

THRUST BLOCK SIZING FOR 250 PSI PRESSURE

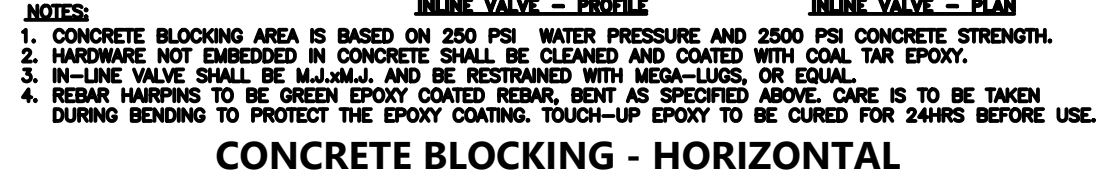
MIN. BEARING AREA AGAINST UNDISTURBED SOIL IN SQUARE FEET.

PIPE SIZE	①	②	③	④	⑤
4"	3	2	2	1	1
6"	6	4	3	2	1
8"	10	7	5	3	2
10"	15	11	8	4	2
12"	22	16	12	6	3
14"	29	21	16	8	4
16"	38	27	21	11	6
18"	48	34	26	13	7
20"	60	42	32	17	8
24"	88	61	47	24	12

SAFE BEARING LOADS IN LBS./SQ. FT.

THE SAFE BEARING LOADS GIVEN IN THE FOLLOWING TABLE ARE FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET.

SOIL	SAFE SOIL BEARING LOAD
HAZK, PEAT, ETC.	SEE GENERAL NOTE #7
SOFT CLAY	1,000
SAND	2,000
SAND AND GRAVEL	3,000
GRAVEL	4,000
CEMENTED W/CLAY	10,000

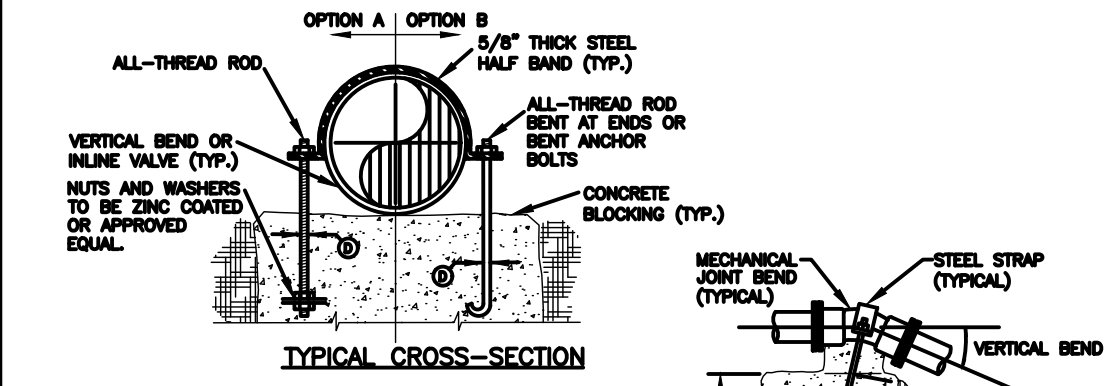


CONCRETE BLOCKING - HORIZONTAL

NOT TO SCALE

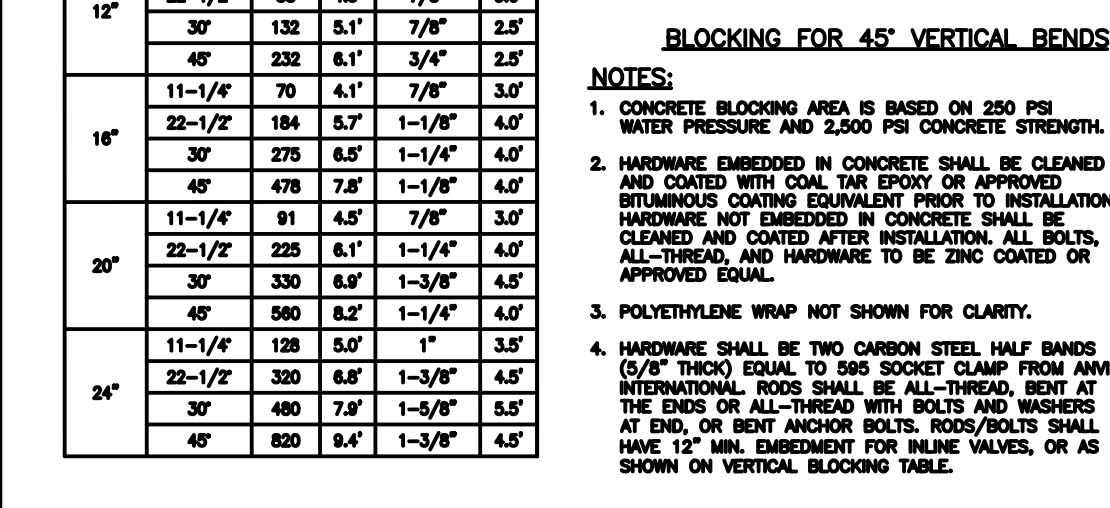
DETAIL APPROVALS: NORTHSHORE UTILITY DISTRICT
 EDITOR: TMC
 MANAGER: EM

①
 LAST UPDATED: MARCH 2024



VERTICAL BLOCKING

PIPE SIZE	VERT. BEND	CUFT.	①	②	③
4"	11-1/4"	8	2.0"	3/4"	1.5"
	22-1/2"	11	2.2"	3/4"	2.0"
	30"	17	2.6"	3/4"	2.0"
	45"	30	3.1"	3/4"	2.0"
6"	11-1/4"	11	2.2"	3/4"	2.0"
	22-1/2"	25	2.9"	3/4"	2.0"
	30"	41	3.0"	3/4"	2.0"
	45"	68	4.1"	3/4"	2.0"
8"	11-1/4"	16	2.0"	3/4"	2.0"
	22-1/2"	47	3.0"	3/4"	2.5"
	30"	70	4.1"	3/4"	2.5"
	45"	123	5.0"	3/4"	2.0"
10"	11-1/4"	32	3.2"	3/4"	2.0"
	22-1/2"	88	4.0"	7/8"	3.0"
	30"	132	5.1"	7/8"	2.5"
	45"	232	6.1"	7/8"	3.0"
12"	11-1/4"	70	4.1"	7/8"	3.0"
	22-1/2"	184	5.7"	1-1/8"	4.0"
	30"	275	6.5"	1-1/8"	4.0"
	45"	476	7.8"	1-1/8"	4.0"
14"	11-1/4"	91	4.5"	7/8"	3.0"
	22-1/2"	225	6.1"	1-1/4"	4.0"
	30"	330	6.9"	1-3/8"	4.5"
	45"	560	8.2"	1-1/2"	4.0"
16"	11-1/4"	128	5.0"	1"	3.5"
	22-1/2"	320	6.8"	1-3/8"	4.5"
	30"	480	7.9"	1-5/8"	5.5"
	45"	820	9.4"	1-3/4"	4.5"

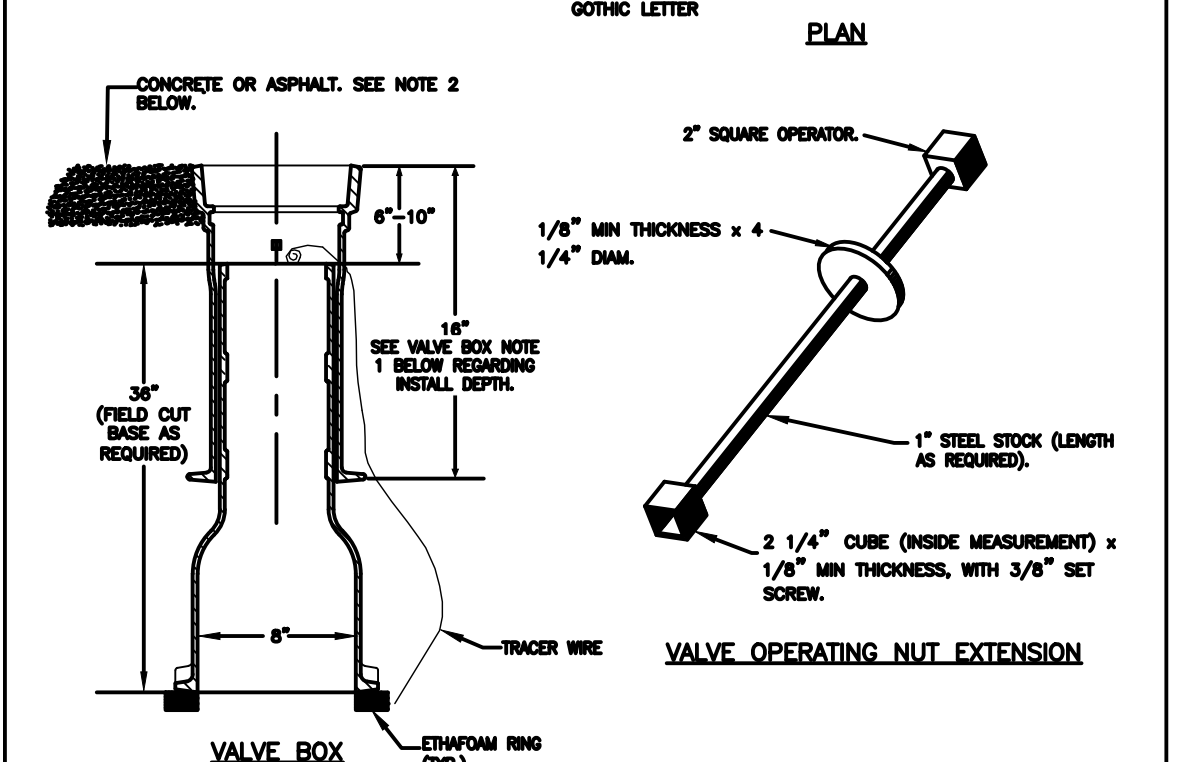
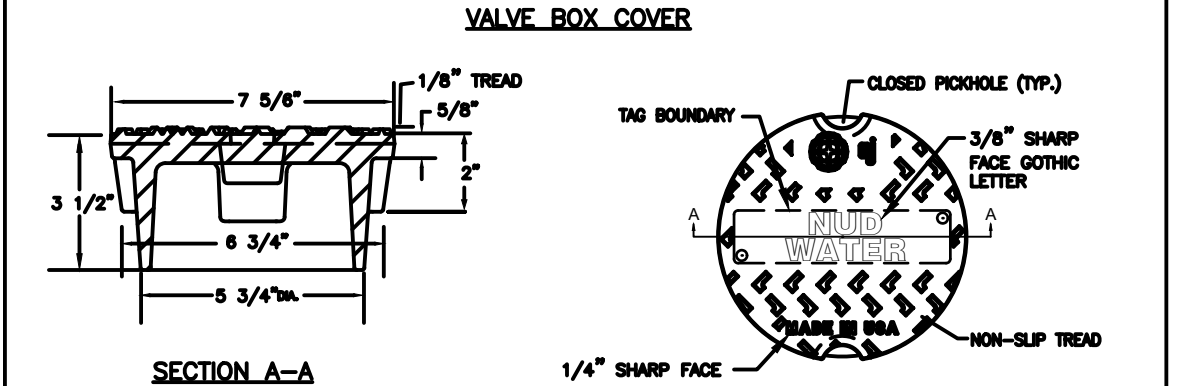


CONCRETE BLOCKING - VERTICAL

NOT TO SCALE

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 MANAGER: EM

②
 LAST UPDATED: MARCH 2024

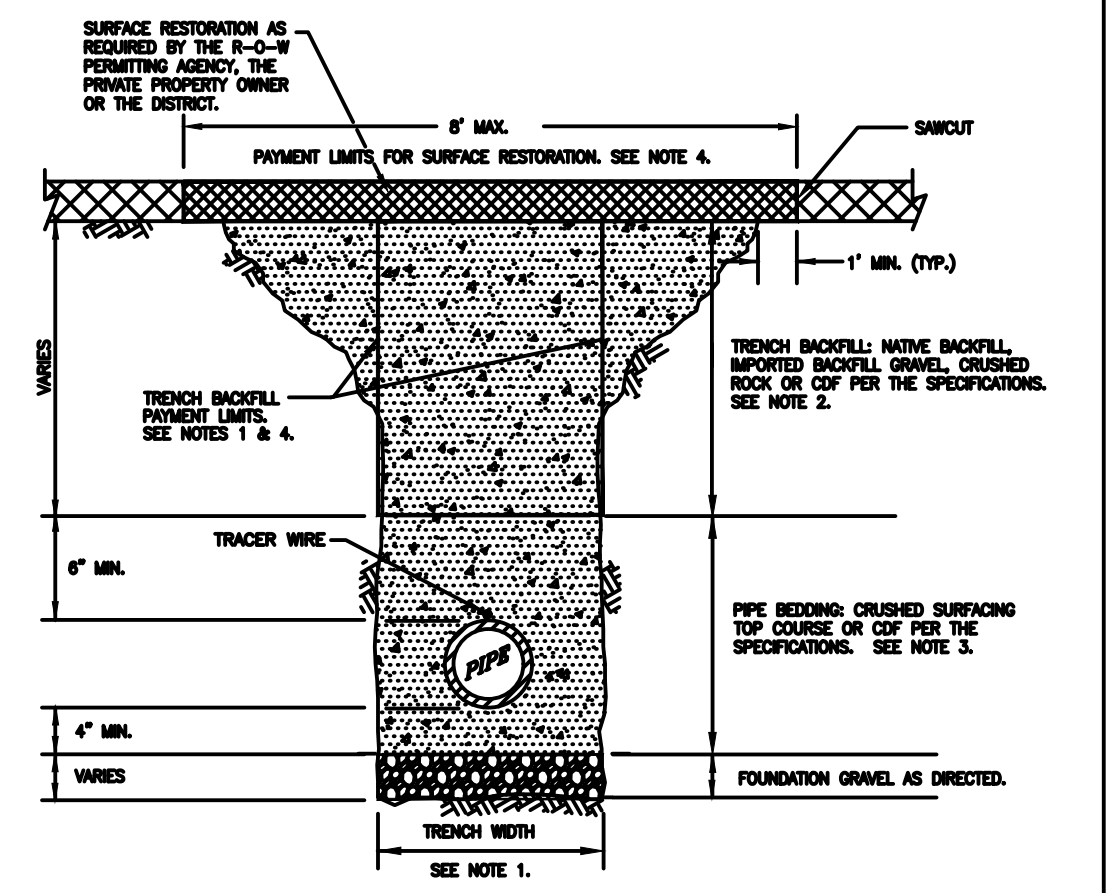


VALVE BOX & OPERATING NUT EXTENSION

NOT TO SCALE

DETAIL APPROVALS: NORTHSHORE UTILITY DISTRICT
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 MANAGER: S/D

①①
 LAST UPDATED: FEBRUARY 2023

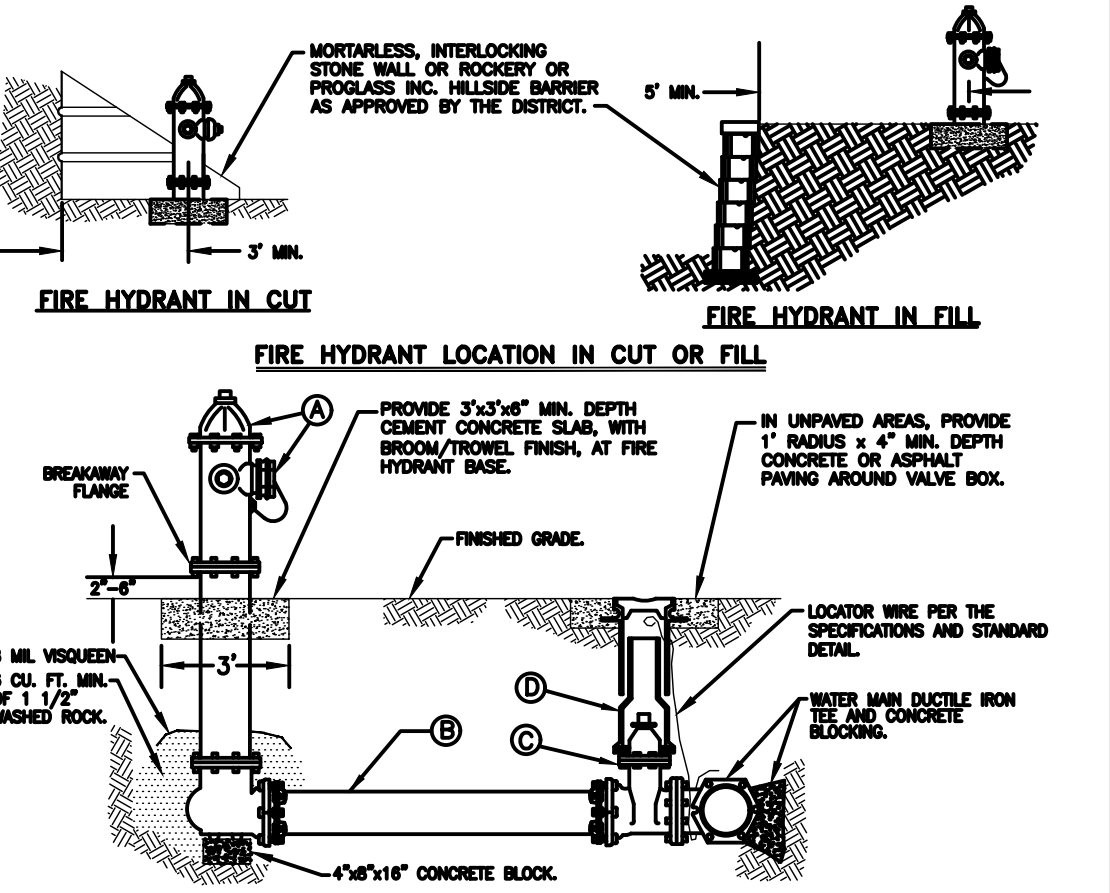


TYPICAL TRENCH SECTION & PAYMENT LIMITS

NOT TO SCALE

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 MANAGER: S/D

①②
 LAST UPDATED: FEBRUARY 2023

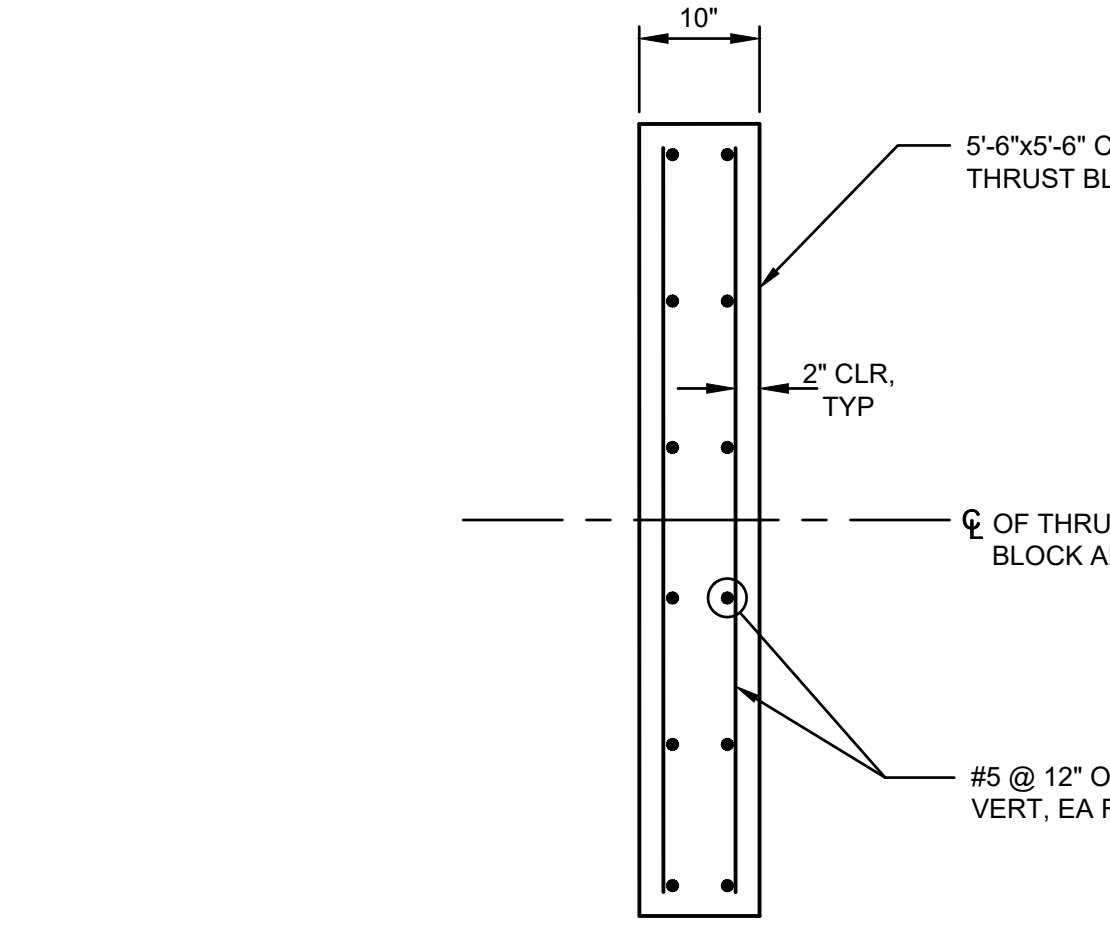


FIRE HYDRANT ASSEMBLY

NOT TO SCALE

DETAIL APPROVALS: NORTHSHORE UTILITY DISTRICT
 EDITOR: TMC
 MANAGER: EM

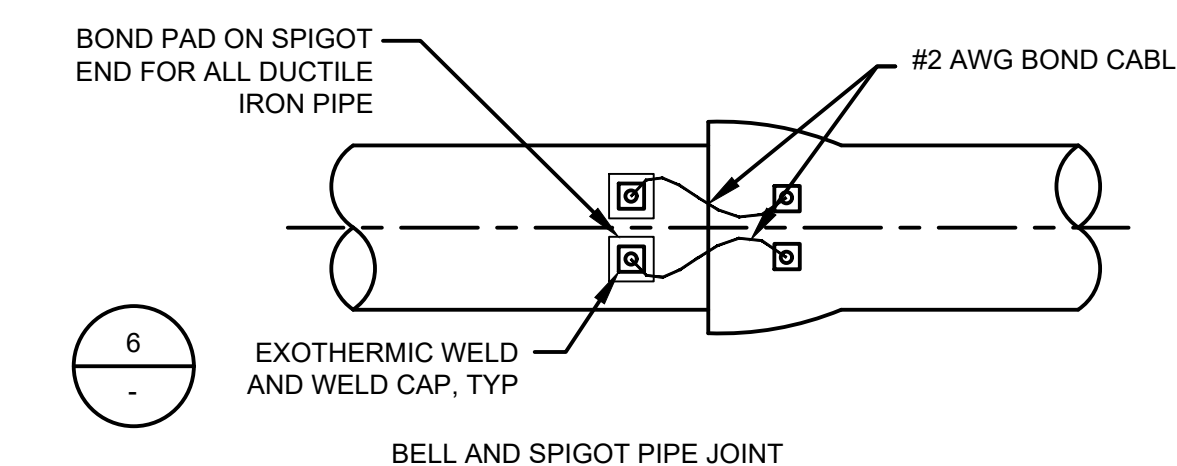
③
 LAST UPDATED: MARCH 2024



"DAILEY" THRUST BLOCK

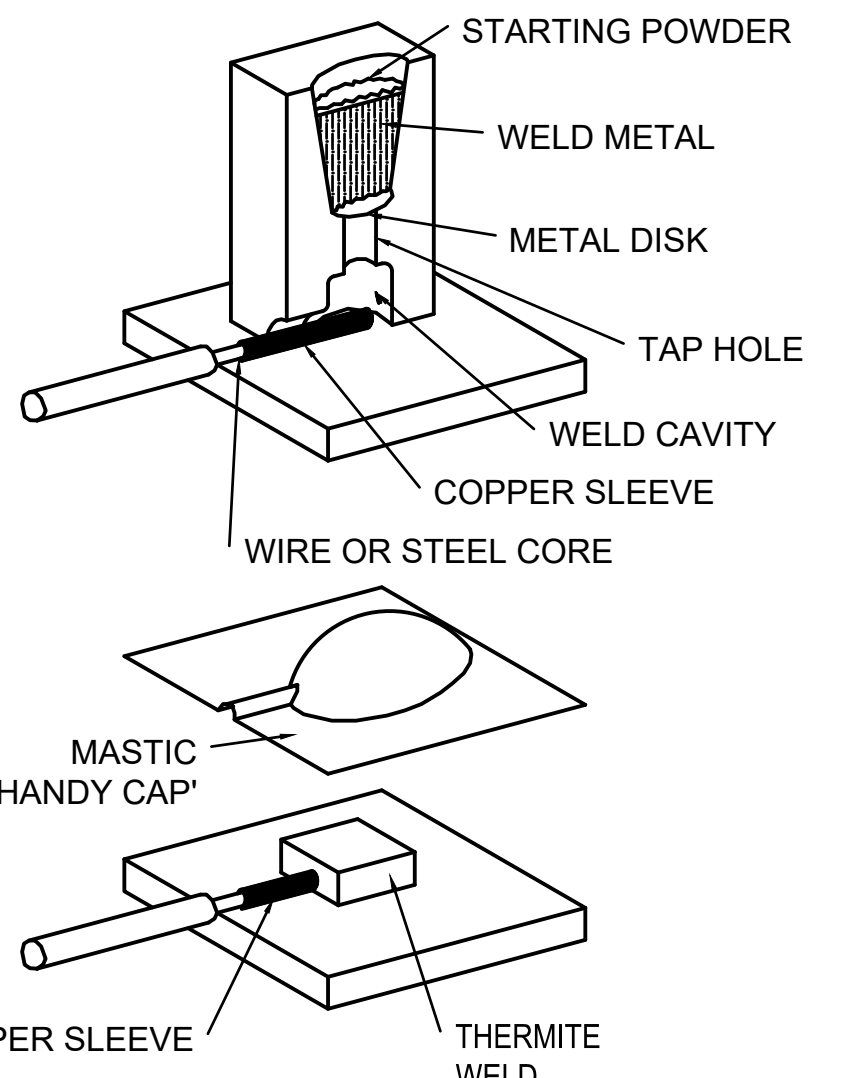
C1-4 SCALE: 3/4"=1'-0"

NOTES:
 1. FILL GAP BETWEEN THRUST BLOCK AND PIPE WITH GROUT.
 2. THRUST BLOCK MAY BE CAST-IN-PLACE OR PRECAST.



PIPE JOINT BONDING DETAIL

NTS



EXOTHERMIC WELD PROCEDURE DETAIL

NTS

NOTES:
 1. CLEAN WELD AREA TO BRIGHT METAL.
 2. WELD CABLE TO PIPE USING 'CADWELD' OR APPROVED EQUAL EXOTHERMIC WELD.
 3. ADAPTER SLEEVE REQUIRED FOR EXOTHERMIC WELDING OF #6 AWG WIRE OR SMALLER.
 4. CLEAN SLAG FROM WELD AREA AND TEST FOR ADHESION.
 5. INSULATE WELD WITH ROYSTON HANDY CAP OR APPROVED EQUAL.
 6. ALL CLEANED AREA NOT COVERED BY HANDY CAP SHALL BE COVERED WITH 125 MIL ROYSTON TAC TAPE OR APPROVED EQUAL.

NO	BY	APPD	REVISION	DATE

WARNING

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

Gray & Osborne, Inc.
 CONSULTING ENGINEERS

DESIGNED BY	AKG
DRAWN BY	MAN
CHECKED BY	AKG
APPROVAL	EBD
DATE	AUG 2024

NORTHSHORE UTILITY DISTRICT

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 Kenmore, WA 98028-2684 Kenmore, WA 98028-2684

Ph: (425) 398-4400 | Fax: (425) 398-4430 | www.nud.net

C0928

451 ZONE CONTROL VALVE IMPROVEMENTS

SCHEDULES A AND B

CIVIL DETAILS 1

#C928

ERIC B. DELANEY
 STATE OF WASHINGTON
 40195
 REGISTERED PROFESSIONAL ENGINEER

8/15/2024

I:\GIS\SERVER\3\daia2\Nshore\18591_451_zone_control_valve_station\plans\set-mar-2022\General\CD-DET.dwg, 8/15/2024, 11:14 AM, PHILIP MARSHALL

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SIDE SEWER CONNECTION TO EXISTING STUB
NOT TO SCALE

DETAIL APPROVALS
EDITOR: TMC
MANAGER: S/D

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: JANUARY 2022

Standard Detail: **8a**
Revision Date: Feb. 2012

SIDE SEWER SURFACE CLEANOUT
NOT TO SCALE

DETAIL APPROVALS
EDITOR: TMC
MANAGER: S/D

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: JANUARY 2022

Standard Detail: **9**
Revision Date: Oct. 2022

SURFACE CLEANOUT BOX
NOT TO SCALE

DETAIL APPROVALS
EDITOR: TMC
MANAGER: E/W

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: MARCH 2024

Standard Detail: **9a**
Revision Date: Feb. 2012

NEW CONNECTION TO EXISTING MANHOLE
NOT TO SCALE

DETAIL APPROVALS
ENGINEER: TMC
MANAGER: S/D

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: JANUARY 2022

Standard Detail: **15**
Revision Date: Feb. 2012

CATCH BASIN TYPE 1
NOT TO SCALE

DETAIL APPROVALS
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MANAGER: S/D

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: JANUARY 2022

Standard Detail: **412**
Revision Date: Feb. 2012

CURB AND GUTTER
NOT TO SCALE

DETAIL APPROVALS
EDITOR: TMC
MANAGER: S/D

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: JANUARY 2022

Standard Detail: **420**
Revision Date: Feb. 2012

SOLID COVER RECTANGLE
NOT TO SCALE

DETAIL APPROVALS
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MANAGER: S/D

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: JANUARY 2022

Standard Detail: **423**
Revision Date: Oct. 2022

VANED-GRATE RECTANGLE
NOT TO SCALE

DETAIL APPROVALS
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MANAGER: S/D

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: JANUARY 2022

Standard Detail: **424**
Revision Date: Feb. 2012

PIPE AND SECTION TRASH RACK
NOT TO SCALE

DETAIL APPROVALS
EDITOR: TMC
MANAGER: S/D

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: JANUARY 2022

Standard Detail: **465**
Revision Date: Nov. 2022

ROOF DRAIN DETAIL
NOT TO SCALE

DETAIL APPROVALS
EDITOR: TMC
MANAGER: S/D

NORTHSHORE UTILITY DISTRICT
2024 STANDARD SEWER DETAILS

LAST UPDATED: JANUARY 2022

Standard Detail: **10**
Revision Date: Feb. 2012

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CONSULTING ENGINEERS

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DRAWN BY	MAN
CHECKED BY	AKG
APPROVAL	EBD
DATE	AUG 2024

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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
CIVIL DETAILS 2

CIVIL
SHEET:CD-2
20 OF 56

ERIC B. DELFINO
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER
40195
8/15/2024

\\g0server3\dia2\dia2\Nshoret\18591_451_zone_control_valve_station\plans\set-mar-2022\General\C-DET.dwg, 8/15/2024, 11:14 AM, PHILIP MARSHALL

NOTES:

- BOULEVARD TURN LANE OR RAISED MEDIAN
- SCOPE ELEMENTS MAY BE REQUIRED (TYPICAL)
- PLAN LANE 4, PROPOSED ULTIMATE NETWORK FOR BIKE FACILITY REQUIREMENTS
- PROPOSED ULTIMATE NETWORK FOR BIKE FACILITY REQUIREMENTS
- INCHES ON ARTERIALS
- 12 FT WIDTH IF MORE THAN ONE LANE, 11 FT
- MINIMUM PAVEMENT THICKNESS SHALL BE 8 INCHES OF HOT MIX ASPHALT PLACED TO THE SURFACE OF THE SUBGRADE AND 4 INCHES OF HOT MIX ASPHALT PLACED TO THE SURFACE OF THE ASPHALT COURSE, OVER HMA CLASS 12 PG 64-22, A GEOTECHNICAL REPORT/ANALYSIS MAY BE REQUIRED BY THE ENGINEER, AND ADDITIONAL PAVEMENT THICKNESS MAY BE REQUIRED BY THE ENGINEER, AND ADDITIONAL PAVEMENT THICKNESS MAY BE REQUIRED BY THE ENGINEER, AND ADDITIONAL PAVEMENT THICKNESS MAY BE REQUIRED BY THE ENGINEER.
- ALL LANE WIDTHS SHALL BE MEASURED FROM CENTERLINE TO CENTERLINE, UNLESS OTHERWISE NOTED. ADDITIONAL ROW TO THE SHOULDER LEVEL SHALL BE CONSTRUCTED AND RESTRICTED.

STANDARD PAVEMENT SECTION
LEFT SIDE (RIGHT SIDE TO BE MIRROR IMAGE)

CITY OF BOTHELL
PUBLIC WORKS DEPARTMENT

Approved By: [Signature]
City Engineer

TYPICAL ARTERIAL SECTION WITH PROTECTED BIKE LANES

Standard Detail **306**
Revision Date: Apr. 2023

CITY OF BOTHELL
PUBLIC WORKS DEPARTMENT

Approved By: [Signature]
City Engineer

PAVEMENT PLANNING

Standard Detail **318**
Revision Date: Feb. 2012

CITY OF BOTHELL
PUBLIC WORKS DEPARTMENT

Approved By: [Signature]
City Engineer

CONCRETE SIDEWALK DETAIL

Standard Detail **344**
Revision Date: Dec. 2016

CITY OF BOTHELL
PUBLIC WORKS DEPARTMENT

Approved By: [Signature]
City Engineer

CEMENT CONCRETE DRIVEWAY TYPE - 2

Standard Detail **347**
Revision Date: Jun. 2015

TYPICAL PATCH FOR PAVEMENT

NOTES:

- IF THE DISTANCE FROM THE EDGE OF PATCH TO THE EDGE OF PAVEMENT OR CURB AND GUTTER IS LESS THAN 3", THE PATCH MUST CONTINUE TO THE EXISTING EDGE, UNLESS ROADWAY IS OVERLAID WITHIN 60 DAYS.
- HOT MIX ASPHALT SHALL BE CLASS 1/2".
- ALL TRENCH BACKFILL SHALL BE CRUSHED SURFACING TOP COURSE MATERIAL FOR PERPENDICULAR TRENCHES, OR AS DIRECTED BY ENGINEER.
- HMA CLASS 1/2" MAY BE USED IN LIEU OF ATB.
- PATCH MUST ALWAYS BE 1" DEEPER THAN EXISTING ASPHALT; MAX 6" DEEP, OR AS DIRECTED BY ENGINEER.
- TOP SEAL-USE PG 64-22 AND PROVIDE A SAND BLANKET TO ALLEVIATE TRAILING.
- REFER TO COK STD. PLAN NO. CK-R.13C FOR REQUIREMENTS FOR GEOTECH BORING ASPHALT PATCHES.

CITY OF KIRKLAND
PLAN NO. CK-R.12

RESTORATION DETAIL AND PAVEMENT PATCHING

CITY OF BOTHELL
PUBLIC WORKS DEPARTMENT

Approved By: [Signature]
City Engineer

CEMENT CONCRETE CURBS

Standard Detail **340**
Revision Date: Feb. 2012

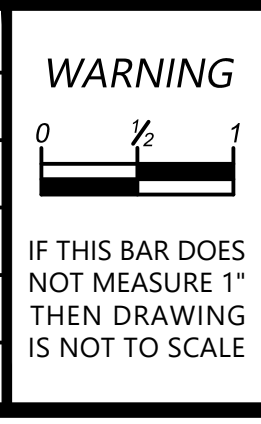
CITY OF BOTHELL
PUBLIC WORKS DEPARTMENT

Approved By: [Signature]
City Engineer

CEMENT CONCRETE CURBS

Standard Detail **340**
Revision Date: Feb. 2012

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APPROVAL EBD
DATE AUG 2024

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451 ZONE CONTROL VALVE IMPROVEMENTS

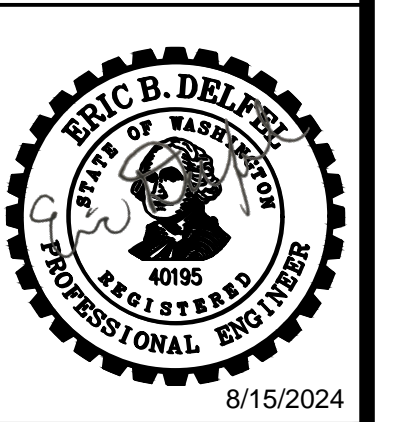
SCHEDULES A AND B

CIVIL DETAILS 3

CIVIL

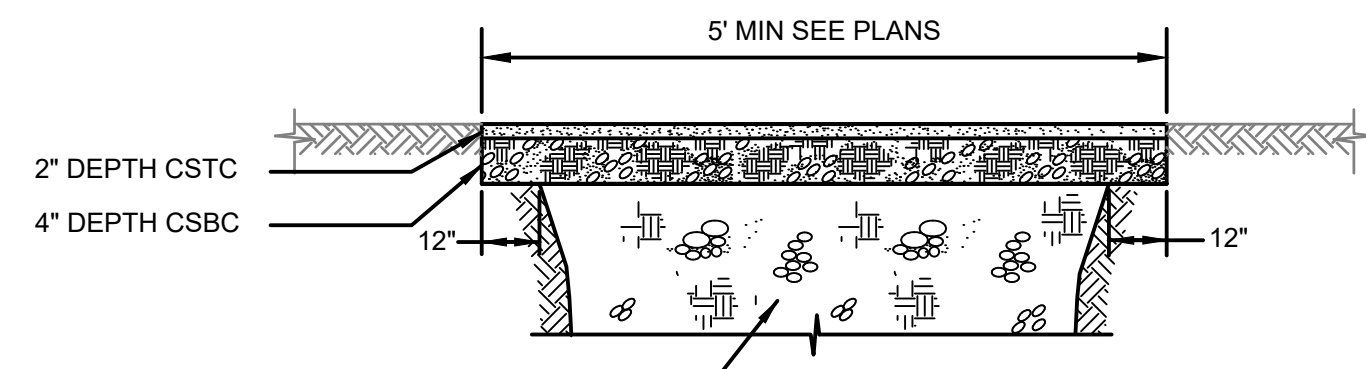
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21 OF 56



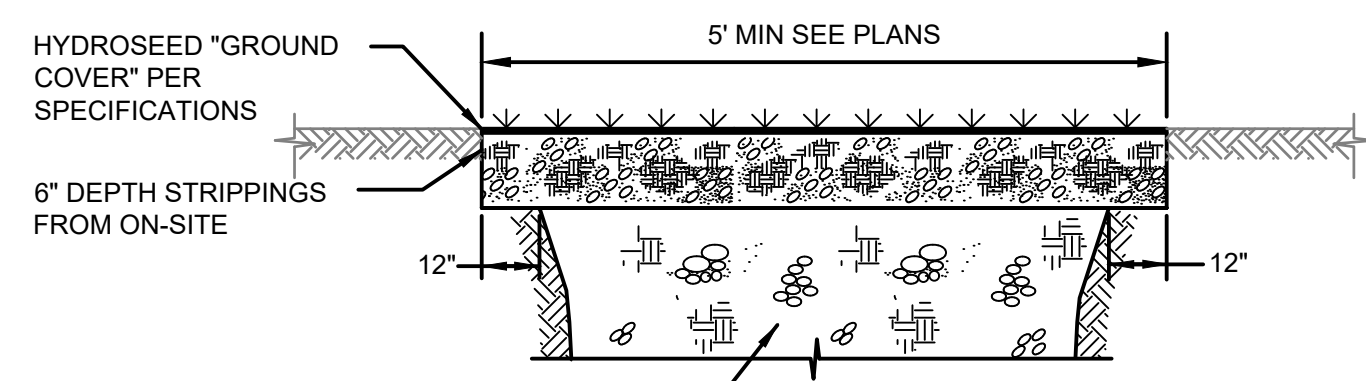
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8/15/2024



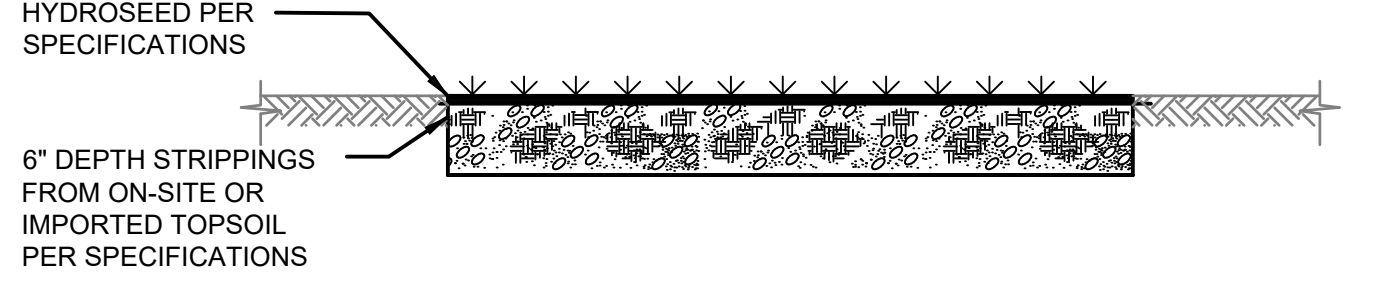
1 CSTC TRENCH REPAIR
TYP NOT TO SCALE

COMPACTED BACKFILL CONSISTING OF BANK RUN GRAVEL FOR TRENCH BACKFILL COMPACTED TO 95% MODIFIED PROCTOR

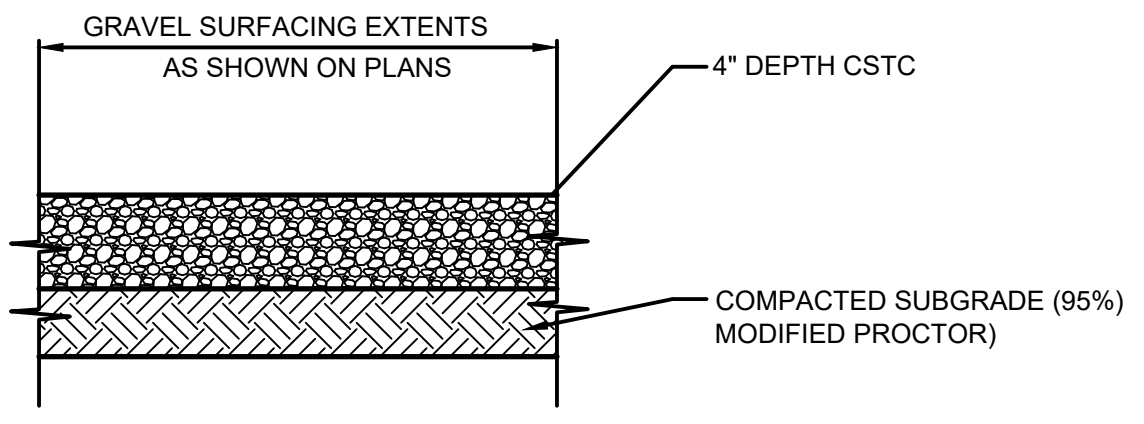


2 HYDROSEED TRENCH REPAIR
TYP NOT TO SCALE

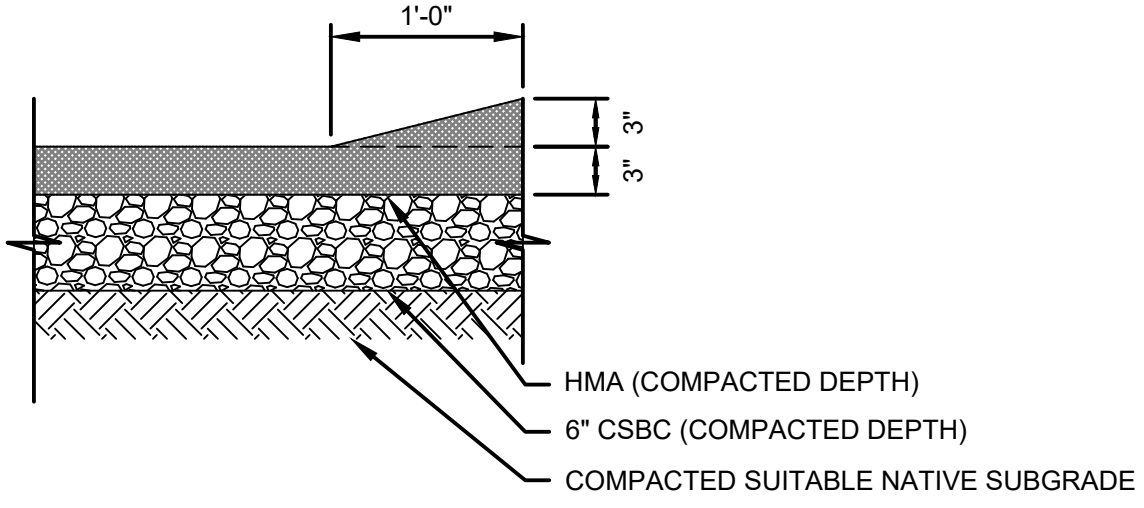
COMPACTED BACKFILL CONSISTING OF BANK RUN GRAVEL FOR TRENCH BACKFILL COMPACTED TO 95% MODIFIED PROCTOR



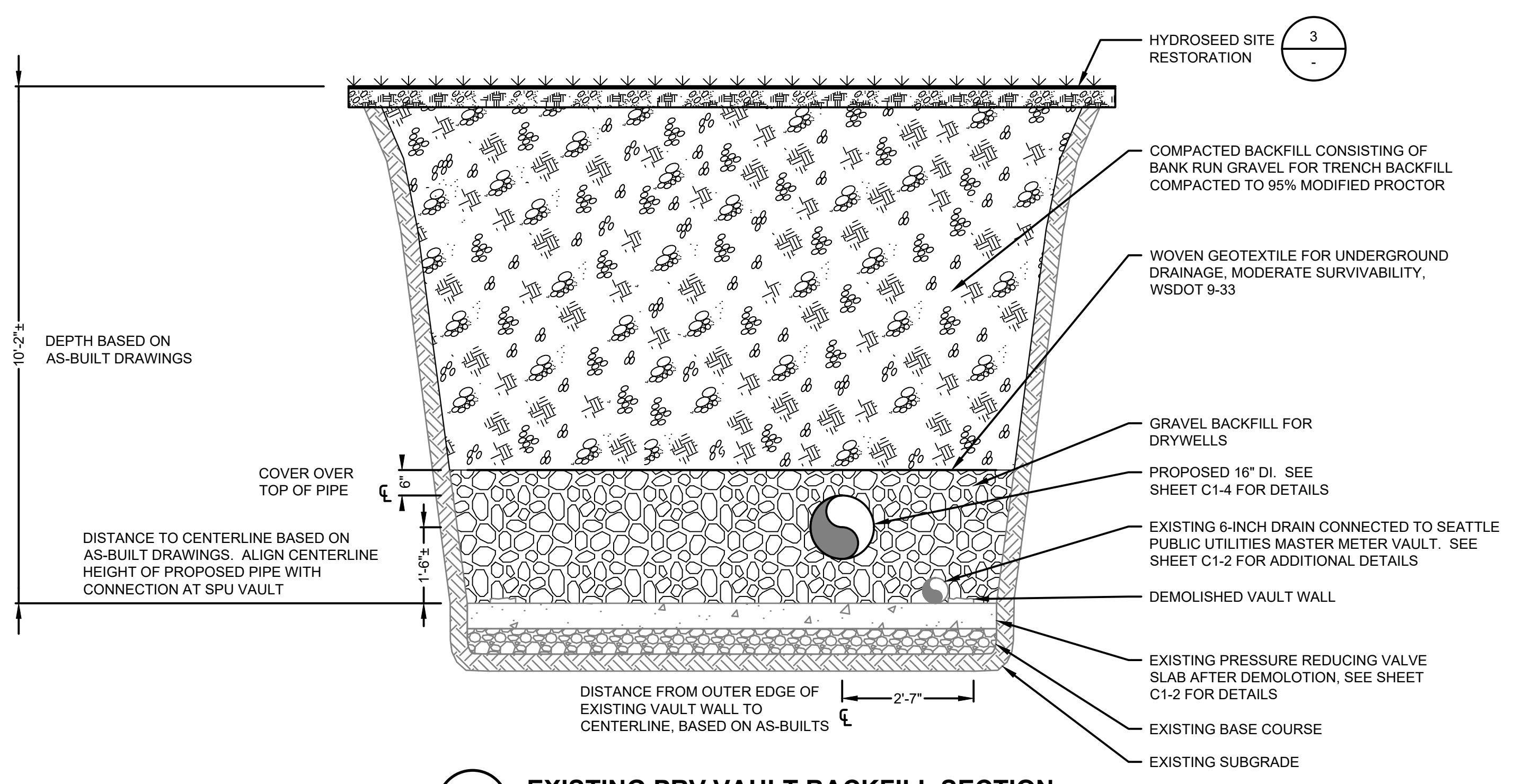
3 HYDROSEED SITE RESTORATION
TYP NOT TO SCALE



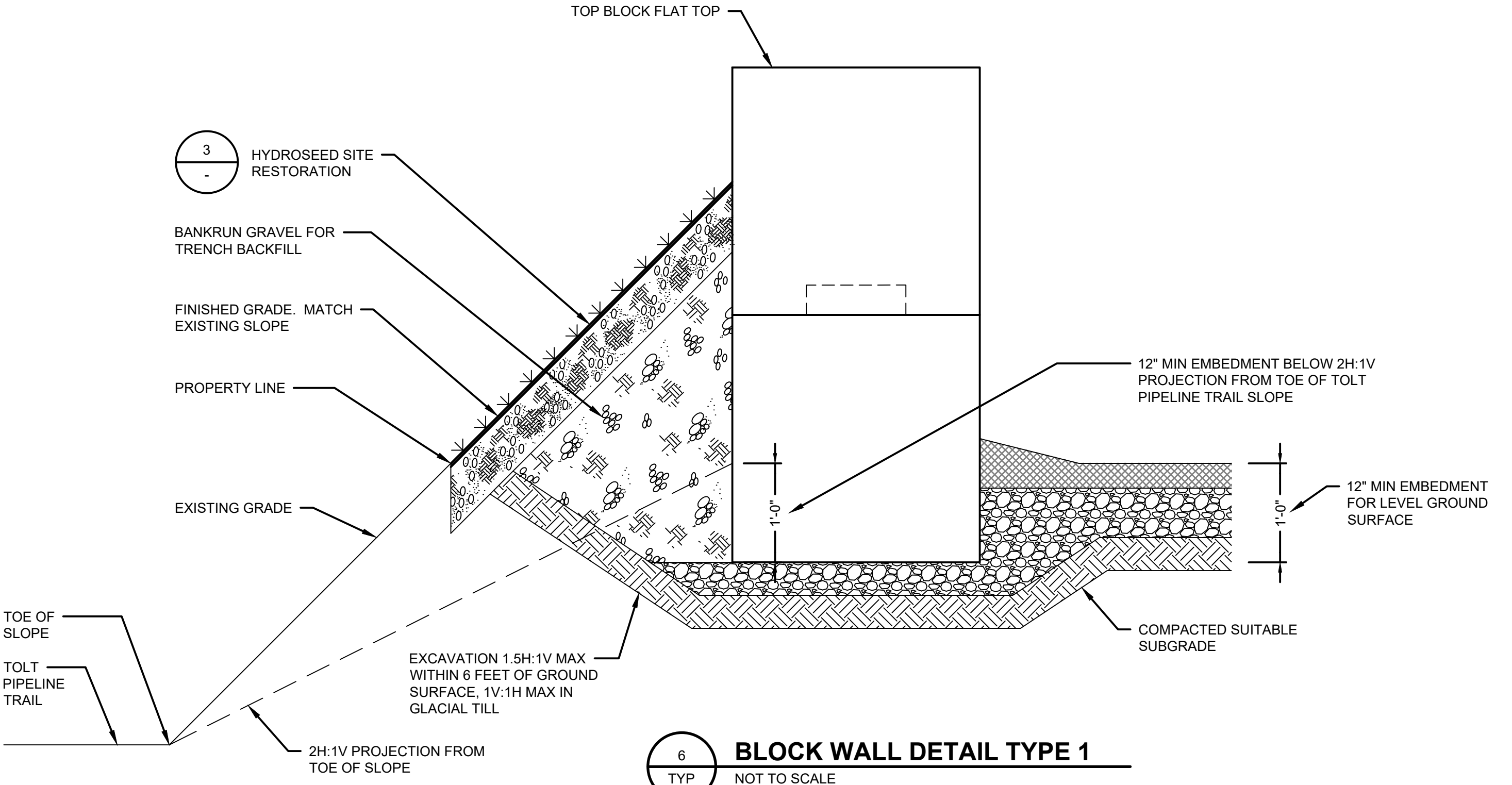
4 SITE CRUSHED SURFACING
TYP NOT TO SCALE



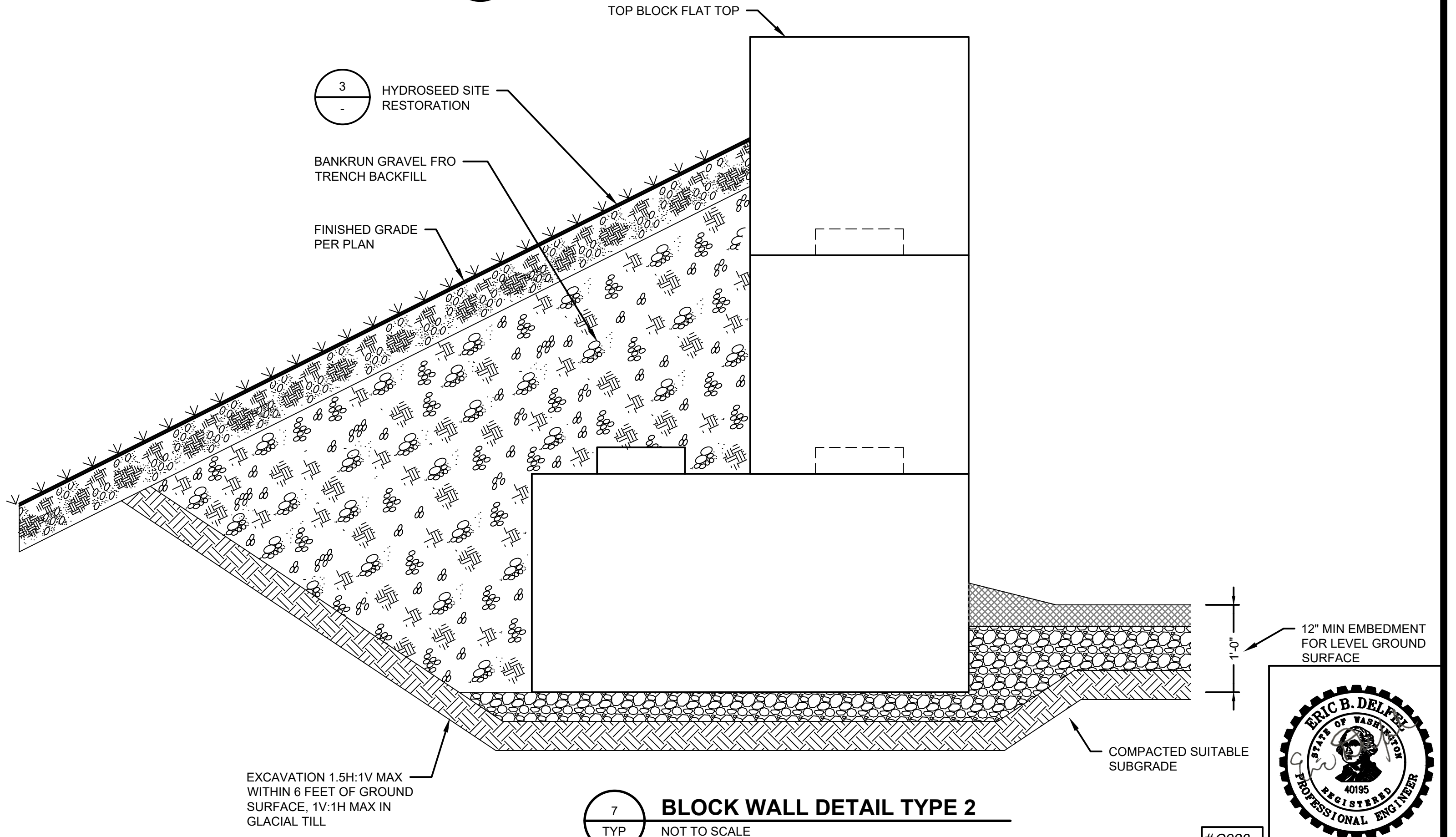
5 ASPHALT WEDGE CURB DETAIL
TYP NOT TO SCALE



8 EXISTING PRV VAULT BACKFILL SECTION
TYP NOT TO SCALE



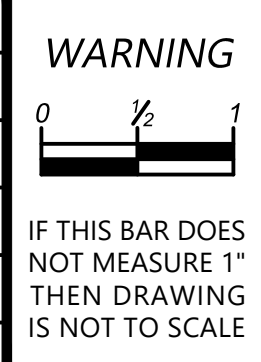
6 BLOCK WALL DETAIL TYPE 1
TYP NOT TO SCALE



7 BLOCK WALL DETAIL TYPE 2
TYP NOT TO SCALE

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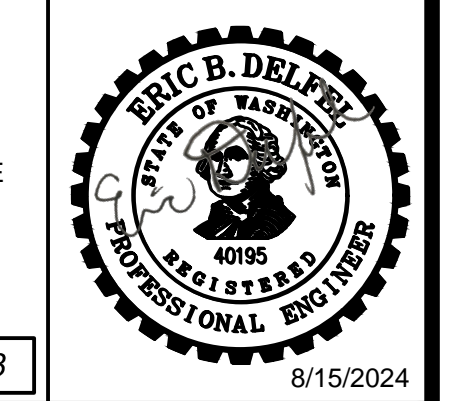


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APPROVAL	EBD
DATE	AUG 2024



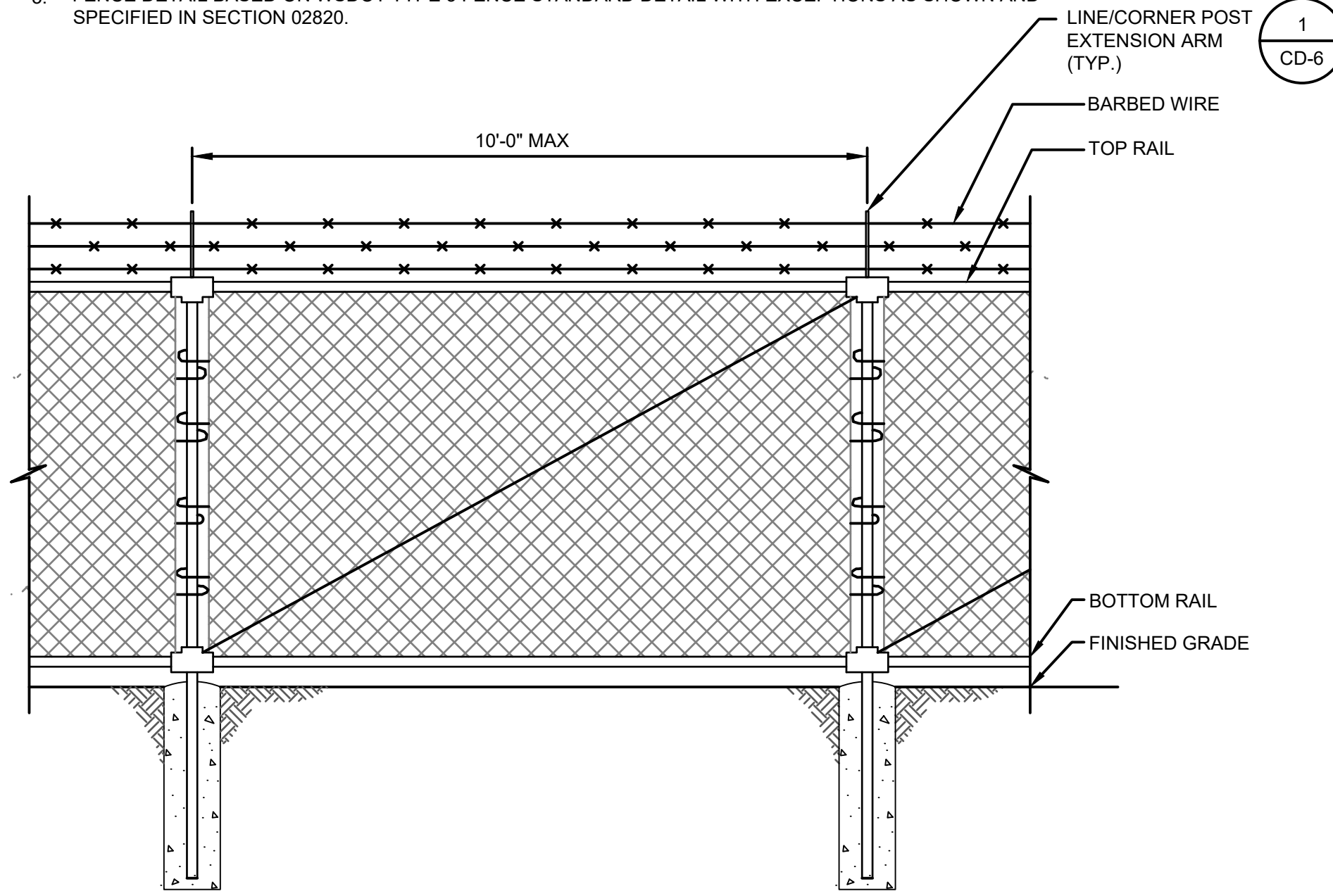
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451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
CIVIL DETAILS 4



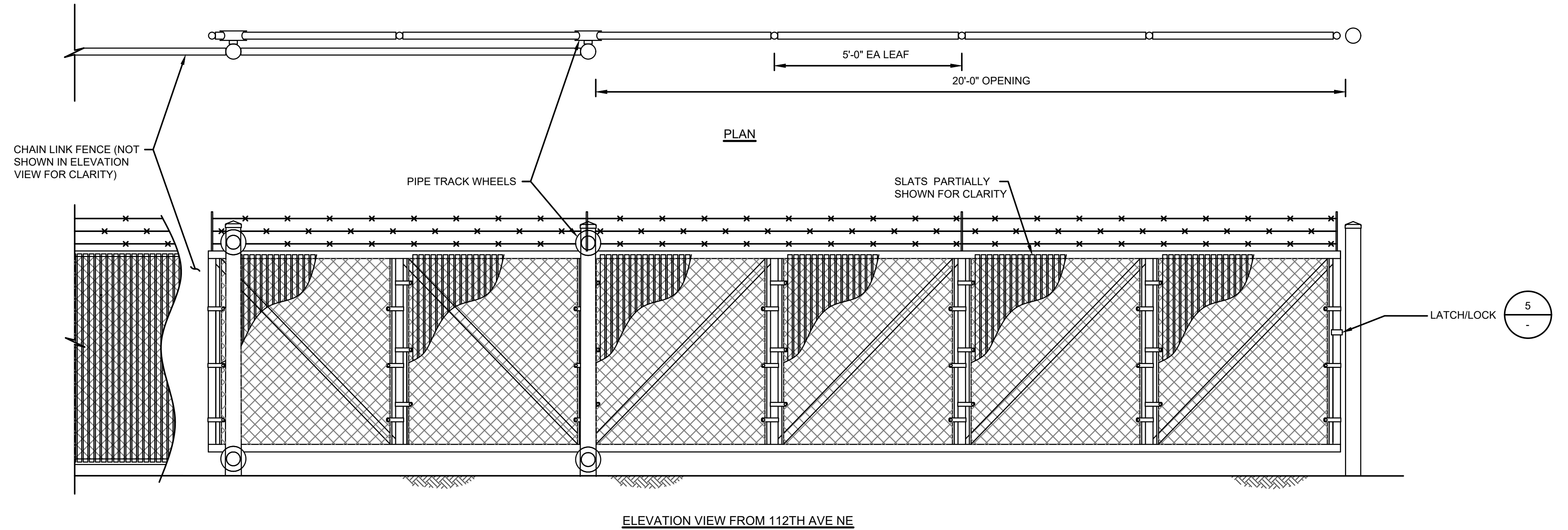
#C928
8/15/2024
CIVIL
SHEET:CD-4
22 OF 56

- SEE SPECIFICATIONS FOR TYPICAL MATERIAL AND INSTALLATION REQUIREMENTS.
- FENCE FABRIC SHALL BE DIAMOND MESH, GALVANIZED WIRE (BLACK VINYL COATED), WITH FACTORY INSTALLED BLACK FLAT TUBULAR POLYETHYLENE SLATS (FENCE DETAIL TYPE 2 ONLY), VIEWGAURD BY SECURITY CONTRACTOR SERVICES, INC. OR EQUAL.
- FENCE DETAIL BASED ON WSDOT TYPE 3 FENCE STANDARD DETAIL WITH EXCEPTIONS AS SHOWN AND SPECIFIED IN SECTION 02820.



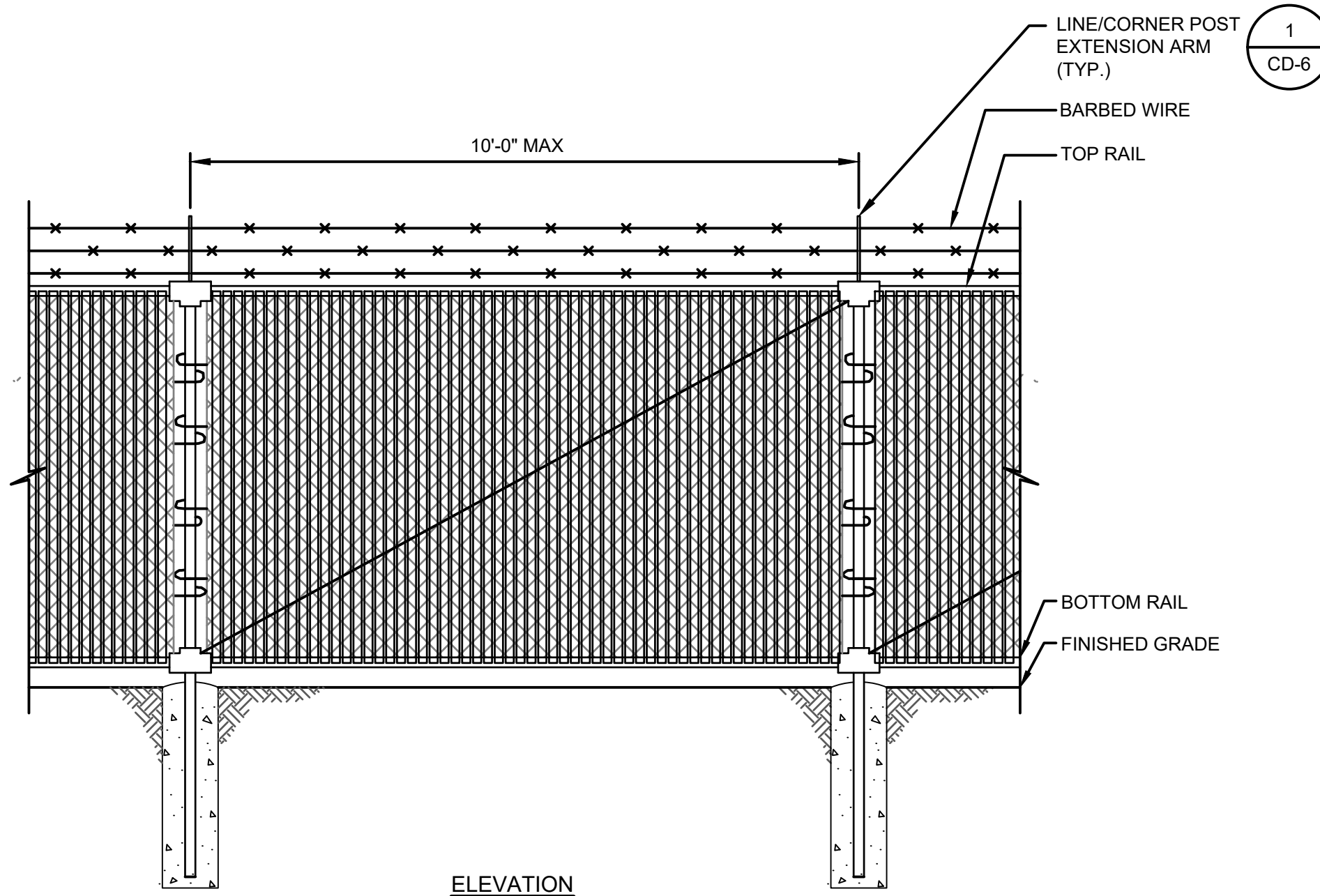
ELEVATION

1 FENCE DETAIL TYPE 1
NOT TO SCALE



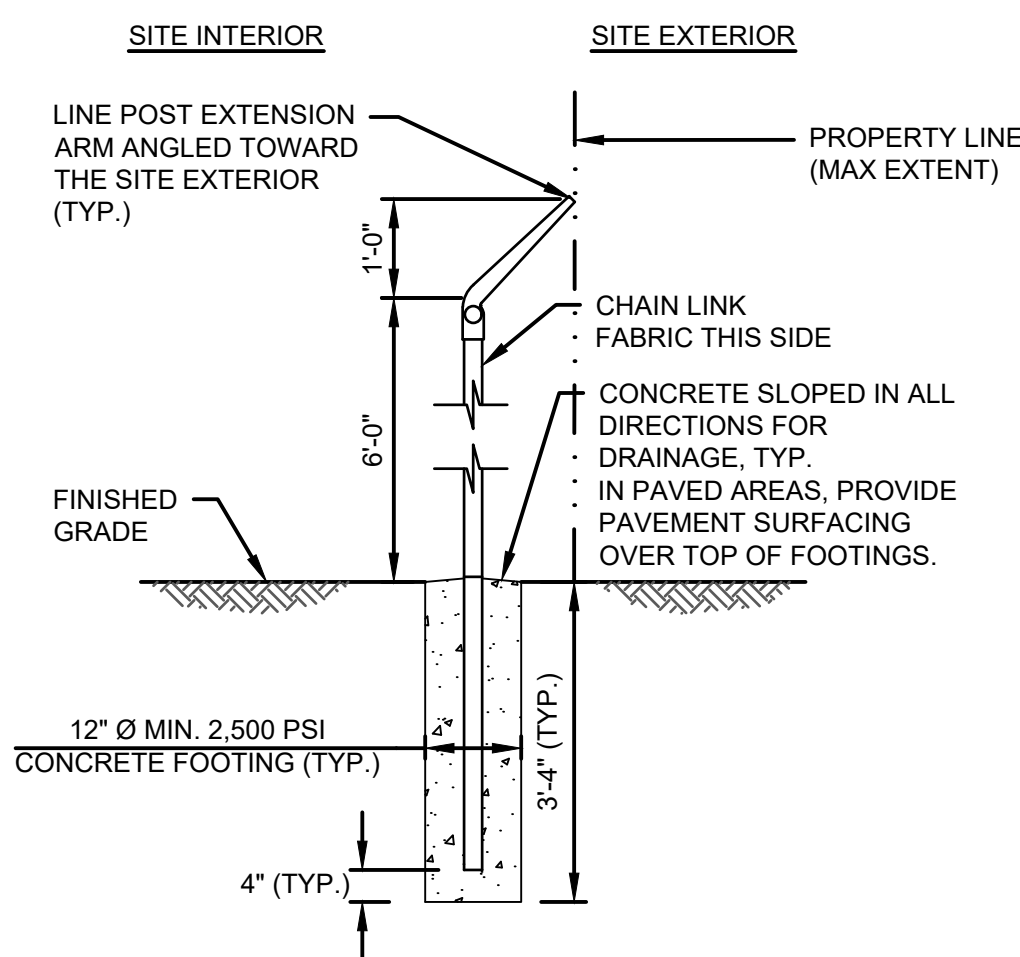
ELEVATION VIEW FROM 112TH AVE NE

3 CANTILEVERED ROLLING GATE
NOT TO SCALE

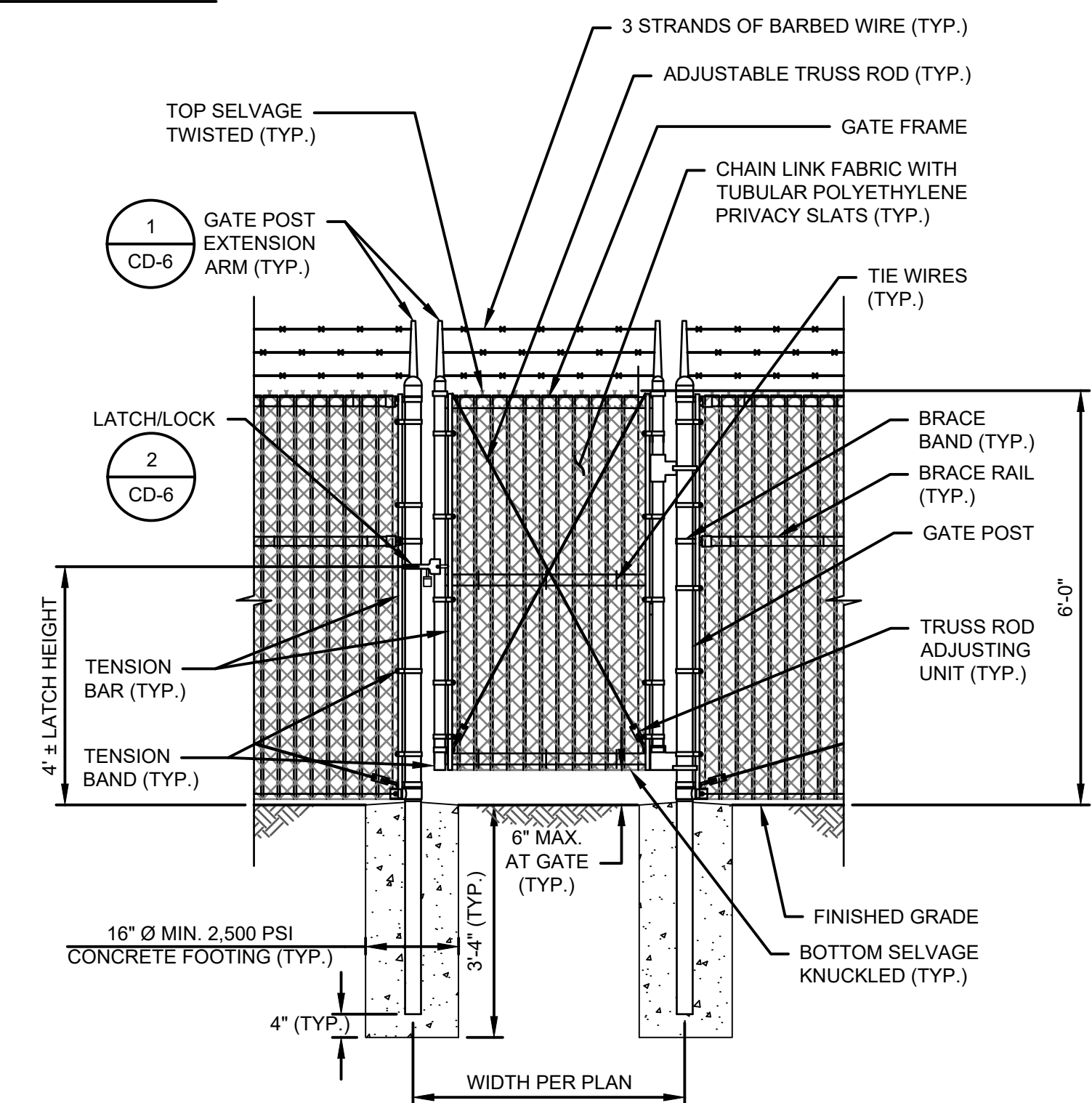


ELEVATION

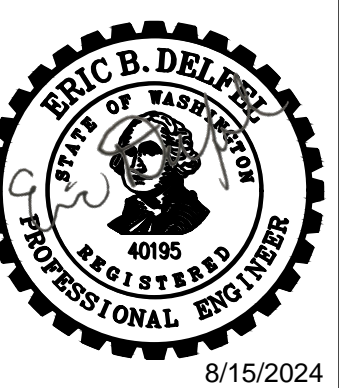
2 FENCE DETAIL TYPE 2
NOT TO SCALE



LINE/BRACE POST SECTION



4 PERSONNEL GATE - MANUAL SWING GATE
NOT TO SCALE



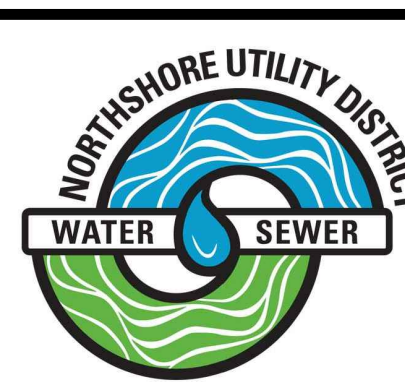
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NO	BY	APPD	REVISION	DATE

WARNING
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DRAWN BY	MAN
CHECKED BY	AKG
APPROVAL	EBD
DATE	AUG 2024



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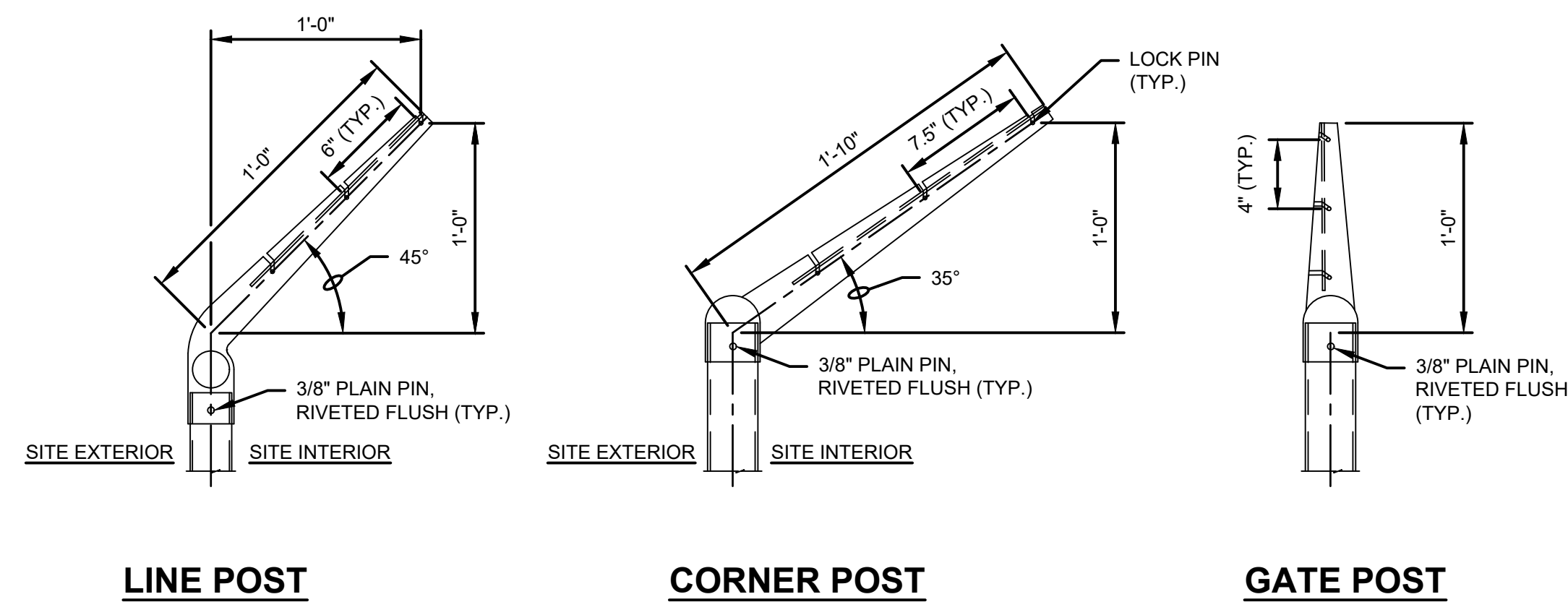
C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
CIVIL DETAILS 5

CIVIL
SHEET: CD-5
23 OF 56

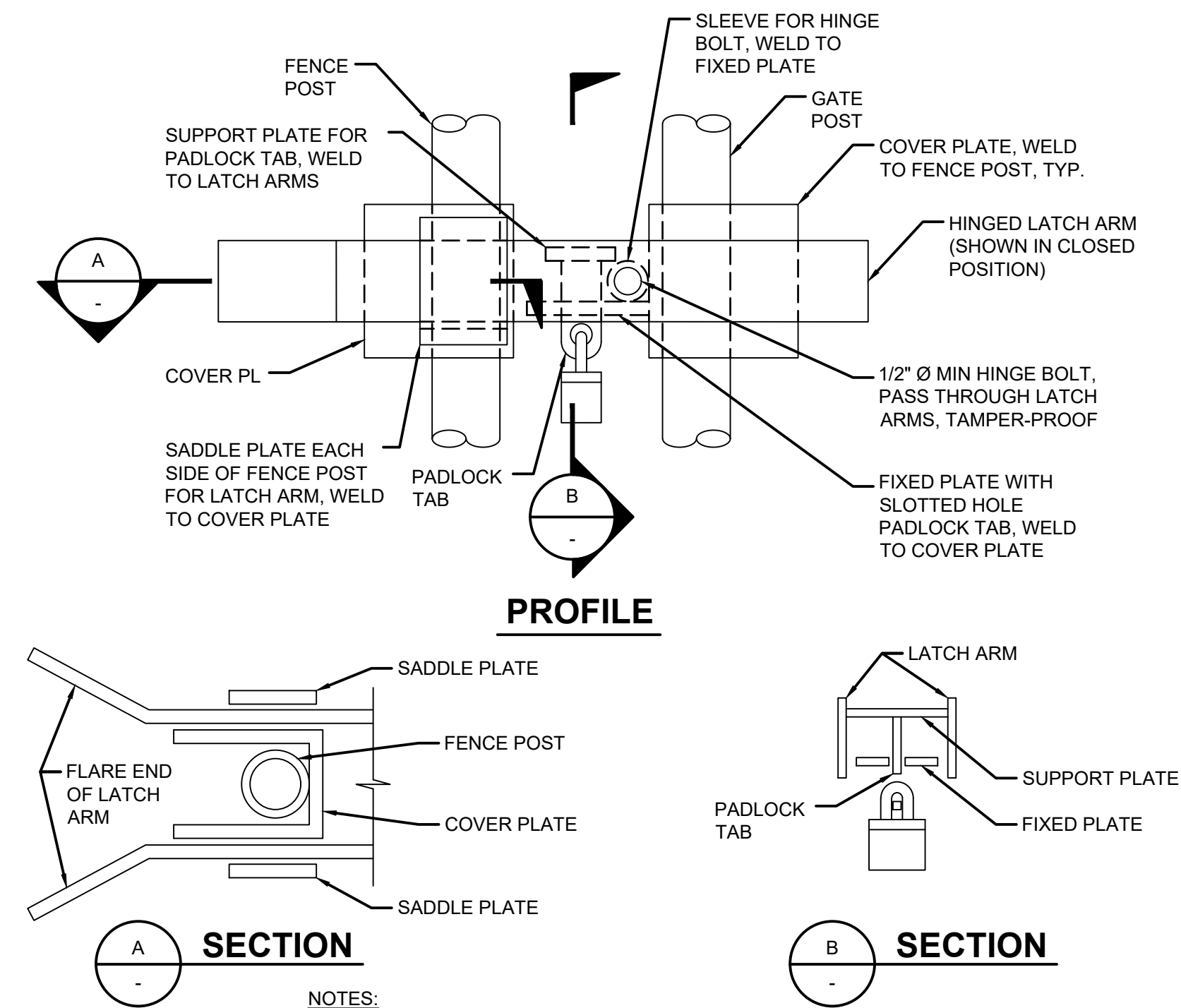
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8/15/2024

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1
TYP
EXTENSION ARM DETAILS
NOT TO SCALE



- 2**
TYP
FENCE GATE LATCH/LOCK DETAIL
NOT TO SCALE
- NOTES:**
1. USE 1/4" THICK PLATE, MIN, TYP.
 2. DETAIL IS BASED ON EXISTING LATCH, MATCH DIMENSIONS OF EXISTING LATCH - FIELD VERIFY.

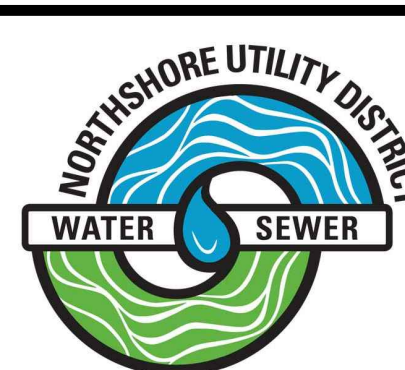
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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
CIVIL DETAILS 6

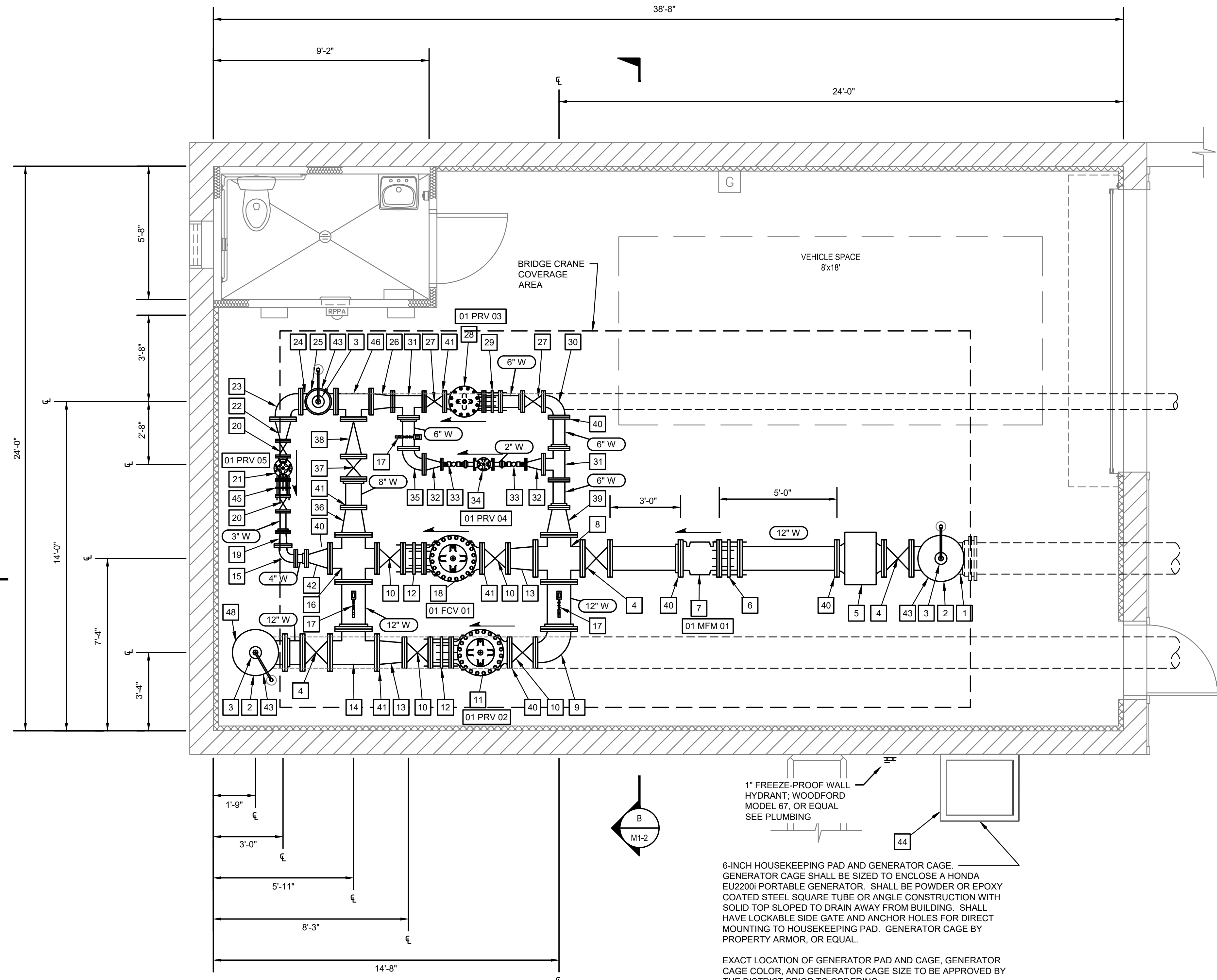
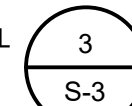
#C928



CIVIL
 SHEET: CD-6
 24 OF 56

COMPONENT LEGEND

- 1 16" 90° BEND (MJ, RESTRAINED)
- 2 16" X 12" TEE (FL)
- 3 2" COMBINATION AIR VAC/RELEASE
- 4 12" GATE VALVE (FL)
- 5 12" STRAINER (FL)
- 6 12" DISMANTLING JOINT (FL)
- 7 12" FLOW METER
- 8 12" CROSS (FL)
- 9 12" X 10" REDUCING 90° BEND (FL)
- 10 10" GATE VALVE (FL)
- 11 10" PRESSURE REDUCING VALVE (FL)
- 12 10" DISMANTLING JOINT (FL)
- 13 12" X 10" REDUCER (FL)
- 14 12" TEE (FL)
- 15 4" 90° BEND (FL)
- 16 12" X 10" CROSS (FL)
- 17 COMBINATION PRESSURE GAUGE AND TRANSMITTER
- 18 10" FLOW CONTROL VALVE (FL)
- 19 4" X 3" REDUCER (FL)
- 20 3" GATE VALVE (FL)
- 21 3" PRESSURE RELIEF VALVE (FL)
- 22 8" X 3" REDUCER (FL)
- 23 8" 90° BEND (FL)
- 24 8" CROSS (FL)
- 25 8" TAPPED BLIND FLANGE (FL)
- 26 8" X 6" REDUCER (FL)
- 27 6" GATE VALVE (FL)
- 28 6" PRESSURE REDUCING VALVE (FL)
- 29 6" DISMANTLING JOINT (FL)
- 30 6" 90° BEND (FL)
- 31 6" TEE (FL)
- 32 6" X 2" REDUCER (FL)
- 33 2" BRASS BALL VALVE (FL)
- 34 2" PRESSURE REDUCING VALVE (FL)
- 35 6" BEND (FL)
- 36 12" X 8" REDUCER (FL)
- 37 8" GATE VALVE (FL)
- 38 8" CHECK VALVE (FL)
- 39 12" X 6" REDUCER (FL)
- 40 PIPE SUPPORT TYPE A
- 41 PIPE SUPPORT TYPE B
- 42 10" X 4" REDUCER (FL)
- 43 PENETRATION REINFORCING DETAIL
- 44 GENERATOR PAD AND ENCLOSURE
- 45 3" DISMANTLING JOINT (FL)
- 46 8" TEE (FL)
- 47 8" 90° BEND (MJ, RESTRAINED)
- 48 DIRECT TAP 16" TEE WITH 1" CORP STOP, C&P PACK JOINT, FORD F1001, OR APPROVED EQUAL WITH SS STIFFENER, FORD INSERT-53-72, OR APPROVED EQUAL



NOTES:

1. ALL PIPING AND APPURTENANCES SHALL BE RATED FOR A MINIMUM OF 250 PSI.
2. ALL ABOVE GROUND PIPING SHALL BE PAINTED PER SPECIFICATION 09900-2.2.C.
3. ALL ABOVE GROUND PIPING SHALL BE PAINTED BLUE PER SPECIFICATION 09900-2.3.B.
4. ALL ABOVE GROUND GATE VALVES SHALL HAVE HAND WHEELS PER SPECIFICATION 15100-2.1.

8" DI CLASS 53 TO 529 ZONE

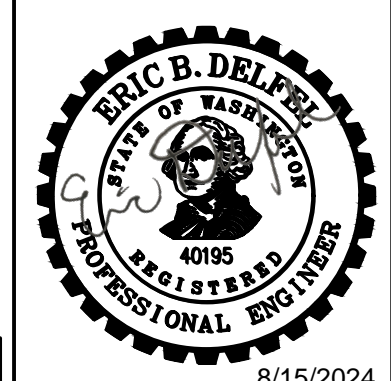
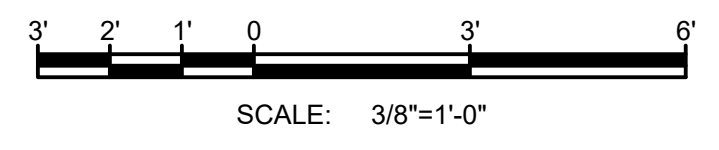
16" DI CLASS 53 FROM TOLT PIPELINE

16" DI CLASS 53 TO 451 ZONE

1" FREEZE-PROOF WALL HYDRANT; WOODFORD MODEL 67, OR EQUAL SEE PLUMBING

6-INCH HOUSEKEEPING PAD AND GENERATOR CAGE. GENERATOR CAGE SHALL BE SIZED TO ENCLOSE A HONDA EU2200i PORTABLE GENERATOR. SHALL BE POWDER OR EPOXY COATED STEEL SQUARE TUBE OR ANGLE CONSTRUCTION WITH SOLID TOP SLOPED TO DRAIN AWAY FROM BUILDING. SHALL HAVE LOCKABLE SIDE GATE AND ANCHOR HOLES FOR DIRECT MOUNTING TO HOUSEKEEPING PAD. GENERATOR CAGE BY PROPERTY ARMOR, OR EQUAL.

EXACT LOCATION OF GENERATOR PAD AND CAGE, GENERATOR CAGE COLOR, AND GENERATOR CAGE SIZE TO BE APPROVED BY THE DISTRICT PRIOR TO ORDERING.



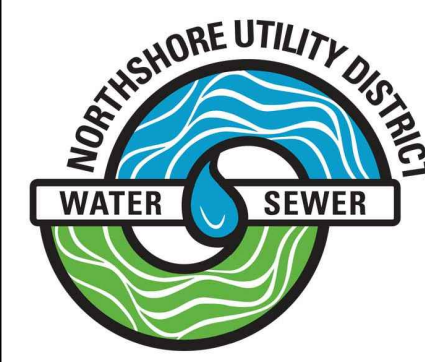
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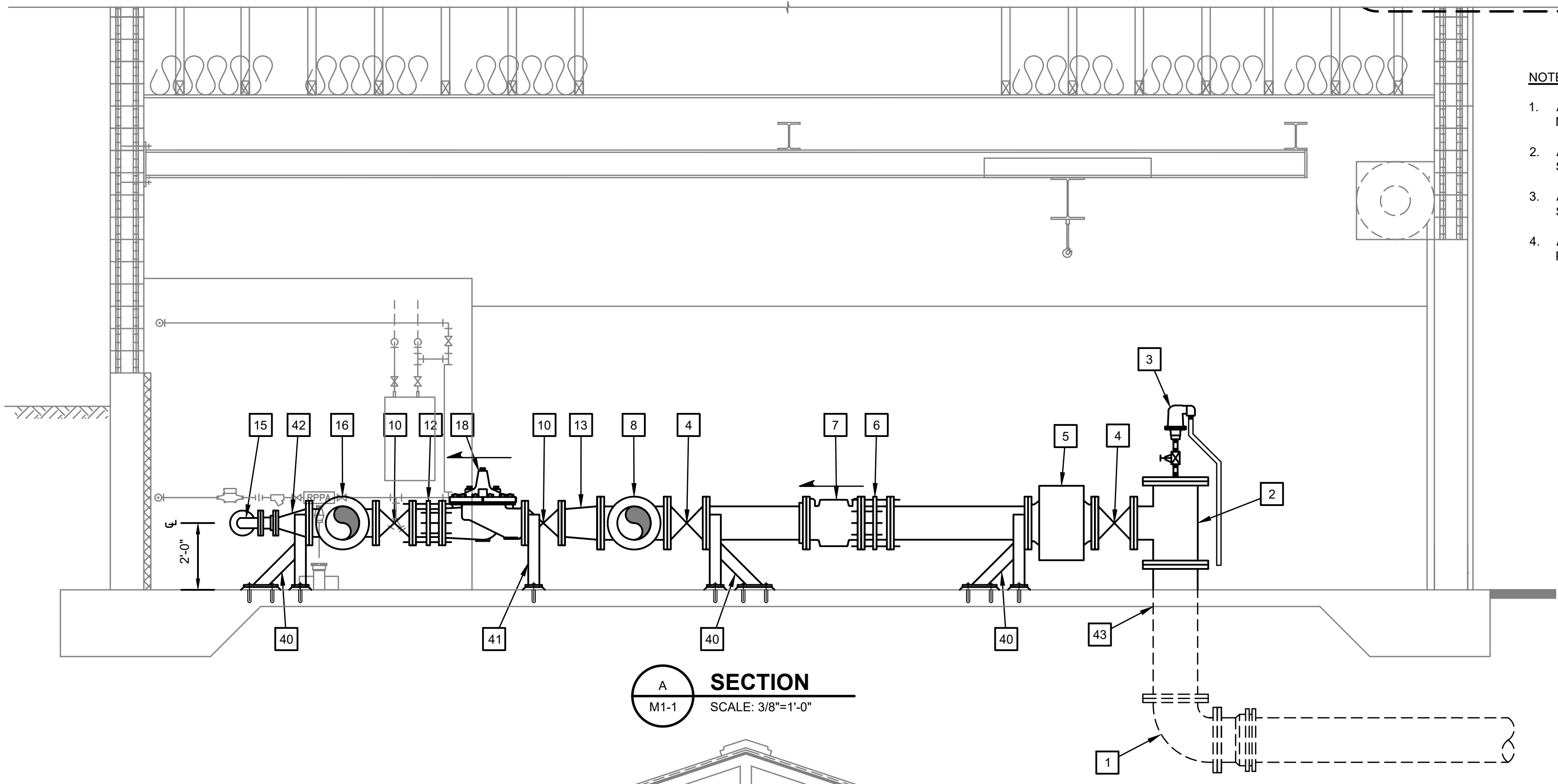
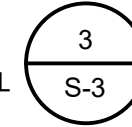
C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
MECHANICAL PLAN

#C928

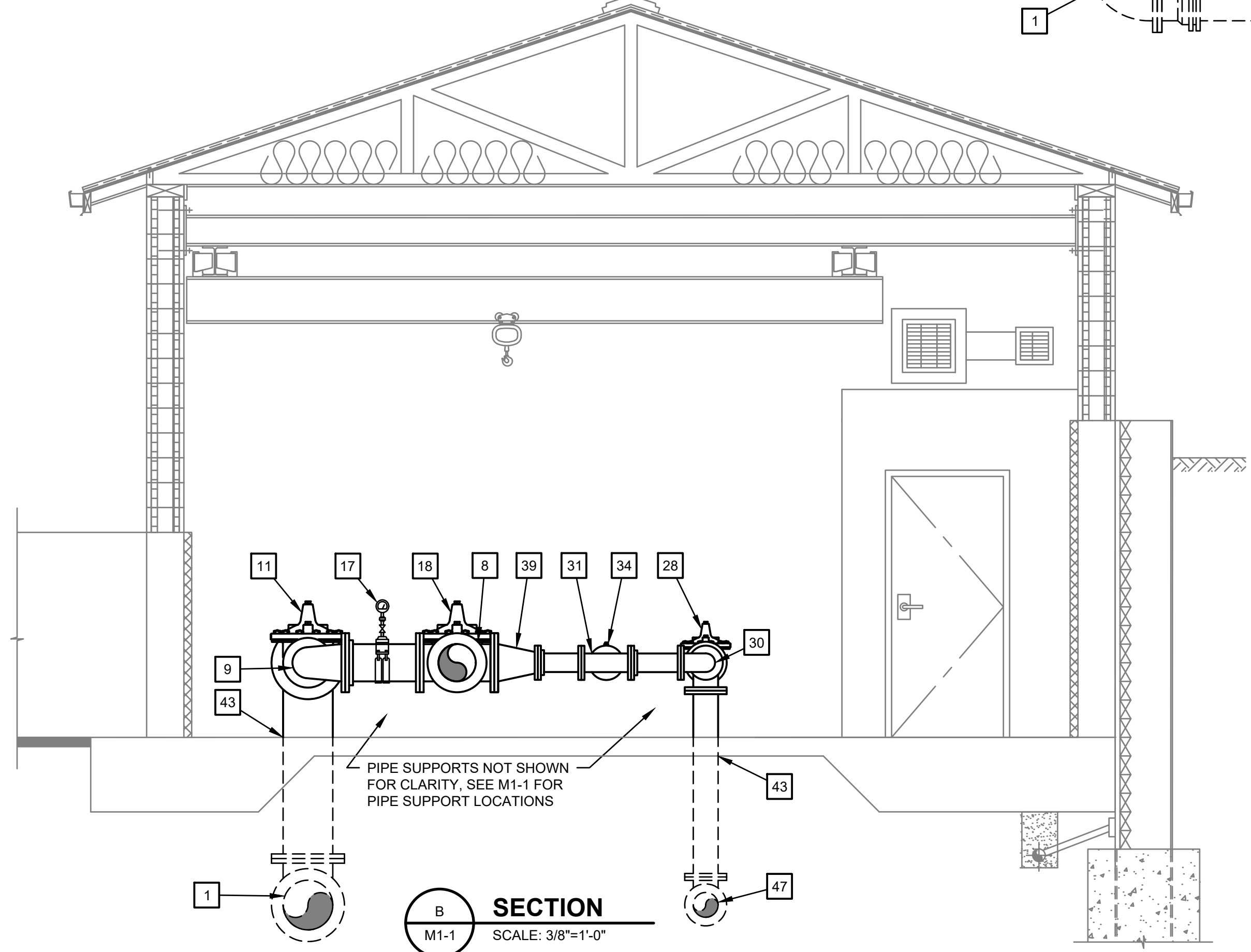
MECHANICAL
SHEET: M1-1
25 OF 56

COMPONENT LEGEND

- 1 16" 90° BEND (FL) W/ ADAPTER (FLxMJ)
- 2 16" X 12" TEE (FL)
- 3 2" COMBINATION AIR VAC/RELEASE
- 4 12" GATE VALVE (FL)
- 5 12" STRAINER (FL)
- 6 12" DISMANTLING JOINT (FL)
- 7 12" FLOW METER
- 8 12" CROSS (FL)
- 9 12" X 10" REDUCING 90° BEND (FL)
- 10 10" GATE VALVE (FL)
- 11 10" PRESSURE REDUCING VALVE (FL)
- 12 10" DISMANTLING JOINT (FL)
- 13 12" X 10" REDUCER (FL)
- 14 12" TEE (FL)
- 15 4" 90° BEND (FL)
- 16 12" X 10" CROSS (FL)
- 17 COMBINATION PRESSURE GAUGE AND TRANSMITTER
- 18 10" FLOW CONTROL VALVE (FL)
- 19 4" X 3" REDUCER (FL)
- 20 3" GATE VALVE (FL)
- 21 3" PRESSURE RELIEF VALVE (FL)
- 22 8" X 3" REDUCER (FL)
- 23 8" 90° BEND (FL)
- 24 8" CROSS (FL)
- 25 8" TAPPED BLIND FLANGE (FL)
- 26 8" X 6" REDUCER (FL)
- 27 6" GATE VALVE (FL)
- 28 6" PRESSURE REDUCING VALVE (FL)
- 29 6" DISMANTLING JOINT (FL)
- 30 6" 90° BEND (FL)
- 31 6" TEE (FL)
- 32 6" X 2" REDUCER (FL)
- 33 2" BRASS BALL VALVE (FL)
- 34 2" PRESSURE REDUCING VALVE (FL)
- 35 6" BEND (FL)
- 36 12" X 8" REDUCER (FL)
- 37 8" GATE VALVE (FL)
- 38 8" CHECK VALVE (FL)
- 39 12" X 6" REDUCER (FL)
- 40 PIPE SUPPORT TYPE A
- 41 PIPE SUPPORT TYPE B
- 42 10" X 4" REDUCER (FL)
- 43 PENETRATION REINFORCING DETAIL
- 44 GENERATOR PAD AND ENCLOSURE
- 45 3" DISMANTLING JOINT (FL)
- 46 8" TEE (FL)
- 47 8" 90° BEND (FL) W/ ADAPTER (FLxMJ)



- NOTES:**
1. ALL PIPING AND APPURTENANCES SHALL BE RATED FOR A MINIMUM OF 250 PSI.
 2. ALL ABOVE GROUND PIPING SHALL BE PAINTED PER SPECIFICATION 09900-2.2.C.
 3. ALL ABOVE GROUND PIPING SHALL BE PAINTED BLUE PER SPECIFICATION 09900-2.3.B.
 4. ALL ABOVE GROUND GATE VALVES SHALL HAVE HAND WHEELS PER SPECIFICATION 15100-2.1.



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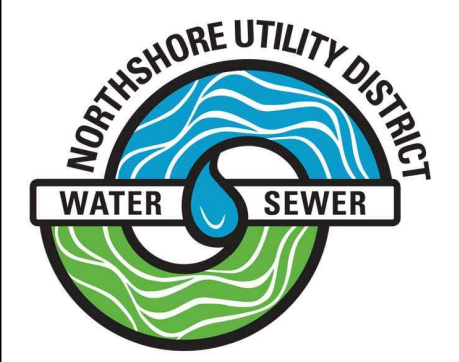
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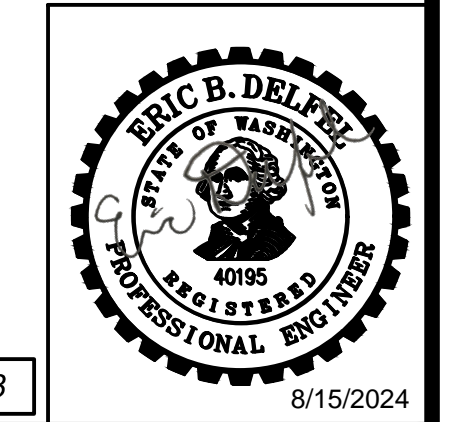


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APPROVAL	EBD
DATE	AUG 2024



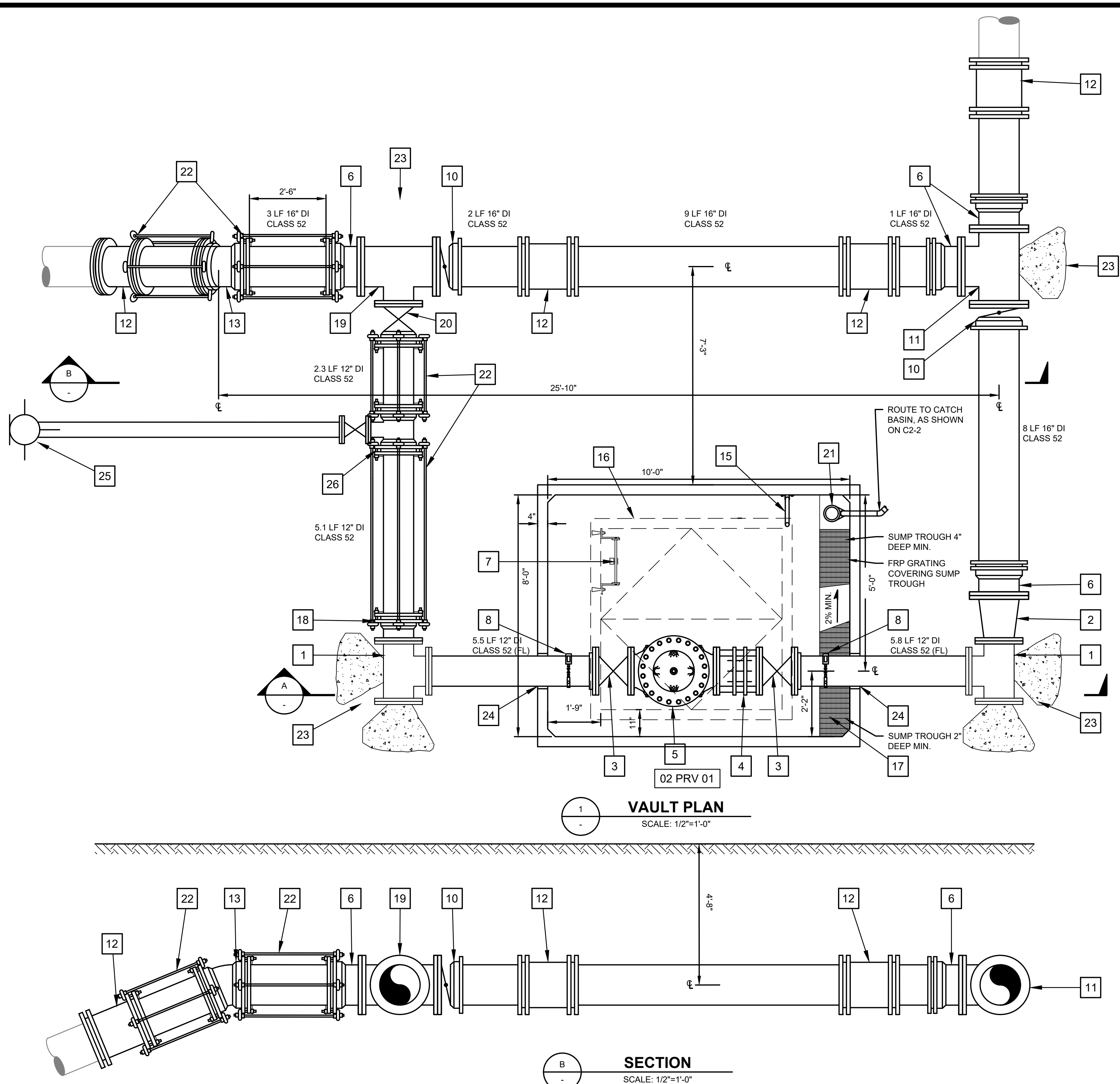
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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
MECHANICAL SECTIONS



#C928
 MECHANICAL
 SHEET: M1-2
 26 OF 56

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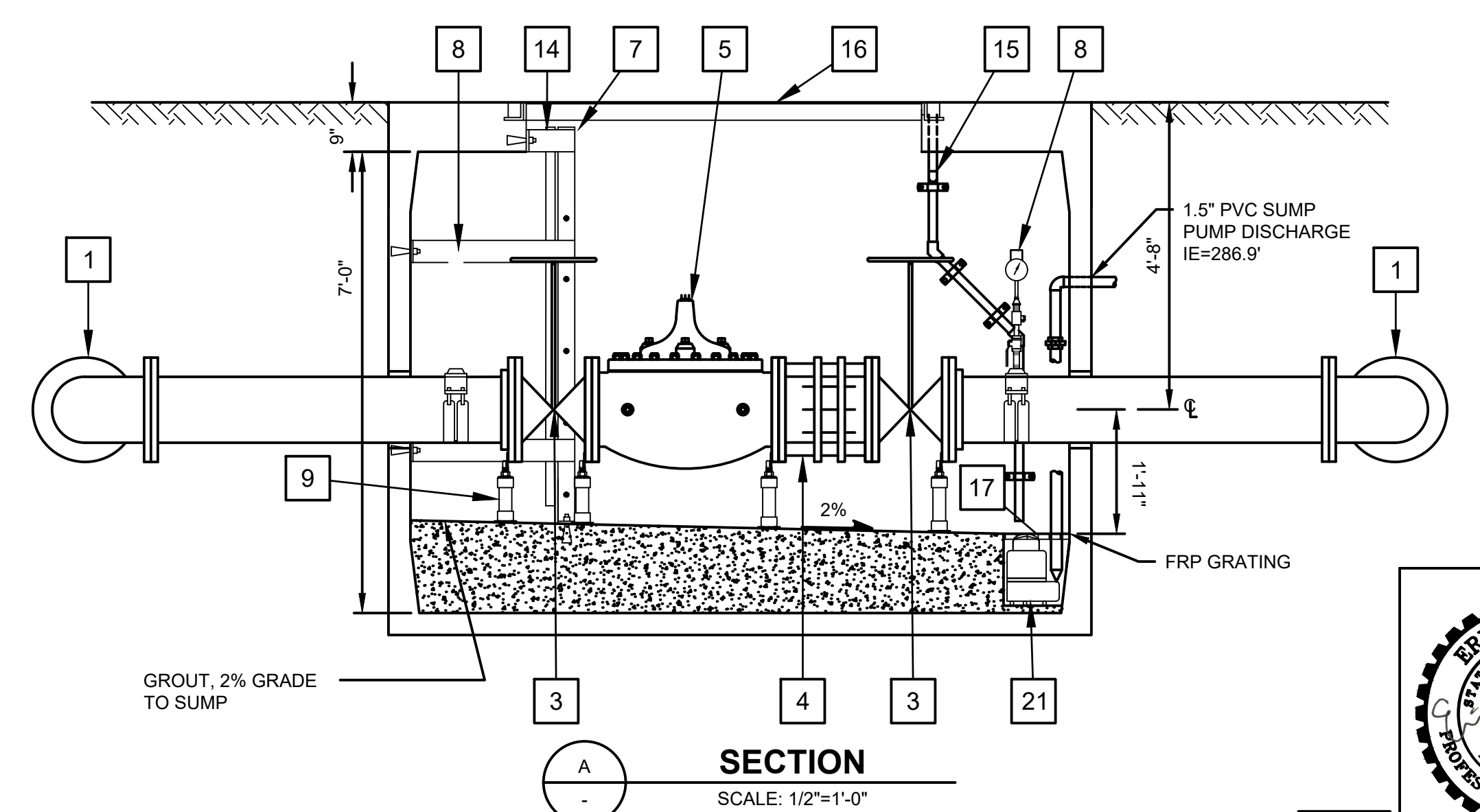


COMPONENT LEGEND

- 1 12" TEE W/ BLIND FLANGE (FL)
- 2 16" X 12" REDUCER (FL)
- 3 12" GATE VALVE (FL)
- 4 12" DJ400 DISMANTLING JOINT (FL)
- 5 12" PRESSURE REDUCING VALVE (FL)
- 6 16" RFCA
- 7 LADDER (MD-1)
- 8 COMBINATION PRESSURE GAUGE AND TRANSMITTER (MD-1)
- 9 PIPE SUPPORT TYPE C: STANDON S89 PIPE SUPPORT, AS REQUIRED (MD-2)
- 10 16" BUTTERFLY VALVE (FLxMJ, RESTRAINED)
- 11 16" TEE (FL)
- 12 16" LONG PATTERN SOLID SLEEVE, RESTRAINED
- 13 16" 22.5" VERTICAL BEND (MJ, RESTRAINED)
- 14 BILCO LADDERUP SAFETY POST
- 15 1-1/2" SCH. 80 PVC HATCH DRAIN. ROUTE TO VAULT SUMP AS SHOWN. (MD-2)
- 16 72" x 96" H-30 DOUBLE LEAF DOOR ACCESS HATCH, LW PRODUCTS OR EQUAL.
- 17 12" WIDE SUMP TROUGH W/ FRP GRATING, 2% MIN. GRADE TO SUMP AND SUMP PUMP
- 18 12" RFCA
- 19 16" x 12" TEE (FL)
- 20 12" GATE VALVE (FLxMJ, RESTRAINED)
- 21 SUMP PUMP (MD-2)
- 22 SHACKLE ROD RESTRAINT SYSTEM, SEE NOTE 2
- 23 HORIZONTAL THRUST BLOCK (CD-1)
- 24 WALL PENETRATION (MD-2)
- 25 FIRE HYDRANT ASSEMBLY (CD-1)
- 26 12" x 6" TEE (MJxFL)

NOTES:

1. ALL MECHANICAL JOINT FITTINGS AND GASKETED PIPE JOINTS SHALL BE RESTRAINED.
2. FOR PIPE SECURED WITH SHACKLE ROD RESTRAINING SYSTEMS, 16" PIPE SHALL HAVE 6 EVENLY SPACED SHACKLE RODS AND 12" SHALL HAVE 4 EVENLY SPACED SHACKLE RODS. SEE SPECIFICATION 02500-2.3(E)



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 CHECKED BY: AKG
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451 ZONE CONTROL VALVE IMPROVEMENTS

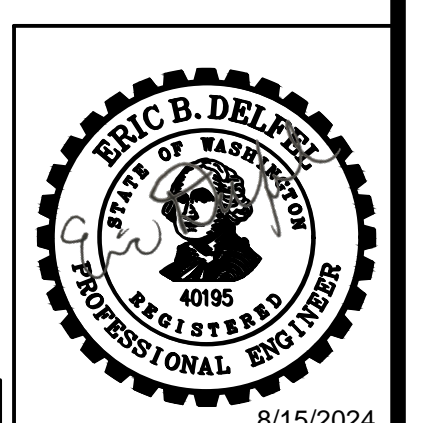
SCHEDULE B

MECHANICAL PLN & SEC

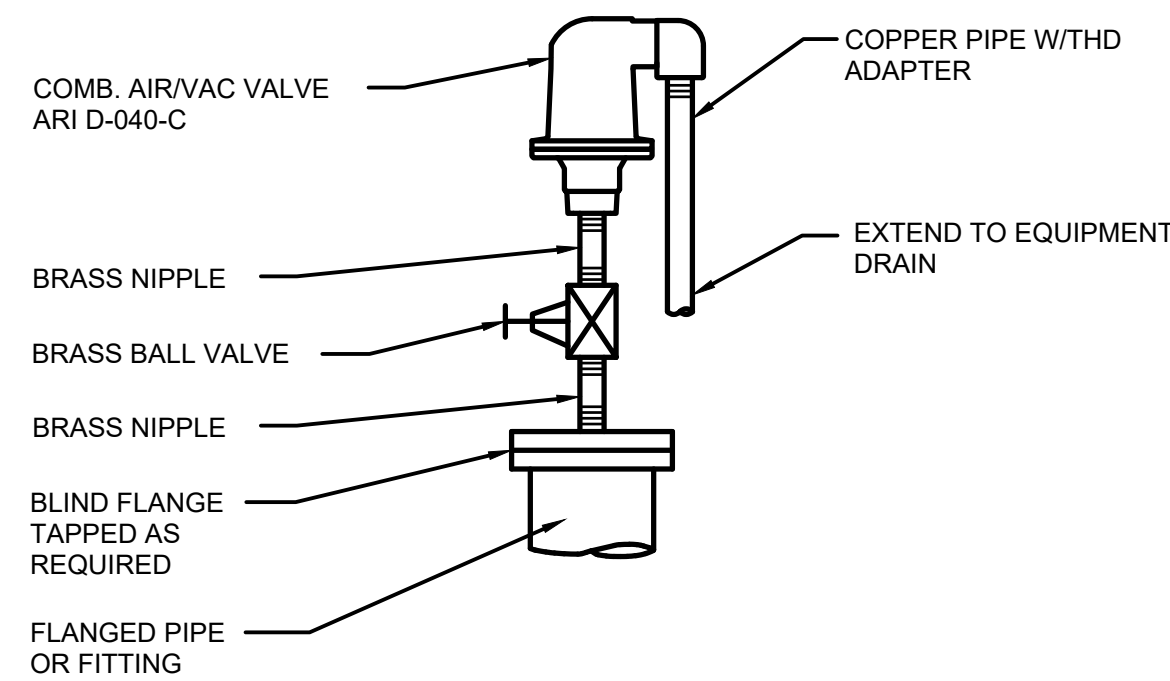
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SHEET: M2-1

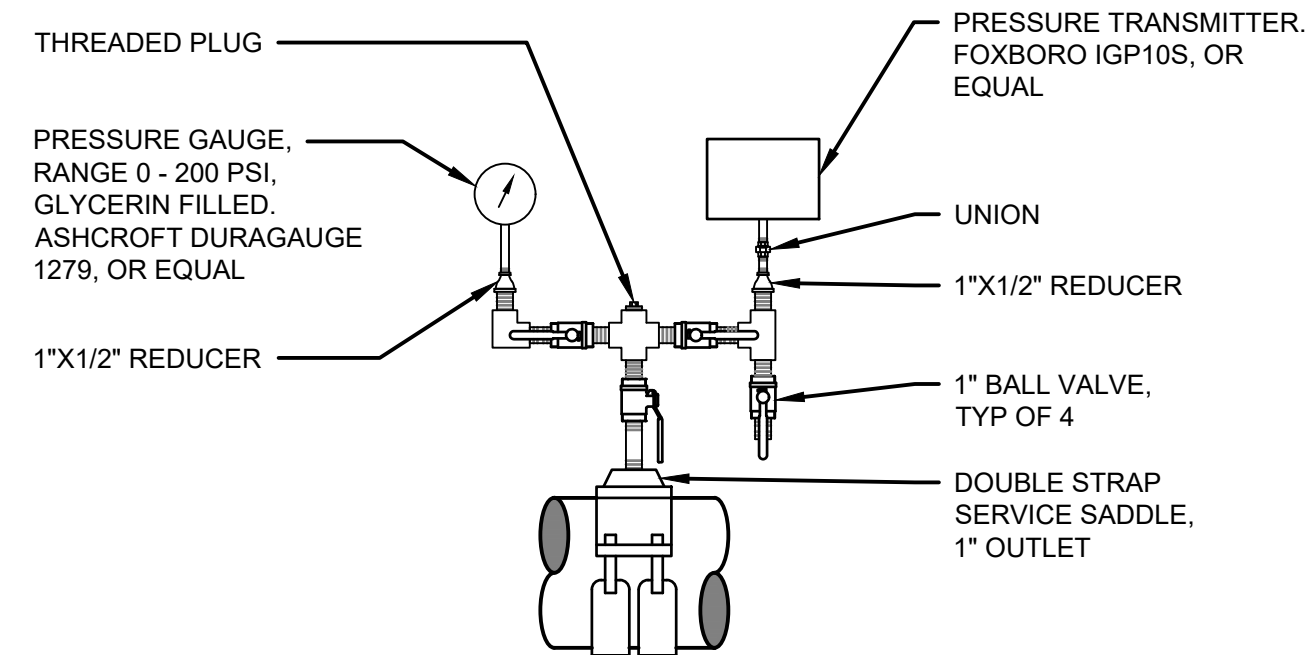
27 OF 56



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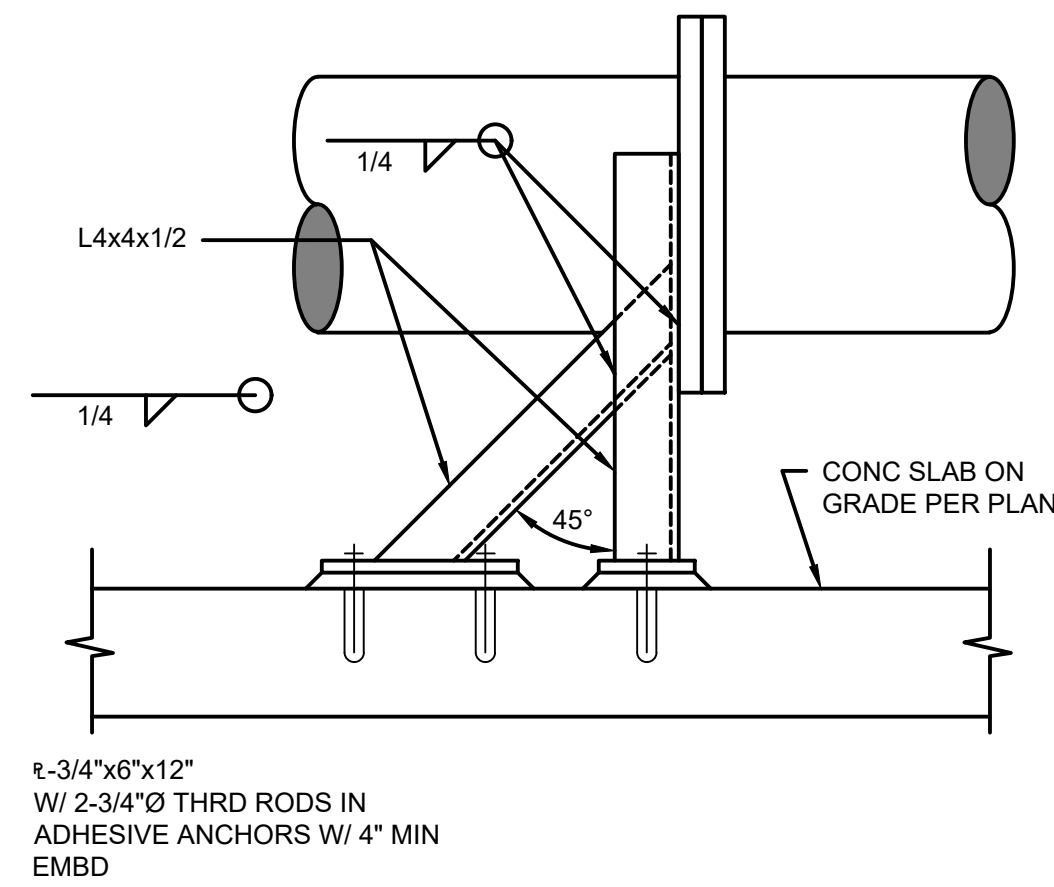


1
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COMBINATION AIR/VAC VALVE

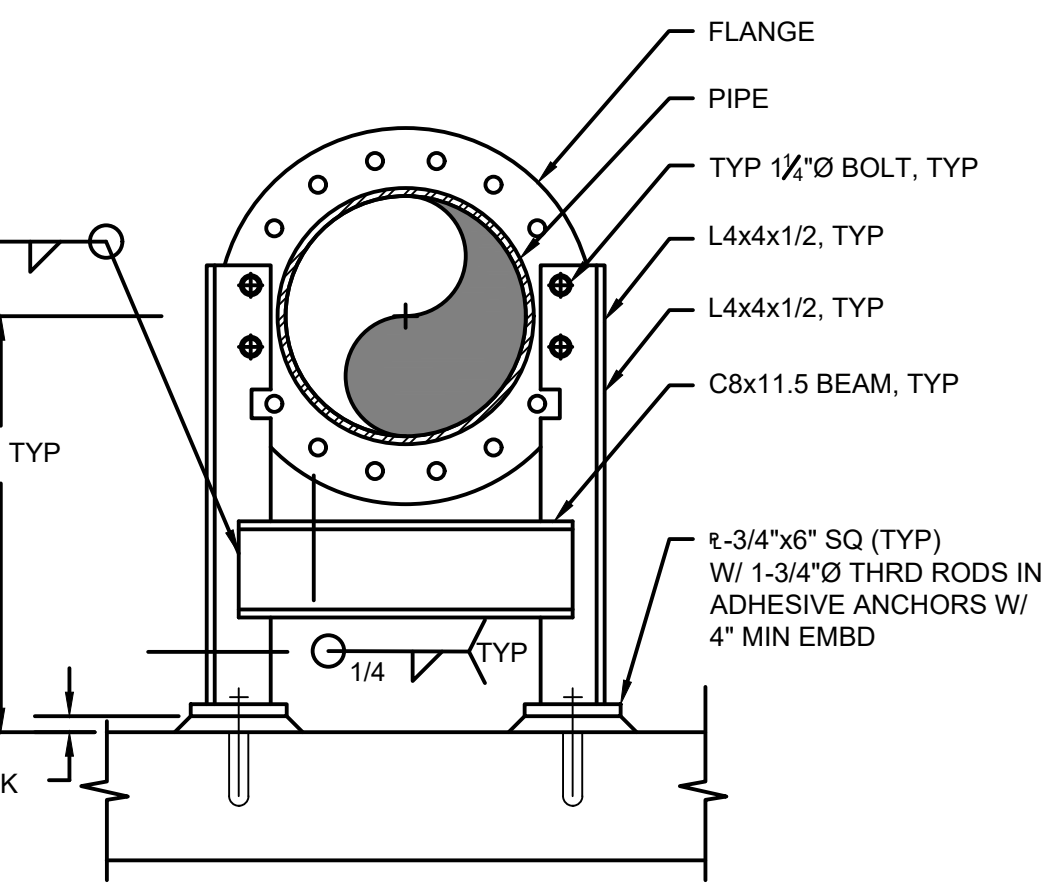
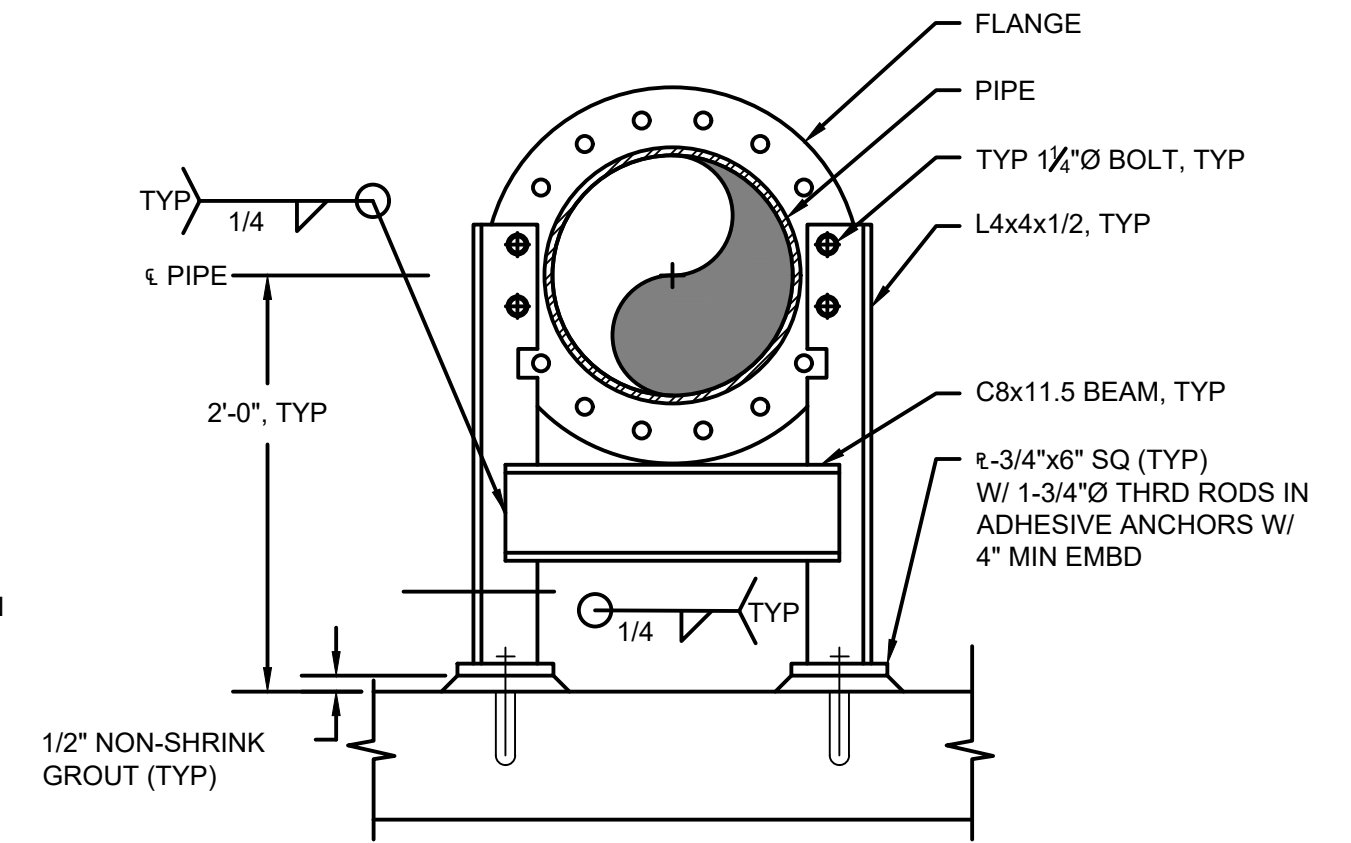


NOTES:
1. ALL FITTINGS, GAUGES, VALVES, SNUBBERS, ETC. TO BE THREADED USE COPPER 1/2" THREADED PIPE NIPPLES FOR CONNECTIONS.

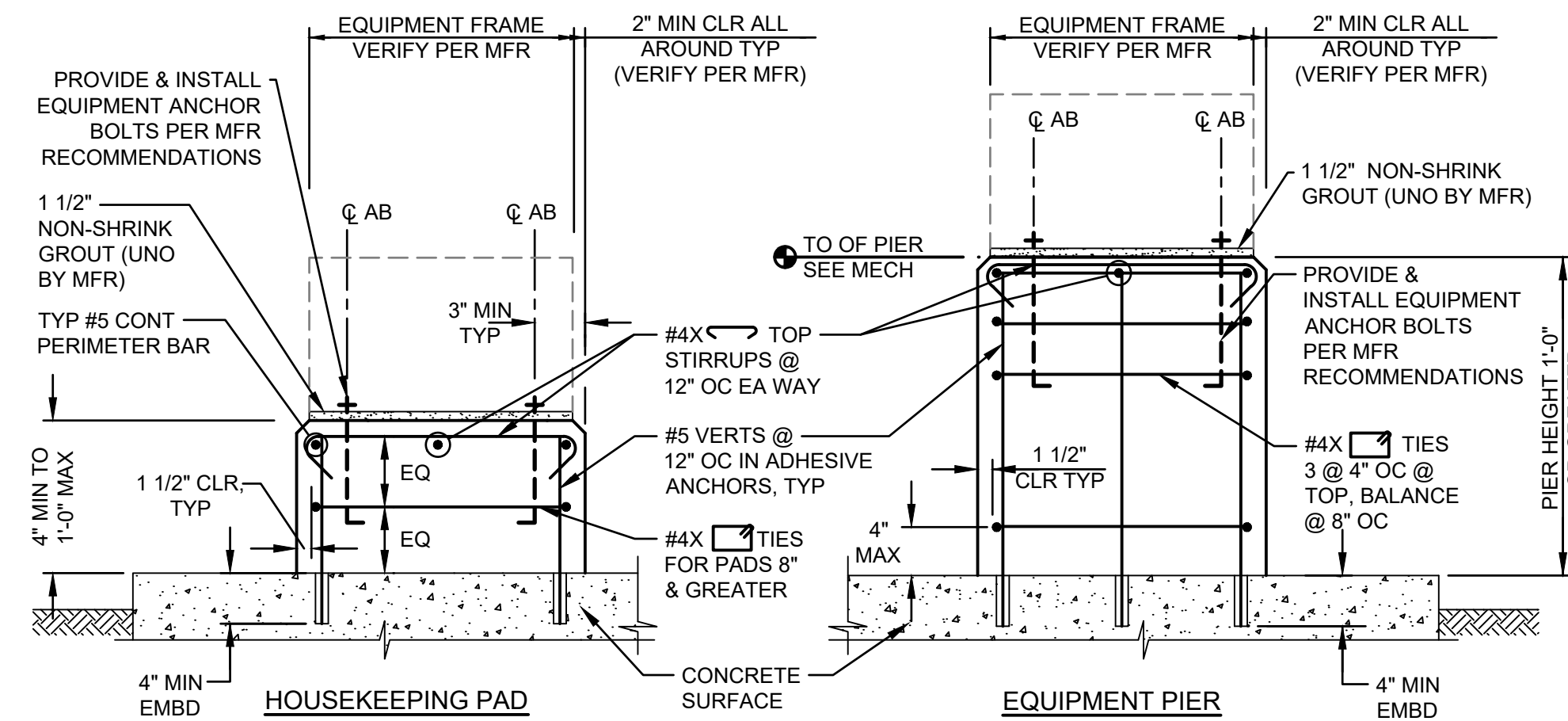
2
TYP NTS
COMBINATION PRESSURE GAUGE AND TRANSMITTER



3
TYP NTS
PIPE SUPPORT - TYPE A

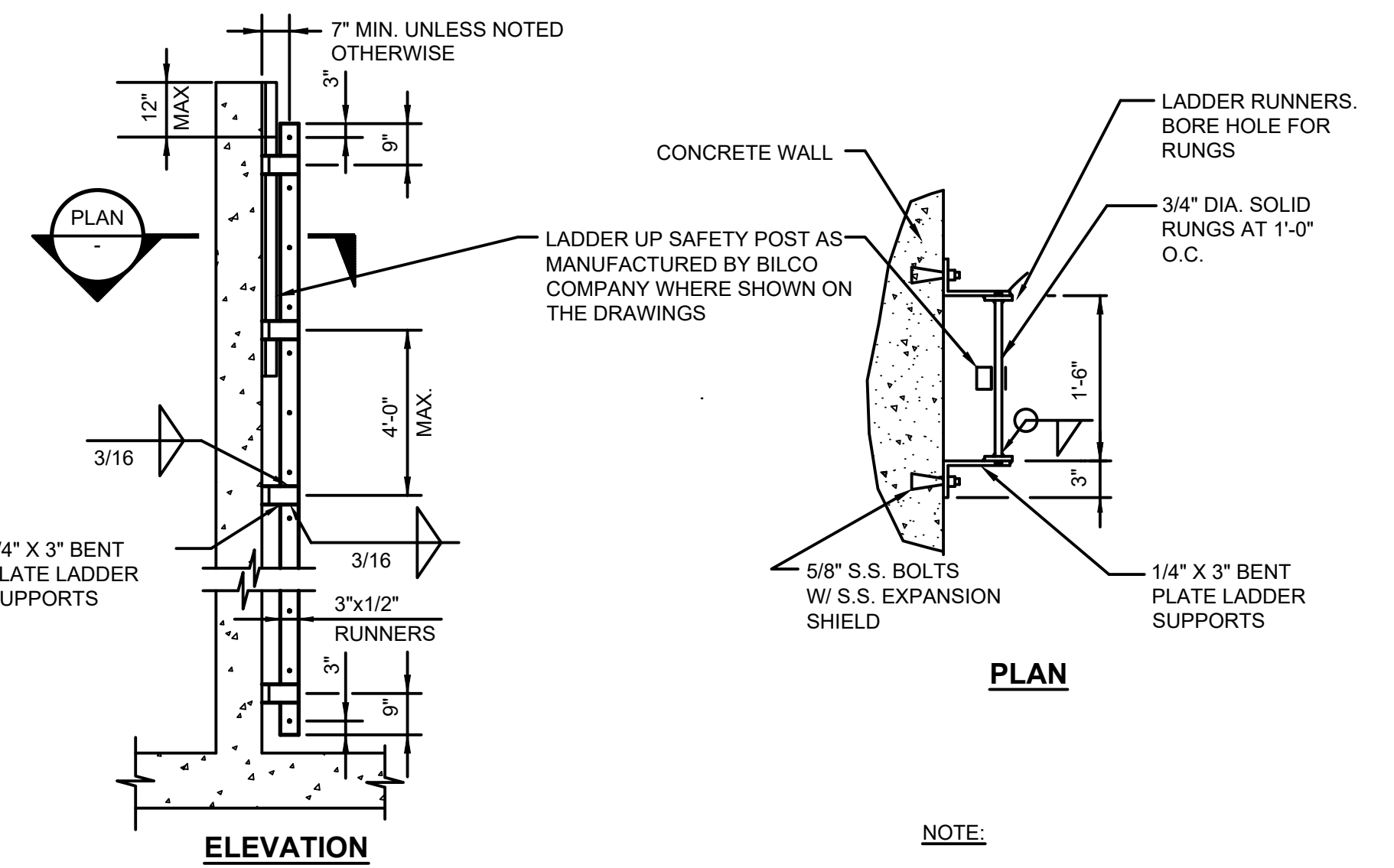


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TYP NTS
PIPE SUPPORT - TYPE B



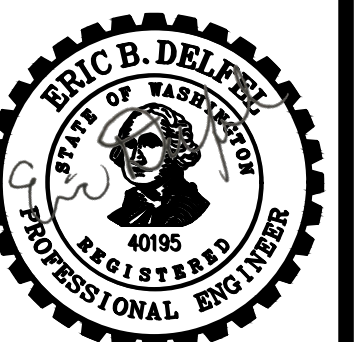
5
TYP NOT TO SCALE
TYP HOUSEKEEPING PAD & EQUIPMENT PIER DETAILS

NOTES:
1. CHAMFER ALL EXPOSED CORNERS OF HOUSEKEEPING PADS AND EQUIPMENT PIERS.
2. FOR PIER HEIGHT LESS THAN 1'-0" SEE HOUSEKEEPING PAD DETAIL



6
M2-1 NTS
LADDER MOUNTING DETAIL

NOTE:
LADDER AND HARDWARE SHALL BE 316 STAINLESS STEEL.

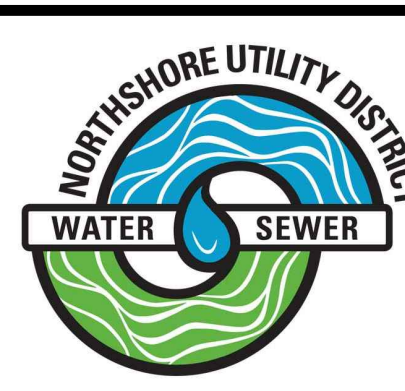


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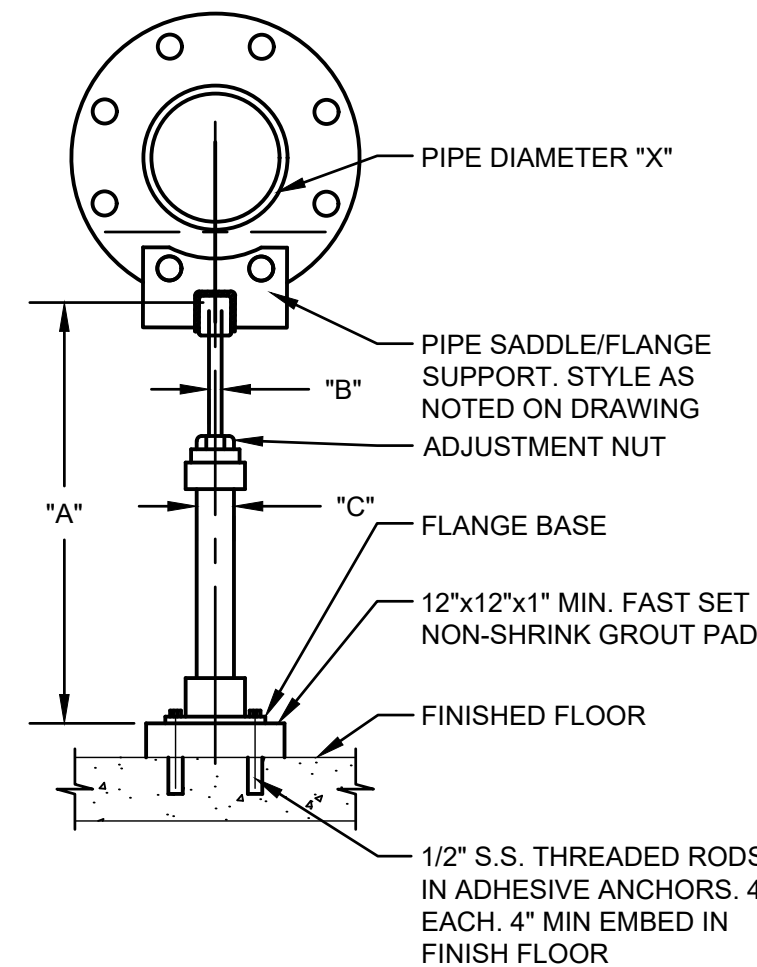


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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
MECHANICAL DETAILS (1)

MECHANICAL
SHEET:MD-1
28 OF 56

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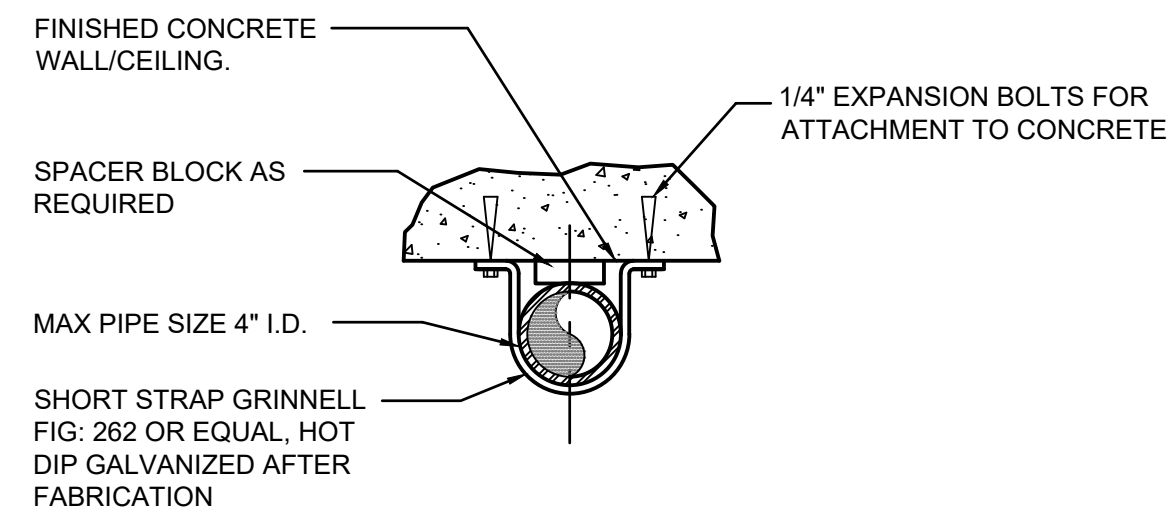


PIPE SIZE "X"	MIN. HEIGHT "A"	VERTICAL ADJUSTMENT	THRU ROD DIAM. "B"	PIPE DIAM. "C"
6"	7"	4"	1"	2"
8"	7"	4"	1"	2"
12"	7"	4"	1"	2"

NOTES:

- PIPE SUPPORT SHALL BE "STANDON", OR EQUAL, AS SHOWN:
 FIG. S89 FLANGE SUPPORT
 FIG. S92 SADDLE SUPPORT
 FIG. C92 PIPE CLAMP SUPPORT
 FIG. S96 FLANGE CRADLE SUPPORT
- PIPE "C" SHALL BE SCH. 40 304 S.S.
- ALL PIPE SUPPORT COMPONENTS SHALL BE 304 S.S. U.N.O., FASTENER SHALL BE 316 S.S.

1 PIPE SUPPORT TYPE C
 M2-1 NTS



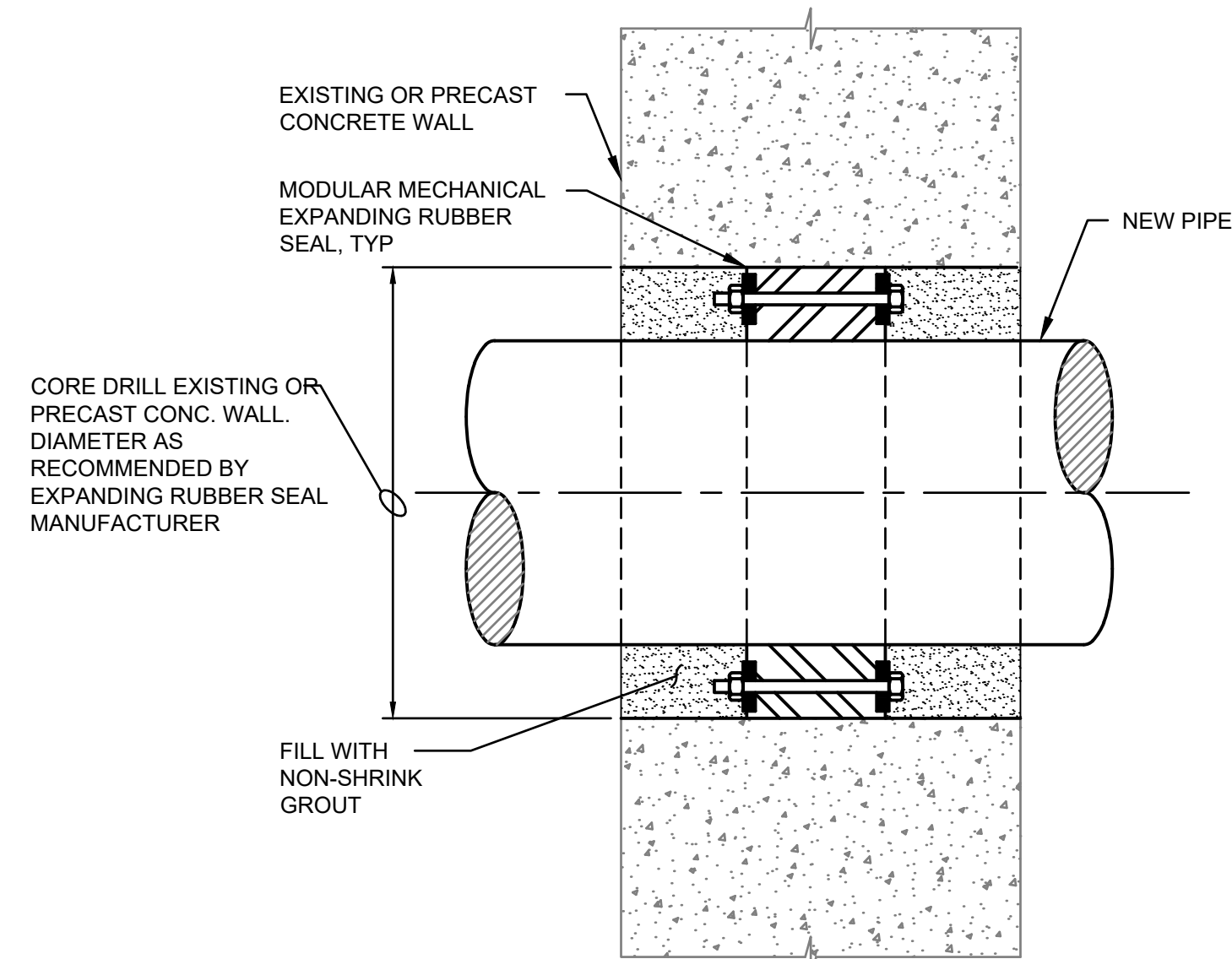
NOTES:

- PIPE SUPPORT TYPE B SHALL BE USED TO SECURE ALL SMALL DIAMETER PIPING, TUBING AND CONDUITS TO WALLS AND CEILINGS.
- SECURE AT ALL FITTING LOCATIONS AND AT 4' O.C. MIN.
- PIPE SUPPORT SIZE SHALL MATCH ACTUAL PIPE DIAMETER.

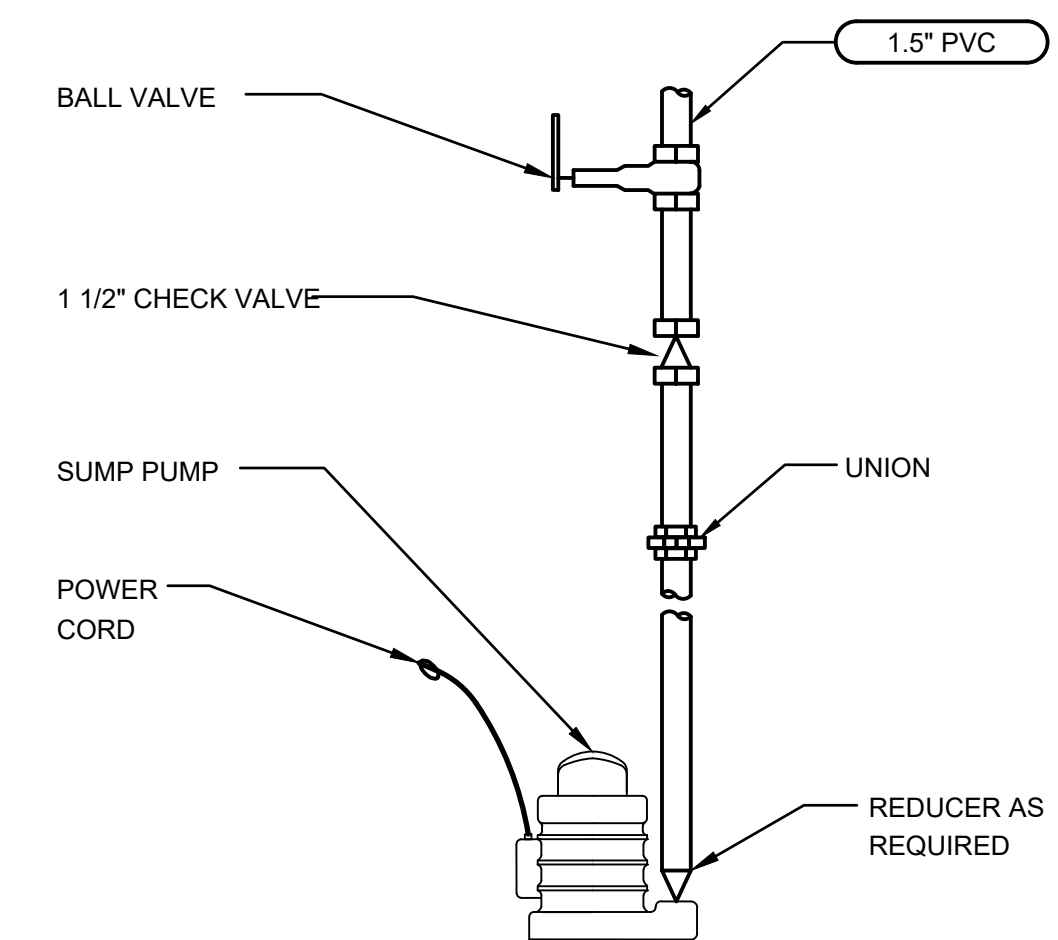
2 PIPE SUPPORT TYPE D
 M2-1 NTS

NOTES:

- FOR EXISTING CONCRETE OR PRECAST CONCRETE, AN OPENING SHALL BE PROVIDED OF ADEQUATE SIZE TO ALLOW FOR INSTALLATION OF PENETRATION SHOWN ON THIS DETAIL. THE OPENING SHALL BE FILLED WITH NON-SHRINK GROUT AFTER PIPE INSTALLATION. IF OPENING IS PROVIDED BY CORE DRILLING, RESULTING SMOOTH CONCRETE SURFACES SHALL BE ROUGHENED BEFORE FILLING WITH GROUT.
- FOR ADDITIONAL REINFORCEMENT AROUND PIPE PENETRATIONS SEE DETAIL **3** S-3
- FOR CMU WALLS, CORE DRILL HOLE. PROVIDE MIN. 8" THICK NON-SHRINK GROUT ENCASEMENT ALL AROUND PIPE SLEEVE IN WALL. FILL ANNULAR OPENING WITH SEALANT.
- MODULAR MECHANICAL EXPANDING RUBBER SEALS SHALL BE USED FOR ALL NEW PENETRATIONS IN EXISTING FLOORS AND WALLS FOR ALL PIPES WITH NOMINAL DIAMETER GREATER THAN OR EQUAL TO 1/2 INCH. ALL PIPING LESS THAN 1/2 INCH NOMINAL DIAMETER SHALL HAVE ANNULAR SPACE FILLED WITH NON-SHRINK GROUT.



3 EXISTING CONCRETE WALL PIPE PENETRATION
 M2-1 NTS



NOTE:

- ROUTE 2" SUMP PUMP DISCHARGE AS NOTED ON PLANS.
- SUMP PUMP SHALL MEET THE FOLLOWING SPECIFICATIONS
 - 30GPM@ 12' TDH
 - 120V, 60HZ, 1 PHASE
 - 1/2 HP MAX
 - SELF CONTAINER INTEGRAL DIAPHRAGM CONTROL, ZOELLER M-53 OR EQUAL

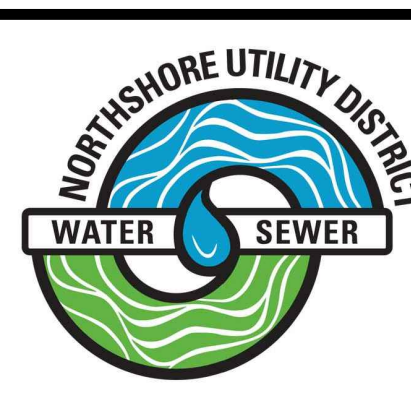
4 SUMP PUMP DETAIL
 M2-1 NTS

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WARNING
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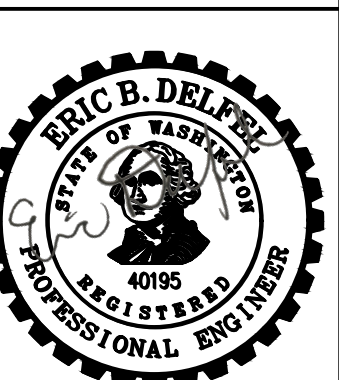
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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
MECHANICAL DETAILS (2)

#C928



MECHANICAL
SHEET:MD-2
29 OF 56

BUILDING DATA

CODES:

IBC	2018	INTERNATIONAL BUILDING CODE
IMC	2018	INTERNATIONAL MECHANICAL CODE
IFC	2018	INTERNATIONAL FIRE CODE
UPC	2018	UNIFORM PLUMBING CODE
WSEC	2018	WASHINGTON STATE ENERGY CODE

PROJECT DESCRIPTION:
 CONSTRUCTION OF SINGLE STORY, PARTIALLY BURIED CONCRETE AND CMU BUILDING WITH PRE-MANUFACTURED WOOD ROOF TRUSSES AND METAL ROOFING, INCLUDING ONE SINGLE OCCUPANCY RESTROOM.

GROSS BUILDING AREAS
 BUILDING (OVERALL): 928 SF

IBC OCCUPANCY AND TYPE (CHAPTER 3):
 U: ENTIRE BUILDING

ALLOWABLE BUILDING AREA (IBC 506.2):
 U (TYPE VB): 5,500 SF
 (NON-SPRINKLERED, SINGLE STORY)

FIRE RESISTIVE BUILDING ELEMENTS REQUIREMENTS (IBC 601):
 PRIMARY STRUCTURAL FRAME: 0 HOURS
 BEARING WALLS: 0 HOURS
 NONBEARING WALLS: 0 HOURS
 FLOOR ASSEMBLIES: 0 HOURS
 ROOF ASSEMBLIES: 0 HOURS

FIRE RESISTIVE EXTERIOR WALLS REQUIREMENTS (IBC 602):
 ALL SEPARATION DISTANCES ≥ 10 FT: 0 HOURS

AUTOMATIC SPRINKLER SYSTEMS (IBC 903):
 U (TYPE VB): NOT APPLICABLE

FIRE ALARM AND DETECTION SYSTEMS (IBC 907):
 U (TYPE VB): NOT APPLICABLE

ATTIC VENTILATION CALCULATIONS:
 PROVIDE FREE AREA INTO ATTIC SPACE FOR VENTILATION PER THE PLANS AND PER INTERNATIONAL BUILDING CODE (IBC).

MIN. REQ'D FREE AREA = $\frac{\text{ATTIC AREA}}{150}$
 $\frac{1057 \text{ SF}}{150} = 7.05 \text{ SF}$

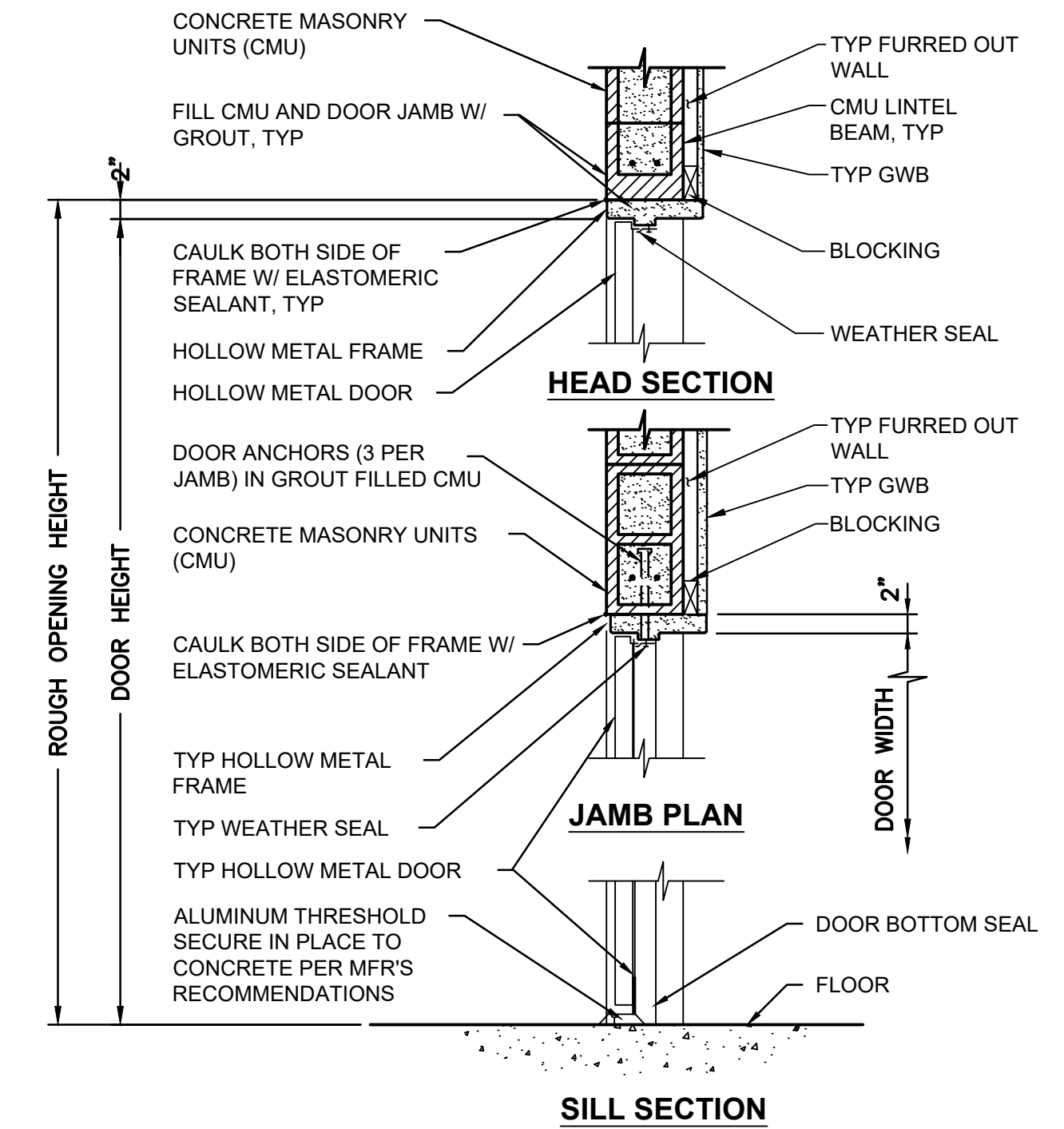
PROPOSED FREE AREA	
EAVE VENT HOLES PER STRUCTURAL:	2.36 SF
RIDGE VENT FREE AREA PER ARCHITECTURAL:	4.80 SF
TOTAL FREE AREA:	7.16 SF

ROOM MATERIAL AND FINISH SCHEDULE														
ROOM NAME	WALLS												CEILING	
	FLOOR			NORTH		SOUTH		EAST		WEST		MATL	FINISH	
	MATL	FINISH	BASE	MATL	FINISH	MATL	FINISH	MATL	FINISH	MATL	FINISH			
CONTROL VALVE ROOM	CONC	CSH	N/A	CMU/IFS	PTS/FF	CMU/IFS	PTS/FF	CMU/IFS	PTS/FF	CMU/IFS	PTS/FF	GWB	PTS	
BATHROOM	CONC	CSH	RBB	GWB	PTS	GWB*	PTS	GWB*	PTS	GWB	PTS	GWB	PTS	

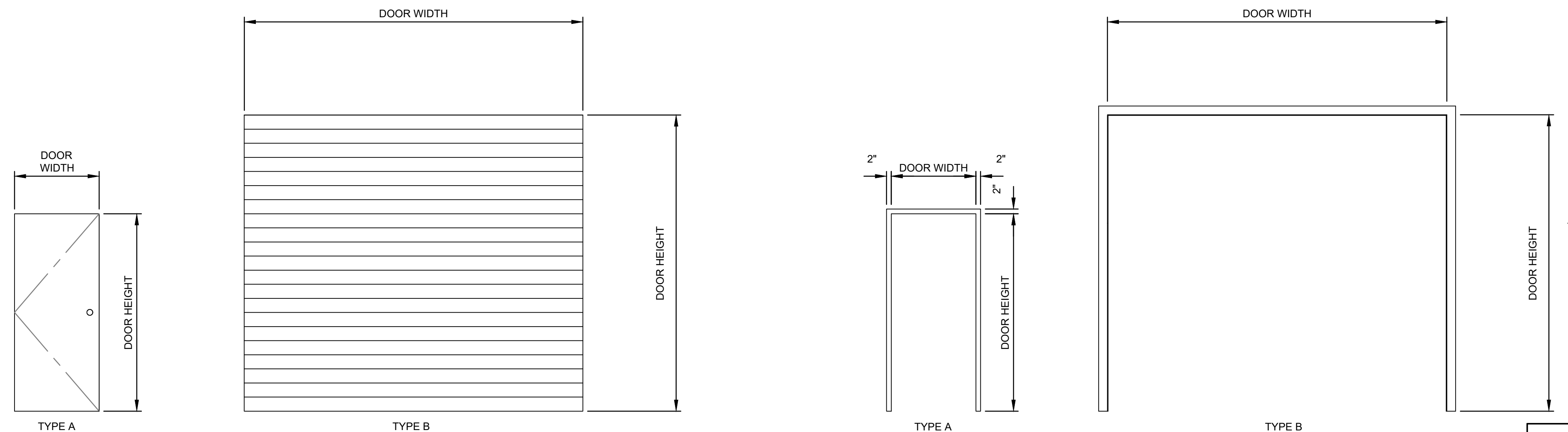
CMU	-CONCRETE MASONRY UNIT	GWB	-GYPSUM WALL BOARD	PTS	-PAINT TO SPECIFICATIONS
CONC	-CONCRETE	FF	-FACTORY FINISH	RBB	-RUBBER RESILIENT WALL BASE
CSH	-CONCRETE SURFACE HARDENER	IFS	-INSULATED FINISH SYSTEM	*	-BOTH SIDES OF WALL
		N/A	-NOT APPLICABLE		

DOOR SCHEDULE							
NO.	MATERIAL & TYPE	DOOR SIZE: WIDTH x HEIGHT x THICKNESS	DOOR TYPE	FRAME TYPE	MAXIMUM U-FACTOR	FINISH	HARDWARE GROUP
1	HOLLOW METAL INSULATED	3'-0" x 7'-0" x 1 3/4"	A	A	0.37	PAINT	1
2	HOLLOW METAL INSULATED	3'-0" x 7'-0" x 1 3/4"	A	A	0.37	PAINT	2
3	OVERHEAD COIL INSULATED	12'-0" x 10'-6" x 3/4"	B	B	0.31	FF	N/A

NOTE: FRAME THROAT VARIES, COORDINATE & VERIFY FRAME DEPTH W/ FINISHED WALL SECTION.



TYP DOOR DETAIL
 SCALE: NTS



DOOR TYPES
 SCALE: NTS

DOOR FRAME TYPES
 SCALE: NTS

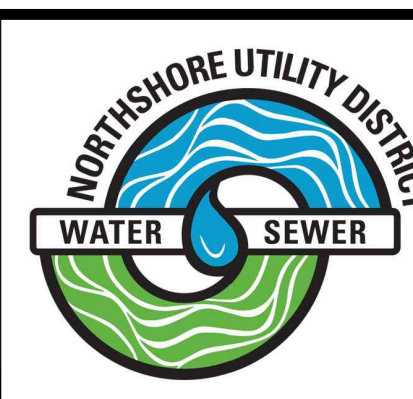
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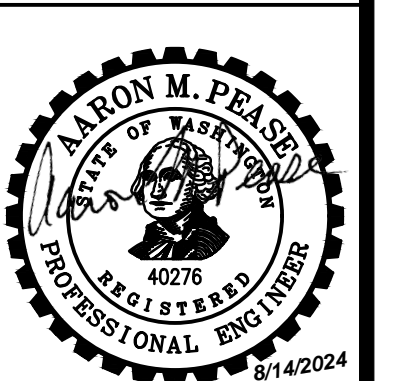


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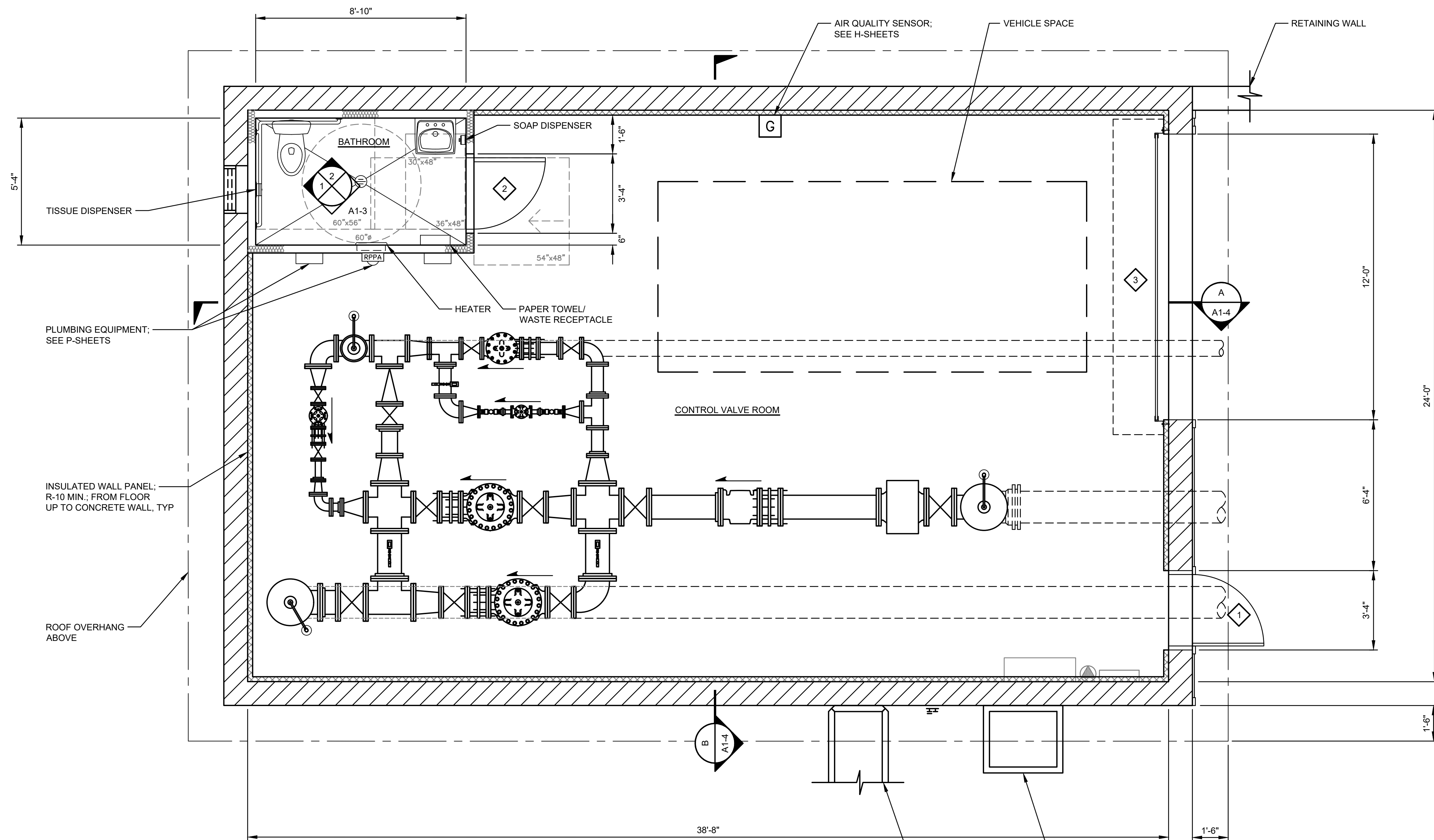
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 451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
BUILDING NOTES AND SCHEDULES



ARCHITECTURAL
 SHEET: A1-1
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FLOOR PLAN
SCALE: 3/8"=1'-0"



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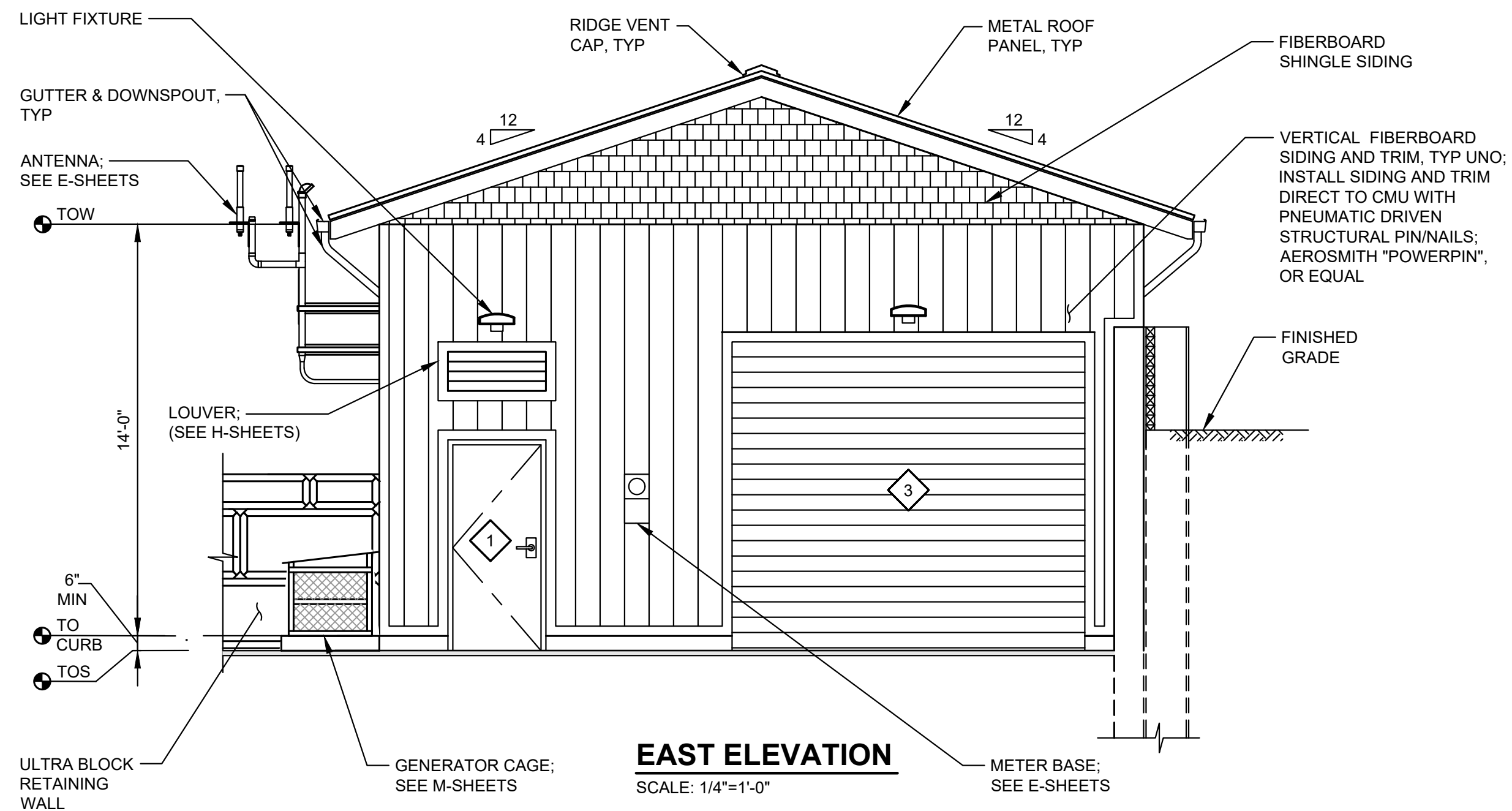
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SCHEDULE A
FLOOR PLAN

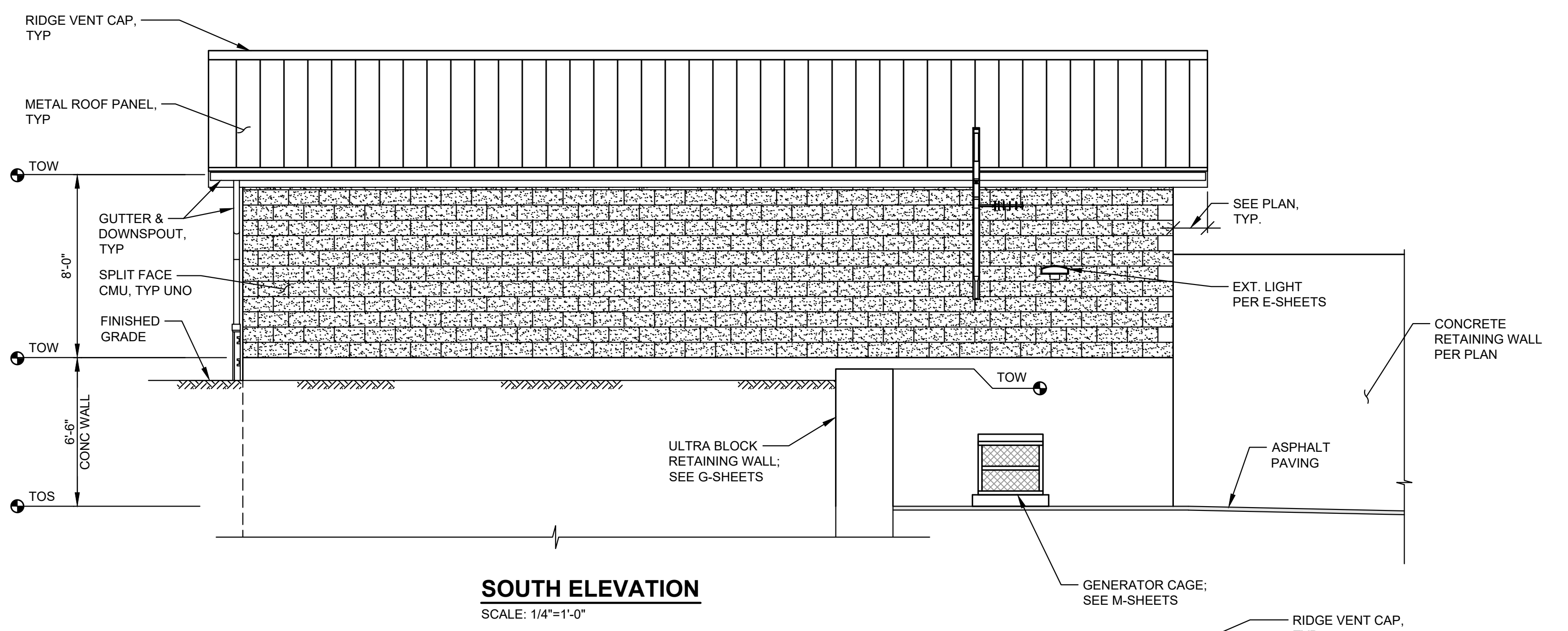
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ARCHITECTURAL
SHEET: A1-2
31 OF 56

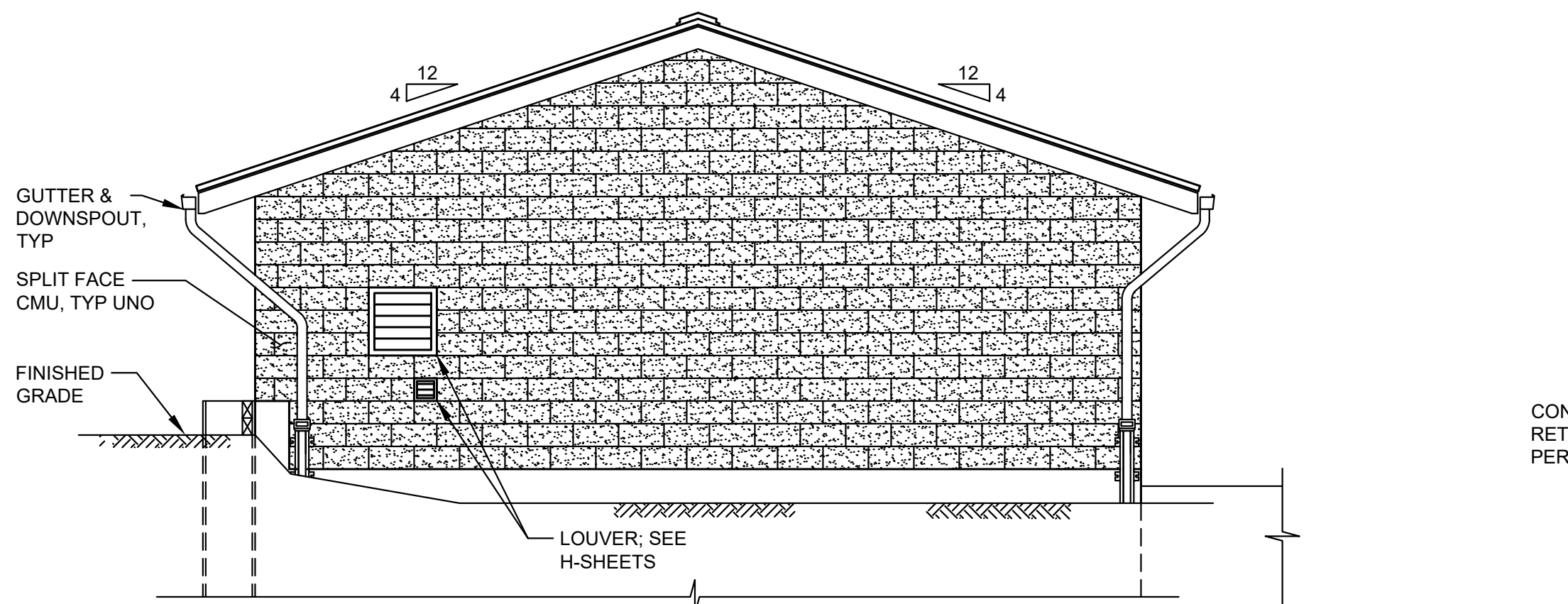
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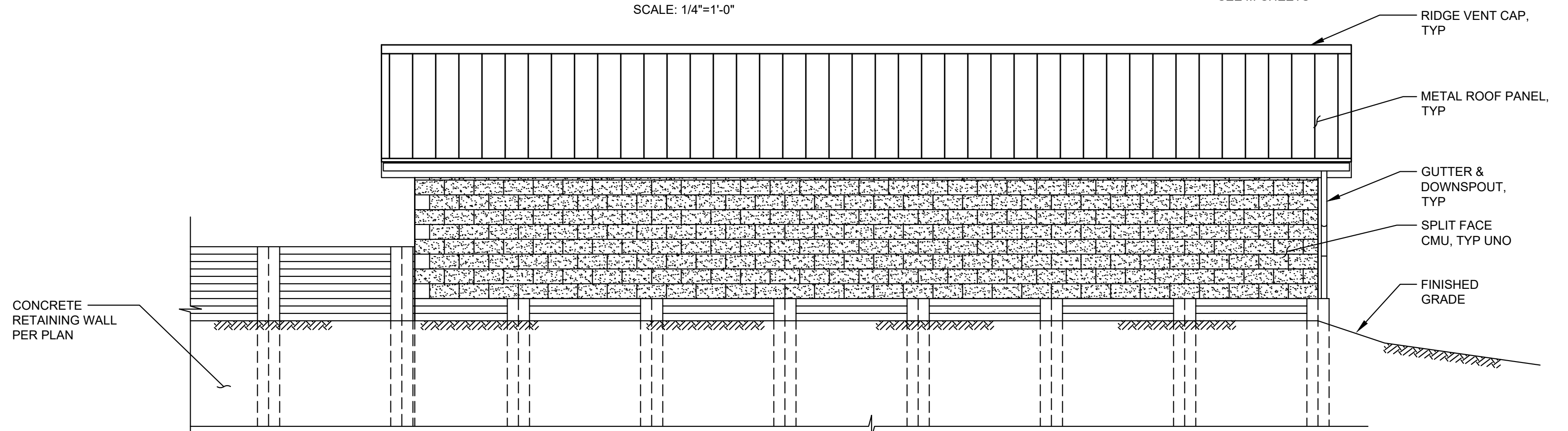
EAST ELEVATION
SCALE: 1/4"=1'-0"



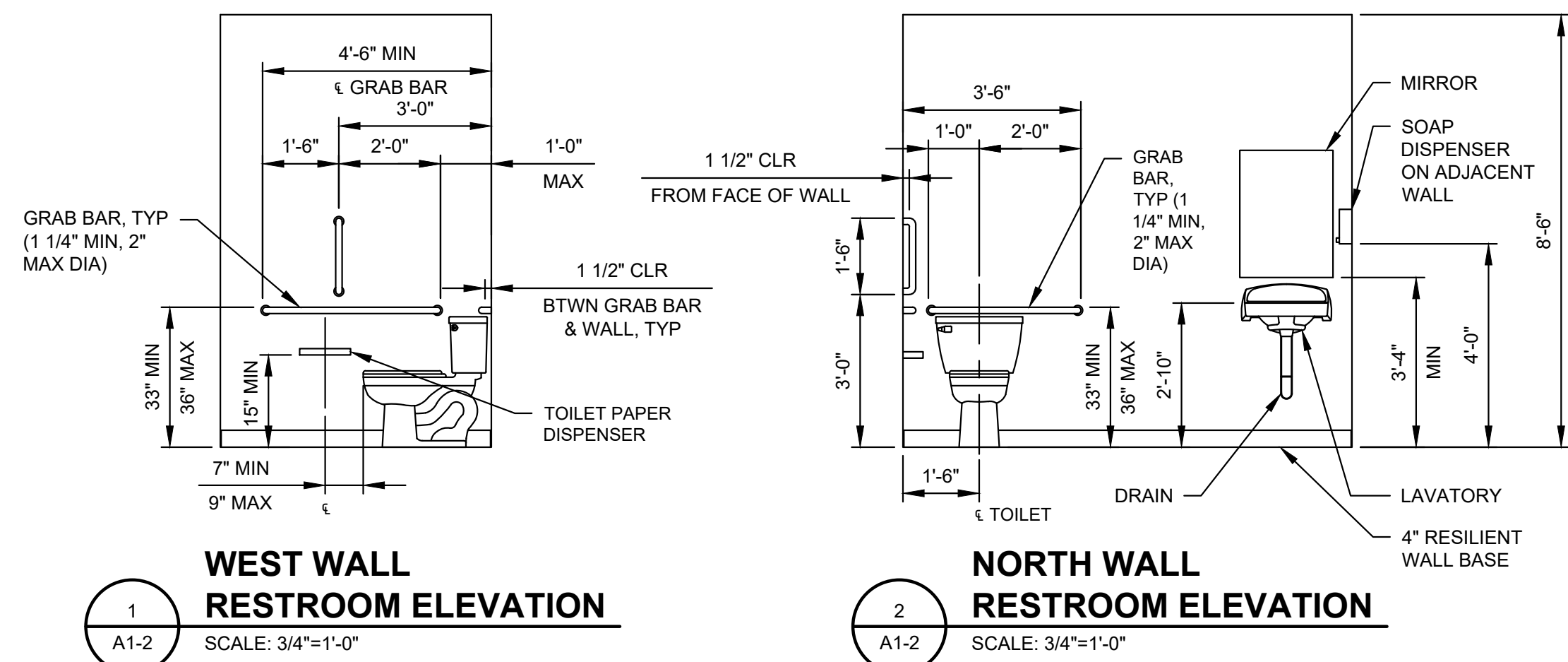
SOUTH ELEVATION
SCALE: 1/4"=1'-0"



WEST ELEVATION
SCALE: 1/4"=1'-0"



NORTH ELEVATION
SCALE: 1/4"=1'-0"



WEST WALL RESTROOM ELEVATION
SCALE: 3/4"=1'-0"

NORTH WALL RESTROOM ELEVATION
SCALE: 3/4"=1'-0"

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WARNING
0 1/2 1
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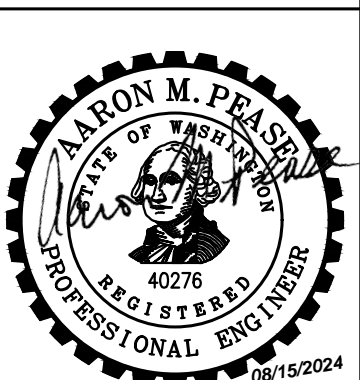


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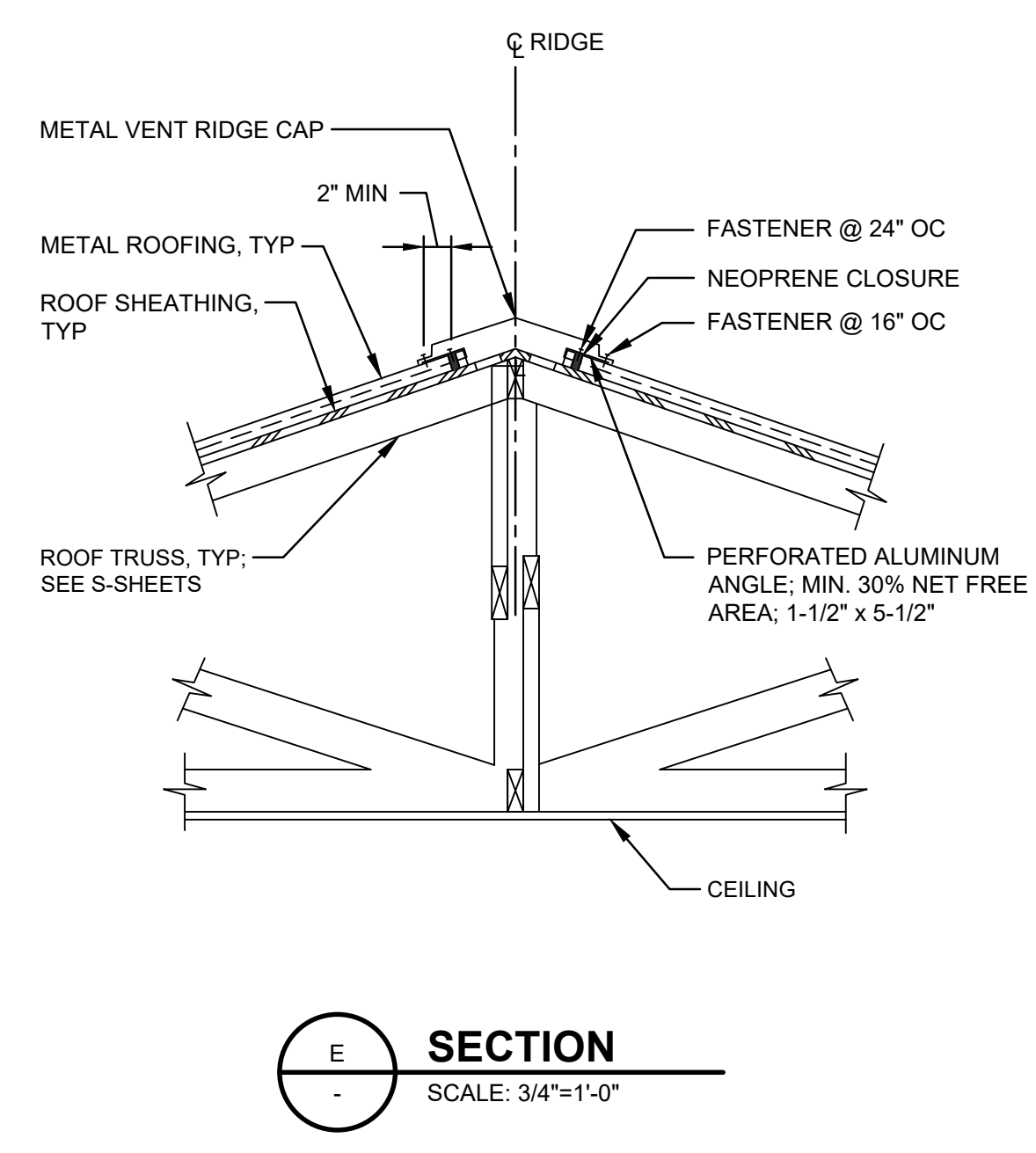
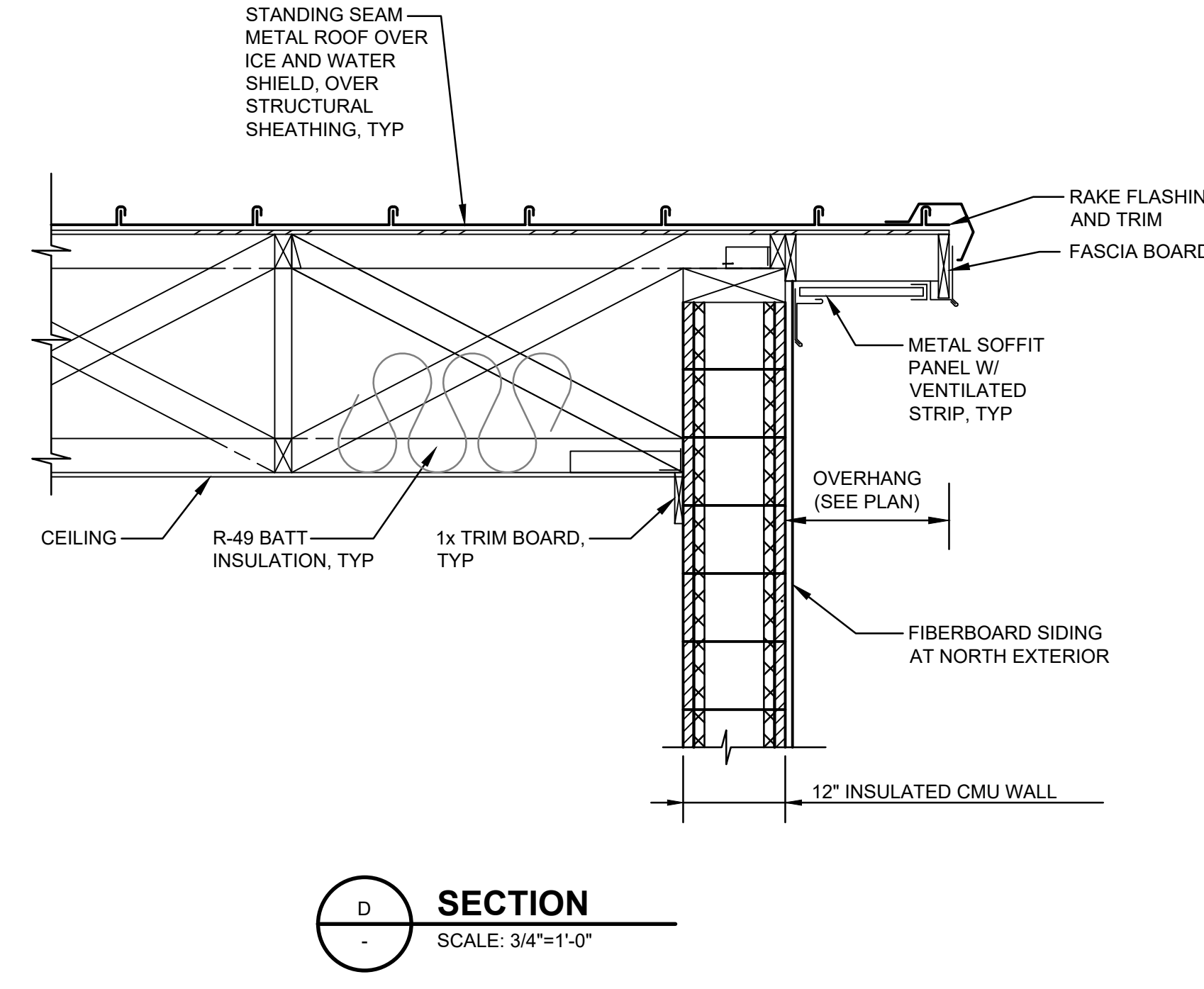
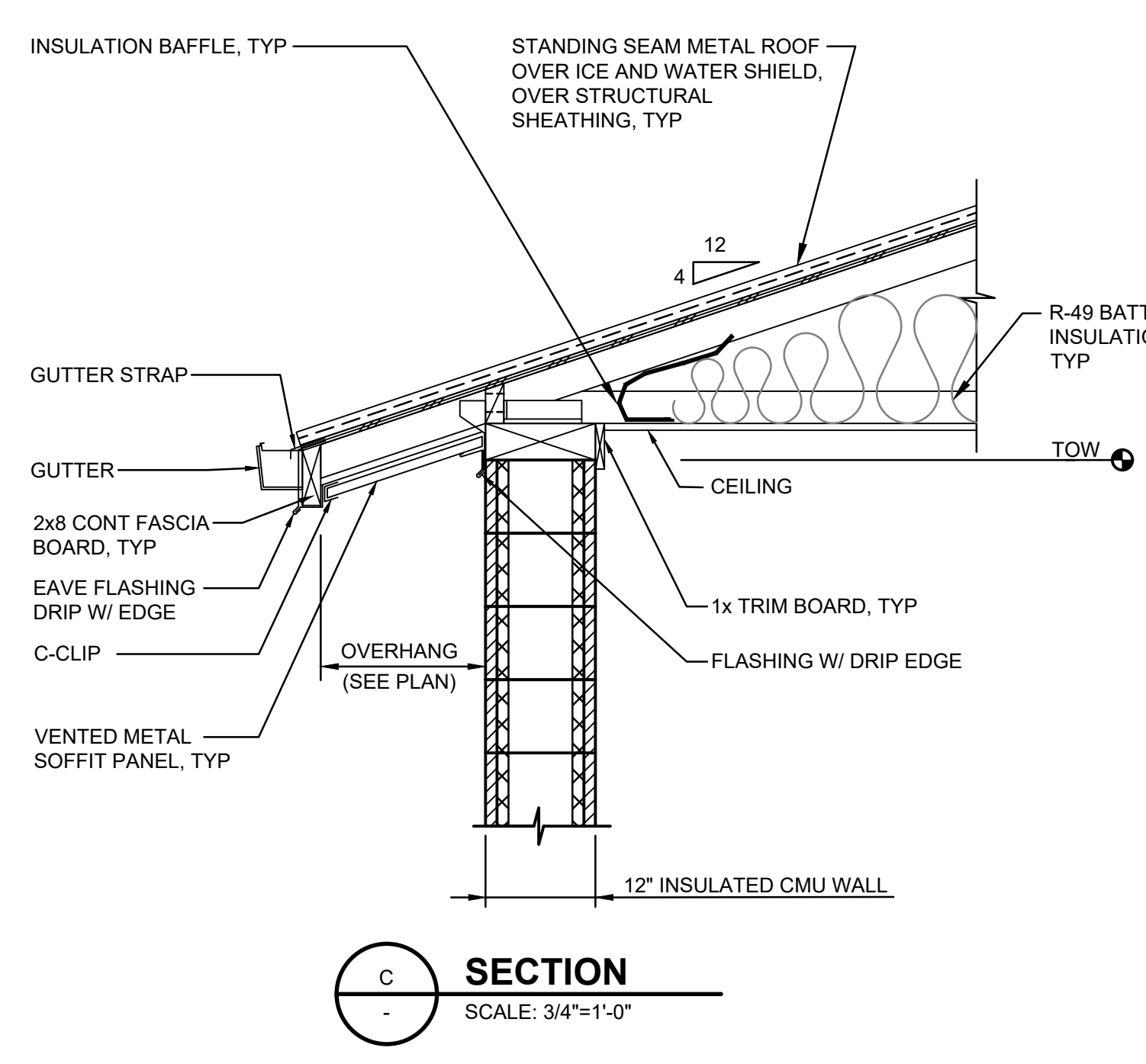
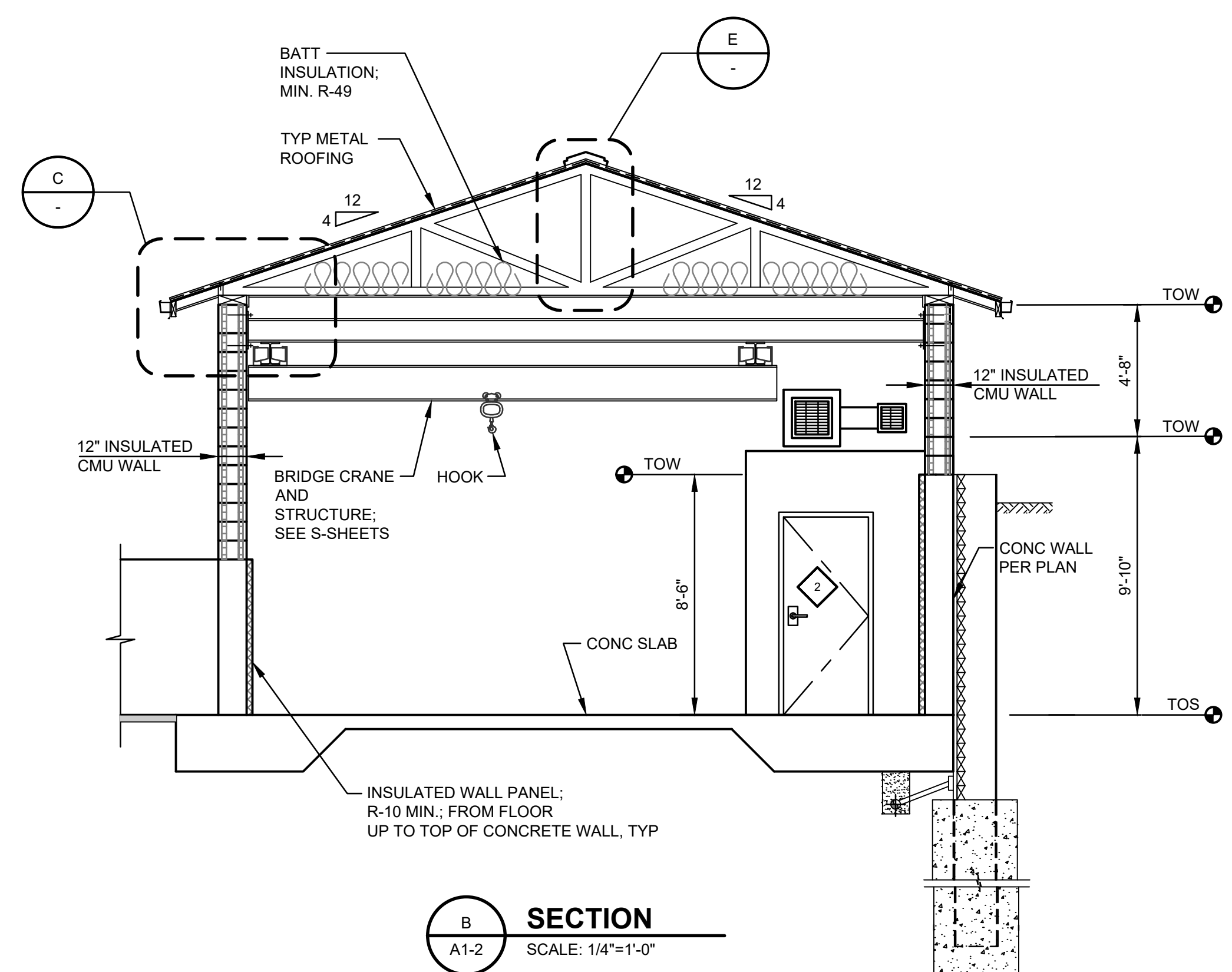
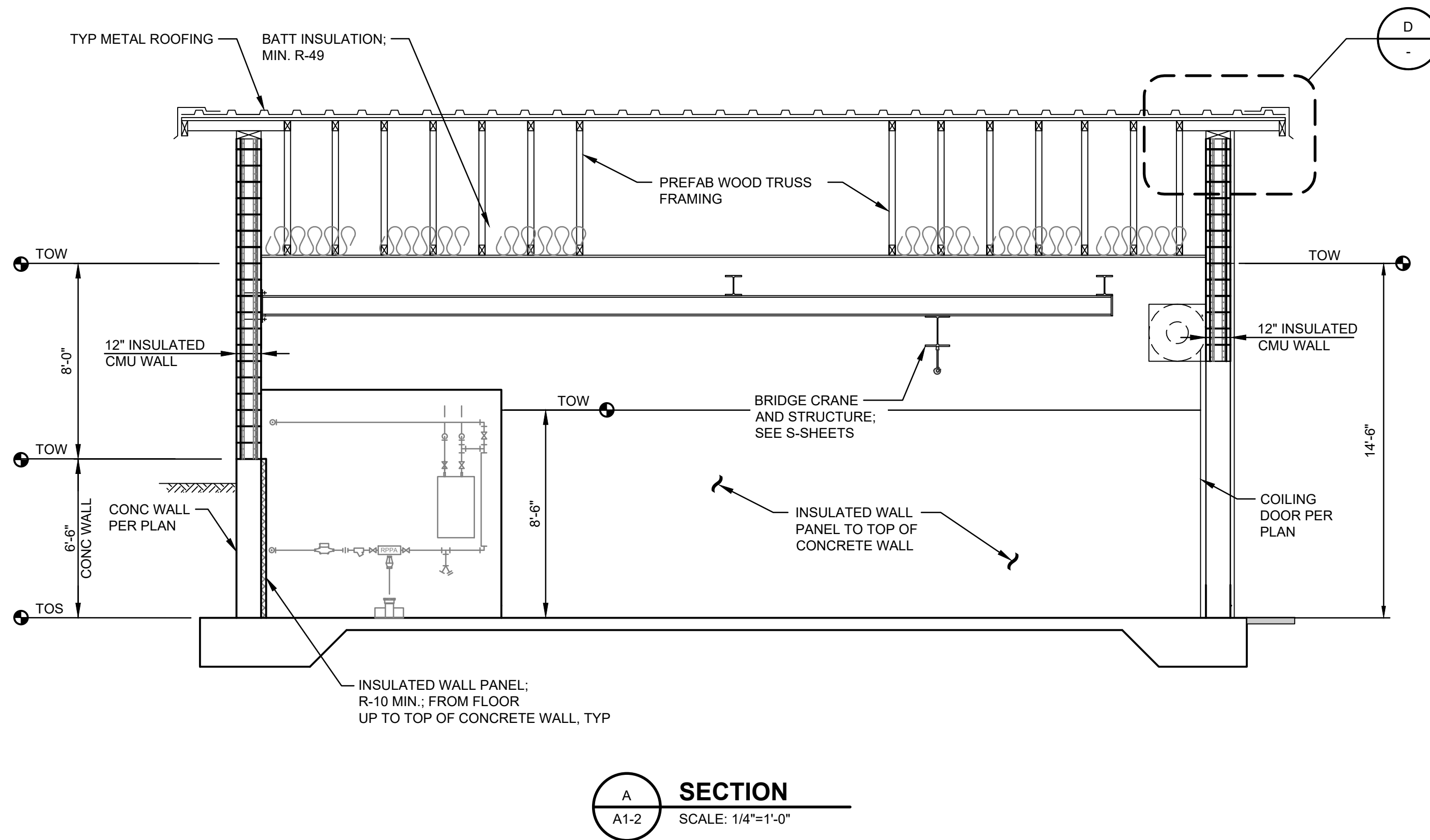
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451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
EXTERIOR AND INTERIOR BUILDING ELEVATIONS



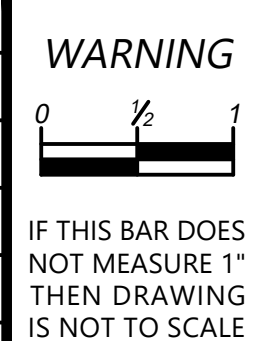
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ARCHITECTURAL
SHEET: A1-3
32 OF 56

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451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
BUILDING SECTIONS AND DETAILS



#C0928
ARCHITECTURAL
SHEET: A1-4
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HVAC DESIGN CRITERIA

OA VENTILATION

NONE: CONTROL VALVE FACILITY IS CONSIDERED A NON-OCCUPIED EQUIPMENT ROOM.

THE RESTROOM IS MECHANICALLY VENTILATED WITH EXHAUST FANS PER IMC.

THE CONTROL VALVE FACILITY WILL BE VENTILATED PER IMC CHAPTER 4 FOR ENCLOSED PUBLIC GARAGES.
CONTINUOUS STANDBY RATE OF >0.05 CFM/SF.
FULL-ON RATE OF >0.75 CFM/SF.

FLOOR AREA: 928 SF
REQ'D LOW AIRFLOW: 50 CFM
REQ'D HIGH AIRFLOW: 700 CFM

DESIGN TEMPERATURES

WINTER AMBIENT TEMP: 17 °F
SUMMER AMBIENT TEMP: 83 °F
INTERIOR HEATING SETPOINT: 55 °F
INTERIOR COOLING SETPOINT: 90 °F

HEATING/COOLING

CONTROL VALVE FACILITY:
REQ'D HEATING LOAD: 19.5 MBH (5.7 KW)
REQ'D COOLING LOAD: 0.622 MBH
TYPE: ELECTRIC RESISTANCE (SELECT 7.5 KW CAPACITY IN COMPLIANCE WITH WSEC C403.3.1)

CONTROL DESCRIPTION:

THE INLINE EXHAUST FAN [01 EF 01] WILL PROVIDE VENTILATION IN THE CONTROL ROOM AND WILL BE A CONTINUOUS SYSTEM.

THE INLINE EXHAUST FAN [01 EF 02] IN THE CONTROL ROOM WILL PROVIDE VENTILATION AND BE CONTROLLED BY THE AIR QUALITY SENSOR [01 AS 01].

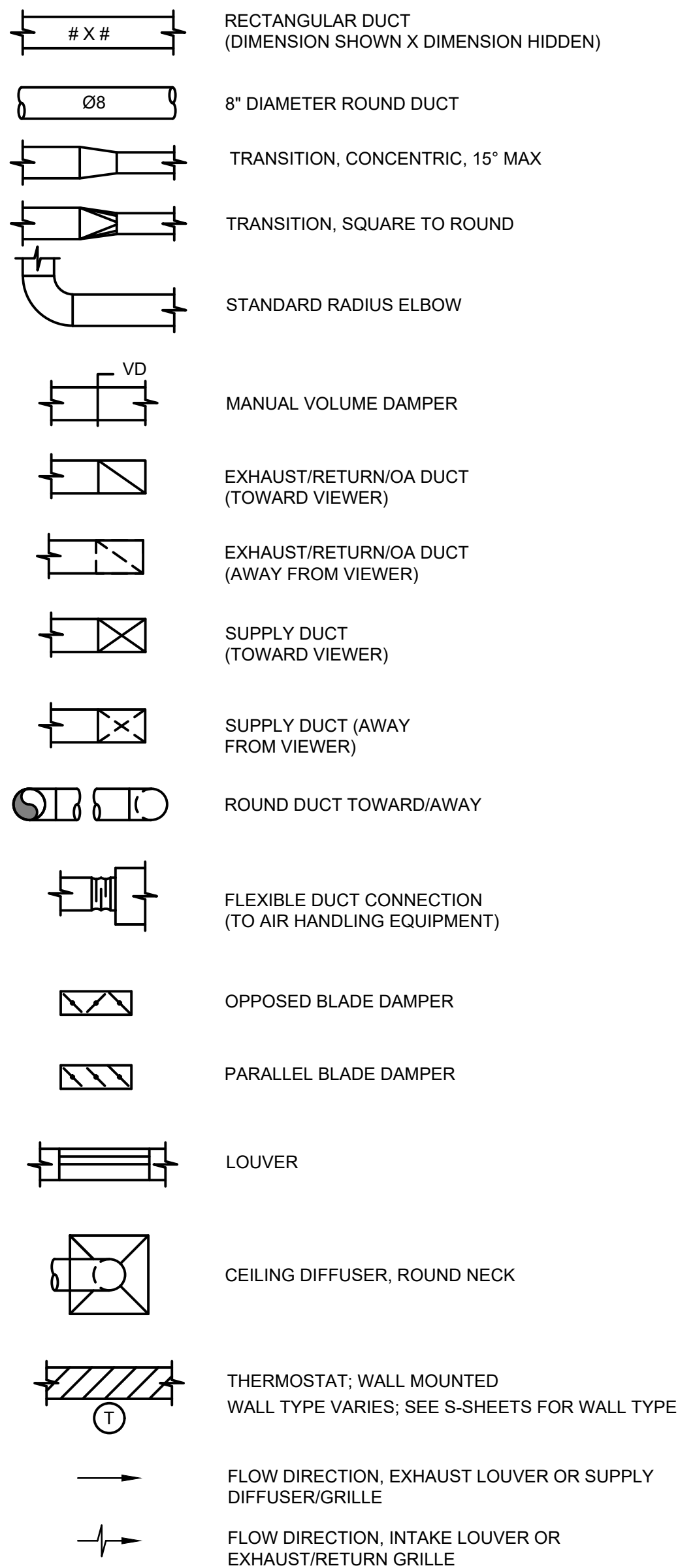
THE CEILING EXHAUST FAN [01 EF 03] WILL PROVIDE VENTILATION IN THE RESTROOM AND WILL BE CONTROLLED BY A LIGHT SWITCH.

THE UNIT HEATER [01 HT 01] WILL PROVIDE HEATING IN THE CONTROL ROOM AND WILL BE CONTROLLED BY AN INTERNAL THERMOSTAT.

THE WALL HEATER [01 HT 02] WILL PROVIDE HEATING IN THE RESTROOM AND WILL BE CONTROLLED BY AN INTERNAL THERMOSTAT.

THE INSULATED MOTORIZED DAMPERS IN THE CONTROL ROOM WILL BE CONTROLLED BY THE EXHAUST FAN [01 EF 02]. TO BE OPEN WHEN THE FAN IS RUNNING.

HVAC SYMBOLS



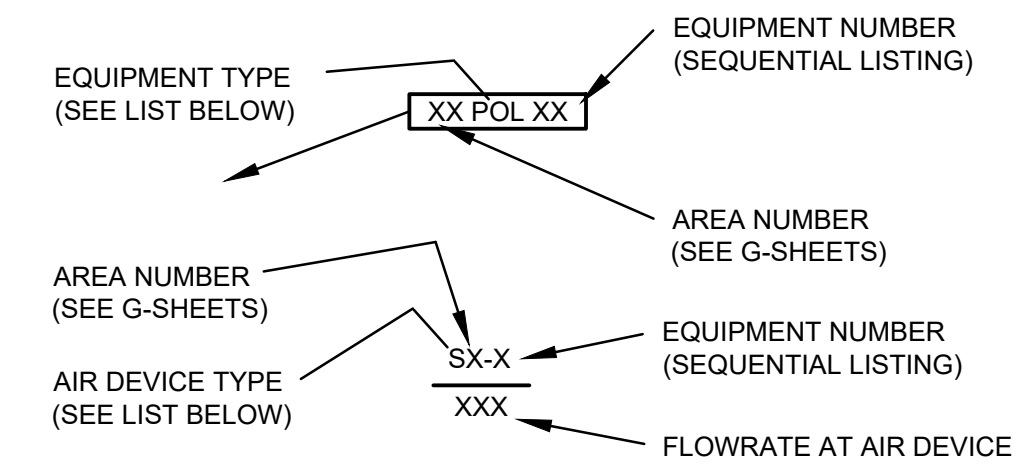
HVAC ABBREVIATIONS

A	AMPERE
ACH	AIR CHANGES PER HOUR
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
BDD	BACK DRAFT DAMPER
BLDG	BUILDING
BTU	BRITISH THERMAL UNIT
CA	COMPRESSED AIR
CAP	CAPACITY
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
DIA	DIAMETER
DN	DOWN
EA	EXHAUST AIR
ECM	ELECTRONICALLY COMMUTATED MOTOR
EF	EXHAUST FAN
°F	DEGREES FAHRENHEIT
FS	FLOW SWITCH
GPM	GALLONS PER MINUTE
HOA	HAND/OFF/AUTO
MA	MIXED AIR
MBH	1,000 BTU'S/HR
MCA	MINIMUM CIRCUIT AMPS
MFR	MANUFACTURER
MOCPP	MAXIMUM OVER CURRENT PROTECTION
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NG	NATURAL GAS
NO	NORMALLY OPEN
OA	OUTSIDE AIR
POC	POINT OF CONNECTION
RA	RETURN AIR
SA	SUPPLY AIR
SP	STATIC PRESSURE
TEMP	TEMPERATURE
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
VD	VOLUME DAMPER
VRF	VARIABLE REFRIGERANT FLOW
W	WATT
WC	WATER COLUMN
WP	WALL PENETRATION

HVAC GENERAL NOTES

- MATERIALS, METHODS AND INSTALLATION SHALL COMPLY WITH THE CONTRACT SPECIFICATIONS AND WITH THE PROVISIONS OF THE 2018 INTERNATIONAL MECHANICAL CODE, 2018 INTERNATIONAL BUILDING CODE, 2018 INTERNATIONAL FIRE CODE AS AMENDED BY THE STATE OF WASHINGTON AND THE LOCAL AUTHORITY HAVING JURISDICTION.
- THESE PLANS ARE SCHEMATIC AND DO NOT SHOW EXACT ROUTING OR EVERY OFFSET, WHICH MAY BE REQUIRED. THE HVAC CONTRACTOR IS TO COORDINATE WITH ALL OTHER TRADES AND IS TO VERIFY ALL CLEARANCES BEFORE COMMENCING WORK.
- CONTRACTOR SHALL VERIFY THE DIMENSIONS WITH THE EQUIPMENT MANUFACTURER TO PROVIDE DUCT TRANSITIONS TO HVAC VENTILATORS, FANS, LOUVERS, OR SUPPLY/EXHAUST GRILLES TO MATCH THE INLET/OUTLET DIMENSIONS OF THE EQUIPMENT.
- PROVIDE EARTHQUAKE RESTRAINT FOR HVAC EQUIPMENT IN ACCORDANCE WITH SMACNA RESTRAINT MANUAL AS REQUIRED BY 2018 INTERNATIONAL BUILDING CODE REQUIREMENTS.
- CONSTRUCTION, SUPPORTS AND INSTALLATION SHALL BE INSTALLED AND COMPLY WITH THE 2018 INTERNATIONAL MECHANICAL CODE (IMC) AND WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE.
- ALL DUCTWORK IS CLASSIFIED AS LOW PRESSURE.
- ALL HVAC SYSTEMS SHALL BE BALANCED BY A LICENSED CONTRACTOR IN ACCORDANCE WITH ACCEPTED ENGINEERING STANDARDS AND SPECIFICATION.
- AN AIR BARRIER TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE WASHINGTON STATE ENERGY CODE AND ASTM E779.
- LOCATE THERMOSTATS 5 FEET AFF. UNLESS OTHERWISE NOTED.
- PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL DUCTWORK CONNECTING TO EQUIPMENT.
- CONTRACTOR SHALL COORDINATE CEILING EQUIPMENT LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELECTRICAL LIGHTING LAYOUT.
- BUILDING HVAC DOCUMENTS SUCH AS RECORDS, CALCULATIONS, COMPLIANCE FORMS, AND EQUIPMENT MANUALS SHALL BE SUPPLIED TO THE BUILDING OWNER.

HVAC EQUIPMENT & AIR DEVICE IDENTIFICATIONS



EQUIPMENT

AC	AIR CONDITIONER
BC	BRANCH CONTROLLER
C	CONTROLLER
CJ	CONDENSING UNIT
DS	DUCT STAT
EF	EXHAUST FAN
FC	FAN COIL
FS	FLOW SWITCH
HP	HEAT PUMP
HT	HEATER
MD	MOTORIZED DAMPER
SF	SUPPLY FAN
T	THERMOSTAT
VD	VOLUME DAMPER

AIR DEVICE

E	EXHAUST GRILLE
LVR	LOUVER
R	RETURN GRILLE
S	SUPPLY DIFFUSER/GRILLE

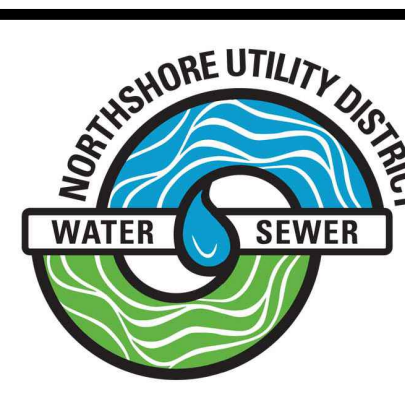
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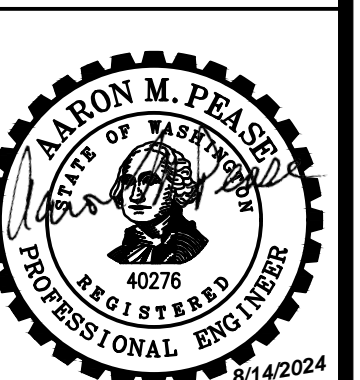
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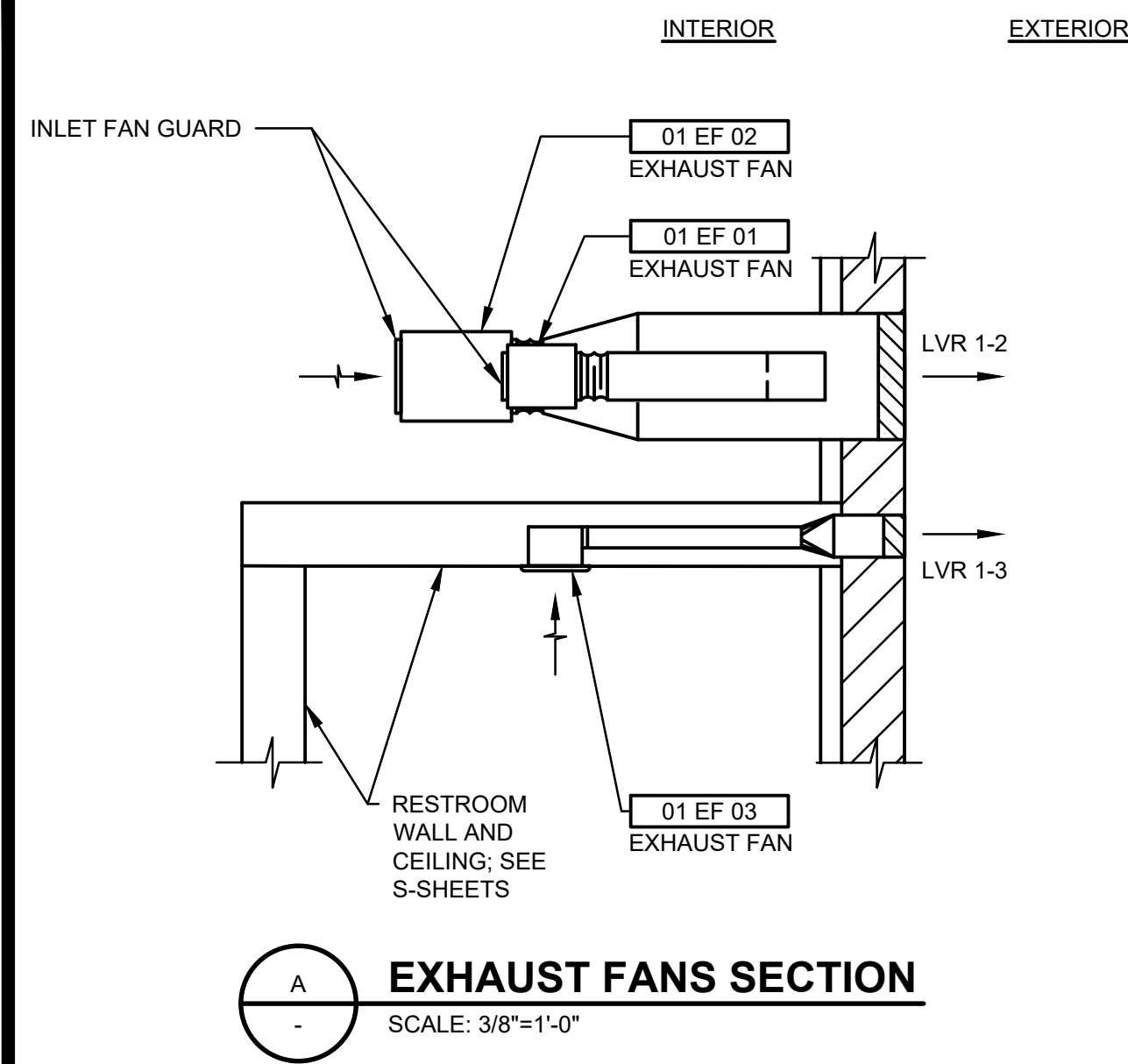
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451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
HVAC DESIGN CRITERIA, NOTES, AND
SYMBOLS

#C928

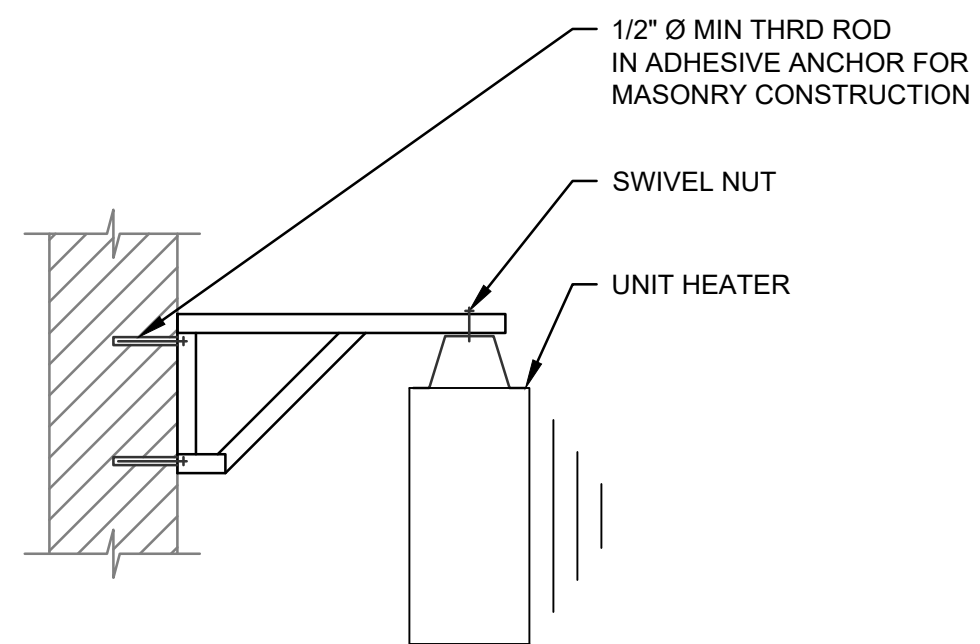


HVAC
 SHEET: H1-1
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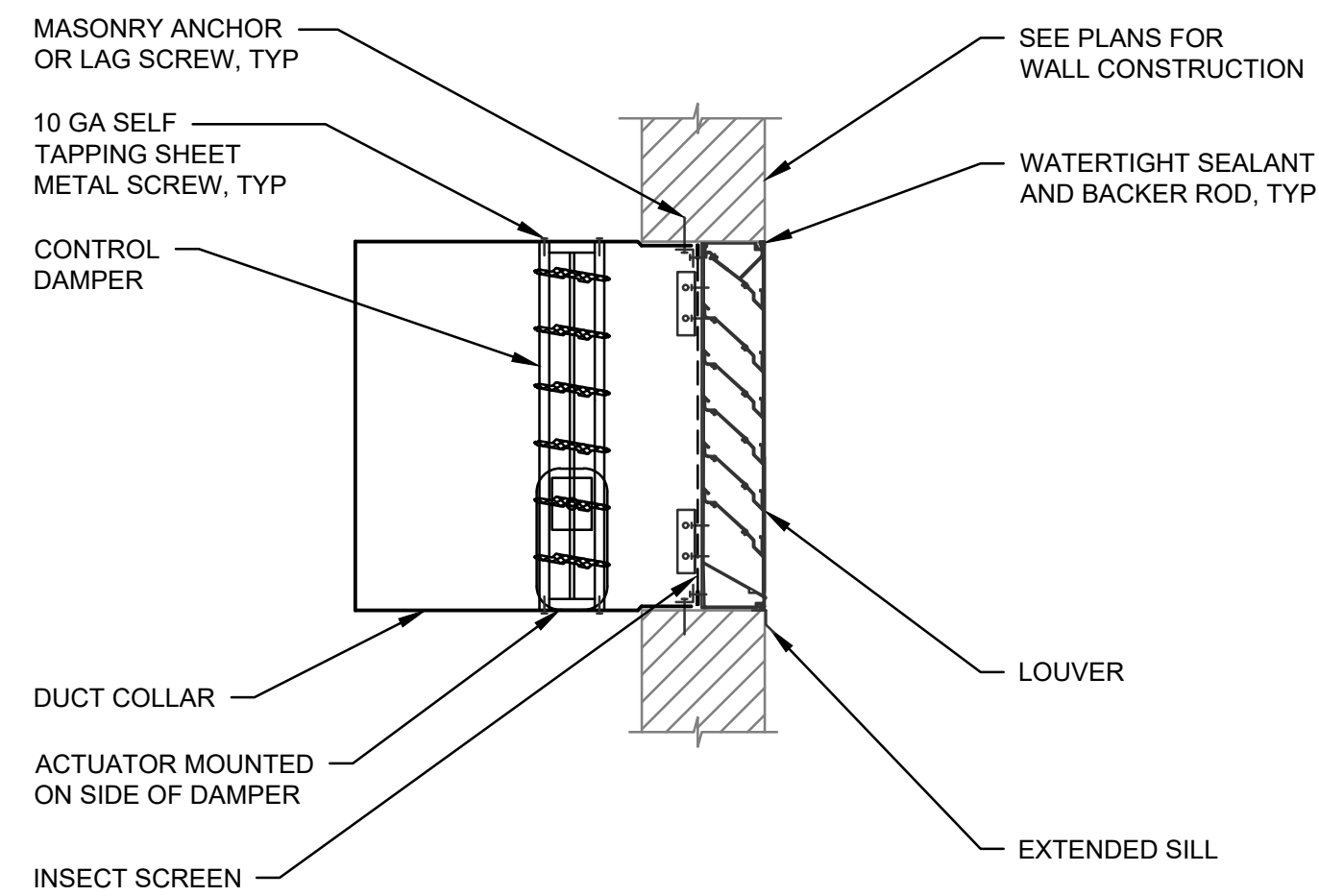
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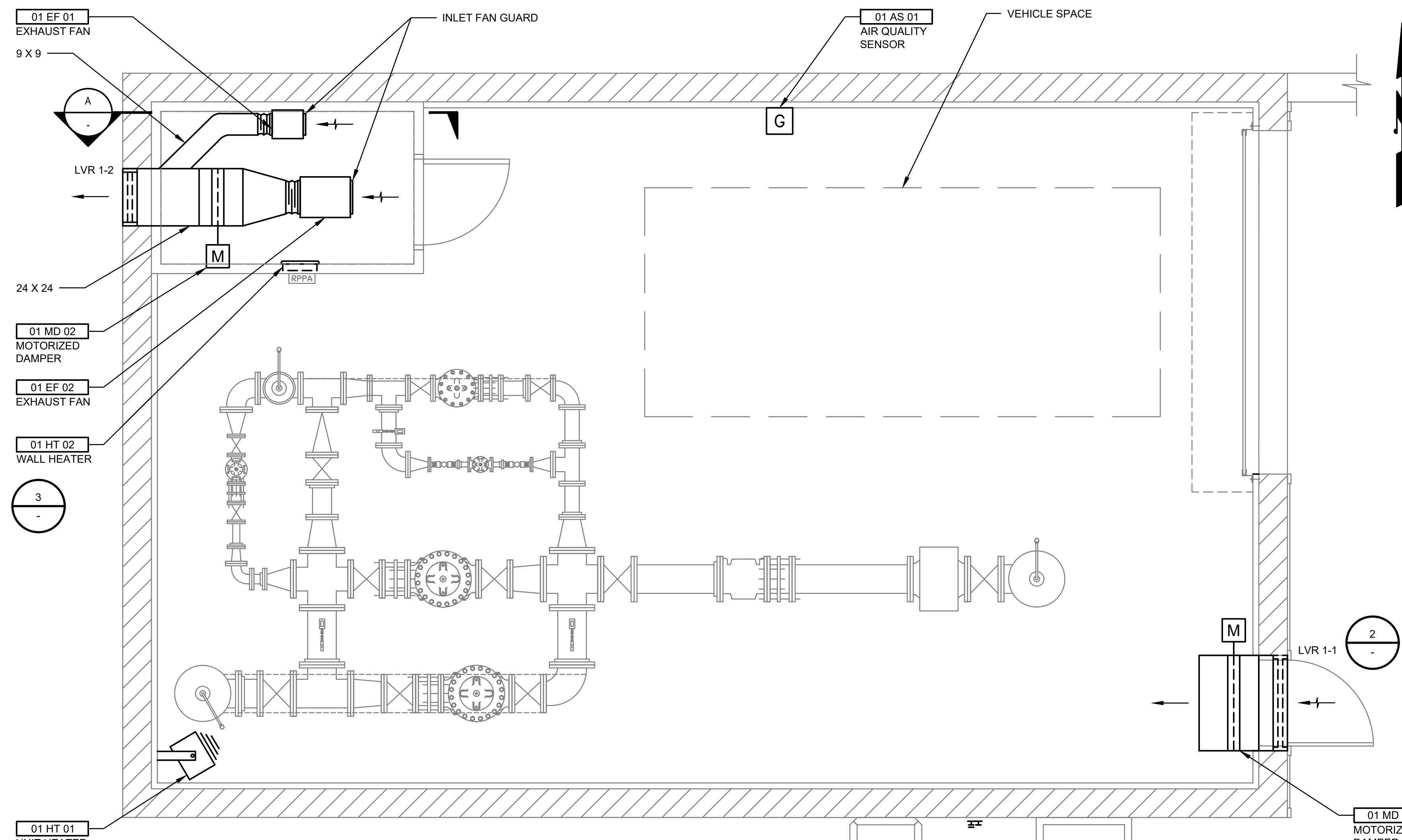
EXHAUST FANS SECTION
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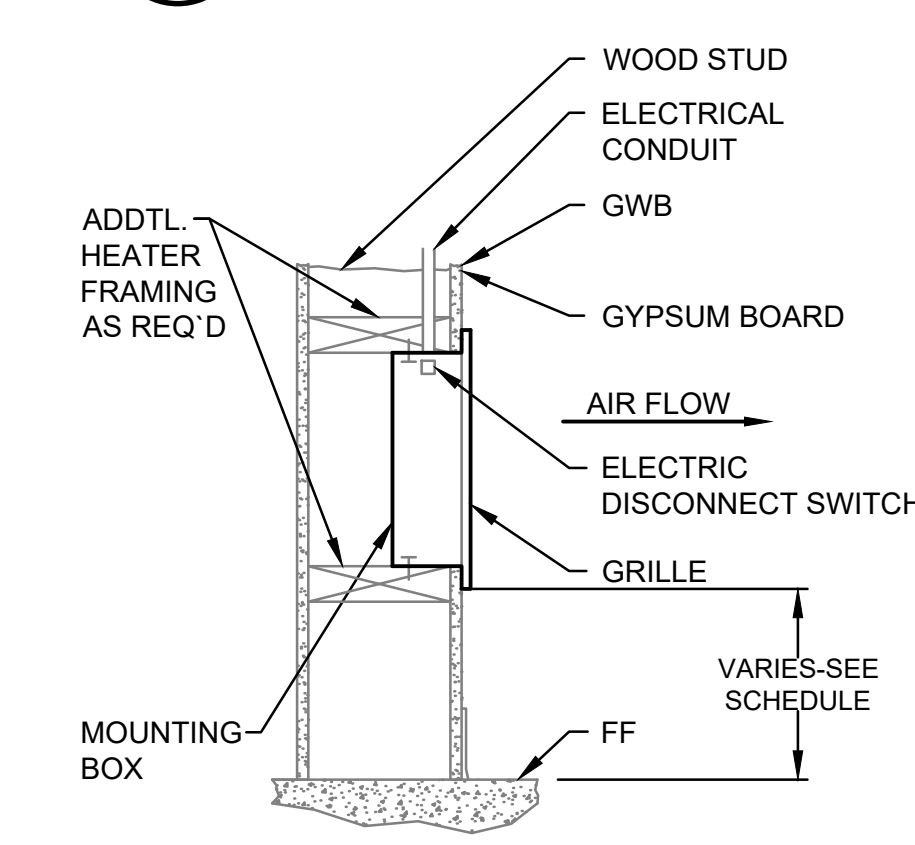
HEATER MOUNTING
SCALE: 1"=1'-0"



LOUVER AND MOTORIZED DAMPER
SCALE: 1"=1'-0"



HVAC PLAN
SCALE: 3/8"=1'-0"



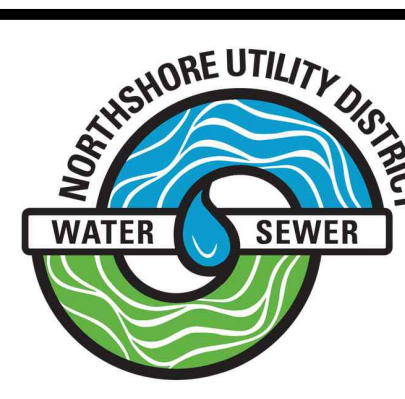
ELEVATION WALL HEATER
NOT TO SCALE

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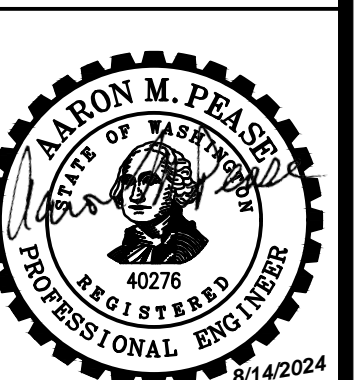
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SCHEDULE A
HVAC PLAN

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HVAC
SHEET: H1-3
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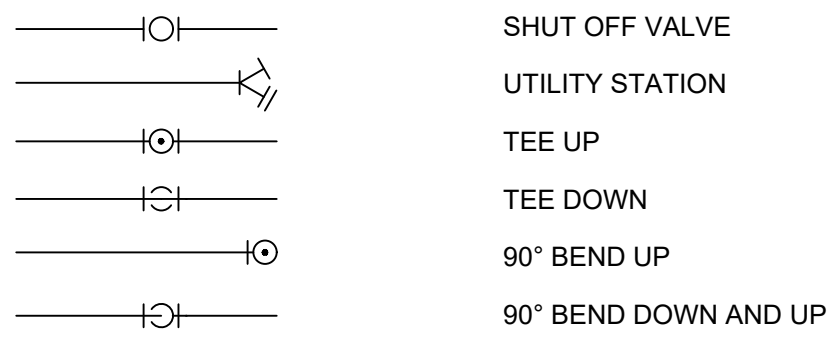
WATER PIPING NOTES

1. ALL PLUMBING WORK SHALL CONFORM WITH THE SPECIFICATIONS AND WITH THE CURRENT EDITION PLUMBING CODE OR SHALL BE APPROVED BY THE LOCAL BUILDING OFFICIAL.
2. INSTALL EXPOSED SHUT OFF VALVE TO ISOLATE ALL PLUMBING FIXTURES.
3. PROVIDE WATER HAMMER ARRESTORS (MINIMUM 12" AIR CHAMBER) AT ALL SINKS AND ALL INSTANT SHUT-OFF VALVES.
4. USE WALL AND CEILING FLANGES AT ALL PENETRATIONS.

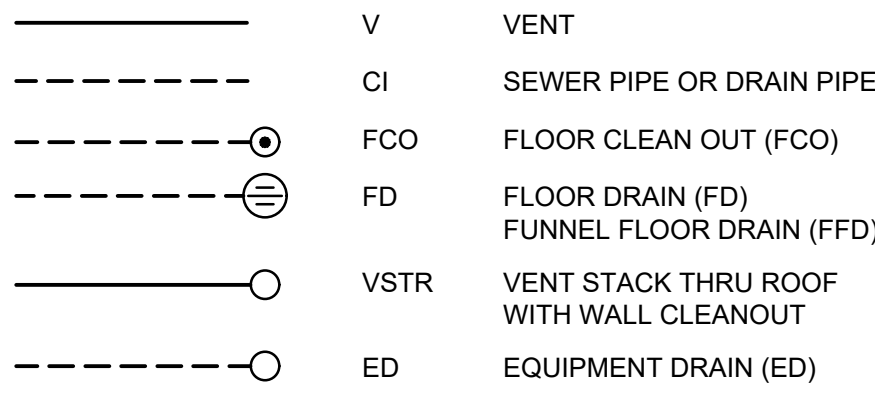
DRAINAGE PIPING NOTES

1. ALL DRAINAGE WORK SHALL CONFORM WITH THE SPECIFICATIONS AND WITH THE CURRENT EDITION PLUMBING CODE OR SHALL BE APPROVED BY THE LOCAL BUILDING OFFICIAL.
2. ALL BURIED DRAINS SERVING FLOOR DRAINS AND OTHER PLUMBING FIXTURES UNDER SLAB SHALL HAVE A MINIMUM SLOPE AT 1/4"/FT. FOR PIPES < 3", AND AT 1/8"/FT. FOR PIPES ≥ 3".
3. ALL BENDS UNDER FLOOR TO BE 45° FITTINGS MAXIMUM.

PLUMBING SYMBOLS & ABBREVIATIONS

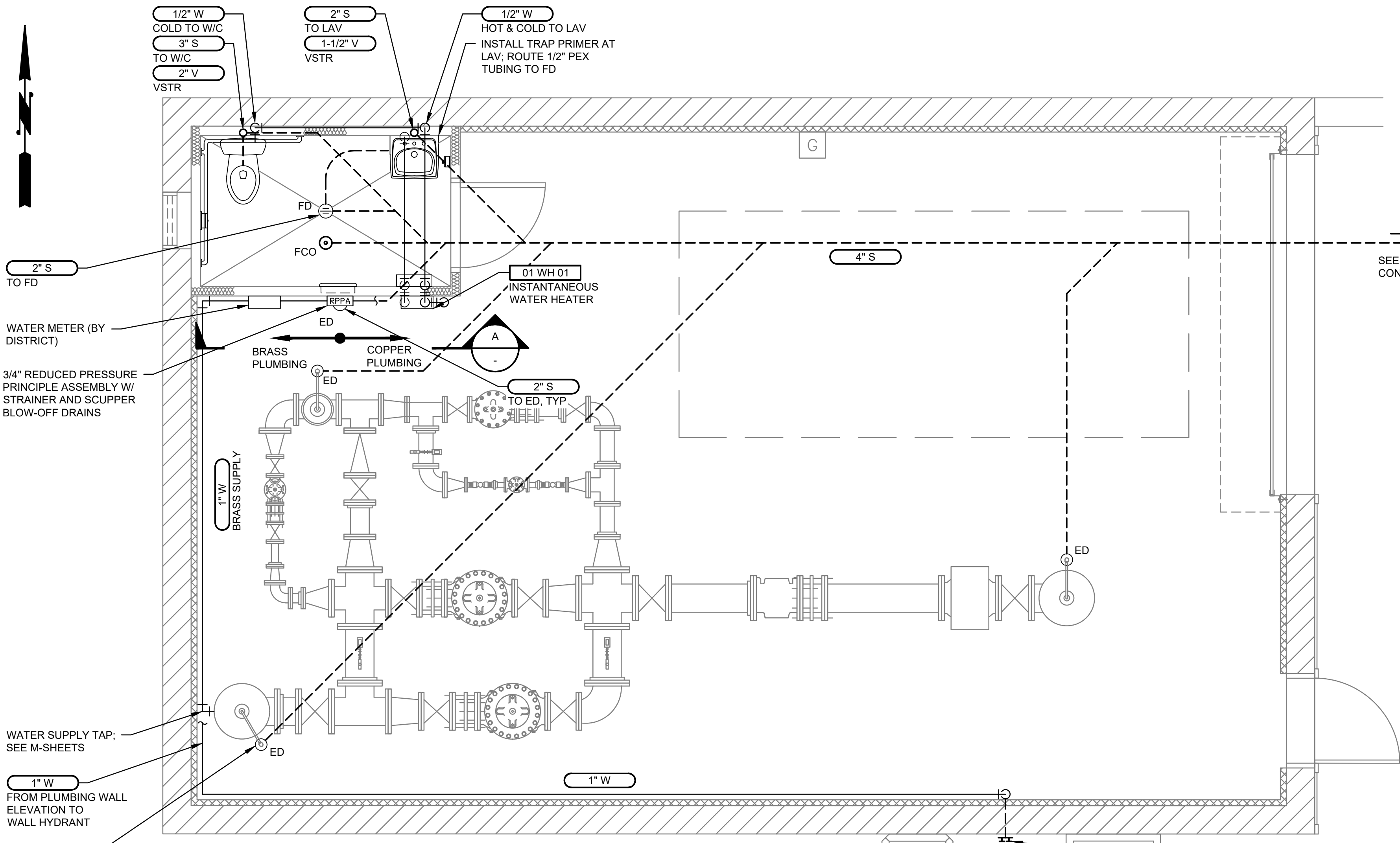


DRAINAGE PIPING LEGEND

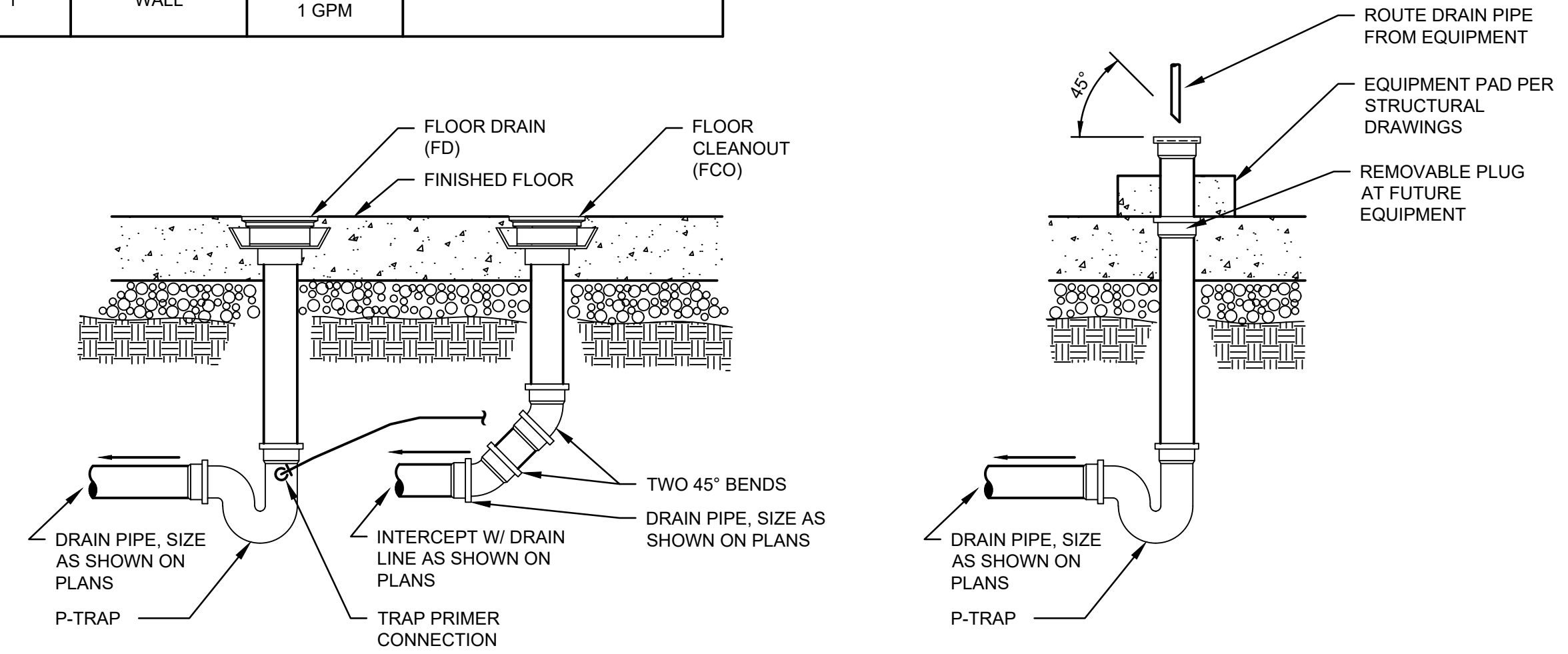


NOTE: FOR ADDITIONAL ABBREVIATIONS & SYMBOLS SEE CORRESPONDING ELECTRICAL, STRUCTURAL, ARCHITECTURAL, & MECHANICAL SHEETS.

DOMESTIC WATER HEATER SCHEDULE									
LOCATION	ID. NO.	TYPE	MFR & MODEL NO.	ELECTRICAL			MOUNTING	CAPACITY	REMARKS
				KW	VOLTS	PHASE			
CONTROL VALVE ROOM	01 WH 01	ON DEMAND	KELTECH INC. HL103/480D OR EQUAL	10	240	1	WALL	65 Δ°F @ 1 GPM	

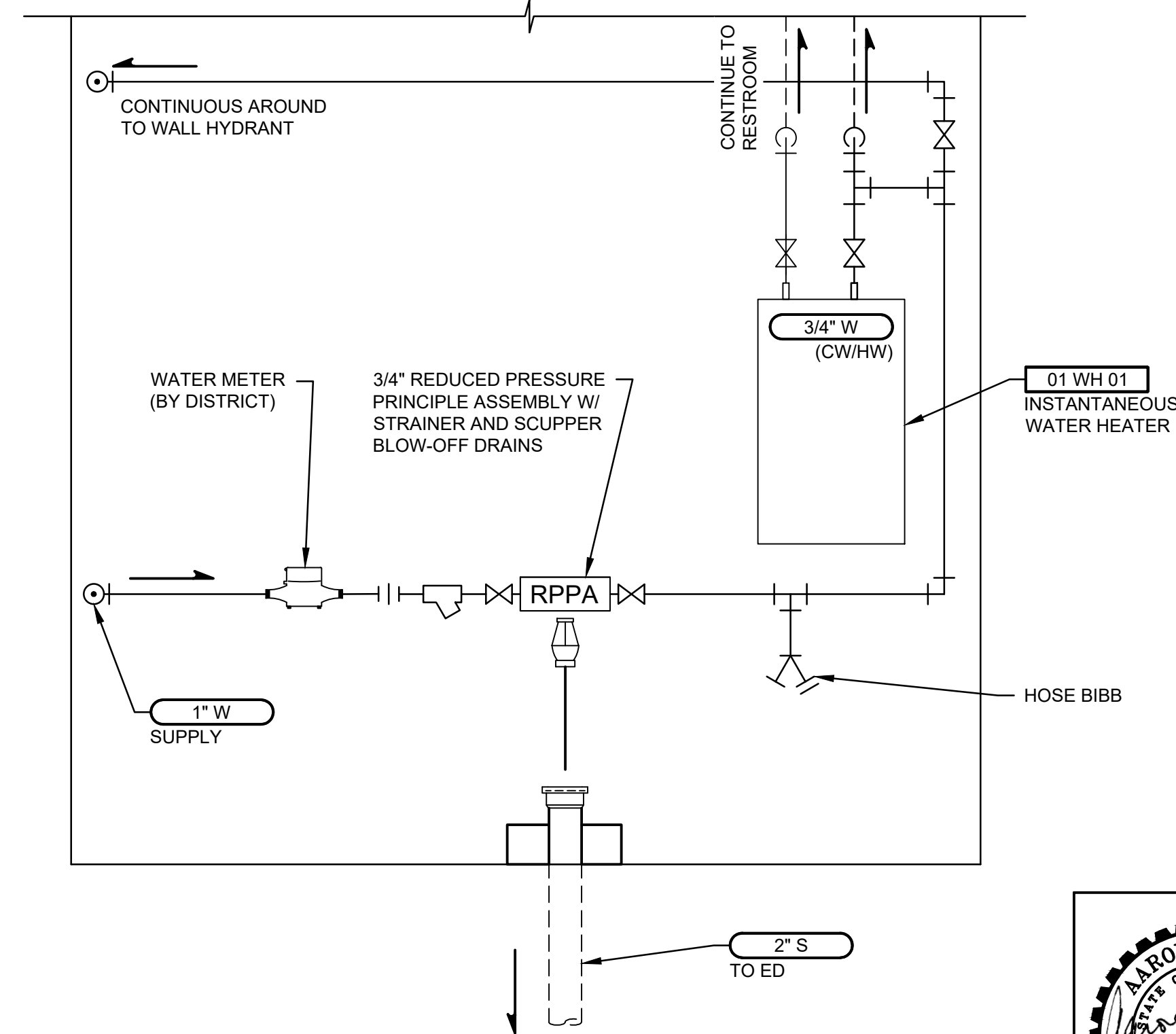


PLUMBING, DRAIN, AND VENT PLAN
SCALE: 3/8"=1'-0"



1 FLOOR DRAIN AND CLEANOUT DETAIL
TYP NOT TO SCALE

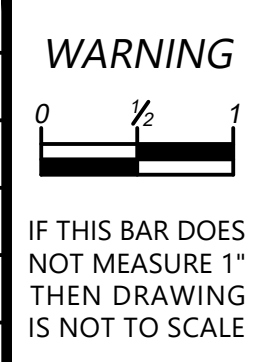
2 EQUIPMENT DRAIN DETAIL
TYP NOT TO SCALE



A PLUMBING ELEVATION
SCALE: 3/4"=1'-0"

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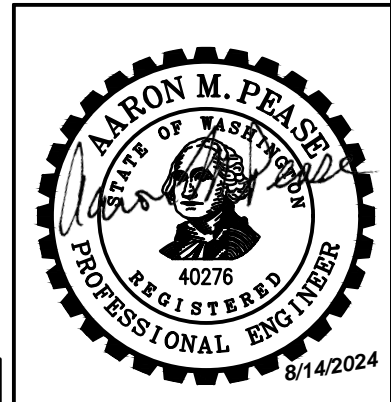
DESIGNED BY AMP
DRAWN BY EYS
CHECKED BY ASD
APPROVAL AMP
DATE AUG 2024



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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
PLUMBING, DRAINAGE, AND VENT
NOTES, LEGEND, PLAN, AND DETAILS

PLUMBING
SHEET: P1-1
37 OF 56



GENERAL STRUCTURAL NOTES

GENERAL

THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SITE CONDITIONS BEFORE STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY. USE DETAIL MARKED "TYPICAL" WHEREVER APPLICABLE. CHANGES, OMISSIONS OR SUBSTITUTIONS ARE NOT PERMITTED WITHOUT WRITTEN APPROVAL OF THE ENGINEER. REFER TO THE SPECIFICATIONS FOR FURTHER REQUIREMENTS. DO NOT SCALE THE DRAWINGS.

ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE 2018 EDITION OF THE INTERNATIONAL BUILDING CODE.

THE DESIGN, ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS, ETC., IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR, AND HAS NOT BEEN CONSIDERED BY THE ENGINEER OF RECORD. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE PRIOR TO ITS COMPLETION. THE CONTRACTOR SHALL PROVIDE THE NECESSARY BRACING TO PROVIDE STABILITY PRIOR TO THE COMPLETION OF THE STRUCTURE.

THE GENERAL NOTES APPLY TO ALL STRUCTURES UNLESS NOTED OTHERWISE (U.N.O.). LOCATION AND SIZE OF ANCHOR BOLTS FOR SPECIFIC EQUIPMENT SHALL BE SPECIFIED BY THE VENDOR. CONTRACTOR SHALL COORDINATE LOCATIONS OF STRUCTURAL OPENINGS, PENETRATIONS AND EMBEDDED ITEMS WITH THE MECHANICAL, ARCHITECTURAL, ELECTRICAL, PLUMBING AND VENTILATION SECTIONS OF THE DRAWINGS AND WITH SUPPLIERS AND SUBCONTRACTORS AS MAY BE REQUIRED.

SPECIAL INSPECTION & TESTING

SPECIAL INSPECTIONS SHALL MEET THE REQUIREMENTS OF IBC CHAPTER 17. OBSERVE THE WORK ASSIGNED FOR CONFORMANCE WITH APPROVED DRAWINGS AND SPECIFICATIONS.

FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL AND ENGINEER. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION; THEN, IF NOT CORRECTED, TO THE BUILDING OFFICIAL AND ENGINEER. SUBMIT A FINAL REPORT STATING THE WORK WAS IN CONFORMANCE WITH THE APPROVED DRAWINGS AND SPECIFICATIONS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF IBC.

SPECIAL INSPECTION REQUIRED:

- STEEL: IN ACCORDANCE WITH SECTION 1705.2 AND TABLE 1705.2.3
- CONCRETE: IN ACCORDANCE WITH SECTION 1705.3 AND TABLE 1705.3
- MASONRY: IN ACCORDANCE WITH SECTION 1705.4
- WOOD: IN ACCORDANCE WITH SECTION 1705.5
- SOIL: IN ACCORDANCE WITH SECTION 1705.6 AND TABLE 1705.6

SHOP DRAWINGS

SHOP DRAWINGS, WHERE REQUIRED, SHALL BE CHECKED AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING FOR ENGINEER REVIEW. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW OF DESIGN INTENT, PRIOR TO FABRICATION. GENERAL CONTRACTOR IS RESPONSIBLE FOR VERIFICATION AND COORDINATION OF DIMENSIONS AND DETAILS FOR EACH SUBCONTRACTOR.

DESIGN LOADS

ROOF SNOW LOAD:	
DESIGN SNOW LOAD, Ps.....	25 PSF
GROUND SNOW LOAD, Pg.....	20 PSF
SNOW LOAD IMPORTANCE FACTOR, Is.....	1.2

ROOF LIVE LOAD, Lr.....	20 PSF
FLOOR LIVE LOAD, Lf.....	125 PSF

WIND DESIGN DATA:

ULTIMATE WIND SPEED (3-SECOND GUST), Vult.....	109 MPH
NOMINAL WIND SPEED, Vasd.....	84.4 MPH
RISK CATEGORY.....	IV
WIND EXPOSURE.....	B

EARTHQUAKE DESIGN DATA

MAPPED SPECTRAL RESPONSE ACCELERATIONS	
Ss.....	1.269 g
S1.....	0.445 g

SITE CLASS.....	C
SPECTRAL RESPONSE COEFFICIENT	
Sds.....	1.015 g
Sd1.....	0.445 g

SEISMIC IMPORTANCE FACTOR, Ie.....	1.5
RISK CATEGORY.....	IV
SEISMIC DESIGN CATEGORY.....	D
ANALYSIS PROCEDURE USED.....	EQUIVALENT LATERAL FORCE ANALYSIS

SCHEDULE A:	
BASIC SEISMIC-FORCE-RESISTING SYSTEM(S).....	SPECIAL REINFORCED MASONRY SHEAR WALLS
DESIGN BASE SHEAR.....	41.1 KIPS
SEISMIC RESPONSE COEFFICIENT(S), Cs.....	0.305
RESPONSE MODIFICATION FACTOR(S), R.....	5

SCHEDULE B:	
BASIC SEISMIC-FORCE-RESISTING SYSTEM(S).....	STEEL ORDINARY CANTILEVER COLUMN SYSTEM
DESIGN BASE SHEAR.....	1.11 KIPS
SEISMIC RESPONSE COEFFICIENT(S), Cs.....	1.218
RESPONSE MODIFICATION FACTOR(S), R.....	1.25

FOUNDATION DATA PER GEOTECHNICAL REPORT BY PanGEO, INC. DATED JULY 8, 2022.

ALLOWABLE BEARING PRESSURE:.....3,000 PSF

ABOVE ARE ASSUMED PER DATA PROVIDED. CONTRACTOR MUST VERIFY IN FIELD.

EXTEND ALL EXTERIOR FOOTINGS 2'-0" MINIMUM BELOW FINISHED GRADE. UNO (UNLESS NOTED OTHERWISE), BOTTOM OF ALL FOOTINGS TO BEAR ON 12" MINIMUM UNDISTURBED NATIVE OR ON PROPERLY COMPACTED STRUCTURAL FILL PLACED ON THE NATIVE SOIL. NO FOOTING SHALL BEAR HIGHER THAN 1 VERTICAL TO 1.5 HORIZONTAL SLOPE ABOVE ANY EXCAVATION, EXISTING OR PLANNED. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING TO PREVENT MOVEMENT OF WALLS IF BACKFILL IS PLACED BEFORE FLOOR SYSTEM IS IN PLACE. THERE SHALL BE 95% COMPACTION (ASTM D1557 MODIFIED PROCTOR DENSITY) OF ALL BACKFILL SOIL UNDER SLABS ON GRADE.

STRUCTURAL FILL SHALL BE MOISTURE CONDITIONED TO NEAR ITS OPTIMUM MOISTURE CONTENT, PLACED IN LOOSE. HORIZONTAL LIFTS LESS THAN 12 INCHES IN THICKNESS, AND COMPACTED TO AT LEAST 95 PERCENT OF ITS MAXIMUM DRY DENSITY AS DETERMINED USING ASTM D-1557 (MODIFIED PROCTOR).

MASONRY

SPECIFIED COMPRESSIVE STRENGTH OF MASONRY ASSEMBLY: f_m=1500 PSI.
 CONCRETE MASONRY UNITS: ASTM C90, GRADE N-TYPE I, MEDIUM WEIGHT RUNNING BOND.
 MORTAR: ASTM C270, TYPE S, MIN. COMPRESSIVE STRENGTH OF 1800 PSI AT 28 DAYS. GROUT: ASTM C476 WITH A MIN. COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS. FILL ALL CELLS CONTAINING REINFORCING WITH GROUT IN LIFTS NOT EXCEEDING 4'-0" IN HEIGHT. FILL OTHER CELLS WITH GROUT AS INDICATED ON DRAWINGS. ALL REINFORCEMENT SHALL BE IN PLACE PRIOR TO GROUTING WITH VERTICAL BARS HELD AT TOP, BOTTOM AND 192 DIAMETERS MAXIMUM ON CENTERS. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR MASONRY WALLS, AS REQUIRED, UNTIL CONNECTIONS TO FLOOR AND/OR ROOF DIAPHRAGMS ARE COMPLETED.

CAST-IN-PLACE CONCRETE

CONCRETE SHALL HAVE THE FOLLOWING PROPERTIES:
 28-DAY STRENGTH f_c=4,000 PSI
 AIR ENTRAINMENT: 5%-7%
 MAXIMUM SLUMP: 3" FOR SLABS FOOTINGS, 4" FOR WALLS, COLUMNS AND BEAMS. CONSTRUCTION TO BE IN ACCORDANCE WITH ACI 318.

SUBMIT MIX DESIGN FOR REVIEW AND PROVIDE NOT LESS THAN 6 SACKS OF CEMENT PER CUBIC YARD FOR ALL CONCRETE WITH MAXIMUM W/C=0.45.

REINFORCING STEEL

WELDED WIRE FABRIC (W.W.F.): ASTM A82 AND A185
 DEFORMED BARS: ASTM A615, GRADE 60 (GRADE 40 FOR #3).
 UNLESS OTHERWISE NOTED ON THESE DRAWINGS, MINIMUM CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS:
 CONCRETE CAST AGAINST SOIL=3"
 FORMED CONCRETE AGAINST SOIL=2"
 WALLS, COLUMNS AND BEAMS EXPOSED TO WATER, SEWAGE & WEATHER=2".
 WALLS, COLUMNS AND BEAMS DRY CONDITION=1 1/2".

PROVIDE 2-#5 MIN. U.N.O. TRIM BARS AROUND ALL OPENINGS IN CONCRETE WALLS OR SLAB EXTENDING 2'-6" PAST CORNERS. TYP. AT TIME OF CONCRETE PLACEMENT, REINFORCING SHALL BE FREE OF MUD, OIL, OR OTHER NONMETALLIC COATINGS THAT MAY DECREASE BOND.

WELDING OF REINFORCING BARS SHALL CONFORM TO ANSIIAWS D1.4. WHERE PERMITTED, LOW HYDROGEN WELDING RODS SHALL BE USED FOR ALL WELDING OF REINFORCING BARS. SPECIAL INSPECTION IS REQUIRED FOR ALL FIELD WELDING.

SUBMIT SHOP DRAWINGS OF REINFORCING STEEL FOR REVIEW BY THE ENGINEER PRIOR TO FABRICATION. REINFORCING SHALL BE DETAILED IN ACCORDANCE WITH ACI 315 AND 318 (LATEST EDITION).

STRUCTURAL STEEL AND MISCELLANEOUS METALS

"W" SHAPES: ASTM A992, Fy=50 KSI.
 "HP" SHAPES: ASTM A572, Fy=50, KSI.
 CHANNELS, ANGLES, PLATES, AND BARS: ASTM A36, Fy=36 KSI.
 PIPE: ASTM A53 OR A501, Fy=35 KSI MINIMUM.
 TUBING: ASTM A500, GRADE B, Fy=46 KSI.

ALL BOLTS FOR CONNECTIONS IN SUBMERGED CONDITION SHALL BE: ASTM F593C OR F593D STAINLESS STEEL (SS) BOLTS. ALL OTHERS SHALL BE GALVANIZED ASTM F3125 GRADE A325 BOLTS HIGH STRENGTH BOLTS (H.S.B.), U.N.O. AS ASTM A307 MACHINE BOLTS (M.B.). WHERE HIGH STRENGTH BOLTS ARE USED, THEY SHALL BE INSTALLED WITH LOAD INDICATOR DEVICES (LOAD INDICATOR WASHERS OR SNAP-OFF HEADS).

ADHESIVE ANCHORS: HILTI HIT-RE 500 V3 OR APPROVED EQUAL, U.N.O. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

HEADED ANCHOR STUDS (H.A.S.): ASTM A108, Fy=50 KSI, END WELDED PER MANUFACTURER'S RECOMMENDATIONS.
 ALL ANCHOR BOLTS AND THREADED RODS: ASTM F1554, U.N.O., ASTM A193 GRADE B8 WHERE STAINLESS STEEL IS NOTED. ALL ANCHOR BOLTS MUST BE ACCURATELY PLACED IN THEIR FINAL LOCATION PRIOR TO POURING CONCRETE, "WET STICKING" OF ANCHOR BOLTS IS NOT ALLOWED.

WELDING ELECTRODES OR WIRES: AWS A5.1 OR A5.5, E70XX; AWS A5.17, E70S-X; AWS A5.20, E7XT-X.
 FOR ALL SHOP WELDS AND FIELD WELDS OF ALL LATERAL RESISTING ELEMENTS, ELECTRODES SHALL BE E70 WITH A MINIMUM SPECIFIED CVN OF 20 FT-LBS AT -20 DEGREES FAHRENHEIT. ALL WELDS SHALL BE 3/16" MINIMUM U.N.O.

ERECTION AND FABRICATION IN ACCORDANCE WITH AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS." WELDING SHALL CONFORM TO AWS "STRUCTURAL WELDING CODE - STEEL". ALL WELDING SHALL BE PERFORMED BY AWS/WABO CERTIFIED WELDERS.

ALL COLUMNS AND BEAMS TO BE FROM UNSPLICED LENGTHS U.N.O. ON THE DRAWINGS. SUBMIT SHOP DRAWINGS SHOWING SIZES, DIMENSIONS AND REQUIRED CONNECTION DETAILS FOR REVIEW BY THE ENGINEER PRIOR TO FABRICATION.

WOOD

ROOF SHEATHING SHALL BE 5/8" (NOMINAL) MIN. U.N.O. APA RATED SHEATHING 24/0, EXPOSURE 1, SIZED FOR SPACING. INSTALL PANELS WITH 1/4" SPACING AT END JOINTS AND 1/8" SPACING AT EDGE JOINTS MIN. INSTALL PLYWOOD SHEATHING WITH FACE GRAIN PERPENDICULAR TO SUPPORTS.

SAWN LUMBER: HEM-FIR #1 OR BETTER, U.N.O. WWPA GRADING RULES. ALL DIMENSIONS NOTED ARE NOMINAL. WOOD BEARING ON OR WITHIN 1" OF CONCRETE OR CMU OR WITHIN 6" OF EARTH SHALL BE TREATED WITH AN APPROVED PRESERVATIVE. ALL NAILS ARE TO BE "COMMON." ALL NAILS IN TREATED TIMBER SHALL BE GALVANIZED. ALL FRAMING CONNECTORS NOTED ARE PER SIMPSON STRONG TIE COMPANY INC. OR ENGINEER APPROVED EQUAL. SEE MANUFACTURER'S REQUIREMENTS.

TREATED LUMBER SHALL BE BRANDED WITH A QUALITY CONTROL AGENCY MARK BY AMERICAN WOOD PROTECTION ASSOCIATION.

GLUE-LAMINATED MEMBERS:

- SIMPLE SPAN BEAMS: 24F-V4.
- CONTINUOUS OR CANTILEVER BEAMS: 24F-V8.
- COMPRESSION MEMBERS: 2.
- TENSION MEMBERS: 3.

GLUE-LAMINATED MEMBERS SHALL CONFORM TO THE LATEST EDITION OF AITC 117, "DESIGN STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER OF SOFTWOOD SPECIES." SHOP DRAWINGS OF GLUE-LAMINATED MEMBERS TO BE SUBMITTED FOR REVIEW BY THE ENGINEER PRIOR TO FABRICATION. FRAMING ANCHORS AND CONNECTORS: SIMPSON OR APPROVED EQUAL AS INDICATED ON DRAWINGS. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. FOR NAILING NOT SHOWN ON DRAWINGS, USE IBC NAILING SCHEDULE, TABLE NO. 2304.10.1. ALL WOOD BEARING ON CONCRETE OR MASONRY, IF LESS THAN 4'-0" ABOVE GRADE, SHALL BE PRESSURE TREATED DOUGLAS FIR. STRUCTURAL MEMBERS SHALL NOT BE CUT FOR PIPES, ETC., UNLESS SPECIFICALLY NOTED OR DETAILED.

PREFABRICATED WOOD TRUSSES

ROOF TRUSSES SHALL BE DESIGNED BY THE CERTIFIED MANUFACTURER FOR THE SPANS AND CONDITIONS SHOWN ON THE DRAWINGS AND THE LOADS LISTED BELOW.
 MAXIMUM TRUSS SPACING: 24" O.C.

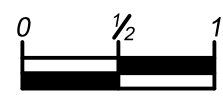
TRUSS LOADING UNLESS NOTED OTHERWISE ON DRAWINGS:

- TOP CHORD LIVE LOAD=25 PSF.
- TOP CHORD DEAD LOAD=5 PSF.
- BOTTOM CHORD LIVE LOAD=10 PSF.
- BOTTOM CHORD DEAD LOAD=10 PSF.
- PER IBC, UNINHABITABLE ATTICS SHALL BE DESIGNED FOR A LIVE LOAD OF 10 PSF.
- ADDITIONAL LIVE LOAD: SNOW LOAD DUE TO DRIFTING SHALL BE INCLUDED AS SPECIFIED ON THE DRAWINGS.

TRUSSES TO BE FABRICATED BY A CERTIFIED MEMBER OF THE TRUSS PLATE INSTITUTE. DESIGN, FABRICATION AND ERECTION TO CONFORM TO THE TRUSS PLATE INSTITUTE STANDARDS. CONNECTOR PLATES SHALL BE ICC APPROVED WITH A MINIMUM SIZE OF 3"x5". ALL CHORD MEMBERS SHALL HAVE LUMBER GRADE STAMPS; ALL WEB MEMBERS SHALL HAVE GRADE STAMPS OR ALL WEB MEMBERS, FOR A GIVEN TRUSS, SHALL BE MADE FROM THE SAME LUMBER GRADE WITH AT LEAST 50% OF THE WEB MEMBERS BEARING A GRADE STAMP. TRUSS DESIGNS AND ERECTION PLANS SHALL BE BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF WASHINGTON. ERECTION PLANS SHALL SHOW TRUSS SPACING, TRUSS MARK NUMBERS (CORRESPONDING TO THE DESIGN CALCULATIONS), CONCENTRATED LOADS, PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINT PER IBC SECTION 2303.4.1.2 AS REQUIRED BY THE TRUSS DESIGN AND ERECTION BRACING. SHOP DRAWING SHALL INCLUDE FOR EACH TYPE OF TRUSS, DIMENSIONS AND CONFIGURATIONS, NOMINAL LUMBER SIZE AND GRADE. SPECIFICATIONS FOR CONNECTOR PLATE USED, SIZE AND LOCATION OF EACH CONNECTOR AT EACH JOINT AND AMOUNT OF CAMBER IF REQUIRED. DESIGN CALCULATIONS, SHOP DRAWINGS AND ERECTION PLANS SHALL BE SUBMITTED FOR REVIEW BY THE ENGINEER PRIOR TO FABRICATION.

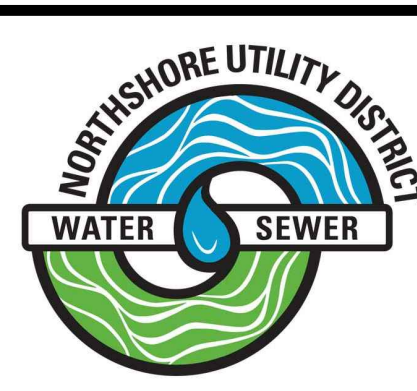
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NO	BY	APPD	REVISION	DATE

WARNING

 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE



DESIGNED BY	ZK
DRAWN BY	RAH
CHECKED BY	ZK
APPROVAL	MJB
DATE	AUG 2024

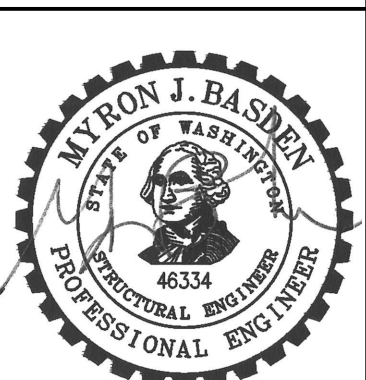


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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
GENERAL STRUCTURAL NOTES



#C928

8/15/2024

STRUCTURAL

SHEET: S-1

38 OF 56

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SPECIAL INSPECTION SCHEDULE			
VERIFICATION AND INSPECTION	CI	PI	REMARKS/REFERENCES
CONCRETE:			
REINFORCING STEEL INCLUDING PLACEMENT	-	X	ACI 318: CH 20, 25.2, 25.3, 26.6.1-26.6.3
ANCHOR RODS, EMBEDDED BOLTS AND INSERTS	X	-	PRIOR TO AND DURING PLACEMENT OF CONCRETE
USE OF REQUIRED DESIGN MIX	-	X	ACI 318: CH. 19, 26.4.3, 26.4.4
CONCRETE SLUMP, AIR CONTENT, TEMPERATURE AND TEST SPECIMENS	X	-	WHILE MAKING SPECIMENS FOR STRENGTH TESTS
CONCRETE AND SHOTCRETE PLACEMENT	X	-	ACI 318: 26.5
CONCRETE CURING	-	X	ACI 318: 26.5.3-26.5.5
CONCRETE FORMWORK FOR SHAPE, LOCATIONS AND DIMENSIONS	-	X	ACI 318: 26.11.1.2(6)
MASONRY:			
PROVISIONS OF CONSTRUCTION DOCUMENTS AND SUBMITTALS	-	X	
VERIFICATION OF F'm and F'aac	-	X	PRIOR TO CONSTRUCTION
SLUMP FLOW AND VSI	X	-	
SITE-PREPARED MORTAR AND MORTAR JOINTS	-	X	BEGINS & PRIOR CONSTRUCTION
LOCATION OF REINFORCEMENT, CONNECTORS, AND ANCHORAGES	-	X	AS MASONRY CONSTRUCTION BEGINS
SIZE AND LOCATION OF STRUCTURAL ELEMENTS	-	X	DURING CONSTRUCTION
ANCHOR TYPE, SIZE AND LOCATION	-	X	DURING CONSTRUCTION
SIZE, GRADE AND TYPE OF REINFORCEMENT, BOLTS AND ANCHORAGES	-	X	DURING/PRIOR CONSTRUCTION
HOT/COLD WEATHER CONSTRUCTION	-	X	DURING CONSTRUCTION
GROUT SPACE	-	X	PRIOR TO GROUTING
STEEL:			
MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS:			
MANUFACTURER'S CERTIFICATE	-	X	
INSPECTION OF HIGH-STRENGTH BOLTING:	-	X	AISC 360, SECTION N5.6
MATERIAL VERIFICATION OF STRUCTURAL STEEL AND COLD-FORMED STEEL DECK:	-	X	
IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	-	X	AISC 360, N5.7
INSPECTION OF WELDING:			SHOP AND FIELD
COMPLETE AND PARTIAL PENETRATION GROOVE WELDS	X	-	AWS D1.1
MULTIPASS, SINGLE-PASS FILLET WELDS > 5/16", PLUG AND SLOT WELDS	X	-	AWS D1.1
SINGLE-PASS FILLET WELDS < 5/16", FLOOR AND ROOF DECK WELDS	-	X	AWS D1.3
REINFORCING STEEL	X	-	AWS D1.4, ACI 318: SECTION 26.6.4
SOILS:			
VERIFY DESIGN BEARING CAPACITY	-	X	
VERIFY EXCAVATIONS	-	X	
CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	-	X	
USE OF MATERIALS, DENSITIES AND LIFT THICKNESSES	X	-	DURING PLACEMENT AND COMPACTION
OBSERVE SUBGRADE AND SITE PREPARED PROPERLY	-	X	PRIOR TO PLACEMENT OF COMPACTED FILL
WOOD:			
TYPE AND SPACING OF STRUCTURAL PANEL NAILING	-	X	IBC 1705.11.3
TYPE AND INSTALLATION OF TRUSS SEISMIC TIES	-	X	

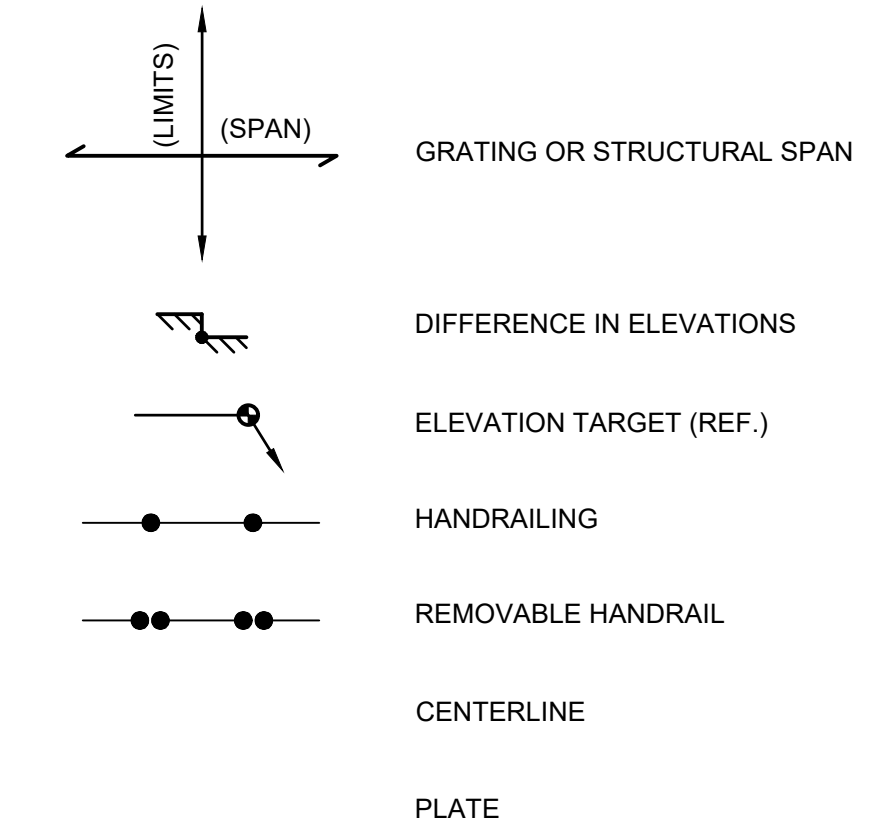
INSPECTION SCHEDULE NOTES

- ITEMS MARKED WITH AN "X" REQUIRE INSPECTION BY A SPECIAL INSPECTOR APPROVED BY THE BUILDING OFFICIAL.
- ITEMS MARKED "NA" ARE NOT APPLICABLE TO THIS PROJECT.
- CI = CONTINUOUS INSPECTION DURING PROGRESS OF WORK BY SPECIAL INSPECTOR.
- PI = PERIODIC INSPECTION BY SPECIAL INSPECTOR AS REQUIRED TO CONFIRM CONFORMANCE OF WORK.
- TESTING AND INSPECTION REPORTS SHALL BE SUBMITTED TO THE ENGINEER, BUILDING OFFICIAL AND CONTRACTOR.
- OWNER WILL CONTRACT FOR SPECIAL INSPECTION SERVICES.

SUPPLEMENTAL STRUCTURAL ABBREVIATIONS:

ABV ABOVE	FRM'G FRAMING	STIRR STIRRUP
AFF ABOVE FINISH FLOOR	FS FAR SIDE	STRUC STRUCTURE(AL)
ADD'L ADDITIONAL	FTG FOOTING	SYM SYMMETRICAL
ADJ ADJACENT	GA GAUGE	T TOP
AL ALUMINUM	GB GRADE BEAM	T&G TONGUE AND GROOVE
APPRX APPROXIMATE	GLB GLUE-LAMINATED BEAM	TMPLY TEMPORARY
ARCH ARCHITECTURAL	HAS HEADER ANCHOR STUDS	TN TOE NAIL
@ AT	HDR HEADER	TO TOP OF
BEL BELOW	HF HEM-FIR	TOS TOP OF SLAB
BF BRACED FRAME	HGR HANGER	TRANS TRANSVERSE
BM BEAM	HSB HIGH STRENGTH BOLT (A325 UNO)	TYP TYPICAL
BN BOUNDARY NAIL	HSS HOLLOW STRUCTURAL STEEL	UNO UNLESS NOTED OTHERWISE
BNDRY BOUNDRY	IBC INTERNATIONAL BUILDING CODE	VFY VERIFY
BO BOTTOM OF	IF INSIDE FACE	WHS WELDED HEADED STUD
BOS BOTTOM OF SLAB	INT INTERIOR	WP WORK POINT
BOT BOTTOM	JST JOIST	WS WESTERN SPECIES
BRDG BRIDGE(ING)	K KIPS (1000 POUNDS)	WTS WELDED THREADED STUD
BRG BEARING	LAT LATERAL	X-STG EXTRA STRONG
CAM CAMBER(ED)	LDGR LEDGER	XX-STG DOUBLE EXTRA STRONG
CANT CANTILEVER(ED)	LLH LONG LEG HORIZONTAL	
CDF CONTROLLED DENSITY FILL	LLV LONG LEG VERTICAL	
CG CENTER OF GRAVITY	LS LAG SCREW	
CIP CAST IN PLACE	LSL LAMINATED STRAND LUMBER	
CJ CONTROL JOINT	LT WT LIGHT WEIGHT	
CJP COMPLETE JOINT PENETRATION	LVL LAMINATED VENEER LUMBER	
COL COLUMN	MAS MASONRY	
CONST CONSTRUCTION	MATL MATERIAL	
CONT CONTINUOUS	MB MACHINE BOLT (A307)	
CTSK COUNTERSINK	MFR MANUFACTURER	
D DEPTH	MRF MOMENT RESISTING FRAME	
d PENNY (NAILS)	MTL METAL	
DBL DOUBLE	(N) NEW MEMBER	
DF DOUGLAS FIR	NS NEAR SIDE	
DIAG DIAGONAL	OH OVERHANG	
DIAPH DIAPHRAGM	ORNT ORIENTATE (ION)	
do DITTO (DO OVER)	PAR PARALLEL	
DWG DRAWING	P/C PRECAST CONCRETE	
DWL DOWEL	PERP PERPENDICULAR	
EA EACH	PSL PARALLEL STRAND LUMBER	
EF EACH FACE	PT PRESSURE TREAT(ED)	
EJ EXPANSION JOINT	P/T POST TENSIONED	
EMBD EMBED(MENT)	QTY QUANTITY	
EN EDGE NAIL	REF REFERENCE	
ENG ENGINEER	REINF REINFORCEMENT	
EQ EQUAL	SHT SHEET	
ES EACH SIDE	SHTG SHEATHING	
EXIST EXISTING MEMBER	SIM SIMILAR	
EXT EXTERIOR	SKW SKEW(ED)	
FFE FINISHED FLOOR ELEVATION	SPC SPACING	
FN FACE NAIL	SS STAINLESS STEEL	
FND FOUNDATION	STGR STAGGER	
FO FACE OF	STIFF STIFFENER	

STRUCTURAL LEGEND



NO	BY	APPD	REVISION	DATE

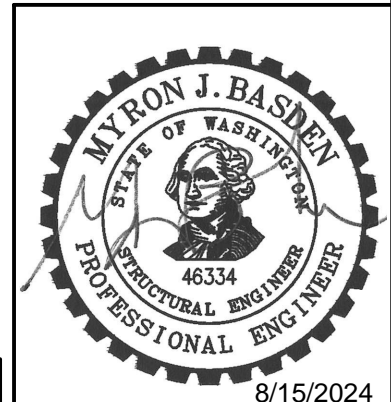


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 DRAWN BY RAH
 CHECKED BY ZK
 APPROVAL MJB
 DATE AUG 2024

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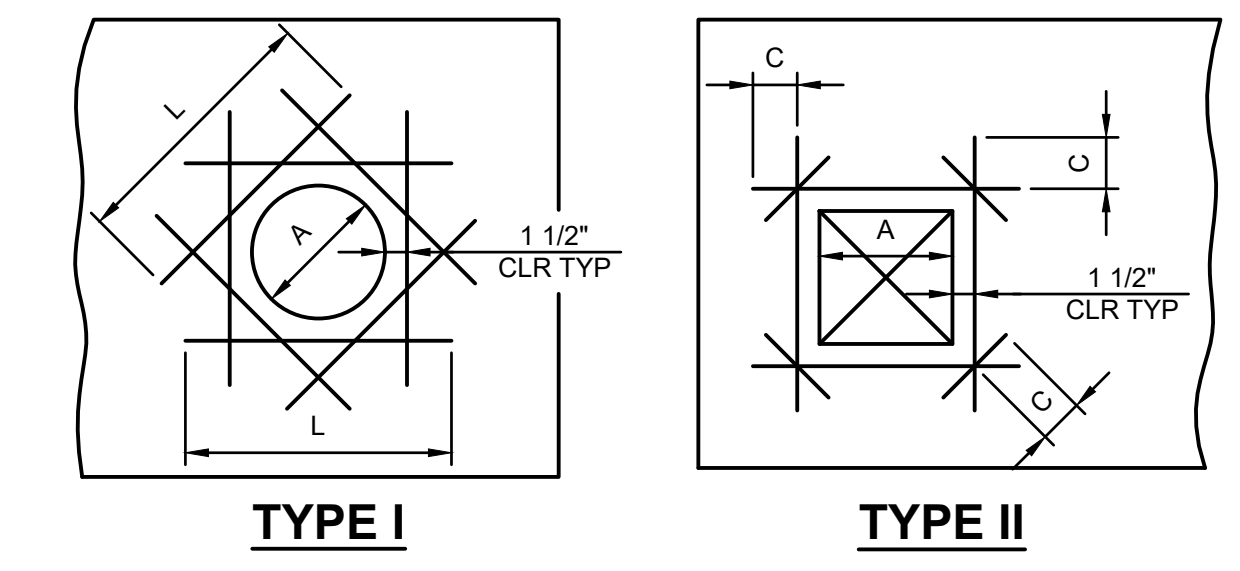
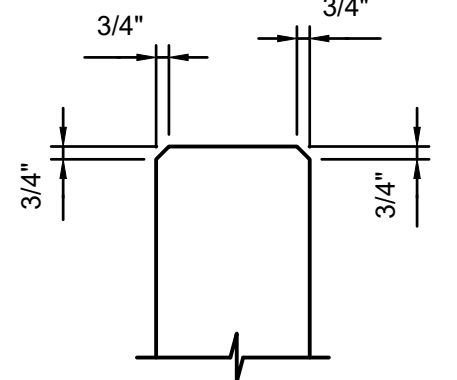
C0928
 451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
SPECIAL INSPECTION SCHEDULE,
STRUCTURAL ABBREVIATIONS & LEGEND

STRUCTURAL
SHEET: S-2
39 OF 56



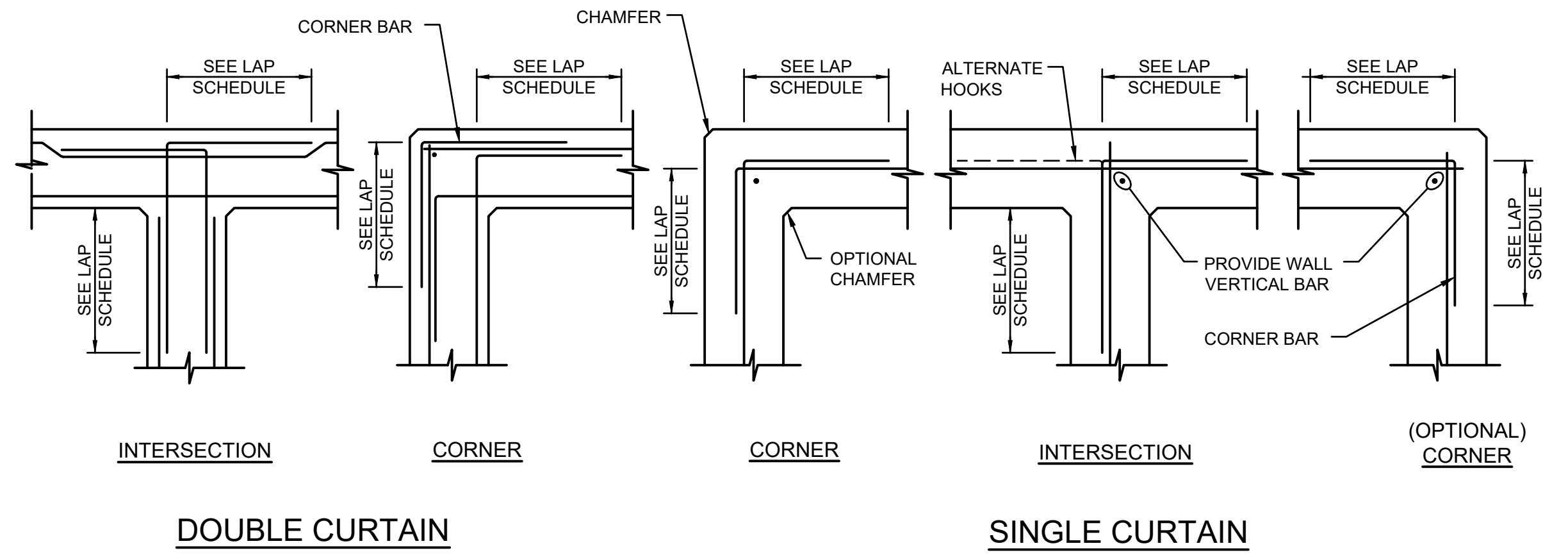
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REINF	LAP
#4	2'-4"
#5	3'-0"
#6	3'-6"
#7	4'-3"
#8	4'-10"
#9	5'-3"
#10	6'-6"
#11	8'-0"



OPENING SIZE (A)	TYPE I		TYPE II	
	MINIMUM BAR LENGTH (L)	BAR SIZE	(C)	BAR SIZE
0" - 12"	3' - 9"	#5	1' - 0"	MATCH VERTICAL BARS OR LARGEST BAR IN SLABS OR WALKWAYS
13" - 18"	4' - 9"	#6	1' - 3"	
19" - 24"	6' - 9"	MATCH VERTICAL BARS OR LARGEST BAR IN SLABS OR WALKWAYS	2' - 6"	
25" - 36"	7' - 9"		2' - 6"	
36"	8' - 9"		2' - 6"	

NOTE:
ALL BARS, EACH FACE. USE THESE BAR SIZES UNLESS OTHERWISE NOTED.

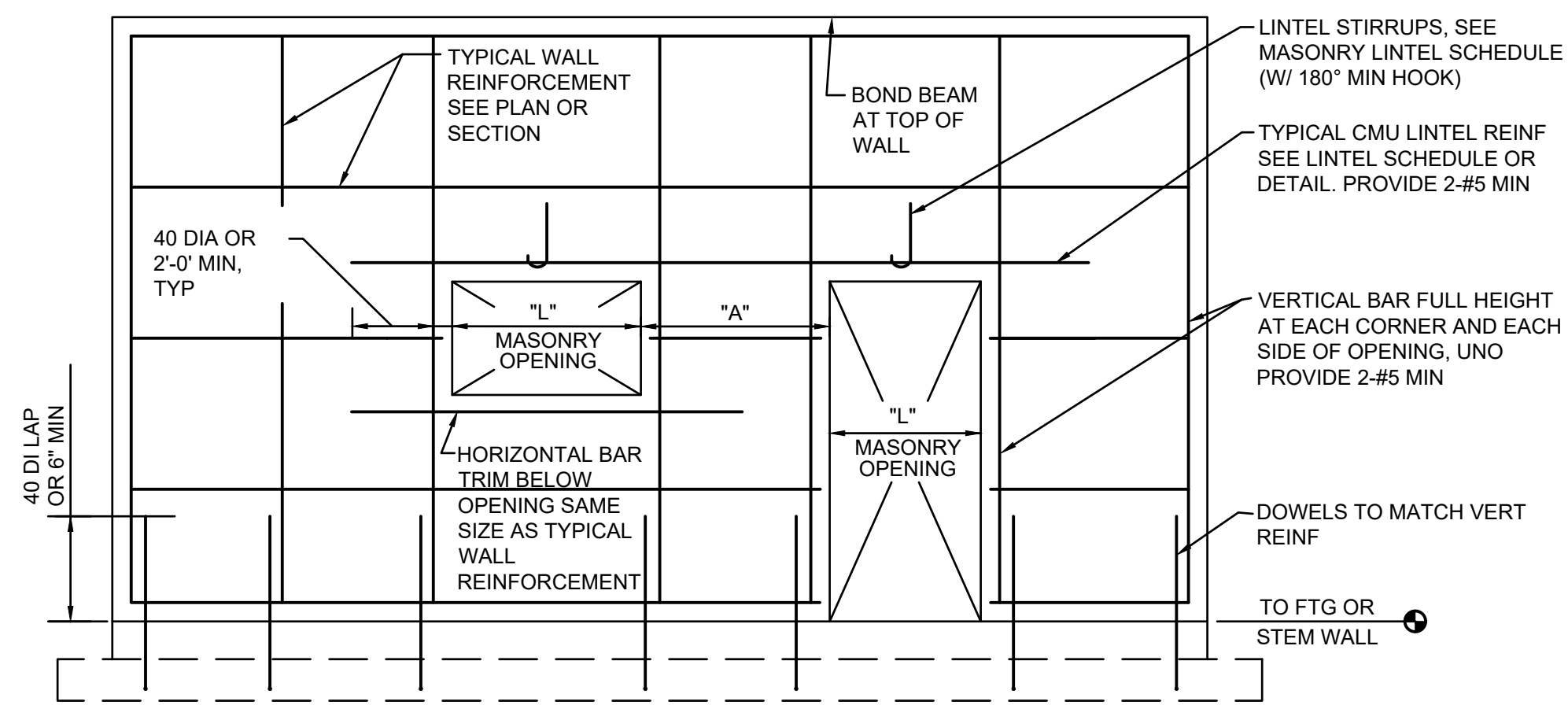


1 TYP LAP SCHEDULE
NOT TO SCALE

2 TYP CHAMFER DETAIL
NOT TO SCALE

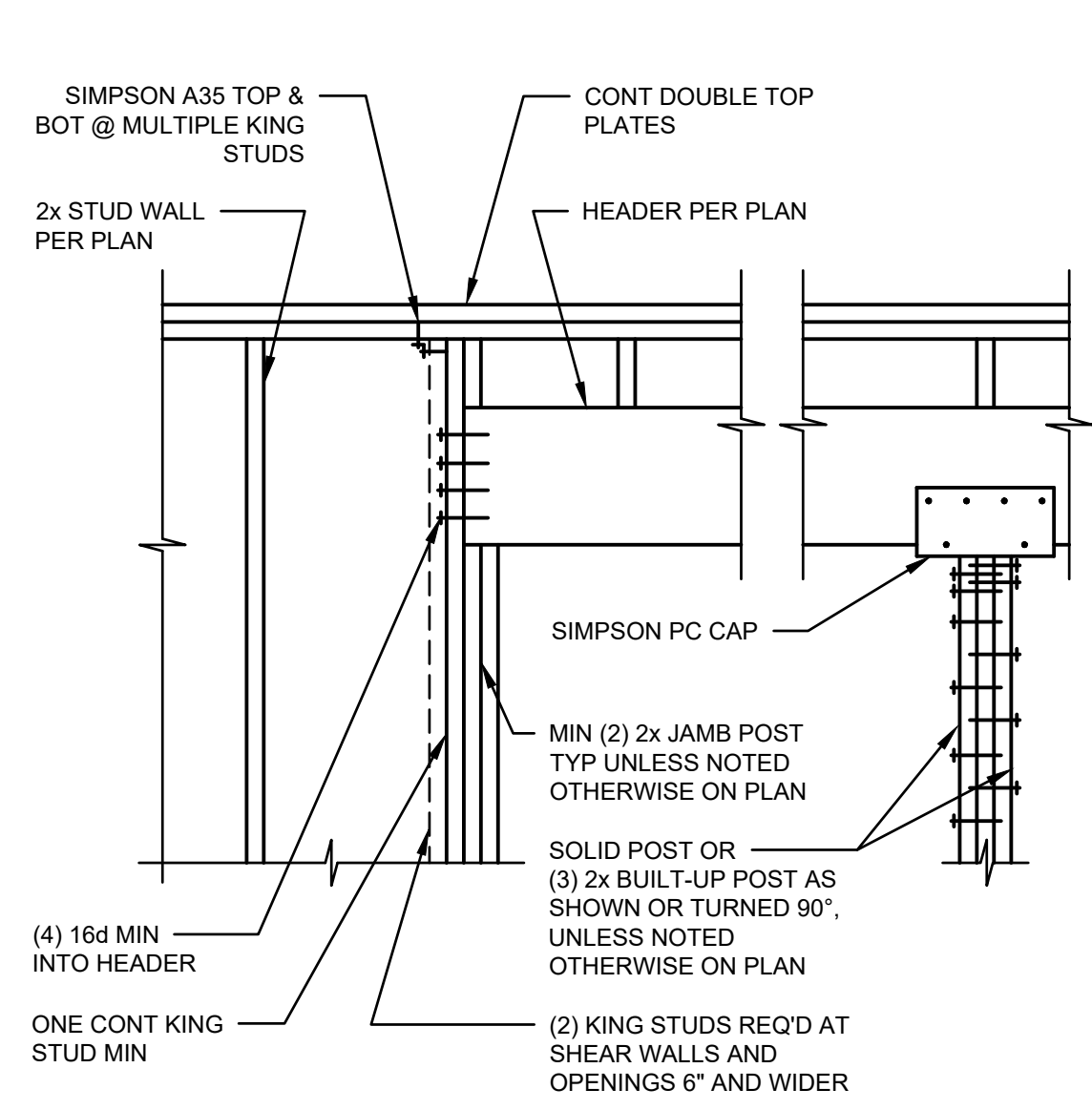
3 TYP PENETRATION REINFORCING DETAIL
NOT TO SCALE

4 TYP REINFORCING @ WALL INTERSECTION DETAIL
NOT TO SCALE

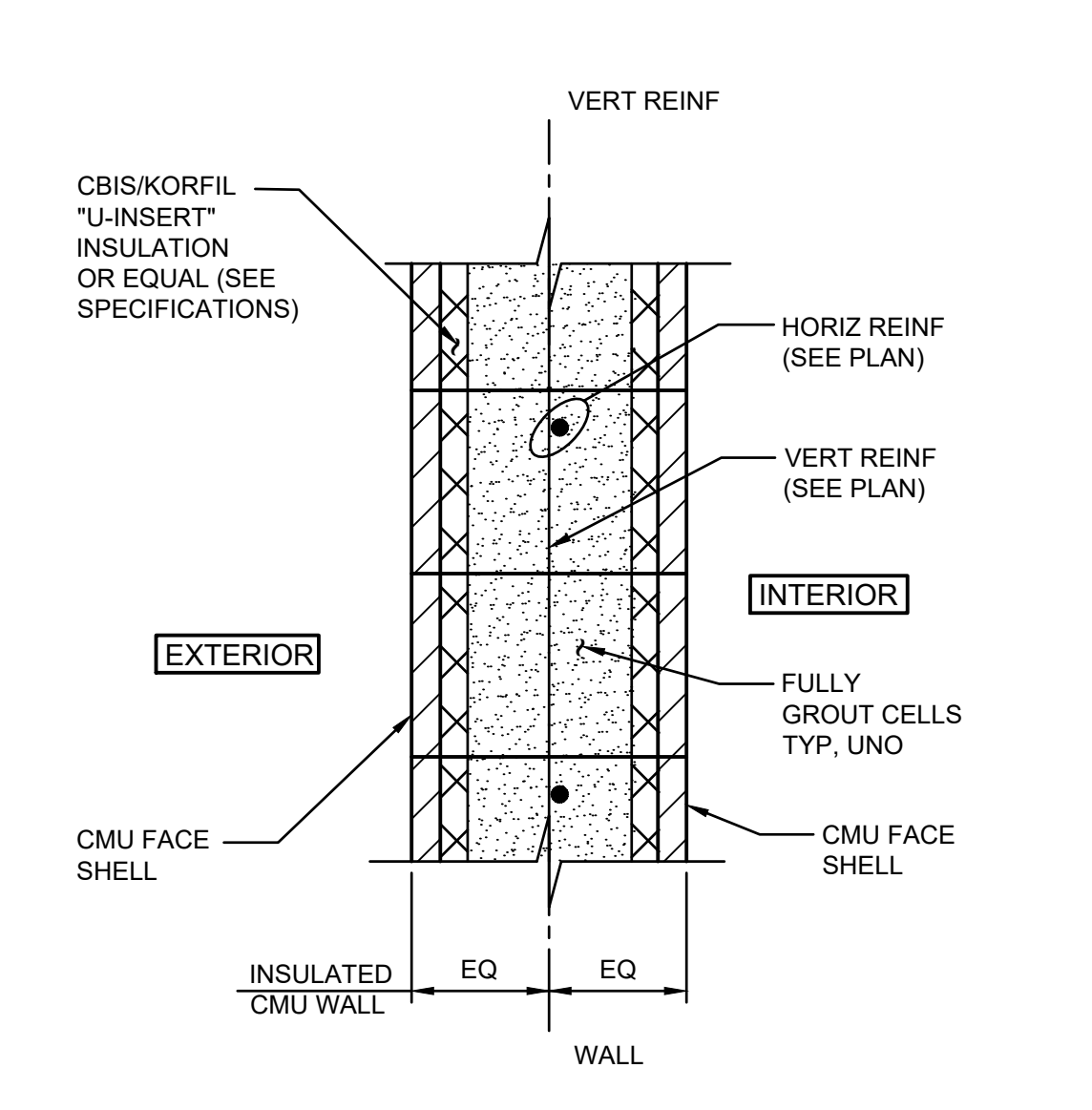


NOTES:
1. WHERE DISTANCE "A" IS BETWEEN 1'-4" AND 2'-0", PROVIDE #3 TIES AT 8" OC FULL HEIGHT OF THE SMALLER OF THE TWO OPENINGS.
2. DISTANCE "A" SHALL NOT BE LESS THAN 1'-4".
3. PROVIDE CONTINUOUS BOND BEAM W/2-#5 MIN AT ALL LEDGERS, UNO
4. SEE CMU WALL CONTROL JOINT DETAIL AND PLAN FOR LOCATION.

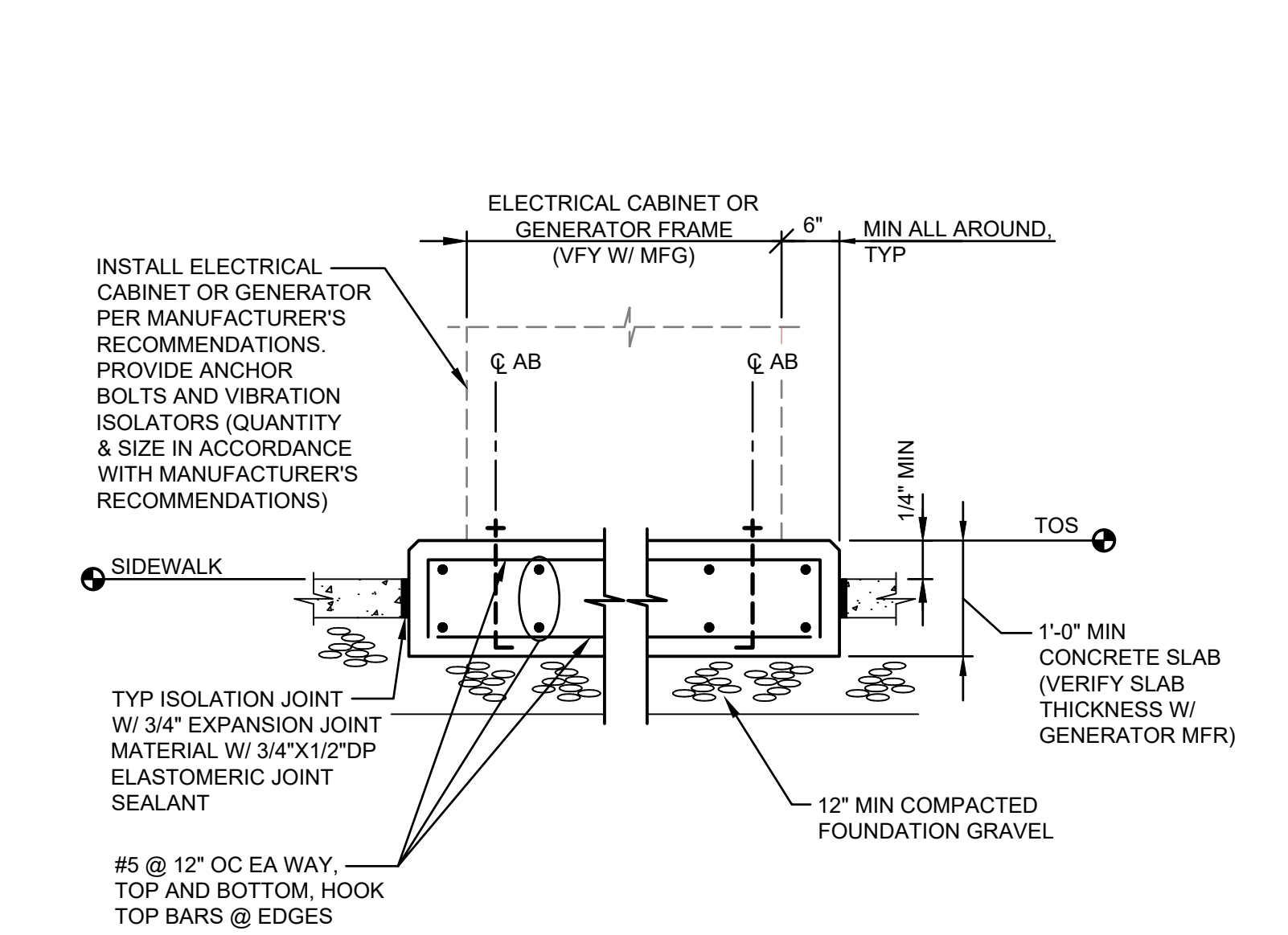
5 TYPICAL CMU WALL REINFORCEMENT PLACEMENT
NOT TO SCALE



6 TYP HEADER DETAIL
NOT TO SCALE



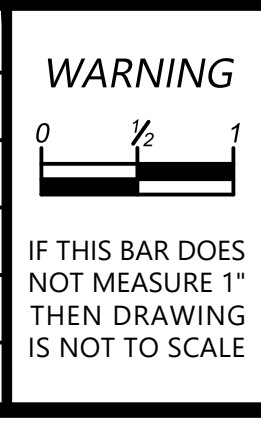
7 TYPICAL 12" INSULATED CMU WALL DETAIL
SCALE: 1/2"=1'-0"



8 TYP GENERATOR AND ELECTRICAL CABINET PAD DETAIL
NOT TO SCALE

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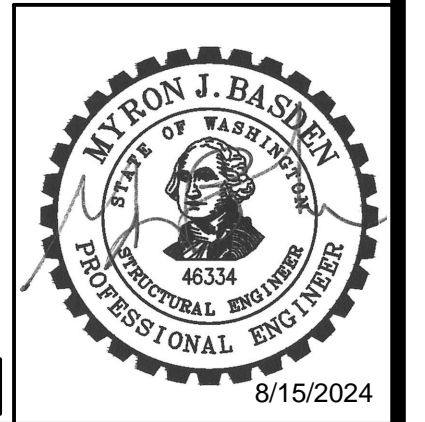


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CHECKED BY: ZK
APPROVAL: MJB
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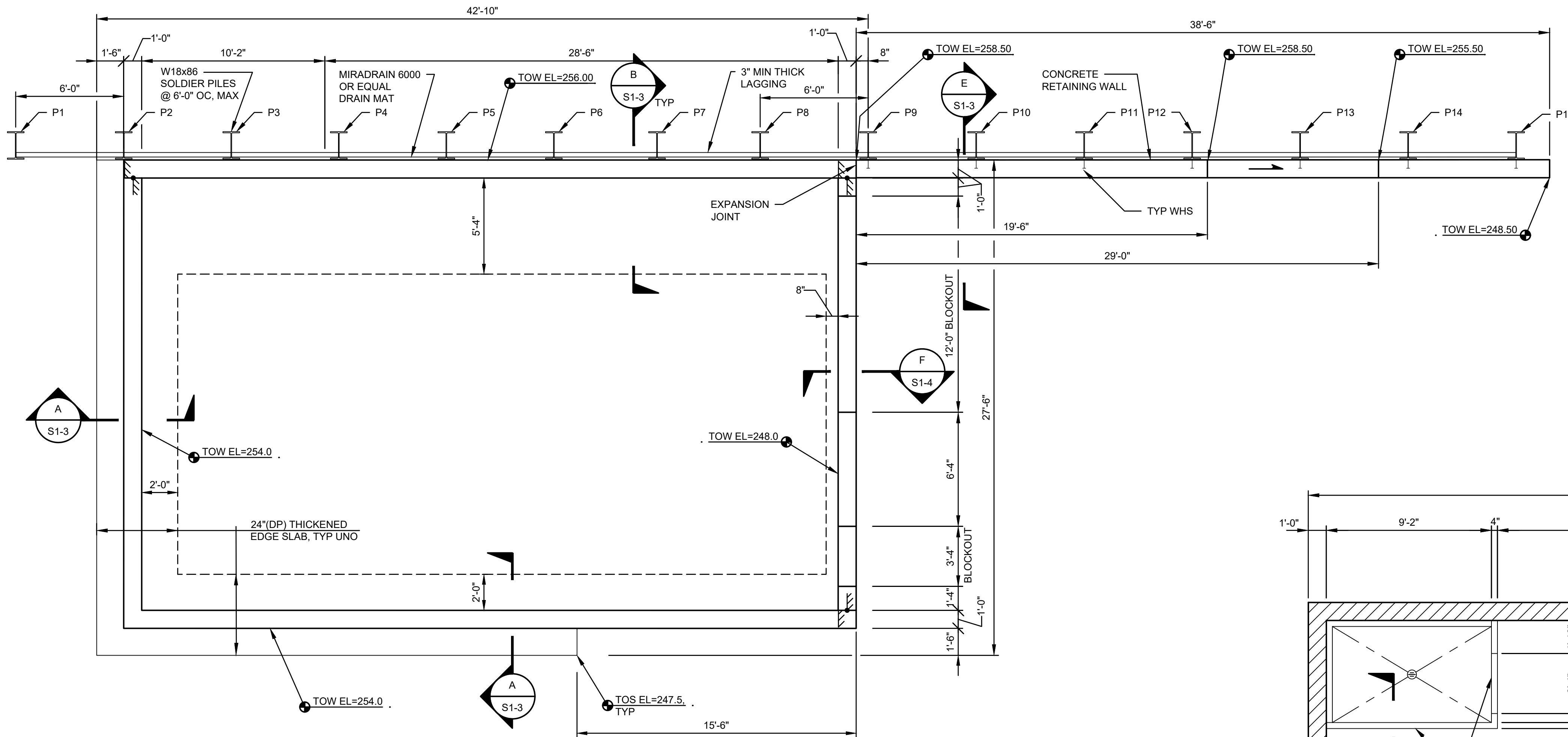
C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
TYPICAL STRUCTURAL DETAILS

STRUCTURAL
SHEET: S-3
40 OF 56

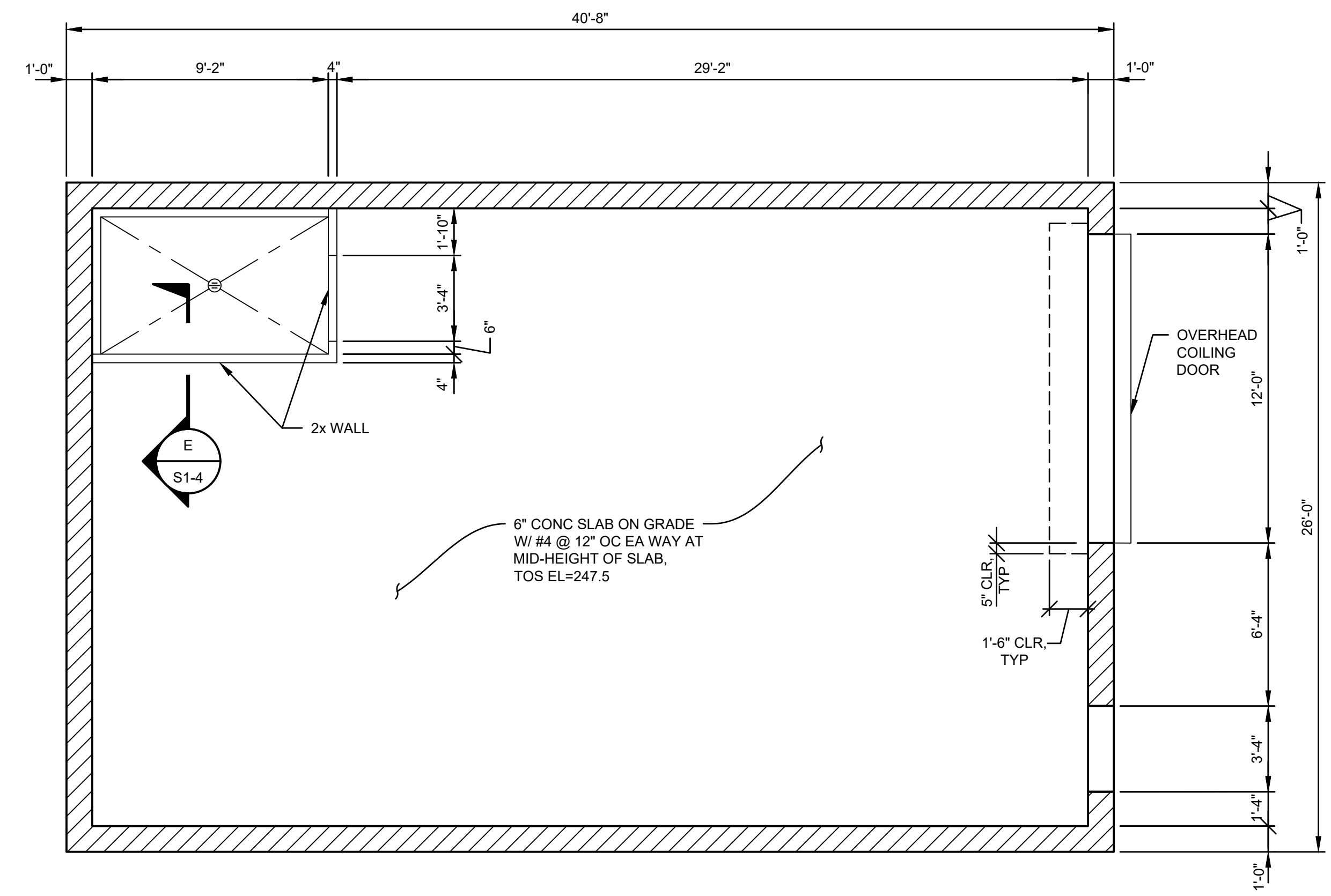


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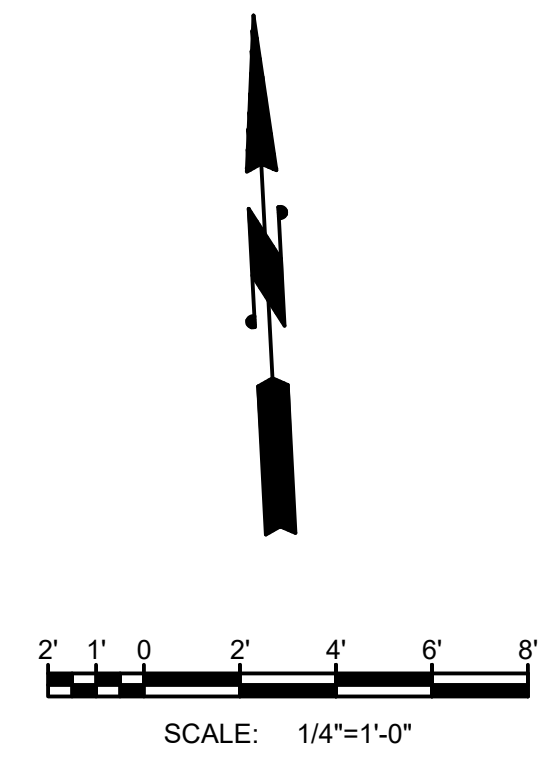


FOUNDATION PLAN
SCALE: 1/4"=1'-0"



FLOOR PLAN
SCALE: 1/4"=1'-0"

- NOTES:**
- SEE SHEETS S-1 THROUGH S-3 FOR GENERAL STRUCTURAL NOTES AND TYPICAL DETAILS.
 - DIMENSIONS SHOWN ON THE STRUCTURAL PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
 - NOT ALL PENETRATIONS MAY BE SHOWN. CONTRACTOR SHALL VERIFY NUMBER, SIZE, AND LOCATIONS OF ALL OPENINGS WITH MECHANICAL, ELECTRICAL, AND HVAC DRAWINGS.
 - "TOW" REFERS TO TOP OF CONCRETE WALL ON THIS SHEET.



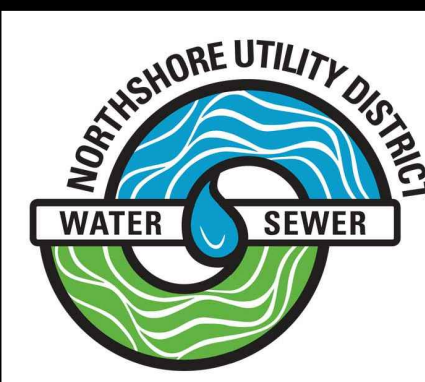
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WARNING

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE



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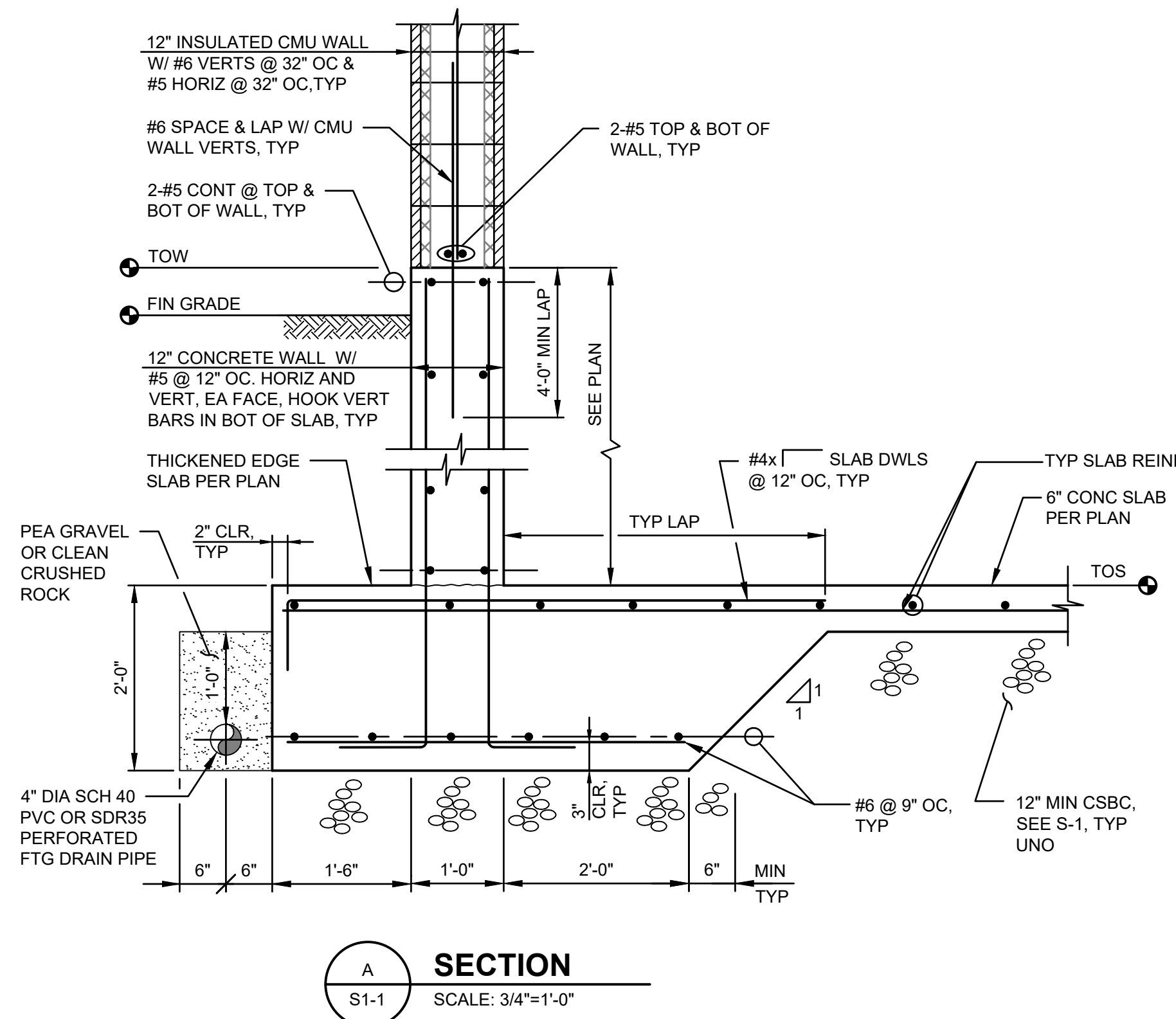
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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
FOUNDATION AND FLOOR PLANS

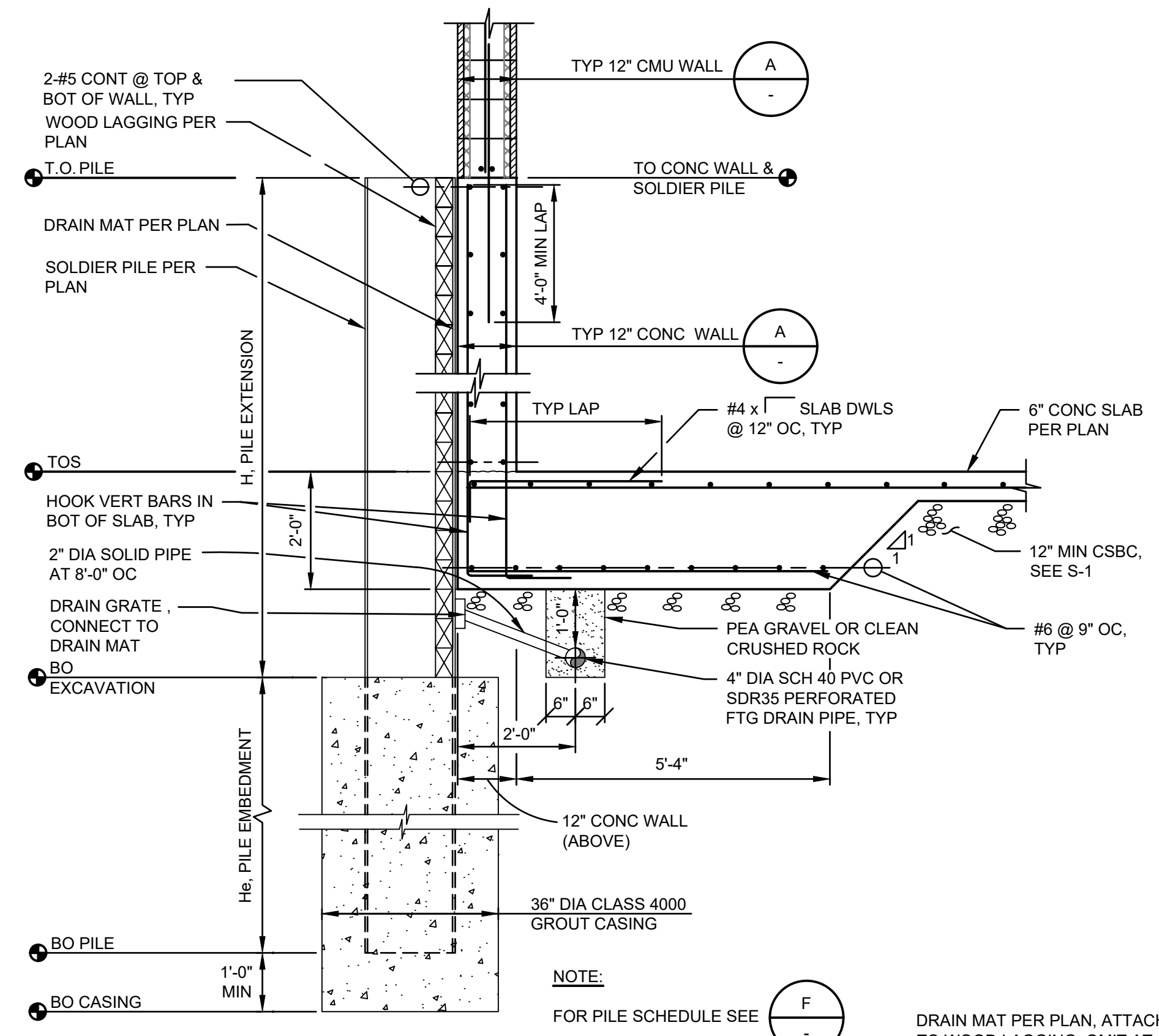
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STRUCTURAL
SHEET: S1-1
41 OF 56

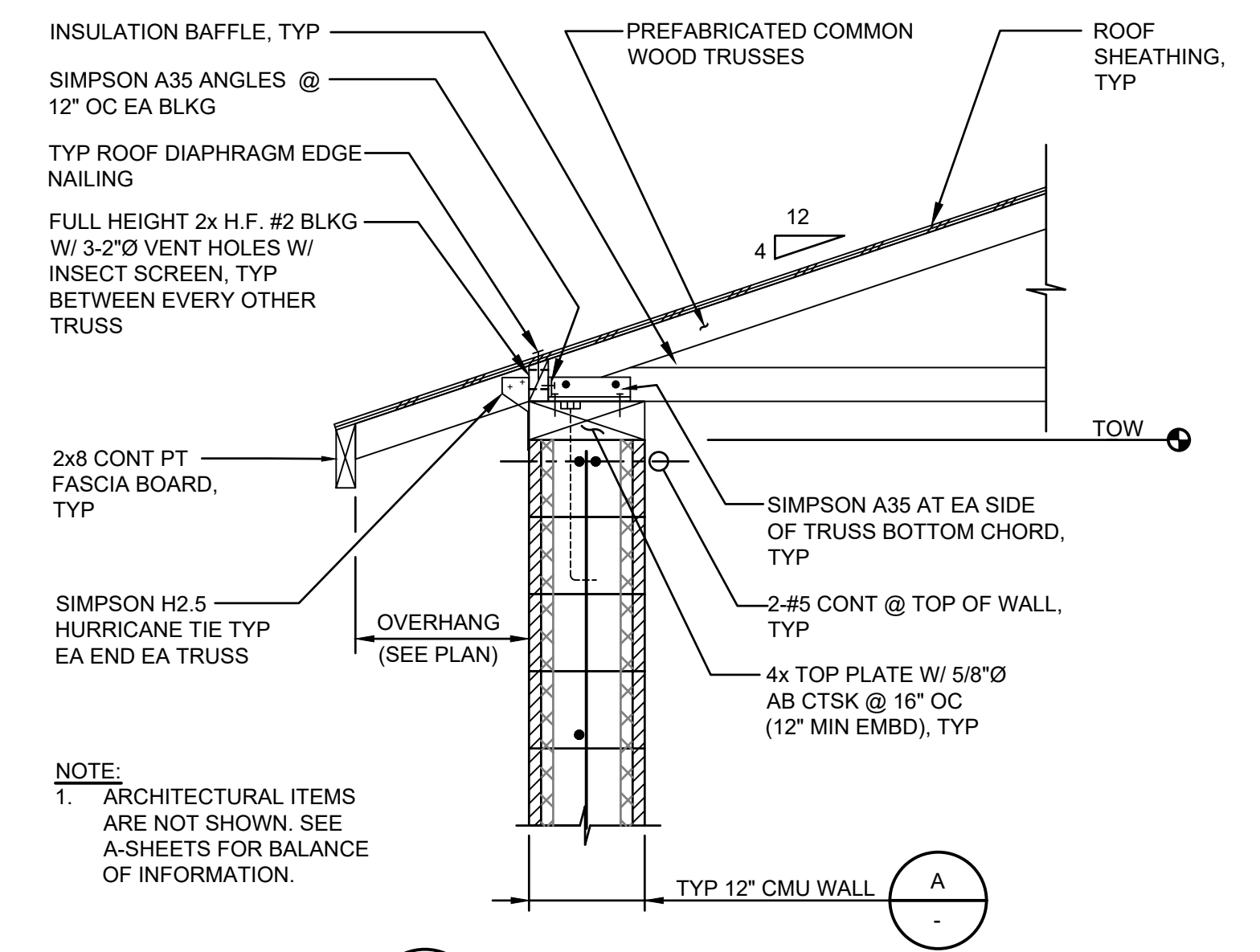
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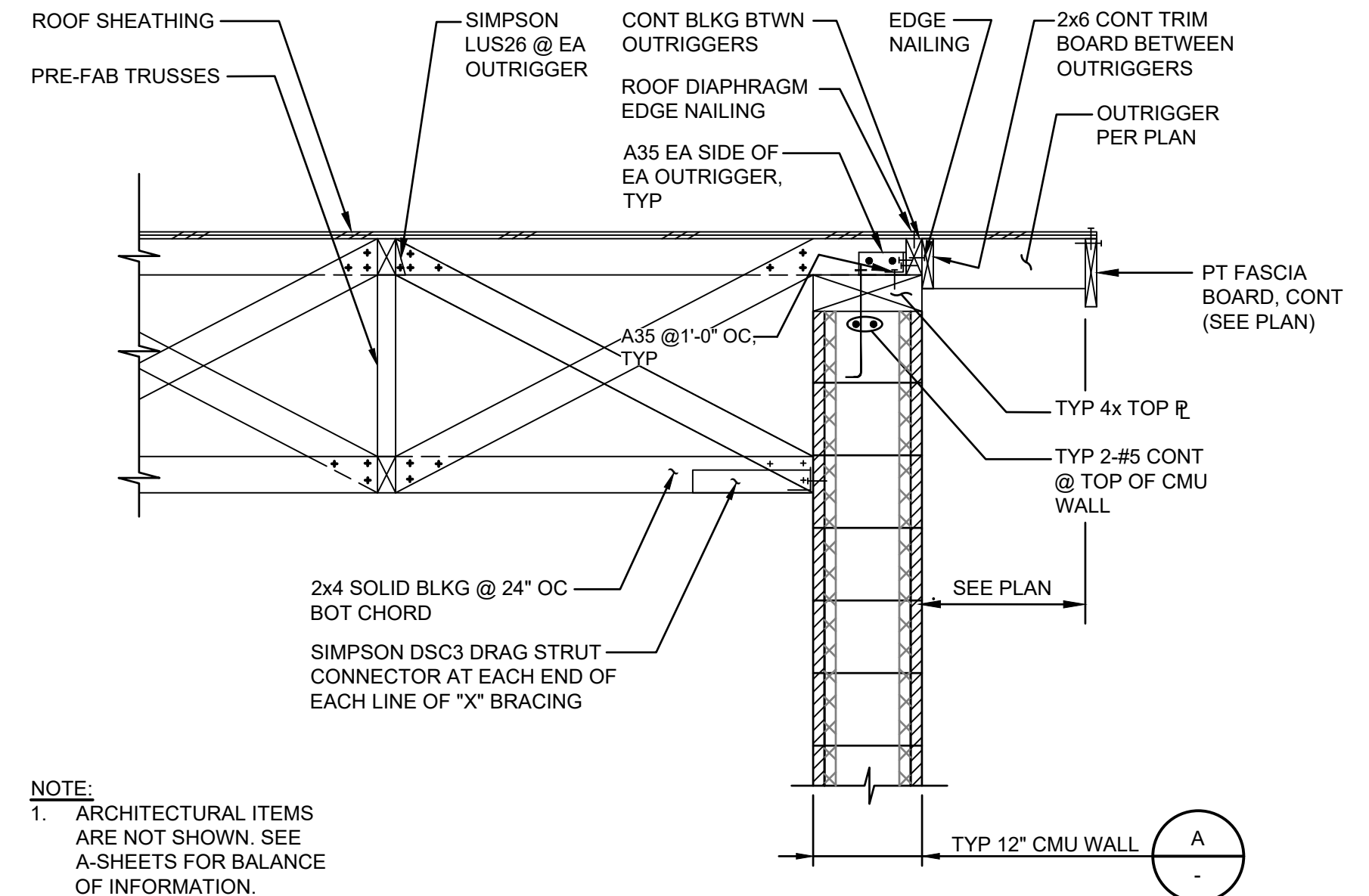
A SECTION
S1-1 SCALE: 3/4"=1'-0"



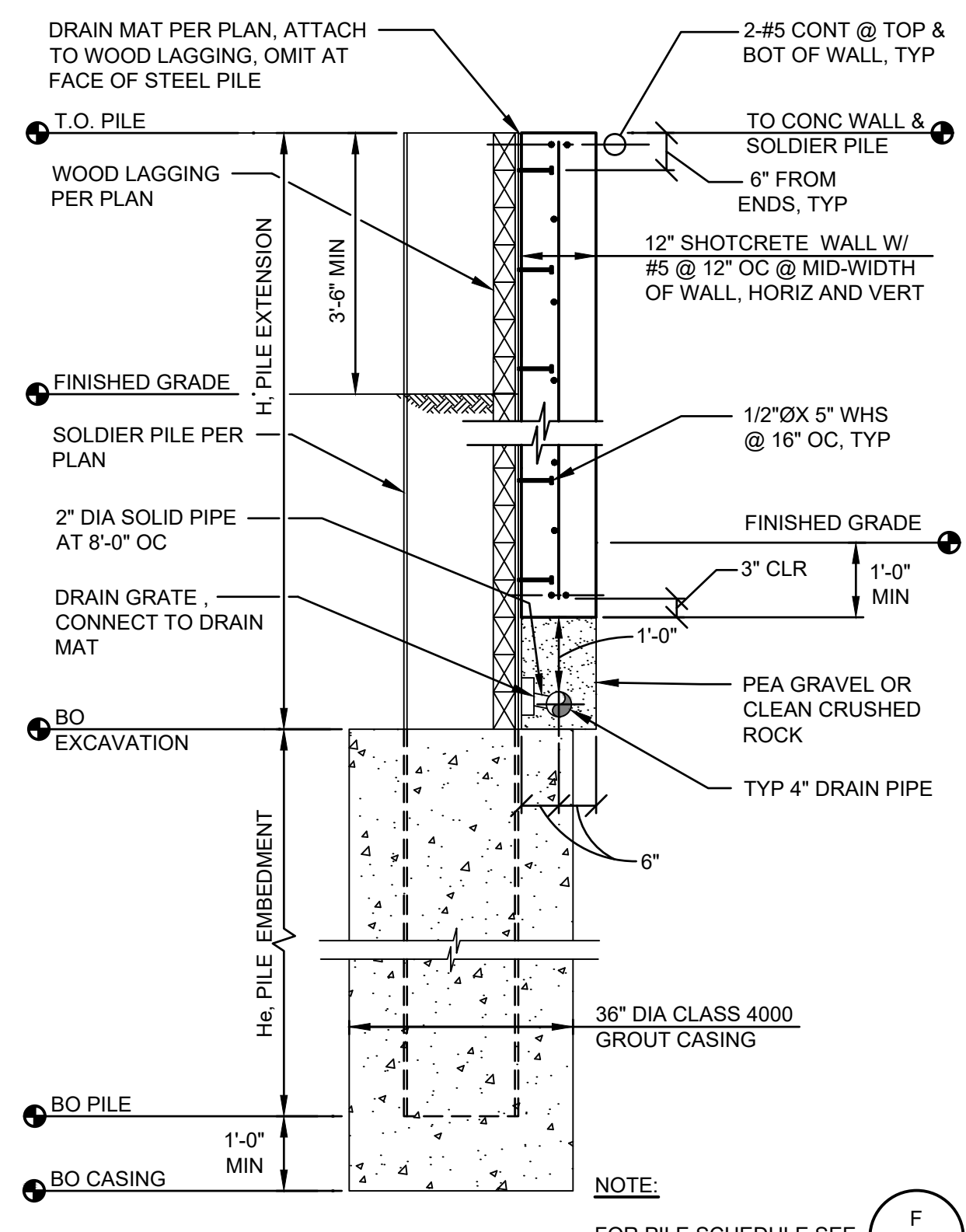
B SECTION
S1-1 SCALE: 1/2"=1'-0"



C SECTION
S1-2 SCALE: 3/4"=1'-0"



D SECTION
S1-2 SCALE: 3/4"=1'-0"

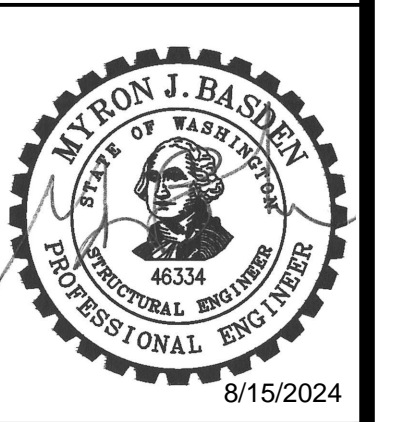


E SECTION
S1-1 SCALE: 1/2"=1'-0"

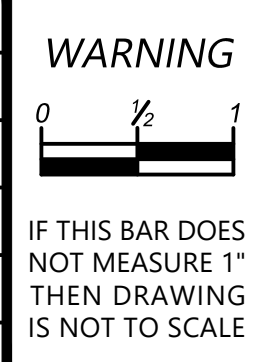
SOLDIER PILE RETAINING WALL SCHEDULE				
PILE NO.	T.O. PILE EL.	H	He	NOTES
P1	256.67	12'-8"	16'-0"	SEE NOTE 10
P2	256.67	12'-8"	16'-0"	SEE NOTE 10
P3	256.67	12'-8"	16'-0"	SEE NOTE 10
P4	256.67	12'-8"	16'-0"	SEE NOTE 10
P5	256.67	12'-8"	16'-0"	SEE NOTE 10
P6	256.67	12'-8"	16'-0"	SEE NOTE 10
P7	256.67	12'-8"	16'-0"	SEE NOTE 10
P8	256.67	12'-8"	16'-0"	SEE NOTE 10
P9	258.50	15'-2"	16'-0"	-
P10	258.50	15'-8"	16'-0"	-
P11	258.50	16'-2"	16'-0"	-
P12	258.50	16'-2"	16'-0"	-
P13	257.00	15'-2"	16'-0"	-
P14	254.25	13'-0"	16'-0"	-
P15	251.00	10'-9"	16'-0"	-

- NOTES:**
- SET SOLDIER PILES IN PRE-DRILLED CONCRETE GROUT CASING. CHIP AND REMOVE CONCRETE ENCASUREMENT AS REQUIRED DURING PLACEMENT OF LAGGING.
 - LAGGING SHALL BE INSTALLED AS THE EXCAVATION PROCEEDS AND NO MORE THAN 4 FEET (MEASURED VERTICALLY) OF UNSUPPORTED EXCAVATION SHALL BE EXPOSED AT ONE TIME.
 - SOLDIER PILES: ASTM A992, Fy=50 KSI.
 - TIMBER LAGGING: PRESSURE TREATED DOUGLAS FIR-LARCH NO. 2 OR BETTER.
 - SEE PLAN FOR PILE LOCATIONS.
 - PILES SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIFICATIONS.
 - CONTRACTOR SHALL VERIFY EXISTING CONDITIONS, INCLUDING UTILITIES, PRIOR TO STARTING WORK.
 - CONTRACTOR TO VERIFY COMPATIBILITY OF SOLDIER PILE LOCATIONS WITH EXISTING UTILITIES.
 - EACH END OF LAGGING SHALL HAVE 2" MINIMUM BEARING AT FLANGE OF STEEL PILE.
 - WHERE NOTED, CUT PILES TO BE 4'-0" BELOW FINISHED GRADE AFTER EXCAVATION IS BACKFILLED.

F SOLDIER PILE SCHEDULE
NO SCALE



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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
DETAILS

STRUCTURAL
SHEET: S1-3
43 OF 56

ABBREVIATIONS

A	AMPERE (AMP)	FVNR	FULL VOLTAGE NON REVERSING	LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT	PMU	POWER MONITOR UNIT
AC	ALTERNATING CURRENT	FVR	FULL VOLTAGE REVERSING	LINE	POWER LINE/POWER BLOCK	POT	POTENTIOMETER
AF	BREAKER FRAME SIZE (IN AMPS)	FY	FLOW COMPUTATION	LV	LOW VOLTAGE	PVC	POLYVINYL CHLORIDE CONDUIT
AI	ANALOG INPUT	G	GROUND CONDUCTOR	M	MAGNETIC CONTACTOR	RGS	RIGID GALVANIZED STEEL CONDUIT
AL	ALUMINUM	GEC	GROUNDING ELECTRODE CONDUCTOR	mA	MILLIAMPERES	RVSS	REDUCED-VOLTAGE SOFT START
AM	AMMETER	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	MCC	MOTOR CONTROL CENTER	RMC	RIGID METALLIC CONDUIT
AO	ANALOG OUTPUT	GND	GROUND	MCM	THOUSAND CIRCULAR MILLS	RNC	RIGID NONMETALLIC CONDUIT
AT	BREAKER TRIP (SETTING IN AMPS)	H	HORN	MCP	MOTOR CIRCUIT PROTECTOR	RTU	REMOTE TELEMETRY UNIT
ATS	AUTOMATIC TRANSFER SWITCH	HA	HAND-AUTO	MOV	METAL OXIDE VARISTOR	s	SECOND
AWG	AMERICAN WIRE GAUGE	HIM	HUMAN INTERFACE MODULE	MS	MOTOR STARTER	SHD	SHIELDED
BATT	BATTERY	HMI	HUMAN MACHINE INTERFACE	MSDS	MOTOR SAFETY DISCONNECT SWITCH	SPD	SURGE PROTECTION DEVICE
BKR	BREAKER	HOA	HAND-OFF-AUTO	MTS	MANUAL TRANSFER SWITCH	SS	STAINLESS STEEL
CP	CONTROL PANEL	HOR	HAND-OFF-REMOTE	MTU	MASTER TELEMETRY UNIT	SUSE	SUITABLE FOR USE AS A SERVICE ENTRANCE
CPT	CONTROL POWER TRANSFORMER	HP	HORSEPOWER	mV	MILLIVOLT	TB	TERMINAL BLOCK
CST	CONTROL STATION	IC	INTERRUPTING CAPACITY	MW	MEGAWATT	TDAD	TIME DELAY AFTER DE-ENERGIZATION
CT	CURRENT TRANSFORMER	JCXXX	JUNCTION BOX, CONTROL	N	NEUTRAL CONDUCTOR	TDAE	TIME DELAY AFTER ENERGIZATION
CU	COPPER	JPXXX	JUNCTION BOX, POWER	NEC	NATIONAL ELECTRICAL CODE	TQS	TORQUE SWITCH
DC	DIRECT CURRENT	JSXXX	JUNCTION BOX, SIGNAL	NEMA	NATIONAL ELECTRIC MANUFACTURERS ASSOC.	TP/TSP	TWISTED PAIR/TWISTED SHIELDED PAIR
DI	DISCRETE INPUT	KA	KILOAMPERES	NESC	NATIONAL ELECTRICAL SAFETY CODE	TS/TT	TWISTED SHIELDED TRIAD/TWISTED TRIAD
DIST	DISTRIBUTION	KAIC	KILOAMPERES-INTERRUPTING CAPACITY	NFPA	NATIONAL FIRE PROTECTION AGENCY	T/M	THERMAL MAGNETIC
DO	DISCRETE OUTPUT	KCM	THOUSAND CIRCULAR MILLS	OCPPD	OVERCURRENT PROTECTION DEVICE	UPS	UNINTERRUPTIBLE POWER SUPPLY
DTWV	DISCHARGE-TO-WASTE VALVE	kV	KILOVOLT	OE	OVERHEAD ELECTRIC	V	VOLT
EIOM	EXTENDED I/O MODULE	kVA	KILOVOLT-AMPERE	OIU	OPERATOR INTERFACE UNIT	VA	VOLT-AMPERE
ETC	ELAPSED TIME/COUNTER METER	kVAh	KILOVOLT-AMPERE HOUR	OL	OVERLOAD, THERMAL	VFD	VARIABLE FREQUENCY DRIVE
ETM	ELAPSED TIME METER	KVAR	KILOVAR (REACTIVE KILOVOLT-AMPERE)	OLR	OVERLOAD RELAY	VMR	VOLTAGE MONITORING RELAY
ENCL	ENCLOSURE	KVARh	KILOVAR-HOUR	P	POLE	W	WATT
EXIST	EXISTING	kW	KILOWATT	PF	POWER FACTOR	WAN	WIDE AREA NETWORK
FDR	FEEDER	kWh	KILOWATT-HOUR	PH	PHASE	Wh	WATT-HOUR
FLA	FULL LOAD AMPS	LA	LIGHTNING ARRESTOR	PLC	PROGRAMMABLE LOGIC CONTROL	WP	WEATHER PROOF
FU	FUSE	LAN	LOCAL AREA NETWORK	PMR	PHASE MONITOR RELAY	XFMR	POWER TRANSFORMER

SYMBOL LEGEND

ONE LINE SYMBOLS		ELEMENTARY WIRING DIAGRAM SYMBOLS	
	CAPACITOR		CONNECTION POINT
	REACTOR/CHOKE		TERMINAL POINT
	CIRCUIT BREAKER, MAGNETIC ONLY		SCREW TERMINAL
	CIRCUIT BREAKER, THERMAL-MAGNETIC		MOUNTED ON OUTER DOOR
	CONNECTION POINT		MOUNTED ON INNER DOOR
	CONTACTOR		LOCKABLE DEVICE
	FUSE		NC CONTACT
	FUSIBLE DISCONNECT		NC CONTACTOR
	ANALOG AMMETER		NO CONTACT
	THERMAL OVERLOAD RELAY		NO CONTACTOR
	GROUND EQUIPMENT/CHASSIS		NO CONTACTOR
	SOLID NEUTRAL		SOLID STATE CONTACTOR
	TRANSFORMER		ALTERNATING RELAY
	CONDUIT DOWN		CONTROL RELAY
	CONDUIT UP		CONTACTOR
	CONDUIT STUB UP/END CAP		"BYPASS" CONTACTOR
	DISCONNECT SWITCH		"ISOLATION" CONTACTOR
	FUSED DISCONNECT SWITCH		SOLID STATE CONTACT RELAY
	COMMUNICATION OUTLET		MOTOR RELAY
	TELEPHONE OUTLET		TIME DELAY RELAY (TDAE)
	SPECIAL OUTLET		TIME DELAY RELAY (TDAD)
	SIMPLEX RECEPTACLE		LIGHT FIXTURE
	DUPLEX RECEPTACLE		X = REFERENCE LIGHTING SCHEDULE IF APPLICABLE
	DUPLEX RECEPTACLE (HIDDEN)		"PUSH TO TEST" LED PILOT LIGHT
	QUAD RECEPTACLE		FUSED SWITCH W/ LED
	QUAD RECEPTACLE (HIDDEN)		TDAE, N.O., TIME DELAY CLOSE, INSTANTANEOUS RE-OPEN
	FLOOR MOUNTED RECEPTACLE		TDAE, N.C., TIME DELAY OPEN, INSTANTANEOUS RE-CLOSE
	LED LIGHT POLES		TDAD, N.O., INSTANTANEOUS CLOSE, TIME DELAY RE-OPEN
	#12 AWG GROUND CONDUCTOR		TDAD, N.C., INSTANTANEOUS OPEN, TIME DELAY RE-CLOSE
	#12 AWG NEUTRAL CONDUCTOR		
	#12 AWG BRANCH CONDUCTOR		
	CROSSMARKS INDICATE QUANTITY AND USE OF CONDUCTORS		
	LIGHT SWITCH		HAND-OFF-AUTO SWITCHES
	SEAL OFF		ON-OFF-RESET SWITCH
	MOTOR X = HORSE POWER		SELECTOR SWITCHES
	XX= CV CHECK VALVE		
	FE FLOW ELEMENT		
	FI FLOW INDICATOR		
	FIT FLOW INDICATOR/TRANSMITTER		
	FS FLOW SWITCH		
	FT FLOW TRANSMITTER		
	HD HEAT DETECTOR		
	IS INTRUSION SWITCH		
	J JUNCTION BOX		
	L LIMIT SWITCH		
	LE LEVEL ELEMENT		
	LI LEVEL INDICATOR		
	LIT LEVEL INDICATOR/TRANSMITTER		
	LS LEVEL SWITCH/FLOAT		
	LT LEVEL TRANSDUCER		
	MDT MOTION DETECTOR		
	MFV MAGNETIC FLOW METER		
	MOV MOTOR OPERATOR VALVE		
	PC PHOTO CELL		
	PE PRESSURE ELEMENT		
	PI PRESSURE INDICATOR		
	PIT PRESSURE INDICATOR/TRANSMITTER		
	PS PRESSURE SWITCH		
	PT PRESSURE TRANSMITTER		
	SD SMOKE DETECTOR		
	SV SOLENOID VALVE		
	T THERMOSTAT		

GENERAL ELECTRICAL NOTES:

- SITE AND BUILDING PLANS:**
- CONDUIT ROUTING IS SHOWN FOR SCHEMATICALLY. ACTUAL ROUTING MAY BE MORE DIRECT AND IS LEFT TO THE CONTRACTOR FOLLOWING SPECIFICATIONS 16130. NON-ELECTRICAL BURIED PIPING HAS ROUTING PRIORITY OVER ELECTRICAL BURIALS.
 - ALL TRENCHING SHALL BE PER ELECTRICAL TRENCHING DETAIL, REFERENCE E-5.
 - THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES.
 - THROUGHOUT THIS DOCUMENT, THE TERMS "DEMO", "DEMOLISH", OR "REMOVE" MEAN TO REMOVE, THEN WASTEHAUL OR RETURN TO THE OWNER, PER THE OWNER'S DIRECTION.
 - THROUGHOUT THIS DOCUMENT, THE TERMS "PROVIDE" OR "INSTALL" MEAN TO PROVIDE AND INSTALL.

INDOOR INSTALLATIONS NOTES:

- ALL EXPOSED PORTIONS OF CONDUITS FROM UNDERGROUND SHALL BE RGS. ALL OVERHEAD CONDUITS SHALL BE RGS.
 - EXCEPT FOR INSTRUMENTATION, ALL PORTIONS OF CONDUITS IN THE ATTIC MAY BE EMT.
 - PANELS MOUNTED ON INTERIOR WALLS SHALL BE SUPPORTED TO THE WALL WITH 1/2-INCH (MINIMUM) GALVANIZED UNISTRUT.
- PULLBOX/VULT/OUTDOOR INSTALLATIONS:**
- ALL MOUNTING FASTENERS (NUTS, BOLTS SCREWS, WASHERS, ETC.) SHALL BE 316 STAINLESS STEEL.
 - ALL MOUNTING BRACKETS AND BRACING SHALL BE 316L STAINLESS STEEL.
 - ALL EXPOSED PORTIONS OF CONDUITS SHALL BE PVC-COATED RGS UNLESS SPECIFICALLY NOTED OTHERWISE.
 - ALL CONNECTIONS INTO ENCLOSURES SHALL BE WATERTIGHT, MADE INTO THE BOTTOM OF THE PANELS, USING MYERS-TYPE HUBS. REFERENCE SPECIFICATION 16130.
 - PANELS MOUNTED ON VERTICAL WALLS SHALL BE SUPPORTED TO THE WALL WITH 1/2-INCH (MINIMUM) 316L STAINLESS STEEL UNISTRUT.
 - ENCLOSURE SHALL INCLUDE WELDED MOUNTING TABS. HOLES SHALL NOT BE DRILLED THROUGH ENCLOSURE SURFACES FOR MOUNTING PURPOSE.

ELECTRICAL PLANS:

- ELECTRICAL REFERENCES ARE TO THE SHEET DESIGNATION NOT THE SHEET NUMBER.

CABLE AND CONDUIT NOTES:

- REFERENCE SPECIFICATION 16120 FOR CONDUCTORS, INSTRUMENTATION, COMMUNICATION, AND OTHER SPECIAL CABLES AND CONDUCTORS.
- REFERENCE SPECIFICATION 16130 FOR RACEWAYS, BOXES, AND JUNCTION BOX TYPES, AND HANDHOLE, PULLBOX, AND VAULT CONDUIT INSTALLATION METHODS.
- CONDUIT NUMBERS ARE FORMATTED AS:
TAANN(S) WHERE: T = TYPE (P=POWER, C=CONTROL, S=SIGNAL/INSTRUMENTATION)
AA= AREA NUMBER (01-99)
NN= CONDUIT NUMBER WITHIN THE AREA (01-99)
S = SPARE CONDUIT (~ "TILDE") (IF APPLICABLE)

- = AREA 03 POWER CONDUIT NO. 19, SPARE
- = AREA 01 CONTROL CONDUIT NO. 12
- = AREA 05 INSTRUMENTATION CONDUIT NO. 21, SPARE

- CABLE AND CONDUIT SCHEDULES:
4.1. THE CABLE AND CONDUIT SCHEDULE PROVIDES CONDUIT NUMBER, SOURCE, DESTINATION, AND SIZE AS WELL AS CONDUCTOR AND CABLE REQUIREMENTS. REFERENCE SPECIFICATION 16130 FOR CONDUIT COMPOSITION AND COATING.
4.2. CONDUITS MARKED WITH "n" (WHERE n = 1, 2, OR 3) SHALL BE 100% CONTINUOUS PER SPECIFICATION 16130.
SPECIFICALLY, CONDUITS MARKED WITH:
"1" NOT USED.
"2" NOT USED.
"3" DENOTE INSTRUMENTATION CIRCUITS THAT ARE NOT INTRINSICALLY SAFE. IF THESE CONDUITS ENTER A PULLBOX, THEN THEY MUST CONNECT TO A "TYPE 3" J-BOX INSIDE THE PULLBOX.
- REGARDLESS OF THE TYPE OF CONDUIT BEING ROUTED TO A PIPE MOUNTED DEVICE, THE LAST 18 INCHES OF THE CONDUIT CONNECTING TO THE DEVICE SHALL BE LFMC.

READING ELECTRICAL SHEETS:

PANELBOARD CIRCUIT ASSIGNMENTS:

- LIGHTING FIXTURES AND RECEPTACLES ARE SHOWN WITH THEIR PANELBOARD CIRCUIT BREAKER NUMBER FOLLOWING THE FORMAT BELOW:



ELECTRICAL WORK SUMMARY:

THIS SUMMARY OF ELECTRICAL WORK IS INCLUDED AS A COURTESY AND IS INTENDED TO PROVIDE A GENERAL UNDERSTANDING OF ELECTRICAL DESIGN INTENT AND MAJOR ELECTRICAL CONSTRUCTION TASKS. IT IS NOT PROVIDED AS A COMPLETE LIST OF WORK AND SHALL NOT BE USED FOR BIDDING PURPOSES. REFER TO ALL PLANS AND SPECIFICATIONS.

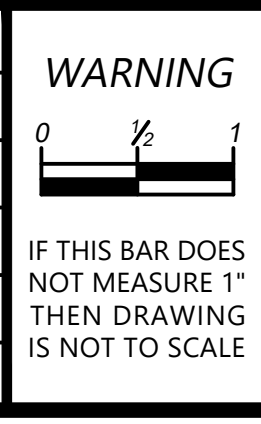
- EXISTING METER NO. 3 VAULT AND ASSOCIATED ELECTRICAL EQUIPMENT, CONDUIT, AND CONDUCTORS WILL BE DEMOLISHED, "SCHEDULE A"
- A NEW 451 ZONE CONTROL VALVE BUILDING WILL BE ADDED, "SCHEDULE A".
- A NEW REMOTE VALVE VAULT WILL BE ADDED, "SCHEDULE B".
- CONTROL PANELS [01 CP 01] AND [02 CP 01] ARE PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.

SHEET LIST	
SHEET	SHEET DESCRIPTION
E-1	ELECTRICAL SYMBOLS, ABBREVIATIONS, SHEET LIST, AND WORK SUMMARY
E-2	PANELBOARD SCHEDULES
E-3	ANALOG LOOP DIAGRAMS
E-4	CABLE AND CONDUIT SCHEDULES
E-5	ELECTRICAL DETAILS
E-6	ELECTRICAL DETAILS
E1-1	SITE ELECTRICAL PLAN AND ONE LINE DIAGRAM
E1-2	BUILDING ELECTRICAL PLAN AND DEVICE TAG LIST
E1-3	BUILDING LIGHTING AND RECEPTACLES
E1-4	BUILDING HVAC AND SECURITY PLAN
E2-1	SITE ELECTRICAL PLAN, ONE LINE DIAGRAM, AND TAG LIST
E2-2	VAULT ELECTRICAL PLAN AND CONTROL PANEL [02 CP 01] ELEVATION

GENERAL SYMBOLS	
	CONDUIT
	TAG LABEL
	GFCI PANELBOARD CIRCUIT
	AREA ID TAG
	DEMOLITION (DEMO)
	INTRINSICALLY SAFE AREA
	CLEARANCE AREA
LINETYPES	
	EXPOSED CONDUIT
	UNDERGROUND (BURIED) CONDUIT
	GROUNDING ELECTRODE CONDUCTORS
	EMBEDDED CONDUIT (WALLS, CONCRETE, ETC.)
NOTE: UNLESS NOTED OTHERWISE.	
NOTE: THIS IS A GENERAL LEDGER SHEET. ALL SYMBOLS MAY NOT APPLY.	

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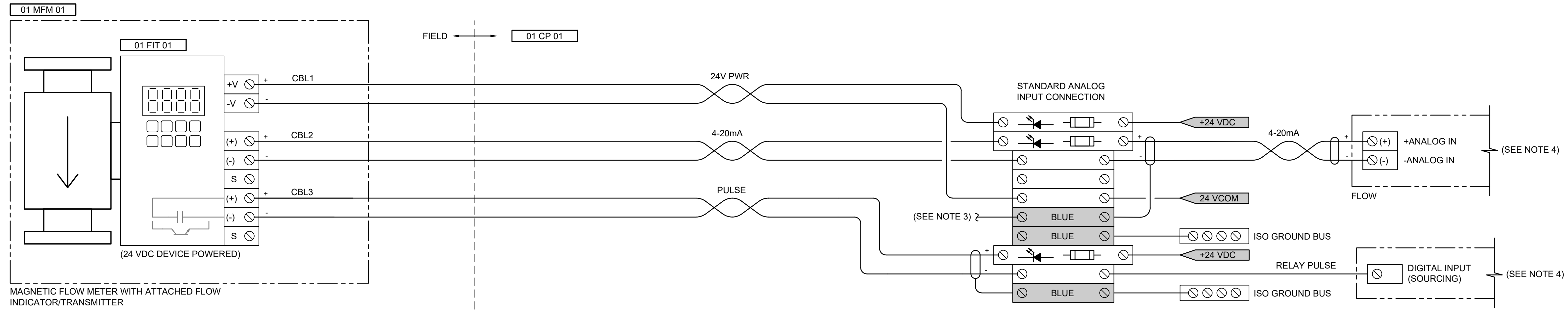
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DRAWN BY: PEB
CHECKED BY: JRN
APPROVAL: JRN
DATE: AUG 2024

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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
ELECTRICAL SYMBOLS, ABBREVIATIONS, SHEET LIST, AND WORK SUMMARY

ELECTRICAL
SHEET: E-1
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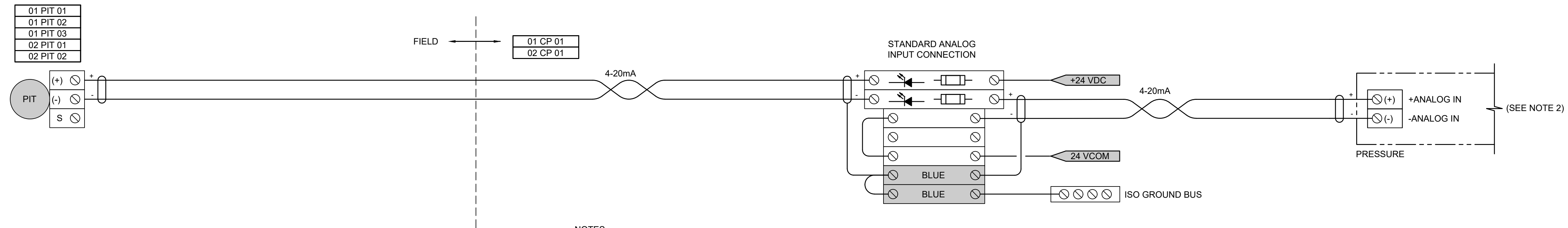
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NOTES:

- 24 VDC POWER TO THE FLOW METER SHALL BE DERIVED FROM THE METER'S STANDARD 7-TERMINAL ANALOG GROUP.
- PROVIDE A SEPARATE FUSED 24 VDC INPUT TERMINAL PAIR JUST BELOW THE STANDARD 7-TERMINAL ANALOG GROUP FOR FLOW TOTALIZING PULSE SIGNAL.
- FOR CLARITY, SHIELDS ARE NOT SHOWN CONNECTED ON THE FIELD SIDE OF THE STANDARD 7-TERMINAL ANALOG GROUP. CONNECT ALL SHIELDS AT THE TERMINAL SHOWN.
- THE OWNER WILL PROVIDE TERMINATION POINTS IN [01 CP 01].

1 INSTANTANEOUS AND TOTALIZED FLOW INSTRUMENTATION CONNECTION DIAGRAM
NOT TO SCALE



NOTES:

- PRESSURE TRANSMITTERS ARE LOOP-POWERED.
- THE OWNER WILL PROVIDE TERMINATION POINTS IN [01 CP 01] AND [02 CP 01].

2 PRESSURE TRANSMITTER INSTRUMENTATION CONNECTION DIAGRAM
NOT TO SCALE

TERMINAL LEGEND:

SHADED TERMINALS ARE USED FOR SHIELD CONNECTIONS TO ISOLATED GROUND. THESE TERMINALS ARE BLUE AND ARE NOT TO BE CONNECTED TO CHASSIS GROUND.

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WARNING
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE



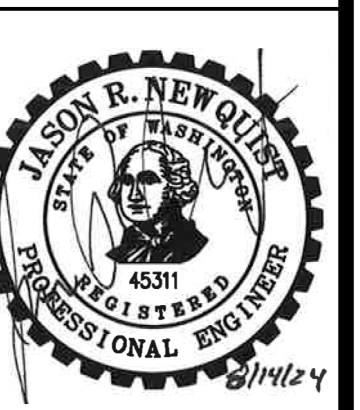
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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
ANALOG LOOP DIAGRAMS

#C928



ELECTRICAL
SHEET: E-3
47 OF 56

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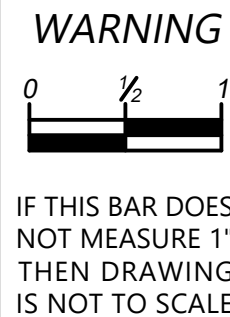
AREA 01 - POWER CABLE AND CONDUIT SCHEDULE						
NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
P0101	[01 UT 01], UTILITY TRANSFORMER	[01 UV 01], UTILITY VAULT	2"	2X #3/0 AWG XHHW-2; 1X #2 AWG XHHW-2 N		
P0101A	[01 UV 01], UTILITY VAULT	[01 MB 01], METER BASE	2"	2X #3/0 AWG XHHW-2; 1X #2 AWG XHHW-2 N; 1X #6 AWG XHHW-2 G		
P0102	[01 MB 01], METER BASE	[01 PB 01], PANELBOARD, 240/120V	2"	2X #3/0 AWG XHHW-2; 1X #3/0 AWG XHHW-2 N; 1X #6 AWG XHHW-2 G		
P0103	[01 PB 01], PANELBOARD, 240/120V	[01 DREC 01], DEDICATED RECEPTACLE, UTILITY POWER	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0104	[01 DREC 02], DEDICATED RECEPTACLE, INSIDE, GENERATOR POWER	[01 DREC 03], DEDICATED RECEPTACLE, OUTSIDE, GENERATOR POWER	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0105	[01 PB 01], PANELBOARD, 240/120V	[01 CDOS 01], COILING DOOR OPERATOR SYSTEM	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0106	[01 PB 01], PANELBOARD, 240/120V	RECEPTACLES	3/4"	2X #12 AWG XHHW-2; 2X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0107	[01 PB 01], PANELBOARD, 240/120V	RECEPTACLES	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0108	[01 PB 01], PANELBOARD, 240/120V	EXTERIOR LIGHTING	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0109	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	INTERIOR LIGHTING	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0110	[01 PB 01], PANELBOARD, 240/120V	[01 AS 01], AIR QUALITY SENSOR	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0111	[01 AS 01], AIR QUALITY SENSOR	[01 SDS 02], SAFETY DISCONNECT SWITCH, HIGH FLOW EXHAUST FAN	3/4"	1x #12 AWG XHHW-2; 1x #12 AWG XHHW-2 N; 1x #12 AWG XHHW-2 G		
P0112	[01 SDS 02], SAFETY DISCONNECT SWITCH, HIGH FLOW EXHAUST FAN	JUNCTION BOX, JP0112	3/4"	1x #12 AWG XHHW-2; 1x #12 AWG XHHW-2 N; 1x #12 AWG XHHW-2 G		
P0112A	JUNCTION BOX, JP0112	[01 EF 01], EXHAUST FAN, HIGH FLOW	3/4"	1x #12 AWG XHHW-2; 1x #12 AWG XHHW-2 N; 1x #12 AWG XHHW-2 G		
P0112B	JUNCTION BOX, JP0112	[01 MD 01], MOTORIZED DAMPER, HIGH FLOW EXHAUST FAN	3/4"	1x #12 AWG XHHW-2; 1x #12 AWG XHHW-2 N; 1x #12 AWG XHHW-2 G		
P0112C	JUNCTION BOX, JP0112	[01 MD 02], MOTORIZED DAMPER, INTAKE	3/4"	1x #12 AWG XHHW-2; 1x #12 AWG XHHW-2 N; 1x #12 AWG XHHW-2 G		
P0113	[01 PB 01], PANELBOARD, 240/120V	[01 SDS 03], SAFETY DISCONNECT SWITCH, LOW FLOW EXHAUST FAN	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0114	[01 SDS 03], SAFETY DISCONNECT SWITCH, LOW FLOW EXHAUST FAN	[01 EF 02], EXHAUST FAN, LOW FLOW	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0115	[01 PB 01], PANELBOARD, 240/120V	[01 SDS 01], SAFTER DISCONNECT SWITCH, WATER HEATER	3/4"	1X #6 AWG XHHW-2; 1X #6 AWG XHHW-2 N; 1X #10 AWG XHHW-2 G		
P0116	[01 SDS 01], SAFTER DISCONNECT SWITCH, WATER HEATER	[01 WH 01], WATER HEATER	3/4"	1X #6 AWG XHHW-2; 1X #6 AWG XHHW-2 N; 1X #10 AWG XHHW-2 G		
P0117	[01 PB 01], PANELBOARD, 240/120V	[01 HT 01], UNIT HEATER	3/4"	1X #8 AWG XHHW-2; 1X #8 AWG XHHW-2 N; 1X #10 AWG XHHW-2 G		
P0118	[01 PB 01], PANELBOARD, 240/120V	[01 HT 02], HEATER, RESTROOM	3/4"	1X #10 AWG XHHW-2; 1X #10 AWG XHHW-2 N; 1X #10 AWG XHHW-2 G		
P0119	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 DREC 04], DEDICATED RECEPTACLE, NVR AND DOOR CONTROLLER	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0120~	STUB UP UNDER [01 PB 01] ONE FOOT ABOVE THE FLOOR AND CAP.	NEAR ORIGINAL ELECTRICAL STAND AND CAP	3/4"	PULL WIRE		SPARE CONDUIT.

AREA 01 - CONTROL CABLE AND CONDUIT SCHEDULE						
NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
C0101	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	JUNCTION BOX, JC0101	3/4"	6X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0101A	JUNCTION BOX, JC0101	[01 SV 01], SOLENOID VALVE, OPEN, FLOW CONTROL VALVE NO. 1	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0101B	JUNCTION BOX, JC0101	[01 SV 02], SOLENOID VALVE, CLOSE, FLOW CONTROL VALVE NO. 1	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0101C	JUNCTION BOX, JC0101	[01 LS 01], LIMIT SWITCH, CLOSED, FLOW CONTROL VALVE NO. 1	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0102	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 LS 02], LIMIT SWITCH, CLOSED CONTROL VALVE NO. 2	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0103	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 LS 03], LIMIT SWITCH, CLOSED, CONTROL VALVE NO. 3	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0104	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 LS 04], LIMIT SWITCH, CLOSED, CONTROL VALVE NO. 4	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0105	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 LS 05], LIMIT SWITCH, CLOSED, CONTROL VALVE NO. 5	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0106	[01 CDOS 01], COILING DOOR OPERATOR SYSTEM	[01 CDOS 01], CONTROL STATION, COILING DOOR OPERATOR SYSTEM	3/4"	MANUFACTURER'S RECOMMENDED CABLE		
C0107	[01 CDOS 01], COILING DOOR OPERATOR SYSTEM	[01 CDSS 01], SAFETY SENSOR, COILING DOOR OPERATOR SYSTEM	3/4"	MANUFACTURER'S RECOMMENDED CABLE		
C0108	[01 CDOS 01], COILING DOOR OPERATOR SYSTEM	[01 CDSS 02], SAFETY SENSOR, COILING DOOR OPERATOR SYSTEM	3/4"	MANUFACTURER'S RECOMMENDED CABLE		
C0109	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 HD 01], HEAT DETECTOR	3/4"	8X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		POWER, STATUS, AND OCCUPANCY SENSOR STATUS
C0109A	[01 HD 01], HEAT DETECTOR	[01 SD 01], SMOKE DETECTOR	3/4"	6X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0109B	[01 SD 01], SMOKE DETECTOR	JUNCTION BOX, JC0109B	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		OCCUPANCY SENSOR STATUS VIA MP20 POWER PACK
C0110	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	JUNCTION BOX, JC0110	3/4"	4X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		

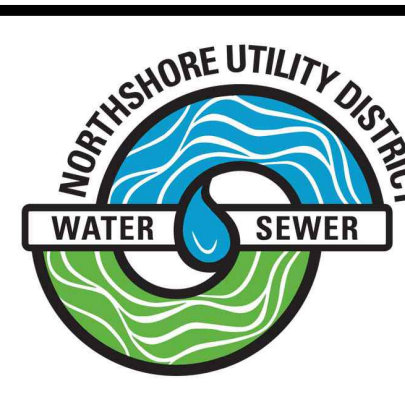
NOTES:

1. REFERENCE CABLE AND CONDUIT NOTES ON SHEET E-1.

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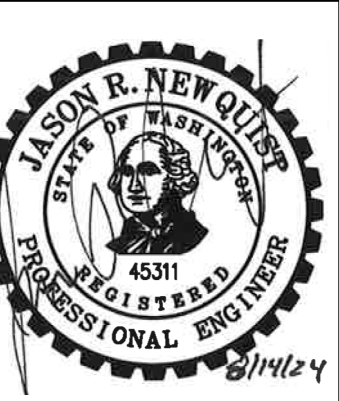
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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
CABLE AND CONDUIT SCHEDULES

#C928



ELECTRICAL
 SHEET: E-4
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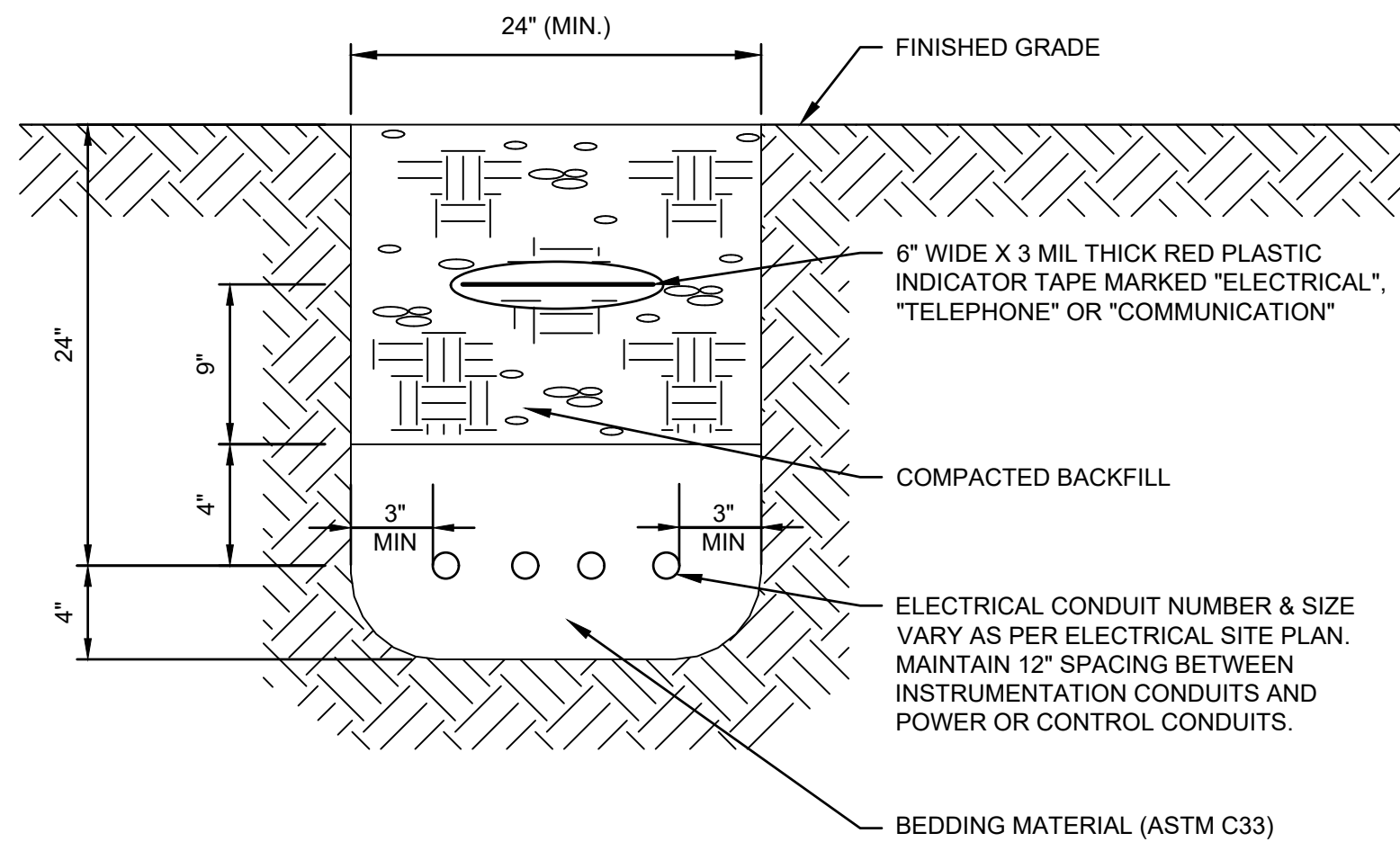
AREA 01 - CONTROL CABLE AND CONDUIT SCHEDULE						
NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
C0110A	JUNCTION BOX, JC0110	[01 ISW 01], INTRUSION SWITCH, DOOR, CONTROL VALVE FACILITY BUILDING	1/2"	2X #14 AWG XHHW-2		
C0110B	JUNCTION BOX, JC0110	JUNCTION BOX, JC0110B	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0110C	JUNCTION BOX, JC0110B	[01 ISW 02], INTRUSION SWITCH, ROLLUP DOOR, CONTROL VALVE FACILITY BUILDING	1/2"	2X #14 AWG XHHW-2		
C0111	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 ANT 01], ANTENNA, RADIO AND [01 ANT 02], ANTENNA, CELLULAR MODEM	1-1/2"	MANUFACTURER'S CABLES		RIGID ALUMINUM CONDUIT
C0112	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	JUNCTION BOX, JC0112	3/4"	2x #14 AWG XHHW-2; 1x #12 AWG XHHW-2 G		[01 FLD 01], FLOOD SWITCH
C0113	SOUTHEAST WALL UNDER SHELF	[01 UP 01], UTILITY POWER POLE	2"	ISP (ZIPLY FIBER) RECOMMENDED CABLE		
C0114	SOUTHEAST WALL UNDER SHELF	JUNCTION BOX, JC0114	3/4"	1X 8-C, 4-TP, #23 AWG, CAT6; 1X #12 AWG XHHW-2 G		
C0115	SOUTHEAST WALL UNDER SHELF	JUNCTION BOX, JC0115	3/4"	1X 8-C, 4-TP, #23 AWG, CAT6; 1X #12 AWG XHHW-2 G		
C0116	SOUTHEAST WALL UNDER SHELF	JUNCTION BOX, JC0117	1-1/4"	6X 2-C, 1-TP, #18 AWG, OS; 1X #12 AWG XHHW-2 G		1X TSP IS SPARE
C0116A	JUNCTION BOX, JC0117	JUNCTION BOX, JC0117A	1"	3X 2-C, 1-TP, #18 AWG, OS; 1X #12 AWG XHHW-2 G		
C0117	OWNER SUPPLIED FLOW METER	JUNCTION BOX, JC0118	3/4"	MANUFACTURER'S RECOMMENDED CABLE		COIL TWO ADDITIONAL FEET IN JUNCTION BOX

AREA 01 - INSTRUMENTATION CABLE AND CONDUIT SCHEDULE						
NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
S0101	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 MFM 01], MAGNETIC FLOW METER, TOLT PIPELINE	3/4"	2X #12 AWG XHHW-2; 2X 2-C, 1-TP, #18 AWG, OS; 1X #12 AWG XHHW-2 G	* 3	POWER, FLOW, AND TOTALIZING PULSE
S0102	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 PIT 01], PRESSURE INDICATING TRANSMITTER, TOLT PIPELINE	3/4"	1X 2-C, 1-TP, #18 AWG, OS; 1X #12 AWG XHHW-2 G	* 3	
S0103	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 PIT 02], PRESSURE INDICATING TRANSMITTER, 451 ZONE	3/4"	1X 2-C, 1-TP, #18 AWG, OS; 1X #12 AWG XHHW-2 G	* 3	
S0104	[01 CP 01], CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	[01 PIT 03], PRESSURE INDICATION TRANSMITTER, 529 ZONE	3/4"	1X 2-C, 1-TP, #18 AWG, OS; 1X #12 AWG XHHW-2 G	* 3	

AREA 02 - POWER CABLE AND CONDUIT SCHEDULE						
NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
P0201	[02 UT 01], UTILITY TRANSFORMER	[02 MB 01], METER BASE	2"	2X #3 AWG XHHW-2; 1X #3 AWG XHHW-2 N		
P0202	[02 MB 01], METER BASE	[02 PB 01], PANELBOARD	2"	2X #3 AWG XHHW-2; 1X #3 AWG XHHW-2 N; 1X #6 AWG XHHW-2 G		CONDUIT AND CONDUCTORS ARE PROVIDED AND INSTALLED BY THE OWNER, PART OR [02 CP 01]
P0203	[02 PB 01], PANELBOARD	[02 CP 01], CONTROL PANEL, CONTROL VALVE VAULT	3/4"	2X #12 AWG XHHW-2; 2X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G; 1X #10 AWG XHHW-2 G		
P0204	[02 PB 01], PANELBOARD	[02 SP 01], SUMP PUMP	3/4"	1x #12 AWG XHHW-2; 1x #12 AWG XHHW-2 N; 1x #12 AWG XHHW-2 G		
P0205~	[02 PB 01], PANELBOARD	BURY TO TWO FEET PAST CONCRETE PAD AND CAP	3/4"	PULL WIRE		SPARE CONDUIT.
P0206~	[02 PB 01], PANELBOARD	BURY TO TWO FEET PAST CONCRETE PAD AND CAP	3/4"	PULL WIRE		SPARE CONDUIT.

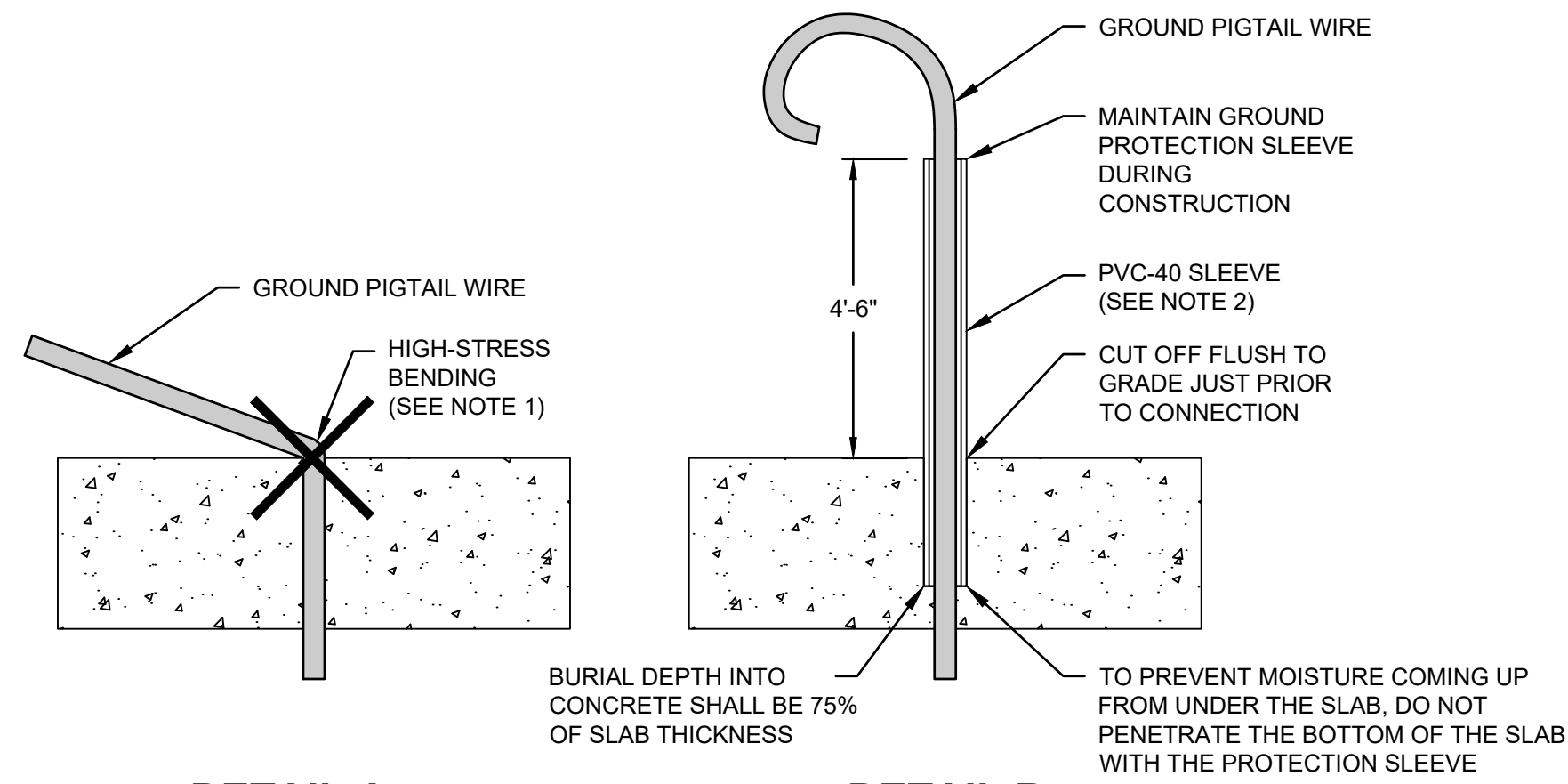
AREA 02 - CONTROL CABLE AND CONDUIT SCHEDULE						
NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
C0201	[02 CP 01], CONTROL PANEL, CONTROL VALVE VAULT	[02 ANT 01], ANTENNA, RADIO	1-1/2"	MANUFACTURER'S CABLES		RIGID ALUMINUM CONDUIT

AREA 02 - INSTRUMENTATION CABLE AND CONDUIT SCHEDULE						
NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
S0201	[02 CP 01], CONTROL PANEL, CONTROL VALVE VAULT	JUNCTION BOX JS0201	1-1/2"	10X #14 AWG XHHW-2; 4X 2-C, 1-TP, #18 AWG, OS; 1X #12 AWG XHHW-2 G	* 3	INSIDE OF [02 VLT 01], 2X #14 AND 1X TSP ARE SPARE
S0201A	JUNCTION BOX JS0201	[02 PIT 02], PRESSURE INDICATING TRANSMITTER, OUT	3/4"	1X 2-C, 1-TP, #18 AWG, OS	* 3	
S0201B	JUNCTION BOX JS0201	[02 SV 01], SOLENOID VALVE, OPEN, CONTROL VALVE	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
S0201C	JUNCTION BOX JS0201	[02 SV 02], SOLENOID VALVE, CLOSE, CONTROL VALVE	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
S0201D	JUNCTION BOX JS0201	JUNCTION BOX JS0201D	3/4"	2X #14 AWG XHHW-2; 1X 2-C, 1-TP, #18 AWG, OS; 1X #12 AWG XHHW-2 G	* 3	
S0201E	JUNCTION BOX JS0201D	[02 PIT 01], PRESSURE INDICATING TRANSMITTER, IN	3/4"	1X 2-C, 1-TP, #18 AWG, OS	* 3	
S0201F	JUNCTION BOX JS0201D	[02 ISW 01], INTRUSION SWITCH, HATCH, CONTROL VALVE VAULT	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
S0201D	JUNCTION BOX JS0201	[02 LS 01], LIMIT SWITCH, CLOSED, CONTROL VALVE	3/4"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
S0202~	[02 CP 01], CONTROL PANEL, CONTROL VALVE VAULT	[02 VLT 01], CONTROL VALVE VAULT	1"	PULL WIRE		SPARE CONDUIT, CAP INSIDE OF VAULT



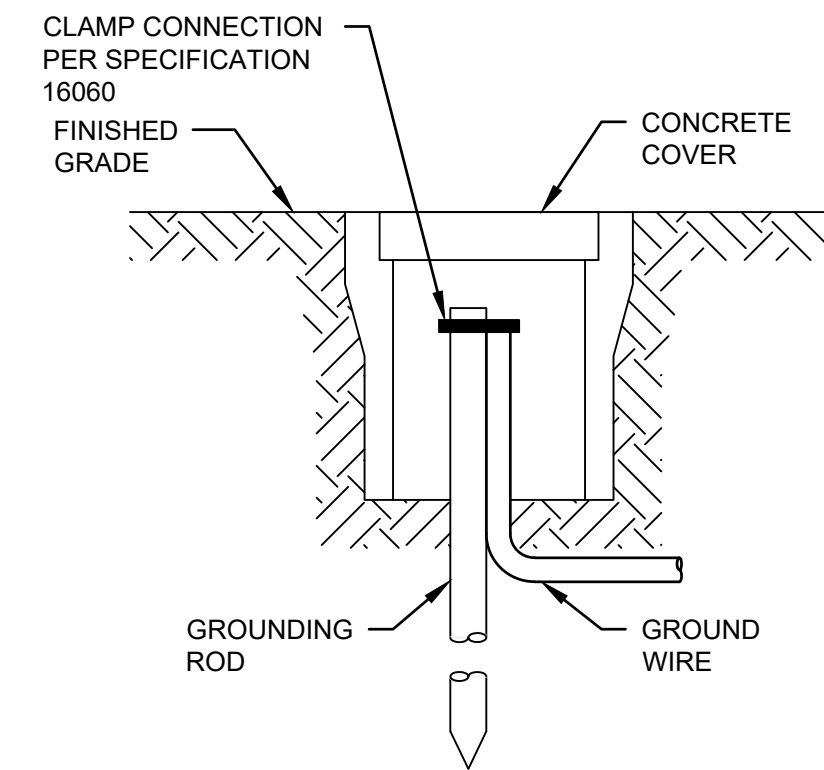
- NOTE:**
- SPACING BETWEEN CONDUITS AND OTHER UTILITIES SHALL BE IN COMPLIANCE WITH THE UTILITIES OR 24 INCHES MINIMUM, WHICHEVER IS THE GREATER.

1 ELECTRICAL TRENCHING DETAIL
TYP NOT TO SCALE



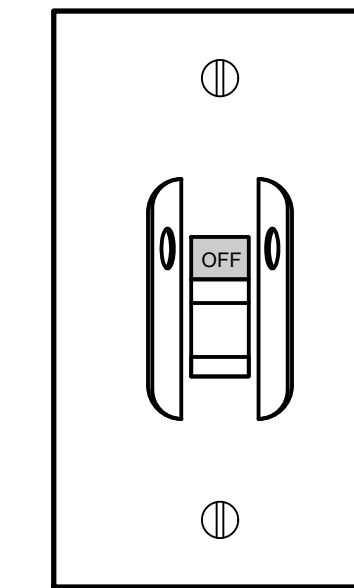
- NOTES:**
- BARE COPPER GROUND WIRES SHALL NOT PENETRATE DIRECTLY OUT OF CONCRETE FLOORS. CONSTRUCTION ACTIVITIES CAN CAUSE TIGHT WIRE BENDING AND POSSIBLE GROUND WIRE DEGRADATION. DETAIL "A" IS NOT ACCEPTABLE.
 - PROTECT THE GROUND PIGTAIL DURING CONSTRUCTION WITH A PVC-40 SLEEVE INSTALLED AS DESCRIBED IN DETAIL "B".
 - JUST PRIOR TO SETTING EQUIPMENT OVER, OR MAKING THE FINAL CONNECTION OF THE GROUND WIRE, CUT OFF THE SLEEVE FLUSH TO THE FLOOR TAKING CARE NOT TO CUT INTO THE GROUND WIRE.

2 GROUND PIGTAIL CONSTRUCTION PROTECTION SLEEVE DETAIL
TYP NOT TO SCALE



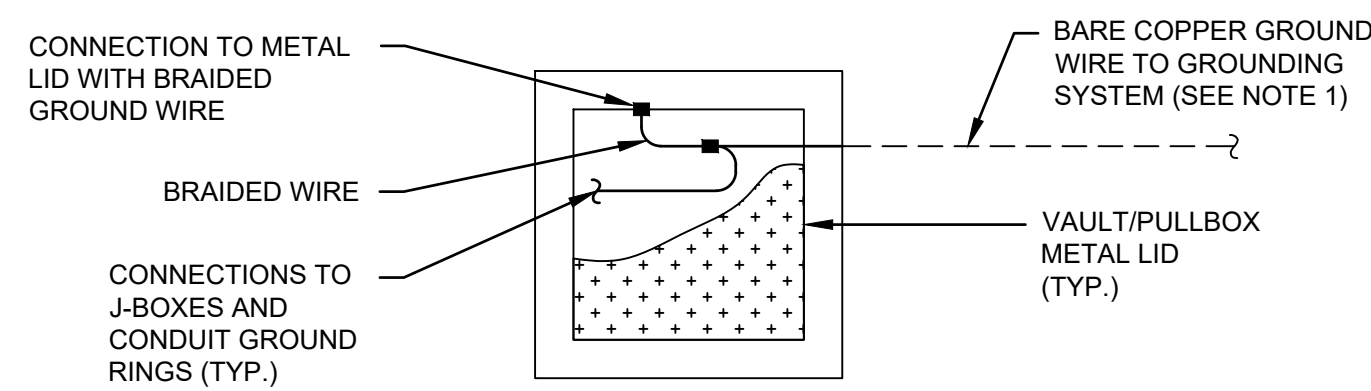
- NOTES:**
- GROUND ROD BOX SHALL BE FOGTITE GROUND ROD BOX WITH ROAD RATING EQUAL TO THE DEVICE OR STRUCTURE IT SUPPORTS (H20 MINIMUM).

3 GROUND ROD BOX DETAIL
TYP NOT TO SCALE



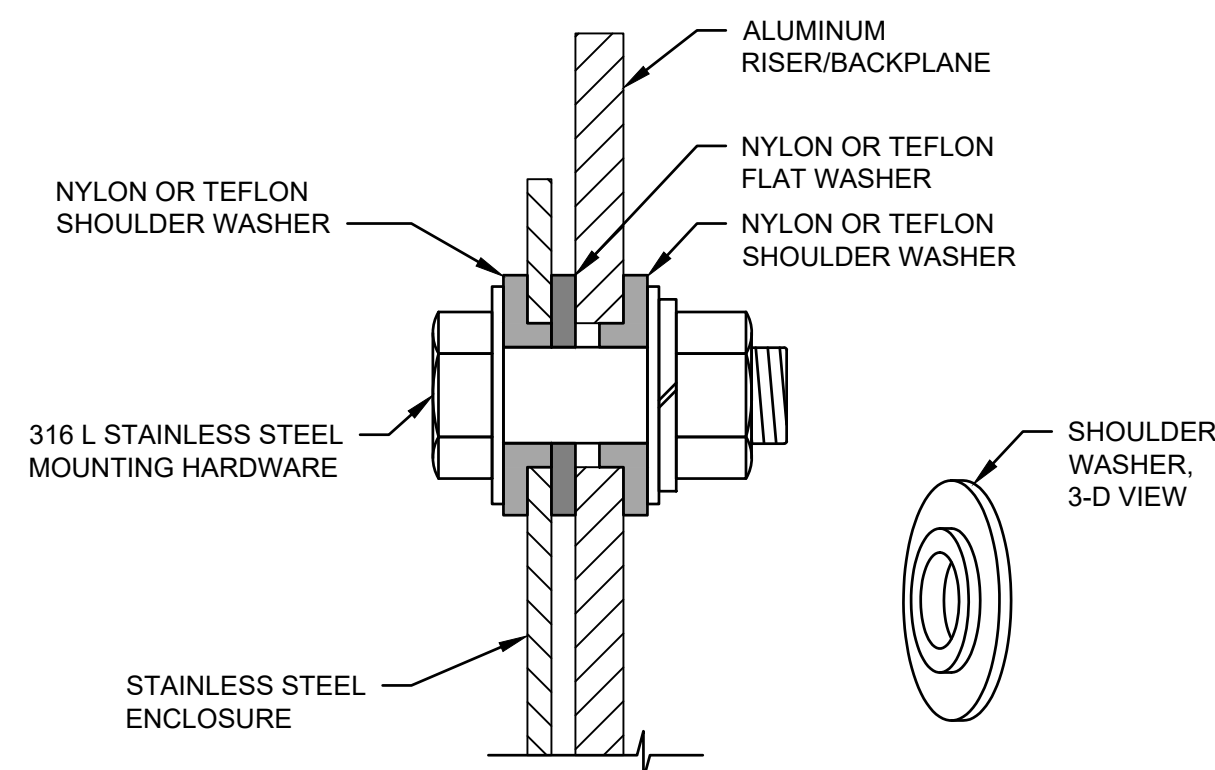
- NOTES:**
- ALL HVAC POWER DEVICES SHALL BE CONNECTED THROUGH A SAFETY DISCONNECT SWITCH WITH A COVERPLATE THAT IS LOCKABLE IN THE OPEN POSITION.
 - SAFETY DISCONNECT SWITCHES THAT ARE WALL-MOUNTED SHALL BE RECESSED INTO THE WALL IN STANDARD DEVICE BOXES.
 - SAFETY DISCONNECT SWITCHES TO OUTDOOR EQUIPMENT OR EQUIPMENT MOUNTED ABOVE THE CEILING OR EQUIPMENT MOUNTED WITHIN SUSPENDED CEILINGS SHALL BE SURFACE MOUNTED IN CAST ALUMINUM DEVICE BOXES.
 - ALL HVAC SAFETY DISCONNECT SWITCHES SHALL BE TOGGLE-TYPE, 600 VAC, 3 POLE, INDUSTRIAL GRADE, NON-GROUNDING, SIDE WIRED.
20A: LEVITON 1222-2E OR EQUIVALENT (2 POLE, 240 VAC)
30A: LEVITON MS303-DS OR EXACT EQUIVALENT
40A: LEVITON MS403-DS OR EXACT EQUIVALENT
 - PROVIDE WEATHERPROOF COVER FOR OUTDOOR SWITCHES.

4 LOCKABLE SAFETY DISCONNECT SWITCH DETAIL
TYP NOT TO SCALE



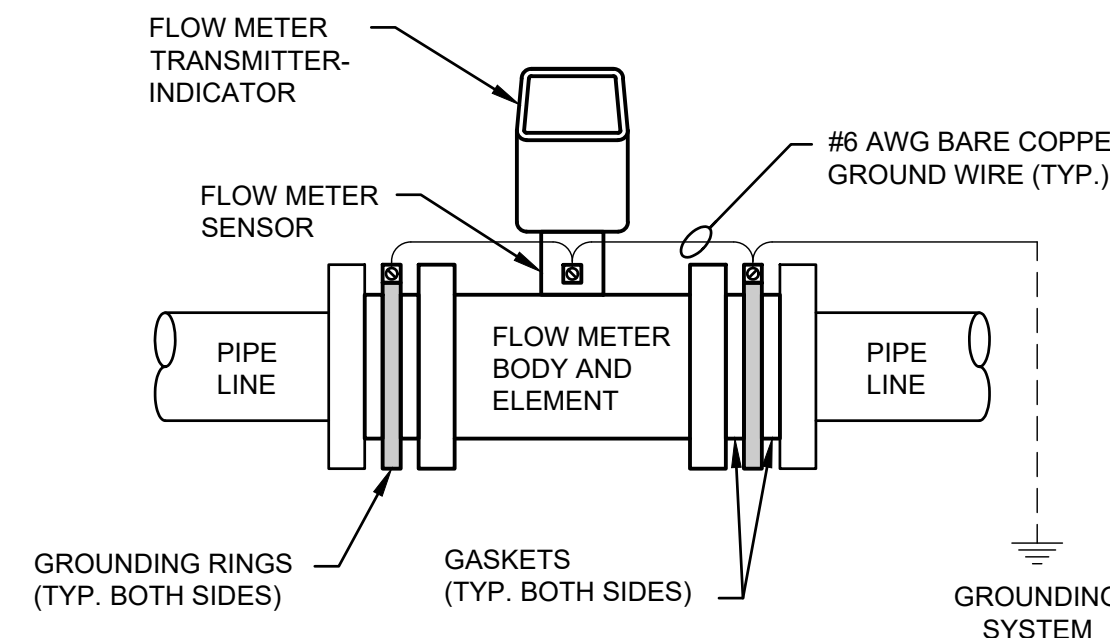
- NOTES:**
- GEC AND GROUND WIRE SHALL BE #6 AWG BARE COPPER.
 - GROUND ALL METAL COMPONENTS AS PER "VAULT AND PULLBOX GROUNDING" IN SPECIFICATION 16060.
 - ALL GROUND CONDUCTORS SHALL BE STRANDED WITH THE EXCEPTION OF THE FLEXIBLE BRAIDED GROUND CONDUCTOR TO THE METAL HATCH LIDS.

5 METAL LID GROUNDING DETAIL
E2-2 NOT TO SCALE



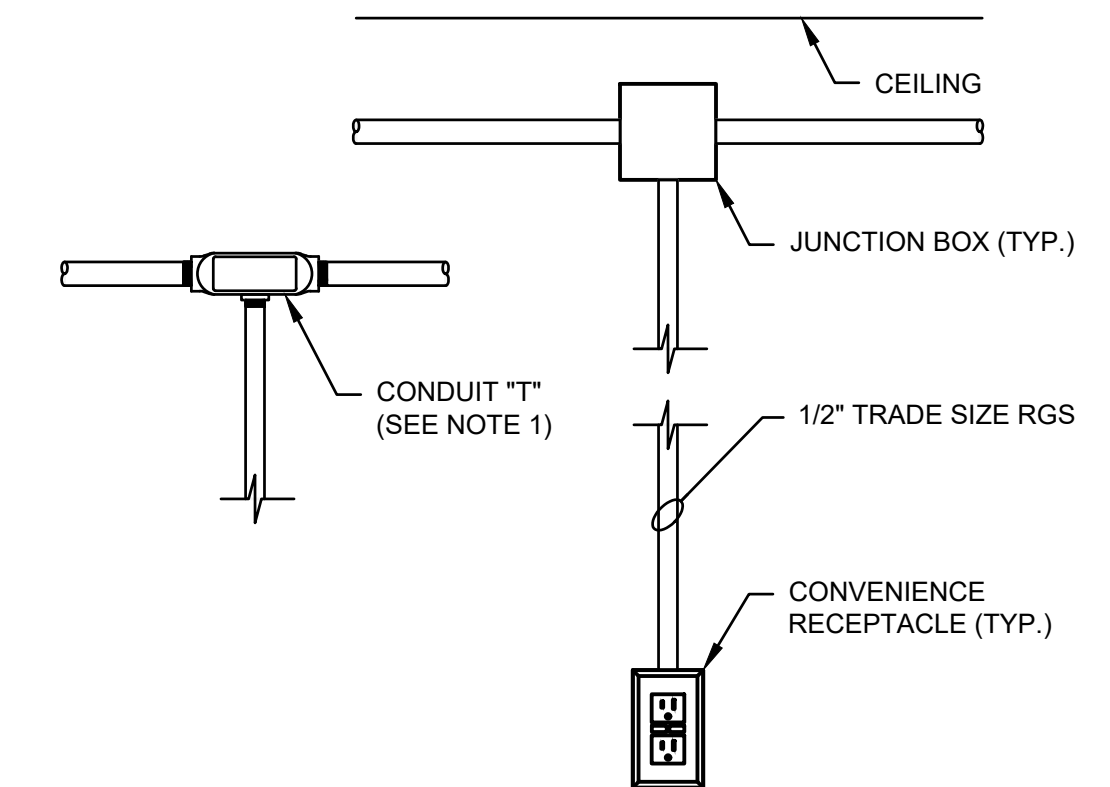
- NOTE:**
- PROVIDE TEFLON OR NYLON SHOULDER WASHERS BETWEEN STAINLESS STEEL MOUNTING HARDWARE AND STRUCTURES/ENCLOSURES. SEPARATE STAINLESS STEEL ENCLOSURES FROM ALUMINUM RISERS OR BACKPLANES WITH A FLAT TEFLON OR NYLON WASHER AS SHOWN.

6 SHOULDER WASHER MOUNTING DETAIL
TYP NOT TO SCALE



- NOTES:**
- CONTRACTOR SHALL PROVIDE AND INSTALL INSULATING GASKETS AND MANUFACTURER'S GROUND RINGS TO EACH SIDE OF THE FLOW METER BODY. THE GROUND RINGS AND FLOW METER SENSOR SHALL BE TIED TO THE SYSTEM GROUND WITH A #6 AWG GROUNDING WIRE. CONNECT AS SHOWN OR PER MANUFACTURER'S REQUIREMENTS.

7 FLOW METER GROUNDING DETAIL
TYP NOT TO SCALE

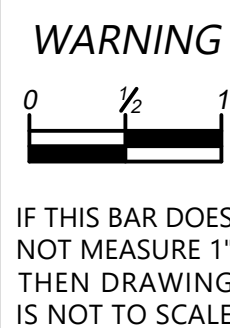


- NOTES:**
- WHERE SPlicing FOR CONVENIENCE RECEPTACLE IS PERFORMED IN A CONDUIT BODY THE CONDUIT BODY SHALL BE SIZED PER THE NEC AND HAVE ITS VOLUME MARKED BY THE MANUFACTURER COMPLIANT TO NEC 314.16(C).

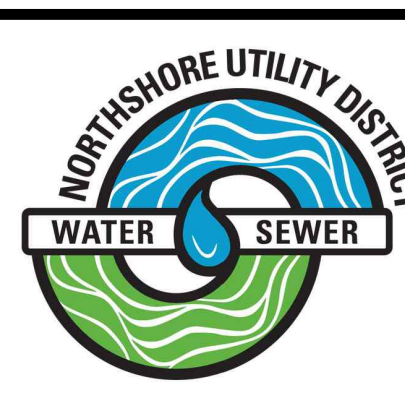
8 JUNCTION BOX AND RECEPTACLE DETAIL
TYP NOT TO SCALE

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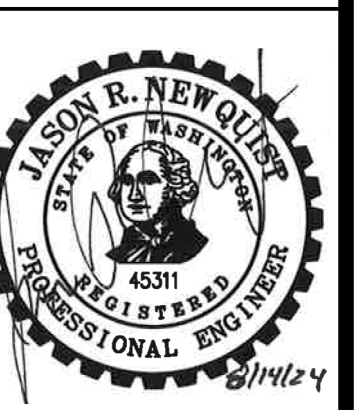
DESIGNED BY	PAM
DRAWN BY	PEB
CHECKED BY	JRN
APPROVAL	JRN
DATE	AUG 2024



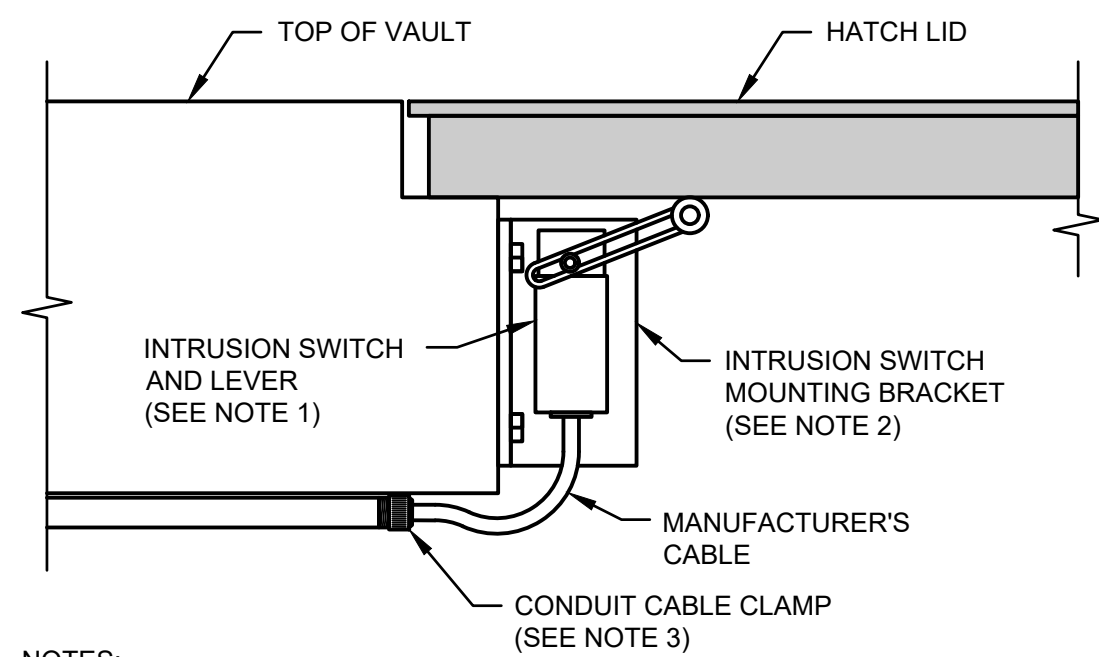
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C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
ELECTRICAL DETAILS

#C928

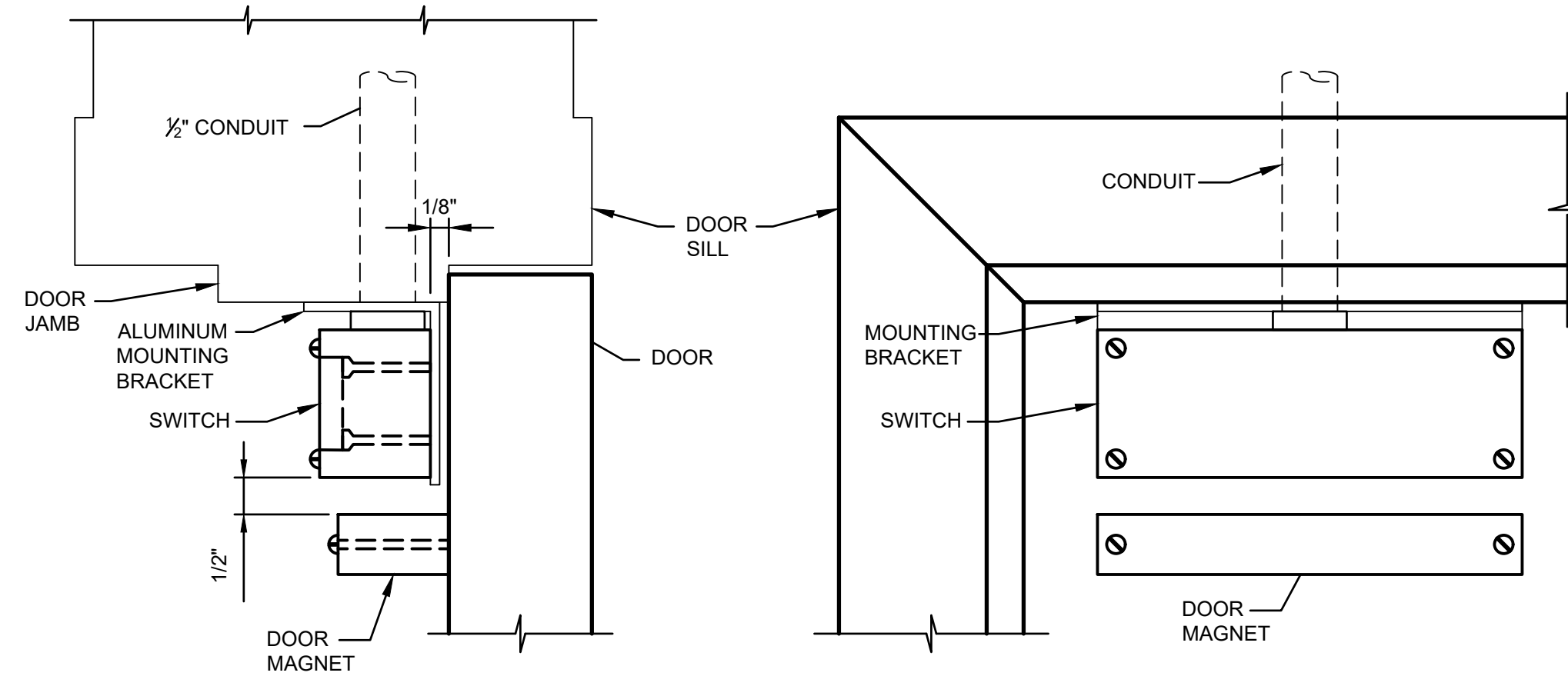


ELECTRICAL
SHEET: E-5
49 OF 56



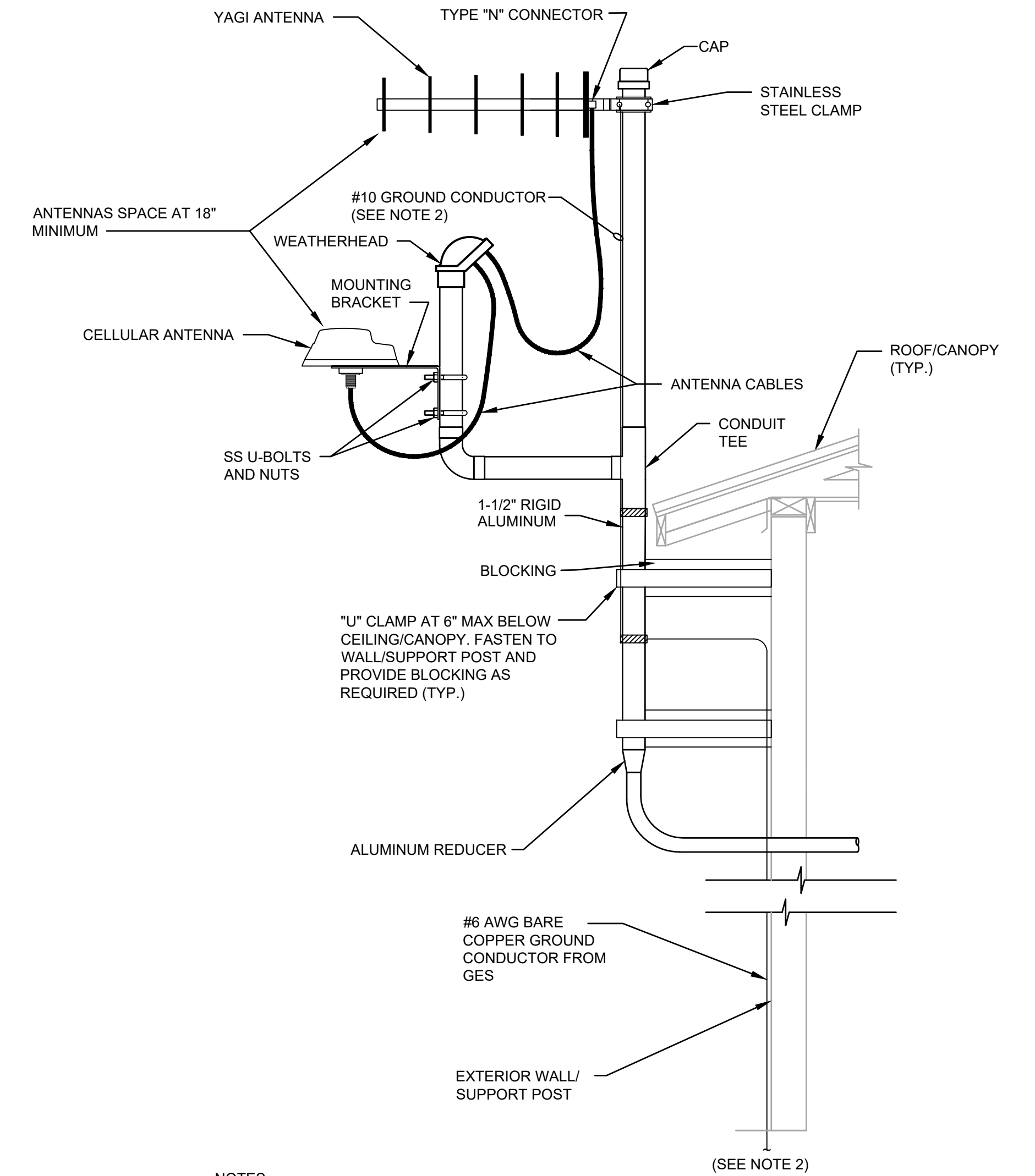
- NOTES:**
- INTRUSION AND HATCH LID ACTIVATED LIGHT SWITCHES SHALL BE ALLEN BRADLEY #802M, LEVER TYPE, SPRING RETURN, NEMA 4, 2 CIRCUIT, FACTORY SEALED. PROVIDE WITH A 1-INCH WIDE ADJUSTABLE LEVER, 1.19 TO 3-INCH RADIUS WITH 3/4-INCH NYLON ROLLER, ALLEN BRADLEY #802T-W2D.
 - SWITCH ALUMINUM BRACKET SHALL COMPLY WITH ASTM B221, ALLOY 6061-6.
 - CONDUIT CABLE CLAMP SHALL BE 316L STAINLESS STEEL, CROUSE HINDS TYPE CGK OR EQUAL.
 - FOR INTRUSION SWITCHES, THE MANUFACTURE'S CABLE SHALL BE SPLICED TO CONDUCTOR WIRES IN THE VAULT'S CONTROL ENTRY J-BOX.

1
TYP
**VAULT ACCESS HATCH
INTRUSION/LIGHT SWITCH DETAIL**
NOT TO SCALE



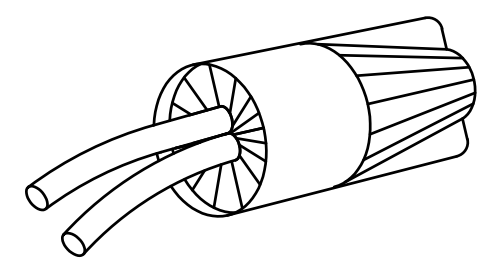
- NOTES:**
- DOOR INTRUSION SWITCH SHALL BE MAGNETIC TYPE, TRIPLE BIASED, TAMPER PROOF, SENTROL 2800T SERIES OR EQUAL.
 - CONTRACTOR SHALL FABRICATE ALUMINUM MOUNTING BRACKET FOR SWITCH.

2
E1-4
DOOR INTRUSION SWITCH DETAIL
NOT TO SCALE



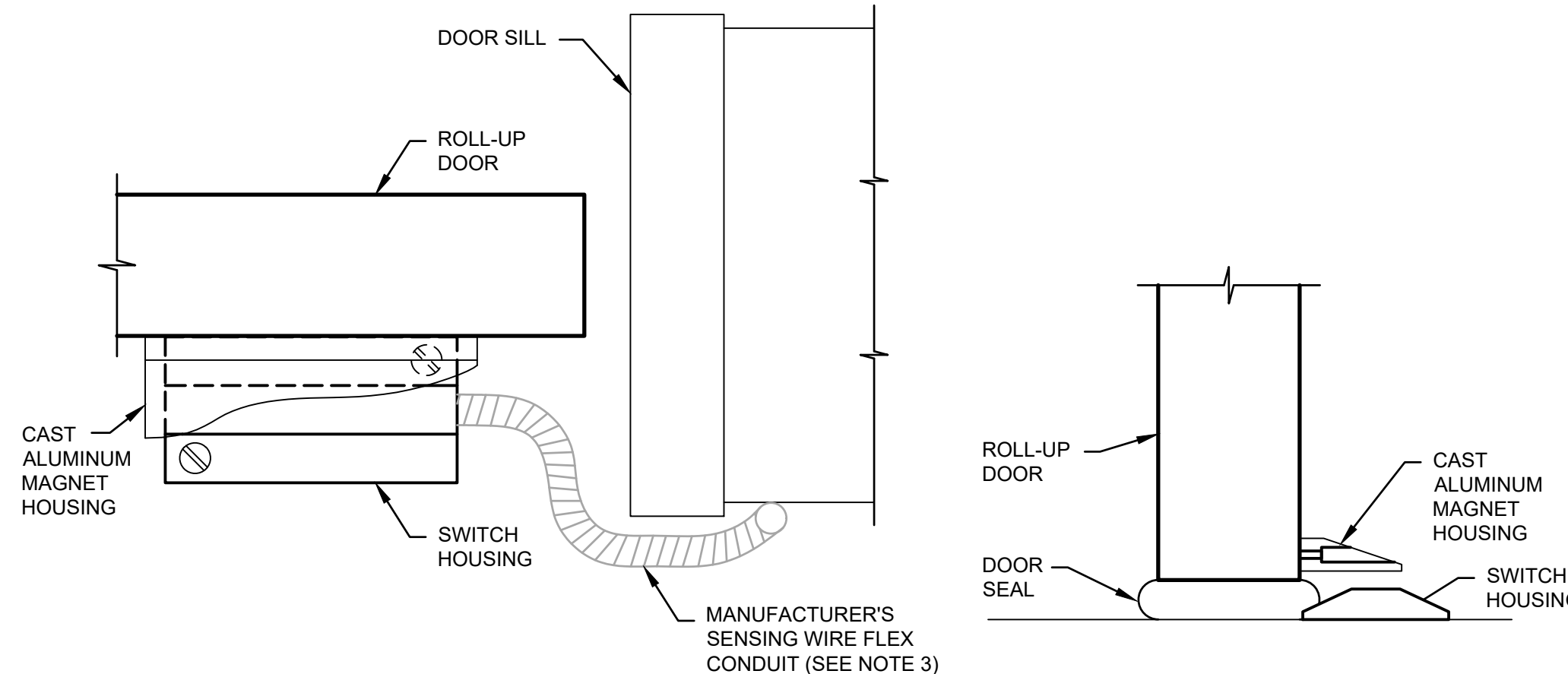
- NOTES:**
- PROVIDE WEATHER SEAL AT ANTENNA / ANTENNA FEED LINE CONNECTION.
 - CONNECT GROUND CONDUCTOR DIRECTLY TO GEC SYSTEM. TIE CABLE GROUND CONDUCTOR TO MAST EVERY 2'-0". CONNECT TO GROUNDING SYSTEM.
 - THE CONTRACTOR SHALL PROVIDE AND INSTALL A NEW MAST AND INSTALL CABLE, ANTENNAS AND MOUNTING HARDWARE PER MANUFACTURER'S RECOMMENDATIONS. THE INTEGRATOR SHALL CONNECT THE CABLES AND DIRECT THE ANTENNA MAST ROTATION IF REQUIRED.

5
TYP
ANTENNA MOUNTING DETAIL
NOT TO SCALE



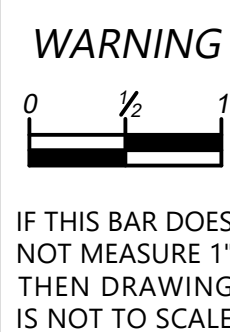
- NOTES:**
- PROVIDE WATER-TIGHT CONNECTOR FOR CONTROL AND INSTRUMENTATION CONDUCTOR SPLICING. INCLUDE A STRAIN RELIEF ON CONDUCTOR SPLICE CONNECTORS. REFERENCE SPECIFICATION 16120 FOR SPECIFIC REQUIREMENTS.
 - SUBMERGE THE SPLICE AND TEST FOR WATER-TIGHT INTEGRITY.

3
TYP
**INSTRUMENTATION AND CONTROL
WATER-TIGHT SPLICE DETAIL**
NOT TO SCALE

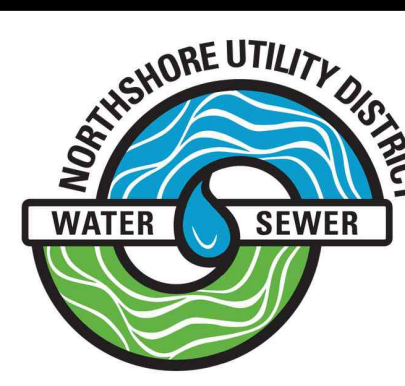


- NOTES:**
- ROLL-UP DOOR INTRUSION SWITCH SHALL BE MAGNETIC TYPE, FLOOR-MOUNTED, WITH CAST ALUMINUM MAGNET HOUSING SECURED TO THE DOOR, GE SECURITY 2200 SERIES OR EQUAL.
 - CONTRACTOR SHALL SECURE SWITCH HOUSING TO FLOOR USING xxxxx STAINLESS STEEL SCREWS.
 - PROVIDE J-BOX TO TERMINATE MANUFACTURER'S SENSING WIRES.

4
E1-4
ROLL-UP DOOR INTRUSION SWITCH DETAIL
NOT TO SCALE

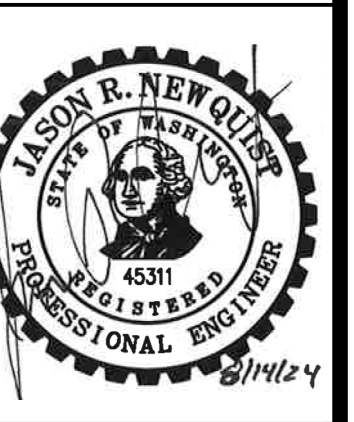


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CHECKED BY	JRN
APPROVAL	JRN
DATE	AUG 2024



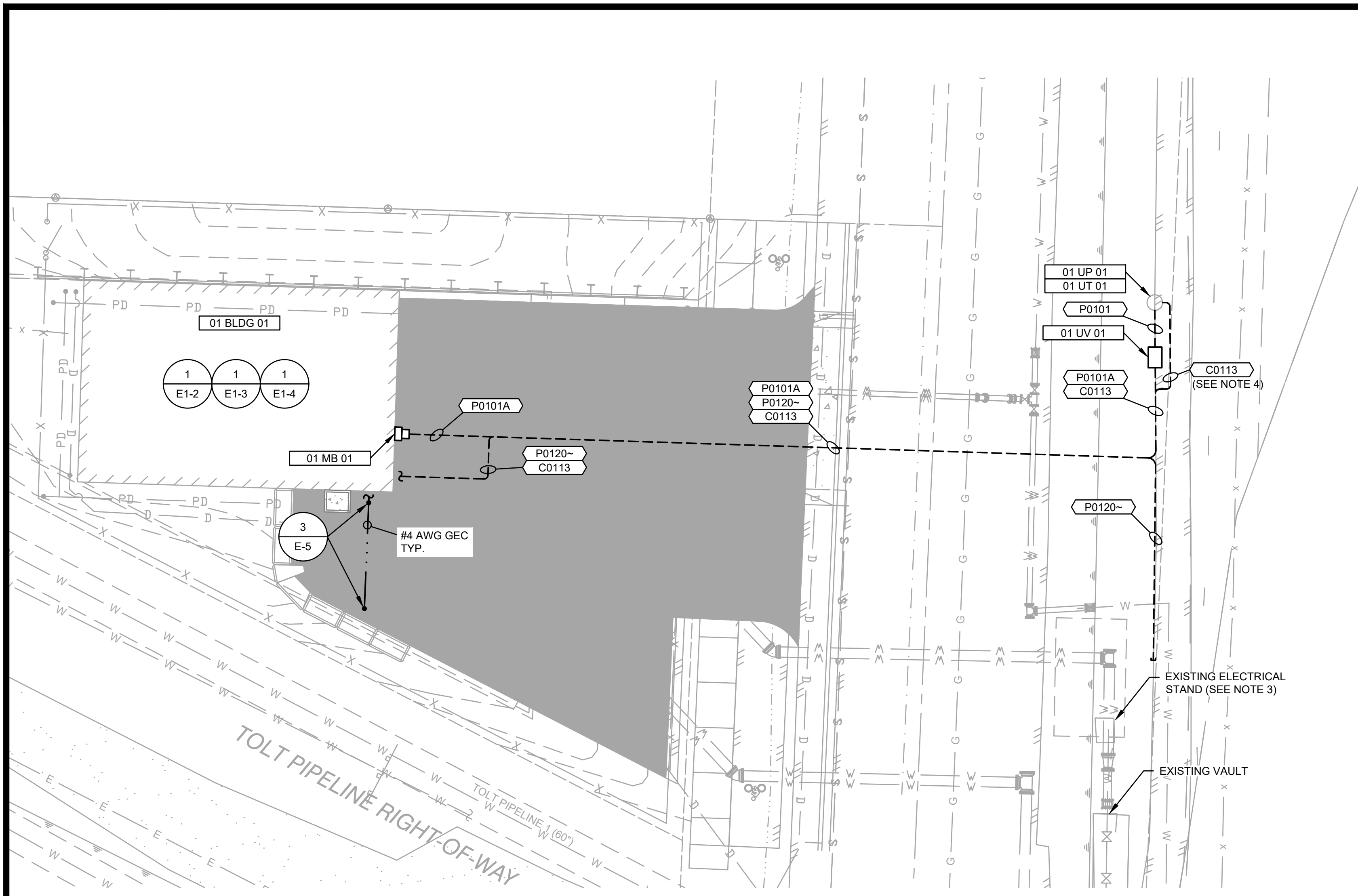
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451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULES A AND B
ELECTRICAL DETAILS



ELECTRICAL
SHEET: E-6
50 OF 56

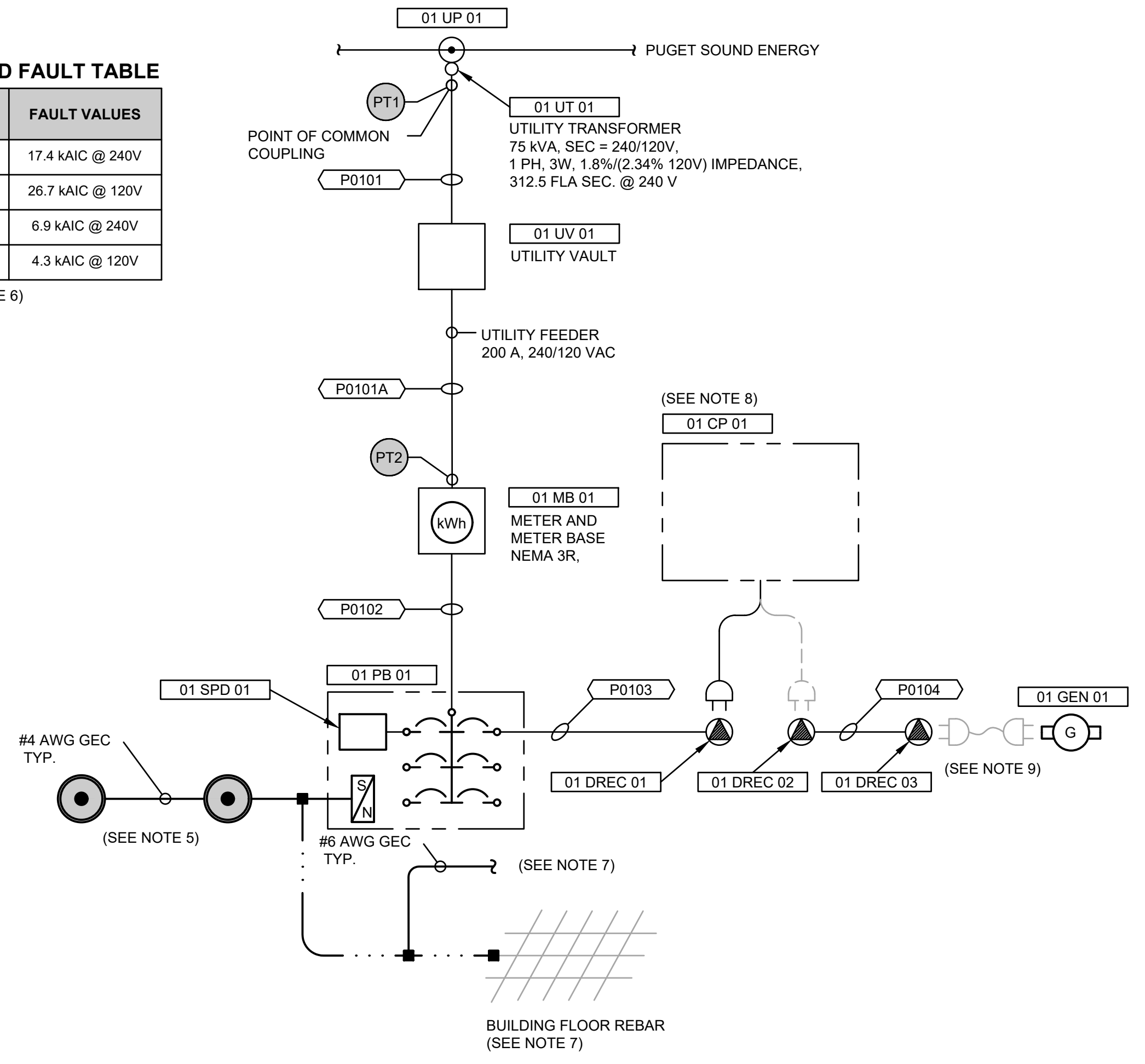
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BOLTED FAULT TABLE

FAULT POINT	FAULT VALUES
PT1	17.4 kAIC @ 240V
PT1	26.7 kAIC @ 120V
PT2	6.9 kAIC @ 240V
PT2	4.3 kAIC @ 120V

(SEE NOTE 6)

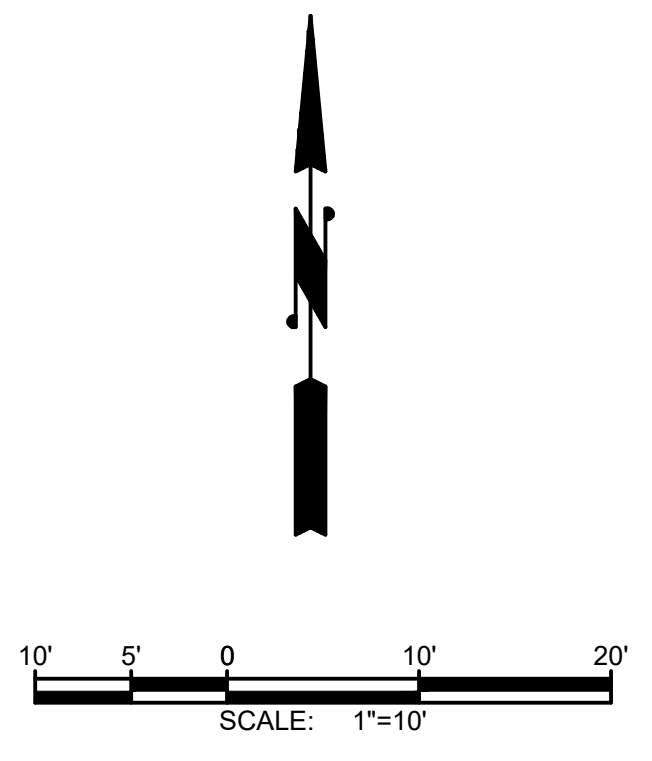


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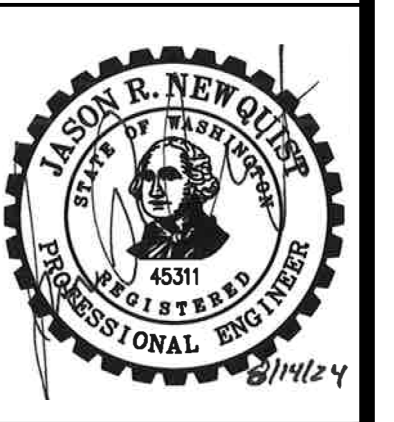
- DELECTRICAL DEMOLITION IS NOT SHOWN ON THE ELECTRICAL DRAWINGS. SEE DRAWINGS C1-1 AND C1-2 FOR DEMOLITION. FOR ALL EQUIPMENT THAT IS BEING DEMOLISHED REMOVE CONDUCTORS, DEMOLISH SURFACE CONDUITS, AND DEMOLISH BURIED CONDUITS TO TWO FEET BELOW GRADED OR FLUSH WITH CONCRETE, UNLESS NOTED OTHERWISE. BACKFILL OR MORTAR TO MATCH SURROUNDINGS.
- EXISTING ELECTRICAL IS NOT SHOWN, CONTRACTOR SHALL VERIFY AS NEEDED.
- CONTRACTOR SHALL DEMOLISH THE EXISTING UTILITY POWER SERVICE. COORDINATE THE DEMOLITION OF THE EXISTING ELECTRICAL POWER SERVICE WITH THE ELECTRICAL POWER UTILITY AND DELIVER THE EXISTING METER TO THE ELECTRICAL POWER UTILITY.
- CONTRACTOR SHALL COORDINATE WITH ZIPLY FIBER FOR A NEW FIBER OPTIC SERVICE CONNECTION.

NOTES:

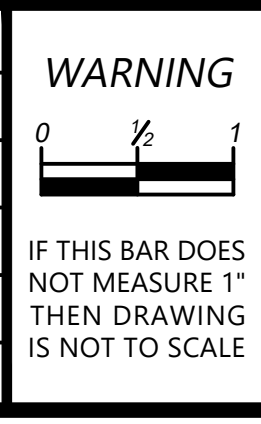
- THE ELECTRICAL POWER UTILITY COMPANY IS PUGET SOUND ENERGY (PSE), THE CONTRACTOR SHALL PROVIDE UTILITY TRANSFORMER AS-BUILT DRAWINGS. INFORMATION TO BE PROVIDED SHALL INCLUDE IMPEDANCE, KAIC, AND KVA RATINGS.
- CONTRACTOR SHALL PROVIDE ALL TRENCHING, EXCAVATION, AND BACKFILL PER POWER UTILITY COMPANY'S REQUIREMENTS. CONTRACTOR SHALL COORDINATE WITH POWER UTILITY COMPANY FOR THE NEW/MODIFIED ELECTRICAL SERVICES.
- THE REVENUE METER IS PROVIDED BY THE POWER UTILITY COMPANY. THE METER BASE IS PROVIDED BY THE CONTRACTOR PER POWER UTILITY COMPANY'S REQUIREMENTS. CONTRACTOR SHALL MOUNT THE METER BASE PER THE POWER UTILITY COMPANY'S REQUIREMENTS.
- [01 SPD 01] SHALL BE PROVIDED ON THE LINE SIDE OF THE UTILITY CONNECTION IN [01 PB 01] IN COMPLIANCE WITH NEC 285.24(A). IF NOT INTEGRAL WITH THE PANELBOARD, THEN THE CONTRACTOR SHALL PROVIDE CONDUIT TO CONNECT AS NECESSARY. DO NOT EXTEND MANUFACTURER'S LEADS.
- PROVIDE A GROUND SYSTEM OF TWO 10' X 3/4" GROUND RODS SPACED A MINIMUM OF 10 FEET APART. GROUNDING ELECTRODE CONDUCTORS SHALL BE #4 AWG BARE COPPER STRANDED WIRE. THE GEC SHALL BE BURIED AT A MINIMUM OF 30" BELOW GRADE PER CODE.
- BOLTED FAULT TABLE VALUES ARE TAKEN FROM PSE'S ELECTRICAL SERVICE HANDBOOK.
- BOND GEC TO BUILDING FLOOR REBAR AT TWO CORNERS, FLOW METERS, PROCESS PIPING, PATCH BOARD GROUND BUS BAR, ANTENNA MAST, ETC., REFERENCE THE SPECIFICATION.
- THE OWNER WILL PROVIDE CONTROL PANEL [01 CP 01] AND PLC PROGRAMMING. THE CONTRACTOR SHALL INSTALL [01 CP 01] AND TERMINATE ALL CONDUCTORS AND CABLES PER THE OWNER SUPPLIED DOCUMENTATION.



SITE ELECTRICAL PLAN - AREA 1
SCALE: 1"=10'



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CHECKED BY	JRN
APPROVAL	JRN
DATE	AUG 2024

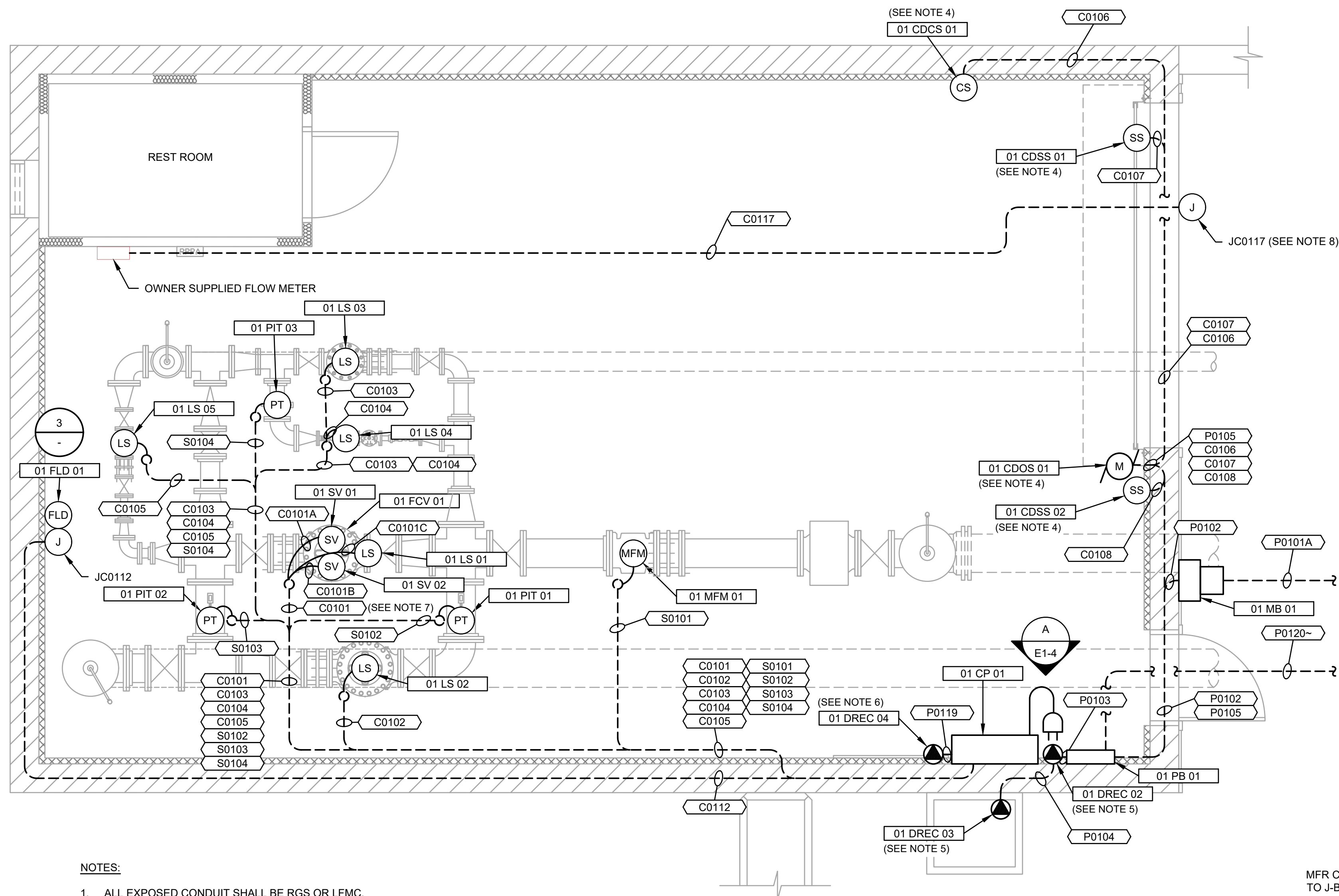


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451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
SITE ELECTRICAL PLAN AND ONE LINE DIAGRAM

ELECTRICAL
SHEET: E1-1
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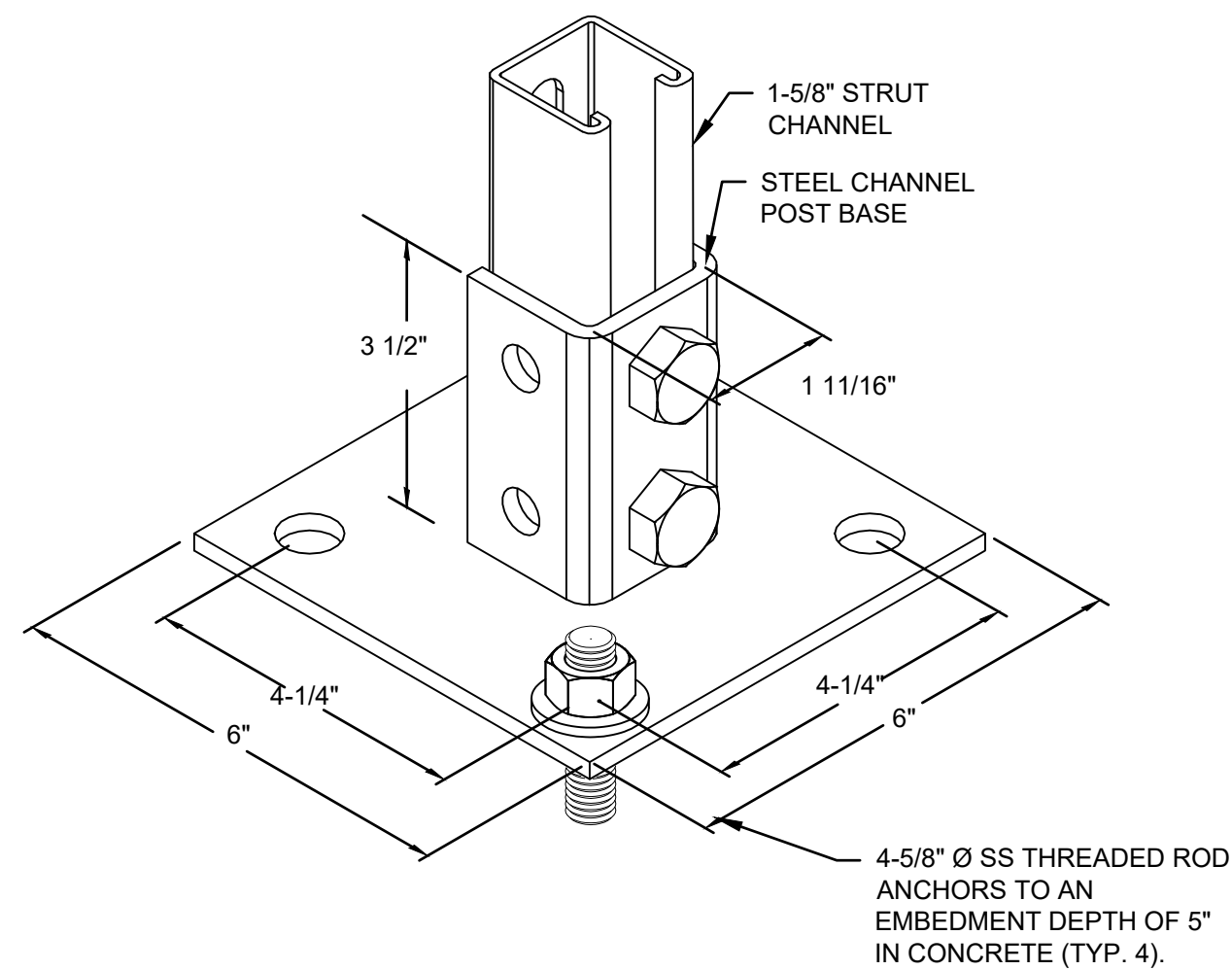


NOTES:

- ALL EXPOSED CONDUIT SHALL BE RGS OR LFMC.
- PROVIDE CONDUIT BODIES AS NEEDED FOR ROUTING AND SPLICING.
- PROVIDE CONDUIT/CONDUIT BODY SUPPORT AS NEEDED.
- COILING DOOR MANUFACTURER'S CONTROLS AND INTERLOCKS MAY NOT ALL BE SHOWN. CONTRACTOR SHALL PROVIDE ALL NECESSARY CONDUITS, CONDUCTORS, AND CABLING FOR A COMPLETE FUNCTIONING COILING DOOR SYSTEM FOLLOWING MANUFACTURER'S RECOMMENDATIONS AND CONTRACT SPECIFICATIONS. FOLLOW THE CONDUIT AND CONDUCTOR REQUIREMENTS OF THE SPECIFICATIONS. ASSUME A CONTROL STATION (SIX FEET MINIMUM DISTANCE FROM THE CONTROLLED OPENING) AND TWO SAFETY SENSORS AS A MINIMUM. PROVIDE A 120V, 20A, NEMA 12 DISCONNECT AND EXTEND CIRCUIT TO [01 CDOS 01].
- [01 DREC 01] IS NOT SHOWN, REFERENCE DETAIL A ON SHEET E1-4. DEDICATED RECEPTACLES SHALL BE 20A, NON-GFCI, IN CAST ALUMINUM BOXES WITH WEATHERPROOF COVERS - EXTERIOR AND WALL PLATE - INTERIOR. [01 DREC 01] SHALL BE GRAY, [01 DREC 02] AND [01 DREC 03] SHALL BE ORANGE. INSTALL 6" ABOVE GRADE - EXTERIOR AND 42" ABOVE THE FLOOR - INTERIOR. THEY SHALL BE LABELED FOLLOWING SPECIFICATION 16140. CONTRACTOR SHALL PROVIDE THE OWNER FOUR MATCHING PLUGS.
- [01 DREC 04] SHALL BE A DUPLEX DEDICATED RECEPTACLE, INSTALL ON THE COMMUNICATION PATCH BOARD, REFERENCE E1-4.
- JUNCTION BOX JC0101 IS NOT SHOWN, JUNCTION BOX SHALL BE 6"X 6" X 4" NEMA 4X SS, INSTALL ON THE END OF CONDUIT C0101 AND PROVIDE CONDUIT SUPPORT AS NEEDED REFERENCE DETAIL 2 ON THIS DRAWING.
- JUNCTION BOX SHALL BE 6"X 6" X 4" NEMA 4X SS, INSTALL ABOVE THE COILING DOOR.

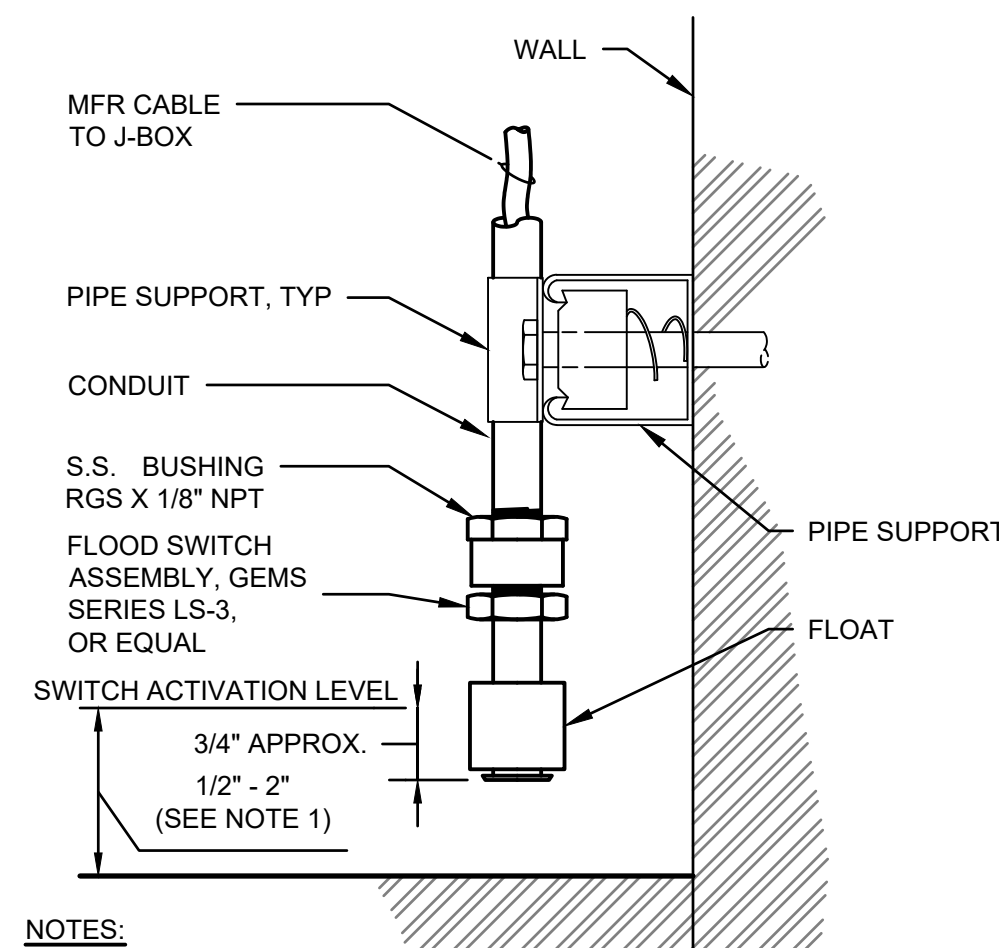
BUILDING POWER, CONTROL, AND INSTRUMENTATION PLAN

SCALE: 3/8"=1'-0"



POST BASE DETAIL

NOT TO SCALE



NOTES:

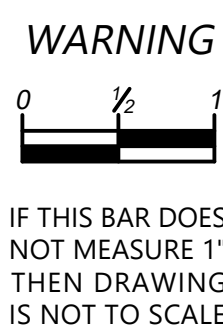
- SET THE FLOOD TRIP LEVEL WITH THE OWNER.
- FLOOD SWITCH MANUFACTURER'S CABLE SHALL BE SPLICED TO CONDUCTOR WIRES IN AN ADJACENT CONTROL J-BOX.

FLOOD SWITCH DETAIL

NOT TO SCALE

DEVICE TAG LIST		
TAG ID#	TAG DESCRIPTION	VINTAGE
01 ANT 01	ANTENNA, RADIO	NEW
01 ANT 02	ANTENNA, CELLULAR MODEM	NEW
01 AQT 01	AIR QUALITY TRANSMITTER	NEW
01 AS 01	AIR QUALITY SENSOR	NEW
01 BLDG 01	CONTROL VALVE FACILITY BUILDING	NEW
01 CAM 01	CAMERA, INTERIOR	NEW
01 CAM 02	CAMERA, EXTERIOR	NEW
01 CDCS 01	CONTROL STATION, COILING DOOR OPERATOR SYSTEM	NEW
01 CDOS 01	COILING DOOR OPERATOR SYSTEM	NEW
01 CDSS 01	SAFETY SENSOR, COILING DOOR OPERATOR SYSTEM	NEW
01 CDSS 02	SAFETY SENSOR, COILING DOOR OPERATOR SYSTEM	NEW
01 CP 01	CONTROL PANEL, CONTROL VALVE FACILITY BUILDING	NEW
01 CR 01	CARD READER	NEW
01 DCON 01	DOOR CONTROLLER	NEW
01 DREC 01	DEDICATED RECEPTACLE, UTILITY POWER	NEW
01 DREC 02	DEDICATED RECEPTACLE, INSIDE, GENERATOR POWER	NEW
01 DREC 03	DEDICATED RECEPTACLE, OUTSIDE, GENERATOR POWER	NEW
01 DREC 04	DEDICATED RECEPTACLE, NVR AND DOOR CONTROLLER	NEW
01 DS 01	DOOR STRIKE	NEW
01 EF 01	EXHAUST FAN, HIGH FLOW	NEW
01 EF 02	EXHAUST FAN, LOW FLOW	NEW
01 EF 03	EXHAUST FAN/LIGHT, BATHROOM	NEW
01 ER 01	EXIT REQUEST	NEW
01 FCV 01	FLOW CONTROL VALVE NO. 1	NEW
01 FIT 01	FLOW INDICATING TRANSMITTER, TOLT PIPELINE MAGNETIC FLOW METER	NEW
01 FLD 01	FLOOD SWITCH	NEW
01 FPP 01	FIBEROPTIC PATCH PANEL	NEW
01 HD 01	HEAT DETECTOR	NEW
01 HT 01	UNIT HEATER	NEW
01 HT 02	HEATER, RESTROOM	NEW
01 ISW 01	INTRUSION SWITCH, DOOR, CONTROL VALVE FACILITY BUILDING	NEW
01 ISW 02	INTRUSION SWITCH, ROLLUP DOOR, CONTROL VALVE FACILITY BUILDING	NEW
01 LS 01	LIMIT SWITCH, CLOSED, FLOW CONTROL VALVE NO. 1	NEW
01 LS 02	LIMIT SWITCH, CLOSED, CONTROL VALVE NO. 2	NEW
01 LS 03	LIMIT SWITCH, CLOSED, CONTROL VALVE NO. 3	NEW
01 LS 04	LIMIT SWITCH, CLOSED, CONTROL VALVE NO. 4	NEW
01 LS 05	LIMIT SWITCH, CLOSED, CONTROL VALVE NO. 5	NEW
01 MB 01	METER BASE	NEW
01 MD 01	MOTORIZED DAMPER, HIGH FLOW EXHAUST FAN	NEW
01 MD 02	MOTORIZED DAMPER, INTAKE	NEW
01 MFM 01	MAGNETIC FLOW METER, TOLT PIPELINE	NEW
01 OS 01	OCCUPANCY SENSOR	NEW
01 PB 01	PANELBOARD, 240/120V	NEW
01 PIT 01	PRESSURE INDICATING TRANSMITTER, TOLT PIPELINE	NEW
01 PIT 02	PRESSURE INDICATING TRANSMITTER, 451 ZONE	NEW
01 PIT 03	PRESSURE INDICATION TRANSMITTER, 529 ZONE	NEW
01 ROUT 01	ROUTER	NEW
01 SD 01	SMOKE DETECTOR	NEW
01 SDS 01	SAFTER DISCONNECT SWITCH, WATER HEATER	NEW
01 SDS 02	SAFETY DISCONNECT SWITCH, HIGH FLOW EXHAUST FAN	NEW
01 SDS 03	SAFETY DISCONNECT SWITCH, LOW FLOW EXHAUST FAN	NEW
01 SV 01	SOLENOID VALVE, OPEN, FLOW CONTROL VALVE NO. 1	NEW
01 SV 02	SOLENOID VALVE, CLOSE, FLOW CONTROL VALVE NO. 1	NEW
01 UH 01	UNIT HEATER	NEW
01 UP 01	UTILITY POWER POLE	EXISTING
01 UT 01	UTILITY TRANSFORMER	EXISTING
01 UV 01	UTILITY VAULT	NEW
01 WH 01	WATER HEATER	NEW

NO	BY	APPD	REVISION	DATE



DESIGNED BY	PAM
DRAWN BY	PEB
CHECKED BY	JRN
APPROVAL	JRN
DATE	AUG 2024

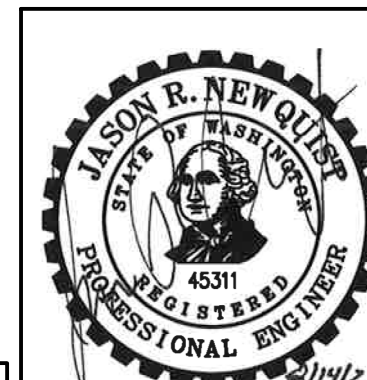


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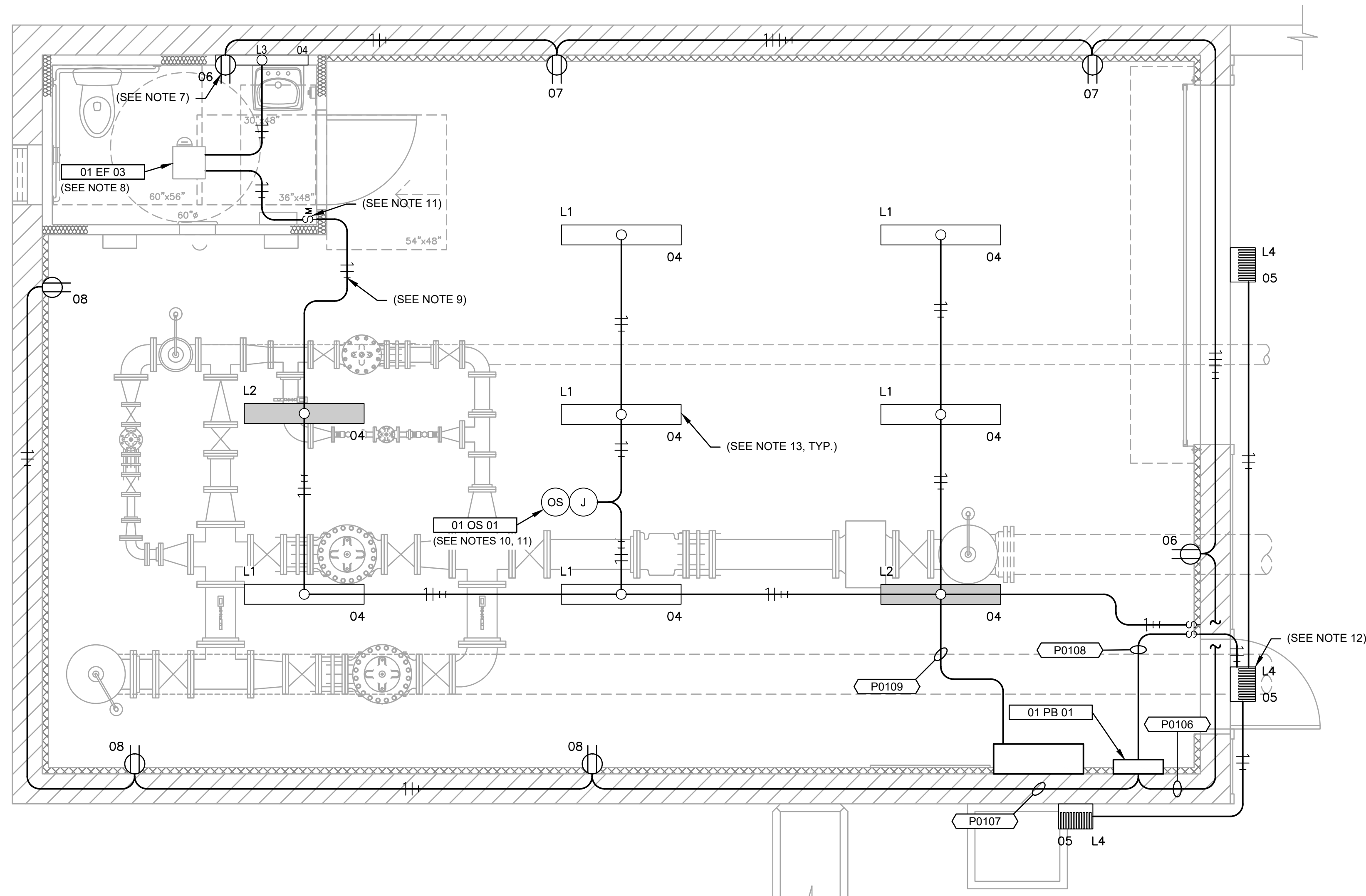
C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
BUILDING ELECTRICAL PLAN AND
DEVICE TAG LIST



#C928

ELECTRICAL
SHEET: E1-2
52 OF 56

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NOTES:

1. ALL EXPOSED CONDUITS SHALL BE RGS.
2. CONDUIT NUMBERS FOR CONVENIENCE RECEPTACLE AND LIGHTING CIRCUITS ARE ONLY APPLIED TO THE CONDUIT LEAVING THE POWER SOURCE. CONDUITS BETWEEN DEVICES ARE REQUIRED AND ARE NOT SHOWN IN THE CABLE AND CONDUIT SCHEDULE.
3. ALL INTERIOR CONVENIENCE RECEPTACLES SHALL BE 20A, WHITE, GFCI, DUPLEX, IN CAST ALUMINUM BOXES WITH IN-USE COVERS - PROCESS AREA AND WALL PLATE - RESTROOM. RECEPTACLES MOUNTED TO CONCRETE OR CMU WALLS SHALL BE SURFACE-MOUNTED.
4. ALL INTERIOR RECEPTACLES IN THE PROCESS AREA SHALL BE MOUNTED 42 INCHES ABOVE THE FLOOR.
5. EXPOSED CONDUITS TO CONVENIENCE RECEPTACLES AND LIGHT SWITCHES MAY BE 1/2-INCH TRADE SIZE WHERE ALLOWED BY CODE.
6. THE POWER CONDUCTORS TO LIGHT FIXTURE, BATTERY BACKED, CHARGING CIRCUITS AND THE OCCUPANCY SENSOR INTERNAL POWER CIRCUITS SHALL NOT BE SWITCHED.
7. INSTALL 4" ABOVE SINK LEVEL.
8. EXHAUST FAN WITH LIGHT CONNECT SO THAT THE LIGHTS AND FAN OPERATE SIMULTANEOUSLY, REFERENCE H-SHEETS.
9. EXTEND THE UN-SWITCHED LINE CONDUCTOR.
10. CONNECT THE OCCUPANCY, PP20 POWER PACK, AND MP20 POWER PACK PER MANUFACTURER'S DOCUMENTATION. THE POWER PACKS INTERNAL 120V POWER CONDUCTOR SHALL NOT BE SWITCHED. CONNECT THE SWITCHED POWER CONDUCTOR TO THE PP20 POWER PACK OUTPUT RELAY AND THE MOTION SENSOR STATUS CONDUCTORS TO THE MP20 POWER PACK OUTPUT RELAY.
11. CONFIGURE LIGHTING CONTROL TO TURN OFF AFTER 30 CONSECUTIVE MINUTES OF NO MOVEMENT.
12. INSTALL FIXTURE ABOVE LOUVER.
13. INSTALL FIXTURES ON CEILING AND COORDINATE LOCATION TO NOT INTERFERE WITH THE CRANE SUPPORT BEAMS.

1 BUILDING LIGHTING AND RECEPTACLE PLAN
SCALE: 3/8"=1'-0"

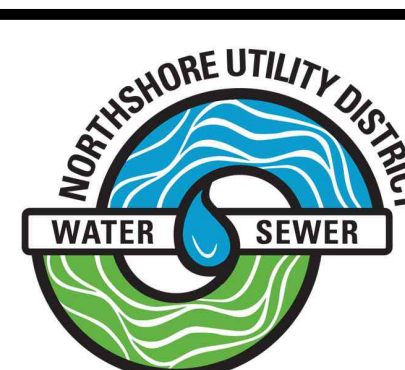
LIGHTING SCHEDULE								
MNEMONIC	TECHNOLOGY	APPLICATION	DESCRIPTION	MANUFACTURER		INPUT (VA)	VOLTAGE	COMMENTS
L1	LED	WET, CEILING/OVERHEAD	8" X 48", RECTANGULAR.	HOLOPHANE	EVT4	33	120 VAC, 1 PH	4000 LUMENS, 4000 K COLOR, MEDIUM DISTRIBUTION, FROSTED LENS, WET APPLICATION.
L2	LED	WET, CEILING/OVERHEAD	8" X 48", RECTANGULAR, BATTERY-BACKED.	HOLOPHANE	EVT4	33	120 VAC, 1 PH	4000 LUMENS, 4000 K COLOR, MEDIUM DISTRIBUTION, FROSTED LENS, WET APPLICATION.
L3	LED	DAMP, WALL-MOUNT, BATHROOM	4" X 36" RECTANGULAR	LITHONIA	FMVTSL	34	120 VAC, 1 PH	1900 LUMENS, 4000 K COLOR, WHITE ACRYLIC DIFFUSER.
L4	LED	WET, WALL-MOUNT, BUILDING	EXTERIOR BUILDING LIGHT.	LITHONIA	DSXW1 LED	40	120 VAC, 1 PH	3059 LUMENS, 4000 K COLOR, 10 LEDS (ONE ENGINE), 1000 MA DRIVE CURRENT, WITH PHOTO CELL AND VANDAL GUARD. 13-3/4" W X 10" D X 6-3/8" H.
01 OS 01	NA	CEILING/OVERHEAD	OCCUPANCY SENSOR	SENSORSWITCH	CM PDT 10	NA	120 VAC, 1 PH	PROVIDE WITH PP20 POWER PACK (FOR LIGHTING) AND MP20 POWER PACK (MOTION STATUS FOR PLC).

NO	BY	APPD	REVISION	DATE

WARNING
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE



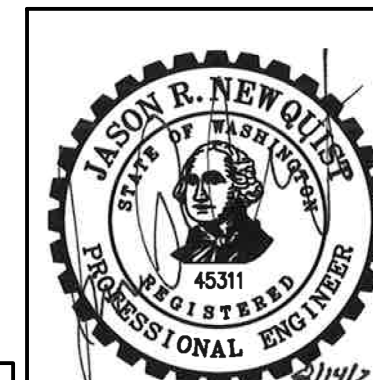
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CHECKED BY JRN
APPROVAL JRN
DATE AUG 2024



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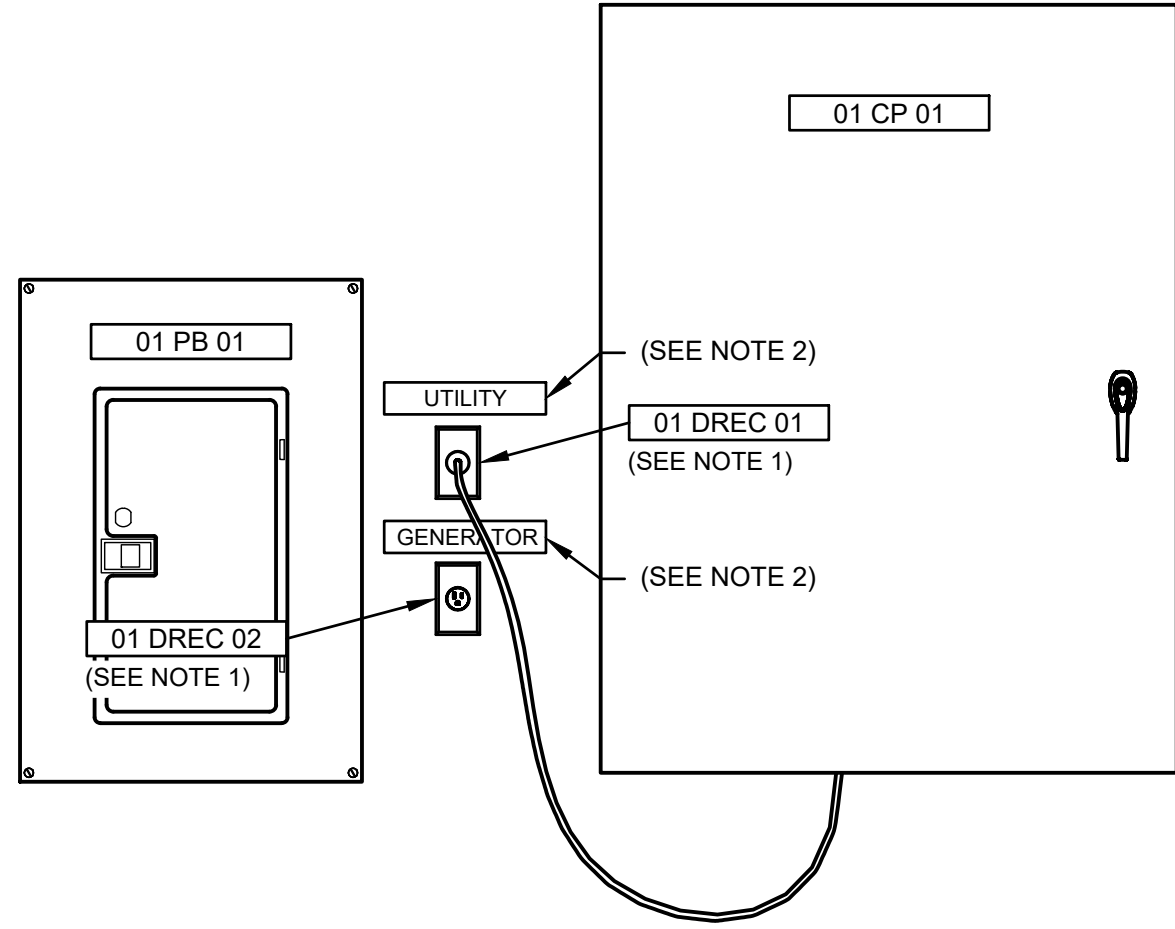
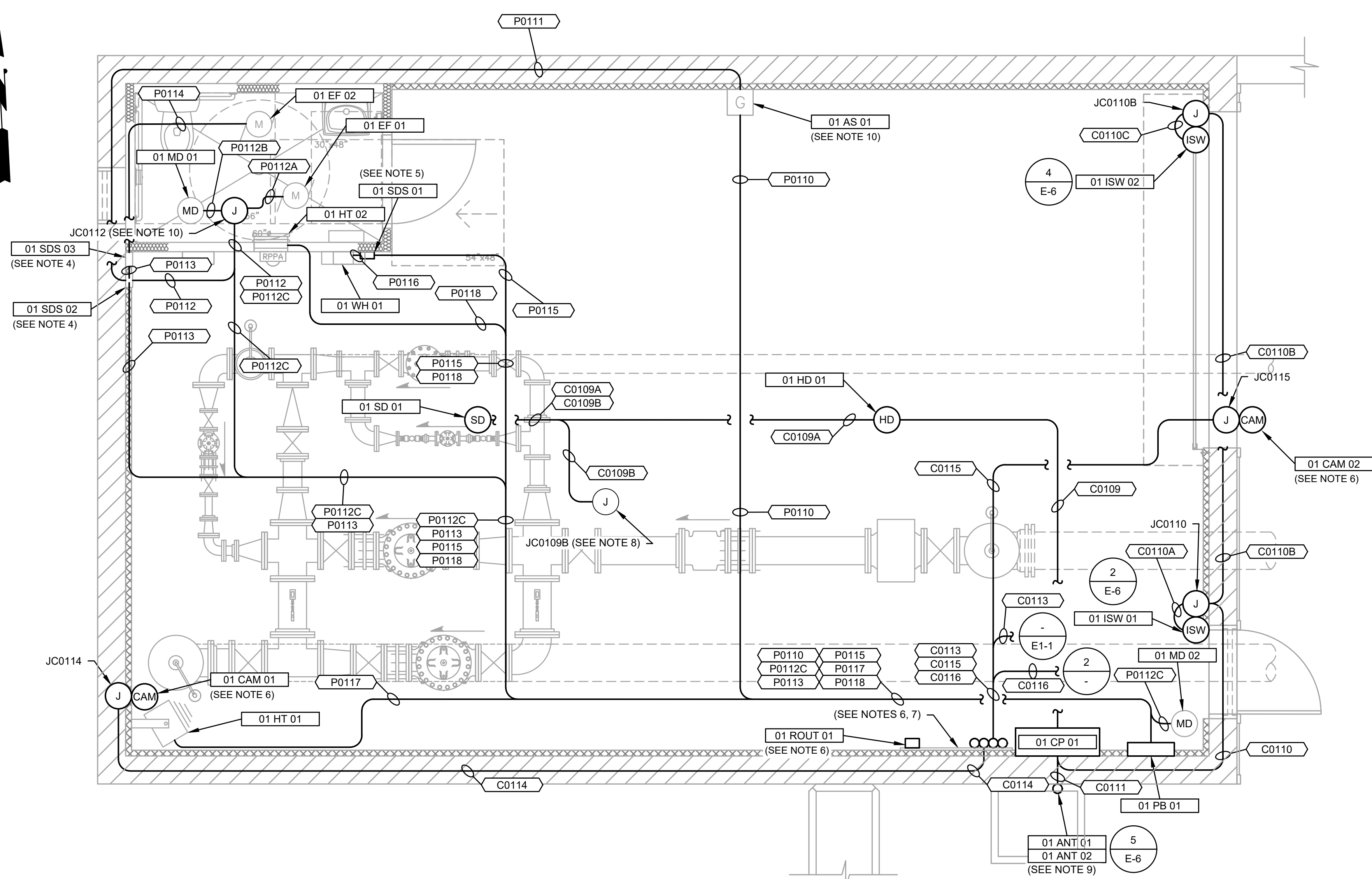
C0928
451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
BUILDING LIGHTING AND RECEPTACLES

#C928



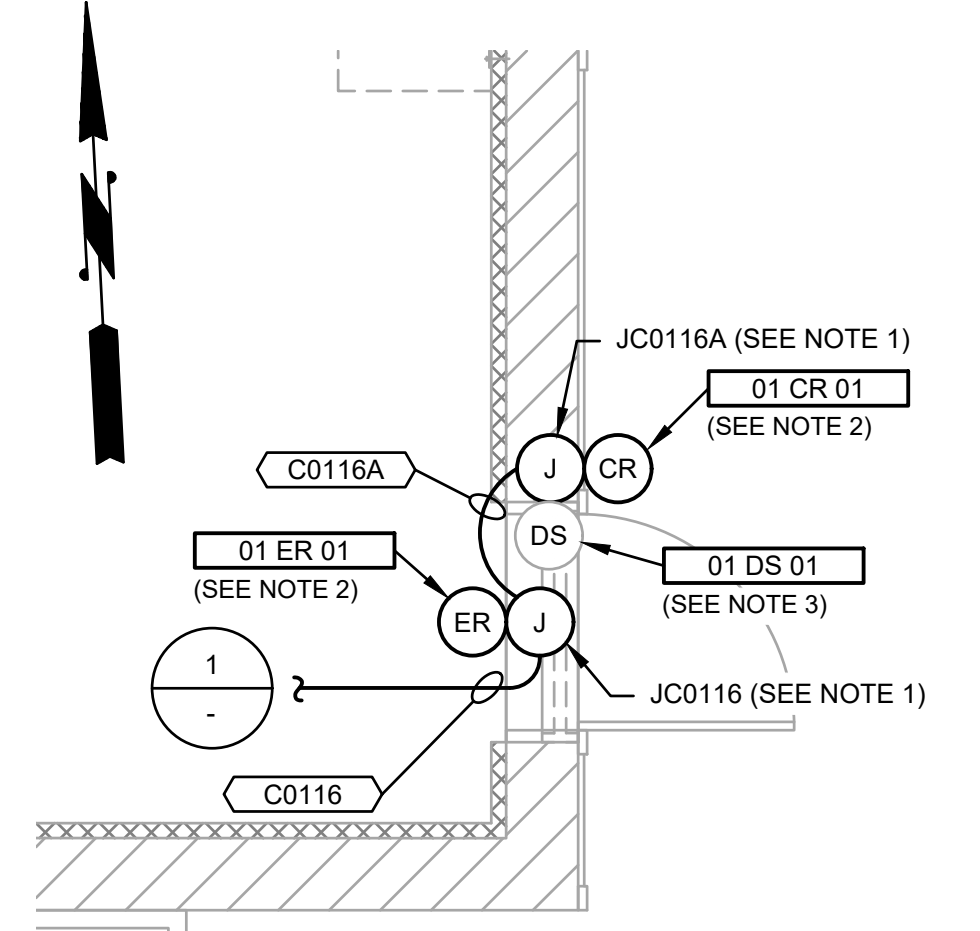
ELECTRICAL
SHEET: E1-3
53 OF 56

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NOTES:
 1. REFERENCE NOTE 5 ON SHEET E-1-2.
 2. PROVIDE "UTILITY POWER" AND "GENERATOR POWER" PLACARDS, REFERENCE GENERAL CONTROL PANEL NOTES ON SHEET E-1.

A ELECTRICAL EQUIPMENT ELEVATION
 E1-2 SCALE: 1"=1'-0"



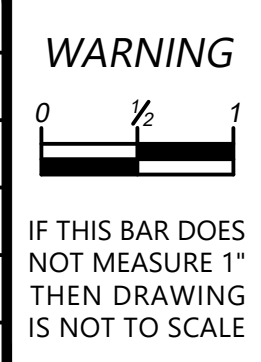
NOTES:
 1. JUNCTION BOXES SHALL BE INSTALLED FLUSH WITH THE INTERIOR OR EXTERIOR WALL AS NEEDED. PROVIDE SOLID COVER FOR JUNCTION BOXES.
 2. [01 CR 01] SHALL BE VERKADA AD33 WITH SINGLE GANG MOUNT PLATE. [01 ER 01] SHALL BE VERKADA REX. CONTRACTOR SHALL INSTALL AND CONNECT DOOR CONTROL DEVICES PER THE MANUFACTURE'S DOCUMENTATION.
 3. THE DOOR STRIKE WILL BE SUPPLIED AS PART OF THE DOOR INSTALLATION HARDWARE.

2 DOOR ENTRY PLAN
 SCALE: 3/8"=1'-0"

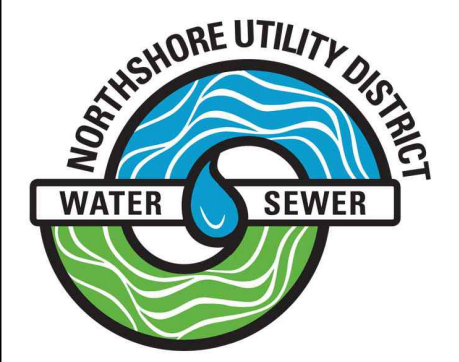
- NOTES:**
- INTRUSION SWITCH CIRCUITS SHALL BE WIRED SEPARATELY TO THE MAIN CONTROL PANEL.
 - INTRUSION SWITCHES SHALL BE WIRED SUCH THAT THEY ARE OPEN-CIRCUITED WHEN THE DOOR IS OPEN, CLOSED WHEN THE DOOR IS CLOSED.
 - SMOKE AND HEAT DETECTORS SHALL BE 24 VDC POWERED WITH FORM C (DRY) CONTACTS. WIRE THE CONTACTS TO BE OPEN WHEN IN THE ALARM CONDITION, CLOSED UNDER NORMAL CONDITIONS.
 - SAFETY DISCONNECT SWITCH IS PROVIDED BY THE MANUFACTURER AND INSTALL BY THE CONTRACTOR.
 - SAFETY DISCONNECT SWITCH SHALL BE 240V, 60A, TWO POLE, 10KAIC, NEMA 4X SS.
 - COORDINATE CAMERA MOUNTING LOCATION AND AIMING WITH THE OWNER. INTERIOR CAMERA [01 CAM 01] SHALL BE VERKADA DOME SERIES CD52-512-HW. EXTERIOR CAMERA [01 CAM 02] SHALL BE VERKADA BULLET SERIES CB52-512E-HW. INSTALL [01 CAM 02] UNDER THE ROOF PEAK. [01 ROUT 01] SHALL BE WATCHGUARD FIREBOX T85 PoE AND INSTALLED ON THE COMMUNICATION PATCH BOARD SHELF. [01 DC0N 01] NOT SHOWN, SHALL BE VERKADA AC41 WITH FOUR DOOR CASSETTES AND INSTALLED ON THE COMMUNICATION PATCH BOARD. CONTRACTOR SHALL SUPPLY ETHERNET CAT6 PATCH CABLES AS NEEDED AND CONNECT ALL DEVICES PER THE MANUFACTURES DOCUMENTATION.
 - PROVIDE 8' X 4' X 1" GRADE A PLYWOOD COMMUNICATION PATCH BOARD AND SECURE TO WALL 1" ABOVE THE FLOOR AND 8' HIGH. TRIM AS NEEDED TO FIT IN THE AREA SHOWN. SMOOTH THE SURFACE WITH SANDPAPER AND REMOVE DUST AND CONTAMINANTS. PRIME WITH ONE COAT OF TNEPEC SERIES 151-1051 OR EQUAL. APPLY TWO FINISH COATS OF WHITE TNEPEC SERIES 1029 ENDURATONE OR EQUAL. SHELF NOT SHOWN FOR CLARITY, CONTRACTOR SHALL PROVIDE A 48" X 12" X 1/2" WHITE LAMINATED WOOD SHELF AND INSTALL AT 48" ABOVE THE FLOOR, PROVIDE MOUNTING HARDWARE AS NEEDED. ROUTE CONDUITS TO 1' ABOVE THE FLOOR AND INSTALL CONDUIT GROMMETS. GROUND BUS BAR IS NOT SHOW FOR CLARITY, CONTRACTOR SHALL SUPPLY A GROUND BUS BAR AND CONNECT TO THE COMMUNICATION PATCH BOARD INSTALL AT 6" ABOVE FLOOR. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR THE INSTALLATION OF THE COMMUNICATION, DOOR CONTROL, AND CAMERA DEVICES TO THE PATCH BOARD AND ON THE SHELF.
 - INSTALL MP20 POWER PACK IN JUNCTION BOX AND CONNECT TO PP20 POWER PACK AND [01 OS 01] PER MANUFACTURER'S DOCUMENTATION, REFERENCE NOTE 10 ON E1-3.
 - ANTENNAS [01 ANT 01] AND [01 ANT 02] ARE PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.
 - PROVIDE JUMPERS IN [01 AG 01] TO CONFIGURE BOTH RELAY OUTPUTS TO BE IN PARALLEL. SPLICE CIRCUITS FOR [01 EF 01], [01 MD 01], AND [01 MD 02] TOGETHER WITH THE CIRCUIT FROM [01 SDS 01] IN JUNCTION BOX JP0112.

1 BUILDING HVAC AND SECURITY PLAN
 SCALE: 3/8"=1'-0"

NO	BY	APPD	REVISION	DATE



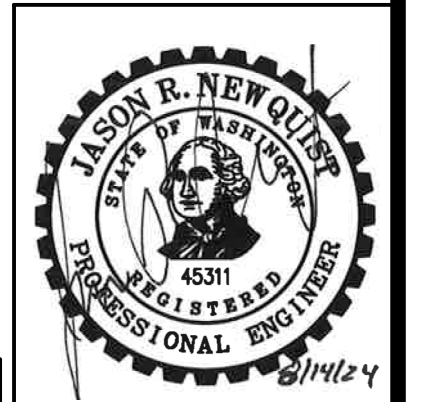
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DRAWN BY	PEB
CHECKED BY	JRN
APPROVAL	JRN
DATE	AUG 2024



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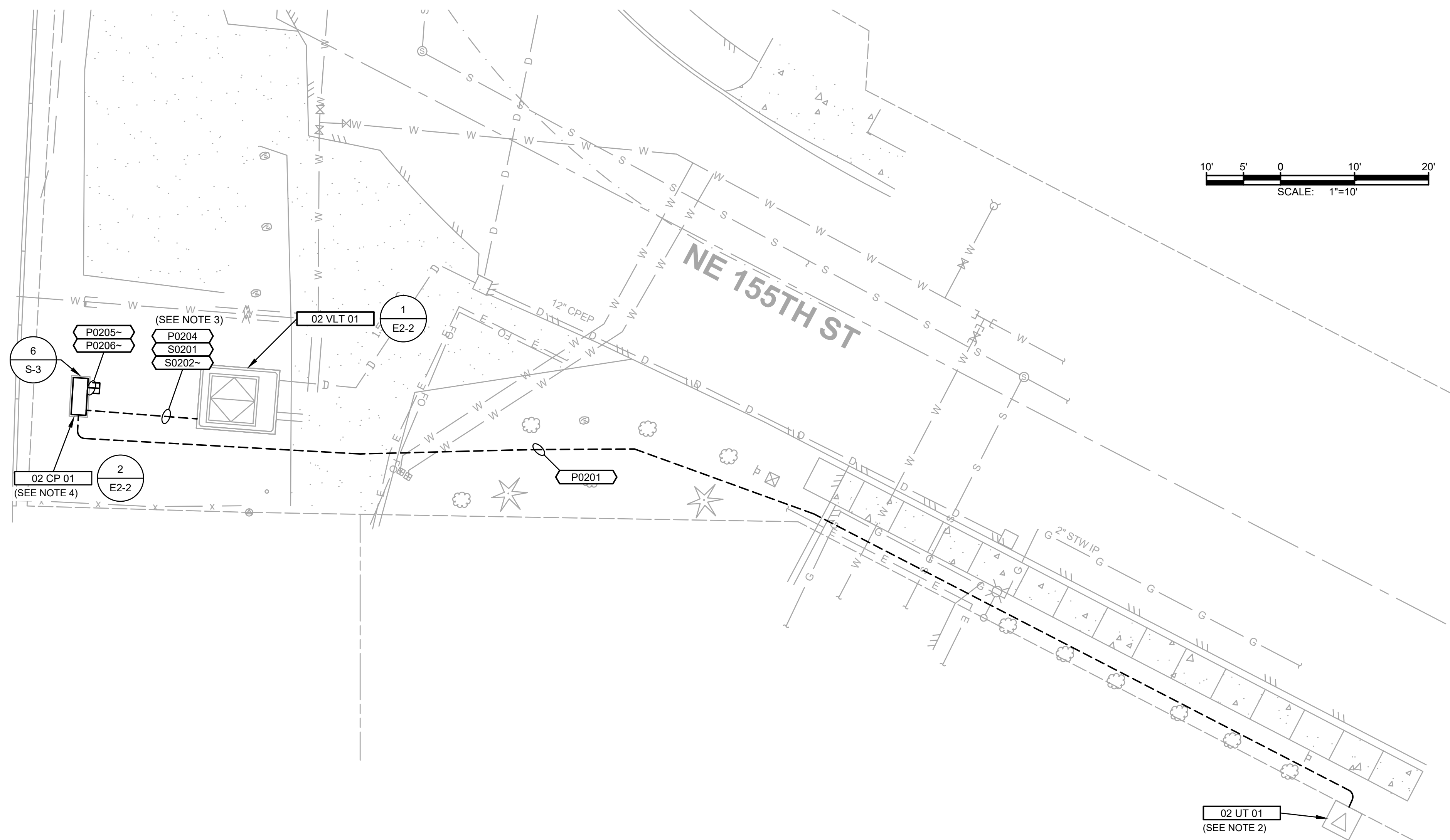
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451 ZONE CONTROL VALVE IMPROVEMENTS
SCHEDULE A
BUILDING HVAC AND SECURITY PLAN

#C928



ELECTRICAL
SHEET: E1-4
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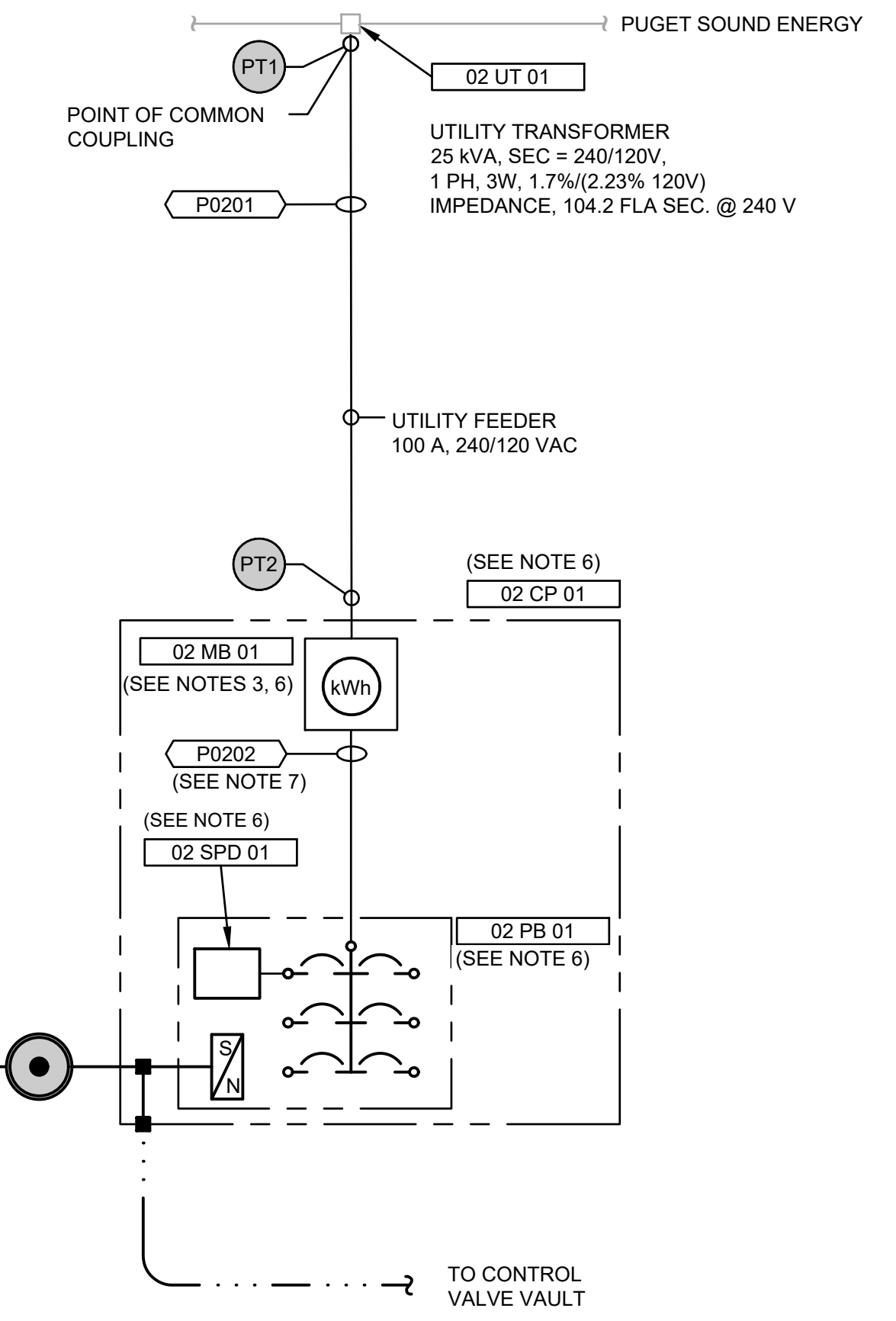
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BOLTED FAULT TABLE

FAULT POINT	FAULT VALUES
PT1	6.1 kAIC @ 240V
PT1	9.3 kAIC @ 120V
PT2	1.9 kAIC @ 240V
PT2	1.2 kAIC @ 120V

(SEE NOTE 5)



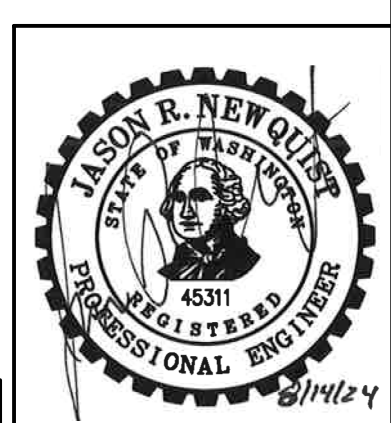
- NOTES:**
- THE ELECTRICAL POWER UTILITY COMPANY IS PUGET SOUND ENERGY (PSE), THE CONTRACTOR SHALL PROVIDE UTILITY TRANSFORMER AS-BUILT DRAWINGS. INFORMATION TO BE PROVIDED SHALL INCLUDE IMPEDANCE, KAIC, AND KVA RATINGS.
 - CONTRACTOR SHALL PROVIDE ALL TRENCHING, EXCAVATION, AND BACKFILL PER POWER UTILITY COMPANY'S REQUIREMENTS. CONTRACTOR SHALL COORDINATE WITH POWER UTILITY COMPANY FOR THE NEW ELECTRICAL SERVICE.
 - THE REVENUE METER IS PROVIDED BY THE POWER UTILITY COMPANY.
 - PROVIDE A GROUND SYSTEM OF TWO 10' X 3/4" GROUND RODS SPACED A MINIMUM OF 10 FEET APART. GROUNDING ELECTRODE CONDUCTORS SHALL BE #6 AWG BARE COPPER STRANDED WIRE. THE GEC SHALL BE BURIED AT A MINIMUM OF 30" BELOW GRADE PER CODE.
 - BOLTED FAULT TABLE VALUES ARE TAKEN FROM PSE'S ELECTRICAL SERVICE HANDBOOK.
 - CONTROL PANEL [02 CP 01], PANELBOARD [02 PB 01], SURGE PROTECTIVE DEVICE [02 SPD 01], AND METER BASE [02 MB 01] ARE PROVIDED BY THE OWNER. CONTROL PANEL [02 CP 01] IS INSTALLED BY THE CONTRACTOR.
 - PROVIDED AND INSTALLED BY THE OWNER.

- NOTES:**
- NOT ALL UTILITIES ARE SHOW, CONTRACTOR SHALL LOCATE AS NEEDED.
 - EXISTING PUGET SOUND ENERGY (PSE) PAD MOUNTED TRANSFORMER. CONTRACTOR SHALL APPLY FOR A NEW PSE ELECTRICAL SERVICE, PAY ANY PSE FEES, AND COORDINATE WITH PSE AS NEEDED.
 - INCLUDE #6 AWG STRANDED BARE COPPER GEC IN TRENCH.
 - PANELBOARD [02 PB 01] IS LOCATED WITHIN [02 CP 01]. [02 CP 01] IS PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.

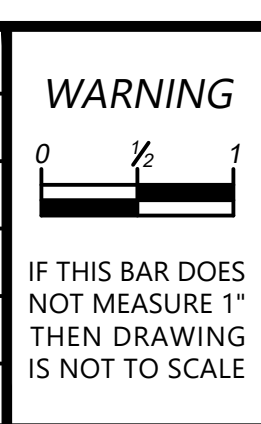
SITE ELECTRICAL PLAN - AREA2
SCALE: 1"=10'

DEVICE TAG LIST			DEVICE TAG LIST		
TAG ID#	TAG DESCRIPTION	VINTAGE	TAG ID#	TAG DESCRIPTION	VINTAGE
02 ANT 01	ANTENNA, RADIO	NEW	02 SPD 01	SURGE PROTECTIVE DEVICE	NEW
02 ANT 02	ANTENNA, CELLULAR MODEM	NEW	02 SV 01	SOLENOID VALVE, OPEN, CONTROL VALVE	NEW
02 CP 01	CONTROL PANEL, CONTROL VALVE VAULT	NEW	02 SV 02	SOLENOID VALVE, CLOSE, CONTROL VALVE	NEW
02 CV 01	CONTROL VALVE	NEW	02 UT 01	UTILITY TRANSFORMER	EXISTING
02 ISW 01	INTRUSION SWITCH, HATCH, CONTROL VALVE VAULT	NEW	02 VLT 01	CONTROL VALVE VAULT	NEW
02 LS 01	LIMIT SWITCH, CLOSED, CONTROL VALVE	NEW			
02 MB 01	METER BASE	NEW			
02 PB 01	PANELBOARD	NEW			
02 PIT 01	PRESSURE INDICATING TRANSMITTER, IN	NEW			
02 PIT 02	PRESSURE INDICATING TRANSMITTER, OUT	NEW			
02 SP 01	SUMP PUMP	NEW			

1 ONE LINE DIAGRAM
NOT TO SCALE



NO	BY	APPD	REVISION	DATE



Gray & Osborne, Inc.
CONSULTING ENGINEERS

DESIGNED BY: PAM
DRAWN BY: PEB
CHECKED BY: JRN
APPROVAL: JRN
DATE: AUG 2024

NORTHSHORE UTILITY DISTRICT
WATER SEWER

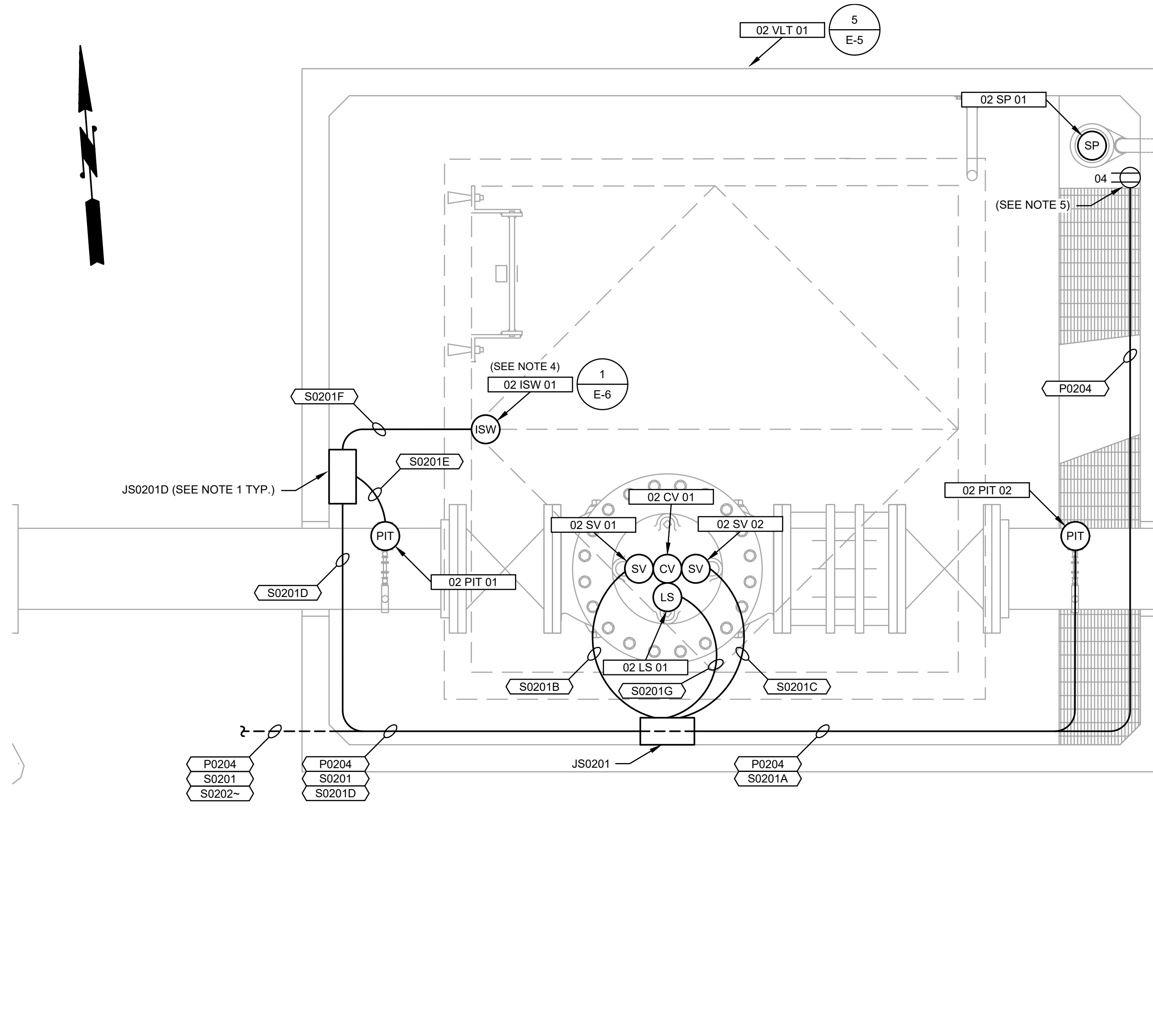
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SCHEDULE B
SITE ELECTRICAL PLAN, ONE LINE
DIAGRAM, AND TAG LIST

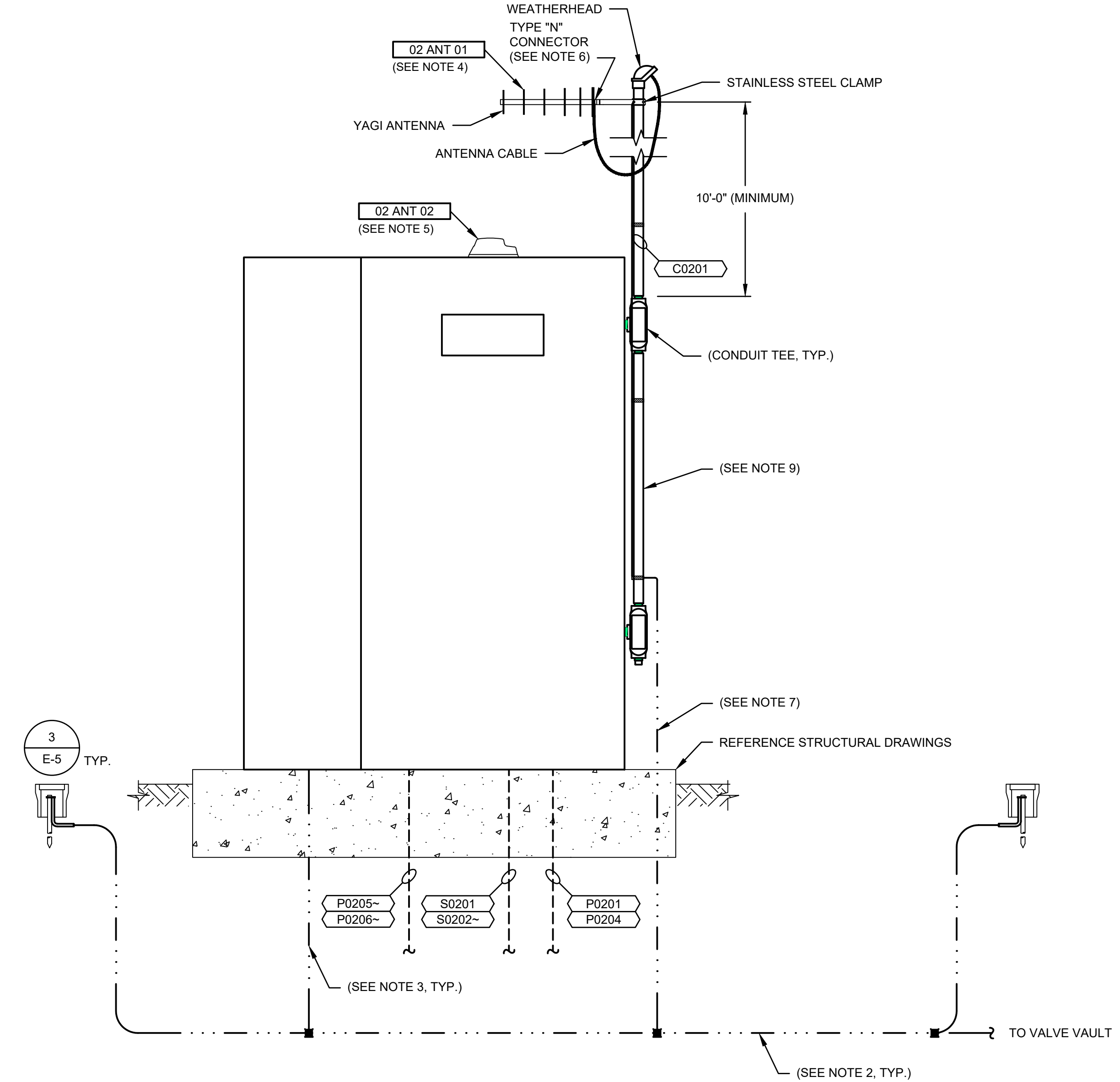
ELECTRICAL
SHEET: E2-1
55 OF 56

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- NOTES:**
- JUNCTION BOXES SHALL BE NEMA 4X 316L STAINLESS STEEL 6"X 6"X 4" MINIMUM. ALL EXPOSED CONDUIT SHALL BE PVC-RGS. ALL MOUNTING AND SUPPORT HARDWARE SHALL BE 316L STAINLESS STEEL.
 - CONTRACTOR SHALL PROVIDE CONDUIT BODIES AS NEEDED AT SPLICE POINTS. ALL SPLICES SHALL BE PER DETAIL NO. 3 ON SHEET E-6.
 - CONTRACTOR SHALL PROVIDE CONDUIT SUPPORTS AT SOLENOID VALVES AND PRESSURE TRANSMITTERS AS NEEDED. REFERENCE DETAIL NO. 2 ON SHEET E1-2.
 - LOCATE [02 ISW 01] SO THAT IT IS ACTIVATED BY THE LATCHING HATCH DOOR, REFERENCE DETAIL NO. 1 ON SHEET E-6.
 - RECEPTACLE SHALL BE 20A, NON-GFCI, IN CAST BOX WITH IN-SERVICE COVER. INSTALL ON WALL AT 48" ABOVE THE FLOOR. ALL MOUNTING AND SUPPORT HARDWARE SHALL BE 316L STAINLESS STEEL.

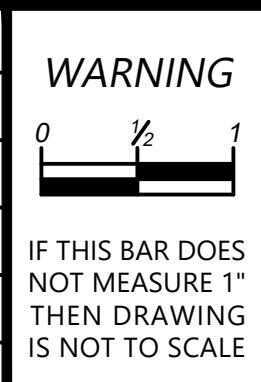
1 VAULT ELECTRICAL PLAN
E2-1 SCALE: 1"=1'-0"



- NOTES:**
- THE OWNER WILL PROVIDE CONTROL PANEL [02 CP 01] AND PLC PROGRAMMING. THE CONTRACTOR SHALL INSTALL [02 CP 01] AND TERMINATE ALL CONDUCTORS AND CABLES PER THE OWNER SUPPLIED DOCUMENTATION.
 - CONTRACTOR SHALL INSTALL TWO GROUND RODS IN GROUND ROD BOXES, SPACE GROUND ROD AT 10' MINIMUM. GEC SHALL BE #6 AWG BARE STRANDED COPPER.
 - #6 AWG STRANDED BARE COPPER IN PVC-80 CONDUIT.
 - ANTENNA [02 ANT 01] IS PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.
 - ANTENNA [02 ANT 02] IS PROVIDED AND INSTALLED BY THE OWNER.
 - PROVIDE WEATHER SEAL AT ANTENNA / ANTENNA FEED LINE CONNECTION.
 - CONNECT GROUND CONDUCTOR DIRECTLY TO GEC SYSTEM. TIE CABLE GROUND CONDUCTOR TO MAST EVERY 2'-0". CONNECT TO GROUNDING SYSTEM.
 - THE CONTRACTOR SHALL PROVIDE AND INSTALL A NEW MAST AND INSTALL CABLE, ANTENNA AND MOUNTING HARDWARE PER MANUFACTURER'S RECOMMENDATIONS. THE INTEGRATOR SHALL CONNECT THE CABLES AND DIRECT THE ANTENNA MAST ROTATION IF REQUIRED.

2 CONTROL PANEL [02 CP 01] ELEVATION
E2-1 SCALE: 1"=1'-0"

NO	BY	APPD	REVISION	DATE

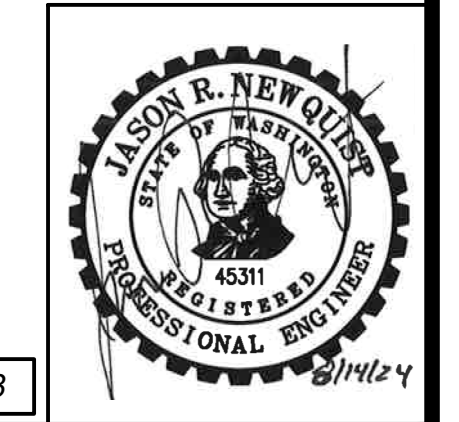


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SCHEDULE B
VAULT ELECTRICAL PLAN AND CONTROL
PANEL [02 CP 01] ELEVATION



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ELECTRICAL
SHEET: E2-2
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