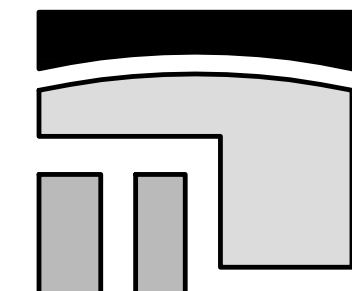


NEW FACILITY FOR:

JIMMY JOHN'S

212 US-2 WEST DEVILS LAKE,
NORTH DAKOTA 58802



STROH
ARCHITECTS INTERIORS
8 Seventh St. N.
Fargo, N.D. 58102
Office (701) 239-4198
Fax(701) 239-9643
www.tlstroh.com

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

[Signature]

Date AUGUST 21, 2026 Reg. No. 923

Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

DESIGN TEAM

ARCHITECT
T.L. STROH
ARCHITECTS, LTD.
8 SEVENTH ST. N.
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CONTACT: TERRY STROH

CIVIL ENGINEERS

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ENGINEERING
503 7TH ST. N., SUITE 200
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CONTACT: KYLE BARON

STRUCTURAL ENGINEERS

HEYER
ENGINEERING
4180 24TH AVE. S.
FARGO, ND 58104
PH: (701) 280-0449

CONTACT: NICOLE ANDERSON

MECHANICAL ENGINEERS

MBN
ENGINEERING
503 7TH ST. N., SUITE 200
FARGO, ND 58102
PH: (701) 478-6336

CONTACT: MIKE PETERSON

ELECTRICAL ENGINEERS

MBN
ENGINEERING
503 7TH ST. N., SUITE 200
FARGO, ND 58102
PH: (701) 478-3320

CONTACT: PRABHA KAVASSERI

MATERIALS SYMBOLS

	AGGREGATE
	BATT INSULATION
	BRICK
	CONCRETE
	CONCRETE MASONRY
	EARTH
	GYPSUM BOARD
	METAL/STEEL
	PLYWOOD
	RIGID INSULATION
	WOOD BLOCKING
	FINISH WOOD

DRAWING KEY

DETAIL NUMBER SHEET NUMBER	
REFERENCE NORTH	
DOOR NUMBER	
WINDOW NUMBER	
ROOM NUMBER	
ELEVATION NUMBER SHEET NUMBER	
NEXT ELEVATION	

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C5.0	PAVING PLAN
C5.1	DIMENSION PLAN
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C6.2	SPECIFICATIONS
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C6.4	SPECIFICATIONS
C6.5	SPECIFICATIONS
C6.6	SPECIFICATIONS

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M100	PLUMBING PLAN
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M201	MECHANICAL ROOF PLAN

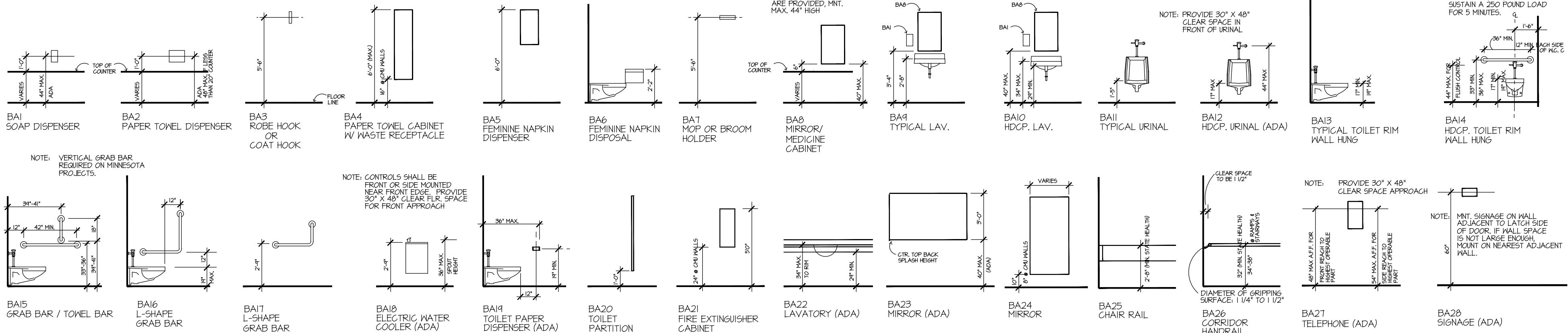
ELECTRICAL

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E201	LIGHTING & POWER PLANS
E301	ROOF PLAN & MOTOR SCHEDULE
E401	COMMUNICATIONS PLAN
E501	ELECTRICAL SCHEDULES AND DETAILS
E600	ELECTRICAL NOTES
E601	ELECTRICAL NOTES

ABBREVIATIONS

A.C.T.	ACOUSTICAL CEILING TILE	N.T.S.	NOT TO SCALE
ADJ.	ADJUSTABLE	O.C.	ON CENTER
ALT.	ALTERNATE	P.	PAINT
B.C.	BOTTOM OF CURB	PL	PROPERTY LINE
CPT.	CARPET	P.T.D.	PAPER TOWEL DISPENSER
CL	CENTER LINE	±	PLUS OR MINUS
C.T.	CERAMIC TILE	Q.T.	QUARRY TILE
C.M.U.	CONCRETE MASONRY UNIT	REV.	REVERSE
CONC.	CONCRETE	RM.	ROOM
C.J.	CONTROL JOINT	S.V.	SHEET VINYL
C.S.	CORNER GUARD	SIM.	SIMILAR
DEMO.	DEMOLITION	STRUCT.	STRUCTURAL
DRNG.	DRAINING	T.C.	TOP OF CURB
ELEC.	ELECTRICAL	T.P.H.	TOILET PAPER HOLDER
EQ.	EQUAL	TNL.	TOWEL
EXIST.	EXISTING	T.B.	TOWEL BAR
F.E.	FIRE EXTINGUISHER	TYP.	TYPICAL
G.B.	GRAB BAR	V.B.	VAPOR BARRIER
GYP. BD.	GYPSUM BOARD	V.C.T.	VINYL COMPOSITION TILE
H.M.	HOLLOW METAL	V.W.G.	VINYL WALL COVER
K.D.	KNOCK DOWN	V.	VERIFY
MECH.	MECHANICAL	WLD.	WELDED
N.I.C.	NOT IN CONTRACT	WD.	WOOD

STANDARD MOUNTING HEIGHTS/
ADA REQUIREMENTS



Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

TS, MB

Date:

AUGUST 21, 2026

Revision Date:

Job Number:

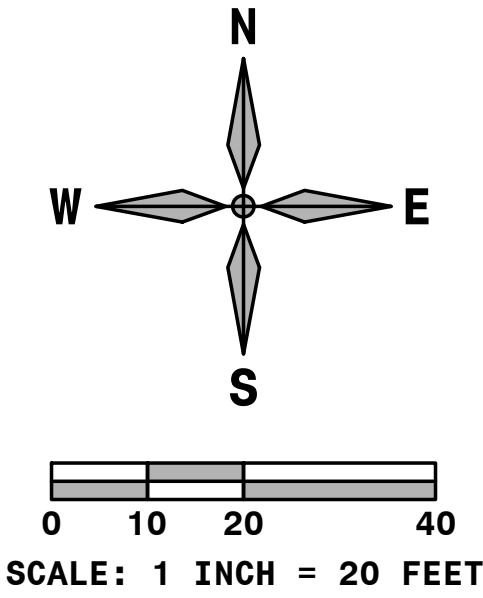
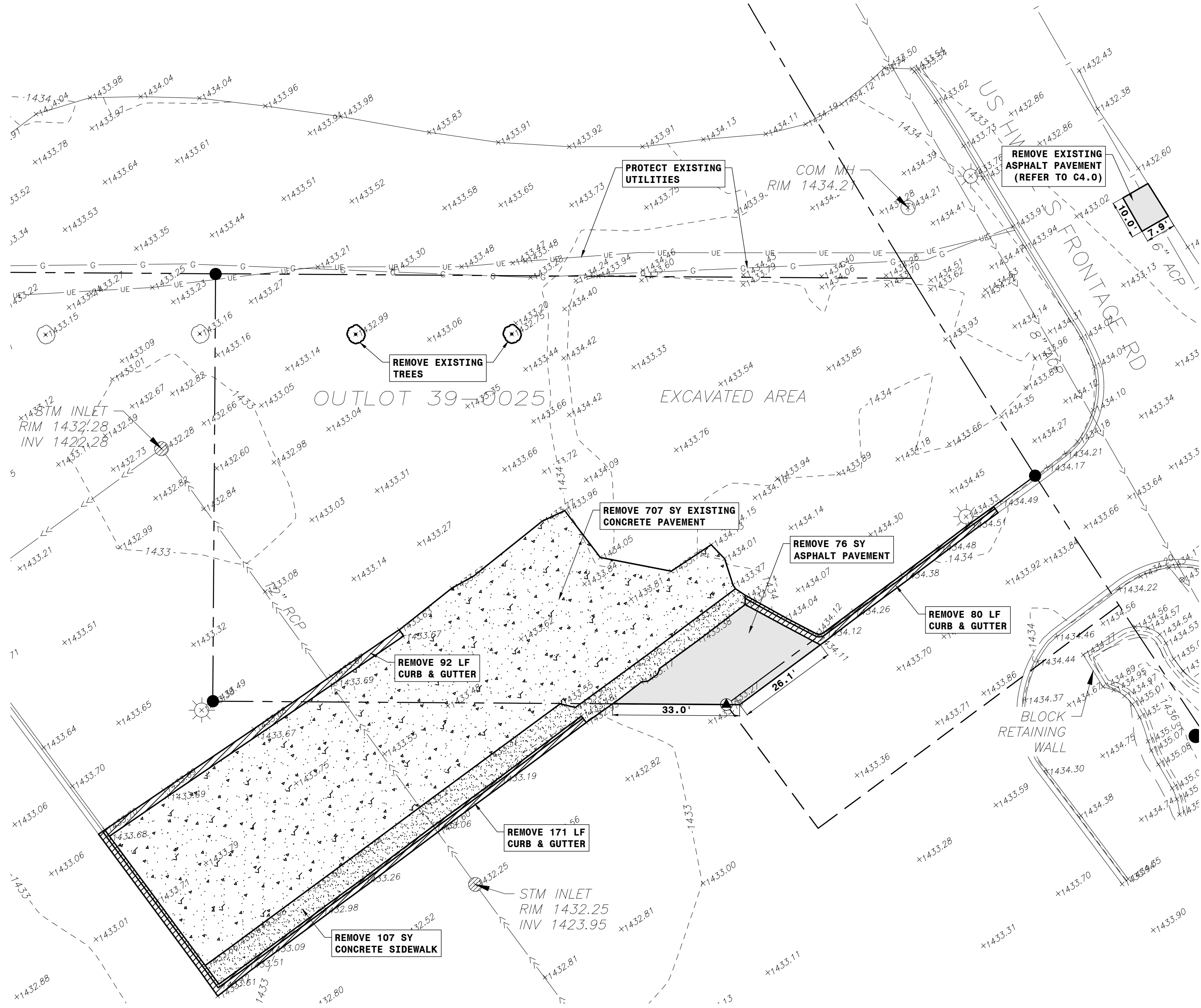
2026.25

Sheet Name:

COVER SHEET

Sheet Number:

CS.1



SYMBOL LEGEND:

---	EXISTING PROPERTY LINE
---	EXISTING EASEMENT LINE
●	EXISTING MONUMENT
⊙	EXISTING BENCHMARK
⊙	EXISTING SANITARY SEWER MANHOLE
⊙	EXISTING STORM SEWER INLET
⊙	EXISTING WATER GATE VALVE
⊙	EXISTING SIGN
⊙	EXISTING LIGHT POLE
⊙	EXISTING TELEPHONE MANHOLE
⊙	EXISTING DECIDUOUS TREE
→→→	EXISTING STORM SEWER LINE
→→→	EXISTING SANITARY SEWER LINE
---	EXISTING WATER LINE
---	EXISTING GAS LINE
---	EXISTING UNDERGROUND ELECTRICAL LINE
---	EXISTING CONTOUR LINE
⊙	REMOVE EXISTING TREE
▨	REMOVE EXISTING CONCRETE SIDEWALK
▨	REMOVE EXISTING CONCRETE PAVEMENT
▨	REMOVE EXISTING ASPHALT PAVEMENT
▨	REMOVE EXISTING CONCRETE CURB & GUTTER

SITE INFORMATION:

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PLAN NOTES:

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BENCHMARKS:

- TOP NUT OF HYDRANT AS SHOWN. ELEVATION = 1437.11 (NAVD88)

Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

Revision Date:

Job Number:

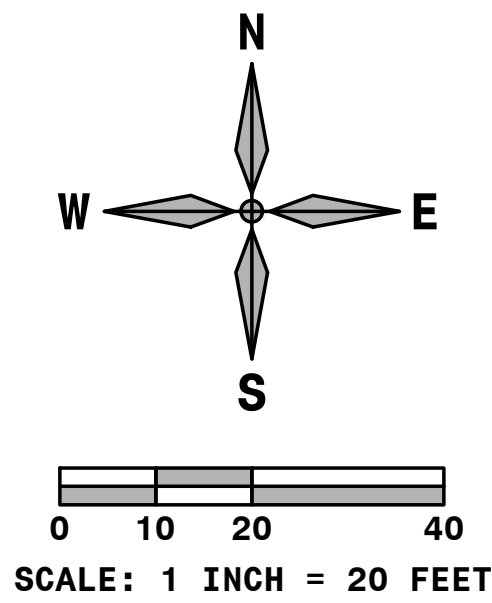
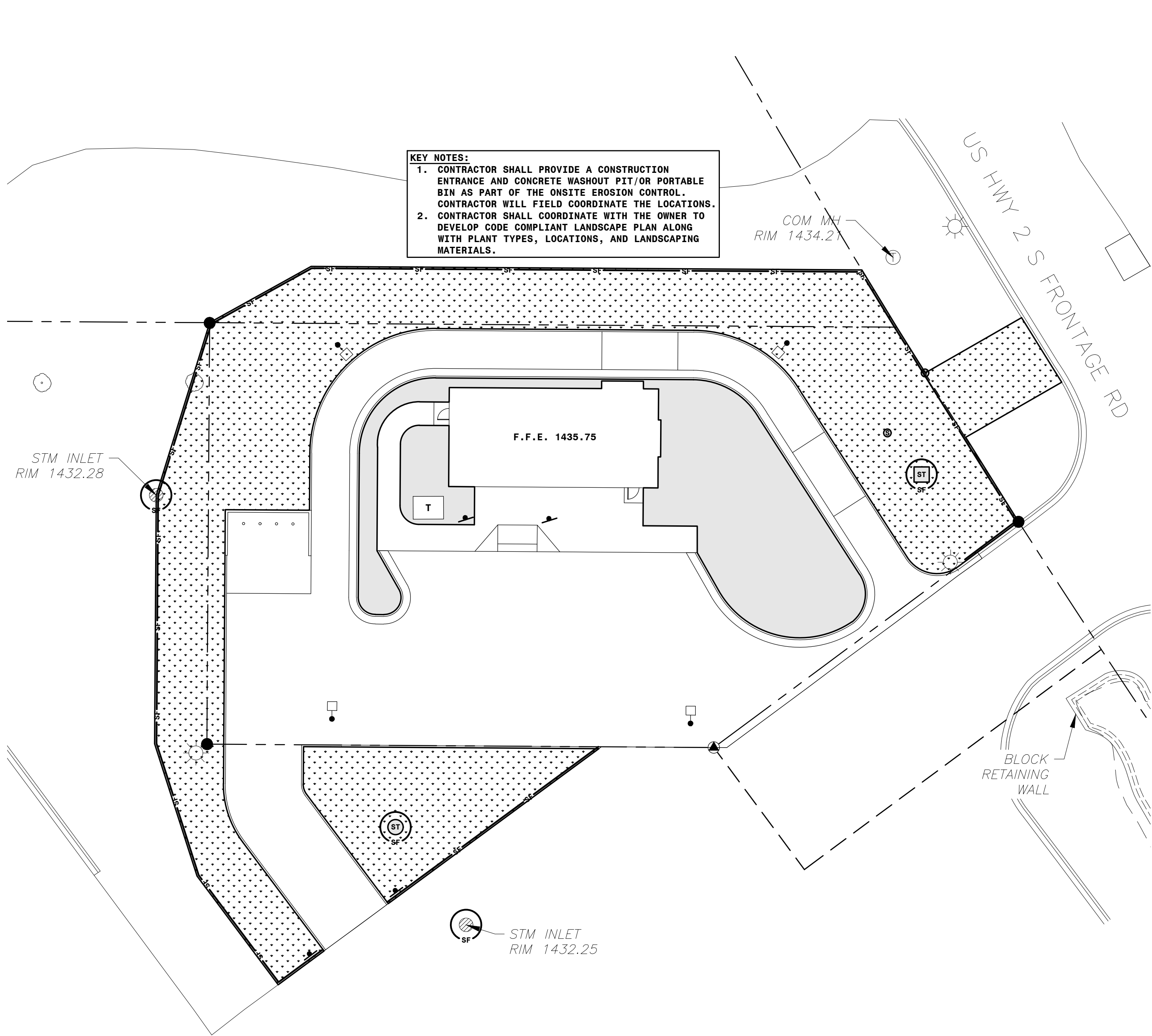
2025.04

Sheet Name:

EXISTING
CONDITIONS /
DEMOLITION PLAN

Sheet Number:

C1.0



SYMBOL LEGEND:

---	EXISTING PROPERTY LINE
---	EXISTING EASEMENT LINE
---	EXISTING MONUMENT
---	EXISTING BENCHMARK
---	EXISTING SANITARY SEWER MANHOLE
---	EXISTING STORM SEWER INLET
---	EXISTING WATER GATE VALVE
---	EXISTING SIGN
---	EXISTING LIGHT POLE
---	EXISTING TELEPHONE MANHOLE
---	EXISTING DECIDUOUS TREE
---	NEW SIGN
---	NEW LIGHT POLE
---	NEW CURB STOP
---	NEW SANITARY CLEANOUT
---	NEW STORM INLET
---	NEW STORM MANHOLE
---	NEW INLET PROTECTION
---	NEW SILT FENCE
---	NEW SEEDING/HYDROMULCH AREA
---	NEW LANDSCAPING ROCK (LANDSCAPE AREA)

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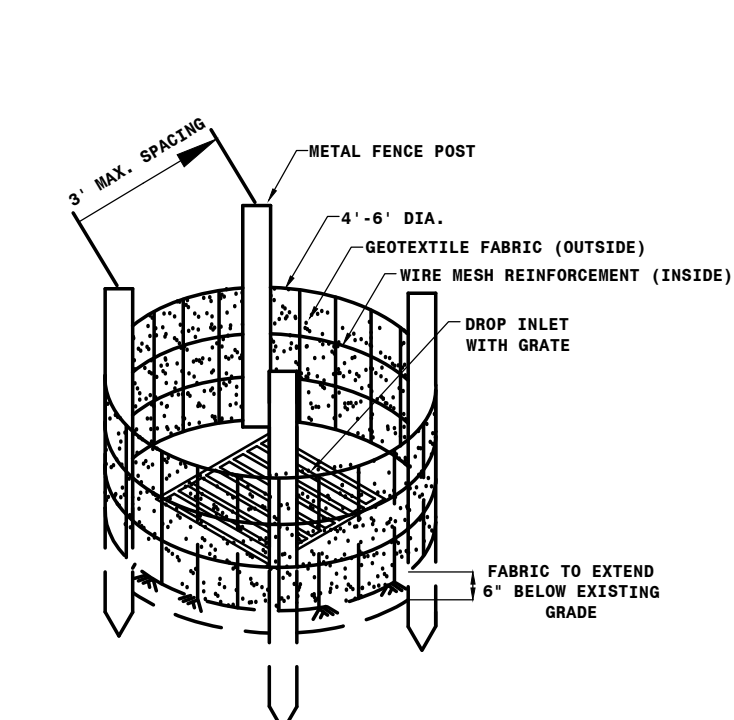
LANDSCAPING REQUIREMENTS:

REQUIRED:

MINIMUM OF 10% OF THE TOTAL PLOT AREA

20,447SF * 10% = 2,045SF REQUIRED

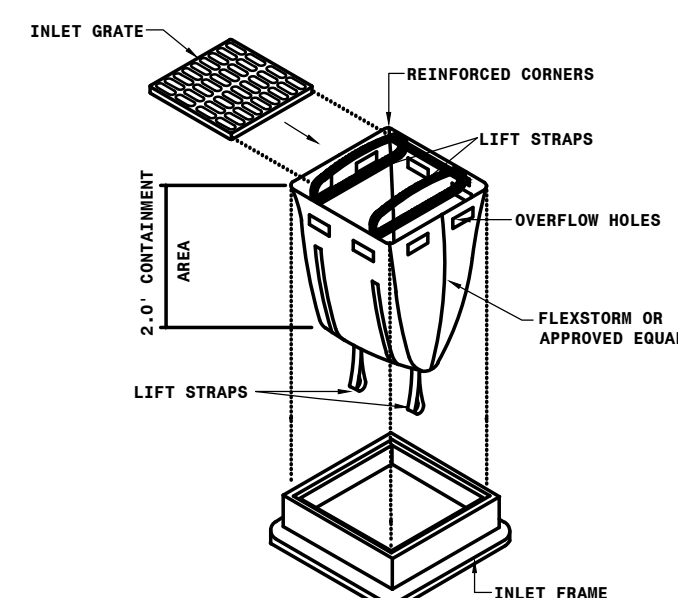
3,207SF PROVIDED



- NOTES:
- INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.
 - MANUFACTURED ALTERNATIVES MAY BE SUBSTITUTED, SUBJECT TO THE ENGINEER'S APPROVAL.
 - WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.
 - FABRIC SHALL BE INSTALLED IN ONE CONTINUOUS PIECE WRAPPED AROUND POSTS, OVERLAPPED ACROSS THE LAST GAP, ITS ENDS SECURELY FASTENED TO SEPARATE POSTS.

1 INLET PROTECTION DETAIL (GRASS)

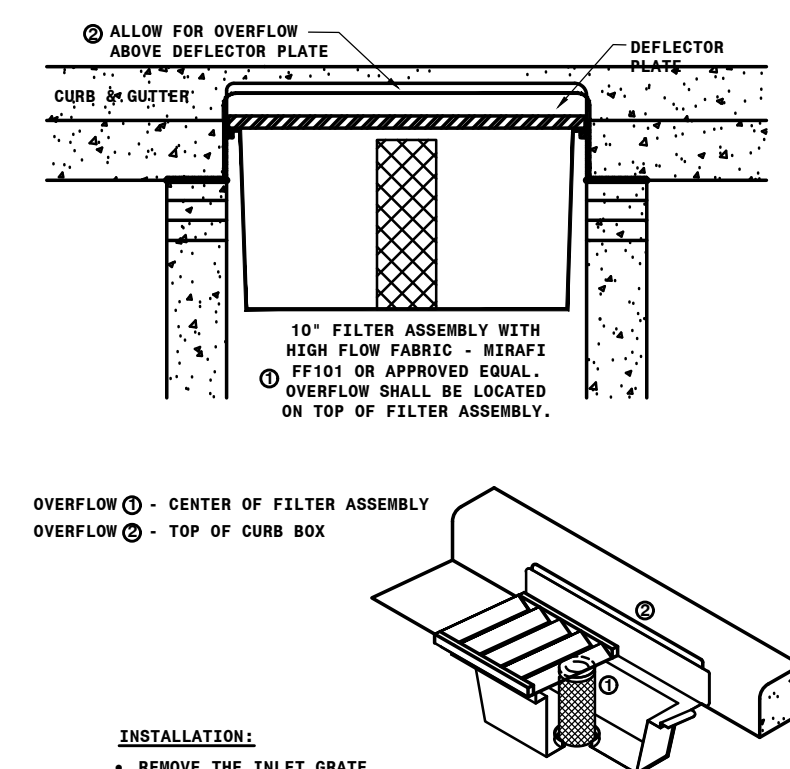
22.0 NOT-TO-SCALE



- INSTALLATION:
- REMOVE THE INLET GRATE.
 - STAND THE GRATE UPRIGHT. INSTALL THE GRATE BETWEEN THE LIFT STRAPS.
 - PLACE THE BAG IN THE INLET & LOWER THE BAG AND GRATE USING THE LIFT STRAPS.
- MAINTENANCE:
- CHECK BAG REGULARLY & AFTER RAIN EVENTS. IF THE BAG IS FILLED WITH 1/3 OF ITS CAPACITY WITH SEDIMENT, EMPTY THE BAG.
 - REMOVE DEBRIS AROUND THE INLET GRATE PRIOR TO REMOVING BAG.
 - USE THE LIFT HANDLES TO REMOVE THE BAG AND USE THE HANDLES ON THE BOTTOM TO EMPTY BAG.

2 INLET PROTECTION DETAIL

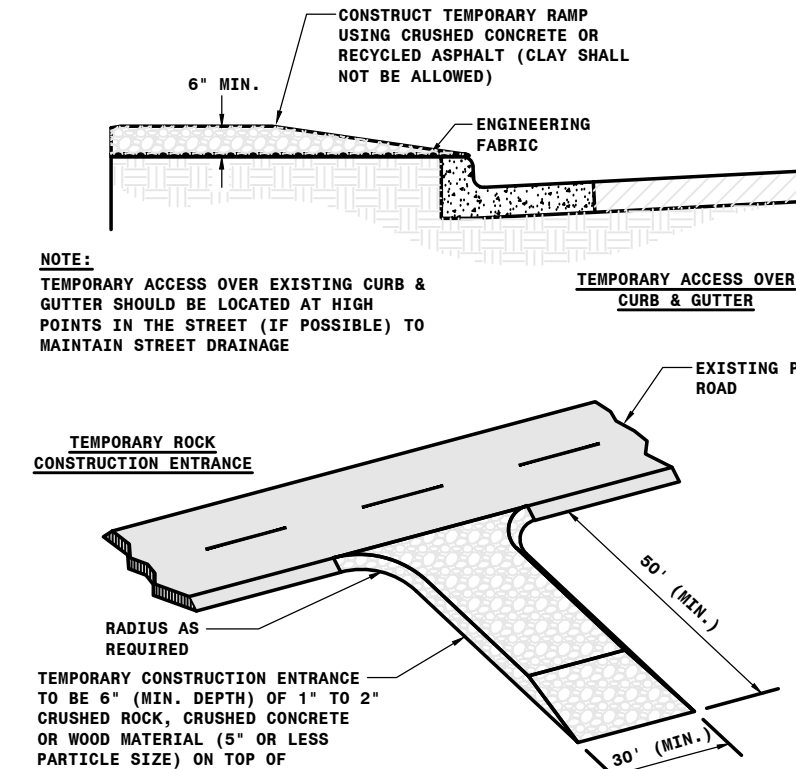
22.0 NOT-TO-SCALE



- INSTALLATION:
- REMOVE THE INLET GRATE.
 - INSERT THE DEVICE INTO THE CASTING FRAME.
 - INSTALL GRATE INTO CASTING FRAME OVER TOP OF DEVICE.
- MAINTENANCE:
- CHECK REGULARLY & AFTER RAIN EVENTS. IF THE BAG IS FILLED WITH 1/3 OF ITS CAPACITY WITH SEDIMENT, EMPTY THE BAG.
 - REMOVE DEBRIS AROUND THE INLET GRATE PRIOR TO REMOVING DEVICE.

3 INLET PROTECTION DETAIL (STREET)

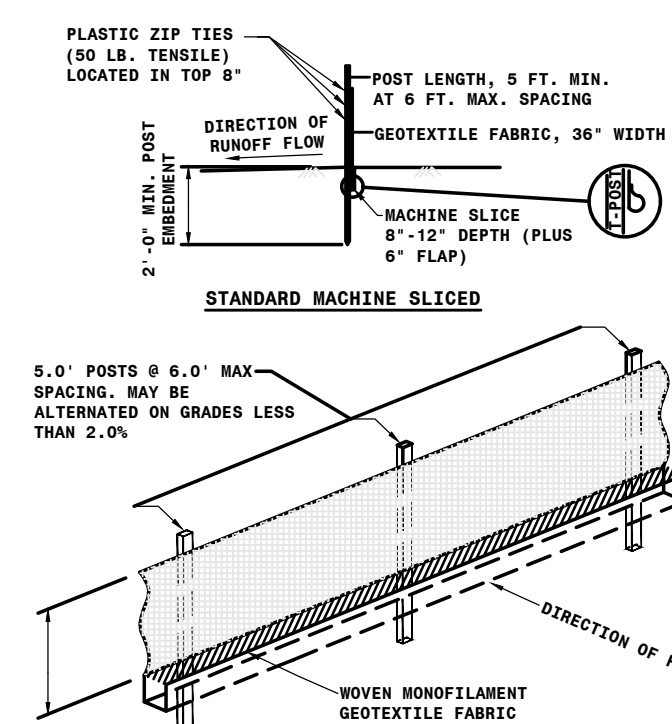
22.0 NOT-TO-SCALE



- NOTES:
- UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL REMOVE THE TEMPORARY CONSTRUCTION ENTRANCE UNLESS NOTED OTHERWISE, AND THE SITE SHALL BE RESTORED TO ITS PREVIOUS CONDITION.
 - ENTRANCES SHALL BE MAINTAINED IN A MANNER TO MINIMIZE THE TRACKING OF SEDIMENT ONTO PAVED SURFACES.
 - THE LOCATION OF TEMPORARY ENTRANCES SHALL BE AS SHOWN ON THE PLANS. IF NOT SHOWN ON THE PLANS, THE CONTRACTOR SHALL COORDINATE THE LOCATIONS WITH THE ENGINEER.

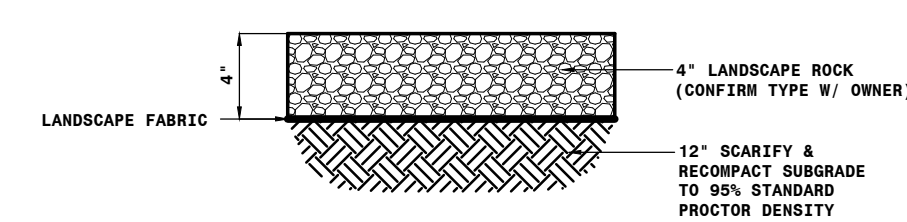
4 CONSTRUCTION ENTRANCE DETAIL

22.0 NOT-TO-SCALE



5 SILT FENCE DETAIL

22.0 NOT-TO-SCALE



6 4" REINFORCED CONCRETE SIDEWALK DETAIL

22.0 NOT-TO-SCALE

Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

Revision Date:

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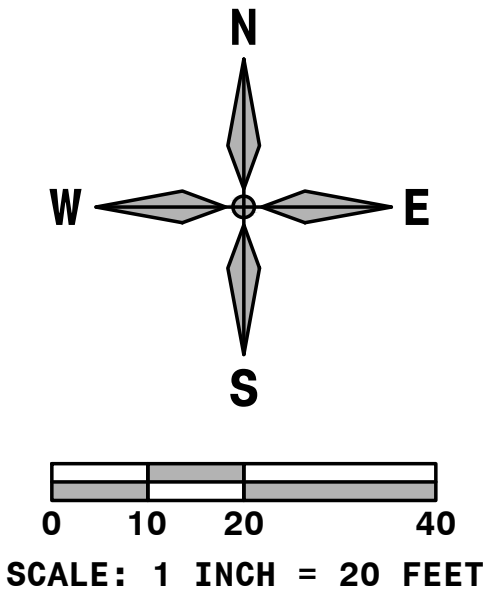
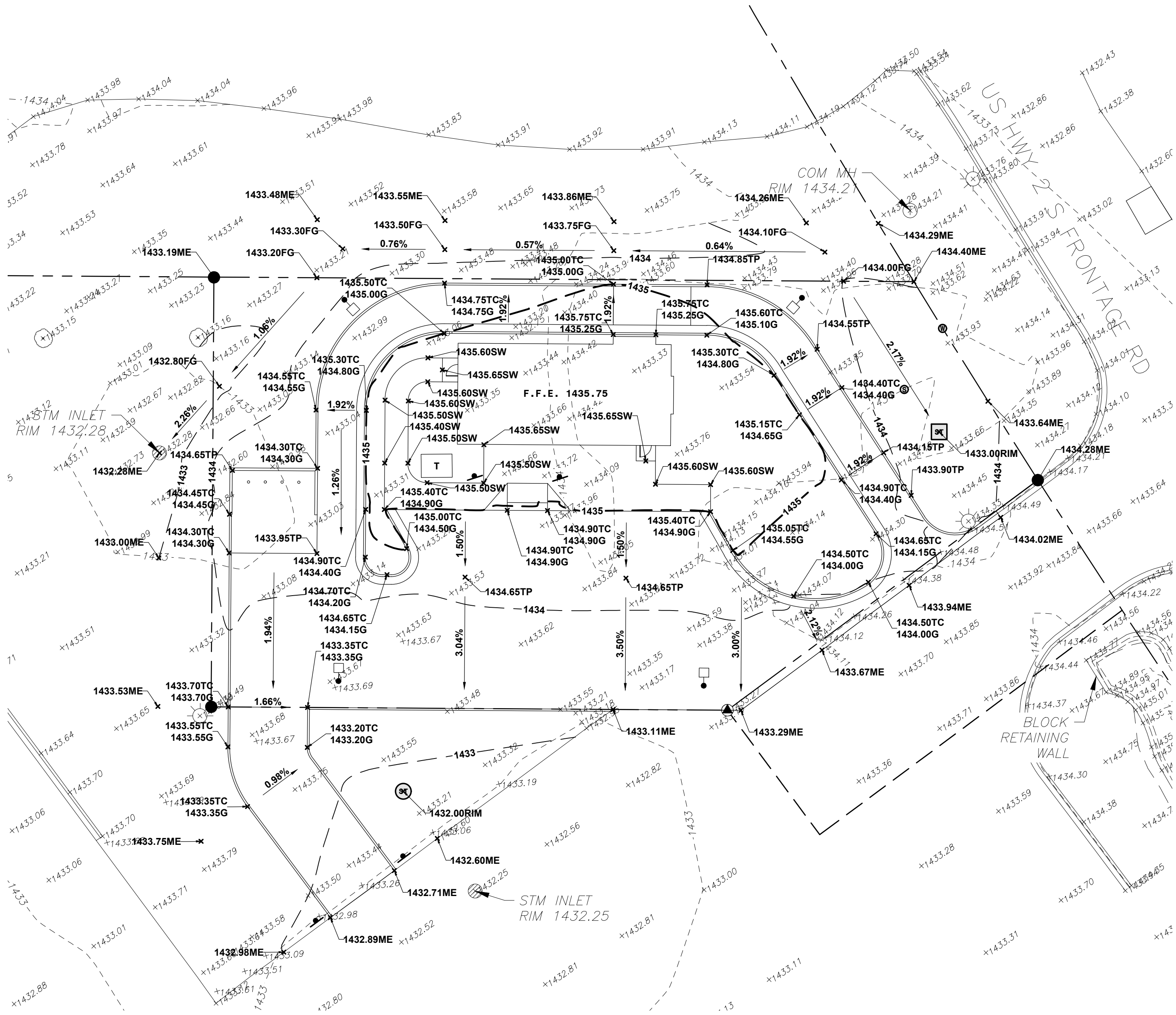
2025.04

Sheet Name:

EROSION
CONTROL /
LANDSCAPE PLAN

Sheet Number:

C2.0



SYMBOL LEGEND:

---	EXISTING PROPERTY LINE
---	EXISTING EASEMENT LINE
●	EXISTING MONUMENT
⊙	EXISTING BENCHMARK
⊙	EXISTING SANITARY SEWER MANHOLE
⊙	EXISTING STORM SEWER INLET
⊙	EXISTING WATER GATE VALVE
⊙	EXISTING SIGN
⊙	EXISTING LIGHT POLE
⊙	EXISTING TELEPHONE MANHOLE
⊙	EXISTING DECIDUOUS TREE
---	EXISTING CONTOUR LINE
---	NEW SIGN
---	NEW LIGHT POLE
---	NEW CURB STOP
---	NEW SANITARY CLEANOUT
---	NEW STORM INLET
---	NEW STORM MANHOLE
---	NEW TOP OF PAVEMENT ELEVATION
---	NEW GUTTER ELEVATION
---	NEW TOP OF CURB ELEVATION
---	NEW FINISHED GRADE ELEVATION
---	NEW SIDEWALK ELEVATION
---	MATCH EXISTING ELEVATION
---	NEW CONTOUR LINE
---	NEW SLOPE AND DIRECTION OF FLOW

SITE INFORMATION:

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BENCHMARKS:

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STROH

ARCHITECTS | INTERIORS

8 Seventh St. N.

Fargo, N.D. 58102

Office (701) 239-4198

Fax(701) 239-9643

www.tlstroh.com



Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

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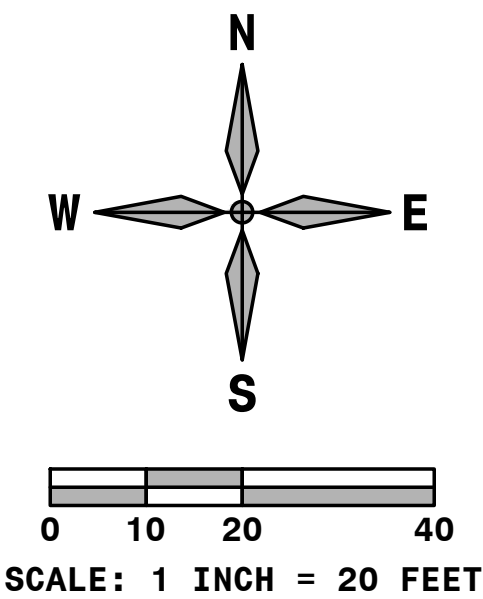
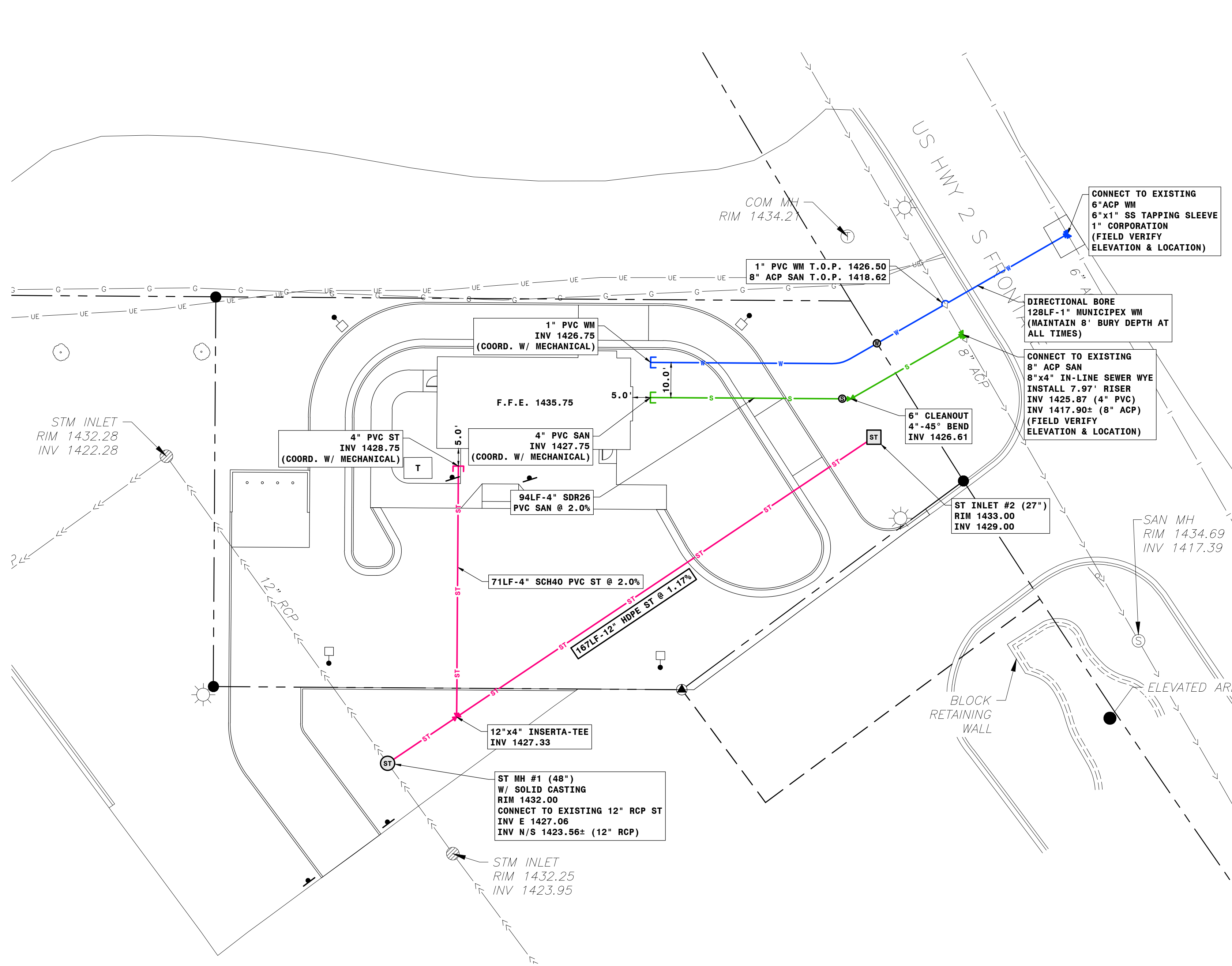
2025.04

Sheet Name:

GRADING PLAN

Sheet Number:

C3.0



SYMBOL LEGEND:

	EXISTING PROPERTY LINE
	EXISTING EASEMENT LINE
	EXISTING MONUMENT
	EXISTING BENCHMARK
	EXISTING SANITARY SEWER MANHOLE
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	EXISTING SIGN
	EXISTING LIGHT POLE
	EXISTING TELEPHONE MANHOLE
	EXISTING DECIDUOUS TREE
	NEW SIGN
	NEW LIGHT POLE
	NEW CURB STOP
	NEW SANITARY CLEANOUT
	NEW STORM INLET
	NEW STORM MANHOLE
	NEW WATER LINE
	NEW SANITARY SEWER LINE
	NEW STORM SEWER LINE

SITE INFORMATION:

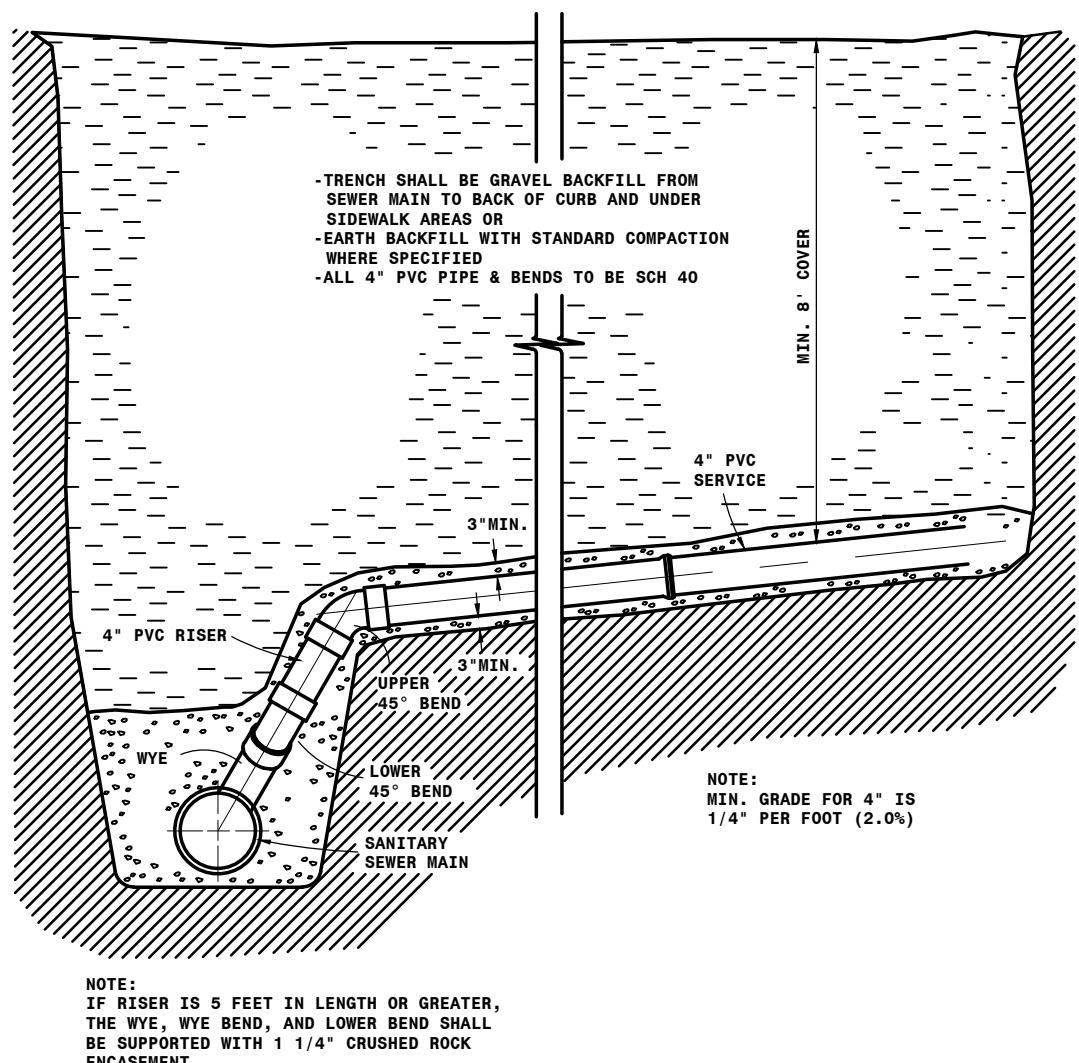
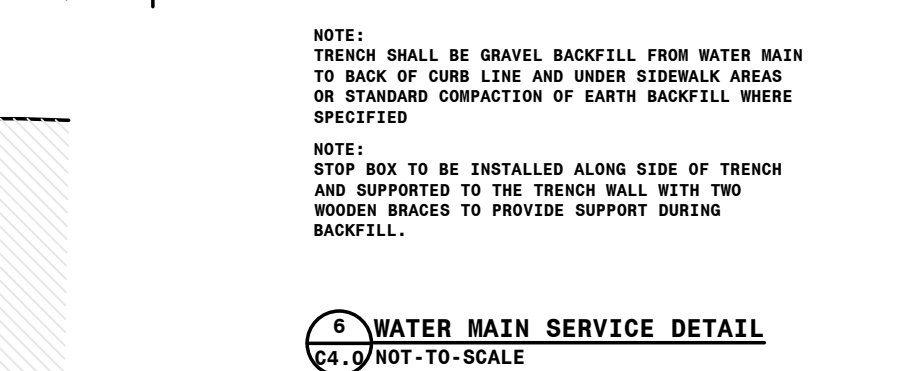
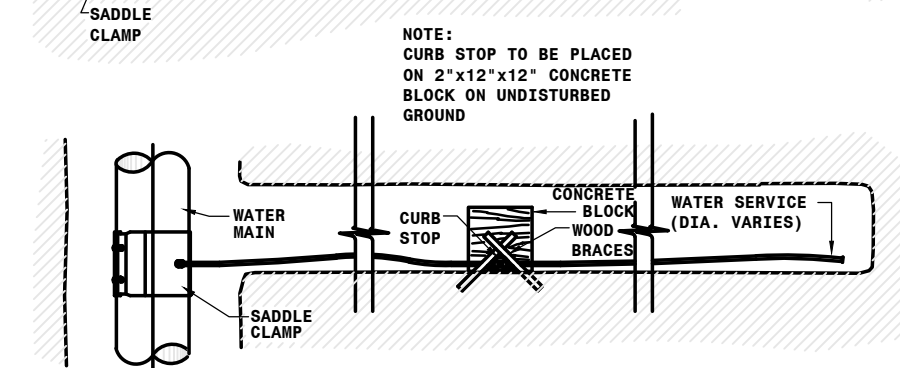
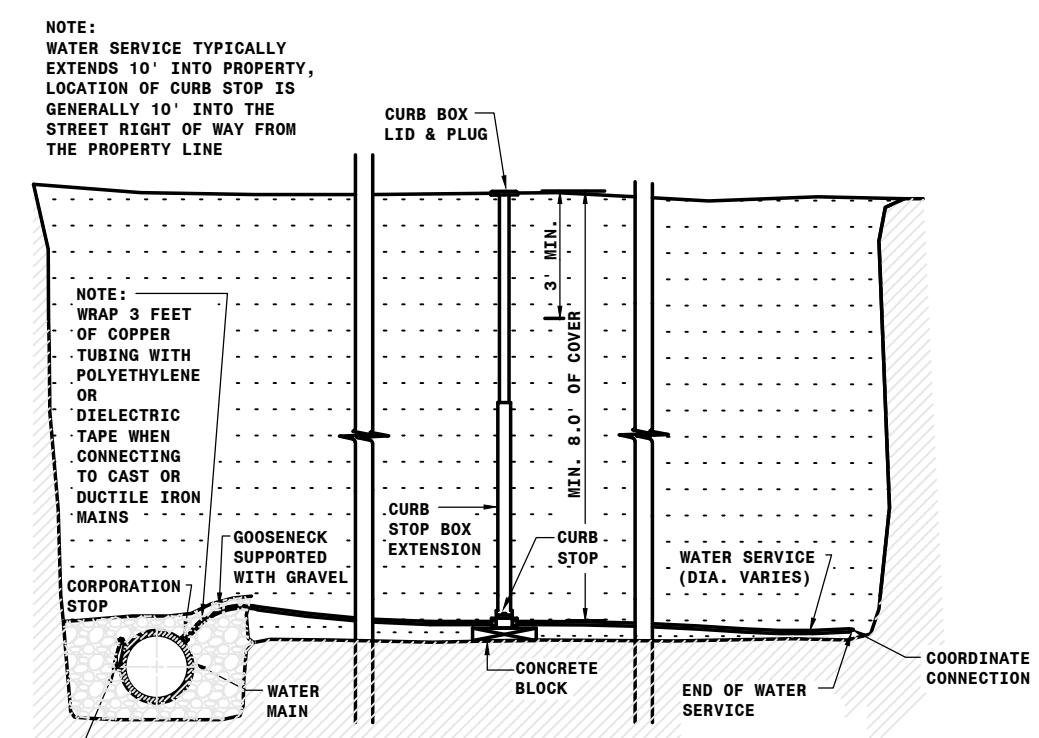
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PLAN NOTES:

1. CONTRACTOR SHALL NOTIFY UTILITY COMPANIES FOR UNDERGROUND LOCATIONS 48 HOURS PRIOR TO BEGINNING CONSTRUCTION. NORTH DAKOTA ONE CALL PHONE NUMBER: 1-800-795-0555
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BENCHMARKS:

1. TOP NUT OF HYDRANT AS SHOWN. ELEVATION = 1437.11 (NAVDB88)



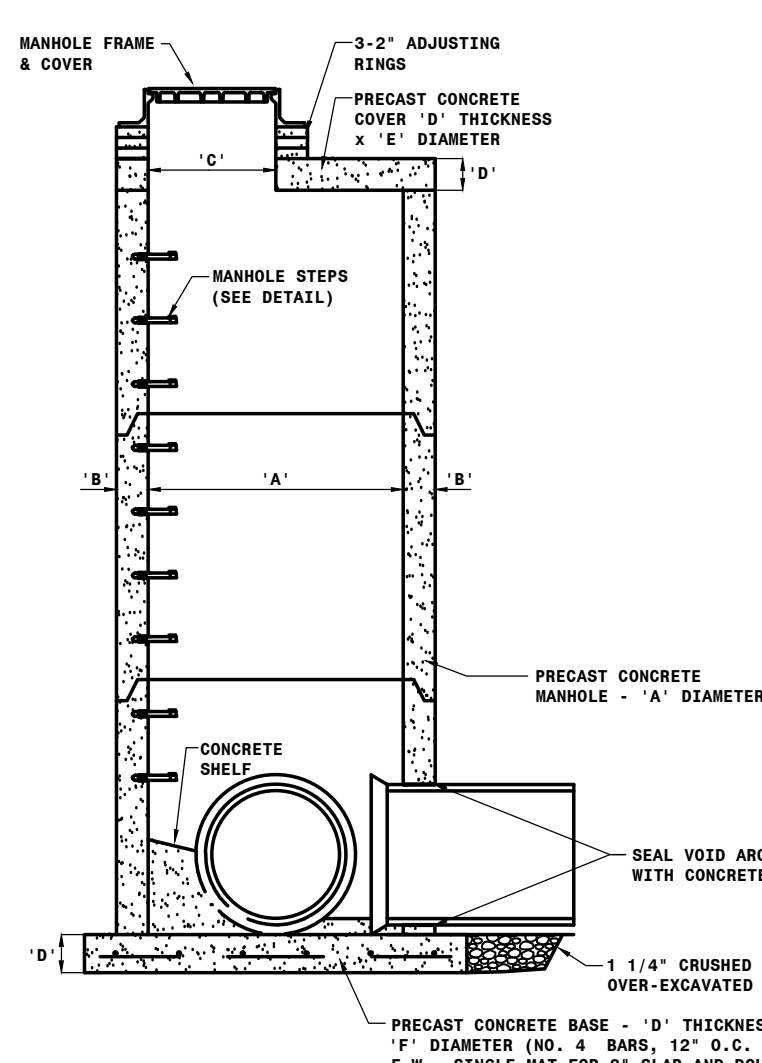
1. SANITARY SERVICE CONNECTION DETAIL
C4.0 NOT-TO-SCALE

NOTES:
IF INLET CASTING & GRATE IS REQUIRED: NEENAH R-340S OR APPROVED EQUAL.
MANHOLE CASTING FRAME AND COVER SHALL BE NEENAH FOUNDRY CO. R-1733 OR EAST JORDAN 120S-AGGSSA OR APPROVED EQUAL.
ALL JOINTS AND LIFTING HOLES TO BE MORTARED.
BUTYL RUBBER GASKET ON ALL JOINTS (JOINT TO MEET ASTM 433 REQUIREMENT).
PVC CONNECTIONS TO STORM MANHOLES AND INLETS SHALL BE MADE WITH GPK MANHOLE ADAPTER OR APPROVED EQUAL.
HOPE CONNECTIONS TO STORM MANHOLES AND INLETS SHALL BE MADE WITH PRESS SEAL GASKET CORP. WATERSTOP OR APPROVED EQUAL.

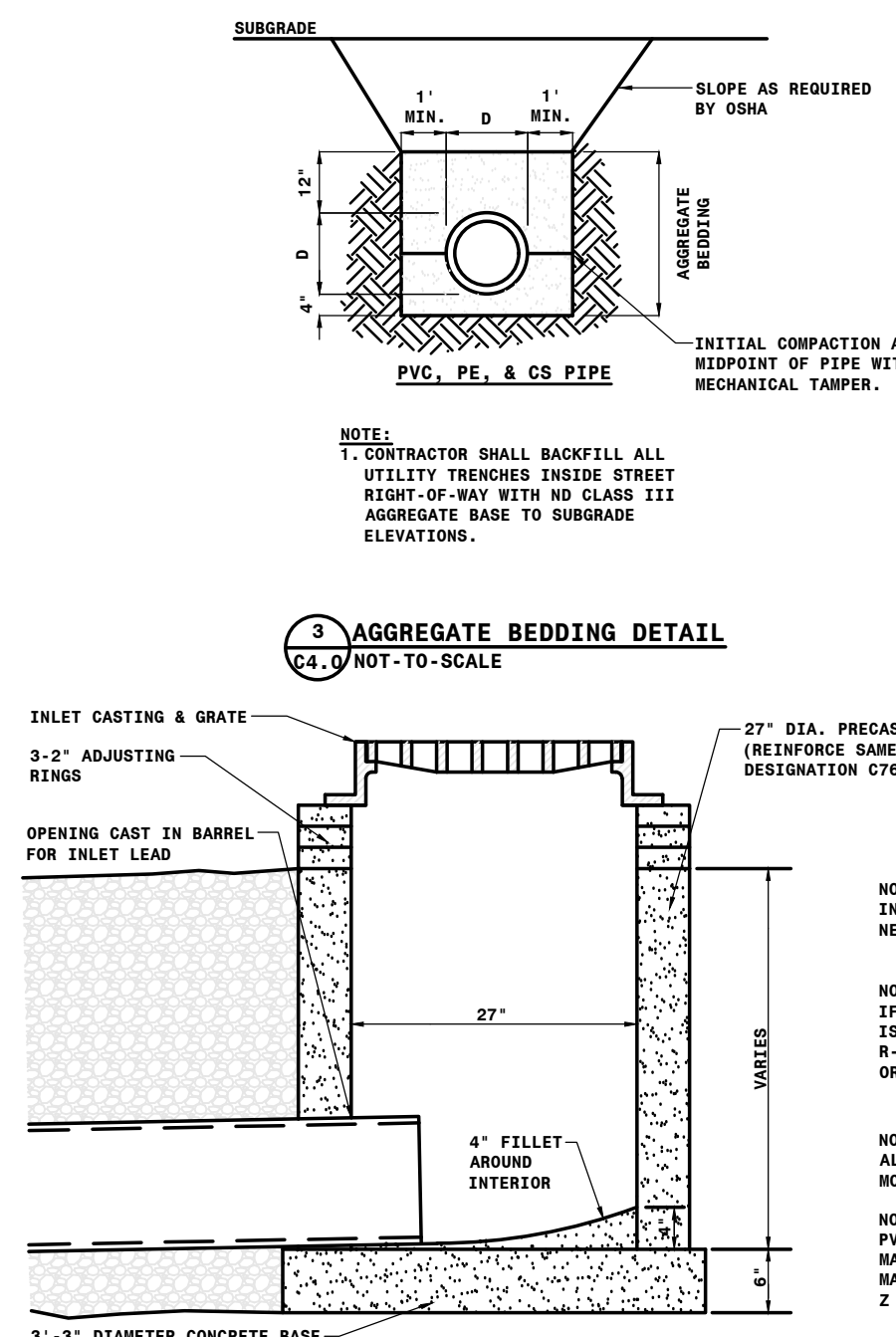
NOTE:
IF RISER IS 5 FEET IN LENGTH OR GREATER, THE WYE, WYE BEND, AND LOWER BEND SHALL BE SUPPORTED WITH 1 1/4\"/>

DIMENSION TABLE

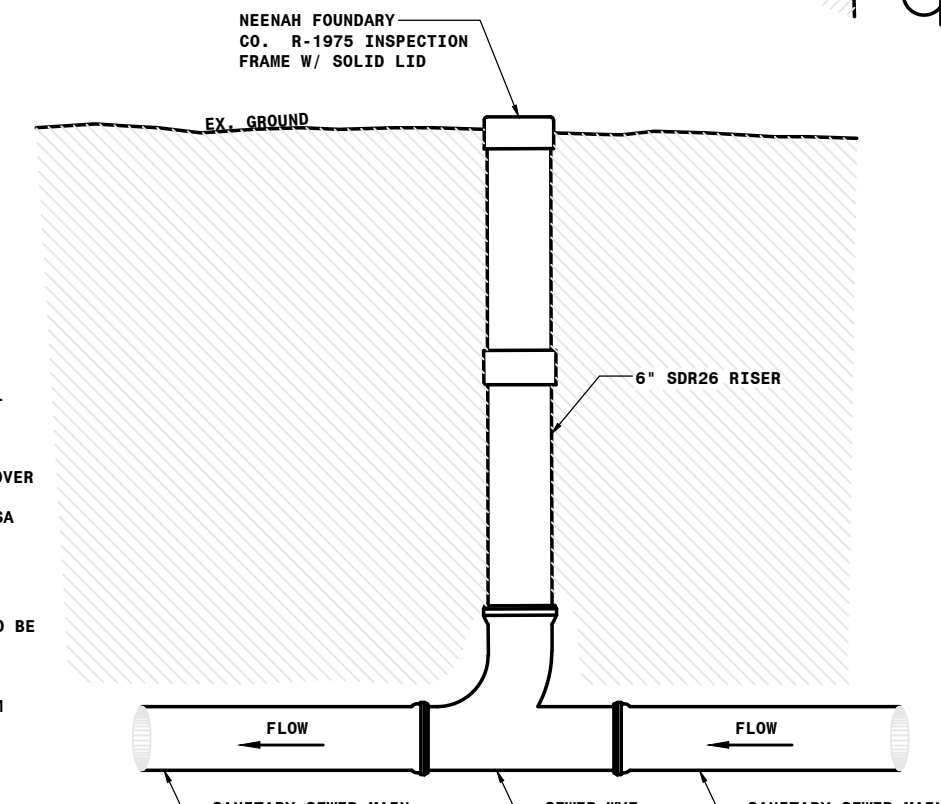
A	B	C	D	E	F
48"	0"	27"	8"	58"	64"
60"	0"	27"	8"	72"	78"
72"	7"	27"	8"	86"	92"
84"	0"	27"	8"	100"	106"
96"	0"	27"	8"	114"	120"
108"	10"	27"	12"	128"	140"
120"	11"	27"	12"	142"	154"



2. STORM MANHOLE (48" - 120") DETAIL
C4.0 NOT-TO-SCALE



3. STORM INLET (27") DETAIL
C4.0 NOT-TO-SCALE



5. SANITARY SEWER CLEANOUT STANDARD DETAIL
C4.0 NOT-TO-SCALE

Project:



New Facility
For:
212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301



Date:
AUGUST 21, 2026

Revision Date:

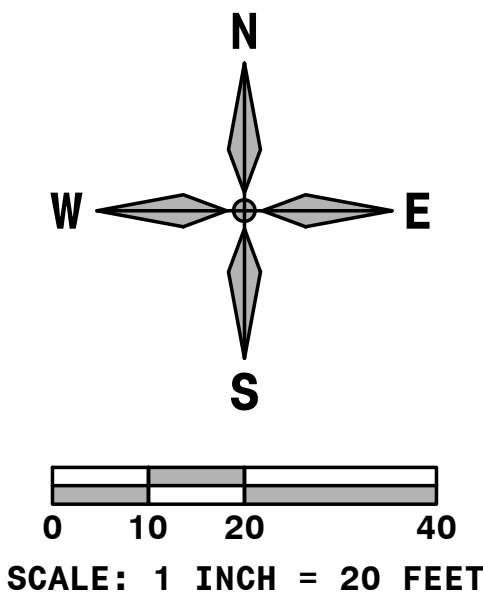
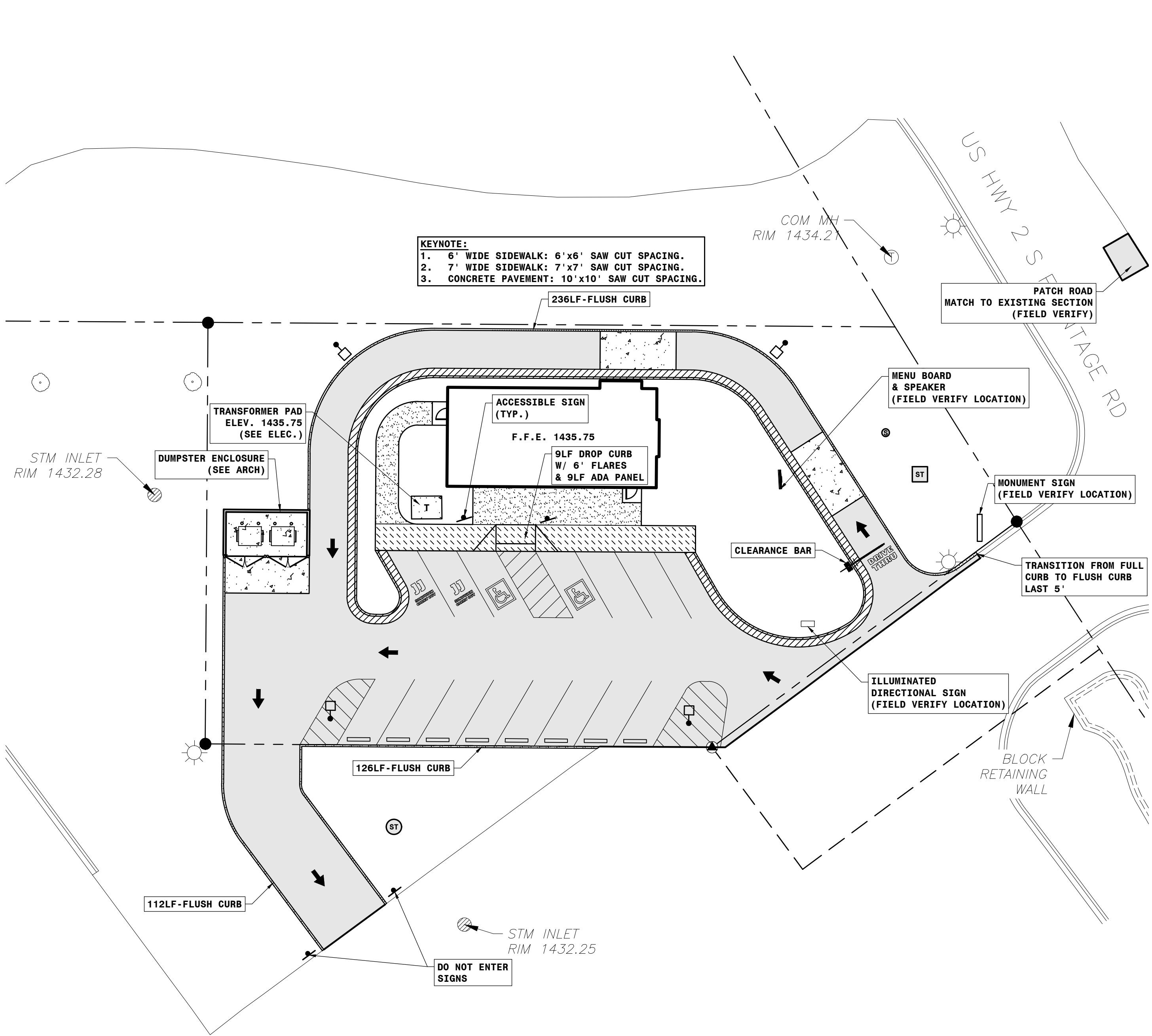
Job Number:
2025.04

Sheet Name:

UTILITY PLAN

Sheet Number:

C4.0



SYMBOL LEGEND:

	EXISTING PROPERTY LINE
	EXISTING EASEMENT LINE
	EXISTING MONUMENT
	EXISTING BENCHMARK
	EXISTING SANITARY SEWER MANHOLE
	EXISTING STORM SEWER INLET
	EXISTING WATER GATE VALVE
	EXISTING SIGN
	EXISTING LIGHT POLE
	EXISTING TELEPHONE MANHOLE
	EXISTING DECIDUOUS TREE
	NEW SIGN (4/C5.1)
	NEW LIGHT POLE
	NEW CURB STOP
	NEW SANITARY CLEANOUT
	NEW STORM INLET
	NEW STORM MANHOLE
	NEW 4" REINFORCED CONCRETE SIDEWALK (4/C5.0)
	NEW 6" REINFORCED CONCRETE PAVEMENT (3/C5.0)
	NEW THICKENED EDGE SIDEWALK (2/C5.0)
	NEW 6" ASPHALT PAVEMENT (5/C5.0)
	NEW STANDARD CONCRETE CURB & GUTTER (1/C5.0)
	NEW 6" CONCRETE FLUSH CURB (5/C5.0)

PLAN NOTES:

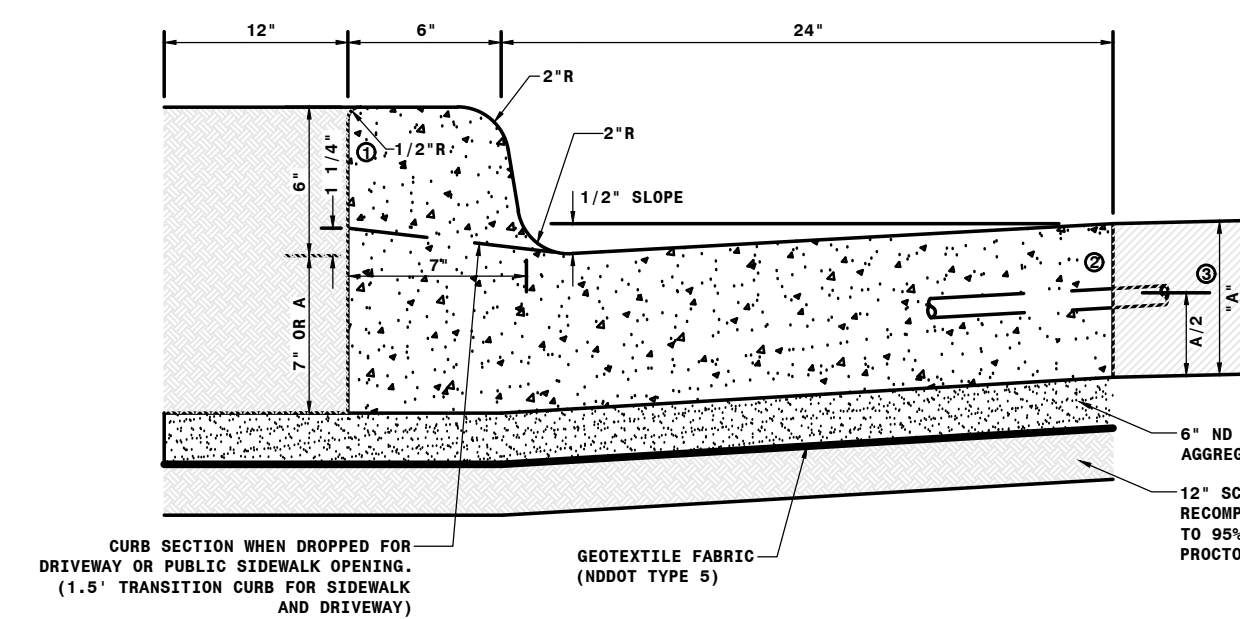
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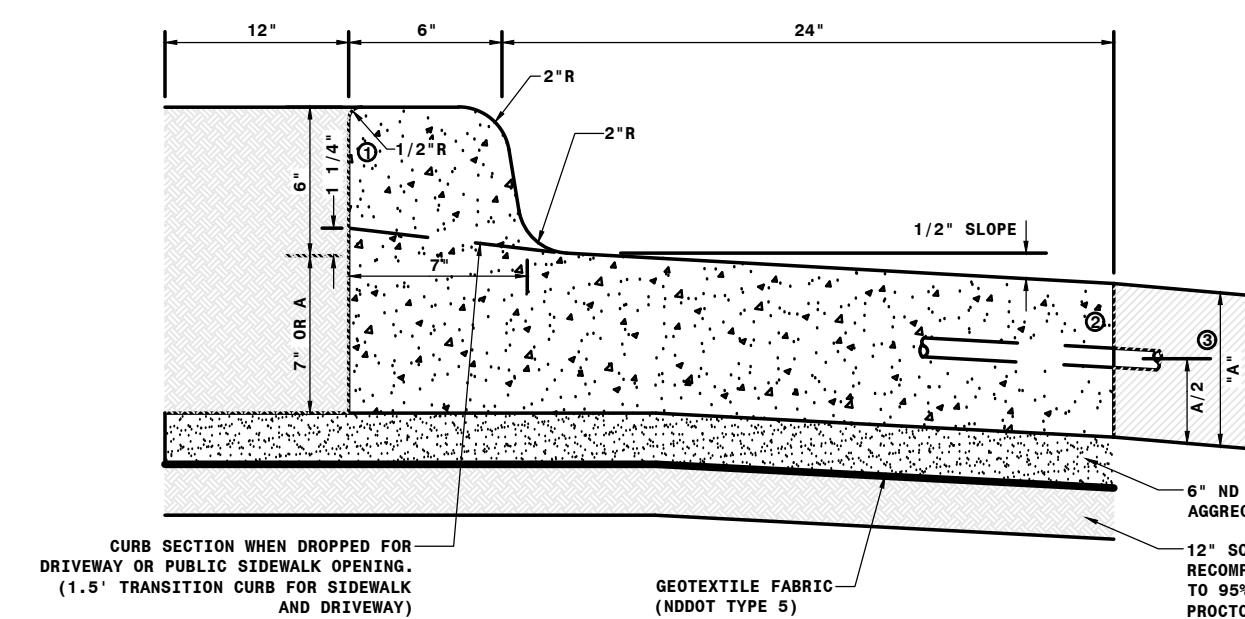
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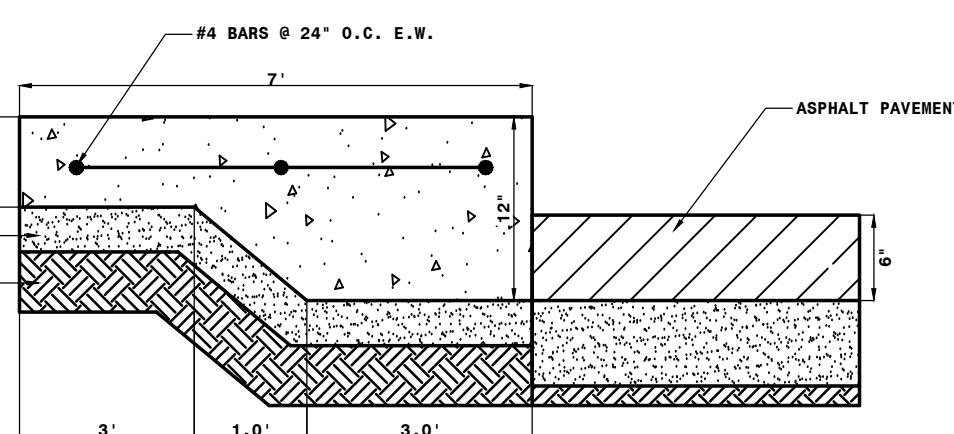
TYPE I STANDARD CURB & GUTTER



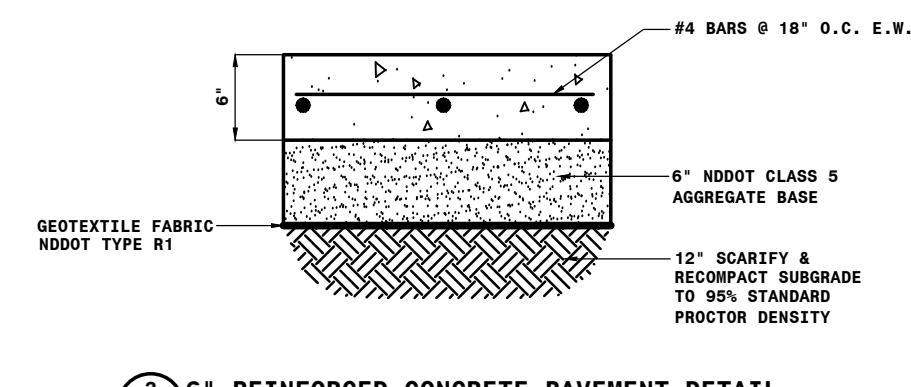
TYPE II STANDARD CURB & GUTTER

- NOTE:
- MALE KEYWAY REQUIRED FOR EXTRUDED CURB CONSTRUCTION
 - FEMALE KEYWAY FOR USE WITH FORMS (INDICATED WITH DASHED LINES)
 - PLACE DUMMY JOINT AT 10' 0" O.C. FOR ASPHALT PAVING.
 - PLACE DUMMY JOINT TO MATCH PANEL SPACING FOR CONCRETE PAVEMENT.
- NOTE:
- 1/2" x 18" DEFORMED BARS AT 30" O.C. REQUIRED WHEN SEPARATE CURB IS INSTALLED WITH CONCRETE PAVING
 - 1" EXPANSION JOINTS PLACED AT P.C.'S AND HIGH POINTS FOR ASPHALT PAVING.
 - 1" EXPANSION JOINTS TO MATCH EXPANSION JOINTS ON CONCRETE PAVEMENT.

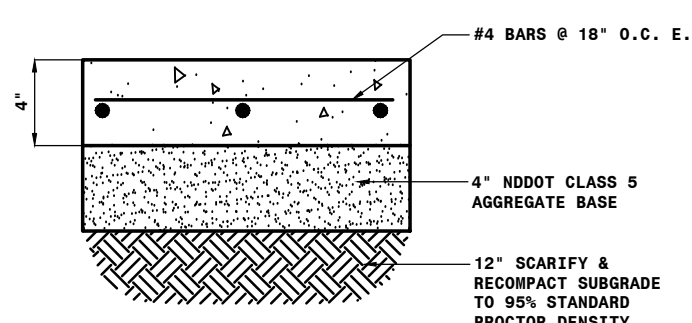
(TYPE I OR TYPE II) STANDARD CURB AND GUTTER DETAIL



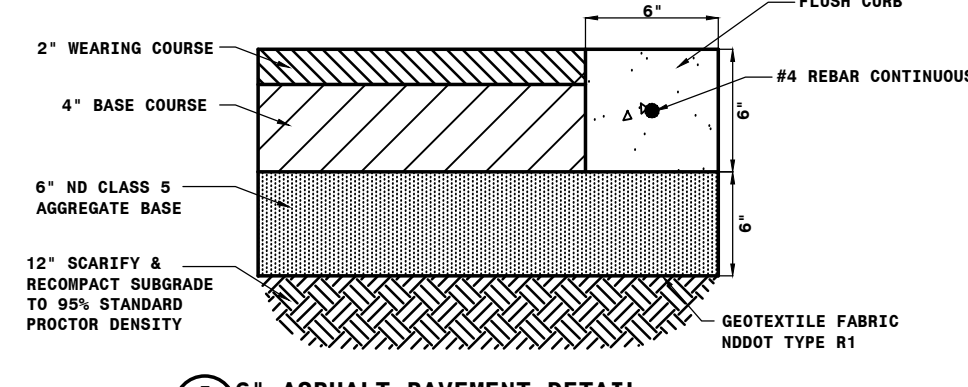
4" THICKENED EDGE CONCRETE DETAIL



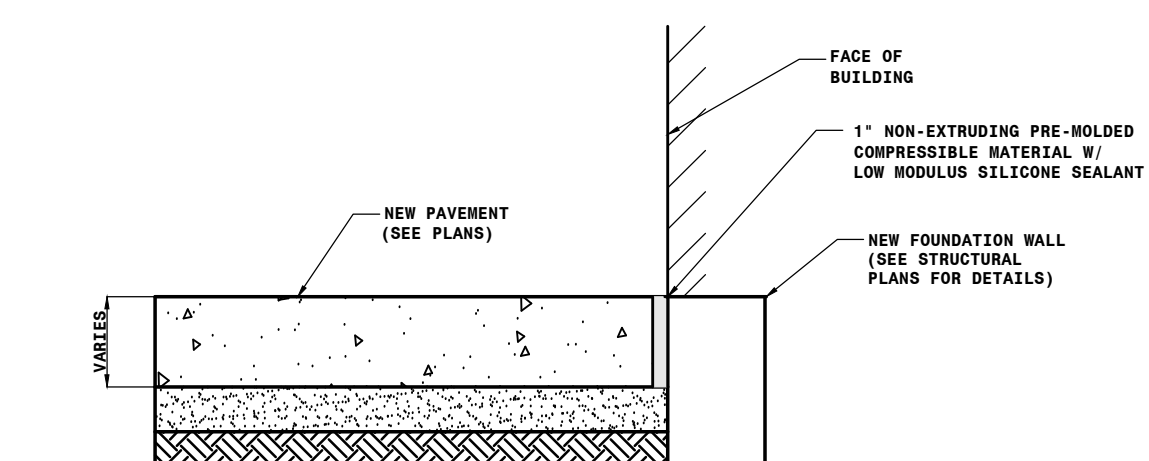
6" REINFORCED CONCRETE PAVEMENT DETAIL



4" REINFORCED CONCRETE SIDEWALK DETAIL



6" ASPHALT PAVEMENT DETAIL



PAVEMENT ALONG BUILDING DETAIL

STROH
ARCHITECTS | INTERIORS
8 Seventh St. N.
Fargo, N.D. 58102
Office (701) 239-4198
Fax(701) 239-9643
www.tlstroh.com

MBN
MECHANICAL • ELECTRICAL • CIVIL
701 MAIN AVENUE
FARGO, ND 58103
PHONE: 701-795-0555
FAX: 701-476-6240

Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

Revision Date:

Job Number:

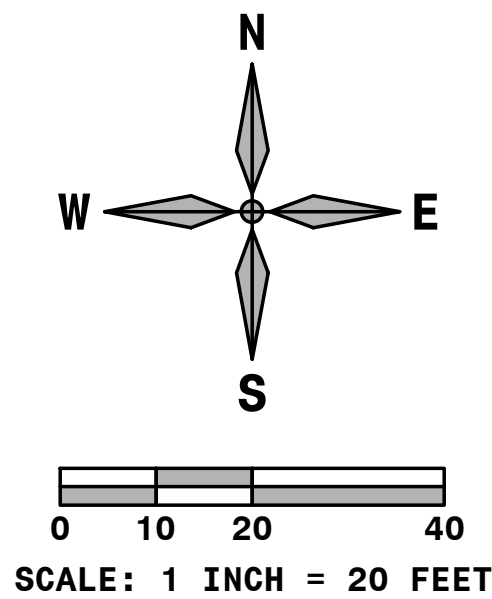
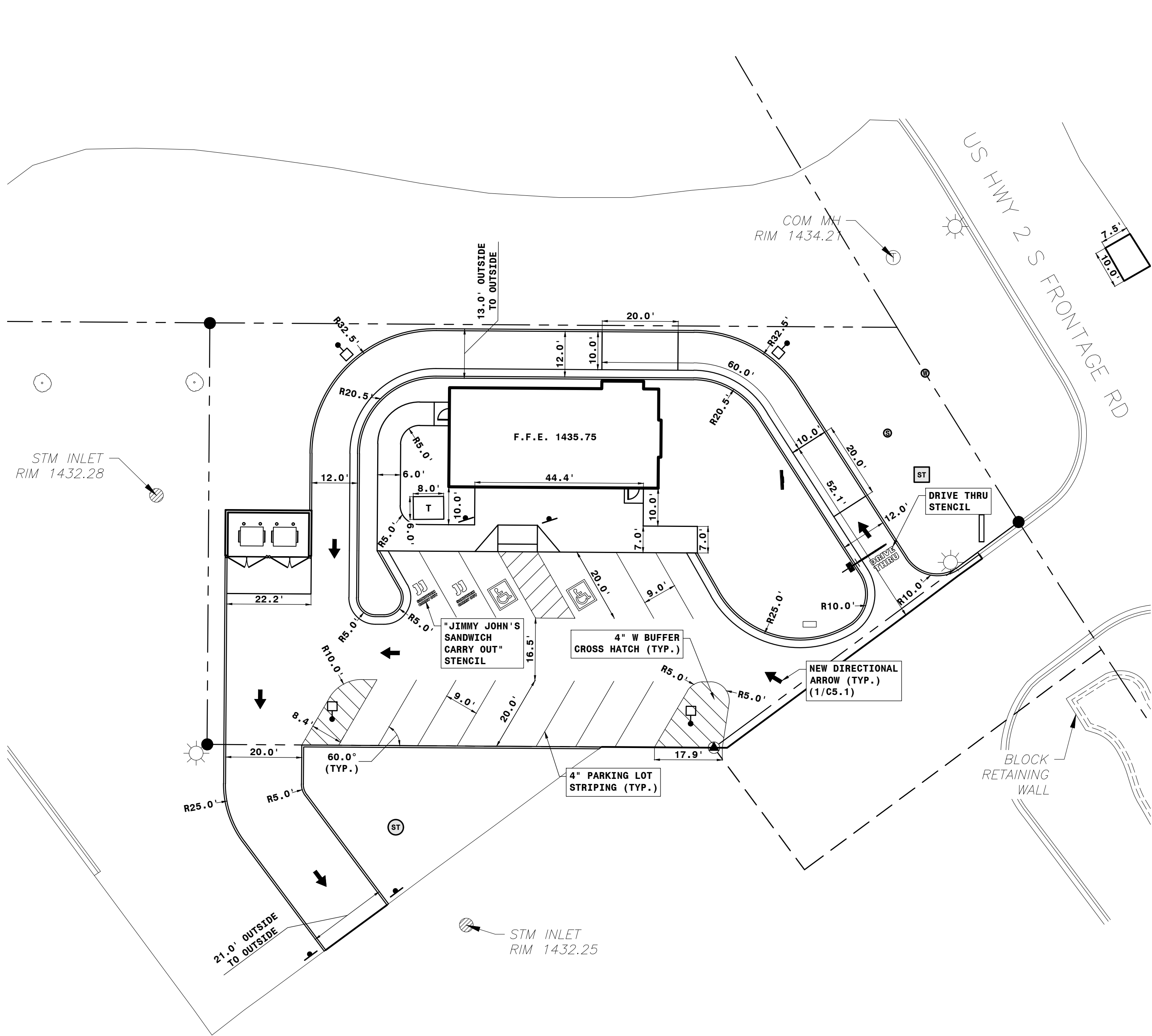
2025.04

Sheet Name:

PAVING PLAN

Sheet Number:

C5.0



SYMBOL LEGEND:

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---	EXISTING EASEMENT LINE
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○	EXISTING BENCHMARK
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⊙	EXISTING STORM SEWER INLET
⊙	EXISTING WATER GATE VALVE
⊙	EXISTING SIGN
⊙	EXISTING LIGHT POLE
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⊙	EXISTING DECIDUOUS TREE
⊙	NEW SIGN (4/C5.1)
⊙	NEW LIGHT POLE
⊙	NEW CURB STOP
⊙	NEW SANITARY CLEANOUT
⊙	NEW STORM INLET
⊙	NEW STORM MANHOLE

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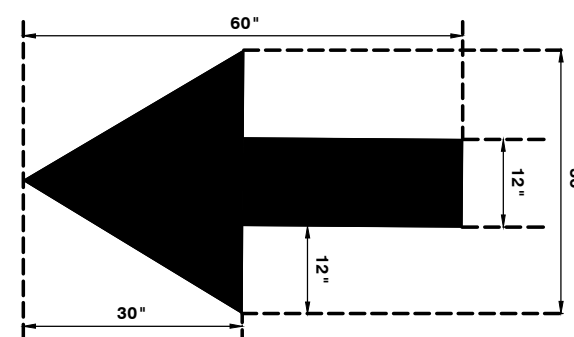
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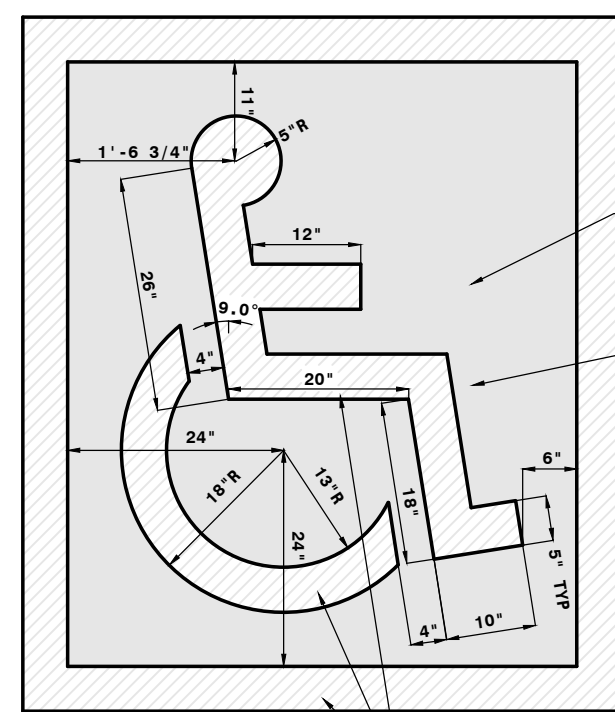
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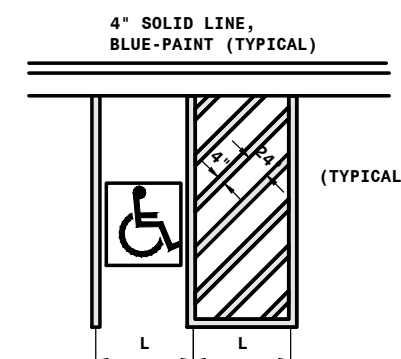
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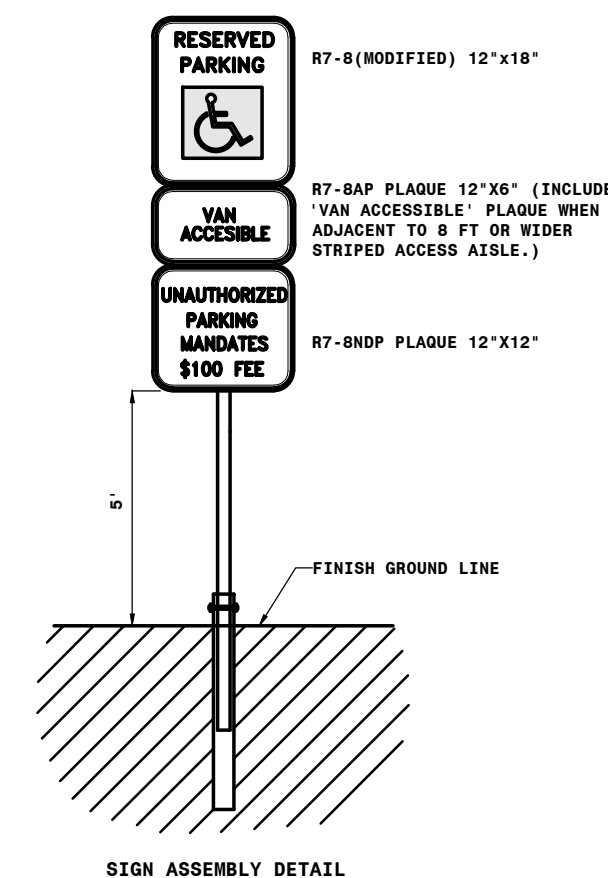
1 DIRECTIONAL ARROW DETAIL
C5.1 NOT-TO-SCALE



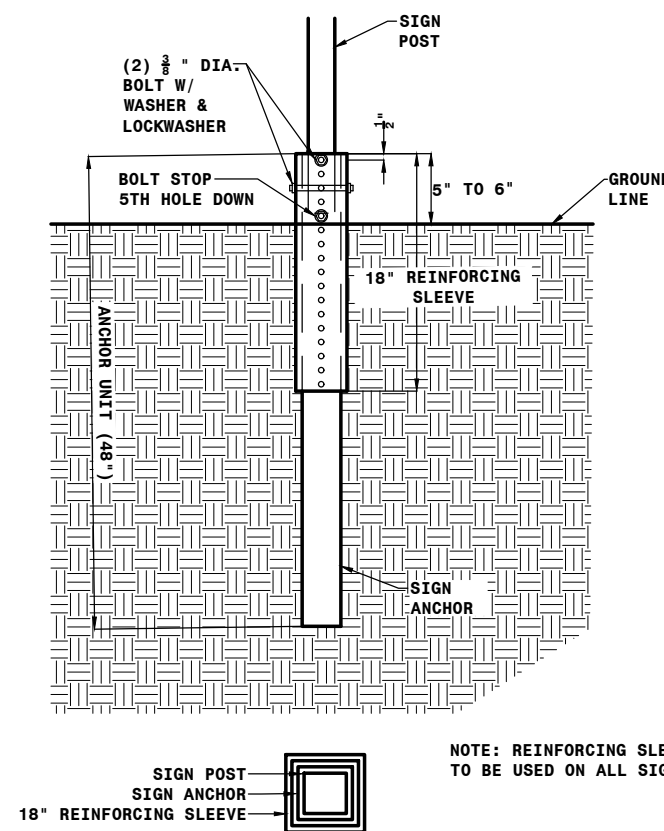
2 ACCESSIBILITY SYMBOL DETAIL
C5.1 NOT-TO-SCALE



3 ACCESSIBLE STRIPING DETAIL
C5.1 NOT-TO-SCALE



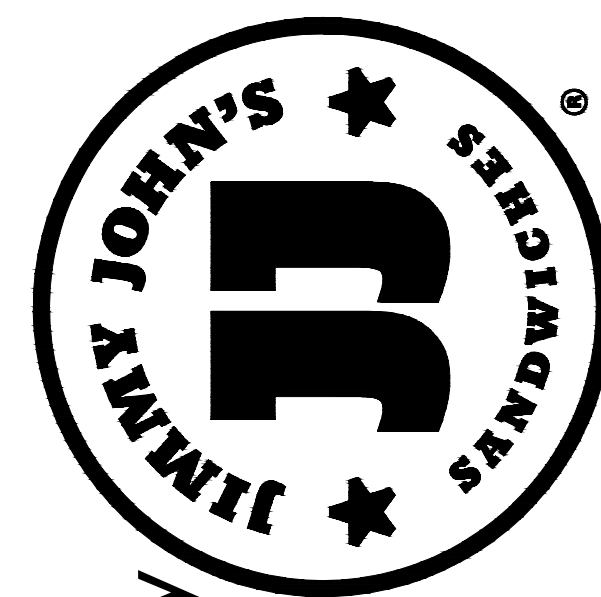
4 ACCESSIBILITY SIGN DETAIL
C5.1 NOT-TO-SCALE



5 SIGN ANCHOR INSTALLATION DETAIL
C5.1 NOT-TO-SCALE

SIGN SIZE	POST	ANCHOR	SLEEVE
12" WIDTH SIGNS	1.50"	1.75"	2.00"
18" WIDTH SIGNS	1.75"	2.00"	2.25"
24" x 24" SIGNS	2.00"	2.25"	2.50"
LARGER THAN 24" x 24"	2.00"	2.25"	2.50"

Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301



Date:
AUGUST 21, 2026

Revision Date:

Job Number:
2025.04

Sheet Name:

DIMENSION PLAN

Sheet Number:

C5.1

SECTION 01 57 13
EROSION CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractors.

1.02 RELATED REQUIREMENTS

A. Section 31 22 00 - Site Grading: Temporary and permanent grade changes for erosion control.

B. Section 31 23 23 - Fill and Backfill.

C. Section 32 11 23 - Aggregate Base Course: Temporary and permanent roadways.

1.03 REFERENCE STANDARDS

A. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017 (Reapproved 2021).

B. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.

C. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; 1995.

D. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service; 2015.

1.04 INSTALLATION REQUIREMENTS

A. Construction General Permit (CGP)

1. The Construction General Permit authorizes the discharge of storm water associated with construction activity and small construction activity as defined under the National Pollutant Discharge Elimination System (NPDES)/ State Disposal System (SDS) program.

a. Construction activity includes clearing, grading, excavation, that disturbs land of equal to or greater than five (5) acres and includes the disturbance of less than five (5) acres of total land area that is a part of a larger common plan of development or sale if the larger common plan will ultimately disturb five (5) acres or more.

b. Small construction activity includes clearing, grading, excavation, that disturbs land of equal to or greater than one (1) acre, and includes the disturbance of less than one (1) acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than one and less than five (5) acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

2. To obtain coverage under the general permit, the General Contractor must submit the following:

a. Notice of Intent (NOI).

b. Storm Water Pollution Prevention Plan (SWPPP).

B. Notice of Intent (NOI)

1. The General Contractor shall complete the NOI form for construction activity.

a. NOI form can be found at: www.https://deq.nd.gov/WQ/2_NDPDES_Permits/

b. All Contractors is responsible for the day to day supervision of construction activities and is responsible for compliance with the permit conditions.

2. The NOI shall contain, at a minimum, the following information:

a. Owner name, mailing address and phone number.

b. Project contact name and phone number.

c. Project/Site name.

d. Project/Site location (street address; section; township; range; or latitude and longitude; county.

e. Brief description of the construction activity.

f. The anticipated start date and the anticipated completion date for the project.

g. The estimated total area of the site and the total area of disturbance in acres.

h. Name of receiving waters or the name of the municipal storm sewer system and receiving waters.

i. The signature of the applicant/owner.

C. Storm Water Pollution Prevention Plan (SWPPP)

1. The General Contractor shall complete the SWPPP and must be available for review by the ND Environmental Quality at the time of application. The SWPPP must be completed prior to the start of construction.

a. The SWPPP form can be found at: www.https://deq.nd.gov/WQ/2_NDPDES_Permits/

1.05 TERMINATION OF COVERAGE

A. Notice of Termination (NOT)

1. Contractor(s) wishing to terminate coverage under the CGP must submit a Notice of Termination (NOT) to the ND Environmental Quality.

2. Contractor(s) must submit a NOT within 30 days after one or more of the following conditions have been met:

a. Final Stabilization has been achieved on all portions of the site for which the contractor is responsible.

b. Another Owner/Contractor has assumed control over all areas of the site that have not been finally stabilized.

1.06 PERFORMANCE REQUIREMENTS

A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.

B. Best Management Practices Standard: FHWA FLP-94-005.

C. Runoff Calculation Standard for Urban Areas: USDA TR-55.

D. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.

1. Contractor will obtain permits and pay for securities required by authority having jurisdiction.

2. Owner will withhold payment to equivalent to all fines resulting from non-compliance with applicable regulations.

E. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

F. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.

1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.

2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 10 years.

G. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.

1. Control movement of sediment and soil from temporary stockpiles of soil.

2. Prevent development of ruts due to equipment and vehicular traffic.

3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

H. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.

1. Prevent windblown soil from leaving the project site.

2. Prevent tracking of mud onto public roads outside site.

3. Prevent mud and sediment from flowing onto sidewalks and pavements.

4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

I. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.

1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

J. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.

1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

K. Open Water: Prevent standing water that could become stagnant.

L. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

M. Coordination: All Contractors are responsible to coordinate work and environmental impacts with the General Contractor. Concerns must be addressed and incorporated into the SWPPP prior to construction. General Contractor is responsible for upholding and managing the SWPPP.

N. Fines: Fines incurred due to non-compliance by contractors shall be levied to the responsible contractor.

1.07 SUBMITTALS

A. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.

B. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

C. Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures that must remain after Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

A. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

B. Gravel: See Section 32 11 23 for aggregate.

C. Erosion Control Blanket

1. NDDOT ECB 1

a. S31UVD - ECB.

b. ETRS-1RD - ErosionTech.

c. SS-S1 - Silt Sock

d. ETX-2 - Erosion Tech.

e. Or approved equal.

D. Storm Drain Drop Inlet Sediment Traps:

1. FLEXSTORM Inlet Filters.

2. Wimco.

3. Lange IPD.

4. Approved Equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

A. Erosion Prevention Practices:

1. General Contractor must plan for and implement appropriate construction phasing, vegetative buffer strips, horizontal slope grading and other construction practices that minimize erosion, so that the inspection and maintenance requirements are complied with.

2. All exposed soil areas with a continuous positive slope within 200 lineal feet of a surface water, must have temporary erosion protection or permanent cover for the exposed soil areas year round. This includes constructed storm water management pond side slopes and any exposed soil areas with a positive slope to a storm water conveyance system, such as a curb and gutter system, storm sewer inlet, temporary or permanent drainage ditch or other natural or man made systems that discharge to a surface water. See the guidelines below:

a. Slopes steeper than 3:1: Establish temporary or permanent cover within 7 days.

b. Slopes 10:1 to 3:1: Establish temporary or permanent cover within 14 days.

c. Flatter than 10:1: Establish temporary or permanent cover within 21 days.

3. The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge to any surface water. Stabilization must be completed within 24 hours of connecting to a surface water.

4. Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours of connection to a surface water.

B. Sediment Control Practices

1. Sediment control practices must minimize sediment from entering surface waters, including curb and gutter systems and storm sewer inlets.

a. Temporary or permanent drainage ditches and sediment basins that are designed as part of a treatment system require sediment control practices only as appropriate for site conditions.

b. If the down gradient treatment system is overloaded, additional up gradient sediment control practices must be installed to eliminate the overloading, and the SWPPP must be amended to identify these additional practices.

c. In order to maintain sheet flow and minimize rill and/or gullies, there shall be no unbroken slope length of greater than 75 feet for slopes with a grade of 3:1 or steeper.

2. Sediment control practices must be established on all down gradient perimeters before any up gradient land disturbing activities begin. These practices shall remain in place until final stabilization has been established.

a. Linear Sediment Barriers: Made of silt fences.

1) Provide linear sediment barriers:

(a) Along downhill perimeter edge of disturbed areas, including soil stockpiles.

(b) Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.

(c) Along the toe of cut slopes and fill slopes.

(d) Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas; space at maximum of 200 feet apart.

(e) Across the entrances to culverts that receive runoff from disturbed areas.

2) Space sediment barriers with the following maximum slope length upslope from barrier:

(a) Slope of Less Than 2 Percent: 100 feet.

(b) Slope Between 2 and 5 Percent: 75 feet.

(c) Slope Between 5 and 10 Percent: 50 feet.

(d) Slope Between 10 and 20 Percent: 25 feet.

(e) Slope Over 20 Percent: 15 feet.

3. The timing of the installation of sediment control practices may be adjusted to accommodate short-term activities such as clearing or grubbing, or passage of vehicles. Any short-term activity must be completed as quickly as possible and the sediment control practices must be installed immediately after the activity is completed. However, sediment control practices must be installed before the next precipitation event even if the activity is not complete.

4. All storm drain inlets must be protected by appropriate BMP's during construction until all sources with potential for discharging to the inlet have been stabilized.

5. Temporary soil stockpiles must have silt fence or other effective sediment controls, and cannot be placed in surface waters, including storm water conveyances such as curb and gutter systems, or conduits and ditches.

6. Vehicle tracking of sediment from the construction site must be minimized by BMP's such as rock construction pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used if such BMP's are not adequate to prevent sediment from being tracked onto the street.

a. Construction Entrances: Traffic-bearing aggregate surface.

1) Width: 30 feet, minimum.

2) Length: 50 feet, minimum.

3) Provide at each construction entrance from public right-of-way.

4) Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

7. The General Contractor must install all temporary sedimentation basins if outlined in the plan documents.

C. Pollution Prevention Management Measures

1. Contractors shall implement the following pollution prevention management measures on the site:

a. Solid Waste: Collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with governing state regulations.

b. Hazardous Materials: Oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with governing state health department regulations.

c. External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.

D. Final Stabilization

1. The General Contractor is responsible for final stabilization of the site.

2. The General Contractor must submit a Notice of Termination within 30 days after final stabilization has been completed, or another Contractor has assumed control over all areas of the site that have not undergone final stabilization.

3. Final Stabilization can be accomplished once the following items have been completed:

a. All soil disturbing activities at the site have been completed and all soils have been stabilized by a uniform perennial vegetative cover with a density of 70 percent over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions have been established.

b. All drainage ditches, constructed to drain water from the site after construction is complete, must be stabilized to preclude erosion.

c. All temporary synthetic, and structural erosion prevention and sediment control BMP's must be removed.

d. The General Contractor must control all sediment from conveyances and from temporary sedimentation basins that are to be used as permanent water quality management basins.

e. Sediment must be stabilized to prevent it from being washed back into the basin, conveyances or drainageways discharging off-site or to surface waters. The cleanout of permanent basins must be sufficient to return the basin to design capacity.

3.04 INSTALLATION

A. Traffic-Bearing Aggregate Surface:

1. Excavate minimum of 6 inches.

2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.

3. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.

B. Silt Fences:

1. Store and handle fabric in accordance with ASTM D4873/D4873M.

2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.

3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.

4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.

5. Install with top of fabric at nominal height and embedment as specified.

6. Embed bottom of fabric in a trench on the upslope side of fence, with 2 inches of fabric laid flat on bottom of trench facing upslope; backfill trench and compact.

7. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.

8. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.

C. Mulching Over Large Areas:

1. Dry Straw and Hay: Apply 2-1/2 tons per acre; anchor using dull disc harrow or emulsified asphalt applied using same spraying machine at 100 gallons of water per ton of mulch.

D. Temporary Seeding:

1. When hydraulic seeder is used, seedbed preparation is not required.

2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.

3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.

4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.

5. Incorporate fertilizer into soil before seeding.

6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.

7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.

8. Repeat irrigation as required until grass is established.

3.05 INSPECTIONS & MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

B. All inspections and maintenance conducted during construction must be recorded in writing and these records must be retained with the SWPPP. Records of each inspection and maintenance activity shall include:

1. Date and time of inspection.

2. Name of person(s) conducting inspections.

3. Finding of inspections, including recommendations for corrective actions.

4. Corrective actions taken (including dates, times, and party completing maintenance activities.

5. Date and amount of rainfall events greater than 1/2 inch (0.5 inches) in 24 hours.

6. Documentation of changes made to the SWPPP.

C. All erosion prevention and sediment control Best Management Practices (BMP's) must be inspected to ensure integrity and effectiveness. All non functional BMP's must be repaired, replaced, or supplemented with functional BMP's. The General Contractor must investigate and comply with the following inspection and maintenance requirements:

1. Surface Waters:

a. Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment being deposited by erosion.

b. The General Contractor must remove all deltas and sediment deposited in surface waters, including drainage ways, catch basins and other drainage systems and restabilize the areas where sediment removal results in exposed soil. Removal and stabilization must take place within seven (7) days of discovery unless precluded by legal, regulatory, or physical access constraints.

c. The General Contractor shall use all reasonable efforts to obtain access. If precluded, removal and stabilization must take place within seven (7) calendar days of obtaining access.

d. The General Contractor is responsible for contacting all local, regional, state and federal authorities and receiving any applicable permits, prior to conducting any work.

2. Construction Exit Locations:

a. Construction site vehicle exits must be inspected for evidence of off-site sediment migration onto paved surfaces.

b. Tracked sediment must be removed from all off-site paved surfaces within 24 hours of discovery.

3. Temporary and Permanent Best Management Practices (BMP's):

a. The General Contractor is responsible for the operation and maintenance of all permanent water quality management BMP's, as well as all erosion prevention and sediment control BMP's, for the duration of the project; or until another Contractor has resumed control over all areas of the site that have not been finally stabilized; or the site has undergone final stabilization.

4. Migrated Sediment Off-Site:

a. If sediment escapes the construction site, off-site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off-site impacts.

D. Clean out temporary sediment control structures weekly and relocate soil on site.

E. Place sediment in appropriate locations on site; do not remove from site.

3.06 RECORD RETENTION

A. The SWPPP, including all certificates, reports, and records must be made available to the federal, state and local officials within 72 hours upon request for the duration of the permit and for three (3) years following the Notice of Termination.

END OF SECTION

SECTION 02 41 00
SITE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 01 57 13 - Erosion Control.

B. Section 31 22 00 - Site Grading: Topsoil removal.

C. Section 31 23 23 - Fill and Backfill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.04 PROJECT CONDITIONS

A. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

PART 2 PRODUCTS

2.01 MATERIALS

A. Fill Material: As specified in Section 31 23 23 - Fill and Backfill.

PART 3 EXECUTION

3.01 SCOPE

A. Remove, salvage, dispose of, or return to owner all items as indicated on plans.

B. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 22 00.

C. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

1. Obtain required permits.

2. Comply with applicable requirements of NFPA 241.

3. Use of explosives is not permitted.

4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.

5. Provide, erect, and maintain temporary barriers and security devices.

6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.

7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.

8. Do not close or obstruct roadways or sidewalks without permit.

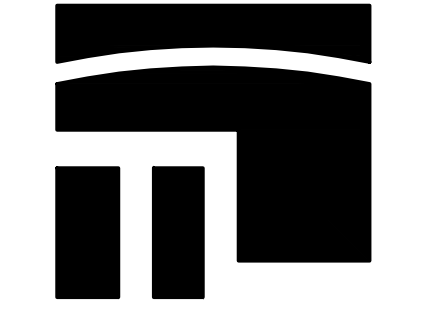
9. Conduct operations to minimize obstruction of exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Do not begin removal until built elements to be salvaged or relocated have been removed.

D. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.



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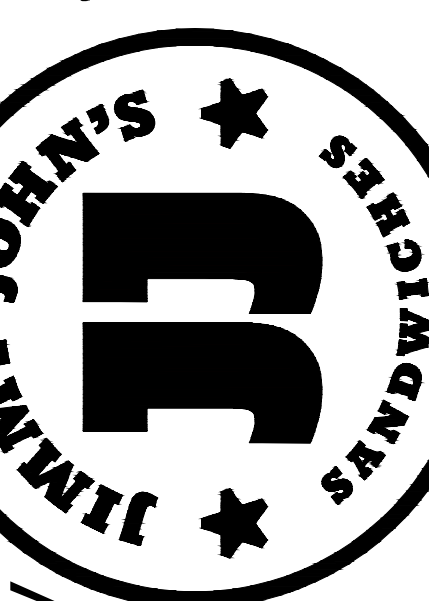


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Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301



REGISTERED PROFESSIONAL ENGINEER
ANTHONY K. LUK
PE-68864
DATE 08-21-26
NORTH DAKOTA

Date:
AUGUST 21, 2026

Revision Date:

Job Number:
2025.04

Sheet Name:
SPECIFICATIONS

Sheet Number:
C6.0

- E. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
- F. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- G. If hazardous materials are discovered during removal operations, stop work and notify Owner's Representative and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- H. Hazardous Materials: Comply with 29 CFR 1926 and state and local regulations.

3.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to the Owner and the local governing authority.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Utility Companies.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

3.04 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 31 22 00
SITE GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal of topsoil.
- B. Rough grading the site for site structures.
- C. Finish grading.

1.02 RELATED REQUIREMENTS

- A. Section 31 23 23 - Fill and Backfill: Filling and compaction.

1.03 PROJECT CONDITIONS

- A. Protect above- and below-grade utilities that remain.
- B. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from grading equipment and vehicular traffic.

1.04 MATERIALS

- A. Topsoil: See Section 31 23 23.
- B. Other Fill Materials: See Section 31 23 23.

PART 3 EXECUTION

2.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the work are as indicated.
- B. Verify the absence of standing or ponding water.

2.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Notify utility company to remove and relocate utilities.
- E. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- F. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

2.03 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.
- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.
- E. When excavating through roots, perform work by hand and cut roots with sharp axe.
- F. See Section 31 23 23 for filling procedures.
- G. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.
- H. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- I. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

2.04 SOIL REMOVAL

- A. Stockpile topsoil to be re-used on site; remove remainder from site. Coordinate removal with owner.
- B. Stockpile subsoil to be re-used on site; remove remainder from site. Coordinate removal with owner.
- C. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

2.05 FINISH GRADING

- A. Before Finish Grading:
1. Verify building and trench backfilling have been inspected.
 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
- C. Where topsoil is to be placed, scarify surface to depth of 6 inches.
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 12 inches.
- E. Place topsoil where required to level finish grade.
- F. Place topsoil to the following compacted thicknesses:
1. Areas to be Seeded with Grass: 6 inches.
 2. Shrub Beds: 18 inches.
 3. Flower Beds: 18 inches.
 4. Planter Boxes: To within 3 inches of box rim.
- G. Place topsoil during dry weather.
- H. Remove roots, weeds, rocks, and foreign material while spreading.
- I. Near plants spread topsoil manually to prevent damage.
- J. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- K. Lightly compact placed topsoil.
- L. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

2.06 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).
- C. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.
- D. Top Surface of Finish Grade: Plus or minus 1/2 inch.

2.07 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

2.08 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 31 23 16.13
TRENCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavating for utility trenches outside the building to utility main connections
- B. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Section 31 2200- Site Grading.
- B. Section 31 23 23 - Fill and Backfill.
- C. Section 33 05 13 - Manholes and Structures.
- D. Section 33 14 16 - Site Water Utility Distribution Piping.
- E. Section 33 31 13 - Site Sanitary Sewerage Gravity Piping.
- F. Section 33 42 11 - Storm Sewer Piping.

1.03 REFERENCE STANDARDS

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; 2010.
- B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012.
- C. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2024.
- D. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2012.
- E. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2008.
- F. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.
- G. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010.

1.04 SUBMITTALS

- A. Compaction Density Test Reports.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.
1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 2. Prevent contamination.
 3. Protect stockpiles from erosion and deterioration of materials.
- C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill: Subsoil excavated on-site.
1. Graded.
 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
- B. Granular Fill: Coarse Aggregate, See Section 32 11 23 - Aggregate Base Course.
- C. Topsoil: See Section 31 22 00.

2.02 SOURCE QUALITY CONTROL

- A. If tests indicate materials do not meet specified requirements, change material and retest.
- B. Provide materials of each type from same source throughout the work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31 22 00 for additional requirements.
- C. Locate, identify, and protect utilities that remain and protect from damage.
- D. Notify utility company to remove and relocate utilities.
- E. Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Owner's Representative.

3.03 TRENCHING

- A. Notify Owner's Representative of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- B. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Cut trenches wide enough to allow inspection of installed utilities.
- E. Hand trim excavations. Remove loose matter.
- F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
- G. Remove excavated material that is unsuitable for re-use from site.
- H. Stockpile excavated material to be re-used in area designated in Section 31 22 00.
- I. Remove excess excavated material from site.
- J. Provide temporary means and methods, as required, to remove all water from trenching until directed by the Owner's Representative. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- K. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Owner's Representative.

3.04 PREPARATION FOR UTILITY PLACEMENT

- A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.05 BACKFILLING

- A. Backfill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- I. Correct areas that are over-excavated.
1. Thrust bearing surfaces: Fill with concrete.
 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 95 percent of standard proctor density.
- J. Compaction Density Unless Otherwise Specified or Indicated:
1. 95 percent of standard proctor density.
- K. Reshape and re-compact fills subjected to vehicular traffic.

3.06 BEDDING AND FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Utility Piping, Conduits, and Duct Bank:
1. Bedding: Use granular fill.
 2. Cover with general fill.
 3. Fill up to subgrade elevation.
 4. Compact in maximum 8 inch lifts to 95 percent of standard proctor density.

3.07 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 1/2 inch from required elevations.
- B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1/2 inch from required elevations.

3.08 FIELD QUALITY CONTROL

- A. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.
- B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified Proctor"). AASHTO T 180, or ASTM D698 ("standard Proctor").
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no additional cost to the Owner.

3.09 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

SECTION 31 23 23
FILL AND BACKFILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for paving and site structures.
- B. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

- A. Section 31 22 00 - Site Grading: Removal and handling of soil to be re-used.

1.03 REFERENCE STANDARDS

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; 2010.
- B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012.
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- D. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2012.
- E. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2008.
- F. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where designated.
1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 2. Prevent contamination.
 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill: Subsoil excavated on-site.
1. Graded.
 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
- B. Granular Fill: Coarse Aggregate, See Section 32 11 23 - Aggregate Base Course.
- C. Topsoil: Topsoil excavated on-site.
1. Graded.
 2. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.

2.02 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. If tests indicate materials do not meet specified requirements, change material and retest.
- C. Provide materials of each type from same source throughout the work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. See Section 31 22 00 for additional requirements.
- D. Verify structural ability of unsupported walls to support imposed loads by the fill.
- E. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

- A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth. Compact to 95 percent of maximum dry density.
- G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- I. Correct areas that are over-excavated.
1. Other areas: Use general fill, flush to required elevation, compacted to minimum 95-105 percent of maximum dry density.
- J. Compaction Density Unless Otherwise Specified or Indicated:
1. Under paving, slabs-on-grade, and similar construction: 95-105 percent of maximum dry density.
 - a. Moisture Range: +3/-1 of optimum moisture.
 2. At other locations: 90 percent of maximum dry density.
- K. Reshape and re-compact fills subjected to vehicular traffic.
- L. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Owner's Representative. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Over Buried Utility Piping, Conduits, and Duct Bank in Trenches:
1. Bedding: Use granular fill.
 2. Cover with general fill.
 3. Fill up to subgrade elevation.
 4. Compact in maximum 8 inch lifts to 95-105 percent of maximum dry density.
 - a. Moisture Range: +3/-1 of optimum moisture.
- C. At Lawn Areas:
1. Use general fill or topsoil.
 2. Fill up to subgrade elevations.
 3. Compact to 90 percent of maximum dry density.
 4. See Section 31 22 00 for topsoil placement.



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Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

Revision Date:

Job Number:

2025.04

Sheet Name:

SPECIFICATIONS

Sheet Number:

C6.1

- D. Under Monolithic Paving:
1. Compact subsoil to 95-105 percent of its maximum dry density before placing fill.
 - a. Moisture Range: +3/-1 of optimum moisture.
 2. Use general fill.
 3. Fill up to subgrade elevation.
 4. Compact to 95-105 percent of maximum dry density.
 - a. Moisture Range: +3/-1 of optimum moisture.
 5. See Section 32 11 23 for aggregate base course placed over fill.
- 3.05 TOLERANCES
- A. Top Surface of General Filling: Plus or minus 1/2 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1/2 inch from required elevations.
- 3.06 FIELD QUALITY CONTROL
- A. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D1557 ("modified Proctor"), ASTM D698 ("standard Proctor"), AASHTO T 180, ASTM D1557 ("modified Proctor"), ASTM D698 ("standard Proctor"), AASHTO T 180, ASTM D1557 ("modified Proctor"), or ASTM D698 ("standard Proctor").
- C. Proof roll compacted fill at surfaces that will be under slabs-on-grade. Reference project geotechnical report for proof roll requirements.
- 3.07 CLEANING
- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.
- END OF SECTION

SECTION 31 25 25
GEOTEXTILE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install geotextile for use as a stabilizer and separator to prevent intermixing of subgrade soils and selected fill materials.

1.02 RELATED SECTIONS

- A. Section 31 22 00 - Site Grading.

1.03 SUBMITTALS

- A. Submit product data, manufacturer's instructions, and manufacturer's certificates.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Rolls shall be furnished with wrapping suitable for protection against moisture and extended ultraviolet exposure.
- B. Store rolls in a manner that protects them from the elements.
- C. If outdoor storage, elevate and protect rolls with waterproof cover.
- D. Geotextile rolls shall not be exposed to sunlight for a period exceeding 14 days.
- E. Replace damaged geotextiles.

PART 2 PRODUCTS

2.01 MATERIALS

- A. R1 - Geosynthetics for Separation, Riprap, and Reinforcement
1. Geotextile shall be composed of long chain polymeric filaments (95 percent by weight, polyolefins, polyesters or polyamide) formed into a non-woven fabric.
- B. Geotextiles shall be free of defects or flaws.
- C. Geotextile shall meet the requirements shown below:

PROPERTY AND TEST METHOD	MINIMUM VALUE
Grab Tensile Strength (ASTM D 4632)	300 lbs
Grab Elongation (ASTM D 4632)	25%
CBR Puncture Strength (ASTM D 6241)	1000 lbs
Trapezoid Tear (ASTM D 4533)	100 lbs
Ultraviolet Stability (ASTM D 4355) @ 500 hrs.	70%
Permittivity (ASTM D 4491)	0.5 / sec-1
Apparent Opening Size (ASTM D 4751)	30 U.S. sieve
Flow Rate Minimum (ASTM D 4491)	4 gal / min / sq. ft.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clear installation area of all obstructions, native vegetation, roots, and other debris which may damage geotextile.

3.02 GEOTEXTILE PLACEMENT

- A. See plan details for placement
- B. Unroll smoothly on subgrade in direction of construction traffic.
- C. Overlap in direction of subbase placement.
- D. Minimum overlap is 2 feet.
- E. Do not drag geotextile across subgrade.
- F. Replace damaged geotextile with a minimum patch size of damaged area plus 3 feet.

3.03 AGGREGATE PLACEMENT

- A. Dumping on geotextile is not permitted.
- B. Traffic directly on geotextile is not permitted.
- C. Fill any ruts with additional aggregate.

END OF SECTION

SECTION 32 11 23
AGGREGATE BASE COURSE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Construction Entrance.
- B. Aggregate Bedding
- C. Paving aggregates.

1.02 RELATED REQUIREMENTS

- A. Section 01 57 13 - Erosion Control.
- B. Section 31 22 00 - Site Grading: Preparation of site for base course.
- C. Section 31 23 16.13 - Trenching: Pipe Bedding Material.
- D. Section 31 23 23 - Fill and Backfill: Compacted fill under base course.
- E. Section 32 12 16 - Asphalt Paving.
- F. Section 32 13 13 - Concrete Paving.

1.03 REFERENCE STANDARDS

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; 2010.
- B. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.
- C. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft.-lb/ft³ (600 kN-m/m³)); 2012.
- D. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2024.
- E. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft.-lb/ft³ (2,700 kN m/m³)); 2012.
- F. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Ballon Method; 2008.
- G. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010.

1.04 SUBMITTALS

- A. Compaction Density Test Reports.
- 1.05 DELIVERY, STORAGE, AND HANDLING
- A. When necessary, store materials on site in advance of need.
- B. Aggregate Storage, General:
1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 2. Prevent contamination.
 3. Protect stockpiles from erosion and deterioration of materials.
- C. Verify that survey bench marks and intended elevations for the work are as indicated.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Coarse Aggregate Class 3 (Utility Trenches): Coarse aggregate, conforming to State of ND Highway Department Class 3 standard.
- B. CoarseAggregate Class 5: Coarse aggregate, conforming to State of ND Highway DepartmentClass 5 standard.
- C. Salvaged (Crushed) Concrete Base: Coarse aggregate, conforming to State of ND Highway Department Salvaged Base Course standards.

2.02 SOURCE QUALITY CONTROL

- A. If tests indicate materials do not meet specified requirements, change material and retest.
- B. Provide materials of each type from same source throughout the work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

- A. Place aggregate in maximum 6 inch layers, roller compact to 95 percent of maximum dry density.
- B. Level and contour surfaces to elevations and gradients indicated.
- C. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation From Design Elevation: Within 1/2 inch.

3.05 FIELD QUALITY CONTROL

- A. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- B. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D698 ("standard Proctor"), or ASTM D1557 ("modified Proctor").
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest at no additional cost to the Owner.
- D. Proof roll compacted aggregate at surfaces that will be under slabs-on-grade.

3.06 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

SECTION 32 12 16
ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Double course bituminous concrete paving.

1.02 RELATED REQUIREMENTS

- A. Section 31 22 00 - Site Grading: Preparation of site for paving and base.
- B. Section 31 23 23 - Fill and Backfill: Compacted subgrade for paving.
- C. Section 32 11 23 - Aggregate Base Course: ND Class 5 aggregate base course or salvaged base course.

1.03 REFERENCE STANDARDS

- A. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types; 1997.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with State of ND Highways standard.
- B. Mixing Plant: Complying with State of ND Highways standard.
- C. Obtain materials from same source throughout.

1.05 FIELD CONDITIONS

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.
- B. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen supplier's bill of lading and not more than maximum specified temperature.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Asphalt Cement: ASTM D 946. In accordance with State of ND Highways Standards, FAA 43 Mix.
- B. Aggregate for Base Course: In accordance with State of ND Highways Standards, FAA 43 Mix.
- C. Aggregate for Wearing Course: In accordance with State of ND Highways Standards, FAA 43 Mix.
- D. Fine Aggregate: In accordance with State of ND Highways Standards, FAA 43 Mix.
- E. Mineral Filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.
- F. Performance Graded Asphalt Cement (ASHTO MP1): PG58-28
- G. Tack Coat: In accordance with State of North Dakota Highways standards.
1. Material shall be SS-1h.

2.02 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Use dry material to avoid foaming. Mix uniformly.
- B. Submit proposed mix design of each class of mix for review prior to beginning of work.

2.03 SOURCE QUALITY CONTROL

- A. Test mix design and samples in accordance with AI MS-2.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with manufacturer's instructions.
- B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 0.05 gal/sq yd.
- C. Coat surfaces of manhole frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.03 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Place base course to thickness identified in schedule at end of section.
- B. Place wearing course within 24 hours of applying tack coat.
- C. Place wearing course to thickness identified in schedule at end of section.
- D. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- E. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.04 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.
- C. Variation from True Elevation: Within 1/2 inch.

3.05 FIELD QUALITY CONTROL

- A. Take samples and perform tests in accordance with AI MS-2

3.06 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 2 days or until surface temperature is less than 140 degrees F.

3.07 SCHEDULE

- A. Pavement thickness shall match noted parking areas: See plan and detail for sections.
- END OF SECTION

SECTION 32 13 13
CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete sidewalks, integral curbs, gutters, and parking areas.

1.02 RELATED REQUIREMENTS

- A. Section 31 22 00 - Site Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.
- B. Section 31 23 23 - Fill and Backfill: Compacted subbase for paving.
- C. Section 32 11 23 - Aggregate Base Course: ND Class 5 aggregate base course.

1.03 REFERENCE STANDARDS

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- B. ACI 301 - Specifications for Structural Concrete; 2016.
- C. ACI 305R - Hot Weather Concreting; 2010.
- D. ACI 306R - Cold Weather Concreting; 2010.
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.
- F. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.
- G. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2015a.
- H. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2025.
- I. ASTM C150/C150M - Standard Specification for Portland Cement; 2021.
- J. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- K. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019.
- L. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- M. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.

1.04 SUBMITTALS

- A. Product Data: Provide data on admixtures and curing compound.
- B. Design Data: Indicate designed concrete strength and typical details.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

1.07 WARRANTY

- A. Contractor shall guarantee all exterior flatwork for a period of one (1) year from final completion of the project.
- B. Concrete pavement in which uncontrolled cracks occur shall be removed and replaced at the Contractor's expense. The work shall include the complete removal and replacement of a quantity of pavement, to include dowel bar assemblies when applicable, as is determined necessary for acceptance of the pavement by the Engineer. Any/all damage occurring during the removal and replacement process shall be restored at the Contractor's expense. All removal and replacement work shall be in accordance with the requirements of these Specifications.

PART 2 PRODUCTS

2.01 FORM MATERIALS

- A. Forms shall be metal or wood, with sections that interlock and are at least 10 feet in length. The forms shall be of the same thickness as the concrete to be placed against them and shall have a base width of at least 2/3 their height. They shall have at least 3 stake pockets for every 10 feet of length and the bracing and support must be able to withstand the pressure of the concrete and weight and thrust of the machinery operating on the forms. Forms shall be set upon the compacted subgrade at to exact line and grade for a distance of at least 300 feet in advance of the concrete placing operation. Metal forms shall be oiled or coated with soft soap or whitewash before depositing the concrete against them. Forms shall be mortar and dirt free and shall be checked with a 10-foot straightedge and any variation in excess of 1/8 inch shall be corrected.
- B. Approved flexible or curved forms of proper radius shall be used on curves having a radius 150 feet or less. Straight forms longer than 10 feet shall not be used on any curved line unless approved by the Engineer. If the pavement is being placed contiguous to previously finished pavement or curb and gutter, such finished pavement or curb and gutter may be made to serve as a side form if found to be suitable in the opinion of the Engineer.

2.02 AUXILIARY FINISHING EQUIPMENT AND MATERIAL

- A. Straight Edge
1. Two or more ten (10) foot straight edges of an approved type shall be used. Extra blades shall be provided and used when previously used edges become wavy and warped.
- B. Floats
1. Approved long-handled floats, each having a blade at least 3 feet in length and 6 inches in width.
- C. Master Straight-Edge
1. All straight edges shall be tested by the master straightedge before being used and frequently during their use.
- D. Brooms
1. Brooms shall be of an approved push type not less than 18 inches long, from good quality bass or bassine fiber not more than five (5) inches in length. The handle shall be at least one foot longer than one-half the pavement width and shall be readily adjustable.

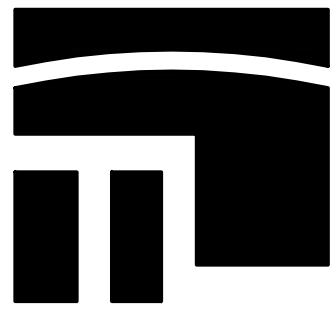
2.03 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi) yield strength; deformed billet steel bars; unfinished.
- B. Fiber reinforcement bars will not be allowed unless approved by the owner.
- C. Dowels: ASTM A615/A615M, Grade 40 - 40,000 psi yield strength; smooth steel bars; unfinished finish.
- D. Deformed steel bars meeting the Specifications for bar reinforcement shall be used for the tie bars joining slabs together across longitudinal joints or joining slabs to the curb and gutter section.
- E. Bars carried over as excess from previous year's construction shall not be used on any project unless documentation of protection from the sun is given to the Engineer. Bars showing rust through the coating shall be rejected for use on a project. Epoxy coatings shall be 8 to 12 mils in thickness.
- F. Reinforcement shall be placed on plastic chairs, unless otherwise specified.

2.04 JOINT MATERIALS

- A. Expansion Joints
1. If expansion or isolation joints will be required, they shall be as indicated in the diagrams. Expansion/Isolation joint material shall conform to ASTM D-1751. Joint material shall be 1-inch in thickness, 1/2 inch less in height than the pavement depth. It shall extend the full width of the pavement slab and curb, and any concrete at the ends when the forms are removed shall be chipped away. The dowel support shall securely and rigidly hold the dowel bars and premoled filler in correct position during the paving operation. All expansion/isolation joint faces shall be cleaned by sandblasting and sealed with silicone sealant to produce a slightly concave surface approximately 1/4 inch below the concrete surface.
 2. The expansion joint dowel bar assembly shall be of a type as manufactured by Dayton Superior, Wady Industries, Construction Materials, Inc., Laclede Steel Company, the Bethlehem Steel Company, the American Steel and Wire Company, or approved equal. The entire expansion joint assembly shall be of a type approved by the Engineer.

2.05 CURING COMPOUNDS



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Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

Revision Date:

Job Number:

2025.04

Sheet Name:

SPECIFICATIONS

Sheet Number:

C6.2

- A. Linseed oil based or poly-alpha-methylstyrene liquid curing compound, white pigmented conforming to the requirements of AASHTO M 148 Type 2, Class B.
- 2.06 CONCRETE MATERIALS
- A. Obtain cementitious materials from same source throughout.
- B. Cement: ASTM C 150 Normal - Type I or II Portland type, grey color.
1. ASTM C 150: Type I or II.
2. ASTM C 595; Types GU, MS and HS
- a. Slag cement and fly ash content shall be a maximum of 30% and a maximum total replacement of 40% with ternary cementitious mixtures.
3. ASTM C 1157; Types GU, MS or HS
- C. Fine, Angular and Coarse Mix Aggregates: ASTM C 33.
- D. Fly Ash: ASTM C618, Class C.
- E. Water: Clean, and not detrimental to concrete.
- F. Air-Entraining Admixtures: ASTM C260/C260M.
- G. Chemical Admixtures: ASTM C 494/C 494M.
1. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- 2.07 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 Owner's Representative for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
- D. Concrete Properties:
1. Compressive Strength, when tested in accordance with ASTM C 39/C 39M at 28 days: 4500 psi.
2. Fly Ash Content: Maximum 30 percent of cementitious materials by weight.
- a. Fly ash content of mixes (cold weather) will be reduced to zero when placed after October 15th and before April 15th without an adequate cold weather management plan.
3. Cement Content: Maximum 620 lb per cubic yard.
4. Water-Cement Ratio: Maximum 42 percent by weight.
5. Total Air Content (exposed slabs only): 6% shall be targeted, (5-8 percent range), determined in accordance with ASTM C173/C173M.
6. Maximum Slump: 4 inches.
- E. Aggregates
1. For all paving applications, mixes shall generally be provided with gradations considered well-graded by specification as determined by the most current NDDOT specification for Well-Graded Aggregates for concrete. Optimization techniques will be used to prepare the final gradations for workability and coarseness factor considerations. Fine and coarse aggregates for all other mixes shall conform to the requirements of ASTM C33 for Concrete Aggregates and meet the following requirements.
2. Detritious Reactions
- a. Alkali Silica Potential
- 1) Aggregate data shall be provided for all aggregates to be used in the concrete mixture to mitigate the risk of Alkali Silica Reaction (ASR) occurring in the concrete. One or more of the following methods shall be submitted for review by the Engineer.
- (a) Field history of the aggregate. This data shall represent at least 10 years of performance with similar cementitious materials and exposure.
- (b) ASTM C 1260 Standard Test Method for Potential Alkali Aggregate Reactivity (Mortar-Bar Method). This method shall be conducted with each aggregate separately to determine the potential reactivity. The maximum expansion shall be 0.1 percent. This data shall be current within 1 year from time of submittal.
- (c) ASTM C 1567 Standard Test Method for Determining the Potential Alkali Aggregate Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method). Fly Ash, Slag Cement, Silica fume or Lithium may be used to mitigate potential ASR. This method shall be conducted with each aggregate separately to determine the potential reactivity. The maximum expansion shall be 0.1 percent. This data shall be current within 1 year from time of submittal.
- (d) ASTM C 1293 Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction. This method shall be conducted with each aggregate separately to determine the potential reactivity. The maximum expansion shall be 0.04 percent. This data shall be current within 3 years from time of submittal. If supplementary cementitious materials are used in this testing for the mitigation of ASR the result must be less than 0.04 percent at 2 years.
- (e) ASTM C 295 Standard Guide for Petrographic Examination of Aggregates for Concrete. Petrographic analysis must indicate there is no risk of ASR occurring with the aggregate to be used in the mixture.
- (f) Limit the alkali content in the concrete to no more than 3 lbs per cubic yard Na2O equivalent.
- 2) Fine Aggregate properties shall meet the requirements of Section 802 of the most current NDDOT Standard Specifications for Road and Bridge Construction with exceptions, the maximum limits of lightweight pieces of aggregate shall not exceed 1%.
- 3) Coarse aggregate properties shall meet the requirements of Section 802 of the most current NDDOT Standard Specifications for Road and Bridge Construction with exceptions, the maximum percent weight of the plus No. 4 fraction of Shale shall not exceed 0.5%.
- 2.08 MIXING
- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.
- PART 3 EXECUTION
- 3.01 EXAMINATION
- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.
- 3.02 SUBBASE
- A. See Section 32 11 23 for construction of base course for work of this Section.
- 3.03 PREPARATION
- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Notify Owner's Representative minimum 24 hours prior to commencement of concreting operations.
- 3.04 COLD AND HOT WEATHER CONCRETING
- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.
- 3.05 PLACING CONCRETE
- A. All concrete shall be placed with formwork unless placed by a curb machine or mechanical paver. Curb and gutter may be installed integral with the concrete pavement except at curb radii and one full panel height on each side of inlet castings not located in a radius, where it shall be installed separate. After mixing, the concrete shall be handled rapidly and the successive batches deposited in a continuous operation until individual sections are completed. The concrete shall be placed so segregation and unnecessary rehandling is avoided. Immediately prior to placing the concrete, the inside of the forms shall be wetted and the aggregate base moistened with water. The forms shall be filled and concrete brought to the established grade. Trucks hauling concrete shall not back over reinforcing or over previously deposited concrete. Ruts exceeding ½ inch in depth shall be filled with granular material prior to the placing of concrete. Concrete shall not be placed on a frozen subgrade or base.
- B. The mixed concrete shall be deposited on the subgrade to the required depth and for a width not exceeding the direct reach of the mixer boom, in successive batches and in a continuous operation without the use of intermediate forms or bulkheads between joints. If concrete placement is temporarily interrupted, the unfinished face of the concrete shall be covered with wet burlap or plastic sheeting. When placement operations are resumed, the concrete shall be broken down and thoroughly consolidated with the fresh concrete. If the elapsed time between placement loads of concrete exceeds 45 minutes, a transverse construction joint shall be installed. While being placed, the concrete shall be vibrated with spud type vibrators or a vibrating screed so that the formation of voids or honeycomb is prevented. The concrete shall be especially well vibrated against the forms and along fixed structures.
- 3.06 JOINTS AND SAWING
- A. Joints in concrete pavement shall be of the design specified and shall be constructed at the spacing and locations shown on the plans. Where a specific jointing layout is not provided, jointing shall be per the standard detail in these Specifications. The contractor shall establish the joint locations in the field from the plans or standard details. All joints shall be sawed along a true and straight line established by the Contractor and shall not deviate at any point by more than 1/2 inch from the established line.
- B. Transverse Contraction Joints and Sawing

1. The location of each transverse joint shall be marked in a manner satisfactory to the Engineer, prior to placement of the concrete and, in the case of joints that are to be sawed, the markings shall be transferred to the fresh concrete as soon as the final finishing operations have been completed. All contraction joints shall be sawed to a sufficient depth to control cracking, but in no case to a depth less than 1/4 of the thickness of the pavement plus ½ inch. Transverse joints constructed in the pavement shall be extended through the integral or separate curb. The Contractor shall be responsible for sawing to a depth that will prevent uncontrolled cracking. A sufficient number of saw cuts shall be made as soon as possible to relieve the contraction joint tension in the slab. Remaining saw cuts must be made within 48 hours after pouring.
2. The initial sawing shall be accomplished as soon as the condition of the concrete will permit without raveling and before random cracking occurs. The sequence of initial sawing shall be at the Contractor's option. The sawing shall be immediately delayed if any raveling occurs and surface pressure shall be used to remove the sawing residue from each joint and the pavement surface immediately after completing the sawing of that joint. Widening of the joints to full width as per dimensions shown on the jointing/sealing detail shall not be performed until the concrete has cured for at least 24 hours and shall be delayed longer when the sawing causes joint raveling.
3. The early entry dry saw "Soft-Cut" method of sawing will only be allowed with the Engineer's approval for the initial saw-cutting. Concrete pavement in which uncontrolled cracks occur shall be removed and replaced at the Contractor's expense. The work shall include the complete removal and replacement of a quantity of pavement, to include dowel bar assemblies when applicable, as is determined necessary for acceptance of the pavement by the Engineer. Any/all damage occurring during the removal and replacement process shall be restored at the Contractor's expense. All removal and replacement work shall be in accordance with the requirements of these Specifications.
- C. Transverse Expansion Joints
1. Expansion joints shall be spaced as shown on the plans and shall be of the preformed type and shall extend entirely through the depth and width of the pavement and through all integral curbs. No concrete shall be left above the expansion material or across the joint, but shall be cut away after the forms are removed.
2. Dowel bars shall be installed for load transfer across the joint. They shall be held in place midway across the joint, parallel to both the surface and the centerline of the slab by an approved supporting device. The "free" end of the dowel shall be coated with an approved lubricant and covered with an approved metal or plastic dowel cap or sleeve. The preformed filler material shall be accurately pre-punched to fit snugly around the dowel bars.
3. The expansion material and dowel assembly shall be accurately and firmly staked to the subgrade. The top edge of the filler shall be set 1/2 inch below the pavement surface. During the placing of the concrete, the top edge of the filler shall be protected by a removable channel cap. After the concrete has been placed and finished, the cap shall be removed and the joint edged to the specified radius. All expansion/isolation joints shall be cleaned by sandblasting and sealed with silicone sealant to produce a slightly concave surface approximately 1/4 inch below the concrete surface.
4. Before the pavement is opened to traffic, the joint shall be cleaned so that there is a clear space of the specified width for the full depth and width of the pavement. It shall then be filled with joint filler which when cooled shall become flush with the surface of the pavement. Any sealant material on the surface of the pavement shall be removed at the Contractor's expense.
- D. Transverse Construction Joints
1. Transverse construction joints shall be constructed whenever the placing of the concrete is suspended for more than 45 minutes. When the work is suspended near the proper location for an expansion joint, the expansion joint shall be installed in the manner previously specified, except that the concrete shall only be placed on one side of the header, when work is resumed it shall be placed on the other side.
2. When work is suspended at other locations, a contraction joint shall be formed by securely staking in place at right angles to the subgrade and centerline of the pavement, a bulkhead of wood or metal cut to the cross-section of the pavement and then depositing concrete against it. Before the work is resumed, the bulkhead shall be removed and concrete placed against the face of the older concrete.
3. Transverse construction joints shall only be constructed at planned transverse joint locations.
4. Dowel bars shall be installed for load transfer across the joint. The Dowel bars shall be either installed with the construction joint or later drilled in place. If installed with construction joint they shall be held in place midway across the joint, parallel to both the surface and the centerline of the slab by a dowel splicer basket assembly, self supported dowel sleeve, or other supporting device approved by the Engineer. The dowel bars shall be installed within the tolerances specified above for placing reinforcement. One end of the dowel shall be painted or coated with an approved lubricant.
- E. Longitudinal Joints
1. The longitudinal joint between adjoining, separately constructed pavement shall be as constructed as shown on the plans. The bars shall be as shown in the detail and may be bent at right angles against the form of the first lane constructed and straightened into final position before the adjacent concrete is placed. Bars may be placed or inserted through small accurately positioned holes or by other approved methods. Tie bars or tie bar baskets shall be placed so that they are not within 12 inches of the intersection of the longitudinal joint and the transverse joint.
2. If uncontrolled cracking occurs, the concrete pavement shall be completely removed to the nearest planned longitudinal and transverse joints. The removal and replacement method shall be approved by Engineer and at the Contractor's sole expense.
- 3.07 PAVEMENT FINISHING
- A. Strike-off and compaction shall be done by both vibrating and screeding processes. Separate power machines may be used for each process or both processes may be combined in the same machine, provided controls exist enabling the operator to apply either operation separately or both combined. When weather conditions cause rapid drying of the pavement surface a fine mist or fog spray applied to the concrete surface shall be permitted only if approved by the Engineer – using any other method to apply water to the concrete surface will not be permitted and will result in nonpayment, replacement, and/or repair of the wetted area as determined by the Engineer.
1. Formwork
- a. Forms shall be left in place for at least 15 hours after placing the concrete, and the method of removing them shall not damage or mar the concrete.
2. Straight Edge
- a. The finished surface of the pavement must conform to the grade, alignment, and contour shown on the plans. Immediately following the floating operation, the Contractor shall test the slab surface for trueness with a 10-foot straightedge. The straightedge shall be placed parallel to the pavement centerline and be passed over the slab to reveal any high areas or depressions. The high areas or depressions shall be cut or filled as necessary with the long handled floats and the area checked again with the straightedge. Successive advances of the straightedge shall overlap by 1/2 the length of the straightedge. The entire surface shall be checked until all variations in excess of 1/8 inch in 10 feet have been eliminated. Special care shall be taken at all headers to ensure this variation is held to a minimum.
- 3.08 CURB FINISHING
- A. No grout shall be used to finish the curb. After the concrete is poured into the forms, it shall be puddled and spaded so as to ensure a through, dense mixture, eliminate air pockets, and create uniform and smooth sides.
- B. When weather conditions cause rapid drying of the pavement surface a fine mist or fog spray applied to the concrete surface shall be permitted only if approved by the Engineer – using any other method to apply water to the concrete surface will not be permitted and will result in nonpayment, replacement, and/or repair of the wetted area as determined by the Engineer.
- C. Before the curb concrete has thoroughly set, and while the concrete is still green, the forms shall be removed and the front and top side finished with a float or steel trowel to make a uniform finished surface.
1. Rounding Corners
- a. Whenever corners are to be rounded, special steel trowels shall be used while the concrete is still workable and the corners constructed to the dimensions herein specified. For combined curb and gutter, the top and side of the curb and gutter may be finished by means of a special shaped trowel or by a curb-and-gutter machine which shapes the entire surface in accordance with the specified dimensions. This trowel shall be used immediately upon removing the front form while the concrete is still workable but firm enough to stand up.
2. Smoothness
- a. The top and face of the curb and also the top of the apron on combined curb and gutter must be finished true to line and grade without any irregularities of surface noticeable to the eye. The gutter shall not hold water to a depth of more than 1/4 inch, nor shall any portion of the surface or face of the curb or gutter section depart from more than 1/4 of an inch from a straight edge ten (10) feet in length, placed on the curb parallel to the center line of the street nor shall any part of the exposed surface present a wavy appearance.
- 3.09 FINAL SURFACE FINISH
- A. The edges of the pavement shall be left smooth and true to line, and finished, at about the time the concrete takes its initial set.
- B. After surface irregularities have been removed and before the concrete attains an initial set, the pavement shall be uniformly textured using a seamless strip of artificial grass, or by brooming.
- C. Artificial grass drags or a broom pulled longitudinally in a line parallel to the slab centerline, shall be the texturing method, and shall be maintained in good repair. The texturing material shall apply a uniform texture with 1/16 to 1/8 inch deep striations. The width of the texturing material shall be in full contact over the full width of the pavement. The texturing material shall be cleaned as often as necessary to remove hardened particles or debris that would otherwise scar the surface.
- D. The texturing material being pulled longitudinally shall be mounted to a self-propelled bridge, operated off of the paving string-line, and shall not deviate at any point by more than 1/2 inch from the established alignment.
- E. With formed paving only, brooms shall be drawn across the surface at right angles to the centerline of the pavement, with the stroke of the broom slightly overlapping adjacent strokes. The brooming operation shall apply a uniform texture with 1/16 to 1/8 inch deep striations. Brooms shall be washed and dried at frequent intervals during the day. Any long or coarse bristles that may cause surface irregularities shall be trimmed or cut out, and any brooms that have become worn out shall be discarded.
- F. Upon completion of the final finishing the surface texture shall be uniform in appearance and free of surface water, rough or porous spots, irregularities, depressions, and other objectionable features.
- 3.10 CURING AND PROTECTION
- A. Normal Pavement
1. As soon as the concrete has been textured, the Contractor shall start curing operations. The finished surface shall be sprayed with an approved curing agent on all exposed faces. Sufficient curing compound shall be applied at a rate of approximately 200 SF/gal to ensure a coating as white as a sheet of paper. In lieu of curing agent, the concrete may be cured by wet burlap or other methods approved by the Engineer. When wet burlap or plastic film is used for curing, the curing period shall be at least 5 days. The concrete surface must not be pitted from or damaged from application of water or incidental rain. The Contractor shall protect all concrete from weather conditions, traffic damage, or any other causes occurring prior to its final acceptance. Any damaged section shall be repaired at the Contractor's expense.
- B. Timing of Curing Compound Application
1. Curing procedures should be undertaken within ½ hour of completion of finishing operations or before the wet sheen on the surface of the concrete disappears, whichever occurs first. Evaporation retarders shall be used for interim protection whenever hot, windy or dry conditions quantified by evaporation rates exceeding 0.2 pounds per square foot per hour exist, and shall be used in accordance with manufacturer's recommendations. Evaporation retarders shall not be used as a finishing aid.
- 3.11 PROTECTION OF PAVEMENT
- A. The newly-placed concrete shall be protected from traffic by employing watch persons, if necessary, and by the erection and maintenance of barricades, fences, warning signs and lights, pavement bridges, and cross-overs.
- B. When the temperature is expected to fall below 35°F, suitable measures shall be taken to maintain the concrete surface temperature above 40°F for 5 days or until the concrete attains a compressive strength of 3,000 psi. Admixtures for curing or temperature control shall be used only as permitted or directed. The admixtures shall not be considered as a substitute for any specified curing requirement.
- C. Any concrete pavement damaged before final acceptance, including damage by frost action, shall be repaired to the satisfaction of the Engineer or removed and replaced at the Contractor's sole expense.
- 3.12 PROTECTION OF PAVEMENT
- A. The newly-placed concrete shall be protected from traffic by employing watch persons, if necessary, and by the erection and maintenance of barricades, fences, warning signs and lights, pavement bridges, and cross-overs.
- B. When the temperature is expected to fall below 35°F, suitable measures shall be taken to maintain the concrete surface temperature above 40°F for 5 days or until the concrete attains a compressive strength of 3,000 psi. Admixtures for curing or temperature control shall be used only as permitted or directed. The admixtures shall not be considered as a substitute for any specified curing requirement.
- C. Any concrete pavement damaged before final acceptance, including damage by frost action, shall be repaired to the satisfaction of the Engineer or removed and replaced at the Contractor's sole expense.
- 3.13 TOLERANCES
- A. All Concrete Pavement:
1. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
2. Maximum Variation From True Position: 1/4 inch.
- 3.14 OPENING TO TRAFFIC
- A. Newly constructed pavement shall not be opened to Contractor or public traffic until the concrete has attained a compressive strength of 3,000 psi, as determined by breaking test cylinders cured in the field in a manner that replicates as closely as possible the curing conditions of the pavement. In addition to the strength requirements, the newly constructed concrete pavement shall not be opened to any traffic until all joints have been sealed unless permission is granted by the Engineer. The Contractor shall erect and maintain suitable barricades and lights to protect the pavement from traffic. Any part of the pavement damaged from traffic or other causes occurring prior to the acceptance of the pavement shall be repaired to the satisfaction of the Engineer at the Contractor's sole expense.
- 3.15 FIELD QUALITY CONTROL
- A. An independent testing agency will perform field quality control tests.
1. Provide free access to concrete operations at project site and cooperate with appointed firm.
2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
3. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 75 cu yd or less of each class of concrete placed.
1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.
- 3.16 PROTECTION
- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian or vehicular traffic over pavement for 5 days minimum after finishing.

END OF SECTION

SECTION 32 17 23.13
PAINTED PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Parking lot markings, accessible symbols and parking buffers.

1.02 RELATED REQUIREMENTS

- A. Section 32 12 16 - Asphalt Paving.

1.03 REFERENCE STANDARDS

- A. FHWA MUTCD - Manual on Uniform Traffic Control Devices; 2010, with Errata.
- B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.

1.04 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 methods.
- B. Certificates: Submit for each batch of paint and glass beads stating compliance with specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver glass beads in containers suitable for handling and strong enough to prevent loss during shipment accompanied by batch certificate.
- B. Store products in manufacturer's unopened packaging until ready for installation.
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD CONDITIONS

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Line and Zone Marking Paint: MPI (APL) No. 97 Latex Traffic Marking Paint; below.
1. Colors and locations indicated below:
- a. Parking Stalls: Concrete: Yellow / Asphalt: White
- b. Accessible Symbols: Blue/White as detailed.
- c. Accessible Buffers: Blue.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Owner's Representative of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Allow new pavement surfaces to cure for a period of not less than 21 days before application of marking materials.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Clean surfaces thoroughly prior to installation.
1. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods.
2. Completely remove rubber deposits, existing paint markings, and other coatings adhering to the pavement, by scraping, wire brushing, sandblasting, mechanical abrasion, or approved chemicals.



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Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

Revision Date:

Job Number:

2025.04

Sheet Name:
SPECIFICATIONS

Sheet Number:

C6.3

3. Sandblasting: Use equipment of size and capacity necessary, providing not less than 150 cfm of air at pressure not less than 90 psi at each nozzle used.
- D. Where oil or grease are present, scrub affected areas with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application; after cleaning, seal oil-soaked areas with cut shellac to prevent bleeding through the new paint.
- E. Establish survey control points to determine locations and dimensions of markings; provide templates to control paint application by type and color at necessary intervals.

3.03 INSTALLATION

- A. Begin pavement marking as soon as practicable after surface has been cleaned and dried.
- B. Do not apply paint if temperature of surface to be painted or the atmosphere is less than 50 degrees F or more than 95 degrees F.
- C. Apply in accordance with manufacturer's instructions using an experienced technician that is thoroughly familiar with equipment, materials, and marking layouts.
- D. Comply with FHWA MUTCD manual (<http://mutcd.fhwa.dot.gov>) for details not shown.
- E. Apply markings in locations determined by measurement from survey control points; preserve control points until after markings have been accepted.
- F. Striping Dimensions
1. Parking Lot Striping: 4-inch width.
 2. Parking Lot Buffer (Cross-Hatch): 4-inch width, 2 foot gap.
 3. Accessible Buffer: as detailed.
 4. Accessible Symbol: as detailed.
 5. Specific Franchise Markings: Confirm with Owner.
- G. Apply uniformly painted markings of color(s), lengths, and widths as indicated above or on the drawings with true, sharp edges and ends.
1. Apply Latex/Epoxy in one coat only.
 2. Wet Film Thickness: 0.015 inch, minimum.
 3. Length Tolerance: Plus or minus 3 inches _____.
 4. Width Tolerance: Plus or minus 1/8 inch.
- H. Parking Lots: Apply parking space lines and other markings indicated on drawings.
- I. Symbols: Use a suitable template that will provide a pavement marking with true, sharp edges and ends, of the design and size indicated.

3.04 DRYING, PROTECTION, AND REPLACEMENT

- A. Protect newly painted markings so that paint is not picked up by tires, smeared, or tracked.
- B. Provide barricades, warning signs, and flags as necessary to prevent traffic crossing newly painted markings.
- C. Allow paint to dry at least the minimum time specified by the applicable paint standard and not less than that recommended by the manufacturer.
- D. Remove and replace markings that are applied at less than minimum material rates; deviate from true alignment; exceed length and width tolerances; or show light spots, smears, or other deficiencies or irregularities.
- E. Remove markings in manner to avoid damage to the surface to which the marking was applied, using carefully controlled sand blasting, approved grinding equipment, or other approved method.
- F. Painted markings that are discolored, damaged by wind-blown dirt, or are ineffective at night will be rejected. Unsightly markings with uneven edge lines, over spray, poor longitudinal alignment, uneven adherence, missing portions, or other objectionable faults will be rejected. The Contractor shall repair or replace all rejected markings at his expense. Removal of unacceptable work shall be accomplished with suitable blasting or grinding equipment unless other means are authorized by the Engineer.
- G. Replace removed markings at no additional cost to the Owner.

END OF SECTION

SECTION 32 17 26

TACTILE WARNING SURFACING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cast Iron tactile and detectable warning tiles for pedestrian walking surfaces.

1.02 RELATED REQUIREMENTS

- A. Section 32 13 13 - Concrete Paving: Concrete sidewalks.

1.03 REFERENCE STANDARDS

- A. 49 CFR 37 - Transportation Services for Individuals with Disabilities (ADA); current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2016).
- D. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.
- E. ATBCB PROWAG - Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; 2011.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, standard details, details specific to this project; written installation and maintenance instructions.
- B. Manufacturer's Qualification Statement.
- C. Warranty: Submit manufacturer warranty; complete forms in Owner's name and register with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver to project site in manufacturer's protective wrapping and in manufacturer's unopened packaging.
- B. Store covered and elevated above grade and in manufacturer's unopened packaging until ready for installation. Maintain at ambient temperature between 40 and 90 degrees F.

1.07 WARRANTY

- A. Cast Iron Tiles: Provide manufacturer's standard ten year warranty against manufacturing defects, breakage or deformation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Cast Iron Detectable Warning Plates:
1. ADA Solutions, LLC www.adatile.com/#sle.
 2. EJ www.ejco.com/#sle.
 3. Neenah Foundry, a division of Neenah Enterprises, Inc www.nfco.com/#sle.

2.02 TACTILE AND DETECTABLE WARNING DEVICES

- A. Cast Iron Detectable Warning Plates:
1. Material: Cast gray iron; ASTM A48/A48M, Class 30 A (minimum).
 2. Installation Method: Cast in place.
 3. Shape: Rectangular.
 4. Pattern: Truncated cones in compliance with ADA Standards.
 5. Joint: Manufacturer standard, bolted connection.
 6. Finish: Manufacturer's factory-applied powder coat.

2.03 ACCESSORIES

- A. Fasteners: ASTM A666/A666M, Type 304 stainless steel
1. Type: Countersunk, color matched composite sleeve anchors
 2. Size: 1/4 inch diameter and 1-1/2 inches long.

PART 3 EXECUTION

3.01 EXAMINATION

- A. When installation location is near site boundary or property line, verify required location using property survey.
- B. Verify that work area is ready to receive work:
1. If existing conditions are not as required to properly complete the work of this section, notify Owner's Representative.
 2. Do not proceed with installation until deficiencies in existing conditions have been corrected.
- C. Verify that dimensions, tolerances, and attachment methods for work in this section are properly coordinated with other work on site.

3.02 GENERAL INSTALLATION

- A. Install in accordance with manufacturer's written instructions.
1. Do not install damaged, warped, bowed, dented, abraded, or otherwise defective units.

2. Do not install when ambient or substrate temperature has been below 40 degrees F during the preceding 8 daylight hours.
- B. Field Adjustment:
1. Locate relative to curb line in compliance with ATBCB PROWAG, Sections 304 and 305.
 2. Orient so dome pattern is aligned with the direction of ramp.
- C. Install units fully seated to substrate, square to straight edges and flat to required slope.

3.03 INSTALLATION, CAST IN PLACE PLASTIC TILES

- A. Tamp and vibrate units as recommended by manufacturer.
- B. Place and position weights on units while concrete cures as recommended by manufacturer. Ensure no voids or air pockets exist between top surface of concrete and underside of units.

3.04 INSTALLATION - CAST IN PLACE, CAST IRON PLATES

- A. Install by method described in manufacturer's written instructions.
- B. Place units into wet concrete.
- C. Press assembly into concrete to achieve final elevation.
- D. Finish concrete adjacent to plate. Remove wet concrete spilled onto plate surface.

3.05 PROTECTION

- A. Protect installed units from traffic, subsequent construction operations or other imposed loads until concrete is fully cured.
- B. Touch-up, repair or replace damaged products prior to Date of Substantial Completion.

END OF SECTION

SECTION 32 31 10

SIGNING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Signs.
- B. Posts.
- C. Hardware.

1.02 RELATED REQUIREMENTS

- A. All site signage will meet the current edition of the Manual of Uniform Traffic Control Devices, published by the FHWA.
- B. All sign faces shall be according to detail drawings and the alphabets shown in the MUTCD, Standard Highway signs, and Standard Alphabets, published by FHWA.

1.03 SUBMITTALS

- A. Project Record Documents: Record actual locations of site signage installed.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Flat Sheet Aluminum:
1. ASTM B 209 Alloy 6061 T6 or 5052-H38 with mill finish.
 - a. Thickness:
 - 1) equal to or less than 24" width: 80 gauge.
 - 2) greater than 24" width: 100 gauge.
 - 3) 30" Stop Signs: 80 Gauge.
 2. Mounting Holes: 3/8" diameter to fit 3/8" bolt.
 2. Hardware, Fittings and Posts:
 1. All Steel bolts, nuts, U-bolts, lock washers and washers shall be galvanizes tell meeting ASTM A153.
 - a. Bolts: 3/8" diameter steel panel bolts, machine bolts, etc., shall meet SAE J429 Grade 5 or ASTM A449.
 - b. Nuts: Steel hex nuts shall meet SAE J995 Grade 5 or ASTM A563.
 - c. Washers: Steel flat washers shall be fabricated of steel meeting ASTM F844.
 2. Posts:
 - a. Telespar 12 gauge brand.
 - b. Vertical Clearance (ground to bottom of sign)
 - 1) Single Sign: 7 feet
 - 2) Double Sign: 6 feet
 - c. Anchor Posts:
 - 1) Length: 4 feet.
 3. Post Sleeves:
 - a. 18" Omni-Directional Sleeve or approved equal.
 - C. Light Standard Mounting Hardware:
 1. Bolts:
 - a. Stainless Steel hex bolts, 1/4" diameter.
 2. Self-Tapping Screws:
 - a. 1/4" Self Tapping Screws with hex head and locking flange.
 3. Washers:
 - a. Steel flat washers shall be fabricated of steel meeting ASTM F844. Plastic washers shall be fabricated to the sheeting manufacturer's specifcaitons.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Each sign shall be located according to the plans or adjusted with the Engineer's approval. Installed signs will be inspected at night for maximum effect. If any sign is ineffective at night, the sign shall be replaced at the Contractor's expense.
- B. All sign fabrication, packaging, labeling, handling, and shipping shall follow the latest version of the NDDOT Standard Specifications for Road and Bridge Construction.
- C. Anchors and Anchor Sleeves for telescoping perforated tube supports shall be driven. The perforated tube anchor and sleeve shall be driven to a height of 5-6 inches above the ground. Anchors and sleeves shall be installed per the detail.

END OF SECTION

SECTION 33 01 10 58

DISINFECTION OF WATER SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Disinfection of site domestic water lines specified in Section 33 14 16.
- B. Testing and reporting results.

1.02 RELATED REQUIREMENTS

- A. Section 33 14 16 - Site Water Utility Distribution Piping.

1.03 REFERENCE STANDARDS

- A. AWWA B300 - Hypochlorites; 2024.
- B. AWWA B301 - Liquid Chlorine; 2024.
- C. AWWA B302 - Ammonium Sulfate; 2023.
- D. AWWA B303 - Sodium Chlorite; 2024.
- E. AWWA C651 - Disinfecting Water Mains; 2014.

1.04 SUBMITTALS

- A. Test Reports: Indicate results comparative to specified requirements.
- B. Disinfection report:
1. Type and form of disinfectant used.
 2. Date and time of disinfectant injection start and time of completion.
 3. Test locations
 4. Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
 5. Date and time of flushing start and completion.
 6. Disinfectant residual after flushing in ppm for each outlet tested.
- C. Bacteriological report:
1. Date issued, project name, and testing laboratory name, address, and telephone number.
 2. Time and date of water sample collection.
 3. Name of person collecting samples.
 4. Test locations
 5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.

6. Coliform bacteria test results for each outlet tested.
7. Certification that water conforms, or fails to conform, to bacterial standards of the North Department of Health and local standards.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with AWWA C651.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code or regulation for performing the work of this Section.

PART 2 PRODUCTS

2.01 DISINFECTION CHEMICALS

- A. Chemicals: AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, AWWA B303 Sodium Chlorite, AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, AWWA B303 Sodium Chlorite, AWWA B300 Hypochlorite, AWWA B301 Liquid Chlorine, AWWA B302 Ammonium Sulfate, and AWWA B303 Sodium Chlorite.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that piping system has been cleaned, inspected , and pressure tested.
- B. Schedule disinfecting activity to coordinate with start-up, testing, adjusting and balancing, demonstration procedures, including related systems.

3.02 DISINFECTION

- A. Use method prescribed by the applicable state or local codes, or health authority or water purveyor having jurisdiction, or in the absence of any of these follow AWWA C651.
- B. Provide and attach equipment required to perform the work.
- C. All water mains shall be chlorinated as set forth by the latest revision of AWWA C601. Sufficient chlorine tablets or powder shall be placed in each pipe to furnish a resultant solution of 50 to 100 parts per million of available chlorine. Generally required dosage to meet this standard is as follows:

WATERMAIN SIZE	REQUIRED DOSAGE
2"	1 LB PER 10,000 FEET
4"	1 LB PER 2,500 FEET
6"	1 LB PER 1,100 FEET
8"	1 LB PER 700 FEET
10"	1 LB PER 350 FEET
12"	1 LB PER 280 FEET
16"	1 LB PER 160 FEET

- D. Introduce treatment into piping system.
- E. The chlorinated water shall remain in the pipeline for at least 24 hours and shall have a residual chlorine content of at least 5 parts per million at that time.
- F. Flush, circulate, and clean until required cleanliness is achieved; use municipal domestic water.
- G. Replace permanent system devices removed for disinfection.
- H. Pressure test system to 125 psi. Repair leaks and re-test.

3.03 FIELD QUALITY CONTROL

- A. Testing shall be performed by the Contractor and paid by the Owner.
- B. If tests indicate that work does not meet specified requirements, remove work, replace and retest at no cost to the Owner.
- C. Test samples in accordance with AWWA C651.

END OF SECTION

SECTION 33 05 61

CONCRETE MANHOLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Monolithic precast concrete manholes with transition to lid frame, covers, anchorage, and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 31 23 23 - Fill and Backfill.
- B. Section 33 42 11 - Storm Sewer Piping.

1.03 REFERENCE STANDARDS

- A. ASTM C478 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections; 2019.
- B. ASTM C478M - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections (Metric); 2019.
- C. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate manhole locations, elevations, piping sizes, elevations of penetrations, and resilient rubber connectors.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

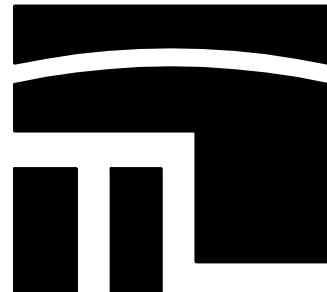
2.01 STORM SEWER MANHOLES

- A. Manhole Sections: Reinforced precast concrete in accordance with ASTM C 478 (ASTM C 478M), with resilient connectors complying with ASTM C 923 (ASTM C 923M) and integral steps.
- B. Inlet Casting : East Jordan 5340M / 5113, Neenah R-3405 or approved equal.
- C. Casting (Solid Covers): East Jordan 1205/1205Z, Neenah R-1733 or approved equal with a self-sealing lid, concealed pick bar, and the word "STORM" cast into the center of the lid in letters 2 inches high.
- D. Joints: Shall be of the tongue and groove type and shall be designed to self-centering. Joints shall meet the requirements of ASTM C990 unless otherwise specified. Joints shall be an all weather butyl rubber gasket in flexible rope form, meeting or exceeding the requirements of federal specification 55.5-210A and AASHTO M-198. Where conditions warrant, an approved primer shall be used to obtain a sufficient seal as directed by the Engineer.
- E. Connections:
1. Boot Connector:
 - a. A Lok X-CEL Connector, manufactured by A Lok Products, Inc. or approved equal.
 - b. Press-Seal PSX: Direct Drive.
 - c. Approved Equal.
- F. Adjusting Rings: shall be either Reinforced Concrete grade rings conforming to ASTM 478 or injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by Ladtech, Inc. or approved equal. The HDPE rings shall be manufactured from Polyethylene plastic in accordance with ASTM D 1248 and shall be installed as per the manufacturer's recommendation with a bead of Butyl Sealant applied between the rings, cone and casting.
- G. Lift Holes: shall be manufactured to provide a watertight seal.
- H. Configuration
1. Shaft Construction: Concentric with cylindrical top section; lipped male/female dry joints; sleeved to receive pipe sections or as detailed on the drawings.
 2. Shape: Cylindrical.
 3. Clear Inside Dimensions: As indicated on plans.
 4. Design Depth: As indicated on plans.
 5. Clear Lid Opening: As indicated on plans.
 6. Pipe Entry: Provide openings as indicated on plans.
 7. Steps: As required by code.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify items provided by other sections of work are properly sized and located.
- B. Verify that built-in items are in proper location, and ready for roughing into work.
- C. Verify excavation for manholes is correct.



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Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

Revision Date:

Job Number:

2025.04

Sheet Name:

SPECIFICATIONS

Sheet Number:

C6.4

3.02 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 MANHOLES

- A. Place concrete base pad, trowel top surface level.
B. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.
C. Cut and fit for pipe.
D. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.
E. Set cover frames and covers level without tipping, to correct elevations.
F. Coordinate with other sections of work to provide correct size, shape, and location.

3.04 SCHEDULES

- A. Storm Sewer Inlets and Manholes: Precast concrete sections, steps, inside dimension and depth indicated on plans.

END OF SECTION

SECTION 33 14 16

SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water pipe for site conveyance lines.
B. Pipe valves.

1.02 RELATED REQUIREMENTS

- A. Section 33 01 10.58 - Disinfection of Water System: Disinfection of site service utility water piping.
B. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.
C. Section 33 20 00 - Utility Identification Tracer Wires.

1.03 REFERENCE STANDARDS

- A. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service; 2015.
B. AWWA C800 - Underground Service Line Valves and Fittings; 2014.
C. AWWA C904 - Cross-Linked Polyethylene (PEX) Pressure Tubing, ½ In. (13 mm) Through 3 In. (76 mm), for Water Service; 2016.

1.04 SUBMITTALS

- A. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.
B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

PART 2 PRODUCTS

2.01 WATER PIPE

- A. Crosslinked Polyethylene Tubing: AWWA C904.
1. Fittings: AWWA C800, insert-stiffener type.
2. Joints: Cold expansion fittings with PEX reinforcing rings, complying with ASTM F1960
B. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Water Service" in large letters.

2.02 VALVES

- A. Ball Valves Up To 2 Inches:
1. Brass body, Teflon coated brass ball, rubber seats and stem seals, Tee stem pre-drilled for control rod, AWWA inlet end, compression outlet with electrical ground connector, with control rod, valve key, and extension box.
2. Approved ball valve manufacturers:
a. Mueller Oriseal.
b. Ford.
c. McDonald.
d. Or approved equal.

2.03 CORPORATION STOP

- A. Corporation stops shall be:
1. Mueller H-15000.
2. Ford F-600.
3. McDonald 1701.
4. Or approved equal

2.04 TAPPING SLEEVES

- A. Tapping sleeves shall be mechanical joint with stainless steel bolts or stainless steel tapping sleeves with a stainless steel flange.

2.05 SERVICE CONNECTIONS

- A. All service connections to PVC pipe shall be stainless steel, double bolt (minimum) service saddles.
B. Service saddles shall have stainless steel washers between the nut and the plastic washer to equalize tightening stress.
C. Rubber tapered gaskets shall be required to resist circumferential and longitudinal forces along with O-ring or flat gaskets for hydraulic seal.
D. Saddle bolts shall be tightened to the manufacturers recommended tightness and verified with a torque wrench.
E. Bolt tightness shall be rechecked with a torque wrench after the pipe tap is complete.
F. All services shall be pressure tested with the main.
G. Approved saddle types:
1. Romac style 304.
2. Ford style FS 303.
3. Powerseal 3412AS.
4. Cascade CSC-1 and CSC-2.
5. Or approved equal.

2.06 BEDDING AND COVER MATERIALS

- A. Bedding: As specified in Section 31 23 16.13.
B. Cover: As specified in Section 31 23 16.13.

2.07 ACCESSORIES

- A. Concrete for Thrust Restraints.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

3.02 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
B. Remove scale and dirt on inside and outside before assembly.
C. Prepare pipe connections to equipment with flanges or unions.

3.03 TRENCHING

- A. See the sections on excavation and fill for additional requirements.
B. See Section 31 23 16.13 for additional requirements.
C. Hand trim excavation for accurate placement of pipe to elevations indicated.
D. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide thrust restraint bearing on subsoil as indicated in drawings.

3.04 INSTALLATION - PIPE

- A. Maintain 10' separation of water main from sewer piping.
B. Group piping with other site piping work whenever practical.
C. Establish elevations of buried piping to ensure not less than 8.0 feet of cover.
D. Install pipe to indicated elevation to within tolerance of 5/8 inches.
E. Install crosslinked polyethylene tubing and fittings to AWWA C904.
F. Route pipe in straight line.
G. Install pipe to allow for expansion and contraction without stressing pipe or joints.
H. Slope water pipe and position drains at low points.

3.05 INSTALLATION - VALVES

- A. Set valves on solid bearing.
B. Center and plumb valve box over valve. Set box cover flush with finished grade.

3.06 THRUST BLOCKING

- A. All fittings shall be braced by means of poured concrete or concrete thrust blocks. No wood thrust blocks will be allowed. Poured concrete shall be 3000 psi concrete poured against undisturbed earth. Care shall be taken not to cover up joints, bolts, flanges, and the fittings with concrete.
B. Thrust restraint at the joints may be used in lieu of concrete thrust blocking with the permission of the Engineer. Restraint devices for PVC pipe shall meet or exceed the requirements of ASTM F 1674-96 or the latest revision, Standard Test Method for Joint Restraint Products for Use with PVC Pipe.

3.07 FIELD QUALITY CONTROL

- A. Hydrostatic Testing will be provided by the Contractor and paid by the Owner.
B. NSF Declaration: All products (treatment chemicals and materials) that may come into contact with water intended for use in a public water system shall meet American National Standards Institute (ANSI) National Sanitation Foundation (NSF) International Standards 60 & 61, as appropriate. A product will be considered as meeting these standards if so certified by NSF, the Underwriters Laboratories, or other organizations accredited by ANSI to test and certify such products.
C. Hydrostatic Test:
1. Watermain shall be subjected to a hydrostatic test of 125 psi for a period of one hour and shall be held within 2 psi of the test pressure for the entire duration.
D. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

END OF SECTION

SECTION 33 20 00

UTILITY IDENTIFICATION TRACER WIRES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Utility Identification Tracer Wires for Site Water Utility Distribution Piping.

1.02 RELATED REQUIREMENTS

- A. Section 33 01 10.58 - Disinfection of Water System.
B. Section 33 14 16 - Site Water Utility Distribution Piping.

1.03 REFERENCE STANDARDS

- A. ASTM B910/B910M: Standard Specifications for Annealed Copper-Clad Steel Wire.

1.04 SUBMITTALS

- A. Product Data: Submit product manufacturer literature, color choices, options, installation instructions, and included parts.

1.05 QUALITY ASSURANCE

- A. Trace Wire:
1. All installed trace wire shall be verified as operational using Contractor's locating equipment.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in undamaged, unopened container, bearing manufacturer's original labels. Inspect for damage.
B. Protect materials from damage by storage in secure location.

PART 2 PRODUCTS

2.01 UTILITY IDENTIFICATION TRACER WIRE

- A. Manufacturers
1. Copperhead Industries, LLC
PO Box 1081
Monticello, MN 55362
2. Approved Equal
B. Insulation color coded to marked utility according to the American Public Works Association (APWA) uniform color standards.

2.02 SPLICE CONNECTORS

- A. Manufacturers
1. Copperhead Industries, LLC
PO Box 1081
Monticello, MN 55362
2. Approved Equal

2.03 TERMINAL BOXES

- A. Manufacturers
1. Copperhead Industries, LLC
PO Box 1081
Monticello, MN 55362
2. Bingham & Taylor (F202CGN)
PO Box 939
Culpeper, VA 22701
3. Approved Equal
B. Flush Mount Terminal Boxes
1. Minimum 36" long, 2-1/2" diameter ABS shaft.
2. Flared shaft bottom.
3. Permanently magnetic cast or ductile iron cover frame and lid.
4. Variable size wire terminal blocks beneath lid.
5. Integral direct connection terminal to allow connection of locator without removing the lid.
6. Locking cover with pentagon nut.
7. Lid stamped with utility type and color coded to marked utility according to the American Public Works Association (APWA) uniform color standards.
C. Above grade terminal boxes:
1. PVC terminal box with 1" diameter conduit connection.
2. Minimum 2 terminals with jumper.
3. Color coded to marked utility according to hte American Public Works Association (APWA) uniform color standards.

2.04 GROUNDING ANODE

- A. Manufacturers:
1. Copperhead Industries, LLC
PO Box 1081
Monticello, MN 55362
2. Approved Equal

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify tracer wire installation locations, termination points, and connection points to existing tracer wire systems.

3.02 PREPARATION

- A. Remove insulation from splices and terminations as necessary according to manufacturer's instructions.

3.03 INSTALLATION

- A. Tracer wire:
1. Trace wire installation shall be performed in such a manner that allows proper access for connection of line tracing equipment, proper locating of wire without loss or deterioration of low frequency (512Hz) signal for distances in excess of 1,000 linear feet, and without distortion of signal caused by multiple wires being installed in close proximity to one another.
2. Tracer wire system must be installed as a continuous single wire. No looping or coiling of wire is allowed.
3. Attach tracer wire to utility pipes and services at 8' to 12' intervals using tape or plastic zip ties installed all the way around the utility pipe. Allow for 1 to 3 inches of slack between the pipe and the tracer wire between attachment points.
4. Install mainline pipe tracer wire continuously on the top center of utility pipes, running around or through valves, manholes, or other structures.
5. All connections between individual tracer wires will be made with approved splice connectors only.
6. Any damage occurring during installation of the trace wire must be immediately repaired in an approved waterproof method. Taping and/or spray coating shall not be allowed.
7. Where existing trace wire is encountered on an existing utility that is being extended or tied into, the new and existing trace wire shall be connected using approved splice connectors, and shall be properly grounded at the splice location as specified.
8. Where tracer wire is terminated at a mainline dead end/stub, connect a grounding anode at the end of the pipe and leave a 3' pigtail of tracer wire laid horizontally beyond the pipe.
9. Install branching mainline, service pipe, or hydrant lead tracer wire as a single continuous wire between the mainline wire and either a terminal box or a ground anode. Connect to the mainline wire with approved connector without cutting/splicing the mainline tracer wire. No looping or coiling of wire is allowed.
10. Water main and water services will require tracer wire. All tracer wire installed on services shall terminate at the gate valve with a 1/2" - 1" bronze ground clamp. The ground clamp shall be completely wrapped in a flexible protective seal. The seal shall be a 4"x4" Air-Seal as manufactured by Cooper Power Systems or approved equal.
B. Flush mount terminal boxes:

1. Install flush mount terminal boxes at finished ground elevations as shown in the drawings and details, or as directed by the Engineer.
2. Provide 3 feet of extra tracer wire and grounding anode leader wire in the flush mount terminal box.
3. Connect tracer wire and grounding anode leader wire to flush mount terminal box cap according to manufacturer's instructions.
C. Above grade terminal boxes:
1. Install above grade terminal boxes as shown in the drawings and details, or as directed by the Engineer.
2. Provide 4 inches of extra tracer wire and grounding anode leader wire in the terminal box. Connect tracer wire.
3. Connect tracer wire and grounding anode leader wire to different terminal posts with a manually removable jumper between them according to manufacturer's recommendations.
D. Grounding anode:
1. Install grounding anodes at all dead ends/stubs, at all terminal boxes, and at all branches in the mainline tracer wire.
2. Install grounding anodes vertically beneath the pipe and connect to the tracer wire system as specified.
3. At dead end/stub locations, connect the grounding anode leader wire to the tracer wire and trim the anode leader wire to length. No looping or coiling of excess anode leader wire is allowed.
4. At terminal boxes, connect the grounding anode leader wire to the terminal box cover or connecting stud. Do not connect the grounding anode leader directly to the tracer wire.

3.04 FIELD QUALITY CONTROL

- A. Prohibited products and methods:
1. Uninsulated tracer wire or insulated tracer wire using any insulation other than HDPE.
2. Twist-on wire nuts or connectors.
3. Tape or spray-on waterproofing.
4. Any installation with multiple wires laid side-by-side or twisted together.
5. Connecting the tracer wire to any conductive utilities.

- B. Post-Installation Test:
1. All new trace wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the Contractor, Engineer, and Owner as applicable, prior to acceptance of ownership.
2. This verification shall be performed upon completion of rough grading and again prior to final acceptance of the project.
3. Continuity testing in lieu of actual line tracing shall not be accepted.

SECTION 33 31 13

SITE SANITARY SEWERAGE GRAVITY PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sanitary sewerage drainage piping, fittings, and accessories.
B. Connection of building sanitary drainage system to municipal sewers.

1.02 RELATED REQUIREMENTS

- A. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.

1.03 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.04 REFERENCE STANDARDS

- A. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2020.
B. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2016.

1.05 SUBMITTALS

- A. Product Data: Provide data indicating pipe, and pipe accessories.
B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

- A. Plastic Pipe: ASTM D3034, Type PSM, Schedule 26 Poly(Vinyl Chloride) (PVC) material; inside nominal diameter as indicated in plans, bell and spigot style solvent sealed joint end.
B. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.02 BEDDING AND COVER MATERIALS

- A. Pipe Bedding Material: As specified in Section 31 23 16.13.
B. Pipe Cover Material: As specified in Section 31 23 16.13.

PART 3 EXECUTION

3.01 TRENCHING

- A. See Section 31 23 16.13 for additional requirements.
B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

- A. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
B. Connect to building sanitary sewer outlet and municipal sewer system, through installed sleeves.

3.03 INSTALLATION - CLEANOUTS

- A. Form bottom of excavation clean and smooth to correct elevation.
B. Establish elevations and pipe inverts for inlets and outlets as indicated.

3.04 FIELD QUALITY CONTROL

- A. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.05 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

SECTION 33 42 11

STORM SEWER PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Storm drainage piping, fittings, and accessories.
B. Connection of drainage system to municipal sewers.

1.02 RELATED REQUIREMENTS

- A. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.
B. Section 33 05 61 - Concrete Manholes.

1.03 REFERENCE STANDARDS

- A. AASHTO M 252 - Standard Specification for Corrugated Polyethylene Drainage Pipe; 2018.
B. AASHTO M 294 - Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-MM (12- to 60-in.) Diameter; 2018.
C. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2021a.
D. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2020.
E. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2016.

1.04 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

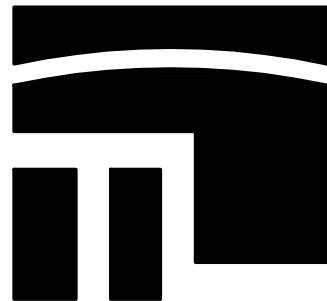
1.05 SUBMITTALS

- A. Product Data: Provide data indicating pipe and pipe accessories.
B. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

- A. Plastic Pipe: ASTM D1785, Schedule 40, Poly Vinyl Chloride (PVC) material; inside nominal diameter as noted on the plans, bell and spigot style solvent sealed joint end.
B. High Density Polyethylene Pipe (HDPE):
1. Dual Wall.



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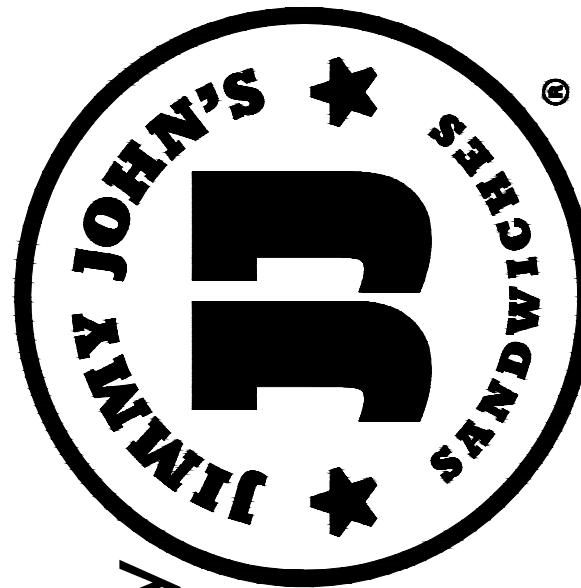
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Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

Revision Date:

Job Number:

2025.04

Sheet Name:

SPECIFICATIONS

Sheet Number:

C6.5

2. 4" through 10" shall meet AASHTO M252, Type S.
3. 12" through 60" shall meet AASHTO M 294, Type S or ASTM F 2306.
4. Pipe fittings: shall meet AASHTO M 252, AASHTO M 294, or ASTM F 2306.
5. Water tight joint: shall meet ASTM F 477 and ASTM D 3212.
6. Approved Products:

a. Hancor Blue Seal HDPE pipe with water tight joint.

b. ADS N12 WT IB pipe.

c. Or approved equal.

2.02 PIPE ACCESSORIES

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.
- B. Concrete Manhole Connections:

1. HDPE/PVC/Cocnrete Pipe: Waterstop WS-30 Adaptor, manufactured by Press Seal Gasket Corp. or approved equal.

2.03 BEDDING AND COVER MATERIALS

- A. Bedding: As specified in Section 31 23 16.13.
- B. Cover: As specified in Section 31 23 16.13.

PART 3 EXECUTION

3.01 TRENCHING

- A. See Section 31 23 16.13 - Trenching for additional requirements.
- B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
- C. Connect to building storm drainage system, foundation drainage system, and utility/municipal sewer system.
- D. Connect to municipal storm sewer system, through installed sleeves.

3.03 FIELD QUALITY CONTROL

- A. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

3.04 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION



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Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301



Date:

AUGUST 21, 2026

Revision Date:

Job Number:

2025.04

Sheet Name:

SPECIFICATIONS

Sheet Number:

C6.6

S0.1

ENGINEERED NOOD NOTES:

- POSTS AND BEAMS CONSTRUCTED OF MULTIPLE LAMINATED VENEER LUMBER MEMBERS SHALL BE FASTENED TOGETHER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. S.D. 2/5/4.1 FOR MINIMUM REQUIREMENTS.
- LAMINATED NOOD FABRICATOR SHALL BE AN APA MEMBER AND SHALL FABRICATE ACCORDING TO APA SPECIFICATIONS.
- LAMINATED NOOD SUPPLIER SHALL FURNISH ALL HANGERS, HARDWARE, AND ACCESSORIES FOR ALL CONNECTIONS ASSOCIATED WITH LAMINATE NOOD MEMBERS (U.O.N.).
- SEE ARCHITECTURAL DETAILS AND SPECIFICATIONS FOR MATERIAL TYPE AND FINISHES.
- ALL LAMINATED FRAMING MEMBERS ARE SPECIFIED AS DOUG-FIR COMBINATION 24FV4. SOUTHERN-PINE COMBINATION 24FV3 MAY BE USED WITH EQUIVALENT DESIGN VALUES & SECTION PROPERTIES.
- LAMINATED NOOD SUPPLIER SHALL PROVIDE ALL WOOD TO WOOD CONNECTIONS. STRUCTURAL STEEL SUPPLIER SHALL FURNISH ALL WOOD TO STEEL CONNECTIONS, HANGERS AND HARDWARE WHICH ARE REQUIRED TO COMPLETE THE ERECTION OF THE LAMINATED WOOD.
- LAMINATED WOOD MANUFACTURER AND STRUCTURAL STEEL SUPPLIER SHALL COORDINATE ALL CONNECTION DETAILS PRIOR TO FABRICATION.
- PROVIDE STANDARD CAMBER AT ALL ROOF BEAMS AND PURLINS.
- LVL MEMBERS SHALL HAVE THE FOLLOWING MINIMUM DESIGN VALUES:

Fb	=	2,600 psi	- BENDING
Fv	=	265 psi	- SHEAR
Fc	=	2,510 psi	- COMPRESSION PARALLEL TO GRAIN
FcL	=	750 psi	- COMPRESSION PERPENDICULAR TO GRAIN
E	=	2,000 ksi	- MODULUS OF ELASTICITY

- GLU-LAM MEMBERS SHALL HAVE THE FOLLOWING MINIMUM DESIGN VALUES:

Fb	=	2,400 psi	- BENDING
Fv	=	265 psi	- SHEAR
Fc	=	1,650 psi	- COMPRESSION PARALLEL TO GRAIN
FcL	=	650 psi	- COMPRESSION PERPENDICULAR TO GRAIN
E	=	1,800 ksi	- MODULUS OF ELASTICITY

- LSL MEMBERS SHALL HAVE THE FOLLOWING MINIMUM DESIGN VALUES:

Fb	=	2,325 psi	- BENDING
Fv	=	310 psi	- SHEAR
Fc	=	2,110 psi	- COMPRESSION PARALLEL TO GRAIN
FcL	=	400 psi	- COMPRESSION PERPENDICULAR TO GRAIN
E	=	1,550 ksi	- MODULUS OF ELASTICITY

- PSL COLUMN MEMBERS SHALL HAVE THE FOLLOWING MINIMUM DESIGN VALUES:

Fb	=	2,400 psi	- BENDING
Fv	=	190 psi	- SHEAR
Fc	=	2,500 psi	- COMPRESSION PARALLEL TO GRAIN
FcL	=	345 psi	- COMPRESSION PERPENDICULAR TO GRAIN
E	=	1,800 ksi	- MODULUS OF ELASTICITY

- PSL BEAM MEMBERS SHALL HAVE THE FOLLOWING MINIMUM DESIGN VALUES:

Fb	=	2,900 psi	- BENDING
Fv	=	290 psi	- SHEAR
Fc	=	2,900 psi	- COMPRESSION PARALLEL TO GRAIN
FcL	=	625 psi	- COMPRESSION PERPENDICULAR TO GRAIN
E	=	2,000 ksi	- MODULUS OF ELASTICITY

STRUCTURAL FRAMING PANEL SHEATHING NOTES (WOOD):

- FASTENERS SHALL NOT BE LOCATED LESS THAN 3/8" IN FROM THE EDGE OF THE PANEL.
- FASTENERS SHALL BE DRIVEN WITH THE HEAD OF THE FASTENER FLUSH WITH THE SURFACE OF THE SHEATHING.
- FASTENERS SHALL BE OF SUFFICIENT LENGTH TO ENSURE PENETRATION INTO FRAMING MEMBERS BY AT LEAST 1-1/2" (U.O.N.).
- FRAMING MEMBERS SHALL BE A MINIMUM 2" NOMINAL (3" NOMINAL FOR PANEL FLOOR SHEATHING) IN THE DIMENSION TO WHICH THE STRUCTURAL PANEL IS ATTACHED.
- NO UNBLOCKED PANELS LESS THAN 1'-4" WIDE SHALL BE USED.
- PANEL EDGES SHALL BUTT ALONG THE CENTERLINE OF FRAMING MEMBERS.
- EACH WOOD SHEATHING PANEL SHALL BE IDENTIFIED WITH THE GRADE TRADEMARK OF THE AMERICAN PLYWOOD ASSOCIATION AND SHALL MEET THE REQUIREMENTS OF PRODUCT STANDARD (ps). APPLICATION AND NAILING OF PLYWOOD SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE AMERICAN PLYWOOD ASSOCIATION AND TABLE 2304.10.1 "FASTENING SCHEDULE" OF THE INTERNATIONAL BUILDING CODE UNLESS OTHER REQUIREMENTS NOTED ON THE PLAN ARE STRICTER.
- PANEL WALL SHEATHING SHALL BE 7/16" APA EXPOSURE 1, RATED WOOD SHEATHING WITH 24/16 SPAN RATINGS (U.O.N.). PANELS MAY BE INSTALLED EITHER HORIZONTALLY OR VERTICALLY.
- GYPSPUM WALL SHEATHING SHALL BE 5/8" TYPE X GYPSPUM WALL BOARD (EXTERIOR GRADE) (U.O.N.). 4'-0" WIDE PANELS MAY BE APPLIED PARALLEL OR PERPENDICULAR TO STUDS. 2'-0" WIDE PANELS MUST BE APPLIED PERPENDICULAR TO STUDS. END JOINTS OF ADJACENT COURSES OF GYPSPUM BOARD SHALL NOT OCCUR OVER THE SAME STUD.
- BACK ALL VERTICAL SHEATHING PANEL EDGES WITH NOMINAL 2x BLOCKING (MINIMUM).
- FRAMING MEMBERS SHALL BE SPACED NO FURTHER THAN 1'-4" O.C.
- OFFSET PANEL JOINTS ON EACH SIDE OF WALL MINIMUM ONE STUD BAY.
- FASTENERS FOR PANEL WOOD SHEATHING SHALL BE A MINIMUM 8d COMMON WIRE NAILS, SPACE NAILS AT 1'-0" O.C. ALONG INTERMEDIATE FRAMING MEMBERS (FIELD OF PANEL) AND AT 6" O.C. AT ALL PANEL EDGES (U.O.N.).
- FASTENERS FOR GYPSPUM SHEATHING SHALL BE A MINIMUM 8d GALVANIZED COOLER (0.042" DIAMETER X 1-1/8", 1/4" HEAD) OR WALLBOARD (0.0418" DIAMETER X 1-1/8", 19/64" HEAD) NAILS. SPACE NAILS AT 7" O.C. ALONG INTERMEDIATE FRAMING MEMBERS (FIELD OF PANEL) AND AT 6" O.C. AT ALL PANEL EDGES (U.O.N.).
- PANEL ROOF SHEATHING SHALL BE 1/2" APA EXPOSURE 1, RATED SHEATHING WITH 32/16 PANEL SPAN RATINGS (U.O.N.).
- ALL UNSUPPORTED PANEL ROOF EDGES SHALL BE TONGUE AND GROOVE EDGES, OR HAVE PANEL EDGE CLIPS (MIDWAY BETWEEN EACH SUPPORT), OR HAVE 2x LUMBER BLOCKING.
- PANEL ROOF SHEATHING SHALL BE ORIENTED WITH THE STRENGTH AXIS PERPENDICULAR TO THE SUPPORTS AND SHALL BE CONTINUOUS OVER 2 OR MORE SUPPORTS.
- FASTENERS FOR PANEL ROOF SHEATHING SHALL BE MINIMUM 8d COMMON WIRE NAILS (U.O.N.). SPACE NAILS AT 1'-0" O.C. ALONG INTERMEDIATE FRAMING MEMBERS (FIELD OF PANEL) AND AT 6" O.C. AT ALL PANEL EDGES (U.O.N.).

WOOD FRAMING NOTES:

- WOOD AND TIMBER CONSTRUCTION SHALL CONFORM TO PROJECT SPECIFICATIONS AND AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (APA) STANDARDS.
- WOOD CONSTRUCTION SHALL CONFORM TO CHAPTER 23, OF THE INTERNATIONAL BUILDING CODE (U.O.N.).
- ALL NAILING SHALL BE COMMON WIRE NAILS (U.O.N.) & SHALL CONFORM TO TABLE 2304.10.1 "FASTENING SCHEDULE" OF THE INTERNATIONAL BUILDING CODE UNLESS OTHER REQUIREMENTS NOTED ON THE PLAN ARE MORE STRICT.
- FRAMING LUMBER SHALL CONFORM WITH THE PROVISIONS OF THE AMERICAN SOFTWOOD LUMBER STANDARD PS20-10 AND EACH PIECE SHALL BEAR THE GRADE STAMP OF A GRADING AGENCY APPROVED BY THE AMERICAN LUMBER STANDARDS COMMITTEE. ALL FRAMING LUMBER 2" AND LESS IN THICKNESS SHALL BE SEASONED TO A MOISTURE CONTENT OF 19% OR LESS PRIOR TO SURFACING WITH THE INDICATION "S-DRY" ON THE GRADE STAMP.
- DIMENSION LUMBER SHALL BE SPRUCE-PINE-FIR (SPF), NO. 2 GRADE OR BETTER WITH THE FOLLOWING MINIMUM DESIGN VALUES (U.O.N.):

Fb	=	875 psi	- BENDING
Fv	=	135 psi	- SHEAR
Fc	=	1,150 psi	- COMPRESSION PARALLEL TO GRAIN
FcL	=	425 psi	- COMPRESSION PERPENDICULAR TO GRAIN
E	=	1,400 ksi	- MODULUS OF ELASTICITY
Emn	=	510 ksi	- MINIMUM MODULUS OF ELASTICITY

- SILL PLATES FOR LOAD BEARING WALLS ON CONCRETE OR MASONRY SHALL BE AMPA COPPER AZOLE (CA-B) TREATED SOUTHERN PINE (SP), NO. 2 GRADE MINIMUM. SILL PLATES FOR NON-LOAD BEARING WALLS ON CONCRETE OR MASONRY SHALL BE AMPA CA-B TREATED PONDEROSA PINE (PP) STUD GRADE MINIMUM.
- ALL BEARING STUD WALLS SHALL BE CONSTRUCTED WITH CONTINUOUS TREATED SILL PLATE AND DOUBLE TOP PLATE. JOINTS IN LOAD BEARING WALL TOP PLATES SHALL BE OFFSET AT LEAST 4'-0". SEE PLANS AND DETAILS.
- SILL PLATES FOR BEARING WALLS SHALL BE ANCHORED TO CONCRETE OR MASONRY WITH 1/2" DIAMETER ZINC GALVANIZED (1.1 MILS MINIMUM) EPOXY BOLTS SPACED 4'-0" O.C. (U.O.N.). PROVIDE 6" EMBEDMENT DEPTH (U.O.N.). THERE SHALL BE A MINIMUM OF 3 - BOLTS PER PIECE WITH ONE BOLT LOCATED WITHIN 8" OF EACH END OF EACH PIECE. THERE SHALL BE NO SILL PLATE SPLICE UNDER ANY POST, JACK STUD, OR KING STUD.
- BUILT-UP MEMBERS SUCH AS COLUMNS, BEAMS, JOISTS, AND JAMB STUDS SHALL BE FASTENED TOGETHER WITH 2 - ROWS OF 16d COMMON WIRE NAILS SPACED AT 1'-0" O.C. (U.O.N.).
- 2x LUMBER USED FOR HEADERS, BEAMS, AND JOISTS SHALL BE FREE OF CHECKS AND SPLITS.
- ALL HEADERS, BEAMS, JOISTS, AND TRUSSES SHALL BEAR FULLY ON STUD WALLS, POSTS, AND JACK STUDS. DO NOT OVERCUT.
- ALL 2x HEADERS AND BEAMS SHALL HAVE 3 - SUPPORT STUDS (1 - KING STUD, 2 - JACK STUDS) UNLESS REQUIREMENTS NOTED ON PLAN ARE MORE STRICT.
- NO NOTCHING OF STUDS, JOISTS, BEAMS, OR TRUSSES IS PERMITTED WITHOUT THE ENGINEER'S APPROVAL. DO NOT OVERCUT NOTCHES. HOLES BORED IN STUDS OR JOISTS SHALL BE IN THE MIDDLE ONE-THIRD OF THE DEPTH AND MIDDLE ONE-THIRD OF THE SPAN. THE DIAMETER OF ANY SUCH HOLE SHALL NOT EXCEED ONE-FOURTH THE DEPTH.
- ALL FABRICATED WOOD TRUSSES ARE TO BE ENGINEERED BY FABRICATOR AND ERECTED ACCORDING TO MANUFACTURER'S SPECIFICATIONS. PLAN LOCATIONS FOR TRUSSES ARE FOR REFERENCE ONLY. FINAL LOCATIONS SHALL BE DETERMINED BY SUPPLIER USING MAXIMUM SPACING AND DETAILS INDICATED ON PLANS. WOOD TRUSS CONSTRUCTION AND FABRICATION SHALL FOLLOW GUIDELINES SET FORTH BY THE WOOD TRUSS COUNCIL OF AMERICA. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL TRUSS INFORMATION.
- ALL FABRICATED WOOD TRUSSES SHALL BE FURNISHED IN ACCORDANCE WITH DESIGNS PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE THE PROJECT IS LOCATED, USING THE DESIGN LOADS AND SPAN CONDITIONS INDICATED ON THE CONTRACT DOCUMENTS. WOOD TRUSS DESIGN ENGINEER SHALL DESIGN TRUSSES USING THE CURRENT ADOPTED EBC IN THAT STATE. ADDITIONAL LOADS SUCH AS SNOW DRIFT LOADING AND LOADS FROM ALL OTHER DISCIPLINES ARE THE RESPONSIBILITY OF THE WOOD TRUSS ENGINEER. NO DEVIATION OF OVERALL TRUSS SHAPE, MEMBER SIZE, OR SUPERIMPOSED LOADS, FROM THE CONTRACT DOCUMENTS SHALL BE PERMITTED WITHOUT THE APPROVAL OF THE ARCHITECT AND/OR THE ENGINEER. SHOP DRAWINGS, INCLUDING AN OVERALL ERECTION PLAN INDICATING EACH TYPE OF TRUSS, TRUSS BEARING POINT LOCATIONS, REQUIRED LATERAL BRACINGS, EACH TRUSS MEMBERS SIZE, STRESS AND CONNECTION DETAILS, SHALL BE SUBMITTED FOR PRIOR APPROVAL TO THE GENERAL CONTRACTOR. TRUSS DETAIL SHEETS INDICATING LOADS, TRUSS MAKE-UP, MEMBER SIZES, REACTIONS, ETC. TO BE SIGNED BY A PROFESSIONAL ENGINEER AND SUBMITTED PRIOR TO INSTALL.
- FASTEN ALL WOOD TRUSSES TO TOP PLATES WITH 3 - 16d COMMON WIRE NAILS (MINIMUM). SEE PLANS FOR ADDITIONAL FASTENING REQUIREMENTS.
- THE WOOD TRUSS SUPPLIER SHALL PROVIDE AN HB-41 "SUMMARY SHEET" WITH THE TRUSS ERECTION DRAWINGS FOR REFERENCE BY THE TRUSS INSTALLER.
- THE GUIDELINES SET FORTH BY THE TRUSS PLATE INSTITUTE PUBLICATION BCS1 "GUIDE TO HANDLING, RESTRAINING AND BRACING WOOD TRUSSES" SHALL BE FOLLOWED BY THE TRUSS INSTALLER.
- PERMANENT BRACINGS OF WOOD TRUSSES SHALL BE INSTALLED BY THE TRUSS INSTALLER, WHERE INDICATED BY THE TRUSS ERECTION DRAWINGS. MINIMUM BRACING REQUIREMENTS FOR TOP CHORD, BOTTOM CHORD, AND WEB MEMBER PLANES SHALL BE IN ACCORDANCE WITH BCS1, UNLESS REQUIREMENTS NOTED ON THE PLAN ARE MORE STRICT.
- ERECTION BRACING OF WOOD TRUSSES IS THE RESPONSIBILITY OF THE TRUSS INSTALLER. THE TRUSS INSTALLER SHALL PROVIDE TEMPORARY DIAGONAL, LATERAL, AND CROSS BRACING (PER BCS1) UNTIL ROOF SHEATHING, CEILING AND PERMANENT BRACING CAN BE APPLIED AND SHEARWALLS COMPLETED.
- ROOF TRUSSES SHALL BE FASTENED TO THE SUPPORT WALLS WITH SIMPSON "H2BT" TIES OR EQUAL (U.O.N.) AND SHALL BE NAILED PER MANUFACTURES RECOMMENDATION.
- CONTRACTOR TO PROVIDE DIAGONAL BRACING AT STUD WALLS TO PREVENT RACKING DURING CONSTRUCTION.

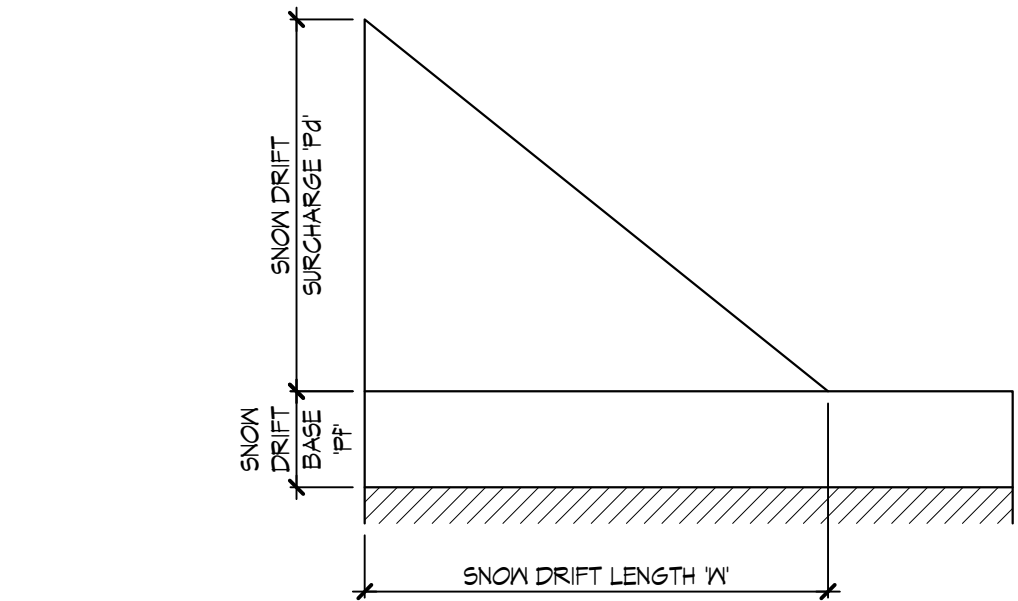
MASONRY NOTES:

- CONCRETE BLOCK MASONRY UNITS SHALL CONFORM TO GRADE N, MOISTURE CONTROLLED TYPE I REQUIREMENTS OF ASTM C40, WITH AN ASSUMED COMPRESSIVE STRENGTH Fm = 2000 PSI. MORTAR SHALL CONFORM TO ASTM C270 AND SHALL BE TYPE M OR TYPE S, WITH TYPE M BELOW GRADE.
- BOND BEAMS SHALL HAVE 2 - #5 REINFORCING BARS CONTINUOUS. PROVIDE AT TOP OF WALLS AND WHERE SHOWN ON PLAN OR DETAILS. SEE STANDARD DETAILS FOR TYPICAL CORNER BARS. EXTEND VERTICAL REINFORCEMENT THROUGH BOND BEAM WHERE APPLICABLE.
- ALL MASONRY LINTEL BEAMS AND BOND BEAMS WHERE NOTED SHALL BE A 1" BLOCK TYPE UNIT.
- CONCRETE GROUT FOR UNIT MASONRY CORES AND BOND BEAMS SHALL HAVE A 20 DAY COMPRESSIVE STRENGTH OF 3000 PSI.
- MASONRY WALLS ARE TO BE SUPPORTED Laterally UNTIL THE ENTIRE ROOF AND/OR FLOOR IS IN PLACE AS DETAILED.
- WIRE REINFORCING FOR CMU WALLS SHALL BE CORROSION RESISTANT #6A HORIZONTAL JOINT REINFORCING CONFORMING TO ASTM A951. REINFORCING SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS WITH MAXIMUM SPACING OF 1'-4" O.C. (U.O.N.).
- MASONRY REINFORCING SHALL BE LAPPED AS FOLLOWS:

#3 BAR = 1'-6"	#6 BAR = 3'-0"
#4 BAR = 2'-0"	#7 BAR = 3'-6"
#5 BAR = 2'-6"	#8 BAR = 4'-0"
- VERTICAL REINFORCING BARS SHALL BE HELD IN POSITION AT TOP AND BOTTOM AND AT 1/2 (RENF.) DIAMETER INTERVALS MAXIMUM. LENGTH OF REINFORCING BARS TO BE COORDINATED WITH GENERAL CONTRACTOR AND MASONRY CONTRACTOR.
- WHERE CELLS ARE TO BE FILLED WITH CONCRETE GROUT, PROVIDE ADDITIONAL FULL MORTAR BED AT CROSS WEBS ENCLOSED GROUTED CELL.
- CONSOLIDATE ALL CONCRETE GROUT BY PUDDLING OR VIBRATING.
- BLOCK COURSING SHOWN ON STRUCTURAL PLANS MAY NOT BE REPRESENTATIVE OF ACTUAL COURSING. SEE ARCHITECTURAL PLANS AND SECTIONS FOR ACTUAL LAYOUT OF BLOCK COURSING.
- MASONRY PIERS SHALL BE LAID UP SIMULTANEOUSLY WITH WALLS AND SHALL BE INTERLOCKED WITH WALL BLOCKS.
- FIRST COURSE OF ALL HOLLOW MASONRY SHALL BE PLACED ON A FULL BED OF MORTAR.
- CAST DOVELLS, WITH STANDARD HOOKS, IN FOOTINGS FOR PIERS AND WALLS ABOVE. DOVELLS SHALL BE THE SAME SIZE AND SPACING OF VERTICAL REINFORCING (U.O.N.).
- ALL OPENINGS IN MASONRY WALLS REQUIRE A LINTEL. FOR OPENINGS WHICH HAVE NOT BEEN CALLED FOR ON PLAN, THE FOLLOWING SCHEDULE SHALL APPLY:

LOOSE LINTEL SCHEDULE				
SPAN	4" VENEER	8" WALL	12" WALL	16" WALL
0'-0" - 4'-0"	L 3-1/2 x 3-1/2 x 1/4	L 2 - L 3-1/2 x 3-1/2 x 1/4	N 8x10 IV PL. 1/4"	N 8x10 IV PL. 1/4"
4'-0" - 6'-0"	L 4 x 3-1/2 x 1/4	L 2 - L 4 x 3-1/2 x 1/4	N 8x10 IV PL. 1/4"	N 8x10 IV PL. 1/4"
6'-0" - 8'-0"	L 5 x 3-1/2 x 1/4	L 2 - L 6 x 3-1/2 x 1/4	N 8x18 IV PL. 1/4"	N 8x24 IV PL. 1/4"
8'-0" - 10'-0"	L 6 x 3-1/2 x 5/16	N 8x18 IV PL. 1/4"	N 8x24 IV PL. 1/4"	N 8x28 IV PL. 1/4"

- NOTES:
- LINEELS SHALL HAVE A BEARING OF 2" PER FOOT OF SPAN @ EACH END (6" MINIMUM).
 - SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL PLANS FOR OPENINGS NOT SHOWN.
 - FOR SPANS GREATER THAN 10'-0", CONTACT STRUCTURAL ENGINEER OF RECORD.



SNOW DRIFT LOAD SCHEDULE			
MARK	SNOW DRIFT BASE Pf	SNOW DRIFT SURCHARGE Pd	SNOW DRIFT LENGTH W
SD1	41 psf	26 psf	2'-0"
SD2	50 psf	40 psf	3'-0"

FOOTING SCHEDULE					
MARK	FOOTING SIZE	FOOTING DEPTH	REINFORCING		REMARK
			TRANS	LONG	
F1.8C	1'-8" CONT.	1'-0"	-	2 - #5	@ STOOPS
F2.0C	2'-0" CONT.	1'-0"	#4 @ 4'-0" O.C.	2 - #5	-
F2.5C	2'-6" CONT.	1'-0"	#4 @ 4'-0" O.C.	3 - #5	-
F3.5C	3'-6" CONT.	1'-0"	#5 @ 1'-4" O.C.	4 - #5	-

HOLDOWN SCHEDULE				
MARK	TYPE	ANCHOR POST	ANCHOR SIZE	DETAIL
HD1	SIMPSON "HDUE3-SD53"	2 - 2x6	5/8" DIA.	13/53.1 & 14/53.1
HD2	SIMPSON "HDUE1-SD53"	2 - 2x6	5/8" DIA.	13/53.1 & 14/53.1
HD3	SIMPSON "HDUE13-SD53.5"	5 - 2x6	1" DIA.	13/53.1 & 14/53.1

NOTES:

- ALL ANCHOR POSTS TO BE SPF NO. 2 GRADE (U.O.N.).
- ANCHOR BOLT NUTS TO BE SNUG TIGHT PLUS 1/2 TURN.
- BOLT HOLES THROUGH ANCHOR POSTS SHALL BE A MAXIMUM OF 1/16" LARGER THAN BOLTS.
- ALL HOLDOWN ANCHOR RODS TO BE CAST-IN-PLACE.
- HOLDOWN ANCHORS SHALL BE CAST-IN-PLACE WHERE LABELED WITH "SABR" ON PLAN AND SHALL MEET THE FOLLOWING REQUIREMENTS:
 - SIMPSON SABRS/8x24 ANCHOR BOLTS HAVE A MINIMUM EMBEDMENT OF 1'-6", MINIMUM EDGE DISTANCE OF 1-3/4" & MINIMUM END DISTANCE OF 4-1/4"
 - SIMPSON SABR7/8x28 ANCHOR BOLTS HAVE A MINIMUM EMBEDMENT OF 1'-10", MINIMUM EDGE DISTANCE OF 1-3/4" & MINIMUM END DISTANCE OF 4-1/4"
 - SIMPSON SABR1X30 ANCHOR BOLTS HAVE A MINIMUM EMBEDMENT OF 2'-0", MINIMUM EDGE DISTANCE OF 1-3/4" & MINIMUM END DISTANCE OF 5"
 - SIMPSON SABR11/4x32 ANCHOR BOLTS HAVE A MINIMUM EMBEDMENT OF 2'-2 1/2", MINIMUM EDGE DISTANCE OF 1-3/4" & MINIMUM END DISTANCE OF 5".
 - FOLLOW SIMPSON'S RECOMMENDATIONS FOR INSTALLATION PROCEDURES.

SHEARWALL SCHEDULE				
MARK	SHEATHING	SIDES	NAILING	ANCHOR BOLTS
1	7/16" RATED SHEATHING	1	8d @ 6" O.C.	5/8" DIA. @ 4'-0" O.C.
2	7/16" RATED SHEATHING	1	8d @ 4" O.C.	5/8" DIA. @ 3'-0" O.C.
3	7/16" RATED SHEATHING	1	8d @ 2" O.C.	5/8" DIA. @ 1'-6" O.C.

NOTES:

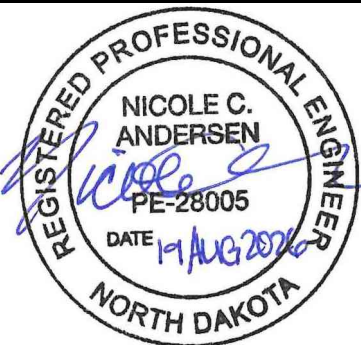
- FASTENERS INTO 7/16" RATED SHEATHING SHALL BE A MINIMUM 8d COMMON NAILS.
- SHEATHING PANEL EDGES TO BE NAILED AS NOTED. INTERMEDIATE SUPPORTS SHALL BE NAILED @ 1'-0" O.C.
- TRUSSES ABOVE SHEARWALLS TO HAVE THE SAME SHEATHING & FASTENING UNLESS DRAG TRUSSES ARE SUPPLIED BY TRUSS MANUFACTURER.
- ALL SHEARWALL SHEATHING MUST BE APPLIED DIRECTLY TO THE STUDS SPACED NO MORE THAN 1'-4" O.C. SHEATHING MAY BE PLACED VERTICALLY OR HORIZONTALLY. APA RATED OSB MAY BE SUBSTITUTED FOR PLYWOOD.
- FRAMING @ ADJOINING PANEL EDGES SHALL BE 3" NOMINAL WHERE FASTENER SPACING IS 2" O.C. AND ALL OTHER EDGES SHALL BE BACKED BY 2" NOMINAL FRAMING.
- SHEATHING TO EXTEND FROM THE FLOOR TO THE ROOF SHEATHING.
- SILL PL. ANCHOR BOLTS MAY BE CAST-IN-PLACE, EXPANSION OR SCREW TYPE. CONTRACTOR SHALL PROVIDE 3"x3"x20.229" STEEL WASHERS FOR ALL SHEARWALL SILL PL. ANCHOR BOLTS. THE WASHER SHALL BE PLACED WITHIN 1/2" FROM THE WALL SHEATHING. SLOTTED HOLES ARE PERMITTED.



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Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

DDN/NCA/HLR

Date:

AUGUST 21, 2026

Revision Date:

Job Number:

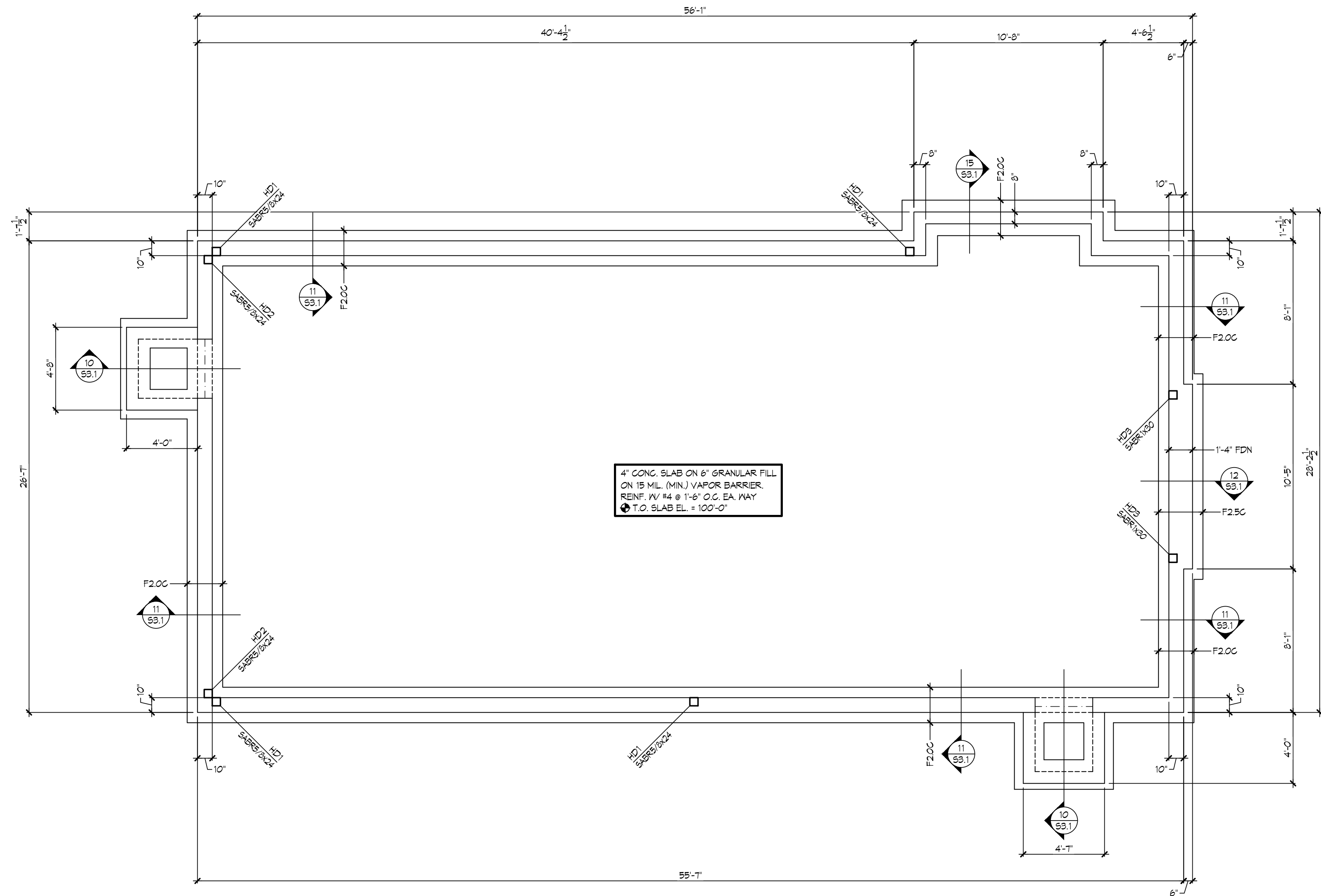
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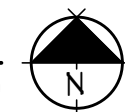
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FOOTING & FOUNDATION PLAN

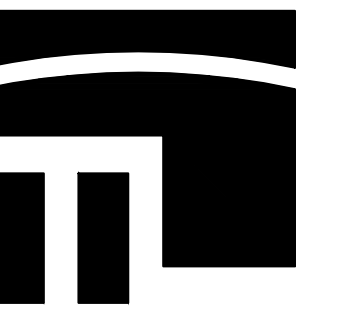
1/4" = 1'-0"

T.O. FTG. EL. = 95'-0" (U.O.N.)



SHEET NOTES:

1. VERIFY ALL DIMENSIONS IV ARCHITECTURAL PLANS WHICH SHALL GOVERN.
2. SEE SHEET S0.1 & S0.2 FOR GENERAL STRUCTURAL NOTES.
3. Ⓢ — = STEPPED FOOTING S.D. 1/53.1.
4. SEE SHEET S0.1 CONCRETE NOTE #12 FOR CCJ/GJ LAYOUT INFORMATION. S.D. 6/53.1 & 7/53.1.
5. VERIFY FINAL GRADING ELEVATIONS WITH CIVIL PLANS & COORDINATE IV TOP OF FOOTING ELEVATIONS.
6. CONTRACTOR TO COORDINATE FOOTING ELEVATIONS IV UTILITIES & MECHANICAL DRAWINGS.
7. S.D. 9/53.1 FOR UTILITIES PENETRATING THE FOUNDATION.
8. COORDINATE LOCATIONS OF MECHANICAL & ELECTRICAL PENETRATIONS THROUGH ALL SLABS.
9. SEE THIS SHEET FOR SHEARWALL ANCHOR BOLT & HOLDOWN LOCATION. SEE HOLDOWN SCHEDULE ON S0.2 FOR ANCHOR BOLT REQUIREMENTS.
10. SEE SHEARWALL SCHEDULE ON S0.2 FOR BOTTOM PL. FASTENING. SEE NOTE SHEET S0.2 FOR ALL OTHER ANCHOR BOLTS.
11. F# - FOOTING MARK - SEE FOOTING SCHEDULE ON SHEET S0.2.
12. HD# - HOLDOWN MARK - SEE HOLDOWN SCHEDULE ON SHEET S0.2.



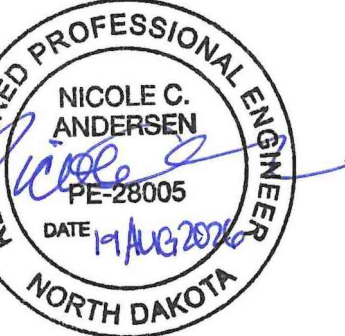
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Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:
DDN/NCA/HRL

Date:
AUGUST 21, 2026

Revision Date:

Job Number:
2026.25

Sheet Name:
FOOTING &
FOUNDATION PLAN

Sheet Number:

S1.1



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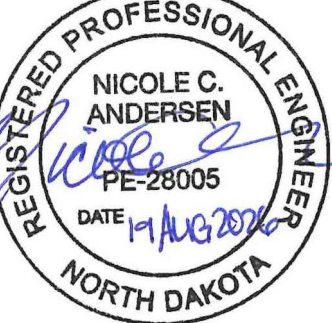
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Project:



New Facility
For:
212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:
DDN/NCA/HRL

Date:
AUGUST 21, 2026

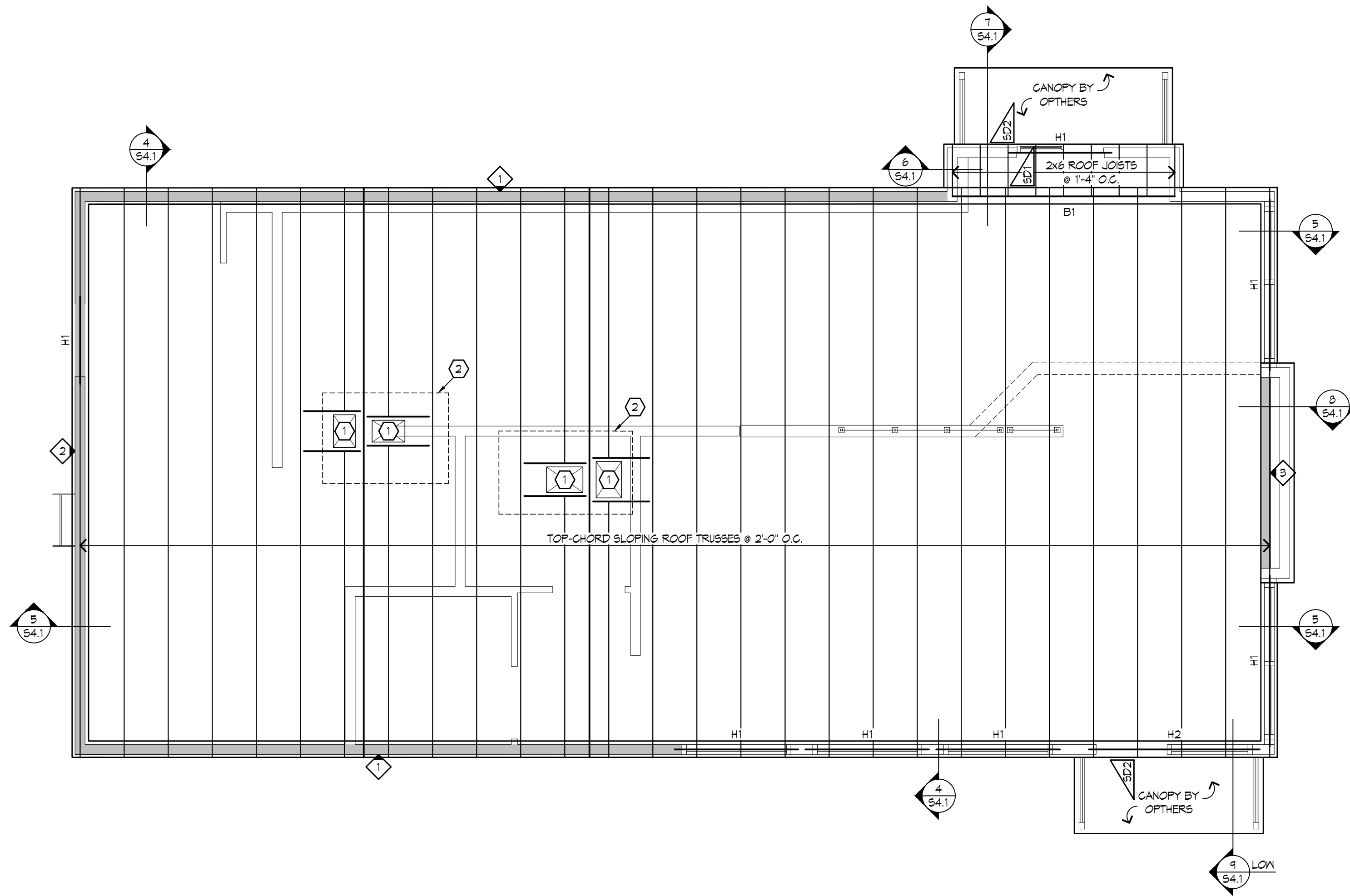
Revision Date:

Job Number:
2026.25

Sheet Name:
ROOF FRAMING
PLAN

Sheet Number:

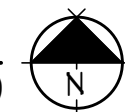
S2.1



ROOF FRAMING PLAN

1/4" = 1'-0"

TRUSS BRG. EL. = 112'-6" (U.O.N.)

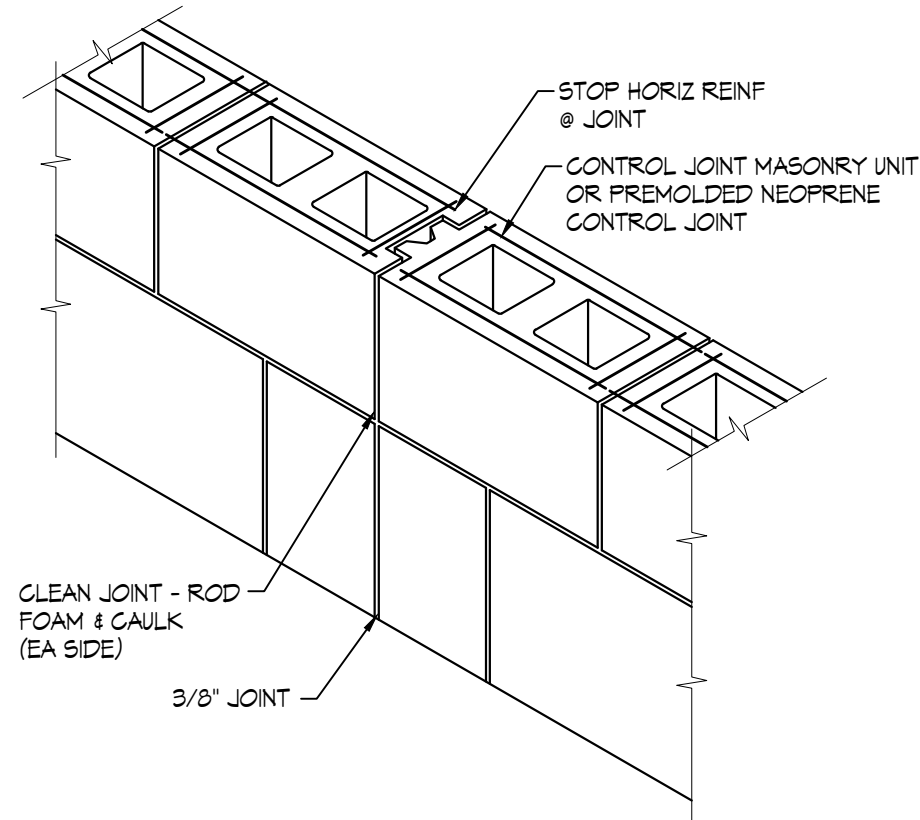


SHEET NOTES:

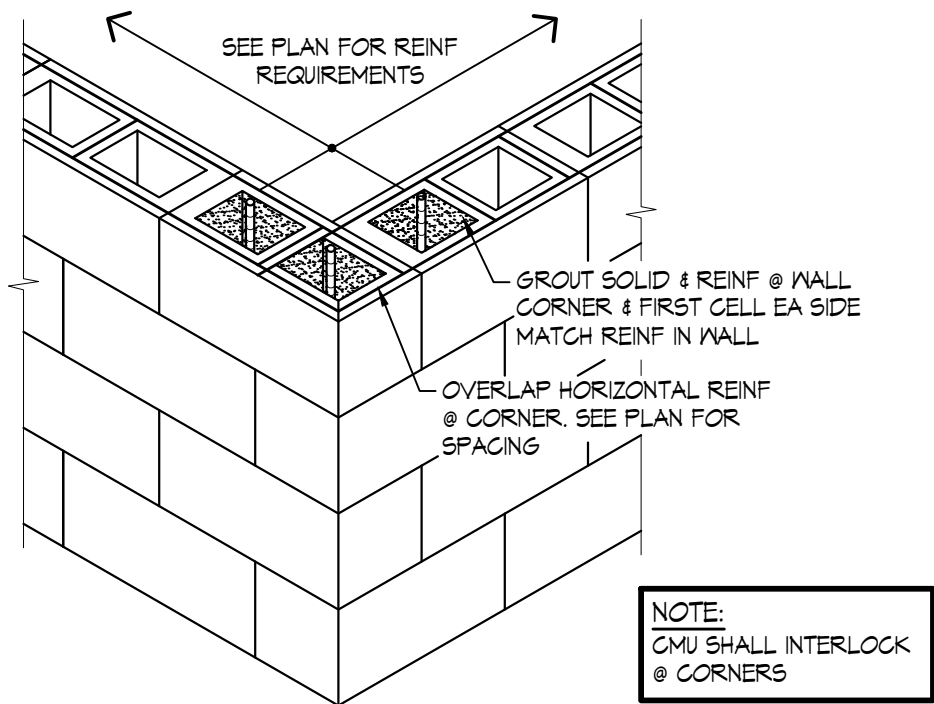
1. VERIFY ALL DIMENSIONS IV/ ARCHITECTURAL PLANS WHICH SHALL GOVERN.
2. SEE SHEET S0.1 & S0.2 FOR GENERAL STRUCTURAL NOTES.
3. ALL FIRST FLOOR EXTERIOR & BEARING WALLS SHALL BE 2x6 SPF No. 2 GRADE OR BETTER @ 1'-4" O.C. (U.O.N.). ALL OTHER WALLS SHALL BE 2x SPF. STUD GRADE OR BETTER @ 1'-4" O.C.
4. ROOF SHEATHING TO BE 1/2" T&G APA RATED SHEATHING IV/ 32/16 SPAN RATINGS.
5. TRUSS LAYOUT IS SCHEMATIC ONLY. VERIFY FINAL TRUSS SPACING IV/ SHOP DRAWINGS. SLOPE TOP CHORD OF TRUSSES PER ARCHITECTURAL PLANS.
6. VERIFY OPENINGS IV/ ARCHITECTURAL & MECHANICAL.
7. ALL POSTS SHALL BE CONTINUOUS DOWN TO FOUNDATION.
8. PROVIDE 3 - 2x8 HEADER FOR ALL MECHANICAL PENETRATIONS UP TO 2'-0" WIDE.
9. VERIFY SIZE, WEIGHT & LOCATIONS OF MECHANICAL UNITS IV/ MECHANICAL DRAWINGS.
10. - SHEARWALL TYPE - SEE SHEARWALL SCHEDULE ON SHEET S0.2. SHADING INDICATES EXTENT OF SHEARWALL.
11. H# - HEADER MARK - SEE HEADER SCHEDULE ON SHEET S0.2.
12. B# - BEAM MARK - SEE BEAM SCHEDULE ON SHEET S0.2.

KEY NOTES:

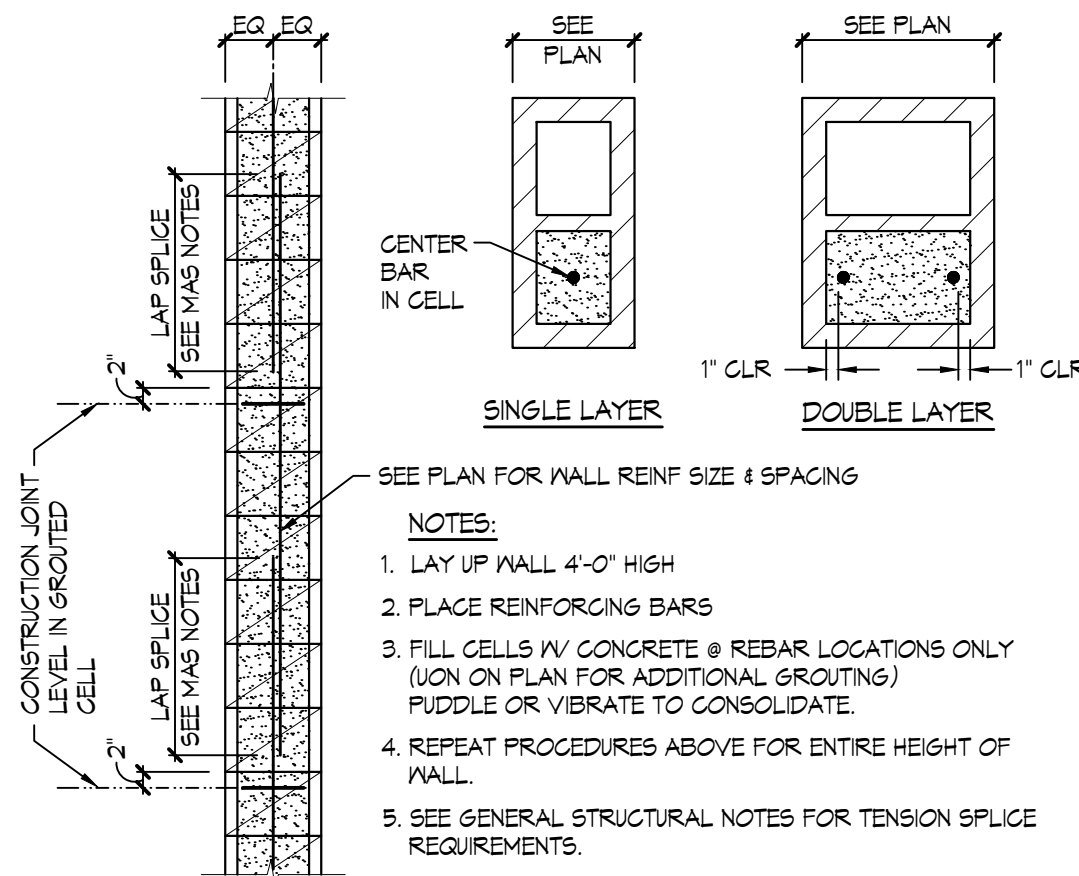
- ① OPENING THRU ROOF - HEADER BY TRUSS SUPPLIER AS REQ'D.
- ② RTU - SEE MECHANICAL DRAWINGS FOR SIZE, WEIGHT, & LOCATION



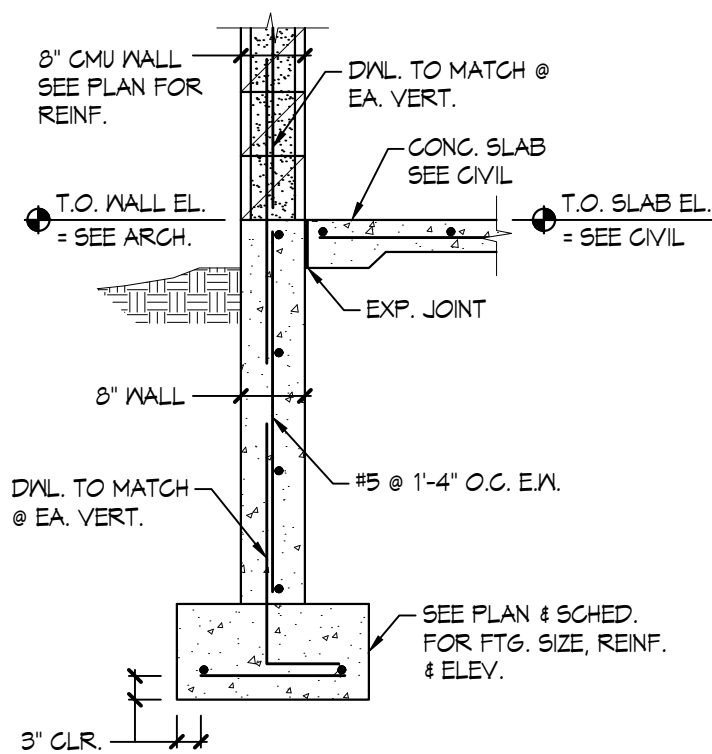
4 MASONRY WALL CONTROL JOINT
S2.2 NO SCALE



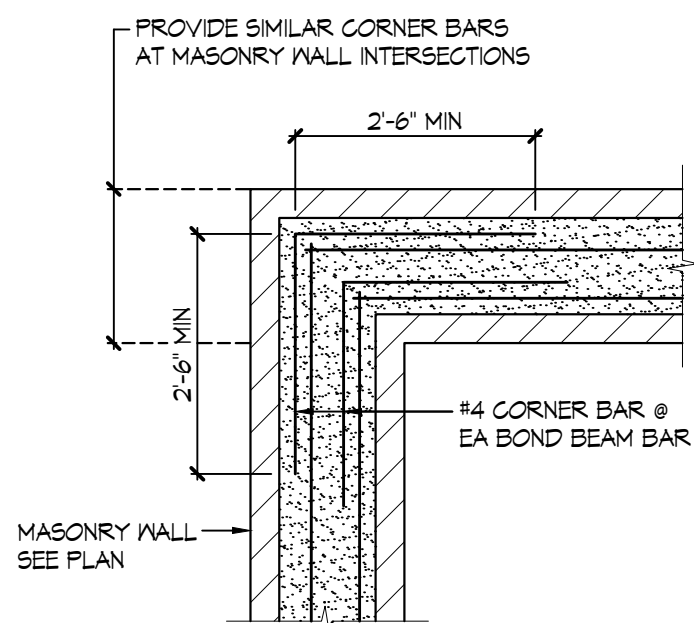
3 MASONRY WALL CORNER DETAIL
S2.2 NO SCALE



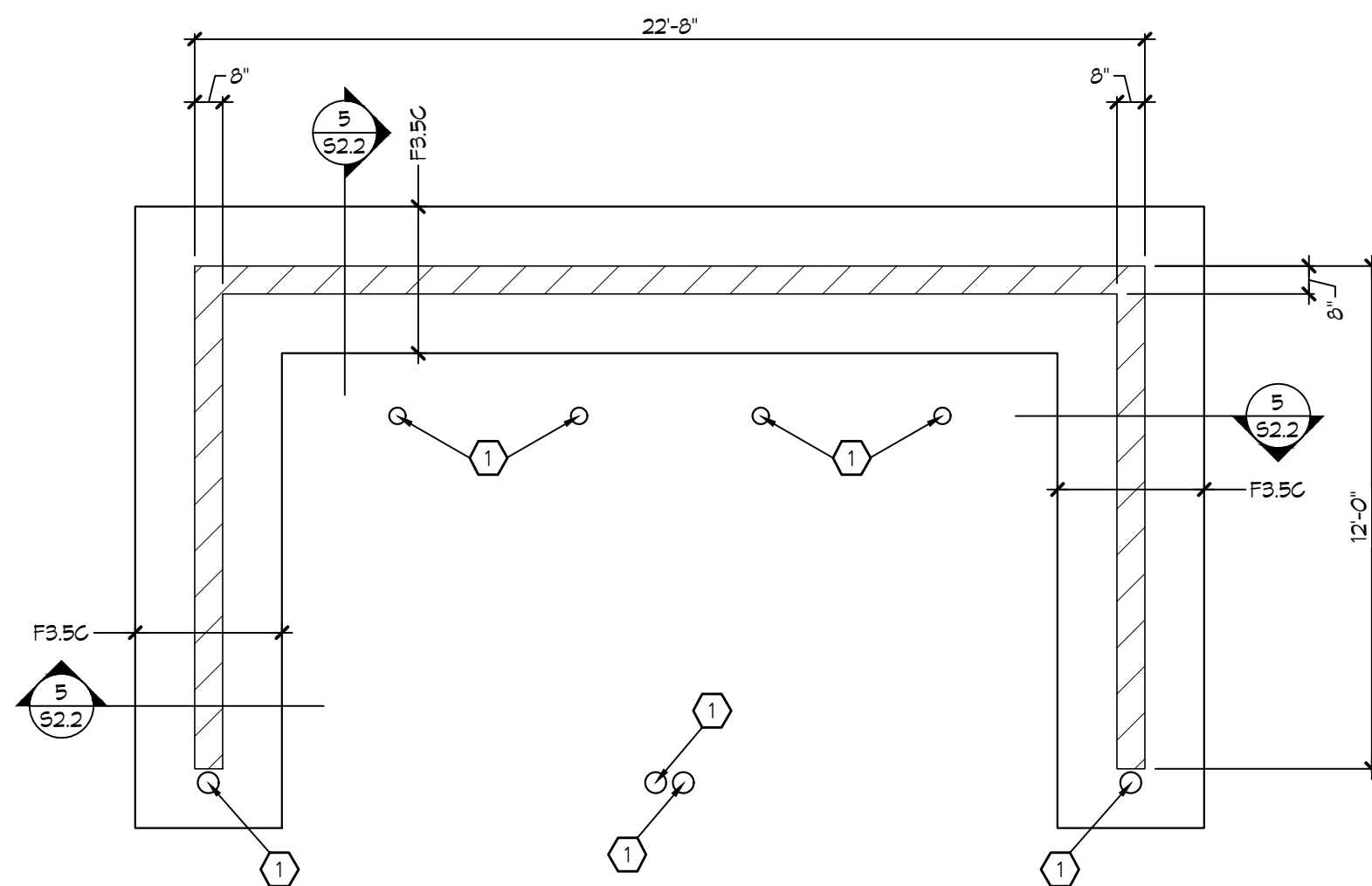
2 REINFORCED MASONRY WALL
S2.2 NO SCALE



5 EXTERIOR FOUNDATION WALL DETAIL
S2.2 1/2" = 1'-0"



1 MASONRY CORNER REINFORCING
S2.2 NO SCALE



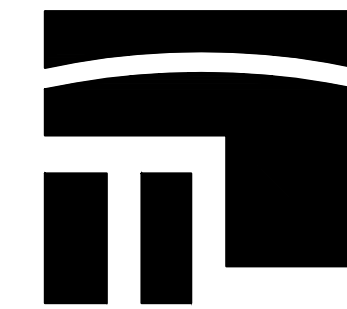
DUMPSTER ENCLOSURE FOOTING & FOUNDATION PLAN
1/4" = 1'-0" T.O. FTG. EL. = 93'-0" (U.O.N.)

SHEET NOTES:

1. VERIFY ALL DIMENSIONS IV ARCHITECTURAL PLANS WHICH SHALL GOVERN.
2. SEE SHEET S0.1 & S0.2 FOR GENERAL STRUCTURAL NOTES.
3. VERIFY FINAL GRADING ELEVATIONS WITH CIVIL PLANS & COORDINATE IV TOP OF FOOTING ELEVATIONS.
4. CONTRACTOR TO COORDINATE FOOTING ELEVATIONS IV UTILITIES & MECHANICAL DRAWINGS.
5. S.D. 9/53.1 FOR UTILITIES PENETRATING THE FOUNDATION.
6. REINFORCE 8" CMU IV #5 VERTICALS @ 2'-0" O.C. IV 3 - #5 @ ALL CORNERS & 2 - #5 @ ALL ENDS. S.D. 3/52.2. PROVIDE CONTINUOUS 8" BOND BEAM @ TOP OF WALL IV 2 - #5 CONTINUOUS.
7. F# - FOOTING MARK - SEE FOOTING SCHEDULE ON SHEET S0.2.

KEY NOTES:

1. BOLLARDS BY OTHERS - SEE ARCH./CIVIL DRAWINGS



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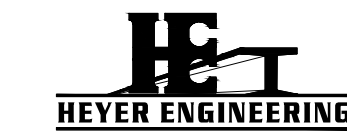
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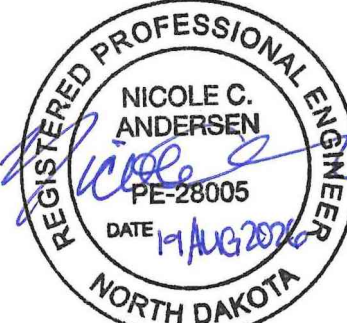
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Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

DDN/NCA/HLR

Date:

AUGUST 21, 2026

Revision Date:

Job Number:

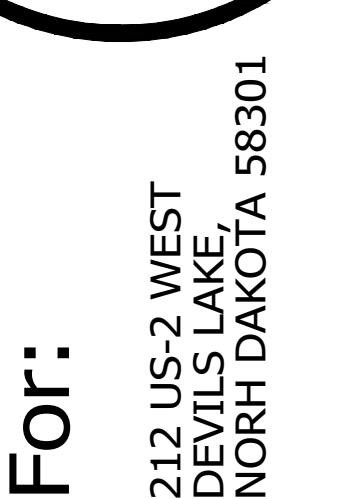
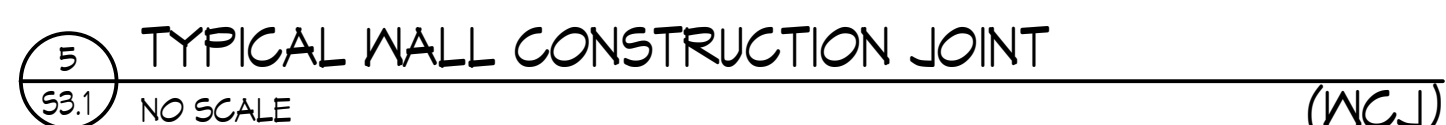
2026.25

Sheet Name:

DUMPSTER
ENCLOSURE PLAN
& DETAILS

Sheet Number:

S2.2



US-2 WEST
MILLS LAKE, ND 58301

Drawn By:
N/NCA/HRL

te:
AUGUST 21, 2026

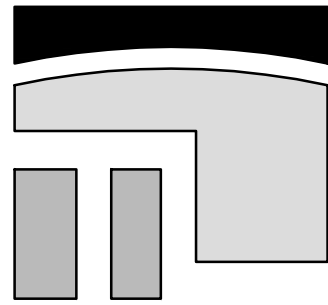
Division Date:

o Number:
026.25

Sheet Name:
NOTING &
FOUNDATION
TAILS

Sheet Number:

53.1



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

TS

Date AUGUST 21, 2026 Reg. No. 923

Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

TS, MB

Date:

AUGUST 21, 2026

Revision Date:

Job Number:

2026.25

Sheet Name:

Specification
Sheet

Sheet Number:

G001

DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01 1050
FIELD BENCHMARK AND SURVEY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- Survey and Benchmark requirements to professionally layout corners and elevations of building components that are shown on Civil, Architectural and referenced on Mechanical, and Electrical Drawings.
 - Components included but are not limited to: footings, foundations, electrical and mechanical entrances, foundations, slabs or floors, stoops, generator building and dumpster enclosure.
 - The intent is that all dimensions needed to accurately layout the general, mechanical, utilities and electrical portion of the building are taken from plans, located, marked and preserved on site.
- Quality Assurance.
- Submittals.
- Record Document Requirements.

1.02 RELATED SECTIONS

- Documents affecting work of this section include, but are not limited to, General Conditions, all Supplementary Conditions, and Sections in Division 0 and 1 of these Specifications.

1.03 INFORMATION PROVIDED BY OWNER

- Plans.
- Base location is that shown on layout plan by the Architect, confirm with Owner.
- Grid line system defining work areas shown on the plan.
- Elevation as shown on plans, based on top of floor slab as elevation 100.

1.04 SUBMITTALS

- See Section 01 3000 - Administrative Requirements, for submittal procedures.
- Submit name, address, telephone number and registration license # of registered land surveyor before starting survey work.
- On request, submit documentation verifying accuracy of survey work.
- Submit a copy of site drawing and a certificate signed by the Land Surveyor, that the benchmark elevations and corner locations of the site and as transferred to the work site and finished floors are in conformance with Contract Documents.

1.05 PROJECT RECORD DOCUMENTS

- Maintain a complete and accurate log of benchmark and survey work as it progresses.
- Submit Record Documents under provisions of Section 01 7000.
 - Provide one (1) copy of the logs, drawings and notes to the Owner through the Engineer.

1.06 QUALITY ASSURANCE

- Construction Manager managing the construction shall employ a Land Surveyor registered in the State of North Dakota and acceptable to Owner/Architect/Engineering, to perform survey work of this section.
 - Owner and/or Architect shall have the right of refusal, without prejudice, of the Contractor's selected Registered Land Surveyor. If this occurs the contractor will submit another Registered Land Surveyor for consideration. If an adjustment of cost is required it shall be by project Change Order.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

- Establish and protect a survey control benchmark prior to starting work.
- Review and verify accuracy of information of horizontal dimensions and elevations shown in construction documents prior to starting work.
- Promptly notify Engineer of any discrepancies discovered.

3.02 SURVEY AND LOCATIONS OF REFERENCE POINTS

- Locate and protect survey control and reference points.
 - Control datum for survey control benchmarks is to be based on Surveyor's marks. See Civil Engineer's site plan.
- This Contractor shall provide for use of all other Contractors and Subcontractors on the site the following elevations and survey corner markings.
 - Transfer of the benchmark elevations to a location, which will not be demolished, within the construction work site.
 - Permanent benchmarks for elevations and exterior corners of the construction limits.
 - This is for all floors and all work whether interior or exterior, including offsets.
 - Use 20'-0" offsets unless otherwise directed.
 - Locate entrances for utilities including inverts into the buildings.
- Protect survey control points prior to starting site work.
- The Contractor shall anticipate means and methods that will result in the preservation of all permanent reference points and benchmarks during construction.
 - Promptly report to Owner the loss or destruction of any reference point, benchmark or relocation required because of the changes in grades, destruction during construction or other reasons.
 - Replace dislocated survey control points; benchmarks and reference points based on original survey control. Make no changes without prior written notice to Owner.

3.03 SURVEY REQUIREMENTS

- Contractor shall utilize a Registered Land Surveyor provide field engineering services to provide the information required in Part 1 and 2 of this specification. Utilize recognized engineering survey practices.
- Establish a minimum of two permanent benchmarks on site, referenced to established control points. Record locations, with horizontal and vertical data, on the project record documents.
- Establish elevations, lines and levels. Locate and layout by instrumentation and similar appropriate means:
 - Make all site notations and markings on materials that are not scheduled for demolition and are visible in the work area or on suitable exterior grade stakes and batter boards.

END OF SECTION

SECTION 01 1130
FINISH SCHEDULE

PART 1 GENERAL

1.01 SUBMITTALS

- See Section 01 3000 - Administrative Requirements, for submittal procedures.
- Shop Drawings: Indicate in individual specification sections.
- Maintenance Data: Indicate in individual specification sections.
- Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.02 WARRANTY

- See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

1.03 EXTRA MATERIALS

- See Section 01 6000 - Product Requirements, for additional provisions.

1.04 FINISH SCHEDULE: SEE ATTACHED SHEET A2.4.

END OF SECTION

SECTION 01 1400
WORK RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- Work Restrictions (Site Access, Occupant Coordination, Site Use).

1.02 RELATED REQUIREMENTS

- Section 01 3000 - Administrative Requirements: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.

- Section 01 5000 - Temporary Facilities and Controls.

1.03 WORK RESTRICTIONS

- Smoking is not permitted on the project site or in buildings and structures.
- Consuming prepared foods is allowed on the construction site and within the building. If this privilege is abused, food will no longer be allowed within the building and must be consumed in a job trailer or outside the building.
- Radios, tape players, compact disc players, ect. are not allowed on the construction site and within the building.

END OF SECTION

SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- Procedures for preparation and submittal of applications for progress payments.
- Documentation of changes in Contract Price and Contract Time.
- Change procedures.
- Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

- Section 01 2100 - Allowances: Payment procedures relating to allowances.

1.03 SCHEDULE OF VALUES

- Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- Forms filled out by hand will not be accepted.
- Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.
- Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- Payment Period: Submit at intervals stipulated in the Agreement.
- Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- Forms filled out by hand will not be accepted.
- For each item, provide a column for listing each of the following:
 - Item Number.
 - Description of work.
 - Scheduled Values.
 - Previous Applications.
 - Work in Place and Stored Materials under this Application.
 - Authorized Change Orders.
 - Total Completed and Stored to Date of Application.
 - Percentage of Completion.
 - Balance to Finish.
 - Retainage.
- Execute certification by signature of authorized officer.
- Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- Submit one electronic and three hard-copies of each Application for Payment.
- Include the following with the application:
 - Transmittal letter as specified for submittals in Section 01 3000.
 - Construction progress schedule, revised and current as specified in Section 01 3000.
 - Partial release of liens from major subcontractors and vendors.

1.05 MODIFICATION PROCEDURES

- Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- For minor changes not involving an adjustment to the Contract Price or Contract Time, Architect will issue instructions directly to Contractor.
- For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - The document will describe the required changes and will designate method of determining any change in Contract Price or Contract Time.
 - Promptly execute the change.
- Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation. Document any requested substitutions in accordance with Section 01 6000.
- Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 - For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- Substantiation of Costs: Provide full information required for evaluation.
 - On request, provide the following data:
 - Quantities of products, labor, and equipment.
 - Taxes, insurance, and bonds.
 - Overhead and profit.
 - Justification for any change in Contract Time.
 - Credit for deletions from Contract, similarly documented.
 - Support each claim for additional costs with additional information:
 - Origin and date of claim.
 - Dates and times work was performed, and by whom.
 - Time records and wage rates paid.
 - Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 - For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price.
- Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

- Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Price, previous payments, and sum remaining due.
- Application for Final Payment will not be considered until the following have been accomplished:
 - All closeout procedures specified in Section 01 7000.

END OF SECTION

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- General administrative requirements.
- Electronic document submittal service.
- Progress meetings.
- Construction progress schedule.
- Coordination drawings.
- Submittals for review, information, and project closeout.
- Number of copies of submittals.
- Requests for Interpretation (RFI) procedures.
- Submittal procedures.

1.02 RELATED REQUIREMENTS

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

- Comply with requirements of Section 01 7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- Make the following types of submittals to Architect:
 - Requests for Interpretation (RFI).
 - Requests for substitution.
 - Shop drawings, product data, and samples.
 - Test and inspection reports.
 - Design data.
 - Manufacturer's instructions and field reports.
 - Applications for payment and change order requests.
 - Progress schedules.
 - Coordination drawings.
 - Correction Punch List and Final Correction Punch List for Substantial Completion.
 - Closeout submittals.

1.04 PROJECT COORDINATOR

- Project Coordinator: Construction Manager.
- Cooperate with the Project Coordinator in allocation of mobilization areas of site, for field offices and sheds, for site access, traffic, and parking facilities.
- During construction, coordinate use of site and facilities through the Project Coordinator.
- Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations, and resolution of ambiguities and conflicts.
- Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is identified in Section 01 1000 - Summary.
- Coordinate field engineering and layout work under instructions of the Project Coordinator.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROGRESS MEETINGS

- Schedule and administer meetings throughout progress of the work at maximum weekly intervals.
- Project Coordinator will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- Attendance Required:
 - Contractor.
 - Owner.
 - Architect.
 - Contractor's superintendent.
 - Major subcontractors.
- Agenda:
 - Review minutes of previous meetings.
 - Review of work progress.
 - Field observations, problems, and decisions.
 - Identification of problems that impede, or will impede, planned progress.
 - Review of submittals schedule and status of submittals.
 - Review of RFIs log and status of responses.
 - Review of off-site fabrication and delivery schedules.
 - Maintenance of progress schedule.
 - Corrective measures to regain projected schedules.
 - Planned progress during succeeding work period.
 - Maintenance of quality and work standards.
 - Effect of proposed changes on progress schedule and coordination.
 - Other business relating to work.
- Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 CONSTRUCTION PROGRESS SCHEDULE

- Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
- If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - Include written certification that major contractors have reviewed and accepted proposed schedule.
- Within 10 days after joint review, submit complete schedule.
- Submit updated schedule with each Application for Payment.

3.03 COORDINATION DRAWINGS

- Provide information required by Project Coordinator for preparation of coordination drawings.
- Review drawings prior to submission to Architect.

3.04 REQUESTS FOR INFORMATION (RFI)

- Definition: A request seeking one of the following:
 - An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
 - A resolution to an issue which has arisen due to field conditions and affects design intent.
- Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming delays in costs or delays in execution of the work.
 - Prepare a separate RFI for each specific item:
 - Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - Do not forward requests which solely require internal coordination between subcontractors.
- Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
 - Official Project name and number, and any additional required identifiers established in Contract Documents.
- Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

3.05 SUBMITTALS FOR REVIEW

- When the following are specified in individual sections, submit them for review:

- Product data.
 - Shop drawings.
 - Samples for selection.
 - Samples for verification.
- Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
 - Samples will be reviewed for aesthetic, color, or finish selection.
 - After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.
- 3.06 SUBMITTALS FOR PROJECT CLOSEOUT**
- Submit Correction Punch List for Substantial Completion.
 - Submit Final Correction Punch List for Substantial Completion.
 - When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
 - Project record documents.
 - Operation and maintenance data.
 - Warranties.
 - Bonds.
 - Other types as indicated.
 - Submit for Owner's benefit during and after project completion.

3.07 NUMBER OF COPIES OF SUBMITTALS

- Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 - After review, produce duplicates.
 - Retained samples will not be returned to Contractor unless specifically so stated.

3.08 SUBMITTAL PROCEDURES

- General Requirements:
 - Use a separate transmittal for each item.
 - Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
 - Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
- Product Data Procedures:
 - Submit only information required by individual specification sections.
 - Collect required information into a single submittal.
 - Do not submit (Material) Safety Data Sheets for materials or products.
- Shop Drawing Procedures:
 - Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 - Do not reproduce Contract Documents to create shop drawings.
 - Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- Samples Procedures:
 - Transmit related items together as single package.
 - Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

3.09 SUBMITTAL REVIEW

- Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
- Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- Architect's and consultants' actions on items submitted for review:
 - Authorizing purchasing, fabrication, delivery, and installation:
 - "Approved", or language with same legal meaning.
 - "Approved as Noted, Resubmission not required", or language with same legal meaning.
 - At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 - "Approved as Noted, Resubmit for Record", or language with same legal meaning.
 - Not Authorizing fabrication, delivery, and installation:
- Architects and consultants' actions on items submitted for information:
 - Items for which no action was taken:
 - "Received" - to notify the Contractor that the submittal has been received for record only.
 - Items for which action was taken:
 - "Reviewed" - no further action is required from Contractor.

END OF SECTION

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- Submittals.
- Quality assurance.
- References and standards.
- Testing and inspection agencies and services.
- Control of installation.
- Tolerances.
- Defect Assessment.

1.02 RELATED REQUIREMENTS

- Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCE STANDARDS

- ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2023).
- ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2026.
- ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.
- ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2025b.
- ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2026.
- IAS AC89 - Accreditation Criteria for Testing Laboratories; 2025.

1.04 SUBMITTALS

- See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.05 QUALITY ASSURANCE

- Testing Agency Qualifications:
 - Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.
- Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide

services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.06 REFERENCES AND STANDARDS

- For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- Obtain copies of standards where required by product specification sections.
- Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.07 TESTING AND INSPECTION AGENCIES AND SERVICES

- Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- Contractor Employed Agency:
 - Laboratory Qualifications: Accredited by IAS according to IAS AC89.
 - Laboratory: Authorized to operate in the State in which the Project is located.
 - Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
 - Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- Comply with manufacturers' instructions, including each step in sequence.
- Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- Comply with specified standards as minimum quality for the work except where more stringent tolerance codes, or specified requirements indicate higher standards or more precise workmanship.
- Have work performed by persons qualified to produce required and specified quality.
- Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- Adjust products to appropriate dimensions; position before securing products in place.

3.03 TESTING AND INSPECTION

- See individual specification sections for testing and inspection required.
- Testing Agency Duties:
 - Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - Perform specified sampling and testing of products in accordance with specified standards.
 - Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 - Perform additional tests and inspections required by Architect.
 - Submit reports of all tests/inspections specified.
- Limits on Testing/Inspection Agency Authority:
 - Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - Agency may not approve or accept any portion of the Work.
 - Agency may not assume any duties of Contractor.
 - Agency has no authority to stop the Work.
- Contractor Responsibilities:
 - Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - Provide incidental labor and facilities:
 - To provide access to Work to be tested/inspected.
 - To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - To facilitate tests/inspections.
 - To provide storage and curing of test samples.
 - Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 - Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.04 DEFECT ASSESSMENT

- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
- C. Where other criteria are met, Contractor shall give preference to products that:
- If used on interior, have lower emissions, as defined in Section 01 6116.
 - If wet-applied, have lower VOC content, as defined in Section 01 6116.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.03 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

- A. See Section 01 2500 - Substitution Procedures.

3.02 OWNER-SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
- Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
 - Arrange and pay for product delivery to site.
 - On delivery, inspect products jointly with Contractor.
 - Submit claims for transportation damage and replace damaged, defective, or deficient items.
 - Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
- Review Owner reviewed shop drawings, product data, and samples.
 - Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 - Handle, store, install and finish products.
 - Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weatherlight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 7000

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Cutting and patching.
- C. Surveying for laying out the work.
- D. Cleaning and protection.
- E. Starting of systems and equipment.
- F. Demonstration and instruction of Owner personnel.
- G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- H. General requirements for maintenance service.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
- On request, submit documentation verifying accuracy of survey work.
 - Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
 - Submit surveys and survey logs for the project record.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
- Structural integrity of any element of Project.
 - Integrity of weather exposed or moisture resistant element.
 - Efficiency, maintenance, or safety of any operational element.
 - Visual qualities of sight exposed elements.
 - Work of Owner or separate Contractor.
- Include in request:
- Identification of Project.
 - Location and description of affected work.
 - Necessity for cutting or alteration.
 - Description of proposed work and products to be used.
 - Effect on work of Owner or separate Contractor.
 - Written permission of affected separate Contractor.

- g. Date and time work will be executed.

- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.03 QUALIFICATIONS

- A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities.

1.04 PROJECT CONDITIONS

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- C. Perform dewatering activities, as required, for the duration of the project.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- Minimize amount of bare soil exposed at one time.
 - Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - Construct fill and waste areas by selective placement to avoid erosive surface silts or dunes.
 - Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- F. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.05 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Control datum for survey is that indicated on drawings.
- E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- H. Utilize recognized engineering survey practices.
- I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
- Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - Grid or axis for structures.
 - Building foundation, column locations, ground floor elevations.
- J. Periodically verify layouts by same means.
- K. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

- A. On all products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. Perform whatever cutting and patching is necessary to:
- Complete the work.
 - Fit products together to integrate with other work.
 - Provide openings for penetration of mechanical, electrical, and other services.
 - Match work that has been cut to adjacent work.

- Repair areas adjacent to cuts to required condition.
- Repair new work damaged by subsequent work.
- Remove samples of installed work for testing when requested.
- Remove and replace defective and non-complying work.

- C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

- D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- F. Restore work with new products in accordance with requirements of Contract Documents.
- G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- I. Patching:
- Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - Match color, texture, and appearance.
 - Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jams, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and Owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.09 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

3.10 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- Clear areas to be occupied by Owner prior to final completion before Owner occupancy.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, drainage systems, and _____
- H. Clean site, sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
- H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.13 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

DIVISION 03 - CONCRETE

SECTION 03 1000 CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formwork for cast-in-place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Concrete Reinforcing.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 31 2316 - Excavation: Shoring and underpinning for excavation.

1.03 REFERENCE STANDARDS

- A. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials and Commentary; 2010 (Reapproved 2015).
- B. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- C. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices; 2025.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on void form materials and installation requirements.
- C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.
- C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

2.02 FORM MATERIALS

- A. Form Materials: At the discretion of the Contractor.

2.03 FORMWORK ACCESSORIES

- A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch (25 mm) in concrete surface.
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
- Do not use materials containing diesel oil or petroleum-based compounds.
 - Composition: Colorless, reactive, water-based compound.
 - Products:
 - Kaufman Products Inc; FormKote Emulsion: www.kaufmanproducts.net/#tle.
 - Nox-Crete Inc; BIO-NOX: www.nox-crete.com/#tle.
 - SpecChem, LLC; Bio Strip WB (water-based): www.specchemllc.com/#tle.
 - Substitutions: See Section 01 6000 - Product Requirements.
 - Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 1200.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

- A. Earth forms are not permitted.

3.03 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI SPEC-301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Coordinate this section with other sections of work that require attachment of components to formwork.

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

3.06 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
- Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
 - During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI SPEC-117, unless otherwise indicated.
- B. Construct permanent insulated foam panel formwork to maintain tolerances required by ACI SPEC-301.
- C. Construct and align formwork for elevator hoistway in accordance with ASME A17.1.

3.08 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

3.09 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

SECTION 03 2000

CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories.
- B. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

- A. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2026.
- C. CRSI (DA4) - Manual of Standard Practice; 2024.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
- Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in the State in which the Project is located.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI SPEC-301.
- B. Provide Architect with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) (420 MPa).
- Deformed billet-steel bars.
 - Unfinished.
- B. Reinforcement Accessories:
- Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch (1.29 mm).
 - Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.02 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Welding of reinforcement is not permitted.

PART 3 EXECUTION

3.01 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Comply with applicable code for concrete cover over reinforcement.

3.02 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 4000 - Quality Requirements, will inspect installed reinforcement for compliance with contract documents before concrete placement.

END OF SECTION

SECTION 03 3000

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Floors and slabs on grade.
- B. Concrete foundation walls and footings.
- C. Joint devices associated with concrete work.
- D. Miscellaneous concrete elements, including equipment pads, equipment pits, light pole bases, flagpole bases, thrust blocks, and manholes.
- E. Concrete curing.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories: Forms and accessories for formwork.
- B. Section 03 2000 - Concrete Reinforcing.
- C. Section 07 9200 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code for Structural Concrete—Code Requirements and Commentary; 2025.
- B. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.
- C. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- D. ACI PRC-308 - Curing of Concrete—Guide; 2026.
- E. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- F. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2026.
- G. ASTM C143/C143M - Standard Test Method for Slump of Concrete; 2026b.
- H. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2024.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- C. Mix Design: Submit proposed concrete mix design.
- Indicate proposed mix design complies with requirements of ACI SPEC-301, Section 4 - Concrete Mixtures.
 - Indicate proposed mix design complies with requirements of ACI CODE-318, Chapter 5 - Concrete Quality, Mixing and Placing.
- D. Test Reports: Submit report for each test or series of tests specified.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Verify that forms are clean and free of rust before applying release agent.
- B. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- C. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches (150 mm). Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
1. Vapor Retarder Over Granular Fill: Install compatible granular fill before placing vapor retarder as indicated on drawings. Do not use sand.

3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI PRC-304.
- B. Place concrete for floor slabs in accordance with ACI PRC-302.1.
- C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- D. Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- F. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.04 SLAB JOINTING

- A. Locate joints as indicated on drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

3.05 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.06 CONCRETE FINISHING

- A. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
1. Other Surfaces to Be Left Exposed: Trowel as described in ACI PRC-302.1, minimizing burnish marks and other appearance defects.

3.07 CURING AND PROTECTION

- A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Surfaces Not in Contact with Forms:
1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
2. Final Curing: Begin after initial curing but before surface is dry.

3.08 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards (76 cu m) or less of each class of concrete placed.
- F. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.09 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. 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.

3.10 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

DIVISION 04 - MASONRY
SECTION 04 2613
MASONRY C.M.U. AND VENEER

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete block.
- B. Clay facing brick.
- C. Mortar and grout.
- D. Reinforcement and anchorage.
- E. Flashings.
- F. Installation of lintels.
- G. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood stud backup for masonry veneer.
- B. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- B. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2022.
- C. ASTM C90 - Standard Specification for Dry-Cast Loadbearing Concrete Masonry Units; 2024a.
- D. ASTM C91/C91M - Standard Specification for Masonry Cement; 2025.
- E. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale); 2026a.
- F. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2026.
- G. ASTM C476 - Standard Specification for Grout for Masonry; 2023.
- H. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.
- I. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
- J. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and mortar.
- C. Samples: Submit four samples of decorative block units to illustrate color, texture, and extremes of color range.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.06 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
1. Size: Standard units with nominal face dimensions of 16 by 8 inches (400 by 200 mm) and nominal depth of 8 inches (200 mm).
2. Special Shapes: Provide non-standard blocks configured for corners.
3. Load-Bearing Units: ASTM C90, normal weight.
- a. Hollow block, as indicated.
- b. Exposed Faces: Manufacturer's standard color and texture where indicated.

2.02 BRICK UNITS

- A. Manufacturers:
1. Belden Brick; www.beldenbrick.com.
- B. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
1. Color and Texture: Titanium Velour (Verify with Owner).
2. Nominal Size: As indicated on drawings.

2.03 MORTAR AND GROUT MATERIALS

- A. Masonry Cement: ASTM C91/C91M Type N.
1. Colored Mortar: Premixed cement as required to match Architect's color sample.
- B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
- C. Water: Clean and potable.

2.04 REINFORCEMENT AND ANCHORAGE

- A. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Anchor plates: Not less than 0.075 inch (1.91 mm) thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
2. Wire ties: Manufacturer's standard shape, 0.1875 inch (4.75 mm) thick.
3. Vertical adjustment: Not less than 3-1/2 inches (89 mm).
- B. Strap Anchors: Bent steel shapes, 1-1/2-inch (38 mm) width, 0.105-inch (2.7 mm) thickness, 24-inch (610 mm) length; with 1-1/2 inches (38 mm) long, 90-degree bend at each end to form U or Z shape or with cross pins; hot-dip galvanized in accordance with ASTM A153/A153M Class B.

2.05 FLASHINGS

- A. Metal Flashing Materials:
1. Copper Flashing: ASTM B370, 060 soft annealed; 20 oz/sq ft (0.7 mm) thick; natural finish.

2.06 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
- B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; in maximum lengths available.
- C. Cavity Vents:
1. Type: Polyester mesh.
2. Color(s): As selected by Architect from manufacturer's full range.
- D. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
- E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.07 MORTAR AND GROUT MIXING

- A. Mortar for Unit Masonry: ASTM C270, Proportion Specification.
1. Exterior, non-loadbearing masonry; Type N.
- B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
- C. Grout: ASTM C476; consistency as required to fill volumes completely for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches (50 mm) or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches (50 mm).
- D. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
1. Bond: Running.
2. Coursing: One unit and one mortar joint to equal 8 inches (200 mm).
3. Mortar Joints: Concave.
- D. Brick Units:
1. Bond: Running.
2. Coursing: Three units and three mortar joints to equal 8 inches (200 mm).
3. Mortar Joints: Concave.

3.03 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar as work progresses.
- E. Interlock intersections and external corners, except for units laid in stack bond.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

3.04 WEEPS/CAVITY VENTS

- A. Install cavity vents in veneer walls at 32 inches (800 mm) on center horizontally below shelf angles and lintels and at top of walls.

3.05 CAVITY MORTAR CONTROL

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.06 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

- A. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches (400 mm) each side of opening.
- B. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches (400 mm) on center vertically and 24 inches (600 mm) on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches (200 mm) on center.

3.07 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
1. Extend flashings full width at such interruptions and at least 6 inches (152 mm), minimum, into adjacent masonry or turn up at least 1 inch (25.4 mm), minimum, to form watertight pan at non-masonry construction.
2. Remove or cover protrusions or sharp edges that could puncture flashings.
3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Terminate flashing up 8 inches (203 mm) minimum on vertical surface of backing:
1. Install vertical leg of flashing over fluid-applied or self-adhered air/vapor barriers over backing or per manufacturer's directions.

3.08 LINTELS

- A. Install loose steel lintels over openings.

3.09 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- C. Size control joints as indicated on drawings; if not indicated, 3/4 inch (19 mm) wide and deep.

3.10 TOLERANCES

- A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch (1.6 mm).
- B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft (6 mm in 3 m) and 1/2 inch in 20 ft (13 mm in 6 m) or more.
- C. Maximum Variation from Plumb: 1/4 inch (6 mm) per story non-cumulative; 1/2 inch (13 mm) in two stories or more.
- D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft (3 mm in 1 m) and 1/4 inch in 10 ft (6 mm in 3 m); 1/2 inch in 30 ft (13 mm in 9 m).
- E. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch (minus 6.4 mm, plus 9.5 mm).

3.11 CUTTING AND FITTING

- A. Cut and fit for pipes and conduit. Coordinate with other sections of work to provide correct size, shape, and location.

3.12 CLEANING

- A. Remove excess mortar and mortar smears as work progresses.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.

3.13 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

DIVISION 05 - METALS
SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel items.
- B. Dumpster enclosure gates and posts.
- C. Bollards.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 04 2613 - Masonry C.M.U. and Veneer.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.
- D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2024.
- E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.
- F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.
- G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- H. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2026.
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025, with Amendment (2026).
- J. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).
- K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.
- L. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.
- M. SSPC-SP 2 - Hand Tool Cleaning; 2024.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

1.05 QUALITY ASSURANCE

- A. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.
- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

- A. Dumpster Enclosure Posts and Gates.

1. See drawings for member sizing.
- B. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; galvanized finish.
- C. Lintels: As detailed; galvanized finish.

2.04 FINISHES - STEEL

- A. Prime paint steel items.
1. Exceptions: Galvanize items to be embedded in concrete and items to be embedded in masonry.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.05 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch (3 mm) maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch (1.5 mm).
- C. Maximum Misalignment of Adjacent Members: 1/16 inch (1.5 mm).
- D. Maximum Bow: 1/8 inch (3 mm) in 48 inches (1.2 m).
- E. Maximum Deviation From Plane: 1/16 inch (1.5 mm) in 48 inches (1.2 m).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.
- 3.03 INSTALLATION
- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Perform field welding in accordance with AWS D1.1/D1.1M.
- D. Obtain approval prior to site cutting or making adjustments not scheduled.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6 mm) per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch (6 mm).
- C. Maximum Out-of-Position: 1/4 inch (6 mm).

END OF SECTION

SECTION 05 5133
METAL LADDERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop-fabricated metal ladders.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry.
- B. Section 07 4213 - Metal Wall Panels.
- C. Section 09 9000 - Painting and Coating.

1.03 REFERENCE STANDARDS

- A. ANSI A14.3 - American National Standard for Ladders - Fixed - Safety Requirements; 2008 (Reaffirmed 2018).
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- C. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- D. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025, with Amendment (2026).
- E. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).
- F. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.
- G. SSPC-SP 2 - Hand Tool Cleaning; 2024.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
2. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.05 QUALITY ASSURANCE

- A. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Mechanical Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.
- C. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- D. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED LADDERS

- A. Ladders: Steel; in compliance with ANSI A14.3; with mounting brackets and attachments; prime paint finish.
1. Side Rails: 3/8 by 2 inches (9 by 50 mm) members spaced at 20 inches (500 mm).
2. Rungs: One inch (25 mm) diameter solid round bar spaced 12 inches (300 mm) on center.
3. Space rungs 7 inches (175 mm) from wall surface.
4. Ladder Security Gate with Lock: Provide hinged lockable security gate at ladder to prevent unauthorized access.

2.04 FINISHES - STEEL

- A. Prime paint steel items.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.

2.05 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch (3 mm) maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch (1.5 mm).
- C. Maximum Misalignment of Adjacent Members: 1/16 inch (1.5 mm).
- D. Maximum Bow: 1/8 inch (3 mm) in 48 inches (1.2 m).
- E. Maximum Deviation From Plane: 1/16 inch (1.5 mm) in 48 inches (1.2 m).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Obtain approval prior to site cutting or making adjustments not scheduled.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6 mm) per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch (6 mm).
- C. Maximum Out-of-Position: 1/4 inch (6 mm).

END OF SECTION

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural dimension lumber framing.
- B. Structural composite lumber framing.
- C. Nonstructural dimension lumber framing.
- D. Rough opening framing for doors, windows, and roof openings.
- E. Sheathing.
- F. Roof-mounted curbs.
- G. Roofing nailers.
- H. Preservative treated wood materials.
- I. Miscellaneous framing and sheathing.
- J. Communications and electrical room mounting boards.
- K. Concealed wood blocking, nailers, and supports.
- L. Miscellaneous wood nailers, furring, and grounds.
- M. Roof sheathing with factory applied roofing underlayment.

1.02 RELATED REQUIRE

5. Towel and bath accessories.
6. Wall-mounted door stops.
7. Wall paneling and trim.
8. Joints of rigid wall coverings that occur between studs.
9. Other walk- or ceiling-mounted items indicated on drawings.

3.05 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
B. Provide wood curb at each roof opening except where prefabricated curbs are specified and where specifically indicated otherwise; form corners by alternating lapping side members.

3.06 INSTALLATION OF CONSTRUCTION PANELS

- A. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
1. At long edges use sheathing clips where joints occur between roof framing members.
2. Nail panels to framing; staples are not permitted.
B. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
1. Install plywood wall sheathing in accordance with manufacturer's current ICC-ES evaluation report for specified sheathing product.
C. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches (610 mm) on center on all edges and into studs in field of board.
1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
3. Install adjacent boards without gaps.
4. Size: 48 by 96 inches (2440 by 4880 mm), installed horizontally at ceiling height.

3.07 TOLERANCES

- A. Framing Members: 1/4 inch (6 mm) from true position, maximum.
B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet (2 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.

3.08 CLEANING

- A. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.
B. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 1753 SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop-fabricated wood trusses.
B. Truss bridging.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry.

1.03 REFERENCE STANDARDS

- A. ANSI/TPI 1 - National Design Standard for Metal Plate Connected Wood Truss Construction; 2022.
B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvalumeated) by the Hot-Dip Process; 2025a.
C. SBCA (BCSI) - Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining and Bracing of Structural Building Components; 2025.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on plate connectors, bearing plates, and metal bracing components.
C. Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
1. Include identification of engineering software used for design.
2. Provide shop drawings stamped or sealed by design engineer.
D. Designer's Qualification Statement.

1.05 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design by or under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle trusses in accordance with SBCA (BCSI).
B. Store trusses in vertical position resting on bearing ends.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Truss Plate Connectors:
1. Alpine, an ITW Company: www.alpineitw.com/#sle.
2. MiTek Industries, Inc.: www.mit.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 TRUSSES

- A. Wood Trusses: Design and fabricate trusses in accordance with ANSI/TPI 1 and to achieve specified design requirements indicated.
1. Structural Design: Comply with applicable code for structural loading criteria.
2. Roof Deflection: 1/240, maximum.

2.03 MATERIALS

- A. Lumber:
1. Moisture Content: Between 7 and 9 percent.
2. Lumber fabricated from old growth timber is not permitted.
B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G90/Z275 coating; die stamped with integral teeth; thickness as indicated.
C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.04 ACCESSORIES

- A. Wood Blocking, Bridging, Plates, and Miscellaneous Framing: Softwood lumber, any species, construction grade, 19 percent maximum and 7 percent minimum moisture content.
B. Fasteners: Electrogalvanized steel, type to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that supports and openings are ready to receive trusses.

3.02 PREPARATION

- A. Coordinate placement of bearing items.

3.03 ERECTION

- A. Install trusses in accordance with manufacturer's instructions, SBCA (BCSI); maintain a copy of applicable documents on site until installation is complete.
B. Set members level and plumb, in correct position.
C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.
D. Do not field-cut or alter structural members without approval of Architect.
E. Install permanent bridging and bracing.
F. Install headers and supports to frame openings required.
G. Frame openings between trusses with lumber in accordance with Section 06 1000.

3.04 TOLERANCES

- A. Framing Members: 1/2 inch (12 mm) maximum, from true position.

END OF SECTION

SECTION 06 2000 FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items.
B. FRP wall panels

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.
B. AWI (QCP) - Quality Certification Program; Current Edition.
C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).
D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
B. Product Data:
1. Provide manufacturer's product data, storage and handling instructions for factory-fabricated units.
C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
1. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
2. Include certification program label.

1.04 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
B. Quality Certification:
1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
2. Provide labels or certificates indicating that work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
3. Provide designated labels on shop drawings as required by certification program.
4. Provide designated labels on installed products as required by certification program.
5. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-fabricated units to project site in original packages, containers or bundles bearing brand name and identification.
B. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.
C. Protect from moisture damage.
D. Handle materials and products to prevent damage to edges, ends, or surfaces.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.
C. Interior Woodwork Items:
1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for paint finish.

2.02 SHEET MATERIALS

- A. Glass Board (Fiberglass Reinforced Plastic).
1. Kermitte Glasbord-P w/ Surfaseal, Part Number P1W wall panel.
a. Finish: Embossed; Class C (III).
b. Color: White.
c. Thickness: 0.09 inch (2.3 mm).
2. Accessories:
a. Trim Units:
1) Provide standard inside corners (IC) and edge caps at all locations.
2) Color: Same as panel.
b. Adhesive: Type recommended by panel manufacturer.
3. Locations: At all locations where mop sinks are indicated.
a. Glass board to extend floor to ceiling and a minimum of 24 inches beyond edges of mop sinks at each side per building code.

2.03 FASTENINGS

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

2.04 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
B. Lumber for Shimming and Blocking: Softwood lumber of pine species.

2.05 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
1. Structural Design: Comply with applicable code for structural loading criteria.
2. Roof Deflection: 1/240, maximum.

2.03 MATERIALS

- A. Lumber:
1. Moisture Content: Between 7 and 9 percent.
2. Lumber fabricated from old growth timber is not permitted.
B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G90/Z275 coating; die stamped with integral teeth; thickness as indicated.
C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.04 ACCESSORIES

- A. Wood Blocking, Bridging, Plates, and Miscellaneous Framing: Softwood lumber, any species, construction grade, 19 percent maximum and 7 percent minimum moisture content.
B. Fasteners: Electrogalvanized steel, type to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

- A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
B. Set and secure materials and components in place, plumb and level.
C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim to conceal larger gaps.

3.03 GLASS BOARD (FIBERGLASS REINFORCED PLASTIC)

- A. Wall preparation; do not install resin panels until wall finish is completed.

3.04 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch (1.6 mm).
B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.79 mm).

SECTION 06 4100 ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Specially fabricated cabinet units throughout the facility.
B. Plastic Laminate Countertops.
C. Cabinet and drawer hardware.

1.02 RELATED REQUIREMENTS

- A. Section 01 1130 - Finish Specifications.
B. Section 06 1000 - Rough Carpentry.

- C. Section 06 2000 - Finish Carpentry.
D. Section 08 8000 - Glazing.
E. Section 12 3600 - Laminate, Solid Surface and Quartz Countertops.

1.03 REFERENCE STANDARDS

- A. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.
C. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches (300 mm) square, illustrating proposed cabinet substrate and finish.

1.05 QUALITY ASSURANCE

- A. Fabricator/Installer Qualifications: Firm specializing in fabricating and installing products specified in this section with minimum five years of documented experience; with qualifications indicating ability to comply with requirements of this section.
B. Perform work in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Premium quality, unless other quality is indicated for specific items.
C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products prior to installation on flat, level, clean surfaces; elevate products above floors and protect from sunlight.
B. Store products in interior rooms with completed wet work and overhead work.
C. Handle materials and products to prevent damage to edges, ends, or surfaces.

PART 2 PRODUCTS

2.01 ARCHITECTURAL WOOD CASEWORK

- A. Provide casework and casework components in sizes and profiles as indicated on drawings.

2.02 CONCEALED CABINET BASE COMPONENTS

- A. Cabinet Base Toe-Kick Subfronts:
B. Cabinet Base Blocking and Stretchers:
C. Cabinet Base Sleepers:

2.03 CABINETS

- A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Premium Grade.
B. Plastic Laminate Faced Cabinets: Custom grade.

2.04 LUMBER MATERIALS

- A. Softwood Lumber: NIST PS 20; Graded in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Grade II/Custom; average moisture content of 5-10 percent; species as recommended by manufacturer.
B. Hardwood Lumber: NHLA; Graded in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Grade II/Custom; average moisture content of 5-10 percent; species as follows:
1. Exposed Surfaces: Species White Oak.

2.05 PANEL MATERIALS

- A. Particleboard: ANSI A208.1; medium density industrial type as specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, composed of wood chips bonded with interior grade adhesive under heat and pressure; sanded faces; thickness as required; use for components indicated on drawings.

2.06 LAMINATE MATERIALS

- A. Manufacturers:
1. See Section 01 1130 - Finish Specifications.
B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications and as follows:

2.07 COUNTERTOPS AND WINDOW SILLS

- A. Solid Surfacing Countertops and Window Sills: See Section 01 1130 - Finish Schedule and Drawings.

2.08 HARDWARE

- A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
B. Cantilever Support Brackets: Equal to A & M Hardware, Inc. model No. AM1824 B (18" x 24") black in color.
1. Distributor: HDL
C. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch (25 mm) spacing adjustments.
D. Drawer and Door Pulls:
1. Manufacturer: Berenson Hardware.
2. Product: Metro Pull.
3. Product #: 4116-1055-P.
4. Size: 5 7/16" x 7 1/16".
5. Center to Center: 5 1/16"
6. Finish: Matte Black.
E. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish steel with satin finish.
1. Locations: All drawers and doors.
F. Drawer Slides for light and Medium Duty Drawers:
1. Manufacturer: Accuride International, Inc.: www.accuride.com.
a. Drawers 24" wide or less; Model #7432, full extension all ball bearing, rail mount, full extension + 1" over travel slides, hold-in, 100 lb./pr. load rating, and progressive movement.
1) Standard Finish: Clear zinc.
G. Drawer Slides for Heavy Duty Drawers:
1. Manufacturer: Accuride International, Inc.: www.accuride.com.
a. Drawers 42" wide or less; Model #3640A, full extension all ball bearing, rail/bracket mount, full extension + 1" over travel slides, hold-in, 200 lb./pr. load rating, and sequential movement.
1) Standard Finish: Clear zinc.
H. Hinges: European style concealed self-closing type, steel with polished finish.

2.09 FABRICATION

- A. Shop-fabricate casework to dimensions, profiles, and details indicated on drawings.
B. Cabinet Style: As indicated for each location.
C. Fabricate to maximum extents plausible, including doors, drawers, and hardware; fabricate units in sizes transportable through building openings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify casework and materials required for installation have been delivered, handled and stored as specified.
B. Verify wood blocking that provides casework backing is installed as indicated on drawings.
C. Verify location and sizes of rough-in plumbing and rough-in electrical associated with work of this section.

3.02 INSTALLATION

- A. Install custom wood ceiling panels, assuring that they are rigid, plumb, and level.
B. Use concealed joint fasteners to align and secure adjoining cabinet units.
C. See Section 08 8000 for site-glazing of glass applications installed in casework components.

3.03 ADJUSTING

- A. Adjust hardware for smooth operation in accordance with hardware manufacturer's documented instructions.

3.04 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
B. Clean exposed surfaces of casework, shelving, and hardware.

END OF SECTION

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

SECTION 07 2100 THERMAL INSULATION - ROCKWOOL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Mineral fiber blanket insulation.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood stud walls.

1.03 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.
C. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2023).
D. ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings; 2025.
E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.
F. EN 15804 - Sustainability of Construction Works - Environmental Product Declarations - Core Rules for the Product Category of Construction Products; 2022 (Corrigendum 2021).
G. ISO 14025 - Environmental Statements and Programmes for Products - Environmental Product Declarations (EPDs); 2026.
H. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.
I. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
C. Installer's qualification statement.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and accessories in insulation manufacturer's original packaging with identification labels intact and in sizes to suit project.
1. Ensure insulation materials are not exposed to moisture during delivery.
2. Replace wet or damaged insulation materials.
B. Store materials off ground in dry location and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer; store in original packaging until installed.
C. Packaging Waste Management: Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities. Collect and separate for disposal paper and plastic material in appropriate on-site storage containers for recycling.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Thermal Insulation:
1. ROCKWOOL: www.rockwool.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MINERAL FIBER BLANKET INSULATION MATERIALS

- A. Mineral Fiber Blanket Thermal Insulation: Semi-rigid stone wool insulation that is noncombustible; Type 1 in accordance with ASTM C665.
1. Applications: Insulation for steel stud and wood stud exterior walls for thermal control and fire protection.
2. Flame Spread Index (FSI): 25 or less, when tested in accordance with ASTM E84 or UL 723.
3. Smoke Developed Index (SDI): 50 or less, when tested in accordance with ASTM E84 or UL 723.
4. Facing: Unfaced.
5. Wood Studs: See Section 06 1000.
a. Blanket Overall Size: 7-1/4 inches thick by 23 inches wide by 47 inches long (184 mm thick by 584 mm wide by 1,194 mm long), nominal.
b. Thermal Resistance: R-value (RSI-value) of 30 (5.28) at 75 degrees F (24 degrees C), minimum, when tested in accordance with ASTM C518.
6. Board Edges: Square.
7. Density: Greater than 2 pcf (32 kg/cu m), nominal.
8. Moisture Resistance: Absorption of less than 0.03 percent by weight.
9. Metallic Corrosion Resistance: Noncorrosive/passed, when tested in accordance with ASTM C665 for steel, and ASTM C795 for stress corrosion cracking tendency of austenitic stainless steel.
10. Melting Point: 2,150 degrees F (1177 degrees C), minimum.
11. Fungi Resistance: Zero mold growth when tested in accordance with ASTM C1338.
12. Environmental Product Declaration (EPD): Material included on UL-certified EPD in accordance with EN 15804 and ISO 14025; see 01 6000 - Product Requirements for additional information.
13. Low-Emitting VOC Material Certification: Greenguard Gold certified and listed in UL (GGG).
14. Products:
a. ROCKWOOL; COMFORTBATT: www.rockwool.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
B. Verify substrate surfaces are flat, free of honeycombs, fins, or irregularities.

3.02 INSTALLATION

- A. Install insulation in accordance with manufacturer's written installation instructions.
B. Ensure that insulation installation maintains continuity of thermal protection to building interior spaces.
C. Do not compress insulation to fit into spaces.
D. Install insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
E. Install insulation at least 3 inches (76 mm) from heat-emitting devices such as recessed light fixtures, and at least 2 inches (51 mm) from sidewalls of chimneys and vents.

3.03 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.
B. Open door or window to ensure good ventilation during installation on construction site.
C. Cover open ventilation ducts to reduce passage of particulate into ductwork.

END OF SECTION

SECTION 07 2119 FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Foamed-in-place insulation; rim joists and steel beams, see drawings for specific locations.
1. Roof Truss Level: In exterior framed walls to a 1 inch thickness where indicated.
a. In exterior wall crevices.
2. All Locations: Joist tails at exterior walls.

1.02 RELATED REQUIREMENTS

- A. Section 07 2100 - Thermal Insulation.

1.03 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.
C. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
D. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.
C. Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
D. Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of all contractor accreditation and installer certification on site during and after installation. Present on-site documentation upon request.
E. Certificates: Certify that products of this section meet or exceed specified requirements.

1.06 QUALITY ASSURANCE

- B. Section 06 1000 - Rough Carpentry: Exterior plywood sheathing and supporting construction for batt insulation.
- C. Section 07 2100 - Thermal Insulation.
- D. Section 07 4213 - Metal Wall Panels.
- E. Section 07 4243 - Composite Wall Panels.
- F. Section 09 2116 - Gypsum Board Assemblies: Exterior sheathing.

2.03 REFERENCES

- A. ASTM International
- ASTM C 1250 – Standard Test Method for Nonvolatile Content of Cold Liquid-Applied Elastomeric Waterproofing Membranes.
 - ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.
 - ASTM D 2240 – Standard Test Method for Rubber Property – Durometer Hardness.
 - ASTM D 4541 – Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers.
 - ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials
 - ASTM E 96 - Test Method for Water Vapor Transmission of Materials
 - ASTM E 283 – Standard Test Method for Determining the Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences Across the Specimen.
 - ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Skylight, Doors and Curtain Walls by Uniform Static Air Pressure Differences.
 - ASTM E 779 – Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
 - ASTM E 783 – Standard Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors.
 - ASTM E 1105 – Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
 - ASTM E 1186 – Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.
 - ASTM E 1677 - Specification for Air Retarder Material or System for Framed Building Walls.
 - ASTM E 2178 – Standard Test Method for Air Permance of Building Materials
 - ASTM E 2357 – Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
 - ASTM G155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
 - ASTM C 1305 - Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane.
- B. ATCC – American Association of Textile Chemists & Colorists
- Test Method 127 Water Resistance: Hydrostatic Pressure Test.
- C. TAPPI
- Test Method T-460; Air Resistance of Paper (Gurley Hill Method).

2.04 SUBMITTALS

- A. Refer to Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's current technical literature for each component.
- C. Quality Assurance Submittals:
- Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.
 - Manufacturer Instructions: Provide manufacturer's written installation instructions.
- D. Manufacturer's Field Service Reports: Provide site reports from authorized field service representative, indicating observation of weather barrier system installation.

2.05 CLOSEOUT SUBMITTALS:

- A. Refer to Section 01 7000 - Execution and Closeout Requirements.
- B. Weather Barrier Warranty: Manufacturer's executed warranty form with authorized signatures and endorsements indicating date of Substantial Completion.

2.06 QUALITY ASSURANCE

- A. Qualifications:
- Installer shall have experience with installation of commercial fluid-applied weather barrier assemblies under similar conditions.
 - Installer shall be trained and certified for installation by manufacturer.
- B. Installation shall be in accordance with manufacturer's installation guidelines and recommendations.
- C. Source Limitations: Provide weather barrier and accessory materials produced by single manufacturer.

2.07 MOCK-UPS REQUIREMENTS

- A. Install mock-up using approved weather barrier system including membrane, flashing, joint and detailing compound and related weather barrier accessories according to weather barrier manufacturer's current printed instructions and recommendations.
- Mock-up size: 10 feet by 10 feet.
 - Mock-up Substrate: Match wall assembly construction, including window opening.
 - Mock-up may remain as part of the work.

2.08 VISUAL INSPECTION BY MANUFACTURER'S DESIGNATED REPRESENTATIVE

- A. Contact manufacturer's designated representative prior to weather barrier system installation, to perform required mock-up visual inspection and analysis as required for warranty.

2.09 PRE-INSTALLATION MEETING

- A. Hold a pre-installation conference, two weeks prior to start of weather barrier installation. Attendees shall include Contractor, Architect, certified installer, Owner's Representative, and weather barrier manufacturer's designated field representative.
- B. Review all related project requirements and submittals, status of substrate work and preparation, areas of potential conflict and interface, availability of weather barrier system materials and components, installer's training requirements, equipment, facilities and scaffolding, and coordinate methods, procedures and sequencing requirements for full and proper installation, integration and protection.

2.10 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 60 00 - Product Requirements.
- B. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store weather barrier materials as recommended by manufacturer.

2.11 SCHEDULING

- A. Review requirements for sequencing of installation of weather barrier system with installation of windows, doors, louvers and flashings to provide a weather-tight barrier system.
- B. Schedule installation of exterior cladding within nine months of weather barrier system installation.

2.12 WARRANTY

- A. Refer to Section 01 7800 - Closeout Submittals.
- B. Limited Warranty: Manufacturer's warranty for weather barrier for a period of ten (10) years from date of Purchase.
- C. Pre-installation meeting and jobsite observations by weather barrier manufacturer for warranty are required.

PART 2 PRODUCTS

3.01 WEATHER BARRIER

- A. Manufacturer: DuPont Building Innovations: 4417 Lancaster Pike, Chestnut Run Plaza 728, Wilmington, DE 19805; 1.800.44TYVEK (8-9635); <http://weatherization.tyvek.com>
- Description: A single-component, low VOC, 25 mil thick synthetic polymer fluid-applied product with superior elasticity and flexibility providing resistance to air flow, bulk water and wind driven rain yet allows moisture vapor to escape.
 - Basis of Design: DuPont™ Tyvek® Fluid Applied WB System; including DuPont™ Tyvek® Fluid Applied WB, DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound, DuPont™ Tyvek® Fluid Applied Flashing – Brush Grade and DuPont™ Sealant for Tyvek® Fluid Applied Systems.
 - Substitutions: Section 01 60 00 - Product requirements.
- B. Performance Characteristics:
- Air Penetration Resistance (Material):
 - 0.0002 cfm/ft2 at 75 Pa, when tested in accordance with ASTM

- E 2178.
- Air infiltration greater than 10,000 seconds per 100cc, when tested in accordance with TAPPI Test Method T-460.
- Air Penetration Resistance (System / Assembly):
 - = 0.01 cfm/ft2 at 75 Pa, when tested in accordance with ASTM E 2357.
 - = 0.01 cfm/ft2 at 75 Pa, Type I Air Barrier, when tested in accordance with ASTM E 1677.
- Water Vapor Transmission: 25 perms, when tested in accordance with ASTM E 96, Method B at 25 mils DFT (Dry Film Thickness).
- Water Penetration Resistance: Greater than 1000 cm when tested in accordance with AATCC Test Method 127. No leakage at 15 psf when tested in accordance with ASTM E 331.
- Tensile Strength: Minimum 165 lbs/in2, when tested in accordance with ASTM D 412.
- Estimated Elongation: 420% in accordance with ASTM D 412.
- Hardness: Passes at a Shore A hardness of 71, when tested in accordance with ASTM D 2240.
- Surface Burning Characteristics: Class A, when tested in accordance with ASTM E 84. Flame Spread: 25, Smoke Developed: 25.
- UV Resistance: 9 months
- Volatile Organic Content (VOC): Less than 2% (25-30 g/L) when measured in accordance with ASTM C 1250.
- Adhesion Strength (Concrete): Greater than 33 psi when measured in accordance with ASTM D 4541.
- Low Temperature Crack Bridging: Pass, when tested in accordance with ASTM C 1305.

3.02 ACCESSORIES

- A. Joint Treatment:
- Joint Tape:
 - Product: Self-adhered fiberglass mesh tape as recommended by weather barrier manufacturer.
 - Joint Compound: Fluid-applied, vapor permeable, elastomeric flashing material; trowel applied.
 - Product: DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound
- B. Flashing:
- Vapor permeable fluid-applied elastomeric flashing:
 - Product: DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound.
- C. Sheet flashing with butyl adhesive layer.
- Product: DuPont™ StraightFlash™.
- D. Sealant: Elastomeric; non-vapor permeable sealant; compatible with weather barrier.
- Product: DuPont™ Sealant for Tyvek® Fluid Applied Systems.
- E. Primers for flexible flashing and sheet flashing:
- Provide flashing manufacturer recommended primer to assist in adhesion between substrate and flashing.

PART 3 EXECUTION

4.01 EXAMINATION

- A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories.

4.02 PREPARATION

- A. Complete surface preparation, priming, flashing and detailing of openings, cracks, and material transitions prior to beginning installation of fluid-applied weather barrier system.
- B. Surfaces shall be clean and free of frost, oil, grease, mold and efflorescence prior to application of fluid-applied weather barrier system.

4.03 INSTALLATION - DETAILING

- A. Corners: Apply fluid-applied joint compound, 25 mil thick, to outside and inside corners. Joint compound shall extend 2 inches from corner for full height of corner.
- B. Joint treatment:
- Sheathing:
 - Joints shall be prepared per manufacturer's approved joint treatment details.
 - Apply joint tape as recommended by fluid-applied weather barrier manufacturer.
 - No joint treatment required for joints up to 1/16 inch.
 - Joints 1/16 to 1/4 inch: Fluid-applied joint compound applied to form a 1 inch width on each side of sheathing joint; smooth joint compound across sheathing joint. Thickness shall be 15 to 25 mils.
 - Joints 1/16 to 1/2 inch: Apply joint tape to bridge both sides of joint equally. Apply fluid-applied joint compound and trowel smooth embedding joint compound uniformly into joint tape to form a 1 inch width on each side of sheathing joint at a consistent thickness of 15 to 25 mils.
 - Joints 1/2 to 1 inch: Apply sheet flashing primer above and below sheathing joint. Center sheet flashing over sheathing joint and press firmly in place per manufacturer's recommendations.
 - Non-movement joints in masonry and transitions to columns and beams:
 - Joints 1/4 inch wide or less: Apply fluid-applied joint compound a minimum of 2 inches wide by 60 mils thick to each side of joint or crack.

- C. Installation – Vapor permeable fluid-applied elastomeric flashing at openings:
- At jams and head of rough opening: Apply 25 mil thickness of fluid-applied flashing to full depth of opening and 2 inches onto outside face of opening.
 - At sills: Apply primer to substrates as recommended by manufacturer. Cut sheet flashing to fit directly between jams of opening. Install sheet flashing to full width of sill opening and down onto outside face of opening a minimum of 2 inches. Cover sheet flashing with 25 mil thickness of vapor permeable fluid-applied elastomeric flashing per fluid-applied weather barrier manufacturer's instructions.
- D. Allow Fluid-Applied Flashing, Joint Compound and Sealant to cure for minimum 24 hours before coating with Fluid-Applied Weather Barrier.

4.04 INSTALLATION - FLUID-APPLIED WEATHER BARRIER

- A. Install fluid-applied weather barrier prior to installation of windows, doors, and louvers.
- B. Mask and protect any adjacent finished surfaces from fluid-applied weather barrier material.
- C. Install fluid-applied weather barrier over exterior face of required exterior wall substrates in accordance with weather barrier manufacturer recommendations and instructions.
- D. Install fluid-applied weather barrier by power-rolling method or spray and backrolling method to achieve 25 mils providing a consistent and uniform thickness.
- E. Repair any voids, holidays, or non-uniform installations or damage by other trades to proper mil thickness prior to installation of final cladding assemblies.

4.05 FIELD QUALITY CONTROL

- A. Notify weather barrier manufacturer's designated representative to obtain required periodic observations of weather barrier system installation.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections as required in Contract Documents.
- C. Inspections: Weather barrier materials, accessories, and installation are subject to inspection for compliance with performance requirements.
- D. Tests: As determined by Owner's testing agency from among the following tests:
- Quantitative Air-Leakage Testing: Weather barrier assemblies will be tested for air infiltration according to ASTM E 783.
 - Quantitative Air-Leakage Testing: Whole building air leakage will be tested in accordance with ASTM E 779, ASTM E 1827 or equivalent.
 - Qualitative Air-Leakage Testing: Weather barrier assemblies will be tested for evidence of air leakage according to ASTM E 1186.
 - Qualitative Water-Leakage Testing: Weather barrier assemblies will be tested for water leakage according to ASTM E 1105.
- E. Weather barrier assemblies will be considered defective upon failure of inspections and specific project testing required.
- Apply additional fluid-applied weather barrier material, in accordance with manufacturer's instructions, where inspection results indicate insufficient thickness, voids, skips, pinholes or other defects as recommended by weather barrier manufacturer.
 - Remove and replace deficient weather barrier system components for retesting as specified above.

- F. Repair damage to weather barriers caused by destructive testing; follow manufacturer's written instructions.

4.06 PROTECTION AND CLEANING

- A. Protect weather barrier from contact with incompatible materials and sealants not approved per weather barrier manufacturer's recommendation.
- B. Protect installed weather barrier system from damage during construction prior to cladding installation.
- If damaged or exposed to UV beyond nine (9) months, clean and prepare surfaces and install additional, full-thickness, fluid-applied weather barrier application in accordance with weather barrier manufacturer's instructions.
- C. Remove masking materials and adjacent protection after weather barrier installation.

END OF SECTION

SECTION 07 4213

METAL WALL PANELS - PETERSEN ALUMINUM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior wall panels.
- B. Related flashings.

1.02 RELATED REQUIREMENTS

- A. Section 04 2613 - Masonry Veneer.
- B. Section 05 4000 - Cold-Formed Metal Framing: Wall panel substrate.
- C. Section 06 1000 - Rough Carpentry: Wall panel substrate.
- D. Section 07 2500 - Weather Barriers: Weather barrier under wall panels.
- E. Section 07 4243 - Composite Wall Panels.
- F. Section 07 2600 - Vapor Retarders: Vapor retarder under wall panels.
- G. Section 07 6200 - Sheet Metal Flashing and Trim: Transitions between wall panel substrate and wall panels.
- H. Section 07 9200 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.

1.03 REFERENCE STANDARDS

- A. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2025a.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data - Wall System: Manufacturer's data sheets on each product used, including:
- Physical characteristics of components shown on shop drawings.
 - Storage and handling requirements and recommendations.
 - Installation instructions and recommendations.
- C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and anchorage methods.
- D. Samples: Submit two samples of wall panel and soffit panel, 12 by 12 inches (305 by 305 mm) in size illustrating finish color, sheen, and texture.
- E. Manufacturer's qualification statement.
- F. Installer's qualification statement.
- G. Executed warranty.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years of documented experience.
- B. Installer Qualifications: Company specializing in installing products specified in this section with minimum five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- C. Prevent contact with materials that may cause discoloration or staining of products.

1.07 FIELD CONDITIONS

- A. Do not install wall panels when air temperature or relative humidity is outside manufacturer's limits.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Finish Warranty: Provide 35-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Metal Wall Panels - Concealed Fasteners:
- Petersen Aluminum Corporation; Precision and Flush Wall: www.pac-clad.com/#sle.
 - Substitutions: Not permitted.

2.02 METAL WALL PANEL SYSTEM

- A. Wall Panel System: Factory-fabricated, prefinished metal panel system, site assembled.
- Provide exterior wall panels.
 - Provide components which will support panel dead loads and withstand live loads caused by positive and negative wind pressure acting normally to plane of wall.
 - Movement: Accommodate movement within system without damage to components or deterioration of seals; between system and perimeter components when subject to seasonal temperature cycling; when subject to dynamic loading and release of loads; and under deflection of structural support framing.
 - Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
 - Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
 - Provide continuity of weather barrier seal at building enclosure elements in accordance with requirements; see Section 07 2500.
- B. Exterior Wall Panels:
- Profile: Vertical; Precision HWP and Flush Wall style.
 - Material: Precoated steel sheet, 22 gauge, 0.0299-inch (0.76 mm) minimum thickness.
 - Panel Width: Precision HWP - 16 inches (406.4 mm).
 - Panel Width: Flush Wall - 12 inches.
 - Colors: Black Aluminum, Musket Gray and Cardinal Red. See drawings for locations.
- C. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles.
- D. Trim: Same material, thickness, and finish as exterior sheets; brake-formed to required profiles.
- E. Anchors: Galvanized steel.

2.03 MATERIALS

- A. Precoated Steel Sheet: Aluminum-zinc alloy-coated steel sheet, ASTM A792/A792M, Commercial Steel (CS) or Forming Steel (FS), with A250/AZM150 coating; continuous coil-coated on exposed surfaces and panel back with specified finishes.
- B. Select materials with surface flatness, smoothness, and lack of surface blemishes where exposed to view in finished system.

2.04 FINISHES

- A. Exposed Surface Finish: Panel manufacturer's standard polyvinylidene fluoride (PVDF) coating, top coat over epoxy primer.
- B. Panel Backside Finish: Panel manufacturer's standard siliconized polyester wash coat.

2.05 ACCESSORIES

- A. Flashing: See Section 07 2600.
- B. Fasteners: Manufacturer's standard type to suit application; steel, hot-dip galvanized.

- C. Field Touch-Up Paint: As recommended by panel manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that building framing members are ready to receive panels.
- B. Verify weather barrier, see Section 07 2500, has been installed over wall panel substrate; see Section 05 4000.

3.02 PREPARATION

- A. Protection of In-Place Conditions: Protect surrounding areas and adjacent surfaces from damage during execution of this work.

3.03 INSTALLATION

- A. Install panels on walls in accordance with manufacturer's instructions.
- B. Fasten panels to structural supports; align, level, and plumb.
- C. Use concealed fasteners unless otherwise indicated by Architect.

3.04 TOLERANCES

- A. Offset from True Alignment between Adjacent Members Abutting or In Line: 1/16 inch (1.6 mm), maximum.
- B. Variation from Plane or Location as Indicated on Drawings: 1/4 inch (6.4 mm), maximum.

3.05 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Remove site cuttings from finish surfaces.
- C. Remove protective material from wall panel surfaces.
- D. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

3.06 PROTECTION

- A. Protect metal wall panels until completion of project.
- B. Touch up, repair, or replace damaged wall panels or accessories before Date of Substantial Completion.

END OF SECTION

SECTION 07 4243

COMPOSITE WALL PANELS - NICHIIA USA, INC

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fiber-cement siding.
- B. Mounting accessories, trim and hardware.

1.02 RELATED REQUIREMENTS

- A. Section 04 2613 - Masonry Veneer.
- B. Section 06 1000 - Rough Carpentry.
- C. Section 07 2500 - Weather Barriers.
- D. Section 07 6200 - Sheet Metal Flashing and Trim.

1.03 REFERENCE STANDARDS

- A. AAMA 509 - Voluntary Test and Classification Method for Drained and Back Ventilated Rainscreen Wall Cladding Systems; 2022.
- B. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets; 2026.
- C. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Characteristics and storage and handling requirements.
- C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, support rails, and anchorage methods.
- D. Samples: Two of each siding panel, 12 by 12 inches (305 by 305 mm), illustrating color, pattern, and texture.
- E. Executed warranty.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store materials in manufacturer's unopened packaging with labels intact.
- B. Store materials under dry and waterproof cover, in ventilated area, and elevated above grade on flat surface.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 15-year manufacturer warranty for siding panels. Complete forms in Owner's name and register with manufacturer.
- C. Finish Warranty: Provide 15-year manufacturer warranty against excessive finish degradation. Include provision for replacing units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Nichiha USA, Inc: www.nichiha.com/#sle.
- B. Substitutions: Not permitted.

2.02 FIBER-CEMENT SIDING

- A. Description: Factory-fabricated, drained and back-ventilated (D/BV) rainscreen siding system, site assembled; comply with AAMA 509.
- B. Performance Requirements:
- Siding Density: Comply with ASTM C1186, Type A, Grade II.
 - Structural Performance:
 - Comply with ASTM E330/E330M, using test pressure 1.5 times design wind pressure, with 10-second maximum load duration.
 - Maximum Allowable Deflection of Panel: L/180 for length (L) of span.
- C. Designer Series Siding: Smooth with high gloss; surfaces factory sealed.
- Size: 17-7/8 by 71-9/16 inches (455 by 1818 mm).
 - Thickness: 5/8 inch (16 mm).
 - Corners: Manufacturer's standard premanufactured corners; match panel finish.
 - Orientation: Horizontal.
 - Finish: Snow.
 - Products: Nichiha USA, Inc; Miraia.

2.03 COMPONENTS

- A. Thermal Clip and Rail:
- Thermal Clips: JEL 778, zinc-aluminum-magnesium alloy-coated steel.
 - Cornier Clips: JE 777C, zinc-aluminum-magnesium alloy-coated steel.
 - Horizontal Panel Supports: FA 700, aluminum-zinc alloy-coated steel.
 - Double Flange Sealant Backer: FH 1015R, aluminum-zinc alloy-coated steel with fluorine coating.
 - Corrugated Spacer: FS 1005.

2.04 ACCESSORIES

- A. Trim: Aluminum.
- Profiles: Provide H-mold, inside corner, and open outside corner trim.
 - Finish: Match panels.
- B. Flashing: Manufacturer's recommended material.
- Starter Profiles: Main segments, inside corners, and outside corners.
 - Overhang Profiles: Main segments, inside corners, outside corners, and joint clips.
 - Finish: Matte black.
- C. Fasteners: Galvanized or corrosion resistant; length as required to penetrate fastened surface, minimum 1-1/4 inches (31.8 mm).
- D. Sealants: As recommended by manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify support structure meets manufacturer's requirements to receive siding.
- B. Verify installation of weather barrier; see Section 07 2500.

3.02 PREPARATION

- A. Protect surrounding areas and adjacent surfaces from damage during execution of work.

3.03 INSTALLATION

- A. Install siding and support structure in accordance with manufacturer's instructions.
- B. Install flashing in accordance with manufacturer's instructions.

3.04 TOLERANCES

- A. Wall Surface Plane: Level within 1/4 inch (6.4 mm) in 20 feet (6.1 m).

3.05 REPAIR

- A. Touch up, repair, or replace damaged products before mm-dd-yyyy.

3.06 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Clean siding in accordance with manufacturer's instructions.

3.07 PROTECTION

- A. Protect installed siding from subsequent construction operations.

END OF SECTION

SECTION 07 5400

THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Adhered system with thermoplastic roofing membrane.
- B. Insulation, flat and tapered.
- C. Flashings.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood roof decking.

1.03 REFERENCE STANDARDS

- A. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin-Based Sheet Roofing; 2026.
- B. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces; 2024.
- C. NRCA (RM) - The NRCA Roofing Manual; 2026.
- D. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
- C. Shop Drawings: Submit drawings that indicate joint or termination detail conditions, conditions of interface with other materials, and paver layout.
- D. Manufacturer's qualification statement.
- E. Warranty Documentation:
- Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - Submit installer's written verification that installation complies with warranty conditions for waterproof membrane.

1.05 QUALITY ASSURANCE</

- D. Through-Wall Flashing: Cold-applied, self-adhering, styrene-butadiene-styrene (SBS) modified rubberized asphalt sheet membrane bonded with high density cross-woven polyethylene film.
- Thickness: 47 mil, 0.047 inch (1.2 mm), minimum.
 - Width: 12 inches (305 mm), minimum.

2.04 ACCESSORIES

- A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.
- B. Membrane Adhesive: As recommended by membrane manufacturer.
- C. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
- D. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.
- E. Insulation Adhesive: As recommended by insulation manufacturer.
- F. Strip Reglet Devices: Galvanized steel, maximum possible lengths per location, with attachment flanges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 PREPARATION - WOOD DECK

- A. Verify flatness and tightness of joints in wood decking; fill knot holes with latex filler.
- B. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.03 INSTALLATION, GENERAL

- A. Perform work in accordance with manufacturer's instructions, NRCA (RM), and NRCA (WM) applicable requirements.
- B. Do not apply roofing membrane during cold or wet weather conditions.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- F. Coordinate this work with installation of associated counterflashings installed by other sections as the work of this section proceeds.

3.04 INSTALLATION - INSULATION, UNDER MEMBRANE

- A. Attachment of Insulation: Embed each layer of insulation in adhesive in full contact, in accordance with roofing and insulation manufacturers' instructions.
- B. Lay subsequent layers of insulation with joints staggered minimum 6 inches (152 mm) from joints of preceding layer.
- C. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- D. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- E. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches (457 mm).
- F. Do not install more insulation than can be covered with membrane in same day.

3.05 INSTALLATION - MEMBRANE

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Fully Adhered Application: Apply adhesive to substrate at rate of (). Fully embed membrane in adhesive except in areas directly over or within 3 inches (76 mm) of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- D. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches (76 mm). Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- E. At intersections with vertical surfaces:
- Extend membrane over cant strips and up a minimum of 4 inches (102 mm) onto vertical surfaces.
 - Fully adhere flexible flashing over membrane and up to nailing strips.
- F. Around roof penetrations, seal flanges and flashings with flexible flashing.
- G. Coordinate installation of roof drains and related flashings.

3.06 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Remove bituminous markings from finished surfaces.
- C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- D. Repair or replace defaced or damaged finishes caused by work of this section.

3.07 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

SECTION 07 6200 SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, downspouts, exterior penetrations, and other items indicated in Schedule.
- B. Sealants for joints within sheet metal fabrications.
- C. Precast concrete splash pads.

1.02 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2026.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- C. ASTM A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products; 2018 (Reapproved 2024).
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).
- E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement; 2025.
- F. CDA A4050 - Copper in Architecture - Handbook; Current Edition.
- G. ICC (IPC) - International Plumbing Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.
- B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 3 years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 PREPAINTED, METALLIC-COATED STEEL SHEETS

- A. Description: Factory-applied coatings applied to metallic-coated steel sheet substrates prior to fabrication by coil coating; topcoat systems consist of primers and organic topcoats on exposed, top side of sheet; washcoats on bottom, unexposed sheet side.
- B. Comply with ASTM A755/A755M.
- C. Metallic-Coated Steel Sheet Substrates:
- Zinc-Coated, Galvanized, Steel Sheets: Commercial steel sheets, galvanized by hot-dip process; comply with ASTM A653/A653M; coating designation G90 (Z275).
- D. Substrate Preparation for Prefinishing: Clean and prepare substrate surfaces in accordance with coating manufacturer's recommendations for substrate type and application.
- E. Washcoats or Backercoats: Provide washcoats or backercoats in accordance with organic coating manufacturer's recommendations.
- F. Primer Coats: Provide basecoat primers in accordance with coating manufacturer's recommendations for substrate type, topcoat, and application.
- G. High-Performance Organic Coating System: Provide thermally cured, 50-percent PVDF or silicone-modified polyester systems in accordance with AAMA 2604; tested for weathering for 5 years with 5 delta units maximum of color change.

2.02 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.
- D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate corners from one piece with minimum 18-inch (450 mm) long legs; seam for rigidity, seal with sealant.
- F. Fabricate flashings to allow toe to extend 2 inches (50 mm) over roofing gravel. Return and brake edges.

2.03 GUTTERS AND DOWNSPOUTS

- A. Downspouts: Rectangular profile.
- B. Gutters and Downspouts: Size for rainfall intensity determined by a storm occurrence of 1 in 10 years in accordance with ICC (IPC).
- C. Accessories: Profiled to suit gutters and downspouts.
- Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
 - Downspout Supports: Brackets.
- D. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3,000 psi (21 MPa) at 28 days, with minimum 5 percent air entrainment.
- E. Seal metal joints.

2.04 FLASHING

- A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

2.05 ACCESSORIES

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Primer Type: Zinc chromate.
- C. Concealed Sealants: Non-curing butyl sealant.
- D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- E. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

- A. Install starting and edge strips, and cleats before starting installation.
- B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.
- C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch (0.38 mm).

3.03 INSTALLATION

- A. Insert flashings into reglets to form tight fit; secure in place with lead wedges; pack remaining spaces with lead wool; seal flashings into reglets with sealant.
- B. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- E. Exterior Flashing Receivers: Install in accordance with manufacturer's recommendations, and in proper relationship with adjacent construction, and as follows:
- F. Secure downspouts in place with concealed fasteners.
- G. Set splash pads under downspouts.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for field inspection requirements.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

3.05 SCHEDULE

- A. Through-Wall Flashing in Masonry.
- B. Fascia and Cornices at canopies:
- C. Downspouts.
- D. Coping, Cap, Parapet, Sill and Ledge Flashings.
- E. Counterflashings at Curb-Mounted Roof Items, including skylights and roof hatches:
- F. Roofing Penetration Flashings, for Pipes, Structural Steel, and Equipment Supports:

END OF SECTION

SECTION 07 9005 JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Throughout the Work, sealants, caulking and joint backing all joints where shown on Drawings and elsewhere as required to provide a positive barrier against passage of air and passage of moisture.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-In-Place Concrete: Sealants required in conjunction with paving.
- B. Section 06 1000 - Rough Carpentry.
- C. Section 06 2000 - Finish Carpentry.
- D. Section 06 4100 - Architectural wood Casework.
- E. Section 07 2500 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders.
- F. Section 07 6200 - Sheet Metal Flashing and Trim.
- G. Section 08 1113 - Hollow Metal Doors and Frames.
- H. Section 08 5113 - Aluminum Windows.
- I. Section 09 2116 - Gypsum Board Sheathing.

- J. Section 09 3000 - Tiling: Sealant used as tile grout.

1.03 REFERENCE STANDARDS

- A. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).
- C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.
- D. ASTM D1667 - Standard Specification for Flexible Cellular Materials--Poly (Vinyl Chloride) Foam (Closed-Cell); 2022.
- E. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with other sections referencing this section.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, and color availability.
- C. Manufacturer's Installation Instructions: Indicate special procedures.

1.06 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 5 years experience.

1.07 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.08 COORDINATION

- A. Coordinate the work with all sections referencing this section.

1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. 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:
- Dow Corning Corp: www.dowcorning.com.
 - GE Plastics: www.geplastics.com.
 - Pecora Corporation: www.pecora.com.
 - BASF Construction Chemicals-Building Systems: www.chemrex.com.
 - Tremco, Inc: www.tremcosealants.com.
- B. Polyurethane Sealants:
- Pecora Corporation: www.pecora.com.
 - BASF Construction Chemicals-Building Systems: www.chemrex.com.
 - Tremco, Inc: www.tremcosealants.com.

2.02 SEALANTS

- A. General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A; single component.
- Color: Standard colors matching finished surfaces.
 - Applications: Use for:
 - Joints between concrete and other materials.
 - Joints between metal frames and other materials.
 - Other exterior joints for which no other sealant is indicated.
- B. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
- Applications: Use for:
 - Interior wall and ceiling control joints.
 - Joints between door and window frames and wall surfaces.
 - Other interior joints for which no other type of sealant is indicated.
- C. Bathtub/Tile Sealant: White silicone; ASTM C920, Uses I, M and A; single component, mildew resistant.
- Applications: Use for:
 - Joints between plumbing fixtures and floor and wall surfaces.
 - Joints between bath countertops and wall surfaces.
- D. Concrete Floor Joint Filler: Self-leveling, pourable, semi-rigid sealant intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
- Composition: Polyurea or epoxy, single or multi-part, 100 percent solids by weight.
 - Hardness: 75 to 80 after 7 days, when tested in accordance with ASTM D2240 Shore A.
 - Color: Concrete gray.
 - Joint Width: 1/8 to 1/4 inch (3 to 6 mm).

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. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- D. Install bond breaker where joint backing is not used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- G. Tool joints concave.
- H. Concrete Floor Joint Filler: Install concrete floor joint filler per manufacturer's written instructions. After floor joint filler is fully cured, shave joint filler flush with top of concrete slab.

3.04 CLEANING

- A. Clean adjacent soiled surfaces.

3.05 PROTECTION

- A. Protect sealants until cured.

END OF SECTION

DIVISION 08 - OPENINGS SECTION 08 1113 HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-fire-rated hollow metal doors and frames.
- B. Factory installed electrical boxes and conduit on frames scheduled to receive electrified hardware. See "Door Schedule".
- Coordination of installation for electrified hardware provided under Section 08 7100.
- C. Hollow metal borrowed lites glazing frames.
- D. Accessories, including silencers, glazing and anchorage devices.

1.02 RELATED REQUIREMENTS

- A. Section 04 2000 - Unit Masonry.
- B. Section 06 1000 - Rough Carpentry.
- C. Section 08 7100 - Door Hardware.
- D. Section 08 8000 - Glazing.
- E. Section 09 2116 - Gypsum Board Assemblies.
- F. Section 09 9113 - Exterior Painting.

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.
- D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2025.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2026.
- G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2025.
- H. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.
- I. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.
- J. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames; 2018.
- K. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.
- L. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025, with Amendment (2024).
- M. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- N. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2026.
- O. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
- C. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- D. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.
- Manufacturer shall provide documentation indicating products meet or exceed UL 10C, ANSI A250.4, and ANSI A250.5; documentation shall be supplied to project site, as required for code official's approval.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.
- B. Maintain at project site copies of reference standards relating to installation of products specified.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 3 EXECUTION

2.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in place to ensure proper door alignment.

2.02 PREPARATION

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

2.03 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Coordinate frame anchor placement with wall construction.
- C. Install door hardware as specified in Section 08 7100.
- D. Coordinate installation of electrical connections to electrical hardware items.
- E. Touch up damaged factory finishes.

2.04 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B. Maximum Diagonal Distortion: 1/16 inch (1.6 mm) measured with straight edge, corner to corner.

- A. Adjust for smooth and balanced door movement.

2.05 ADJUSTING

- A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

SECTION 08 4313 ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.
- C. Weatherstripping.
- D. Perimeter sealant.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-In-Place Concrete.
- B. Section 06 1000 - Rough Carpentry.
- C. Section 07 2500 - Weather Barriers: Sealing framing to water-resistive barrier installed on adjacent construction.
- D. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.
- E. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.
- F. Section 08 8000 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

- A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.
- B. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2026.
- C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- D. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
- E. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- F. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2026.
- G. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of other components that comprise the exterior enclosure.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
- D. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C). Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- C. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.
- D. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.02 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Coordinate attachment and seal of perimeter air and vapor barrier materials.
- I. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- J. Set thresholds in bed of sealant and secure.
- K. Install hardware using templates provided.
1. See Section 08 7100 for hardware installation requirements.
- L. Install glass in accordance with Section 08 8000, using glazing method required to achieve performance criteria.
- M. Install perimeter sealant in accordance with Section .
- N. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet (1.5 mm per m) non-cumulative or 0.06 inch per 10 feet (1.5 mm per 3 m), whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch (0.8 mm).

3.04 ADJUSTING

- A. Adjust operating hardware for smooth operation.

3.05 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
- C. Remove excess sealant by method acceptable to sealant manufacturer.

3.06 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 5659 SERVICE AND TELLER WINDOW UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Service and teller window units.

1.02 RELATED REQUIREMENTS

- A. Section 07 2500 - Weather Barriers: Sealing frames to water-resistive barrier installed on adjacent construction.
- B. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

1.03 REFERENCE STANDARDS

- A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.
- B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate work with adjacent materials specified in other sections and as indicated on drawings and approved shop drawings.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's product data for specified products indicating materials, operation, glazing, finishes, and installation instructions.
- C. Shop Drawings: Indicate configuration, sizes, rough-in, mounting, anchors and fasteners, and installation clearances.
- D. Manufacturer Qualification Statement.
- E. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least ten years documented experience, and with ability to provide test reports showing that their standard manufactured products meet the specified requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver units in manufacturer's original packaging and unopened containers with identification labels intact.
- B. Store units in area protected from exposure to weather and vandalism.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide manufacturer's warranty agreeing to repair or replace units and their components that fail in materials or workmanship within five years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Service and Teller Window Units:
1. Quikserv: www.quikserv.com/#sle.
2. Ready Access, Inc: www.ready-access.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SERVICE AND TELLER WINDOW UNITS

- A. Location: Built within exterior wall, as indicated on drawings.
- B. Window Type: Sliding, single horizontal.
1. Operation: Self-closing.
2. Mounting: Flush with wall surface.
3. Window Size: As indicated on drawings.
- C. Glazing: Insulating glass, clear.
1. Tempered safety glazing.

2.03 ASSEMBLY COMPONENTS

- A. Windows: Factory-fabricated, finished, and glazed, with extruded aluminum frame and glazing stops; complete with hardware and anchors.
1. Provide window units that are re-glazable from the secure side without dismantling the non-secure side of framing.

2. Rigidly fit and secure joints and corners with internal reinforcement. Make joints and connections flush, hairline, and weatherproof. Fully weld corners.
3. Apply factory finish to exposed surfaces.
4. Wind Design: Design and size components to withstand dead loads and live loads caused by pressure and negative wind loads acting normal to plane of window as calculated in accordance with applicable code.
5. Self-Closing Operation: Manual open and self-closing with auto-locking handles and magnetic hold-open device.

2.04 MATERIALS

- A. Aluminum Extrusions: Minimum 1/8 inch (3.2 mm) thick frame and sash material complying with ASTM B221 and ASTM B221M.
- B. Insulating Glass: Double pane insulating vision glass; 5/8 inch (15.9 mm) thick, minimum.
- C. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

2.05 FINISHES

- A. Class II Color Anodized Finish: AAMA 611 AA-M12C22A32 Integrally colored anodic coating not less than 0.4 mils (0.01 mm) thick.
1. Finish Color: Black.

2.06 ACCESSORIES

- A. Hardware and Security Devices for Sliding Windows:
1. Night Security Lock Bar: Sliding aluminum lock bar.
2. Auto-Lock Handle: Stainless steel auto-locking handle on all self-closing sliders to prevent intrusion.
3. Weatherstripping and Glazing Sealant: Factory applied.
4. Bottom Sills: Stainless steel construction, no bottom tracks and no pop rivets.
5. Handles: Stainless steel, manufacturer's standard profile and finish.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that window openings are ready for installation of windows.
- B. Verify that correct embedded anchors are in place and in proper location; repair or replace anchors as required to achieve satisfactory installation.
- C. Notify Architect if conditions are not suitable for installation of units; do not proceed until conditions are satisfactory.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install units in correct orientation (inside/outside or secure/non-secure).
- C. Anchor units securely in manner so as to achieve performance specified.
- D. Set sill members and sill flashing in continuous bead of sealant.
- E. Remove and replace defective work.

3.03 ADJUSTING

- A. Adjust operating components for smooth operation while also maintaining a secure, weather-tight enclosure and a tight fit at the contact points; lubricate operating hardware.

3.04 CLEANING

- A. Remove protective material from factory finished surfaces.
- B. Clean exposed surfaces promptly after installation without damaging finishes.

3.05 PROTECTION

- A. Provide temporary protection to ensure that service and teller windows are without damage upon Date of Substantial Completion.

END OF SECTION

SECTION 08 7100 DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for aluminum and hollow metal doors.
- B. Electrically operated and controlled hardware.
- C. Lock cylinders for doors that hardware is specified in other sections.
- D. Thresholds.
- E. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

- A. Section 08 1113 - Hollow Metal Doors and Frames.
- B. Section 08 4313 - Aluminum-Framed Storefronts: Door hardware, except as noted in section.
- C. Section 28 1000 - Access Control: Electronic access control devices.

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. BHMA A156.1 - Standard for Butts and Hinges; 2025.
- C. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.
- D. BHMA A156.3 - Exit Devices; 2025.
- E. BHMA A156.4 - Door Closers and Pivots; 2024.
- F. BHMA A156.5 - Cylinders and Input Devices for Locks; 2020.
- G. BHMA A156.6 - Standard for Architectural Door Trim; 2021.
- H. BHMA A156.7 - Template Hinge Dimensions; 2022.
- I. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.
- J. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.
- K. BHMA A156.18 - Standard for Materials and Finishes; 2020.
- L. BHMA A156.21 - Thresholds; 2025.
- M. BHMA A156.22 - Standard for Gasketing; 2021.
- N. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems; 2023.
- O. BHMA A156.31 - Electric Strikes and Frame Mounted Actuators; 2024.
- P. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- Q. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- R. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- C. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- D. Keying Requirements Meeting:
1. Owner will schedule meeting at project site prior to Contractor occupancy.
2. Attendance Required:
- a. Contractor.
- b. Owner.
- c. Installer's Architectural Hardware Consultant (AHC).
- d. Hardware Installer.
- e. Owner's Security Consultant.
3. Agenda:
- a. Establish keying requirements.
- b. Verify locksets and locking hardware are functionally correct for project requirements.
- c. Verify that keying and programming complies with project requirements.
4. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
- a. Access control requirements.
- b. Key control system requirements.
- c. Schematic diagram of preliminary key system.
- d. Flow of traffic and extent of security required.

5. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
6. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
2. Provide complete description for each door listed.
- D. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
2. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
3. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- G. Keying Schedule:
1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.
- H. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
- I. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Lock Cylinders: Ten for each master keyed group.
3. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
1. Closers: Five years, minimum.
2. Exit Devices: Three years, minimum.
3. Locksets and Cylinders: Three years, minimum.
4. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.
2. Accessibility: ADA Standards and ICC A117.1.
3. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.
- D. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
1. See Section 28 1000 for additional access control system requirements.
- E. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Door Hardware Schedule.
- F. Fasteners:
1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
- a. Aluminum fasteners are not permitted.
- b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.

2.02 HINGES

- A. Manufacturers:
1. McKinney; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Hager Companies: www.hagerco.com/#sle.
3. BEST, dormakaba Group: www.bestaccess.com/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Hinges: Comply with BHMA A156.1, Grade 1.
1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
- a. Provide hinge width required to clear surrounding trim.
2. Provide hinges on every swinging door.
3. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
4. Provide ball-bearing hinges at each door with closer.
5. Provide non-removable pins on exterior outswinging doors.
6. Provide following quantity of butt hinges for each door:
- a. Doors From 60 inches (1.5 m) High up to 90 inches (2.3 m) High: Three hinges.

2.03 EXIT DEVICES

- A. Manufacturers:
1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Von Duprin, an Allegion brand: www.allegion.com/us/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Exit Devices: Comply with BHMA A156.3, Grade 1.
1. Lever design to match lockset trim.
2. Provide cylinder with cylinder dogging or locking trim.
3. Provide exit devices properly sized for door width and height.
4. Provide strike as recommended by manufacturer for application indicated.
5. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.04 ELECTRIC STRIKES

- A. Manufacturers:
1. Adams Rite, HES, or Securitron; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Electric Strikes: Comply with BHMA A156.31, Grade 1.
1. Provide UL (DIR) listed burglary-resistant electric strike; style to suit locks.
2. Provide non-handed 24 VDC electric strike suitable for door frame material and scheduled lock configuration.
3. Provide field selectable Fail Safe/Fail Secure modes.
4. Provide transformer and rectifier as necessary for complete installation.

5. Connect electric strikes into fire alarm where non-rated doors are scheduled to release with fire or sprinkler alarm condition.

2.05 LOCK CYLINDERS

- A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
1. Provide standard, electronic, conventional, full size interchangeable core (FSIC), and small format interchangeable core (SFIC) type cylinders, Grade 1, with six-pin core in compliance with BHMA A156.5 at locations indicated.
2. Provide cylinders from same manufacturer as locking device.
3. Provide cams and/or tailpieces as required for locking devices.

2.06 CYLINDRICAL LOCKS

- A. Manufacturers:
1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. BEST, dormakaba Group: www.bestaccess.com/#sle.
3. Schlage, an Allegion brand: www.allegion.com/us/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.
1. Bored Hole: 2-1/8 inch (54 mm) diameter.
2. Latchbolt Throw: 1/2 inch (12.7 mm), minimum.
3. Backset: 2-3/4 inch (70 mm) unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
- a. Finish: To match lock or latch.
5. Provide a lock for each door, unless otherwise indicated that lock is not required.
6. Provide an office lockset for swinging door where hardware set is not indicated.
7. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.

2.07 DOOR PULLS AND PUSH PLATES

- A. Door Pulls and Push Plates: Comply with BHMA A156.6.
1. Pull Type: Straight, unless otherwise indicated.
2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
- a. Edges: Beveled, unless otherwise indicated.
3. Material: Aluminum, unless otherwise indicated.

2.08 CLOSERS

- A. Manufacturers; Surface Mounted:
1. Corbin Russwin, Norton, Rixson, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. LCN, an Allegion brand: www.allegion.com/us/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Closers: Comply with BHMA A156.4, Grade 1.
1. Type: Surface mounted to door.
2. Provide door closer on each exterior door.

2.09 OVERHEAD STOPS AND HOLDERS

- A. Manufacturers:
1. Rixson or Sargent; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Glynn-Johnson, an Allegion brand: www.allegion.com/us/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
1. Provide stop for every swinging door, unless otherwise indicated.

2.10 PROTECTION PLATES

- A. Protection Plates: Comply with BHMA A156.6.
- B. Metal Properties: Stainless steel material.
1. Metal, Standard Duty: Thickness 0.050 inch (1.27 mm), minimum.
- C. Edges: Beveled, on four sides unless otherwise indicated.
- D. Fasteners: Countersunk screw fasteners.

2.11 KICK PLATES

- A. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
1. Size: 8 inch (203 mm) high by 2 inch (51 mm) less door width (LDW) on push side of door.

2.12 WALL STOPS

- A. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Provide wall stops to prevent damage to wall surface upon opening door.
2. Type: Bumper, concave, wall stop.
3. Material: Aluminum housing with rubber insert.

2.13 THRESHOLDS

- A. Thresholds: Comply with BHMA A156.21.
1. Provide threshold at each exterior door, unless otherwise indicated.
2. Type: Flat surface.
3. Material: Aluminum.
4. Threshold Surface: Profiled horizontal grooves across full width.
5. Field cut threshold to fluted of frame and width of door sill for tight fit.
6. Provide non-corroding fasteners at exterior locations.

2.14 WEATHERSTRIPPING AND GASKETING

- A. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Head and Jamb Type: Adjustable.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with brush weatherstripping.

2.15 LATCH PROTECTOR

- A. Latch Protector: Provide on door to protect latch from being tampered with while in locked position.
1. Type: Standard latch protector.
2. Material: Stainless steel.

2.16 SILENCERS

- A. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
1. Single Door: Provide three on strike jamb of frame.
2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
3. Material: Rubber, gray color.

2.17 KEY CABINET

- A. Key Cabinet: Sheet steel construction, piano hinged door with key lock; BHMA A156.28.
1. Mounting: Wall-mounted.
2. Capacity: Actual quantity of keys, plus 25 percent additional capacity.
3. Size key hooks to hold 6 keys each.
4. Finish: Baked enamel, manufacturer's standard color.
5. Key cabinet lock to building keying system.

2.18 FIRE DEPARTMENT LOCK BOX

- A. Fire Department Lock Box:
1. Heavy-duty, surface mounted, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers and tamper alarm.
2. Capacity: Holds 10 keys.
3. Finish: Manufacturer's standard dark bronze.

2.19 POWER SUPPLY

- A. Power Supply: Hard wired, with multiple zones providing eight (8) breakers for each output panel with individual control switches and LED's; UL (DIR) Class 2 listed.
1. Power: 12 VAC, 20 Amp; with 120 VAC power supply.
2. Operating Temperature: 32 to 110 degrees F (0 to 43 degrees C).
3. Provide with emergency release terminals that release devices upon activation of fire alarm system.

2.20 FINISHES

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
1. Primary Finish: 625; bright chromium plated over nickel, with brass or bronze base material (former US equivalent US26); BHMA A156.18.
2. Secondary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26d); BHMA A156.18.
- a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide

- primary finish on one side of door and secondary finish on other side if necessary.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
- B. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item.
1. For Steel Doors and Frames: See Section 08 1113.
2. For Aluminum-Framed Storefront Doors and Frames: See Section 08 4313.
3. Mounting heights in compliance with ADA Standards:
- a. Locksets: 40-5/16 inch (1024 mm).
- b. Push Plates/Pull Bars: 42 inch (1067 mm).
- c. Deadlocks (Deadbolts): 48 inch (1219 mm).
- d. Exit Devices: 40-5/16 inch (1024 mm).
- D. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 01 4000 - Quality Requirements.
- B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

- A. Adjust work under provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 PROTECTION

- A. Protect finished Work under provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION

SECTION 08 8000 GLAZING

- C. Requirements: During a period of ten years after Date of Substantial Completion, manufacturer shall deliver to jobsite, without charge to Owner, replacement of any insulating glass unit which develops obstruction of vision through unit due to accumulation of dust, moisture or film on internal surfaces of glass caused by failure of hermetic seal because of defective materials or workmanship.
- D. Laminated Glass: Provide a five (5) year warranty to include coverage for delamination, including replacement of failed units.

PART 2 PRODUCTS

2.01 FLAT GLASS MATERIALS

- A. System Manufacturers:
- Oldcastle is specified with products by the following also acceptable:
 - AFG Industries, Inc: www.afglass.com.
 - Pilkington Building Products North America: www.pilkington.com.
 - Substitutions: Refer to Section 01 6000 - Product Requirements.
 - Glass Manufacturers:
 - Guardian Industries, Inc. is specified with products by the following also acceptable:
 - PPG Industries, Inc: www.ppg.com.
 - Clear Float Glass: Clear, annealed, FS DD-G-451; thickness as indicated on Drawings or herein specified.
 - Safety Glass: Clear; fully tempered with horizontal tempering.
 - Insulated Glass Units: ASTM E774; hermetically-sealed, double-glazed units with outer pane of 1/4" Guardian SunGuard SNX 62/27 on Clear Low-E #2 surface and inner pane of 1/4" Clear glass; 1/2" Air Cavity (90% Argon Fill); 1" thick overall factory assembled. Tempered where required by code and heat strengthened where required by manufacturer.
 - Utilize Security Laminated Glass where indicated on drawings for inner pane.
 - Insulated Spandrel Panels: ASTM E774; hermetically-sealed, double-glazed units with outer pane of heat strengthened 1/4" Guardian SunGuard SNX 62/27 on Clear Low-E #2 surface and inner pane of heat strengthened 1/4" Clear glass with spandrel Subdued Grey ceramic frit coating on #4 surface. 1/2" Air Cavity (90% Argon Fill); 1" thick overall factory assembled. Tempered where required by code and heat strengthened where required by manufacturer. 2" rigid extruded cellular polystyrene, ASTM C578, Type IV, minimum 5-year aged R-value of 5.0 per inch of material at 75 degrees F, per ASTM C158, minimum compressive strength of 25 psi per ASTM D1621, factory applied at interior.
 - Utilize Security Laminated Glass where indicated on drawings for inner pane.

2.02 GLASS MATERIALS

- A. Float Glass: All glazing is to be float glass unless otherwise indicated.
- Annealed Type: ASTM C1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
 - Heat-Strengthened and Fully Tempered Types: ASTM C1048.
 - Tinted Types: Color and performance characteristics as indicated.
 - Thicknesses: As indicated; for exterior glazing comply with specified requirements for wind load design regardless of specified thickness.

2.03 GLAZING COMPOUNDS

- A. Manufacturers:
- Bostik Inc: www.bostik-us.com/#sle.
 - Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com/#sle.
 - Pecora Corporation: www.pecora.com/#sle.
 - BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com/#sle.
 - Substitutions: Refer to Section 01 6000 - Product Requirements.
- B. Butyl Sealant : Single component; ASTM C 920 Grade NS Class 12-1/2 Uses M and A; Shore A hardness of 10 to 20; black color; non-skinning.
- C. Acrylic Sealant : Single component, solvent curing, non-bleeding; ASTM C 920, Type S, Grade NS, Class 12-1/2, Uses M and A; cured Shore A hardness of 15 to 25; color as selected.
- D. Silicone Sealant : Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C 920 Type S Grade NS Class 25 Uses M A and G; cured Shore A hardness of 15 to 25; color as selected.
- E. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C864 Option I. Length of 0.1 inch for each square foot (25 mm for each square meter) of glazing or minimum 4 inch (100 mm) x width of glazing rabbet space minus 1/16 inch (1.5 mm) x height to suit glazing method and pane weight and area.
- F. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, ASTM C 864 Option I. Minimum 3 inch (75 mm) long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.
- G. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.
- H. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option I; black color.
- I. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings for glazing are correctly sized and within tolerance.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant.
- D. Install sealants in accordance with ASTM C1193 and FGMA Sealant Manual.
- E. Install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION - EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)

- A. Place setting blocks at 1/4 points with edge block no more than 6 inches (150 mm) from corners.
- B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.04 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)

- A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch (1.6 mm) above sight line.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inches (150 mm) from corners.
- C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- D. Place glazing tape on free perimeter of glazing in same manner described above.
- E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- F. Knife trim protruding tape.

3.05 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.

3.06 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION

DIVISION 09 - FINISHES

SECTION 09 2116 GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Acoustic insulation.
- C. Gypsum wallboard.
- D. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Building framing and sheathing.
- B. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.
- C. Section 09 3000 - Tiling: Tile backing board.

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- B. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).
- C. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.
- D. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2025.
- E. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.
- F. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2019 (Reapproved 2024).
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.
- H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.
- I. ASTM E413 - Classification for Rating Sound Insulation; 2022.
- J. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.
- K. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- L. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data:
- Provide data on gypsum board, accessories, and joint finishing system.
- C. Shop Drawings: Indicate special details associated with acoustic seals.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonworking supports, in accordance with manufacturer's recommendations.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- See PART 3 for finishing requirements.
- B. Interior Partitions: Provide completed assemblies with the following characteristics:
- Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
- American Gypsum Company: www.americangypsum.com/#sle.
 - CertainTeed Corporation: www.certainteed.com/#sle.
 - Georgia-Pacific Gypsum: www.buildgp.com/#sle.
 - Gold Bond Building Products, LLC provided by National Gypsum Company: www.goldbondbuilding.com/#sle.
 - USG Corporation: www.usg.com/#sle.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
- Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 - Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
- C. Thickness:
- Vertical Surfaces: 5/8 inch (16 mm).
 - Ceilings: 5/8 inch (16 mm).
- D. Glass Mat Faced Products:
- Georgia-Pacific Gypsum; DensArmor Plus: www.buildgp.com/#sle.
- E. Exterior Sheathing Board: See Section 06 1000.

2.03 GYPSUM BOARD ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed mineral-fiber, friction fit type, unfaced; thickness 2 inches (50.8 mm).
- B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
- C. Finishing Accessories:
- Types: As detailed or required for finished appearance.
 - Materials: G40 (Z120) galvanized steel sheet in accordance with ASTM A653/A653M.
 - Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
- D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
- Paper Tape: 2 inch (50 mm) wide, creased paper tape for joints and corners.
 - Joint Compound: Drying type, vinyl-based, ready-mixed.
- E. Finishing Compound: Surface coat and primer, takes the place of skim coating.
- F. High Build Drywall Surface: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
- Products:
 - CertainTeed Corporation; Level V Wall and Ceiling Primer/Surfacer with M2Tech: www.certainteed.com/#sle.
 - USG Corporation; USG Sheetrock Brand Tuff-Hide Primer-Surfacer: www.usg.com/#sle.
 - Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.03 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Nonrated: Install gypsum board perpendicular to framing, with ends and edges occurring over firm bearing.
- Exception: Tapered edges to receive joint treatment at right angles to framing.
- C. Installation on Wood Framing: For nonrated assemblies, install as follows:
- Single-Layer Applications: Screw attachment.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated on drawings.
- Not more than 30 feet (10 meters) apart on walls and ceilings over 50 feet (16 meters) long.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.05 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
- Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
 - Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
 - Level 1: Wall areas above finished ceilings, whether or not accessible in the completed construction.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).
- D. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

3.06 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

3.07 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

3.08 PROTECTION

- A. Protect installed gypsum board assemblies from subsequent construction operations.

END OF SECTION

SECTION 09 3000 TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Ceramic accessories.
- D. Ceramic trim.
- E. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

- A. Section 01 1130 - Finish Specification.
- B. Section 03 3000 - Cast-In-Place Concrete.
- C. Section 06 4000 - Architectural Wood Casework.
- D. Section 07 9005 - Joint Sealers.
- E. Section 09 2116 - Gypsum Board Assemblies: Tile backer board.
- F. Section 09 9000 - Paints and Coatings.
- G. Section 10 2800 - Toilet, Bath, and Laundry Accessories.

1.03 REFERENCE STANDARDS

- ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2023.
 - ANSI A108.1b - Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.
 - ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.
 - ANSI A108.1b - Setting of Ceramic Tile with Dry-Set Cement Mortar, Modified Dry-Set Cement Mortar, EGP (Exterior Glue Plywood) Modified Dry-Set Cement Mortar, or Improved Modified Dry-Set Cement Mortar; 2023.
 - ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 2023.
 - ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2024).
 - ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).
 - ANSI A108.12 - Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Modified Dry-Set Mortar; 2023.
 - ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).
- B. ANSI A108/A118/A136.1 - Specifications for the Installation of Ceramic Tile; 2020.
- ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2023.
 - ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation; 2019.
 - ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014 (Reaffirmed 2024).
 - ANSI A118.13 - American National Standard Specification for Bonded Sound Reduction Membranes for Thin-Set Ceramic Tile Installation; 2014 (Reaffirmed 2024).
- C. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.
- D. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2026.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- D. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- E. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 7419 - Construction Waste Management and Disposal for packaging waste requirements.
- B. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.06 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature above 50 degrees F (10 degrees C) and below 100 degrees F (38 degrees C) during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

- A. Manufacturers:
- See Section 01 1130 - Finish Specification and Drawings.
 - Substitutions: Not permitted.
- B. Floor Tile: ANSI A137.1, and as follows:
- See Section 01 1130 - Finish Specification and Drawings.
- C. Glazed Wall Tile : ANSI A137.1, and as follows:
- See Section 01 1130 - Finish Specification and Drawings.

2.02 TRIM AND ACCESSORIES

- A. Ceramic Accessories: Glazed finish, same color and finish as adjacent field tile; same manufacturer as tile.
- B. Ceramic Trim: Matching bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.

- Applications:
 - Open Edges: Bullnose.
 - Floor to Wall Joints: Cove base.
 - Manufacturers: Same as for tile.
- C. Non-Ceramic Trim: Finish/Style: E-Stainless Steel, style and dimensions as indicated in Section 01 1130 - Finish Schedule, for setting using tile mortar or adhesive.
- Applications: Use at locations indicated on drawings.
 - See Section 01 1130 - Finish Schedule and Drawings.
 - Products:
 - Schluter-Systems; Schiene: www.schluter.com/#sle.
 - Substitutions: Not permitted.

2.03 SETTING MATERIALS

- A. Mortar Bed Materials: Pre-packaged mix of Portland cement, sand, latex additive, and water.
- Products:
 - LATICRETE International, Inc; LATICRETE 3701 Fortified Mortar Bed: www.laticrete.com/#sle.
 - Substitutions: See Section 01 6000 - Product Requirements.

2.04 GROUTS

- A. See Section 01 1130 - Finish Specification and Drawings.
- B. Manufacturers:
- LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
 - Substitutions: See Section 01 6000 - Product Requirements.
- C. Standard Grout: ANSI A118.6 standard cement grout.
- Applications: Use where indicated on drawings and where no other type of grout is indicated.
 - Use sanded grout for joints 1/8 inch (3.2 mm) wide and larger; use unsanded grout for joints less than 1/8 inch (3.2 mm) wide.
 - Color: As indicated on drawings.

2.05 ACCESSORY MATERIALS

- A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
- Crack Resistance: No failure at 1/8 inch (3.2 mm) gap, minimum.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive tile.
- B. Verify wall surfaces are smooth and flat within tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.
- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Vacuum clean surfaces and damp clean.
- B. Seal substrate surface cracks with filler.
- C. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 INSTALLATION - GENERAL

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a thru A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
- B. Lay tile to pattern indicated on drawings. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install ceramic accessories rigidly in prepared openings.
- G. Install non-ceramic trim in accordance with manufacturer's instructions.
- H. Sound tile after setting. Replace hollow sounding units.
- I. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
- J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- K. Grout tile joints unless otherwise indicated on drawings. Use standard grout unless otherwise indicated on drawings.
- L. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, on ground, with standard grout, unless otherwise indicated on drawings.

3.05 INSTALLATION - WALL TILE

- A. Over gypsum wallboard on wood or metal studs, install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat.

3.06 CLEANING

- A. Clean tile and grout surfaces.

3.07 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

3.08 SCHEDULES

- A. See Section 01 1130 - Finish Schedule and Drawings.

END OF SECTION

SECTION 09 5100 ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Wire hangers, fasteners, hold-down clips, main runners, cross tees, inside/outside corners, and wangle moldings.

1.02 RELATED REQUIREMENTS

- A. Section 01 1130 - Finish Schedule.
- B. Section 09 2116 - Gypsum Board Assemblies.
- C. Section 28 3100 - Fire Detection and Alarm: Fire alarm components in ceiling system.

1.03 REFERENCE STANDARDS

- A. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
- B. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.
- C. ASTM 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- D. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2019 (Reapproved 2025).
- E. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2024a.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on suspension system components and acoustical units.

- D. Samples: Submit two full size samples illustrating material and finish of acoustical units.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
- See Section 01 6000 - Product Requirements, for additional provisions.
 - Extra Acoustical Units: Provide minimum of one full unopened case of each type of ceiling tile units specified.

1.06 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide ceiling panel units and grid components by a single manufacturer.
- B. Coordination of Work: Coordinate ceiling work with installers of related work included, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and fire protection (sprinklers).
- C. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store ceiling components in a dry interior location in their cartons prior to installation to avoid damage. Store cartons in a flat, horizontal position. The protectors between the panels should not be removed until installation.
- B. Do not store in unconditioned spaces with humidity greater than 55 percent or lower than 25 percent relative humidity and temperatures lower than 50 degrees F or greater than 86 degrees F. Panels must not be exposed to extreme temperatures, for example, close to a heating source or near a window with direct sunlight.
- C. Handle ceiling units carefully to avoid chipped edges or damage to units in any way.

1.08 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F (16 degrees C), and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

1.09 PROJECT CONDITIONS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. As interior finish products, the wood veneer panels are designed for installation installation in temperature conditions between 50 degrees F and 86 degrees F, in spaces where the building is enclosed and HVAC systems are functioning and will be in continuous operation. Relative humidity should not fall below 25

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall coverings.
- 1.02 RELATED REQUIREMENTS
 - A. Section 01 1130 - Finish Schedule.

1.03 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.
- B. ASTM F793/F793M - Standard Classification of Wall Coverings and Ceiling Coverings by Use Characteristics; 2025.
- 1.04 SUBMITTALS
 - A. See Section 01 3000 - Administrative Requirements for submittal procedures.
 - B. Product Data: Manufacturer's data sheets for wall covering and adhesive. Indicate compliance with specified flame spread and smoke developed ratings.
 - C. Shop Drawings: Indicate wall elevations with seaming layout.
 - D. Samples: Submit two samples of wall covering, 6 by 6 inches (152 by 152 mm) in size, illustrating color, finish, and texture.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Inspect roll materials for damage upon arrival.
- B. Protect packaged adhesive from temperature cycling and cold temperatures.
- C. Do not store roll goods on end.

1.06 FIELD CONDITIONS

- A. Maintain adhesive and wall covering manufacturer's recommended temperature ranges 24 hours before, during, and after installation.

PART 2 PRODUCTS

2.01 WALL COVERINGS

- A. Performance Requirements:
 - 1. Surface Burning Characteristics: Flame spread index of 25, maximum, and smoke developed index of 50, maximum, when tested in accordance with ASTM E84.
- B. Wall Covering: Fabric-backed vinyl roll stock.
 - 1. See Section 01 1130 - Finish Schedule.

2.02 ACCESSORIES

- A. Adhesive: Type recommended by wall covering manufacturer.
- B. Substrate Filler: As recommended by adhesive and wall covering manufacturers; compatible with substrate.
- C. Substrate Primer and Sealer: Alkyd enamel type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify substrate surfaces are primed and meet manufacturer's requirements to receive work.
- B. Measure moisture content of substrates with electronic moisture meter. Do not apply wall coverings if moisture content of substrate exceeds level recommended by wall covering manufacturer.
- C. Verify flatness tolerance of surfaces does not vary more than 1/8 inch in 10 feet (3 mm in 3 m) or at rate greater than 1/16 inch/ft (5 mm/m).
- D. Notify Architect of detrimental conditions affecting wall covering installation.
- E. Correct detrimental conditions before starting installation.

3.02 PREPARATION

- A. Remove wall plates and accessories impeding wall covering installation.
- B. Wash impervious surfaces with tetra-sodium phosphate; rinse and neutralize; wipe dry.
- C. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings before preparing surfaces or finishing.
- D. Correct surface defects affecting work of this section and clean surfaces. Remove existing coatings exhibiting loose surface defects.
- E. Vacuum surfaces to remove loose particles.

3.03 INSTALLATION

- A. Apply adhesive and wall covering in accordance with manufacturer's instructions.
- B. Apply adhesive to wall immediately before applying wall covering.
- C. Use wall covering in roll number sequence.
- D. Razor trim edges of wall covering. Do not razor trim on gypsum board surfaces.
- E. Smoothly apply wall covering without wrinkles, gaps, or overlaps. Eliminate air pockets and ensure full bond to substrate surface.
- F. Butt edges lightly.
- G. Horizontal seams are not permitted.
- H. Do not seam within 2 inches (51 mm) of internal corners or within 6 inches (152 mm) of external corners.
- I. Do not install wall covering more than 1/4 inch (6 mm) below top of resilient base.
- J. Cover spaces above and below windows and above doors in pattern sequence from roll.
- K. Where wall covering tucks into reveals, metal wallboard, or plaster stops, use contact adhesive within 6 inches (152 mm) of wall covering termination. Ensure complete contact bond.
- L. Remove excess adhesive from seams while wet and before proceeding to next wall covering sheet.
- M. Reinstall wall plates and accessories removed to accommodate work of this section.

3.04 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Clean wall coverings of dust, dirt, excess adhesive, and other contaminants.

END OF SECTION

SECTION 09 9000
PAINTING AND COATING

PART 1 GENERAL

1.01 GENERAL NOTE

- A. The Architect and representatives for Owner shall be notified prior to priming of gypsum board surfaces to allow inspection of the joints and surfaces to determine if the surfaces are acceptable.

1.02 SECTION INCLUDES

- A. Surface preparation of new and existing surfaces.
- B. Field application of paints, stains, varnishes, and other coatings.
- C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Elevator pit ladders.
 - 3. Exposed surfaces of steel lintels and ledge angles.
 - 4. Prime surfaces to receive wall coverings.
 - 5. Mechanical and Electrical:
 - a. In finished areas, paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, and mechanical equipment, unless otherwise indicated.
 - b. In finished areas, paint shop-primed items.
 - c. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.

- 5. Stainless steel, anodized aluminum, bronze, terne, and lead items.
- 6. Floors, unless specifically so indicated.
- 7. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
- 8. Glass.
- 9. Concealed pipes, ducts, and conduits.
- E. Surfaces to be finished are indicated in this section and on the Drawings.
- F. See Schedule - Surfaces to be Finished, at end of Section.

1.03 RELATED REQUIREMENTS

- A. Section 01 1130 - Finish Schedule.
- B. Section 05 5000 - Metal Fabrications: Shop-primed items.
- C. Section 06 2000 - Finish Carpentry.
- D. Section 08 1113 - Hollow Metal Doors and Frames.
- E. Section 09 2116 - Gypsum Board Assemblies.

1.04 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.
- B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020 (Reapproved 2025).

1.05 SUBMITTALS

- A. Product Data: Provide data on all finishing products, including VOC content.
- B. Samples: Submit two paper chip samples, 8 1/2 x 1 1/8 inch (____ x _____ mm) in size illustrating range of colors and textures available for each surface finishing product scheduled.
- C. Manufacturer's Instructions: Indicate special surface preparation procedures.
- D. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.
- E. Maintenance Materials: Furnish the following for 's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Paint and Coatings: 1 gallon (4 L) of each color; store where directed.
 - 3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 10 years experience.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.09 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
 - B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
 - C. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
 - D. Minimum Application Temperatures for Latex Paints: 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.
 - E. Minimum Application Temperature for Varnish Finishes: 65 degrees F (18 degrees C) for interior or exterior, unless required otherwise by manufacturer's instructions.
 - F. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.
- 1.10 EXTRA MATERIALS
- A. See Section 01 6000 - Product Requirements, for additional provisions.
 - B. Supply 1 gallon (4 L) of each color; store where directed.
 - C. Label each container with color in addition to the manufacturer's label.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
 - 1. See Section 01 1130 - Finish Schedule and Drawings.
 - 2. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.
 - 3. Diamond Vogel Paints: www.diamondvogel.com/#/sle.
 - 4. Benjamin Moore & Co: www.benjaminmoore.com/#/sle.
 - 5. Pittsburgh Paints: www.ppgpaints.com/#/sle.
- C. Transparent Finishes:
 - 1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.
- D. Stains:
 - 1. See Section 01 1130 - Finish Schedule and Drawings.
 - 2. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.
- E. Primer Sealers: Same manufacturer as top coats.
 - 1. See Section 01 1130 - Finish Schedule and Drawings.
- F. Block Fillers: Same manufacturer as top coats.
 - 1. See Section 01 1130 - Finish Schedule and Drawings.
- G. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

- A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
 - 1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
 - 3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
 - 4. Supply each coating material in quantity required to complete entire project's work from a single production run.
 - 5. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
 - 1. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D-National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. Architectural coatings VOC limits of State in which the project is located.
 - 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: As indicated in Color Schedule
 - 1. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.

2.03 PAINT SYSTEMS - EXTERIOR

- A. Paint ME-OP-2A - Ferrous Metals, Primed, Alkyd, 2 Coat:

- 1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
- 2. Semi-gloss: Two coats of alkyd enamel.
- B. Paint MgE-OP-3A - Galvanized Metals, Alkyd, 3 Coat:
 - 1. One coat galvanize primer.
 - 2. Semi-gloss: Two coats of alkyd enamel.

2.04 PAINT SYSTEMS - INTERIOR

- A. Paint I-OP - All Interior Surfaces Indicated to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry, brick, wood, plaster, uncoated steel, shop primed steel, galvanized steel, and aluminum.
 - 1. Two top coats and one coat primer.
 - 2. Primer(s): As recommended by manufacturer of top coats.
- B. Paint I-OP-MD-DT - Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals, metals, wood, and wood:
 - 1. Medium duty applications include doors, doors, door frames, door frames, railings, railings, handrails, handrails, guardrails, guardrails, balustrades, and balustrades.
 - 2. Two top coats and one coat primer.
- C. Paint I-OP-DF - Paint I-OP-DF - Dry Fall: Metals; exposed structure and overhead-mounted services in utilitarian spaces in utilitarian spaces, including shop primed steel deck, steel deck, structural steel, structural steel, metal fabrications, metal fabrications, galvanized ducts, galvanized ducts, galvanized conduit, galvanized conduit, galvanized piping, and galvanized piping.
 - 1. Shop primer by others.
 - 2. One top coat/Color as selected..
 - 3. Top Coat Product(s):
 - a. Sherwin-Williams Dryflat Flat, (MPI #55)
- D. Paint WI-TR-VS - T & G wood ceilings/Soffits, Wood, Transparent, Varnish, Stain:
 - 1. Custom Stain - Valspar; Aqueous Wipe Base VXC0265 with two (2) coats sanding sealer applied.
- E. Paint CI-OP-3L - Concrete/Masonry, Opaque, Latex, 3 Coat:
 - 1. One coat of block filler.
 - 2. Semi-gloss: Two coats of latex enamel.
- F. Paint High Performance: Corathane-Moisture Cure Urethane (Single Component).
 - 1. Touch-up with alkyd primer.
 - 2. MCU-Mio Aluminum: Two coats; Corathane-Moisture Cure Urethane (Single Component).
- G. Paint MI-OP-2A - Ferrous Metals, Primed, Alkyd, 2 Coat:
 - 1. Touch-up with alkyd primer.
 - 2. Semi-gloss: Two coats of alkyd enamel.
- H. NOTICE: The Architect and representatives for Owner shall be notified prior to priming of gypsum board surfaces to allow inspection of the joints and surfaces to determine if the surfaces are acceptable.
- I. Paint GI-OP-3LA - Gypsum Board/Plaster, Latex-Acrylic, 3 Coat:
 - 1. One coat of alkyd primer sealer.
 - 2. Eggshell: Two coats of latex-acrylic enamel.
- J. Exposed Overhead Work:
 - 1. Touch-up: Rust-inhibitive waterborne acrylic primer, free of heavy metals.
 - a. DFT: 2.5-5.0 mils.
 - b. Min. Volume Solids: 44%.
 - c. Max. VOC's: 138 gms/L
 - d. Sheen: 0-5 units @ 85 degrees.
 - 2. One Coat: 100% acrylic, waterborne flat dryflat.
 - a. DFT: 3.0-5.0 mils.
 - b. Min. Volume Solids: 40%.
 - c. Max. VOC's: 58 gms/L
 - d. Sheen: 0-5 units @ 85 degrees.
- K. Paint FI-OP-3A - Fabrics/Insulation Jackets, Alkyd, 3 Coat:
 - 1. One coat of alkyd primer sealer.
 - 2. Eggshell: Two coats of alkyd enamel.

2.05 ACCESSORY MATERIALS

- A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of coatings until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D. Test shop-applied primer for compatibility with subsequent cover materials.
- E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.
 - 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
 - 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- H. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- I. Plaster Surfaces to be Painted: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- J. Insulated Coverings to be Painted: Remove dirt, grease, and oil from canvas and cotton.
- K. Aluminum Surfaces to be Painted: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.
- L. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- M. Uncoated Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting, clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
- N. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
- O. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.
- P. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's instructions.

- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance.
- E. Sand wood and metal surfaces lightly between coats to achieve required finish.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint shop-primed equipment, where indicated.
- B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- C. Finish equipment, piping, conduit, and exposed duct work in utility areas in colors according to the color coding scheme indicated.
- D. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.05 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

- A. Protect finished coatings until completion of project.
- B. Touch-up damaged coatings after Substantial Completion.

3.07 SCHEDULE - SURFACES TO BE FINISHED

- A. Do Not Paint or Finish the Following Items:
 - 1. Items fully factory-finished unless specifically noted.
 - 2. Fire rating labels, equipment serial number and capacity labels.
 - 3. Stainless steel items.
- B. Paint the surfaces described below under Schedule - Paint Systems.
- C. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
 - 1. Paint all insulated and exposed pipes occurring in finished areas to match background surfaces, unless otherwise indicated.
 - 2. Paint shop-primed items occurring in finished areas.
 - 3. Paint interior surfaces of air ducts and convactor and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
 - 4. Paint dampers exposed behind louvers, grilles, and convactor and baseboard cabinets to match face panels.

3.08 SCHEDULE - PAINT SYSTEMS

- A. Concrete, Concrete Block, Brick Masonry: Finish all surfaces exposed to view.
 - 1. Interior: CI-OP-3L, semi-gloss.
- B. Gypsum Board: Finish all surfaces exposed to view.
 - 1. Interior Walls: GI-OP-3A, semi-gloss.
- C. Wood: Finish all surfaces exposed to view.
 - 1. Interior trim and frames: WI-OP-3A, semi-gloss.
- D. Steel Doors and Frames: Finish all surfaces exposed to view; MI-OP-3A, gloss.
- E. Exposed Structural Steel Stair and Walkway Support Framing, Steel Guard Rails, Hand Rails, and Exposed to View Stair Components within Atrium:
 - 1. High performance coating: Corathane-Moisture Cure Urethane (Single Component).
- F. Steel Fabrications: Finish all surfaces exposed to view.
 - 1. Exterior: ME-OP-3A, gloss; finish all surfaces, including concealed surfaces, before installation.
 - 2. Interior: MI-OP-3L, gloss.
- G. Shop-Primed Metal Items: Finish all surfaces exposed to view.
 - 1. Finish the following items:
 - a. Exposed surfaces of lintels.
 - b. Exposed surfaces of steel stairs and railings.
- H. Wall Surfaces Under Vinyl Wall Covering: GI-P-1A.
- I. Pipe and Duct Insulation Jackets: Finish all surfaces exposed to view; FI-OP-2L, flat.

3.09 SCHEDULE - COLORS

- A. See Section 01 1130 - Finish Schedule and Drawings.

END OF SECTION

DIVISION 10 - SPECIALTIES

SECTION 10 1400

SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior and interior Jimmy Johns graphics for Free Standing Prototype.
 - 1. See drawings.
- B. Room signs.
- C. Address identification numbers (Metal numbers).
- D. Toilet room plaques.

1.02 RELATED REQUIREMENTS

- A. Section 04 2000 - Unit Masonry.
- B. Section 09 2116 - Gypsum Board Assemblies.

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- B. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
- C. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
- D. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store tape adhesive at normal room temperature.

1.07 FIELD CONDITIONS

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Flat Signs:
 - 1. Metal Arts: www.metalartsletterandplaques.com
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SIGNAGE APPLICATIONS

- A. Room and Door Signs:

- 1. Sign Type: Flat signs with engraved panel media as specified.
- 2. Provide "tactile" signage, with letters raised minimum 1/32 inch (0.8 mm) and Grade II braille.
- 3. Character Height: 1 inch (25 mm).
- 4. Sign Height: 2 inches (50 mm), unless otherwise indicated.
- 5. Office Doors: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.
- 6. Conference and Meeting Rooms: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section with sliding "In Use/Vacant" indicator.
- 7. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
- 8. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", room numbers to be determined later, and braille.
- B. Building Address Numbers:
 - 1. Use individual cast aluminum letters.
 - 2. Font Style: To be selected.
 - 3. Address Numbers: 4".
 - a. Location: To be determined.
 - 4. Case: All upper case.
 - 5. Surface Finish: Natural Satin.
 - 6. Material: Aluminum.
 - 7. Mounting Method: PMS-3 - Projected spacer mount.
 - a. Mount at locations indicated on drawings.

2.03 SIGN TYPES (TOILET ROOM SIGNS)

- A. Accessibility Compliance: All signs are required to comply with ADA Standards for Accessible Design and ANSI/ICC A 117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
- B. Provide "tactile" signage, with letters raised minimum 1/32 inch (0.8 mm) and Grade II braille.
- C. Color and Font: Unless otherwise indicated:
 - 1. Character Font: Helvetica, Arial, or other sans serif font.
 - 2. Character Case: Upper case only.
 - 3. Background Color: To be determined.
 - 4. Character Color: Contrasting color.

2.04 ACCESSORIES

- A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.
- B. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
 - 1. Toilet Room Signs: Locate on wall at latch side of door with centerline of sign at 60 inches (1525 mm) above finished floor.
- C. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

3.03 SIGN SCHEDULE

- A. Jimmy Johns Graphics Package for Stand Alone Prototype.
- B. Interior Toilet Room Signs:
 - 1. Men's Room Signs.
 - 2. Women's Room Signs.
- C. Building Address Numbers:
 - 1. Address Numbers: 4" height. Provide four (4) digits. To be determined.

END OF SECTION

SECTION 10 2800

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Commercial toilet accessories.
- B. Electric hand/hair dryers.
- C. Utility room accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000: Concealed supports for accessories, including in wall framing and plates and above ceiling framing.
- B. Section 09 3000 - Tiling: Ceramic washroom accessories.

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- B. Automated Soap Dispenser: Liquid soap dispenser, wall-mounted, with stainless steel cover and window to gauge soap level, tumbler lock.
- C. Mirrors: Stainless steel framed, 1/4 inch (6 mm) thick annealed float glass; ASTM C1036.
- Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
 - Size: 24 inches x 36 inches.
- D. Grab Bars: Stainless steel, textured surface.
- Standard Duty Grab Bars:
 - Push and Pull Point Load: Minimum 250 lbf (1112 N).
 - Dimensions: 1-1/4 inch (32 mm) outside diameter, minimum 18-gauge, 0.05-inch (1.02 mm) steel thickness, concealed flange mounting, 1-1/2 inch (38 mm) clearance between wall and inside of grab bar.
 - Length and Configuration: As indicated on drawings.
- E. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.

2.05 ELECTRIC HAND/HAIR DRYERS

- A. Electric Hand Dryers:
- Operation: Automatic, sensor-operated on and off.
 - Mounting: Wall-mounted - surface.
 - Cover: Stainless steel with brushed finish.
 - Tamper-resistant screw attachment of cover to mounting plate.
 - Air Velocity: 15,000 linear feet per minute (76 m/s), minimum.
 - Fan Control: Field adjustable down to approximately half-speed.
 - Total Wattage: 500 W, maximum; no heater.
 - Runtime: Field adjustable or automatic, up to 35 seconds.

2.06 UTILITY ROOM ACCESSORIES

- A. Mop and Broom Holder: 0.05 inch (1.3 mm) thick stainless steel, Type 304, hat-shaped channel.
- Holders: Three spring-loaded rubber cam holders.
 - Length: 36 inches (900 mm).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.
- D. Verify that field measurements are as indicated on drawings.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

3.04 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 10 4400 FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire blanket and cabinet.
- C. Fire extinguisher cabinets.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking.

1.03 REFERENCE STANDARDS

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.
- B. FM (AG) - FM Approval Guide; Current Edition.
- C. NFPA 10 - Standard for Portable Fire Extinguishers; 2026.
- D. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide extinguisher operational features.
- C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.
- D. Operation and Maintenance Data: Include test, refill, or recharge schedules and recertification requirements.

1.05 FIELD CONDITIONS

- A. Do not install extinguishers when ambient temperature causes freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguishers:
- Activar Construction Products Group, Inc. - J.L Industries: www.activarcp.com/#sle.
 - Ansul, a Tyco Business: www.ansul.com/#sle.
 - Kidde, a unit of United Technologies Corp.: www.kidde.com/#sle.
 - Potter-Roemer: www.potterroemer.com/#sle.
 - Substitutions: See Section 01 6000 - Product Requirements.
- B. Fire Extinguisher Cabinets and Accessories:
- Activar Construction Products Group, Inc. - J.L Industries: www.activarcp.com/#sle.
 - Kidde, a unit of United Technologies Corp.: www.kidde.com/#sle.
 - Potter-Roemer: www.potterroemer.com/#sle.
 - Substitutions: See Section 01 6000 - Product Requirements.

2.02 FIRE EXTINGUISHERS

- A. General Requirements: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated on drawings.
- B. Multipurpose Dry-Chemical-Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
- Class: A,B,C.
 - Size: 5 lb (2.27 kg).
 - Finish: Baked polyester powder coat; color as selected by Architect.
 - Temperature Range: Minus 65 to 120 degrees F (Minus 54 to 49 degrees C).

2.03 FIRE EXTINGUISHER CABINETS

- A. Cabinet Construction: Non-fire rated.
- B. Cabinet Configuration: Recessed type.
- Size to accommodate accessories.
- C. Cabinet Mounting Hardware: Appropriate to cabinet, with predrilled holes for placement of anchors.
- D. Fabrication: Weld, fill, and grind components smooth.
- E. Finish of Cabinet Interior: White colored enamel.

2.04 ACCESSORIES

- A. Fire Blanket: Fire-retardant-treated wool; red, 62-by-84-inch (1575 by 2135 mm) size.
- B. Extinguisher Brackets: Formed steel, chrome-plated.

- C. Lettering: FIRE EXTINGUISHER text on decal or self-adhesive vinyl, prespaced black lettering in accordance with authorities having jurisdiction.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and interfaces with other work.
- B. Verify substrate and site conditions for product installation are in accordance with manufacturer's written instructions.
- C. Verify rough openings for cabinet are sized and located in accordance with manufacturer's written instructions.
- D. Notify Architect in writing of conditions detrimental to completion of work. Do not proceed with installation until detrimental conditions are corrected.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings, 42 inches (1067 mm) from finished floor to inside bottom of cabinet.
- C. Secure rigidly in place.
- See Section 06 1000 for in-wall blocking requirements.
- D. Place extinguishers and accessories in cabinets.

END OF SECTION

DIVISION 12 - FURNISHINGS SECTION 12 3600 COUNTERTOPS AND WINDOW SILLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops for architectural cabinet work.
- B. Window sills.
- C. Wall-hung counters and vanity tops.
- D. Sinks molded into countertops.

1.02 RELATED REQUIREMENTS

- A. Section 06 4100 - Architectural Wood Casework.
- B. Section 09 3000 - Tiling: Tile for countertops.

1.03 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.
- D. IAPMO Z124 - Plastic Plumbing Fixtures; 2022, with Editorial Revision.
- E. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- F. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- G. PS 1 - Structural Plywood; 2023.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
- Preparation instructions and recommendations.
 - Storage and handling requirements and recommendations.
 - Specimen warranty.
- C. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.
- D. Verification Samples: For each finish product specified, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Natural Stone Institute (NSI) Accredited Natural Stone Fabricator; www.naturalstoneinstitute.org/#sle.
- B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD 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.

PART 2 PRODUCTS

2.01 COUNTERTOPS AND WINDOW SILLS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. See Section 01 1130 - Color and Finish Schedule.
- C. Solid Surfacing window Sills and Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
- Flat Sheet Thickness: 1/2 inch (12 mm), minimum.
 - Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous; non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
 - NSF approved for food contact.
 - Sinks and Bowls: Integral castings; minimum 3/4 inch (19 mm) wall thickness; comply with IAPMO Z124.
 - Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
 - Other Components Thickness: 1/2 inch (12 mm), minimum.
 - Back and End Splashes: Same sheet material, square top; minimum 4 inches (102 mm) high.
 - Skirts: As indicated on drawings.

2.02 MATERIALS

- A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch (19 mm) thick; join lengths using metal spines.
- B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.03 FABRICATION

- A. Fabricate window sills, tops and splashes in the largest sections practicable, with top surface of joints flush.
- Join lengths of tops using best method recommended by manufacturer.
 - Fabricate to overhang fronts and ends of cabinets 1 inch (25 mm) except where top butts against cabinet or wall.
 - Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
- Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
 - Height: 4 inches (102 mm), unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.

- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 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.

3.03 INSTALLATION

- A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- B. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

- A. Variation From Horizontal: 1/8 inch in 10 feet (3 mm in 3 m), maximum.
- B. Offset From Wall, Countertops: 1/8 inch (3 mm) maximum; 1/16 inch (1.5 mm) minimum.
- C. Field Joints: 1/8 inch (3 mm) wide, maximum.

3.05 CLEANING

- A. Clean countertops surfaces thoroughly.

3.06 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

DIVISION 31 - EARTHWORK

SECTION 31 1000 SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and grubbing.
- B. Selective removal and trimming.
- C. Earth stripping and stockpiling.

1.02 RELATED REQUIREMENTS

- A. Section 31 2323 - Fill: Material for filling holes, pits, and excavations generated as result of removal operations.
- B. Section 32 9300 - Plants: Relocation of existing trees, shrubs, and other plants; pruning.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1910.266 - Logging Operations; Current Edition.
- B. ANSI A300 Part 1 - American National Standard for Tree Care Operations - Tree, Shrub, and Other Woody Plant Management - Standard Practices (Pruning); 2017.
- C. ANSI Z133 - American National Standard for Arboricultural Operations - Safety Requirements; 2017.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Site Plan:
 - Indicate areas for temporary construction and field offices.
- C. Clearing Firm Qualification Statement: Documentation of specialized experience.

1.05 QUALITY ASSURANCE

- A. Clearing Firm Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.

1.06 FIELD CONDITIONS

- A. Ambient Conditions: Terminate work during hazardous environmental conditions according to 29 CFR 1910.266.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Sedimentation Barrier: See Civil Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Comply with additional requirements specified in Section 01 7000 - Execution and Closeout Requirements.

3.02 PREPARATION

- A. Coordinate work with utility companies; notify before starting work and comply with local requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are to remain.

3.03 CLEARING AND GRUBBING

- A. Clearing: Cut trees, stumps, shrubs, downed timber, and other vegetation for removal within identified area as indicated on drawings according to 29 CFR 1910.266. Follow recommendations of ANSI Z133 and best local practices for species involved.
- B. Do not remove or damage vegetation beyond limits indicated on drawings.

3.04 SELECTIVE REMOVAL AND TRIMMING

- A. Selective Removal: Individual tree and shrub identified for removal as indicated on drawings according to 29 CFR 1910.266.
- B. Selective Trimming: Individual limbs and branches cut back according to ANSI A300 Part 1 identified for removal as indicated on drawings. Follow recommendations of ANSI Z133 and best local practices for species involved.

3.05 EARTH STRIPPING AND STOCKPILING

- A. Stripping:
 - Remove topsoil within identified area as indicated on drawings.
- B. Stockpiling:
 - Place topsoil in identified areas as indicated on drawings:
 - Pile depth not to exceed 8 feet (2.5 m).

3.06 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Remove unused stockpiled subsoil. Grade stockpile area to prevent standing water.
- C. Leave site clean and ready to receive work.

END OF SECTION

SECTION 31 2200 GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Rough grading.
- B. Fine grading.

1.02 RELATED REQUIREMENTS

- A. Section 31 1000 - Site Clearing.
- B. Section 31 2316 - Excavation.
- C. Section 31 2323 - Fill.

1.03 REFERENCE STANDARDS

- A. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017 (Reapproved 2025).

1.04 SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Gravel: Excavated on-site.
- Graded according to ASTM D2487 Group Symbol GW, GP, or SP.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify survey bench mark and intended elevations for grading areas are as indicated.
- B. Verify the absence of standing or ponding water.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect above- and below-grade utilities to remain.
- D. Notify utility company to remove and relocate utilities.
- E. Provide temporary means and methods to remove standing or ponding water from areas prior to grading.
- F. Protect site features to remain, including but not limited to bench marks, survey control points, and fences.
- G. Remove topsoil in accordance with Section 31 1000.
- H. Excavate materials in accordance with Section 31 2316.
- I. Fill and backfill in accordance with Section 31 2323.

3.03 ROUGH GRADING

- A. Excavate and fill subgrade material to elevations indicated on plans.
- B. Remove and replace unsuitable materials as specified fill.

3.04 FINE GRADING

- A. Scrape and spread subgrade material uniformly smooth and without disruptions as indicated on drawings.

3.05 TOLERANCES

- A. Top Surface: Plus or minus 1/2 inch (13 mm).

3.06 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Remove unused stockpiled subsoil. Grade stockpile area to prevent standing water.
- C. Leave site clean and raked, ready to receive work.

END OF SECTION

SECTION 31 2316 EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and protection.
- B. Dewatering.
- C. Excavation.

1.02 RELATED REQUIREMENTS

- A. Section 31 1000 - Site Clearing.
- B. Section 31 2200 - Grading.
- C. Section 31 2323 - Fill.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Delegated Design Documents: Support and protection plan drawings and calculations sealed by designer.
- C. Field Quality Control Submittals: Document visual inspection of loadbearing excavated surfaces.
- D. Project Record Documents: Record drawings at project closeout; see Section 01 7000 - Execution and Closeout Requirements. On drawings, show locations of installed support materials left in place, including referenced locations and depths.

1.04 FIELD CONDITIONS

- A. Ambient Conditions: Do not perform excavation during periods of heavy rain as directed by Architect.
- B. Existing Conditions: See site and utility survey, geotechnical report, and site drawing; see Section 00 3100.
- C. Utility Location: Notify Call Before You Dig (811) before excavation to request approximate underground utility marking.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify survey bench mark elevations are as indicated on drawings.

3.02 PREPARATION

- A. See Section 31 1000 for site clearing and topsoil removal.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect survey bench marks, control points, and monuments from excavating equipment and vehicular traffic.
- D. Locate and identify known utilities to remain and protect from damage.

3.03 SUPPORT AND PROTECTION

- A. Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

3.04 DEWATERING

- A. Prevent surface water and groundwater from entering excavations and surrounding areas.
- B. Dispose of water without causing surface erosion, sediment buildup, or endangering public health or property.

3.05 EXCAVATION

- A. Grade top perimeter of excavation to prevent surface water collection.
- B. General Excavation:
 - Excavate to indicated contours, elevations, and grades.
- C. Excavation to accommodate foundations and underground utilities.
 - Excavate to specified elevations.
 - Over-excavate to safely install, adjust, and remove forms, bracing, or supports necessary for installation of work.
- D. Notify Architect of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

3.06 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Provide access for visual inspection of loadbearing excavated surfaces by Architect before proceeding with work.

3.07 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Stockpile excavated material for re-use in area designated on-site; see Section 31 2200.
- C. Remove excavated material unsuitable for re-use from site.
- D. Remove excess excavated material from site.

3.08 PROTECTION

- A. Divert surface water away from excavations.
- B. Keep excavations free of standing water.
- C. Maintain stability of banks and loose soils; prevent from falling into excavations.
- D. Maintain excavations in satisfactory, undisturbed condition.
- E. Protect bottom of excavations from freezing.

END OF SECTION

SECTION 31 2323 FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for building volume below grade, footings, slabs-on-grade, paving, and utilities within the building.
- B. Backfilling and compacting for utilities outside the building to utility main connections.
- C. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.
- B. Section 31 1000 - Site Clearing.
- C. Section 31 2200 - Grading: Site grading.
- D. Section 31 2316 - Excavation: Removal and handling of soil to be re-used.
- E. Section 32 9119 - Landscape Grading.

1.03 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.

4. See Section 32 9119 for topsoil placement.
- 3.05 TOLERANCES**
- A. Top Surface of General Filling: Plus or minus 1 inch (25 mm) from required elevations.
- 3.06 FIELD QUALITY CONTROL**
- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Soil Fill Materials:
1. Perform compaction density testing on compacted fill in accordance with ASTM D1556 and ASTM D6938.
 2. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
 3. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- 3.07 CLEANING**
- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

DIVISION 32 - EXTERIOR IMPROVEMENTS

**SECTION 32 9119
LANDSCAPE GRADING**

PART 1 GENERAL

1.01 SECTION INCLUDES

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

1.05 FIELD CONDITIONS

PART 2 PRODUCTS

2.01 MATERIALS

PART 3 EXECUTION

3.01 EXAMINATION

3.02 PREPARATION

3.03 TOPSOIL PLACEMENT

3.04 FINISH GRADING

3.05 CLEANING

3.06 PROTECTION

END OF SECTION

**SECTION 32 9223
SODDING**

PART 1 GENERAL

1.01 SECTION INCLUDES

1.02 RELATED REQUIREMENTS

1.03 DEFINITIONS

1.04 REFERENCE STANDARDS

1.05 SUBMITTALS

1.06 QUALITY ASSURANCE

1.07 DELIVERY, STORAGE, AND HANDLING

PART 2 PRODUCTS

2.01 MATERIALS

2.02 ACCESSORIES

PART 3 EXECUTION

3.01 EXAMINATION

3.02 PREPARATION

3.03 FERTILIZING

3.04 LAYING SOD

3.05 CLEANING

3.06 MAINTENANCE

END OF SECTION

**SECTION 32 9300
PLANTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

- B. Maintenance Data: Include cutting and trimming method ; types, application frequency, and recommended coverage of fertilizer .

1.05 QUALITY ASSURANCE

1.06 DELIVERY, STORAGE, AND HANDLING

1.07 FIELD CONDITIONS

1.08 WARRANTY

PART 2 PRODUCTS

2.01 PLANTS

2.02 SOIL MATERIALS

2.03 SOIL AMENDMENT MATERIALS

2.04 MULCH

2.05 ACCESSORIES

PART 3 EXECUTION

3.01 EXAMINATION

3.02 PREPARATION OF SUBSOIL

3.03 PLACING TOPSOIL

3.04 FERTILIZING

3.05 PLANTING

3.06 PLANT SUPPORT

3.07 FIELD QUALITY CONTROL

3.08 CLEANING

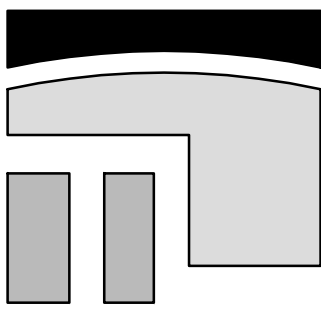
3.09 MAINTENANCE

3. Do not allow climbing, twining, or creeping plants to encroach into other species.
4. Replace mulch as required and remove debris.

D. Tree and Shrub Maintenance:

E. Cleanup:

END OF SECTION



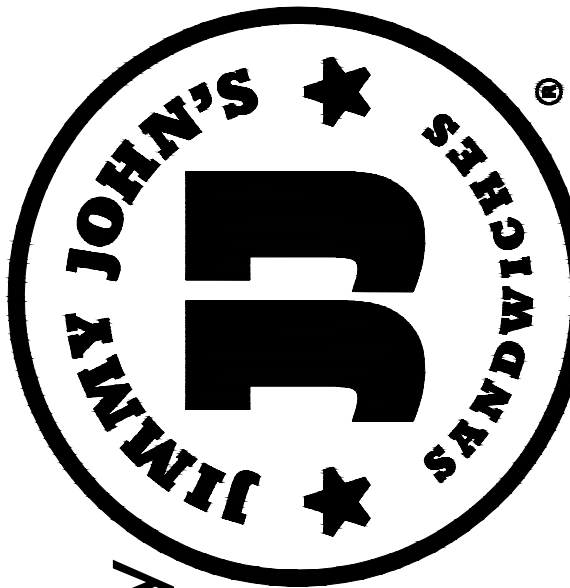
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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Architect under the laws of the State of North Dakota.

TS

Date AUGUST 21, 2026 Reg. No. 923

Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

TS, MB

Date:

AUGUST 21, 2026

Revision Date:

Job Number:

2026.25

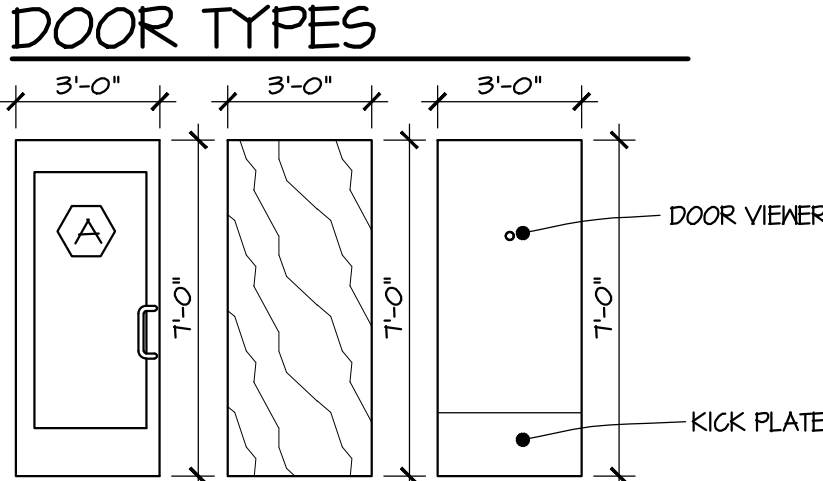
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Specification
Sheet

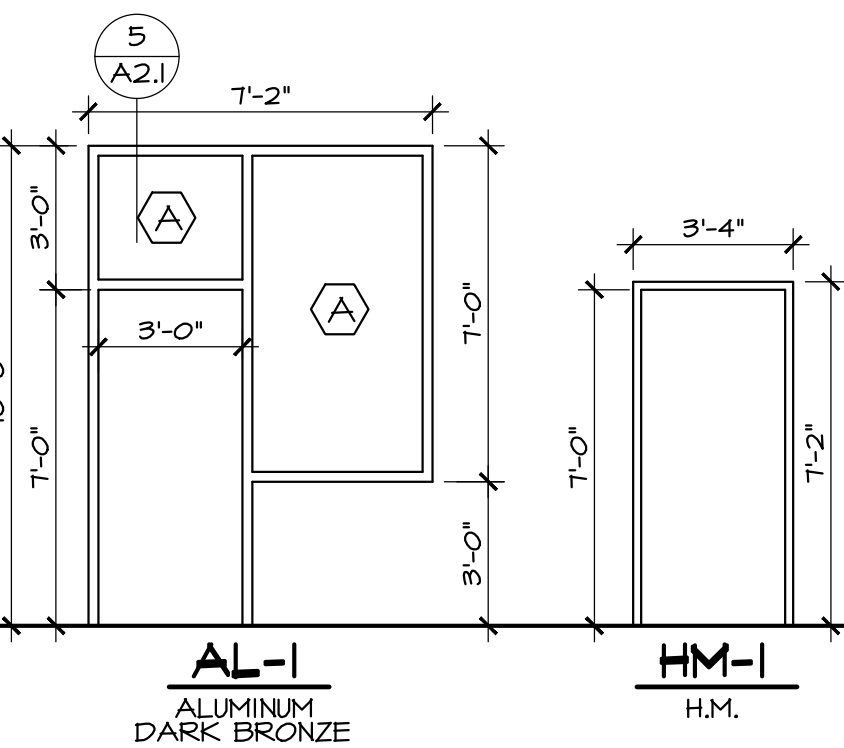
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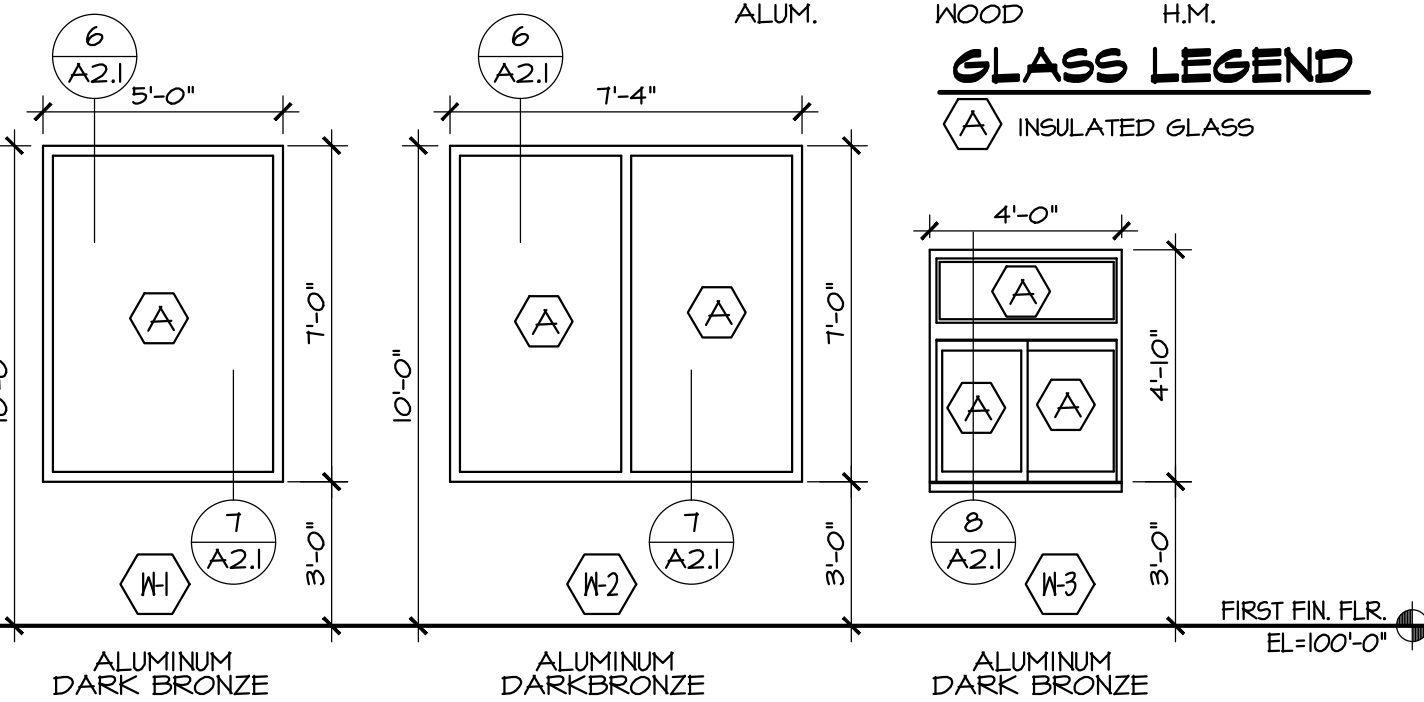
DOOR SCHEDULE												
DOOR NO.	DOOR		FRAME		DETAILS	JAMB	HWDE. GROUP	FIRE RATING (MINUTE)	CARD ACCESS HWDE.			REMARKS
	SIZE	MAT.	TYPE	MAT.	TYPE	HEAD						
100	3'-0"x7'-0"x1 3/4"	ALUM.	A	ALUM.	AL-1	5/A2.1	5/A2.1 SIM.	1	-			
101	3'-0"x7'-0"x1 3/4"	MD	B	H.M.	H.M.-1	1/A2.1	2/A2.1	2	-			MENS
102	3'-0"x7'-0"x1 3/4"	MD	B	H.M.	H.M.-1	1/A2.1	2/A2.1	2	-			WOMENS
105	3'-0"x7'-0"x1 3/4"	H.M.	C	H.M.	H.M.-1	3/A2.1	4/A2.1	3	-			STORAGE



FRAME TYPES



WINDOW TYPES



HARDWARE SCHEDULE

GROUP 1: STOREFRONT ENTRY DOORS

- (1) CLR PR800U CLOSER (CLEAR ANODIZED)
- (1) PUSH BAR
- (1) PULL PLATE
- (1) THRESHOLD
- (1) SWEEP
- (1) DEADBOLT CYLINDER
- (1) THUMBURNS
- (1) WEATHER STRIP
- (1) CLR 20083DU CONTINUOUS HINGE (CLEAR ANODIZED)
- (1) DOOR BUMPER

GROUP 2: CUSTOMER RESTROOM DOORS

- (1 1/2) PAIR HAGER HINGES 981279 4 1/2 X 4 1/2 (US26D FIN)
- (1) YALE ALUM602UN 626 AUGUSTA LEVER HANDLED PRIVACY LOCK (US26D)
- (1) LCN SUPER SMOOTH DOOR CLOSER SERIES #4041 (US26D FIN)
- (1) HAGER 232W US26D CONVEX WALL STOP
- (2) 6"x34" - HAGER 190S US32D S/S KICKPLATES (BOTH SIDES)

GROUP 3: EXTERIOR SERVICE DOORS

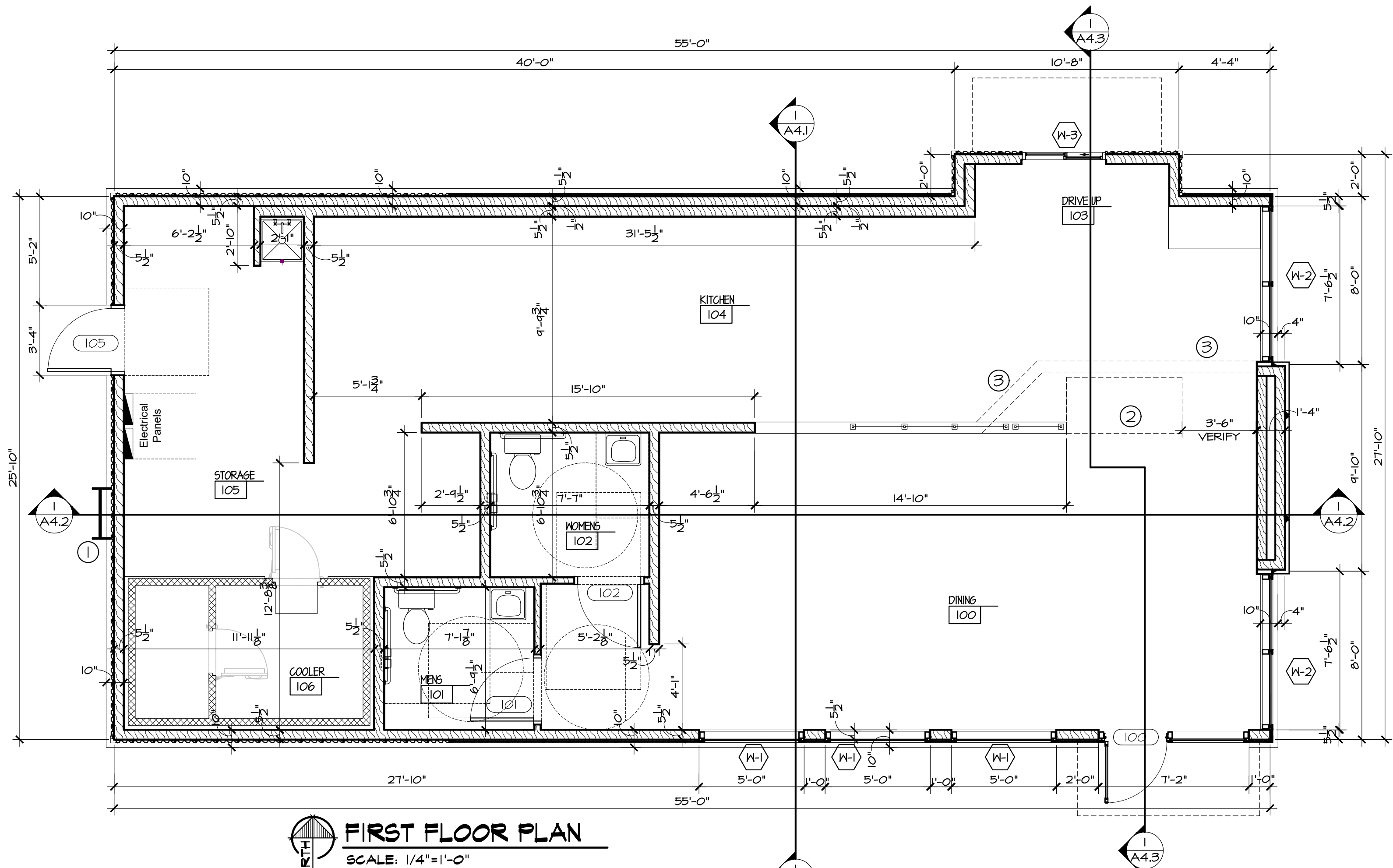
- (1) SENTINEL 4016 CLOSER (CLEAR ANODIZED)
- (1) PUSH BAR
- (1) PULL PLATE
- (1) KICK PLATE
- (1) THRESHOLD
- (1) SWEEP
- (1) THUMBURNS
- (1) WEATHER STRIP
- (1) 2" VIEWER
- (1) CLR 20083DU CONTINUOUS HINGE (CLEAR ANODIZED)

DOOR NOTES

- EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
- ALL FIRE RATED DOORS AND ALL EXTERIOR SWINGING DOORS SHALL HAVE CLOSERS.
- ALL INTERIOR DOORS TO BE SOLID WOOD CORE WITH BIRCH VENEER STAINED SEE FINISH SCHEDULE SEE DOOR SCHEDULE.
- ALL NEW DOOR HARDWARE SHALL BE BRUSHED ALUMINUM / SATIN CHROME (US 26D FINISH), UNLESS NOTED OTHERWISE.
- ENTRY / EXIT DOORS TO HAVE SIGN "THIS DOOR TO REMAIN UNLOCKED WHILE BUILDING IS OCCUPIED - POSTED"
- DOOR OPENING FORCE SHALL NOT EXCEED 5 LBS
- ALL DOOR OPERATING HARDWARE SHALL BE MOUNTED AT 38" A.F.F.
- DOOR HARDWARE MUST BE OPERABLE BY A SINGLE HAND WITHOUT TIGHT GRASPING, TIGHT PINCHING OR TWISTING.
- "S" INDICATES SAFETY GLASS
- HOLLOW METAL FRAMES MUST BE 2" WELDED FRAMES
- ALL INTERIOR DOOR CLOSERS MUST NOT BE SEEN FROM DINING SIDE.
- SILENCERS ARE REQUIRED FOR ALL H.M. DOOR FRAMES - HAGER 207D DOOR SILENCER.

DOOR REMARKS

- A. PROVIDE WOOD BLOCKING FOR DOOR STOPS.
- B. CLOSER TO BE MOUNTED ON DOOR, NOT FRAME.
- C. CLOSER TYPE TO BE 90° OPENING.
- D. PAINT DOORS AND FRAMES BOTH SIDES PS-J-5.
- E. PROVIDE H.C. ACCESSIBLE MENS/WOMENS SIGNAGE AT WALL OUTSIDE OF DOOR AS REQUIRED BY GOVERNING AUTHORITIES.
- F. REFURBISH WEATHERSTRIPPING, DOOR BOTTOM, ETC. TO LIKE NEW CONDITION.



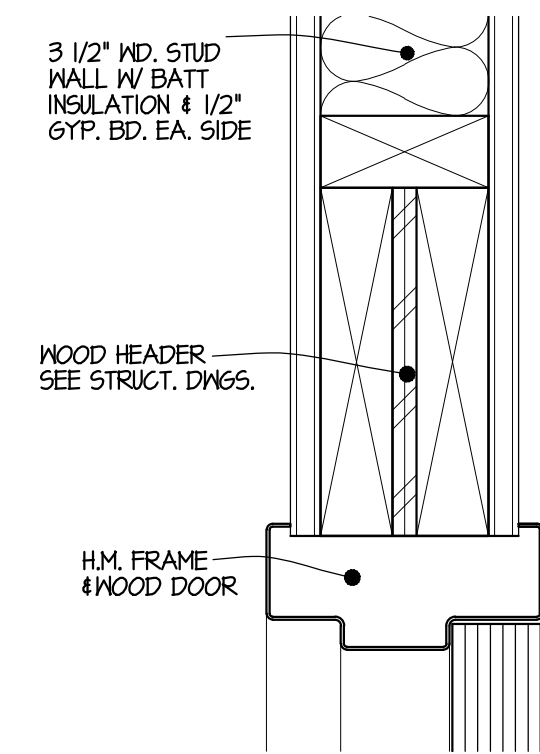
FIRST FLOOR PLAN
SCALE: 1/4"=1'-0"

SHEET A2.1 - FIRST FLOOR PLAN GENERAL NOTES:

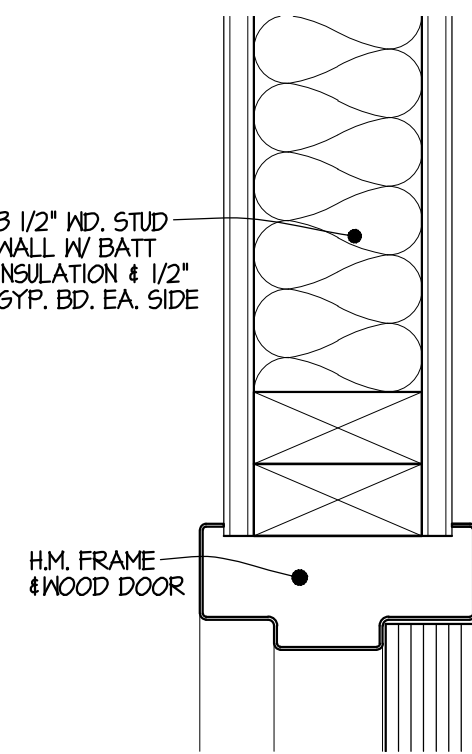
- ALL DIMENSIONS ARE FROM FACE OF NEW WOOD STUD WALLS UNLESS OTHERWISE NOTED.
- ALL NEW INTERIOR WALLS TO BE 3 1/2" WOOD STUDS WITH SOUND ATTENUATION BATT INSULATION UNLESS OTHERWISE NOTED.

SHEET A2.1 - FIRST FLOOR PLAN NOTES:

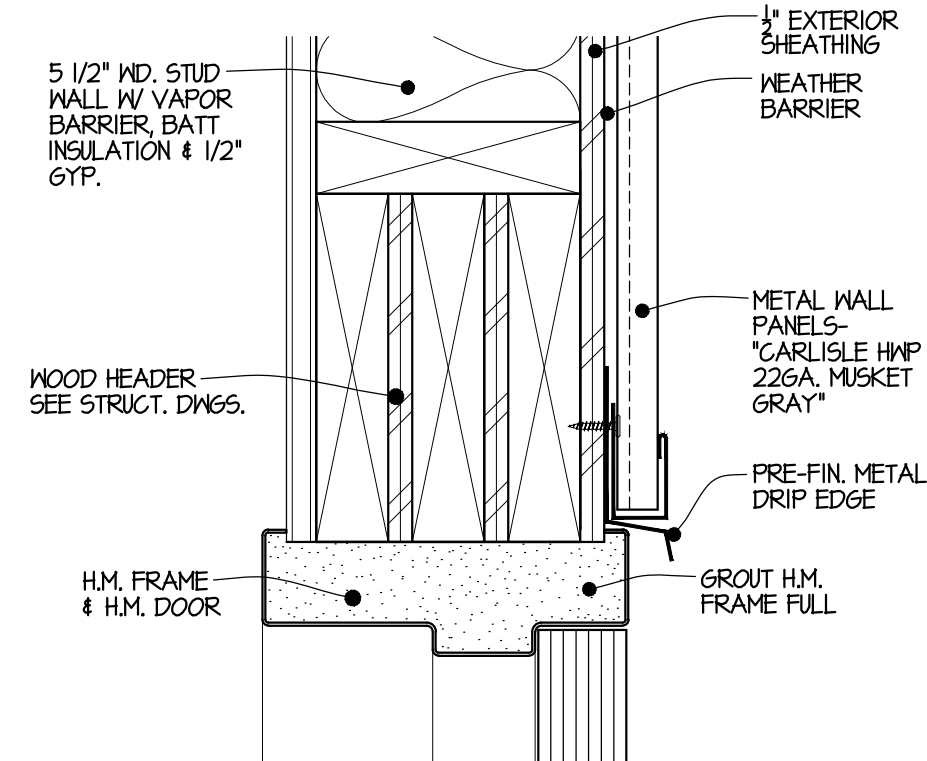
- LOCATION OF ROOF ACCESS LADDER.
- LOCATION OF OWNER PROVIDED CASEWORK-VER.
- DASHED LINE INDICATES SOFFIT ABOVE.



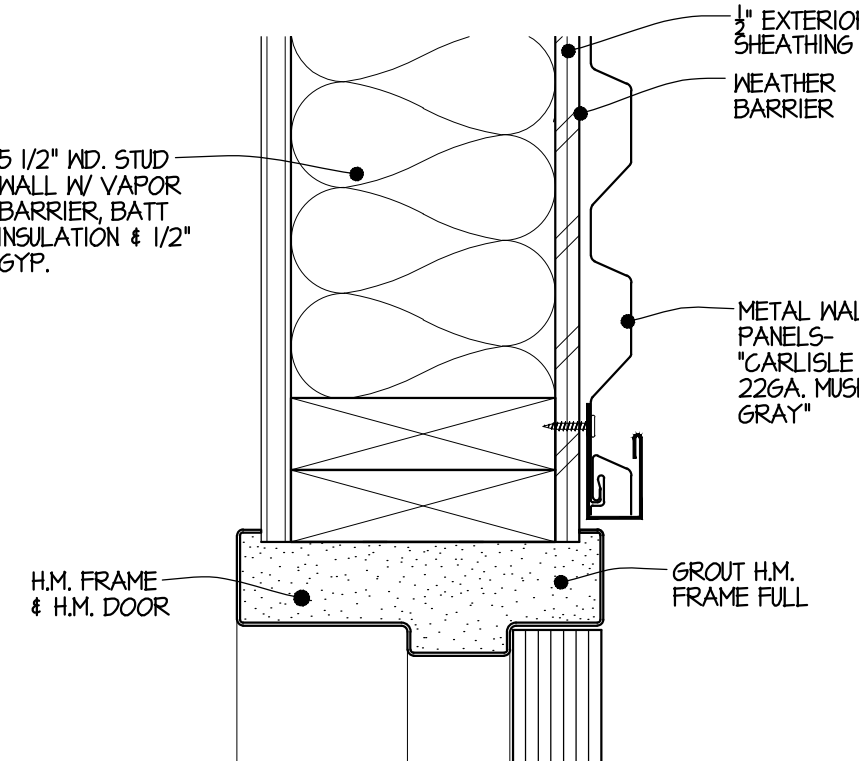
1 DETAIL HEAD
A2.1 SCALE: 3"=1'-0"



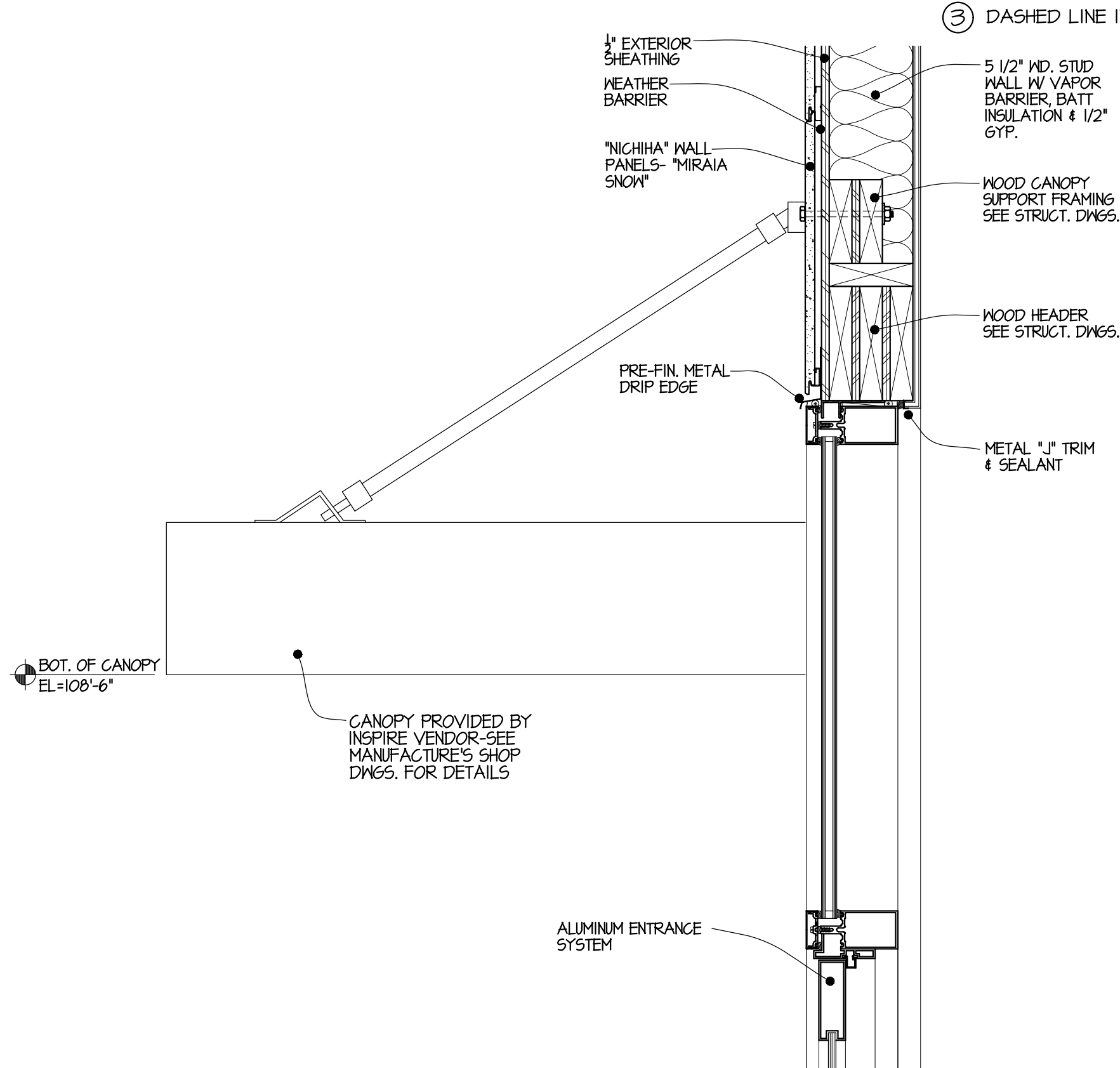
2 DETAIL JAMB
A2.1 SCALE: 3"=1'-0"



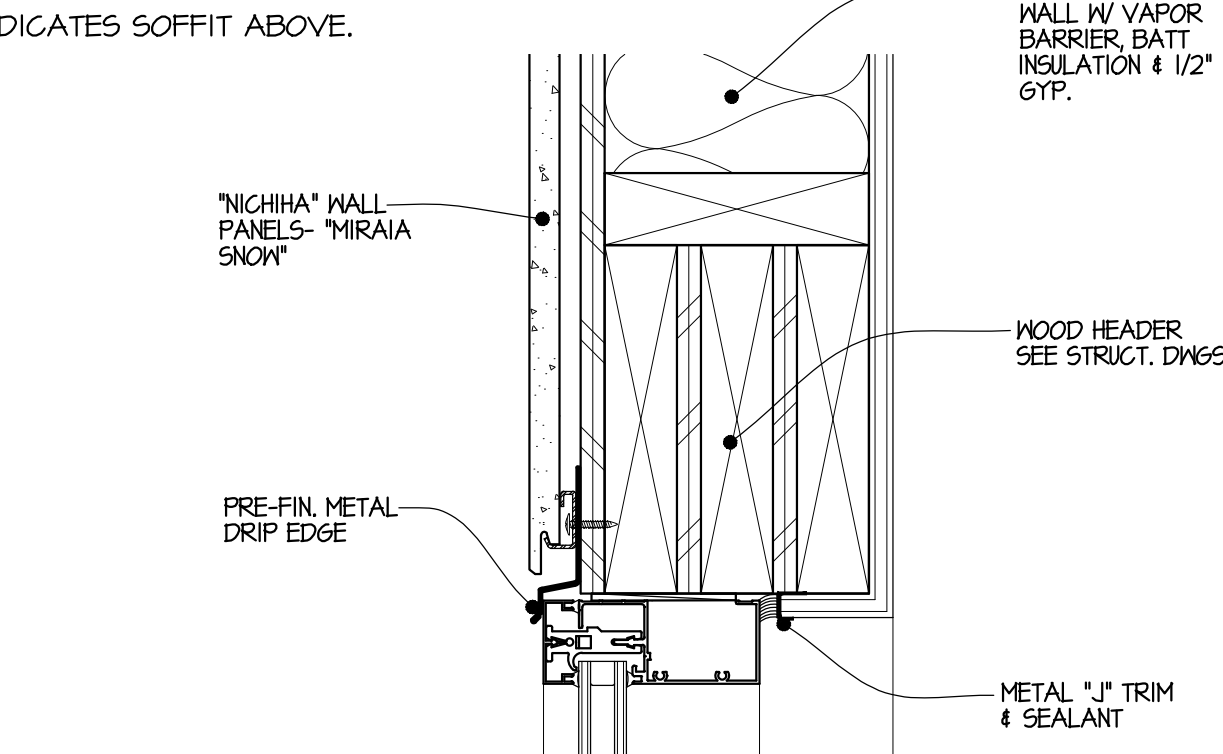
3 DETAIL HEAD
A2.1 SCALE: 3"=1'-0"



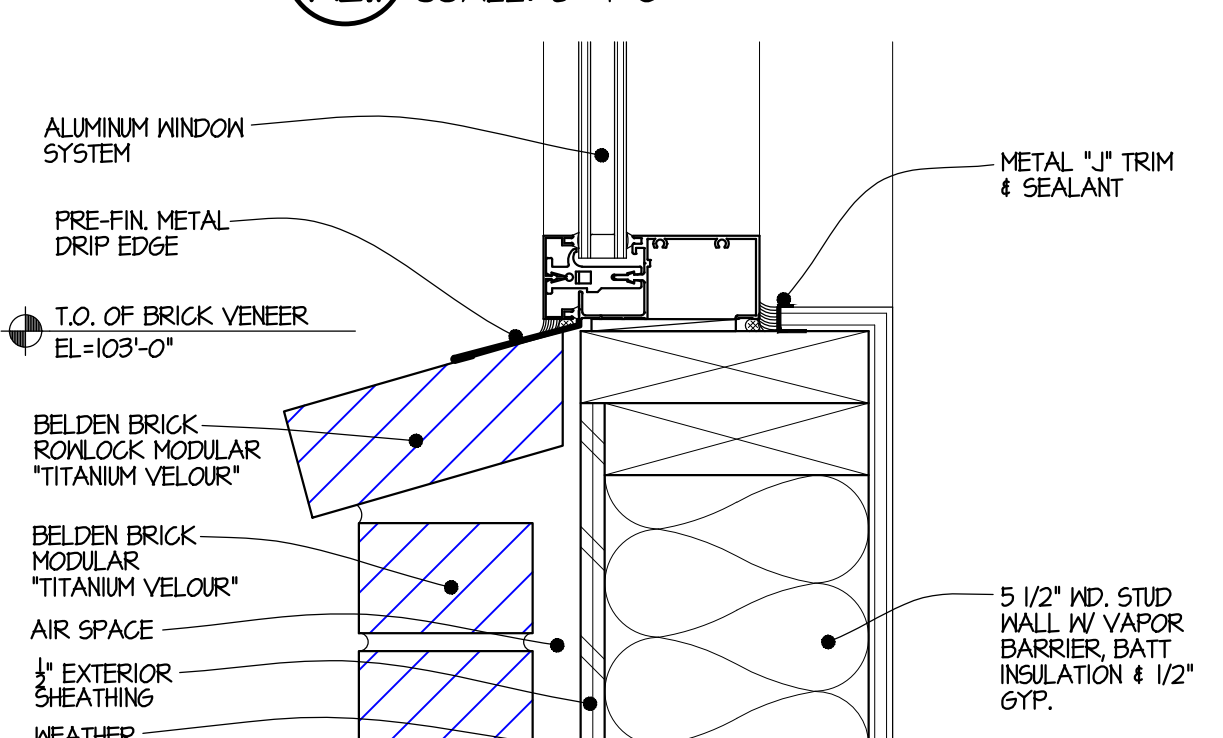
4 DETAIL JAMB
A2.1 SCALE: 3"=1'-0"



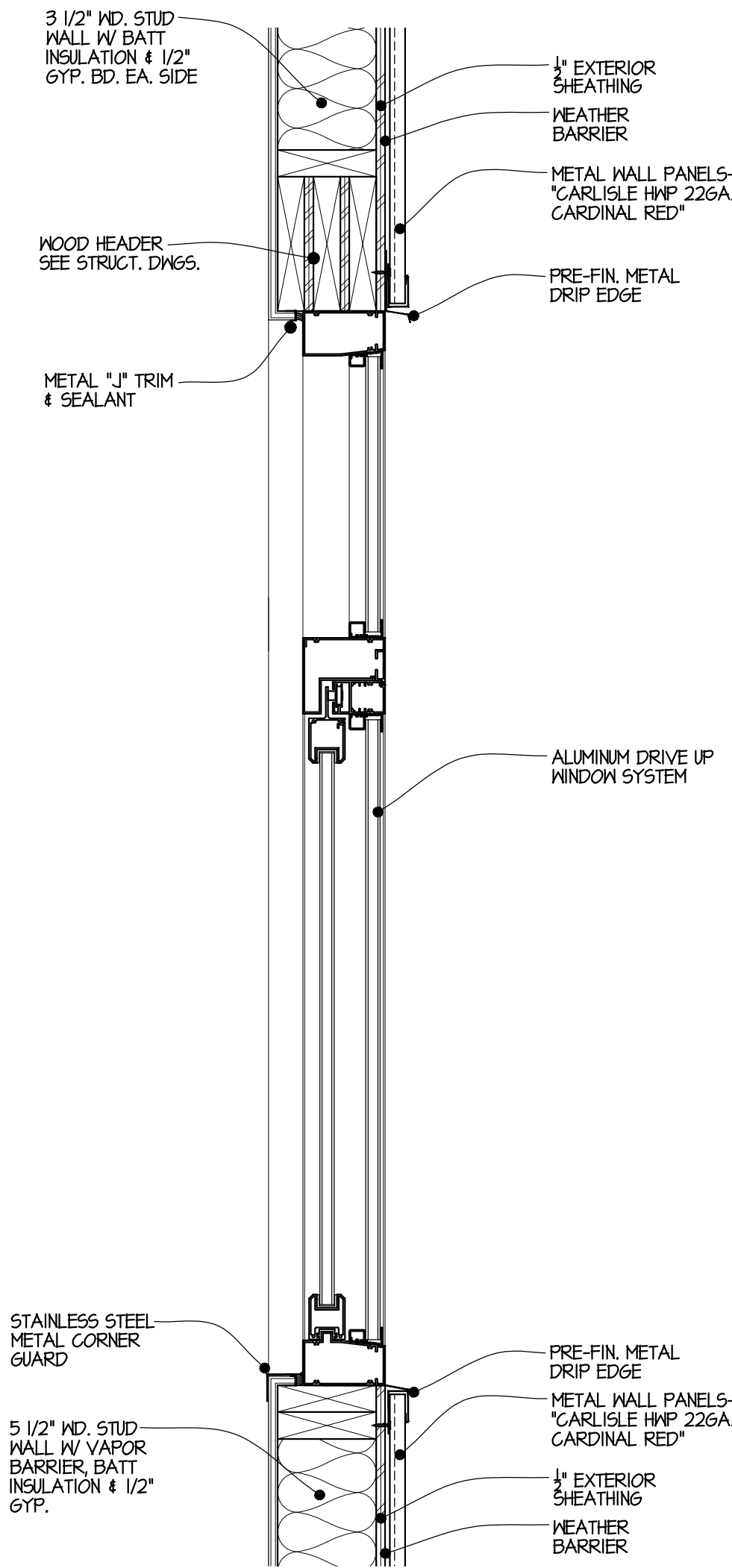
5 DET. HEAD-JAMB SIM.
A2.1 SCALE: 1 1/2"=1'-0"



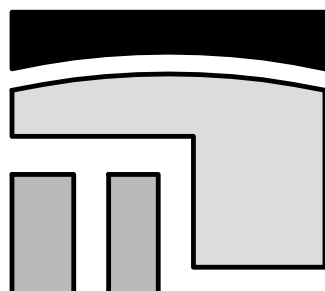
6 DETAIL HEAD-JAMB SIM.
A2.1 SCALE: 3"=1'-0"



7 DETAIL SILL
A2.1 SCALE: 3"=1'-0"



8 DETAIL- DRIVE-UP
A2.1 SCALE: 1 1/2"=1'-0"



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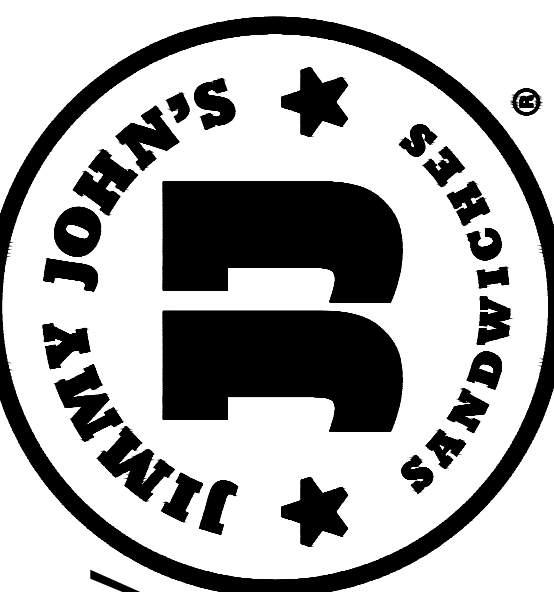
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Signature

Date AUGUST 21, 2026 Reg. No. 923

Project:



New Facility For:

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:
TS, MB

Date:
AUGUST 21, 2026

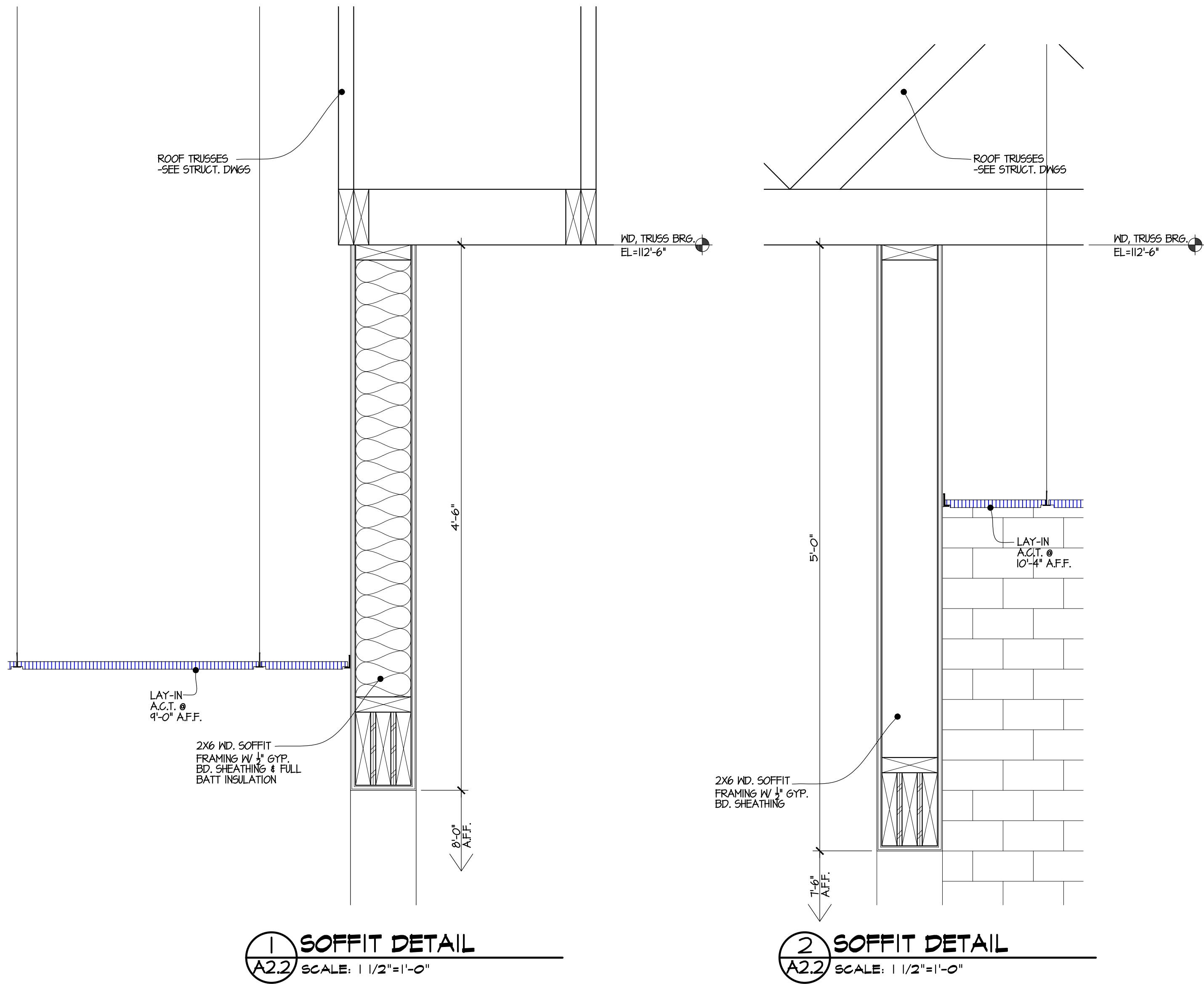
Revision Date:

Job Number:
2026.25

Sheet Name:
FIRST FLOOR PLAN
DOOR & WINDOW
SCHEDULE &
DETAILS

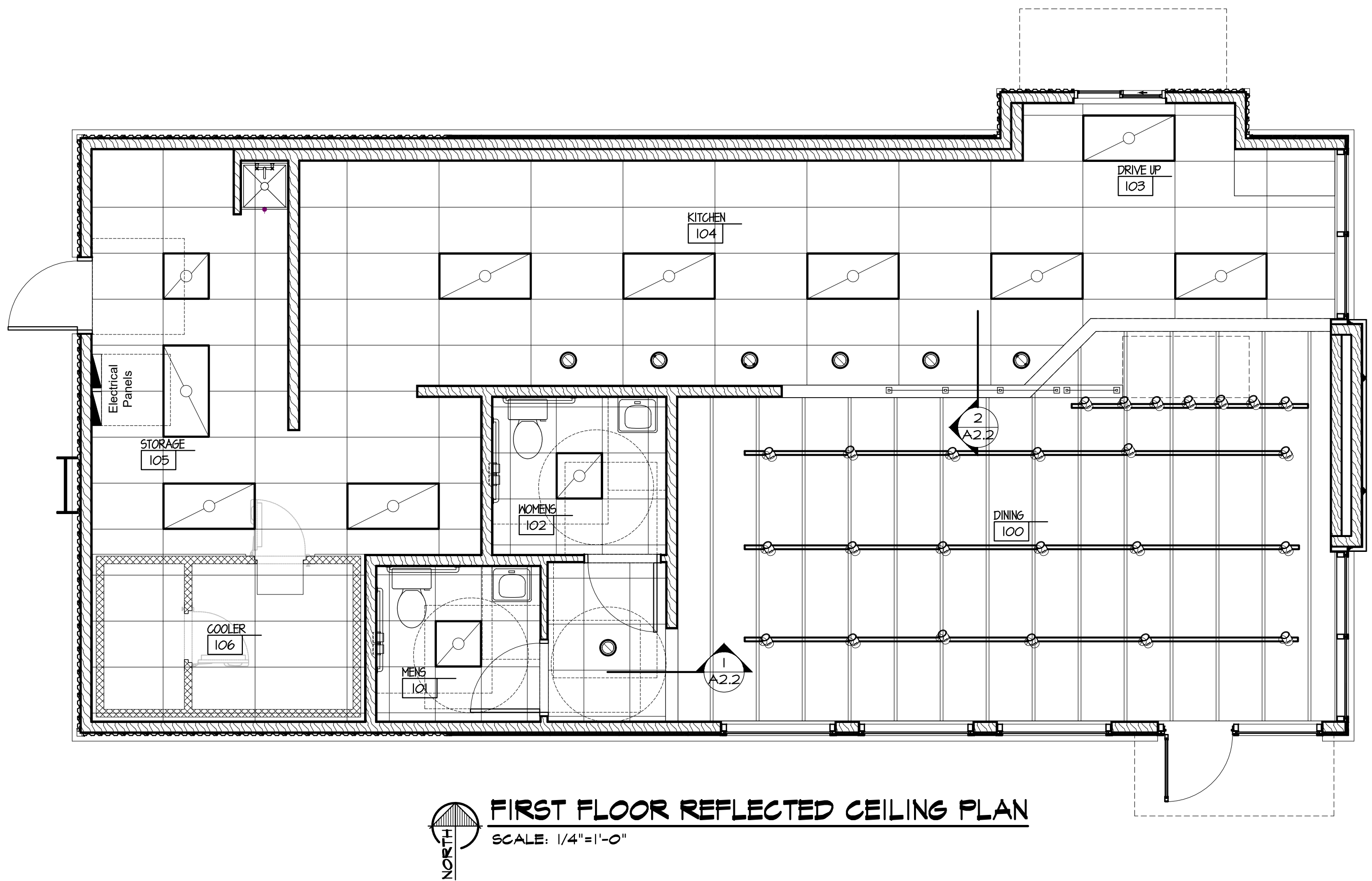
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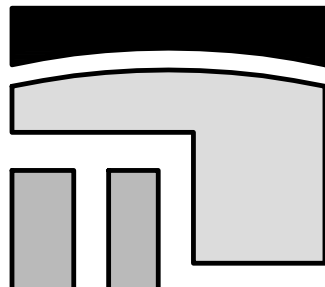


1 SOFFIT DETAIL
A2.2 SCALE: 1/2"=1'-0"

2 SOFFIT DETAIL
A2.2 SCALE: 1/2"=1'-0"



FIRST FLOOR REFLECTED CEILING PLAN
SCALE: 1/4"=1'-0"



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

TS

Date AUGUST 21, 2026 Reg. No. 923

Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:
TS, MB

Date:
AUGUST 21, 2026

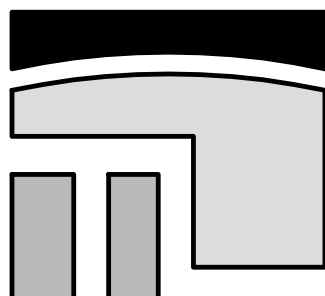
Revision Date:

Job Number:
2026.25

Sheet Name:
REFLECTED
CEILING PLAN

Sheet Number:

A2.2



STROH

ARCHITECTS INTERIORS

8 Seventh St. N.

Fargo, N.D. 58102

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TS

Date AUGUST 21, 2026 Reg. No. 923

Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

TS, MB

Date:

AUGUST 21, 2026

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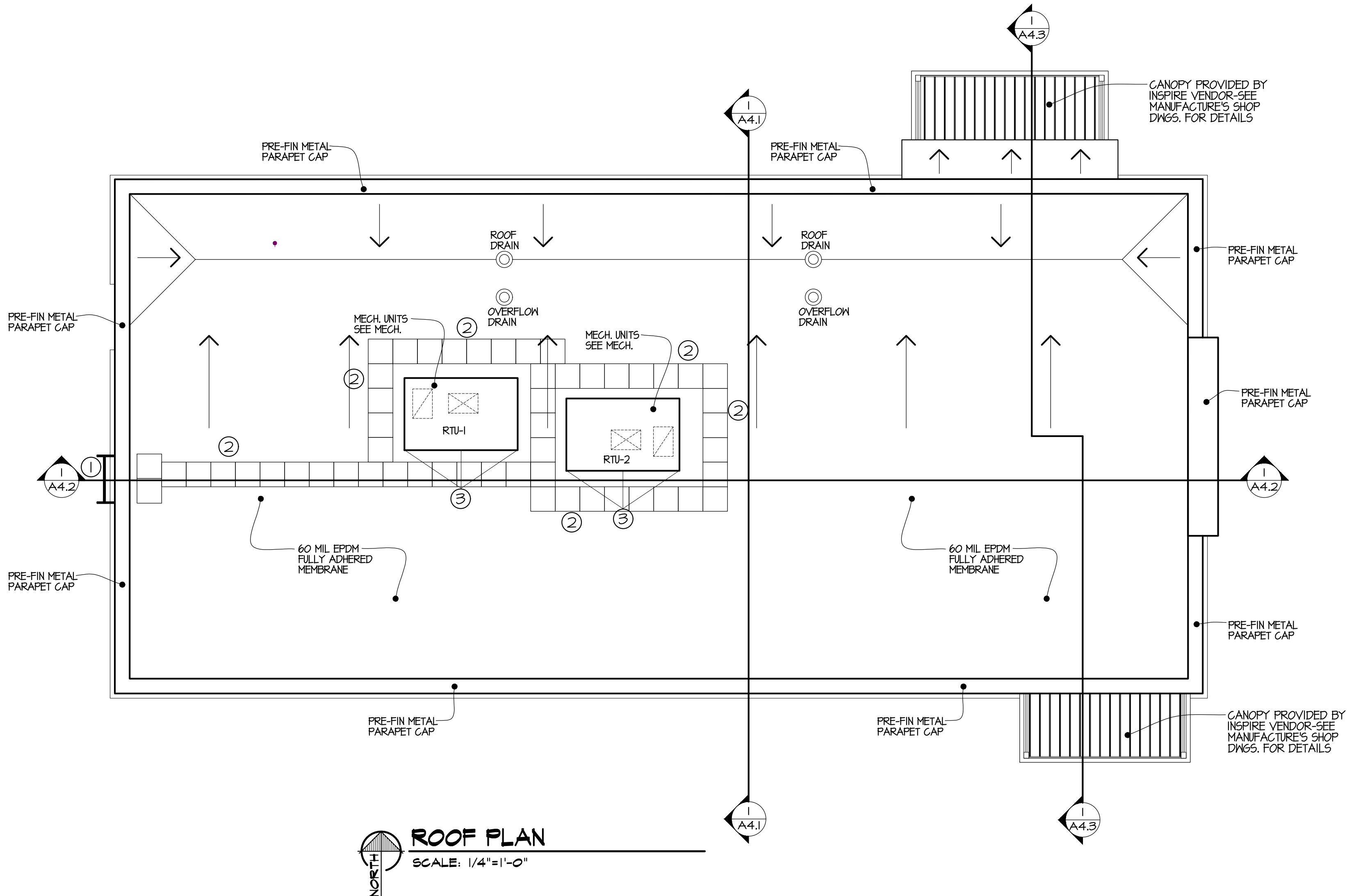
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Sheet Name:

ROOF PLAN

Sheet Number:

A2.3



ROOF PLAN

SCALE: 1/4"=1'-0"

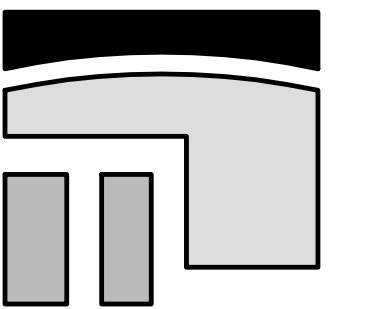
ROOF PLAN GENERAL NOTES:

- COORDINATE ALL ROOF EQUIPMENT LOCATIONS WITH MECH. & ELEC.
- ARROWS INDICATE DIRECTION OF SLOPE FOR TAPERED INSULATION.
- ROOF INSULATION SHALL SLOPE 1/8" PER FOOT OR AS PER MANUFACTURERS RECOMMENDATION.
- LOCATE OVERFLOW DRAINS 2" HIGHER THAN ROOF DRAINS.

ROOF PLAN NOTES:

- LOCATION OF ROOF ACCESS LADDER.
- INDICATES LOCATION OF PAVERS OVER SLIP SHEET. VERIFY LOCATIONS WITH MECH EQUIPMENT.
- LOCATION OF ROOF CRICKETS AS REQUIRED.

A2.4



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Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
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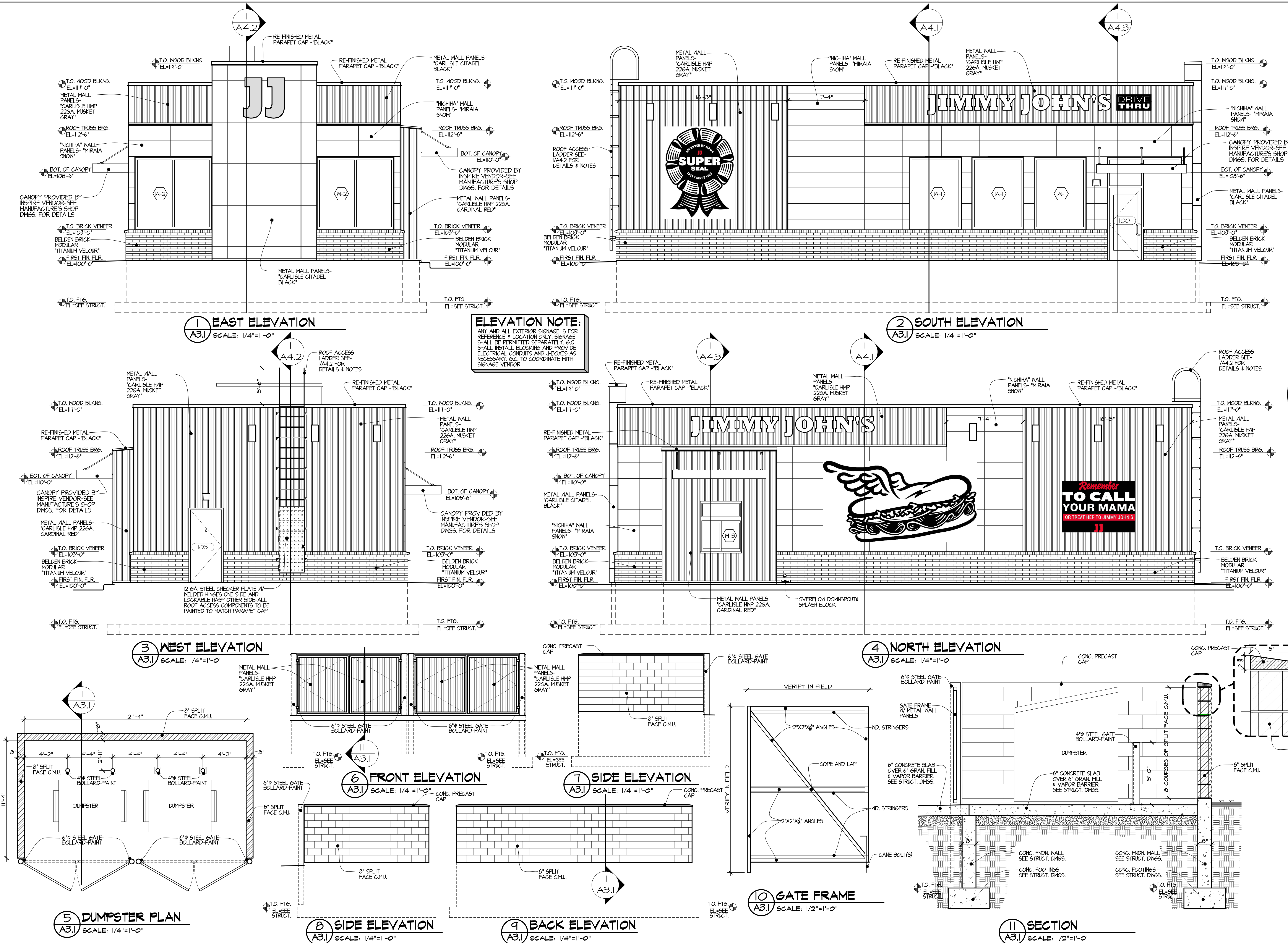
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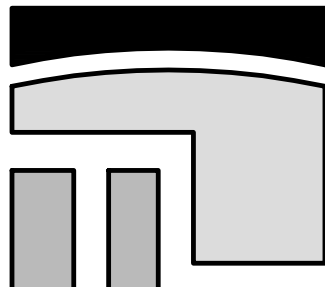
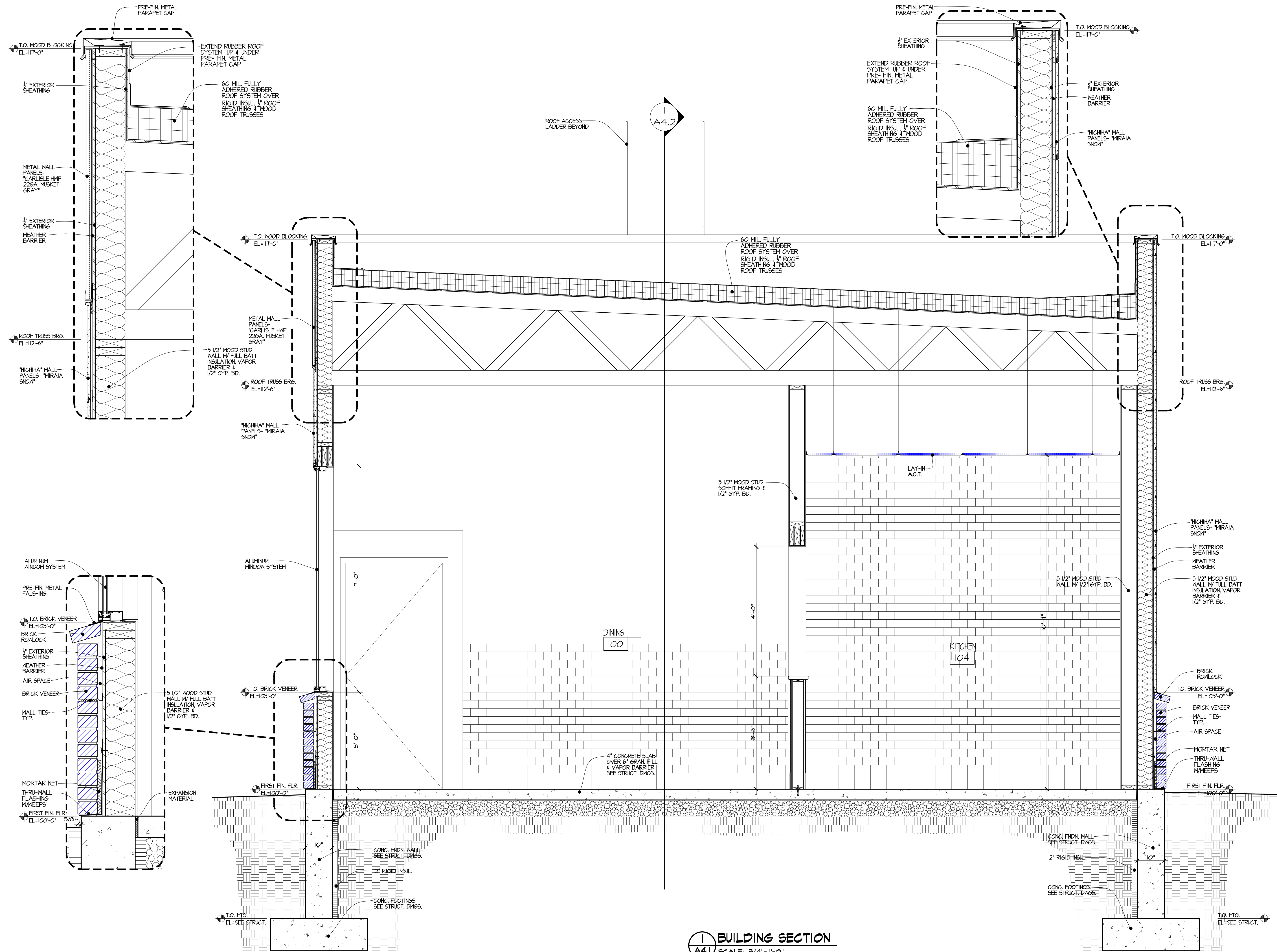
Job Number:
2026.25

Sheet Name:
BUILDING
ELEVATIONS &
DUMPSTER
DETAILS

Sheet Number:

A3.1





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[Signature]

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Project:



New Facility
For:
212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST

DEVILS LAKE, ND 58301

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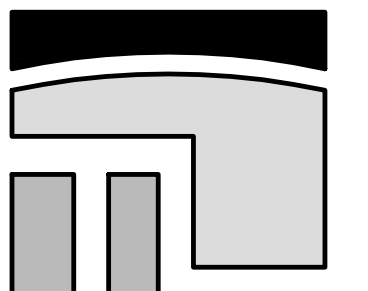
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BUILDING

SECTIONS

Sheet Number:

A4.1



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New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

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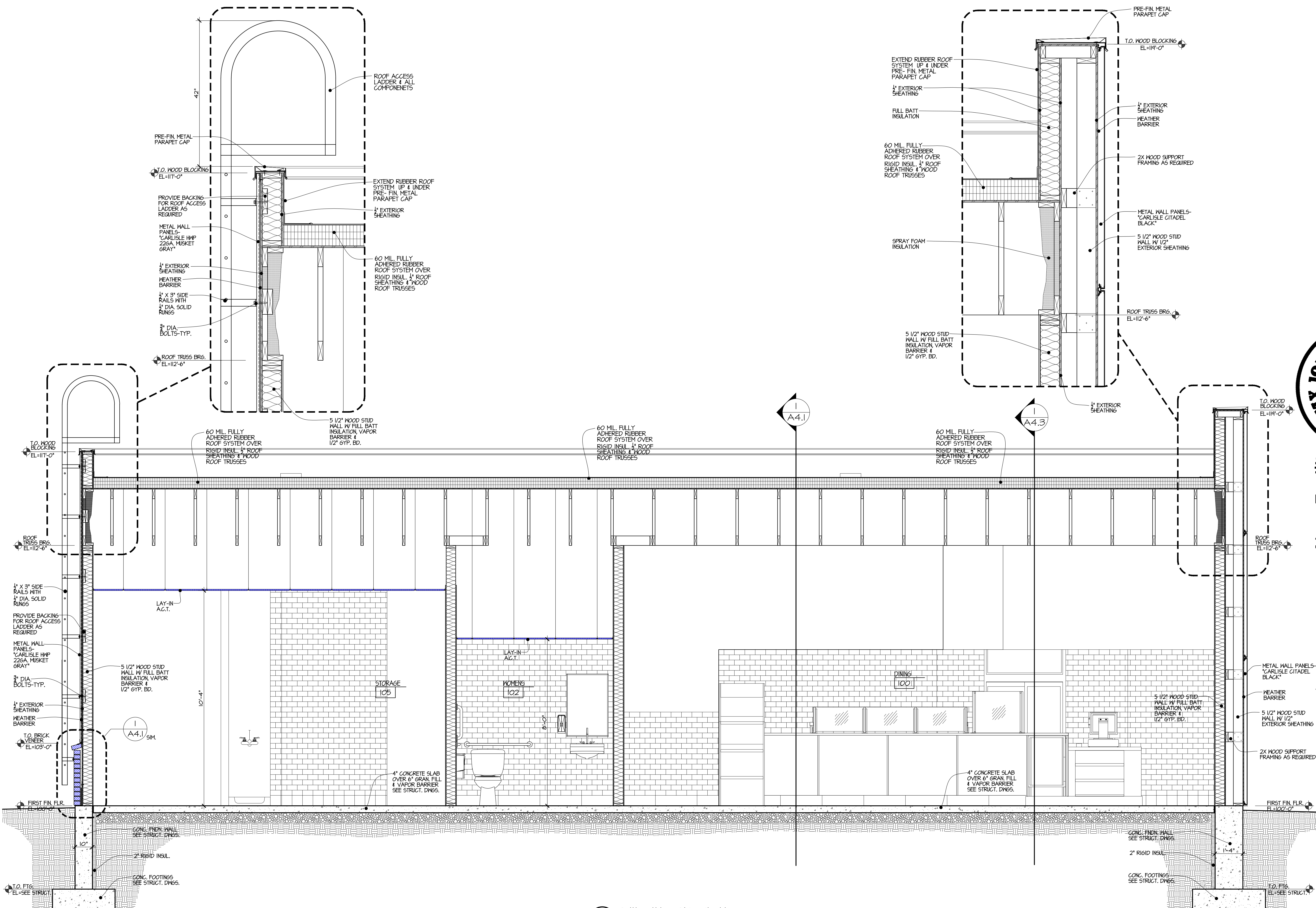
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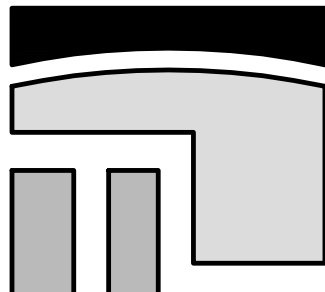
BUILDING
SECTIONS

Sheet Number:

A4.2



BUILDING SECTION
A4.2 SCALE: 1/2"=1'-0"



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Date AUGUST 21, 2026 Reg. No. 923

Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

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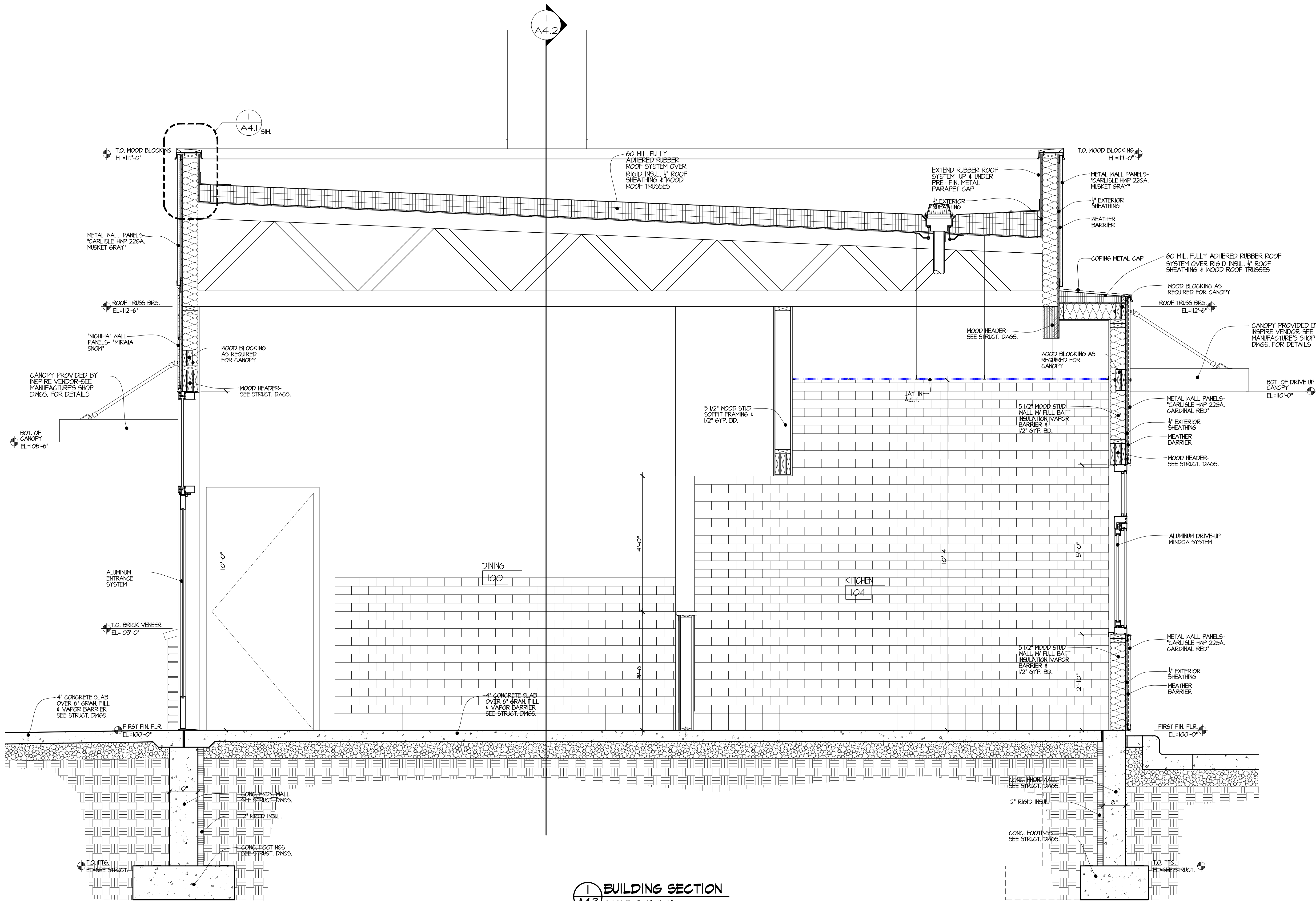
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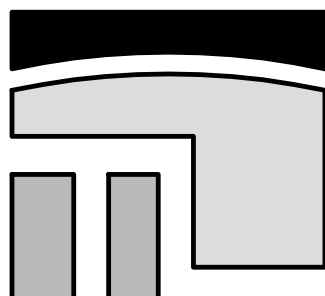
BUILDING
SECTIONS

Sheet Number:

A4.3



BUILDING SECTION
A4.3 SCALE: 3/4"=1'-0"



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Date AUGUST 21, 2026 Reg. No. 923

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New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

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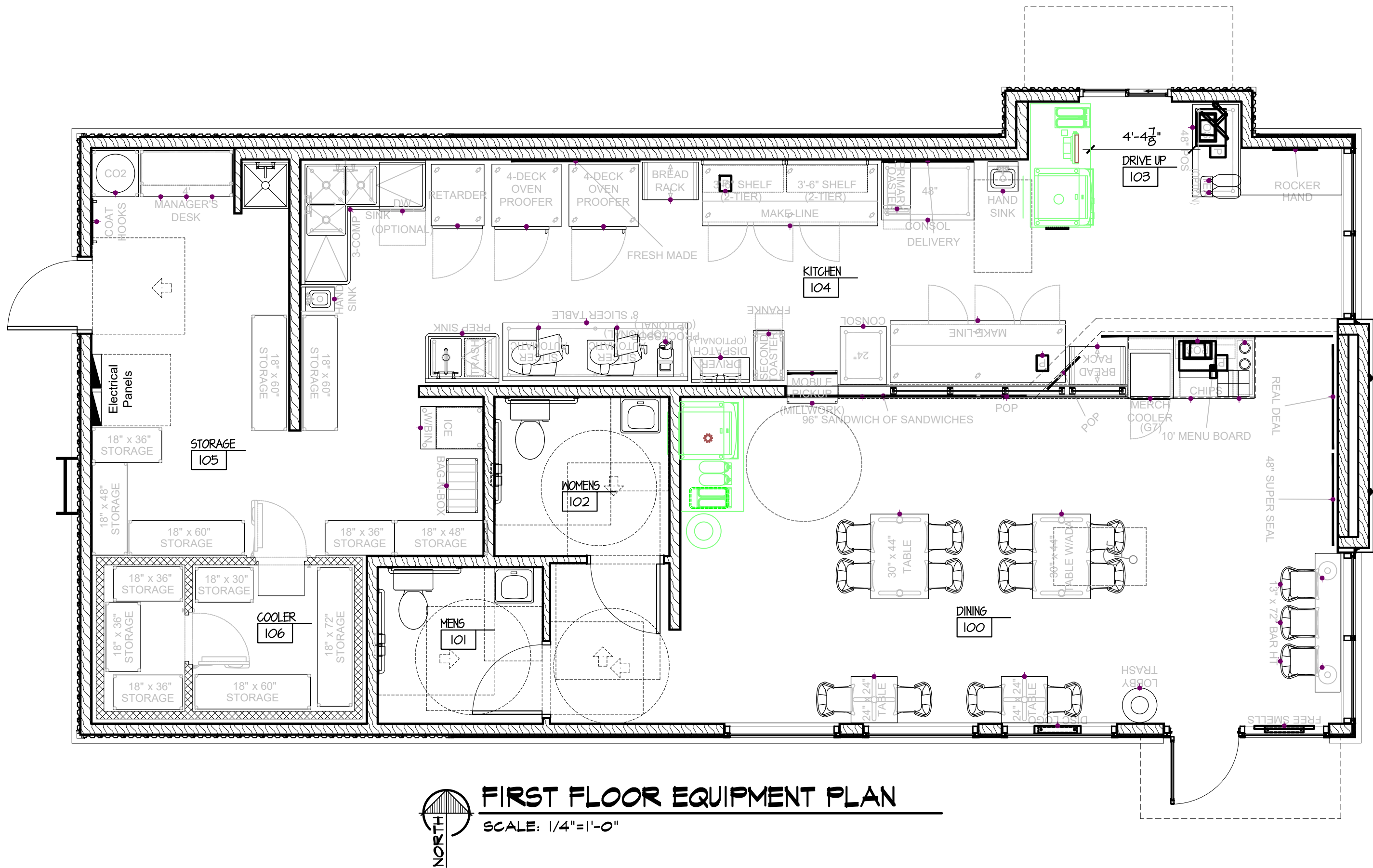
Revision Date:

Job Number:
2026.25

Sheet Name:
EQUIPMENT PLAN
(REFERENCE ONLY)

Sheet Number:

EQ.1



Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:
MDP

Date:
AUGUST 21, 2026

Revision Date:

Job Number:
2025.04

Sheet Name:
MECHANICAL
SCHEDULES

Sheet Number:

M001

PLUMBING NOTES

- PART 1 - GENERAL
- A. REQUIREMENTS OF REGULATORY AGENCIES AND STANDARDS
- ALL WORK SHALL BE IN ACCORDANCE WITH THE STATE OF NORTH DAKOTA PLUMBING CODE, CURRENT INTERNATIONAL FUEL & GAS CODE, CURRENT MECHANICAL CODE, CURRENT INTERNATIONAL ENERGY CONSERVATION CODE, AND ANY LOCAL AMENDMENTS.
- B. SCOPE OF WORK
- THE CONTRACTOR SHALL VISIT THE JOB SITE AND REVIEW CONSTRUCTION AND VENDOR DRAWINGS FOR ALL TRADES PRIOR TO BID TO BECOME FAMILIAR WITH THE PROJECT AND INTENT OF THE DRAWINGS.
 - THE CONTRACTOR SHALL OBTAIN A PERMIT FOR WORK TO BE COMPLETED AND INCLUDE COST FOR ALL PERMIT FEES, PERMITS, INSPECTIONS AND TESTING IN THE BID. PLUMBING CONTRACTOR MUST BE PRESENT FOR ALL INSPECTIONS OF HIS WORK BY REGULATORY AUTHORITIES.
 - THE CONTRACTOR SHALL OBTAIN APPROVED SUBMITTALS PRIOR TO BEGINNING WORK OR ORDERING EQUIPMENT.
 - THE CONTRACTOR SHALL PROVIDE ALL NEW MATERIAL IN ACCORDANCE WITH THESE DOCUMENTS AND APPLICABLE SPECIFICATIONS. ALL EQUIPMENT SHALL BE UL OR ETL LISTED.
 - ALL WORK SHALL BE PERFORMED BY A LICENSED PLUMBING CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE. ALL EXCAVATION AND BACKFILL AS REQUIRED FOR THIS PHASE OF CONSTRUCTION SHALL BE A PART OF THIS CONTRACT.
 - PLUMBING PLANS IN GENERAL, ARE DIAGRAMMATIC IN NATURE, AND ARE TO BE READ IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, FIRE SPRINKLER, AND STRUCTURAL PLANS AND SHALL BE CONSIDERED AS ONE SET OF DOCUMENTS. PIPING OFFSETS REQUIRED TO PROVIDE AND INSTALL A COMPLETE FUNCTIONAL SYSTEM SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. DO NOT SCALE FOR THE EXACT LOCATION OF FIXTURES, PIPING, EQUIPMENT, ETC.
 - THE CONTRACTOR IS EXPECTED TO PROVIDE ALL MATERIAL NECESSARY FOR A COMPLETE OPERATING SYSTEM. IT IS NOT THE INTENT OF THESE DOCUMENTS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION.
 - THE CONTRACTOR SHALL PROVIDE INSURANCE FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR DURATION OF THE PROJECT AS REQUIRED BY GENERAL CONTRACTOR.
 - THE CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD SET OF ANY DEVIATIONS BETWEEN THE WORK AS DESIGNED ON THESE DOCUMENTS AND THAT OF WHICH IS ACTUALLY INSTALLED. THIS RECORD SET OF DRAWINGS SHALL BE KEPT WITH THE GENERAL CONTRACTOR AND TURNED OVER TO OWNER AT PROJECT COMPLETION.
- C. TERMS
- "CONCEALED", AS USED IN THE DOCUMENTS AND APPLICABLE SPECIFICATIONS MEANS EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, BEHIND WALLS, OR ABOVE CEILINGS.
 - "EXPOSED", AS USED IN THE DOCUMENTS AND APPLICABLE SPECIFICATIONS MEANS EXPOSED TO VIEW INDORS.
 - "PROVIDE", AS USED IN THE DOCUMENTS AND APPLICABLE SPECIFICATIONS MEANS TO FURNISH AND INSTALL COMPLETE.
- D. WARRANTY
- PLUMBING CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF ACCEPTANCE BY OWNER. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED.
 - ANY CORRECTIONS FOR DEFECTIVE MATERIALS AND/OR INSTALLATION SHALL BE MADE AT THE CONTRACTORS EXPENSE DURING THE WARRANTY PERIOD.
- PART 2 - PRODUCTS
- A. EQUIPMENT
- WATER HEATER SHALL BE GUARANTEED BY THE MANUFACTURER FOR A PERIOD OF NOT LESS THAN 3 YEARS AFTER START-UP. FURNISH TO THE OWNER THE MANUFACTURERS GUARANTEE.
 - WATER HEATER SHALL HAVE A COMBINATION TEMPERATURE AND PRESSURE RELIEF VALVE HAVING THE CAPACITY TO RELIEVE THE FULL CAPACITY OF THE HEATING ELEMENT INPUT RATING FOR BOTH TEMPERATURE AND PRESSURE RELIEF. VALVE SHALL BE ASME RATED.
 - GREASE INTERCEPTOR SHALL BE TYPE APPROVED BY THE LOCAL PLUMBING CODE FOR USE AS A GREASE INTERCEPTOR.

PLUMBING NOTES (CONTINUED)

- B. FIXTURES
- ALL PLUMBING FIXTURES SHALL BE COMPLETE IN EVERY DETAIL WITH ALL TRIMMINGS AND CONNECTION.
- C. PIPING
- "WATER DISTRIBUTION PIPING ABOVE AND BELOW GROUND SHALL BE TYPE "L" COPPER. COORDINATE WITH LOCAL JURISDICTION FOR ADDITIONAL REQUIREMENTS.
 - WATER PIPING INSULATION SHALL BE ARMAFLEX INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR ALL HOT WATER PIPING. WHERE DOMESTIC WATER TEMPERATURES CAN CAUSE SWEATING ALL COLD WATER PIPING SHALL BE INSULATED WITH ARMAFLEX INSULATION, THICKNESS AS PER ADOPTED ENERGY CODE.
 - FOR AUTOMATIC-CIRCULATING HOT WATER SYSTEM, HOT WATER PIPING SHALL BE INSULATED WITH 1" OF INSULATION PER IECC 2015.
 - GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL, SCREW TYPE FOR PIPING 2 INCH AND SMALLER PER ASTM A-120, WELD TYPE FOR PIPING 2-1/2 INCH AND LARGER PER ASTM A-53. BURIED STEEL PIPE IN CONTACT WITH THE EARTH SHALL BE METALLIC ARC WELDED AND COATED WITH HIGH DENSITY "X-TRU-COAT" POLYETHYLENE AND WITH POLYETHYLENE TAPE COAT JOINTS. PAINT YELLOW ALL GAS PIPING ON ROOF. ALL GAS PIPING SHALL ENTER BUILDING ABOVE GRADE.
 - CONDENSATE DRAIN PIPING SHALL BE PVC WITH 1" ARMAFLEX INSULATION. WHERE USED IN A RETURN AIR PLENUM, CONDENSATE SHALL BE TYPE "L" COPPER WITH 1" ARMAFLEX INSULATION. SEE PLUMBING DRAWINGS FOR SIZE AND LOCATION OF PIPING.
 - SOIL, WASTE, VENT AND RAINWATER PIPING SHALL BE PVC WHERE CODE ALLOWS. CAST IRON SHALL BE USED THROUGH RATED ASSEMBLIES OR IN RETURN AIR PLENUMS.
 - ALL HORIZONTAL RAINWATER PIPING THAT RECEIVES CONDENSATE DISCHARGE FROM AIR CONDITIONING EQUIPMENT SHALL BE INSULATED WITH 1" THICK INSULATION.
- PART 3 - EXECUTION
- A. COORDINATION
- THE CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL, MECHANICAL, AND VENDOR DOCUMENTS AND SUBMITTALS PRIOR TO PURCHASING PLUMBING EQUIPMENT.
 - THE CONTRACTOR SHALL COORDINATE THE PLUMBING WORK WITH OTHER TRADES AND MAKE PROPER PROVISIONS IN RELATION TO THEIR WORK. ANY CHANGES REQUIRED DUE TO LACK OF COORDINATION, SHALL BE MADE AT THE CONTRACTORS' EXPENSE.
- B. INSTALLATION
- SANITARY, VENT, WATER AND CONDENSATE PIPING SHALL BE INSTALLED WITHIN WALL SYSTEM. NO EXPOSED VISIBLE PIPE SHALL BE ALLOWED. FOR CONCRETE MASONRY UNIT WALLS (CMU) THE PIPE SHALL BE INSTALLED WITHIN VERTICAL CELLS OF BLOCKS AND FOR PRE-ENGINEERED METAL BUILDING WALLS (PEMB) THE PIPE SHALL BE INSTALLED BEHIND WALL PANEL. PROVIDE PVC CONDUIT FOR WATER PIPING INSIDE WALL.
 - EQUIPMENT LABELING
 - LABEL ALL INTERIOR EQUIPMENT WITH A PERMANENTLY ATTACHED LAMINATED IDENTIFICATION WITH 1" MIN. HIGH LETTERS.
 - LABEL ALL WATER AND GAS DISTRIBUTION PIPING WITH A PERMANENTLY ATTACHED STENCIL OR COMMERCIALY AVAILABLE IDENTIFICATION WITH 1" MIN. HIGH LETTERS. LABEL SHALL COMPLY WITH 2018 IPC PAR. 606.7 AND INCLUDE PIPE CONTENTS, SIZE, AND DIRECTION OF FLOW.
 - LABELS SHALL INCLUDE EQUIPMENT'S DRAWING DESIGNATION AND NUMBER OR AS DIRECTED BY OWNER'S REPRESENTATIVE.
 - LOCATE LABELS WHERE ACCESSIBLE AND VISIBLE.
 - ALL EXPOSED PIPING SHALL BE PAINTED TO MATCH EXPOSED SURFACE OR AS DIRECTED BY ARCHITECT.
 - ALL FIXTURES MUST BE PROVIDED WITH READILY ACCESSIBLE STOPS AND APPROPRIATELY MARKED ACCESS PANELS. COORDINATE LOCATIONS WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION.
 - PROVIDE SHOCK PROTECTION AT ALL LOCATIONS OF QUICK CLOSING VALVES (FLUSH VALVES, WASHING MACHINES AND SINGLE LEVER FAUCETS) PER SHOCK ARRESTOR MANUFACTURERS INSTALLATION GUIDELINES. ALL WATER PIPING SHALL BE SECURED FROM LATERAL MOVEMENT ON ENDS OF RUNS GREATER THAN 50'.
 - DIELECTRIC COUPLINGS ARE REQUIRED BETWEEN ALL DISSIMILAR METAL IN PIPING AND EQUIPMENT CONNECTIONS.
 - ISOLATE COPPER PIPING FROM HANGER OR SUPPORTS WITH ISOLATOR PADS OR MATERIAL.
 - PROVIDE ADA COMPLIANT PIPE WRAP FOR ALL EXPOSED PIPING UNDER ADA ACCESSIBLE SINKS.
 - NO COMBUSTIBLE MATERIALS ARE ALLOWED IN MECHANICAL ROOMS OR IN CEILING SPACES WHERE USED AS RETURN AIR PLENUM.
 - ALL FIRE RATED FLOOR AND WALL PENETRATIONS SHALL BE PROPERLY PROTECTED FROM FIRE, SMOKE AND WATER PENETRATION BY FILLING VOIDS BETWEEN PIPE AND WALL JOISTS AS PART OF THE PLUMBERS WORK.
 - PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES. ACCESS PANELS IN RATED WALL MUST MAINTAIN THE SAME RATING AND MUST MATCH THE FINISH OF THE WALL IN WHICH IT IS INSTALLED.
 - PROVIDE COMBINATION COVER PLATE AND CLEANOUT PLUG OR ACCESS PANEL FOR ALL WALL CLEANOUTS FINISH TO MATCH FIXTURE TRIM. NO FLOOR OR WALL CLEANOUTS SHALL BE LOCATED IN AREA SUBJECT TO PUBLIC VIEW.
 - NO WATER, SANITARY OR DRAINAGE PIPING PERMITTED IN ELECTRICAL OR ELEVATOR EQUIPMENT ROOMS.
 - ALL CONTROL VALVES SHALL BE TAGGED AND MARKED. A REPRODUCIBLE DIAGRAM LOCATING ALL VALVES SHALL BE PROVIDED FOR OWNER/OPERATOR.
 - PROVIDE ANGLE STOPS ON ALL WATER SERVICE LINES TO FIXTURES FOR INDIVIDUAL SHUT-OFF.
 - THE POTABLE WATER SUPPLY MUST BE PROTECTED FROM CONTAMINATION, INSTALLING AND MAINTAINING DEVICES TO PREVENT BACKFLOW SIPHONAGE AT ALL FIXTURES AND EQUIPMENT IS NECESSARY IF THERE IS NO AIR GAP.
 - STUDIOR MINIMAXI AIR ADMITTANCE VALVES MAY BE USED AS AN ALTERNATE TO VENT PIPING THRU ROOF WHERE ACCEPTABLE BY THE PLUMBING OFFICIAL AND LOCAL CODES. INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.

PLUMBING FIXTURE SCHEDULE

MARK	ITEM	MANUFACTURER - MODEL NO.	CW	HW	WASTE	VENT	TEMP.	DESCRIPTION
QU-J-202	WATER FILTER	3M BREW125-MS	1/2"	-	-	-	-	
QW-J-101	UNDERCOUNTER DISHWASHER	HOBART - LXMR-1	3/4"	-	-	-	-	
QB-J-051	BAG-IN-BOX RACK w/ PUMP RACK	BIG FLEX 44249	1/2"	-	-	-	-	
QB-J-801	ICE MAKER NUGGET STYLE 64BLB	SCOTTSMAN NSR220W-1B	2) 1/2"	-	3"	2"	-	WATER COOLED ICE MAKER. PROVIDE W/ HOSHIZAKI B-300PF BIN.
QW-J-201	HAND SINK / FAUCET	KROHNE HS-2BL-INS	1/2"	1/2"	1-1/2"	1-1/2"	110	PROVIDE WITH BELOW DECK MIXING VALVE. ZURN MODEL ZW3870XL.T.
QW-J-001	MOP BASIN	ZURN-1996S	-	-	3"	2"	-	
QW-J-020	FAUCET	T&S B-066S-BS1R	1/2"	1/2"	-	-	110	8" WALL MOUNT SERVICE SINK. QUARTER-TURN ETERNA CARTRIDGES W/ SPRING CHECKS, LEVER HANDLES, UPPER SUPPORT ROD, GARDEN HOSE MALE OUTLET, BUILT-IN SERVICE STOPS, ROUGH CHROME FINISH, 1/2" NPT VACUUM BREAKER & 1/2" NPT FEMALE INLETS
QW-J-402	3 COMPARTMENT SINK W/ 2- 24" DRAIN BOARDS	JOHN BOOS 3B16204-2D24	-	-	INTO FS	-	-	
QW-J-050	FAUCET	T&S B-0133-A14-B08	1/2"	1/2"	-	-	140	
QW-J-302	PREP SINK	JOHN BOOS 1B16204 - 1D18R - X	-	-	INTO FS	2"	-	
	FAUCET	T&S B-0231-CR	1/2"	1/2"	-	-	140	
QB-J-101	ICED TEA BREWER	BUNN-O-MATIC 36700-0301	3/8"	-	-	-	-	TEE OFF ICE/BEVERAGE UNIT WATER SUPPLY WITH SHUT-OFF VALVE
LAV	HANDICAP WALL HUNG LAVATORY	LAVATORY - AMERICAN STANDARD LUCERNE WALL HUNG #3356-421 FAUCET - AMERICAN STANDARD #7895-903. SINGLE LEVER. CONTRACTOR TO SUPPLY CONCEALED ARM SUPPORT CARRIER FOR MOUNTING OF LAVATORY.	1/2"	1/2"	1-1/2"	1-1/2"	110	PROVIDE WITH BELOW DECK MIXING VALVE. ZURN MODEL ZW3870XL.T.
HWC	HANDICAP FLOOR MOUNT WATER CLOSET	HANDICAP WATER CLOSET - AMERICAN STANDARD CADET E LONGATED, FLOOR MOUNTED, WHITE, 1-28 GPT. OPEN FRONT SEAT 16-1/2" HEIGHT. MUST MEET ADA CODE. FLUSH LEVER - SHALL BE LOCATED ON OPEN SIDE OF TANK AWAY FROM ADJACENT WALL.	1/2"	-	3"	2"	-	ADA TOILET W/ SEAT COVER. ZURN OPEN FRONT SEAT Z565SSS STOP VALVE. 1/2" WATER LINE AT 12" A.F.F.
FD-1	FLOOR DRAIN SQUARE	WADE MODEL # 110305-TY	-	-	3"	2"	-	FLOOR DRAIN - 5"x5" SQUARE GRATE FLOOR DRAIN. PROVIDE WITH TRAP PRIMER. FINAL FINISH TO BE COORDINATED WITH ARCHITECT.
FD-2	FLOOR DRAIN ROUND	WADE MODEL #11033TDS-TY	-	-	3"	2"	-	FLOOR DRAIN - 5" ROUND GRATE FLOOR DRAIN. PROVIDE WITH TRAP PRIMER. FINAL FINISH TO BE COORDINATED WITH ARCHITECT.
FS	FLOOR SINK	WADE MODEL #9110-1	-	-	3"	2"	-	FLOOR SINK - 8"x8" SQUARE WITH HALF GRATE. COORDINATE FINISH WITH ARCHITECT.
RD	ROOF DRAIN	WADE MODEL 3000-52-53	-	-	-	-	-	ROOF DRAIN - WADE MODEL 3000-52-53. AE EXTENSION AS REQUIRED.
CO	FLOOR CLEANOUT ROUND		-	-	-	-	-	POLISHED NICKEL BRONZE TOP. TOP TO BE INSTALLED FLUSH WITH FINISHED FLOOR. FIELD VERIFY CORRECT CONNECTION (3" OR 4") AND ORDER APPROPRIATE MODEL.
WCO	WALL CLEANOUT	WADE MODEL # 8590	-	-	-	-	-	WALL CLEANOUT - TAPPED PLUG WITH 8480R.

AIR INLET/OUTLET SCHEDULE

AIR INLET/OUTLET UNIT ID	TYPE	NECK SIZE (INCH)	MODULE SIZE (INCH)	NC	MOUNTING	ORD	MANUFACTURER & MODEL	NOTES
S-1	SCD	6" DIA	24"x24"	<20	LAY-IN	N	PRICE SCD4	1
S-2	SCD	10" DIA	24"x24"	<20	LAY-IN	N	PRICE SCD4	1
S-3	GR	10"x4"	11-3/4"x5-3/4"	<20	SURFACE	Y	PRICE S3G6	1,2
S-4	GR	10"x4"	11-3/4"x5-3/4"	<20	SURFACE	Y	PRICE S3D	1
R-1	ECG	22"x22"	24"x24"	<20	LAY-IN	N	PRICE R0	1
R-2	GR	36"x24"	37-3/4"x25-3/4"	<20	SURFACE	Y	PRICE S3D	1
1) PROVIDE STANDARD WHITE FINISH. 2) PROVIDE WITH INTEGRAL AIR SCOP.								
					SCD	SQUARE CONE DIFFUSER		
					ECG	EGG CRATE GRILLE		
					ORD	OPPOSED BLADE DAMPER		
					GR	GRILLE		

WATER HEATER SCHEDULE

WATER HEATER ID	FUEL SOURCE	HEATER SIZE (MBH)	TEMPERATURE RISE (F)	GPM	VOLTAGE/ PHASE	MANUFACTURER & MODEL	NOTES
WH-1	NG	199	90	4.0	120/1	A.O. SMITH 199-N	1,2
WH-2	NG	199	90	4.0	120/1	A.O. SMITH 199-N	1,2
1) DISCONNECT BY DIVISION 26. 2) PROVIDE RELIEF VALVE ON THE WATER HEATER.							

PUMP SCHEDULE

PUMP ID	TYPE	PURPOSE	GPM	HEAD (FT)	RPM	HP	VOLTAGE/ PHASE	VFD	MANUFACTURER & MODEL	NOTES
PCP-1	IL	HW RECIRC	2	10	-	60 W	120/1	N	ECOCIRC 20-18	1,2,3
1) SELECTIONS BASED ON BELL & GOSSETT CATALOGS. 2) DISCONNECT SWITCH BY DIVISION 26. 3) STAINLESS STEEL PUMP WITH FLANGES. RUN AT CONSTANT PRESSURE.										
							IL	INLINE		

PACKAGED ROOFTOP UNIT SCHEDULE

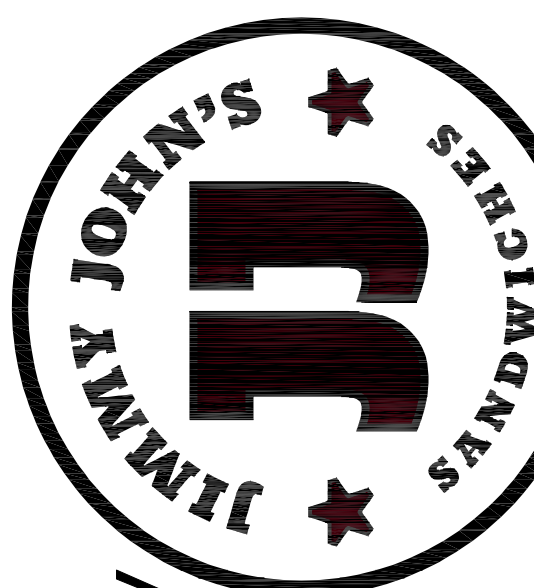
PACKAGED ROOFTOP UNIT SCHEDULE																													
		SUPPLY FAN SECTION							HEATING					COOLING COIL					ELECTRICAL										
ROOFTOP UNIT ID	DISCHARGE ORIENTATION	OA CFM	CFM	ESP (INCH)	HP	DRIVE	VFD		INPUT MBH	OUTPUT MBH	STAGES	EAT	LAT	AMB °F	EAT (DB/WB)	LAT (DB/WB)	SENSIBLE MBH	TOTAL MBH	EER	VOLTAGE/ PHASE	MCA	MOCP	MIN SCCR	FILTER TYPE	WEIGHT (LBS)	MANUFACTURER & MODEL	NOTES		
RTU-1	VERTICAL	200	1200	0.8	0.75	DIRECT	Y	NG	100	81	2	55	117	95	80/67	60/57	25	37	12	208/3	25	35	10,154	MERV 8	1200	TRANE YSK	1,2,3,4,5,6,7,8,9,10,11		
RTU-2	VERTICAL	200	1600	0.5	3	DIRECT	Y	NG	130	105	2	55	113	95	80/67	58/56	38	50	12.9	208/3	32	45	9,002	MERV 8	1500	TRANE YHK	1,2,3,4,5,6,7,8,9,10,11		
1) PROVIDE FIELD WIRED 115V CONVENIENCE OUTLET AND PHASE MONITORS w/ BROWN OUT PROTECTION. 2) PROVIDE UNIT MOUNTED DISCONNECT SWITCH, SINGLE POWER POINT CONNECTION FOR UNIT. 3) CONTRACTOR TO PROVIDE BACKDRAFT DAMPER WITH LINKED DAMPER BLADES. FIELD MOUNTED IF REQUIRED. 4) DESIGN MAX FACE VELOCITY AT 500 FPM AND MAX OUTLET VELOCITY AT 2000 FPM. 5) PROVIDE LUGS THAT ARE RATED FOR BOTH COPPER AND ALUMINUM CONDUCTORS. 6) PROVIDE 24 INCH TALL, INSULATED ROOF CURB. PROVIDE WITH MINIMUM R10 INSULATION. 7) PROVIDE HOT GAS REHEAT WITH DISCHARGE AIR TEMPERATURE OF 70 DEGREES. 8) PROVIDE WITH TWO STAGES OF COOLING CAPACITY CONTROL. 9) PROVIDE A SWITCH IN THE DRAIN PAN TO STOP THE UNIT AND PREVENT OVERFLOW. 10) PROVIDE WITH REFRIGERANT DETECTION SYSTEM AND INTEGRAL CONTROLS TO DILUTE AND DISPERSE REFRIGERANT UPON LEAK DETECTION. 11) PROVIDE WITH ECONOMIZER.																													
																			B	BELT DRIVE									
																			D	DIRECT DRIVE									
																			TA	THROW AWAY									



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Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:
MDP

Date:
AUGUST 21, 2026

Revision Date:

Job Number:
2025.04

Sheet Name:
MECHANICAL
NOTES & DETAILS

Sheet Number:

M002

MECHANICAL NOTES

PART 1 - GENERAL

A. REQUIREMENTS OF REGULATORY AGENCIES AND STANDARDS

- ALL WORK SHALL BE IN ACCORDANCE WITH THE STATE OF NORTH DAKOTA PLUMBING CODE, CURRENT INTERNATIONAL FUEL & GAS CODE, CURRENT MECHANICAL CODE, CURRENT INTERNATIONAL ENERGY CONSERVATION CODE, AND ANY LOCAL AMENDMENTS.
- SCOPE OF WORK**
- THE CONTRACTOR SHALL VISIT THE JOB SITE AND REVIEW CONSTRUCTION AND VENDOR DRAWINGS FOR ALL TRADES PRIOR TO BID TO BECOME FAMILIAR WITH THE PROJECT AND INTENT OF THE DRAWINGS.
- THE CONTRACTOR SHALL OBTAIN A PERMIT FOR WORK TO BE COMPLETED AND INCLUDE COST FOR ALL PERMIT FEES, PERMITS, INSPECTIONS AND TESTING IN THE BID.
- THE CONTRACTOR SHALL PROVIDE ALL NEW MATERIAL IN ACCORDANCE WITH THESE DOCUMENTS AND APPLICABLE SPECIFICATIONS. ALL EQUIPMENT SHALL BE UL OR ETL LISTED.
- ALL WORK SHALL BE PERFORMED BY A LICENSED MECHANICAL CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER.
- MECHANICAL PLANS, IN GENERAL, ARE DIAGRAMMATIC IN NATURE AND ARE TO BE READ IN CONJUNCTION WITH ARCHITECTURAL, PLUMBING, ELECTRICAL, FIRE SPRINKLER, AND STRUCTURAL PLANS AND SHALL BE DUCTWORK CHANGES MAY BE MADE BY CONTRACTOR USING EQUIVALENT SIZED DUCT. CONTACT ENGINEER IF DUCT AREA WILL NOT FIT.
- THE CONTRACTOR IS EXPECTED TO PROVIDE ALL MATERIAL NECESSARY FOR A COMPLETE OPERATING SYSTEM. IT IS NOT THE INTENT OF THESE DOCUMENTS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE INSURANCE FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR DURATION OF THE PROJECT AS REQUIRED BY GENERAL CONTRACTOR.
- THE CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD SET OF ANY DEVIATIONS BETWEEN THE WORK AS DESIGNED ON THESE DOCUMENTS AND THAT OF WHICH IS ACTUALLY INSTALLED. THIS RECORD SET OF DRAWINGS SHALL BE KEPT WITH THE GENERAL CONTRACTOR AND TURNED OVER TO OWNER AT PROJECT COMPLETION.

C. TERMS

- "CONCEALED", AS USED IN THE DOCUMENTS AND APPLICABLE SPECIFICATIONS MEANS EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, BEHIND WALLS, OR ABOVE CEILINGS.
- "EXPOSED", AS USED IN THE DOCUMENTS AND APPLICABLE SPECIFICATIONS MEANS EXPOSED TO VIEW INDOORS.
- "PROVIDE", AS USED IN THE DOCUMENTS AND APPLICABLE SPECIFICATIONS MEANS TO FURNISH AND INSTALL COMPLETE.

D. WARRANTY

- ALL MATERIAL AND WORK PERFORMED SHALL BE GUARANTEED FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE.
- CONTRACTOR SHALL PROVIDE COMPRESSOR WARRANTIES FOR FIVE YEARS. ANY REPAIRS REQUIRING SYSTEM SHUTDOWN ALL BE DONE DURING NON-OPERATIONAL PERIODS OR AS AGREED WITH OWNER.
- ANY CORRECTIONS FOR DEFECTIVE MATERIALS AND/OR INSTALLATION SHALL BE MADE AT THE CONTRACTORS EXPENSE DURING THE WARRANTY PERIOD.

PART 2 - PRODUCTS

A. EQUIPMENT

- PROVIDE NEW FILTERS FOR ALL AIR CONDITIONING EQUIPMENT BEFORE START-UP, REPLACE PRIOR TO FINAL ACCEPTANCE BY OWNER.
- PROVIDE SMOKE DETECTORS WITH SERVICE ACCESS DOORS IN ALL SUPPLY AIR DUCTS FOR FANS AND AIR HANDLING UNITS SERVING A COMMON PLENUM OF 2,000 CFM OR ABOVE PER GEORGIA STATE AMENDMENTS TO 2018 IMC §606.2.1 AND §606.2.2. FOR SMOKE DETECTORS NOT VISIBLE OR IN CONCEALED SPACES, PROVIDE REMOTE ANNUNCIATION TEST STATION AS REQUIRED BY AUTHORITY HAVING JURISDICTION. COORDINATE PRIOR TO INSTALLATION. DETECTORS SHALL BE BY ONE MANUFACTURER, COORDINATE VOLTAGE ETC. WITH ELECTRICAL CONTRACTOR AND FIRE ALARM SYSTEM BEFORE ORDERING. UPON DETECTION, SMOKE DETECTORS SHUT DOWN ASSOCIATED AIR MOVING EQUIPMENT AND ALL AIR MOVING EQUIPMENT SERVING THAT COMMON PLENUM.
- OUTSIDE AIR INTAKES SHALL BE SCREENED WITH A CORROSION RESISTANT MATERIAL, NOT LARGER THAN 1/2" MESH. O/A INTAKES SHALL NOT BE TAKEN FROM A LOCATION CLOSER THAN 10 FT. FROM ANY CHIMNEY, VENT OUTLET OR SANITARY SEWER VENT OUTLET, UNLESS SUCH VENT IS NOT LESS THAN 24 INCHES ABOVE THE OUTSIDE AIR VENT.

B. DUCTWORK

- ALL CONCEALED DUCTWORK SHALL BE GALVANIZED SHEETMETAL WITH SEALED SEAMS AND JOINTS WITH EXTERNAL BLANKET INSULATION R-6 MIN. ALL FLEX DUCT SHALL BE RATED CLASS 1, UL-181 LISTED WITH METALLIZED INNER AND OUTER FOIL LINERS, MIN. R-6 WITH A MAX. TOTAL LENGTH NOT TO EXCEED 14 FT. INSTALL UL LISTED FOR PLENUM, FLEXIBLE DUCTWORK ELBOW SUPPORTS AT EACH DIFFUSER, GRILLE, AND REGISTER EQUAL TO "THERMAFLEX FLEXFLOW ELBOW".
- ALL EXPOSED SUPPLY AIR DUCTWORK SHALL BE PAINT GRIP SPRING ROLND DUCTWORK WITH SEALED SEAMS (NO FLANGES) AND JOINTS WITH 1" INTERNAL FIBERGLASS INSULATION (JOHNS MANVILLE SPIRACOUSTIC PLUS OR EQUAL) IF NOT DIFFERENTLY SPECIFIED ON DRAWINGS. FINAL COLOR SELECTION TO BE APPROVED BY ARCHITECT.
- ALL EXHAUST DUCTS SHALL BE GALVANIZED SHEET METAL WITH SEALED SEAMS AND JOINTS. ALL METAL EXHAUST, MAKE-UP OR OTHERWISE DUCTS INSTALLED IN LOCATIONS WHERE DEWPOINT CONDITIONS CAN OCCUR INSIDE THE DUCT SHALL BE INSULATED WITH EXTERNAL BLANKET INSULATION R-6 MIN.
- ALL OUTSIDE AIR DUCTWORK SHALL BE GALVANIZED SHEETMETAL WITH SEALED SEAMS AND JOINTS WITH EXTERNAL BLANKET INSULATION R-6 MIN.
- ALL INSULATION SHALL MEET 2550 FLAME SPREAD SMOKE DEVELOPED REQUIREMENTS.
- DUCT SIZES SHOWN ARE INSIDE DIMENSIONS.

C. DAMPERS

- ALL BRANCH TAKE-OFFS SHALL BE PROVIDED WITH MANUAL VOLUME DAMPERS. PROVIDE RADIUS ELBOWS WHERE FEASIBLE, SQUARE ELBOWS, AND TEES SHALL BE FURNISHED WITH SINGLE FOIL TURNING VANES.
- PROVIDE MANUAL VOLUME DAMPERS WITH EXTRACTOR AT ALL FLEX TAKE-OFFS.
- PROVIDE REMOTE, CABLE OPERATED VOLUME DAMPERS IN INACCESSIBLE AND HARD CEILING AREAS, "RUSKIN ZPD25" OR EQUAL.
- PROVIDE TYPE "B" DYNAMIC FIRE DAMPERS WITH SERVICE ACCESS DOORS IN ALL DUCTS AND OPENINGS PENETRATING FIRE RATED WALLS, MECHANICAL AND ELECTRICAL EQUIPMENT ROOMS, TENANT SEPARATION, PARTITIONS, FLOOR OR ROOF SLABS AND AT OUTSIDE AIR INTAKES AS REQUIRED. PROVIDE LOW-LEAKAGE CLASS DAMPERS FOR ALL SITUATIONS WHERE THE AIRFLOW HAS TO BE CONTROLLED. VERIFY AND REPLACE AS REQUIRED FOR EXISTING SYSTEMS. FIRE DAMPERS SHALL COMPLY WITH THE REQUIREMENTS OF UL 555. STATIC FIRE DAMPERS CAN BE INSTALLED IN HEATING, VENTILATION AND AIR-CONDITIONING SYSTEMS THAT ARE SHUT DOWN AUTOMATICALLY IN CASE OF FIRE. (2018 IBC SEC. 717.3).
- PROVIDE RADIATION DAMPERS IN RATED CEILINGS FOR ALL CEILING OPENINGS, CEILING FANS, DIFFUSERS OR GRILLES RATED FOR USE IN THE CEILING ASSEMBLY. CEILING RADIATION DAMPERS SHALL COMPLY WITH WITH THE REQUIREMENTS OF UL 555C. ONLY CEILING RADIATION DAMPERS LABELED FOR USE IN DYNAMIC SYSTEM SHALL BE INSTALLED IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEM DESIGN TO OPERATE WITH FANS ON DURING A FIRE.

D. PIPING

- REFRIGERANT PIPING
 - LINES SHALL BE COPPER, TYPE "L" HARD DRAWN WITH WROUGHT COPPER BRAZING-JOINT TYPE FITTINGS. USE BRAZING MATERIALS FOR ALL COPPER PIPING PER AWS AS 8. BCUP SERIES COPPER-PHOSPHORUS ALLOY OR BA21 SILVER ALLOY. SOFT COPPER TYPE "M" SHALL BE ALLOWED FOR RISER PIPING INSIDE CHASE TO LIMIT NUMBER OF JOINTS. COORDINATE WITH ENGINEER FOR PRIOR APPROVAL.
 - SIZE PER MANUFACTURER'S RECOMMENDATIONS.
 - ARMAFLEX INSULATION SHALL BE USED FOR SUCTION LINES. PIPING INSULATION SHALL MEET THE REQUIREMENTS OF 2015 IECC TABLE C403.2.10.
 - ALL EXPOSED INSULATION SHALL BE PROTECTED WITH UV RESISTANT PAINT, ALUMINUM OR SHEET METAL SHIELD.

E. AIR DEVICES

- ALL DIFFUSERS, REGISTERS AND GRILLES SHALL BE EXPOSED SURFACE OFF WHITE BAKED ENAMEL FINISH OR AS SPECIFIED BY ARCHITECT, UNLESS NOTED OTHERWISE.

F. CONTROLS

- REFER TO EQUIPMENT SCHEDULES.

PART 3 - EXECUTION

A. COORDINATION

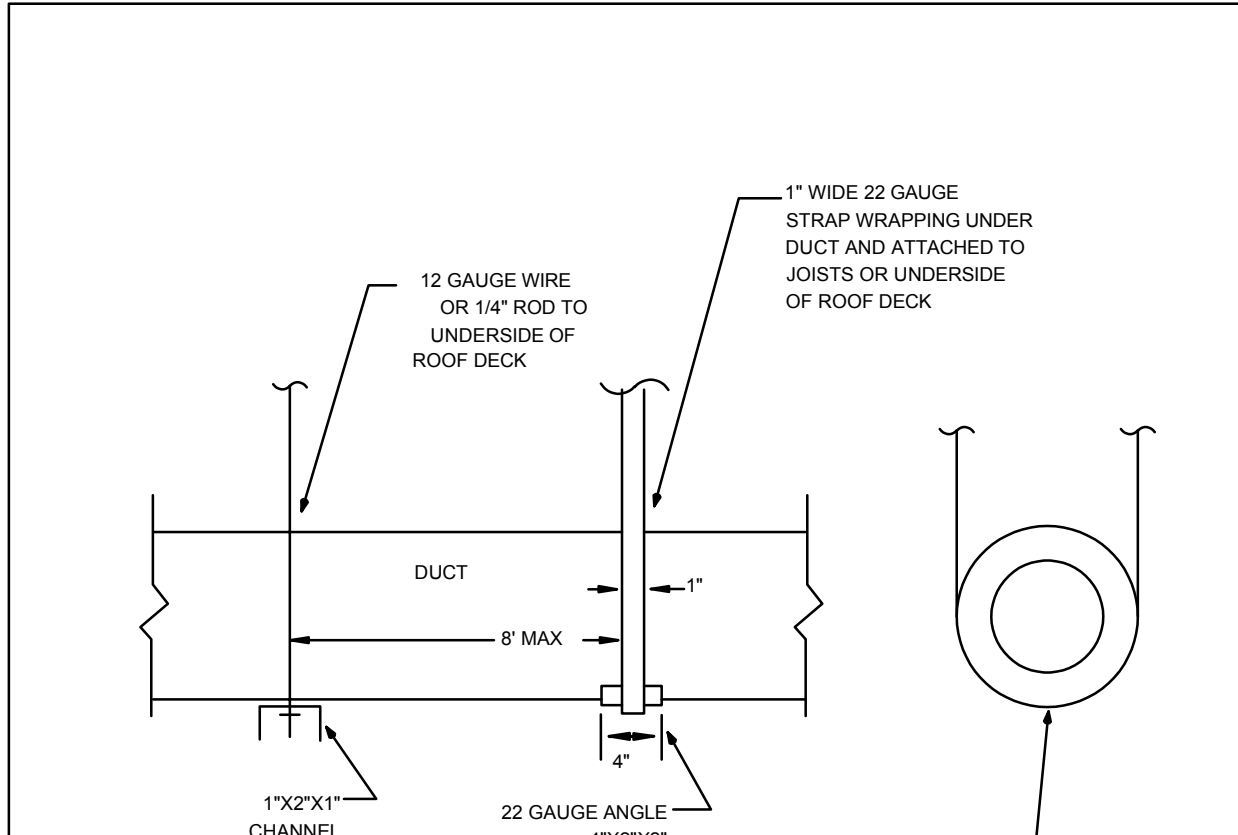
- THE CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL, PLUMBING, AND VENDOR DOCUMENTS AND SUBMITTALS PRIOR TO PURCHASING MECHANICAL EQUIPMENT. COORDINATE ALL CONTROL WIRING REQUIRED FOR ALL EQUIPMENT RELATED TO THE PROJECT.
- THE CONTRACTOR SHALL COORDINATE THE MECHANICAL WORK WITH OTHER TRADES AND MAKE PROPER PROVISIONS IN RELATION TO THEIR WORK. ANY CHANGES REQUIRED DUE TO LACK OF COORDINATION, SHALL BE MADE AT THE CONTRACTORS' EXPENSE.
- THERMOSTAT LOCATION SHALL BE APPROVED BY OWNER AND ENGINEER BEFORE INSTALLATION. INSTALL THERMOSTAT 48" MAX. AFF PER A.D.A REQUIREMENTS WHERE APPLICABLE.

B. INSTALLATION

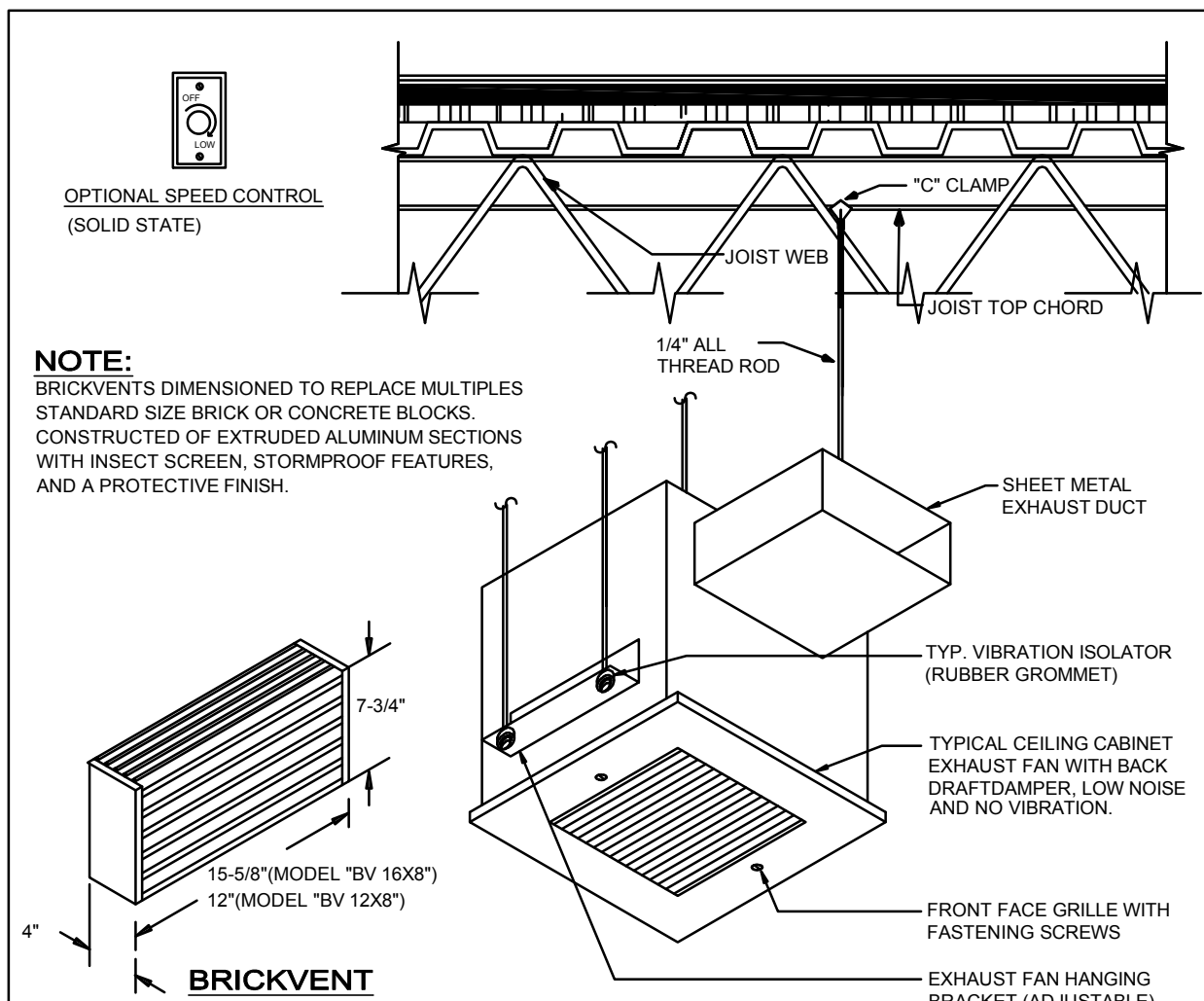
- MECHANICAL EQUIPMENT ON ROOF OR ELEVATED STRUCTURES SHALL COMPLY WITH ALL LOCAL CODES AND AMENDMENTS.
- MECHANICAL EQUIPMENT SHALL BE PROTECTED FROM PHYSICAL DAMAGE WITH PERMANENT BARRIERS (BOLLARDS AND/OR CORNER GUARDS).
- EQUIPMENT LABELING
 - LABEL ALL EXTERIOR EQUIPMENT WITH A PERMANENTLY ATTACHED EXTERIOR STENCIL ENAMEL IDENTIFICATION WITH 2" MIN. HIGH LETTERS. LABEL SHALL BE UV RESISTANT MATERIAL.
 - LABEL ALL INTERIOR EQUIPMENT WITH A PERMANENTLY ATTACHED LAMINATED IDENTIFICATION WITH 1" MIN. HIGH LETTERS.
 - LABELS SHALL INCLUDE EQUIPMENT'S DRAWING DESIGNATION AND NUMBER OR AS DIRECTED BY OWNER'S REPRESENTATIVE.
 - LOCATE LABELS WHERE ACCESSIBLE AND VISIBLE.
- ALL EXPOSED DUCTWORK SHALL BE PAINTED TO MATCH EXPOSED SURFACE OR AS DIRECTED BY ARCHITECT.
- THE CONTRACTOR SHALL PROVIDE ALL SHEETMETAL DUCTWORK, HANGERS, AUXILIARY SUPPORT STEEL, HOUSEKEEPING PADS, AND CONCRETE PADS.
- MAINTAIN A MIN. OF 36" CLEARANCE IN FRONT OF ALL 120-208 VOLT PANELS AND MIN. 42" CLEARANCE IN FRONT OF ANY 240-480 VOLT PANEL. MAINTAIN ADEQUATE SIDE CLEARANCE PER NEC.

C. TEST AND BALANCE

- CONTRACTOR SHALL PROVIDE MEANS FOR BALANCING ALL SYSTEMS INCLUDING DAMPERS AND VALVES.
- HVAC CONTRACTOR SHALL PROVIDE THE TEST AND BALANCE (T&B) REPORT PER 2015 IECC C408.2.5.2 (THE T&B REPORT SHALL BE INDEPENDENT FOR SYSTEMS OVER 15 TONS) FOR ALL MECHANICAL EQUIPMENT, AIR DEVICES, DAMPERS, AIR HANDLING UNITS AND FANS. THE TEST AND BALANCE REPORT SHALL BE IN ACCORDANCE WITH THE AIR BALANCE COUNCIL STANDARDS AND SHALL INCLUDE AIR QUANTITIES FOR ALL SUPPLY GRILLES, RETURN GRILLES AND EXHAUST GRILLES AND THE LEAVING AND ENTERING AIR TEMPERATURES (°F) FROM SUPPLY GRILLES AND EVAPORATORS.



DUCT SUPPORT DETAIL
NOT TO SCALE



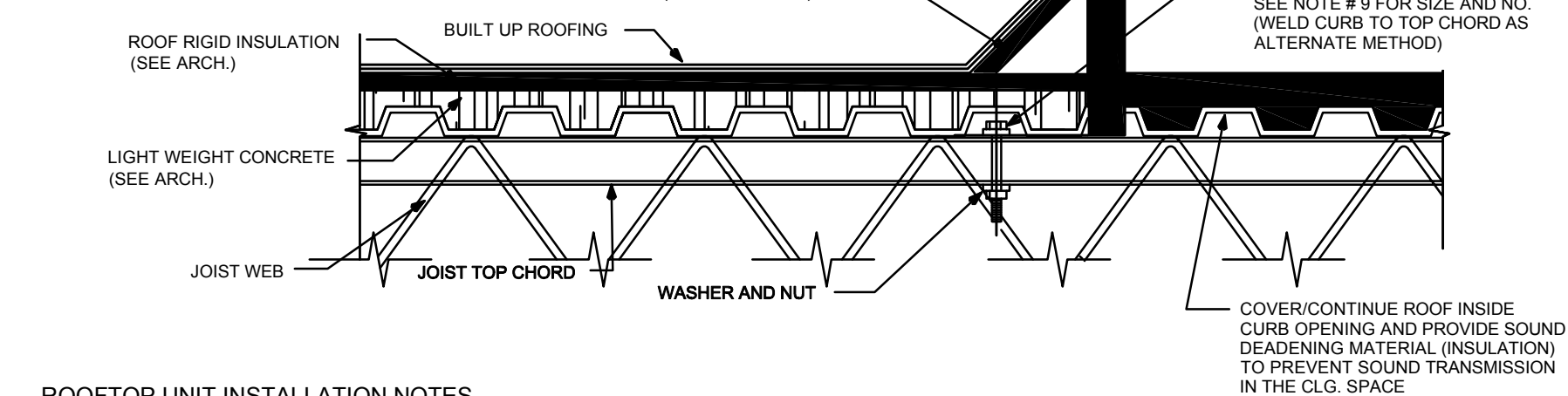
CABINET FAN DETAIL
NOT TO SCALE

NOTE

DETAIL SHOWN FOR REFERENCE ONLY FOR ATTACHMENT PURPOSES. CODE COMPLIANCE SHALL BE DETERMINED AND VERIFIED BY A LICENSED STRUCTURAL ENGINEER.

MAX. ALLOWABLE DIFFERENCE (in)		
A - B	B - C	A - C
0.5	1.0	1.0

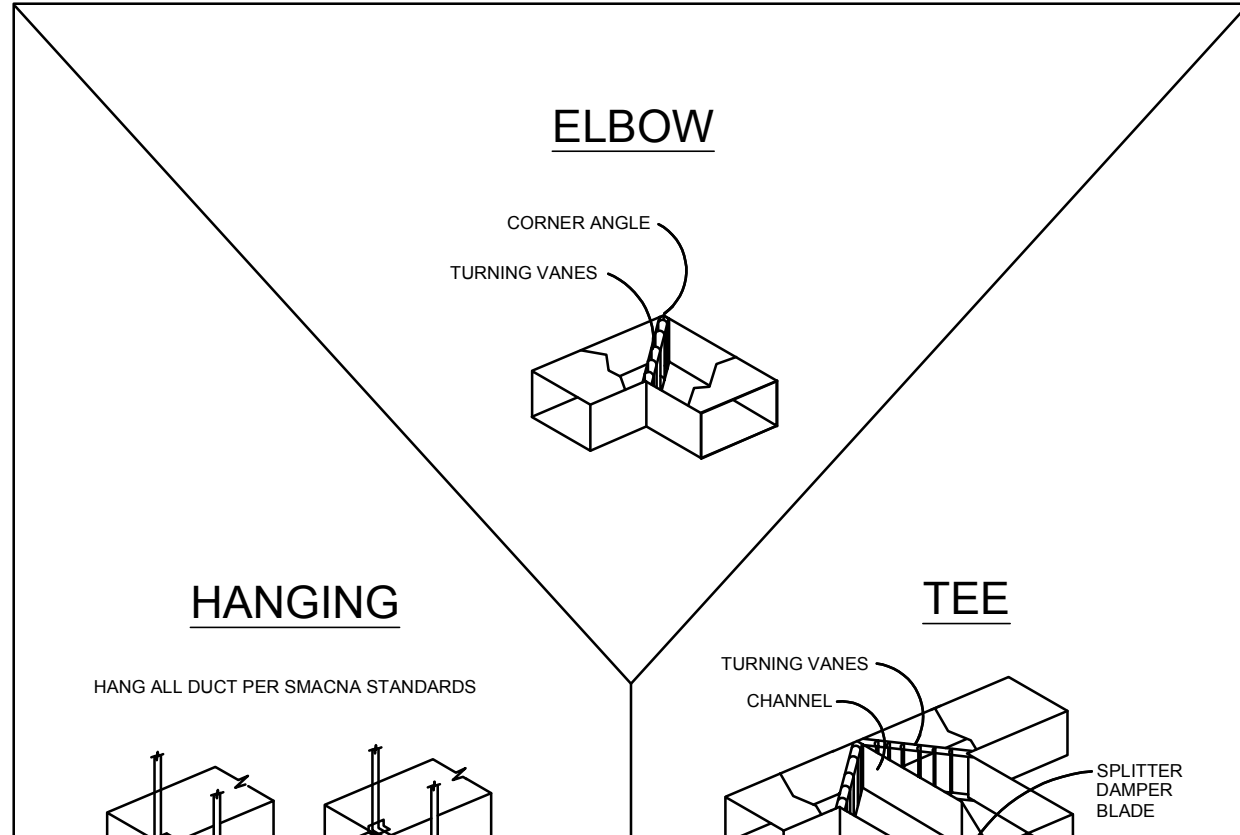
ROOFCURB LEVELING TOLERANCES



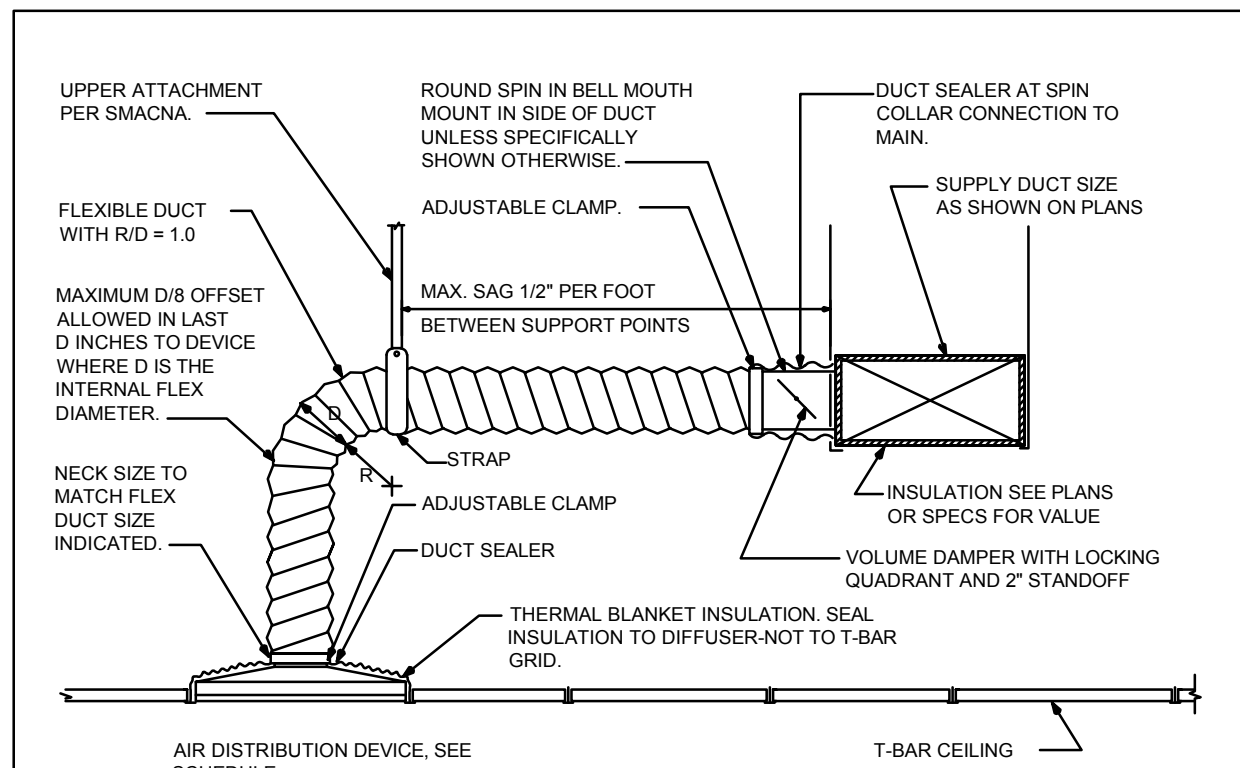
ROOFTOP UNIT INSTALLATION NOTES

- DUCT TRANSITION FROM RTU TO DUCT SIZE SHOWN ON MECH. FLOOR PLAN SHALL BE MADE BETWEEN RTU & TOP OF ROOF WITHIN CURB.
- SIZE OF OPENING IN ROOF DECK TO BE AS SMALL AS POSSIBLE, 6" MAX. LARGER THAN DUCT SIZE SHOWN. COORDINATE W/STRUCTURAL PLANS.
- INSTALL PER MANUFACTURER'S RECOMMENDATION AND INSTALLATION MANUAL.
- ALL WIRING BY ELECTRICAL CONTRACTOR.
- ROOF SLOPE COMPENSATION TO BE ACHIEVED THROUGH ROOF CURB SLOPE. DO NOT SHIM ROOF CURB.
- CONTRACTOR SHALL COORDINATE LOCATION OF ROOF CURB WITH STRUCTURE PRIOR TO INSTALLATION.
- ROOF CURB BY AIR CONDITIONER MANUFACTURER. PROVIDE ADDITIONAL BRACING AND SUPPORT. AS REQUIRED FOR ROOF CURB INSTALLATION TO WITHSTAND WIND LOAD PER LOCAL CODES.
- CURB TO BE HEAVY GAUGE GALVANIZED STEEL CONSTRUCTION AS RECOMMENDED BY MANUFACTURER. ALL FASTENERS SHALL BE CORROSION PROTECTED IF EXPOSED TO OUTDOORS.
- FOR ATTACHMENT OF A/C UNIT ROOF CURB TO ROOF STRUCTURE, PROVIDE 3/8" THROUGH BOLTS, PROVIDE AT 36" O.C. MINIMUM OF (8) ANCHORS (2) PER SIDE OR AS RECOMMENDED BY STRUCTURAL ENGINEER.
- CLEARANCE OF UNIT TO ABOVE FINISHED ROOF SHALL BE RAISED A MIN. OF 8 INCHES TO COMPLY WITH 2017 FLORIDA BUILDING CODE, PAR. 1510.10.
- COORDINATE WITH ARCHITECT DETAILS FOR ALL ROOFING REQUIREMENTS AND ADDITIONAL INFORMATION.

HVAC EQUIPMENT ROOF CURB DETAIL
NOT TO SCALE



HVAC DUCT DETAILS
NOT TO SCALE



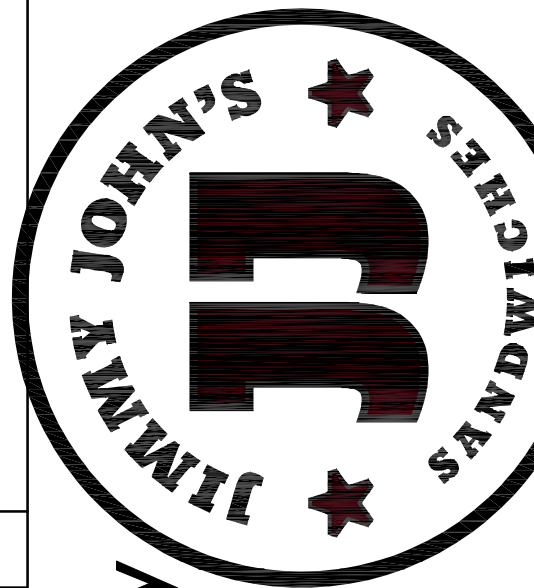
FLEXIBLE DUCT NOTES:

- FLEXIBLE DUCTS SHALL BE ONE-PIECE AND SHALL NOT BE SPICED TOGETHER.
- EXTEND FLEXIBLE DUCT INSULATION TO DUCT/DIFFUSER PANEL INSULATION AND SEAL WITH MASTIC.
- MINIMUM 1" WIDE 22 GALVANIZED STRAP HANGER WITH HEIMED EDGES PER SMACNA, FIGURE 3-10.
- FLEXIBLE AIR DUCT SHALL BE FULLY EXTENDED AND NOT COMPRESSED WITH ELBOW RADIUS NOT LESS THAN R/D = 1.0.
- PROVIDE NON METALLIC, INSULATED FLEXIBLE DUCT.

SUBMITTALS AND SHOP DRAWINGS REQUIREMENTS

- THE CONTRACTOR SHALL PROVIDE SUBMITTALS AND SHOP DRAWINGS FOR APPROVAL AND ASSEMBLE INTO ELECTRONIC (PDF) PACKAGES PER SCHEDULE BELOW. INDIVIDUAL SUBMITTALS NOT ORGANIZED PER PACKAGES SHALL RESULT IN REJECTION OF SUBMITTAL.
- COORDINATE WITH GENERAL PROJECT TERMS AND CONDITIONS FOR SUBMITTING PROCEDURES AND PROCESS.
- CONTRACTOR SHALL REVIEW EACH SUBMITTAL AND CHECK FOR COORDINATION WITH OTHER WORK OF THE CONTRACT AND FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. MARK WITH APPROVAL STAMP BEFORE SUBMITTING TO ARCHITECT. FAILURE TO COMPLY WITH REQUIREMENTS IDENTIFIED HEREIN SHALL RESULT IN REJECTION OF SUBMITTAL.
- SUBMITTAL PACKAGES
 - PACKAGE 1 - MECHANICAL EQUIPMENT
 - PACKAGE 2 - MECHANICAL DUCTWORK AND ACCESSORIES
 - PACKAGE 3 - MECHANICAL CONTROLS
 - PACKAGE 4 - TEST AND BALANCE REPORT
- ALL FIXTURES AND EQUIPMENT SHALL BE ORGANIZED AND CLEARLY MARKED WITH TAGS MATCHING CONSTRUCTION DOCUMENTS.
- MARK EACH SUBMITTAL TO SHOW WHICH PRODUCTS AND OPTIONS ARE APPLICABLE AND INCLUDE THE FOLLOWING INFORMATION AS APPLICABLE: MANUFACTURER'S CATALOG CUTS AND MANUFACTURER'S PRODUCT SPECIFICATIONS. GENERIC PRODUCT DATA SHALL NOT BE ACCEPTABLE.
- IDENTIFY DEVIATIONS FROM THE CONTRACT DOCUMENTS ON SUBMITTALS. ANY COSTS INCURRED BY THE ENGINEER FOR DEVIATIONS REQUIRING REDESIGN OR EXTENSIVE REVIEW SHALL BE PAID BY CONTRACTOR.

Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
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DEVILS LAKE, ND 58301

Drawn By:
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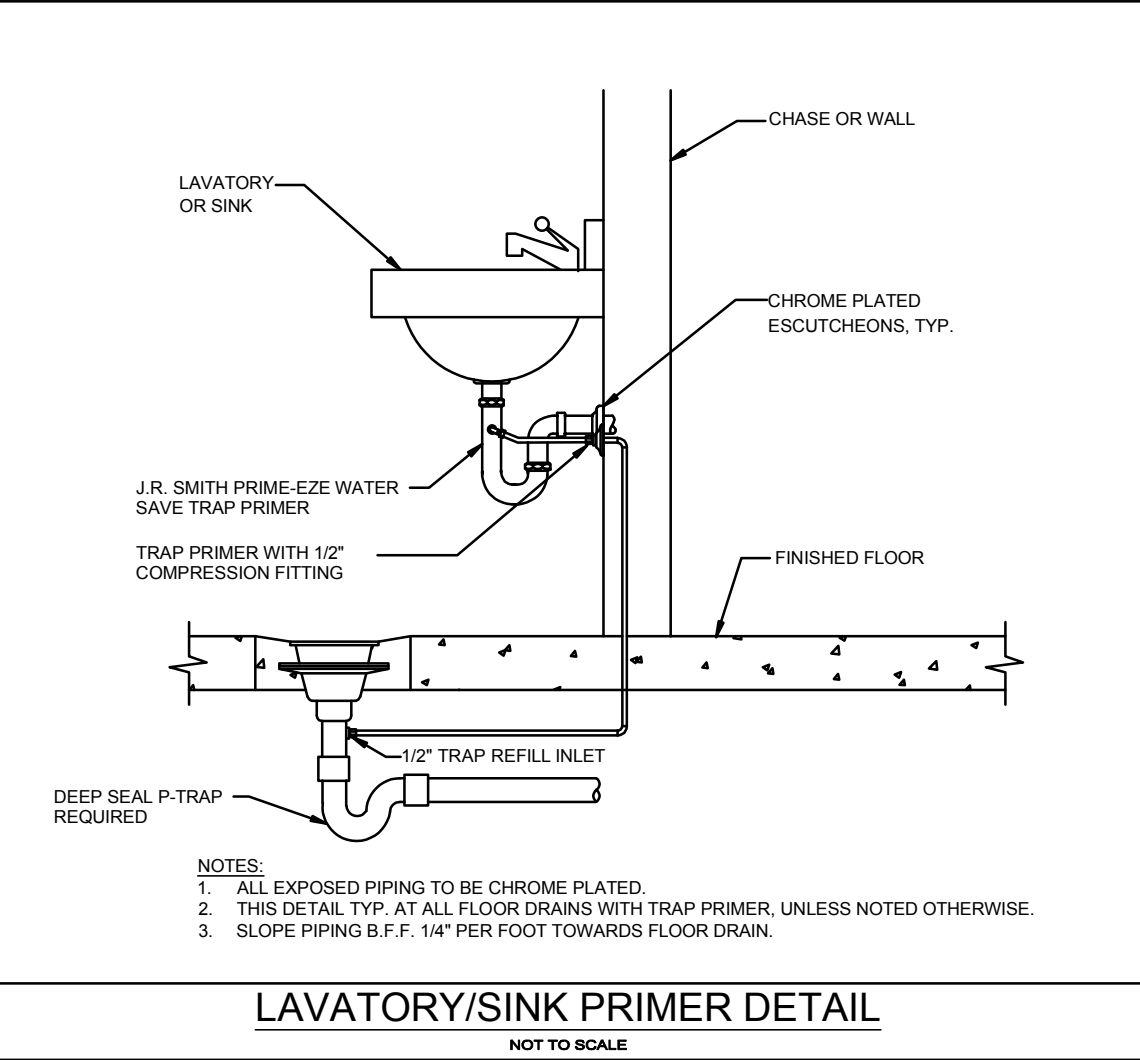
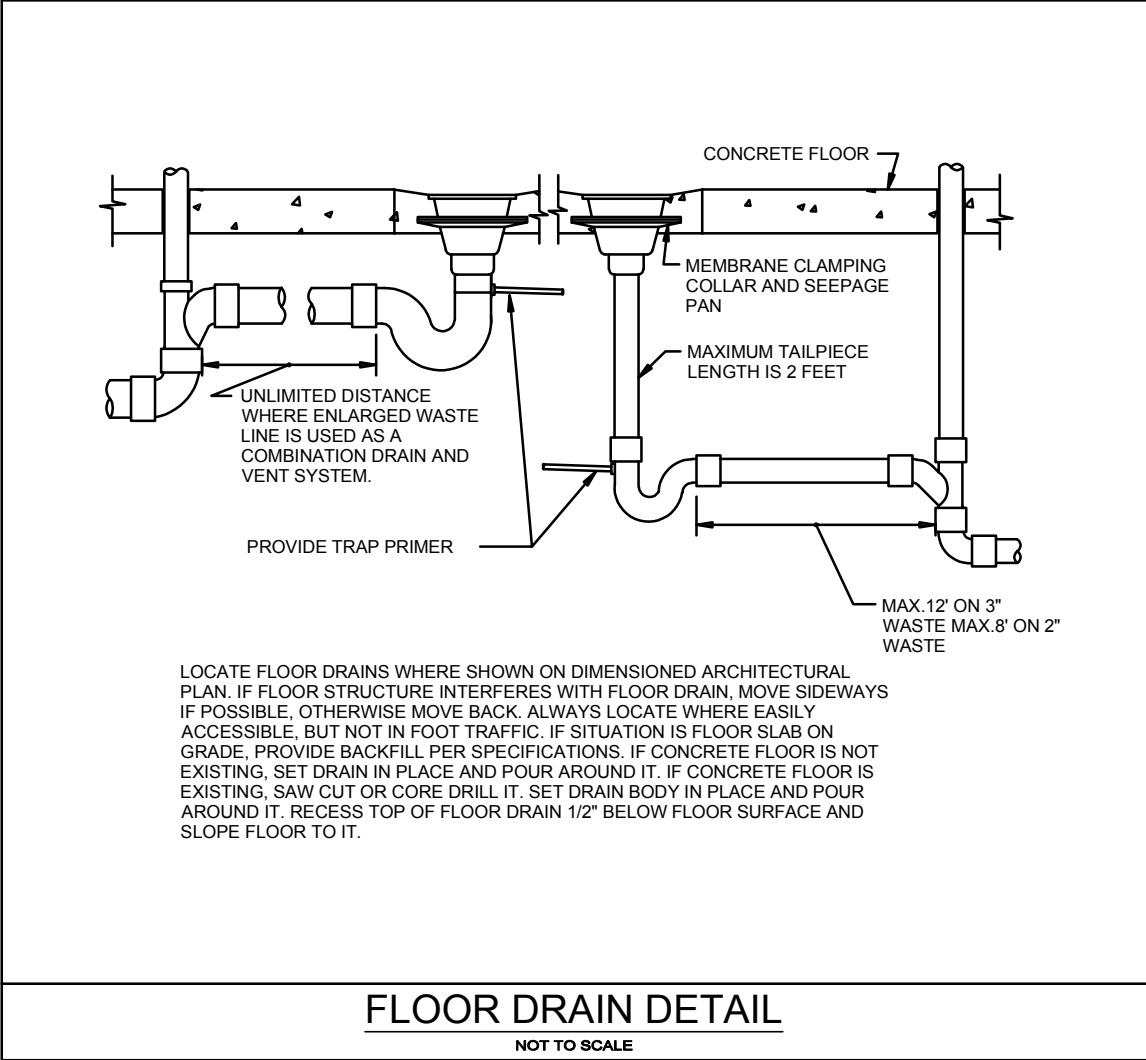
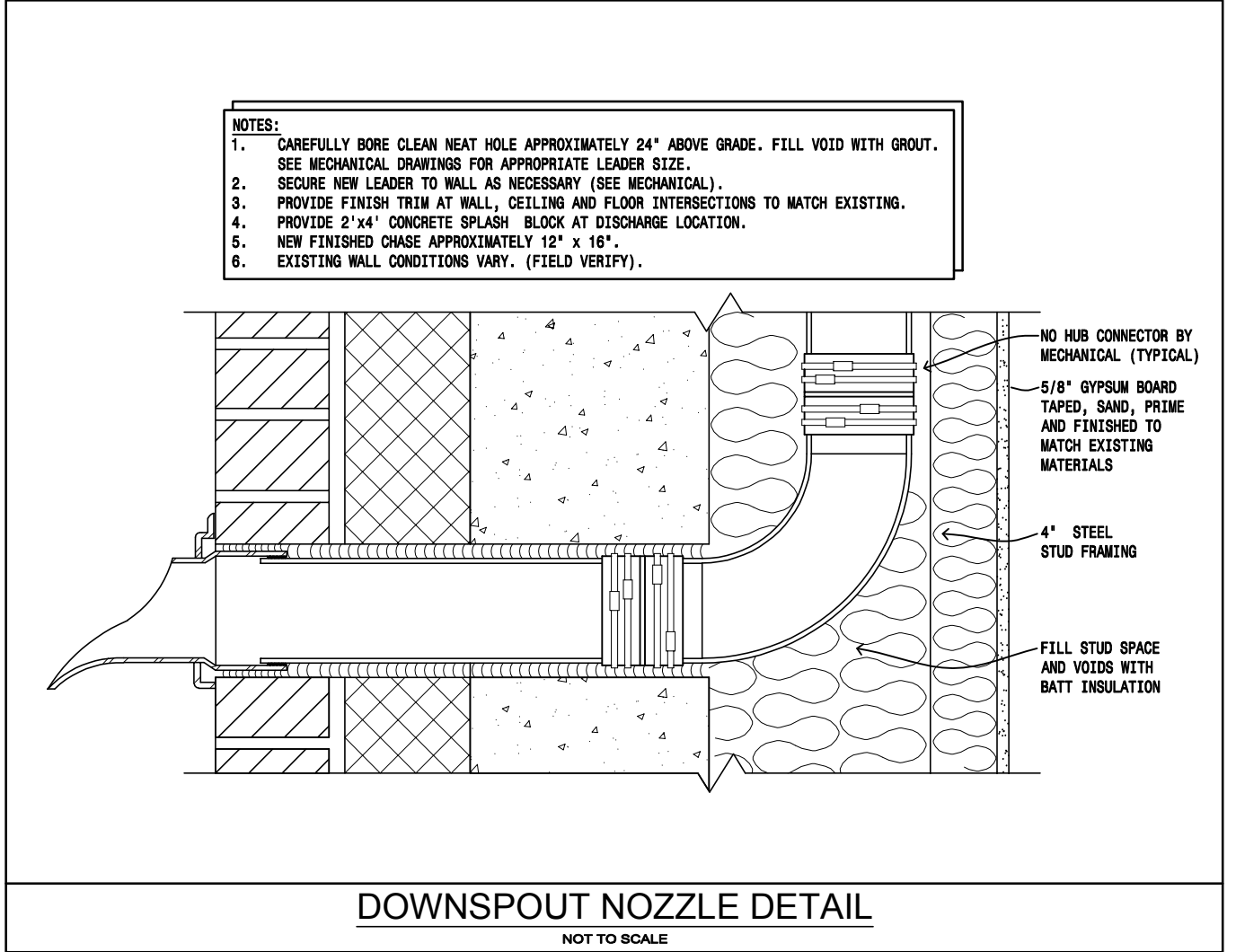
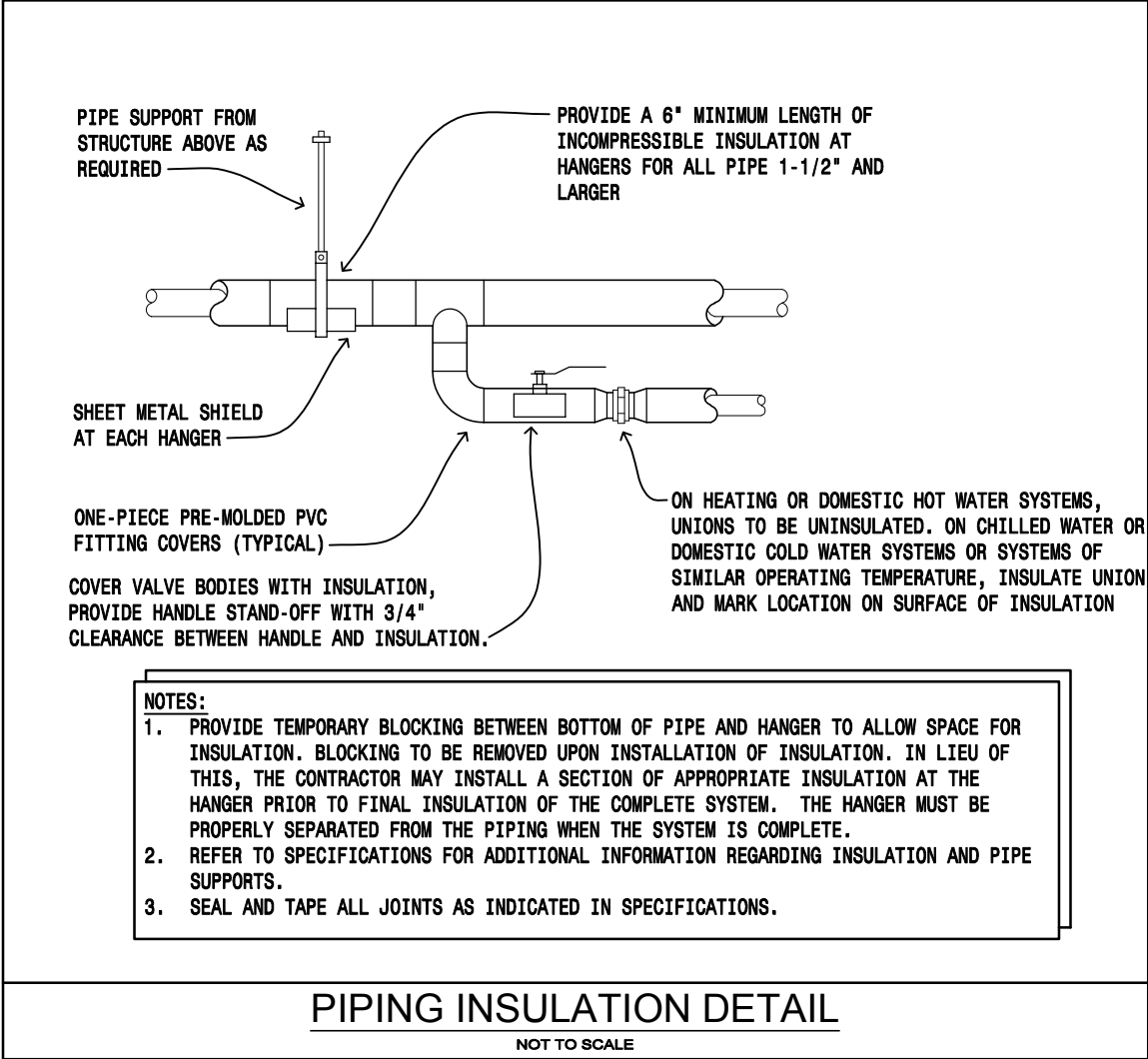
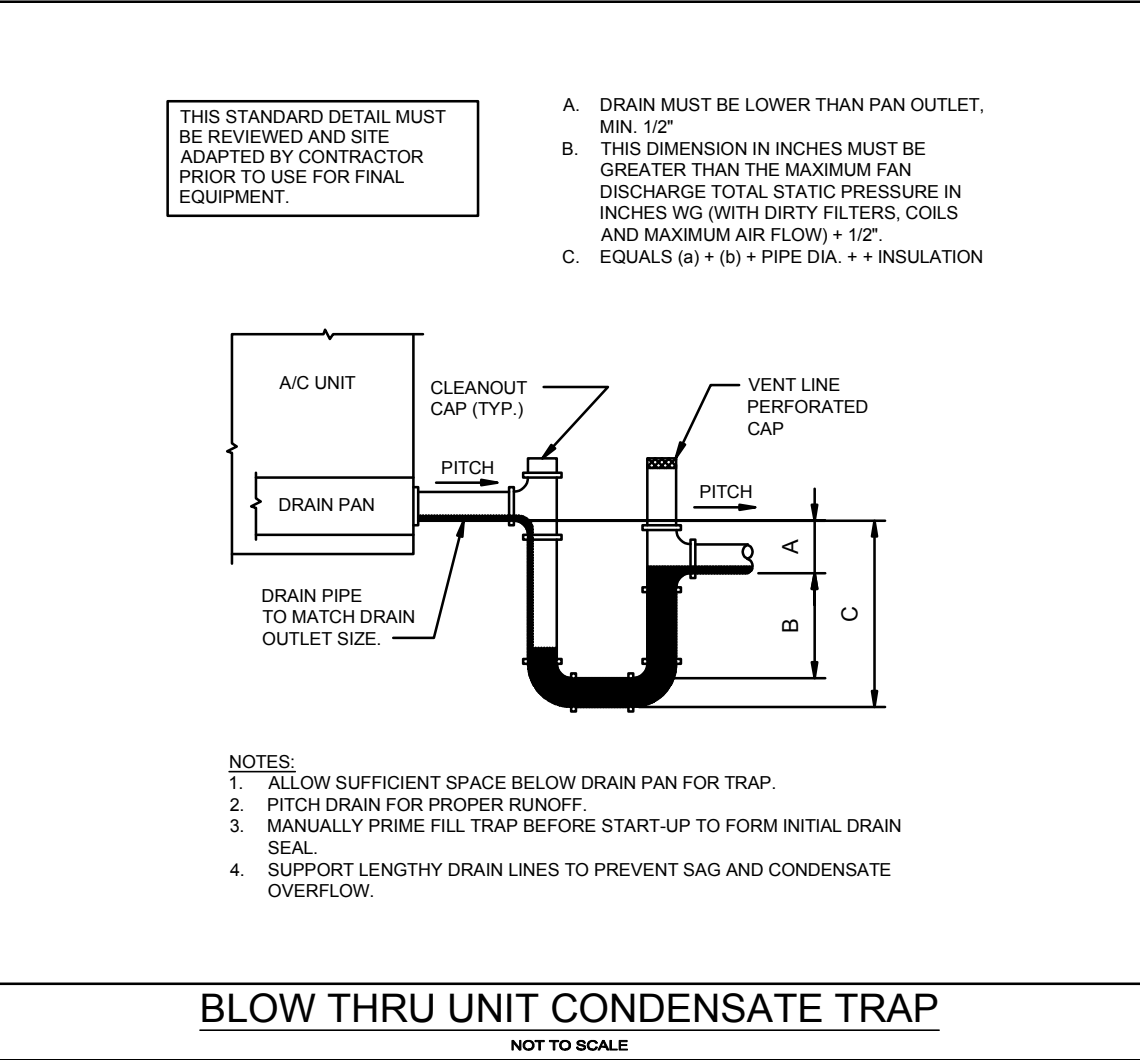
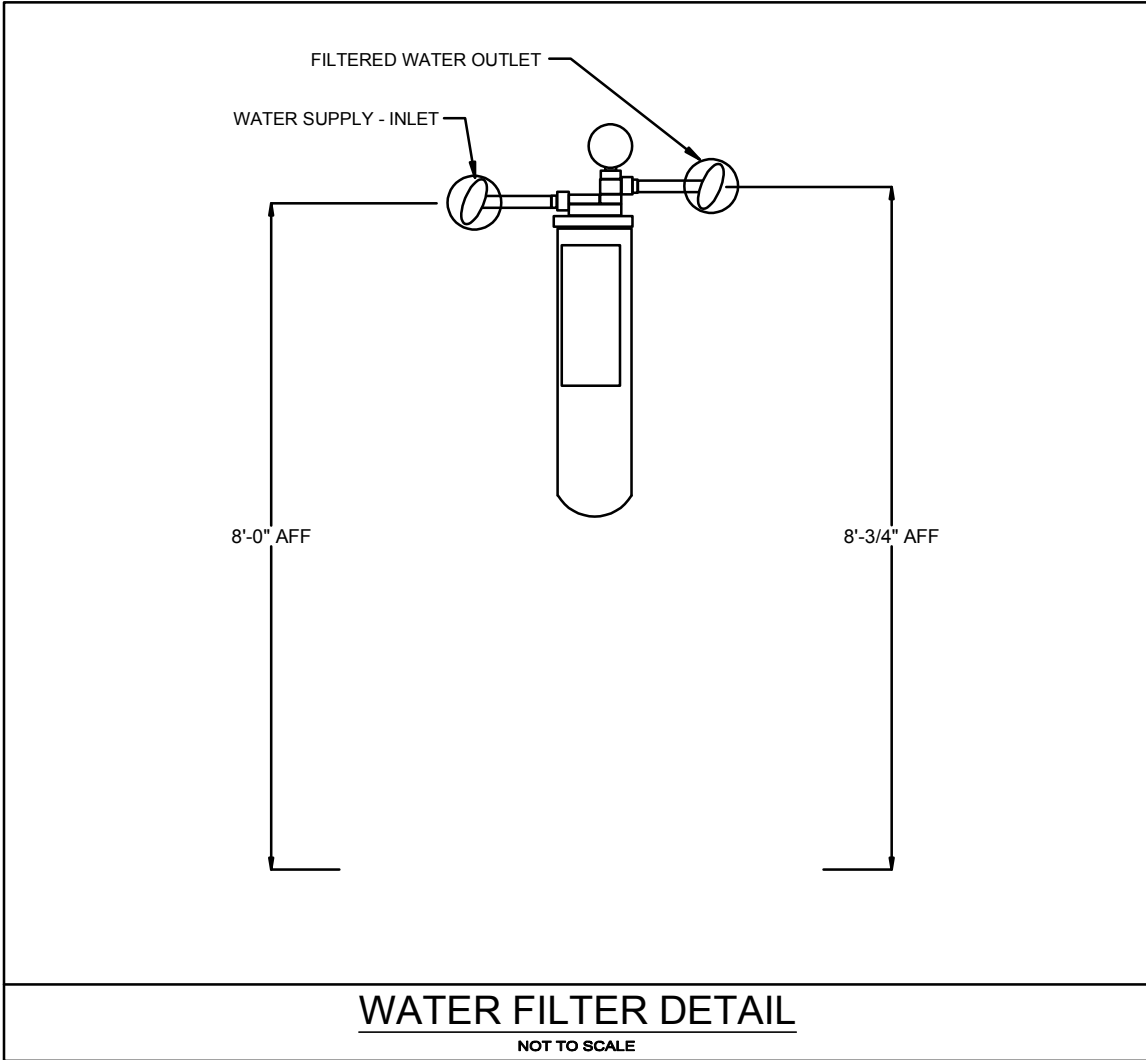
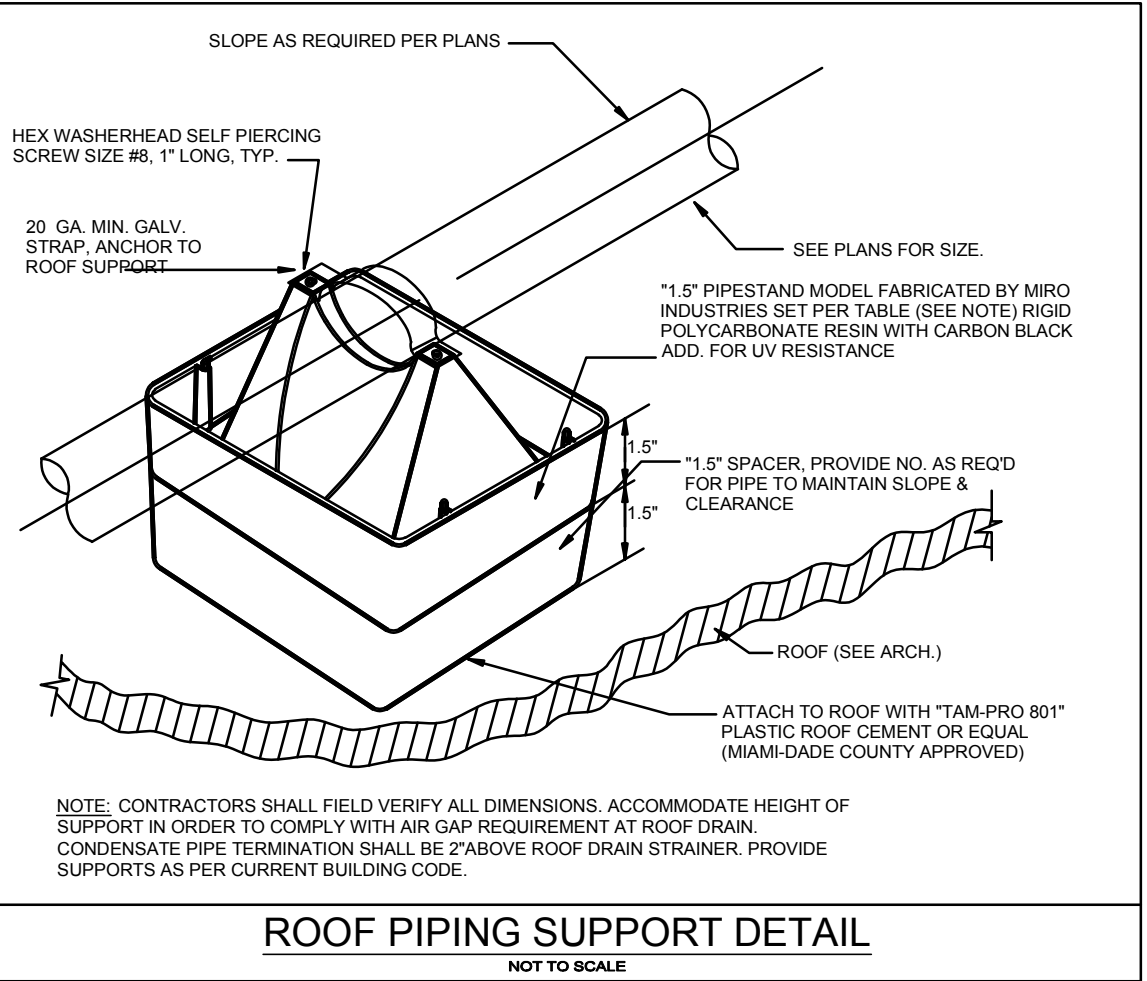
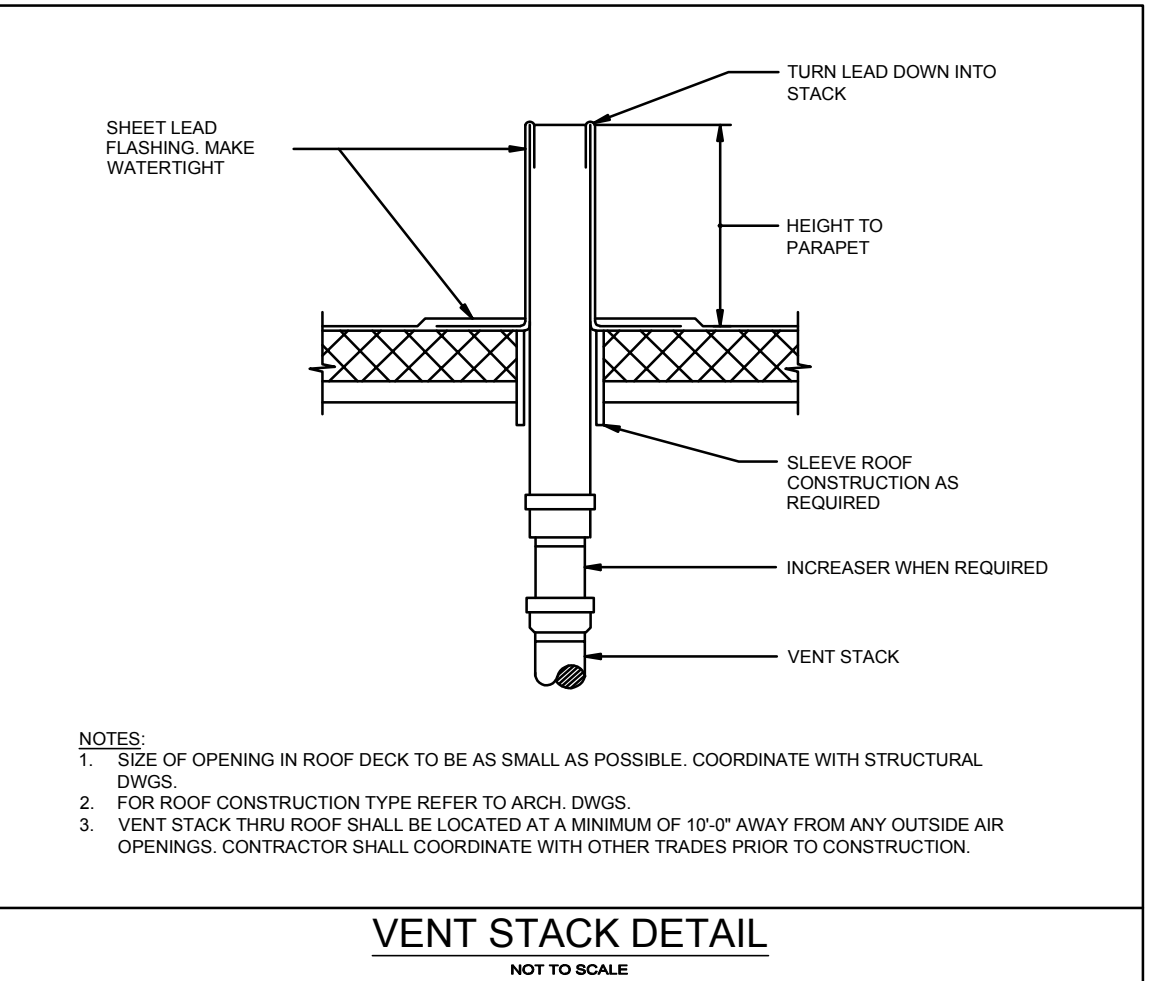
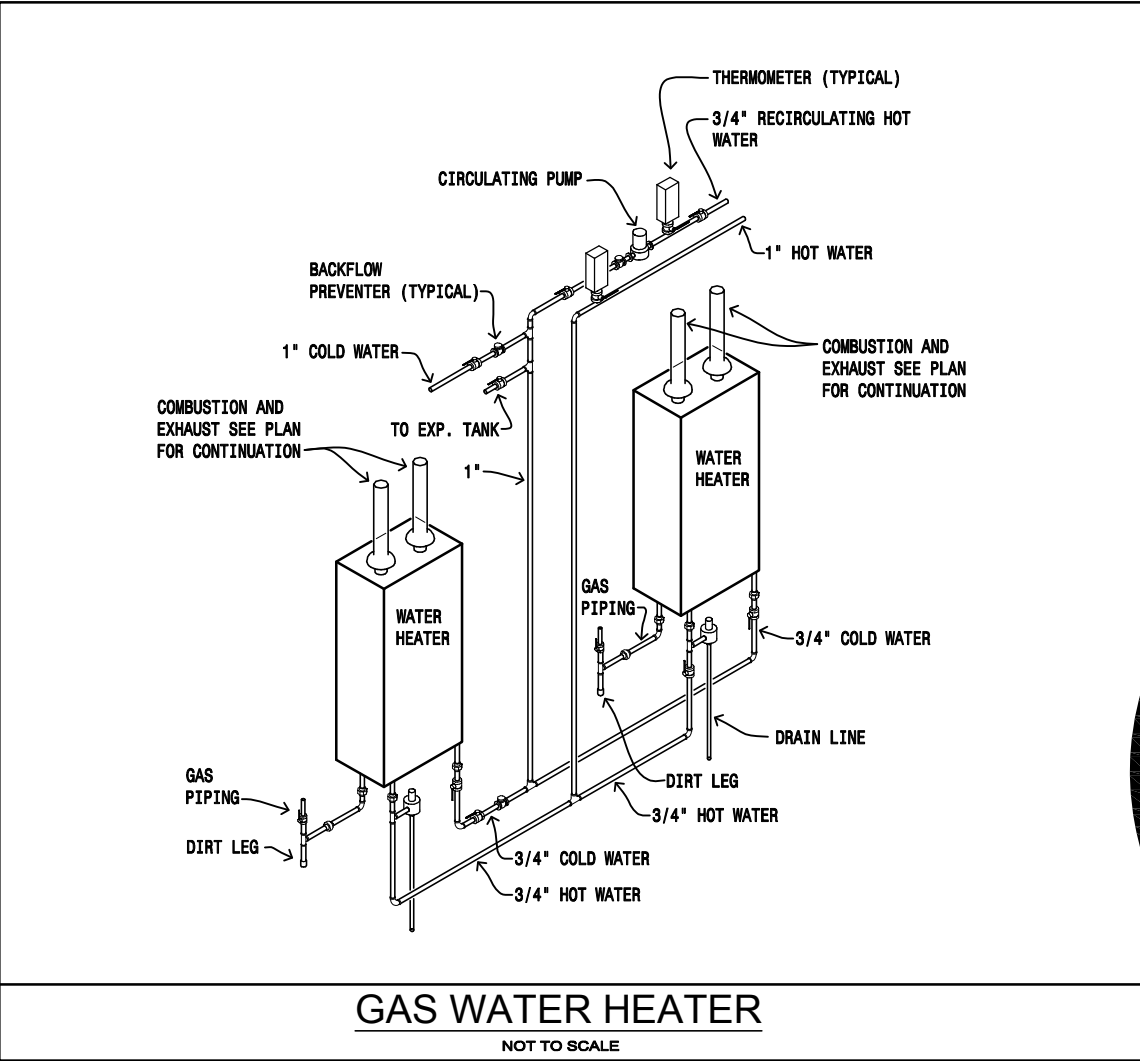
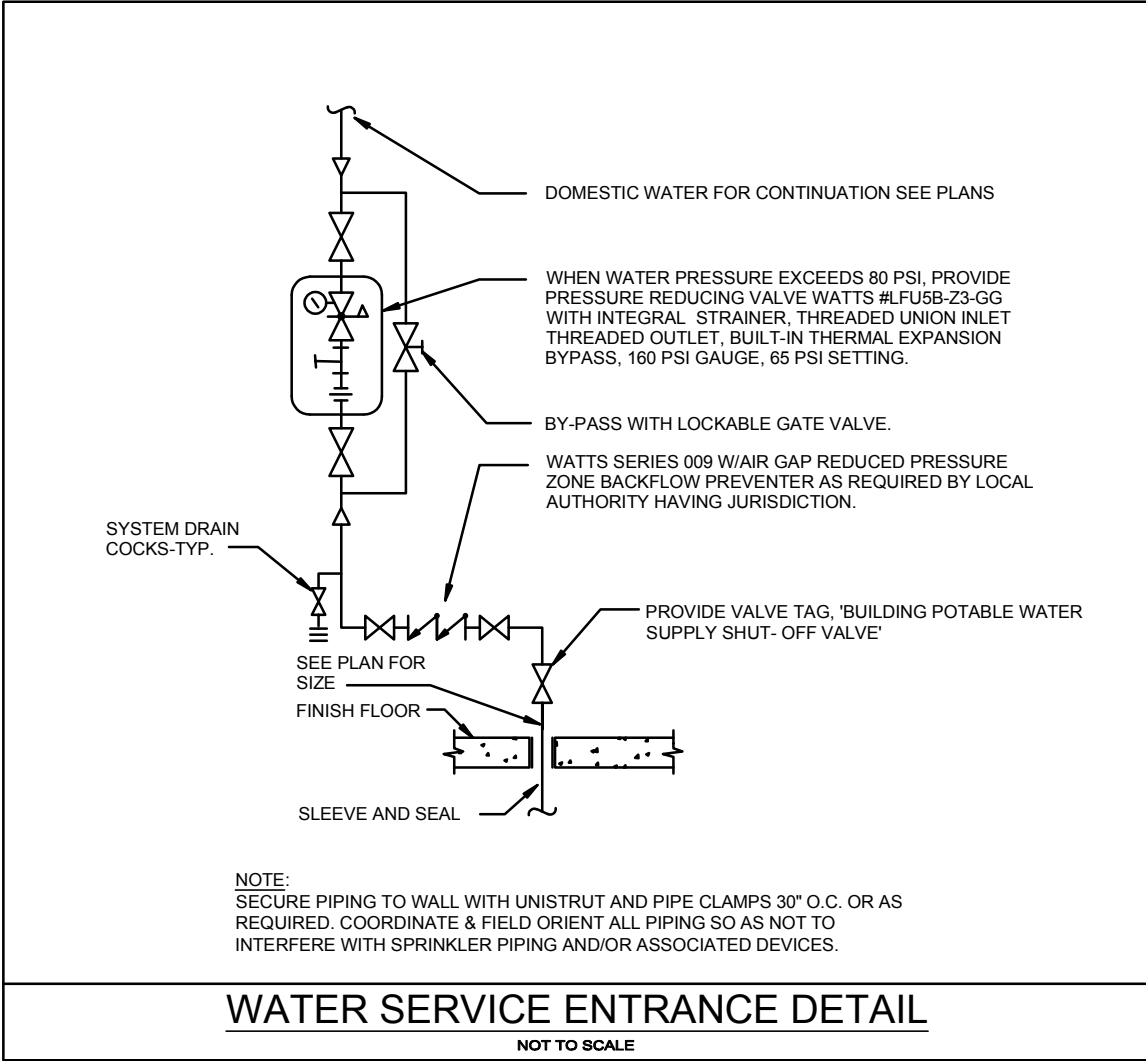
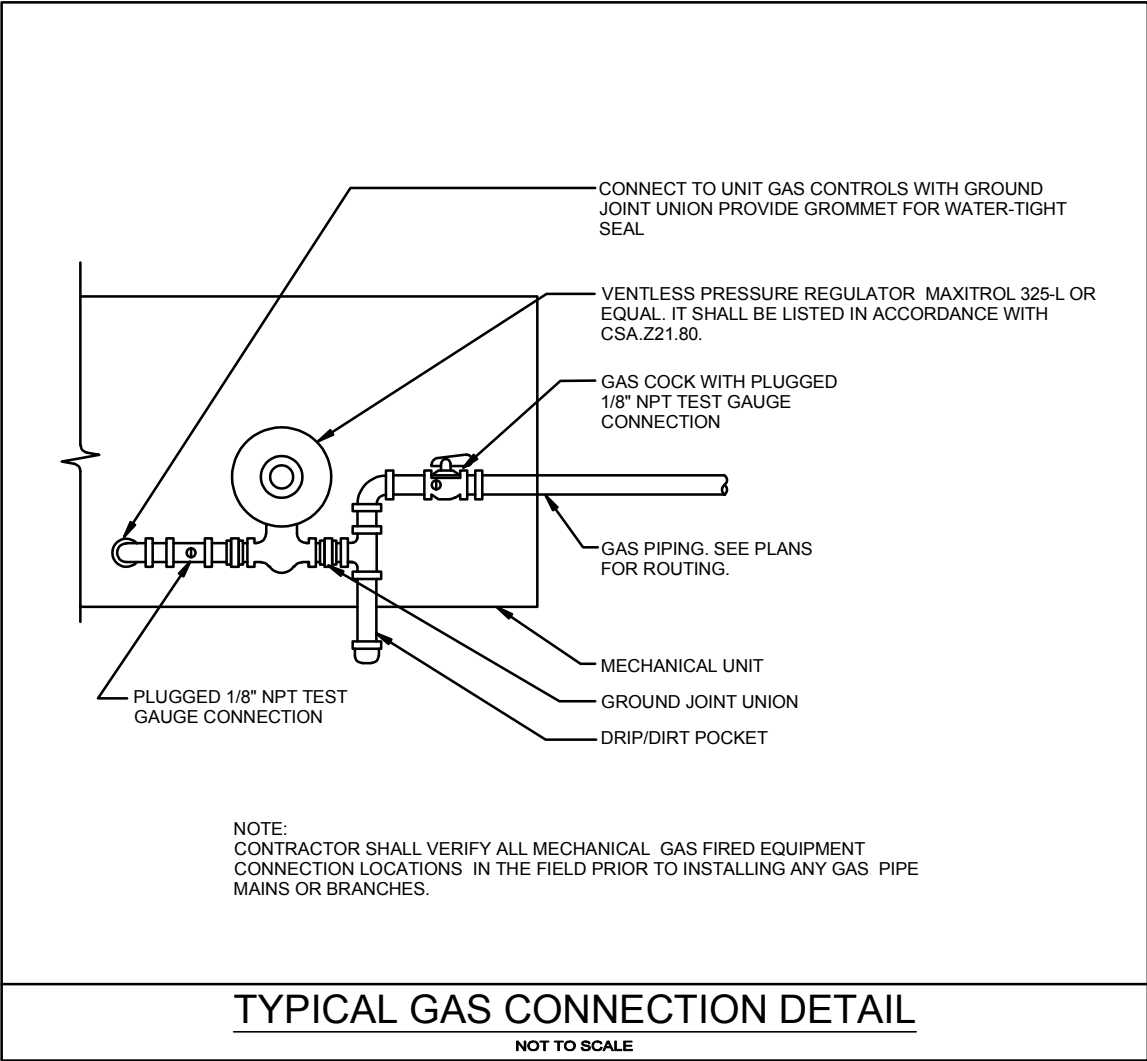
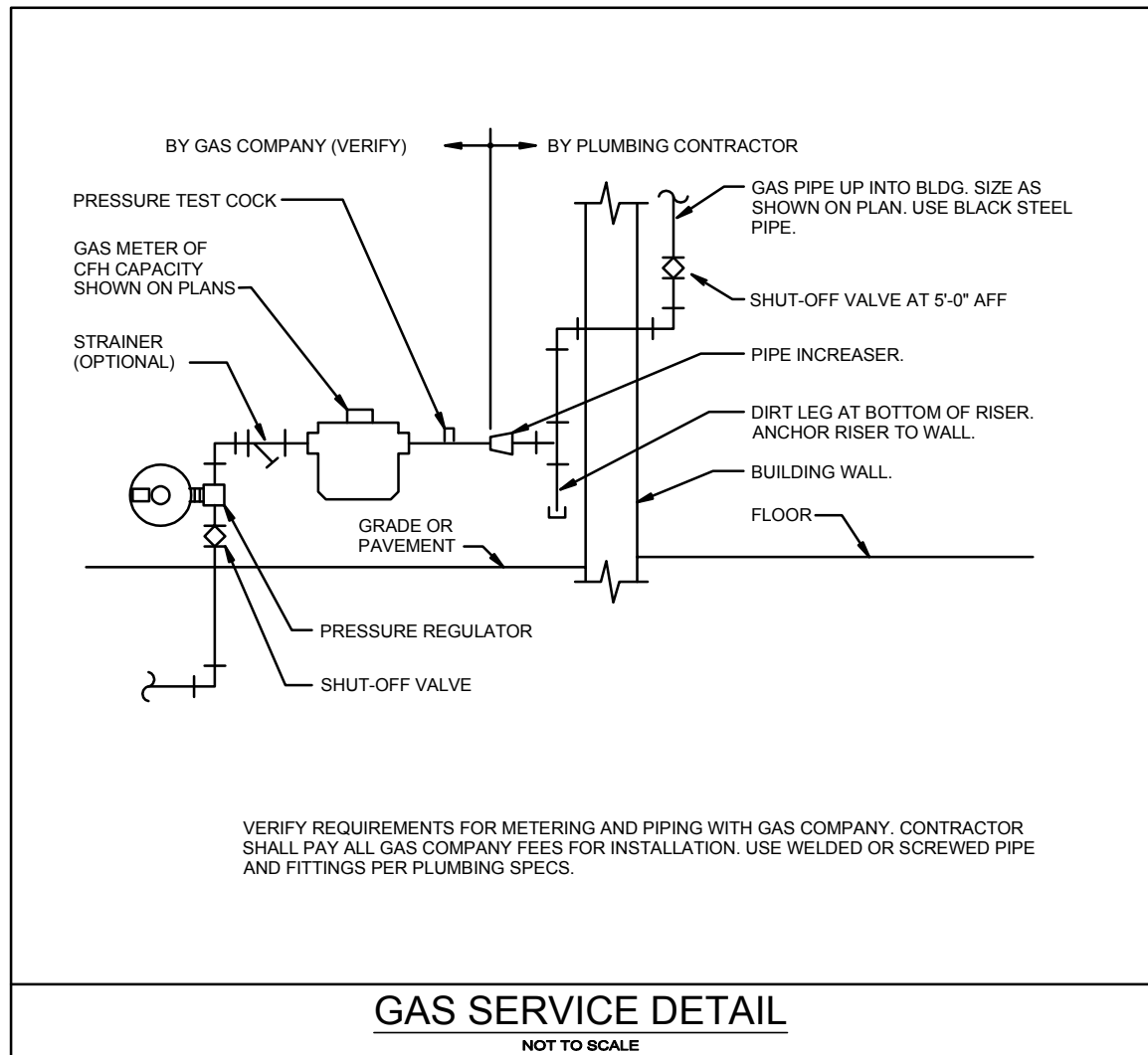
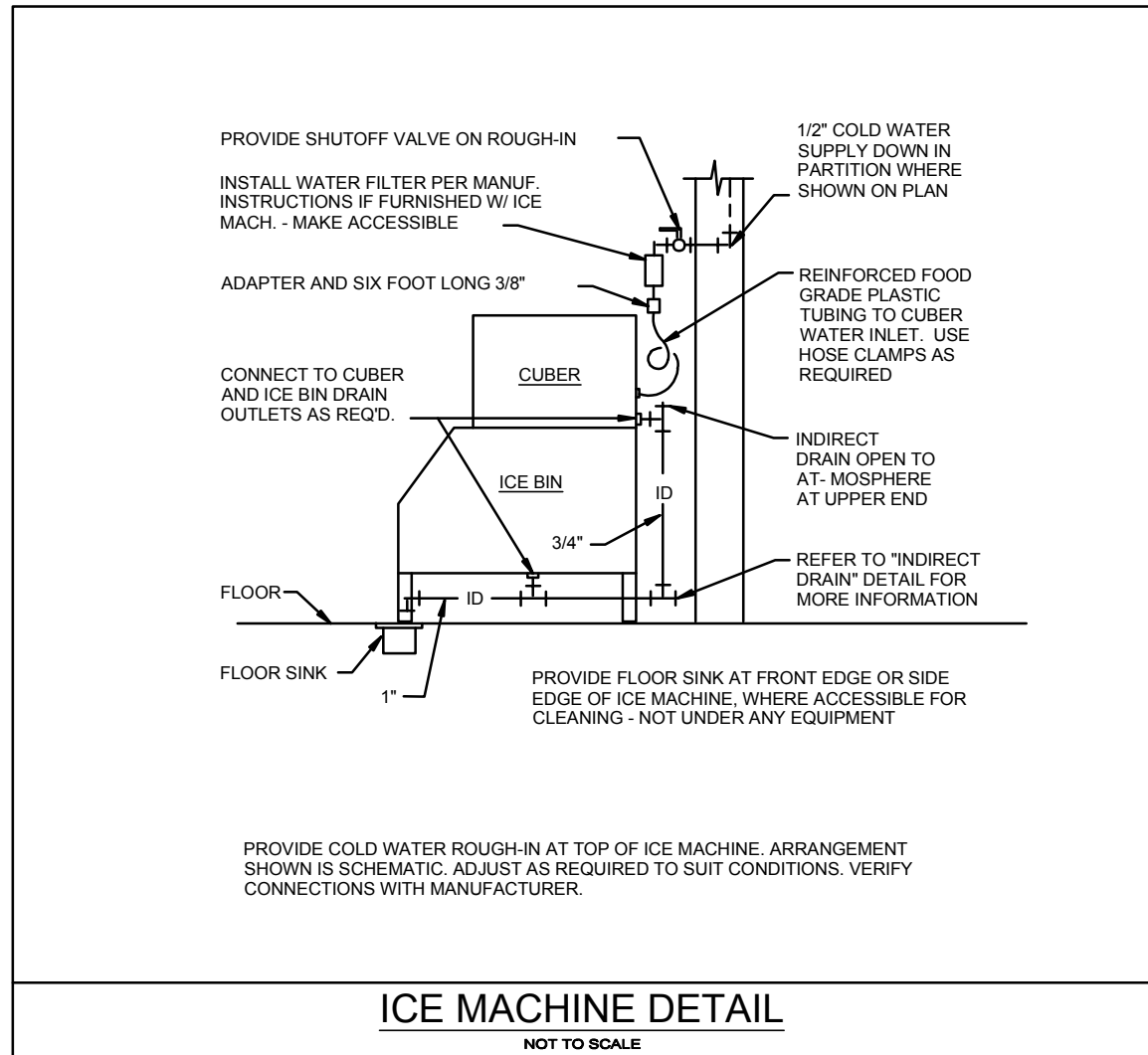
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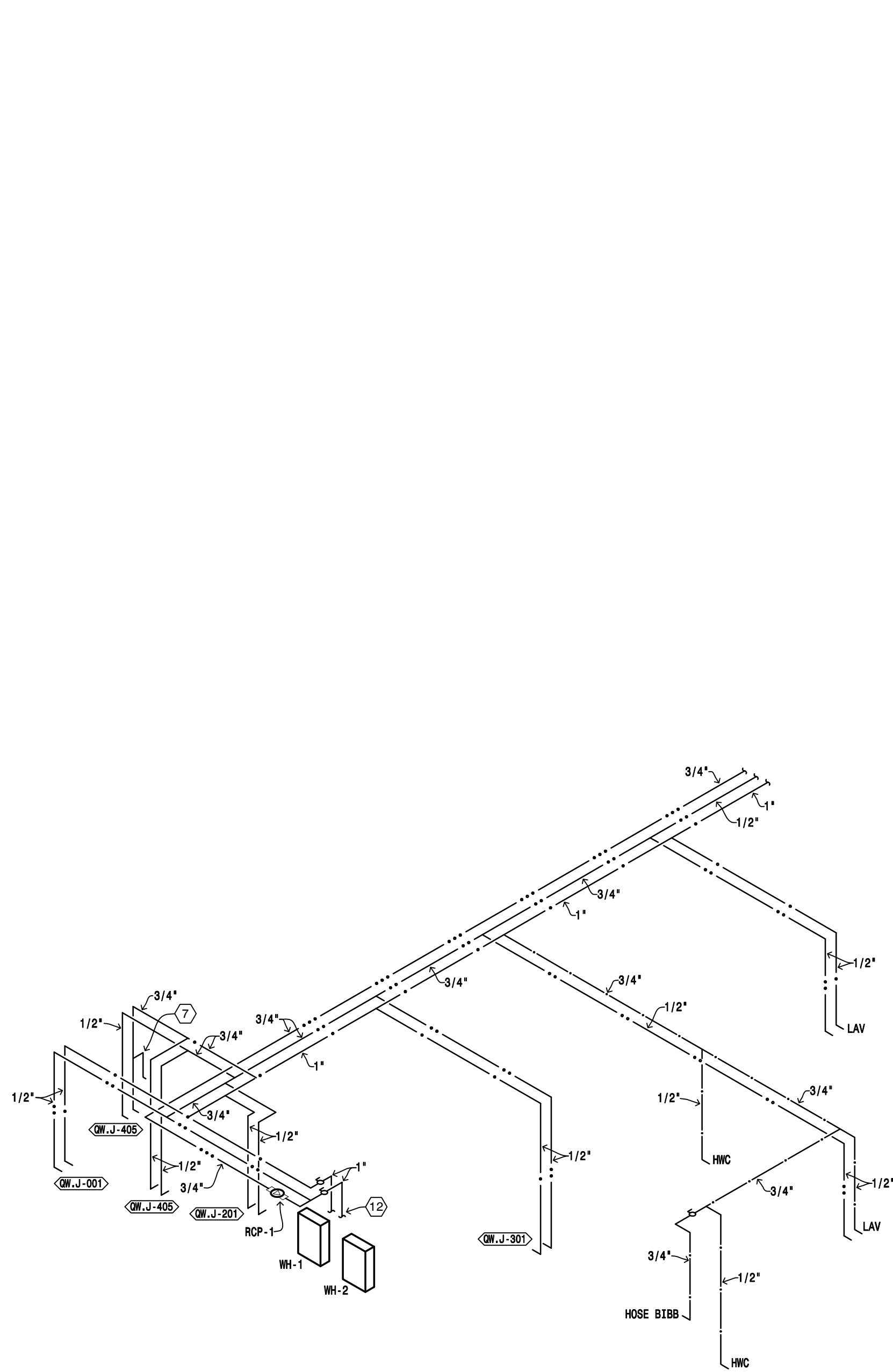
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2025.04

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PLUMBING
NOTES & DETAILS

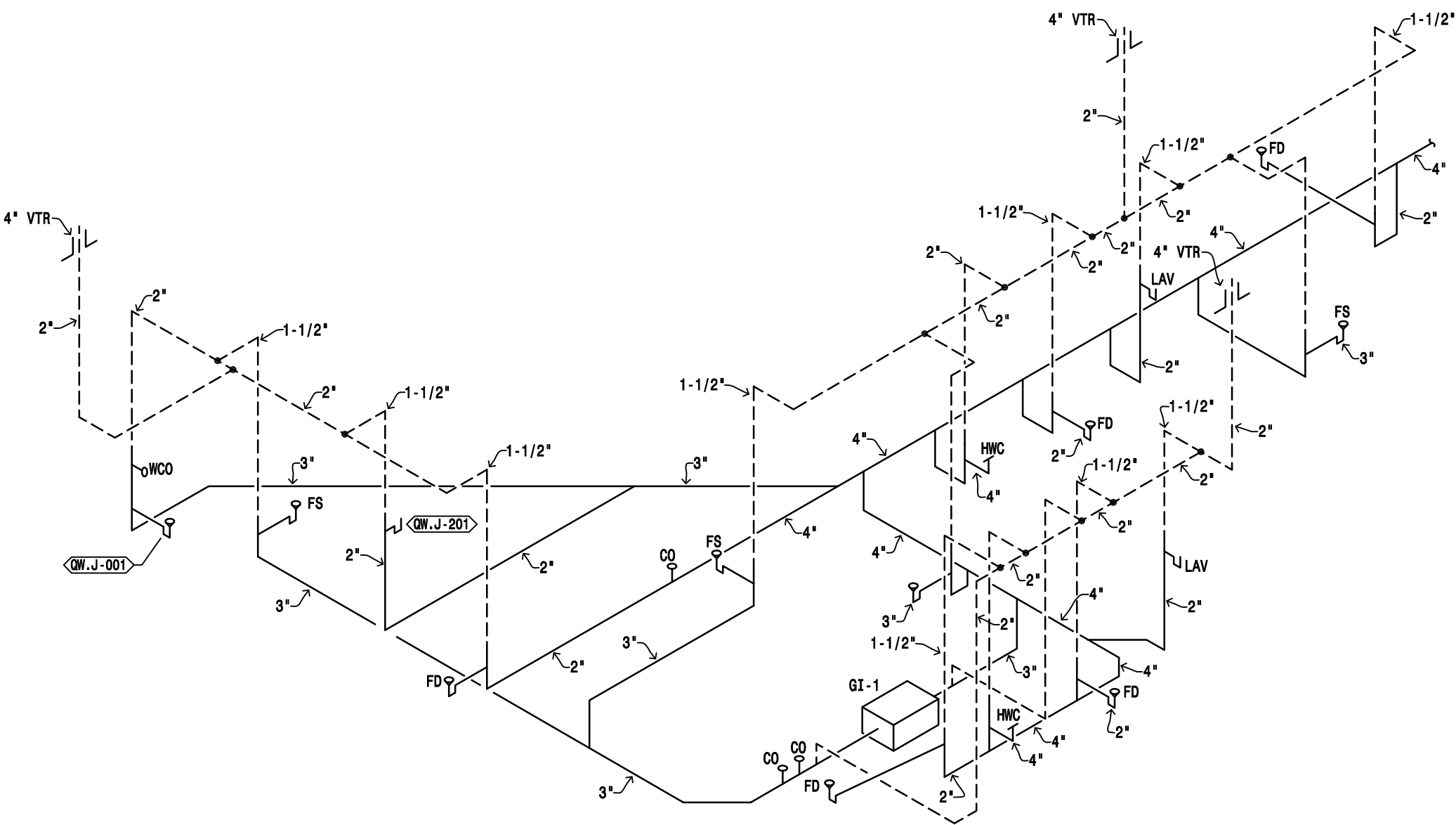
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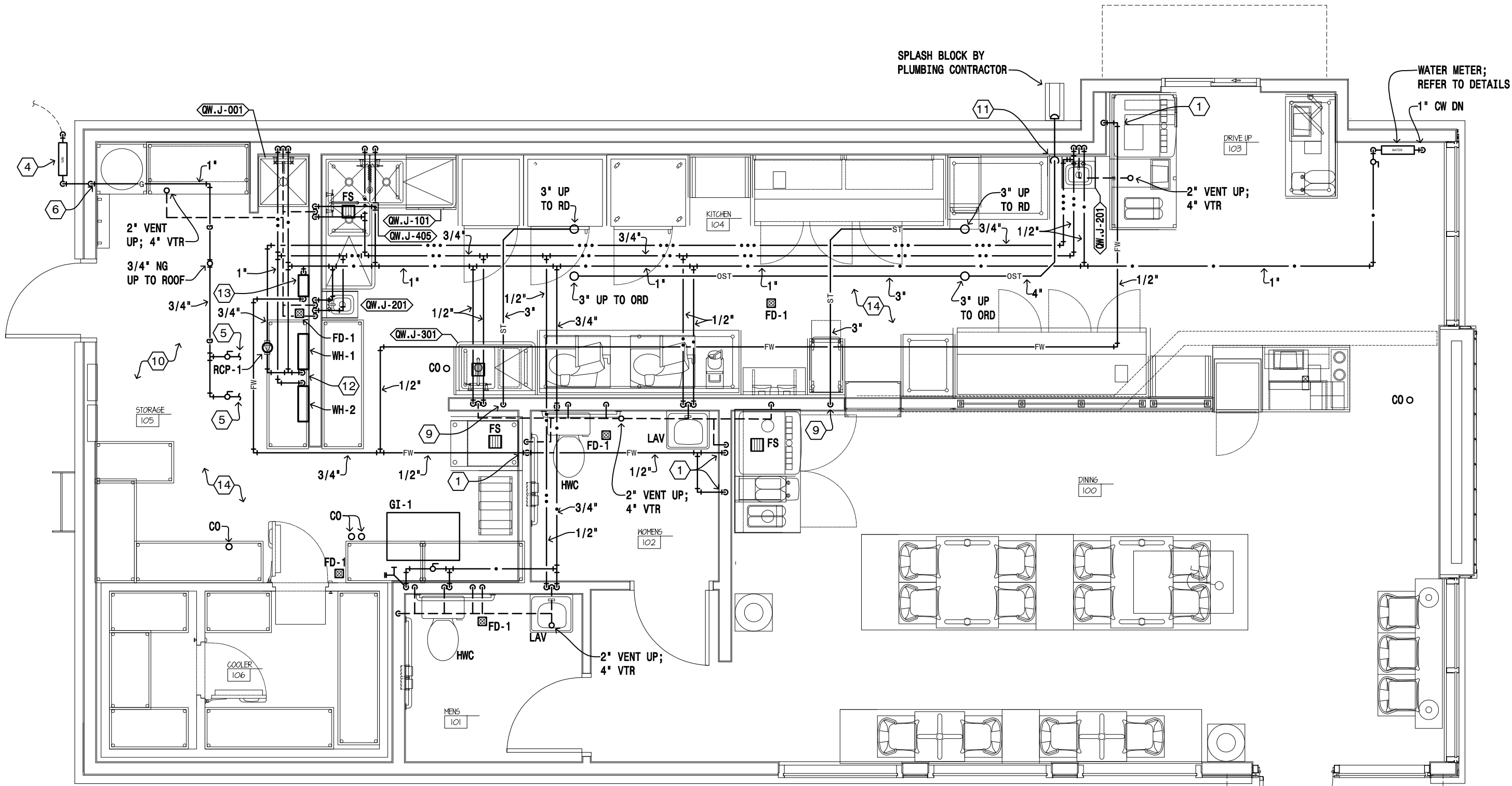




DOMESTIC WATER RISER DIAGRAM
SCALE: NOT-TO-SCALE

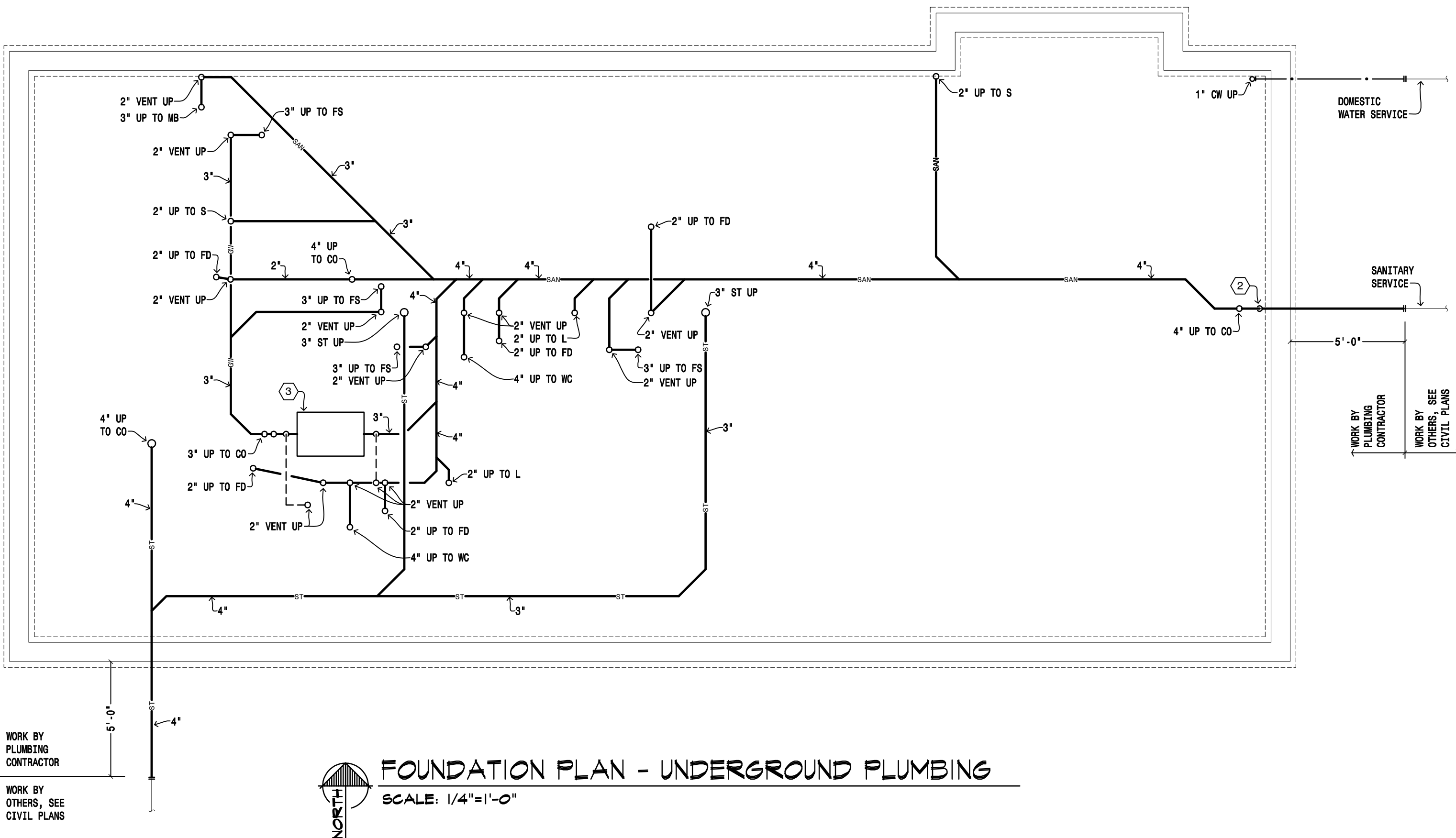


DRAIN, WASTE, AND VENT RISER DIAGRAM
SCALE: NOT-TO-SCALE



FIRST FLOOR PLAN - PLUMBING
SCALE: 1/4"=1'-0"

NOTES:
ALL "O" EQUIPMENT LABELS AND FIXTURE TAGS ARE FOR REFERENCE ONLY AND MAY NOT REPRESENT EXACT EQUIPMENT USED. COORDINATE AND CONFIRM WITH OWNER & ARCHITECT FOR FINAL FIXTURE SELECTIONS PRIOR TO ORDERING.



FOUNDATION PLAN - UNDERGROUND PLUMBING
SCALE: 1/4"=1'-0"

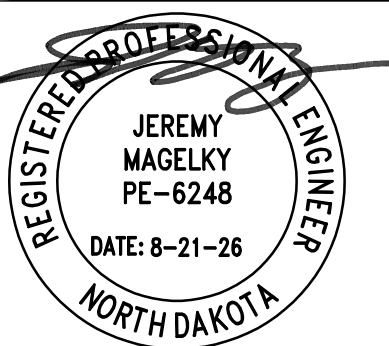
PLUMBING ROUGH-IN CONNECTION SCHEDULE				
FIXTURE	WASTE	VENT	CW	HW
FD	2"	1-1/2"	-	-
L	2"	1-1/2"	1/2"	1/2"
MB	3"	1-1/2"	1/2"	1/2"
S	2"	1-1/2"	1/2"	1/2"
U	2"	1-1/2"	3/4"	-
WC	4"	2"	1/2"	-

PLAN NOTES:

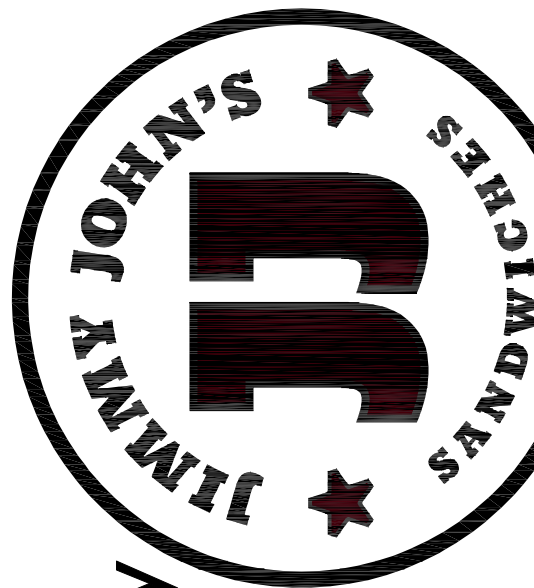
- 1/2" FILTERED COLD WATER DOWN TO FIXTURE.
- OFFSET 4" SEWER DOWN TO MATCH CIVIL INVERT. COORDINATE WITH SITE UTILITY CONTRACTOR.
- GREASE INTERCEPTOR SHALL BE SCHIER GB2 OR APPROVED EQUAL.
- NATURAL GAS METER SIZED FOR 700 MBH @ 2 PSIG. CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY COMPANY FOR PRESSURE, METER LOCATION, AND INSTALLATION REQUIREMENTS. ALL FEES SHALL BE PAID BY OWNER.
- ROUTE 1/2" NATURAL GAS TO EACH WATER HEATER. PROVIDE REGULATOR, SHUT-OFF VALVE, UNIONS, AND DIRT LES. SIZE FINAL CONNECTION TO WATER HEATER PER MANUFACTURER'S RECOMMENDATIONS. REFER TO DETAILS.
- PROVIDE MAIN GAS SHUT-OFF VALVE IN VERTICAL PIPE LOCATED INSIDE THE BUILDING 5 FEET ABOVE FINISHED FLOOR. CONTRACTOR TO ENSURE VALVE IS LOCATED IN ACCESSIBLE LOCATION. VALVE SHALL HAVE A PERMANENTLY ATTACHED HANDLE.
- BRANCH 3/4" COLD WATER TO DISHWASHER.
- WATER FILTRATION SYSTEM. COORDINATE EXACT LOCATION WITH ELECTRICAL GEAR LOCATED ON SAME WALL. COORDINATE WITH ELECTRICAL CONTRACTOR.
- 3" STORM PIPING DOWN IN WALL. PROVIDE WALL CLEANOUT IN ACCESSIBLE LOCATION.
- COORDINATE ALL DOMESTIC PIPING ROUTING WITH ELECTRICAL GEAR IN THIS AREA.
- 4" OVERFLOW STORM PIPING DOWN. PROVIDE CLEANOUT AT BASE OF STACK.
- REFER TO WATER HEATER DETAIL FOR CONTINUATION.
- INSTALL WATER FILTER SYSTEM UNDER ELECTRICAL EQUIPMENT. COORDINATE WITH ELECTRICAL CONTRACTOR.
- INSTALL TRAP PRIMER ON FLOOR DRAINS AND FLOOR SINKS. COORDINATE WITH OWNER FOR REQUIRED LOCATIONS.

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Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:
MDP

Date:
AUGUST 21, 2026

Revision Date:

Job Number:
2025.04

Sheet Name:
PLUMBING PLANS

Sheet Number:

M100

- PLAN NOTES:
- 1 18x12 SUPPLY AIR & 12x18 RETURN AIR UP TO ROOFTOP UNIT.
 - 2 20x14 SUPPLY AIR & 14x20 RETURN AIR UP TO ROOFTOP UNIT.
 - 3 INSTALL TWO GRILLES IN SAME STUD CAVITY AS WATER PIPING. ONE GRILLE SHALL BE 12" BELOW CEILING, ONE GRILLE SHALL BE 18" ABOVE FINISHED FLOOR. COORDINATE LOCATION WITH PLUMBING CONTRACTOR. WALL CAVITY SHALL BE INSULATED TO PREVENT PIPE FREEZING.
 - 4 6"Ø EXHAUST DUCT UP THROUGH ROOF. COORDINATE TERMINATION LOCATION WITH ROOFTOP UNIT INTAKES.
 - 5 ROUTE WATER HEATER INTAKE & EXHAUST UP THRU ROOF. COORDINATE EXHAUST TERMINATION LOCATION WITH ROOFTOP INTAKES. MAINTAIN MINIMUM 10'-0" CLEARANCE. SIZE & ROUTE PER MANUFACTURER'S RECOMMENDATIONS.
 - 6 COORDINATE DUCTWORK & GRILLE LOCATIONS WITH LIGHTING. ALL EXPOSED DUCTWORK SHALL BE GALVANIZED.

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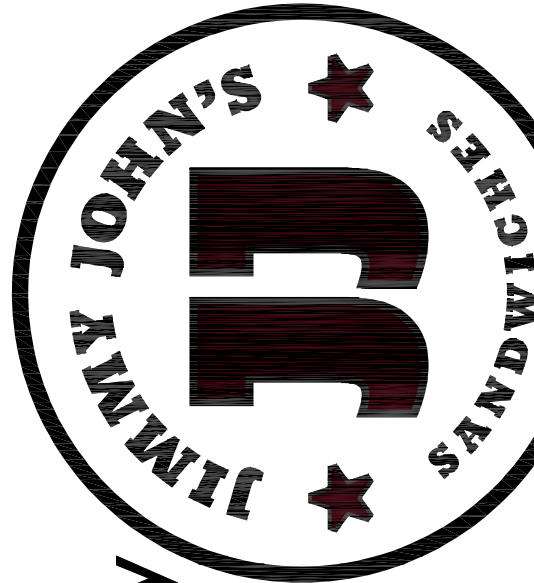
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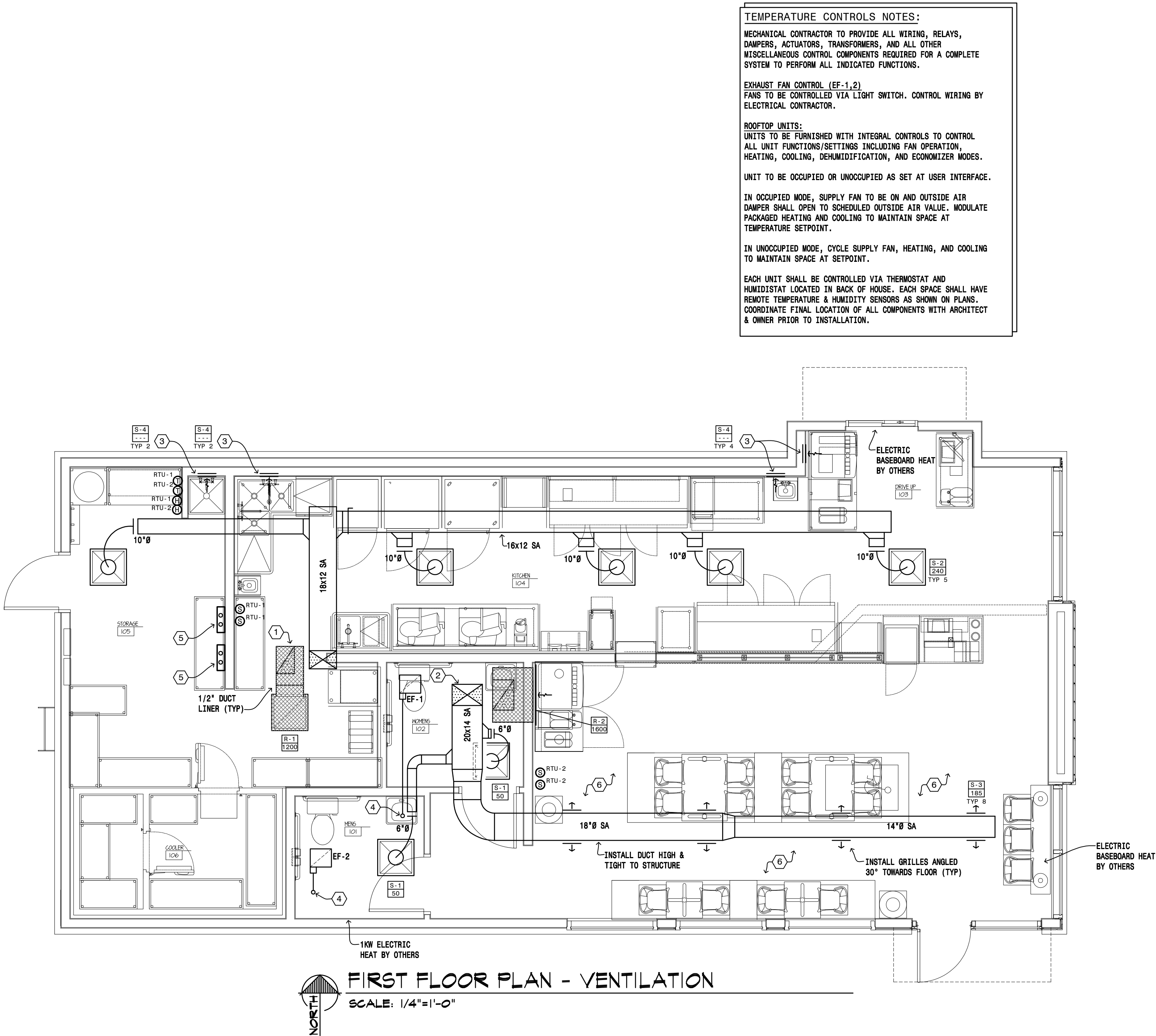
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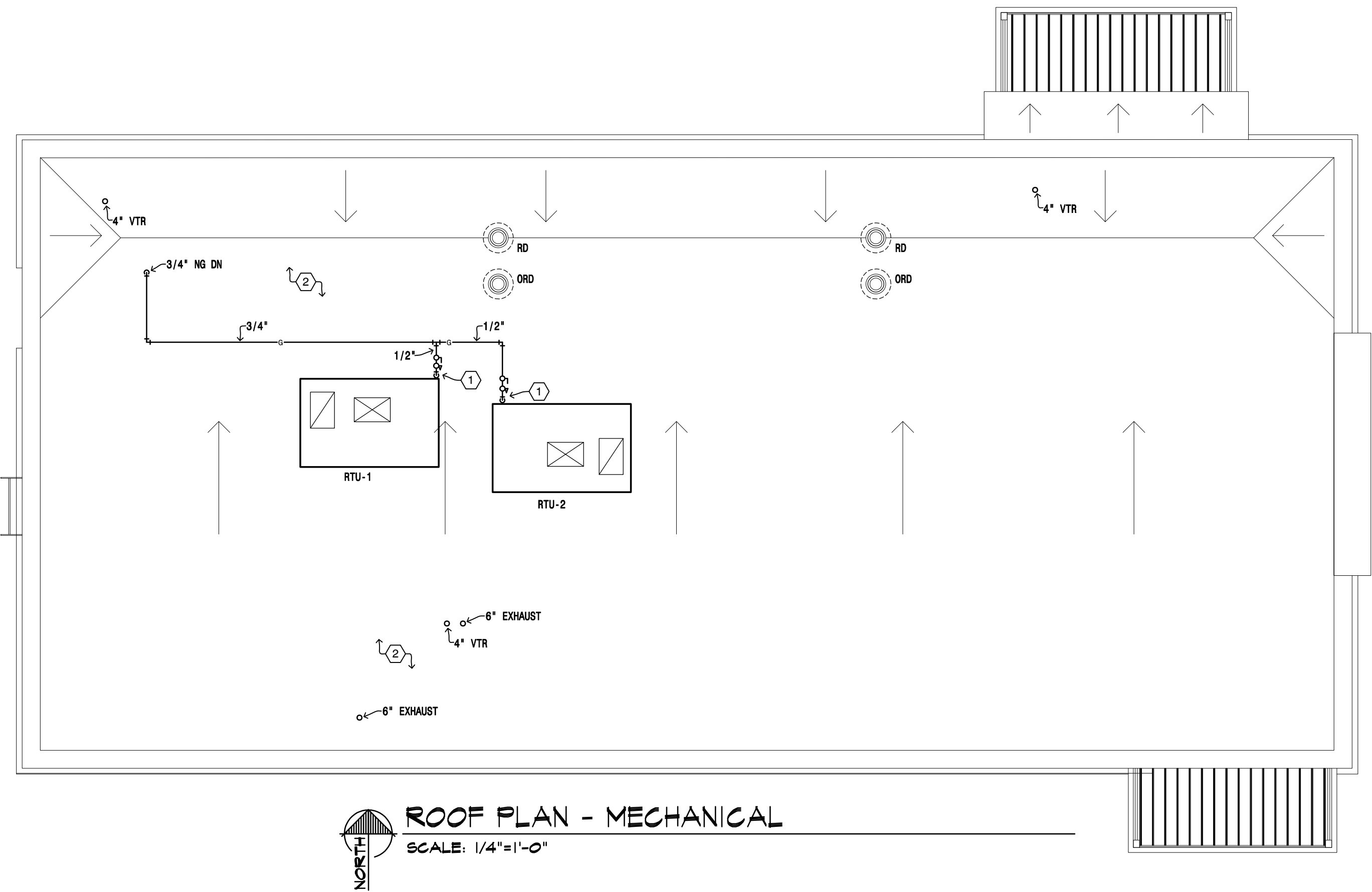
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Sheet Name:
VENTILATION PLANS

Sheet Number:

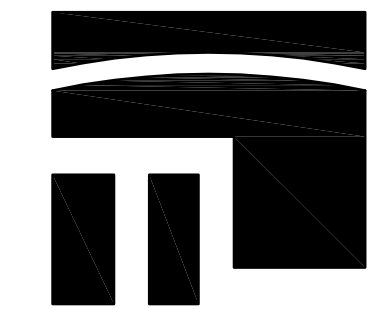
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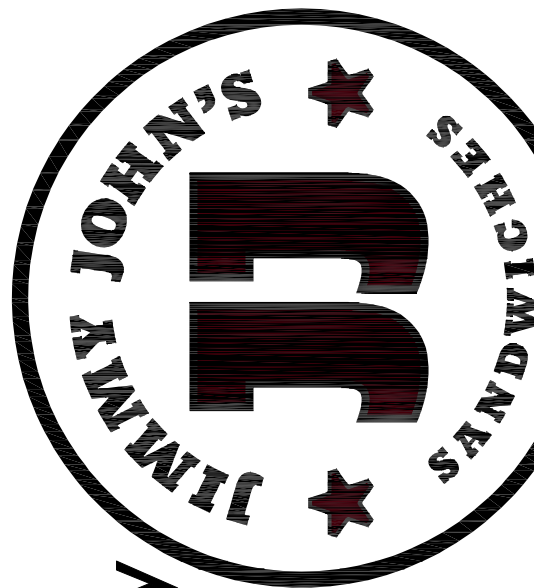
- 1/4" NATURAL GAS CONNECTION TO UNIT. PROVIDE WITH SHUT-OFF VALVE, REGULATOR, UNIONS, AND DIRT LEG (TYP).
- MAINTAIN MINIMUM 10'-0" CLEARANCE BETWEEN ROOFTOP UNIT INTAKES AND PLUMBING VENTS, EXHAUST TERMINATIONS.



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Sheet Name:
MECHANICAL
ROOF PLAN

Sheet Number:

M201

ELECTRICAL NOTES

PART 1 - GENERAL

A. REQUIREMENTS OF REGULATORY AGENCIES AND STANDARDS

- ALL EQUIPMENT, MATERIAL AND INSTALLATION SHALL MEET THE REQUIREMENTS OF ONE OR MORE OF THE FOLLOWING:
 - NATIONAL ELECTRICAL CODE (NEC), NFPA-70 (2026)
 - LIFE SAFETY CODE, NFPA-101 (2024) WITH STATE AMENDMENTS
 - INTERNATIONAL ENERGY CONSERVATION CODE (IECC), (2021), WITH STATE SUPPLEMENTS AND AMENDMENTS (2023)
 - INTERNATIONAL BUILDING CODE, (2024) WITH STATE AMENDMENTS
 - INTERNATIONAL FIRE CODE, (2024) WITH STATE AMENDMENTS
 - STATE BUILDING CODE, (LOCAL AMENDMENTS TO INTERNATIONAL BUILDING CODE)
 - OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
 - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
 - AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 - INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
 - ILLUMINATING ENGINEERING SOCIETY (IES)
 - UNDERWRITERS LABORATORIES (UL)
 - STANDARD FOR THE INSTALLATION, MAINTENANCE AND USE OF LOCAL PROTECTIVE SIGNALING SYSTEMS (NFPA-72)
 - FEDERAL SPECIFICATION (FED. SPEC.)
 - INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)

B. SCOPE OF WORK

- THE CONTRACTOR SHALL VISIT THE JOB SITE AND REVIEW CONSTRUCTION AND VENDOR DRAWINGS FOR ALL TRADES PRIOR TO BID TO BECOME FAMILIAR WITH THE PROJECT AND INTENT OF THE DRAWINGS.
- THE CONTRACTOR SHALL OBTAIN A PERMIT FOR WORK TO BE COMPLETED AND INCLUDE COST FOR ALL PERMIT FEES, PERMITS, INSPECTIONS AND TESTING IN THE BID.
- THE CONTRACTOR SHALL PROVIDE ALL NEW MATERIAL IN ACCORDANCE WITH THESE DOCUMENTS AND APPLICABLE SPECIFICATIONS.
- THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THESE DOCUMENTS AND THOSE OF OTHER DISCIPLINES TO THE ARCHITECT/ENGINEER FOR WRITTEN DIRECTION/INSTRUCTIONS FOR CHANGES NECESSARY IN THE WORK.
- THE CONTRACTOR SHALL NOT SCALE THE ELECTRICAL DRAWINGS, REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND ELEVATIONS.
- THE CONTRACTOR IS EXPECTED TO PROVIDE ALL MATERIAL NECESSARY FOR A COMPLETE OPERATING SYSTEM. IT IS NOT THE INTENT OF THESE DOCUMENTS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION.
- THE CONTRACTOR SHALL COORDINATE THE ELECTRICAL WORK WITH OTHER TRADES AND MAKE PROPER PROVISIONS IN RELATION TO THEIR WORK. ANY CHARGES REQUIRED DUE TO LACK OF COORDINATION, SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CUTTING AND PATCHING OF THEIR WORK.
- THE ELECTRICAL INSTALLATION SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER BY A LICENSED ELECTRICAL CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE INSURANCE FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR DURATION OF THE PROJECT.
- NO COMBUSTIBLE MATERIALS, IE: PVC CONDUIT, NON-PLENUM RATED CABLING, ETC., ARE ALLOWED ABOVE ANY CEILINGS.

C. TERMS

- "PROVIDE", AS USED IN THE DOCUMENTS AND APPLICABLE SPECIFICATIONS MEANS TO FURNISH AND INSTALL COMPLETE.
- "WIRING", AS USED IN THE DOCUMENTS MEANS CONDUIT AND WIRES WITHIN THE CONDUIT SYSTEM.
- "CONCEALED", AS USED IN THE DOCUMENTS AND APPLICABLE SPECIFICATIONS MEANS EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, BEHIND WALLS, INSIDE CABINETRY OR ABOVE SUSPENDED CEILINGS.
- "NEMA 1", INDICATES THE ENCLOSURE SHALL BE LISTED FOR INDOOR USE ONLY.
- "NEMA 3R", INDICATES THE ENCLOSURE SHALL BE LISTED FOR EXTERIOR USE.
- "SETS", AS USED FOR SERVICES, FEEDERS AND BRANCH CIRCUITS MEANS PARALLELED AND EACH SET SHALL BE INSTALLED IN SEPARATE CONDUITS.

D. WARRANTY

- ALL MATERIAL AND WORK PERFORMED SHALL BE GUARANTEED FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM DATE OF ACCEPTANCE.
- ANY CORRECTIONS FOR DEFECTIVE MATERIALS AND/OR INSTALLATION SHALL BE MADE AT THE CONTRACTORS EXPENSE DURING THE WARRANTY PERIOD.

PART 2 - PRODUCTS

A. DISTRIBUTION AND BRANCH CIRCUIT PANEL BOARDS

- CURRENT CARRYING BUSES AND GROUND BARS SHALL BE ALUMINUM.
- ALL CIRCUIT BREAKERS SHALL BE BOLT ON TYPE, PLUG ON TYPE CIRCUIT BREAKERS ARE NOT ACCEPTABLE, UNLESS NOTED OTHERWISE.
- ALL CIRCUIT BREAKERS USED FOR MECHANICAL EQUIPMENT SHALL BE "HACR" TYPE.
- AIC RATINGS SHALL BE AS INDICATED ON THE BRANCH CIRCUIT PANEL SCHEDULES.
- ALL PANEL BOARDS SHALL BE LABELED WITH PLASTIC LAMINATE IDENTIFICATION PLATES THAT ARE ENGRAVED WITH CONTRASTING 1/4" LETTERING.
- ALL PANEL BOARDS SHALL HAVE A TYPE WRITTEN SCHEDULE OF BRANCH CIRCUIT DESCRIPTIONS.
- CIRCUIT BREAKERS SHALL MEET ALL PROVISIONS OF NEC 210.12.
- ELECTRICAL EQUIPMENT THAT IS LIKELY TO REQUIRE EXAMINATION, MAINTENANCE ETC WHILE ENERGIZED, SHALL BE FIELD OR FACTORY MARKED TO WARN OF POTENTIAL ELECTRIC ARC FLASH HAZARDS PER NEC 110.16.

B. DISCONNECT SWITCHES AND MOTOR STARTERS

- SWITCHES SHALL BE H.P. RATED, HEAVY DUTY TYPE.
- QUICK-MAKE, QUICK-BREAK OPERATING MECHANISM.
- STARTERS SHALL BE COMBINATION TYPE, FUSIBLE WITH BIMETAL OVERLOADS IN EACH PHASE.
- STARTERS SHALL HAVE A "HAND-OFF-AUTO" (HOA) SWITCH UNLESS NOTED OTHERWISE.

C. CONDUCTORS

- MINIMUM SIZE SHALL BE #12 AWG, EXCEPT FOR CONTROL/LOW VOLTAGE WIRING.
- INSULATION TYPE SHALL BE DUAL RATED THHN/THWN.
- ALL CONDUCTORS SHALL BE COPPER, UNLESS NOTED OTHERWISE.
- ALL CONDUCTORS 100 AMPS OR LESS ARE BASED ON LISTED TERMINALS OF 75°. PROVIDE CONDUCTORS SIZED IN ACCORDANCE TO TABLE 310.15(B)(16) 60° COLUMN WHEN LISTING IS UNKNOWN.

D. WIRING DEVICES (GENERAL PURPOSE)/FACEPLATE

- RECEPTACLES SHALL MEET ALL PROVISIONS OF NEC 406.12 (TAMPER-RESISTANT). PROVIDE GROUND FAULT (GFCI), ARC-FAULT, (AFCI) AND WEATHER-RESISTANT WHERE REQUIRED BY CODE.
- PAINTED WALL LOCATIONS, PROVIDE WHITE DEVICE WITH SMOOTH, WHITE NYLON FACEPLATE, UNLESS DIRECTED OTHERWISE.
- ACM (ALUMINUM COMPOSITE PANEL) INTERIOR LOCATIONS, PROVIDE GRAY DEVICE WITH BRUSHED STAINLESS STEEL FACEPLATE, UNLESS DIRECTED OTHERWISE.
- FOR EXTERIOR WALL LOCATIONS, PROVIDE ARLINGTON DB SERIES OR EQUIVALENT WITH RECESS STEEL BOX AND WEATHERPROOF IN-USE, LOW PROFILE CLEAR COVER, WHITE TRIM.

E. JUNCTION BOXES

- INTERIOR LOCATIONS SHALL BE PRESSED STEEL.
- EXTERIOR LOCATIONS SHALL BE HEAVY DUTY CAST ALUMINUM WITH THREADED HUBS.

F. CONDUIT

- EMT SHALL BE GALVANIZED STEEL.
- PVC SHALL BE SCHEDULE 40 WHERE NOT SUBJECT TO PHYSICAL DAMAGE.
- PVC SHALL BE SCHEDULE 80 WHERE EXPOSED TO PHYSICAL DAMAGE.
- MC CABLE IS ACCEPTABLE WITH LIGHTWEIGHT ALUMINUM INTERLOCKED ARMOR AND INTERNAL REDUNDANT GROUND.

G. EQUIPMENT TERMINAL RATING

- ALL EQUIPMENT SHALL BE PROVIDED WITH 60/75° RATED TERMINALS.

ELECTRICAL NOTES CONTINUED

PART 3 - EXECUTION

A. COLOR CODING FOR CONDUCTORS SHALL BE THE FOLLOWING:

- 208/120 VOLT, THREE PHASE, FOUR WIRE SYSTEM: A PHASE-BLACK, B PHASE-RED, C PHASE-BLUE, GROUND (NEUTRAL)-WHITE AND GROUNDING-GREEN.
- CONDUCTORS FOR SERVICES AND BRANCH CIRCUITS #6 AND LARGER SHALL BE IDENTIFIED CONSISTENTLY BY: COLOR CODING, MARKING TAPE OR OTHER APPROVED MEANS.

B. WIRING METHODS

- CONDUCTORS SHALL BE INSTALLED IN ELECTRICAL METALLIC TUBING (EMT) UNLESS NOTED OTHERWISE. CONNECTORS AND FITTINGS SHALL BE STEEL SET SCREW OR COMPRESSION TYPE.
- PVC, AS INDICATED IN PART 2-PRODUCTS (F) SHALL BE INSTALLED BELOW SLAB, UNDERGROUND AND EXPOSED WHERE LISTED FOR SUCH USE.
- MC CABLE, AS INDICATED IN PART 2-PRODUCTS (F) IS ACCEPTABLE FOR USE WITH GENERAL BRANCH CIRCUITS, RATED 20 AMPERES OR LESS, CONCEALED IN WALLS AND ABOVE SUSPENDED CEILINGS, AND AS APPROVED BY THE AUTHORITY HAVING JURISDICTION. IT IS NOT INTENDED TO USE MC CABLE EXPOSED.
- ALL CONDUITS SHALL BE INSTALLED WITHIN WALL SYSTEM. NO EXPOSED VISIBLE CONDUITS SHALL BE ALLOWED. FOR CONCRETE MASONRY UNIT WALLS (CMU) THE CONDUIT SHALL BE INSTALLED WITHIN VERTICAL CELLS OF BLOCKS AND FOR PRE-ENGINEERED METAL BUILDING WALLS (PEMB) THE CONDUIT SHALL BE INSTALLED BEHIND WALL PANEL.

C. MISCELLANEOUS

- LAY-IN TYPE LIGHTING FIXTURES SHALL BE SECURED ON ALL FOUR SIDES TO SUSPENDED CEILING.
- CONDUCTORS FOR BRANCH CIRCUITS SHALL BE INCREASED FROM SIZES INDICATED IN THE PANEL SCHEDULES TO PREVENT VOLTAGE DROP EXCEEDING 3% AT THE FARTHEST DEVICE. LOADS FOR DETERMINING CONDUCTOR SIZE SHALL BE BASED ON ACTUAL CONNECTED LOAD OR 80% OF CIRCUIT BREAKER SIZE, WHICHEVER IS GREATER. CONTACT ENGINEER OF RECORD FOR ALL CIRCUIT RUNS IN EXCESS OF 100 FT. FOR CALCULATION OF WIRE SIZE. FOR BID PURPOSES, INCREASE WIRE SIZE BY ONE FOR CIRCUIT RUNS BETWEEN 100 FT. AND 200 FT. AND TWO WIRE SIZES FOR CIRCUIT RUNS GREATER THAN 200 FT.

D. GROUNDING

- THE ELECTRICAL SYSTEM SHALL BE COMPLETE AND EFFECTIVELY GROUNDING AS REQUIRED PER THE LATEST EDITION OF THE NEC 2026 AND LOCAL CODES. ALL GROUNDING ELECTRODE CONDUCTORS SHALL BE COPPER.

E. COORDINATION

- THE CONTRACTOR SHALL COORDINATE WITH THE LOCAL UTILITY COMPANY PRIOR TO STARTING WORK FOR METERING REQUIREMENTS, METERING LOCATION, TRANSFORMER CONDUIT REQUIREMENTS, LUG SIZE REQUIREMENTS AND EXACT SERVICE POINT CONNECTION. SERVICE SHUT DOWN SHALL BE COORDINATED WITH THE OWNER PRIOR TO SCHEDULING WITH UTILITY COMPANY. CONTRACTOR SHALL INSTALL CONDUITS FOR UTILITY PRIMARY FEEDER PER UTILITY GUIDELINES.
- THE CONTRACTOR SHALL COORDINATE WITH THE LOCAL TELEPHONE AND CABLE TV COMPANY PRIOR TO STARTING WORK FOR EXACT SERVICE POINT CONNECTION AND ANY REQUIREMENTS ANY ONE OF THE PROVIDERS MAY NEED.
- THE CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL, PLUMBING AND VENDOR DOCUMENTS AND SUBMITTALS PRIOR TO PURCHASING ELECTRICAL EQUIPMENT. COORDINATE ALL CONTROL WIRING REQUIRED FOR ALL EQUIPMENT RELATED TO THE PROJECT. PROVIDE ELECTRICAL BREAKERS, DISCONNECTS AND CONDUCTORS AS REQUIRED PER MECHANICAL SUBMITTALS AND ACTUAL EQUIPMENT NAMEPLATE RATINGS.
- THE CONTRACTOR SHALL LOCATE ALL RECEPTACLES, SWITCHES, BREAKERS AND DISCONNECTS ON OR ADJACENT TO EQUIPMENT SERVED. DEVICES SERVING EQUIPMENT IN FINISHED SPACES SHALL BE CONCEALED WITHIN EQUIPMENT ACCESSIBLE THROUGH EQUIPMENT ACCESS PANELS. I.E. DRINKING FOUNTAINS AND WALL MOUNTED AIR HANDLING UNITS.
- THE CONTRACTOR SHALL LOCATE ALL ELECTRICAL EQUIPMENT REQUIRING SERVICE PER NEC 110.26. MAINTAIN ALL REQUIRED CLEARANCES.

F. RECORD DOCUMENTS

- THE CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD SET OF ANY DEVIATIONS BETWEEN THE WORK AS DESIGNED ON THESE DOCUMENTS AND THAT OF WHICH IS ACTUALLY INSTALLED. THIS RECORD SET OF DRAWINGS SHALL BE KEPT WITH THE GENERAL CONTRACTOR AND REQUIRE APPROVAL FROM THE ARCHITECT/ ENGINEER.

ELECTRICAL SYMBOLS

	20 AMP DUPLEX RECEPTACLE (NEMA 5-20R) MOUNTED AT 18" A.F.F. TO CENTER LINE OF OUTLET UNLESS NOTED OTHERWISE.
	20 AMP QUADRUPLX RECEPTACLE (NEMA 5-20R) MOUNTED AT 18" A.F.F. TO CENTER LINE OF OUTLET UNLESS NOTED OTHERWISE.
	20 AMP DUPLEX RECEPTACLE (NEMA 5-20R) MOUNTED ABOVE COUNTER. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT LOCATION AND MOUNTING HEIGHT.
	SPECIAL PURPOSE POWER DEVICE, COORDINATE EXACT NEMA NUMBER DEVICE WITH EQUIPMENT PLUG UNLESS NOTED OTHERWISE.
	COMMUNICATIONS OUTLET WITH CAT 6 CABLES. PROVIDE 1" CONDUIT SLEEVE WITH PULL STRING, STUB INTO ACCESSIBLE CEILING SPACE. MOUNT AT 18" A.F.F. TO CENTER OF OUTLET UNLESS NOTED OTHERWISE.
	JUNCTION BOX
	EMERGENCY EXIT SIGN, WALL MOUNTED. EXIT SIGN SHALL BE MOUNTED WITHIN 6'-8" ABOVE TOP OF EGRESS DOOR FRAME.
	EMERGENCY EXIT SIGN. FOR CEILING(S) WITH A HEIGHT LESS THAN OR EQUAL TO 6'-8" ABOVE TOP OF EGRESS DOOR FRAME, EXIT SIGN SHALL BE CEILING SURFACE MOUNTED. FOR CEILING(S) WITH A HEIGHT GREATER THAN 6'-8" ABOVE TOP OF EGRESS DOOR FRAME, EXIT SIGN SHALL BE CEILING SUSPENDED AT OR ABOVE THE LINE OF SIGHT.
	SINGLE POLE, 20 AMP, SWITCH. MOUNT 42" A.F.F. TO CENTERLINE OF SWITCH UNLESS NOTED OTHERWISE.
	SINGLE/DOUBLE RELAY, 20 AMP MOTION/SOUND SWITCH, PASSIVE (PIR) AND ULTRASONIC (US) DUAL TECHNOLOGY. MOUNT 42" A.F.F. TO CENTERLINE OF SWITCH UNLESS NOTED OTHERWISE. SENSOR SWITCH "WSX-PDT" SERIES. PROVIDE DOUBLE POLE WHEN (2) CONTROLLED CIRCUITS. SWITCH TO CONTROL EXHAUST FAN AND LIGHTS IN RESTROOM AREA.
	ELECTRICAL PANELBOARD, SURFACE MOUNTED
	FUSIBLE DISCONNECT SWITCH
	GROUNDING ELECTRODE AND CONDUCTOR SYSTEM

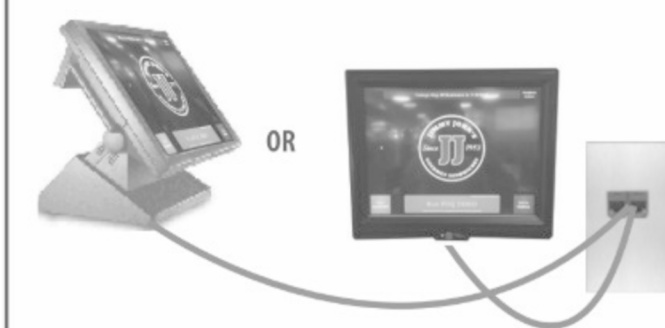
THERMOSTAT LOCATION. REFER TO MECHANICAL DRAWINGS FOR MOUNTING HEIGHT AND SPECIFICATIONS. PROVIDE JUNCTION BOX IN WALL BEHIND THERMOSTAT WITH 1" CONDUIT SLEEVE WITH PULL STRING, STUB INTO ACCESSIBLE CEILING SPACE. CONDUIT AND BOXES SHALL BE CONCEALED / RECESSED IN CONCRETE BLOCK (CMU) WALLS.

GENERAL NOTE:

- REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION PERTAINING TO DEVICES AND FACEPLATES.

POS DIAGRAM

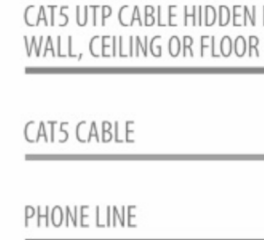
DEDICATED DRIVERS DISPATCH



EVERY COLD TABLE

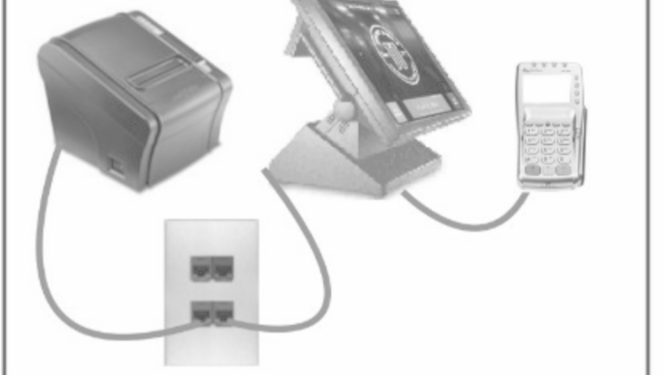


CABLE LEGEND

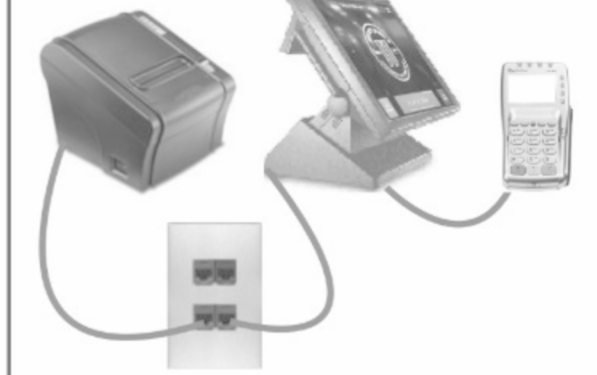


*ALL COVER PLATES MUST BE STAINLESS STEEL

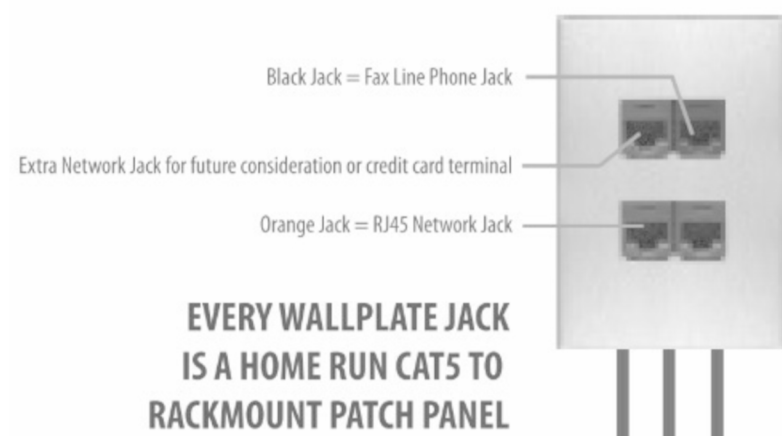
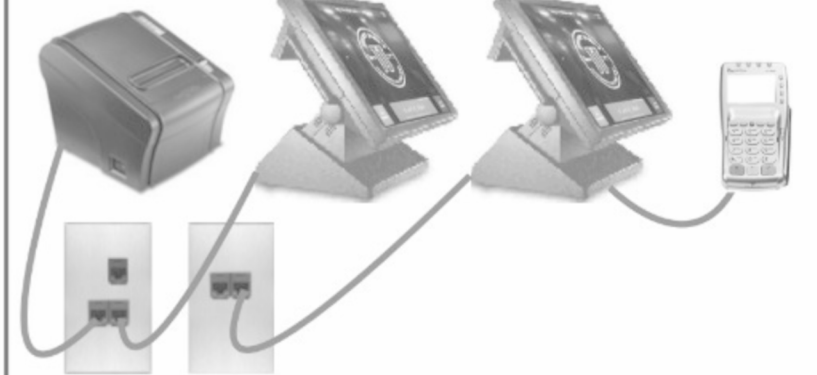
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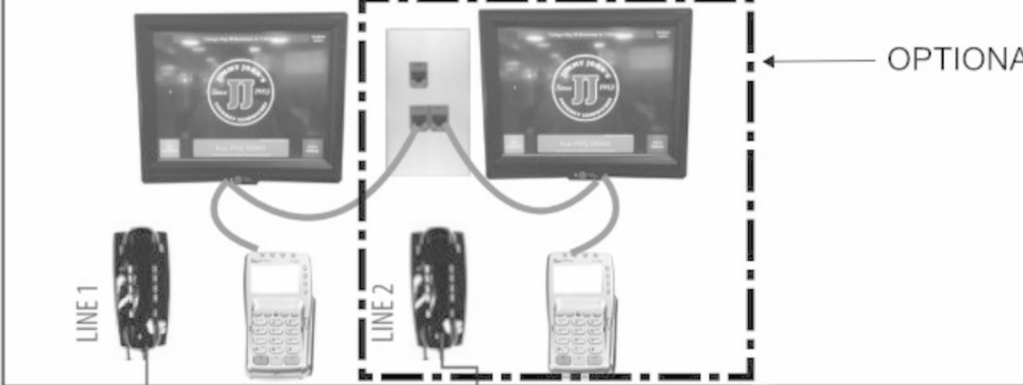
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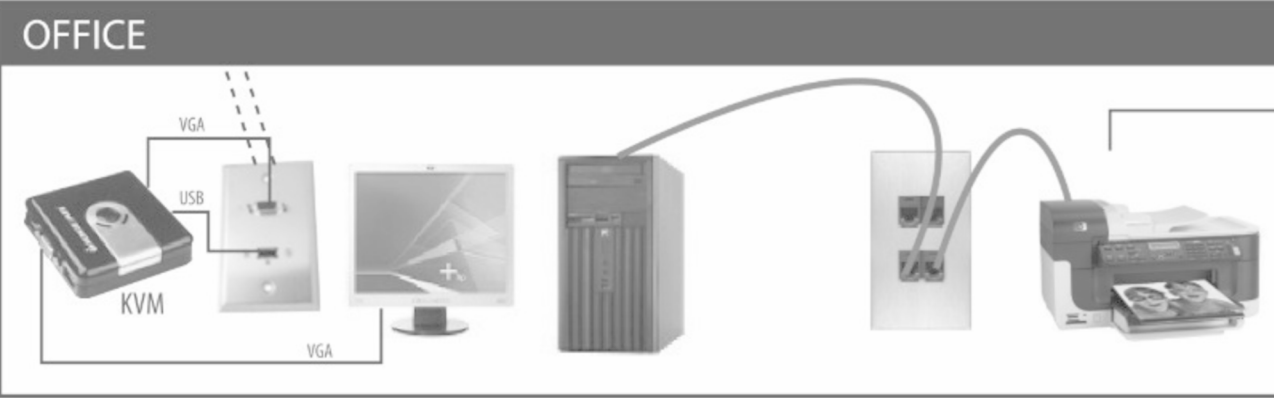
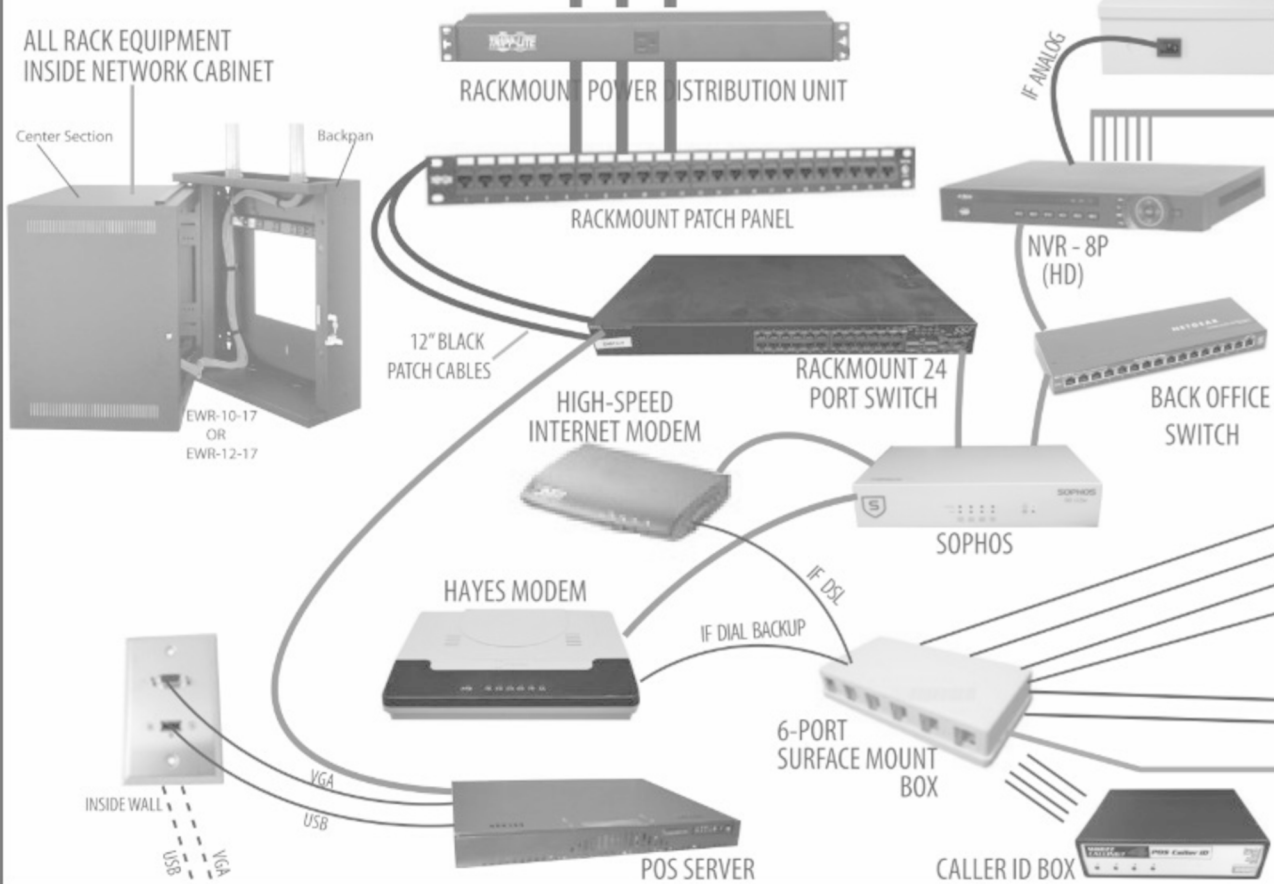
DRIVE-THRU (if applicable)



ABOVE DRIVER'S BOX



OFFICE - NEAR CEILING



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ELECTRICAL ABBREVIATIONS

GFI	GROUND FAULT CIRCUIT INTERRUPTER VIA RECEPTACLE
GFI/B	GROUND FAULT CIRCUIT INTERRUPTER VIA CIRCUIT BREAKER
WP	WEATHERPROOF
NL	NIGHT LIGHT FIXTURE, WIRE FIXTURE AHEAD OF LOCAL SWITCHING, CONTACTORS AND RELAYS
(TIE)	USED FOR CLARITY PURPOSES AS FOLLOWS: - TO CONNECT GROUPS OF MULTIPLE DEVICES/LIGHT FIXTURES IN DIFFERENT LOCATIONS TOGETHER ON THE SAME BRANCH CIRCUIT AS INDICATED. - TO INDICATE BRANCH CIRCUIT USED IN DIFFERENT LOCATIONS, FOLLOW KEYNOTES AS INDICATED.



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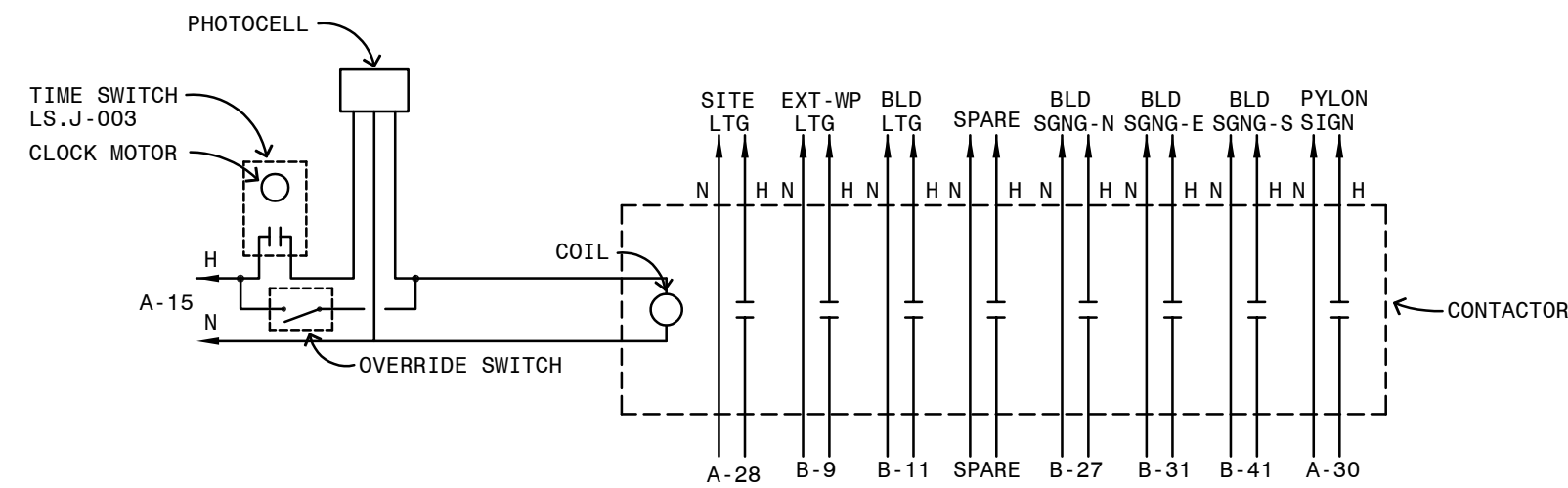
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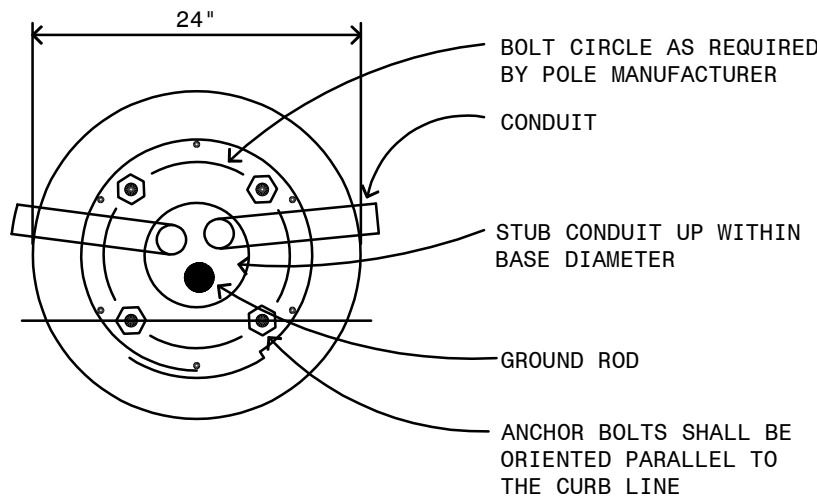
ELECTRICAL NOTES

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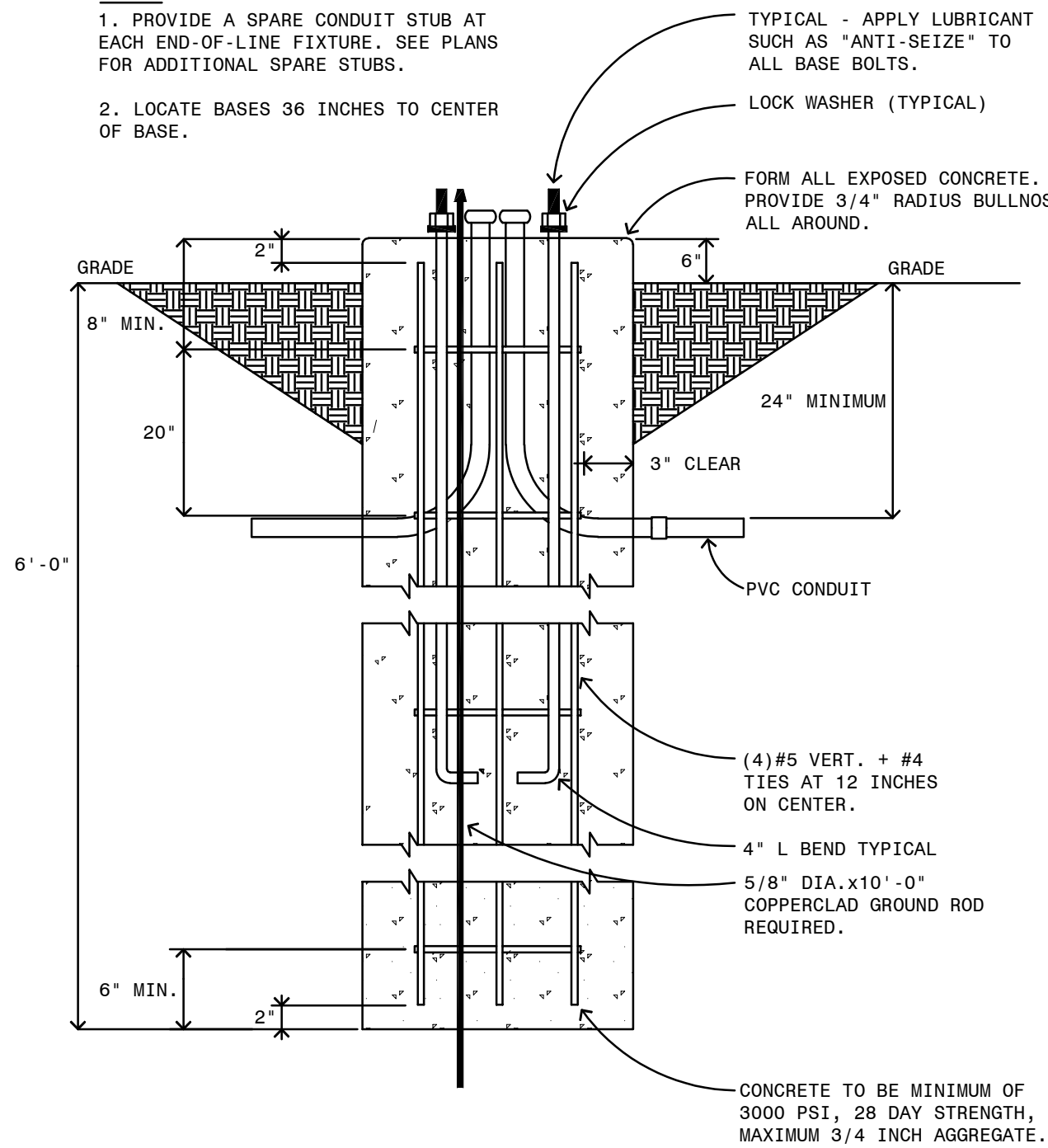


3 TIME CLOCK WITH LIGHTING CONTACTOR DETAIL
NOT TO SCALE



NOTES:

1. PROVIDE A SPARE CONDUIT STUB AT EACH END-OF-LINE FIXTURE. SEE PLANS FOR ADDITIONAL SPARE STUBS.
2. LOCATE BASES 36 INCHES TO CENTER OF BASE.



2 TYPE AA1 CONCRETE BASE DETAIL
NOT TO SCALE

GENERAL NOTES:

- PROVIDE COMPATIBLE EMERGENCY BATTERY PACK WITHOUT LAMPS (DUAL-LITE LM SERIES OR EQUAL) FOR ALL REMOTE HEAD TYPE EMERGENCY FIXTURES. INSTALL ON INTERIOR SIDE OF WALL AND LOCATE ABOVE ACCESSIBLE CEILING WHEN CEILINGS ARE PRESENT.
- COORDINATE EXACT LOCATION AND FINISH OPTIONS OF ALL EMERGENCY REMOTE TEST SWITCHES WITH ARCHITECT PRIOR TO ROUGH-IN AND CONNECT FOR OPERATION.
- ALL SUSPENDED LIGHT FIXTURE(S) SHALL BE MOUNTED WITH THREADED ROD, PROVIDE UNISTRUT AS REQUIRED FOR MOUNTING BETWEEN BAR JOISTS.
- FINISHES OF ALL FIXTURES INDICATED IN THIS SCHEDULE SHALL MATCH THE FINISH ADJACENT TO THE CEILING/WALL THE FIXTURE IS MOUNTED IN/ON UNLESS NOTED OTHERWISE. PROVIDE CUSTOM COLOR FINISH IF FINISH REQUIRED IS NOT A STANDARD FIXTURE OPTION.
- ALL LINEAR FIXTURES INSTALLED IN A 4'x4' CEILING SYSTEM SHALL BE MOUNTED SO THAT THE BOTTOM OF THE FIXTURE IS FLUSH WITH THE CEILING SYSTEM. REGRESSED MOUNTING OF FIXTURES SHALL NOT BE ACCEPTABLE. PROVIDE CREE CR-HDC MOUNTING CLIP KIT AS REQUIRED.
- PROVIDE INVERTER EQUAL TO EVENLITE LM-1000VA, 120V, SINGLE PHASE WITH LEAD CALCIUM BATTERY FOR EMERGENCY FIXTURES.

NOTES:

1. VERIFY CEILING TYPES PRIOR TO ORDERING FIXTURES.
2. VERIFY EXACT MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS.

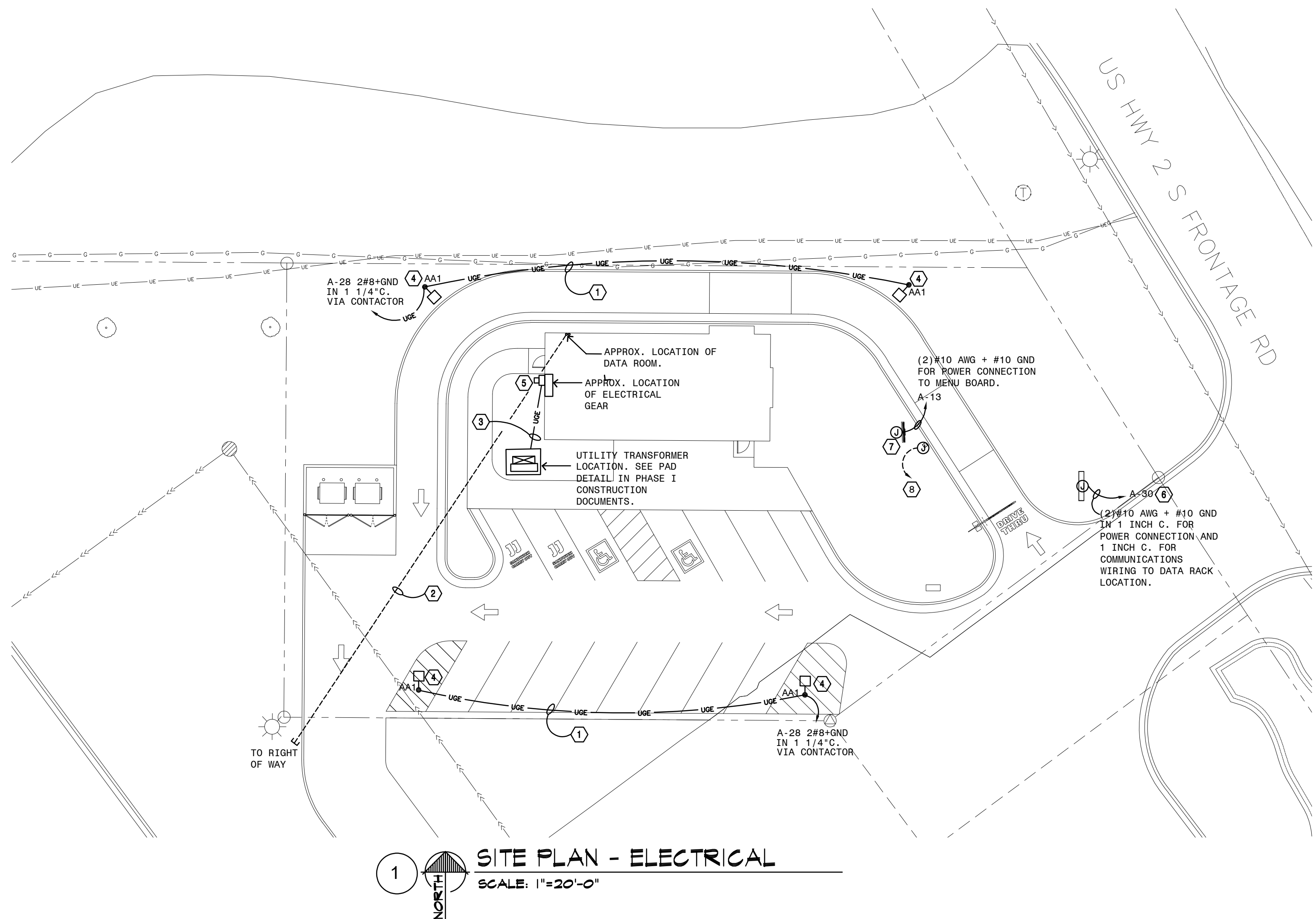
GENERAL NOTES:

1. VERIFY ALL REQUIREMENTS OF UTILITY TRANSFORMER WITH UTILITY COMPANY OTTER TAIL POWER.
2. COORDINATE LOCATION AND ROUTING OF SITE CONDUITS WITH OTHER SITE UTILITIES.
3. ALL SITE CONDUITS SHALL BE AT LEAST 24 INCHES BELOW GRADE.
4. SEE DETAIL 3/E101 FOR TIME CLOCK AND LIGHTING CONTACTOR/CONTROLS. EC TO PROVIDE CONTACTOR.
5. ELECTRICAL CONTRACTOR TO COORDINATE AND VERIFY WITH UTILITY COMPANY FOR TELECOM EASEMENT REQUIREMENTS PRIOR TO ROUGH-IN.
6. EC RESPONSIBLE TO COORDINATE WITH OTHER SITE UNDERGROUND UTILITIES PRIOR TO SITE POLE MOUNTING AND ROUGH-IN.
7. EC TO COORDINATE AND VERIFY WITH UTILITY COMPANY AND OTHER UNDERGROUND SITE TRADES FOR LOCATION OF THE UTILITY TRANSFORMER.

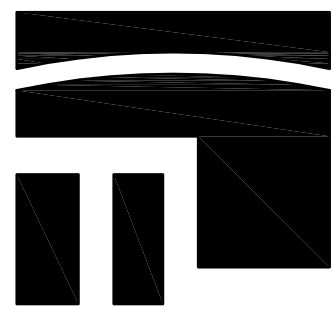
PLAN NOTES:

1. PROVIDE 1-1/4 INCH CONDUIT AND #8 CONDUCTORS THROUGHOUT ENTIRE CIRCUIT.
2. PROVIDE (2) 2 INCH CONDUITS FROM DATA RACK TO PROPERTY LINE FOR TELECOMMUNICATIONS SERVICE ENTRANCE. EXTEND CONDUITS AS NEEDED FOR TELECOMMUNICATIONS SERVICE ENTRANCE. VERIFY SERVICE POINT WITH TELECOM PROVIDER.
3. SEE RISER DIAGRAM ON SHEET E501 FOR FEEDER SCHEDULE.
4. COORDINATE LIGHT POLE INSTALLATION WITH UNDERGROUND UTILITIES CONTRACTOR. SEE DETAIL 2/E101 FOR LIGHT POLE BASE REQUIREMENTS.
5. PROVIDE 320A METER SOCKET PER UTILITY COMPANY REQUIREMENTS. SEE RISER DIAGRAM ON SHEET E501.
6. PROVIDE 120V CONNECTION TO PYLON SIGN, COORDINATE WITH SIGN EQUIPMENT SUPPLIER. PROVIDE (2) #10 + #10 GND IN ONE INCH CONDUIT TO PANEL A.
7. PROVIDE 120V CONNECTION WITH 20A DISCONNECT TO DRIVE THROUGH MENU BOARD, COORDINATE WITH MENU BOARD SUPPLIER. PROVIDE (2) #10 + #10 GND IN ONE INCH CONDUIT TO PANEL INDICATED. CONNECT TO CIRCUIT A-13 IN PANEL A.
8. PROVIDE (1) 3/4 INCH CONDUIT ROUTED UNDERGROUND FROM SPEAKER POST FOR DATA CONNECTION TO DRIVE THRU COMMUNICATION PANEL. VERIFY EXACT REQUIREMENTS AND LOCATION WITH OWNER/ARCHITECT.

TYPE	MANUFACTURERS	CATALOG INFORMATION	FIXTURE DESCRIPTION	LED DATA	DRIVER DATA	INPUT WATTS	VOLTAGE	REMARKS
				TYPE	TYPE			
LE.J-001	PHILIPS	CHLORIED VLLU SERIES	EMERGENCY FIXTURE WITH 30 WATT CAPACITY, LEAD-CALCIUM BATTERY, AND SELF-DIAGNOSTICS.	LED 4000K	LED	6	120	
LE.J-002	PHILIPS	CHLORIED VLLCR2R SERIES	LED COMBINATION EXIT/EMERGENCY FIXTURE WITH RED LETTERING, REMOTE POWER SUPPLY CAPABILITY.	LED 4000K	LED	5	120	
LE.J-004	PHILIPS	CHLORIED VLL2R00 SERIES	EXTERIOR EMERGENCY LIGHT FIXTURE, POWERED VIA REMOTE CAPABILITY IN LE.J-002.	LED 4000K	LED	16	120	
LR.J-001	SATCO	S11815 SERIES	6" ROUND RECESSED DOWNLIGHT WITH CLEAR REFLECTOR, AND MATCHING FLANGE FINISH.	LED 4000K	LED	78	120	
LR.J-003	SATCO	NUVO 65 SERIES	2'x4' ARCHITECTURAL TROFFER, 80 CRI, AND WHITE FINISH.	LED 4000K	LED	40	120	
LR.J-004	SATCO	NUVO 65 SERIES	2'x2' ARCHITECTURAL TROFFER, 80 CRI, AND WHITE FINISH.	LED 4000K	LED	22	120	
LR.J-005	LIGHTOLIER	L5R SERIES	5" ROUND RECESSED DOWNLIGHT WITH CLEAR REFLECTOR, AND MATCHING FLANGE FINISH RATED FOR WET LOCATIONS.	LED 4000K	LED	78	120	
LS.J-002	LIGHTOLIER	LT08 SERIES	6" TRACK LIGHT, PROVIDE WITH TRACK AND ALL REQUIRED COMPONENTS; PROVIDE CURRENT LIMITERS AS RECOMMENDED BY THE MANUFACTURER. COORDINATE AIMING OF TRACK FIXTURES IN FIELD WITH OWNER.	LED 4000K	LED	29	120	
LS.J-003	INTERMATIC	T101 SERIES	TIME CLOCK.	LED 4000K	LED	0	120	
LW.J-001	SATCO	NUVO 62 SERIES	8" LED WALL SCENCE WITH UP/DOWN LIGHT	LED 4000K	LED	20	120	
AA1	LITHONIA	DSX1 SERIES	SINGLE HEAD POLE MOUNTED LED FIXTURE, P3 PERFORMANCE PACKAGE, TYPE 14M DISTRIBUTION, HOUSE SIDE SHIELD, SIZE 1, INTEGRAL MOTION SENSOR, WITH 20 FEET ROUND TAPERED ALUMINUM POLE, BRONZE FINISH. VERIFY FINISH WITH ARCHITECT.	LED 4000K 13,969 LUMENS	LED	102	120	



1 SITE PLAN - ELECTRICAL
SCALE: 1"=20'-0"



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Project:



New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:

212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

Date:

AUGUST 21, 2026

Revision Date:

Job Number:

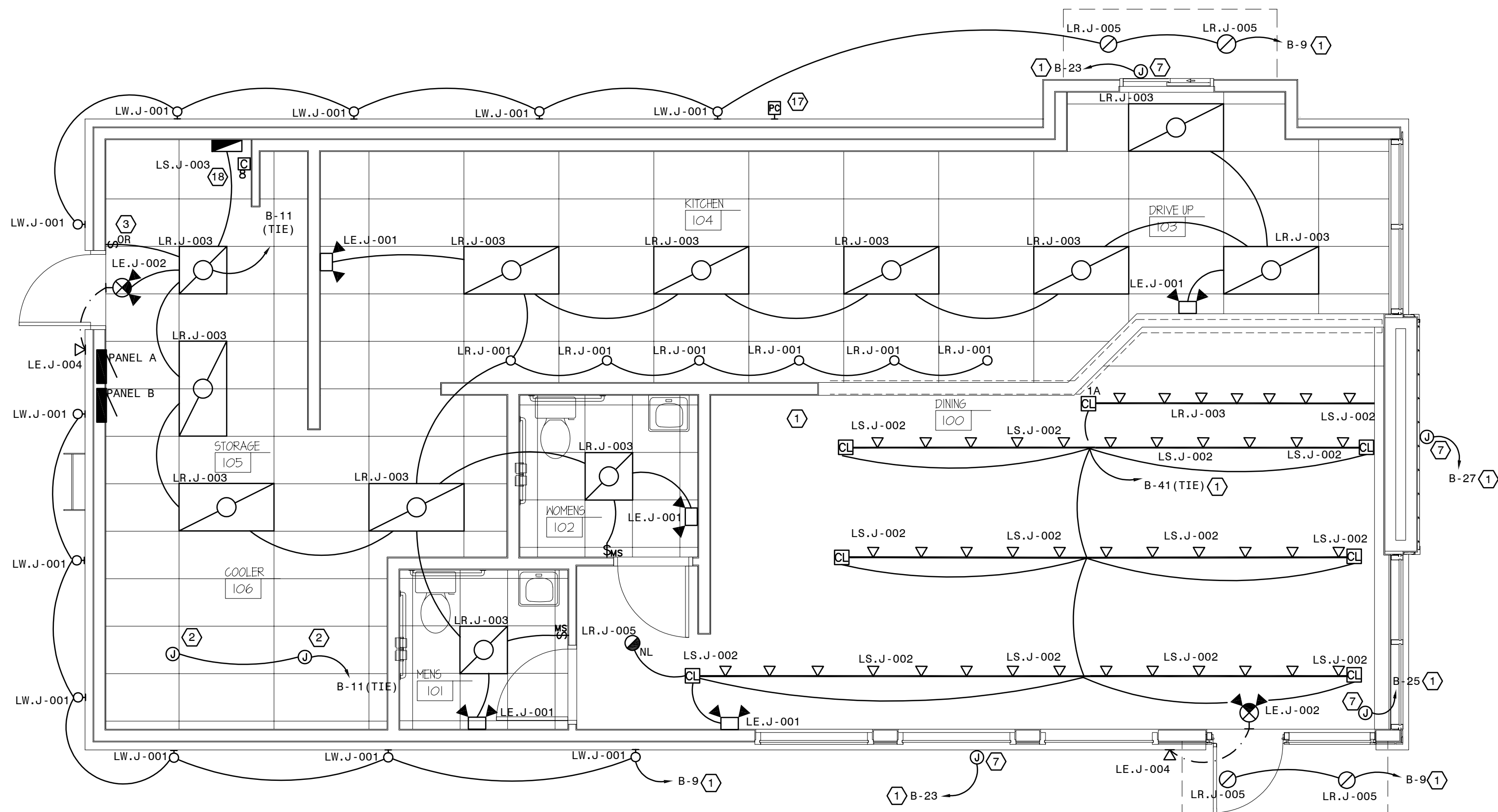
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SITE PLAN -
ELECTRICAL &
LIGHTING SCHEDULE

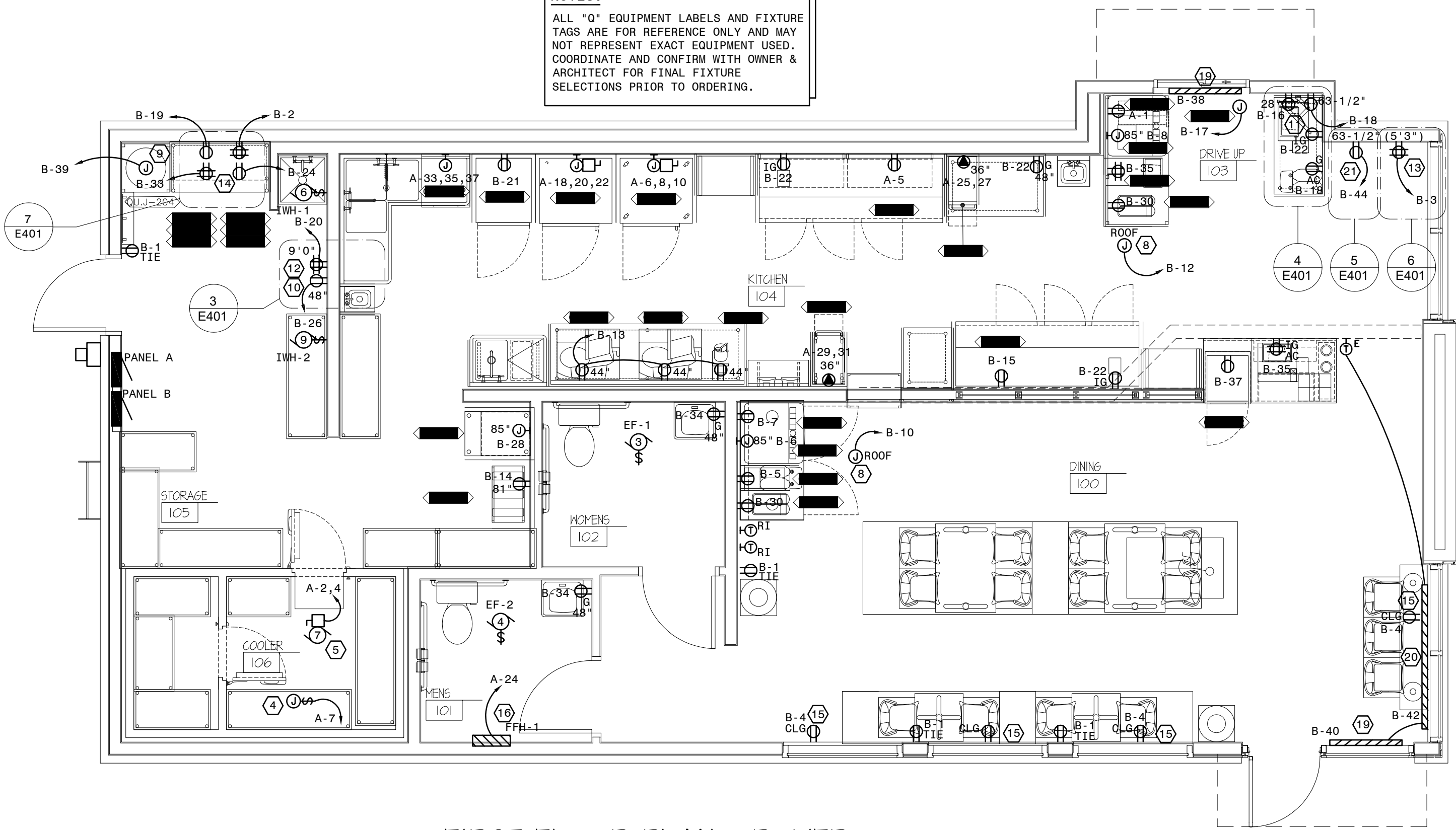
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E101



FIRST FLOOR PLAN - LIGHTING
SCALE: 1/4"=1'-0"

NOTES:
ALL "O" EQUIPMENT LABELS AND FIXTURE TAGS ARE FOR REFERENCE ONLY AND MAY NOT REPRESENT EXACT EQUIPMENT USED. COORDINATE AND CONFIRM WITH OWNER & ARCHITECT FOR FINAL FIXTURE SELECTIONS PRIOR TO ORDERING.



FIRST FLOOR PLAN - POWER
SCALE: 1/4"=1'-0"

KEY NOTES

- WIRE CIRCUIT THRU TIME CLOCK "LS.-J-003" AND CONTACTOR. PROVIDE SEPARATE RELAYS WHERE MULTIPLE AREAS ARE INDICATED TO UTILIZE THE SAME BRANCH CIRCUIT INDICATED WITH (TIE). WIRE EMERGENCY/ EXIT / LOCALLY CONTROLLED AREAS AHEAD OF CONTROL.
- JUNCTION BOX FOR COOLER AND FREEZER LIGHT CONNECTION. CONTRACTOR MUST FIELD VERIFY CONNECTION REQUIREMENTS. FIXTURE IS PROVIDED WITH COOLER/FREEZER AND WIRED BY ELECTRICAL CONTRACTOR.
- PROVIDE OVERRIDE SWITCH FOR SWITCHING LIGHTS OFF HOURS.
- DISCONNECT FOR COOLER EVAPORATOR FAN CONNECTION. COORDINATE EXACT LOCATION WITH EQUIPMENT INSTALLATION.
- DISCONNECT FOR FREEZER EVAPORATOR FAN CONNECTION. COORDINATE EXACT LOCATION WITH EQUIPMENT INSTALLATION.
- DISCONNECT FOR COOLER/FREEZER CONDENSER ON ROOF. COORDINATE EXACT LOCATION WITH EQUIPMENT INSTALLATION.
- JUNCTION BOX FOR ELECTRICAL CONNECTION TO BUILDING SIGNAGE. BRANCH PANEL CIRCUIT BREAKER WITH LOCKABLE CLIP SHALL SERVE AS DISCONNECTING MEANS FOR BUILDING SIGNAGE PER NEC ARTICLE 600.8(A)(3)(3). COORDINATE EXACT LOCATION WITH SIGNAGE PACKAGE AND CONNECT FOR OPERATION.
- ELECTRICAL CONNECTION TO REMOTE ICE CHILLER ON ROOF. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO ROUGH IN AND CONNECT FOR OPERATION.
- ELECTRICAL CONNECTION TO CO2 TANK AND MONITORING SYSTEM. COORDINATE EXACT REQUIREMENTS IN FIELD WITH EQUIPMENT INSTALLATION PRIOR TO ROUGH-IN.
- ELECTRICAL CONNECTION FOR IRRIGATION CONTROLLER. COORDINATE EXACT REQUIREMENTS IN FIELD WITH EQUIPMENT INSTALLATION PRIOR TO ROUGH-IN.
- ELECTRICAL CONNECTIONS FOR DRIVE THRU TIMER. SEE DETAIL 4/E401 FOR DEVICE LAYOUT. COORDINATE EXACT LOCATION AND REQUIREMENTS IN FIELD WITH EQUIPMENT INSTALLATION PRIOR TO ROUGH-IN.
- ELECTRICAL CONNECTIONS FOR COMMUNICATIONS PANEL. SEE DETAIL 3/E401 FOR DEVICE LAYOUT. COORDINATE EXACT LOCATION / REQUIREMENTS IN FIELD WITH EQUIPMENT INSTALLATION PRIOR TO ROUGH-IN.
- ELECTRICAL CONNECTIONS FOR PHONE BANK. SEE DETAIL 6/E401 FOR DEVICE LAYOUT. COORDINATE EXACT REQUIREMENTS IN FIELD WITH EQUIPMENT INSTALLATION PRIOR TO ROUGH-IN.
- ELECTRICAL CONNECTION FOR NETWORK CABINET. SEE DETAIL 7/E401 FOR DEVICE LAYOUT. COORDINATE EXACT REQUIREMENTS IN FIELD WITH EQUIPMENT INSTALLATION PRIOR TO ROUGH-IN.
- PROVIDE SHOW WINDOW DUPLEX RECEPTACLE AT NO MORE THAN 18" ABOVE WINDOW AS REQUIRED TO MEET THE NEC SHOW WINDOW REQUIREMENTS.
- PROVIDE 1.5KW FAN FORCED HEATER EQUAL TO QMARK AWH3150F, 120V, SINGLE PHASE WITH INTEGRAL THERMOSTAT AND DISCONNECT. CONNECT TO 20A/1P BREAKER IN PANEL AS NOTED ON PLANS. VERIFY EXACT LOCATION WITH ARCHITECT. PROVIDE SEMI RECESSED KIT. VERIFY LOCATION WITH ARCHITECT.
- PROVIDE PHOTOCELL FOR CONTROLLING EXTERIOR LIGHTS. SEE DETAIL 3/E101.
- PROVIDE TIME CLOCK BY INTERMATIC TS-101 AND CONTACTOR. SEE DETAIL ON SHEET 3/E101. ALL CONNECTIONS BY EC.
- PROVIDE 3-FOOT COMMERCIAL BASEBOARD HEATER EQUAL TO QMARK (2513W) 750 WATTS, 120V, SINGLE PHASE, WITH INTEGRAL THERMOSTAT AND DISCONNECT. (BASEBOARD HEATER LOCATED NEAR RESTAURANT ENTRANCE TO HAVE LOW VOLTAGE RELAY CONTROL TO DAISY CHAIN WITH 6-FOOTER FOR SINGLE THERMOSTAT CONTROL AS STATED IN NOTE #20.)
- PROVIDE 6 FOOTER BASEBOARD HEATER EQUAL TO BKOC SERIES 2516W, 1.5KW, 120V, SINGLE PHASE WITH LOW VOLTAGE RELAY CONTROL (208/24V TRANSFORMER RELAY). BASEBOARD HEATER TO HAVE INTEGRAL DOUBLE POLE POWER ON/OFF SWITCH. ENTRANCE BASEBOARD HEATERS 3-FOOTER AND 6 FOOTER TO BE ON THE SAME THERMOSTAT. PROVIDE SINGLE THERMOSTAT NEAR BACK WALL WITH LOW VOLTAGE RELAY CONTROL. COORDINATE WITH ARCHITECT PRIOR TO ROUGH-IN.
- ELECTRICAL CONNECTIONS FOR DRIVER'S DISPATCH. SEE DETAIL 5/E401 FOR DEVICE LAYOUT. COORDINATE EXACT REQUIREMENTS IN FIELD WITH EQUIPMENT INSTALLATION PRIOR TO ROUGH-IN.

GENERAL NOTES KITCHEN

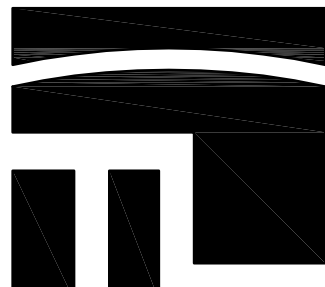
- ALL 125-VOLT THROUGH 250-VOLT RECEPTACLES SUPPLIED BY SINGLE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 50 AMPERES OR LESS, AND ALL RECEPTACLES SUPPLIED BY THREE-PHASE BRANCH CIRCUITS RATED 150 VOLTS OR LESS TO GROUND, 100 AMPERES OR LESS SHALL HAVE GROUND FAULT PROTECTION PER NEC ARTICLE 210.8(B). PROVIDE GROUND FAULT PROTECTION AT CIRCUIT BREAKER FOR RECEPTACLES WITHIN KITCHEN/NET AREA.
- REFER TO ELECTRICAL POINT OF CONNECTION SCHEDULE ON THIS SHEET FOR SPECIFICATIONS OF ALL KITCHEN EQUIPMENT ON THIS SHEET.
- REFER TO ELECTRICAL CONNECTIONS DRAWINGS AND EQUIPMENT CUT SHEETS PREPARED BY FOOD SERVICE EQUIPMENT VENDOR FOR ADDITIONAL INFORMATION REGARDING ELECTRICAL CONNECTION REQUIREMENTS AND PLACEMENT.
- ALL KITCHEN EQUIPMENT ELECTRICAL CIRCUITRY REFLECTED ON THE CONSTRUCTION DOCUMENTS WAS COORDINATED WITH ONLY CUT SHEETS PROVIDED TO PROMUS 04/15/25 AND WITHOUT THE BENEFIT OF POINT-OF-CONNECTION DRAWINGS FROM THE KITCHEN EQUIPMENT VENDOR. IT IS STRONGLY RECOMMENDED THAT ALL EQUIPMENT CIRCUITRY, MOUNTING HEIGHT, CONNECTION REQUIREMENTS, ETC. SHALL BE COORDINATED WITH THE OWNER/KITCHEN CONSULTANT PRIOR TO ROUGH IN.
- COORDINATE EXACT LOCATION AND FURTHER REQUIREMENTS IN FIELD WITH EQUIPMENT INSTALLATION PRIOR TO ROUGH-IN.
- ALL KITCHEN EQUIPMENT AND RECEPTACLES TO BE GFCI PROTECTED AS PER NEC.

KITCHEN EQUIPMENT - ELECTRICAL SCHEDULE

TAG	DESCRIPTION	VOLTAGE	NUMBER OF POLES	POWER	DISCONNECT/RCPT TYPE	BRANCH CIRCUIT	NOTES
Q-1A	DRIVE-THRU WINDOW	120	1	0.8 KVA	20A-1P	B-17	
QB-J-001	SODA DISPENSER	120	1	0.4 KVA	5-15R	A-1	3
QB-J-001	SODA DISPENSER	120	1	0.4 KVA	5-15R	B-7	3
QB-J-101	TEA BREWER	120	1	1.7 KVA	5-15R	B-5	3
QB-J-801	ICE MAKER	120	1	0.5 KVA	20A-1P	B-6	1,2
QB-J-801	ICE MAKER	120	1	0.5 KVA	20A-1P	B-8	1,2
QB-J-802	FOOD PROCESSOR	120	1	0.1 KVA	5-15R	B-14	
QB-J-803	FOOD PROCESSOR	120	1	0.1 KVA	5-15R	B-26	
QB-J-804	FOOD PROCESSOR	120	1	0.1 KVA	5-15R	B-19	
QB-J-805	FOOD PROCESSOR	120	1	0.1 KVA	5-15R	B-24	
QC-J-201	HIGH SPEED OVEN	208	2	6.0 KVA	NEMA L6-30P	A-28,31	
QC-J-201	HIGH SPEED OVEN	208	2	6.0 KVA	NEMA L6-30P	A-25,27	
QC-J-301	4 DECK PROOFER OVEN	208	3	9.8 KVA	60A-3P	A-6,8,10	
QC-J-301	4 DECK PROOFER OVEN	208	3	9.8 KVA	60A-3P	A-18,20,22	
QP-J-002	FOOD SLICER	120	1	0.2 KVA	5-15R	B-13	
QP-J-101	FOOD PROCESSOR	120	1	0.1 KVA	5-15R	B-13	
QR-J-202	FRIDGE	120	1	0.8 KVA	5-15R	B-37	
QR-J-301	FRIDGE, REACH IN	120	1	1.2 KVA	5-15R	B-21	
QR-J-401	REFRIGERATED PREP TABLE	120	1	0.8 KVA	5-15R	A-5	
QR-J-401	REFRIGERATED PREP TABLE	120	1	0.8 KVA	5-15R	B-15	
QW-J-102	DISHWASHER	208	3	8.5 KVA	60A-3P	A-33,35,37	

NOTES:

- COORDINATE EXACT LOCATION OF ELECTRICAL CONNECTION TO ALL EQUIPMENT WITH INSTALLATION PRIOR TO ROUGH-IN.
- WIRE CIRCUIT FROM BREAKER TO CONDENSING UNIT DISCONNECT ON ROOF. WIRE ASSOCIATED ICE MAKER FROM CONDENSING UNIT TERMINAL BLOCK. COORDINATE WITH MECHANICAL EQUIPMENT.
 - PROVIDE HARDWIRED ELECTRICAL CONNECTION TO UNIT AS REQUIRED. CIRCUIT BREAKER FEEDING UNIT SHALL BE PROVIDED WITH LOCK OUT DEVICE IN ACCORDANCE WITH NEC AND AS APPROVED BY THE AUTHORITY HAVING JURISDICTION.
 - ELECTRICAL CONNECTION TO DEVICE LOCATED IN MILLWORK. COORDINATE EXACT LOCATION IN FIELD WITH EQUIPMENT INSTALLATION PRIOR TO ROUGH-IN.



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Project:



New Facility
For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

Date:
AUGUST 21, 2026

Revision Date:

Job Number:
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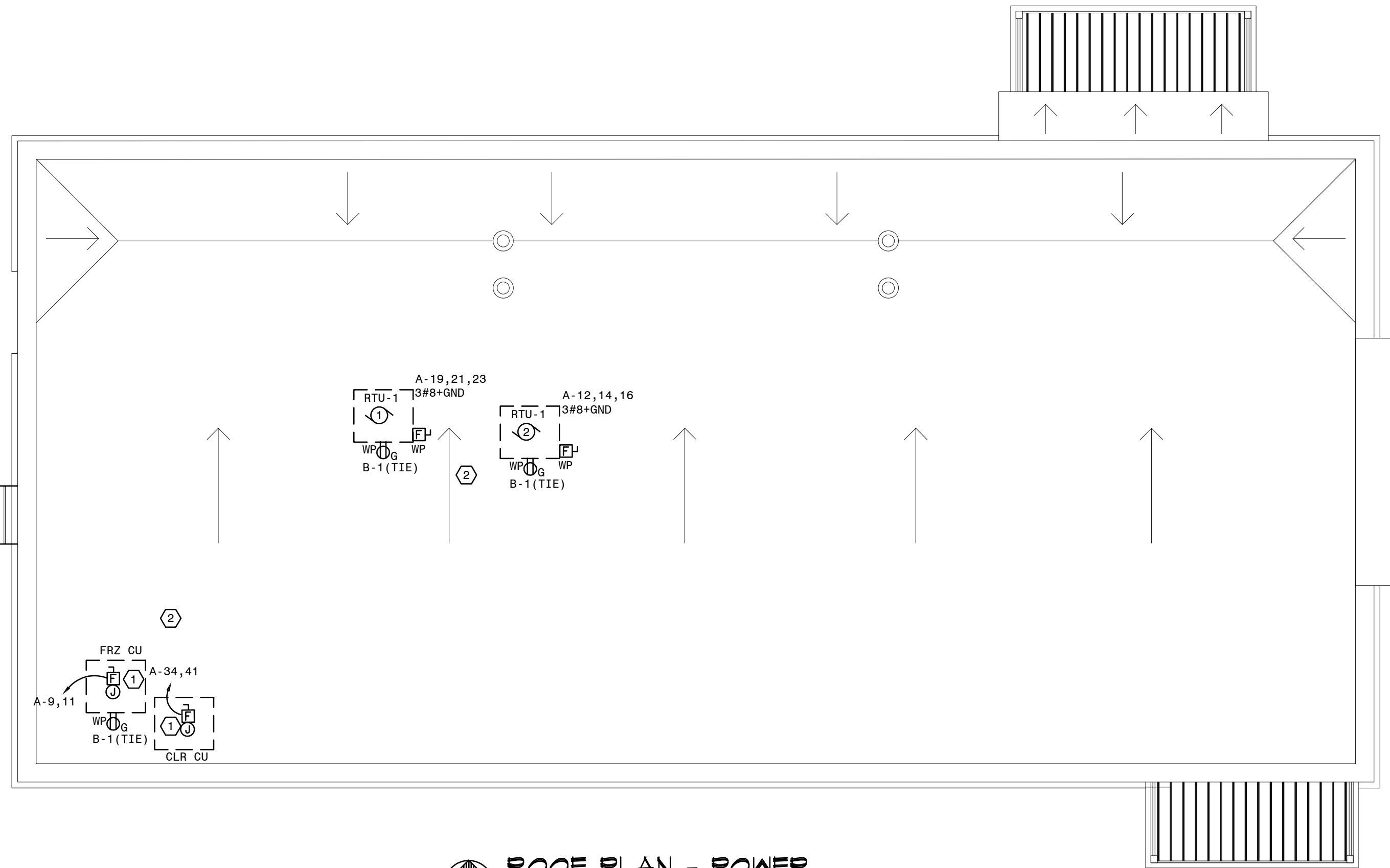
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LIGHTING AND
POWER PLANS

Sheet Number:

E201

MOTOR AND EQUIPMENT SCHEDULE																															
MOTOR NO	DESCRIPTION OF MOTOR OR EQUIPMENT	LOCATION (ROOM NO)	LOAD IN HORSEPOWER (HP) OR FULL LOAD AMPS (FLA)	VOLTAGE, PHASE	PANEL AND CIRCUIT NUMBER OR MCC NUMBER	CONDUCTOR SIZE AND QUANTITY	GROUND CONDUCTOR SIZE	CONDUIT SIZE	FAULT CURRENT RATING (AMPS)	CONTROLLER						DISCONNECT				CONTROL OR AUXILIARY DEVICE (SEE NOTES)											
										MAGNETIC STARTER/DISCONNECT	STARTER SIZE	VARIABLE FREQUENCY DRIVE	THERMOSTAT	MOTION SWITCH	PILOT TOGGLE SWITCH	CONTROLLER BY (DIV. NO.)	CONTROLLER LOCATION (ROOM NO.)	DISCONNECT SIZE	FUSIBLE / NON FUSIBLE	NEMA RATING	DISCONNECT BY (DIV. NO.)	VFD	DEFINITE PURPOSE RELAY	MOTION SWITCH	THERMOSTAT	AQUASTAT	FLOAT SWITCH	FIRE ALARM CONTROL RELAY	FIRE ALARM DUCT DETECTORS (SUPPLY AND RETURN)	INTERLOCK WITH	LABELS
1	RTU-1	ROOF	25 MCA	208, 3	A-19,21,23	3 #8	#8	1-1/4"	10,154 A		X				23	ON UNIT		ON VFD		DIV 23	2										5
2	RTU-2	ROOF	32 MCA	208, 3	A-12,14,16	3 #8	#8	1-1/4"	9,001 A		X				23	ON UNIT		ON VFD		DIV 23	2										5
3	EF-1	RESTROOM	FRAC	120, 1	B-1	2#12	#12	1/2"					X		26	ON UNIT	20A	NF	1	DIV 26											
4	EF-2	RESTROOM	FRAC	120, 1	B-1	2#12	#12	1/2"					X		26	ON UNIT	20A	NF	1	DIV 26											
5	RCP-1	105	FRAC	120, 1	A-26	2#12	#12	1/2"						X	23	ON UNIT	20A	NF	1	DIV 26											
6	IWH-1 (NOTE 4 PER JJ PROTOTYPE)	105	FRAC	120, 1	B-29	2#12	#12	1/2"							23	ON UNIT	20A	NF	1	DIV 26											
7	FREEZER CU	ROOF	22 MCA	208, 1	A-9,11	2#10	#12	3/4"							23	ON UNIT	30A	F 20	3R	DIV 26											
8	COOLER CU	ROOF	22 MCA	208, 1	A-34,41	2#10	#12	3/4"							23	ON UNIT	30A	F 20	3R	DIV 26											
9	IWH-2 (NOTE 4 PER JJ PROTOTYPE)	105	FRAC	120, 1	B-36	2#12	#12	1/2"							23	ON UNIT	20A	NF	1	DIV 26											
10																															
NOTES FOR AUXILIARY CONTROL DEVICE																															
1. ELECTRICAL CONTRACTOR TO FURNISH, SET, AND WIRE AUXILIARY CONTROL DEVICE																															
2. ELECTRICAL CONTRACTOR TO SET, AND WIRE AUXILIARY CONTROL DEVICE FURNISHED BY OTHERS																															
3. ELECTRICAL CONTRACTOR TO WIRE AUXILIARY CONTROL DEVICE FURNISHED AND SET BY OTHERS																															
4. PROVIDE HARDWIRED ELECTRICAL CONNECTION TO UNIT AS REQUIRED. CIRCUIT BREAKER FEEDING UNIT SHALL BE PROVIDED WITH LOCK OUT DEVICE IN ACCORDANCE WITH NEC AND LOCAL AHJ.																															
5. PROVIDE FAULT CURRENT LABEL ON DISCONNECT, SEE SPECIFICATION SECTION 26 0553																															
6. PROVIDE CURRENT LIMITING FUSES FOR ALL FUSED DISCONNECTS.																															

- GENERAL NOTE:
- PROVIDE AIR CURTAIN ELECTRICAL CONNECTION WHERE REQUIRED.



ROOF PLAN - POWER
SCALE: 1/4"=1'-0"

- KEY NOTES
- DISCONNECT FOR COOLER/FREEZER CONDENSER ON ROOF. COORDINATE EXACT LOCATION WITH EQUIPMENT INSTALLATION.
 - VERIFY EXACT LOCATION OF MECHANICAL EQUIPMENT WITH MC.

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Michael A. Stroh
REGISTERED PROFESSIONAL ENGINEER
NORTH DAKOTA
EXPIRATION DATE 08-21-26

Project:

JIMMY JOHN'S SANDWICHES

New Facility

For:

212 US-2 WEST
DEVILS LAKE,
NORTH DAKOTA 58301

Location:
212 US-2 WEST
DEVILS LAKE, ND 58301

Drawn By:

Date:
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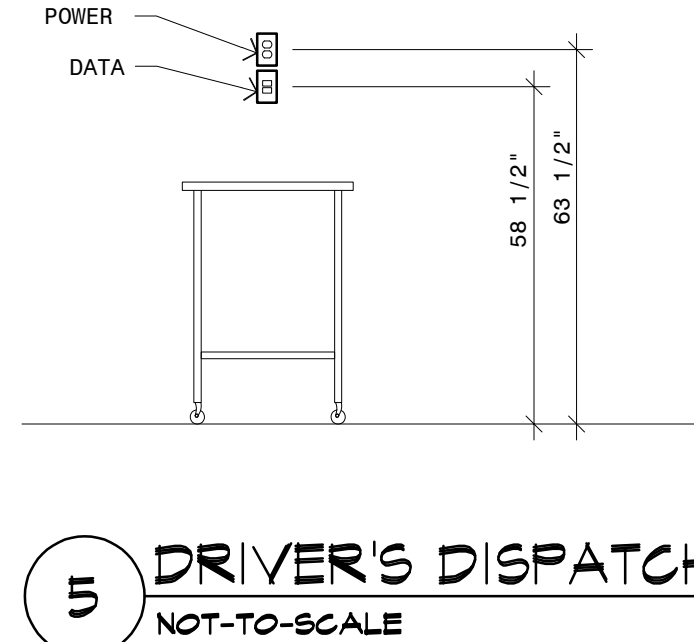
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Sheet Name:
ROOF PLAN AND
MOTOR SCHEDULE

Sheet Number:

E301



- # E401

BRANCH CIRCUIT WIRING AND VOLTAGE DROP CHART

OVER-CURRENT CIRCUIT PROTECTION	SINGLE POLE CIRCUIT		TWO POLE CIRCUITS		THREE POLE CIRCUITS		MAXIMUM CONDUCTOR DISTANCE			
	WITH NEUTRAL (Ø,N,G)	WITH NEUTRAL (Ø,N,G)	WITHOUT NEUTRAL (Ø,G)	WITH NEUTRAL (Ø,N,G)	WITHOUT NEUTRAL (Ø,G)	CONDUIT	120V, 1Ø	208V, 1Ø	208V, 3Ø	
15A	(1)#12, (1)#12, (1)#12	(2)#12, (1)#12, (1)#12	(2)#12, (1)#12	(3)#12, (1)#12, (1)#12	(3)#12, (1)#12	3/4"	60'	105'	121'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	96'	167'	193'	
	(1)#8, (1)#8, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	153'	266'	307'	
20A	(1)#12, (1)#12, (1)#12	(2)#12, (1)#12, (1)#12	(2)#12, (1)#12	(3)#12, (1)#12, (1)#12	(3)#12, (1)#12	3/4"	45'	78'	91'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	72'	125'	144'	
	(1)#8, (1)#8, (1)#8	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	115'	199'	230'	
30A	(1)#6, (1)#6, (1)#6	(2)#6, (1)#6, (1)#6	(2)#6, (1)#6	(3)#6, (1)#6, (1)#6	(3)#6, (1)#6	1"	183'	317'	366'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	48'	83'	96'	
	(1)#8, (1)#8, (1)#8	(2)#8, (1)#8, (1)#8	(2)#8, (1)#8	(3)#8, (1)#8, (1)#8	(3)#8, (1)#8	3/4"	76'	133'	153'	
40A	(1)#6, (1)#6, (1)#6	(2)#6, (1)#6, (1)#6	(2)#6, (1)#6	(3)#6, (1)#6, (1)#6	(3)#6, (1)#6	1"	122'	211'	244'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	99'	115'	115'	
	(1)#8, (1)#8, (1)#8	(2)#8, (1)#8, (1)#8	(2)#8, (1)#8	(3)#8, (1)#8, (1)#8	(3)#8, (1)#8	1"	158'	183'	183'	
50A	(1)#6, (1)#6, (1)#6	(2)#6, (1)#6, (1)#6	(2)#6, (1)#6	(3)#6, (1)#6, (1)#6	(3)#6, (1)#6	1"	122'	211'	244'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	99'	115'	115'	
	(1)#8, (1)#8, (1)#8	(2)#8, (1)#8, (1)#8	(2)#8, (1)#8	(3)#8, (1)#8, (1)#8	(3)#8, (1)#8	1"	158'	183'	183'	
60A	(1)#6, (1)#6, (1)#6	(2)#6, (1)#6, (1)#6	(2)#6, (1)#6	(3)#6, (1)#6, (1)#6	(3)#6, (1)#6	1"	122'	211'	244'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	99'	115'	115'	
	(1)#8, (1)#8, (1)#8	(2)#8, (1)#8, (1)#8	(2)#8, (1)#8	(3)#8, (1)#8, (1)#8	(3)#8, (1)#8	1"	158'	183'	183'	
70A	(1)#6, (1)#6, (1)#6	(2)#6, (1)#6, (1)#6	(2)#6, (1)#6	(3)#6, (1)#6, (1)#6	(3)#6, (1)#6	1"	122'	211'	244'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	99'	115'	115'	
	(1)#8, (1)#8, (1)#8	(2)#8, (1)#8, (1)#8	(2)#8, (1)#8	(3)#8, (1)#8, (1)#8	(3)#8, (1)#8	1"	158'	183'	183'	
80A	(1)#6, (1)#6, (1)#6	(2)#6, (1)#6, (1)#6	(2)#6, (1)#6	(3)#6, (1)#6, (1)#6	(3)#6, (1)#6	1"	122'	211'	244'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	99'	115'	115'	
	(1)#8, (1)#8, (1)#8	(2)#8, (1)#8, (1)#8	(2)#8, (1)#8	(3)#8, (1)#8, (1)#8	(3)#8, (1)#8	1"	158'	183'	183'	
90A	(1)#6, (1)#6, (1)#6	(2)#6, (1)#6, (1)#6	(2)#6, (1)#6	(3)#6, (1)#6, (1)#6	(3)#6, (1)#6	1"	122'	211'	244'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	99'	115'	115'	
	(1)#8, (1)#8, (1)#8	(2)#8, (1)#8, (1)#8	(2)#8, (1)#8	(3)#8, (1)#8, (1)#8	(3)#8, (1)#8	1"	158'	183'	183'	
100A	(1)#6, (1)#6, (1)#6	(2)#6, (1)#6, (1)#6	(2)#6, (1)#6	(3)#6, (1)#6, (1)#6	(3)#6, (1)#6	1"	122'	211'	244'	
	(1)#10, (1)#10, (1)#10	(2)#10, (1)#10, (1)#10	(2)#10, (1)#10	(3)#10, (1)#10, (1)#10	(3)#10, (1)#10	3/4"	99'	115'	115'	
	(1)#8, (1)#8, (1)#8	(2)#8, (1)#8, (1)#8	(2)#8, (1)#8	(3)#8, (1)#8, (1)#8	(3)#8, (1)#8	1"	158'	183'	183'	

GENERAL NOTES:

- CONDUCTORS AND CONDUIT INDICATED FOR BRANCH CIRCUITS PER CIRCUIT BREAKER RATING INDICATED IN PANEL SCHEDULE(S).
- CONDUCTORS BASED ON COPPER WIRE, 75°C TEMPERATURE RATING, 1.0 POWER FACTOR, 3% MAXIMUM VOLTAGE DROP, 6 OR LESS CURRENT CARRYING CONDUCTORS.
- CONDUIT SIZES BASED ON EMT CONDUIT WITH THHW/THHN CONDUCTORS. INCREASE CONDUIT SIZE AS REQUIRED PER NEC CONDUIT FILL TABLES FOR ALL OTHER CONDUIT TYPES OR CONDUCTORS.
- CONDUCTORS DO NOT CONSIDER NEC ALLOWED AMPACITY OR DERATING.
- DISTANCE INDICATED IS THE TOTAL WIRE LENGTH FROM THE CIRCUIT BREAKER TO THE END DEVICE ON THE BRANCH CIRCUIT.
- EQUIPMENT GROUNDING CONDUCTOR SIZE INCREASE IN PROPORTION TO UNGROUNDED CONDUCTORS PER NEC 250.122(B).
- WHERE THE WIRE SIZE IS LARGER THAN THE MAXIMUM WIRE SIZE TERMINAL OF THE EQUIPMENT, PROVIDE A JUNCTION BOX AND SPLICE DOWN TO THE LARGEST WIRE SIZE POSSIBLE. THE BOX SHALL BE LOCATED AS CLOSE TO THE TERMINATION AS POSSIBLE, BUT NO FARTHER THAN 15 FEET.
- IN THE EVENT CONDUCTORS EXCEED LENGTHS INDICATED IN SCHEDULE, CONTACT THE ENGINEER FOR FURTHER DIRECTION.

PANELBOARD SCHEDULE											
PANEL NAME	FED FROM	CONNECTED LOAD	DEMAND LOAD	BUSS RATING	MAINS TYPE	MCB RATING	PHASES	WIRES	ISCA	SC RATING	ENCLOSURE
A	UTILITY			400 A	MCB	400 A	3	4		35KAIC	NEMA 1
B	A			100 A	MLO	100 A	3	4		35KAIC	NEMA 1

FEEDER SCHEDULE

TAG	SETS	CONDUIT	PHASE CONDUCTORS	NEUTRAL CONDUCTORS	GROUNDING CONDUCTOR
Y0410SE	(2)	3"	(3) 250KCM(AL)	(1) 250KCM(AL)	N/A
Y0100	(1)	1-1/2"	(3) #1(AL)	(1) #1(AL)	(1) #8

GENERAL NOTES:

- CONDUIT AND CONDUCTOR SIZES ARE BASED ON THHN/THWN 75C INSULATED CONDUCTORS AND 40% FILL IN EMT CONDUIT. CONTRACTOR SHALL ADJUST AS REQUIRED PER NEC FOR ALL OTHER CONDUIT TYPES.
- FEEDERS WITH MULTIPLE CONDUITS INDICATED SHALL BE PARALLELED.
- PROVIDE ALUMINUM CONDUCTORS WHERE INDICATED BY (AL).

RISER DIAGRAM KEY NOTES

- UTILITY PRIMARY UG CONDUITS. PROVIDE IN ACCORDANCE WITH UTILITY DESIGN STANDARDS, COORDINATE REQUIREMENTS PRIOR TO BID.
- UTILITY METERING. PROVIDE 320A METERING SOCKET PER UTILITY COMPANY REQUIREMENTS. PROVIDE IN ACCORDANCE WITH UTILITY DESIGN STANDARDS, COORDINATE EXACT REQUIREMENTS PRIOR TO BID.
- EXOTHERMIC CONNECTION. ELECTRICALLY CONTINUOUS STEEL REINFORCING BAR, 20 FEET AT MINIMUM, IN BUILDING FOUNDATION IN DIRECT CONTACT WITH EARTH.
- PROVIDE 10 FOOT BY 3/4" DIAMETER COPPER GROUND ROD, TYPICAL.
- EXOTHERMIC CONNECTION, TYPICAL.
- CONNECTION TO METALLIC COLD WATER PIPE WITHIN 5' OF POINT OF ENTRANCE, BEFORE FIRST VALVE WITH HEAVY DUTY BRONZE GROUND CLAMP SUITABLE FOR THIS INSTALLATION.
- PROVIDE BONDING JUMPER, SIZED AS INDICATED AROUND FIRST VALVE.
- PROVIDE GROUNDING ELECTRODE CONDUCTOR IN SCHEDULE 40 PVC, SIZED AS INDICATED.
- PROVIDE GROUNDING CONDUCTOR IN SCHEDULE 40 PVC CONDUIT, SIZED AS INDICATED, TO FIRE SPRINKLER PIPING. PROVIDE LISTED AND APPROVED BONDING AND GROUNDING CONNECTIONS AS REQUIRED.
- PROVIDE SURGE PROTECTION DEVICE (SPD) WITH 200KA SURGE CURRENT RATING IN A NEMA 1 ENCLOSURE, SURFACE MOUNTED. SPD SHALL BE UL 1449, 4TH EDITION LISTED.
- PROVIDE INTERMATIC "T101" SERIES TIME CLOCK "LS.J-003" IN A NEMA ONE ENCLOSURE AND LIGHTING CONTACTOR. PROVIDE INTERMATIC "K4200" SERIES PHOTOCCELL. CONTROL TO BE WIRED FOR PHOTOCCELL ON, TIME CLOCK OFF.

RISER DIAGRAM- ELECTRICAL

PANELBOARD LOAD SCHEDULE																										
PANEL:			PANEL A			MAIN: MCB			400A			ENCLOSURE:			NEMA 1			LOCATION:			106					
RATING:			400			AIC RATING:			VOLTS: 208Y/120, 3 PH., 4W.			35,000			MOUNTING:			RECESSED			FED FROM:			UTILITY		
CKT #	TRIP AMPS	POLE	LOAD IN VOLT-AMPERES					LOAD DESCRIPTION		PH	LOAD DESCRIPTION		LOAD IN VOLT-AMPERES					TRIP AMPS	POLE	CKT #						
			LIGHTING	RECPT	MTRS&EQUIP	KITCHEN	HEAT/AC						HEAT/AC	KITCHEN	MTRS&EQUIP	RECPT	LIGHTING									
1	*20	1					400		QB-J-001 DRINK DISPENSER	A	FREEZER EVAPORATOR				2288			30		2						
3	20	1							SPARE	B								2		4						
5	*20	1					800		QR-J-401 REF PREP TABLE	C	QC-J-301 OVEN WITH PROOFER		3300				*50		6							
7	*20	1					1000		COOLER EVAPORATOR	A			3300						8							
9	30					1100			COOLER CONDENSER	B			3300					3	10							
11		2				1100				C	RTU-2				3840		45		12							
13	20	1							MENU BOARD	A					3840				14							
15	20	1							CONTACTOR	B					3840			3	16							
17	20	1							SPARE	C	QC-J-301 OVEN WITH PROOFER		3300			*50		18								
19	35					3000			RTU-1	A			3300					20								
21						3000				B			3300				3	22								
23		3				3000				C	FFH-1	1500					20	1	24							
25	*30						3000		QC-J-201 HIGH SPEED OVEN	A	RCF-1		100				20	1	26							
27		2					3000			B	SITE LIGHTING				700		20	1	28							
29	*30						3000		QC-J-201 HIGH SPEED OVEN	C	PYLON SIGN		500				20	1	30							
31		2					3000			A	SPD						30		32							
33	*30						2800		DISHWASHER	B									34							
35							2800			C								3	36							
37		3					2800			A	PANEL B		3800		3000	0	100		38							
39	30					2288			FREEZER CONDENSER	B			3000	200	2800	500			40							
41		2				2288				C			4400	200	2300	3400		3	42							
43	20	1							SPARE	A	SPARE						20	1	44							
45	20	1							SPARE	B	SPARE						20	1	46							
47	20	1							SPARE	C	SPARE						20	1	48							
49	*20	1							SPARE	A	SPARE						20	1	50							
51	*20	1							SPARE	B	SPARE						*20	1	52							
53	20	1							SPARE	C	SPARE						*20	1	54							
LOAD CALCULATIONS																										
LOAD TYPE		VA / PHASE			TOTAL VA	DEMAND FACTOR	DIVERSIFIED LOAD																			
		A	B	C																						
LIGHTING		0	1200	3400	4600	1.00	4600																			
RECEPTACLES		3000	2800	2300	8100	0.50	4050																			
MOTORS & EQUIP		9228	12716	10928	32872	0.90	29585																			
KITCHEN EQUIP.		20600	15400	17600	53600	0.65	34840																			
HEAT / AC		0	0	1500	1500	0.75	1125																			
LARGEST MOTOR					0.25	0																				
TOTAL AMPS:					206	TOTAL VA:		74,200																		
NOTES:																										
1. BREAKERS NOTED WITH * TO BE GFCI																										
2. ALL KITCHEN EQUIPMENT TO BE GFCI PROTECTED PER NEC.																										
3. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR CIRCUIT BREAKER SIZING FOR ALL DEDICATED EQUIPMENT CIRCUITS.																										
4. SERIES RATED TO UPSTREAM PANEL A MAIN CIRCUIT BREAKER																										

PANELBOARD LOAD SCHEDULE																				
PANEL:			PANEL B			MAIN: MCB			100A			ENCLOSURE: NEMA 1			LOCATION: 106					
RATING:			100			AIC RATING:			35,000			MOUNTING: RECESSED			FED FROM: PANEL A					
CKT #	TRIP AMPS	POLE	LOAD IN VOLT-AMPERES					LOAD DESCRIPTION		PH	LOAD DESCRIPTION		LOAD IN VOLT-AMPERES					TRIP AMPS	POLE	CKT #
			LIGHTING	RECPT	MTRS&EQUIP	KITCHEN	HEAT/AC						HEAT/AC	KITCHEN	MTRS&EQUIP	RECPT	LIGHTING			
1	*20	1		900				RECEPTACLES-GEN PURPOSE	A	RECEPT., NETWORK			400			20	1	2		
3	*20	1		400				RECEPT., PHONE BANK	B	RECEPT., CEILING SIGNS			400			*20	1	4		
5	*20	1				1700		QB-J-101 TEA BREWER	C	ICE MAKER		500			*20	1	6			
7	*20	1				400		QB-J-001 DRINK DISPENSER	A	ICE MAKER		500			*20	1	8			
9	20	1	500					EXTERIOR LIGHTING	B	REMOTE CHILLER		500			*20	1	10			
11	20	1	1800					LIGHTING	C	REMOTE CHILLER		500			*20	1	12			
13	*20	1				400		OPJ-002, 101 SLICERS AND PROC.	A	RECEPT., BAG IN BOX			100		*20	1	14			
15	*20	1				800		QR-J-401 REF PREP TABLE	B	RECEPT., DRIVE THRU TIMER			200		*20	1	16			
17	*20	1		800				Q-1A DRIVE THRU WINDOW	C	RECEPT., DRIVE THRU TIMER			200		*20	1	18			
19	20	1		100				RECEPT., NETWORK	A	RECEPT., COM PANEL			400		*20	1	20			
21	*20	1				1200		QR-J-301 REACH IN FRIDGE	B	RECEPT., DISPLAY/PRINTERS			200		*20	1	22			
23	20	1						BUILDING SIGNAGE	C	RECEPT., NETWORK			100		20	1	24			
25	20	1		500				BUILDING SIGNAGE	A	RECEPT., IRRIGATION			100		20	1	26			
27	20	1		500				BUILDING SIGNAGE	B	ICE MAKER		500			*20	1	28			
29	20	1			100			IWH 1	C	QB-J-701 BUBBLER		1700			*20	1	30			
31	20	1		500				BUILDING SIGNAGE	A	QB-J-701 BUBBLER		1700			*20	1	32			
33	20	1		400				RECEPT., NETWORK	B	RESTROOM RECEPT.			400		20	1	34			
35	*20	1		700				RECEPTACLES	C	IWH 2			100		20	1	36			
37	*20	1				800		QR-J-202 FRIDGE	A	BASEBOARD HEAT		750			20	1	38			
39	20	1		500				RECEPTACLES	B	BASEBOARD HEAT		750			20	1	40			
41	20	1	1600					LIGHTING	C	BASEBOARD HEAT		750			20	1	42			
43	20	1						SPARE	A	RECEPT., DRIVERS DISP.			100		20	1	44			
45	20	1						SPARE	B	SPARE					20	1	46			
47	20	1						SPARE	C	SPARE					20	1	48			
49	*20	1						SPARE	A	SPARE					*20	1	50			
51	*20	1						SPARE	B	SPARE					*20	1	52			
53	20	1						SPARE	C	SPARE					*20	1	54			
LOAD CALCULATIONS																				
LOAD TYPE		VA / PHASE			TOTAL VA	DEMAND FACTOR	DIVERSIFIED LOAD													
		A	B	C																
LIGHTING			0	500	3400	9900	1.00	3900												
RECEPTACLES		3100	3200	2300	8600	0.50	4300													
MOTORS & EQUIP		0	0	200	200	0.90	180													
KITCHEN EQUIP.		3800	3000	4400	11200	0.65	7280													
HEAT / AC		750	750	750	2250	0.75	1688													
LARGEST MOTOR						0.25	0													
TOTAL AMPS:		48			TOTAL VA:		17,348													
NOTES: 1. SERIES RATED TO 85K UPSTREAM PANEL B MAIN CIRCUIT BREAKER 2. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR CIRCUIT BREAKER SIZING FOR ALL DEDICATED EQUIPMENT CIRCUITS. 3. ALL KITCHEN EQUIPMENT TO BE GFCI PROTECTED PER NEC.																				

PART 1 - GENERAL

1. GENERAL CONDITIONS

- A. THE GENERAL, SPECIAL, AND OTHER CONDITIONS OF THE ARCHITECTURAL, MECHANICAL AND VENDOR DOCUMENTS SHALL BE CONSIDERED AN INTEGRAL PART OF THESE ELECTRICAL SPECIFICATIONS.
- B. REFERENCE TO THE 'CONTRACTOR' IN THIS SPECIFICATION SHALL MEAN 'ELECTRICAL CONTRACTOR (EC)', UNLESS NOTED OTHERWISE. ALL WORK SPECIFIED HEREIN IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE.

2. SCOPE OF WORK

- A. FURNISH ALL LABOR, MATERIALS, EQUIPMENT, TOOLS AND OTHER ITEMS NECESSARY FOR, OR INCIDENTAL TO, INSTALLATION OF A COMPLETE ELECTRICAL SYSTEM AS REQUIRED FOR THIS PROJECT.
- B. ALSO INCLUDE ALL OTHER WORK AND MISCELLANEOUS EQUIPMENT NOT SPECIFICALLY MENTIONED, BUT REASONABLY INFERRED, THAT ARE REQUIRED FOR A FULLY FUNCTIONAL AND TESTED SYSTEM.

3. DRAWINGS AND DOCUMENTS

- A. THE DRAWINGS AND SPECIFICATIONS FORM A COMPLETE SET OF PLANS FOR THE ELECTRICAL WORK FOR THIS PROJECT. WHAT IS REQUIRED BY EITHER SHALL BE AS BINDING AS IF REQUIRED BY BOTH. IN THE EVENT THE DRAWINGS AND SPECIFICATIONS ARE IN CONFLICT, THE GREATER REQUIREMENT OR COST SHALL BE INCLUDED IN BID, OR IF TIME ALLOWS, A CLARIFICATION WILL BE ISSUED.
- B. BIDDERS SHALL EXAMINE AND INCLUDE ALL OTHER TRADE AND EQUIPMENT VENDOR DRAWINGS AND SPECIFICATIONS TO AVOID OMISSIONS, DUPLICATIONS, AND TO ENSURE COMPLETE INSTALLATION OF ALL WORK FOR ELECTRICAL.
- C. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO SHOW APPROXIMATE LOCATION ONLY. PLACEMENT OF ELECTRICAL EQUIPMENT AND DEVICES SHALL NOT INTERFERE WITH LOCATIONS OR CLEARANCES OF OTHER TRADES' MATERIALS OR EQUIPMENT. COORDINATE THE PLACEMENT OF ELECTRICAL DEVICES WITH ARCHITECTURAL PLANS, ELEVATIONS AND DETAILS.
- D. THE DIRECT ROUTING OF CONDUITS AND WIRING IS NOT ASSURED. EXACT REQUIREMENTS SHALL BE GOVERNED BY THE CONDITIONS OF THE PROJECT SITE. EXTRA LENGTHS OF WIRING OR THE ADDITION OF PULL OR JUNCTION BOXES, ETC., NECESSITATED BY SUCH CONDITIONS, SHALL BE INCLUDED IN THE BID.

4. CODES, INSPECTIONS AND FEES

- A. THE COMPLETED ELECTRICAL INSTALLATION SHALL COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AS WELL AS ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES, REGULATIONS, AND STANDARDS INCLUDING INTERPRETATIONS BY APPROPRIATE AUTHORITIES HAVING JURISDICTION. WHERE THE DRAWINGS AND SPECIFICATIONS CALL FOR WORKMANSHIP OR MATERIALS IN EXCESS OF CODE OR REGULATORY REQUIREMENTS, THE DRAWINGS AND SPECIFICATIONS SHALL GOVERN.
- B. THE WORK SPECIFIED HEREIN SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY AUTHORIZED REPRESENTATIVES OF THE NATIONAL BOARD OF FIRE UNDERWRITERS, STATE AND LOCAL AGENCIES HAVING JURISDICTION, AND THE ENGINEER. THE CONTRACTOR SHALL MAKE THE NECESSARY ARRANGEMENTS TO HAVE THE ELECTRICAL WORK INSPECTED BY APPROPRIATE INSPECTOR(S) AND SHALL PROVIDE TWO COPIES OF FINAL SIGNED 'CERTIFICATE OF INSPECTOR' TO THE OWNER.
- C. OBTAIN AND PAY FOR ALL LICENSES, PERMITS, FEES AND CHARGES FOR ALL WORK INSTALLED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE TO PAY ALL FEES AND CHARGES LEVIED BY THE ELECTRICAL UTILITY COMPANY FOR CONNECTION TO ELECTRICAL SERVICES.

5. JOB SITE SAFETY

- A. THE CONTRACTOR IS SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
- B. NO ACT, DRAWING REVIEW OR CONSTRUCTION REVIEW BY THE OWNER, THE ENGINEERS OR THEIR CONSULTANTS, IS INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON, OR NEAR THE CONSTRUCTION SITE.

6. SITE CONDITIONS

- A. EXAMINE THE SITE AND BE FAMILIAR WITH ALL EXISTING BUILDING CONDITIONS AND LIMITATIONS PRIOR TO SUBMITTING BID. NO EXTRA PAYMENT WILL BE ALLOWED FOR WORK REQUIRED BECAUSE OF THESE CONDITIONS, OR IF INFORMATION IS VISIBLE OR READILY ATTAINABLE, FOR ANY LIMITATION OR MISUNDERSTANDING OF EXISTING CONDITIONS.
- B. ANY DISCREPANCIES FROM THESE DOCUMENTS SHOULD BE REPORTED TO THE ARCHITECT/ENGINEER PRIOR TO BID.

7. WORKMANSHIP AND CONTRACTOR QUALIFICATIONS

- A. INSTALL ELECTRICAL EQUIPMENT AND MATERIALS IN A NEAT AND WORKMANLIKE MANNER BY PERSONS EXPERIENCED AND SKILLED IN THE TRADE. ONLY THE BEST QUALITY WORKMANSHIP WILL BE ACCEPTED. HAPHAZARD OR POOR INSTALLATION WILL BE CAUSE FOR REJECTION OF WORK. ALL EXPOSED COMPONENTS OF THE ELECTRICAL SYSTEM SHALL BE SQUARE AND TRUE WITH BUILDING LINES AND SURFACES.
- B. CONTRACTOR SHALL BE LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED.
- C. COORDINATION OF WORK
- A. GIVE CAREFUL CONSIDERATION TO THE WORK OF THE GENERAL, MECHANICAL AND ALL OTHER CONTRACTORS/SUBCONTRACTORS ON THE PROJECT. ORGANIZE AND PHASE THE ELECTRICAL WORK SO THAT IT WILL NOT INTERFERE WITH THE WORK OF OTHER TRADES.
- B. DRAWINGS AND SPECIFICATIONS FOR OTHER TRADES AND GENERAL CONSTRUCTION DRAWINGS SHALL BE CONSULTED FOR COORDINATION INFORMATION, DETAILS, DIMENSIONS, ETC. COORDINATE ALL SHAFTS, CHASES, FURRED SPACES, SUSPENDED CEILING, LOCATIONS OF EQUIPMENT, ETC.
- C. THE LOCATION OF ALL OUTLETS, WIRING, AND EQUIPMENT SHALL BE VERIFIED. THE ELECTRICAL REQUIREMENTS OF ANY EQUIPMENT SHALL BE VERIFIED WITH ACTUAL EQUIPMENT OR APPROVED SHOP DRAWINGS PRIOR TO ANY ROUGH-IN WORK. NOTIFY ENGINEER OF ANY DISCREPANCIES.
- D. DIMENSIONS GIVEN ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS. DIMENSIONS, WHETHER CALCULATED OR SCALED, SHALL BE VERIFIED IN THE FIELD.
- E. CHECK ACTUAL JOB CONDITIONS BEFORE FABRICATING WORK. COORDINATE WITH OTHER TRADES TO AVOID REWORK DUE TO FIELD CONDITIONS. CHANGES OR ADDITIONS, SUBJECT TO ADDITIONAL COMPENSATION, WHICH ARE MADE WITHOUT WRITTEN AUTHORIZATION AND AN AGREED PRICE, SHALL BE AT THE CONTRACTOR'S RISK AND EXPENSE.

- F. COORDINATE ROUTING OF ALL CONDUIT AND WIRE CONCEALED IN WALLS, SOFFITS OR CEILINGS PROVIDED BY THE GENERAL CONTRACTOR. FIELD COORDINATE ALL WORK TO CONCEAL INSTALLATIONS NOT COORDINATED OR SPECIFICALLY APPROVED BY THE ARCHITECT AND ENGINEER.
- G. VERIFY ITEMS SUCH AS DOOR SWINGS, WINDOW LOCATIONS, CASEWORK, ETC., BEFORE INSTALLING ANY ELECTRICAL EQUIPMENT OR DEVICES.
- H. MAKE MINOR ADJUSTMENTS TO WORK WHERE REQUESTED BY THE OWNER OR THE OWNER'S REPRESENTATIVE WHEN ADJUSTMENTS ARE NECESSARY OF PROPER OPERATION AND WITHIN THE INTENT OF THE CONTRACT.

9. MATERIALS AND EQUIPMENT

- A. UNLESS OTHERWISE SPECIFIED, ALL MATERIAL AND EQUIPMENT SHALL BE NEW AND MANUFACTURED BY APPROVED OR LISTED MANUFACTURERS. ALL MATERIALS AND EQUIPMENT SHALL MEET THE REQUIREMENTS OF ALL GOVERNING CODES.
- B. ALL MATERIAL AND EQUIPMENT SHALL BE LISTED AND LABELED BY UNDERWRITERS LABORATORIES, INC. (UL), AS CONFORMING TO ITS STANDARDS IN EVERY CASE WHERE SUCH A STANDARD HAS BEEN ESTABLISHED FOR THAT TYPE OF MATERIAL OR EQUIPMENT.
- C. WHERE EQUIPMENT SUPPLIED BY THE CONTRACTOR HAS CHARACTERISTICS OTHER THAN THAT SPECIFIED HEREIN, THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, REMOVE AND REPLACE THE ELECTRICAL WORK NECESSITATED BY THE SUBSTITUTED PRODUCT.
10. TEMPORARY INSTALLATIONS
- A. COMPLY WITH THE OWNER AND GENERAL CONTRACTOR REQUIREMENTS. ALL WORK TO BE IN CONFORMANCE WITH N.E.C. ARTICLE 590, TEMPORARY INSTALLATIONS.
- B. ELECTRICAL POWER SYSTEM: PROVIDE AN ELECTRICAL DISTRIBUTION SYSTEM OF SUFFICIENT SIZE, CAPACITY, AND POWER CHARACTERISTICS REQUIRED FOR ALL CONSTRUCTION OPERATIONS.
- C. PROVIDE NEW TEMPORARY ELECTRICAL SERVICE AS REQUIRED FOR THE PROJECT. FOR NEW SERVICE CONSTRUCTION, COORDINATE WITH THE UTILITY TO PROVIDE TEMPORARY SERVICE FOR THE DURATION OF CONSTRUCTION SO AS NOT TO INTERFERE WITH NEW SERVICE CONSTRUCTION. PAY FOR ALL UTILITY CHARGES ASSOCIATED WITH THE TEMPORARY SERVICE INCLUDING ENERGY BILLS.
- D. LIGHTING: PROVIDE TEMPORARY LIGHTING WITH LOCAL SWITCHING THROUGHOUT ALL AREAS OF CONSTRUCTION. PROVIDE ADEQUATE ILLUMINATION FOR CONSTRUCTION OPERATIONS, OBSERVATIONS, INSPECTIONS, AND TRAFFIC CONDITIONS.
- E. REMOVE ALL TEMPORARY INSTALLATION ELECTRICAL EQUIPMENT AT THE END OF THE PROJECT. PATCH AND SEAL SLEEVE OPENINGS.

11. CUTTING AND PATCHING

- A. PERFORM ALL CORE DRILLING, CUTTING AND PATCHING NECESSARY FOR THE COMPLETION OF THE ELECTRICAL WORK FOR THIS PROJECT. NO STRUCTURAL MEMBERS SHALL BE DISTURBED WITHOUT OBTAINING WRITTEN PERMISSION OF THE ENGINEER.
- B. ANY SURFACE WHICH IS DISTURBED IN ANY WAY BY THE CONTRACTOR SHALL BE REPAIRED AND REFINISHED TO PROVIDE A SURFACE EQUAL IN STRENGTH, DURABILITY, AND APPEARANCE TO THE ORIGINAL SURFACE.
- C. WHERE IT IS NECESSARY TO DRILL OR CUT CONCRETE SURFACES, THE EDGES SHALL BE SHARPLY DEFINED. HOLES SHALL BE MADE WITH A ROTARY DRILL. CUTS SHALL BE MADE WITH A CONCRETE SAW UNLESS SOME OTHER METHOD OF MAKING SPECIFIC CUTS IS APPROVED BY THE ENGINEER.
- D. PENETRATIONS THROUGH SMOKE, FIRE, HAZARDOUS AREA, OR OTHER RATED SEPARATIONS SHALL BE FIRE SEALED TO PRESERVE THE RATINGS OF THE SEPARATIONS.
- E. ALL CUTTING, DRILLING, PATCHING, REPAIRING, AND REFINISHING SHALL BE DONE BY PERSONS SKILLED IN APPROPRIATE TRADES.
- F. CLEAN AWAY ALL RUBBISH AND LITTER GENERATED DURING ELECTRICAL INSTALLATION.

12. SHOP DRAWINGS AND SUBMITTALS

- A. SUBMIT SHOP DRAWINGS FOR ALL NEW ITEMS OF ELECTRICAL EQUIPMENT. SUBMIT ELECTRONIC PDF VERSIONS OF THE SHOP DRAWINGS FOR REVIEW. ALL SHOP DRAWING SUBMITTALS SHALL ALLOW FOR A MINIMUM OF 14 WORKING DAYS FOR ENGINEER REVIEW.
- B. SHOP DRAWINGS SHALL BE DETAILED, DIMENSIONED MANUFACTURERS' DRAWINGS. EACH SET OF DOCUMENTS SHALL LIST THE PROJECT NAME AND ADDRESS, AND THE CONTRACTOR'S NAME, ADDRESS, AND TELEPHONE NUMBER. AN INDEX PAGE SHALL LIST INDIVIDUALLY ALL THE ITEMS IN THE SUBMITTAL WITH REFERENCES TO TYPE DESIGNATIONS OR OTHER IDENTIFIERS NOTED ON DRAWINGS.
- C. ASSURE THAT SHOP DRAWINGS ARE COMPLETE BEFORE SUBMITTAL. SUBMITTAL TO THE ENGINEER SHALL BE VIA THE GENERAL CONTRACTOR AND, WHERE REQUIRED, THE ARCHITECT. SHOP DRAWINGS NOT SIGNED BY BOTH THE CONTRACTOR AND THE GENERAL CONTRACTOR SHALL BE RETURNED.
- D. HIGHLIGHT ANY INFORMATION OR OPTIONS BEING PROVIDED. SHOP DRAWINGS NOT INDICATING WHAT IS BEING PROVIDED WILL BE RETURNED.
- E. PROVIDE A LIST FOR ANY ITEM SUBMITTED IN THE SHOP DRAWINGS WHICH IS A SUBSTITUTION FOR SPECIFIED PRODUCTS. IF THE CONTRACTOR USES MATERIALS OTHER THAN THOSE SPECIFIED AND FAILS TO CALL ATTENTION TO THE DIFFERENCES BETWEEN THESE MATERIALS AND THOSE SPECIFIED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT, AT NO ADDITIONAL COST TO THE OWNER, OF ANY SUCH MATERIALS DETERMINED BY THE ENGINEER TO BE UNACCEPTABLE.
- F. THE APPROVAL STAMP/LETTER ON THE SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OR THE SUPPLIER OF RESPONSIBILITY FOR FULL CONTRACT COMPLIANCE.
- G. LIGHTING CONTROL SYSTEM SUBMITTAL - PROVIDE FLOOR PLAN DRAWINGS WHICH INDICATE LOCATIONS, ORIENTATION AND COVERAGE OF EACH SENSOR, GROUPS, ZONES, SCENES, AND OTHER SPECIFIC DESIGN SYMBOLS AND DESIGNATIONS AS REQUIRED TO DEFINE INSTALLATION, LOCATION AND CONFIGURATION OF ALL CONTROL DEVICES.
- H. FIRE ALARM SUBMITTAL - PROVIDE FLOOR PLAN DRAWINGS WHICH INDICATE THE LOCATION OF ALL COMPONENTS, CIRCUITS AND RACEWAYS. FLOOR PLANS SHOULD ALSO INDICATE CIRCUIT LAYOUTS, NUMBER, SIZE AND TYPE OF RACEWAY AND CONDUCTORS, CONDUIT FILL CALCULATIONS, SPARE CAPACITY CALCULATIONS, AND NOTIFICATION APPLIANCE CIRCUIT VOLTAGE DROP CALCULATIONS.

14. MAINTENANCE MANUAL AND RECORD DRAWINGS

- A. FURNISH THE OWNER WITH TWO (2) PRINTED COPIES AND TWO (2) DIGITAL DATA DVD'S OF A MANUAL COVERING THE OPERATION AND THE MAINTENANCE OF ALL EQUIPMENT PROVIDED UNDER THIS CONTRACT. THE MANUAL SHALL BE IN A 3-RING, LOOSE LEAF, HEAVY DUTY BINDER AND SUBMITTED TO THE ARCHITECT/ENGINEER FOR APPROVAL. EACH MANUAL SHALL CONTAIN THE FOLLOWING:
- COMPLETE MANUFACTURER CATALOG DATA, MANUFACTURER'S LITERATURE, WIRING DIAGRAMS, DETAIL OPERATING INSTRUCTIONS, AND A COMPLETE LISTING OF SUPPLIERS AND DISTRIBUTORS WHERE REPLACEMENT PARTS AND MAINTENANCE SERVICES ARE AVAILABLE FOR ALL EQUIPMENT.
 - PHYSICAL DESCRIPTION AND INSTALLATION INSTRUCTIONS AND USER'S MANUAL AND OPERATING INSTRUCTIONS.
 - REPLACEMENT PARTS LIST.
 - INSPECTION CERTIFICATES, SIGNED BY THE APPROPRIATE INSPECTOR, SHALL BE FURNISHED IN THE MAINTENANCE MANUAL.
 - MANUFACTURER'S WARRANTY.
 - SPECIFIED TEST REPORTS.
 - DATA DVD WITH INDEXED PDF DOCUMENTS OF ALL MANUAL CONTENT OF ITEMS ABOVE.

- B. MARKUP A SET OF CONSTRUCTION DOCUMENTS AS WORK PROGRESSES, TO SHOW ACTUAL CIRCUIT ROUTING AND DIMENSIONED INFORMATION, LOCATIONS, TYPES, ETC., OF EQUIPMENT LOCATION CHANGES, AND ANY OTHER CHANGES OR DEVIATIONS BETWEEN PROJECT WORK, AS BUILT, AND THE CONTRACT DOCUMENTS. MARKINGS SHALL BE NEAT, LEGIBLE, AND PERMANENT. UPON COMPLETION OF THE WORK, THE CONTRACTOR TRANSFER APPLICABLE MARKINGS TO SECOND SET OF DOCUMENTS AND PROVIDE BOTH SETS OF RECORD DOCUMENTS TO THE OWNER.

15. CLEAN-UP

- A. RID THE PREMISES OF SCRAP MATERIALS, TRASH AND DEBRIS BOTH DURING CONSTRUCTION AND AT COMPLETION OF PROJECT. LEAVE THE BUILDING AND SURROUNDING AREA IN A CLEAN AND ORDERLY CONDITION.

16. ACCEPTANCE DEMONSTRATION AND TRAINING

- A. PERFORM SYSTEM START-UP, TESTING AND PROGRAMMING PRIOR TO OWNER'S TRAINING. DO NOT SCHEDULE DEMONSTRATIONS UNTIL SYSTEMS ARE COMPLETELY READY TO TURN OVER TO THE OWNER AS FINAL.
- B. DEMONSTRATE TO THE OWNER THE OPERATION OF THE ELECTRICAL INSTALLATION, LOCATIONS, TYPES, ETC., OF ALL SPECIAL ITEMS INSTALLED BY HIM OR INSTALLED UNDER HIS SUPERVISION. THE TIMING OF THE DEMONSTRATION WILL BE DETERMINED BY THE OWNER UPON COMPLETION OF THE WORK. PROPERLY SET AUTOMATIC TIME SWITCHES TO PERFORM SWITCHING OPERATIONS IN ACCORDANCE WITH SCHEDULES PROVIDED BY THE OWNER'S REPRESENTATIVE, AND DEMONSTRATE (USING THE MANUFACTURER'S OPERATING INSTRUCTIONS) HOW TO OVERRIDE, TEST AND PROGRAM LIGHTING SYSTEMS.

17. REBATE PROGRAMS

- A. PROVIDE THE OWNER WITH ALL REBATE FORMS, FILLED OUT WITH APPLICABLE PROJECT INFORMATION, FOR UTILITY OR PRODUCT REBATE PROGRAMS TO WHICH THE OWNER IS ELIGIBLE.

18. GUARANTEES AND WARRANTIES

- A. FURNISH THE OWNER WITH A WRITTEN GUARANTEE FOR THE PERIOD OF ONE (1) YEAR AGAINST THE FAILURE OF ANY PART OF THE ELECTRICAL SYSTEM INSTALLED UNDER THE SPECIFICATIONS DUE TO FAULTY MATERIAL OR WORKMANSHIP, WITHOUT ANY CHARGES, TO THE OWNER. GUARANTEE PERIOD TO START UPON SUBSTANTIAL COMPLETION OR AS SPECIFIED UNDER GENERAL AND SPECIAL CONDITIONS.
- B. ASSURE THAT ANY EXTENDED WARRANTIES TO WHICH THE OWNER IS ELIGIBLE, ARE PASSED ON TO THE OWNER.

PART 2 - PRODUCTS

1. GENERAL - MATERIALS

- A. ALL MATERIALS MUST BE NEW AND BEAR UNDERWRITER'S LABORATORIES (UL) LABEL. MATERIALS THAT ARE NOT COVERED BY UL TESTING STANDARDS SHALL BE TESTED AND APPROVED BY AN INDEPENDENT TESTING LABORATORY OR A GOVERNMENTAL AGENCY. MATERIAL NOT IN ACCORDANCE WITH THESE SPECIFICATIONS MAY BE REJECTED EITHER BEFORE OR AFTER INSTALLATION.

2. GENERAL - INSTALLATION

- A. ELECTRICAL SYSTEM LAYOUTS INDICATED ON THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT. GOVERN EXACT ROUTING OF CABLE AND WIRING AND THE LOCATIONS OF OUTLETS BY STRUCTURE AND EQUIPMENT SERVED. TAKE ALL DIMENSIONS FROM ARCHITECTURAL DRAWINGS.
- B. CONSULT ALL OTHER DRAWINGS, VERIFY SCALES AND REPORT ANY DIMENSIONAL DISCREPANCIES OR OTHER CONFLICTS WITH OWNER BEFORE SUBMITTING BID.
- C. ALL HOME RUNS TO PANELBOARDS ARE INDICATED AS STARTING FROM THE OUTLET NEAREST THE PANEL AND CONTINUING IN THE GENERAL DIRECTION OF THAT PANEL. CONTINUE SUCH CIRCUITS TO THE PANEL AS THROUGH THE ROUTES WERE COMPLETELY INDICATED. TERMINATE HOMERUNS OF SIGNAL, ALARM AND COMMUNICATIONS SYSTEMS IN A SIMILAR MANNER.
- D. AVOID CUTTING AND BORING HOLES THROUGH STRUCTURE OR STRUCTURAL MEMBERS WHENEVER POSSIBLE. OBTAIN PRIOR APPROVAL OF OWNER AND CONFORM TO ALL STRUCTURAL REQUIREMENTS WHEN CUTTING OR BORING THE STRUCTURE IN NECESSARY AND PERMITTED.
- E. FURNISH AND INSTALL ALL NECESSARY HARDWARE, HANGERS, BLOCKING, BRACKETS, BRACING, RUNNERS, ETC., REQUIRED FOR EQUIPMENT SPECIFIED UNDER THIS SECTION.
- F. PROVIDE NECESSARY BACKING REQUIRED TO INSURE RIGID MOUNTING OF OUTLET BOXES.
3. CONDUIT AND CABLES
- A. ELECTRICAL CONDUCTORS SHALL BE BUILDING WIRE, EXCEPT WHERE OTHER TYPE OF WIRE OR CABLE IS SPECIFICALLY INDICATED.
- B. BUILDING WIRE CONDUCTORS SHALL BE SOFT-DRAWN ANNEALED COPPER, HAVING A CONDUCTIVITY OF NOT LESS THAN 98% PURE COPPER. CONDUCTOR SIZES ARE AMERICAN WIRE GAUGE (AWG) OR CIRCULAR MILS (KCMIL) AS FOLLOWS:
- #12 AWG SOLID COPPER.
 - #10 AWG AND LARGER SHALL BE STRANDED COPPER.
 - BRANCH CIRCUITS TO BE COLOR CODED, COLOR IMPREGNATED WIRE.

- C. INSULATION TYPE: XHHW, XHHW-2, THHW, OR THWN-2, COLOR CODED, COLOR IMPREGNATED WIRE.

- D. AC, CORE CLAD OR ROMEX CABLES ARE NOT ALLOWED. TYPE MC CABLES WITH GREEN GROUND CONDUCTOR ALLOWED ONLY WHERE NOTED IN SECTION 7 - RACEWAYS AND BOXES.
- E. LIGHT FIXTURES SHALL NOT BE USED AS RACEWAY UNLESS LISTED AND MARKED AS RACEWAY IN ACCORDANCE WITH N.E.C. ARTICLE 410.64.
- F. ELECTRICAL CONDUIT INSTALLATIONS MUST BE SUPPORTED PER THE N.E.C. AND NOT EXCEED 10 FEET BETWEEN SUPPORTS. ELECTRICAL CONDUIT INSTALLATIONS MUST BE A MINIMUM OF 3/4 INCH EMT.
- G. CORD DROPS AND PORTABLE APPLIANCE CONNECTIONS: TYPE SO, OIL PROOF, HARD SERVICE CORD WITH STAINLESS-STEEL, WIRE-MESH, STRAIN RELIEF DEVICE AT TERMINATIONS TO SUIT APPLICATION.

- H. PROVIDE #12 BRANCH CIRCUIT CONDUCTORS FOR ALL 120 VOLT, 20 AMP CIRCUITS LESS THAN 75 FEET, PROVIDE #10 BRANCH CIRCUIT CONDUCTORS FOR ALL 120 VOLT, 20 AMP CIRCUITS OVER 75 FEET.
- I. WHERE MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS ARE INSTALLED IN A SINGLE RACEWAY (E.G. COMBINING MULTI-CONDUCTOR CABLES WITH PLASTER RING) AND CAPACITY SHALL BE DE-RATED AS REQUIRED BY THE N.E.C.
- J. PROVIDE DEDICATED NEUTRAL CIRCUITS FOR ALL 120 VOLT BRANCH CIRCUITS.

4. LOW VOLTAGE CONDUCTORS AND CABLES

- A. RS-232 CABLE: PLENUM RATED, TYPE CMP, TWO PAIR, NO. 22 AWG, STRANDED COPPER; EACH PAIR 100 PERCENT SHIELDED, COPPER DRAIN WIRE.
- B. RS-485 CABLE: PLENUM RATED, TYPE CMP, TWO TWISTED PAIR, NO. 22 AWG, STRANDED COPPER, UNSHIELDED.
- C. COAXIAL CABLE FOR CATV, MATV AND DBS:
- RG-6: 16 AWG, SOLID, COPPER-COVERED STEEL CONDUCTOR; GAS-INJECTED, FOAM-PE INSULATION. DOUBLE SHIELDED WITH 100 PERCENT ALUMINUM-FOIL SHIELDED AND 60 PERCENT ALUMINUM BRAID. PLENUM RATED, TYPE CMP, USE WHERE THE COAXIAL CABLE WILL BE TAPPED OR SPLIT.

- D. CONTROL CIRCUITS
- LOW VOLTAGE CONTROL CABLE: TWISTED PAIRS #16 AWG WITH OVERALL SHIELD.
 - NM CABLES NOT ALLOWED.
 - CLASS 1 CONTROL CIRCUITS: STRANDED COPPER, TYPE THWN OR XHHN, IN RACEWAY OR CABLE WITH ARMOR JACKET.
 - CLASS 2 CONTROL CIRCUITS: STRANDED COPPER, TYPE THWN OR XHHN, IN RACEWAY, POWER-LIMITED CABLE, CONCEALED IN BUILDING FINISHES, CABLE WITH ARMOR JACKET OR POWER-LIMITED TRAY CABLE, IN CABLE TRAY AND ON HANGERS.
 - CLASS 3 REMOTE-CONTROL AND SIGNAL CIRCUITS: STRANDED COPPER, TYPE TW OR TYPE TF, COMPLYING WITH UL 83.

- F. ALL LOW VOLTAGE CABLES INSTALLED IN METAL BOX AND RACEWAY SYSTEM TO AN ACCESSIBLE CEILING.
- G. MINIMUM CONDUIT SIZE IS 3/4 INCH WITH LARGER SIZES NOTED ON PLAN. INSTALL PLASTIC BUSHING ON CONDUIT ENDS.
- H. GROUP AND BUNDLE LOW VOLTAGE CABLES AND PROVIDE SUPPORT INDEPENDENT OF CEILING SUPPORTS. UTILIZE D RINGS, J-HOOKS OR APPROVED NYLON STRAPS TO HOLD CABLES AND PROVIDE SUPPORTS INDEPENDENT OF THE CEILING SUPPORTS.
5. GROUNDING AND BONDING
- A. CIRCUITS, METAL RACEWAY SYSTEMS, AND ALL OTHER PERMANENTLY INSTALLED ELECTRICAL EQUIPMENT SHALL BE SOLIDLY GROUND IN ACCORDANCE WITH THE N.E.C. TO FORM A CONTINUOUS, PERMANENT AND EFFECTIVE GROUNDING SYSTEM.
- B. GROUNDING CONDUCTOR CONNECTIONS SHALL BE MADE WITH SOLDERLESS PRESSURE TIGHT FITTINGS, WHERE WELDED CONNECTIONS ARE PRACTICAL, CONNECTIONS MAY BE MADE BY THE USE OF SUITABLE WELDING PROCESS. ALL CONNECTIONS SHALL BE MADE IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- C. GROUND RODS TO BE 10' X 3/4" COPPER CLAD STEEL. GROUND RODS IN EXPOSED AREA LIGHTS TO BE 8' X 5/8" COPPER CLAD STEEL.
- D. THE BUILDING AND ELECTRICAL SYSTEMS SHALL BE GROUND AND BONDED IN ACCORDANCE WITH THE N.E.C.
- E. ELECTRICAL SERVICE AND SEPARATELY DERIVED ALTERNATING CURRENT SYSTEM SHALL BE GROUND IN ACCORDANCE WITH N.E.C., ARTICLE 250.
- F. ALL FEEDER AND BRANCH CIRCUITS SHALL HAVE A GREEN COPPER GROUND CONDUCTOR RUN WITH THE PHASE AND NEUTRAL CONDUCTORS.
- G. PROVIDE CODE REQUIRED #6 OR LARGER GROUND CONDUCTOR AND 12 INCH GROUND BUS AT TELECOMMUNICATIONS DEMARCATION LOCATION.

- H. GROUP AND BUNDLE LOW VOLTAGE CABLES AND PROVIDE SUPPORT INDEPENDENT OF CEILING SUPPORTS. UTILIZE D RINGS, J-HOOKS OR APPROVED NYLON STRAPS TO HOLD CABLES AND PROVIDE SUPPORTS INDEPENDENT OF THE CEILING SUPPORTS.
- M. CONDUIT CAST IN CONCRETE FLOORS IS NOT ALLOWED.
- N. FITTINGS FOR EMT SHALL BE STEEL COMPRESSION TYPE IN EXTERIOR OR DAMP LOCATIONS. FITTINGS FOR OTHER RACEWAYS SHALL BE STEEL SET-SCREW TYPE STYLE IN INTERIOR DRY CONDITIONS. DIE CAST FITTINGS ARE NOT ALLOWED.
- O. INSTALL NYLON PULL CORDS IN ALL EMPTY CONDUITS.
- P. PROVIDE EXPANSIONS FITTINGS CROSSING ALL EXPANSION JOINTS OR SPANNING BETWEEN ISOLATED STRUCTURES.
- Q. SURFACE RACEWAYS TO BE A 2 COMPARTMENT STYLE SIMILAR TO WIREMOLD G-4000 WHITE FINISH WITH DEVICE OUTLETS NOTED ON PLANS.
- R. GENERAL CONDUIT INSTALLATION:
- RUN ALL CONDUIT CONCEALED UNLESS NOTED OTHERWISE.
 - RUN ALL CONDUIT PARALLEL TO OR AT RIGHT ANGLES TO CENTER LINES OF COLUMNS AND BEAMS.
 - CONDUITS ABOVE CEILING SHALL NOT OBSTRUCT REMOVAL OF CEILING TILES, LIGHTING FIXTURES, AIR DIFFUSERS, ETC.
 - CONDUITS SHALL NOT CROSS ANY DUCT SHAFT OR AREA DESIGNATED AS FUTURE DUCT SHAFT HORIZONTALLY. CONDUIT RISER, WHEN ALLOWED IN DUCT SHAFT MUST BE COORDINATED WITH MECHANICAL WORK TO AVOID ANY CONFLICT.

5. GROUNDING AND BONDING

- A. CIRCUITS, METAL RACEWAY SYSTEMS, AND ALL OTHER PERMANENTLY INSTALLED ELECTRICAL EQUIPMENT SHALL BE SOLIDLY GROUND IN ACCORDANCE WITH THE N.E.C. TO FORM A CONTINUOUS, PERMANENT AND EFFECTIVE GROUNDING SYSTEM.
- B. GROUNDING CONDUCTOR CONNECTIONS SHALL BE MADE WITH SOLDERLESS PRESSURE TIGHT FITTINGS, WHERE WELDED CONNECTIONS ARE PRACTICAL, CONNECTIONS MAY BE MADE BY THE USE OF SUITABLE WELDING PROCESS. ALL CONNECTIONS SHALL BE MADE IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- C. GROUND RODS TO BE 10' X 3/4" COPPER CLAD STEEL. GROUND RODS IN EXPOSED AREA LIGHTS TO BE 8' X 5/8" COPPER CLAD STEEL.
- D. THE BUILDING AND ELECTRICAL SYSTEMS SHALL BE GROUND AND BONDED IN ACCORDANCE WITH THE N.E.C.
- E. ELECTRICAL SERVICE AND SEPARATELY DERIVED ALTERNATING CURRENT SYSTEM SHALL BE GROUND IN ACCORDANCE WITH N.E.C., ARTICLE 250.
- F. ALL FEEDER AND BRANCH CIRCUITS SHALL HAVE A GREEN COPPER GROUND CONDUCTOR RUN WITH THE PHASE AND NEUTRAL CONDUCTORS.
- G. PROVIDE CODE REQUIRED #6 OR LARGER GROUND CONDUCTOR AND 12 INCH GROUND BUS AT TELECOMMUNICATIONS DEMARCATION LOCATION.

6. CONDUIT HANGARS AND SUPPORT

- A. FOR INDIVIDUAL CONDUIT RUNS NOT DIRECTLY FASTENED TO THE STRUCTURE, USE THREADED ROD AND HANGERS MANUFACTURED BY CADDY, UNISTRUT OR POWERSTRUT.
- B. GALVANIZED STEEL SLOTTED CHANNEL SUPPORT SYSTEMS WITH FITTINGS AND SUPPORTS BY THE SAME MANUFACTURER.
- C. CONDUIT AND CABLE SUPPORT DEVICES TO BE STEEL WITH HANGERS AND SUPPORTS SUITABLE FOR RACEWAY OR CABLE TO BE SUPPORTED.
- D. STEEL SLOTTED SUPPORT SYSTEMS WITH MANUFACTURER'S GALVANIZED METAL COATING.
- E. FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES TO BE BOLTED STRUCTURAL STEEL OR STEEL SLOTTED SYSTEMS CALCULATED BY A REGISTERED STRUCTURAL ENGINEER.
- F. CONCRETE BASES INSTALLED BY THE ELECTRICAL CONTRACTOR. BASE TO BE NOMINALLY 3000 PSI CONCRETE WITH DIMENSIONS NOTED ON THE DRAWINGS. INSTALL FOR ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT.

- #12 AWG SOLID COPPER.
- #10 AWG AND LARGER SHALL BE STRANDED COPPER.
- BRANCH CIRCUITS TO BE COLOR CODED, COLOR IMPREGNATED WIRE.

7. RACEWAYS AND OUTLET BOXES

- A. PROVIDE RACEWAYS, FITTINGS, CONNECTORS AND ACCESSORIES FOR A COMPLETE RACEWAY SYSTEM. RACEWAYS INCLUDE:
- RIGID STEEL: HOT-DIPPED GALVANIZED.
 - ELECTRICAL METALLIC TUBING (EMT): ELECTRO-GALVANIZED.
 - WIREWAYS: ENAMEL FINISH, HINGED TYPE.
 - FLEXIBLE METALLIC CONDUIT: FOR FINAL CONNECTION IN DRY LOCATIONS LESS THE 6 FOOT LENGTHS.
 - LIQUID TIGHT FLEXIBLE METAL CONDUIT: FOR FINAL CONNECTION IN DAMP OR WET LOCATIONS LESS THAN 6 FOOT LENGTHS.
- B. PROVIDE FITTINGS AND ACCESSORIES APPROVED FOR THE PURPOSE EQUAL IN ALL RESPECTS TO THE CONDUIT OR RACEWAY. EMT CONNECTORS AND COUPLINGS SHALL BE SET STEEL SETSCREW TYPE INDOORS AND STEEL COMPRESSION TYPE IN DAMP OR WET LOCATIONS AND OUTDOORS.
- C. OUTLET BOXES: 4" SQUARE X 1 1/2" DEEP (OR LARGER) SIZES WITH SURFACES OR FLUSH-TYPE SCREW-MOUNTED TRIM COVERS, BOXES AND COVERS PAINTED WITH INHIBITOR-PRIMED PAINT INSIDE AND OUT.
- D. JUNCTION BOXES SHALL BE SAME AS OUTLET BOXES UP TO 42 CU. IN. USE CODE-GAUGE STEEL IN LARGER SIZES WITH SURFACES OR FLUSH-TYPE SCREW-MOUNTED TRIM COVERS, BOXES AND COVERS PAINTED WITH INHIBITOR-PRIMED PAINT INSIDE AND OUT.
- E. PULL BOXES SHALL BE SAME AS JUNCTION BOXES UNLESS INDICATED OTHERWISE ON THE DRAWINGS, WITH COVERS.
- F. TELEPHONE OUTLET BOXES SHALL NOT SMALLER THAN 4 1/16" SQUARE X 2 1/2" DEEP WITH SINGLE-GANG RING. OTHER CONFIGURATIONS AS SHOWN ON THE PLAN.
- G. ENCLOSE ALL ELECTRICAL POWER WIRING IN CONDUIT.
- H. CONDUIT SHALL BE RIGID STEEL OR EMT AS FOLLOWS:
- ABOVE GROUND: USE RIGID STEEL ONLY.
 - LOCATIONS SUBJECT TO MECHANICAL INJURY. RIGID STEEL ONLY.
 - DRY LOCATIONS AND NOT SUBJECT TO MECHANICAL INJURY: EMT.

- K. USE FLEXIBLE CONDUITS IN THE FOLLOWING APPLICATIONS:
- RECESSED LIGHTING FIXTURES.
 - MOTOR CONNECTIONS AND TRANSFORMERS.
 - AT BUILDING JOINTS.
 - AT WET LOCATIONS, FLEXIBLE CONDUIT SHALL BE LIQUID TIGHT TYPE.
- L. METAL CLAD CABLE WITH GREEN GROUND CONDUCTOR ALLOWED FOR THE FOLLOWING CONDUITS:
- ABOVE ACCESSIBLE CEILINGS FOR FINAL CONNECTIONS FROM JUNCTION BOXES TO LIGHT FIXTURES NOT EXCEEDING 6 FEET IN LENGTH.
 - FINAL CONNECTION NOT EXCEEDING 6 FEET IN LENGTH TO ROTATING OR VIBRATING EQUIPMENT.
 - ALLOWED IN NEW CASEWORK OR BUILT UP STRUCTURES WHERE FLEXIBILITY IS REQUIRED.
- M. CONDUIT CAST IN CONCRETE FLOORS IS NOT ALLOWED.
- N. FITTINGS FOR EMT SHALL BE STEEL COMPRESSION TYPE IN EXTERIOR OR DAMP LOCATIONS. FITTINGS FOR OTHER RACEWAYS SHALL BE STEEL SET-SCREW TYPE STYLE IN INTERIOR DRY CONDITIONS. DIE CAST FITTINGS ARE NOT ALLOWED.
- O. INSTALL NYLON PULL CORDS IN ALL EMPTY CONDUITS.
- P. PROVIDE EXPANSIONS FITTINGS CROSSING ALL EXPANSION JOINTS OR SPANNING BETWEEN ISOLATED STRUCTURES.
- Q. SURFACE RACEWAYS TO BE A 2 COMPARTMENT STYLE SIMILAR TO WIREMOLD G-4000 WHITE FINISH WITH DEVICE OUTLETS NOTED ON PLANS.
- R. GENERAL CONDUIT INSTALLATION:
- RUN ALL CONDUIT CONCEALED UNLESS NOTED OTHERWISE.
 - RUN ALL CONDUIT PARALLEL TO OR AT RIGHT ANGLES TO CENTER LINES OF COLUMNS AND BEAMS.
 - CONDUITS ABOVE CEILING SHALL NOT OBSTRUCT REMOVAL OF CEILING TILES, LIGHTING FIXTURES, AIR DIFFUSERS, ETC.
 - CONDUITS SHALL NOT CROSS ANY DUCT SHAFT OR AREA DESIGNATED AS FUTURE DUCT SHAFT HORIZONTALLY. CONDUIT RISER, WHEN ALLOWED IN DUCT SHAFT MUST BE COORDINATED WITH MECHANICAL WORK TO AVOID ANY CONFLICT.

- K. USE FLEXIBLE CONDUITS IN THE FOLLOWING APPLICATIONS:
- RECESSED LIGHTING FIXTURES.
 - MOTOR CONNECTIONS AND TRANSFORMERS.
 - AT BUILDING JOINTS.
 - AT WET LOCATIONS, FLEXIBLE CONDUIT SHALL BE LIQUID TIGHT TYPE.
- L. METAL CLAD CABLE WITH GREEN GROUND CONDUCTOR ALLOWED FOR THE FOLLOWING CONDUITS:
- ABOVE ACCESSIBLE CEILINGS FOR FINAL CONNECTIONS FROM JUNCTION BOXES TO LIGHT FIXTURES NOT EXCEEDING 6 FEET IN LENGTH.
 - FINAL CONNECTION NOT EXCEEDING 6 FEET IN LENGTH TO ROTATING OR VIBRATING EQUIPMENT.
 - ALLOWED IN NEW CASEWORK OR BUILT UP STRUCTURES WHERE FLEXIBILITY IS REQUIRED.
- M. CONDUIT CAST IN CONCRETE FLOORS IS NOT ALLOWED.
- N. FITTINGS FOR EMT SHALL BE STEEL COMPRESSION TYPE IN EXTERIOR OR DAMP LOCATIONS. FITTINGS FOR OTHER RACEWAYS SHALL BE STEEL SET-SCREW TYPE STYLE IN INTERIOR DRY CONDITIONS. DIE CAST FITTINGS ARE NOT ALLOWED.
- O. INSTALL NYLON PULL CORDS IN ALL EMPTY CONDUITS.
- P. PROVIDE EXPANSIONS FITTINGS CROSSING ALL EXPANSION JOINTS OR SPANNING BETWEEN ISOLATED STRUCTURES.
- Q. SURFACE RACEWAYS TO BE A 2 COMPARTMENT STYLE SIMILAR TO WIREMOLD G-4000 WHITE FINISH WITH DEVICE OUTLETS NOTED ON PLANS.
- R. GENERAL CONDUIT INSTALLATION:
- RUN ALL CONDUIT CONCEALED UNLESS NOTED OTHERWISE.
 - RUN ALL CONDUIT PARALLEL TO OR AT RIGHT ANGLES TO CENTER LINES OF COLUMNS AND BEAMS.
 - CONDUITS ABOVE CEILING SHALL NOT OBSTRUCT REMOVAL OF CEILING TILES, LIGHTING FIXTURES, AIR DIFFUSERS, ETC.
 - CONDUITS SHALL NOT CROSS ANY DUCT SHAFT OR AREA DESIGNATED AS FUTURE DUCT SHAFT HORIZONTALLY. CONDUIT RISER, WHEN ALLOWED IN DUCT SHAFT MUST BE COORDINATED WITH MECHANICAL WORK TO AVOID ANY CONFLICT.

- A. CIRCUITS, METAL RACEWAY SYSTEMS, AND ALL OTHER PERMANENTLY INSTALLED ELECTRICAL EQUIPMENT SHALL BE SOLIDLY GROUND IN ACCORDANCE WITH THE N.E.C. TO FORM A CONTINUOUS, PERMANENT AND EFFECTIVE GROUNDING SYSTEM.
- B. GROUNDING CONDUCTOR CONNECTIONS SHALL BE MADE WITH SOLDERLESS PRESSURE TIGHT FITTINGS, WHERE WELDED CONNECTIONS ARE PRACTICAL, CONNECTIONS MAY BE MADE BY THE USE OF SUITABLE WELDING PROCESS. ALL CONNECTIONS SHALL BE MADE IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- C. GROUND RODS TO BE 10' X 3/4" COPPER CLAD STEEL. GROUND RODS IN EXPOSED AREA LIGHTS TO BE 8' X 5/8" COPPER CLAD STEEL.
- D. THE BUILDING AND ELECTRICAL SYSTEMS SHALL BE GROUND AND BONDED IN ACCORDANCE WITH THE N.E.C.
- E. ELECTRICAL SERVICE AND SEPARATELY DERIVED ALTERNATING CURRENT SYSTEM SHALL BE GROUND IN ACCORDANCE WITH N.E.C., ARTICLE 250.
- F. ALL FEEDER AND BRANCH CIRCUITS SHALL HAVE A GREEN COPPER GROUND CONDUCTOR RUN WITH THE PHASE AND NEUTRAL CONDUCTORS.
- G. PROVIDE CODE REQUIRED #6 OR LARGER GROUND CONDUCTOR AND 12 INCH GROUND BUS AT TELECOMMUNICATIONS DEMARCATION LOCATION.

- H. GROUP AND BUNDLE LOW VOLTAGE CABLES AND PROVIDE SUPPORT INDEPENDENT OF CEILING SUPPORTS. UTILIZE D RINGS, J-HOOKS OR APPROVED NYLON STRAPS TO HOLD CABLES AND PROVIDE SUPPORTS INDEPENDENT OF THE CEILING SUPPORTS.
- M. CONDUIT CAST IN CONCRETE FLOORS IS NOT ALLOWED.
- N. FITTINGS FOR EMT SHALL BE STEEL COMPRESSION TYPE IN EXTERIOR OR DAMP LOCATIONS. FITTINGS FOR OTHER RACEWAYS SHALL BE STEEL SET-SCREW TYPE STYLE IN INTERIOR DRY CONDITIONS. DIE CAST FITTINGS ARE NOT ALLOWED.
- O. INSTALL NYLON PULL CORDS IN ALL EMPTY CONDUITS.
- P. PROVIDE EXPANSIONS FITTINGS CROSSING ALL EXPANSION JOINTS OR SPANNING BETWEEN ISOLATED STRUCTURES.
- Q. SURFACE RACEWAYS TO BE A 2 COMPARTMENT STYLE SIMILAR TO WIREMOLD G-4000 WHITE FINISH WITH DEVICE OUTLETS NOTED ON PLANS.
- R. GENERAL CONDUIT INSTALLATION:
- RUN ALL CONDUIT CONCEALED UNLESS NOTED OTHERWISE.
 - RUN ALL CONDUIT PARALLEL TO OR AT RIGHT ANGLES TO CENTER LINES OF COLUMNS AND BEAMS.
 - CONDUITS ABOVE CEILING SHALL NOT OBSTRUCT REMOVAL OF CEILING TILES, LIGHTING FIXTURES, AIR DIFFUSERS, ETC.
 - CONDUITS SHALL NOT CROSS ANY DUCT SHAFT OR AREA DESIGNATED AS FUTURE DUCT SHAFT HORIZONTALLY. CONDUIT RISER, WHEN ALLOWED IN DUCT SHAFT MUST BE COORDINATED WITH MECHANICAL WORK TO AVOID ANY CONFLICT.

- #12 AWG SOLID COPPER.
- #10 AWG AND LARGER SHALL BE STRANDED COPPER.
- BRANCH CIRCUITS TO BE COLOR CODED, COLOR IMPREGNATED WIRE.

T. CONDUIT PENETRATION:

- FIRE RATED FLOOR OR WALL: INSTALL CONDUIT IN CONDUIT SLEEVE OR FRAMED OPENING. SEAL PENETRATION WITH FIRE RETARDANT SEALANT SPECIFIED HEREIN.
- ROOF OR EXTERIOR WALL: AVOID PENETRATING ROOF OR EXTERIOR WALL WHERE POSSIBLE. WHERE PENETRATIONS ARE NECESSARY, BUILDING WEATHERPROOF INTEGRITY MUST BE PRESERVED.
- SOUND INSULATED OR AIR PLENUM WALL: INSTALL CONDUIT IN CONDUIT SLEEVE AND SEAL PENETRATION AS DETAILED ON THE DRAWINGS.
- NON-FIRE RATED DRY WALL: CONDUIT SLEEVES ARE NOT REQUIRED. PENETRATIONS MUST BE SEALED WITH PLASTER PRIOR TO PAINTING.
- PENETRATIONS MADE AFTER WALL FINISH IS APPLIED MUST BE SMALL AS POSSIBLE AND PROVIDED ESCUTCHEONS, ONE ON EACH SIDE OF WALL.
- SUSPENDED CEILING: CUT HOLE AS SMALL AS POSSIBLE TO PERMIT CONDUIT PENETRATION. PROVIDE ESCUTCHEON FOR EACH CONDUIT BELOW CEILING.

U. OUTLET BOXES:

- PROVIDE OUTLET BOXES AND PULL BOXES AS REQUIRED TO ACCOMMODATE LIGHTING AND BREAKERS AND/OR SWITCHES ARE LISTED IN THE SCHEDULES AS 'SPACE ONLY', THIS SHALL INCLUDE EXTENDED BUS AND MOUNTING PROVISIONS.
- OUTLET BOXES MUST NOT BE INSTALLED BACK-TO-BACK.
- OUTLET BOXES USED FOR WALL BOX DIMMERS MAY NOT BE GANGED. OUTLET BOXES USED FOR WALL BOX DIMMERS MUST BE DE-RATED WHEN GROUPED UNDER ONE COVER.
- PROVIDE CAST STEEL FLOOR BOXES TO ACCOMMODATE POWER AND DATA CONNECTIONS TO FREE STANDING EQUIPMENT AND FURNITURE PARTITIONS.
- ALL OUTLET BOXES SHALL BE TWO-GANG OR 4" SQUARE X 2" DEEP MINIMUM WITH PLASTER RING SIZED AS REQUIRED.
- EXTERIOR BOXES FOR BRANCH CIRCUITS TO BE CAST ALUMINUM WITH THREADED HUBS.

8. UNDERGROUND RACEWAYS

- A. CONDUITS BELOW GRADE TO BE SCHEDULE 40 PVC ELECTRICAL CONDUIT WITH FITTINGS AND ACCESSORIES BY THE SAME MANUFACTURER.
- B. UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC BURIED IN EARTH. TRANSITIONS THROUGH CONCRETE SLABS, PRE-MANUFACTURED BENDS OR ELBOWS TO BE RIGID STEEL CONDUIT WITH CORROSION PROTECTION.
- C. EXTERIOR BRANCH CIRCUIT OR FEEDER HANDHOLES TO BE CAST FIBERGLASS RESIN WITH OPEN BOTTOM AND HEAVY DUTY BOLTED COVER.
- D. INSTALL UNDERGROUND TRACEABLE, PLASTIC WARNING TAPE 12 INCHES ABOVE FEEDER CONDUIT OR GROUPS OF BRANCH CIRCUIT CONDUITS.
9. IDENTIFICATION AND LABELING
- A. LABEL ALL CONTROL DEVICES AND DEVICE ENCLOSURES WITH INDIVIDUAL NAME PLATES OR LEGEND PLATES.
- B. INDIVIDUAL NAME OR LEGEND PLATES TO BE BLACK LAMINATED PLASTIC PLATES WITH WHITE ETCHED LETTERS. PAPER, FOIL OR TAPE MARKERS ATTACHED WITH ADHESIVES SHALL NOT BE USED.
- C. ENGRAVED, LAMINATED ACRYLIC OR MELAMINE LABEL, PUNCHED OR DRILLED FOR SCREW MOUNT

12. ENCLOSED SWITCHES, CIRCUIT BREAKERS AND CONTROLLERS

A. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, AC, SINGLE THROW SAFETY SWITCHES, BUILD IN ACCORDANCE WITH NEMA REQUIREMENTS WITH A VOIDABLE FULL COVER INTERLOCK AND QUICK-MAKE, QUICK-BREAK MECHANISM. EACH SWITCH SHALL BE FUSIBLE UNLESS NON-FUSIBLE (NF) IS SPECIFICALLY INDICATED. SWITCHES SHALL BE IN NEMA 1 ENCLOSURES IN DRY LOCATIONS AND NEMA 3R WHERE EXPOSED TO THE WEATHER.

B. PROVIDE AUXILIARY CONTACTS TO SHUT DOWN VFD PRIOR TO DISCONNECTING POWER. PROVIDE REJECTION FUSES WHERE NOTED.

C. FULL VOLTAGE NON REVERSING STARTERS - SIZE 0 MINIMUM.

D. ALL STARTERS TO BE COMBINATION STARTERS AND MOLDED CASE CIRCUIT WITH COVER MOUNTED HOA AND PILOT LIGHTS.

E. FRACTIONAL HP STARTERS QUICK MAKE QUICK BREAK SINGLE POLE SWITCHES FOR INTEGRALLY PROTECTED MOTORS.

F. MULTI POLE HORSE POWER RATED SWITCHES OR ENCLOSED CIRCUIT BREAKERS IN FLUSH NEMA 1 ENCLOSURES WHERE MOTORS ARE LOCATED IN FINISHED SPACES.

G. ALL DEVICES NEMA RATED FOR THE ENVIRONMENT THEY ARE LOCATED.

H. THE CONTRACTOR SHALL OBTAIN EXACT INFORMATION PERTAINING TO LOCATION, ELECTRICAL CHARACTERISTICS, AND WIRING FOR EQUIPMENT FURNISHED BY OTHERS FROM THE CONTRACTOR FURNISHING THE EQUIPMENT. THIS INFORMATION SHALL BE VERIFIED BY EXAMINING NAMEPLATES AND MANUFACTURER'S WIRING DIAGRAMS. ANY DISCREPANCY BETWEEN THE EQUIPMENT AND THE PROVISIONS MADE BY THESE SPECIFICATIONS SHALL BE REPORTED. EQUIPMENT DAMAGED AS A RESULT OF THE CONTRACTOR'S FAILURE TO OBSERVE MANUFACTURER'S REQUIREMENTS SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR. THE THERMAL PROTECTION ELEMENTS IN MANUAL STARTERS SHALL BE RECHECKED WITH NAME PLATE DATA AT THE SITE BEFORE OPERATION OF THE EQUIPMENT. WHERE NECESSARY, THE THERMAL PROTECTION ELEMENTS SHALL BE CHANGED TO PROPERLY PROTECT THE EQUIPMENT.

I. FURNISH AND INSTALL MANUAL THERMAL PROTECTION FOR ALL MOTORS NOT INTEGRALLY EQUIPPED WITH THERMAL PROTECTION.

J. THE CONTRACTOR SHALL FURNISH AND INSTALL FINAL ELECTRICAL CONNECTIONS TO ALL MOTORS AND ELECTRICALLY POWERED EQUIPMENT INDICATED ON THE PLANS OR EQUIPMENT SCHEDULE.

K. FURNISH AND INSTALL A DISCONNECT SWITCH IMMEDIATELY AHEAD OF AND ADJACENT TO EACH MAGNETIC MOTOR STARTER OR APPLIANCE UNLESS THE MOTOR APPLIANCE IS LOCATED ADJACENT AND WITHIN SIGHT OF THE SERVING PANELBOARD, CIRCUIT BREAKER OR SWITCH. VERIFY ALL EQUIPMENT NAMEPLATE CURRENT RATINGS PRIOR TO INSTALLATION.

L. PROVIDE A FUSED DISCONNECT SWITCH ON ANY TRANSFORMER SECONDARY WHERE SECONDARY CONDUCTORS EXCEED 25 FEET FROM TERMINAL TO SECONDARY OVERCURRENT DEVICE.

M. THE CONTRACTOR SHALL FURNISH AND INSTALL DISCONNECT SWITCHES HAVING THE NUMBER OF POLES AND AMPERE RATINGS AS SHOWN ON THE DRAWINGS AND AS SPECIFIED IN EQUIPMENT SCHEDULES.

13. SURGE PROTECTION DEVICES (SPDS)

A. SERVICE ENTRANCE: MODULAR DESIGN WITH PEAK SINGLE IMPULSE SURGE CURRENT RATING OF 240KA PER MODE/480KA. TYPE 2 SURGE SUPPRESSION (SPD) AT THE MAIN ELECTRICAL SERVICE SHOWN ON THE DRAWINGS.

B. PANELBOARD SUPPRESSORS: NON-MODULAR DESIGN WITH PEAK SINGLE IMPULSE SURGE CURRENT RATING OF 120KA PER MODE/240KA. TYPE 2 SURGE SUPPRESSION (SPD) AT PANELBOARDS OR SEPARATELY DERIVED SYSTEMS SHOWN ON THE DRAWINGS.

C. TYPE 3 SURGE SUPPRESSION (SPD) AT POINT OF USE: DUPLEX RECEPTACLE INTEGRAL TO WIRING DEVICE.

D. INSTALL IN ACCORDANCE WITH N.E.C. ARTICLE 285.

E. INSTALL AN OCPD OR DISCONNECT AS REQUIRED TO COMPLY WITH UL LISTING OF THE SPD.

F. INSTALL SPDS WITH CONDUCTORS BETWEEN SUPPRESSORS AND POINTS OF ATTACHMENT AS SHORT AND STRAIGHT AS POSSIBLE, AND ADJUST CIRCUIT BREAKER POSITIONS TO ACHIEVE SHORTEST AND STRAIGHTEST LEADS. DO NOT SPLICE AND EXTEND SPD LEADS UNLESS SPECIFICALLY PERMITTED BY MANUFACTURER. DO NOT EXCEED MANUFACTURER'S RECOMMENDED LENGTH. DO NOT BOND NEUTRAL AND GROUND.

G. USE CRIMPED CONNECTORS AND SPLICES ONLY. WIRE NUTS ARE UNACCEPTABLE.

17. WIRING DEVICES

A. WIRING DEVICES SHALL BE INSTALLED IN METAL DEVICE BOXES.

B. SWITCHES AND RECEPTACLES SHALL BE HUBBELL, BRYANT, LEVITON, PASS & SEYMOUR, OR APPROVED EQUAL SUBJECT TO APPROVAL BY THE ARCHITECT, COLOR SHALL BE WHITE FOR NORMAL POWER AND RED FOR EMERGENCY POWER. SPECIAL COLOR DEVICE OUTLETS AND MATCHING COVERPLATE AS NOTED ON THE PLANS.

C. SWITCHES SHALL BE HEAVY DUTY GRADE, AC QUIET TYPE, 20-AMP, 120/277 VOLT, WITH SILVER ALLOY CONTACTS, EQUAL TO HUBBELL #5362.

D. GENERAL PURPOSE DUPLEX RECEPTACLES SHALL BE HEAVY DUTY GRADE NEMA 5-20R, 125 VOLT, 3 WIRE GROUNDING TYPE DEVICES WITH BRASS ONE PIECE GROUND STRAP; THIRD POLE GROUNDING TO THE OUTLET BOX. HOSPITAL GRADE DUPLEX RECEPTACLES IN PATIENT CARE AREAS DEFINED PER N.E.C. ARTICLE 517.

E. GROUND FAULT CIRCUIT INTERRUPT (GFI) DUPLEX RECEPTACLES SHALL BE HEAVY DUTY GRADE, 20 AMP DEVICES WIRED SO THAT EACH UNIT IS SELF-CONTAINED. GFI RECEPTACLE SHALL NOT BE CONNECTED TO FEED THROUGH UNLESS SPECIFICALLY NOTED ON THE DRAWINGS.

F. RECEPTACLES IN DAMP OR WET LOCATIONS TO HAVE N.E.C. WEATHER RESISTANT RATING.

G. TAMPER RESISTANT RATING IN AREAS REQUIRED BY N.E.C.

H. AFCI RECEPTACLES WHERE REQUIRED BY N.E.C.

I. ISOLATED GROUND RECEPTACLES TO BE ORANGE IN COLOR.

J. SURGE PROTECTION DEVICE (SPD) TYPE 3 DUPLEX RECEPTACLE WITH INDICATION LIGHT AND AUDIBLE ALARM.

K. COVER PLATES TO BE NYLON, SPECIAL COLOR PLASTIC COVER PLATES TO MATCH STYLE LINE TYPE RECEPTACLES AS NOTED ON THE PLANS WITH MATCHING COLORS.

L. WEATHERPROOF DUPLEX RECEPTACLES SHALL BE GFCI PROTECTED WITH 'WHILE-IN-USE' WEATHERPROOF COVERPLATES.

M. INSTALL HOSPITAL GRADE RECEPTACLES IN PATIENT CARE AREAS. INSTALL WITH THE GROUND PIN NEUTRAL BLADE AT THE TOP.

N. THE CONTRACTOR SHALL FURNISH AND INSTALL WALL PLATES FOR ALL FLUSH MOUNTED WIRING DEVICES AND ALL FLUSH MOUNTED SPECIAL SYSTEM OUTLETS. SECTIONAL WALL PLATES SHALL NOT BE USED. BLANK PLATES SHALL BE INSTALLED OVER ALL OUTLETS PROVIDE FOR FUTURE USE. WALL PLATES SHALL BE SECURED WITH MATCHING SCREWS. ENGRAVED WALL PLATES SHALL HAVE BACK FILL.

O. THE CONTRACTOR SHALL FURNISH AND INSTALL OUTLETS FOR AND MAKE FINAL ELECTRICAL CONNECTIONS TO ALL ELECTRICALLY POWERED EQUIPMENT INDICATED ON THE PLANS OR EQUIPMENT SCHEDULES.

19. LIGHTING

A. PROVIDE PRODUCTS THAT COMPLY WITH REQUIREMENTS OF NFPA 70 AND NFPA 101.

B. PROVIDE PRODUCTS LISTED AND CLASSIFIED BY UNDERWRITERS LABORATORIES INC. AS SUITABLE FOR THE PURPOSE SPECIFIED AND INDICATED.

C. UNLESS SPECIFICALLY INDICATED TO BE EXCLUDED, PROVIDE ALL REQUIRED CONDUIT, BOXES, WIRING, CONNECTORS, HARDWARE, SUPPORTS, TRIMS, ACCESSORIES, ETC., AS NECESSARY FOR A COMPLETE OPERATING SYSTEM.

D. PROVIDE PRODUCTS SUITABLE TO WITHSTAND NORMAL HANDLING, INSTALLATION, AND SERVICE WITHOUT ANY DAMAGE, DISTORTION, CORROSION, FADING, DISCOLORING, ETC.

E. PHOTOMETRIC MEASUREMENTS INDICATED ON THE PRODUCT DATA SHALL BE PROVIDED IN ACCORDANCE WITH IESNA LM-79-08 APPROVED METHOD: ELECTRICAL AND PHOTOMETRIC MEASUREMENTS OF SOLID-STATE LIGHTING PROJECTS AND SHALL MEET THE REQUIREMENTS SPECIFIED AND/OR INDICATED ON THE DRAWINGS.

F. LUMEN DATA INDICATED ON THE PRODUCT DATA SHEETS SHALL BE GENERATED IN ACCORDANCE WITH IESNA LM-80-08 APPROVED METHOD FOR MEASURING LUMEN MAINTENANCE OF LED LIGHT SOURCES AND SHALL MEET THE REQUIREMENTS SPECIFIED AND/OR INDICATED ON THE DRAWINGS.

G. LUMEN DEPRECIATION SHALL BE IDENTIFIED IN TERMS OF IES TM-21-11. UNLESS NOTED OTHERWISE, LUMINAIRES SHALL PROVIDE A MINIMUM L70 RATING AT THE DRIVE CURRENT PROVIDED PRODUCT SHALL INDICATE SUCH.

H. LED COLOR TEMPERATURES: CRI>85, 2700K AS NOTED +/- 145K.

I. LED COLOR TEMPERATURES: CRI>85, 4000K AS NOTED +/- 275K.

J. LUMEN OUTPUT SPECIFIED SHALL BE LUMENS DELIVERED FROM THE LUMINAIRE AT THE COLOR TEMPERATURE SPECIFIED. LED LUMINAIRES SHALL DELIVER A MINIMUM OF 60 LUMENS PER WATT. LED'S SHALL BE 'BIN NO.1' QUALITY.

K. THE LED LIGHT SOURCE SHALL BE FULLY DIMMABLE WITH USE OF COMPATIBLE DIMMER SWITCH DESIGNATED FOR LOW VOLTAGE LOADS.

L. DRIVERS SHALL BE SOLID STATE AND ACCEPT 120 THROUGH 277 VAC AT 60 HZ INPUT.

M. LUMINAIRES SHALL HAVE INTEGRAL THERMAL PROTECTION.

N. LED ARRAYS SHALL BE SEALED, HIGH PERFORMANCE, LONG LIFE TYPE, MINIMUM 70% RATED OUTPUT AT 50,000 HOURS.

O. INDOOR LUMINAIRES SHALL HAVE A MINIMUM CRI OF 85.

P. LUMINAIRES SHALL NOT DRAW POWER IN THE OFF STATE. LUMINAIRES WITH INTEGRAL OCCUPANCY, MOTION, PHOTO-CONTROLS, OR INDIVIDUALLY ADDRESSABLE LUMINAIRES WITH EXTERNAL CONTROL AND INTELLIGENCE ARE EXEMPT FROM THIS REQUIREMENT. THE POWER DRAW FOR SUCH LUMINAIRES SHALL NOT EXCEED 0.5 WATTS WHEN IN THE OFF STATE.

Q. LED PACKAGE(S)/MODULE(S)/ARRAY(S) USED IN QUALIFIED LUMINAIRES SHALL DELIVER A MINIMUM 70% OF INITIAL LUMENS, FOR A MINIMUM OF 50,000 HOURS.

R. LUMINAIRES SHALL BE FULLY ACCESSIBLE FROM BELOW CEILING PLANE FOR CHANGING DRIVERS, POWER SUPPLIES AND ARRAYS.

S. SET LEVEL, PLUMB, AND SQUARE WITH CEILINGS AND WALL COMPLYING WITH NFPA 70 FOR FIXTURE SUPPORTS.

T. SUSPENDED LIGHTING FIXTURE SUPPORT

• PENDANTS AND RODS - WHERE LONGER THAN 48 INCHES, BRACE TO LIMIT SWINGING.

• STEM-MOUNTED, SINGLE-UNIT FIXTURES - SUSPENDED WITH TWIN-STEM HANGERS.

• CONTINUOUS ROWS - USE TUBING OR STEM FOR WIRING AT ONE POINT AND TUBING OR ROD FOR SUSPENSION FOR EACH UNIT LENGTH OF FIXTURE CHASSIS, INCLUDE ONE AT EACH END. ALTERNATE - FLEXIBLE CORD CONNECTION FOR SINGLE CIRCUIT.

U. ADJUST AND AIM LIGHTING FIXTURES AT INTENDED SURFACES. PROVIDE ADDITIONAL ADJUSTMENTS FOR OWNER PRIOR TO FINAL TURNOVER OR AT SUBSTANTIAL COMPLETION.

V. LIGHTING FIXTURES MOUNTED IN CONTINUOUS ROWS MAY BE NED FED WITH ONLY THE CIRCUITS FEEDING THE ROW (PASSING THROUGH OF OTHER CIRCUITS NOT ALLOWED) WITH EACH ROW FED FROM INDIVIDUAL JUNCTION BOXES AT THE END FEED POINT.

W. LIGHTING FIXTURES MUST HAVE INDIVIDUAL FEEDS TO EACH FIXTURE. 'DAISY-CHAINING' OF FIXTURES NOT ALLOWED. THE LIGHTING FIXTURE WHIPS MUST BE 6 FEET LONG OR LESS.

20. STRUCTURED CABLING

A. INSTALLER QUALIFICATIONS: COMPANY MUST HAVE 3 YEARS EXPERIENCE IN THE INSTALLATION AND TESTING OF THE TYPE OF SYSTEM SPECIFIED.

B. COMPANY MUST EMPLOY A BICSI REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER.

C. DATA ROOM: PROVIDE 3/4 INCH GRAY PAINTED, FIRE RATED, PLYWOOD ON ALL WALLS FOR EQUIPMENT MOUNTING.

D. CABLING AND EQUIPMENT: EQUAL TO PANDUIT AND GENERAL CABLE CATEGORY 6, PLENUM RATED CABLE. PROVIDE A COMPLETE PERMANENT SYSTEM OF CABLING AND PATHWAYS FOR VOICE AND DATA COMMUNICATIONS, INCLUDING CABLES, CONDUITS AND RACEWAYS, PULL WIRES, SUPPORT STRUCTURES, AND OUTLETS. PROVIDE TERMINATION AT CONTRACTOR PROVIDED PATCH PANELS.

E. ENCLOSURES: PROVIDE OPEN FRAME DATA RACK EQUAL TO MIDDLE ATLANTIC EWR-12-17. PROVIDE UL LISTED HORIZONTAL POWER STRIP, SINGLE INPUT, 120 VOLT SINGLE PHASE, 20 AMP RATED, (8) NEMA 5-20R OUTLETS AND AN INTEGRAL CIRCUIT BREAKER AND 10 FOOT CORD WITH NEMA 5-20P PLUG EQUAL TO CHATSWORTH 12816 SERIES. PROVIDE HORIZONTAL WIRE MANAGEMENT EQUAL TO HOFFMAN DCHS2.

F. PATCH PANELS: PROVIDE 24 PORT FLUSH MOUNT MODULAR PATCH PANEL EQUAL TO PANDUIT CFAPPB1.

G. JACKS: CATEGORY 6 JACK MODULES EQUAL TO PANDUIT NK688MIW, COMPONENT COMPLIANT, 8 POSITION, 8 WIRE, KEYSTONE PUNCHDOWN JACK MODULE. PROVIDE BLUE COLORED JACKS FOR DATA, OFF WHITE FOR TELEPHONE.

H. FACEPLATES: MODULAR FACEPLATES SHALL BE PANDUIT NETKEY SERIES. TWO AND FOUR GANG FACEPLATES AS REQUIRED. PANDUIT PART NUMBERS NK2FN, NK4FN. PLASTIC PLATES WITH LABELS. SEE DRAWINGS FOR QUANTITY OF CONNECTOR MODULES AND MODULAR FACEPLATES. PROVIDE COLOR COORDINATED SCREW COVER AND CLEAR STATION AND PORT LABEL COVERS.

I. CAPACITY: PROVIDE PORTS SUFFICIENT FOR CABLES TO BE TERMINATED PLUS 25 PERCENT SPARE.

J. GROUNDING BAR: CHATSWORTH 40172 SERIES IN RACK. PROVIDE GROUNDING TO NEAREST ELECTRICAL PANEL.

K. LABELS: COMPLY WITH TIA/EIA-606 USING ENCODED IDENTIFIERS; LABEL EACH JACK ON THE FACE PLATE WITH A UNIQUE NUMERICAL IDENTIFIER. ALL HORIZONTAL CABLING SHALL BE LABELED WITH PERMANENT TAG INDICATION FROM WHICH JACK THE CABLE ORIGINATED.

L. TESTING:

• BACKBONE CABLE - PERFORM TESTS FOR DC LOOP RESISTANCE, SHORTS, OPENS, INTERMITTENT FAULTS AND POLARITY BETWEEN CONNECTORS AND BETWEEN CONDUCTORS AND SHIELD.

• CATEGORY 6 LINKS - PERFORM TESTS FOR WIRE MAP, LENGTH, ATTENUATION, NEXT, AND PROPAGATION DELAY.

21. J-HOOKS

A. MANUFACTURER: PANDUIT J-PRO SERIES OR EQUAL

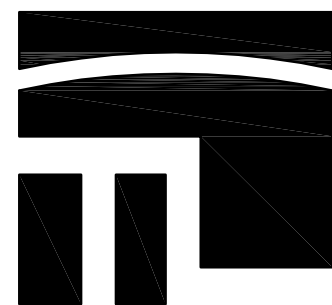
B. PANDUIT JP2 SERIES J-HOOK SHALL BE USED FOR UP TO 31 CATEGORY 6 4-PAIR COMMUNICATIONS CABLES.

C. PANDUIT JP4 SERIES J-HOOK SHALL BE USED FOR UP TO 127 CATEGORY 4-PAIR COMMUNICATIONS CABLES.

D. MANUFACTURER'S GUIDELINES SHALL BE USED FOR SUPPORTING/MOUNTING THE J-HOOKS. PROVIDE WALL MOUNT, CEILING SUPPORT, THREADED ROD CLIP, BEAM CLAMP, ETC. MOUNTING OPTION AS APPROPRIATE FOR THE INSTALLATION.

E. CABLE SHALL BE SUPPORTED AT NO GREATER THAN FOUR FOOT INTERVALS FOR CATEGORY 6 CABLE. PROVIDE A CABLE TIE AT EACH J-HOOK TO RETAIN AND MANAGE THE CABLE BUNDLE.

F. J-HOOKS TO BE UL LISTED AS SUITABLE FOR AIR HANDLING PLENUM SPACES.



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