

Project #2602 Specifications to identify General, Mechanical & Electrical Construction for the Chippewa Downs Grandstand project located in Belcourt, North Dakota.

ARCHITECT

Jiran Architects & Planners, PC
1431 Interstate Loop
Bismarck, ND 58503
Phone (701) 258-7771
e-mail: jeff@jiranpc.com

STRUCTURAL ENGINEER

CW Structural
1000 E Calgary Ave, Suite #2
Bismarck, ND 58503
Phone (701) 221-3286
e-mail: chriswentz@cwstructural.net

CIVIL ENGINEER

Swenson, Hagen, & Co.
900 Basin Ave. #1
Bismarck, ND 58504
Phone (701) 223-2600
e-mail: jpetryszyn@swensonhagen.com

MECHANICAL ENGINEER

Prairie Engineering, P.C.
1905 17th St SE
Minot, ND 58701
Phone (701) 252-6363
e-mail: cbulow@prairieengineeringpc.com

ELECTRICAL ENGINEER

Prairie Engineering, P.C.
1905 17th St SE
Minot, ND 58701
Phone (701) 252-6363
e-mail: tkeeling@prairieengineeringpc.com

I hereby certify that this plan and specification was prepared by me or under my supervision and that I am a duly registered Architect under the laws of the State of North Dakota.



JEFF WELCH, AIA

REGISTERED NUMBER 1274

DATE August 21, 2026

Notice to Contractors
 Advertisement for Bids
 Bid Intent (Section 00100)
 Bid Forms
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 A.I.A. Bid Bond
 A.I.A. Performance/Labor & Material Bond
 A.I.A. Owner/Contractor Agreement A101
 A.I.A. List of Subcontractors
 A.I.A. Pay Request
 A.I.A. Change Order
 A.I.A. Consent of Surety Company to Final Payment
 A.I.A. Waiver of Liens
 A.I.A. Certificate of Substantial Completion
 A.I.A. General Conditions of the Contract for Construction #A201
 TERO Regulations

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	01620	CONSTRUCTION PAYMENT PROCEDURES
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233300	AIR DUCT ACCESSORIES
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- 260583 CONNECTIONS TO EQUIPMENT
- 260943 NETWORK LIGHTING CONTROL SYSTEM
- 262416 PANELBOARDS
- 262713 ELECTRIC SERVICE
- 262726 WIRING DEVICES AND DEVICE PLATES
- 262813 FUSES
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- 262913 MOTOR STARTERS
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DIVISION 27 COMMUNICATIONS

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- 270528 NETWORK SYSTEMS ROUGH-IN
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END OF SECTION

The Turtle Mountain Band of Chippewa Indians will receive bids on September 17, 2026 for the construction of the Chippewa Downs Grandstand project. The project consists of a 5,448 s.f. one story wood framed building with bathrooms, offices, betting windows, and concession kitchen. A pre-engineered 800 seat metal grandstand and press box shall also be included in the scope of the project.. A Single Prime Bid shall represent all General, Mechanical, and Electrical Construction. Bids shall be received at the Tribal Transportation Building 1300 Ogema Road Belcourt, ND 58316., Attention: Chairman Jamie Azure until Thursday, September 17 at 1:30 PM. Central Time at which time qualified submittals will be publicly opened and read.

Work represented includes but is not limited to associated utilities, concrete foundation and slabs, pre-engineered metal grandstand and associated foundation, wood wall framing, steel siding, insulation, metal roofing, wood doors, drywall, vinyl flooring, ducted air supply and return, plumbing, controls, power, lighting, and communications.

Single Prime Bids submitted in duplicate must be accompanied by a Bond payable to The Turtle Mountain Band of Chippewa Indians in the amount equal to five percent (5%) of the bid. This is to serve as a guarantee that the bidder will enter into a Contract for the performance of such work if the Contract is awarded to him. Only bids, which are accompanied by such bond, will be considered.

All bids will be made on the basis of cash payment for such work. After bid opening the Owner will return the bid security of all except the lowest responsible bidders. When the Contract is awarded, the remaining unsuccessful bidder's bond will be returned. The Owner reserves the right to reject any or all bids, and further reserves the right to award the Contract in the best interests of the Owner. The Owner reserves the right to hold the low bids for a period of thirty (30) days after the date of the bid opening.

Each Contractor shall comply with TERO Regulations represented in the specifications for the Turtle Mountain Chippewa Reservation. Prime bidding contractors shall include an identified 3% Fee based upon their contract quote. Turtle Mountain Band of Chippewa Indians expects all Contractors to utilize to the greatest extent feasible, Certified Minority Contractors, subcontractors, and vendors in good standing with the North Dakota Minority Contractors Association. Contractors will be responsible for an EPA fee in the amount of 1% of their contract quote.

Plans and specifications will be available at the following recognized Builders Exchanges for examination: Bismarck-Mandan Exchange, Construction Plans of Bismarck, Minot, Grand Forks, and Fargo all of North Dakota. Construction Industry Center of South Dakota. Minneapolis, St. Paul, Reed Construction Data and McGraw-Hill Dodge Planroom; all of Minnesota.

The documents may further be reviewed in the office of the Owner or Architect, Jiran Architects & Planners, P.C. Bidding Contractors having the proper class of North

Dakota Contractor's License may obtain digital copies of the documents by contracting Jeff Welch at 701-258-7771 jeff@jiranpc.com at no charge.

Any bid not prepared and submitted in accordance with the provisions hereof, shall be considered non-responsive. The Owner may waive any formalities, and retains the rights to reject any or all bids.

END OF NOTICE TO CONTRACTORS

01. GENERAL REQUIREMENTS:

1. *Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.*

02. PURPOSE:

1. The intent of construction documents is to identify construction required for a new Grandstand and Concession / Bathroom building to replace the current facility located in Belcourt, North Dakota.
2. A Single Prime Bid proposals shall be submitted and shall represent all General Construction, Mechanical Construction and Electrical Construction shown on the drawings and defined in the specifications.
3. TERO (Tribal Employment Rights Ordinance) shall be considered part of this project and is included with these documents.
4. All Contractors are required to utilize local labor at every opportunity. Contact the local Tero Office at Belcourt in developing their work plan and follow the ordinance requirements in the minority subcontractors described in the included TERO ordinance included in these specifications. For further information contact:
Tero Office
PO Box 900
Belcourt, ND 58316
Phone (701) 477-2662
5. The **Bid Opening** will be held at Tribal Transportation Building 1300 Ogema Road Belcourt, ND 58316 at 1:30 PM, 2026

03. SCHEDULES:

1. The General Contractor upon award of contracts, shall propose a construction progress chart and submit to Architect and Owner for approval. Upon approvals, the General Contractor shall send one (1) copy each to all subcontractors, suppliers, engineers, and other prime contractors. Each successful Contractor shall sign off on the schedule indicating acceptance of proposed timeframes. The General Contractor is responsible for establishing a schedule, and for coordination on site of all trades. The same Contractor's foreman shall be used throughout this project for continuity.
2. Contractors may start construction as soon as possible. A completion schedule shall be negotiated between all Prime Contractors and the Owner. After a schedule has been agreed to by all parties, Liquidated Damages in the amount of \$500 per calendar day shall be assessed to the General Contractor per calendar day if they do not meet their own scheduled completion date.
3. Contractors shall commence work in the shortest time possible upon a Notice to Proceed, and diligently continue work efforts to an early project completion.
4. Bi-weekly Zoom remote construction meetings will be held to assist and monitor project work flow. In the event that Contractors progress is slower than shown on the scheduled

work program, the Architect will advise they are required to add additional capable staff or work overtime to bring said work into phase at no added cost to the Owner.

04. PROCEDURES:

1. Care shall be taken to protect, staff, public and workmen from all danger during construction. Contractors shall comply with O.S.H.A. and all governing safety precautions.
2. The General Contractor shall be responsible for building and maintaining adequate weatherproof and dust proof enclosures during the complete project term.
3. Contractors and subcontractors will be responsible for loss or damage through accident or careless workmanship. The Contractor is hereby made aware of the Owner's concern and their responsibility for accidents caused by smoking on the project site or the use of any open flame during construction procedures. The Contractor will be responsible for the meticulously careful removal and replacement of all components.
4. Care shall be taken to leave safe exit passage ways from construction area. Contractor shall take particular care when depositing materials on the building site and staging construction activities and maintaining safe traffic/equipment flow.

05. BID FORM:

1. Contractors shall utilize the enclosed bid form when submitting work proposals.

END OF SECTION 00100

CHIPPEWA DOWNS GRANDSTAND

Belcourt, North Dakota

Single Prime Bid Form

Chairman Jamie Azure
Turtle Mountain Band of Chippewa Indians
Belcourt, ND

Dear Chairman Azure:

In compliance with your invitation to bid, the undersigned hereby proposes to furnish all labor, material, equipment, and furnishings required for the **General, Mechanical, and Electrical Construction** of the **Chippewa Downs Grandstand Building** project located in Belcourt, North Dakota as drawn, specified and detailed by Jiran Architects & Planners, P.C., and their Consultants, Bismarck, North Dakota including addenda's No. _____

BASE BID _____ **DOLLARS (\$** _____ **).**

State the amount of all labor, materials, and equipment for the complete construction of the project as drawn and specified.

DEDUCT ALTERNATE 1 _____ **DOLLARS (\$** _____ **).**

State the amount to be DEDUCTED from the Base Bid representing exemption from ND State Sales Tax.

The following Bid Items are for the Owner's information only and will not be a factor in determining the low bidder:

BID ITEM #1 TERO _____ **DOLLARS (\$** _____ **).**

State the amount that is included in the Base Bid for 3% TERO

BID ITEM #2 EPA _____ **DOLLARS (\$** _____ **).**

State the amount that is included in the Base Bid for 1% EPA

This bid may be withdrawn at anytime prior to the scheduled time of submittal or any authorized postponement thereof. The undersigned is a Licensed Contractor, Registered in the State of ND. under License No. _____, Class _____,

Renewed on _____ Day of _____, 20_____.

CONTRACTOR

BY

TITLE

REQUEST FOR APPROVAL OF SUBSTITUTION

PROJECT _____

DATE _____
NO. _____

BID DATE _____

We hereby submit for your consideration the following product instead of the specified item for the above Project.

SECTION	LINE NO.	SPECIFIED NO.
_____	_____	_____

PROPOSED SUBSTITUTION _____

_____ **COMPLETE TECHNICAL DATA, INCLUDING LABORATORY TESTS, IF APPLICABLE, IS ATTACHED.**

(Include complete information on changes to Drawings and/or Specifications, which proposed substitutions will require for its proper installation.)

Does the substitution affect dimensions shown on drawings? Yes No
Describe _____

Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution? Yes No

Does the Substitution affect other Trades Yes No

Describe differences between proposed substitution and specified items. _____

Manufacture's Guarantees of the proposed and specified items are different: (Explain on attachment.) Yes No

Submitted By: (Print name) _____

Firm Name & Address _____

DATE _____

Telephone # _____

Response of Specifiers:

_____ Request is approved Subject
Compliance with the specification and
An addendum will be issued.

_____ Approval cannot be granted
Because the request did not reach this
Office within the specified time.

_____ Approval cannot be granted at his
time.

_____ Prior Approval is NOT Required.

BY _____

(Signature)

AIA® Document A701® – 2018

Instructions to Bidders

for the following Project:
(Name, location, and detailed description)

Chippewa Downs Horse Track Grandstand
Belcourt, ND

This project consists of pre-manufactured grandstand structure with a seating capacity of 800 and a building constructed behind it to house a lobby, concessions, betting windows, bar, lounge, and restrooms. The building will be constructed with wood framed walls and roof. The building's foundations will consist of cast-in-place concrete frost foundation walls and spread footings. The foundations for the grandstands will consist of drilled concrete pier, piers and pad footings or possibly helical piers depending on site soil conditions and recommendations from a licensed Geotechnical Engineer. The project will also include demolition of the existing grandstand structure and related building.

THE OWNER:

(Name, legal status, address, and other information)

Turtle Mountain Band of Chippewa Indians
PO Box 900
Belcourt, ND 58316
701-477-2607

THE ARCHITECT:

(Name, legal status, address, and other information)

Jiran Architects & Planners, PC
1431 Interstate Loop
Bismarck, ND 58503
701-258-7771

TABLE OF ARTICLES

- 1 DEFINITIONS**
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- 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS**

ADDITIONS AND DELETIONS:

The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612™–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

§ 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.
(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

§ 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:
(Insert the form and amount of bid security.)

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning days after the opening of Bids, withdraw its Bid and request the return of its bid security.

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:

(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

§ 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement,

unless such a Statement has been previously required and submitted for this Bid.

§ 6.2 Owner's Financial Capability

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- 1** a designation of the Work to be performed with the Bidder's own forces;
- 2** names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- 3** names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)

§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.4 Building Information Modeling Exhibit, if completed:

.5 Drawings

Number	Title	Date
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.6 Specifications

Section	Title	Date	Pages
---------	-------	------	-------

.7 Addenda:

Number	Date	Pages
--------	------	-------

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

☐ AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017.)

☐ The Sustainability Plan:

Title	Date	Pages
-------	------	-------

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
----------	-------	------	-------

- .9 Other documents listed below:
(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Turtle Mountain Band of Chippewa Indians
PO Box 900
Belcourt, ND 58316

BOND AMOUNT: \$**PROJECT:**

(Name, location or address, and Project number, if any)
Chippewa Downs Horse Track Grandstand

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

ADDITIONS AND DELETIONS:

The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR AS PRINCIPAL *(Signature)*

(Printed name and title)

(Witness)

SURETY *(Signature)*

(Printed name and title)

(Witness)

AIA® Document A312® – 2010

Performance Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Turtle Mountain Band of Chippewa Indians

PO Box 900

Belcourt, ND 58316

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

Chippewa Downs Horse Track Grandstand

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

ADDITIONS AND DELETIONS:

The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

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Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

Company: *(Corporate seal)*

Company: *(Corporate seal)*

CONTRACTOR AS PRINCIPAL
(Signature)

SURETY *(Signature)*

(Printed name and title)

(Printed name and title)

(Any additional signatures appear on the last page of this Performance Bond)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party)

Jamie Azure

PO Box 900

Belcourt, ND 58316

701-278-5477

Jamie.Azure@tmbci.org

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

- 3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)



AIA® Document A312® – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Turtle Mountain Band of Chippewa Indians
PO Box 900
Belcourt, ND 58316

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

Chippewa Downs Horse Track Grandstand

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

ADDITIONS AND DELETIONS:

The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

Company: *(Corporate seal)*

Company: *(Corporate seal)*

CONTRACTOR AS PRINCIPAL
(Signature)

SURETY *(Signature)*

(Printed name and title)

(Printed name and title)

(Any additional signatures appear on the last page of this Payment Bond)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:
OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

Jamie Azure
PO Box 900
Belcourt, ND 58316
701-278-5477
Jamie.Azure@tmbci.org

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1** have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2** have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under

this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the _____ a day of _____ in the year Two Thousand Twenty-Six
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Turtle Mountain Band of Chippewa Indians
PO Box 900
Belcourt, ND 58316
701-477-2607

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

Chippewa Downs Horse Track Grandstand
Belcourt, ND

This project consists of pre-manufactured grandstand structure with a seating capacity of 800 and a building constructed behind it to house a lobby, concessions, betting windows, bar, lounge, and restrooms. The building will be constructed with wood framed walls and roof. The building's foundations will consist of cast-in-place concrete frost foundation walls and spread footings. The foundations for the grandstands will consist of drilled concrete pier, piers and pad footings or possibly helical piers depending on site soil conditions and recommendations from a licensed Geotechnical Engineer. The project will also include demolition of the existing grandstand structure and related building.

The Architect:
(Name, legal status, address and other information)

Jiran Architects & Planners, PC
1431 Interstate Loop
Bismarck, ND 58503
701-258-7771

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- ☐ The date of this Agreement.
- ☐ A date set forth in a notice to proceed issued by the Owner.
- ☐ Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

- ☐ Not later than () calendar days from the date of commencement of the Work.
- ☐ By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price
------	-------

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
------	-------	---------------------------

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price
------	-------

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
------	-----------------------	-------------------------

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

§ 4.6 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- 1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- 2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

%

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

- ☐ Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- ☐ Litigation in a court of competent jurisdiction
- ☐ Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the

Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:

(Name, address, email address, and other information)

§ 8.3 The Contractor's representative:

(Name, address, email address, and other information)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with a building information modeling exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with a building information modeling exhibit, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 Building information modeling exhibit, dated as indicated below:
(Insert the date of the building information modeling exhibit incorporated into this Agreement.)

- .5 Drawings

Number	Title	Date
--------	-------	------

- .6 Specifications

Section	Title	Date	Pages
---------	-------	------	-------

.7 Addenda, if any:

Number	Date	Pages
--------	------	-------

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

☐ AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

☐ The Sustainability Plan:

Title	Date	Pages
-------	------	-------

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
----------	-------	------	-------

.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

(Printed name and title)

CONTRACTOR (Signature)

(Printed name and title)

AIA[®] Document G705[™] – 2001

List of Subcontractors

PROJECT:*(Name and address)*
Chippewa Downs Horse Track Grandstand

DATE:

TO ARCHITECT:*(Name and address)*
Jiran Architects & Planners, PC
1431 Interstate Loop
Bismarck, ND 58503

ARCHITECT'S PROJECT NUMBER:
2602

FROM CONTRACTOR:*(Name and address)*

CONTRACTOR'S PROJECT NUMBER:

(List Subcontractors and others proposed to be employed on the above Project as required by the bidding documents.)

Work/Firm Name	Address/Phone	Superintendent

AIA® Document G702® - 1992
Application and Certificate for Payment

TO OWNER: Turtle Mountain Band of Chippewa Indians PROJECT: Chippewa Downs Horse Track Grandstand APPLICATION NO: 001 Distribution to:
PO Box 900 OWNER: []
Belcourt, ND 58316 ARCHITECT: []
FROM Jiran Architects & Planners, PC CONTRACTOR FOR: []
CONTRACTOR: 1431 Interstate Loop CONTRACT DATE: []
Bismarck, ND 58503 PROJECT NOS: 2602 / / OTHER: []

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. AIA Document G703, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM \$0.00
2. NET CHANGE BY CHANGE ORDERS \$0.00 CONTRACTOR:
3. CONTRACT SUM TO DATE (Line 1 + 2) \$0.00 By: Date:
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) \$0.00 State of: County of:
5. RETAINAGE: Subscribed and sworn to before me this day of Notary Public: My Commission expires: \$0.00

6. TOTAL EARNED LESS RETAINAGE \$0.00
(Line 4 Less Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT \$0.00
(Line 6 from prior Certificate)
8. CURRENT PAYMENT DUE \$0.00 AMOUNT CERTIFIED \$0.00
(Line 3 less Line 6)

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.
(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$0.00	\$0.00
Total approved this Month	\$0.00	\$0.00
TOTALS	\$0.00	\$0.00
NET CHANGES by Change Order		\$0.00

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.



Continuation Sheet

**Chippewa Downs Horse
Track Grandstand**

APPLICATION NO.:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO.:

[illegible]



AIA Document G701® – 2017

Change Order

PROJECT: <i>(Name and address)</i> Chippewa Downs Horse Track Grandstand Belcourt, ND	CONTRACT INFORMATION: Contract For: --- Date: ---	CHANGE ORDER INFORMATION: Change Order Number: 001 Date: ---
OWNER: <i>(Name and address)</i> Turtle Mountain Band of Chippewa Indians PO Box 900 Belcourt, ND 58316	ARCHITECT: <i>(Name and address)</i> Jiran Architects & Planners, PC 1431 Interstate Loop Bismarck, ND 58503	CONTRACTOR: <i>(Name and address)</i>

THE CONTRACT IS CHANGED AS FOLLOWS:

(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)

The original Contract Sum was	\$	0.00
The net change by previously authorized Change Orders	\$	0.00
The Contract Sum prior to this Change Order was	\$	0.00
The Contract Sum will be unchanged by this Change Order in the amount of	\$	0.00
The new Contract Sum including this Change Order will be	\$	0.00

The Contract Time will be unchanged by () days.

The new date of Substantial Completion will be

NOTE: This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.

ARCHITECT <i>(Signature)</i> BY: Jeff Welch, AIA, Project Architect <i>(Printed name, title, and license number if required)</i> _____ Date	CONTRACTOR <i>(Signature)</i> _____ <i>(Printed name and title)</i> _____ Date	OWNER <i>(Signature)</i> BY: Jamie Azure, Tribal Chairman <i>(Printed name and title)</i> _____ Date
--	---	---

AIA[®] Document G707[™] – 1994

Consent of Surety to Final Payment

PROJECT: <i>(Name and address)</i>	ARCHITECT'S PROJECT NUMBER:	OWNER: []
Chippewa Downs Horse Track Grandstand	2602	ARCHITECT: []
	CONTRACT FOR:	CONTRACTOR: []
	CONTRACT DATED:	SURETY: []
		OTHER: []
TO OWNER: <i>(Name and address)</i>		
Turtle Mountain Band of Chippewa Indians		
PO Box 900		
Belcourt, ND 58316		

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

on bond of
(Insert name and address of Contractor)

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall
not relieve the Surety of any of its obligations to
(Insert name and address of Owner)

Turtle Mountain Band of Chippewa Indians
PO Box 900
Belcourt, ND 58316

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

Attest:
(Seal):

SURETY *(Signature)*

(Printed name and title)



AIA® Document G706®A – 1994

Contractor's Affidavit of Release of Liens

PROJECT: <i>(Name and address)</i> Chippewa Downs Horse Track Grandstand	ARCHITECT'S PROJECT NUMBER : 2602	OWNER: [] ARCHITECT: [] CONTRACTOR: [] SURETY: [] OTHER: []
TO OWNER: <i>(Name and address)</i> Turtle Mountain Band of Chippewa Indians PO Box 900 Belcourt, ND 58316	CONTRACT FOR: CONTRACT DATED: ,	

STATE OF:
COUNTY OF:

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

**SUPPORTING DOCUMENTS ATTACHED
HERETO:**

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

CONTRACTOR'S Authorized Representative (Signature)

(Printed name and title)

Date

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:



AIA Document G704® – 2017

Certificate of Substantial Completion

PROJECT: *(name and address)*
Chippewa Downs Horse Track Grandstand

CONTRACT INFORMATION:
Contract For:
Date:

CERTIFICATE INFORMATION:
Certificate Number:
Date:

OWNER: *(name and address)*
Turtle Mountain Band of Chippewa Indians
PO Box 900
Belcourt, ND 58316

ARCHITECT: *(name and address)*
Jiran Architects & Planners, PC
1431 Interstate Loop
Bismarck, ND 58503

CONTRACTOR: *(name and address)*

The Work identified below has been reviewed and found, to the Architect's best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate. *(Identify the Work, or portion thereof, that is substantially complete.)*

ARCHITECT <i>(Signature)</i>	BY: Jeff Welch, AIA, Project Architect <i>(Printed name, title, and license number if required)</i>	<i>Date Of Substantial Completion</i>
-------------------------------------	---	---------------------------------------

WARRANTIES

The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:
(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)

WORK TO BE COMPLETED OR CORRECTED

A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:
(Identify the list of Work to be completed or corrected.)

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within () days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: \$

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:
(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

CONTRACTOR <i>(Signature)</i>	<i>(Printed name and title)</i>	<i>Date</i>
OWNER <i>(Signature)</i>	BY: Jamie Azure, Tribal Chairman <i>(Printed name and title)</i>	<i>Date</i>



AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Chippewa Downs Horse Track Grandstand
Belcourt, ND

THE OWNER:

(Name, legal status and address)

Turtle Mountain Band of Chippewa Indians
PO Box 900
Belcourt, ND 58316

THE ARCHITECT:

(Name, legal status and address)

Jiran Architects & Planners, PC
1431 Interstate Loop
Bismarck, ND 58503

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This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™–2017, Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the

purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct,

but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as

constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The

Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the

Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others

whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

- or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;

- 2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- 3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed

by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve

the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to

fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or

approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- 1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- 2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- 3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- 4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner

may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially

similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

TITLE 18

TURTLE MOUNTAIN BAND OF CHIPPEWA INDIANS

BUSINESS REGULATIONS & LICENSES

2012

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BUSINESS REGULATIONS AND LICENSES
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Licensure and Regulations of Child Care Centers

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TITLE 18
BUSINESS REGULATIONS AND LICENSES

CHAPTER 18.01
Administration and Enforcement

18.0101 General.

The administration and enforcement of this Title is vested in and shall be exercised by the Director of the "Tribal Employment Rights Ordinance" (TERO). All payments and fees regarding business shall be made to the Director of TERO.

18.0102 Regulatory license.

If any other title, ordinance or law of the Turtle Mountain Band of Chippewa requires a person or business license under this Title to obtain a license or permit for regulatory purposes, no license or permit under this Title shall be issued until the business has obtained the required license or permit.

18.0103 Business license.

Unless otherwise specifically provided in this Title, all persons, association, companies, firms or corporations conducting or engaged in any business or trade within the Turtle Mountain Band of Chippewa (reservation) jurisdiction must obtain a license or permit. Application for, issuance, termination, and revocation of such license shall be governed by the terms of this Title.

18.0104 License; Application.

Any person desiring a license or permit shall make a written application to the Director of TERO therefore upon completion of a blank application furnished by the TERO Commission and upon filing the same with the Director of TERO stating a description of the business, the name and address of the business, the purpose for which the same is desired, for what length of time, and specifying the place where the business is to be carried on; if required to file a bond before being licensed the person shall also name the proposed sureties on the bond in his application.

18.0105 License; Granting.

1. The TERO Director shall receive applications for licenses and permits, and upon approval grant the same in all cases where expressly authorized upon the terms and conditions specified by this Title. The Director will refer any applications for any purpose not named by this Title to the TERO Commission for a determination of the Director's authority to grant any license or permit.
2. Upon receipt of each application the TERO Director shall conduct such investigation of the applicant's business and moral character, as he deems necessary for the protection of the public good. If an investigation is conducted and the applicant's character or business responsibility is found to be unsatisfactory, the TERO Director shall notify the applicant that his application is disapproved and that no license will be issued; or the TERO Director at his discretion may issue a temporary license and allow the applicant time to clear any questions of the TERO Director concerning the applicant that may exist. If the character and business responsibility of the applicant are found to be satisfactory, the TERO Director shall recommend approval to the TERO Commission. If approved by the TERO Commission, the TERO Director shall endorse the license and deliver it to the applicant.
3. Upon approval of the application by the TERO Commission and payment of the fee, a business license shall be issued to the applicant on a form approved by the TERO Commission. The license shall be signed by the TERO Director or his authorized representative. The license shall specifically

describe the business or trade to be conducted, the name of the business, and the name of the owner or principal owners, and the location at which the business or trade will be conducted.

4. If an application for a license or permit is denied, the applicant is entitled to a hearing within ten (10) days of the denial. The hearing will be informal and with the TERO Director. If the denial is not reversed the applicant may appeal the denial through Title 22, Tribal Administrative Procedures Act.

18.0106 Persons engaging in more than one business.

Persons who engage in more than one business shall pay a fee and obtain a business license for each type of business. The TERO Director will have full discretion to determine if each business is non-integrated or separate and apart from the other, or if each business is one and the same.

18.0107 Jurisdiction.

All persons subject to the provisions of this Title shall be deemed to have consented to the full and exclusive jurisdiction of the Turtle Mountain Court as a condition of doing business within the boundaries of the Turtle Mountain Band of Chippewa jurisdiction. In any action in which the Tribal Court determines that the position of the TERO Director is substantially upheld, the licensee shall be liable for costs incurred by the Tribe including reasonable attorneys fees.

18.0108 License; Term.

1. Annual business license. No License or permit shall be granted for a longer period than one (1) year.
2. All annual business licenses are issued annually and must be renewed before due date of each calendar year.
3. Short term (temporary) Business License: A short term or temporary business license is any license issued for a period not to exceed three months.
4. Permit: A permit may be issued on a daily basis and for contractors as provided for in Section 18.0203 of this Title.
5. No license or permit shall be valid until signed and sealed, nor shall any person be deemed licensed until a license is duly issued to him by the TERO Director.
6. Each license shall be dated the day of issuance thereof, but if the applicant or applicants shall have been acting without a license, the license shall commence with the date business commenced; if the business calls for a yearly license then the license shall commence on the date of approval of the business for which the license shall be issued.
7. The date of issuance of the license, together with the time of commencing and expiration shall be specifically set forth by the license and license record.

18.0109 Transacting a business without a license.

1. A person, company, association, firm partnership or corporation conducting or engaging in any business within the Turtle Mountain jurisdiction without a valid business license shall be notified of their liability for the business license fee and shall be sent a notice for the amount due. The notice shall inform the person that no further business may be conducted on the Turtle Mountain Tribal land unless the person obtained a business license. There shall also be imposed a penalty of twenty-five dollars (\$25.00) per day, exclusive of any other provisions of this Title, upon any person for each day that his business is conducted without a valid tribal license. The TERO Director will determine when the business first started without a license.
2. If a person continues to conduct or engage in a business or trade without a business license, in addition to any other rights accorded by this Title

or Tribal Code, The TERO Director may institute an action in the Turtle Mountain Tribal Court to enjoin the activity until a business license is obtained. The court may also take such other action as is necessary to enforce the provisions of this Title, including imposing a penalty equal to the business license fee due along with costs and expenses.

18.0110 Complying with laws and regulations.

Any person or business operating within the jurisdiction of the Turtle Mountain Band of Chippewa shall comply with all laws and regulations of the Turtle Mountain Tribal Community.

18.0111 License; Not transferable.

No License or permit shall be assignable or transferable except by permission of the TERO Commission. No person other than the person to whom the license is granted shall be authorized to do business or act under such license at any other than the place specified therein. The TERO Commission may grant the continuance of the business licensed to any other portion of the Reservation, such permission to be certified on the license by the TERO Director. No license shall authorize any person to act under it at more than one (1) place at the same time, or at any other place than is therein specified. Whoever shall violate any of the provisions of this section shall be deemed to be acting without a license and shall be subject to the same penalty as prescribed for acting without a license.

18.0112 Licenses; Revocation.

1. All licenses granted shall be subject to laws and regulations in force at the time of issuing thereof or which may be subsequently passed by the Tribal Council or TERO Commission. Any person who shall violate any provision of this Title relating to his license may be processed against for any fine or penalty imposed thereby, and his license may be revoked or forfeited in the discretion of the TERO Director, the TERO Commission or the Tribal Court if an action is brought for the recovery of any fine or penalty.

Where not otherwise provided, any license may be terminated or revoked by the TERO Director or the TERO Commission at any time for cause. "Cause" shall include, but not be limited to, the following:

- a. Violation of the Turtle Mountain Tribal Code dealing with or pertaining to the business or trade licensed;
- b. The willful making of any false statement or misrepresentation as to a material fact in the application for license;
- c. The death of a licensee;
- d. When the licensee ceases business at the location licensed;
- e. Conviction of any crime; or
- f. Conducting business in an unlawful manner or in such a manner as to constitute a breach of the peace, or to constitute a menace to the health, safety, or general welfare of the Tribe, or permitting any disorderly or immoral practices upon the premises where the licensee is licensed to carry on the business or trade.

When the license is terminated or revoked for cause, the licensee or those claiming under him shall not be entitled to any return of any portion of the license fee previously paid to the TERO Commission.

2. When a license is terminated or revoked it will be effective immediately, and the licensee is entitled to a hearing with the TERO Director within ten (10) days of termination or revocation.
3. Notice of the hearing for revocation of a license shall be given by the TERO Director in writing setting forth specifically the grounds for complaint and the time and place for hearing. Such notice shall be mailed to the licensee at his last known address at least forty-eight (48) hours prior to the date set for the hearing, or shall be delivered by a law enforcement officer in the same manner as a summons at least forty-eight

(48) hours prior to the date set for the hearing. The hearing will be informal and with the TERO Director. If the termination or revocation is not reversed, the licensee can appeal the decision through Title 22, Tribal Administrative Procedures Act.

18.0113 Licenses; Posting of.

All licenses and permits issued by the TERO Director for the operation of any business establishment, trade, or any part of the operation thereof, shall be posted in a conspicuous place in the main business area of the business establishment; where badges representing permits or licenses are issued to be worn by an individual, such licensee shall wear such badge during the normal course of employment for which said badge was issued.

18.0114 Licenses; Enforcement.

All Tribal officials having duties to perform with reference to licensed premises, including all police officers, shall have authority to enter the license premises with or without a search warrant to check for violations of Tribal laws by the licensee.

18.0115 License fee; Deposition of.

All license fees collected under this Title shall be transferable to the Finance Dept. of the Tribe and credited to the general fund of the Turtle Mountain Band of Chippewa Indians, unless otherwise provided in this Title.

18.0116 Violations; Criminal; Indian.

Unless otherwise provided in this Title, any person violating any of the provisions of this Title shall be guilty of an offense and shall be punished pursuant to Section 26.0601 of the Tribal Code.

18.0117 Violation; Punishment; Persons not subject to Turtle Mountain criminal jurisdiction.

Unless otherwise provided in this Title, persons determined not to be subject to Turtle Mountain Criminal jurisdiction violating any of the provisions of this Title shall be removed from the Reservation pursuant to Article IX, Section 4 of the Constitution and Bylaws of the Turtle Mountain Band of Chippewa Indians.

18.0118 Civil penalty.

Instead of proceeding under Sections 18.0116 or 18.0117 of this, or any other provisions provided by this Title, the TERO Director may assess a civil penalty against any person who he shall have probable cause to believe is in violation of this Title. Said civil penalty shall not be less than twenty-five dollars (\$25.00) per violation or per day of violation.

18.0119 License fees.

Every person or business issued or reissued a business license shall pay a license fee as follows:

1. Annual business license - \$150.00 per year;
2. Short term or temporary business license fee for members of Turtle Mountain - \$50.00 for any period up to 3 months;
3. Short term or temporary business license fee for non-members of Turtle Mountain - \$75.00 for any period up to 3 months; and
4. Short term or temporary business license fee for a period of one (1) day or less would be \$25.00 per day.

18.0120 Authorization for inspection of customer records.

1. Except as otherwise specifically provided by tribal law, any tribal governmental body (other than the Tribe itself), board, bureau, commission, utility, or agency, or any political subdivision of the Tribe, or organizations or agencies supported, in whole or in part, by tribal

funds or expending tribal funds, may not disclose customer information to any other person, tribal agency, or law enforcement agency unless disclosure is made in accordance with any of the following:

- a. Consent is granted by the customer in writing and signed by the customer;
- b. To a tribal agency, other governmental agency, or law enforcement agency pursuant to valid legal process.
- c. To any other person pursuant to valid legal process; or
- d. For the purposes of reporting a suspected violation of the law when the tribal entity reasonably believes that the customer is engaged in unlawful activity.

Customer information refers to any information derived from a customer's records.

2. Intentional violations of this section by a tribal agency or any other person, or a willful failure by the tribal agency or any other person to make these records available within ten (10) days after written authorization, or within the time limits prescribed by legal process, may result in a liability for an amount up to two hundred fifty dollars (\$250.00), plus attorneys fees incurred in any proceeding to enforce this section. Any tribal agency, or other person acting in good faith on any provision in this Section, may not be held liable to the customer or any other person.
3. Any agency or person requiring or requesting access to customer information shall make such request in writing, and pay to the tribal entity that assembles or provides the customer information reasonable costs incurred for supplying the information.

CHAPTER 18.02

Definitions

18.0201

Definitions.

1. "Business" includes all activities or acts, personal or corporate, engaged in with the object of gain, benefit, or advantage, either direct or indirect. For the purposes of this definition business does not include occasional or casual activities and sales. An occasional or casual activity occurs when a person engages in an isolated transaction that is not conducted with such frequency or is not one of a series of activities as to be sufficient to consider the person as regularly conducting the activity. "Business" shall include, but not be limited to:
 - a. Construction companies, contractors, repair services, or installation services;
 - b. manufacturing or industrial concerns;
 - c. retail and mercantile merchants;
 - d. Automobile service stations, garages, repair or body shops;
 - e. Retailer, wholesaler, manufacturer, contractors or any other business not located or having a place of business on the Turtle Mountain Reservation, but making sales and deliveries or providing services within the jurisdiction of the (Turtle Mountain Band of Chippewa Indians);
 - f. a farming or agricultural operation making use of land belonging to the Turtle Mountain Band of Chippewa, but shall not include such an operation primarily owned and operated by a tribal member of the Turtle Mountain Band of Chippewa;
 - g. Any casino, enterprise, amusement park, sports arena, or center which is open to the public and conducted for profit;
 - h. A motel, hotel, rooming house, trailer court, mobile home park, bowling alley, or Laundromat;
 - i. A restaurant, bar, café, or snack bar; or
 - j. Traveling merchants, food vendors, or peddlers.

2. "Contractor" means a person, firm, partnership, corporation, limited liability company or any of them, who undertakes to, or does himself, or by or through others, construct, alter, repair, add to, subtract from, improve, move, wreck or demolish any building, highway, road, railroad, irrigation system, excavation or other structure, project, development or improvement, or to do any part thereof, including the erecting of scaffolding, or other structure or works in connection therewith, and includes subcontractors.
3. "Person" includes an individual, officer, agent, company firm, partnership, joint venture, association, corporation, state, trust, or any other group or combination acting as unit, and shall include the singular and the plural.
4. "Short term or temporary business" shall include the same definition as under "business," but the business is only intended to be conducted for a limited duration of time, not to exceed three (3) months, and the person does not intend to become an annual yearly business.

18.0202 Bond.

As a condition of transacting business within the Turtle Mountain jurisdiction, the TERO Director may require a person or business to give a bond to TERO to secure the license provided for herein payable in the event that such a person fails to abide under the terms of this Title. Such bond shall be in the sum of not less than one hundred dollars (\$100), and not more than one thousand (\$1,000) with sureties to be approved by the TERO Commission.

18.0203 Contractor.

1. Any person desiring a permit as a contractor shall pay to the TERO Director a fee of twenty-five dollars (\$25.00). In the case of a construction contract, such permit shall be valid only for those construction contractors for which the permit was issued. The performance of an additional construction contract shall require an additional permit.
2. In the alternative, an applicant may apply for an annual contractor's license, and shall upon receipt of such license, pay to the TERO Director a fee of one hundred and fifty dollars (\$150.00). Such annual license permits the applicant to operate within the Turtle Mountain jurisdiction as a contractor for the period for which such license is issued, and shall permit the applicant to perform any number of construction contracts during such period.

CHAPTER 18.05

Licensure and Regulations of Child Care Centers

18.0501 Purposes and definition.

1. The purpose of this chapter is to secure the safety and well being of the children residing on the reservation or within Indian country who are under the supervision of a childcare center. This purpose shall be achieved by establishing standards for the licensure and regulation of all childcare centers operating within the jurisdiction of the Turtle Mountain Band of Chippewa Indians.
2. Definitions:
 - a. "Child Care Center" means an early childhood facility where early childhood services are provided to four (4) or more children for a fee.
 - b. "Parent" as used for the purposes of this Chapter only, means the natural parent, step-parent, grandparents, or legal guardian or temporary or permanent custodian of a minor child.

18.0502 Application form.

1. Application for an unrestricted license to operate a childcare center shall be made through the TERO office and in accordance with the

- reasonable requirements of that office. The fee for such license shall be established by TERO, subject to approval of the TERO Commission.
2. The TERO office shall develop and make available a standardized application for licensure. Such applications must include the following information at a minimum:
 - a. Business name, address, and phone number of child care center.
 - b. Statement of tribal fire authorities that center is in compliance with applicable fire code regulations;
 - c. Name, address, and telephone number of child care center operator;
 - d. Name, address, and telephone number of child care center director; and
 - e. Total area of childcare center measured in square feet.
 3. Should a licensed child care center or applicant for a child care license change ownership or location, a new application for licensure must be filed within thirty (30) days.

18.0503 Review of application.

1. The TERO office shall review all applications for childcare licensure. A representative of the TERO office shall visit the childcare center to view the facility, and interview the director and operator of the center. During such interview, such representative shall inquire about and determine that the minimum standards for licensure under this chapter are met by the center.
2. Within sixty (60) days after receipt of an application for licensure by TERO, the TERO Director shall recommend approval to the TERO Commission. If approved by the TERO Commission, the TERO Director shall endorse the license and deliver it to the applicant.
3. All decisions of the TERO Commission are final. No person denied a license shall be eligible to reapply for a period of three (3) months.

18.0504 Unrestricted child care license.

An Unrestricted Child Care License shall contain the following information:

1. Name of center and operation;
2. Date of issuance and signature of the designated tribal licensing office;
3. The maximum number of children which may be cared for by the center;
4. The center is in compliance with the minimum licensing requirements for child care centers set out under this Title; and
5. The term of the license.

18.0505 Provisional license.

1. In the event the designated tribal licensing office determines that a childcare center has had inadequate time to comply with the requirements set out in this chapter, it may, in its discretion, issue a provisional child care license.
2. The Provisional License shall contain the following information:
 - a. Name of center and operator;
 - b. Date of issuance and signature of representative of designated tribal licensing office;
 - c. The center has failed to meet the minimum licensing requirements set out under Section 18.0130, but has been granted a one (1) year period of time in which to bring the center into compliance;
 - d. The maximum number of children which may be cared for by the center;
 - e. Each area of noncompliance has been documented by the designated tribal licensing office and a copy may be obtained by contacting the designated tribal licensing office;
 - f. The license expires automatically upon one year from the date of issuance; and
 - g. Upon proof of compliance with the minimum licensing requirements set out under Chapter 18, the center shall be issued an unrestricted child care license.

18.0506**Rights of provisional licensee.**

1. An applicant receiving a provisional license has the right to:
 - a. Receive a written statement of all areas of the center, which are presently in noncompliance;
 - b. Receive a written statement of the rationale of the designated tribal licensing office for the denial of an unrestricted child care license; and
 - c. Appeal the denial of an unrestricted license to the TERO Commission within fifteen (15) days of the denial. The TERO Commission shall provide the applicant with notice and an informal hearing on the licensure before at least three (3) members of the TERO Commission within fifteen (15) days of receipt of the request for appeal.
2. A provisional license, subject to the exceptions contained in this chapter, entitles the licensee to all rights and privileges afforded the holder of an unrestricted childcare license. Receipt of a provisional license will be recognized by the Tribe as evidence of compliance with licensure requirements of this chapter.
3. The licensee must publicly post or display the provisional license in clear view of patrons of the childcare center.

18.0507**Minimum qualifications and duties of the operator of a child care center.**

The operator shall be at least twenty-one (21) years of age.

1. The operator may be any person, firm, partnership, corporation, limited liability company or any entity as designated by the TERO Commission.
2. The operator must:
 - a. Ensure that the center is in compliance with all licensure standards set out in this Chapter;
 - b. Establish a child care program;
 - c. Apply for a child care license;
 - d. Develop and make available to parents, staff and the designated tribal licensing office, upon request, a plan for operation of the center, a policy of enrollment for children, and a statement of the rights and responsibilities of staff and parents;
 - e. Maintain records of enrollment, attendance, and health of the children and all other records required to be maintained under this Chapter;
3. The operator shall be responsible for all center staff volunteers and others providing services within the center.
4. Ensure that parents of children enrolled in the center are informed of the center's policies and procedures, including the center schedule and content of the child care programming, policy on discipline, and policy in the case of a child's illness or accident.
5. Develop a written agreement to govern the center's relationship with parents of children enrolled in the center which shall contain the amount of fees to be charged for care, the method of payment of those fees, and the center's policy, if any, on payment of delinquent fees. This written agreement should include information on any governmental or other childcare program in which the parent is enrolled. Examples of such programs include the Childcare Block Grant, the Cross Roads Program, and T.A.N.F. childcare program. The written agreement shall include the percentage of fees, which are paid for by the governmental or other program and the amount, which is the parent's responsibility.
6. Develop written policies governing the emergency medical care and treatment of children enrolled in the program, and policies providing for the care of children with special physical, emotional, or psychological needs.
7. Develop a written policy for assuring the care and safety of personal property of children enrolled in the center.
8. Comply with all North Dakota requirements for the mandatory reporting of suspected child abuse or neglect made applicable by this Title, and

develop a policy and procedure for the reporting of suspected abuse or neglect by staff.

9. Develop a schedule for employees of the center which ensures that a staff member with current C.P.R. certification, in accordance with the Turtle Mountain Tribal Code or North Dakota certification requirements, made applicable by this Title, is present in the center at all times when children are receiving care in the center.

18.0508

Minimum requirements for care givers employed in a licensed child care center.

1. The child care center shall maintain a record of all employees and volunteers of the center which shall contain the person's name, address, and phone number, and shall provide a copy of such to the designated tribal licensing office upon request.
2. All care givers employed or volunteering at a child care center shall certify to the designated tribal licensing office, within thirty (30) days of employment with a center, that he or she does not have a health problem which will interfere with the ability to provide adequate child care, or would be detrimental to the health of the children or center staff.
3. Any care giver or applicant for a position as a care giver with access to children enrolled at the center who has been arrested for, charged civilly or criminally with, or been convicted of child abuse or neglect of his or her own children, or those of another person, shall disclose that fact to the designated tribal licensing office and furnish, upon request, information demonstrating that the individual has the ability to provide satisfactory care to children enrolled in the center. The designated tribal licensing office may, at its discretion, require the caregiver or applicant provide it with copies of criminal and civil records, medical records, and other documentation normally accorded privilege or confidential status. If the designated tribal licensing office determines that the caregiver or applicant presents a potential threat to the safety or well being of the children enrolled in the center, it may prohibit that person from working in a licensed childcare center.

18.0509

Minimum standards for records maintained by center on children enrolled in center.

1. The following information shall be obtained and maintained for each child enrolled in the center, and shall be updated as necessary, and at least once annually:
 - a. Child's full name, birth date, and current address;
 - b. Name, address, phone number, place of employment, and business phone number of parent.
 - c. Names, addresses, phone numbers of all persons able to assume responsibility for the child in the event the parent cannot be reached in an emergency;
 - d. Written consent form signed by parent permitting emergency medical treatment of the child;
 - e. Signed authorization of the parent listing the names, addresses and telephone numbers of all persons authorized to take the child off the premises of the center.
 - f. Copies of written authorizations signed by the child's parent, which permit the center to dispense or administer medication, prescription or otherwise. The child's name must be printed on all prescription medication, and the container must bear written instructions containing dosage amount and frequency; and
 - g. Verification that the child's immunizations are current.
2. All information pertaining to the admission, progress, health, finances and discharge of the child care enrollee shall be confidential, and release of that information limited to the parent, the designated representative of the parent, and the child care center.

18.0510**Emergency plan requirement.**

A center must have a plan demonstrating the ability to respond to emergency events, which must include the following:

1. Annual fire inspection completed by the tribal fire authorities;
2. Emergency response procedures, including a plan for emergency evacuation in the event of fire or other disaster, conspicuously posted in the center;
3. At least one (1) staff member present at all times when care is being provided to children, who has completed a minimum of five (5) hours of first-aid training;
4. At least one (1) approved first-aid kit maintained and kept in a designated location, which is inaccessible to children, yet readily accessible to staff.
5. Storage facility for medicine, which is inaccessible to children, yet readily accessible to staff, and appropriate for the storage of medicine.
6. Provision for transportation by an adult to a hospital or other facility in the event of an emergency, which adult must remain at the hospital or other facility until such time as the parent or other responsible adult designated by the parent can be reached to supervise the child's medical or other treatment.

18.0511**Sanitation and safety requirements.**

1. The facility must have an annual health and sanitation inspection completed by an environmental health practitioner. All reports of such inspection shall be filed with the TERO office including a written explanation of how any problems identified in such report are to be corrected by the center.
2. The center's building, grounds and equipment must be maintained in a sanitary, safe and reasonable manner, and if located near a busy street, the yard must be fenced to protect the health and safety of children.
3. All center buildings erected prior to 1970 must be stripped and resurfaced so surfaces do not contain lead-bearing paint.
4. Indoor floors must not be slippery, and all steps and walkways must be kept clean and free from snow and ice. Stairs and/or porches must have rails.
5. There must be adequate ventilation and proper humidity, and a HVAC system capable of maintaining a temperature of not less than 68 degrees Fahrenheit, and not more than 20 degrees less than the outside temperature when such outside temperatures exceeds 88 degrees Fahrenheit.
6. Childcare center must be cleaned daily, and personal items such as toys, pacifiers, and combs must be stored in a sanitary manner.
7. Hazardous or poisonous substances must be kept in locked storage, and inaccessible to children.
8. Caregivers and staff shall wash hands before preparing or serving meals, after diapering, and after using bathroom facilities.
9. When food is prepared, served or stored in a childcare center, it will be done in a sanitary and safe manner.
10. Drinking water must be accessible to children, and hot water temperature in bathrooms must be no greater than one hundred twenty (120°) degrees Fahrenheit.
11. Bathroom must be cleaned daily, and located in separate rooms from those used for cooking, eating, and sleeping.
12. Centers shall take steps to keep the facility free of insects and rodents. Chemicals for insects and rodent control may not be available in areas accessible to children.
13. The minimum ratio of care givers or programs staff to children in child care centers shall be:
 - a. If all children in care are less than twenty-four (24) months of age, one (1) staff member per four (4) children.

- b. If all children in care are twenty-four (24) months of age to thirty-six (36) months of age, one (1) staff member per five (5) children.
 - c. If all children in care are three (3) years of age to four (4) years of age, one (1) staff member per seven (7) children.
 - d. If all children in care are four (4) years of age to five (5) years of age, one (1) staff member per ten (10) children.
 - e. If all children in care are five (5) years of age to six (6) years of age, one (1) staff member per twelve (12) children.
 - f. If all children in care are six (6) years of age to twelve (12) years of age, one (1) staff member per eighteen (18) children.
 - g. If children in care are of mixed age categories, the minimum ratio of care givers or staff to children shall be determined by calculating the average age of the children, and applying the corresponding ratio; however, in no event shall a single (1) care giver or staff member care for more than two (2) children twenty-four (24) months of age or younger, or more than four (4) thirty-six (36) months or younger at any one time.
14. These ratios shall apply to the total number of children present at the center at any one time and not the total number of children enrolled.

18.0512 Minimum standards for food and nutrition.

- 1. Food suppliers must be properly prepared, sufficient in amount, varied according to child's diet, and served at appropriate hours.
- 2. Staff must discuss with parents child's habits, activities, and special concerns about their children.
- 3. Each facility shall have a designated area where a child can sit quietly or lie down to rest.
- 4. No child shall be confined to a crib or playpen during the entire time at center.
- 5. Children shall never be shaken or jostled.
- 6. At no time shall infants be left unattended while feeding.
- 7. Physical discipline shall not be used by any staff or volunteer on the children. Children may not be locked in any room for disciplinary action.

18.0513 Other regulations.

Rules and regulations as defined in this document may be changed or added to according to need.

18.0514 Revocation of a child care license.

The TERO office may revoke a childcare center's license for noncompliance with any of the regulations set out in this chapter. The revocation of a childcare license, provisional or temporary, may be appealed to the TERO Commission. The child care center may continue to operate the child care center pending a determination by the TERO Commission, or until such time as the license expires of its own accord, whichever occurs first. A center may not appeal the expiration of a provisional license.

RESOLUTION NUMBER **TMBC338-06-19** OF THE DULY ELECTED AND CERTIFIED
GOVERNING BODY OF THE TURTLE MOUNTAIN BAND OF CHIPPEWA INDIANS

WHEREAS, the Turtle Mountain Band of Chippewa Indians, hereinafter referred to as the Tribe, is an unincorporated Band acting under a revised Constitution and By-Laws approved by the Secretary of the Interior on June 16th, 1959 and amendments thereto approved; and

WHEREAS, Article IX (a) Section 1 of the Turtle Mountain Constitution and By-Laws empowers the Tribal Council with the authority to represent the Band and to negotiate with Federal, State, and Local Governments and with private persons; and

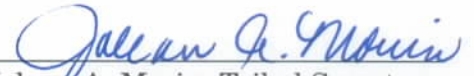
WHEREAS, Article IX (a) Section 1 of the Turtle Mountain Constitution and Bylaws requires a 30-day comment period prior to the adoption of any ordinances or amendments to the Tribal Code, whether proposed by resolution or otherwise. Adoption must occur through a roll call vote of the Tribal Council at a publicly held meeting; and

WHEREAS, the Tribe is proposing to amend, add or delete various revisions to Title 32, the TERO Ordinance Sections 32.0403, 32.0408-A, 32.0408-B, 32.0408-C, 32.0501, 32.0502, 32.0503, 32.0201 and by the adoption of Resolution No. TMBC235-04-19, placed said proposed amendments out for public comment, with various comments received; now

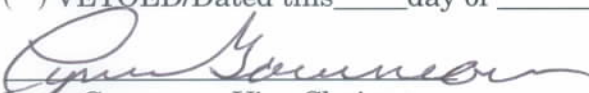
THEREFORE BE IT RESOLVED that the Tribe is approving the following amendments, additions or deletions to Title 32, TERO Ordinance Sections 32.0403, 32.0408-A, 32.0408-B, 32.0408-C, 32.0501, 32.0502, 32.0503, 32.0201 and to exclude geographical limitation of Rolette County.

C E R T I F I C A T I O N

I, the undersigned Tribal Secretary of the Turtle Mountain Band of Chippewa Indians, do hereby certify that the Tribal Council is composed of **nine (9) members** of whom **seven (7)** constituting a quorum were present at a meeting duly called, convened and held on the **6th day of June, 2019** that the foregoing resolution was adopted by an affirmative vote of **six (6) in favor** – Representatives Stuart LaFountain, LoAnn Jerome, Chad Counts, Nathan Davis, Jim Baker and Ron Trottier Sr.; none (0) opposed; two (2) absent-the late Rep. Carson Belgarde and Chairman Jamie Azure; with the Vice-Chairman not voting.


Jolean A. Morin, Tribal Secretary
6/14/19

✓ ☒ SIGNED INTO LAW/Dated this 14th day of June, 2019
☐ VETOED/Dated this _____ day of _____, 2019


Lynn Gourneau, Vice-Chairman


Jamie Azure, Tribal Chairman

TITLE 32
Tribal Employment Rights Ordinance
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TITLE 32
TRIBAL EMPLOYMENT RIGHTS ORDINANCE

CHAPTER 32.01
General Provisions and Purpose

32.0101 Name.

This Ordinance shall be known as the Turtle Mountain Band of Chippewa Indians Tribal Employment Rights Ordinance.

32.0102 Findings.

It is the policy of the Turtle Mountain Tribal Council to promote employment opportunities for Indians and business opportunities for Indian firms and contractors, and to provide direction, management and business standards for the Turtle Mountain Indian Reservation. The work force of the Tribe must be given an opportunity to gain employment on or off the reservation and the Tribal council will promote that preference in harmony with congressional enactments giving Indians special employment rights. It is also the Council's responsibility to monitor Indian preference along with collecting from those doing business on the Turtle Mountain Indian Reservation a fair fee for that privilege. Thus, the Tribal Council has enacted and hereby amends an ordinance called "Tribal Employment Rights Ordinance (TERO)."

CHAPTER 32.02
Definitions

32.0201 Definitions.

Employers/contractors may seek clarification as to all TERO requirements and definitions at the pre-bid conference for any on-reservation construction project, or otherwise by directing inquiries to the Tribal TERO Commission.

1. "CHAIRMAN" shall mean the chairman of the Turtle Mountain Chippewa Tribal Employment Rights Commission.
2. "COMMISSION" shall mean the Turtle Mountain Chippewa Tribal Employment Rights Commission.
3. "COMMISSIONER" shall mean a Commissioner of the Turtle Mountain Chippewa Tribal Employment Rights Commission
4. "UNION" shall mean duly organized workers as recognized by any labor organization recognized as such under the national Labor Relations Act.
5. "COUNCIL" shall mean the Tribal Council of the Turtle Mountain Band of Chippewa Indians.
6. "TERO DIRECTOR" shall mean the individual hired by the Tribal Council to keep the Council, Commission, employees and employers informed of this Ordinance and its violations. The Director has authority to resolve informal disputes on behalf of the Commission.
7. "TERO" shall mean the Tribal Employment Rights Ordinance.
8. "EEOC" shall mean the Equal Employment Opportunities Commission of the United States.
9. "EMPLOYER" shall mean any person, business, company, contractor, subcontractor, or other entity located or engaged in work on the reservation, employing one or more persons, and without regard for whether the employer or its owner is Indian or Non-Indian or a member of the Turtle Mountain Band of Chippewa Indians or not. The term "Employer" excludes federal, state, county and tribal government, Tribally-owned or tribally-chartered private, for profit corporations are employers under this definition. Tribally owned or tribally chartered, non-profit corporations are employers under this definition. Tribally chartered or state chartered non-profit corporations authorized by the Tribe to contract with any federal agency pursuant to P.L. 93-638 or to enter into a grant agreement pursuant to P.L. 100-297 are employers under this definition. Tribally owned corporations are employers under this definition.

10. An employer is "ENGAGED IN BUSINESS ON THE RESERVATION" if in connection with any portion of a business enterprise or specific project, contract or subcontract, the employer or any of its employees or agents performing work within the exterior boundaries of the reservation. Employers who have both on-reservation and off-reservation business locations shall also be subject to the TERO in their off-reservation locations if those off-reservation locations are on lands adjacent to the reservation.
11. "Indian" shall mean any person recognized as an Indian by the United States Government pursuant to its trust responsibility. In complying with and implementing the TERO, following additional preferences shall be recognized and enforced.
12. Indians residing in Rolette County, North Dakota. Indians residing in other counties in the State of North Dakota.
13. Any Indian recognized by the U.S. Government pursuant to its trust responsibility wherever residing.
14. The terms "RESIDENCE" or "RESIDING" shall mean the place of domicile of an applicant on the date the applicant seeks employment or contracting preference under the TERO and resides within 90 days prior to such application. Domicile shall mean the place where an individual Indian has his true, fixed, and permanent home and principal establishment, and to which whenever he is absent he has the intention of returning;
15. The term "INDIAN-OWNED BUSINESS" shall mean a business entity (in whatever form) of which at least 51% is owned by any federally recognized Indian Tribe or by Indians and which has been screened and certified as an "Indian-owned business" by the MBE/WBE office in Bismarck, North Dakota or the Indian Business Development Center in Bismarck. A copy of MBE/WBE certification will be furnished to the TERO Office.
16. The term "JOINT VENTURE" shall require that any Tribal member (s) or Tribe who enters a Joint Venture contract must control at least 51% of the Joint Venture and receive at least 51% of profits of the Joint venture. The Joint Venture shall show proof of Joint Venture to the TERO office by providing copies of ownership, state contractors license, bond and liability insurance. The Joint Venture must be certified and screened by the MBE/WBE office in Bismarck, North Dakota.
17. Any employer is "LOCATED ON THE RESERVATION" if in connection with any portion of a business enterprise or specific project contract or subcontract, he/she is doing business or performing work within the exterior boundaries of the reservation.
18. The term "OFCCP" shall mean the Office of Federal Contract Compliance Programs of the United States.
19. The term "RESERVATION" shall mean the Turtle Mountain Indian Reservation proper and all tribal land and trust property held by the U.S. Government for the Tribe in Rolette County, North Dakota, including all land within the exterior boundaries of said reservation proper and said tribal land and trust property.
20. The term "SECRETARY" shall mean the Secretary of the Interior or his duly authorized representative.
21. The term "TRIBE" shall mean the Turtle Mountain Band of Chippewa Indians.
22. "KEY POSITION" means an ongoing position where a person is a permanent employee for a period of one year prior to the contract and it is vital to the contractor's ability to perform the contract as he bid it or to the special operation of a crew familiar with each other in their duties to perform, that said person or persons be used on the project in said position(s).
23. MBE means "MINORITY BUSINESS ENTERPRISES". WBE means "WOMEN'S BUSINESS ENTERPRISE".
24. "INFORMAL DISPUTE RESOLUTION"; Clarifying and trying to remedy a situation without a hearing. (See 32.0702, 32.0703 and 32.0704)

CHAPTER 32.03

Turtle Mountain Chippewa Tribal Employment Rights Commission.

32.0301

Appointment.

The Turtle Mountain Chippewa Tribal Employment Rights Commission shall consist of one council member (and one alternate council member) appointed by the Tribal Council, four members appointed by the Tribal Council at large from the reservation community. Chairman of the board will be appointed by the Tribal Council. The alternate council member may vote in place of the appointed council member in the absence of that member.

32.0302

Term of office.

Commissioners shall hold office for a period of two years. Commissioners shall hold office after expiration of their terms of office until their successors are duly appointed and approved.

32.0303

Removal from office.

A Commissioner may be removed from office by the Tribal Council upon conviction of a crime, or for gross neglect of duty, misfeasance of malfeasance in office, or ineligibility to serve as a Commissioner or where the Commissioner misses three consecutive meeting without good cause. Specific written charges shall be prepared and served upon the Commissioner by the Tribal council at least ten days before a Council hearing upon the matter, and he shall be given an opportunity to answer to the charges at the hearing, before Tribal Council action. If the Commissioner refuses to appear before the Tribal Council, the Council shall nonetheless proceed to vote upon his removal. The decision of the Council shall be final.

32.0304

Vacancy and interim appointment.

If a Commissioner shall die, resign, be incapacitated or leave the reservation or be removed from office, the Tribal Council shall appoint an eligible person to fill the vacant position for the remainder of the term of the office of the Commissioner whose position it has to fill.

32.0305

Chairman.

The Chairman of the Commissioner shall be appointed by the Tribal Council and will be liaison between the Council and the Commission when needed.

32.0306

Duties of commission.

The Commission shall administer the employment rights program of the Turtle Mountain Band of Chippewa Indians in accordance with this Ordinance.

32.0307

Powers of commission.

The Commission shall have the power:

1. To establish rules and regulations governing all activities of the Commission, subject to prior approval of the Tribal Council.
2. To set minimum wage scale for construction employment at the beginning of each calendar year (see Section 32.014), subject to prior approval of the Tribal Council.
3. To expend operating funds appropriated by the Council for the use of the Turtle Mountain Chippewa Tribal Employment Rights Program.
4. To obtain funding from federal, state or other sources to supplement Council appropriations, subject to prior approval of the Tribal Council.
5. To impose numerical hiring goals and timetables, specifying the fair minimum number of Indians an employer may hire by craft or skill level.
6. To promote employers to establish or participate in such training programs as the Commission deems appropriate to increase the pool of Indian eligible for employment on the reservation.
7. To assist the TERO Director in administering a tribal hiring hall.
8. To require that employers may hire non-Indians for non-key positions only after the tribal hiring hall has certified that qualified Indians are unavailable to fill vacant job positions.

9. To prohibit employers from using job qualifications criteria a personnel requirement that bar Indians from employment unless such criteria or requirements are required by business necessity. Commission regulations may adopt EEOC guidelines or may adopt additional requirements to eliminate employment barriers unique to Indians and the reservation, subject to prior approval of the Tribal Council.
10. To enter into agreements with the unions to insure union compliance with the Ordinance.
11. To give preference to Tribal and other Indian-owned business in the award of contracts or subcontractors.
12. To establish counseling programs to assist Indians to retail employment.
13. To hold hearings and to subpoena witnesses and documents in accordance with this Ordinance.
14. To require employers to submit reports and take all actions deemed necessary by the Commission for the fair and vigorous implementation of this Ordinance.
15. To enter into cooperative agreements with federal employments rights agencies such as EEOC and OFCCP to eliminate discrimination against Indians both on and off the Reservation.
16. To take such other actions as deemed necessary to achieve the purpose and objectives of the Turtle Mountain Chippewa Tribal Employment Rights Program established in this Ordinance.

In exercising the above-specified powers, the Commission shall have the discretion to implement certain powers only or to apply one or more such powers to limited classes or numbers of employers.

CHAPTER 32.04

Turtle Mountain Chippewa Tribal Employment Rights Program

32.0401

Coverage.

All employers are required to give preference to equally qualified Indians and non-members married to an enrolled tribal member of one-quarter (1/4) or more degree of Indian blood, in hiring, promotion, training, and all other aspects of employment, contracting and subcontracting, and must comply with this Ordinance and the rules, regulations and orders of the Commission. The above requirements shall apply only to facilities or components or divisions of an employer located on or engaged in business on the reservation, or for employers who have both on-reservation and off-reservation business locations, the employer shall also be subject to this TERO in their off-reservation locations, if those off-reservation locations are on lands adjacent to the reservation.

32.0402

Contractors, subcontractors, and minority businesses.

The Indian preference requirements contained in the Ordinance shall be binding on all contractors, subcontractors, and minority businesses of employers, regardless of tier, shall be deemed a part of all resulting contract and specifications. The TERO Commission shall have the initial and primary responsibility for insuring that all contractors, subcontractors, and minority businesses comply with these requirements and contractors, subcontractors, and minority businesses shall be subject to penalties provided herein for violation of this Ordinance if the contractor or subcontractor, subcontractors, and minority businesses fails to comply.

32.0403

Minimum numerical goals and timetables for Indian employment.

The Commission will establish the minimum number of Indians, which each employer should employ on his work force during any year that he or any of his employees are located or engaged in work on the reservation. Noncompliance will require rational between employer and Commission. Numerical goals shall be set for each craft, skill area, classification, etc., used by the employer and shall include, but not be limited to,

administrators, supervisory, and professional categories. The goals shall be expressed in terms of number of Indian employment as a percentage of the total man hours worked by the employer's workforce in the job classification involved. Numerical goals shall be based upon surveys of the available Indian manpower pool and of projected employment opportunities. Both the TERO Director and the License Compliance/Employment Officer shall be involved in the formation of hiring goals for each employer.

1. For new employer, the goals shall meet with the Commission or Director as long before he actually begins work as possible and shall furnish the Commission with a precise list of the number, the kind of employees he expects to employ. The Commission or Director shall then set specific goals and timetables for the employer after considering any special factors or goals into his plan for complying with this Ordinance and shall agree in writing to meet these goals. Any employer who fails to provide such a written agreement to the TERO Commission shall not be permitted to commence work on the reservation.
2. For an existing employer on the reservation, the goals shall be a percentage of the new employees expected to be employed during the ensuing year. The employer shall incorporate the goals into his plan for complying with this Ordinance and shall agree in writing to meet these goals. Any employer who fails to provide such a written statement will not be permitted to commence work on the reservation. The TERO Commission shall maintain on file the current plan of each employer authorized to undertake work on the reservation.
3. For both new and existing employers, the goals shall be reviewed by the Commission at least annually and shall be revised as necessary to reflect changes in the number of Indians available or changes in employer hiring plans. Each employer shall submit a monthly report to the Director on a form provided by the employer, indicating the number of Indians in his work force, how close he is to meeting his goals, all persons hired or fired during the month, the job positions involved and other information required by the Commission.
4. Each employer shall meet his minimum goals for the employment of Indians. Whenever the Commission or Director has reason to believe that an employer is violating this Ordinance by not meeting his goals, the Commission or Director may file a complaint and notify the employer of the alleged violation pursuant to Chapter 32.07 of this Ordinance. The Commission shall bear the initial burden of providing that an employer has failed to or is failing to meet its goals. Upon a prima facie proof of such failure, the employer shall then bear the burden of proving that it has met or is meeting its goals or has made a good faith effort to meet its goals. It shall not be an excuse for such failure that the union with which the employer has a collective bargaining agreement providing for exclusive referral failed to refer Indians.

32.0404

Training.

Every employer shall be required by the Commission to participate in training programs to assist Indians to become qualified in the various job classifications used by the employer. Every employer shall employ the maximum number of Indian trainees or apprentices possible. The ratio of Indian trainees to fully qualified workers shall be set by the Commission after consultation with employer. For construction projects, the number of Indian trainees shall be no less than the minimum ratio established by the Department of Labor (one trainee for every four journeyman). Every employer with a collective bargaining agreement with a union shall be required to obtain agreement from the union to establish an advanced journeyman upgrade and apprenticeship program.

32.0405

Qualified and personnel requirements.

Every employer is prohibited for using job qualification criteria or personnel requirements which bar Indians from employment. The Commission

shall bear the initial burden of proving that a job qualification criterion or personnel requirements is not required by business necessity. Upon a prima facie proof that a job qualification or personnel criterion is not required necessity, employer shall then bear the burden of proving that it is. If that burden is not met, the employer will be required to eliminate the job qualification criterion or personnel acquisitions at issue. In implementing this section, the Commission shall be guided by principles established in the EEOC in order to eliminate employment barriers unique to Indians and the reservation. If the employer and the Commission or Director is unable to agree upon any matter in this section, the Commission may invoke the hearing procedure provided in Chapter 32.07 of this Ordinance.

32.0406

Tribal hiring hall.

The Commission shall establish and administer a tribal hiring hall to assist employers in identifying and hiring qualified Indians in job positions, employ and supervise a License Compliance/Employment Officer to oversee the hiring hall, labor survey, and employee referral functions under this ordinance. An employer may recruit and hire workers from whatever sources are available to it and by whatever process it chooses, provided that it may not hire a non-Indian until it has given the Commission or Director a reasonable time to locate a qualified Indian and the tribal hiring hall has certified that a qualified Indian is unavailable to fill the vacant job position.

For purpose of this Ordinance, "reasonable time" shall be defined as follows: Three (3) working days to locate and refer a qualified Indian. The Commission may grant a waiver of these time periods upon a showing by the employer that such time periods impose an undue burden upon it. An employer subject to a collective bargaining agreement with the union shall be exempt from this procedure if the union agrees to refer Indians from a listing supplied by the Commission or Director. However, if any union fails to meet this obligation to refer Indians to an employer, the Commission or Director may require the employer to accept Indian referrals from sources other than the union.

In administering a tribal hiring hall, a hiring list may be maintained by the License Compliance/Employment Officer. Individuals who desire to obtain employment in areas within the scope of this TERO Ordinance may enter their names on this hiring list. Names shall be entered in chronological order by the date and time of sign-up. The list may be utilized by the License Compliance/Employment Officer on a first come, first served basis in placing individuals of comparable skills in various crafts with various employers: Comparably skilled individuals shall be referred for placement in the order their names appear on the list.

If any non-Indian worker is found to be employed in a job in violation of this section, the employer shall be required by the Commission or Director to remove employee immediately and said employer shall be subject to the penalties in Chapter 32.08 of this Ordinance.

32.0407

Counseling and support programs.

The Commission will establish counseling and other support programs to assist Indians to retain employment. Every employee shall be required to cooperate with the Commission regarding such counseling and support programs.

32.0408

Preference in contracting and subcontracting.

Every employer shall give preference in the award of any contract or subcontract to Indian-Owned businesses, the names of which shall be supplied to the employer for their use. Employers shall be required to take every step feasible to identify or locate Indian-owned businesses. 10% preference will be given to qualified Indian-owned businesses. These businesses then must assume the responsibility of submitting timely bids or otherwise lose the right of being considered.

32.0409

Lay-offs.

In all lay-offs and reduction in force, no Indian worker shall be terminated if a non-Indian worker in the same job classification is still employed unless the termination is pursuant to a prior lay-off procedure agreed to by the Commission in writing. Unless otherwise agreed in advance per such lay-off procedure, the non-Indian must first be terminated if the Indian possesses the minimum qualifications for the job classification.

32.0410

Promotion.

Every employer shall give Indians preferential consideration for all promotion opportunities and shall encourage Indians to seek such opportunities. For every supervisory position filled by a non-Indian, the employer shall file a report with the Commission stating what efforts were made to inform Indian workers about the position, what Indians, if any, applied for the position, and the reasons why each Indian was not hired for the position.

32.0411

Summer students.

Every employer shall give Indian students preferential consideration for summer student employment. The employer shall make every effort to promote after school, summer and vacation employment for Indian students.

CHAPTER 32.05

Fee Assessment

32.0500

Fee assessment.

Fee Assessment to Provide Tribal Revenue and Operation of the Commission Pursuant to Article 9, Sections 3 and 4 of the Turtle Mountain Band of Chippewa Indian Constitution.

32.0501

Contractors, subcontractors and minority businesses.

Every contractor, subcontractor or business entity with a negotiated contract of \$10,000 including all change orders or more shall pay a one-time fee of 3% of the total amount of the contract. The fee will be paid in full when receiving first progress payment of within 45 days from date of award, or whichever comes later. This Ordinance shall apply, but not be limited to, the following categories of contractors, subcontractors or employers, Construction Contractors, Manufacturers, Materialmen and Suppliers. 3% will also apply to Professional Services, A/E Firms, Consultants and Legal Services, regardless of dollar amount.

32.0502

Accounting.

Fees shall be paid to the TERO Office and placed in the general account, and the council shall appropriate funds for use by the commission.

32.0503

Tribal business license.

Any person, employer, or vendor doing business in the reservation shall be required to obtain and maintain in force a tribal business license before any work will commence. All licenses are issued annually, and must be renewed before due date of each calendar year. Tribal business license applications will be obtained at the TERO Office. Fees will not apply for educational purposes, except for new construction, remodeling and demolition.

CHAPTER 32.06

Compliance by Unions

32.0600

Notice.

Every union with a collective bargaining agreement with an employer must file a written agreement stating that the union will comply with this Ordinance and the rules, regulations and orders of the Commission. Until such

agreement is filed with the Commission or Director, the employer may not commence work on the reservation.

32.0601 Contents of union agreements.

Every union agreement with an employer or filed with the Commission or Director must provide:

1. Indian Preference. The union will give absolute preference to Indian residents in job referrals regardless of which union referral list they are on.
2. Cooperation with Commission. The union will cooperate with the Commission or Director in all respects.
3. Registration. The union will establish a mechanism allowing Indians to register for job referral lists by telephone or mail.
4. Training Programs. The union will establish a journeyman upgrade and advanced apprenticeship program.
5. Include all Indians. The union will "include" all Indians who qualify for journeyman or apprenticeship status and wish to join the union.
6. Temporary Work Permits. The union will grant temporary work permits to Indians who do not wish to join the union.

32.0602 Model union agreement.

The employer will provide a model union agreement for use by all unions who have collective bargaining agreements with any employer.

32.0603 Recognition of unions.

Nothing herein or any activity by the Commission authorized hereby shall constitute official tribal recognition of any union or tribal endorsement of any union activities on the reservation. No union activities shall take place without prior approval of the Turtle Mountain Chippewa Tribal Council.

32.0604 No waiver of sovereign immunity.

Nothing in this Ordinance is a waiver of the Turtle Mountain Band of Chippewa Indian's sovereign immunity as against any person, agency or governmental entity including, but not limited to, the National Labor Relations Board and the Federal Office of Contract Compliance. Nothing in this Ordinance is a "consent to be sued" as defined by the Turtle Mountain Chippewa Tribal Code, Section. The Tribe's sovereign immunity also extends to members of the TERO Commission and Staff.

**CHAPTER 32.07
Complaints and Hearings**

32.0701 Notice.

If a hearing is requested by the Commission or Director, an individual employee, or union pursuant to this section, a written notice of hearing shall be given to all parties concerned of the nature, time and place of the hearing and the evidence to be presented, and shall advise such parties of their rights to be present at the hearing, to present any testimony of witness and other evidence to be represented by counsel at their own expense, and that the Commission may be represented by general counsel for the Turtle Mountain Chippewa Tribe.

32.0702 Commission complaint and procedure.

If the Commission or Director believes that an employer, contractor, subcontractor, or union has failed to comply with the Ordinance or any rules, regulations or orders of the Commission, it may file a complaint and notify such party of the alleged violations. The Commission or Director will attempt to achieve an informal settlement of the matter, but if an informal settlement cannot be achieved, the Commission or Director may request a hearing upon the matter pursuant Section 32.0701

32.0703

Individual complaint procedure.

If an Indian believes that an employer has failed to comply with this Ordinance or rules, regulation or orders of the Commission, or believes he/she has been discriminated against by an employer because he/she is an Indian, he/she may file a complaint in writing with the Director specifying the alleged violation. Upon receipt of the complaint, the Director shall investigate and attempt to achieve an informal settlement of the matter. If an informal settlement cannot be achieved, the individual or Director may request a hearing upon the matter pursuant to Section 32.0701.

If an employer fires, lays off, or penalizes in any manner, an Indian employee who utilizes the individual complaint procedure provided herein or exercises any right provided herein, the employer shall be subject to the penalties in Chapter 32.08 of this Ordinance.

32.0704

Employer or union complaint procedure.

If an employer or union believes that any provision of this Ordinance or any rule, regulations or order of the Commission or Director is illegal or unclear, it may file a complaint in writing with the Director specifying the alleged illegality or error. Upon receipt of the complaint, the Director shall investigate and attempt to achieve an informal settlement of the matter. If an informal settlement cannot be achieved, the employer, union or Commission may request a hearing upon the matter pursuant to Section 32.0701.

32.0705

Hearing procedure.

Hearing before the Commission shall be governed by the following rules of procedure:

1. All parties may present testimony of witnesses and other evidence and may be represented by counsel at their own expense.
2. The Commission shall be responsible for taping the proceedings and preserving such tapes and all pleading and physical evidence submitted at the hearing. These items shall constitute the record on appeal if any appeal should be taken after the hearing.
3. The Commission may have the advice and assistance at the hearing of general counsel for the Tribe.
4. The Chairman of the Commission or the Vice Chairman may preside. No formal rules of evidence or procedure need to be followed, but the Commission shall proceed to ascertain the facts in a reasonable and orderly fashion.
5. Any matter to be proven must be proven to the satisfaction of the Commission or by the preponderance of the evidence.
6. The hearing may be continued at the discretion of the Commission or Director.
7. At the final close of the hearing, the Commission may take immediate action or take the matter under advisement.
8. The Commission or Director shall notify all parties within 30 days after its decision in the matter.
9. The Commission may require the presence of persons and documents at the hearing by service of subpoena(s) issued by the Commission.
10. Any party leaving a scheduled meeting will be subject to entry of an adverse finding by default, unless authorized by the Commission.
11. Any party not appearing for a scheduled meeting will be subject to an adverse finding by default unless prior written approval must be submitted in writing to the Director.
12. Complaints must be filed within 30 days of incident with the TERO Office otherwise complaint will not be processed.

CHAPTER 32.08

Penalties for Violation

32.0801

Penalties for violation.

Any employer, contractor, subcontractor or union who violates this Ordinance or rules, regulations or orders of this Commission shall be subject to penalties for such violations, including, but not limited to:

1. Denial of right to commence or continue business inside the reservation or Adjacent Tribal Land.
2. Suspension of all operations inside the reservation.
3. Payment of back pay and damages to compensate any injured party.
4. An order to summarily remove employees hired in violation of this Ordinance or rules, regulations and orders of the Commission.
5. Imposition of monetary civil penalties.
6. Prohibition from engaging in any future operations on the reservation.
7. An order requiring employment, promotion and training of Indians injured by the violation.
8. An order requiring changes in procedures and policies necessary to eliminate the violation.
9. An order making any other provision deemed by the Commission necessary to eliminate violations.
10. The maximum civil penalty, which may be imposed, is \$500.00 for each violation. Each day during which a violation exists shall constitute a separate violation.
11. The Commission or Director may apply to the Tribal Court of the Turtle Mountain Band of Chippewa Indians for a judicial order or decree after notice and hearing to the other party or parties to enforce any final ruling or order of the Commission. The Tribal Court shall act on such requests on an expedited basis. The Tribal Court shall not have jurisdiction to re-examine the merits of any such Commission determination, but may grant, deny, or modify the relief sought as applicable law and equitable circumstances warrant.

CHAPTER 32.09

Appeals

32.0901

Appeals.

Any party to a Commission hearing shall have the right to appeal any decision, ruling or order of the Commission to the Tribal Court of Appeals of the Turtle Mountain Chippewa Tribe of the Turtle Mountain Indian Reservation, North Dakota. The Court of Appeals (with a law trained judge presiding) shall have jurisdiction to reverse, affirm or modify any Commission decision, order or ruling if such Court determines on the basis of the record made at the Commission hearing that the Commission action was (a) not supported by substantial evidence: or, (b) was clearly erroneous as a matter of law. Otherwise, the Commission decisions shall be affirmed.

CHAPTER 32.10

Tribal Training Program

32.1001

Tribal training program.

The Tribe shall appropriate such tribal funds necessary and available to establish training programs to prepare the tribal members for job opportunities developed pursuant to the Turtle Mountain Chippewa Tribal Employment Rights Ordinance. The Commission shall negotiate a training program in cooperation with employers, state, federal and tribal officials. Such programs shall follow applicable federal standards (if any).

CHAPTER 32.11

Publication of Ordinance

32.1101

Publication of ordinance.

The Commission or Director shall notify all employers of this Ordinance and their obligations to comply. All bid announcements issued by any tribal, federal, state or private or public entities shall contain a statement that

the successful bidder will be obligated to comply with this Ordinance and all rules, regulations and orders of the Commission.

The Tribal Council may issue business licenses to prospective employers planning to work on the reservation upon review and approval of the prospective employers business license application in conformity with applicable tribal law and procedure. The TERO office shall make available to the Council the name of each business to whom a tribal business license has been issued. The Commission shall advise such employer or prospective employers of their obligations under this Ordinance, rules, regulations and order of the Commission.

The Director shall send a copy of this Ordinance to every employer operating on the reservation and any amendments or revisions thereto. A small fee may be charged for this service.

CHAPTER 32.12 Compliance Plan

32.1201 Compliance plan.

As of the effective date of this Ordinance, no new employer may commence work on the reservation until it has been issued a license from the Tribe and consulted with the Commission or Director and developed a plan occupied by the Commission for meeting its obligations under this Ordinance.

CHAPTER 32.13 Reporting and On-Site Inspection

32.1301 Reporting and on-site inspection.

Employers shall submit reports and other information requested by the Director or Commission. The Director or his designee shall have the right to make on-site inspections during regular working hours in order to monitor any employer's compliance with this Ordinance and rules, regulations and orders of the Commission. The Director or his Designee shall have the right to inspect and copy all relevant records of any employer, of any signatory union or subcontractor of any employer and shall have a right to speak to workers and conduct an investigation on the job site. All information collected by the Director or his Designee shall be kept confidential unless disclosure is required during a hearing or appeal as provided in Chapter 32.07, 32.08 and 32.09.

CHAPTER 32.14 Tribal Minimum Wage Scale

Apprentice Bricklayer	17.00
Apprentice Electrician	16.00
Apprentice Plumber	16.00
Apprentice Sheet Metal	17.00
Asbestos Removal	16.00
Bricklayer	22.00
Carpet & Floor Tile Layer	16.00
Carpenter	18.00
Cement Finisher	19.00
Cleaning/Janitorial	12.50
Construction Foreman	20.00
Construction Worker/Labor	14.00
Drywall Hanger	17.00
Diesel Mechanic	20.00
Finish Carpenter	20.00
Flag Person	13.00
Foreman	19.00
Form Setter	18.00

Glazier	19.00
Heavy Equipment Operator (Heavy)	21.00
Heavy Equipment Operator (Light)	16.00
Heating/Air Conditioning	22.00
Inspector	22.00
Insulator	16.00
Journeyman Electrician	19.00
Journeyman Plumber	18.00
Journeyman Sheet Metal	19.00
Master Electrician	22.00
Master Plumber	22.00
Painter-brush-roller	16.00
Perfa-Taper	17.00
Pilot Car Driver	14.00
Pipe Fitter/Steam Sprinkler	18.00
Pipe Layer-Underground	16.00
Project Manager	25.00
Roofer-Asphalt/Shingles	16.00
Secretary	12.00
Security Guard	14.00
Spray Painter	18.00
Steel or Rod Buster	16.00
Structural Ironworker	22.00
Surveyor (Certified)	19.00
Surveyor Helper/Rodman	15.00
Tractor-Trailer Truck Driver (Diesel)	19.00
Truck Driver-Light	16.00
Welder-Light/Cutting Torch	16.00
Welder-Pipe/Heavy Iron	17.00

This is the most current Tribal minimum wage rates as of July 30, 2013. The tribal wage scale is subject to revision on an annual or other periodic basis by the Tribe. Employers may secure the most current rates from the TERO Director.

CHAPTER 32.15 Severability

32.1501 Severability.

If any provision of this Ordinance, or its application to any person or circumstances is held invalid, the remainder of the Ordinance, or the application of the provision to other persons or circumstances is not affected.

CHAPTER 32.16 Relation to Federal Indian Preference Requirements

32.1601 Relation to Federal Indian Preference Requirements.

The Tribal Indian preference requirements imposed by this Ordinance is separate from the supplemental to any and all applicable federal Indian preference requirements.

CHAPTER 32.17 Special TERO Rules for Large Tribal Construction Projects

32.1701 Special TERO rules for large Tribal construction projects.

For construction projects in amounts over \$500,000, where the Tribe, the Turtle Mountain Housing Authority or any other tribal agency or instrumentality solicits bids for section of one or more prime contractors, the following special TERO rules shall apply:

1. For all such projects which the entity soliciting bids for one or more prime construction contractors has appointed a project team to oversee the

- project the TERO Director shall serve as a non-voting member of the project team during the pre-bid and construction phases of the project.
2. For all such projects, the minimum numerical goals and timetables for Indian employment under Section 32.0403 for the prime contractor(s) and all subcontractors and the approved plan for how the contractor or subcontractors are to meet these goals under this ordinance shall not be finalized by the TERO Director or Commission or become legally effective until approved by the project team for that project, and no TERO enforcement proceedings (including the conduct of hearings under Section 32.0705 and the imposition of penalties under Chapter 32.08 or application for tribal court action there under) shall be initiated by the TERO Director or Commission as to said projects until cleared by the project team.
 3. All written requests for pre-bid interpretations of TERO requirements received by the TERO office on such projects shall be answered in writing by the TERO office or the Tribe's legal counsel for the project after clearance of said answers by the tribal project manager for the project.
 4. All day-to-day TERO office functions including, but not limited to, compliance review, hiring hall, labor survey, employee referral, hiring plan negotiations and other TERO efforts to secure TERO compliance through informal means, shall continue to apply to such projects as otherwise set out in this ordinance.

CHAPTER 32.18
Effective Date

32.1801

Effective date.

This Ordinance is a revision of Tribal Ordinance No. 32 approved July, 28, 1981. Provisions in this Ordinance regarding Indian Preference are continuous. This Ordinance as hereby amended supersedes any all prior resolutions and ordinances of the Turtle Mountain Band of Chippewa Indians to the extent of any conflict or inconsistency.

PART 1 GENERAL REQUIREMENTS

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Project consists of the General, Mechanical, and Electrical systems for the **CHIPPEWA DOWNS GRANDSTAND located in Belcourt, ND**
- B. Contract Documents, dated July 31, 2026.

1.2 ADDITIONAL SUPPLEMENTARY CONDITIONS

- A. Limits of insurance coverage

Commercial General Liability

\$1,000,000/\$2,000,000 limits

- CGL includes CG 25 03 (per project aggregate)
- Additional insured requirements:
- Covers ongoing operations (CG 20 10 7/04 or equivalent)
- Covers completed operations (CG 20 37 7/04 or equivalent)
- Subcontractor's insurance is primary/noncontributory
- Waiver of subrogation required
- Architects, Engineers & Owners Listed as Additional Insured (When required by contract)

Commercial Auto Liability

- \$1,000,000 limit
- Hired/non-owned auto required
- Additional insured endorsement applies

Workers' Compensation & Employers' Liability

- Coverage A (workers' compensation)
- Coverage B (employers' liability) with 100/500/100 (statutory required limits)

Excess Liability

- \$1,000,000 limit
- Subcontractor's insurance is primary/noncontributory

Other Insurance Requirements

- Notice of cancellation required
- Insurance carrier has an A.M. Best rating of "A-" or better

Builder's Risk

- The Owner shall carry the Builder's Risk insurance.

- B. The Contractor will be required to submit:

1. A Certificate of Insurance
 2. Note that North Dakota State Sales Tax will be waived from this project.
 3. Clearance from the Workforce Safety & Insurance of ND.
- C. Pay Requests may include items purchased and stored for use in a future Phases subject to the conditions of the Contract for construction.
- D. The prime contractor shall be required to obtain a Turtle Mountain Band of Chippewa Indians Department of Environmental Regulations / EPA permit. This application is included as part of this specification. The annual permit fee for prime contractors is 1% of the total bid amount. Questions regarding this permit fee shall be directed to: Jeff Desjarlais at (701) 477-1080

1.3 BUILDING PERMIT

- A. No building permit shall be required.
- B. The Electrical Contractors shall be responsible for purchasing all testing and permits in their respective fields of work.
- C. The General Contractor shall be responsible for all associated permits and clearances

1.4 AS BUILT DRAWINGS

- A. The General, Mechanical, and Electrical Contractors shall be responsible for keeping an accurate set of "as-built" drawings to present to the Owner at the end of each Phase of the project.

1.5 TEMPORARY FACILITIES

- A. Heat
1. The General Contractor shall provide and pay for all heat, fuel, electricity, and service necessary to protect all work and materials against injury from damp and cold until project is accepted.
 2. The General Contractor shall maintain a temperature of at least (50 deg. F.) in enclosed space during construction and at least two (2) weeks before application of finish materials raise temperature and maintain at least (65 deg. F.) until Owner acceptance. Contractor shall install one (1) thermometer at each floor to monitor conditions.
- B. Water
1. Water bills are paid by the General Contractor.

- a. Connections for Contractors' personal use are not included.
2. The General Contractor is required to make all temporary connections and maintain until plumbing installation is ready for use as approved by the Engineer.

C. Lights and Power

1. All light and power bills are to be paid by the General Contractor.
 - a. The Electrical Contractor shall arrange and pay costs to provide temporary service panel, for use of all Contractors until wiring and fixtures are installed, and Engineer approves use of permanent systems.
 - b. The Electrical Contractor shall be responsible for providing and maintaining a (20 F.C.) temporary lighting level at all work areas.
 - c. Each Contractor provides his own extension cords.
 - d. Each Contractor provides respective service run to their project office or shed.
 - (1). Connection shall be made outside of building proper.
2. Coordinate downtimes of mechanical/electrical systems with Facilities Director in advance of event in order that proper measures can be taken.

D. Field Toilet

1. A field toilet shall be provided and maintained by the General Contractor for worker's use as the building's existing toilets are set for demolition and replacement. After new toilets are installed, these may be used for on site workers.

E. Enclosures

1. Furnish, install and maintain for the duration of construction all required scaffolds, barricades, warning signs, bridges, platforms and other temporary construction necessary for proper completion of the Work in compliance with all safety and other regulations.
2. Maintain all temporary facilities and controls as long as needed for the safe and proper completion of the Work. Remove all such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Architect.

F. Permanent Systems

1. Contractor shall request written permission from Engineer to use permanent systems during construction.

- a. Replace all filters with new filters before acceptance.
 - b. Light fixtures shall be cleaned and have lamps replaced with new lamps.
2. Shall guarantee all equipment is in new condition at project acceptance and shall warrant against malfunction or equipment damage for twelve (12) months after Owner's acceptance of building.

1.6 CONTINGENCY

A. General Construction Contingency

1. The General Contractor shall include a contingency amount in his bid of \$50,000. If this money is not used during the course of construction, the remaining amount will be credited back to the owner by means of a Change Order.

END OF SECTION 01010

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. The Architect/Engineer is the Author and therefore Prime Interpreter of all the documents.
2. If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of any part of the plans, specifications or other portion of the contract documents, he may submit to the Architect/Engineer a written request for an interpretation thereof.
 - (a). Any interpretation of the proposed documents will be made only by addendum duly issued or delivered to the exchanges and each person receiving a set of documents.
 - (b). The Architect or Owner will not be responsible for any other explanation or interpretation of the proposed documents. The act of submitting the bid without further qualification indicates the Contractor fully understands the Architect/Engineers design intent.

03. DRAWINGS, DETAILS & SPECIFICATIONS:

1. Plans and specifications for all phases of work are bound in a single set of plans and specifications for all Prime Bidding Contractors. All contractors shall review documents of all trades to fully inform themselves of all requirements before bidding. Reasonable diligence was used in preparation and detailing of documents, and submitted bids shall represent a complete functional product.
2. Figured dimensions shall be followed in preference to measurements by scale. Large scale drawings shall take precedence over those of a smaller scale.
3. Figures on all drawings, as the detail drawings themselves, are subject to measurements necessary in every case by adjacent or incorporated completed work. All such necessary measurements shall be taken before undertaking any work dependent upon such data.

04. SPECIFIED PRODUCTS, MATERIALS, AND EQUIPMENT:

1. Drawings and specifications are based upon quality products, materials, and equipment. Each division of the specifications generally will identify the manufacturer intended and used in the project design, identified as (specification reference). These materials set the minimum acceptable standards.
2. Designs are based upon current material and data provided the Architect. In the event the specified referenced product has changed, or needs modification, it is the bidders responsibility to notify the Architect of a change in writing before addenda's are issued in order that appropriate clarifications are made. Submission of a product bid confirms the equipment or material will perform as required and intended in the design. No claims for added costs will be allowed.

05. SUBSTITUTIONS:

1. In the spirit of competition, other product manufacturers are often listed under the approval section of each specification division. It is the responsibility of this manufacturer/vendor to examine plans and specifications, and quote their product equal to or exceeding the specification preference standard. In the event these manufacturer/vendors find a difference in their product, they shall be required to submit a request for a substitute prior approval.
2. No substitution will be considered prior to receipt of Bids unless written request for approval has been received by mail by the Architect/Engineer at least **seven (7) days prior to date for receipt of Bids**. Each such request shall include name of the material or equipment for which it is to be substituted and complete description of proposed substitute including drawings, cuts, color charts, performance and test data and any other information necessary for evaluation. Statement setting forth differences in proposed material or product from specified item, and any changes in other materials, equipment or other Work that the incorporation of substitute would require shall be included. Burden of proof of merit of proposed substitute is upon proposer. **Complete and submit included form (REQUEST FOR APPROVAL OF SUBSTITUTIONS) with request for approval.** Architect's approval of an item for previous project does not constitute approval for this Project. Architect will consider delivery time and availability of service as well as product itself, it acting on request for approval. Architect's decision of approval or disapproval of proposed substitution shall be final.
3. Only those requests for approval which include a stamped return envelope will be answered in writing by Architect.
4. If Architect approves any proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner. No claims for additional costs will be considered by a Vendor or Contractor due to substitution of a product.

END OF SECTION 01200

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. The Architect/Engineer are the Author and therefore Prime Interpreter of all the documents.
2. If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of any part of the plans, specifications or other portion of the contract documents, he may submit to the Architect/Engineer a written request for an interpretation thereof.
 - (a). Any interpretation of the proposed documents will be made only by addendum duly issued or delivered to the exchanges and each person receiving a set of documents.
 - (b). The Architect or Owner will not be responsible for any other explanation or interpretation of the proposed documents. The act of submitting the bid without further qualification indicates the Contractor fully understands the Architect/Engineers design intent.

03. DRAWINGS, DETAILS & SPECIFICATIONS:

1. Plans and specifications for all phases of work are bound in a single set of plans and specifications for all Prime Bidding Contractors. All contractors shall review documents of all trades to fully inform themselves of all requirements before bidding. Reasonable diligence was used in preparation and detailing of documents, and submitted bids shall represent a complete functional product.
2. Figured dimensions shall be followed in preference to measurements by scale. Large scale drawings shall take precedence over those of a smaller scale.
3. Figures on all drawings, as the detail drawings themselves, are subject to measurements necessary in every case by adjacent or incorporated completed work. All such necessary measurements shall be taken before undertaking any work dependent upon such data.

04. SPECIFIED PRODUCTS, MATERIALS, AND EQUIPMENT:

1. Drawings and specifications are based upon quality products, materials, and equipment. Each division of the specifications generally will identify the manufacturer intended and used in the project design, identified as (specification reference). These materials set the minimum acceptable standards.
2. Designs are based upon current material and data provided the Architect. In the event the specified referenced product has changed, or needs modification, it is the bidders responsibility to notify the Architect of a change in writing before addenda's are issued in order that appropriate clarifications are made. Submission of a product bid confirms the equipment or material will perform as required and intended in the design. No claims for added costs will be allowed.

05. SUBSTITUTIONS:

1. In the spirit of completion, other product manufacturers are often listed under the approval section of each specification division. It is the responsibility of this manufacturer/vendor to examine plans and specifications, and quote their product equal to or exceeding the specification preference standard. In the event these manufacturer/vendors find a difference in their product, they shall be required to submit a request for a substitute prior approval.
2. No substitution will be considered prior to receipt of Bids unless written request for approval has been received by mail by the Architect/Engineer at least **seven (7) days prior to date for receipt of Bids**. Each such request shall include name of the material or equipment for which it is to be substituted and complete description of proposed substitute including drawings, cuts, color charts, performance and test data and any other information necessary for evaluation. Statement setting forth differences in proposed material or product from specified item, and any changes in other materials, equipment or other Work that the incorporation of substitute would require shall be included. Burden of proof of merit of proposed substitute is upon proposed. **Complete and submit included form (REQUEST FOR APPROVAL OF SUBSTITUTIONS) with request for approval.** Architect's approval of an item for previous project does not constitute approval for this Project. Architect will consider delivery time and availability of service as well as product itself, it acting on request for approval. Architect's decision of approval or disapproval of proposed substitution shall be final.
3. Only those requests for approval which include a stamped return envelope will be answered in writing by Architect.
4. If Architect approves any proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner. No claims for additional costs will be considered by a Vendor or Contractor due to substitution of a product.

06. SHOP DRAWINGS:

1. Shop drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:
 - a. Dimensions
 - b. Identification of products and materials included by sheet and detail number
 - c. Compliance with specified standards.
 - d. Notification of coordination requirements.
 - e. Notification of dimensions established by field measurement.
2. Shop Drawing Submittals: Contractors shall submit shop drawings in electronic form. All shop drawings shall be in the form of .PDF files submitted directly to the Architect or Engineer for which the shop drawing is intended.

07. SAMPLES:

1. Accuracy of Sample: Unless otherwise specifically directed by the Architect / Engineer, all samples shall be of the precise article proposed to be furnished and shall illustrate the functional and aesthetic characteristics of the product.

2. Number of Samples: Submit all samples in the quantity which is required to be returned plus three (3) which will be retained by the Architect / Engineer.

08. COLORS:

1. General: Unless the precise color and pattern is specifically described in the Contract Documents, whenever a color or pattern is available in a specified product, submit accurate color charts and pattern charts from the full range of manufacturer's standards to the Architect / Engineer for his review and selection.
2. Comparative Analysis: Unless all available colors and patterns have identical costs and identical wearing capabilities, and are identically suited for the installation, completely describe the relative costs and capabilities of each.

09. MANUALS:

1. Unless otherwise specifically directed by the Architect / Engineer elsewhere in the specifications, prepare all required manuals covering items included in this work in accordance with the following:
 - a. Provide three (3) copies of Operation and Maintenance manuals each bound in an indexed 3-ring binder.
 - b. Include the name of the project and the name of the submitting contractor on the cover.
 - c. Provide a master index at the beginning of the manual showing items included. Internally subdivide the binder contents with permanent page dividers, logically organized with tab titling clearly printed under reinforced laminated plastic tabs.
 - d. Organize all sections to correspond to specification sections.
 - e. Include copies of all approved shop drawings in the submittal.
 - f. Operating instructions shall include step by step instructions for each piece of equipment installed in the project. Instructions shall include installation instructions, part numbers and lists, operation instructions of equipment, name of vendor, and maintenance instructions.
 - g. Testing reports if applicable.
 - h. Include all warranty information within the submittal.

10. PROJECT RECORD DRAWINGS:

1. The General Contractor shall maintain a record set of blue line prints of contract drawings and shop drawings in clean, undamaged condition. All other contractors shall record work variations on the General Contractor's record set. Mark-up the set of record documents to show the actual installation where the installed work varies from the work as originally shown. Make whichever drawings are most capable of showing the actual "field" condition fully and accurately.
2. Mark record drawings with red erasable pencil and where feasible, use other colors to distinguish between variations in separate categories of work.
3. During the progress of work, the contractor shall keep accurate data on locations and elevations of underground or concealed work.

4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates, and other identification on the cover of each set. Submit to Architect / Engineer.
5. **Final payment to contractors will not be released until accurate record drawings, operation and maintenance manuals have been received and accepted by the Architect / Engineer.**

END OF SECTION 01300

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

.02 SCOPE OF WORK:

- a. Extent of work of this section includes all labor, material, equipment, and services necessary for and reasonably incidental to the testing of material as shown on the drawings and specified herein.
- b. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.
- c. The Testing Laboratory shall be retained by the Contractor, at no additional expense to the Owner. The Testing Laboratory shall act as the Owner's agent in all matters relating to material testing, and shall report to the Owner and take instructions from the Contractor after Owner and Architect or Engineer approval of instructions has been granted.
- d. It shall be the responsibility of all Contractors to familiarize themselves with all sections of these specifications to allow the Testing Laboratory to perform their duties at the proper sequence of construction without any hindrance or delays.
- e. Additional requirements for testing are described in various sections of these specifications.
- f. The General Contractor shall be responsible for retaining a prior approved single testing laboratory to perform all services including all mechanical and electrical for their respective work responsibility under this section.
- g. NOTE: The quality control testing required on this project is a significant part of the overall project. Bidder is CAUTIONED to thoroughly familiarize himself with the testing requirements and the costs to provide them.

.03 TESTING LABORATORY REQUIREMENTS:

- a. All testing laboratories desiring to provide services for this project must receive written approval from the Owner prior to bidding.
 - (1) The Testing Laboratory must meet the requirements of the American Council of Independent Laboratories (ACIL) and be authorized to operate in the state of North Dakota.
 - (2) The Testing Laboratory must furnish, to the Owner's satisfaction, documentation of an in-house quality assurance program.
 - (3) The Testing Laboratory shall provide, to the Owner's satisfaction, a current certificate of insurance stating limits of liability coverage to include professional liability coverage if applicable.

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- (4) The Testing Laboratory must maintain a full-time registered professional engineer with a minimum of five (5) years experience in the types of testing required under this Contract to review all required testing services.
- (5) Each person in charge of laboratory testing, field testing, and inspection must have not less than one (1) year of full-time experience in the duties required to be performed under this Contract and shall perform such duties only under the direct supervision of a registered engineer.
- b. The Testing Laboratory shall perform all tests described herein and any additional tests requested by Owner. When it appears that the material furnished, or work performed by the Contractor, fails to meet the construction contract requirements, the Testing Laboratory shall direct the attention of the Owner, Architect and Engineers to such failure.
- c. Meetings: Representatives of the Testing Laboratory shall attend pre-construction conferences and all project progress meetings when so directed by Owner, Architect, Engineers, and/or respective Contractor, at no additional cost to the Owner.
- d. Written Reports: Submit all test reports to Owner, Architect, respective Engineer (if applicable), respective Contractor and respective subcontractor (if applicable) within seventy-two (72) hours after each test is completed unless specified otherwise in these specifications.
- e. Verbal Reports: Testing Laboratory is to give verbal notification, to Owner, Architect and Engineers, immediately, of any irregularity to ensure all necessary retesting and/or replacement of material with the least possible delay in progress of the Work.
- f. Test Standards: Testing Laboratory shall furnish the Owner, Architect and Engineer, upon request, one (1) copy of each standard (ASTM, AASHTO, and AWS) referred to or which is pertinent to these specifications.
- g. Resumes: Testing laboratory will provide current resumes of engineers and technicians to be employed on this job.
- h. The testing requirements shall remain in force for the full duration of the construction contract, including all delays or time extensions.

.04 PAYMENT FOR TESTING SERVICES:

- a. Initial Services:
- (1) The respective Contractor will pay for all initial testing services requested by these specifications. Costs for all such testing services shall be included in respective Contractor's proposal.
- (2) The respective Contractor will pay for all initial testing services requested by the Owner which are not specifically required by these specifications, and upon completion and acceptance of all work, an equitable adjustment shall be effected thereof by appropriate Change Order EXCEPT that, if such initial tests indicate noncompliance with the Contract Documents, the costs of initial tests associated with that noncompliance shall be borne entirely by the respective Contractor.

b. Retesting: When initial tests indicate noncompliance with the Contract Documents, all subsequent retesting occasioned by the noncompliance shall be performed by the same Testing Laboratory and the costs thereof will be borne entirely by the respective Contractor.

.05 TAKING SPECIMENS:

a. All specimens and samples for testing will be taken only by the Testing Laboratory; all sampling equipment and personnel will be provided by the Testing Laboratory; and all deliveries of specimens and samples to the Testing Laboratory will be performed only by the Testing Laboratory.

b. Contractors shall provide representatives of the Testing Laboratory access to the work at all times in order that the Laboratory may properly perform its functions.

.06 SCHEDULES FOR TESTING:

a. Establishing Schedule: By advance discussion with the Testing Laboratory, the Contractors shall determine the time required for the Laboratory to perform its tests and to issue each of its findings.

b. When changes of construction schedule are necessary during construction, the Contractors shall coordinate all such changes of schedule with the Testing Laboratory.

c. When the Testing Laboratory is ready to test specimens but cannot due to incompleteness of the work, all extra costs for testing attributable to the delay will be backcharged to the respective Contractor and shall not be borne by the Owner.

.07 CODE COMPLIANCE TESTING:

Inspections and tests required by codes or ordinances, or by a plan approval authority, and made by a legally constituted authority, shall be the responsibility of and shall be paid for by the respective Contractor, unless otherwise provided in the Contract Documents.

.08 CONTRACTOR'S CONVENIENCE TESTING:

Inspection or testing performed exclusively for a Contractor's convenience shall be the sole responsibility of the respective Contractor.

.09 GRADING:

The grading subcontractor shall submit to the Testing Laboratory, for approval, a completed grading and earthwork plan, including the source(s) of all engineered fill materials; all of which shall be approved by the Civil Engineer prior to the commencement of any grading operations.

.10 EXCAVATION & BACKFILLING AND SUBGRADE:

a. A registered Civil Engineer with a minimum of 5 years of providing geotechnical observation experience and prior approval by Owner and Engineer, representing the Testing Laboratory, shall observe all site excavations prior to the placement of any engineered fill and footings, including excavation over-size.

b. The Testing Laboratory shall test and approve each lift placed prior to the placement of any additional lifts. Maximum depth of clay engineered fill - 6 inches. Maximum depth of granular engineered fill - 1 foot.

- (1) Determine maximum density and optimum moisture content of each type of fill, backfill and subgrade material using ASTM D698-Standard Proctor, "Moisture-Density Relations of Soils."
 - (2) Conduct field density tests in accordance with ASTM D1556, "Density of Soil In-Place by the Sand-Cone Method"; or ASTM D2922, "Density of Soil and Soil-Aggregate In-Place by Nuclear Methods".
 - (a) One test for each 250 square yards of sub-base.
 - (b) One test for each 250 square yards per one foot lift, or fraction thereof, of fill or backfill.
 - (c) One test for each 250 square yards of subgrade.
 - (d) One test for each 200 linear feet of sidewalk and curb and gutter.
 - (e) One test along trenches at maximum 100 foot intervals per 18 inches of vertical lift and at changes in required density EXCEPT for non-paved areas where tests shall be at maximum 100 foot intervals per 3 feet of vertical lift.
 - (f) One test for each 200 linear feet of electrical/communication trenching.
 - (g) For each isolated parcel less than 250 square yards, 200 linear feet and 100 foot intervals per 18 inch lift (or 3 foot lift if applicable), take at least two tests.
- c. The Soils Engineer shall observe and approve the final excavated subgrade elevations prior to the placement of any sub-base, base and pavement materials.
- d. The Testing Laboratory shall observe and approve of all dewatering procedures during construction operations. Testing Laboratory shall make a written report concerning conditions of site during every site visitation. This shall include any observed items which might affect the project quality (including but not limited to the following: site dewatering, covering partially completed masonry walls at days end, curing of concrete slabs, and protection of equipment and materials).
- e. Furnish test reports in accordance with paragraph .03d.

.11 CONCRETE:

- a. The Testing Laboratory shall prepare the concrete mix design for each type of concrete used on the job.

b. The Testing Laboratory shall perform batch plant inspections to verify that the ready mix producer is in compliance with the requirements as established by the National Ready Mix Concrete Association for Batch Plant Certification, and until concrete quality is established to the satisfaction of the Owner and Architect. Periodic inspections shall be performed thereafter as determined by the Testing Laboratory and with the concurrence of the Owner and Architect. Periodically inspect and test batch proportioning equipment for accuracy.

c. The Testing Laboratory shall run a laboratory trial batch mix for each type of concrete proposed for use on the site to determine proper mix proportions, to include gradation and quality of coarse and fine aggregates.

d. The Testing Laboratory shall sample and test aggregates and mix ingredients as necessary to insure compliance with specifications.

e. The Testing Laboratory shall sample and test aggregates as necessary for moisture content. Request that adjustments be made in quantities of mixing water and aggregates as necessary to maintain water-cement ratio of approved design mixes.

f. The Testing Laboratory shall certify, in duplicate, that ingredients and proportions and amount of ingredients in concrete conform with approved trial mixes. When concrete is batched or mixed off immediate building site, the Ready-Mix supplier shall certify (by signing, initialing, or stamping thereon) on delivery slips (duplicate) that ingredients in truck load mixes conform to proportions of aggregate weight, cement factor and water-cement ratio of approved trial mixes.

g. The Testing Laboratory shall:

- (1) Provide a field representative at site during placement of concrete to perform concrete sampling and testing.
- (2) Take concrete samplings in accordance with ASTM C172. Mold and cure four compression test cylinders for each 50 cubic yards or fraction thereof for each concrete type per day. After good concrete quality control has been established and maintained, make four cylinders for each 100 cubic yards or fraction thereof for each concrete type per day. Label each cylinder with an identification number. Owner may require additional cylinders to be molded and cured under job conditions.
- (3) Test slump of concrete periodically and during making of concrete test cylinders. Method of making slump test shall be described in ASTM C143.
- (4) When air-entrained concrete is being placed, determine air content at least daily during progress of such work and during making of concrete test cylinders. Determine air content by either ASTM C173 or ASTM C231.
- (5) If slump or air content falls outside specified limits, another test shall be made immediately from another portion of same batch.
- (6) Insure maintenance of water-cement ratio established by approved trial mix.

-
- (7) Notify batch plant of mix irregularities and request materials and proportioning check.
 - (8) Verify that specified mixing has been accomplished.
- h. Laboratory Tests of Field Samples:
- (1) Test compression test cylinders for strength in accordance with ASTM C39. For each test series, test one (1) cylinder at seven (7) days, one (1) cylinder at fourteen (14) days and one (1) cylinder at twenty eight (28) days. The remaining cylinder will be used as a spare to be tested at either 7, 28, 56 or 90 day test as required. No further compression tests on each test series are required after specified strengths have been met.
 - (2) Furnish compression test reports in accordance with paragraph .03d. On test reports indicate following information:
 - (a) Cylinder identification number and date cast.
 - (b) Specific location at which test samples were taken.
 - (c) Type of concrete, slump and percent air.
 - (d) Compressive strength of concrete in psi.
 - (e) Weather conditions during placing.
 - (f) Temperature of concrete.
 - (g) Maximum and minimum ambient temperature during placing.
 - (h) Ambient temperature when concrete sample in test cylinder was taken.
 - (i) Date delivered to laboratory and date tested.

.13 STRUCTURAL STEEL:

- a. The Testing Laboratory shall test all bolts in bolted connections noted as slip-critical for proper torque; visually inspect one hundred percent (100%) of all shop and field welded connections; visually inspect all roof metal decking to assure anchorage meets specifications; all per AWS D1.1 (latest revision).
- b. Furnish written reports in accordance with paragraph .03d.

END OF SECTION 01400

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. It shall be the responsibility of all Contractors to visit the area making themselves aware of all existing site conditions and requirements for new construction.
2. The General Contractor shall notify other Contractors of work schedules sufficiently in advance so they can cooperate with him and he is responsible for coordination.
3. The Contractors shall not stipulate in their proposals any conditions not contained in the form of proposal contained in the contract documents. Each bid shall include all labor, materials and equipment as called for in these specifications and as indicated on the plans.
4. The General Contractor shall be responsible for furnishing the Architect with a Construction Schedule which will be with reasonable accuracy, establish the time each division of work is to be performed and such schedule must be prepared and presented promptly after the contracts have been signed.
5. Within (10) ten days after a Notice To Proceed, the successful bidder shall submit to the Architect a list of all subcontractors and suppliers whose work and material the bidder proposes to use on the project. After approval of such list, it may not be changed without written permission of the Architect.
6. The General Contractor shall diligently pursue work as promptly as possible. He shall install a construction office on the site and maintain a set of plans, specifications and approved shop drawings in the office at all times.
 - (a). Contractor shall maintain in job shack only approved stamped shop drawings on jobsite indexed according with specification divisions.
 - (b). Contractor shall maintain a marked master set of drawings and specifications that reference addenda items by division. Enter all addenda modifications on drawings and specifications.
7. The General contractor shall employ an experienced full time project Superintendent for the term of the project. The Superintendent shall not be changed during the project, and the Contractor shall be prepared to submit favorable recommendations from (3) three other Architects of similar projects attesting Superintendents Performance.
8. Each Contractor shall be held responsible for his own clean-up upon completion of his work, at the end of each day. (See Section 01650).
9. Contractor is responsible to immediately inform Architect of any discrepancies.

END OF SECTION 01500

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Bidders shall inform themselves of the conditions under which the work is to be performed concerning the site of work, the structure of the ground, obstacles which may be encountered and all other relevant matters concerning the work to be performed and if awarded the contract, shall not be allowed any extra compensation by reason of any matter of things concerning which such bidder might have fully informed himself, because of his failure to have so informed himself prior to the bidding, such methods and means of carrying out his work as will not cause any interruption or interference with any other Contractors.
2. The bidder is expected to base his bid on materials and equipment complying fully with the plans and specifications, and in the event he names in his bid materials or equipment which do not conform, he shall responsible to supply the specified material or equipment at no change in bid price.
3. All plans and specifications are bound as bidding documents. Each Contractor when preparing his bid, shall carefully review all other sections of the documents to fully inform himself of the work to be done. The Architect/Engineer is the Author and interpreter of these documents. All questions Contractors may have regarding intent or interpretation of project shall be asked before submission of bids in order that the addenda may clarify a condition for all. Questions regarding work after submission of bids will be responded to by Architect/Engineer by application of this projects design principles.
4. Any addenda, bulletins or interpretations issued during the time of bidding shall be covered in the proposal and in closing the contract will become a part thereof.

03. SIGNING OF BIDS:

1. Bids which are not signed by individuals making them should have attached thereto a power of attorney evidencing authority to sign the bid in the name of the person for which it is signed.
2. Bids which are signed for co-partnership should be signed by all of the copartners or an attorney-in-fact. If signed by an attorney-in-fact, there should be attached to the bid a power of attorney authority to sign the bid.

04. WITHDRAWAL OF BIDS:

1. Any bidder may withdraw his bid an anytime prior to the scheduled closing time for the receipt of bids, but no bid shall be withdrawn for a period of (30) thirty days after the scheduled closing time for the receipt of bids.

05. CONTRACTORS LICENSE:

1. All bids and proposals for the construction of any public contract project subject to the provisions of this chapter shall contain a statement showing that the bidder or Contractor is duly and regularly licensed hereunder.

- (a). A Contractor must be the holder of a license at least (10) ten days prior to the date set for receiving bids, to be a qualified bidder.
- (b). No contract shall be awarded to any Contractor unless he is the holder of a license in the Class within which the value of the project shall fall as herein - before provided.
- (c). A current copy of the Contractors Renewal Certificate shall be included in the envelope marked Bid Bond.

06. FILING OF BIDS:

1. Bidders must submit bids on attached forms in duplicate.
2. Proposals shall be turned into the Owner in a sealed bid envelope with the following information plainly marked on its exterior.
 - (a). **The Class of License held by the Bidder.**
 - (b). **The Number of the Bidders License.**
 - (c). **The name and address, of person, firm, or corporation submitting the bid in the upper left hand corner.**
 - (d). **Name of Project in lower left hand corner.**
 - (e). **Acknowledge of receipt of ALL General, Mechanical, & Electrical addenda.**

A bid submitted without this information on the exterior of the envelope shall not be considered and shall be returned to the bidder.

3. Attached to the bid envelope a separate sealed envelope marked bid bond shall contain:
 - (a). Bid Bond in the amount of 5% of the total bid amount
 - (b). Current copy of Contractors License Renewal.
4. There shall be **NO additions or deletions to the bid amount written on the outside of the bid envelope.** All bid amounts must be fully tabulated on the provided bid form. Any bid received with **additions or deletions marked on the outside of the envelope shall not be considered and shall be returned to the bidder.**

07. BID SECURITY:

1. Each bid shall be accompanied by a bid bond at least equal to five percent (5%) of the total amount of all proposals entered, payable without condition to the Owner.
2. The bid security which must accompany each bid is required as guarantee that the bidder will enter into a contract with the Owner for the work described in the proposal and furnish bond as specified. It will be opened and reviewed for conformance before bid is actually opened.

08. TERO:

1. TERO (Tribal Employment Rights Ordinance) shall be considered part of this project. Contact the TERO office for the proper version of the ordinance that applies to this project. For further information contact:
 - Tero Office
 - PO Box 900
 - Belcourt, ND 58316
 - Phone (701) 477-6451 Ext. 114

END OF SECTION 01600

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Within ten (10) days after a Notice to Proceed is issued, the successful bidder shall submit to the Architect a Schedule of Values by specification division indicating separate labor and separate material costs for each section. Upon acceptance by Architect of this tabulation, Contractor may utilize this form for monthly progress payments.
2. Retainage shall be in the amount of (10%) of the completed work until the project is (50%) complete, at which time retainage shall be reduced to (5%) of the total contract.

03. PROJECT CLOSEOUT:

1. Prior to requesting Architects final inspection for certification, Contractor shall prepare his own list of work left to complete. In doing so he shall certify that:
 - (a). Contract Documents have been reviewed.
 - (b). Work has been checked for compliance with the Contract Documents.
 - (c). Work has been completed in accordance with the Contract Documents.
 - (d). Other than items identified, work is completed and ready for final inspection.Submit list tabulation Architect for his determination if project is substantially complete and ready for final inspection.
2. Complete final cleaning up requirements, including touchup, repair and restoration of marred surfaces. (See Section 01650).
3. Each Prime Contractor shall arrange for each installer of work that requires regular or continuing maintenance, to meet at the site with the Owner's personnel to provide necessary basic instruction in the proper maintenance of the work. Such arrangements must be coordinated in advance with the Owner and Architect.
4. Each Prime Contractor shall furnish the Owner with (1) set of red line marked blueprint drawings:
 - (a). Contractor shall neatly document as built changes on the prints and return to the Architect within (10) ten days of Substantial Completion.
5. Each Prime Contractor shall provide the Owner with an indexed bound set of shop drawings in a (3) three ring binder. Exterior of binder shall have the project name neatly lettered on its cover. Included within the binder shall be an indexed copy of all warranties.
6. Other Sub-Contractors shall refer to their respective section of specifications for special drawings and manuals.
7. All Prime Contractors shall be responsible for instructional training to the Owner on the operation and maintenance of all equipment and building systems.

04. ACCEPTANCE AND FINAL PAYMENT:

1. Upon receipt of written notice from the Contractor that the work is ready for final inspection, the Architect and the Owner shall promptly make such inspection. Work shall be inspected and when not more than (10) ten minor items need correction, a Certificate of Substantial Completion will be issued providing the Owner can occupy the space. When the work

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- accepted under the contract and the contract fully performed, the Architect shall promptly issue a final approval over his own signature, stating that the work provided for in this contract has been completed and is accepted by the Owner under the terms and conditions thereof, and that the entire balance found due the Contractor and noted in said final certificate is due and payable.
2. Before issuance of final certificate, the Contractor shall submit evidence satisfactory to the Architect by way of lien waivers that all payrolls, materials, bills, and other indebtedness connected with the work have been paid.
 3. Final payment shall be due thirty (30) days after Substantial Completion of the work provided the work then fully completed, and the contract fully performed.
 4. If after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and the Architect so certified, the Owner shall upon certificate of the Architect and without terminating the contract, make payment of the balance due for the portion of the work fully completed and accepted. Such payment will be made under the terms and conditions governing final payment except that it shall not constitute a waiver of claims.

05. GUARANTEE:

1. The Contractor shall guarantee and make good without cost to the Owner any defects, settlement, shrinkage, or other faults in the work arising from improper materials, or workmanship which may appear within (1) one year after the acceptance of the work (except for specific guarantee of another length of time specified elsewhere), and shall keep in repair for the period free of expense to the Owner. Part of full payment for the work shall not relieve him in anyway from such responsibility.

END OF SECTION 01620

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Throughout the construction period, maintain the site in a standard of cleanliness as described in this Section.
2. In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other sections of these specifications.
3. Conduct daily inspection, and more often if necessary, to verify that requirements for cleanliness are being met.
4. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.
5. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

03. PROGRESS CLEANING:

1. General:
 - (a). Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
 - (b). Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
 - (c). At least once each week, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
 - (d). Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.
2. Site:
 - (a). Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
 - (b). Weekly, and more often if necessary, inspect all arrangement of materials stored on the site. Restack, tidy, or otherwise provide everything necessary to meet the requirements of subparagraph 1.a.above.
 - (c). Maintain the site in a neat and orderly condition at all times.
3. Building:
 - (a). Daily, and more often if necessary, inspect the structure and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage.
 - (b). Weekly, and more often is necessary, sweep interior spaces clean. "Clean," for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and hand-held broom.
 - (c). As required preparatory to installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended

by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

- (d). Following the installation of finish materials, clean the finish surfaces daily (and more often if necessary) at all times while work is being performed in the space in which finish materials are installed. "Clean," for the purpose of this subparagraph, shall be interpreted as meaning free from foreign material which, in the opinion of the Architect, may be injurious to the finish surface material.
4. Architect shall be SOLE JUDGE as to cleaning responsibilities in case of dispute.

04. FINAL CLEANING:

1. General Contractor shall have overall responsibility for all final cleaning requirements unless otherwise specifically indicated.
2. "Clean," for the purpose of this section, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials. Comply with all manufacturer instructions/recommendations regarding cleaning operations.
3. Prior to completion of the Work, respective Contractors shall remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste; and conduct final progress cleaning as described in this section.
4. Site: Completely remove resultant debris.
5. Structure:
 - (a). Interior:
 - (1). Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter.
 - (2). Remove all traces of splashed materials from adjacent surfaces.
 - (b). Special Areas:
 - (1). Where any portion of completed building was used for shop, storage, material preparation, etc., the respective Contractor must restore all material to original condition. If surface is not scheduled for any applied finishes, stains must be completely removed or surface must be finished at respective Contractor's expense and as directed by Architect.
6. Schedule final cleaning as approved by the Architect to enable the Owner to accept a completely clean work.
7. Architect shall be sole judge as to final cleaning responsibilities in case of dispute

END OF SECTION 01650

SECTION 01720 – STAKING AND CONSTRUCTION SURVEYING

PART 1 - GENERAL

1.1 SUMMARY

- A. This section outlines the staking and surveying work related to provide reference points in the field. Section clarifies staking provided to the Contractor and Contractor's responsibilities.
- B. Construction Surveys establish "control stakes" for basic line and grade used for project construction.
 - 1. Control stakes are used to check work for contract compliance.
- C. Set supplemental "working stakes" from control stakes when needed.
 - 1. Working stakes are used to perform the work and are provided by the contractor.

1.2 CONTRACTOR'S RESPONSIBILITY

- A. Notify the Owner at least fourteen (14) calendar days in advance of the times and places that staking will be needed.
- B. Set supplementary staking, grade staking, offsets, cut stakes, temporary bench marks, and control points necessary for contractor to complete the work in accordance with the plans and specifications.
- C. Provide all staking materials for contractor supplementary staking to include hubs, lath, flagging, paint and other material needed to provide construction staking.
- D. Request clarification from the Owner regarding conflicts before proceeding with installation of facilities.
- E. Preserve all offset and reference staking, until such time as the pipeline or other facilities are installed.
- F. Reference stakes needing replacement due to Contractor error or negligence must be replaced by Contractor, at no cost to the contract.
- G. All permanent survey points/markers (i.e. property corners) and bench marks not directly in the line of work shall be preserved.

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- H. Replace all permanent survey markers disturbed or destroyed using a Professional Land Surveyor, at no cost to the contract.
 - I. Provide evidence of reestablishment of permanent survey markers to the Owner and copy of stamped and approved monument re-establishment documentation from the appropriate jurisdiction (state, BIA, etc.).

END OF SECTION

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Soil borings have been performed by Material Testing Services LLC, herein referred to as the Soils Engineer.
2. The Soils Engineer's recommendations **are not a warranty of subsurface conditions**.
 - (b). Contractors shall use the following information as instruction for excavation and backfilling requirements.
 - (b). Bidders should visit the site and acquaint themselves with all existing conditions. Prior to bidding, bidders may make their own subsurface investigation, but all such investigations shall be performed only under time schedules and arrangements approved in advance by the Owner and Architect.
3. See the following soils report:

Report of Geotechnical Exploration Program

**Proposed Chippewa Downs Grandstands
Belcourt, North Dakota
MTS No. G26-026**

For

Jiran Architects & Planner, PC

August 14, 2026

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Proposed Chippewa Downs Grandstands
Belcourt, North Dakota
MTS No. G26-026

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APPENDICES

APPENDIX A – FIELD EXPLORATION PROGRAM

- A.1 Exploration Scope
- A.2 Surface Observations
- A.3 Subsurface Conditions
- A.4 Water Levels
- A.5 Soil Sampling
- A.6 Soil Classification Procedure

Attachments to Appendix A

Location Maps
Soil Profile Drawing
Boring Logs
Symbols & Descriptive Terminology on Test Boring Logs
Soil Classification Sheet

APPENDIX B – LABORATORY TEST PROGRAM

- B.1 Testing Scope
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Attachments to Appendix B

Mechanical Sieve Analysis

APPENDIX C – COLD WEATHER CONSTRUCTION PRECAUTIONS

Report of Geotechnical Exploration

**Proposed Chippewa Downs Grandstands
Belcourt, North Dakota
MTS No. G26-026**

1. INTRODUCTION

1.1. Authorization

This work was conducted in accordance with our proposal dated May 15, 2026.

1.2. Scope of Services

The authorized scope of services included soil borings, laboratory testing and an engineering report.

Authorized drilling included two soil borings to nominal depths of 20 feet. The boring locations were selected in coordination with the client and Material Testing Services staff. Soil sampling was to be performed using standard penetration test (SPT) procedures. Laboratory tests in the proposal included moisture content, dry density, gradation through a #200 sieve, Atterberg limits (liquid & plastic limits) and unconfined compression testing. If soft cohesive soils were encountered undisturbed 3-inch diameter thin-walled Shelby tubes were to be taken.

The authorized engineering report includes the results of the field and laboratory testing as well as engineering recommendations regarding:

- a. Site preparation
- b. Foundation types and depths
- c. Allowable bearing capacity and estimated potential foundation settlement
- d. Potential construction difficulties
- e. Potential expansive or compressible soils
- f. Site drainage
- g. Exterior backfill
- h. Floor slabs
- i. Frost considerations
- j. Lateral Earth Pressures
- k. Pavements
- k. Excavation slopes

I. Construction monitoring

Determining if there is potential on-site contamination is not included in the scope of services.

2. ENGINEERING REVIEW

2.1. Project Data

If the project information presented below is not correct or has been changed, it is necessary that the correct project data be presented to us for further review.

The proposed project will include construction of a new grandstand building measuring approximately 55 by 155 feet. We anticipate the structure will be permanently heated. The building is anticipated to be supported on standard strip footings and isolated piers bearing on either individual concrete pads or strip footings. The building will include below-grade concrete foundation walls and above-grade steel framing. We assume a finished floor elevation of approximately 1,923.30 feet.

It is anticipated that the building will be accessed by gravel parking areas and drive lanes. No concrete or asphalt pavement is anticipated on the exterior of the building.

For purposes of design, we assume column loads will not exceed 75 kips and perimeter wall loads will not exceed 5 kips per linear foot.

We assume the maximum allowable settlement under working load is 1 inch and a maximum differential settlement of ½ inch.

2.2. Special Concerns and Constructability

Fill or possible fill consisting predominantly of clayey sand was encountered in both soil borings to a depth of approximately 5 feet below existing grade. We recommend that the existing fill not be relied upon to support the foundation or floor slabs. Existing fill encountered beneath proposed foundations and floor slabs should be overexcavated and

replaced with engineered fill as described in Section 2.3.1 of this report.

The project will include demolition of the existing building. We recommend that the geotechnical engineer, or their representative, observe the excavation following demolition and prior to placement of engineered fill to verify that all unsuitable fill has been removed and that the exposed subgrade is suitable for the proposed construction.

2.3. Excavation and Site Preparation

2.3.1. Building

We recommend that the topsoil and existing fill be removed from the building footprint. A hydraulic excavator with a smooth cutting-edge bucket should be used for foundation excavation. Any loose materials should be removed as much as possible. Exposed sands should be surface compacted with a minimum of three passes with a heavy vibratory roller.

Any fill required in the building area can consist of the on-site non-organic soils, pit-run sand or sand with gravel. Any gravel in the fill should have 100 percent passing the 1-1/2-inch sieve. Moisture contents should be adjusted for sands to facilitate compaction.

Loose lift thicknesses of new fill should be no more than 8 inches. Any fill that is to support footings or floor slabs should be compacted to at least 97 percent of maximum dry density as determined according to ASTM D 698 (standard Proctor).

Where overexcavation beneath proposed foundations is required to remove existing fill, the excavation should extend laterally beyond the outside edge of the foundation at a slope of 1 horizontal to 1 vertical (1H:1V). In other words, provide a lateral overexcavation of 1 foot for every 1 foot of overexcavation below the bottom of the proposed foundation. The lateral overexcavation should be measured horizontally from the outside edge of the foundation at the bottom of the footing.

We recommend that the excavated areas be observed by the geotechnical engineer of record or their representative prior to the placement of concrete or controlled, compacted fill. The purpose of the observations would be to make sure that no existing fill or soft natural soil is left in place and that the exposed natural soils can support the proposed fill and structural loads. We wish to point out that there could be deeper excavations required away from the boring locations.

After the excavations are complete, backfill should be placed as soon as possible. Also, care should be taken so that the grades slope away from the excavations in case it rains. Although it is impossible to completely keep rainwater from the site, provisions must be made to protect the excavations as much as possible from the influx of rainwater or surface runoff both during and after construction. Water and any soft/saturated soil should be removed as soon as possible.

If earthwork is done during periods of freezing temperatures, we recommend protecting the fill from freezing once it has been placed. No frozen soils should be used as fill and fill should not be placed on frozen ground. Earthwork could be difficult in the spring or late fall when conditions are often cool and wet. Furthermore, placed and compacted soil should be protected from freezing until the building is enclosed and can be maintained in heated conditions.

2.4. Foundation Recommendations

2.4.1. Footing Depths

Perimeter footings for heated buildings should be carried to a frost depth of 5 feet. The frost depth should be considered from final grade to the bottom of the footing. Interior footings can be placed at a convenient depth below the floor slab. For footings which will be in an unheated environment, we recommend using a frost depth of 7 feet.

2.4.2. Bearing Capacity and Settlement

With the recommended site preparation, on-site observations by the geotechnical engineer, and adequate compaction testing of new fill, in our opinion, continuous perimeter strip footings and isolated pad footings can be proportioned for a net allowable soil bearing capacity of up to 3,000 psf. Isolated piers bearing on strip footings may also be designed using this allowable bearing pressure, where applicable. This allowable bearing pressure is considered to provide a theoretical factor of safety of 3 or more with respect to general shear failure of the supporting soils.

Our calculations suggest that total settlements should be 1 inch or less and that the differential settlement should be ½ inch or less.

2.4.3. Drilled Piers

For drilled pier design, the soil parameters presented in Tables C-1 and C-2 are intended to provide the basis for evaluating lateral capacity and anticipated lateral deflection of the proposed drilled piers. Passive lateral earth pressure values are provided by soil layer for use in lateral drilled pier analysis. The upper 5 feet of soil should be neglected for lateral resistance and side resistance in unheated areas due to potential frost penetration and frost softening.

Drilled piers that are not supported on pads we recommend extending to 15 feet below grade to prevent frost jacking.

2.4.4. Lateral Earth Pressures

Walls with unbalanced backfill will be subject to at-rest earth pressures. We recommend designing the walls for an at-rest lateral earth pressures equivalent to that generated by a fluid having a total unit weight of 50 pcf for the on-site compacted sand and 65 pcf for lean clays.

To resist lateral loads, we recommend using an ultimate passive pressure equivalent to that of a fluid with a total weight of 450 pcf for the compacted sand and 375 pcf for compacted

lean clay. If compacted fill is placed on the passive side next to the foundation resisting lateral loads, it should be compacted to at least 95 percent of maximum density as determined by ASTM D 698. In addition, those portions of the foundations within five feet of final grade in unheated areas should be ignored when calculating passive resistance due to frost softening. An ultimate friction factor of 0.30 can be used between the bottom of the footing and the foundation soils. We wish to point out that these values will give the ultimate resistance to lateral loads. We recommend that a theoretical safety factor of 2.0 be applied for a safe design.

2.4.5. Methods of Analysis

The allowable foundation loading recommended was arrived at using the Terzaghi-Meyerhof bearing capacity equation with estimates using empirical correlations with the “N” values, as well as our experience with similar site and soil conditions.

Settlements were evaluated using the Schmertmann method and elastic settlement analyses. Soil elastic moduli used in the elastic settlement analyses were estimated using empirical correlations with Standard Penetration Test (SPT) “N” values, with consideration given to soil type. Pressuremeter-based correlations and additional empirical correlations published by the Federal Highway Administration (FHWA) were also evaluated.

The equivalent passive, at-rest and active earth pressures were calculated using estimated unit weights and estimated angles of internal friction based on our experience, the laboratory testing and correlations with the Atterberg limits and soil type.

2.5. Floor Slabs

We recommend that the site be prepared as stated in **Section 2.3**. We recommend that slabs-on-grade be constructed structurally independent of foundation walls and columns. We also recommend a minimum 6-inch layer of free draining sand be placed directly below the slabs. The sand should have less than seven percent passing the #200 sieve by weight. If it contains gravel, the gravel should have a maximum size of one inch. The sandy layer will be used to

provide a working surface for concrete placement and serve as a capillary break.

With the site prepared as recommended, it is our opinion that the subgrade modulus of 200 pci can be used if a minimum of 18 inches of granular fill is used below the slab. A subgrade modulus of 150 pci can be used if the on-site soils are used to within 6 inches of the bottom of the slab.

2.6. Exterior Foundation Backfill

The exterior foundation backfill could consist of the on-site non-organic soil or imported fill as described in section 2.3.3. If sand is used as exterior backfill, we recommend providing at least a 2-foot-thick lean clay cap in the green areas at the surface to divert surface water away from the building.

Foundation backfill should be placed in maximum loose lift thicknesses not to exceed 8 inches. Lift sizes may have to be smaller depending on the compaction equipment that is used. Compaction should be to a minimum of 92 percent of the standard Proctor density in lawn areas. For sidewalks or lightly loaded structures such as air conditioning units, the compaction should be increased to 95 percent. If there are driveways or parking areas within the backfill zone the fill 1 foot or more below the bottom of pavements should be compacted to at least 95 percent and fill within 1 foot should be compacted to at least 98 percent. Clay fill should be placed at a moisture content of -3 to +3 percent of the optimum moisture content and sand fill should be moisture conditioned as required to facilitate compaction.

2.7. Surface Drainage

We advise that adequate drainage be maintained during and after construction. Unless roof drainage is internal, we also recommend that downspouts and gutters or an appropriate closed conduit system be used to control roof drainage. Downspouts should have extensions that carry roof water well past the backfill line. Splash pads should also be provided at the end of the extensions, if applicable.

The exterior clay backfill should slope away from the buildings at a rate of 1 inch per foot or greater for a distance of at least 10 feet from the building in lawn areas. In parking areas much positive surface drainage should be provided as practical.

2.8. Exterior Slabs

Due to the potential for frost movement for exterior slabs, precautions should be taken to minimize future post construction movement of sensitive slabs due to frost action. Options available include excavating frost susceptible soils to a depth of 5 feet below the slabs and replacing them with non-frost susceptible sand containing less than 5 percent passing the #200 sieve by weight. Another option would be to place at least 4 inches of extruded polystyrene foam insulation below the slabs and extend it at least 8 feet laterally past the edge of the slabs. Typically, 6 to 12 inches of sand is placed above the insulation for protection. A third option is to support the slabs or steps on foundations taken to frost depth. At least a 4-inch void should be provided below the slabs if this option is used.

Sensitive slabs are slabs that cannot tolerate much movement without causing some difficulties. An example would be the sidewalk or steps in front of a doorway. It is **not** intended to include all exterior sidewalks and driveways, etc.

2.9. Excavation Slopes

Safe excavations must be always maintained. The excavation contractor is responsible for the safety of the excavations. Current OSHA requirements should be carefully followed when excavating for the back slope of the excavation. The OSHA soil type and excavation requirements must be verified by a competent person for the contractor at the time of construction. MTS does not assume responsibility for site safety or the contractors' activities.

2.10. Site Classification for Seismic Design

The subsurface investigation extended to a maximum depth of approximately 20 feet below existing grade. Because the exploration did not characterize the upper 100 feet of the soil profile as described in ASCE 7-22, a definitive seismic site classification has not been established. However, the available subsurface information indicates the near-surface soils at

the site are generally consistent with Site Soil Class D

3. CONSTRUCTION OBSERVATION AND TESTING

The recommendations contained in this report have been made based on the subsurface conditions found at the boring locations. It is possible that there are soil conditions on site that were not represented by the borings. Also, we presumed that close construction monitoring during excavation and backfilling would be authorized. Consequently, on-site observation during construction is considered integral to the successful implementation of the recommendations.

It is imperative that the geotechnical engineer be on site at the following times to observe the site conditions and effectiveness of the construction. We recommend that the testing be performed by the geotechnical engineer as the **Owner's** representative during construction.

3.1 Excavation Observations

The geotechnical engineer should observe the entire excavation bottom of the excavation prior to the placement of engineered fill and/or concrete. He would also be available for additional consultation and recommendations if necessary.

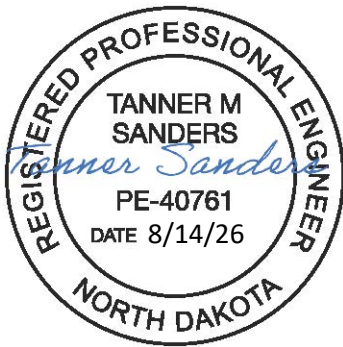
3.2 Placement of Fill

It will also be necessary to perform a representative number of compaction tests during placement of engineered fill. The tests should be performed to determine if the required compaction was achieved. As a general guideline, tests should be taken for each 2,500 square feet embankment fill, every 75 to 100 feet in trench fill, and for each 2-foot thickness of fill. The actual number of tests should be left to the discretion of the geotechnical engineer.

4 EXPLORATION LIMITATIONS

The recommendations contained in this report represent our professional opinions. These opinions were arrived at according to currently accepted engineering practices at this time and location. Other than this, no warranty is intended or implied.

This report is written by:



Tanner Sanders, P.E.
Geotechnical Engineer

Reviewed by:

A black ink signature of Steve Wald.

Steve Wald, P.E.
President

APPENDIX A – FIELD EXPLORATION PROGRAM

- A.1 Exploration Scope
- A.2 Surface Observations
- A.3 Subsurface Conditions
- A.4 Water Levels
- A.5 Soil Sampling
- A.6 Soil Classification Procedure

Attachments to Appendix A

Site and Boring Location Map
Soil Profile Drawing
Boring Logs
Symbols & Descriptive Terminology on Test Boring Logs
Soil Classification Sheet

A. FIELD EXPLORATION PROGRAM

A.1 Exploration Scope

Two borings were drilled to nominal depths of 20 feet for the project. They were drilled on May 27, 2026. The boring locations are illustrated on the attached aerial map at the back of this Appendix.

The borings were backfilled with the auger cuttings. Some settlement of these materials can be expected to occur. The final closure of the holes is the responsibility of the client or property owner.

A.2 Surface Observations

The site is located at approximately 4189 96th Street Northeast near Belcourt, North Dakota. The property is currently developed with associated buildings and a horse racetrack.

The borings indicate the site slopes upward toward the existing building, with the highest ground elevations located near the existing building. Ground surface elevations at boring locations range from approximately 1,918.0 to 1,922.0 feet. Ground surface elevations were estimated using terrain data available through Google Earth.

A.3 Subsurface Conditions

The subsurface conditions encountered at the test locations are illustrated by means of the attached boring logs and profile drawing. We wish to point out that the subsurface conditions at other times and locations at the site may differ from those found at our test boring locations. If different conditions are encountered during construction, it is necessary that you contact us so that our recommendations can be reviewed. The test boring log also shows the possible geologic origin of the materials encountered.

Topsoil fill was encountered at boring locations to depths of approximately 2 inches below existing grade. Below the topsoil fill, the borings encountered fill material mostly classifying as clayey sand or sandy lean clay. Beneath the fill, naturally deposited glacial till classifying as sandy lean clay or clayey sand or coarse to fine alluvium classifying as lean clay, silty lean clay or silty sand was encountered.

Based on the standard penetration resistance ("N" values), the sands were generally classified as medium dense, while the cohesive soils were generally classified as firm to hard.

A.4 Water Levels

No groundwater was measured during drilling or immediately after drilling. This information is shown at bottom of the attached boring logs.

Water levels should be expected to fluctuate seasonally and annually. The water levels at the time of construction could be significantly different than what was recorded on the boring logs. The time of year the borings were drilled and the history of precipitation prior to drilling should be known when using the groundwater readings on the boring logs to extrapolate water levels at other points in time.

A.5 Soil Sampling

Soil sampling was done according to the procedures described by ASTM D1586. Using this procedure, a 2-inch O.D. split barrel sampler is driven into the soil by a 140-lb weight falling 30 inches. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as penetration resistance or "N" value. The "N" value is an index of the relative density of cohesionless soils and the consistency of cohesive soils.

We are retaining representative samples of the soil obtained during our field operations for approximately one month. We will then discard them unless we are notified further as to their disposition.

A.6 Soil Classification Procedure

As the samples were obtained in the field, they were visually and manually classified by the crew chief according to ASTM D 2488. Representative portions of all samples were then sealed and returned to the laboratory for further examination and for verification of the field classification. In addition, selected samples were then submitted to a program of laboratory tests. Logs of the borings indicating the depth and identification of the various strata, the "N" value, the laboratory test data, water level information and pertinent information regarding the method of maintaining and advancing the drill holes are also attached. Charts illustrating the soil classification procedures, the descriptive terminology and symbols used on the boring logs are also attached.

Soil Boring Map

Legend

-  Approximate Soil Boring Locations
-  Chippewa Downs

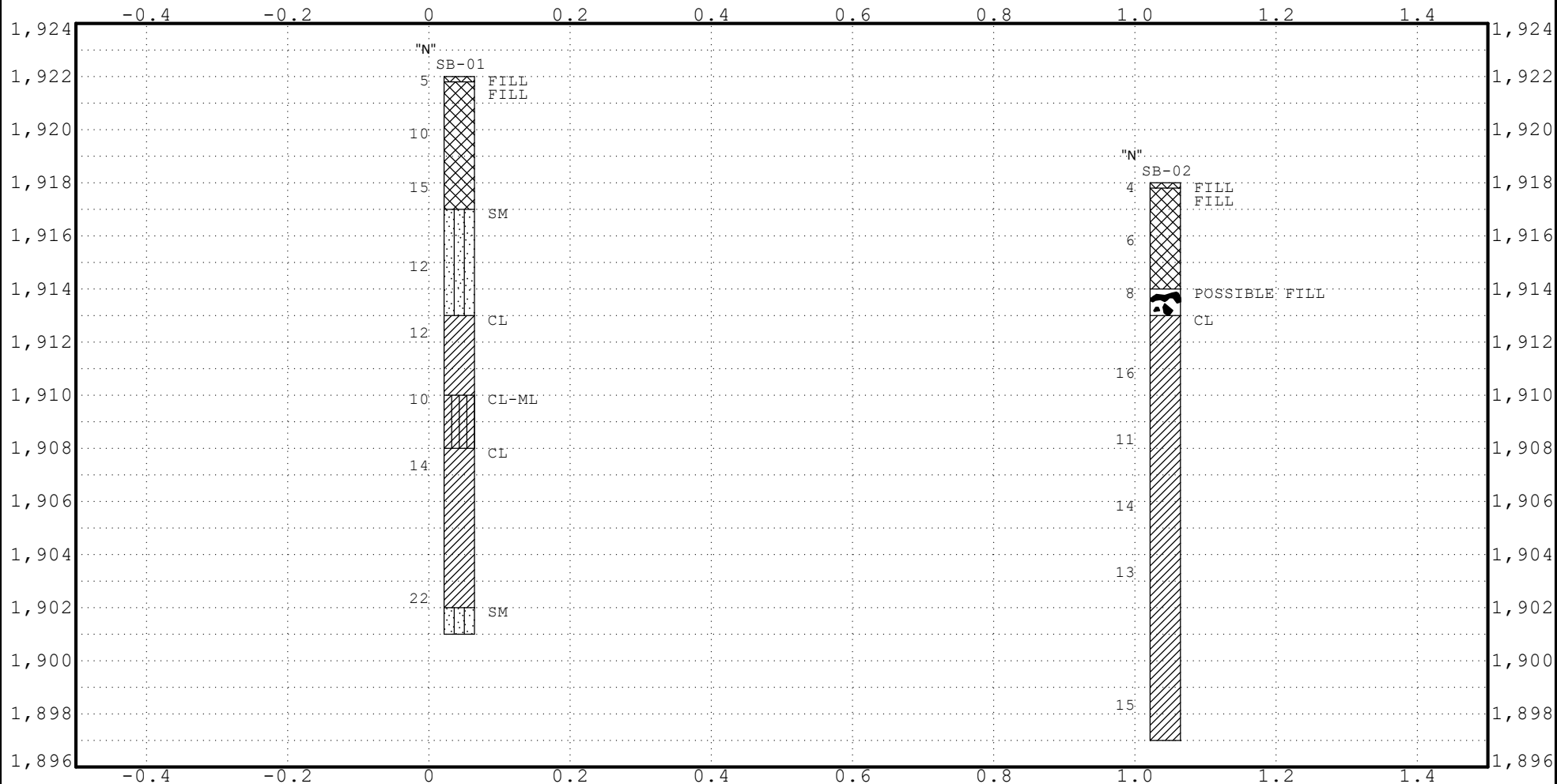


Google Earth

Image © 2026 Airbus

700 ft





Boring	North	East	Elev.	Depth
SB-01	0	1	1922.0	21.0
SB-02	0	2	1918.0	21.0

SOIL PROFILE DIAGRAM		
Material Testing Services Inc		
PROPOSED GRANDSTANDS		
BELCOURT, ND		
PROJECT #	DATE	PLATE
G26-026	Aug 26	1

MATERIAL TESTING SERVICES, LLC

Box 634

Minot, North Dakota 58702

(701) 852-5553

SOIL BORING RECORD

BORING NUMBER

SB-01

SHEET 1 OF 1

PROJECT

PROPOSED GRANDSTANDS

PROJECT LOCATION

BELCOURT, ND

PROJECT NUMBER

G26-026

START DATE

5/27/26

FINISH DATE

5/27/26

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS			
					TYPE	LEGEND	D (PCF)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)
1921.8	Fill Topsoil / Organic Clay dark brown, moist (OL)		1922.0	Fill	SB			5					
	Fill / Mostly Clayey Sand , brown, fine to coarse grained, moist (SC)				SB			10					
5.0					SB			15					
1917.0	Silty Sand , light brown, mostly fine to medium grained, moist, medium dense (SM)		1917.0	Coarse Alluvium	SB			12			7		
9.0					SB			12					
1913.0	Lean Clay , light brown, occasional silty sand lenses, moist, firm (CL)		1912.0	Fine Alluvium	SB			10				33	23
12.0					SB			14					
1910.0	Silty Lean Clay , light brown, moist, firm (CL-ML)				SB			22			20		
14.0					SB								
1908.0	Lean Clay with Sand , light brown, occasional silty sand lenses, moist, firm (CL)		1907.0	Glacial Till	SB								
20.0					SB								
1902.0	Silty Sand , light brown, mostly fine grained, moist to wet, medium dense (SM)		1902.0	Coarse Alluvium	SB								
21.0													
1901.0	End of Boring NM = None Measured												

DRILLER **RB**
METHOD **4" FA, 0-19.5'**
LOGGER **JF**
REVIEWER **TS**
DRILL RIG **CME 45**

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
5/27/26	1330			21		NM

MATERIAL TESTING SERVICES, LLC

Box 634

Minot, North Dakota 58702

(701) 852-5553

SOIL BORING RECORD

BORING NUMBER

SB-02

SHEET **1** OF **1**

PROJECT

PROPOSED GRANDSTANDS

PROJECT LOCATION

BELCOURT, ND

PROJECT NUMBER

G26-026

START DATE

5/27/26

FINISH DATE

5/27/26

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS				
					TYPE	LEGEND	D (PCF)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (ksf)
1917.8	Fill Topsoil / Organic Clay dark brown, moist (OL)		1918.0	Fill	SB			4						
	Fill / Mostly Clayey Sand , brown, fine to coarse grained, moist (SC)				SB			6						
4.0			1914.0	Possible Fill	SB			8						
5.0	Possible Fill / Mostly Sandy Lean Clay , brown, mottled, trace gravel and lignite, moist (CL)													
1913.0	Sandy Lean Clay , brown, mottled, trace lignite and gravel, moist, firm to hard (CL)		1913.0	Glacial Till							19			
					SB			16						
			1908.0		SB			11						
					SB			14						
			1903.0		SB			13						
			1898.0		SB			15						
21.0														
1897.0	End of Boring NM = None Measured													

DRILLER **RB**
 METHOD **4" FA, 0-19.5'**
 LOGGER **JF**
 REVIEWER **TS**
 DRILL RIG **CME 45**

WATER LEVEL
MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
5/27/26	1415			21		NM

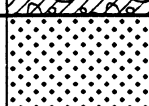
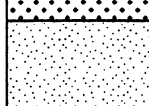
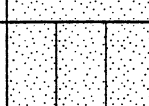
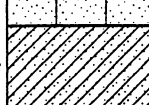
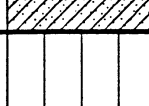
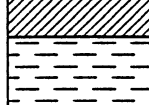
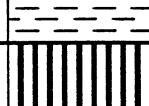
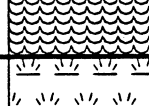
SYMBOLS AND DESCRIPTIVE TERMINOLOGY ON TEST BORING LOG

SYMBOLS FOR DRILLING AND SAMPLING		SYMBOLS FOR LABORATORY TESTS	
<u>Symbol</u>	<u>Description</u>	<u>Symbol</u>	<u>Description</u>
HSA	3 1/4" I.D. hollow stem auger	W	Water content
_FA	4", 6" or 10" diameter flight auger	D	Dry density - pounds per cubic foot
_HA	2", 4" or 6" hand auger	LL	Liquid limit - ASTM** D 4318
_DC	2 1/2", 4", 5" or 6" steel drive casing	PL	Plastic limit - ASTM D 4318
_RC	Size A, B or N rotary casing		
PD	Pipe drill or cleanout tube		--- Inserts in Last Column (Qu or RQD) ---
CS	Continuous split barrel sampling	Qu	Unconfined compressive strength, psf - ASTM D 2166
DM	Drilling mud	Pq	Penetrometer reading, tsf
JW	Jetting water	Ts	Torvane reading, tsf
SB	2" O.D. split barrel sampling	G	Specific gravity
_L	2 1/2" or 3 1/2" O.D. SB liner sample	SL	Shrinkage limits - ASTM D 427
_T	2" or 3" thin walled tube sample	OC	Organic content - Combustion method
3TP	3" thin walled tube using pitcher sampler	SP	Swell pressure, tsf
_TO	2" or 3" thin walled tube using Osterberg sampler	PS	Percent swell under pressure
W	Wash sample	FS	Free swell, percent
B	Bag sample	SS	Shrink swell, percent
P	Test pit sample	pH	Hydrogen ion content - Meter Method
_Q	BQ, NQ, or PQ wireline system	SC	Sulfate content, parts/million or mg/l
_X	AX, BX, or NX double tube barrel	CC	Chloride content, parts/million or mg/l
N	Standard penetration test, blows per foot	C*	One dimensional consolidation - ASTM D 2435
CR	Core recovery, percent	Qc*	Triaxial compression
WL	Water level	D.S.*	Direct shear - ASTM D 3080
?	Water level	K*	Coefficient of permeability, cm/sec
NMR	No measurement recorded, primarily due to presence of drilling or coring fluid	DH*	Double hydrometer - ASTM D 4221
		MA*	Particle size analysis - ASTM D 422
		R	Laboratory electrical resistivity, ohm-cm - ASTM G 57
		E*	Pressuremeter deformation modulus, tsf
		PM*	Pressuremeter test
		VS*	Field vane shear - ASTM D 2573
		IR*	Infiltrometer test - ASTM D 3385
		RQD	Rock quality designation, percent
		*	Results shown on attached data sheet or graph
		**	ASTM designates American Society for Testing and Materials

DESCRIPTIONS OF N-VALUES VS. SOIL PROPERTIES				DESCRIPTIONS OF SOIL CONDITIONS	
<u>N Value</u>	<u>Density</u>	<u>N Value</u>	<u>Consistency</u>	<u>Condition</u>	<u>Description</u>
0 - 4	Very loose	0 - 4	Very soft	Lamination	Up to 1/2" thick stratum
5 - 10	Loose	5 - 8	Soft	Layer	1/2" to 6" thick stratum
11 - 30	Medium dense	9 - 15	Firm	Dry	Powdery, no noticeable water
31 - 50	Dense	16 - 30	Hard	Moist	Below saturation
Over 50	Very dense	Over 30	Very hard	Wet	Saturated, above liquid limit
				Waterbearing	Pervious soil below water
				Varved	Alternating laminations of any combinations of clay, silt and fine grained sand

DESCRIPTIONS OF GRAVEL PROPORTIONS IN SOILS			DESCRIPTIONS OF PARTICLE SIZES	
<u>Soil Type</u>	<u>Description</u>	<u>Range, %</u>	<u>Material Type</u>	<u>Size</u>
Coarse grained soils	A little gravel	2 - 14	Boulders	Over 12"
Coarse grained soils	With gravel	15 - 49	Cobbles	3" - 12"
			Coarse gravel	3/4" - 3"
Fine grained soils:			Fine gravel	#4 sieve - 3/4"
71-85% passing #200 sieve	A little gravel	2 - 7	Coarse sand	#4 - #10 sieve
71-85% passing #200 sieve	With gravel	8 - 29	Medium sand	#10 - #40 sieve
70% passing #200 sieve	A little gravel	2 - 14	Fine sand	#40 - #200 sieve
70% passing #200 sieve	With gravel	15 - 24	Silt	100% passing #200 sieve and > 0.002mm
70% passing #200 sieve	Gravelly	16 - 49	Clay	100% passing #200 sieve and < 0.002mm

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
			HIGHLY ORGANIC SOILS		

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

APPENDIX B – LABORATORY TEST PROGRAM

B.1 Testing Scope

B.2 Test Methods

Attachments to Appendix B

Mechanical Sieve Analysis

B. LABORATORY TEST RESULTS

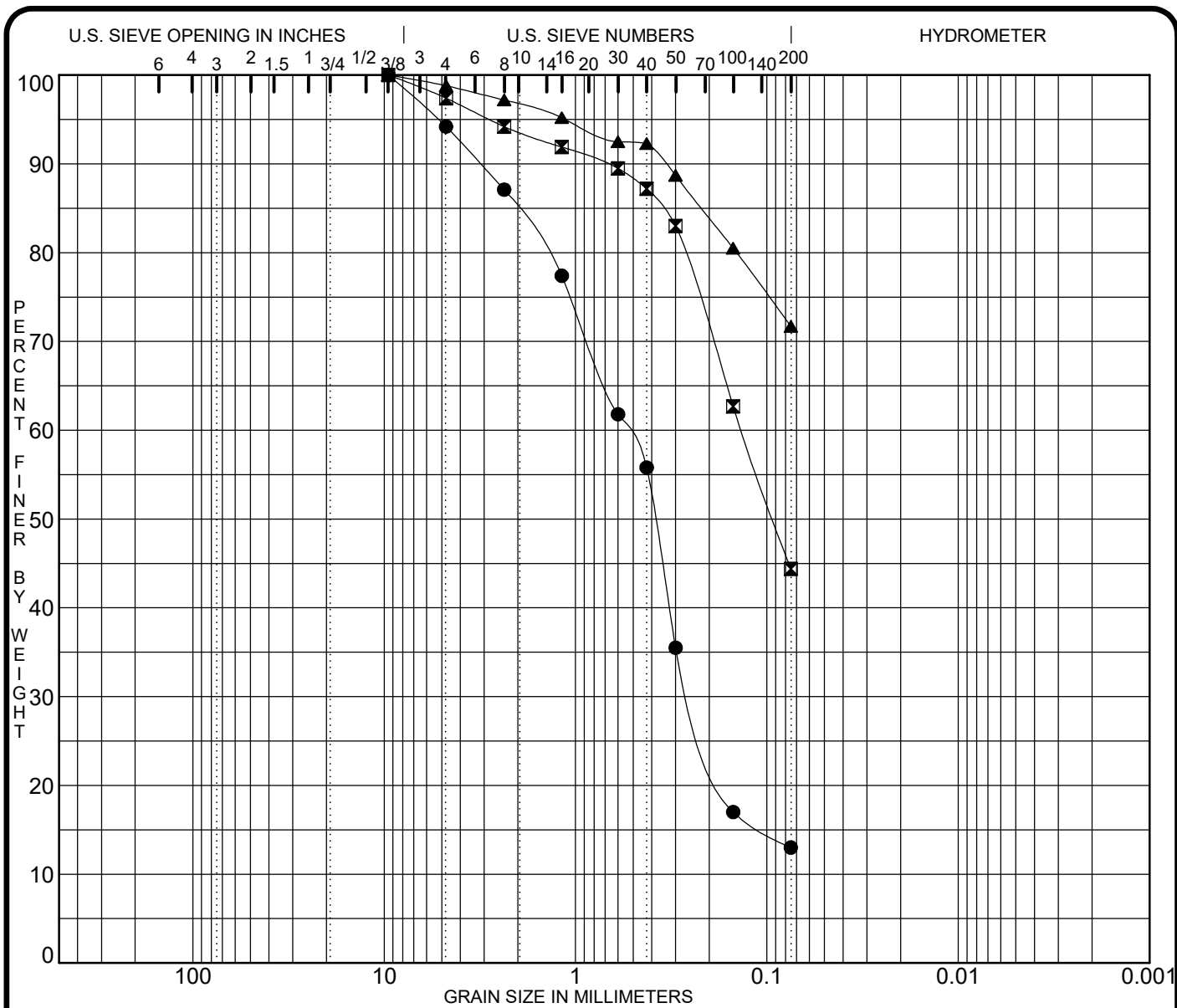
B.1 Testing Scope

Laboratory testing was conducted to characterize soil properties including Atterberg limits (liquid and plastic limits), mechanical sieve analysis, and in-situ moisture contents.

B.1. Test Methods

Testing and classification of soil was performed in accordance with the following standards as applicable:

Description	ASTM Method
Unified soil classification system	D 2487 and D 2488
Atterberg limits	D 4318
Moisture Content	D 2216
Grain Size Distribution	D 6913 and D 7928
Moisture-density relationship	D 698 or D 1557
Laboratory Wet/Dry Density	D 7263
Unconfined Compressive Strength	D 2166
California Bearing Ratio	D 1883
Organic Content	D 2974



APPENDIX C

Precautions for Excavating & Refilling During Cold Weather

PRECAUTIONS FOR EXCAVATING AND REFILLING DURING COLD WEATHER

Winter in North Dakota presents specific problems for foundation construction. Soils which are allowed to freeze undergo a moisture volume expansion, resulting in a loss of density. These frost-expanded soils will consolidate upon thawing, causing settlement of any structure supported on them. To prevent this settlement, frost should not be allowed to penetrate the soil below any proposed structure.

Ideally, winter excavation should be limited to areas small enough to be refilled to a grade higher than footing grade on the same day. Typically, these areas should be filled to floor grade. Trenching back down to unfrozen soils for foundation construction can then be performed just prior to footing placement. The excavated trenches should be protected from freezing by means of insulation or heating during foundation construction. Backfilling of the foundation trenches should be performed immediately after the below-grade foundation construction is finished. In addition, any interior footings, or footings designed without frost protection should be extended below frost depth, unless adequate precautions are taken to prevent frost intrusion until the building can be enclosed and heated.

In many cases, final grade cannot be attained in one day's time, even though small areas are worked. In the event final grade cannot be attained in one day's time, frost can be expected to develop overnight. The depth of frost penetration can be minimized by leaving a layer of loose soil on top of the compacted material overnight. However, any frost which forms in this loose layer, or snow, should never be used as fill material.

After the structure has been enclosed, all floor slab areas should be subjected to ample periods of heating to allow thawing of the soil system. Alternatively, the frozen soil can be completely removed and replaced with an engineered fill. The floor slab areas should be checked at random and representative locations for remnant areas of frost, and density tests should be performed to document fill compaction prior to slab placement.

Due to the potential problems associated with fill placement during cold weather, any filling operations should be monitored by a full-time, on-site soils technician. Full-time monitoring aids in detecting areas of frozen material, or potential problems with frozen material within the fill, so that appropriate measures can be taken. The choice of fill material is particularly important during cold weather, since clean granular fill materials can be placed and compacted more efficiently than silty or clayey soils. In addition, greater magnitudes of heaving can be expected with freezing of the more frost susceptible silts and clays.

If more specific frost information or cold weather data concerning other construction materials is required, please contact us.

SECTION 02315 – EXCAVATION, TRENCHING AND BACKFILL

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes excavation, trenching and backfill necessary for the construction of the facilities as indicated on the plans including, but not limited to: water mains and service lines, sewer mains and service lines, concrete manholes, septic tanks, and other structures.

1.2 RELATED WORK

- A. Section 02230 – Site Clearing
- B. Section 02300 – Earthwork
- C. Section 02511 – Water Service Lines
- D. Section 02531 – Sanitary Service Lines
- E. Section 02920 – Topsoiling, Seeding, and Mulching

1.3 REFERENCES

- A. Manual on Uniform Traffic Control Devices
- B. ASTM D698 – Test Methods for Moisture Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb. Rammer and 12-in. Drop [Standard Proctor Test]
- C. ASTM D2321 – Underground Installation of Flexible Thermoplastic Sewer Pipe
- D. ASTM D2487 – Classification of Soils for Engineering Purposes [Unified Soil Classification System]

1.4 SUBMITTALS

- A. Imported Bedding Sieve Analysis
- B. Compaction Method
- C. Detectable Warning Tape

1.5 DEFINITIONS

- A. Bedding, Haunching and Initial Backfill zones as defined herein and on the standard pipe trench detailed drawing.
- B. Soil Materials as summarized and defined in ASTM D2321 and ASTM D2487.

PART 2 - PRODUCTS

2.1 BEDDING, HAUNCHING AND INITIAL BACKFILL MATERIAL

- A. Native material if acceptable to Owner.
- B. Imported Bedding: Consists of sand, sandy gravel, or fine gravel having a maximum size of ¾-inch and a maximum Plasticity Index of 6.

2.2 WARNING TAPE

- A. Detectable 3 inches wide.
- B. Printed with "Caution Buried Water Line Below" for water mains and service lines.
- C. Printed with "Caution Buried Sewer Line Below" for sewer mains, sewer force mains, and service lines.

PART 3 - EXECUTION

3.1 GENERAL

- A. Trenching and excavation work shall be done in accordance with proper emphasis on safety as determined by the Contractor to conform to recommended safety standards such as OSHA 1910 and 1926.
- B. A Competent Person, as defined by OSHA 1926, shall be on site at all times when excavation work is being completed.
- C. Provide suitable sheeting, shoring, and bracing as required in conformance with OSHA regulations.
- D. In accordance with the contract, obtain all permits from appropriate road agency for construction within road right of way.
- E. Repair damage resulting from settlement, slides, cave-ins, water pressure, and other causes.

-
- F. Provide adequate signs, barricades, fences and amber lights and take all necessary precautions to protect the work and the safety of the public in all construction areas.
 - 1. Placement of construction signs and barricades shall conform to the most current version of the "Manual on Uniform Traffic Control Devices."
 - 2. Protect barricades and obstructions at night by amber signal lights that burn from sunset to sunrise. Barricades shall also be of substantial construction, painted white or with reflective paint to increase their visibility at night.
 - 3. Perform work without obstruction to traffic or inconvenience to the general public and the residents in the vicinity of the work.
 - G. The maximum open trench allowed during the day at each location shall not exceed 200 feet, with no open trench allowed overnight unless specifically approved.
 - H. Cleared trees, brush, or rocks prior to or during construction is considered incidental to excavation work.

3.2 EXCAVATION

- A. Remove trees and stumps from excavation and site.
- B. Remove and stockpile existing topsoil.
- C. Install facilities as staked, centered in excavation, unless otherwise approved by Owner.
- D. Maintain surface drainage away from trenching or excavation.
- E. Remove unsuitable foundation materials from excavation as shown on the plans or as authorized by the Owner.
- F. Maintain a minimum 1-foot clearance between outer surface of structure being installed and wall of excavation.

3.3 TRENCHING

- A. Bottom width:
 - 1. No less than 12 inches or more than 24 inches wider than the outside diameter of the pipe.
 - 2. Where a chain or wheel trencher is approved for use in a rural area, the trench width shall be 4 to 6 inches greater than the outside diameter of the pipe.
- B. Depth: Provide minimum cover as specified, or depths shown on plans.

3.4 BEDDING

- A. If existing soil cannot provide uniform, stable bearing support, over-excavate a minimum of 4 inches below bottom of pipe or structure and provide imported bedding material as directed by the Owner.
 - 1. If unsuitable soil is encountered a price for imported bedding material will be negotiated if not included in bid schedule.
- B. Unauthorized over excavation shall be backfilled with acceptable bedding material at the Contractor's expense.

3.5 HAUNCHING AND INITIAL BACKFILL

- A. General.
 - 1. Provide complete and uniform bearing and support for the pipe, including allowance for bell holes, or structure.
 - 2. Work material under and around the pipe to ensure full pipe support.
 - 3. Prevent movement of the pipe during placement of material.
 - 4. Avoid contact between the pipe and mechanical compaction equipment.
 - 5. Where a trencher is approved, backfill the trench from surface with selected material, free from large clods and all stones larger than 3 inches.
- B. No frozen clods, saturated, foreign, or organic materials will be allowed.
- C. Hand compact in 6-inch lifts from the bottom of the trench to 12 inches above the pipe crown.

3.6 BACKFILL & COMPACTION

- A. All buried material shall be inspected by technical representative prior to backfilling.
- B. Backfill remainder of excavation with native material, free from large clods, stones 8 inches or larger, organic material or frost chunks.
- C. All backfill shall be compacted in the specified lifts utilizing mechanical equipment designed for compaction. Compaction methods utilizing mechanical equipment not designed for compaction will not be approved.
- D. All methods of compaction shall be approved prior to construction.
- E. Compact in 6-inch lifts to a density not less than the density of the surrounding undisturbed soil or not less than 90% of the maximum dry density, determined by ASTM D698.
- F. In cases where the Contractor performs unacceptable methods of compaction, the work on the project will cease until an acceptable method of compaction has been

approved. The Owner has the right to delay work until soil samples along the project alignment are taken for the purpose of developing a proctor for testing the compaction of the soil backfilled in the trench.

- G. Compact with mechanical tamper, after initial backfill, to a density not less than 95% of the maximum dry density, determined by ASTM D698 for the entire depth of the trench through a roadway or driveway.
- H. Backfill and compact around manholes, valve boxes, and other appurtenances in 6-inch lifts.
 - 1. Compact with a mechanical tamper to a density not less than 90% of the maximum dry density, determined by ASTM D698.
- I. Repair any trenches improperly backfilled or where settlement occurs, then refill and compact.
- J. Restore surface to the required grade and compaction. Conform to Section 02300 for rough grading, finish grading and site surface drainage.
- K. Remove and dispose of all surplus backfill materials to a location approved by the Owner.

3.7 WARNING TAPE INSTALLATION

- A. Install warning tape over water, sewer or force mains and service lines in trench 2 feet below finished grade.

3.8 FROST PROTECTION

- A. Place insulation in areas where water main, sewer service lines or water service lines cross a road, driveway, traveled path, or as indicated on the plans.
- B. Center insulation over pipe or appurtenance with 1 foot of compacted fill between the pipe and the insulation.
- C. Grade fill so insulation lays flat.
- D. Insulate with a minimum of one 2 inch layer of polystyrene.
 - 1. If a minimum bury depth is specified, install one 2 inch thick layer for each foot of backfill less than the required minimum bury depth.
- E. Install 3 foot wide for pipes up to 6 inches in diameter and 4 feet wide for pipes up to 12 inches in diameter.
- F. Extend insulation a minimum of 5 feet on each side of the road crossing.
- G. Lap insulation by 6 inches or stagger by 6 inches if composed of two layers.

H. Minimum thickness for the first lift of backfill over the insulation is 8 inches.

1. Do not operate construction equipment directly on insulation. Do not compact first lift with backhoe-mounted compactor or any other large compaction equipment.
2. Compact remaining backfill using normal construction practices.

3.9 REMOVAL OF NUISANCE WATER

- A. Remove nuisance water entering the trenches.
- B. Nuisance water that can be removed through the use of sump or trash pumps is not considered dewatering.
- C. Keep trenches free from water until waterlines, fittings, valves, sewer lines, manholes and other appurtenances are in place and sealed against the entrance of water.
- D. Prevent all water, earth or any foreign material from entering any facility.
- E. Keep trenches free from water until the facilities are in place, sealed against the entrance of water, and backfill has been placed and compacted above the water level.

3.10 LOCATE EXISTING UTILITIES

- A. Field locate all existing underground utilities.
 1. Utilize state "811" or "one-call" hotlines.
 2. Contact all other utility owners not covered by the state "one-call" hotlines.

3.11 UTILITY CONFLICTS

- A. Protect existing utilities from damage during excavation and backfilling operations.
- B. Provide temporary support for existing water, gas, telephone, power, or other utility services that cross the trench until backfilling of trench is complete

3.12 RECORDS

- A. Conform to as-built requirements.

END OF SECTION

SECTION 02330 – ACCESS ROAD & GRAVEL SURFACING

PART 1 - GENERAL

1.1 SUMMARY

- A. This section covers the construction of new and existing gravel surfaced access roadways.

1.2 RELATED WORK

- A. Section 01720 – Construction Staking
- B. Section 02230 – Site Clearing
- C. Section 02300 – Earthwork
- D. Section 02315 – Excavation, Trenching, and Backfilling
- E. Section 02920 – Topsoiling, Seeding, Fertilizing, and Mulching

1.3 REFERENCES

- A. ASTM C117 – Standard Test Method for Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing.
- B. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- C. ASTM D422 – Particle-Size Analysis of Soils
- D. ASTM D698 – Standard Test Methods for Moisture Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb. Rammer and 12-inch Drop [Standard Proctor Test].
- E. ASTM D1556 – Density of Soil In-Place by the Sand Cone Method.
- F. ASTM D3017 – Moisture Content of Soil and Soil-Aggregate In-Place by Nuclear Method.
- G. ASTM D4318 – Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- H. ASTM D6938 – Standard Test method for In-Place Density and Water content of Soil and Soil-Aggregate by Nuclear Methods.

I. North Dakota Department of Transportation, Standard Specifications for Road and Bridge Construction

J. Manual on Uniform Traffic Control Devices for Streets and Highways

1.4 SUBMITTALS

A. Gradation test results for aggregates of Gravel Surfacing.

B. Field density test results for Subgrade and Gravel Surfacing.

C. Geotextile

1.5 QUALITY ASSURANCE

A. The materials and construction methods specified herein are minimum requirements. Where the appropriate state/local codes require more stringent materials or execution methods, they shall apply.

B. Notify the Owner of any planned deviation from these specifications before proceeding so any price changes or quantity adjustments may be made.

C. Furnish copies of test reports to the Owner.

PART 2 - PRODUCTS

2.1 BORROW

A. As identified in the plans.

B. Shall consist of natural soils free from organic matter, frozen material, refuse, construction debris or other man-made items.

2.2 GEOTEXTILE

A. Composed of long chain polymeric filaments (95 percent by weight, polyolefin, polyester, or polyimide) formed into woven fabric.

B. Follow manufactures recommendations for storage on site.

C. Meet or exceed characteristics as listed:

PROPERTY & TEST METHOD	MINIMUM VALUE
Grab Tensile Strength (ASTM D4632)	315 lbs.
Grab Elongation (ASTM D4632)	15%
Mullen Burst (ASTM D3786)	600 psi.

Puncture Strength (ASTM D4833)	120 lbs.
Trapezoid Tear (ASTM D4533)	120lbs.
Ultraviolet Stability 500hrs (ASTM D4355)	70%
Permittivity (ASTM D4491)	0.05/sec
Apparent Opening Size (ASTM D4751)	40 U.S. sieve
Flow Rate Minimum (ASTM D4491)	4 gal./min./ft ²

2.3 GRAVEL SURFACING

- A. The aggregate for surfacing shall consist of sound durable particles of gravel, with which may include limited amounts of fine soil particles.
- B. Meet the following characteristics:

SIEVE SIZE	PERCENT PASSING
$\frac{3}{4}$ inch	100
No. 4	50-78
No. 8	37-67
No. 40	13-35
No. 200	4.0-15.0
Plasticity Index	4-12
Processing Required	crushed

- 1. Fraction passing the No. 200 sieve: not be greater than two-thirds (2/3) of the fraction passing the No. 40 sieve.
- 2. Exceeding the upper limit specified for the No. 200 sieve will not be allowed.

PART 3 - EXECUTION

3.1 GENERAL

- A. Obtain all necessary permits and bonding required.
- B. Comply with the standards and construction requirements of the applicable local, municipal, county, state, and federal highway authorities.
- C. Observe all prescribed traffic safety regulations.
- D. Grade the access road to the alignment and profile as specified in the plan set and staked by the Project Engineer.
- E. Scarify the top 12 inches of subgrade and compact to 95% of specified density prior placing fill.

-
- F. Uniformly apply water by tank truck in the amounts necessary to produce the optimum moisture content. Mix water with the soil by means of a spring tooth or disc harrows.
 - G. Control the moisture content of the soil to assist in obtaining the specified density. Maintain the moisture content of the soil at 2-3 percent above optimum moisture.
 - H. Utilize a mechanical compaction method (sheepsfoot or peg tooth roller) until the embankment becomes unyielding.
 - I. Re-compact final 12 inches of roadway construction to 95% of specified density requirements just prior to placement of the gravel surfacing.
 - J. If available, the in-place gravel may be salvaged and reused,
 - 1. When reusing gravel mix a minimum of 50% of the total depth specified with new gravel, unless otherwise specified.

3.2 TOPSOIL

- A. Topsoil shall be salvaged to a depth of 6 inches and stockpiled.
- B. The salvaged topsoil shall be replaced on the inslopes of the completed roadway.
- C. Seeding shall be accomplished per Section 02920.

3.3 EXCAVATION

- A. Excavate to the specified lines and grades per Sections 02300 and 02315.
- B. Make excavation true to the depths, slopes, grades, and lines as called for in the plans or as otherwise ordered and staked by the Owner or Project Engineer.
- C. Bench all constructed slopes in excess of 5:1 to reduce the potential for slope failure or slippage.
- D. Roadway finished grade tolerance: +/- 0.1 feet of the grade elevation.
- E. Slope tolerance: +/- 0.2:1 of the slope.
- F. Excavate without causing rutting, pumping or other disturbance to underlying materials.
- G. Over-excavation for removal of porous or unsuitable materials must be authorized and measured by the Owner and Project Engineer at the time the work is accomplished.

3.4 BORROW

- A. The Project Engineer will identify, stake, and cross-section the designated borrow area.
- B. Extra materials for embankment construction that are obtained by changing back slopes, widening ditches, or otherwise adjusting dimensions or elevations shown on the plans is not considered borrow.
- C. Compact borrow fill in 6 inch maximum lifts using a mechanical compactor as per the specification where the borrow soil is being placed.

3.5 WASTE MATERIAL

- A. Remove and waste unsuitable or excess material in the designated area as directed by the Owner.
- B. Compact waste material in 1-foot lifts using earthmoving equipment to provide wheel compaction during the haul cycles.

3.6 SUBGRADE

- A. Stockpile material for backfilling.
- B. Compact subgrade in 6 inch lifts using a mechanical compactor.
- C. Compact subgrade to a density no less than 90% of the maximum density determined by the Standard Proctor Test ASTM D698 and to within 3-feet of the finished grade.
- D. Within 3-feet of the surface compact subgrade to a density no less than 95% of the maximum density determined by the Standard Proctor Test ASTM D698.

3.7 GEOTEXTILE

- A. If required, place geotextile fabric on finished subgrade to a point 1 foot beyond gravel edge.
- B. Overlap geotextile fabric 3 feet in every direction.
- C. Repair damaged areas by cutting and splicing fabric and overlapping 3 feet in every direction.
- D. Traffic and dumping directly on the geotextile fabric is not permitted.

3.8 GRAVEL SURFACING

- A. Spread evenly to achieve the compacted layer of gravel as specified on the detail drawings.
- B. Watering and roller compaction.
 - 1. Roll simultaneously with the spreading and watering operations and continue in parallel overlapping strips until the entire area has been rolled at least twice.
 - 2. Utilize pneumatic tired rollers with an effective roller weight of not less than 250 pounds per inch of roller width.
 - 3. Vibratory compacting equipment may be used in lieu of the above specified rollers.

END OF SECTION

SECTION 02370 – EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes temporary erosion and sediment control measures by use of silt fences, hay bales, and erosion blankets. This is not intended to incorporate all available methodologies of temporary erosion and sediment control or supersede any state or Tribal laws.

1.2 RELATED WORK

- A. Section 02300 – Earthwork
- B. Section 02920 – Topsoiling, Seeding, Fertilizing, and Mulching

1.3 REFERENCES

- A. ASTM D4355 – Standard Test Method for Grab Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus
- B. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
- C. ASTM D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile
- D. EPA – Clean Water Act
- E. ND DOT – Erosion and Sediment Control Handbook
- F. MN PCA – Minnesota Pollution Control Agency Best Management Practices
- G. SD DOT – Construction Field Manual – Construction Site Management and Erosion and Sediment Control

1.4 SUBMITTALS

- A. Method of erosion control
- B. Silt fence and appurtenances
- C. Hay bales and appurtenances

D. Erosion blankets and appurtenances

E. Erosion control plan

1.5 DEFINITIONS

A. Erosion Control: Any practice that protects the soil surface and minimizes the amount of soil particles detached and transported by rainfall or wind. Erosion control is implemented as a source control.

B. Sediment Control: Any practice that traps the soil particles after they have been detached and transported. Sediment control begins with erosion control by minimizing the potential sources of sediment. The emphasis should be placed on providing a protective cover on the soil surface, diverting runoff so that it does not flow across disturbed areas, and preserving existing vegetation to maximize soil infiltration and capture sediment.

1.6 QUALITY ASSURANCE

A. Erosion control materials, methods, and practices shall conform to the strictest of applicable state or Tribal agency handbooks of Best Management Practices, laws established for the purpose of erosion control, or the specifications herein.

1.7 CLEANUP

A. Remove sediment deposits in a timely manner when deposits reach 1/3 the height of the silt fence or bale line.

1. Place in the topsoil stockpile area or area approved by the Owner.

B. Remove temporary erosion and sediment control measures only after the area has stabilized and vegetation has developed to the extent that further erosion is unlikely.

PART 2 - PRODUCTS

2.1 SILT FENCING

A. Applicability.

1. Heavy duty: General use during site grading to protect critical areas and navigable waters.
2. Standard: Light duty applications to protect temporary construction or to supplement the other types of silt fence.

3. Machine-slice: For most applications.

B. Geotextile uniform in texture and appearance and have no defects, flaws, or tears that would affect its physical properties as follows.

Description	Heavy Duty	Standard	Machine Slice
Type	woven	woven	monofilament
Width	48 inches	36 inches	36 inches
Minimum grab tensile Strength per ASTM D4632	100 pounds	100 pounds	130 pounds
Equivalent opening size per ASTM D4751	20-70 sieve	20-70 sieve	30-40 sieve
Minimum UV stability per ASTM D4355 500 hour	70%	70%	70%
Top fastening component	Overlap around woven wire backing	sewn-in cord	

C. Post properties.

Description	Heavy Duty	Standard	Machine Slice
Material	metal	wood	metal
Minimum size	1.25 pounds per foot	1.5 inch x 1.5 inch	1.25 pounds per foot
Minimum length	5 feet	4 feet	5 feet
Post fastener	No. 16 gauge wire hog rings	Gun staples 0.5 inches long	Plastic zip ties 50 pound tensile strength

D. Net Backing

1. Woven wire
2. Minimum 14-1/2 gauge
3. 2-6 inch mesh opening
4. Minimum 30 inch width
5. 100 pound per foot tensile strength per ASTM D4595
6. Minimum 70% UV stability per ASTM D4355 500 hour

E. All seams heat sealed or sewn

2.2 EROSION BALES

A. Erosion bales may be used in lieu of silt fencing.

- B. Rectangular clean hay bales or straw bales free of noxious weeds.
- C. Twine bound.
- D. Wood or steel anchor stakes.
 - 1. Minimum 2 inch nominal x 2 inch nominal x 6 feet long (wood) or 5 foot (steel)

2.3 EROSION CONTROL BLANKETS

- A. Blankets consist of softly barbed, interlocking, 100% bio or photodegradable, and weed seed free Aspen excelsior fibers
 - 1. Curlex I or Curlex Double Net as manufactured by American Excelsior Company or approved equal rated for particular application slopes and velocities.
 - 2. Minimum 4 foot blanket width.
 - 3. Minimum No. 11 gauge "u" staples with 1-2 inch heads.
 - a. 6, 8, or 12 inch depending on soil.

2.4 OTHER

- A. It may be necessary to implement other materials and methods to prevent erosion and sediment transport than those specified herein (e.g. areas of high flow, navigable water boundaries, etc.). Other materials and methods proposed by the Contractor shall conform to standards published by the applicable state or Tribal agency's Best Management Practices (BMPs).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Coordinate temporary and permanent erosion control measures to assure economical, effective, and continuous erosion control.
- B. Divert drainage away from construction areas.
- C. Perform construction in and adjacent to navigable waters in such a manner as to avoid washing, sloughing, or deposition of material into waters which will result in undue or avoidable contamination, pollution, or siltation.
- D. Install silt fence as shown in the plans and/or to the contour of the slope such that flow approaches the fence at right angles.
 - 1. Place in an arc or horseshoe shape with the ends pointing towards the slope.

2. Install the silt fence fabric and net backing on the upstream side of the post according to the embedment, spacing, and fastening requirements for each respective application type.

Description	Heavy Duty	Standard	Machine Slice
Minimum embedment	2 feet	1.5 feet	2 feet
Maximum spacing	8 feet	8 feet	6 feet
Minimum fasteners per post	3	5	3

3. Maximum drainage area of 1/4 acre per 100 feet of fence.
4. Installation limitations are as follows with a maximum permissible slope of 2:1 with no interpolation between grade tiers (e.g. a 4:1 slope would have a maximum slope length of 15 feet).

Slope Steepness	Maximum Slope Length (feet)
2:1 (50%)	15
5:1 (20%)	25
10:1 (10%)	50
20:1 (5%)	75
100:1 (1%)	100

5. Compact the soil on the upslope side of the fence.
6. Maintain silt fences and ensure that they provide effective erosion and sediment control.

Problem	Corrective Maintenance
Undercutting of fence	Replace, rearrange, and/or re-grade
Collapsing of fence	Replace or rearrange Add bales, stakes, wire, or rock
Torn fabric	Replace Add bales, stakes, wire, or rock
Excessive sagging	Decrease spacing between posts Reinforce
Runoff escaping around fence	Lengthen fence

- E. Place bales as shown in the plans and/or to the contour of the slope such that flow approaches the bale wall at right angles.
 1. Installation limitations are the same as silt fence requirements for slope steepness and the corresponding maximum slope length.
 2. Place bales in a 4 inch deep trench on their side.
 3. Securely anchor each bale with stakes.
 4. Compact soil on the upslope side of bales.
 5. Fill gaps between bales with straw.

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6. Bales may be used as mulching material if they meet the specifications of Section 02920.
 7. Maintain bales and ensure that they provide effective erosion and sediment control.

Problem	Corrective Maintenance
Undercutting of bales	Replace or rearrange Add bales, stakes, wire, or rock
Displacing of bales	Replace or rearrange Reinforce with rock, bales, or basins
Gaps between bales	Replace or rearrange Stuff loose bale material in voids
Decomposing Bales	Replace as necessary
Runoff escaping around bales	Lengthen the bale check

- F. Install erosion control blankets where indicated in the plans and on slopes greater than 6:1 (16.67%).
 1. Install in accordance with the manufacturer's recommendations and within 48 hours of seeding completion per Section 02920.
 2. Unroll blankets longitudinally in the general direction of flow.
 - a. On slopes, blankets may be unrolled horizontally or vertically to the slope except for channels.
 - b. Overlap downstream blankets with upstream blankets.
 - c. Offset longitudinal overlaps of blankets away from the lowest point of a channel.
 3. Spread blanket evenly, smoothly, and without stretching.
 4. Ensure all parts of the blanket touch the soil.
 5. Staple using 3.5 staples per square yard as detailed in the plans.
 - a. Minimum 6 inch staples for firm soils.
 - b. Minimum 8 inch staples where both sod and mats are used.
 - c. Minimum 12 inch staples for loose soils.
 - d. 100% biodegradable staples designed for the blankets being used.
 6. Anchor all edges and ends appropriately as detailed in the plans.
 - a. Longitudinal overlaps a minimum of 2-4 inches in width.
 - b. Longitudinal ends at discontinuances of blanket area anchored with an 8-inch bury and 90 degree continuance 1 foot outward from the blanket area.
 - c. Transverse ends (roll ends) at discontinuances of blanket areas anchored with an 8-inch bury and 90 degree continuance 1 foot outward from the blanket area.
 - d. Stagger staples at the end of roll overlaps and end of role terminations.

7. Trench flanks exposed to runoff or sheet flow per the manufacturer's recommendations.

3.2 PREPARATION

- A. Grade the site to provide divergence of runoff around the disturbed area and to ensure effective placement of erosion and sediment control measures in accordance with Section 02300.
- B. Remove all tree roots, stones larger than 2 inches, and all other obstructions where erosion blankets are to be laid.

3.3 FIELD QUALITY CONTROL

- A. Inspect erosion and sediment control measures daily and immediately following each rain event or rapid snow thaw to ensure effective operation and repair, replace, or reinforce any deficiencies.
- B. After placement, prohibit traffic; either by foot, vehicle or equipment over areas covered by erosion control blankets.

Replace all blankets displaced by excessive wind, water or other causes.

END OF SECTION

SECTION 02510 – WATER DISTRIBUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes the installation of water mains, valves, hydrants and other appurtenant structures for community water systems.

1.2 RELATED WORK

- A. Section 02315 – Excavation, Trenching and Backfill
- B. Section 02511 – Water Service Lines
- C. Section 03100 – Concrete

1.3 REFERENCES

- A. ANSI/AWWA C104/A21.4 – Cement-Mortar Lining for Ductile Iron Pipe and Fittings
- B. ANSI/AWWA C110/A21.10 – Ductile Iron and Gray Iron Fittings
- C. ANSI/AWWA C111/A21.11 – Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings
- D. ANSI/AWWA C116 - Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings
- E. ANSI/AWWA C150/A21.50 – Thickness Design of Ductile Iron Pipe
- F. ANSI/AWWA C151/A21.51 – Ductile Iron Pipe, Centrifugally Cast
- G. ANSI/AWWA C153/A21.53 – Ductile Iron Compact Fittings for Water Service
- H. ANSI/AWWA C219 – Bolted, Sleeve-Type Couplings for Plain-End Pipe
- I. ANSI/AWWA C509 – Resilient Seated Gate Valves for Water Supply Service and Sewerage Systems
- J. ANSI/AWWA C515 – Reduced Wall, Resilient Seated Gate Valves for Water Supply Service
- K. ANSI/AWWA C600 – Installation of Ductile Iron Mains and Their Appurtenances
- L. ANSI/AWWA C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water

- M. ANSI/AWWA C651 – Disinfecting Water Mains
- N. ANSI/AWWA C900 – PVC Pipe and Fabricated Fittings, 4 In. Through 12 In. for Water Transmission and Distribution
- O. ANSI/AWWA C906 - Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 63 In., for Water Distribution and Transmission
- P. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
- Q. ASTM D2241 – Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)
- R. ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter
- S. ASTM D3139 – Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
- T. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- U. Plastics Pipe Institute, Incorporated – Handbook of Polyethylene Pipe
- V. Standard Methods for Examination of Water and Wastewater
- W. NSF/ANSI 14 – Plastics Piping System Components and Related Materials
- X. NSF/ANSI 61 – Drinking Water System Components – Health Effects

1.4 SUBMITTALS

- A. Water Main and Fittings
- B. Water Main Couplings
- C. Retainer Glands
- D. Gate Valves with Boxes, Adaptors, and Stem Extensions
- E. Utility Markers
- F. Method of Disinfection
- G. Water Testing Lab
- H. Method of connection to existing distribution system and related products

1.5 ACCEPTANCE

- A. Work covered by this section will not be accepted until the backfilling and testing connected with the work has been completed satisfactorily.

PART 2 - PRODUCTS**2.1 WATER DISTRIBUTION PIPE AND FITTINGS**

- A. Pipe size, material, and pressure rating as indicated on the bid schedule.
- B. Ductile Iron Pipe.
 - 1. Conform to AWWA C151 with a thickness design in accordance with AWWA C150.
 - 2. Cement mortar lining conforming to AWWA C104.
 - 3. Asphaltic coating conforming to AWWA C151.
- C. Polyvinyl Chloride Pipe.
 - 1. Pipe:
 - a. AWWA C900, pressure class included in bid schedule.
 - b. ASTM D 2241 PVC 1120, SDR included in the bid schedule.
 - 2. Joints:
 - a. Conform to ASTM D3139
Elastomeric Seals (gaskets) conforming to ASTM F477
- D. High Density Polyethylene Pipe.
 - 1. Pipe:
 - a. Conform to AWWA C901 or C906, IPS dimensions.
 - b. PE-4710 or PE-3408, Pressure rating included in the bid schedule.
 - 2. Joints:
 - a. Butt fusion.
 - b. Fusion process conforming to U.S. Department of Transportation, DOT Title 49, Part 192.
- E. Yelomine PVC
 - 1. Meets requirements of ASTM 2241.
 - 2. Minimum wall thickness of SDR 21.
 - 3. Joints: Precision machined grooves with restrained joint coupling.
 - a. Equal to Permanent Use Certa-Lok Joints.
- F. Fittings.
 - 1. Ductile Iron and PVC pipe 4 inches and larger.

- a. Conform to AWWA C110 and AWWA C111 for ductile and gray iron fittings.
 - b. Conform to AWWA C153 for ductile iron compact fittings.
 - c. Interior lining and exterior coating - fusion bonded epoxy conforming to AWWA C116.
 - d. 250 psi pressure rating.
 - e. Type 316 stainless steel T bolts and nuts with anti-seize.
 2. Couplers for plain-end pipe
 - a. Conform to AWWA C219 and NSF 61
 - b. Interior lining and exterior coating - fusion bonded epoxy conforming to AWWA C116.
 - c. Type 304 stainless steel bolts and nuts with anti-seize
 - d. Long body
 - e. Equal to Hymax-Krause, Romac, or equal
- G. Thrust Restraint.
1. Concrete Thrust Blocks:
 - a. One part Portland cement, 2 1/2 parts of fine aggregate, 3 1/2 parts coarse aggregate and just enough water for a workable consistency.
 - b. #4 rebar.
 2. Retainer Glands:
 - a. Ductile Iron Pipe
 - 1) 4-inches and larger - Equal to Series 1100, EBAA Iron, Inc.
 - 2) 3-inches and smaller – Equal to Harco Knuckle Joint Restraint
 - 3) Bell Restraint Harness - Equal to Series 1700, EBAA Iron, Inc.
 - b. PVC Pipe:
 - 1) 4-inches and larger - Equal to Series 2000PV, EBAA Iron, Inc.
 - 2) 3-inches and smaller – Equal to Harco Knuckle Joint Restraint
 - 3) Bell Restraint Harness - Equal to Series 6500, EBAA Iron, Inc.
 3. Joint Restraint Rodding:
 - a. 3/4 inch mild steel threaded rods.
 - b. Tie bolts.
 - c. Duc lugs.

2.2 GATE VALVES

- A. Conform to AWWA C509 or C515.
- B. Constructed with a non-rising stem (NRS) and a 2-inch square stem-operating nut, opening counter-clockwise.
- C. Supply valves with mechanical joints.
- D. Equal to Mueller 2360 Series, Waterous Series 500 or American Flow Control Series 2500.
- E. Steel valve stem extensions with centering device.

1. Provide extension with set screw to secure to operating nut

F. Fusion-Bonded Epoxy interior lining and exterior coating conforming to AWWA C550.

2.3 VALVE BOXES

A. 2 piece, screw type, adjustable cast iron valve boxes equal to Tyler/Union model 6850.

B. Locking cover with:

1. Brass cotter pin or brass rod as a keeper.
2. "WATER" plainly marked.

C. Valve box adaptor for connection of valve box to the valve, equal to Valve Box Adaptor II as manufactured by Adaptor Inc.

D. Valve box length to match bury depth of pipe.

2.4 WARNING TAPE

A. Refer to Section 02315.

2.5 WATER TESTING LAB

A. EPA or State certified lab.

2.6 ACCESSORIES

A. One gate valve key.

PART 3 - EXECUTION

3.1 WATER MAIN INSTALLATION

A. Install water mains and appurtenances in the locations and of the sizes and materials shown on the plans and bid schedule.

B. Refer to Section 02315 for excavation, trenching, bedding, and backfill requirements and for minimum separation distances.

C. Remove all dirt or foreign material from within the pipe prior to installing.

D. Ensure pipe spigot and bell are clean before joining pipes.

E. Install pipe with a minimum bury depth as listed in the bid schedule or as shown on drawings, measured from finished grade.

F. Installation depth may exceed minimum bury depth to eliminate high points in the main, except at locations of air release mechanisms shown on the plans.

- G. Coat all stainless steel fitting bolts with anti-seize lubricant.
- H. Coat all threaded connections and fittings with PVC thread sealant.
- I. Ductile Iron Pipe and fitting installation.
 - 1. Encase buried ductile iron pipe and fittings with 8 mil polyethylene encasement.
 - 2. Tape encasement in accordance with manufacturer's recommendations.
- J. PE Pipe Installation.
 - 1. HDPE Pipe Cold Bending:
 - a. Maximum bending radius: the lesser of 30 times the outside diameter of the pipe or 50% of the manufacturer's recommendation.
 - b. Make necessary provisions to ensure that localized curvature is within the tolerances over the length of curve.
 - c. For tighter curve requirements, use prefabricated HDPE fittings of the same DR and OD as the pipe.
 - 2. Butt Fused Joints: Butt-fuse all HDPE joints, except as otherwise indicated
 - a. Strictly follow manufacturer's recommendations.
 - b. Ensure that HDPE pipes are of the same grade and dimensions.
 - c. Do not remove bead unless determined necessary. If bead is removed do not remove below pipe outside diameter.
- K. Install concrete thrust blocks and retainer glands on all fittings and appurtenances including in-line valves and hydrant tees.
 - 1. Concrete Thrust Blocks:
 - a. Pour thrust blocks against the fitting and undisturbed earth.
 - b. Place concrete thrust blocks so that the pipe and joints will be accessible for repair.
 - 2. Retainer Glands:
 - a. Install in accordance with manufacturer's recommendations.
 - b. Restrain all pipe joints less than 20 feet from fittings with retainer glands.
 - c. Additional restraints may be required for pipe sections near critical fittings.

3.2 GATE VALVE INSTALLATION

- A. Install valves at locations indicated on the plans.
- B. Install suitable thrust restraints on all valves.
- C. Support gate valves on a poured concrete block with rebar as shown on the plans.
- D. Set valves plumb and provide with a valve box.
- E. Install steel valve stem extension with a centering device to the gate valves to within 2 feet of the finished grade.

1. Secure valve stem extension to the valve stem with a set screw.
 - F. Wrap valves with 8 mil polyethylene encasement.
 - G. Install valve box on valve using a valve adaptor.
 - H. Center the valve box over the valve with the box cover:
 1. Flush with finished grade elevation.
 2. Flush with the surfaced street.
 3. 3 inches below the level of an unimproved street.
- 3.3 WARNING TAPE INSTALLATION
- A. Refer to Section 02315.
- 3.4 UTILITY MARKER INSTALLATION
- A. Install utility markers at each gate valve, air release pit and in locations as directed by the Owner.
- 3.5 PRESSURE AND LEAKAGE TESTING – PVC
- A. Whenever practical, before backfill is fully placed or joints fully covered, test pipe for leaks in the presence of a technical representative.
- B. Furnish necessary material, equipment, and labor for testing including, but not limited to: water, pump, water storage vessel, piping, pressure gauge, valve, hydrant, and corporation stop.
1. Utilize liquid filled pressure gauges with 5 psi increments or less.
- C. Test duration: 2 hours minimum.
- D. Testing Procedure – Test in accordance with the Hydrostatic Testing Method outlined in ANSI/AWWA C605.
1. Slowly fill test section with water and expel air from mains.
 2. Install corporation stops at high points to facilitate removal of air, if necessary.
 - a. Remove corporation stops and plug prior to pressure testing.
 3. Verify all hydrant lead valves and main valves within the test section are open.
 4. Place test section under constant pressure as shown in the table below, as measured at the lowest point of the section.

Classification of PVC Pipe	Test Pressure
ASTM D-2241 SDR-26	150 psi
ASTM D-2241 SDR-21	175 psi
ASTM D-2241 SDR-17	200 psi
AWWA C-900	Equal to Pressure Class

Note: In no case shall test pressure exceed the rating of valves, fittings or any components of the system being tested.

5. If pressure drops more than 5 psi during the test, immediately re-pressurize the line to the original test pressure and continue test.
 - a. Record amount of water required to re-pressurize the line.
6. At the end of the test, re-pressurize the line to the original test pressure.
 - a. Record amount of water required to re-pressurize the line.
7. Add total amount of water required to re-pressurize the line during and at the end of the test and compare with the allowable leakage as calculated below.
 - a. If leakage is greater than allowable leakage, test fails.

E. Allowable Leakage Determination.

$$Q = (L \cdot D \cdot P^{1/2}) / 7,400$$

Q = Allowable Leakage (gph)

L = Total Length Tested Divided by
The Standard Pipe Length

D = Nominal Diameter of Pipe (inches)

P = Test Pressure (psi)

Example Allowable Leakage Chart Using Formula Above
PVC Pipe with 20-foot sections

Pipe Diameter, D	Allowable Leakage/ 1000 feet (gph)				
	P = 100 psi	P = 150 psi	P = 175 psi	P = 200 psi	P = 250 psi
1 ½ inch	0.10	0.12	0.13	0.14	0.16
2 inch	0.14	0.17	0.18	0.19	0.22
4 inch	0.27	0.33	0.36	0.38	0.43
6 inch	0.41	0.50	0.54	0.57	0.64
8 inch	0.54	0.66	0.72	0.76	0.85
10 inch	0.68	0.83	0.89	0.96	1.07
12 inch	0.81	0.99	1.07	1.15	1.28

F. Repair, at no cost to Owner, any section of the line that fails this test.

1. Retest all repaired sections of line, at no cost to Owner, until pressure test is successfully completed.

3.6 PRESSURE AND LEAKAGE TESTING – DUCTILE IRON

- A. Whenever practical, before backfill is fully placed or joints fully covered, test pipe for leaks in the presence of an IHS representative.
- B. Furnish necessary material, equipment, and labor for testing including, but not limited to: water, pump, water storage vessel, piping, pressure gauge, valve, hydrant, and corporation stop.
 1. Utilize liquid filled pressure gauges with 5 psi increments or less.

- C. Test duration: 2 hours minimum.
- D. Testing Procedure – Test in accordance with the Hydrostatic Testing Method outlined in ANSI/AWWA C600.
1. Slowly fill test section with water and expel air from mains.
 2. Install corporation stops at high points to facilitate removal of air, if necessary.
 - a. Remove corporation stops and plug once test completed.
 3. Verify all hydrant lead valves and main valves within the test section are open.
 4. Place test section under constant pressure.
 - a. 1.5 times working pressure or 150 psi, whichever is greater.
 - b. Do not exceed 115% of pipe pressure rating at the lowest point in the test section.
 - c. Test shall not be less than 1.25 times the working pressure at the highest point in test section.
 5. If pressure drops more than 5 psi during the test, immediately re-pressurize the line to the original test pressure and continue test.
 - a. Record amount of water required to re-pressurize the line.
 6. At the end of the test, re-pressurize the line to the original test pressure.
 - a. Record amount of water required to re-pressurize the line.
 7. Add total amount of water required to re-pressurize the line during and at the end of the test and compare with the allowable leakage as calculated below.
 - a. If leakage is greater than allowable leakage, test fails.

E. Allowable Leakage Determination:

$$Q = (L \cdot D \cdot P^{1/2}) / 148,000$$

Q = Allowable Leakage (gph)

L = Total Length of Pipe Tested (feet)

D = Nominal Diameter of Pipe (inches)

P = Test Pressure (psi)

Example Allowable Leakage Chart Using Formula Above
Ductile Iron Pipe per 1,000 feet of pipe

Pipe Diameter, D	Allowable Leakage/ 1000 feet (gph)			
	P = 100 psi	P = 150 psi	P = 200 psi	P = 250 psi
4 inch	0.27	0.33	0.38	0.43
6 inch	0.41	0.50	0.57	0.64
8 inch	0.54	0.66	0.76	0.85
10 inch	0.68	0.83	0.96	1.07
12 inch	0.81	0.99	1.15	1.28

- F. Repair, at no cost to Owner, any section of the line that fails this test.
1. Retest all repaired sections of line, at no cost to Owner, until pressure test is successfully completed.

3.7 PRESSURE AND LEAKAGE TESTING – PE

- A. Whenever practical, before backfill is fully placed or joints fully covered, test pipe for leaks in the presence of an IHS representative.
- B. Furnish necessary material, equipment, and labor for testing including, but not limited to: water, pump, water storage vessel, piping, pressure gauge, valve, hydrant, and corporation stop.
 - 1. Utilize liquid filled pressure gauges with 5 psi increments or less.
- C. Test duration: 4 hours expansion phase; 1 hour test phase.
- D. Testing Procedure – Test in accordance with the recommendations from the Plastic Pipe Institute.
 - 1. Slowly fill test section with water and expel air from mains.
 - 2. Install corporation stops at high points to facilitate removal of air, if necessary.
 - a. Remove corporation stops and plug once test completed.
 - 3. Verify all hydrant lead valves and main valves within the test section are open.
 - 4. Place test section under constant pressure.
 - a. 1.5 times working pressure at the lowest elevation or 150 psi, whichever is greater.
 - b. Do not exceed 115% of pipe pressure rating at the lowest point in the test section.
 - 5. To allow for pipe expansion, add water as required to maintain test pressure at 10 psi over target test pressure for four (4) hours.
 - 6. Reduce pressure by 10 psi to target test pressure to begin test phase.
 - a. If pressure remains within 5% of target test value for 1 hour, test passes.

3.8 DISINFECTION OF WATER MAIN AND FITTINGS

- A. Conform to AWWA C651 for disinfection. Tablet method is not allowed.
- B. Obtain water at the site for disinfection.
- C. Flush chlorinated water in accordance with AWWA C651.
 - 1. Waste flushed disinfection water in an environmentally safe manner. Chlorine residual of water being disposed will be neutralized by treatment of sodium bisulfate as per Appendix C of AWWA C652. The method used is subject to the approval of the Owner.
- D. After disinfecting and flushing but before the water main is placed in service, collect and test water samples for bacteriological quality.
 - 1. Sample in accordance with the Standard Methods for Examination of Water and Wastewater.
 - 2. Take two consecutive tests, 24 hours apart.

3. Collect one sample from the new water main and one from each branch line near the end.
 - a. Additional samples may be required on extremely long mains.
 4. Take samples to a EPA certified testing lab.
 5. Permanent sampling taps may be required at the direction of the Owner.
- E. If initial disinfection fails to produce satisfactory bacteriological results, re-chlorinate the mains and branch lines, flush and take new samples until two satisfactory results are obtained.
1. Do not place main in service until the Owner has received safe bacteriological results.
- F. No additional payment will be made for any equipment, material, testing or labor required to disinfect the mains. Include all costs associated with disinfection in the contract bid prices for water main.

3.9 CONNECTIONS TO EXISTING DISTRIBUTION SYSTEMS

- A. Depressurizing of mains will not be permitted overnight, over weekends, or on federal holidays.
- B. Coordinate system tie-in with the Owner and/or operator of the existing utility a minimum of three working days before any connection is made.
- C. Notify residents affected by the water shutoff of the time and day of shutoff a minimum of two working days in advance.
- D. Connect using stainless steel tapping sleeve with a tapping gate valve.
- E. Clean all connection components with a 200 ppm chlorine solution prior to installation.
- F. Once work on the connection has commenced it must proceed as rapidly as possible until completed.
- G. Visually inspect any joints not pressure tested for leakage.
 1. Test under system pressure prior to backfilling.
 2. Test in the presence of the technical representative.
 3. Repair and retest any joint with leakage until no leakage is visible at no cost to the contract.

END OF SECTION

SECTION 02531 – SANITARY SEWER SERVICE LINES**PART 1 - GENERAL****1.1 SUMMARY**

- A. This section includes installation of sewer service lines, connection to sewer mains (wyes and saddles), riser pipe, cleanouts, and house sewer connections.

1.2 RELATED WORK

- A. Section 02315 – Excavation, Trenching and Backfill
- B. Section 02530 – Sanitary Sewer
- C. Section 01720 – Staking and Construction Surveying

1.3 REFERENCES

- A. ASTM D2665 – Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
- B. ASTM D3034 – Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- C. ASTM D3212 – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- D. ASTM F477 – Standard Specifications for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- E. ASTM F1336 – Standard Specification for Poly(Vinyl Chloride) (PVC) Gasketed Sewer Fittings
- F. ASTM D2855 – Standard Practice for Making Solvent-Cemented Joints with Poly(Vinyl Chloride) (PVC) Pipe and Fittings

1.4 SUBMITTALS

- A. Sewer Service Line Pipe and Fittings
- B. Sewer Wyes and Saddles

1.5 ACCEPTANCE

- A. The work will not be accepted until satisfactory pipe installation, backfilling and cleanup is complete.

-
- B. If the work does not meet the specified requirements of this section and related sections, remove, and replace at no additional cost to the contract.

PART 2 - PRODUCTS

2.1 SEWER SERVICE LINE PIPE AND FITTINGS

A. Conform to ASTM D3034 as indicated:

1. Pipe Class: SDR 35.
2. Bell ended joints conforming to ASTM D3212.
3. Elastomeric gaskets conforming to ASTM F477.
4. 4-inch nominal diameter unless otherwise indicated.
5. Each length of pipe shall be clearly marked with the following:
 - a. Manufacturer.
 - b. Nominal Pipe Size.
 - c. The PVC Cell Classification.
 - d. Type PSM PVC Sewer Pipe.
 - e. ASTM Designation.
 - f. Pipe Class.

2.2 SEWER WYES

A. Connection to New Sewers:

1. In-line gasketed fittings conforming to ASTM F1336.

B. Connection to Existing Sewers:

1. PVC Sewer Mains:
 - a. PVC conforming to ASTM D3034 or ASTM D2665.
 - b. Solvent weld skirt with watertight gasket branch.
 - c. Two stainless steel bands and connectors for securing to the main.
 - d. GPK Products of Fargo, ND, or approved equal.
2. Asbestos-Cement, Cast Iron, Concrete, or Vitrified Clay Sewers:
 - a. Sewer saddle with watertight gasket, stainless steel bands and connector for securing to the main.
 - b. Equal to Sealtite wye sewer saddle manufactured by General Engineering Company.

2.3 CLEANOUTS

A. Single or Double Cleanout:

1. Schedule 40 PVC DWV pipe and fittings conforming to ASTM D2665.
2. Supply 4-inch slip on cap or threaded female adapter with 4-inch diameter threaded slotted white flush plug with threaded brass insert as manufactured by Sioux Chief or approved equal.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Verify that dimensions and elevations are as indicated on the plans.
- B. Inspect pipe and fittings for defects.
- C. Remove materials from the site that are defective, damaged, used, unsound, or that otherwise do not meet the specifications.

3.2 UTILITY CONFLICTS

- A. Refer to Section 02315.

3.3 SEWER SERVICE LINE INSTALLATION**A. Sewer Wyes and Saddles:**

- 1. Connection to New PVC:
 - a. Furnish and install wyes at the locations indicated by the plans.
 - b. Install a solvent weld cap or a plug and leave in place until service line construction begins.
- 2. Connection to Existing PVC:
 - a. Install saddle wyes at the locations indicated by the plans.
 - b. Repair damage caused during the tapping process at no additional cost.
- 3. Rotate the branch or wye of the saddle no more than 45 degrees from horizontal.

B. Risers:

- 1. Extend riser from sanitary wye to an elevation that will allow for a service line to be laid at specified grades.
- 2. Install riser pipe in the sewer trench.
- 3. Install riser pipe approximately vertical.
- 4. Encase the bottom of riser, wye and 1/8 bend in crushed rock or sand.

C. Service Lines:

- 1. Furnish and install sewer service lines at the locations on the plans.
- 2. Cap sewer service, and stake if no connection is made.
- 3. Follow general pipe installations requirements of Section 02315.
- 4. Minimum slope for sewer service lines is 1/8-inch per foot (1%).
- 5. Maximum slope for sewer service lines is 1/2-inch per foot (4 %), unless otherwise specified.

D. Sewer Service Line Cleanouts.

- 1. Single Cleanouts:
 - a. Install one-way cleanouts at a spacing not to exceed 100 feet.

2. Construct as shown on the standard details.
3. Install a 4-inch sewer wye in the sewer service line and connect risers of the same material from the wye to the ground surface.
 - a. Attach a schedule 40 PVC DWV slip-on cap or female adapter to the end of the riser.
 - b. Install cleanout so cap is flush with finished grade.

SECTION 02920 – TOPSOILING, SEEDING, FERTILIZING, AND MULCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. This section covers topsoiling, seeding, fertilizing, mulching, and punching areas disturbed by construction activities.

1.2 RELATED WORK

- A. Section 02300 – Earthwork
- B. Section 02315 – Excavation, Trenching, and Backfill
- C. Section 02316 – Rock Excavation

1.3 SUBMITTALS

- A. Fertilizer, methods and materials
- B. Seed mixture, methods and materials
- C. Mulch – methods and materials

1.4 QUALITY ASSURANCE

- A. The materials and construction methods specified herein are minimum requirements. Where the appropriate state/local codes require more stringent materials or execution methods, they shall apply.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Native topsoil from stockpiles within project area.
 - 1. Containing organic material and nutrients suitable for plant growth.
 - 2. Free of debris, trash, large roots, sticks, frozen material, and rocks 3 inches and larger.
 - 3. Moisture content suitable for spreading and tilling.

2.2 FERTILIZER

- A. Conform to applicable state and tribal laws.

- B. Packaged in suitable containers.
1. Labeled with manufacturer's guaranteed analysis.

C. Dry and free from lumps.

D. Nutrients in either of the following two proportions.

1. 18-46-0
 - a. Plant available nitrogen 18 pounds
 - b. Plant available phosphoric acid 46 pounds
 - c. Plant available potash 0 pounds
2. 13-13-13
 - a. Plant available nitrogen 13 pounds
 - b. Plant available phosphoric acid 13 pounds
 - c. Plant available potash 13 pounds

E. Apply fertilizer at the rate of 100 pounds per acre.

2.3 SEED MIXTURE

A. Rural / Road Ditch Mixture

1. Permanent seed mixture meeting the latest state/local standards.
2. Conforms to following mixture:

GRASS SPECIES	PURE LIVE SEED (PLS) (POUNDS/ACRE)
Western Wheatgrass	20
Intermediate Wheatgrass	20
	40

B. Urban / Lawn Mixture

1. Permanent seed mixture meeting the latest state/local standards.
2. Conforms to following mixture:

2.4 MULCHING MATERIAL

A. Straw without excessive moisture content.

B. Free of noxious weeds or other foreign matter.

PART 3 - EXECUTION**3.1 GENERAL**

- A. Topsoiling, fertilizing, seeding, and mulching will only be permitted when soil and weather conditions are favorable.
 - 1. Satisfactory periods for planting are between April 1 and June 1, and between August 1 and September 15.
 - 2. Dormant late fall seeding may be completed with approval from the Owner.
 - 3. No seed shall be sown when the wind velocity exceeds 15 miles per hour.
 - 4. No seed shall be sown in standing water or frozen ground.

3.2 TOPSOILING

- A. After grading is complete spread topsoil over all disturbed areas.
 - 1. Apply to a depth of 6 inches.
- B. Remove surface irregularities within the area to be seeded by blading or by other suitable method.
- C. Till soil to a depth of approximately 2 inches, but do not exceed 3 inches.
 - 1. Complete tillage in a manner eliminating clumps of dirt larger than 2 inches in diameter.
- D. Seedbed shall be prepared smooth.
 - 1. Remove foreign matter including weeds, grubbed material, wood, metal, or stones 2 inches in diameter or larger.
 - 2. Accomplish final landscaping by harrowing, dragging, and raking to ensure uniform slope across the disturbed area.
 - 3. Leveling of a trench or site utilizing the bucket of a skid steer will not be approved.

3.3 FERTILIZING

- A. Apply fertilizer uniformly at a rate of 100 pounds/acre using mechanical spreading equipment, blowers, or hydraulic equipment approved by the Owner.
- B. Incorporate fertilizer into the seedbed by harrowing, dragging, or other satisfactory method to a depth of 1 to 3 inches.

C. Never mix fertilizer with the seed, but it may be applied at the same time as the seed if a suitable fertilizer attachment on the drill is used.

D. Fertilizer may be mixed into a Hydro-Mulch mixture as it is applied.

3.4 SEEDING

A. Sow seed within 48 hours of completion of seedbed preparation.

B. Sow with mechanical seeding equipment that will provide uniform distribution at the specified rate.

1. Seeders shall have agitators to provide continuous mixing of seed.
2. Grain drills may be used only if equipped with seed attachments.
 - a. Operate to eliminate the effect of distinct rows of seeding.

C. Seed shall be covered with topsoil to a depth of ¼ inch.

D. Compact soil by rolling.

1. Embed seed firmly.
2. Complete seeding and rolling along the contours, at right angles to existing slopes.

3.5 MULCHING

A. Place mulch within 48 hours of seeding.

1. Mulch all seeded areas including the top surfaces of embankments, ditches, and all cut and fill slopes 6:1 or steeper.
2. The Owner may vary application rates to provide a more stable mulch cover, to prevent erosion, and/or to encourage turf establishment.

B. Blow mulch uniformly at a rate of 4,000 pounds of mulch per acre.

1. Use a mulch blower designed for the purpose.
2. Break straw bales before feeding into blower.

C. Allow approximately 10% of the soil surface to be visible through the mulch blanket.

D. Avoid excessive mulch cover which will smother seedlings.

E. Do not apply mulch during periods of excessively high winds.

F. Begin mulching on the windward side of the areas to be covered.

3.6 PUNCHING

- A. Punch mulch into soil immediately after application using a mulch tiller having:
 - 1. A series of dull flat disks with notched or cutout edges.
 - 2. Disks 20 inches in diameter and ¼ inch thick.
 - 3. Disks spaced approximately 8 inches apart and fitted with scrapers.
 - 4. The total working width of the tiller shall not exceed 6 feet per section, but may be operated in gangs of up to 3 sections.
 - 5. Ballast tiller members as necessary to push straw into the soil approximately 3 inches with the ends of the straw exposed above the soil surface.
- B. The mulch tiller shall follow as closely as possible behind the mulch blower.
- C. Operate the mulch tiller along the contour.
- D. Multiple or diagonal mulch tiller passes may be required to ensure adequate anchoring of the mulch.
- E. Prohibit unnecessary foot, equipment, and vehicular traffic over the seeded and mulched areas.

END OF SECTION

01. GENERAL REQUIREMENTS:

1. *Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.*

02. SECTION INCLUDES:

- 1 Floors.
- 2 Concrete finishing and curing.

03. RELATED SECTIONS:

1. Division 15000: Mechanical items for casting into concrete.

04. REFERENCES:

- All references shall be the latest edition.
1. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International.
 2. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.
 3. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International.
 4. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International.
 5. ACI 305R - Hot Weather Concreting; American Concrete Institute International.
 6. ACI 306R - Cold Weather Concreting; American Concrete Institute International.
 7. ACI 308R - Guide to Curing Concrete; American Concrete Institute International.
 8. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International.
 9. ASTM A 185/A 185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
 10. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 11. ASTM C 33 - Standard Specification for Concrete Aggregates.
 12. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 13. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete.
 14. ASTM C 143/C 143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.
 15. ASTM C 150 - Standard Specification for Portland Cement.
 16. ASTM C 171 - Standard Specification for Sheet Materials for Curing Concrete.
 17. ASTM C 173/C 173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
 18. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 19. ASTM C 309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 20. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete.
 21. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
 22. ASTM C 685/C 685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.

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23. ASTM C 881/C 881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
 24. ASTM C 1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
 25. ASTM E 1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers.
 26. ASTM E 1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

05. SUBMITTALS:

1. See Section 01300 - Administrative Requirements, for submittal procedures.
2. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.
3. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design testing.
4. Shop Drawings: Steel Reinforcement
 - a. Indicate sizes, spacing, lengths, & locations of steel reinforcement.
4. Samples: Submit samples of under-slab vapor retarder to be used.
5. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction for concrete accessories.
6. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

06. QUALITY ASSURANCE:

1. Perform work of this section in accordance with ACI 301 and ACI 318.
2. Follow recommendations of ACI 305R when concreting during hot weather.
3. Follow recommendations of ACI 306R when concreting during cold weather.

07. PRODUCTS:**2. REINFORCEMENT**

- a. Reinforcing bars per General Structural Notes.
- b. Reinforcement Accessories:
 1. Tie Wire: Annealed, minimum 16 gage.
 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 3. Provide galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

3. CONCRETE MATERIALS

- a. Cement: ASTM C 150, Type I or II. Acquire all cement for entire project from same source.
- b. Fine and Coarse Aggregates: ASTM C 33.
 1. Acquire all aggregates for entire project from same source.
 2. Aggregates for concrete slabs shall not contain more than 0.5% shale content.
- c. Fly Ash: ASTM C 618, Class C or F.
- d. Water: Clean and not detrimental to concrete.

4. CHEMICAL ADMIXTURES

Use of chemical admixtures is at the Contractor's discretion, with prior approval, to

achieve workable concrete with specified properties. Chemical admixtures shall comply with the following.

- a. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
 - b. Air Entrainment Admixture: ASTM C 260.
 - c. High Range Water Reducing Admixture: ASTM C 494/C 494M Type F or G.
 - d. Water Reducing and Retarding Admixture: ASTM C 494/C 494M Type A or D.
 - e. Accelerating Admixture: ASTM C 494/C 494M Type C or E.
 - f. Retarding Admixture: ASTM C 494/C 494M Type B.
5. **ACCESSORY MATERIALS**
- a. Under-slab Vapor Retarder: 15 mil minimum thickness, shall comply with ASTM E 1745, Class A; shall be certified by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single ply polyethylene is prohibited.
 - b. Dustproofing/Sealing Compounds:
 1. Water based, ready to use, acrylic copolymer, sealing and dustproofing compound.
 2. Minimum Solids: 27 percent.
 3. Density: 8.5 pounds per gallon.
 4. Manufacturers:
 - 1) Base Manufacturer: Dayton Superior, Safe Seal Heavy Duty (J-24 H.D.)
 - 2) Sonneborne Building Products
 - 3) W.R. Grace
 - 4) Substitutions: See Section 01300 – Submittals and Substitutions
 - c. Moisture-Retaining Cover: ASTM C 171; regular curing paper, white curing paper, clear polyethylene, white polyethylene, or white burlap-polyethylene sheet.
 4. Manufacturers:
 - 1) Conkure Wet Curing Blanket by Raven Industries
 - 2) Substitutions: See Section 01300 – Submittals and Substitutions
6. **CONCRETE MIX DESIGN**
- a. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
 - b. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
 - c. Admixtures: Add approved admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
 - d. Normal Weight Concrete see General Structural Notes.
8. **MIXING**
- a. Transit Mixers: Comply with ASTM C 94/C 94M.

08. EXECUTION

1. **EXAMINATION**
 - a. Verify lines, levels, and dimensions before proceeding with work of this section.
2. **PREPARATION**
 - a. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in

- accordance with manufacturer's instructions.
 - b. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels with epoxy adhesive system manufactured for the purpose of anchoring reinforcing dowels into hardened concrete. See General Structural Notes.
 - c. Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by taping edges and ends. Repair damaged vapor retarder before placing concrete.
- 3. **INSTALLING REINFORCEMENT**
 - a. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve concrete coverage required for protection.
 - b. Install reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps as indicated on the drawings.
 - c. All reinforcement, shall be supported on approved chairs.
 - c. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.
- 4. **PLACING CONCRETE**
 - a. No change in concrete mix or water content shall be made without prior approval.
 - b. Place concrete in accordance with ACI 304R.
 - 1. Concrete shall not be used after 90 minutes has lapsed from initial addition of water to the mix.
 - 2. Deposit concrete as nearly as possible to final location.
 - 3. Place concrete in such a way to prevent mortar and aggregate separation.
 - 4. Mechanically vibrate all concrete when placed. Do not insert vibrator into lower pours that have begun to set.
 - c. Place concrete for floor slabs in accordance with ACI 302.1R.
 - d. Notify Architect not less than 24 hours prior to commencement of placement operations.
 - e. Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
 - f. Repair under-slab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
 - g. Separate slabs on grade from vertical surfaces with 2 layers of 30 lb building paper for bond break.
 - h. Place joint filler in floor slab pattern placement sequence.
 - 1. Set top to required elevations.
 - 2. Secure to resist movement by wet concrete.
 - 3. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface. See Section 07900 for finish joint sealer requirements.
 - i. Install joint devices in accordance with manufacturer's instructions.
 - j. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
 - k. Apply sealants in joint devices in accordance with Section 07900.
 - l. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

- m. Place concrete continuously between predetermined expansion, control, and construction joints.
 - n. Do not interrupt successive placement; do not permit cold joints to occur.
 - o. Place floor slabs in joint pattern indicated.
 - p. Saw cut joints within 24 hours after placing. Use 3/16 inch thick blade, cut into 1/3 depth of slab thickness.
 - q. Screed floors level, maintaining surface flatness of maximum 1/4 inch in 10 ft.
5. **CONCRETE FINISHING**
- a. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. Wood float surfaces that will receive quarry tile, ceramic tile, and terrazzo with full bed setting system.
 - 2. Steel trowel surfaces that will receive carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
 - 3. Steel trowel surfaces that will be left exposed.
 - b. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.
6. **CURING AND PROTECTION**
- a. Comply with requirements of ACI 308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. See General Structural Notes.
 - b. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1. Normal concrete: Not less than 7 days.

09. FIELD QUALITY CONTROL

- 1. An independent testing agency will perform field quality control tests, as specified in Section 01400.
- 2. Provide free access to concrete operations at project site and cooperate with appointed firm. Notify testing agency a minimum of 24 hours prior to placing any concrete.
- 3. Submit proposed mix design of each class of concrete to Architect, Engineer, and inspection and testing firm for review prior to commencement of concrete operations.
- 4. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- 5. Compressive Strength Tests: ASTM C 39/C 39M. For each test, mold and cure three concrete test cylinders. Obtain test samples as specified in Section 01400.
- 6. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- 7. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C 143/C 143M.
- 8. **DEFECTIVE CONCRETE**
 - a. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
 - b. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
 - c. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

10. SCHEDULE - CONCRETE TYPES AND FINISHES

1. As indicated on Drawings in General Structural Notes and in Specifications.

END OF SECTION

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Lumber:
 - (a). Lumber grades specified shall conform to the latest grading rules of the Lumber Manufacturers Association under whose rules the lumber was produced. Maximum moisture content (16%).
 - (b). Each panel of softwood plywood shall bear the appropriate DEPA Grademark of the American Plywood Association, and shall meet the PS-1 for softwood plywood - construction and industrial.
2. Grading Requirements:
 - (a). Grade and trademark each piece of Lumber, or bundle in bundled stock.
 - (b). Use only the recognized official marks of the Association under whose rules it is graded.
 - (c). Grade and trademarks will not be required if each shipment is accompanied by certificate of inspection issued by grading association.
3. Grades:
 - (a). Concealed blocking:
 - (1). S/P/F Number 2 medium grade.
 - (b). Nailers and plates in contact with any type concrete:
 - (1). S/P/F Number 2 medium grade.
 - (2). Lumber shall be preservative - treated as specified. Treatment shall be applied after members are shaped.
 - (c). Plywood or OSB
 - (1). Plywood or Oriented Strand Board (OSB) used on this project shall be (5/8") thick sheathing unless another thickness is indicated on plans.
 - (2). Materials used as blocking sheathing or fillers shall be exterior preservative pressure treated.
4. Rough Hardware:
 - (a). Provide all necessary nails, screws, spikes, bolts, anchors etc. required to secure and anchor all members.

03. GENERAL BLOCKING:

1. Wood blocking not otherwise detailed shall be two-by-fours or larger dimension lumber as required for supporting members.
2. Blocking shall be accurately cut and fitted, true to line and level, shims and wedges not permitted.
3. Anchoring shall be done using largest size spikes, nails, and screws practicable.
4. Bolt blocking to steel, masonry, and concrete members.
 - (a). Bolts of proportionate strength to members attached, length as required.

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- (b). Unless otherwise indicated, anchor bolts shall be (5/8") minimum diameter times length required, and maximum spacing at (36") o.c.
 - (c). Power actuated fasteners not permitted, without prior approval of Architect.
- 5. Provide blocking bucks and framing as necessary and for other trades as required.
 - 6. Where finish trim is applied directly to or blocking, such members shall be perfectly straight, clear, and well seasoned.
 - 7. Warp or other poor characteristics not allowed.

END OF SECTION 06100

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Inspect finish materials (trim, doors, etc.) to insure that no subgrade, defective or machine marked pieces are installed.
2. Arrange to have millwork, finish materials (trim, doors, etc.), and sight exposed nailers primed and back-painted immediately upon delivery to project.
3. Nailing:
 - (a). Interior trim less than (4") wide:
 - (1). 6D casing nails maximum (12") on center staggered.
 - (2). Exceptions detailed.
 - (b). Interior trim (4") wide and wider:
 - (1). Double 6D casing nails maximum (12") on center.
 - (2). Exceptions detailed or specified.
4. Acclimatization of wood materials:
 - (a). Prior to installation, all wood materials shall be stored a minimum of (10) ten days in protected areas within the building.
 - (b). Contractor shall select and Architect approve the areas selected.
 - (c). Contractor shall be responsible for maintaining temperature of such areas between 50 degrees F. and 75 degrees F.
 - (d). Materials shall be stored in approved manner to allow free circulation of air around all items.
 - (e). Solid stock wood materials and trim shall be premium grade, Western Hard Maple.

03. FINISH HARDWARE:

1. Installation:
 - (a). Check markings on hardware for proper location.
 - (b). Supplier shall mark each item or hardware for location.
 - (1). Protect markings until each item is installed.
 - (2). If anytime when hardware is delivered to the project not properly marked, return it to the supplier for marking before attempting to install it.
 - (c). Install and make necessary adjustments for proper working order.
 - (d). Provide clean properly sized and accurately placed mortises and drilled holes for all mortise and surface mounted finish hardware.
 - (e). Any hardware damaged by improper adjustment or careless abuse shall be replaced.
 - (f). Fit all surface applied hardware accurately.
 - (g). Metal frames to receive hardware items shall be drilled and tapped accurately.
 - (h). After hardware is installed, protect exposed surfaces by use of heavy paper and masking tape and maintain until project completion.
2. Removal for Painting:

- (a). Before painter's finish is applied, remove all finish hardware except prime-coated items.
- (b). After final paint and finish coats are dry, permanently replace and readjust finish hardware for proper operation.

END OF SECTION 06200

01. GENERAL REQUIREMENTS:

1. *Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections and bid intent apply to work of this section.*

02. SCOPE:

1. Furnish and install moisture barriers beneath interior concrete floor slabs on grade and at warm side of insulation in stud walls.
2. Furnish and install Air/Vapor and Liquid Moisture Barrier to exterior wall sheathing.
3. Furnish and install "peel and stick" moisture barrier to roof sheathing.
4. See Section 01300 for submittal requirements.

03. MATERIALS:

1. Slab Vapor Barrier:
 - a) Class A according to ASTM E1745 - 09 Standard Specification for Water Vapor Retarders Used in Contact with Solid or Granular Fill under Concrete Slabs that has the following properties:
 - b) Permeance: Not more than 0.1 perms (grains/sq ft/hr/in-Hg) after conditioning testing according to Section 7.1 of ASTM E154 - 08a Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
 - c) Thickness: Not less than 15 mils.
 - d) Tensile Strength: Not less than 45 lbf/in.
 - e) Puncture Resistance: 2200 grams.
 - f) Installation of the vapor barrier should comply with ASTM E1643 - 09 Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
2. Wall Vapor Barrier: (1) one layer 6 mil. Polyethylene film.
3. Wall Underlayment:
 - a) W.R. Meadows AIR-SHIELD LM (ALL SEASON) is a single component, liquid applied, polymer-modified air/vapor and liquid moisture barrier to be applied to exterior wall sheathing.
4. Roofing Underlayment
 - a) On all surfaces to be covered with roofing material, furnish and install a 40 mil "Peel & Stick membrane", required as outlined by metal panel manufacturer. Membrane to be a minimum of 40 mil thickness, smooth, non-granular, by one of the following manufacturers:
 - 1) PAC-CLAD HT Ice and Water Shield
 - 2) W.R Grace "Ice & water Shield"

- 3) Carlisle CCW WIP 300HT
 - 4) Interwrap Titanium PSU
 - 5) MFM Corp "Wind & Water Shield"
 - 6) Polyguard Deck Guard HT of Polyglas HT
 - 7) Tamko TW Tile and Metal Underlayment
- b) Underlayment shall be laid in horizontal layers with joints lapped toward the eaves a minimum of 6", and well secured along laps and at ends as necessary to properly hold the felt in place. All underlayment shall be preserved unbroken and whole.

04. INSTALLATION:

1. Vapor Barrier Slab Installation:
 - (a). Provide a smooth granular cushion base, properly compacted and wetted for barrier under concrete slab.
 - (b). Place a single layer of 15-mil poly as vapor barrier over granular cushion. Stagger seams and joins and tape joints with mechanical duct tape to assure continuity.
 - (c). Avoid unnecessary piercing of vapor barrier with anchors, stakes, pins etc. Screeds for floor slab shall be supported on chairs above membrane on concrete pads previously placed below barrier.
2. Vapor Barrier Wall Installation:
 - (a). Install vapor barrier to warm side of studs (Note location on wall sections). Overlap all edges minimum of 3". Tape joints.
3. Water Resistant / Air Barrier Membrane:
EXTERIOR SHEATHING PANELS
 1. Install and fasten exterior sheathing panels according to the sheathing manufacturer's instructions.
 2. When installing the fasteners, ensure that they are driven flush with the surface (not countersunk) and into the framing. Any fasteners that are countersunk, or any holes from the removal of a fastener, must be pre-treated with [AIR-SHIELD LIQUID FLASHING](#) from W. R. MEADOWS prior to application of the applicable fluid-applied membrane.
 3. Inspect the joint to ensure that all areas to receive joint treatment are clean, dry, smooth, and free from all bond-breaking contaminants.
 4. Remove and replace any damaged structural wall components.

JOINT TREATMENT USING AIR-SHIELD LM FLUID-APPLIED MEMBRANE

1. Fill joint area with the applicable fluid-applied membrane using a W. R. MEADOWS SPREADER TOOL or a 3" (76.2 mm) putty knife. A standard 3" (76.2 mm) roller can be used to apply the applicable fluid-applied membrane.
2. Extend the fluid-applied membrane beyond the joint line 3" (76.2 mm) onto face of exterior sheathing either side of center.
3. Fully embed REINFORCING FABRIC HCR from W. R. MEADOWS 3" (76.2 mm) wide into the wet fluid-applied membrane centered over the joint.
4. Run the SPREADER TOOL or putty knife over the embedded REINFORCING FABRIC HCR to remove any air bubbles.

END OF SECTION 07150

01. GENERAL REQUIREMENTS:

1. *Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections and bid intent apply to work of this section.*

02. FRICTION FIT THERMAL:

1. Material to be fiberglass and marked for "R" value. (USG, Owens Corning Certainteed).
2. Insulation shall have sufficient natural resilience to hold itself in place by friction against sides of structural members.
3. Vapor barrier (6 mil full weight) polyethylene film on warm side of installation. 10 mil installed under floor slab.
4. Install polyethylene vapor barrier over entire wall surface. Lap joints (3") tape, and secure to face of studs and joist.
5. Pack around voids in exterior envelope windows, doors, grilles, etc.

03. RIGID FOAM PERIMETER INSULATION:

1. **General:**
 - (a). Rigid extruded polystyrene insulation Type (SM) as manufactured by Dow Chemical Corporation, (also approved FOAMULAR).
 - (b). Thickness (2") rigid minimum (4'-0") height around foundation wall.
2. **Application:**
 - (a). Insulation at foundation - spot asphaltic emulsion to bond boards to concrete prior to backfill. Carefully butt joints.
 - (b). Anchor with approved insulation anchors thru wall sheathing to studwall at office. Carefully butt joints.

END OF SECTION 07200

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Exposed fastener metal wall panels, with related metal trim and accessories.

1.2 REFERENCES

- A. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:
 - 1. AAMA 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.
 - 2. AAMA 809.2 - Voluntary Specification Non-Drying Sealants.
- B. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. ASTM International (ASTM): www.astm.org:
 - 1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
 - 3. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - 4. ASTM C 645 - Specification for Nonstructural Steel Framing Members.
 - 5. ASTM C 754 - Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - 6. ASTM C 920 - Specification for Elastomeric [Joint Sealants](#).
 - 7. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
 - 8. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
 - 9. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.
 - 10. ASTM E 283 - Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 - 11. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
 - 12. ASTM E 1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
 - 13. ASTM E 1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
 - 14. ASTM E 1980 - Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
- D. International Accreditation Service (IAS):
 - 1. IAS AC 472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems, Part B.

1.3 ADMINISTRATIVE REQUIREMENTS

1.4 QUALITY ASSURANCE

- A. Manufacturer/Source: Provide metal panel assembly and accessories from a single manufacturer providing fixed-base roll forming, and accredited under IAS AC 472 Part B.
- B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum five years experience in manufacture of similar products in successful use in similar applications.
 - 1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
 - a. Product data, including certified independent test data indicating compliance with requirements.
 - b. Samples of each component.
 - c. Sample submittal from similar project.
 - d. Project references: Minimum of five installations not less than five years old, with Owner and Architect contact information.
 - e. Sample warranty.
 - f. IAS AC 472 certificate.
 - 2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements.
 - 3. Approved manufacturers must meet separate requirements of Submittals Article.
- C. Installer Qualifications: Experienced Installer with minimum of five years experience with successfully completed projects of a similar nature and scope.
 - 1. Installer's Field Supervisor: Experienced mechanic, able to communicate with Owner, Architect, and installers, supervising work on site whenever work is underway.

1.5 ACTION SUBMITTALS

- A. Product Data: Manufacturer's data sheets for specified products.
- B. Shop Drawings: Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot of edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, and special details. Make distinctions between factory and field assembled work.
 - 1. Indicate points of supporting structure that must coordinate with metal panel system installation.
 - 2. Include data indicating compliance with performance requirements.
 - 3. Include structural data indicating compliance with requirements of authorities having jurisdiction.
- C. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.
- D. Samples for Verification: Provide 12-inch- (305 mm-) long section of each metal panel profile. Provide color chip verifying color selection.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Indicating compliance of products with requirements, witnessed by a professional engineer.
- B. Qualification Information: For Installer firm and Installer's field supervisor.
- C. IAS Accreditation Certificate: Indicating that manufacturer is accredited under provisions of IAS AC 472.
- D. Manufacturer's Warranty: Sample copy of manufacturer's standard warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance data.
- B. Manufacturer's Warranty: Executed copy of manufacturer's standard warranty.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping.
 - 1. Deliver, unload, store, and erect metal panel system and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
 - 2. Store in accordance with Manufacturer's written instructions. Provide wood collars for stacking and handling in the field.

1.9 WARRANTY

- A. Special Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail in materials and workmanship within one year from date of Substantial Completion.
- B. Special Panel Finish Warranty: On Manufacturer's standard form, in which Manufacturer agrees to repair or replace metal panels that evidence deterioration of factory-applied finish within 25 years from date of Substantial Completion, including:
 - 1. **Fluoropolymer Two- Coat System:**
 - a. Color fading in excess of 10 Hunter units per ASTM D 2244.
 - b. Chalking in excess of No. 6 rating per ASTM D 4214.
 - c. Failure of adhesion, peeling, checking, or cracking.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design Manufacturer: **MBCI Metal Roof and Wall Systems, Division of NCI Group, Inc.**; Houston TX. Tel: (877)713-6224; Email: info@mbci.com; Web: www.mbc.com.

1. Provide basis of design product[, or comparable product approved by Architect prior to bid].

2.2 PERFORMANCE REQUIREMENTS

- A. General: Provide metal wall panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.
- B. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.
- C. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated:
 1. Wind Loads: Determine loads based on uniform pressure, importance factor, exposure category, and basic wind speed indicated on drawings.
 2. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code with maximum deflection of [1/120] [1/180] [1/240] of the span with no evidence of failure.
 3. Seismic Performance: Comply with ASCE 7, Section 9, "Earthquake Loads."
- D. **Air Infiltration:** ASTM E 1680: Maximum 0.006 cfm/sq. ft. (0.030 L/s per sq. m) at 6.24 lbf/sq. ft. (300 Pa) static-air-pressure difference.
- E. **Water Penetration:** ASTM E 1646: No uncontrolled water penetration at a static pressure of 20 lbf/sq. ft. (958 Pa).

2.3 METAL PANEL MATERIALS

- A. **Aluminum-Zinc Alloy-Coated Steel Sheet:** ASTM A 792/A 792M, structural quality, Grade 50, Coating Class AZ50 (Grade 340, Coating Class AZM150), prepainted by the coil-coating process per ASTM A 755/A 755M.

2.4 METAL WALL PANELS

- A. **Large Tapered-Rib-Profile, Exposed Fastener Metal Panels:** Structural metal panel consisting of formed metal sheet with trapezoidal major ribs with intermediate stiffening ribs symmetrically placed between major ribs, installed by lapping edges of adjacent panels.
 1. Basis of Design: MBCI, PBR Panel, www.mbc.com/pbr.html.
 2. Coverage Width: 36 inches (914 mm).
 3. Major Rib Spacing: 12 inches (305 mm) on center.
 4. Rib Height: 1-1/4 inch (31.8 mm).
 5. Nominal Coated Thickness: 24 gage
 6. Panel Surface: Smooth
 7. Exterior Finish: Fluoropolymer two-coat system
 8. Color: As selected by Architect from manufacturer's standard colors

2.5 METAL PANEL ACCESSORIES

- A. General: Provide complete metal panel assembly incorporating base, corner, and opening trims and miscellaneous flashings, in manufacturer's standard profiles. Provide required fasteners, closure strips, support plates, and sealants as indicated in manufacturer's written instructions.
- B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.
- C. Panel Fasteners: Self-tapping screws and other acceptable fasteners recommended by metal panel manufacturer.
 - 1. Exposed Fasteners: Long life fasteners with EPDM or neoprene gaskets, with heads matching color of metal panels by means of factory-applied coating.
- D. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
 - 1. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.
- E. **Steel Sheet Miscellaneous Framing Components:** ASTM C 645, with ASTM A 653/A 653M, **G60 (Z180)** hot-dip galvanized zinc coating.

2.6 FABRICATION

- A. General: Provide factory fabricated and finished metal panels and accessories meeting performance requirements, indicated profiles, and structural requirements.
- B. Panel Lengths: Form panels in continuous lengths for full length of detailed runs, except where otherwise indicated on approved shop drawings.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings. Form from materials matching metal panel substrate and finish.

2.7 FINISHES

- A. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
- B. **Fluoropolymer Two-Coat System:** 0.2 – 0.3 mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat, AAMA 621[, meeting solar reflectance index requirements].
 - 1. Basis of Design: **MBCI, Signature 300.**
- C. Interior Finish: 0.5 mil total dry film thickness consisting of primer coat and wash coat of manufacturer's standard light-colored acrylic or polyester backer finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine metal panel system substrate and supports with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panel installation.
 - 1. Inspect metal panel support substrate to determine if support components are installed as indicated on approved shop drawings. Confirm presence of acceptable supports at recommended spacing to match installation requirements of metal panels.
 - 2. Panel Support Tolerances: Confirm that panel supports are within tolerances acceptable to metal panel system manufacturer but not greater than the following:
 - a. **1/4 inch (6 mm) in 20 foot (6.1 m)** in any direction.
- B. Correct out-of-tolerance work and other deficient conditions prior to proceeding with metal panel system installation.

3.2 PREPARATION

- A. **Miscellaneous Supports:** Install sub framing, girts, furring, and other miscellaneous panel support members according to ASTM C 754 and manufacturer's written instructions.
- B. Flashings: Install flashings to cover exposed underlayment per Section 07 62 00 "Sheet Metal Flashing and Trim."

3.3 METAL PANEL INSTALLATION

- A. Exposed Fastener Metal Wall Panels: Install weathertight metal panel system in accordance with manufacturer's written instructions, approved shop drawings, and project drawings. Install metal panels in orientation, sizes, and locations indicated, free of waves, warps, buckles, fastening stresses, and distortions. Anchor panels and other components securely in place. Provide for thermal and structural movement.
- B. Panel Sealants: Install manufacturer's recommended tape sealant at panel sidelaps and endlaps.
- C. Panel Fastening: Attach panels to supports using screws, fasteners, and sealants recommended by manufacturer and indicated on approved shop drawings.
 - 1. Fasten metal panels to supports at each location indicated on approved shop drawings, with spacing and fasteners recommended by manufacturer.
 - 2. Provide weatherproof jacks for pipe and conduit penetrating metal panels of types recommended by manufacturer.
 - 3. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

3.4 ACCESSORY INSTALLATION

- A. General: Install metal panel trim, flashing, and accessories using recommended fasteners and joint sealers, with positive anchorage to building, and with weather tight mounting. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
 2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
 3. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.
- B. Joint Sealers: Install joint sealers where indicated and where required for weathertight performance of metal panel assemblies, in accordance with manufacturer's written instructions.
1. Prepare joints and apply sealants per requirements of Division 07 Section "[Joint Sealants](#)."

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Engage an independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.

3.6 CLEANING AND PROTECTION

- A. Remove temporary protective films immediately in accordance with metal panel manufacturer's instructions. Clean finished surfaces as recommended by metal panel manufacturer.
- B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and all Division 00 and 01 specification sections apply to this section.
- B. Sealants and joint backing.
- C. Precompressed foam sealers.

1.02 REFERENCE STANDARDS

- A. ASTM C834 - Standard Specification for Latex Sealants; 2010.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- E. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51,

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with other sections referencing this section.

1.04 SUBMITTALS

- A. See Section 01300 - Submittal Procedures.
- B. Product Data: Provide data indicating sealant chemical characteristics.
- C. Samples: Submit two samples, 1x1 inch in size illustrating sealant colors for selection.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.

1.06 MOCK-UP

- A. Construct mock-up with specified sealant types and with other components noted.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

1.07 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.08 WARRANTY

- A. Correct defective work within a five year period after Date of Substantial Completion.
- B. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Silicone Sealants:
 - 1. Bostik Inc: www.bostik-us.com.
 - 2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
 - 3. Pecora Corporation: www.pecora.com.

4. BASF Construction Chemicals-Building Systems:
www.buildingsystems.basf.com.
5. Tremco Global Sealants: www.tremcosealants.com.

B. Polyurethane Sealants:

1. Bostik Inc: www.bostik-us.com.
2. Pecora Corporation: www.pecora.com.
3. BASF Construction Chemicals-Building Systems:
www.buildingsystems.basf.com.
4. Pacific Polymers, Inc.
5. Sika Corporation, Inc.
6. Tremco Global Sealants www.tremcosealants.com.

C. Acrylic Sealants (ASTM C920):

1. Tremco Global Sealants: www.tremcosealants.com.

D. Butyl Sealants:

1. Bostik Inc: www.bostik-us.com.
2. Pecora Corporation: www.pecora.com.
3. Tremco Global Sealants: www.tremcosealants.com.

E. Acrylic Emulsion Latex Sealants:

1. Bostik Inc: www.bostik-us.com.
2. Pecora Corporation: www.pecora.com.
3. BASF Construction Chemicals-Building Systems:
www.buildingsystems.basf.com.
4. Tremco Global Sealants: www.tremcosealants.com.

F. Preformed Compressible Foam Sealers:

1. EMSEAL Joint Systems, Ltd: www.emseal.com.
2. Sandell Manufacturing Company, Inc: www.sandellmfg.com.
3. Dayton Superior Corporation: www.daytonsuperior.com.
4. Tremco Global Sealants: www.tremcosealants.com.

2.02 SEALANTS

A. Caulks and Sealants - General: Provide only products having lower volatile organic compound (VOC) content than required by Regulation 8, Rule 51, of the Bay Area Air Quality Management District.

1. Indoor floor covering installation: 150 g/L.
2. Multipurpose construction: 200 g/L.
3. Nonmembrane roof installation / repair: 300 g/L.
4. Ceramic tile installation: 130 g/L.
5. Cove base installation: 150 g/L.
6. Perimeter bonded sheet vinyl flooring installation: 660 g/L.

B. Type ES-1 - General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A; multi- component.

1. Color: To be selected by Architect from manufacturer's full range.
2. Product: Dymeric 240FC manufactured by Tremco Global Sealants.
3. Applications: Use for:

- a. Control, expansion, and soft joints in masonry.
- b. Joints between concrete and other materials.
- c. Joints between metal frames and other materials.
- d. Other exterior joints for which no other sealant is indicated.

C. Type ES-2 - Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, nondrying, nonskinning, noncuring.

- 1. Applications: Use for:
 - a. Concealed sealant bead in sheet metal work.
 - b. Concealed sealant bead in siding overlaps.

D. Type ES-3 - General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.

- 1. Color: To be selected by Architect from manufacturer's full range.
- 2. Product: Tremflex 834 manufactured by Tremco Global Sealants.
- 3. Applications: Use for:
 - a. Interior wall and ceiling control joints.
 - b. Joints between door and window frames and wall surfaces.
 - c. Other interior joints for which no other type of sealant is indicated.

E. Type ES-4 - Bathtub/Tile Sealant: White silicone; ASTM C920, Uses I, M and A; single component, mildew resistant.

- 1. Product: Tremsil 200 manufactured by Tremco Global Sealants.
- 2. Applications: Use for:
 - a. Joints between plumbing fixtures and floor and wall surfaces.
 - b. Joints between countertops and wall surfaces.

F. Type ES-5 - Acoustical Sealant for Concealed Locations:

- 1. Product: Tremco Acoustical Sealant manufactured by Tremco Global Sealants.
- 2. Applications: Use for concealed locations only:
 - a. Sealant bead between top stud runner and structure and between bottom stud track and floor.

G. Type ES-6 - Interior Floor Joint Sealant: Polyurethane, self-leveling; ASTM C920, Grade P, Class 25, Uses T, M and A; single component.

- 1. Approved by manufacturer for wide joints up to 1-1/2 inches.
- 2. Color: To be selected by Architect from manufacturer's full range.
- 3. Product: Vulkem 45 SSL manufactured by Tremco Global Sealants.
- 4. Applications: Use for:
 - a. Expansion joints in floors.

H. Type ES-7 - Butyl Sealant: ASTM C1311; single component, solvent release, non-skinning, non-sagging.

- 1. Product: Butyl Sealant manufactured by Tremco Global Sealants.
- 2. Movement Capability: Plus and minus 10 percent.

2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

- C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces and joint openings are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean and prime joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.
- E. Install bond breaker where joint backing is not used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- H. Tool joints concave.

3.04 CLEANING

- A. Clean adjacent soiled surfaces.

3.05 PROTECTION

- A. Protect sealants until cured.

3.06 SCHEDULE

- A. Exterior Joints for Which No Other Sealant Type is Indicated: Type ES-1.
- B. Exterior Wall Expansion Joints: Type ES-1.
- C. Control, Expansion, and Soft Joints in Masonry, and Between Masonry and Adjacent Work: Type ES-1.
- D. Lap Joints in Exterior Sheet Metal Work: Type ES-2.
- E. Butt Joints in Exterior Metal Work and Siding: Type ES-2.
- F. Joints Between Exterior Metal Frames and Adjacent Work (except masonry): Type ES-1.
- G. Under Exterior Door Thresholds: Type ES-7.
- H. Interior Joints for Which No Other Sealant is Indicated: Type ES-3.
- I. Control and Expansion Joints in Interior Concrete Slabs and Floors: Type ES-6.

J. Joints Between Plumbing Fixtures and Walls and Floors, and Between Countertops and Walls: Type ES-4.

K. In STC-Rated Walls, Between Metal Stud Track/Runner and Adjacent Construction: Type ES-5.

L. Perimeter joints on interior and exterior side of windows, frames, and louvers in walls: Type ES-1.

END OF SECTION 07900

01. GENERAL REQUIREMENTS:

1. *Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections and bid intent apply to work of this section.*

02. SCOPE:

1. All items under this heading shall be set in correct locations as shown on details and shall be level, square, plumb and at proper elevation.
2. All joints between frame metal and masonry, or finish shall be caulked.
3. Submit shop drawings in .PDF format to Architect for approval.
4. All units under this heading shall be installed by this manufacturer. Unit shall be glazed under this section, to provide single responsibility to the installation.

03. HOLLOW METAL MATERIALS:

1. Doors:
 - (a). (18) gauge cold rolled steel both sides.
 - (b). Flush with edge seams filled and ground smooth.
 - (c). Bevel hinge and lock edges (1/8") in (2").
 - (d). Door reinforced, stiffened, sound-deadened and insulated with full thickness 6lb density fiberglass insulation.
 - (e). All doors provided with 18 gauge channel reinforcing.
 - (f). Doors zinc-covered, bonderized and prime painted.
 - (g). Furnish steel flush cap sealed to door top.
 - (h). Grade II level B heavy duty construction.
 - (i). Furnish integral steel astergals with double door pairs.
2. Frames:
 - (a). Frame assemblies shipped to job site completely welded. Field joint permitted only when size exceeds shipping limitations.
 - (b). (16) gauge cold rolled steel.
 - (c). Bonderized with baked-on prime paint.
 - (d). Furnish set up arc welded - ground smooth. Back weld and body putty to eliminate all open joints
 - (e). Furnish with anchors, (4) per jamb.
 - (f). Door frames have (4) bumpers; that will be installed after final paint coat.
 - (g). Reinforce frames for hardware.
 - (h). Reinforcing of frames.
 - (1). (16) gauge with welded anchors for single openings.
 - (2). (14) gauge for pairs of openings.
 - (i). Conform to door rating noted above (See Also Door Schedule).

04. APPROVALS:

1. Curries

2. Ceco
3. Steelcraft

05. INSTALLATION:

1. Comply with manufacturers specifications and recommendations for the installation of steel doors, and frames.
2. Set units plumb, level and true to line, without warp or rack of frames, or door. Anchor securely in place, and fill frame with grout.
3. Set sill members and other members in a bed of compound, or with joint fillers or gaskets as shown to provide weather-tight construction. See Section 07900 Caulking and Sealants for Compounds.
4. Clean metal surfaces promptly after installation of frames, doors exercising care to avoid damage of the protective coating. Remove sealant compounds, dirt and other substances. All welds shall be ground smooth.
5. Receive the hardware supplied in accordance with Section 08700 Hardware, and Specialties of these specifications, and coordinate with the hardware requirements of this section. Report discrepancies in writing to the Contractor.
6. Cut, reinforce, drill and tap frames and doors as required to receive hardware, except do not drill and tap for surface-mounted items until the time of installation at the project site, comply with hardware requirements of this section. Report discrepancies in writing to the Contractor.
7. *Glazing:* Fabricate doors to facilitate replacement of glass of panels (from inside only) without disassembly of door stiles and rails. Provide removable interior stops, and exterior stops anchored for non-removal.
 - (a). Provide stops of manufacturers standard size and profile.
 - (b). Equip stops with captive glazing gaskets.
8. *Weather-stripping:* Where exterior door stiles or head rails do not close against fixed stops equipped with compression weather-stripping, provide sliding weather-stripping retained in an adjustable strip in a mortise centered in the edge of the door.
 - (a). Provide heavy-duty, hollow, compression weather-stripping in the bottom rail, adjustable for contact within threshold.
 - (b). Install a full opening width aluminum threshold.
9. Replace all damaged doors at direction of Architect with no additional cost to Owner.

END OF SECTION 08100

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Store doors and panels in a protected area. Prior to delivery, inspect doors and panels to insure that no subgrade, defective or damaged doors and panels are delivered.
2. Follow Industry Standard Wood Acclimatization Requirements. Coordinate fabrication of doors and panels to allow ample time for fulfilling such requirements. Conform to AWI Standards.
3. Furnish doors and panels in accord with sizes, style, and fire rating shown on schedule.
4. Doors indicated to be undercut more than (1/2") shall be factory fabricated to size.
5. Doors and fixed panels shall be manufactured with veneers applied, under controlled heat and pressures, with waterproof glue. Veneers shall at a minimum conform to Standards established by the Architectural Woodwork Institute.
6. Submit (5) five sets of door shop drawings to Architect for review. Submit sample of veneer with a clear sealer representing the range of grain and color of the species and material purposed for Architect's acceptance before ordering.

03. MATERIALS:

1. Types:
 - (a). Flush – natural finish 7-ply veneer – and solid stock panel doors typical
 - (1). Solid core, interior grade GPC particle board material.
 - (2). Face Veneers:
 - (a). Select White Oak Premium Grade Plain Sliced cut (book matched).
 - (3). Face Veneer thickness:
 - (a). Standard thickness.
 - (4). Edge strips, provide minimum 3/4" thick hardwood edge strips for all four edges. Match face veneer.
 - (5). Bonded stiles and rails with with minimum 6" dimensions and Lifetime Warranty.
 - (6). Mineral core doors shall have solid blocking at closer anchors and exit devices.
 - (7). Include lite kits with flush stops to prevent conflict with door hardware.

04. APPROVALS:

1. Flush Doors:
 - (1). Weyerhaeuser, Box B, Tacoma, Washington
 - (b). Eggers Hardwood Products Corporation, Neehah, Wisconsin.
 - (c). Graham Doors
 - (d). V.T. Industries

05. INSTALLATION:

1. Match faces of doors in same rooms and area of the building.
2. Allow doors to become acclimated to site heat and humidity before hanging.
3. In fitting for width, trim equally from both sides. Fire classified doors shall be trimmed only from the lock edge and shall be trimmed no more than 3/16".
4. In fitting for height, do not trim top or bottom rails more than 3/4". Fire classified doors shall be trimmed only from the bottom rails and shall be trimmed no more than 1".
5. Threaded-to-the-head- wood screws are required for fastening all hardware. Pilot holes must be drilled for all screws.
6. Recommend the application of a wash coat (thin sealer) prior to the use of a dark stain to avoid a splotchy appearance and/or sharp contrast in color.
7. Do not remove labels from fire rated doors.
8. Just prior to sealing and finishing, doors must be completely block sanded, with not less than 150 grit sandpaper, to remove all handling marks and raised grain.
9. Top bottom, opening, and hardware recess edges must be sealed after fitting with at least two (2) coats of oil-based paint, varnish, or lacquer.
10. Fire rated doors require through bolts on all half-surface hinges and closers.

END OF SECTION 08200

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Electric operated automatic closing rolling counter fire doors with SmokeShield®UL leakage rated assembly label.
- B. Related Sections:
 - 1. 05500 Metal Fabrications. Door opening jamb and head members.
 - 2. 06100 Rough Carpentry. Door opening jamb and head members.
 - 3. Division 26. Electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, installation of control station and wiring, and connection to alarm system.
- C. Products That May Be Supplied, But Are Not Installed Under This Section:
 - 1. Control station
 - 2. Electrical disconnect
 - 3. Annunciators
 - 4. Primary and control wiring
 - 5. Conduit and fittings

1.2 SYSTEM DESCRIPTION

- A. Performance Requirements:
 - 1. Provide doors with Underwriters' Laboratories, Inc. label for the fire rating classification 1 1/2 hr
 - 2. Provide doors with Underwriters' Laboratories, Inc. label for "Leakage Rated Assembly" or "S" label demonstrating product tested to UL 1784.
 - a. Comply with NFPA 105 air leakage requirements

1.3 SUBMITTALS

- A. Reference Section 01300 Submittal Procedures; submit the following items:
 - 1. Product Data
 - 2. Shop Drawings: Include special conditions not detailed in Product Data. Show interface with adjacent work.
 - 3. Quality Assurance/Control Submittals:
 - a. Provide proof of manufacturer ISO 9001:2008 registration
 - b. Provide proof of manufacturer and installer qualifications - see 1.4 below
 - c. Provide manufacturer's installation instructions
 - 4. Closeout Submittals:
 - a. Operation and Maintenance Manual
 - b. Certificate stating that installed materials comply with this specification

1.4 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer Qualifications: ISO 9001:2008 registered and a minimum of five years experience in producing counter fire doors and smoke control units of the type specified
 - 2. Installer Qualifications: Manufacturer's approval

1.5 DELIVERY STORAGE AND HANDLING

- A. Reference Section 01 66 00 - Product Storage and Handling Requirements
- B. Follow manufacturer's instructions

1.6 WARRANTY

- A. Standard Warranty: Two years from date of shipment against defects in material and workmanship
- B. Maintenance: Submit for owner's consideration and acceptance of a maintenance service agreement for installed products

PART 2 PRODUCTS**2.1 MANUFACTURER**

- A. Manufacturer:
 - 1. Cornell: 24 Elmwood Avenue Mountain Top, PA 18707.
Telephone: (800) 233-8366.
 - a. Model: ESC10
 - 2. Cookson
 - 3. Clopay Building Products
 - 4. Amarr

2.2 MATERIALS

- A. Curtain:
 - 1. Slat Configuration:
 - a. Stainless Steel: No. 1F, interlocked flat-faced slats, 1-1/2 inches (38 mm) high by 1/2 inch (13 mm) deep, minimum 22 gauge AISI type 304 #4 finish stainless steel with stainless steel bottom bar and vinyl astragal
 - 2. Finish:
 - a. Stainless Steel: type 304 #4 finish
- B. Endlocks:
Fabricate continuous interlocking slat sections with high strength galvanized steel endlocks riveted to slats per UL requirements
- C. Guides:
 - 1. Configuration & Finish:
 - a. Stainless Steel: minimum 12 gauge formed shapes
 - 1) type 304 #4 finish
- D. Counterbalance Shaft Assembly:
 - 1. Barrel: Steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot (2.5 mm per meter) of width
 - 2. Spring Balance: Oil-tempered, heat-treated steel helical torsion spring assembly designed for proper balance of door to ensure that maximum effort to operate will not exceed 25 lbs (110 N). Provide wheel for applying and adjusting spring torque.
- E. Brackets:
Fabricate from reinforced steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures

-
1. Finish:
 - a. Powder Coat (Stock Colors): Zirconium treatment followed by a gray baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness
 - F. Hood and Mechanism Covers:

24 gauge stainless steel with reinforced top and bottom edges. Provide minimum 1/4 inch (6.35 mm) steel intermediate support brackets as required to prevent excessive sag.

 1. Finish:
 - a. Stainless steel: type 304 #4 finish
 - G. Smoke Seals & UL Smoke Label:
 1. Bottom Bar (Motor Operated Units): Combination smoke seal/sensing edge
 2. Guides and Head: Replaceable, UL Listed, brush seals sealing against fascia side of curtain

2.3 OPERATION

A. Motor Operation:

1. FireGard™ Fire Door Motor Operation: UL listed NEMA 1 enclosure, horsepower as recommended by manufacturer, 115v single phase service. Provide a totally enclosed non ventilated motor, removable without affecting the setting of limit switches; thermal overload protection, planetary gear reduction, adjustable rotary limit switch mechanism and a transformer with 24v secondary output. All internal electrical components are to be prewired to terminal blocks.
 - a. Provide an internal solenoid brake mechanism to hold the door at any position during normal door operation
 - b. Equip operator with an emergency manual chain hoist assembly that provides emergency operation during non-alarm power failure
 - c. Activate automatic closure by separation of a fusible link
 - d. Delay automatic closure for no more than ten seconds when electrically notified
 - e. Control automatic closure speed with a variable rate centrifugal governor without the use of electrical pulsation, oscillation type or constant rate viscosity governors
 - f. Maintain automatic closure speed at an average of 12" (304mm) per second
 - g. Ensure that electrical sensing edge and push button control station are inoperable during automatic closure
 - h. Reset door system by reconnecting fusible links or by re-engaging failsafe release device
 - i. Provide minimum #50 roller chain for drive connection from operator output shaft to the door drive shaft
 - j. Ensure that manual resetting of spring tension or mechanical dropouts will not be required
 - k. Install system only with manufacturer supplied or specified fasteners

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- 1. Notify electrical contractor to mount the control station(s) and supply the appropriate disconnect switch, all conduit and wiring per the door system wiring instructions
 - m. Drop test and reset door system twice by all means of activation and comply fully with NFPA 80 Section 5
 - B. Control Station:
 - 1. Surface mounted: "Open/Close/Stop" push buttons; NEMA 1
 - C. Control Operation:
 - 1. Momentary contact to close:
Fail-safe, UL325-2010 Compliant Entrapment Protection for Motor Operation.
 - a. 2-wire, E.L.R. (E.L.R. meets fail-safe/monitored device specifications) electric sensing edge extending full width of door bottom bar. Contact before door fully closes shall cause door to immediately stop downward travel and reverse direction to the fully opened position. Provide a self-coiling cable connection to control circuit.
- 2.4 ACCESSORIES
- A. Locking:
 - 1. None
 - 2. Padlockable slide bolt: Padlockable slide bolt on coil side of bottom bar at each jamb extending into slots in guides. Provide interlock switches on motor operated units.
 - B. UL Labeled and Listed Countertop to Meet NFPA 80 Requirements:
 - 1. Stainless steel min. 14 gauge type 304 #4 finish: 1 ½ Hour UL Labeled, 2" (51 mm) thick, 14 gauge type 304 #4 finish stainless steel. "T" shaped design for face of wall mounted unit of size and configuration for opening size and wall construction
 - C. Photoelectric Smoke/Heat Detector (when not connected to central alarm system): UL listed
 - D. Operator and Full Bracket Mechanism Cover:
 - 24 gauge stainless steel sheet metal cover to enclose exposed moving operating components at coil area of unit. Finish to match door hood.

PART 3 EXECUTION

- 3.1 EXAMINATION
- A. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings
 - B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates
 - C. Commencement of work by installer is acceptance of substrate

3.2 INSTALLATION

- A. Install door and operating equipment with necessary hardware, anchors, inserts, hangers and supports
- B. Comply with NFPA 80 and NFPA 105 and follow manufacturer's installation instructions

3.3 ADJUSTING

- A. Following completion of installation, including related work by others, lubricate, test, and adjust doors for ease of operation, free from warp, twist, or distortion

3.4 FIELD QUALITY CONTROL

- A. Site Test: Test doors for normal operation and automatic closing. Coordinate with authorities having jurisdiction to witness test and sign Drop Test Form

3.5 CLEANING

- A. Clean surfaces soiled by work as recommended by manufacturer
- B. Remove surplus materials and debris from the site

3.6 DEMONSTRATION

- A. Demonstrate proper operation to Owner's Representative
- B. Instruct Owner's Representative in maintenance procedures

END OF SECTION

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Description of Work:
 - (a). The extent of each type of aluminum doors, curtainwalls, and windows is shown on the drawings and in the schedules.
 - (b). The following types of aluminum doors, curtainwalls, and windows are required.
 - (1). Entrance doors with hardware.
 - (2). Thermal break storefront and curtainwall
 - (3). Miscellaneous aluminum trim and panning.
 - (c). **See Section 08710 and provide and install hardware group 8 under this Section**
2. Standards: Except as otherwise indicated, the requirements for aluminum doors, frames and windows, and the terminology used in this section, are those of NAAMM, AAMA and AA, and in particular, those of the "entrance manual" by NAAMM.
3. Manufacturer: A firm with not less than (5) five years of successful experience in the fabrication of aluminum entrance doors, curtainwall and windows, of the type specified for this project will be required. The standard of specification design and details are based upon the following:
 - (a). Storefront – Kawneer 451-T
 - (b). Doors - Kawneer wide style thermally broken
 - (c). It is intended that similar details to those specified and shown from above identified equal manufacturers will be considered acceptable provided they comply with size, profile (both maximum and minimum), finish, and testing standards of specified base systems. Each Contractor intending to bid an approved equal shall submit full description of proposed system to Architect with support data from manufacturer for Architect's prior approval before preparing his bid.
4. Prepare and submit shop drawings for approval prior to fabrication or delivery of all items. Shop drawings shall show half-size detail sections of every typical composite member. Show all anchors, hardware, operators, trim weatherstripping, glazing sealants, perimeter caulking, etc. Drawings shall be based on physical measurements of the actual openings. Contractor shall be fully responsible for all dimensions, quantities and sizes.
5. Submit with the shop drawings samples of each required finish. Samples shall be on approximately (12") long extruded shapes of the type required for the windows. If finish color will vary slightly within the work, submit sufficient duplicate samples to define the limits of such variation.
 - (a). Temperature Variation: Window wall shall be so installed to provide for expansion and contraction of the component materials and parts as will be caused by ambient temperature range of (180 Deg. F.) without causing harmful buckling, failure of joint seals, undue stress on fasteners, or other detrimental effects.
 - (b). Design Wind Velocity: at project site is (80) mph.

- (c). Window units are indicated to be of "thermal-break construction", provide units which have been tested for thermal performance (AAMA -1503) showing a condensation resistance factor (CRF) of at least 68.
- (d). Except as otherwise indicated, comply with air infiltration tests, water resistance tests, uniform load deflection tests, and classification of window units required in each case.

03. TESTING:

1. Window manufacturer shall submit to Bidding Contractor evidence that the proposed windows have complied with the following tests performed by an approved testing laboratory. Tests shall have been performed on a window of a size at least as large as the typical window for this project.
 - (a). Thermally broken aluminum door with 7 X 3 opening, weatherstripping, one (1") insulating glass, and unlocked door in closed position.
 - (1). Zero static pressure at 15 mph wind velocity: Condensation resistance factor.48.
 - (2). Static pressure drop of .112 inches of water:
 - (3). Total thermal transmittance..0.93
 - (b). Windows and Curtainwall:
 - (1). Air Infiltration Fixed Lite: When tested in accordance with ASTM E-283, the allowable air infiltration shall not exceed .06 CFM per square foot of fixed lite when subjected to a static pressure of 6.24 PSF, (25 MPH).
 - (2). Air Infiltration Operating Vents: Operating Vents: When tested in accordance with ASTM-E-283, the allowable air infiltration shall not exceed .40 CFM per foot of crack length when subjected to a static pressure of 6.24 PSF, (50 MPH).
 - (c). Water Penetration: When tested in accordance with ASTM-E-331, there will be no uncontrolled water penetration at a static pressure of 10 PSF, (50 mph), with a water spray of five (5) gallons per square foot of exterior surface per hour for a period of fifteen minutes.
 - (d). Test in accordance with ASTM-E-330 guidelines. Structural calculations for window members' deflection and stress shall be furnished to the Architect when the standard test report does not reflect adequately the actual loading conditions of the subject project.
- (1). Deflection normal to wall plane of intermediate vertical and horizontal members shall be limited to 1/175 of unsupported span .750 inches maximum. Deflection at sealant joints occurring between window frame members and building elements shall be limited to (1/2) of joint width. Provide aluminum or steel reinforcing when required. Deflection of anchors shall be limited to .062 inches. Actual deflection shall be determined for members when subjected to a wind load Design Pressure as directed by subject project's governing building code or by ANSI/AAMA 302.9 publication.
 - (2). Fixed frame glass carrying members shall be limited to a deflection parallel to wall plane of 1/300 of unsupported span without reducing glass bite more than 25%, .125 inches maximum. Operating vent glass carrying members shall be limited to manufacturer's limits, .062 inches maximum, which do not obstruct the function of the operating unit. Provide aluminum or steel reinforcing when required.
 - (3). All window members shall be of proper aluminum alloy and temper to provide a minimum ultimate tensile strength of 28,000 PSI. There shall be no over-stress of any window member, anchor or other component

when unit is subjected to a Structural Test Pressure equal to 1.5 times the Design Pressure. Stress limits for aluminum and steel components shall be limited to specifications as set forth by the current AAMA and AISC guide-lines, respectively.

2. Field testing of windows shall be performed at Contractors expense by an AAMA QUALIFIED INDEPENDENT TESTING LABORATORY at no additional cost to Owner.
 - (a). Architect will select at random (3) fixed installations.
 - (b). If unit fails to meet installed test standards all corrections shall be made, and unit re-tested at expense of Contractor.
 - (c). If Owner decides on additional testing, and units fail, Contractor shall be responsible for making correction, paying for original test, and re-test to confirm compliance with specifications.
 - (d). Those tested units not meeting the specified requirements and any or all units having similar deficiencies shall be corrected by the responsible Contractor at no cost to the Owner.
 - (1). Air infiltration tests on windows shall be conducted in accordance with ASTM-E-783.
 - (2). Allowable air infiltration shall not exceed 1.5 times the amount herein specified.
 - (3). Water resistance tests shall be conducted in accordance with AAMA 501.3.
 - (4). There shall be no water leakage as defined in AAMA 501.3 during the test.

04. PRODUCT WARRANTY:

1. Furnish a written guarantee, signed by the Manufacturer, Installer, and Contractor, against defects of material or workmanship for a period of (5) five years from the date of substantial completion of the work. Defects of materials or workmanship shall include (but not be limited to) excessive water leakage or excessive air infiltration, excessive deflection of unit or movement of anchorage, deterioration of metal or metal finish in excess of normal weathering, faulty sash operation or defects in hardware, weatherstripping or sealants. Guarantee shall not include glass breakage except when the breakage can be traced to pre-glazing edge damage or other defects of glass or glazing workmanship.

05. CONSTRUCTION MATERIALS WINDOWS AND CURTAINWALL:

1. All fixed frame, operating vent, and receiver sections shall be extruded from aluminum alloy, provided with a barrier chamber and bridged as one piece. A two-part chemically curing, high strength, resin is to be poured into the barrier chamber and the aluminum bridge shall be removed, affording a continuous thermal break.
2. Storefront system shall have a section (2" x 4-1/2") with a wall section of (1/8").
3. Fabricate and assemble frame, and sash and ventilate members into window and window systems in accordance with approved drawings and as specified in this section.
4. Finish of all aluminum components shall be AAMA 611 Class 1 Clear Anodized.
5. Fasteners shall be aluminum, non-magnetic stainless steel, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum window members,

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- trim hardware, anchors and other components of window units. Mechanical fasteners, welded components and hardware items shall not bridge thermal barriers unless the window units tested also had the thermal bridges.
- (a). Where fasteners screw-anchor into aluminum less than 0.125" thick, reinforce interior with aluminum or non-magnetic stainless steel to receive screw threads, or provide standard noncorrosive pressed-in splined grommet nuts.
 - (b). Do not use exposed fasteners except where unavoidable for application of hardware. Match finish of adjoining metal.
 - (c). Provide Phillips flat-head machine screws for exposed fasteners.
6. Anchors, Clips, and Window Accessories: Depending on strength and corrosion-inhibiting requirements, fabricate units of aluminum, non-magnetic stainless steel, or hot-dip zinc coated steel or iron complying with ASTM A-386.
 7. Fabricate aluminum units with an integrally concealed low conductance thermal barrier, located between exterior materials and window members exposed on interior, in manner which eliminates direct metal-to-metal contact. Provide manufacturer's standard construction which has been in use on similar window units for period of not less than five (5) years, has been tested to demonstrate resistance to thermal conductance and condensation, and has been tested to show adequate strength and security of glass retention.
 8. Unless otherwise shown on the architectural details, the glazing stops shall be a snap-in type with a minimum wall thickness of .040 inches adaptable to wet seal of wedge-and-tape glazing. Glazing pockets shall have a depth of .750 inches and a width of .375 inches plus the glass or panel thickness. Windows incorporating sealed insulating glass units shall be designed so that water entering the space around the unit will be drained and will not remain in contact with the edge seal of the glass at any point.
 9. Window units shall be secured to the building structure with allowances made for installation sequence, building movement, thermal movement of aluminum, and standard window opening construction tolerances. All materials employed shall be aluminum or noncorrosive materials compatible with aluminum, fasteners shall be stainless steel or cadmium plated steel, all steel clips and/or steel anchors, if used, shall be zinc plated. All fasteners, expansion channels, clips and anchors, utilized as subject project requires, must be of adequate alloy, size and spacing to assure the structural integrity of window units.
 10. All sash shall have replaceable double weatherstripping made of dense neoprene with non-vulcanized corners retained in grooves extruded as an integral part of sash. Weatherstripping shall close tightly against both the entire interior and exterior perimeters of receiving frames. Weep slots shall be provided in sash or receiver sections to direct any incidental water penetration away from interior of building.
 11. NFRC 100 System "U" Value shall be: .77 for doors and .29 for curtainwalls.

06. INSTALLATION:

1. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface and are in accordance with approved shop drawings.
2. Do not install doors and windows until all conditions are satisfactory.

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3. Check actual existing openings and coordinate placement of new bucks with carpenter to insure air and water-free installation. Show measurements of openings on shop drawings.
 4. Employ only skilled tradesmen with work done in accordance with approved shop drawings and specifications.
 5. Set doors and windows units plumb, level, and true to line, without warp or rack of frames or sash. Anchor securely in place to maintain permanent position when subjected to normal thermal and building movement and specified wind loads.
 6. Aluminum shall be insulated from direct contact with steel, masonry concrete or noncompatible materials by bituminous paint, zinc chromate priming or other suitable insulating material.
 7. Furnish and apply sealants to provide a weathertight installation at all joints and intersections and at opening perimeters. All voids between window framing and existing masonry, and/or wood bucks, shall be completely filled in such manner as to eliminate any air infiltration into the building. Wipe off excess sealant material and leave all exposed surfaces and joints clean and smooth.
 8. See Caulking & Sealants for compounds, fillers and gaskets to be installed with the window units by the Window Installer or under his direction. The Window Installer will be responsible for proper leak-free installation.
 9. Glass and glazing shall conform to and be set in accordance with the specifications and drawings to provide a satisfactory, fully leak-free installation.

07. ADJUST AND CLEAN:

1. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Sash and hardware shall be examined to assure tight fit at contact points and at weatherstripping to ensure smooth operation and weathertight closure. Lubricate hardware and moving parts. Advise Owner on maintenance.

END OF SECTION 08400

PART 1 - GENERAL

1.1 CONDITIONS

- A. Conditions of the contract (General and Supplementary Conditions) and Division 01 - General Requirements, govern the work of 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 WORK INCLUDED

- A. This section includes the following:
 - 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 is 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.

1.3 RELATED WORK IN OTHER SECTIONS

- A. This section includes coordination with related work in the following sections:
 - 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 "Aluminum Entrances and Storefronts"
 - 6. Division 26 Sections "Electrical"
 - 7. Division 28 Sections "Electronic Safety and Security".

1.4 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. IBC - International Building Code 2021 Edition (as adopted and amended by local building code)

1.5 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.
- 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.

1.6 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.
- 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.

1.7 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.

1.8 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.

1.9 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.
- B. 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:

	<u>Ives</u>	<u>Stanley</u>	<u>Hager</u>	<u>McKinney</u>
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
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:

	<u>Ives</u>	<u>Markar</u>	<u>Stanley</u>
1. Edge Mount Pin & Barrel Stainless Steel Continuous Hinge	700 Series	300 Series	650 Series
- 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:

	<u>Von Duprin</u>	<u>ASSA</u>
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 EXIT DEVICES

- A. Acceptable manufacturers and respective catalog numbers:

Von Duprin Detex

- | | | |
|---------------------------|------------|-------------------------|
| 1. Wide Stile, Push Pad | 99 Series | Advantex (Wide Stile) |
| 2. Narrow Stile, Push Pad | 33 Series | Advantex (Narrow Stile) |
| 3. Lever Trim | 996 Series | "D/DM" Trim |
| 4. Pull Trim | 990 Series | "C" Trim |
- A. Exit devices shall be independently certified by ANSI for compliance with ANSI A156.3, Grade 1 (2008).
- B. Obtain exit devices from a single manufacturer, although several may be indicated as offering products complying with requirements.
- C. All exit devices shall be equipped with a sound-dampening feature to reduce touch pad return noise.
- D. On full glass doors there shall be no exposed fasteners on the back of the mechanism visible through the glass.
- 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.
 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.

2.6 LOCKS AND LATCHES

- A. Acceptable manufacturers and respective catalog numbers:
- | | | |
|------------------------|----------------|---------------|
| | <u>Schlage</u> | <u>Best</u> |
| 1. Grade 1 Cylindrical | ND Series ATH | 9K Series 16D |
- B. Bored locks shall be independently certified by ANSI for compliance with ANSI A156.2 (2011).
- 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.

2.7 PULLS, PUSH BARS, PUSH/PULL PLATES

- A. Acceptable manufacturers and respective catalog numbers:

	<u>Ives</u>	<u>Burns</u>	<u>Trimco</u>
1. Offset Door Pull (1" dia., 10" CTC)	8190-0	39C	1191-3
2. Push Plate (.050 6"X 16")	8200 6" X 16"	56	1001-9
3. Pull Plate (1" dia., 10" CTC - .050" X 4" X 16")	8303-0 4" X 16"	5426C	1018-3B

- A. 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.
- B. Where required on wide stile doors, install straight pull offset of cylinder to allow for access to cylinder.
- C. 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.

2.8 CLOSERS

- A. Acceptable manufacturers and respective catalog numbers:

<u>LCN</u>	<u>Sargent</u>
1. 4040XP / 4040XP EDA	281 / 281P10

- 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. Provide "SPECIAL TEMPLATE - #1728 / #0723" closer arms as required to accommodate aluminum frame head details with "non-structural stops" when closers will be required to utilize parallel arm mounting positions. Frame mounting shoe shall be shortened, and pivot hub height shall be increased to permit frame mounted shoe to be positioned on frame rabbit (rather than the frame stop), and behind the frame stop rather than on top of the frame stop. Contact LCN Door Closers at: 877-671-7011 for pricing and design assistance.
- G. Closers shall use high strength cast iron cylinders, forged main arms, and one-piece forged steel pistons.
- H. Closers shall utilize a stable fluid withstanding temperature range of +120deg F to -30deg F without seasonal adjustment of closer speed to properly close the door. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with standards UL10C.
- I. Unless otherwise specified, all door closers shall have full covers and separate adjusting valves for sweeps, latch, and backcheck.
- J. Provide closers for all labeled doors. Provide closer series and type consistent with other closers for similar doors specified elsewhere on the project.
- K. 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.

- L. Install closers on the room side of corridor doors, stair side of stairways and interior side of exterior doors.
- M. Closers shall be furnished complete with all mounting brackets and cover plates as required by door and frame conditions, and by adjacent hardware.
- N. 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.

2.9 LOW ENERGY ELECTRO-MECHANICAL AUTOMATIC OPERATORS

- A. Acceptable manufacturers and respective catalog numbers:

	<u>LCN</u>	<u>Stanley</u>	<u>Besam</u>
1. Electro-Mechanical Operator	9500 Sr. Swing	MagicForce	SW200i
- B. Low energy operators shall be independently certified by ANSI for compliance with ANSI A156.19 (2002).
- C. Where low kinetic energy, as defined by ANSI/BHMA Standard A156.19, power operators are indicated for doors required to be accessible to the disabled, provide electrically powered operators complying with the ADA for opening force and time to close standards.
- D. Operator operation shall consist of Push button, push plate, switch-activated, manual or manual/electric power assisted Push 'N' Go opening with power boost closing and holding as specified in hardware sets.
- E. Operators shall comply with ANSI A156.19, UL 325, and the American with Disabilities Act.
- F. In event of power failure, make door operate manually with controlled spring close as though equipped with a #3 manual door closer, without damage to operator components.
- G. Provide adjustment by microprocessor control for:
 - 1. Opening speed.
 - 2. Backcheck.
 - 3. Hold-open, from 5 to 30 seconds.
 - 4. Closing speed.
 - 5. Opening force.
 - 6. Acceleration during opening and recycling, for soft start.
 - 7. Door will safely stop and reverse if an object is encountered in the opening or closing cycle.
- H. Operator equipment shall be completely electromechanical and include the following features:
 - 1. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
 - 2. Manual opening force: 14 lb-force (62 N) maximum.
 - 3. Closing force: 6 lb-force (26.6 N).
 - 4. Factory-set door hold-open voltage.
 - 5. Control box and motor/gear box shall be contained in protective housing; utilize precision-machined gears and bearing seats, all-weather lubricant, and shall be mounted on vibration isolators.
 - 6. Gears shall be manufactured by operator manufacturer specifically for operators.
 - 7. Motor shall consist of a DC permanent magnet motor with shielded ball bearings. Motor shall stop when door stops or is fully open and when breakaway is operated.
 - 8. Door operating arm shall be fabricated from forged steel and attached at natural pivot point of door. Do not use slide block in top of door.
 - 9. Exposed arms shall be factory-polished and finished to match operator enclosure.
 - 10. Control circuits for actuators and safeties shall be low-voltage, NEC Class II.
 - 11. Power operators will require 115 VAC power supply.
- I. Enclosure shall consist of a extruded aluminum header concealing all operating parts except arms and manual control switches.
- J. Exterior switches shall be weather resistant and mount on a single gang electrical box furnished by Division 26.

- K. Power Operators shall be warranted by the manufacturer to be free from defects in material and workmanship for a period of two years.

2.10 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.

2.11 OVERHEAD STOPS

- A. Acceptable manufacturers and respective catalog numbers:
- | | <u>Glynn-Johnson</u> | <u>Rixson</u> | <u>Sargent</u> |
|-------------------------------|----------------------|---------------|----------------|
| 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.

2.12 WALL STOPS AND HOLDERS

- A. Acceptable manufacturers and respective catalog numbers:
- | | <u>Ives</u> | <u>Trimco</u> | <u>Burns</u> |
|------------------------------|-------------|---------------|--------------|
| 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.

2.13 WEATHERSTRIP, GASKETING

- A. Acceptable manufacturers and respective catalog numbers:
- | <u>Zero</u> | <u>Pemko</u> | <u>NGP</u> | <u>Reese</u> |
|-------------|--------------|------------|--------------|
|-------------|--------------|------------|--------------|

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.

2.14 THRESHOLDS

- A. Acceptable manufacturers and respective catalog numbers:

	<u>Zero</u>	<u>Pemko</u>	<u>NGP</u>	<u>Reese</u>
1. Saddle Thresholds	8655	171	425	S205
2. Half Saddle Thresholds	1674	227	324	S239
3. Interlocking Threshold	74A	114	442-5	T550
4. 1/4" Saddle Thresholds	63	151	411	S263
5. Threshold	653	169	****	****

- A. Thresholds shall be independently certified by ANSI for compliance with ANSI A156.21 (2001).
- B. 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.
- C. Threshold Types:
- 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.
 - 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.

2.15 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:

<u>HARDWARE ITEM</u>	<u>BHMA FINISH AND BASE MATERIAL</u>
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. Exit Devices	626 (US26D - Satin Chromium)
5. Locks and Latches	626 (US26D - Satin Chromium)
6. Pulls and Push Plates/Bars	630 (US32D - Satin Stainless Steel)
7. Closers	689 (Aluminum)
8. Protective Plates	630 (US32D - Satin Stainless Steel)
9. Overhead Stops	630 (US32D - Satin Stainless Steel)
10. Wall Stops and Holders	630 (US32D - Satin Stainless Steel)
11. Thresholds	719 (Mill Aluminum)
12. Weather-strip, Sweeps Drip Caps	Aluminum Anodized
13. Weather-strip, Sweeps Drip Caps (aluminum doors)	Match finish of aluminum doors.
14. Miscellaneous	626 (US26D - Satin Chromium)

2.16 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.

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.

- 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.

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. All hardware shall be left clean and in good operation. Hardware found to be disfigured, defective, or inoperative shall be repaired or replaced.

3.5 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.

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HW SET 01

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	PRIVACY LOCK	9K-L	BES
1	EA	WALL STOP	WS406/407CCV	IVE
1	EA	PERIMETER SEAL	188S	ZER

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.

HW SET 02

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	OFFICE LOCK	9K-B	BES
1	EA	WALL STOP	WS406/407CCV	IVE

FUNCTION: (F82) OFFICE LOCK. OUTSIDE LEVER LOCKED/UNLOCKED BY OUTSIDE KEY. INSIDE BUTTON LOCKS OUTSIDE LEVER UNTIL UNLOCKED BY OUTSIDE KEY OR BY TURNING INSIDE LEVER. INSIDE LEVER ALWAYS UNLOCKED.

HW SET 03

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	OFFICE LOCK	9K-B	BES
1	EA	SURFACE CLOSER	4040XP / 4040XP EDA	LCN
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: (F82) OFFICE LOCK. OUTSIDE LEVER LOCKED/UNLOCKED BY OUTSIDE KEY. INSIDE BUTTON LOCKS OUTSIDE LEVER UNTIL UNLOCKED BY OUTSIDE KEY OR BY TURNING INSIDE LEVER. INSIDE LEVER ALWAYS UNLOCKED.

CHIPPEWA DOWNS GRANDSTAND

Belcourt, North Dakota

Finish Hardware

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HW SET 04

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	OFFICE LOCK	9K-B	BES
1	EA	OH STOP	90S	GLY
1	EA	SURFACE CLOSER	4040XP / 4040XP EDA	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	EA	GASKETING	188S (AT RATED OR SMOKE & DRAFT CONTROL DRS ONLY)	ZER

FUNCTION: (F82) OFFICE LOCK. OUTSIDE LEVER LOCKED/UNLOCKED BY OUTSIDE KEY. INSIDE BUTTON LOCKS OUTSIDE LEVER UNTIL UNLOCKED BY OUTSIDE KEY OR BY TURNING INSIDE LEVER. INSIDE LEVER ALWAYS UNLOCKED.

HW SET 05

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	9K-D	BES
1	EA	WALL STOP	WS406/407CCV	IVE

FUNCTION: (F86) STOREROOM LOCK. FIXED OUTSIDE TRIM - OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. INSIDE LEVER ALWAYS UNLOCKED.

HW SET 06

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	9K-D	BES
1	EA	SURFACE CLOSER	4040XP / 4040XP EDA	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE

FUNCTION: (F86) STOREROOM LOCK. FIXED OUTSIDE TRIM - OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. INSIDE LEVER ALWAYS UNLOCKED.

HW SET 07

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	PANIC HARDWARE	CD-9947-DT-LBR	VON
1	EA	PANIC HARDWARE	CD-9947-NL-LBR	VON
3	EA	IC CYLINDER	AS REQUIRED	
2	EA	SURFACE CLOSER	4040XP SCUSH	LCN
2	EA	KICK PLATE	8400 10"	IVE
1	EA	RAIN DRIP	142	ZER
1	SET	GASKETING	429 (MOUNT PRIOR TO CLOSER)	ZER
2	EA	DOOR SWEEP W/DRIP	8198	ZER
1	EA	THRESHOLD	AS REQUIRED	ZER

FUNCTION: NIGHT LATCH PANIC HARDWARE. FIXED OUTSIDE TRIM - LATCH RETRACTED BY KEY. INSIDE PUSH PAD RETRACTS LATCH FOR EGRESS. LATCH DOGGED BY INSIDE CYLINDER FOR PUSH/PULL OPERATION.

HW SET 08

QTY		DESCRIPTION	CATALOG NUMBER	MFR
1	EA	CONT. HINGE	700	IVE
1	EA	CONT. HINGE	700 EPT	IVE
1	EA	POWER TRANSFER	EPT2/EPT10	VON
1	EA	PANIC HARDWARE	CD-3347A-EO	VON
1	EA	ELEC PANIC HARDWARE	CD-LX-3347A-NL-OP	VON
3	EA	IC CYLINDER	AS REQUIRED	
2	EA	90 DEG OFFSET PULL	8190 10"	IVE
2	EA	OH STOP	100S	GLY
1	EA	SURFACE CLOSER	4040XP / 4040XP EDA	LCN
1	EA	SURF. AUTO OPERATOR	9542IQ	LCN
2	EA	ACTUATOR, WALL OR JAMB MOUNT	8310-853 OR 8310-818 AS REQD (VERIFY TYPE AND MOUNTING LOCATION) (RAIL MOUNT OUTSIDE / WALL MOUNT INSIDE)	LCN
1	EA	RAIN DRIP	142	ZER
1	EA	WEATHERSTRIPPING	BY DOOR SUPPLIER	B/O
2	EA	DOOR SWEEP W/DRIP	8198	ZER
1	EA	THRESHOLD	AS REQUIRED	ZER

FUNCTION: NIGHT LATCH PANIC HARDWARE. FIXED OUTSIDE TRIM - LATCH RETRACTED BY KEY. INSIDE PUSH PAD RETRACTS LATCH FOR EGRESS. LATCH HELD RETRACTED BY INSIDE CYLINDER FOR PUSH/PULL OPERATION. LATCHBOLT MONITOR SWITCH (LX) MONITORS LATCH STATUS. PRESSING INSIDE OR OUTSIDE PUSH PLATE ACTUATOR AUTOMATICALLY OPENS DOOR ONLY WHILE LATCH IS RETRACTED.

CHIPPEWA DOWNS GRANDSTAND

Belcourt, North Dakota

Finish Hardware

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HW SET 09

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	PUSH PLATE	8200 6" X 16"	IVE
1	EA	PULL PLATE	8303 10" 4" X 16"	IVE
1	EA	SURFACE CLOSER	4040XP / 4040XP EDA	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406/407CCV	IVE

FUNCTION: PUSH/PULL.

DOOR	HW SET
1001	08
1003	08
1011	03
1012	02
1031	01
1041	09
1051	07
1061	09
1071	04
1081	05
1091	06
1111	06
1121	02
1131	02
1141	02

END OF SECTION

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Glass and glazing required for the Work includes, but is not necessarily limited to, 1" insulated vision glass, tempered (1/4") interior glass.
2. In addition to complying with all pertinent codes and regulations, comply with all pertinent recommendations contained in the "Manual of Glazing" of the Flat Glass Marketing Association.
3. Provide at least one person who shall be thoroughly trained and experienced in the skills required, who shall be completely familiar with the referenced standards and the requirements of the Work, and who shall personally direct all installation performed under this Section of these Specifications.
4. Use all means necessary to protect glass and glazing materials before, during and after installation and to obtain the installed work and materials of all other trades.
5. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

03. MATERIALS:

1. All glass shall bear the label of its manufacturer and shall conform in all respects with the pertinent requirements of Federal Specification DD-G-451c, shall be relatively distortion free with all distortion waves in the horizontal direction, and shall be in the following qualities.
2. All glass to be used in accordance with U.S. Consumer Product Safety Commission Regulations.
3. Glazing for windows shall be Oldcastle Building Envelope SB60 #2 – 1/2" Argon (90% argon) – 1/4" Clear Energy Advantage #4 with TGI thermal spacer.
4. All typical interior glazing on doors, sidelights or borrowed lights shall be tempered (1/4") glass as shown on the drawings.
5. Glass on grandstand shall be 1/2" tempered and laminated clear glass.
7. All glazing accessories shall be new, first quality of their respective kinds and subject to the approval of the Architect.

04. INSTALLATION:

1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

2. Verify that all glazing may be performed in accordance with all pertinent codes and regulation, the original design, and the referenced standards. In the event of discrepancy, immediately notify the Architect.
3. Set all glass in a true plane, tight and straight, with proper and adequate clearance, firmly anchored to prevent rattling and looseness, with all edges cleanly cut; do not nip or seam the edges.
4. It shall be the responsibility of the Glazing Contractor to correct all imperfections and replace all damaged glass. It shall be the responsibility of the General Contractor to complete final cleaning of all glass surfaces. It shall also be the responsibility of the General Contractor to provide construction protection of the glass to avoid damage after installation of glass until project is completed.

END OF SECTION 08800

01. GENERAL REQUIREMENTS:

1. *Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.*

02. SCOPE:

1. Finish interior walls and ceilings as indicated on finish schedules and details.
2. Water resistant fire rated type board in moist areas.
3. All material delivered in original unopened containers or bundles.
4. Store to protect from elements and damage from construction operation.
5. Maintain temperature to (45 degrees F.) to (75 degrees F.) during application of wallboard.
6. Provide ventilation to eliminate excessive moisture.
7. Perimeter joints and openings around all wall outlets in sound walls, shall be sealed and backs of electrical boxes buttered with non-drying, permanently flexible synthetic rubber based Tremco Acoustical Sealant.

03. MATERIAL:

1. (1/2") gypsum board, tapered edges.
2. Metal trim required at window and door jambs, at ceiling angles and intersections where wall board abuts other material.
 - (a). Dura-Bead
 - (b). Metal Trim 200 A
 - (c). Perf-A-Trim
3. Drywall screws, (1-1/4") Hilo Type S Buglehead.
4. Metal control joint USG-#-093.
5. Dura Bond 500 adhesive.
6. Level 4 finish is required on all painted gypsum board surfaces.

04. INSTALLATION:

1. Meet at project site with the installers of related work and review the coordination and sequencing of work to ensure that everything to be concealed by gypsum drywall has been accomplished and that everything to be concealed by gypsum drywall has been accomplished, and that chases, access panels, openings, supplementary framing and blocking and similar provisions have been completed.

-
2. Install supplementary framing, blocking and bracing to support fixtures, equipment, services, heavy trim, furnishings and similar work.
 3. End and edges of all gypsum wallboard shall occur over nailing member, except when the end joints are to be back blocked.
 4. Use wallboard of maximum practical lengths. Shim and level where required for a straight true surface.
 5. Stagger end joints.
 6. Fasten to framing member with power-driven screws, or apply as noted on plan with laminating adhesives as per manufacturer's recommendations:
 - (a). Dura-Bond 500 (U.S.G.) trowel application of drywall to masonry and laminating boards.
 7. Comply with fire assembly ratings detailed on plans and conform to assemblies as tested and approved as per ASTM-E-119.

END OF SECTION 09250

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Standard Specifications:
 - (a). "Handbook for Ceramic Tile Installation", applies by Tile Council of America.
2. **Grades** - all tiles shall be graded. Containers to be grade sealed in accordance with simplified practice recommendations. Do not open until approved.
3. Samples required - to include full range of colors and patterns. Note requirement of color ranges and desired patterns.
4. Each material following shall be as specifically recommended by its manufacturer for the uses to which it is put and shall be installed according to recommendations govern.
5. Coordinate with all other trades having integral or adjacent work. Advise on required slab recesses to render floor finishes in even plane.
6. Maintain above (50 deg. F.) for forty-eight (48) hours prior to starting work, during work, and after work until mortar and grout have cured.
7. All corners to be coved or rounded.
8. Tile stopping on plane wall surfaces shall be bull nosed.
9. All base surfaces shall be dry, clean, and free of all oily or waxy films; shall also be firm, level and plumb.
10. Install tile with control joints to allow for expansion and contraction as per Tile Council Standard EJ-171-89. Provide Architect with diagram layout of control joints.
11. The Contractor shall furnish to Owner extra tile for future repairs. Provide (3%) of each material, color and type used. Include in Base Bid cost of water jet cut logo Item 04.2A in this section.
12. Submit color samples to Architect for approval before ordering.

03. APPROVALS:

1. Daltile
2. Syverson

04. MATERIALS:

1. Colors as selected from manufacturer's standard. All surfaces shall conform to ADA Standards. Provide all required tile and miscellaneous shaped bullnose, round corners, cap, etc. for a complete professional installation.
2. **Ceramic Wall Tile Selection:**
 - a) Daltile
 - b) Classic – Color Wheel Collection
 - c) 6" x 6" Wall Tile
 - d) Color selected by Architect
3. Grout joint typical 1/4" with grout color selected by Architect.
4. Portland Cement (ASTM-C-150 Type I) hydrated lime (ASTM-C-206 or C207S), sand (ASTM-C-144) and clean potable water.
5. Thin set adhesive conforming to R113.
6. Silicone caulking at control joints.

05. INSTALLATION:

1. Conform to mfg. requirements and ANSI-108.1.
2. Surface clean from all oil, wax, and dust.
3. Apply adhesive uniformly with 1/4" notched trowel.
4. Carefully place units in straight lines conforming to a uniform approved pattern. Lay out work before beginning. Verify location of surface movement and align control joints as required. Set terrazzo metal edge at transition to carpet materials.
5. Protect floor from construction traffic at least (24) hours after application of grout.
6. Cover all finished floor w/heavy non-staining construction paper masked in place for protection during construction completion. Remove paper and rinse protective neutral cleaner from all tile surfaces.
7. Grouting:
 - (a). Mix to thick creamy consistency. In accord with A108.10 Standards, wet tile before grouting. Force into joints allow no voids.
 - (b). Wipe out joints to contour of cushion edge. Clean and polish to finished surface. Use no acid. Provide dampness for curing; wait (24) hours, minimum after setting tile to start grouting.
 - (c). Grout Color shall be approved by Architect.
8. Cleaning:
 - (a). Sponge and wash thoroughly after grout has stiffened. Wipe diagonally across joints. **Acid not permitted.**

- (b). Follow by rubbing well with excelsior, sawdust, and clean burlap, with damp cloths or sponge. Allow no staining materials. Polish with dry cloths.
- (c). Rinse tile work with clean water before and after use of chemical cleaners.

END OF SECTION 09300

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Standard of Acoustical Materials Association applies. Available 335 East 45th Street, New York, NY, 10017.
2. Ceiling Contractor approved by manufacturer.
3. Furnish additional 2% of each type of acoustical used. Deliver to Owner place where directed.
4. Carefully review plans and schedule for configuration of required ceiling assemblies.
5. Submit five (5) sets of shop drawings showing details of metal suspension system, classification of ceiling tile, and sample of materials.

04. MATERIALS:

1. ACT:

- (a). Acoustic Board shall be Armstrong "Cirrus" 578 2' x 2' boards with angled tegular edge. Ceiling tile shall be class A rated.
- (b). Acoustic Board shall require a white metal 15/16" Prelude XL 2' X 2' grid with stiffeners, caps, wall angle, and corner trim. Suspension grid in all areas shall be **white**.

2. ACT 2:

- (a). Acoustic Board shall be Armstrong "Kitchen Zone" in 2' x 2' boards with square edge and water-repellent, washable, scratch-resistant, soil-resistant
- (b). Acoustic Board shall require a white metal 15/16" aluminum with prepainted aluminum Cap 2' X 2' grid with stiffeners, caps, wall angle, and corner trim. Suspension grid in all areas shall be **white**

4. Minimum 12 gauge suspension wires.
5. All electrical penetrations through rated ceiling tile areas (lights, speakers, etc.) shall be "tented" with fire rated assemblies to maintain the fire rating of the ceiling tile and grid system.
6. All mechanical penetrations through rated ceiling shall be equipped with fire dampers (see mechanical specifications)

05. INSTALLATION:

1. Space to receive acoustical treatment shall be dry, and with no more dampening materials to be installed.

2. Application of acoustical treatment shall be done by the manufacturer on his authorized applicator, and in strict accordance with the manufacturer's specifications, except as modified herein.
3. Install acoustical units in a true and even plane, in straight-line courses (laid out as noted in corridors within decorative edge trim and symmetrically about center lines of ceiling or panel). Border tile shall typically be not being less than (6") wide.
4. Fit border units neatly against vertical surfaces and decorative edge. Carefully cut to fit.
5. Seal joints in acoustical units around pipes, ducts, and electrical outlets with caulking compound.
6. Install wall molding at intersection of suspended ceiling and vertical surfaces. Apply continuous ribbon of acoustical adhesive or caulking compound on vertical web before attaching to vertical surface with mechanical fastener.
7. Keep finished surface of acoustical units free of soiling.
8. Wire suspension systems to be as recommended by tile manufacturer. Place additional support wires at corners of light fixtures and diffusers, and at support areas suggested by Grid Mfg.
9. See mechanical and electrical drawings and specifications.
10. Coordinate work of all persons involved with ceiling equipment.
11. Mechanical suspension systems:
 - (a). See drawings for grid layouts.
 - (1). Coordinate with electrical fixture layout.
 - (b). Install level and true.
 - (c). Border units to be largest size possible.

END OF SECTION 09500

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Furnish all labor and materials for complete finish installation.
2. Provide base around entire perimeter of space. Include columns, pilasters, base cabinets, etc.
3. Flooring not required under permanently built-in cabinets and equipment. This Contractor will be required to patch tile removed under demolition
4. Temperatures:
 - (a). Floor covering in tile storage areas, 70 degrees F. minimum continuously.
 - (b). Areas to be covered, 70 degrees F. minimum for (48) hours before laying, during laying, and (48) hours after laying.
5. Deliver materials in unbroken packages. Manufacturer's original label intact. Do not open until approved.
6. Submit complete list of materials to be used for approval. Submit color samples to Architect for selection.
7. Furnish 45 SF additional sheet vinyl goods or rubber floor tile of each color used. Deliver to Owner, where directed.
8. In remodeled areas receiving new flooring, this contractor shall include removal of existing flooring in his bid.

03. APPROVALS:

1. Luxury Vinyl: Shaw Commercial: PATHWAYS 12, 7" X 48" plank. Color as selected by Architect.
2. Vinyl Base:
 - (a). Johnsonite (Spec. Referenced)
 - (b). Roppe.

04. MATERIAL:

1. Resilient base:
 - (a). Top-set cove base in (1/8") vinyl at resilient tile.
 - (b). Top-set straight base (1/8") at carpet.
 - (c). (4") in standard colors in rolls.
 - (d). Submit samples.
 - (e). (1/8") thick vinyl base is acceptable in rolls.

2. Adhesive:
 - (a). Install adhesive approved by Mfg. of floor finish.

05. INSTALLATION:

1. Workmanship by skilled experienced craftsmen. Start of work indicates Subcontractors acceptance of surface.
2. Preparation of surfaces - clean and remove grease and all foreign matter. Lay flooring only after surfaces are in fit condition, and properly roll into place to assure adherence. Neatly butt rubber tiles for an even smooth fit. Carefully seam sheet vinyl flooring with matching material. Curling and distinguishable seams will not be acceptable. Plan sheet vinyl seams in advance. Have Architect approve diagram layout before beginning work.
3. Resilient Base where scheduled and at all areas receiving new floor finish.
 - (a). Cement directly to backing.
 - (b). Use adhesive formulated for base installation.
 - (c). Take care not to stretch during installation - roll firmly in place.
4. Clean floor at completion of work.
5. From the time of laying until acceptance, protect the flooring from damage. Defects which develop, such as damage, loose, broken, or curled tiles, shall be removed and replaced. Cover traffic lanes with building paper using pressure sensitive tape, later removing covering at direction of General Contractor.

END OF SECTION 09650

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. The work to be done under this section includes all materials, labor equipment, and services necessary to providing and applying all paints, varnishes, coatings or other related materials specifically called for in this specification or in the drawings.
2. The compliance by the Painting Contractor to spreading rates will be checked on the project with a dry mil thickness gage by the Architect or his representative.
3. Gypsum Drywall Finishing:
 - (a). Material:
 - (1). Joist reinforcement tape - U.S.G. Perf-A-Tape.
 - (2). Dura Bond joint compound, taping, topping and multipurpose.
 - (b). Installation:
 - (1). Taping, embedding and filling, finishing shall be done in accordance with U.S.G. instructions.
 - (2). All areas above finish ceiling shall be fire taped.

03. WORK SPECIFIED ELSEWHERE:

1. It is the purpose of this specification to include all surfaces and equipment requiring job painting. This includes work in the following section, in addition to this section:
 - (a). General Construction
 - (b). Heating, Air Conditioning, and Ventilation.
 - (c). Plumbing.
 - (d). Electrical
 - (e). Concrete Work
 - (f). Caulking & Sealing
 - (g). Other
2. The Painting Contractor shall examine each of these sections and include such material and labor in his bid.

04. SAMPLES AND COLORS:

1. Contractor will furnish this Architect a set of color chips to be used for picking color placement.
2. Paint or coating colors used shall be a close reasonable match to the color chips furnished by the Architect.

05. SUBSTITUTIONS:

1. The materials or products specified herein and indicated on drawings or finish schedules by trade name shall be provided as detailed.
2. This Contractor shall submit his bid based on specified materials or approved manufacturer.

3. Equal quality products of other manufacturer's will be considered for approval if the request is submitted within (10) ten days prior to bidding. This written request must include all necessary supporting information and data for Architect to determine equal quality characteristics. Also required with the request is an affidavit from an executive officer of the paint or coating manufacturer, certifying the materials being asked for approval, meet these specification requirements.
4. After Architectural Approval of material there shall be no substitutions.

06. MATERIALS:

1. As different types of paints and coatings have specified surface preparation and application requirements peculiar to that product, each manufacturer's instructions must be adhered to at all times.
2. All materials not specified but required for successful application of any specified paint or coating must be of the brand and type recommended by the approved paint or coatings manufacturer.
3. The approved manufacturer's complete coating system will be used on this project with no substitutions.
4. No paint or coating is to be delivered to the project site in other than the original container.
5. No materials other than types and brand names specified or approved may be delivered to, or stored on project site.
6. Storage of painting material:
 - (a). General Contractor will assign a lockable area or room for storing all this Contractor's supplies and equipment.
 - (b). This Contractor must use adequate means and take all precautions to protect floors and other surfaces of this area from damage.
 - (c). This Contractor must use adequate means and take all precautions to prevent fire, explosions and other damage caused by his materials and equipment.
 - (d). Paint and solvent must be stored in closed metal containers at all times.
 - (e). Remove oily rags, waste, etc. EVERY NIGHT.

07. GENERAL REQUIREMENTS:

1. This Painting Contractor and his workmen shall be constantly aware that they are applying the finish surface to this building. Their skill in securing the highest quality appearance for each surface is required.
2. The application of any paint or coating to the surface shall constitute acceptance of that surface by this Contractor. To avoid this responsibility he must notify the Architect in writing of surface defects before beginning his material application. An exception to this will be allowed only after application test, or of first coat, and Architect is notified in writing before additional material is applied.

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3. All surfaces must be free of foreign matter before applying any paint or coating. Removal of foreign matter from painting surfaces left by other trades shall be the responsibility of the General Contractor.
 4. The General Contractor shall maintain an ambient temperature not less than 60 degrees F. for 24 hours prior to, and a minimum of 24 hours after completion of paint or coating application to all interior surfaces.
 5. This Contractor will remove and reinstall, or provide acceptable in place protection for, all installed hardware, accessories, lighting and electric components, factory finished materials, plumbing fixtures and fittings and any other materials that may become splattered or damaged by the paint or coating materials.
 6. If this Contractor finds that problems are arising in connection with application of the paint, painting on that area should be stopped immediately. The Supplier of the paint and Architect should then be contacted to see what can be done to rectify the conditions.
 7. Plaster, mortar, block, brick, concrete or any other masonry related surface shall not be painted if its moisture content exceeds 12 percent.
 8. All doors must have at least two (2) coats of finish paint or varnish on top and bottom edges.
 9. Where open cabinets and shelves occur, room finish on walls shall not be omitted except in back of permanent cabinets with closed backs.

08. PREPARATION OF SURFACES:

1. This Contractor shall call to the attention of the General Contractor and Architect any imperfections that would interfere with the uniform appearance, adhesion, and quality of the finished paint or coating.
2. Steel door frames must be made smooth by filling or sanding before applying any paint or coating. Existing corridor frames shall be sanded smooth to remove paint build up and prepared for repainting.
3. Remove all rust or mill scale from ferrous metal surfaces requiring exposed finish coat of paint or coating. After removal, spot prime with inhibitive red primer.
4. Wood surfaces must be sanded smooth, dust removed before the application of any paint or coating.
5. Nail holes must be puttied after prime or undercoat, then sanded smooth. Putty or wood filler must match color of finish when clear coat is specified.

09. MIXING AND TINTING:

1. Job site tinting of finish coat is to be done only when approved by Architect.
2. Thinning is to be done only when specifically allowed by manufacturer and never to exceed his directions.

10. PROTECTION:

1. This Contractor is responsible for removal of all paint or coating splatter, spills, etc. on floors or adjacent colors, materials, glass, hardware, and other finished surfaces.
2. This Contractor must leave premises clean and free from all rubbish and accumulated material left from his work.

11. APPLICATION:

1. Final coat of paint or coating must have visual evidence of solid hiding and uniform appearance.
2. There shall be no visible evidence of runs, sags, curtains or other evidence of poor application.
3. All coats shall be thoroughly dry before applying succeeding coats, unless specifically exempted by material manufacturer.
4. Make edges of paint or coating adjoining other materials or colors, sharp and clean, with no overlapping.
5. When paint or coating is brush applied, each coat must be brushed out uniformly to eliminate laps, skips and excess brush marks.
6. When paint or coating is roller applied, proper skill must be used to avoid all signs of lapping and excess paint lines from edge of roller. When cutting in with a brush is required, these areas must be of same texture, color and hiding as adjacent areas, to assure good appearance. All doors shall have final coat roller applied for slight stipple texture.
7. When paint or coating is applied by spray, it must be done before the installation of fixtures, hardware, flooring and other finish items unless thoroughly protected. It shall be applied only by skilled painters, to assure a uniform finish with no evidence of poor or improper application.
8. Each coat of clear finish or enamel shall be lightly sanded and wiped free of dust before applying next coat.
9. All factory primed exterior millwork or siding must be primed, after erection or installation, with exterior wood primer before application of top coat.
10. Exposed piping, conduit, ductwork, hangers and related or similar materials shall be painted the color and texture of the wall or ceiling adjacent.
11. Each coat of paint or a coating shall be of visible difference from preceding coat.
12. Each coat of paint or a coating shall be inspected by Architect or representative before next coat is applied. Only after inspection and approval will credit be given for that coat.

13. Spot painting to correct soiled or damaged paint surfaces will be allowed only when touch up is blended into surrounding finish and is invisible to normal viewing. Otherwise, re-coating entire section to corners or visible stripping point.
14. Any repainting authorized after finished job is accepted by the Architect and the General Contractor, shall be completed and the time and material charged to the General Contractor.
15. Factory primed surfaces must be determined paintable in a normal manner by this Contractor, or treated properly to secure adequate adhesion of jobsite paint or coating. Any added coat must be approved by the Architect prior to application.

12. SCHEDULE OF PAINTING:

1. The paints and coating detailed are based on Pittsburgh Paint Products except as noted otherwise herein. Approved: Glidden, Benjamin Moore, Valspar, Columbia, Pratt & Lambert, Cook Paints, Devoe and Sherwin Williams, (spec. reference).
2. Material Schedule:
 - (a). Exterior metal, doors, frames:
 - (1). Ferrous metals
 - (a). 1 coat (2.1-1.9 mil dry film) inhibitive red primer.
 - (b). 2 coats (2.4-1.8 mil dry film/coat) Promar exterior Lo-Sheen enamel.
 - (2). Galvanized:
 - (a). 1 coat (1.9 - 1.6) mils dry film Galvite paint White.
 - (b). 2 coats (2.1-1.8) mils dry film Metal Latex semi-gloss enamel.
 - (b). Interior Gypsum Board:
 - (1). Latex Enamel
 - (a). 1 coat (1.8 - 1.3 mil dry film) Promar quick drying latex primer..
 - (b). 2 coats (2.8 mil dry film) semi-gloss Promar 400.
 - (c). Light eggshell finish.
 - (c). Interior Metal:
 - (1). Metal Doors & Frames:
 - (a). 1 coat at (2.2 - 1.9) mils dry film Universal Metal Primer.
 - (b). 2 coats (2.1- 1.8) mils dry film/coat Metal Latex semi-gloss enamel.
 - (2). Galvanized:
 - (a). 1 coat (1.9 - 1.6) mils dry film Galvite paint White.
 - (b). 2 coats (2.1-1.8) mils dry film Metal Latex semi-gloss enamel.

END OF SECTION 09900

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Solid plastic toilet compartments including the following: (Hiny Hiders)
 - 1. Floor mounted overhead-braced toilet compartments.

1.2 RELATED SECTIONS

- A. Section 05500 - Metal Fabrications.
- B. Section 06100 - Rough Carpentry.

1.3 REFERENCES

- A. ASTM A 666 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- B. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- C. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- D. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. United States EPA (Environmental Protection Agency) Registration - Bactericidal Surfaces Registered with the U.S. EPA to Legally Make Claims that these Materials Kill Infectious Bacteria.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300 - Submittals.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Provide layout drawings and installation details with location and type of hardware required.
- D. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns.
- E. Sustainable Design Submittals:
 - 1. Recycled Content: Certify percentages of post-consumer and pre-consumer recycled content.
 - 2. Regional Materials: Certify distance between manufacturer and Project.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A company regularly engaged in manufacture of products specified in this section, and whose products have been in satisfactory use under similar service conditions for not less than 5 years.
- B. Installer Qualifications: A company regularly engaged in installation of products specified in this Section, with a minimum of 5 years experience.
- C. Materials: Doors, panels and pilasters, constructed from high density polyethylene (HDPE) resins. Partitions to be fabricated from polymer resins compounded under high pressure, forming a single

component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. Cover all plastic components with a protective plastic masking.

- D. Performance Requirements:
 - 1. Antimicrobial Touch Surfaces: Hardware touch surfaces shall be manufactured from substrates that are registered with the U.S. EPA to kill specific bacteria tested according to U.S. EPA protocols.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

- A. 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 absolute limits.

1.8 WARRANTY

- A. Manufacturer guarantees its plastic against breakage, corrosion, and delamination under normal conditions for 25 years from the date of receipt by the customer. If materials are found to be defective during that period for reasons listed above, the materials will be replaced free of charge. Labor not included in warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Scranton Products, which is located at: 801 E. Corey St.; Scranton, PA 18505; ASD Toll Free Tel: 800-445-5148; Fax: 855-376-6161; Email:[request info \(info@scrantonproducts.com\)](mailto:request_info@scrantonproducts.com); Web:<https://www.scrantonproducts.com>
 - 1. Fabricator: Santana Toilet Partitions.
 - 2. Fabricator: Comtec Toilet Partitions.
 - 3. Fabricator: Capitol Toilet Partitions.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01300 Submittals

2.2 MATERIAL

- A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface.
- B. Zinc Aluminum Magnesium and Copper Alloy (Zamac): ASTM B 86.
- C. Stainless Steel Castings: ASTM A167, Type 304.
- D. Aluminum: ASTM 6463-T5 alloy.

2.3 SOLID PLASTIC TOILET COMPARTMENTS

- A. Basis of Design: Hiny Hiders Toilet Partitions as manufactured by and supplied by Scranton Products.
 - 1. Style: Floor mounted overhead-braced toilet compartments.
- B. Doors, Panels, and Pilasters: 1 inch (25 mm) thick with all edges rounded to a radius. Mount doors and dividing panels based on height of specified system.
 - 1. Door and Panel Height: 72 inches (1829 mm).

2. Aluminum heat sink fastened to bottom edges.
 3. Door Design: Two panel side panel design.
 4. Panel Edge: Standard.
 5. Panel Edge: Shiplap.
 6. Pilasters: 82 inches (2083 mm) high and fastened to floor.
- C. Panel Color: Metallic series.
1. Stainless - Hammered.
- D. Pilaster Shoes: 3 inches (76 mm), 20 gauge stainless steel. Secured to pilasters with a stainless steel tamper resistant Torx head sex bolt.
- E. Headrail: Heavy-duty extruded 6463-T5 alloy aluminum with anti-grip design. Finish to be clear anodized. Fastened to headrail brackets with stainless steel tamper resistant Torx head sex bolt, and fastened at the top of the pilaster with stainless steel tamper resistant Torx head screws.
1. Headrail Brackets: 20 gauge stainless steel with satin finish. Secured to the wall with stainless steel tamper resistant Torx head screws.
- F. Wall Brackets:
1. Aluminum Brackets: Heavy-duty aluminum 6463-T5 alloy.
 2. PVC Brackets: Extruded PVC plastic.
 3. Stainless Steel Brackets: Stainless steel type 304.
 4. Brackets are fastened to pilasters with stainless steel tamper resistant Torx head screws and fastened to the panels with stainless steel tamper resistant Torx head sex bolts.
- G. Door Hardware:
1. Vault Hinge: Heavy-duty 304 stainless steel hinge having gravity-acting cams with a brushed finish and wrap around flanges.
 2. Door Strike/Keeper: Heavy-duty extruded aluminum 6436-T5 alloy with a bright dip anodized finish. Secured to pilasters with stainless steel tamper resistant Torx head sex bolts. Bumper shall be made of extruded black vinyl.
 - a. Style: 3 inches (76 mm) stainless steel emergency access.
 3. Latch Mechanism: Aluminum Slide Bolt Latch and Housing: Heavy-duty extruded 6463-T5 alloy aluminum. Latch and housing to have a bright dip anodized finish. Slide bolt and button to have a black anodized finish.
 4. Doors supplied with one coat hook/bumper and door pull made of chrome plated Zamak.
 5. Equip outswing handicapped doors with second door pull and door stop.

2.4 SOLID PLASTIC PRIVACY SCREENS

- A. Provide plastic privacy screens in urinal and entry toilet room applications as indicated or scheduled.
- B. Panels, and pilasters, if required, 1 inch (25 mm) thick with edges rounded to a radius. Screens to be mounted at 14 inches (356 mm) above the finished floor. Color as selected by Architect from manufacturer's full line of current colors.
1. Aluminum heat sink fastened to bottom edges.
 2. Recycled Content: Minimum 25 percent.
- C. Screen Type: Pilaster supported.
1. Configuration: Floor pilaster supported screen.
 2. Urinal Screens: 24 inches (610 mm) wide by 55 inches (1397 mm) high.
 3. Pilaster: Pilaster screens shall be 82 inches (2083 mm) high.
 4. Headrail: Heavy-duty extruded 6463-T5 alloy aluminum with anti-grip design and integrated curtain track. Finish to be clear anodized. Fastened to the headrail bracket with a stainless steel tamper resistant Torx head sex bolt and fastened at the top of the pilaster with stainless steel tamper resistant Torx head screws.
 5. Headrail Brackets: 20 gauge stainless steel with a satin finish. Secured to the wall with stainless steel tamper resistant Torx head screws.

- 6. Pilaster Sleeves: 20 gauge stainless steel secured to pilaster with a stainless steel tamper resistant Torx head sex bolt.
- 7. Pilaster Shoes: One-piece molded HDPE secured to the pilaster with a stainless steel tamper resistant Torx head sex bolt.
- D. Wall Brackets: Extruded PVC plastic. Fastened to the panel/pilaster with stainless steel tamper resistant torx head screws and fastened to wall with stainless steel tamper resistant torx head sex bolts.
 - 1. Length of Wall Brackets: 54 inches (1327 mm).
- E. Aluminum Slide Bolt Latch and Housing: Heavy-duty extruded 6463-T5 alloy aluminum. Latch and housing to have a bright dip anodized finish. Slide bolt and button to have a black anodized finish.

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.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install partitions rigid, straight, plumb, and level manor, with plastic laid out as shown on shop drawings.
- C. Clearance at vertical edges of doors shall be uniform top to bottom and shall not exceed 3/8 inch (9.5 mm).
- D. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.
- E. Finished surfaces shall be cleaned after installation and be left free of imperfections.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Furnish and install as located in on drawings in masonry walls and steel stud framed walls.
2. See Section 01300 for submittal requirements.
3. Extinguishers shall have been filled within (45) forty-five days of substantial completion and have date of filling clearly marked on band.
4. Cabinets shall have primed finish. Manufacturer of extinguisher shall also supply cabinet and supplier shall be responsible for extinguisher fitting cabinet.

03. APPROVALS:

1. Larsen Manufacturing Company (spec. reference).
2. J.L. Industries
3. Ansul
4. Kidde

04. MATERIALS:

1. Two (2) units Model #MP 5 Classified with 5 gallon capacity (U.L. Standard 2A-10BC).
 - (a). Two (2) units semi-recessed mounted cabinet w/ flush door pull and vertical duo door and "Fire Extinguisher" signage in red letters.

05. INSTALLATION:

1. Install at working height to secure backing. Note specific locations on floor plans.
2. Caulk around cabinet
3. See locations shown on drawings for semi-recessed installation.

END OF SECTION 10520

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Furnish and install the identified toilet and bath accessories as per Mfg. Standards and ADA requirements in locations shown on drawings..
3. Mount only to solid blocking.
5. All furnishing shall have satin stainless steel finish and concealed mountings where applicable.
6. Submit a copy of Mfg. data sheets and five (5) copies of shop drawings and cut sheets of manufacturers literature for Architects review and approval.

03. SPECIFIED ITEMS:

1. (13) units: Toilet paper dispenser #5106.
2. (2) units: Channel frame full length mirror 20" X 60" #781.
3. (15) units: Channel frame mirror 18" X 30"
4. (15) units: Model #6A01-11 wall mounted foam soap disp..
5. (2) units: Safety 1-1/2" diameter grab bar pair w/concealed mount & 42" + 36" lengths and 18" vertical #812-7.

04. APPROVALS:

1. Bradley (spec. referenced)
2. American Specialties
3. McKinney Parker
4. Bobrick

05. INSTALLATION:

1. Secure to wall only on solid blocking. Verify location based upon Mfg. Recommendations for ADA Requirements. Typically mount from finish floor:
 - (a). Toilet tissue dispenser @ 19" to center.
 - (b). Grab bar pair (33") to center.
 - (c). Sink Mirror (69") to top.

Refer to drawings and contact Architect for specific mounting locations
2. Neatly anchor with concealed fasteners as recommended by manufacturer.
3. Clean installation with soap and water. Polish mirrors with approved glass cleaner.
4. Coordinate installation with laying of ceramic wall tile.

END OF SECTION 10800

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Extent of work of this section includes all labor, material, equipment and services necessary for and reasonably incidental to the furnishing and installation of kitchen equipment as herein specified and as required by the drawings.
2. Mechanical and Electrical rough-ins and connections to equipment items included in this section will be performed by the Mechanical and Electrical Contractors respectively. Supplier of this equipment shall cooperate with Mechanical and Electrical Contractors by way of informing them of type of equipment furnished, roughing-in dimensions and any special admonitions regarding connecting of equipment items. This Subcontractor shall further supervise and coordinate the mechanical and electrical connections being performed by others to guaranty the successful commercial operation of all equipment. On jobsite a video tape shall be prepared instructing the Owner's Representatives in the proper care, operation and maintenance of all kitchen equipment items (all at no additional cost to the Owner).
3. This subcontractor is required to verify all measurements and familiarize himself with construction conditions. He will be held responsible for correct size of all equipment after it is made up and installed, unless General Contractor guarantees dimensions of work not yet in place when measurements are taken.
4. Provide any supports, hangers, bolts, etc., over and above what will be available in construction that may be necessary to support in a safe and practical way all equipment included in this contract. Such supports shall be reviewed by Architect when shown on shop drawings.
5. This bidder must furnish Architect with brochures, descriptive literature, and shop drawings, showing in detail the design, location, size and construction of each item of equipment he proposes to furnish, for approval, prior to fabrication of equipment.
6. Three complete sets of approved operating and maintenance manuals containing the manufacturer's operating and maintenance instructions for each piece of food service equipment furnished under this contract shall be provided to the Owner. Each set shall be bound in an approved hardback cover. Fly sheets shall be placed before instructions covering each subject and each piece of equipment. The instruction sheets shall be approximately 8-1/2" X 11", with large sheets of drawings folded in. The operating and maintenance instruction shall contain the following information: instructions for installing, operating and performing preventive maintenance of the equipment, a list of service parts (identified by the manufacturer's part number), and quantity of service parts required for preventive maintenance for a period of one year.
7. All ferrous metal parts required to be painted shall be factory finished.

03. ITEMS OF EQUIPMENT:

1. Food equipment shall be provided by Capital City Restaurant Supply:
Ryan Leu
Custom Design Manager
O: 701-255-4576
D: 701-415-0212
ryan@ccrsupply.com
1031 E Interstate Avenue
Bismarck, ND 58503
www.ccrsupply.com
2. Furnish and install the following; installation work to be done only by subcontractor who furnished equipment.



Quote

08/20/2026

To:
Jiran Architects
jeff welsh
Jiran Architects
258-7771

Project:
Chippewa Downs Concessions

From:
C C R SUPPLY
Ryan Leu
Office 1031 E Interstate Ave
Warehouse 2700 State Street STE D
Bismarck, ND 58503
(701)255-4576
701-415-0212 (Contact)

Job Reference Number: 20252240

Capital City Restaurant Supply, a Veteran and Locally Owned Business, first opened its doors in 1971. We are a restaurant equipment store that works to improve your kitchen's efficiency and optimize performance. We have knowledgeable product consultants and experts with significant experience in food service operations. We take pride in selling quality restaurant equipment, dinnerware, small wares and furniture. We ensure that we will help you buy the right product, at the best price possible.

Item	Qty	Description	Sell	Sell Total
1	1 ea	THREE (3) COMPARTMENT SINK John Boos Model No. 3B16204-2D18-X "B" Series Sink, 3-compartment, 87-1/4"W x 25-1/2"D x 44"H overall size, (3) 16"W x 20" front-to-back x 14" deep compartments, (2) 18" left & right drainboards, 10"H boxed backsplash with 45° top and 2" return, (1) set of splash mount faucet holes with 8" centers, 3-1/2" die-stamped drain openings, 16/300 stainless steel construction, stainless steel legs, adjustable side bracing, adjustable bullet feet, NSF	\$824.04	\$824.04
	1 ea	Standard flyer accessories only, NO modifications to flyer items allowed or their accessories		
	1 ea	PB-PRW-1LF-X Prerinse Unit, splash mount, flex stainless steel hose, 8" centers, 1/4 turn cramic cartridges, color coded hot/cold indicators, integral check valve, 1/2" NPT, includes 12" wall bracket, NSF, ADA Compliant (LEAD FREE FAUCET)	\$203.04	\$203.04
	1 ea	PB-AD-12LF-X Add-On-Faucet, 12" swing spout, fits on PB-PRW-1LF or PB-PRD-2LF pre-rinse units (LEAD FREE FAUCET)	\$48.60	\$48.60
	3 ea	PB-LWR-1-X Twist Handle Lever Waste, for 3-1/2" industry standard sink opening, standard valve, basket strainer (includes an adapter for either 2" or 1-1/2" drain outlet)	\$40.50	\$121.50
	3 ea	PB-LWB Lever waste support arm bracket. Not for use with PB- LWS-1 or PB-LWS-10V straight handle lever waste.	\$28.92	\$86.76
	1 ea	Note: Provisions made at factory for installation.		

Item	Qty	Description	Sell	Sell Total
			ITEM TOTAL:	\$1,283.94
2	4 ea	WIRE SHELVING Metro Model No. A1860NK3 Quick Ship - Super Adjustable Super Erecta® Shelf, wire, 60"W x 18"D, Metroseal 3 (corrosion-resistant) finish, corner release system, with Microban® antimicrobial protection, NSF	\$102.00	\$408.00
	4 ea	A1848NK3 Quick Ship - Super Adjustable Super Erecta® Shelf, wire, 48"W x 18"D, Metroseal 3 (corrosion-resistant) finish, corner release system, with Microban® antimicrobial protection, NSF	\$87.60	\$350.40
	8 ea	74PK3 Quick Ship - Super Erecta® SiteSelect™ Post, 74-1/2"H, adjustable leveling bolt, posts are grooved at 1" increments & numbered at 2" increments, double grooved every 8", Metroseal 3 Green epoxy coated corrosion-resistant finish with Microban® antimicrobial protection	\$27.36	\$218.88
			ITEM TOTAL:	\$977.28
3	2 ea	HAND SINK John Boos Model No. PBHS-W-1410-P-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, (splash mount faucet included)	\$156.60	\$313.20
	2 ea	Standard flyer accessories only, NO modifications to flyer items allowed or their accessories		
			ITEM TOTAL:	\$313.20
4	1 ea	UNDERCOUNTER REFRIGERATOR True Mfg. - General Foodservice Model No. TUC-48G-HC~FGD01 Undercounter Refrigerator, 33 - 38°F, framed glass door version 01, (2) Low-E glass doors, (4) PVC coated adjustable wire shelves, LED interior lighting, stainless steel top & sides, aluminum interior with stainless steel floor, view spec sheet for electrical information & certifications, Made in USA	\$5,551.40	\$5,551.40
	1 ea	7 year compressor warranty, 7 years parts warranty, 7 year labor warranty, standard. Visit www.truemfg.com for specifics.		
	1 ea	Self-contained refrigeration standard		
	1 ea	Locks, factory installed, standard		
	1 ea	Castors, 1-1/2" (31-7/8" work surface height = LP)	\$244.62	\$244.62
			ITEM TOTAL:	\$5,796.02
5	1 ea	WORK TABLE, 72", STAINLESS STEEL TOP	\$395.28	\$395.28

Item	Qty	Description	Sell	Sell Total
		John Boos Model No. ST6R5-3072GBK-X Work Table, 72"W x 30"D, 16/300 stainless steel top with 5" backsplash, with Stallion Safety Edge front, 90° turndown on sides, box channel understructure with sound deadening tape, galvanized legs, side & rear adjustable bracing, adjustable bullet feet, NSF, KD		
	1 ea	Standard flyer accessories only, NO modifications to flyer items allowed or their accessories		
ITEM TOTAL:				\$395.28
6	1 ea	POPCORN POPPER Gold Medal Products Model No. 2005ST Deluxe Whiz Bang Popcorn Machine, electric, countertop, 12 oz. Unimaxx® kettle, twin hanger arm, blower heater, forced air popcorn crisping system, stainless steel dome, LED sign, 1610 watts, 120v/60/1-ph, NEMA 5-15P, UL, NSF	\$2,163.00	\$2,163.00
	1 ea	All information & pricing is subject to change without notice; contact Gold Medal Products Co. for the most up-to-date pricing and information.		
	1 ea	2 year parts & 6 months labor warranty, standard (contact factory for more information)		
ITEM TOTAL:				\$2,163.00
7	1 ea	NACHO CHEESE / CHIPS WARMER, DISPLAY Gold Medal Products Model No. 2206 Chip 'n Cheese Combo Warmer/Merchandiser, counter top, 10 lbs. warmer box chip capacity, heated spout pump, recommended for use with stainless steel insert bowl #2238 (sold separately), 362 watts, 120v/60/1-ph, NEMA 5-15P, cULus	\$1,092.00	\$1,092.00
	1 ea	All information & pricing is subject to change without notice; contact Gold Medal Products Co. for the most up-to-date pricing and information.		
ITEM TOTAL:				\$1,092.00
8	1 ea	COFFEE BREWER BUNN Model No. 20900.0011 20900.0011 Dual® Coffee Brewer, Portable, mechanical thermostat, brews 18.9 gallons per hour capacity, stainless steel funnel, 3 batch-size settings, electronic timer & grinder interface, upper hot water faucet, variable water bypass, includes (2) GPR servers (20950.0004), 4" black adjustable legs, 120/240v/60/1-ph, 6890 watts, 29 amps, UL, NSF	\$2,465.64	\$2,465.64
	1 ea	Prices include applicable tariffs		
ITEM TOTAL:				\$2,465.64
9	1 ea	WATER FILTRATION SYSTEM, FOR COFFEE BREWERS	\$200.49	\$200.49

Item	Qty	Description	Sell	Sell Total
		3M Purification Model No. BREW120-MS Packed 6 ea (5616001) 3M™ Water Filtration Products Water Filter System, 15-1/2"H x 4-1/2"D, valve-in-head, standard water, single vessel, SQC style, 1/4-turn shut off valve, max pressure of 125 psi at 100°F, for cyst, sediment, chlorine taste and odor, scale, 0.5 micron, 1.5 gpm flow rate, 9000 gallons capacity, includes: (1) integral mounting bracket and (1) o-ring seal cartridge filter, 3/8"FNPT, NSF certified (for coffee/tea brewers)		
	1 ea	HF20-MS (5615109) 3M™ Water Filtration Products Replacement Cartridge, standard length, 0.5 micron, 1.5 gpm flow rate, 9,000 gallons capacity, reduces sediment, chlorine taste & odor, cyst, proprietary scale inhibitor blend for BREW120-MS (5616001), NSF certified	\$90.20	\$90.20
ITEM TOTAL:				\$290.69
10	1 ea	REFRIGERATED MERCHANDISER Beverage Air Model No. MMR35HC-1-B MarketMax™ Refrigerated Merchandiser, reach-in, two-section, 39-1/2"W, 78-1/8"H, (2) double pane hinged glass doors, 35.08 cu. ft. capacity, electronic control, digital display, (10) epoxy coated steel shelves, LED interior lighting, self closing door with automatic hold-open feature, bottom-mounted refrigeration, white interior, black exterior, R290 Hydrocarbon refrigerant, 1/4 HP, cULus, UL EPH Classified, UL-Sanitation	\$6,239.40	\$6,239.40
	1 ea	7 year parts & labor and 7 year compressor warranty (excludes maintenance items)		
	1 ea	115v/60/1-ph, 2.4 amps, cord with NEMA 5-15P		
	1 ea	Left door hinged left, right door hinged right, standard		
	1 ea	61C31-193A-01 Gravity shelf organizer (one kit per door), for MMR/MMF 19/27/35	\$471.03	\$471.03
	1 ea	BEVARLVA001 Note: No charge for stock signs when ordered with unit. This excludes "Got Milk" and custom signs. Contact your sales rep for custom sign pricing. Pricing will be adjusted when PO is received. 1 sign per unit.		
ITEM TOTAL:				\$6,710.43
11	1 ea	WORK TABLE, CABINET BASE OPEN FRONT John Boos Model No. EBOS6R5-30108 Work Table, cabinet base with open front, 108"W x 30"D, 16/300 stainless steel top with 5" backsplash, Stallion Safety Edge front, 90° turndown on sides, stainless steel base, undershelf, & 1" adjustable bullet feet, all welded set-up, NSF (image shown with optional midshelf)	\$2,793.47	\$2,793.47
	1 ea	X-0115Y Modified as noted, PER SKETCH (for special notations) MAKE 102" WIDTH		
	1 ea	EBWS-30108 Work Table Welded Intermediate Shelf, 108"W x	\$495.72	\$495.72

Item	Qty	Description	Sell	Sell Total
		30"D, 18/300 stainless steel, for EBOS, EBOP, EBHS series enclosed base tables		
			ITEM TOTAL:	\$3,289.19
12	1 ea	DISPLAY CASE, HOT FOOD, COUNTERTOP Hatco Model No. WFST-1X Flav-R-Savor® Large Capacity Merchandising Cabinet, countertop, (4) intermediate racks, (2) French style doors, clear anodized finish, incandescent lights, cULus, UL EPH Classified, Made in USA	\$6,072.60	\$6,072.60
				
	1 ea	One year on-site parts & labor warranty, plus one additional year parts only warranty on all Flav-R-Savor® metal sheathed air heating elements		
	1 ea	120v/60/1-ph, 1790 watts, 14.9 amps, NEMA 5-15P (domestic voltage), standard		
	1 ea	STANDARD Clear Anodized Aluminum housing, finish, standard (available at time of purchase only)		
	1 ea	Warm white LED lights, standard		
	1 ea	WFST-TTC Temperature Control Timer, (6) channel, touch screen display	\$388.20	\$388.20
			ITEM TOTAL:	\$6,460.80
13	1 ea	DISPLAY CASE, HOT FOOD, COUNTERTOP Hatco Model No. FDWD-1 Flav-R-Fresh® Holding & Display Cabinet, counter model, (1) door, (4) tier interior revolving circular rack & rack motor, 1390 watts, CE, cULus, UL EPH Classified, Made in USA	\$2,869.80	\$2,869.80
				
	1 ea	NOTE: Sale of this product must comply with Hatco's Minimum Resale Price Policy; consult order acknowledgement for details		
	1 ea	NOTE: Includes 24/7 parts & service assistance, call 414-671-6350		
	1 ea	One year on-site parts & labor warranty, plus one additional year parts only warranty on all Flav-R-Fresh metal sheathed air heating elements		
	1 ea	120v/60/1-ph, 1360 watts, 11.3 amps, NEMA 5-15P (domestic voltage)		
	1 ea	STANDARD Clear Anodized Aluminum housing, finish, standard (available at time of purchase only)		
	1 ea	FDWD4TCRR (4) Tier Circle Rack with Pizza Pan Retainers [in lieu of standard]		
	1 ea	FDWD-SCD Self closing door, in lieu of standard door, left hinge only (available at time of purchase only)	\$57.60	\$57.60
	1 ea	14PIZZA PAN 14" diameter perforated pizza pan, aluminum construction, each	\$25.80	\$25.80
			ITEM TOTAL:	\$2,953.20
14	1 ea	HOT DOG GRILL	\$4,127.60	\$4,127.60

Item	Qty	Description	Sell	Sell Total
		Star (Middleby) Model No. 30SCBDE Grill-Max® Hot Dog Grill, roller-type with integrated bun drawer, stadium seating, Duratec® coated non-stick rollers, capacity 30 hot dogs & 32 buns, programmable electronic controls for front and rear zones, stainless steel construction, cULus, UL EPH Classified, Made in USA		
	1 ea	[30SCBDE-120V] 120v/60/1-ph, 1150 watts, 9.6 amps, NEMA 5-15P, standard		
	1 ea	30SG-1D Grill-Max™ Hot Dog Roller Grill Sneeze Guard, for 23" x 20" grills, (1) door, polycarbonate, UL EPH Classified, NSF, Made in USA	\$535.57	\$535.57
	1 ea	THU Tong Holder	\$123.12	\$123.12
ITEM TOTAL:				\$4,786.29
15	1 ea	WORK TABLE, 72", STAINLESS STEEL TOP John Boos Model No. ST6R5-3072GBK Work Table, 72"W x 30"D, 16/300 stainless steel top with 5" backsplash, with Stallion Safety Edge front, 90° turndown on sides, box channel understructure with sound deadening tape, galvanized legs, side & rear adjustable bracing, adjustable bullet feet, NSF, KD	\$1,085.54	\$1,085.54
				
	1 ea	CUT1416126 Weld-In Undermount Sink, 1-compartment, 14"W x 16" front-to-back x 12" deep, 3-1/2" drain opening, 16/300 stainless steel fabricated bowl, includes cutout, bowl, faucet holes & welding/polishing (Not available for FBLG & UFBLG)	\$864.76	\$864.76
	1 ea	X-0205B On the right (modification)		
	1 ea	PBF-4DM-5GLF Heavy Duty Faucet, deck mount, 5" gooseneck spout, 4" centers, 1/4 turn ceramic cartridges, color coded hot/cold indicators, integral check valve, 1/2" NPT, chrome finish, NSF, ADA Compliant (LEAD FREE FAUCET)	\$274.46	\$274.46
ITEM TOTAL:				\$2,224.76
16	1 ea	SHELVING, WALL MOUNTED John Boos Model No. BHS1672-16/304 Shelf, wall-mounted, 72"W x 16"D x 13"H overall size, 1-1/2" rear up-turn, Stallion Safety Edge front, 16/300 stainless steel, NSF, KD	\$392.45	\$392.45
				
ITEM TOTAL:				\$392.45
17	2 ea	PIZZA BAKE OVEN, COUNTERTOP, ELECTRIC Bakers Pride (Middleby) Model No. PX-14 (QUICK SHIP) HearthBake Series Oven, countertop, electric, pizza, 13-1/4"W x 13-7/8"D bake deck, single 3" high deck, slide out wire baking rack, thermostat to 680°F, 15 min. timer, stainless steel exterior finish, 1" legs, 1.5kW, NSF, UL, CE, CSA	\$1,965.06	\$3,930.12
				

Item	Qty	Description	Sell	Sell Total
	2 ea	1 year parts & labor warranty, standard		
	2 ea	120v/60/1-ph, 12.5 amps, NEMA 5-15P		
			ITEM TOTAL:	\$3,930.12
18	1 ea	WORKTOP FREEZER	\$6,430.11	\$6,430.11
	Beverage Air Model No. WTF60AHC			
	Worktop Freezer, two-section, 60"W, 14.39 cu. ft., (2) solid doors, (4) shelves, snap-in door gaskets, stainless steel exterior top, front, sides, door & grille, galvanized steel exterior back & bottom, aluminum interior, 4" removable backsplash, rear-mounted self-contained refrigeration, R290 Hydrocarbon refrigerant, 1/2 HP, cULus, UL EPH Classified, UL-Sanitation			
	1 ea	7 year parts & labor and 7 year compressor warranty (excludes maintenance items)		
	1 ea	115v/60/1-ph, 7.0 amps, cord with NEMA 5-15P		
	1 ea	Left door hinged left, right door hinged on right, standard		
	1 ea	Solid hinged stainless steel doors, standard		
	1 ea	6" Heavy duty casters, standard		
			ITEM TOTAL:	\$6,430.11
19	1 ea	EXHAUST HOOD		
Custom by Mechanical				
20	2 ea	GAS FLOOR FRYER	\$1,475.13	\$2,950.26
	American Range Model No. AF-50			
	Gas Tube Fryer, floor model, 50 lb. capacity fryer, 304 stainless steel TIG welded tank, thermostat control, millivolt pilot system, (2) baskets, removable crumb screen, stainless steel construction, 6" adjustable chrome plated legs, 33.0kW, 120,000 BTU, cETLus, ETL-Sanitation, Made in USA			
	2 ea	One year limited warranty on parts & labor		
	2 ea	LP Gas		
	1 ea	A99412 Joiner Strip, stainless steel, for AF-50HE	\$104.81	\$104.81
	2 ea	87034 Splash Guard, stainless steel, for AF-50HE, left side	\$137.12	\$274.24
	2 ea	87035 Splash Guard, stainless steel, for AF-50HE, right side	\$137.12	\$274.24
	2 st	A35117 Casters, set of 4 (2 locking)	\$223.92	\$447.84
			ITEM TOTAL:	\$4,051.39
21	1 ea	RANGE, 48" 2 OPEN BURNER, 1 36" GRIDDLE	\$11,757.42	\$11,757.42
	American Range Model No. AR-36G-2B-CL-SBR			
	Restaurant Range, gas, 48", (1) 36" griddle on left, 1" thick plate, manual controls, (2) 32,000 BTU open burners, (1) 26-1/2" convection oven on left, (2) racks, (1) 11" storage base on right, stainless steel front, sides, 20" back riser and shelf standard, option for 6" stub back, 6" adjustable chrome plated legs, 47.0kW, 151,000 BTU, cETLus, ETL-Sanitation, Made in USA			

Item	Qty	Description	Sell	Sell Total
	1 ea	Standard two year limited warranty on parts & labor		
	1 ea	LP Gas		
	1 ea	20" riser with shelf, stainless-steel		
	1 ea	Thermostat for 36" griddle	\$1,728.77	\$1,728.77
	1 st	A35117 Casters, set of 4 (2 locking)	\$223.92	\$223.92
ITEM TOTAL:				\$13,710.11
22	8 ea	WIRE SHELVING	\$125.52	\$1,004.16
		Metro Model No. A2454NK3		
		Quick Ship - Super Adjustable Super Erecta® Shelf, wire, 54"W x 24"D, Metroseal 3 (corrosion-resistant) finish, corner release system, with Microban® antimicrobial protection, NSF		
	8 ea	A2460NK3 Quick Ship - Super Adjustable Super Erecta® Shelf, wire, 60"W x 24"D, Metroseal 3 (corrosion-resistant) finish, corner release system, with Microban® antimicrobial protection, NSF	\$125.52	\$1,004.16
	4 ea	A1836NK3 Quick Ship - Super Adjustable Super Erecta® Shelf, wire, 36"W x 18"D, Metroseal 3 (corrosion-resistant) finish, corner release system, with Microban® antimicrobial protection, NSF	\$73.68	\$294.72
	20 ea	74PK3 Quick Ship - Super Erecta® SiteSelect™ Post, 74-1/2"H, adjustable leveling bolt, posts are grooved at 1" increments & numbered at 2" increments, double grooved every 8", Metroseal 3 Green epoxy coated corrosion-resistant finish with Microban® antimicrobial protection	\$27.36	\$547.20
ITEM TOTAL:				\$2,850.24
23	1 ea	REACH-IN FREEZER	\$8,579.99	\$8,579.99
		Beverage Air Model No. FB49HC-1S		
		Vista® Freezer, reach-in, two-section, 52"W, 84-1/4"H, 46.2 cu. ft., electronic control, (2) lockable hinged solid doors, (6) adjustable wire shelves, LED interior lighting, adaptive defrost, painted gray aluminum interior, stainless steel front, gray coated steel sides, bottom-mounted self-contained refrigeration, R290 Hydrocarbon refrigerant, 3/4 HP, cULus, UL EPH Classified, UL-Sanitation		
	1 ea	7 year parts & labor and 7 year compressor warranty (excludes maintenance items)		
	1 ea	115v/60/1-ph, 11.0 amps, cord with NEMA 5-15P		
	1 ea	Left door hinged left, right door hinged on right, standard		
	1 ea	6" Heavy duty casters (2) locking, standard		
ITEM TOTAL:				\$8,579.99
24	1 ea	REACH-IN REFRIGERATOR	\$6,627.72	\$6,627.72
		Beverage Air Model No. RB49HC-1S		
		Vista® Refrigerator, reach-in, two-section, 46.15 cu. ft., electronic control, (2) lockable hinged self-closing solid doors, (6) adjustable wire shelves, LED lighting, gray painted interior, stainless steel front, gray coated steel sides, bottom-mounted self-contained refrigeration, R290 Hydrocarbon refrigerant, 1/3 HP, cULus, UL EPH		

Item	Qty	Description	Sell	Sell Total
		Classified, UL-Sanitation		
	1 ea	7 year parts & labor and 7 year compressor warranty (excludes maintenance items)		
	1 ea	115v/60/1-ph, 5.4 amps, cord with NEMA 5-15P		
	1 ea	Left door hinged left, right door hinged on right, standard		
	1 ea	6" Heavy duty casters (2) locking, standard		
ITEM TOTAL:				\$6,627.72
25	1 ea	WORK TABLE, STAINLESS STEEL TOP	\$1,790.10	\$1,790.10
		John Boos Model No. ST6-36132GBK		
		Work Table, 132"W x 36"D, 16/300 stainless steel flat top, with Stallion Safety Edge front & back, 90° turndown on sides, box channel understructure with sound deadening tape, galvanized legs, side & rear adjustable bracing, adjustable bullet feet, NSF, KD		
	8 ft	X-0413J Pass Thru Shelf (per linear foot) (minimum 3 feet) (modification)	\$193.70	\$1,549.60
	1 ea	X-0002L Size modification to reduce size, price next largest size		
	1 ea	X-0115X Modified to specifications, PER SKETCH (used when changing size)		
		**Modify to ** 31" D x 132" W x 34" H		
		7" D x 18" W notch on both back corners		
	1 ea	X-0208C Punch, 2-1/2" hole, for appliance cord, includes grommet (specify location) (modification)	\$75.74	\$75.74
	2 ea	X-0214D Notch for column in flat top (modification)	\$491.13	\$982.26
	2 ea	X-TOP-FRAME-48 Window Frame for Pass-Thru, 48" (requires option X-0413J)	\$930.85	\$1,861.70
ITEM TOTAL:				\$6,259.40
26	4 ea	WIRE SHELVING	\$102.30	\$409.20
		Metro Model No. A1860NC		
		Quick Ship - Super Adjustable Super Erecta® Shelf, wire, 60"W x 18"D, chrome plated finish, corner release system, NSF		
	8 ea	27P Quick Ship - Super Erecta® SiteSelect™ Post, 28-3/8"H, adjustable leveling bolt, posts are grooved at 1" increments & numbered at 2" increments, double grooved every 8", chrome finish	\$16.56	\$132.48
ITEM TOTAL:				\$541.68
27	1 ea	POINT-OF-SALE SYSTEMS		
		Custom		
		BY OTHERS		
Total				\$94,574.93

01. GENERAL REQUIREMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

02. SCOPE:

1. Furnish all casework indicated on plans to be provided under this contract. Quality standard shall be identified as PREMIUM GRADE as established by AWI Certification Program.
2. Coordinate all work with Owner furnished equipment, General, Mechanical, & Electrical Contractors. Remove and reinstall units noted on plan.
3. Exercise specific care and caution when placing and delivering units so as not to damage wall, floor, ceiling, or millwork surfaces. Clean up at end of each working day.
4. Advise Contractor of particular studwall backing requirements for specific casework/millwork items in advance.
5. **Verify dimensions, cabinet locations, and coordinate equipment before preparation of shop drawings. Submit shop drawings and manufacturer's literature along with laminate colors and hardware samples, for Architect's approval before confirming order.**

03. MATERIALS:

1. High pressure laminate for vertical surfaces shall be of textured finish and meet NEMA Standards LD3-1980 GP28 for vertical grade. Colors are to be selected from manufacturer's standard color list.
2. High pressure laminate cabinet liner, of (3) standard colors, shall meet NEMA Standards LD3-1980 CL20 for cabinet liner.
3. Low pressure laminate cabinet liner for interior surfaces shall be a double top coated resin impregnated laminate or (3) standard colors.
4. High pressure laminate for countertop surface shall be of textured finish meeting NEMA (LD3-1980 GP 50). Countertop edges to be 3MM PVC edge-banding.
5. Particleboard shall have a minimum density of forty-five (45) pounds per cubic foot with a moisture content not to exceed (8%).
6. Wood fiber hardboard shall be 1/4" thick with one side prefinished to match interior of cabinet.
7. Exposed cabinet body edges shall be covered with colored 3MM PVC edge-banding. Door and drawer front horizontal edges shall be covered with 3MM PVC edge-banding;

color of edge-banding to match the face color of the door and drawer front. Casework face style shall be full overlay.

8. Metal parts, table legs, post legs, counter supports, etc., shall be furniture steel, fabricated by welding, then degreased, cleaned, treated and painted.
9. Hinges shall be Blum full overlay self-closing hinge. The hinge is to be all metal and open 125 deg.. The number of hinges per cabinet door shall be as follows:

<u>DOOR HEIGHT</u>	<u>NO. OF HINGES PER DOOR</u>
0 - 36"	2
37 - 60"	3
61 - 80"	4
81 - 94"	5

10. Drawer and door pulls shall be 3" brushed aluminum wire pulls.
11. Regular drawers shall be equipped with one pair of roller carriage bottom mounted drawer slides, Blum with a 100-pound dynamic and 150 pounds static load capability. Paper storage and file drawers shall be equipped with one pair of Blum full extension drawer slides with a 155-pound load rating.
12. Adjustable shelf supports shall be heavy-duty, self-locking nylon, designed to prevent the self support from rotating.
13. Locks for doors and drawers where indicated shall be five (5) disc tumbler, cam type, keyed alike or differently and master keyed. Each lock shall be furnished with two (2) keys.
14. All window sills shall be included in this section. All window sills shall be ¾" partical board with plastic laminate edging.
15. Carefully review all drawings for specific items and accessories to be a part of project casework. Typical items are:
 - (a). Pull out pre-molded keyboard tray and arm.
 - (b). Counter top electric grommets at (1) gromet/8-LF cabinet field locate with Project Architect.
 - (c). Steel anchors, hangars, and brackets to field assemble and adequately support all casework.
 - (d). Wall dividers w/plastic laminate surfaces.
 - (e). Architectural grade woodwork components as detailed.
 - (f). Locked drawers/ doors where shown.
 - (g). All other architectural items as shown on plans.

04. TYPICAL CONSTRUCTION:

1. Tops and bottoms shall be joined to cabinet ends using a minimum of eight (8) dowels for twenty-four (24) inch deep cabinets and a minimum of five (5) dowels for twelve (12) inch deep cabinets. All dowels are to be hardwood, laterally fluted, with chamfered ends

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- and a minimum diameter of eight (8) millimeters. Internal cabinet components such as fixed horizontals, rails, and verticals are to be doweled in place. Dowels are to be securely glued and cabinets clamped under pressure during assembly to assure secure joints and cabinet squareness.
2. All base and full height units shall have an integral base. Base covering shall be plastic laminate furnished and applied by the casework supplier.
 3. Tops and bottoms shall be particleboard, (3/4") thick, laminated on the interior with low pressure laminate cabinet liner with a backer sheet of a neutral color on the unexposed surface. The bottom surface of all upper cabinets shall be low pressure laminate cabinet liner. Front edges to be with PVC edging. All tops shall be solid except for sink base tops, which shall have a (1" X 1" X 1/8") angle iron front rail. All cabinets over (42") and up to (72") in height shall be supplied with a finished (3/4") continuous top.
 4. Unexposed cabinet ends shall be particleboard, (3/4") thick, laminated on the interior with low pressure laminate cabinet liner and a backer sheet of a neutral color on the exterior unexposed surface. Exposed cabinet ends shall be laminated with vertical surface high pressure laminate on the exterior and high pressure laminate cabinet liner, (3) standard colors, on the interior. Holes shall be drilled for adjustable shelf clips 32mm (1-1/4") on center. Front and bottom edges to be banded with PVC edging. Ends to be bored to except doweled top and bottom. All ends to be rabbeted to accept recessed back and to provide scribe at finished end.
 5. Particleboard, (3/4") thick, shall be laminated on both sides with low pressure laminate cabinet liner. Color shall be (3) standard colors on both surfaces. Front edges to be banded with PVC edging. Adjustable shelves up to (30") wide are (3/4") thick.
 6. Standard recessed cabinet back to be (1/4") thick prefinished hardboard. Color to match cabinet interior. All sink cabinets to have split back, removable from inside. Exposed exterior back on fixed or movable cabinets to be particleboard, (3/4") thick, laminated with high pressure laminate on the exterior surface and (3) standard colored high pressure laminate cabinet liner on the interior surface.
 7. Cabinet doors and drawer fronts. Particleboard, (3/4") thick, shall be laminated with high pressure laminate on the exposed surface and champagne colored high pressure laminate cabinet liner on the interior surface. Horizontal edges shall be covered with 3MM PVC edge banding; color of edge banding to match the face color of the door and drawer front. Double doors shall be used on all cabinets in excess of (24") in width.
 8. Sides, back, sub-front and bottom of all drawers shall be particleboard, (1/2") thick, laminated with (3) standard colors polyester laminate. The back and sub-front are doweled and glued into the sides. Dowels shall be spaced 32mm (1-1/4"). Dowels are to be hardwood, laterally fluted, with chamfered ends and a minimum diameter of eight (8) millimeters. Top edge is banded with PVC edging. Drawer bottom shall be screwed directly to the bottom edges of the drawer box. Paper storage drawers are of heavy-duty (3/4") particleboard construction with 155-pound full extension slides, plywood reinforcement stiffener at bottom and a retaining hood at the rear of each drawer.
 9. Interior cabinet sides, tops, bottoms, backs, horizontals, verticals, and shelves shall be laminated with vertical surface high pressure laminate on all open cabinets. Interior

cabinet sides, tops and bottoms shall be laminated with vertical surface high pressure laminate on all sliding door cabinets.

10. In-line base cabinet installations shall have continuous tops of particle-board, laminated and edged with countertop grade high pressure laminate. Thickness and design as shown on plans and specifications.

05. INSTALLATION:

1. Casework shall be protected in transit. Store under cover in a ventilated building not exposed to extreme temperature and humidity changes. Do not store or install casework in building until concrete, masonry, and plaster work is dry.
2. Install casework under the supervision of the manufacturer's representative with factory-trained journeymen authorized by manufacturer.
3. Erect casework straight, level and plumb and securely anchor in place. Scribe and closely fit to adjacent work. Cut and fit work around pipes, ducts, etc.
4. Install all items complete and adjust all moving parts to operate properly.
5. Leave surface clean and free from defects at time of final acceptance.
6. All materials to be guaranteed for a period of (3) three year from manufacturer's defects and workmanship.
7. Remove all cartons, debris, sawdust, scraps, etc. and leave spaces clean and all casework ready for Owner's use.

END OF SECTION 12300

1. Part 1 General

1.1 Work:

- A. Non-Elevated Wide Span Grandstand with Roof
- B. Press Box

1.2 Related Work

- A. Concrete Foundations and concrete pads

1.3 References:

- A. Applicable building codes: IBC 2018

1.4 Bidders Qualifications

- A. The grandstand seating system shall be the design product of a manufacturer that has been in business for a minimum of 10 years and with satisfactory experience in the design and production of the system specified.
- B. For bid qualification, the manufacturer shall furnish the name and location of at least 10 installations of similar type and quality in ND for the Owner's review.
- C. Bidder must have a full-time sales and installation firm living in the territory for representation and communication at weekly meetings as necessary.

1.5 Engineers Certification and Submittals:

- A. All shop and/or fabrication drawings for structural components of the grandstand system shall be designed and certified by a registered structural engineer currently licensed to practice in the State of North Dakota.
- B. Complete certified structural calculations shall accompany submission of shop drawings. Drawings and calculations shall clearly note all design loads in accordance with the IBC 2018 Building Code.
- C. Designs shall include loading information and calculations.

1.6 Scope of Work:

- A. Furnish and completely install a One (1) Non-Elevated "Wide-span" design permanent grandstand, as manufactured by Southern Bleacher Company, or equal.
- B. Placement of aisles shall be as shown on the drawings.
- C. One press box support structure shall be located at the front of the grandstand, elevated 8'-2" above the top (rear) platform, enabling the installation of an 8' x 12' box. The structure shall have a platform that extends between the two center aisles. The platforms shall be covered with aluminum decking and an elevated walkway to access the press box from the rear platform. The platform and

walkway shall have an aluminum picket guardrail system that matches the grandstand guardrail.

- F. An 8' x 12' Prefabricated IBC Building Code Compliant and Inspected Press Box
 - G. The grandstands shall be 11 Rows high as indicated on the plans
 - H. **Drawings included in the bidding documents are preliminary only. Grandstand supplier / installer shall be responsible for the final design and structural member sizing. Grandstand supplier / installer shall also be responsible for the grandstand foundation design and construction cost to be included in their bid.**
- 1.7 General Slope Dimensions:
- A. The distance between the seats and their respective footboards shall be 17".
 - B. The horizontal distance of back-to-back seat spacing shall be 32".
 - C. The vertical rise per row shall be 13".
- 1.8 Design:
- A. The grandstand shall be designed to support in addition to dead loads, a uniformly distributed live load of not less than 100 pounds per square foot of gross horizontal projections; a parallel sway load of 24 pounds per linear foot of seat, applied to the seat length, designed to resist a horizontal sway force; and in a direction perpendicular to the length of the seats of 10 pounds per linear foot of seats. Horizontal wind loads and seismic conditions shall be taken into consideration in the design to meet applicable building codes. Considering the above loads, all stresses shall not exceed those specified by the American Institute of Steel Construction.

2. PART 2 PRODUCTS

- 2.1 Manufacturers Represented by SAAFE, LLC – Contact Tim Tobin 612-250-9606
- A. Southern Bleacher Company, Graham TX
 - B. Builders First Source, Osakis, MN
 - C. Other manufacturers seeking to be approved must submit product literature and technical information to the Architect for review and approval seven days prior to bid date. Prior to bidding, Manufacturers must provide a list of a minimum of 5 (five) projects of similar product type and project size contracted and completed within the State of North Dakota within the last 3 years. Approval does not relieve the manufacturer of providing the minimum criteria mentioned above.
- 2.2 Grandstand Materials
- A. Support Under-Structure:
 - 1. All structural steel members shall be of ASTM-A36 steel.
 - 2. Shop connections are seal welds.
 - 3. After fabrication, all steel is hot-dipped galvanized to ASTM-A-123 specifications.

4. All steel shall be adequate size and location, reinforced as required to carry the necessary design loads per code. Weathering steel understructure will not be accepted.
5. Vertical columns shall be placed eighteen feet on center laterally
6. Stringers shall be structural wide flange I-beam, with welded angle configurations to form aluminum decking supports. Bolt on angles will not be accepted.
7. Horizontal girders shall be structural wide I-beam. (Wide -Span Only)
8. Longitudinal bays shall be cross-braced at a maximum of alternating bays, while front-to-back bays shall be entirely free of cross-bracing for storage purposes.
9. All bolts shall be high tensile strength when and where required.
10. Anchor bolts shall be hot dipped galvanized 3/4", a minimum of four bolts per column.

B. Seat Planks:

1. Seat planks shall be a single piece 2" by 10", actual dimensions to be a minimum of 9-1/2" wide by 1-1/2" deep.
2. Planks to be an aluminum extrusion with a fluted, non-skid surface; serration on the top, with the outside corners having a smooth radius.
3. The alloy to be 6063-T6; finish to be silver, 204-R1 anodized, conforming to the Aluminum Association Architectural Standards.
4. Planks to have an upturn on all legs to ensure a secure plank-to-clip bond.
5. All planking that is of 2" x 10" dimension or larger shall have a minimum of four structural legs. Wall thickness shall be a minimum of .078", +/- .006", at the smooth surface, and a minimum of .094", +/- .006", at the fluted surface.
6. Minimum weight per foot of the planks shall be 1.82 lbs.
7. Concealed dual sleeve inserts shall be provided to ensure vertical and horizontal alignment; allow for expansion and contractions by fastening at one end only. The sleeves shall be of aluminum alloy 6063-T6, mill finish, and a minimum of 18" in length. With a minimum of 9" penetration, the splice must withstand 120 pounds per foot at any point on a 6'0" span. Butt joints shall not be acceptable.
8. The end caps shall be channel, with a matching anodized finish, and secured to the underside of the plank. Die-formed, plastic, flush-mounted, or cast end caps will not be accepted
9. Seat backs shall be extruded aluminum with a factory applied, baked-on Kynar or Hylar/acrylic resin-based paint coating, Dur-Kyn, as manufactured by the Valspar Corporation. Dur-Kyn meets or exceeds the physical and performance properties of AAMA 2603. Colors shall be selected by the Owner from the manufacturer's standard colors.

C: Interlock Deck System

1. The tread system shall be comprised of aluminum extrusions which interlock together lengthwise and form a .922" x .60" V-shaped gutter running the length of the planks. The interlocking mechanism will

minimize deflection and not separate due to loads being applied to individual planks. The locking mechanism by design shall allow for expansion and contraction of individual planks without affecting performance of the system.

2. The system shall cause the deck planks to react together at all treads and crosswalks to live load and form the appearance of a single tread system. By design, this system forms a solid, overlapping tread and riser installation.
3. The nose extrusion shall allow for a 1" extruded aluminum contrasting nose piece to be flush mounted on the leading edge and shall capture the vertical riser plank in an extruded pocket. The heel extrusion shall have a .70" vertical lip at the rear of the plank to allow for placement of vertical riser plank and inhibit fluids from escaping at the rear of the tread.
4. These extrusions shall be such that the attachment of the seat brackets, step brackets, mid-aisle rails and all other components is accomplished without deck penetration. No through bolting or drilling of the aluminum tread/riser system shall be permitted.
5. The system shall allow for seat and aisle reconfiguration at any time without evidence of its previous configuration.
6. At all butt joint locations of the interlocking deck system, a secondary gutter shall be installed below the aluminum tread/riser system that allows fluids to be contained and gravity flow toward the first tread. This gutter will collect fluids and control them to specific areas. (Wide - Span Only)
7. The riser plate shall receive on the exposed surfaces, a factory applied, baked-on Kynar or Hylar/acrylic resin-based paint coating, Dur-Kyn, as manufactured by the Valspar Corporation. Dur-Kyn meets or exceeds the physical and performance properties of AAMA 2603. Colors shall be selected by the Owner from the manufacturer's standard colors.

D. Hardware:

1. Four-way adjustable bolt clips to adequately connect seats and footboards to the support structure shall be provided, transmitting all live and sway loads to the under-structure members so placed to resist these loads. Clips shall be aluminum; bolts to be 5/16" by 1-1/2" steel; bolts and nuts to be hot-dipped galvanized after fabrication, with an exterior coating of 3.2 mil. minimum.

E. Vertical Aisles:

1. The aisles shall be a minimum of 4'-6" wide and of proper placement to meet all applicable codes. Intermediate steps and aisle center rails shall be required by code.
2. Intermediate steps shall have a totally closed design. Material utilized shall be consistent with prior specifications.

3. At each step, including half steps, an aluminum nosing extrusion (minimum 1" x 1") of contrasting color shall be provided to delineate the horizontal and vertical plains of the stepping surfaces.

F. Guardrail System:

1. Lined rails of adequate size, location, and height shall be furnished for the back, and sides grandstand, as per applicable code and drawings.
2. Guardrail materials to be: minimum piping to be 1-5/8" O.D., schedule 40, anodized aluminum; vertical supports to be 3" x 3" x 1/4" aluminum.
3. Vertical supports shall be bolted to the steel support structure at a minimum of three locations.
4. Guardrails shall aluminum picket and plexiglass as indicated and located on the drawings..
5. All railing shall be designed so that any vertical post does not extend past the top of any horizontal top rail, nor shall a bolt be in or above the top rail, thus creating a snag-free top rail surface for gripping.

H. Footings:

1. Successful bidder shall include loads and calculations along with the shop drawings.

2.3 Press Box Materials

A. Scope of Work:

1. The press box structure must be "labeled" in accordance with the IBC 2018 Building Code and Minnesota Standards Division for Industrialized/Modular Buildings as accepted by the State of North Dakota
2. Shop drawings shall be signed/sealed by a structural engineer.
3. Furnish and completely install a press box conforming to the following specifications. Press box size to be (exterior dimensions): 8' x 12' as indicated on the plan.

B. Design Factors

1. Design load:

- a. Roof 100 P.S.F. live load, 40 P.S.F. snow load
- b. Walls 25 P.S.F. vertical projection, 8 P.S.F. dead load
- c. Floors 100 P.S.F. live load, 10 P.S.F. dead load

C. Components

1. Floor:

- a. Bottom Pan - 1/2" C.D.X. Fir Plywood, nailed to bottom of framing (floor joists). Bottom pan to be covered with corrugated, 29 gauge steel

panels (Dakota Steel and Steel - or Equal) - color to be chosen by Owner).

b. Sleepers - 2" x 6", second or better, Southern Yellow Pine, preservative treated with Osmose K-33 (or equiv. CCA or ACA) to minimum .4lb/cu. ft. retention.

c. Framing - 2" x 8", second or better, Southern Yellow Pine, 16" o.c. for 8' wide box or 12" o.c. for 9' box.

d. Floor Sheathing - Nominal 3/4" x 4 x 8 fir plywood or 3/4" x 4 x 8 T & G "Advantech" OSB; T & G - 2 long edges. Fiberglass Building Insulation R-19 6" thick in floor, Owens-Corning or equal.

e. Floor covering - 24 oz commercial grade, low nap carpeting (glued to subfloor).

2. Walls:

a. Interior Wall Finish (Applied over 1/2" wall sheathing) 3/8" x 4' x 8' FRP wall panels with matching manufactures trim.

b. 1/2" sheetrock or 1/2" CDX plywood interior wall sheathing.

c. Insulation to be R-11, 4" thick at ends and rear walls, 6" thick, R-19 at front wall.

d. End and rear walls to have 2" x 4" plates, second and better, SPF KD. 2" x 4" studs o be stud grade, placed 16" o.c. Front wall to be 2" x 6".

e. 2" x 10" SPF #2 headers on front walls.

f. Exterior Wall Sheathing – 1/2" CDX Fir Plywood. Wrap entire box with #30 felt covering.

g. Exterior Siding – Color to be chosen by Owner from manufacturer's standard range. All fastenings and edge trim to match panel's chosen color. Dakota Steel and Trim Sturdi-Drain 7/8" corrugated, 29 gauge siding, direct fastened panels.

3. Roof:

a. Rafters - 2" x 8", second or better, SPF KD, at 16" o.c. for 8' box or 12" o.c. for 9' box.

b. Subfacia - 2" x 8", second or better, SPF KD.

c. Sheathing - Nominal 3/4" x 4 x 8 fir plywood or 3/4" x 4 x 8 T & G "Advantech" OSB

d. Fascia - Rollex Aluminum Wood grain Fascia, Roof Edge and vented Soffit. Color to be chosen by Owner.

- e. Roofing - .060 EPDM rubber single ply membrane. Roof shall carry a five (5) year warranty. Flash around all roof penetrations to make roof watertight.
- 4.. Ceiling:
 - a. 1/2" sheetrock for firebreak.
 - b. R-19 insulation - unfaced fiberglass.
 - c. Armstrong, fire resistant suspended ceiling system (2 x 4 ceiling tiles).
- 5. Door and Windows:
 - a. Doors to be Acclimated Entry Systems, an out swing, model #HDA-108-010 steel door, w/steel frame. Door will be drilled for dead bolt.
 - b. Locks - Schalage entrance and dead bolt locks; keying same.
 - c. Windows to be horizontal slide gliders (Jeldwen Sitrine series) with low-E glass, a locking system, and full insect screens. Aluminum frame to be electrostatic painted (6 colors available). Both panels are to be removable.
 - d. Window size to be 5' long and 4' high and/or 6' long and 4' high, placed to maximize the window footage.
 - e. Interior mill work - Oak pre-finished base, casings, jambs, and interior doors. Oak interior doors to be H.C.
- 6. Interior Counter:
 - a. 18" wide custom-made countertop, by the full length of the press box. It will be elevated 30" above floor, and to be pre-molded countertop with Formica top. Shelf shall be adequately supported and attached to the front wall underneath the front windows. Support brackets to be constructed of welded aluminum angle. (Brackets must be situated between windows and under countertops so that they do not interfere with people sitting at the countertop.)
- 7. Electrical:
 - a. The prefabricated press box shall come with a completely finished electrical system. Feeder hookup to the panel and wires run inside existing conduit (see "F") to be completed by Electrical Contractor.
 - b. 100 Amp panel, and low voltage boxes, both to be located on rear wall.
 - c. Duplex outlets along rear wall, one per 6' of box.
 - d. Continuous plug mold 2000 along total length of front wall. Receptacles at 2'-0" o.c. Plug mold at 32" above floor, (above interior shelf and below windowsill
 - e. Ceiling lighting to be one LED fixture per six feet of press box length. Each fixture to be 48" long. Fixture to be high abuse premium type with impact resistant diffuser as manufactured by Lithonia Lighting.

f. Empty conduits for speaker wires, scoreboard control and other related functions shall be stubbed to outside of press box for hook-up by Electrical Contractor.

3. PART 3 EXECUTION

3.1 Inspection:

- A. Verify that areas to receive the grandstand and press box is free from impediments interfering with installation.
- B. Do not begin work until building conditions are satisfactory.
- C. Owner to provide adequate access to build the grandstand and set the press box by standard means.

3.2 Installation:

- A. Install grandstands, bleacher and press box in accordance with manufacturer's instructions and approved submittal drawings.

3.3 Guarantee:

- A. The grandstands, press box, chairs and installation shall be guaranteed against all defective materials and workmanship for a period of one year after date of completion.

END OF SECTION 133416

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01. PART 1 GENERAL**1. SUMMARY****A. Specification Format**

1. These Specifications are written in imperative and abbreviated form. This imperative language of the technical sections is directed at the Contractors, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall", and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, perform all indicated requirements whether stated imperatively or otherwise.
2. Three Part Format
 - a. "Part 1 - General": Covers those areas which relate to the Work, and which define the general administrative and technical requirements specific to a particular section.
 - b. "Part 2 - Products": Defines, in detail, the acceptance equipment and materials to be incorporated into the Work.
 - c. "Part 3 - Execution": Describes, in detail, the manner in which items covered by Part 2 are to be incorporated into the Work.
3. Where Codes, Specifications and Drawings are in conflict, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies immediately to the Engineer prior to commencing related work.

B. Definitions:

1. Furnish: Supply equipment as required by these Drawings and Specifications, delivered to the job site for installation or use by others.
2. Install: Fix in position for total operational use all apparatus as shown, specified or required. Provide all miscellaneous fittings and wiring supplies.
3. Or Approved Equal: Equipment or materials selected by Contractor subject to Engineer's acceptance.
4. Or Equivalent: Equipment or materials selected by Contractor matching the function and performance of equipment or materials listed.
5. Provide: Furnish and install in place, total and operational.
6. Complete/Completely: All pipes, fittings, wiring supplies, and accessories provided for the noted equipment from the equipment to the mains or noted termination points.

2. SCOPE OF WORK

- A. The work covered by this Division consists in furnishing all labor, equipment, accessories and materials and in performing all operations necessary for the installation of the

plumbing systems, in strict accordance with Division 22 of this Specification and applicable Drawings and subject to the terms and conditions of the Contract.

- B. Work of this Division is subject to requirements of Instructions to Bidders, General Conditions, Supplementary Conditions, Division One, and all other sections of this Specification.
- C. Examine site and all Contract documents prior to submittal of bid.
 - 1. Submittal of a Bid shall indicate the Contractor has examined the Site and Drawings and has included all required allowances in this Bid. No allowance shall be made for errors resulting from the Contractor's failure to visit job sites and to review Drawings.
- D. Division 22 Work: Includes, but is not limited to, providing the following:
 - 1. Potable Water Distribution System: Fixtures, piping, equipment.
 - 2. Waste and Vent Systems: Piping and specialties.
- 3. ALTERNATES
 - A. Refer to Division 01 for alternates.
- 4. CONTINGENCY
 - A. Refer to Division 01 for amount to include in Mechanical Bid.
- 5. SUBMITTALS
 - A. General:
 - 1. Preferred Submittal Format: PDF, unless otherwise noted.
 - 2. Preferred Submittal Nomenclature: Unless otherwise noted, PDF submittals are to be named according to the following:
 - a. [Specification Section Number] – [Specification Name or Equipment Included]
 - 3. Distribution: Unless otherwise noted, direct all correspondence concerning Division 22 submittals to:
 - a. Caleb Bulow, P.E.
 - b. PRAIRIE ENGINEERING, P.C.
 - c. 1905 17TH STREET SE
 - d. MINOT, ND 58701
 - e. cbulow@prairieengineeringpc.com
 - B. Substitution and Prior Approval to Quote:
 - 1. Format and Content: Complete descriptive technical data on the proposed item consisting of model numbers, type, size and performance characteristics.

2. Submission Timing: Minimum of 192 hours (eight days) prior to bid opening.
 - a. Substitutions will not be permitted after bid opening except where such substitution is considered by the Engineer to be in the best interest of the Owner.
3. Bidder Notification: Prior to bid opening via Addenda, sent to all planholders.
4. Contractor Responsibility: This contractor will be responsible for all coordination, construction costs, and Architectural/Engineering design fees required to substitute equipment that has different characteristics than designed including weights, physical dimensions, clearances, mechanical characteristics, electrical characteristics, and other characteristics deemed important to the design by the Architect/Engineer.
5. Alternative Format: Printed paper, two copies; Self-addressed, stamped envelope required for return reply.

C. Schedule of Values

1. Format and Content: When included with the Bid, at minimum the following categories shall be indicated:
 - a. "Project mobilization"
 - b. "Excavation and Backfill"
 - c. "Insulation"
 - d. "Domestic Water Piping System" (all piping, valves, shock arrestors, fittings, hangers, installed in place)
 - e. "Waste and Vent System" (all piping, valves, fittings, hangers, floor drains, interceptors, installed in place)
 - f. "Plumbing Fixtures" (all fixtures, faucets/flush valves, drain assemblies, water coolers, installed in place)
 - g. "Plumbing Equipment" (all water heaters, recirculation pumps, expansion tanks, storage tanks, installed in place)
2. Submission Timing: Prior to first payment application.

D. Shop Drawings

1. Distribution: Engineer via the Prime Contractor for each item indicated.
2. Format and Content: Include catalog numbers, performance data, dimensions and other descriptive information.
 - a. Contractor Review: Dated and signed cover sheet or review stamp for each Shop Drawing file to indicate thorough review. **Email message text not acceptable.**
 - b. Non-Conforming: Returned to Contractor without review.
3. Submission Timing: Prior to delivery of materials to job site.

E. Record Drawings

1. Format and Content: Paper copy of Drawings project site.
 - a. As work progresses, Contractor's field supervisor shall mark Record Drawings in red pencil to indicate actual conditions of installation.
 - b. Give particular attention to marking actual locations of underground piping.
 - c. Affix all addendum and change order descriptions to appropriate record drawing sheet, utilizing spray adhesive.
 - d. Make Record Drawings available to Engineer during project visitation.
 2. Submission Timing: Close of project with Record Manuals.
- F. Spare Equipment and Devices
1. Distribution: Owner.
 2. Format and Content: List quantities on contractor letterhead or invoice, obtain signature of Owner's representative acknowledging receipt, and include with each Record Manual.
 3. Submission Timing: Close of project with Record Manuals.
- G. Operation and Maintenance Manuals
1. Submission Timing: Close of project, as condition of its acceptance.
 2. Record Manual information shall be included for all equipment/material where Shop Drawings are required.
 3. Format and Content: Two copies, Loose-leaf hardcover binders, and in PDF format on CDs or USB drive.
 - a. List project name, date, Contractor's name, address and telephone number on exterior label of each Record Manual and CD.
 - b. Include an index sheet indicating subcontractor and subcontractor's phone number; and each major piece of equipment, supplier and supplier's telephone number. Provide tabbed dividers indicating major groupings of equipment.
 - c. Include a copy of the Shop Drawings.
 - d. Include all installation, operation and maintenance data packaged with any equipment.
 - e. Include all signed and dated final punch lists from walkthroughs performed by the Engineer.
6. APPLICATIONS FOR PAYMENT
- A. Refer to Division 1 "Applications for Payment".
 - B. Provide one additional copy, sent directly to the Engineer.
 - C. Schedule of Values: At minimum, include items in Submittal article.
7. CHANGES TO CONTRACT

- A. Any required changes to the contract after bid date shall be in accordance with General Conditions/Division 1 and this section. Where any discrepancies between the sections are encountered, the more restrictive section shall apply.
 - B. Proposed changes shall be accompanied with complete substantiating documentation.
 - 1. Provide an itemized list of quantities for materials, equipment, and supplies.
 - a. Include unit costs for each item and extended price.
 - b. Include unit labor for each item and extended time.
 - 2. Provide subcontractor proposals that include the same substantiating documentation.
 - 3. Provide quotations from suppliers for any specially ordered equipment.
 - C. Material costs shall be actual costs to the contractor, obtaining the materials through normal supply channels, including trade and quantity discounts. Utilizing "suggested pricing" from national pricing organizations for unit costs shall not be accepted. Upon request, the contractor or subcontractor shall submit evidence to substantiate the costs.
 - D. Labor units shall be industry accepted standard labor hours to perform one unit of work. If the work is being performed in a location that is not considered to be standard working conditions for that specific task, additional labor shall be itemized.
 - E. Labor rates shall be the actual rate paid for the workman category along with associated labor burden. Labor burden shall consist only of the mandatory fringe benefits, labor taxes, and labor insurances as affected by payroll. The owner reserves the right to reject any labor burden which is inconsistent with other similar contractors or where the fringe benefit cost is in excess of established labor agreements.
 - F. Subcontractors shall compute their costs in the same manner as the contractor. Subcontractors are subject to the same markup constraints as described herein.
 - G. For changes resulting in credit to the costs, no restocking fees for materials shall be applied by the contractor or subcontractors.
8. QUALITY ASSURANCE
- A. Qualifications of Installers
 - 1. For installation and testing, use only trained licensed and experienced workmen familiar with items required and manufacturer's recommended methods.
 - 2. In acceptance or rejection of installed work, no allowance will be made for lack of skill on the part of the workmen.
9. AUTHORITIES AND AGENCIES
- A. Materials, workmanship and installation: Comply with the latest editions of all applicable codes, local ordinances, industry standards, utility company regulations, insurance carrier requirements and these Specifications.

- B. Obtain and pay all permits, inspections, licenses and other charges pertaining to the Work. Upon completion of the Work, furnish proof of acceptance by proper agency having jurisdiction.
- C. Codes and standards shall include, but not necessarily be limited to, the following:
 - 1. International Energy Conservation Code (IECC);
 - 2. Uniform Plumbing Code;
 - 3. North Dakota State Building Code;
 - 4. International Building Code (IBC);
 - 5. International Mechanical Code (IMC);
 - 6. International Fuel Gas Code (IFC);
 - 7. National Fire Protection Association (NFPA) – Sections as adopted by authority having jurisdiction.
- D. The more stringent provisions shall govern where provisions of pertinent codes and standards conflict with these Specifications or Drawings. Where Codes, Specifications or Drawings differ with one another, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies to the Engineer immediately.
 - 1. Pertinent codes and standards shall not be cited to furnish less than specifically shown or specified.
 - 2. Meeting the minimum standards of the above Codes does not permit a lower grade of construction where Plans or Specifications call for workmanship or materials in excess of Code Requirements.
- E. 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.

10. GUARANTEE AND WARRANTY

- A. Except where otherwise noted, contractor shall guarantee materials, workmanship and the proper operation of equipment for a period of one year after Owner's beneficial use of the building or mechanical system. Contractor shall correct all equipment, material and workmanship found to be defective or non-conforming to the contract documents without cost to Owner during that one year period.
- B. Guarantee shall include trips to the project site by Contractor to adjust mechanical equipment as required, ensuring it is operating as intended.
- C. Specified guarantee shall not relieve Contractor from liability arising from improper installation or non-compliance with applicable codes.

11. TEMPORARY FACILITIES

- A. Refer to Special Conditions and/or Division 1 for details of temporary facilities.

12. NOMENCLATURE

- A. Pipe sizes listed are nominal pipe sizes throughout this Division except where otherwise noted.

02. PART 2 PRODUCTS

1. MATERIAL

- A. Material and equipment shall be as shown or specified. Provide material not specifically described but required for a complete and proper installation of the Work, subject to the acceptance of the Engineer.
- B. Potable-water piping and components shall comply with NSF 14 and NSF 61. Plastic piping components shall be marked with "NSF-pw."
- C. Owner will not be liable for material installed in non-compliance with codes, standards, and these Contract Documents.
- D. Fire Stop System material shall be by 3M "Fire Barrier", Metacaulk, Hilti, Nelson Firestop Products, or AD Fire.

2. ELECTRIC WIRING

- A. The Division 22 Contractor shall furnish all motors, special controls and electrical devices as specified herein for proper operation of the equipment furnished.
- B. Division 26 Contractor shall furnish and install, as required, disconnects, starters, switches, etc., and do all necessary power and control wiring including the installation of electrical devices such as thermostats, humidistats, remote control panels, etc., furnished separately by Division 22 Contractor, unless otherwise noted in Equipment Specifications.

03. PART 3 EXECUTION

1. GENERAL

- A. Engineer, Architect, or Owner shall not be responsible for the means, methods, techniques, sequences or procedures of construction selected by Contractor.
- B. Engineer, Architect, or Owner shall not be responsible for safety precautions and programs incidental to work of Contractor.
- C. It is the sole responsibility of Contractor to initiate, maintain, and supervise all safety precautions and programs in connection with the Work.

2. SURFACE CONDITIONS

- A. Prior to work of each Section of Division 22, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

- B. Verify that work of this Division may be installed in accordance with all pertinent codes, regulations and standards.

3. PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Division before, during and after installation and to protect the installed work and materials of all other trades.
- B. Plugs: Install in ends of uncompleted piping at end of each day or when work stops.
- C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

4. COORDINATION

- A. Order material in a timely fashion to assure it is on the job site when required.
- B. Coordinate installation of material with schedule of other trades to prevent unnecessary delay in construction schedule.
- C. Division 22 piping equipment installations shall comply with National Electrical Code requirements 110.26 "working spaces" and "dedicated spaces". Plumbing pipes shall not be installed in the space near electrical panels/equipment defined as "working spaces" or "dedicated spaces".

5. DISCREPANCIES, CONSTRUCTION CONFLICTS AND DRAWINGS

A. Discrepancies

- 1. Prior to submitting bid, Contractor shall refer any apparent discrepancies or omissions to Engineer for clarification.
- 2. The Architect, Engineer or Owner will not be responsible for any oral instructions or modifications to the contract documents prior to opening of bids.
- 3. Written interpretation or clarification will be made by Addenda.

B. Construction Conflicts

- 1. Conflicts discovered during construction shall be immediately called to the attention of the Engineer for decision.
- 2. Do not proceed with installation in area of question until conflict has been fully resolved.
- 3. When so directed by Engineer, Contractor shall make minor adjustment to avoid interferences with other trades. Such minor adjustments shall be performed at no additional cost to the Architect, Engineer or Owner.

C. Drawings

- 1. Drawings indicate extent and general layout of plumbing systems for project. Due to small scale, it is not possible to indicate all fittings and accessories that may be

required. Provide such fittings and accessories as required to form a complete and operating system in general conformance with Specifications and Drawings.

2. Exact locations, distances, levels and other conditions will be governed by the structure. Field measurements shall take precedence over the Drawings. Use the Drawings and these Specifications for guidance. Secure the Architect's approval for all changes in locations.
3. Verify all measurements at site. No compensation will be made because of difference between locations shown on the Drawings and measurements at the building.
4. Refer to the architectural drawings for dimensions and locations of walls, partitions, doors, windows, ceiling heights, door swings and other details of construction.

6. UNDERGROUND UTILITIES

- A. Locations of existing underground utilities are based on available site information and are shown approximately. Contractor shall determine exact utility locations before commencing work and shall be responsible for repair of damages resulting from his construction activities to pre-construction condition.
- B. Trench and backfill for installation of underground piping to depth shown or required. Remove any accumulated water in excavation by pumping. Shore and brace excavation as required by safety regulations. Provide temporary bridges to maintain normal traffic flow. Excavation and backfill required by mechanical installations shall be accomplished in accordance with Section 230590 Specifications by this Contractor.

7. OFFSETS

- A. Where required to allow clearance of ducts, electrical conduit and outlet boxes, beams, etc., to avoid interference with work of other trades, to increase head room under pipes or to improve the appearance of pipe work, this Contractor shall offset his pipes as directed by the Architect/Engineer.

8. CUTTING AND PATCHING

- A. Refer to General Conditions. Unless specifically called out to be performed by other Contractors, the Plumbing Contractor shall perform all cutting and patching required for the installation of material and equipment furnished under his Contract.
- B. Restore damaged surfaces to their original condition by skilled mechanics of the trade involved. Contractor at fault shall assume all cost.
- C. Use only rotary type drilling tools to cut concrete.
- D. Do not endanger the stability of the structure. Do not at any time cut or alter work of any other Contractor without Architect's consent.

9. FIELD QUALITY CONTROL

- A. Perform field tests and inspections. Test new piping and parts of existing piping that have been altered, extended, or repaired.

B. Piping Inspections:

1. Perform tests specified below in presence of authorities having jurisdiction:
 - a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
 - b. Final Inspection: Arrange for authorities having jurisdiction to observe tests to ensure compliance with requirements.

C. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained. Piping will be considered defective if it does not pass tests and inspections.

10. ADJUSTING

A. Perform the following domestic water adjustments before operation:

1. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.
2. Check plumbing specialties and verify proper settings, adjustments, and operation.

11. INSTRUCTIONS

- A. Provide written and oral operating and maintenance instructions to Owner's representatives. The oral instructions shall be given before the Owner occupies the buildings. Instructions to include **all** building's plumbing systems and equipment.
- B. Division 22 Contractor shall coordinate with Owner at Owner's convenience, formal instruction time for contractor personnel to instruct Owner's Representatives on all equipment. Provide similar equipment supplier's instructions where specified thus.
- C. Formal instructions shall be video recorded when required by other Sections of this Specification by this Contractor. Format shall be DVD. Formal instruction to be included with each Record Manual, being referenced to and a part of the Manual.

12. CLEAN UP

- A. Each Contractor shall be responsible for cleaning up after his work, including the removal of all scrap material left on the job by his men or Subcontractors. This will include the removal of all pipe cuttings, pieces of pipe and insulation and other debris.
- B. After all tests have been made and the plumbing systems are operating properly, this Contractor shall go over the entire system and remove labels from all plumbing fixtures and other plumbing equipment.
- C. All equipment having finished paint surfaces shall be examined upon completion for scratches and other damage. Touch up all surfaces as required with paint of color to match factory finish.

END OF SECTION 220500

01. PART 1 GENERAL

1. SECTION INCLUDES

A. Pipe markers.

2. SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturers catalog literature for each product required.

02. PART 2 PRODUCTS

1. PLUMBING COMPONENT IDENTIFICATION GUIDELINE

A. Pipe Markers: 3/4 inch diameter and higher.

2. PIPE MARKERS

A. Flexible Marker: Factory fabricated, semi-rigid, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid conveyed.

B. Flexible Tape Marker: Flexible, vinyl film tape with pressure-sensitive adhesive backing and printed markings.

03. PART 3 EXECUTION

1. PREPARATION

A. Degrease and clean surfaces to receive identification products.

2. INSTALLATION

A. Install plastic pipe markers in accordance with manufacturer's instructions.

B. Install plastic tape pipe marker around pipe in accordance with manufacturer's instructions.

END OF SECTION 220553

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Flexible elastomeric cellular insulation.
- B. Glass fiber insulation.
- C. Jacketing and accessories.

2. RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.

3. REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019, with Editorial Revision (2023).
- B. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2023.
- C. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2022a.
- D. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2023).
- E. ASTM C1423 - Standard Guide for Selecting Jacketing Materials for Thermal Insulation; 2021.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
- G. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.
- H. SAE AMS3779 - Tape, Adhesive, Pressure-Sensitive Thermal Radiation Resistant, Aluminum Coated Glass Cloth; 2016b.
- I. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

4. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

02. PART 2 PRODUCTS

1. REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2. GLASS FIBER INSULATION

A. Manufacturers:

1. CertainTeed Corporation: www.certainteed.com/#sle.
2. Johns Manville Corporation: www.jm.com/#sle.
3. Knauf Insulation: www.knaufinsulation.com/#sle.
4. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
5. Substitutions: See Section 230500 - HVAC General Provisions.

B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.

1. K Value: ASTM C177, 0.24 at 75 degrees F.
2. Maximum Service Temperature: 850 degrees F.
3. Maximum Moisture Absorption: 0.2 percent by volume.

C. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm.

D. Vapor Barrier Lap Adhesive: Compatible with insulation.

3. FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Manufacturers:

1. Aeroflex USA: www.aeroflexusa.com/#sle.
2. Armacell LLC: www.armacell.us/#sle.
3. K-Flex USA LLC: www.kflexusa.com/#sle.
4. Substitutions: See Section 230500 - HVAC General Provisions.

B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.

1. Minimum Service Temperature: Minus 40 degrees F.
2. Maximum Service Temperature: 220 degrees F.
3. Connection: Waterproof vapor barrier adhesive.

4. JACKETING AND ACCESSORIES

A. PVC Plastic Jacket:

1. Manufacturers:

- a. Johns Manville Corporation: www.jm.com/#sle.
 - b. Substitutions: See Section 230500 - HVAC General Provisions.
- 2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
 - a. Minimum Service Temperature: 0 degrees F.
 - b. Maximum Service Temperature: 150 degrees F.
 - c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
 - d. Thickness: 10 mil, 0.010 inch.
 - e. Connections: Brush on welding adhesive.
- B. ABS Plastic Jacket:
 - 1. Jacket: One piece molded type fitting covers and sheet material, off-white color.
 - a. Minimum Service Temperature: Minus 40 degrees F.
 - b. Maximum Service Temperature: 180 degrees F.
 - c. Moisture Vapor Permeability: 0.012 perm inch, when tested in accordance with ASTM E96/E96M.
 - d. Thickness: 30 mil, 0.03 inch.
 - e. Connections: Brush on welding adhesive.
- C. Reinforced Tape:
 - 1. FSK tape suitable for sealing seams between insulation, insulated pipe bends, and fittings resulting in a tight, smooth surface without wrinkles.
 - 2. Comply with UL 723 or ASTM E84.
 - 3. Moisture Vapor Permeability: 0.00 perm inch, when tested in accordance with ASTM E96/E96M.

03. PART 3 EXECUTION

- 1. EXAMINATION
 - A. Verify that piping has been tested before applying insulation materials.
 - B. Verify that surfaces are clean and dry, with foreign material removed.
- 2. INSTALLATION
 - A. Install in accordance with manufacturer's instructions.
 - B. Exposed Piping: Locate insulation and cover seams in least visible locations.
 - C. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.

- D. Glass fiber insulated pipes conveying fluids below ambient temperature:
 - 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
 - 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- E. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- F. For hot piping conveying fluids over 140 degrees F, insulate flanges and unions at equipment.
- G. Glass fiber insulated pipes conveying fluids above ambient temperature:
 - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples.
 - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- H. Inserts and Shields:
 - 1. Application: Piping 1-1/2 inches diameter or larger.
 - 2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
 - 3. Insert Location: Between support shield and piping and under the finish jacket.
 - 4. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
 - 5. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- I. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, see Section 078400
- J. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

3. SCHEDULES

- A. Domestic Hot Water Supply and Recirculating Water, 140 degree F and below:
 - 1. Glass Fiber Insulation: Aboveground.
 - 2. Elastomeric Cellular Insulation: Aboveground and belowground.
 - 3. 1-1/4" diameter pipe and smaller: 1" thick, R-4 minimum.

4. 1-1/2" diameter pipe and larger: 1-1/2" thick, R-6 minimum.
5. Domestic Cold Water:
 - a. Elastomeric Celular Insulation: Aboveground and belowground.
 - b. 1-1/4" diameter pipe and smaller: 1" thick, R-4 minimum.
 - c. 1-1/2" diameter pipe and larger: 1-1/2" thick, R-6 minimum.

END OF SECTION 220719

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Sanitary waste piping, buried within 5 feet of building.
- B. Sanitary waste piping, above grade.
- C. Domestic water piping, buried within 5 feet of building.
- D. Domestic water piping, above grade.
- E. Pipe flanges, unions, and couplings.
- F. Pipe hangers and supports.
- G. Ball valves.
- H. Butterfly valves.

2. RELATED REQUIREMENTS

- A. Section 312316 - Excavation.

3. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
- C. Project Record Documents: Record actual locations of valves.

4. QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.

5. DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

6. FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.

02. PART 2 PRODUCTS**1. GENERAL REQUIREMENTS**

- A. Potable Water Supply Systems: Provide piping, pipe fittings, solder, and flux (if used), complying with NSF 61 and NSF 372; label pipe and fittings.
 - B. Plenum-Installed Piping: Provide piping with flame spread index of 25 or less and smoke developed index of 50 or less when tested in accordance with ASTM E84 or UL 723.
2. SANITARY WASTE PIPING, BURIED WITHIN 5 FEET OF BUILDING
- A. Cast Iron Pipe: ASTM A74 extra heavy weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.
 - B. Cast Iron Pipe: CISPI 301, hubless.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.
 - C. PVC Pipe: ASTM D2665 or ASTM D3034.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.
3. SANITARY WASTE PIPING, ABOVE GRADE
- A. Cast Iron Pipe: ASTM A74, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.
 - B. Cast Iron Pipe: CISPI 301, hubless, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
 - C. PVC Pipe: ASTM D2665.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.
4. DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING
- A. Copper Pipe: ASTM B88 (ASTM B88M), Type L, drawn temper.
 - 1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
 - 2. Joints: ASTM B32, solder.

3. Mechanical Press Sealed Fittings: ASME B16.51 or IAPMO/ANSI/CAN Z1117, ICC (IPC), and IAPMO (UPC) approved, NSF 61 and NSF 372 certified, with EPDM seals.
 - a. Manufacturers:
 - 1) Bonomi North America, Inc: www.bonominorthamerica.com/#sle.
 - 2) FNW: www.fnw.com/#sle.
 - 3) Mueller Streamline, Co: www.muellerstreamline.com/#sle.
 - 4) NIBCO INC: www.nibco.com/#sle.
 - 5) Substitutions: See Section 016000 - Product Requirements.
- B. Cross-Linked Polyethylene (PEX) Pipe: ASTM F876 or ASTM F877.
 1. Manufacturers:
 - a. Uponor, Inc: www.uponorengineering.com/#sle.
 - b. Zurn Industries, LLC: www.zurn.com/#sle.
 - c. Substitutions: See Section 016000 - Product Requirements.
 2. PPI TR-4 Pressure Design Basis:
 3. Fittings: Brass and copper.
 4. Fittings: Brass and engineered polymer (EP) ASTM F1960.
 5. Joints: Mechanical compression fittings.
 6. Joints: ASTM F1960 cold-expansion fittings.
5. DOMESTIC WATER PIPING, ABOVE GRADE
 - A. Copper Pipe: ASTM B88 (ASTM B88M), Type L or K, Drawn (H).
 1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
 2. Joints: ASTM B32 solder.
 3. Joints: Grooved mechanical couplings.
 4. Mechanical Press Sealed Fittings: ASME B16.51 or IAPMO/ANSI/CAN Z1117, ICC (IPC), and IAPMO (UPC) approved, NSF 61 and NSF 372 certified, with EPDM seals.
 - a. Manufacturers:
 - 1) Anvil International: www.anvilintl.com/#sle.
 - 2) Apollo Valves: www.apollovalves.com/#sle.
 - 3) Bonomi North America, Inc: www.bonominorthamerica.com/#sle.
 - 4) FNW: www.fnw.com/#sle.
 - 5) Mueller Streamline, Co: www.muellerstreamline.com/#sle.
 - 6) NIBCO INC: www.nibco.com/#sle.
 - 7) Substitutions: See Section 220500 - Plumbing General Provisions.

- B. CPVC Pipe: ASTM D2846/D2846M, ASTM F441/F441M, or ASTM F442/F442M.
 - 1. Fittings: CPVC; ASTM D2846/D2846M, ASTM F437, ASTM F438, or ASTM F439.
 - 2. Joints: ASTM D2846/D2846M, solvent weld with ASTM F493 solvent cement.
- C. Cross-Linked Polyethylene (PEX) Pipe: ASTM F876 or ASTM F877.
 - 1. Manufacturers:
 - a. SharkBite, a brand of Reliance Worldwide Corporation: www.sharkbite.com/#sle.
 - b. Uponor, Inc: www.uponorengineering.com/#sle.
 - c. Zurn Industries, LLC: www.zurn.com/#sle.
 - d. Substitutions: See Section 016000 - Product Requirements.
 - 2. PPI TR-4 Pressure Design Basis:
 - 3. Fittings: Brass and copper.
 - 4. Fittings: Brass and engineered polymer (EP) ASTM F1960.
 - 5. Joints: Mechanical compression fittings.
 - 6. Joints: ASTM F1960 cold-expansion fittings.
- 6. PIPE FLANGES, UNIONS, AND COUPLINGS
 - A. Unions for Pipe Sizes 3 inch and Under:
 - 1. Ferrous Pipe: Class 150 malleable iron threaded unions.
 - 2. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.
 - B. Flanges for Pipe Sizes Over 1 inch:
 - 1. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
 - C. No-Hub Couplings:
 - 1. Testing: In accordance with ASTM C1277 and CISPI 310.
 - 2. Gasket Material: Neoprene complying with ASTM C564.
 - 3. Band Material: Stainless steel.
 - 4. Eyelet Material: Stainless steel.
 - D. Shielded, Heavy Duty No-Hub Couplings:
 - 1. Testing: In accordance with ASTM C1540 and FM 1680.
 - 2. Gasket Material: Neoprene complying with ASTM C564.
 - 3. Band Material: Stainless steel.
 - 4. Eyelet Material: Stainless steel.

7. PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 - 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 - 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 - 4. Vertical Pipe Support: Steel riser clamp.
 - 5. Floor Supports: Concrete pier or steel pedestal with floor flange; fixture attachment.
 - 6. Rooftop Supports for Low-Slope Roofs: Steel pedestals with bases that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified; and as follows:
 - a. Bases: High-density polypropylene.
 - b. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
 - c. Steel Components: Stainless steel or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
 - d. Attachment and Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion-resistant material.
 - e. Height: Provide minimum clearance of 6 inches under pipe to top of roofing.
- B. Plumbing Piping - Drain, Waste, and Vent:
 - 1. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
 - 2. Hangers for Pipe Sizes 2 inch and Over: Carbon steel, adjustable, clevis.
 - 3. Wall Support for Pipe Sizes to 3 inch: Cast iron hook.
 - 4. Wall Support for Pipe Sizes 4 inch and Over: Welded steel bracket and wrought steel clamp.
 - 5. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- C. Plumbing Piping - Water:
 - 1. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
 - 2. Hangers for Cold Pipe Sizes 2 inch and Over: Carbon steel, adjustable, clevis.
 - 3. Hangers for Hot Pipe Sizes 2 to 4 inch: Carbon steel, adjustable, clevis.
 - 4. Wall Support for Pipe Sizes Up to 3 inch: Cast iron hook.

5. Wall Support for Pipe Sizes 4 inch and Larger: Welded steel bracket and wrought steel clamp.
 6. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 7. Floor Support for Hot Pipe Sizes to 4 inch: Cast iron adjustable pipe saddle, locknut, nipple, floor flange, and concrete pier or steel support.
- D. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
1. Concrete Wedge Expansion Anchors: Comply with ICC-ES AC193.
 2. Masonry Wedge Expansion Anchors: Comply with ICC-ES AC01.
 3. Concrete Screw Type Anchors: Comply with ICC-ES AC193.
 4. Masonry Screw Type Anchors: Comply with ICC-ES AC106.
 5. Concrete Adhesive Type Anchors: Comply with ICC-ES AC308.
 6. Other Types: As required.
8. BALL VALVES
- A. Manufacturers:
1. Anvil International: www.anvilintl.com/#sle.
 2. Apollo Valves: www.apollovalves.com/#sle.
 3. Victaulic Company: www.victaulic.com/#sle.
 4. Uponor, Inc: www.uponorengineering.com/#sle.
 5. Milwaukee Valve Company.
 6. Nexus Valve.
 7. NIBCO INC.
 8. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 9. Viega, LLC.
 10. Substitutions: See Section 220500 - Plumbing General Provisions.
- B. Construction, 4 inch and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.
9. BUTTERFLY VALVES
- A. Manufacturers:
1. Anvil International: www.anvilintl.com/#sle.
 2. Apollo Valves: www.apollovalves.com/#sle.
 3. Milwaukee Valve Company.
 4. Nexus Valve.

5. NIBCO INC.
 6. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 7. Viega, LLC.
 8. Substitutions: See Section 220500 - Plumbing General Provisions.
- B. Construction 1-1/2 inch and Larger: MSS SP-67, 200 psi CWP, cast or ductile iron body, nickel-plated ductile iron disc, resilient replaceable EPDM seat, wafer ends, extended neck, 10 position lever handle.
- C. Provide gear operators for valves 8 inches and larger, and chain-wheel operators for valves mounted over 8 feet above floor.

03. PART 3 EXECUTION

1. EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

2. PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3. INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- G. Provide access where valves and fittings are not exposed.
- H. Establish elevations of buried piping outside the building.
1. Not less than 8 ft of cover for domestic water piping.
 2. Not less than 5 ft of cover for waste piping except where otherwise noted on the Drawings.
- I. Install vent piping penetrating roofed areas to maintain integrity of roof assembly.

- J. Provide support for utility meters in accordance with requirements of utility companies.
 - K. Excavate and backfill in accordance with Division 31.
 - L. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
 - M. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
 - N. Sleeve pipes passing through partitions, walls, and floors.
 - O. Inserts:
 - 1. Provide inserts for placement in concrete formwork.
 - P. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9.
 - 2. Support horizontal piping as indicated.
 - 3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
 - 4. Place hangers within 12 inches of each horizontal elbow.
 - 5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 - 6. Provide copper plated hangers and supports for copper piping.
 - Q. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.
4. APPLICATION
- A. Install unions downstream of valves and at equipment or apparatus connections.
 - B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
 - C. Provide flow controls in water recirculating systems where indicated.
5. TOLERANCES
- A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per foot slope.
 - B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.
6. FIELD TESTS AND INSPECTIONS
- A. Verify and inspect systems according to requirements by the Authority Having Jurisdiction. In the absence of specific test and inspection procedures proceed as indicated below.

B. Domestic Water Systems:

1. Perform testing for leakage prior to system disinfection.
2. Test Preparation: Close each fixture valve or disconnect and cap each connected fixture.
3. General: Pressure test at minimum of 125 psi for two hours.

C. Sewer, Soil, Waste, Drain and Vent Piping:

1. Procedure: Close all openings and pressurize with air.
2. Pressure: Minimum of 5 psig.
3. Duration: 15 minutes.
4. System may be tested in its entirety or in sections.

D. Test Results: Document and certify successful results, otherwise repair, document, and retest.

7. DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Clean interior of domestic water, septic, and vent piping systems. Remove dirt and debris as work progresses. Prior to starting work, verify system is complete, flushed, and clean.

B. New potable water systems shall be disinfected prior to use whenever required by the Authority having jurisdiction. The method to be followed shall be that prescribed by the Health Authority or, in case no method is prescribed by the Health Authority, the following: Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.

1. Flush piping system with clean, potable water until dirty water does not appear at outlets.
2. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.
3. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
4. Maintain disinfectant in system for 24 hours.
5. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
6. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
7. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

8. SCHEDULES

A. Pipe Hanger Spacing:

1. Metal Piping:
 - a. Pipe Size: 1/2 inch to 1-1/4 inch:

- 1) Maximum Hanger Spacing: 6.5 ft.
 - 2) Hanger Rod Diameter: 3/8 inches.
 - b. Pipe Size: 1-1/2 inch to 2 inch:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 3/8 inch.
 - c. Pipe Size: 2-1/2 inch to 3 inch:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 1/2 inch.
 - d. Pipe Size: 4 inch to 6 inch:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 5/8 inch.
- 2. Plastic Piping:
 - a. All Sizes:
 - 1) Maximum Hanger Spacing: 6 ft.
 - 2) Hanger Rod Diameter: 3/8 inch.

END OF SECTION 221005

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Drains.
- B. Cleanouts.
- C. Hydrants.
- D. Ice maker outlet boxes.
- E. Water hammer arrestors.
- F. Sanitary waste interceptors.
- G. Mixing valves.
- H. Relief valves.

2. SUBMITTALS

- A. See Section 220500 - Plumbing General Provisions for submittal procedures.
- B. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.
- C. Shop Drawings: Indicate dimensions, weights, and placement of openings and holes.
- D. Manufacturer's Instructions: Indicate Manufacturer's Installation Instructions: Indicate assembly and support requirements.
- E. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.
- F. Project Record Documents: Record actual locations of equipment, cleanouts, backflow preventers, and water hammer arrestors.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Loose Keys for Outside Hose Bibbs: One.
 - 2. Extra Hose End Vacuum Breakers for Hose Bibbs: One.

3. QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years documented experience.

4. DELIVERY, STORAGE, AND HANDLING

- A. Accept specialties on site in original factory packaging. Inspect for damage.

02. PART 2 PRODUCTS**1. GENERAL REQUIREMENTS**

- A. Specialties in Potable Water Supply Systems: Provide products that comply with NSF 61 and NSF 372 for maximum lead content.

2. DRAINS

A. Manufacturers:

1. Josam Company: www.josam.com/#sle.
2. MIFAB, Inc: www.mifab.com/#sle.
3. Sioux Chief Manufacturing.
4. Watts Drainage Products.
5. Zurn Industries, LLC: www.zurn.com/#sle.
6. Substitutions: See Section 220500 - Plumbing General Provisions.

B. Floor Drains:

1. ASME A112.6.3; lacquered cast iron or stainless steel, two piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer.
2. Pre-packaged shims for tilt correction.

C. Prefabricated Trench Drain: Trench drain system assembled from factory fabricated, polymer concrete castings in standard lengths and variable depths, with integral joint flanges and integral grating support rails; includes joint gaskets and grating.

1. Grate for Kitchen Application: Slotted stainless steel; Load Class A, 0-60 psi, light duty.

D. Floor Sink:

1. Square lacquered cast iron body with integral seepage pan, epoxy coated interior, _____ dome strainer, _____, full grate.

3. CLEANOUTS

A. Manufacturers:

1. Jay R. Smith Manufacturing Company: www.jrsmith.com/#sle.
2. Josam Company: www.josam.com/#sle.
3. MIFAB, Inc: www.mifab.com/#sle.
4. Sioux Chief Manufacturing Company, Inc.
5. Watts Drainage Products.
6. Zurn Industries, LLC: www.zurn.com/#sle.

7. Substitutions: See Section 220500 - Plumbing General Provisions.

B. Cleanouts at Interior Finished Floor Areas:

1. Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round gasketed scored cover in service areas and round gasketed depressed cover to accept floor finish in finished floor areas.

C. Cleanouts at Interior Finished Wall Areas:

1. Soil pipe test tee body, match material to connected piping.
2. Raised head, threaded plug.
3. Round stainless steel access cover secured with machine screw.

4. HYDRANTS

A. Manufacturers:

1. Jay R. Smith Manufacturing Company: www.jrsmith.com/#sle.
2. WADE: www.wadedrains.com/#sle.
3. Zurn Industries, LLC: www.zurn.com/#sle.

B. Wall Hydrants:

1. ASSE 1019; freeze resistant, self-draining type with finish as scheduled, hose thread spout, and integral vacuum breaker.
 - a. Operation: As scheduled. For loose key, provide one key with each hydrant.

5. ICE MAKER OUTLET BOXES

A. Manufacturers:

1. IPS Corporation/Water-Tite: www.ipscorp.com/#sle.
2. Oatey Supply Chain Services, Inc: www.oatey.com/#sle.
3. Zurn Industries, LLC: www.zurn.com/#sle.
4. Precision Plumbing Products.
5. Sioux Chief Manufacturing Company, Inc.
6. Substitutions: See Section 220500 - Plumbing General Provisions.

B. Description: Plastic preformed square or round rough-in box with brass quarter-turn ball valve, and slip-in finishing cover.

C. Accessories:

1. Support brackets for installation between framing studs.

6. WATER HAMMER ARRESTORS

A. Manufacturers:

1. AMTROL, Inc.
2. Josam Company.
3. Sioux Chief Manufacturing Company, Inc.
4. Jay R. Smith Manufacturing Company: www.jrsmith.com/#sle.
5. Watts Regulator Company, a part of Watts Water Technologies:
www.wattsregulator.com/#sle.
6. Tyler Pipe; Wade Div.
7. Zurn Industries, LLC: www.zurn.com/#sle.
8. Substitutions: See Section 220500 - Plumbing General Provisions.

B. Water Hammer Arrestors:

1. Copper construction, bellows type sized in accordance with PDI-WH 201, precharged suitable for operation in temperature range minus 100 to 300 degrees F and maximum 250 psi working pressure.

7. SANITARY WASTE INTERCEPTORS

A. Manufacturers:

1. Jay R. Smith Manufacturing Company: www.jrsmith.com/#sle.
2. MIFAB, Inc: www.mifab.com/#sle.
3. Zurn Industries, LLC: www.zurn.com/#sle.
4. Substitutions: See Section 220500 - Plumbing General Provisions .

B. Grease Interceptors:

1. Construction:
 - a. Material: High-density polyethylene.
 - b. Rough-in: Fully recessed (shallow rough-in) with anchor flange.
 - c. Cover: Steel, epoxy coated, non-skid with gasket, securing handle, and enzyme injection port, recessed for floor finish.
2. Additional Manufacturers:
 - a. Schier Products.
 - b. Zurn Industries, LLC: www.zurn.com/#sle.
 - c. Substitutions: See Section 220500 - Plumbing General Provisions.

8. MIXING VALVES

A. Automatic Temperature Control Mixing Valves:

1. Description: Primary domestic hot water mixing station with digitally controlled mixing valve incorporated into a factory assembled and tested pre-piped manifold system.

2. Manufacturers:
 - a. Leonard Valve Company: www.leonardvalve.com/#sle.
 - b. Watts Water Technologies; POWERS: www.watts.com/#sle.
 - c. Powers; Watts Water Technologies, Inc.
 - d. Substitutions: See Section 220500 - Plumbing General Provisions.
3. Valve: Cast brass body with rough bronze finish, actuator operated, integral temperature adjustment.
4. Controller: Programmable on site without special equipment. Modulate valve to control outlet temperature. Control recirculation pump based on user-set return temperature limits.
 - a. Outlet Temperature Control: Adjustable between 80-140°F, setpoint of 120°F, password protected. Digitally monitor inlet and outlet temperatures.
 - b. Display: Full color, touch-screen.
 - c. Setpoint Adjustments: Ability to receive setpoints from BAS.
 - d. Reporting: Send inlet and outlet temperatures to BAS.
5. Accessories:
 - a. Shut-off valve on outlet.
 - b. Stem thermometer on outlet.

9. RELIEF VALVES

- A. Manufacturers:
 1. ITT Bell & Gossett: www.bellgossett.com/#sle.
 2. Substitutions: See Section 220500 - Plumbing General Provisions.
- B. Bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labelled.

03. PART 3 EXECUTION

1. INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor or wall surface.
 1. Encase exterior cleanouts in concrete flush with grade.
 2. Install floor cleanouts at elevation to accommodate finished floor.
- C. Install approved potable water protection devices on plumbing lines where contamination of domestic water may occur; on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, interior and exterior hose bibbs.

1. Test each pressure vacuum breaker, backflow preventer according to authorities having jurisdiction and the device's reference standard.
 - D. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to fast closing valves such as flush valves.
2. DRAINS
 - A. Protect drains during construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
 - B. Trench drains shall be furnished by this Contractor and turned over to the General Contractor for installation. This Contractor shall provide all piping.
 - C. Floor Drains:
 1. Set grates flush with finished floor, unless otherwise indicated.
 2. Size same as drainage piping.
 3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
3. CLEANOUTS
 - A. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil.
 1. Ensure clearance at cleanout for rodding of drainage system.
 - B. Encase exterior cleanouts in concrete flush with grade.
 - C. Floor Cleanouts: Install at elevation to accommodate finished floor.
 - D. Wall Cleanouts: Install chrome access covers.
 - E. Location:
 1. At each aggregate change in direction of piping greater than 135 degrees.
 2. Intervals of 75 feet, minimum.
 3. At base of each vertical soil and waste stack.
 - F. Sizing Schedule, unless otherwise indicated:
 1. Up to 4" Drain Pipe : Size same as drainage piping.
 2. Above 4" up to 6": 4" cleanout.
4. MASTER MIXING STATION
 - A. Install per manufacturer instructions.
 - B. Electrical power connection by the Electrical Contractor.
 - C. This contractor is responsible for all low voltage and control wiring required by the unit.

- D. Mount to wall or on supports mounted on a 4" concrete housekeeping pad.
5. SANITARY WASTE INTERCEPTORS
- A. Interceptor mounted flush with concrete floor shall be furnished by this Contractor and turned over to the General Contractor for installation. This Contractor shall provide all piping and accessories.
 - B. It is this Contractor's responsibility to field verify all piping inverts into and out of the interceptors to provide the correct extension/riser lengths to maintain the scheduled minimum solid and liquid capacities. Extension/riser lengths shall not result in reduced interceptor capacity.
 - C. Unless otherwise noted, install cleanouts at the inlets and outlets of all interceptors.
 - D. Install all interceptors with clear space for servicing.
 - E. Grease Interceptors:
 - 1. Install grease interceptors, including trapping, venting, and flow-control fitting, according to authorities having jurisdiction and with clear space for servicing.
 - 2. Flush with Floor Installation: Set unit and extension, if required, with cover flush with finished floor.
 - 3. Install cleanout immediately downstream from interceptors not having integral cleanout on outlet.

END OF SECTION 221006

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Gas-fired water heaters.
- B. Potable water expansion tanks.
- C. Water filters.
- D. In-line circulator pumps.

2. SUBMITTALS

- A. See Section 220500 - Plumbing General Provisions for submittals procedures.
- B. Product Data:
 - 1. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
 - 2. Provide electrical characteristics and connection requirements.
- C. Shop Drawings:
 - 1. Indicate dimensions of tanks, tank lining methods, anchors, attachments, lifting points, tapings, and drains.
- D. Project Record Documents: Record actual locations of components.
- E. Operation and Maintenance Data: Include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

3. QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

4. DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

5. WARRANTY

- A. Water Heaters

1. Manufacturer's standard form in which manufacturer agrees to repair or replace components that fail in materials or workmanship for not less than one year from the date of Substantial Completion.

02. PART 2 PRODUCTS

1. WATER HEATERS

A. Manufacturers:

1. A.O. Smith Water Products Co: www.hotwater.com/#sle.
2. Bock Water Heaters, Inc: www.bockwaterheaters.com/#sle.
3. Bradford White Corporation: www.bradfordwhite.com/#sle.
4. Rheem Manufacturing Company: www.rheem.com/#sle.
5. State Water Heaters.
6. Substitutions: See Section 220500 - Plumbing General Provisions.

B. Gas-Fired Water Heaters:

1. Type: Automatic, propane-fired, vertical storage.
2. Minimum Efficiency Required: ASHRAE Std 90.1 I-P.
3. Performance: As scheduled.
4. Tank: Glass lined welded steel with single flue passage, flue baffle and draft hood; thermally insulated and encased in corrosion-resistant steel jacket; baked-on enamel finish; floor shield and legs.
5. Controls: Automatic water thermostat and built-in gas pressure regulator; temperature range adjustable from 120 to 170 degrees F, cast iron or sheet metal burner, hot surface ignition and power venter.
6. Accessories:
 - a. Water Connections: Brass.
 - b. Dip Tube: Brass.
 - c. Drain valve.
 - d. Anode: Magnesium.
 - e. Temperature and Pressure Relief Valve: ASME labeled.

2. POTABLE WATER EXPANSION TANKS

A. Manufacturers:

1. Amtrol Inc: www.amtrol.com/#sle.
2. Armstrong Pumps, Inc.
3. Bell & Gossett, a brand of Xylem, Inc: www.bellgossett.com/#sle.
4. Taco, Inc: www.taco-hvac.com/#sle.

5. Wilkins.
 6. Watts.
 7. American Wheatley, a company of Global Flow Products, LLC; _____
: www.wheatleyhvac.com/#sle.
 8. Substitutions: See Section 220500 - Plumbing General Provisions.
- B. Construction: Welded steel, tested and rated for working pressure of 125 psig, with flexible EPDM diaphragm sealed into tank.
- C. Accessories: Pressure gauge and air-charging fitting, tank drain; precharge to 12 psig.
3. WATER FILTERS
- A. Manufacturers:
1. EcoWater Systems LLC: www.ecowater.com/#sle.
 2. North Star Water Treatment Systems: www.northstarwater.com/#sle.
 3. Antunes.
 4. Substitutions: See Section 220500 - Plumbing General Provisions.
- B. Commercial:
1. Sysetm: Self-cleaning ultrafilter; chlorine cartridge; template-assisted crystallization cartridge.
 2. Filter Media: Activated carbon.
 3. Nominal Pore Size: 0.015 microns.
 4. Tank: Glassfiber reinforced plastic tank with control valve.
 5. Flow Rate: 8 gpm.
 6. Provide capped backwash, carbon refill, and sediment removal access.
 7. Drinking Water Service: NSF 61 certified in compliance with ICC (IPC).
- C. Maximum Operating Pressure: 100 psi.
- D. Electrical: 120/1/60, 10 watts, cord and plug.
1. Provide adjustable flush timer.
4. CIRCULATOR PUMPS
- A. Manufacturers:
1. Armstrong Fluid Technology: www.armstrongfluidtechnology.com/#sle.
 2. Bell & Gossett, a brand of Xylem, Inc: www.bellgossett.com/#sle.
 3. Grundfos Pumps Corporation: www.grundfos.com/#sle.
 4. Taco, Inc: www.tacocomfort.com/#sle.
 5. Thrush Company.

6. Wilo USA, LLC.
 7. Substitutions: See Section 220500 - Plumbing General Provisions.
- B. Wet Rotor Circulators:
1. Casing: Bronze with NPT, union, or flanged connections.
 2. Impeller: Non-metallic.
 3. Pump Shaft: Ceramic.
 4. Pump Bearings: Carbon.
 5. Motor: Single or multi-speed stainless steel replaceable cartridge design.
- C. Controls: Provide aquastat set for high-temp cutoff, electric plug, and illuminated hand switch.

03. PART 3 EXECUTION

1. INSTALLATION

- A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions required for applicable certifications.
- B. Equipment Connections:
- C. Pumps:
1. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.
 2. Hot Water Recirculation Pumps:
 - a. Install thermostats in hot-water return piping.
 - b. Install timers in accessible location on wall near hot water heater.
 - c. Adjust domestic water pumps to function smoothly and lubricate as recommended by manufacturer.
 - d. Adjust initial temperature set points.

2. WATER HEATERS

- A. If any device, fixture, or panel is required to be wall mounted by this contractor, provide AC Plywood, 3/4" or 5/8" thickness, painted both sides with fireproof paint, color to be determined and coordinated with owner. Paint is required even if installed on a non-fire rated wall.
- B. Residential, Water Heater Mounting: Install residential, water heaters on floor, or on water-heater stand on floor if required to be elevated 18".
- C. Install water heaters level and plumb, according to layout drawings, original design, and referenced standards. Maintain manufacturer's recommended clearances.

1. Install combination temperature-and-pressure relief valves in top portion of storage tanks. Use relief valves with sensing elements that extend into tanks. Extend water-heater relief-valve outlet, with drain piping same as domestic-water piping in continuous downward pitch, and discharge by positive air gap onto closest floor drain.
 2. Install shutoff valves on water-supply piping to water heaters and on hot-water outlet piping.
 3. Where installing piping adjacent to water heaters, allow space for service and maintenance of water heaters. Arrange piping for easy removal of water heaters.
 - D. Install gas-fired water heaters according to NFPA 54.
 1. Install gas shutoff valves on gas supply piping to gas-fired water heaters.
 2. Install condensate drain piping same as domestic-water piping in continuous downward pitch, and discharge by positive air gap onto closest floor drain.
3. **FIELD QUALITY CONTROL**
 - A. **Cleaning:**
 1. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed, use procedure described in section 220500 - Plumbing General Provisions.

END OF SECTION 223000

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Flush valve water closets.
- B. Wall hung urinals.
- C. Lavatories.
- D. Under-lavatory pipe supply covers.
- E. Shower receptors.
- F. Mop sinks.

2. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

3. WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.

02. PART 2 PRODUCTS**1. GENERAL REQUIREMENTS**

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2. REGULATORY REQUIREMENTS

- A. Comply with applicable codes for installation of plumbing systems.
- B. Perform work in accordance with local health department regulations.

3. FLUSH VALVE WATER CLOSETS

- A. Water Closets:
 - 1. Vitreous china, ASME A112.19.2, floor mounted, siphon jet flush action, china bolt caps.
 - 2. Bowl: ASME A112.19.2; elongated rim.

- a. ADA Rim Height: 17"
 - b. Standard Rim Height: 15"
 3. Flush Valve: Exposed (top spud).
 4. Flush Operation: Sensor operated.
 5. Handle Height: 44 inches or less.
 6. Color: White.
 7. Manufacturers:
 - a. American Standard, Inc: www.americanstandard-us.com/#sle.
 - b. Kohler Company: www.kohler.com/#sle.
 - c. Mansfield Plumbing Products LLC: www.mansfieldplumbing.com/#sle.
 - d. PROFLO: www.ferguson.com/#sle.
 - e. Zurn Industries, LLC: www.zurn.com/#sle.
 - f. TOTO
 - g. Substitutions: See Section 220500 - Plumbing General Provisions.
- B. Flush Valves:
 1. Valve Supply Size: 1 inch.
 2. Manufacturers:
 - a. American Standard, Inc: www.americanstandard-us.com/#sle.
 - b. Delany Products: www.delanyproducts.com/#sle.
 - c. Sloan Valve Company: www.sloanvalve.com/#sle.
 - d. Zurn Industries, LLC: www.zurn.com/#sle.
 - e. TOTO
 - f. Substitutions: See Section 220500 - Plumbing General Provisions.
 3. Sensor-Operated:
 - a. Type: ASME A112.19.5; chloramine-resistant clog-resistant dual-seat diaphragm valve complete with vacuum breaker, stops and accessories.
 - b. Mechanism: Solenoid-operated piston or electronic motor-actuated operator with low-voltage powered infrared sensor, and mechanical override or override push button.
 - c. Supplied Volume Capacity: 1.2 gal per flush.
 - d. Battery Type: Standard battery sizes only. Proprietary batteries not acceptable.
 4. Concealed Type: Rough brass, exposed parts chrome-plated, wall escutcheon, wheel handle stop.
 5. Exposed Type: Chrome-plated, escutcheon, integral screwdriver stop.
- C. Toilet Seats:

1. Manufacturers:
 - a. American Standard, Inc: www.americanstandard-us.com/#sle.
 - b. Bemis Manufacturing Company: www.bemismfg.com/#sle.
 - c. Church Seat Company: www.churchseats.com/#sle.
 - d. PROFLO: www.ferguson.com/#sle.
 - e. Zurn Industries, LLC: www.zurn.com/#sle.
 - f. TOTO
 - g. Substitutions: See Section 220500 - Plumbing General Provisions.
2. Plastic: Black finish, open front, extended back, self-sustaining hinge, brass bolts, with cover.

4. WALL HUNG URINALS

- A. Manufacturers:
 1. Crane.
 2. American Standard, Inc: www.americanstandard-us.com/#sle.
 3. Gerber Plumbing Fixtures LLC: www.gerberonline.com/#sle.
 4. Kohler Company: www.kohler.com/#sle.
 5. Mansfield Plumbing Products LLC: www.mansfieldplumbing.com/#sle.
 6. PROFLO: www.ferguson.com/#sle.
 7. Zurn Industries, LLC: www.zurn.com/#sle.
 8. Sloan.
 9. Toto.
 10. Substitutions: See Section 220500 - Plumbing General Provisions.
- B. Vitreous china, ASME A112.19.2, wall hung with side shields and concealed carrier.
 1. Consumption Volume: 1.0 gal per flush, maximum.
 2. Flush Valve: Exposed (top spud).
 3. Flush Operation: Sensor operated.
 4. Trapway Outlet: Integral.
 5. Supply Size: 3/4 inch.
- C. Flush Valves:
 1. Manufacturers:
 - a. American Standard, Inc: www.americanstandard-us.com/#sle.
 - b. Delany Products: www.delanyproducts.com/#sle.
 - c. Sloan Valve Company: www.sloanvalve.com/#sle.
 - d. Zurn Industries, LLC: www.zurn.com/#sle.

- e. Substitutions: See Section 220500 - Plumbing General Provisions.
 - 2. Manual Operated:
 - a. Type: ASME A112.18.1 or ASME A112.19.5; diaphragm type, complete with vacuum breaker stops, and accessories.
 - b. Supplied Volume Capacity: 1.5 gal per flush.
 - 3. Sensor-Operated:
 - a. Type: ASME A112.19.5; chloramine-resistant, clog-resistant dual-seat diaphragm valve with vacuum breaker, stops and accessories.
 - b. Mechanism: Solenoid-operated piston or electronic motor-actuated operator with low-voltage powered infrared sensor, and mechanical override or override push button.
 - c. Supplied Volume Capacity: 1.2 gal per flush.
 - d. Batteries: Standard sizes only. Proprietary batteries are not allowed.
 - 4. Exposed Type: Chrome-plated, escutcheon, integral screwdriver stop.
 - D. Urinal Carriers:
 - 1. Manufacturers:
 - a. Jay R. Smith Manufacturing Company: www.jrsmith.com/#sle.
 - b. JOSAM Company: www.josam.com/#sle.
 - c. Zurn Industries, LLC: www.zurn.com/#sle.
 - d. Watts Drainage.
 - e. Substitutions: See Section 220500 - Plumbing General Provisions.
 - 2. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded fixture studs for fixture hanger, bearing studs.
5. LAVATORIES
- A. Manufacturers:
 - 1. American Standard, Inc: www.americanstandard-us.com/#sle.
 - 2. Kohler Company: www.kohler.com/#sle.
 - 3. Mansfield Plumbing Products LLC: www.mansfieldplumbing.com/#sle.
 - 4. Zurn Industries, LLC: www.zurn.com/#sle.
 - 5. Toto.
 - 6. Bradley Corp.
 - 7. Substitutions: See Section 220500 - Plumbing General Provisions.
 - B. Wall-Hung Basin:

1. Porcelain-Enamelled Cast Iron: ASME A112.19.1; white, rectangular basin with splash lip, front overflow, soap depression, and hanger. Size as indicated on drawings with 4-inch centerset spacing.
- C. Supply Faucet:
 1. ASME A112.18.1; chrome plated combination supply fitting with pop-up waste, water economy aerator with maximum flow of 2.2 gpm, indexed handles.
- D. Metered Faucet:
 1. ASME A112.18.1; chrome plated metered mixing faucet with low voltage operated solenoid operator and infrared sensor, aerator and cover plate, open grid strainer.
- E. Sensor Operated Faucet:
 1. Cast brass, chrome plated, deck mounted with sensor located on neck of spout.
 2. Spout Style: Standard.
 3. Power Supply:
 - a. Wired: As indicated on drawings.
 - b. Wireless:
 - 1) Battery: Replaceable alkaline or lithium type with 200,000 cycles, minimum.
 - 2) Light Cell: Photovoltaic or infra-red cell that transforms both sunlight and artificial light into electrical energy for use and battery charging.
 - 3) Low Battery Warning: Provide red or yellow colored indicator to light periodically at 30 days of remaining capacity and continuously 2 weeks prior to get fully discharged.
 4. Mixing Valve: Internal, automatic.
 5. Water Supply: 3/8 inch compression connections.
 6. Aerator: Vandal resistant, 0.5 gpm, laminar flow device.
 7. Automatic Shut-off: 30 seconds.
 8. Sensor Range: Factory set at 3 inch adjustable up to 24 inch.
 9. Finish: Polished chrome.
 10. Manufacturers:
 - a. Chicago Faucet Company: www.chicagofaucets.com/#sle.
 - b. Gerber Plumbing Fixtures LLC: www.gerberonline.com/#sle.
 - c. Sloan Valve Company: www.sloanvalve.com/#sle.
 - d. Toto USA: www.totousa.com/#sle.
 - e. Substitutions: See Section 220500 - Plumbing General Provisions.
- F. Thermostatic Mixing Valve:

1. ASSE 1070 listed with combination stop, strainer, and check valves, and flexible stainless steel connectors.
2. Braided hot and cold water supply lines.

G. Accessories:

1. Offset waste with perforated open strainer.
2. Wheel handle stops.

6. UNDER-LAVATORY PIPE SUPPLY COVERS

A. Manufacturers:

1. Plumberex Specialty Products, Inc: www.plumberex.com/#sle.
2. Engineered Brass Company.
3. Insul-Tect Products Co.; a subsidiary of MVG Molded Products.
4. McGuire Manufacturing.
5. Truebro; a brand of IPS Corporation.
6. Zurn Industries, LLC; Tubular Brass Plumbing Products Operation.
7. Substitutions: See Section 220500 - Plumbing General Provisions.

B. General:

1. Insulate exposed drainage piping including hot, cold and tempered water supplies under lavatories or sinks per ADA Standards.
2. Exterior Surfaces: Smooth nonabsorbent with no finger recessed indentations for easy cleaning.
3. Construction: 1/8 inch PVC with antimicrobial, antifungal and UV resistant properties.
 - a. Comply with ASME A112.18.9 for covers on accessible lavatory piping.
 - b. Comply with ICC A117.1.
4. Color: White.
5. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces. No cable ties allowed.

7. SHOWER RECEPTORS

A. Solid Surfacing Shower Receptors: Solid plastic resin casting, self-supporting, for installation over conventional subfloor; complying with IAPMO Z124.

1. Material: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, renewable material filler, and pigments; homogenous, nonporous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.

2. Surface Burning Characteristics: Flame spread index of 25 or less, and smoke developed index of 450 or less, Class A, when tested in accordance with ASTM E84.
 3. Finish on Exposed Surfaces: Provide satin or matte, gloss rating of 3 to 20, textured anti-slip surface.
 4. Accessories:
 - a. Folding or removable seat.
 - b. Grab Bars: Manufacturer-provided in quantity, size, and locations to meet ADA Standards and ICC A117.1.
 - c. Walls: Panels comprised of same material as shower receptor.
 - B. Drain Trim: Front integral trench drain, heavy gauge type 304 stainless steel.
8. SHOWERS
 - A. Shower Trim:
 1. Manufacturers:
 - a. American Standard.
 - b. Chicago Faucets.
 - c. Component Hardware Group, Inc.
 - d. Delta Faucet Company.
 - e. Grohe America, Inc.
 - f. Kohler.
 - g. Moen Incorporated.
 - h. Sloan.
 - i. Zurn.
 - j. Substitutions: See Section 220500 - Plumbing General Provisions.
 2. Single Handle: ASME A112.18.1; lever-handle operated, pressure balanced mixing valve with integral service stops, bent shower arm with adjustable spray ball joint shower head with maximum flow, and escutcheon.
 3. Wall Mounted Shower Valve:
 - a. Comply with ASME A112.18.1.
 - b. Provide two-way, in-wall diverter valve body with integral thermostatic mixing valve to supply 1.5 gpm.
 4. Hand-Held Shower Head:
 - a. ASME A112.18.1, adjustable spray hand-held shower head with swivel fitting with ASSE 1014 backflow preventer.
 - b. Include 60 inch minimum flexible polished stainless steel hose and in-line vacuum breaker

- c. Provide 25 inch grab bar with sliding spray holder that locks at any height, allowing use of unit as either a hand-held spray or a fixed shower head.

9. MOP SINKS

A. Sink Manufacturers:

- 1. Zurn Industries, LLC: www.zurn.com/#sle.
- 2. Ferguson Enterprises, Inc.; ProFlo Brand.
- 3. Fiat Products.
- 4. Florestone Products Co., Inc.
- 5. Mustee, E. L., & Sons, Inc.
- 6. Swan Corporation.
- 7. Advanced TABCO.
- 8. Substitutions: See Section 220500 - Plumbing General Provisions.

B. Material: Cast polymer composite, white.

C. Type: Rectilinear.

D. Tiling Flange Construction: Galvanized steel.

E. Grid Strainer: Dome stainless steel; integral; removable.

F. Dimensions: As indicated on drawings.

G. Accessories:

- 1. 5 feet of 1/2 inch diameter plain end reinforced plastic hose.
- 2. Hose clamp hanger.
- 3. Mop hanger.
- 4. 12" stainless splash guard.

H. Faucet:

- 1. Standard: ASME A112.18.1/CSA B125.1.
- 2. General: Include hot- and cold-water indicators.
 - a. Material: Commercial, solid brass.
 - b. Finish: Polished chrome plate.
 - c. Check Stops: Provide on hot and cold water.
- 3. Mounting Type: Back/wall, exposed.
- 4. Valve Handle(s):
 - a. Non-ADA: 2-inch lever.
- 5. Spout: Rigid, pail-hook, wall brace.

- a. Vacuum Breaker: Required for hose outlet.
- b. Spout Outlet: 3/4" hose thread.

I. Faucet Manufacturers:

- 1. American Standard.
- 2. Cambridge Brass, Inc.
- 3. Chicago Faucets.
- 4. Component Hardware Group, Inc.
- 5. Delta Faucet Company.
- 6. Elkay.
- 7. Grohe America, Inc.
- 8. Just Manufacturing.
- 9. Kohler.
- 10. Moen Incorporated.
- 11. Sloan.
- 12. T & S Brass and Bronze Works, Inc.
- 13. Zurn.
- 14. Advanced TABCO.
- 15. Substitutions: See Section 220500 - Plumbing General Provisions.

03. PART 3 EXECUTION

1. EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.
- C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

2. PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3. INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome-plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.

- C. Install water supply piping connections. Provide stop on each supply in readily-serviceable location.
 - D. Install components level and plumb.
 - E. Install and secure fixtures in place with wall supports and bolts.
 - F. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
 - G. Install deep-pattern escutcheons if required to conceal protruding fittings.
 - H. Seal joints between fixtures and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant to fixture color.
 - I. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible sinks and lavatories.
 - J. Provide extra batteries for flush valves.
4. WATER CLOSETS
- A. Solidly attach water closets to floor with lag screws. Lead flashing is not intended to hold fixture in place.
 - B. Install toilet seats on water closets.
5. LAVATORIES
- A. Install water temperature limiting devices on all public lavatories.
 - B. Install supports, affixed to building substrate, for wall-mounted lavatories.
6. INTERFACE WITH WORK OF OTHER SECTIONS
- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.
7. ADJUSTING
- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.
 - B. Operate and adjust fixtures and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.
 - C. Adjust water pressure at bubblers, faucets and flushometer valves to produce proper flow.
 - D. Install fresh batteries in battery-powered, electronic-sensor mechanisms.
 - E. Set field-adjustable temperature set points of temperature-actuated water mixing valves. Adjust set point within allowable temperature range.
8. CLEANING

- A. Clean plumbing fixtures and equipment.
9. PROTECTION
- A. Protect installed products from damage due to subsequent construction operations.
 - B. Do not permit use of fixtures by construction personnel.
 - C. Repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 224000

01. PART 1 GENERAL**1. SUMMARY****A. Specification Format**

1. These Specifications are written in imperative and abbreviated form. This imperative language of the technical sections is directed at the Contractors, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall", and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, perform all indicated requirements whether stated imperatively or otherwise.
2. Three Part Format
 - a. "Part 1 - General": Covers those areas which relate to the Work, and which define the general administrative and technical requirements specific to a particular section.
 - b. "Part 2 - Products": Defines, in detail, the acceptance equipment and materials to be incorporated into the Work.
 - c. "Part 3 - Execution": Describes, in detail, the manner in which items covered by Part 2 are to be incorporated into the Work.
3. Where Codes, Specifications and Drawings are in conflict, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies immediately to the Engineer prior to commencing related work.

B. Definitions:

1. Furnish: Supply equipment as required by these Drawings and Specifications, delivered to the job site for installation or use by others.
2. Install: Fix in position for total operational use all apparatus as shown, specified or required. Provide all miscellaneous fittings and wiring supplies.
3. Or Approved Equal: Equipment or materials selected by Contractor subject to Engineer's acceptance.
4. Or Equivalent: Equipment or materials selected by Contractor matching the function and performance of equipment or materials listed.
5. Provide: Furnish and install in place, total and operational.
6. Complete/Completely: All pipes, fittings, ducts, wiring supplies, and accessories provided for the noted equipment from the equipment to the mains or noted termination points.

2. SCOPE OF WORK

- A. The work covered by this Division consists in furnishing all labor, equipment, accessories and materials and in performing all operations necessary for the installation of the HVAC

systems, in strict accordance with Division 23 of this Specification and applicable Drawings and subject to the terms and conditions of the Contract.

- B. Work of this Division is subject to requirements of Instructions to Bidders, General Conditions, Supplementary Conditions, Division One, and all other sections of this Specification.
- C. Examine site and all Contract documents prior to submittal of bid.
 - 1. Submittal of a Bid shall indicate the Contractor has examined the Site and Drawings and has included all required allowances in this Bid. No allowance shall be made for errors resulting from the Contractor's failure to visit job sites and to review Drawings.
- D. Division 23 Work: Includes, but is not limited to, providing the following:
 - 1. Air Distribution System: Equipment and ductwork.
 - 2. Ventilation and Exhaust System: Equipment and ductwork.
 - 3. Building Automation System.
 - 4. Insulation System: Ductwork and piping.
- 3. ALTERNATES
 - A. Refer to Division 1 for alternates.
- 4. CONTINGENCY
 - A. Refer to Division 01 for amount to include in Mechanical Bid.
 - B. Money remaining in contingency at close of project will be credited to the Owner by Change Order.
- 5. SUBMITTALS
 - A. General:
 - 1. Preferred Submittal Format: PDF, unless otherwise noted.
 - 2. Preferred Submittal Nomenclature: Unless otherwise noted, PDF submittals are to be named according to the following:
 - a. [Specification Section Number] – [Specification Name or Equipment Included]
 - 3. Distribution: Unless otherwise noted, direct all correspondence concerning Division 23 submittals to:
 - a. Caleb Bulow, P.E.
 - b. PRAIRIE ENGINEERING, P.C.
 - c. 1905 17TH STREET SE
 - d. MINOT, ND 58701
 - e. cbulow@prairieengineeringpc.com

B. Substitution and Prior Approval to Quote:

1. Format and Content: Complete descriptive technical data on the proposed item consisting of model numbers, type, size and performance characteristics.
2. Submission Timing: Minimum of 192 hours (eight days) prior to bid opening.
 - a. Substitutions will not be permitted after bid opening except where such substitution is considered by the Engineer to be in the best interest of the Owner.
3. Bidder Notification: Prior to bid opening via Addenda, sent to all planholders.
4. Contractor Responsibility: This contractor will be responsible for all coordination, construction costs, and Architectural/Engineering design fees required to substitute equipment that has different characteristics than designed including weights, physical dimensions, clearances, mechanical characteristics, electrical characteristics, and other characteristics deemed important to the design by the Architect/Engineer.
5. Alternative Format: Printed paper, two copies; Self-addressed, stamped envelope required for return reply.

C. Schedule of Values

1. Distribution: One copy to Engineer.
2. Format and Content: When included with the Bid, at minimum the following categories shall be indicated:
 - a. "Project mobilization"
 - b. "Start-up and Commissioning"
 - c. "Excavation and Backfill"
 - d. "Insulation"
 - e. "Test and Balance"
 - f. "Building Automation System"
 - g. "Piping Systems" (all hot/chilled/geothermal piping, valves, fittings, hangers, installed in place)
 - h. "Sheet Metal" (all ductwork, lining, dampers, hangers, installed in place)
 - i. "Terminal Units" (unit heaters, grilles, diffusers, radiation, installed in place)
 - j. "Air Distribution Equipment" (all fans, air handlers, installed in place)
3. Submission Timing: Prior to first payment application.

D. Shop Drawings

1. Distribution: Engineer via the Prime Contractor for each item indicated.
2. Format and Content: Include catalog numbers, performance data, dimensions and other descriptive information.

- a. Contractor Review: Dated and signed cover sheet or review stamp for each Shop Drawing file to indicate thorough review. **Email message text not acceptable.**
 - b. Submit a separate shop drawing file for each Specification Section including only the items within that Section.
 - c. Non-Conforming: Returned to Contractor without review.
 - 3. Submission Timing: Prior to delivery of materials to job site.
- E. Record Drawings
 - 1. Format and Content: Paper copy of Drawings project site.
 - a. As work progresses, Contractor's field supervisor shall mark Record Drawings in red pencil to indicate actual conditions of installation.
 - b. Give particular attention to marking actual locations of underground piping.
 - c. Affix all addendum and change order descriptions to appropriate record drawing sheet, utilizing spray adhesive.
 - d. Make Record Drawings available to Engineer during project visitation.
 - 2. Submission Timing: Close of project with Record Manuals.
- F. Spare Equipment and Devices
 - 1. Distribution: Owner.
 - 2. Format and Content: List quantities on contractor letterhead or invoice, obtain signature of Owner's representative acknowledging receipt, and include with each Record Manual.
 - 3. Submission Timing: Close of project with Record Manuals.
- G. Operation and Maintenance Manuals
 - 1. Submission Timing: Close of project, as condition of its acceptance.
 - 2. Record Manual information shall be included for all equipment/material where Shop Drawings are required.
 - 3. Format and Content: Two copies, Loose-leaf hardcover binders, and in PDF format on CDs or USB drive.
 - a. List project name, date, Contractor's name, address and telephone number on exterior label of each Record Manual and CD.
 - b. Include an index sheet indicating subcontractor and subcontractor's phone number and each major piece of equipment, supplier and supplier's telephone number. Provide tabbed dividers indicating major groupings of equipment.
 - c. Include a copy of the Shop Drawings.
 - d. Include all installation, operation and maintenance data packaged with any equipment.
 - e. Include all signed and dated final punch lists from walkthroughs performed by the Engineer.

6. APPLICATIONS FOR PAYMENT

- A. Refer to Division 1 "Applications for Payment".
- B. Provide one additional copy, sent directly to the Engineer.
- C. Schedule of Values: At minimum, include items in Submittal article.

7. CHANGES TO CONTRACT

- A. Any required changes to the contract after bid date shall be in accordance with General Conditions/Division 1 and this section. Where any discrepancies between the sections are encountered, the more restrictive section shall apply.
- B. Proposed changes shall be accompanied with complete substantiating documentation.
 - 1. Provide an itemized list of quantities for materials, equipment, and supplies.
 - a. Include unit costs for each item and extended price.
 - b. Include unit labor for each item and extended time.
 - 2. Provide subcontractor proposals that include the same substantiating documentation.
 - 3. Provide quotations from suppliers for any specially ordered equipment.
- C. Material costs shall be actual costs to the contractor, obtaining the materials through normal supply channels, including trade and quantity discounts. Utilizing "suggested pricing" from national pricing organizations for unit costs shall not be accepted. Upon request, the contractor or subcontractor shall submit evidence to substantiate the costs.
- D. Labor units shall be industry accepted standard labor hours to perform one unit of work. If the work is being performed in a location that is not considered to be standard working conditions for that specific task, additional labor shall be itemized.
- E. Labor rates shall be the actual rate paid for the workman category along with associated labor burden. Labor burden shall consist only of the mandatory fringe benefits, labor taxes, and labor insurances as affected by payroll. The owner reserves the right to reject any labor burden which is inconsistent with other similar contractors or where the fringe benefit cost is in excess of established labor agreements.
- F. Subcontractors shall compute their costs in the same manner as the contractor. Subcontractors are subject to the same markup constraints as described herein.
- G. For changes resulting in credit to the costs, no restocking fees for materials shall be applied by the contractor or subcontractors.

8. QUALITY ASSURANCE

- A. Qualifications of Installers
 - 1. For installation and testing, use only trained licensed and experienced workmen familiar with items required and manufacturer's recommended methods.

2. In acceptance or rejection of installed work, no allowance will be made for lack of skill on the part of the workmen.

9. AUTHORITIES AND AGENCIES

- A. Materials, workmanship and installation: comply with the latest editions of all applicable codes, local ordinances, industry standards, utility company regulations, insurance carrier requirements and these Specifications.
- B. Obtain and pay all permits, inspections, licenses and other charges pertaining to the Work. Upon completion of the Work, furnish proof of acceptance by proper agency having jurisdiction.
- C. Codes and standards shall include, but not necessarily be limited to, the following:
 1. International Energy Conservation Code (IECC);
 2. Uniform Plumbing Code;
 3. North Dakota State Building Code;
 4. International Building Code (IBC);
 5. International Mechanical Code (IMC);
 6. International Fuel Gas Code (IFC);
 7. National Fire Protection Association (NFPA) – Sections as adopted by authority having jurisdiction.
- D. The more stringent provisions shall govern where provisions of pertinent codes and standards conflict with these Specifications or Drawings. Where Codes, Specifications or Drawings differ with one another, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies to the Engineer immediately.
 1. Pertinent codes and standards shall not be cited to furnish less than specifically shown or specified.
 2. Meeting the minimum standards of the above Codes does not permit a lower grade of construction where Plans or Specifications call for workmanship or materials in excess of Code Requirements.
- E. 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.

10. GUARANTEE AND WARRANTY

- A. Except where otherwise noted, contractor shall guarantee materials, workmanship and the proper operation of equipment for a period of one year after Owner's beneficial use of the building or mechanical system. Contractor shall correct all equipment, material and workmanship found to be defective or non-conforming to the contract documents without cost to Owner during that one year period.
- B. Guarantee shall include trips to the project site by Contractor to adjust mechanical equipment as required, ensuring it is operating as intended.

- C. Specified guarantee shall not relieve Contractor from liability arising from improper installation or non-compliance with applicable codes.

11. TEMPORARY FACILITIES

- A. Refer to Special Conditions and/or Division 1 for details of temporary facilities.

02. PART 2 PRODUCTS

1. MATERIAL

- A. Material and equipment shall be as shown or specified. Provide material not specifically described but required for a complete and proper installation of the Work, subject to the acceptance of the Engineer.
- B. Owner will not be liable for material installed in non-compliance with codes, standards, and these Contract Documents.
- C. Fire Stop System material shall be by 3M "Fire Barrier", Metacaulk, Hilti, Nelson Firestop Products, or AD Fire.
- D. See Division 07 for further details on approved materials.

2. ELECTRIC WIRING

- A. The Division 23 Contractor shall furnish all motors, special controls and electrical devices as specified herein for proper operation of the equipment furnished.
- B. Division 26 Contractor shall furnish and install, as required, disconnects, starters, switches, etc., and do all necessary power and control wiring including the installation of electrical devices such as thermostats, humidistats, remote control panels, etc., furnished separately by Division 23 Contractor, unless otherwise noted in Equipment Specifications or noted in Section 230900.

03. PART 3 EXECUTION

1. GENERAL

- A. Engineer, Architect, or Owner shall not be responsible for the means, methods, techniques, sequences or procedures of construction selected by Contractor.
- B. Engineer, Architect, or Owner shall not be responsible for safety precautions and programs incidental to work of Contractor.
- C. It is the sole responsibility of Contractor to initiate, maintain, and supervise all safety precautions and programs in connection with the Work.
- D. In general, it is intended that ductwork and piping be installed parallel to building lines, unless otherwise shown on the Drawings, and that equipment be located symmetrical with the architectural elements of the building.

2. SURFACE CONDITIONS

- A. Prior to work of each Section of Division 23, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Verify that work of this Division may be installed in accordance with all pertinent codes, regulations and standards.

3. PRODUCT HANDLING

- A. Protection: Use all means necessary to protect the materials of this Division before, during and after installation and to protect the installed work and materials of all other trades.
- B. Plugs: Install in ends of uncompleted piping at end of each day or when work stops.
- C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

4. COORDINATION

- A. Order equipment and material in a timely fashion to assure it is on the job site when required.
- B. Coordinate installation of material with schedule of other trades to prevent unnecessary delay in construction schedule.
- C. Division 23 piping, duct and equipment installations shall comply with National Electrical Code requirements 110.26 "working spaces" and "dedicated spaces". Mechanical ducts and pipes shall not be installed in the space near electrical panels/equipment defined as "working spaces" or "dedicated spaces".

5. DISCREPANCIES, CONSTRUCTION CONFLICTS AND DRAWINGS**A. Discrepancies**

- 1. Prior to submitting bid, Contractor shall refer any apparent discrepancies or omissions to Engineer for clarification.
- 2. The Architect, Engineer or Owner will not be responsible for any oral instructions or modifications to the contract documents prior to opening of bids.
- 3. Written interpretation or clarification will be made by Addenda.

B. Construction Conflicts

- 1. Conflicts discovered during construction shall be immediately called to the attention of the Engineer for decision.
- 2. Do not proceed with installation in area of question until conflict has been fully resolved.

3. When so directed by Engineer, Contractor shall make minor adjustment to avoid interferences with other trades. Such minor adjustments shall be performed at no additional cost to the Architect, Engineer or Owner.

C. Drawings

1. Drawings indicate extent and general layout of mechanical systems for project. Due to small scale, it is not possible to indicate all fittings and accessories that may be required. Provide such fittings and accessories as required to form a complete and operating system in general conformance with Specifications and Drawings.
2. Exact locations, distances, levels and other conditions will be governed by the structure. Field measurements shall take precedence over the Drawings. Use the Drawings and these Specifications for guidance. Secure the Architect's approval for all changes in locations.
3. Verify all measurements at site. No compensation will be made because of difference between locations shown on the Drawings and measurements at the building.
4. Refer to the architectural drawings for dimensions and locations of walls, partitions, doors, windows, ceiling heights, door swings and other details of construction.

6. UNDERGROUND UTILITIES

- A. Locations of existing underground utilities are based on available site information and are shown approximately. Contractor shall determine exact utility locations before commencing work and shall be responsible for repair of damages resulting from his construction activities to pre-construction condition.
- B. Trench and backfill for installation of underground piping to depth shown or required. Remove any accumulated water in excavation by pumping. Shore and brace excavation as required by safety regulations. Provide temporary bridges to maintain normal traffic flow. Excavation and backfill required by mechanical installations shall be accomplished in accordance with Division 31 Specifications by this Contractor.

7. OFFSETS

- A. Where required to allow clearance of electrical conduit and outlet boxes, beams, etc., to avoid interference with work of other trades, to increase head room under mechanical systems or to improve the appearance of mechanical systems work, this Contractor shall offset his mechanical system as directed by the Architect/Engineer.

8. CUTTING AND PATCHING

- A. Refer to General Conditions. Unless specifically called out to be performed by other Contractors, the Division 23 Contractor shall perform all cutting and patching required for the installation of material and equipment furnished under his Contract.
- B. Opening/holes cut to allow passage of ducts and pipes through concrete floor shall be patched by the Contractor doing the cutting unless indicated otherwise on the Drawings.
- C. Fire-Barrier Penetrations

1. Pipe penetrations through fire rated walls and floors shall be sealed with a UL classified Fire Stop System. Fire Stops shall be provided in accordance with the appropriate System No. as it relates to pipe size/Material and wall or floor rating/material.
 2. See Specification Section 230510 for other Fire-Barrier Penetration requirements.
 3. See Section 2 article "Materials" of this Specification for approved fire stop system material.
 - D. Openings between ductwork and fire rated walls and floors shall be sealed with fire rated caulking or steel collars on both sides of wall or floor.
 - E. Restore damaged surfaces to their original condition by skilled mechanics of the trade involved. Contractor at fault shall assume all cost.
 - F. Use only rotary type drilling tools to cut concrete.
 - G. Do not endanger the stability of the structure. Do not at any time cut or alter work of any other Contractor without Architect's consent.
9. FIELD QUALITY CONTROL
- A. Perform field tests and inspections. Test new piping and parts of existing piping that have been altered, extended, or repaired.
 - B. Ceiling Inspection: An above ceiling inspection by the Architect/Engineer shall take place prior to the installation of the ceiling, to ensure that everything is properly sealed, accessible, and fire sealed if required.
 - C. Gas Piping Tests:
 1. Test gas piping as required by the Authority Having Jurisdiction or the Utility Company.
 2. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
 - D. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained. Piping will be considered defective if it does not pass tests and inspections.
10. STARTING AND ADJUSTING
- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
 - B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
 - C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - D. Air Systems shall be adjusted as follows:

1. The ventilation and/or cooling system installed by this Contractor shall be tested and adjusted by this Contractor to demonstrate that the system performs as intended and that the air quantities, as shown on the Drawings, can be met. Balancing will be primarily done at the fans by adjustment of fan speeds to achieve the desired air flow.
2. Volume dampers, air extractors and splitter dampers shall be adjusted to obtain the required air flow in the branch ductwork. Adjustment of dampers at the neck of registers and diffusers will be done only for final trim balancing of the system. All final air quantities shall be plus or minus 10% of the figures shown on the Drawings.
3. A complete Balancing Report shall be submitted to the Engineer upon job completion to indicate the following:
 - a. Register or diffuser location, rated CFM and actual CFM.
 - b. Air handler rated and actual CFM, rate and actual motor amperage, fan RPM and system static pressure.
 - c. Exhaust or supply fan rated and actual CFM, fan RPM and system static pressure, motor rated and actual amperage.

11. CLEANING

- A. Clean interior of duct and piping systems. Remove dirt and debris as work progresses.

12. INSTRUCTIONS

- A. Provide written and oral operating and maintenance instructions to Owner's representatives. The oral instructions shall be given before the Owner occupies the buildings. Instructions to include all building's mechanical systems and equipment.
- B. Copies of written operating and maintenance instructions shall be included with each Record Manual.
- C. Division 23 Contractor shall coordinate with Owner at Owner's convenience, formal instruction time for contractor personnel to instruct Owner's Representatives on all equipment. Provide similar equipment supplier's instructions where specified thus.

13. CLEAN UP

- A. Each Contractor shall be responsible for cleaning up after his work, including the removal of all scrap material left on the job by his men or Subcontractors. This will include the removal of all pipe and sheet metal cuttings, pieces of sheet metal, pipe, and insulation and other debris.
- B. Clean all heating units, clean and straighten fins on all coils, clean scale, dirt or debris off piping, motors, etc., oil or grease all motors, fan bearings, pump gear boxes, etc., and leave in a clean best possible working condition. Install clean filters in ventilation system prior to turning job over to Owner.

- C. After all tests have been made and the mechanical systems are operating properly, this Contractor shall go over the entire system and remove labels from all mechanical equipment.
- D. All equipment having finished paint surfaces shall be examined upon completion for scratches and other damage. Touch up all surfaces as required with paint of color to match factory finish.
- E. Perform all cleaning as required by other Sections of Division 23.

END OF SECTION 230500

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. General construction and requirements.
- B. Applications.
- C. Three phase electric motors.
- D. Shaft grounding rings.
- E. Electronically Commutated Motors (ECM).

2. REFERENCE STANDARDS

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings; 2015 (Reaffirmed 2020).
- B. IEEE 112 - IEEE Standard Test Procedure for Polyphase Induction Motors and Generators; 2017.
- C. NEMA MG 00001 - Motors and Generators; 2024.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

3. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.
- C. Manufacturer's Installation Instructions: Indicate setting, mechanical connections, lubrication, and wiring instructions.

4. QUALITY ASSURANCE

- A. Comply with NFPA 70.

02. PART 2 PRODUCTS**1. GENERAL CONSTRUCTION AND REQUIREMENTS**

- A. Duty: Continuous duty at ambient temperature of 105 °F and at altitude of 1,700 feet above sea level.
- B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with

indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

C. Nominal Efficiency:

1. Open Motor with Two Poles: 82.5.
2. Open Motor with Four Poles: 82.5.
3. Open Motor with Six Poles: 50.0.
4. Enclosed Motor with Two Poles: 75.5.
5. Enclosed Motor with Four Poles: 82.5.
6. Enclosed Motor with Six Poles: 50.0.

D. Construction:

1. Open drip-proof type except where specifically noted otherwise.
2. Design for continuous operation in 104 degrees F environment.
3. Design for temperature rise in accordance with NEMA MG 00001 limits for insulation class, service factor, and motor enclosure type.

E. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.

F. Wiring Terminations:

1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2. APPLICATIONS

- A. Exception: Motors less than 250 watts, for intermittent service may be the equipment manufacturer's standard and need not comply with these specifications.
- B. Single phase motors for shaft mounted fans or blowers: Permanent split capacitor type.
- C. Single phase motors for fans: Capacitor start type.
- D. Single phase motors for fans: Capacitor start, capacitor run type.

3. THREE PHASE POWER - SQUIRREL CAGE MOTORS

- A. Design, Construction, Testing, and Performance: Comply with NEMA MG 00001 for Design B motors.
- B. Insulation System: NEMA Class B or better.

- C. Testing Procedure: In accordance with IEEE 112. Load test motors to determine free from electrical or mechanical defects in compliance with performance data.
 - D. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.
 - E. Thermistor System (Motor Frame Sizes 254T and Larger): Three PTC thermistors embedded in motor windings and epoxy encapsulated solid state control relay for wiring into motor starter; refer to Section 262913.
 - F. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA STD 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.
 - G. Sound Power Levels: To NEMA MG 00001.
 - H. Weatherproof Epoxy Sealed Motors: Epoxy seal windings using vacuum and pressure with rotor and starter surfaces protected with epoxy enamel; bearings double shielded with waterproof non-washing grease.
 - I. Nominal Efficiency: As indicated at full load and rated voltage when tested in accordance with IEEE 112.
 - J. Nominal Power Factor: As indicated at full load and rated voltage when tested in accordance with IEEE 112.
 - K. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.
 - L. Motors Used with Variable Frequency Controllers:
 - 1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
 - 2. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
4. ELECTRONICALLY COMMUTATED MOTORS (ECM)
- A. Description: Brushless DC motor with built in speed and torque controls.
 - B. Rotor: Permanent magnet.
 - C. Circuitry: Programmable, manage commutation of stator to be always synchronous with rotor.
 - D. Multispeed Motors: Minimum turndown of 80%.
 - E. Efficiency: Minimum of 65%.

- F. Bearings: Permanently lubricated, heavy duty ball bearings.

03. PART 3 EXECUTION

1. INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.
- C. Check line voltage and phase and ensure agreement with nameplate.

END OF SECTION 230513

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Duct insulation.
- B. Duct liner.
- C. Jacketing and accessories.

2. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

02. PART 2 PRODUCTS**1. REGULATORY REQUIREMENTS**

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2. GLASS FIBER, FLEXIBLE**A. Manufacturer:**

- 1. CertainTeed Corporation: www.certainteed.com/#sle.
- 2. Johns Manville: www.jm.com/#sle.
- 3. Knauf Insulation: www.knaufinsulation.com/#sle.
- 4. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
- 5. Substitutions: See Section 230500 - HVAC General Provisions.

B. Insulation: ASTM C553; flexible, noncombustible blanket.**C. Vapor Barrier Jacket:**

- 1. Kraft paper with glass fiber yarn and bonded to aluminized film.
- 2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
- 3. Secure with pressure-sensitive tape.

D. Vapor Barrier Tape:

- 1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure-sensitive rubber-based adhesive.

- E. Indoor Vapor Barrier Mastic:
 - 1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.
- F. Outdoor Vapor Barrier Mastic:
 - 1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.
- 3. JACKETING AND ACCESSORIES
 - A. Canvas Jacket: UL listed 6 oz/sq yd plain weave cotton fabric treated with dilute fire-retardant lagging adhesive.
 - B. Reinforced Tape:
 - 1. FSK tape suitable for sealing seams between insulation, insulated elbows, and fittings resulting in a tight, smooth surface without wrinkles.
 - 2. Comply with UL 723 or ASTM E84.
 - 3. Moisture Vapor Permeability: 0.00 perm inch, when tested in accordance with ASTM E96/E96M.
 - 4. Finish: Match insulation.
- 4. DUCT LINER
 - A. Manufacturers:
 - 1. Aeroflex USA: www.aeroflexusa.com/#sle.
 - 2. Armacell LLC: www.armacell.us/#sle.
 - 3. CertainTeed Corporation: www.certainteed.com/#sle.
 - 4. Ductmate Industries, Inc, a DMI Company: www.ductmate.com/#sle.
 - 5. Johns Manville: www.jm.com/#sle.
 - 6. Knauf Insulation: www.knaufinsulation.com/#sle.
 - 7. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
 - 8. Substitutions: See Section 230500 - HVAC General Provisions .
 - B. Glass Fiber Insulation: Non-corrosive, incombustible glass fiber complying with ASTM C1071; flexible blanket, rigid board, and preformed round liner board; impregnated surface and edges coated with poly vinyl acetate polymer, acrylic polymer, or black composite.
 - 1. Fungal Resistance: No growth when tested according to ASTM G21.
 - 2. Apparent Thermal Conductivity: Maximum of 0.31 at 75 degrees F.
 - 3. Rated Velocity on Coated Air Side for Air Erosion: 5,000 fpm, minimum.
 - 4. Minimum Noise Reduction Coefficients:
 - a. 1/2 inch Thickness: 0.30.
 - b. 1 inch Thickness: 0.45.

03. PART 3 EXECUTION**1. INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Insulated Ducts Conveying Air Below Ambient Temperature:
 - 1. Provide insulation with vapor barrier jackets.
 - 2. Finish with tape and vapor barrier jacket.
 - 3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
 - 4. Insulate entire system, including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
- C. Insulated Ducts Conveying Air Above Ambient Temperature:
 - 1. Provide with or without standard vapor barrier jacket.
 - 2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
- D. Ducts Exposed in Mechanical Equipment Rooms or Finished Spaces (below 10 feet above finished floor): Finish with canvas jacket sized for finish painting.
- E. Exterior Applications: Provide insulation with vapor barrier jacket. Cover with caulked aluminum jacket with seams located on bottom side of horizontal duct section.
- F. External Duct Insulation Application:
 - 1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
 - 2. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
 - 3. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
 - 4. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.
- G. Duct and Plenum Liner Application:
 - 1. Secure insulation with mechanical liner fasteners. Refer to SMACNA (DCS) for spacing.
 - 2. Seal and smooth joints. Seal and coat transverse joints.
 - 3. Seal liner surface penetrations with adhesive.
 - 4. Duct dimensions indicated are net inside dimensions required for airflow. Increase duct size to allow for insulation thickness.

2. WALL AND FLOOR PENETRATIONS

-
- A. Roof/Wall Penetrations: Install insulation continuously through roof/wall penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation above roof/wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside flashing at least 2 inches.
 - 4. Seal jacket to roof flashing with flashing sealant.
 - B. Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
3. FIRE-RATED INSULATION SYSTEM INSTALLATION
- A. Where fire-rated insulation system is indicated, secure system to ducts and duct hangers and supports to maintain a continuous fire rating.
 - B. Insulate duct access panels and doors to achieve same fire rating as duct.
 - C. Install firestopping at penetrations through fire-rated assemblies. Fire-stop systems are specified in Division 07.
4. SCHEDULES
- A. Fiberglass wrap, with FSK jacket:
 - 1. Supply-Air Ducts and Plenums in attics, concealed spaces and unconditioned spaces.
 - 2. Tempered-Fresh-Air Ducts in attic spaces.
 - 3. Exhaust-Air Ducts and Plenums between isolation damper and penetration of building exterior.
 - a. Exception: Lined Exhaust-Air Duct from power roof ventilators.
 - 4. Mixed-Air Ducts and Plenums.
 - 5. Dishwasher Exhaust-Air Duct back 10' from roof exhaust fan.
 - 6. Return-Air Duct and Plenums in attic spaces.
 - 7. Tempered-Fresh-Air Duct and Plenums in spaces other than attic.
 - 8. Un-tempered Fresh-Air Duct from air-to-air heat exchangers.
 - B. Fiberglass board, welded board pins, with FSK facing and matching label-less FSK tape:
 - 1. Ducts and Plenums in Mechanical Rooms with one of following means of sealing and cladding:
 - a. Mastic-canvas-mastic.
 - b. Mastic-fiberglass scrim cloth-mastic.
 - c. Self-adhering, peel and stick, rubberized bitumen jacket.

- C. Minimum Duct Insulation R-Values
 - 1. Supply ducts, installed in unheated attics and exterior: R-12.
 - 2. Supply ducts, installed in unconditioned spaces, ceiling plenums, and crawl spaces: R-6.
 - a. Exception: Cooling only supply ducts: R-2.
 - 3. Supply ducts, installed in attic with roof insulation: R-2.
 - 4. Return ducts, installed in unheated attics: R-4.
 - 5. Outside air ducts: R-12.
- D. Insulation not required:
 - 1. Exhaust-Air Duct except as otherwise
 - 2. Return-Air Duct and Plenums in indirectly conditioned spaces.
 - 3. Supply-Air Ducts and Plenums in exposed, conditioned spaces.
 - 4. Fibrous-glass ducts.
 - 5. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
 - 6. Factory-insulated flexible ducts.
 - 7. Factory-insulated plenums and casings.
 - 8. Flexible connectors.
 - 9. Vibration-control devices.
 - 10. Factory-insulated access panels and doors.
 - 11. Listed grease ducts.

END OF SECTION 230713

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Pressure regulators.
- B. Storage containers.
- C. Vaporizers.

2. RELATED REQUIREMENTS

- A. Section 231126 - Facility Liquefied-Petroleum Gas Piping .

3. AUTHORITIES AND AGENCIES

- A. Obtain and pay all permits, inspections, licenses and other charges for large above ground tanks as required by the State Fire Marshal. Upon completion of the Work, furnish proof of acceptance by proper agency having jurisdiction.

4. SUBMITTALS

- A. Shop Drawings: For equipment covered under this section as per Section 230500.
 - 1. Product Data: For each type of the following:
 - a. Pressure regulators. Indicate pressure ratings and capacities.
 - b. Storage containers.
 - c. Vaporizers.
- B. Operation and Maintenance Manuals: For equipment covered under this section as per Section 230500.

5. QUALITY ASSURANCE

- A. Steel Support Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- 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.

02. PART 2 PRODUCTS**1. PRESSURE REGULATORS**

- A. Description: Designed to reduce LP gas container pressures to between 3 and 125 PSIG.
- B. Manufacturers:

1. RegO Products.
2. Fisher; Emerson Electric Company.
3. Marshall Excelsior Company.
4. Substitutions: See Section 230500 - HVAC General Provisions.

C. Materials:

1. Body and Bonnet: Corrosion resistant metal.
2. Nozzle Orifice: Brass.
3. Spring: Steel.
4. Valve Seat Discs: Resilient rubber.
5. Diaphragms: Integrated fabric and synthetic rubber.

D. Overpressure Protection Device: Factory mounted on pressure regulator.

E. Atmospheric Vent: Factory- or field-installed, stainless-steel screen in opening if not connected to vent piping.

2. STORAGE CONTAINERS

A. Description: Factory fabricated, complying with requirements in NFPA 58 and ASME Boiler and Pressure Vessel Code and bearing the ASME label. Tanks shall be rated for 250-psig minimum working pressure.

B. Manufacturers:

1. American Welding and Tank Co.
2. Trinity Industries, Inc.
3. Quality Steel Corporation
4. TransTech Energy, LLC
5. Ransome Manufacturing
6. Substitutions: See Section 230500 - HVAC General Provisions.

C. Accessories: Provide all required including pressure relief devices, shutoff valves, check valves, internal valves, and pressure gauges.

D. Exposed Metal Surfaces, Outdoor Installation: Mechanically cleaned, primed, and painted for resistance to corrosion.

E. Stainless-Steel Nameplate: Attach to aboveground storage container or to adjacent structure for underground storage container.

3. VAPORIZERS

A. Description: Factory-fabricated, -assembled, and -tested vaporizer with heat exchanger sealed pressure-tight, built on a steel base; including insulated jacket, flue-gas vent, liquid

fuel supply and vapor connections, and controls. Assembly shall be FMG labeled and comply with NFPA 58 and NFPA 70.

B. Manufacturers:

1. Algas SDI; Torrex.
2. Ransome Manufacturing; RE Series.
3. Substitutions: See Section 230500 - HVAC General Provisions.

C. Casing:

1. Mineral-fiber insulation, a minimum of 2 inches (50 mm) thick, surrounding the heat exchanger.
2. Sheet metal jacket with screw-fastened closures and baked-enamel or powder-coat protective finish.
3. Mounting base to secure boiler to concrete base.
4. Control Compartment Enclosure: NEMA 250, Type 4, enclosure housing control panels for LPG-fired vaporizers. Explosion-proof control compartment construction required for electric vaporizers.

D. LPG Liquid and Vapor Circuit Specialties:

1. Vaporizer coil safety pressure relief valve.
2. Vapor outlet isolation valve.
3. Inlet safety solenoid valve to close with off-normal operation alarm.
4. Liquid carryover or float-type safety shutoff switch.

03. PART 3 EXECUTION

1. STORAGE CONTAINER INSTALLATION

- A. Install piping connections with swing joints or flexible connectors to allow for storage container settlement and for thermal expansion and contraction.
- B. Ground containers according to NFPA 780.

2. VAPORIZER INSTALLATION

- A. Install vaporizer with access space for periodic maintenance.
- B. Set vaporizers on and anchor to concrete base.
- C. Connect liquid line from pump set, and vapor supply to distribution piping.
- D. Install backup connection from vapor space of container to inlet of pressure-regulating valve at vaporizer discharge to bypass the vaporizer during maintenance. Install shutoff valves to change source from vaporizer to storage container.

3. FIELD QUALITY CONTROL

- A. Test, inspect, and purge LPG according to NFPA 58 and NFPA 54 and requirements of authorities having jurisdiction.
- B. LPG piping will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 231100

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Pipe, pipe fittings, valves, and connections for propane gas piping systems.

2. REFERENCE STANDARDS

- A. ANSI LC 1/CSA 6.26 - Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing; 2023.
- B. ANSI Z21.18/CSA 6.3 - Gas Appliance Pressure Regulators; 2019.
- C. ANSI Z21.80/CSA 6.22 - Line Pressure Regulators; 2019.
- D. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2021.
- E. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2021.
- F. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2021.
- G. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes; 2024.
- H. ASME B31.1 - Power Piping; 2024.
- I. ASME B31.9 - Building Services Piping; 2025.
- J. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.
- K. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.
- L. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2025.
- M. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2022.
- N. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.
- O. ASTM D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings; 2025.
- P. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing; 2020.
- Q. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
- R. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2019.

- S. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2025.
- T. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010, with Errata .
- U. NFPA 58 - Liquefied Petroleum Gas Code; 2024, with Amendment.

3. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
- C. Shop Drawings: For non-penetrating rooftop supports, submit detailed layout developed for this project, with design calculations for loadings and spacings.
- D. Project Record Documents: Record actual locations of valves.

4. QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.

5. DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

6. FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.

02. PART 2 PRODUCTS

1. PROPANE GAS PIPING, BURIED BEYOND 5 FEET OF BUILDING

- A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A) annealed.
 - 1. Fittings: ASME B16.26, cast bronze.
 - 2. Joints: Flared.
- B. Polyethylene Pipe: ASTM D2513, SDR 11.
 - 1. Fittings: ASTM D2683 or ASTM D2513 socket type.
 - 2. Joints: Fusion welded.

2. PROPANE GAS PIPING, BURIED WITHIN 5 FEET OF BUILDING
 - A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A) annealed.
 1. Fittings: ASME B16.26, cast bronze.
 2. Joints: Flared.
 - B. Polyethylene Pipe: ASTM D2513, SDR 11.
 1. Fittings: ASTM D2683 or ASTM D2513 socket type.
 2. Joints: Fusion welded.
3. PROPANE GAS PIPING, ABOVE GRADE
 - A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M, wrought steel welding type.
 2. Joints: NFPA 58, threaded or welded to ASME B31.1.
 - B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A) annealed.
 1. Fittings: ASME B16.26, cast bronze.
 2. Joints: Flared.
 - C. Copper Tube: Listed, ASTM B88 (ASTM B88M), Type K (A), annealed.
 1. Fittings: ASME B16.18 cast copper or ASME B16.22 wrought copper.
 2. Joints: Compression connection or AWS A5.8M/A5.8, BCuP silver braze.
 3. Mechanical Press Sealed Fittings: Double-pressed type and approved or certified, utilizing EPDM, nontoxic, synthetic rubber sealing elements.
 - D. Flexible Gas Piping:
 1. Corrugated Stainless Steel Tubing: Comply with ANSI LC 1/CSA 6.26.
 2. Comply with ASTM E84.
 3. Fittings: Provided by piping system manufacturer.
 4. Provide piping with integral lightning protection.
 5. Manufacturers:
 - a. Omega Flex, Inc; TracPipe CounterStrike: www.omegaflex.com/#sle.
 - b. Parker Hannifin Corporation; Parflex Division.
 - c. Titeflex.
 - d. Tru-Flex Metal Hose Corp.
 - e. Substitutions: See Section 230500 - HVAC General Provisions.
4. FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 2 Inches and Under:
 - 1. Ferrous Pipe: Class 150 malleable iron threaded unions.
 - 2. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.
- B. Flanges for Pipe Size Over 2 Inch:
 - 1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
 - 2. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
- C. Welded Fittings:
 - 1. Systems with gas pressure 2 psi and higher.
 - 2. Ferrous piping larger than 2".
 - 3. Ferrous piping in inaccessible areas.
- D. Cold Press Mechanical Joint Fittings:
 - 1. Manufacturer: Viega.
 - 2. Conform to requirements of ASTM A420 or ASME B16.3 and performance criteria ANSI LC-4/CSA 6.32.
 - 3. Piping: Schedule 10 to 40 carbon steel pipe, conforming to ASTM A53 and A106.
 - 4. Pipe Sizes: ½" to 4".
 - 5. Systems: Gas pressure 5 psi and lower.
 - 6. Sealing Elements: HNBR, factory installed or an alternative supplied by fitting manufacturer.
 - 7. Leakage Path: Press ends shall assure leakage of fluids from inside the system past the sealing element of unpressed connections to alert installer of unpressed connections.

5. PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 - 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 - 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 - 4. Vertical Pipe Support: Steel riser clamp.
 - 5. Floor Supports: Concrete pier or steel pedestal with floor flange; fixture attachment.

6. Rooftop Supports for Low-Slope Roofs: Steel pedestals with bases that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified; and as follows:
 - a. Bases: High density polypropylene.
 - b. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
 - c. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
 - d. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion resistant material.
 - e. Height: Provide minimum clearance of 6 inches under pipe to top of roofing.
 - f. Manufacturers:
 - 1) Cooper B-Line.
 - 2) C-Port; Clearline Technologies.
 - 3) C-Port; MIFAB.
 - 4) Erico.
 - 5) Substitutions: See Section 230500 - HVAC General Provisions.

6. BALL VALVES

A. Manufacturers:

1. Apollo Valves: www.apollovalves.com/#sle.
2. Grinnell Products: www.grinnell.com/#sle.
3. Milwaukee Valve Company: www.milwaukeevalve.com/#sle.
4. Nibco, Inc: www.nibco.com/#sle.
5. Anvil International: www.anvilintl.com/#sle.
6. Nexus Valve.
7. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
8. Viega, LLC.
9. Substitutions: See Section 230500 - HVAC General Provisions.

- B. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, Teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder or threaded ends with union.

7. STRAINERS

A. Manufacturers:

1. Armstrong International, Inc: www.armstronginternational.com/#sle.

2. Maxitrol.
 3. Substitutions: See Section 230500 - HVAC General Provisions.
 - B. Size 2 inch and Under:
 1. Threaded brass body for 175 psi CWP, Y pattern with 1/32 inch stainless steel perforated screen.
 2. Class 150, threaded bronze body 300 psi CWP, Y pattern with 1/32 inch stainless steel perforated screen.
8. LINE PRESSURE REGULATORS AND APPLIANCE REGULATORS INDICATORS
- A. Manufacturers:
 1. Maxitrol Company: www.maxitrol.com/#sle.
 2. RegO Products.
 3. Fisher; Emerson Electric Company.
 4. Marshall Excelsior Company.
 5. Substitutions: See Section 230500 - HVAC General Provisions.
 - B. Compliance Requirements:
 1. Appliance Regulator: ANSI Z21.18/CSA 6.3.
 2. Line Pressure Regulator: ANSI Z21.80/CSA 6.22.
 - C. Materials in Contact With Gas:
 1. Housing: Aluminum, steel (free of non-ferrous metals).
 2. Seals and Diaphragms: NBR-based rubber.

03. PART 3 EXECUTION

1. EXAMINATION
 - A. Verify that excavations are to required grade, dry, and not over-excavated.
2. INSTALLATION
 - A. Install in accordance with manufacturer's instructions.
 - B. Entire installation shall comply with NFPA pamphlet No. 54 entitled "Gas Appliance and Gas Piping" and NFPA 58 Liquefied Petroleum Gas Code.
 - C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
 - D. Install piping to maintain headroom, conserve space, and not interfere with use of space.

- E. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
 - F. Provide access where valves and fittings are not exposed.
 - G. Install valves with stems upright or horizontal, not inverted.
 - H. Connect branch piping from top or side of horizontal piping.
 - I. Pipe vents from gas pressure reducing valves to outdoors and terminate in weather proof hood.
 - J. Do not use propane piping as grounding electrode.
 - K. Install strainer on inlet of each electrically operated valve.
 - L. Sleeve pipes passing through partitions, walls and floors.
 - M. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9.
 - 2. Support horizontal piping as indicated.
 - 3. Place hangers within 12 inches of each horizontal elbow.
 - 4. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
 - 5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 - 6. Provide copper plated hangers and supports for copper piping.
 - N. Install propane piping electrically continuous and bonded to gas appliance equipment grounding conductor of the circuit powering the appliance according to NFPA 70.
 - 1. Corrugated stainless steel tubing (CSST) shall be bonded to the electrical service grounding electrode system. The bonding jumper shall connect to a metallic pipe or fitting between the point of delivery and the first downstream CSST fitting. The bonding jumper shall not be smaller than 6 AWG copper wire or equivalent.
 - O. Prime and paint all exterior ferrous metal piping to protect from corrosion.
3. PRESSURE REGULATORS
- A. Extend relief vent connections for service regulators, line regulators, and overpressure protection devices to outdoors and terminate with weatherproof vent cap.
 - B. Provide regulators at appliances as required.
 - C. Install strainer on inlet of each line-pressure regulator.
4. APPLICATION
- A. Install unions downstream of valves and at equipment or apparatus connections.

- B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- C. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- D. Sediment Traps: Install tee fitting with capped nipple in bottom to form drip, as close as practical to inlet of each appliance.
 - 1. Construct sediment traps using tee fitting with bottom outlet plugged or capped. Use nipple a minimum length of 3 pipe diameters, but not less than 6 inches long and same size as connected pipe. Install with space below bottom of drip to remove plug or cap.
- E. Provide strainer of size equivalent to pipe shown on the drawings. Locate the filter after sediment trap and before the regulator. Install per the manufacturer instructions and per NFPA 85 and NFPA 86 requirements.

5. SERVICE CONNECTIONS

- A. Piping Between Tanks and Secondary Regulator:
 - 1. Installed by LP provider as a subcontractor to the Mechanical Contractor.
 - 2. Tubing shall be installed in a 6" bed of sand a minimum of 18" below grade and a #14 THHN locating wire shall be buried with the pipe.
 - 3. Provide marker tape labeled "GAS" and bury above the propane piping 12" below grade.
- B. Prime and paint all exterior steel piping to protect from corrosion.
 - 1. Clean piping to remove loose dirt and debris prior to applying primer. Sand any rust spots with 220-grit sandpaper; rinse pipe with water and allow to dry.
 - 2. Apply metal primer paint to clean exterior piping.
 - 3. Apply two coats of enamel-based metal topcoat paint. Allow the first coat to thoroughly dry before applying second coat.
- C. Underground copper tubing shall extend 12" above ground on all risers.

6. SCHEDULES

- A. Pipe Hanger Spacing:
 - 1. Metal Piping:
 - a. Pipe Size: 1/2 inches to 1-1/4 inches:
 - 1) Maximum Hanger Spacing: 6.5 ft.
 - 2) Hanger Rod Diameter: 3/8 inches.
 - b. Pipe size: 1-1/2 inches to 2 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 3/8 inch.

END OF SECTION 231126

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Metal ducts.
- B. Flexible ducts.
- C. Ducts for kitchen exhaust applications.

2. SUBMITTALS

- A. Product Data: Provide data for duct materials.
- B. Shop Drawings: Indicate duct fitting types, gauges, sizes, welds, and configuration.

02. PART 2 PRODUCTS**1. GENERAL REQUIREMENTS**

- A. Provide UL Class 1 ductwork, fittings, hangers, supports, and appurtenances in accordance with NFPA 90A and SMACNA (DCS) guidelines unless stated otherwise.
- B. Provide metal duct unless otherwise indicated.
- C. Acoustical Treatment: Provide sound-absorbing liners and sectional silencers for metal-based ducts in compliance with Section 233319.
- D. Duct Shape and Material in accordance with Allowed Static Pressure Range:
 - 1. Round: Plus or minus 2 in-wc of galvanized steel.
 - 2. Rectangular: Plus or minus 1/2 in-wc of galvanized steel.
- E. Duct Sealing and Leakage in accordance with Static Pressure Class:
 - 1. Duct Pressure Class and Material for Common Mechanical Ventilation Applications:
 - a. Supply Air: 1/2 in-wc pressure class, galvanized steel.
 - b. Return and Relief Air: 1/2 in-wc pressure class, galvanized steel.
 - c. General Exhaust Air: pressure class, galvanized steel.
- F. Duct Fabrication Requirements:
 - 1. Duct and Fitting Fabrication and Support: SMACNA (DCS) including specifics for continuously welded round and oval duct fittings.
 - 2. Use reinforced and sealed sheet-metal materials at recommended gauges for indicated operating pressures or pressure class.

3. Construct tees, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide airfoil turning vanes of perforated metal with glass fiber insulation.
4. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.
5. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
6. Provide turning vanes of perforated metal with glass fiber insulation when an acoustical lining is required.
7. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2. METAL DUCTS

A. Material Requirements:

1. Galvanized Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.

B. Round Spiral Duct:

1. Round spiral lock seam duct with galvanized steel outer wall.

C. Connectors, Fittings, Sealants, and Miscellaneous:

1. Fittings: Manufacture with solid inner wall of perforated galvanized steel.
2. Transverse Duct Connection System: SMACNA "E" rated rigid class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips in accordance with SMACNA (DCS).
3. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
 - a. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
 - b. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
4. Gasket Tape:
 - a. Provide butyl rubber gasket tape for a flexible seal between transfer duct connector (TDC), transverse duct flange (TDF), applied flange connections, and angle ring connections.
5. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

3. FLEXIBLE DUCTS

- A. Flexible Air Ducts:
 - 1. UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound spring steel wire.
 - 2. Insulation: Fiberglass insulation with polyethylene vapor barrier film.
 - 3. Pressure Rating: From 10 in-wc to 1 in-wc negative.
 - 4. Temperature Range: Minus 20 to 210 degrees F.
- 4. DUCTS FOR KITCHEN EXHAUST APPLICATIONS
 - A. Provide ductwork, fittings, and appurtenances in accordance with NFPA 96, SMACNA (KVS), UL 1978, and UL 2221 requirements and guidelines.
 - B. Class 1 duct for air with gas and grease particle exhaust at an air velocity of 1,500 to 2,500 fpm.
 - C. Where ducts are not self-draining back to equipment, provide low-point drain pocket with the copper drain pipe to a sanitary sewer.
 - D. Design, fabricate, and install liquidtight preventing exhaust leakage into building.
 - E. Kitchen Hood and Grease Exhaust Duct:
 - 1. Fabricate in accordance with ductwork manufacturer's instructions, SMACNA (DCS), SMACNA (KVS), and NFPA 96.
 - 2. Round, Double-Wall, Premanufactured Grease Exhaust Ducts:
 - a. UL Listed and labeled to UL 1978.
 - b. Nominal 1 inch thick, body soluble fiber insulation that fills annular space between inner liner of 20-gauge, 0.035 inch Type 304 stainless steel and outer jacket of 24-gauge, 0.023-inch aluminized steel.
 - c. Seal joints during installation with factory-supplied overlapping V-bands and sealant.
 - d. Minimum horizontal slope of 1/16 inch per foot per manufacturer's listing to UL 1978.
 - e. Manufacturers:
 - 1) Jeremias Exhaust Systems.
 - 2) Metal Fab.
 - 3) Schebler.
 - 4) Substitutions: See Section 230500 - HVAC General Provisions.
 - 3. Zero Clearance, 2-Hour Fire-Rated, Rectangular, Double-Wall, Premanufactured Grease Duct:
 - a. Listed when tested in accordance with UL 1978 and ASTM E2336.
 - b. Construct of 18-gauge, 0.050-inch stainless steel using continuous external welded joints in rectangular sections.

- c. Liquidtight with continuous external weld for seams and joints.
- d. Where ducts are not self-draining back to equipment, provide low-point drain pocket with copper drain pipe to sanitary sewer.
- e. Through-penetration firestop listed to UL 1479 or ASTM E814.
- f. Manufacturers:
 - 1) Jeremias Exhaust Systems.
 - 2) Metal Fab.
 - 3) Schebler.
 - 4) Substitutions: See Section 230500 - HVAC General Provisions.
- 4. Grease Exhaust Duct Access Doors:
 - a. Listed when tested in accordance with UL 1978.
 - b. Install hinged access doors where indicated or required for access for cleaning and inspection of duct.
 - c. Reinforce door frames with steel angles tied to horizontal and vertical plenum supporting angles.
 - d. Size: 12 by 12 inches.

03. PART 3 EXECUTION

1. INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install products following the manufacturer's instructions.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Flexible Ducts: Connect to metal ducts with liquid adhesive plus tape.
- E. Kitchen Hood Exhaust: Provide residue traps at the base of vertical risers with provisions for the cleanout.
- F. Duct sizes indicated are precise inside dimensions. For lined ducts, maintain sizes inside lining.
- G. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- H. Connect terminal units to supply ducts directly or with one foot maximum length of flexible duct. Do not use flexible duct to change direction.
- I. Duct Insulation: Provide duct insulation. See Section 230713.

- J. Ductwork shall be run as high as possible in all rooms to maintain proper headroom. Where two or more ducts cross each other, they must be arranged in such a manner as to maintain the greatest possible clearance underneath.
- K. Ductwork shall not cover any electrical outlets or junction boxes. Consult with other trades to avoid interference with piping runs, etc.
- L. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.
- M. Ducts shall conform to dimensions on the Drawings unless location of structural members prohibit. Make minor changes in run of certain ducts without extra cost to the Owner if necessary to avoid unforeseen structural or other interferences.
- N. All ducts shall be straight and smooth on the inside with finished joints. No inside standing seams will be permitted in ductwork. No single thickness partitions shall be allowed between ducts. The Engineer reserves the right to order any open seams or joints made tight by caulking or taping. No open joints at corners or elsewhere will be allowed.
- O. Where space permits, elbows shall have a centerline radius equal to 1½ times their width. Shorter radius and square throat elbows shall be used where required to fit restricted areas only and where required by the duct connection details on the Drawings. All short radius and square throat elbows shall be provided with turning vanes.

2. LISTED GREASE DUCT

- A. Locate to comply with minimum clearances from combustibles and minimum termination heights according to product listing or NFPA 211, whichever is most stringent.
- B. Seal between sections of grease exhaust ducts according to manufacturer's written installation instructions, using sealants recommended by manufacturer.
- C. Support vents at intervals recommended by manufacturer to support weight of vents and all accessories, without exceeding appliance loading.
- D. After completing system installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finishes.

3. UNLISTED GREASE DUCT

- A. Install to comply with minimum clearances from combustibles and minimum termination heights according to the current International Mechanical Code or NFPA 96.
- B. Weld exhaust-duct connections with exterior continuous liquid-tight joint.
- C. Perform a light test or approved equivalent test method to determine that all welded and brazed joints are liquid tight. Perform for the entire duct system, including the hood-to-duct connection.

1. Test shall be performed while ductwork is exposed to view, prior to installation of insulation.
 2. A light test shall be performed by passing a lamp having a power rating of not less than 100 watts (or 1500 lumens for energy efficient bulb types) through the entire section of duct work to be tested. The lamp shall be open so as to emit light equally in all directions perpendicular to the duct walls.
 - D. Install duct with a minimum of 2 percent slope on horizontal runs, pitch towards hood.
 - E. Supports shall be of noncombustible material securely attached to the structure. Fasteners shall not penetrate duct walls.
4. CLEANING
- A. Clean thoroughly each duct system. See Section 230130.51.

END OF SECTION 233100

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Air turning devices/extractors.
- B. Duct test holes.
- C. Flexible duct connectors.
- D. Volume control dampers.

2. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide for shop-fabricated assemblies including volume control dampers, duct access doors, duct test holes, and hardware used. Include electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers.
- D. Project Record Drawings: Record actual locations of access doors and test holes.

3. QUALITY ASSURANCE

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

02. PART 2 PRODUCTS**1. AIR TURNING DEVICES/EXTRACTORS**

- A. Manufacturers:
 - 1. Krueger-HVAC, Division of Air System Components: www.krueger-hvac.com/#sle.
 - 2. Ruskin Company: www.ruskin.com/#sle.
 - 3. Titus HVAC, a brand of Johnson Controls: www.titus-hvac.com/#sle.
 - 4. Tuttle & Bailey.
 - 5. Nailor Industries, Inc: www.nailor.com/#sle.
 - 6. Substitutions: See Section 230500 - HVAC General Provisions.
- B. Multi-blade device with radius blades attached to pivoting frame and bracket, steel construction, with push-pull operator strap.

2. MANUAL VOLUME DAMPERS

- A. Manufacturers:
 - 1. Louvers & Dampers, Inc, a brand of Mestek, Inc: www.louvers-dampers.com/#sle.
 - 2. Nailor Industries, Inc: www.nailor.com/#sle.
 - 3. Ruskin Company: www.ruskin.com/#sle.
 - 4. Greenheck Fan Corporation.
 - 5. Pottorff: www.pottorff.com/#sle.
 - 6. Vent Products Company, Inc.
 - 7. Substitutions: See Section 230500 - HVAC General Provisions.
 - B. Standard, Galvanized Steel, Manual Volume Dampers:
 - 1. Suitable for horizontal or vertical applications.
 - 2. Single blade, or multiple, opposed-blade design.
 - C. Adjustable quadrants or regulators: Plainly marked to indicate position of damper, with locking nut.
3. DUCT TEST HOLES
- A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.
4. FLEXIBLE DUCT CONNECTORS
- A. Manufacturers:
 - 1. Carlisle HVAC Products: www.carlislehvac.com/#sle.
 - 2. Ductmate Industries, Inc, a DMI Company: www.ductmate.com/#sle.
 - 3. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
 - 4. Substitutions: See Section 230500 - HVAC General Provisions.
 - B. Fabricate in accordance with SMACNA (DCS) and as indicated.
 - C. Flexible Duct Connections: Fabric crimped into metal edging strip.
 - 1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz/sq yd.
 - a. Net Fabric Width: Approximately 6 inches wide.
 - 2. Metal: 3 inches wide, 24 gauge, 0.0239 inch thick galvanized steel.
 - D. Maximum Installed Length: 14 inch.
5. VOLUME CONTROL DAMPERS
- A. Products for Automatic Controls: See Section 253523.
 - B. Manufacturers:

1. Louvers & Dampers, Inc, a brand of Mestek, Inc: www.louvers-dampers.com/#sle.
 2. MKT Metal Manufacturing: www.mktduct.com/#sle.
 3. Nailor Industries, Inc: www.nailor.com/#sle.
 4. NCA, a brand of Metal Industries Inc: www.ncamfg.com/#sle.
 5. Ruskin Company: www.ruskin.com/#sle.
 6. Greenheck Fan Corporation.
 7. Vent Products Company, Inc.
 8. Substitutions: See Section 230500 - HVAC General Provisions.
- C. Fabricate in accordance with SMACNA (DCS) and as indicated.
- D. Single Blade Dampers:
1. Fabricate for duct sizes up to 6 by 30 inch.
 2. Blade: 24 gauge, 0.0239 inch, minimum.
- E. Multi-Blade Damper: Fabricate consisting of opposed blades with maximum blade sizes 8 by 72 inches. Assemble center- and edge-crimped blades in prime-coated or galvanized-channel frame with suitable hardware.
1. Blade: 18 gauge, 0.0478 inch, minimum.

03. PART 3 EXECUTION

1. PREPARATION

- A. Verify that electric power is available and of the correct characteristics.

2. INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). See Section 233100 for duct construction and pressure class.
- B. Provide duct test holes where indicated and required for testing and balancing purposes.
- C. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
- D. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.
- E. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum two duct widths from duct take-off.
- F. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

3. FIELD QUALITY CONTROL

- A. Operate dampers to verify full range of movement.
- B. Inspect locations of access doors and verify that purpose of access door can be performed.

END OF SECTION 233300

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Roof exhausters.
- B. Kitchen hood upblast roof exhausters.

2. REFERENCE STANDARDS

- A. AMCA (DIR) - (Directory of) Products Licensed Under AMCA International Certified Ratings Program; 2015.
- B. AMCA 99 - Standards Handbook; 2016.
- C. AMCA 204 - Balance Quality and Vibration Levels for Fans; 2020.
- D. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating; 2016, with Errata (2018).
- E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans; 2014.
- F. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data; 2022.
- G. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.
- H. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; 2024.
- I. UL 762 - Outline of Investigation for Power Roof Ventilators for Restaurant Exhaust Appliances; Current Edition, Including All Revisions.

3. ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate fan roof curbs and service utilities installation according to fan size.

4. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on fans and accessories, including fan curves with specified operating point plotted, power, rpm, sound power levels at rated capacity, and electrical characteristics and connection requirements.
- C. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

02. PART 2 PRODUCTS

1. POWER VENTILATORS - GENERAL

- A. Static and Dynamically Balanced: Comply with AMCA 204.
- B. Performance Ratings: Comply with AMCA 210, bearing certified rating seal.
- C. Sound Ratings: Comply with AMCA 301, tested to AMCA 300, bearing certified sound ratings seal.
- D. Fabrication: Comply with AMCA 99.
- E. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- F. Kitchen Hood Exhaust Fans: Comply with requirements of NFPA 96 and UL 762.

2. KITCHEN HOOD UPBLAST ROOF EXHAUSTERS

- A. Manufacturers:
 - 1. Greenheck Fan Corporation: www.greenheck.com/#sle.
 - 2. Captive-Aire.
 - 3. Grease Master.
 - 4. Substitutions: See Section 230500 - HVAC General Provisions.
- B. Belt or Direct Drive Fan:
 - 1. Fan Wheel:
 - a. Type: Non-overloading, backward inclined centrifugal.
 - b. Material: Aluminum, statically and dynamically balanced.
 - 2. Housing:
 - a. Construct of heavy gauge aluminum including curb cap, windband, and motor compartment.
 - b. Rigid internal support structure.
 - c. One-piece fabricated or fully welded curb-cap base to windband for leak proof construction.
 - d. Construct drive frame assembly of heavy gauge steel, mounted on vibration isolators.
 - e. Provide breather tube for fresh air motor cooling and wiring.
- C. Shafts and Bearings:
 - 1. Fan Shaft:
 - a. Ground and polished steel with anti-corrosive coating.
 - b. First critical speed at least 25 percent over maximum cataloged operating speed.

2. Bearings:
 - a. Permanently sealed or pillow block type.
 - b. Minimum L10 life in excess of 100,000 hours (equivalent to L50 average life of 500,000 hours), at maximum cataloged operating speed.
 - c. 100 percent factory tested.
- D. Drive Assembly:
 1. Belts, pulleys, and keys oversized for a minimum of 150 percent of driven horsepower.
 2. Belts: Static free and oil resistant.
 3. Fully machined cast iron type, keyed and securely attached to the wheel and motor shafts.
 4. Motor pulley adjustable for final system balancing.
 5. Readily accessible for maintenance.
- E. Disconnect Switches:
 1. Factory mounted and wired.
 2. Environment Type per NEMA EN 10250: Unless otherwise indicated, as specified for the following installation locations:
 - a. Outdoor Locations: Type 3R.
 3. Finish for Painted Steel Enclosures: Provide manufacturer's standard or factory-applied gray unless otherwise indicated.
 4. Positive electrical shutoff.
 5. Wired from fan motor to junction box installed within motor compartment.
- F. Roof Curb: 16 inch high self-flashing of galvanized steel with continuously welded seams, built-in cant strips, insulation and curb bottom, curb bottom, ventilated double wall, and factory installed nailer strip.
- G. Drain Trough: Allows for single-point drainage of water, grease, and other residues.
- H. Options/Accessories:
 1. Birdscreen:
 - a. Provide galvanized steel construction.
 - b. Protects fan discharge.
 2. Drain Connection:
 - a. Aluminum construction.
 - b. Container allows single-point drainage of grease, water, or other residues.
 3. Finishes: Standard factory finish.
 4. Grease Trap:

- a. Built-in drain connection.
- b. Container system to collect grease residue.
- 5. Hinge Kit:
 - a. Hinges and restraint cables mounted to base sleeve.
 - b. Allows fan to tilt away for access to wheel and ductwork for inspection and cleaning.

03. PART 3 EXECUTION

1. INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Secure roof exhausters with cadmium plated steel lag screws to roof curb.
- C. Extend ducts to roof exhausters into roof curb. Counterflash duct to roof opening.
- D. Provide sheaves required for final air balance.

END OF SECTION 233423

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Diffusers:
- B. Rectangular ceiling diffusers.
- C. Registers/grilles:
 - 1. Ceiling-mounted, exhaust and return register/grilles.
 - 2. Wall-mounted, supply register/grilles.
 - 3. Wall-mounted, exhaust and return register/grilles.

2. REFERENCE STANDARDS**3. SUBMITTALS**

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

02. PART 2 PRODUCTS**1. MANUFACTURERS**

- A. Carnes, a division of Carnes Company Inc: www.carnes.com/#sle.
- B. Krueger-HVAC: www.krueger-hvac.com/#sle.
- C. Price Industries: www.price-hvac.com/#sle.
- D. Titus, a brand of Air Distribution Technologies: www.titus-hvac.com/#sle.
- E. Tuttle and Bailey: www.tuttleandbailey.com/#sle.
- F. Nailor Industries Inc: www.nailor.com/#sle.
- G. Hart & Cooley, Inc.
- H. Shoemaker.
- I. Substitutions: See Section 230500 - HVAC General Provisions.

2. RECTANGULAR CEILING DIFFUSERS

- A. Basis of Design: Price SCD, SPD; Titus OMNI, TMS

- B. Type: Provide square formed adjustable, backpan stamped, and core removable ceiling diffusers constructed to maintain 360 degree discharge air pattern.
- C. Connections: Round.
- D. Frame: Provide surface mount and inverted T-bar type as scheduled. In plaster ceilings, provide plaster frame and ceiling frame.
- E. Fabrication: Steel with baked enamel finish.
- F. Color: As selected by Architect from manufacturer's standard range.
- G. Accessories: As indicated on drawings.

3. CEILING EXHAUST AND RETURN REGISTERS/GRILLES

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with blades set at 45 degrees, vertical face.
- B. Frame: As indicated on drawings.
- C. Fabrication: Steel with 20 gauge, 0.0359 inch minimum frames and 22 gauge, 0.0299 inch minimum blades, steel and aluminum with 20 gauge, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: As indicated on the drawings.
- E. Accessories: As indicated on drawings.
 - 1. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face where not individually connected to exhaust fans.
 - 2. Gymnasiums: Provide front pivoted or welded in place blades, securely fastened to be immobile.

4. WALL SUPPLY REGISTERS/GRILLES

- A. Type: Streamlined and individually adjustable blades, 3/4 inch minimum depth, 3/4 inch maximum spacing with spring or other device to set blades, vertical face, single deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Fabrication: Steel with 20 gauge, 0.0359 inch minimum frames and 22 gauge, 0.0299 inch minimum blades, steel and aluminum with 20 gauge, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: As indicated on the drawings.
- E. Damper: Integral, gang-operated opposed blade type with removable key operator, operable from face.
- F. Gymnasiums: Provide front pivoted or welded in place blades, securely fastened to be immobile.

5. WALL EXHAUST AND RETURN REGISTERS/GRILLES

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with spring or other device to set blades, vertical face.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting.
- C. Fabrication: Steel frames and blades, with factory baked enamel finish.
- D. Color: As indicated on the drawings.
- E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.
- F. Gymnasiums: Provide front pivoted or welded in place blades, securely fastened to be immobile.

03. PART 3 EXECUTION**1. INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Comply with SMACNA (ASMM) for flashing/counter-flashing of roof penetrations and supports for roof curbs and roof mounted equipment.
- C. Check location of outlets and inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.

2. CLOSEOUT ACTIVITIES

- A. Demonstrate operational system to Owner's representative.
- B. Instruct Owner's representative to maintain system and use occupant controls or interfaces, as required.

3. PROTECTION

- A. Protect installed products until completion of project.
- B. Replace, repair, or touch-up damaged products before Substantial Completion.

END OF SECTION 233700

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Cooking hoods.

2. REFERENCE STANDARDS

- A. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.
- B. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; 2024.
- C. SMACNA (KVS) - Kitchen Ventilation Systems and Food Service Equipment Fabrication and Installation Guidelines; 2001.
- D. UL 710 - Standard for Exhaust Hoods for Commercial Cooking Equipment; Current Edition, Including All Revisions.
- E. UL 1046 - Standard for Grease Filters for Exhaust Ducts; Current Edition, Including All Revisions.

3. SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation instructions, adjusting and balancing methods.
- B. Shop Drawings: For each custom fabricated unit, provide drawings showing details of construction, dimensions, and interfaces with adjacent construction.
- C. Test Reports for Grease Extracting Hoods: Provide test reports substantiating exhaust volume ratings and grease extraction performance.
- D. Operation and Maintenance Data.
- E. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

02. PART 2 PRODUCTS**1. MANUFACTURERS**

- A. Grease Extracting Hoods:
 - 1. Greenheck Fan Corporation: www.greenheck.com/#sle.

2. Captive-Aire Systems.
3. Substitutions: See Section 230500 - HVAC General Provisions.

2. HOOD APPLICATIONS

A. Canopy-Style Cooking Hoods:

1. Style: Wall-attached canopy.
2. Type: Grease extracting type, no water wash.

3. HOOD CONSTRUCTION

A. Provide products that comply with NFPA 96, the requirements and recommendations of SMACNA (KVS), and the requirements of the Authorities Having Jurisdiction.

B. Cooking Hoods: Provide Type I hoods, with all external joints and seams continuously welded, liquid-tight, and all internal joints, seams, and attachments sealed liquid-tight and grease-tight.

1. Provide fire extinguishing system for all cooking hoods.
2. Provide complete assemblies listed and labeled by UL under UL 710 for its intended use.
3. Provide hoods and exhaust ducts rated for zero clearance to combustible construction.

C. Construction: Materials, inside and out, are stainless steel complying with ASTM A666/A666M, Type 304, stretcher leveled; unless otherwise indicated.

1. Sheet Thickness: 18 gauge, 0.048 inch, minimum.
2. Fabrication: Fabricate each individual hood in one piece, with all welds ground and finished to match (inside and out); fabricate flat surfaces exposed to view as double-pan formed panels with internal stiffener members.
3. Finish on Surfaces Exposed to View: No.4 (brushed directional); provide stainless steel faces on all sides exposed to view.
4. Finish on Concealed Surfaces: No.4 or No.2B (dull, matte).
5. Duct Collars: For exhaust and make-up air openings, provide duct collar welded to hood unit; minimum of 8 inches extension from top or back face of unit, with minimum one inch 90 degree flange, unless otherwise indicated.
6. Access Panels: Provide removable or hinged access panels sufficient for maintenance and replacement of operating components inside unit; maximum width of 40 inches.
7. Supports: Stainless steel mounting brackets, struts, and threaded hanger rods.
 - a. Hanger Rods: 3/8 inch diameter, minimum.
 - b. Hanger Spacing: 48 inches on center, maximum.
 - c. Attachment to Structure: Mechanical fittings or inserts, stainless steel.

8. Accessory Panels: Where indicated, provide filler and closure panels of same construction as hoods, to close spaces between hoods and adjacent construction; mount with panel face flush with face of hood.
 - a. Where top of ceiling hung hood is lower than the finished ceiling, provide panels to close space between top of hood and ceiling.

4. GREASE EXTRACTING HOODS

- A. Grease Extracting Hoods: Pre-engineered, factory-fabricated standard products; high-velocity centrifugal grease extraction without requiring filters, cartridges, moving parts, removable parts, or constantly running water, with grease collected in gutter piped to drain, and as specified above.
 1. Performance: Remove 95 percent of extraneous matter in air stream at rated air velocity; provide substantiation.
 2. Grease Extracting Baffles: Non-removable, adjustable for balancing.
 3. Access Panels: Provide removable panels, with handles, for access to exhaust plenum for cleaning.
 4. Label: Provide permanent label indicating rated exhaust performance.

5. HOOD ACCESSORIES

- A. Fire Extinguishing Systems:
 1. Manufacturers:
 - a. Ansul, a Tyco Business: www.ansul.com/#sle.
 - b. Grease Master: www.greasemaster.com/#sle.
 - c. Kidde Fire Systems.
 - d. Pyro Chem.
 - e. Substitutions: See Section 230500 - HVAC General Provisions.
 2. Fire extinguishing system to comply with NFPA 96.
 3. Exposed Piping Under Hood: Stainless steel or chrome plated.
 4. Exposed Piping Outside Hood: Not permitted.
 5. Nozzles: Stainless steel or chrome plated brass.
 6. Electrical Components: Provide all components required for properly operating system, including but not limited to wiring, raceways, contactors, circuit breakers, switches and solenoids.
 7. Manual Actuators: Wall-mounted pull stations; provide one near each hood and one near exit door.
- B. Controls:
 1. Fans: Provide manual push button controls for starting and stopping fans and labeled indicator lights showing fan status.

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2. Fans: Provide controls for fan operation by time clock, programmable by the week, capable of maintaining time cycle after operation of manual push buttons.
 3. Hoods with Supply Air Fan: Delay starting of exhaust fan for 5 seconds after start of supply fan. Variable speed operation.
 4. Automatic gas shut-off valve: Electrically operated, normally closed, automatic gas shutoff valve listed and approved for natural gas service.
 - a. Interconnect with the kitchen hood fire suppression system to automatically close upon activation of the fire suppression system, loss of control power, or receipt of a fire alarm/shutdown signal.
 - b. Valve shall be fail-safe, spring-return type requiring manual reset after closure. Gas service shall not be restored until the fire suppression system has been inspected, reset, and released for operation in accordance with applicable codes and manufacturer requirements.
 5. Fire Extinguishing System: Provide automatic actuation complying with NFPA 96; provide local and remote manual actuating stations clearly labeled "Hood Fire Protection"; upon actuation of fire extinguishing system, automatically:
 - a. Shut off fans serving that hood.
 - b. Shut off fuel source to equipment under hood; actuate solenoid gas valves provided as part of gas piping work.
 - c. Shut off electric power to equipment under hood; actuate contactors or switches provided as part of electrical work.
 - d. Activate audible alarm.
- C. Control Panels: Factory assembled and pre-wired, ready for utility connections.
1. UL listed for use with specific hood.
 2. Provide a single control panel combining all control functions for a particular hood, unless otherwise indicated.
 3. Provide a single control panel for each group of hoods served by a single MAU.
 4. Enclosures: Flush-mounted; stainless steel, to match hood.
 5. Provide touchscreen control panel door showing status of fans and power supply.
- D. Lights Inside Hoods: Fluorescent and incandescent in quantity and locations indicated, in UL listed vapor-proof fixtures, pre-wired to junction box on top of hood.
1. Incandescent: Flush mounted, glass lens; 75 watt bulb.
- E. Grease Filters: Stainless steel, washable, complying with , UL listed and labeled.
- F. Splash Panels: Same material and finish as exposed hood surfaces, height from floor to hood.
1. Provide backsplash panel the length of the hood.
 2. Provide one side splash panel the depth of the hood.
 3. Provide with zero clearance insulation.

03. PART 3 EXECUTION**1. PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

2. INSTALLATION

- A. Install in accordance with manufacturer's instructions and NFPA 96.
- B. Install hoods level and plumb, securely fastened, with seismic restraints as specified, and free of vibration during normal operation.
- C. Weld hood duct collars to ductwork, liquid-tight.
- D. Connect to utilities.
- E. Make cutouts in hoods where required to run service lines and to make final connections, and seal openings according to UL 1978.
- F. Securely anchor and attach items and accessories to walls, floors, or bases with stainless-steel fasteners, unless otherwise indicated.
- G. Install trim strips anywhere hood sections meet.
- H. Set initial temperatures and calibrate sensors.
- I. Set field-adjustable switches.
- J. Coordinate gas shut-off valve installation, electrical power, control wiring, and interlocks with the kitchen hood fire suppression system, fire alarm system, electrical work, and kitchen equipment to provide a complete and fully operational fuel gas safety shutoff system.
- K. Connect ducts. Install flexible connectors on makeup air supply duct.
- L. Install fire-suppression piping for remote-mounted suppression systems according to NFPA 17A, "Wet Chemical Extinguishing Systems."

3. SYSTEM STARTUP

- A. Obtain the services of the manufacturer's representative experienced in the installation, adjustment, and operation of the equipment to supervise the starting and adjusting of equipment.
- B. Prepare equipment for startup, start and operate equipment for sufficient period to verify proper operation; correct equipment not operating correctly.
- C. Demonstrate operation to Owner's designated personnel.

- D. Report deficiencies in writing to Architect.
- 4. CLEANING
 - A. Clean surfaces of equipment.
- 5. PROTECTION
 - A. Protect installed products until completion of project.
 - B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 233813

01. PART 1 GENERAL

1. SECTION INCLUDES

- A. Energy recovery units.
- B. Casing.
- C. Fans.
- D. Filters.
- E. Dampers.
- F. Power and controls.

2. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's installation instruction, product data, and engineering calculations.
- C. Shop Drawings: Show design and assembly of energy recovery unit and installation and connection details.
- D. Closeout Submittals: Submit manufacturer's operation and maintenance instructions.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements for additional provisions.
 - 2. Spare Parts: One of each kind of filter.

3. WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Warranty ventilator to be free from defects in material and workmanship and of all parts for period of 1-1/2 years from date of Substantial Completion.

02. PART 2 PRODUCTS

1. MANUFACTURERS

- A. Energy Recovery Ventilators:
 - 1. RenewAire: www.renewaire.com/#sle.
 - 2. ConsERV; Dais Analytic Corp.
 - 3. Greenheck.

4. Nu-Air Ventilation Systems, Inc.
5. Venmar.
6. Substitutions: See Section 230500 - HVAC General Provisions.

2. ENERGY RECOVERY UNITS

- A. Energy Recovery Units: Provide stationary core air-to-air exchanger; prefabricated packaged system designed by manufacturer.
1. Access: Hinged and/or screwed access panels on front.
 2. Framing: Welded extruded aluminum tubular frame capable of supporting components and casings.
 3. Permanent name plate listing manufacturer mounted inside door near electrical panel.

3. CASING

- A. Wall, Floor, and Roof Panels:
1. Construction: 1 inch thick, double wall box construction, with formed edges of exterior wall overlapping formed edges of interior wall.
 2. Exterior Wall: Galvanized steel sheet.
 - a. 20 gauge, 0.0359 inch galvanized steel.
 3. Interior Wall: Galvanized sheet metal.
 - a. 22 gauge, 0.0299 inch galvanized sheet metal.
 4. Insulation:
 - a. 1 inch insulated fiberglass.
 - b. Panel Cores: Mineral wool board.
 - c. Flame Spread Index (FSI): 25 or less, when tested in accordance with ASTM E84 or UL 723.
 - d. Smoke Developed Index (SDI): 50, maximum, when tested in accordance with ASTM E84 or UL 723.
 5. Roof Panel: Weatherproof.
 6. Coating: Polyurethane enamel.
- B. Access Panels: Provide access to components through a large, tightly sealed and easily removable panel.
- C. Doors:
1. Construct doors of same construction and thickness as wall panels.
 2. Height: 80 inches.
- D. Duct Connection Collars: 0.08 inches aluminum, continuously welded.

- E. Weather Hood: Provide on fresh air inlet and exhaust air outlet; removable for access.
 - 1. Construction: ASTM A653/A653M, G90/Z275 galvanized, 20 gauge, 0.0359 inch steel sheet.
 - 2. Screening: Expanded aluminum bird screen.
 - 3. Fresh Air Weather Hood: Maintain a face velocity less than 340 feet/min.
- 4. FANS
 - A. Provide separate fans for exhaust and supply blowers.
 - B. Fans:
 - 1. Backward inclined.
 - 2. Single width, single inlet.
 - C. Bearings:
 - 1. Pillow block.
 - 2. Bearings: Permanently lubricated sealed ball bearings.
 - 3. Rated for not less than 200,000 hours of operation with accessible greased fittings.
 - D. Housings: 12 gauge, 0.1046 inch aluminized steel with plenums integral to general housing and constructed to Class 1 fan standards.
 - E. Motors:
 - 1. Motors: Open drip proof.
 - 2. Efficiency: High.
 - 3. Speed: Single.
 - 4. Control: Constant Speed.
 - 5. Fan Motor: UL listed and labeled.
- 5. FILTERS
 - A. Exhaust and Fresh Air Streams: MERV 7 filters constructed to meet ASHRAE Std 52.2.
 - B. Provide spare set of filters.
- 6. DAMPERS
 - A. Exhaust Back-Draft Damper: Factory installed, galvanized steel.
 - 1. High performance, backdraft dampers suitable for application in HVAC systems with velocities to 3000 fpm.
 - 2. Louvers, Dampers, and Shutters: AMCA 500-D and AMCA 500-L.
 - 3. Damper Capacity: Demonstrate damper capacity to withstand HVAC system operating conditions.

4. Fabrication:

- a. Frame: 20 gauge, 0.0359 inch, 3 inch roll formed galvanized steel channel with rear flange, prepunched mounting holes, and welded corner clips for maximum rigidity.
- b. Blades:
 - 1) Style: Single-piece, overlap frame.
 - 2) Material: Roll formed 28 gauge, 0.0149-inch galvanized steel.
 - 3) Width: Maximum 6 inches.

B. Return Air Damper:

- 1. Factory installed, adjustable volume control, opposed blade damper for regulating airflow, based on external static pressure.
- 2. Return Air Damper: Structural hat channels, reinforced at corners.
- 3. Roll-formed Frames: Structurally superior to 13 gauge, 0.0897 inch U-channel frames.
- 4. Blades: Single skin, 16 gauge, 0.0598 inch.

C. Motorized Dampers: Provide motorized dampers at outside air inlet.

- 1. Type: Motorized two position parallel blade damper with blade seals.
- 2. Motorized Damper: Roll-formed structural hat channels, reinforced at the corners,
- 3. Blades: Single skin, 16 gauge, 0.0598 inch.

7. POWER AND CONTROLS

- A. Motor Control Panels: UL listed.
- B. Include necessary motor starters, fuses, transformers and overload protection according to NFPA 70.
- C. Provide single-point field connection to power supply.
- D. Install wiring in accordance with NFPA 70.

03. PART 3 EXECUTION

1. INSTALLATION

A. Equipment Mounting:

- 1. Install suspended air-to-air energy recovery equipment with continuous-thread hanger rods and elastomeric hangers of size required to support weight of energy recovery equipment.

B. Install units with clearances for service and maintenance.

- C. Provide flexible duct connections at unit duct flanges.
- 2. SYSTEM STARTUP
 - A. Install new filters at completion of equipment installation and before testing, adjusting, and balancing.
- 3. CLEANING
 - A. Clean filters, air plenums, interior and exposed-to-view surfaces prior to Substantial Completion.

END OF SECTION 237223

01. PART 1 GENERAL

1. SECTION INCLUDES

- A. Make-up Air Units.

2. RELATED REQUIREMENTS

- A. Section 251500 - Integrated Automation Software: BAS, BMS, or SCADA.

3. SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data with dimensions, duct and service connections, accessories, controls, electrical nameplate data, and wiring diagrams.
- C. Shop Drawings: Indicate dimensions, duct and service connections, accessories, controls, electrical nameplate data, and wiring diagrams.
- D. Operation And Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.
- E. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

4. WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer's standard form in which manufacturer agrees to repair or replace components that fail in materials or workmanship within specified period.
 - 1. Warranty Period: Not less than one year from the date of Substantial Completion.
- C. Provide five year manufacturers warranty for compressor/condenser unit.

02. PART 2 PRODUCTS

1. FAULT CURRENT PROTECTION

- A. Mechanical equipment with electrical requirements of 20 amps or greater shall be marked from the manufacturer with the short-circuit current rating (SCCR) on the equipment nameplate. Minimum SCCR value shall be as listed below unless scheduled otherwise on Drawing schedules.
- B. Ratings for 208/3/60 systems:
 - 1. 20-amp current protection or less: 5,000 SCCR.

2. 40-amp current protection or less: 10,000 SCCR.

2. MAKE-UP AIR UNITS

- A. Description: Factory-assembled, prewired, self-contained unit consisting of cabinet, supply fan, controls, and direct-fired furnace to be installed outside the building.
 1. Kitchen make-up air unit and kitchen range exhaust hood shall be by same manufacturer.
- B. Manufacturers:
 1. Captive-Air Systems, Inc.
 2. Grease Master.
 3. Greenheck.
 4. Substitutions: See Section 230500 - HVAC General Provisions.
- C. Cabinet: Single-wall galvanized-steel panels, formed to ensure rigidity and supported by galvanized-steel channels or structural channel supports with lifting lugs.
 1. Cabinet shall be fully weatherized for outside installation.
 2. Access Panels: For furnace and fan motor assemblies on both sides of unit.
 3. Internal Insulation: Minimum 1 inch thick fibrous-glass duct lining, comply with ASTM C 1071, Type II, applied on complete unit.
 4. Finish: Heat-resistant, baked enamel.
- D. Supply-Air Fan: Centrifugal, rated according to AMCA 210; statically and dynamically balanced, galvanized steel; mounted on solid-steel shaft with heavy-duty, self-aligning, permanently lubricated ball bearings or pillow-block bearings rated for L-50 or 200,000 hours with external grease fittings.
 1. Motor: Open dripproof or totally enclosed, single-speed motor.
 2. Drive: V-belt drive with matching fan pulley and adjustable motor sheaves and belt assembly.
 3. Mounting: Fan wheel, motor, and drives shall be mounted in fan casing with elastomeric or spring isolators.
- E. Outdoor-air Intake: Galvanized steel with 45-degree angle bird screen, and finish to match cabinet; and sized to supply maximum 100 percent outdoor air.
- F. Filters: Washable.
- G. Dampers:
 1. Outdoor-Air Damper: Galvanized-steel, opposed-blade dampers with vinyl blade seals and stainless-steel jamb seals, having a maximum leakage of 10 cfm/sq. ft. of damper area, at differential pressure of 2-inch wg.

-
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2. Damper Operators: Direct coupled, electronic with spring return or fully modulating as required by the control sequence.
- H. Direct-Fired Furnace: Description: Factory assembled, piped, and wired; and complying with ANSI Z83.4, "Direct Gas-Fired Make-Up Air Heaters"; ANSI Z83.18, "Direct Gas-Fired Industrial Air Heaters"; and NFPA 54, "National Fuel Gas Code."
1. Burners: Cast-iron burner with stainless-steel mixing plates; gas control valve as scheduled; Electrically ignited by hot-surface ceramic or direct spark igniter.
 2. Safety Controls:
 - a. Gas Manifold: Safety switches and controls to comply with ANSI standards.
 - b. Purge-Period Timer: Automatically delays burner ignition and bypasses low-limit control.
 - c. Airflow Proving Switch: Dual pressure switch senses correct airflow before energizing pilot and requires airflow to be maintained within minimum and maximum pressure settings across burner.
 - d. Manual-Reset, High-Limit Control Device: Stops burner and closes main gas valve if high-limit temperature is exceeded.
 - e. Gas Train: Regulated, redundant, 24 VAC gas valve assembly containing pilot solenoid valve, modulating temperature control valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff all in one body.
 - f. Safety Lockout Switch: Locks out ignition sequence if burner fails to light after three tries. Controls are reset manually by turning the unit off and on.
 - g. Control Transformer: Integrally mounted 24 VAC. Minimum 50 VA, or as coordinated with the Division 230900 contractor for their requirements to be met + 10% capacity.
- I. Kitchen System Controls: Factory-wired, fuse-protected control transformer, connection for power supply and field-wired unit to remote control panel.
1. Supplier shall be responsible to ensure all components are provided for seamless control of Kitchen MAU by remote kitchen control panel.
 2. Control transformer shall be minimum 50 VA, or as coordinated with the Division 230900 contractor for their requirements to be met + 10% capacity.

03. PART 3 EXECUTION

1. INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Connect drain pan outlet to nearest building drain system piping.
- C. Adjusting: Use plenum static pressure readings against manufacturer calibration chart to adjust primary airflow as other measuring methods will not work.

- D. Coordinate BAS, BMS, or Integrated Automation linking between unit controller(s) and remote front-end interface; see Section 251500.
2. MAU INSTALLATION
- A. Install gas-fired units according to NFPA 54, "National Fuel Gas Code."
 - B. Install ground-mounted units on concrete pads and spring isolators with minimum 1-inch static deflection.
 - C. Install controls and equipment shipped by manufacturer for field installation with MAUs.
 - D. Piping Connections: Drawings indicate general arrangement of piping, fittings, and specialties. Install piping adjacent to machine to allow service and maintenance.
 - E. Connect duct to MAUs with flexible duct connectors.
 - F. Change filters at completion of work before test and balance.

END OF SECTION 237433

01. PART 1 GENERAL**1. SECTION INCLUDES**

- A. Forced air furnaces.
- B. Air cooled condensing units.
- C. Indoor air handling (fan and coil) units for ducted systems.
- D. Controls.

2. REFERENCE STANDARDS

- A. AHRI 210/240 - Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment; 2023.
- B. AHRI 520 - Performance Rating of Positive Displacement Condensing Units; 2004.
- C. ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2022, with Addendum (2024).
- D. ASHRAE Std 23 - Methods for Performance Testing Positive Displacement Refrigerant Compressors and Compressor Units; 2022.
- E. NEMA MG 00001 - Motors and Generators; 2024.
- F. NFPA 54 - National Fuel Gas Code; 2024.
- G. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.
- H. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2021.
- I. NFPA 211 - Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances; 2024.
- J. UL 207 - Standard for Refrigerant-Containing Components and Accessories, Nonelectrical; Current Edition, Including All Revisions.

3. SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- C. Shop Drawings: Indicate assembly, required clearances, and location and size of field connections.

-
- D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.
 - E. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.
 - F. Project Record Documents: Record actual locations of components and connections.
 - G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements, for additional provisions.
 - 2. Extra Filters: One for each unit.
4. WARRANTY
- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
 - B. Provide three year manufacturers warranty for solid state ignition modules.

02. PART 2 PRODUCTS

1. MANUFACTURERS

- A. Amana Heating & Air Conditioning; Goodman Manufacturing Company, L.P.
- B. Armstrong Air.
- C. Carrier Corporation: www.carrier.com/#sle.
- D. Lennox Industries.
- E. Rheem Manufacturing Company Inc: www.rheem.com/#sle.
- F. Trane Technologies, PLC: www.trane.com/#sle.
- G. York International Corporation / Johnson Controls: www.york.com/#sle.
- H. Substitutions: See Section 230500 - HVAC General Provisions.

2. SYSTEM DESIGN

- A. Split-System Heating and Cooling Units: Self-contained, packaged, matched factory-engineered and assembled, pre-wired indoor and outdoor units; UL listed.
 - 1. Heating: Natural gas fired.
 - 2. Cooling: Outdoor electric condensing unit with evaporator coil in central ducted indoor unit coil in central ducted indoor unit.
 - 3. Provide refrigerant lines internal to units and between indoor and outdoor units, factory cleaned, dried, pressurized and sealed, with insulated suction line.
- B. Performance Requirements: See Drawings for additional requirements.

C. Electrical Characteristics:

1. See Equipment Schedule on drawings.

3. INDOOR AIR HANDLING UNITS FOR DUCTED SYSTEMS

A. Indoor Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heating and cooling element(s), controls, and accessories; wired for single power connection with control transformer.

1. Cabinet: Steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.

B. Supply Fan: Centrifugal type rubber mounted with direct drive.

1. Motor: NEMA MG 1; 1750 rpm multiple speed, permanently lubricated, hinge mounted.

C. Air Filters: 1 inch thick urethane, washable type arranged for easy replacement.

D. Evaporator Coils: Copper tube aluminum fin assembly, galvanized or polymer drain pan sloped in all directions to drain, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve.

1. Construction and Ratings: In accordance with AHRI 210/240 and UL 207.
2. Manufacturers: System manufacturer.

4. OUTDOOR UNITS

A. Outdoor Units: Self-contained, packaged, pre-wired unit consisting of cabinet, with compressor and condenser.

1. Comply with AHRI 210/240.
2. Cabinet: Galvanized steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.
3. Construction and Ratings: In accordance with AHRI 210/240 with testing in accordance with ASHRAE Std 23 and UL 207.

B. Compressor: Hermetic, two speed 1800 and 3600 rpm, AHRI 520 resiliently mounted integral with condenser, with positive lubrication, crankcase heater, high-pressure control, motor overload protection, service valves and drier. Provide time delay control to prevent short cycling and rapid speed changes.

C. Air Cooled Condenser: Aluminum fin and copper tube coil, AHRI 520 with direct drive axial propeller fan resiliently mounted, galvanized fan guard.

1. Condenser Fans: Direct-drive propeller type.
2. Condenser Fan Motor: Enclosed, 1-phase type, permanently lubricated.

D. Accessories: Filter drier, high-pressure switch (manual reset), low pressure switch (automatic reset), service valves and gauge ports, thermometer well (in liquid line).

1. Provide thermostatic expansion valves.

E. Operating Controls:

1. Control by room thermostat to maintain room temperature setting.

F. Mounting:

1. Mounting Pad: Precast concrete parking bumpers, minimum 4 inches square; minimum of two located under cabinet feet.

5. GAS FURNACE COMPONENTS

A. Heat Exchanger: Stainless steel tubular type.

B. Insulation: Foil-faced.

C. Burner: Atmospheric type with adjustable combustion air supply,

1. Gas valve provides 100 percent safety gas shut-off; 24 volt combining pressure regulation, safety pilot, manual set (On-Off), pilot filtration, automatic electric valve.

2. Electronic pilot ignition, with silicon nitride igniter.

3. Combustion air damper with synchronous spring return damper motor.

4. Non-corrosive combustion air blower with permanently lubricated motor.

D. Burner Safety Controls:

1. Thermocouple Sensor: Prevents opening of gas valve until pilot flame is proven and stops gas flow on ignition failure.

2. Flame Rollout Switch: Installed on burner box and prevents operation.

3. Vent Safety Shutoff Sensor: Temperature sensor installed on draft hood and prevents operation, manual reset.

4. Limit Control: Fixed stop at maximum permissible setting, de-energizes burner on excessive bonnet temperature, automatic resets.

E. Operating Controls:

1. Cycle burner by room thermostat to maintain room temperature setting.

2. Supply fan energized from bonnet temperature independent of burner controls, with adjustable timed off delay and fixed timed on delay, with manual switch for continuous fan operation.

6. ACCESSORY EQUIPMENT

- A. Room Thermostat: Wall-mounted, electric solid state microcomputer based room thermostat with remote sensor to maintain temperature setting; low-voltage; with following features:
 - 1. System selector switch (heat-off-cool) and fan control switch (auto-on).
 - 2. Automatic switching from heating to cooling.
 - 3. Preferential rate control to minimize overshoot and deviation from setpoint.
 - 4. Set-up for four separate temperatures per day.
 - 5. Programming based on weekdays, Saturday and Sunday.
 - 6. Selection features including degree F or degree C display, 12 or 24 hour clock, keyboard disable, remote sensor, fan on-auto.
 - 7. Thermostat Display:
 - a. Time of day.
 - b. Actual room temperature.
 - c. Programmed temperature.
 - d. System Mode Indication: Heating, Cooling, Fan Auto, Off, and On, Auto or On, Off.

03. PART 3 EXECUTION

1. EXAMINATION

- A. Verify that substrates are ready for installation of units and openings are as indicated on shop drawings.
- B. Verify that proper power supply is available and in correct location.
- C. Verify that proper fuel supply is available for connection.

2. INSTALLATION

- A. Install in accordance with manufacturer's instructions and requirements of local authorities having jurisdiction.
- B. Install in accordance with NFPA 90A and NFPA 90B.
- C. Install gas fired furnaces in accordance with NFPA 54.
- D. Provide vent connections in accordance with NFPA 211.
- E. Install refrigeration systems in accordance with ASHRAE Std 15.
- F. Controls: Install thermostats at mounting height of 48 inches above floor to center of device.

1. Wiring Method: Install control wiring in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Conceal control wiring except in unfinished spaces.
 - G. Install ground-mounted, compressor-condenser components on 4-inch- thick, reinforced concrete base; 4 inches larger on each side than unit. Concrete, reinforcement, and formwork are specified in Division 03.
3. CONNECTIONS
 - A. Drawings indicate general arrangement of gas piping, fittings, and specialties. Connect gas piping with union or flange and appliance connector valve.
 - B. Install piping adjacent to equipment to allow service and maintenance.
 - C. Install condensate drains to indirect waste. Provide neutralizer for condensate from flue.
 - D. Vent and Outside-Air Connection, Condensing, Gas-Fired Furnaces: Connect plastic piping vent material to furnace connections and extend outdoors. Terminate vent outdoors with a cap and in an arrangement that will protect against entry of birds, insects, and dirt.
 - E. Slope pipe vent back to furnace or to outside terminal.
 - F. Connect ducts to furnace with flexible connector. Comply with requirements in Section 233100.
 - G. Connect refrigerant tubing to refrigerant coil in furnace and to air-cooled, compressor-condenser unit.
 - H. Set controls, burner, and other adjustments for optimum heating performance and efficiency. Adjust heat-distribution features, including shutters, dampers, and relays, to provide optimum heating performance and system efficiency.
 - I. Install new filters in each unit within 14 days after Substantial Completion.

END OF SECTION 238126

CHIPPEWA DOWNS GRANDSTAND

Belcourt, North Dakota

Chippewa Downs Grandstand
Belcourt, North Dakota
Project #26028

DIVISION 26 – ELECTRICAL

SECTION 260500	COMMON WORK RESULTS FOR ELECTRICAL
SECTION 260505	TEMPORARY FACILITIES AND CONTROLS
SECTION 260510	REMODELING WORK
SECTION 260519	CONDUCTORS
SECTION 260526	GROUNDING & BONDING FOR ELECTRICAL SYSTEMS
SECTION 260533	RACEWAYS
SECTION 260534	OUTLET, PULL AND JUNCTION BOXES
SECTION 260540	FLOOR BOXES
SECTION 260553	IDENTIFICATION
SECTION 260583	CONNECTIONS TO EQUIPMENT
SECTION 260943	NETWORK LIGHTING CONTROL SYSTEM
SECTION 262416	PANELBOARDS
SECTION 262713	ELECTRIC SERVICE
SECTION 262726	WIRING DEVICES AND DEVICE PLATES
SECTION 262813	FUSES
SECTION 262816	ENCLOSED SWITCHES & CIRCUIT BREAKERS
SECTION 262913	MOTOR STARTERS
SECTION 264313	SURGE SUPPRESSION
SECTION 265100	LUMINAIRES
SECTION 266500	KITCHEN EQUIPMENT WIRING
SECTION 266530	ELECTRIC HEATING EQUIPMENT

DIVISION 27 – COMMUNICATIONS

SECTION 270500	DIVISION 27 GENERAL PROVISIONS
SECTION 270528	NETWORK SYSTEMS ROUGH-IN
SECTION 271513	NETWORK CABLING
SECTION 275116	PUBLIC ADDRESS SYSTEM

PART 1 – GENERAL

1.1 DESCRIPTION

A. Specification Format

1. These Specifications are written in imperative and abbreviated form. This imperative language of the technical sections is directed at the Contractors, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall", and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, perform all indicated requirements whether stated imperatively or otherwise.
2. Three Part Format
 - a. "Part 1.0 - General": Covers those areas which relate to the Work, and which define the general administrative and technical requirements specific to a particular section.
 - b. "Part 2.0 - Products": Defines, in detail, the acceptance equipment and materials to be incorporated into the Work.
 - c. "Part 3.0 - Execution": Describes, in detail, the manner in which items covered by Part 2 are to be incorporated into the Work.
3. Where Codes, Specifications and Drawings are in conflict, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies immediately to the Engineer prior to commencing related work.

B. Definitions

1. "Furnish" - Supply equipment as required by these Drawings and Specifications, delivered to the job site for installation or use by others.
2. "Install" - Fix in position for total operational use all apparatus as shown, specified or required. Provide all miscellaneous fittings and wiring supplies.
3. "Or Approved Equal" - Equipment or materials selected by Contractor subject to Engineer's acceptance.
4. "Or Equivalent" - Equipment or materials selected by Contractor matching the function and performance of equipment or materials listed.
5. "Provide" - Furnish and install in place, total and operational.
6. "Manufacturer's Representative" – person properly trained/certified for the specific equipment and a regular employee of the Manufacturer, the Manufacturer's Representative Agency, a third party specializing company, or the selling distributor.
7. "Substantial Completion" - The date when the project has been completed, inspected, and accepted by the Engineer and Owner.

C. Work Included

1. Provide labor, equipment and materials in connection with Work specified and shown on Drawings.
2. Work of this Division is subject to requirements of Instructions to Bidders, General Conditions, Supplementary Conditions, Division One, and all other sections of this Specification.
3. Examine site and all Contract documents prior to submittal of bid.

D. Work Installed But Furnished Under Other Directives

1. Provide service for electrically operated equipment not specified in Division 26 & 27. Verify size and locations of such connections by securing all rough-in requirements from the equipment supplier.
2. Equipment requiring electrical service shall be furnished with motors, special controls and remote electrical devices as specified in other Divisions.
3. Verify extent of controls and devices furnished by referring to Divisions where Work is specified.
4. Provide disconnects, starters, control devices, thermal units, fuses, switches and all necessary power and control wiring. Include the installation of remote electrical devices furnished separately with the equipment. Provide identification for remote devices as directed by the Engineer.
5. Contractors of other Divisions providing electrically operated equipment shall verify with the Electrical Contractor the proper voltage and phase before releasing equipment for shipment.
6. Unless otherwise specified, Contractor responsible for furnishing such equipment is also responsible for setting in place.

1.2 NOT USED

1.3 CONTINGENCY

- A. Use contingency only on issuance of Change Orders.
- B. Refer to Division 1 for the amount to include in the Electrical Bid.
- C. Money remaining in contingency at close of project will be credited to the Owner by Change Order.

1.4 SUBMITTALS

- A. Substitution and Prior Approval to Quote.
 1. The reference to manufacturer's name and catalog or model numbers shall be interpreted as establishing a standard of quality, not as limiting competition.
 2. Suppliers wishing to price material or equipment not referenced in Specifications or on Drawings shall apply in writing to Engineer for approval to quote. Electronic submittals shall be in PDF format. Include complete descriptive technical data on the proposed item consisting of: model numbers, type, size and performance characteristics. Procedure also applies to requests by Contractor. Self-addressed, stamped envelope required for return reply.
 3. The request for prior approval to quote shall be received in Engineer's office no later than 192 hours (eight days) prior to bid opening. All substitute items approved for quotation will be listed in Addenda sent to all planholders in advance of bid opening.
 4. Contractors choosing to use material or equipment other than those shown on Drawings or specified in detail, but approved for quotation, shall be responsible for physical dimensions and coordination. Architect, Engineer, or Owner will not be responsible for costs of necessary changes and additional work required by Contractor or any other trades.

5. Substitutions will not be permitted after bid opening.

B. Correspondence

1. Direct all correspondence concerning Division 26 & 27 submittals to:

THOMAS KEELING, P.E
PRAIRIE ENGINEERING, P.C.
1905 17TH ST SE
MINOT, ND 58701
tkeeling@prairieengineeringpc.com

C. Shop Drawings

1. Before any of the materials are delivered to the job, submit to Engineer via the Prime Contractor complete Shop Drawings for each item indicated.
2. Include catalog numbers, performance data, dimensions and other descriptive information.
 - a. The actual part numbers and options for equipment to be utilized shall be highlighted to indicate exact equipment to be furnished.
 - b. Only include information relevant to the equipment being provided. Any extraneous materials shall be removed prior to submittal.
3. Shop Drawings shall be in electronic PDF format and shall include catalog sheets showing all necessary information. Shop drawings shall be separated by specification section, and equipment from separate specification sections shall not be combined.
4. Shop Drawings shall be submitted under the appropriate specification section of the electronic submittal service being used. The shop drawing file for each section shall include the specification section number, section name, and revision number. Example: "262726 Wiring Devices REV 01".
 - a. If an electronic submittal service is not being used, shop drawings may be emailed to the Engineer at the email address indicated above. Emailed shop drawings shall not exceed 10 MB. If shop drawings exceed 10 MB, contact the Engineer to arrange for a file transmittal method.
5. Each Shop Drawing folder shall be **stamped, initialed, and dated**, on a cover sheet included in the PDF submittal by Division 26 Contractor to indicate they have thoroughly reviewed them in accordance with General Conditions. **Email message text not acceptable.**
 - a. If the Division 26 contractor is under a Prime Contractor, the Prime Contractor may also include a review stamp. However this does not relieve the Division 26 contractor from applying their review stamp.
6. Shop Drawings not in conformance with Specification will be returned to Prime Contractor without review.
7. A maximum of two reviews will be completed for each section. Additional submittals required due to lack of proper corrections being made may be subjected to review fees from the Engineer billed to the Division 26 contractor.

D. As-Built Drawings

1. Designate one set of clean blueprints at project site as As-Built Drawings. Make As-Built Drawings available to Engineer during project visitation.

2. As work progresses, Contractor's field supervisor shall mark As-Built Drawings in red pencil to indicate actual conditions of installation.
3. Show same general details as Drawings.
4. Give particular attention to marking actual locations of feeders and underground runs.
5. Affix all addendum and change order descriptions to appropriate as-built drawing sheet, utilizing spray adhesive.
6. Submit As-Built Drawings to Engineer along with Record Manuals at close of project in PDF format.
 - a. As-Built Drawings shall be submitted as one PDF file.
 - b. Record Manuals shall be submitted as one PDF file.
7. Provide minimum one hard copy of As-Built Drawings to the Owner.
8. Review Division 1 for additional requirements for hard copies of As-Built Drawings.

E. Record Manuals

1. Upon completion of Work of this Division and as condition of its acceptance, Contractor shall compile Record Manuals.
 - a. List project name, date, Contractor's name, address and telephone number on exterior label of each Record Manual.
 - b. Provide one electric PDF copy to Engineer for review.
 - 1) After electronic PDF copy is reviewed and approved, provide one hard copy of Record Manual to Owner. Include an index sheet indicating each major piece of equipment, supplier and supplier's telephone number. Provide tabbed dividers indicating major groupings of equipment.
 - 2) Review Division 1 for additional requirements for hard copies of Record Manuals.
 - c. Record Manual information shall be included for all equipment/material where Shop Drawings are required. **Also include all installation, operation and maintenance data packaged with any equipment.**
2. Turn over to Owner all spare equipment and devices specified and shown. List quantities on contractor letterhead or invoice, obtain signature of Owner's representative acknowledging receipt, and include with each Record Manual.
3. Include one copy of formal instructional recordings, properly identified as to specification section.
4. Include copy of State Electrical Board Wiring Certificate in each Record Manual.
5. Include service equipment fault current calculation and step-down transformer fault current calculations in record manuals. Utility transformer fault current shall be calculated per Section 260553-3.3. Step-down transformer fault current shall be calculated per Section 262200-1.2. Provide in tabular form, as per the following example:

Transformer	kVA	Sec. Voltage	Phase	Impedance	Fault Current	Date Calculated
Utility	300	480	3	1.06%	34,043 amps	11/15/2016
T-1	150	208	3	3.8%	10,958 amps	11/15/2016

6. Calculate the available fault current (AFC) for the mechanical and electrical equipment listed and provide the information in tabular form, utilizing naming convention on the drawings.
 - a. HVAC Equipment 1HP and larger
 - b. Refrigeration Equipment

- c. Elevator Equipment
- d. Industrial Control Panels
- e. Electrical Distribution Equipment
- f. Branch Panelboards
- g. MCC's.

7. Fault Current Table Format Example:

Equipment	Voltage	Phase	AFC at Equip.	Date Calculated
<u>AH-1</u>	480	3	5,289 amps	11/15/2016
<u>CU-1</u>	208	3	2,321 amps	11/15/2016

8. Transformer fault current table and equipment fault current calculation table shall be grouped together in the same tabbed section of the record manuals.

1.5 QUALITY ASSURANCE

A. Qualifications of Installers

1. For installation and testing, use only trained licensed and experienced workmen familiar with items required and manufacturer's recommended methods.
2. In acceptance or rejection of installed work, no allowance will be made for lack of skill on the part of the workmen.
3. To the maximum extent possible, retain the same supervisory personnel throughout the duration of the Work.

B. Licenses, Permits, Codes and Standards

1. Materials, workmanship and installation: comply with the latest editions of all applicable codes, local ordinances, industry standards, utility company regulations, insurance carrier requirements and these Specifications.
2. Codes and standards shall include, but not necessarily be limited to, the following:
 - a. Underwriters Laboratories (UL) or other Nationally Recognized Testing Laboratory (NRTL)
 - b. National Electrical Code (NEC)
 - c. National Fire Protection Association (NFPA)
 - d. Occupational Safety and Health Act (OSHA)
 - e. State and local wiring standards
 - f. Building and fire codes
3. The more stringent provisions shall govern where provisions of pertinent codes and standards conflict with these Specifications or Drawings. Where Codes, Specifications or Drawings differ with one another, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies to the Engineer immediately.
4. Pertinent codes and standards shall not be cited to furnish less than specifically shown or specified.
5. Obtain and pay all permits, inspections, licenses and other charges pertaining to the Work. Upon completion of the Work, furnish proof of acceptance by proper agency having jurisdiction.

1.6 GUARANTEE AND WARRANTY

- A. Unless otherwise modified by other sections of this specification, contractor shall guarantee materials, workmanship and the proper operation of equipment for a period of one year. Warranty period shall begin at date of substantial completion, or date of specific equipment commissioning, whichever is later. Contractor shall correct all equipment, material and workmanship found to be defective or non-conforming to the contract documents without cost to Owner.
- B. Guarantee shall include trips to the project site by Contractor to adjust electrical equipment as required, ensuring it is operating as intended.
- C. Specified guarantee shall not relieve Contractor from liability arising from improper installation or non-compliance with applicable codes.
- D. Contractor shall include written warranty statement, indicating start and end dates of warranty period. Warranty statement shall be included with each copy of the Record Manuals.

1.7 CHANGES TO CONTRACT

- A. Any required changes to the contract after bid date shall be in accordance with General Conditions/Division 1 and this section. Where any discrepancies between the sections are encountered, the more restrictive section shall apply.
- B. Proposed changes shall be accompanied with complete substantiating documentation.
 - 1. Provide an itemized list of quantities for materials, equipment, and supplies.
 - a. Include unit costs for each item and extended price.
 - b. Include unit labor for each item and extended time.
 - 2. Provide subcontractor proposals that include the same substantiating documentation.
 - 3. Provide quotations from suppliers for any specially ordered equipment.
- C. Material costs shall be actual costs to the contractor, obtaining the materials through normal supply channels, including trade and quantity discounts. Utilizing "suggested pricing" from national pricing organizations for unit costs shall not be accepted. Upon request, the contractor or subcontractor shall submit evidence to substantiate the costs.
- D. Labor units shall be industry accepted standard labor hours to perform one unit of work. If the work is being performed in a location that is not considered to be standard working conditions for that specific task, additional labor shall be itemized.
- E. Labor rates shall be the actual rate paid for the workman category along with associated labor burden. Labor burden shall consist only of the mandatory fringe benefits, labor taxes, and labor insurances as affected by payroll. The owner reserves the right to reject any labor burden which is inconsistent with other similar contractors or where the fringe benefit cost is in excess of established labor agreements.
- F. Allowable markups for contractor and subcontractors
 - 1. Overhead on work performed by own forces: 12% maximum.
 - 2. Profit on work performed by own forces: 10% maximum.

3. Commission on work performed by Subcontractors: 5% maximum.
 4. Sales tax.
 5. Bond and permit increases where applicable.
- G. No additional markups shall be allowed for:
1. Field and/or office supervision/administration time.
 2. Tool burden.
 3. Shop burden.
 4. Overhead/Profit applied to work performed by others.
- H. Additional costs for travel and subsistence shall only be allowed if the proposal includes a request for extension of the completion date. Furthermore, those costs shall be proportional to the number of working days of the extension.
- I. Subcontractors shall compute their costs in the same manner as the contractor. Subcontractors are subject to the same markup constraints as described herein.
- J. For changes resulting in credit to the costs, no restocking fees for materials shall be applied by the contractor or subcontractors.

1.8 TEMPORARY FACILITIES

- A. Refer to Special Conditions and/or Division 1 for details of temporary facilities.

1.9 APPLICATIONS FOR PAYMENT

- A. Refer to Division 1 "Applications for Payment".
- B. Provide one additional copy, sent directly to the Engineer.
- C. Format and content:
1. When included with the Bid, the following categories shall be indicated on the application for payment:
 - a. Project mobilization.
 - b. Demolition.
 - c. Service & Distribution (all switchgear, panels, transformers, motor control centers, and loose control/disconnects, installed in place).
 - d. Lighting (all fixtures and lamps, installed in place, including pre-fabricated wiring system).
 - e. Wiring Devices (all switches, receptacles, and plates, except voice-data, installed in place).
 - f. Equipment Connections (HVAC, elevator, food service, etc, connected in place).
 - g. Basic Materials (all conduit, wire, boxes, supports, fittings, grounding materials, except special systems and voice-data cabling systems, installed in place).
 - h. Fire Alarm & Detection (all system equipment, installed in place).
 - i. Special Systems (all system equipment and cabling, installed in place, broken out by Specification Section. Examples include Clock and Program, Intercom, Nurse Call, Public Address, Sound Reinforcement, Rescue Assistance, TV Signal Cabling, Architectural and Theatrical Lighting Controls, and the like).

- j. Generator (all system equipment, installed in place).
- k. Voice-Data Cabling Systems (all system equipment, installed in place).

PART 2 – PRODUCTS

2.1 MATERIAL

- A. Material and equipment shall be as shown or specified. Provide material not specifically described but required for a complete and proper installation of the Work, subject to the acceptance of the Engineer.
- B. All material and equipment shall be new when delivered to the job and be listed by a Nationally Recognized Testing Laboratory (NRTL).
- C. Owner will not be liable for material installed in non-compliance with codes, standards, and these Contract Documents.

2.2 PRODUCT HANDLING

- A. Protection
 - 1. Use all means necessary to protect the materials of this Division before, during and after installation and to protect the installed work and materials of all other trades.
- B. Replacements
 - 1. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

PART 3 – EXECUTION

3.1 GENERAL

- A. Engineer, Architect, or Owner shall not be responsible for the means, methods, techniques, sequences or procedures of construction selected by Contractor.
- B. Engineer, Architect, or Owner shall not be responsible for safety precautions and programs incidental to work of Contractor.
- C. It is the sole responsibility of Contractor to initiate, maintain, and supervise all safety precautions and programs in connection with the Work.

3.2 SURFACE CONDITIONS

- A. Prior to work of each Section of Division 26 & 27, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Verify that work of this Division may be installed in accordance with all pertinent codes, regulations and standards.

3.3 COORDINATION

- A. Order material in a timely fashion to assure it is on the job site when required.
- B. Coordinate installation of material with schedule of other trades to prevent unnecessary delay in construction schedule.

3.4 DISCREPANCIES, CONSTRUCTION CONFLICTS AND DRAWINGS

A. Discrepancies

- 1. Prior to submitting bid, Contractor shall refer any apparent discrepancies or omissions to Engineer for clarification.
- 2. The Architect, Engineer or Owner will not be responsible for any oral instructions or modifications to the contract documents prior to opening of bids.
- 3. Written interpretation or clarification will be made by Addenda.

B. Construction Conflicts

- 1. Conflicts discovered during construction shall be immediately called to the attention of the Engineer for decision.
- 2. Do not proceed with installation in area of question until conflict has been fully resolved.
- 3. When so directed by Engineer, Contractor shall make minor adjustment to avoid interferences with other trades. Such minor adjustments shall be performed at no additional cost to the Architect, Engineer or Owner.

C. Drawings

- 1. Drawings indicate extent and general layout of electrical systems for project. Due to small scale, it is not possible to indicate all fittings and accessories that may be required. Provide such fittings and accessories as required to form a complete and operating system in general conformance with Specifications and Drawings.
- 2. Data indicated on Drawings and in these Specifications is as exact as could be secured, but absolute accuracy is not guaranteed.
- 3. Exact locations, distances, levels and other conditions will be governed by the structure. Field measurements shall take precedence over the Drawings. Use the Drawings and these Specifications for guidance. Secure the Architect's approval for all changes in locations.
- 4. Verify all measurements at site. No compensation will be made because of difference between locations shown on the Drawings and measurements at the building.
- 5. Refer to the architectural drawings for dimensions and locations of walls, partitions, doors, windows, ceiling heights, door swings and other details of construction.

3.5 UNDERGROUND UTILITIES

- A. Locations of existing underground utilities are based on available site information and are shown approximately. Contractor shall determine exact utility locations before commencing work and shall be responsible for repair of damages resulting from his construction activities.

- B. Trench and backfill for installation of underground conduits to depth shown or required. Remove any accumulated water in excavation by pumping. Shore and brace excavation as required by safety regulations. Provide temporary bridges to maintain normal traffic flow. Excavation and backfill required by electrical installations shall be accomplished in accordance with Earthwork Specifications by this Contractor.

3.6 CUTTING AND PATCHING

- A. Carefully lay out all work in advance to minimize cutting, channeling or drilling.
- B. Where necessary, all such cutting and patching shall be done in a manner approved by Architect.
- C. Restore damaged surfaces to their original condition by skilled mechanics of the trade involved. Contractor at fault shall assume all cost.
- D. Use only rotary type drilling tools to cut concrete.
- E. Do not endanger the stability of the structure. Do not at any time cut or alter work of any other Contractor without Architect's consent.

3.7 TESTS

- A. Perform all tests as required by Engineer during construction and as described in other Sections of these Specifications.
- B. Testing of entire installation shall be completed before final inspection.

3.8 INSTRUCTIONS

- A. After all required approvals of the Work have been obtained; demonstrate the operation and maintenance of all electrical equipment to the Owner's personnel.
- B. Provide written and oral operating and maintenance instructions to Owner's representatives. The oral instructions shall be given before the Owner occupies the buildings. Instructions to include all building's electrical systems and equipment.
- C. Copies of written operating and maintenance instructions shall be included with each Record Manual.
- D. Electrical Contractor shall coordinate with Owner at Owner's convenience, formal instruction time for contractor personnel to instruct Owner's Representatives on all equipment. Provide similar equipment supplier's instructions where specified thus. Formal instruction to occur with each Record Manual, being referenced to and a part of the Manual.
- E. Formal instructions shall be recorded when required by other Sections of this Specification by this Contractor. Format shall be digital media capable of being played on Windows or Mac operating systems, or shall be submitted on a USB storage device.

1. Electronic PDF files for the as-built drawings and record manuals shall also be included on the USB storage device with the formal instructions.

3.9 CLEAN UP

- A. Remove all scrap material left on job during and after installation of Work.
- B. All equipment having finished paint surfaces shall be examined upon completion for scratches and other damage. Touch up all surfaces as required with paint of color to match factory finish.
- C. Perform all cleaning as required by other Sections of Division 26 & 27.

END OF SECTION 260500

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Temporary electricity.

1.2 PRODUCT HANDLING

A. Protection

1. Use all means necessary to maintain temporary facilities and controls in proper and safe condition throughout the progress of Work.

B. Replacements

1. In the event of loss or damage, immediately make all repairs and replacements necessary at no additional cost to Owner.

PART 2 – PRODUCTS

2.1 UTILITIES

A. Temporary Facilities

1. General: all costs, including utility company charges, required for the performance of temporary electrical system, shall be paid by Electrical Contractor.
2. Energy charges: Refer to Division 1 for requirements.
3. Temporary Electricity: Electrical Contractor shall:
 - a. Furnish and install all necessary temporary wiring.
 - b. Provide area distribution boxes located so the individual trades may use their own construction type extension cords.
 - c. Provide GFCI protection on all temporary power per NEC.

END OF SECTION 260505

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide work in remodeled area as shown on Drawings and Specifications.

B. Existing Conditions

1. Visit existing buildings before submitting bid and become familiar with all pertinent existing conditions. Make allowance in bid for all pertinent existing conditions. No Change Orders will be issued:
 - a. For Contractor's failure to visit site and acquaint himself with existing conditions.
 - b. For any portion of remodeled work necessary for complete installation of systems shown.
 - c. Due to Contractor's lack of understanding of amount of work or difficulty of work involved.

PART 2 – PRODUCTS

2.1 See following sections of this Specification.

PART 3 – EXECUTION

3.1 GENERAL

- A. Wiring in existing building shall remain except as noted on Drawings or specified.
- B. Verify existing conditions relative to work involved and make allowances thereto.
- C. Balance additional loads to existing circuitry between phases.
- D. Furnish a revised, typed panel directory on existing panelboards where circuitry is changed.

3.2 CUTTING AND PATCHING

- A. Carefully lay out all work in advance to minimize cutting, channeling or drilling.
- B. Where necessary, all such cutting and patching shall be done in a manner approved by Architect.
- C. Restore damaged surfaces to their original condition by skilled mechanics of the trade involved. Contractor at fault shall assume all costs.
- D. Use only rotary type drilling tools to cut concrete.
- E. Do not endanger the stability of the structure. Do not at any time cut or alter work of any other Contractor without Architect's consent.

3.3 REMOVAL AND/OR REUSE OF EXISTING MATERIALS AND EQUIPMENT

- A. Remove or relocate existing conduits, wires, equipment, devices or fixtures indicated on Drawings or as required.
- B. Remove any existing non-active voice/data cables including trunk cables, and any other special systems cables in the entirety. Verify with Owner prior to removal.
- C. Remove any existing exposed abandoned raceways, including those above accessible ceiling finishes in their entirety. Verify with Owner prior to removal. Where complete conduit removal is not feasible, cut conduit flush with walls and floors, and patch surfaces.
- D. Provide additional code-mandated supports on any remaining (existing prior to project and located within the remodel area) unsupported raceway systems or communications cabling including fiber optic, voice/data and special systems.
- E. Where existing multi-wire lighting and power branch circuits are modified in any way, it is this Contractor's responsibility to provide additional grounded (neutral) conductors as required between the electrical panelboard and existing circuit devices. Circuit breaker tie-handles are not acceptable. In the event that existing raceways are not properly sized to accommodate the required additional conductors, new raceway shall be installed.
- F. Where the reuse of existing conduits, wires, and devices, or fixtures is permissible, verify that wiring is continuous. Existing outlet or junction boxes shall not be rendered inaccessible by structural changes made to the building.
- G. Verify that no devices are cut off from power source unless specifically noted.
- H. Existing equipment which is indicated as being removed and not indicated for reuse shall remain the property of the Owner, stored as directed. Remove and dispose any material the Owner does not wish to retain, except fluorescent lamps and ballasts.
- I. Do not break, dump or otherwise destroy removed fluorescent and HID lamps, due to possible mercury contamination. Removed lamps are to be recycled and converted by an EPA-Licensed company regularly engaged in this business, and offering this service in accordance with all EPA, State, and Local Regulations:

Green Lights Recycling, Inc.
10040 Davenport Street NE
Blaine, MN 55449
(763) 785-0456

Recycle Technologies
4000 Winnetka Ave. N
Minneapolis, MN 55427
(800) 969-5166

Waste Management Lamp Tracker, Inc.
10050 Naples St NE
Blain, MN 55449
(800) 664-1434

or equivalent as selected by the Contractor.

All associated recycling costs shall be included in this Contract. Recycler shall provide Owner with a Certificate of Conversion, indicating Owner's manifested lamps have been properly recycled and converted. Comply with recycler's packing and shipping instructions.

- J. Do not dump or otherwise destroy removed ballasts, due to possible PCB contamination. Removed ballasts are to be destroyed by an EPA Licensed company regularly engaged in this business, and offering this service in accordance with all EPA, State, and Local Regulations:

Green Lights Recycling, Inc.
10040 Davenport Street NE
Blaine, MN 55449
(763) 785-0456

Recycle Technologies
4000 Winnetka Ave. N
Minneapolis, MN 55427
(800) 969-5166

Waste Management Lamp Tracker, Inc.
10050 Naples St NE
Blain, MN 55449
(800) 664-1434

or equivalent as selected by the Contractor

All associated destruction costs shall be included in this Contract. Recycler shall provide Owner with a Certificate of Destruction, indicating Owner's manifested ballasts have been properly destroyed. Comply with packing and shipping instructions.

- K. Assume existing equipment and fixtures shown to be reused are in good working condition and can be installed without any repairs or, if in unusable condition, notify the Architect for decision. Contractor shall be responsible for any damage by his personnel to equipment in removal or handling.
- L. Provide blank plates as required at existing rough-ins not being re-used.
- M. Clean fixtures and other equipment removed and indicated for reuse. Provide new lamps for reused fixtures.

3.4 CONTINUITY OF SERVICE

- A. Existing building will be in use during construction. Schedule and carry out work for a minimum of inconvenience to the Owner.
- B. All service interruptions shall require a prior approval by Owner. Confine interruptions to the smallest area possible.
- C. Verify that automatically controlled, electrically operated equipment is returned to the same operating condition which existed prior to interruption.

3.5 ASBESTOS

- A. Contractor is assumed to be knowledgeable about Federal, State, and Local requirements with respect to asbestos issues.

- B. Avoid disturbance of any asbestos-containing material (ACM) within the construction area or elsewhere on the site.
- C. Verify with Owner's "Asbestos Survey and Management Plan" the extent (if any) of existing asbestos.

END OF SECTION 260510

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide a complete system of conductors enclosed in a raceway.

1.2 SUBMITTALS

A. Record Drawings

1. Maintain accurate record drawings in accordance with Section 260500.

PART 2 – PRODUCTS

2.1 CONDUCTOR

A. Copper

1. Soft drawn, annealed.
2. Conductivity of not less than 98% pure copper.
3. Insulated for 600 volt service.
4. #10 AWG and smaller: Solid, THWN/THHN.
5. #8 AWG and larger: Stranded, THWN/THHN.
6. Provide USE where required by Code.

B. MC Cable

1. MC cable is not acceptable for use as a wiring method.

2.2 SPLICES

- A. #10 AWG and smaller: Scotchlock Y, R or G as manufactured by 3M Company, or equivalent.
- B. #8 AWG and larger: Compression type, as manufactured by Anderson, Burndy, Thomas and Betts Company, or equivalent.

2.3 LUBRICANT

A. General

1. NRTL-listed.
2. Flame resistant
3. Compatible with conductor insulation.

B. Acceptable Manufacturer

1. As selected by Contractor.

PART 3 – EXECUTION

3.1 INSTALLATION

A. General

1. Install in accordance with Code, product listing, and manufacturer's recommendations.
2. Install wire and cable in Code-conforming raceways after moisture and debris is swabbed from conduit.
3. Refer to system specified for conductor's peculiar to that system.
4. Conductor sizes: Standard AWG, #12 minimum unless otherwise indicated.
5. Fixture taps: minimum #16 AWG.
6. Conductor temperature ratings: Compatible with the equipment to which it is to be connected. Refer to product listing.
7. Make conductor length for parallel feeders identical.
8. Derate ampacities as required for high ambient temperatures or conductor fill.

B. Color

1. Multi-wire (shared neutral) circuits.
 - a. 120/208 volt
 - 1) Phase conductors: Black, red or blue.
 - 2) Grounded conductor (neutral): White.
 - 3) Grounding conductor: Green or bare.
2. Separate neutral circuits:
 - a. 120/208 volt
 - 1) Phase conductors: Black, red or blue.
 - 2) Grounded conductor (neutral): White with stripe colored to match phase.
 - 3) Grounding conductor: Green or bare
3. Switch legs: Same as phase conductors.
4. 120 volt isolated ground circuits:
 - a. Phase conductor: Orange.
 - b. Grounded conductor (neutral): White with orange stripe.
 - c. Grounding conductor: Green with yellow stripe.

C. Splices

1. Eliminate wherever possible.
2. Made only at outlet or junction boxes.
3. Obtain special permission from Engineer for any splices in feeder conductors.

D. Voltage Drop

1. Increase size of circuit wiring in accordance with NEC 210.19(A)(1), fine print note, No. 4.
2. Use #10 AWG minimum for all home run conductors longer than 75 feet on 120/208/240 systems and 150 feet on 277/480 systems.

3.2 TESTS

- A. After equipment and wiring is installed, and before it is energized, test all power circuits with a megohmmeter for insulation resistance, phase-to-phase and phase-to-ground faults.
- B. Before testing, disconnect all equipment that might be damaged by the test voltages.

END OF SECTION 260519

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Bond and ground all electrical equipment in accordance with National Electrical Code, State/Local Codes, these Specifications and as shown on Drawings.

B. Description of System

1. The service equipment, conduit systems, supports, cabinets and neutral conductor shall be solidly grounded and bonded in accordance with National Electrical Code to form a permanent effective and continuous grounded system.

PART 2 – PRODUCTS

2.1 GROUND RODS

- A. Steel with a metallically bonded outer layer of electrolytically applied copper.
- B. Minimum 1/2" diameter 10 foot length, unless otherwise indicated.
- C. Sectional rods not permitted.
- D. Manufacturer: ERITECH or equivalent.

2.2 GROUND ROD CLAMPS

- A. Ground rod clamps shall be high strength silicone bronze.
- B. Manufacturer: ERITECH or equivalent.
- C. At Contractor's option, exothermic welding (CADWELD) or impact compression (ERITECH Hammerlock) may be used in place of ground rod clamps.

2.3 WATER PIPE GROUND CLAMPS

- A. Steel U-bolt with bronze saddle.
- B. Thomas and Betts Company 3900 series or equivalent.

2.4 REBAR GROUND CLAMPS

- A. Bronze alloy construction.
- B. Sized as required by rebar stub out.
- C. Eritech RC or EK series as required by local authority. Equivalent products by Thomas and Betts acceptable.

PART 3 – EXECUTION

3.1 GENERAL

- A. **Grounding conductors not shown or included on floor plans.**
- B. **When required, increase trade size of raceway accordingly.**
- C. Aluminum not acceptable for use as a grounding conductor.

3.2 SYSTEM GROUNDING

- A. Provide grounding electrode system in accordance with NEC 250.50. If available, each of the items listed in 250.52(A)(1) through (A)(8) shall be bonded together to form grounding electrode system.
- B. Connect grounding electrode conductor to grounded service conductor.
- C. Provide raceway enclosing grounding electrode conductor. If metallic, bond as per NEC 250.64(E). Provide grounding bushing as required complete with jumpers same size as grounding electrode conductor.
- D. To comply with NEC 250.53, provide two ground rods spaced minimum 6'-0" apart.

3.3 EQUIPMENT GROUNDING CONDUCTOR

- A. Non-metallic conduit: Sized in accordance with NEC, except as further modified by this Specification.
- B. Flexible Metal Conduit, Liquidtight Flexible Conduit.
 - 1. Other than for connection of 120 volt recessed luminaires, not acceptable for use as means of grounding.
 - 2. Provide bonding jumper sized in accordance with NEC around all flexible conduits. Use fittings having lugs for termination of jumper.
 - 3. Spiral wrap not acceptable. Lay along surface, secured with cable ties.
 - 4. Bonding jumper maximum length: 6'.
 - 5. Bonding jumper not required where separate equipment grounding conductor is used.
- C. Branch Circuits
 - 1. **Separate equipment grounding conductor required for each raceway.**
 - 2. Size: per NEC 250.122.
 - 3. Bond to grounding bars, junction boxes and luminaire grounding screws.
 - 4. Field install grounding screw in luminaire if not provided by factory.
- D. Feeders
 - 1. **Separate grounding conductor required.**
 - 2. Bond to grounding bars in switchboards, panelboards and motor control centers.

3. Provide grounding bushing at both ends of all feeders utilizing metallic raceway.
 - a. Bond to grounding bars at both ends.
 - b. Size bonding jumpers to match equipment grounding conductor.
 4. Feeder Equipment Grounding Conductor Size:
 - a. Size per NEC 250.122.
 - b. Copper equivalent ampacity when aluminum phase conductors utilized.
 5. Do not splice grounding conductor.
- E. Water Pipe System
1. Bond interior metal water piping per NEC Section 250.104(A) if water pipe system is not used as part of grounding electrode system.

END OF SECTION 260526

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide all conduit systems as shown on Drawings or required by Codes and Specifications.

B. Description of System.

1. Provide code-conforming raceway system for all conductors unless specifically noted otherwise by phrase "not in conduit".

1.2 SUBMITTALS

A. Record Drawings

1. Maintain accurate record drawings for all raceway runs in accordance with Section 260500.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Metallic conduit and tubing: Allied Tube and Conduit, Republic Conduit, or equivalent.

B. Non-metallic conduit: Carlon Schedule 40 or Schedule 80 where required, Allied Tube and Conduit, Cantex Inc., or equivalent.

C. Flexible metal conduit: Aluminum.

D. Liquidtight, flexible metal conduit: Anaconda Sealtite or equivalent.

E. Fittings

1. Rigid metal conduit: Appleton, Crouse-Hinds, or equivalent. **Pot metal conduit fittings not acceptable.**
2. EMT:
 - a. **Steel.**
 - b. Setscrew or watertight as required.
 - c. Thomas and Betts Company, or equivalent.
 - d. **Pot metal, "Sock-on" and indentor fittings not acceptable.**
3. Flexible metal conduit: STEEL, Thomas and Betts Company XC-400 series, or equivalent.
4. Liquidtight flexible metal conduit:
 - a. **Steel.**
 - b. Straight or angled as required.
 - c. Appleton, Thomas and Betts Company or equivalent.

F. Hangers and Supports

1. As required by Codes and Specifications.
2. Raco, Unistrut, or equivalent.
3. Erico conduit clips, Type 8-M, 12-M and K-8 acceptable for individual branch circuit runs.

G. Metal Surface Raceway

1. Wiremold 500/700 metallic series or equivalent, unless otherwise indicated on Drawings.
2. Provide associated fittings as required.
3. Standard color as selected by the Architect.

H. Wireway

1. NRTL 870 listing throughout, including connectors and fittings.
2. Hinged cover construction.
3. Sealing capability where required.
4. Suitable for "lay-in" installation of conductors.
5. Rust inhibiting phosphatizing undercoat and baked enamel finish.
6. Plated hardware.
7. Square D "Square Duct" or equivalent.

I. Expansion Fittings

1. Metallic: OZ, Thomas and Betts Company, or equivalent.
2. Non-Metallic: Carlon, or equivalent.

J. Firestop Assemblies

1. Firestop systems shall consist of fittings and/or intumescent materials assembled as per UL (or other NRTL) System Details.
2. Product manufacturers: 3M, Chase Technology Corporation, Dow Corning Fire Stop, Hilti, International Protective Coatings Corp. (Flame Safe), Nelson Fire Stop Systems.

K. Thru Wall and Floor Seals

1. OZ-Gedney Type "FSK" or equivalent.

PART 3 – EXECUTION

3.1 INSTALLATION

A. General

1. Electrically continuous throughout.
2. Plumb and level.
3. Cut square and reamed smooth.
4. Use commercial bender for offsets and bends.
5. Cap to prevent debris from entering during construction.

6. Swab conduit prior to installation of conductor.
7. Provide pull cord in empty conduits.
8. Alter conduit routing to avoid structural obstructions, minimizing crossovers.
9. It is the intent of this Specification to provide reasonable provisions for future expansion of electrical use (See NEC 90.8 and 90.1(B), FPN). Therefore, **install all branch circuit home runs as shown on Drawings. Do not combine home runs or increase quantity of conductors therein.**
10. Install raceway, conduit and fittings in accordance with Code, NRTL listing and manufacturer's recommendations.

B. Concealed Interior Raceway

1. Conceal all raceway within building construction.
2. May be run in a direct line for Contractor's convenience.
3. For Contractor's convenience, **concealed** stubs from concrete-encased PVC conduit runs may extend to first **concealed** junction box.
4. Where applicable, center within insulation any electrical conduit routed in attic space. Provide sealing as per NEC 300.7(A) for all conduits exposed to different temperatures.

C. Exposed Interior Raceway

1. Use limited to mechanical and electrical equipment rooms, motor connections, and panelboards scheduled as surface.
 - a. Run parallel or perpendicular to building lines.
 - b. **Provide RGSC or EMT stubs for concrete-encased PVC conduit runs.** Extend stub from RGSC coupling set flush in floor.
 - c. Provide flexible conduit as required for motor and equipment connections.
2. Shall not be used in finished areas unless specific permission is obtained from Engineer.
 - a. Exposed interior raceway in finished spaces shall be Metal Surface Raceway. Metallic conduit and tubing NOT ALLOWED.

D. Concrete Encased Raceway

1. Shall not interfere with structural integrity of slab, column, or beam.
2. Installation subject to acceptance of Structural Engineer.
3. Maximum diameter 1/3 thickness of concrete member.
4. Install in center of section.
5. Provide expansion fitting when crossing building expansion joint. Grounding integrity of raceway to be maintained.

E. Exterior Raceway

1. Minimum 24" below grade.
2. PVC unless otherwise indicated.
3. **Exterior surface stubs for PVC conduit runs: RGSC, including final underground sweep.** Exterior surface stubs acceptable only where specifically shown.
4. Penetrating Watertight Walls or Floors: Provide block-out with 1/2" clearance around conduit for underground penetrations. Pack with Oakum and caulk with non-shrinking grout, or provide conduit entrance seal.
5. Penetrating Roof or Waterproofing Membranes: Provide flashing and pitch pocket.

6. Contractor responsible for providing a watertight penetration.
7. Coat RGSC penetrations with heavy asphaltic-base compound.
8. Unless otherwise indicated, route exterior conduits to interior distribution equipment concealed under slab.

F. Supports

1. Refer to NEC 300.11
2. **Tie wire supports not acceptable.**
3. Support Spacing: NEC.

G. Specific Locations

1. Allow 6" minimum clearance at flues, steam pipes and heat sources.
2. Conduit visible behind grills and registers: paint black.
3. Seal conduit where leaving heated area and entering unheated area.
4. Penetrating non-watertight walls or floors: Pack space between conduit and block-out on both sides with Oakum.
5. Penetrating fire rated walls or floors: Seal to prevent passage of fire or products of combustion.
6. From each flush mounted panel location, stub three additional 3/4" conduits into nearest accessible ceiling space.
7. Do not mount raceway on ductwork, cover access doors, panels, controls, or otherwise hinder normal maintenance and repair of the equipment.
8. Motors:
 - a. Connect to motor feeder or branch circuit by means of flexible metal conduit or liquidtight flexible metal conduit in moist areas.
 - b. Minimum flexible length: 18".
 - c. Where practical, feed floor mounted motors from raceway installed in or under slab.
 - d. When floor mounted motors are fed overhead, provide required support for raceway. Extend raceway to floor and provide a floor flange. Insert "T" conduit fitting at proper height and extend flexible conduit to motor.

3.2 SIZE

A. National Electrical Code, subject to stated minimums.

B. Minimum Size

1. Exterior raceway: 3/4".
2. In or under poured concrete (including precast concrete panels): 3/4".
3. Branch circuit home run: 3/4". Consider home run to include raceway length from panelboard, switchboard, or motor control center to nearest power consuming or switching device on that circuit.
4. Feeders: 3/4".
5. All others not listed: 1/2".

3.3 TYPE

A. Intermediate Metal Conduit (IMC)

1. May be used in place of rigid galvanized steel conduit for Contractor's convenience.
2. Comply with manufacturer's recommendations for bending, threading and cutting operations.
3. Install as specified for rigid galvanized steel conduit.

B. Rigid Galvanized Steel Conduit (RGSC)

1. Use:
 - a. Overhead electric and telephone service entrance. IMC or Aluminum not acceptable for this application.
 - b. All raceway exposed to weather. Aluminum not acceptable for this application.
 - c. Where required by national, state and local codes.
2. Fittings: Threaded except at KO type boxes where double locknut/bushing method acceptable.
3. Waterproof entire length with heavy asphaltic base compound when:
 - a. Embedded directly in earth.
 - b. Embedded in concrete directly in contact with earth, with or without vapor barrier.
 - c. Penetrations run directly from concrete with earth, to soil burial.
4. Factory applied PVC coating acceptable in place of asphaltic base compound.

C. Rigid Non-Metallic Conduit (PVC)

1. Use only in slabs and exterior underground locations. See 3.1 B3, C4 and E3 for limitations.
2. Provide insulating bushing at all terminal adapters.
3. Provide equipment grounding conductor within raceway.
4. Increase trade size accordingly for equipment grounding conductor.
5. Utilize commercial heating element type bending equipment. **Do not use torches to bend PVC conduit.**

D. Electrical Metallic Tubing (EMT)

1. Use in all areas not prohibited by NEC and this Specification.
2. Do not use in concrete slabs on or under grade, or walls under grade.
3. Do not use in exterior underground applications.

E. Flexible Metal Conduit

1. Use for connections to transformers, motors, fixed appliances, recessed luminaires and other equipment as required.
2. Use liquidtight conduit with liquidtight fittings in areas of high moisture content.

F. Metal Surface Raceway

1. Install complete with matching boxes, fittings, and end caps, parallel or perpendicular to building construction.

2. Wire adjacent devices to alternate circuits where metal surface raceway contains devices integral to the channel.
3. Feed from flush connector in wall directly into raceway. Field cut base as required with 1/2" knockout for this purpose. Do not utilize Wiremold catalog #2051H for 2000/2100 series.

G. Fire Resistive Walls and Decks

1. Preserve integrity of fire rating through the use of UL (or other NRTL) Listed firestop assemblies of appropriate penetration type and rating time.
2. Install in accordance with manufacturer's recommendations.
3. All floor to floor penetrations and all wall penetrations into Mechanical, Electrical, and Communications Rooms shall be sealed with 1 hour firestop assemblies unless more stringent rating is required by building codes.
4. Include UL (or other NRTL) firestop assembly sheets and manufacturer product data sheets specifically used with the Project Closeout Documentation.

END OF SECTION 260533

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide all outlet, pull and junction boxes complete with associated covers and rings.

B. Work Installed But Furnished Under Other Directives.

1. Obtain manufacturer's backboxes or recommendations for special equipment.

1.2 SUBMITTALS

A. Record Drawings

1. Maintain accurate record drawings in accordance with Section 260500.

PART 2 – PRODUCTS

2.1 CEILING BOXES

A. Flush and Surface

1. 2-1/8" minimum depth.
2. Square or octagon as required.
3. Galvanized steel.
4. Manufacturer: Appleton, Raco, Steel City or equivalent.

2.2 WALL BOXES

A. Flush

1. One and two gang wall boxes: 4" square box, 2-1/8" minimum depth with appropriate plaster or tile ring.
2. More than three gang: Gangable 3-1/2" deep unless wall cavity limits depth to 2-1/2".
3. Use 4-11/16" square boxes where required by Code.
4. Single gang masonry boxes acceptable only for single conduit entrance. Feed-through circuiting not acceptable. Use 4" square box/tile ring for feed-through applications.

B. Surface Mounted Devices

1. 4" square box, 2-1/8" minimum depth with appropriate 1/2" raised cover.
2. Manufacturer: Appleton, B-Line, Raco, Steel City, Wiegmann, or equivalent.

C. Sectional, through wall and handy boxes not acceptable.

2.3 PULL AND JUNCTION BOXES

- A. Galvanized steel with cover.
- B. Size: National Electrical Code.
- C. Manufacturer: Appleton, Raco, Hoffman, Shallbetter, Steel City, Wadsworth or equivalent.

PART 3 – EXECUTION

3.1 INSTALLATION

A. General

- 1. Install in accordance with code, product listing and manufacturer's recommendations.
- 2. Install boxes plumb, level and flush with finish surface.
- 3. Support securely and rigidly.
- 4. Verify wall depths to ensure adequate clearance for special backboxes.
- 5. Provide barriers in ganged switch outlets where voltage between adjacent switches exceeds 300 volts.

B. Location

- 1. Governed by structural conditions and obstructions.
- 2. Mount switch outlet on strike side of door, maximum 4" from door opening to first switch. Verify door swing with Architectural Plan.
- 3. Coordinate equipment outlets prior to installation for proper concealment.
- 4. Center outlets with respect to acoustical tile, paneling and furring trim.
- 5. Adjust outlets in masonry or tile construction to horizontal and vertical mortar joints.
- 6. Clear all piping, ductwork and other obstructions.
- 7. For outlet boxes on opposite sides of walls or partitions with separation distances of 24" or less, pack all interconnecting conduits with Duxseal after conductor installation, to prevent sound transmission.
- 8. Outlet boxes improperly located shall be corrected at Contractor's expense.

C. Mounting Heights

- 1. All device mounting heights shall conform to ADA Recommendations. Refer to Standard Electrical Symbol Legend for nominal mounting heights.
- 2. Verify height of all outlets to ensure installation above top of radiation covers, mirrors, counters and any other obstructions that may alter nominal mounting height.
- 3. **Measure from finish floor to centerline of outlet.**
- 4. Mount exterior outlets horizontally. Measure height from nearest interior finish floor below outlet.
- 5. Mount outlet designated AC (above counter) no less than 4" higher than top of countertop backsplash.

D. Fire Resistive Walls and Ceilings

- 1. Penetrations for steel electrical outlet boxes permitted, provided:

- a. Boxes do not exceed 16 square inches in area.
- b. Area of such openings shall not exceed 100 square inches for any 100 square feet of area.
- c. Outlet boxes on opposite sides of walls or partitions separated by horizontal distance of 24 inches.

E. Pull and Junction Boxes

1. Pull and junction boxes are generally not indicated on Drawings.
2. Install in accordance with National Electrical Code and as required to facilitate wire pulling.
3. Do not install in finished spaces without approval of Engineer.

F. Identification

1. Identify pull and junction boxes containing system voltages in excess of 250 volts to ground with voltage markers.
2. Voltage markers: Not visible in finished areas.

END OF SECTION 260534

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide floor boxes complete with devices, fittings and carpet flanges.

1.2 SUBMITTALS

A. Shop Drawings

1. Submit information in accordance with Section 260500.
2. Show all details, including dimensions and service fitting repair parts.

B. Record Manuals

1. Submit information in accordance with Section 260500.
2. Include installation and maintenance instructions accompanying equipment.

PART 2 – PRODUCTS

2.1 CONCRETE FLOOR SLABS

A. Type A

1. Box
 - a. Listed and evaluated by an NRTL to meet the applicable U.S. safety standards for scrub water exclusion when used on tile, terrazzo, wood, and carpet covered floors.
 - b. Construction:
 - 1) Stamped steel, 3.75" overall height with 3/4" to 1-1/4" side knockouts and 3/4" to 1-1/2" bottom knockouts.
 - a) Provide optional 2" threaded hub adapter as required.
 - c. Provide epoxy coating for specific installations where the box is in direct contact with earth.
 - d. Four independent wiring compartments that allow capacity for up to four duplex receptacles and/or communication services.
 - e. Feed through removable barriers from adjacent compartments.
 - f. Internal power and communication device brackets as required by specified internal device types and quantities. Provide internal blank plates for all unused compartments.
 - g. Manufacturer: Wiremold #RFBA4C series.
2. Activation Kit (Cover)
 - a. Die cast aluminum, low profile, round cover with flange to sit flush with floor covering.
 - b. Include nonmetallic pre-pour trim ring.
 - c. Provide Tile Shim set to adjust cover to floor height.
 - d. Finish as selected by the Architect.
 - 1) Powder coat finish: Black, Bronze, or Gray.

- 2) Metallic finish: Brushed Aluminum, Satin Brass, or Satin Nickel.
- e. Manufacturer: Wiremold #6CT2 series.

2.2 DEVICE QUANTITIES

- A. Type A: Two duplex receptacle, four data jacks.

2.3 WIRING DEVICES

- A. Power: Receptacles as per Section 262726.
- B. Voice/data: Jacks as per Section 271500.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Verify concrete depth prior to ordering floor boxes.
- B. Verify exact location of each floor box with Architect prior to installation.
- C. Install box opening flush with floor in accordance with Code, product listing and manufacturer's recommendations.
- D. Activation Cover Installation
 - 1. Carpet/VCT floor finishes: Install cover after floor covering installation is completed.
 - 2. Tile floor finishes: Install cover prior to tile/grout installation. Shim cover as required so top of cover is flush with floor.
- E. Install floor boxes with square covers parallel or perpendicular to building lines.

END OF SECTION 260540

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Label electrical equipment as required by Codes and Specifications and as specifically directed by Engineer.

PART 2 – PRODUCTS

2.1 PANEL DIRECTORIES

- A. Include directory cards with panelboards.

2.2 NAMEPLATES

- A. Machine engraved black laminate with white core, except as otherwise indicated.
- B. Minimum letter size: 1/8".
- C. Minimum plate size: 1" X 3".

2.3 VOLTAGE MARKERS

- A. Vinyl impregnated cloth markers with legend as required.
- B. Manufacturer: Ideal #44-360, or equivalent.

2.4 PRESSURE SENSITIVE TAPE

- A. Use only when specifically referred to in other Sections.
- B. Manufacturer: Dymo, or equivalent.

2.5 UNGROUNDED CONDUCTOR IDENTIFICATION

- A. As per NEC 210.5(C) and 215.12(C).
- B. Typewritten cards behind plastic shield, affixed with double-stick carpet tape. Heat surface prior to affixing directory.

PART 3 – EXECUTION

3.1 GENERAL

A. Directory Cards

1. **Typewritten only.** Hand lettering unacceptable, except at "spares" and "spaces", where neat hand lettering with erasable pencil is required.

2. Indicate type of load and rooms where load occurs.
3. **Do not use room numbers as shown on Drawings, but refer to name and numbers on door.**
4. Do not identify until final load balancing is accomplished.

B. Nameplates

1. Apply plumb and level with two counter-sunk screws.
2. Glue, double-stick tape, or similar adhesive not acceptable.

C. Device Plates

1. Machine engrave directly on plate in lieu of separate nameplate.
2. Fill inscriptions with contrasting color.

D. Voltage Markers

1. Not visible in finished areas.

E. Junction Boxes

1. Mark all covers with indelible marker to indicate panelboard designation and circuit numbers for circuits contained within box.

3.2 EMERGENCY SYSTEM COMPONENTS

- A. All boxes and enclosures (including transfer switches, generators and power panels) for emergency circuits shall be permanently marked so they will be identified as a component of an emergency circuit for system.

3.3 SERVICE EQUIPMENT FAULT CURRENT NAMEPLATE

- A. Provide warning nameplate on each service disconnecting means enclosure indicating the fault current of the system.
- B. Fault current shall be calculated at the utility transformer, using an assumed infinite primary bus, and using the actual transformer impedance and kVa values.
- C. Red laminate with white core.
- D. Letter height: minimum 1/4"
- E. Legend

SERVICE AVAILABLE FAULT CURRENT: _____
TRANSFORMER KVA: _____
TRANSFORMER IMPEDANCE: _____
DATE: _____

END OF SECTION 260553

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. The Contractor shall provide operational electrical connections to all electrically driven or controlled equipment.

PART 2 – PRODUCTS

2.1 MATERIALS

A. General

1. The Contractor shall provide all necessary materials and labor required to make final operational connections to all equipment, generally as shown on the Drawings, and specifically as required by equipment specifications and installation literature.
2. Control devices and panels furnished by others will be delivered to the contractor at the jobsite, and shall be installed in accordance with manufacturer's printed instructions. Review equipment specifications to determine extent of work involved.

PART 3 – EXECUTION

3.1 GENERAL

- A. Provide operational connections for all equipment shown on the Drawings. Connections shall be in accordance with manufacturer's recommendations, and shall be left operating in a manner acceptable to the Engineer and Owner.
- B. Provide available fault current calculations for equipment listed in Section 260500-1.4E based on actual installation criteria (conductor lengths, raceway types, etc.). Calculations shall incorporate the current limiting effects of fuses supplied with local disconnecting means. Include calculation information in Record Manuals.
- C. For all exterior mechanical equipment, provide weatherproof GFCI receptacle outlet within 25' of equipment, circuited to nearest unswitched power. Refer to NEC 210.63 and 406.8.
- D. For all mechanical equipment located in attic and crawl spaces, provide porcelain lamp holder with integral receptacle and lamp guard, circuited to nearest unswitched power via pilot handle toggle switch near access hatch. Engrave plate. Refer to NEC 210.70(C).

3.2 CLEANING

- A. **Clean and vacuum interior** to remove all wire and insulation scraps, dust and dirt.
- B. Clean all exposed surfaces immediately prior to final inspection.

END OF SECTION 260583

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. It is the intent of this Specification to provide all necessary equipment as detailed, for a complete lighting control system.
2. The work included under this Specification shall cover:
 - a. All labor, materials and equipment to furnish the lighting control system herein specified.
3. The work shall include the services of a commissioning agent. The commission agent shall be a factory-trained representative who shall commission the system for proper operation and instruct the Owner as to proper operation, programming, and maintenance.

1.2 SUBMITTALS

A. Shop Drawings

1. Submit information in accordance with Section 260500.
2. Submit floor plan drawing indicating all device locations and circuitry requirements between devices.
3. Provide connection/riser diagram for specific project involved. Upon Engineer's review, provide **additional three** copies for Contractor use at the project site and for Record Drawing/Manual submittal at project closeout.

B. Manuals

1. Provide information in accordance with Section 260500. Manuals shall include descriptions of equipment and methods of maintenance and operations.

PART 2 – PRODUCTS

2.1 CONTROL SYSTEM COMPONENTS

A. Component communication shall be by low voltage hard wired protocol and/or by a wireless mesh network.

B. Switches, modules, and sensors shall be as indicated on the drawings.

1. Unless otherwise indicated on the Drawings, wall switches for wireless control systems shall be powered by line voltage. Battery powered devices not acceptable.
2. Battery powered wireless daylight sensors shall be acceptable.
3. Switching relays that are utilized for emergency egress lighting shall be in conformance with UL 924.

2.2 SEQUENCE OF OPERATIONS

- A. The following descriptions are intended to provide a baseline operational platform for the system. All specific operating points shall be verified with the end user. If not acceptable to the end user, alternative points shall be offered and approved by the Engineer.
 - 1. Individual Office:
 - a. Occupancy Sensors shall operate in Occupancy Mode (auto on, auto off) after 30 minutes.
 - 2. Corridors
 - a. Schedule as directly by owner.
 - b. Wall switches deactivated during scheduled “on” time.
 - c. Off sweep every 2 hours of scheduled “off” time.

PART 3 – EXECUTION

3.1 STORAGE

- A. Store Lighting Control Components in a cool, dry space prior to installation.

3.2 INSTALLATION

- A. General
 - 1. Install where shown on Drawings, plumb and level.
 - 2. Top of trim 6’-3” above finished floor for wall-mounted panel.
 - 3. Conductors neatly dressed and banded with nylon cable ties.
 - 4. From each flush installation, stub three additional 3/4” conduits into nearest accessible ceiling space to provide for future utilization of spare circuits.
 - 5. Provide 3/4” plywood backing for all surface-mounted panels.
 - 6. Provide individual terminal or lug for each wire. Multiple wires to common terminal or several terminals for single stranded conductor not acceptable.
- B. Provide low voltage cabling from control panel to peripheral devices as per manufacturer’s instructions. Provide raceway system where concealed in walls, in mechanical rooms, and rooms without accessible ceilings. Cable shall be plenum-rated where installed above accessible ceilings and not in raceway.
- C. Provide engraved identification nameplate for system cabinet as per Specification 260553.
- D. Provide control station identification as per Drawings.

3.3 TESTS

- A. Upon completion of the installation, the system shall be commissioned by the manufacturer’s factory authorized representative. The commissioning agent shall configure the system as per the sequence of operation, make any adjustments/additions to the configuration as required or instructed, and verify the complete operation of the entire system.

1. Electrical contractor shall notify owner and engineer twenty one (21) working days in advance to scheduling system commissioning.
- B. Furnish a letter of verification to Engineer indicating that the system has been tested and configured by manufacturer's representative and is found to be complete and functional. List date of test and name of manufacturer's representative. Testing to include a functional test of all devices and verification of proper configuration for all devices. Notify Owner and Engineer one week in advance of scheduled tests.
- C. As part of the required project close out Record Manuals, provide documentation on the commissioning of the system including room by room description indicating:
 1. Sensor parameters, time delays, sensitivities and daylighting setpoints.
 2. Sequence of operation, (e.g. manual ON, Auto OFF. etc).
 3. Load parameters (e.g. blink warning, etc).

3.4 INSTRUCTIONS

- A. After system commissioning is complete, the commissioning agent shall provide the Owner with complete instructions as to proper operation and maintenance of the lighting control system.
- B. Record instructions and include with manual in accordance with Section 260500.

3.5 CLEANING

- A. **Clean** and **vacuum interior** to remove all wire and insulation scraps, dust and dirt.
- B. Clean all exposed surfaces immediately prior to final inspection.

END OF SECTION 260943

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide panelboards where indicated and scheduled.

1.2 SUBMITTALS

A. Shop Drawings:

1. Submit information in accordance with Section 260500. Show all details of:
 - a. Lugs.
 - b. Locations for grounding bar, neutral bar and directory.
 - c. Main bus amperage and arrangement.
 - d. Weight and physical dimensions of enclosures.
 - e. Cover and lock type.
 - f. Quantity of spaces.
 - g. Quantity, arrangement, amperage and short circuit withstand ratings in RMS amperes for all circuit breakers.
 - h. Any other pertinent data.
 - i. Applicable series rating for this particular riser/fault current combination.

B. Record Manuals

1. Submit information in accordance with Section 260500.
 - a. Include fault current available at buss. Fault current calculations shall be based on actual installation criteria (conductor lengths, raceway types, etc.)
2. Include installation and maintenance instructions accompanying equipment.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Product of same manufacturer.
- B. Sizing and design based upon Eaton equipment; Eaton catalog numbers utilized for reference.
- C. Other Acceptable Manufacturers.
 1. Approved equal units by Siemens or Square D.
- D. Contractor is cautioned to verify all physical dimensions of "equal" units prior to accepting quotation for bid.

2.2 GENERAL

- A. Provide sub-feed lugs, contactors, main breakers or other equipment as scheduled.

- B. Provide copper bus, copper isolated neutral bar and copper grounding bar in all panelboards.
- C. Use load centers only where specifically indicated. Provide copper bus with plated aluminum neutral and grounding bar.
- D. NRTL-listed, and "suitable for use as service equipment" when required.
- E. Feeder risers are schematic only and not intended to infer lug arrangements. Contractor to indicate desired lug arrangements and sizes on shop drawings.
- F. Connection from load side of main breaker to panel bus shall be bus bar. Insulated wire and backfed types not acceptable.
- G. NRTL-recognized series ratings acceptable, with minimum ratings as specified herein.

2.3 BRANCH CIRCUIT PANELBOARDS

A. Circuit Breakers

- 1. Bolt-on.
- 2. Breaker Types:
 - a. Under 400 ampere: Quick-make, quick-break, thermal magnetic unless otherwise indicated.
- 3. Trip indicating.
- 4. Common trip on multi-pole breakers; handle ties not acceptable.
- 5. Minimum SCCR rating:
 - a. NRTL tested and certified series combinations acceptable.
 - 1) 10,000 for systems up to 240 volts.
- 6. Single pole 15 and 20 ampere ratings to be NRTL-listed as "Switching Breakers" and carry SWD marking.
- 7. FIRE ALARM EQUIPMENT
 - a. Circuit breakers feeding fire alarm control panels and/or other fire alarm equipment shall be equipped with a pad-locking device capable of locking the circuit breaker in the closed position.

B. Bus Assembly and Temperature Rise

- 1. Rating: As scheduled.
- 2. 98 percent conductivity.
- 3. "Distributed phase" or "Phase sequence" type bus bar connections.
- 4. Adjacent single pole breakers connected to opposite polarities.
- 5. Multi-pole breakers installable in any location.
- 6. Provisions for additional breakers such that field addition of connectors or mounting hardware will not be required.

C. Wiring Terminals

- 1. NRTL-listed as suitable for type of conductor specified.

D. Circuit Numbering

1. Starting at top, odd numbers in sequence down lefthand side and even numbers in sequence down righthand side.

E. Cabinet

1. Enclose bus assembly in steel cabinet.
2. Wiring gutter sizes and steel gauge in accordance with NEMA and NRTL standards.
3. Fabricate box from galvanized steel or equivalent rust resistant steel.
4. Furnish **without** pre-punched knockouts.

F. Fronts

1. Code gauge, full finished steel with rust inhibiting primer and baked enamel finish.
2. Not removable with door in locked position.
3. Adjustable trim clamps.
4. Concealed steel hinges.
5. Door with tumbler-type cylinder lock, catch and spring-loaded door pull.
6. Flush lock not to protrude beyond door front.
7. Key all locks alike.
8. Circuit directory frame and card with clear plastic covering on inside of door.

G. Manufacturer

1. Eaton Pow-R-Line series.

2.4 POWER DISTRIBUTION PANELBOARDS

A. Circuit Breakers

1. Bolt-on.
2. Breaker Types:
 - a. Under 400 ampere: Quick-make, quick-break, thermal magnetic.
3. Trip indicating.
4. Common trip on multi-pole breakers; handle ties not acceptable.
5. Equipped with individually insulated braces and protected connectors.
6. Front faces of all circuit breakers to be flush with each other.
7. Affix large, permanent, individual circuit numbers to each breaker in uniform position.
8. Minimum 35,000 SCCR rated.
 - a. NRTL tested and certified series combinations acceptable.

B. Bus Assembly and Temperature Rise

1. Rating: As scheduled.
2. Insulated bus structure.
3. 98 percent conductivity.
4. "Distributed phase" or "phase sequence" type bus bar connections.
5. Adjacent single pole breakers connected to opposite polarities.

C. Wiring terminals

1. NRTL-listed as suitable for type of conductor specified.

D. Cabinet

1. Enclose bus assembly in steel cabinet.
2. Wiring gutter sizes and steel gauge in accordance with NEMA and NRTL standards.
3. Fabricate box from galvanized steel or equivalent rust resistant steel.
4. Furnish **without** pre-punched knock-outs.

E. Fronts

1. Minimum 12-gauge, full finished steel with rust inhibiting primer and baked enamel finish.
2. Circuit directory frame and card with clear plastic covering.

F. Safety Barriers

1. As required by UL or other NRTL.

G. Manufacturer

1. Eaton Pow-R-Line series.

2.5 CABLE TIES

- A. Thomas and Betts Company "Ty-Rap" or equivalent.

2.6 PLYWOOD BACKING FOR SURFACE MOUNTED PANELBOARDS.

- A. 3/4" grade AD, fire-resistant, painted gray (including edges).

PART 3 – EXECUTION

3.1 STORAGE

- A. Store panelboards in a cool, dry area prior to installation.

3.2 INSTALLATION

A. General

1. Install where shown on Drawings, plumb and level.
2. Top of trim 6'-3" above finished floor for wall-mounted panelboard.
3. Adjust operating mechanism for free mechanical movement.
4. Conductors neatly dressed and banded with nylon cable ties after final load balancing.
5. From each flush installation, stub three additional 3/4" conduits into nearest accessible ceiling space to provide for future utilization of spare circuits.
6. Provide 3/4" plywood backing for all surface-mounted panelboards.

7. Tighten all lugs in accordance with manufacturer's recommendations.
8. For all fusible distribution panelboards, arrange devices in descending order such that busbar space is at top and largest devices are at bottom.
9. Provide individual terminal or lug for each wire. Multiple wires to common terminal, or several terminals for single stranded conductor not acceptable.

B. Identification

1. Identify panelboards and directories in accordance with Section 260553.
2. Provide nameplate similar to following example:

PANEL L6
120/208 VOLT 3Ø 4W
2" C – 4 #3/0
FED FROM SWBD #1

3. When required, provide identification as per NEC 210.5(C) at each branch circuit panelboard.

C. Concrete Pad

1. Locate floor mounted panelboard on concrete pad.
2. Dimensions: 4" high and extend 4" from front and sides.
3. Provided by Division 26. Coordinate installation.

3.3 TESTS

A. Balancing Load

1. Circuiting shown on Drawings is designed to produce equal loading on all phases.
2. Under actual operating, check and make circuit adjustments as required to produce balanced condition.

B. GFPE Testing

1. Performed when first installed on site, prior to being energized by utility transformer.
2. Primary current injection method shall be used for testing purposes per NEC 230.95-C.
3. Conducted in accordance with manufacturer's instructions.
4. Conducted in presence of manufacturer's representative.
5. Provide letter of verification to Engineer indicating:
 - a. Date of test.
 - b. Name of manufacturer's representative present.

3.4 CLEANING

- A. **Clean and vacuum interior** to remove all wire and insulation scraps, dust and dirt.
- B. Clean all exposed surfaces immediately prior to final inspection.

END OF SECTION 262416

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide electrical service from North Central Electric's point of connection to main switch.

B. Description of System

1. 120/208 V, 3 Phase, 4 Wire

PART 2 – PRODUCTS

2.1 METERING

A. CT metering.

B. Utility company to furnish all instrument transformers and meters.

C. Meter Sockets: Provide as required by utility company.

2.2 CURRENT TRANSFORMER CABINETS

A. Construction

1. NEMA 3R.
2. 14-gauge galvanized steel.
3. Gray enamel finish, or as required by serving utility.
4. Single hinge cover with combination padlock and sealing wire.

B. Bus Assembly

1. Amperage as indicated on Drawings.
2. Copper bus bar.
3. Glaskyd insulator supports.
4. Combination disconnect/connector kit.
5. Window CT bus link kit.
6. Compression lugs.

C. Combination Back Pan

1. Galvanized steel
2. Prepunched to accept bar type current transformers.

D. Manufacturer: American Midwest Power, Inc., Electro Mechanical Industries, Inc., or States Electric Mfg. Co.

2.3 TRANSITION CABINETS

A. Construction

1. 12-gauge galvanized phosphated steel.
2. Primed and painted one coat forest green enamel.
3. Lift off covers - both sides.
4. Padlocking handle with two point latch mechanism.
5. Penta head sealing bolt.
6. No trough openings, or furnish NEMA 3R cover plates.

B. Bus Assembly

1. Amperage as indicated on Drawings.
2. Copper bus bar.
3. Prepunched to NEMA standards for up to five utility company lugs.
4. Compression lugs on load side.
5. Ground stud.
6. Provision for bar type CT's.

- C. Manufacturer: Shallbetter CB series, or approved equal by American Midwest Power, Inc., Electro Mechanical Industries, Inc., or States Electric Mfg. Co.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Verify with utility company prior to Bid all specific equipment requirements, installation requirements and fees particular to this service installation and make allowances thereto.
- B. Include in Bid all utility company fees and charges associated with service installation.
- C. Include in Bid all miscellaneous lugs, ground rods, site and pad conduits, sleeves, and other appurtenances required for service installation and not provided by utility company.
- D. Transformer and Equipment Pads
1. Concrete pads provided by Division 26.
 2. Size per utility company requirements.
 3. Coordinate installation.
- E. Contractor totally responsible for all utility company coordination, metering equipment placement, and transformer location, with respect to service installation.
- F. Service installation shall comply with utility company rules and regulations.
- G. Cabinets
1. Install cabinets in accordance with Code, product listing and manufacturer's recommendations.

2. Install where shown on Drawings.
3. Plumb and level.
4. Top of trim 6'-3" above finished floor.

3.2 IDENTIFICATION

- A. Identify cabinets with nameplates in accordance with Section 260553.
- B. Inscription as directed by Engineer.
- C. Provide available fault current calculations for cabinets based on actual installation criteria (conductor lengths, raceway types, etc.). Include calculation information in Record Manuals.

3.3 CLEAN UP

- A. **Clean** and **vacuum interior** to remove all wire and insulation scraps, dust and dirt.
- B. Clean all exposed surfaces immediately prior to final inspection.

END OF SECTION 262713

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide wiring devices complete with device plates of matching or specified color. Wiring devices include receptacles for the connection of portable equipment and switches used for the control of both lighting and fractional horsepower motor loads. Also included are dimmers, occupancy sensors, photoelectric switches and time switches.

B. Work Installed But Furnished by Others

1. Where indicated, install devices furnished by other Divisions of this Specification.

1.2 SUBMITTALS

A. Shop Drawings

1. Submit information in accordance with Section 260500.

B. Record Manuals

1. Provide information in accordance with Section 260500.
2. Include installation and maintenance instructions accompanying the equipment.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Device color: Gray or as selected by Architect. Verify with Architect. (Exception: Red devices on emergency circuits where applicable).
- B. All devices shall be of the same manufacturer, except where specifically noted otherwise with the phrase "NO SUBSTITUTION".

2.2 SWITCHES

A. AC Toggle and Keyed Switches

1. 20-ampere 120/277 volt AC and HP rated.
2. Industrial Grade.
3. Color coded face or body by amperage.
4. Screw pressure plate back wire and side wire.
5. Federal Spec WS-896 listed.
6. Acceptable Manufacturers:
 - a. Cooper 2220 series
 - b. Hubbell 1220 series
 - c. Leviton 1220 series

d. Pass & Seymour

PS20AC series

B. Pilot Light Switches

1. Neon lamp in red toggle handle, lit in "on" position.
2. 20 ampere, 120/277 volt AC rated.
3. Manufacturer: As listed above.

C. Time Switches

1. Two Circuit SPST switching, voltage rating as required.
2. Digital display with 7-Day programming.
3. Non-volatile program memory (battery backup unacceptable).
4. Manufacturer: Intermatic #ET2725 series.
5. Other acceptable manufacturer: Tork.
6. Special units as shown on Drawings.

D. Remote Photoelectric Switches

1. Threaded swivel mounting with locking nut and neoprene gasket.
2. Light level adjustment slide.
3. Activation: 1-5 footcandle on, 3-15 footcandle off.
4. Manufacturer: Intermatic #K4200 series, wattage and voltage as required.
5. Other acceptable manufacturers: Paragon, Area Lighting Research, Precision, or Tork.

E. Spring Wound Timer Switch

1. As shown on Drawings.
2. Manufacturer: Intermatic.
3. Other acceptable manufacturers: Area Lighting Research, Rhodes Mark Time, or Tork.

F. Occupancy Sensors

1. Ceiling Mount – Line Voltage
 - a. Self-contained line voltage unit with no external relays or power packs required.
 - b. Passive dual technology sensing combining passive infrared and ultrasonic/microphonic technology. Selective for initial and maintained triggering.
 - c. Rating: 120 VAC @ 800 watts, 277 VAC @ 1200 watts, electronic ballast rating. No minimum load requirements.
 - d. Ceiling-mount with 360° conical pattern coverage.
 - e. Adjustable time delay, from 5 to 20 minutes.
 - f. Automatic adjustment option for continuous time of day usage monitoring with automatic off delay adjustment.
 - g. Integral light level sensor to prevent turning lights on at selected light level between 10 and 300 footcandles.
 - h. LED activity Indicator.
 - i. Manufacturer: WattStopper #DT-355, Sensorswitch CMR-PDT series, Leviton ODC series, Hubbell OMNIDT-BP series, or approved equal.
2. Wall Mount
 - a. Self-contained line voltage unit with passive infrared sensing.

- b. Rating: 120 VAC @ 800 watts, 240/277 VAC @ 1200 watts, electronic ballast rating. No minimum load requirements
- c. PIR collector beams view out horizontally 35 feet in a wall-to-wall pattern, with a 20-foot effectiveness for small hand or body motions.
- d. Adjustable time delay, from 5 to 20 minutes, with "OFF" override switch.
- e. Automatic adjustment option for continuous time of day usage monitoring with automatic off delay adjustment.
- f. Bypass mode to allow override button to act as a standard on-off switch in case of sensor failure.
- g. Vandal resistant lens.
- h. LED activity Indicator.
- i. Multi-way version:
 - 1) Simultaneous load control from up to four device locations.
- j. Dual-level version (ab switching):
 - 1) Two separate relays with dual override switches.
 - 2) Independent Auto or Manual mode per relay.
- k. Manufacturer: WattStopper PW series, Sensorswitch WSX series, Leviton OSSMT series, Hubbell LHIR series, or approved equal.

2.3 RECEPTACLES

A. General Purpose

- 1. 20 ampere, self-grounding, NEMA 5-20R, industrial specification grade.
- 2. Nylon face with finger grooves and compact body.
- 3. Minimum 0.032" triple wipe brass contacts.
- 4. Corrosion resistant steel strap interlocked with face and body.
- 5. Screw pressure plate back wire and side wire.
- 6. Tamper resistant.
- 7. Federal Spec WC-596 listed.
- 8. Acceptable Manufacturers:
 - a. Arrow Hart TR5362xx
 - b. Hubbell HBL5362xxTR
 - c. Leviton 5362-SGxx
 - d. Pass & Seymour TR5362xx

B. GFCI

- 1. 20 ampere, feed-through type.
- 2. Two utilization points per device, with vertical orientation.
- 3. Tamper Resistant.
- 4. Manufacturer: As listed above.

C. Combination Duplex and USB Charging

- 1. 20 ampere, Decora style.
- 2. Two utilization points per device, with vertical orientation.
 - a. Includes one USB-A port.
 - b. Includes one USB-C port.
- 3. 5 ampere, 5 Volt USB output.

4. Tamper resistant.
5. Manufacturers:
 - a. Arrow Hart TRUSBAC20
 - b. Hubbell USB20ACPD
 - c. Leviton M58AC
 - d. Pass & Seymour TR20USBAC6.

D. Damp & Wet Locations

1. All 15 and 20 ampere, 125 and 250 volt non-locking receptacles shall be listed weather-resistant type as per NEC 406.9(A) and 406.9(B)(1).
2. Manufacturer: As listed above.

2.4 DIMMERS

A. Incandescent

1. Phase-selectable for Incandescent, Electronic Low Voltage, and Magnetic Low Voltage.
2. Low end trim adjustment.
3. 500 Watt max load incandescent and low voltage.
4. Manufacturer: Lutron Maestro PRO.
 - a. Multi location dimming capability with Lutron #MA-R devices.

B. LED

1. Control of 0-10 Volt LED dimming for full range dimming control.
2. Wattage as required by luminaire count in room.
3. Integral power pack for positive off.
4. Provide separate power pack if required by total room wattage.
5. Manufacturer: Lutron Diva Series #DVSTV.

2.5 DEVICE PLATES

A. Flush Interior

1. Opening for device intended.
2. 430 or 302/304 stainless steel, or as selected by Architect.
3. Where plastic plates are selected by Architect, provide thermoplastic type.
4. Manufacturer: Cooper, Hubbell, Leviton and Pass & Seymour.

B. Surface Interior

1. 1/2" raised cover

C. Damp & Wet Locations

1. Damp locations:
 - a. Refer to NEC 406.9(A).
 - b. Die-cast aluminum construction with stainless steel springs.

- c. Unless indicated otherwise on the Drawings, Manufacturer: Pass & Seymour #4500 series or equivalent.
- 2. Wet locations:
 - a. Refer to NEC 406.9(B).
 - b. Unless indicated otherwise on the Drawings, Manufacturer: Red Dot #CKMU (horizontal) or #CKMUV (vertical), or approved equal by Hubbell.

PART 3 – EXECUTION

3.1 INSTALLATION

A. General

- 1. Install device and plates where shown on Drawings in accordance with Code, product listing and manufacturer's recommendations.
- 2. Refer to Section 260534-3.1C for mounting heights.
- 3. Plumb and level.
- 4. Tight to wall.
- 5. Thoroughly cover wall opening around device.
- 6. Replace all devices and plates that become discolored or burned during construction.
- 7. Provide blank plates for unused openings.
- 8. Connect wiring devices by means of single conductor tails. Multiple wire connections not acceptable.
- 9. Tighten unused connection screws.

B. Identification

- 1. Identify wall switches which control lighting or equipment not in sight.
- 2. Refer to Section 260553-3.1C.

C. Receptacles

- 1. Vertical mounting with grounding pole at bottom.
- 2. Provide GFCI receptacles at NEC 210.8 locations.

D. Dimmers

- 1. No common neutrals.
- 2. Individually mounted: No gang mounting.
- 3. Do not remove any fins.

E. Photoelectric Switches

- 1. Install on roof, in center of structure where viewing from ground is minimal.
- 2. Verify exact location with Architect.
- 3. Penetrate roof with 3/4" RGSC, securely fastened to structure.
- 4. Provide flashing to maintain roof integrity.
- 5. Mount 18" above finished roof surface.
- 6. Make connections in weatherproof junction box.

F. Occupancy Sensors

1. Provide adequate supports to any structures, ceilings and grid system to safely attach sensors.
2. Mount external power packs (required only for low voltage sensors) within junction box in accessible ceiling space.
3. Verify operating parameters with Engineer.

3.2 TESTS

A. Proper operation of lighting switches, dimmers and occupancy sensors.

B. Duplex Receptacles

1. Proper connections.
2. Test all receptacles with NRTL listed receptacle circuit tester similar to Bryant #5266-PT, or Ideal #EZ Check.

3.3 INSTRUCTIONS

A. Instruct Owner's personnel in proper operation, setting, and maintenance of time switches, dimmers, occupancy sensors, and GFCI receptacles.

END OF SECTION 262726

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide all fuses as required.

B. Work Furnished But Not Installed

1. Provide spare fuses for all sizes and classes required.
2. Quantity: 10%, with a minimum of three each rating, including motor starter control transformer fusing.

1.2 SUBMITTALS

A. Record Drawings

1. Indicate actual class, type and size of fuse installed in each device.

B. Record Manuals

1. Submit information in accordance with Section 260500.

PART 2 – PRODUCTS

2.1 FUSES

A. 600 Amperes and Less Protecting Feeders or Combination Motor/Branch Circuit Loads.

1. UL-listed, Class RK-1.
2. Manufacturer: Bussmann LPN-RK/LPS-RK, Littelfuse LLN-RK/LLS-RK, or Brush LEN-R/LES-R.

B. Plug Fuses

1. Dual element, UL-listed Type S with adapter.
2. Use only as indicated on Drawings for fused toggle switches.

PART 3 – EXECUTION

3.1 STORAGE

A. Store fuses in a cool, dry space prior to installation.

3.2 INSTALLATION

A. General

1. Install fuses in accordance with Code, product listing and manufacturer's recommendations.
2. Verify equipment fuse sized for load prior to installation.
3. All fuses shall be of same manufacturer.
4. Do not mix fuse classes in individual applications.
5. Fuses are not required for switchboard devices marked "Spare".

B. Spare Fuse Cabinet

1. Top of trim 6'-3" above finished floor.
2. Provide 3/4" plywood backing.

C. Identification

1. Indicate on inside cover with pressure sensitive tape the size, voltage and type of fuse furnished for each device.

END OF SECTION 262813

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide disconnects where shown on Drawings or required by Code.
2. Provide enclosed circuit breaker where shown on the Drawings.

1.2 SUBMITTALS

A. Shop Drawings

1. Submit information in accordance with Section 260500.
2. Indicate on submittal exact motor or equipment served.
3. Show all details including electrical ratings, enclosure dimensions and other pertinent data.

B. Record Manuals

1. Submit information in accordance with Section 260500.
2. Include installation and maintenance instructions accompanying the equipment.

PART 2 – PRODUCTS

2.1 DISCONNECT SWITCHES

A. Switch Interior

1. Positive “off” position.
2. Lugs: NRTL-listed for aluminum and copper cable.
3. Plated current carrying parts.

B. Switch Mechanism

1. Quick-make, quick-break operating handle and mechanism.
2. Integral part of box.
3. Enclosures: Code gauge sheet steel (NEMA 1) or Code gauge galvanized steel (NEMA 3R).
4. Treat with rust-inhibiting phosphate primer.
5. Finish: Baked enamel.

C. Ratings

1. 240 or 600 volt.
2. Heavy duty.
3. Horsepower rated.
4. NRTL-listed "Suitable for Use as Service Equipment" when required.

D. Fusing

1. NRTL-listed rejection feature.
2. Reject all fuses except UL-listed Class R.

E. Manufacturer: Panelboard manufacturer.

2.2 ENCLOSED CIRCUIT BREAKERS

A. Breaker Types:

1. Under 400 ampere: Quick-make, quick-break, thermal magnetic unless otherwise indicated.
2. Trip indicating.
3. Minimum SCCR rating:
 - a. 10,000 for systems up to 240 volts.

B. Manufacturer: Panelboard manufacturer.

PART 3 – EXECUTION

3.1 STORAGE

- A. Store disconnect switches or enclosed circuit breakers in a cool, dry space prior to installation.

3.2 INSTALLATION

A. General

1. Install all required disconnect switches or enclosed circuit breakers in accordance with Code, product listing and manufacturer's recommendations.
2. Plumb and level.
3. Tighten lugs in accordance with manufacturer's recommendations.

B. Identification

1. Identify disconnect switches or enclosed circuit breakers in accordance with Section 260553.
2. Nameplate required for all disconnect switches. Nameplate to include load served, voltage, horsepower or MCA rating, and fuse size. Nameplate to be installed inside of cover on exterior disconnect switches.

Example:

RT-1
480 Volt, 3 Ø
35 MCA, 40 A Fuses

3. Do not use schedule number, but indicate load served.
4. Pressure sensitive tape identification for disconnect switches containing fuses.

5. Voltage markers on all disconnect switches containing system voltages in excess of 250 volts to ground.

3.3 TESTING

A. GFPE Testing

1. Performed when first installed on site, prior to being energized by utility transformer.
2. Primary current injection method shall be used for testing purposes per NEC 230.95-C.
3. Conducted in accordance with manufacturer's instructions.
4. Conducted in presence of manufacturer's representative.
5. Provide letter of verification to Engineer indicating:
 - a. Date of test.
 - b. Name of manufacturer's representative present.

3.4 CLEANING

- A. **Clean** and **vacuum interior** to remove all wire and insulation scraps, dust and dirt.
- B. Clean all exposed surfaces immediately prior to final inspection.

END OF SECTION 262816

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide motor starters where shown and scheduled, or as required by Code.

B. Work Installed But Furnished Under Other Directives

1. Refer to Section 260500, Article 1.1, Paragraph D for extent of control devices furnished in other Divisions.

1.2 SUBMITTALS

A. Shop Drawings

1. Submit information in accordance with Section 260500.
2. Show all details including electrical ratings, controls, schematic wiring diagrams, enclosure dimensions and other pertinent data.
3. Indicate on submittal exact motor or equipment served.

B. Record Manuals

1. Submit information in accordance with Section 260500.
2. Include installation and maintenance instructions accompanying the equipment.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Product of same manufacturer.
- B. Sizing based upon Eaton equipment.
- C. Other acceptable manufacturers: Approved equal units by Allen Bradley, Schneider, and Siemens.
- D. Contractor is cautioned to verify all physical dimensions of "equal" units prior to accepting quotation for Bid.

2.2 SINGLE PHASE MOTORS WITH INTEGRAL OVERLOAD PROTECTION

- A. Horsepower rated toggle switch, pilot handle where not in sight from motor.

2.3 SINGLE PHASE MOTORS WITHOUT INTEGRAL OVERLOAD PROTECTION

A. Manual Motor Starter

1. Manually operated toggle switch with integral overload protection.
2. Rendered inoperative unless thermal unit is in position.
3. Provide pilot light for manual starters not in sight from motor.
4. Provide flush-mounted starters with stainless steel plates.
5. NEMA 1 enclosures for surface-mounted starters unless otherwise required by environment.

B. Fused Toggle Switch

1. 4" square box mounting.
2. Complete with fuse adapter and plug fuse of correct rating.
3. Manufacturer: Bussmann or Reliance.
4. **Use only where specifically shown.**

2.4 THREE PHASE AND SPECIFIED SINGLE PHASE MOTORS

A. Across-the-line

1. Magnetic type, non-reversing unless otherwise scheduled.
2. Rated in accordance with NEMA standards, sizes and horsepower ratings.
3. Provide combination fusible unit with Class R fuse holders, where disconnect and starter are shown at the same location.
4. Minimum size: NEMA size 0.
5. Manufacturer's series: Eaton Freedom series, or approved equal units by Allen Bradley 512 series, Schneider 8538 series or Siemens Class 17 series.
6. Control
 - a. 120 volt control transformer
 - b. Control fusing:
 - 1) 250 volt - in accordance with NEC.
 - 2) 600 volt - primary and secondary fusing regardless of VA rating of control transformer.
 - c. Cover-mounted devices for single-speed starters:
 - 1) Transformer operated LED green pilot light for running indication, with push-to-test feature.
 - 2) H-O-A selector switch, unless otherwise scheduled.
 - d. Cover-mounted devices for two-speed starters:
 - 1) Transformer operated LED pilot lights for running indication, with push-to-test feature: Green for low speed, amber for high speed).
 - 2) High-low-off-auto selector switch, unless otherwise scheduled.
 - e. Molded coil construction.
7. Overload Protection – exterior locations
 - a. Resettable overload protection on all phases.
 - b. Class 20 construction.

- c. Starter inoperative if one or more overload units removed.
- 8. Overload Protection – interior locations
 - a. Self-powered.
 - b. Solid state construction with adjustable overload protection on all phases.
 - c. Manual reset with capability for remote reset function.
 - d. Phase loss protection.
 - e. Ambient-insensitive within operating range of -25°C to 55°C.
 - f. Solid state construction, Class 20.
 - g. Starter inoperative if overload unit is removed.
- 9. Electrical Interlocks
 - a. Space for minimum three, any arrangement NO or NC.
 - b. Quantity: Two NO per starter.
- B. Solid State Starters
 - 1. Control and interlock options as previously indicated.
 - 2. Run bypass contactor.
 - 3. Class 20 overload protection.
 - 4. Heavy-duty rating.
 - 5. Temperature: NRTL-listed for -30 to 50°C ambient.
 - 6. Rated for 4 starts per hour
 - 7. Adjustable ramp times, torque control, and kick start.
 - 8. Solid state reduced voltage type: Eaton 801+ Series.
 - 9. Other acceptable manufacturers: As previously indicated.
- C. Variable Frequency Drive
 - 1. Normal duty packaged combination unit, non-bypass type in fan/filter cooled NEMA 1 enclosure.
 - 2. Integral disconnect shall be Fused switch type. 100K AIC Rated.
 - 3. Full numeric operator keypad with LCD display interface mounted on dead front cover.
 - 4. Hand-Off-Auto selector switch.
 - 5. Transformer operated LED amber pilot light for fault indication, with push-to-test feature
 - 6. Integral 3% Line reactor.
 - 7. Variable Torque.
 - 8. Selectable switching frequency.
 - a. 2kHz to 12k Hz
 - b. Automatic reduction under excessive heat sink temperatures.
 - 9. Minimum I/O
 - a. 5 Digital Inputs
 - b. 2 Analog Inputs
 - c. 2 NO/NC Relay Outputs
 - d. 1 Analog Output
 - 10. Communications protocol
 - a. Ethernet/IP, Modbus, BACnet.

11. Manufacturer: Eaton PowerXL DG1 Series, Allen Bradley Powerflex 753 Series or Schneider Altivar 630 Series.

2.5 THREE PHASE POWER MONITOR

- A. Provide for all three phase motors larger than two horsepower, and all three phase compressor equipment.
 1. Not required for motors served by solid state starters or variable frequency drives.
- B. Line voltage to match system.
- C. Operating parameters:
 1. Trip: 90% rated voltage on any or all phases.
 2. Reset: 93% rated voltage on all three phases.
 3. Dead band between trip and reset: 3%.
 4. Repeat accuracy: 1% maximum at 0-70°C.
 5. Trip Delay Time: Two seconds.
 6. Reset: Two seconds.
 7. Output contact rating: Pilot Duty, 470 VA @ 600 VAC.
 8. Transient Protection: 2500 Volts for 10 MS.
- D. Special Options
 1. NEMA 1 or 3R enclosure as required.
 2. Adjustable Time Delayed Restart: 30-300 seconds. Set at 300 seconds.
- E. Manufacturer: Motor Saver Model 350.
- F. Other acceptable manufacturers: Eaton #D65 series.

2.6 PLYWOOD BACKING FOR SURFACE MOUNTED STARTERS

- A. 3/4" grade AD, fire-resistant, painted gray (including edges).

PART 3 – EXECUTION

3.1 STORAGE

- A. Store motor starters in cool, dry space prior to installation.

3.2 INSTALLATION

- A. General
 1. Plumb and level.
 2. Install motor starters in accordance with Code, product listing and manufacturer's recommendations.
 3. Tighten all lugs in accordance with manufacturer's recommendations.

4. Verify correct size overload protection with motor nameplate data and manufacturer's recommendations.
5. Where power factor correction is specified for connection to motor terminals (i.e. load side of overload units), reduce overload rating as per manufacturer's recommendations.
6. Provide 3/4" plywood backing where several controls are shown grouped for surface mounting.

B. Identification

1. Identify motor starters in accordance with Section 260553.
2. Provide two nameplates for all motor starters: One for starter, other for equipment. Do not mount equipment nameplate on motor. Rather, mount on equipment, in visible location near motor.
3. Do not use motor schedule numbers, but indicate motor or load served.
4. Provide pressure-sensitive tape identification in accordance with Section 260553 and 262813 for all motor starters containing fuses.
5. Indicate proper thermal overload unit by circling correct number on chart affixed to cover of starter.
6. Provide voltage markers for all motor starters containing a system voltage in excess of 250 volts to ground.
7. Voltage markers not required for motor starters which form a part of a motor control center as specified in Section 262419.

3.3 TESTS

- A. Proper operation.
- B. Correct rotation.
- C. Solid state motor starters
 1. Furnish letter of verification to Engineer indicating solid state motor starters have been tested by manufacturer's representative.
 2. List date of test and name of manufacturer's representative.

3.4 INSTRUCTIONS

- A. Manufacturer's representative shall instruct Owner in proper maintenance and testing of solid state motor starters. Include name of Owner's representative in letter of verification.
- B. Record instructions and include with Record Manuals in accordance with Section 260500.

3.5 CLEANING

- A. **Clean** and **vacuum interior** to remove all wire and insulation scraps, dust and dirt.
- B. Clean all exposed surfaces immediately prior to final inspection.

END OF SECTION 262913

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide integral Surge Protective Device in panelboards and switchboards where indicated and scheduled.

1.2 SUBMITTALS

A. Shop Drawings

1. Submit information in accordance with Section 260500.

B. Record Manuals

1. Submit information in accordance with Section 260500.
2. Include installation and maintenance instructions accompanying equipment.

PART 2 – PRODUCTS

2.1 TYPE 2 SURGE PROTECTIVE DEVICE (SPD)

A. Provided only in panelboards and switchboards as indicated on the drawings.

B. The panelboard/switchboard manufacturer shall internally install SPD protection within the panelboard and the entire assembly shall be UL 67 listed.

C. SPD requirements:

1. Listed and component recognized in accordance with latest editions of UL 1449, UL 96A and UL 1283.
2. Minimum surge capacity ratings as indicated on the drawings. Operating voltage and configuration as indicated on the drawings
3. 200kA Short Circuit Current Rating (SCCR). SPD devices obtaining SCCRs using upstream over current protection are prohibited.
4. 20kA nominal discharge current.
5. EMI/RFI noise filtering attenuation up to 50dB for 10kHz – 100MHz.
6. Self contained module design, with each suppression element metal-oxide varistor (MOV) based incorporating thermal protection. End of life mode shall be open circuit.
7. Surge current diversion paths between each phase conductor and the neutral conductor, between each phase conductor and the ground and between the neutral conductor and ground. For delta configured systems, the SPD shall have components connected between each phase conductor and between each phase conductor and ground.

8. UL 1449 latest edition listed and recognized component voltage protection rating (VPR) shall not exceed:

<u>VOLTAGE</u>	<u>L-N</u>	<u>L-G</u>	<u>N-G</u>	<u>L-L</u>
240/120 1Ø	700V	700V	700V	1200V
208Y/120	700V	700V	700V	1200V
240D/120	700/1200V	700/1200V	700V	1800V
480Y/277	1200V	1200V	1200V	2000V

9. Designed to withstand a maximum continuous operating voltage (MCOV) of not less than 115% of nominal RMS voltage.
10. Equipped with on board visual and audible diagnostic monitoring devices mounted on the front cover of the SPD.
- Indicating lights shall provide full time visual diagnostic monitoring of the operational status of each phase of the surge current diversion module.
 - Audible diagnostic monitoring shall be by way of audible alarm. This alarm shall activate upon a fault condition. An alarm on/off switch shall be provided to silence the alarm.
 - LCD display surge counter located on the front cover of the SPD. Counter shall be equipped with a manual reset with protection from accidental operation and utilize non-volatile memory.
 - A set of Form "C" dry contacts shall be provided for remote annunciation.
11. Warranty: The panelboard manufacturer shall warranty the SPD for full replacement if destroyed by transients, including lightning, for a period of ten (10) years.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. SPD protection modules shall be factory installed by the panelboard/switchboard manufacturer integral to the panelboards/switchboards indicated on the drawings. Each entire assembly shall be UL 67 listed.

3.2 TESTS

- A. Verify all SPD equipment is active and in proper working condition prior to final project inspection.

3.3 CLEANING

- A. **Clean** and **vacuum interior** to remove all wire and insulation scraps, dust and dirt.
- B. Clean all exposed surfaces immediately prior to final inspection.

END OF SECTION 264313

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Furnish and install a complete luminaire for each lighting outlet.

1.2 SUBMITTALS

A. Shop Drawings

1. Submit information in accordance with Section 260500 including voltage, housing and door frame material, lens type, diffuser thickness, lumen output, and color temperature.

B. Record Manuals

1. Provide information in accordance with Section 260500.

1.3 COORDINATION

- A. Confirm compatibility and interface of luminaire with other materials and job conditions prior to ordering. Report discrepancies to Engineer and defer ordering until clarified.
- B. Provide frames, trim rings, and backboxes as required.
- C. Coordinate with work of all other Divisions to avoid conflicts between luminaires, supports, fittings and mechanical equipment. Ceiling clearances are minimal. It is imperative that Contractors coordinate conduit and duct runs to facilitate luminaire installation as shown on reflected ceiling plans. Engineer will not be responsible for interferences arising from lack of field coordination between trades.

PART 2 – PRODUCTS

2.1 LUMINAIRES

A. General

1. UL or other NRTL listed.
2. Where shown to be installed in fire-rated assemblies, luminaires shall be listed in accordance with UL Standard 1598. Supplemental penetration protection (tenting) will be accomplished by General Contractor in accordance with UL Fire Resistance Directory. Coordinate installation with General Contractor. Supplemental protection shall be spaced minimum 1/2" away from the luminaire, per UL Standard 1598.
3. Verify ceiling finishes and equip all recessed luminaires with appropriate frames as required.
4. Furnish luminaires intended for use in lay-in grid ceilings with proper clips for compliance with NEC.
5. Refer to Section 260500 for "Prior Approval to Quote" procedure.

B. LED Lighting Systems

1. General: All LED lighting system components must be UL or other NRTL listed.
2. Light Engines:
 - a. Meets or exceeds 70% lumen maintenance at 50,000 hours based on IESNA LM-79-2008.
 - b. Minimum 80+ CRI rating.
 - c. 4000K color temperature, or as scheduled on drawings.
 - d. Minimum delivered lumens as scheduled on drawings.
3. Electronic drivers for LED's:
 - a. Factory installed.
 - b. Multi-volt for use on either 120v or 277v systems.
 - c. THD: < 20%.
 - d. Factory installed quick-disconnect plug internal to the luminaire for driver removal.
 - e. Rated for a minimum of 50,000 hours.
 - f. 0-10 Volt dimming standard. Provide non-dimming drivers only as scheduled.
 - 1) Controls and wiring as per manufacturer's recommendations. Provide power packs for wall-box dimmers as required for positive luminaire off.
4. Downlights shall incorporate integral diffuser type lens. Exposed modules not acceptable.
5. Emergency battery packs:
 - a. Include self-testing/self-diagnostics with audible alarm option.
 - b. Factory installed.
 - c. Minimum lumens as scheduled.
6. Spare Drivers:
 - a. Luminaire manufacturer shall keep reasonable driver stocks on hand for replacement of defective drivers under guarantee period.
7. Guarantee period: Minimum 60 months from date of substantial project completion.
 - a. Guarantee shall include all parts and labor required to bring luminaire to complete operation.
 - b. Labor shall be performed by an Owner approved Electrical Contractor licensed in the area the work is to be performed.
 - c. Any costs for equipment rentals required to service luminaires under warranty shall be the responsibility of luminaire manufacturer.

PART 3 – EXECUTION

3.1 STORAGE

- A. Store luminaires in a cool, dry space prior to installation.

3.2 INSTALLATION

A. General

1. Install luminaires plumb and true, free of light leaks, warps, dents and other irregularities.
2. Equip any outlets not specifically labeled with a luminaire the same as those in rooms used for similar purposes.
3. Run all directional lenses the same direction in rooms, corridors and other adjacent areas that contain square luminaires.

4. Continuous row luminaires: Hang level in straight line and butt tightly together.
5. Verify exact location of luminaires with reflected ceiling plan. Any discrepancies between the lighting plan, reflected ceiling plan, or installed ceilings shall be brought to the attention of the Engineer for clarification prior to installation.
6. Coordinate with Mechanical Contractor in advance of installation to prevent space conflicts.
7. Connect recessed luminaires to branch circuitry by means of single flexible metal conduit 6'-0" in length.

B. Barriers

1. Required where recessed luminaires are installed in insulated ceilings.
2. Suitable material to satisfy NRTL requirements.
3. Provided by Division 26 when not indicated otherwise.
4. Coordinate installation.

C. Luminaire Supports

1. Provide adequate supports to any structures, ceilings and grid systems to safely suspend or attach luminaires.
2. General Contractor to provide ceiling support systems as required by that portion of the Specifications. Electrical Contractor to provide any additional supports on an "as needed" basis to prevent ceiling from sagging or developing other irregularities.
3. Contractor responsible for providing proper suspension and mounting devices and to safely support all luminaires shown on Drawings, regardless of ceiling systems.
4. Rigidly support surface suspended ceiling system with anchors, hangers or clips designed for the purpose.
5. Support surface-mounted luminaires at four-foot intervals.
6. Install recessed luminaires in accordance with manufacturer's recommendations.
7. Rigidly support recessed luminaires to structural members or properly supported ceiling system with hangers, clips or fasteners designed for the purpose.
8. Support pendant and stem-hung luminaires at four-foot intervals.

D. 0 – 10 Volt Dimming Control Circuits

1. Installed in accordance with NEC Article 725.
2. Class 1 systems
 - a. #14 AWG THWN/THHN solid conductors installed in the same raceway as associated power wiring.
3. Class 2 systems
 - a. #18/2 non-shielded cable unless otherwise indicated on the drawings.
 - b. Plenum rated where required.
 - c. Cable shall be installed in raceway when concealed within walls, in mechanical rooms, and rooms without ceilings.
 - 1) DO NOT INSTALL IN SAME RACEWAY AS POWER CIRCUITRY.
 - d. Cable not required to be enclosed in raceway when installed above accessible ceilings.
 - 1) Route cables parallel or perpendicular to building construction.
 - 2) Support cables from building structure utilizing approved methods.
 - 3) Neatly coil excess cable length of pre-terminated assemblies.

- 4) All cable runs shall be continuous between devices. NO SPLICING.

3.3 TESTS

- A. Upon completion of this portion of the Work and prior to its acceptance by Owner, check for proper alignment and operation of all lighting equipment.

3.4 CLEAN UP

- A. Clean all luminaires immediately prior to final inspection.

END OF SECTION 265100

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide operational kitchen equipment connection for all units as scheduled on Architectural Drawings. Connection to include but not be limited to solenoid valves, hood lights, compressors, fire alarm and suppression interlocks, and other required accessories. Refer to Food Service Equipment Specifications and Supplier for extent of material furnished into equipment.
2. Provide operational walk-in refrigeration equipment connection for all units as scheduled on drawings. Connection to include but not be limited to control devices, lights, compressors, evaporators, interlocks, and other required accessories.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Wire and Cables

1. Where heating elements are involved in the equipment supplied, provide wire having suitable temperature rating for service conditions.

B. Raceway

1. Provide flexible conduit connections to equipment that must be removed for repair or maintenance.

C. Plate Covers

1. Provide stainless steel plates for all devices located in kitchen.

PART 3 – EXECUTION

3.1 COORDINATION

- A. Location of outlet boxes, conduit, stubups and connection points are to be considered as typical only. Determine exact connection points from Shop Drawings for equipment.
- B. Confirm rating of each item of equipment with the equipment supplier before installing breakers and wiring.
- C. Provide available fault current calculations for hermetically sealed refrigeration compressors based on actual installation criteria (conductor lengths, raceway types, etc.). Include calculation information in Record Manuals.
- D. Owner, Architect, or Engineer will not be responsible for material delivered to jobsite prior to field coordination between trades.

3.2 INSTALLATION

- A. Kitchen equipment to be supplied and set in place by other trades, complete with all motors, heating elements and automatic controls. Provide and install wiring and electrical connections to kitchen equipment. Connect the panel or junction box of the prewired equipment.

3.3 EXHAUST HOODS

- A. Exhaust hoods to be supplied and set in place by other trades, complete with prewired lighting fixtures and dry chemical fire prevention system.
- B. Provide power, control, and alarm wiring as required.
- C. Activation of dry chemical fire prevention system:
 - 1. De-energize equipment below affected range hood.
 - 2. Activate separate FACP zone.

3.4 WALK-IN REFRIGERATION

- A. Refrigeration equipment to be supplied and set in place by other trades, complete with all motors, evaporators and automatic controls. Install all peripheral electrical accessories supplied with walk-in refrigeration equipment. Provide and install all circuitry and electrical connections to equipment as required. Connect the panel or junction box of the prewired equipment.
- B. Entire installation to comply with equipment submittal drawings.
- C. Maximum two ½" penetrations for walk-in cooler: lighting and evaporators. Condulet immediately exterior to room penetration. Pack sealing compound at penetration exterior around raceway circumference, and conduit interior after cables are pulled. At first interior junction box, pack sealing compound at penetration conduit entrance after wires are pulled.

END OF SECTION 266500

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Furnish and install all electric heating equipment as scheduled on Drawings.

1.2 SUBMITTALS

A. Shop Drawings

1. Provide information in accordance with Section 260500.

B. Record Manuals

1. Provide information in accordance with Section 260500.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Size, wattage and control as scheduled.

PART 3 – EXECUTION

3.1 STORAGE

- A. Store electric heating equipment in a cool, dry space prior to installation.

3.2 INSTALLATION

- A. Install in accordance with Code, product listing, and manufacturer's recommendations.
- B. Mount baseboard heaters above Architectural base.

END OF SECTION 266530

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The provisions and requirements of Section 260500 shall be applicable to Division 27.
- B. All Division 27 work shall be included under the Division 26 contract.
- C. The Contractor shall take special note that any conflicts between the Contractor and any Division 27 subcontractors shall not become an issue of the Engineer or Owner. It shall be the Contractor's responsibility to coordinate with the Division 27 subcontractor/s to determine where their work leaves off and where the subcontractor's work begins. The Contractor shall be responsible for all specified work including the operations of work under Division 27.

END OF SECTION 270500

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide Network Cabling System as shown and described.

B. Work furnished and installed by others.

1. Voice: The Owner will provide all telephone handsets.
2. Data: The Owner will provide all end-user software, programming, computer servers, terminals and personal computers.
3. Surveillance: The surveillance system cameras, servers, switches and storage equipment will be provided and installed either by the Owner or under other Sections of this specification.

C. Description of System

1. Voice: Work shall include, but not be limited to, devices, faceplates, cables and cable assemblies, connecting blocks, cable management, terminations, and final acceptance testing.
2. Data: Work shall include, but not be limited to, devices, faceplates, cables and cable assemblies, cable management, patch panels, data racks, terminations, and testing.
3. Surveillance: Work shall include, but not be limited to, devices, cables and cable assemblies, cable management, patch panels, data racks, terminations, and testing.

1.2 SUBMITTALS

A. Shop Drawings

1. Submit information in accordance with Section 260500.
2. Indicate:
 - a. Mounting details.
 - b. Connection diagrams.
 - c. Description of devices.
 - d. Name of installation Contractor/Subcontractor.

B. Record Manuals

1. Provide information in accordance with Section 260500.
2. Include manufacturer's data for adjustment, operation and maintenance of equipment and name of service organization.

PART 2 – PRODUCTS

2.1 MANUFACTURER/SUPPLIER

- A. The system specified is based on equipment as manufactured by General Cable, Panduit, Commscope and other manufacturers as listed. All reference to model numbers and other pertinent information is intended to establish the standards of operational concepts, performance, quality and appearance which must be met. Backboards, conduit, cable tray, and rough-ins shall be by Electrical Contractor.
- B. Contractors/Subcontractors performing Section 271500 work shall have personnel trained/certified in communications cabling installation via equipment manufacturers' or industry standards' training programs. Refer to Section 260500-1.5 Quality Assurance.
- C. Acceptable installers:
 - 1. Computer Store, 1100 S Broadway, Minot, ND 58701, 701/838-3967.
 - 2. Data Connections, 4016 37th Avenue NW, Mandan, ND 701/426-8771.
 - 3. Dell-Comm, Inc. 812 S 18th St., Bismarck, ND 58504, 701/222-2887.
 - 4. ECSI, 1711 12th Ave SW, Minot, ND 58701, 701/838-8401
 - 5. Gefroh Electric, 100 45th Ave NW, Minot, ND 58703, 701/838-0225.
 - 6. Innova Integrated Systems, 1800 22nd Ave SW, Minot, ND, 701/837-0131.
 - 7. Main Electric, 2626 Valley St., Minot, ND 58701, 701/852-3315.
 - 8. Muth Technology, 600 E Benson Rd, Sioux Falls, SD 57104, 800/888-1597.
 - 9. RBB Electric, 1123 N 1st St., Grand Forks, ND 58208, 701/775-7404.
 - 10. Wheeler Construction, 1720 South Broadway, Minot, ND, 58701, 701/852-5584.
 - 11. Installers not listed above and wishing to quote shall refer to Specification 260500-1.4 for approval procedure. No consideration shall be given to any installer not pre-approved.

2.2 DEVICES AND FACEPLATES

- A. Data jacks: Single outlet RJ45, eight-pin/eight wire, modular construction, TIA/EIA-568.2-D Category 6 compliant, T568A and T568B identification, Panduit Mini-Com #CJ688TG, Commscope #MGS400 series, Leviton #61UJK series, or approved equal.
- B. Voice jacks: Same as data jacks.
- C. Voice wall-mount face plate/jack assembly: Stainless steel with Category 6 keystone jack, Panduit #KWP6, Commscope #630B8, Leviton #4108W1SP series, or approved equal.
- D. Faceplates
 - 1. Single gang with ID windows and two or four modular inserts as dictated by jack count shown on the drawings.
 - 2. 430 or 302/304 stainless steel, or as selected by Architect.
 - a. Panduit #CFPL2/4 series, Commscope #M12/14SP-L series, Leviton #43080-1L2/4 series, or approved equal.

3. Where plastic plates are selected by Architect.
 - a. Panduit #CFPE2/4 series, Commscope #M12/14L series, Leviton #42080-2/4 series, or approved equal.
- E. Provide blank modules as required. Panduit #CMB, Commscope #M81, Leviton #41084 series, or approved equal.
- F. Color: Devices as selected by Owner, faceplates as selected by Architect.
- G. Surveillance Cameras
 1. Jack assembly for cameras mounted to accessible ceilings shall utilize Panduit Model #CBXQ1IW-A enclosure mounted to building structure above the ceiling. Surveillance system provider shall be responsible for patchcord between camera and jack.
 2. Cameras mounted directly to rough-ins or surface boxes shall utilize cable terminated to RJ45 Plug, Panduit Model #FP6X88MTG field terminating type or approved equal. Provide minimum 12" extra cable length within rough-in or camera mounting equipment.

2.3 CABLES AND CABLE ASSEMBLIES

- A. Station cables (voice and data): Four unshielded, twisted pair, #23 gauge, Category 6 – 350 MHz, solid copper conductor, cable tray and plenum rated.
 1. General Cable #7131900, Commscope #2088B, Berk-Tek #10032094 or equivalent meeting the following characteristics at 250 MHz.
 - a. ACR: 10.5 dB min. @ 100m
 - b. PS-ACR: 8.5 dB min. @ 100m
 - c. ELFEXT: 24.5 dB min.
 - d. PS-ELFEXT: 21.5 dB min.
 - e. NEXT: 43 dB min.
 - f. PS-NEXT: 41 dB min.
 - g. ATTEN.: 32.8 dB max. @ 100m
 - h. LCL: 26 dB min.
 - i. Return Loss: 20 dB min.
- B. Extended Range cable: Four unshielded, twisted pair, #22 gauge, Category 6, solid copper conductor, cable tray and plenum rated.
 1. Limited power listed for up to 90 Watts (PoE Type 4)
 2. Certified for 10 Mbps transmission up to 250 meters.
 3. Certified for 1 Gbps transmission up to 200 meters.
 4. General Cable #8131800, Paige #258300336, or equivalent meeting the following characteristics at 250 MHz.
 - a. Insertion Loss: 30.6 dB/100m max.
 - b. Return Loss : 17.3 dB/100m min.
 - c. NEXT: 38.3 dB/100m min.
 - d. PSNEXT: 36.3 dB/100m min.
 5. Use only where indicated on the Drawings.

- C. Outside Plant cable: Four unshielded, twisted pair, #23 gauge, Category 6, solid copper conductor, gel filled water block for underground/wet applications and UV resistant insulation.
 - 1. General Cable #7136100, Commscope #1572A, Berk-Tek #10139885 or equivalent meeting the following characteristics at 250MHz.
 - a. Insertion Loss: 32.8 dB max.
 - b. Return Loss : 17.3 dB min.
 - c. NEXT: 38.3 dB min.
 - d. PSNEXT: 36.3 dB min.
- D. Outside Plant Extended Range cable: Four unshielded, twisted pair, #22 gauge, Category 6, solid copper conductor, gel filled water block, wet listed, and extended range.
 - 1. Limited power listed for up to 90 Watts (PoE Type 4)
 - 2. Certified for 10 Mbps transmission up to 250 meters.
 - 3. Certified for 1 Gbps transmission up to 200 meters.
 - 4. General Cable #8146100, Paige #258330804, or equivalent meeting the following characteristics at 250 MHz.
 - a. Insertion Loss: 30.6 dB/100m max.
 - b. Return Loss : 17.3. dB/100m min.
 - c. NEXT: 38.3 dB/100m min.
 - d. PSNEXT: 36.3 dB/100m min.

2.4 WIRELESS ACCESS POINT (WAP) CABLING

- A. Cabling for WAP's shall be Limited Power Listed CAT 6A.
 - 1. Data jacks: Single outlet RJ45, eight-pin/eight wire, modular construction, TIA/EIA-568.2-D Category 6A compliant, T568A and T568B identification, Panduit Mini-Com #CJ6X88TG, or approved equal.
 - 2. Above Ceiling Installation: Panduit #CBXQ2IW-A, or Approved Equal surface termination box attached to building structure.
 - 3. Station cables: Four unshielded, twisted pair, #23 gauge, Category 6A – 500 MHz, solid copper conductor, cable tray and plenum rated. UL Listed CMP-LP (0.7A).
 - a. General Cable #7151850 or Approved Equal meeting the following characteristics per 100 meters at 500 MHz.
 - 1) ACRF: 13.8 dB min.
 - 2) PSACRF: 10.8 dB min.
 - 3) PSAACRF: 32.0 dB min.
 - 4) NEXT: 33.8 dB min.
 - 5) PSNEXT: 31.8 dB min.
 - 6) PSANEXT: 60.0 dB min.
 - 7) Return Loss: 15.2 dB min.

2.5 MISCELLANEOUS PRODUCTS

A. Cable management:

1. 6" die-cast aluminum distribution rings: Allen Tel #GB13C or equivalent.
2. Plenum velcro cable ties: Panduit #HLSP series or equivalent.
3. Cable hooks with retainers: B-Line #BCH series or equivalent.

B. Patch Panels

1. Patch panels shall have modular jack-style termination connectors, be 24-port or 48-port in size, one or two standard EIA rack spaces in height. The panels shall have separate port and panel designation strips. Panduit #CP24BL or #CP48BL, Commscope #M2400-1U-GS, Leviton #49255-H24 or #49255-H48, or approved equal.
2. Quantity: As required by station cable count.

C. Data Rack (DTR)

1. 84", floor-mounted, EIA/TIA 19" rack assembly. Panduit #R2P, Hoffman #EDR19FM45U, Chatsworth #55053-X03, or equivalent, quantity as shown on Drawings.
2. Provide horizontal cable management panels with integral bend radius control for front and rear cables. Size and quantity determined by cable and patch panel quantity. Panduit #NCMH2, Hoffman #DCHD2, Chatsworth #13930-702, or equivalent.
3. Provide full height 4"x5" vertical cable management panels for front and rear cables. Panels required on both sides of rack. Panduit #WMPV45E, Hoffman #DV6D7, Chatsworth #13915-703, or equivalent.

D. Wall Mounted Data Rack (DTR-W)

1. Swing out sectional wall mount 19" rack.
2. Lockable front cover.
3. Sized as required for equipment.
4. Include Surge Suppression type power strips as required.
5. Manufacturer: Lowell LWR Series or equivalent.

E. Identification:

1. Panduit #LS8E or Pan-Mark labeling systems or equivalent. Hand lettering not acceptable.

F. Power Strip:

1. 19" rack-mounted surge suppression strip with twelve NEMA 5-20 receptacles.
2. UL1449 listed. 30kA Maximum Surge. EMI/RFI Filtration.
3. Manufacturer: CyberPower #CPS1220RMS or equivalent.
4. Quantity: One per data rack.

2.6 COLOR

- A. All cables shall match their associated jack color for type of system served unless otherwise indicated.
- B. Verify cable and jack color configuration with Engineer/Owner's Rep.
- C. Typical color configuration.
 - 1. Voice Jacks – Match Faceplate (Yellow cable)
 - 2. Data Jacks – Yellow
 - 3. WAP – Orange
 - 4. Cameras – Purple

PART 3 – EXECUTION

3.1 STORAGE

- A. Store system equipment in cool, dry space prior to installation.

3.2 GENERAL

- A. Securely install components where shown on Drawings.
- B. Contractor shall adjust and provide all other assistance required at final inspection to bring the system satisfactorily on-line.
- C. Install in accordance with NEC, EIA/TIA Standards, NRTL listing, and manufacturer's recommendations and instructions.
- D. All cables that extend underground shall be listed for use in wet locations. See Outside Plant cables in Part 2 for requirements.
- E. Cable:
 - 1. Install cables in raceways as required by Section 270528 and in cable tray (communications type) where cable tray is specified.
 - 2. Route open air cables (where not in raceway or cable tray) parallel or perpendicular to building construction supporting with specified products, maximum 4'-0" on center.
 - 3. Bundle multiple open air cable runs located in TTB/TB rooms together with velcro cable ties
 - 4. Identify ends of cables with room designations as directed by Owner.
 - 5. Bending radius shall be minimum 1".
 - 6. All cable runs shall be continuous, **NO SPLICING.**

3.3 DATA

- A. Provide Data Rack(s) as shown and specified.
- B. Install patch panels and cable management system in Data Rack.

- C. Install data station cable from patch panel to data outlet locations as shown on the Drawings. Cable length not to exceed 295 feet.
- D. Terminate cables according to T568A or T568B wiring scheme as determined by Owner's system requirements.
- E. Extended range cable to only be used where indicated on the Drawings, or where approved by the Engineer. Use of this cable is not permitted as an alternative to change or alter network system distribution locations or quantities.
- F. Identify cable at both ends according to Owner's convention. Arrange patch panels and patch panel jacks as per Owner's convention. Identify all patch panels, patch panel jacks, and faceplate jacks according to Owner's convention.
 - 1. If no convention is available, room numbers shall be incorporated into the identification. Ex: For room 120, use 120-1 for first cable, 120-2 for second cable, etc.

3.4 SURVEILLANCE

- A. Install separate dedicated patch panels in Data Rack for the camera cables.
- B. Install station cable from patch panel to camera locations as shown on the Drawings. Cable length not to exceed 295 feet. Verify exact camera location and mounting configuration with Surveillance System installer.
 - 1. Extended range cable to only be used where indicated on the Drawings or where approved by the Engineer.
- C. Terminate cables according to T568A or T568B wiring scheme as determined by Owner's system requirements.
- D. Identify cable at both ends according to Owner's convention. Arrange patch panels and patch panel jacks as per Owner's convention. Identify all patch panels, patch panel jacks, and faceplate jacks according to Owner's convention.
 - 1. If no convention is available, camera numbers shall be incorporated into the identification. Ex: For camera 21, use C-21.

3.5 GROUNDING

- A. For each data rack, provide one #10 AWG solid copper conductor from data rack to nearest panelboard with equipment ground bus.
- B. Where multiple data racks are located in single room (more than 2), provide isolated communication grounding bus in room. Extend #6 solid SDBC in conduit, extended shortest and most direct route to ground bar at nearest panelboard with equipment ground bus. Extend one #10 AWG solid copper conductor from each data rack to communication grounding bus in room.

3.6 TESTING REQUIREMENTS

- A. All terminated voice and data cables shall be tested and certified for TIA/EIA-568.2-D. Category 6 standards. The test shall be performed on the permanent link configuration (from station jack to patch panel jack). These standards require the following when tested at 250 MHz:
 - 1. Return Loss shall be no less than 10.0dB.
 - 2. Insertion Loss (Attenuation) shall not exceed 31.1dB.
 - 3. Near End Cross Talk (NEXT) shall be no less than 35.3dB.
 - 4. Power Sum Near End Cross Talk (PSNEXT) shall be no less than 32.7dB.
 - 5. Attenuation to Crosstalk Ratio Far-end (ACRF) shall be no less than 16.2dB.
 - 6. Power Sum ACRF (PSACRF) shall be no less than 13.2dB.
 - 7. Propagation Delay shall be less than 490 nanoseconds.
 - 8. Propagation Delay Skew shall be less than 44 nanoseconds.
- B. All terminated WAP cables shall be tested and certified for TIA/EIA-568.2-D. Category 6A standards. The test shall be performed on the permanent link configuration (from station jack to patch panel jack). These standards require the following when tested at 500 MHz:
 - 1. Return Loss shall be no less than 8.0dB.
 - 2. Insertion Loss (Attenuation) shall not exceed 43.8dB.
 - 3. Near-end Cross Talk (NEXT) shall be no less than 26.7dB.
 - 4. Power Sum Near-end Cross Talk (PSNEXT) shall be no less than 23.8dB.
 - 5. Attenuation to Crosstalk Ratio Far-end (ACRF) shall be no less than 10.2dB.
 - 6. Power Sum ACRF (PSACRF) shall be no less than 7.2 dB.
 - 7. Propagation Delay shall be less than 490 nanoseconds.
 - 8. Propagation Delay Skew shall be less than 44 nanoseconds.
 - 9. Power Sum Alien Near-end Cross Talk (PSANEXT) shall be no less than 49.5 dB.
 - 10. Power Sum Alien Attenuation to Crosstalk Ratio Far-end (PSAACRF) shall be no less than 23.7 dB.
- C. Additional testing shall include line mapping and cable length before final acceptance by Owner.
 - 1. DC resistance shall be less than 3% or less than 150 milli-Ohms.
- D. All permanent link cable runs shall be documented with a hard copy print-out of the test results. Compile one copy of test results in a loose-leaf binder, similar to manual references in Section 260500, 1.04E. Submit at project completion with referenced Record Manual.
- E. Field tester to be Level III and conform to TIA/EIA 568.2-D Annex A & B requirements.

3.7 CLEANING

- A. **Clean** and **vacuum interior** to remove all wire and insulation scraps, dust and dirt.
- B. Clean all exposed surfaces immediately prior to final inspection.

END OF SECTION 271513

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide raceways for network systems as shown on the Drawings.

B. Work furnished and installed by others.

1. Local serving telephone utility shall place the service entrance cable to the point of presence, install circuit protection cabinet, protectors, and ground the entrance cable as needed to the service grounding conductor provided under this contract.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Main telephone terminal boards (TTB): ¾" grade AD fire-resistant plywood, painted gray (including edges). Dimensions as required by serving utility company.

B. Voice/data terminal board (TTB):

1. ¾" grade AD fire-resistant plywood, painted gray (including edges). Dimension as required by Owner's network system supplier. May be included with main telephone terminal board for single board installation.

C. Raceways:

1. As specified in Section 260533 and sized as shown on Drawings, minimum 3/4".

D. Boxes:

1. 2-1/8" deep unless restricted by wall thickness.
2. As specified in Section 260534 and 260540.

E. Blank plates:

1. As specified in Section 262726, yoke-mounted. Box-mounted plates not acceptable.

F. Firestop Assemblies

1. NRTL listed 4" square pathway with intumescent material designed to seal out fire, smoke, and toxic gases.
2. Quantity shall equal or exceed the width of the associated cable tray. i.e. a 6" wide tray requires two pathways.
3. Include mounting accessories as required by application specifics.
4. Manufacturer: EZ Path Series 44, 3M Model PT4SD or approved equal.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Serving Communications Utility Requirements

1. Raceways:
 - a. Provide telephone service entrance conduit, stubbed to terminal board from property line.
 - b. Verify service entrance conduit size and quantity, and property line location with serving utility.
 - c. Provide bushing or connector at each conduit stub.
 - d. Provide pull wire in each telephone conduit run.
2. Provide surface double-duplex receptacle at main telephone terminal board, fed from dedicated spare circuit breaker. Receptacles to be isolated ground type, with separate grounding conductor connected to panelboard grounding bar.
3. Provide telephone board communication grounding bus as required by serving utility, minimum #6 solid SDBC in conduit, extended shortest and most direct route to ground bar at main switch. Terminate in ground bar affixed to telephone terminal board, location as directed by serving utility.
4. Entire installation to comply with serving utility company requirements.

B. Raceways:

1. Stub from rough-in location into nearest accessible ceiling space, or location as indicated on Drawings.
2. Provide bushing or connector at each conduit stub.
3. Provide pull wire in each voice/data raceway.
4. Provide raceway system where concealed in walls, in mechanical rooms and rooms without accessible ceilings.

C. Provide blank plates for all rough-in boxes not concealed by Owner's voice/data equipment.

D. Entire installation to comply with Owner's network systems supplier requirements.

END OF SECTION 270528

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included

1. Provide a complete and operational Public Address System to support voice and audio program sources for the grandstand seating and building interior.

B. Description of System

1. The system shall provide for one-way communication between areas indicated.

1.2 SUBMITTALS

A. Shop Drawings

1. Submit information in accordance with Section 260500.
2. Indicate mounting details, cabinet dimensions, connection diagrams, and description of system functions.

B. Record Manuals

1. Submit information in accordance with Section 260500.
2. Include manufacturer's data for adjustment, operation and maintenance of equipment and name of service organization.
3. Provide multiple copies, one to remain in equipment cabinet, other copies for Record Manuals.

PART 2 – PRODUCTS

2.1 MANUFACTURER/SUPPLIER

A. The system specified is based on equipment as manufactured by Biamp, Shure, and other manufacturers as listed.

B. All references to model numbers and other pertinent information is intended to establish the standards of operational concepts, performance, quality and appearance which must be met

C. Acceptable Suppliers:

1. AVI, 1930 East Century Avenue, Bismarck, North Dakota, (701) 223-3800.
2. TriCorne Audio Inc, 4023 State Street, Bismarck, North Dakota, (701) 258-6912.

2.2 PACP

A. Audio Processor

1. Digital Signal Processor.

2. Frequency response 20Hz-20kHz.
3. Configuration/Control via laptop RS 232 and Ethernet.
4. 12 x 8 In/Out configuration.
5. Manufacturer: Biamp Tesira Forte Series.

B. Controller

1. Touchscreen type mounted to the cover of the enclosure.
2. Ethernet based
3. Manufacturer: Biamp Tesira TEC-1s.

C. Bluetooth Interface (B)

1. Local Interface
 - a. Single Gang Stainless Steel Decora device with pairing button and status indication.
 - b. Remote power from associated Format A twisted pair receiver.
 - c. RJ45 type connection.
 - d. Manufacturer: RDL #DS-BT1A
2. Receiver
 - a. Format A twisted pair receiver.
 - b. Balanced and Unbalanced Output.
 - c. Installed in the equipment cabinet.
 - d. Manufacturer: RDL #TX-TPR2A

D. Amplifier

1. Four independent channel type.
2. Power output as required operating on recommend voltage system.
3. Standard 19" rack mount type.
4. Manufacturer: Community Model ALC Series.

E. Weather-Resistant Speakers "A"

1. Type A
 - a. 2-way horn type coaxial.
 - b. Frequency response 80Hz-18kHz.
 - c. 200 Watt tap
 - d. 90 x 90 distribution pattern.
 - e. Light Gray colored housing and grill or Black if selected by Architect.
 - f. Manufacturer: Community R.5COAX99T.

F. Indoor Ceiling Speakers "B"

1. Type B
 - a. Diameter: 8".
 - b. Frequency Response: 54 Hz – 11.6 kHz.
 - c. Impedance: 8 Ω .

- d. Multiple wattage taps at 25/70 Volt.
- e. Operation at 70 Volt.
- f. Manufacturer: Lowell RPAK-810-T72.

G. Hardwire Input Outlet (M) (Two Thus)

- 1. Three jacks per outlet.
 - a. Three-contact female mini-XLR microphone jack (two required).
 - b. 3.5mm Stereo Audio Input (one required).
- 2. Mount all three jacks in single gang stainless steel faceplate.

H. Local Volume Control (V)

- 1. Rotary dial volume control
- 2. 50W power rating in one-gang box.
- 3. Manufacturer: Lowell 50LVC

I. Wireless Microphone

- 1. UHF Digital type with 32 selectable frequencies.
- 2. Handheld Type (Two Required)
 - a. Hand held wireless microphone shall be super-cardioid condenser type with mute button.
 - b. Receiver shall be rack mounted.
 - c. Include tabletop microphone stand.
 - d. Include windscreen.
 - e. Manufacturer: Shure Model SLXD Series.
- 3. Antenna Splitter
 - a. Dual 1 in, 4 out UHF active splitter to service up to four diversity receivers.
 - b. Omnidirectional remote mount antennas with mounting kits.
 - c. Rack mounted.
 - d. Manufacturer: Shure Model UA845UWB Series.

J. Wired Microphone (Two Required)

- 1. Handheld dynamic cardioid type with integral on/off switch.
- 2. Include tabletop microphone stand.
- 3. Include windscreen.
- 4. Manufacturer: Shure Model SM58 Series.

K. Enclosure

- 1. Swing out sectional wall mount 19" rack.
- 2. Lockable front cover.
- 3. Sized as required for equipment.
- 4. Include Surge Suppression type power strips as required.
- 5. Manufacturer: Lowell LWR Series or equivalent.

2.3 CABLE

- A. Speaker cable: AWG as required, outdoor/water resistant.
- B. Antenna cable: RG6 Coaxial.
- C. Microphone cable: #22 gauge, two-wire stranded, shielded, with overall polyvinyl jacket. Belden: #8451 or equivalent.

PART 3 – EXECUTION

3.1 STORAGE

- A. Store public address components in a cool, dry space prior to installation.

3.2 INSTALLATION

- A. General
 - 1. Install in accordance with code, product listing, and manufacturer's instructions.
 - 2. Verify exact location of equipment with owner/engineer prior to installation.
 - 3. All wiring installed in minimum 1/2" raceway as shown on Drawings.
 - 4. Exercise particular care in the installation of control rough-in boxes to ensure plumb and level placement.
 - 5. Clearly mark all incoming cables and wires as to origin.
- B. Special care in cable installation shall be taken to ensure that grounds do not occur because of careless terminations or damage to the jacket of the shield. Take special care to ensure that random contact of shields of adjacent cables do not occur in consoles and at junction boxes.

3.3 TESTS

- A. Prior to final inspection, verify that the public address system is in proper working condition. Furnish letter of verification to Engineer indicating that the system has been tested by a manufacturer's representative. List date of test and name of manufacturer's representative. Division 26 contractor responsible for test and scheduling.

3.4 INSTRUCTIONS

- A. Manufacturer's representative shall instruct Owner in proper operation, maintenance and testing of the complete system. Indicate on letter of verification, name of Owner's representative receiving instructions.
- B. Record instructions and include with Record Manuals in accordance with Section 260500.

3.5 CLEANING

- A. **Clean and vacuum interior** to remove all wire and insulation scraps, dust and dirt.
- B. Clean all exposed surfaces immediately prior to final inspection.

END OF SECTION 274116