

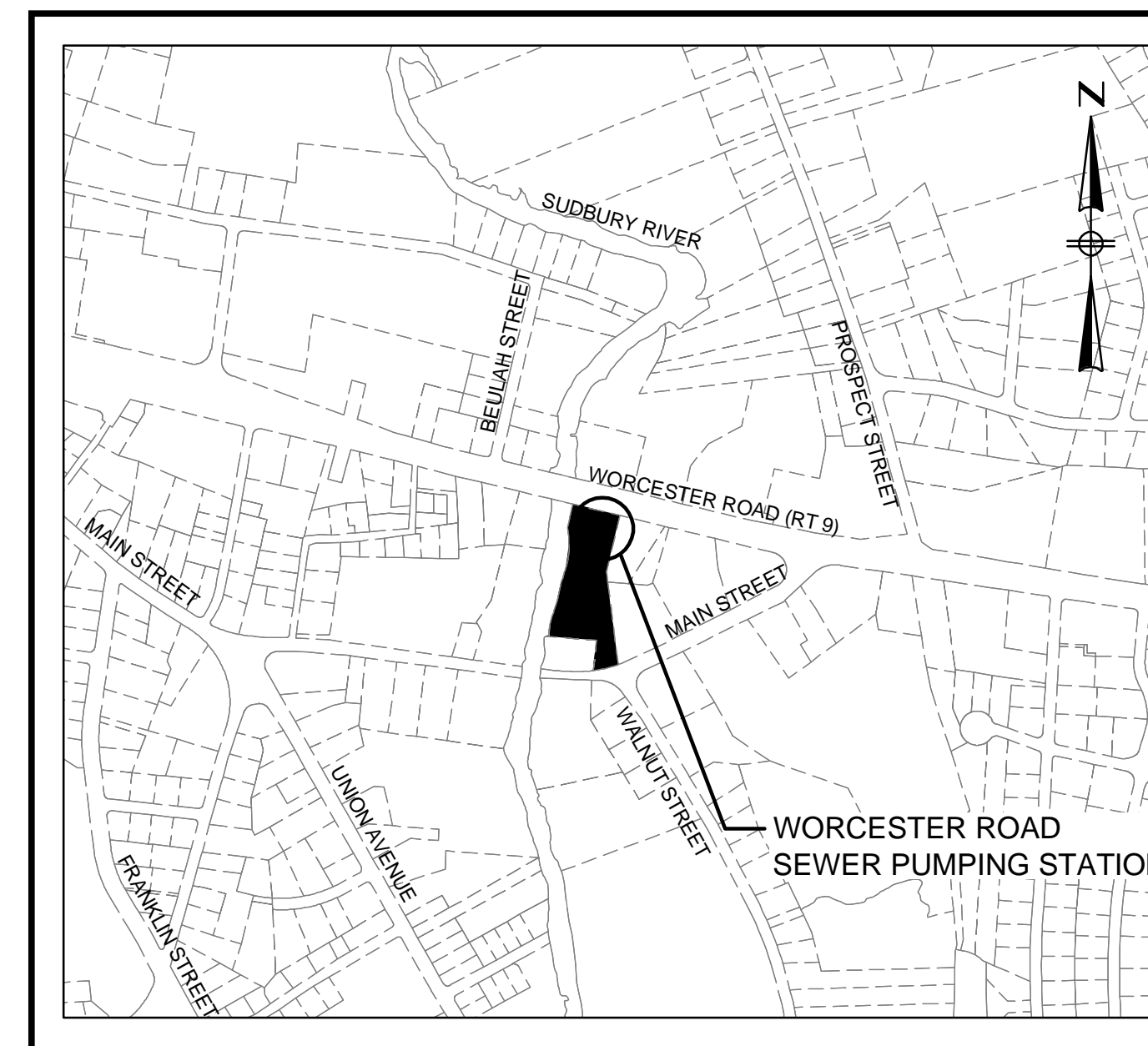
# CITY OF FRAMINGHAM, MA DEPARTMENT OF PUBLIC WORKS WORCESTER ROAD SEWER PUMPING STATION REPLACEMENT CONTRACT NO. PW-1025 CWSRF NO. 6999 JANUARY 2023



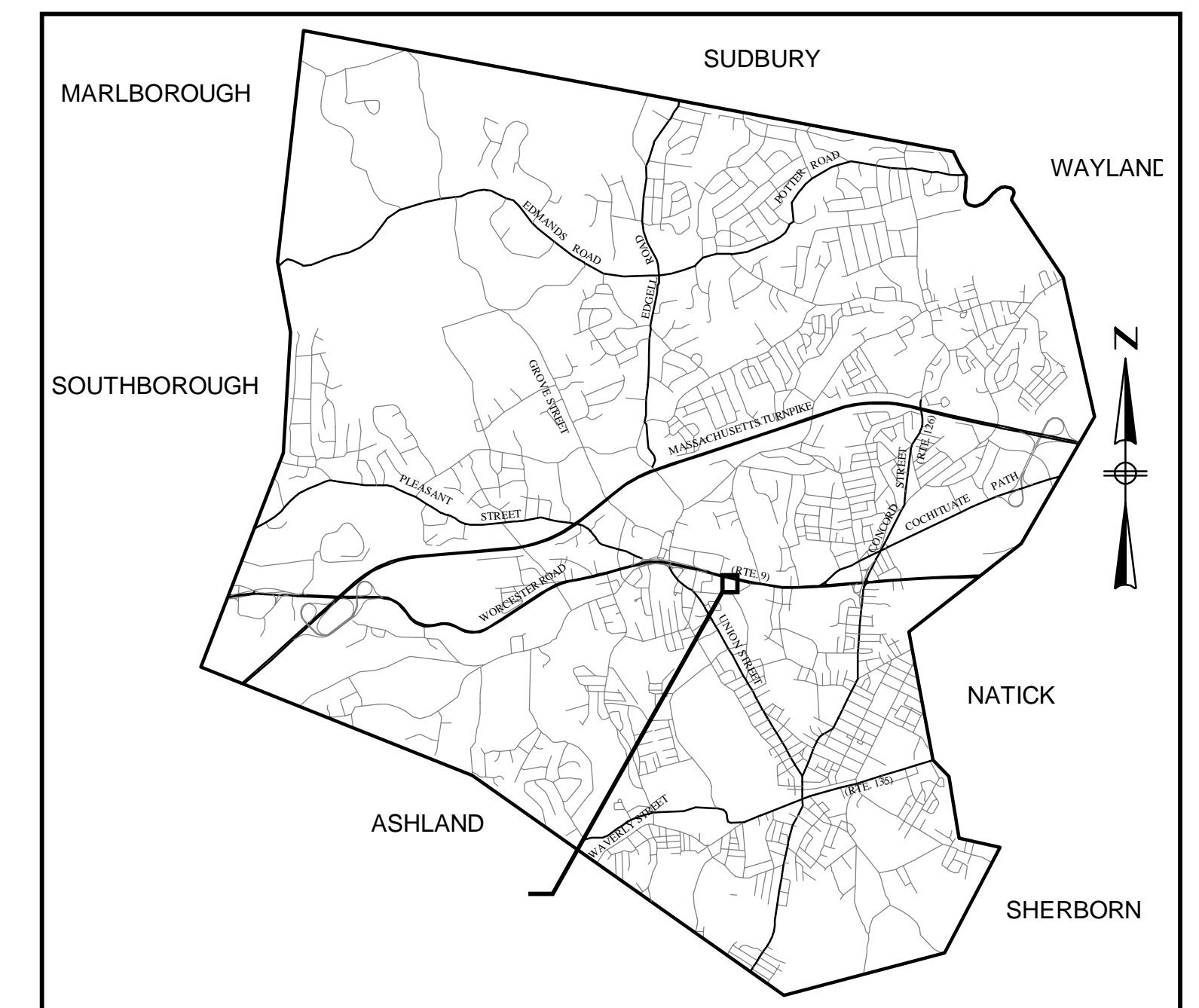
CHARLIE J. SISITSKY - MAYOR

ROBERT A. LEWIS - DIRECTOR OF PUBLIC WORKS

WILLIAM R. SEDEWITZ, P.E. - CHIEF ENGINEER



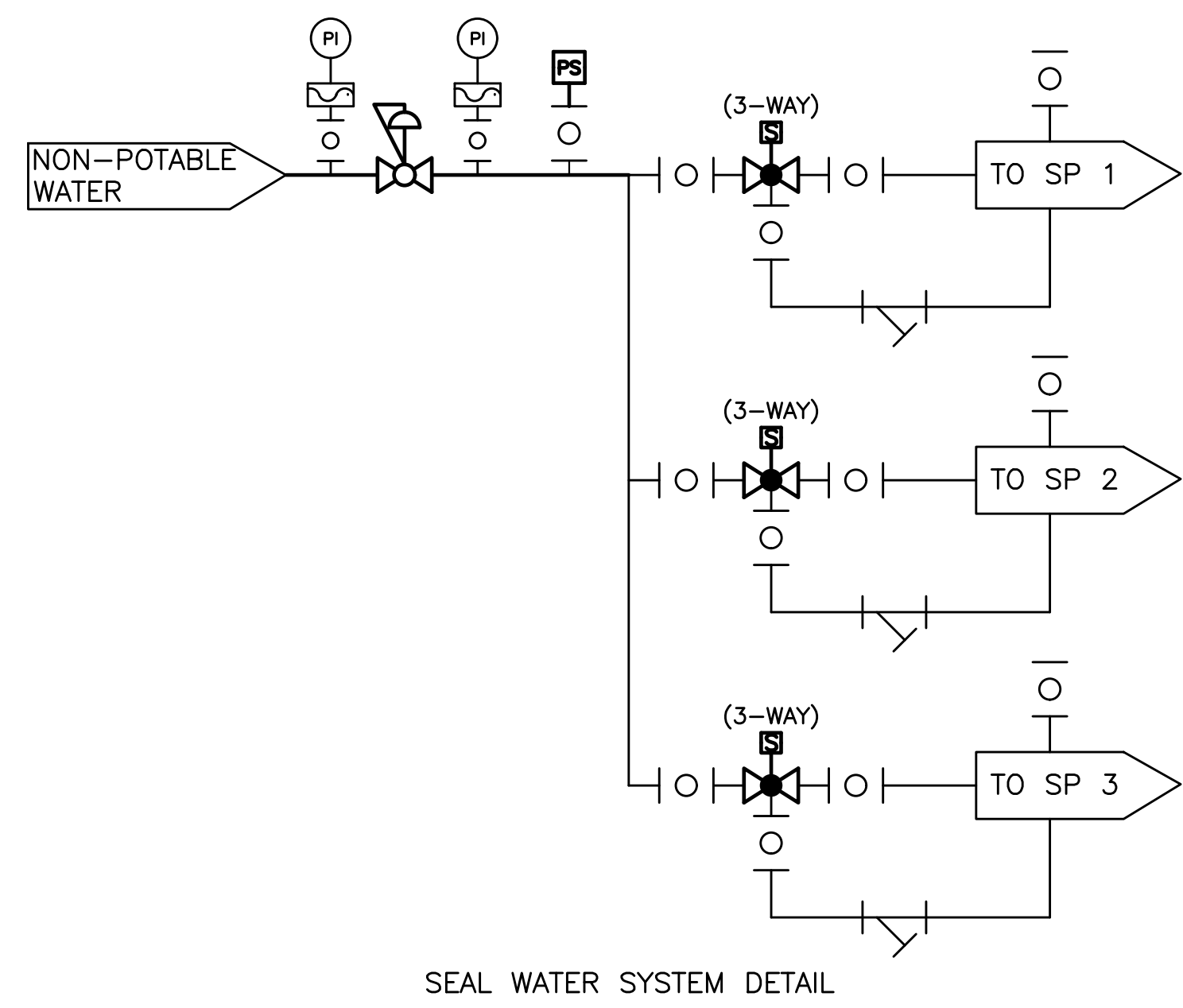
WORCESTER ROAD SEWER PUMPING STATION  
LOCUS MAP  
NOT TO SCALE



LOCATION MAP  
NOT TO SCALE







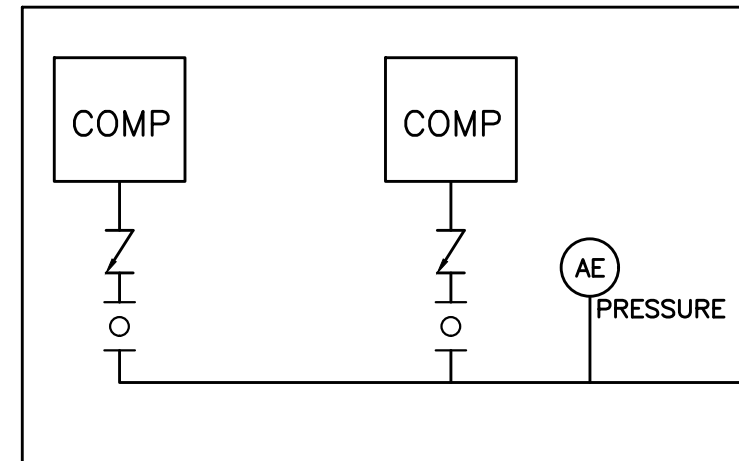
SEAL WATER SYSTEM DETAIL

18" INFLUENT FROM WEST

INFLUENT CHAMBER

18" INFLUENT FROM SOUTH

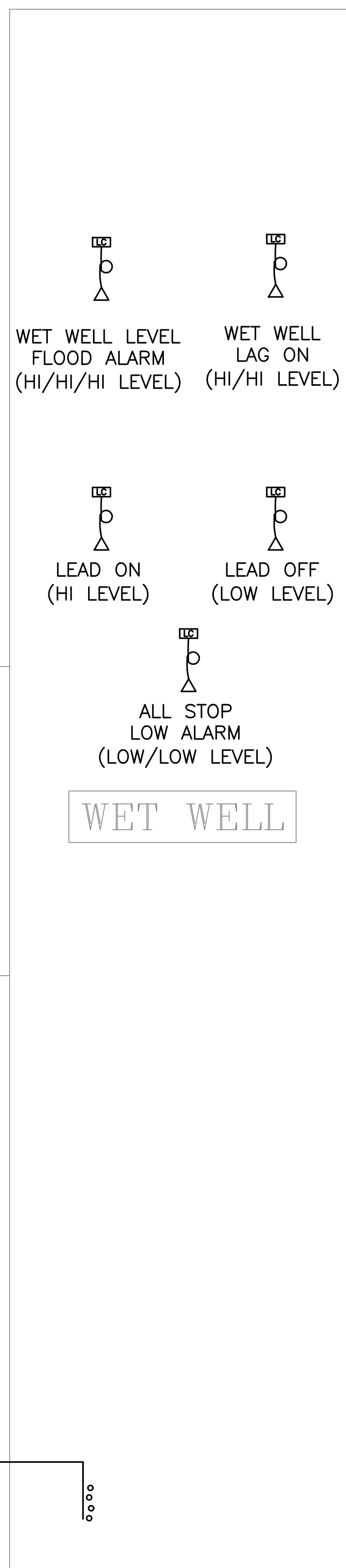
BUBBLER LEVEL CONTROL SYSTEM



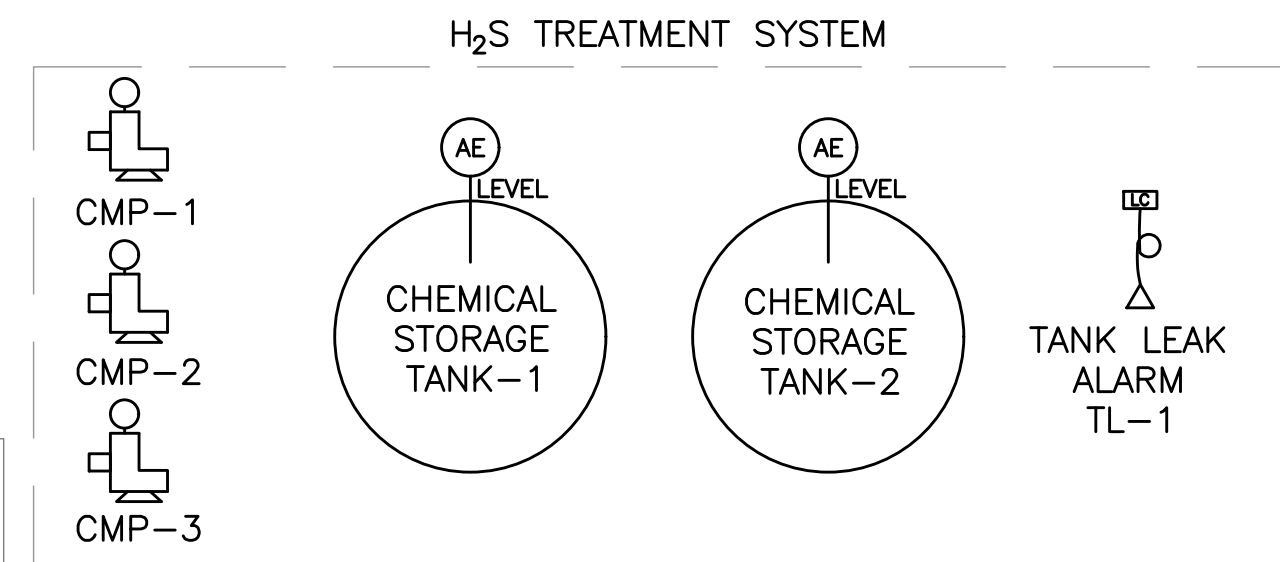
LEGEND

SYMBOLS	NAMES
	BALL VALVE
	PLUG VALVE
	CHECK VALVE
	GATE VALVE
	SOLENOID VALVE
	AIR BLEED VALVE
	PRESSURE REDUCING VALVE
	NEEDLE VALVE

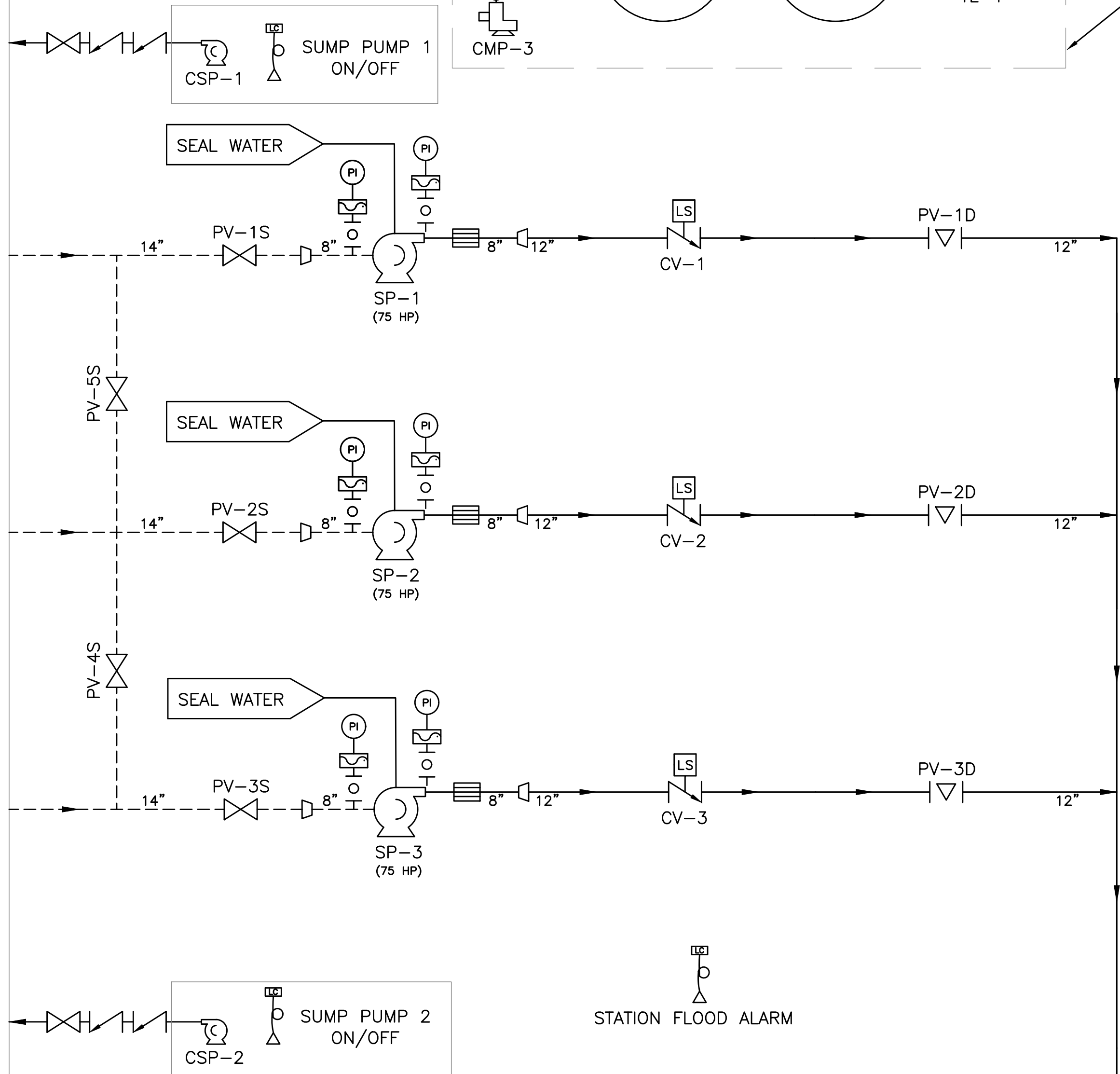
	LIMIT SWITCH
	ANALOG ELEMENT W/DESCRIPTION
	FLOAT TYPE LEVEL SENSOR
	PRESSURE INDICATOR W/DIAPHRAGM
	PRESSURE SENSOR
	STRAINER



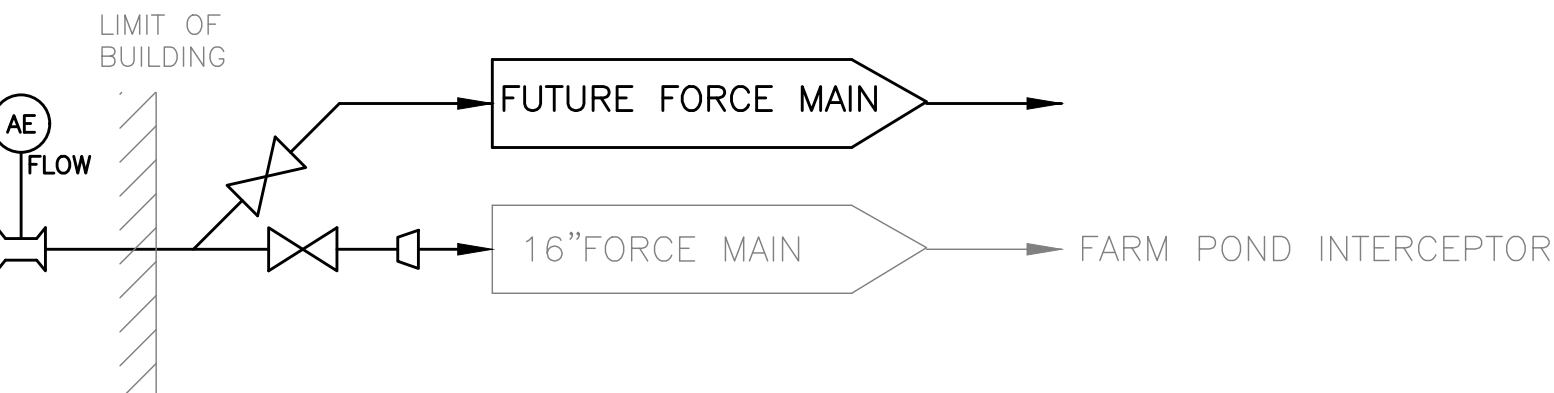
WET WELL



EXISTING CHEMICAL STORAGE CONTAINMENT BERM



DRY WELL



	FLOWMETER
	SUCTION PIPING
	DISCHARGE PIPING
	REDUCER
	DISMANTLING COUPLING
	CENTRIFUGAL PUMP
	METERING PUMP

ABBREVIATION	NAMES
AE	ANALOG ELEMENT
AR	AIR RELEASE
CMP	CHEMICAL METERING PUMP
COMP	COMPRESSOR
CSP	CENTRIFUGAL SUMP PUMP
CV	CHECK VALVE
DWF	DRY WELL FLOOD
FE	FLOW ELEMENT
FM	FLOWMETER
GV	GATE VALVE
LC	LEVEL CONTROL
LS	LIMIT SWITCH
M	MOTOR OPERATED
PI	PRESSURE INDICATOR
PS	PRESSURE SENSOR
PV	PLUG VALVE
SP	SEWAGE PUMP
TL	TANK LEAK

WWF	WET WELL FLOOD
WWH	WET WELL HIGH
WWP	WET WELL PUMP

3/1/2023 1:43 PM J:\7385 - FRAMINGHAM WRP IMPROVEMENTS\DRAWING\PLANS\G-2 PROCESS FLOW DIAGRAM.DWG (BETA STD BW.CTB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	RTG
DESIGNED BY:	AJG
CHECKED BY:	JRD



REGISTERED PROFESSIONAL	PREPARED BY	SUBCONSULTANT	SCALE	TITLE
			NONE	Worcester Road Sewer Pumping Station Replacement

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BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	G-2

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

3/1/2023 1:43 PM J:\7385 - FRAMINGHAM WRF IMPROVEMENTS\DRAWINGFILES\PLANSET\C-1 AND C-2 - EX CONDITIONS - PROP SITE - BYPASS - RESTORATION - PLANS.DWG (BETA STD BW.CTB)

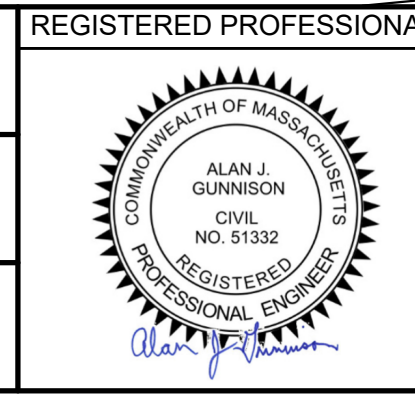


**EXISTING SITE PLAN**  
SCALE: 1" = 10'

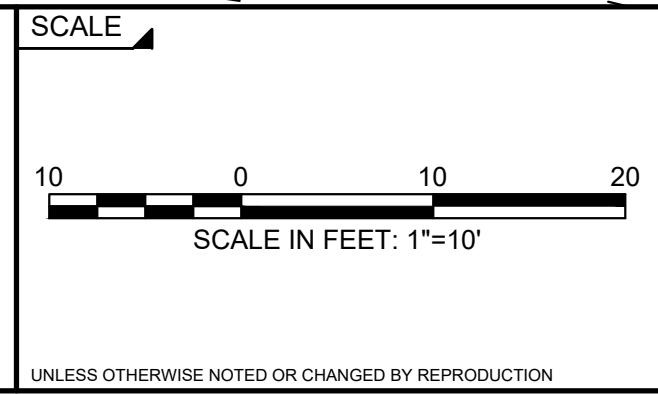
100 YEAR FLOOD PLAIN EL.  
NAVD88 = 155  
NGVD29 = 155.76

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

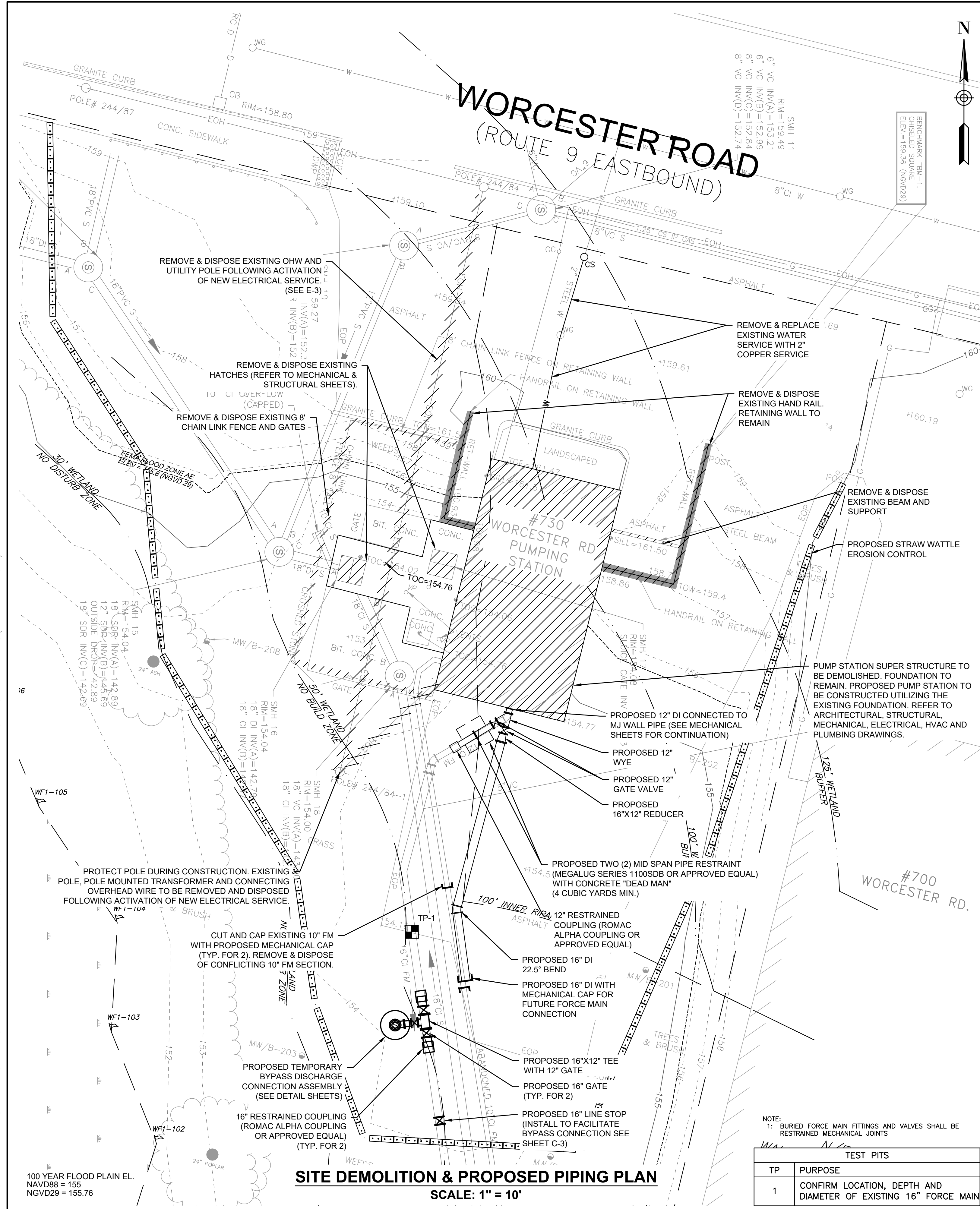
DRAWN BY:  
RTG  
DESIGNED BY:  
AJG  
CHECKED BY:  
JRD



REGISTERED PROFESSIONAL PREPARED BY  
SUBCONSULTANT



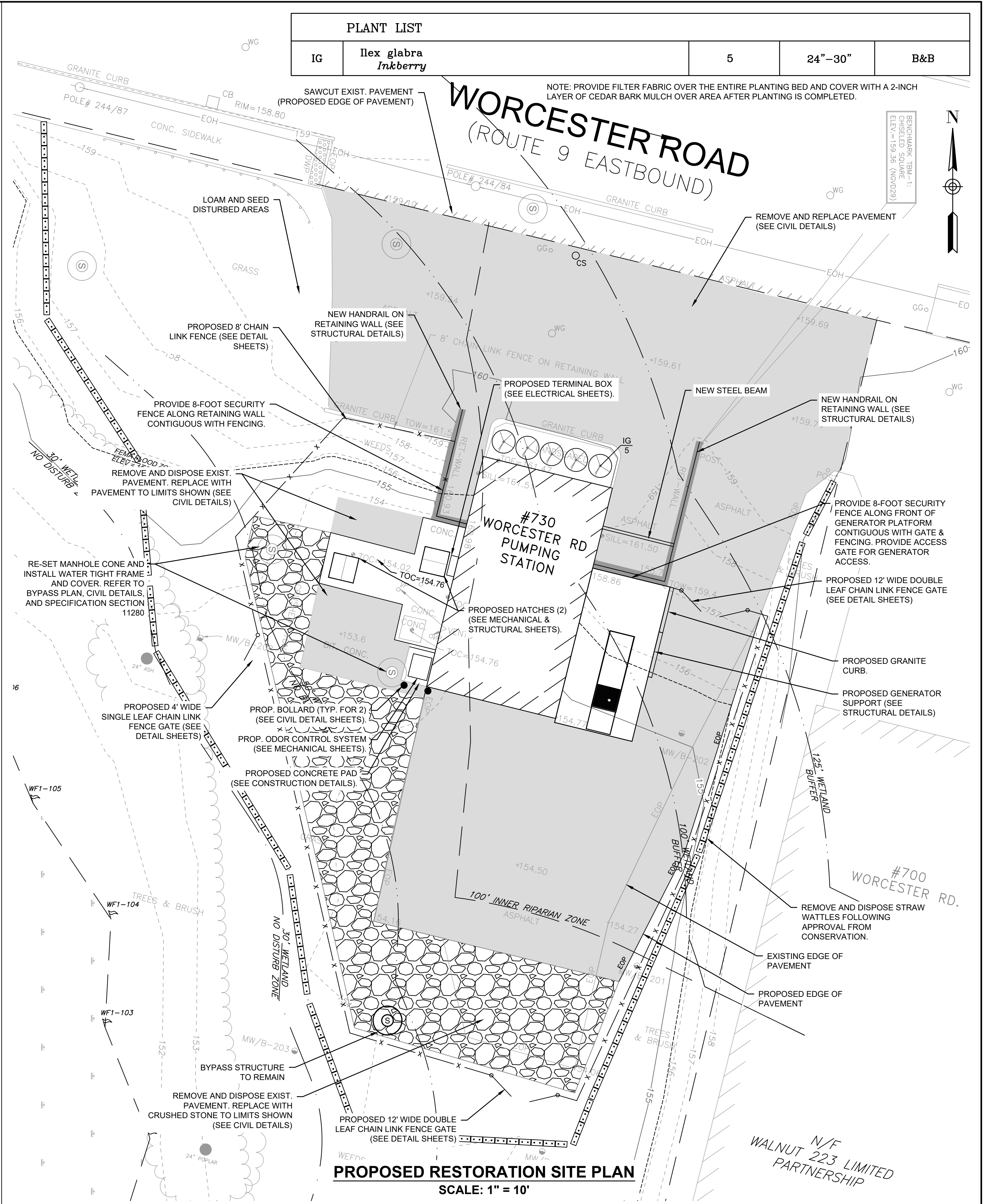
<p><b>Worcester Road Sewer Pumping Station Replacement</b></p> <p>EXISTING CONDITIONS SITE PLAN</p>		BETA JOB NO. 7385
		ISSUE DATE JANUARY 2023
<p>SHEET NO. C-1</p>		<p>UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION</p>



**SITE DEMOLITION & PROPOSED PIPING PLAN**  
SCALE: 1" = 10'

NOTE: 1: BURIED FORCE MAIN FITTINGS AND VALVES SHALL BE RESTRAINED MECHANICAL JOINTS

TEST PITS	
TP	PURPOSE
1	CONFIRM LOCATION, DEPTH AND DIAMETER OF EXISTING 16" FORCE MAIN



**PROPOSED RESTORATION SITE PLAN**  
SCALE: 1" = 10'

PLANT LIST				
IG	Ilex glabra <i>Inkberry</i>	5	24"-30"	B&B

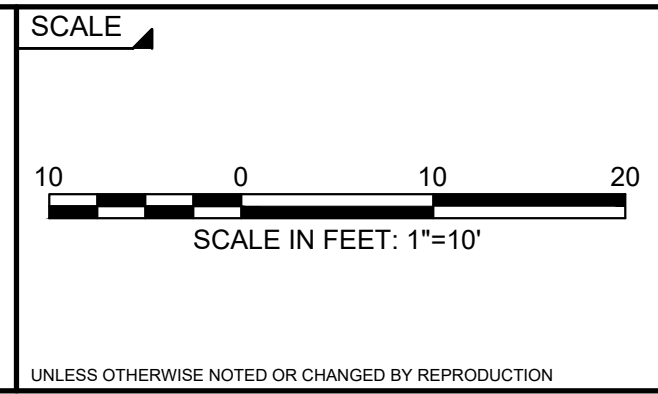
NOTE: PROVIDE FILTER FABRIC OVER THE ENTIRE PLANTING BED AND COVER WITH A 2-INCH LAYER OF CEDAR BARK MULCH OVER AREA AFTER PLANTING IS COMPLETED.

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
RTG  
DESIGNED BY:  
AJG  
CHECKED BY:  
JRD



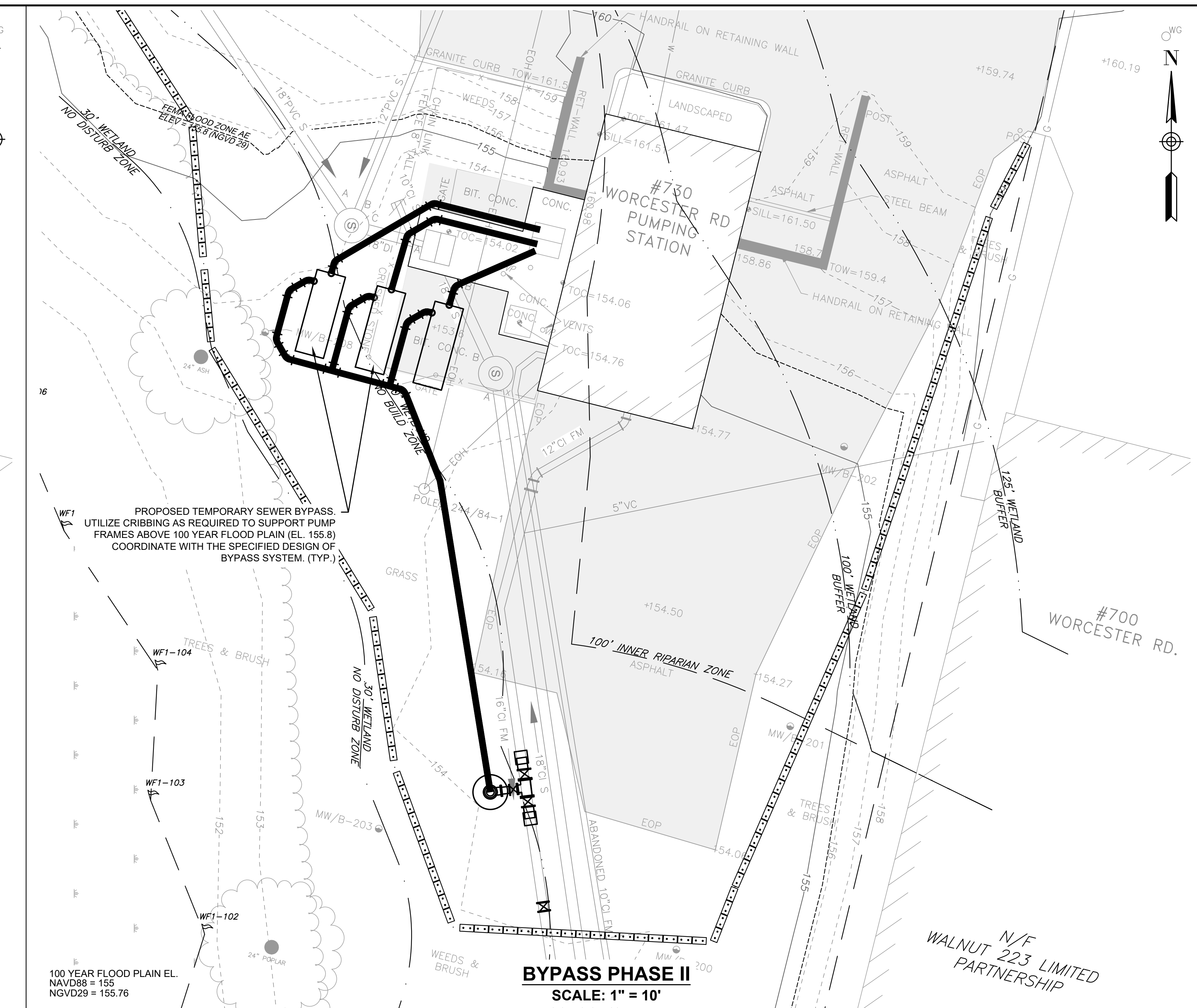
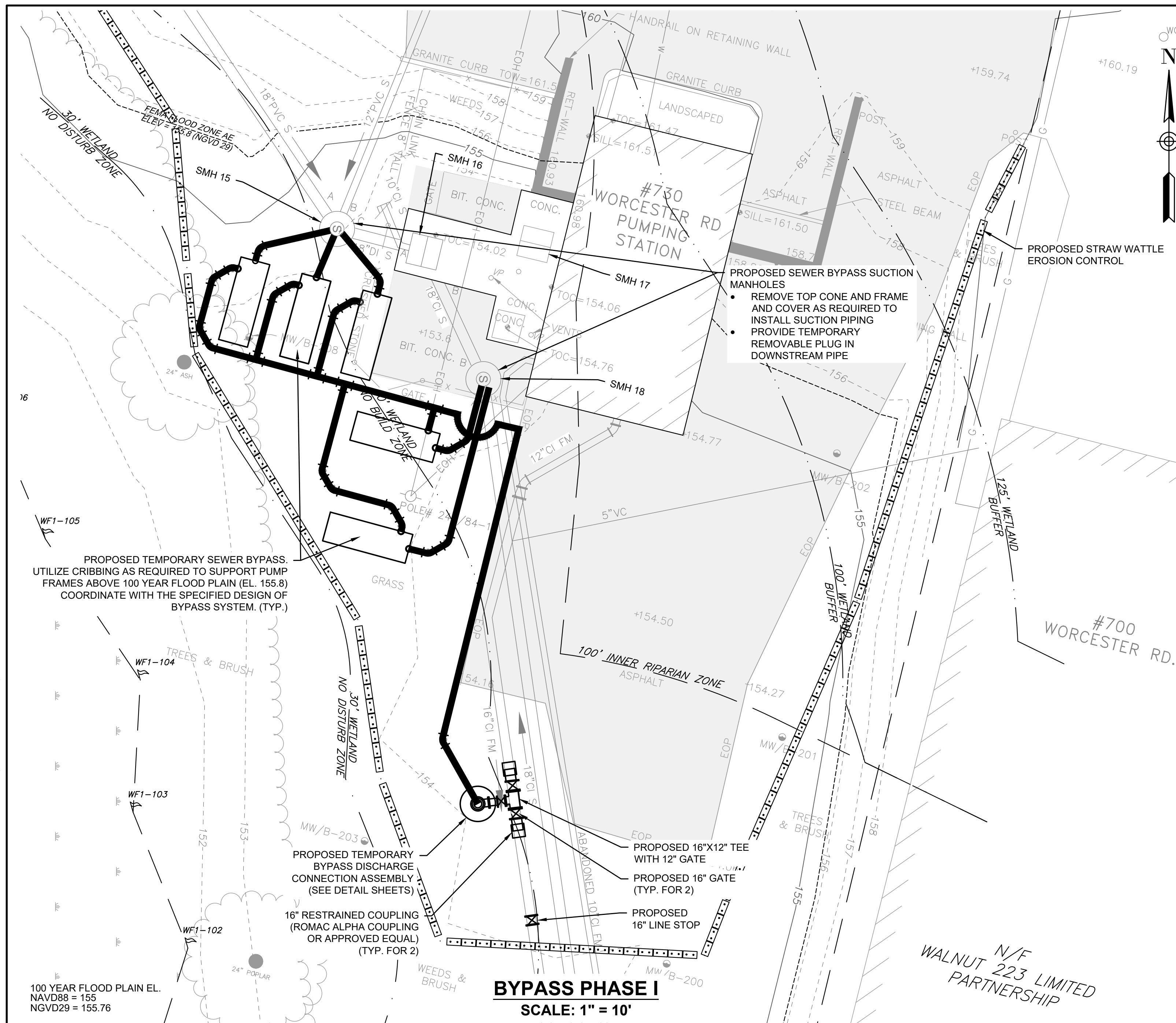
REGISTERED PROFESSIONAL PREPARED BY  
SUBCONSULTANT



TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
DEMOLITION, PROPOSED PIPING, & RESTORATION SITE PLANS

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. C-2

3/1/2023 1:43 PM J:\7385 - FRAMINGHAM WRF IMPROVEMENTS\DRAWINGFILES\PLANS\C-1 AND C-2 - EX CONDITIONS - PROP SITE - BYPASS - RESTORATION - PLANS.DWG (BETA STD BW.CTB)



**BYPASS NOTES**

- REFER TO SPECIFICATION SECTION 02149 MAINTAINING FLOW AND CONSTRUCTION NOTES.
- THE CONTRACTOR'S SEQUENCE OF CONSTRUCTION SHALL BE BASED ON THE SCHEDULE SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE OWNER AND ENGINEER AS SPECIFIED. HOWEVER, AS A GUIDE FOR BIDDERS IN THE PREPARATION OF THEIR BID AND FOR THE CONTRACTOR IN THE PREPARATION OF THEIR SCHEDULE, A RECOMMENDED SEQUENCE OF CONSTRUCTION IS PROVIDED ON THIS PLAN.
- THE ORDER OF CONSTRUCTION SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER AND ENGINEER; SUCH APPROVAL OR DIRECTION, HOWEVER, SHALL IN NO WAY RELIEVE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM THE WORK IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONSTRUCTION PLANS AND SPECIFICATIONS HAVE BEEN DEVELOPED TO MINIMIZE THE CONSTRUCTION IMPACTS ON THE OPERATION OF THE CITY'S WASTEWATER COLLECTION SYSTEM. THE CONTRACTOR'S SEQUENCE OF WORK MUST BE SPECIFICALLY DETAILED IN PRELIMINARY CRITICAL PATH METHOD SCHEDULE AS REQUIRED IN GENERAL CONDITIONS 2.03 B.1
- WHENEVER THE CONTRACTOR'S PROPOSED WORK WILL REQUIRE THE OWNER TO DEVIATE FROM THE NORMAL OPERATION OF THE WASTEWATER COLLECTION SYSTEM THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING. SUCH NOTIFICATION SHALL BE SUBMITTED ONE WEEK PRIOR TO THE PLANNED CONSTRUCTION ACTIVITY.

**BYPASS RECOMMENDED SEQUENCE OF CONSTRUCTION:**

**PHASE I: WET WELL AND PARSHALL FLUME CHAMBER MODIFICATIONS**

- COMPLETE TEST PIT TO CONFIRM ALIGNMENT AND DIAMETER OF EXISTING FORCE MAIN.
- INSTALL 16-INCH LINE STOP ON EXISTING FORCE MAIN.
- THE PROPOSED BYPASS CONNECTION SHALL BE COMPLETED BETWEEN THE HOURS OF 10:00 PM AND 5:00 AM
  - SYSTEM STORAGE IS NOT AVAILABLE TO COMPLETE THE WORK. PUMPER TRUCKS WITH SUPPLEMENTAL PUMPING AS REQUIRED TO MANAGE THE FLOWS AT THE FOLLOWING LOCATIONS. OFF-LOAD LOCATIONS MUST BE MANNED AND HAVE POLICE DETAILS AS REQUIRED.
    - WORCESTER ROAD SEWER PUMP STATION
      - ADDRESS: 730 WORCESTER ROAD; OFFLOAD SMH INTERSECTION OF ARTHUR AND BISHOP STREET.
    - WOODLAND SEWER PUMP STATION
      - ADDRESS: OFF FLORITA DRIVE; OFFLOAD SMH ON WATSON PLACE.
    - FENWICK SEWER PUMP STATION
      - ADDRESS: 474 CENTRAL STREET; OFFLOAD SMH ON WATSON PLACE.
  - COMPLETE INSTALLATION OF BYPASS CONNECTION AS SPECIFIED.
  - REMOVE LINE STOP AND RETURN FLOW TO FORCE MAIN.
    - PROVIDE REQUIRED CLEARANCE FOR INSTALLATION OF SUCTION PIPING.
    - PROTECT MANHOLE FROM INUNDATION OF RIVER WATER AS DETAILED ON CD-2.

**PHASE II: WET WELL AND PARSHALL FLUME CHAMBER MODIFICATIONS (CONTINUED)**

- INSTALL APPROVED TEMPORARY BYPASS PHASE I. BYPASS SYSTEM SHALL INCLUDE WINTER PROTECTION.
  - COMPLETE TESTING OF BYPASS SYSTEM AS SPECIFIED FOR UP TO 5 DAYS FOLLOWING ESTABLISHMENT OF CONTINUOUS AND RELIABLE OPERATION.
- COMPLETE REPAIRS/IMPROVEMENTS TO WET WELL AND PARSHALL FLUME CHAMBER INCLUDING BUT NOT LIMITED TO:
  - REMOVE INFILL FROM EXISTING WET WELL TO LIMITS SHOWN.
  - REPLACE EXISTING SUCTION PIPING FROM WET WELL TO EXISTING PUMPS INCLUDING 14-INCH DI PIPING, 14-INCH GATE VALVE AND APPURTENANCES.
  - REMOVE EXISTING LADDERS, VALVES, PIPING, AND APPURTENANCES AS SHOWN.
  - REPAIR ANY CRACKS AS SPECIFIED AND AS DIRECTED BY THE ENGINEER.
  - COMPLETE CONCRETE INFILL AS SHOWN AND SPECIFIED.
  - REMOVE AND REPLACE HATCH ON PARSHALL FLUME CHAMBER
  - COMPLETE EPOXY COATING OF WET WELL AND PARSHALL FLUME CHAMBER AS SPECIFIED.
    - CLEAN AND PREPARE SURFACE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
    - APPLY EPOXY AS SPECIFIED IN SECTION 09882.
    - COMPLETE TESTING OF EPOXY. REPAIR WHERE REQUIRED.
    - ALLOW EPOXY TO CURE PRIOR TO RETURNING FLOW.
- COMPLETE HYDRAULIC TEST OF WET WELL WITH POTABLE WATER. WATER TO BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- ONCE ALL SPECIFIED IMPROVEMENTS HAVE BEEN COMPLETED AND APPROVED, RETURN FLOW TO EXISTING PUMP STATION.

**PHASE II: PUMP STATION DEMOLITION AND REPLACEMENT**

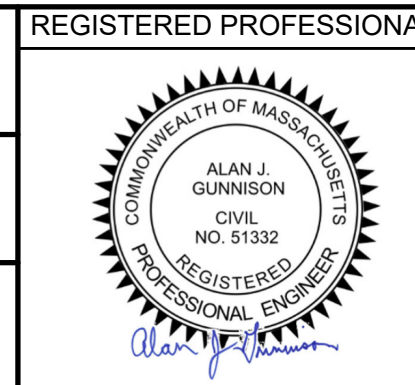
- MODIFY SUCTION WET WELL HATCH AS REQUIRED TO:
  - PROTECT MANHOLE FROM INUNDATION OF RIVER WATER AS DETAILED ON CD-2.
- INSTALL APPROVED TEMPORARY BYPASS PHASE II. BYPASS SYSTEM SHALL INCLUDE WINTER PROTECTION.
  - SYSTEM STORAGE IS NOT AVAILABLE TO COMPLETE THE WORK. PUMPER TRUCKS WITH SUPPLEMENTAL PUMPING AS REQUIRED TO MANAGE THE FLOWS AT THE SAME THREE LOCATIONS REQUIRED DURING INSTALLATION OF THE PHASE I BYPASS.
  - INSTALLATION OF TEMPORARY BYPASS PHASE II SHALL BE COMPLETED AT NIGHT BETWEEN THE HOURS OF 10:00 PM AND 5:00 AM.
  - COMPLETE TESTING OF BYPASS SYSTEM AS SPECIFIED FOR UP TO 5 DAYS FOLLOWING ESTABLISHMENT OF CONTINUOUS AND RELIABLE OPERATION.
- DEMOLISH AND REBUILD PUMP STATION AS SPECIFIED.
- COMPLETE REQUIRED TESTING OF NEW PUMP STATION.
- ONCE THE NEW PUMP STATION HAS BEEN TESTED AND APPROVED, REMOVE BYPASS PHASE II.
- INSTALL NEW HATCH AS SPECIFIED.

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
RTG

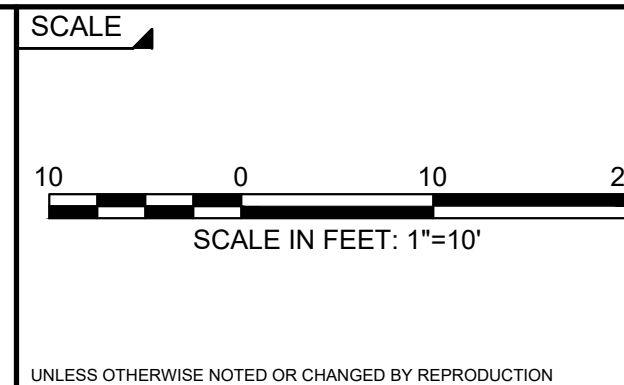
DESIGNED BY:  
AJG

CHECKED BY:  
JRD



REGISTERED PROFESSIONAL  
PREPARED BY

SUBCONSULTANT



TITLE

**Worcester Road Sewer Pumping Station Replacement**

BYPASS PLANS - PHASE I & PHASE II

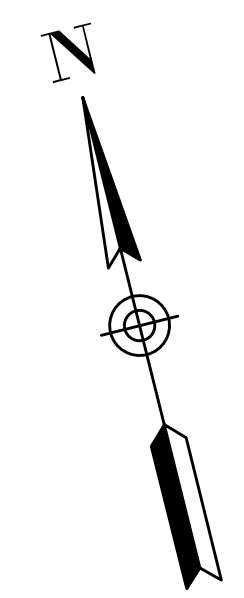
BETA JOB NO. 7385

ISSUE DATE JANUARY 2023

SHEET NO. C-3

1931 SHLO

# WORCESTER ROAD ← (ROUTE 9 WESTBOUND)



193+0

194+0

CONC. BARRIER

195+0

1931 SHLO BASELINE

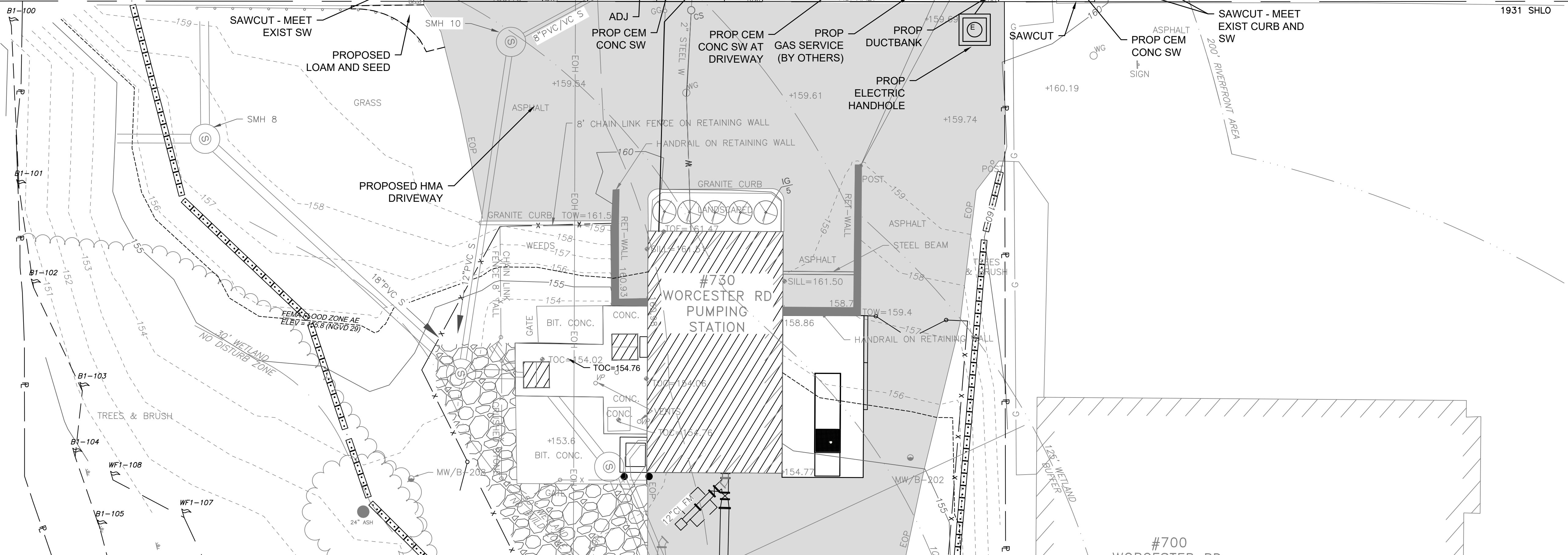
196+0

# WORCESTER ROAD (ROUTE 9 EASTBOUND) →

1931 SHLO

1931 SHLO

# SUDBURY RIVER



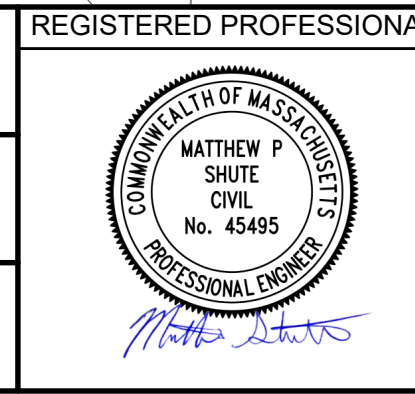
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NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

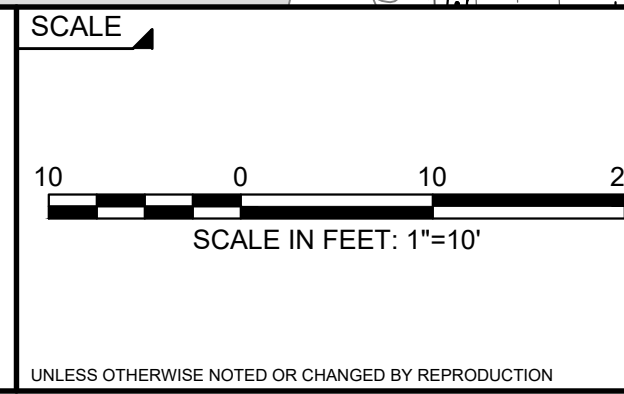
DRAWN BY:  
RTG

DESIGNED BY:  
AJG

CHECKED BY:  
JRD



REGISTERED PROFESSIONAL  
SUBCONSULTANT



TITLE

## Worcester Road Sewer Pumping Station Replacement

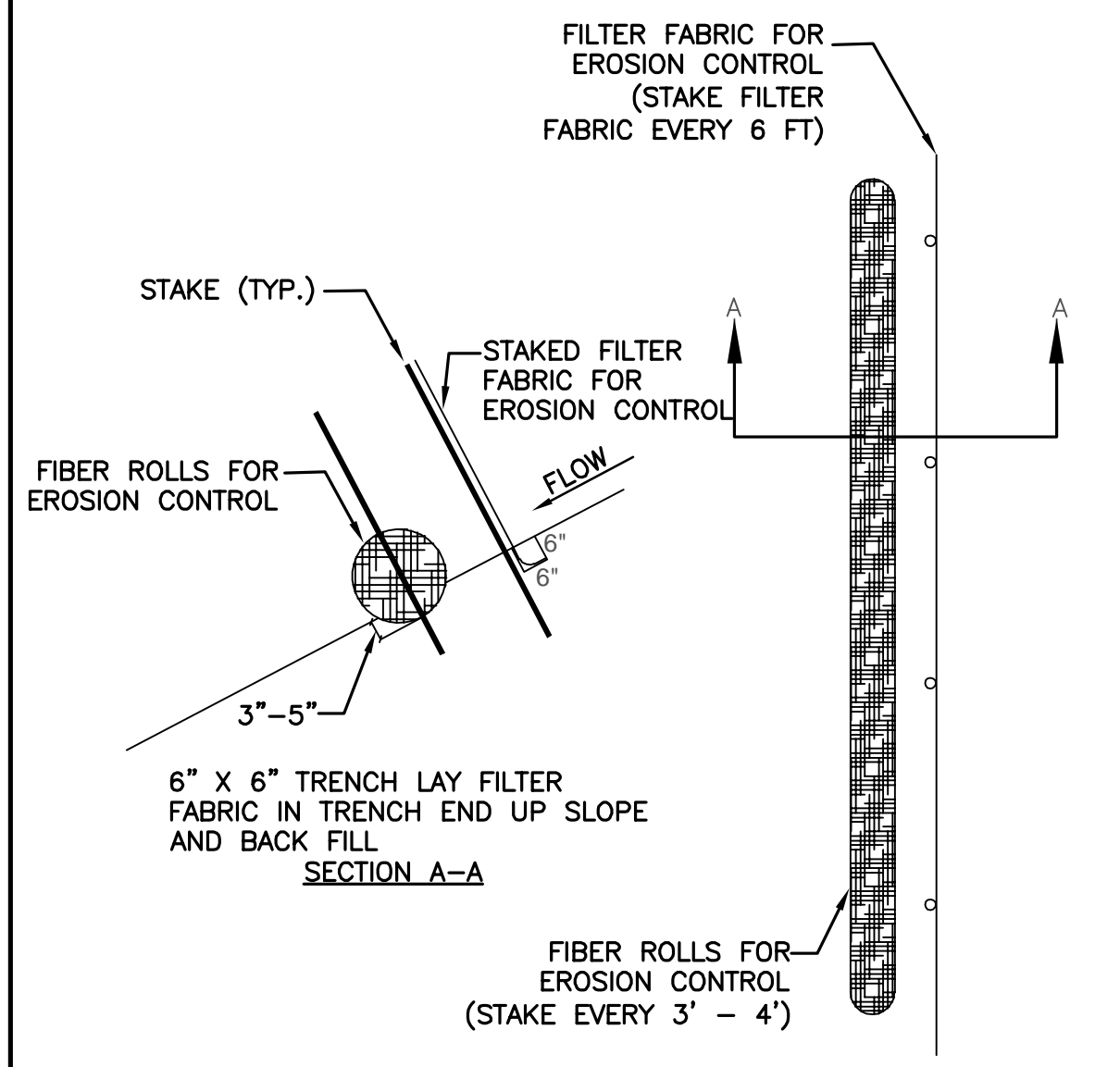
### SIDEWALK & CURB MODIFICATION PLAN

BETA JOB NO. 7385

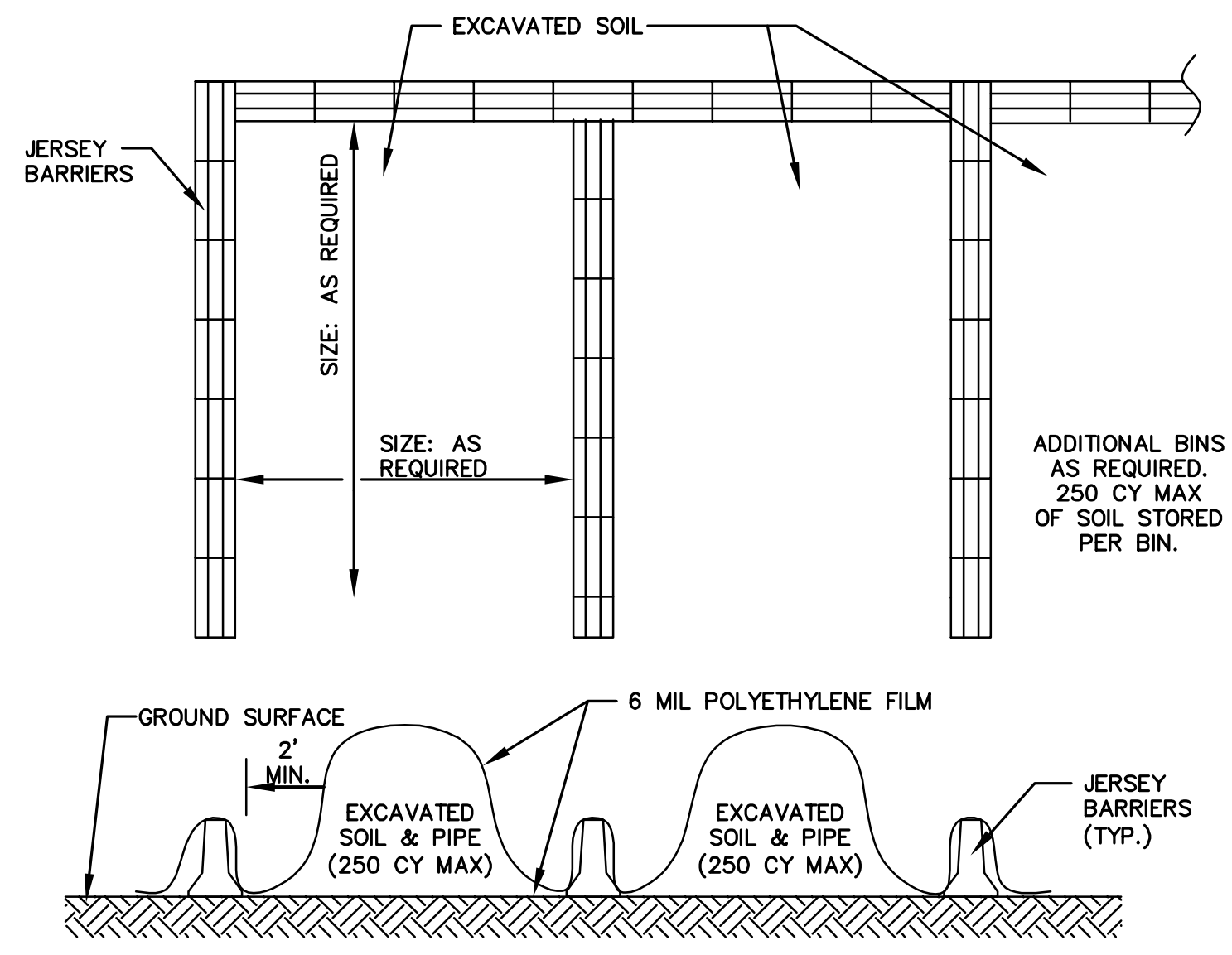
ISSUE DATE JANUARY 2023

SHEET NO. C-4

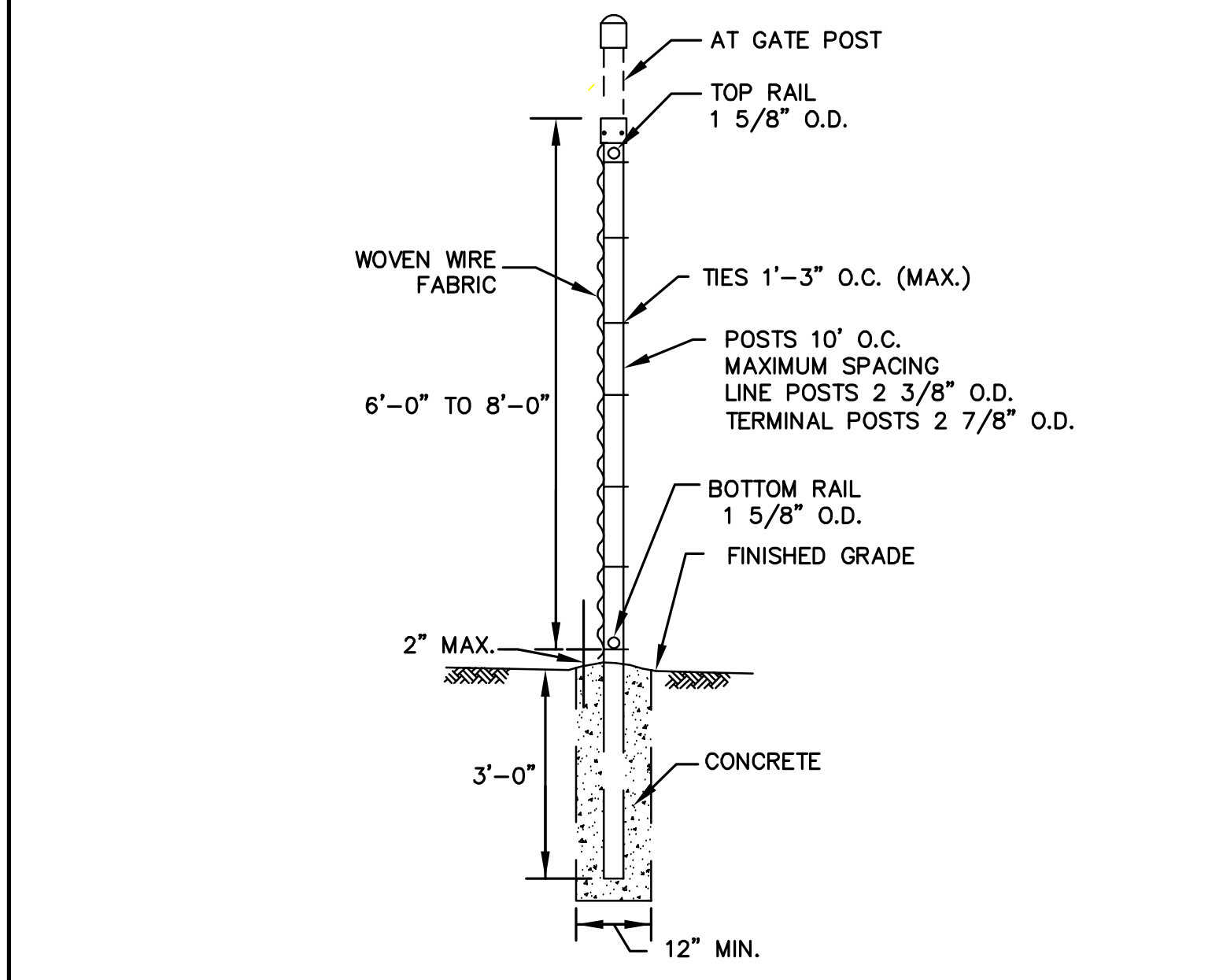
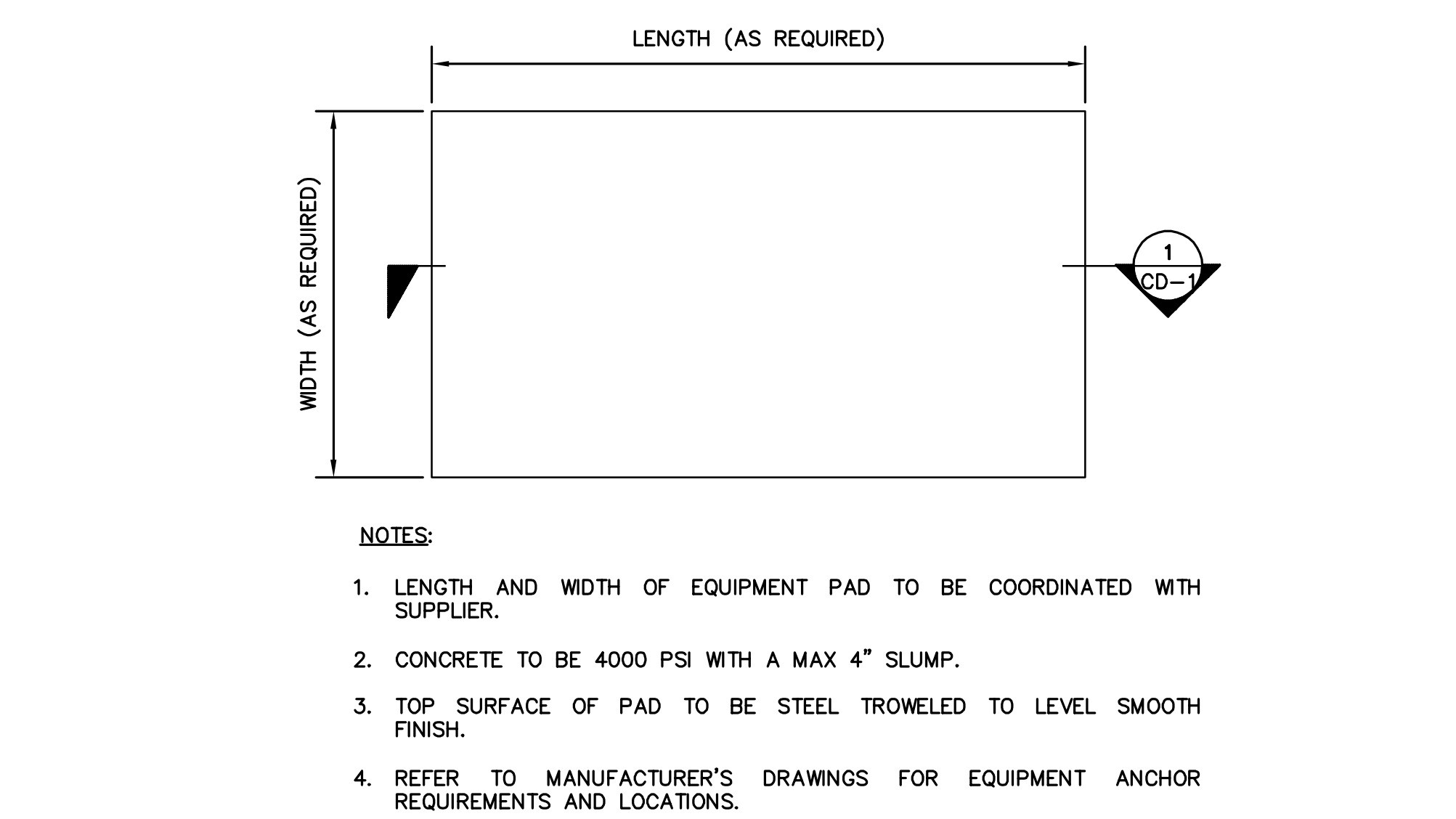
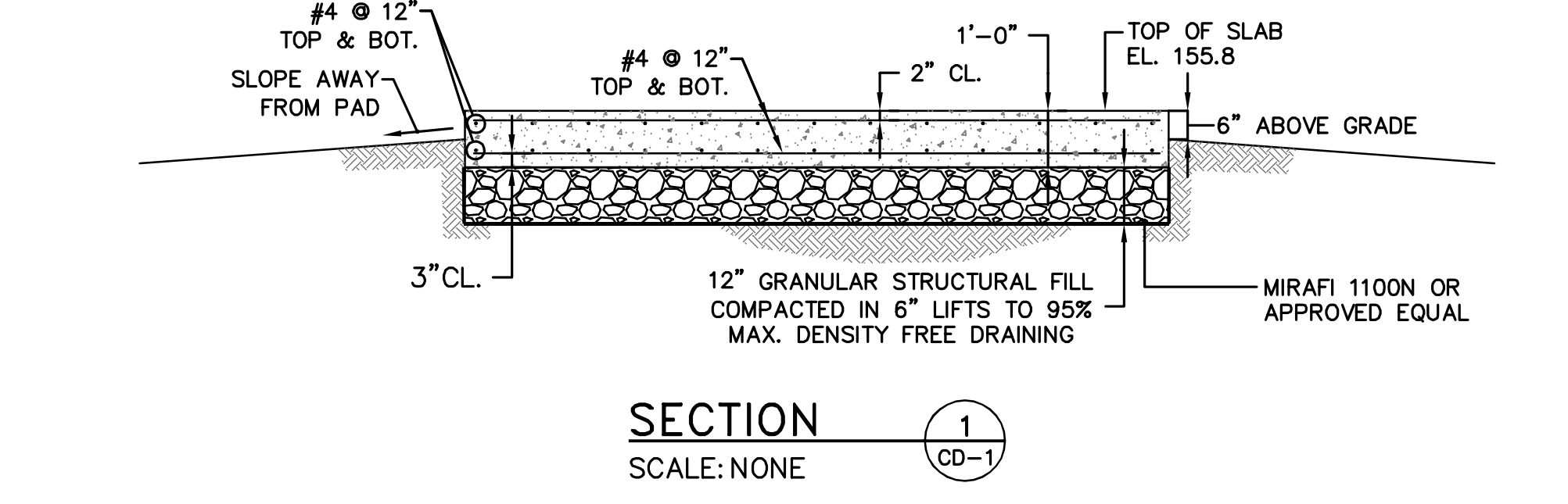
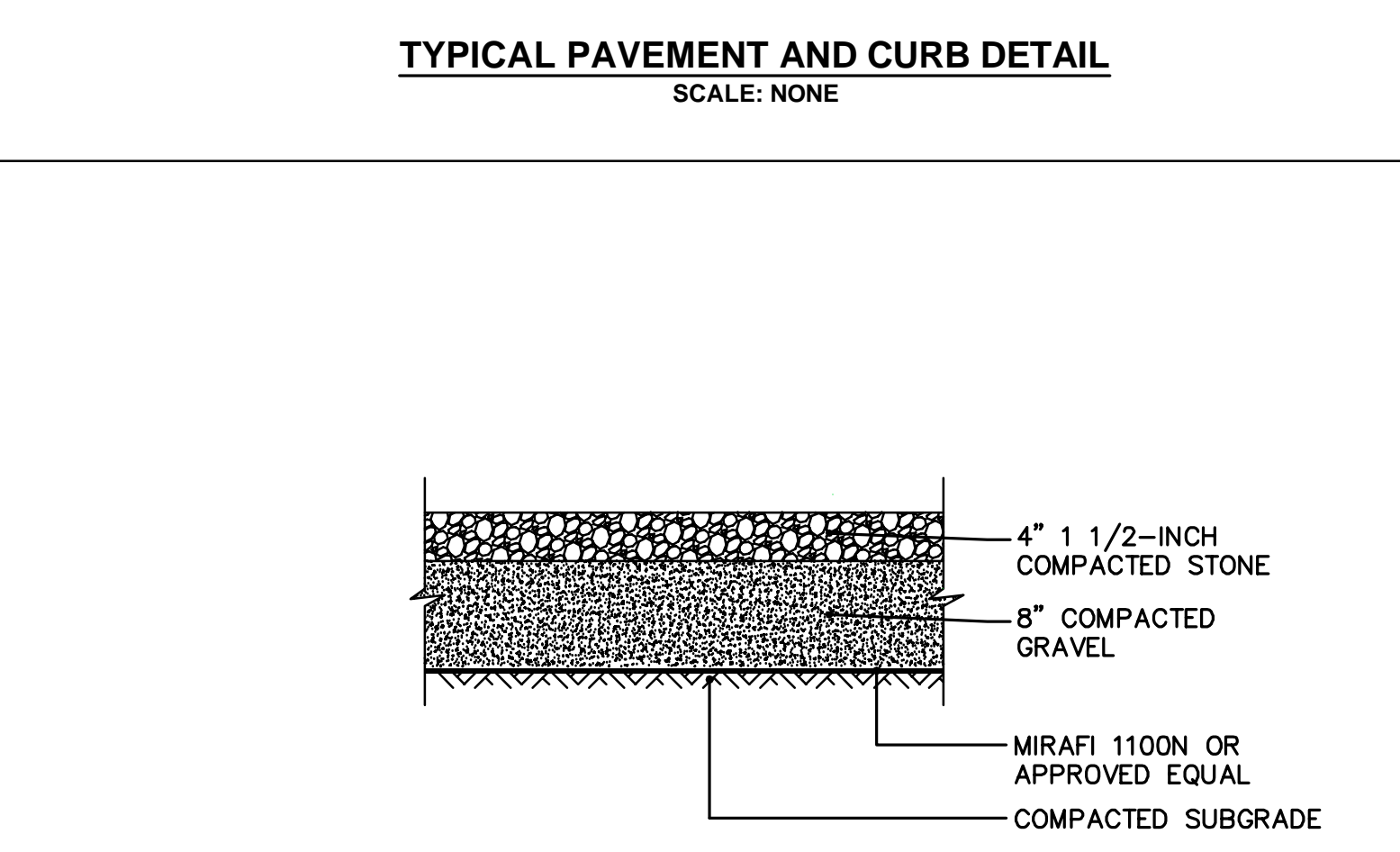
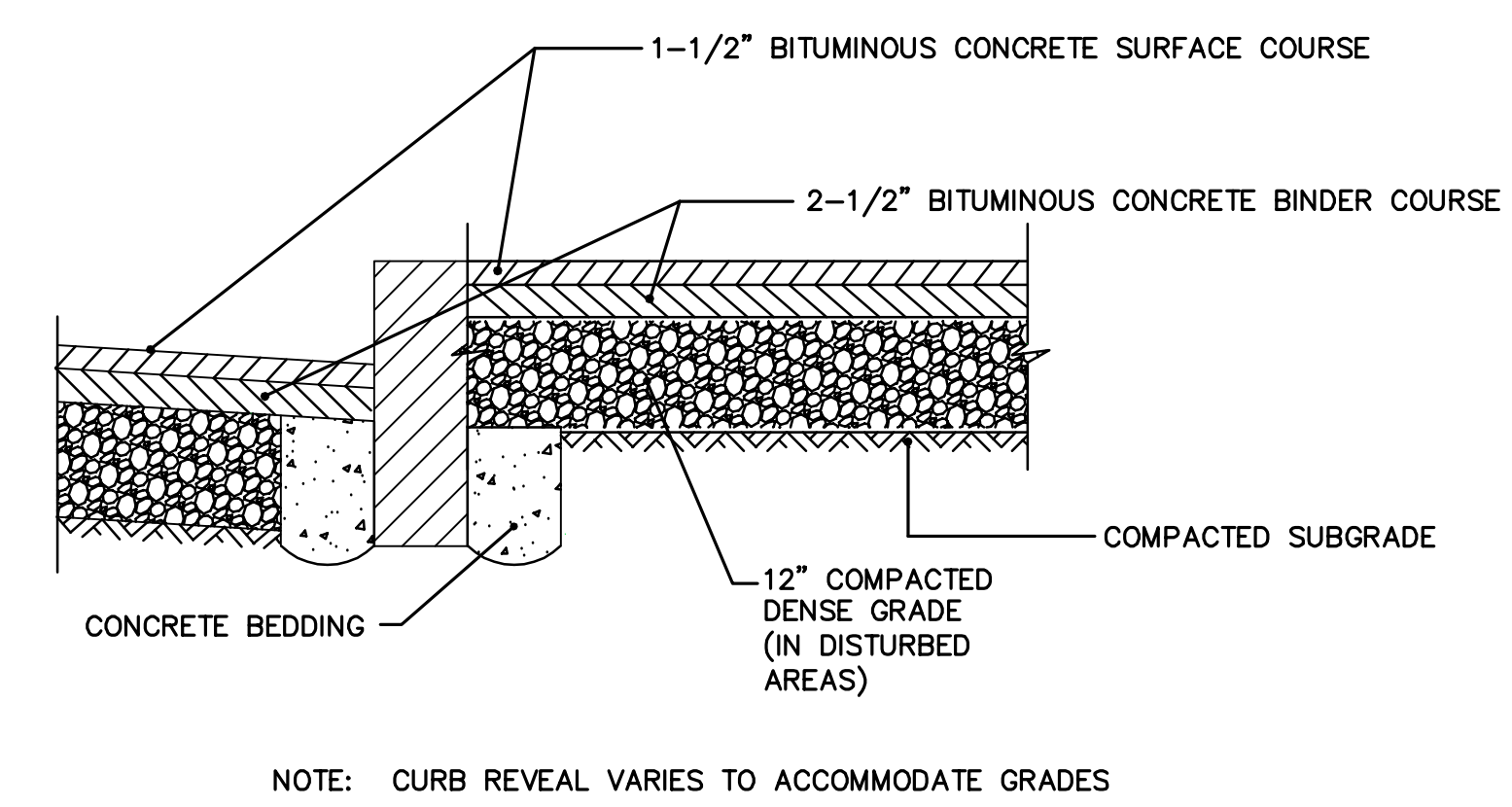
3/6/2023 11:11 AM \\BETA-INC.COM\PROJECTS\DRAWINGFILES\PLANS\CD-1 THRU CD-3 CONSTRUCTION DETAILS.DWG (BETA STB.BW.STB)



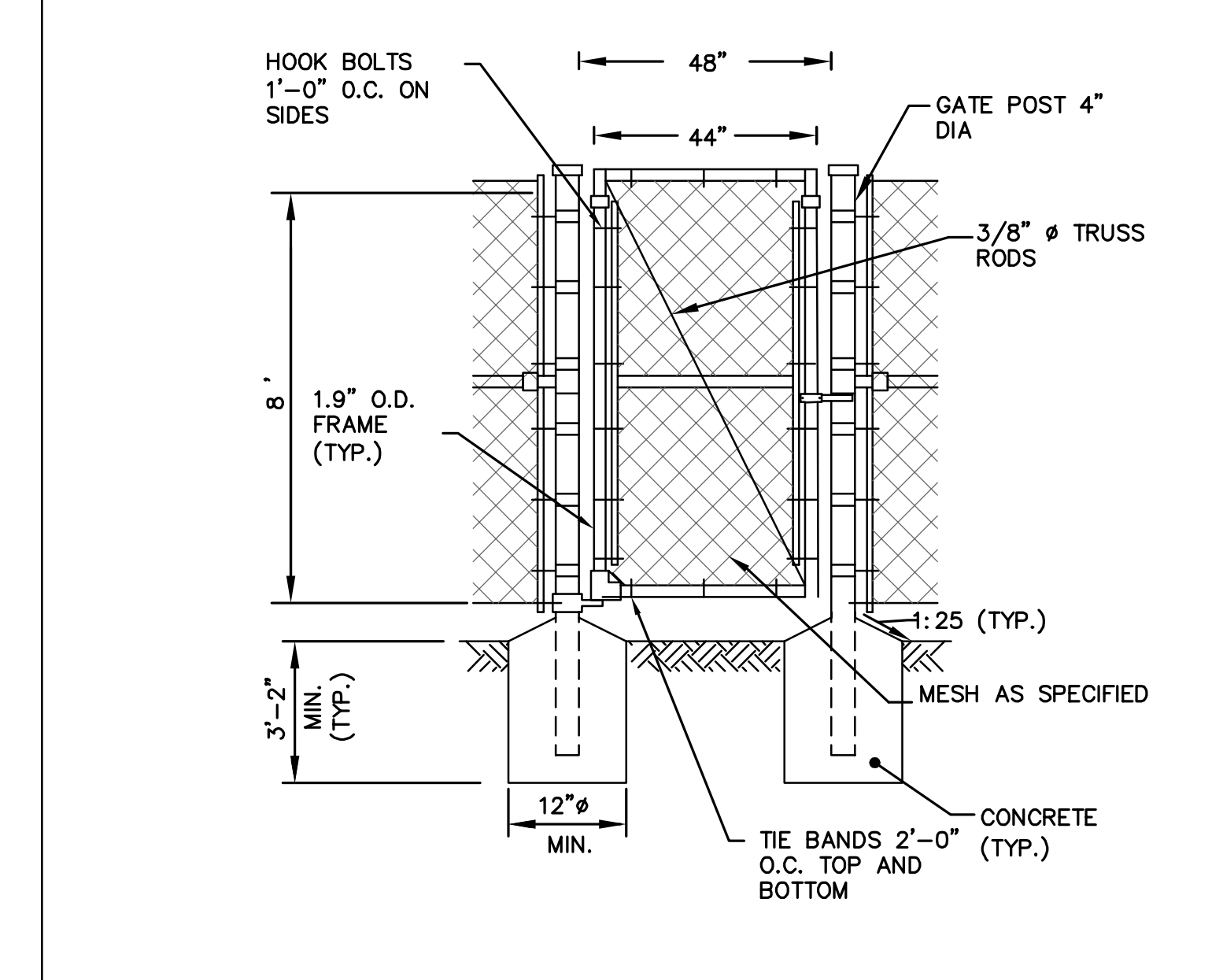
- NOTES:**
1. COMPOST FILTER TUBES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT WATTLES.
  2. COMPOST FILTER TUBES AND SILT FENCE SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR REBARS DRIVEN THROUGH THE WATTLES. THE FIRST STAKE IN EACH WATTLE SHALL BE ANGLED TOWARDS PREVIOUSLY LAID WATTLE TO FORCE WATTLE TOGETHER.
  3. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
  4. COMPOST FILTER TUBES SHALL BE INSTALLED AND REMOVED IN ACCORDANCE WITH CITY OF FRAMINGHAM CONSERVATION COMMISSION'S REQUIREMENTS.



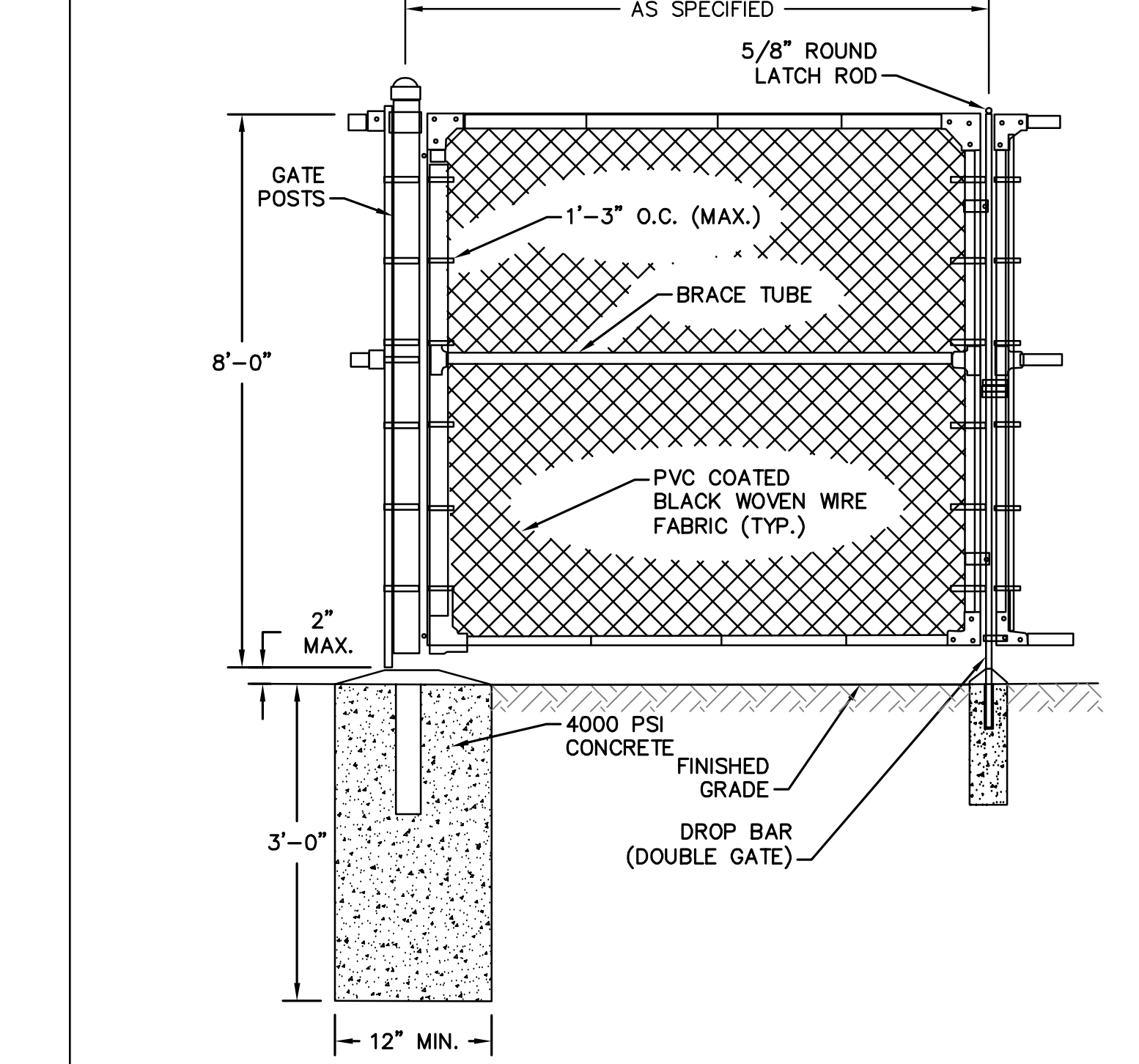
- NOTES:**
1. THE CONTRACTOR SHALL PROVIDE, INSTALL, AND MAINTAIN POLYETHYLENE SHEETING & JERSEY BARRIERS AS SHOWN AND AS REQUIRED BY SPECIFICATION SECTION 02080.
  2. PERIODICALLY (AT LEAST WEEKLY) INSPECT THE STOCKPILES TO INSURE THAT THE LINER AND COVER ARE INTACT AND SECURELY ANCHORED.
  3. SWEEP AND DISPOSE OF ALL RESIDUAL DIRT, DUST AND DEBRIS FROM THE STAGING AREA AFTER COMPLETION OF THE WORK.
  4. JERSEY BARRIERS SHALL BE PLACED AS SHOWN OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE UNTIL IT IS NO LONGER NEEDED FOR THE PURPOSE INTENDED.
  5. ALL POLYETHYLENE SHALL BE REMOVED AND PROPERLY DISPOSED OF.



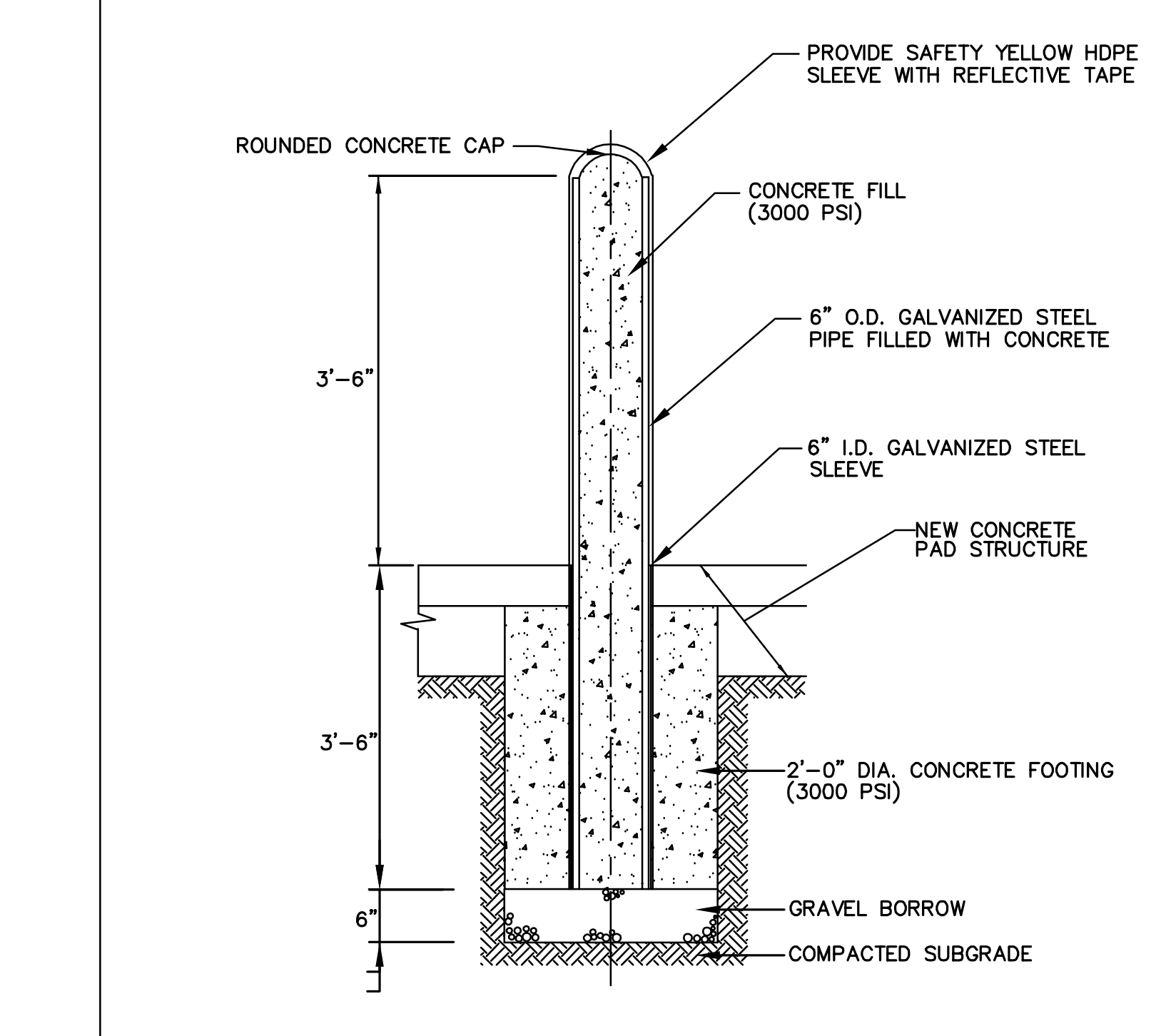
- NOTES:**
1. SEE SPECIFICATION SECTION 02831 CHAIN LINK FENCE FOR ADDITIONAL REQUIREMENTS.



- NOTES:**



- NOTES:**



- NOTES:**

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: PAN  
DESIGNED BY: AJG  
CHECKED BY: JRD

REGISTERED PROFESSIONAL: ALAN J. GUNNISON, CIVIL ENGINEER, NO. 91332

PREPARED BY: BETA, www.BETA-inc.com

SUBCONSULTANT

SCALE: AS SHOWN

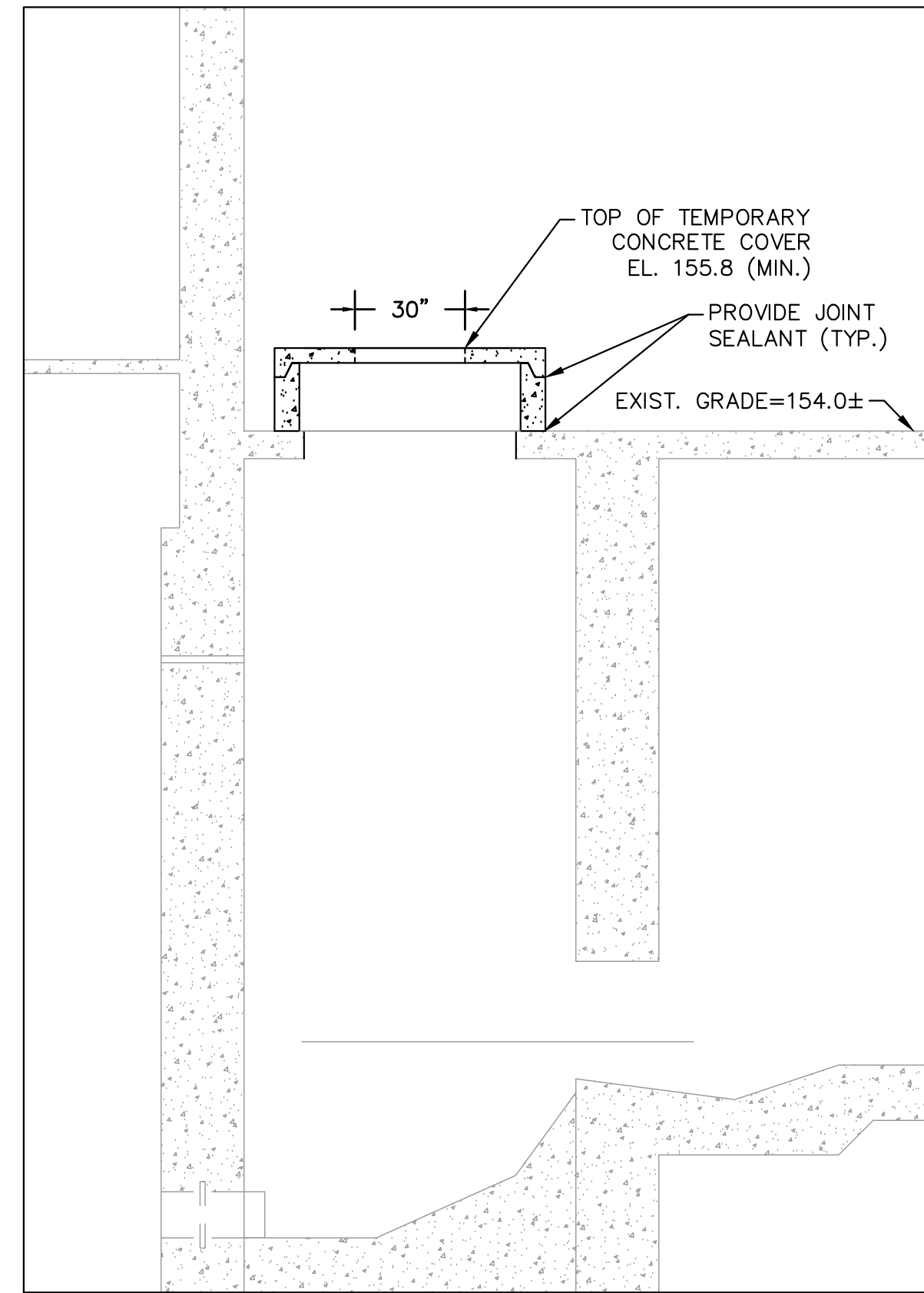
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**Worcester Road Sewer Pumping Station Replacement**

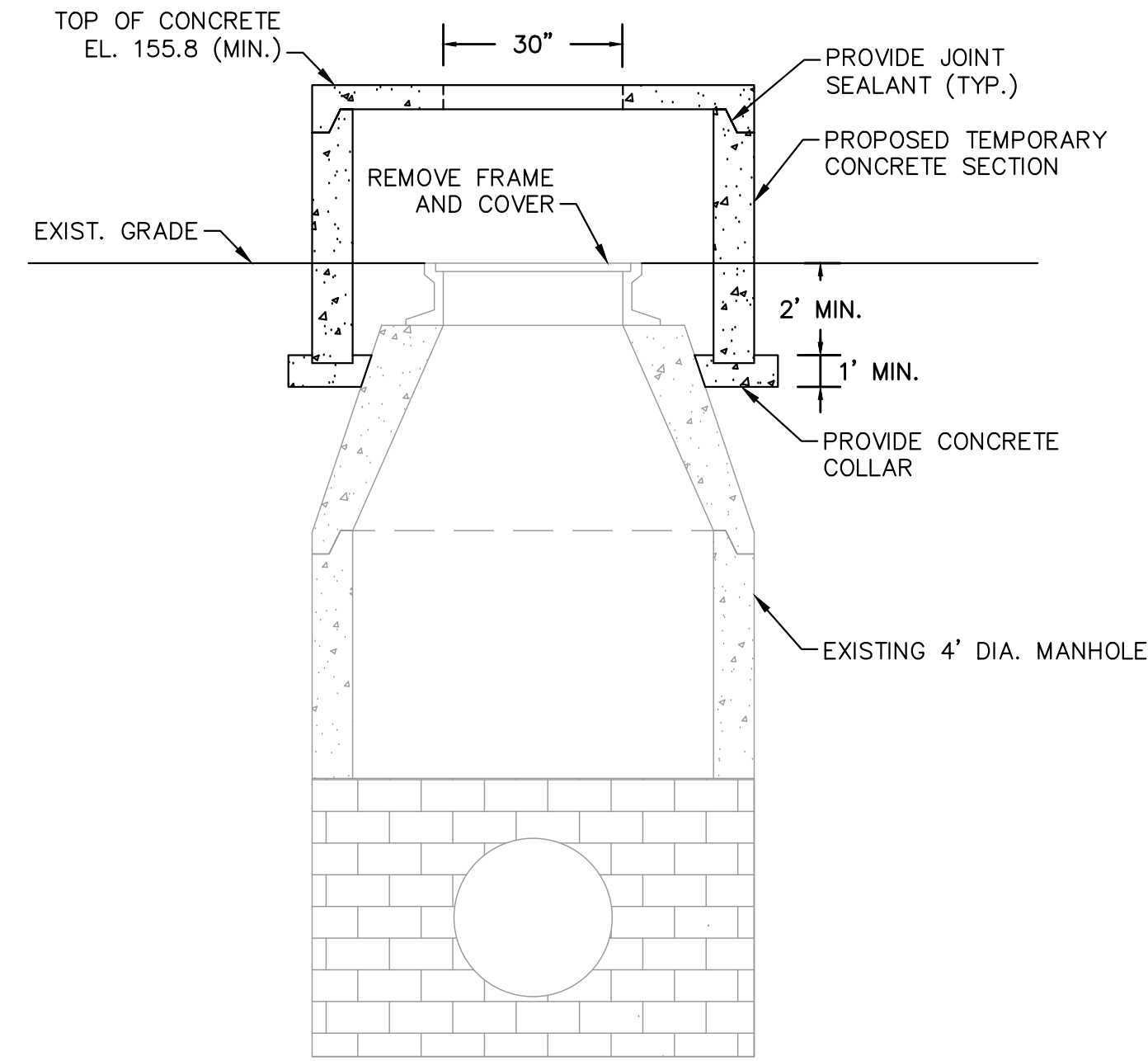
CONSTRUCTION DETAILS - 1

BETA JOB NO. 7385  
ISSUE DATE: JANUARY 2023  
SHEET NO. CD-1

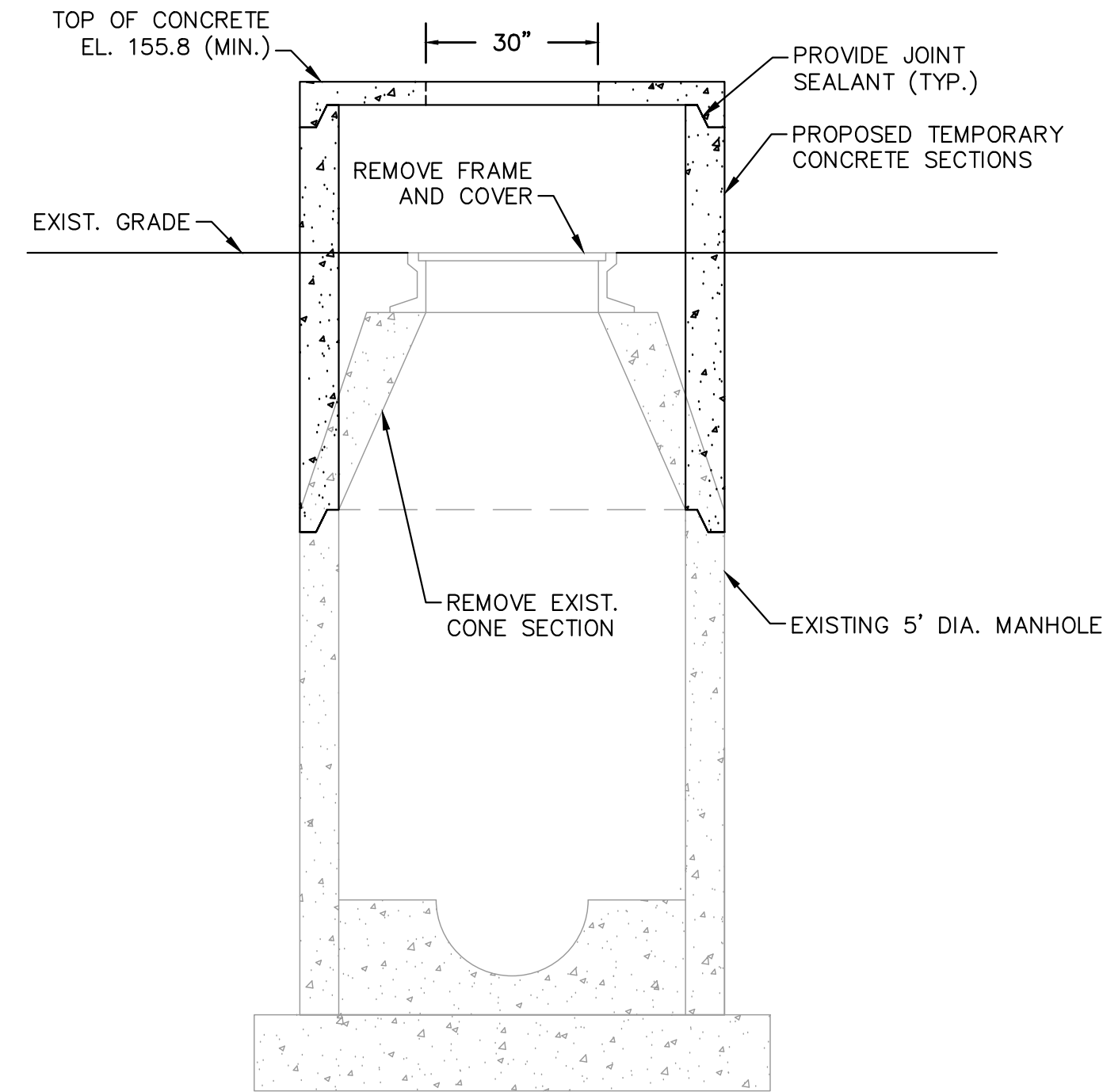




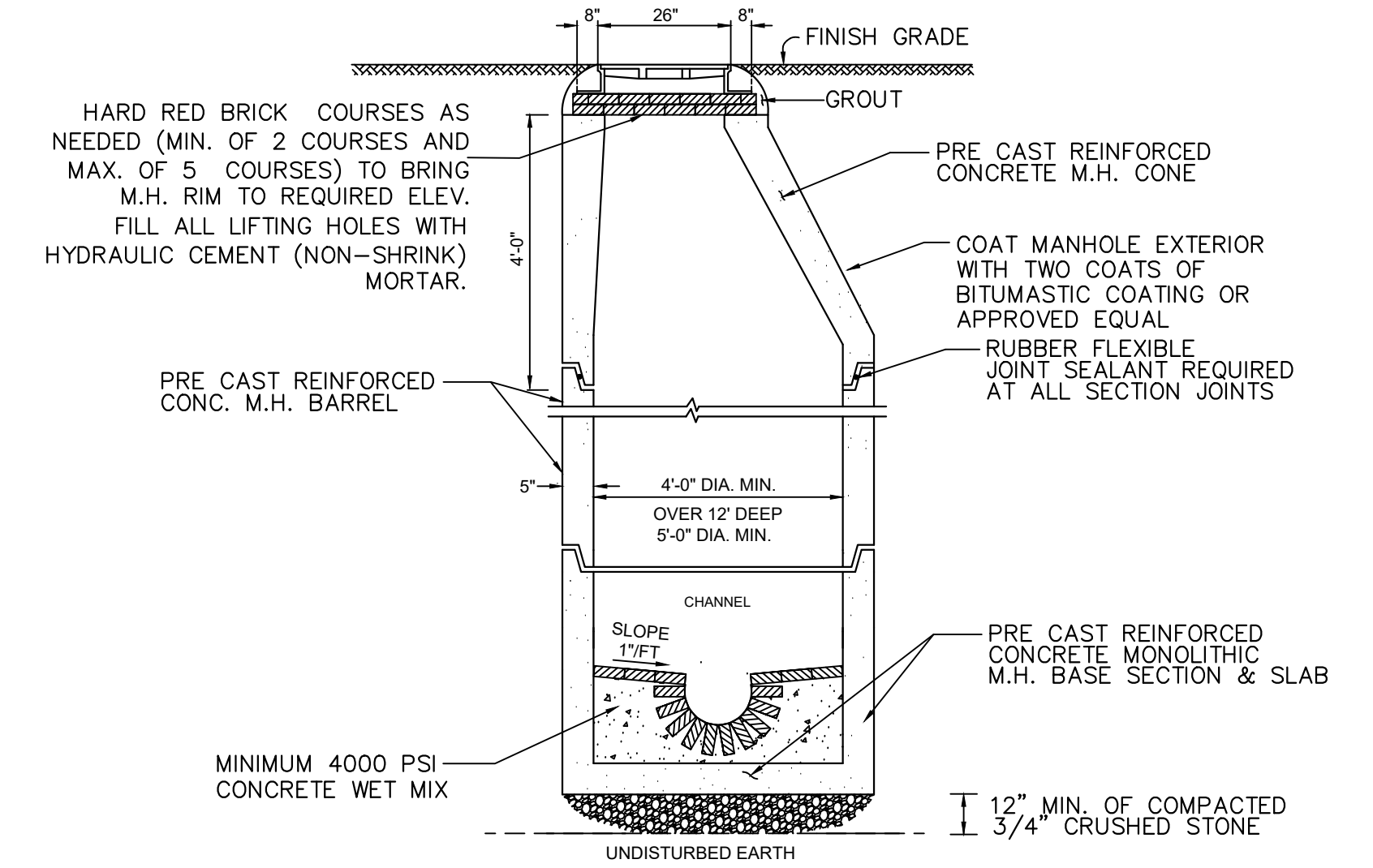
**TEMPORARY HATCH MODIFICATION DETAIL**  
SCALE: NONE



**PHASE 1 4-FOOT MANHOLE MODIFICATION**  
SCALE: NONE

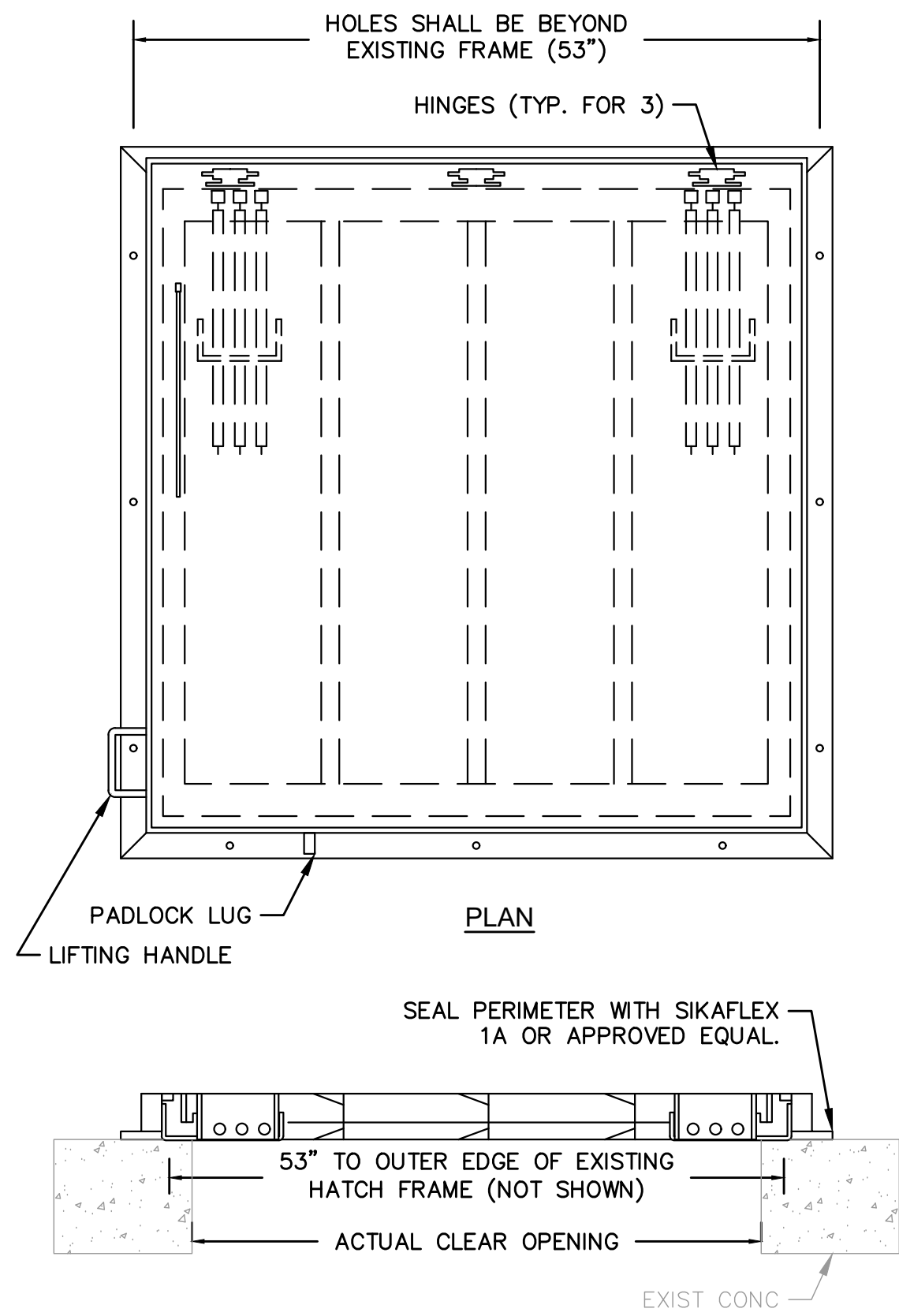


**PHASE 1 5-FOOT MANHOLE MODIFICATION**  
SCALE: NONE

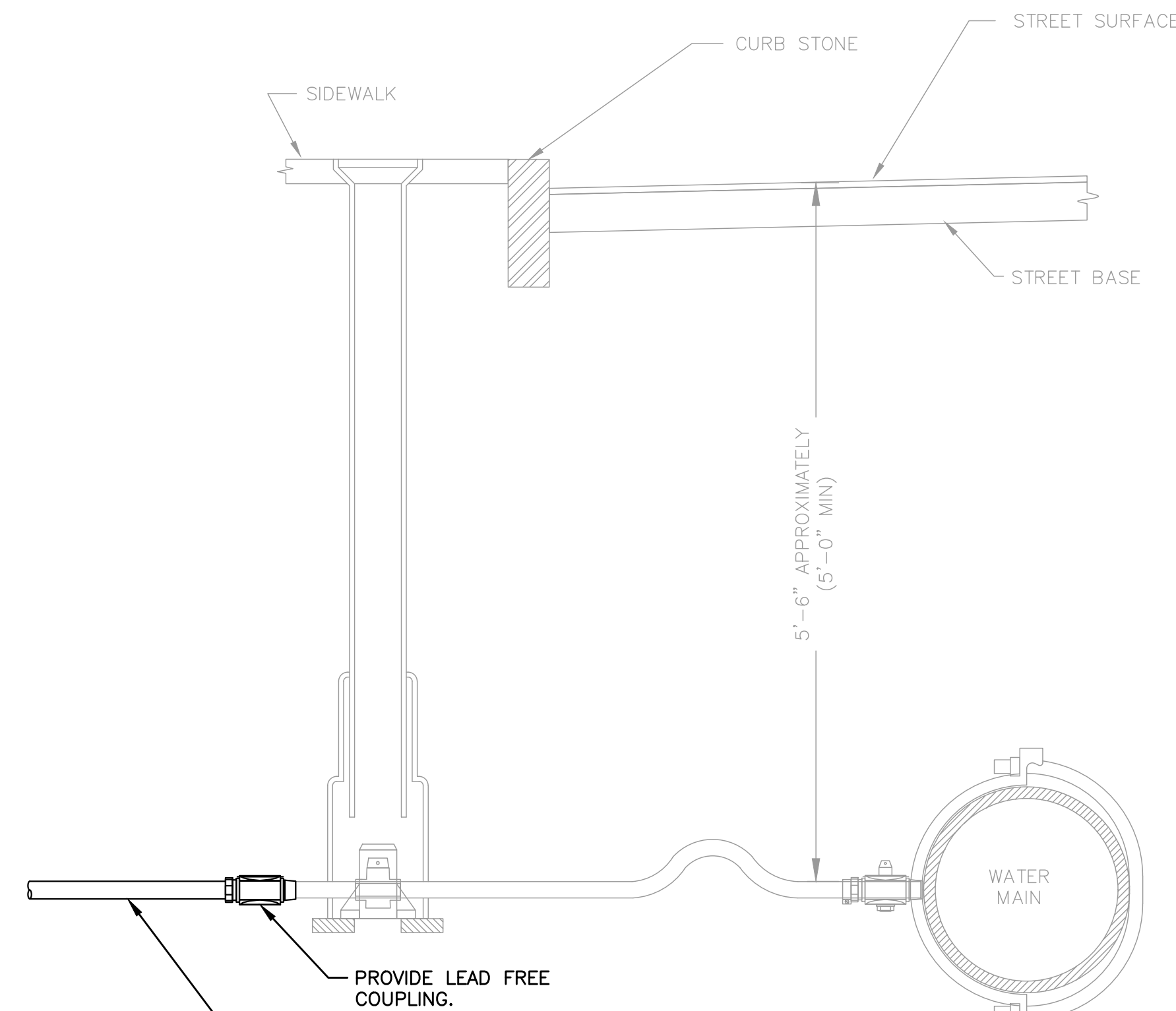


- NOTES:**
1. TYPICAL SANITARY MANHOLE TO BE 4 FEET IN DIAMETER.
  2. 5'-0" DIAMETER FOR ALL MANHOLE DEPTHS GREATER THAN 12 FEET OR WHEN ORDERED BY THE ENGINEER.
  3. 6" MIN. WALL THICKNESS AND 7" MIN. BASE THICKNESS WITH 5'-0" DIAMETER MANHOLES.
  4. OUTER EDGE OF BRICK TABLE TO BE AT ELEVATION OF CROWN OF PIPE.
  5. DESIGN LOAD - HS20.
  6. ALL INVERTS SHALL BE 4,000 PSI CEMENT CONCRETE IN VOID AREAS AND RED SEWER BRICK CONSTRUCTION.
  7. INVERTS SHALL NOT BE BUILT ABOVE GRADE. ALL INVERTS SHALL BE BUILT IN PLACE AFTER ALL PIPES HAVE BEEN INSTALLED.

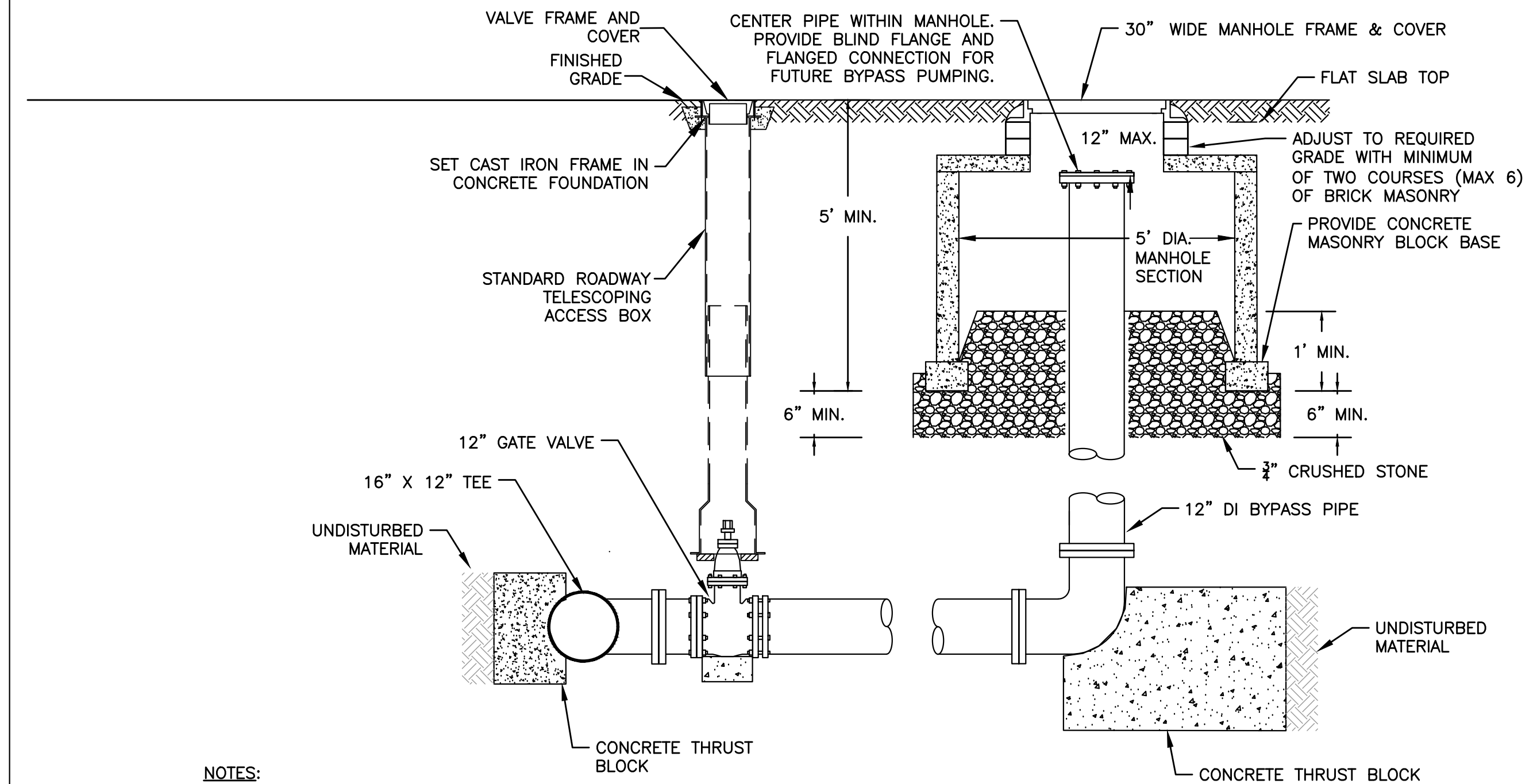
**TYPICAL SEWER MANHOLE**  
SCALE: NONE



**HATCH DETAIL**  
SCALE: NONE



**WATER SERVICE CONNECTION**  
SCALE: NONE



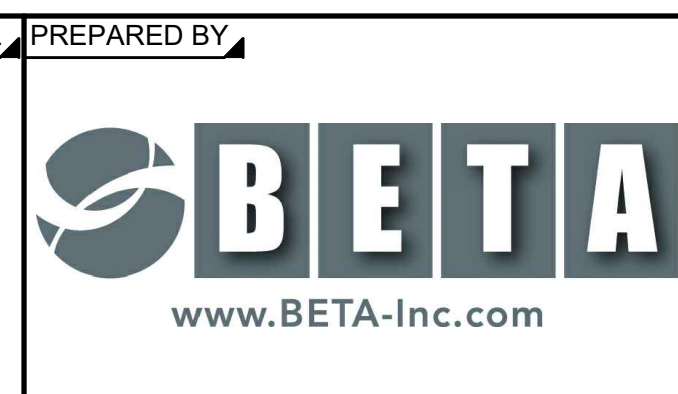
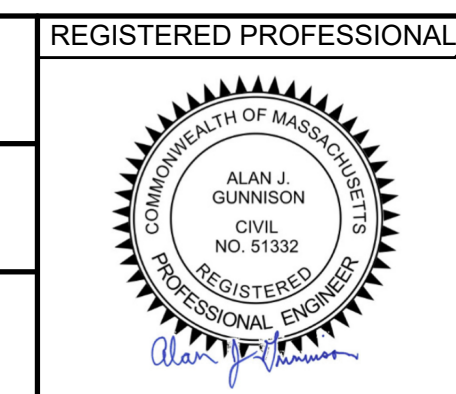
- NOTES:**
1. ONCE INSTALLED AND ACCEPTED, THE BYPASS DISCHARGE CONNECTION WILL BECOME A PERMANENT PART OF FRAMINGHAM'S WASTEWATER COLLECTION SYSTEM. THE CITY OF FRAMINGHAM MAINTAINS AND OPERATES ALL VALVES, PIPING, AND APPURTENANCES THAT ARE PART OF THE COLLECTION SYSTEM.
  2. DISCHARGE CONNECTION WILL BE A 16" X 12" TEE AND A 12" GATE VALVE. SEE SPECIFICATION SECTIONS 02618 AND 02619 FOR REQUIREMENTS.
  3. THRUST BLOCKS SHALL BE 4000 PSI CONCRETE BETWEEN THE PIPE AND UNDISTURBED MATERIAL IN ACCORDANCE WITH DUCTILE IRON PIPE RESEARCH ASSOCIATION THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE.
  4. POLYPROPYLENE SHEETING SHALL BE PLACED AROUND FITTINGS PRIOR TO POURING CONCRETE IN ACCORDANCE WITH AWWA C105.

**PERMANENT WASTEWATER BYPASS CONNECTION**  
SCALE: NONE

3/17/2023 1:44 PM J:\7385 - FRAMINGHAM WRFPS IMPROVEMENTS\DRAWINGFILES\PLANS\SET\CD-1 THRU CD-3 CONSTRUCTION DETAILS.DWG (BETA STD BW.CTB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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PAN  
DESIGNED BY:  
AJG  
CHECKED BY:  
JRD

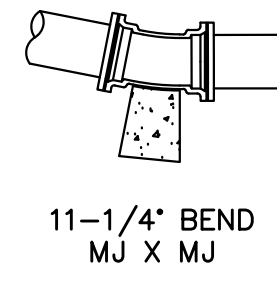
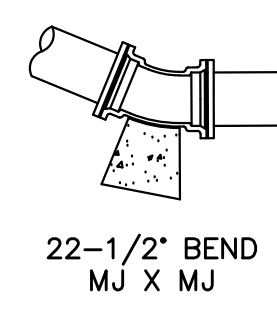
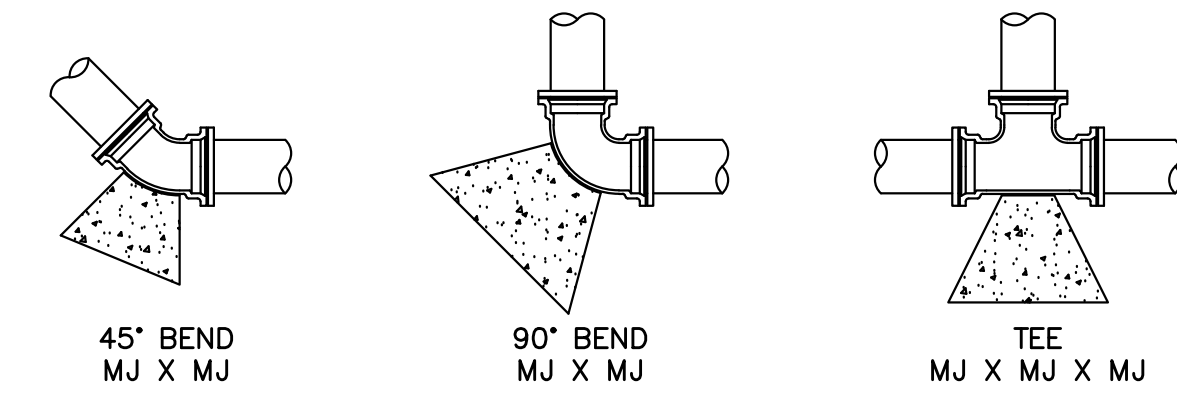


PREPARED BY:  
SUBCONSULTANT:  
SCALE:  
AS SHOWN

TITLE:  
**Worcester Road Sewer Pumping Station Replacement**  
CONSTRUCTION DETAILS - 2

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. CD-2

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION



PIPE SIZE	MINIMUM SURFACE AREA (S.F.) OF CONCRETE AGAINST UNDISTURBED EARTH				
	11 1/4°	22 1/2°	45°	90°	TEE
6"	0.5	1.1	2.1	3.9	2.8
8"	0.9	1.8	3.6	6.6	4.7
12"	1.8	3.7	7.2	13.2	9.3
16"	3.0	6.0	11.8	21.7	15.4
24"	4.5	8.9	17.4	32.0	22.7

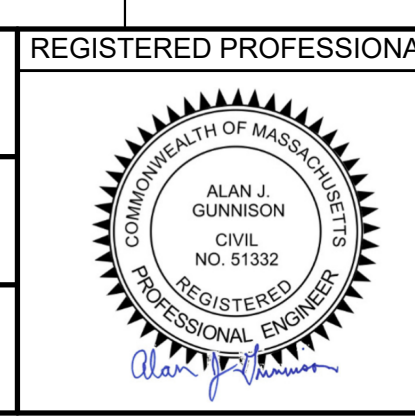
- NOTES:**
1. PORTLAND TYPE II CEMENT CONCRETE MEETING SPECIFICATION SECTION 03300 AND SHALL BE PLACED SO AS TO NOT INTERFERE WITH THE JOINTS OF THE FITTING. CONCRETE SHALL BE 4000 PSI.
  2. POLYPROPYLENE SHEETING SHALL BE PLACED AROUND FITTINGS PRIOR TO POURING CONCRETE IN ACCORDANCE WITH AWWA C105.
  3. ALL JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH SPECIFICATION SECTION 02618.

**THRUST BLOCK BEARING AREAS**  
SCALE: NONE

3/1/2023 1:44 PM J:\7385 - FRAMINGHAM WRFPS IMPROVEMENTS\DRAWINGFILES\PLANS\CD-1 THRU CD-3 CONSTRUCTION DETAILS.DWG (BETA STD BW.CTB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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SUBCONSULTANT

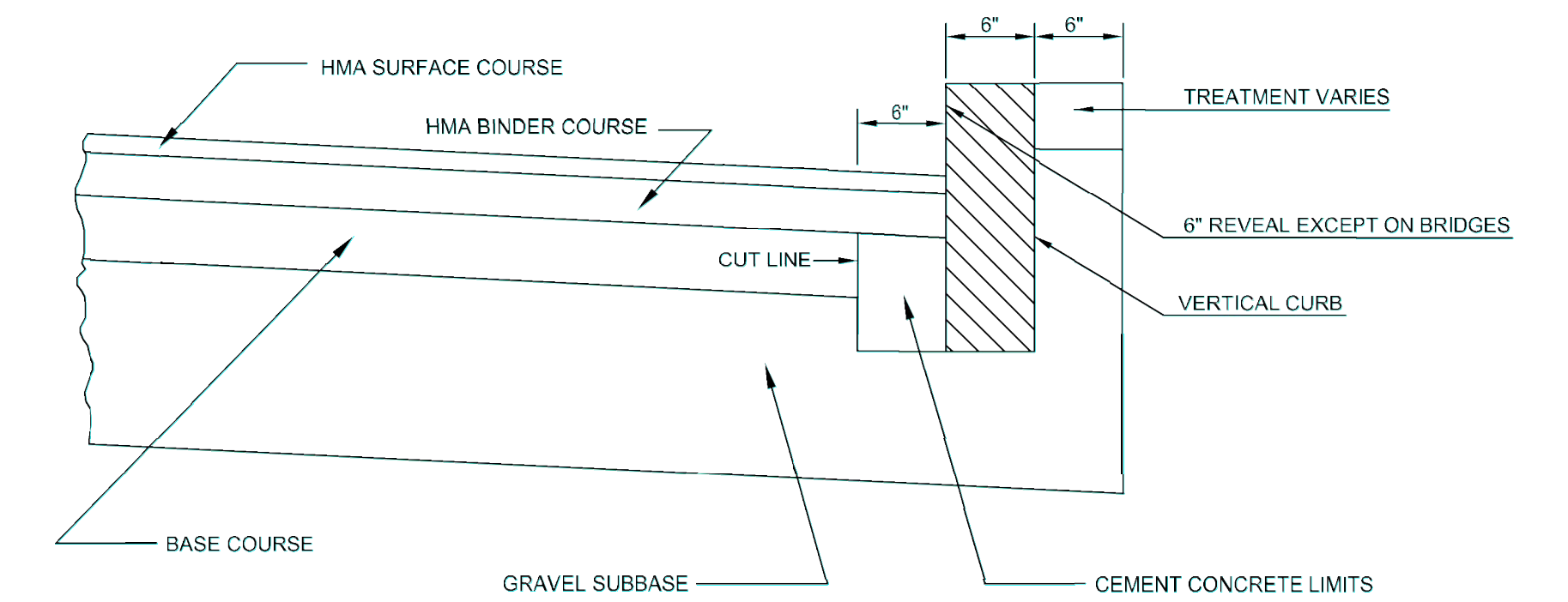
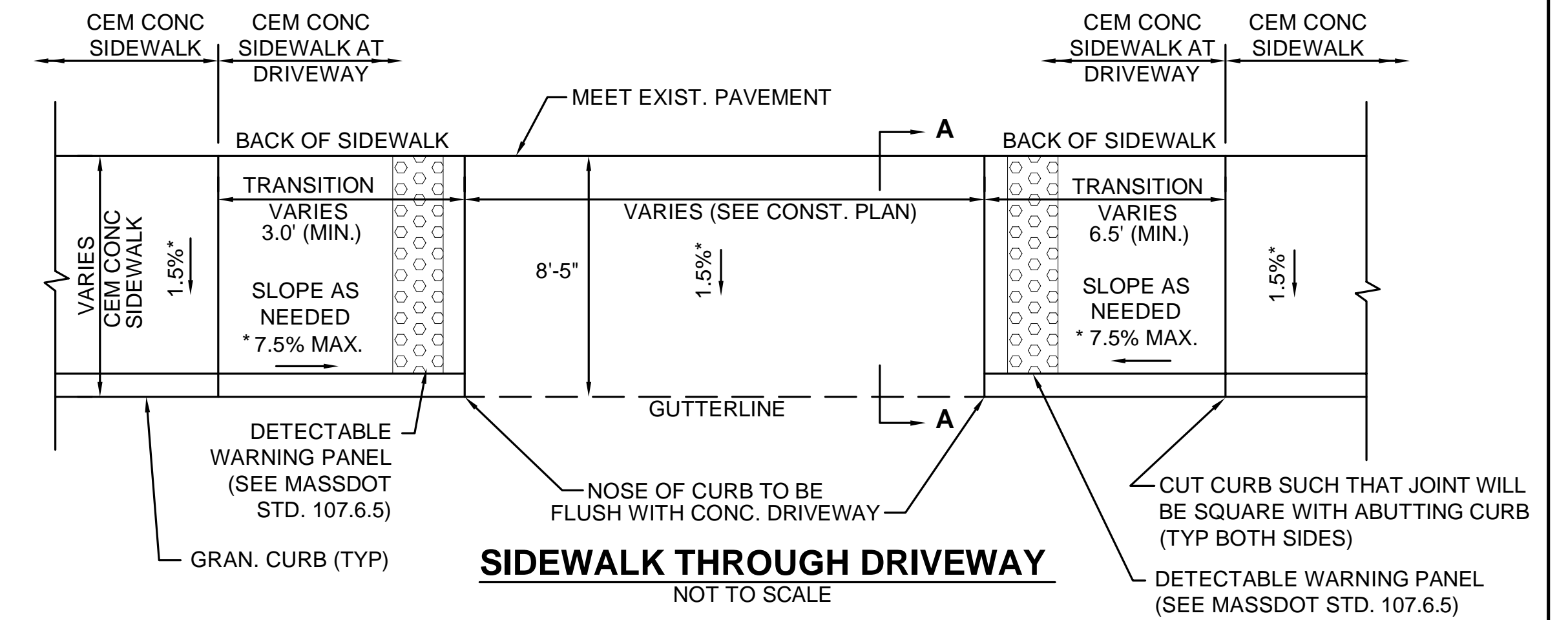
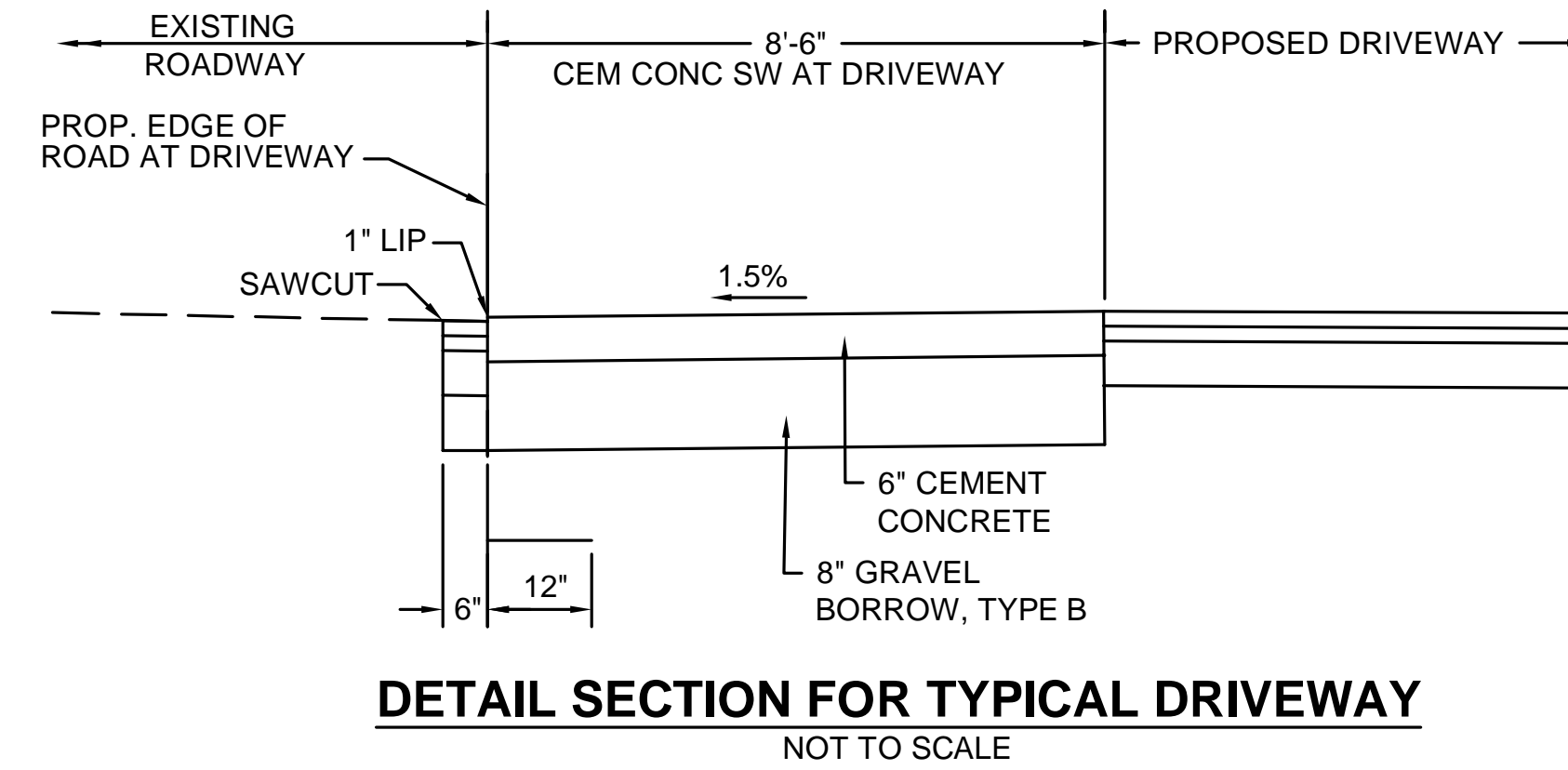
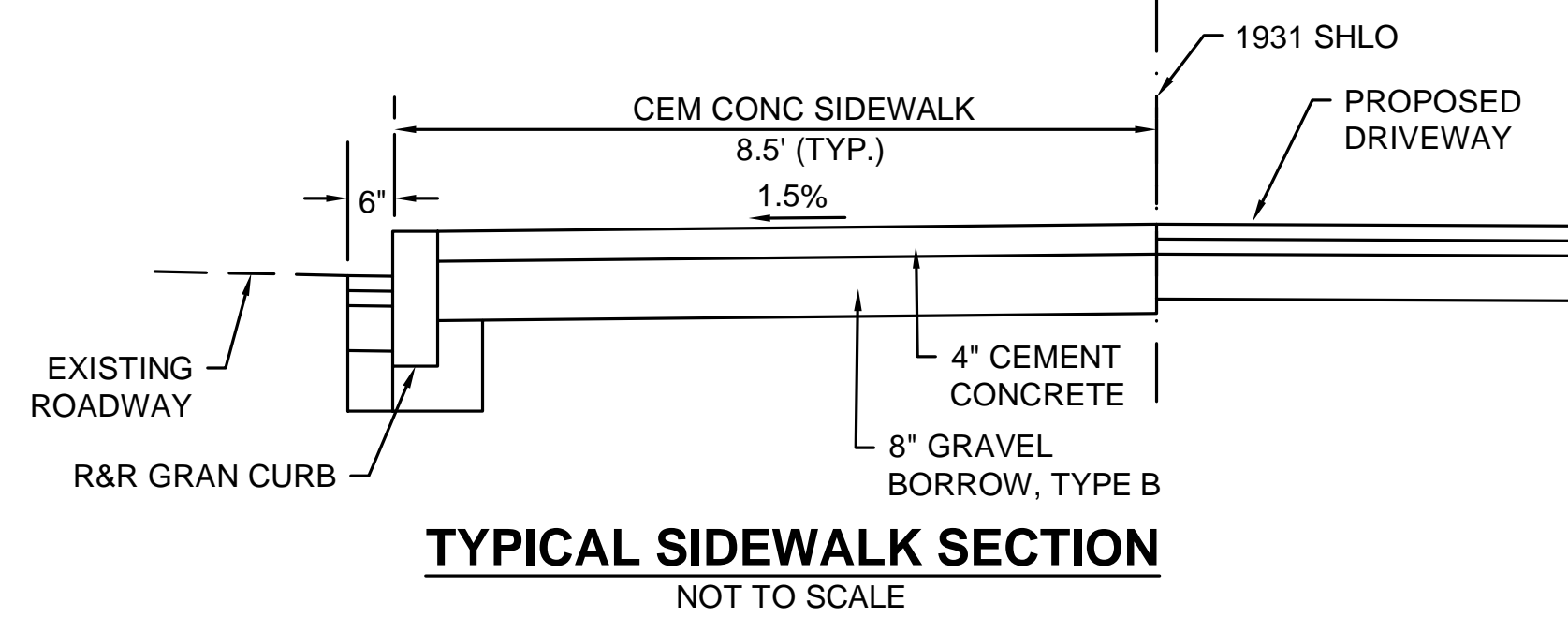
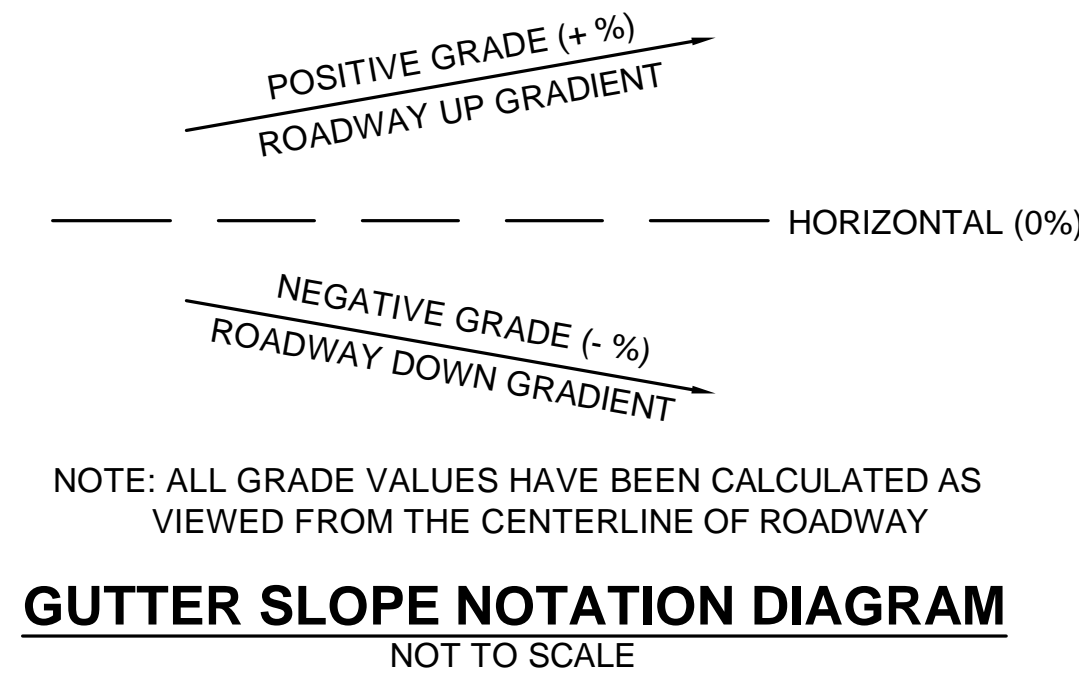
SCALE  
AS SHOWN  
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TITLE  
**Worcester Road Sewer  
Pumping Station Replacement**  
CONSTRUCTION DETAILS - 3

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. CD-3

DRIVEWAYS WITH SIDEWALK									
DWY #	LOCATION	RAMP REFERENCE POINT		OPENING WIDTH AT GUTTER (FT)	SIDEWALK WIDTH (FT)	PATH OF TRAVEL (3'-3" MIN) (FT)	ROADWAY GUTTER SLOPE (%)*	TRANSITION LENGTH	
		NORTHING	EASTING					LEFT	RIGHT
1	WORCESTER ROAD	676071.372	2933859.771	20.0	8.5	8.0	-0.7±	7.7	N/A MEET EXIST
2	WORCESTER ROAD	676135.741	2933844.148	37.0	8.5	8.0	-1.0±	3.0 2" REVEAL	6.5

\*SEE GUTTER SLOPE NOTATION DIAGRAM THIS SHEET



**NOTES:**

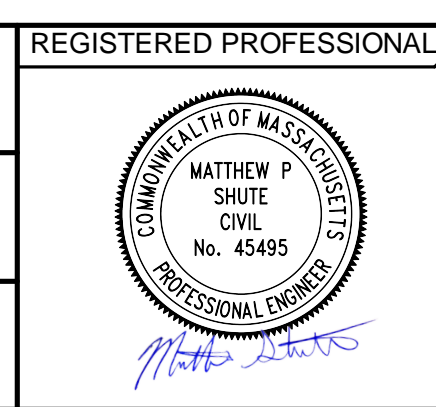
1. THIS PROCEDURE IS APPLICABLE ONLY IF CURB IS TO BE SET AFTER BASE COURSE IS IN PLACE PRIOR TO BINDER AND TOP PLACEMENT.
2. CUT NEAT LINE 6" FROM CURB LINE AND REMOVE BASE AND GRAVEL. REPLACE WITH CEMENT CONCRETE.
3. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED; ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT TO BE USED AS A SUBSTITUTE.

**METHOD OF SETTING VERTICAL CURB**  
(MASSDOT CONSTRUCTION STANDARD E106.3.0)  
NOT TO SCALE

3/3/2023 8:15 AM \\BETA-INC.COM\RIENVIRON\7385 - FRAMINGHAM WRPIS IMPROVEMENTS\DRAWINGFILES\PLANS\SETMASSDOT PERMIT PLANS\CURB MODIFICATION PLAN.DWG (BETA STB BW.STB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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DESIGNED BY: AJG
CHECKED BY: JRD



SUBCONSULTANT	SCALE NONE	TITLE Worcester Road Sewer Pumping Station Replacement CURB MODIFICATION DETAILS
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BETA JOB NO. 7385
ISSUE DATE JANUARY 2023
SHEET NO. CD-4

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION
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- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE 2009 EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS.
- ALL SIGN LEGENDS, BORDERS AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- TEMPORARY CONSTRUCTION SIGNING, BARRICADES AND ALL OTHER UNNECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.
- THE FIRST TEN PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL NOT COVERED IN THE PLAN SHALL REFER TO MASS HIGHWAY "STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TRAFFIC MANAGEMENT PLANS".
- EXISTING SIGNS THAT CONFLICT WITH TEMPORARY TRAFFIC CONTROL (TTC) SHALL BE COVERED OR REMOVED WHILE THE TTC ZONE IS IN EFFECT, AND SHALL BE UNCOVERED OR REPLACED WHEN EXISTING TRAFFIC PATTERNS ARE RESTORED.
- CONTRACTOR IS RESPONSIBLE FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING ALL TRAFFIC MANAGEMENT DEVICES REQUIRED FOR MAINTENANCE OF TRAFFIC.
- INSTALL PCMS TWO WEEKS PRIOR TO CONSTRUCTION TO INFORM MOTORIST OF UPCOMING WORK.
- CONTRACTOR IS RESPONSIBLE FOR UPDATES (CHANGES) TO PORTABLE MESSAGE SIGN.
- CONTRACTORS SHALL MAINTAIN ADA/AAB - COMPLIANT PEDESTRIAN ACCESS AND PEDESTRIAN DETOURS AT ALL TIME WITHIN WORK ZONES SPECIFICALLY INCLUDING PEDESTRIAN GUIDANCE SYSTEMS AT WORK ZONES. ACCESS SHALL BE MAINTAINED ALONG ALL SIDEWALKS AND CROSSWALKS AND TO ALL ABUTTERS. ANY PEDESTRIAN DETOUR SHALL INCLUDE A FULLY ADA/AAB - COMPLIANT PEDESTRIAN DETOUR ROUTE WITH PROPER BARRICADES, RAILINGS, RAMPS AND SIGNAGE.

**FORMULAS FOR DETERMINING TAPER LENGTHS**

SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	$L = WS$

WHERE: L = TAPER LENGTH IN FEET  
 W = WIDTH OF OFFSET IN FEET  
 S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH

BASED ON: TABLE 6C-4 2009 MUTCD

**TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES**

TYPE OF TAPER	TAPER LENGTH (L)*
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MINIMUM, 100 FT MAXIMUM
DOWNSTREAM TAPER	50 FT MINIMUM, 100 FT MAXIMUM

BASED ON: TABLE 6C-3 2009 MUTCD

**LEGEND:**

● REFLECTORIZED PLASTIC DRUM	▨ WORK ZONE	🚚 WORK VEHICLE
P POLICE DETAIL	➔ DIRECTION OF TRAFFIC	🚛 TRUCK MOUNTED ATTENUATOR
▨ TYPE III BARRICADE	🚦 IMPACT ATTENUATOR	➔ TRAFFIC OR PEDESTRIAN SIGNAL
⚡ FLASHING ARROW PANEL	▭ MEDIAN BARRIER	🚧 SIGN
⚡ FLASHING ARROW PANEL	▭ MEDIAN BARRIER WITH WARNING LIGHTS	🗣️ PORTABLE CHANGEABLE MESSAGE SIGN

**SUGGESTED WORK ZONE WARNING SIGN SPACING**

ROAD TYPE	DISTANCE BETWEEN SIGNS**		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350	350	350
MOST OTHER ROADWAYS*	500	500	500
FREEWAYS AND EXPRESSWAYS*	1,000	1,500	2,640

\* SPEED CATEGORY TO BE DETERMINED BY HIGHWAY AGENCY

\*\* DISTANCES ARE SHOWN IN FEET. THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

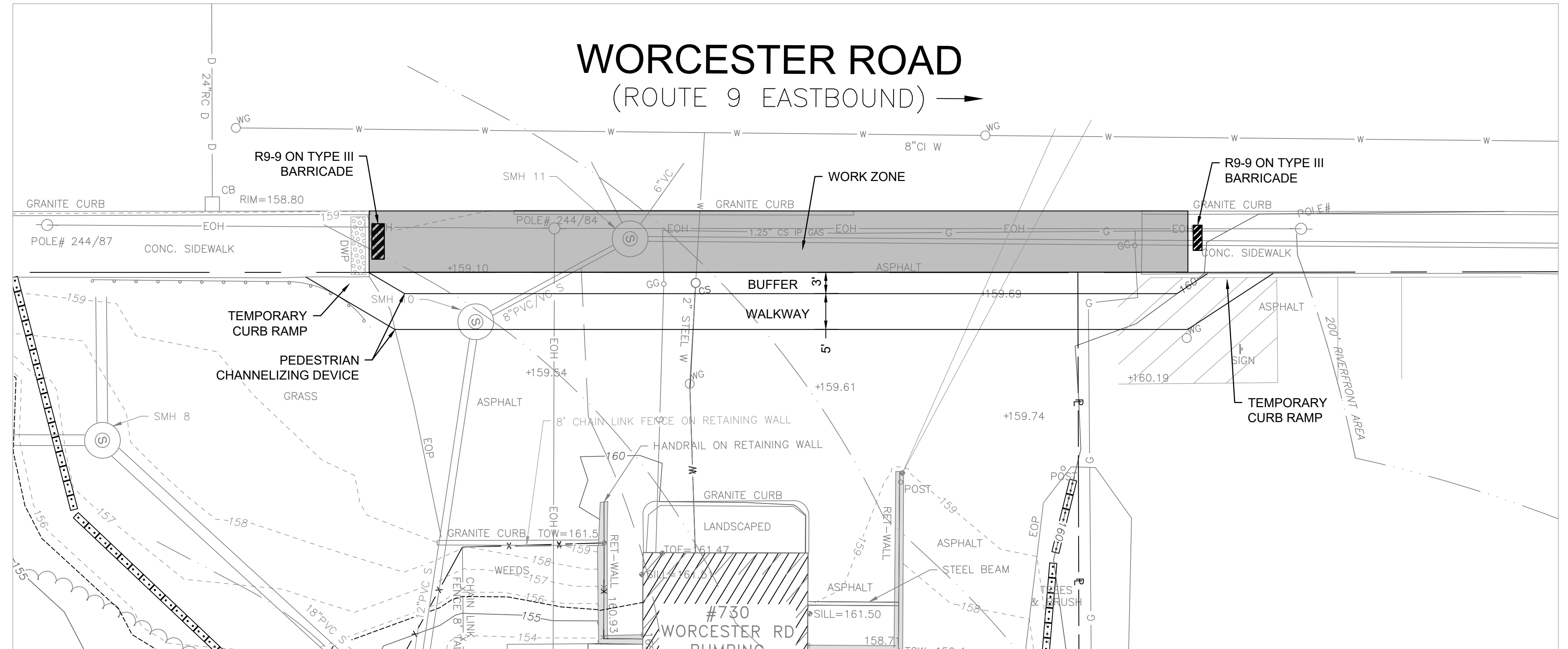
THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TMP SETUPS. IT IS THE ONE WHICH MAY OFTEN HAVE THE "STANDARD RED OR RED-ORANGE FLAGS (16 in. X 16 in.)" MOUNTED ON IT. THESE ADVANCE WARNING SIGNS ARE LOCATED AT THE PROJECT LIMITS ON ALL APPROACHES (i.e. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

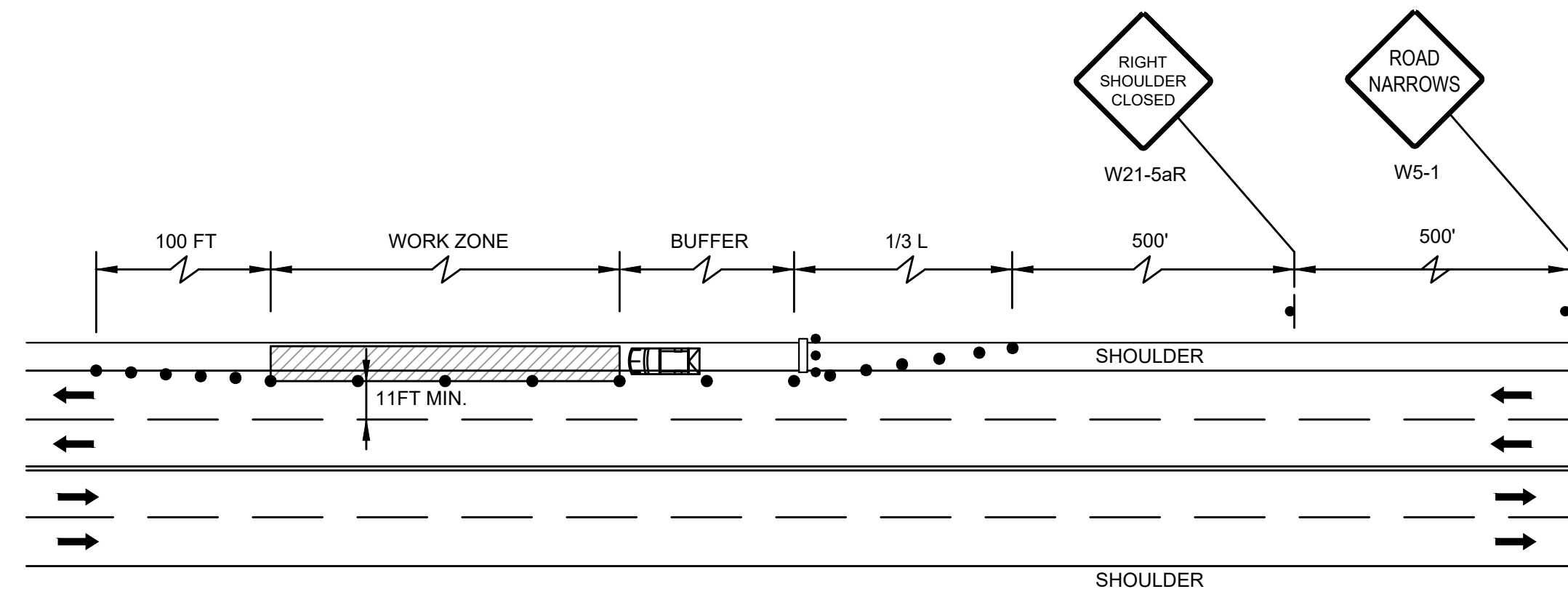
MA-R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

MA-R2-10a, MA-R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

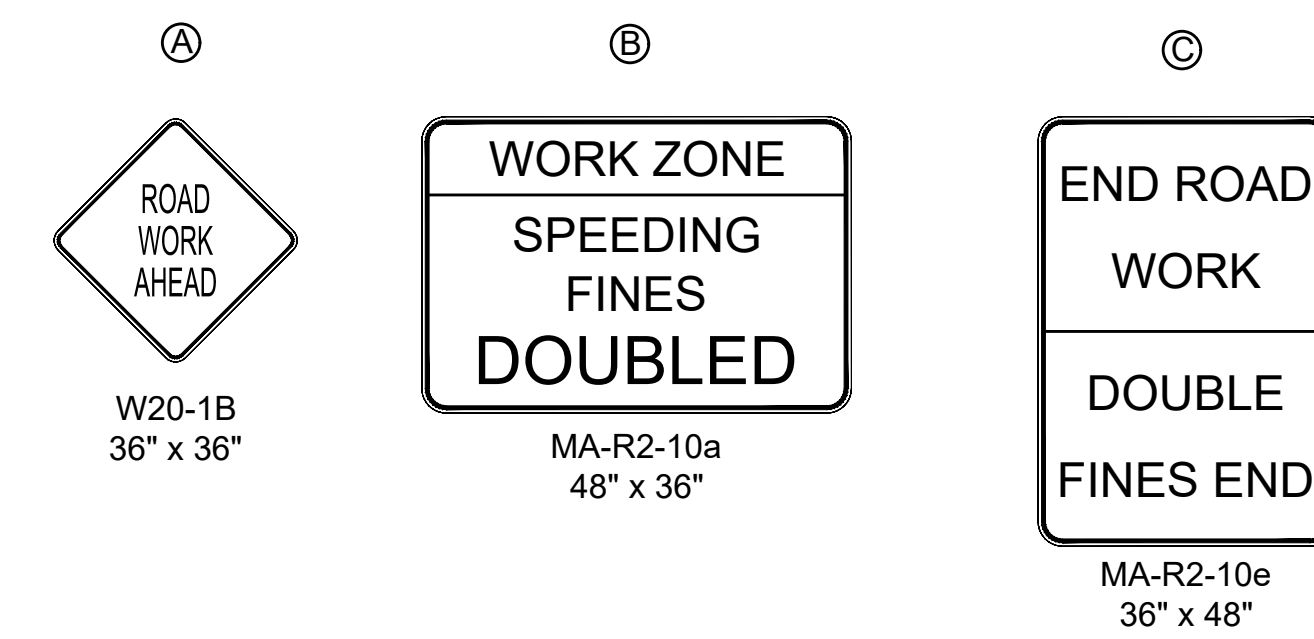
BASED ON: TABLE 6C-1 2009 MUTCD



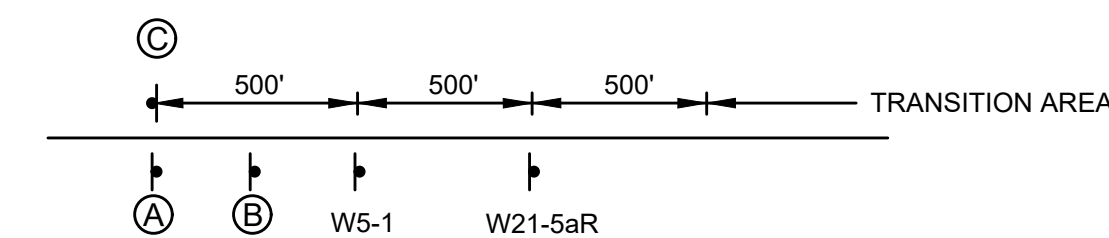
**TEMPORARY PEDESTRIAN DETOUR**  
NOT TO SCALE



**MULTILANE ROAD SHOULDER CLOSED**  
NOT TO SCALE



**TYPICAL MAINLINE ADVANCED SIGN SETUP**  
NOT TO SCALE



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NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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 DESIGNED BY: AJG  
 CHECKED BY: JRD

REGISTERED PROFESSIONAL  
  
 PREPARED BY

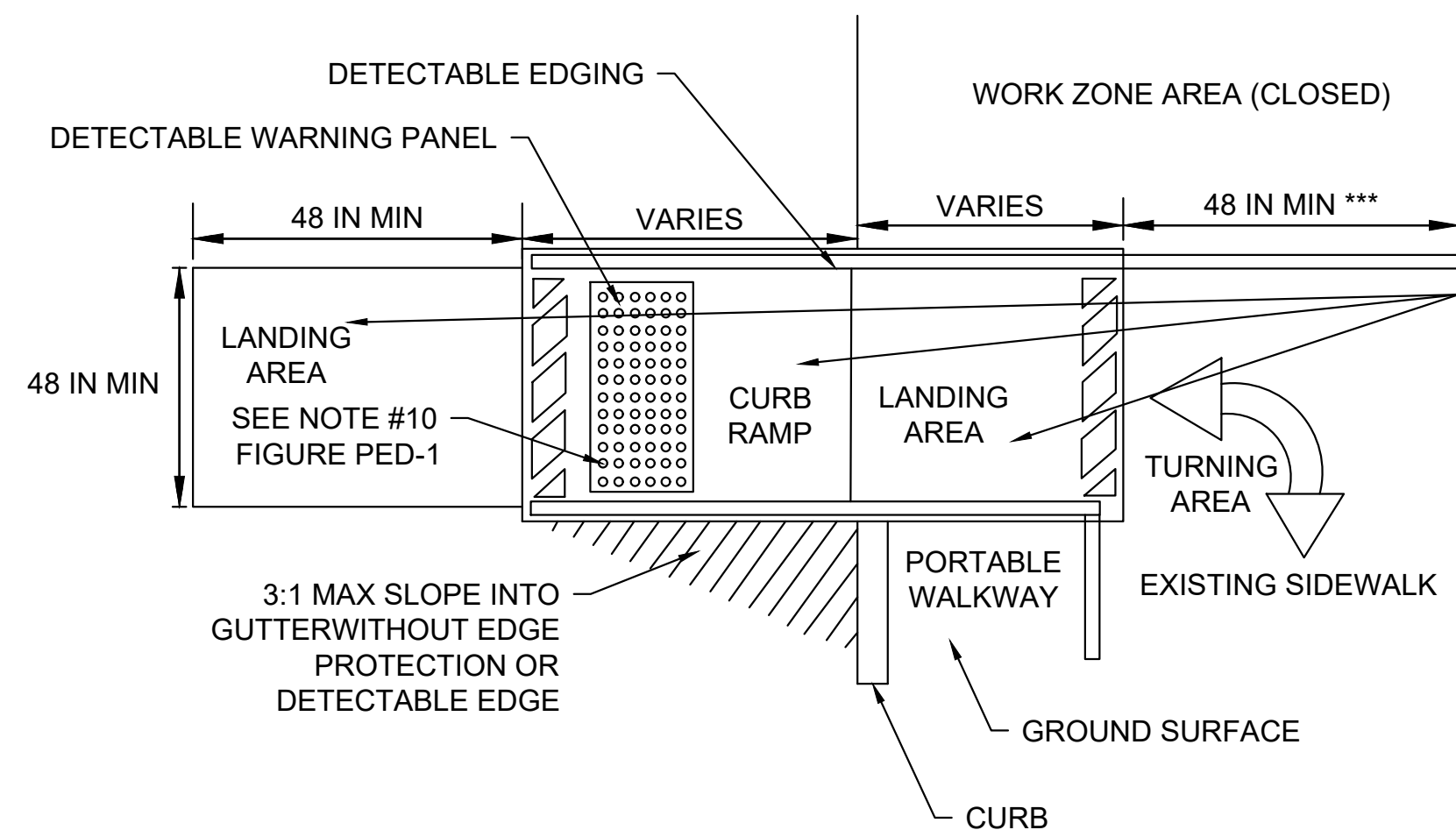
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SUBCONSULTANT  
 SCALE  
 NONE

TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
 TEMPORARY TRAFFIC CONTROL PLAN  
 DETAILS-1

BETA JOB NO. 7385  
 ISSUE DATE JANUARY 2023  
 SHEET NO. TP-1

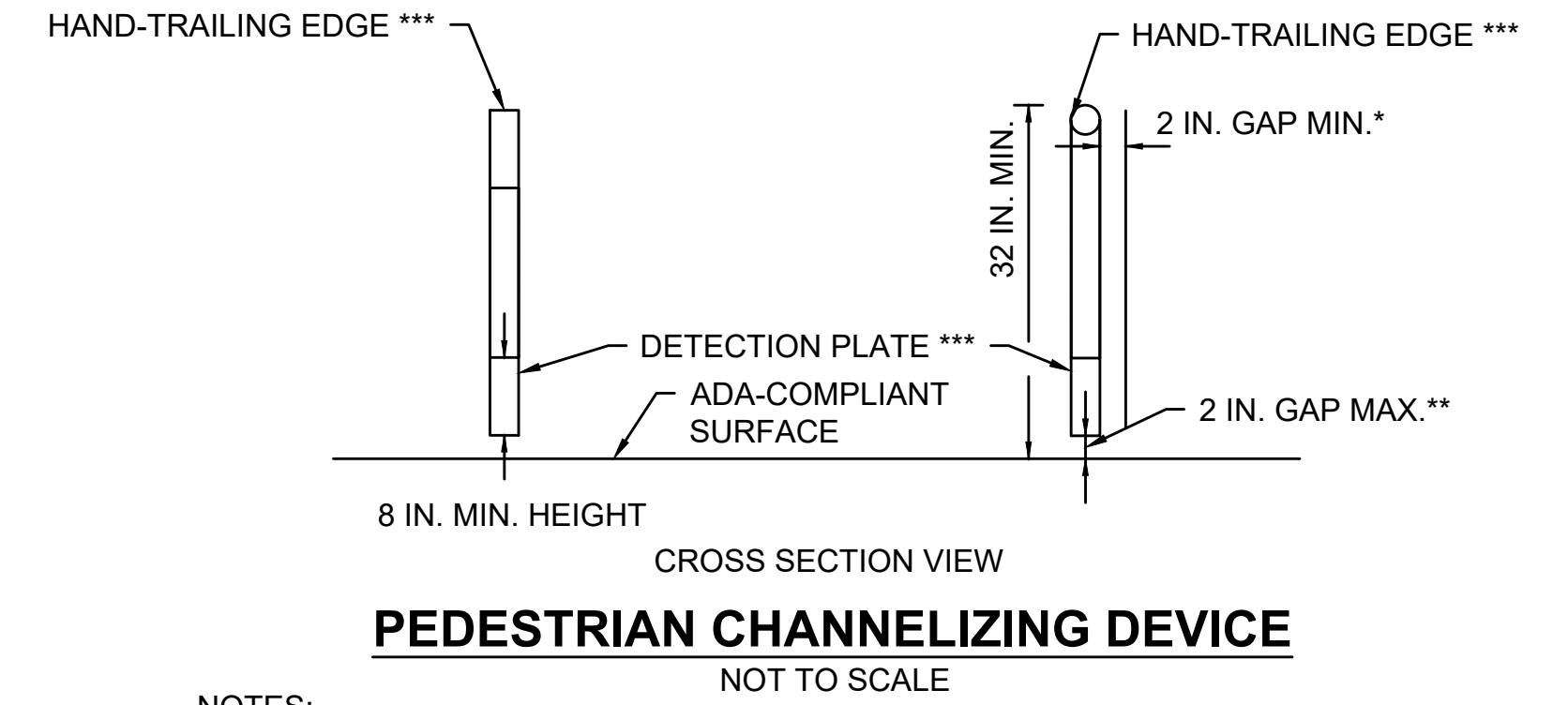
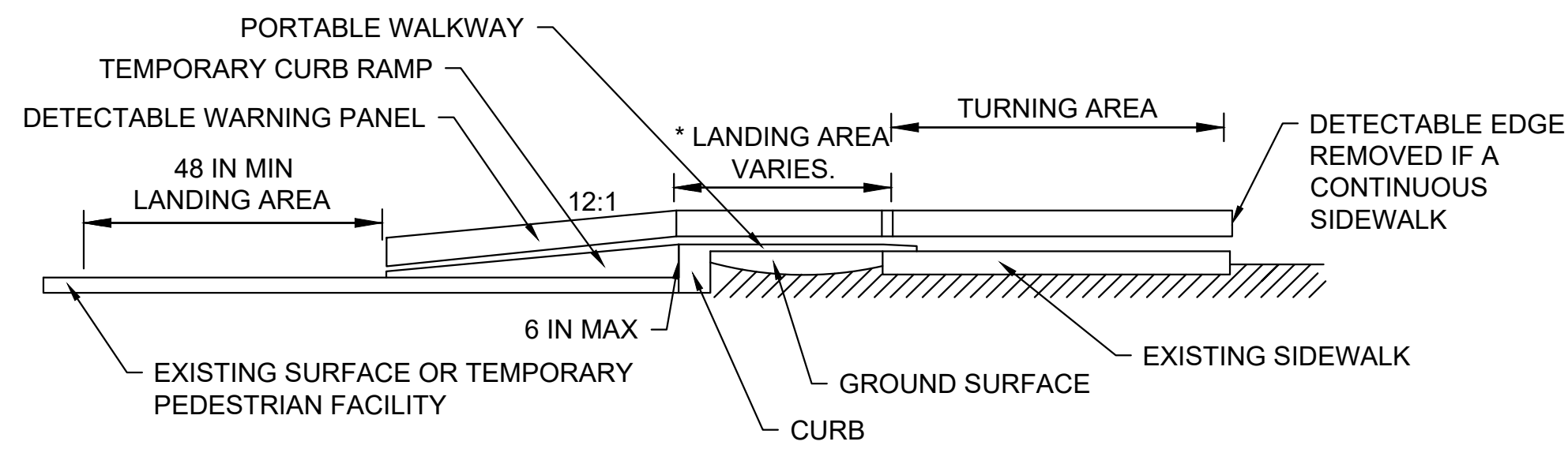
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**TEMPORARY CURB RAMP**  
NOT TO SCALE

NOTE: TEMPORARY FACILITIES, INCLUDING BUT NOT LIMITED TO, TEMPORARY PEDESTRIAN PASSAGEWAYS AROUND A CONSTRUCTION SITE, SHALL COMPLY WITH 521 CMR.

- \* LANDING AREA USED TO OVERLAP NON-ADA COMPLIANT SURFACES.
- \*\* DETECTABLE EDGE REMOVED IF A CONTINUOUS SIDEWALK.
- \*\*\* 60 IN. IF AN OBSTRUCTION IS AT BACK OF SIDEWALK



- PEDESTRIAN CHANNELIZING DEVICE**  
NOT TO SCALE
- NOTES:
- \* THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT.
  - \*\* A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.
  - \*\*\* THE HAND-TRAILING EDGE AND DETECTION PLATE SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE PATH SUCH THAT A PEDESTRIAN USER WITH A LONG CANE CAN FOLLOW IT.

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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DESIGNED BY: AJG
CHECKED BY: JRD

REGISTERED PROFESSIONAL

PREPARED BY

SUBCONSULTANT
---------------

SCALE	NONE
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TITLE

**Worcester Road Sewer Pumping Station Replacement**

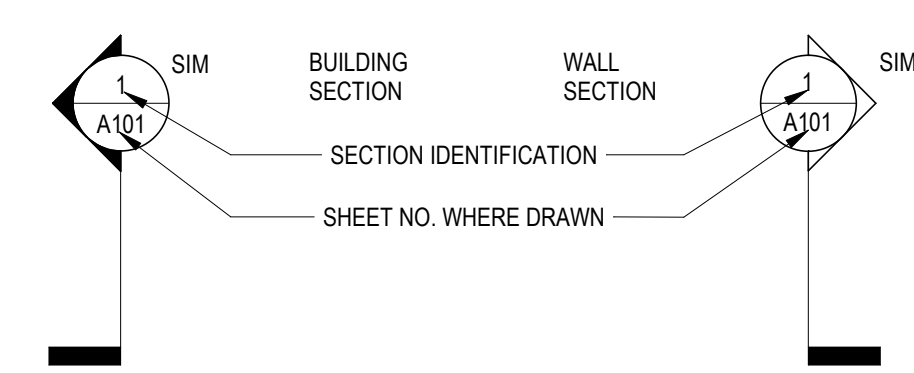
TEMPORARY TRAFFIC CONTROL PLAN  
DETAILS-2

BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	TP-2

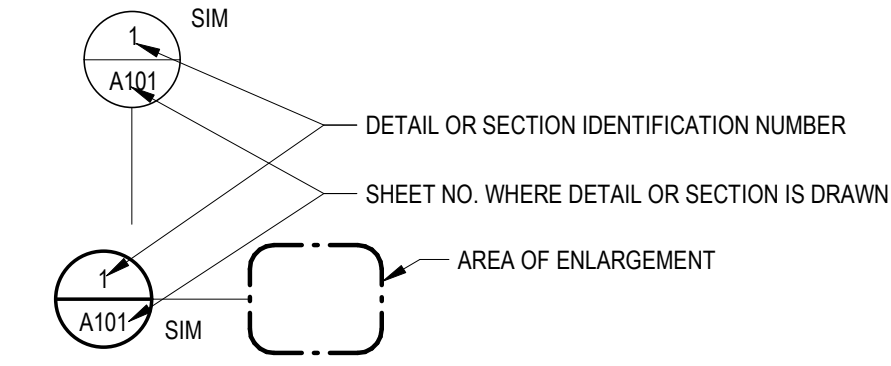
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# ARCHITECTURAL SYMBOLS

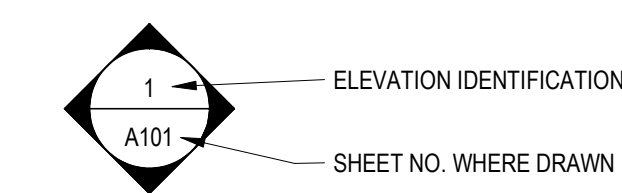
## SECTION DESIGNATORS



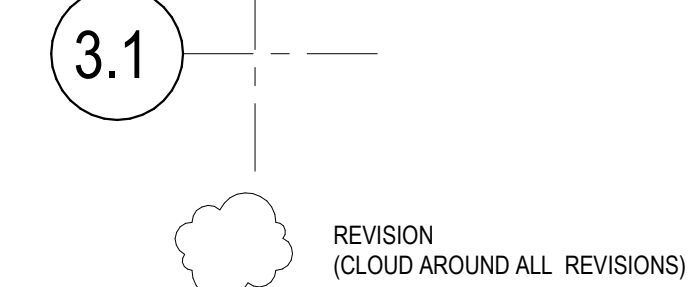
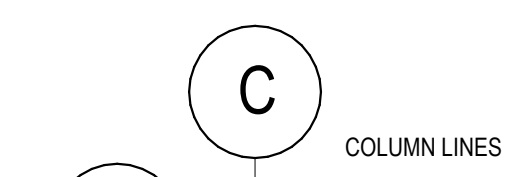
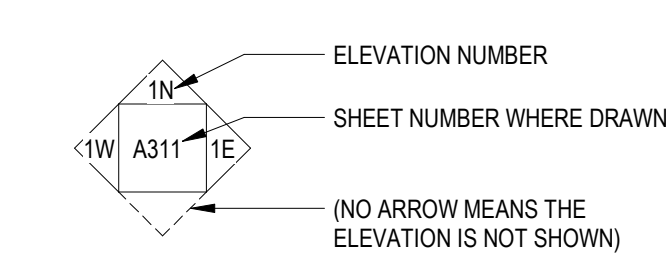
## DETAIL / SECTION DESIGNATOR



## BUILDING ELEVATION DESIGNATOR



## ROOM ELEVATION DESIGNATOR

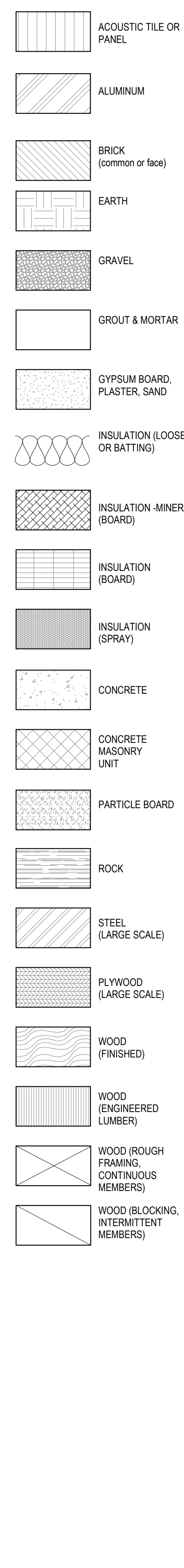


# ABBREVIATIONS

@	AT	EOS	EDGE OF SLAB	NTS	NOT TO SCALE
AC	AIR CONDITIONING	EQ	EQUAL	OC	ON CENTER (S)
ACoust	ACOUSTIC, ACOUSTICAL	EQUIP	EQUIPMENT	OH	OVERHEAD
ADJ	ADJUSTABLE	EX, EXIST	EXISTING	OP HND	OPPOSITE HAND
AFF	ABOVE FINISHED FLOOR	EXH	EXHAUST	OP SIM	OPPOSITE SIMILAR
ALUM	ALUMINUM	EXT	EXTERIOR	PL	PLATE
ANOD	ANODIZED	FD	FLOOR DRAIN / FIELD DIMENSION	PLAM	PLASTIC LAMINATED
APPROX	APPROXIMATE	FDTN, FDN	FOUNDATION	PLYWD, PLY	PLYWOOD
ARCH	ARCHITECT(URAL)	FH	FULL HEIGHT	PT	PRESSURE TREATED
AUX	AUXILIARY	FIN	FINISH, FINISHED	PTD	PAINTED
BD	BOARD	FIXT, FIX	FIXTURE	RAD, R	RADIUS
BLDG	BUILDING	FLR, FL	FLOOR	RD	ROOF DRAIN
BLK	BLOCK (S)	FLSHG	FLASHING	REF	REFER (ENCE)
BLKG	BLOCKING	FOB	FACE OF BLOCK / BRICK	REFL	REFLECTED
BO	BOTTOM OF	FOB	FACE OF WALL	REIN	REINFORCED (ED)
BOT	BOTTOM	FP	FIREPROOF, FIREPROOFING	REQD	REQUIRED
CAB	CABINET	FR	FIRE RATED	RM	ROOM
CD	CEILING DIFFUSER	FTG	FOOTING	RO	ROUGH OPENING
CEM	CEMENT	GA	GAUGE	S	SOUTH
CJ	CONTROL JOINT	GALV	GALVANIZED	SCH	SCHEDULE
CL	CENTER LINE	GC	GENERAL CONTRACTOR	SIM	SIMILAR
CLG	CEILING	GL	GLASS	SPEC	SPECIFICATION
CLOS, CLO	CLOSET	GR	GRADE	SPR	SPRINKLER
CLR	CLEAR	GWB	GYPSUM WALL BOARD	SS	SOLID SURFACE
CMU	CONCRETE MASONRY UNIT	HC	HANDICAPPED	SSTL	STAINLESS STEEL
CO	CASED OPENING	HM	HOLLOW METAL	STL	STEEL
COL	COLUMN	HOR	HORIZONTAL	STOR	STORAGE
CONC	CONCRETE	HT	HEIGHT	STRUCT, STR	STRUCTURE (AL)
CONST	CONSTRUCTION	HVAC	HEAT, VENT., AIR COND.	SUSP	SUSPENDED
CONT, CTS	CONTINUOUS	INCL	INCLUDE (ED) (ING)	TEL	TELEPHONE
CORR	CORRIDOR	INSUL	INSULATION	TEMP	TEMPERED
CR	CEILING REGISTER	INT	INTERIOR	THK	THICKNESS
DET	DETAIL	JC	JANITOR'S CLOSET	TLT	TOILET
DF	DRINKING FOUNTAIN	JT	JOINT	TOC	TOP OF CONCRETE
DIA	DIAMETER	LAM	LAMINATE	TOS	TOP OF STEEL
DIAG	DIAGONAL	LAV	LAVATORY	TRANS	TRANSFORMER
DIM	DIMENSION	LBS	POUNDS	TYP	TYPICAL
DISP	DISPENSER	LDR	LEADER	UL	UNDERWRITER'S LABORATORIES
DMB	DRY MARKER BOARD	MATL	MATERIAL	UNO	UNLESS NOTED OTHERWISE
DN	DOWN	MAX	MAXIMUM	VCT	VINYL COMPOSITION TILE
DWG	DRAWING	MECH	MECHANICAL	VERT	VERTICAL
E	EAST	MFR, MFD, MFG	MANUFACTURE (ER) (ED) (ING)	VEST	VESTIBULE
EA	EACH	MIN	MINIMUM	VIF	VERIFY IN FIELD
EJ	EXPANSION JOINT	MO	MASONRY OPENING	W	WEST
EL	ELEVATION	MTL	METAL	WI, W/O	WITH, WITHOUT
ELECT, ELEC	ELECTRIC, ELECTRICAL	N	NORTH	WC	WATER CLOSET
ELEV	ELEVATOR	NC	NOT IN CONTRACT	WD	WOOD
EOD	EDGE OF (ROOF) DECK	NO, #	NUMBER	WWF	WELDED WIRE FABRIC
		NOM	NOMINAL	WWM	WELDED WIRE MESH

# FILL PATTERNS

## MATERIALS KEY



# GENERAL NOTES:

- DRAWINGS INDICATE LOCATION, DIMENSIONS, REFERENCE AND TYPICAL DETAILS FOR CONSTRUCTION. MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER CONSTRUCTION OF ANY PART OF THE WORK SHALL BE INCLUDED AS IF THEY WERE INDICATED IN THE DRAWINGS. FOR CONDITION(S) NOT ILLUSTRATED, NOTIFY ENGINEER FOR CLARIFICATION AND/OR SIMILAR DETAIL.
- WHEN THE SCOPE OF WORK INCLUDES ALTERATION TO EXISTING FACILITIES, WORK WHICH IS OBVIOUSLY REQUIRED TO BE PERFORMED OR IS OBVIOUSLY NEEDED TO PROVIDE A COMPLETE AND FINISHED PRODUCT WITHIN THE SCOPE OF WORK, BUT WHICH IS NOT SPECIFICALLY INCLUDED ON THE CONTRACT DOCUMENTS, SHALL BE PERFORMED BY THE CONTRACTOR AND BE INCLUDED ON THE BID. CONTRACTOR TO INSPECT AT TIME OF DELIVERY ALL FIXTURES PROVIDED BY OWNER TO INSURE PROPER QUANTITY, THAT ITEMS ARE DEFECT FREE AND MATCH INVOICE. CONTRACTOR TO BE RESPONSIBLE FOR INSTALLATION, WHICH MAY INCLUDE WALL BLOCKING, SHIMMING, ETC.
- DO NOT SCALE DRAWINGS - WRITTEN DIMENSIONS TAKE PRECEDENCE OVER GRAPHIC REPRESENTATION. DETAIL DIMENSIONS TAKE PRECEDENCE OVER LARGER PLAN/SECTIONAL DIMENSIONS. ANY INCONSISTENCY AND/OR CONFLICTING DIMENSIONS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY FOR CLARIFICATION. CONTRACTOR SHALL NOT AT ANY TIME SCALE DIMENSIONS OR ELEMENTS OFF DRAWINGS. PLEASE CONTACT ENGINEER FOR DIMENSION IN QUESTION.

## CODE:

**USE GROUP**  
U (UTILITY & MISCELLANEOUS)

**MINIMUM CONSTRUCTION TYPE**  
TYPE VB

TABULAR VALUE	HEIGHT	FOOTPRINT AREA
(IBC 504.3, 504.4 & 506.2)	1 ST. (40 FT)	5,500 FT <sup>2</sup>
<b>FRONTAGE INCREASE</b>		
IBC SECTION 506.2		-4,125 FT <sup>2</sup>
100% OPEN PERIMETER		
<b>TOTAL ALLOWED</b>	1 ST. (40 FT)	9,625 FT <sup>2</sup>
<b>ACTUAL</b>	1 ST.	APPROX. 650 FT <sup>2</sup>

## FIRE RATINGS

BUILDING ELEMENT (IBC TABLE 601)	TYPE VB RATINGS IN HOURS
PRIMARY STRUCTURAL FRAME	0
EXTERIOR BEARING WALLS INCLUDING COLUMNS ALONG THE EXTERIOR WALL	0 HOUR (FIRE SEPARATION DISTANCE IS GREATER THAN 10 FEET)
EXTERIOR NON-BEARING WALLS	0
INTERIOR BEARING WALLS	0
FLOOR CONSTRUCTION	0
ROOF CONSTRUCTION	0

## INTERIOR FINISHES

NEW INTERIOR FINISHES MUST COMPLY WITH THE FOLLOWING:  
IBC TABLE 803.11 USE GROUP U  
ROOMS AND ENCLOSED SPACES NO RESTRICTIONS

## MEANS OF EGRESS

SPACE	AREA	OCCUPANT LOAD FACTOR	OCCUPANT LOAD
UPPER LEVEL	700 SF	300 SF/PERSON	2
LOWER LEVEL	700 SF	300 SF/PERSON	2
<b>BUILDING TOTAL =</b>			<b>4</b>

THE MAIN LEVEL IS THE ONLY OCCUPIED SPACE WITHIN THE BUILDING THAT REQUIRES MEANS OF EGRESS IN ACCORDANCE WITH CHAPTER 10. SINCE IT HAS AN OCCUPANT LOAD OF LESS THAN 50 PEOPLE AND A COMMON PATH OF TRAVEL OF LESS THAN 75 FEET, IT QUALIFIES AS A SPACE WITH ONE MEANS OF EGRESS IN ACCORDANCE WITH IBC TABLE 1006.3.2(2).

THE LOWER LEVEL IS AN UNOCCUPIED SPACE THAT ONLY REQUIRES ACCESS TO MAINTAIN EQUIPMENT IN ACCORDANCE WITH THE MECHANICAL CODE (IBC 1209). THE PROPOSED ACCESS VIA AN INTERIOR STAIR MEETS THE REQUIREMENTS OF INTERNATIONAL MECHANICAL CODE SECTION 306 FOR ACCESS.

MINIMUM # OF EXITS: SINCE THE OCCUPANT LOAD IS LESS THAN 49 PEOPLE, ONLY A SINGLE MEANS OF EGRESS IS REQUIRED.  
MAX TRAVEL DISTANCE: 200 FEET.

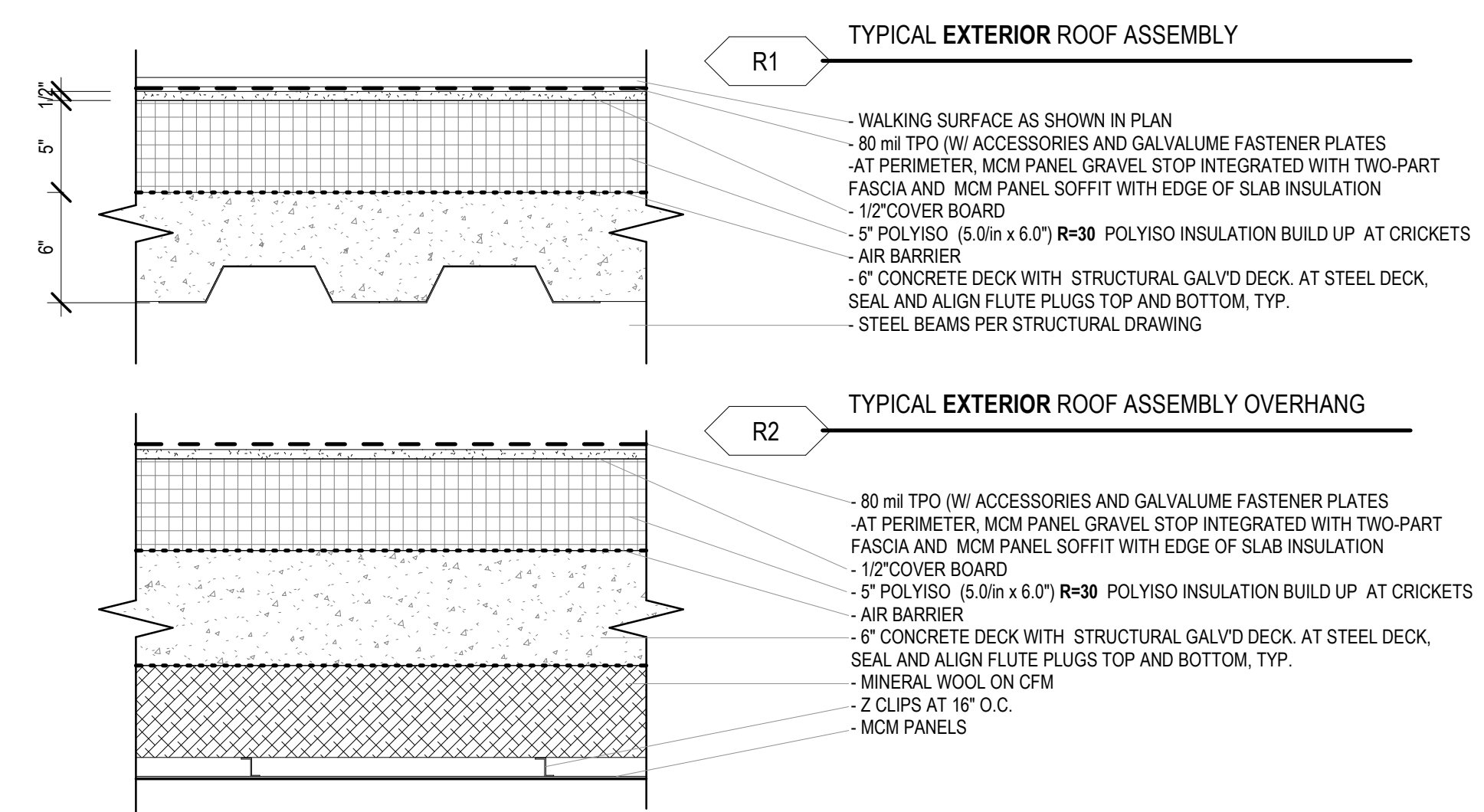
**FIRE PROTECTION SYSTEMS**  
IBC CHAPTER 9 AND THE MASSACHUSETTS AMENDMENTS DO NOT REQUIRE FIRE PROTECTION SYSTEMS FOR USE GROUP U BUILDINGS.

## ENERGY CONSERVATION

THE PROJECT IS SUBJECT TO THE PROVISIONS OF THE 2018 INTERNATIONAL ENERGY CONSERVATION CODE OR ANSI/ASHRAE/IESNA 90.1 WITH MASSACHUSETTS AMENDMENTS (MASSACHUSETTS ENERGY CODE). THE CITY OF FRAMINGHAM HAS ALSO ADOPTED THE STRETCH ENERGY CODE (780 CMR APPENDIX AA) HOWEVER IT DOES NOT APPLY TO BUILDINGS THAT ARE LESS THAN 100,000 FT<sup>2</sup> IN AREA AND THEREFORE DOES NOT APPLY TO THIS PROJECT (780 CMR AA103.2)

## ACCESSIBILITY FOR PERSONS WITH DISABILITIES:

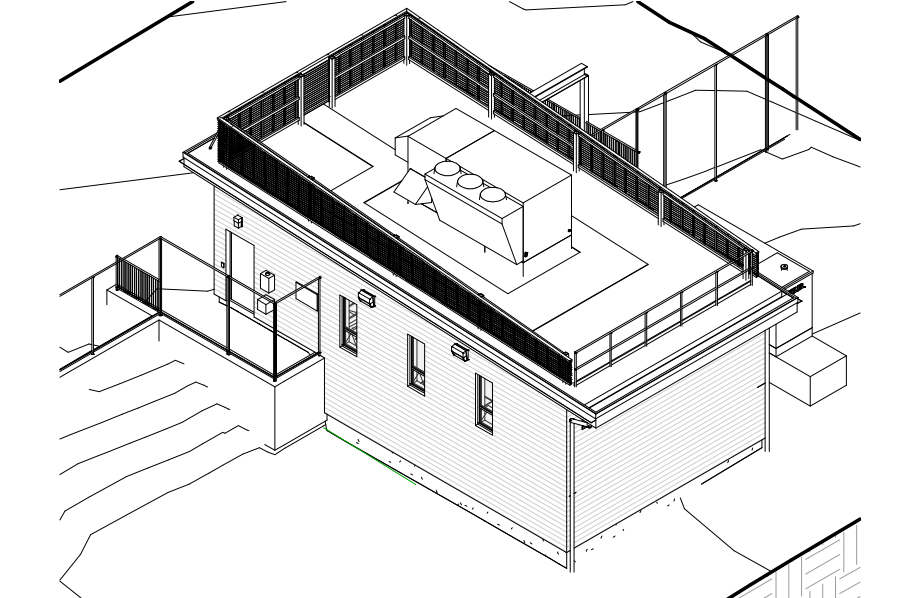
MASSACHUSETTS ARCHITECTURAL ACCESS BOARD REGULATIONS  
SINCE THE BUILDING WILL NOT BE OPEN TO THE PUBLIC, IT IS NOT REQUIRED TO COMPLY WITH THE REGULATIONS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (521 CMR SECTION 11.1).  
AMERICAN WITH DISABILITIES ACT  
THE ADA GUIDELINES ARE NOT ENFORCED BY THE COMMONWEALTH OF MASSACHUSETTS. THEY CAN ONLY BE ENFORCED THROUGH A CIVIL LAWSUIT OR COMPLAINT FILED WITH THE US DEPARTMENT OF JUSTICE. THE ADA DOES REQUIRE THAT EMPLOYEE WORK SPACES ARE DESIGNED TO ALLOW EMPLOYEES TO APPROACH, ENTER, AND EXIT THE WORK AREA (ADA SECTION 203.9). HOWEVER, THE WORK AREAS ARE NOT REQUIRED TO BE PROVIDED WITH ACCESSIBLE FEATURES (I.E. WORK SINKS, SHELVES, ETC). SPACES FREQUENTED ONLY SERVICE PERSONNEL FOR MAINTENANCE, REPAIR OR OCCASIONAL MONITORING OF EQUIPMENT SHALL NOT BE REQUIRED TO COMPLY WITH THESE REQUIREMENTS OR TO BE ON AN ACCESSIBLE ROUTE (ADA SECTION 203.5).



## ROOF ASSEMBLY



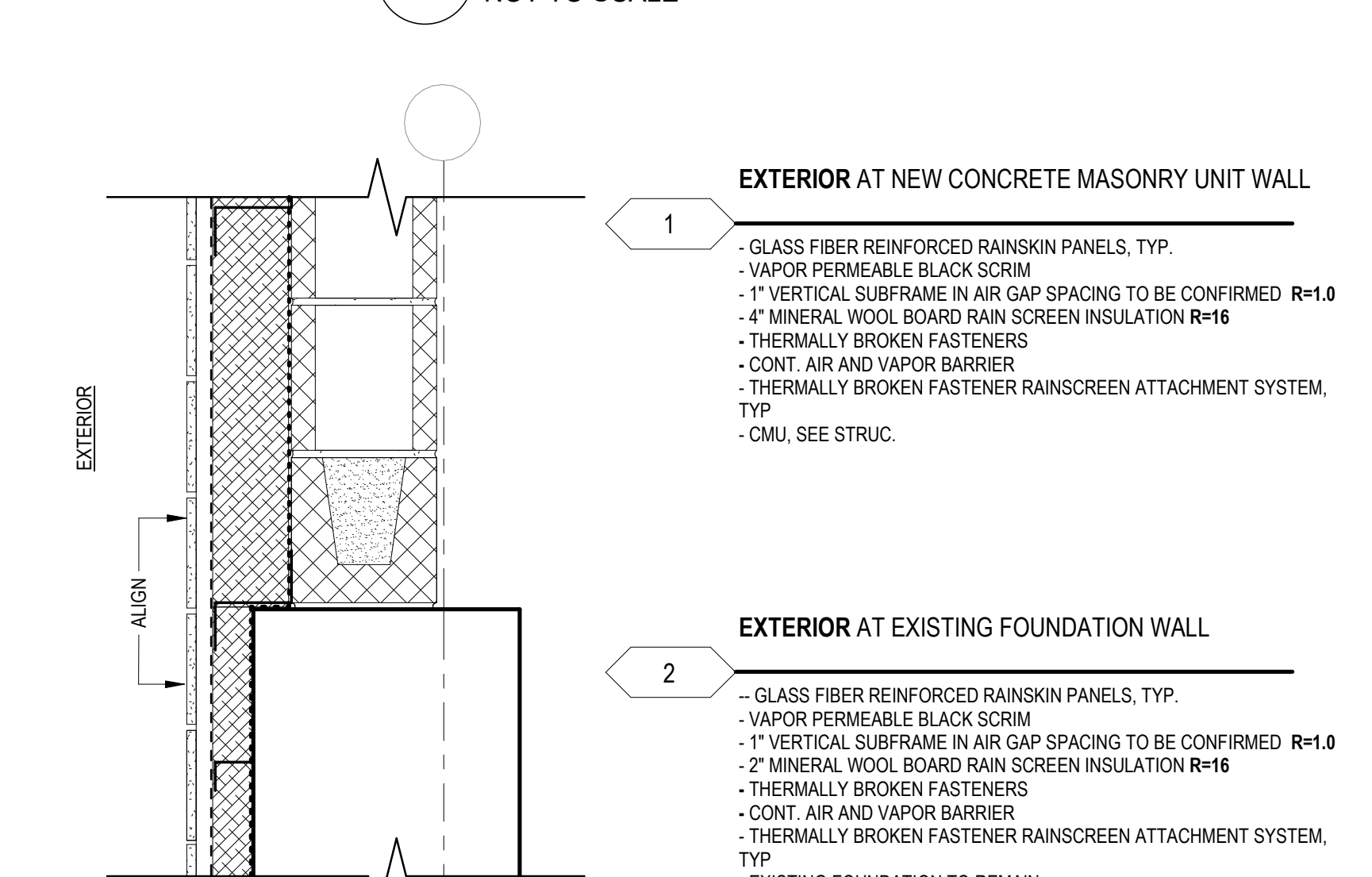
3 VIEW FROM WORCESTER RD  
NOT TO SCALE



2 SW BIRD'S EYE VIEW  
NOT TO SCALE



1 VIEW TOWARD SW  
NOT TO SCALE

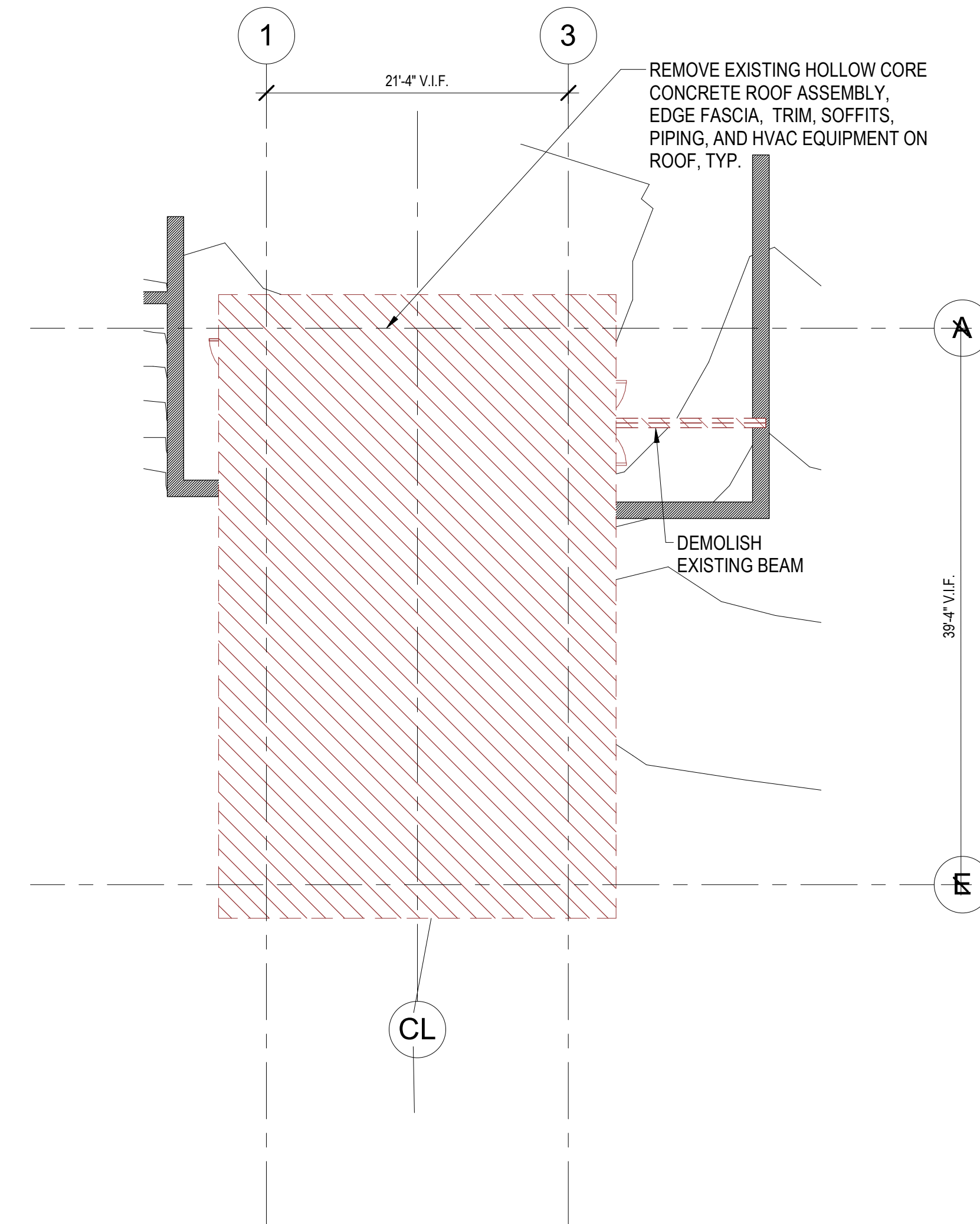


## WALL TYPES

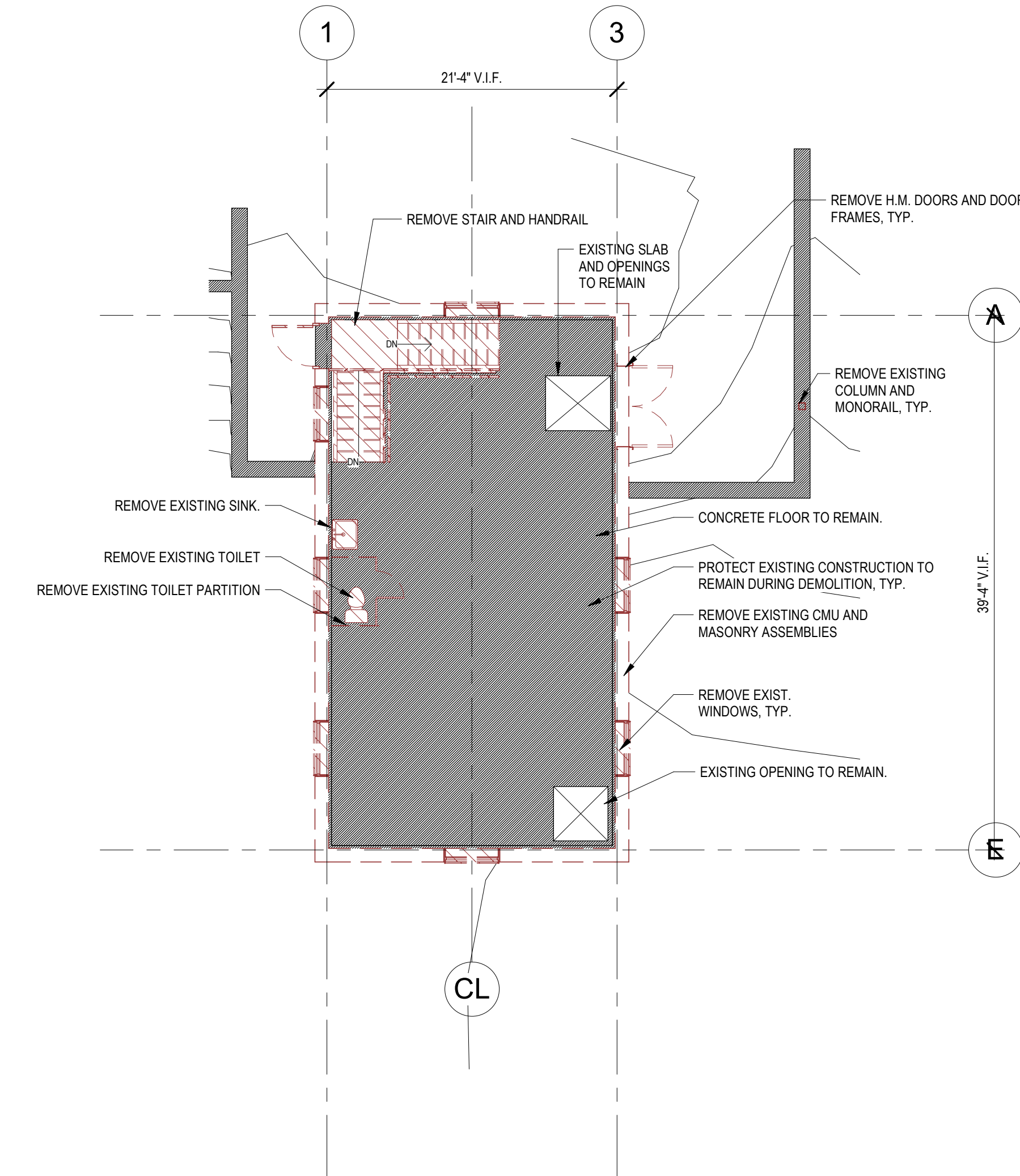
DRAWN BY: ALK		REGISTERED PROFESSIONAL	PREPARED BY: <b>BETA</b>	SUBCONSULTANT: DSK Dewing Schmid Kearns ARCHITECTS + PLANNERS	SCALE: As indicated	TITLE: Worcester Road Sewer Pumping Station Replacement	DSK JOB NO.: 20030.00
DESIGNED BY: DSK						GENERAL NOTES, ABBR., SYMBOLS AND 3D VIEWS	ISSUE DATE: JANUARY 2023
CHECKED BY: MPS							SHEET NO.: AG-01

P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWG\601-REV\FAMILIES\TITLEBLOCKS\DOC\_Arch D 24x36 Vertical Title - BETA

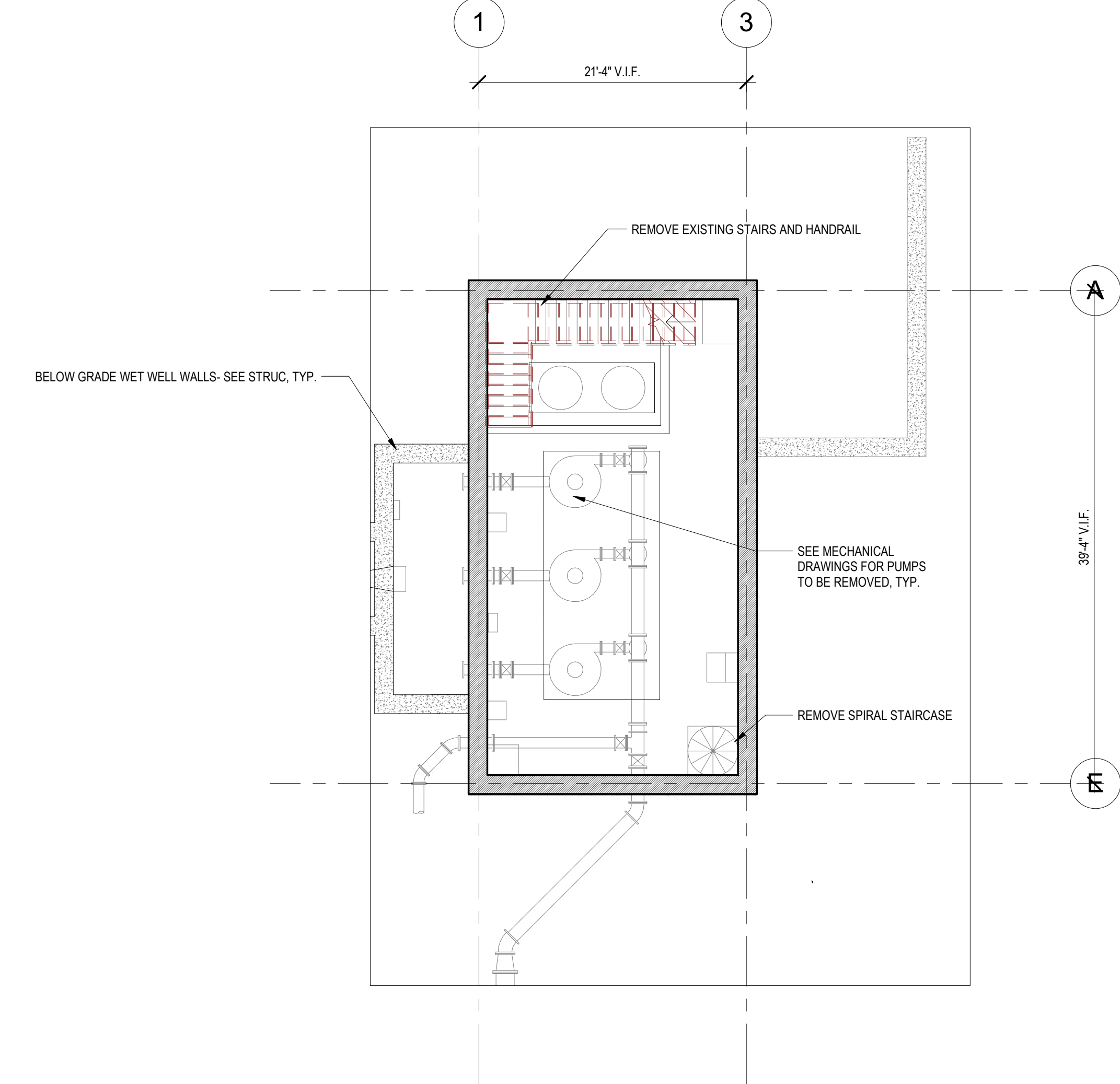
DEMOLITION LEGEND			
WINDOW - TO BE DEMOLISHED		WALL - EXISTING TO REMAIN	
DOOR - TO BE DEMOLISHED		WALL - TO BE DEMOLISHED	



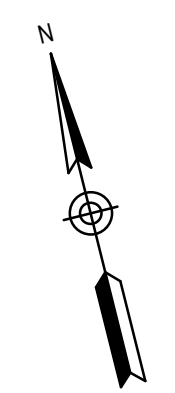
**3** ROOF DEMOLITION PLAN  
1/8" = 1'-0"



**2** 02 UPPER LEVEL DEMO PLAN  
1/8" = 1'-0"



**1** LOWER LEVEL DEMOLITION PLAN  
1/8" = 1'-0"



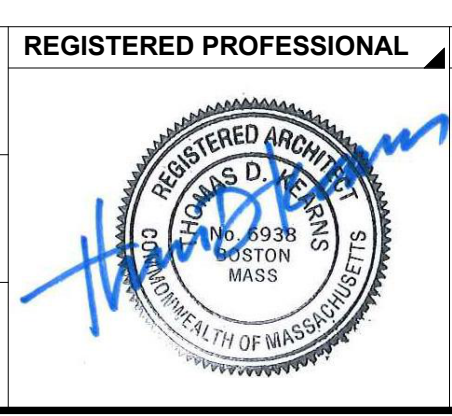
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NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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ALK

DESIGNED BY:  
DSK

CHECKED BY:  
MPS



SUBCONSULTANT

**DSK** Dewing Schmid Kearns  
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280 Elm Street  
South Dartmouth, MA  
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508.999.0440

SCALE

**As indicated**

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE

**Worcester Road Sewer  
Pumping Station Replacement  
DEMOLITION PLANS**

DSK JOB NO. 20030.00

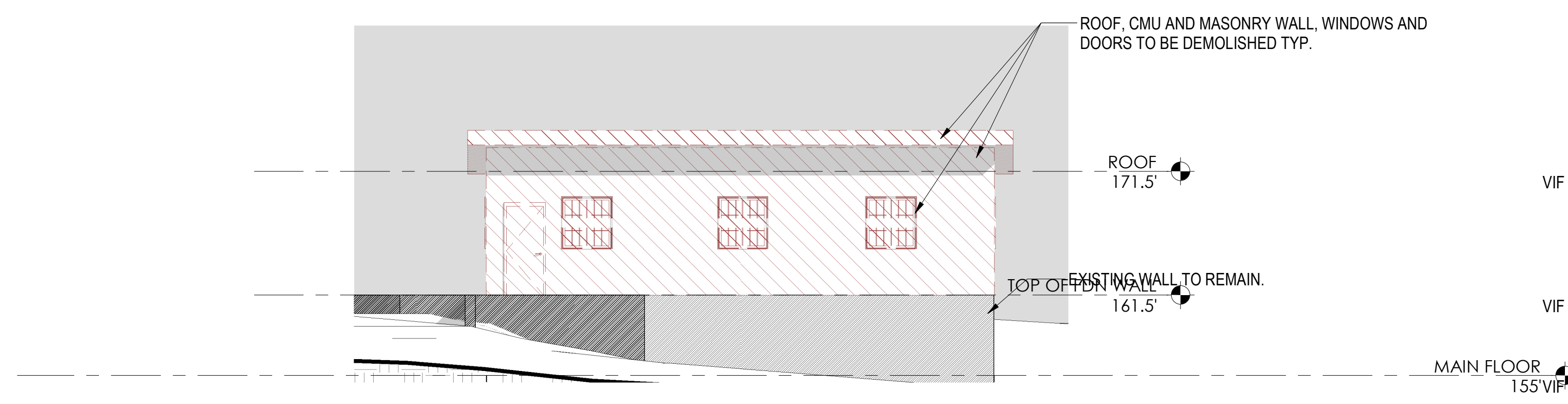
ISSUE DATE JANUARY 2023

SHEET NO. **AD-01**

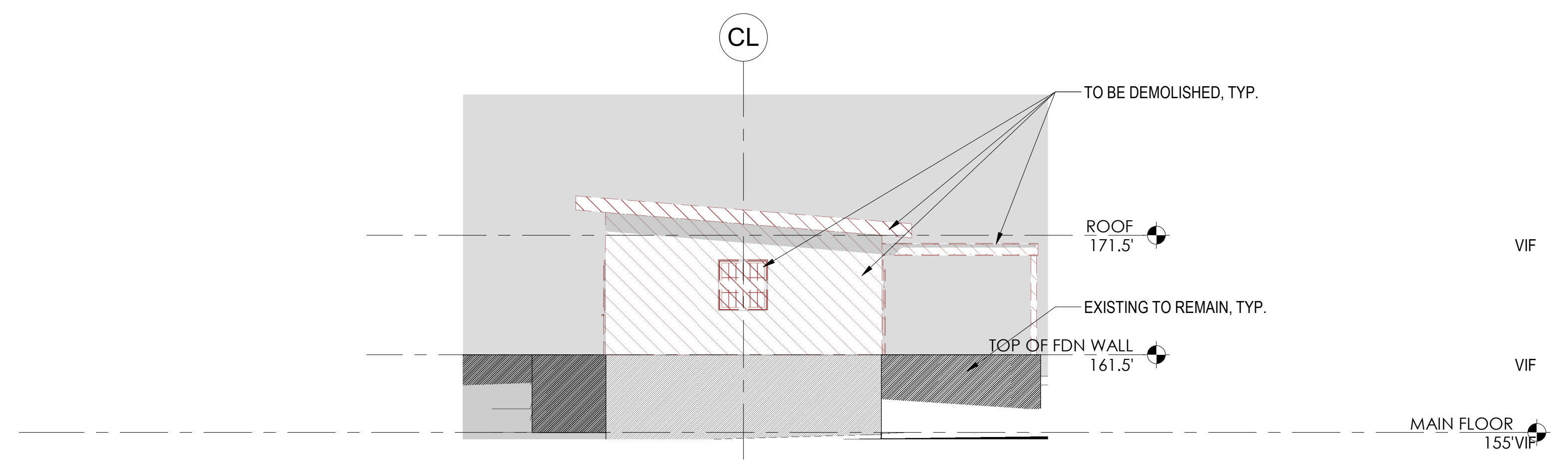
DEMOLITION LEGEND			
WINDOW - TO BE DEMOLISHED		WALL - EXISTING TO REMAIN	
DOOR - TO BE DEMOLISHED		WALL - TO BE DEMOLISHED	

**GENERAL NOTES - DEMO:**

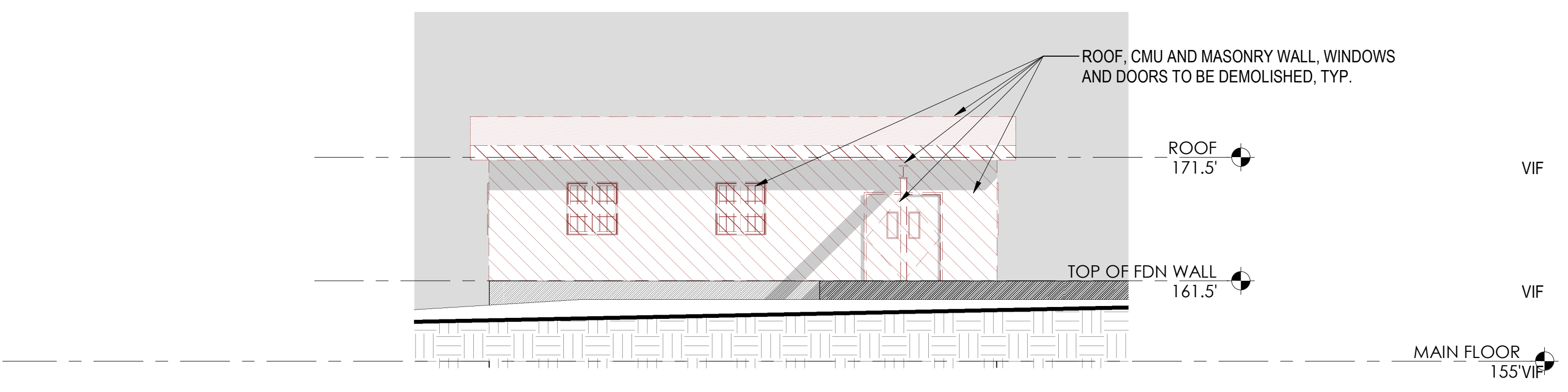
- REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
- REFER TO STRUCTURAL DRAWING FOR MORE INFO ON DEMO SCOPE.



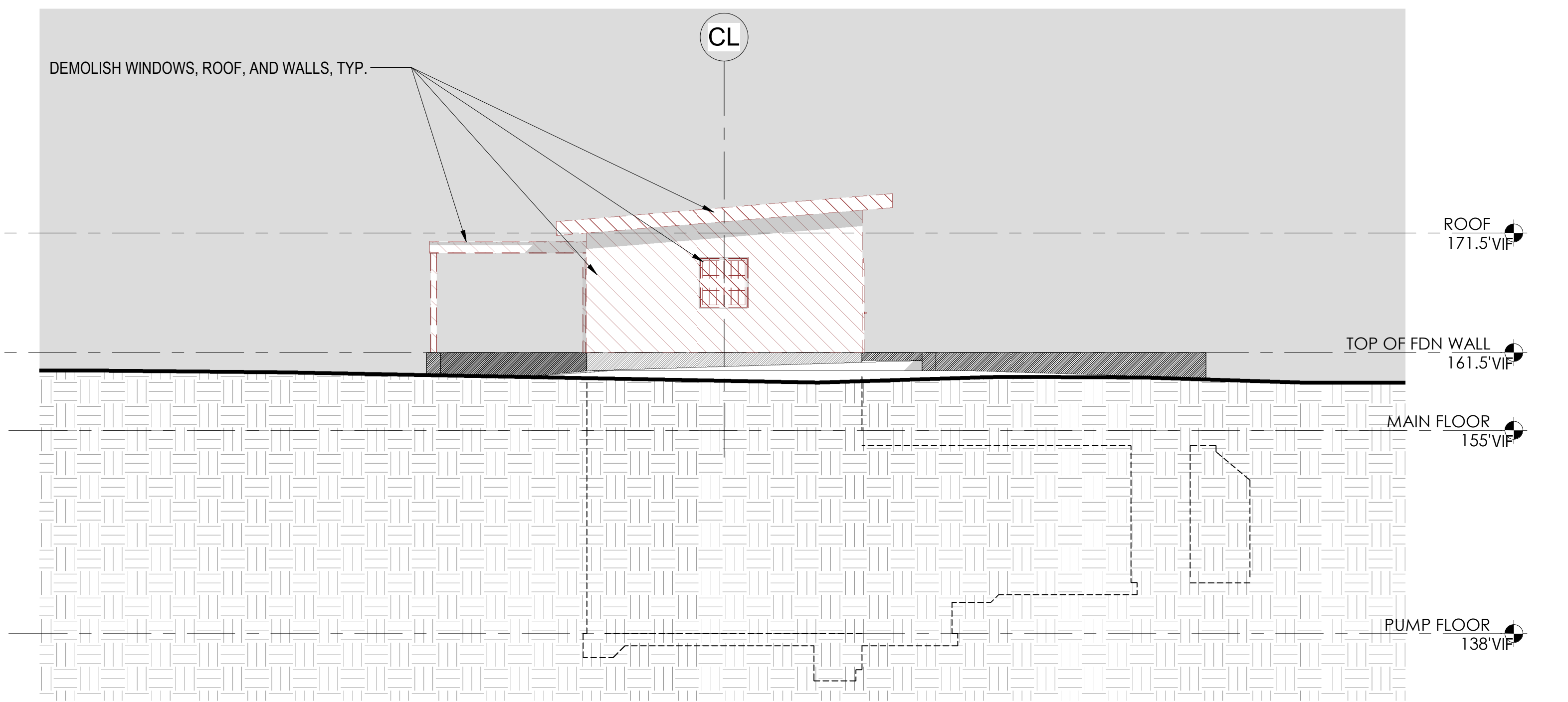
**4 WEST DEMOLITION ELEVATION**  
1/8" = 1'-0"



**3 SOUTH DEMOLITION ELEVATION**  
1/8" = 1'-0"



**2 EAST DEMOLITION ELEVATION**  
1/8" = 1'-0"



**1 NORTH DEMOLITION ELEVATION**  
1/8" = 1'-0"

P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWG\601-REV\1\FAMILIES\TITLEBLOCKS\KDC\_Arch D 24x36 Vertical Title - BETA

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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TITLE

**Worcester Road Sewer  
Pumping Station Replacement  
WALL DEMOLITION EXTERIOR ELEVATIONS**

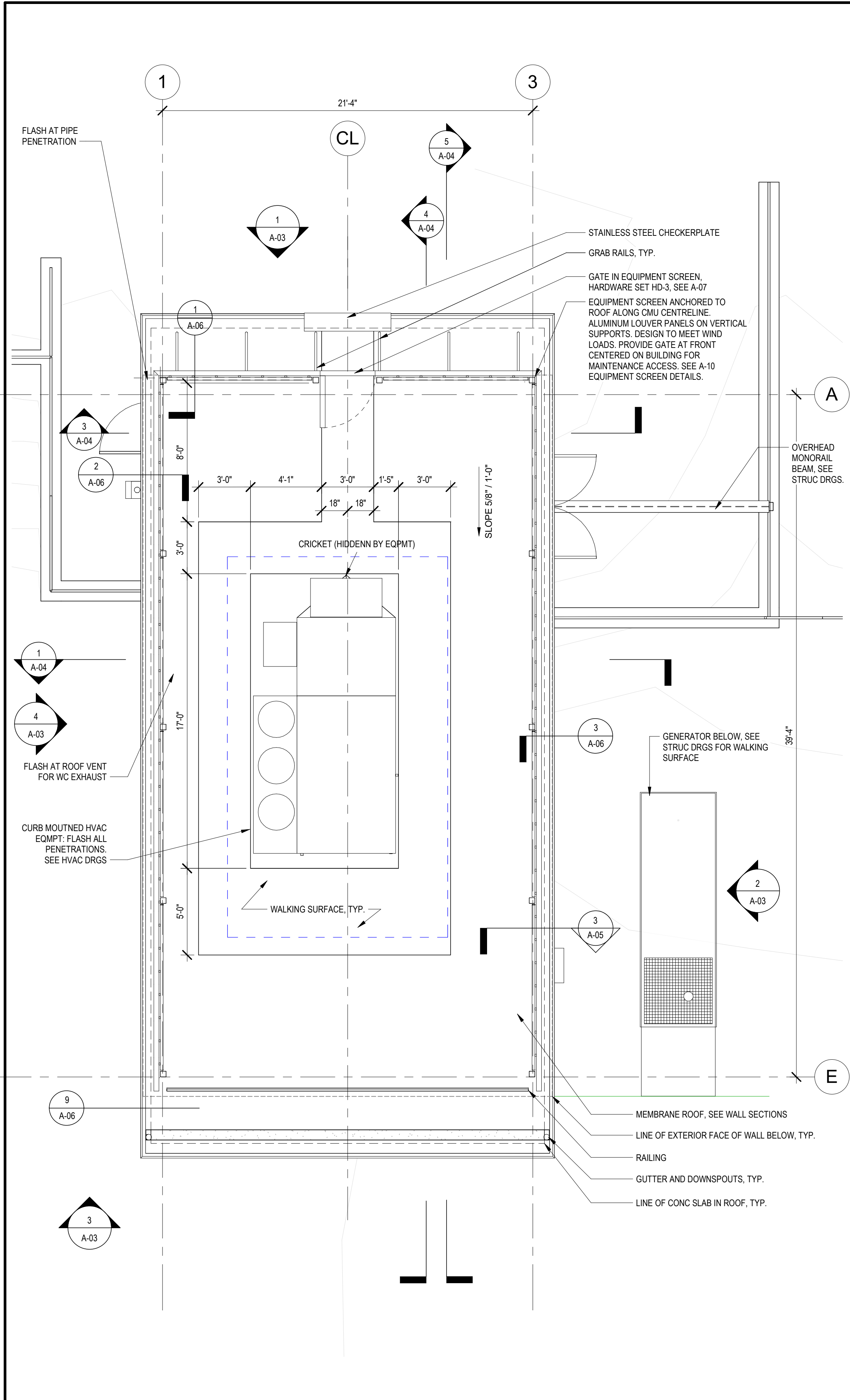
DSK JOB NO. 20030.00

ISSUE DATE JANUARY 2023

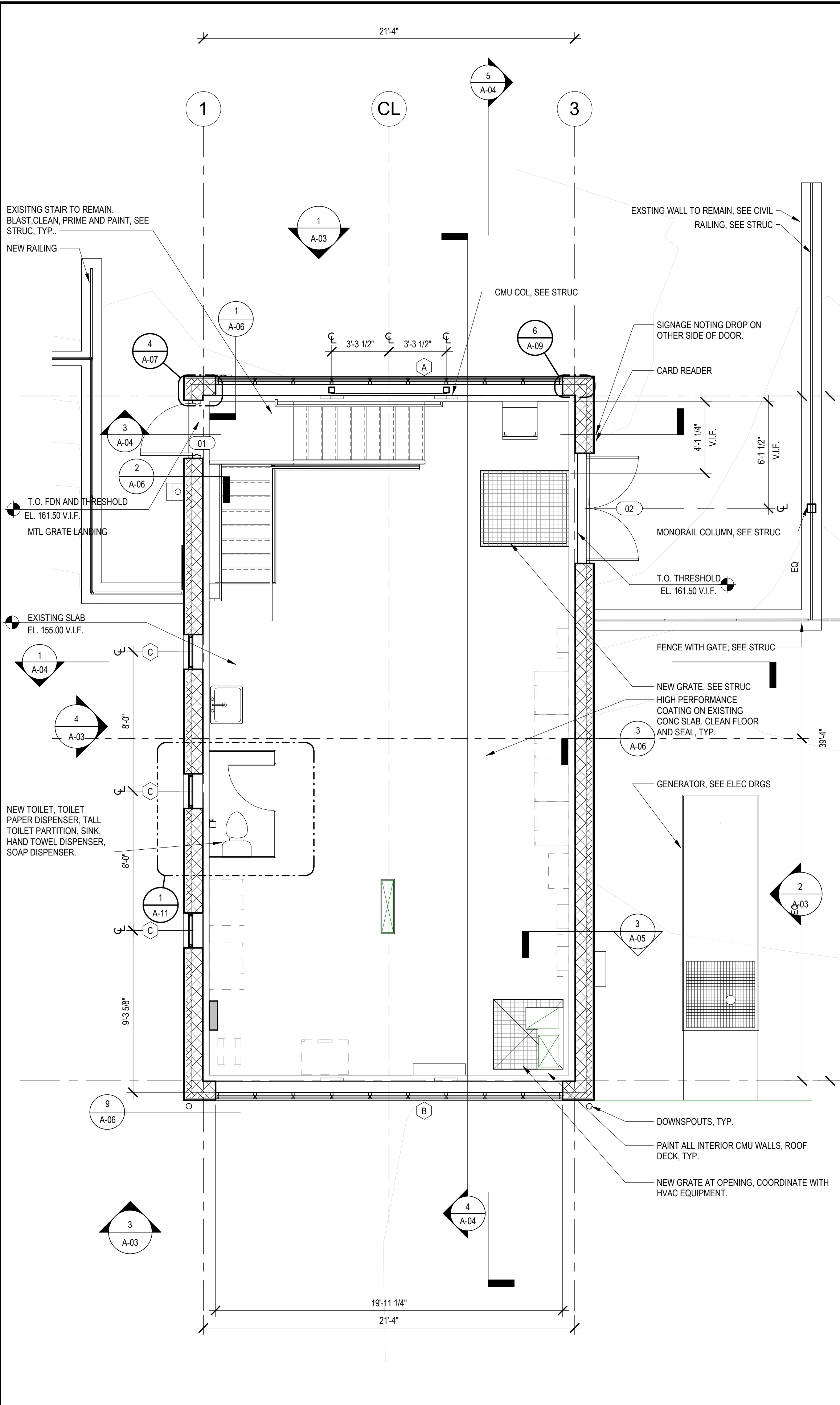
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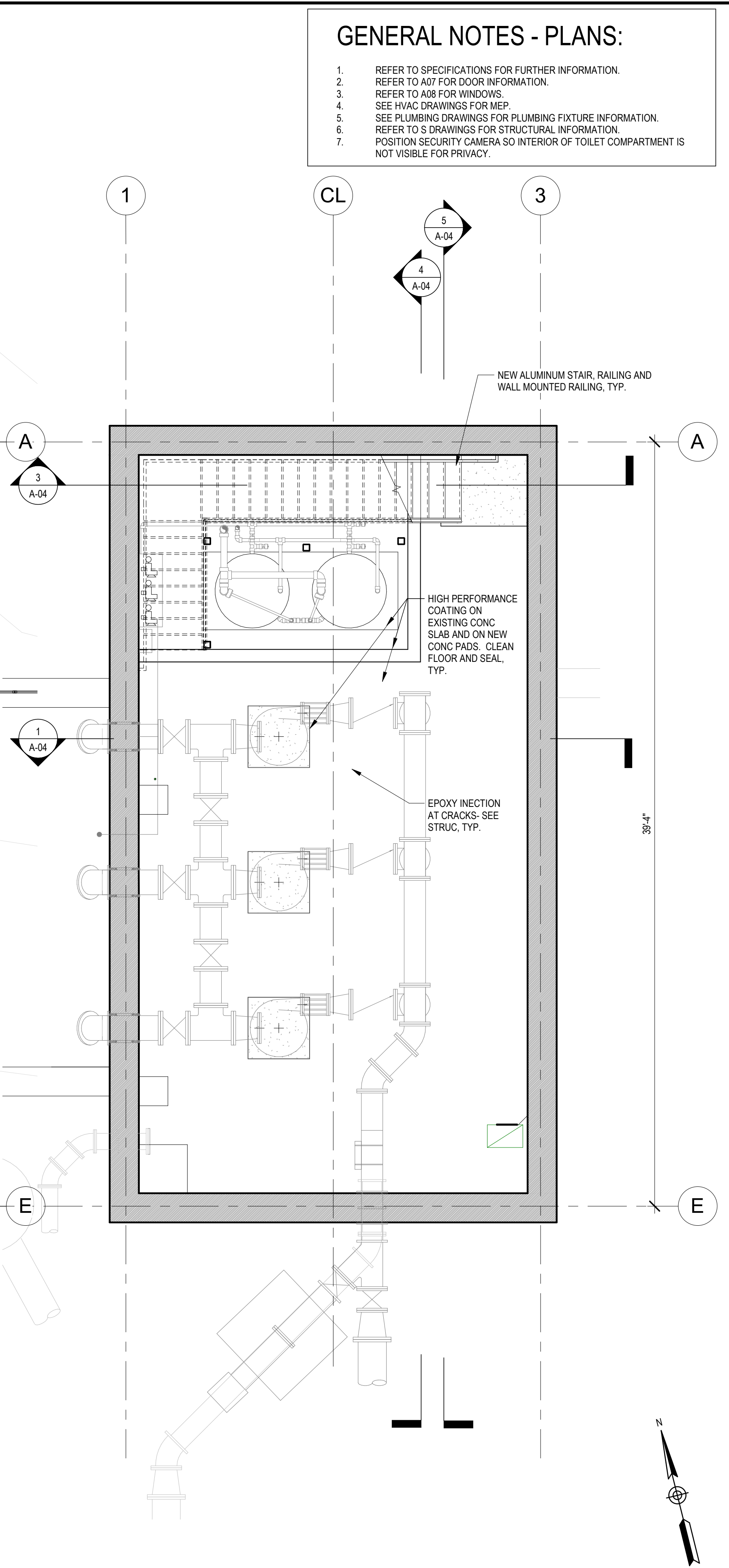
- GENERAL NOTES - PLANS:**
- REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
  - REFER TO A07 FOR DOOR INFORMATION.
  - REFER TO A08 FOR WINDOWS.
  - SEE HVAC DRAWINGS FOR MEP.
  - SEE PLUMBING DRAWINGS FOR PLUMBING FIXTURE INFORMATION.
  - REFER TO S DRAWINGS FOR STRUCTURAL INFORMATION.
  - POSITION SECURITY CAMERA SO INTERIOR OF TOILET COMPARTMENT IS NOT VISIBLE FOR PRIVACY.



**3 ROOF PLAN**  
1/4" = 1'-0"



**2 02 UPPER LEVEL FLOOR PLAN**  
1/4" = 1'-0"



**1 00 LOWER LEVEL FLOOR PLAN**  
1/4" = 1'-0"

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DESIGNED BY:  
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CHECKED BY:  
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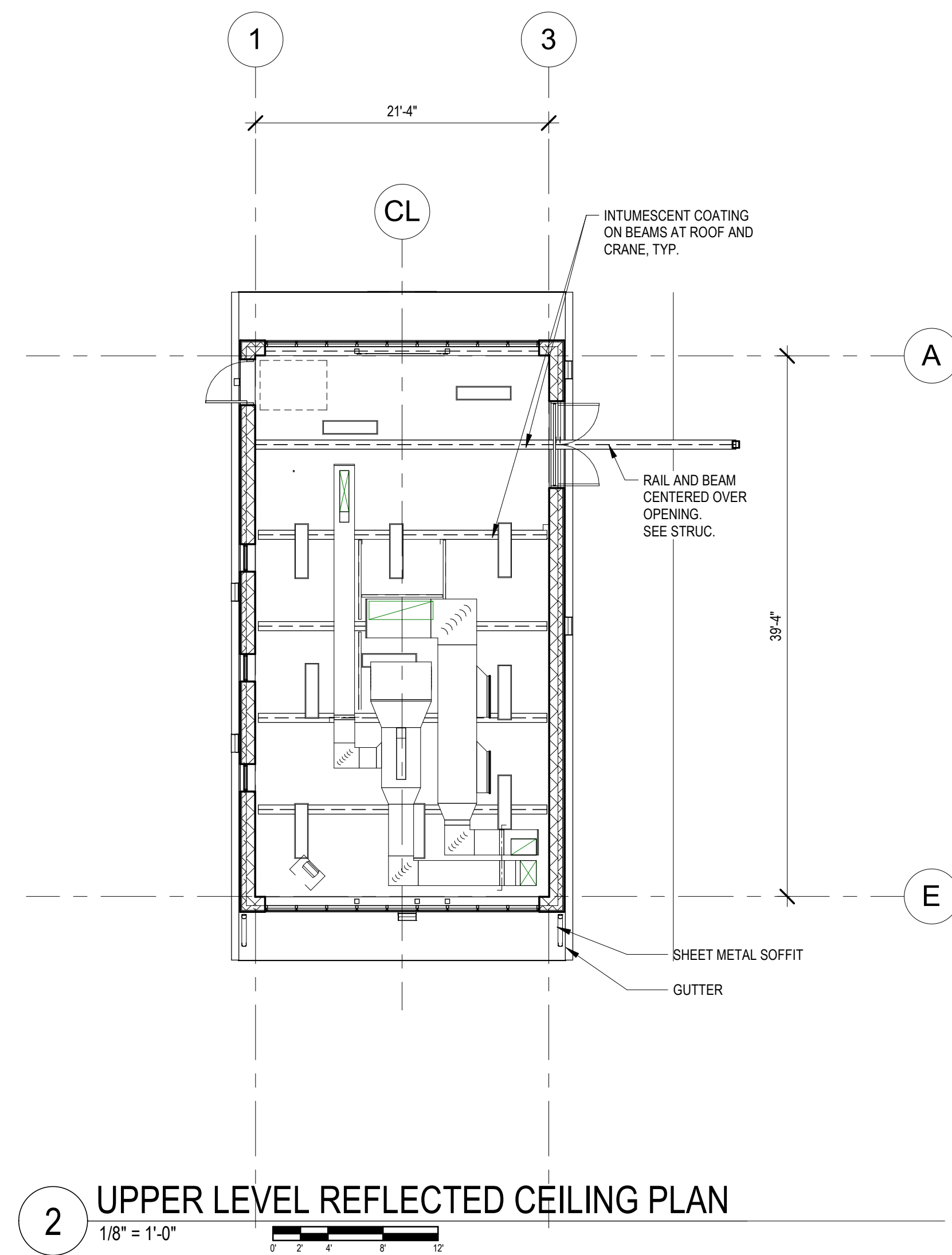
SCALE  
1/4" = 1'-0"  
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE  
Worcester Road Sewer Pumping Station Replacement  
FLOOR PLANS

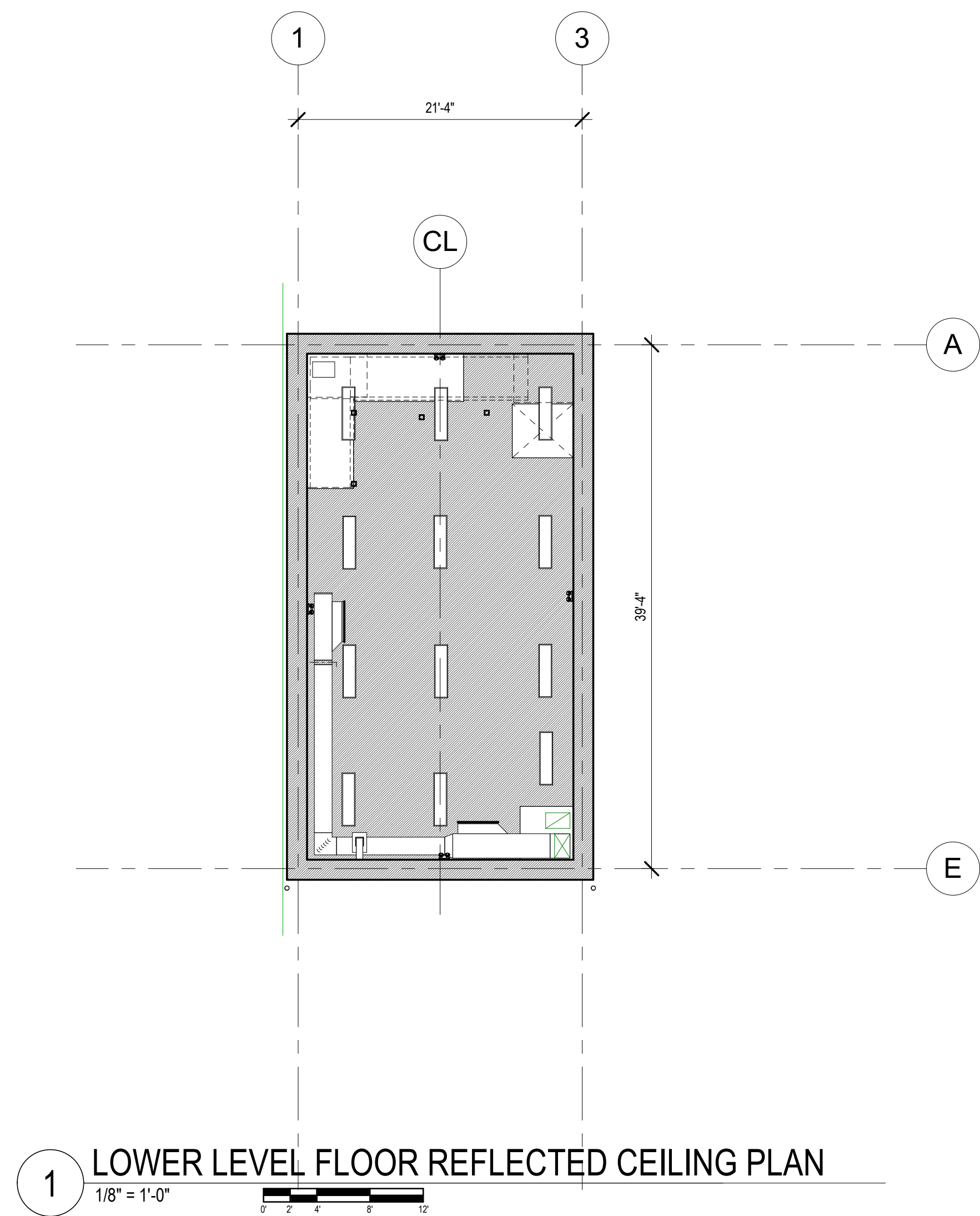
DSK JOB NO. 20030.00  
ISSUE DATE JANUARY 2023  
SHEET NO. A-01

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

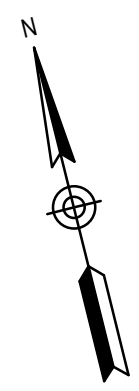
- GENERAL NOTES - RCPs:**
1. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
  2. REFER TO A07 FOR DOOR INFORMATION.
  3. REFER TO A08 FOR WINDOWS.
  4. SEE HVAC DRAWINGS FOR MEP.
  5. SEE PLUMBING DRAWINGS FOR PLUMBING FIXTURE INFORMATION.
  6. REFER TO S DRAWINGS FOR STRUCTURAL INFORMATION.



**2 UPPER LEVEL REFLECTED CEILING PLAN**  
1/8" = 1'-0"



**1 LOWER LEVEL FLOOR REFLECTED CEILING PLAN**  
1/8" = 1'-0"



P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWG\600-REV\IT\FAMILIES\TITLEBLOCKS\KDC\_Arch D 24x36 Vertical Title - BETA

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

**DRAWN BY:**  
ALK

**DESIGNED BY:**  
DSK

**CHECKED BY:**  
MPS



**SUBCONSULTANT**

**DSK Dewing Schmid Kearns**  
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**SCALE**

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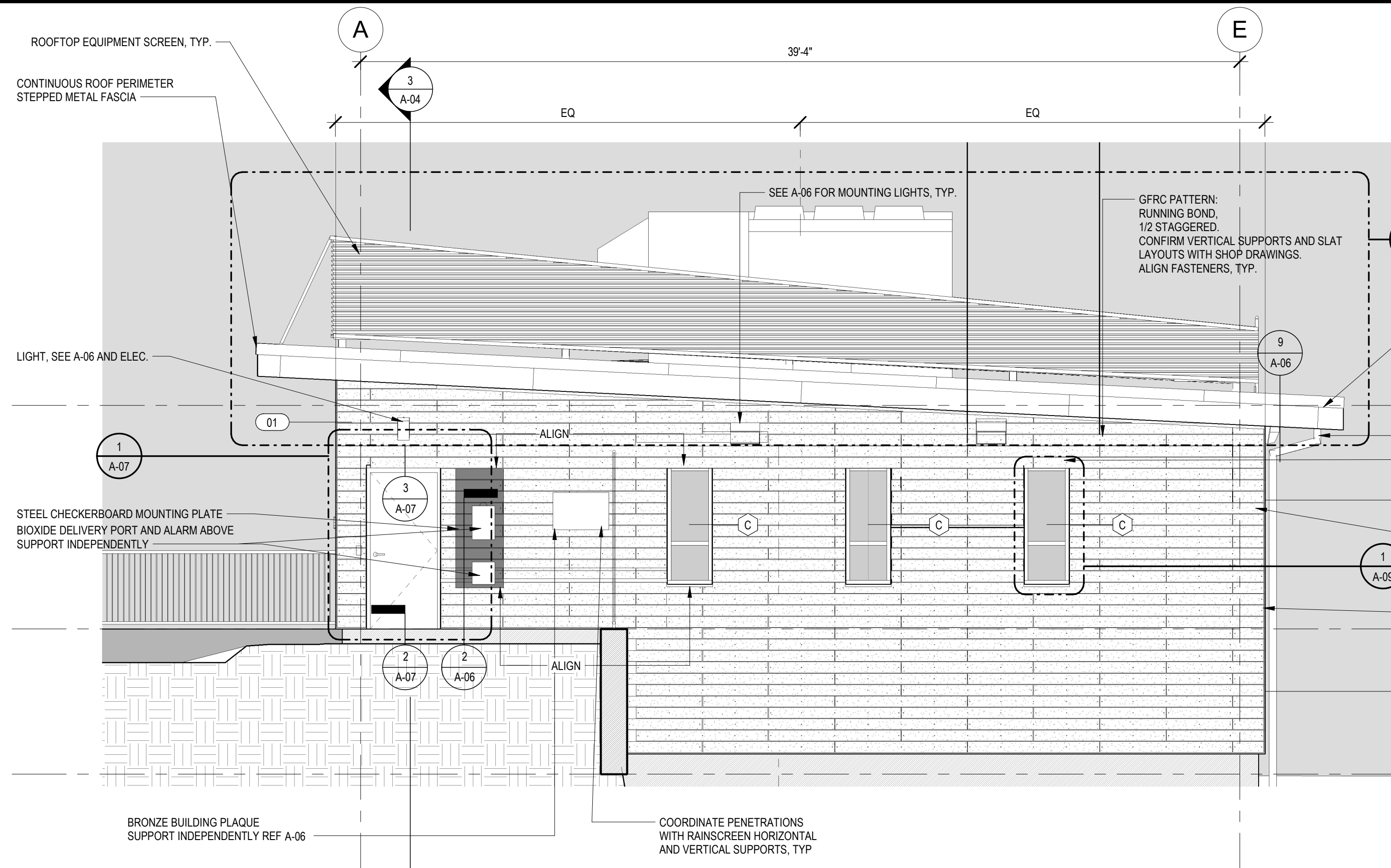
**TITLE**

**Worcester Road Sewer Pumping Station Replacement REFLECTED CEILING PLANS**

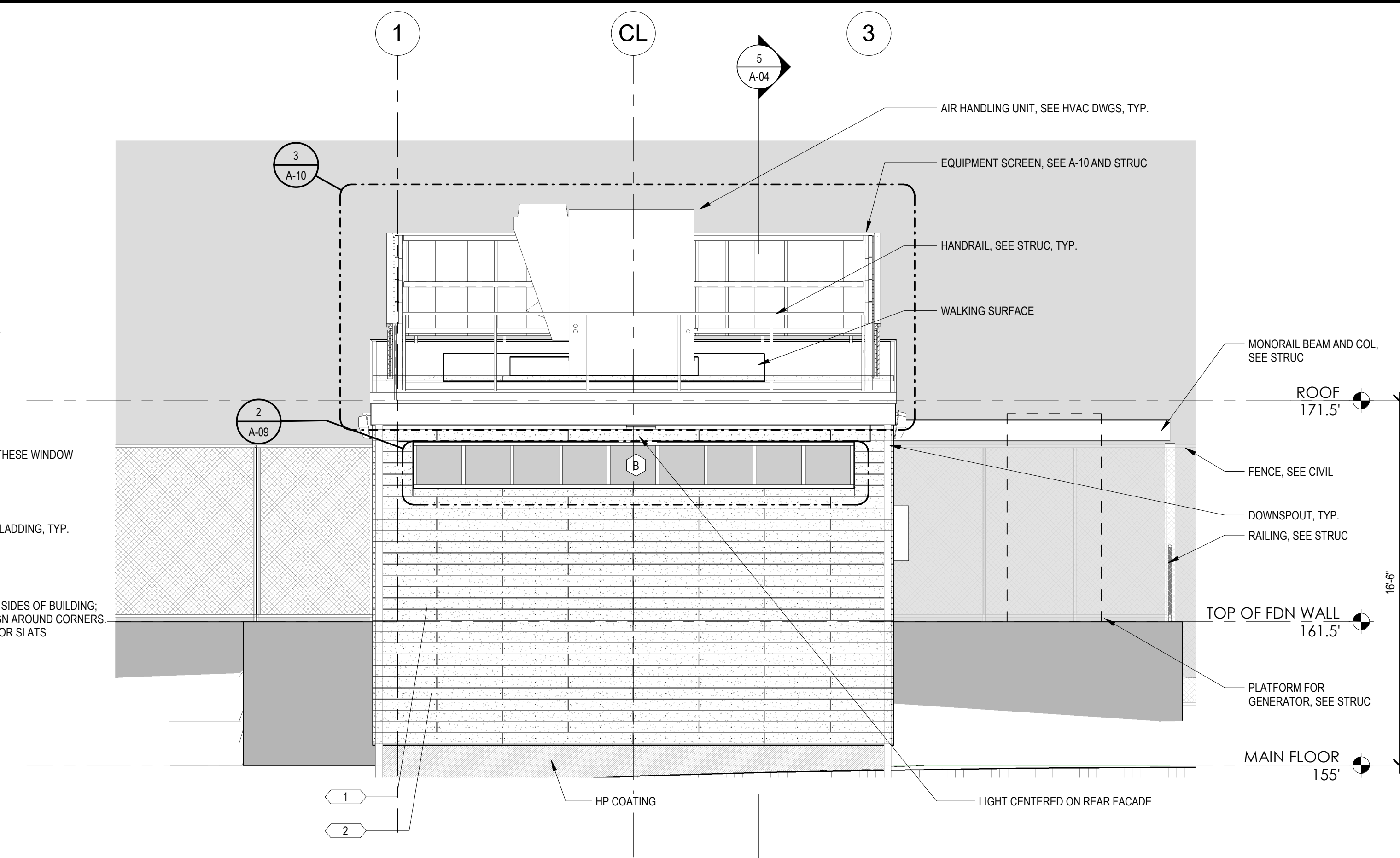
**DSK JOB NO.** 20030.00

**ISSUE DATE** JANUARY 2023

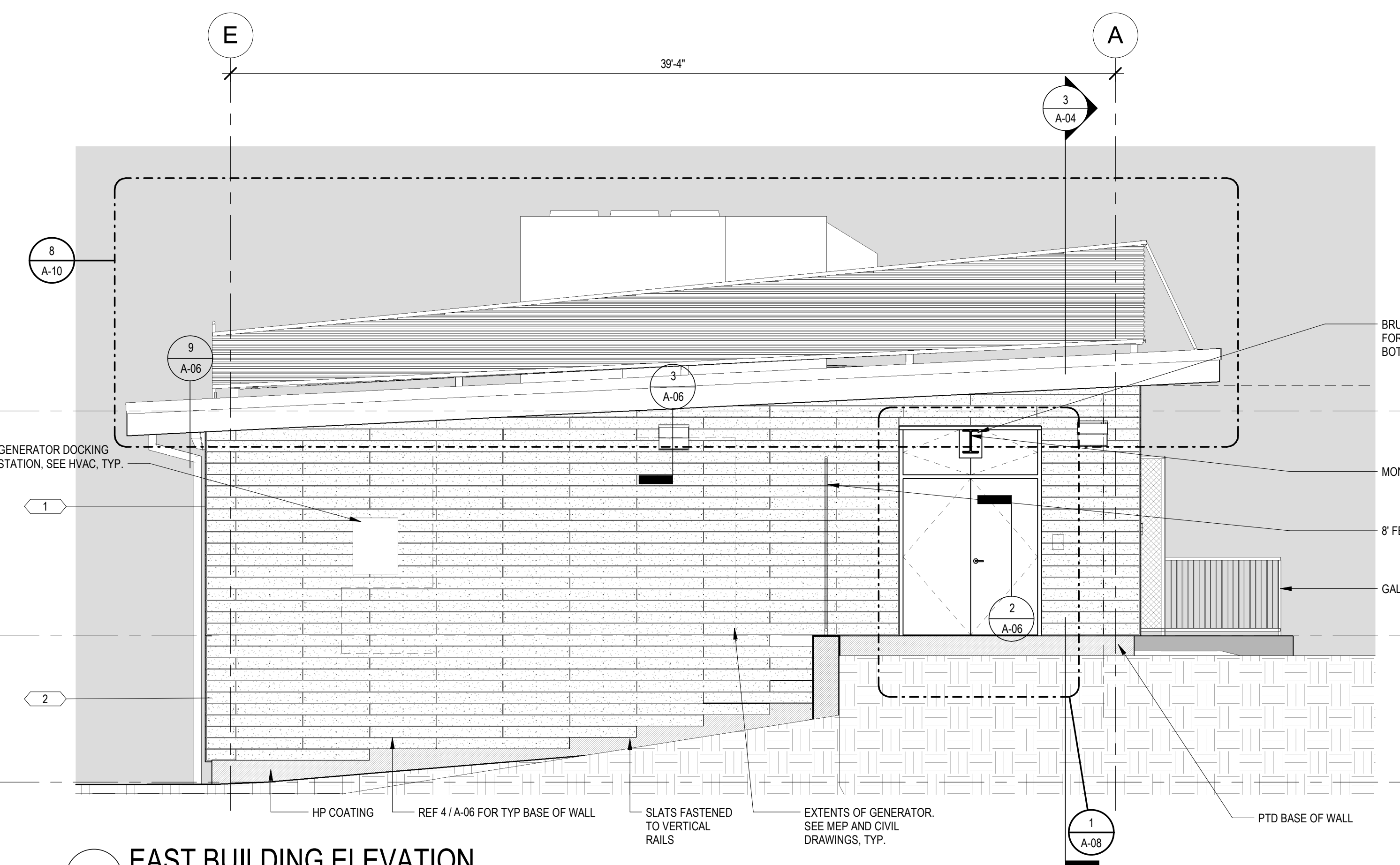
**SHEET NO.** **A-02**



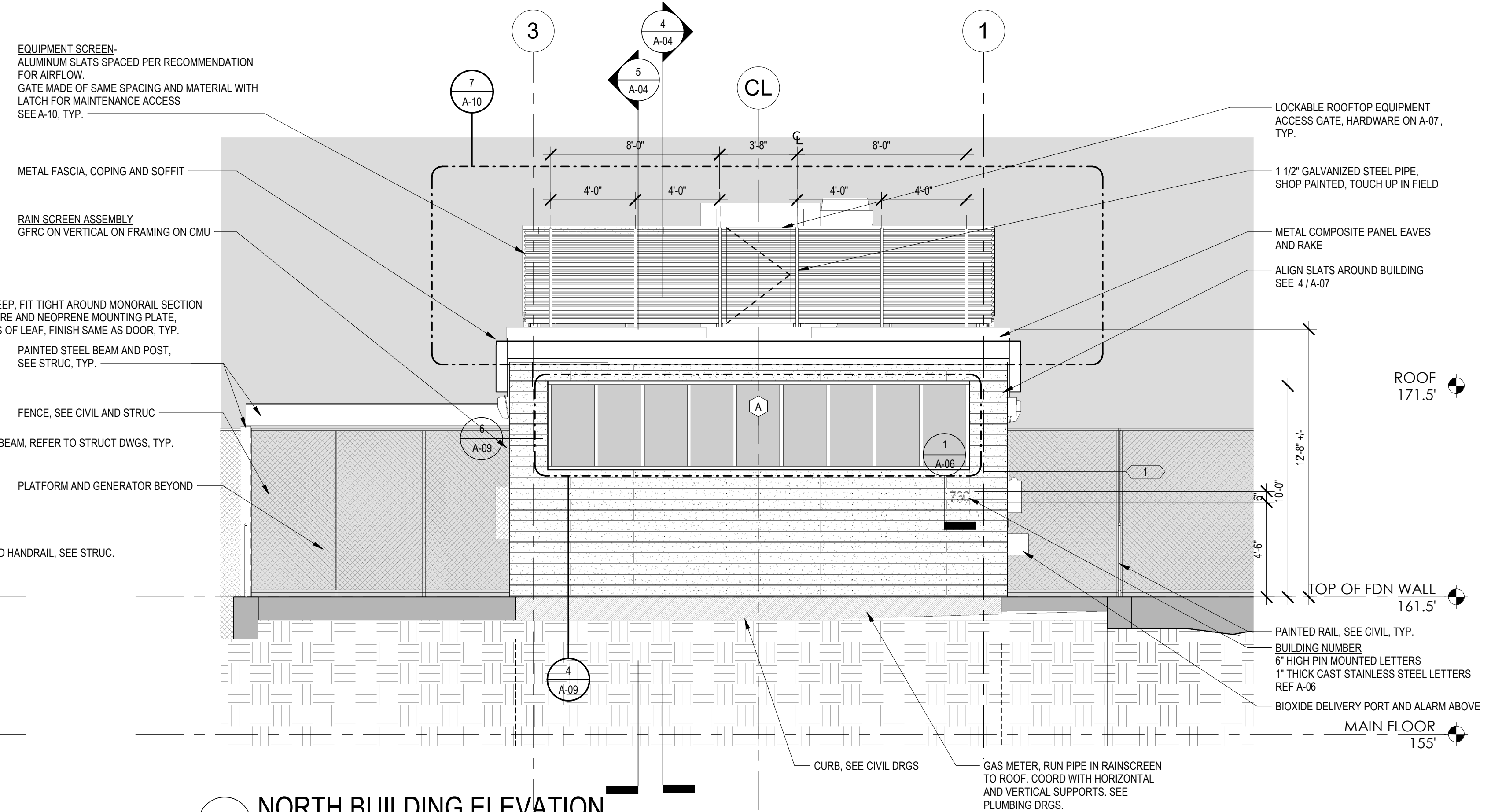
**4 WEST BUILDING ELEVATION**  
1/4" = 1'-0"



**3 SOUTH BUILDING ELEVATION**  
1/4" = 1'-0"



**2 EAST BUILDING ELEVATION**  
1/4" = 1'-0"



**1 NORTH BUILDING ELEVATION**  
1/4" = 1'-0"

P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWGS\601-REV\VF\FAMILIES\TITLEBLOCKS\601-Rev\VF\FAMILIES\TITLE - BETA

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

**DRAWN BY:**  
ALK

**DESIGNED BY:**  
DSK

**CHECKED BY:**  
MPS

**REGISTERED PROFESSIONAL ARCHITECT**

**PREPARED BY**

**BETA**  
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508.999.0440

**SCALE**

**1/4" = 1'-0"**

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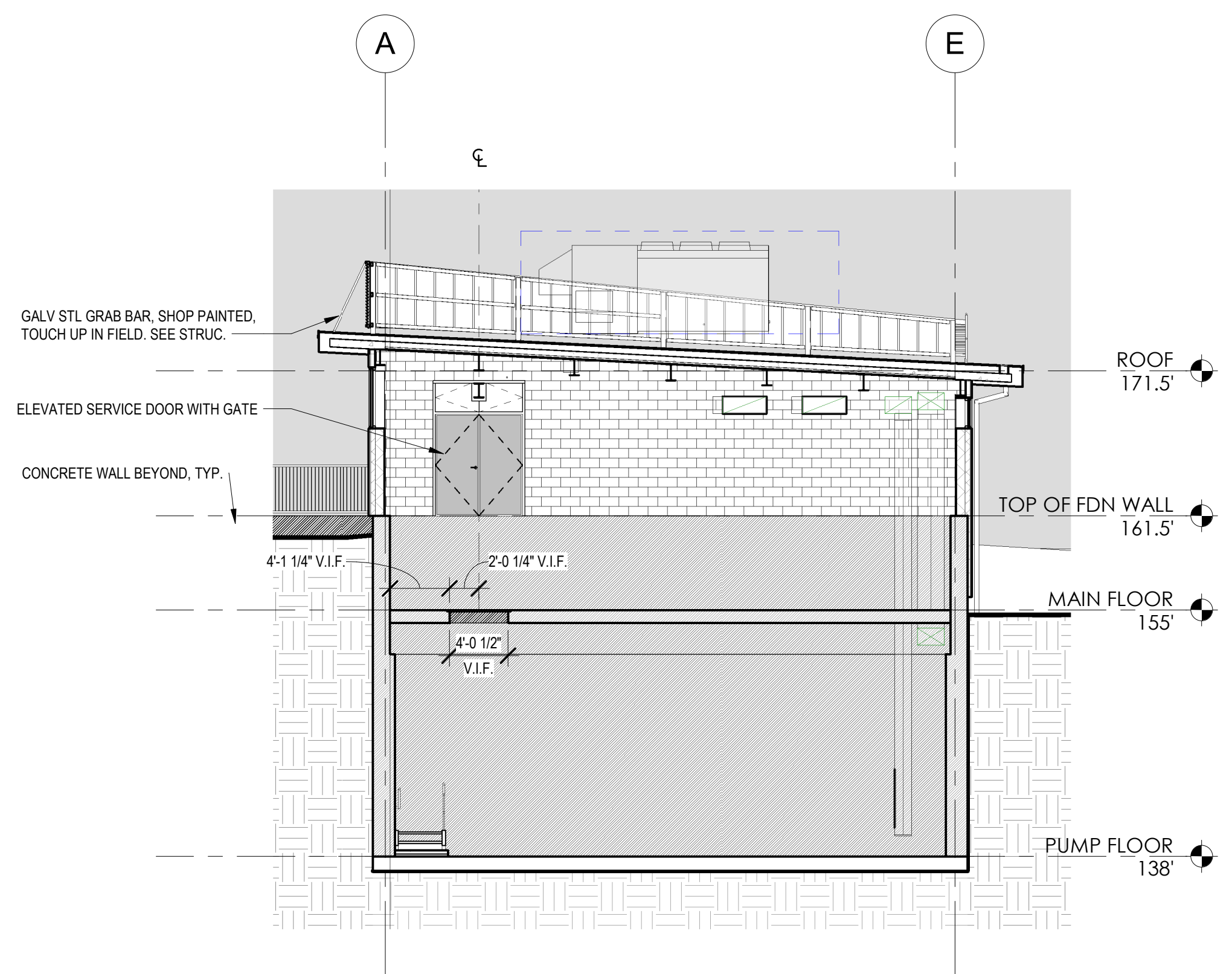
**TITLE**

**Worcester Road Sewer Pumping Station Replacement**  
**EXTERIOR BUILDING ELEVATIONS**

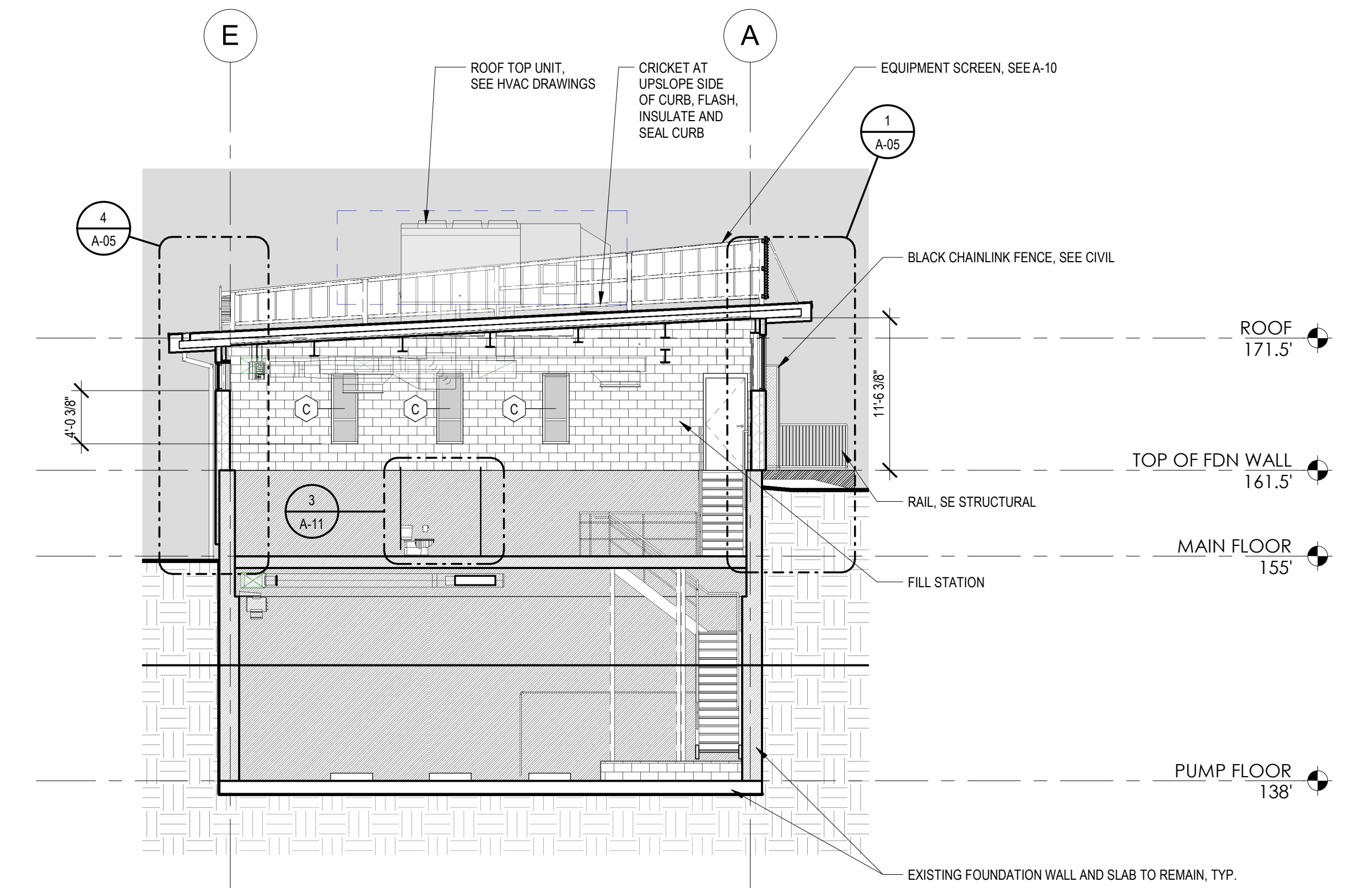
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**ISSUE DATE** JANUARY 2023

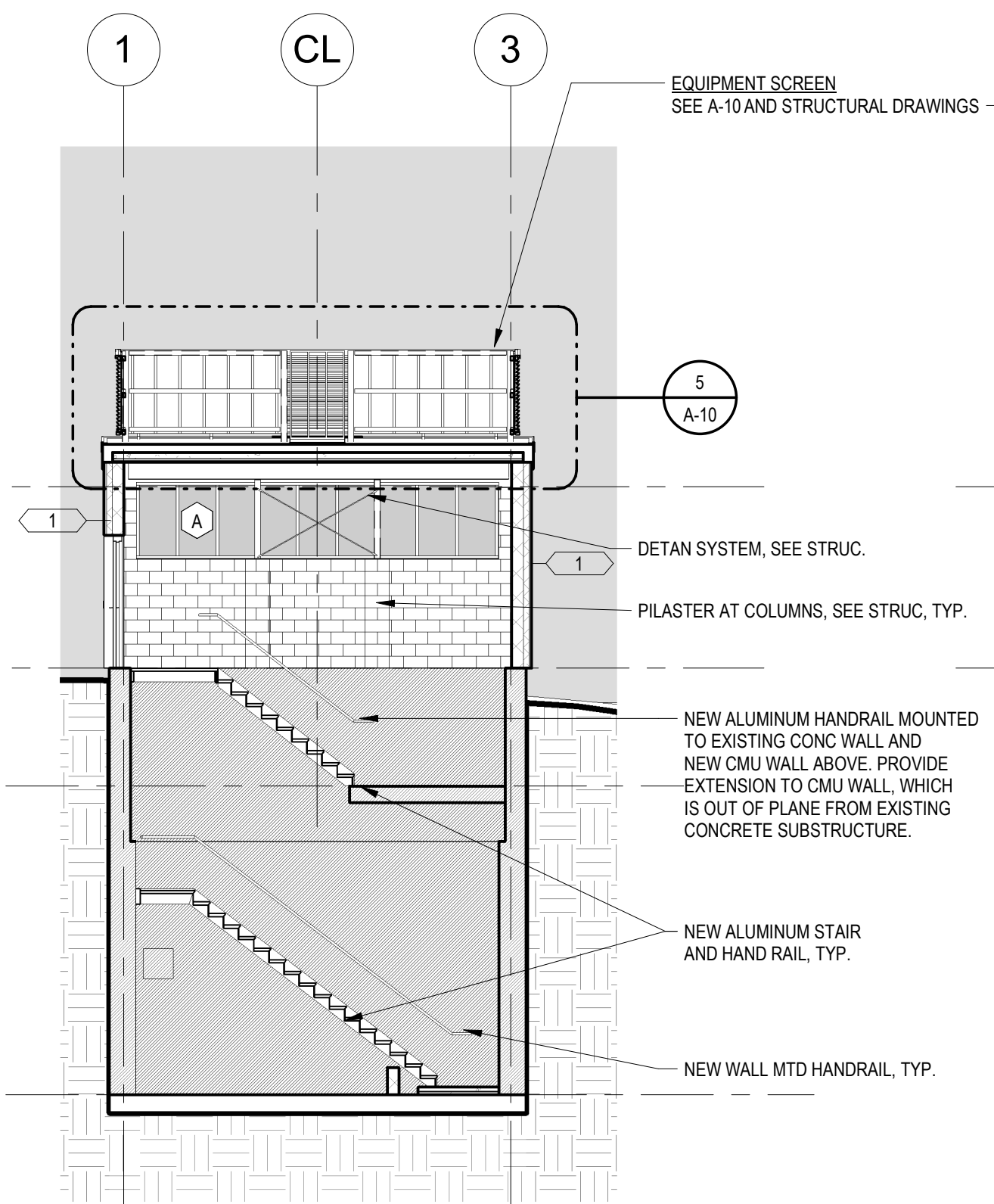
**SHEET NO.** **A-03**



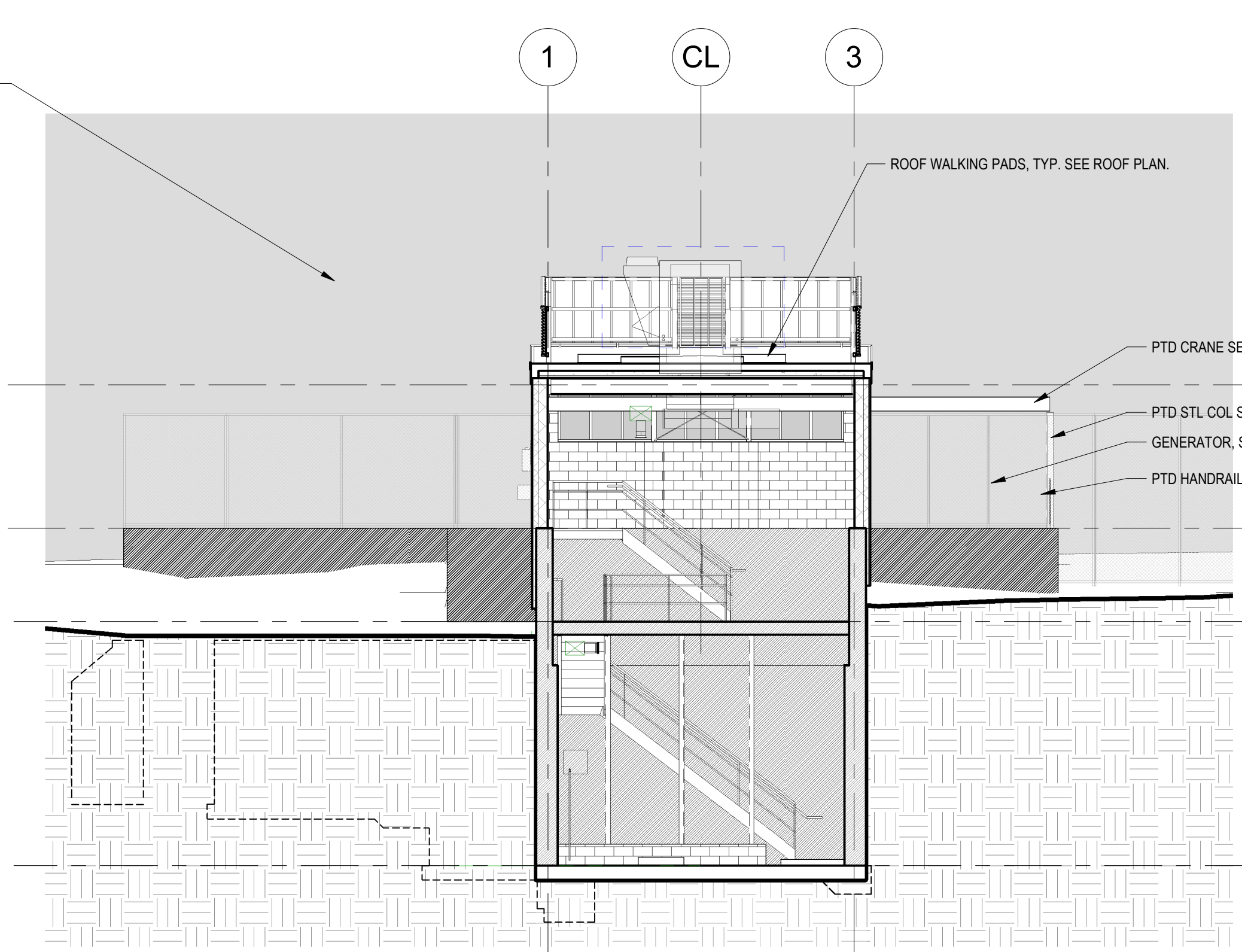
**5 BUILDING SECTION S/N LOOKING EAST**  
1/8" = 1'-0"



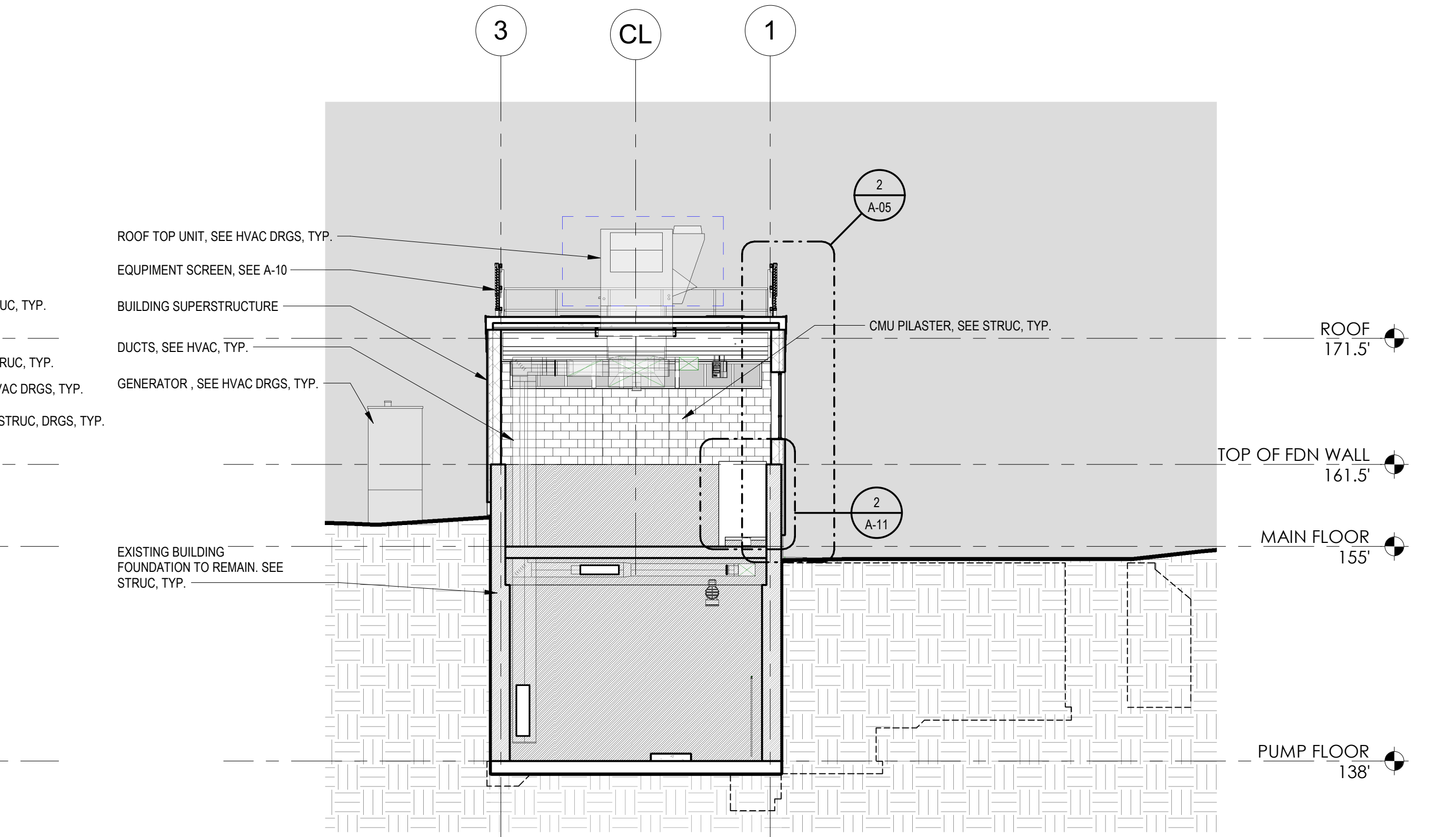
**4 BUILDING SECTION (N/S) LOOKING WEST**  
1/8" = 1'-0"



**3 BUILDING SECT LKG NORTH**  
1/8" = 1'-0"



**2 BUILDING SECTION E/W**  
1/8" = 1'-0"



**1 BUILDING SECTION (W/E) LOOKING SOUTH**  
1/8" = 1'-0"

P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWG\600-NPS-DWG\600-NPS-DWG\_Veritical Title - BETA

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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ALK  
DESIGNED BY:  
DSK  
CHECKED BY:  
MPS



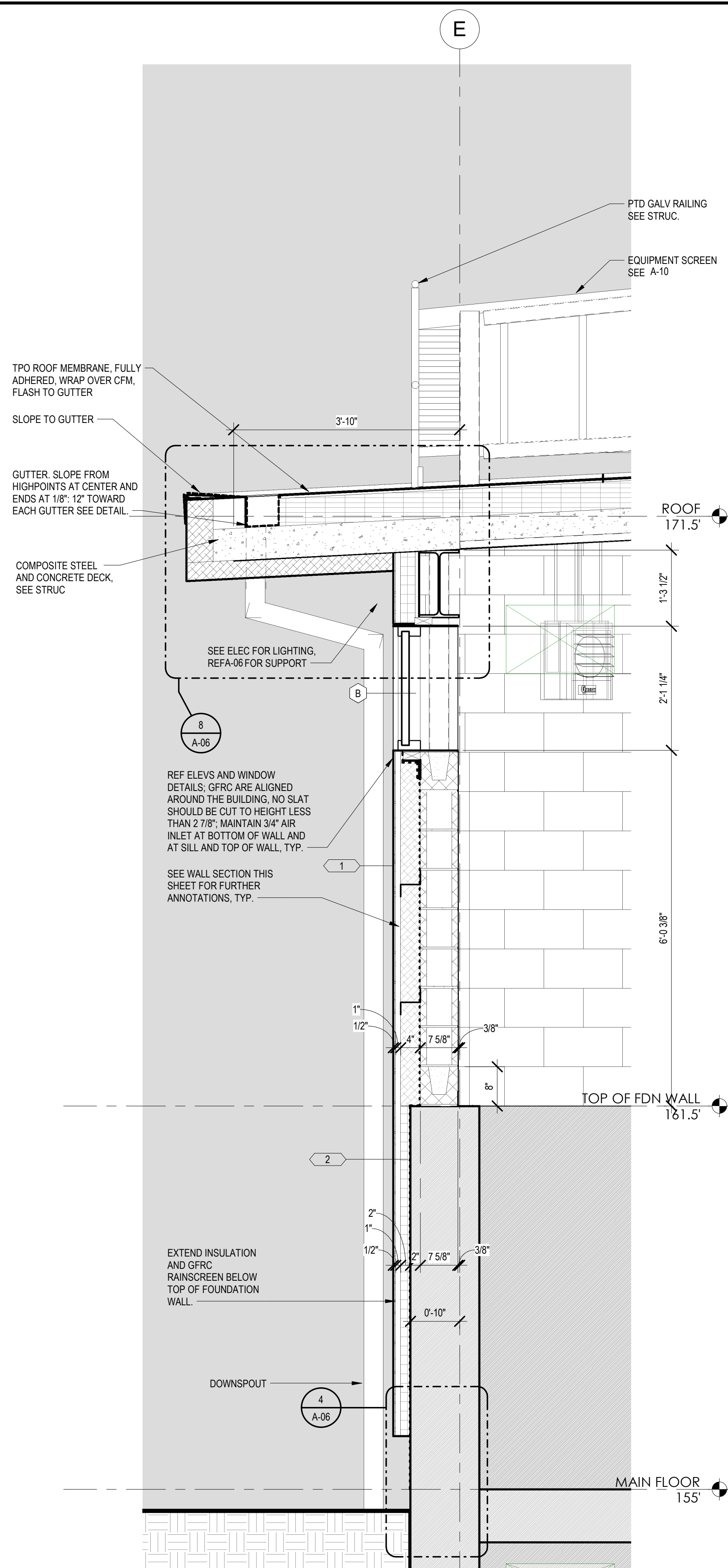
SUBCONSULTANT  
DSK Dewing Schmid Kearns  
ARCHITECTS + PLANNERS  
30 Monument Square Suite 200B  
Concord, MA 01742  
978.371.7500  
280 Elm Street  
South Dartmouth, MA 02748  
508.999.0440

SCALE  
**1/8" = 1'-0"**  
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

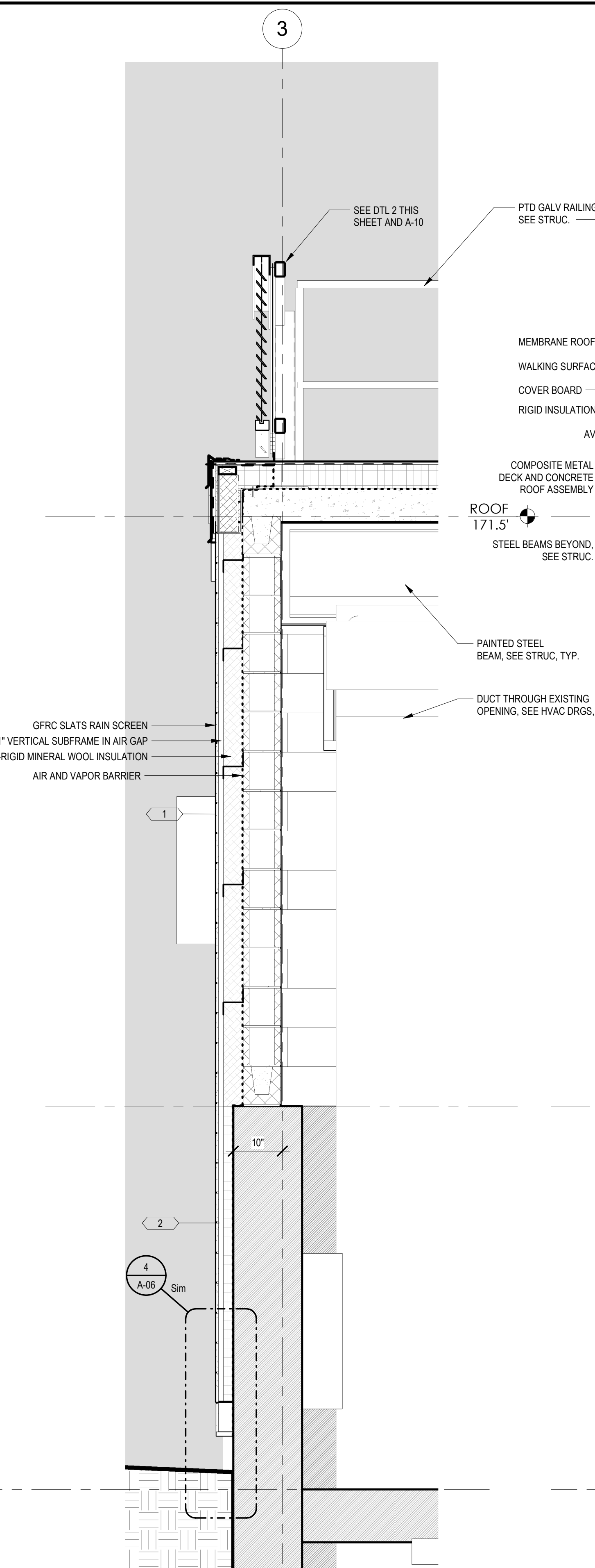
TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
**BUILDING SECTIONS**

DSK JOB NO. 20030.00  
ISSUE DATE JANUARY 2023  
SHEET NO. **A-04**

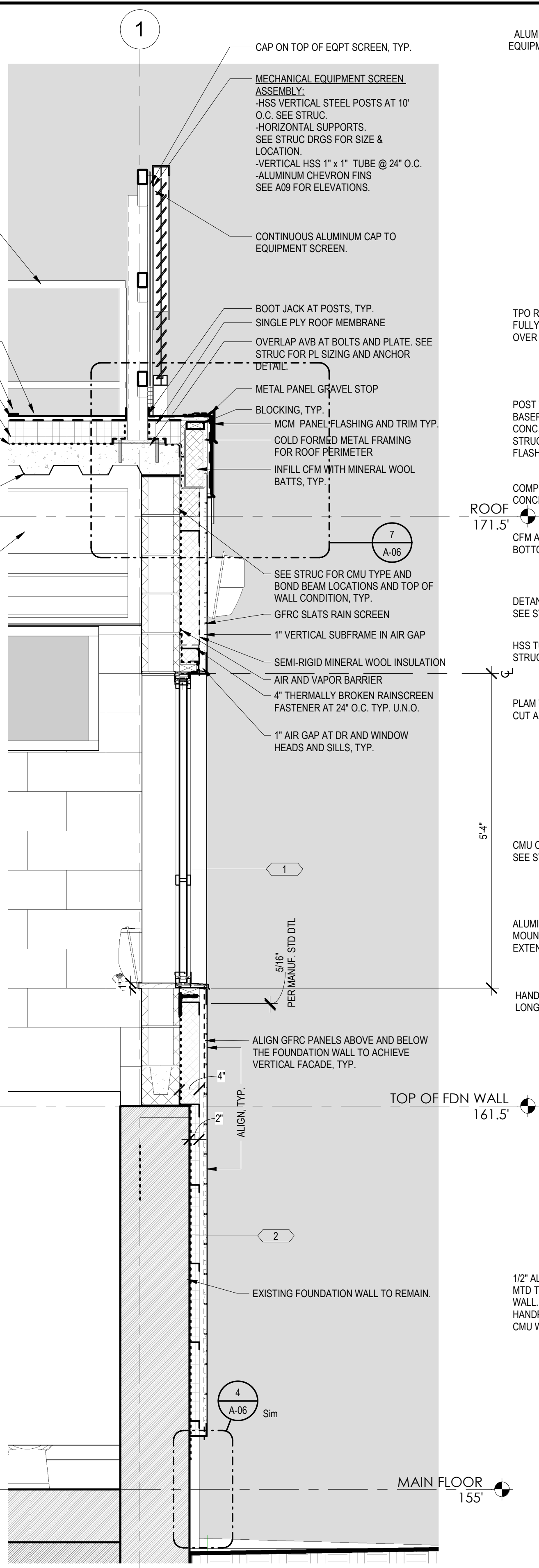
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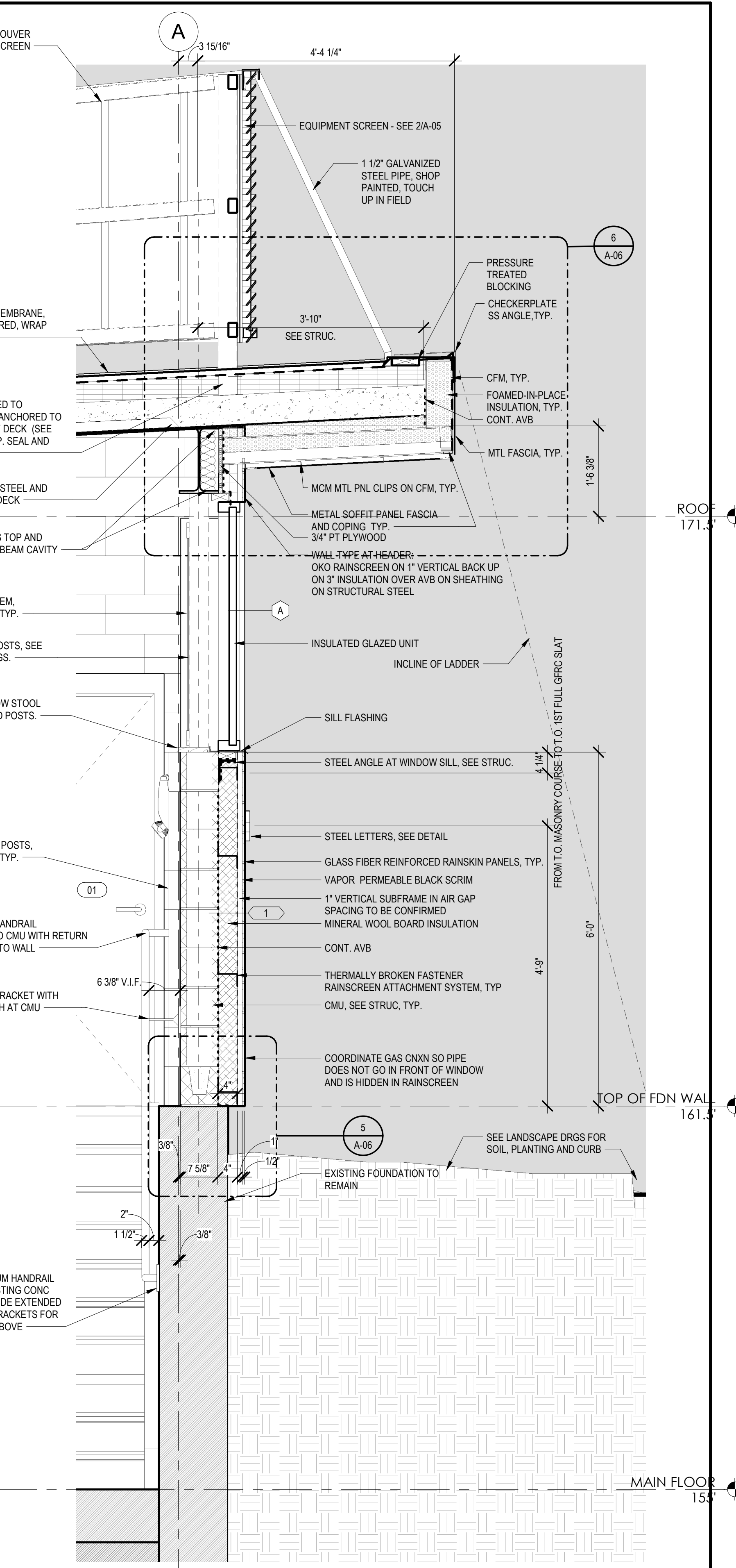
4 WALL SECTION SOUTH WALL (REAR OF BLDG)  
3/4" = 1'-0"



3 WALL SECTION AT EAST WALL LOOKING SOUTH  
3/4" = 1'-0"



2 WALL SECTION WEST WALL LOOKING SOUTH  
3/4" = 1'-0"



1 WALL SECTION AT NORTH (FRONT) OF BUILDING  
3/4" = 1'-0"

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
ALK  
DESIGNED BY:  
DSK  
CHECKED BY:  
MPS

REGISTERED PROFESSIONAL PREPARED BY

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SUBCONSULTANT

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South Dartmouth, MA 02748  
508.999.0440

SCALE

3/4" = 1'-0"

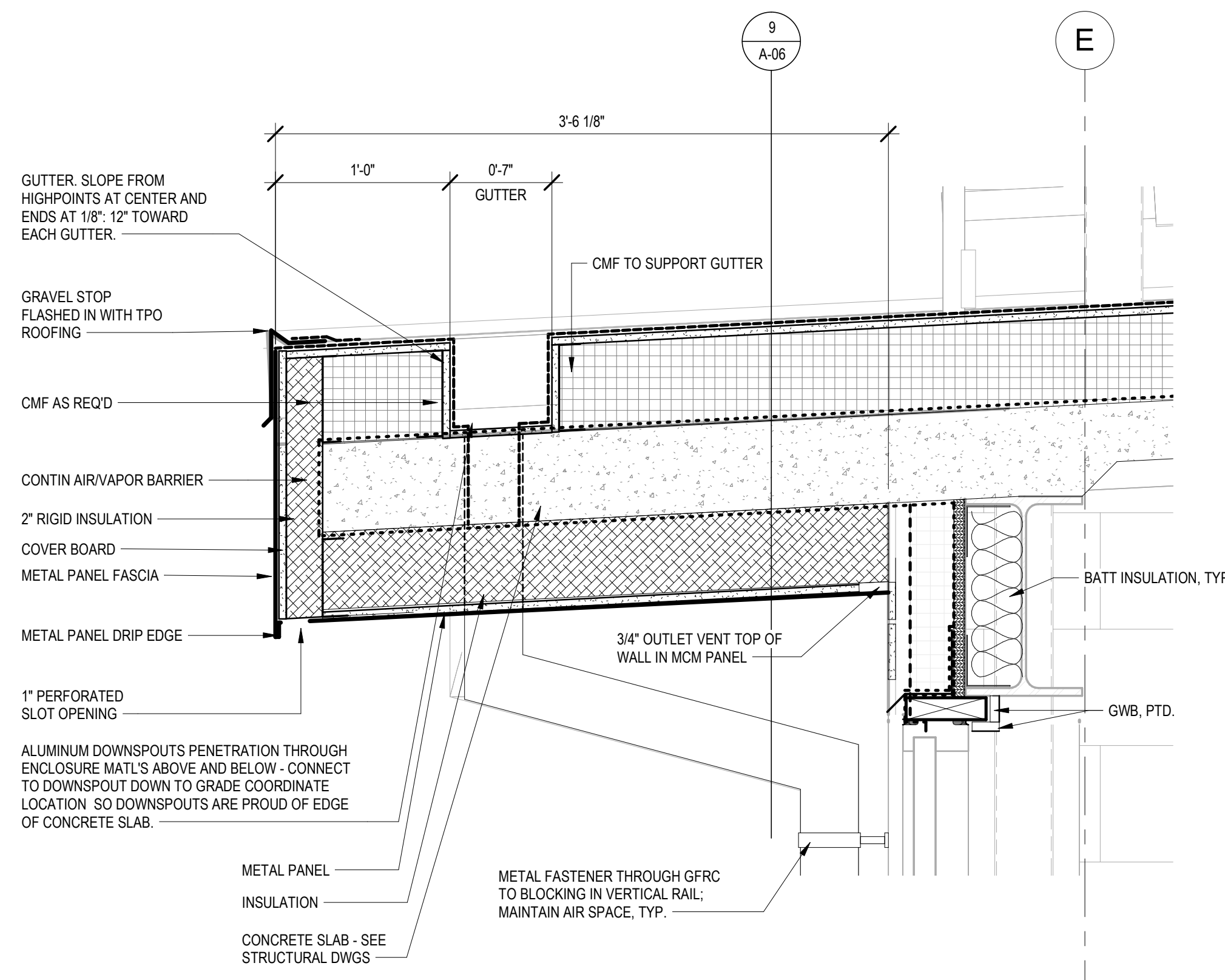
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE

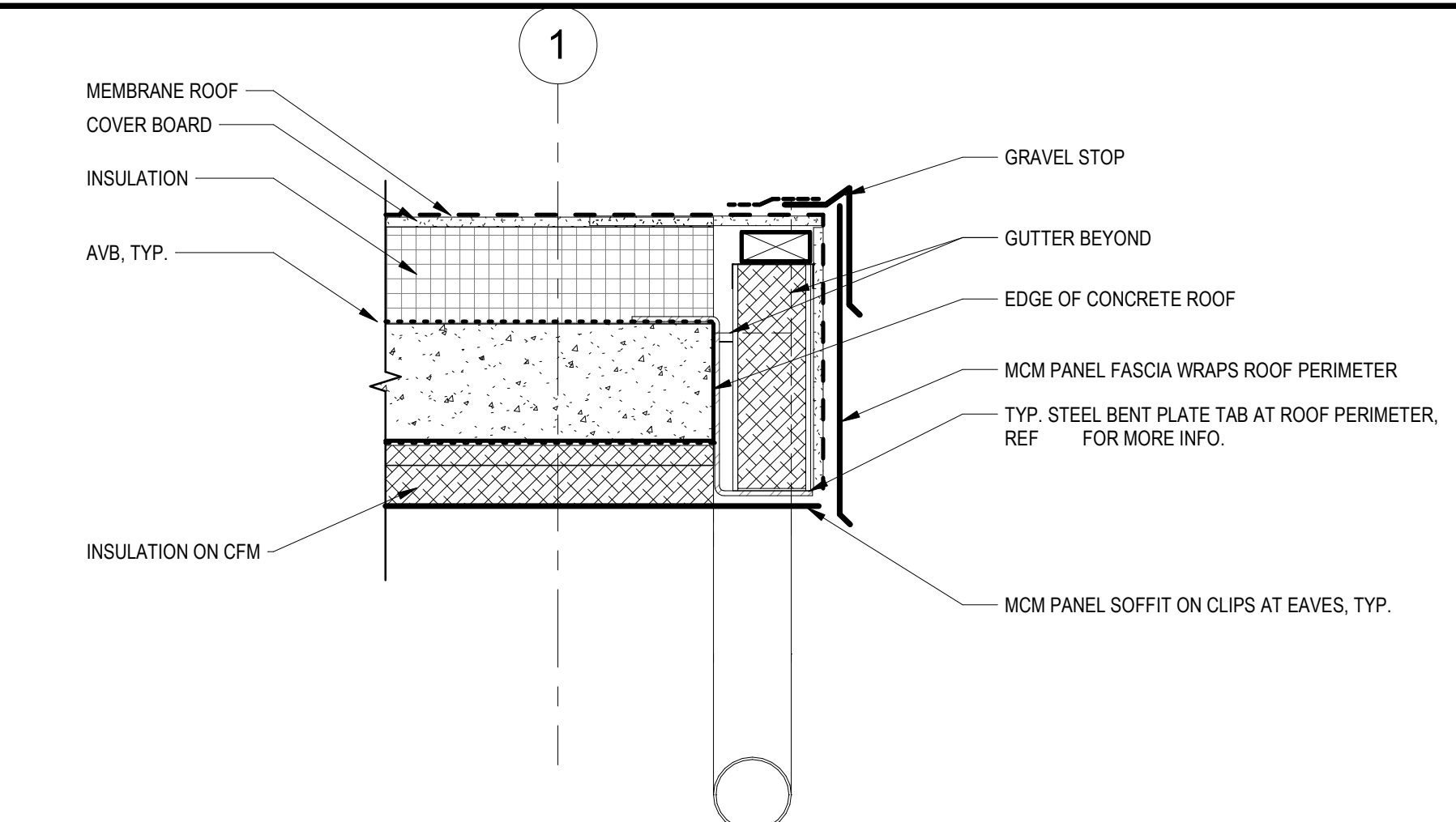
**Worcester Road Sewer Pumping Station Replacement**  
**WALL SECTIONS AND EXTERIOR DETAILS**

DSK JOB NO. 20030.00  
ISSUE DATE JANUARY 2023  
SHEET NO. **A-05**

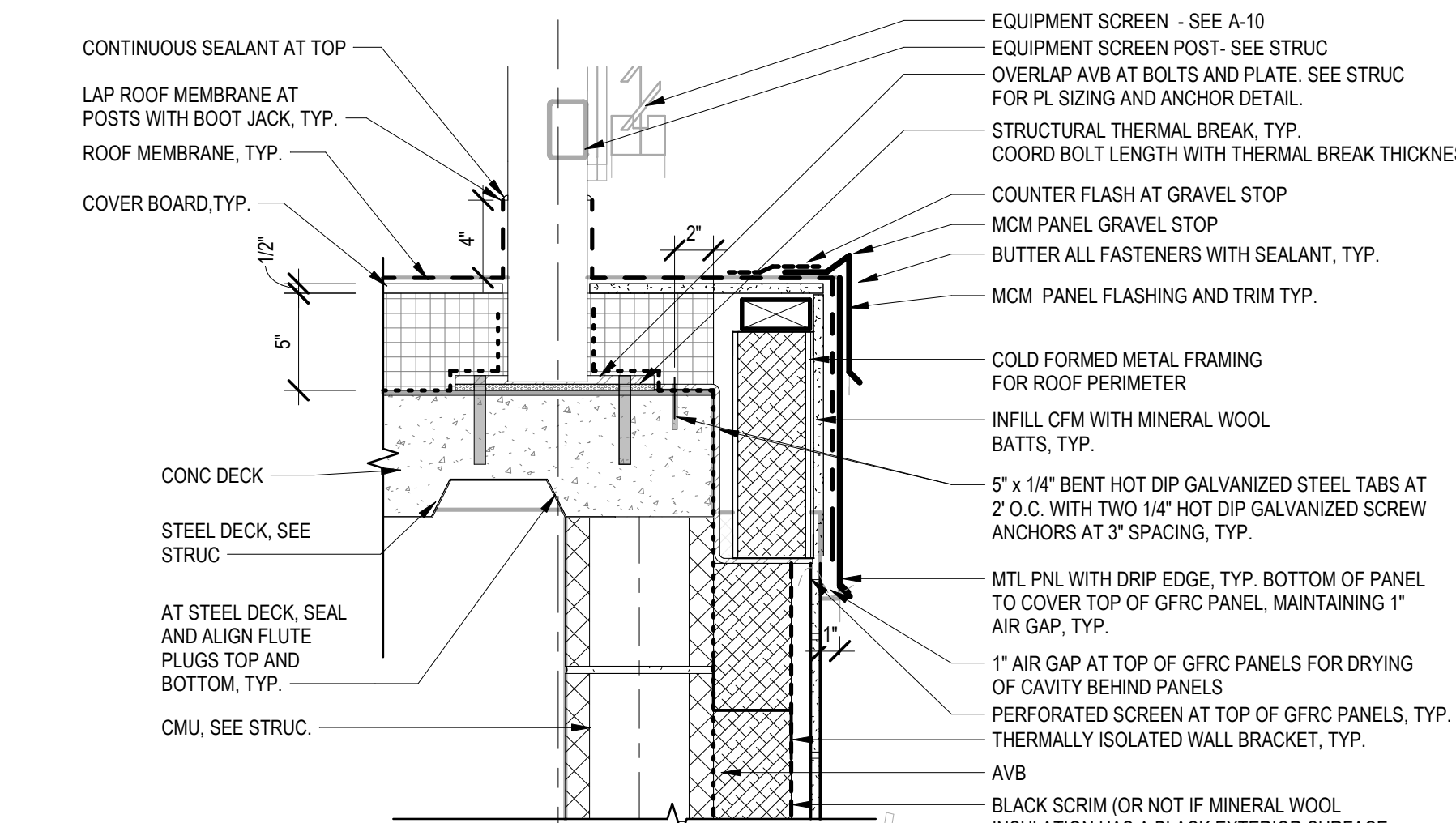
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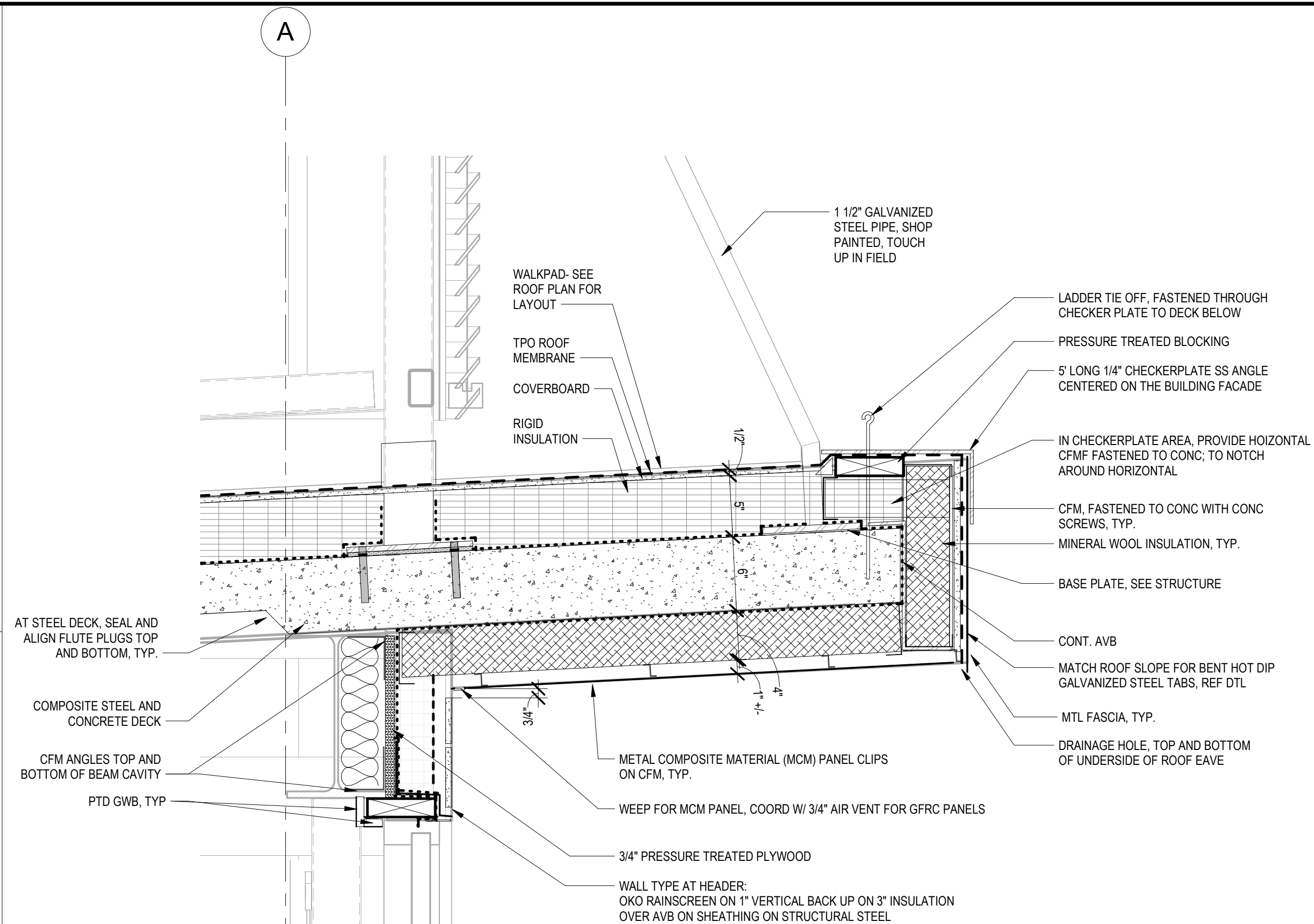
8 SOUTH ROOF DETAIL WITH GUTTER  
1 1/2" = 1'-0"



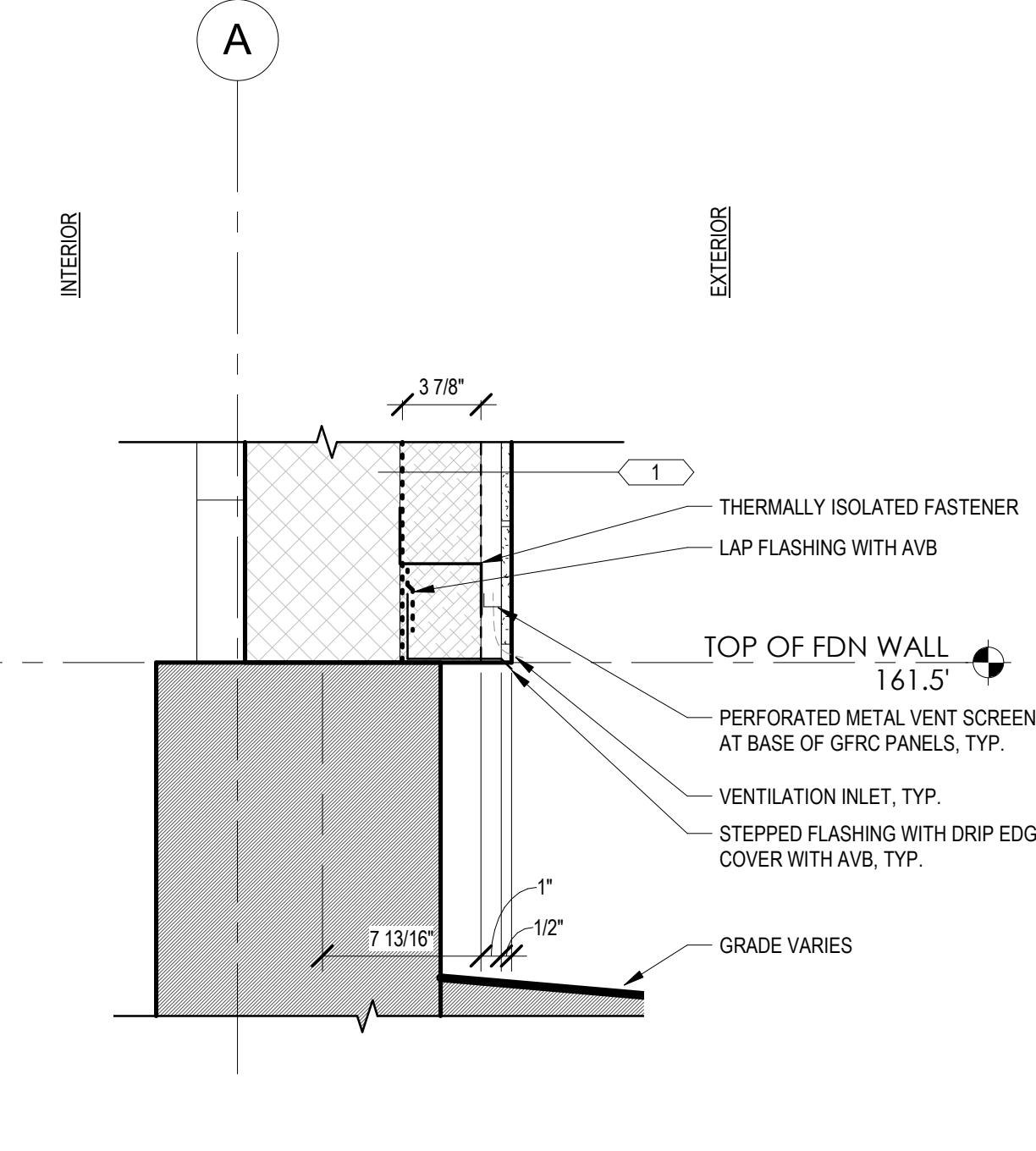
9 TYPICAL RAKE SECTION DETAIL AT ROOF OVERHANG  
1 1/2" = 1'-0"



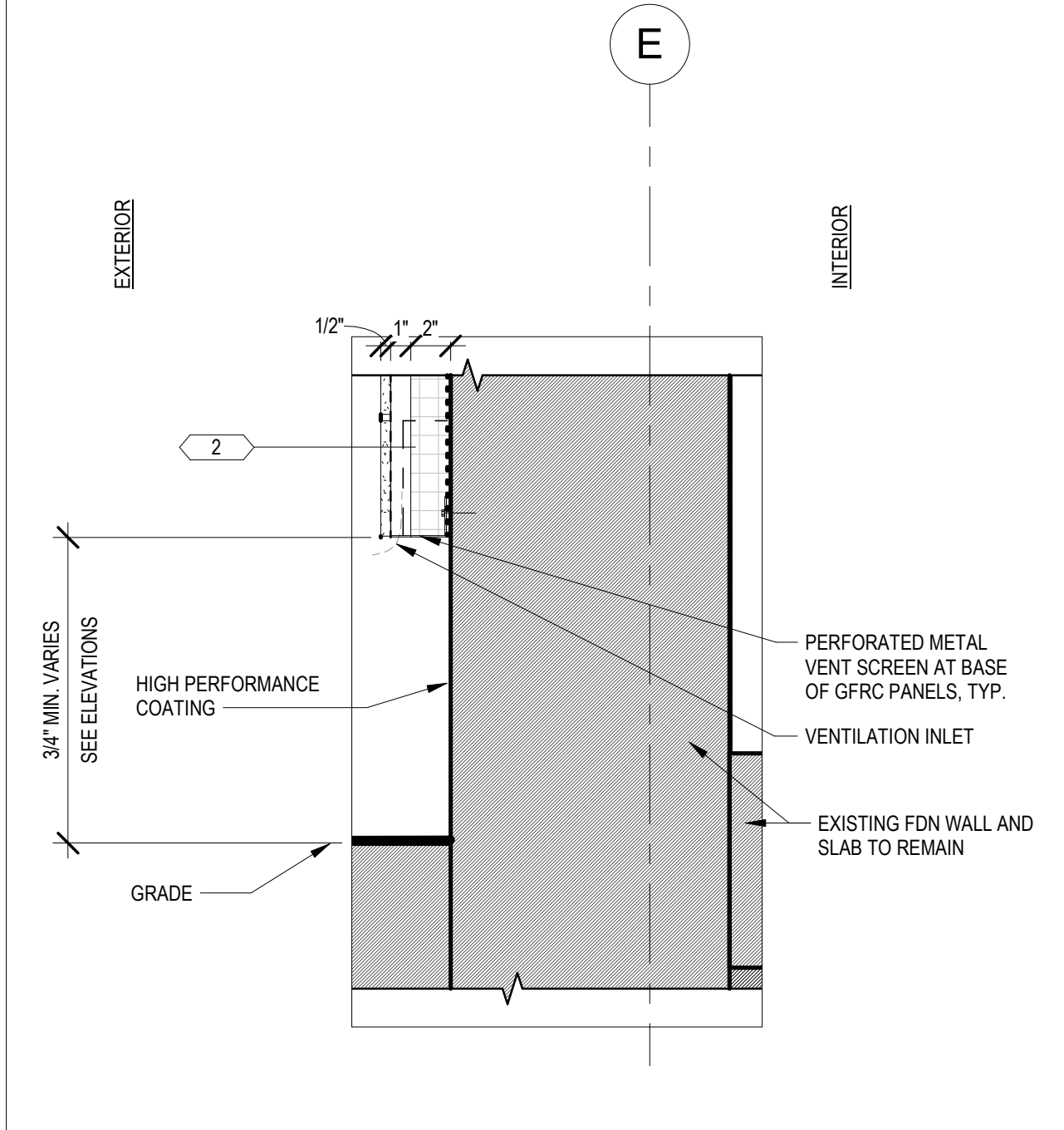
7 TYPICAL EQPMT SCREEN POST & RAKE SECTION DETAIL  
1 1/2" = 1'-0"



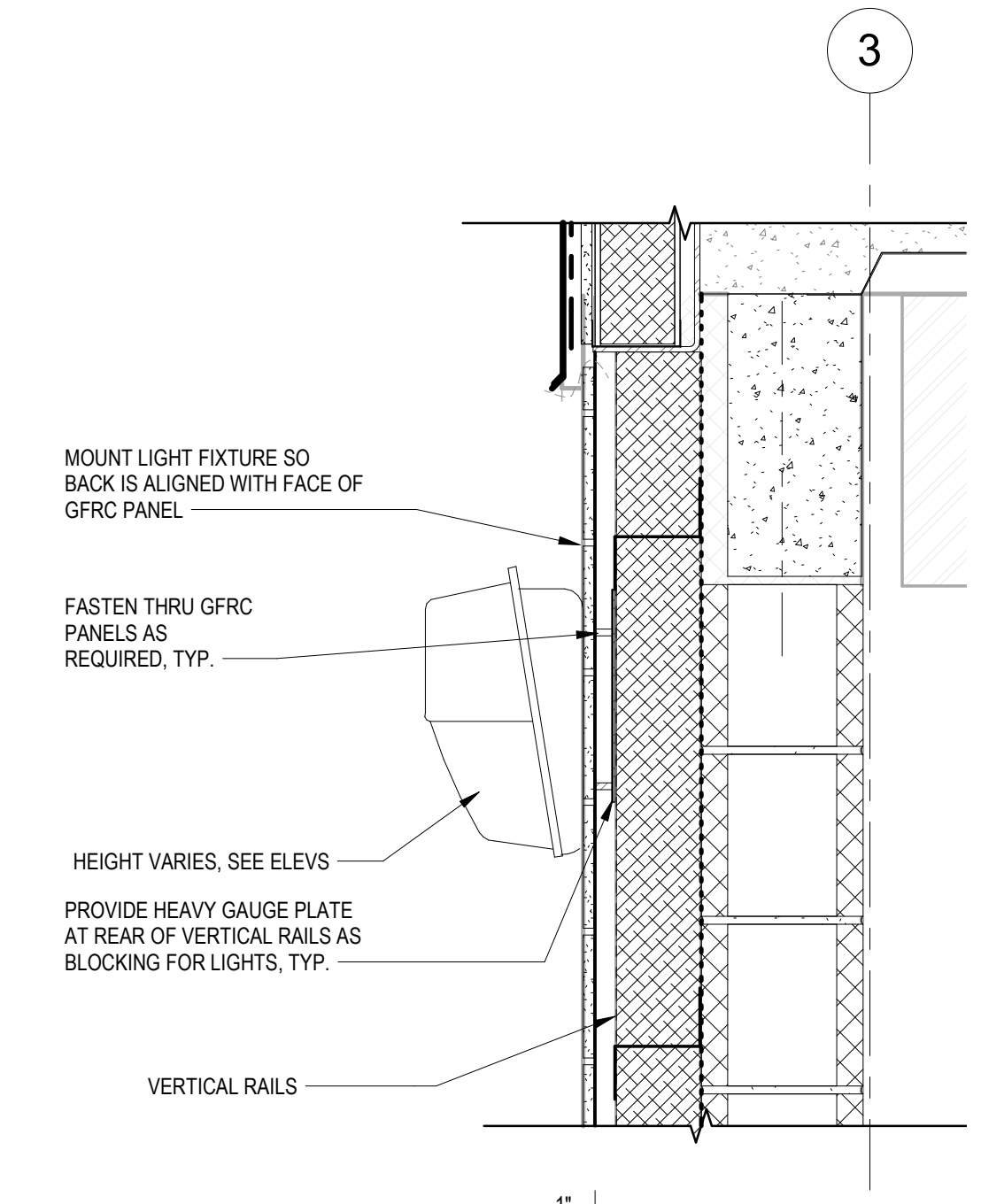
6 ENLARGED SECTION AT FRONT OF ROOF  
1 1/2" = 1'-0"



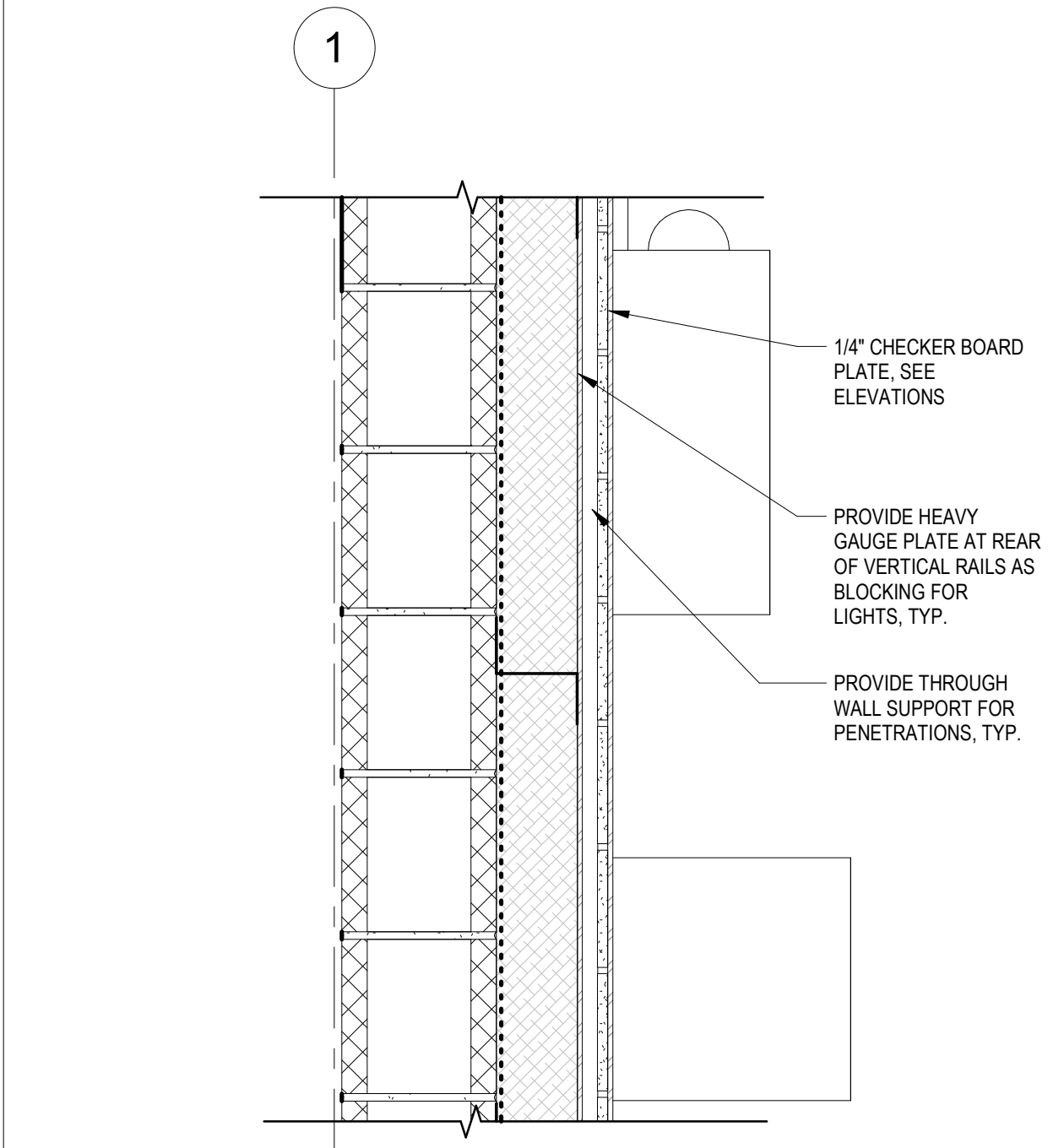
5 TYPICAL DETAIL AT BASE OF TYPE 1 WALL  
1 1/2" = 1'-0"



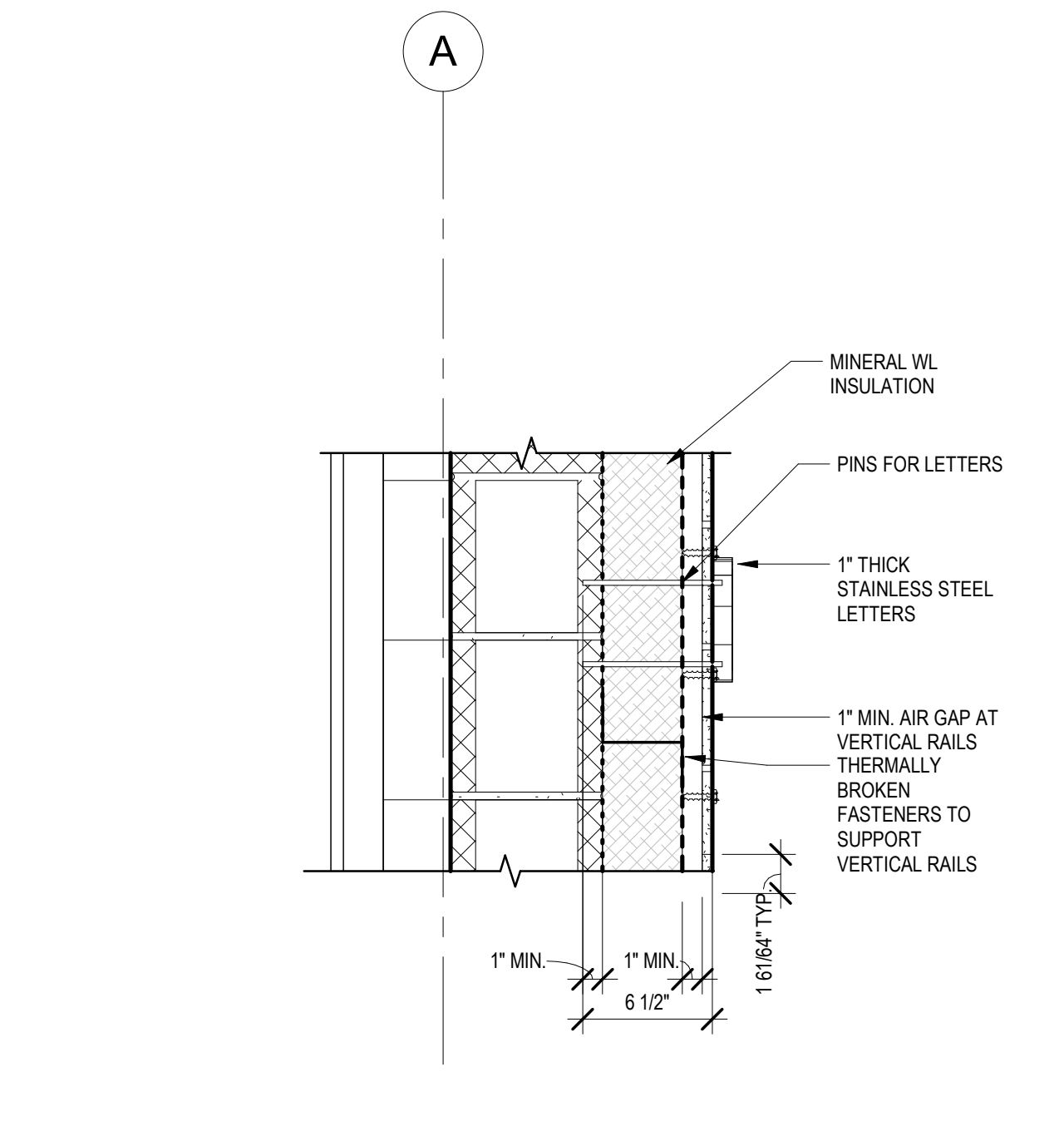
4 TYPICAL DETAIL AT BASE OF TYPE 2 WALL  
1 1/2" = 1'-0"



3 TYP SECTION DETAIL AT LIGHT  
1 1/2" = 1'-0"



2 TYP. MOUNTING DTL AT RAINSCREEN  
1 1/2" = 1'-0"



1 TYPICAL BLOCKING FOR PIN LETTERS  
1 1/2" = 1'-0"

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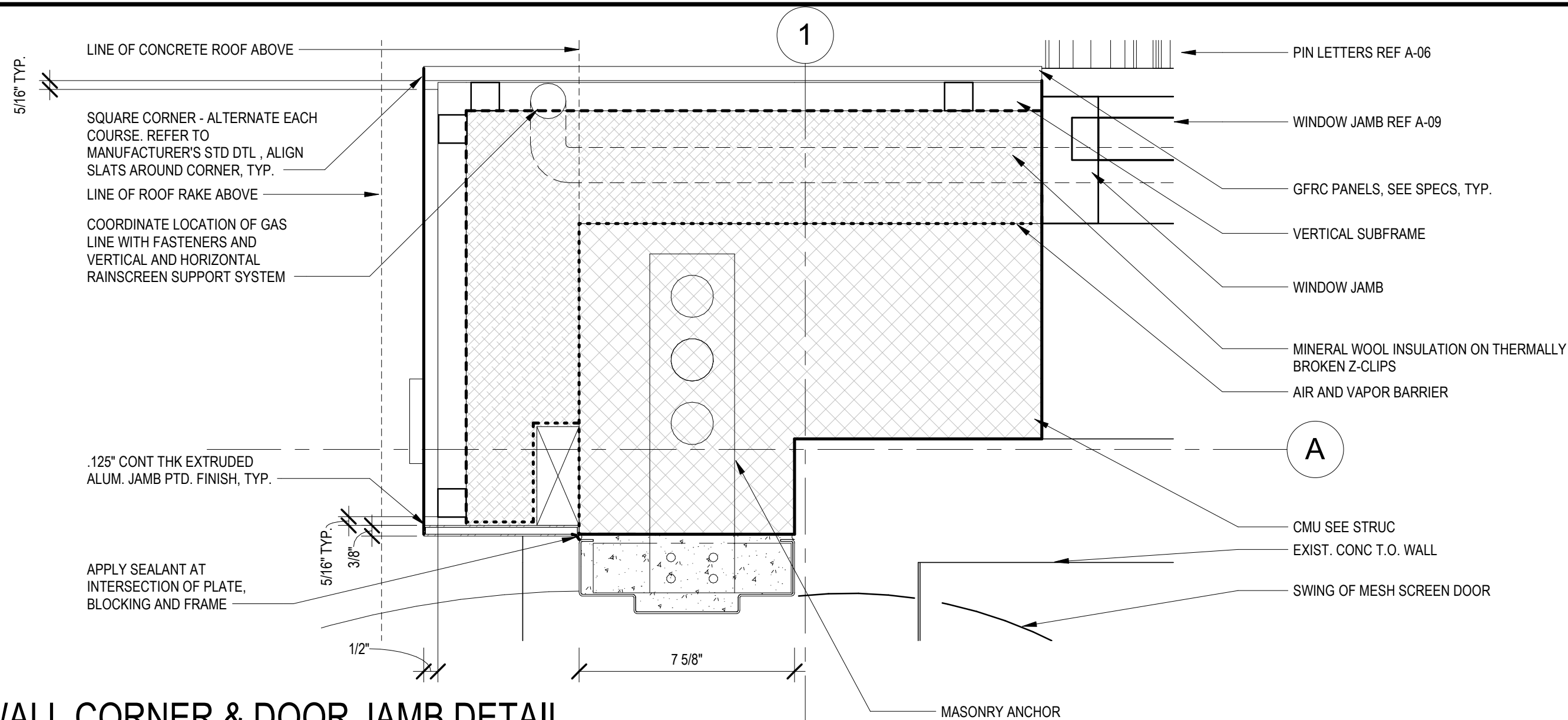
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1 1/2" = 1'-0"  
TITLE  
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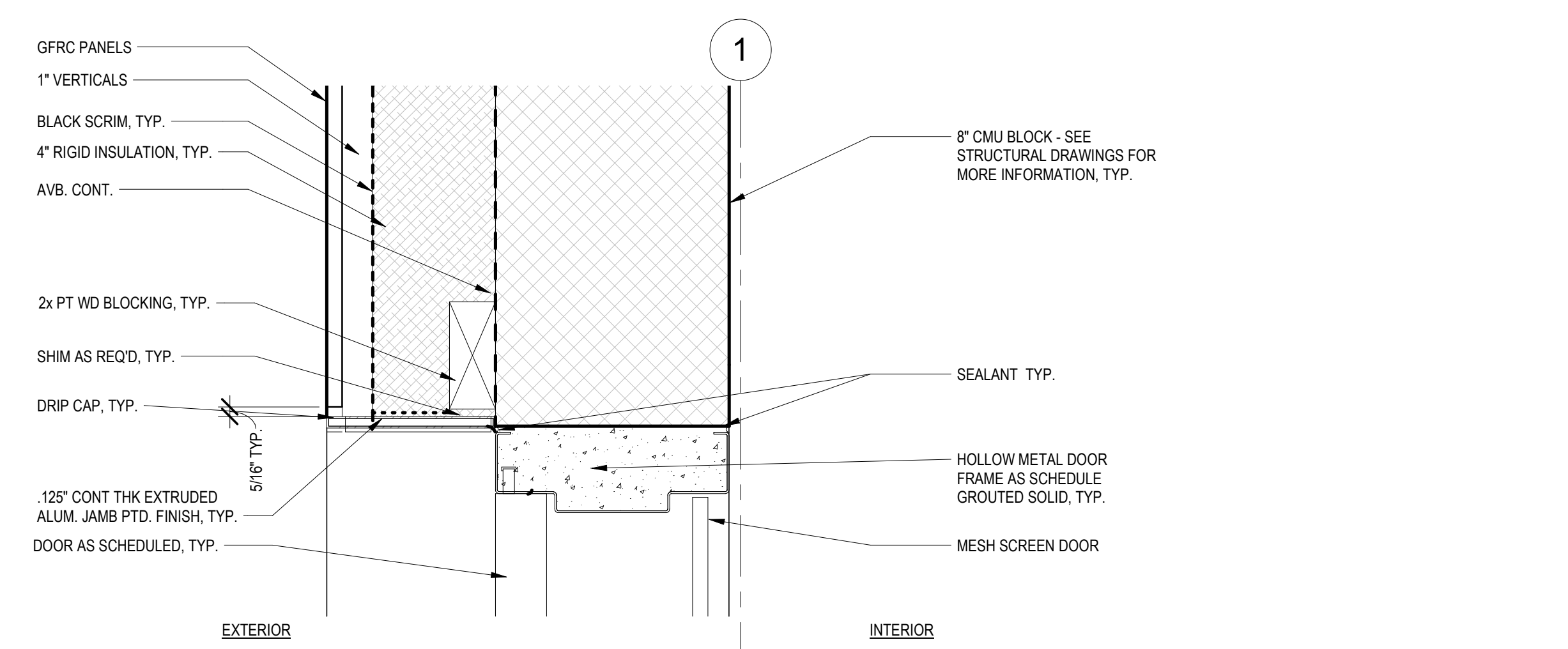
Worcester Road Sewer Pumping Station Replacement  
EXTERIOR DETAILS

DSK JOB NO. 20030.00  
ISSUE DATE JANUARY 2023  
SHEET NO. A-06

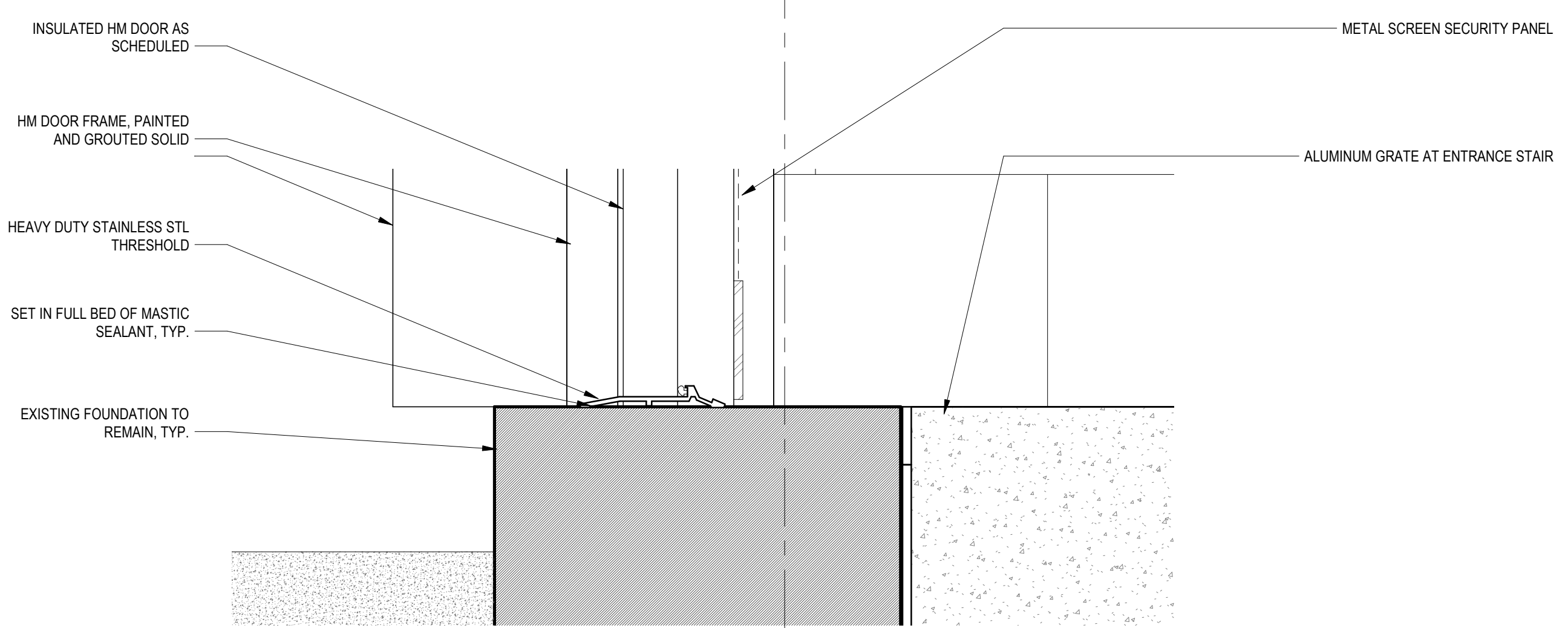
NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS



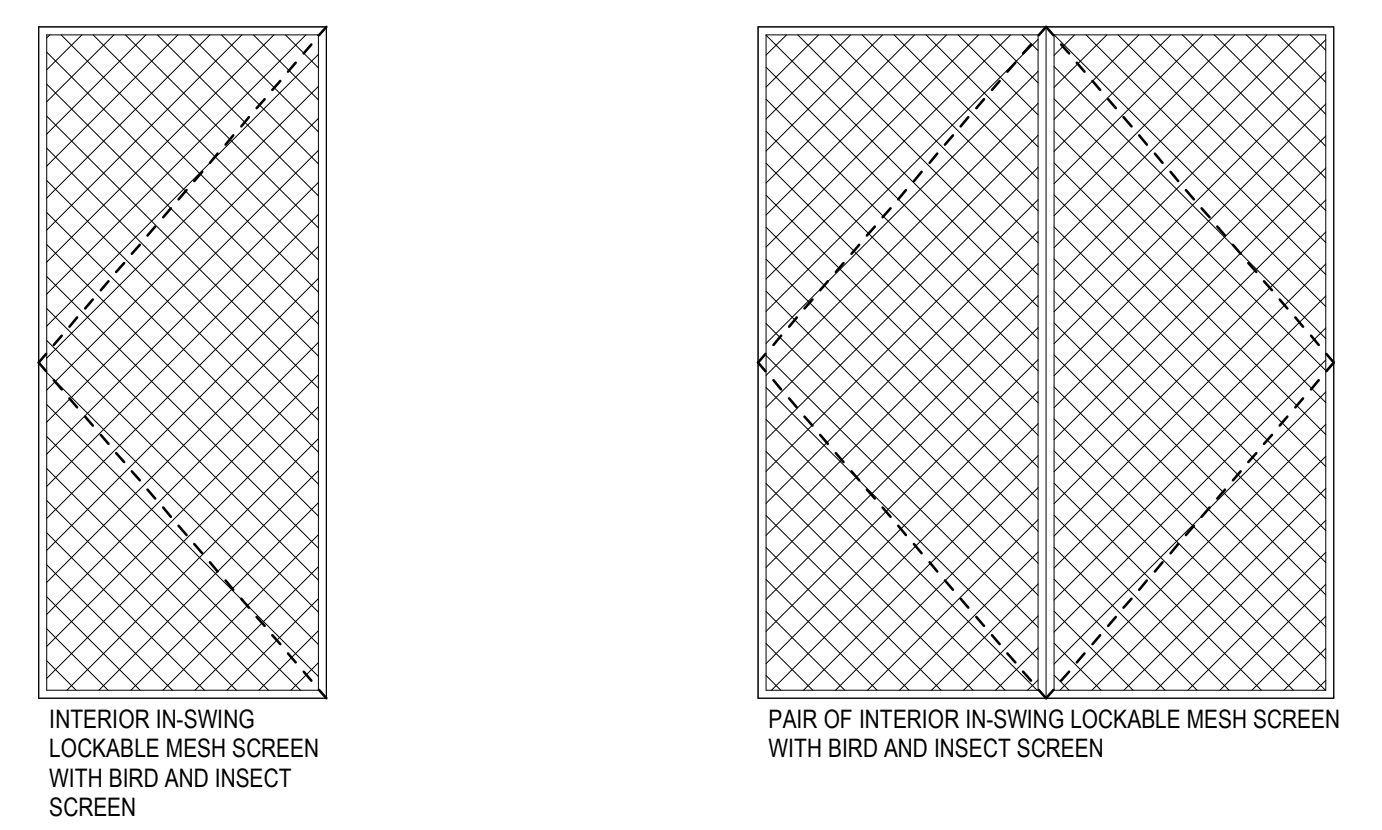
**4 TYP. WALL CORNER & DOOR JAMB DETAIL**  
3" = 1'-0"



**3 DETAIL SECTION AT DOOR HEADER**  
3" = 1'-0"

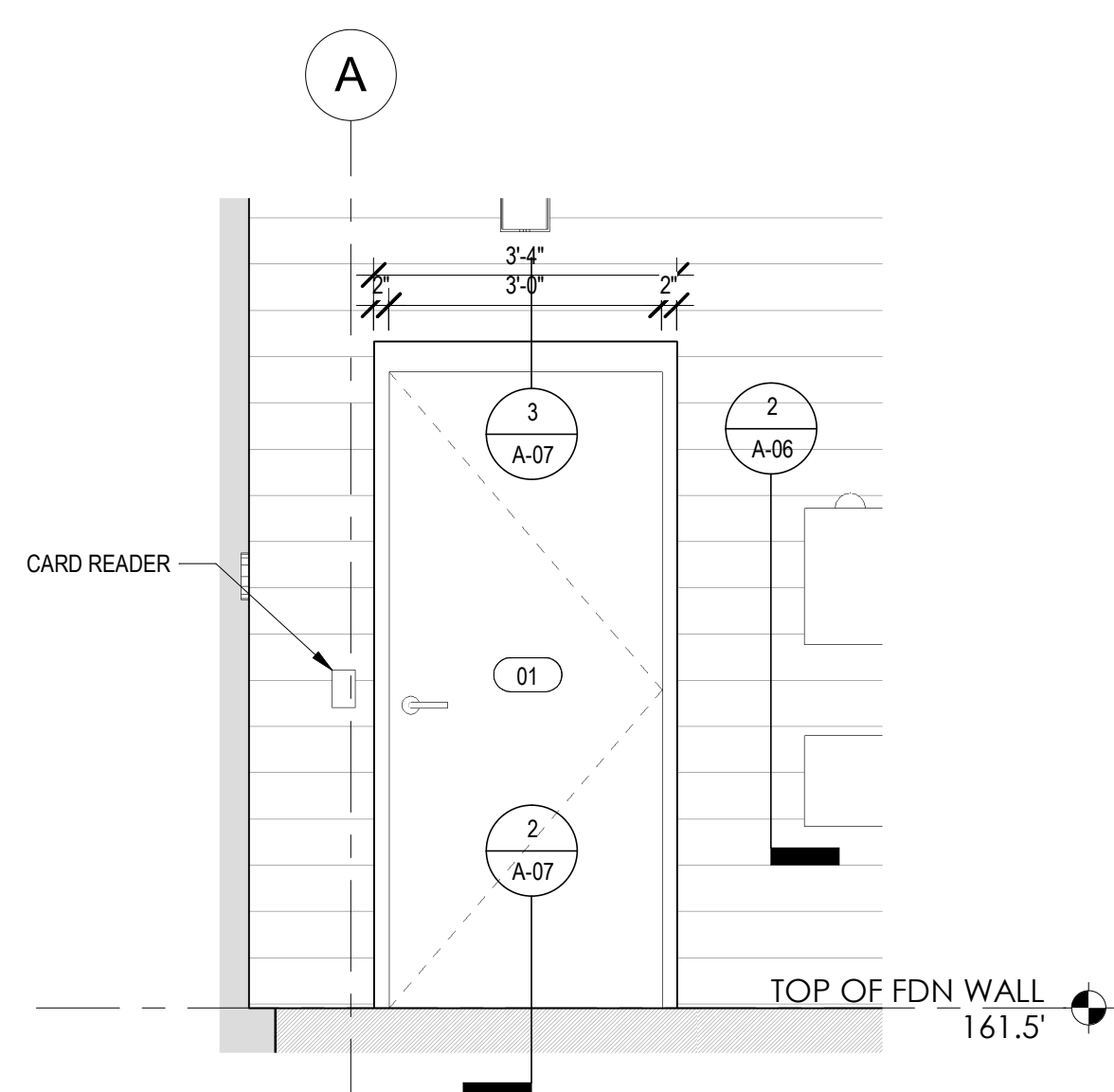


**2 HM DOOR SILL DETAIL**  
3" = 1'-0"



**METAL MESH SECURITY PANELS W/ BIRD + INSECT SCREENS**

- WIRE MESH PARTITIONS - SCREEN DOORS - WELDED-WIRE GUARD DOORS
- A. HINGED SCREEN DOOR / GUARD DOOR FOR FALL PROTECTION AND ACCESS CONTROL. COMPLETE SYSTEM OF SCREEN DOOR / WIRE PARTITION PANELS INCLUDES ALL SUPPORTS, WIRE PANELS, HARDWARE, BRACING, POLES, FASTENERS PINS, BRACKETS, AND SAFETY NUTS.
- COORDINATE AND PROVIDE PREP FOR DOOR AND FRAME FOR NEW HARDWARE BEING INSTALLED.
  - COORDINATE LAYOUT OF HARDWARE AND PLATES TO AVOID CONFLICT WITH ANY ADJACENT DOOR HARDWARE. PROVIDE FRAMED OPENINGS / CUT-OUTS AS REQUIRED. OFF-SET LOCATION OF HARDWARE TO AVOID CONFLICT LOCATIONS.
  - USE CONCEALED FASTENERS, WHEN POSSIBLE.
  - ALL PANELS, FRAMES, MOUNTING BRACKETS, AND HARDWARE TO BE INCLUDE:
    - PRODUCT TYPE: SCREEN DOOR / WELDED-WIRE MACHINE GUARD DOOR.
    - OPENING TYPE: HINGED (SINGLE AND PAIRED)
    - DOOR HEIGHT AND WIDTH: SEE DOOR SCHEDULE / DRAWINGS.
    - WIRE MESH OPENING HEIGHT: 2 INCHES.
    - WIRE MESH OPENING WIDTH: 2 INCHES.
    - WIRE THICKNESS: 5/32 INCH.
    - INSECT SCREEN: COATED POLYESTER.
    - MATERIAL: WELDED GALVANIZED STEEL.
    - COLOR: BLACK
    - FINISH: POWDER COATED.
    - MOUNTING HARDWARE: PROVIDE REINFORCING PLATES AND/OR FRAMES FOR ALL OPENINGS AND FOR THE MOUNTING OF HARDWARE, INCLUDE ALL SAFETY NUTS, AND FASTENERS.
    - HARDWARE: SEE HARDWARE SCHEDULE / HARDWARE SPECIFICATIONS.



**1 DOOR 01**  
1/2" = 1'-0"

**GENERAL NOTES - DOORS AND HARDWARE:**

- ALL EXTERIOR DOORS TO HAVE ELECTRIC LOCKS WITH ASSOCIATED POWER SUPPLY.
- SINGLE ENTRY DOOR TO HAVE ELECTRIC LOCK AND PANIC DEVICE OVERRIDE.
- COORDINATE & PREPARE FRAMES, DOORS, & HARDWARE FOR SECURITY DEVICES & CONTACTS, TYP.
- THE DOORS ARE TO BE ALARMED. PROVIDE CONDUIT INSIDE THE MASONRY WALL.
- RECESSED CARD READER FOR ACCESS. SEE ELECTRICAL DRAWINGS.
- PAIR OF DOORS - COPE & FINISH UPPER DOOR PANELS AROUND GANTRY BEAM SUPPORT, PROVIDE NEOPRENE GASKET TO SEAL, TYP.
- ALL EXTERIOR DOORS SHALL BE INSULATED, SEE SPECS 08111.
- ALL NEW HARDWARE SATIN SS FINISH.
- PROVIDE KEYBOX INSIDE.
- PROVIDE SWEEPS AT ALL EXTERIOR DOORS.
- PROVIDE SS DRIP CAP AT ALL EXTERIOR DOORS.
- ROOF EQUIPMENT SCREEN GATE BY EQUIPMENT SCREEN MANUFACTURER

**DOOR HARDWARE SCHEDULE:**

- HD-1** ENTRANCE LEVER SET (SINGLE) (EXTERIOR OPENING)  
ENTRANCE FUNCTION LEVERLOCKSET (ELECTRIC LOCK); COORDINATE WITH ELECTRIC ENTRY SECURITY SYSTEM.  
PANIC DEVICE  
1 1/2 BUTTS  
BUTYL BULB WEATHER-STRIPPING ALL-AROUND  
BOTTOM SWEEP  
MOP PLATE INTERIOR SIDE ONLY  
HEAVY DUTY THRESHOLD WITH GASKET  
OVERHEAD CLOSER WITH HOLD-OPEN FEATURE  
LONG HOOK AND EYE / WALL STOP HOLD OPEN (16 INCHES MIN).  
SILENCERS  
DRIP CAP
- HD-2A** MULTI-SET LOWER DOORS (PAIR) (EXTERIOR OPENING)  
STOREROOM FUNCTION LEVERLOCKSET (ELECTRIC LOCK) ON ACTIVE LEAF ONLY; COORDINATE W/ ELECTRIC ENTRY SECURITY SYSTEM.  
3 BUTTS  
BUTYL BULB WEATHER-STRIPPING ALL-AROUND  
NO LEVERLOCKSET ON INACTIVE LEAF  
BOTTOM SURFACE FLUSH BOLTS ON INACTIVE LEAF  
TOP SURFACE FLUSH BOLTS ON INACTIVE LEAF WITH LONG THROU KICK PLATE BOTH SIDES  
ASTRAGAL  
SILENCERS  
HD STAINLESS STEEL THRESHOLD  
OVERHEAD CLOSERS (180 DEGREE) WITH HOLD-OPEN FEATURE (PAIR-BOTH LEAFS)  
PAIR OF WALL STOPS WITH HOOK AND EYE BOLTED TO BOLLARDS; SEE PLAN  
COORDINATE WITH REMOVABLE HEADER FRAME CROSS RAIL.
- HD-2B** MULTI-SET UPPER DOORS (PAIR) (EXTERIOR OPENING)  
PAIR HAS NO LEVER/LOCK SET  
2 BUTTS  
BULB WEATHER-STRIPPING ALL-AROUND BOTTOM SURFACE FLUSH BOLTS ON BOTH LEAFS  
OVERHEAD DOOR HOLDER MINIMUM 90 DEGREE OPENING (PAIR-BOTH LEAFS)  
ASTRAGAL  
BRUSH WEATHERSTRIPPING AROUND BEAM OPENING - SEE DOOR DETAIL SHEETS FOR NEOPRENE GASKET INFO  
SILENCERS  
DRIP CAP  
DRIP BASE AT BOTTOM OF DOORS (BOTH LEAFS)  
COORDINATE WITH REMOVABLE HEADER FRAME CROSS RAIL.
- HD-1AS** WIRE MESH / WELDED-WIRE GUARD DOOR FOR ENTRANCE DOOR  
INTERIOR IN-SWING LOCKABLE MESH SCREEN/WELDED-WIRE GUARD DOOR WITH BIRD AND INSECT SCREEN.  
1.5 BUTTS - 180 DEGREE SWING  
KEY LATCHSET AT EXTERIOR, WITH THUMB TURN AT INTERIOR.  
HOOK AND EYE / WALL STOP HOLD OPEN MOUNTED TO RAILING.
- HD-2AS** WIRE MESH / WELDED-WIRE GUARD DOORS FOR MULTI-SET LOWER DOORS  
PAIR OF INTERIOR IN-SWING LOCKABLE MESH SCREEN/WELDED-WIRE GUARD DOORS WITH BIRD AND INSECT SCREEN.  
3 BUTTS - 180 DEGREE SWING  
KEY LOCKSET AT EXTERIOR, WITH THUMB TURN AT INTERIOR OF ACTIVE LEAF.  
HOOK AND EYE / WALL STOP HOLD-OPEN.  
SURFACE FLUSH BOLTS AT INTERIOR TOP AND BOTTOM, INACTIVE LEAF ONLY  
COORDINATE WITH REMOVABLE HEADER FRAME CROSS RAIL.
- HD-3** ROOF EQUIPMENT SCREEN GATE  
SINGLE EXTERIOR IN-SWING LATCHING/LOCKABLE EQUIPMENT SCREEN DOOR.  
3 BUTTS - 180 DEGREE SWING  
KEY LATCHING-LOCKSET AT EXTERIOR, WITH THUMB TURN AT INTERIOR.  
HOOK AND EYE / WALL STOP HOLD-OPEN.  
COORDINATE WITH EQUIPMENT SCREEN MANUFACTURER.

**DOOR SCHEDULE**

MARK	DIMENSIONS	THRESHOLD	FRAME TYPE	COMMENTS	HARDWARE		
	WIDTH	HEIGHT	THICKNESS	DETAIL			
01	3'-0"	7'-0"	0'-1 3/4"	2/A-07	HM	SEE INSWING METAL SCREEN DOOR	HD-1
02	3'-0"	7'-0"	0'-1 3/4"	2/A-07	STACKING HM	SEE INSWING METAL SCREEN DOOR FOR LOWER PAIR. UPPER DIMS ARE ON ELEVATION	HD-2A/2B

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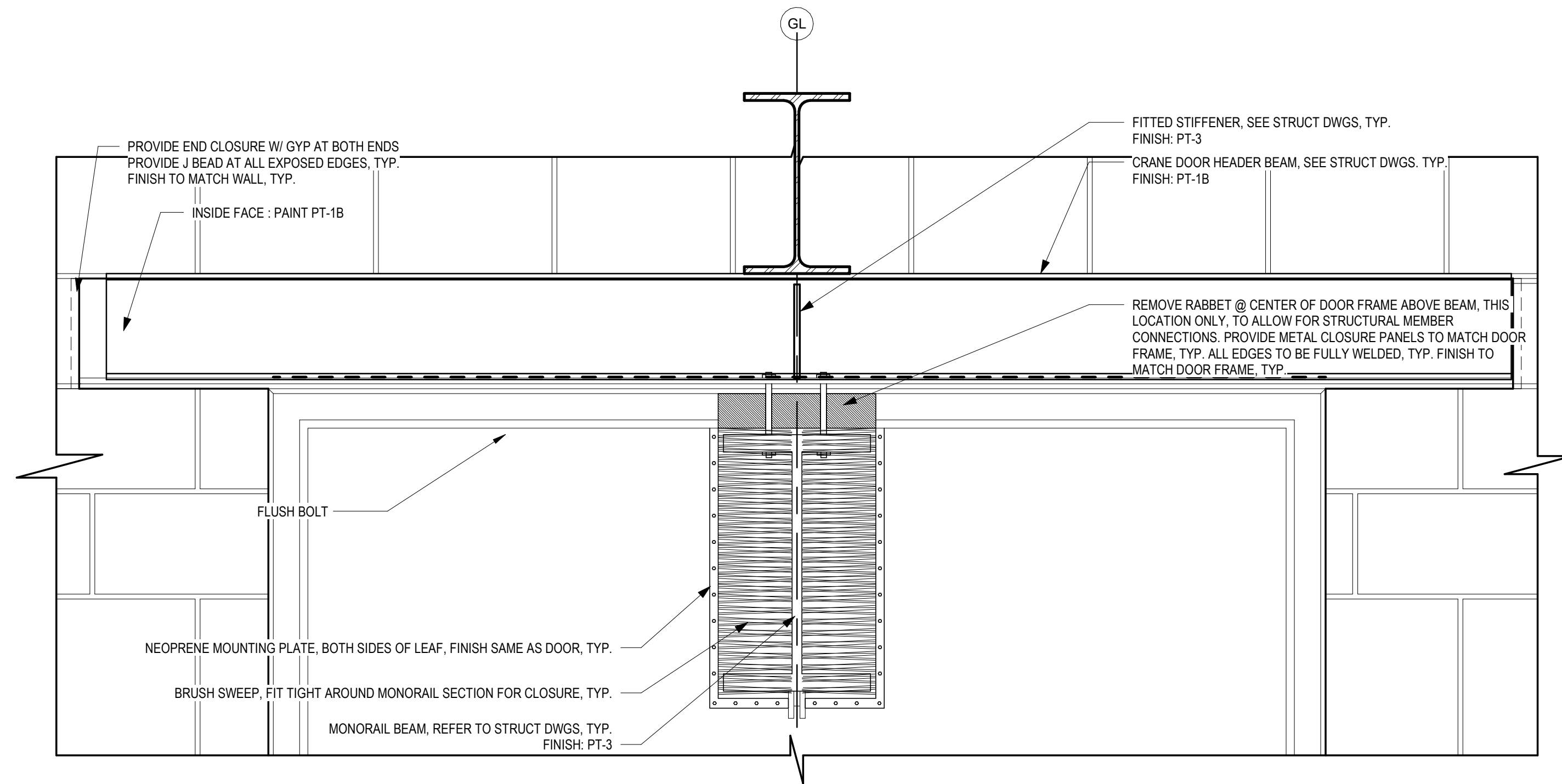


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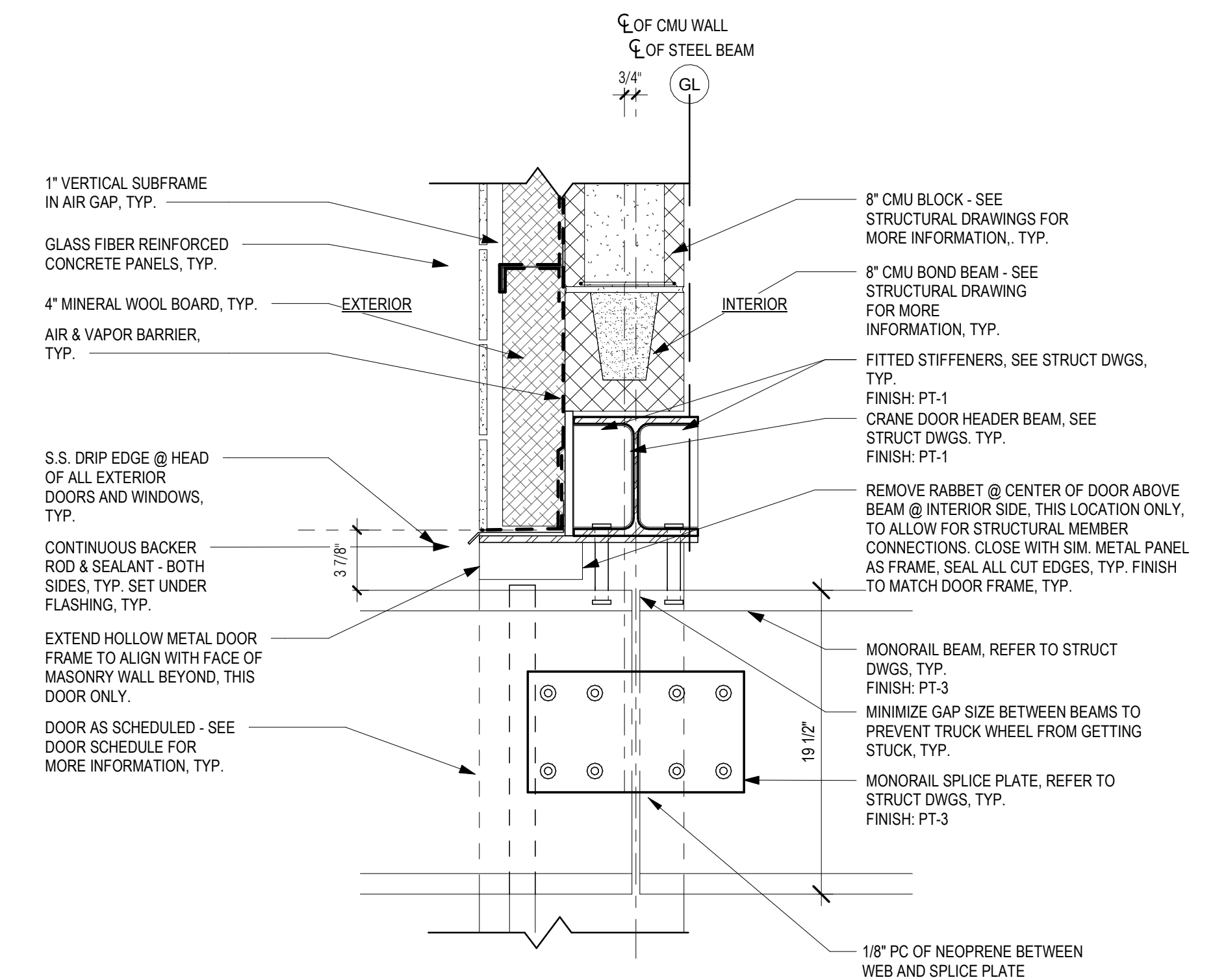
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**DOOR SCHEDULE & DETAILS**

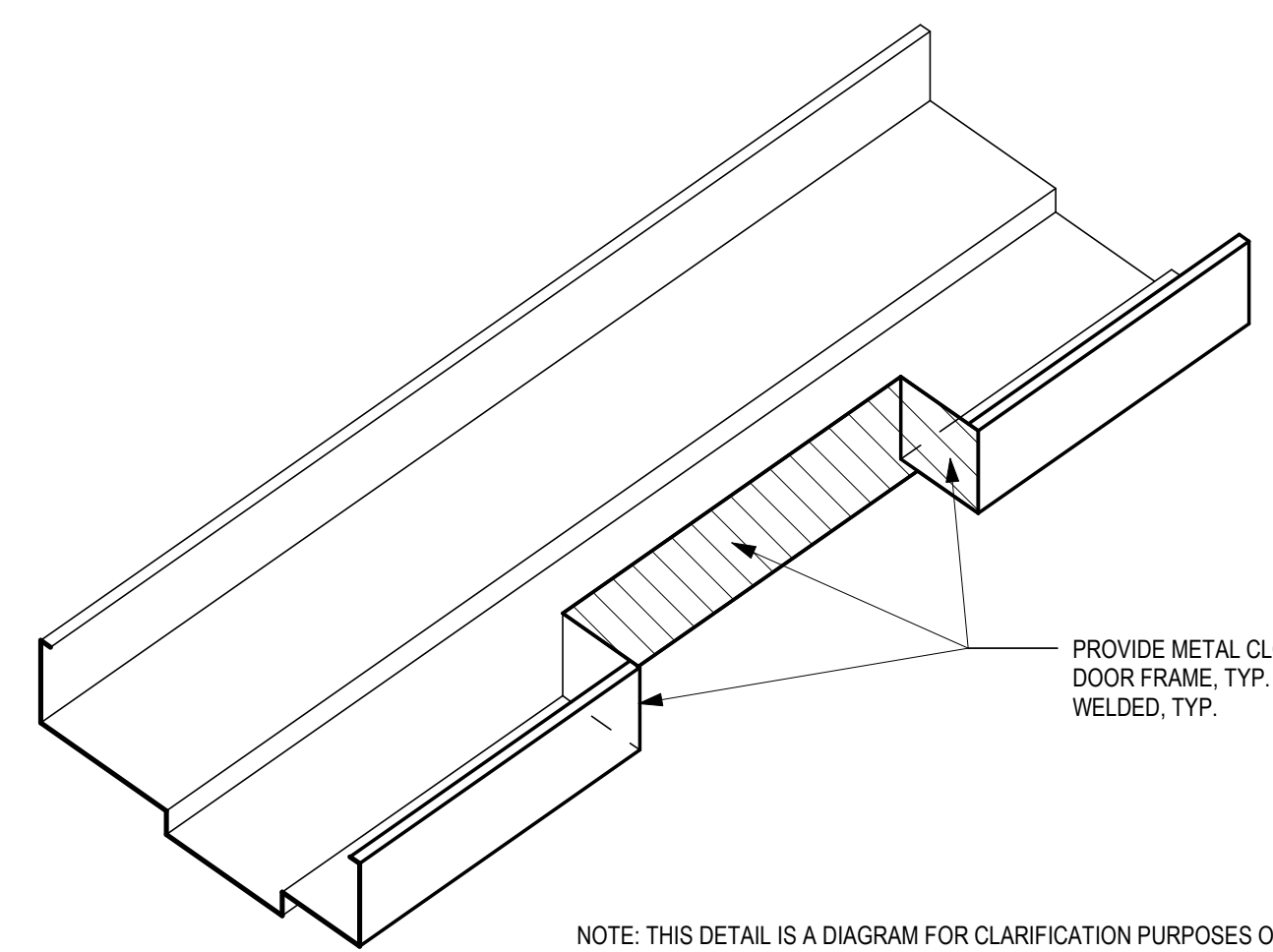
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**4 CRANE DOOR HEADER - INTERIOR ELEVATION**  
1 1/2" = 1'-0"

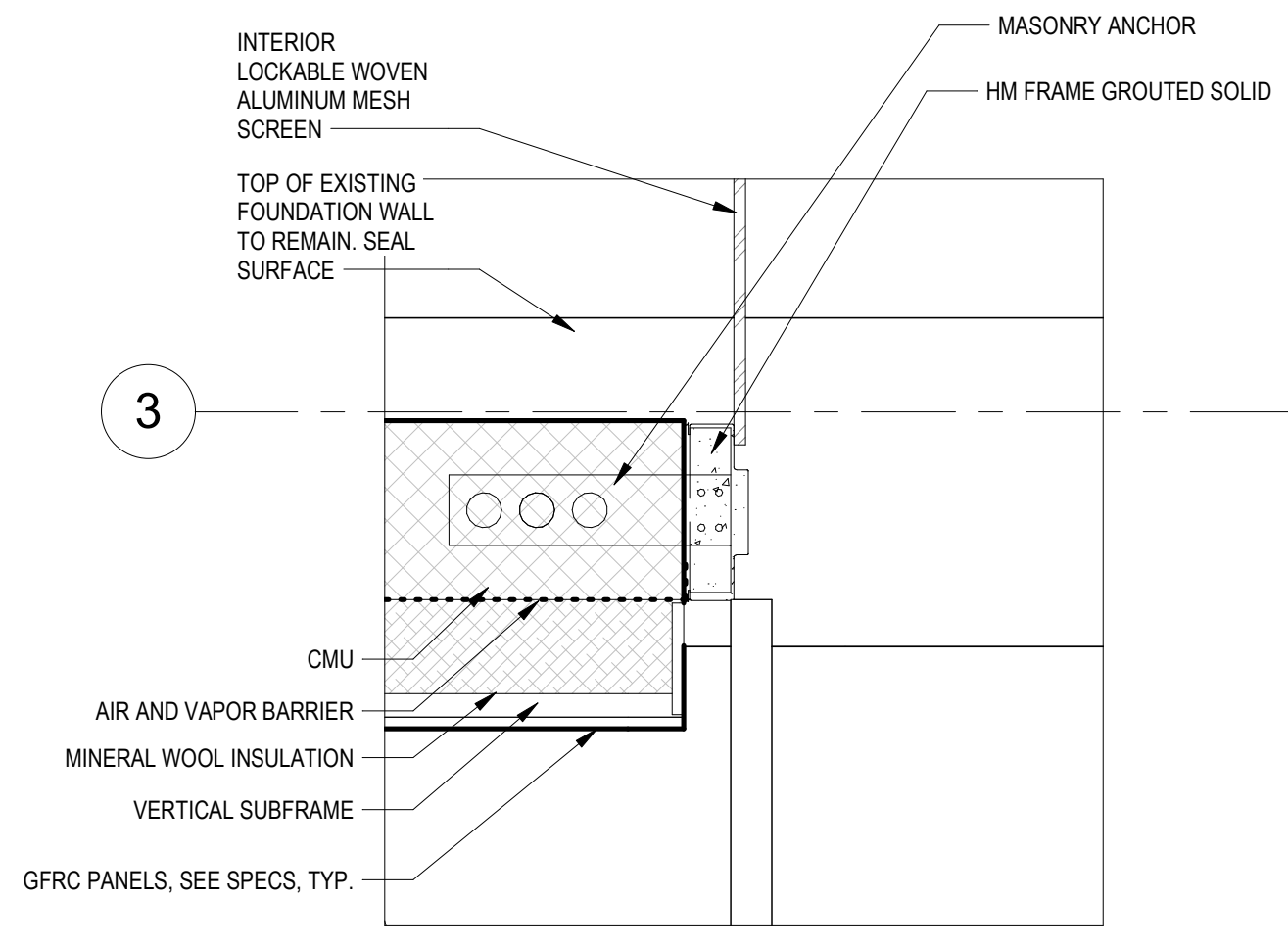


**3 CRANE DOOR HEADER - SECTION**  
1 1/2" = 1'-0"

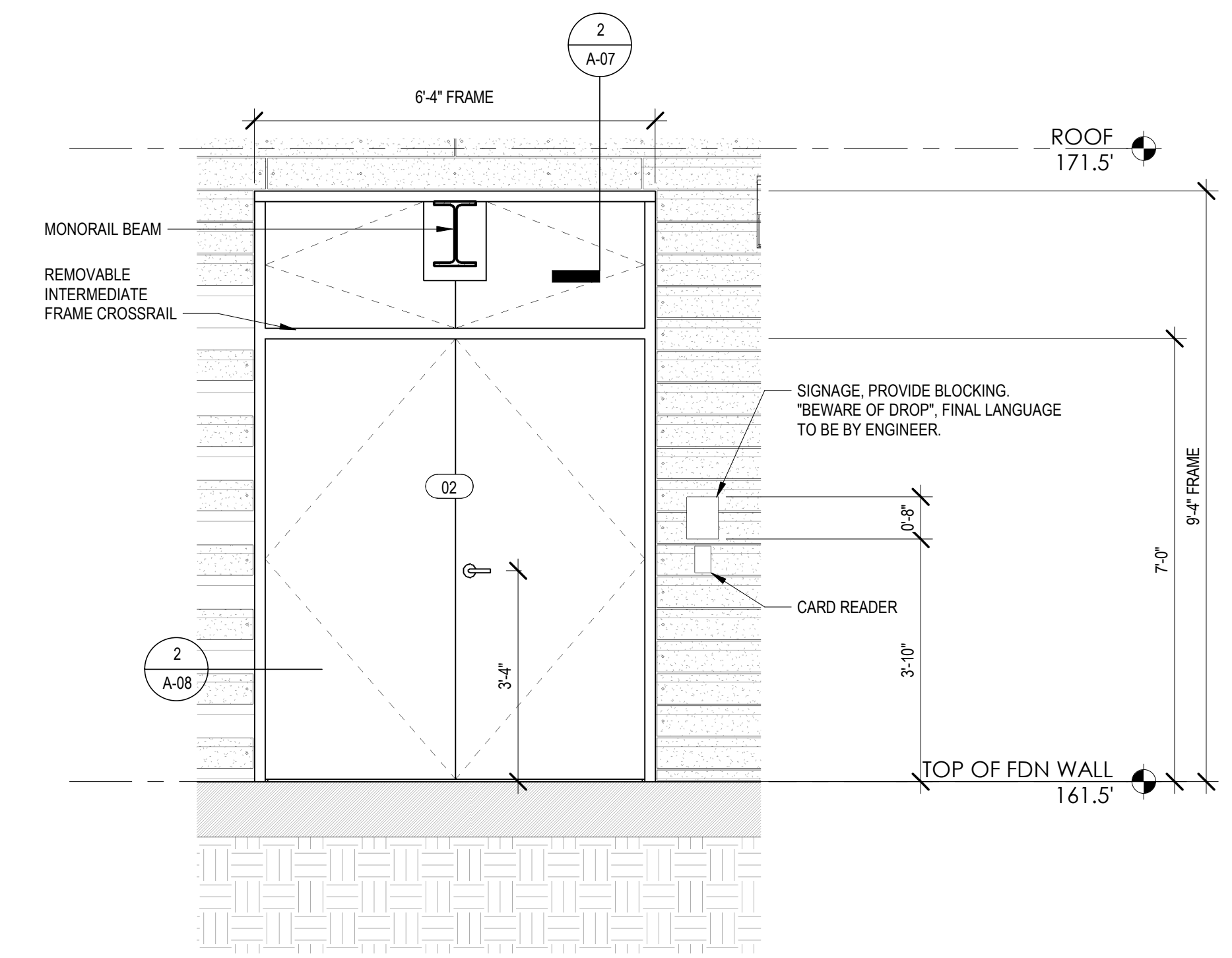


NOTE: THIS DETAIL IS A DIAGRAM FOR CLARIFICATION PURPOSES ONLY.

**5 MONORAIL DOOR FRAME DETAIL**  
3" = 1'-0"



**2 DOOR JAMB, DOOR 02**  
1 1/2" = 1'-0"



**1 CRANE DOOR ELEVATION**  
1/2" = 1'-0"

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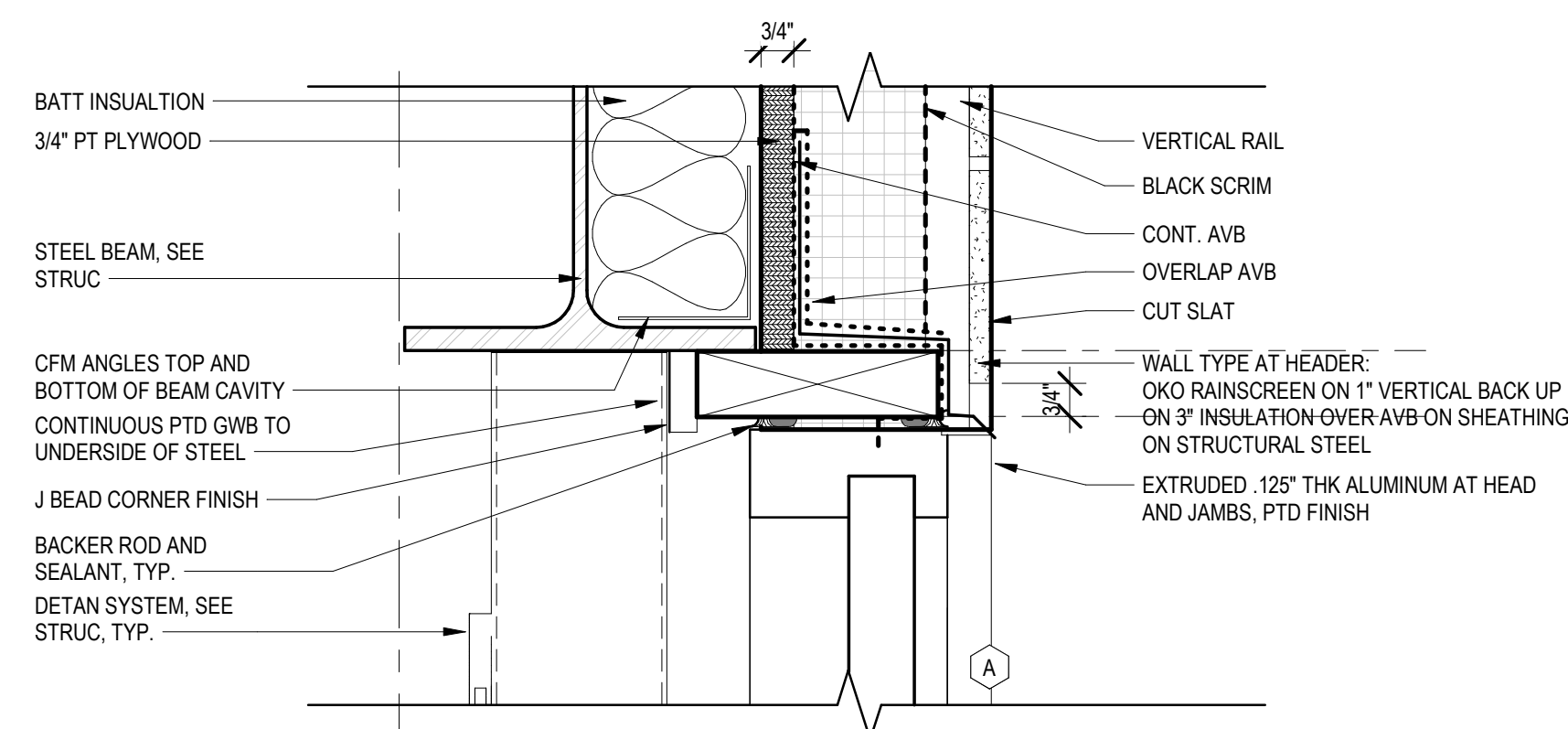
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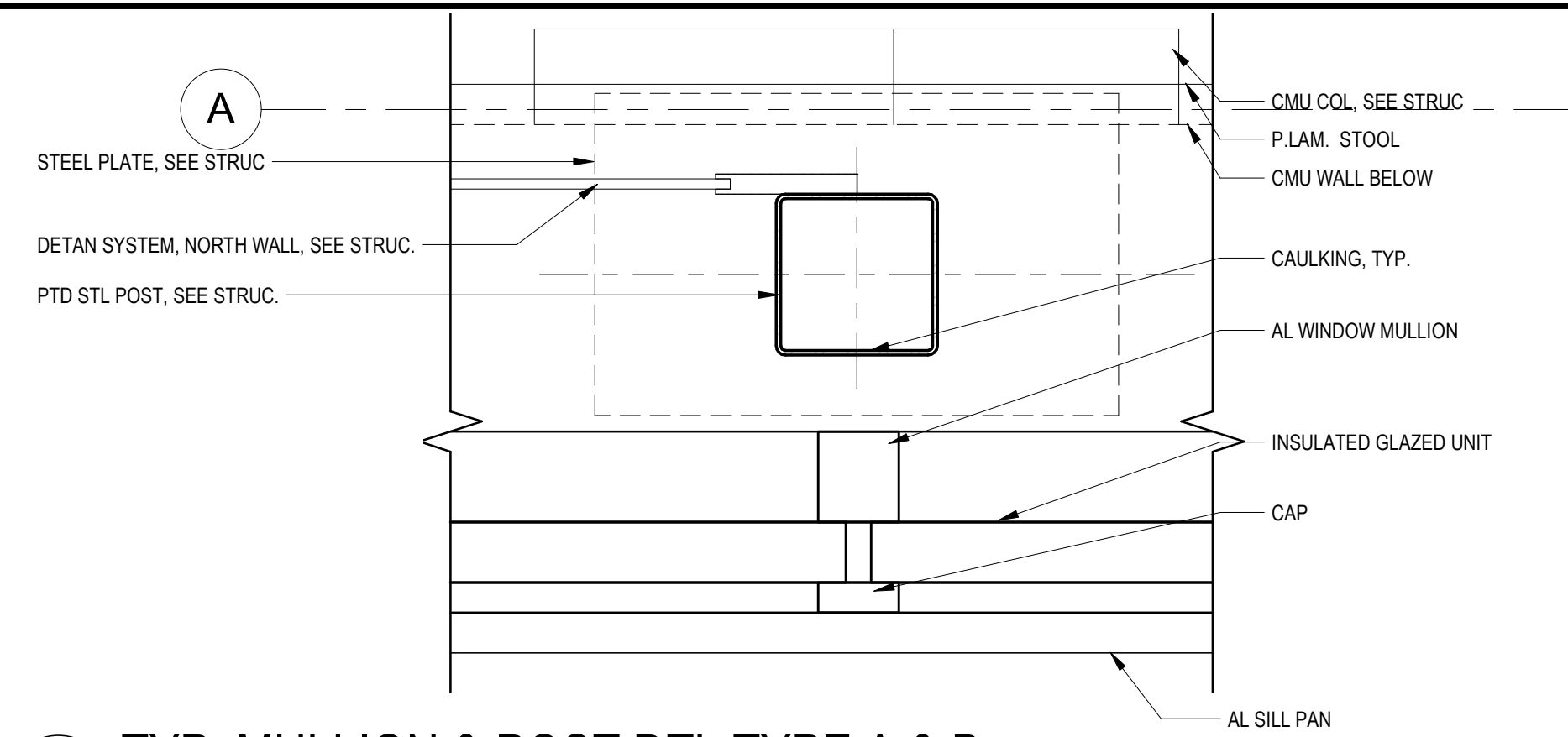
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**CRANE DOOR DETAILS**

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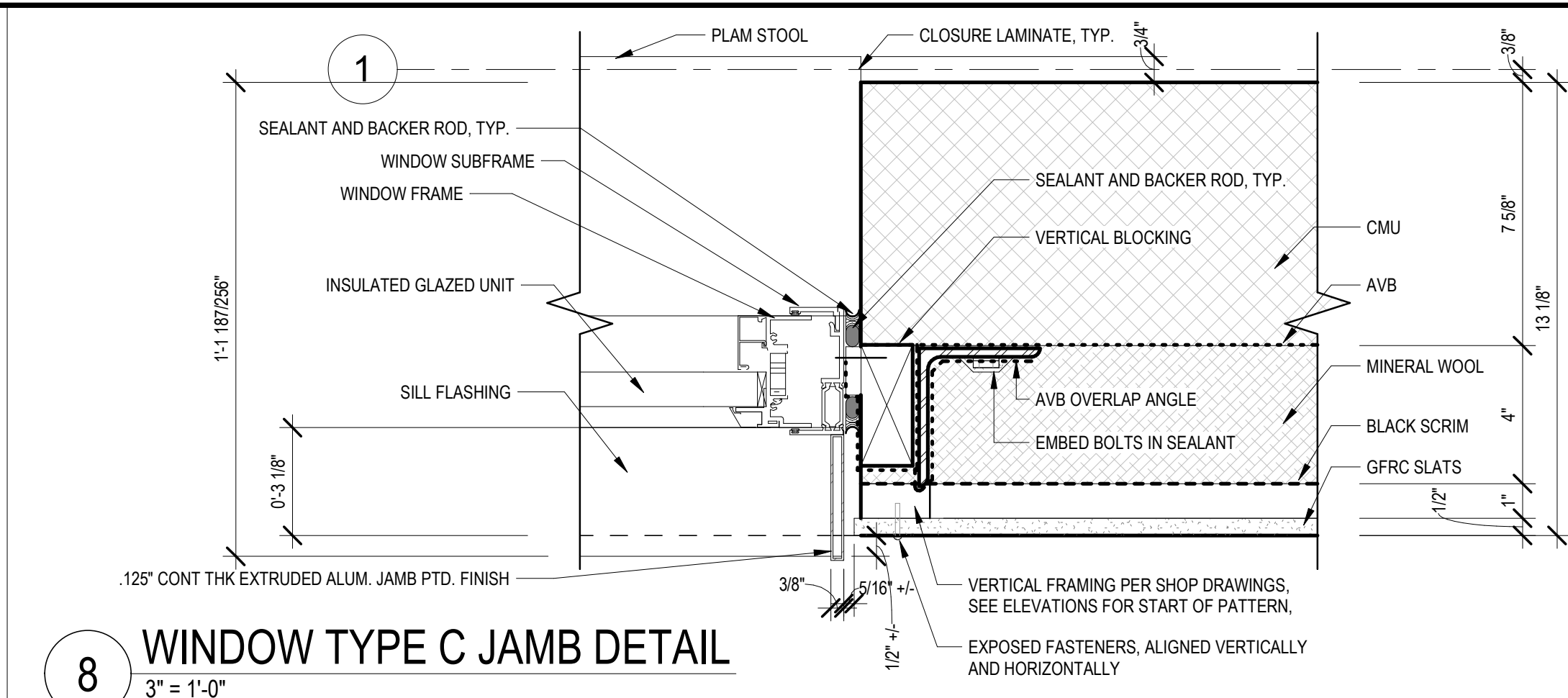




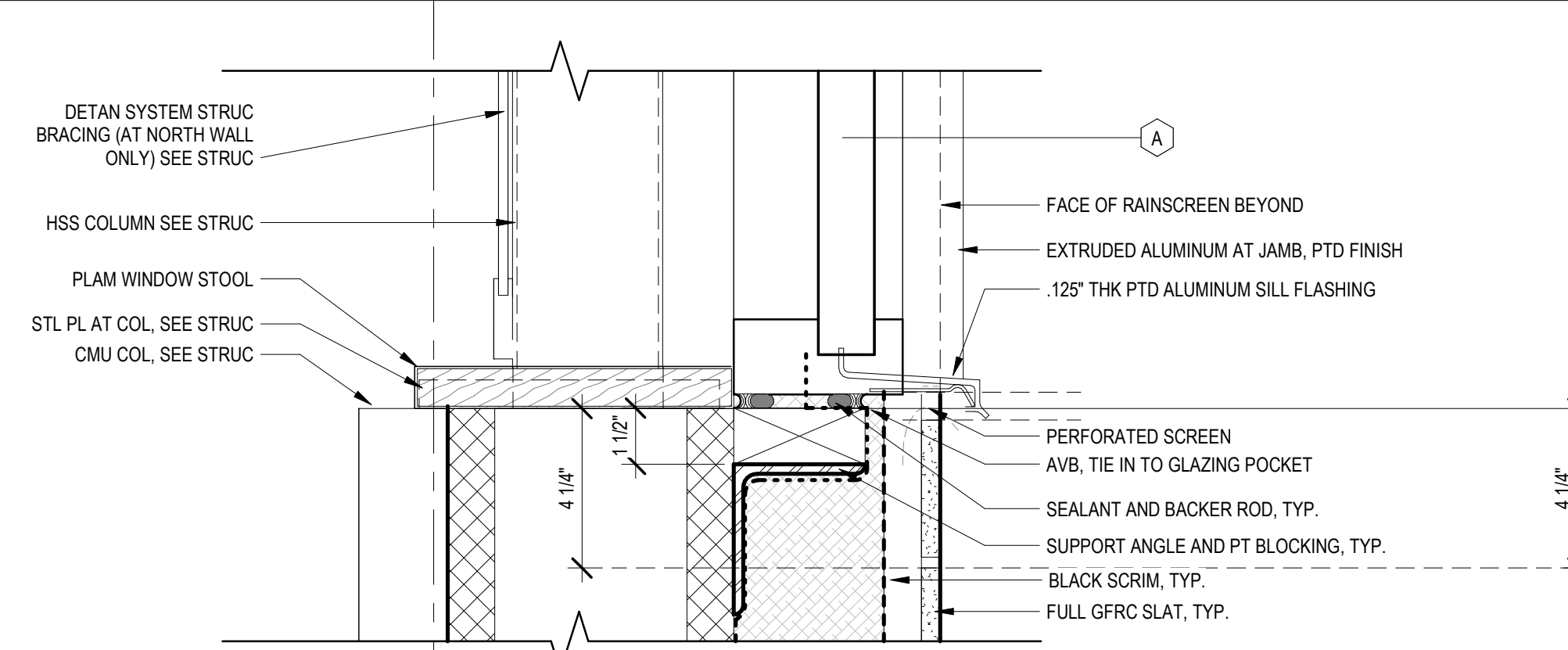
**10 WINDOW HEAD TYPE DETAIL TYPE A & B**  
3" = 1'-0"



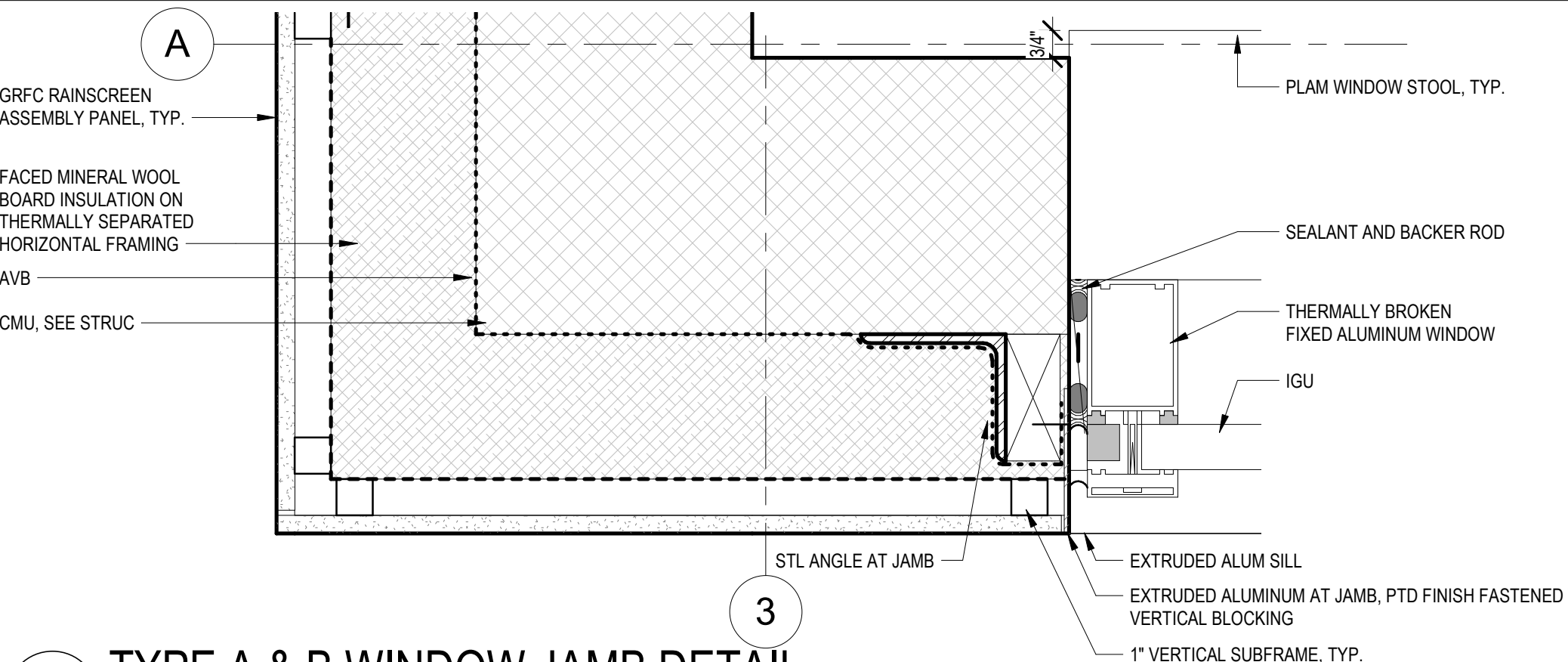
**9 TYP. MULLION & POST DTL TYPE A & B**  
3" = 1'-0"



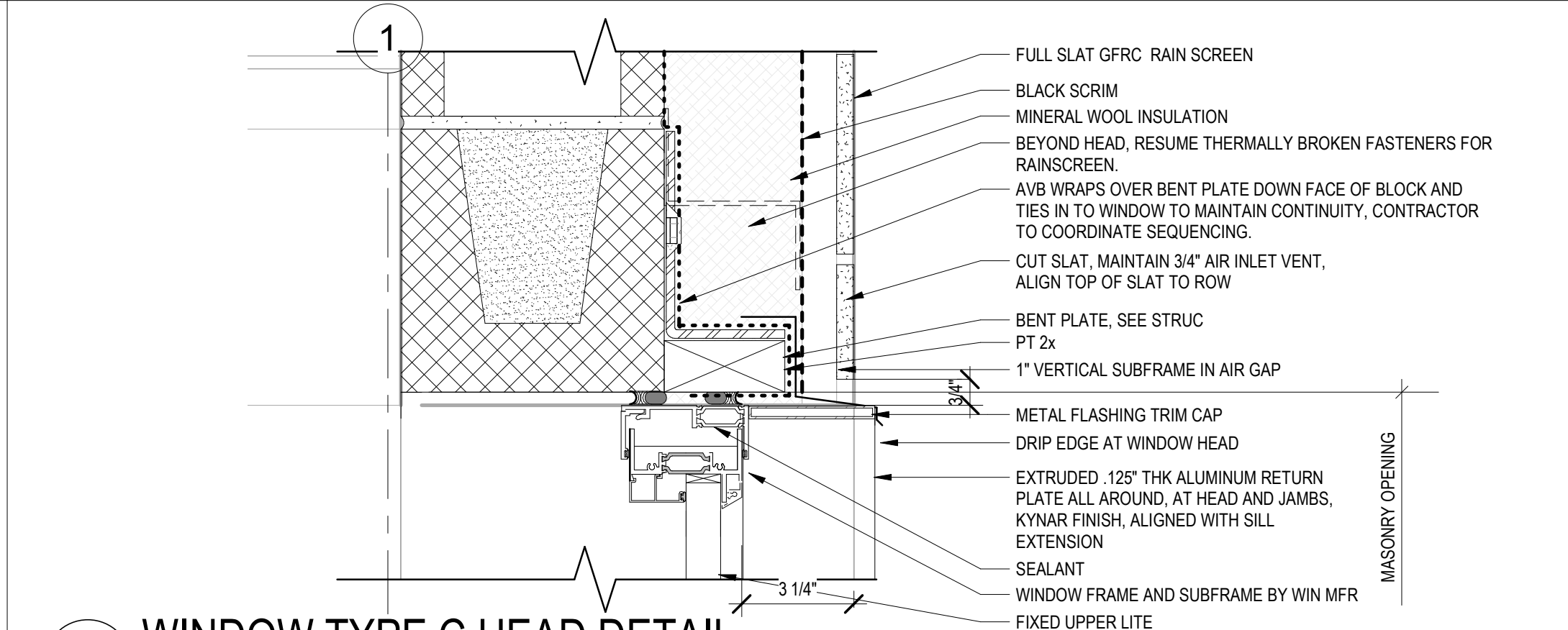
**8 WINDOW TYPE C JAMB DETAIL**  
3" = 1'-0"



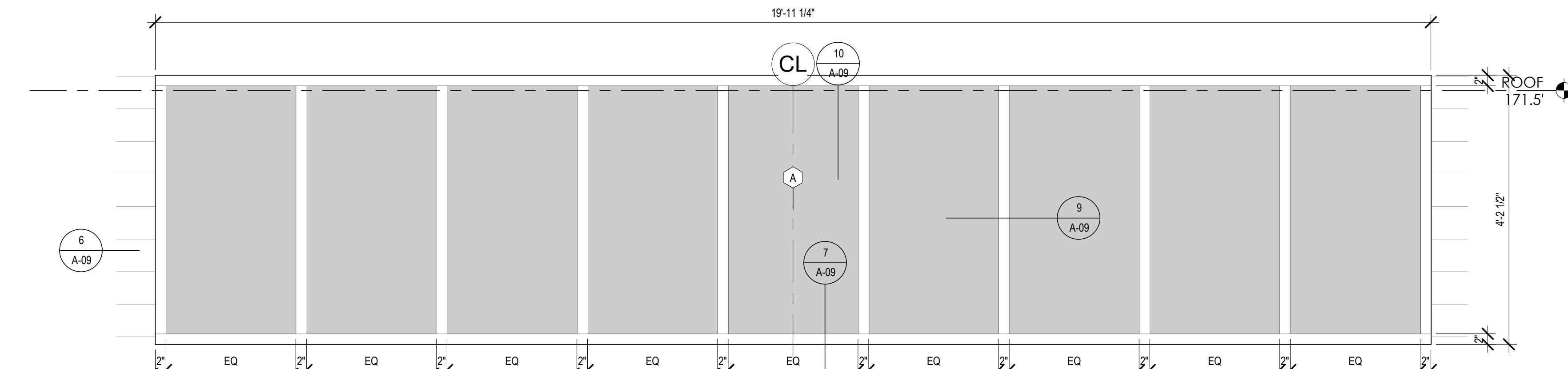
**7 WINDOW SILL DETAIL TYPE A & B**  
3" = 1'-0"



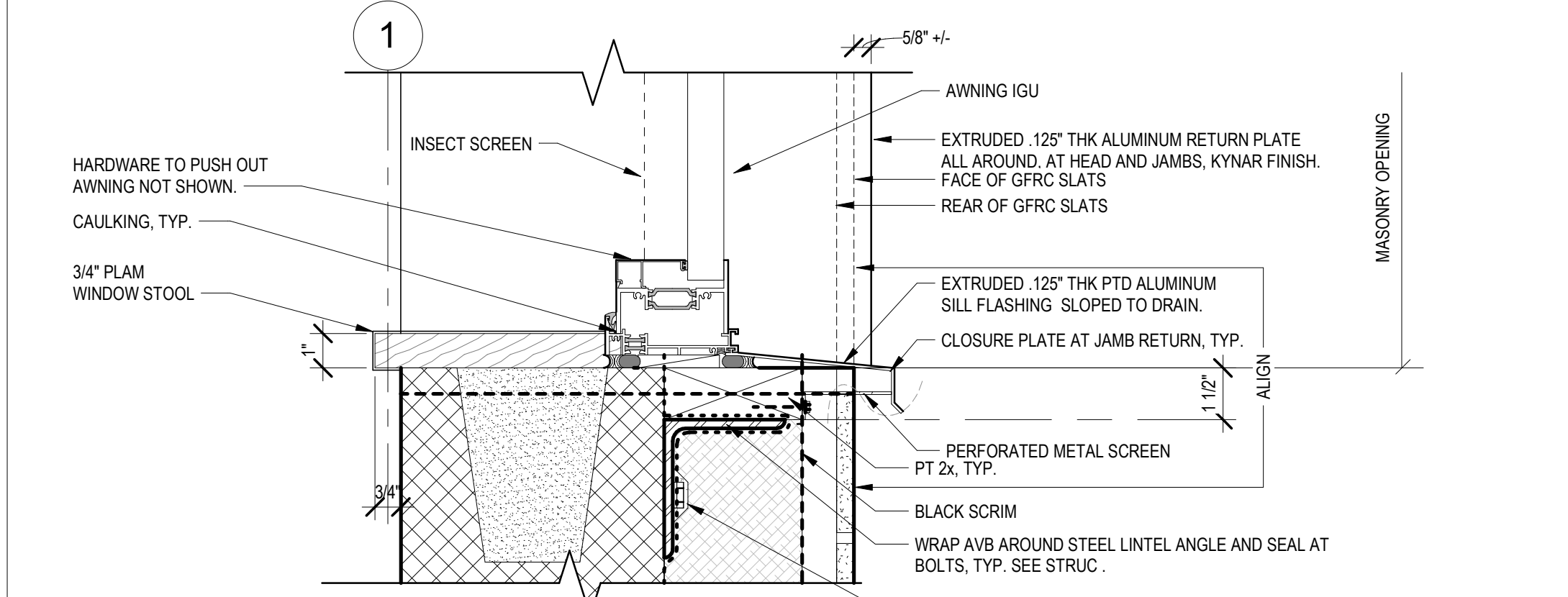
**6 TYPE A & B WINDOW JAMB DETAIL**  
3" = 1'-0"



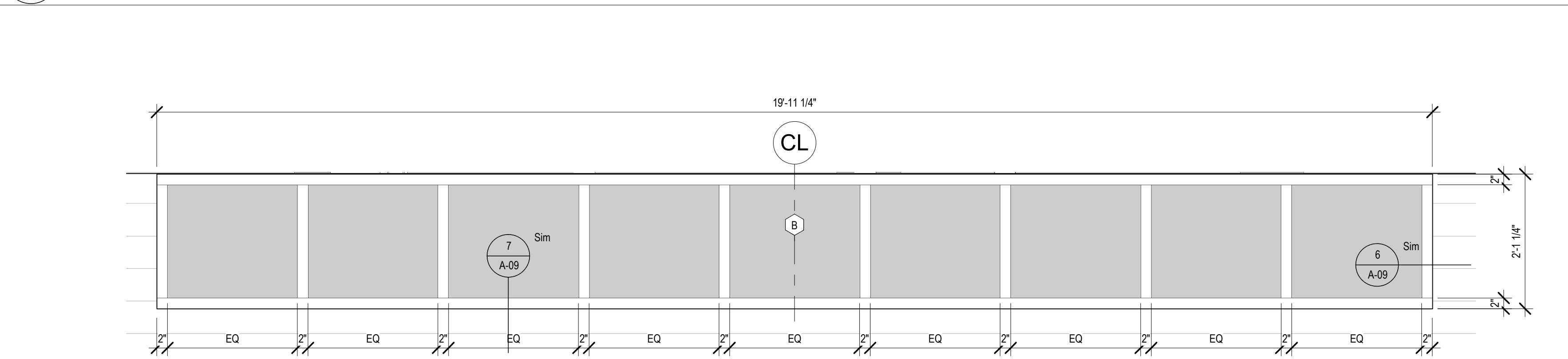
**5 WINDOW TYPE C HEAD DETAIL**  
3" = 1'-0"



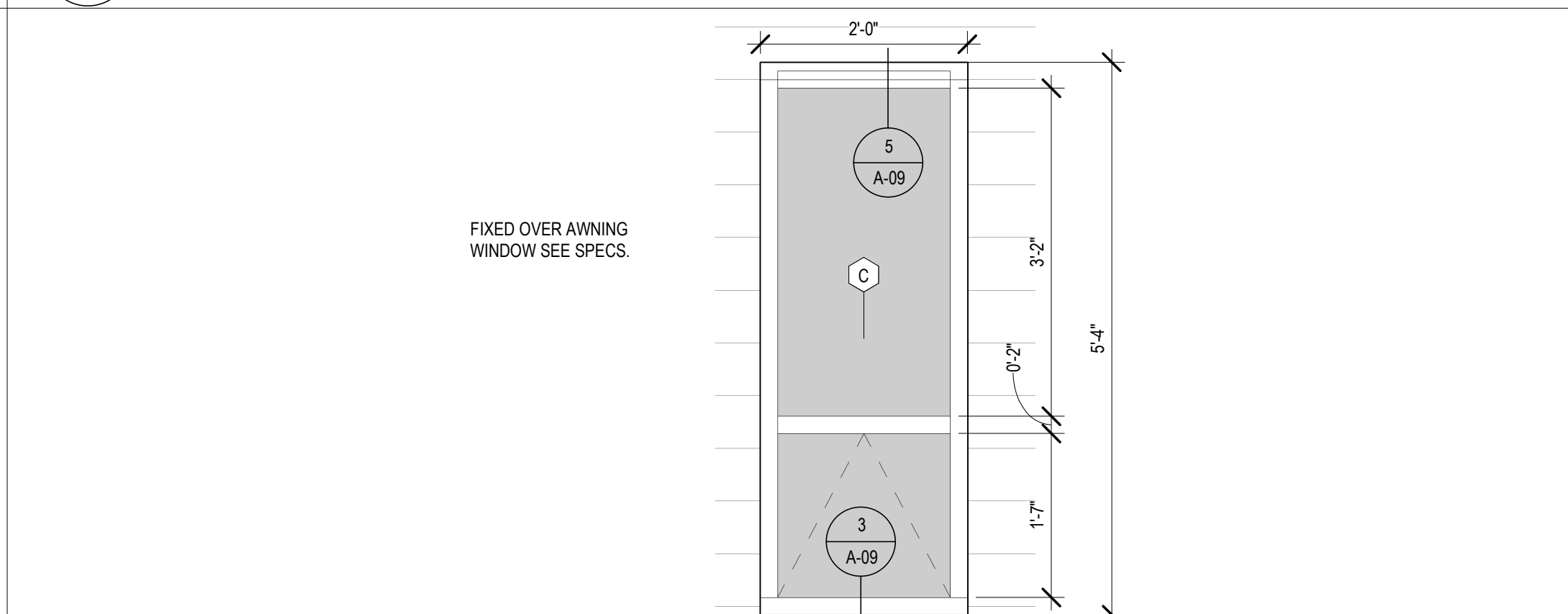
**4 TYPE A WINDOW ELEVATION**  
3/4" = 1'-0"



**3 WINDOW TYPE C SILL DETAIL**  
3" = 1'-0"



**2 SOUTH WINDOW, TYPE B**  
3/4" = 1'-0"



**1 TYP. WINDOW ELEVATION TYPE C**  
3/4" = 1'-0"

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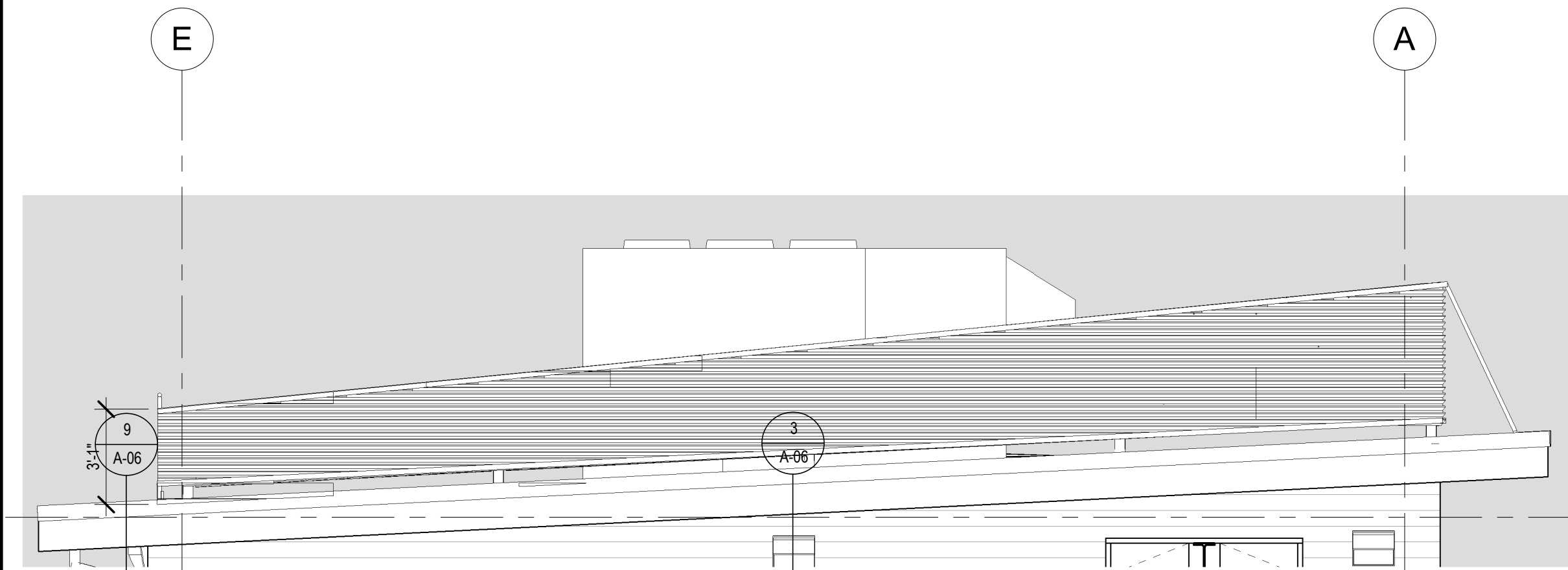
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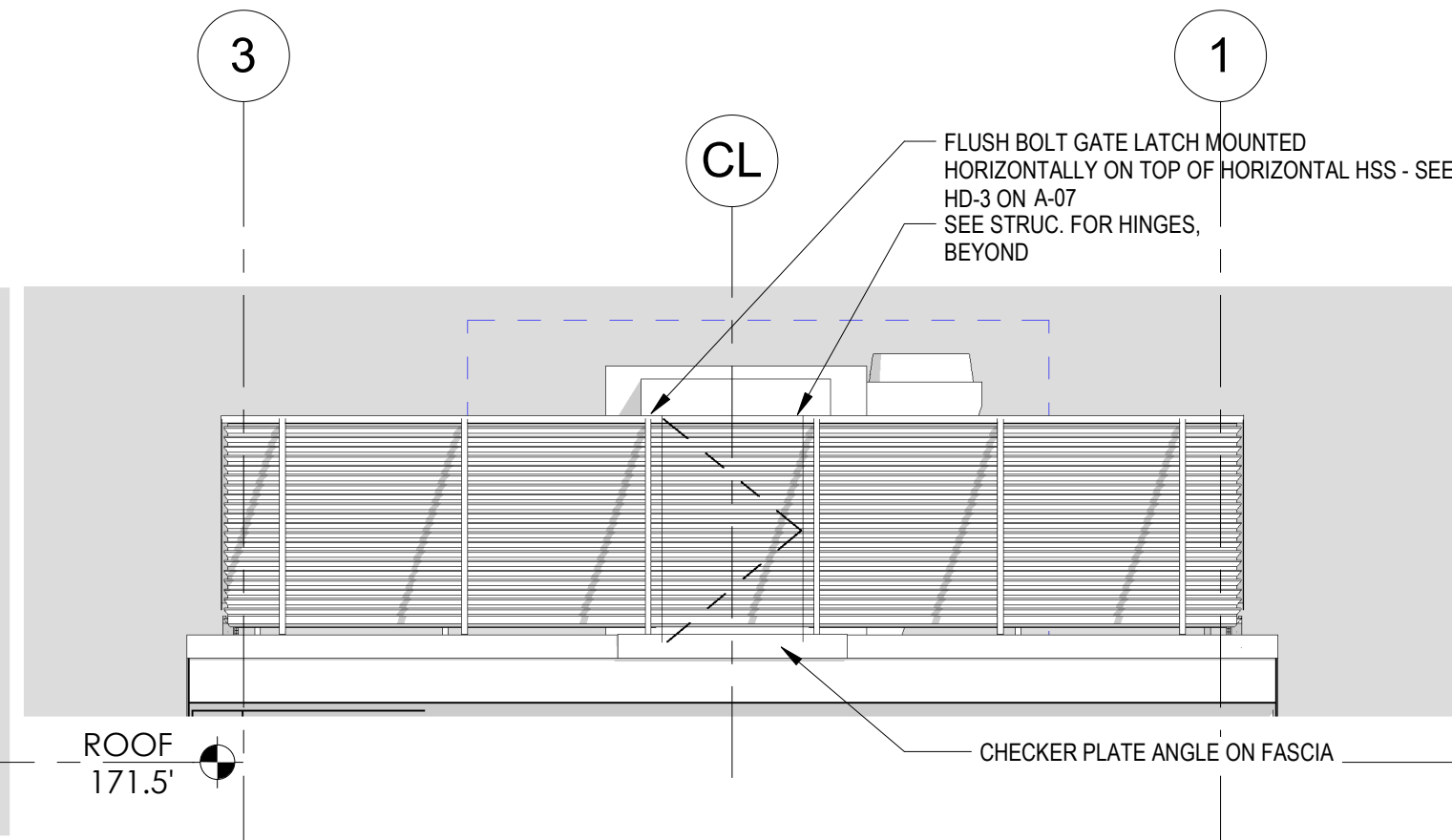
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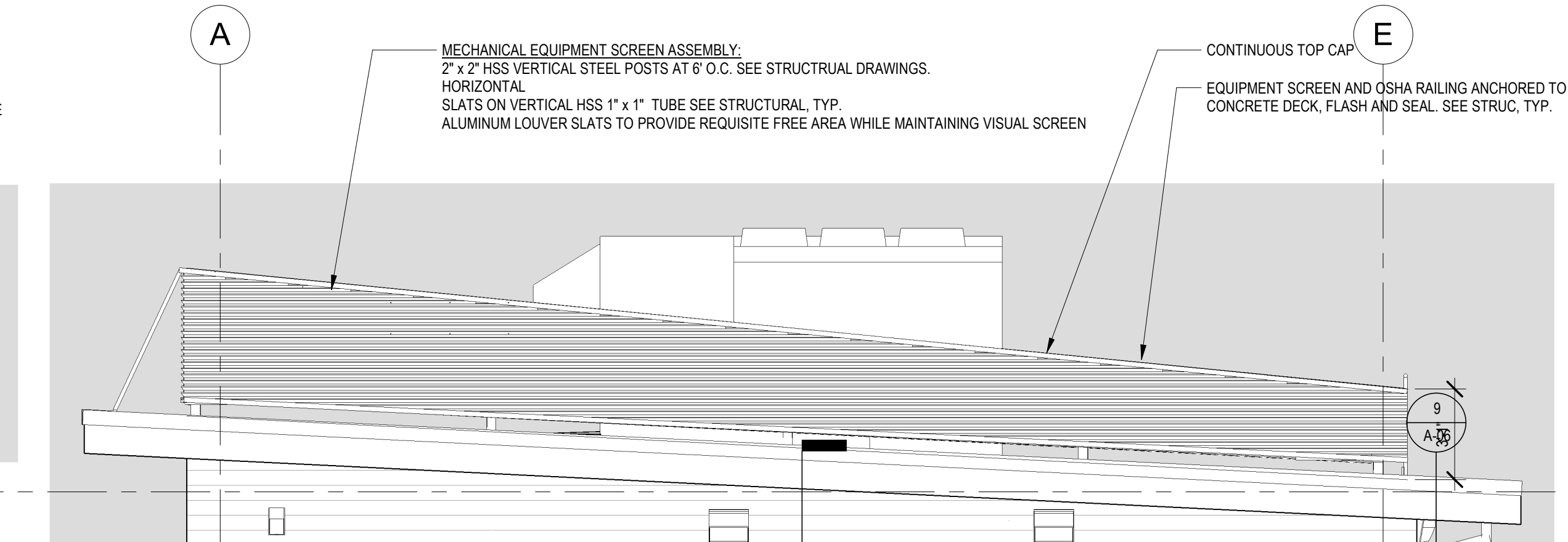
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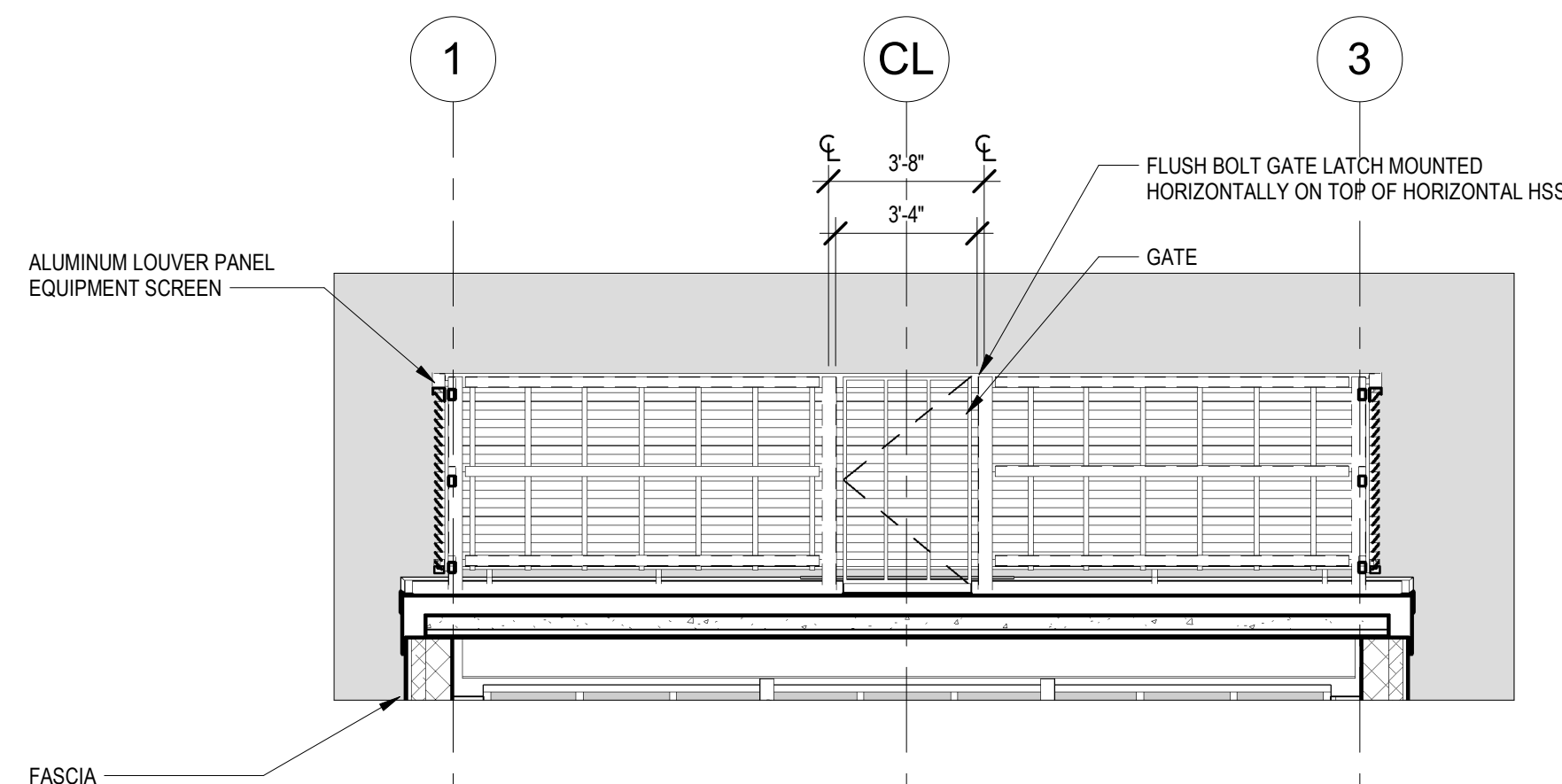
**8 EAST ENLARGED BUILDING ELEVATION EQUIPMENT SCREEN**  
1/4" = 1'-0"



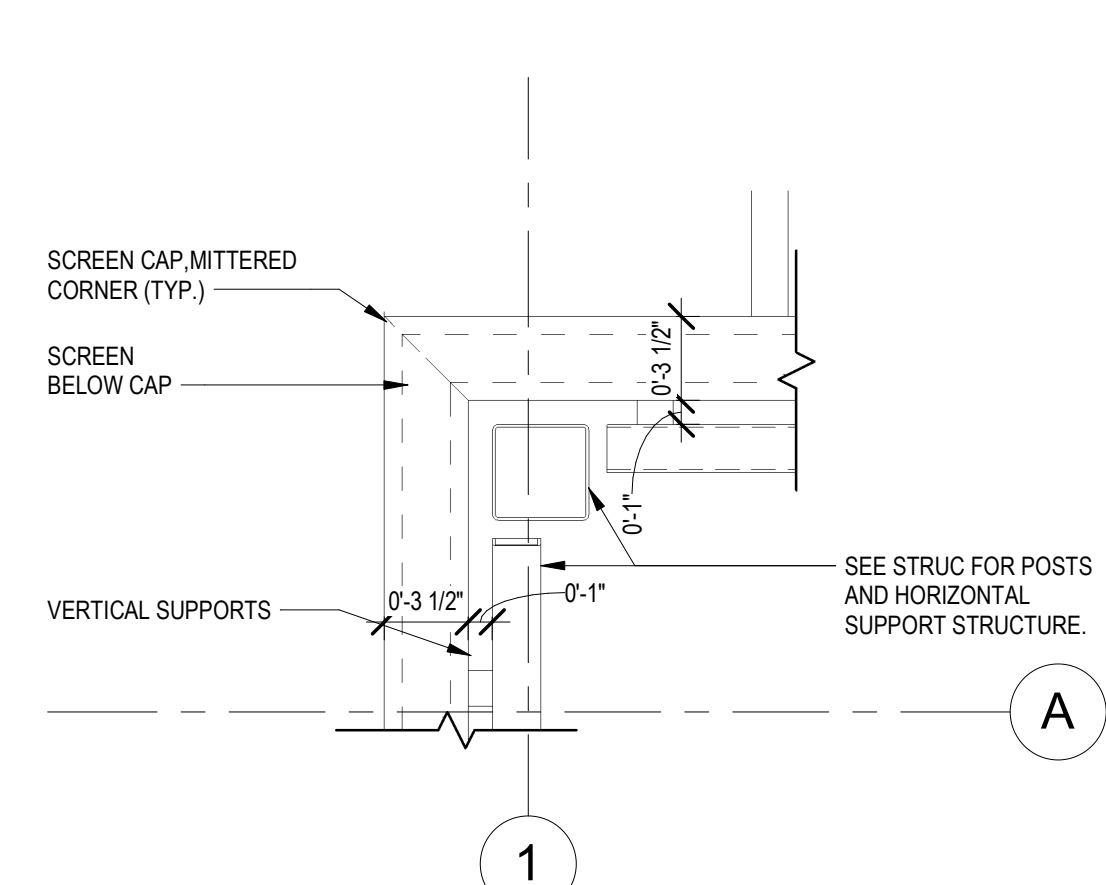
**7 NORTH ENLARGED ELEVATION EQUIPMENT SCREEN**  
1/4" = 1'-0"



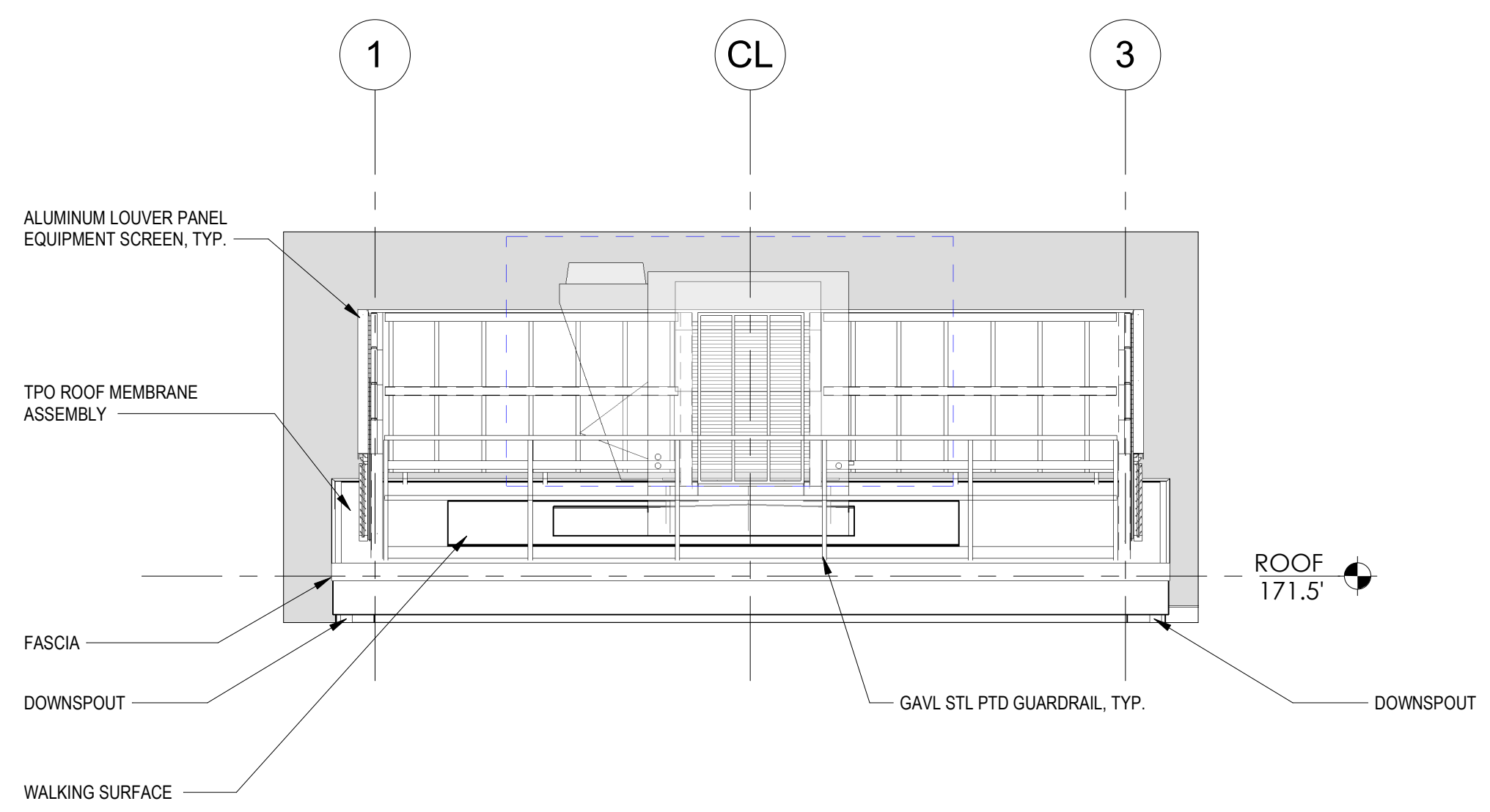
**6 WEST ENLARGED ELEVATION EQUIPMENT SCREEN**



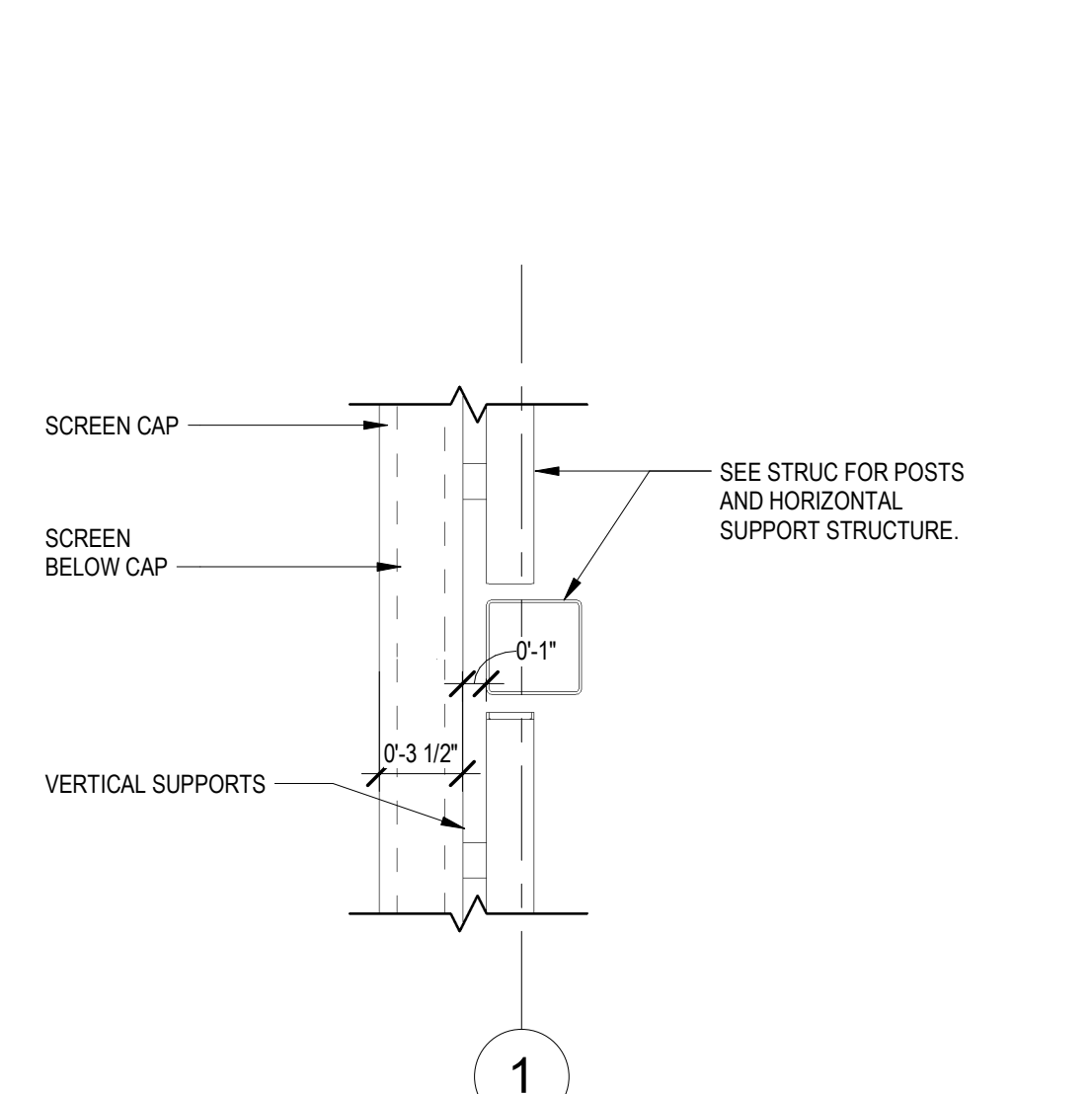
**5 EQUIPMENT SCREEN - NORTH WALL, FROM SOUTH**  
1/4" = 1'-0"



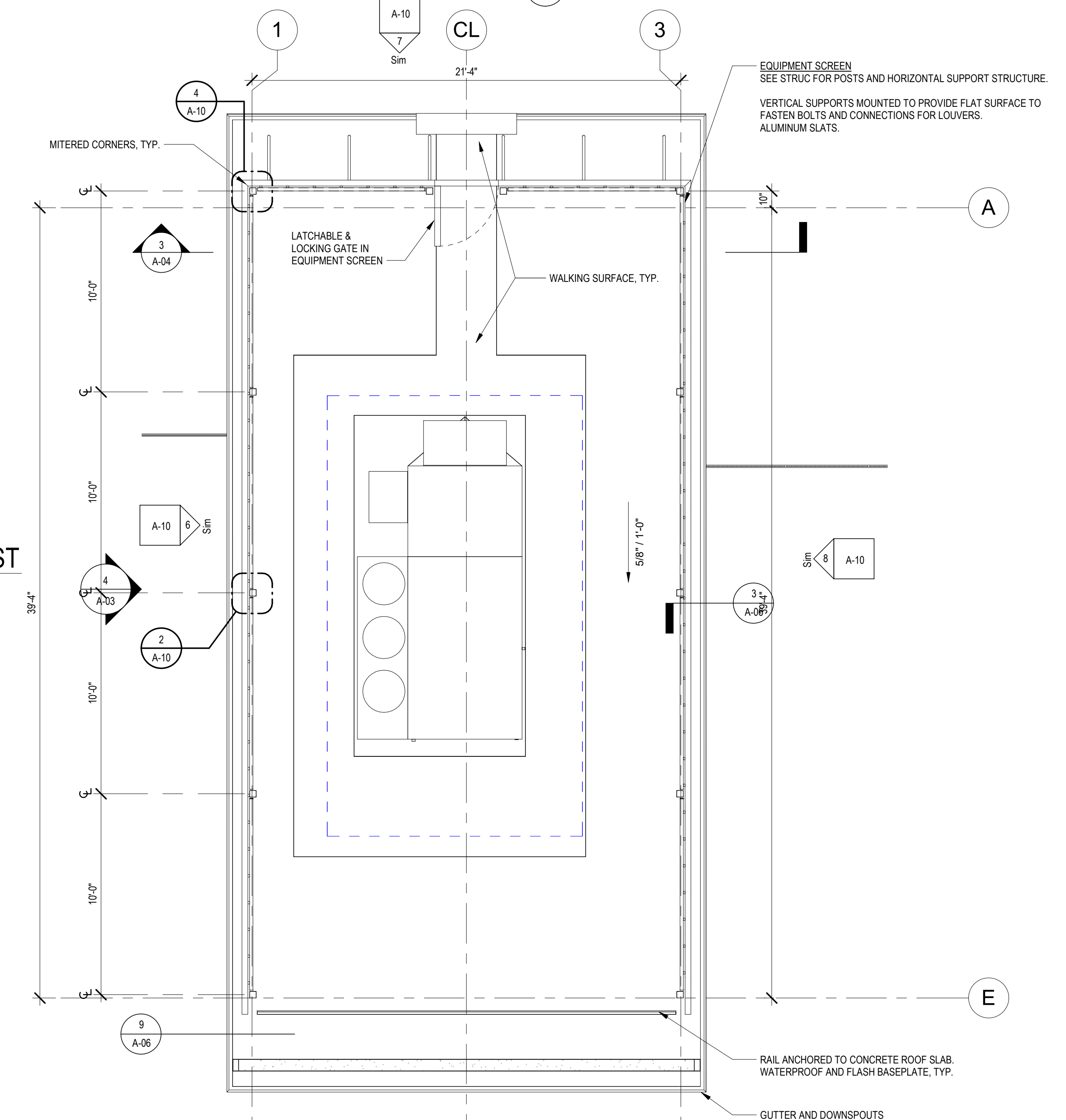
**4 EQUIPMENT SCREEN DETAIL AT CORNER POST**  
1 1/2" = 1'-0"



**3 SOUTH ELEVATION- HAND RAIL**  
1/4" = 1'-0"



**2 EQUIPMENT SCREEN DETAIL AT POST**  
1 1/2" = 1'-0"



**1 ROOF EQUIPMENT SCREEN PLAN**  
1/4" = 1'-0"

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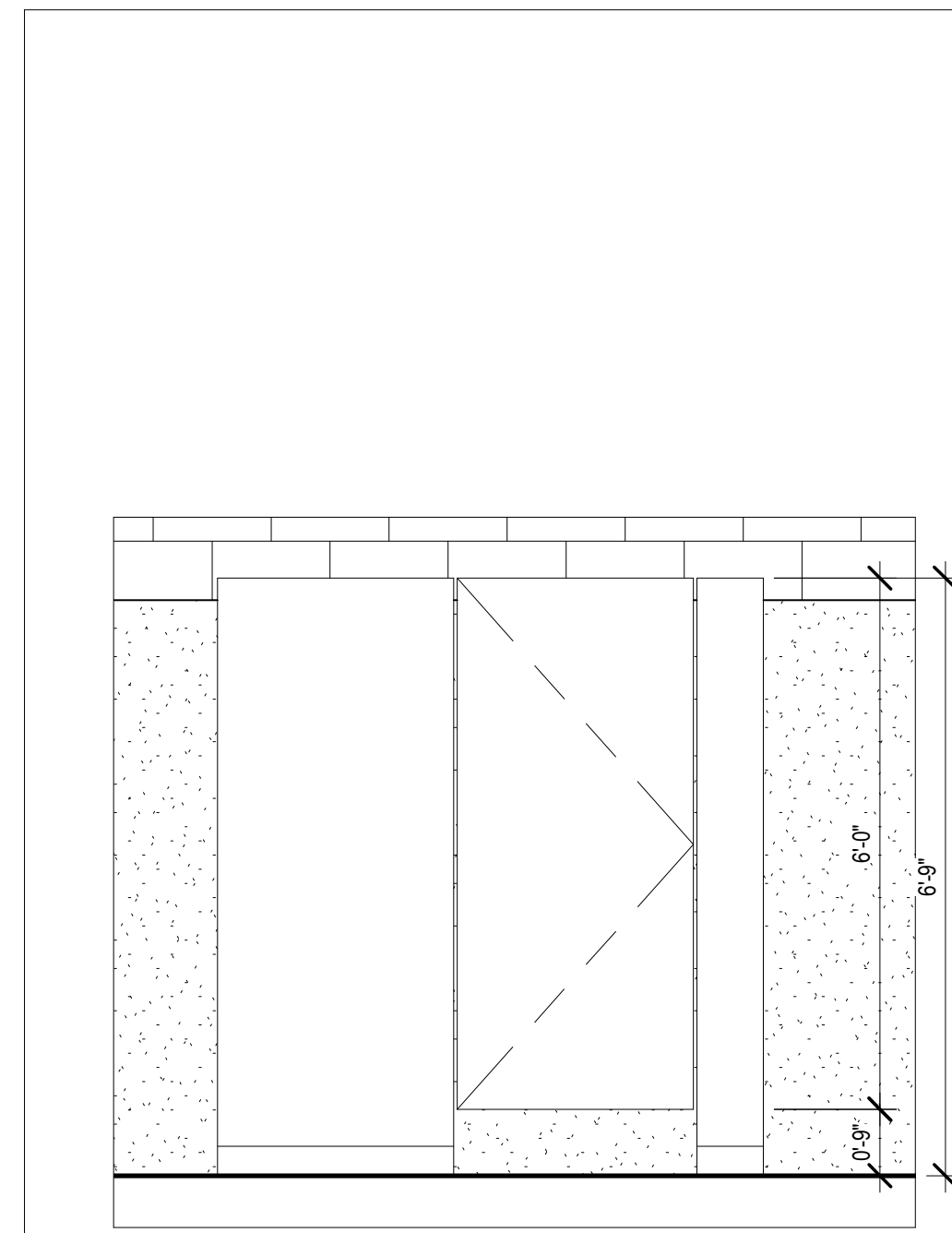
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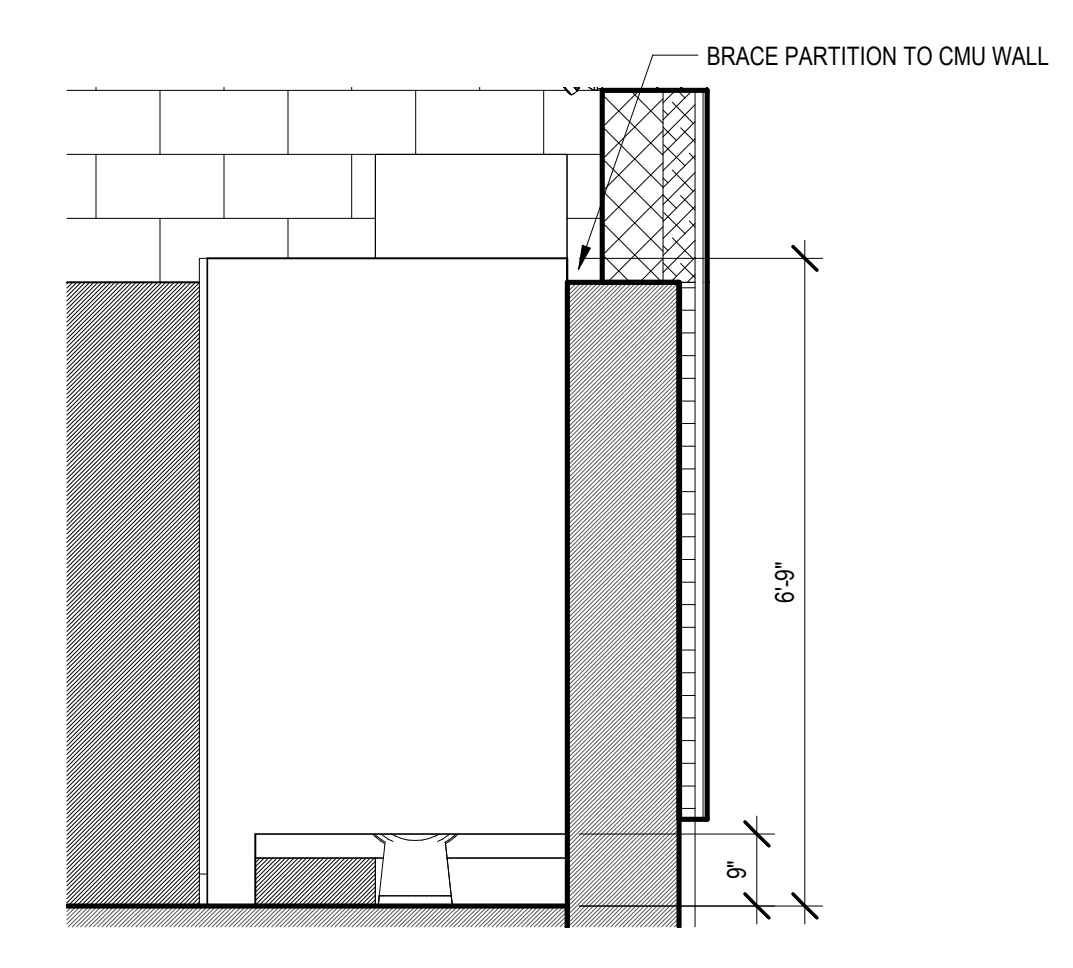
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**EQUIPMENT SCREEN DETAILS**

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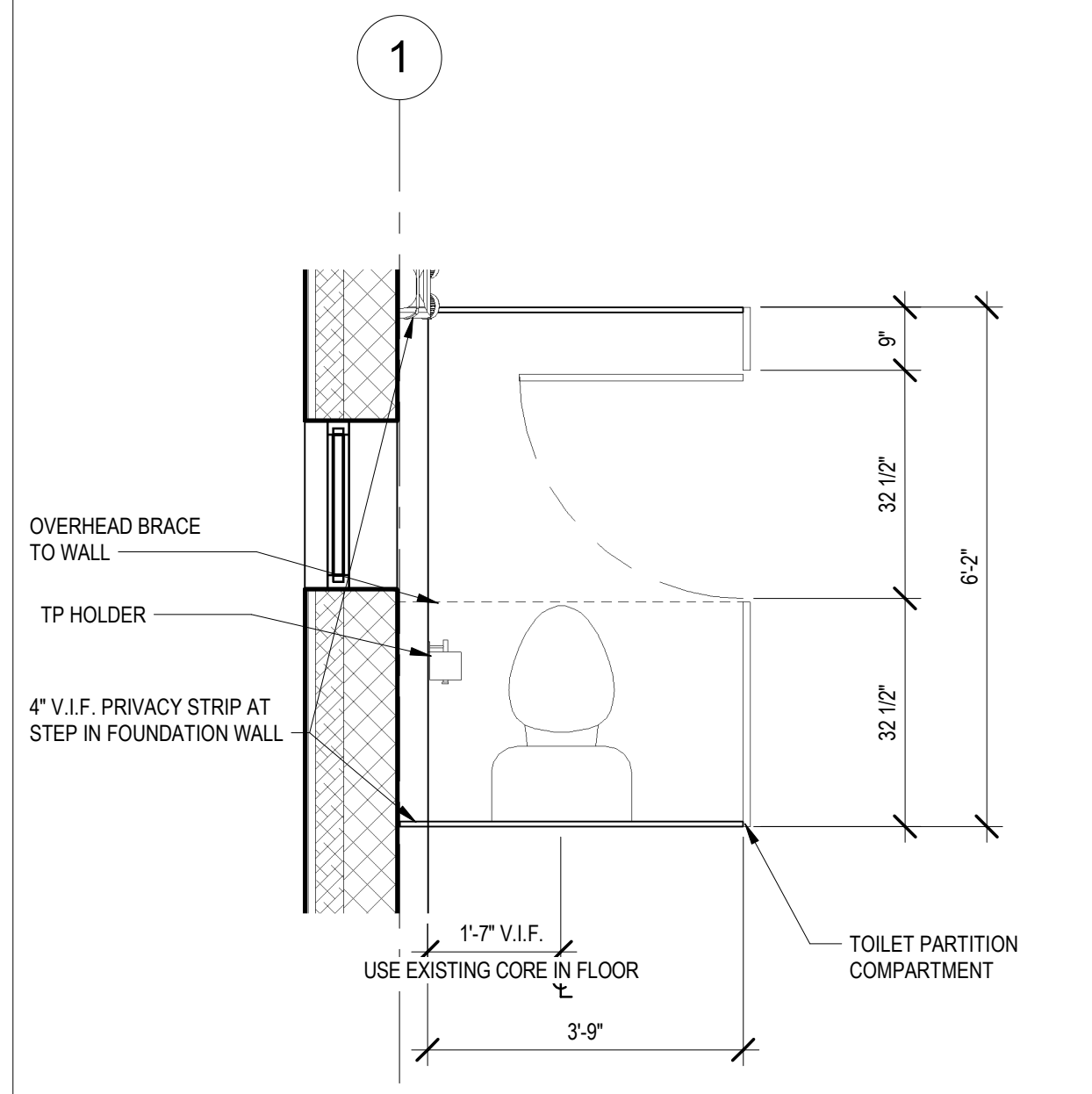
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3 TOILET COMPARTMENT ELEVATION  
1/2" = 1'-0"



2 TOILET COMPARTMENT PARTITION ELEV.  
1/2" = 1'-0"



1 ENLARGED PLAN TOILET COMPARTMENT  
1/2" = 1'-0"

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INTERIOR ELEVATIONS

DSK JOB NO. 20030.00  
ISSUE DATE JANUARY 2023  
SHEET NO. A-11

**GENERAL**

- STRUCTURAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE COMMONWEALTH OF MASSACHUSETTS STATE BUILDING CODE, 9TH EDITION.
- VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO BEGINNING WORK OR FABRICATING MATERIALS. NOTIFY THE ENGINEER OF DISCREPANCIES BEFORE PROCEEDING WITH ANY PHASE WORK.
- DO NOT SCALE FROM THESE DRAWINGS. REFER TO LABELED DIMENSIONS ONLY.
- DETAILS LABELED "TYPICAL DETAILS" ON DRAWINGS APPLY TO SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SUCH DETAILS APPLY WHETHER OR NOT DETAILS ARE REFERENCED AT EACH LOCATION. NOTIFY ENGINEER OF CONFLICTS REGARDING APPLICABILITY OF "TYPICAL DETAILS".
- DO NOT LOAD THE SLAB ON GRADE OR SUPPORTED SLAB WITH ERECTION CRANES OR ERECTION EQUIPMENT. THE SLABS HAVE NOT BEEN DESIGNED FOR CRANE LOADS AND WILL REQUIRE AN INCREASE IN THICKNESS AND/OR REINFORCEMENT. OBTAIN ENGINEERS APPROVAL ON PROPOSED CRANE SUPPORT PLAN FOR SLABS PRIOR TO COMMENCING WORK.
- DO NOT STORE OR STACK CONSTRUCTION MATERIALS ON POURED OR ERECTED FLOORS/ROOFS IN EXCESS OF 80 PERCENT OF LIVE LOAD. AVOID IMPACT WHEN PLACING MATERIALS ON POURED OR ERECTED FLOORS OR ROOFS.
- OPENINGS IN SLABS AND WALLS LESS THAN 12" MAXIMUM DIMENSION ARE GENERALLY NOT SHOWN ON STRUCTURAL DRAWINGS. OPENINGS SHOWN ON DRAWINGS SHALL NOT BE REVISED WITHOUT PRIOR WRITTEN APPROVAL.
- WHERE SPECIFIC DETAILS ARE NOT SHOWN THAT ARE SIMILAR IN CHARACTER TO THOSE INDICATED, SIMILAR CONSTRUCTION DETAILS SHALL BE USED.
- THE CONTRACT STRUCTURAL DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION. PROVIDE ALL MEASURES REQUIRED TO PROTECT THE STRUCTURE, WORKMEN, AND OTHER PERSONS DURING CONSTRUCTION, INCLUDING BRACING, SHORING FOR THE BUILDING, FORMS AND SCAFFOLDING, SHORING OF RETAINING WALLS AND OTHER TEMPORARY SUPPORTS AS REQUIRED. COMPLY WITH APPLICABLE REQUIREMENTS OF OSHA AND OTHER GOVERNING BODIES HAVING JURISDICTION AT THE SITE.

**DESIGN LOADS**

LIVE LOADS	
ROOF	20 PSF, 300 LB
FIRST FLOOR SLAB	100 PSF, 325 LB
SNOW LOADS	
GROUND SNOW LOAD (Pg)	40.0 PSF
FLAT ROOF SNOW LOAD (P <sub>f</sub> )	35.0 PSF
WIND LOADS	
BASIC WIND SPEED	120 MPH
IMPORTANCE FACTOR (I <sub>w</sub> )	1.00 (CATEGORY IV)
WIND EXPOSURE CATEGORY	B
SEISMIC	
SEISMIC RISK CATEGORY	IV
IMPORTANCE FACTOR (I <sub>e</sub> )	1.5 (CATEGORY IV)
DESIGN FACTOR S <sub>s</sub>	0.196
DESIGN FACTOR S <sub>1</sub>	0.067
SITE CLASSIFICATION	D
SPECTRAL RESPONSE S <sub>Ds</sub>	0.209
SPECTRAL RESPONSE S <sub>D1</sub>	0.107
SEISMIC DESIGN CATEGORY	C
BASIC RESISTING SYSTEM	INTERMEDIATE REINFORCED MASONRY SHEAR BEARING WALL
DESIGN BASE SHEAR	C <sub>sw</sub>
RESPONSE COEFFICIENT C <sub>s</sub>	0.090
RESPONSE MOD FACTOR R	3.5
ANALYSIS METHOD	EQUIVALENT LATERAL FORCE

**FOUNDATIONS**

- ALL FOOTINGS FOR WALLS AND COLUMNS SHALL BEAR ON NATURALLY DEPOSITED SOILS OR COMPACTED STRUCTURAL FILL.
- SLABS ON GRADE SHALL BE PLACED ON 12 INCHES OF COMPACTED STRUCTURAL FILL OVER PROOF ROLLED NATURAL SOILS.
- ALL UNSUITABLE MATERIAL WITHIN FOUNDATIONS AND SLABS SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER.
- FOUNDATIONS SHALL BE CENTERED UNDER SUPPORTED STRUCTURAL MEMBERS, UNLESS NOTED OTHERWISE ON THE DRAWINGS (OFFSETS ARE A REQUIREMENT OF THIS PROJECT). FOUNDATION WALLS SHALL BE KEYPED TO FOOTINGS.
- FOUNDATIONS MAY BE ALTERED TO SUIT EXISTING CONDITIONS AS DIRECTED BY THE ENGINEER.
- PROVIDE TEMPORARY OR PERMANENT SUPPORTS AS REQUIRED TO PROTECT EXISTING AND NEWLY COMPLETED STRUCTURES AND UTILITIES.
- CARRY OUT CONTINUOUS CONTROL OF SURFACE AND SUBSURFACE WATER DURING CONSTRUCTION SUCH THAT FOUNDATION WORK IS DONE IN DRY AND ON UNDISTURBED SUB GRADE MATERIAL. REFER TO DEWATERING & CONTAMINATION NOTES ON G-1.
- ALL CONCRETE SURFACES SHALL BE FORMED. DO NOT FORM AGAINST EXCAVATIONS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- NO FOUNDATION CONCRETE SHALL BE PLACED ON FROZEN SUB GRADE MATERIAL.
- PLACE BACKFILL BEHIND WALLS ON BOTH SIDES SIMULTANEOUSLY.

**CONCRETE**

- CONCRETE WORK SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318), AND SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301).
- UNLESS NOTED OTHERWISE, CONCRETE SHALL BE AS FOLLOWS:  
 ROOF 4000 PSI (NORMAL WEIGHT)  
 FOUNDATION WALLS AND FOOTINGS 4000 PSI (NORMAL WEIGHT)  
 SLAB-ON-GRADE 4000 PSI (NORMAL WEIGHT)  
 HOUSEKEEPING/MECHANICAL PADS 3000 PSI (NORMAL WEIGHT)
- CONCRETE EXPOSED TO THE WEATHER SHALL BE AIR ENTRAINED.
- PROVIDE VAPOR BARRIER UNDER INTERIOR SLABS CAST ON GRADE.
- CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS ARE MANDATORY. ADDITIONAL CONSTRUCTION JOINTS AND MODIFICATIONS AS REQUIRED TO EXECUTE THE CONSTRUCTION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- SIZE OF CONCRETE PLACEMENTS, UNLESS NOTED OTHERWISE, SHALL CONFORM TO ACI GUIDELINES AND RECOMMENDATIONS.

**REINFORCEMENT**

- REINFORCEMENT SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318), ACI DETAILING MANUAL (SP-66), CRSI MANUAL OF STANDARD PRACTICE (MSP), AND THE STRUCTURAL WELDING CODE-REINFORCING STEEL (AWS D1).
- STEEL REINFORCEMENT SHALL CONFORM TO ASTM A615 GRADE 60.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
- PROVIDE SUPPLEMENTAL BARS AND ACCESSORIES AS REQUIRED TO HOLD REINFORCEMENT SECURELY IN POSITION.
- MINIMUM CONCRETE PROTECTIVE COVER, UNLESS NOTED OTHERWISE, SHALL BE AS FOLLOWS:  
 FOOTINGS - BOTTOMS 3 INCHES  
 FOOTINGS - SIDES AND TOP 2 INCHES  
 WALLS 2 INCHES  
 SLABS ON GRADE 1 INCH TOP/1 1/2" BOTTOM
- ALL CONTINUOUS REINFORCEMENT SHALL BE EXTENDED AROUND CORNERS AND LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS.
- LAPS SHALL BE CLASS B TENSION LAP SPLICES, UNLESS NOTED OTHERWISE.
- REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS.
- COLUMN DOWELS SHALL BE SET WITH A TEMPLATE AND POSITIONED SO AS TO BE ENCLOSED BY THE COLUMN TIES.
- WELDED WIRE FABRIC SHALL LAP 8" OR 1-1/2 SPACES, WHICHEVER IS LARGER, AND SHALL BE WIRED TOGETHER.

**MASONRY CONSTRUCTION**

- CONCRETE MASONRY UNIT (CMU) CONSTRUCTION SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (ACI 530).
- CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C-90 GRADE N-1.
- MORTAR SHALL CONFORM TO ASTM C-270, TYPE N. MASONRY CEMENT IS NOT PERMITTED FOR SHEAR WALLS.
- GROUT SHALL CONFORM TO ASTM C-476 2,500 PSI.
- PRIOR TO GROUTING CELLS, BARS AND CELLS MUST BE INSPECTED BY THE TESTING AGENCY.
- THE BASE OF EACH CELL IN WHICH A BAR IS PLACED MUST HAVE A CLEAN OUT HOLE.
- SUBMIT SHOP DRAWINGS SHOWING ALL UNITS, REINFORCING, LINTELS, ETC. FOR REVIEW AND APPROVAL.
- PROVIDE AND INSTALL LINTELS FOR ALL OPENINGS AS SHOWN ON THE DRAWINGS.
- MASONRY BLOCK CELLS CONTAINING VERTICAL REINFORCING SHALL BE GROUTED SOLID. FILLING CELLS WITH MORTAR IS UNACCEPTABLE. DO NOT DROP MORTAR IN CELLS TO BE GROUTED.
- REINFORCING SHALL BE SECURELY HELD IN POSITION USING "REBAR POSITIONERS".
- REINFORCING BARS TO EXTEND 12 BAR DIAMETERS BUT NOT LESS THAN 12" BEYOND BEND U.N.O.
- REINFORCING LAP SPLICE LENGTH = 48 BAR DIAMETERS (24" MINIMUM).
- PROVIDE A CONTINUOUS TWO COURSE BOND BEAM WITH (2)-#5 CONTINUOUS HORIZONTAL BARS AT THE TOP OF ALL WALLS IN EACH COURSE. THE BOND BEAMS SHALL STEP ALONG THE SLOPE OF THE WALLS.
- ALL HORIZONTAL REINFORCING, EXCEPT IN THE LINTELS SHALL BE PLACED IN A CMU BOND BEAM BLOCK. PROVIDE GALVANIZED METAL LATH IN THE HORIZONTAL JOINT BELOW THE BLOCK TO RETAIN THE GROUT.

**STRUCTURAL STEEL**

- WORK SHALL CONFORM TO SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, AND THE STRUCTURAL WELDING CODE.
- STRUCTURAL STEEL SHALL BE DETAILED IN ACCORDANCE WITH "DETAILING FOR STEEL CONSTRUCTION (AISC) AND, WHERE REQUIRED, DESIGNED IN ACCORDANCE WITH THE CITED REFERENCES.
- STRUCTURAL STEEL SHALL BE NEW STEEL CONFORMING TO THE FOLLOWING:  
 UNLESS NOTED OTHERWISE    ASTM A992 GRADE 50 (FY = 50 KSI)  
 CHANNELS, ANGLES, PLATES    ASTM A36 (FY = 36 KSI)  
 HOLLOW STRUCTURAL SECTIONS    ASTM A500 GRADE B (FY = 46 KSI)  
 ANCHOR BOLTS    ASTM F1554  
 HIGH STRENGTH BOLTS    ASTM A325
- BOLTED CONNECTIONS SHALL BE MADE WITH 3/4 INCH DIAMETER A325-N HIGH STRENGTH BOLTS.
- WELDED CONNECTIONS SHALL BE MADE BY APPROVED CERTIFIED WELDERS USING FILLER METAL CONFORMING TO E70XX.
- UNLESS OTHERWISE NOTED, BEAM CONNECTIONS SHALL PROVIDE FOR A REACTION LOAD "R" EQUAL TO HALF THE TOTAL UNIFORM LOAD CAPACITY OF BEAM FOR GIVEN SHAPE.
- PROVIDE STIFFENERS WHERE SHOWN ON DRAWINGS.
- PROVIDE TEMPORARY ERECTION BRACING AND SUPPORTS TO HOLD STRUCTURAL STEEL FRAMING SECURELY IN POSITION. SUCH TEMPORARY BRACING AND SUPPORTS SHALL NOT BE REMOVED UNTIL PERMANENT BRACING HAS BEEN INSTALLED AND CONCRETE FOR FLOOR SLABS HAS ATTAINED 75% OF SPECIFIED CONCRETE STRENGTH.
- FIELD CUTTING OF STRUCTURAL STEEL OR ANY FIELD MODIFICATIONS OF STRUCTURAL STEEL SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL.
- STRUCTURAL STEEL ENCASED IN MASONRY OR CONCRETE SHALL BE COVERED WITH MASTIC.
- STRUCTURAL STEEL MEMBERS, LINTELS AND CONNECTIONS EXPOSED TO THE WEATHER SHALL BE GALVANIZED.
- STRUCTURAL STEEL, IF USED FOR THE DESIGN OF THE SHEAR WALLS, SHALL BE DESIGNED IN ACCORDANCE WITH AISC.

**METAL DECK**

- METAL ROOF DECK SHALL BE 2" DEEP, 36" WIDE, GALVANIZED PER ASTM A924 G-90, TYPE 2VLJ METAL DECK WITH THE FOLLOWING MINIMUM PROPERTIES:  
 GAUGE 18  
 IP 0.559  
 In 0.558  
 Sp 0.495  
 S<sub>1</sub> 0.504
- UNLESS OTHERWISE INDICATED WELD METAL ROOF DECK TO STRUCTURAL SUPPORTS WITH 5/8" DIAMETER PUDDLE WELDS TO ALL STRUCTURAL SUPPORTS A MINIMUM OF 12 INCHES ON CENTER. WELD ALONG THE BUILDING PERIMETER AND AROUND OPENINGS AT 6 INCHES ON CENTER. PROVIDE SIDE LAP SCREWS AS SHOWN ON DRAWINGS.
- OVERHANGS SHALL BE TEMPORARILY SHORED UNTIL CONCRETE REACHES 75% OF f'c.

**SUBMITTALS, TESTING AND INSPECTIONS**

- SUBMITTALS AND TESTING SHALL BE AS REQUIRED BY THE MASSACHUSETTS STATE BUILDING CODE AND THESE FOLLOWING REQUIREMENTS.
- THE CONTRACTOR SHALL PROVIDE FOR AN INDEPENDENT TESTING AGENCY TO PERFORM REQUIRED TESTING.
- THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE TESTING AGENCY AND THE ENGINEERS ACCORDINGLY.
- NOTIFY THE ENGINEER PRIOR TO FOUNDATION EXCAVATION.
- NOTIFY THE ENGINEER PRIOR TO FIRST CONCRETE PLACEMENT.
- SUBMITTAL INCLUDES BUT NOT LIMITED TO:  
 DEWATERING  
 BORROW MATERIAL  
 CONCRETE MIX DESIGN  
 STEEL REINFORCING ACCESSORIES  
 CONCRETE MASONRY UNITS, MORTAR AND GROUT  
 STRUCTURAL STEEL  
 METAL DECK
- TESTS/INSPECTIONS INCLUDES BUT NOT LIMITED TO:  
 EARTHWORK  
 CONCRETE STRENGTH  
 REINFORCING STEEL INSTALLATION  
 CONCRETE PLACEMENT AND CURING  
 STEEL BOLTING AND WELDING  
 MASONRY MATERIAL INSTALLATION
- THE CONTRACTOR SHALL ALSO KEEP COMPLETE AND ORGANIZED RECORDS OF ALL TESTS AND INSPECTIONS AND PROVIDE THEM TO THE ENGINEER SO THAT THE FINAL AFFIDAVIT CAN BE PREPARED. A BINDER SHALL BE MAINTAINED AT THE JOBSITE AT ALL TIMES FOR THE ENGINEERS INSPECTION.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER, IN ADVANCE, BEFORE CONCEALING ANY WORK THAT WILL REQUIRE OBSERVATION NEEDED TO PREPARE THE FINAL AFFIDAVIT.

3/1/2023 1:45 PM J:\7385 - FRAMINGHAM WRRS IMPROVEMENTS\DRAWINGFILES\PLANS\SET(SR)\GENERAL NOTES.DWG (BETA STD.BW.CTB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	JMR
DESIGNED BY:	PJK
CHECKED BY:	CWJ



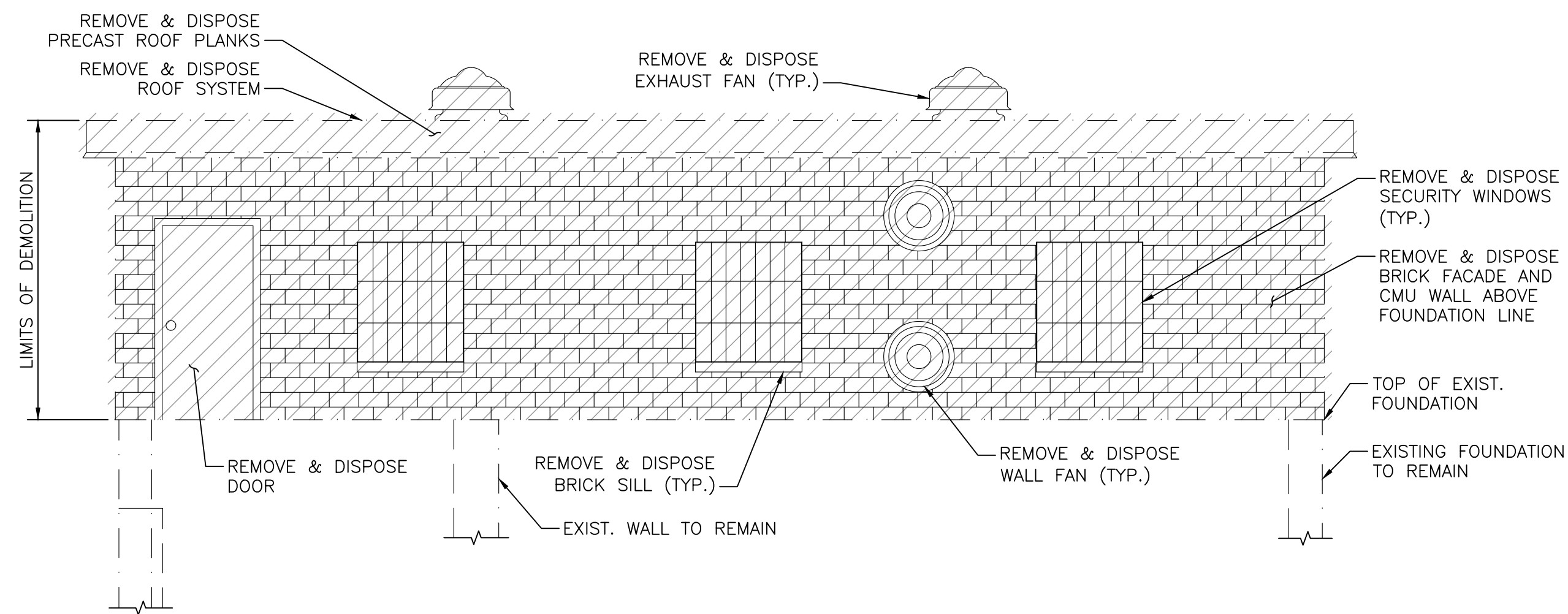
REGISTERED PROFESSIONAL	PREPARED BY	SUBCONSULTANT
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SCALE	AS SHOWN
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TITLE	<b>Worcester Road Sewer Pumping Station Replacement</b>
	GENERAL NOTES

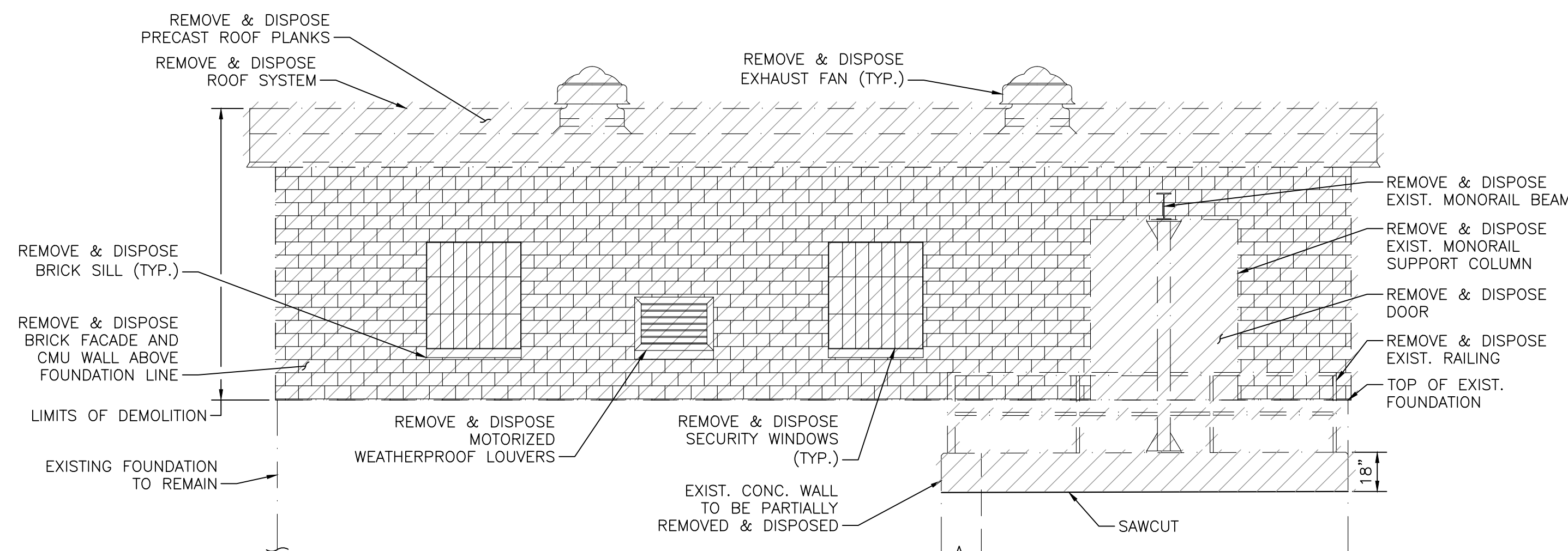
BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	S-1

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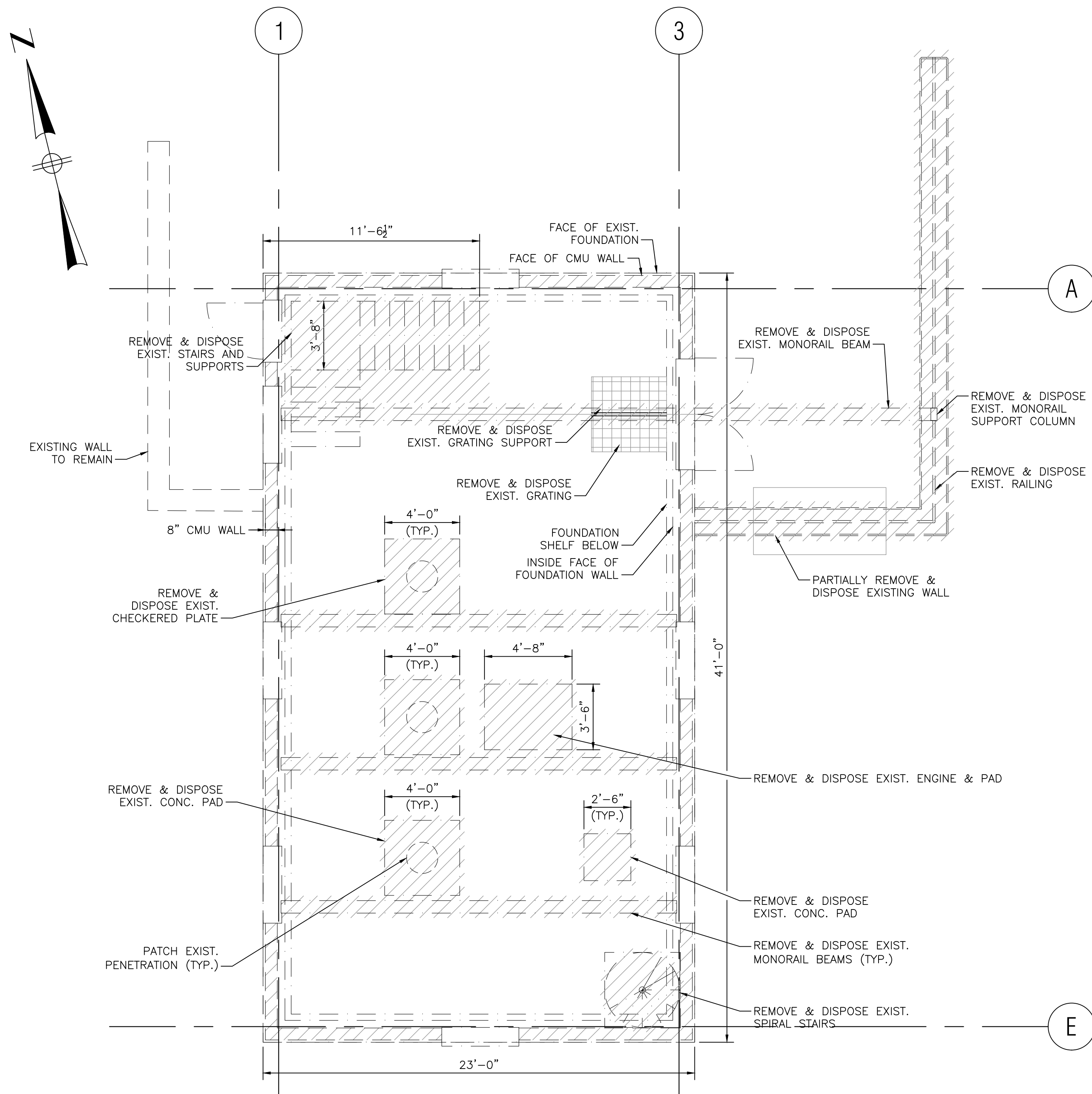
**WEST DEMO ELEVATION**

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



**EAST DEMO ELEVATION**

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



**UPPER LEVEL DEMO PLAN**

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

3/1/2023 1:45 PM J:\7385 - FRAMINGHAM WRRPS IMPROVEMENTS\DRAWINGFILES\PLANS\SET(S)\DEMOLITION DETAILS.DWG (BETA STD BW.CTB)

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DESIGNED BY: PJK		
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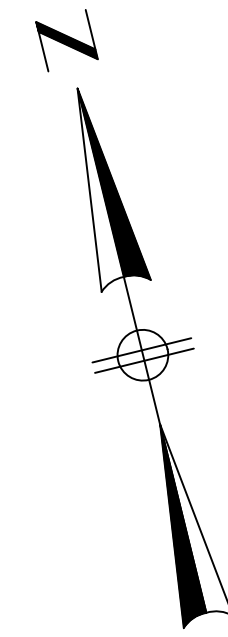
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AS SHOWN	<p><b>Worcester Road Sewer Pumping Station Replacement</b></p> <p><b>DEMOLITION DETAILS</b></p>

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ISSUE DATE JANUARY 2023
SHEET NO. S-2



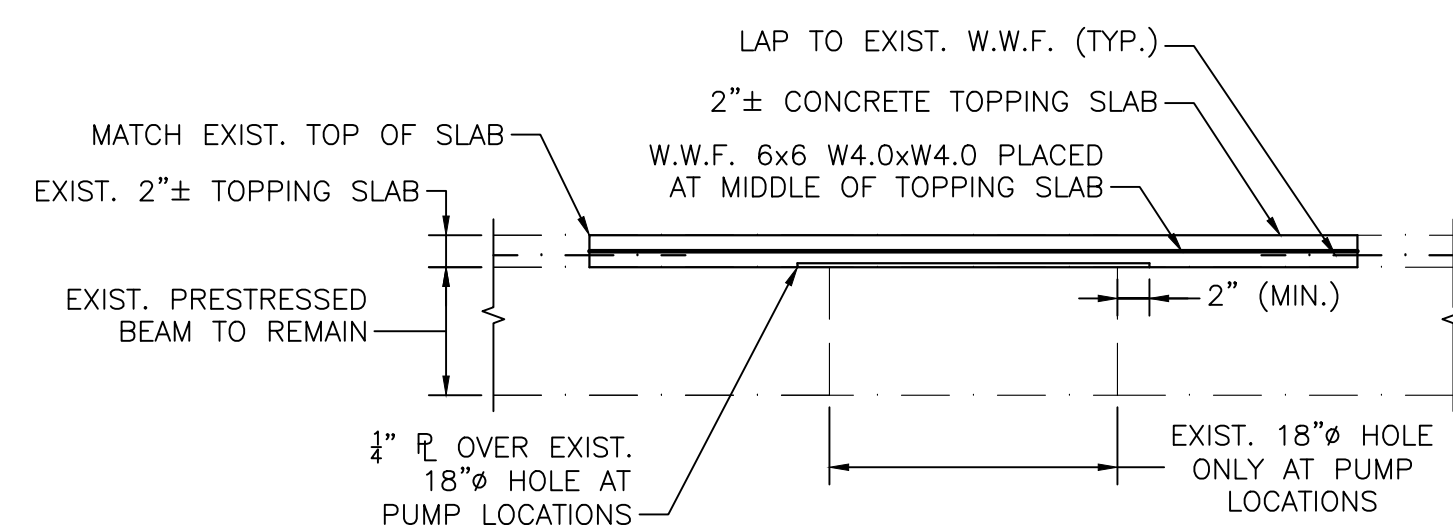
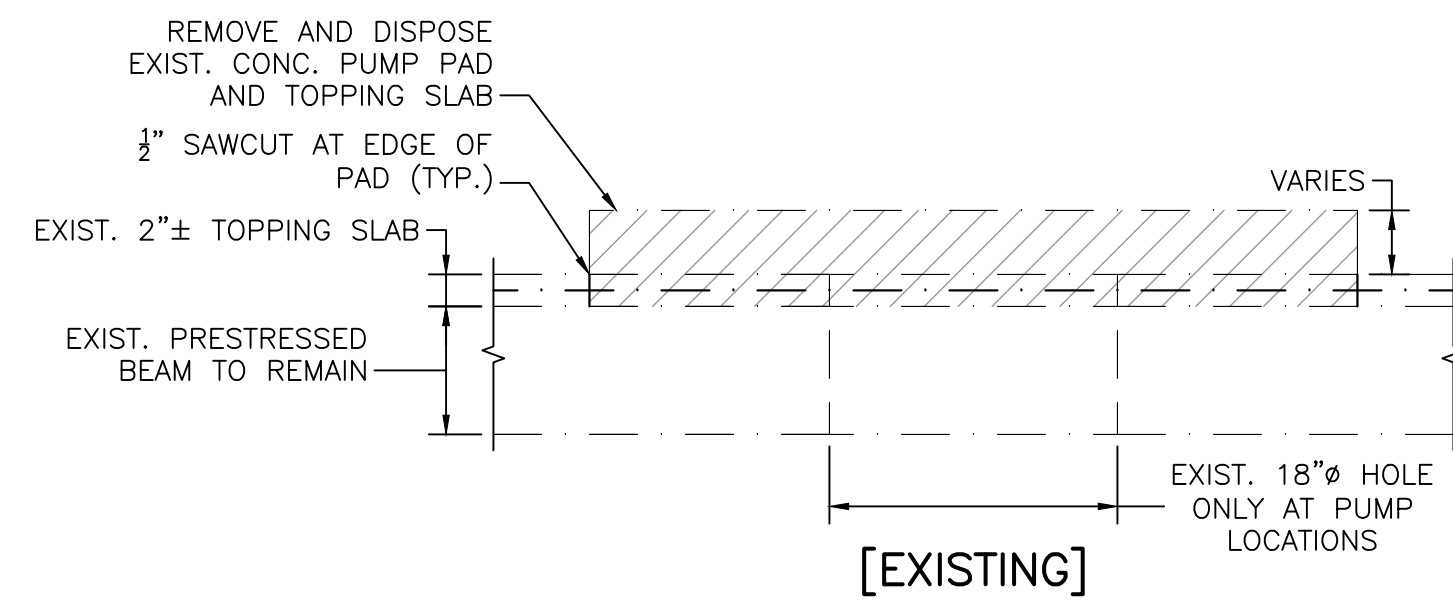
- FIRST FLOOR NOTES:**
1. DRILLING, CORING, OR CUTTING OF THE EXISTING FIRST FLOOR IS NOT PERMITTED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER UNLESS NOTED ON THE STRUCTURAL PLANS.
  2. CHIPPING HAMMERS SHALL BE LIMITED TO 30 LBS MAX. FOR ANY DEMOLITION WORK ON THE FIRST FLOOR SLAB.



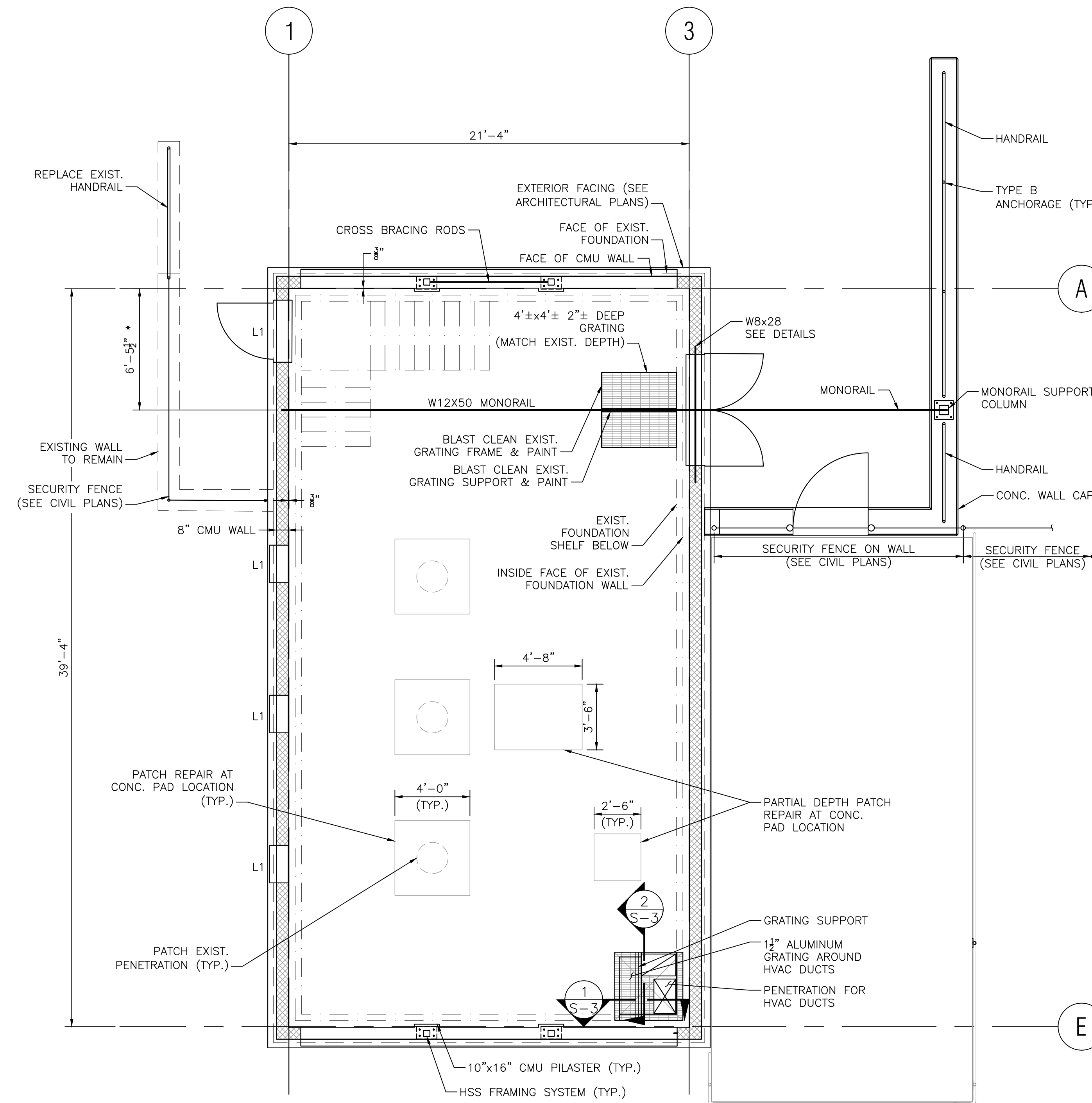
\* FIELD VERIFY DIMENSION. ROOF BEAM AND MONORAIL ARE TO ALIGN WITH THE  $\phi$  OF ACCESS HATCH ON THE MAIN LEVEL

**CONCRETE REPAIR NOTES:**

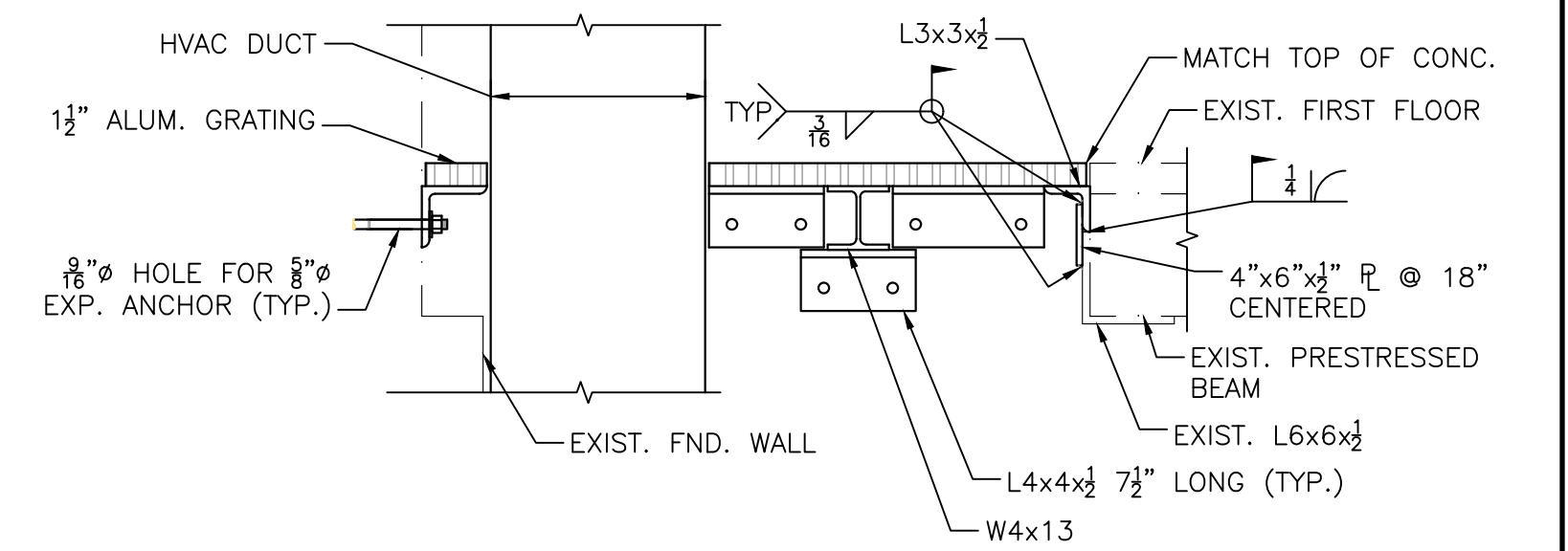
1. EXISTING CONCRETE SURFACE SHALL BE CLEAN WITH NO DEBRIS WITH DUST VACUUMED OUT.
2. EXISTING CONCRETE SHALL BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER PRIOR TO PLACING NEW CONCRETE.



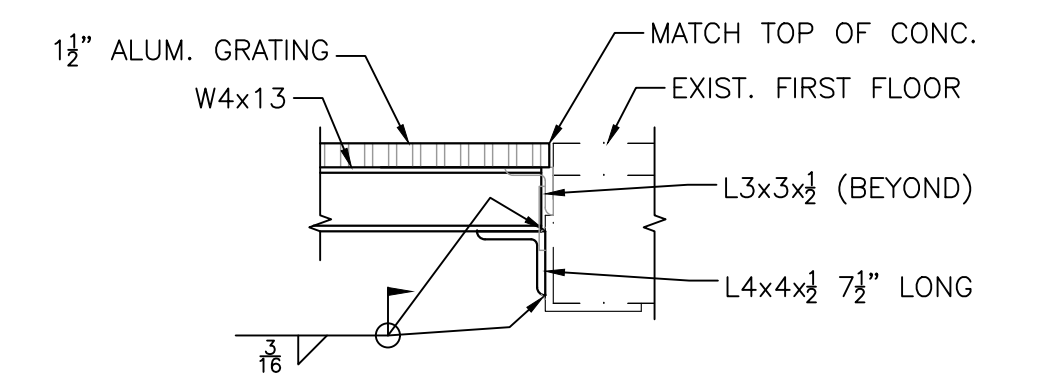
**UPPER LEVEL SLAB REPAIR DETAILS**  
SCALE: 1" = 1'-0"



**UPPER LEVEL PLAN**  
SCALE: 1/4" = 1'-0"



**SECTION 1**  
SCALE: 1" = 1'-0"



**SECTION 2**  
SCALE: 1" = 1'-0"

3/1/2023 1:45 PM - J17385 - FRAMINGHAM WRRS IMPROVEMENTS/DRAWINGFILES/PLANS/SET(SR0) 1ST FLOOR PLAN/DWG (BETA STD.BW/GTB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
JMR

DESIGNED BY:  
PJK

CHECKED BY:  
CWJ

REGISTERED PROFESSIONAL

CHRISTOPHER W. JONES  
STRUCTURAL  
No. 41025  
REGISTERED  
PROFESSIONAL ENGINEER

3/2/2023

PREPARED BY

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SCALE

AS SHOWN

TITLE

**Worcester Road Sewer Pumping Station Replacement**

UPPER LEVEL PLAN

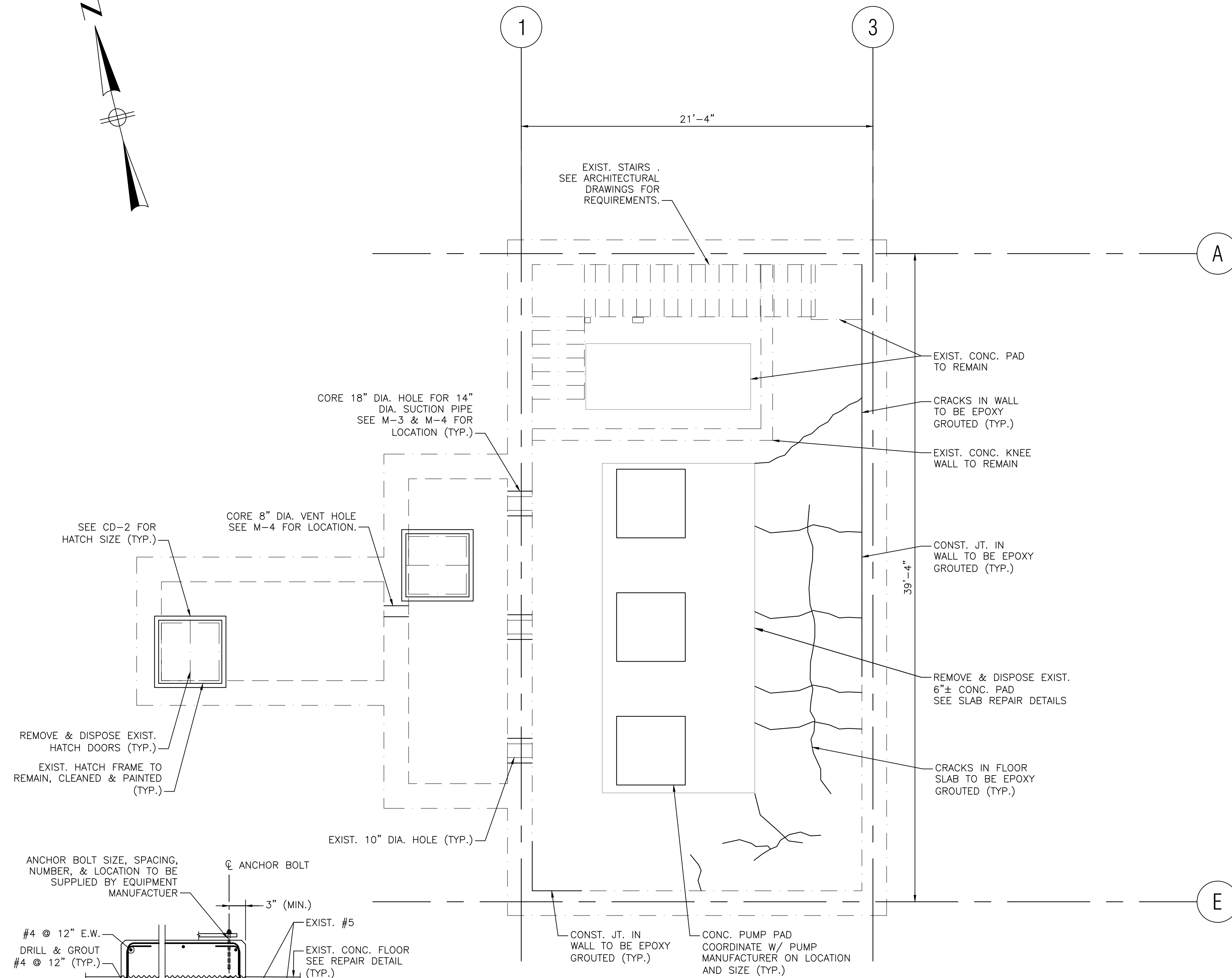
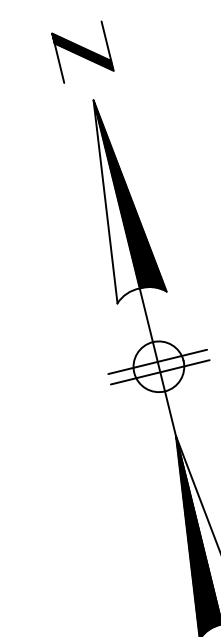
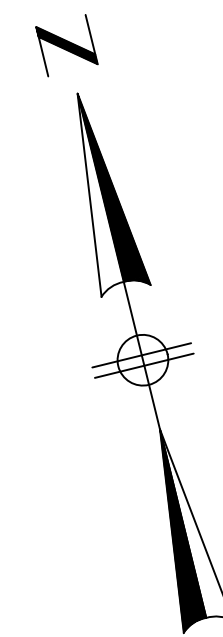
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ISSUE DATE: JANUARY 2023

SHEET NO. S-3

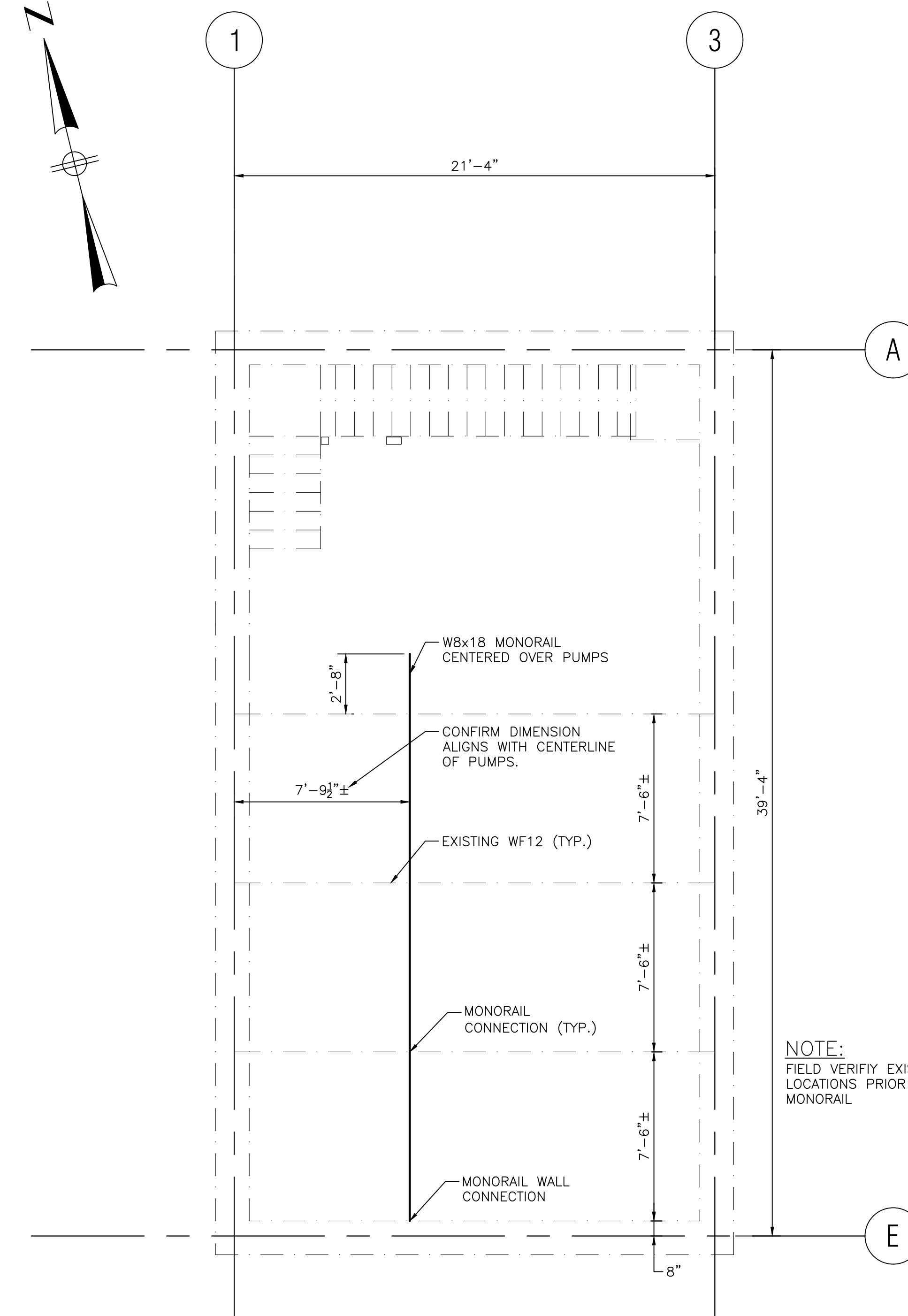
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**LOWER LEVEL PLAN**

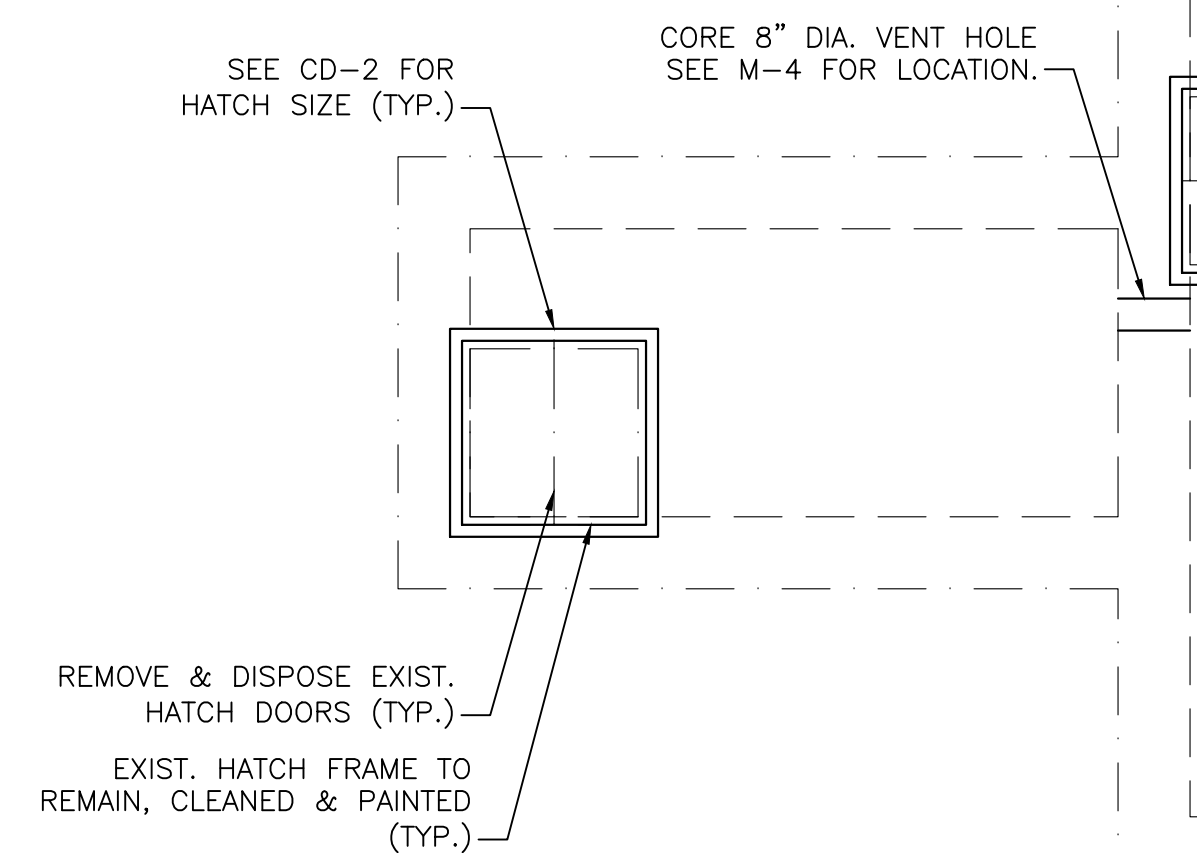
SCALE: 1/4" = 1'-0"



**LOWER LEVEL REFLECTED CEILING PLAN**

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

**NOTE:**  
FIELD VERIFY EXISTING BEAM LOCATIONS PRIOR TO FABRICATING MONORAIL



**EQUIPMENT PAD**  
NOT TO SCALE

**NOTE:**  
1. DIMENSIONS OF PAD AS REQUIRED TO SUIT EQUIPMENT (4" MIN. HEIGHT)

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DESIGNED BY:	PJK
CHECKED BY:	CWJ

REGISTERED PROFESSIONAL

PREPARED BY

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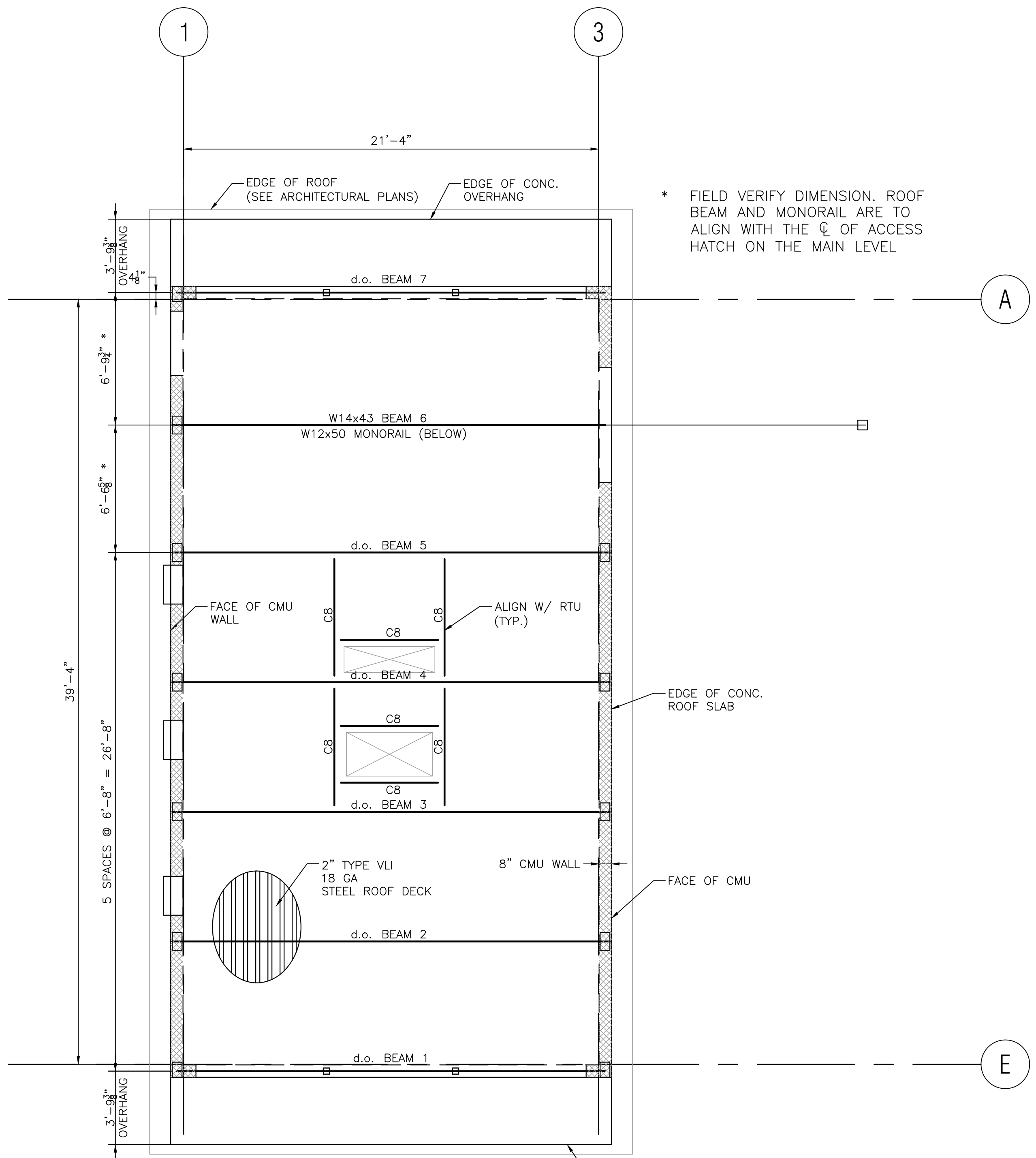
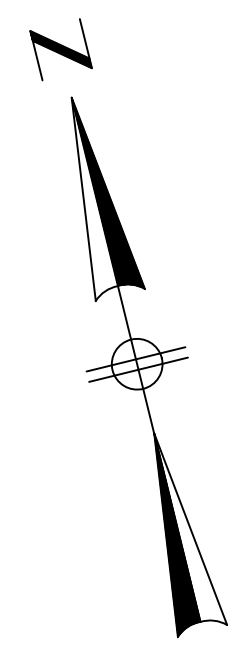
SCALE	AS SHOWN
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TITLE	<b>Worcester Road Sewer Pumping Station Replacement</b>
	<b>LOWER LEVEL PLAN</b>

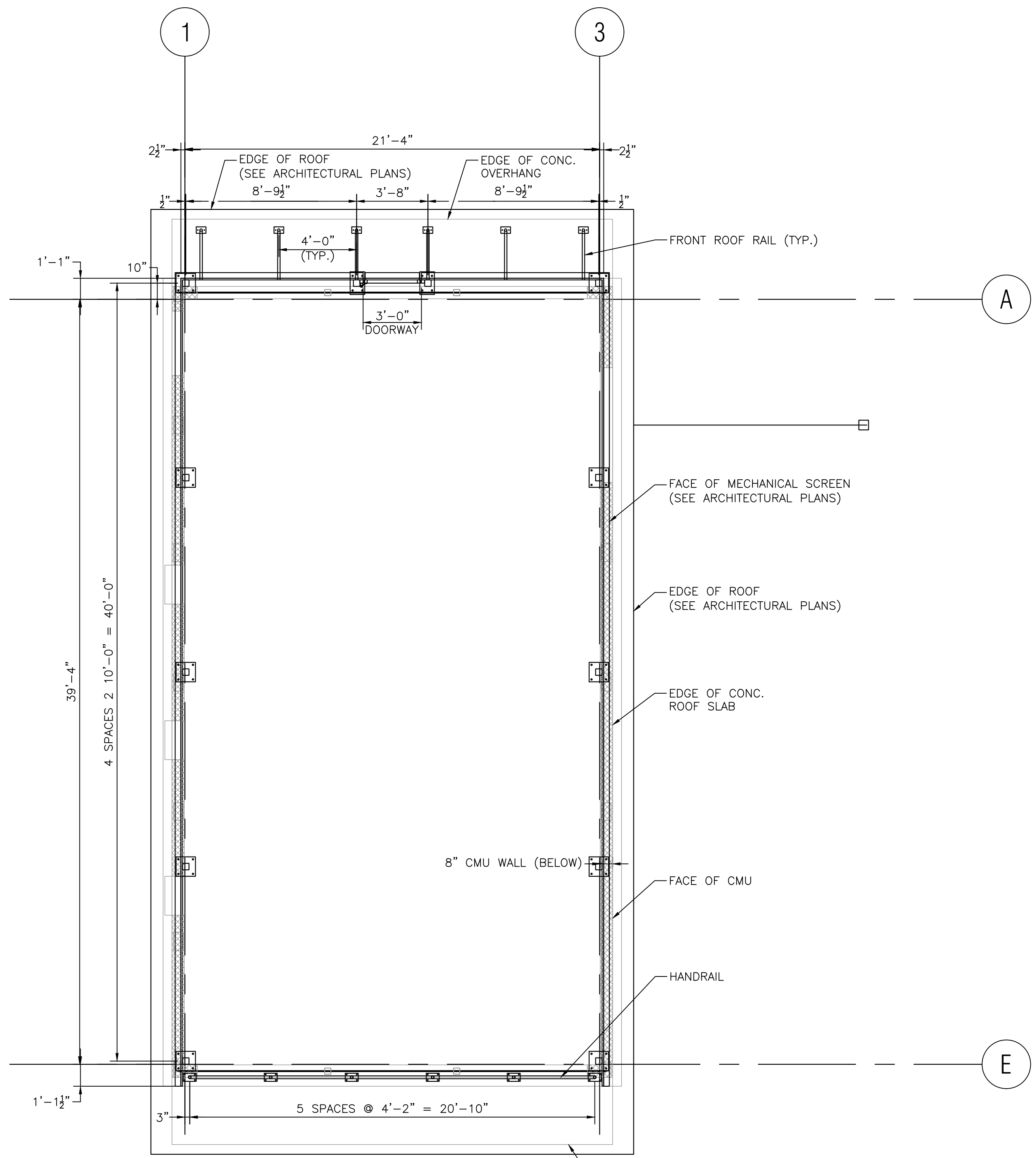
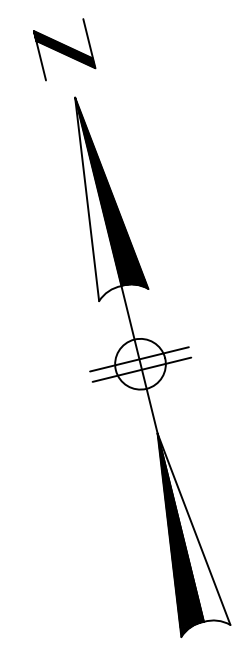
BETA JOB NO.	7385
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SHEET NO.	<b>S-4</b>

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3/1/2023 1:45 PM J:\7385 - FRAMINGHAM WRRPS IMPROVEMENTS\DRAWINGFILES\PLANS\SET(S)\6) ROOF PLAN.DWG (BETA STD.BW.CTB)



\* FIELD VERIFY DIMENSION. ROOF BEAM AND MONORAIL ARE TO ALIGN WITH THE CL OF ACCESS HATCH ON THE MAIN LEVEL



NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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DESIGNED BY:  
PJK  
CHECKED BY:  
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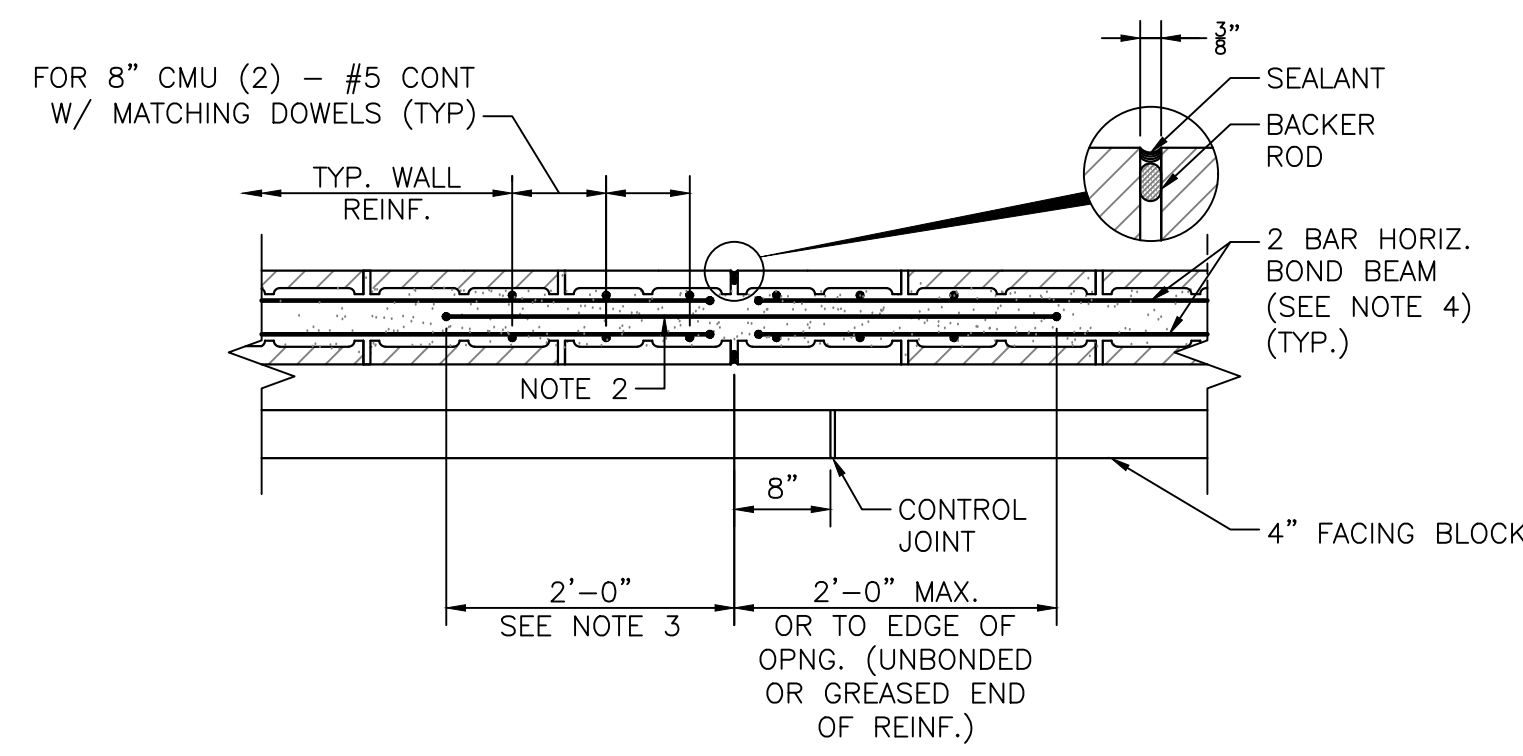
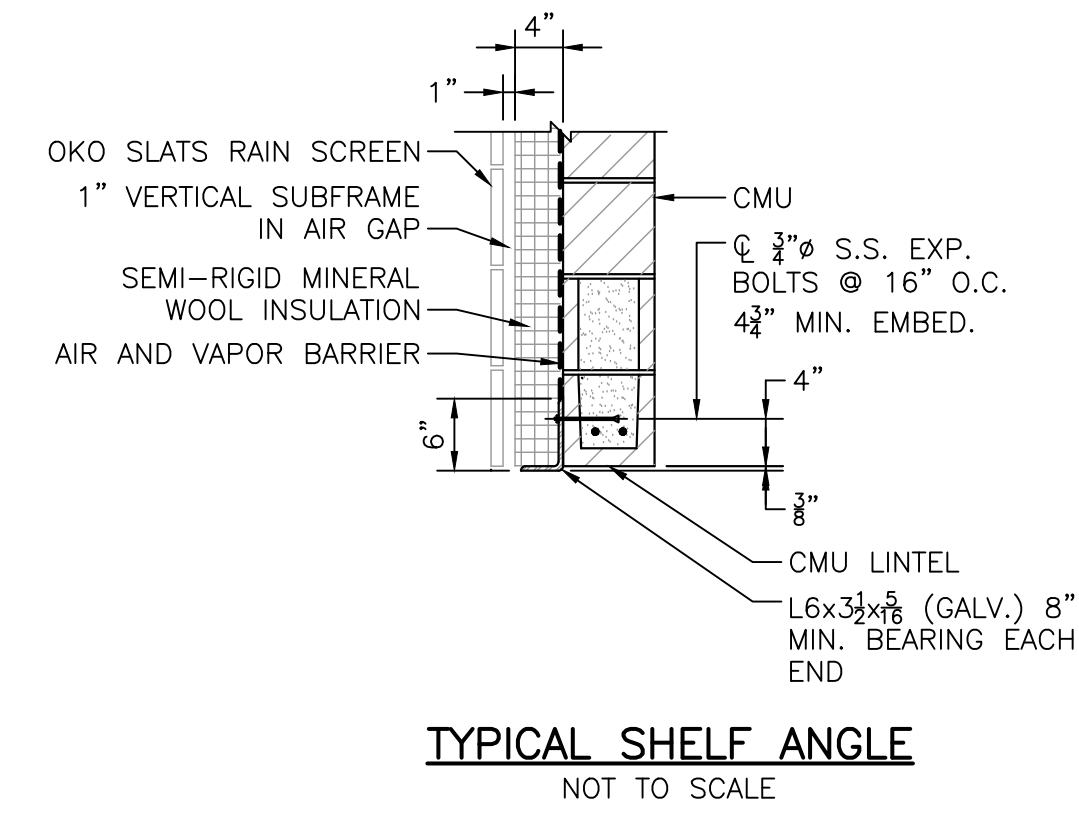
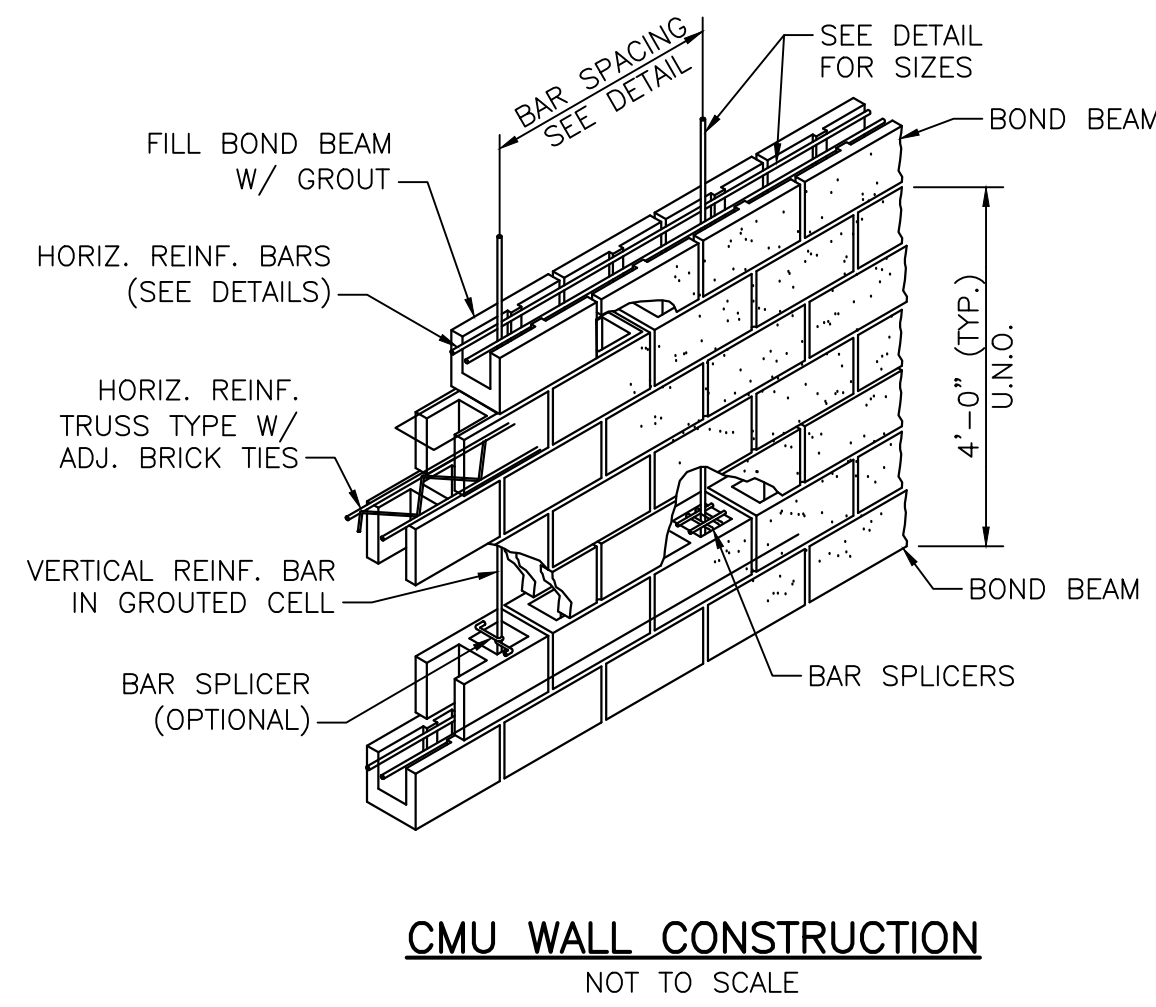
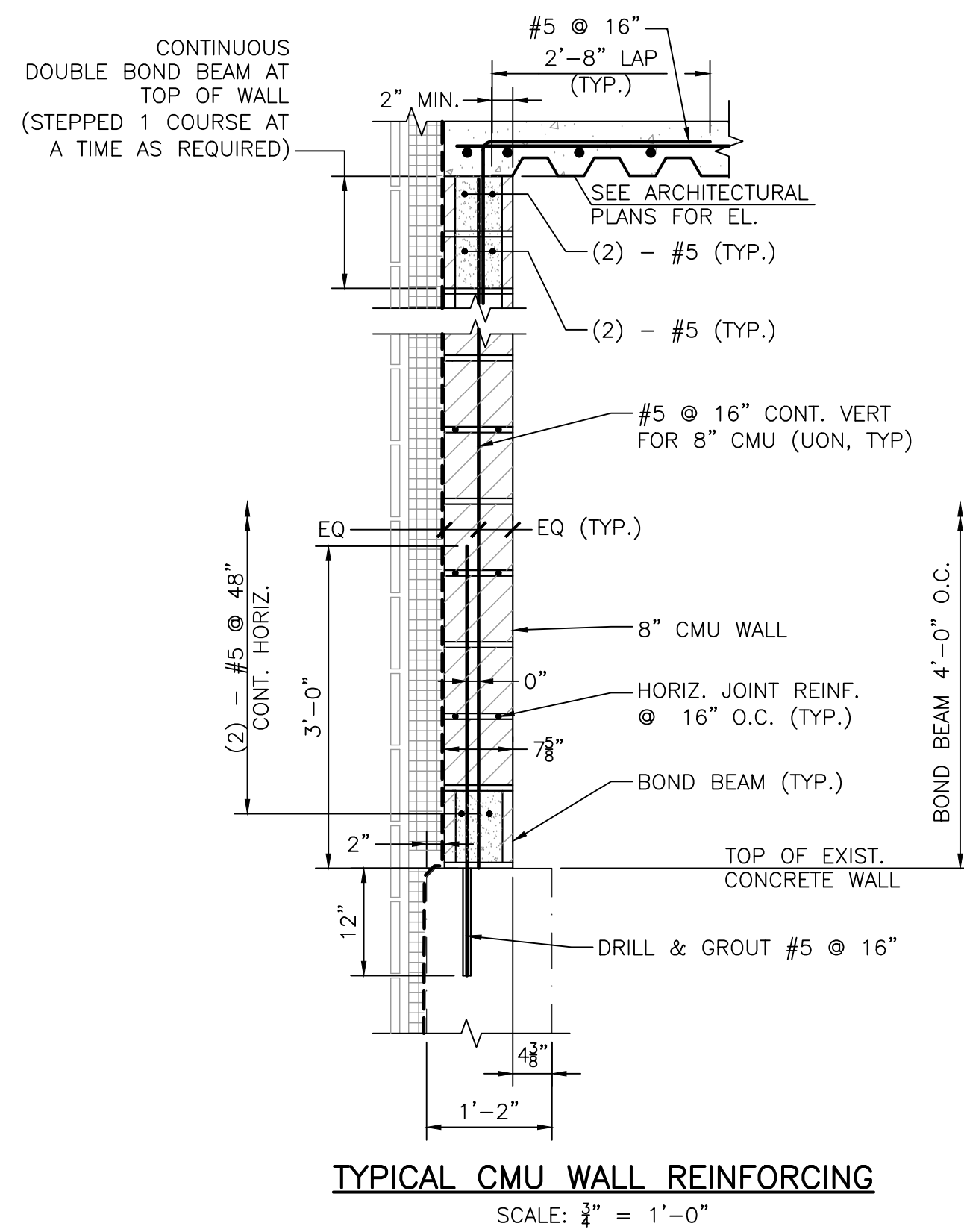
SCALE  
AS SHOWN

TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
**ROOF PLAN**

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. S-5

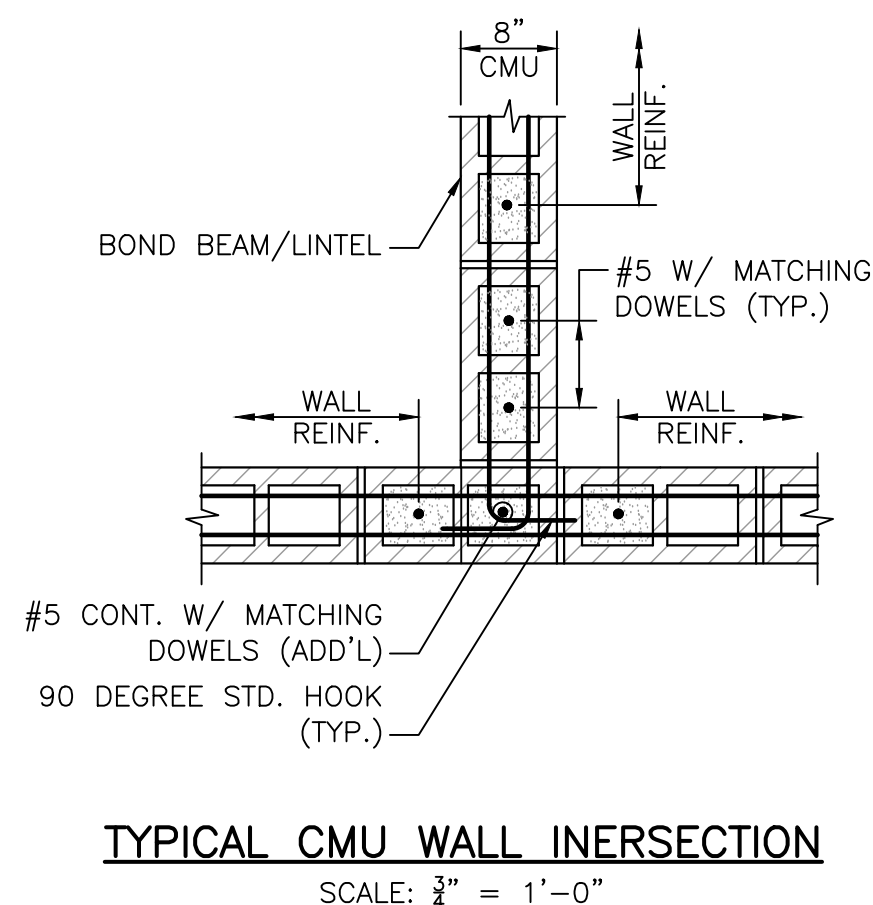
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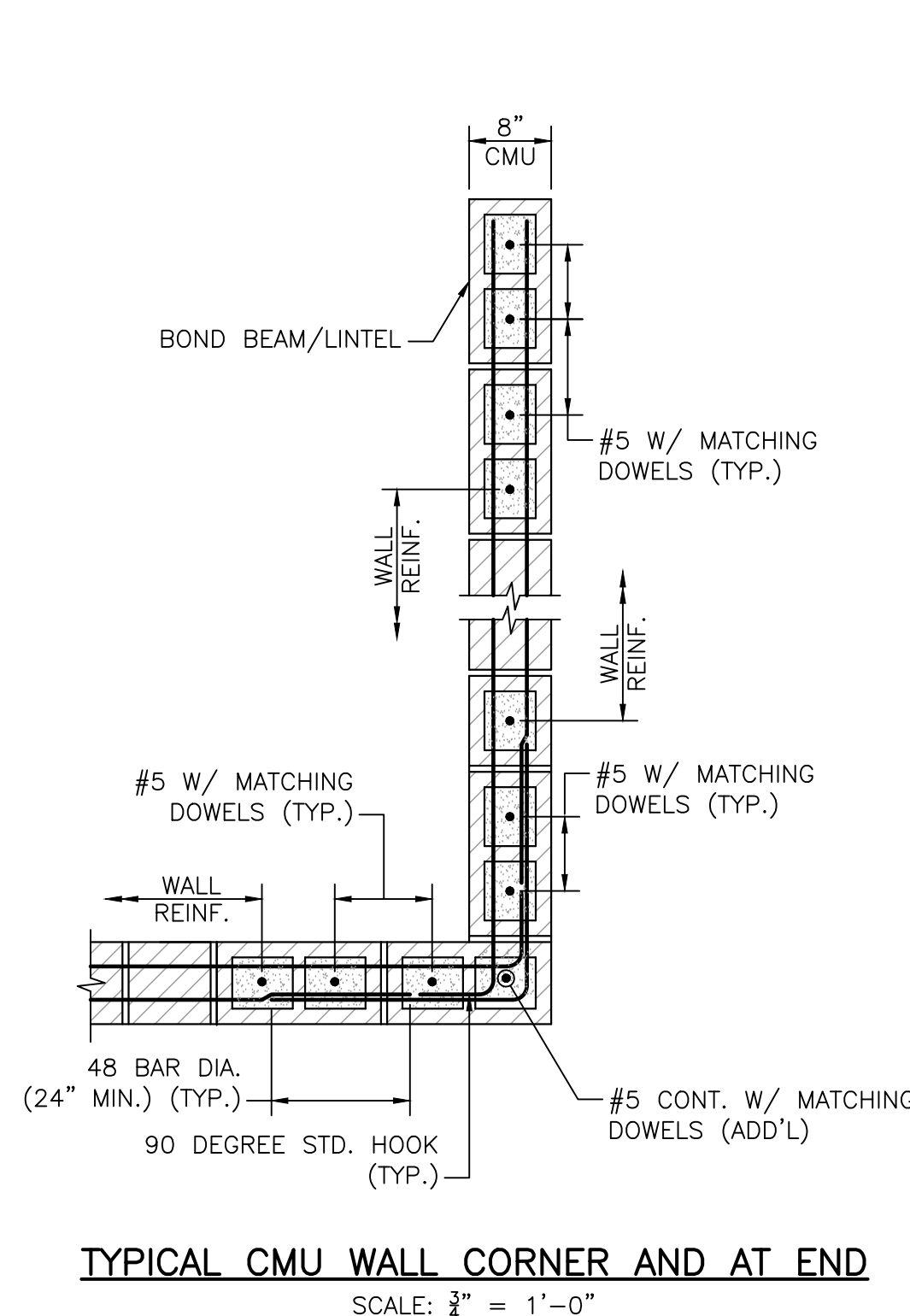


- NOTES:**
1. TERMINATE HORIZ. REINFORCEMENT WITH A STANDARD HOOK TWO INCHES FROM CONTROL JOINTS.
  2. PROVIDE SMOOTH DOWEL IDENTICAL TO HORIZONTAL BAR DIAMETER ACROSS THE JOINT AT HORIZONTAL BAR LOCATIONS. PREVENT BOND BETWEEN BAR AND GROUT ON ONE SIDE OF JOINT WITH PLASTIC SLEEVE OR GREASE. CAP ALL DOWELS TO ALLOW ONE INCH OF MOVEMENT.
  3. PROVIDE STD. HOOK ON SIDE WITH BOND IF 2'-0" LENGTH IS NOT POSSIBLE.
  4. CONTINUE HORIZ. REINF. THROUGH MCJ @ BEAM BEARING, DECK BEARING, T.O.W. BOND BEAMS AND LINTEL REINF. SMOOTH DOWEL BAR NOT REQUIRED.
  5. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF CONTROL JOINTS.

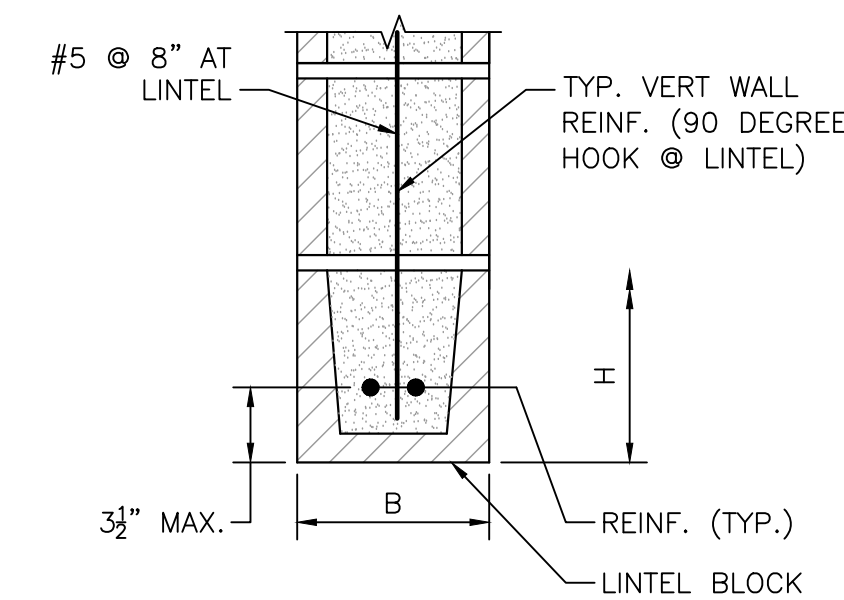
**MASONRY CONTROL JOINT (MCJ)**  
SCALE: 3/4" = 1'-0"



**TYPICAL CMU WALL INTERSECTION**  
SCALE: 3/4" = 1'-0"



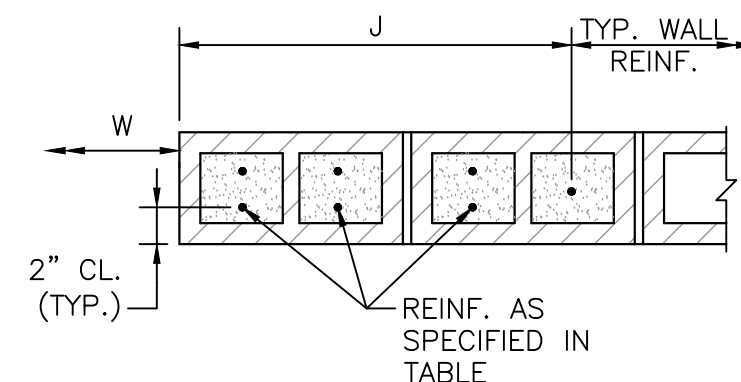
**TYPICAL CMU WALL CORNER AND AT END**  
SCALE: 3/4" = 1'-0"



MARK/LOCATION	W	B	H	REINF
L1	< 3'-4"	WIDTH OF CMU WALL	8"	2-#5 BOT
L2	> 3'-4" BUT < 6'-8"	WIDTH OF CMU WALL	16"	2-#5 BOT
L3	> 6'-8"	12"	24"	2-#5 BOT

- CMU LINTEL NOTES:**
1. PROVIDE 8" MINIMUM BEARING AT EACH SIDE OF CLEAR SPAN.
  2. FULLY GROUT CMU OVER DEPTH "H" TO ENDS OF BEARING.
  3. DEPTH OF LINTEL MAY CONSIST OF FULLY GROUTED CMU LINTEL BLOCK(S) OR 8" CMU LINTEL BLOCK PLUS 8" CMU BLOCK(S), FULLY GROUTED.

**TYPICAL CMU LINTEL**  
NOT TO SCALE



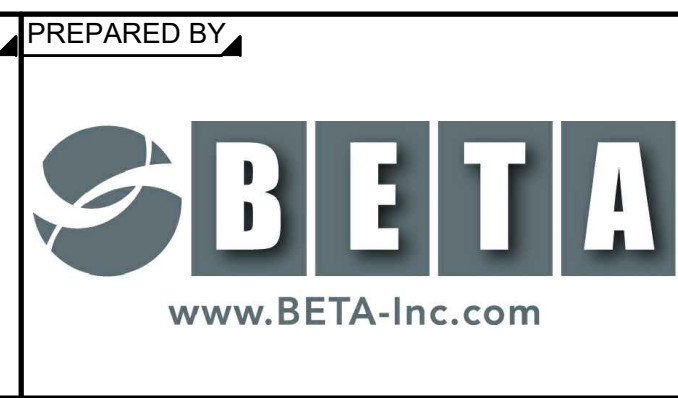
W	JAMB WIDTH, J	VERTICAL REINF.
< 3'-4"	1'-6"	2-#5 @ 16" O.C. E.F.
> 3'-4" BUT < 6'-8"	2'-0"	2-#5 @ 8" O.C. E.F.
> 6'-8" BUT < 12'-0"	2'-8"	2-#5 @ 8" O.C. E.F.

**TYPICAL CMU WALL OPENING**  
NOT TO SCALE

3/1/2023 1:45 PM J:\7385 - FRAMINGHAM WRRS IMPROVEMENTS\DRAWING\FILES\PLANS\SET(S)\7 MASONRY DETAILS.DWG (BETA STD BIM/CTB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	JMR
DESIGNED BY:	PJK
CHECKED BY:	CWJ



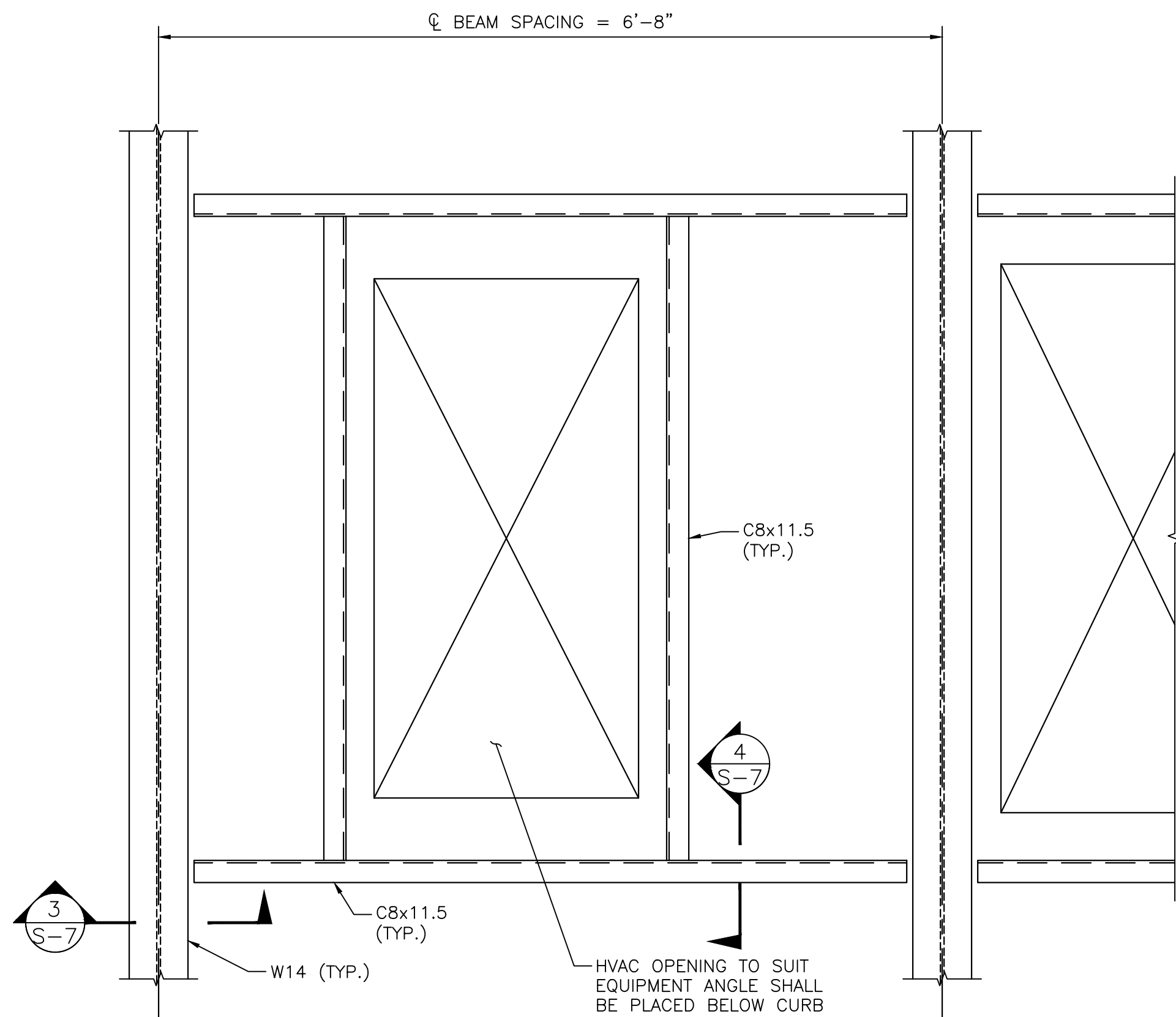
REGISTERED PROFESSIONAL	PREPARED BY	SUBCONSULTANT
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SCALE	TITLE
AS SHOWN	Worcester Road Sewer Pumping Station Replacement

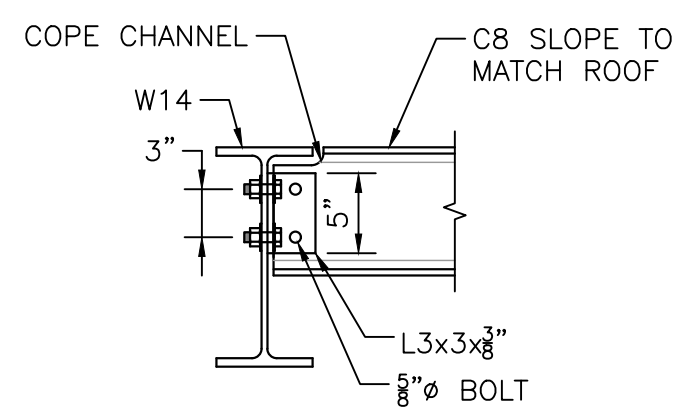
Worcester Road Sewer Pumping Station Replacement	
MASONRY DETAILS	

BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	S-6

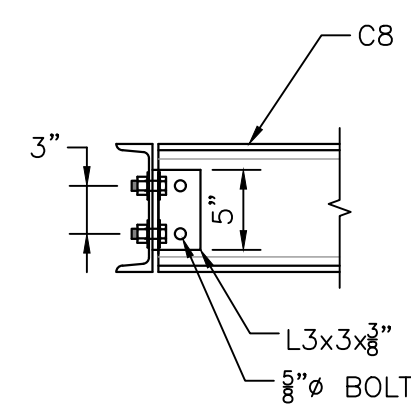
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION



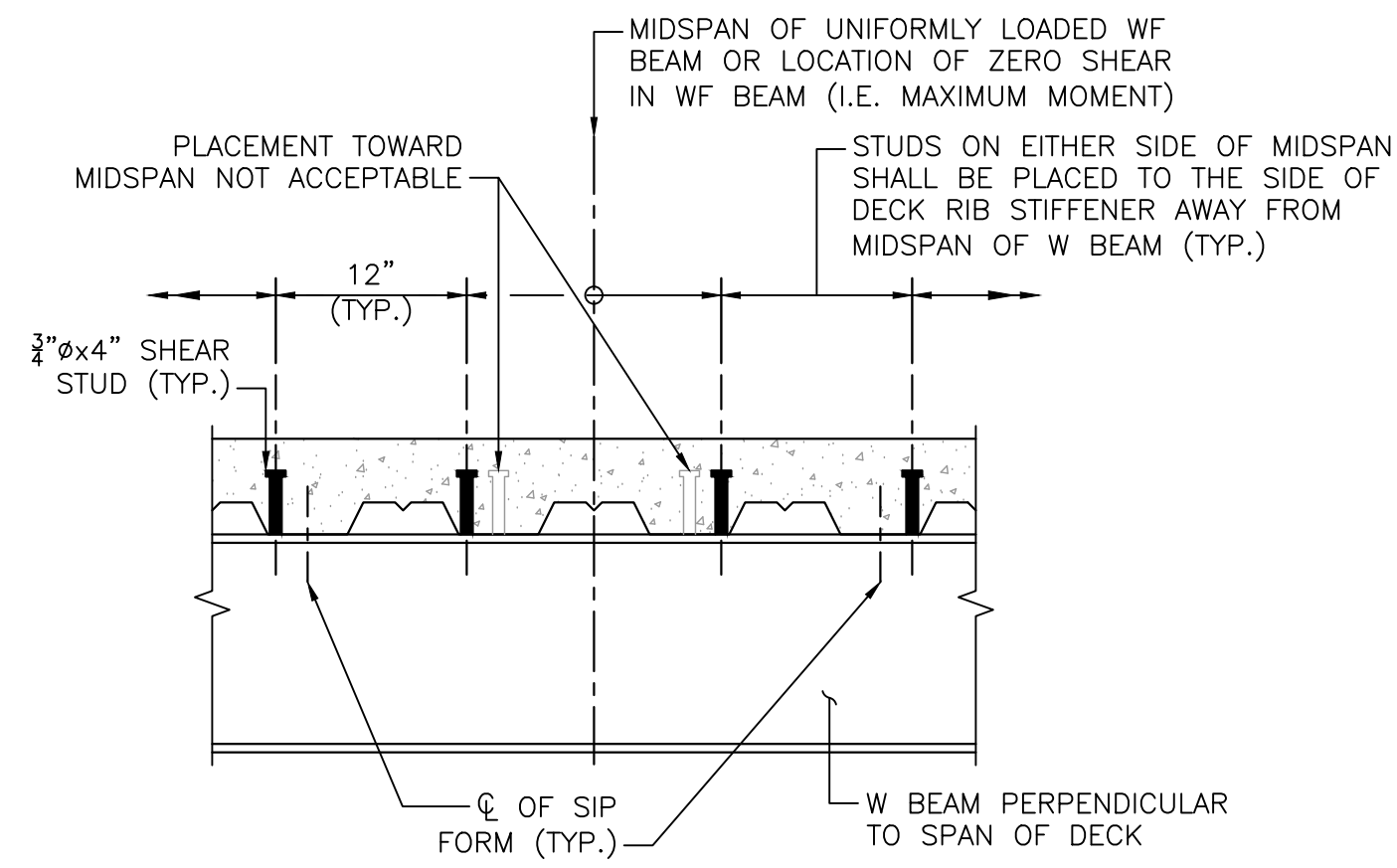
**ROOF OPENING FRAME**  
SCALE: 1" = 1'-0"



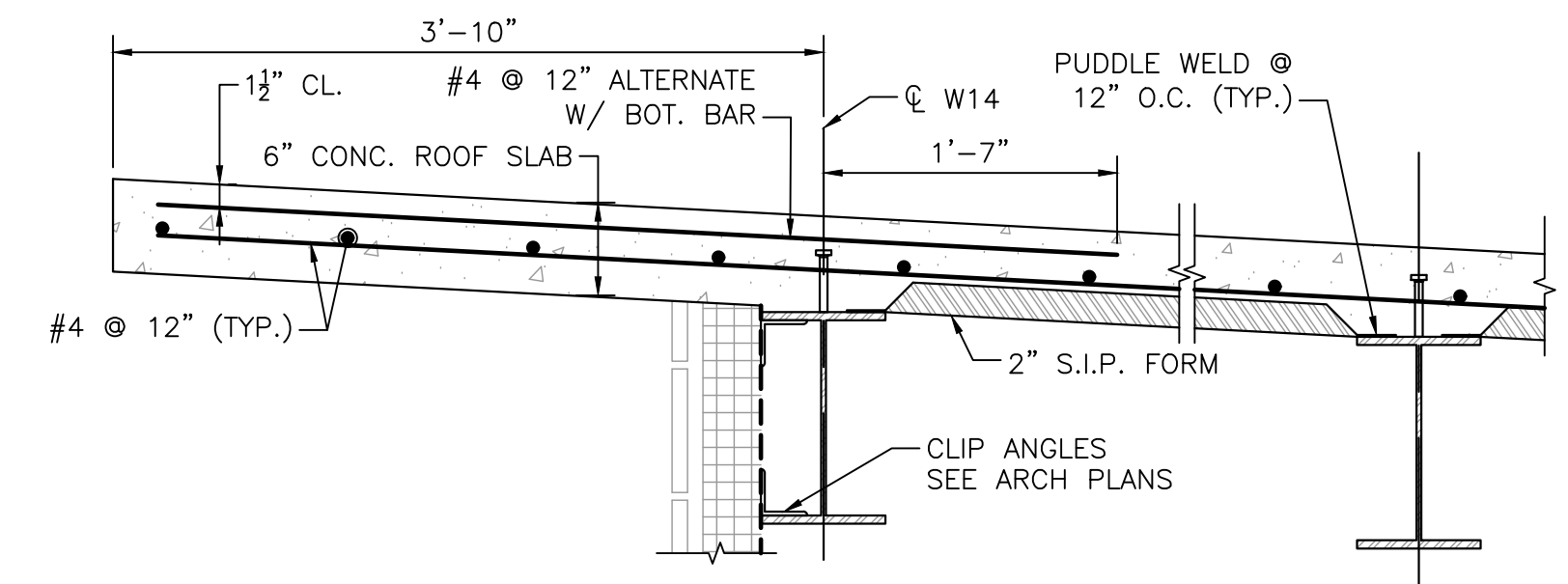
**SECTION 3**  
SCALE: 1" = 1'-0"



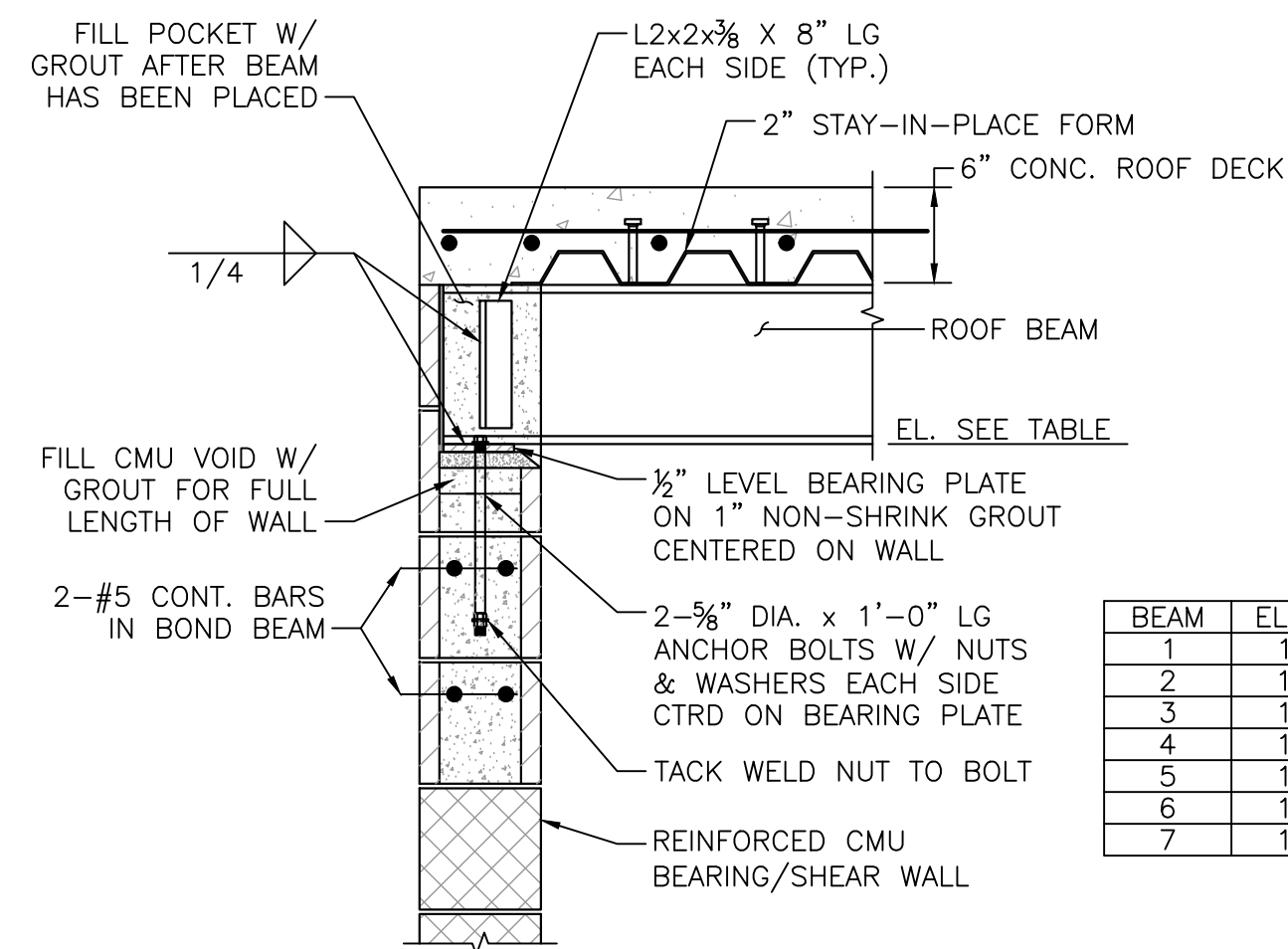
**SECTION 4**  
SCALE: 1" = 1'-0"



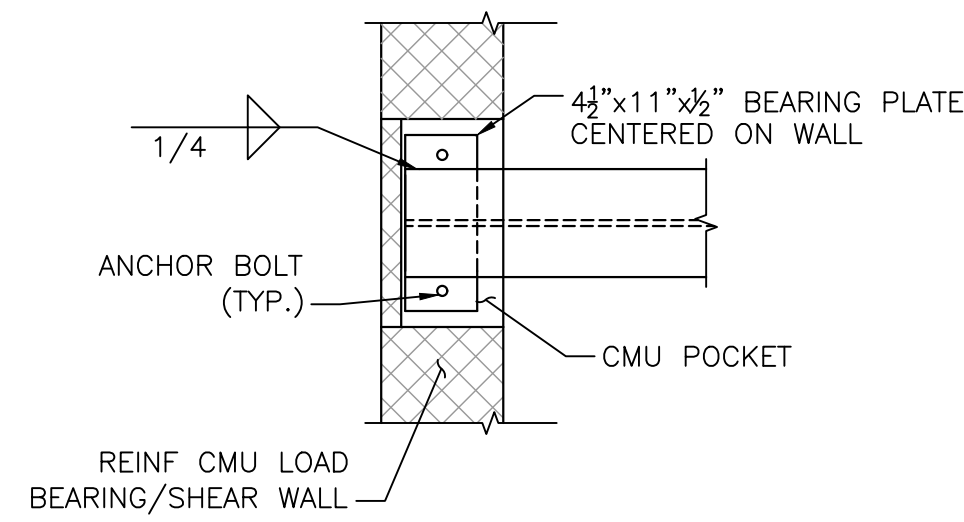
**SHEAR STUD LAYOUT DETAIL**  
SCALE: 1" = 1'-0"



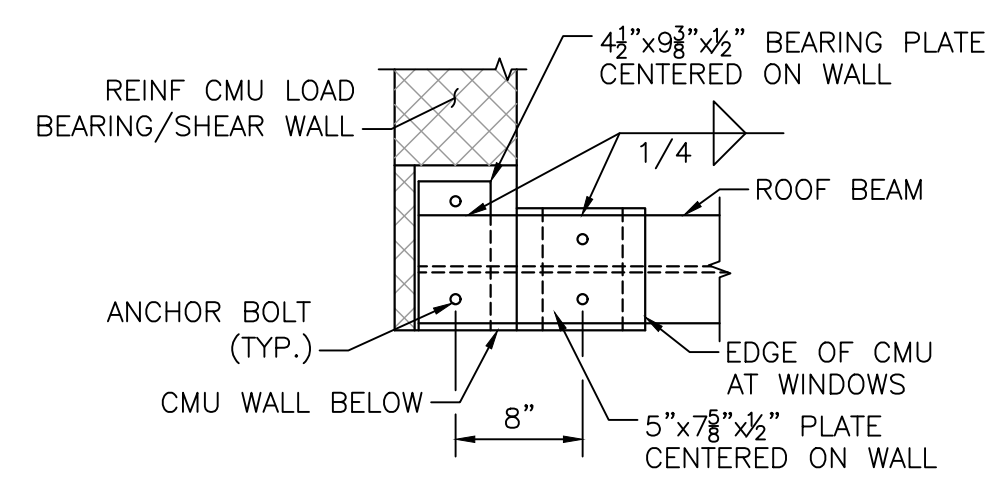
**[NORTH OVERHANG SHOWN, SOUTH SIMILAR]**  
**TYP. ROOF OVERHANG SECTION**  
SCALE: 1" = 1'-0"



**CMU WALL - BEAM POCKET SECTION**  
SCALE: 1" = 1'-0"



**CMU WALL - BEAM POCKET PLAN**  
SCALE: 1" = 1'-0"



**CMU CORNER - BEAM POCKET PLAN**  
SCALE: 1" = 1'-0"

3/1/2023 1:46 PM J:\7385 - FRAMINGHAM WRFS IMPROVEMENTS\DRAWINGFILES\PLANS\SET(SR)(8) STRUCTURAL ROOF DETAILS.DWG (BETA STD BW.CTB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
JMR  
DESIGNED BY:  
CHECKED BY:

REGISTERED PROFESSIONAL  
PREPARED BY

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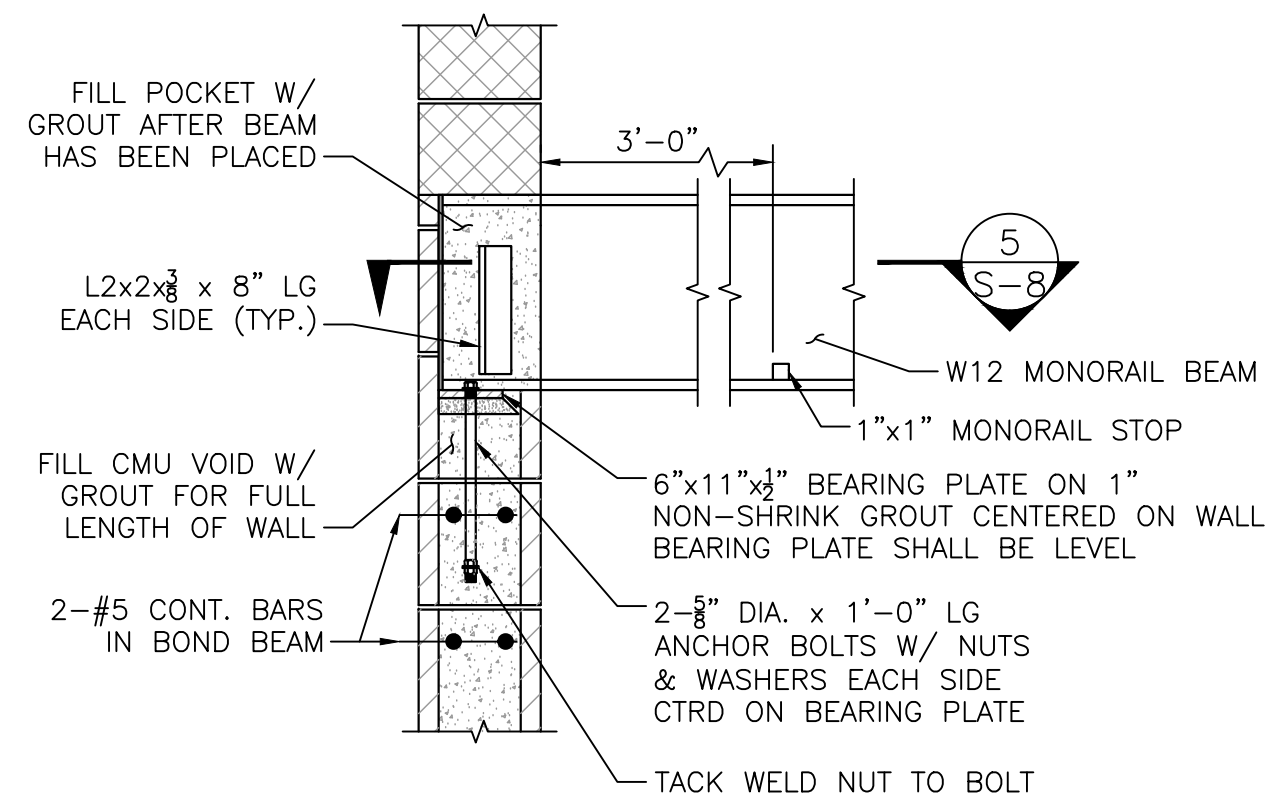
SUBCONSULTANT  
SCALE  
AS SHOWN

TITLE  
Worcester Road Sewer Pumping Station Replacement  
STRUCTURAL ROOF DETAILS

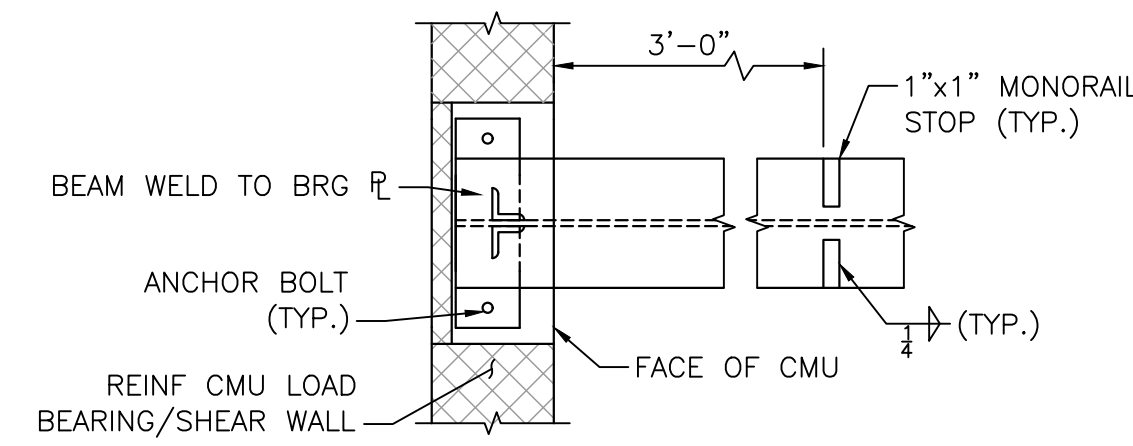
BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. S-7

**CONCRETE REPAIR NOTES:**

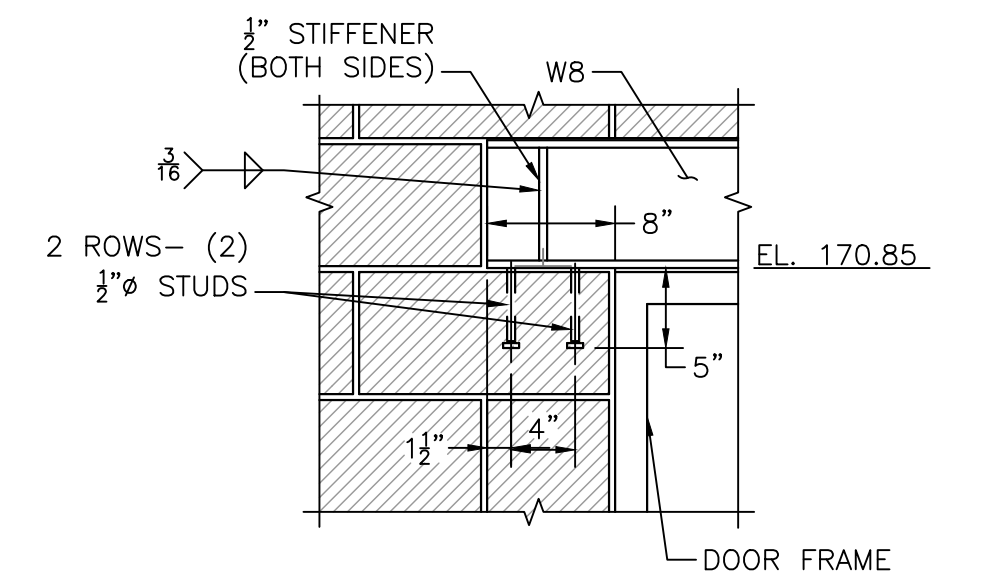
- EXISTING CONCRETE SURFACE SHALL BE CLEAN WITH NO DEBRIS WITH DUST VACUUMED OUT.
- EXISTING CONCRETE SHALL BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER PRIOR TO PLACING NEW CONCRETE.
- APPLY APPROVED BONDING COMPOND TO EXISTING CONCRETE PRIOR TO PLACEMENT OF PATCHING MORTAR OR 4000 PSI - 8" CEMENT CONCRETE REPAIR MATERIAL.



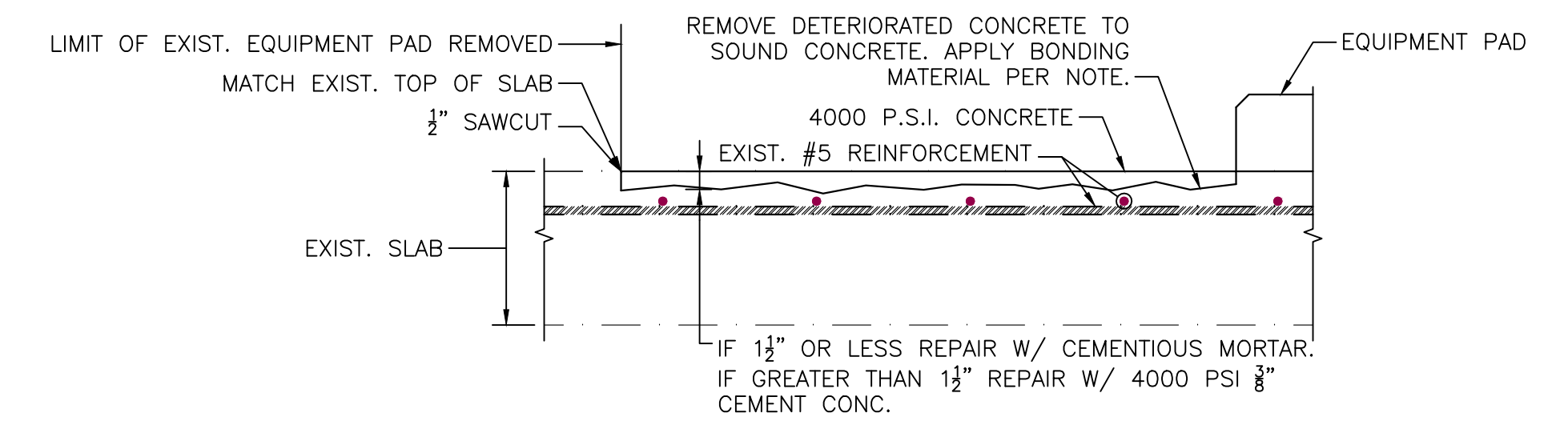
**CMU WALL - MONORAIL POCKET SECTION**  
SCALE: 1" = 1'-0"



**SECTION 5**  
SCALE: 1" = 1'-0"

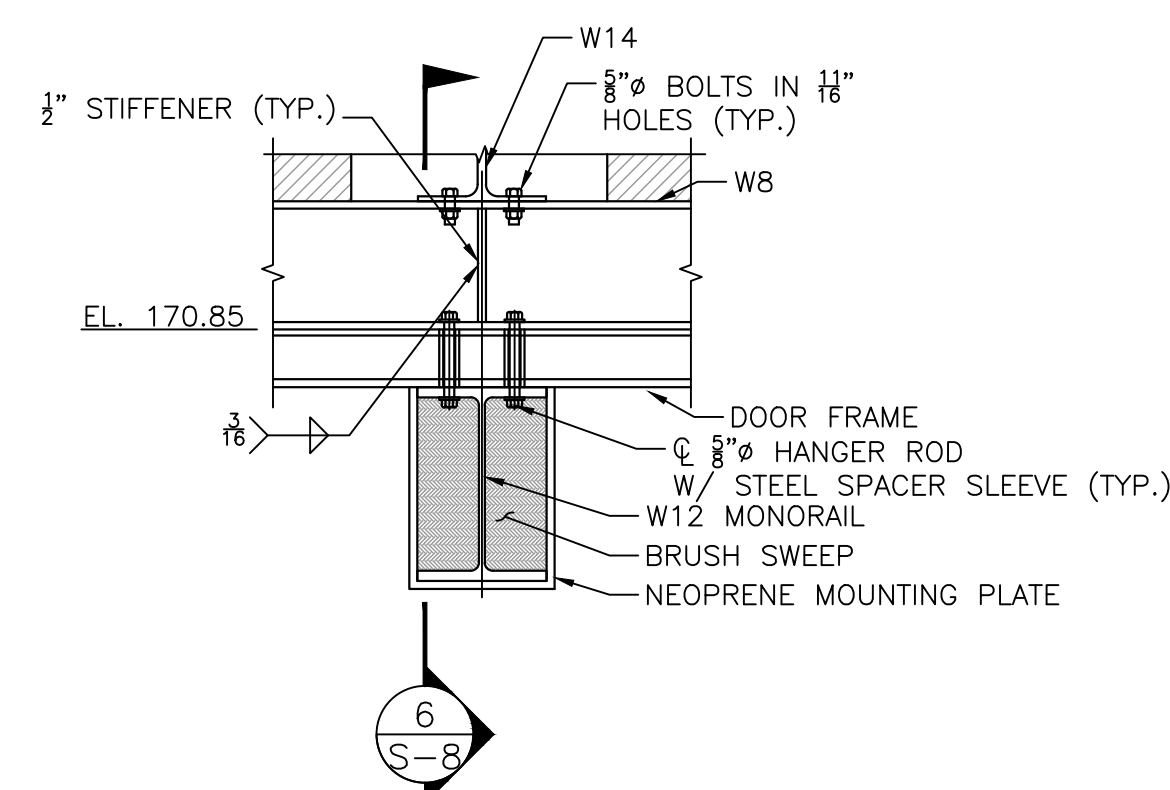


**BEAM OVER DOORWAY END BEARING**  
SCALE: 1" = 1'-0"

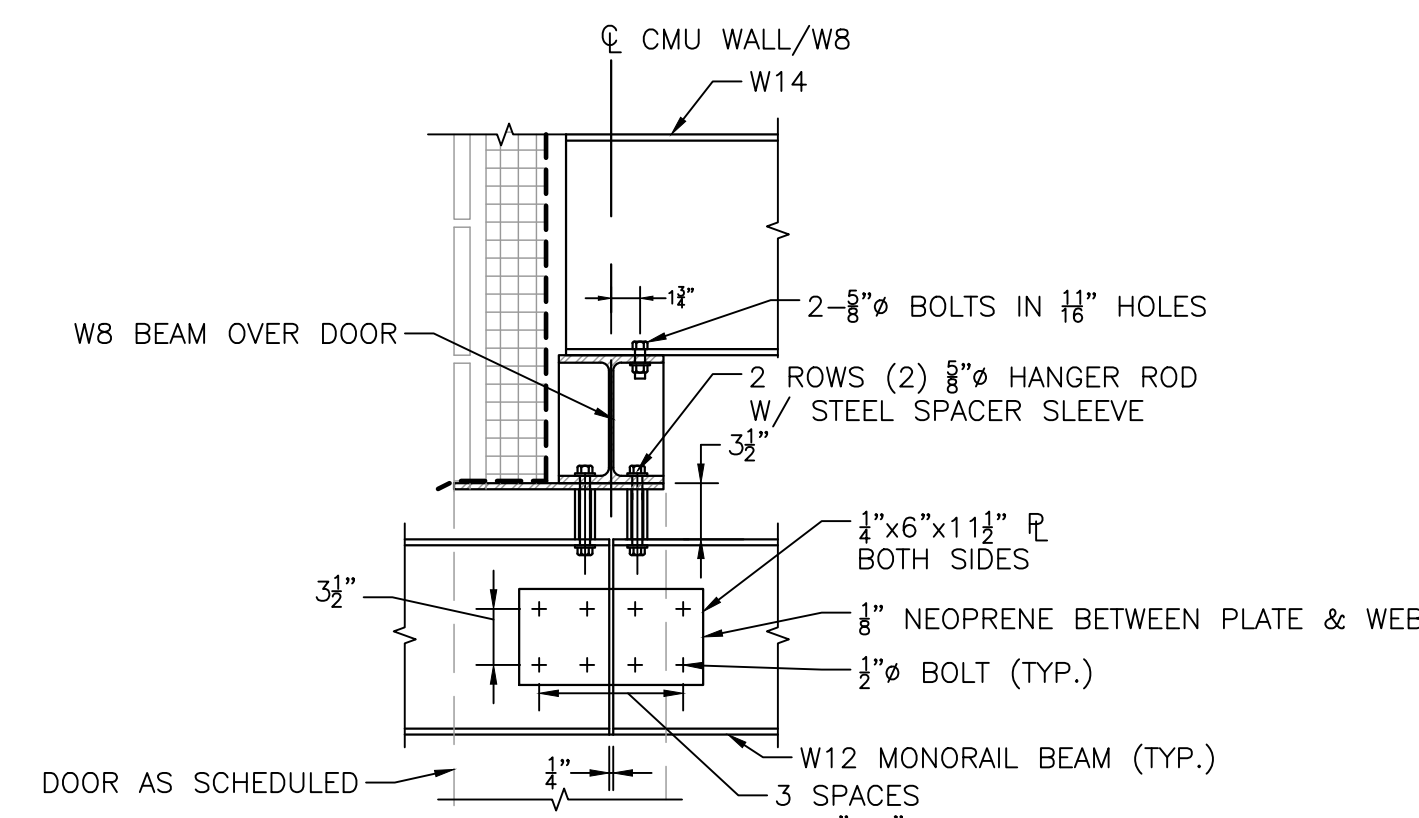


[SHALLOW DEPTH REPAIR]

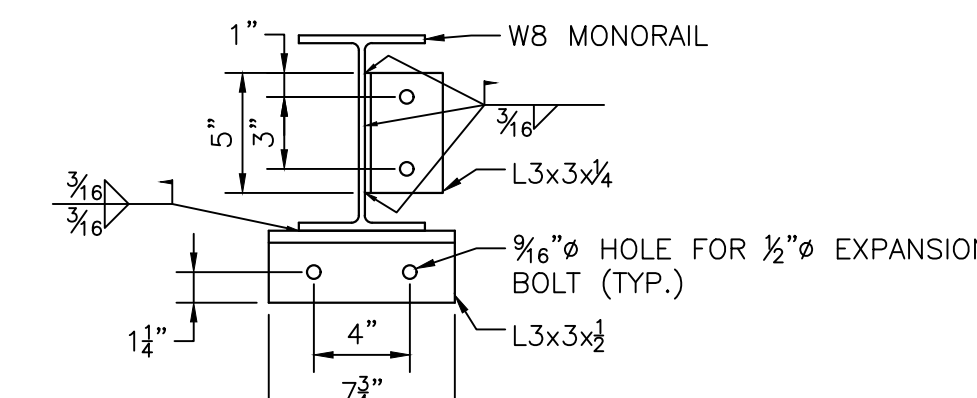
**LOWER LEVEL SLAB REPAIR DETAILS**  
SCALE: 1" = 1'-0"



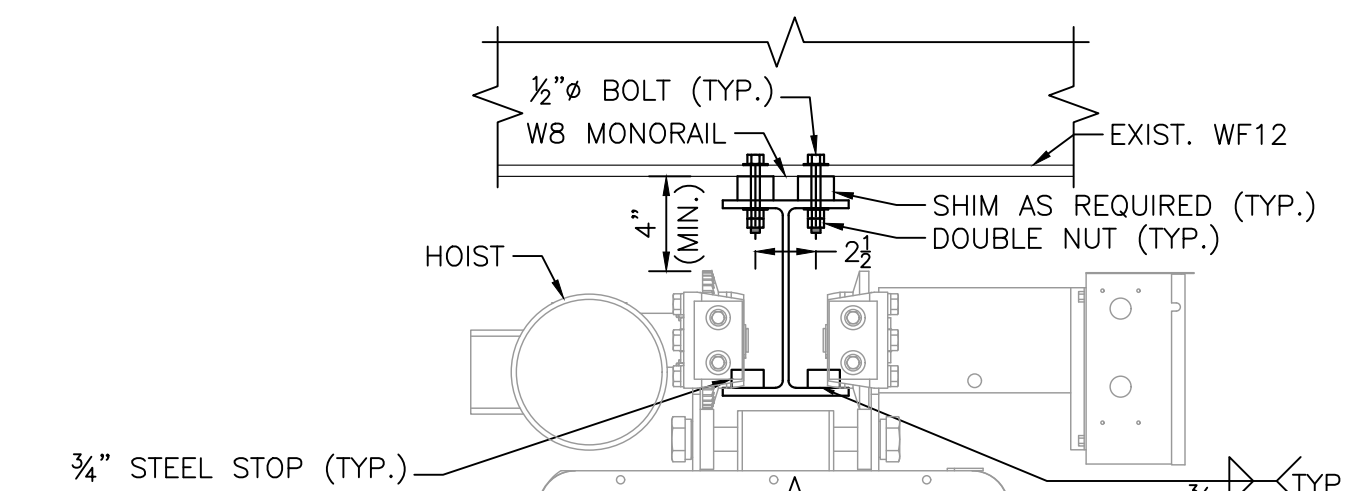
**MONORAIL CONNECTION AT DOORWAY**  
SCALE: 1" = 1'-0"



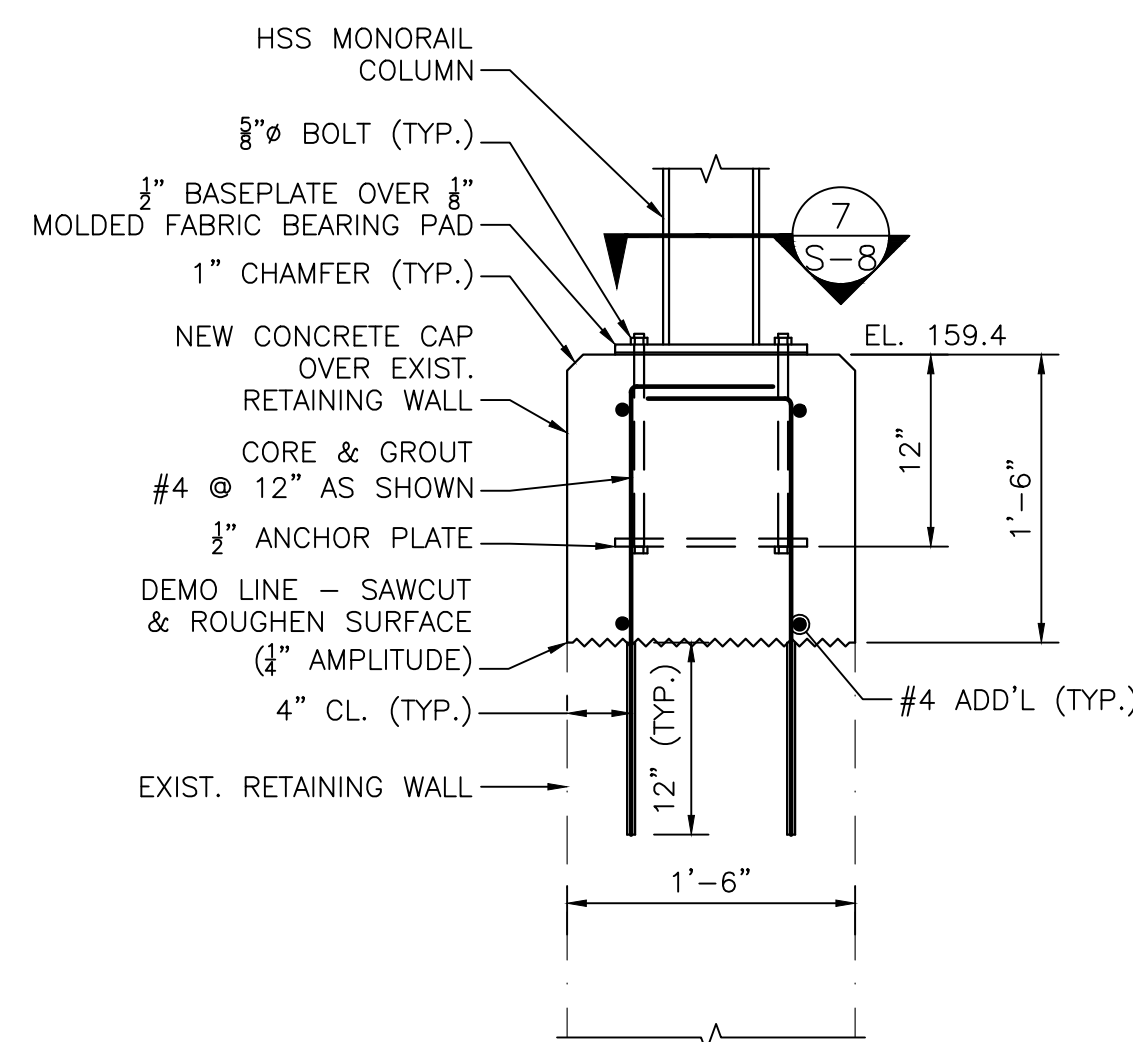
**SECTION 6**  
SCALE: 1" = 1'-0"



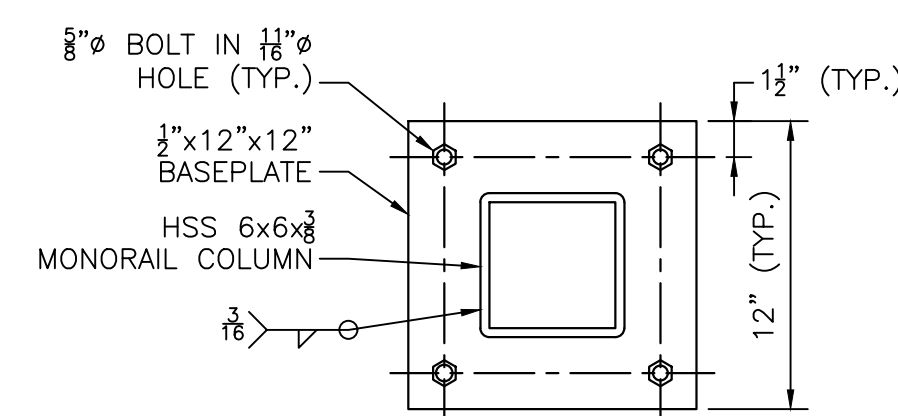
**LOWER LEVEL MONORAIL WALL CONNECTION**  
SCALE: 1 1/2" = 1'-0"



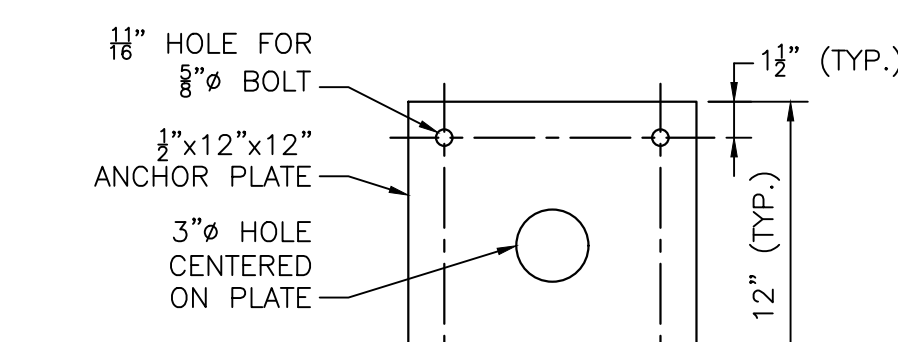
**LOWER LEVEL MONORAIL CONNECTION**  
SCALE: 1 1/2" = 1'-0"



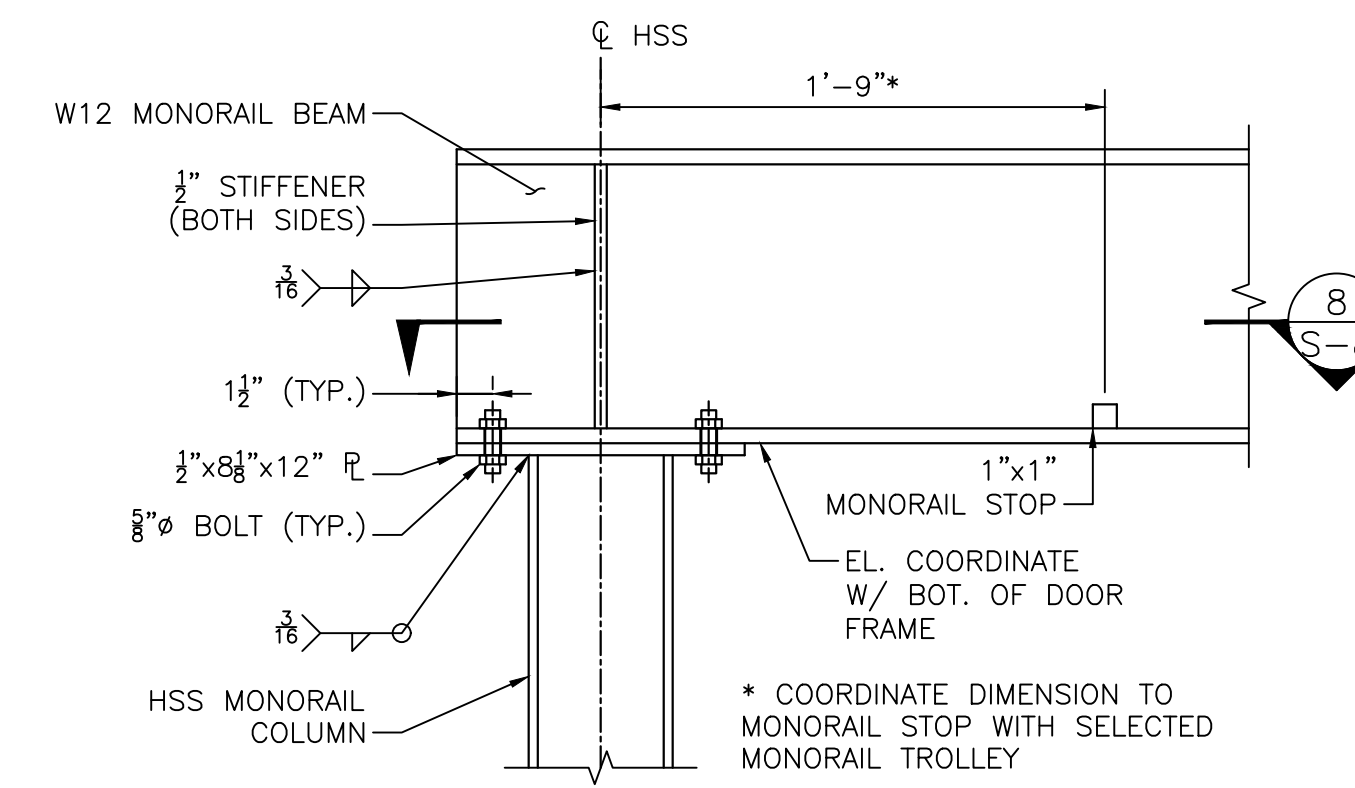
**FOUNDATION WALL CAP & MONORAIL COLUMN DETAILS**  
SCALE: 1" = 1'-0"



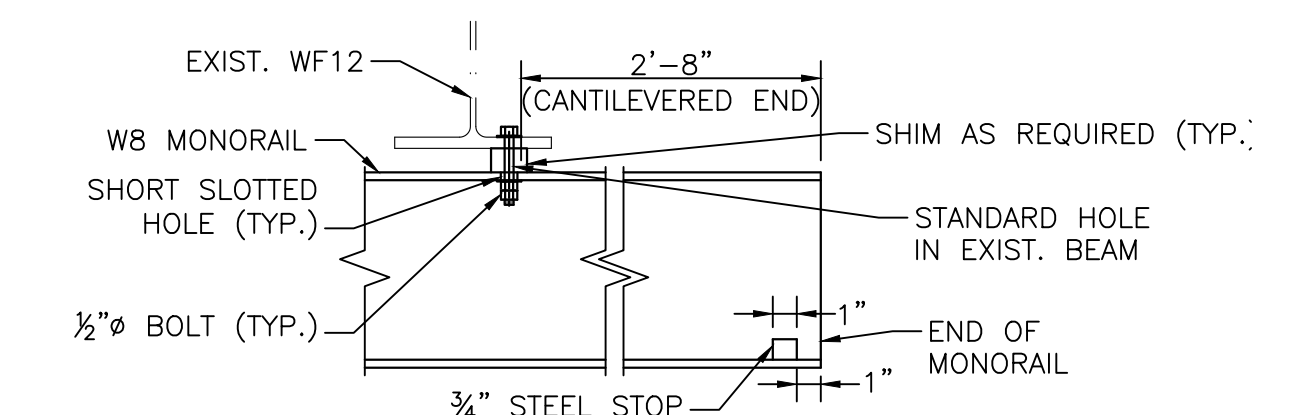
**SECTION 7**  
SCALE: 1 1/2" = 1'-0"



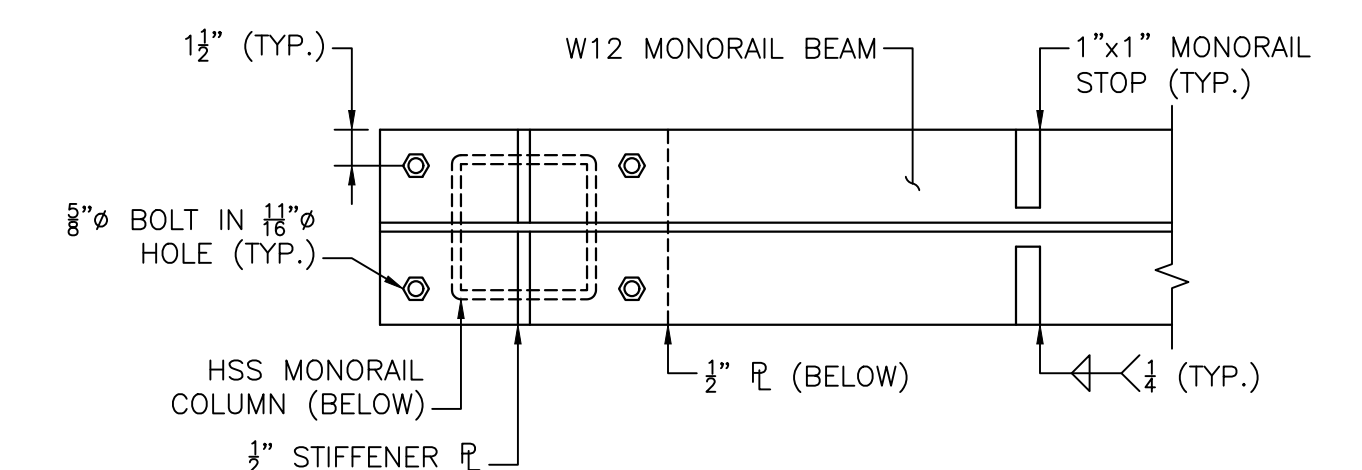
**ANCHOR PLATE**  
SCALE: 1 1/2" = 1'-0"



**MONORAIL BEAM & COLUMN CONNECTION DETAILS**  
SCALE: 1 1/2" = 1'-0"



**LOWER LEVEL MONORAIL CONNECTION SECTION**  
SCALE: 1 1/2" = 1'-0"



**SECTION 8**  
SCALE: 1 1/2" = 1'-0"

3/1/2023 1:45 PM J:\7385 - FRAMINGHAM WPSS IMPROVEMENTS\DRAWINGS\PLANS\BETA\BETA STD BW.CTB

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
JMR  
DESIGNED BY:  
CHECKED BY:

REGISTERED PROFESSIONAL  
CHRISTOPHER W. JONES  
STRUCTURAL  
No. 41025  
PROFESSIONAL ENGINEER  
3/2/2023

PREPARED BY  
**BETA**  
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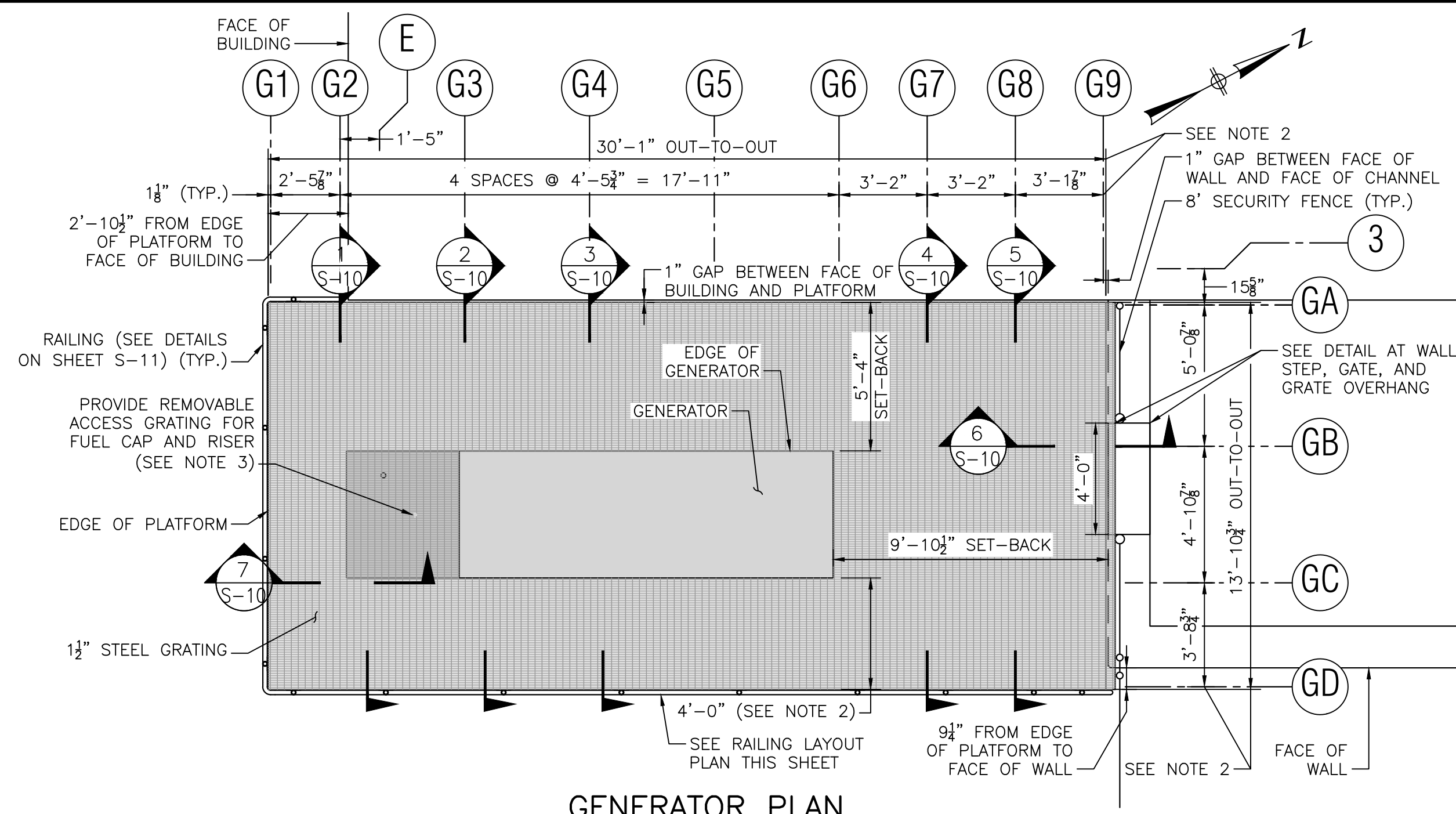
SUBCONSULTANT

SCALE  
AS SHOWN

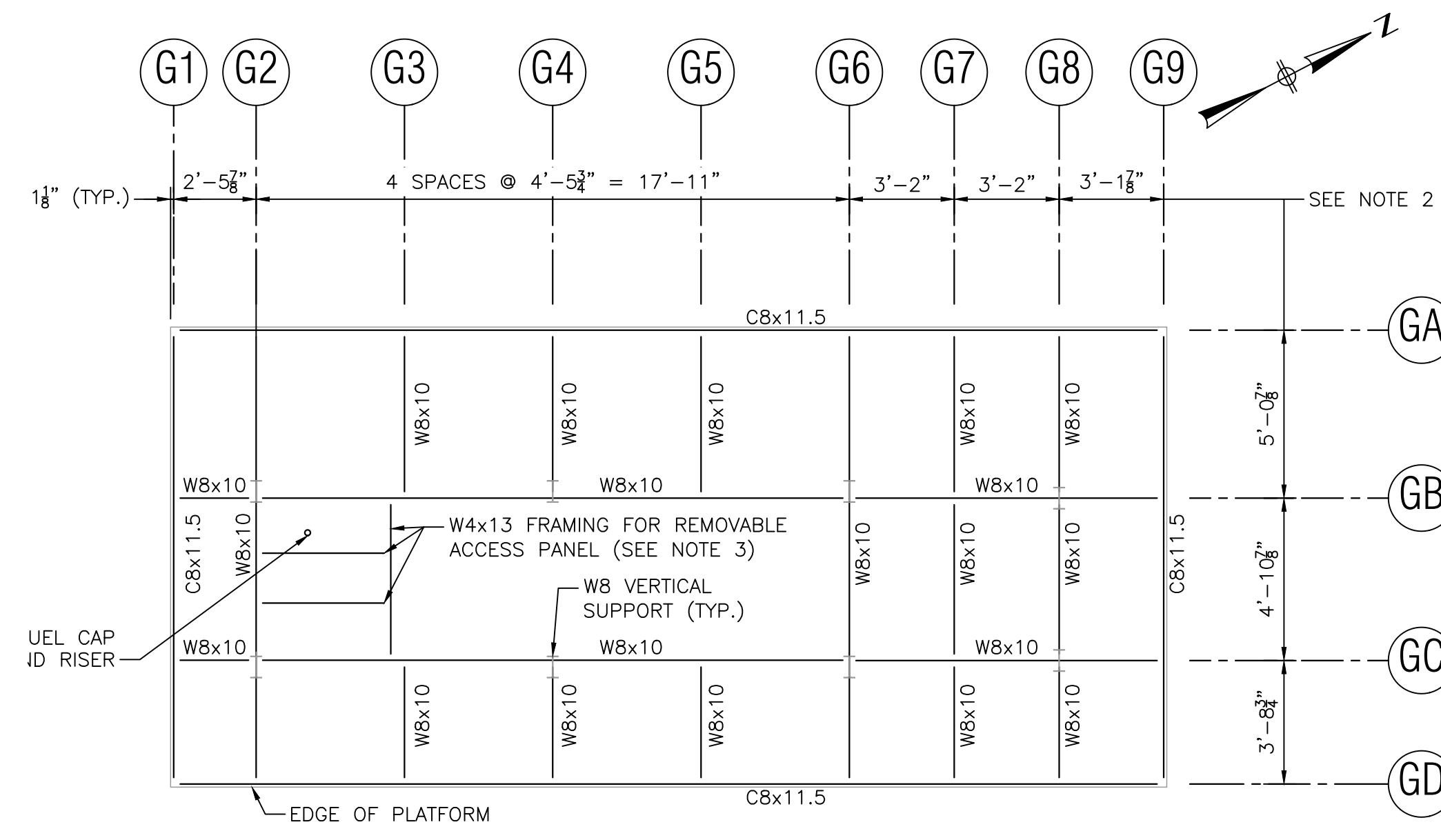
TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
MISCELLANEOUS DETAILS

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. S-8

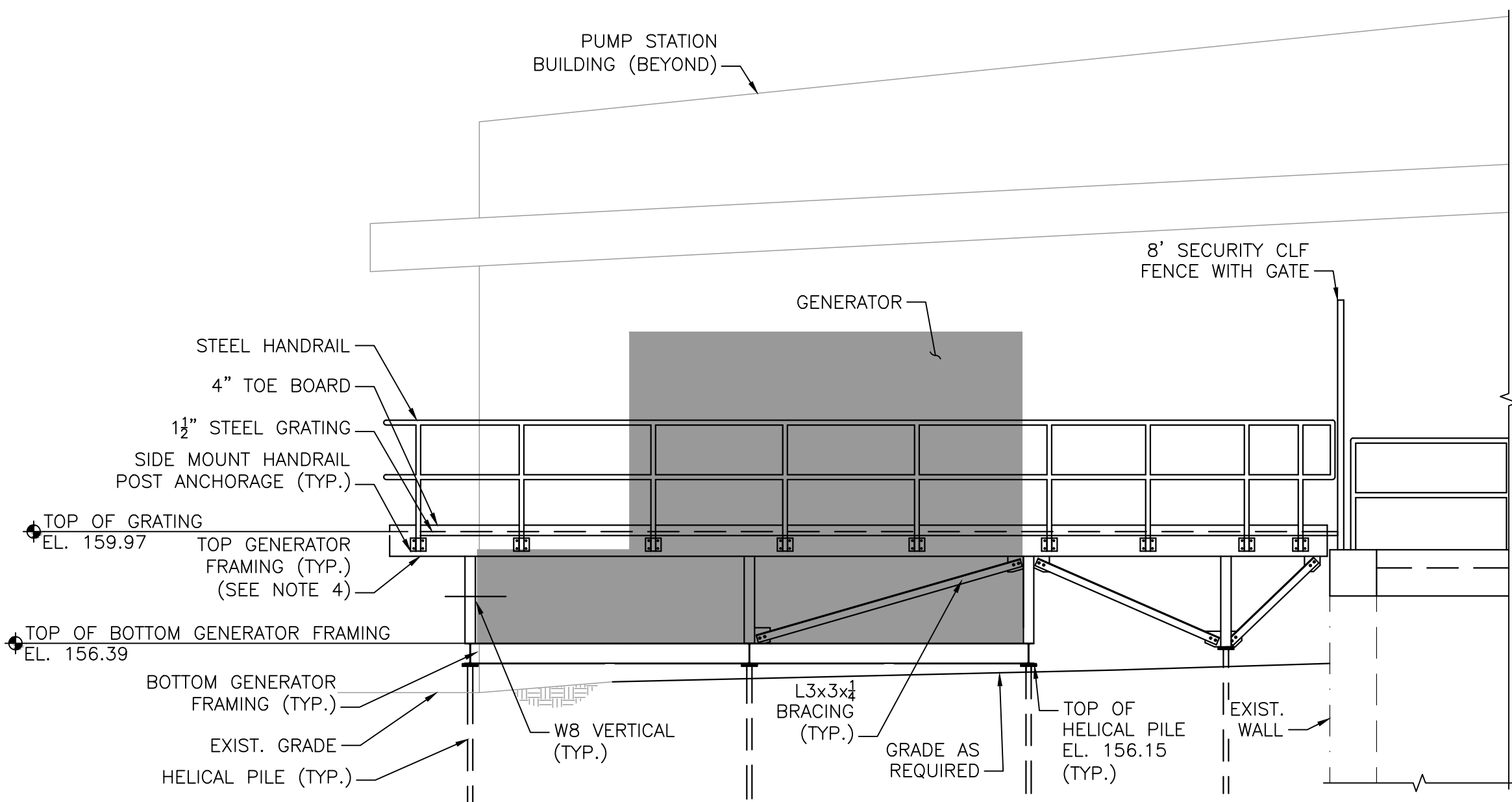
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION



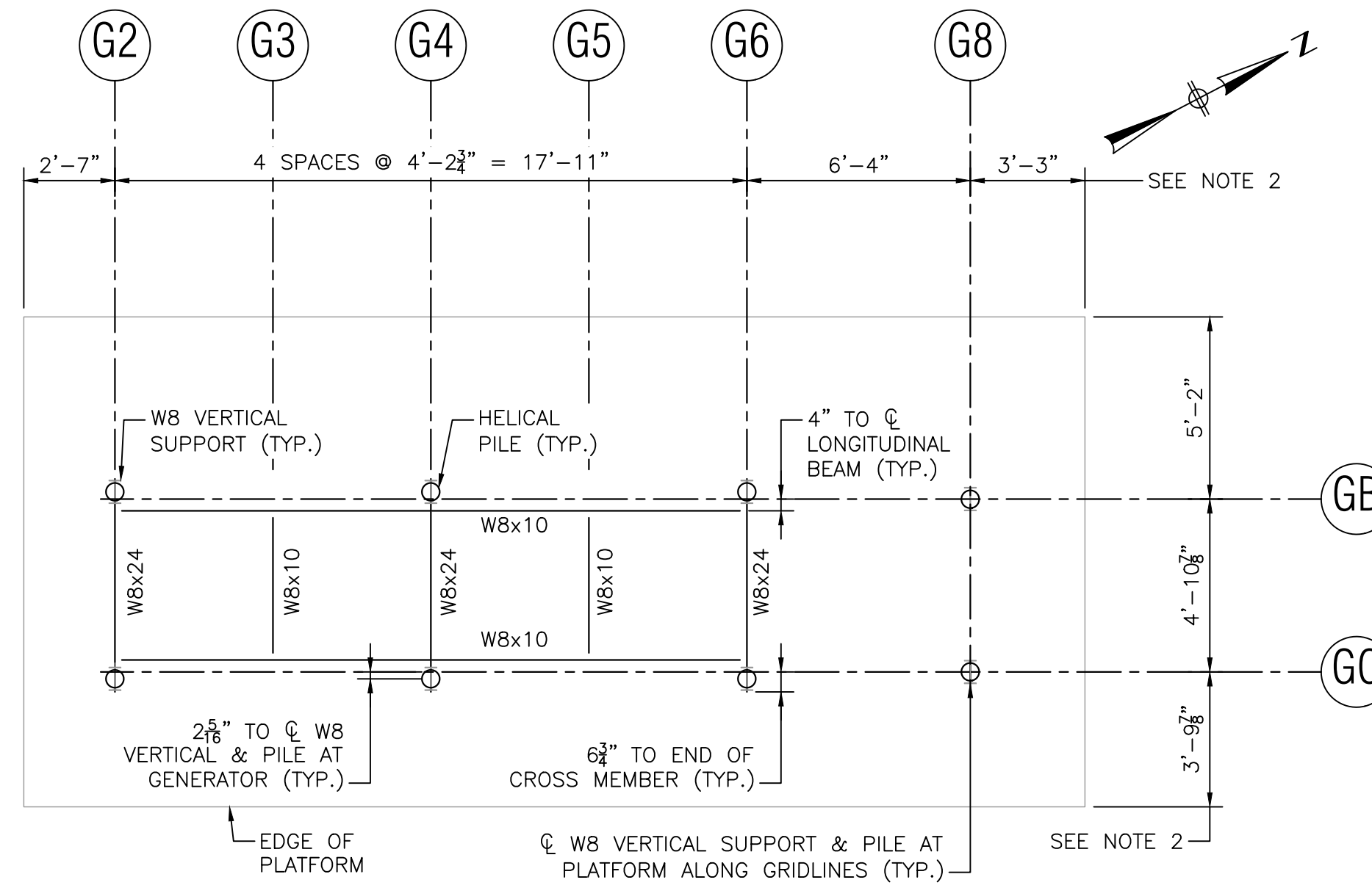
**GENERATOR PLAN**  
SCALE: 1/4" = 1'-0"



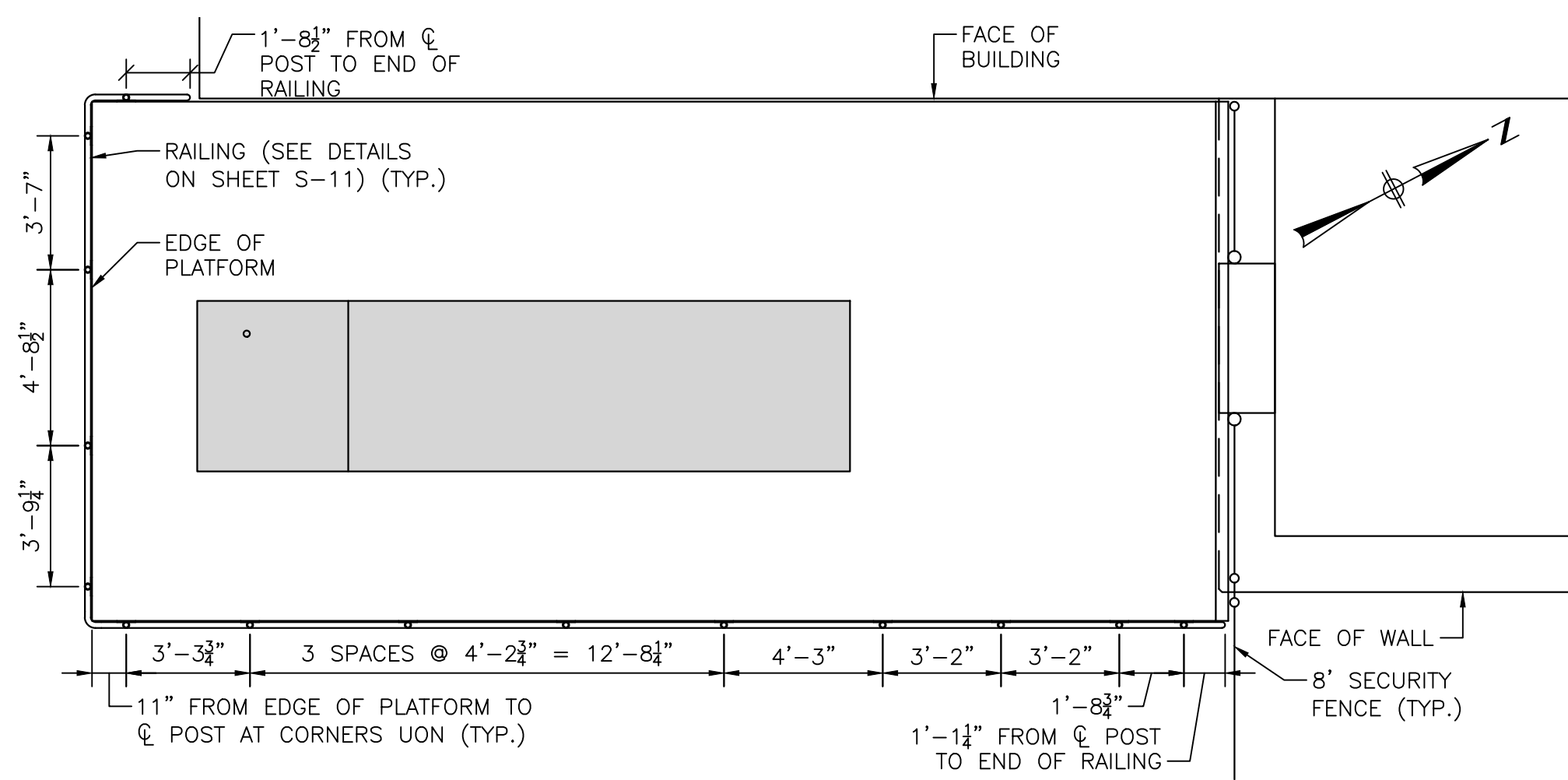
**TOP GENERATOR FRAMING PLAN**  
SCALE: 1/4" = 1'-0"



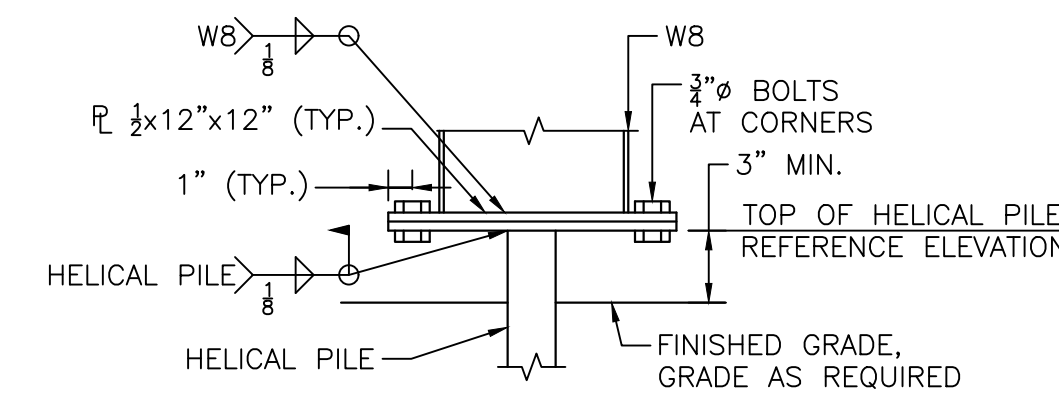
**GENERATOR ELEVATION**  
SCALE: 1/4" = 1'-0"



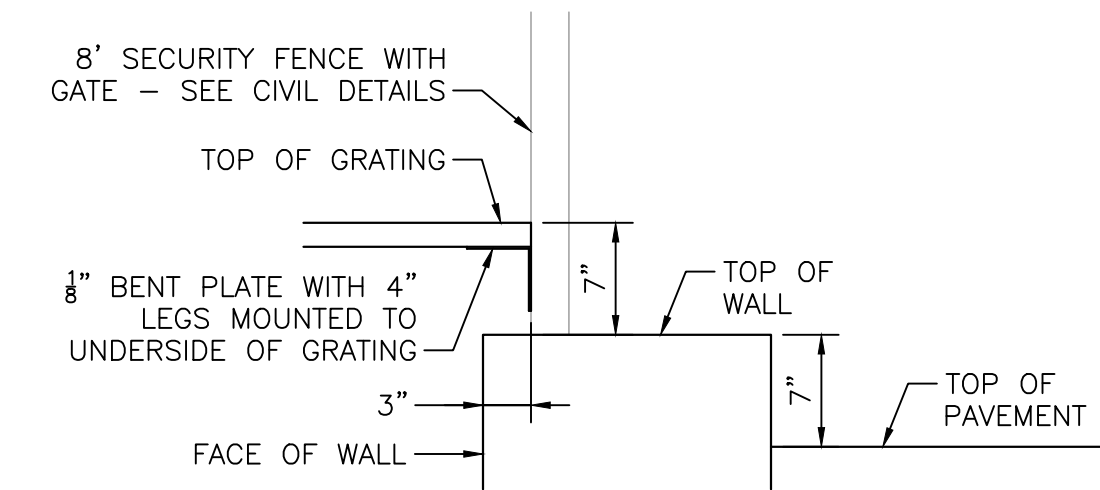
**BOTTOM GENERATOR FRAMING PLAN**  
SCALE: 1/4" = 1'-0"



**GENERATOR RAILING LAYOUT PLAN**  
SCALE: 1/4" = 1'-0"



**TOP OF HELICAL PILE DETAIL**  
SCALE: 1 1/2" = 1'-0"



**DETAIL AT WALL STEP, GRATE, AND GRATE OVERHANG**  
SCALE: 1" = 1'-0"

- GENERATOR SUPPORT NOTES:**
- HELICAL PILES SHALL BE AT LEAST 30 FEET LONG AND BEAR INTO GLACIAL TILL. THE FACTORED AXIAL DESIGN LOAD PER PILE IS 26.0 KIPS.
  - DIMENSIONS SHOWN ARE FOR A KOHLER 250REOZJE STATE CODE 944 GALLON FUEL TANK WITH AN IBC/OSHPD ENCLOSURE.  
  
CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE GENERATOR SUPPORT AND ACCESS PLATFORM IF AN ALTERNATIVE GENERATOR IS SELECTED. CONTRACTOR SHALL MEET MINIMUM SET-BACK DISTANCES AND COORDINATE ADDITIONAL CLEARANCE REQUIREMENTS WITH THE MANUFACTURER.
  - CONTRACTOR TO COORDINATE THE LOCATION OF FRAMING AND ACCESS GRATING FOR THE FUEL CAP AND RISER WITH THE MANUFACTURER.
  - TOP FRAMING TO BE ASSEMBLED OFF PLATFORM AND HOISTED INTO ITS FINAL POSITION DUE TO CLEARANCES TO THE BUILDING.
  - ALL STRUCTURAL STEEL, PLATES, BOLTS, NUTS, AND WASHERS SHALL BE HOT DIPPED GALVANIZED.
- GRATING NOTES:**
- GRATING SHALL BE GALVANIZED STEEL.
  - GRATING SHALL BE INSTALLED WITH THE BEARING BARS PERPENDICULAR TO THE SUPPORTS.
  - IN NO CASE SHALL THE BEARING BARS BE LESS THEN 1 1/2" IN DEPTH.
  - HOLD DOWN CLIPS SHALL BE 316L STAINLESS STEEL.
  - INSTALL GRATING PER MANUFACTURERS RECOMMENDATIONS.
  - GRATING LOAD CRITERIA:  
UNIFORM LOAD 200 PSF  
300 LB  
CONCENTRATED LOAD L/300 FOR SPANS 4' AND LESS  
MAX DEFLECTION L/240 FOR SPANS OVER 4'.

3/1/2023 1:47 PM J:\7385 - FRAMINGHAM WRRS IMPROVEMENTS\DRAWINGFILES\PLANS\SET(SR) GENERATOR SUPPORT.DWG (BETA STD BY CTE)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	DW
DESIGNED BY:	DW
CHECKED BY:	CWJ

REGISTERED PROFESSIONAL  
  
 PREPARED BY

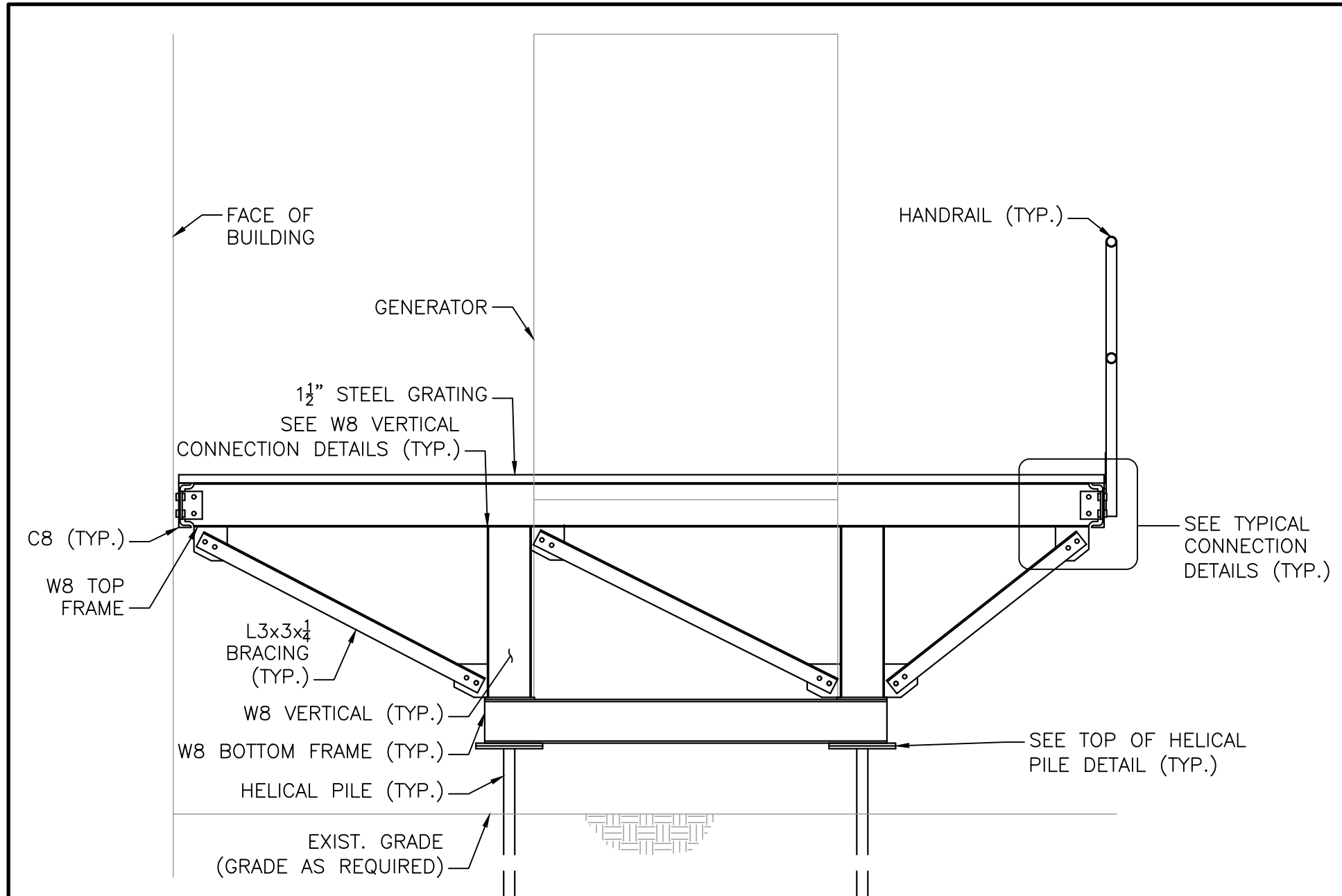
SUBCONSULTANT  
  
 www.BETA-inc.com

SCALE	AS SHOWN
TITLE	Worcester Road Sewer Pumping Station Replacement GENERATOR SUPPORT (1 OF 2)

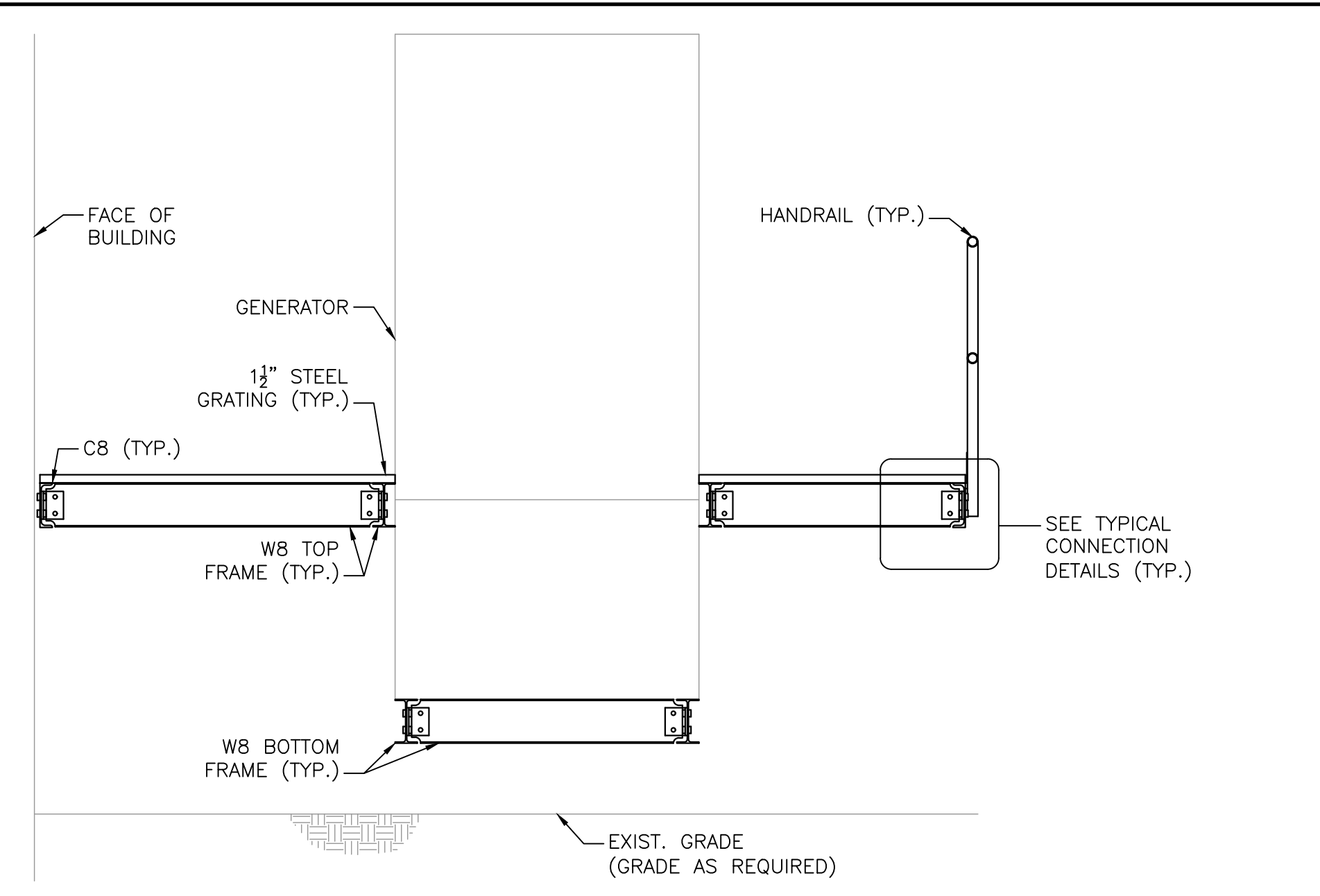
BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	S-9

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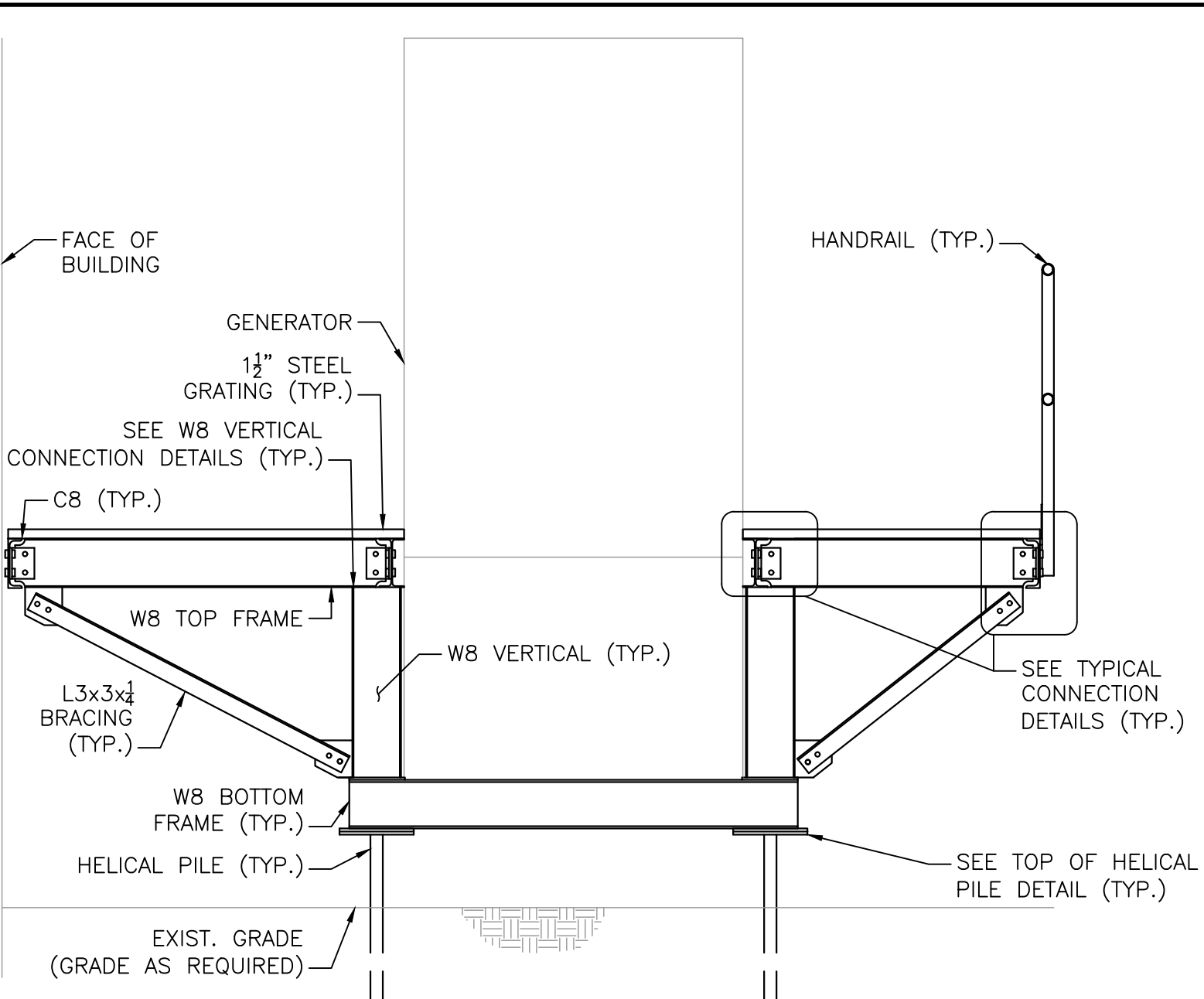
3/1/2023 1:47 PM J:\7385 - FRAMINGHAM WRRS IMPROVEMENTS\DRAWINGFILES\PLANS\SETSR\0 GENERATOR SUPPORT 2.DWG (BETA STD.BW.CTB)



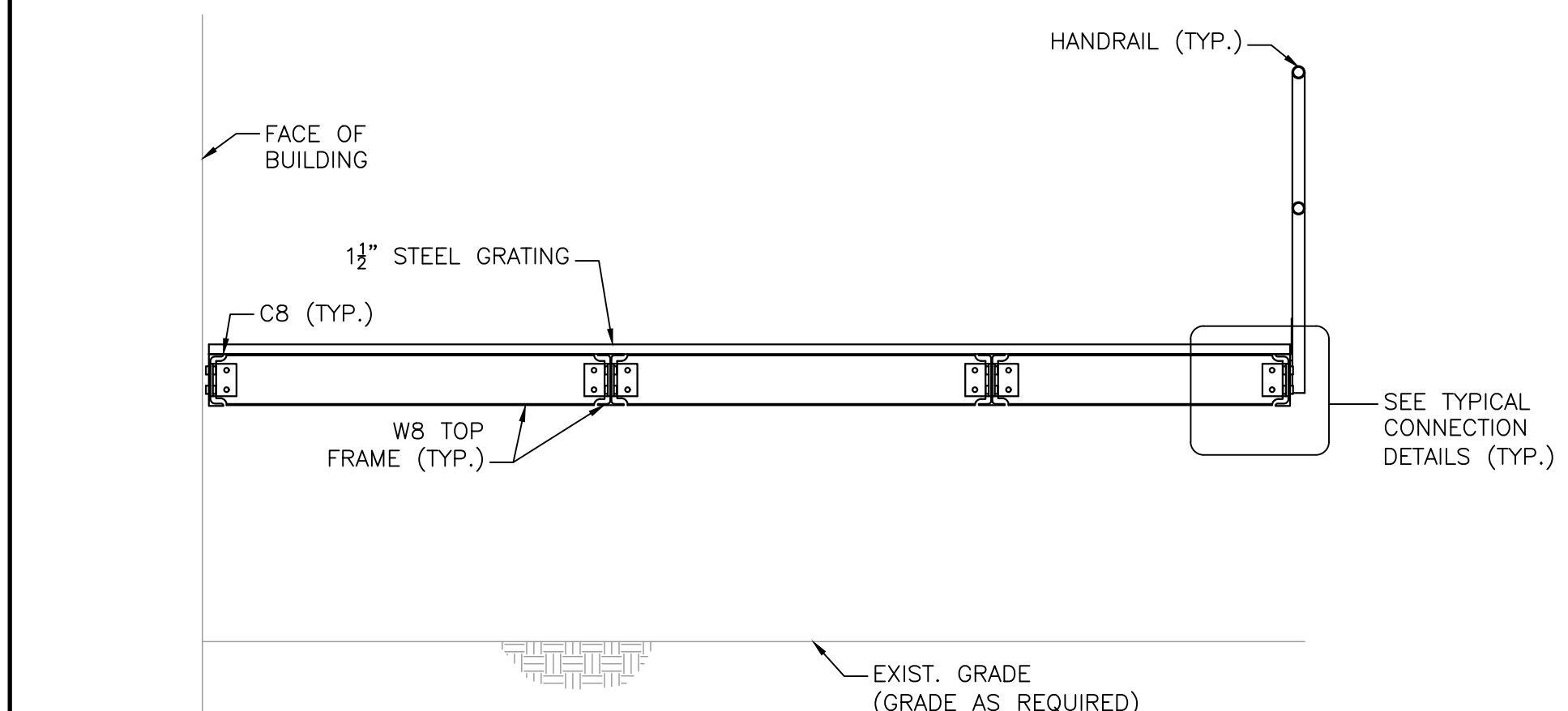
**SECTION 1 - AT GRIDS G2 & G6**  
SCALE: 1/2" = 1'-0"



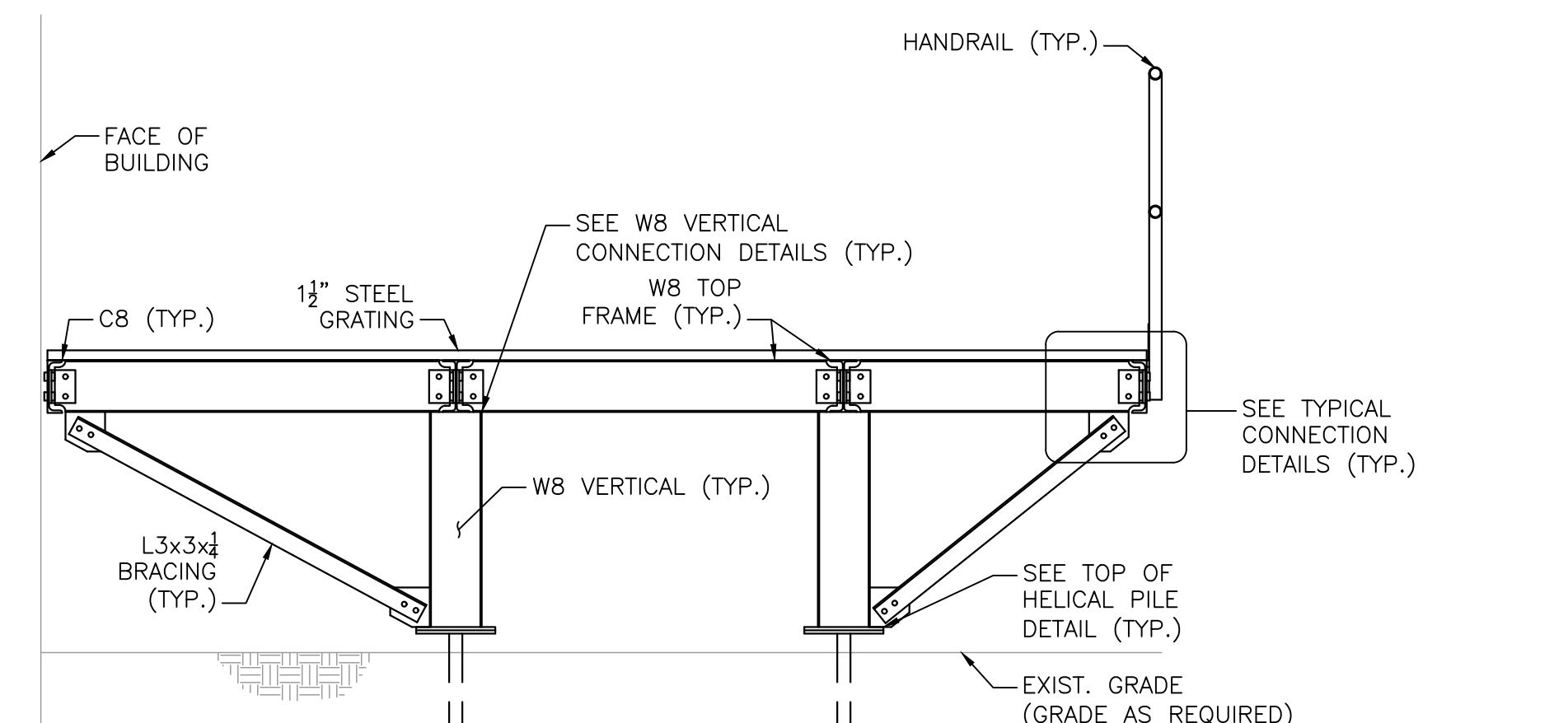
**SECTION 2 - AT GRIDS G3 & G5**  
SCALE: 1/2" = 1'-0"



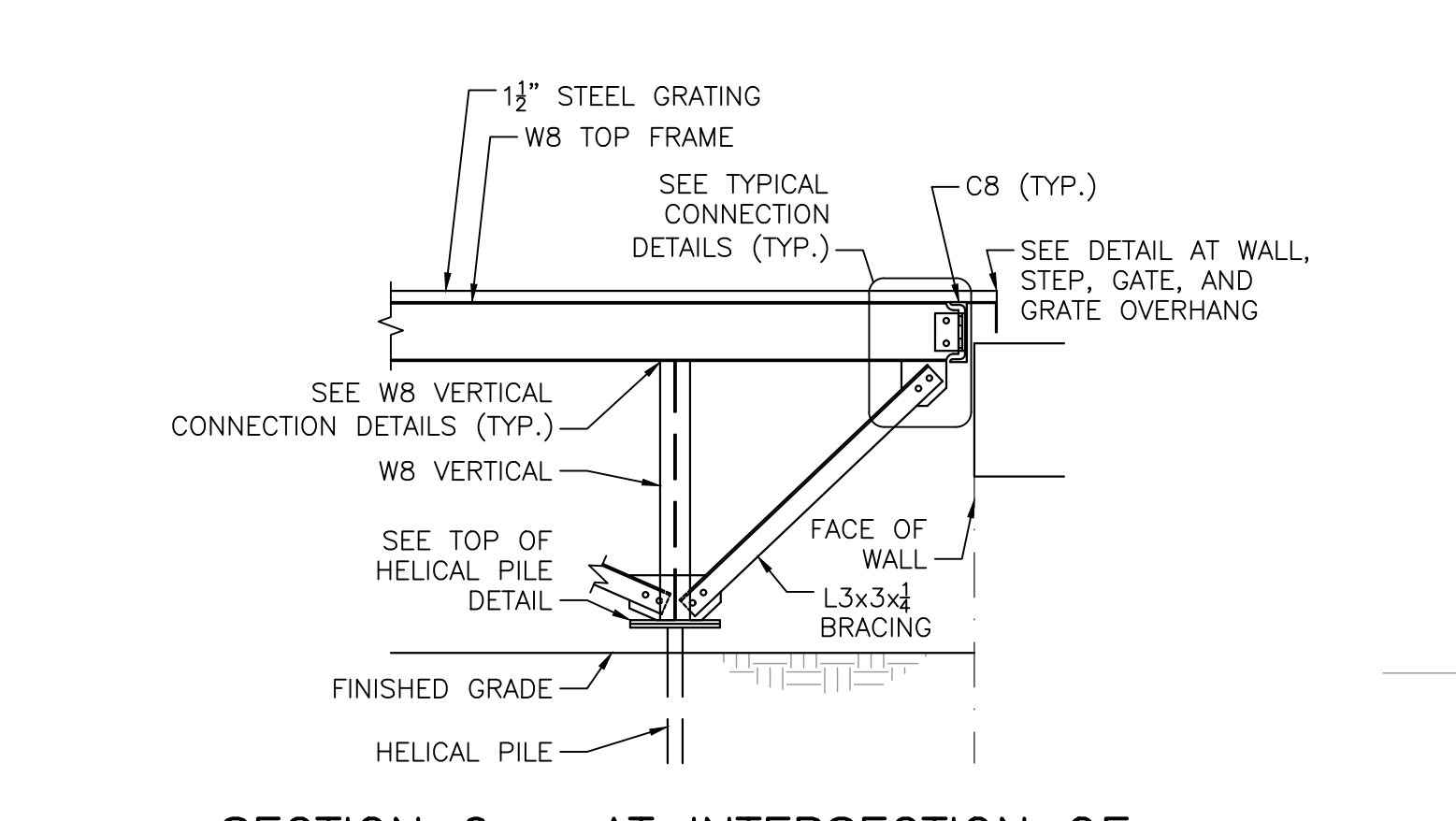
**SECTION 3 - AT GRID G4**  
SCALE: 1/2" = 1'-0"



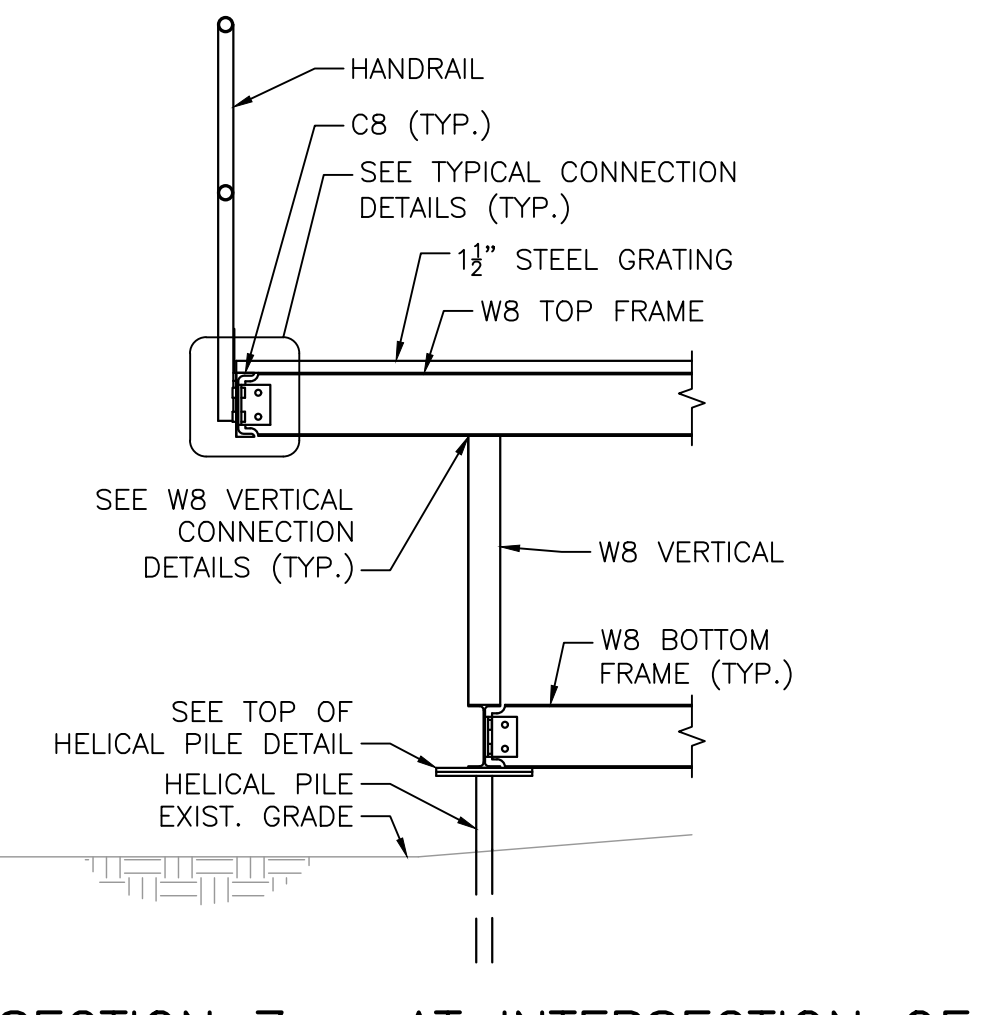
**SECTION 4 - AT GRID G7**  
SCALE: 1/2" = 1'-0"



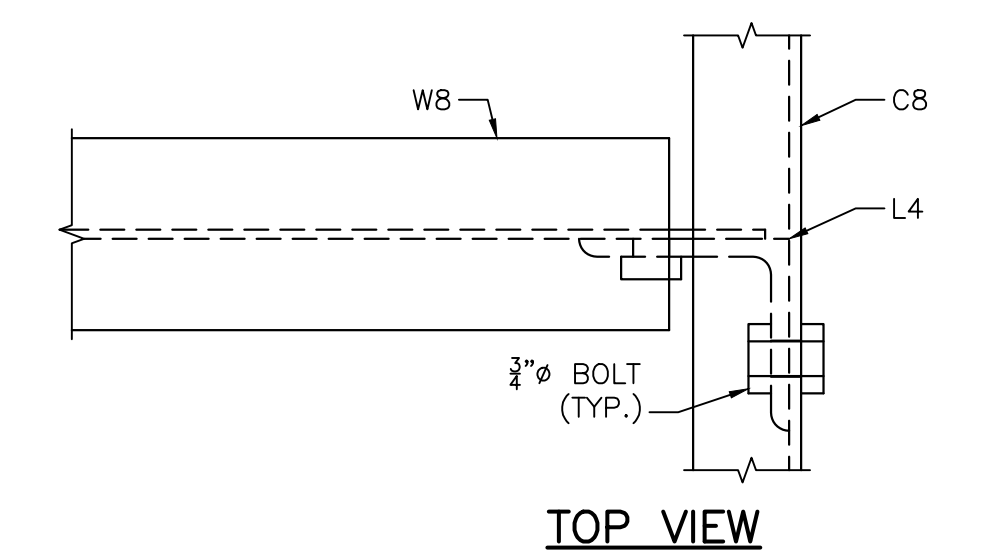
**SECTION 5 - AT GRID G8**  
SCALE: 1/2" = 1'-0"



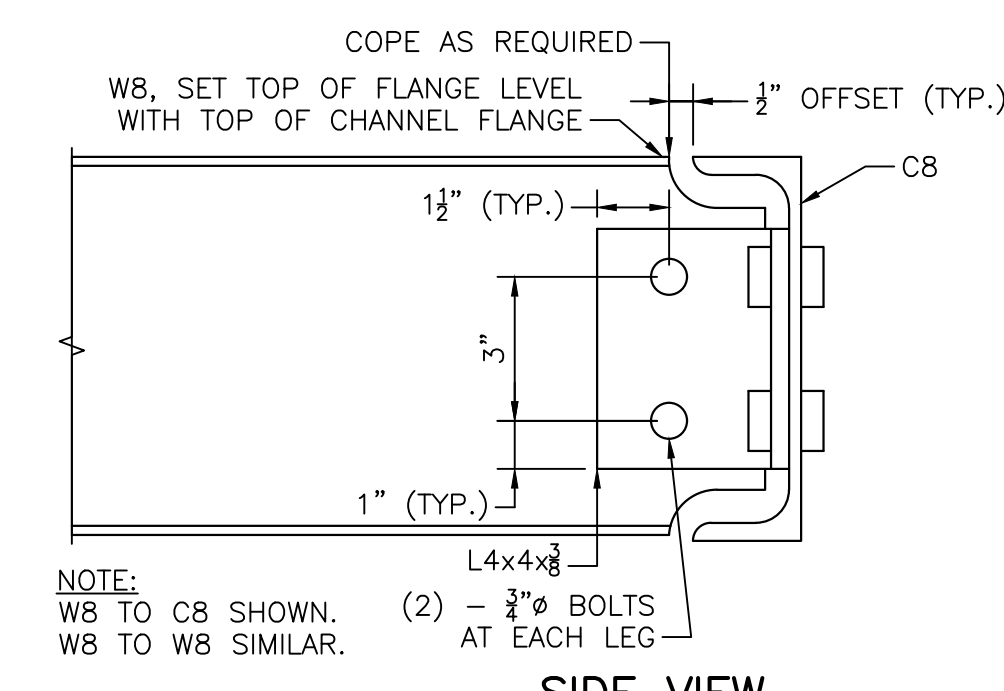
**SECTION 6 - AT INTERSECTION OF GRIDS G8-G9/GB & G8-G9/GC**  
SCALE: 1/2" = 1'-0"



**SECTION 7 - AT INTERSECTION OF GRIDS G1-G2/GB & G1-G2/GC**  
SCALE: 1/2" = 1'-0"

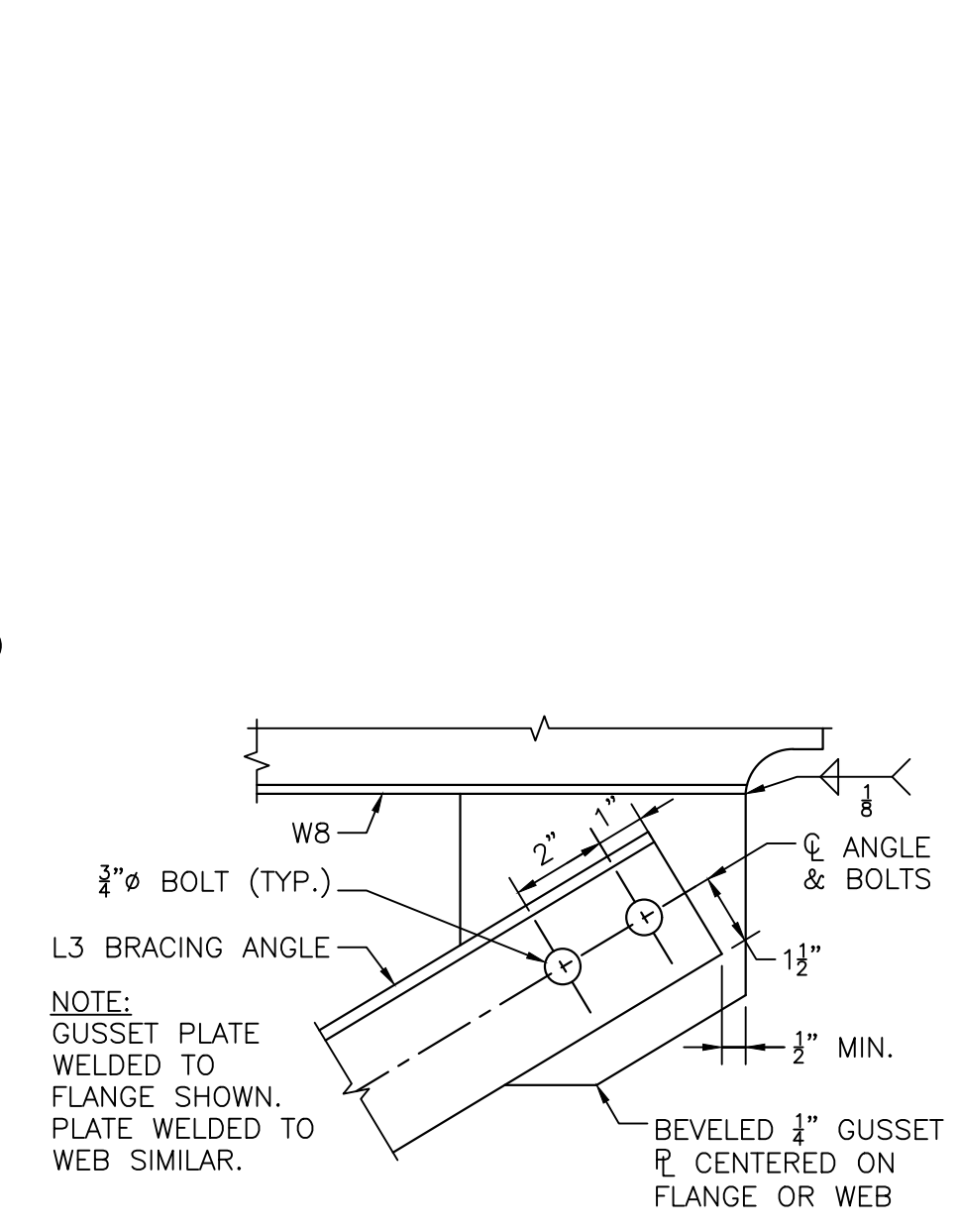


**TOP VIEW**



**SIDE VIEW**

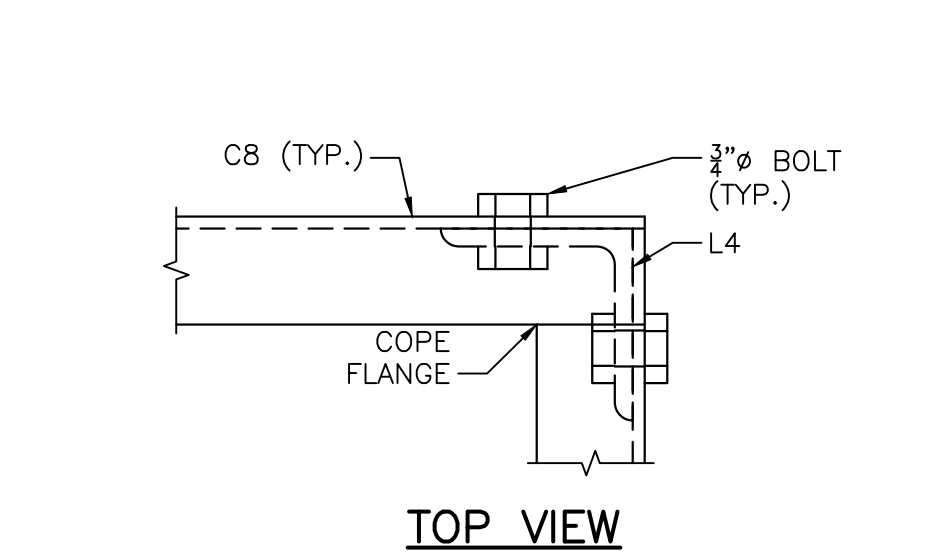
**[W8 TO C8 OR W8 TO W8]**



**TOP VIEW**

**[ANGLE BRACING]**

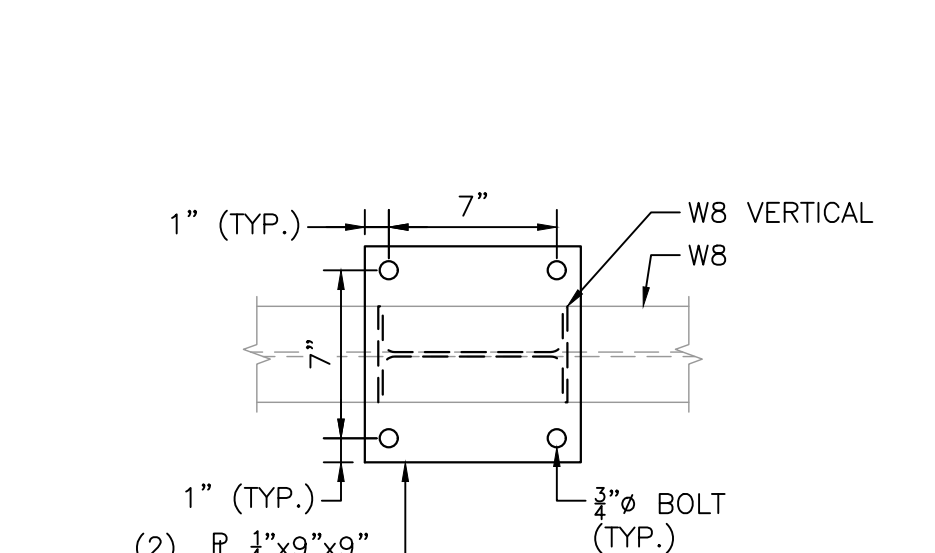
**TYPICAL CONNECTION DETAILS**  
SCALE: 3" = 1'-0"



**TOP VIEW**

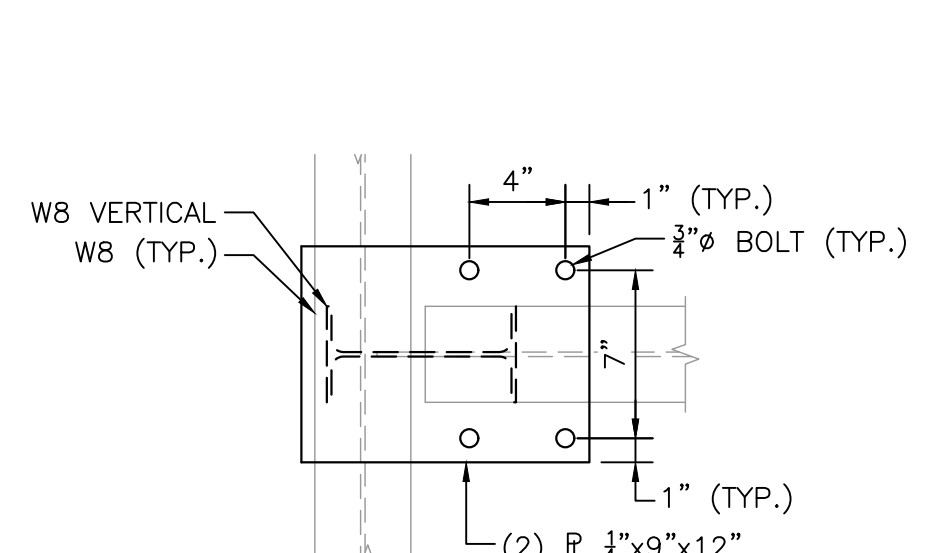
**[C8 TO C8 AT PLATFORM CORNERS]**

**TYPICAL CONNECTION DETAILS**  
SCALE: 3" = 1'-0"



**TOP VIEW**

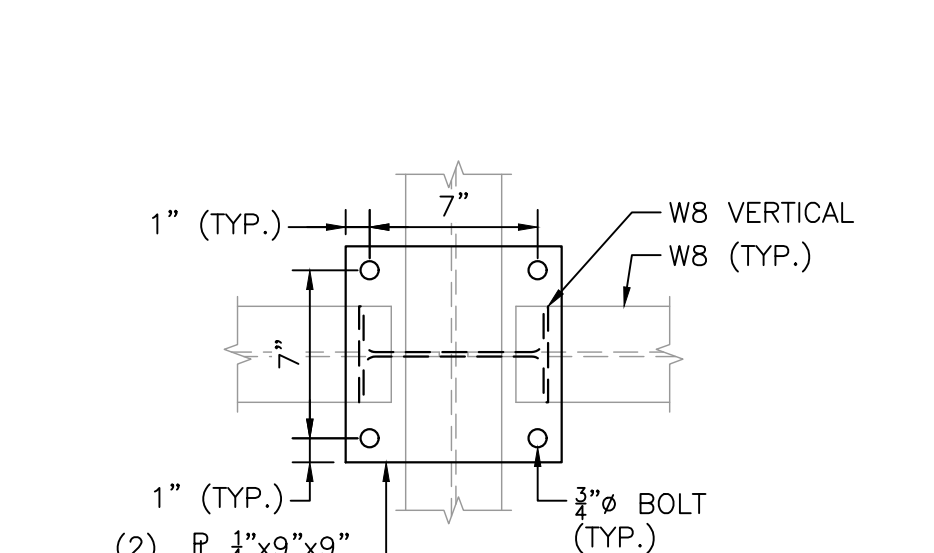
**CONDITION 1**



**TOP VIEW**

**CONDITION 2**

**W8 VERTICAL CONNECTION DETAILS**  
SCALE: 1/2" = 1'-0"



**TOP VIEW**

**CONDITION 3**

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: DW  
DESIGNED BY: DW  
CHECKED BY: PJK

REGISTERED PROFESSIONAL  
CHRISTOPHER W. JONES  
STRUCTURAL  
No. 41025  
PROFESSIONAL ENGINEER  
3/2/2023

PREPARED BY  
**BETA**  
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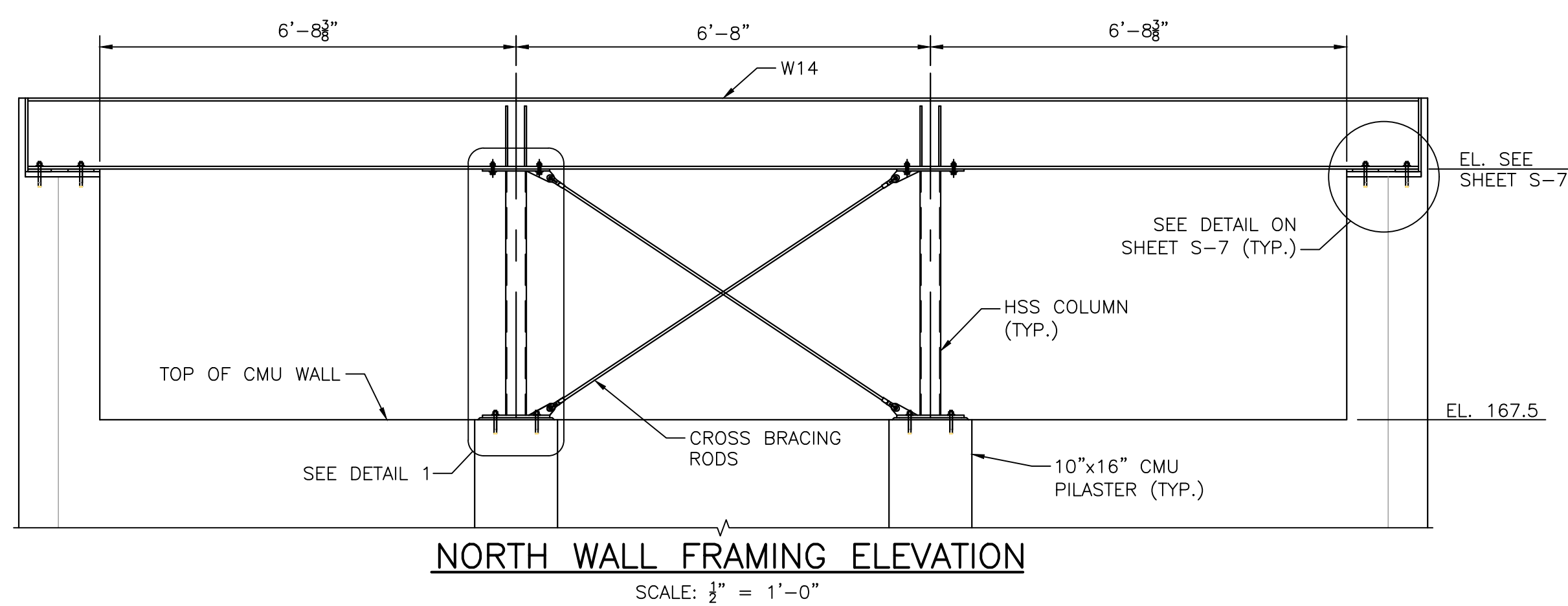
SUBCONSULTANT

SCALE  
AS SHOWN

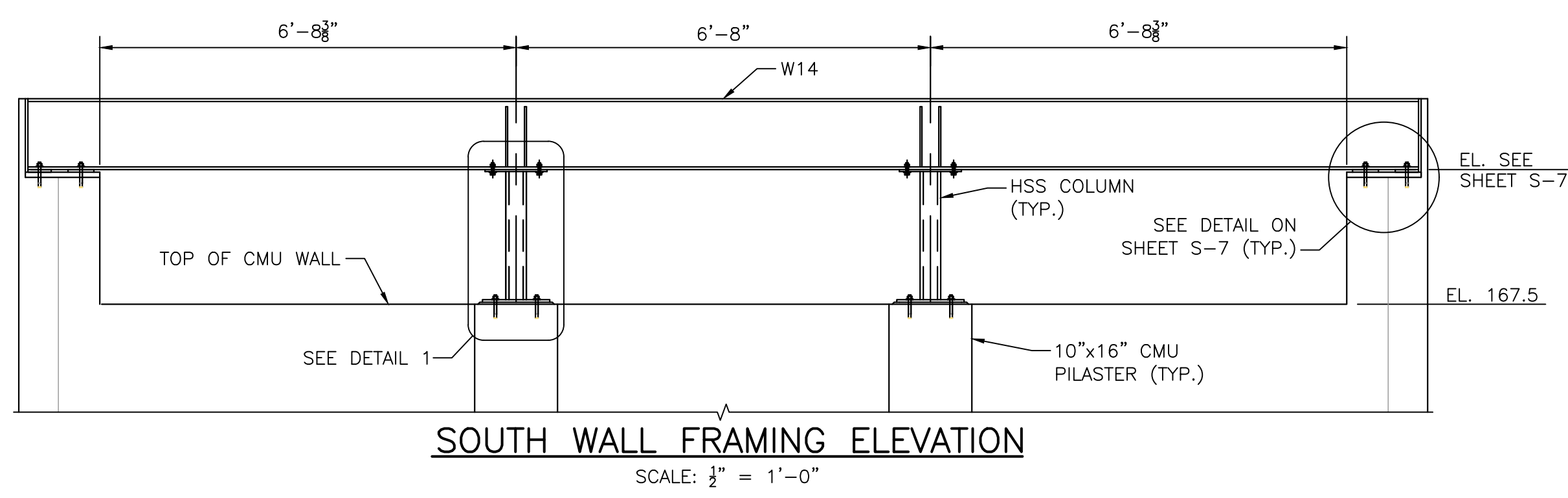
TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
GENERATOR SUPPORT (2 OF 2)

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. S-10

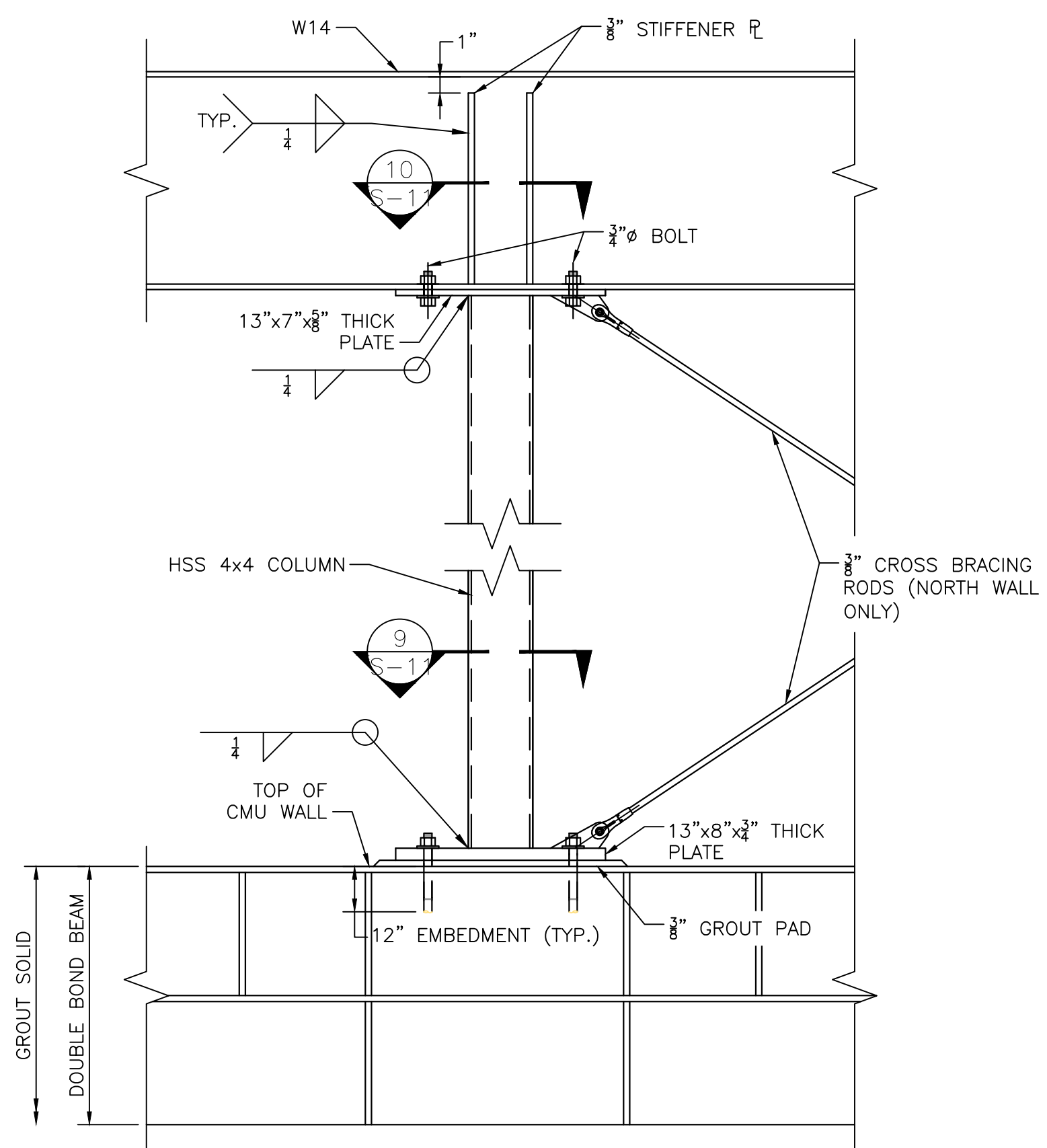
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION



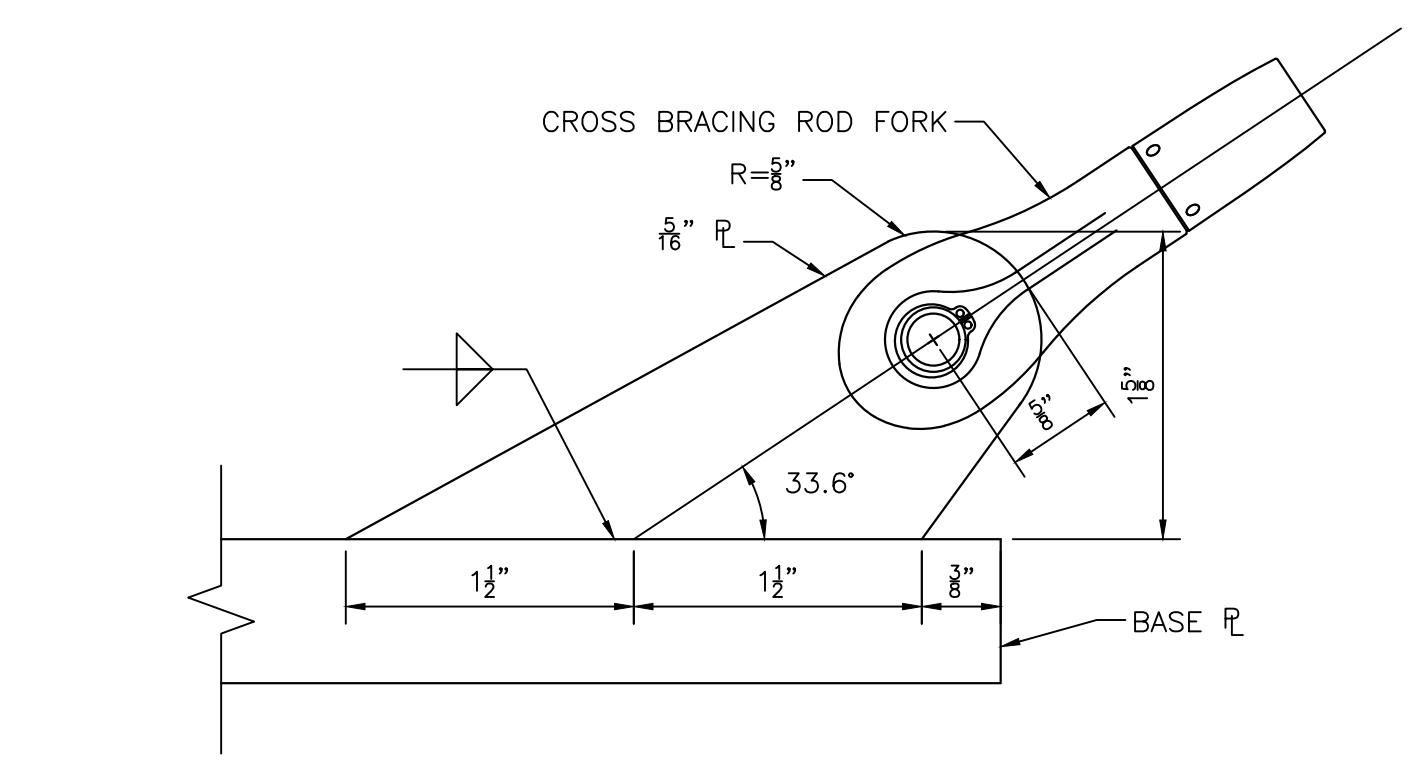
**NORTH WALL FRAMING ELEVATION**  
SCALE: 1/2" = 1'-0"



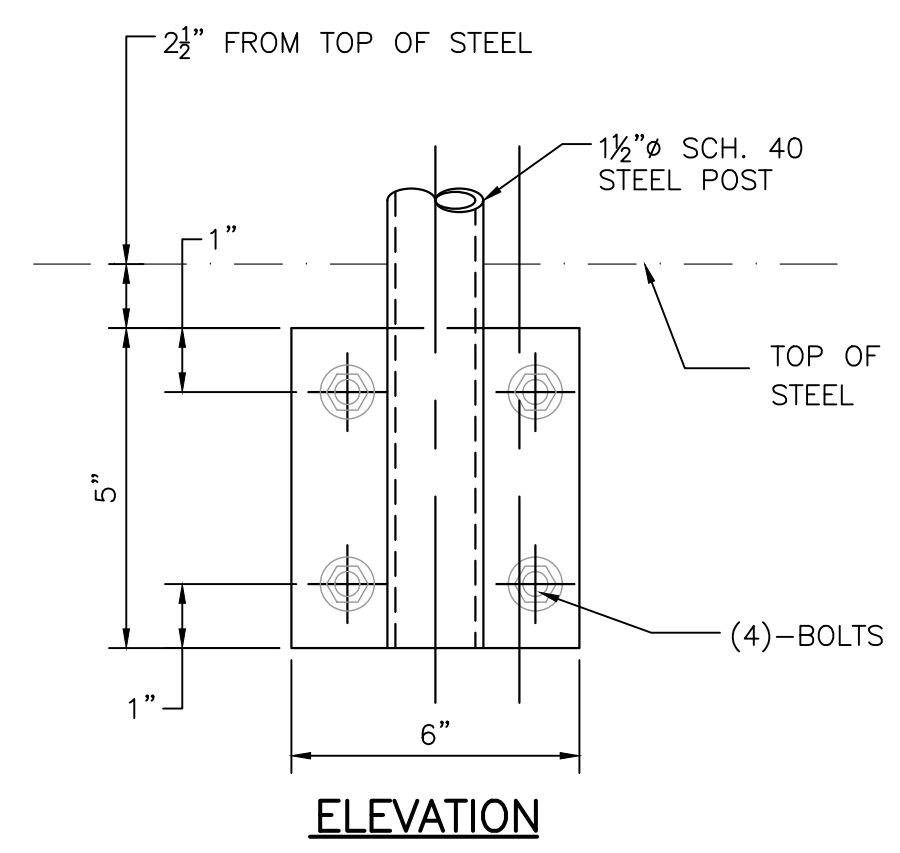
**SOUTH WALL FRAMING ELEVATION**  
SCALE: 1/2" = 1'-0"



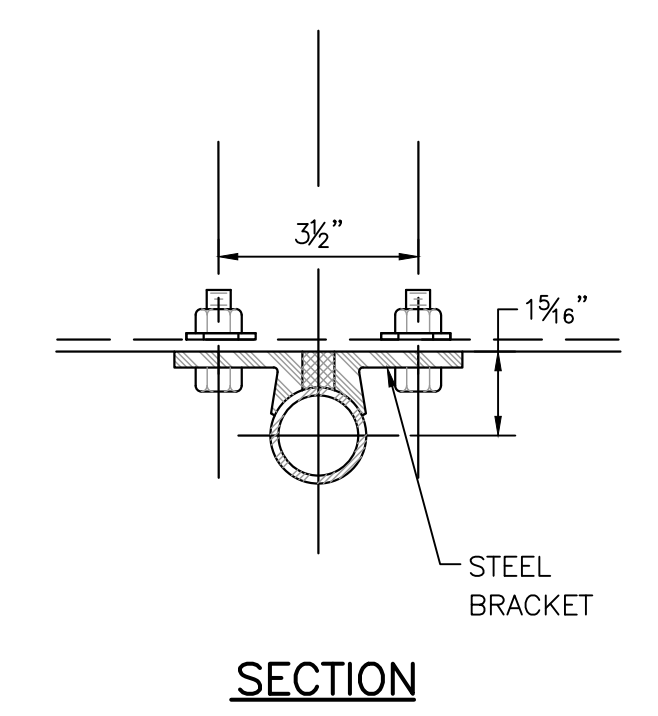
**DETAIL 1**  
SCALE: 1/2" = 1'-0"



**CROSS BRACING ROD CONNECTION PLATE**  
SCALE: 3" = 1'-0"

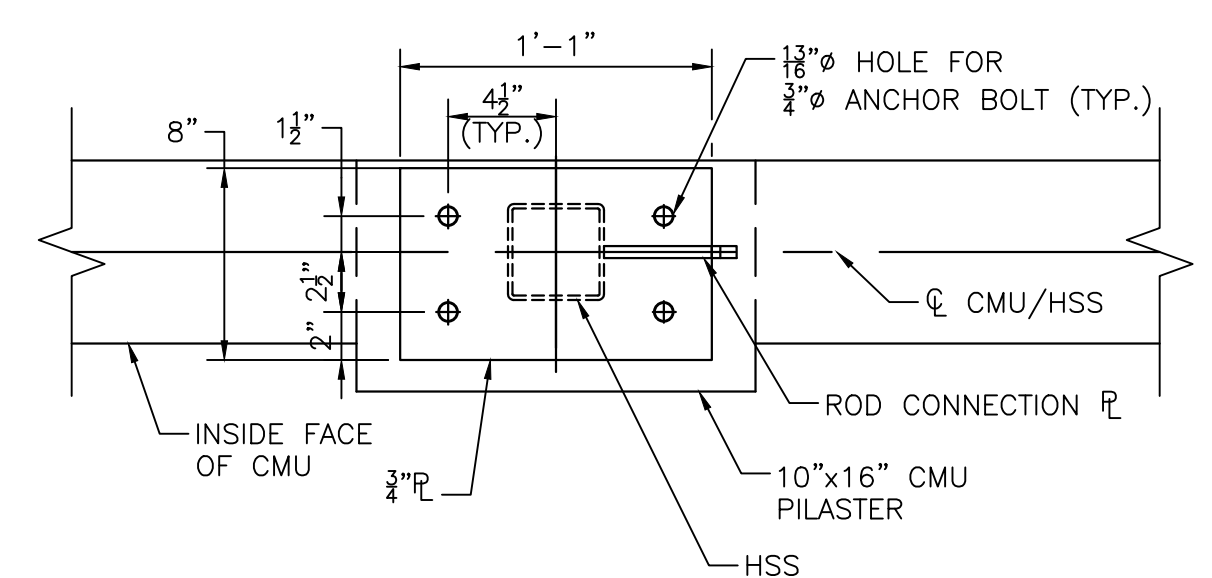


**ELEVATION**

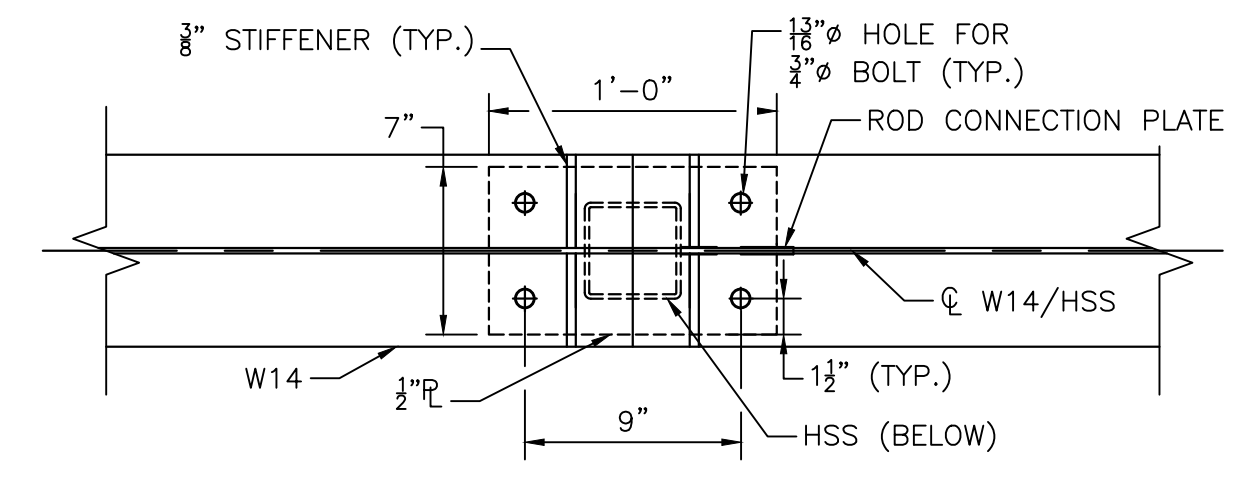


**SECTION**

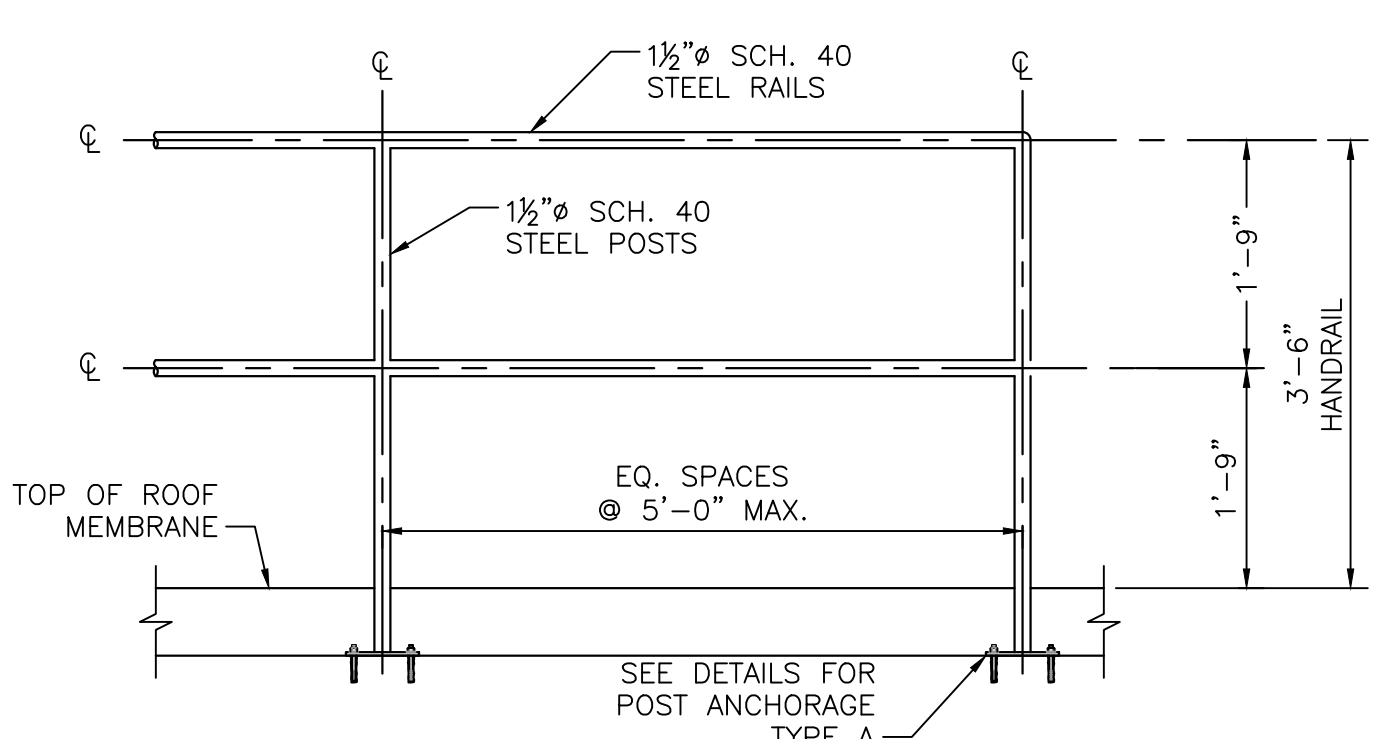
**[TYPE C] PLATFORM HANDRAIL POST ANCHORAGE**  
SCALE: 3" = 1'-0"



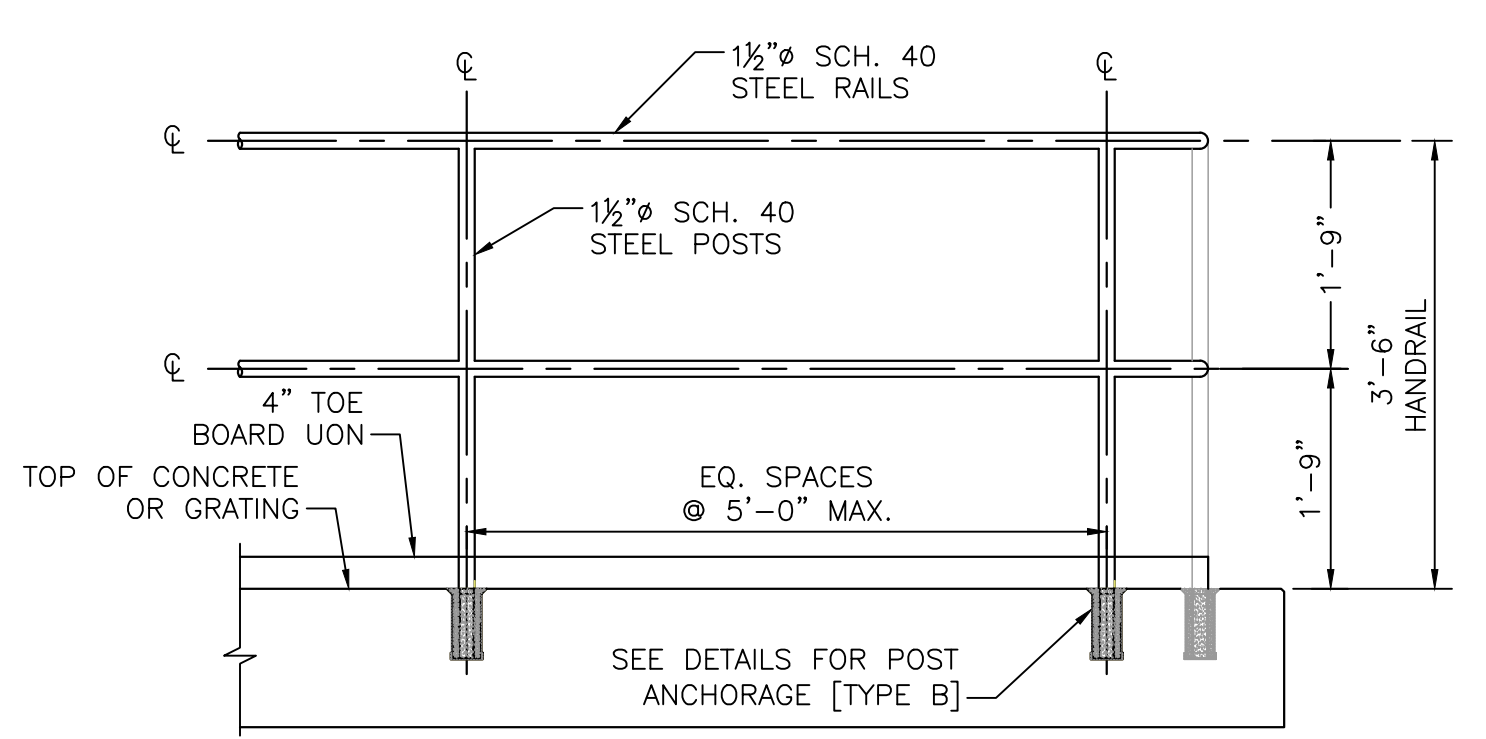
**SECTION 9**  
SCALE: 1 1/2" = 1'-0"



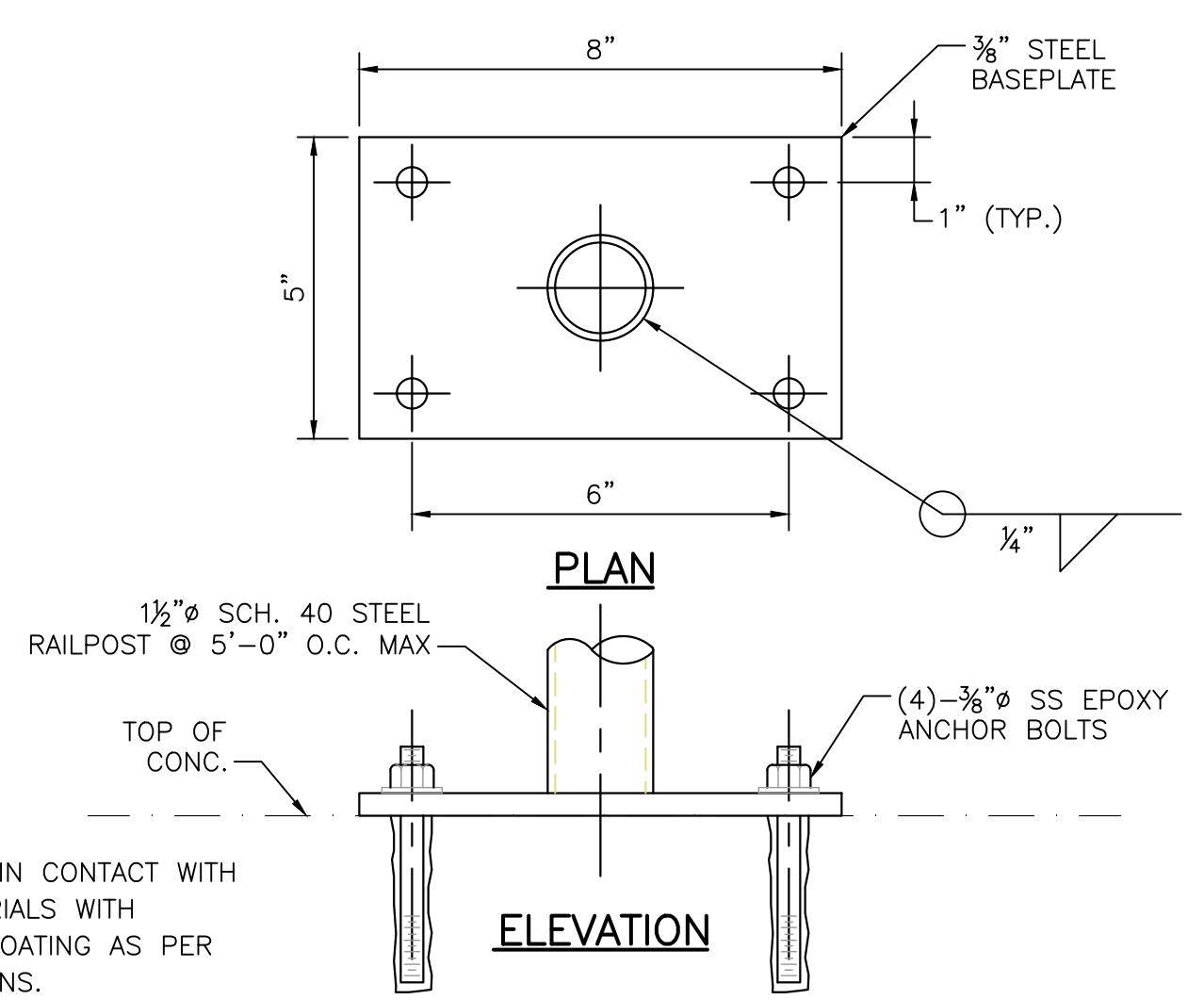
**SECTION 10**  
SCALE: 1 1/2" = 1'-0"



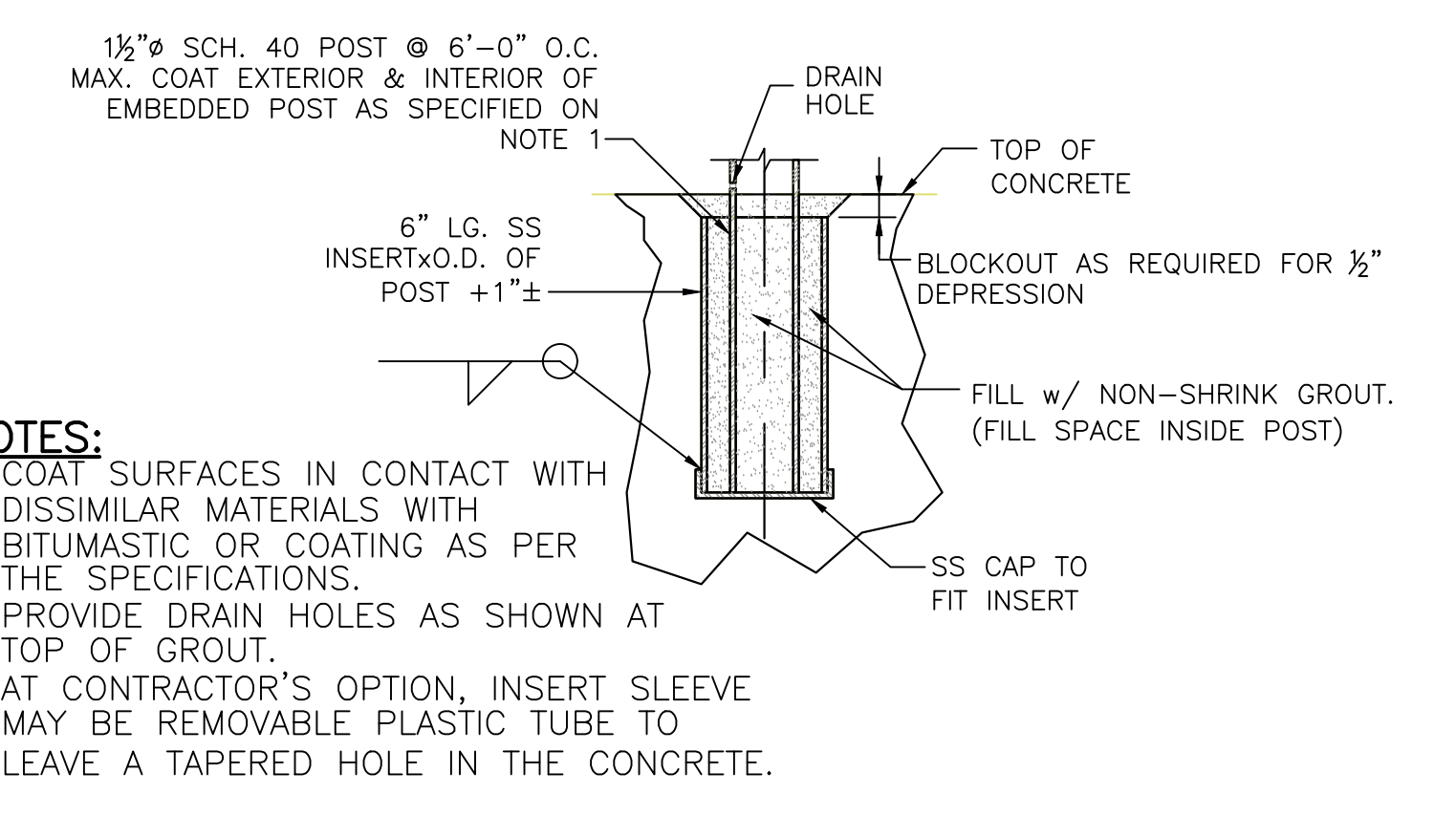
**HANDRAIL AT ROOF**  
NOT TO SCALE



**HANDRAIL ON WALL OR PLATFORM**  
NOT TO SCALE



**[TYPE A] ROOF HANDRAIL POST ANCHORAGE**  
SCALE: 3" = 1'-0"



**[TYPE B] WALL HANDRAIL POST ANCHORAGE**  
SCALE: 3" = 1'-0"

**NOTES:**

1. COAT SURFACES IN CONTACT WITH DISSIMILAR MATERIALS WITH BITUMASTIC OR COATING AS PER THE SPECIFICATIONS.
2. PROVIDE DRAIN HOLES AS SHOWN AT TOP OF GROUT.
3. AT CONTRACTOR'S OPTION, INSERT SLEEVE MAY BE REMOVABLE PLASTIC TUBE TO LEAVE A TAPERED HOLE IN THE CONCRETE.

3/1/2023 1:45 PM J:\7385 - FRAMINGHAM WRRS IMPROVEMENTS\DRAWING\FILES\PLANS\SET(SR)(10) STEEL DETAILS 1.DWG (BETA STD BW.CTB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
JMR  
DESIGNED BY:  
CHECKED BY:



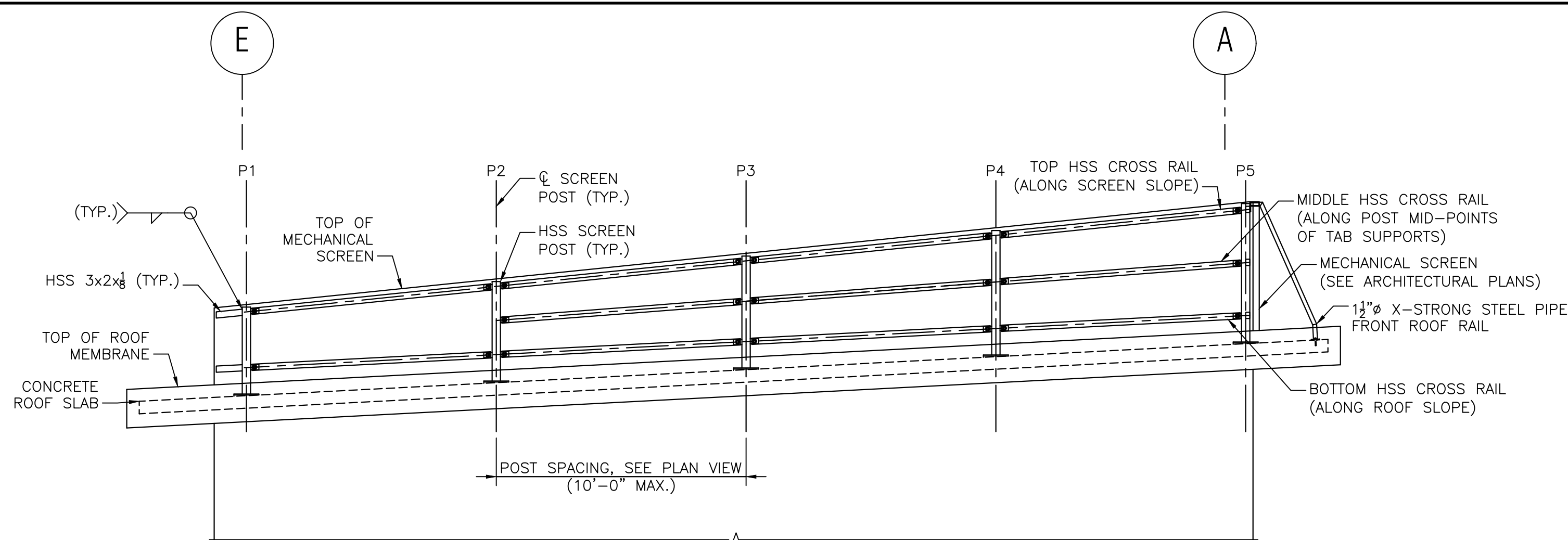
REGISTERED PROFESSIONAL  
PREPARED BY  
SUBCONSULTANT

SCALE  
AS SHOWN

TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
STEEL DETAILS (1 OF 2)

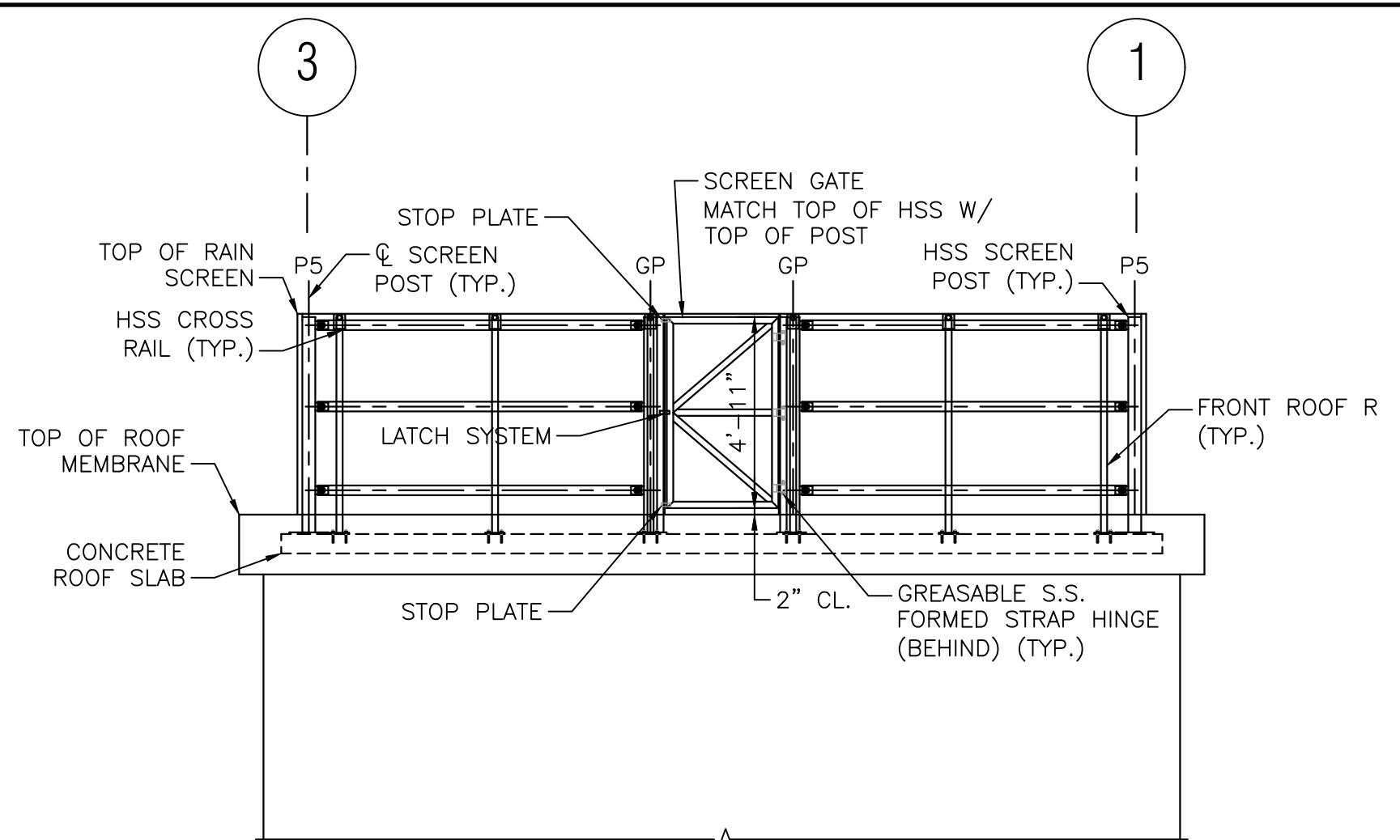
BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. S-11

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION



**NOTE:**  
POSTS, RAILS, AND HARDWARE BEHIND SCREEN ARE SHOWN FOR CONCEPTUAL PURPOSES.

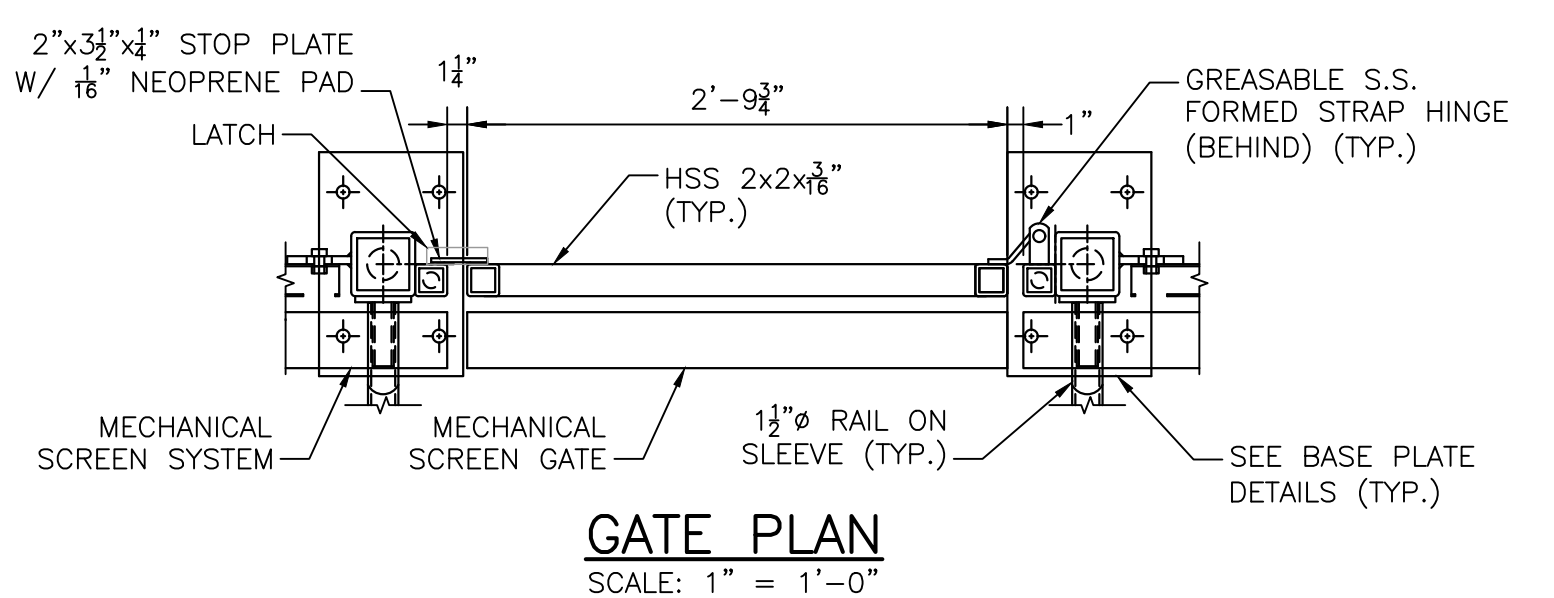
**[WEST SIDE SIMILAR]**  
**EAST MECHANICAL SCREEN ELEVATION**  
SCALE: 1/4" = 1'-0"



**NOTE:**  
POSTS, RAILS, AND HARDWARE BEHIND SCREEN ARE SHOWN FOR CONCEPTUAL PURPOSES.

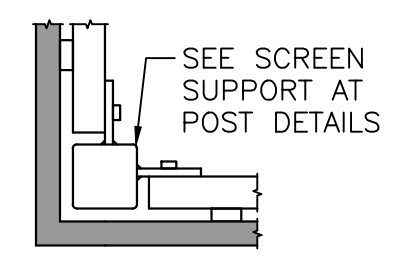
**NORTH MECHANICAL SCREEN ELEVATION**  
SCALE: 1/4" = 1'-0"

**MECHANICAL SCREEN FRAMING NOTES:**  
1. ALL MECHANICAL SCREEN FRAMING MEMBERS AND CONNECTIONS SHALL BE HOT-DIPPED GALVANIZED AND PAINTED PER THE ARCHITECT.

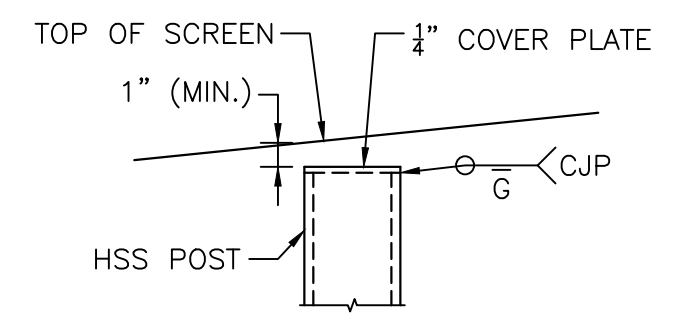


**GATE PLAN**  
SCALE: 1" = 1'-0"

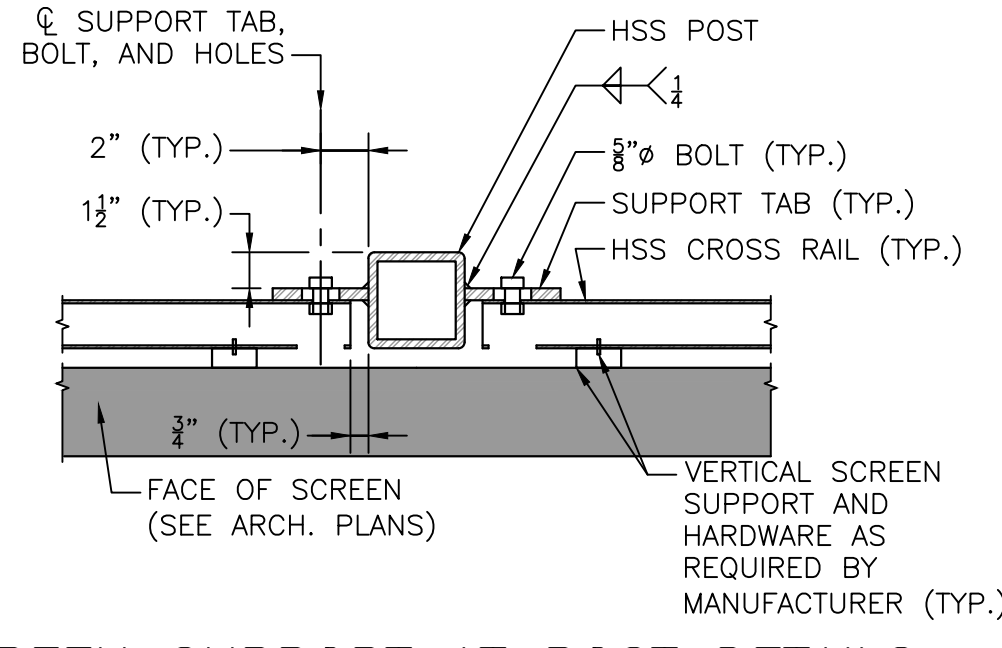
EAST SIDE POST DIMENSIONS			
POST NUMBER	"H"	"A"	"B"
P1	3'-10 3/8"	-	2'-7 1/2"
P2	4'-3 1/4"	3'-0"	3'-0 3/8"
P3	4'-8 3/4"	3'-4 3/8"	3'-5 1/4"
P4	5'-1"	3'-9 3/4"	3'-10 3/8"



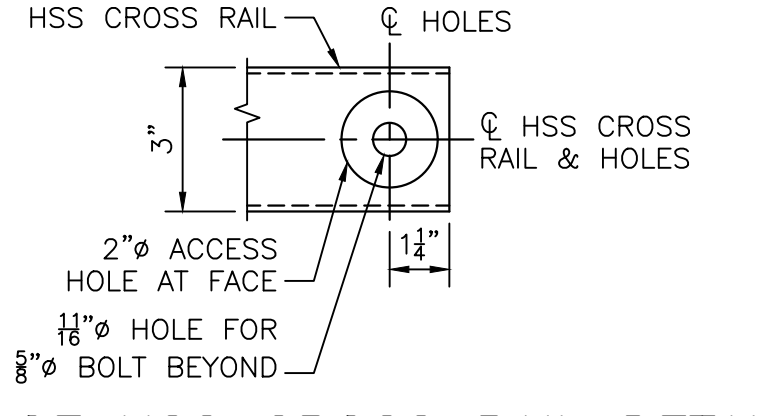
**POST P5 TOP VIEW**



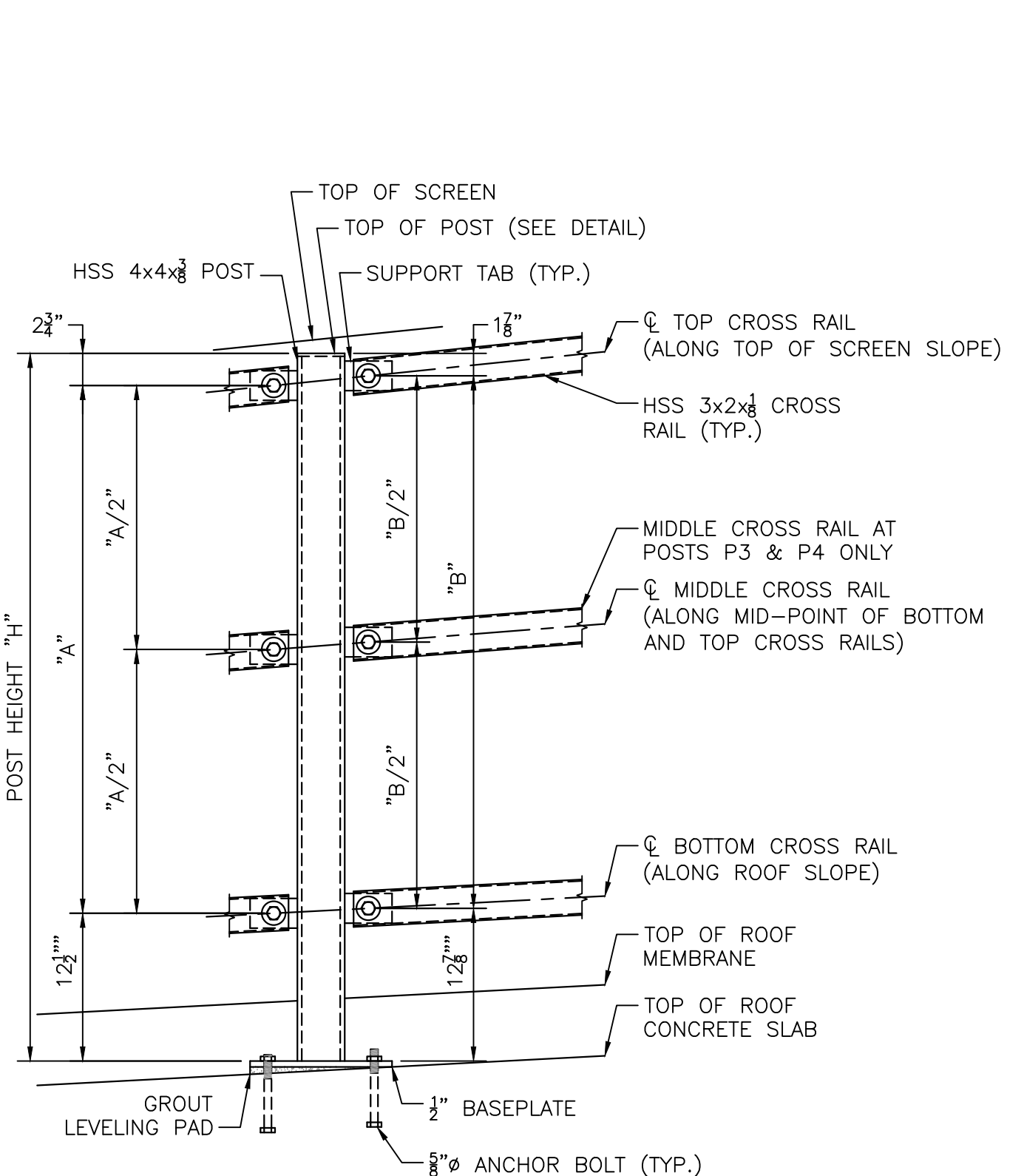
**TOP OF POST DETAILS**  
SCALE: 1 1/2" = 1'-0"



**SCREEN SUPPORT AT POST DETAILS**  
SCALE: 1 1/2" = 1'-0"

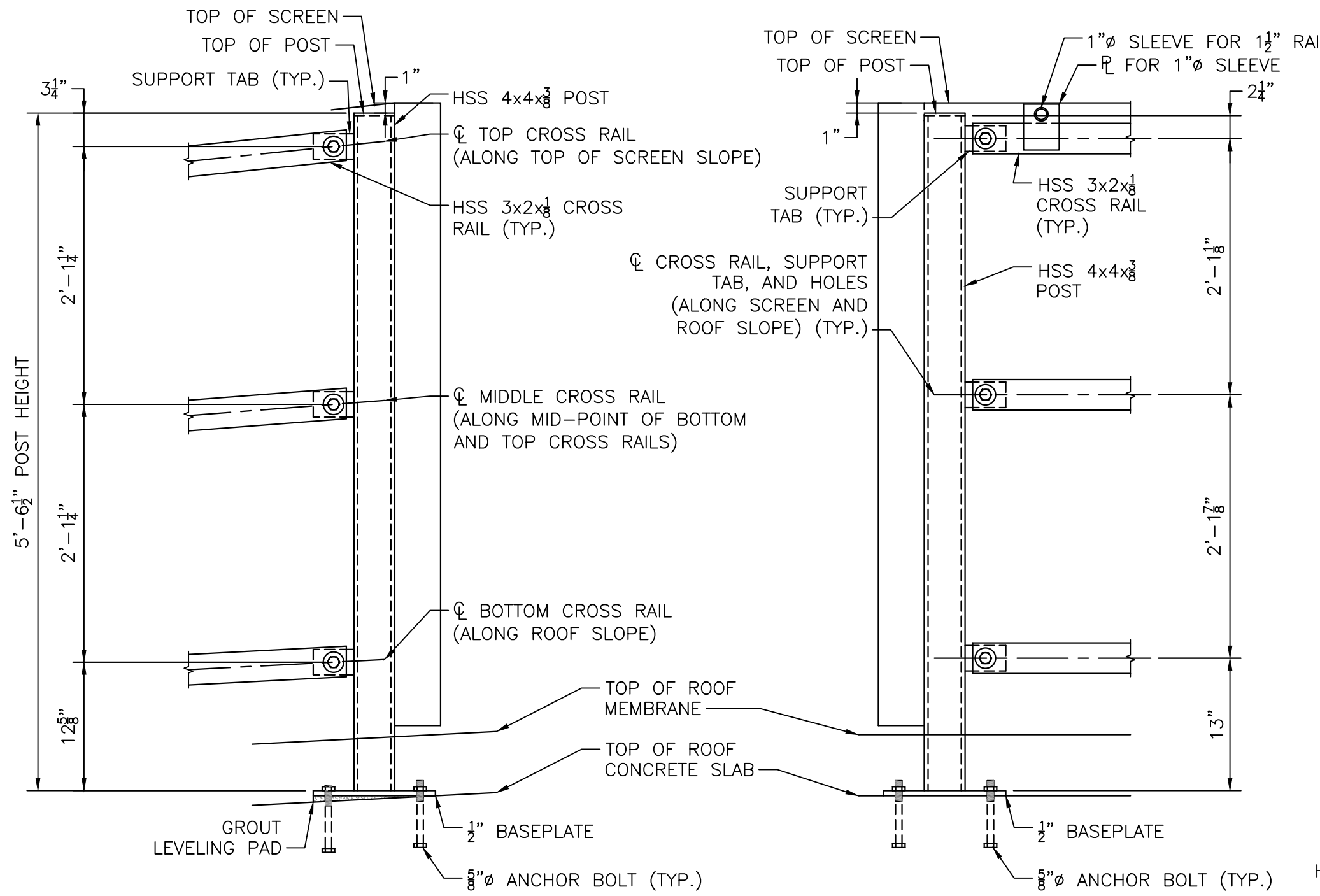


**END OF HSS CROSS RAIL DETAILS**  
SCALE: 3" = 1'-0"



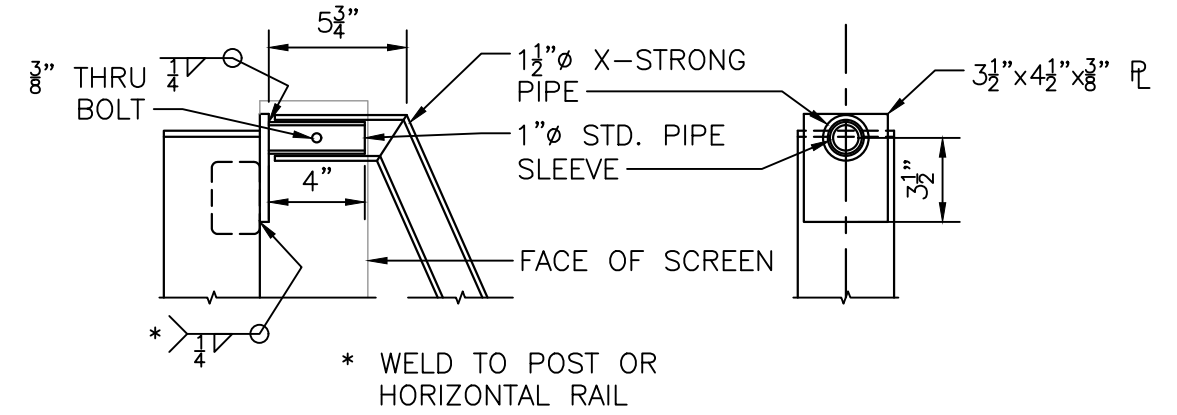
**NOTES:**  
1. EAST SIDE POST SHOWN. SEE TABLES FOR EAST SIDE POST DIMENSIONS. WEST SIDE SIMILAR AND TO BE MIRRORRED.  
2. DIMENSION BANDS "A" AND "B" ARE TAKEN FROM TOP AND BOTTOM OF POST AS WELL AS Q OF SUPPORT TAB AND HOLES.

**POST P1 TO P4 DETAILS**  
SCALE: 1" = 1'-0"

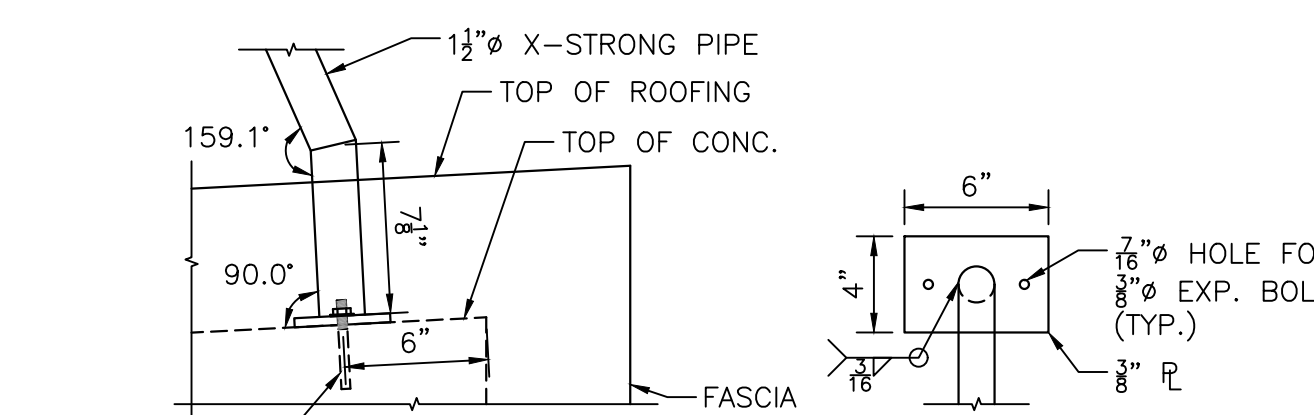


**NOTES:**  
1. NORTHEAST CORNER POST SHOWN, NORTHWEST CORNER SIMILAR AND TO BE MIRRORRED.  
2. DIMENSIONS ARE TAKEN FROM TOP AND BOTTOM OF POST AS WELL AS Q OF SUPPORT TAB AND HOLES.

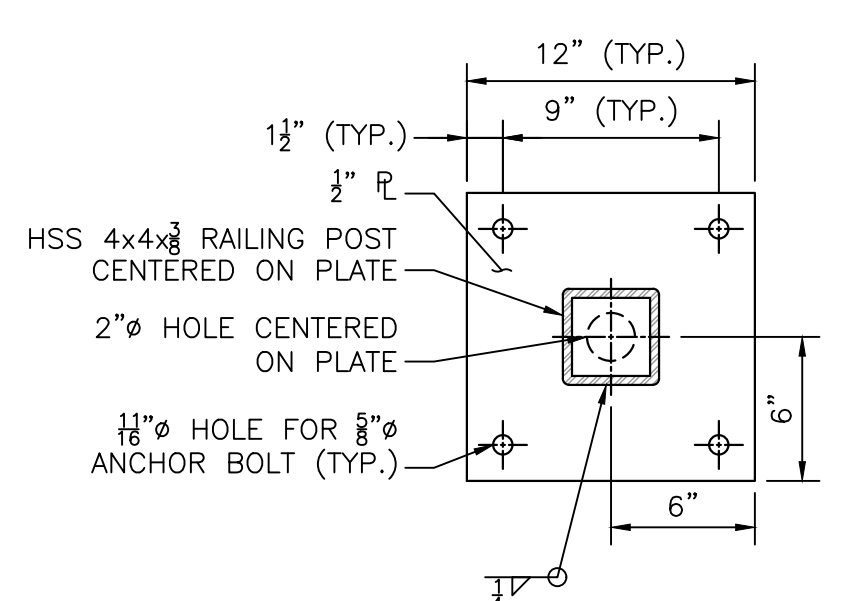
**POST P5 DETAILS**  
SCALE: 1" = 1'-0"



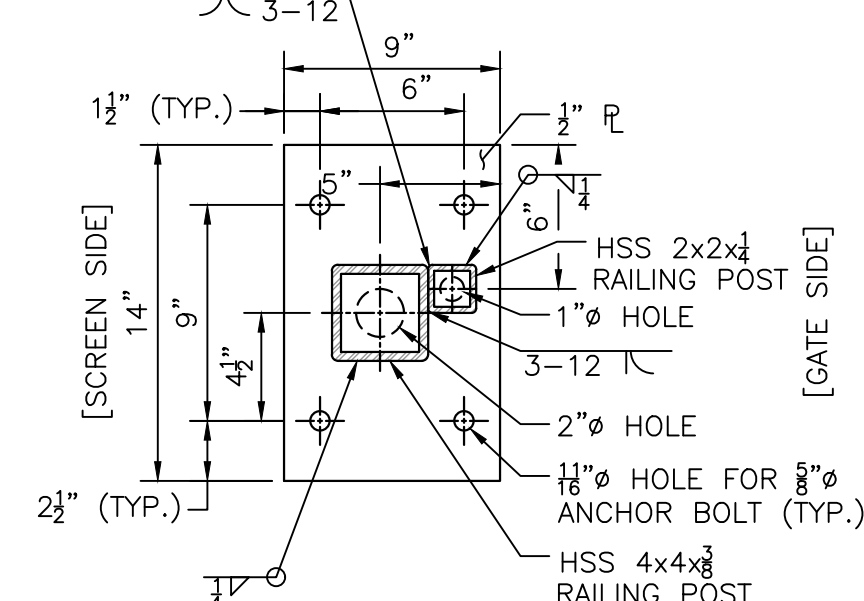
**[SECTION] [ELEVATION]**  
**RAIL UPPER CONNECTION**  
SCALE: 1 1/2" = 1'-0"



**[SECTION] [PLAN]**  
**RAIL LOWER CONNECTION**  
SCALE: 1 1/2" = 1'-0"

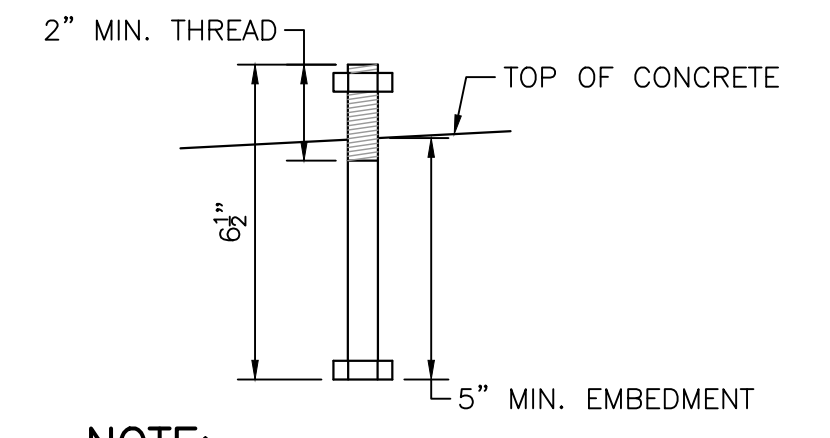


**[POSTS P1 TO P5]**



**[POST GP ONLY]**

**BASEPLATE DETAILS**  
SCALE: 1 1/2" = 1'-0"



**NOTE:**  
ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1554 GRADE 36.

**ANCHOR BOLT DETAIL**  
SCALE: 3" = 1'-0"

3/17/2023 1:48 PM - J:\7385 - FRAMINGHAM WRF IMPROVEMENTS\DRAWINGFILES\PLANS\SET(11) STEEL DETAILS 2.DWG (BETA STD.BW.CTB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: DW  
DESIGNED BY:  
CHECKED BY:



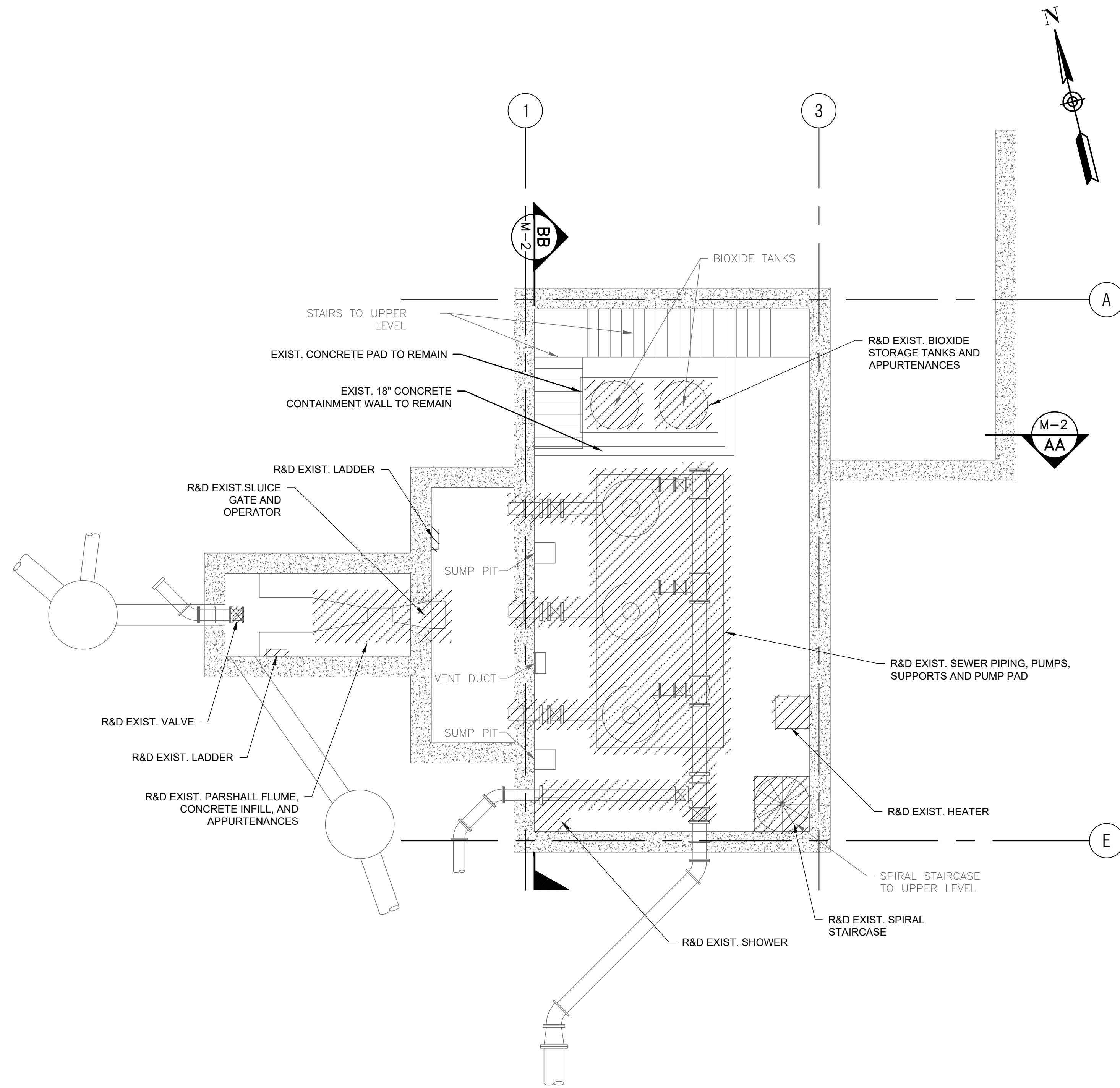
PREPARED BY:  
SUBCONSULTANT:

SCALE: AS SHOWN

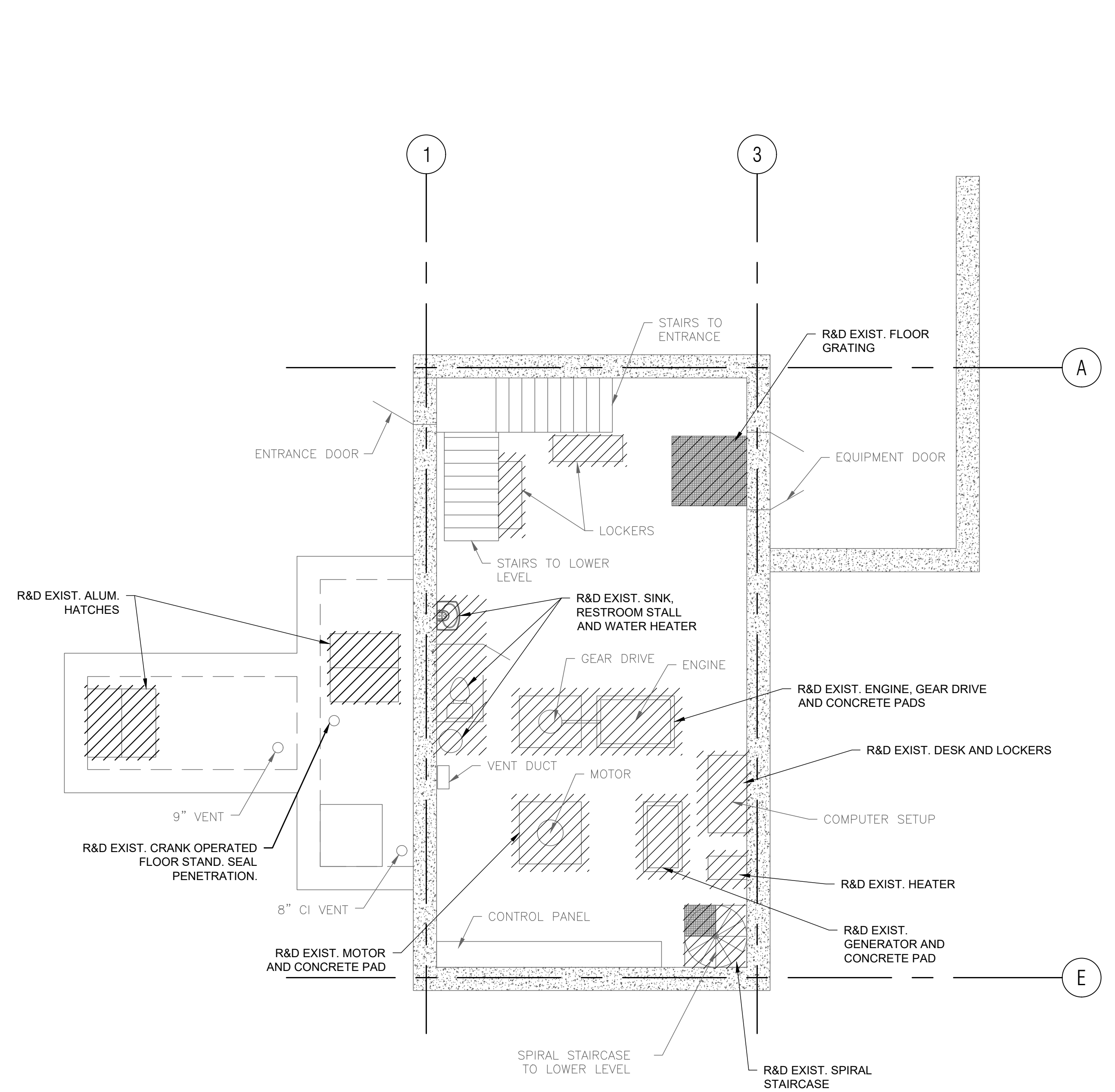
TITLE: **Worcester Road Sewer Pumping Station Replacement**  
**STEEL DETAILS (2 OF 2)**

BETA JOB NO. 7385  
ISSUE DATE: JANUARY 2023  
SHEET NO. S-12

3/1/2023 2:32 PM \\BETA-INC\COM\ENR\IRON\7385 - FRAMINGHAM WPFS IMPROVEMENTS\DRAWINGFILES\PLANS\SETM-1 - PROP DEMOLITION PLANS & SECTIONS.DWG (BETA STB BW STB)



**LOWER LEVEL - MECHANICAL PIPING PLAN - DEMOLITION**  
SCALE: 3/16" = 1'-0"



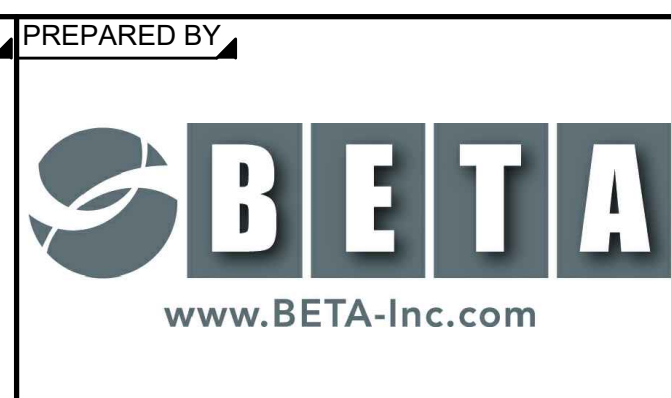
**UPPER LEVEL - MECHANICAL PIPING PLAN - DEMOLITION**  
SCALE: 3/16" = 1'-0"

**MECHANICAL DEMOLITION NOTES:**

1. REFER TO SPECIFICATION 02095 AND THE RISK BASED PCB BULK PRODUCT WASTE DISPOSAL PLAN IN APPENDIX G FOR REQUIREMENTS ASSOCIATED WITH PCBs.
2. REFER TO SPECIFICATION SECTION 02050.
3. DEMOLITION CANNOT BEGIN UNTIL THE TEMPORARY BYPASS SYSTEM HAS BEEN INSTALLED, STARTED UP, TESTED AND ACCEPTED BY THE OWNER/ENGINEER IN ACCORDANCE WITH SPECIFICATION SECTION 02149.
4. ALL DEMOLITION AND REMOVAL OF EXISTING STRUCTURES, UTILITIES, EQUIPMENT AND APPURTENANCES SHALL BE ACCOMPLISHED WITHOUT DAMAGING THE INTEGRITY OF THE EXISTING STRUCTURES TO REMAIN, UTILITIES, EQUIPMENT AND APPURTENANCES THAT ARE TO REMAIN. EQUIPMENT TO BE SALVAGED SHALL BE REMOVED AND DELIVERED BY THE CONTRACTOR TO AN AREA AT THE CITY OF FRAMINGHAM DPW, INDICATED BY THE ENGINEER.
5. ALL DEMOLITION MATERIAL INCLUDING CONCRETE, PIPE AND BRICK THAT WAS IN CONTACT WITH SEWAGE SHALL BE CLEANED IN ACCORDANCE WITH MASSDEP REQUIREMENTS AND DISPOSED OF ACCORDINGLY. ONCE CLEANED, DEMOLITION MATERIALS SHALL NOT BE CONSIDERED SPECIAL WASTE, UNLESS QUALIFIED AS SUCH BY OTHER CRITERIA.
6. MATERIALS TO BE REMOVED THAT ARE NOT DESIGNATED TO BE SALVAGED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED OFF-SITE AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE AND IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS, CONTRACT REQUIREMENTS, AND SPECIFICATION SECTION 02080.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE LEGAL AND PROPER DISPOSAL OF ALL DEMOLITION MATERIAL ACCORDING TO SECTION 02080 AND ANY RELEVANT LAWS OF THE CITY OF FRAMINGHAM AND STATE OF MASSACHUSETTS.
8. ADDITIONAL DEMOLITION WORK IS SHOWN ON THE CIVIL, STRUCTURAL, ARCHITECTURAL, HVAC, I&C, PLUMBING, AND ELECTRICAL DRAWINGS.
9. PLANS OF THE EXISTING FACILITY WERE BASED ON EXISTING DRAWINGS. THE DRAWINGS SHOW OVERALL DIMENSIONS OF THE STRUCTURES, AND THE LOCATION OF MAJOR EQUIPMENT AND PIPING. MISCELLANEOUS EQUIPMENT, PIPING, CONCRETE EQUIPMENT PADS, PIPE SUPPORTS AND MATERIALS ARE NOT NECESSARILY SHOWN BUT MAY BE INCLUDED IN THE DEMOLITION. THE CONTRACTOR SHALL INSPECT FACILITY DURING THE BIDDING PHASE OF THE PROJECT TO FAMILIARIZE THEMSELVES WITH THE EXTENT OF THE DEMOLITION WORK REQUIRED.

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	RTG
DESIGNED BY:	AJG
CHECKED BY:	JRD



REGISTERED PROFESSIONAL	PREPARED BY	SUBCONSULTANT

SCALE	TITLE
AS SHOWN	

**Worcester Road Sewer Pumping Station Replacement**

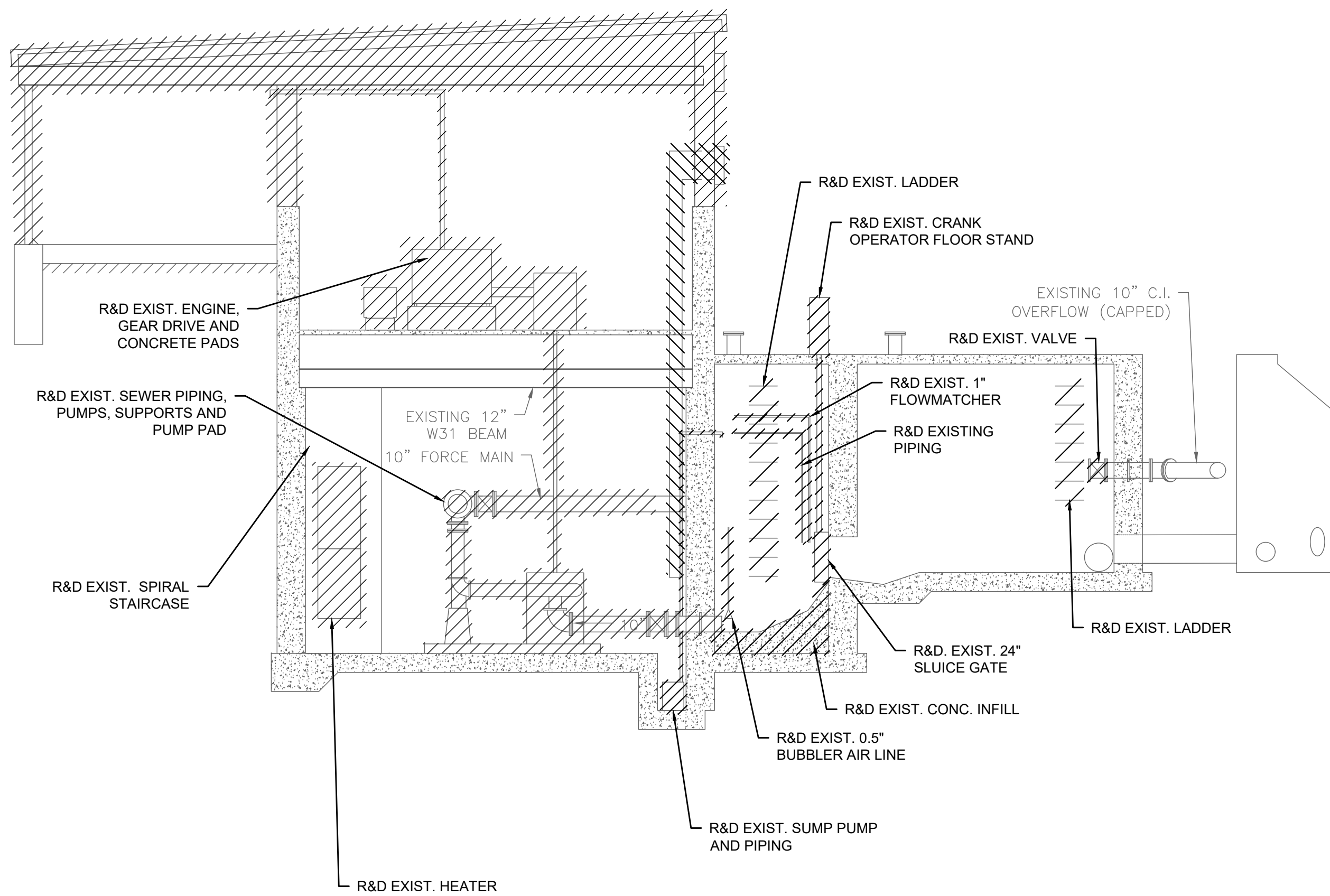
**DEMOLITION PLANS**

BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	M-1

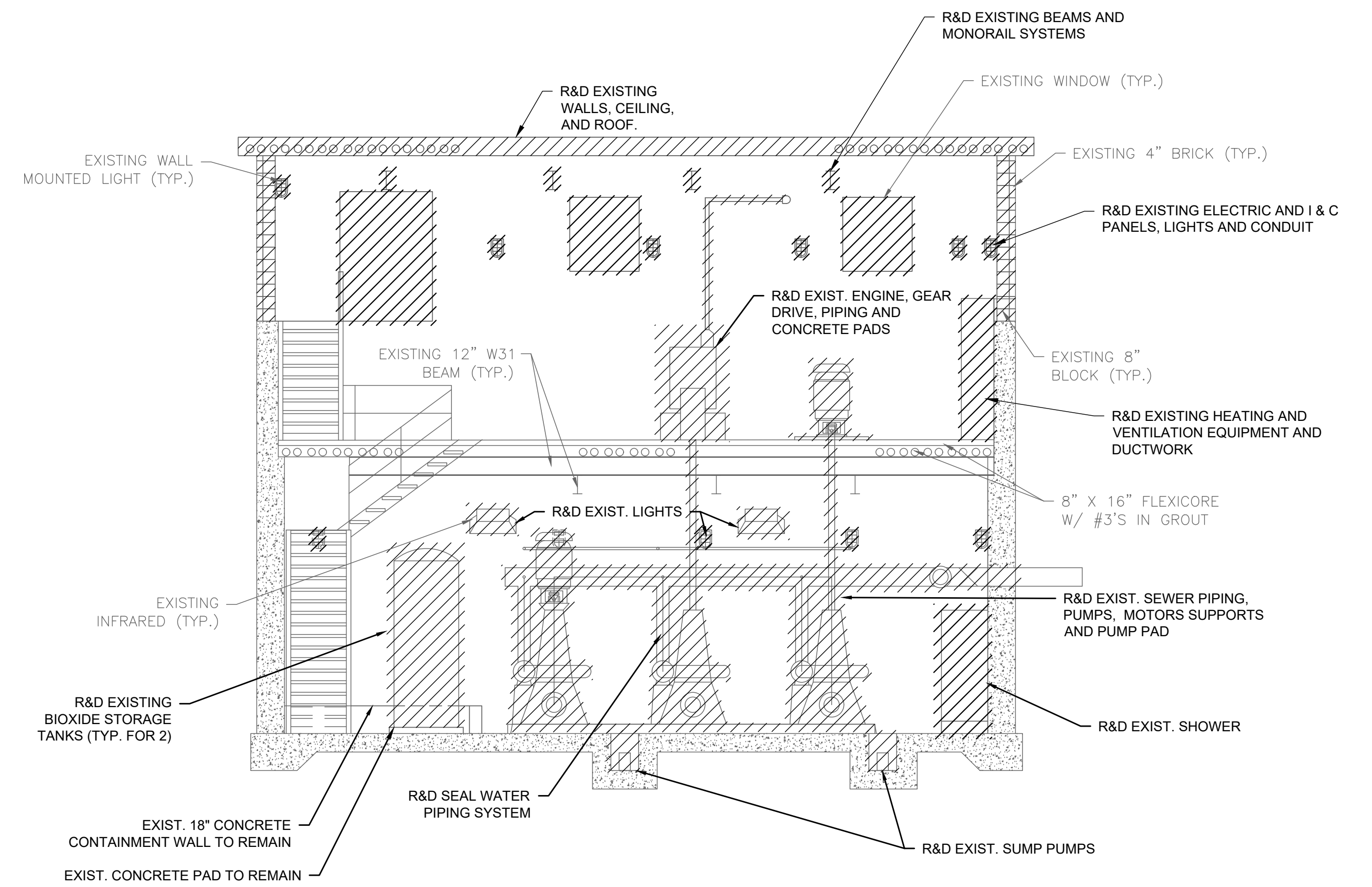
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION



3/1/2023 2:32 PM \\BETA-INC.COM\IRIEN\IRON\7385 - FRAMINGHAM WRPS IMPROVEMENTS\DRAWING\FILES\PLANS\SETM-1 - PROP DEMOLITION PLANS & SECTIONS.DWG (BETA STB.BW.STB)



**SECTION A-A - DEMOLITION**  
SCALE: 3/16" = 1'-0"



**SECTION B-B - DEMOLITION**  
SCALE: 3/16" = 1'-0"

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	RTG
DESIGNED BY:	AJG
CHECKED BY:	JRD



SUBCONSULTANT	
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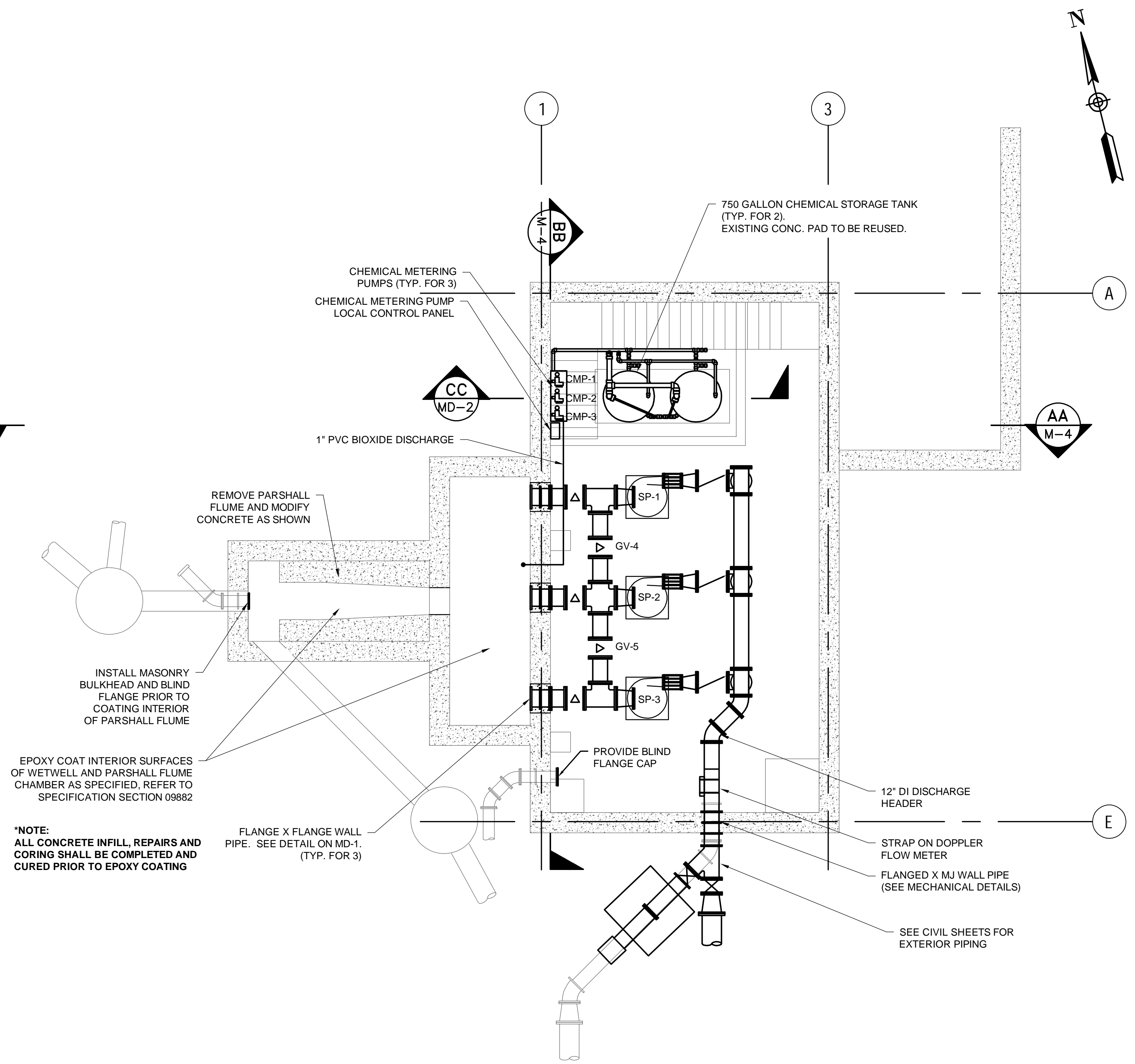
SCALE	AS SHOWN
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TITLE	<b>Worcester Road Sewer Pumping Station Replacement</b>
	DEMOLITION SECTIONS

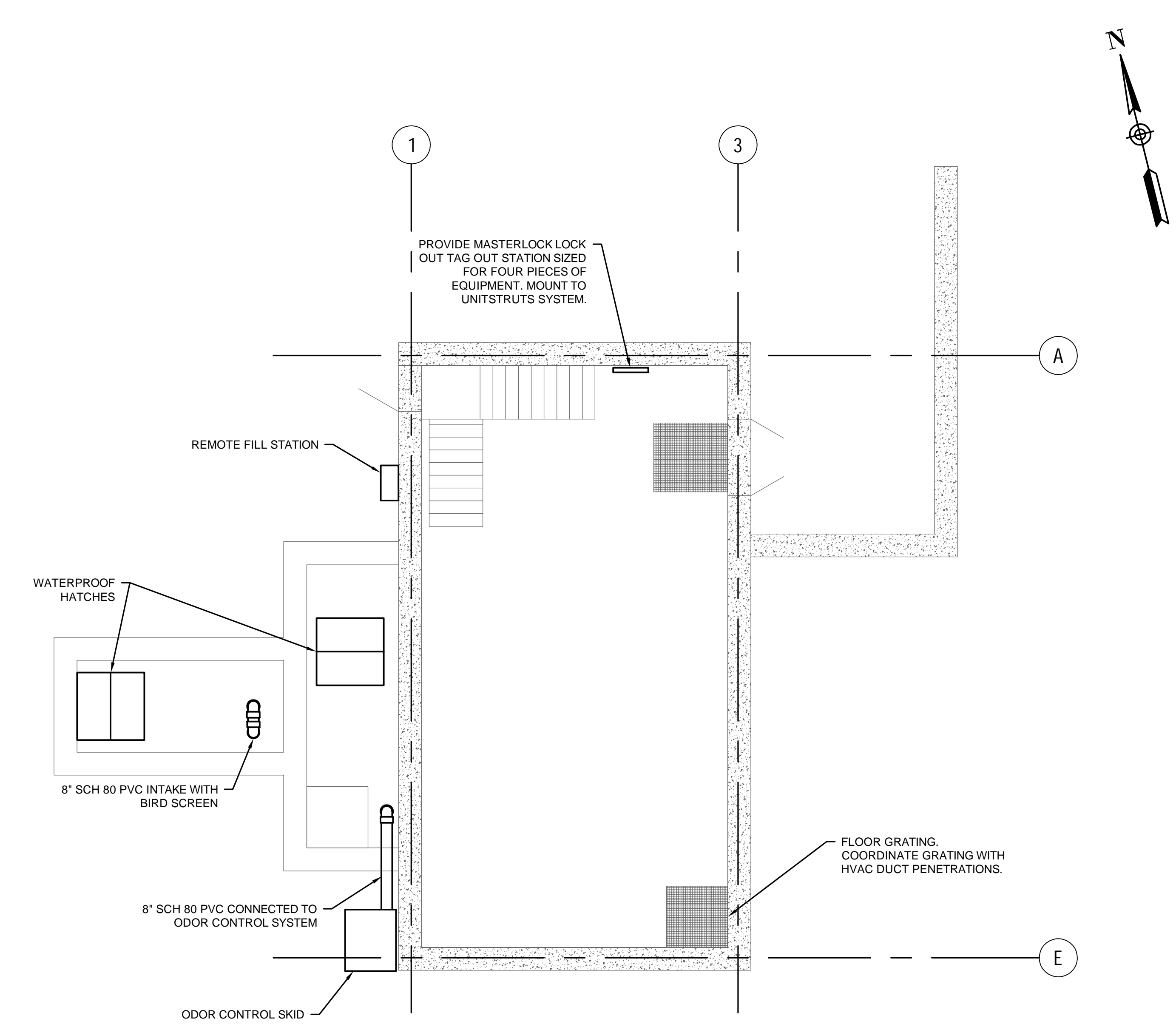
BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	M-2

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

3/6/2023 9:19 AM \\BETA-INC.COM\PROJECTS\WIP\7385 - FRAMINGHAM WRRPS IMPROVEMENTS\DRAWINGFILES\PLANS\M-3 - PROP MECHANICAL PLANS & SECTIONS.DWG (BETA STB BW.STB)

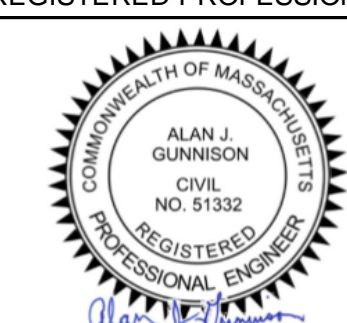



**LOWER LEVEL - MECHANICAL PIPING PLAN - PROPOSED**  
SCALE: 3/16" = 1'-0"



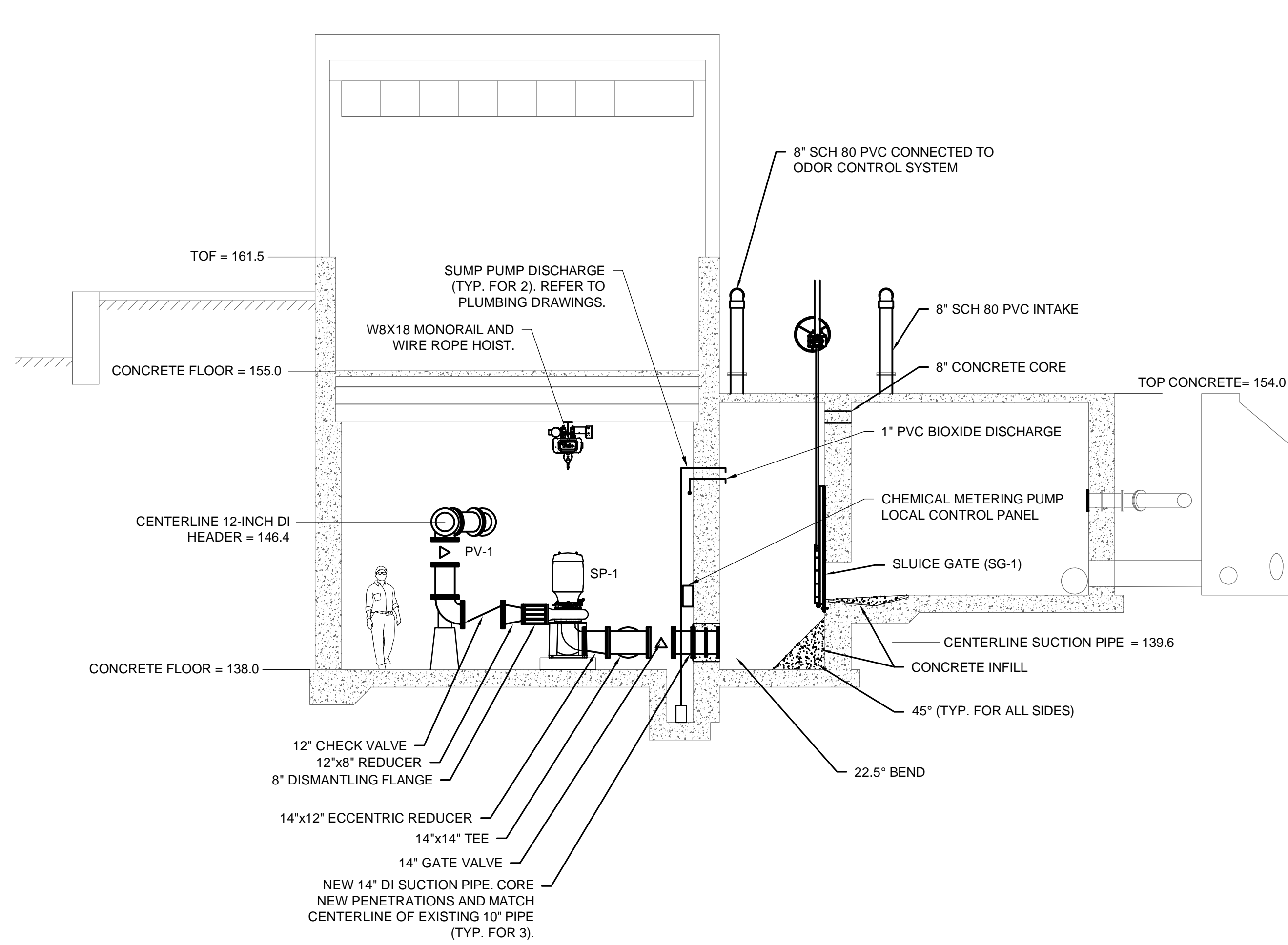
**UPPER LEVEL - MECHANICAL PIPING PLAN - PROPOSED**  
SCALE: 3/16" = 1'-0"

**PCB NOTES:**  
1. REFER TO SPECIFICATION Q2095 AND THE RISK BASED PCB BULK PRODUCT WASTE DISPOSAL PLAN IN APPENDIX G FOR REQUIREMENTS ASSOCIATED WITH PCBs.

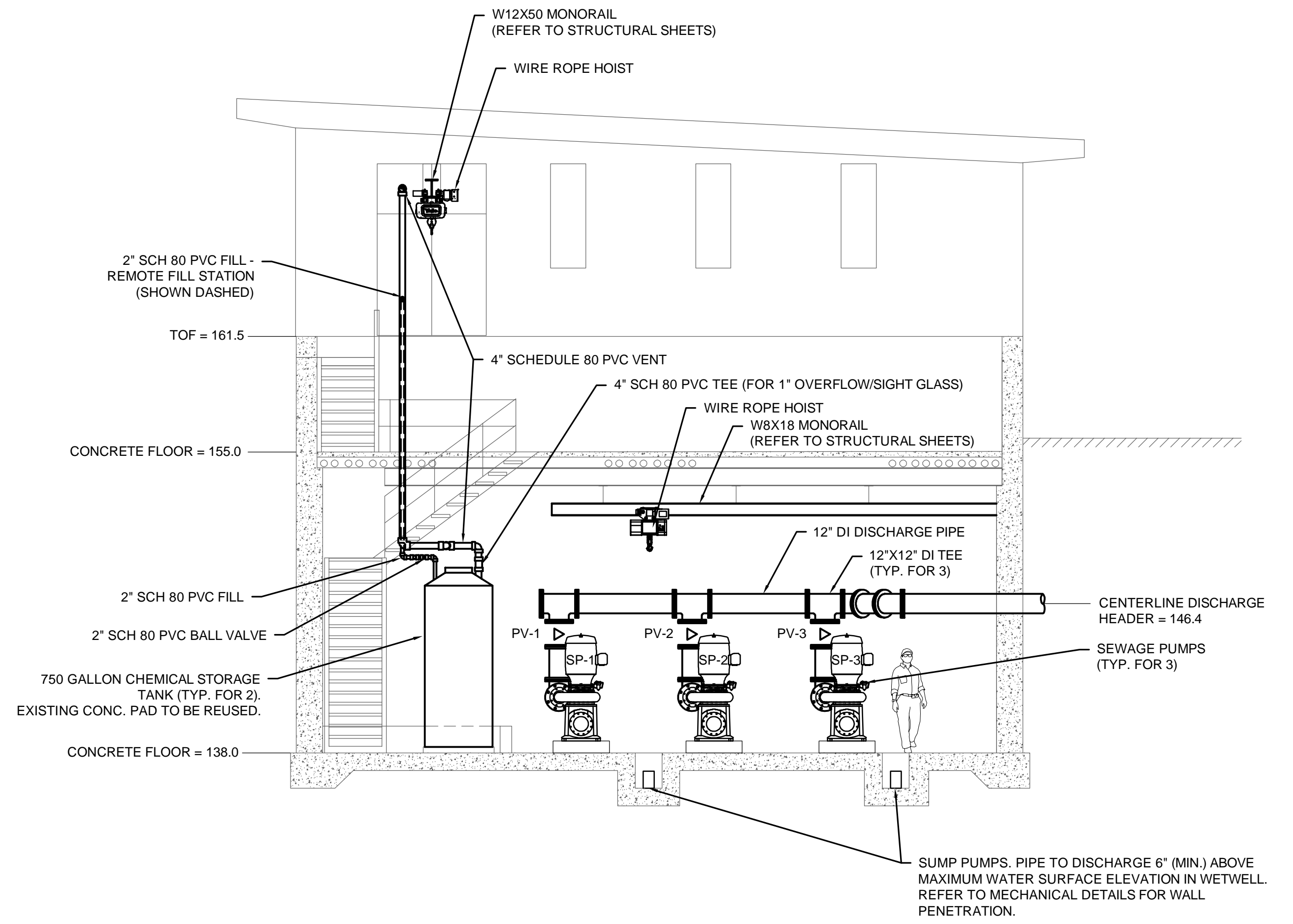
				DRAWN BY: RTG DESIGNED BY: AJG CHECKED BY: JRD	REGISTERED PROFESSIONAL  PREPARED BY:  www.BETA-Inc.com	SUBCONSULTANT	SCALE: AS SHOWN	TITLE: <b>Worcester Road Sewer Pumping Station Replacement</b>  PROPOSED PLANS	BETA JOB NO. 7385 ISSUE DATE JANUARY 2023 SHEET NO. <b>M-3</b>
NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS					

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3/6/2023 9:19 AM \\BETA-INC.COM\IRIEN\IRON\7385 - FRAMINGHAM WRFPS IMPROVEMENTS\DRAWINGFILES\PLANS\SETM-3 - PROP MECHANICAL PLANS & SECTIONS.DWG (BETA STB BW STB)



**SECTION A-A - PROPOSED**  
SCALE: 3/16" = 1'-0"



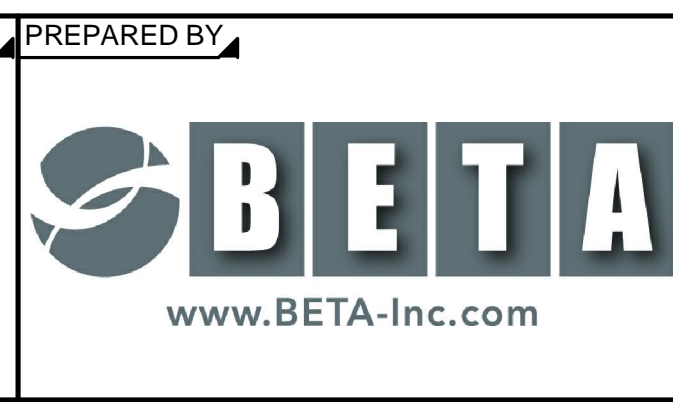
**SECTION B-B - PROPOSED**  
SCALE: 3/16" = 1'-0"

**PCB NOTES:**

- REFER TO SPECIFICATION 02095 AND THE RISK BASED PCB BULK PRODUCT WASTE DISPOSAL PLAN IN APPENDIX G FOR REQUIREMENTS ASSOCIATED WITH PCBs.

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	RTG
DESIGNED BY:	AJG
CHECKED BY:	JRD



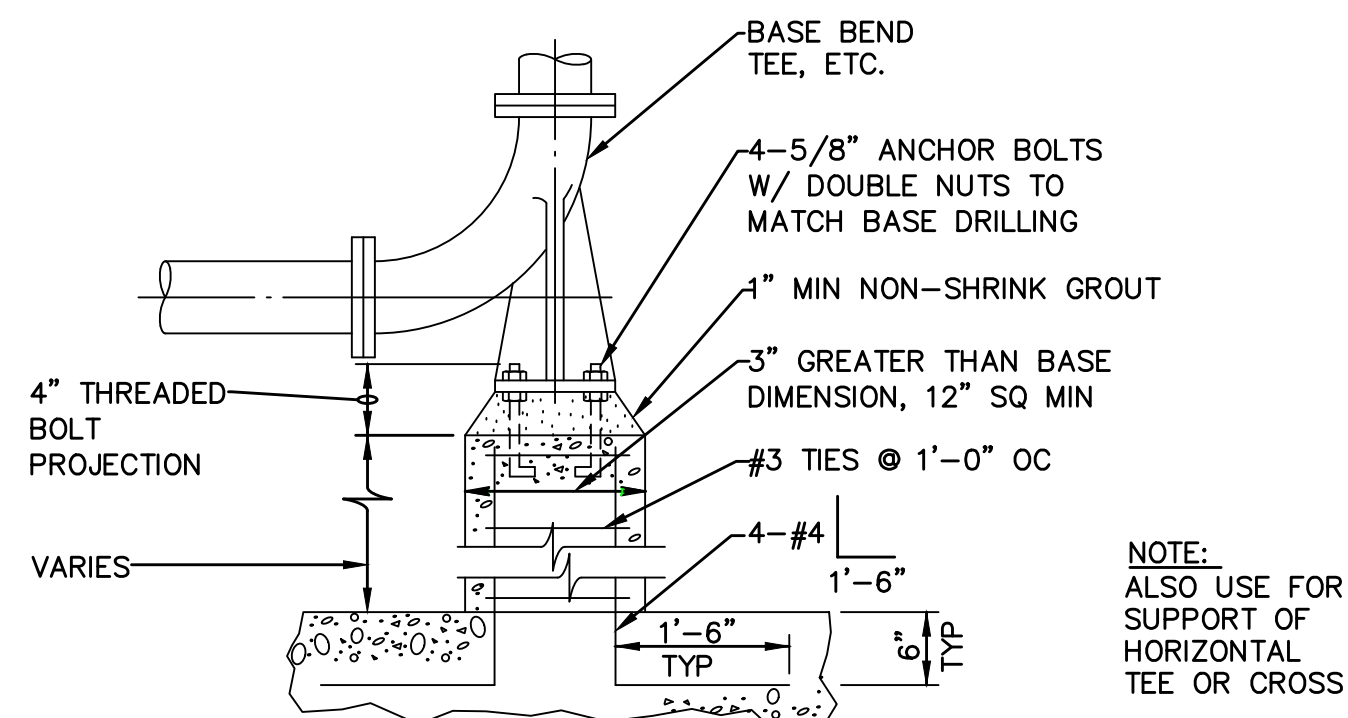
REGISTERED PROFESSIONAL  
PREPARED BY  
SUBCONSULTANT

SCALE  
AS SHOWN

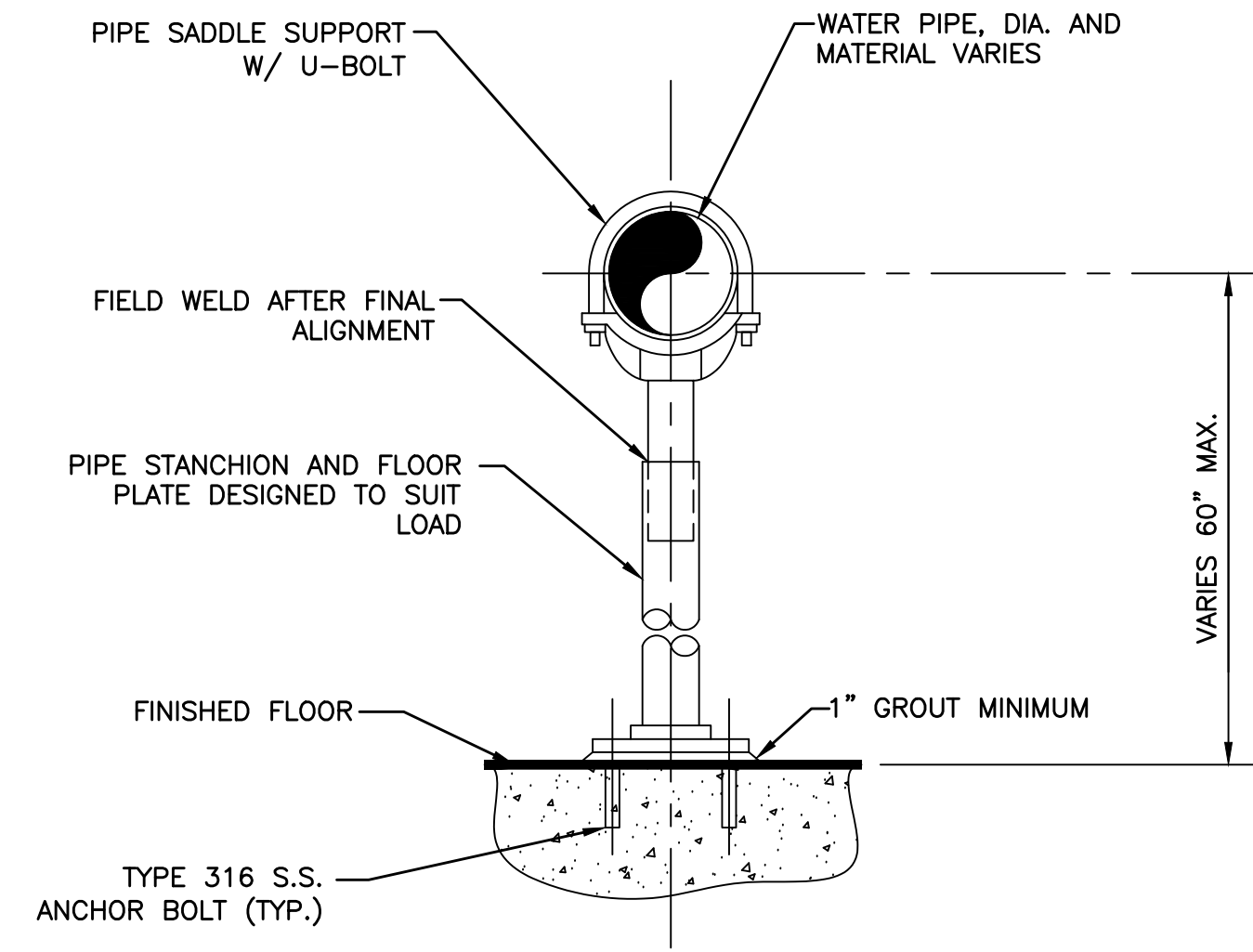
TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
PROPOSED SECTIONS

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. M-4

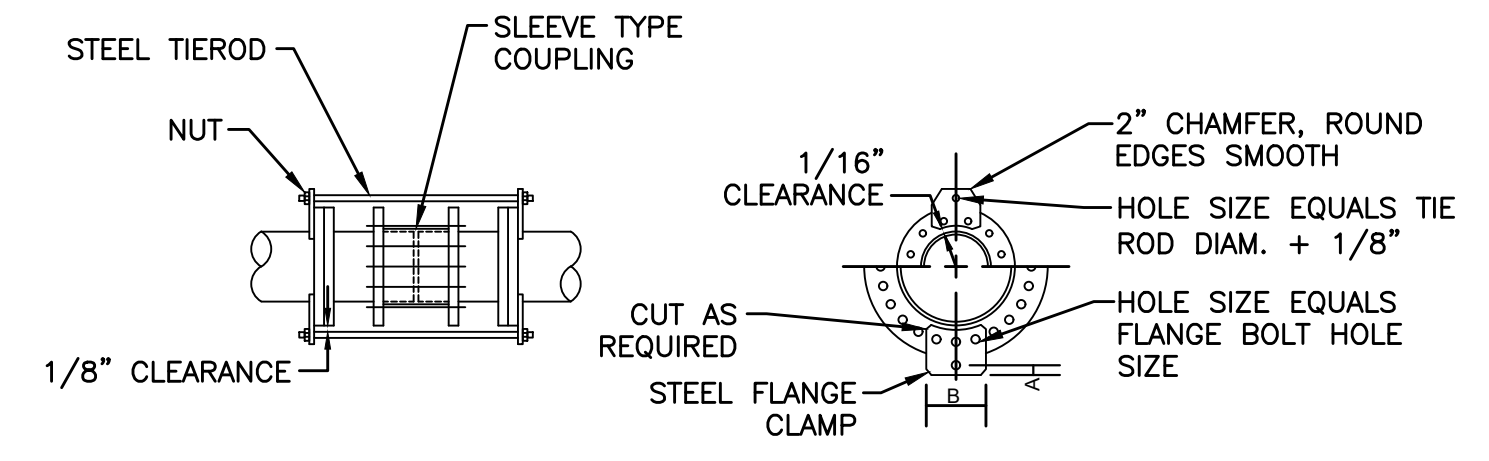
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION



NOTE:  
ALSO USE FOR  
SUPPORT OF  
HORIZONTAL  
TEE OR CROSS

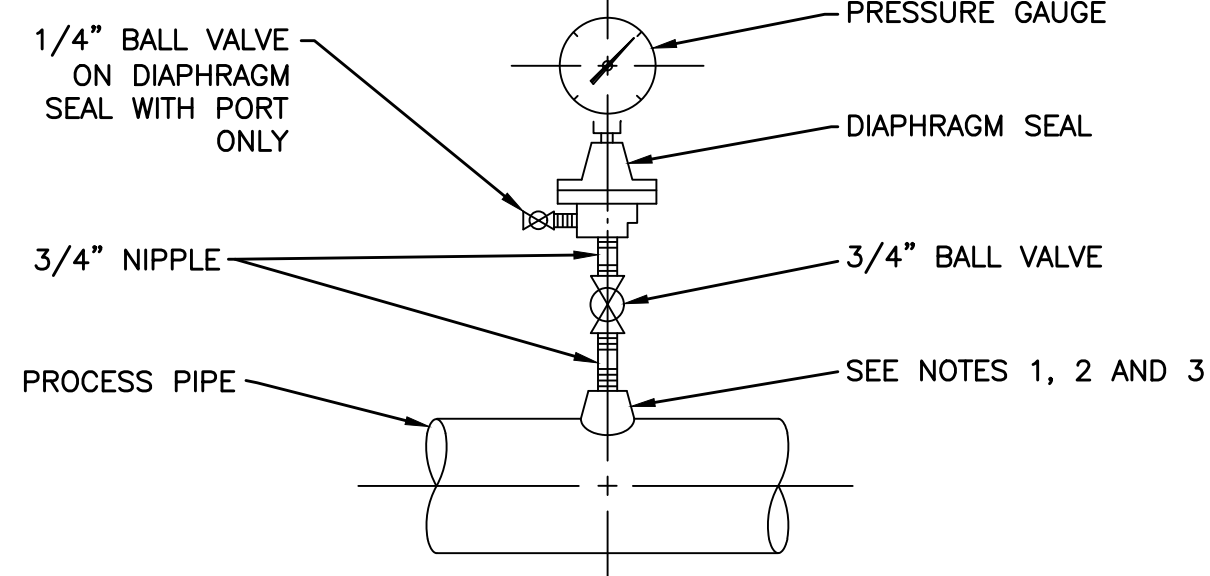
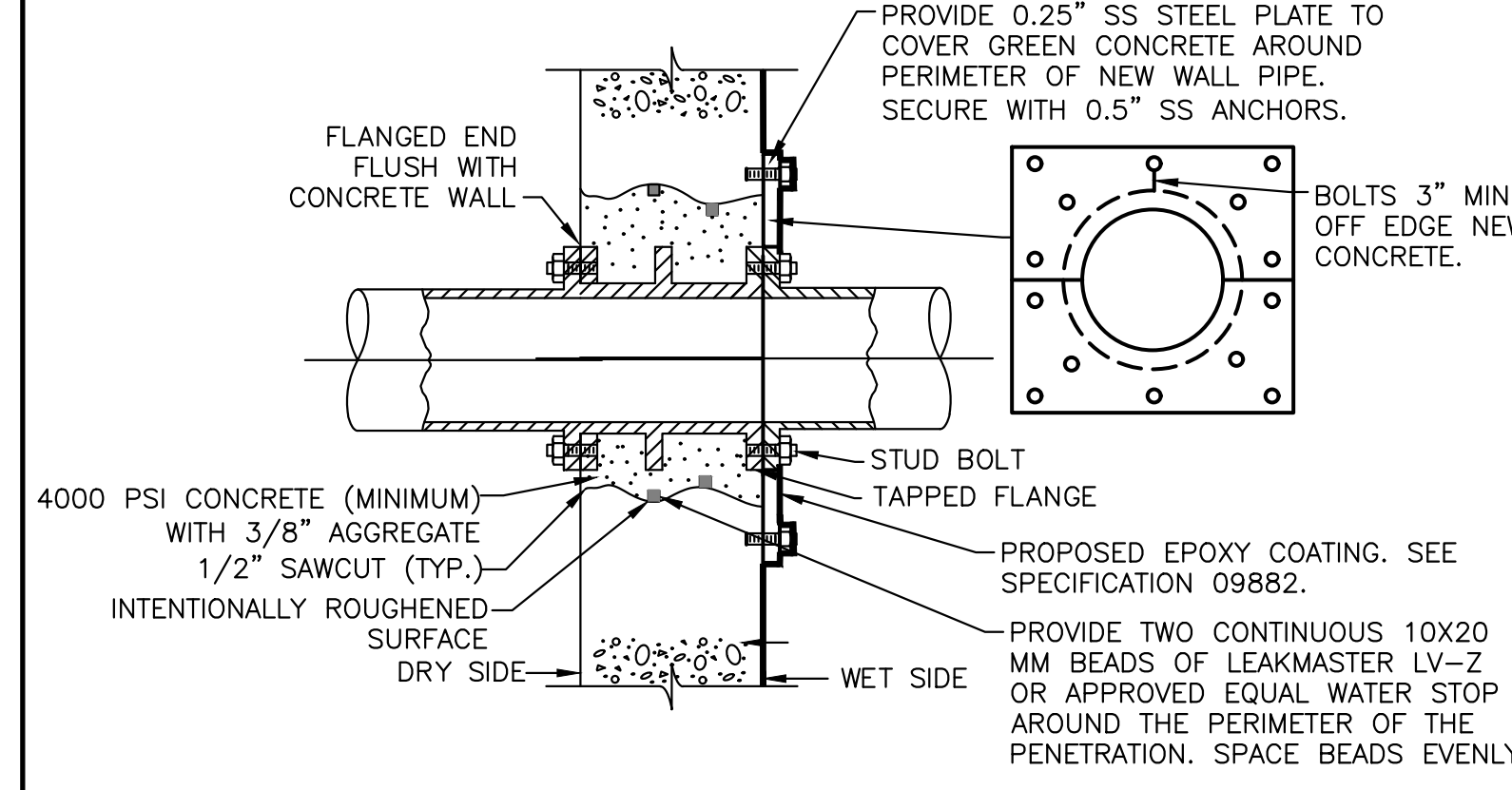


- NOTES:
1. PROVIDE HALF-ROUND RIGID INSULATION WAND INSULATION SHIELD FOR INSULATED PIPING.
  2. PROVIDE NEOPRENE ISOLATION PAD UNDER SUPPORT FOOT FOR ISOLATED PIPING OR WHEN SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.

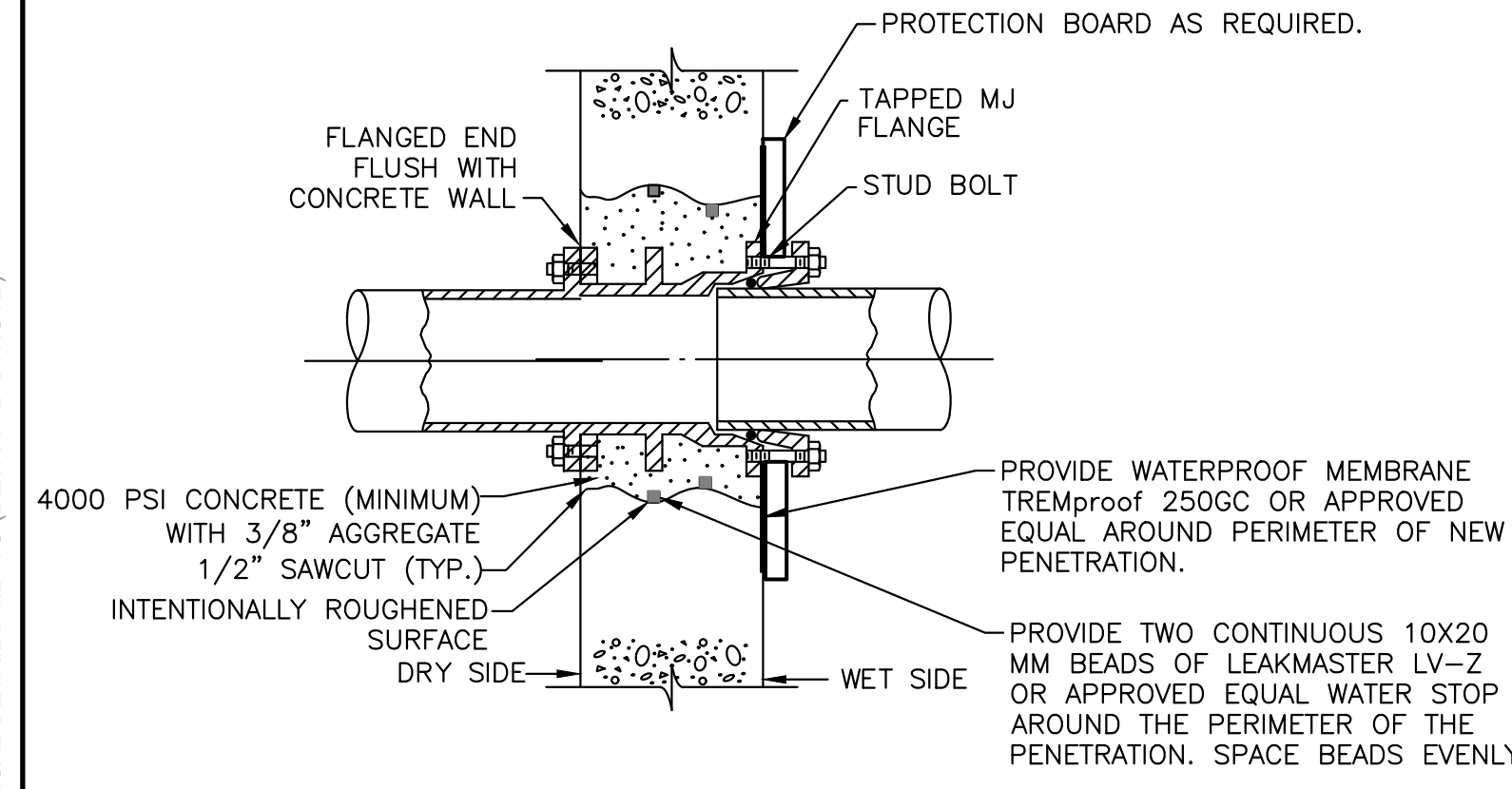
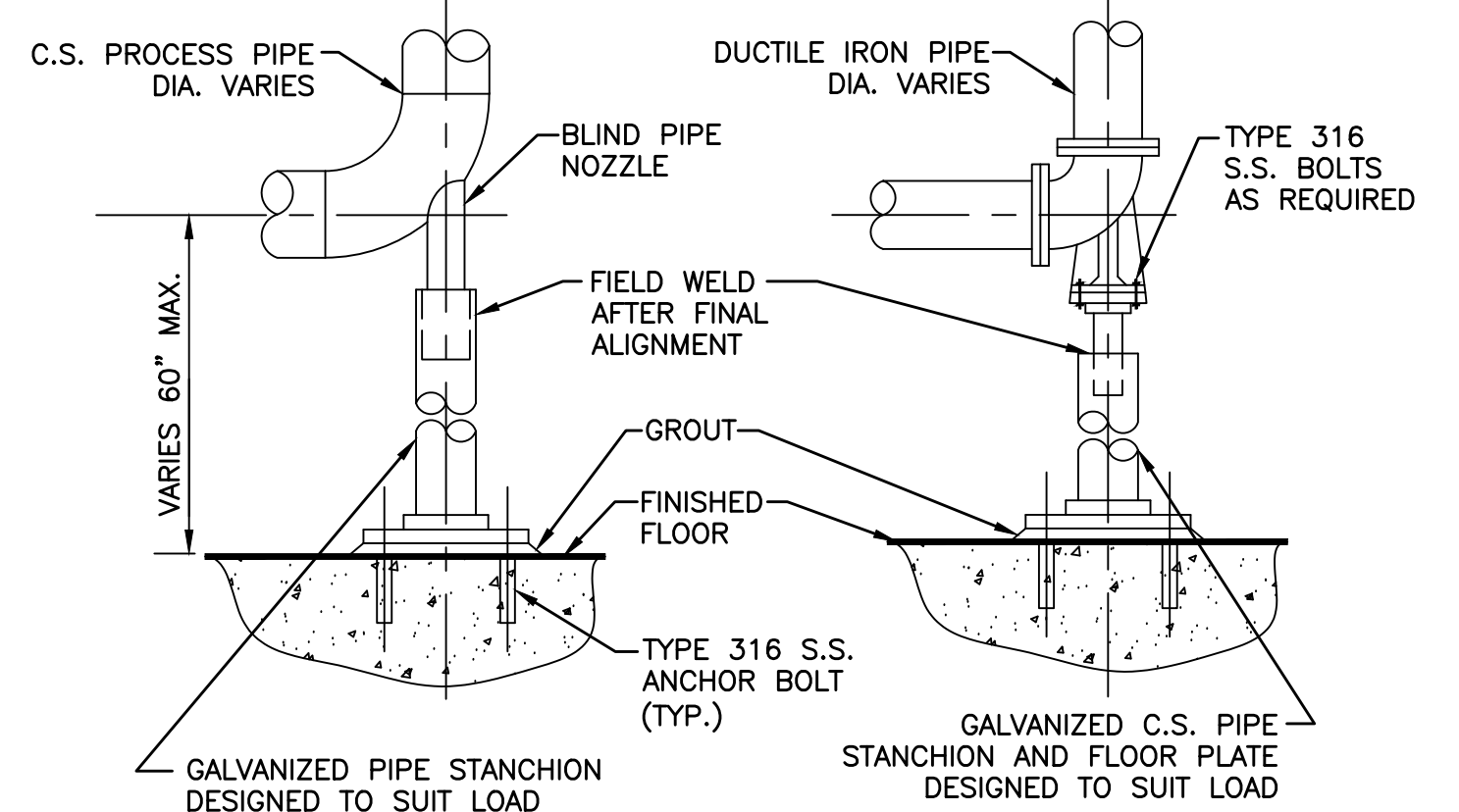


NOTE: TIERODS SHALL BE EQUALLY SPACED AROUND PIPE.

PIPE SIZE	TIE RODS		FLANGE CLAMP			
	NO.	DIA.	THICKNESS	NO. OF FLANGE BOLTS PER CLAMP	"A"	"B"
6"	2	1/2"	1/2"	2	2"	7-3/4"
8"	2	5/8"	1/2"	2	2"	8-5/8"
10"	2	3/4"	1/2"	2	2"	7-3/4"
12"	2	1"	1/2"	2	2"	8-1/2"
14"	2	1-1/8"	3/4"	2	2"	9"
16"	2	1-1/4"	7/8"	3	2"	12-1/4"
18"	2	1-3/8"	7/8"	3	2-1/2"	13"
20"	3	1-3/8"	1"	2	2-1/2"	8"
24"	4	1-3/8"	1"	2	2-1/2"	8-3/4"
30"	4	1-3/4"	1"	3	2-1/2"	12-1/4"
36"	6	1-3/4"	1-1/4"	3	2-1/2"	8-1/2"
42"	6	1-3/4"	1-1/4"	3	2-1/2"	12-3/4"
48"	8	1-3/4"	1-1/4"	3	2-1/2"	12-1/2"



- NOTES:
1. FOR STEEL, GALVANIZED STEEL, AND PVC 2 1/2" AND SMALLER USE A BUSHING IN A TEE. FOR DUCTILE IRON AND FIBERGLASS REINFORCED PLASTIC PIPE.
  2. ALL SIZES, USE PIPE SADDLE WITH BUSHING.
  3. FOR STEEL AND STAINLESS STEEL PIPES 3" AND LARGER, AND PRESSURE VESSELS, USE THRED-O-LET AS SHOWN.
  4. PROVIDE SNUBBER FOR POSITIVE DISPLACEMENT PUMP INSTALLATIONS.



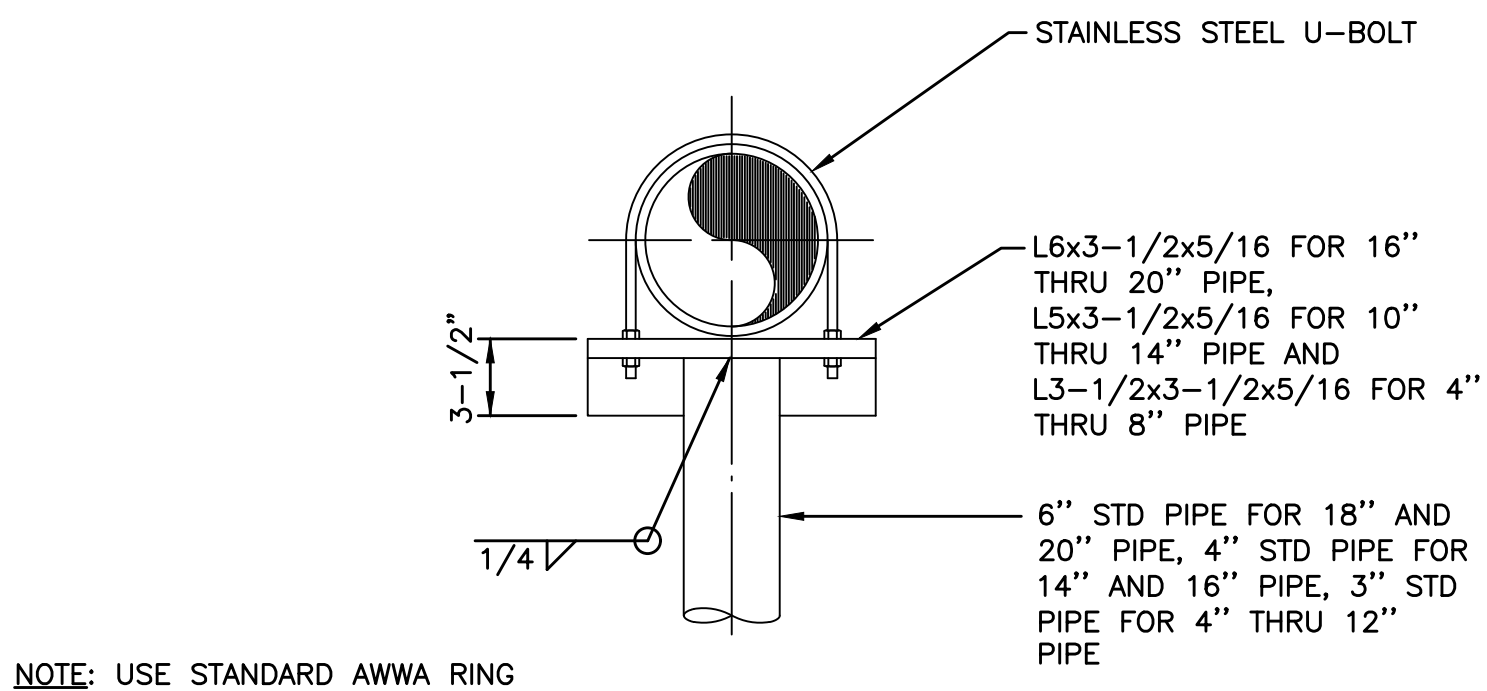
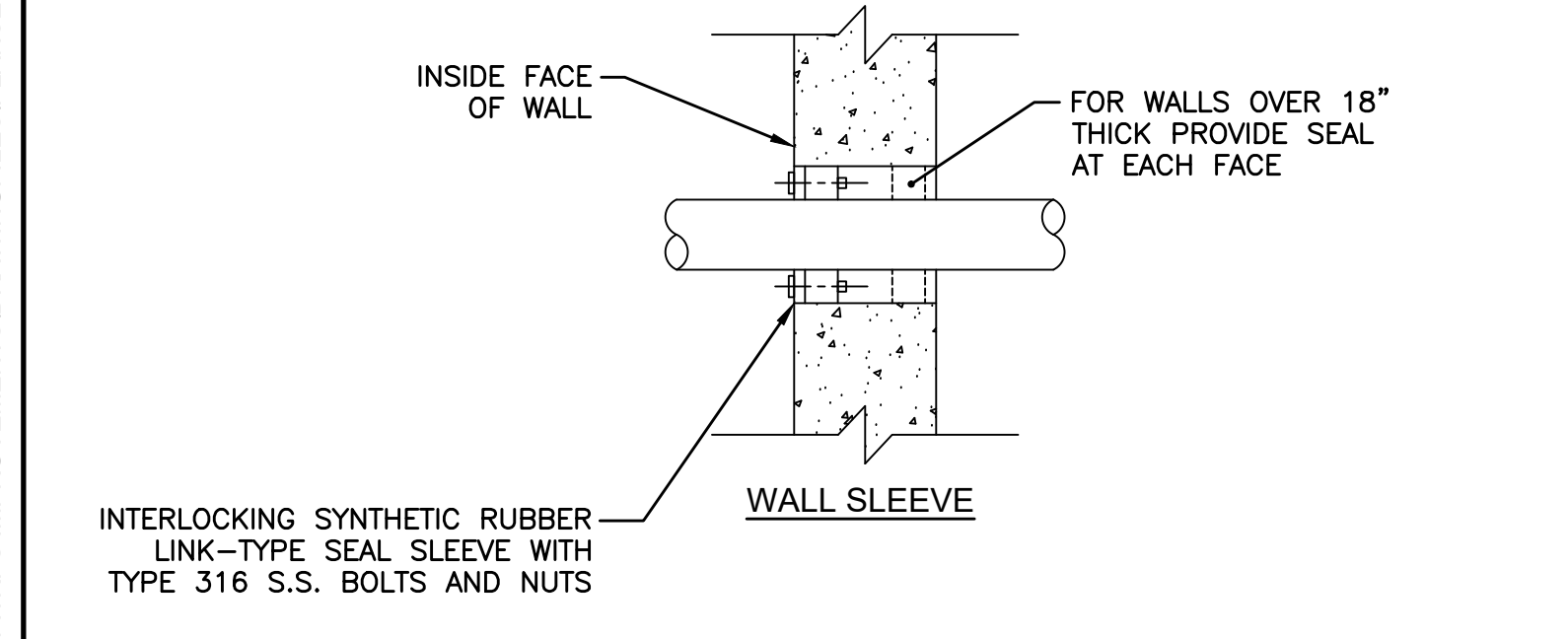
PUMP TAG	PUMP CONFIGURATION	NO. REQUIRED	CAPACITY		MOTOR		DISCHARGE SIZE (IN)	TYPE	MINIMUM EFFICIENCY AT DESIGN POINT (%)	SHUT OFF HEAD (FT)
			FLOW (GPM)	TDH (FT)	POWER (HP)	PUMP SPEED (RPM)				
SP-1 SP-2 SP-3	SINGLE PUMP OPERATION	3	2,700 PER PUMP	54 FT	75 HP	1170 RPM	8-INCH	DRY PIT IMMERSIBLE SOLIDS HANDLING	68%	99 FT

PUMP TAG	NO. REQUIRED	FLUID PROPERTIES			RATED CAPACITY (GPH)	RATED PRESSURE (PSIG)	MOTOR SPEED (RPM)	NPSHA	POWER (VDC)
		FLUID	SPECIFIC GRAVITY	TEMPERATURE RANGE (°F)					
CMP-1 CMP-2 CMP-3	3	CALCIUM NITRATE SOLUTION (TRADE NAME - BIOXIDE)	1.49	55-95°F	6.2 PER PUMP	100 PSI	1750 RPM	3 PSI	90 DC

VALVE TAG	NO. REQUIRED	VALVE TYPE	SIZE	MATERIAL	ACTUATOR	LOCATION	CONNECTION
CV-1 TO CV-3	3	SWING CHECK	12"	CAST IRON	WEIGHTED LEVER	LOWER LEVEL	FL X FL
PV-1S TO PV-5S	5	PLUG VALVE	14"	CAST IRON	MANUAL	LOWER LEVEL	FL X FL
PV-1D TO PV-3D	3	PLUG VALVE	12"	CAST IRON	CHAIN WHEEL	LOWER LEVEL	FL X FL

GATE TAG	TYPE	GATE WIDTH (IN)	GATE HEIGHT (IN)	GATE MATERIAL	MOUNTING TYPE	OPERATOR	OPENING INVERT ELEV. (FT)	OPERATING FLOOR ELEV. (FT)
SG-1	SELF CONTAINED RISING STEM	28	28	316 SS	WALL MOUNTED	HAND	142.3+/-	154.0+/-

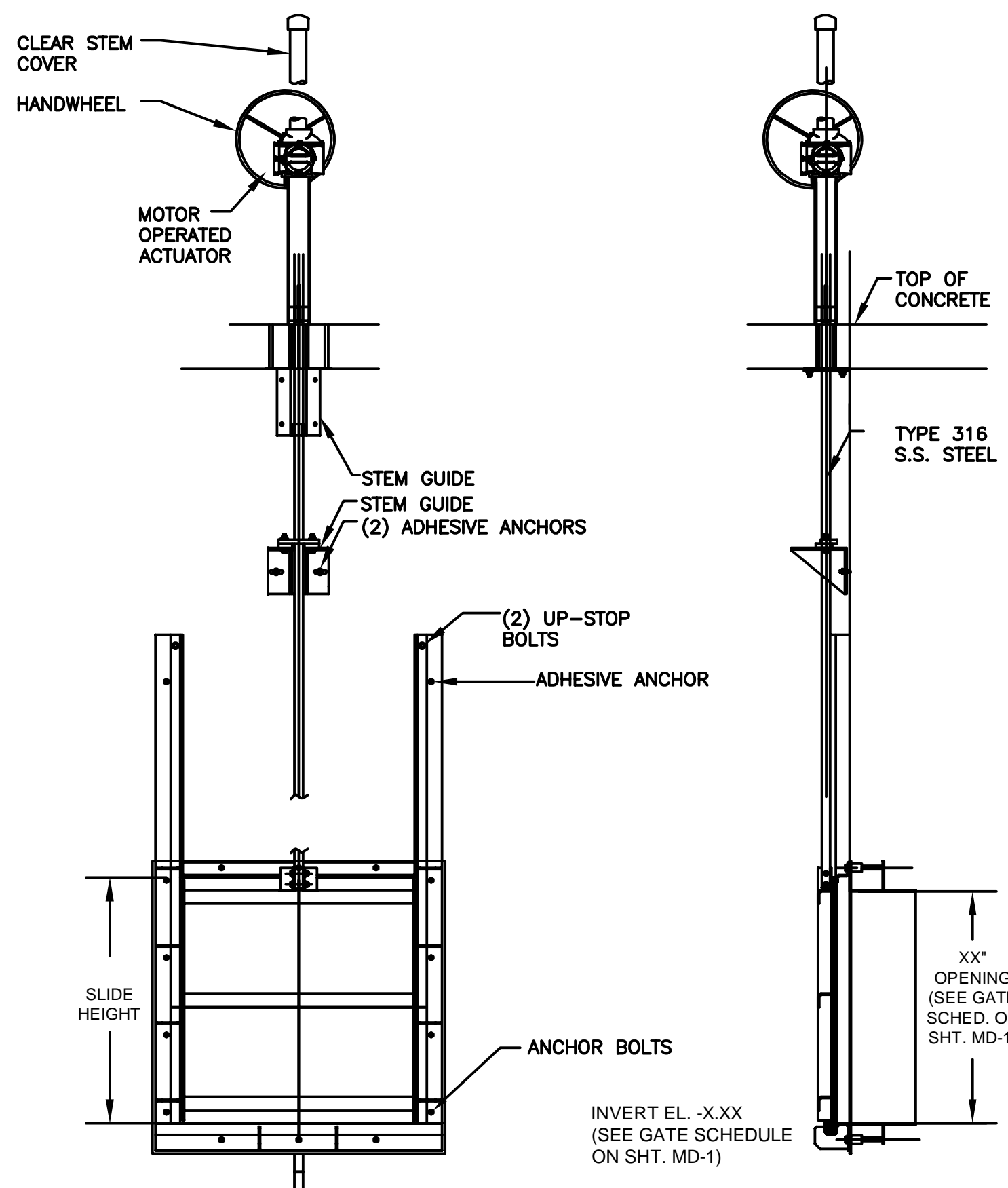
PUMP, VALVE, & GATE SCHEDULE  
SCALE: NONE



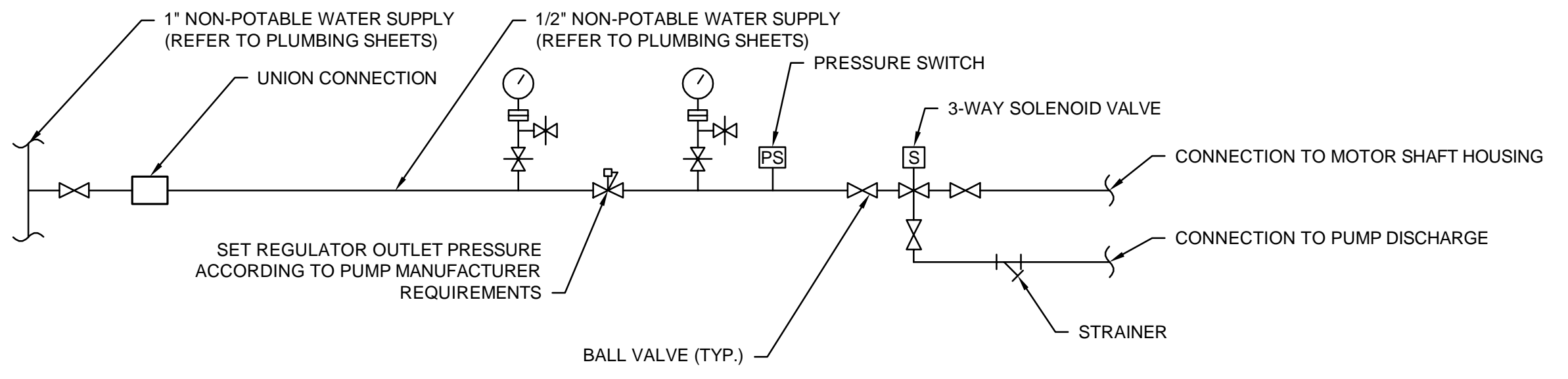
NOTE: USE STANDARD AWWA RING FLANGE FOR BASE.

DRAWN BY: PAN	REGISTERED PROFESSIONAL	PREPARED BY: 	SUBCONSULTANT	SCALE: AS SHOWN	TITLE: Worcester Road Sewer Pumping Station Replacement MECHANICAL DETAILS - 1	BETA JOB NO.: 7385
DESIGNED BY: AJG						ISSUE DATE: JANUARY 2023
CHECKED BY: JRD						SHEET NO.: MD-1

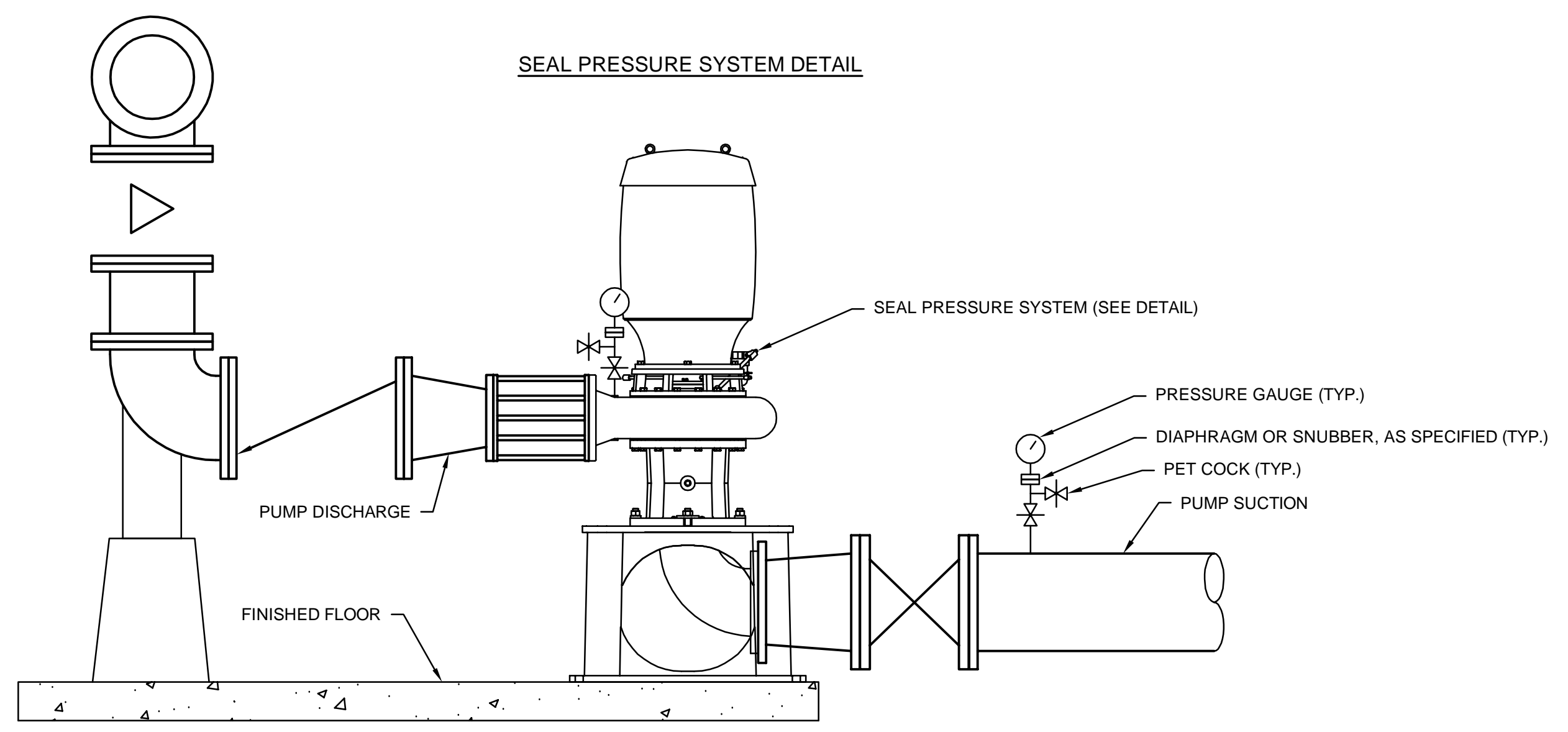
3/1/2023 1:44 PM J:\7385 - FRAMINGHAM WRFPS IMPROVEMENTS\DRAWINGFILES\PLANS\MD-1 - MECHANICAL DETAILS 1.DWG (BETA STD BW.CTB)



**SLUICE GATE**  
SCALE: NONE



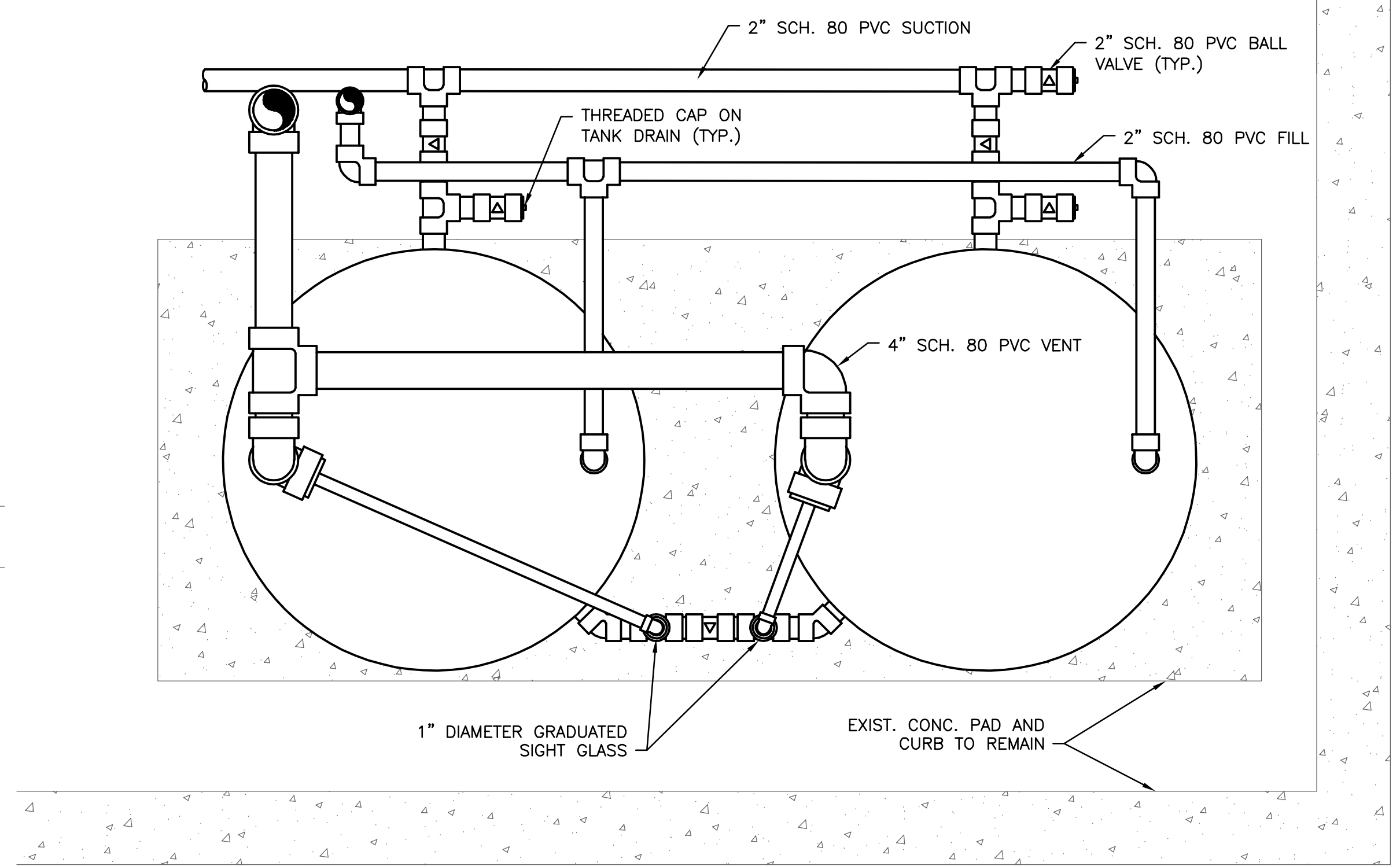
**SEAL PRESSURE SYSTEM DETAIL**



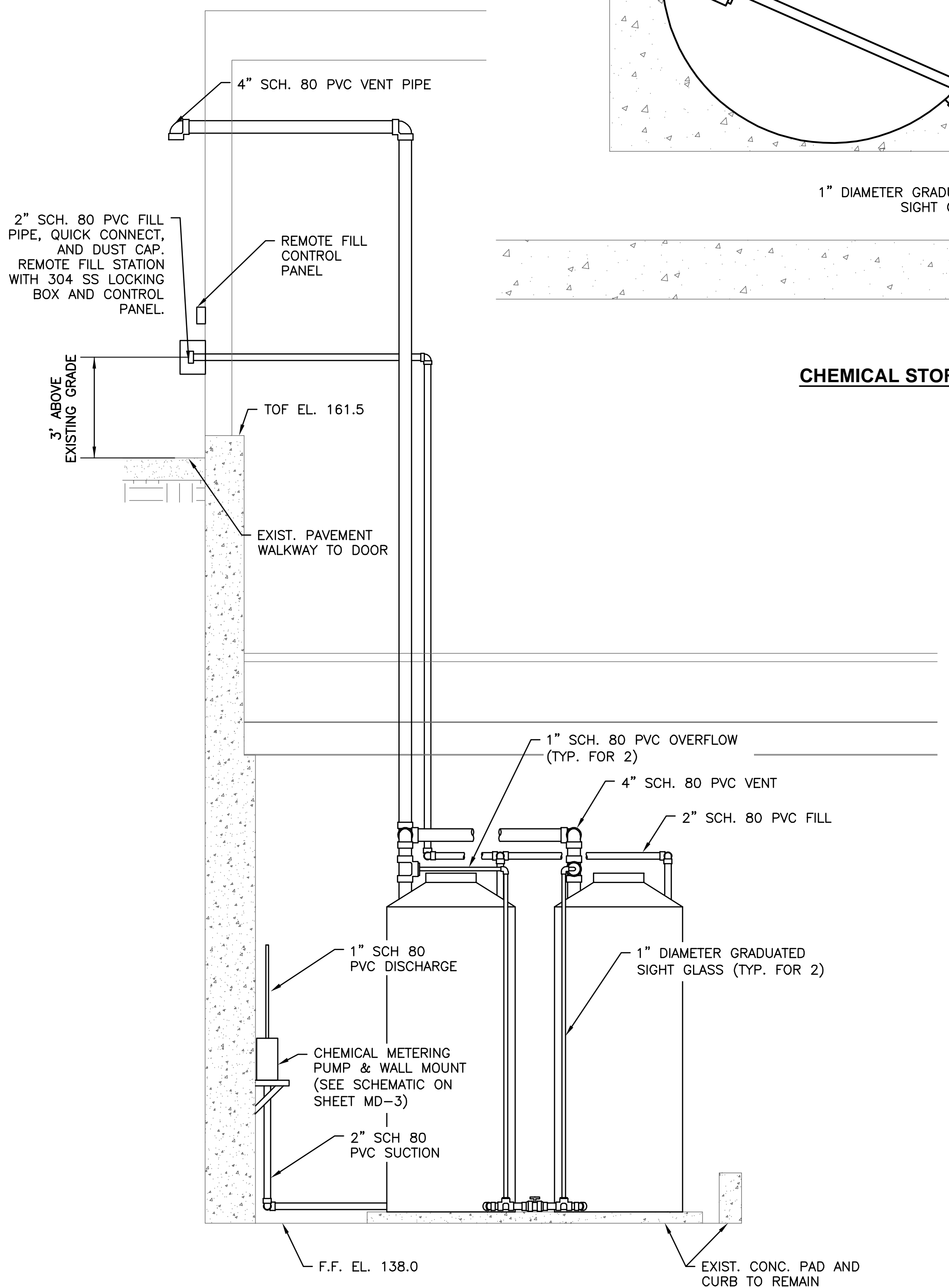
NOTE: PROVIDE UNION CONNECTIONS AT CEILING AND PUMP FOR REMOVAL OF NON-POTABLE SEAL WATER PIPING WHEN REQUIRED.

**PUMP SECTION**

**TYPICAL WATER SEALED PUMP MISCELLANEOUS CONNECTIONS**  
SCALE: NONE



**CHEMICAL STORAGE TANKS - PROPOSED PLAN**  
SCALE: NONE



**SECTION C-C - PROPOSED**  
SCALE: 3/8" = 1'-0"

3/2/2023 4:39 PM J:\7385 - FRAMINGHAM WRRS IMPROVEMENTS\DRAWINGFILES\PLANS\SET\MD-1 - MECHANICAL DETAILS 1.DWG (BETA STB BY STB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	PAN
DESIGNED BY:	AJG
CHECKED BY:	JRD



REGISTERED PROFESSIONAL	PREPARED BY	SUBCONSULTANT	SCALE	TITLE
			AS SHOWN	Worcester Road Sewer Pumping Station Replacement

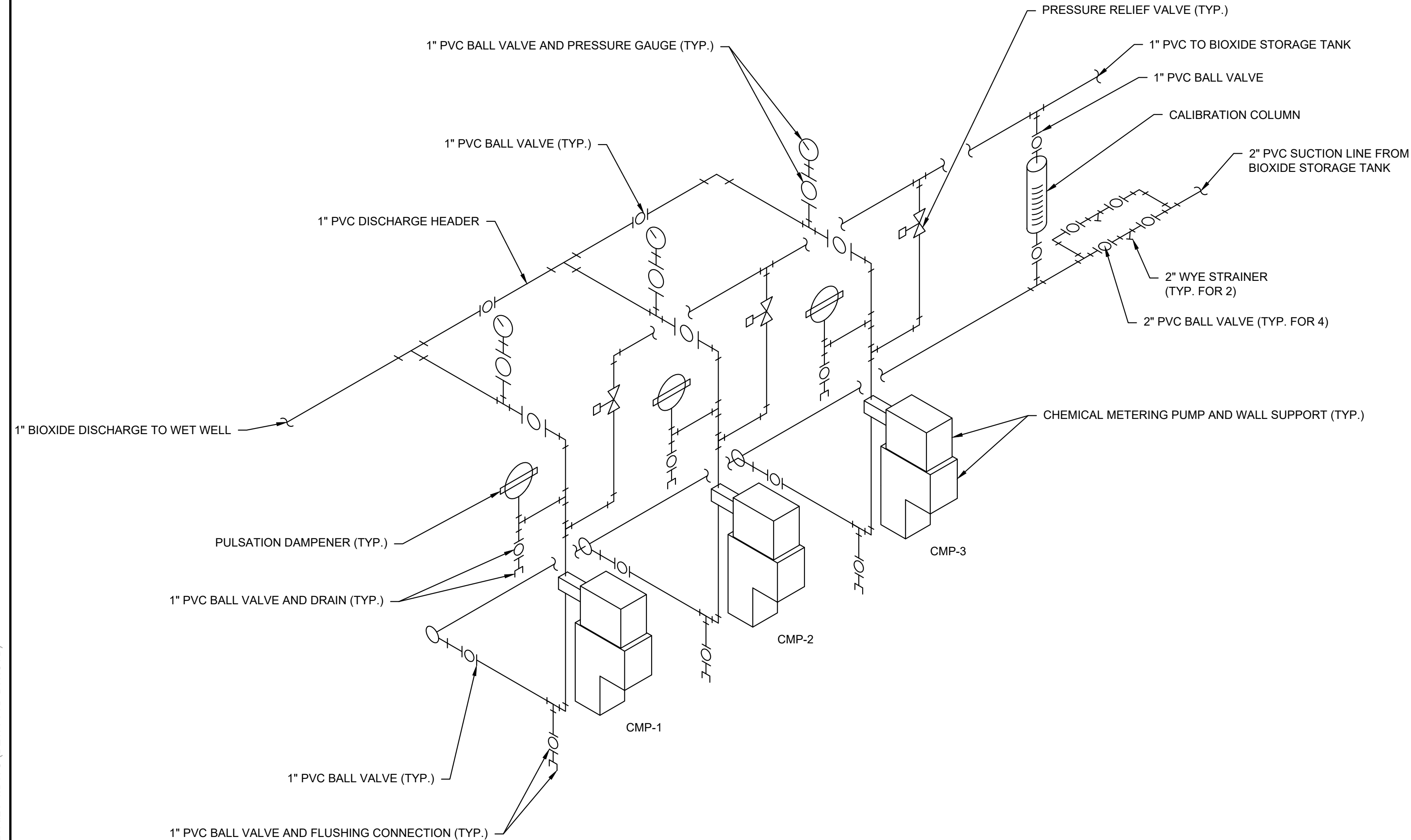
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BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	MD-2

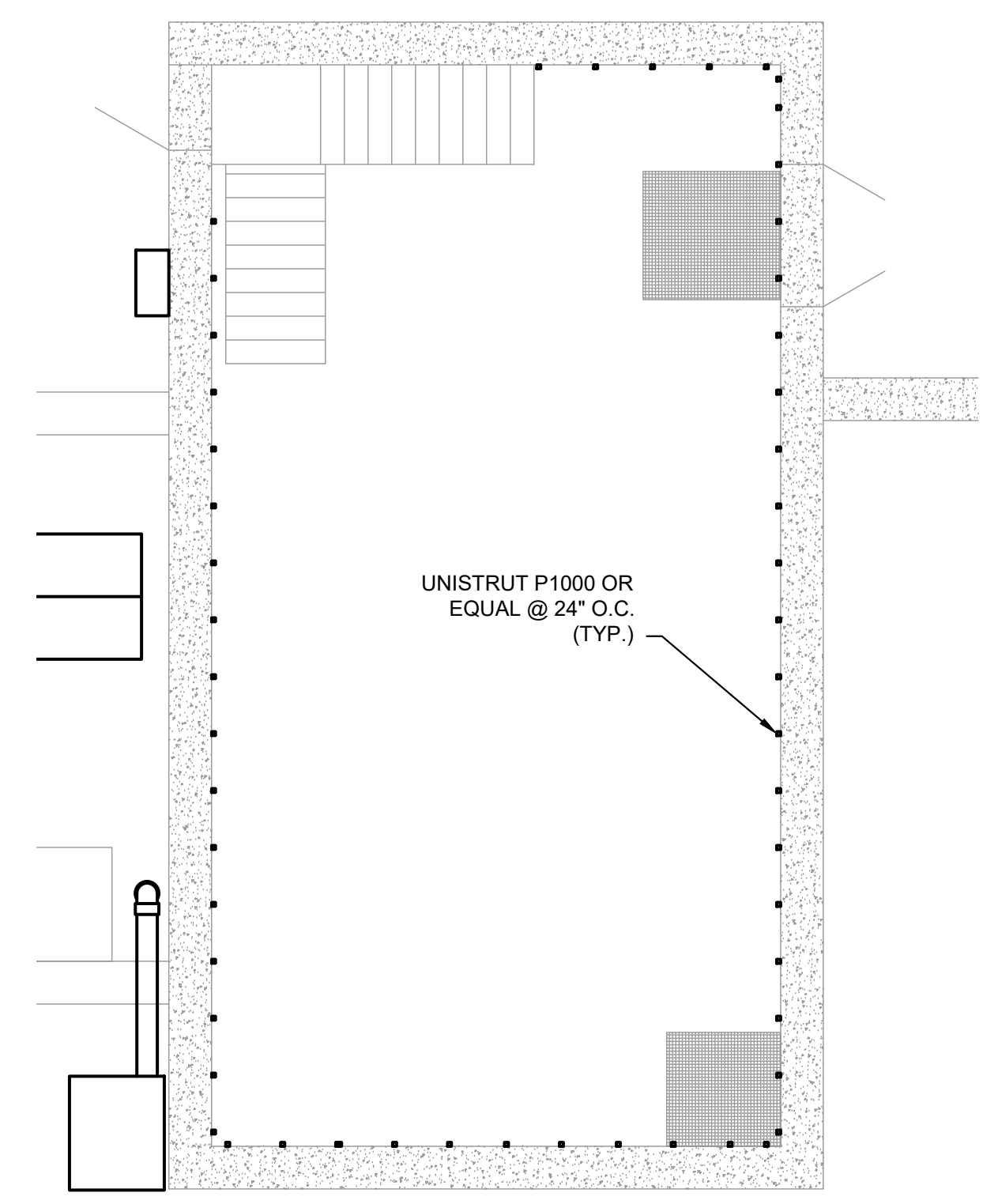
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

3/1/2023 1:45 PM J:\7385 - FRAMINGHAM WRFPS IMPROVEMENTS\DRAWINGFILES\PLANS\SET1\MD-1 - MECHANICAL DETAILS 1.DWG (BETA STD BW.CTB)

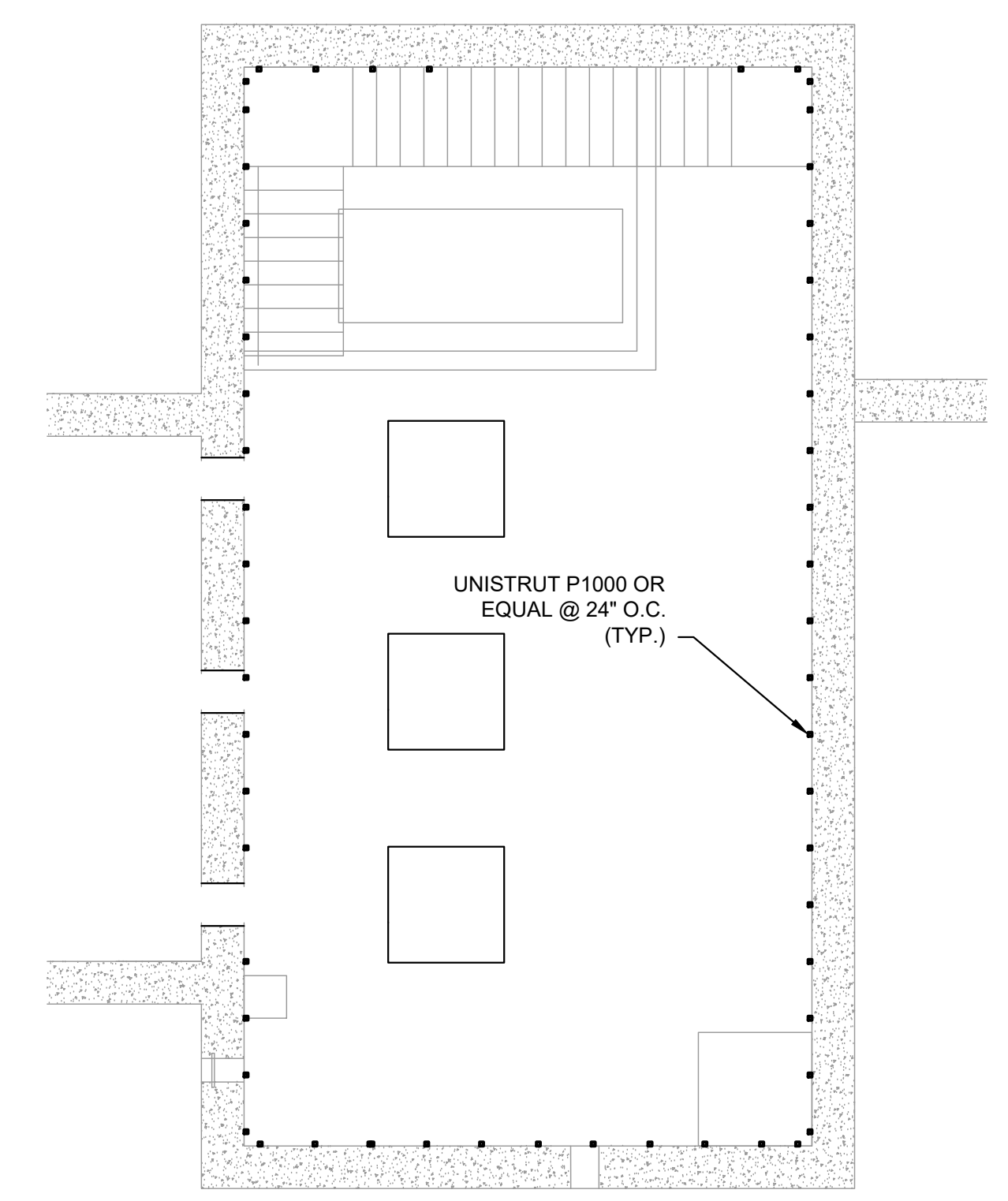


NOTE: ALL CHEMICAL PIPING AND FITTINGS SHALL BE SCHEDULE 80 PVC. ALL CHEMICAL SERVICE VALVES SHALL BE PVC AND TEFLON.

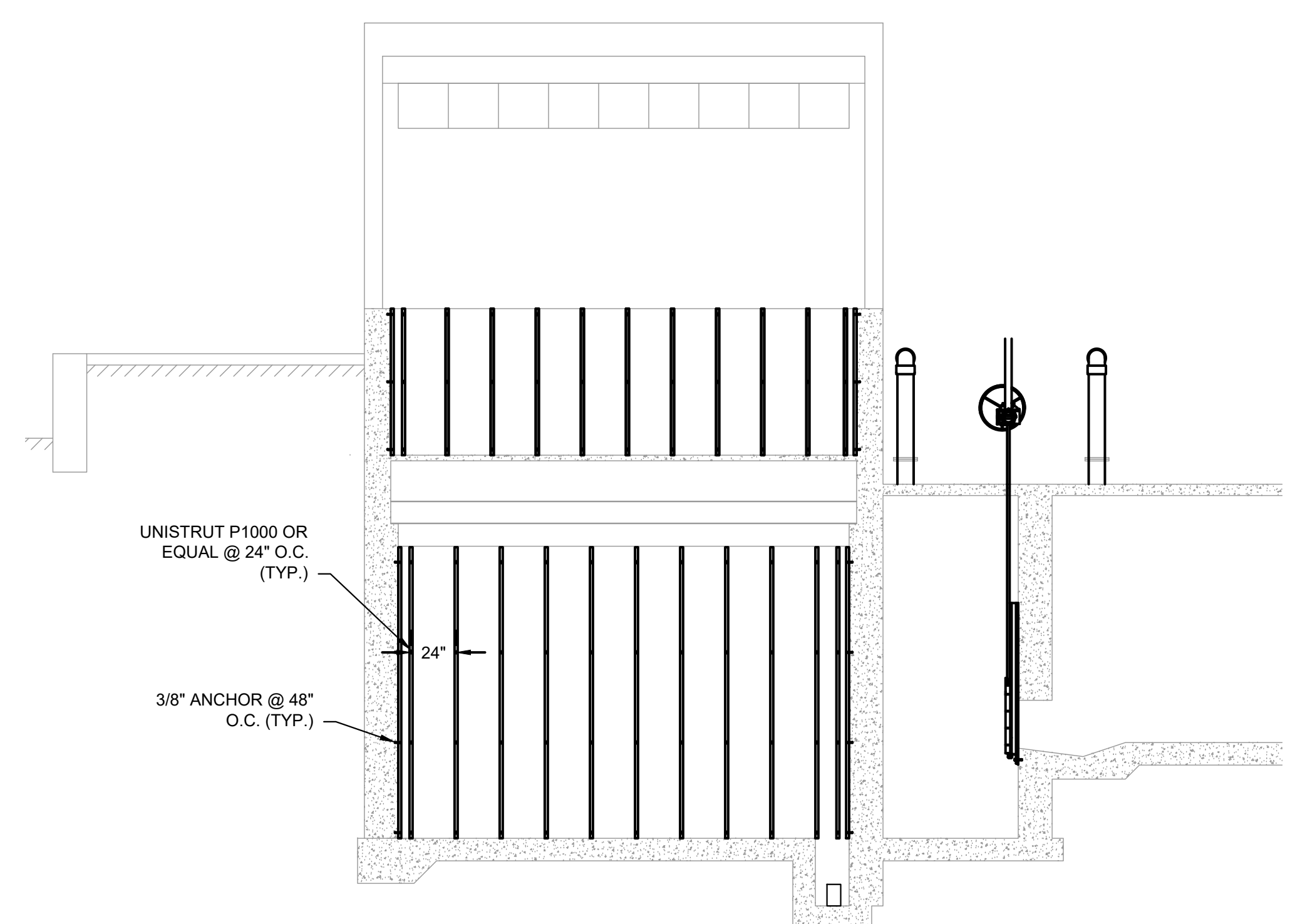
**BIOXIDE METERING PUMP PIPING SCHEMATIC**  
SCALE: NONE



**UNISTRUT SUPPORT DETAIL PLAN UPPER LEVEL**  
SCALE: NONE



**UNISTRUT SUPPORT DETAIL PLAN LOWER LEVEL**  
SCALE: NONE



**UNISTRUT SUPPORT DETAIL PROFILE**  
SCALE: NONE

- NOTE:
1. P1000 UNISTRUT (OR EQUAL) SHALL BE HOT DIP GALVANIZED.
  2. ANCHORS SHALL BE HOT DIP GALVANIZED.
  3. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 02095 PRIOR TO APPLICATION OF EPOXY COATING. PROTECT THREADS AS REQUIRED.
  4. IF WEDGE ANCHORS ARE USED THEY SHALL BE RATED FOR CRACKED CONCRETE. INSTALL PER MANUFACTURER'S REQUIREMENTS.

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
CJM  
DESIGNED BY:  
AJG  
CHECKED BY:  
JRD



PREPARED BY:  
SUBCONSULTANT:  
SCALE:  
AS SHOWN

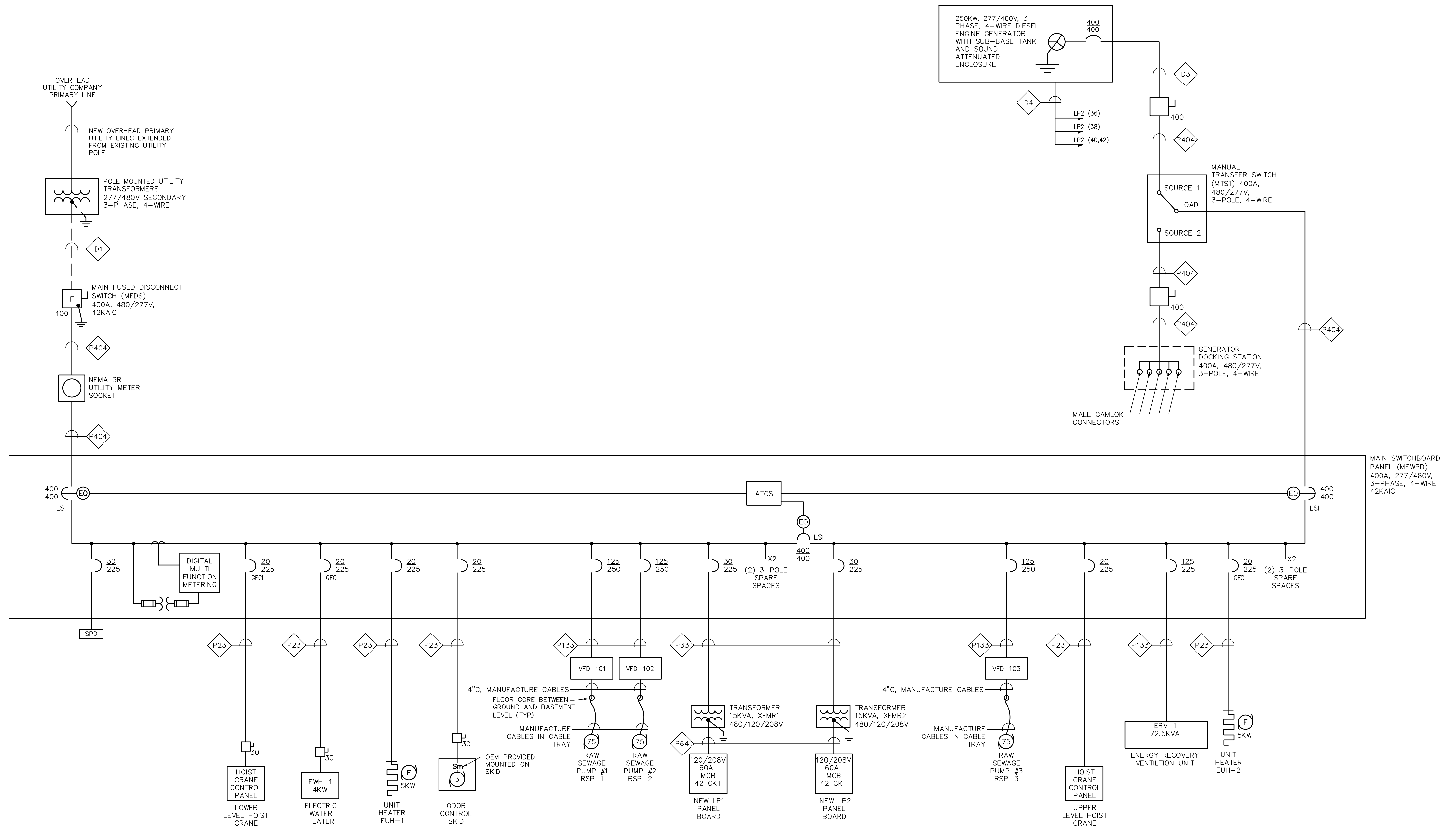
TITLE:  
**Worcester Road Sewer Pumping Station Replacement**  
MECHANICAL DETAILS - 3

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. MD-3

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION



2/2/2023 9:43 AM W:\YEAR - 2018\190220.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\190220.00 ELECTRICAL PLANS.DWG (BETA STB.BW.STB)



ONE LINE DIAGRAM  
NOT TO SCALE

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
RTG  
DESIGNED BY:  
AJG  
CHECKED BY:  
AJG

REGISTERED PROFESSIONAL  
MICHAEL J. COTTER  
ELECTRICAL  
No. 40999  
PROFESSIONAL ENGINEER  
STATE OF MASSACHUSETTS

PREPARED BY  
**BETA**  
www.BETA-inc.com

SUBCONSULTANT  
**SAR**  
ENGINEERING, INC.  
Mechanical/Electrical Engineers  
150 Grossman Drive, Suite 309  
Burlington, Massachusetts 02184  
617.221-9220  
web: www.sar.com

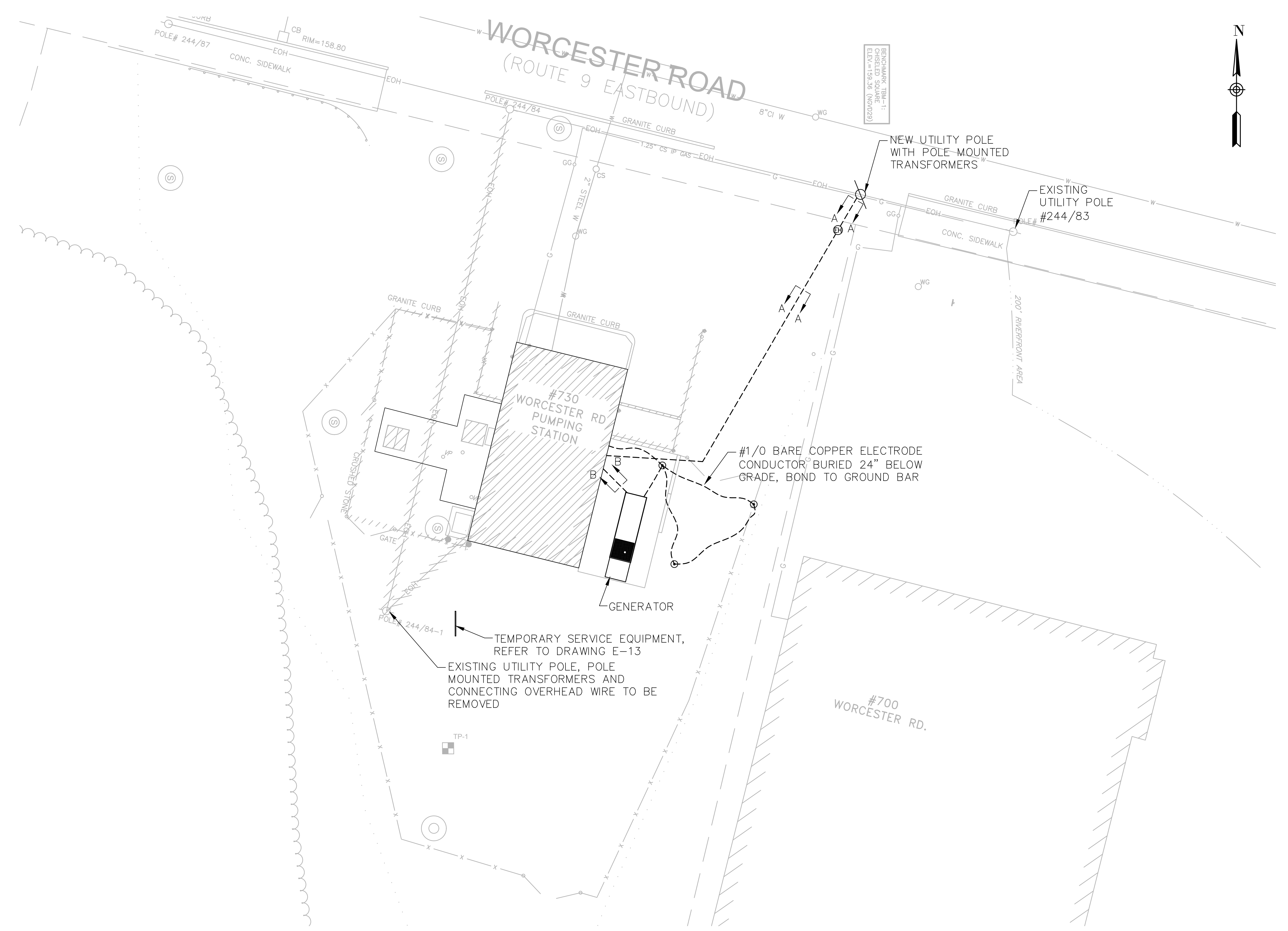
SCALE  
AS SHOWN  
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE  
**Worcester Road Sewer  
Pumping Station Replacement**  
**ELECTRICAL  
ONE LINE DIAGRAM**

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. E-2



NOTES:  
 1. REFER TO DRAWING E-12 FOR DUCTBANK SECTIONS.



**PROPOSED SITE PLAN**  
 SCALE: 1" = 10'

2/2/2023 9:45 AM W:\YEAR - 2019\19020.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\19020.00 ELECTRICAL PLANS DWG (BETA STB BY STB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
RLB

DESIGNED BY:  
MC

CHECKED BY:  
MC

REGISTERED PROFESSIONAL  
 MICHAEL J. COTTER  
 ELECTRICAL  
 No. 40999  
 PROFESSIONAL ENGINEER

PREPARED BY  
**BETA**  
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 Mechanical/Electrical Engineers  
 150 Grossman Drive, Suite 309  
 Braintree, Massachusetts 02194  
 617.221-9220  
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SCALE  
 AS SHOWN

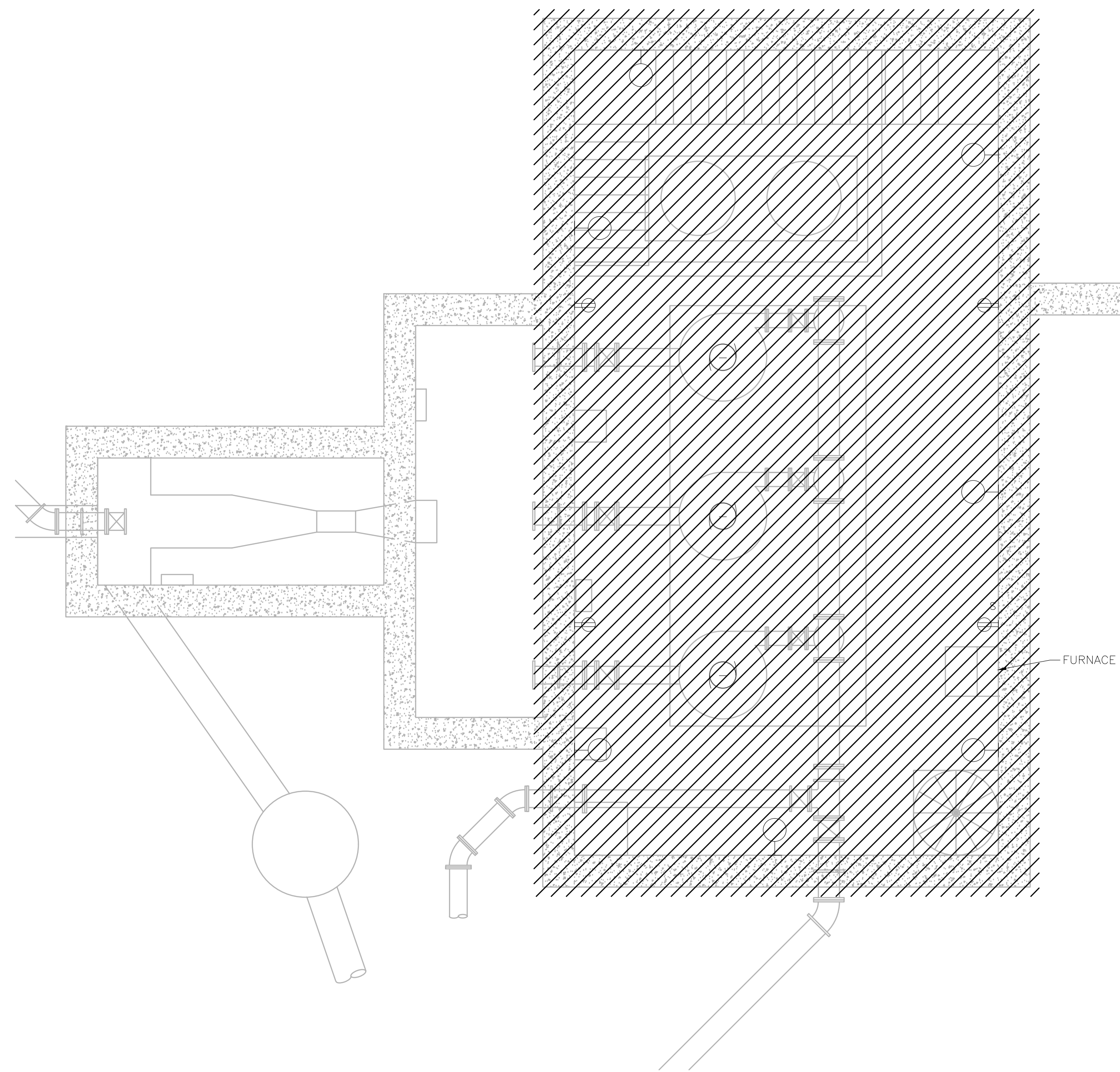
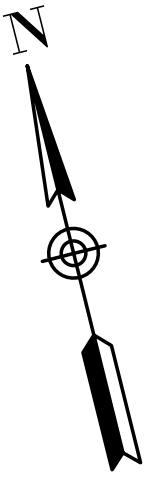
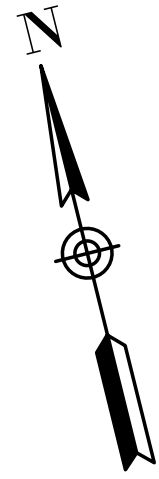
TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
**ELECTRICAL SITE PLAN**

BETA JOB NO. 7385  
 ISSUE DATE: JANUARY 2023  
 SHEET NO. E-3

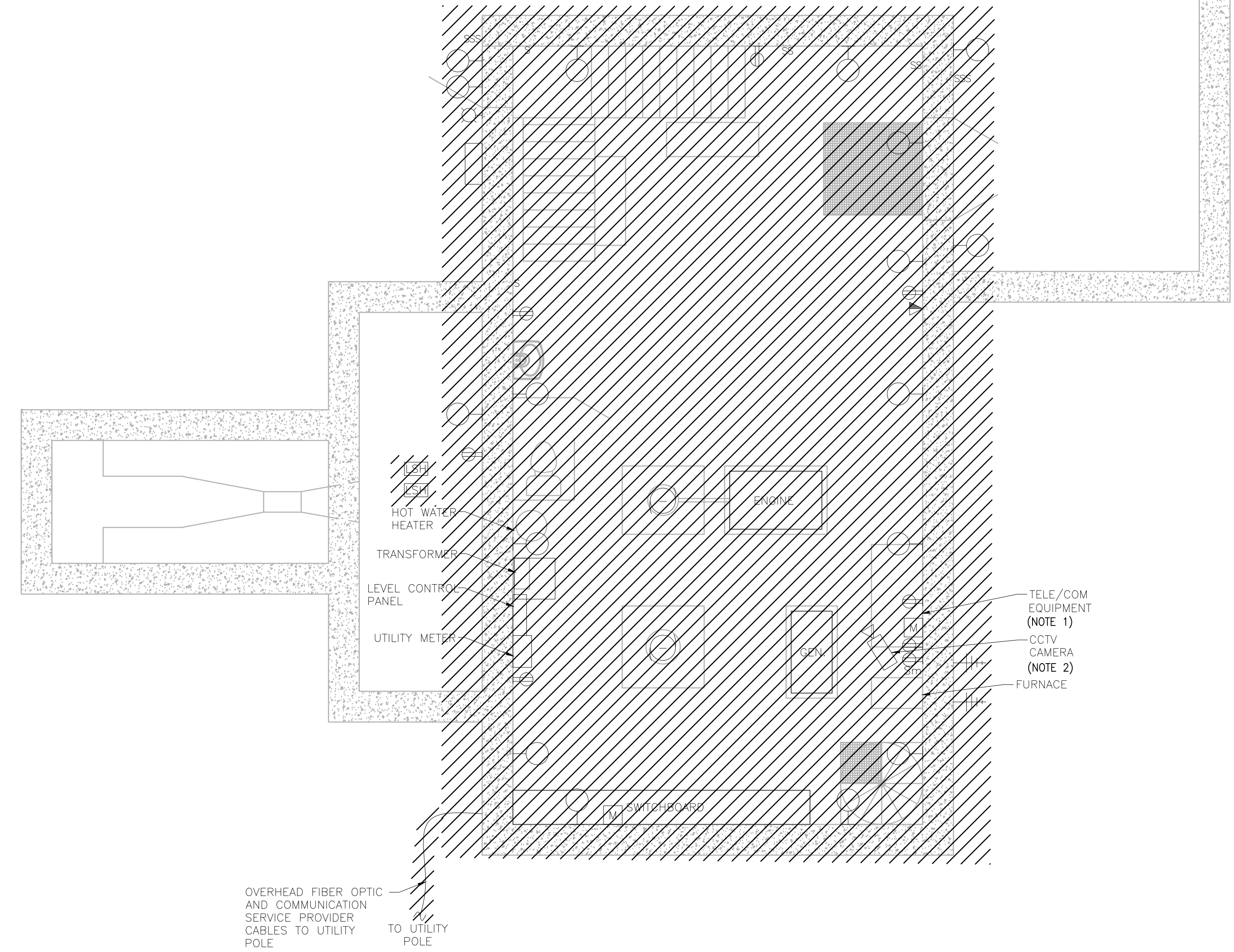
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

**NOTES:**

1. DISCONNECT AND REMOVE TELE/COM RACK MOUNTED EQUIPMENT, AND EQUIPMENT RACK. EQUIPMENT SHALL BE RETURNED TO OWNER.
2. DISCONNECT AND REMOVE CCTV CAMERA. EQUIPMENT SHALL BE RETURNED TO OWNER.



**LOWER LEVEL - ELECTRICAL PLAN - DEMOLITION**  
SCALE: 1/4" = 1'



**UPPER LEVEL - ELECTRICAL PLAN - DEMOLITION**  
SCALE: 1/4" = 1'

2/2/2023 9:44 AM W:\YEAR - 2019\19020.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\19020.00 ELECTRICAL PLANS.DWG (BETA STB.BW.STB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: RLB
DESIGNED BY: MC
CHECKED BY: MC

REGISTERED PROFESSIONAL  
  
 MICHAEL J. COTTER  
 ELECTRICAL  
 No. 40999  
 PROFESSIONAL ENGINEER  
 STATE OF MASSACHUSETTS

PREPARED BY  
  
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SUBCONSULTANT  
  
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 ENGINEERING, INC.  
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 150 Grossman Drive, Suite 309  
 Braintree, Massachusetts 01904  
 617-221-9120  
 web: www.sar.com

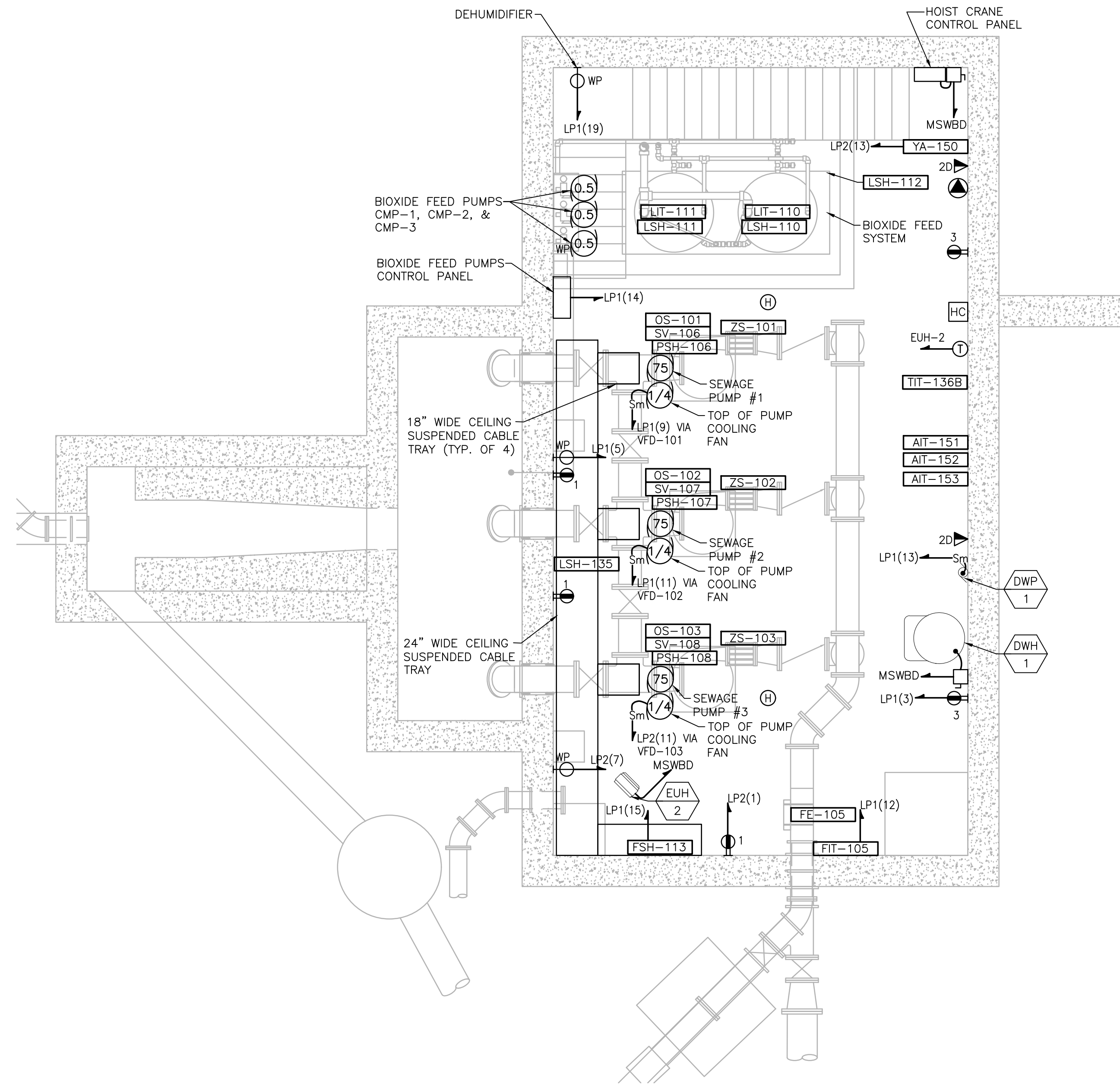
SCALE AS SHOWN
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TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
 ELECTRICAL DEMOLITION PLANS

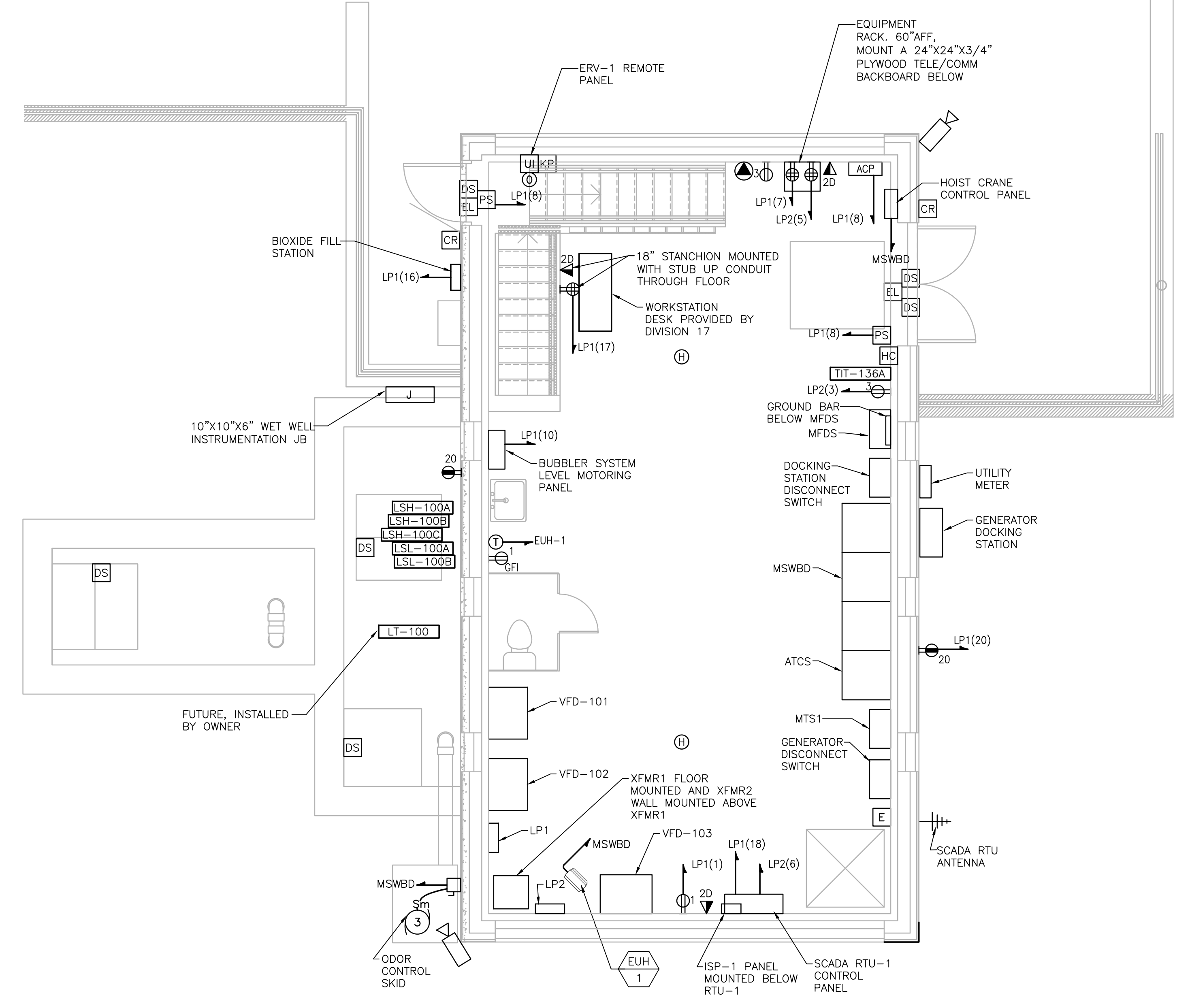
BETA JOB NO. 7385
ISSUE DATE JANUARY 2023
SHEET NO. E-4

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

2/2/2023 9:45 AM W:\YEAR-2019\190220.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\190220.00 ELECTRICAL PLANS DWG (BETA STB BIV STB)



**LOWER LEVEL - ELECTRICAL POWER PLAN - PROPOSED**  
SCALE: 3/16" = 1'



**UPPER LEVEL - ELECTRICAL POWER PLAN - PROPOSED**  
SCALE: 3/16" = 1'

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
RLB  
DESIGNED BY:  
MC  
CHECKED BY:  
MC

REGISTERED PROFESSIONAL  
MICHAEL J. GOTTER  
ELECTRICAL  
No. 40999  
PROFESSIONAL ENGINEER  
*Michael J. Gotter*

PREPARED BY  
**BETA**  
www.BETA-inc.com

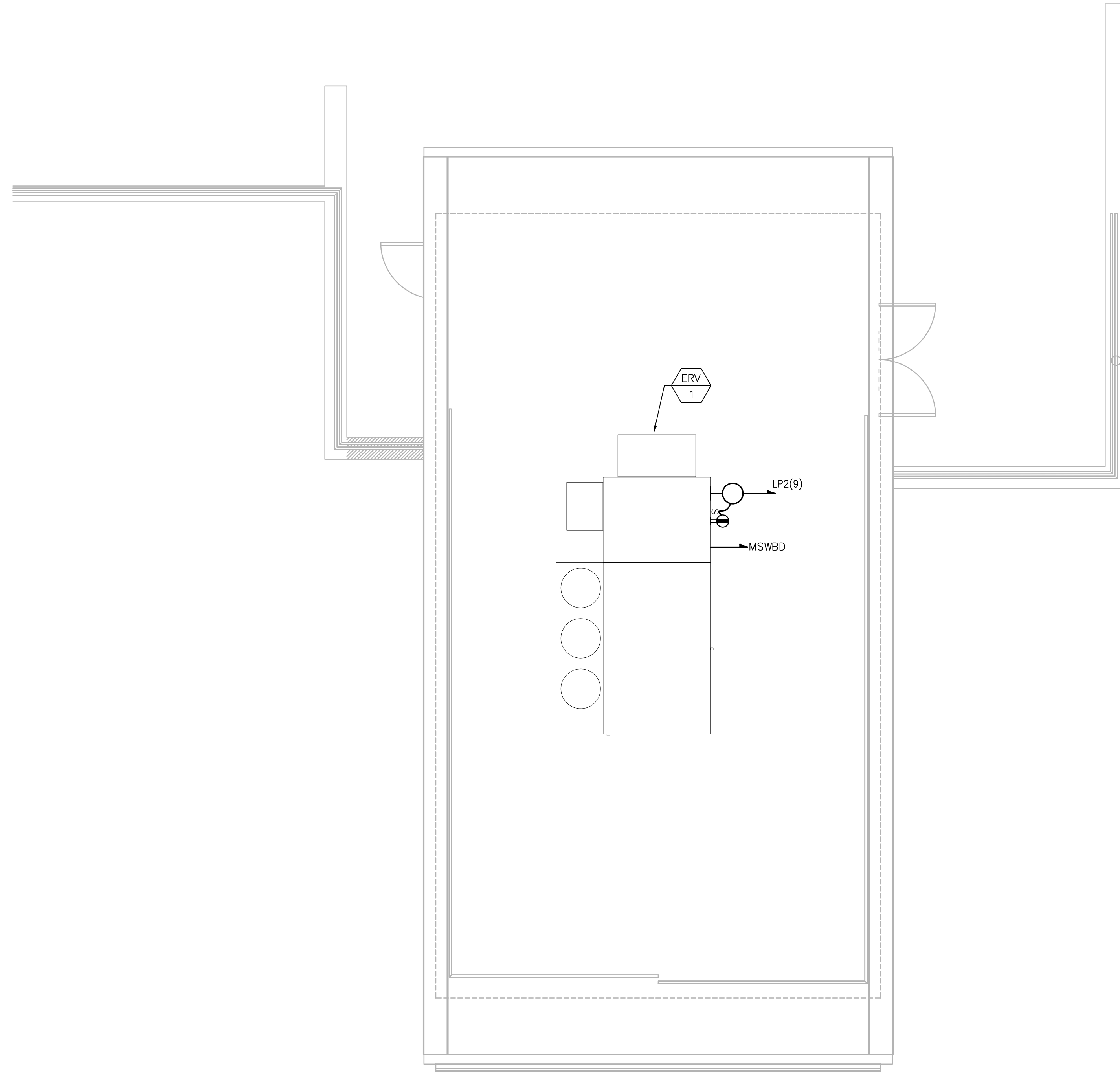
SUBCONSULTANT  
**SR**  
ENGINEERING, INC.  
Mechanical/Electrical Engineers  
150 Grossman Drive, Suite 309  
Braintree, Massachusetts 02184  
617.221.9220  
web: www.sar.com

SCALE  
AS SHOWN  
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
**ELECTRICAL PROPOSED POWER PLANS**

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. E-5

2/2/2023 9:45 AM W:\YEAR - 2019\19020.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\19020.00 ELECTRICAL PLANS DWG (BETA STB BY STB)



**ROOF - ELECTRICAL POWER PLAN - PROPOSED**  
SCALE: 3/16" = 1'

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	RLB
DESIGNED BY:	MC
CHECKED BY:	MC

REGISTERED PROFESSIONAL

PREPARED BY

PREPARED BY

www.BETA-Inc.com

SUBCONSULTANT

Mechanical/Electrical Engineers  
150 Grossman Drive, Suite 309  
Braintree, Massachusetts 02184  
617-221-9220  
web: www.sr.com

SCALE

AS SHOWN

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE

**Worcester Road Sewer  
Pumping Station Replacement**

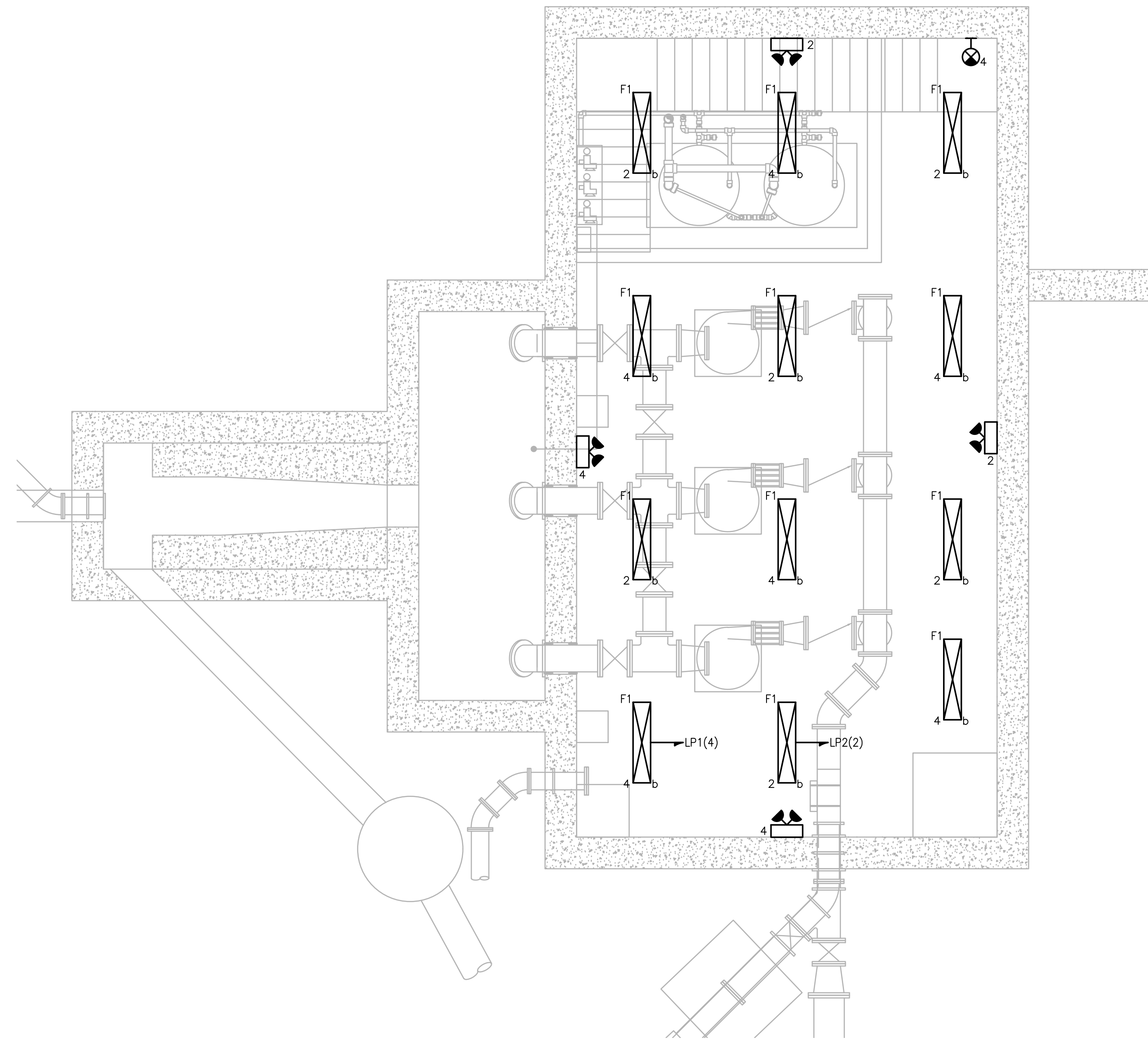
**ELECTRICAL  
PROPOSED POWER ROOF PLAN**

BETA JOB NO. 7385

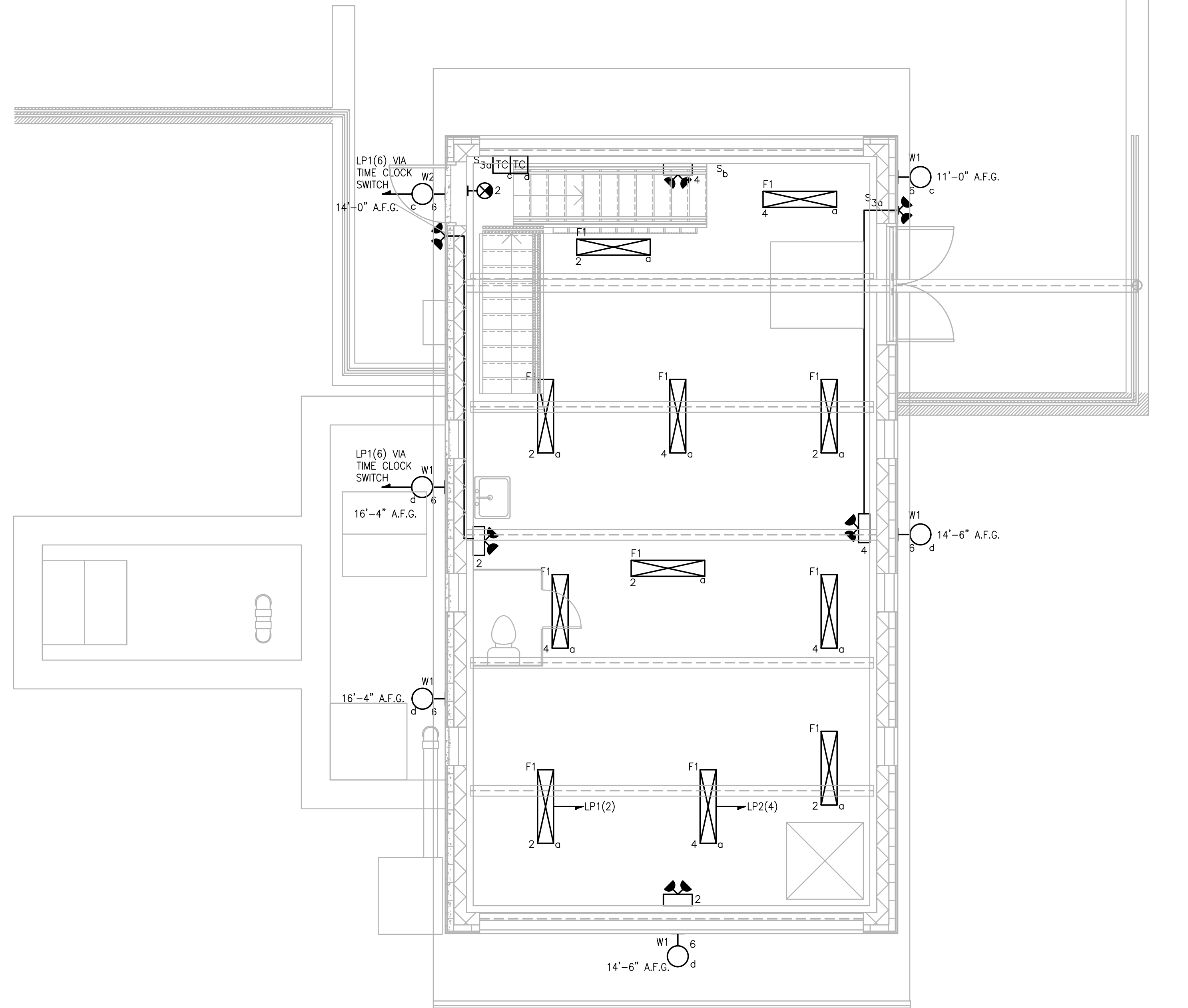
ISSUE DATE JANUARY 2023

SHEET NO. E-6

2/2/2023 9:45 AM W:\YEAR-2019\190220.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\190220.00 ELECTRICAL PLANS DWG (BETA STB BW STB)



**LOWER LEVEL - ELECTRICAL LIGHTING PLAN - PROPOSED**  
SCALE: 3/16" = 1'



**UPPER LEVEL - ELECTRICAL LIGHTING PLAN - PROPOSED**  
SCALE: 3/16" = 1'

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
RLB  
DESIGNED BY:  
MC  
CHECKED BY:  
MC

REGISTERED PROFESSIONAL  
MICHAEL J. GUTTER  
ELECTRICAL  
No. 40999  
PROFESSIONAL ENGINEER  
*Michael J. Gutter*

PREPARED BY  
**BETA**  
www.BETA-Inc.com

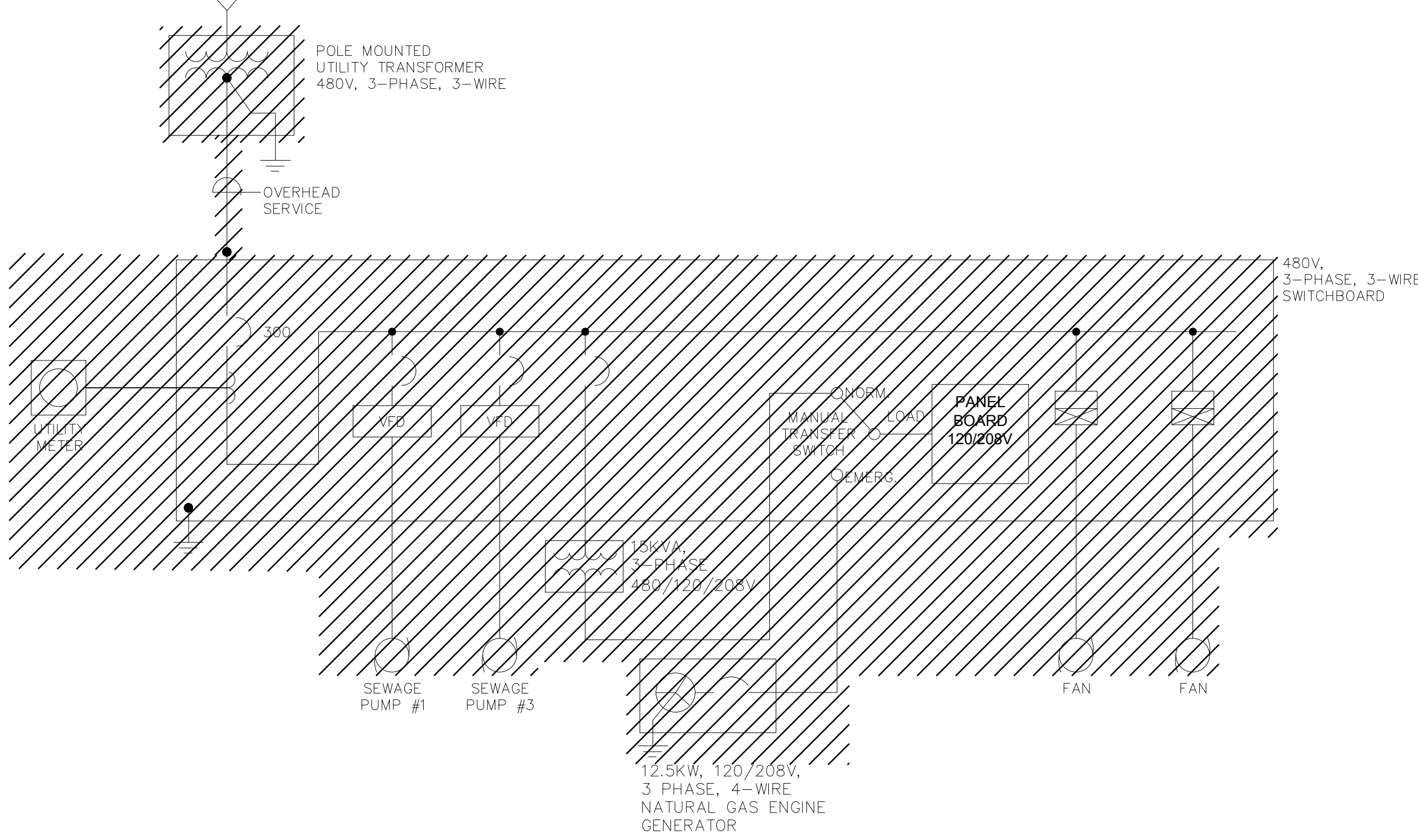
SUBCONSULTANT  
**SAR**  
ENGINEERING, INC.  
Mechanical/Electrical Engineers  
150 Grossman Drive, Suite 309  
Braintree, Massachusetts 02184  
617.221-9220  
web: www.sar.com

SCALE  
AS SHOWN  
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE  
**Worcester Road Sewer  
Pumping Station Replacement**  
**ELECTRICAL  
PROPOSED LIGHTING PLANS**

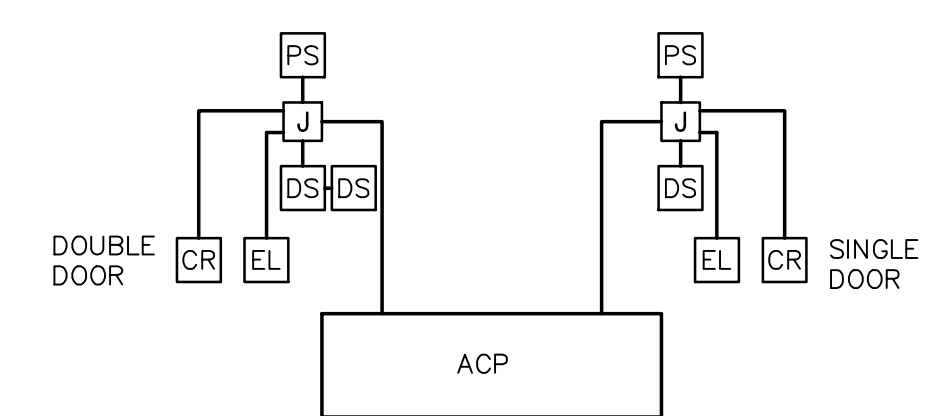
BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. E-7

INCOMING POWER COMPANY OVERHEAD PRIMARY LINE



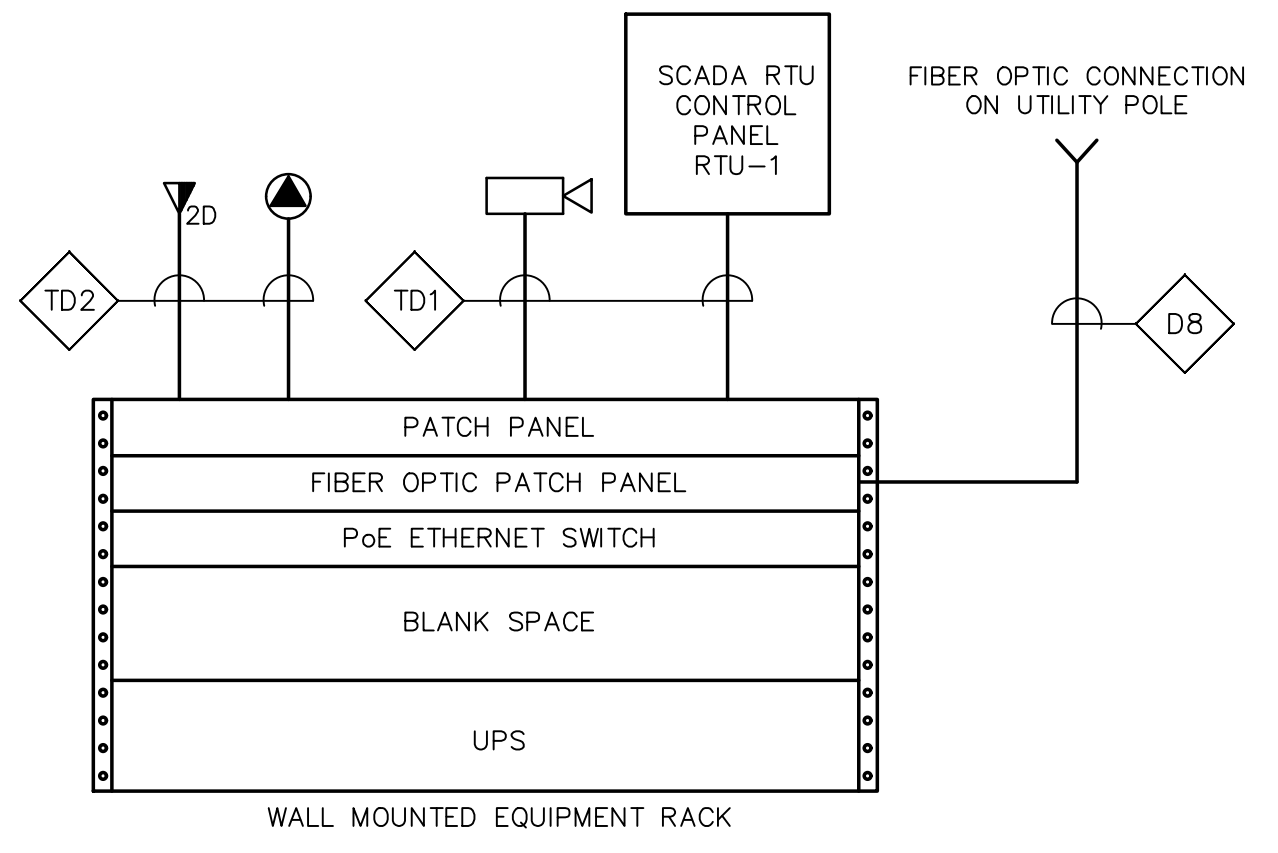
**ONE LINE DIAGRAM - DEMOLITION**  
NOT TO SCALE

- NOTES:
- RISER DIAGRAM ONLY REPRESENTS EXISTING CONDITIONS WITHOUT THE IMPLEMENTATION OF TEMPORARY SERVICE WORK. ALL EXISTING ELECTRICAL AND TEMPORARY SERVICE EQUIPMENT IS TO BE REMOVED IN A PHASED MANNER.



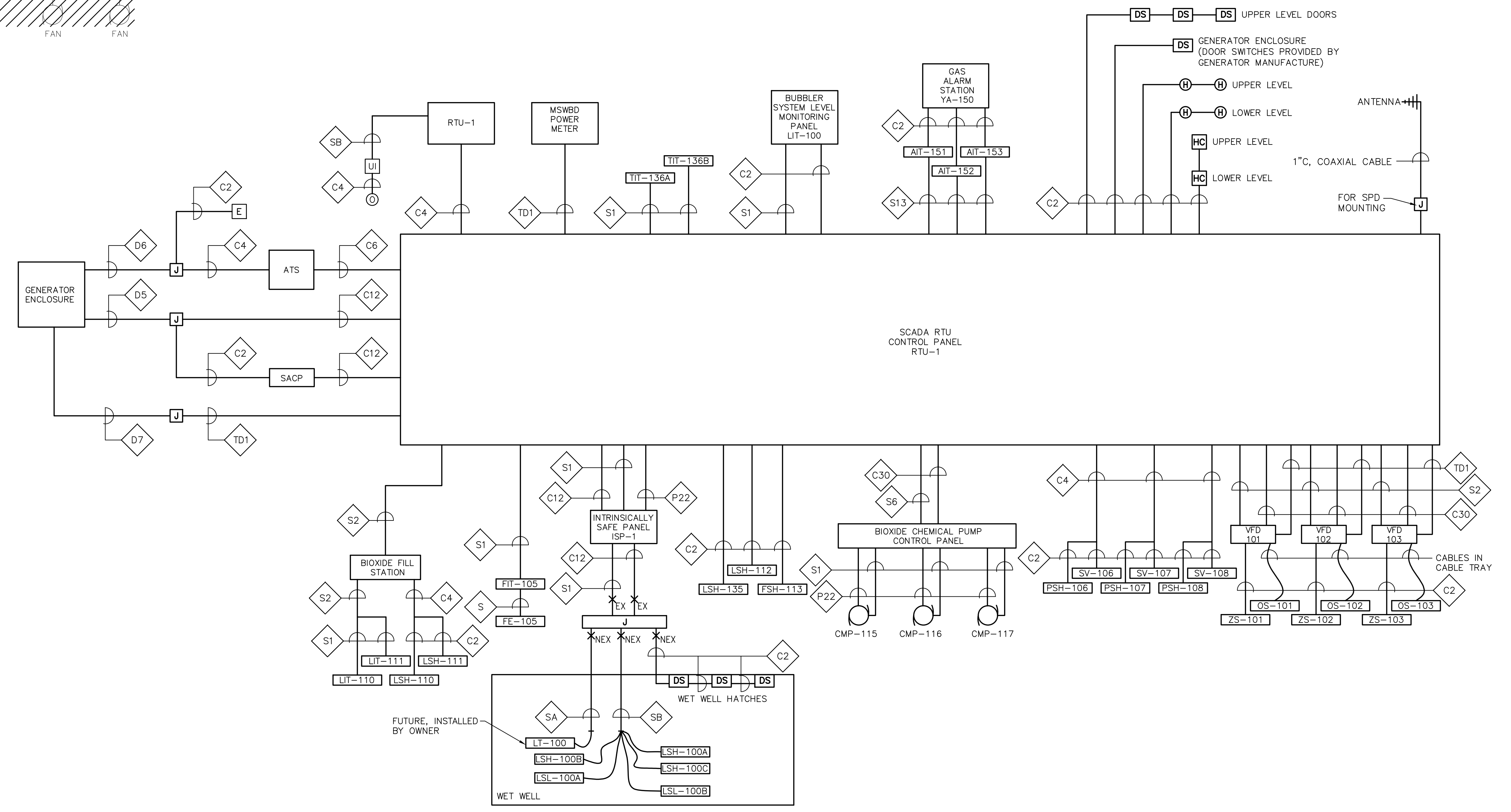
**ACCESS CONTROL RISER**  
NOT TO SCALE

- ACCESS CONTROL NOTES:
- MINIMUM SIZE CONDUIT SHALL BE 3/4" UNLESS NOTED OTHERWISE.
  - SYSTEM CABLING SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH EQUIPMENT SUPPLIERS APPROVED SHOP DRAWINGS AND CONVERGINT TECHNOLOGIES WIRING DIAGRAMS.



**COMMUNICATIONS & CCTV RISER DIAGRAM**  
NOT TO SCALE

- NOTES:
- RISER DIAGRAM ONLY REPRESENTS TYPE OF DEVICES AND DOES NOT REPRESENT ACTUAL QUANTITIES. REFER TO PLAN DRAWINGS QUANTITIES AND LOCATIONS OF DEVICES.



**CONTROL BLOCK WIRING DIAGRAM**  
NOT TO SCALE

2/2/2023 9:45 AM 1/11/2023 9:45 AM - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS/ELECTRICAL DEPARTMENT/190220.00 ELECTRICAL PLANS.DWG (BETA STB BIV STB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: RLB  
DESIGNED BY: MC  
CHECKED BY: MC

REGISTERED PROFESSIONAL  
MICHAEL J. COTTER  
ELECTRICAL  
No. 40999  
PROFESSIONAL ENGINEER

PREPARED BY  
**BETA**  
www.BETA-inc.com

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Braintree, Massachusetts 02184  
617.221-9220  
web: www.sar.com

SCALE: AS SHOWN  
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

TITLE: **Worcester Road Sewer Pumping Station Replacement**  
**ELECTRICAL DIAGRAMS**

BETA JOB NO. 7385  
ISSUE DATE: JANUARY 2023  
SHEET NO. E-8

LIGHTING FIXTURE SCHEDULE table with columns: TYPE, DESCRIPTION, MANUFACTURER & CATALOG SERIES, LAMPS (TYPE, LUMENS), VOLTS, WATTS, MOUNTING (TYPE, HEIGHT), REMARKS. Includes rows for F1, W1, W2, emergency lighting, and sealed-beam fixtures.

POWER CABLE/CONDUIT SCHEDULE table with columns: SYMBOL, CONDUIT SIZE, CONDUCTORS, GND\*. Lists items P22 through P404 with various conductor counts and grounding.

SIGNAL CABLE/CONDUIT SCHEDULE table with columns: SYMBOL, CONDUIT SIZE, CONDUCTORS. Lists items SA through TC1 with conductor counts for various signal applications.

TELE/DATA CABLE/CONDUIT SCHEDULE table with columns: SYMBOL, CONDUIT SIZE, CONDUCTORS. Lists items TD1 and TD2 with conductor counts.

CONTROL CABLE/CONDUIT SCHEDULE table with columns: SYMBOL, CONDUIT SIZE, CONDUCTORS. Lists items C2 through C30 with conductor counts.

LIGHTING FIXTURE SCHEDULE NOTES:

- 1. THE CATALOG NUMBERS LISTED ARE GIVEN AS A GUIDE TO THE DESIGN AND QUALITY OF FIXTURE DESIRED EQUIVALENT DESIGNS, MATERIALS, DIMENSIONS, COEFFICIENT OF UTILIZATIONS AND EQUAL QUALITY FIXTURES OF OTHER MANUFACTURERS WILL BE ACCEPTABLE.

CABLE CONDUIT SCHEDULE NOTES:

- 1. CONDUIT AND CONDUCTOR SIZES ARE TO BE PER THE ABOVE SCHEDULES UNLESS OTHERWISE NOTED

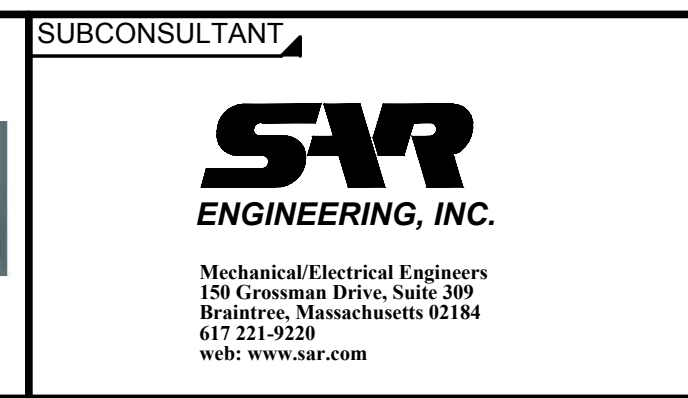
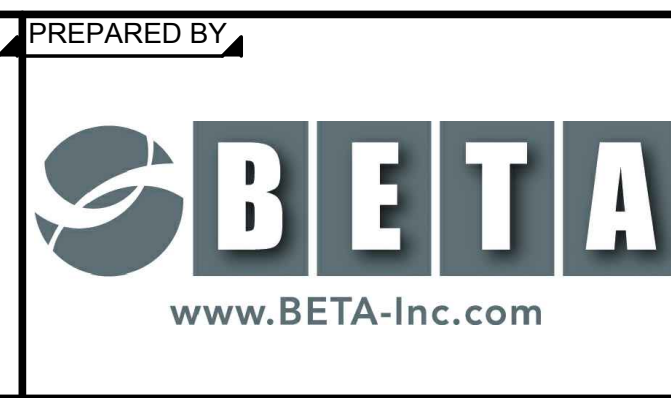
PANELBOARD SCHEDULE table for NO. LP1, LOCATION: UPPER LEVEL. Includes electrical specifications (208/120V, 3PH, 4W, 100A MAINS), load descriptions, breaker ratings, and a detailed circuit schedule from 1 to 42.

PANELBOARD SCHEDULE table for NO. LP2, LOCATION: UPPER LEVEL. Includes electrical specifications (208/120V, 3PH, 4W, 100A MAINS), load descriptions, breaker ratings, and a detailed circuit schedule from 1 to 42.

2/2/2023 9:45 AM W:\YEAR - 2019\19020 00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\19020 00 ELECTRICAL PLANS DWG (BETA STB BHV STB)

Revision table with columns: NUMBER, DATE, MADE BY, CHECKED BY, REVISIONS.

Approval table with columns: DRAWN BY, DESIGNED BY, CHECKED BY. Includes names RLB, MC, and MC.



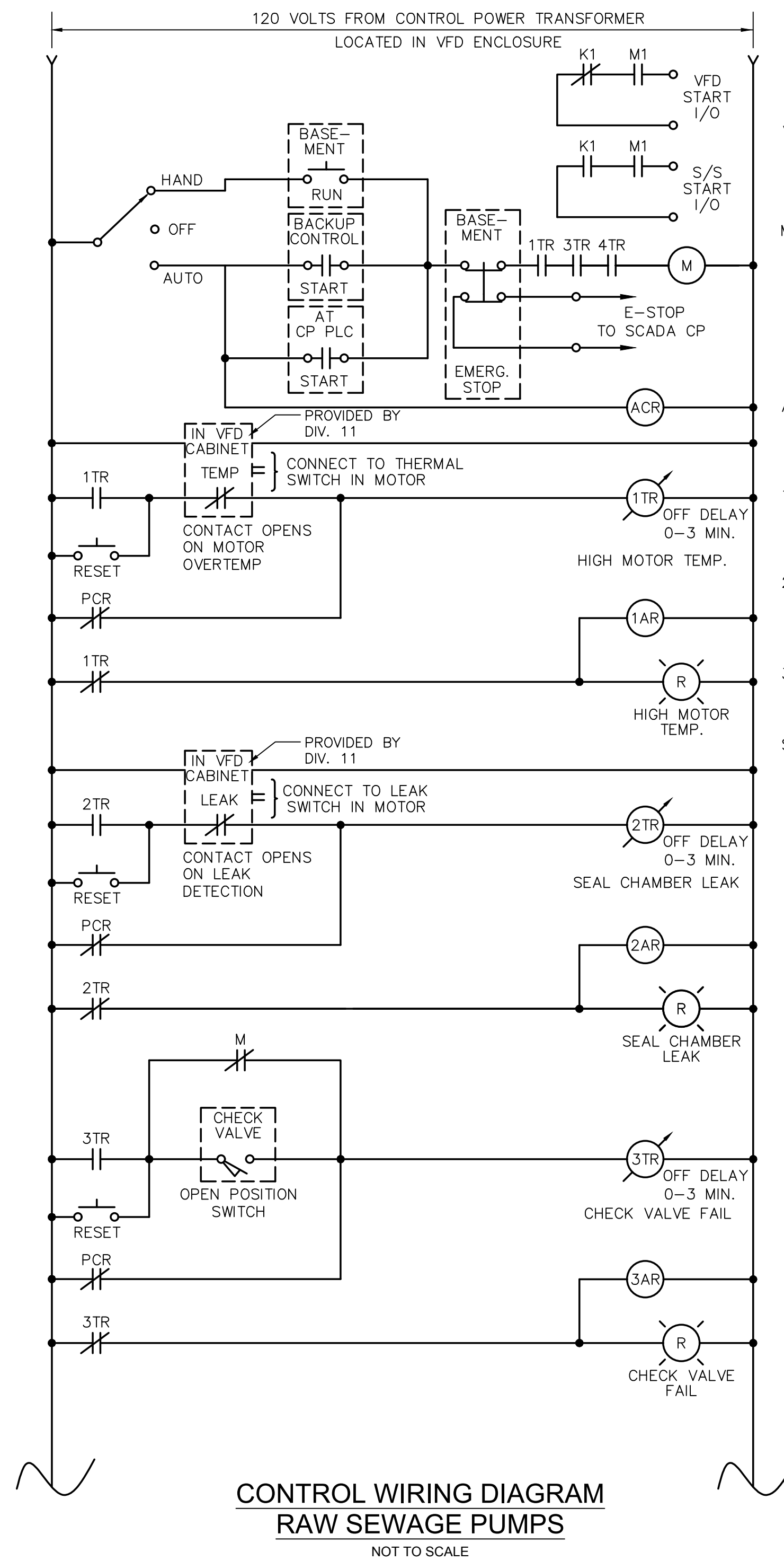
SCALE AS SHOWN

Title block containing project name: Worcester Road Sewer Pumping Station Replacement, and sheet title: ELECTRICAL SCHEDULES.

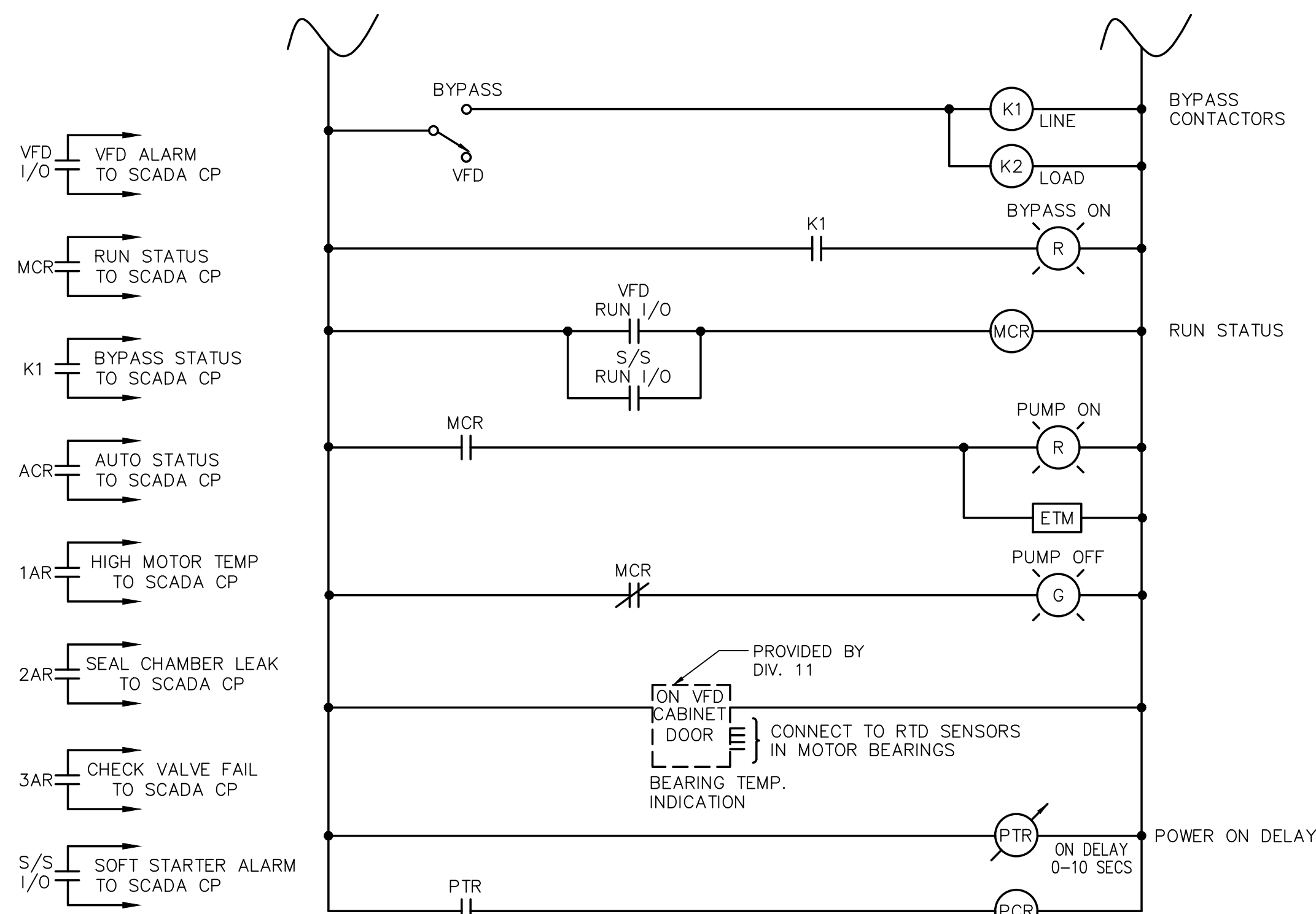
BETA JOB NO. 7385, ISSUE DATE: JANUARY 2023, SHEET NO. E-9

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

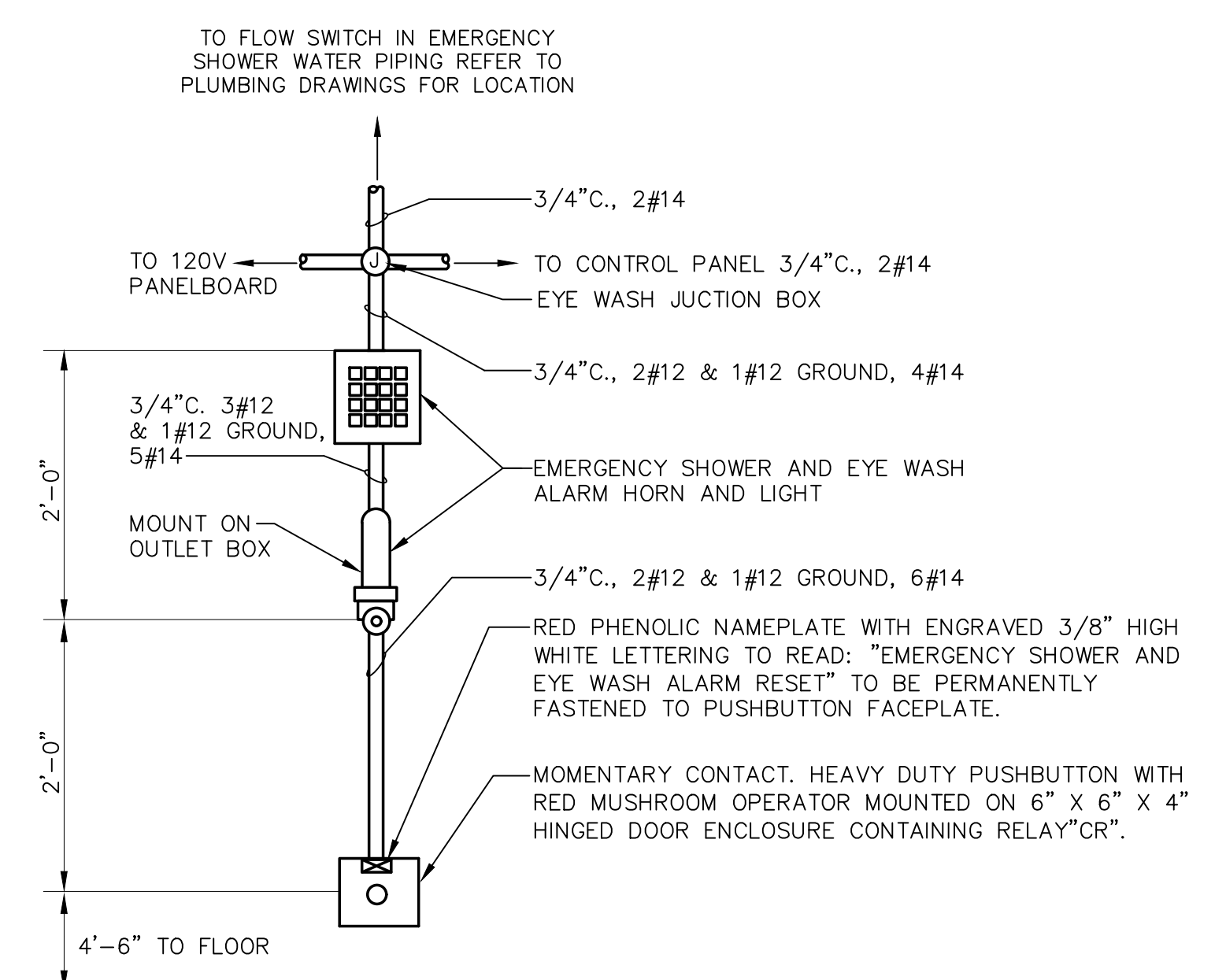
2/2/2023 9:45 AM W:\YEAR-2018\19020.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\19020.00 ELECTRICAL PLANS.DWG (BETA STB BY/STB)



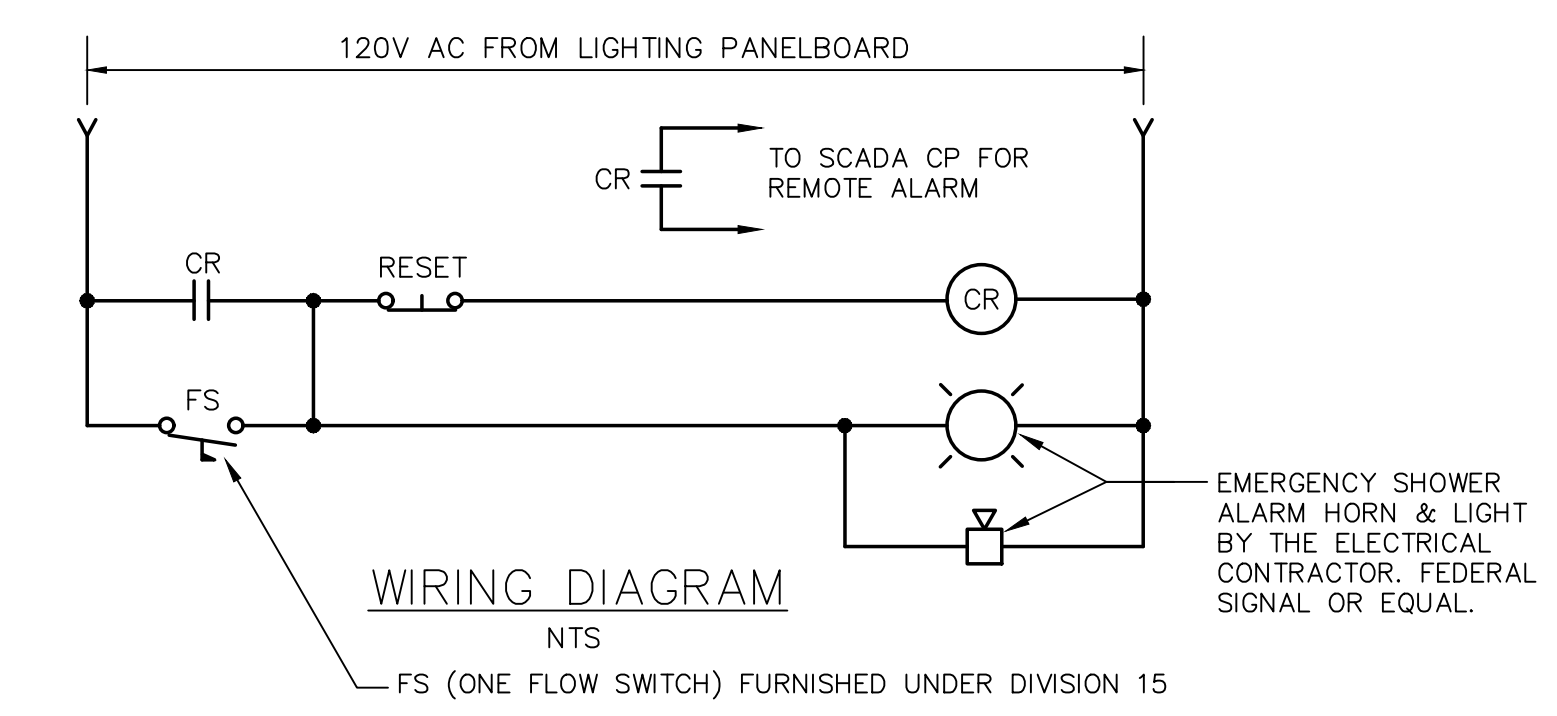
**CONTROL WIRING DIAGRAM  
RAW SEWAGE PUMPS**  
NOT TO SCALE



**CONTROL WIRING DIAGRAM  
RAW SEWAGE PUMPS - CONT.**  
NOT TO SCALE



**ELEVATION VIEW**  
NOT TO SCALE



**WIRING DIAGRAM**  
NOT TO SCALE

NOTE:  
1. ALARM STATION TO BE MOUNTED DIRECTLY NEAR EACH EMERGENCY SHOWER. REFER TO PLAN DRAWINGS FOR EYEWASH LOCATIONS.

**EMERGENCY EYE WASH  
ALARM STATION**  
NOT TO SCALE

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
RLB  
DESIGNED BY:  
MC  
CHECKED BY:  
MC

REGISTERED PROFESSIONAL  
MICHAEL J. COTTER  
ELECTRICAL  
No. 40999  
PROFESSIONAL ENGINEER

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SCALE  
AS SHOWN

TITLE  
**Worcester Road Sewer  
Pumping Station Replacement**  
**ELECTRICAL  
WIRING DIAGRAMS**

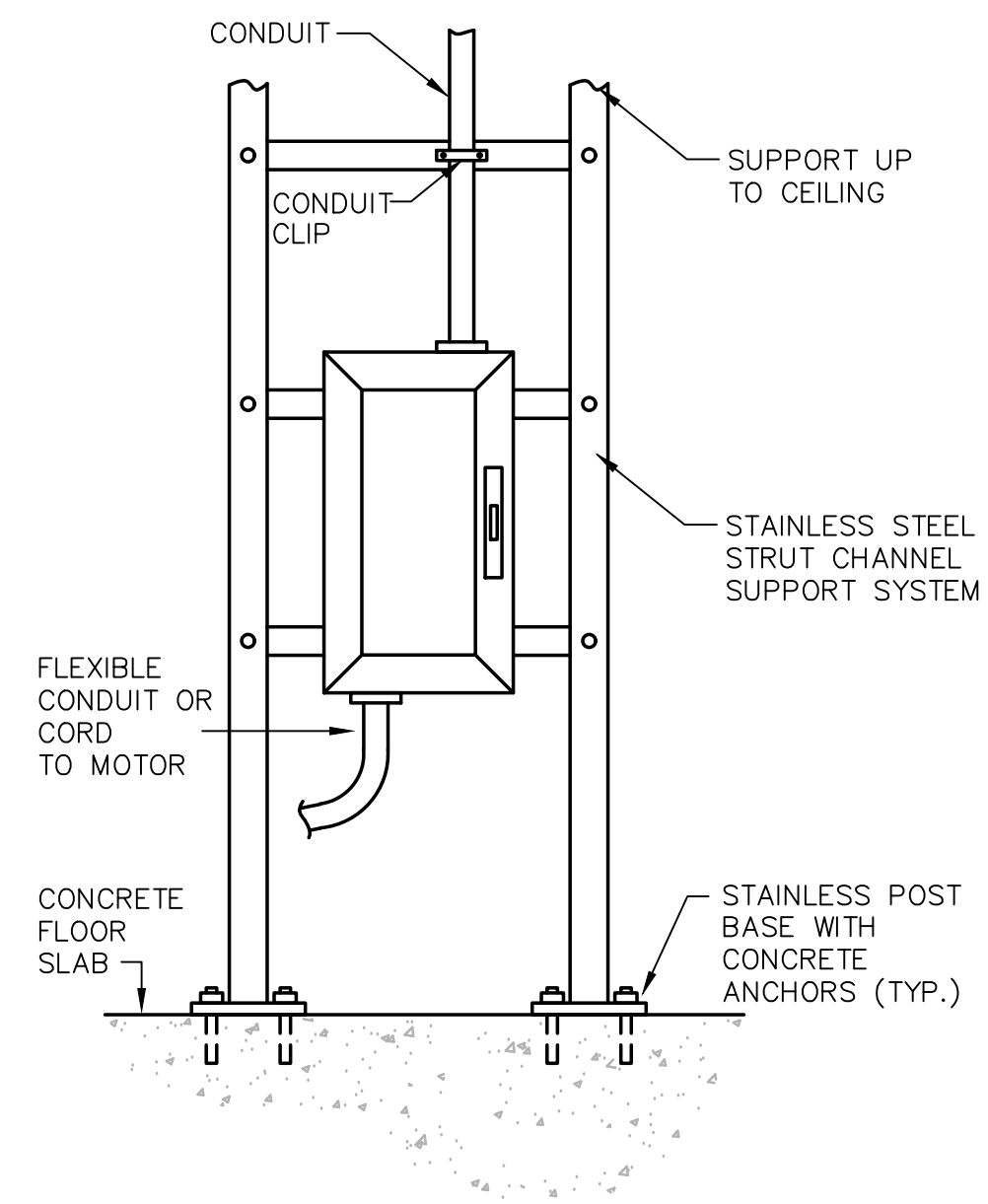
BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. E-10

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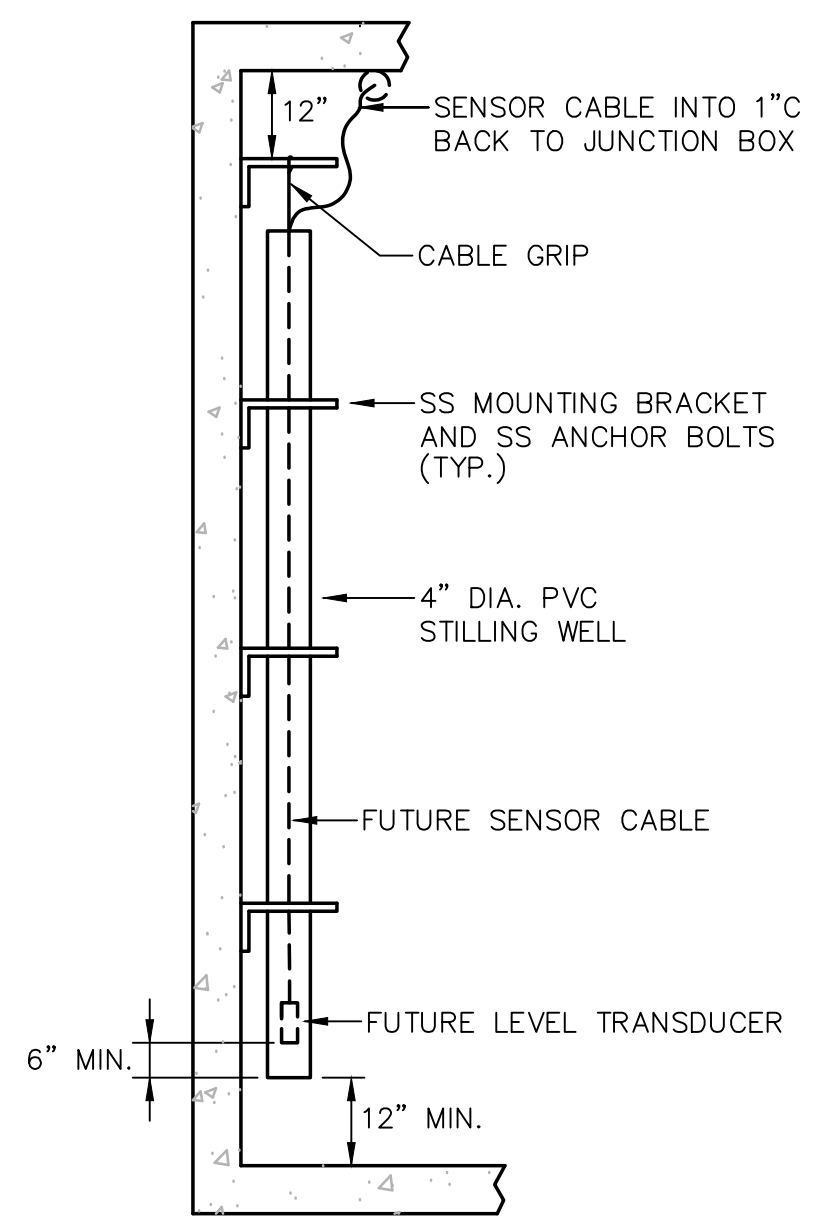


GENERAL NOTES:

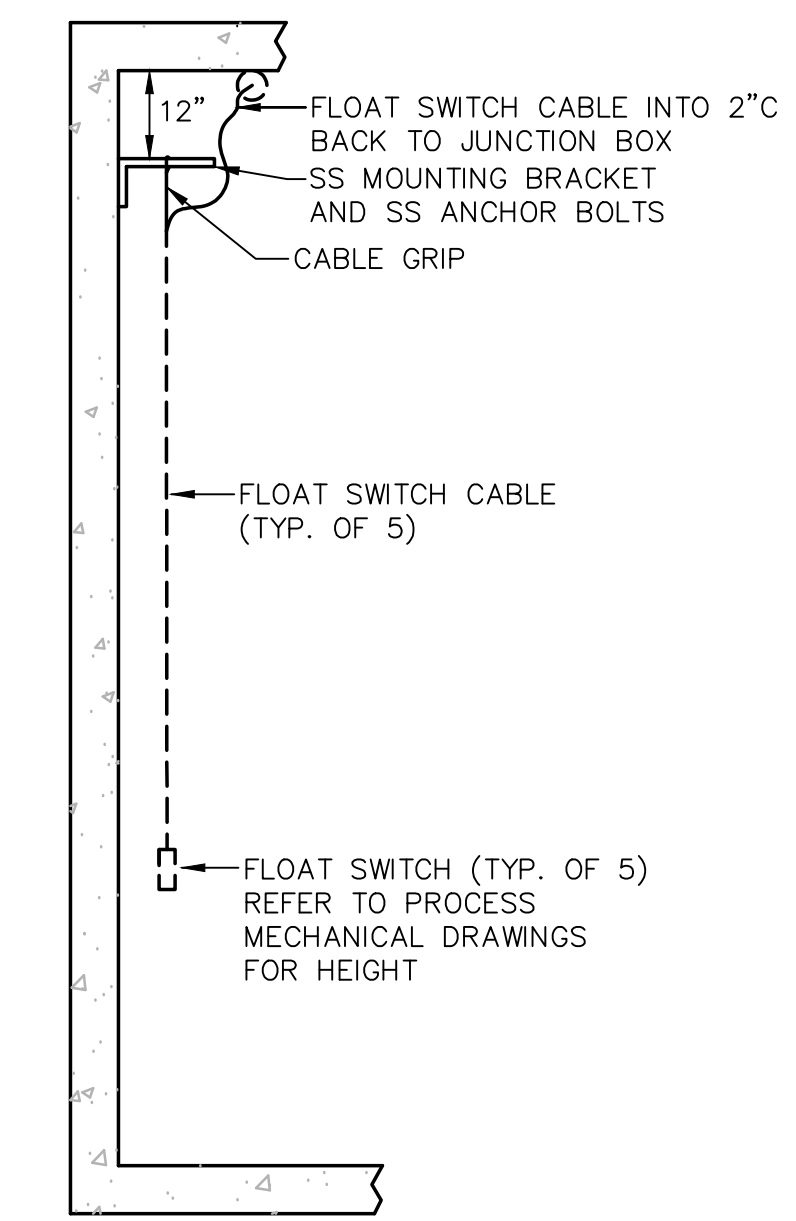
1. ALL MOUNTING BRACKETS, SUPPORTS, FASTENERS, AND ECT. WITHIN THE WET WELL SHALL BE STAINLESS STEEL.



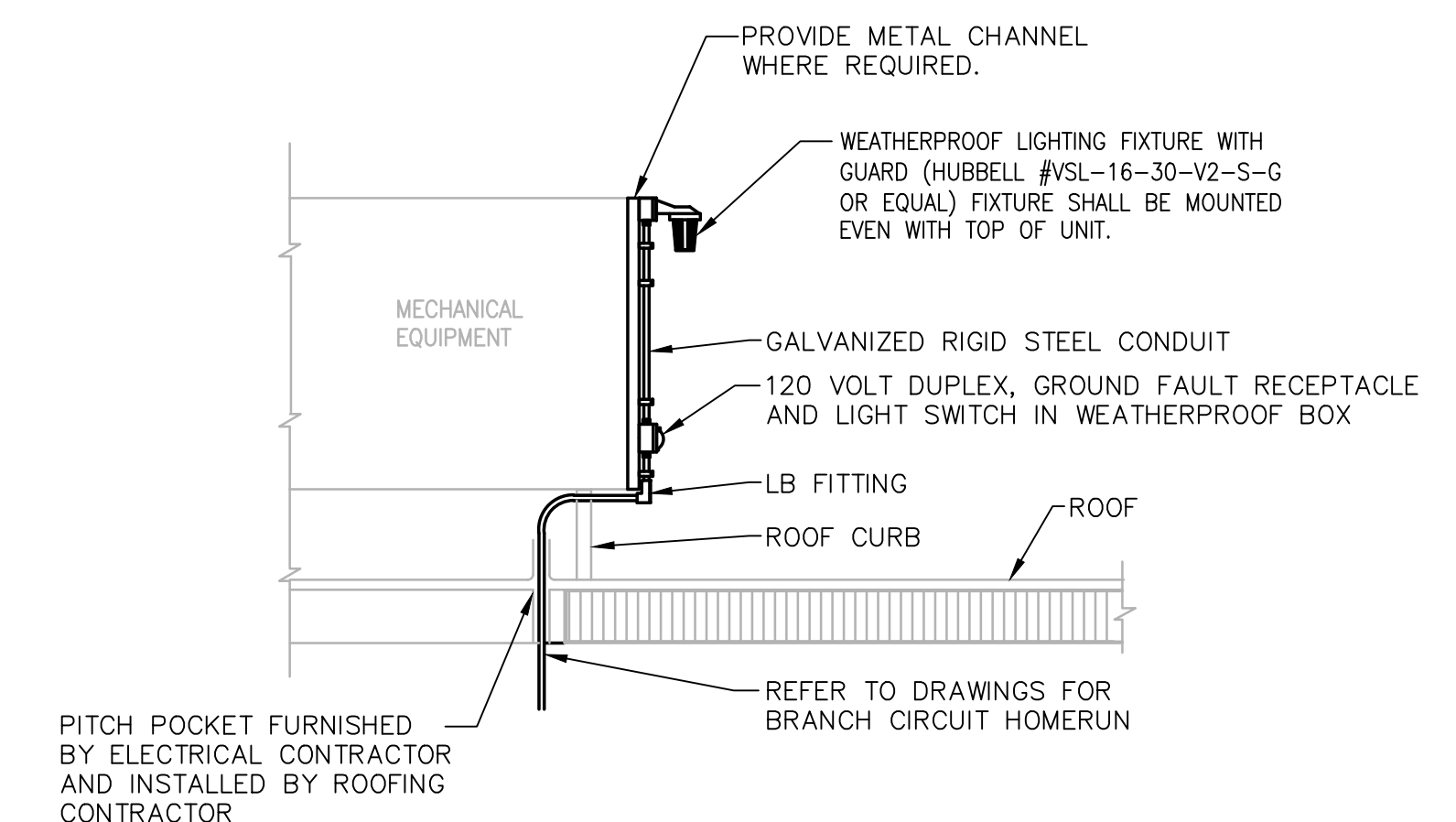
**ELECTRICAL EQUIPMENT STANCHION MOUNTING DETAIL**  
NOT TO SCALE



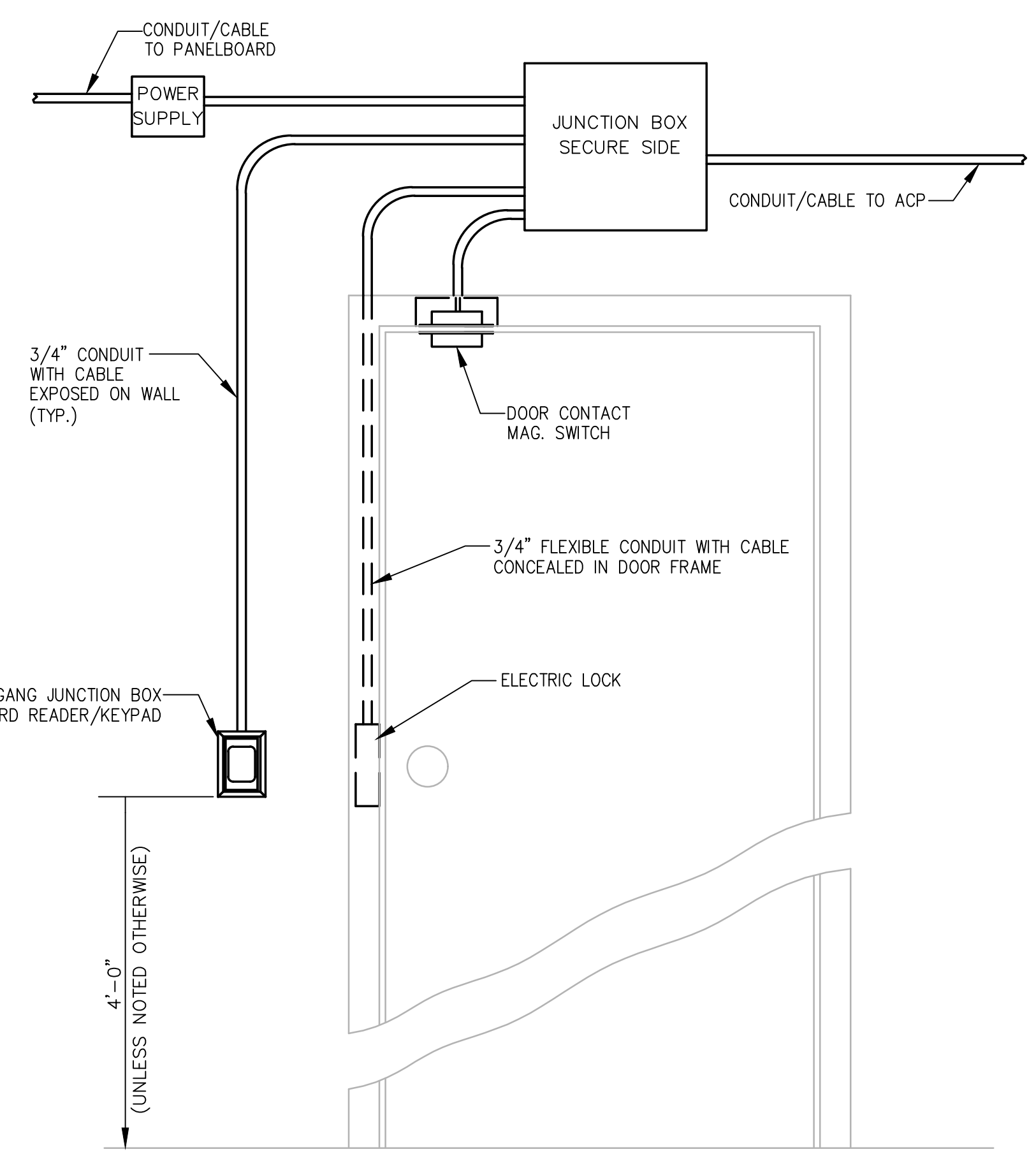
**SUBMERSIBLE LEVEL TRANSDUCER IN WET WELL**  
NOT TO SCALE



**FLOAT LEVEL SWITCH IN WET WELL**  
NOT TO SCALE

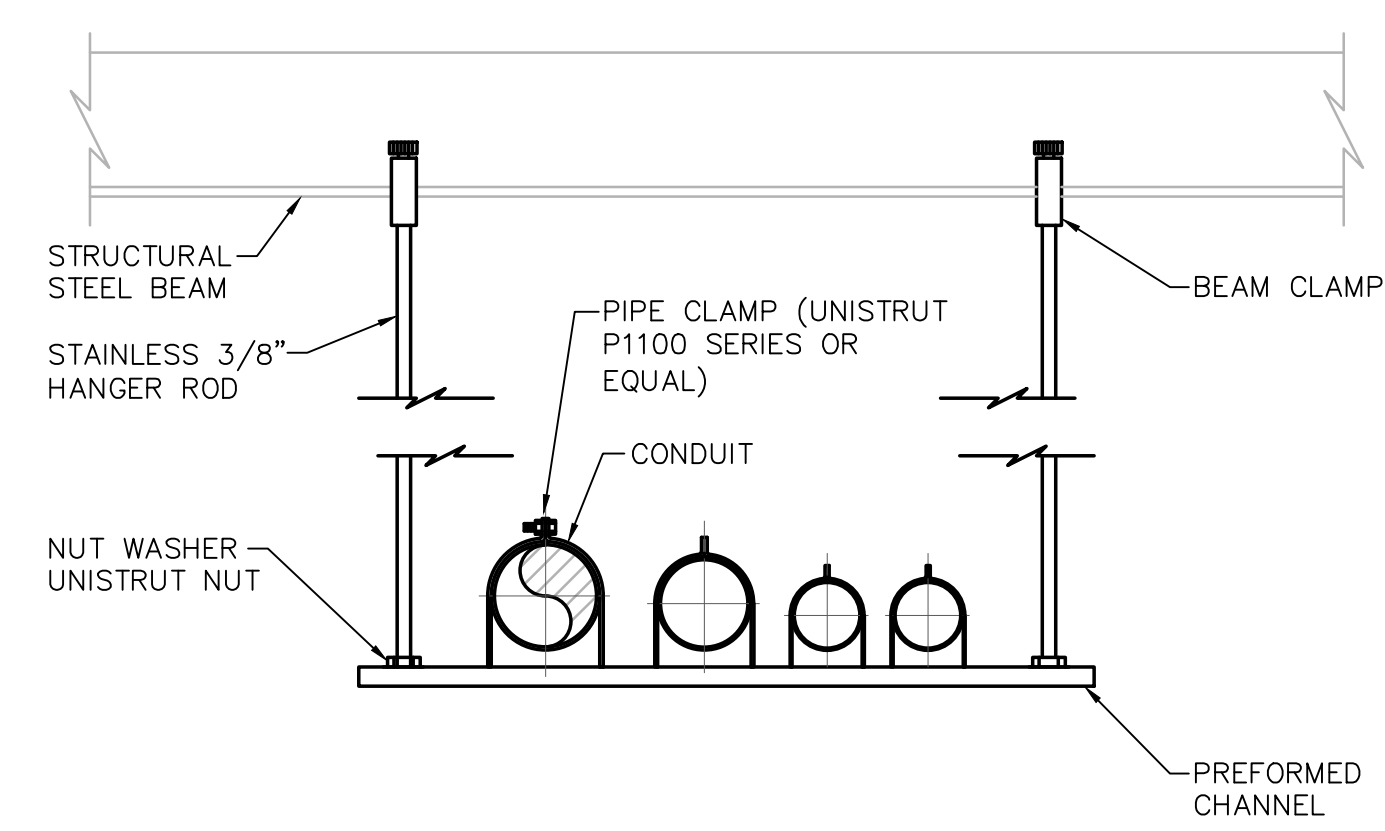


**ROOFTOP LIGHT AND RECEPTACLE DETAIL**  
NOT TO SCALE

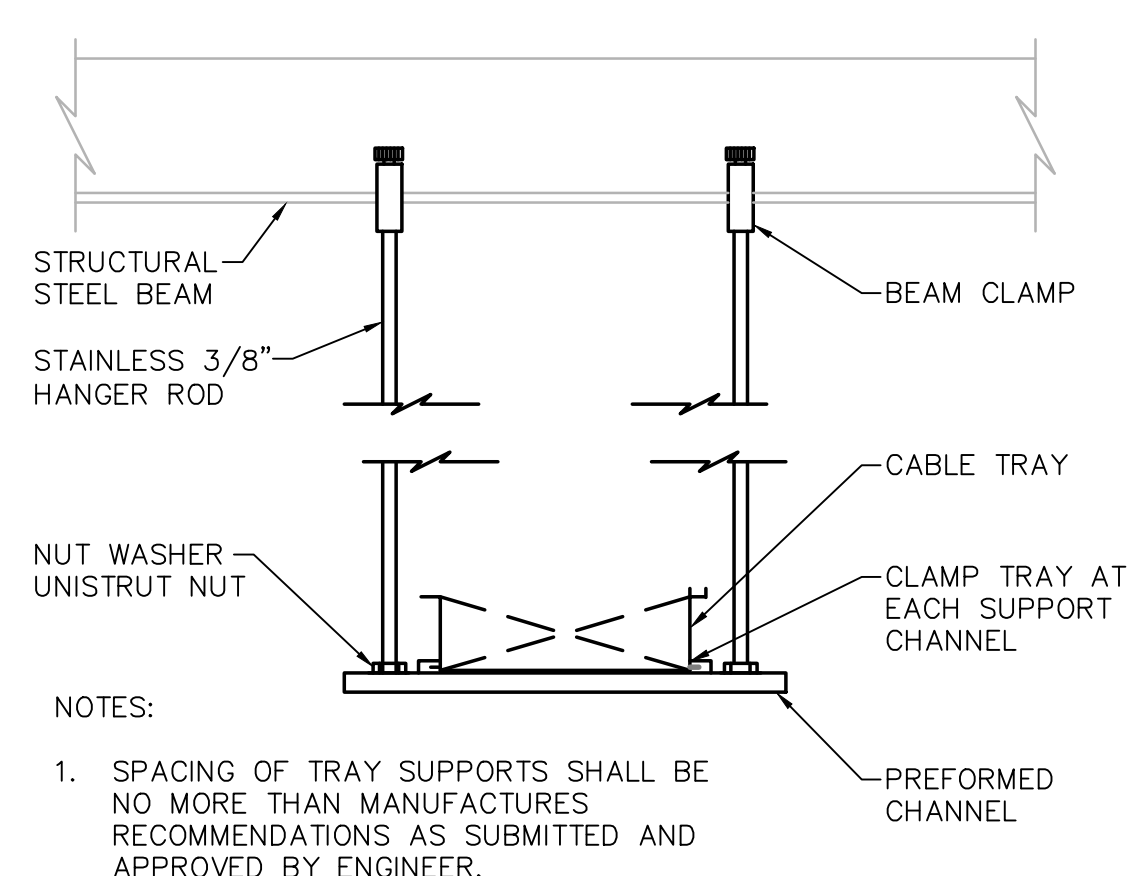


**TYPICAL DOOR WITH ACCESS CONTROL**  
NOT TO SCALE

- NOTES:
1. REFER TO PLAN DRAWINGS FOR DEVICES REQUIRED AND THEIR APPROXIMATE LOCATIONS AT EACH DOOR

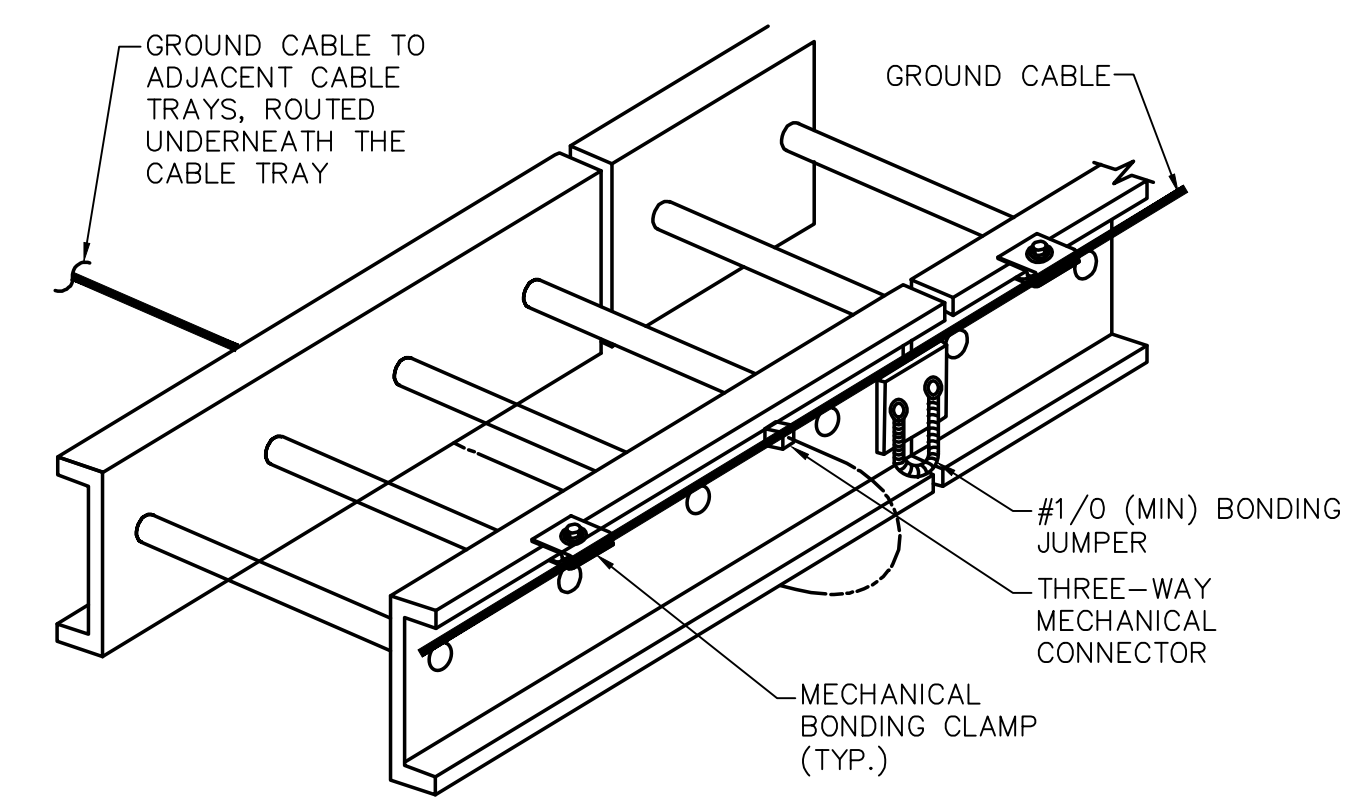


**TYPICAL CONDUIT TRAPEZE HANGER**  
NOT TO SCALE

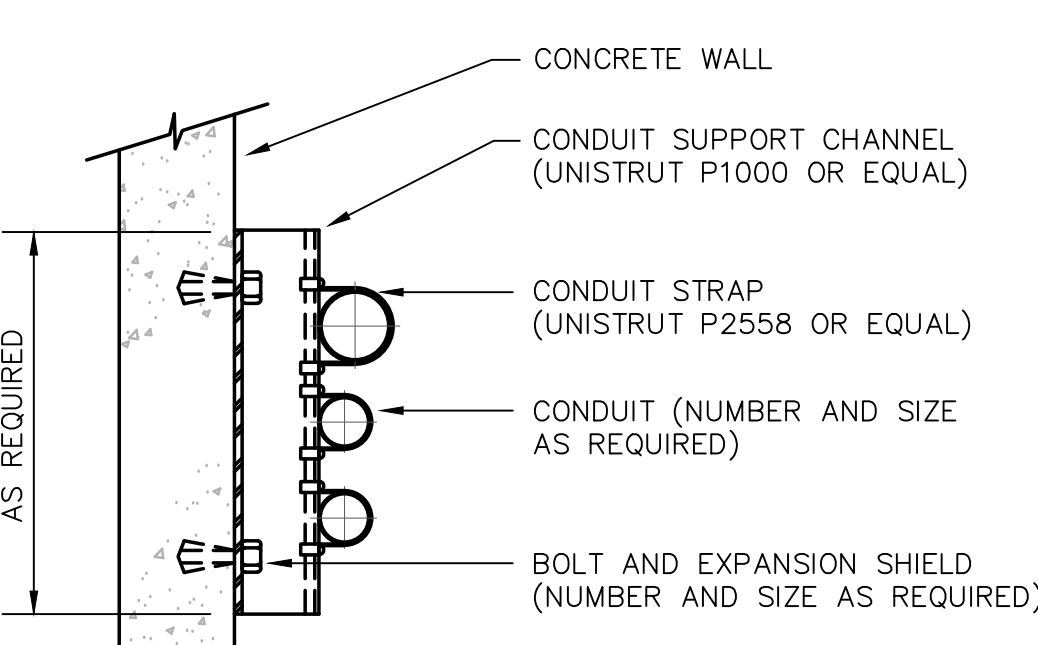
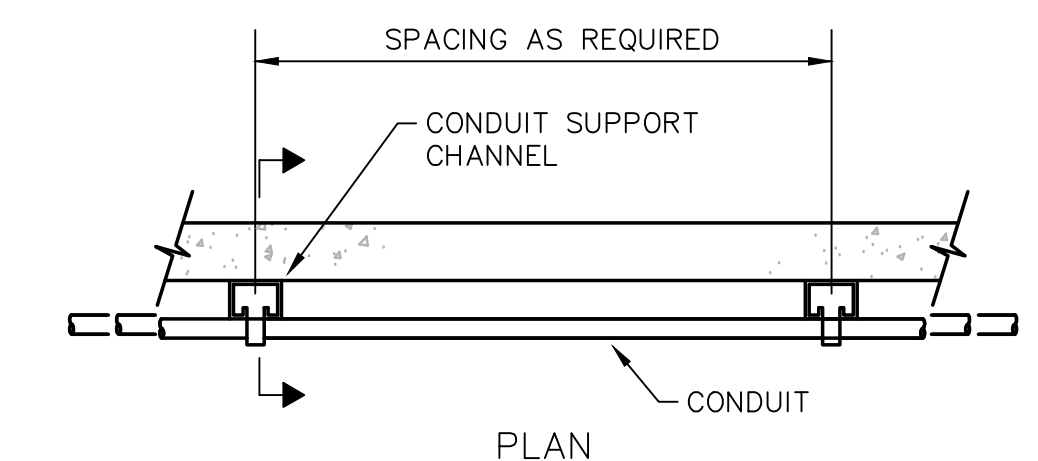


**TYPICAL CABLE TRAY HANGER**  
NOT TO SCALE

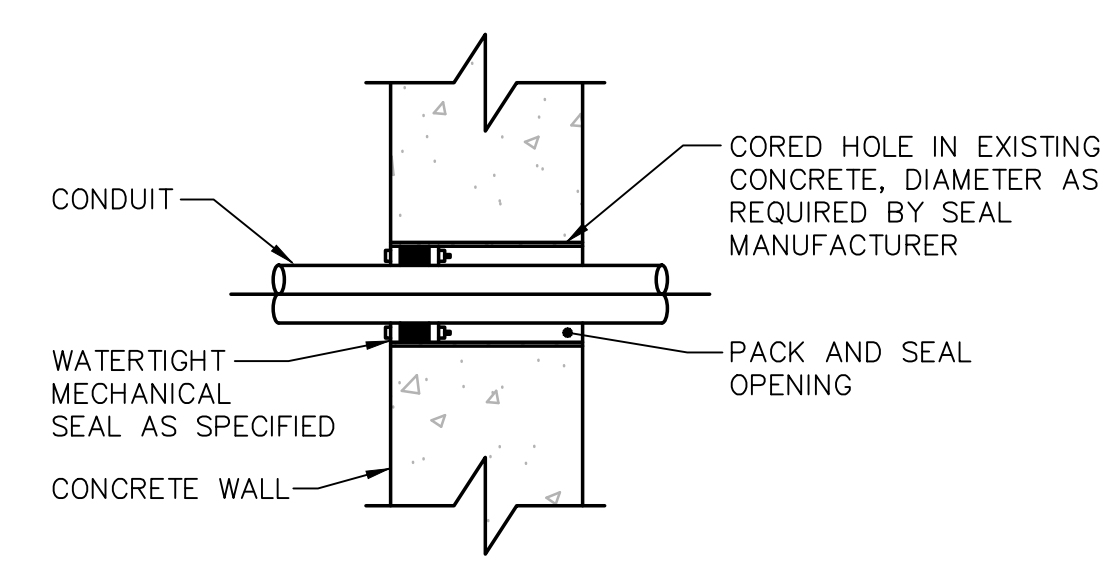
- NOTES:
1. SPACING OF TRAY SUPPORTS SHALL BE NO MORE THAN MANUFACTURERS RECOMMENDATIONS AS SUBMITTED AND APPROVED BY ENGINEER.



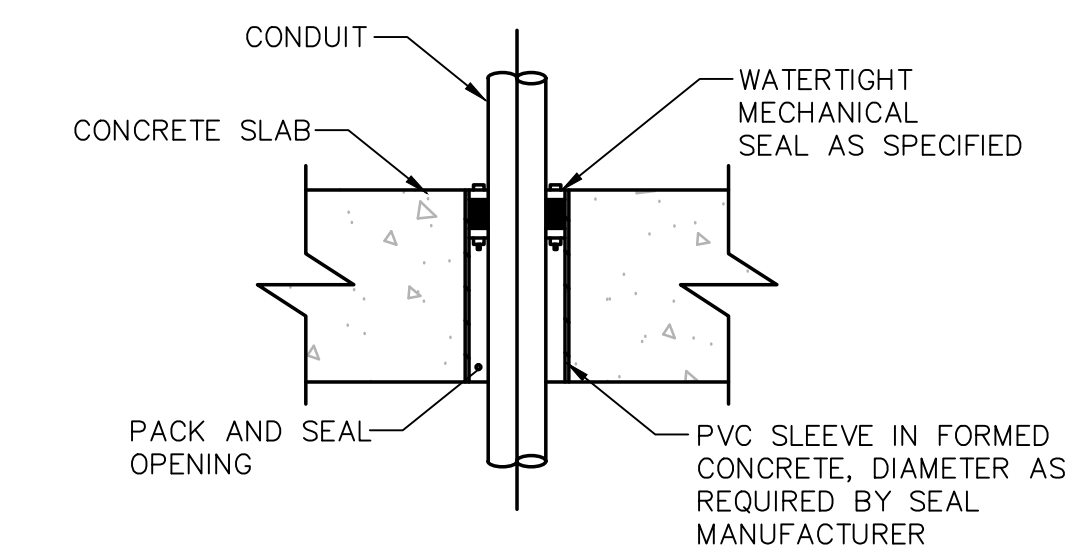
**GROUNDING EACH CABLE TRAY SECTION**  
NOT TO SCALE



**TYPICAL CONDUIT WALL SUPPORT**  
NOT TO SCALE



**CONDUIT PENETRATION THROUGH CONCRETE WALL**  
NOT TO SCALE



**CONDUIT PENETRATION PASSING THROUGH CONCRETE SLAB**  
NOT TO SCALE

2/2/2023 9:45 AM W:\YEAR - 2018\190220.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\190220.00 ELECTRICAL PLANS.DWG (BETA STB BIV STB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	RLB
DESIGNED BY:	MC
CHECKED BY:	MC

REGISTERED PROFESSIONAL

PREPARED BY

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SUBCONSULTANT

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150 Grossman Drive, Suite 309  
Braintree, Massachusetts 02184  
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TITLE

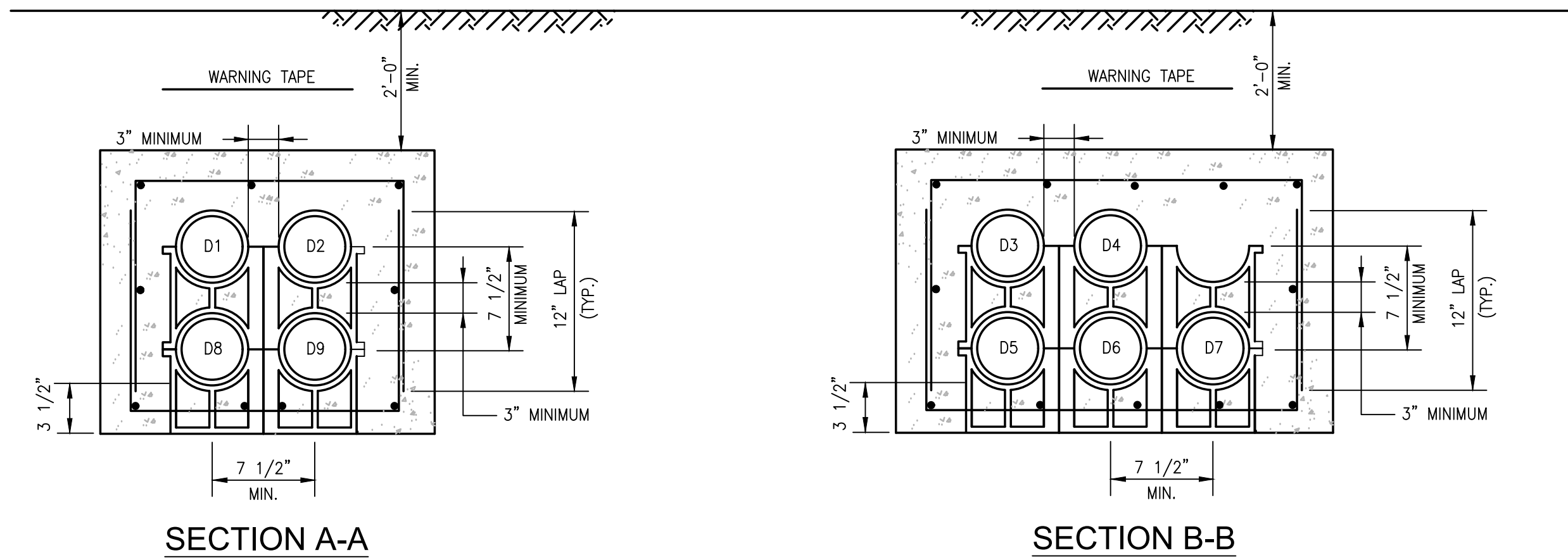
**Worcester Road Sewer Pumping Station Replacement**

**ELECTRICAL DETAILS**

BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	E-11

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

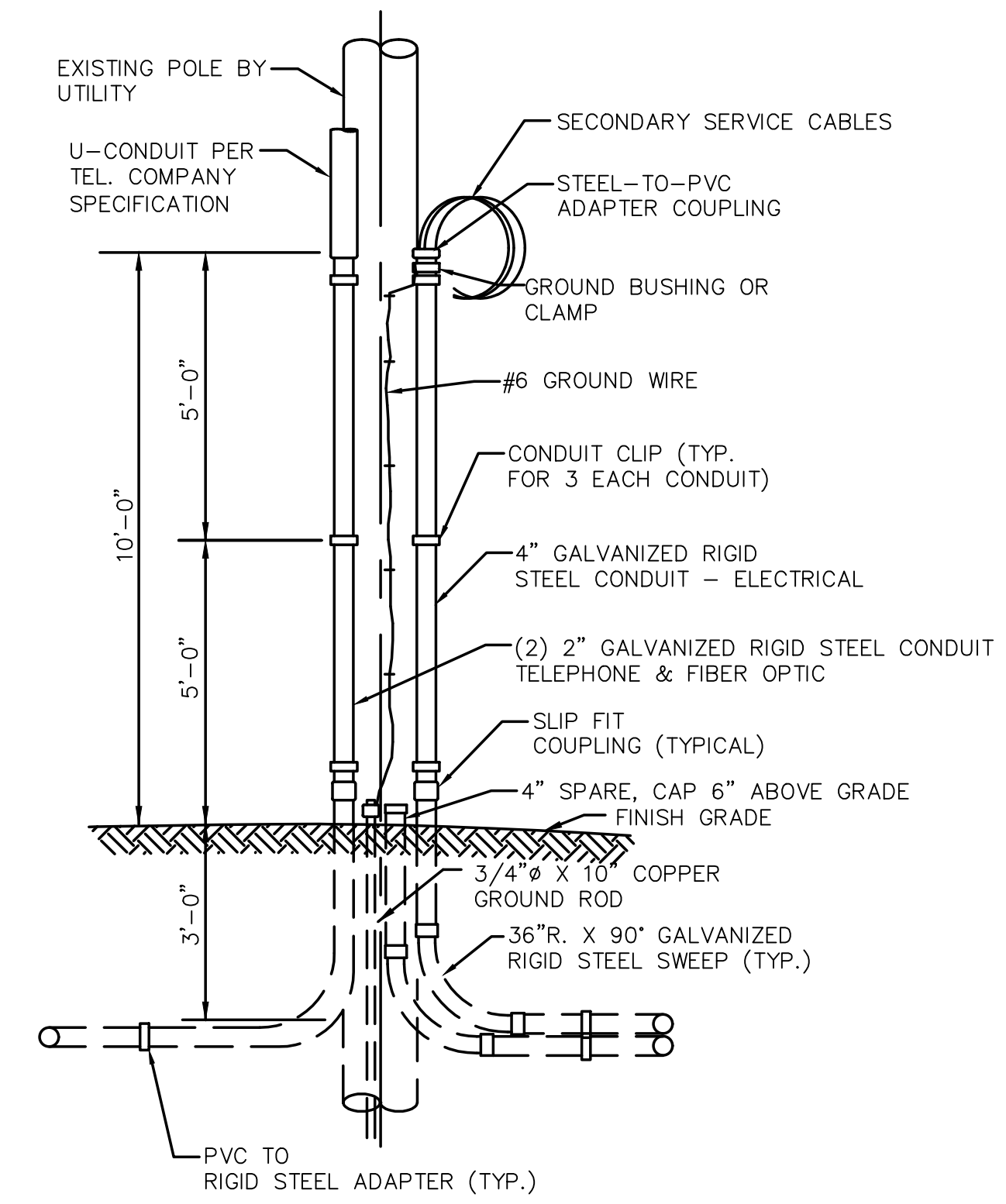
DUCT / CABLE SCHEDULE				
DUCT NO.	SIZE	CONDUCTORS	FROM	TO
D1	4"	(4) 600kcmil	UTILITY POLE	MCB
D2	4"	PULL STRING	UTILITY POLE	STUB UP AND CAP BELOW MCB
D3	4"	(4) 600kcmil, #2 GND	GENERATOR	GENERATOR DISCONNECT SWITCH
D4	1"	(6) #12, #12GND	LP-1	GENERATOR AUXILIARY SYSTEMS
D5	1"	(20) #14	GENERATOR	SCADA RTU CONTROL PANEL & SECURITY CONTROL PANEL
D6	1"	(6) #14	GENERATOR	ATS & EMERGENCY STOP
D7	1"	(1) CAT6 CABLE	GENERATOR	SCADA RTU CONTROL PANEL
D8	2"	FIBER OPTIC CABLE	UTILITY POLE	EQUIPMENT RACK
D9	2"	PULL STRING FOR TELE/COM	UTILITY POLE	TELE/COM BACKBOARD



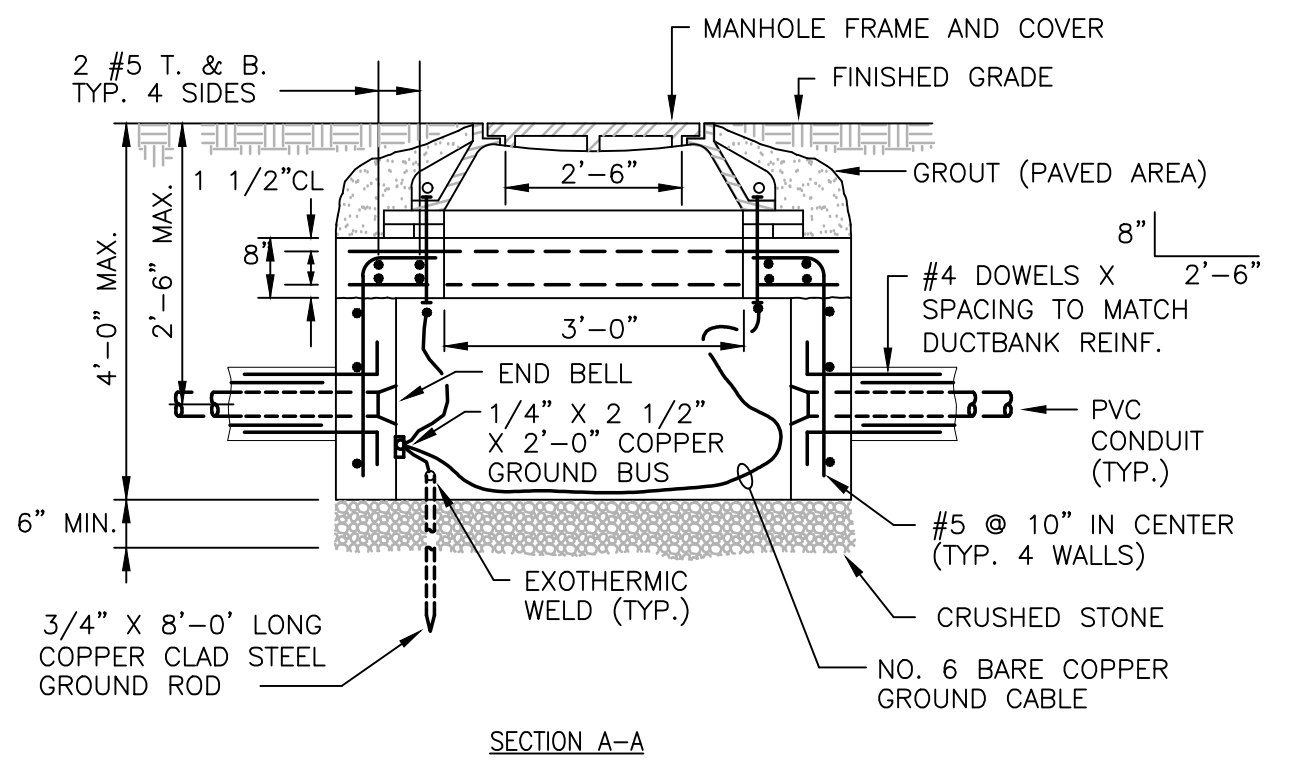
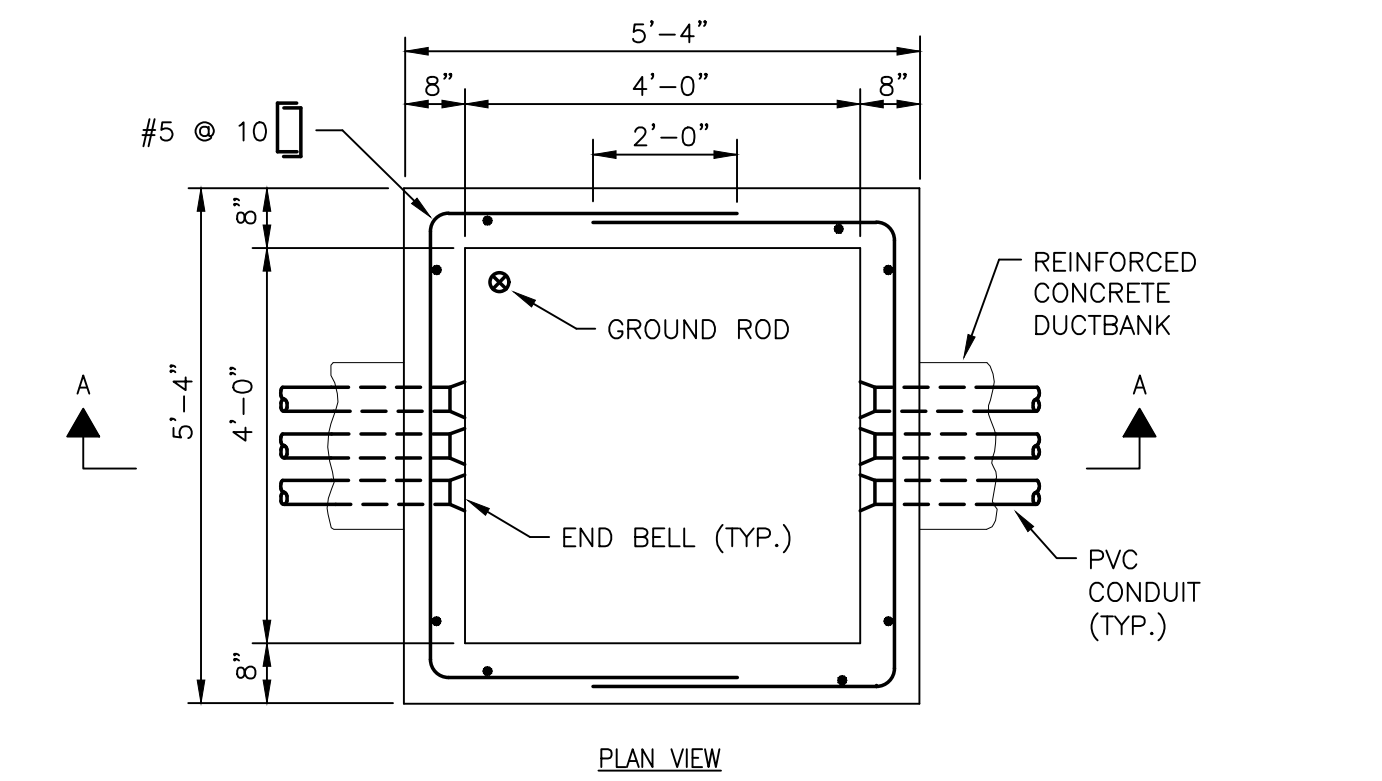
**NOTES:**

- BACKFILL DUCT BANK IN LAYERS AND MANUALLY TAMP OR "PUDDLE" CONCRETE FILL. PROVIDE RED DUCT BANK MARKER TAPES, READING "CAUTION - ELECTRICAL LINES BELOW", OVER ENTIRE LENGTH OF DUCTLINE. LOCATE TAPES 12 INCHES BELOW GRADE. PROVIDE A TAPE FOR EVERY 12 INCHES OF WIDTH OF DUCTLINE.

**DUCTBANK SECTIONS**  
NO SCALE



**UTILITY POLE SERVICE RISER DETAIL**  
NOT TO SCALE



**NOTES:**

- CHIMNEY HEIGHT IS KEPT TO MINIMUM TO FACILITATE PLACING COMPLETED SPLICES IN HANDHOLE FROM ABOVE GRADE.
- CONCRETE PER SPECIFICATIONS WITH MINIMUM STRENGTH OF 5,000 PSI AT 28 DAYS.
- PROVIDE HANDHOLE FRAME, RING AND COVER.
- REFER TO DUCTBANK SECTIONS FOR THE REQUIRED NUMBER OF CONDUIT ENTRANCES. PROVIDE CONDUIT ENTRY SPACE ON NON-USED SIDES FOR A MINIMUM (8) 4" FUTURE CONDUITS.

**UTILITY HANDHOLE DETAIL**  
NO SCALE

2/2/2023 9:45 AM W:\YEAR-2018\190220.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\190220.00 ELECTRICAL PLANS.DWG (BETA STB BIV STB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: RLB
DESIGNED BY: MC
CHECKED BY: MC

REGISTERED PROFESSIONAL  
 MICHAEL J. COTTER  
 ELECTRICAL  
 No. 40999  
 PROFESSIONAL ENGINEER

PREPARED BY  
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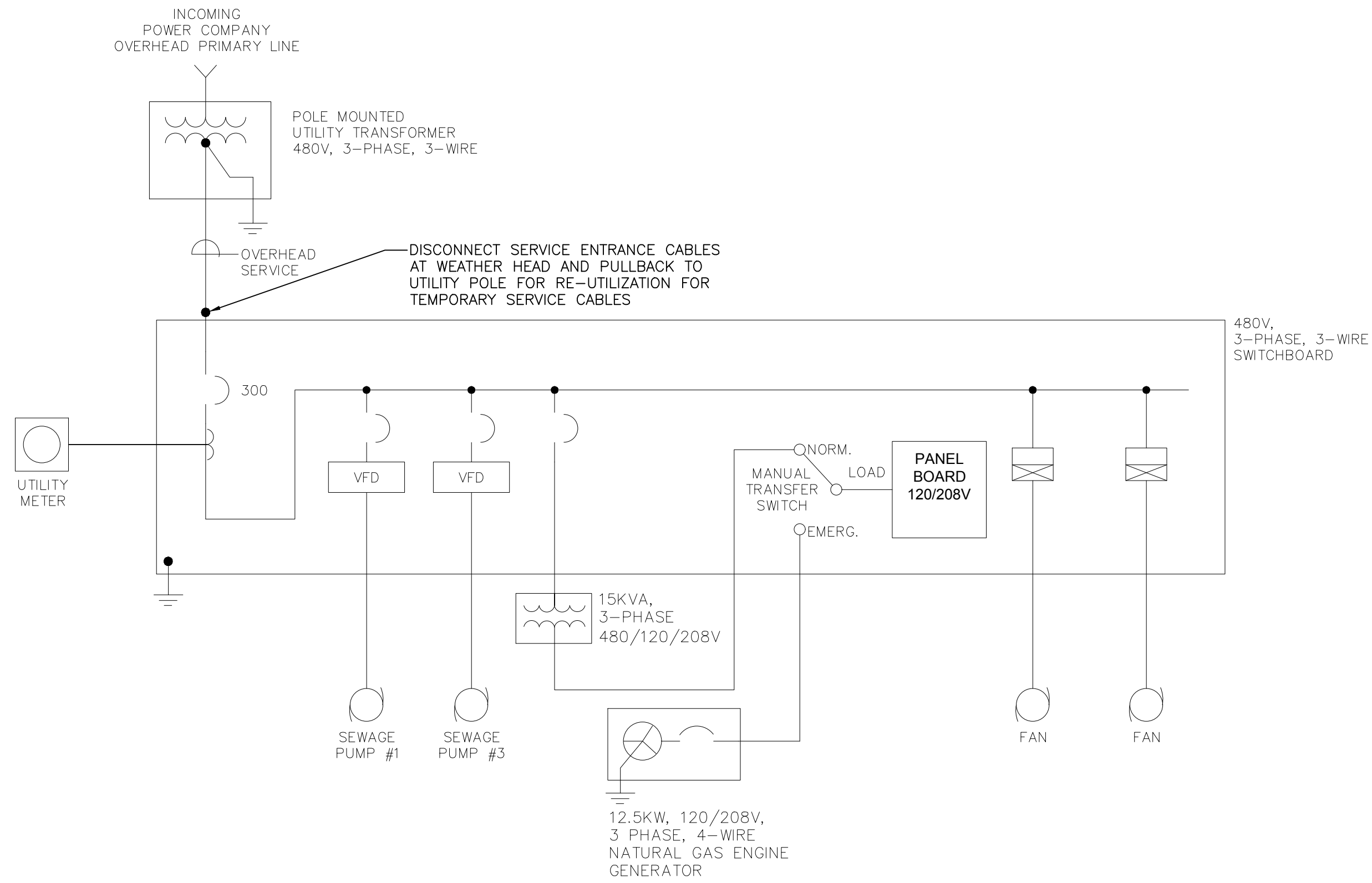
SCALE AS SHOWN
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TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
**ELECTRICAL SITE DETAILS**

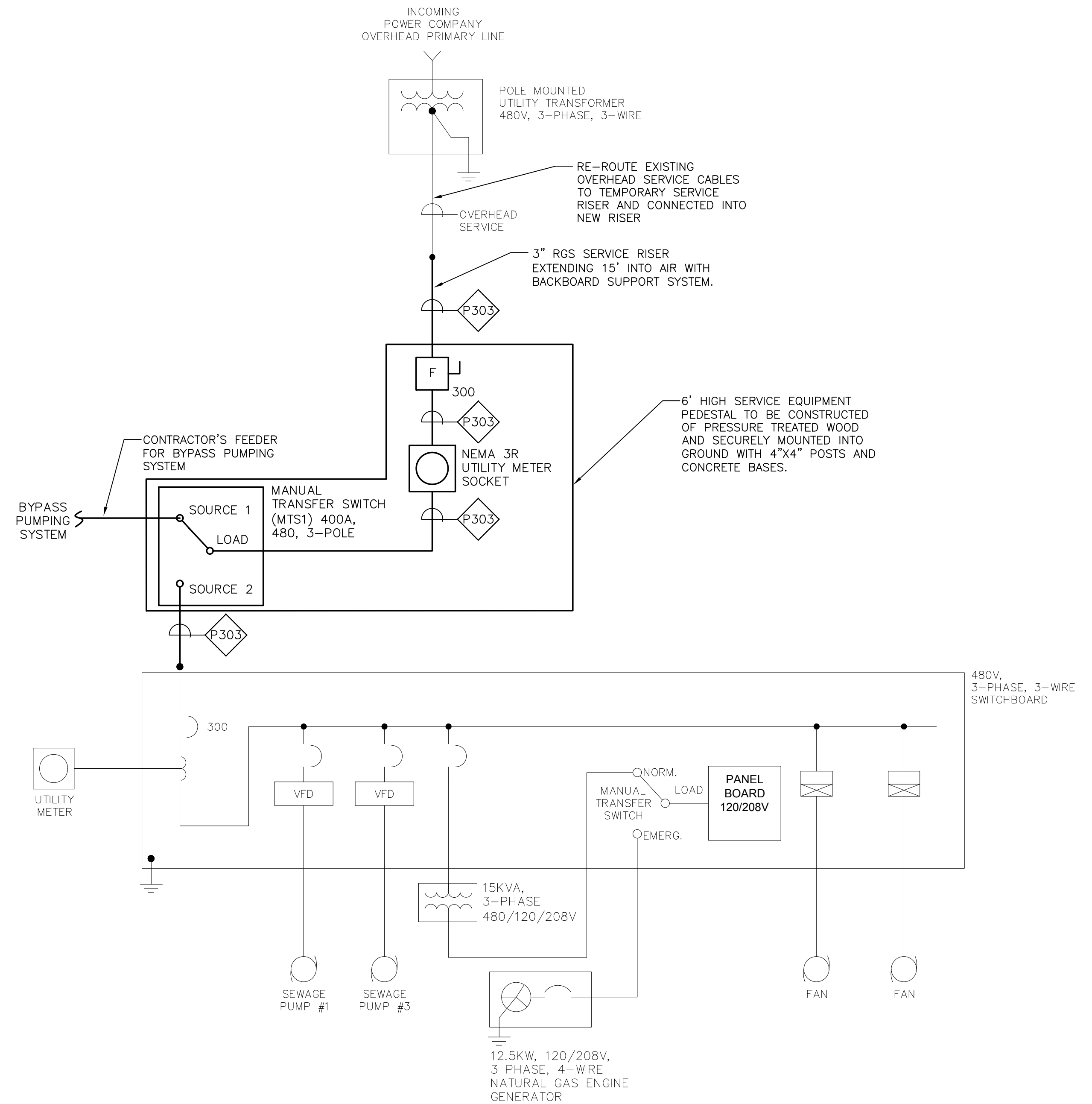
BETA JOB NO. 7385
ISSUE DATE JANUARY 2023
SHEET NO. E-12

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2/2/2023 9:47 AM 1/15/2023 9:47 AM - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS/ELECTRICAL DEPARTMENT/19020.00 ELECTRICAL PLANS.DWG (BETA STB.BW.STB)



**TEMPORARY SERVICE ONE LINE DIAGRAM - DEMOLITION**  
NOT TO SCALE



**TEMPORARY SERVICE ONE LINE DIAGRAM**  
NOT TO SCALE

TEMPORARY SERVICE NOTES

1. A TEMPORARY SERVICE SHALL BE PROVIDED TO THE TRANSFER OF THE EXISTING SERVICE BETWEEN THE EXISTING PUMP STATION AND THE BY PASS PUMP STATION AND SHALL REMAIN INTACT UNTIL THE NEW ELECTRICAL SERVICE IS ENERGIZED AND THE BY-PASS PUMPING SYSTEM IS NO LONGER REQUIRED. THE TEMPORARY SERVICE ONE LINE DIAGRAMS ONLY INDICATE A POSSIBLE METHOD OF ACHIEVING TEMPORARY SERVICE POWER, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A FULL RELIABLE TEMPORARY SERVICE POWER SYSTEM AND MAY UTILIZE OTHER METHODS TO ACHIEVE THIS.
2. THE WORK SHALL BE DONE ACCORDANCE WITH NEC ARTICLE 590, INSTALLED IN A NEAT MANNER AND WORKMANLIKE MANNER.
3. WORK SHALL BE PROPERLY FASTENED TO STRUCTURE EXTERIOR SURFACES AND PROPERLY PROTECTED FROM VEHICLE DAMAGE WHERE RUN BETWEEN STRUCTURES BY MEANS OF OVERHEAD, UNDERGROUND, VEHICLE RAMP SYSTEMS.
4. DEMOLISH THE EXISTING ELECTRICAL SERVICE PER ONE LINE DEMOLITION PLAN ON DRAWING E-8 AFTER THE BY-PASS PUMPING SYSTEM HAS BEEN COMMISSIONED AND ACCEPTED BY THE OWNER DE

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	RLB
DESIGNED BY:	MC
CHECKED BY:	MC

REGISTERED PROFESSIONAL  
  
 MICHAEL J. COTTER  
 ELECTRICAL  
 No. 40999  
 PROFESSIONAL ENGINEER

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SCALE	AS SHOWN
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TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
**ELECTRICAL TEMPORARY SERVICE**

BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	E-13

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

**GENERAL NOTES**

- HVAC WORK IS INDICATED DIAGRAMMATICALLY. EXACT LOCATIONS OF ALL COMPONENTS ARE TO BE DETERMINED IN THE FIELD AND BY THE ACTUAL BUILDING CONDITIONS. EXISTING DUCTS, PIPING OR EQUIPMENT INTERFERING WITH OTHER INSTALLATIONS SHALL BE RELOCATED AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER. EXACT LOCATIONS MUST HAVE THE APPROVAL OF THE ENGINEER.
- ALL WORK SHALL BE COORDINATED WITH ALL OTHER TRADES BEFORE ANY INSTALLATION IS MADE.
- ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH STATE CODES, MANUFACTURER'S APPROVED PUBLISHED LITERATURE, AND AUTHORITIES HAVING JURISDICTION.
- INSTALLATION OF EQUIPMENT SHALL PERMIT ACCESSIBILITY FOR SERVICE AND/OR REPLACEMENT.
- ALL CEILING MOUNTED EQUIPMENT SHALL BE INSTALLED IN SUCH A WAY THAT LIGHTS, PIPING, AND DUCTWORK DO NOT BLOCK ACCESS TO UNITS AND RELATED ACCESSORIES.
- CONTRACTOR SHALL COORDINATE ALL WALL, CEILING, FLOOR, ROOF AND BEAM PENETRATIONS.
- ALL DUCT SIZES SHOWN ARE NET INSIDE CLEAR DIMENSIONS.
- PROVIDE VOLUME DAMPERS AT EVERY MAIN BRANCH TAKE-OFF AND AS INDICATED AND IN SUCH OTHER LOCATIONS WHERE REQUIRED TO PROPERLY BALANCE THE SYSTEM.
- PROVIDE INSTRUMENT TEST HOLES WITH CAPS IN AIR DISTRIBUTION SYSTEMS AS REQUIRED TO BALANCE SYSTEM.
- ALL OPEN ENDED DUCTS IN THE CEILING PLENUM SHALL BE UNOBSTRUCTED FOR A MINIMUM DISTANCE OF 24" FROM THE OPENING TO ALLOW FREE AIR FLOW AND SHALL HAVE 3/4" WIRE MESH SCREENING.
- INSTALL ALL PIPING BELOW DUCTWORK UNLESS CLEARANCE CONDITION REQUIRES PIPING TO BE ABOVE.
- EXACT ELEVATION FOR SIDE WALL DIFFUSERS, REGISTERS AND GRILLES SHALL BE APPROVED BY THE ENGINEER BEFORE INSTALLATION.
- ALL EXPOSED EQUIPMENT (REGISTERS, UNIT HEATERS, ETC.) SHALL HAVE COLORS SELECTED BY THE ENGINEER, UNLESS NOTED OTHERWISE.
- BLANK OFF AND INSULATE ALL UNUSED LOUVER AREA.
- ALL REGISTERS, GRILLES AND DIFFUSERS LOCATED IN WALLS NEAR FLOOR SHALL BE HEAVY-DUTY TYPE DESIGNED TO WITHSTAND RUGGED IMPACT. REFER TO SCHEDULE. THE SECTION OF DUCTWORK BEHIND THE AIR DEVICE SHALL BE PAINTED FLAT BLACK.
- ALL MAIN BRANCH PIPES FROM RISERS SHALL HAVE ISOLATION VALVES NEAR SHAFTS. PROVIDE SHUT-OFF VALVES AT EACH SUPPLY BRANCH AND COMBINATION BALANCING SHUT-OFF VALVE AT EACH RETURN BRANCH.
- ROOF OPENINGS SHALL BE SIZED FROM APPROVED SHOP DRAWINGS.
- ALL FLOOR MOUNTED MECHANICAL EQUIPMENT, ETC. SHALL HAVE A CONCRETE PAD 4" HIGH AND 6" BEYOND EQUIPMENT FOOT PRINT ON ALL FOUR SIDES. CONCRETE PADS SHALL BE SIZED FROM APPROVED SHOP DRAWINGS OF EQUIPMENT.
- ALL DAMPER MOTORS SHALL BE 120 VOLT.

**SEQUENCE OF OPERATIONS**

- ERV-1: SEE SPECIFICATIONS
- ELECTRICAL UNIT HEATERS: EUH FAN AND HEATING COIL SHALL CYCLE FROM WALL MOUNTED THERMOSTAT TO MAINTAIN SPACE TEMPERATURE SETPOINT.

**ABBREVIATIONS**

ACD	AUTOMATIC CONTROL DAMPER
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHAP	AS HIGH AS POSSIBLE ACCESS PANEL
AP	ARCHITECT
ARCH	ARCHITECT
ATC	AUTOMATIC TEMPERATURE CONTROL
BDD	BACKDRAFT DAMPER
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BOD	BOTTOM OF DUCT
CAP	CAPACITY
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CO	CLEANOUT
CONT	CONTROLLER
CP	CUT AND CAP
DIA	DIAMETER
DB	DRY BULB TEMPERATURE
DC	DUST COLLECTOR
DDC	DIRECT DIGITAL CONTROL
DN	DOWN
DWG	DRAWING
DX	DIRECT EXPANSION COOLING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EBB	ELECTRIC BASEBOARD RADIATION
ECH	ELECTRIC CABINET HEATER
ECON	AIR-SIDE ECONOMIZER
EF	EXHAUST FAN
EFF	EFFICIENCY
ELV	ELEVATION
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
ERV	ENERGY RECOVERY VENTILATOR
ETR	EXISTING TO REMAIN
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
FA	FREE AREA
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FOB	FLAT ON BOTTOM
FOOT	FLAT ON TOP
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FT	FEET
FTR	FINNED TUBE RADIATION
GAL	GALLONS
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GF	GLYCOL FEED
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HGRH	HOT GAS REHEAT
HW	HOT WATER
HZ	HERTZ
IN	INCHES
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LD	LINEAR DIFFUSER
LF	LINEAR FEET
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSANDS OF BTU'S PER HOUR
MCC	MOTOR CONTROL CENTER
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
POS	PROVIDED UNDER OTHER SECTIONS
PSI	POUNDS PER SQUARE INCH (GAUGE)
PD	PRESSURE DROP
PRV	PRESSURE REDUCING VALVE
R	RETURN
RA	RETURN AIR
RF	RETURN/EXHAUST FAN
RG	RETURN GRILLE
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RR	RETURN REGISTER
S	SUPPLY
SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
SF	SQUARE FEET, SUPPLY FAN
SP	STATIC PRESSURE
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
STL	STEEL
TYP	TYPICAL
UC	UNDERCUT DOOR
V	VOLTS
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WG	WATER GAUGE
WMS	WIRE MESH SCREEN

**EQUIPMENT TAG SYMBOLS & ABBREVIATIONS**

EQUIPMENT NOT REQUIRING ELECTRIC SERVICE	TAG NO	SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS	TAG NO	EQUIPMENT REQUIRING ELECTRIC SERVICE
AHU	AIR HANDLING UNIT			
AF	AIR FILTER			
AS	AIR SEPARATOR			
CH	CHILLER			
CT	COOLING TOWER			
CUH	CABINET UNIT HEATER			
C	CONVECTOR			
EF	EXHAUST FAN			
ERV	ENERGY RECOVERY VENTILATOR			
ET	EXPANSION TANK			
EUH	ELECTRIC UNIT HEATER			
FCU	FAN COIL UNIT			
FMS	FLOW MEASURING STATION			
HC	HEATING COIL			
HFCU	HEAT RECOVERY UNIT			
HV	HEATING AND VENTILATING UNIT			
IRV	INTAKE ROOF VENT			
MAU	MAKEUP AIR UNIT			
P	PUMP			
REF	RETURN/EXHAUST FAN			
RF	RETURN FAN			
RTU	ROOFTOP UNIT			
SA	SOUND ATTENUATOR			
SF	SUPPLY FAN			
TU	TERMINAL UNIT			
UH	UNIT HEATER			

**DUCTWORK LEGEND/SYMBOLS**

DOUBLE LINE	DESCRIPTION
	SUPPLY AIR FLOW
	OUTSIDE AIR FLOW
	RETURN/EXHAUST AIR FLOW
	SUPPLY/OUTSIDE AIR FLOW
	RETURN AIR FLOW
	EXHAUST AIR FLOW
	RECTANGULAR SUPPLY DUCT ELBOW (UP & DN)
	RECTANGULAR RETURN DUCT ELBOW (UP & DN)
	RECTANGULAR EXHAUST DUCT ELBOW (UP & DN)
	ROUND SUPPLY DUCT ELBOW (UP & DN)
	ROUND RETURN DUCT ELBOW (UP & DN)
	ROUND EXHAUST DUCT ELBOW (UP & DN)
	DENOTES RECTANGULAR DUCT SIZE IN INCHES (DIMENSIONS INSIDE CLEAR)
	DENOTES ROUND DUCT SIZE IN INCHES (DIMENSIONS INSIDE CLEAR)
	SUPPLY AIR TERMINALS CEILING OR DUCT MOUNTED (SQUARE, RECTANGULAR, CIRCULAR & SIDEWALL W/ AIR VOLUME EXTRACTOR) CFM, SIZE & TYPE AS NOTED.
	RETURN AIR TERMINAL CFM, SIZE & TYPE AS NOTED
	EXHAUST AIR TERMINAL CFM, SIZE & TYPE AS NOTED
	SUPPLY GRILLE W/ INSIDE COLLAR
	DUCT RISING IN DIRECTION OF ARROW
	TRANSITION DUCT CONCENTRIC & ECCENTRIC
	DUCT ACCESS DOOR
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT
	HUMIDIFIER - DUCT MOUNTED
	FIRE DAMPER W / ACCESS DOOR
	SMOKE DAMPER W / ACCESS DOOR

**DUCTWORK LEGEND/SYMBOLS**

DOUBLE LINE	DESCRIPTION
	COMBINATION FIRE/SMOKE DAMPER W / ACCESS DOOR
	MANUAL VOLUME DAMPER
	MOTOR OPERATED DAMPER
	DUCT MOUNTED SMOKE DETECTOR
	SQUARE VANED ELBOW
	RADIUS TYPE ELBOW WITH OR WITHOUT VANES
	DUCT SPLIT WITH VANED ELBOW
	STRAIGHT TEE
	CONICAL TEE
	45° TEE
	DOOR UNDERCUT - SQUARE FEET SIZE AS PER PLANS
	DOOR LOUVER - SQUARE FEET SIZE AS PER PLANS
	HORIZONTAL AIR DELIVERY UNIT HEATER
	VERTICAL AIR DELIVERY UNIT HEATER
	THERMOSTAT
	OCCUPIED / UNOCCUPIED SWITCH
	RISER UP
	RISER DOWN
	ELBOW - 90°
	ELBOW - 45°
	LATERAL CONNECTION
	TEE CONNECTION
	SECTION OR DETAIL IDENTIFICATION

NOTE- NOT ALL SYMBOLS APPEAR ON DRAWINGS

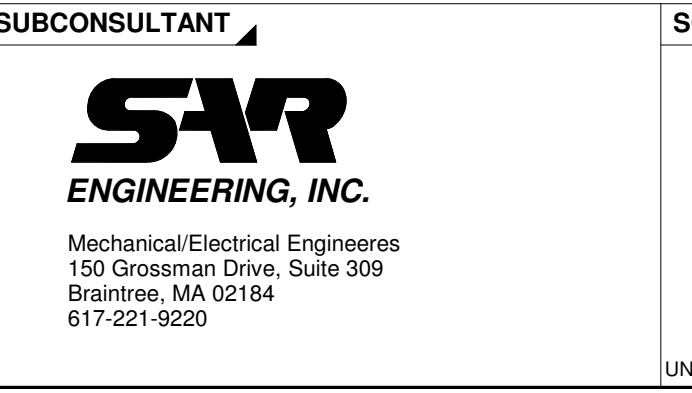
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NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

**DRAWN BY:**  
RLB

**DESIGNED BY:**  
RLB

**CHECKED BY:**  
RHB



SCALE

**N.T.S.**

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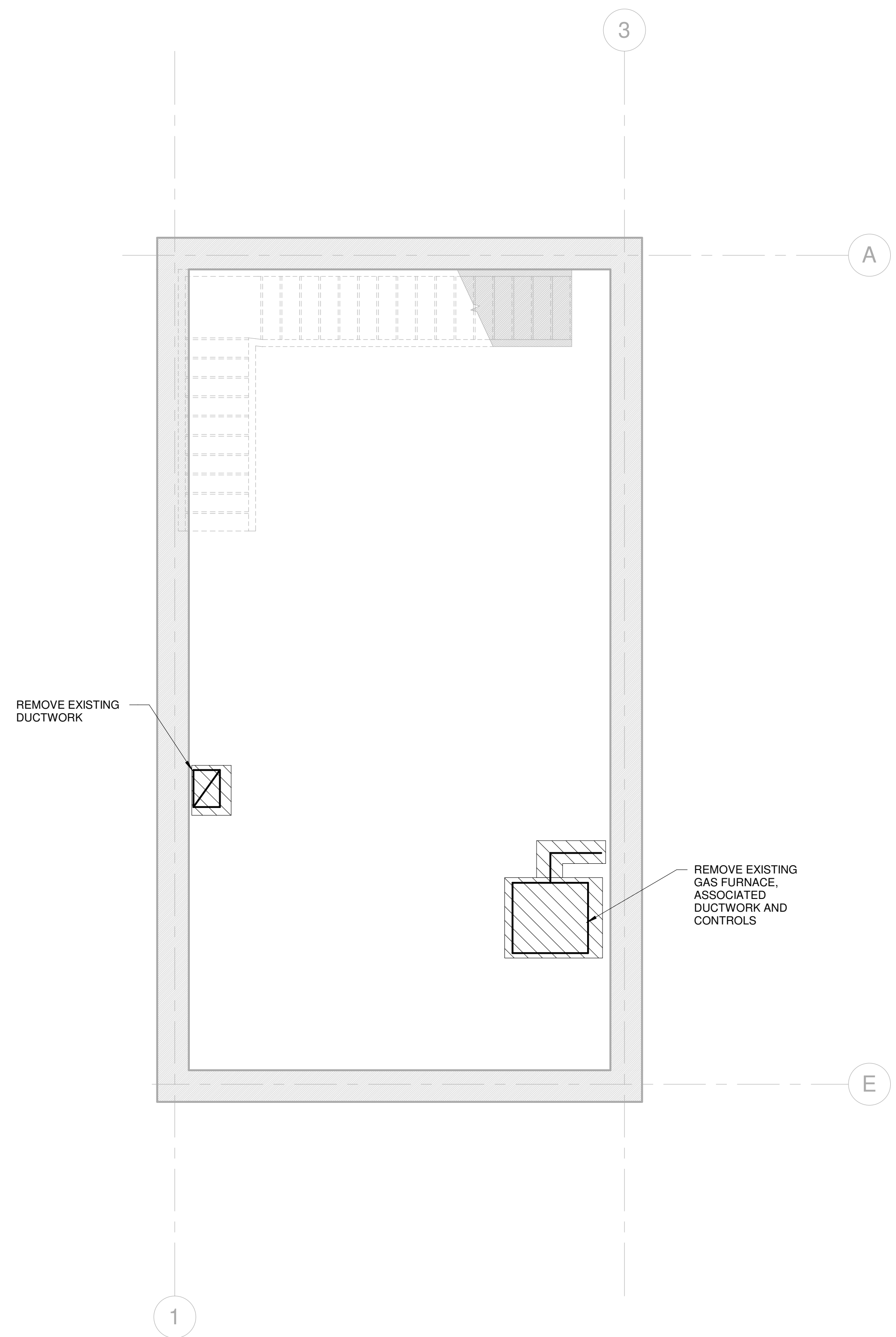
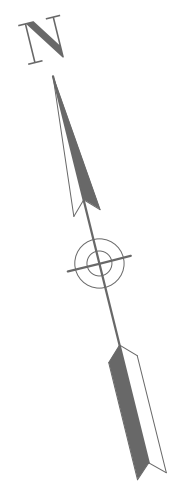
TITLE

**Worcester Road Sewer Pumping Station Replacement**

**HVAC LEGEND AND GENERAL NOTES**

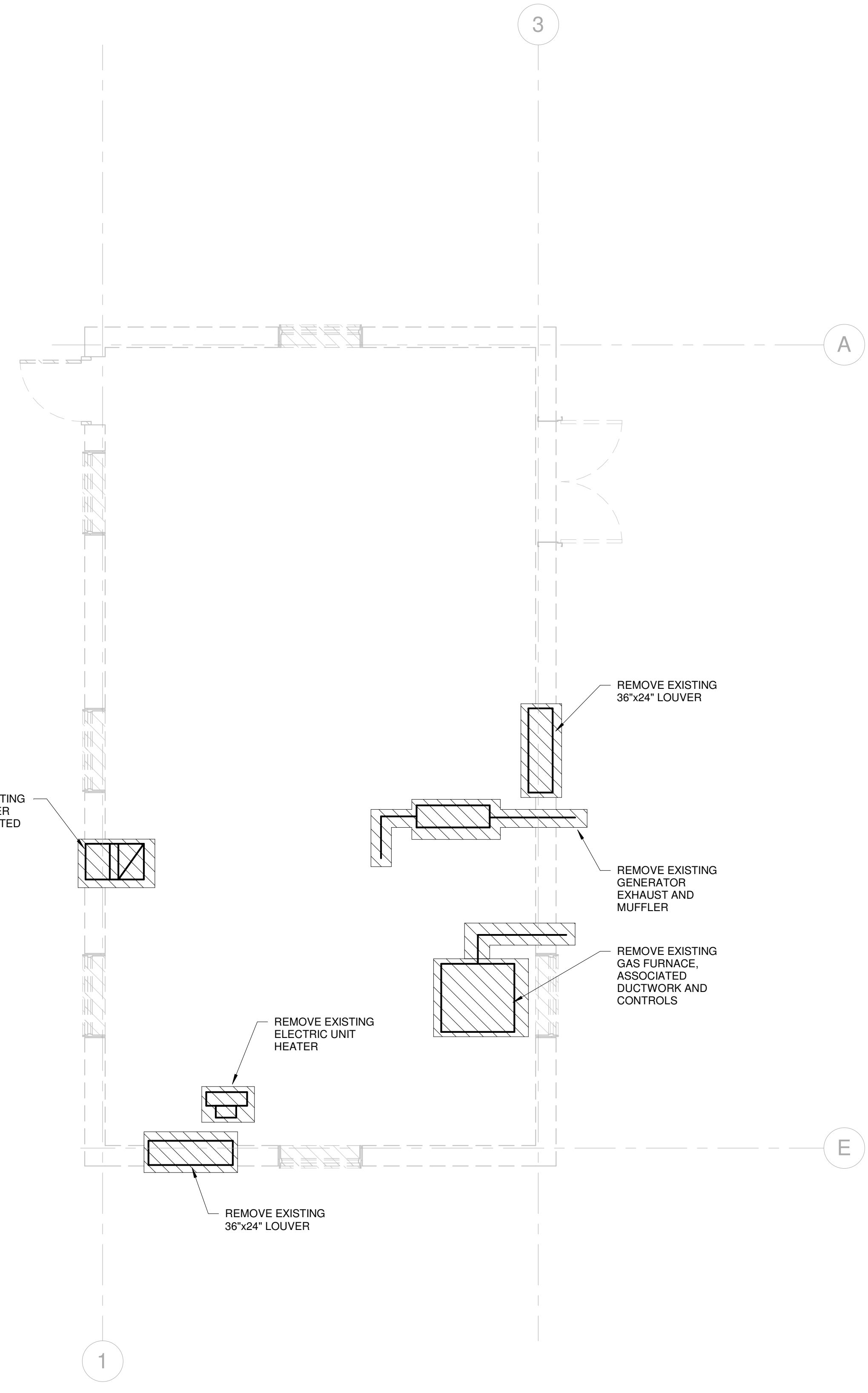
DSK JOB NO.	20030.00
ISSUE DATE	JANUARY 2023
SHEET NO.	H-1

P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWG\600-REV\TITLEBLOCKS\KOC\_Arch D 24x36 Vertical Title - BETA



**LOWER LEVEL - HVAC PLAN - DEMOLITION**

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



**UPPER LEVEL - HVAC PLAN - DEMOLITION**

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

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:  
RLB  
DESIGNED BY:  
RLB  
CHECKED BY:  
RHB



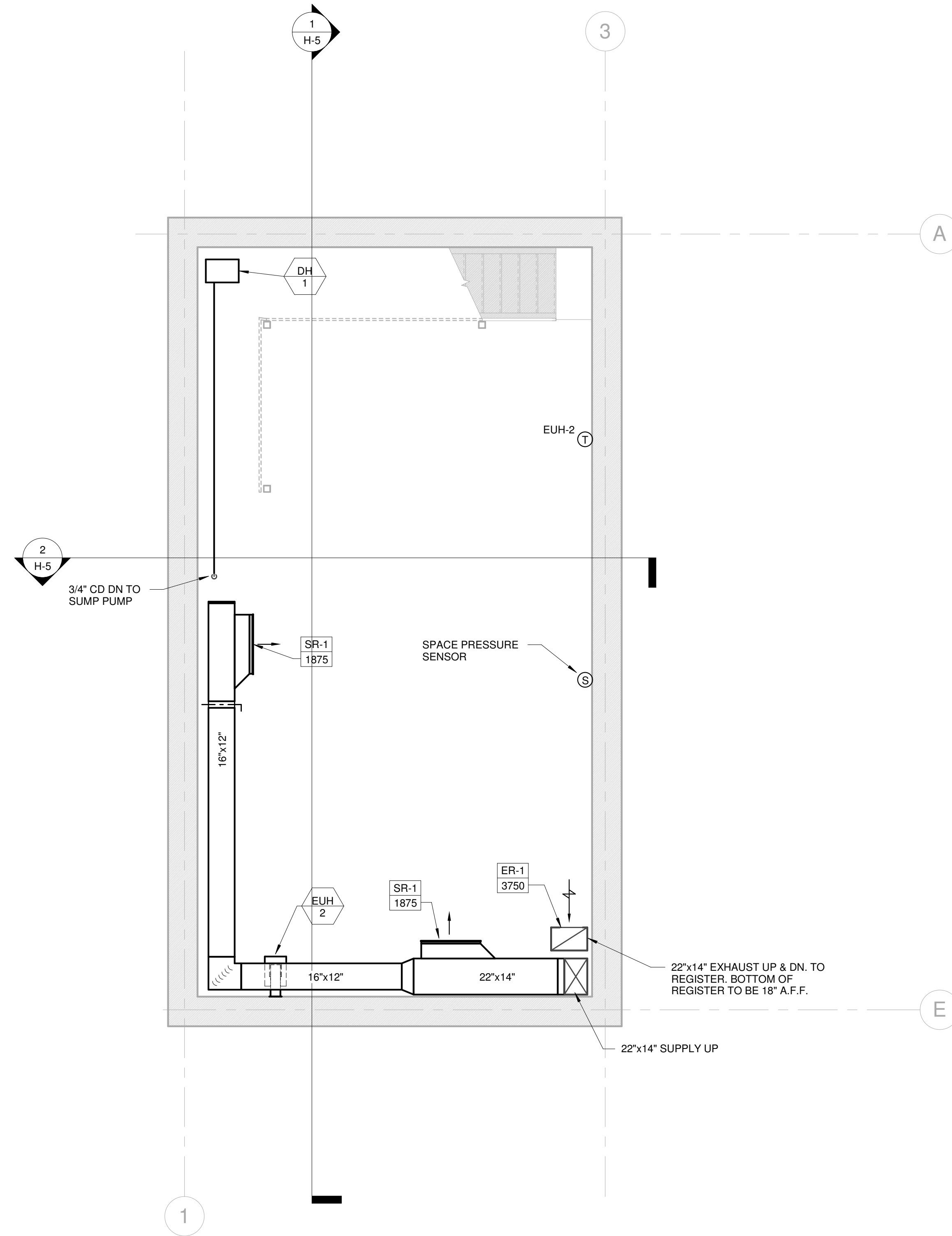
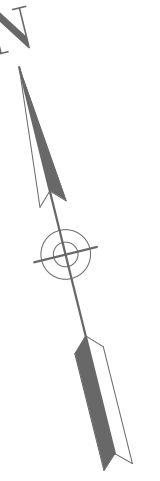
SUBCONSULTANT  
**SAR**  
ENGINEERING, INC.  
Mechanical/Electrical Engineers  
150 Grossman Drive, Suite 309  
Braintree, MA 02184  
617-221-9220

SCALE  
**1/4" = 1'-0"**  
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TITLE  
**Worcester Road Sewer  
Pumping Station Replacement  
HVAC DEMOLITION PLANS**

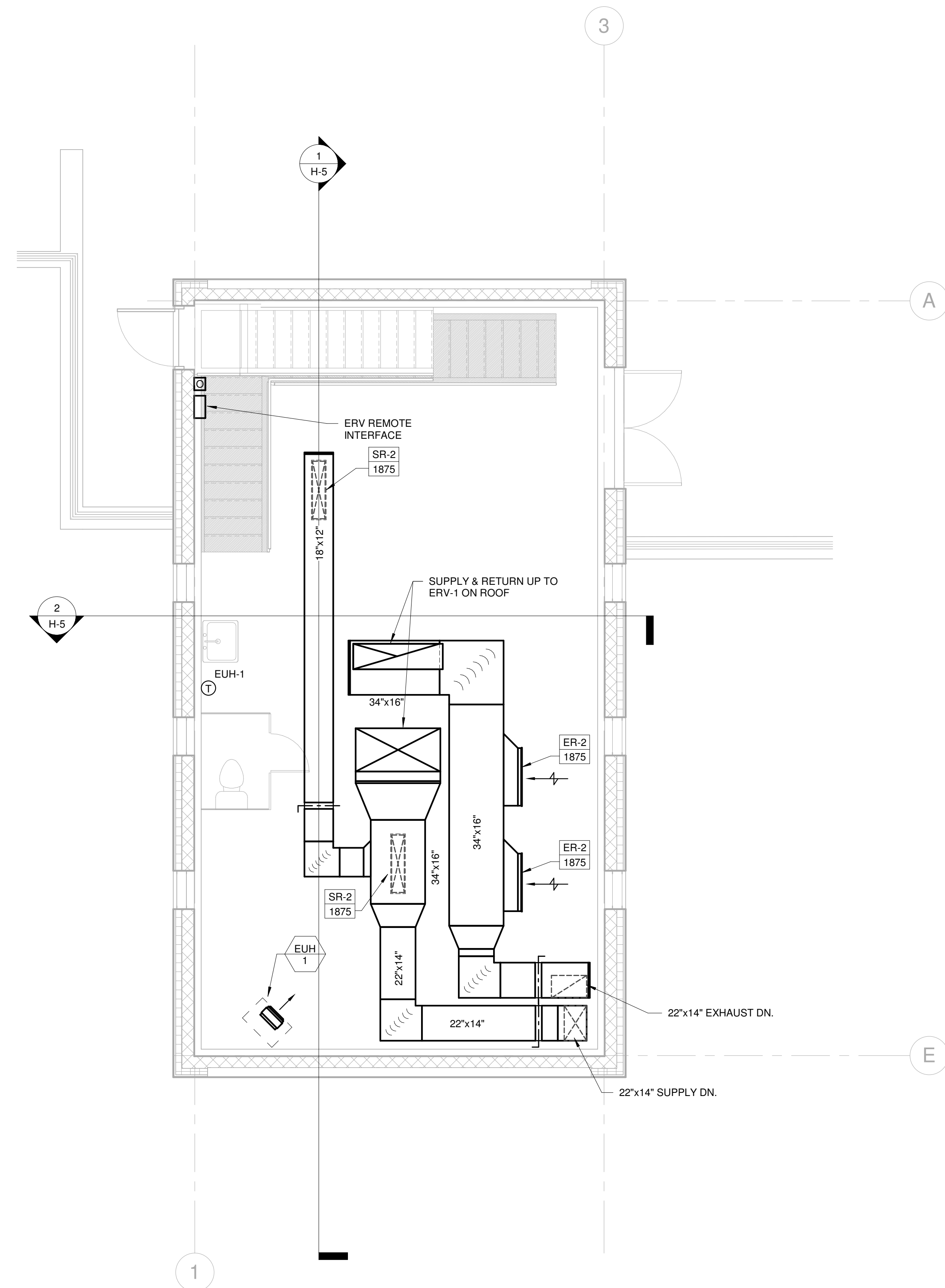
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ISSUE DATE JANUARY 2023  
SHEET NO. **H-2**

P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWG\600-REV\T\FAMILIES\TITLEBLOCKS\KOC\_Arch D 24x36 Vertical Title - BETA



**LOWER LEVEL - HVAC PLAN - PROPOSED**

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



**UPPER LEVEL - HVAC PLAN - PROPOSED**

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

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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RHB



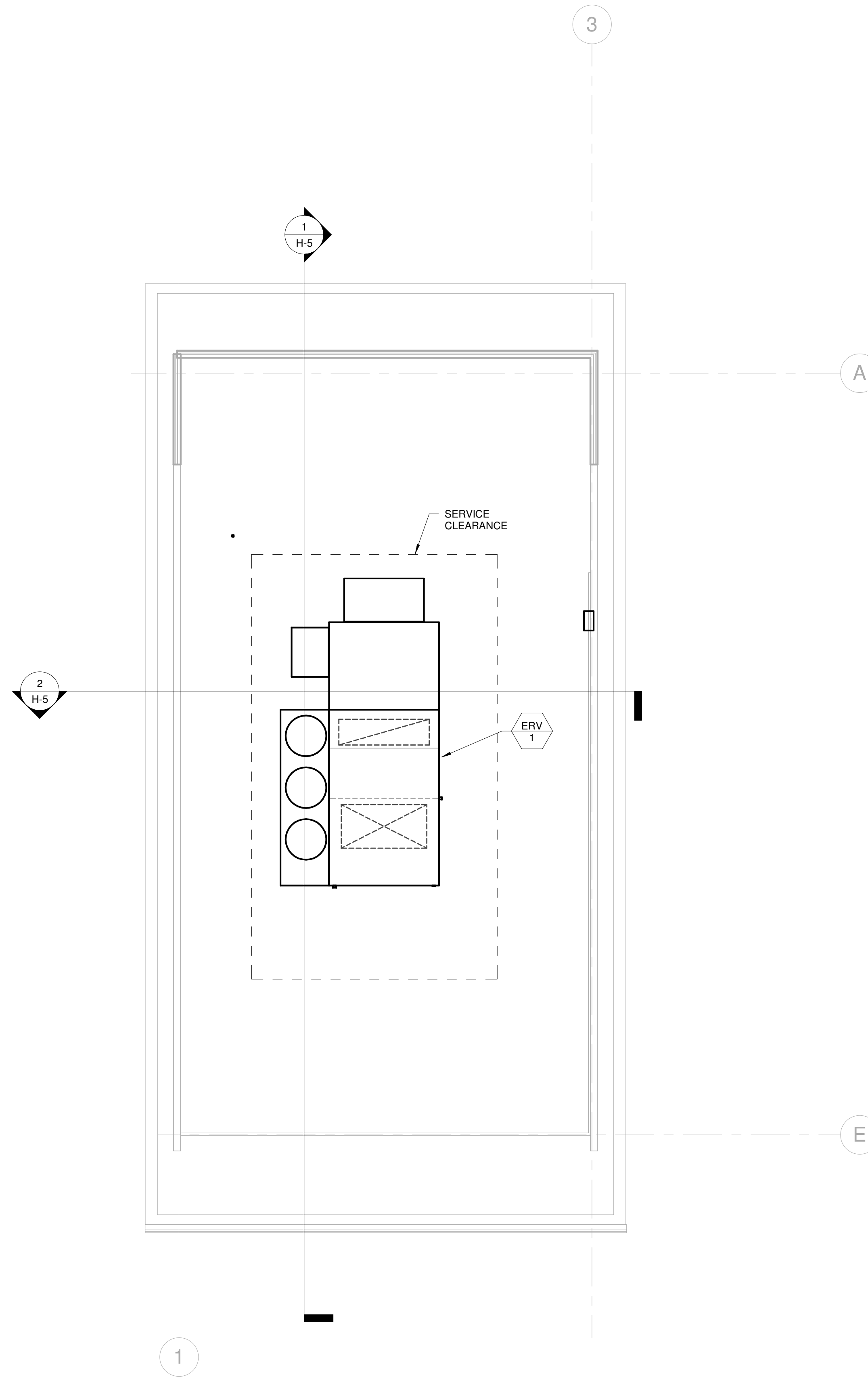
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SCALE  
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TITLE  
**Worcester Road Sewer Pumping Station Replacement HVAC FLOOR PLANS**

DSK JOB NO. 20030.00  
ISSUE DATE JANUARY 2023  
SHEET NO. **H-3**

P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWG\600-REV\TITLEBLOCKS\KOC\_Arch D 24x36 Vertical Title - BETA



**ROOF - HVAC PLAN - PROPOSED**

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

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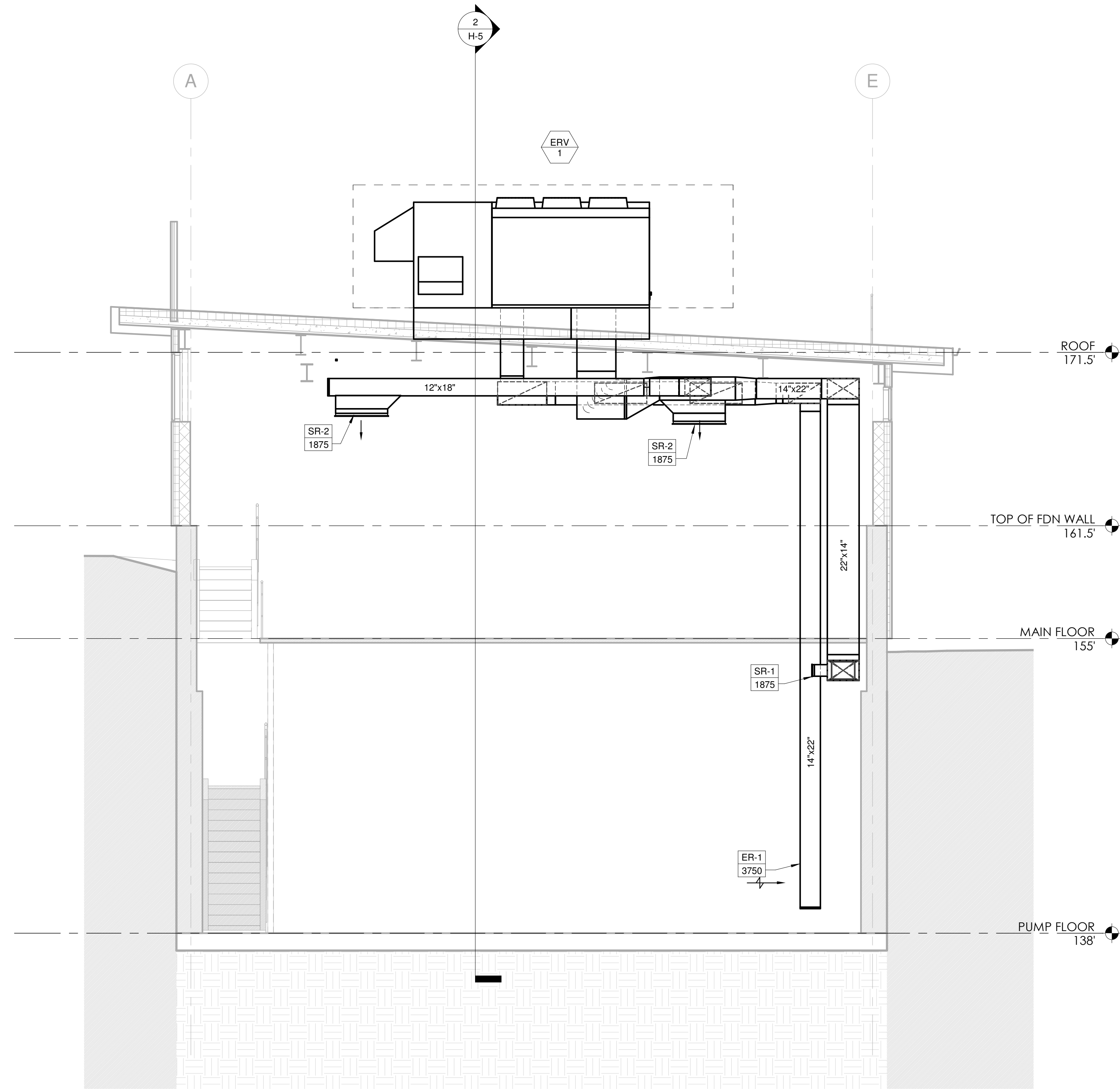


SCALE  
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UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

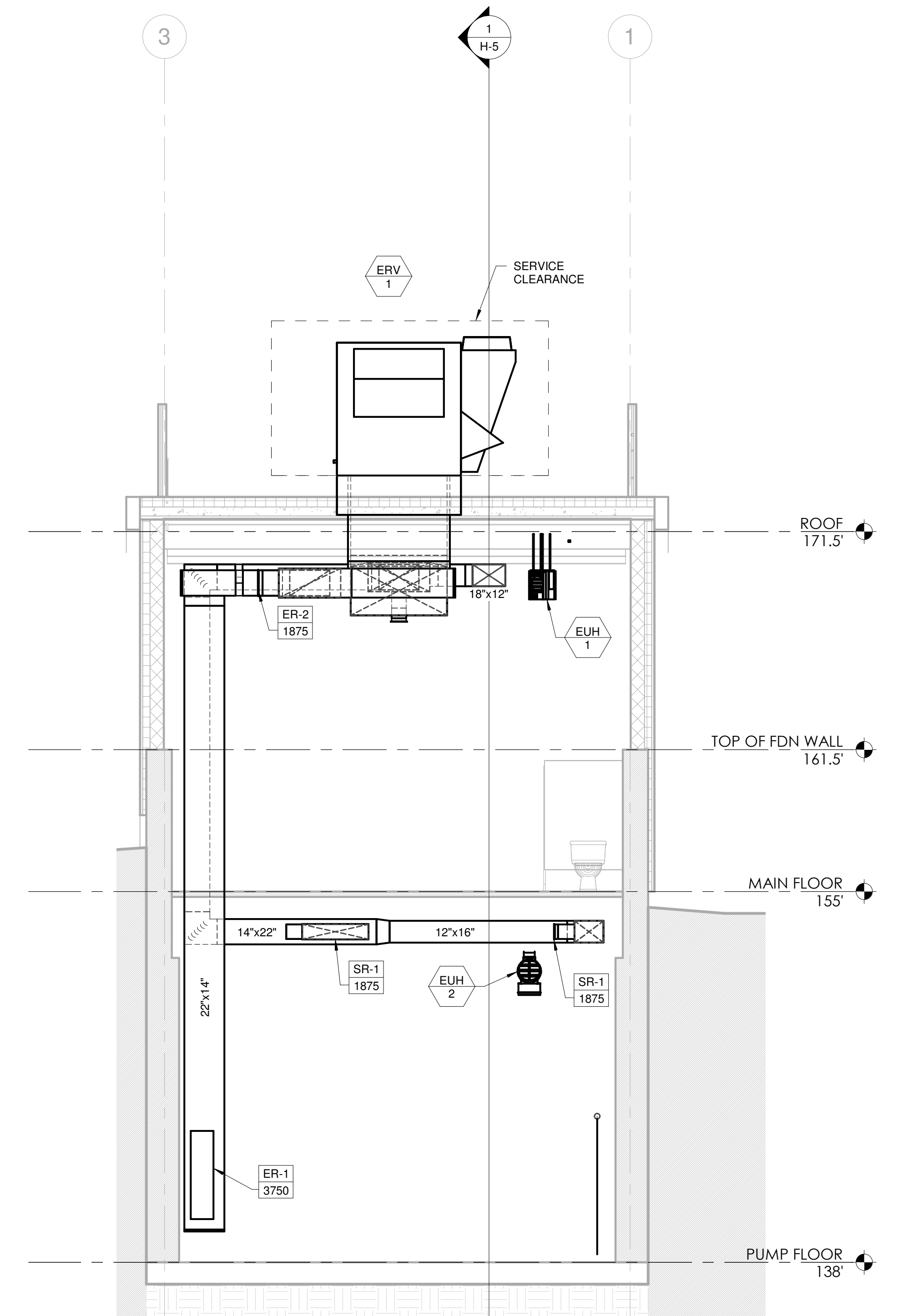
TITLE  
**Worcester Road Sewer  
Pumping Station Replacement  
HVAC ROOF PLANS**

DSK JOB NO. 20030.00  
ISSUE DATE JANUARY 2023  
SHEET NO. **H-4**

P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWG\600-NPS-DWG-601-REV\1\FAMILIES\TITLEBLOCKS\KOC\_Arch D 24x36 Vertical Title - BETA



① Section 1  
1/4" = 1'-0"



② Section 2  
1/4" = 1'-0"

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RLB

**CHECKED BY:**  
RHB



**SCALE**

1/4" = 1'-0"

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**TITLE**

**Worcester Road Sewer Pumping Station Replacement**

**HVAC SECTIONS**

**DSK JOB NO.** 20030.00

**ISSUE DATE** JANUARY 2023

**SHEET NO.** H-5



### ENERGY RECOVERY UNIT SCHEDULE (PART 1)

Type Mark	SUPPLY AIR PERFORMANCE					EXHAUST AIR NORMAL PERFORMANCE					DX COOLING COIL					GAS HEATING PERFORMANCE				ELECTRICAL DATA			Manufacturer	Model	OPER. WEIGHT		
	SUPPLY FAN CFM	MIN. O.A. CFM	E.S.P.	T.S.P.	R.P.M.	HP	EXHAUST FAN CFM	E.S.P.	T.S.P.	R.P.M.	HP	TOTAL BTU/h	SENSIBLE BTU/h	EAT DB	EAT WB	LAT DB	LAT WB	INPUT	OUTPUT	E.A.T.	L.A.T.	MCA				MOP	V/PH/Hz
ERV 1	7500	7500	1.40 in-wg	5.08 in-wg	2040	10.0 hp	7500	1.20 in-wg	2.99 in-wg	1879	7.5 hp	338200.0 Btu/h	218600.0 Btu/h	80.4 °F	68.0 °F	53.9 °F	53.6 °F	300000.0 Btu/h	240000.0 Btu/h	48 °F	77.5 °F	87.2 A	110 A	480/3/60	Valent	VXE-212-58-30H-25I-J	4893.00 lb

### ENERGY RECOVERY UNIT SCHEDULE (PART 2)

Type Mark	WHEEL WINTER DESIGN CONDITION										WHEEL SUMMER DESIGN CONDITION									
	OUTDOOR AIR		SUPPLY AIR		RETURN AIR		EXHAUST AIR		CAPACITY REDUCTION		OUTDOOR AIR		SUPPLY AIR		RETURN AIR		EXHAUST AIR		CAPACITY REDUCTION	
	DB	WB	DB	WB	DB	WB	DB	WB			DB	WB	DB	WB	DB	WB	DB	WB		
ERV 1	7.4 °F	5.3 °F	47.9 °F	40.5 °F	72.0 °F	55.8 °F	30.1 °F	27.7 °F	328050.0 Btu/h	90.8 °F	76.2 °F	80.4 °F	68.0 °F	75.0 °F	62.5 °F	81.5 °F	71.5 °F	246375.0 Btu/h		

#### SUPPLY REGISTER...

TAG. NO	CONNECTION SIZE	Manufacturer	Model
SR-1	36"x8"	NAILOR	81DV
SR-2	36"x8"	NAILOR	81DV

#### ELECTRIC UNIT HEATER

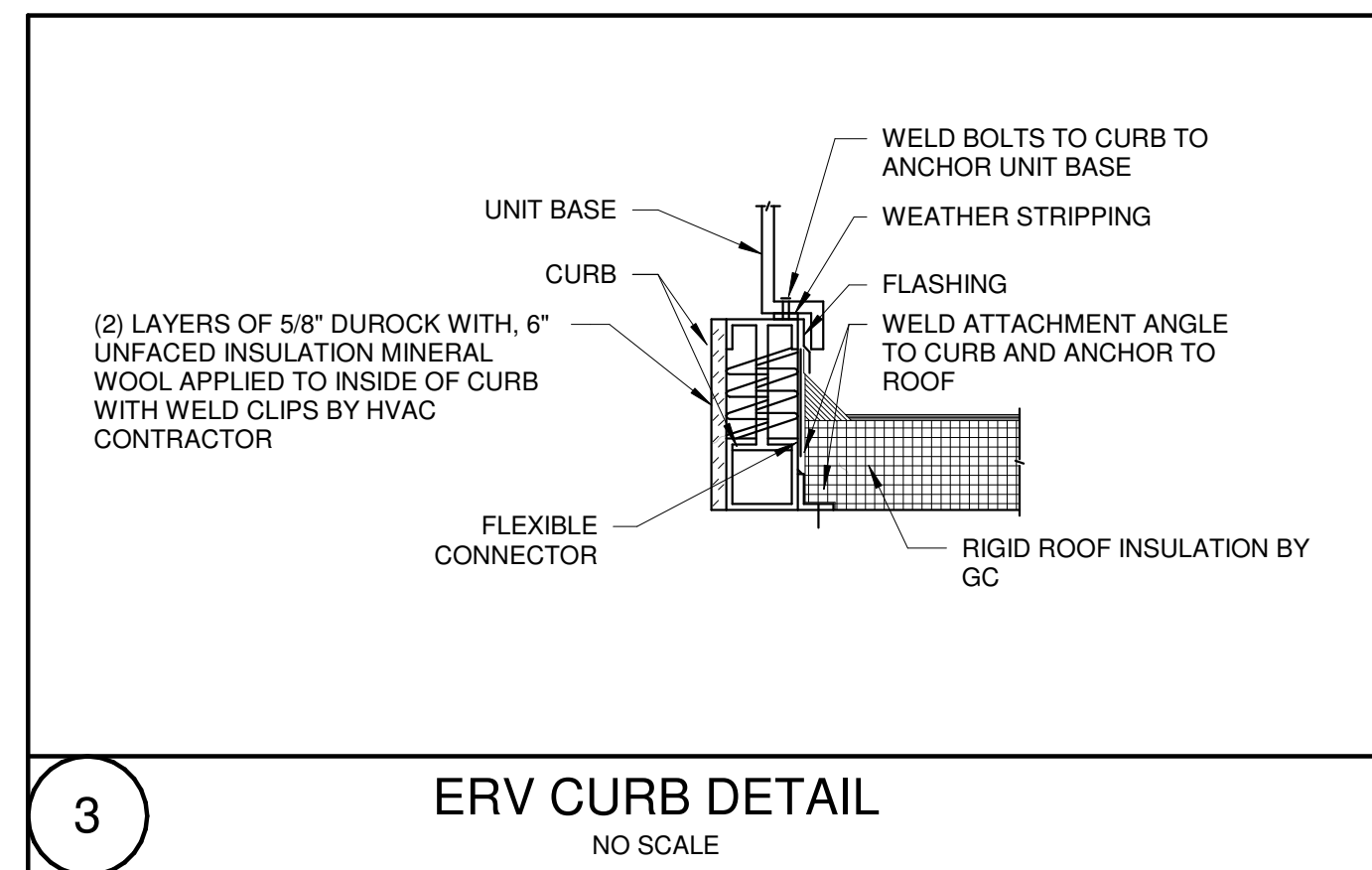
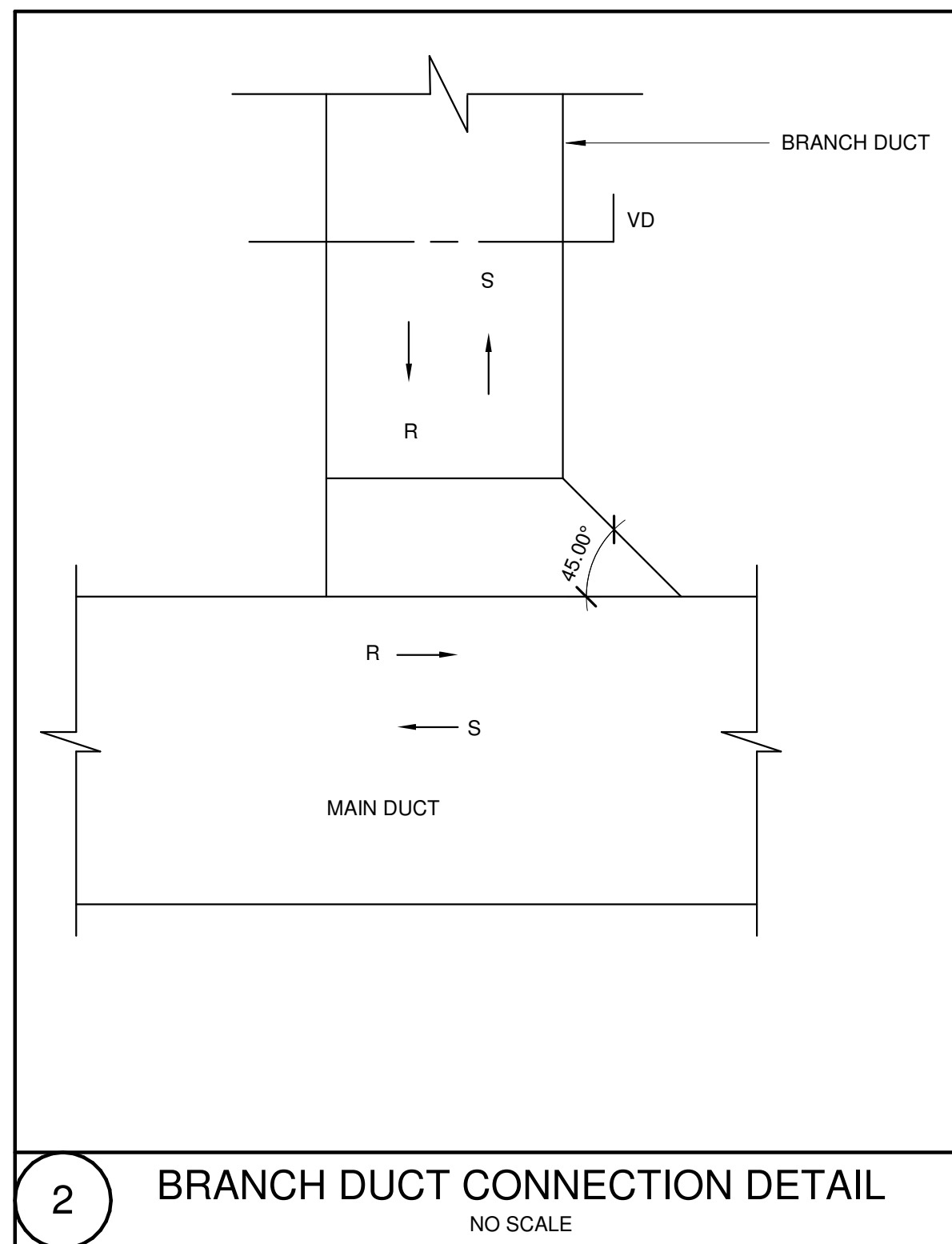
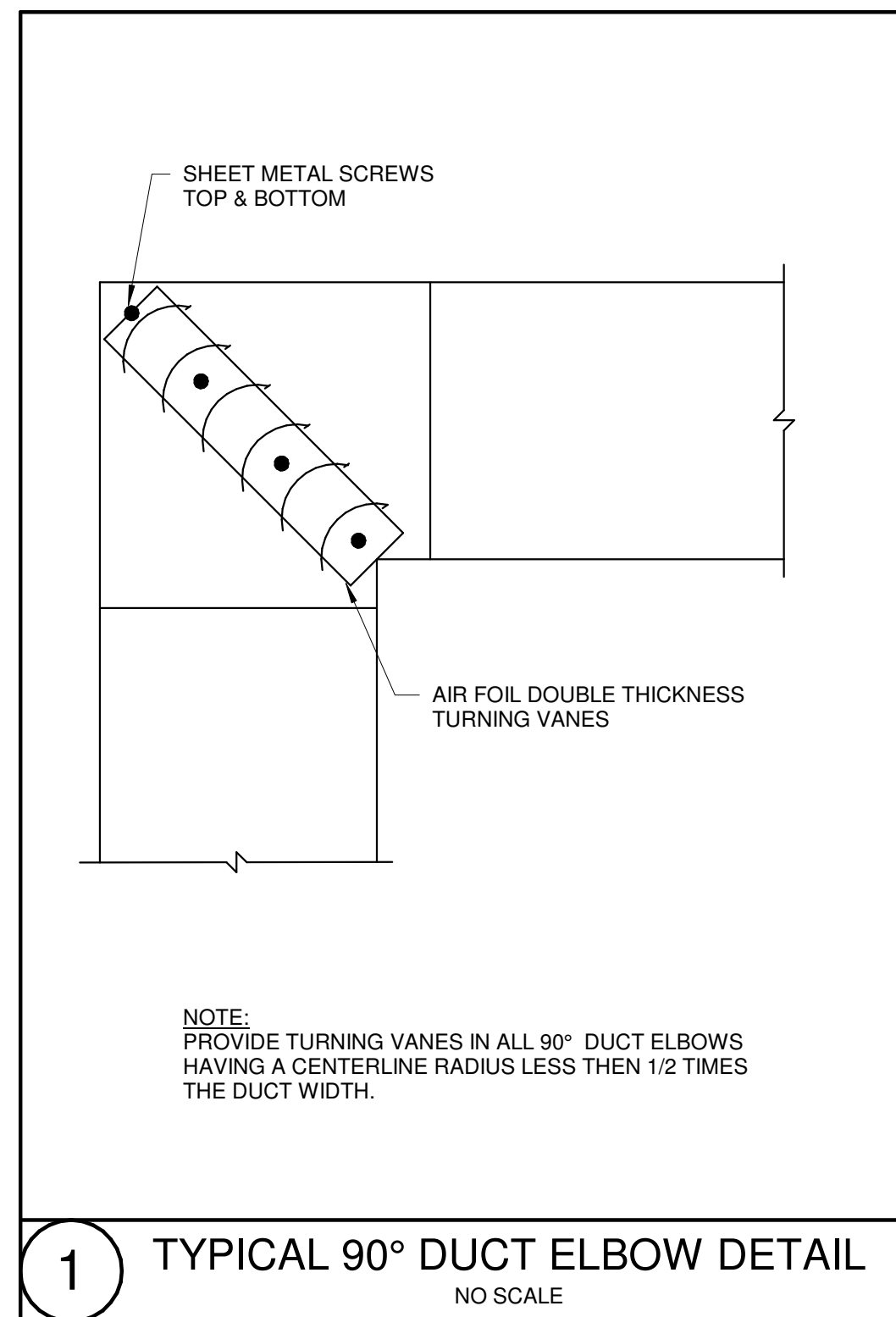
Type Mark	CAPACITY	CFM	V/PH/Hz	Manufacturer	Model
EUH 1	5000 W	350	480/3/60	Marley Engineered Products	MUH
EUH 2	5000 W	700	480/3/60	Marley Engineered Products	QWDO5432

#### EXHAUST REGISTER...

Type Mark	SIZE	Manufacturer	Model
ER-1	12"x48"	NAILOR	51FH-HD
ER-2	36"x14"	NAILOR	51FH-HD

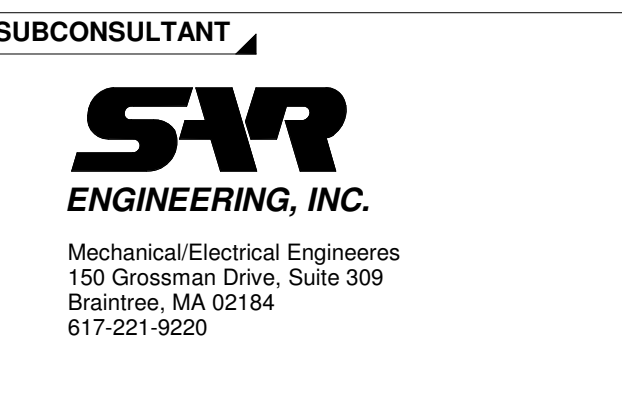
#### DEHUMIDIFIER SCHEDULE

TAG NO.	EXTRACT PPD	V/PH/Hz	MANUFACTURER	MODEL	NOTES
DH 1	56	120/1/60	EBAC IND.	CS60	PROVIDE WALL BRACKET AND COND. PUMP



P:\PROJECTS\1510 NPS - NEWBURYPORT PUMP STATION\600-NPS-DWG\600-TITLEBLOCKS\KOC\_Arch D 24x36 Vertical Title - BETA

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RHB



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TITLE  
**Worcester Road Sewer Pumping Station Replacement HVAC SCHEDULES AND DETAILS**

DSK JOB NO. 20030.00  
ISSUE DATE JANUARY 2023  
SHEET NO. **H-6**

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

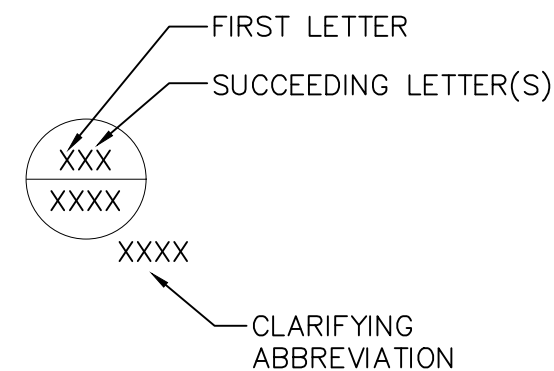
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**ABBREVIATIONS**

AM	AUTO-MANUAL
BIX	BIOXIDE
BTE	BIOLOGICAL TREATED EFFLUENT
CEN	CENTRATE
CP	CONTROL PANEL
DO	DISSOLVED OXYGEN
ES	EMERGENCY STOP
ETH	ETHERNET
FA	FOUL AIR
FR	FOWARD-REVERSE
HI	HIGH
HOA	HAND-OFF-AUTO
ISR	INTRINSICALLY SAFE RELAY
JB	JUNCTION BOX
LR	LOCAL-REMOTE
LS	LIME SLURRY
MC	MOTOR CONTROLLER (STARTER)
OAC	OPEN-AUTO-CLOSE
OIT	OPERATOR INTERFACE TERMINAL
ORP	OXYGEN REDUCTION POTENTIAL
OS	OPERATOR STATION
PH	HYDROGEN ION CONCENTRATION
PI	PRIMARY INFLUENT
PM	POLYMER
PRESS	PRESSURE
PS	PRIMARY SLUDGE
PTE	PRIMARY TANK EFFLUENT
RAS	RETURN ACTIVATED SLUDGE
RSW	RAW SEWAGE WATER
SS	START-STOP
TURB	TURBIDITY
SAN	SANITRAY WASTE
SC	SCUM
SBS	SODIUM BISULFITE
SHC	SODIUM HYPOCHLORITE
SSE	SECONDARY SETTLED EFLUENT
STO	SLUDGE THICKENER OVERFLOW
TEF	TREATED EFFLUENT WATER
TEMP	TEMPERATURE
TS	THICKENED SLUDGE
VFD	VARIABLE FREQUENCY DRIVE
WAS	WASTE ACTIVATED SLUDGE

**INSTRUMENT IDENTIFICATION LETTERS**

FIRST LETTER	SUCCEEDING LETTER(S)				
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUST.		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE		USER'S CHOICE	CLOSE	USER'S CHOICE
D	USER'S CHOICE	DIFFERENCE	USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW	FRACTION			
G	USER'S CHOICE		GLASS		
H	HAND, MANUAL		HORN		HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME, SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE, HUMIDITY				MIDDLE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		USER'S CHOICE	OPEN	USER'S CHOICE
P	PRESSURE, VACUUM		POINT, TEST		
Q	QUANTITY, EVENT	TOTALIZE			
R	RADIATION		RECORD, PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMP.			TRANSMIT	
U	MULTI-VARIABLE		MULTI-FUNCTION	MULTI-FUNCTION	MULTI-FUNCTION
V	VIBRATION			VALVE, DAMPER	
W	WEIGHT, FORCE		WELL		
X	UN-CLASSIFIED		UN-CLASSIFIED	UN-CLASSIFIED	UN-CLASSIFIED
Y	EVENT, STATE			RELAY, COMPUTE	
Z	POSITION			DRIVE, ACTUATOR	



**LINE LEGEND**

	NEW PROCESS PIPING
	EXISTING PROCESS PIPING
	PNEUMATIC AIR PIPING
	DIGITAL SIGNAL
	ANALOG SIGNAL
	ELECTRICAL POWER OR CONTROL
	FIELD INSTRUMENTATION
	PLC INTERFACE
	PANEL/OIT/SCADA DISPLAY AND OR CONTROL
	INDEPENDENT CONTROL CIRCUIT
	DRAWING AND OR PROCESS REFERENCE

**SYMBOL LEGEND**

	ACTUATOR - MOTORIZED		MIXER
	ACTUATOR - SOLENOID		MIXER - SUBMERSIBLE
	AIR REGULATOR/SEPARATOR		MOTOR
	ANALYZER		POSITION SWITCH
	BLOWER/FAN		PULSATION DAMPENER
	CALIBRATION COLUMN		PUMP - CENTRIFUGAL
	COMPRESSOR - ROTARY TYPE		PUMP - PERISTALTIC
	DRAIN		PUMP - PROGRESSING/CAVITY
	EDUCATOR		PUMP - RECIPROCATING/METERING
	ELECTRIC MOTOR		PUMP - ROTARY LOBE
	EMERGENCY EYEWASH/SHOWER		PUMP - SUBMERSIBLE
	FLEX CONNECTION		SLIDE OR SLUICE GATE
	FLOW METER - MAGNETIC		SOLENOID
	FLOW METER - ULTRASONIC STRAP ON		STATIC MIXER
	FLOW METER - ROTAMETER		VALVE - BALL
	FLOW METER - THERMAL MASS		VALVE - BUTTERFLY
	FLOW SWITCH		VALVE - CHECK
	GRINDER		VALVE - GATE
	HOSE		VALVE - GLOBE
	LEVEL SWITCH - FLOAT SWITCH		VALVE - PINCH
	LEVEL SWITCH - PADDLE WHEEL		VALVE - PLUG
	LEVEL TRANSMITTER - SUBMERSIBLE PRESSURE		VALVE - PRESSURE REGULATING
	LEVEL TRANSMITTER - ULTRASONIC		VALVE - PRESSURE REGULATING
	LEVEL TRANSMITTER - RADAR		VIBRATOR
	MACERATOR		

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY:	RLB
DESIGNED BY:	MC
CHECKED BY:	MC

REGISTERED PROFESSIONAL  
  
 MICHAEL J. COTTER  
 ELECTRICAL  
 No. 40999  
 PROFESSIONAL ENGINEER

PREPARED BY  
  
 www.BETA-inc.com

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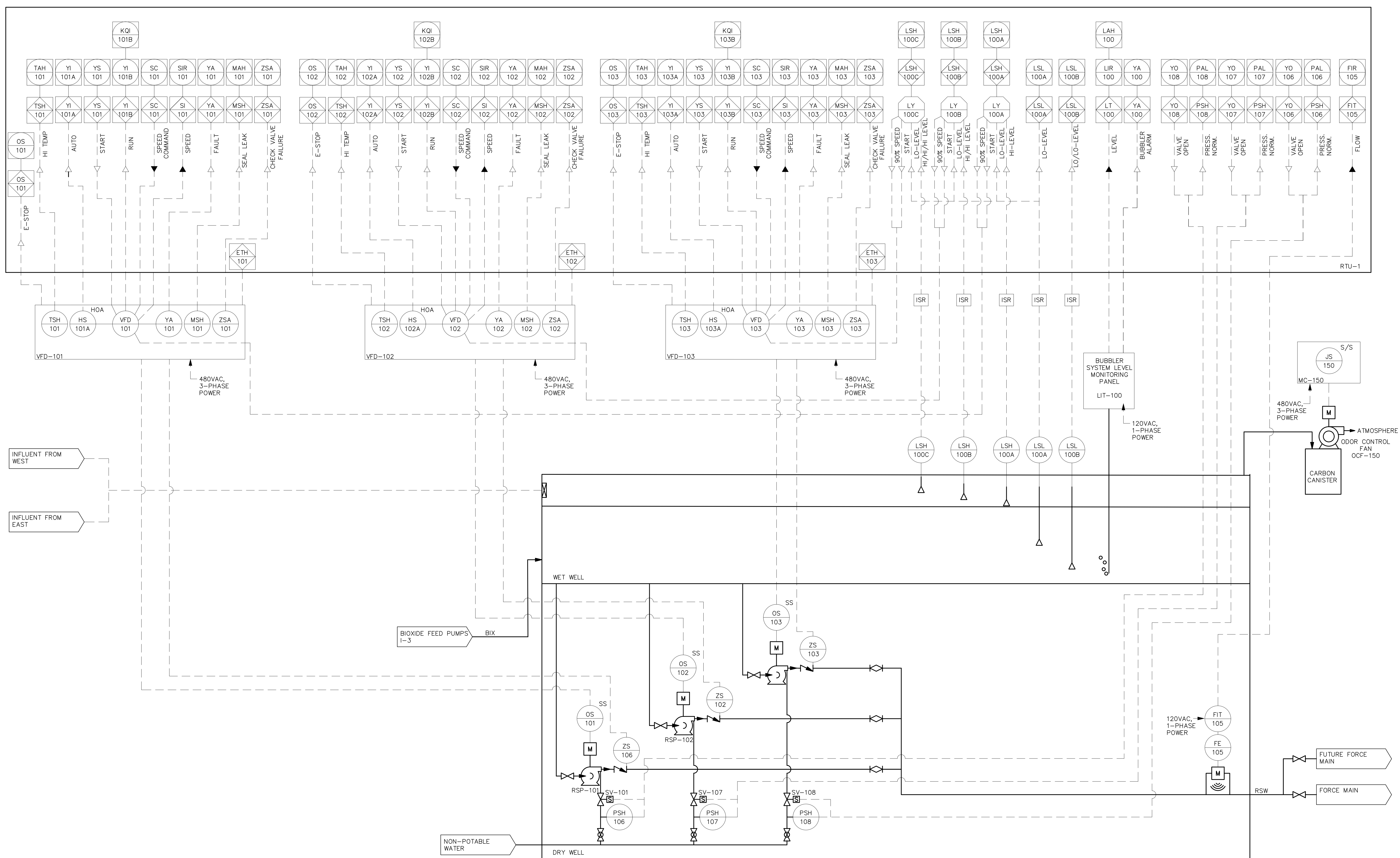
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TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
**INSTRUMENTATION & CONTROLS LEGEND AND ABBREVIATIONS**

BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	I-1

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2/2/2023 9:40 AM W:\YEAR-2019\19020.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\19020.00 I&C.DWG (BETA STB BIV STB)



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MC

REGISTERED PROFESSIONAL  
MICHAEL J. COTTER  
ELECTRICAL  
No. 40999  
PROFESSIONAL ENGINEER



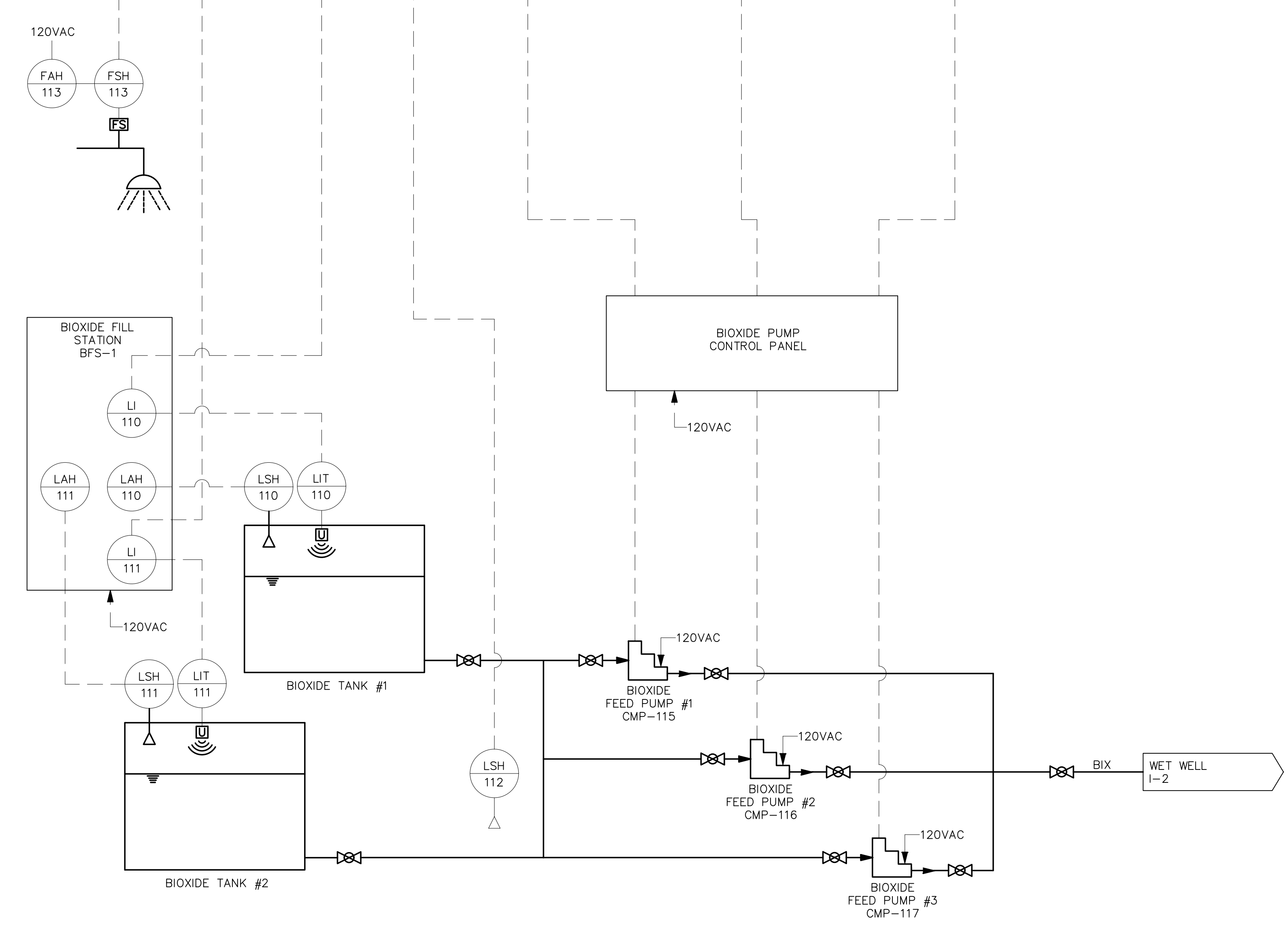
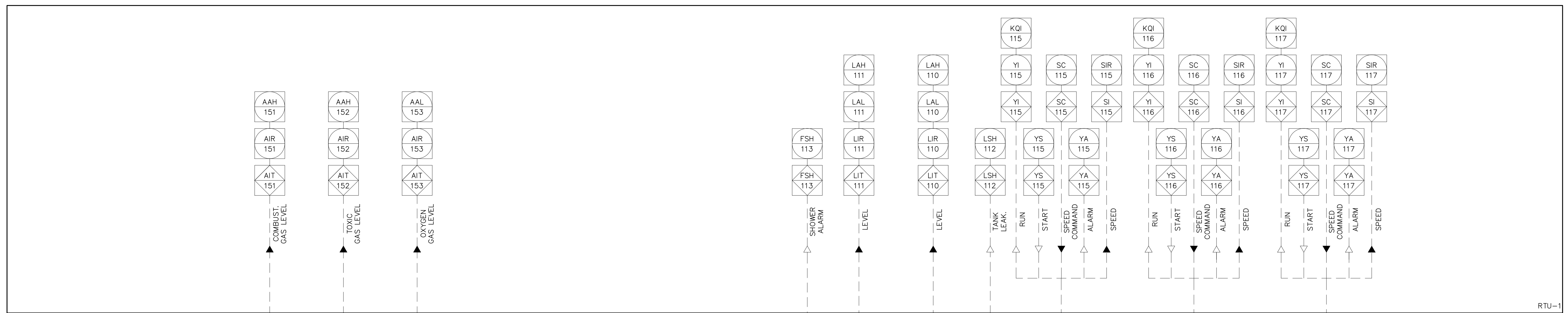
SUBCONSULTANT  
**SAR**  
ENGINEERING, INC.  
Mechanical/Electrical Engineers  
150 Grossman Drive, Suite 309  
Burlington, Massachusetts 01914  
617.221-9120  
web: www.sar.com

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TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
INSTRUMENTATION & CONTROLS  
SEWAGE PUMPS

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. 1-2

2/2/2023 9:40 AM W:\YEAR-2019\19020.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\19020.00 I&C DWG (BETA STB BY STB)

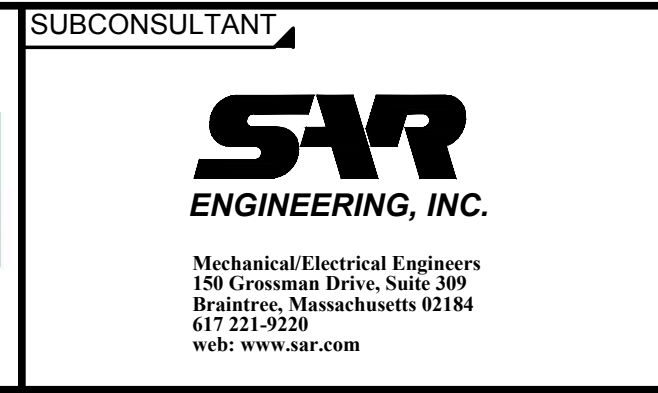
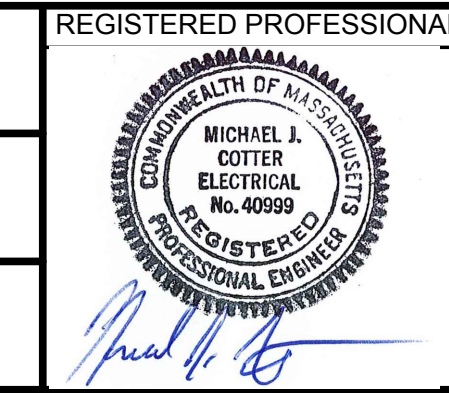


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DESIGNED BY:  
MC

CHECKED BY:  
MC



SCALE  
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TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
**INSTRUMENTATION & CONTROLS**  
**GAS MONITORING & BIOXIDE SYSTEM**

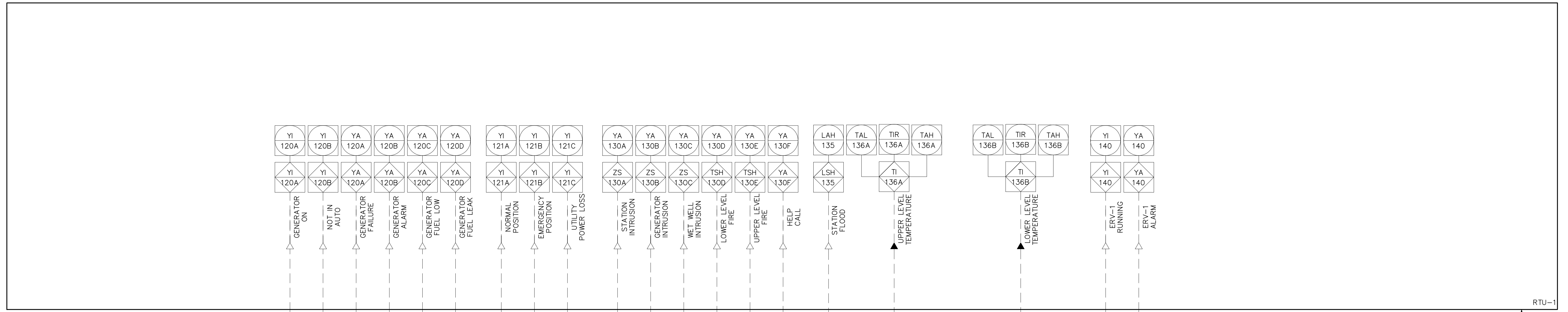
BETA JOB NO. 7385

ISSUE DATE: JANUARY 2023

SHEET NO. I-3

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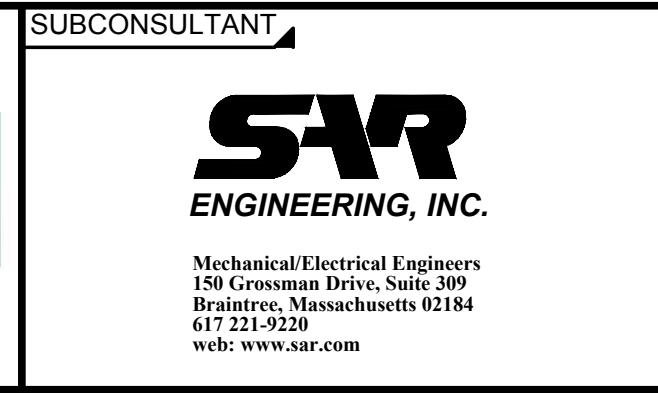
2/2/2023 9:41 AM W:\YEAR-2019\19020.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\ELECTRICAL DEPARTMENT\19020.00 I&C.DWG (BETA STB.BW.STB)



RTU-1  
120VAC, 1-PHASE POWER

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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DESIGNED BY:  
MC  
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MC



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TITLE  
**Worcester Road Sewer Pumping Station Replacement**  
**INSTRUMENTATION & CONTROLS STATION MONITORING**

BETA JOB NO. 7385  
ISSUE DATE JANUARY 2023  
SHEET NO. 1-4

2/2/2023 9:25 AM W:\YEAR - 2019\19020.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\PLUMBING\DEPARTMENT\19020.00 PLUMBING PLANS.DWG (BETA STB BW STB)

### PLUMBING NOTES

1. THE WORK COVERED CONSISTS OF FURNISHING ALL LABOR AND MATERIALS NECESSARY TO INSTALL, COMPLETE AND READY FOR CONTINUOUS OPERATION, THE PLUMBING SYSTEMS, APPARATUS AND EQUIPMENT FOR THIS PROJECT.
2. ALL PLUMBING EQUIPMENT AND MATERIALS SHALL BE IN COMPLETE ACCORDANCE WITH THE STATE BUILDING CODE, LOCAL FUEL GAS AND PLUMBING CODES, ALL LOCAL CODES AND REGULATIONS, NATIONAL FIRE PROTECTION ASSOCIATION, INSURANCE REGULATIONS AND REQUIREMENTS GOVERNING SUCH WORK.
3. ANY AND ALL PERMITS REQUIRED FOR INSTALLATION OF ANY MATERIAL SHALL BE OBTAINED AS PART OF THE WORK OF THE SPECIFICATION INCLUDING ALL FEES OR EXPENSES INCURRED.
4. ALL PRODUCTS USED AS PART OF THE POTABLE WATER SYSTEM WHERE THE INTENDED PURPOSE IS TO DELIVER OR CONVEY POTABLE WATER FOR HUMAN CONSUMPTION SHALL BE LEAD FREE AND CONFORM TO THE LATEST "LEAD FREE" LAW.
5. WHERE WATER PIPING IS SHOWN DROPPING INTO PLUMBING CHASES WITH SIZES NOTED, THAT SIZE SHALL BE CARRIED FULL LENGTH THROUGH THE CHASE. REFER TO PLUMBING FIXTURE SCHEDULE ON THIS DRAWING FOR INDIVIDUAL FIXTURE CONNECTION SIZES.
6. UNLESS OTHERWISE NOTED, ALL HORIZONTAL DRAINAGE PIPING WHICH IS 3" OR LESS IN DIAMETER SHALL PITCH OF NOT LESS THAN 1/4" PER FOOT AND ALL HORIZONTAL DRAINAGE PIPING WHICH IS 4" OR LARGER IN DIAMETER SHALL PITCH OF NOT LESS THAN 1/8" PER FOOT.
7. PROVIDE ALL FLOOR CLEANOUTS WITH HUB AND SPIGOT; LEAD AND OAKUM JOINTS FROM CLEANOUT TO AND INCLUDING CONNECTION TO SANITARY OR STORM DRAIN.
8. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND HEIGHT OF ALL PLUMBING FIXTURES.
9. MISCELLANEOUS DISCREPANCIES OR OMISSIONS WHICH MIGHT APPEAR ON THE PLANS OR SPECIFICATIONS WILL NOT RELIEVE THE CONTRACTOR OF CODE COMPLIANCE.
10. ALL FLOOR DRAINS SHALL BE PROVIDED WITH A TRAP PRIMER CONNECTION. CONTRACTOR SHALL PROVIDE ALL ASSOCIATED EQUIPMENT NECESSARY TO PROVIDE A COMPLETE SYSTEM.
11. PROVIDE CLEANOUTS AT ALL CHANGE OF DIRECTIONS FOR STORM AND SANITARY/WASTE PIPING.
12. PROVIDE WALL CLEANOUTS WITH ACCESS PANELS AT ALL STORM AND SANITARY/WASTE PIPING WITHIN PIPE CHASES OR WALLS.
13. ALL INTERIOR BURIED DOMESTIC WATER PIPING, NON-POTABLE WATER PIPING, TEMPERED WATER PIPING OR AIR PIPING SHALL BE SOFT ROLLED "K" COPPER COIL AND BE PROTECTED WITH A HIGH DENSITY RUBBER INSULATION. FITTINGS SHALL NOT BE PERMITTED IN OR UNDER SLAB. PROVIDE SLAB PENETRATIONS WITH SLEEVE AND FIRE STOPPING.

### PLUMBING DEMOLITION NOTES

1. UNLESS OTHERWISE NOTED, ALL EXISTING PLUMBING SYSTEMS WITHIN HATCH MARKS (COLD WATER, HOT WATER, HOT WATER RETURN, SANITARY, RAIN LEADERS, ETC) AND ASSOCIATED EQUIPMENT ARE TO BE DEMOLISHED OR SALVAGED. REMOVE THE EQUIPMENT TO BE DEMOLISHED OR SALVAGED PER SECTION 02050. ALL CONTROL DEVICES ASSOCIATED WITH THE DEMOLISHED EQUIPMENT SHALL BE REMOVED.
2. NO PIPING OR EQUIPMENT INDICATED FOR DEMOLITION WILL BE REUSED OR SALVAGED UNLESS SPECIFICALLY NOTED AS SUCH. ALL EQUIPMENT REMOVED SHALL BE REMOVED FROM SITE AND PROPERLY DISPOSED OF. PRIOR TO REMOVAL OF EQUIPMENT COORDINATE WITH OWNER FOR ANY EQUIPMENT THE OWNER WILL KEEP.
3. EXISTING EQUIPMENT INDICATED ON THE DEMOLITION PLANS IS BASED ON SITE OBSERVATIONS AND IT IS NOT THE INTENTION OF THESE DRAWINGS TO SHOW ALL EQUIPMENT AND MATERIALS TO BE DISCONNECTED AND/OR REMOVED.

### PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	ETR	LIGHT LINE INDICATES EXISTING PIPING TO REMAIN
	RE	REMOVE EXISTING PIPING
	CTE	CONNECT TO EXISTING
	C&C	CUT & CAP
		BELOW FLOOR PIPING (INDICATED AS DOUBLE LINEWORK)
	CW	COLD WATER
	HW	HOT WATER
	HWR	HOT WATER RECIRCULATION
	NPCW	NON-POTABLE COLD WATER
	NPHW	NON-POTABLE HOT WATER
	S or W	SOIL OR WASTE
	V	VENT
	AV	ACID VENT
	GTV	GAS TRAIN VENT
	RW	RAIN WATER CONDUCTOR
	PD	PUMP DISCHARGE
	G	NATURAL GAS
	CONT	CONTINUATION
	UP	PIPE RISE OR UP
	DN	PIPE DROP OR DOWN
	TEE	PIPE TEE
	SOV	SHUT-OFF VALVE
		GAS COCK
	PRV	PRESSURE REDUCING VALVE
	CV	CHECK VALVE
	BVA	BALANCING VALVE ASSEMBLY
	W & T	WASTE & TRAP
	CO	CLEANOUT PLUG
	FCO	FLUSH FLOOR CLEANOUT
	DCO	DANDY CLEANOUT
		CAPPED PIPE
		ARROW INDICATES DIRECTION OF FLOW
		ARROW INDICATES DIRECTION OF SLOPE
		UNION
	PA	PIPE ANCHORS
	PGD	PIPE GUIDES
		FLEXIBLE CONNECTOR
	HB	HOSE BIBB
	WH	WALL HYDRANT
		DIAGRAM NO. & DWG. NO. REFERENCE
	FD "A"	FLOOR DRAIN & TYPE
	RD "A"	ROOF DRAIN & TYPE
	OED	OPEN END DRAIN (WITH CHECK VALVE)
	BFP/RPZ	BACKFLOW PREVENTER/REDUCED PRESSURE ZONE ASSY
	WM	WATER METER
	T	THERMOMETER
	PG	PRESSURE GAUGE WITH PETCOCK
	T&P	TEMPERATURE AND PRESSURE RELIEF VALVE
	SA	SHOCK ABSORBER WITH SHUT-OFF VALVE
		VACUUM RELIEF VALVE

### PLUMBING LEGEND

ABBREVIATION	DESCRIPTION
WH-1	WATER HEATER & NUMBER
SS	SOIL STACK
VS	VENT STACK
VTR	VENT THRU ROOF
INV	INVERT
TMV	THERMOSTATIC MIXING VALVE
TW	TEMPERED WATER (70°F)
TYP	TYPICAL
NTS	NOT TO SCALE
AFF	ABOVE FINISHED FLOOR
LPC	LIMIT OF PLUMBING CONTRACT
GC	GENERAL CONTRACTOR
FPC	FIRE PROTECTION CONTRACTOR
PC	PLUMBING CONTRACTOR
EC	ELECTRICAL CONTRACTOR
HVAC	HVAC CONTRACTOR
LPC	LIMIT OF PLUMBING CONTRACT
WC	WATER CLOSET
UR	URINAL
LAV	LAVATORY
MR	MOP RECEPTOR
SHR	SHOWER
DF	DRINKING FOUNTAIN
SK	SINK
F & I	FURNISH & INSTALL
S=.01	SLOPE = 1/8" PER FOOT
S=.02	SLOPE = 1/4" PER FOOT
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
F.F.E.	FINISHED FLOOR ELEVATION

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

DRAWN BY: RLB	REGISTERED PROFESSIONAL
DESIGNED BY: RLB	PREPARED BY
CHECKED BY: JAL	



SCALE AS SHOWN	TITLE Worcester Road Sewer Pumping Station Replacement PLUMBING LEGEND AND GENERAL NOTES
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BETA JOB NO. 7385	ISSUE DATE: JANUARY 2023
SHEET NO. P-1	

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

## PLUMBING FIXTURE SCHEDULE

DESIGNATION	FIXTURE DESCRIPTION	CONNECTION SIZE						REMARKS
		CW	HW	TW	SAN	V	NPHW	
HB	HOSE BIBB	-	-	-	-	-	3/4"	-
EWU-1	EMERGENCY SHOWER/EYEWASH	-	-	1 1/4"	-	-	-	INTERIOR MOUNTED, CORROSION RESISTANT, EMERGENCY SHOWER/EYEWASH (COMBINATION UNIT) WITH HORN, STROBE AND FLOW SWITCH
P-1	WATER CLOSET - FLOOR MTD.	3/4"	-	-	4"	2"	-	SEE SPECIFICATION
P-2	LAVATORY	1/2"	1/2"	-	2"	2"	-	SEE SPECIFICATION

1. ALL EXPOSED VALVES, PIPING AND FITTINGS SHALL BE CHROME PLATED.
2. CONTRACTOR SHALL PROVIDE EACH CONNECTION TO EACH SINK OR PIECE OF EQUIPMENT ITS OWN INDIVIDUAL SHUTOFF VALVE

## ELECTRIC WATER HEATER SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	GALS.	RECOVERY		KW	VOLTS	PHASE	HZ.	REMARKS
					G.P.H.	Δ TEMP °F					
DWH-1	A.O. SMITH	DRE-120-15	CHEMICAL BLDG	120	61	100	15	480	3	60	-

\* MANUFACTURERS NAMES AND MODEL NUMBERS ARE SHOWN ONLY TO REPRESENT TYPE, STYLE AND LEVEL OF QUALITY EXPECTED, REFER TO SPECIFICATIONS FOR ACCEPTABLE EQUAL MANUFACTURERS

## CIRCULATING PUMP SCHEDULE

DESIGNATION	LOCATION	WATER HEATER SERVED	MODEL	CAPACITY (GPM)	HEAD (FEET)	TYPE	ELECTRICAL REQUIREMENTS				REMARKS
							RPM	HP	VOLTS	Φ	
DWP-1	MECH ROOM	DWH-1	TACO 006B	2	6	INLINE	3250	1/40	115	1	SERVES 140° HW SYSTEM

\* MANUFACTURERS NAMES AND MODEL NUMBERS ARE SHOWN ONLY TO REPRESENT TYPE, STYLE AND LEVEL OF QUALITY EXPECTED, REFER TO SPECIFICATIONS FOR ACCEPTABLE EQUAL MANUFACTURERS

## SHOCK ABSORBER SCHEDULE

PDI RATING SYMBOL	A	B	C	D	E
PRECISION PLUMBING PRODUCTS OR EQUAL	SC-500	SC-750	SC-1000	SC-1250	SC-1500
WATTS REGULATOR COMPANY OR EQUAL	0750030	0750053	0750060	0750070	0750090
WADE OR EQUAL	5-P	10-P	20-P	50-P	75-P

\* MANUFACTURERS NAMES AND MODEL NUMBERS ARE SHOWN ONLY TO REPRESENT TYPE, STYLE AND LEVEL OF QUALITY EXPECTED, SIMILAR EQUALS BY OTHER SPECIFIED MANUFACTURERS WILL BE ACCEPTABLE

## SUMP PUMP SCHEDULE

DESIGNATION	LOCATION	MODEL	CAPACITY (GPM)	HEAD (FEET)	TYPE	ELECTRICAL REQUIREMENTS				REMARKS
						RPM	HP	VOLTS	Φ	
SP-1	BASEMENT	LIBERTY PUMPS 237	20	15	SIMPLEX SUBMERSIBLE	1725	1/3	120	1	AUTOMATIC WITH FLOAT
SP-2	BASEMENT	LIBERTY PUMPS 237	20	15	SIMPLEX SUBMERSIBLE	1725	1/3	120	1	AUTOMATIC WITH FLOAT

2/2/2023 9:25 AM W:\YEAR - 2019\19020.00 - FRAMINGHAM WORCESTER ROAD PUMP STATION IMPROVEMENTS\PLUMBING DEPARTMENT\19020.00 PLUMBING PLANS.DWG (BETA STB BW STB)

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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RLB

DESIGNED BY:  
RLB

CHECKED BY:  
JAL



SCALE

AS SHOWN

TITLE

**Worcester Road Sewer  
Pumping Station Replacement**

**PLUMBING  
SCHEDULES**

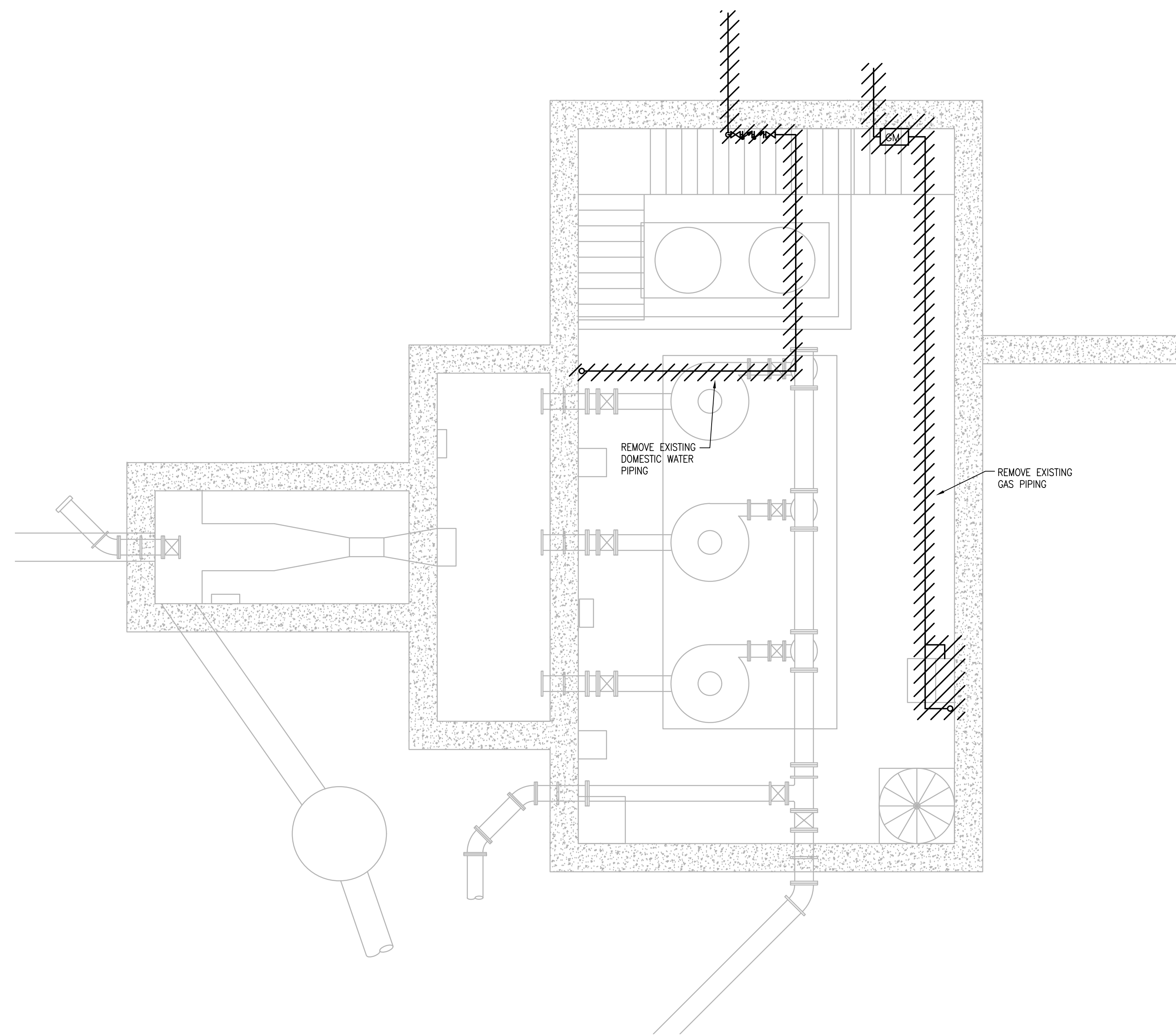
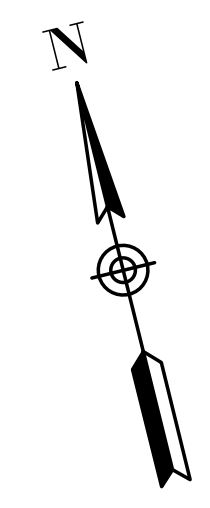
BETA JOB NO. 7385

ISSUE DATE JANUARY 2023

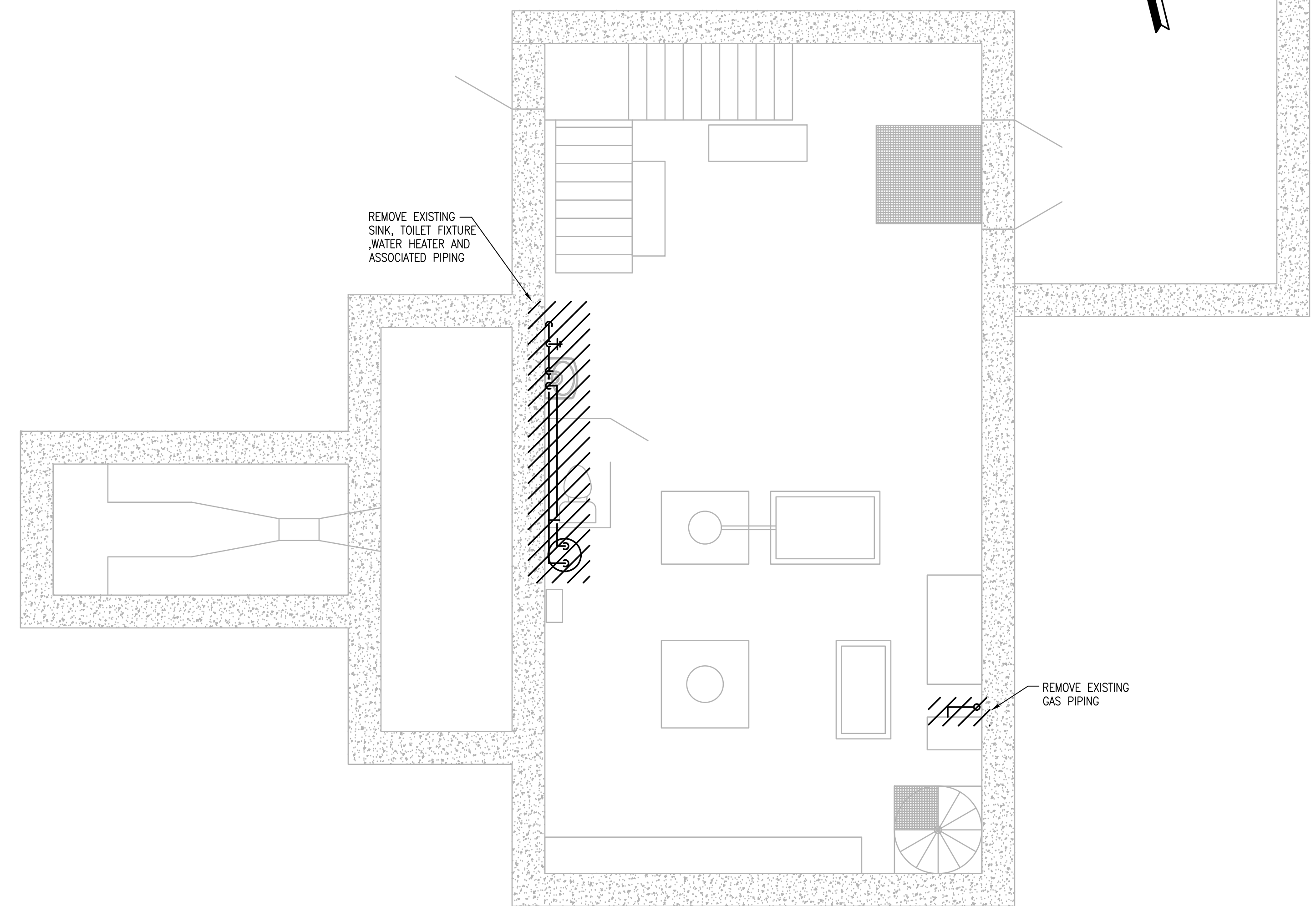
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**LOWER LEVEL - PLUMBING PLAN - DEMOLITION**  
SCALE: 1/4" = 1'



**UPPER LEVEL - PLUMBING PLAN - DEMOLITION**  
SCALE: 1/4" = 1'

NUMBER	DATE	MADE BY	CHECKED BY	REVISIONS

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DESIGNED BY:  
RLB

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SCALE

AS SHOWN

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TITLE

**Worcester Road Sewer Pumping Station Replacement**

**PLUMBING DEMOLITION PLANS**

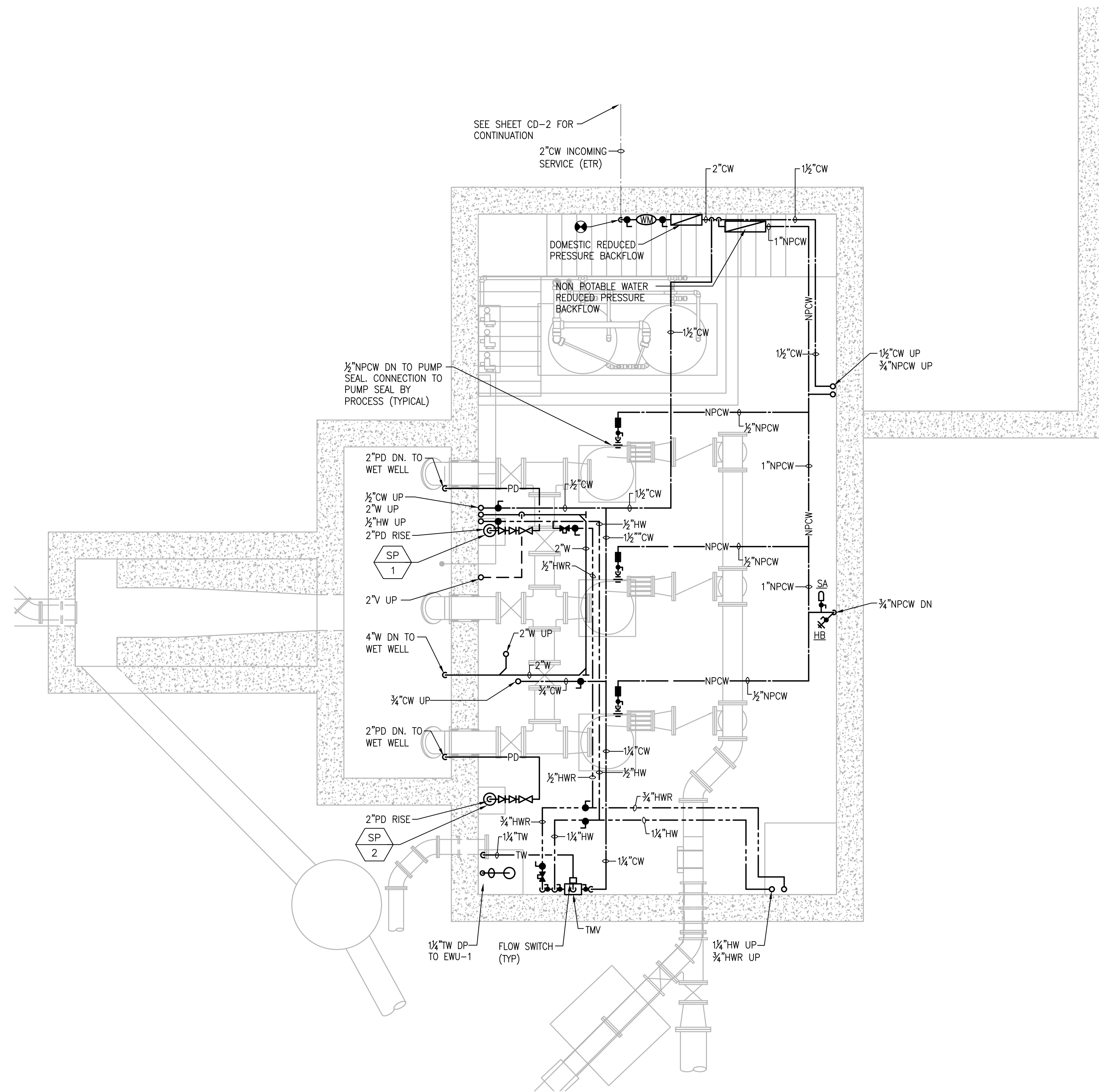
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ISSUE DATE JANUARY 2023

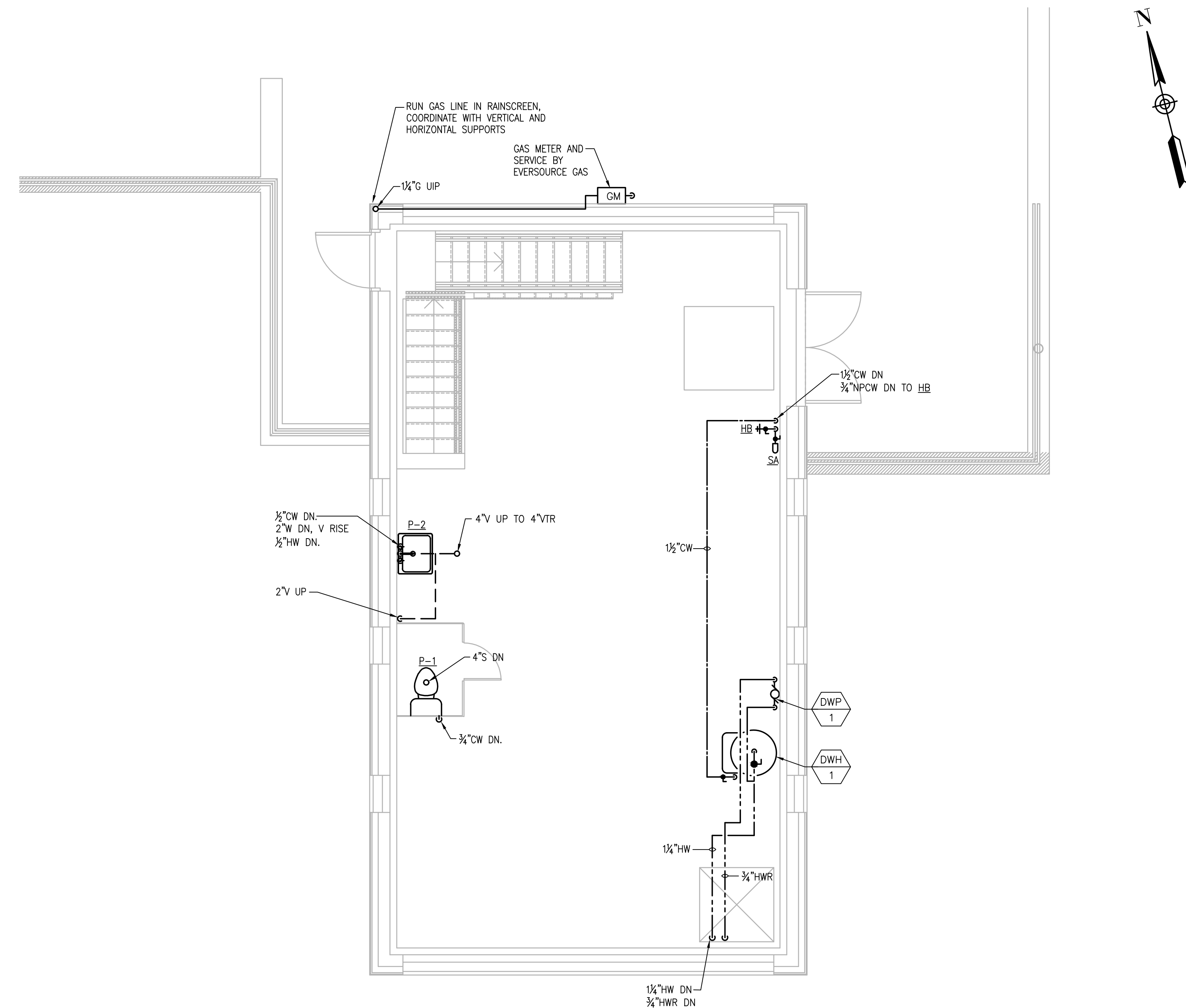
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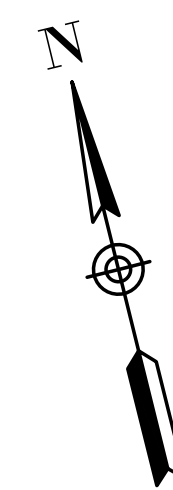
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**LOWER LEVEL - PLUMBING PLAN - PROPOSED**  
SCALE: 1/4" = 1'

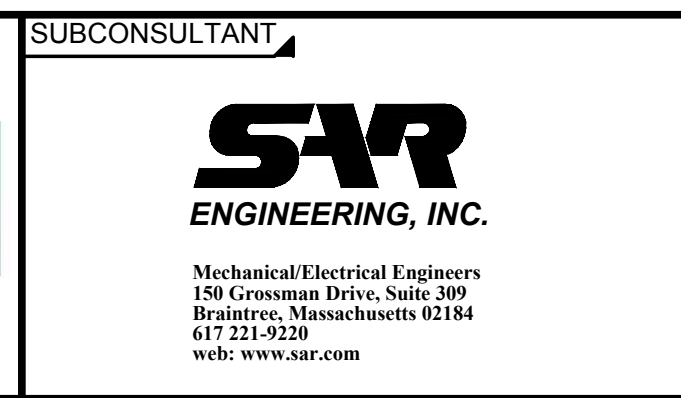
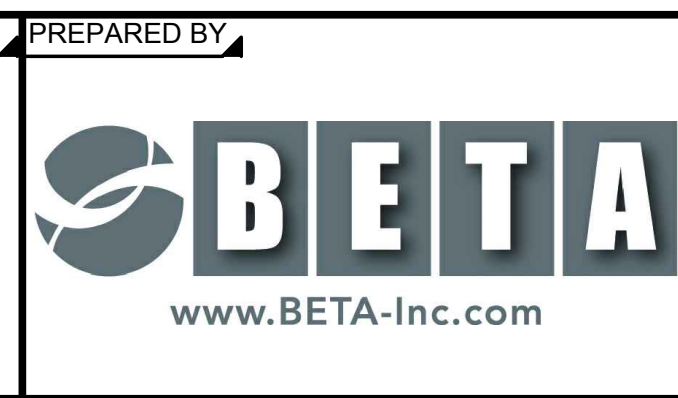


**UPPER LEVEL - PLUMBING PLAN - PROPOSED**  
SCALE: 1/4" = 1'



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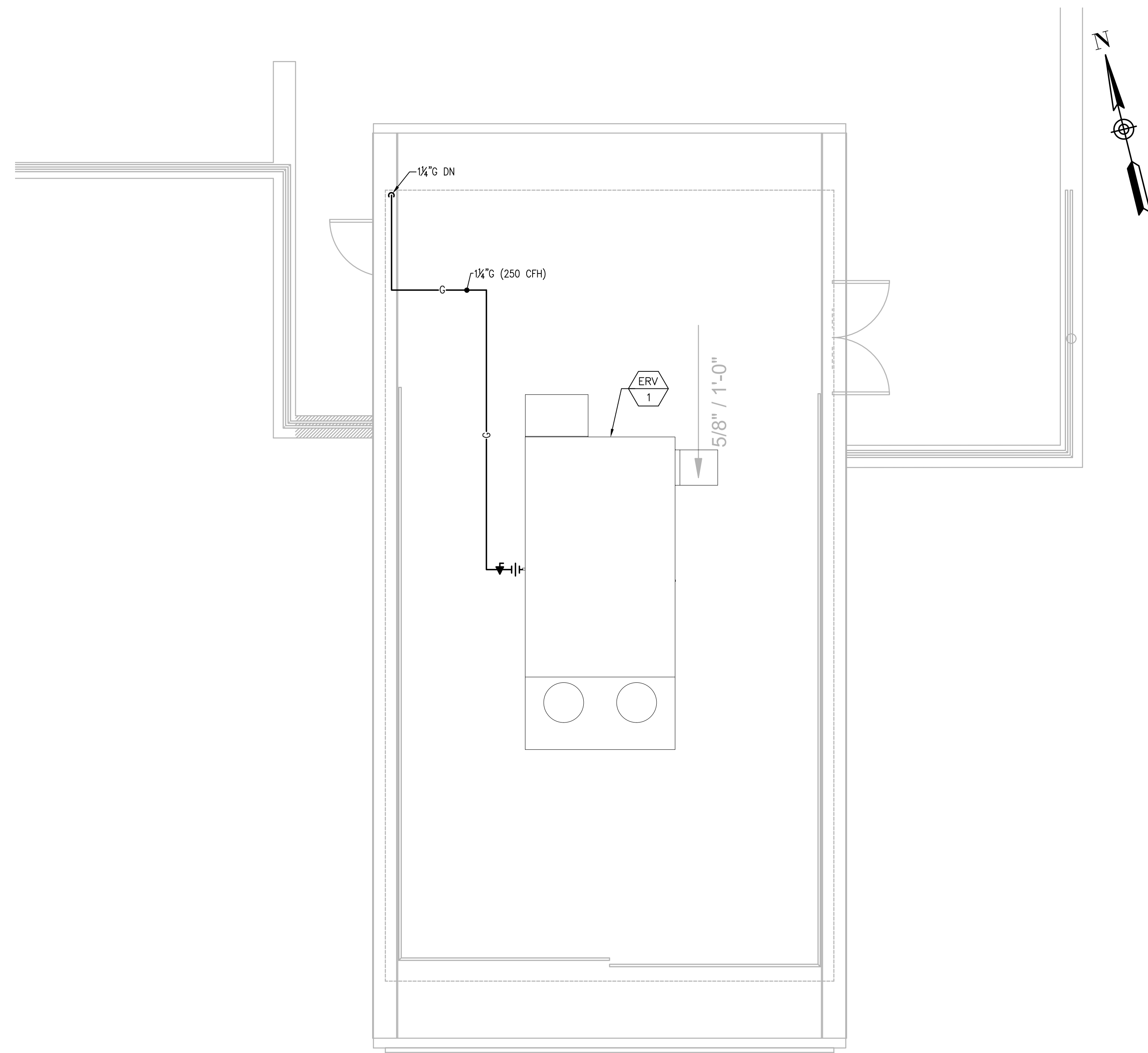
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TITLE: **Worcester Road Sewer Pumping Station Replacement**  
**PLUMBING PROPOSED PLANS**

BETA JOB NO. 7385  
ISSUE DATE: JANUARY 2023  
SHEET NO. P-4

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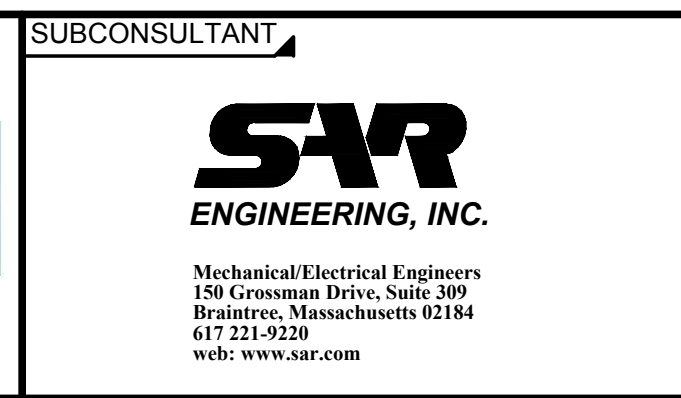
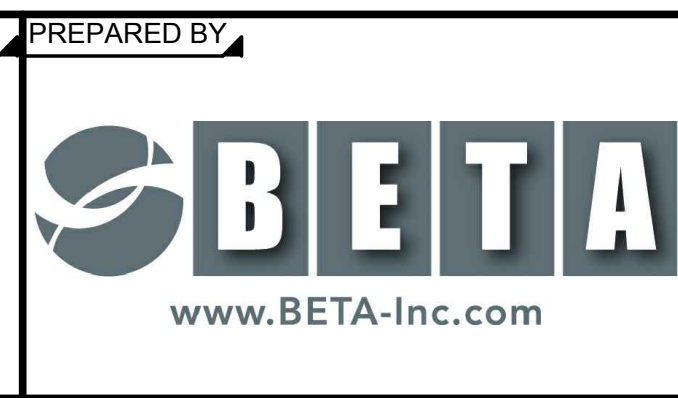
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**ROOF-HVAC-PLAN - PROPOSED**  
SCALE: 1/4" = 1'

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DESIGNED BY:	RLB
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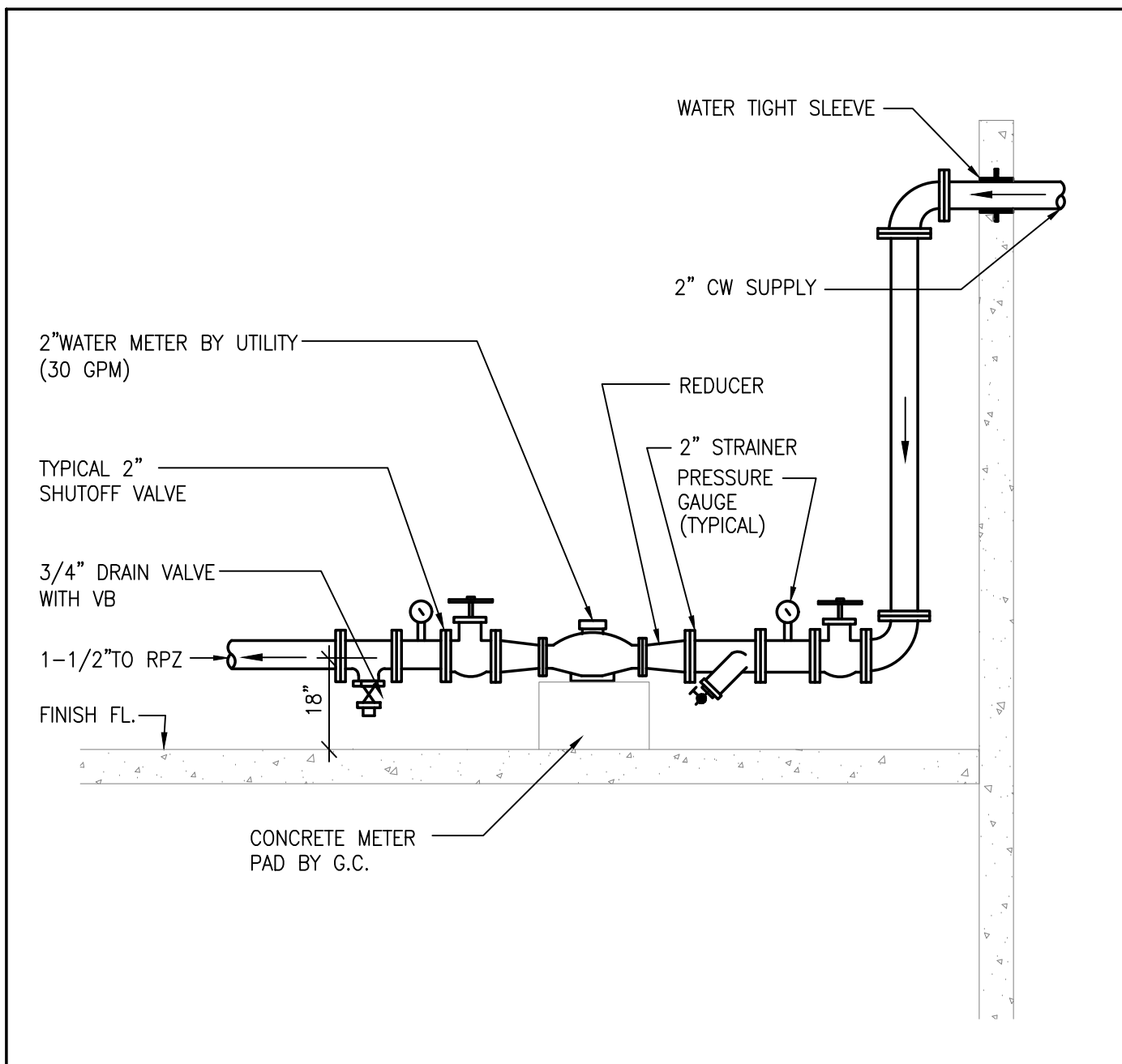
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TITLE	<b>Worcester Road Sewer Pumping Station Replacement</b> PLUMBING PROPOSED ROOF PLAN
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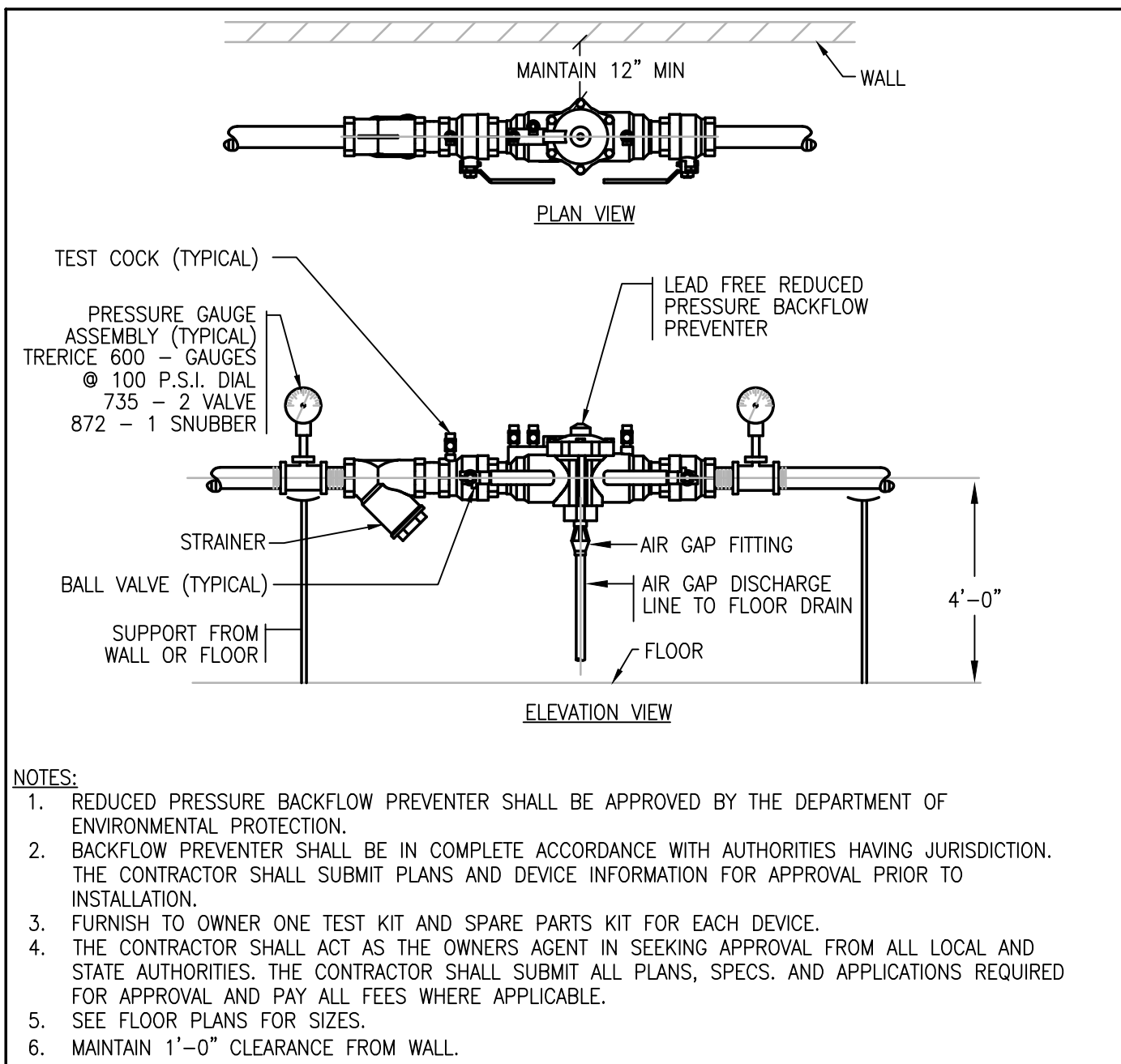
BETA JOB NO.	7385
ISSUE DATE	JANUARY 2023
SHEET NO.	P-5

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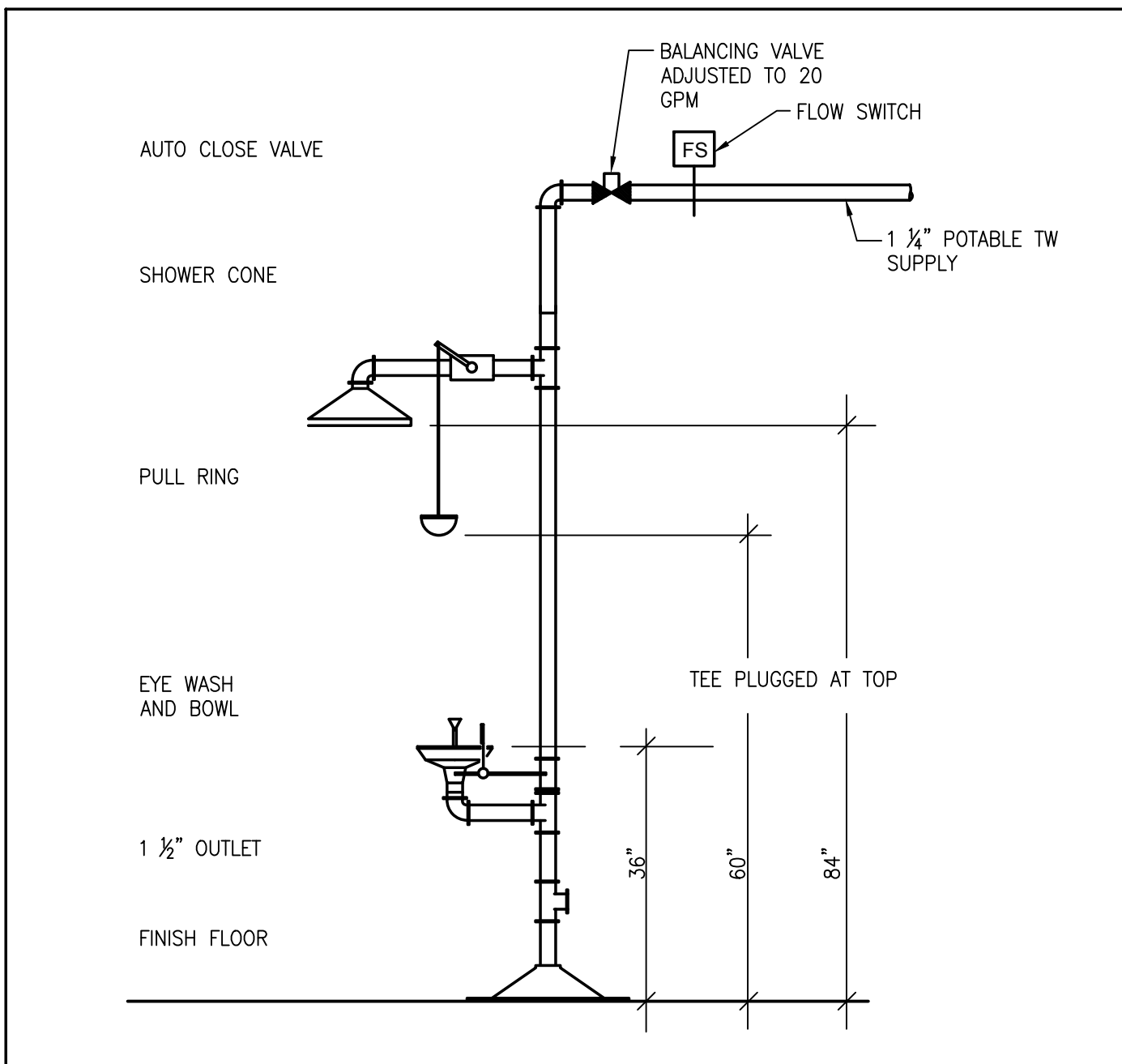
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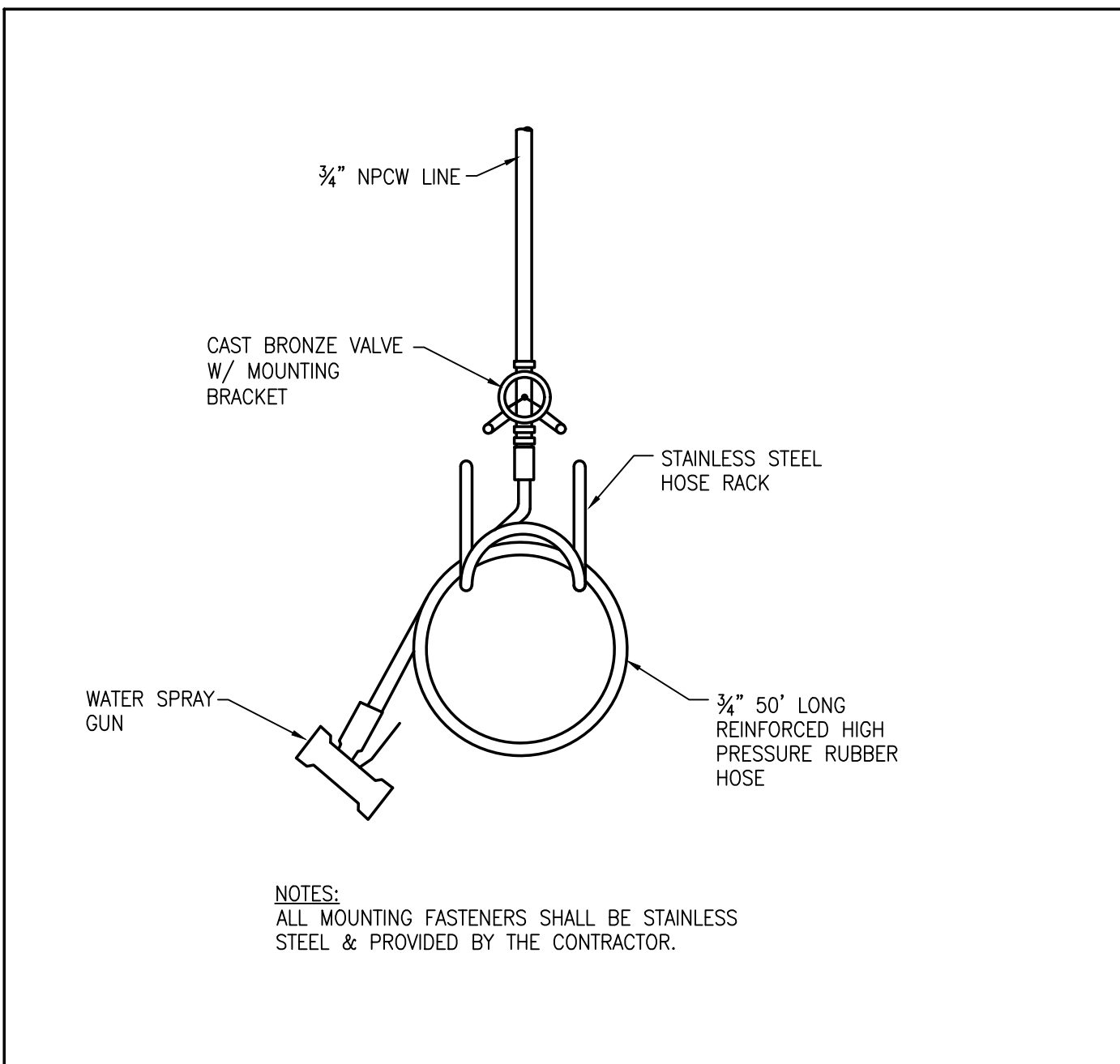
**1 DOMESTIC WATER METER DETAIL** NTS



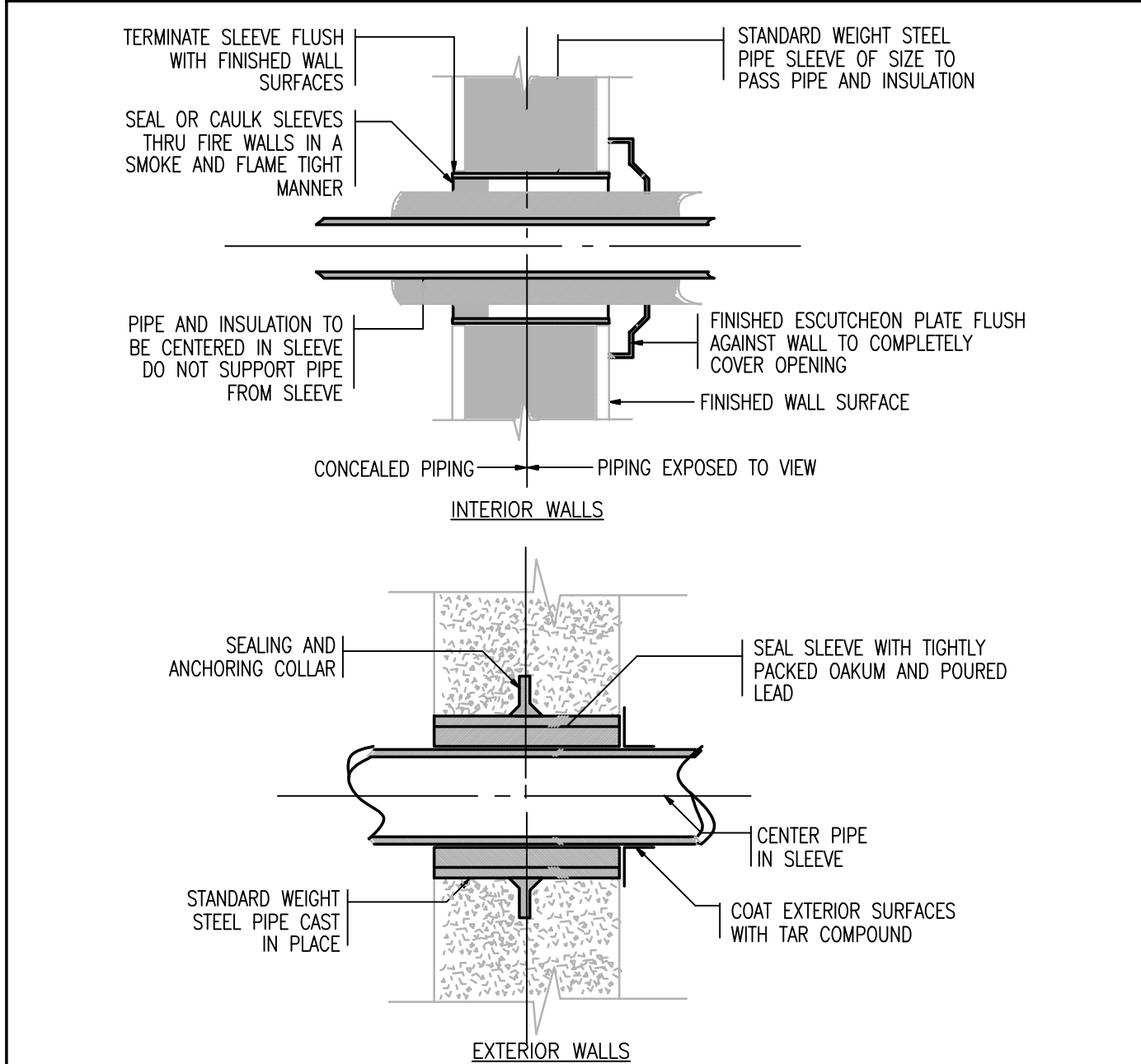
**2 REDUCED PRESSURE BACKFLOW DETAIL** NTS



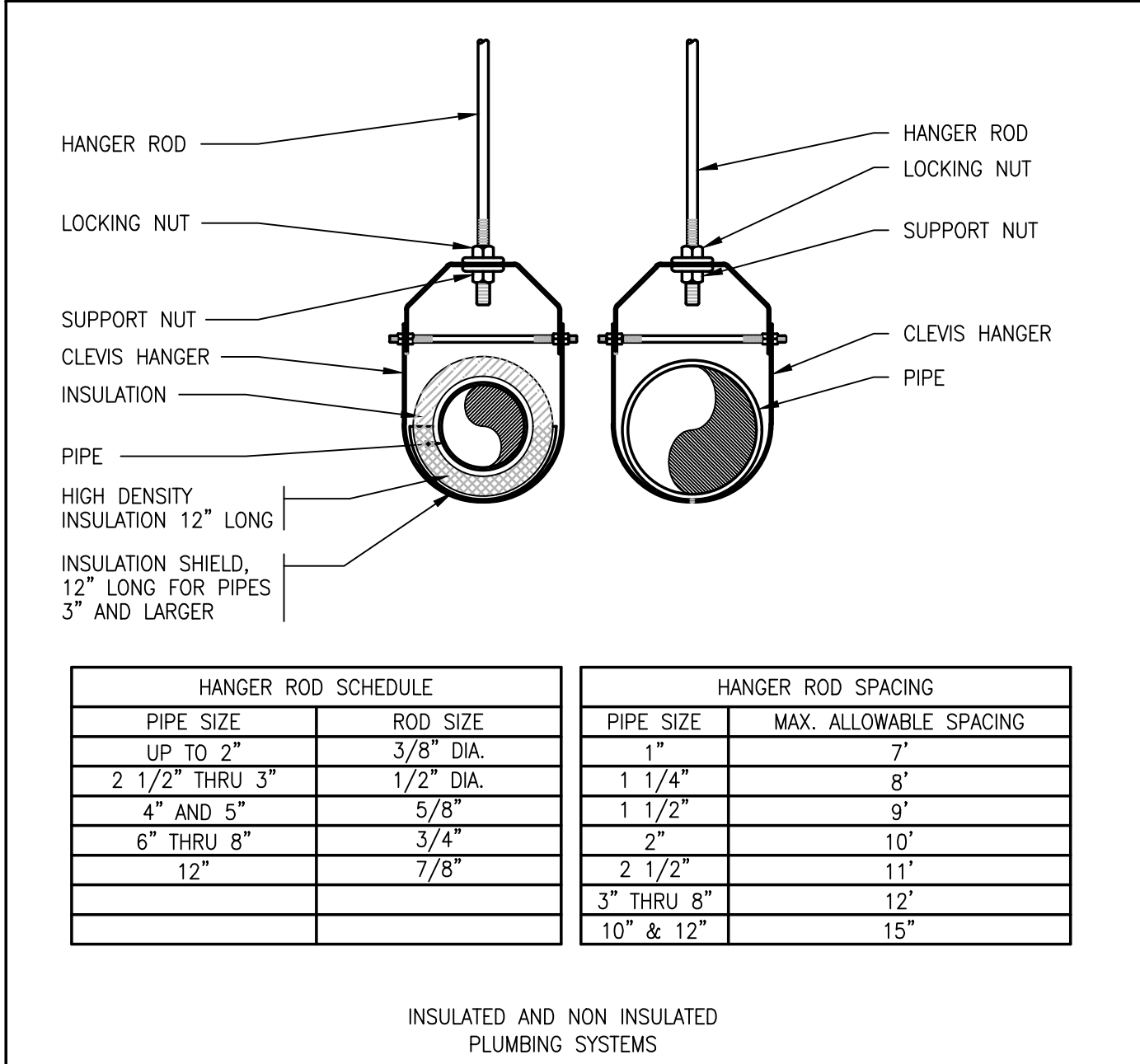
**3 EMERGENCY SHOWER & EYE WASH** NTS



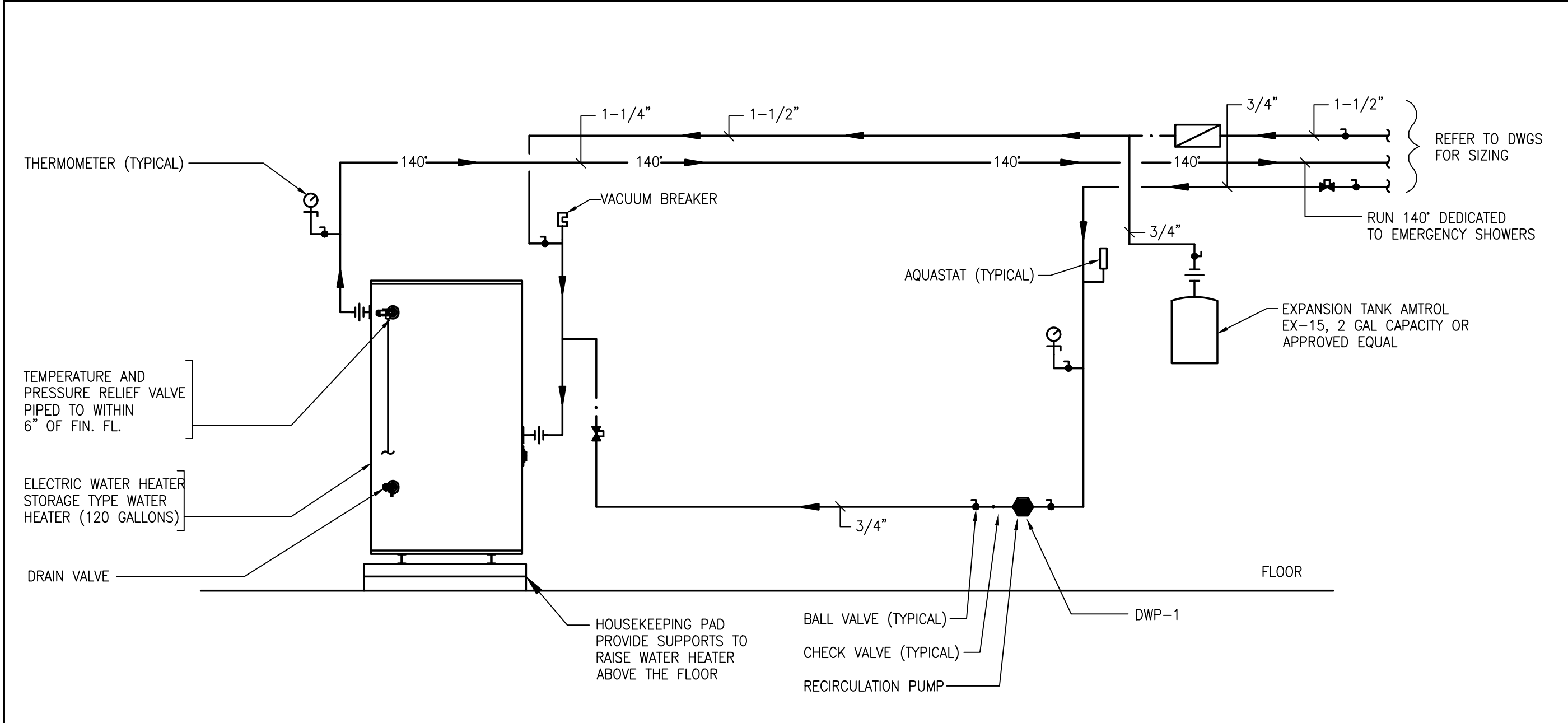
**4 WASH DOWN STATION AT HOSEBID DETAIL** NTS



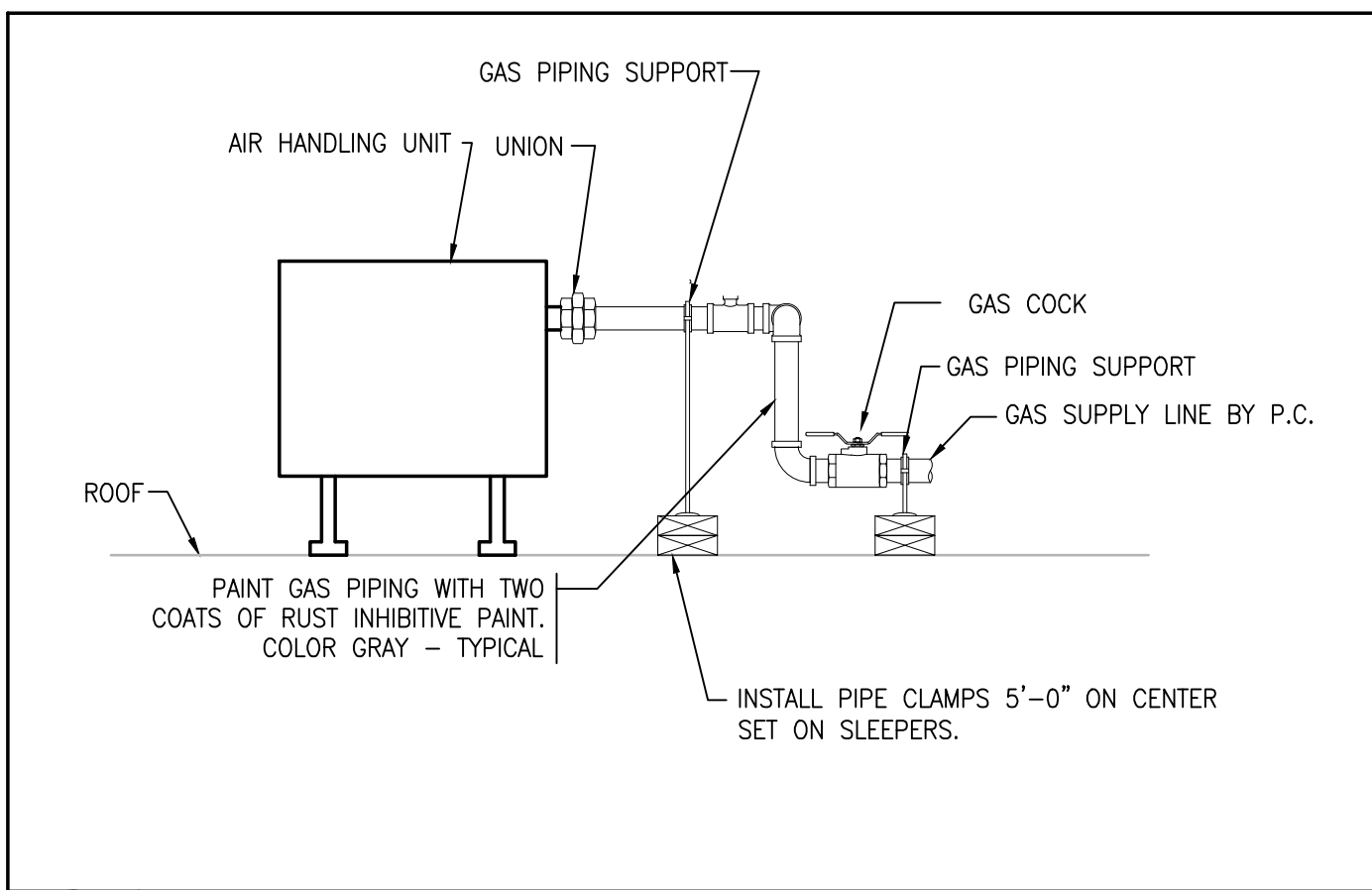
**5 PIPING SLEEVE DETAIL** NTS



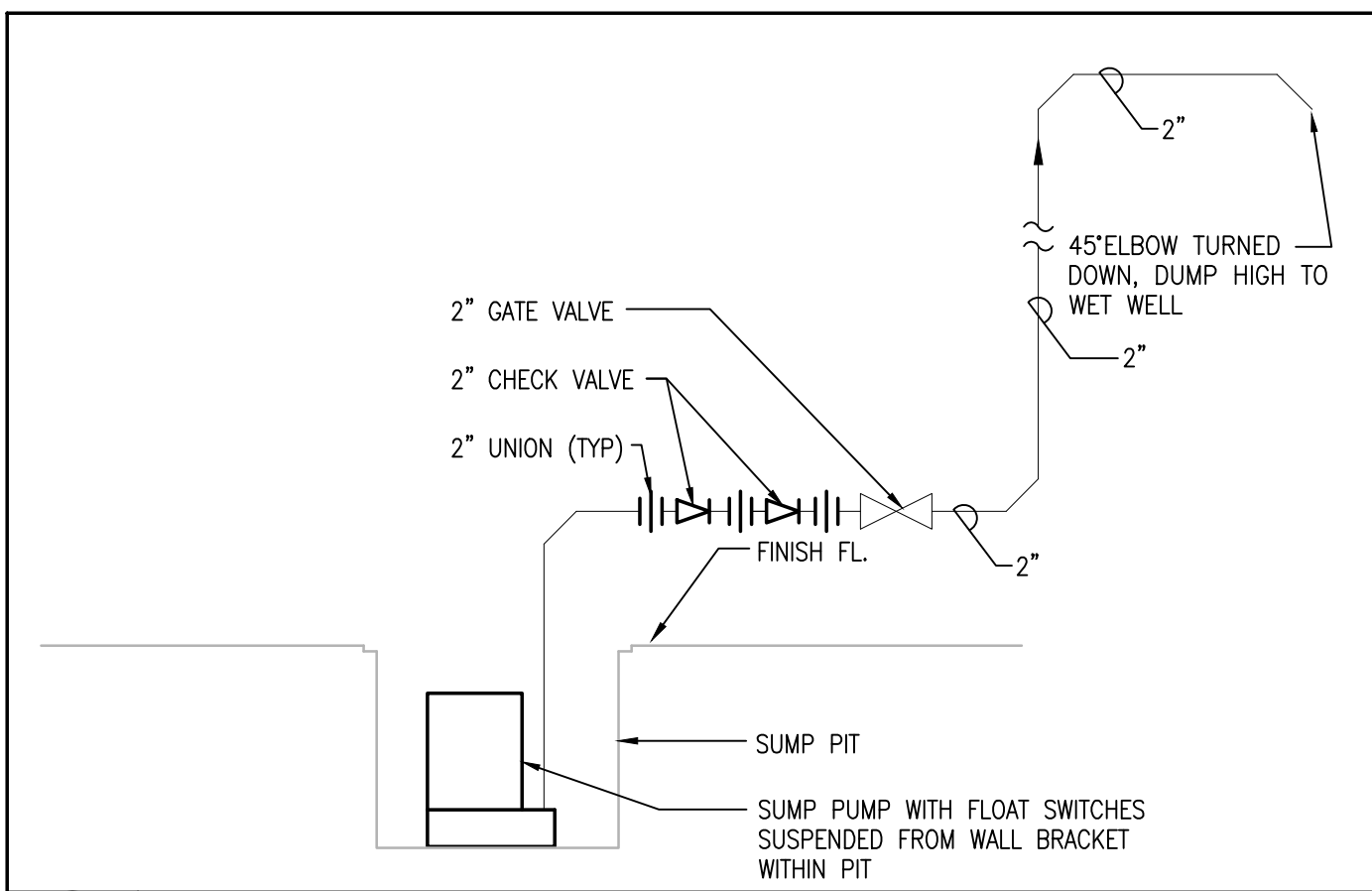
**6 CLEVIS PIPE HANGER DETAIL** NTS



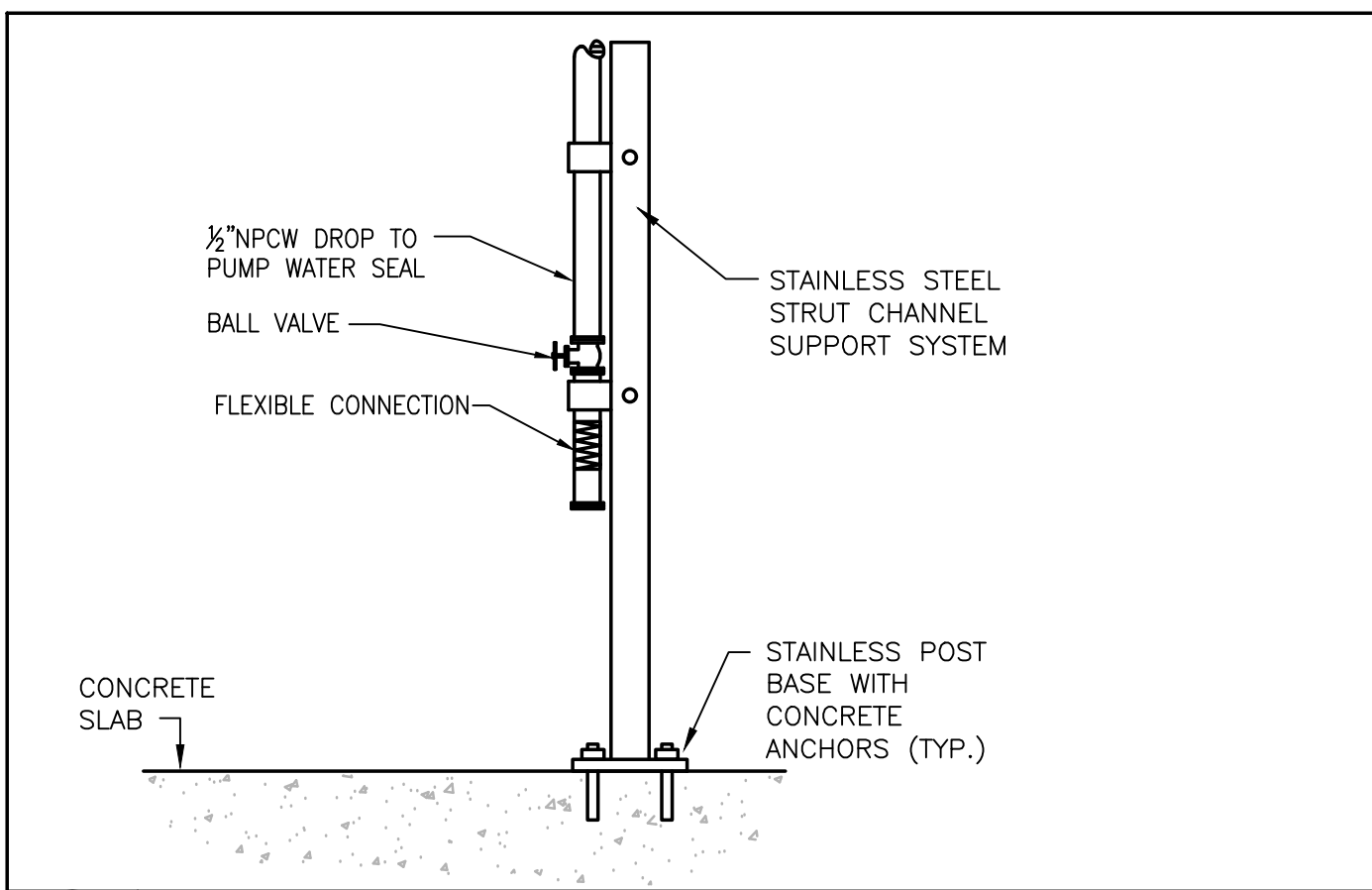
**7 ELECTRIC WATER HEATER DETAIL** NTS



**8 ROOFTOP UNIT GAS PIPING DETAIL** NTS



**9 SUMP PUMP DETAIL** NTS



**10 PIPE SUPPORT FOR DROP TO WATER SEAL DETAIL** NTS

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 DESIGNED BY: RLB  
 CHECKED BY: JAL

REGISTERED PROFESSIONAL  
 PREPARED BY  
  
  
 www.BETA-inc.com

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**PLUMBING DETAILS**

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