard Specification for Preformed Sponge Rubber, Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
   2. ASTM D 4976 – Standard Specification for Polyethylene Plastics Molding and Extrusion Materials
   3. ASTM D5249 - Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland Cement Concrete and Asphalt Joints.

1.4 FIELD CONDITIONS

A. Maintain materials and surrounding air temperature to minimum 50 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 - PRODUCTS

2.1 MANHOLES, INLET CASTINGS, LIDS AND GRATES

A. Manholes, Inlet Castings, Lids and Grates: As indicated on the Drawings.

Rebid Documents

2.2 ADJUSTMENT RINGS

A. Concrete Adjusting Rings: Concrete rings having a minimum compressive strength of 4000 psi, steel reinforced and meet AASHTO H-20 loading requirements. Concrete adjusting rings shall be 2 inches thick with an internal dimension that does not restrict the opening size of the manhole or inlet casting.

B. HDPE Polymer Adjustment Rings: Injection molded high density polyethylene (HDPE) conforming to ASSTM D4976 from one of the following:
   1. Ladtech, Inc. or IPEX Inc.

C. Expanded Polypropylene Adjustment Rings: From on of the following:
   1. Cretex Specialty Products
   2. Approved equal.

D. Poylmer adjusting rings shall be 2 to 6 inches thick with an internal dimension that does not restrict the opening size of the manhole or inlet casting.

2.3 MORTAR

A. Mortar shall be a compound of 1 part Portland cement to 2 parts of sand by volume to which lime may be added not to exceed 10 percent of cement by weight.

2.4 EXPANSION JOINT MATERIALS

A. Flexible Foam Expansion Joint: Foam expansion joint material meeting the requirements of ASTM D5249, Type 2 and ASTM D1752, Section 5.1 through 5.4 with compression requirement modified to 10 psi and 25 psi maximum.
   1. Foam expansion joints shall be non-gassing and shall be compatible with hot pour joint sealants.

PART 3 - EXECUTION

3.1 GENERAL

A. Existing manholes, inlets, and valve boxes shall be adjusted to the elevation, grade, or dimensions as indicated on the plans. The structures are assumed to be clean prior to the beginning of the adjustment construction.

B. If casting height needs to be raised, install additional adjusting rings as necessary.

C. If castings, grating, I&I barrier, or cover needs to be lowered, remove adjusting rings, masonry, or concrete to sufficient depths so that a seat of proper dimensions may be reconstructed to receive the casting, grating, I&I barrier, or cover at the proposed grade.

D. Castings shall be set in full mortar beds or otherwise secured as shown on the plans.

E. If necessary, the Contractor shall use tapered or sloped adjusting risers.

Rebid Documents

F. Upon completion of adjustment, all surplus material shall be removed, and the structure and the site shall be thoroughly cleaned of any accumulation of silt, debris, or foreign matter of any kind.

G. Utility structures, excluding manholes encased in concrete sidewalks and pavements, shall be wrapped with a flexible foam expansion joint.
   1. Minimum joint thickness for curb stop boxes, hydrants, street signs, pedestrian signal foundations, and valve boxes shall be 1/2 inch.
   2. Minimum joint thickness for larger structures shall be 3/4 inch with a 1 inch maximum.

H. Adjusting rings shall be installed according to the manufacturer's recommendations.

3.2 TOLERANCES

A. Final elevation of castings shall be plus or minus 1 inch of the specified elevation.

B. Finished casting elevations shall always be 1/4 inch lower than finished paved elevation.

3.3 FIELD QUALITY CONTROL

A. Provide proper compaction around castings.

B. Check for infiltration and exfiltration and correct if necessary.

END OF SECTION 33 0514

Rebid Documents

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Rebid Documents

SECTION 33 1116 – SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions. and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
1. Pipe and fittings for site water lines including domestic and fire suppression system water lines.
2. Valves, fire hydrants and domestic water hydrants.

B. Related Requirements:
1. Section 31 2326 “Excavation” for trenching.
2. Section 31 2316.13 “Trenching” for excavating, trenching and backfilling.
3. Section 31 2323 “Fill” for bedding and backfilling.
4. Section 32 1313 “Concrete Paving” for concrete thrust restraints.
5. Section 33 0513 “Manholes and Structures”.
6. Section 33 1300 Disinfection of Water Utility Distribution”.

1.3 REFERENCES

A. American Society for Testing and Materials International (ASTM): latest editions, unless otherwise specified.
1. ASTM D1785 – Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
2. ASTM D2241 – Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
3. ASTM D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
4. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.

B. American Water Works Association (AWWA): latest editions, unless otherwise specified.
1. AWWA C502 – Dry Barrel Fire Hydrants; American Water Works Association.
2. AWWA C509 – Resilient-Seated Gate Valves for Water Supply Service; American Water Works Association.
3. AWWA C900 – Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 12 In., for Water Transmission and Distribution; American Water Works Association.
4. AWWA C901 – Polyethylene (PE) Pressure Pipe and Tubing, 1/2 In. Through 3 In., for Water Service; American Water Works Association.

C. UL 246 – Hydrants for Fire-Protection Service; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 "Submittal Procedures."
   1. Product Data: Submit data for pipe materials, pipe fitting, valves and accessories.
   2. Manufactuer's certificate describing products meeting or exceeding specified requirements.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record installed locations of piping mains, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with Manufacturer's instructions on handling, storage and installation.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver free of damage and store in protected area with labeling in place.

B. Report any damage, including light surface scratches, to Engineer prior to installation. Repair or replace any coating or component damage as required by Manufacturer and as directed by Engineer.

PART 2 - PRODUCTS

2.1 WATER PIPE – 4 INCHES AND LARGER

A. Polyvinyl Chloride Pipe: Polyvinyl Chloride Pipe PVC meeting the requirements of AWWA C900 or the latest revision thereof as manufactured by CertainTeed Pipe.
   1. Furnish pipe on Cast Iron Pipe Equivalent outside diameters with elastomeric joints.
   2. The pressure class of PVC pipe shall be PC235 with a DR 18.

B. Ductile Iron Fittings: Ductile iron pipe conforming to AWWA/ANSI C153/A2.1.53 or AWWA/ANSI C110/A2.1.10 capable of a working pressure of 350 pounds per square inch.
   1. Fittings shall be cement mortar lined and contain an exterior bituminous seal conforming with AWWA/ANSI C104/A21.4.
   2. Push-on joints and mechanical joints shall be manufactured in accordance with AWWA/ANSI C111/A21.11.P.

Rebid Documents

2.2 VALVES

A. Gate Valves: Conforming to AWWA Standard C515 with the manufacturer's name and pressure rating marked on valve body.
   1. Gate Valves furnished shall be of a quality equal to that manufactured by American Flow Control.
      a. The metals used shall be in accordance with AWWA and ASTM Standards.
      b. Unless otherwise designated, all gate valves shall have non-rising stem, O-ring stem seals, 2-inch operating nuts, and open counterclockwise.
      c. All gate valves shall have stem extension. Stem extension shall be brought to within 2 feet of finished grade.
      d. Stem extensions shall be fastened to the operating nut with a set screw. The operating nut shall be drilled or otherwise indented to accept the set screw and provide a secure connection that will prevent an extension from coming loose during operation.
      e. The gate valve shall have a resilient synthetic rubber coating seat attached to the wedge, manufactured and designed in accordance with the latest AWWA Standard C 515.
      f. Resilient-Seated Gate Valve body and bonnet shall be coated, inside and out, with a fusion bonded epoxy in accordance with AWWA C550.
      g. The water way shall have a full unobstructed flow without recesses in the bottom. All bonnet bolts shall be stainless steel.

B. Valve Boxes: Having a quality equal to one of the following:
   1. Tyler Pipe Model 6860.
   2. Star Pipe Products Cast Iron Heavy Duty Model “G.”
   3. Approved equal.
   4. Properties:
      a. No. 6 round base for 16-inch and smaller gate valves.
      b. Cover shall be marked “WATER.”
      c. Top Section 25-1/2 inches long. Extension pieces as required.
      d. All valve boxes shall be capable of a minimum 6-inch top adjustment in either direction, up or down, to or from, the finished grades shown in the Drawings.
      e. If any valve box extension pieces are required to make the above-mentioned adjustment, they shall be considered incidental.

2.3 HYDRANTS

A. Hydrants: Meeting the requirements of AWWA C502 by one of the following:
   1. Waterous Pacer Model WB-67-250, 5-1/4 inch.
   2. American Darling Model B-62-B, 5-1/4 inch as manufactured by American Flow Control.
   3. Approved equal.
   4. Properties:
      a. Break-away type traffic flanges.
      b. (2) 2-1/2 inch hose connections with National Standard Threads.
      c. (1) 4-1/2 inch pumper connection with National Standard Threads.

Rebid Documents

2.4 BEDDING AND COVER MATERIALS

A. Bedding and Covering: As specified in Section 31 2323 “Fill”.

2.5 ACCESSORIES

A. Concrete for Thrust Restraints: Concrete type specified in Section 32 1313 “Concrete Paving”.

B. Marking Tape: The Contractor will be required to furnish and install marking tape located 2 feet above the top of all water lines installed under this contract. The tape shall be of the non-detectable type and shall have a minimum width of 5 inches. The tape shall be blue in color with the words “CAUTION WATER LINE BELOW” imprinted on the tape in black capital letters. The marking tape shall be equal to that manufactured by Presco standard grade.

C. Polyethylene Encasements: All ductile iron and cast iron pipe, valves, bale boxes, fittings, and hydrants shall be encased with 8-mil linear low-density (LLD) polyethylene film in accordance with AWWA/ANSI C105/A21.5.

D. Insulation boards: Polystyrene insulation board shall have a thermal conductivity of not more than 0.28 BTU per hour per square foot per degree Fahrenheit per inch of thickness as tested in accordance with ASTM C177. The insulation shall not absorb moisture to an extent greater than 2.5 percent by volume as tested in accordance with ASTM D2842. The compression strength of the insulation shall be greater than 20 psi as tested in accordance with ASTM D1621. The density of the insulation shall be between 0.9 and 1.3 pounds per cubic feet as tested in accordance with ASTM D1622. The insulation shall be specifically designed for protection of underground utilities and shall be installed in accordance with the manufacturer’s recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

3.2 PREPARATION

A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or unions.

3.3 TRENCHING

A. Refer to Section 31 2316 “Excavation and Section 31 2323 “Fill” for requirements.

Rebid Documents

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide thrust restraint bearing on subsoil.

D. Backfilling and pipe bedding: Refer to Section 31 2323 “Fill”.

3.4 PIPE INSTALLATION

A. Establish elevations of buried piping to ensure not less than 8.5 feet of cover to crown. See plan for invert elevations.

B. Install pipe to indicated elevation to within tolerance of 1/2 inches.

C. Route pipe in straight line.

D. Install pipe to allow for expansion and contraction without stressing pipe or joints.

E. Slope water pipe and position drains at low points.

F. Insulate Water Lines. Furnish and install the insulation required to insulate the water lines as indicated on plans. The insulation shall be at least 4 inches thick by 8 feet wide centered on the water line. The material between the top of the bedding material and the insulation shall consist of a concrete sand.

G. Install marking tape 2 feet above top of pipe.

3.5 VALVE AND HYDRANT INSTALLATION

A. Set valves and hydrants on concrete block 6 inches thick and 18 inches square or larger.

B. Center and plumb valve box over valve. Set box cover flush with finished grade.

C. Set hydrants plumb; locate pumper nozzle perpendicular to and facing roadway.

D. Set hydrants to grade, with nozzles at least 24 inches above finished grade.

E. All hydrants shall be furnished with a 9 foot bury depth from the bottom of the inlet pipe to the top of the ground. All bolts and nuts connecting the barrel to the foot elbow shall be stainless steel. The hydrants shall be surrounded by 1/2 cubic yards of subcut gravel so placed that it will readily accept all water from drip valves.

3.6 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Division 01.

B. Perform disinfection and bacteriological testing in accordance with Section 33 1300 “Disinfecting of Water Utility Distribution”.

Rebid Documents

C. Pressure Testing. All new pipe or any valve section thereof shall be subject to hydrostatic pressure test under the supervision of the Engineer. The test section shall be filled with water, and the pressure shall be gradually increased. If defects are found, the Contractor shall immediately make the necessary repairs at its own expense. The final pressure test shall be 200 psi and shall be held at least two hours. The Contractor shall furnish all tools, equipment, and material necessary to make the pressure test.

D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

END OF SECTION 33 1116

Rebid Documents

SECTION 33 1300 - DISINFECTING OW WATER UTILITY DISTRIBUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Disinfection of site domestic water lines and site fire water lines specified in Section 33 1116 “Site Water Utility Distribution Piping”.
   2. Testing and reporting results.

B. Related Requirements:
   1. Section 33 1116 “Site Water Utility Distribution Piping”.

1.3 REFERENCES

A. American Water Works Association (AWWA): latest editions, unless otherwise specified.
   1. AWWA B300 - Hypochlorites; American Water Works Association.
   2. AWWA B301 - Liquid Chlorine; American Water Works Association.
   3. AWWA B302 - Ammonium Sulfate; American Water Works Association.
   4. AWWA B303 - Sodium Chlorite; American Water Works Association.
   5. AWWA C651 - Disinfecting Water Mains; American Water Works Association.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures”.
   1. Test Reports: Indicate results comparative to specified requirements.
      a. Disinfection report:
         1) Type and form of disinfectant used.
         2) Date and time of disinfectant injection start and time of completion.
         3) Test locations.
         4) Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
         5) Date and time of flushing start and completion.
         6) Disinfectant residual after flushing in ppm for each outlet tested.

      b. Bacteriological report:
         1) Date issued, project name, and testing laboratory name, address, and telephone number.
         2) Time and date of water sample collection.

3) Name of person collecting samples.
4) Test locations.
5) Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
6) Coliform bacteria test results for each outlet tested.
7) Certification that water conforms, or fails to conform, to bacterial standards of North Dakota State Department of Environmental Quality.

2. Certificate: From authority having jurisdiction indicating approval of water system.

1.5 QUALITY ASSURANCE

A. Submit bacteriologist's signature and authority associated with testing.

B. Test all samples at a certified laboratory, approved by the North Dakota State Department of Environmental Quality.

PART 2 - PRODUCTS

2.1 DISINFECTION CHEMICALS

A. Certify all disinfectant products meet applicable AWWA Standards.

B. Chemicals: AWWA B300, Hypochlorite; AWWA B301, Liquid Chlorine; AWWA B302, Ammonium Sulfate; and AWWA B303, Sodium Chlorite.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that piping system has been cleaned, inspected, pressure tested and all services are turned off.

B. Schedule disinfecting activity to coordinate with start-up, testing, adjusting and balancing, demonstration procedures, including related systems.

3.2 DISINFECTION

A. Use method prescribed by the applicable state or local codes, or health authority or water purveyor having jurisdiction, or in the absence of any of these follow AWWA C651.

B. Provide and attach equipment required to perform the work.

C. Inject treatment disinfectant into piping system.

Rebid Documents

D. Water shall be fed into the new line with chlorine applied in amounts to maintain a chlorine residual of 50 milligrams per liter for 24 hours or chlorine residual of 200 milligrams per liter for 3 hours.

E. Chlorine applications shall be made in accordance with AWWA C651.

F. All valves and hydrants in the section treated shall be operated during this time in order to disinfect the appurtenance.

G. Heavily chlorinated water should not remain in prolonged contact (maximum of 48 hours) with the water main pipe.

3.3 TOLERANCES

A. A plate count of "zero" is required on the bacteriological test.

B. The feed or application rates stated herein are for general guidance only. Refer to AWWA C651 for exact limits.

3.4 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Division 01.

B. Two sets of samples shall be taken for each 1,200 feet of water line installed. The samples shall be taken a minimum of 24 hours apart.

C. The testing laboratory shall test for coliforms and e-coli using the "Colilert" or other Engineer approved equivalent test. The "Colilert" test is a pass/fail test that does not quantify the amount of bacteria. Any presence of coliforms or e-coli shall qualify as a failed test.

D. If the initial disinfection fails to produce satisfactory bacteriological results, the new waterlines may be reflushed and shall be resampled. If check samples also fail to produce acceptable results, the main shall be rechlorinated by the continuous-feed or slug method of chlorination until satisfactory results are obtained.

3.5 CLEANUP AND CLOSEOUT

A. Clean up and properly dispose of all chemicals and containers.

B. Drain any standing water from flushing.

END OF SECTION 33 1300

Rebid Documents

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Rebid Documents

SECTION 33 3111 – SITE SANITARY SEWERAGE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:
   1. Sanitary sewerage drainage piping, fittings, and accessories.
   2. Connection of building sanitary drainage system to municipal sewers.

B. RELATED REQUIREMENTS
   1. Section 32 1313 “Concrete Paving” for concrete cleanout base pad construction.
   2. Section 31 2316 “Excavation” for excavating of trenches.
   3. Section 31 2316.13 “Trenching” for excavating, bedding, and backfilling of trenches.
   4. Section 31 2323 “Fill” for bedding and backfilling materials.
   5. Section 33 0513 “Manholes and Structures”

1.3 REFERENCE STANDARDS

A. ASTM International (ASTM): latest editions, unless otherwise specified.
   1. ASTM D304 “Standard Specifications for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings”.
   2. ASTM F477 “Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.”

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3300 “Submittal Procedures.”
   1. Product Data: Provide data indicating pipe, pipe accessories and fittings.
   2. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
   3. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
   4. Project Record Documents:
      a. Record location of pipe runs, connections, catch basins, manhole, and invert elevations.
         1) Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

Rebid Documents

1.5 REGULATORY REQUIREMENTS

A. The materials, equipment, and construction methods employed for installation of all sanitary sewer piping, fittings, and accessories shall be in full compliance with the North Dakota State Plumbing Code, regulations set forth by the North Dakota Department of Environmental Quality, and in accordance with these specifications.

PART 2 - PRODUCTS

2.1 SEWER PIPE MATERIALS

A. Polyvinyl Chloride (PVC) Storm Sanitary Sewer Pipe:
1. PVC sanitary sewer pipe 15 inches or smaller shall conform to the requirements of ASTM D3034 for type PSM.
2. PVC storm sewer pipe and fittings with a bury depth less than 16 feet shall have shall have an SDR of 35.
   a. Pipe be the same type and have the same SDR for full run lengths between manholes. Pipe specifications must be stamped on the pipe.

3. PVC sanitary sewer pipe and fittings with a bury depth equal to or greater than 16 feet shall have an SDR of 26.
   a. Pipe be the same type and have the same SDR for full run lengths between manholes. Pipe specifications must be stamped on the pipe.

4. PVC storm sewer pipe shall have the elastomeric gasket type joint providing a watertight seal.

B. Fittings:
1. Fittings shall be the same material as pipe molded or formed to suit pipe size and end design, which includes tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.2 PIPE ACCESSORIES

A. Marking Tape. The Contractor will be required to furnish and install marking tape located 2 feet above the top of all storm sewer pipe installed under the contract. The tape shall be of the non-detectable type and shall have a minimum width of 5 inches. The tape shall be green in color with the words “CAUTION SEWER LINE BELOW” imprinted on the tape in black capital letters. The marking tape shall be equal to that manufactured by Presco standard grade.

2.3 CLEANOUT MANHOLE

A. Cleanout Frames and Lids: As indicated on the Drawings.

Rebid Documents

2.4 BEDDING AND COVER MATERIALS

A. Pipe Bedding Material: As specified in Section 312323 “Fill.”

B. Pipe Cover Material: As specified in Section 312323 “Fill.”

PART 3 - EXECUTION

3.1 GENERAL

A. Perform work in accordance with applicable codes.

3.2 PIPE TRENCHING

A. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

C. See Section 312316.13 "Trenching” for additional requirements.

3.3 PIPING INSTALLATION

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.

C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

D. Pipe installed for future building connections shall be stubbed out, capped and buried as indicated on plans.

E. Stub Outs: For sanitary sewer stub outs indicated on the Drawings, a 2-inch by 4-inch wood marker shall be placed a minimum of 1 foot from the end of the sewer stub out and shall extend vertically and plumb to not less than 2 feet above the existing surrounding ground and be painted green.

F. Insulate Sewer. Furnish and install the insulation required to insulate the sewer as indicated on the Drawings. The insulation shall be at least 4 inches thick by 8 feet wide centered on the sewer main. The material between the top of the sewer bedding and the insulation shall consist of a concrete sand.

G. Install marking tape 2 feet above top of pipe.

Rebid Documents

3.4 CLEANOUT INSTALLATION

A. Form bottom of excavation clean and smooth to proper elevation.

B. Establish elevations and pipe inverts for inlets and outlets as indicated.

C. See Drawings for cleanout details.

3.5 FIELD QUALITY CONTROL

A. Perform field inspection in accordance with Section 01 4000 “Quality Requirements.”

B. Televise Sewer: All sewer pipe installed shall be televised. Prior to televising Contractor shall flush pipes with clean water.
   1. The Contractor shall have the sewer pipe televised and recorded by a firm normally engaged in such type of work.
   2. The Contractor shall provide a high-quality digital video with a report for each section of sewer main televised. The recording shall describe locations and conditions of the sewer and shall have a visual footage counter showing the distance of the camera from the manhole.
   3. After the Contractor has submitted the recordings and report, they will be viewed by the Engineer for acceptance. Any sewer failing inspection shall be replaced and re-televised at no cost to the Owner.

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.6 PROTECTION

A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 33 3111

Rebid Documents

SECTION 33 4613 – FOUNDATION DRAINAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings, the provisions of the Contract including General Conditions, Supplementary Conditions, Special Conditions, and the Division 01 General Requirements apply to the Work of this Section.

1.2 SUMMARY

A. Section Includes:

1. Perforated foundation drainage tubing and piping.
2. Geotextile filter fabrics.
3. Filter aggregate

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (ASHTO): Latest editions, unless otherwise specified.
1. Standard Specifications for Highway Bridges, 2002 Edition
2. AASHTO M 252, Standard Specification for Corrugated Polyethylene Drainage Pipe

B. ASTM International (ASTM): Latest editions, unless otherwise specified.
1. ASTM C33, Standard Specification for Concrete Aggregates
2. ASTM D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Application.
3. ASTM F405, Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 3200 “Submittal Procedures”:
1. Product Data: Manufacturer's materials description and installation instructions for foundation drainage system.
2. Shop Drawings: Show system layout including elevations recommended for proper drainage flow; properly identify all junctions and list all necessary fittings required for the complete installation.
3. Certification signed by Contractor and foundation drainage system installer that installed materials conform to specified requirements and system was successfully checked and tested prior to covering with drainage fill.

Rebid Documents

1.5 DELIVERY, STORAGE AND HANDLING

A. Do not store plastic pipe and fittings in direct sunlight.

B. Protect pipe, pipe fittings and seals from dirt and damage.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Foundation Drainage Tubing: One of the following.
1. Perforated -Wall Tubing
a. Perforated High-Density Polyethylene (HDPE) Corrugated Tubing and Fittings:
1) NPS 4 and Smaller: ASTM F405 or AASHTO M 252, Type CP; corrugated, for coupled joints.
2) Couplings: Manufacturer's standard, band type.
3) Non-woven geotextile filter fabric pipe wrap.
a) Polypropylene (PP) or polyester fibers or combination of both, with flow rate range from 110 to 330 gpm/sq. ft. when tested according to ASTM D4491.

b. Basis-of-Design: “Goldline”, Soil-tight single-wall pipe with geotextile fabric (Prinsco, Inc.)

2. Solid-Wall Pipes
a. Perforated Polyvinyl Chloride (PVC) Pipe
1) Nominal 4-inch diameter, Schedule 40, per ASTM D 2241; plain end.
2) 1/4-inch minimum and 3/8-inch maximum diameter AASHTO Class 1 perforations.
3) Couplings: Solid plastic.
4) Joint covers: No. 15 asphalt saturated felt.
5) Non-woven geotextile filter fabric pipe wrap.
a) Polypropylene (PP) or polyester fibers or combination of both, with flow rate range from 110 to 330 gpm/sq. ft. when tested according to ASTM D4491.

2.2 AGGREGATE MATERIAL

A. Coarse aggregate conforming to ASTM C33, Size No. 4, 1-1/2 inch to 3/4 inch.

2.3 SOIL MATERIALS

A. Soil materials are specified in Section 31 2323 "Fill."

Rebid Documents

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Notify the Contractor of conditions detrimental to performance of the Work and recommended corrections. Where the installation and its completion may be delayed due to existing conditions, follow notification immediately with a written report. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide trenches for drainage system free of unsuitable materials, with smooth, firm and stable bottoms throughout the length of the system.

3.3 INSTALLTION

A. Install foundation drainage tubing in accordance with ASTM D2321, with at least 6” of filter aggregate on sides of tubing and 12” of filter aggregate above tubing or as shown on the Drawings.
   1. Slope system as required for proper drainage.
   2. Top Side Installation: Install tubing with perforations on or closest to the top side of tubing.
   3. Join perforated PE pipe and fittings with couplings for soil-tight joints according to AASHTO's Standard Specifications for Highway Bridges, Division II, Section 26.4.2.4, "Joint Properties"; or according to ASTM D2321.
   4. Connect sock sections with adhesive or tape.
   5. Use increasers, reducers, and couplings made for different sizes or materials of pipes and fittings being connected. Reduction of pipe size in direction of flow is prohibited.

B. Coordinate installation of foundation drainage to the storm drainage system. Make connections of foundation drainage in accordance with manufacturer’s requirements.

C. Test or check foundation drainage before backfilling to ensure free flow.
   1. Remove obstructions, replace damaged components, and retest system until satisfactory.
   2. After testing drain lines, place additional filter aggregate to a depth of 4" on top of drains prior to backfilling.

D. Backfill and compact as specified in Section 31 2316.13 “Trenching”.

3.4 PROTECTION

A. Protect completed work prior to backfilling and compaction, and drainage trenches not yet completed, by erecting temporary barricades.

Rebid Documents

END OF SECTION 33 4613

Rebid Documents