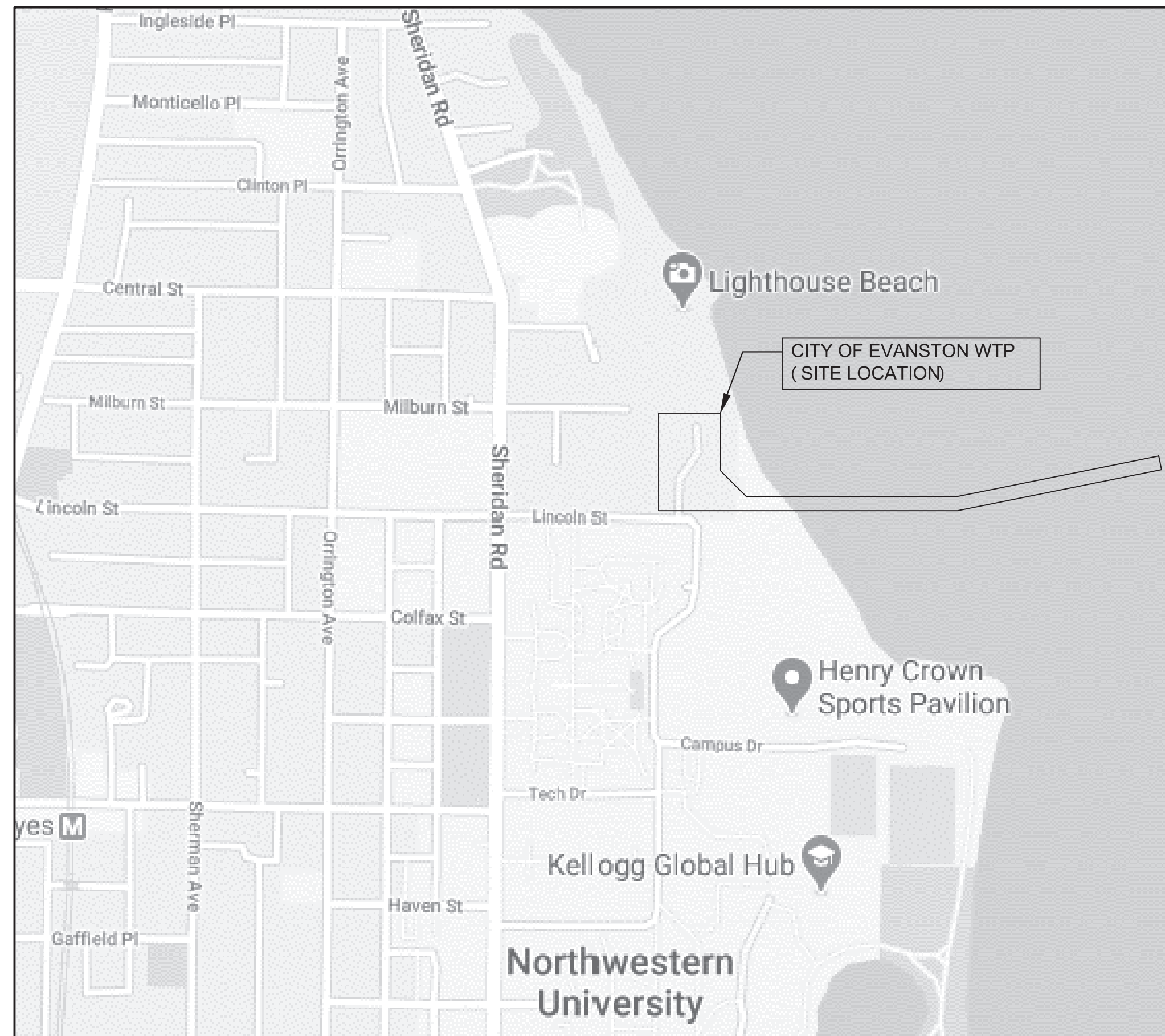


1909 Raw Water Intake Replacement

EVANSTON WATER TREATMENT PLANT
EVANSTON, ILLINOIS

CITY OF
EVANSTON

BID NO. 22-35
APRIL 2022

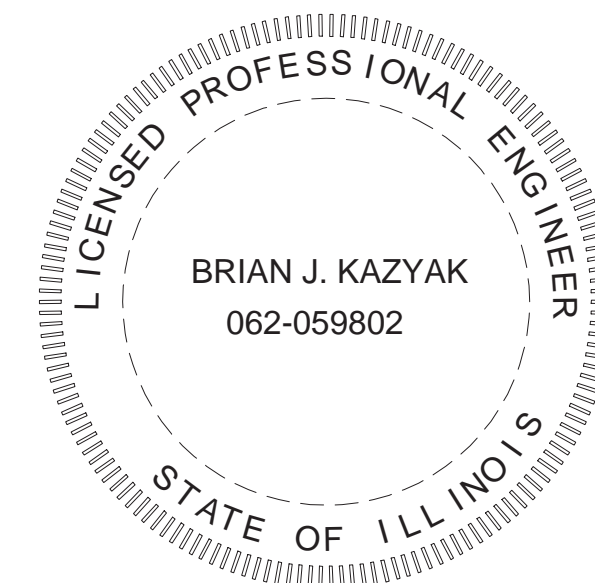



LOCATION MAP
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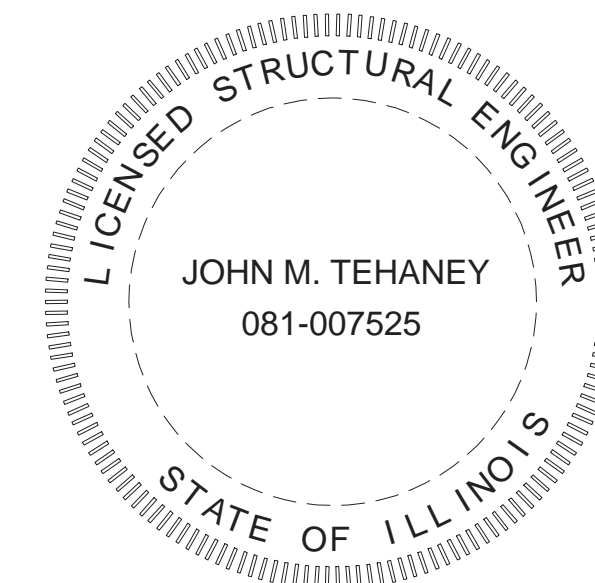
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CHICAGO, ILLINOIS 60654-1983
WWW.STANTEC.COM

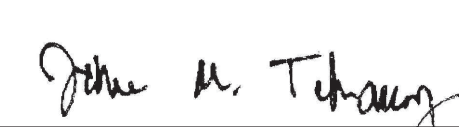


SIGNATURE: 
DATE SIGNED: 04-04-2022
EXP DATE: 11-30-2023

PE LICENSE NUMBER: 062-059802
DESIGN FIRM: STANTEC CONSULTING SERVICES, INC.
DESIGN FIRM REGISTRATION: 184004750-0006

ALL OTHER SHEETS



SIGNATURE: 
DATE SIGNED: 04-04-2022
EXP DATE: 11-30-2022

SE LICENSE NUMBER: 081-007525
DESIGN FIRM: STANTEC CONSULTING SERVICES, INC.
DESIGN FIRM REGISTRATION: 184004750-0006

STRUCTURAL

- S-001 GENERAL NOTES AND DESIGN CRITERIA
- S-002 NOTES AND SPECIAL INSPECTIONS
- S-003 STANDARD DETAILS - I
- S-004 STANDARD DETAILS - II
- S-005 STANDARD DETAILS - III
- S-006 STANDARD DETAILS - IV
- S-007 STANDARD DETAILS - V
- S-008 STANDARD DETAILS - VI
- S-009 STANDARD DETAILS - VII
- S-010 SHOREWELL NO 3 MODIFICATIONS
- S-011 VALVE VAULT PLANS
- S-012 VALVE VAULT SECTIONS AND DETAILS

JOB NO.
173440108
DRAWING NO.
G-001

A

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2	G-002	LIST OF DRAWINGS
3	G-003	SYMBOLOLOGY
4	G-004	SITE STAGING PLAN
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10	C-002	STANDARD DETAILS - I
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13	C-005	SITE UTILITY AND DEMOLITION PLAN
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MECHANICAL		
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52	H-002	EQUIPMENT SCHEDULES
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59	E-004	SITE PLAN
60	E-005	VAULT PLANS
61	E-006	PANEL AND LUMINAIRE SCHEDULE
62	E-007	PUMP HOUSE PLAN AND DETAILS
63	E-008	SCHEMATIC DIAGRAM

REFERENCE DRAWINGS	
DRAWING No	DRAWING TITLE
REDACTED FOR BID	

REFERENCE DRAWINGS HAVE BEEN REDACTED. INFORMATION WILL BE PROVIDED TO ATTENDEES OF THE MANDATORY PRE-BID MEETING WHO SUBMIT THE NON-DISCLOSURE AGREEMENT.

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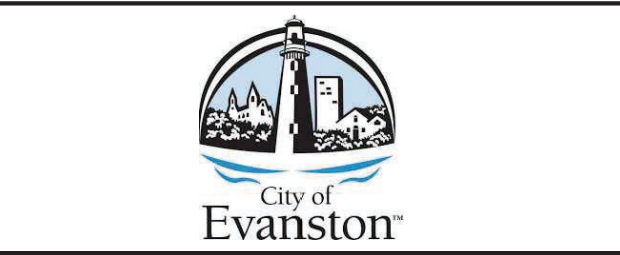
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DESIGNED	DF
DRAWN	TH
CHECKED	BK
DATE	04/2022

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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
GENERAL
LIST OF DRAWINGS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
173440108
DRAWING NO.
G-002
SHEET NO.
02 OF 63

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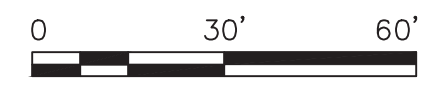
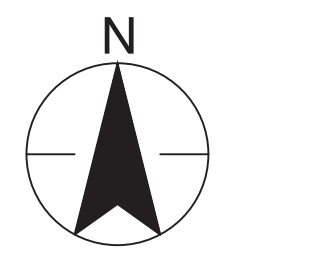
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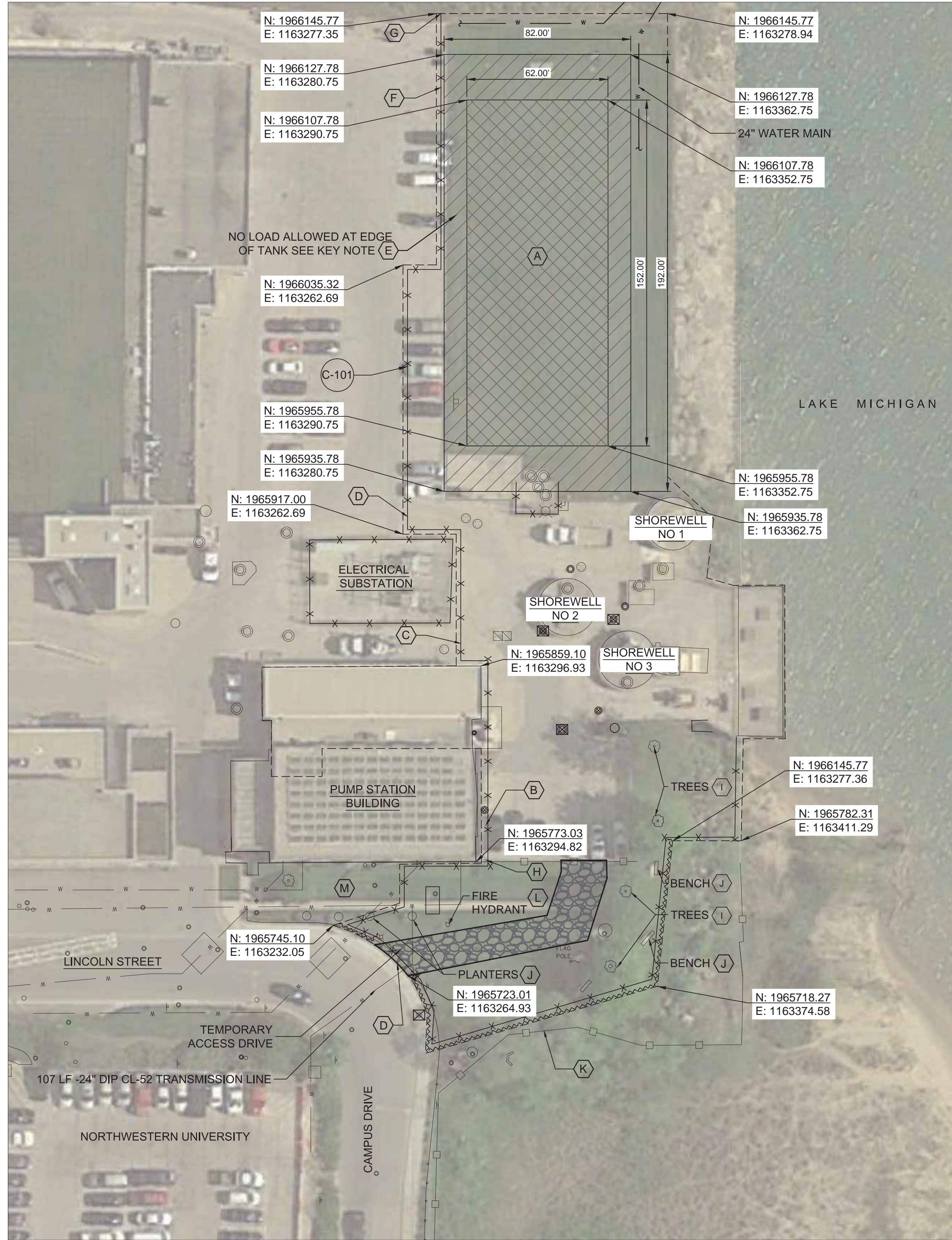
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SITE MAP



GENERAL SHEET NOTES

1. THE CONTRACTOR SHALL VIDEO RECORD THE WORK AREA AT THE EVANSTON WATER TREATMENT PLANT PRIOR TO MOBILIZATION FOR THE PURPOSE OF DOCUMENTING EXISTING CONDITIONS. THE CONTRACTOR SHALL PROVIDE ONE COPY TO THE OWNER AND ONE COPY TO THE ENGINEER.
2. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS TO PROTECT ABUTTING PROPERTY, UTILITIES, PEDESTRIANS, AND VEHICULAR TRAFFIC.
3. THE CONTRACTOR SHALL LOCATE AND MARK ALL EXISTING UTILITIES PRIOR TO MOBILIZATION. SPECIFIC ATTENTION SHALL BE GIVEN TO EXISTING WATER MAINS, ELECTRICAL, AND GAS LINES IN THE AREA OF THE TEMPORARY SITE ACCESS DRIVE. GAS LINES MAY BE WITHIN 2 FEET OF GROUND SURFACE.
4. STOCKPILING OF MATERIALS AND EQUIPMENT SHALL BE ALLOWED AT THE DISCRETION OF THE OWNER.
5. CONTRACTOR SHALL MAINTAIN FIVE FEET OF CLEARANCE AROUND ALL EXISTING EQUIPMENT, STRUCTURES, VALVES, AND BUILDINGS FOR OWNER ACCESS.
6. ALLOWABLE UNIFORM TEMPORARY CONSTRUCTION LOADS WERE DETERMINED BASED ON THE CONCRETE DIMENSIONS, REINFORCEMENT SIZE, PLACEMENT AND NUMBER SHOW ON AVAILABLE STRUCTURAL DRAWINGS DATED AS SHOWN. ALLOWABLE LOADS ARE BASED ON ASSUMPTION THAT THE STRUCTURAL CONCRETE IS IN GOOD CONDITION FREE OF ANY SPALLING. ASSUMED $f_c = 3,000$ psi, AND $f_y = 40,000$ psi. ALLOWABLE UNIFORM LOADS DETERMINED IN ACCORDANCE WITH BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE. (ACI 318-05)
7. THE FENCING AND GATES INDICATED ON THIS DRAWING REFER TO TEMPORARY CONSTRUCTION FENCING. THIS FENCING SHALL BE MAINTAINED DURING THE DURATION OF THE PROJECT AND BE INSTALLED TO THE REQUIREMENTS OF PERMANENT FENCING. UPON COMPLETION OF THE PROJECT THE FENCING SHALL BE REMOVED AND FINAL SITE FENCING SHALL BE ERECTED.

TRAFFIC CONTROL NOTES

1. TRAFFIC CONTROL AND PROTECTION DEVICES SHALL BE PROVIDED AND CLEANED AS NECESSARY THROUGHOUT THE DURATION OF THE CONTRACT.
2. THE WORK OF THIS CONTRACT SHALL NOT LIMIT TRAFFIC OR PEDESTRIAN ACTIVITY ALONG LINCOLN STREET AND CAMPUS DRIVE.
3. THE CONTRACTOR SHALL MAINTAIN A FLAGGER AT THE CONSTRUCTION SITE ENTRANCE AT ALL TIMES TO DIRECT TRAFFIC AND PEDESTRIANS WHENEVER THERE IS WORK ONSITE.
4. INGRESS AND EGRESS FOR EVANSTON STAFF SHALL BE MAINTAINED AT ALL TIMES.
5. PRIOR TO MOBILIZATION THE CONTRACTOR SHALL SUBMIT TO THE OWNER AND ENGINEER A TRAFFIC AND PEDESTRIAN CONTROL PLAN FOR APPROVAL.
6. TRAFFIC CONTROL DEVICES, PROCEDURES, AND LAYOUTS SHALL BE AS PER CURRENT PART IV OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
7. ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR. PORTABLE MOUNTINGS FOR WARNING SIGNS MAY BE USED FOR WARNING DEVICES UPON APPROVAL BY THE ENGINEER.
8. ALL TRAFFIC CONTROL SIGNS SHALL BE PLACED AT A MINIMUM OF 2 FEET CLEAR OF THE BACK OF CURB WHERE POSSIBLE.
9. THE CONTRACTOR SHALL PROVIDE SIDEWALK CLOSURE AND PEDESTRIAN DETOUR SIGNS TO MAINTAIN FOOT TRAFFIC ALONG LINCOLN STREET, CAMPUS DRIVE AND THROUGH NORTHWESTERN UNIVERSITY CAMPUS TO MAINTAIN PEDESTRIAN TRAFFIC AROUND THE CONSTRUCTION SITE.
10. LINCOLN STREET AND CAMPUS DRIVE SHALL BE KEPT FREE OF DIRT, MUD, AND DEBRIS. ALL PUBLIC ROADWAYS ADJACENT TO THE CONSTRUCTION SITE SHALL BE INSPECTED AT THE END OF EACH CONSTRUCTION DAY AND CLEANED IF NECESSARY. STREET SWEEPERS SHALL BE USED AT REGULAR INTERVALS WHENEVER MATERIAL OR EQUIPMENT IS BROUGHT ON OR OFF SITE.

EROSION CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL MEASURES CONTAINED WITHIN THE CONTRACT DOCUMENTS AND AS REQUIRED BY THE CITY, STATE, OR OTHER REGULATORY AUTHORITY. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL SUBMIT AN EROSION AND SEDIMENT CONTROL PLAN FOR THE WORK TO BE PERFORMED.
2. FOR AREAS OF PROPOSED DISTURBANCE GREATER THAN 1.0 ACRE, THE CONTRACTOR SHALL PREPARE AND PROVIDE AN IEPA - NOI STORM WATER POLLUTION PREVENTION PLAN (SWPPP) TO OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM IEPA (ILR-10). THE CONTRACTOR SHALL PROVIDE TO THE OWNER AND ENGINEER A COPY OF THE PERMIT 30 DAYS PRIOR TO CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL SOLELY BE RESPONSIBLE FOR THE PERMIT.
 - a. A COPY OF THE APPROVED SWPPP BEING IMPLEMENTED BY THE CONTRACTOR SHALL BE ON THE CONSTRUCTION SITE AT ALL TIMES.
3. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS IN THE ILLINOIS URBAN MANUAL, LATEST EDITION.
4. THE CONTRACTOR SHALL INSTALL TEMPORARY ACCESS DRIVES AND INLET PROTECTION PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
5. A DESIGNATED CONCRETE WASHOUT AREA SHALL BE IMPLEMENTED PRIOR TO ANY CONCRETE ACTIVITIES.
6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT SEDIMENT TRANSPORT OFF THE SITE IS REDUCED BY A COMBINATION OF MINIMIZATION OF EROSION AT THE SOURCE AND INSTALLATION OF SPECIFIC MEASURES TO CONTROL OR REDUCE THE TRANSPORT OF SEDIMENT.
7. THE CONTRACTOR SHALL ALSO PROVIDE ANY ADDITIONAL EROSION CONTROL MEASURES (E.G. HYDROSEEDING, MULCHING OF STRAW, SAND BAGGING, DIVERSION DITCHES, ETC.) AS DICTATED BY FIELD CONDITIONS TO PREVENT EROSION OR THE INTRODUCTION OF DIRT, MUD, OR DEBRIS INTO EXISTING PUBLIC STREETS, WATERWAYS, OR ONTO CITY PROPERTY OUTSIDE OF THE DESIGNATED WORKS AREAS DURING ANY PHASE OF CONSTRUCTION OPERATIONS.
8. THE CONTRACTOR SHALL DESIGNATE ONE EMPLOYEE AS RESPONSIBLE FOR IMPLEMENTATION OF THE EROSION AND SEDIMENT CONTROL PLAN ON ALL DISTURBED AREAS. ALL MEASURES SHALL BE INSPECTED BY THIS INDIVIDUAL AND THE ENGINEER ON A REGULAR BASIS AT LEAST ONCE EVERY 7 DAYS AND AFTER RAINFALL EVENT GREATER THAN 0.5 INCHES.
9. WHERE WORK IS COMPLETE, PERMANENT STABILIZATION SHALL OCCUR WITHIN SEVEN (7) DAYS OF COMPLETION. FOR WORK STOPPAGE GREATER THAN (14) DAYS, TEMPORARY STABILIZATION SHALL OCCUR BY THE SEVENTH DAY AFTER WORK HAS CEASED.
10. SILT FENCE PERIMETER EROSION BARRIER SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED WITH VEGETATION. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL MEASURES CONTAINED WITHIN THE CONTRACT SPECIFICATIONS AND AS REQUIRED BY THE CITY, DISTRICT, OR OTHER REGULATORY AUTHORITY. THE CONTRACTOR SHALL ALSO PROVIDE ANY ADDITIONAL EROSION CONTROL MEASURES (E.G. HYDROSEEDING, MULCHING OF STRAW, SAND BAGGING, DIVERSION DITCHES, ETC.) DICTATED BY FIELD CONDITIONS TO PREVENT EROSION OR THE INTRODUCTION OF DIRT, MUD, OR DEBRIS INTO EXISTING PUBLIC STREETS, WATERWAYS, OR ONTO ADJACENT PROPERTIES DURING ANY PHASE OF CONSTRUCTION OPERATIONS.

SURVEY CONTROL NOTES

1. COORDINATES: ILLINOIS STATE PLANE, EAST ZONE (1201), NAD 1983.
2. ELEVATIONS: EVANSTON CITY DATUM
3. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL ESTABLISH A SURVEY CONTROL MARKER PER IDOT STANDARD 667101-02. CONTROL MARKER SHALL BE PLACED UNDER DIRECTION OF THE ENGINEER.

KEY NOTES

- A. MAXIMUM ALLOWABLE UNIFORM TEMPORARY CONSTRUCTION LOAD ON WASH WATER DETENTION BASINS LIMITED TO 100 PSF.
 1. ACCESS TO AREA SHALL ONLY BE WITH CONSTRUCTION SUPPORT MATS TO SPAN NO LOAD AREA. CONTRACTOR SHALL SUBMIT DATA AND LOAD CAPACITY FOR APPROVAL OF CONSTRUCTION SUPPORT MATS PRIOR TO USE.
- B. PROVIDE 12 FOOT WIDE GATE ACCESS AT ROLL-UP DOOR. SEE DETAIL C-102
- C. PROVIDE 4 FOOT WIDE SINGLE ENTRY GATE. SEE DETAIL C-103.
- D. PROVIDE 12 FOOT WIDE VEHICLE GATE. SEE DETAIL C-102.
- E. CONTRACTOR SHALL SUBMIT A METHOD OF SPANNING ACROSS RESTRICTED AREA TO PROVIDE ACCESS TO STORAGE AREA AT A LOCATION WITHIN THE DEFINED WIDTH. RESTRICTED AREA SHALL NOT BE LOADED AND UNIFORM ELEVATION AROUND BASINS SHALL BE MAINTAINED DURING CONSTRUCTION STAGING ACTIVITIES.
- F. CONTRACTOR SHALL INSTALL FENCE BETWEEN THE CONSTRUCTION SITE AND WATER TREATMENT PLANT TO MAINTAIN A SECURE PERIMETER OF THE WTP SITE.
- G. TIE NEW FENCE INTO EXISTING FENCE TO MAINTAIN SECURE WATER TREATMENT PLANT PERIMETER.
- H. TIE CONSTRUCTION FENCE INTO PUMP STATION BUILDING TO MAINTAIN SECURE WATER TREATMENT PLANT PERIMETER.
- I. PROTECT OR REMOVE AND REPLACE AS REQUIRED TO COMPLETE THE WORK. TREE REMOVALS SHALL BE APPROVED BY THE OWNER PRIOR TO PROCEEDING.
- J. REMOVE AND STORE ON SITE AT A LOCATION APPROVED BY THE OWNER. ITEMS SHALL BE REINSTALLED FOLLOWING RESTORATION OF THE SITE.
- K. TIE CONSTRUCTION FENCE AT SOUTH END TO EXISTING WROUGHT IRON FENCE DURING CONSTRUCTION. PROVIDE SINGLE LEAF PEDESTRIAN GATE FOR MAINTENANCE BY CITY STAFF.
- L. REMOVE FIRE HYDRANT DURING CONSTRUCTION AND REINSTALL AFTER COMPLETION OF WORK. CONTRACTOR TO COORDINATE SHUTDOWN OF HYDRANT WITH OWNER.
- M. SHALLOW GAS MAIN IN AREA.

LEGEND

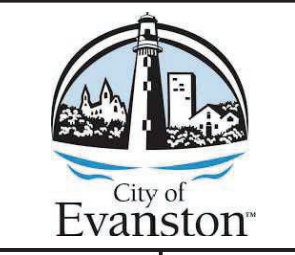
	INLET PROTECTION
	FENCE
	SILT FENCE
	DENOTES LIMITS OF CONSTRUCTION
	CONTRACTOR LAYDOWN AREA
	TEMPORARY ACCESS DRIVE
	NO LOAD ALLOWED AREA

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DESIGNED	DF
DRAWN	TH
CHECKED	BK
DATE	04/2022

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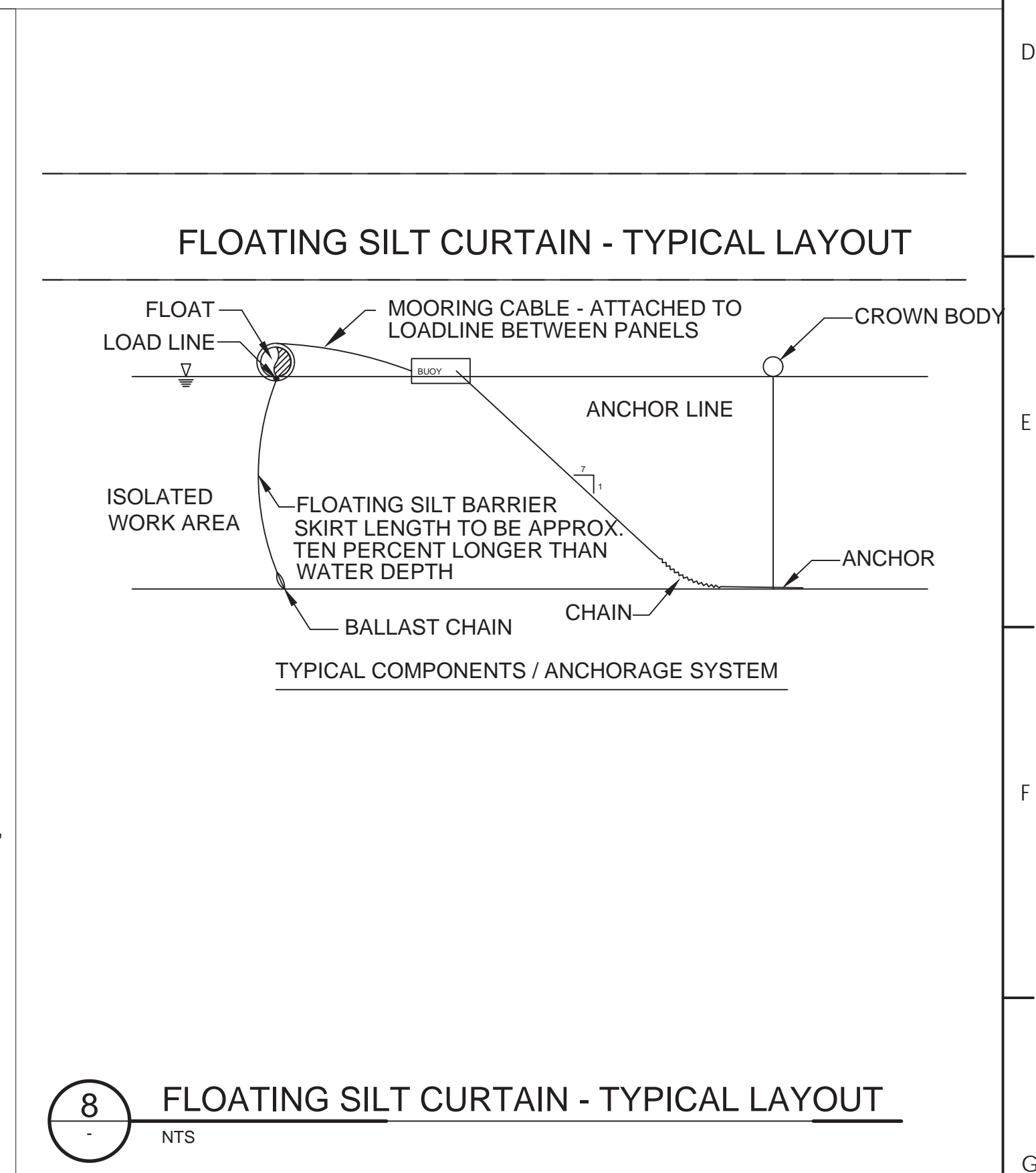
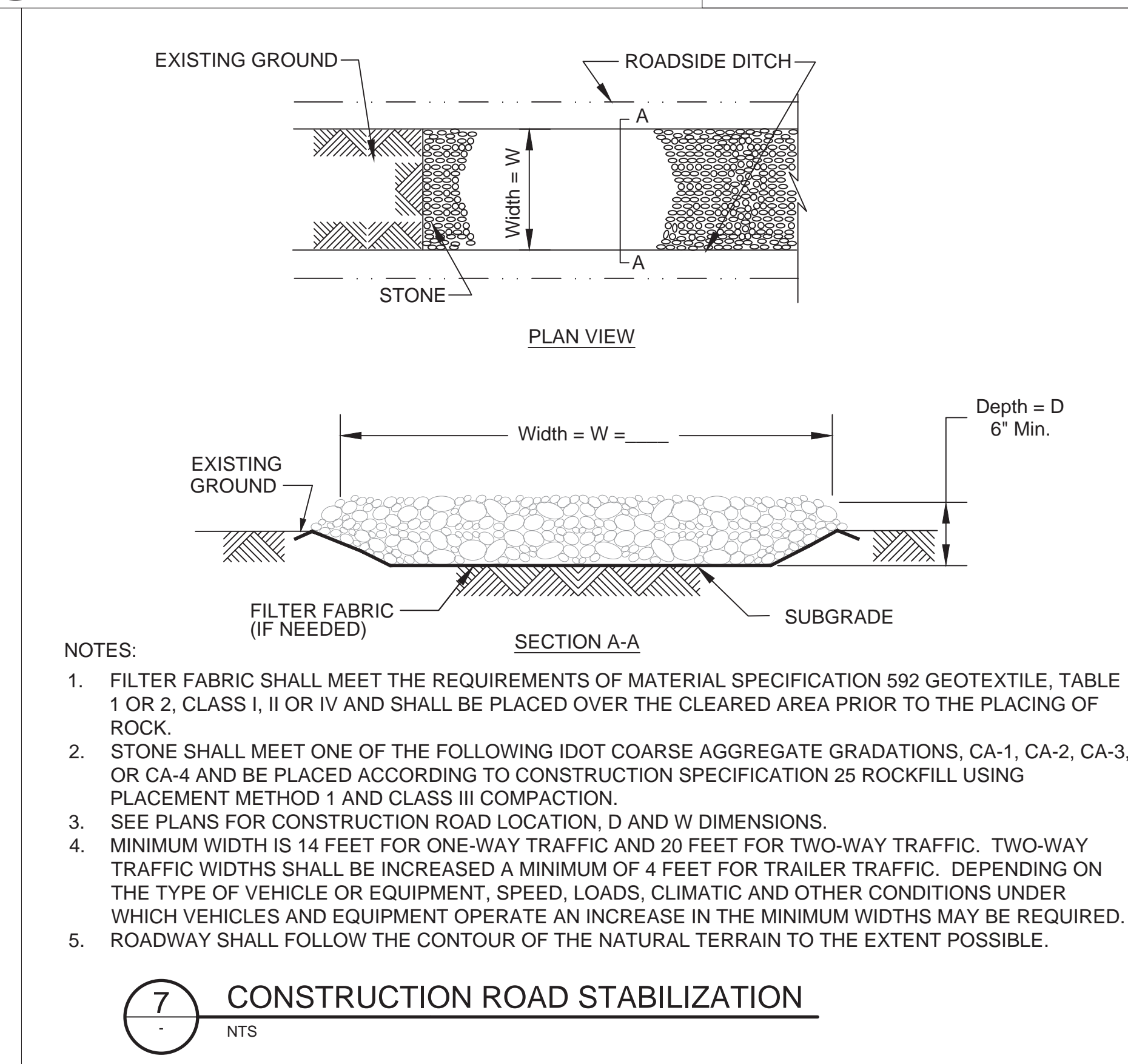
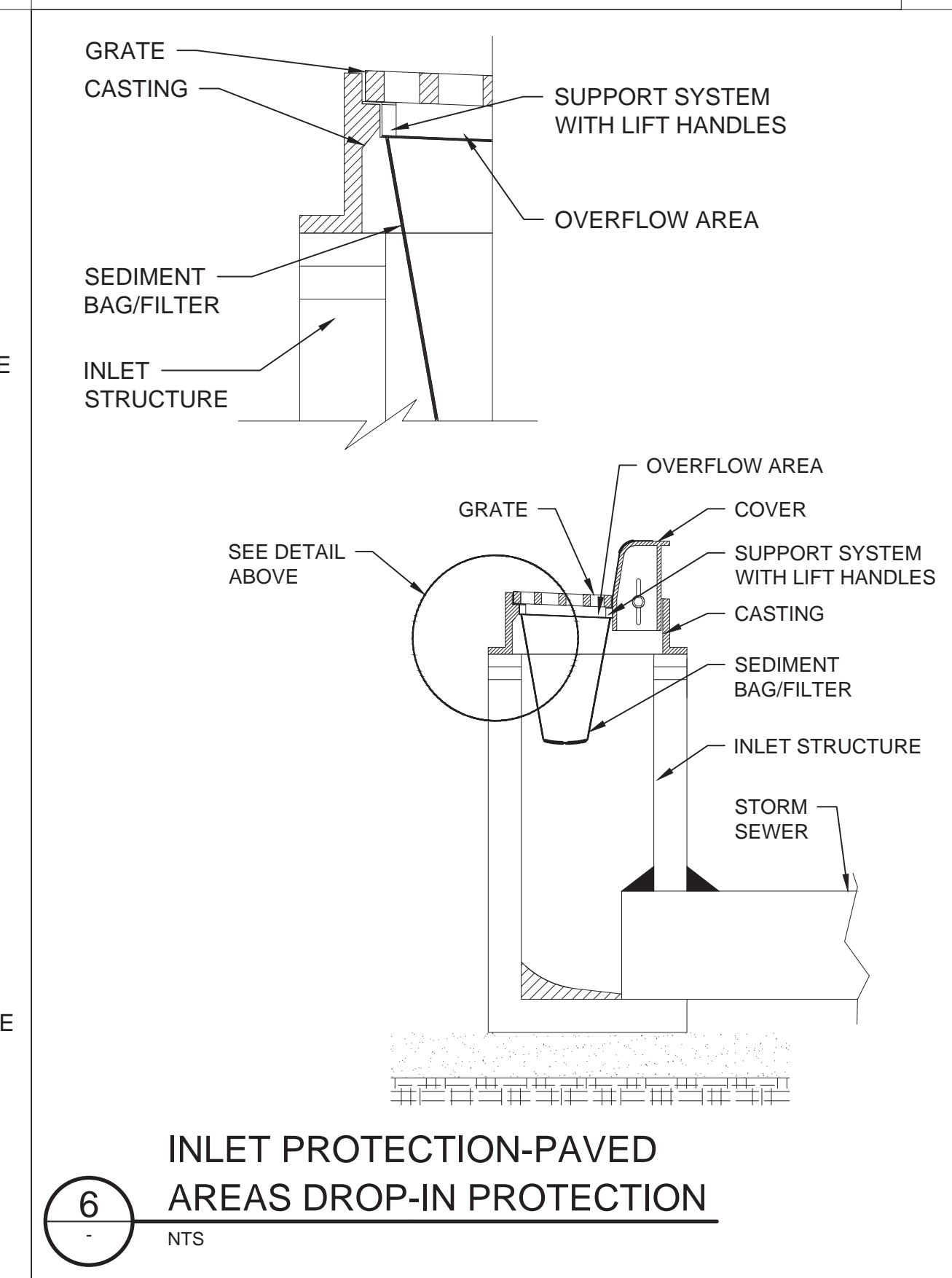
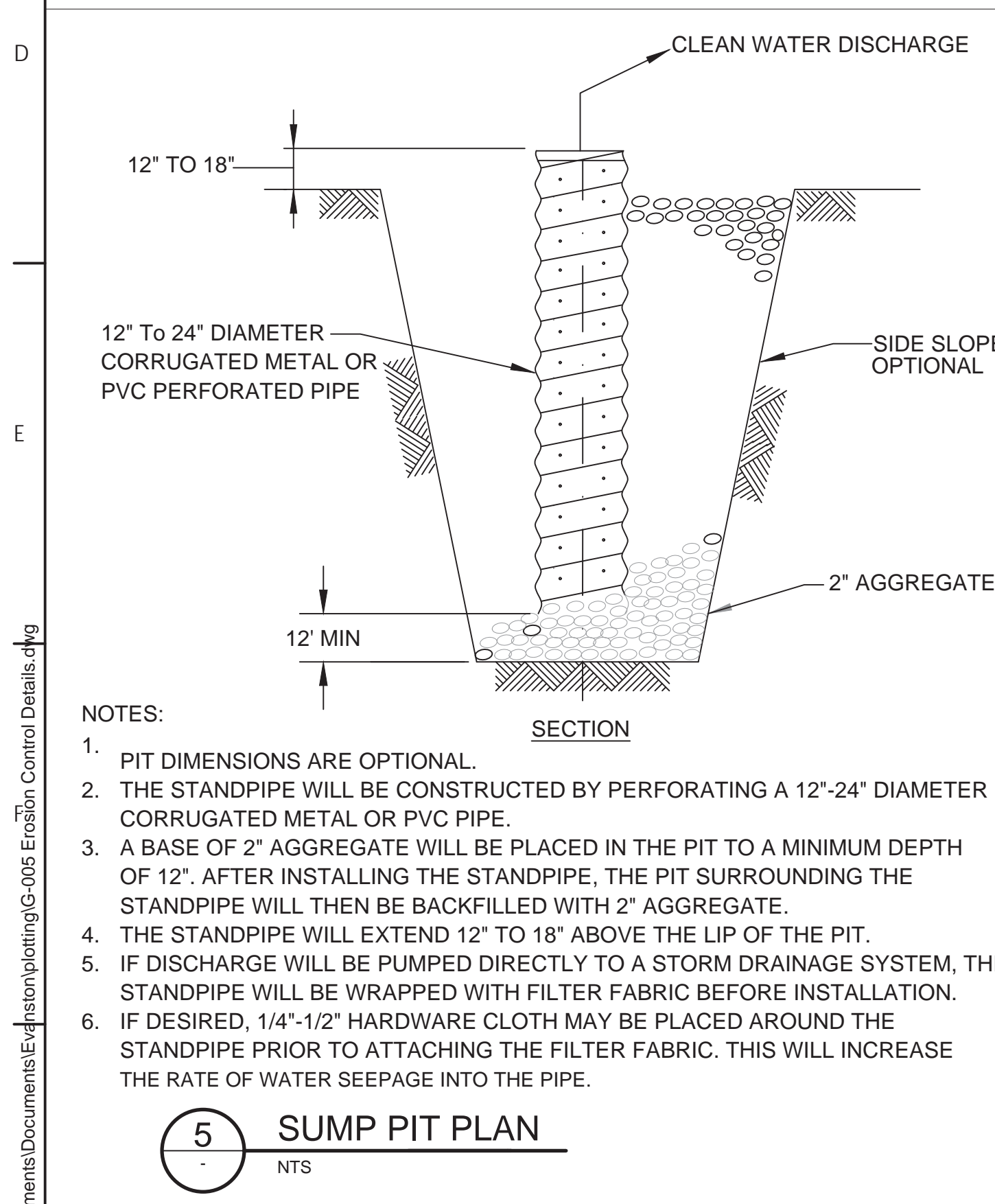
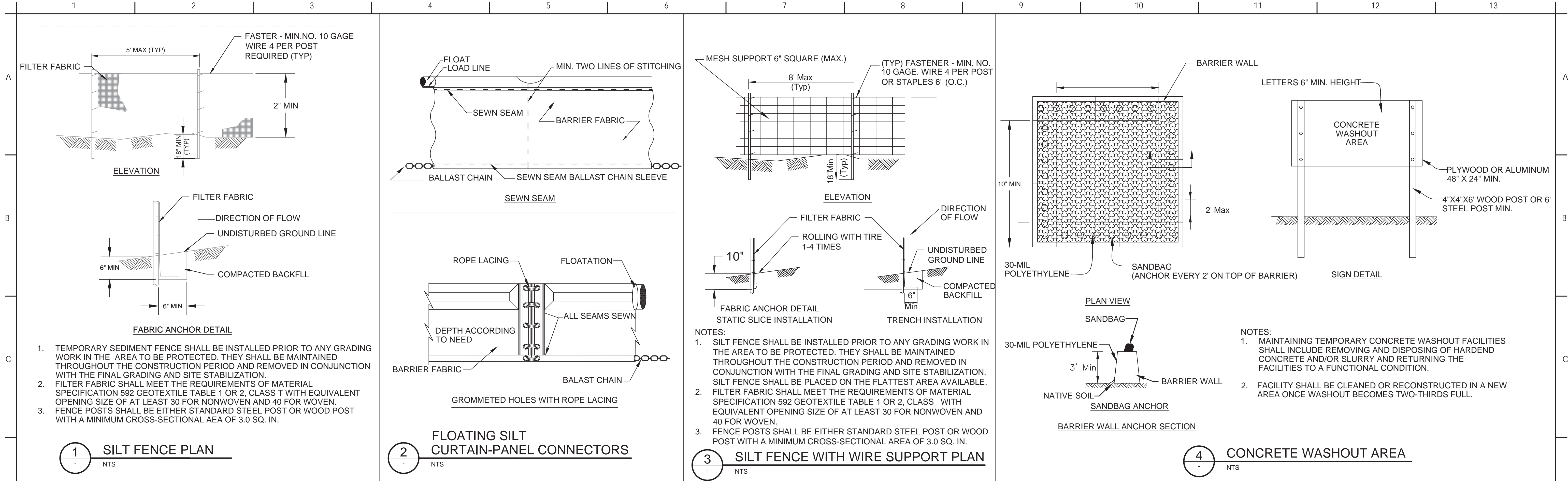
CITY OF EVANSTON

1909 RAW WATER INTAKE REPLACEMENT

GENERAL
SITE STAGING PLAN

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

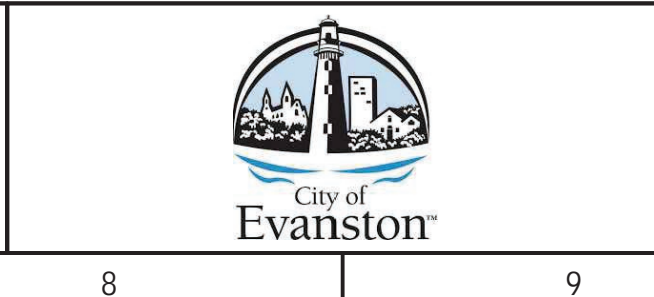
JOB NO.
173440108
DRAWING NO.
G-004
SHEET NO.
04 OF 63



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DATE	04/2022

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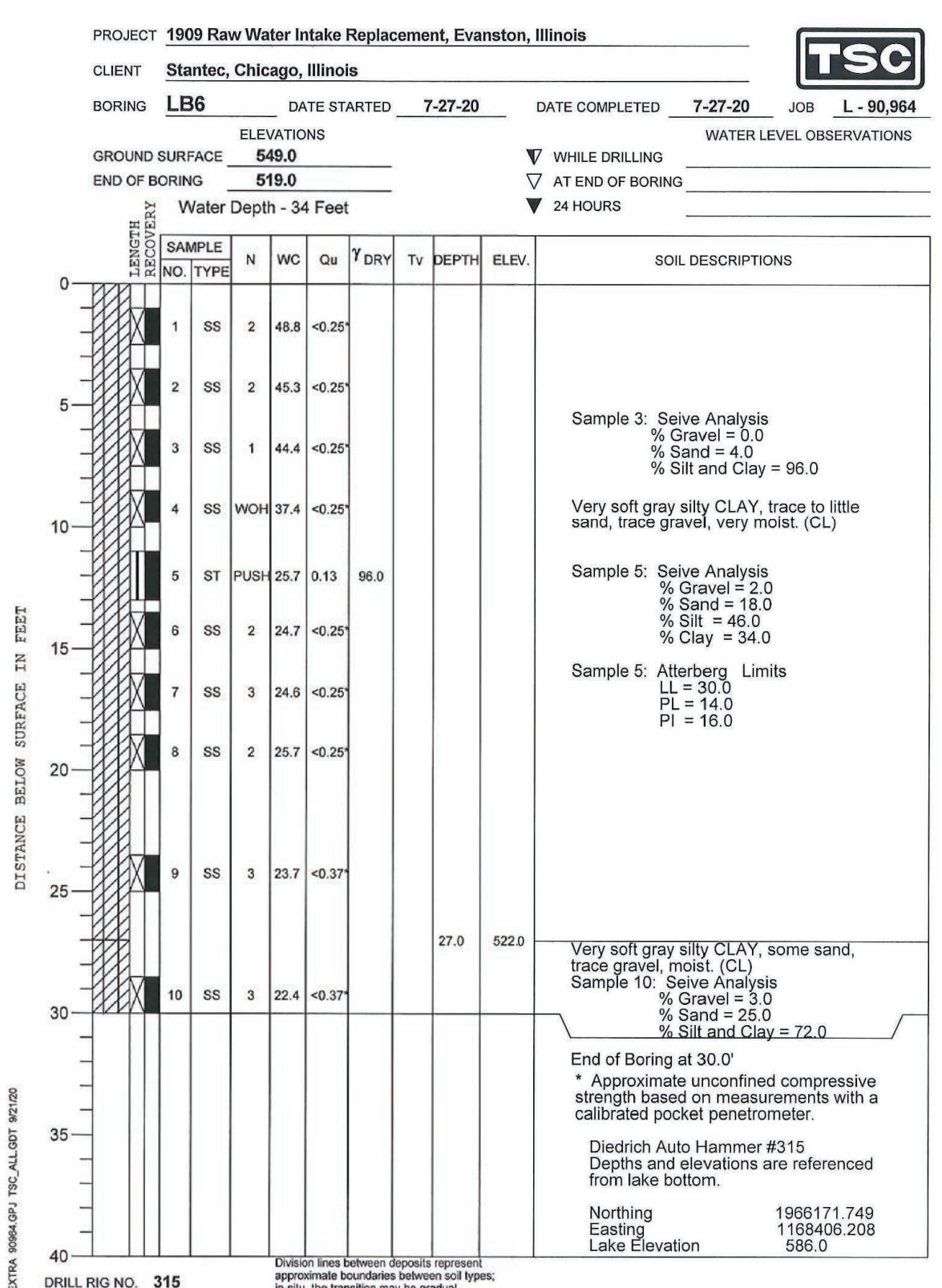
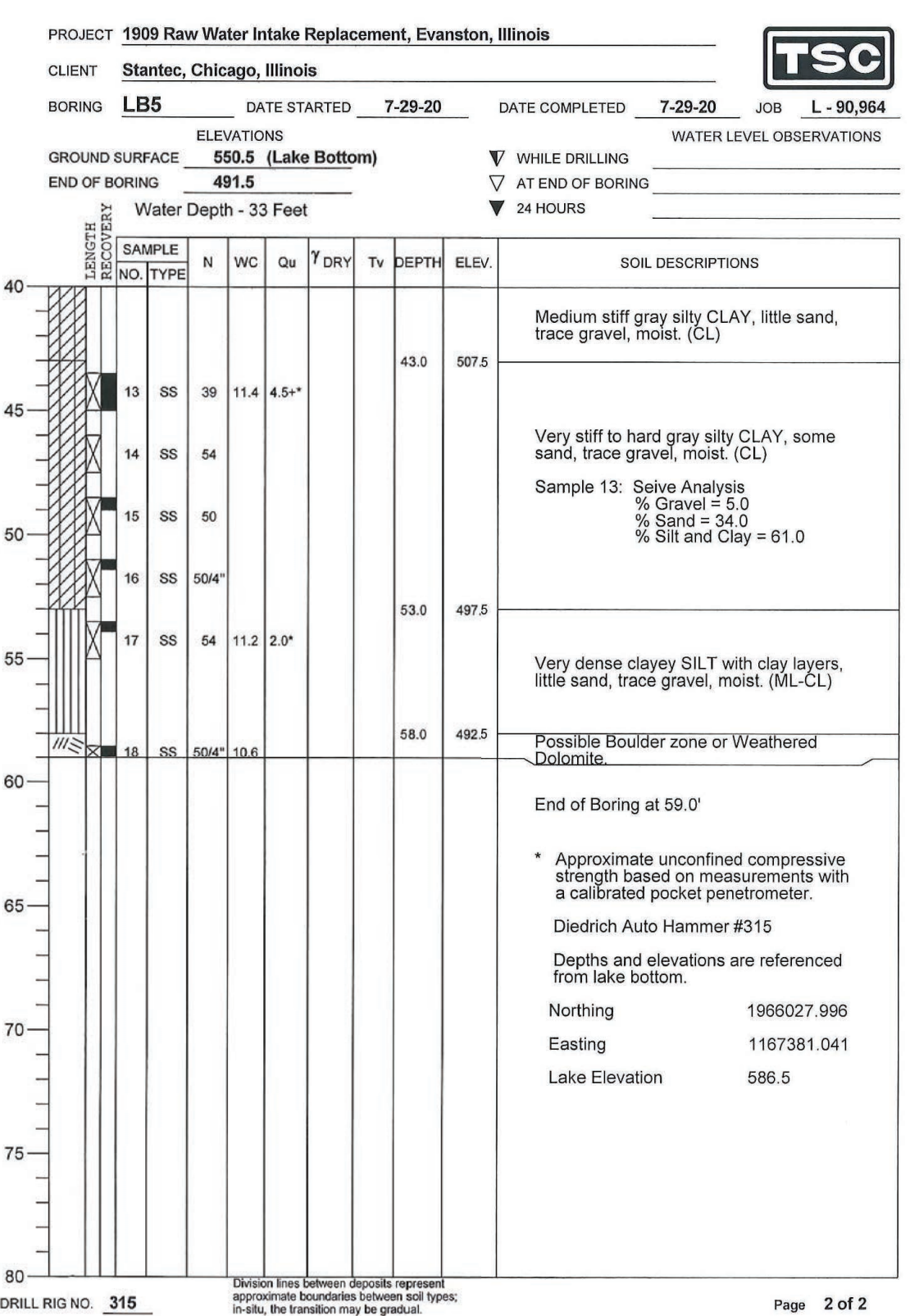
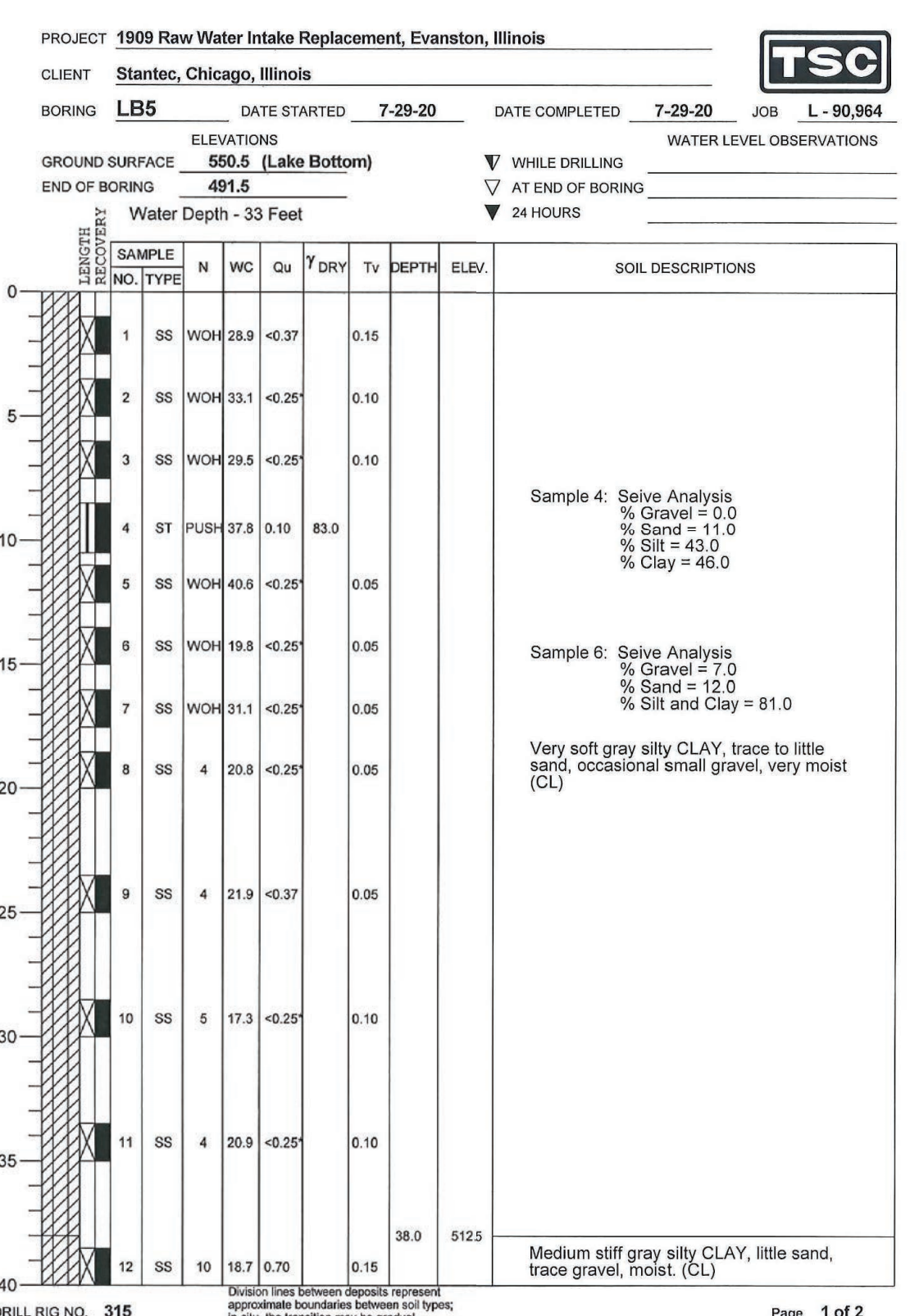
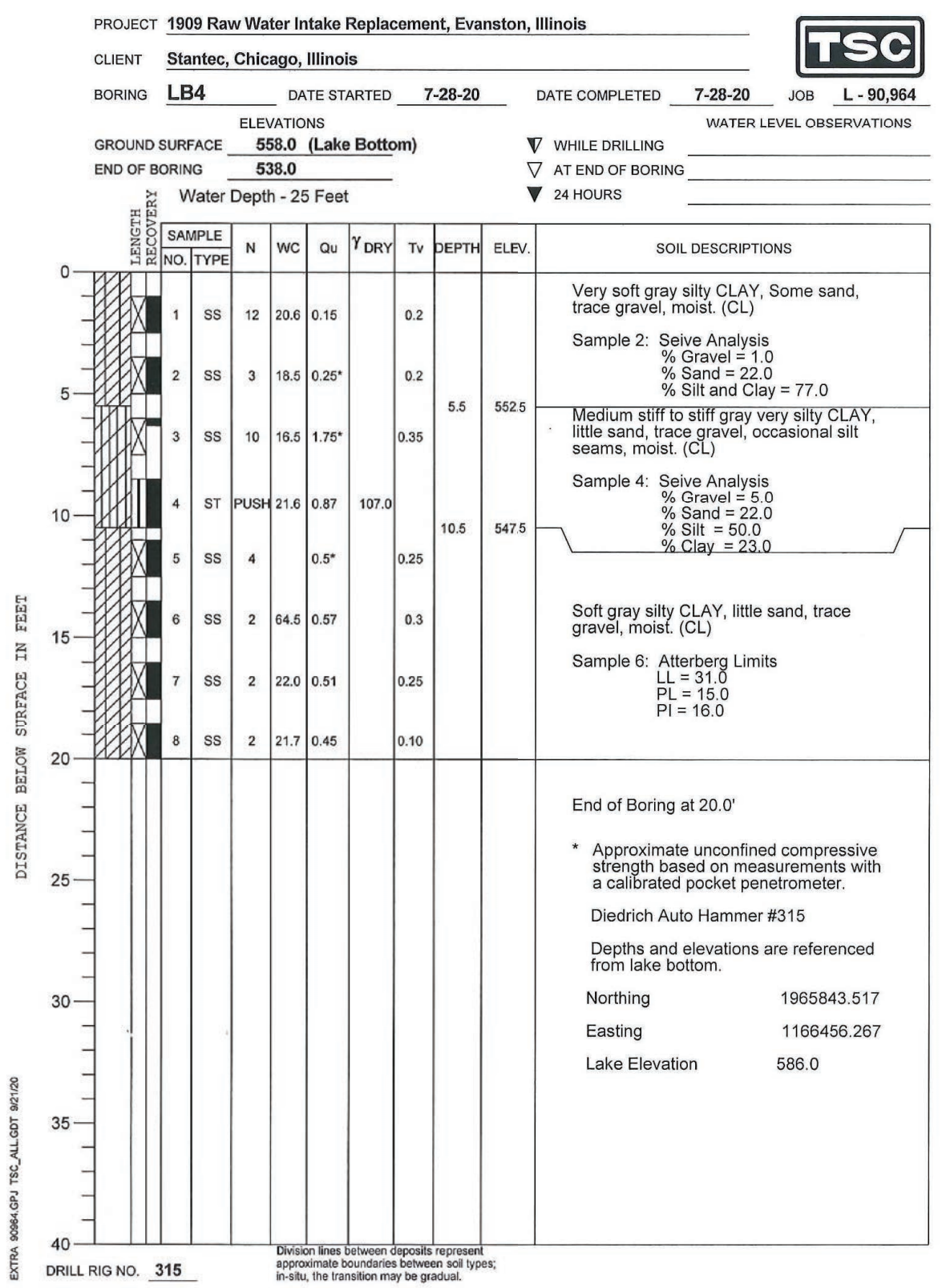
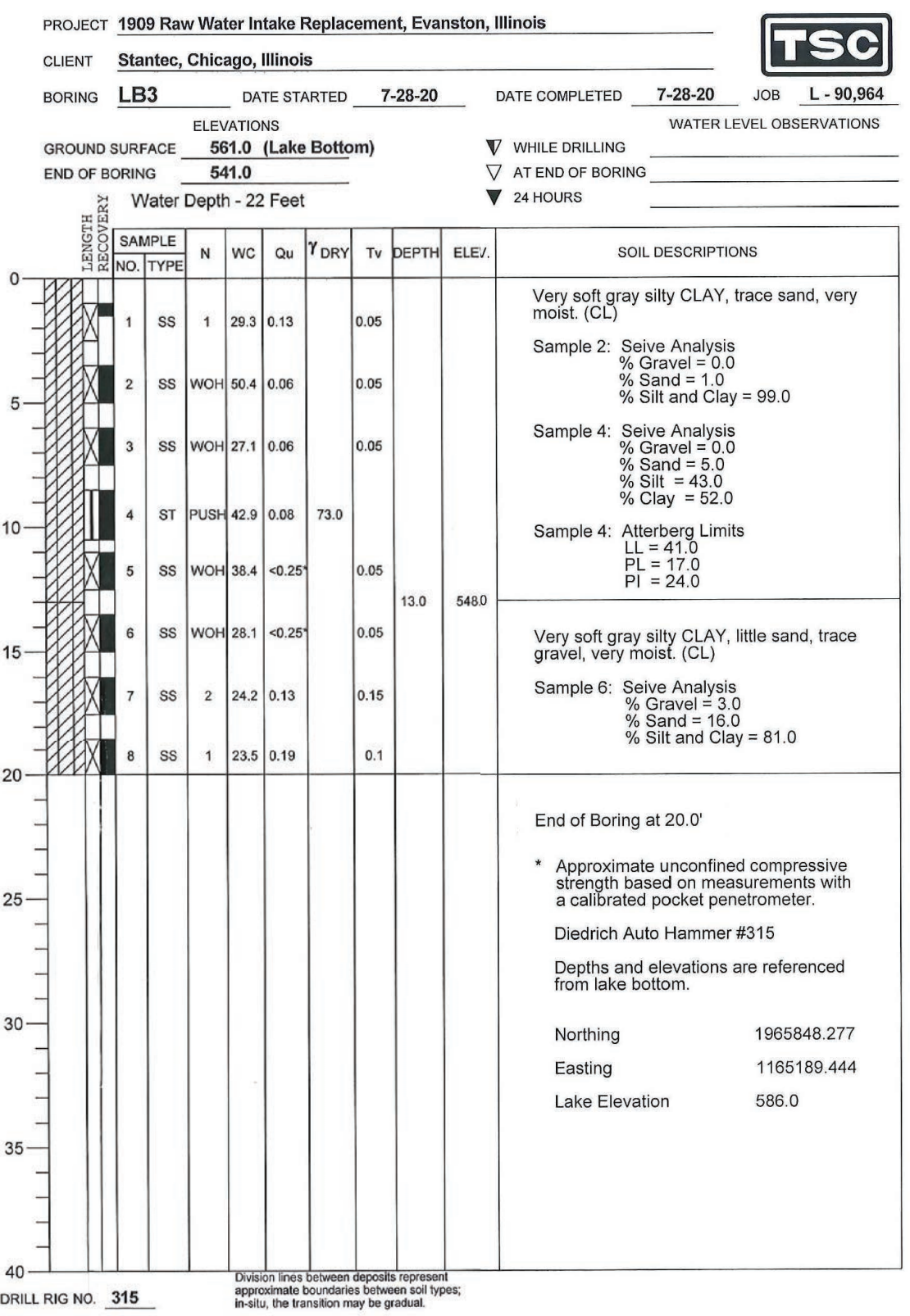
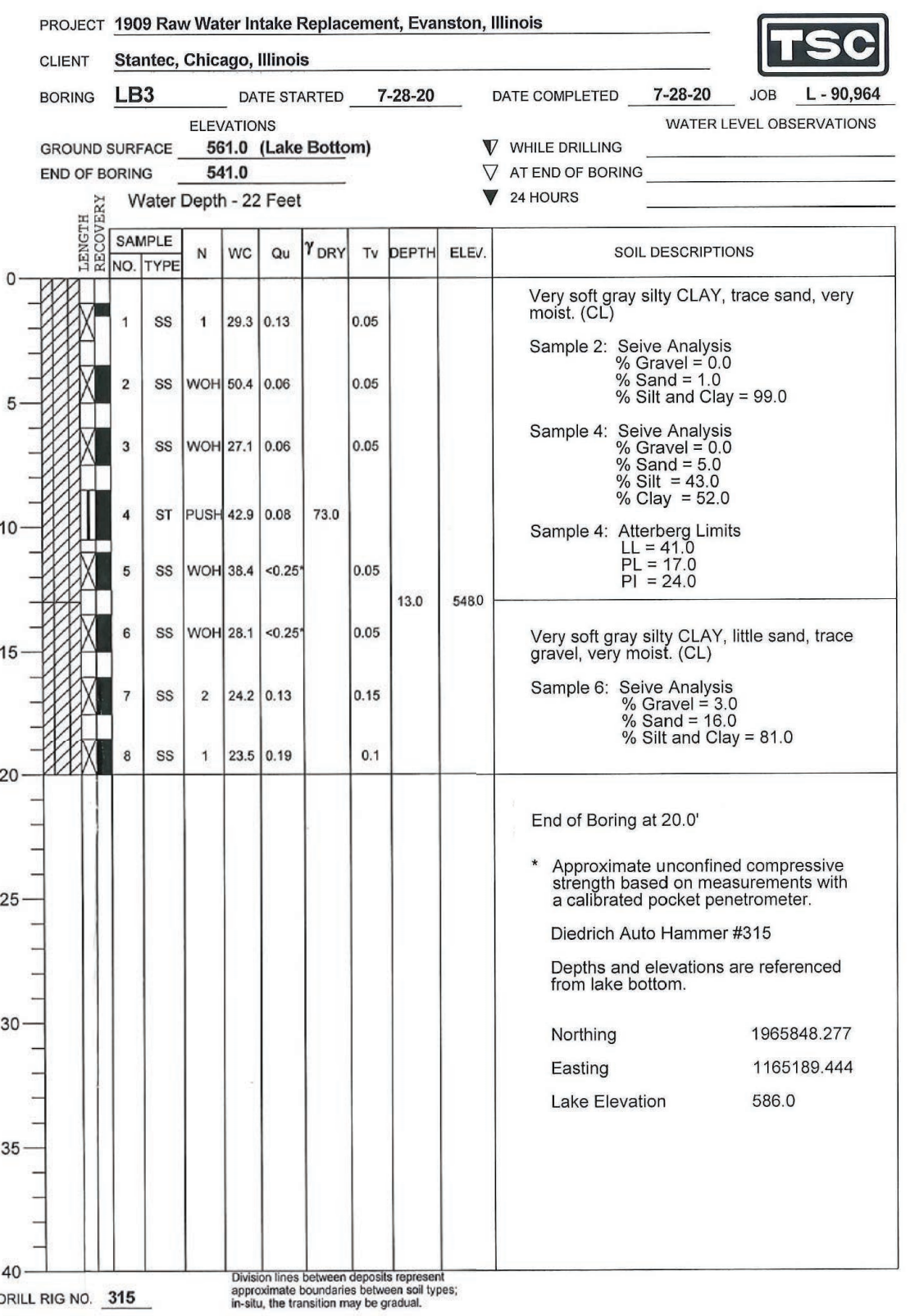
CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 GENERAL
 EROSION CONTROL DETAILS

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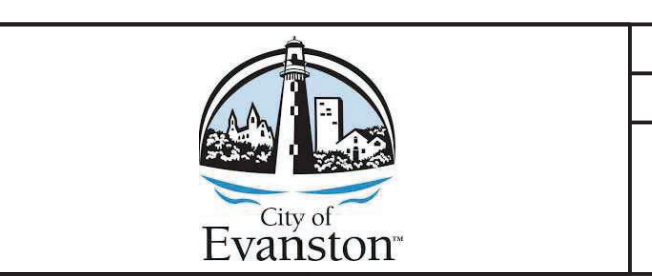
GENERAL SHEET NOTES

1. APPROXIMATE LOCATIONS OF LAKE BORINGS LB3 THROUGH LB7 AND LAND BORING 1 ARE SHOWN ON SHEETS C-012 AND C-013.



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DATE	04/2022

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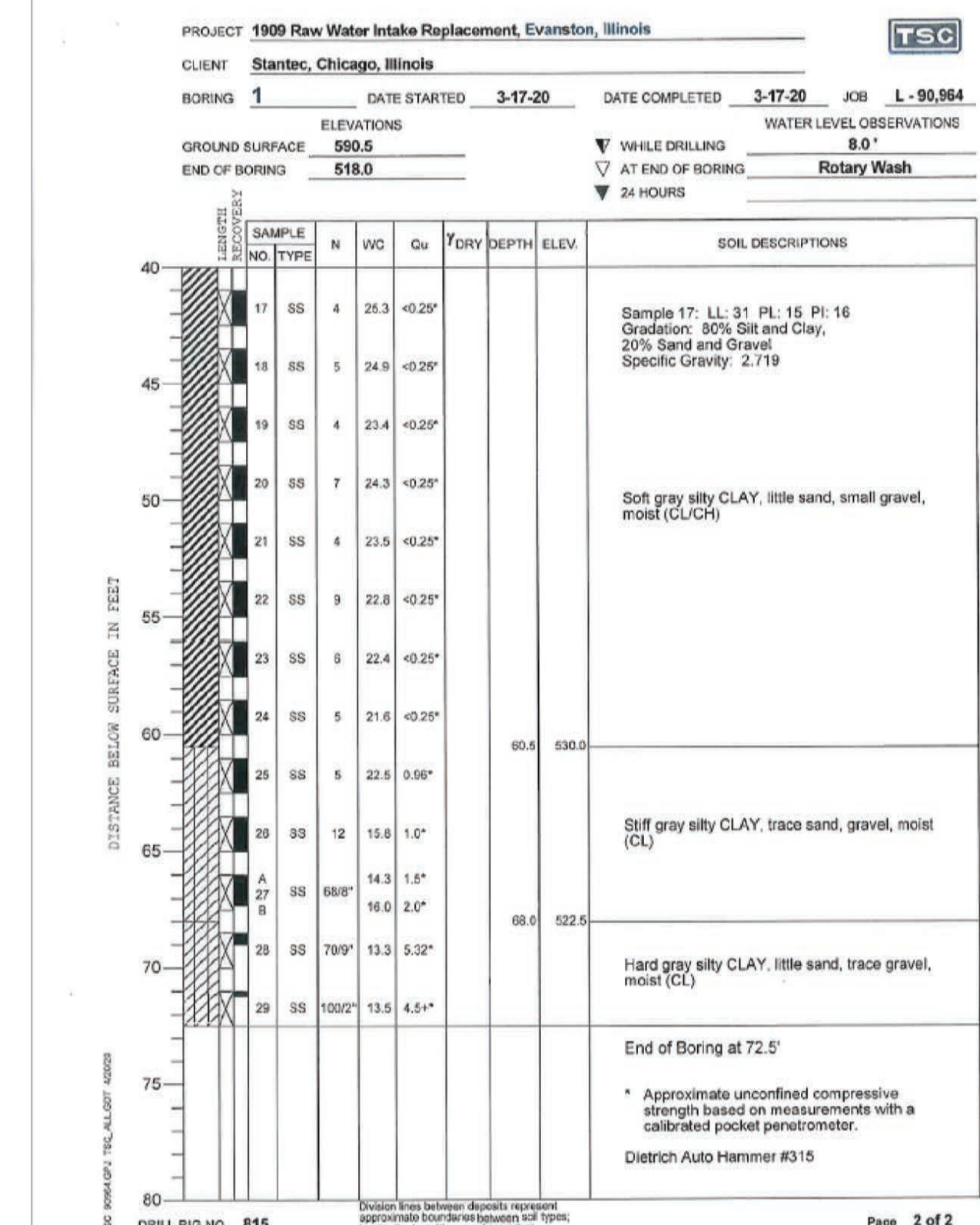
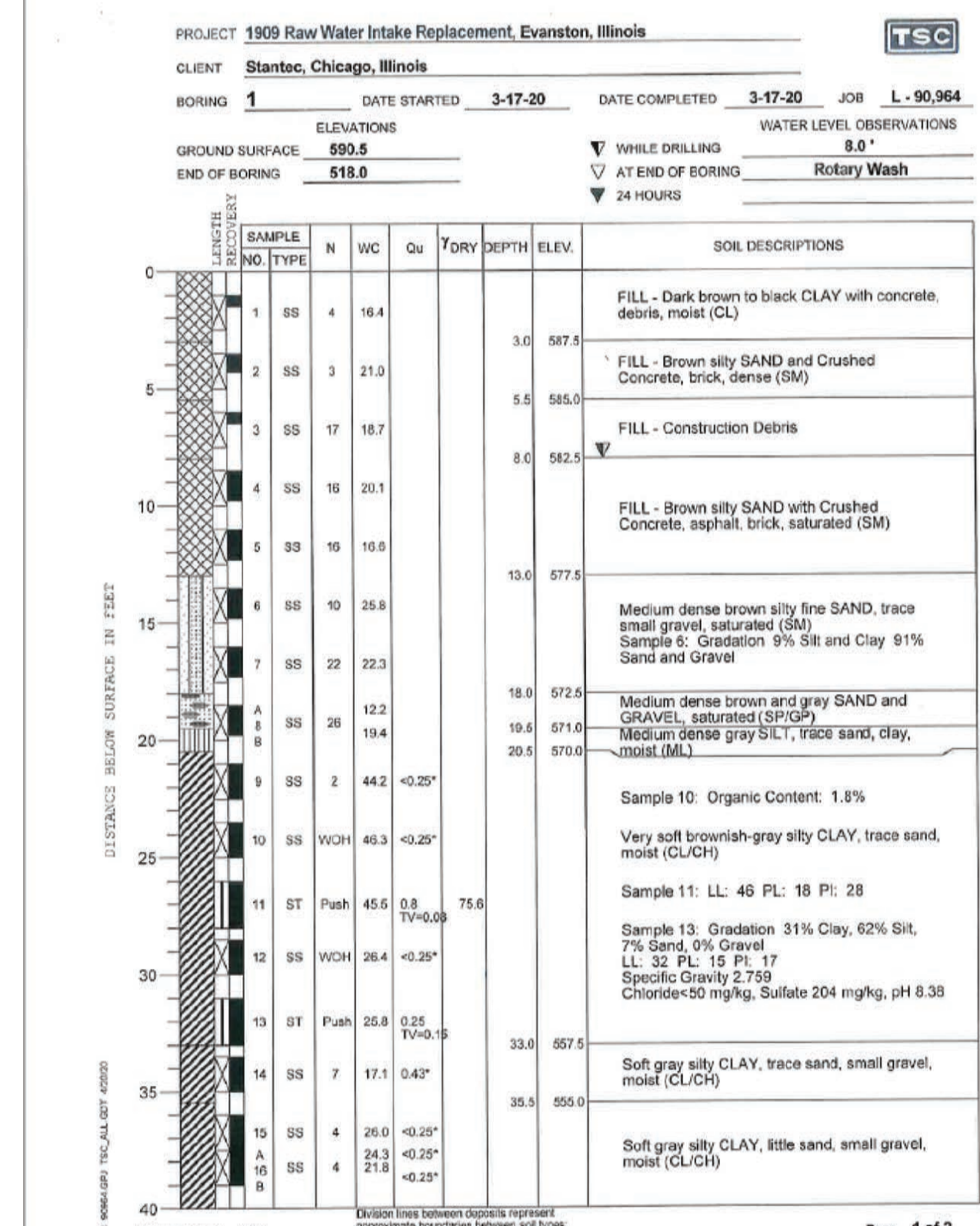
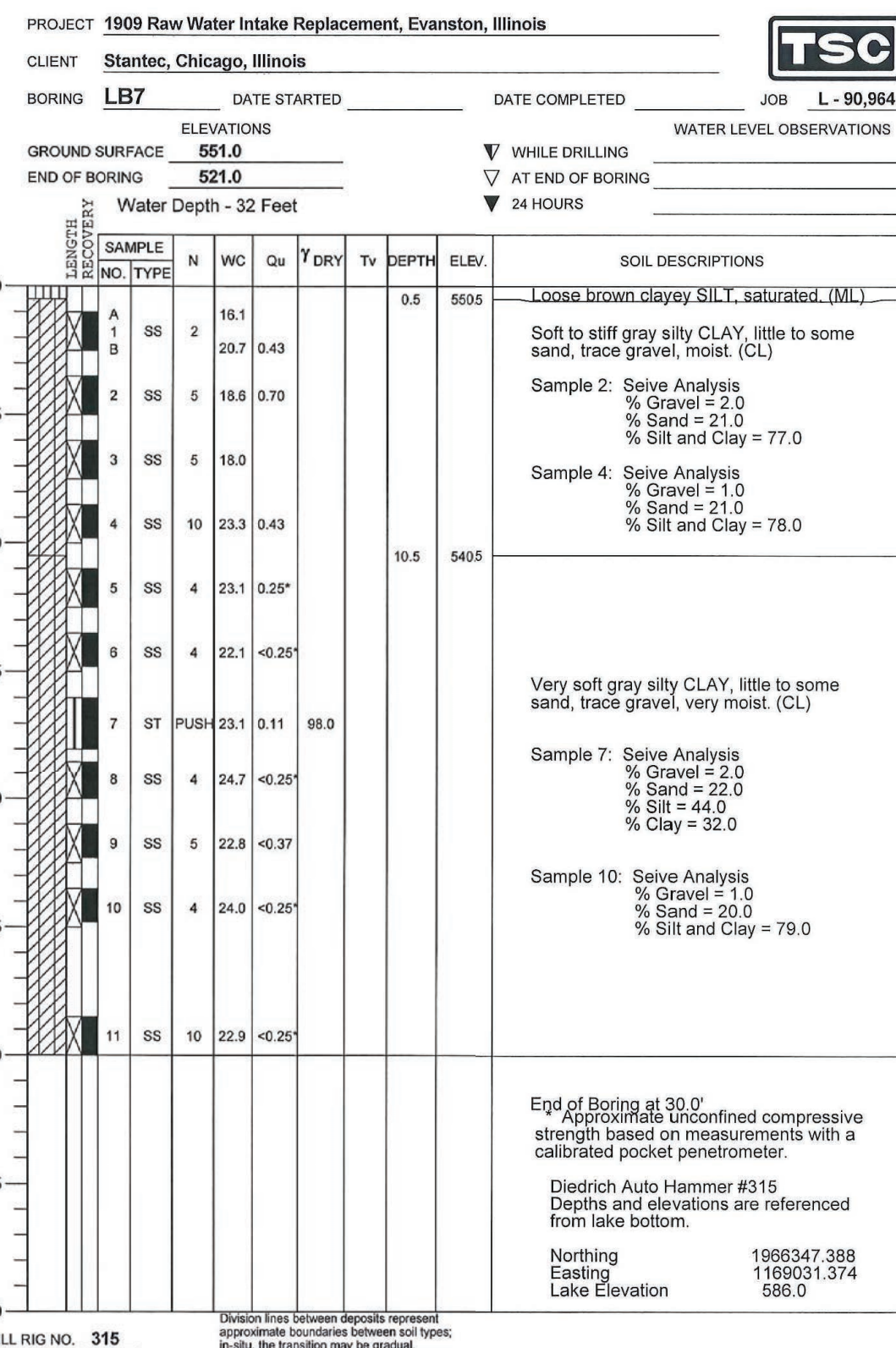
CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 GENERAL
 SOIL BORING LOGS - I

VERIFY SCALES
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 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 173440108
 DRAWING NO. G-006
 SHEET NO. 06 OF 63

GENERAL SHEET NOTES

- APPROXIMATE LOCATIONS OF LAKE BORINGS LB3 THROUGH LB7 AND LAND BORING 1 ARE SHOWN ON SHEETS C-012 AND C-013.



1	2	3	4	5	6	7	8	9	10	11	12	13																																				
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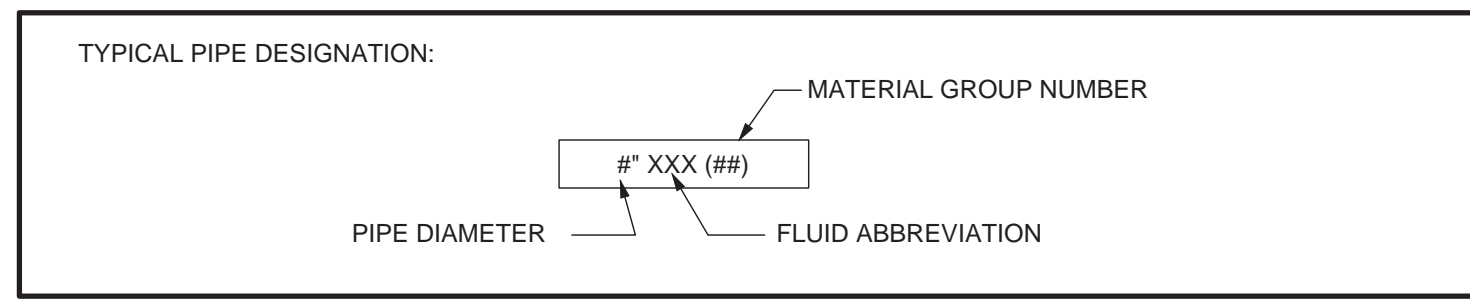
C

D

F

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FLUID ABBREVIATION	FUNCTION THIS LIST INCLUDES SOME LINES NOT USED IN THIS PROJECT	PIPING MATERIALS (SEE GENERAL NOTES AT THE RIGHT AND PIPE MATERIAL SHEET)				FIELD TEST REQUIREMENTS		
		EXPOSED PIPING (E)		BURIED PIPING		MINIMUM TEST PRESSURE (PSI)	TEST MEDIUM	LEAKAGE ALLOWANCE (A)
		4" DIA AND SMALLER	6" DIA AND LARGER	4" DIA AND SMALLER	6" DIA AND LARGER			
CLS	CHLORINE SOLUTION	PE05	PV02	PE05	PV02	125	WATER	(A)
RW	RAW WATER	CS02, DI01	CS05, DI01	-	CS05, DI01, RC03	150 (CS05, DI01) 80 (RC03)	WATER	(A)
DRN	DRAIN	-	-	-	RC01	E	WATER	RC01(C)
SPD	SUMP PUMP DISCHARGE	CS02	-	CS02	-	125	WATER	(A)



GENERAL SHEET NOTES

- ALTHOUGH SEVERAL PIPE MATERIAL GROUPS MAY BE LISTED ON THIS SHEET FOR A GIVEN FLUID SERVICE, CONTRACTOR SHALL PROVIDE ONLY THE PIPE MATERIAL GROUP SHOWN ON THE DRAWINGS AND SPECIFIED FOR THAT FLUID SERVICE.
- CHANGE IN PIPING MATERIAL GROUP NUMBER IS INDICATED THUS: \blacklozenge
- PROVIDE DOUBLE CONTAINMENT FOR ALL CHEMICAL PIPING PER CODE REQUIREMENTS.

SHEET KEYNOTES

- LEAKAGE ALLOWANCE IS AS FOLLOWS:
 - PIPES SO DESIGNATED SHALL SHOW ZERO LEAKAGE.
 - PIPES SO DESIGNATED SHALL SHOW ZERO LEAKAGE FOR UNBURIED PIPE AND NOT MORE THAN 0.02 GALLON PER HOUR PER INCH DIAMETER PER 100 FEET OF BURIED PIPE.
 - PIPES SO DESIGNATED SHALL NOT SHOW A LEAKAGE OF MORE THAN 0.15 GALLON PER HOUR PER INCH OF DIAMETER PER 100 FEET OF PIPE
 - PIPES SO DESIGNATED SHALL NOT SHOW A LOSS OF PRESSURE OF MORE THAN 5 PERCENT
 - PIPE SO DESIGNATED SHALL NOT SHOW A LOSS OF VACUUM OF MORE THAN 4 INCHES MERCURY COLUMN
- FOR FIELD TEST PROCEDURES AND ADDITIONAL TEST REQUIREMENTS, SEE PIPING SECTION OF SPECIFICATIONS.
- NO SUBSTITUTIONS UNLESS ACCEPTED BY THE ENGINEER PER THE SPECIFICATIONS.
- PIPING GROUP NUMBER SHOWN THUS * SHALL BE INSULATED. SEE PIPING SECTION OF SPECIFICATIONS FOR INSULATING MATERIALS.
- EXPOSED PIPING SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATIONS. COLORS TO BE SELECTED BY ENGINEER.
- PROPRIETARY NAMES HAVE BEEN QUOTED FOR IDENTIFICATION PURPOSES ONLY. SUBSTITUTIONS WILL BE PERMITTED SUBJECT TO PROVISIONS OF THE SPECIFICATIONS.
- NO SUBSTITUTIONS UNLESS ACCEPTED BY THE ENGINEER PER THE SPECIFICATIONS.
- FOR VALVES 8" AND LARGER, SEE VALVE SCHEDULE. FOR SPECIAL VALVES, SEE SPECIFICATIONS. FOR PIPE LINING AND COATING, SEE SPECIFICATIONS.
- PIPE MATERIALS SHALL BE PER THE REFERENCE STANDARDS AS MODIFIED BY THE CONTRACT SPECIFICATIONS.

PIPING MATERIAL SCHEDULE (C)			
GROUP NO	PIPE (D)	FITTINGS	VALVES, 6" AND SMALLER (E)(F)
CS02	STEEL, ASTM A53, SCH 40, WELDED, GALVANIZED.	2 1/2" AND SMALLER, MALLEABLE IRON, ASME B16.3, THREADED, BANDED, GALVANIZED 150 PSI. 3" AND LARGER, CAST IRON, ASME B16.1, 125 PSI FLANGED OR MECHANICAL COUPLING.	2 1/2" AND SMALLER, ECCENTRIC PLUG, SYNTHETIC RUBBER FACED: DEZURIK PEC, CAST IRON, OR MILLIKEN 603E. BALL: JAMESBURY FIG 351 OR WATTS #B-6080. 3" AND LARGER, ECCENTRIC PLUG, SYNTHETIC RUBBER FACED: DEZURIK PEC, CAST IRON, OR MILLIKEN 601. GATE: AWWA C500. BUTTERFLY: AWWA, FLANGED.
CS05	WELDED STEEL, AWWA C200, LINED.	WELDED STEEL, FABRICATED, AWWA C208, LINED.	AS INDICATED ON DRAWINGS.
DI01	DUCTILE IRON, ANSI A21.51, (AWWA C151), ENDS BELL AND SPIGOT, MECHANICAL JOINTS OR 125 PSI FLANGED. (TYPICAL SERVICE - WATER LINES).	DUCTILE IRON AWWA C110, BELL AND SPIGOT JOINTS (RESTRAINED OR NON-RESTRAINED), MECHANICAL COUPLINGS, ASME B16.1 FLANGES, OR MECHANICAL JOINTS.	GATE: AWWA C500, O-RING SEALS, MECHANICAL JOINT ENDS, CLOW F-5065. BUTTERFLY: AWWA. ECC PLUG DEZURIK PEC, CAST IRON OR MILLIKEN 603E. BALL: PRATT OR APCO-WILLAMETTE.
PE05	POLYETHYLENE, PRESSURE PIPE, AWWA C901.	POLYETHYLENE THERMAL BUTT-FUSED JOINTS, FLANGED JOINTS AT VALVES AND TRANSITIONS.	AS INDICATED ON DRAWINGS.
PV02	CHLORINATED POLYVINYL CHLORIDE (CPVC), ASTM D1784, CLASS 23447-B, SCH 80.	CPVC, SCH 80, SOCKET AND SOLVENT WELD JOINTS, SOLVENT SHALL BE COMPATIBLE WITH FLUID SERVICE.	CPVC, BALL, DIAPHRAGM, BUTTERFLY, OR LIFT CHECK: NIBCO/ CHEMTROL, MCCANNA-MARPAC, OR GEORGE FISCHER SLOANE.
RC01	REINFORCED CONCRETE (RCP), ASTM C75, O-RING BELL, AND SPIGOT JOINTS.	RCP, USE MANHOLES	-
RC03	PRESTRESSED CONCRETE PRESSURE PIPE (RCP), STEEL CYLINDER TYPE, AWWA C301.	RCP, PER AWWA C301 AND AWWA M9.	AS INDICATED ON DRAWINGS.

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DESIGNED	DF
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CITY OF EVANSTON

1909 RAW WATER INTAKE REPLACEMENT

GENERAL

PIPE SCHEDULE - FLUID ABBREVIATIONS AND PIPE MATERIALS

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
173440108

DRAWING NO.
G-008

SHEET NO.
08 OF 63

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CIVIL GENERAL NOTES

GENERAL

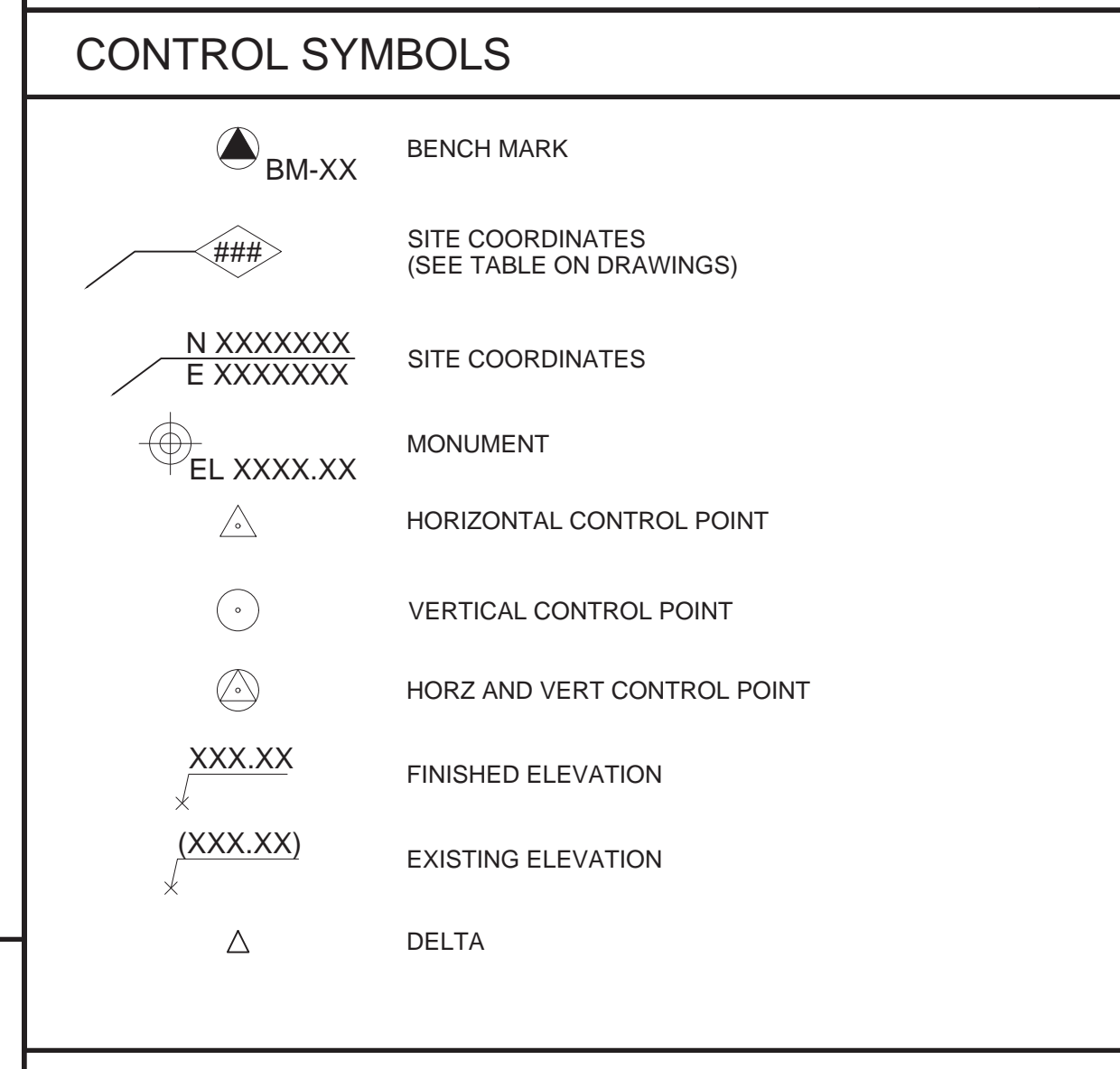
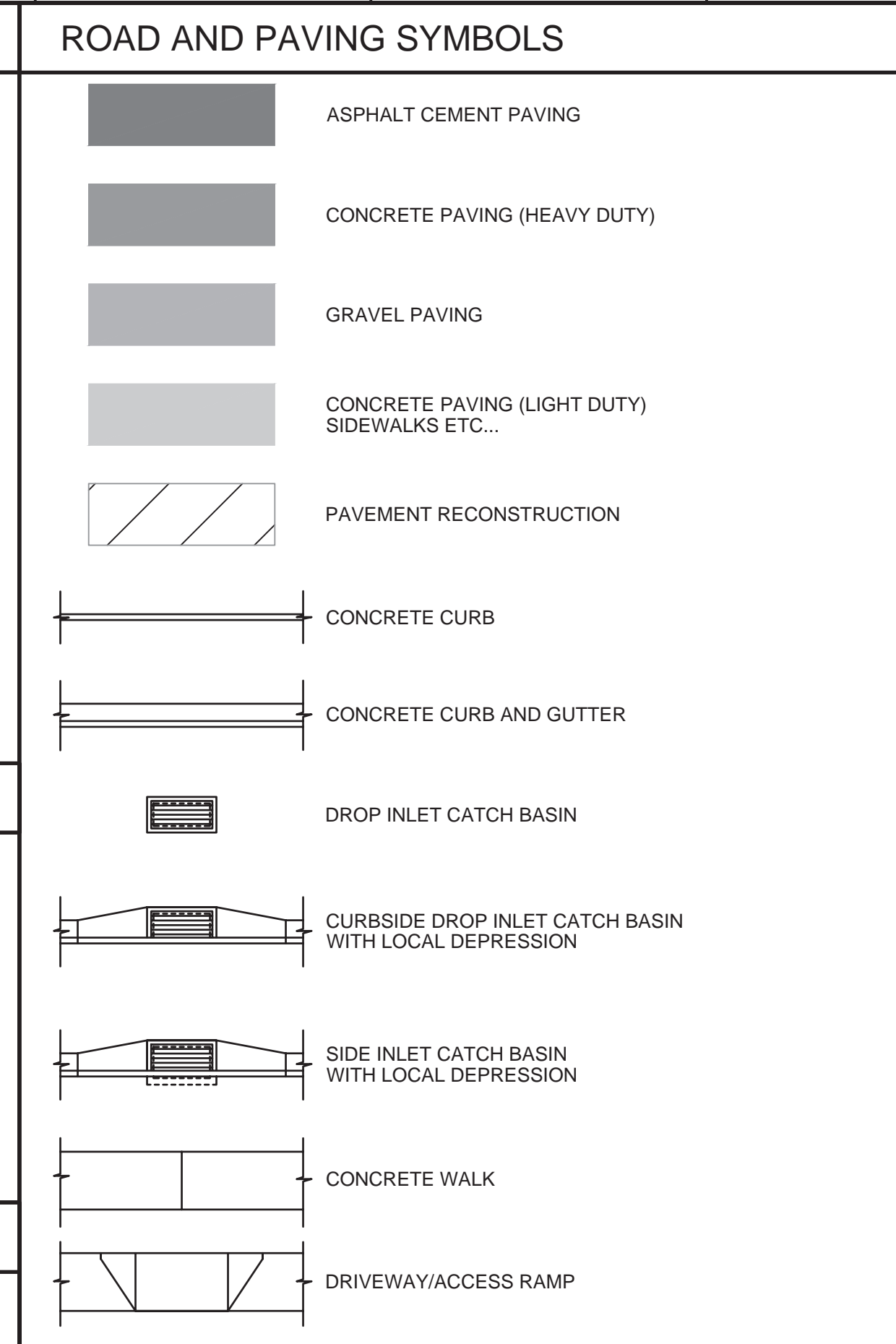
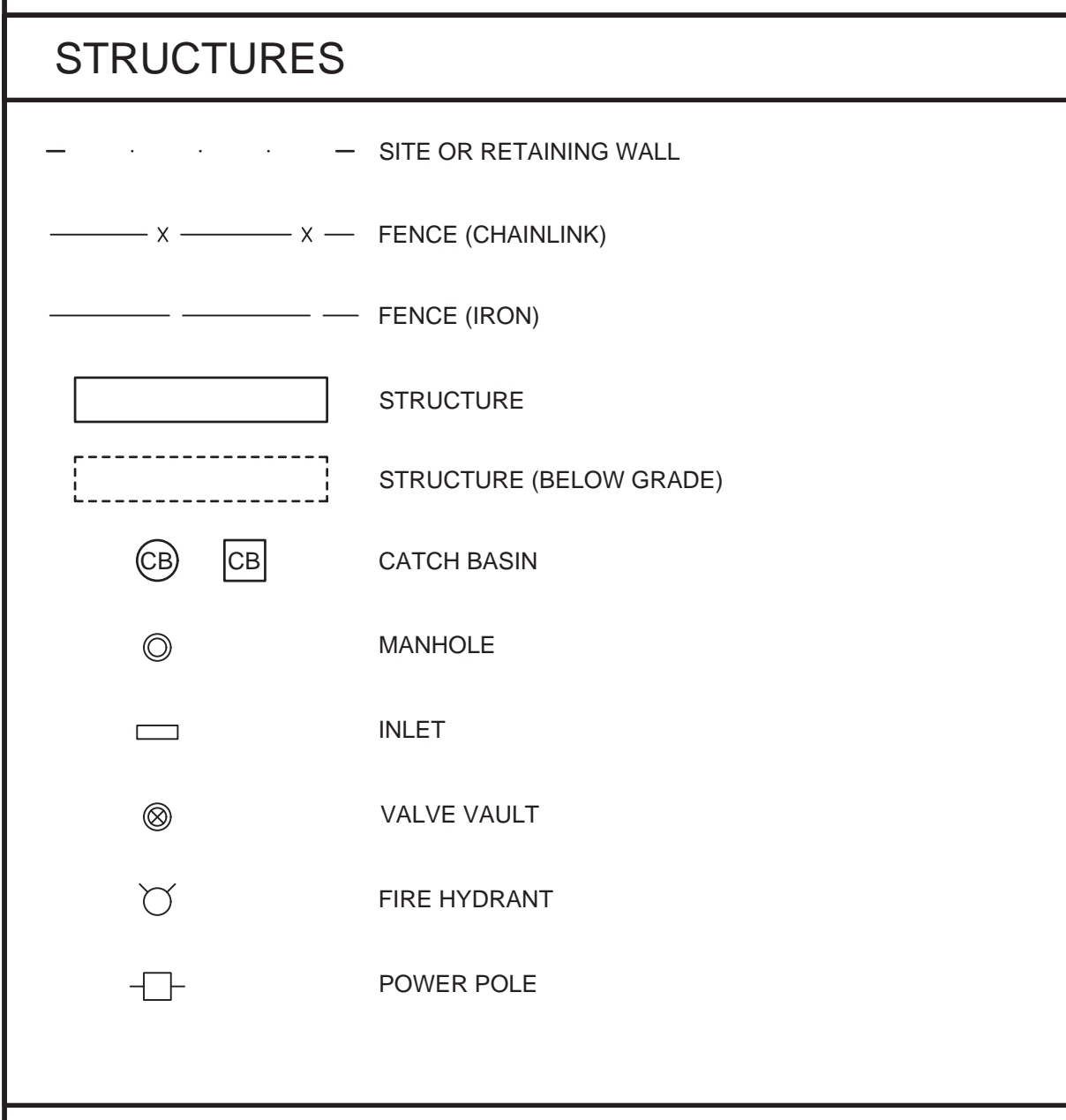
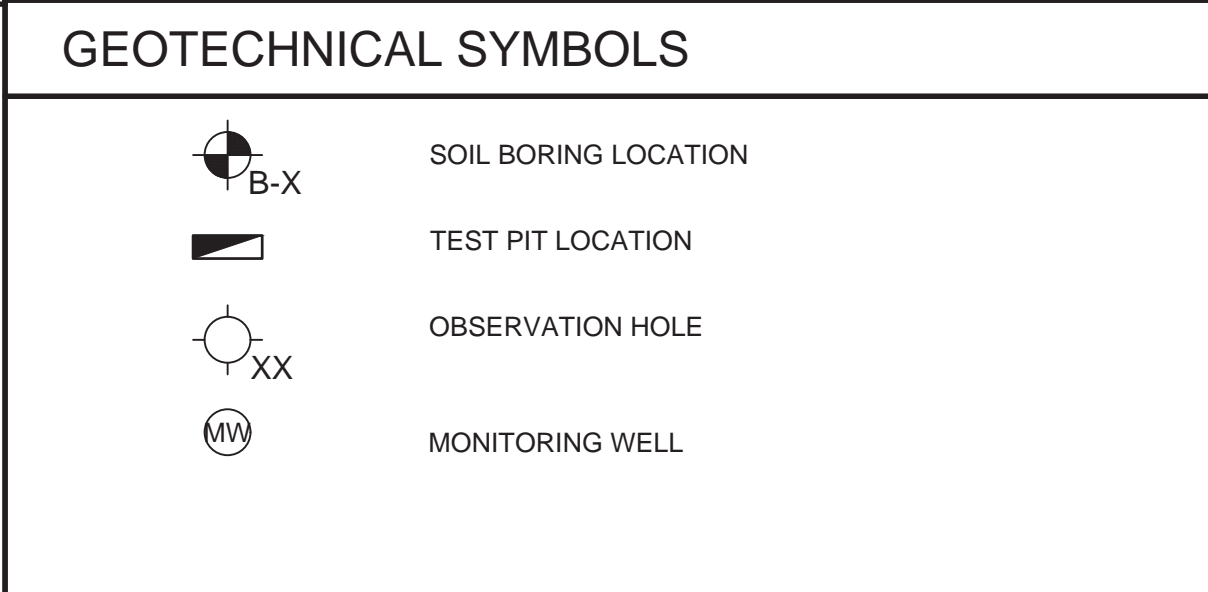
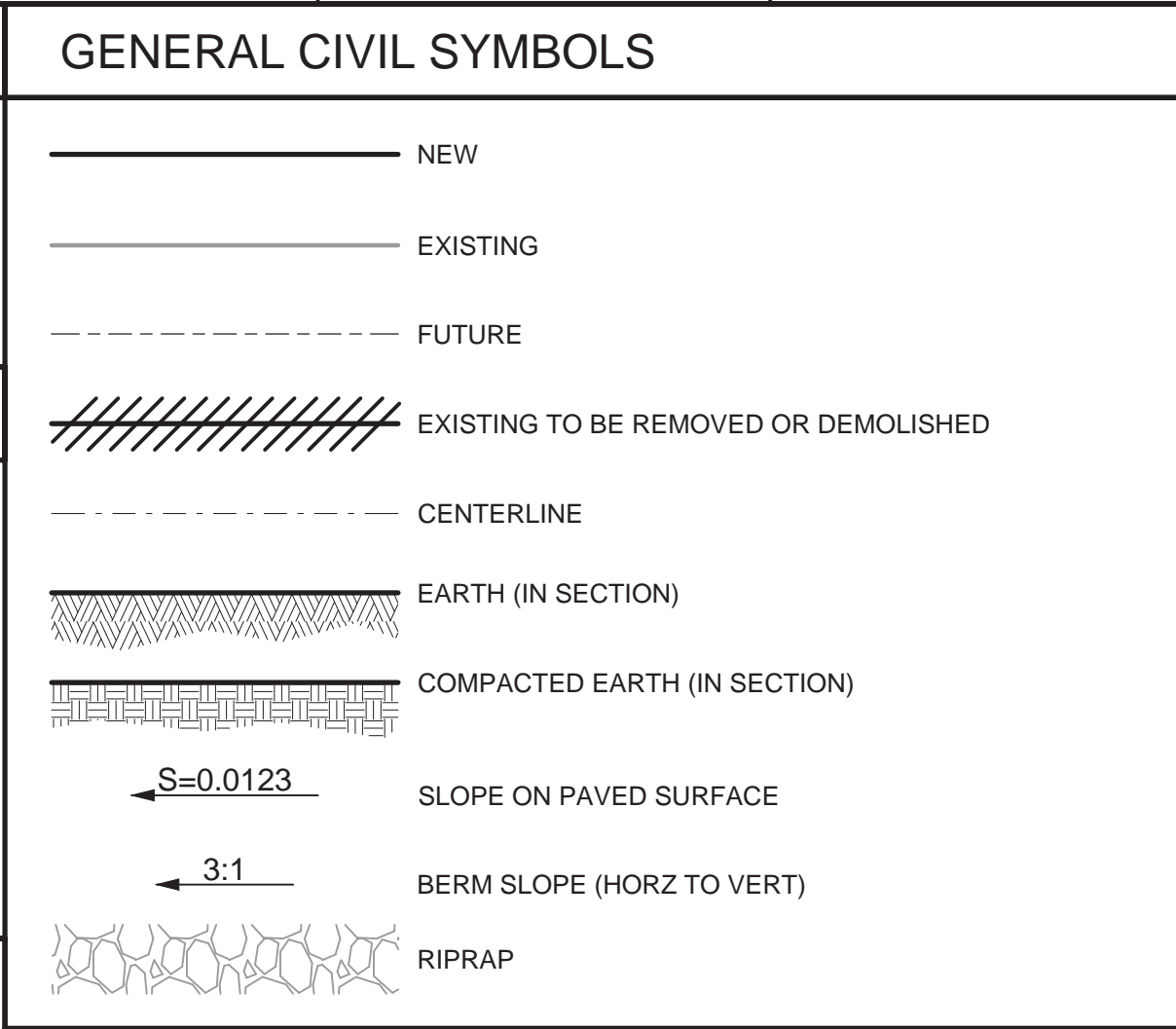
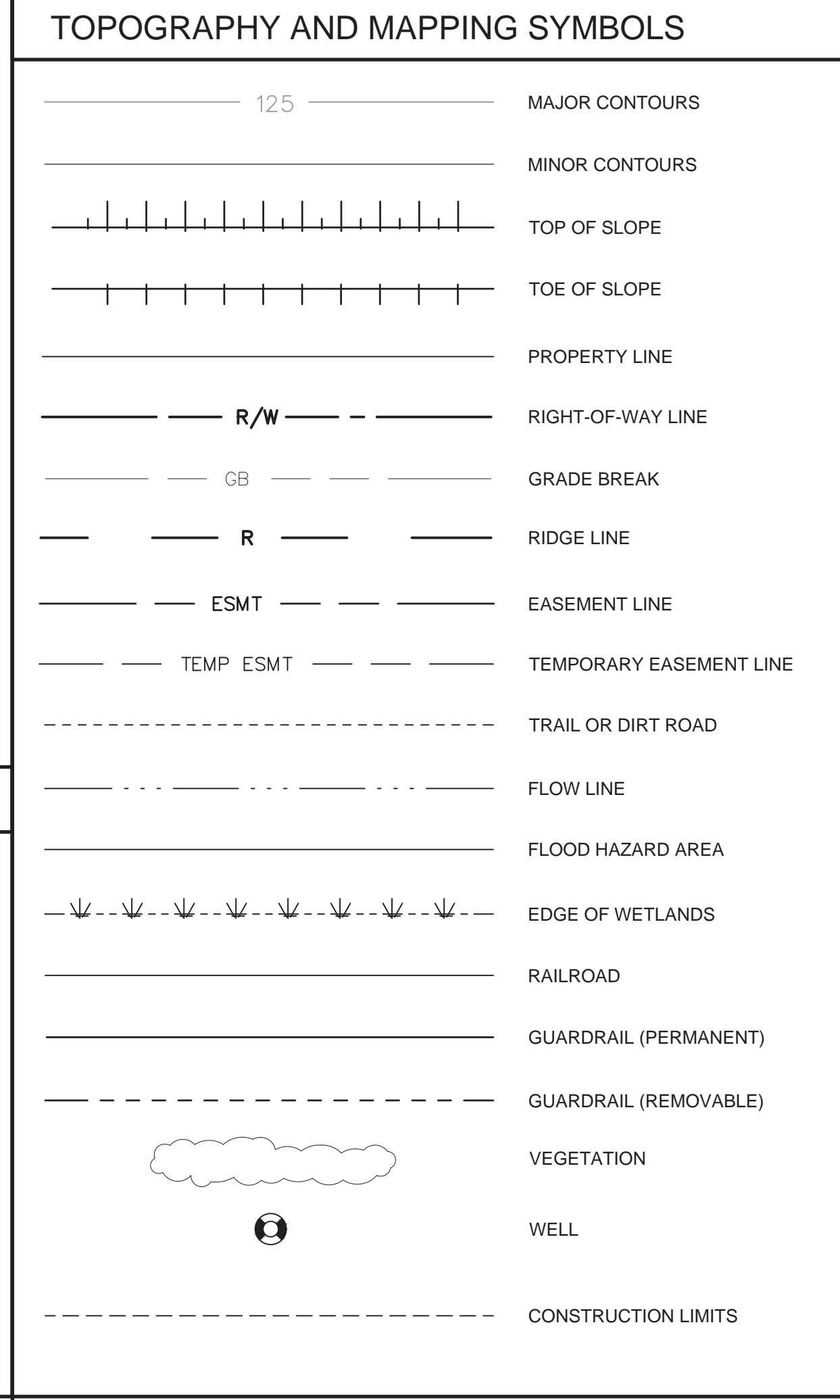
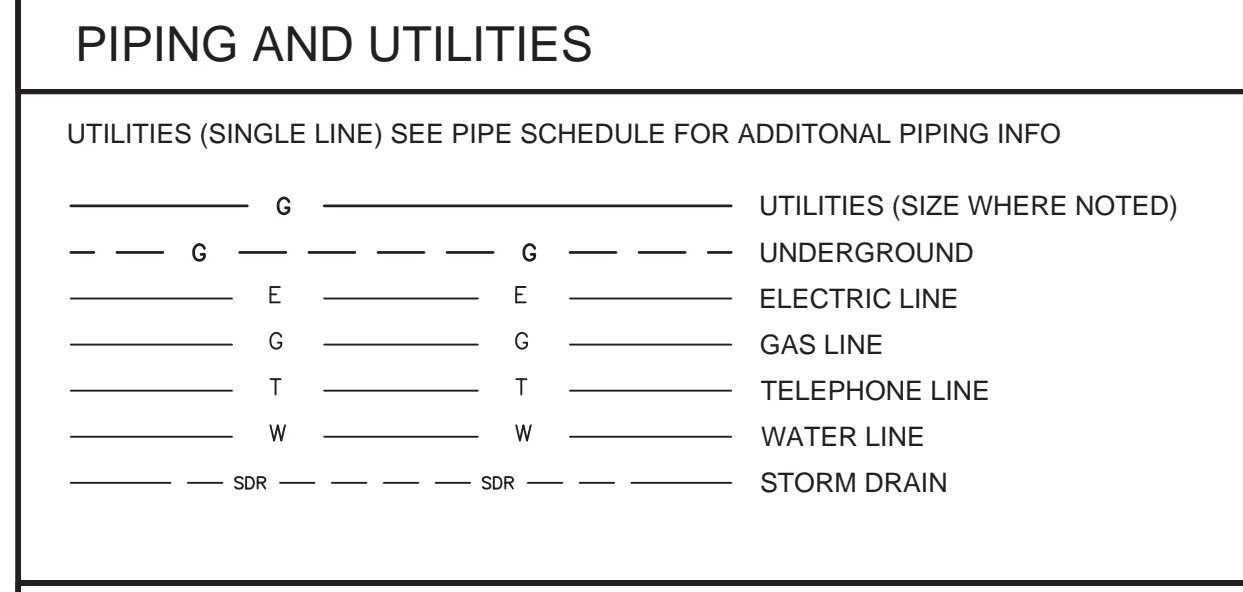
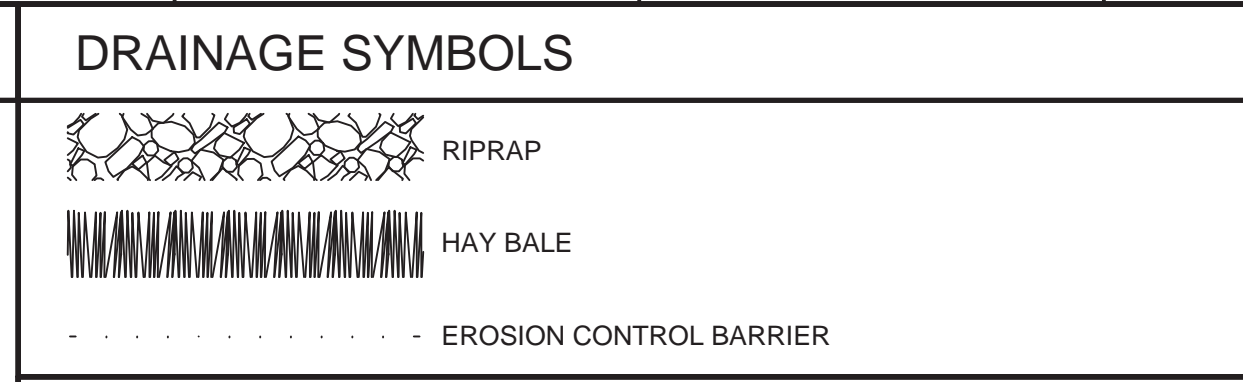
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND PROJECT LAYOUT.
- EXISTING UTILITIES, STRUCTURES, TREES, FENCING, AND PAVEMENT LOCATIONS SHOWN ARE APPROXIMATE. THE COMPLETENESS AND ACCURACY OF THIS INFORMATION IS NOT GUARANTEED BY THE ENGINEER. THE CONTRACTOR SHALL FIELD VERIFY THE EXACT LOCATIONS OF THESE OR ANY OTHER EXISTING FACILITIES AS REQUIRED TO COMPLETE THE WORK.
- THE CONTRACTOR SHALL VERIFY ELEVATIONS SHOWN ON THE DRAWINGS. IF DISCREPANCIES BECOME APPARENT AND STRUCTURE ELEVATIONS NEED ADJUSTMENT, THE ADJUSTMENTS WILL BE MADE BY THE ENGINEER PRIOR TO START OF WORK AND AFTER SUCH DISCREPANCIES ARE SUBMITTED TO THE ENGINEER FOR REVIEW.
- THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE FROM DAMAGE. ALL IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED AT THE CONTRACTOR'S EXPENSE WITHOUT ADDITIONAL COMPENSATION.

UTILITIES

- PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES IN AND AROUND THE AREAS OF NEW CONSTRUCTION. THE CONTRACTOR SHALL POTHOLE FOR EXISTING UTILITIES PRIOR TO SUBMITTAL OF SHOP DRAWINGS, FOR POINTS OF CONNECTIONS.
- LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS AND ELEVATIONS AND SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT UTILITY LINES WHETHER SHOWN OR NOT SHOWN.
- PRIOR TO ANY CONNECTION TO AN EXISTING UTILITY, THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER.
- PRIOR TO ANY EXCAVATION IN THE VICINITY OF ANY EXISTING UNDERGROUND FACILITIES, INCLUDING ALL WATER, SEWER, STORM DRAIN, GAS, PETROLEUM PRODUCTS, OR OTHER PIPELINES; ALL BURIED ELECTRIC POWER, COMMUNICATIONS, OR TELEVISION CABLES; ALL TRAFFIC SIGNAL AND STREET LIGHTING FACILITIES; AND ALL ROADWAY RIGHTS-OF-WAY, THE CONTRACTOR SHALL NOTIFY THE RESPECTIVE AUTHORITIES REPRESENTING THE OWNERS OR AGENCIES RESPONSIBLE FOR SUCH FACILITIES NOT LESS THAN 3 DAYS NOR MORE THAN 7 DAYS PRIOR TO EXCAVATION SO THAT A REPRESENTATIVE OF SAID OWNERS OR AGENCIES CAN BE PRESENT DURING SUCH WORK IF THEY SO DESIRE. IN THE CASE OF THE UNDERGROUND UTILITY SERVICE ALERT CENTER, THIS NOTICE WILL GIVE THEM TIME TO MARK THE LOCATION OF THE UTILITIES. THE CONTRACTOR SHALL ALSO NOTIFY THE REGIONAL OR LOCAL UNDERGROUND SERVICE ALERT COMPANY AT LEAST 3 DAYS, BUT NO MORE THAN 7 DAYS, PRIOR TO SUCH EXCAVATION.

PIPING

- THE CONTRACTOR SHALL COMPLY WITH IEPA CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS.
- STRAIGHT SLOPES SHALL BE MAINTAINED BETWEEN INVERT ELEVATIONS SHOWN OR SPECIFIED.
- THE CONTRACTOR SHALL ADJUST ALL VALVE BOXES, PULL BOXES AND MANHOLES TO FINISHED GRADE UNLESS OTHERWISE SHOWN OR SPECIFIED. MANHOLES IN OPEN FIELDS SHALL BE SET ONE FOOT ABOVE GRADE. APPROXIMATE RIM ELEVATIONS ARE SHOWN ON DRAWINGS.



ABBREVIATIONS

G	NATURAL GAS LINE
HPG	HIGH PRESSURE GAS LINE
LPG	LIQUID PETROLEUM GAS LINE
W	WATER
PW	POTABLE WATER
FIRE	FIRE SUPPLY WATER LINE
REV	RECLAIMED WATER
UW	UTILITY / NON-POTABLE WATER
IRRG	IRRIGATION LINE
SDR	STORM DRAIN
SS	SANITARY SEWER
STM	STEAM LINE
TEL	TELEPHONE
COMM	COMMUNICATIONS LINE
FOC	FIBER OPTIC CABLE
CATV	CABLE TV
E	POWER
UNID	UNIDENTIFIED
ABND	ABANDONED UTILITY

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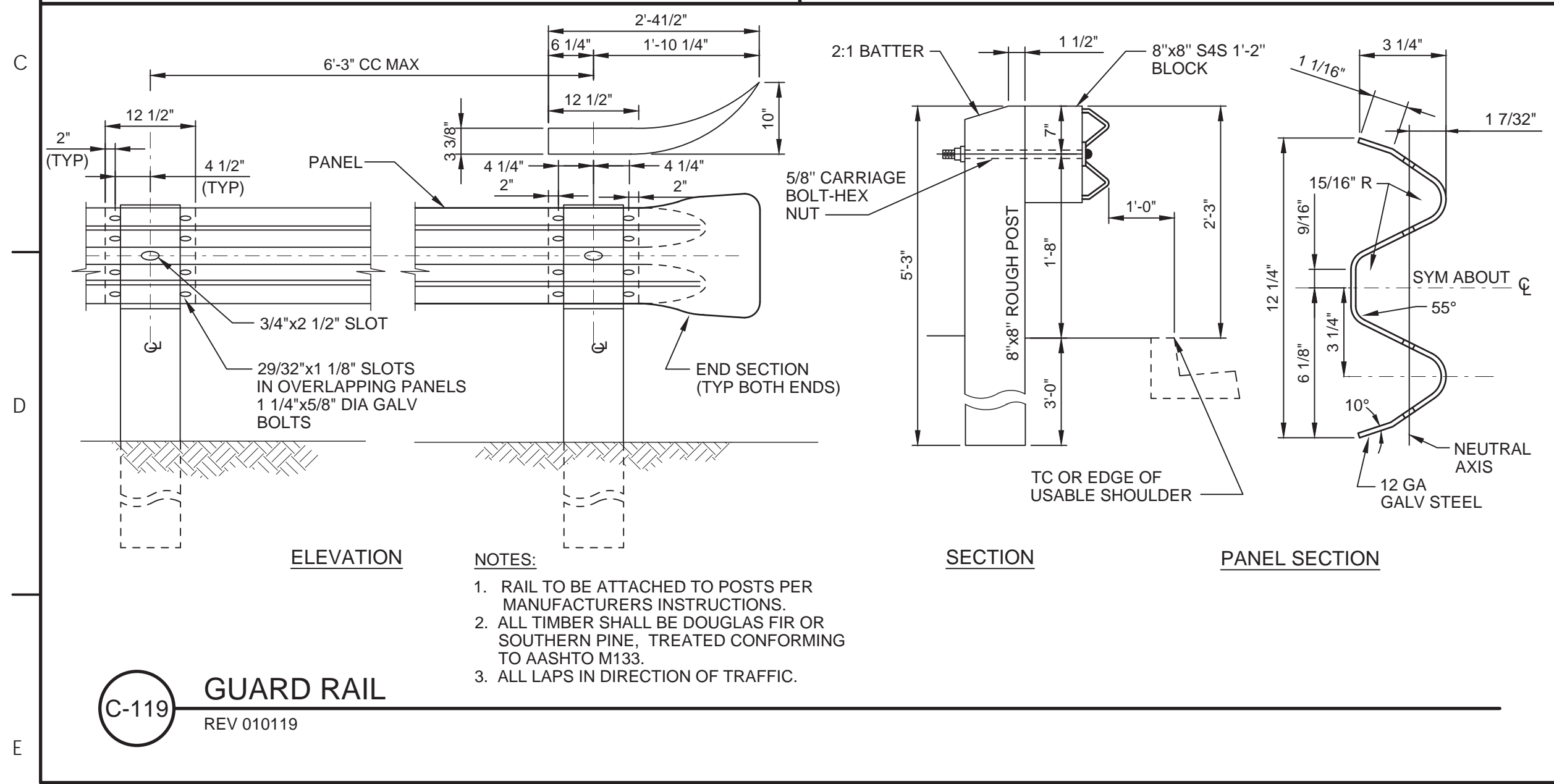
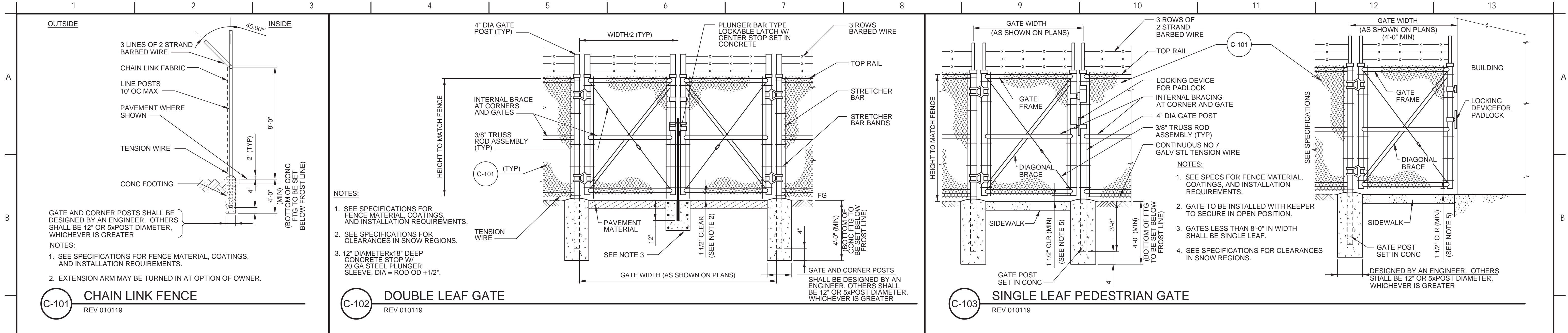


CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 CIVIL
 GENERAL CIVIL NOTES AND SYMBOLS

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	SHEET NO.
	09 OF 63

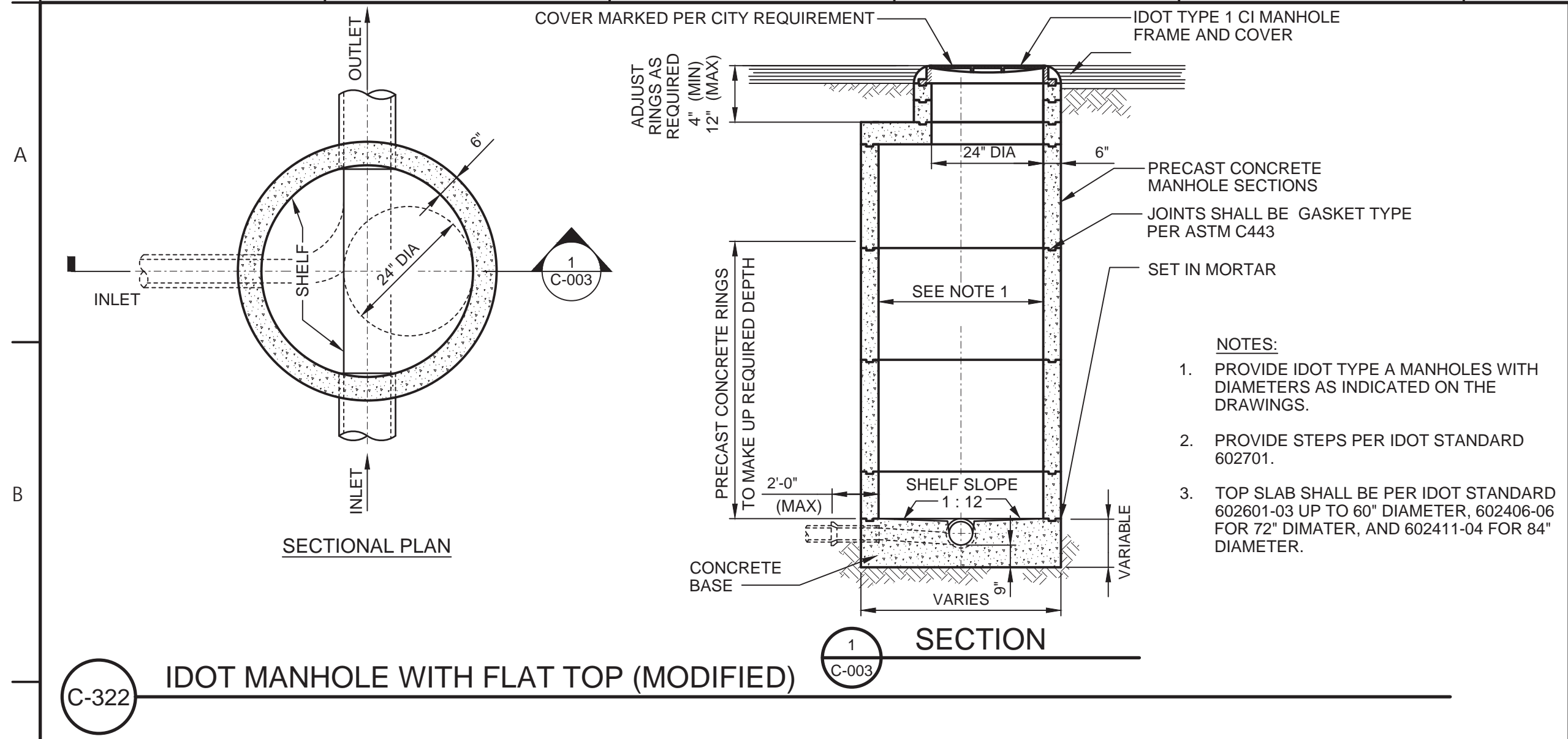
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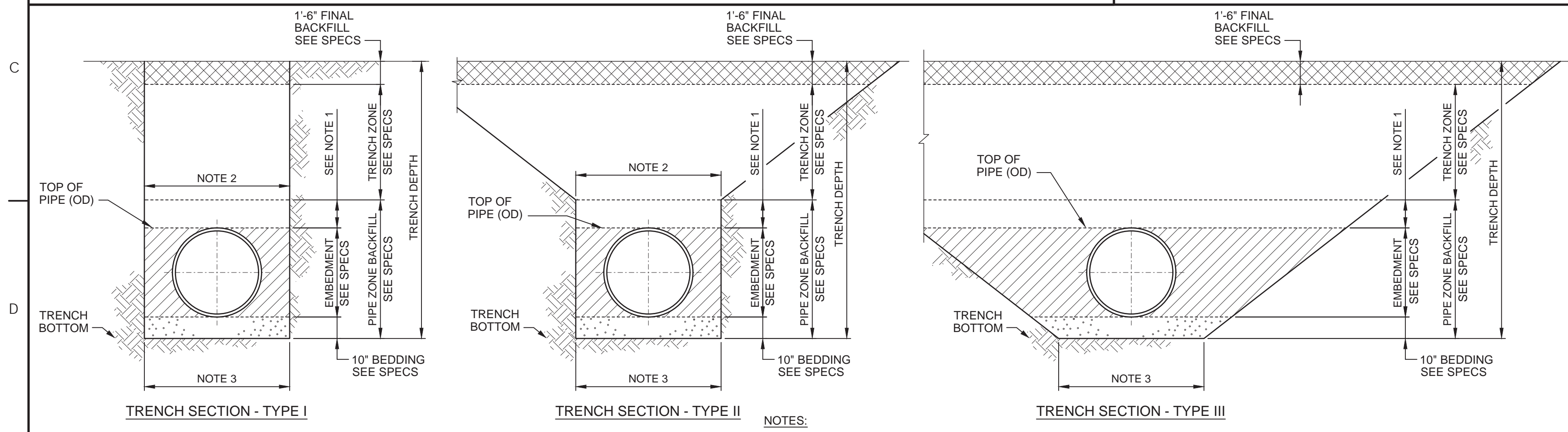


DESIGNED <u>DF</u>				ISSUED FOR BID				 Stantec <small>350 N. ORLEANS ST., SUITE 1301 CHICAGO, ILLINOIS 60654-1883 WWW.STANTEC.COM</small>		 CITY OF EVANSTON 1909 RAW WATER INTAKE REPLACEMENT CIVIL STANDARD DETAILS - I		VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING <small>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</small>		JOB NO. 173440108 DRAWING NO. C-002 SHEET NO. 10 OF 63	
REV	DATE	BY	DESCRIPTION	DATE	04/2022	ANY PRINTS NOT BEARING THIS STAMP MAY HAVE BEEN PRINTED PRIOR TO ADVERTISING AND CANNOT BE CONSIDERED AS BID DOCUMENTS									

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C-322 IDOT MANHOLE WITH FLAT TOP (MODIFIED)



C-601 TRENCH SECTION FLEXIBLE PIPE

REV 010119

TRENCH SECTION NOT FOR MARINE PIPE INSTALLATION. SEE INTAKE DETAIL FOR MARINE TRENCH REQUIREMENTS

A. FLEXIBLE PIPE REFERS TO ALL STEEL, DUCTILE-IRON, AND PLASTIC PIPES.

B. TYPICAL TRENCH SECTIONS (I, II AND III) ARE TO BE USED ONLY WHERE STABLE, COMPACT SOIL CONDITIONS EXIST. IF BOULDERS OR LARGE OBSTRUCTIONS ARE ENCOUNTERED, TRENCH SECTIONS MAY BE DEEPER OR WIDER THAN SHOWN. THE ENGINEER SHALL BE ADVISED SHOULD THIS OCCUR.

C. THE NEED FOR PROTECTIVE SYSTEMS AND EXCAVATION SLOPES SHALL BE DETERMINED CONSIDERING APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, AND GEOTECHNICAL CONSULTANTS' RECOMMENDATIONS.

D. PROTECTIVE SYSTEMS SHALL BE DESIGNED AND BUILT IN ACCORDANCE WITH THE APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS.

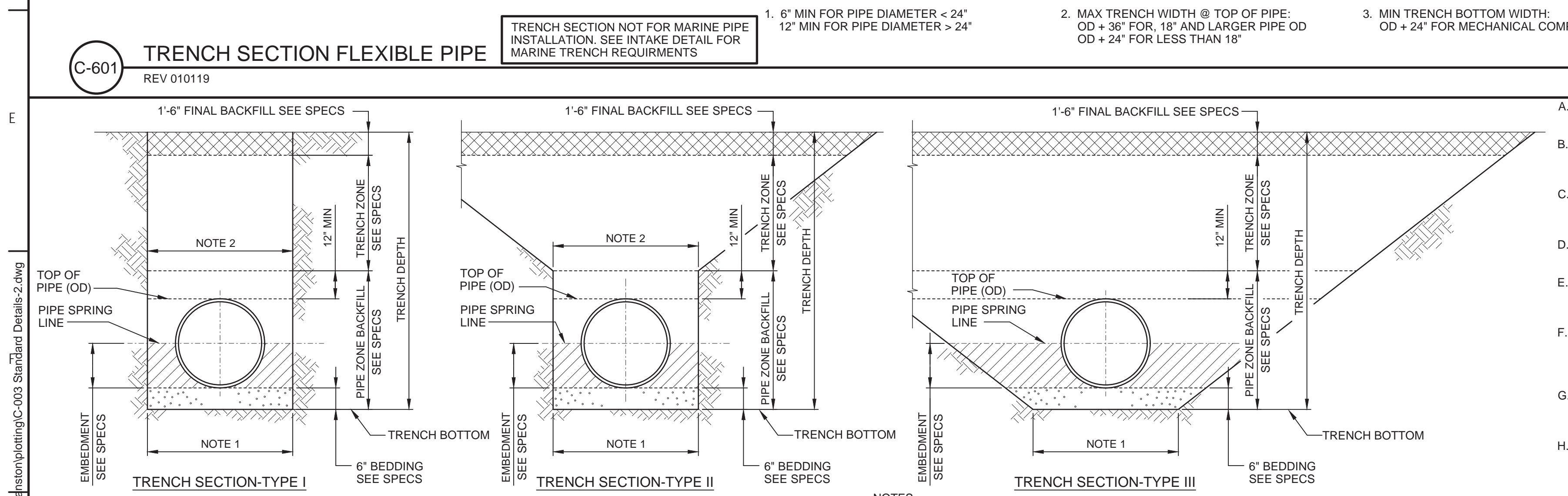
E. SUPPORTING DOCUMENTATION SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN AND COMPLIANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS.

F. UNSUPPORTED VERTICAL AND/OR SLOPING TRENCH WALL SLOPES SHALL NOT BE STEEPER THAN ALLOWED BY APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, UNLESS SUPPORTING DOCUMENTATION IS SUBMITTED, ACCORDING TO AFOREMENTIONED SAFETY STANDARDS.

G. TRENCH SECTIONS OTHER THAN THE TYPICAL SECTIONS SHOWN MAY BE UTILIZED PROVIDED THEY COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS COMPLIANCE AND PIPE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER.

H. IF OVER-EXCAVATION DUE TO POOR FOUNDATION MATERIAL IS ORDERED BY THE ENGINEER, THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTION OF THE SPECIFICATIONS ARTICLE ENTITLED, "FILL AND BACKFILL MATERIAL REQUIREMENTS."

I. IF DURING CONSTRUCTION, THE WATER TABLE IS DISCOVERED TO BE ABOVE THE TRENCH BOTTOM, THE ENGINEER SHALL BE NOTIFIED, AND APPROPRIATE DEWATERING SHALL BE IMPLEMENTED TO LOWER THE WATER LEVEL BELOW THE TRENCH BOTTOM. THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTIONS OF THE SPECIFICATIONS, OR AS ORDERED BY THE ENGINEER.



C-602 TRENCH SECTION RIGID PIPE

REV 010119

TRENCH SECTION NOT FOR MARINE PIPE INSTALLATION. SEE INTAKE DETAIL FOR MARINE TRENCH REQUIREMENTS

A. RIGID PIPE REFERS TO ALL TYPES OF REINFORCED AND UN-REINFORCED CONCRETE PIPE AND VITRIFIED CLAY PIPE.

B. TYPICAL TRENCH SECTIONS (I, II AND III) ARE TO BE USED ONLY WHERE STABLE, COMPACT SOIL CONDITIONS EXIST. IF BOULDERS OR LARGE OBSTRUCTIONS ARE ENCOUNTERED, TRENCH SECTIONS MAY BE DEEPER OR WIDER THAN SHOWN. THE ENGINEER SHALL BE ADVISED SHOULD THIS OCCUR.

C. THE NEED FOR PROTECTIVE SYSTEMS, AND EXCAVATION SLOPES SHALL BE DETERMINED CONSIDERING APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, AND GEOTECHNICAL CONSULTANTS' RECOMMENDATIONS.

D. PROTECTIVE SYSTEMS SHALL BE DESIGNED AND BUILT IN ACCORDANCE WITH THE APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS.

E. SUPPORTING DOCUMENTATION SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN AND COMPLIANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS.

F. UNSUPPORTED VERTICAL AND/OR SLOPING TRENCH WALL SLOPES SHALL NOT BE STEEPER THAN ALLOWED BY APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, UNLESS SUPPORTING DOCUMENTATION IS SUBMITTED, ACCORDING TO AFOREMENTIONED SAFETY STANDARDS.

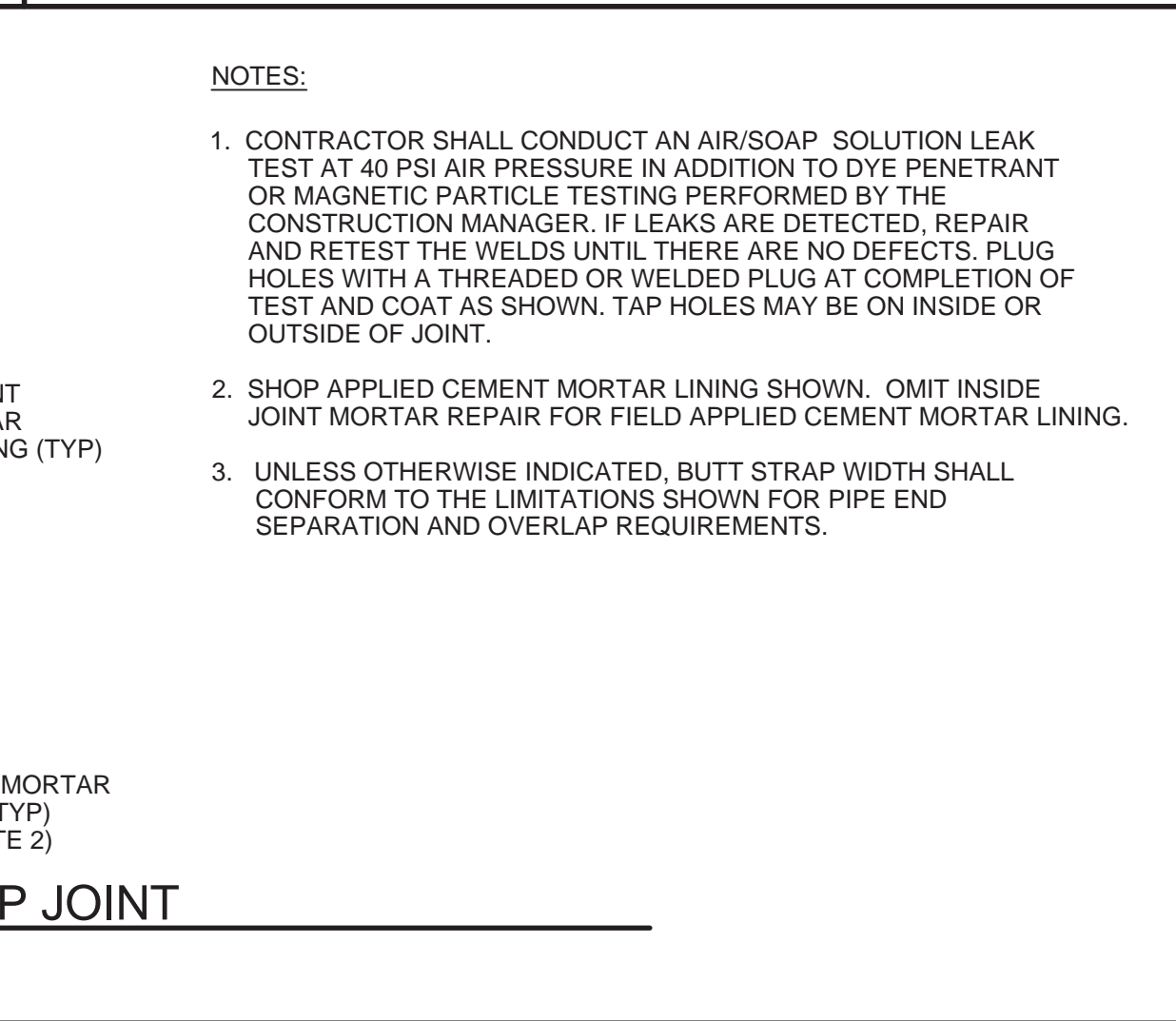
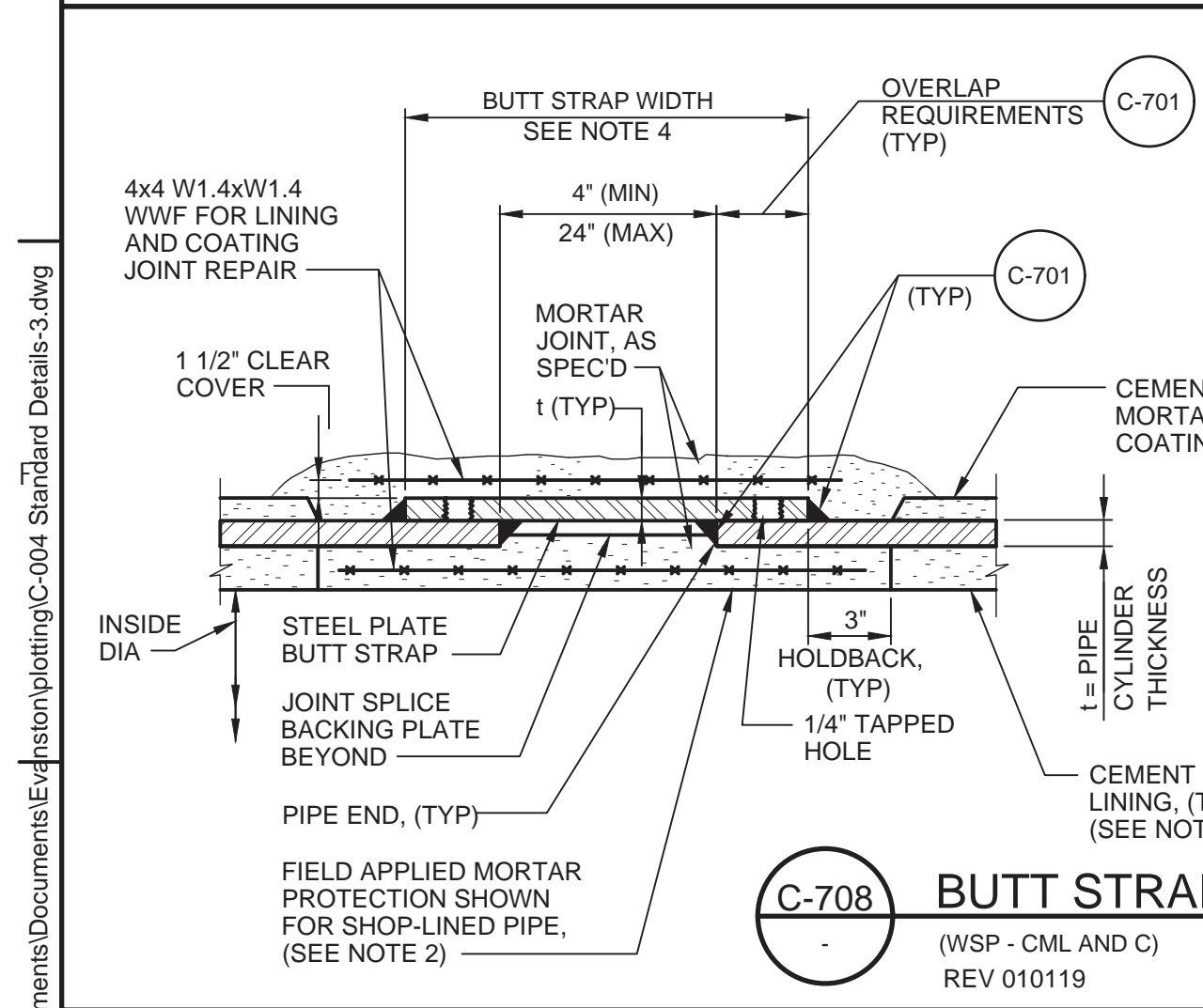
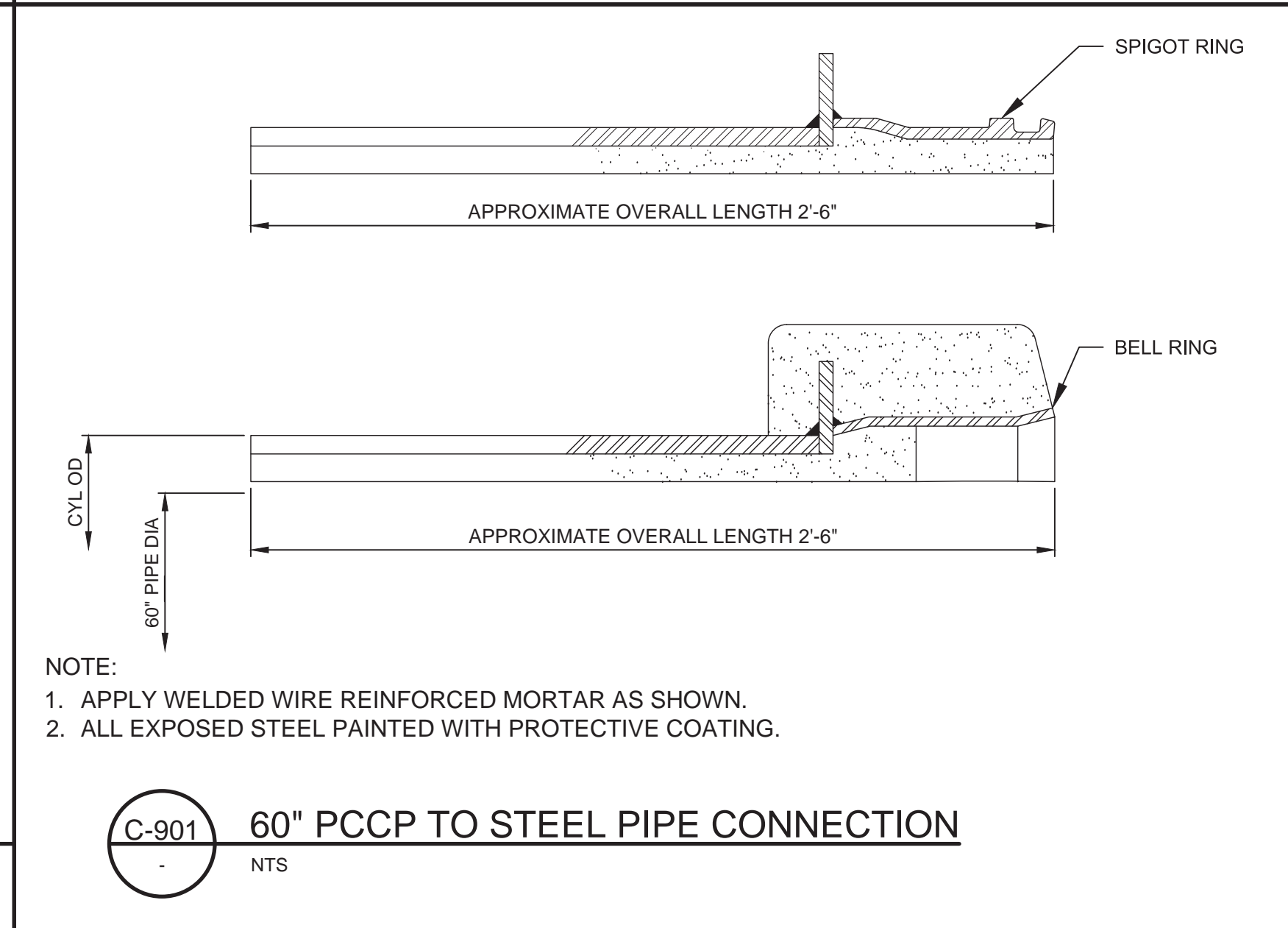
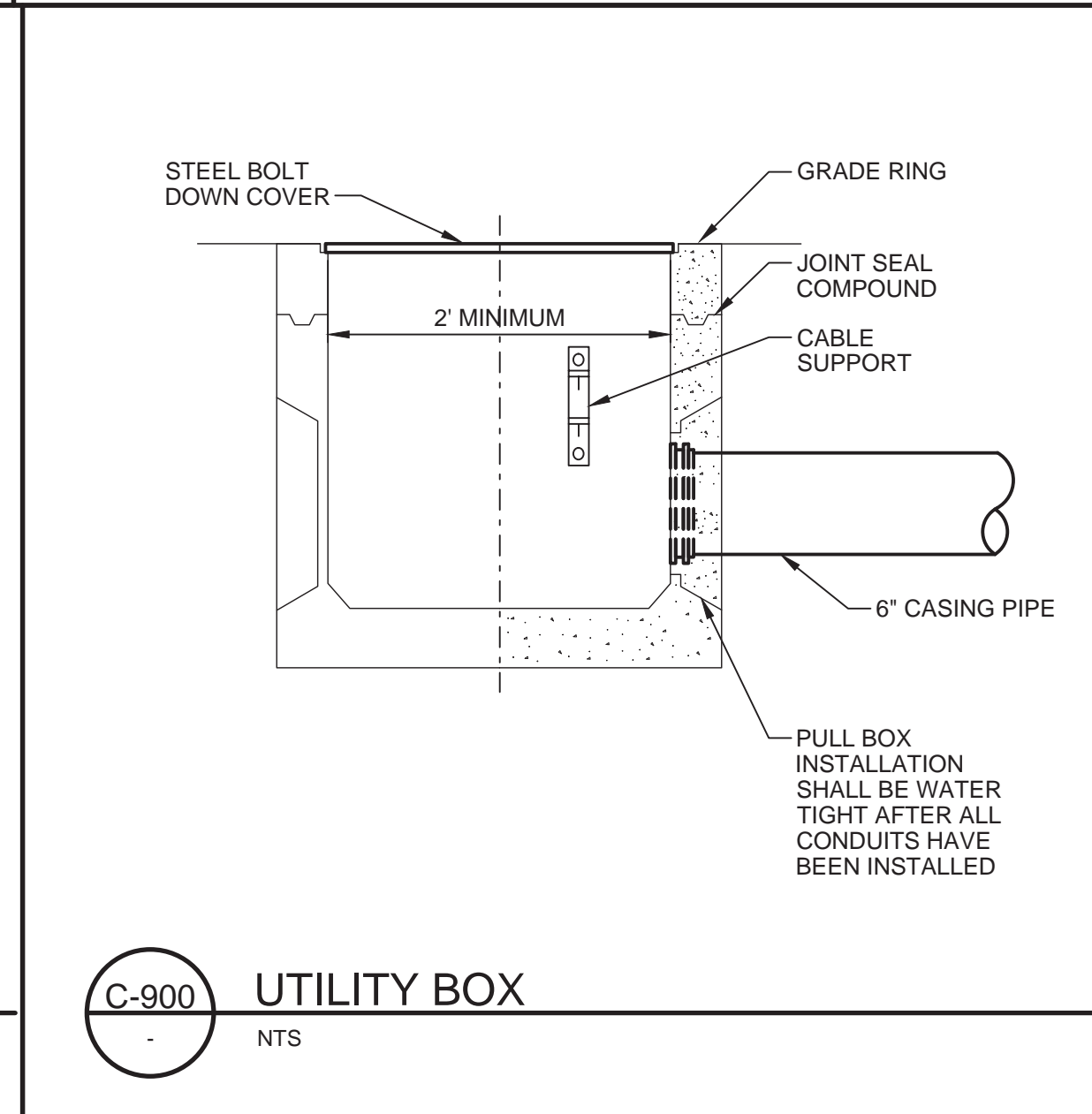
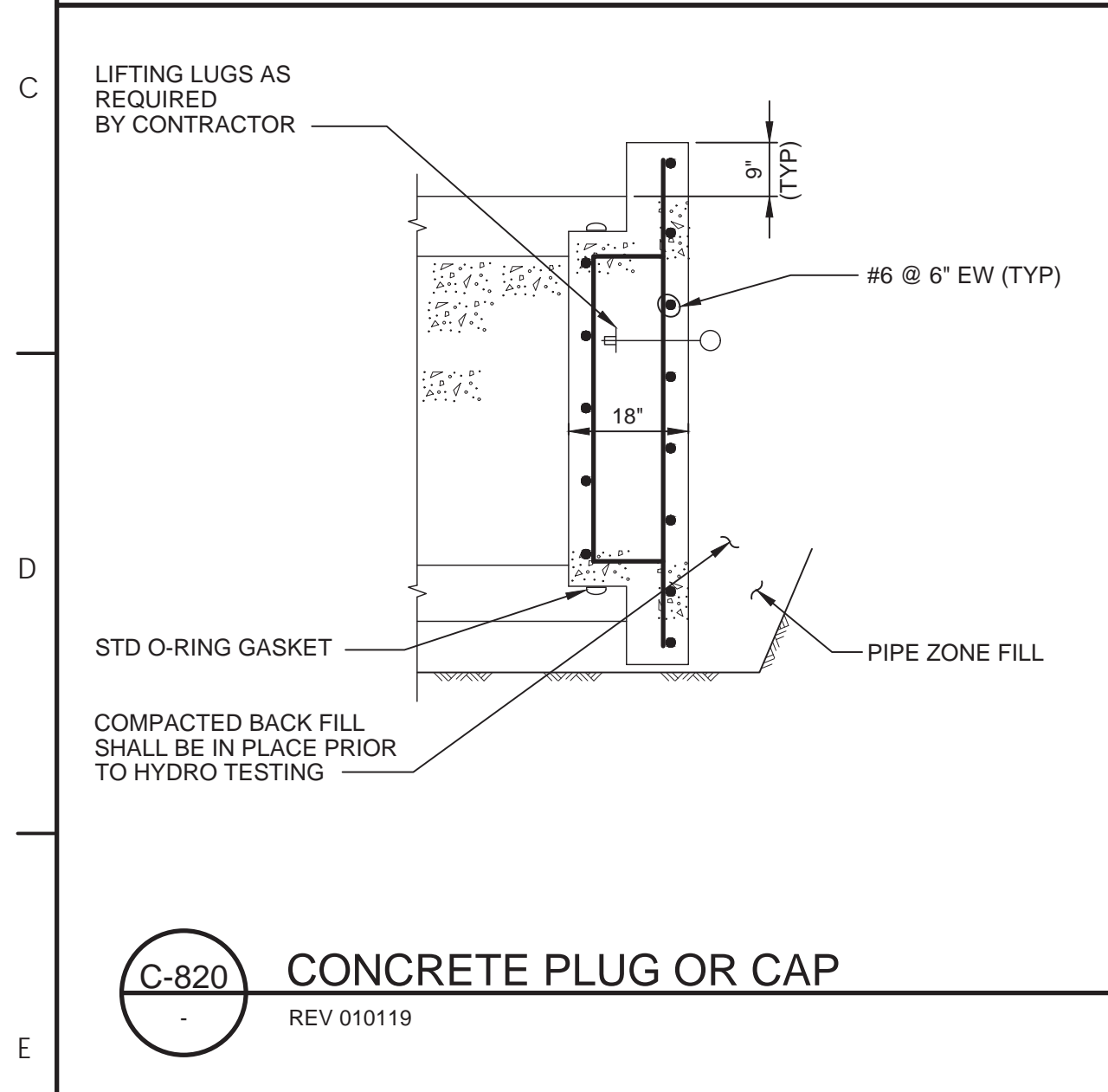
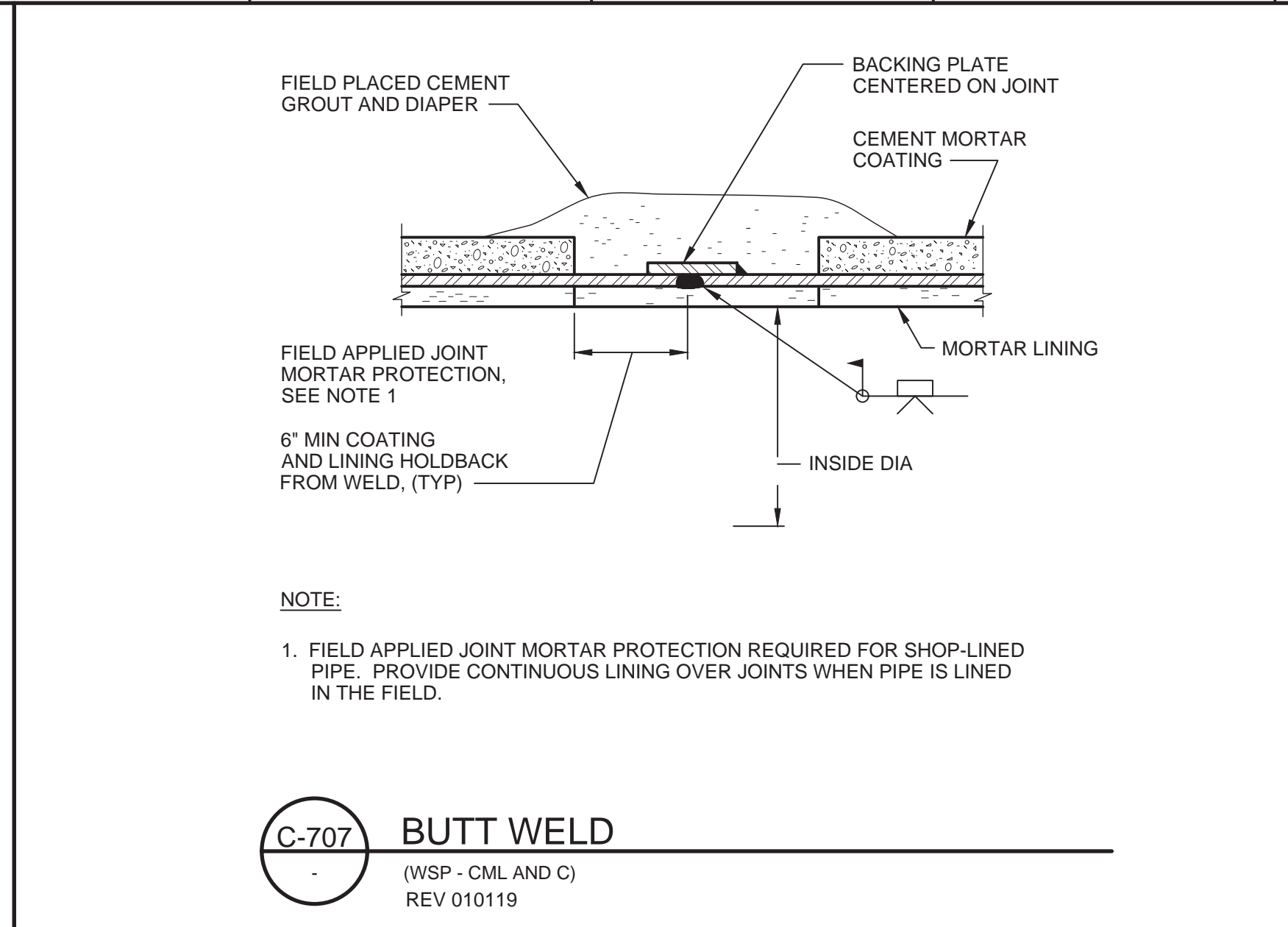
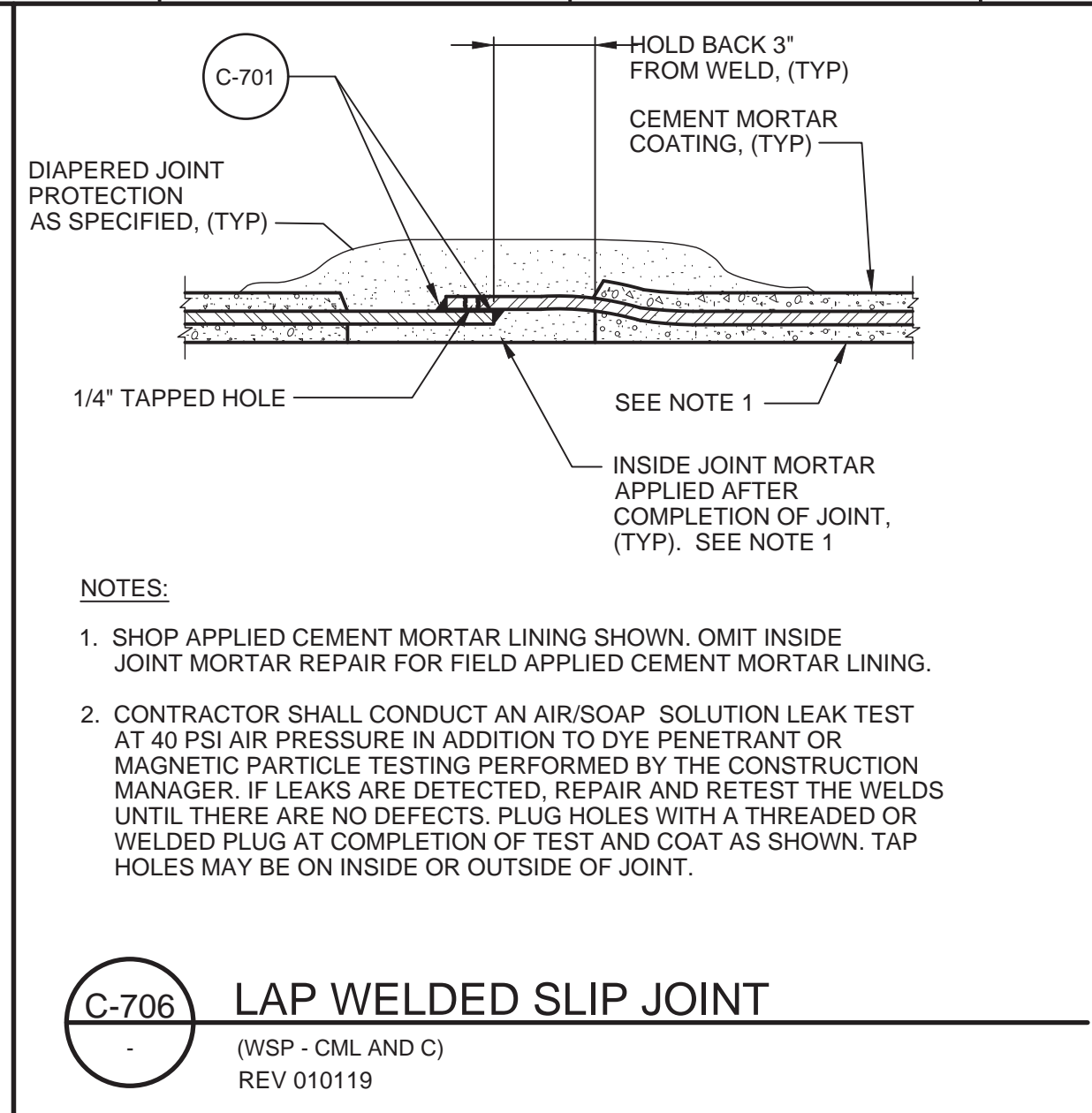
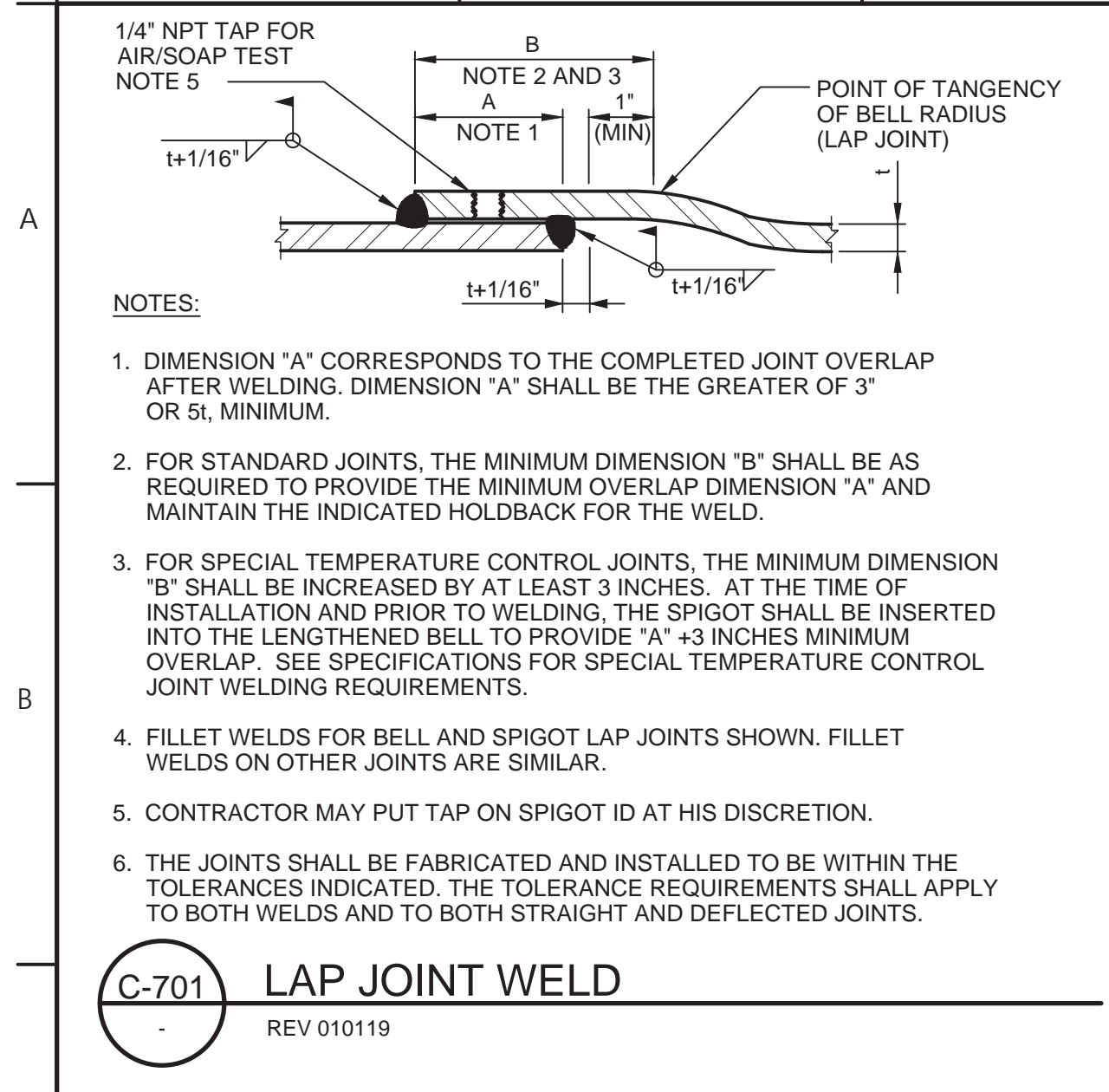
G. IF OVER-EXCAVATION DUE TO POOR FOUNDATION MATERIAL IS ORDERED BY THE ENGINEER, THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTION OF THE SPECIFICATIONS ARTICLE ENTITLED, "FILL AND BACKFILL MATERIAL REQUIREMENTS."

H. IF DURING CONSTRUCTION, THE WATER TABLE IS DISCOVERED TO BE ABOVE THE TRENCH BOTTOM, THE ENGINEER SHALL BE NOTIFIED, AND APPROPRIATE DEWATERING SHALL BE IMPLEMENTED TO LOWER THE WATER LEVEL BELOW THE TRENCH BOTTOM. THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTIONS OF THE SPECIFICATIONS, OR AS ORDERED BY THE ENGINEER.

I. TRENCH SECTIONS OTHER THAN THE TYPICAL SECTIONS SHOWN MAY BE UTILIZED PROVIDED THEY COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS COMPLIANCE AND PIPE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER.

DESIGNED	DF	ISSUED FOR BID
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DATE	04/2022	

<p>350 N. ORLEANS ST., SUITE 1301 CHICAGO, ILLINOIS 60654-1883 WWW.STANTEC.COM</p>		<p>CITY OF EVANSTON 173440108 CIVIL 1909 RAW WATER INTAKE REPLACEMENT STANDARD DETAILS - II</p>		<p>VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"</p> <p>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</p>	<p>JOB NO. 173440108 DRAWING NO. C-003 SHEET NO. 11 OF 63</p>
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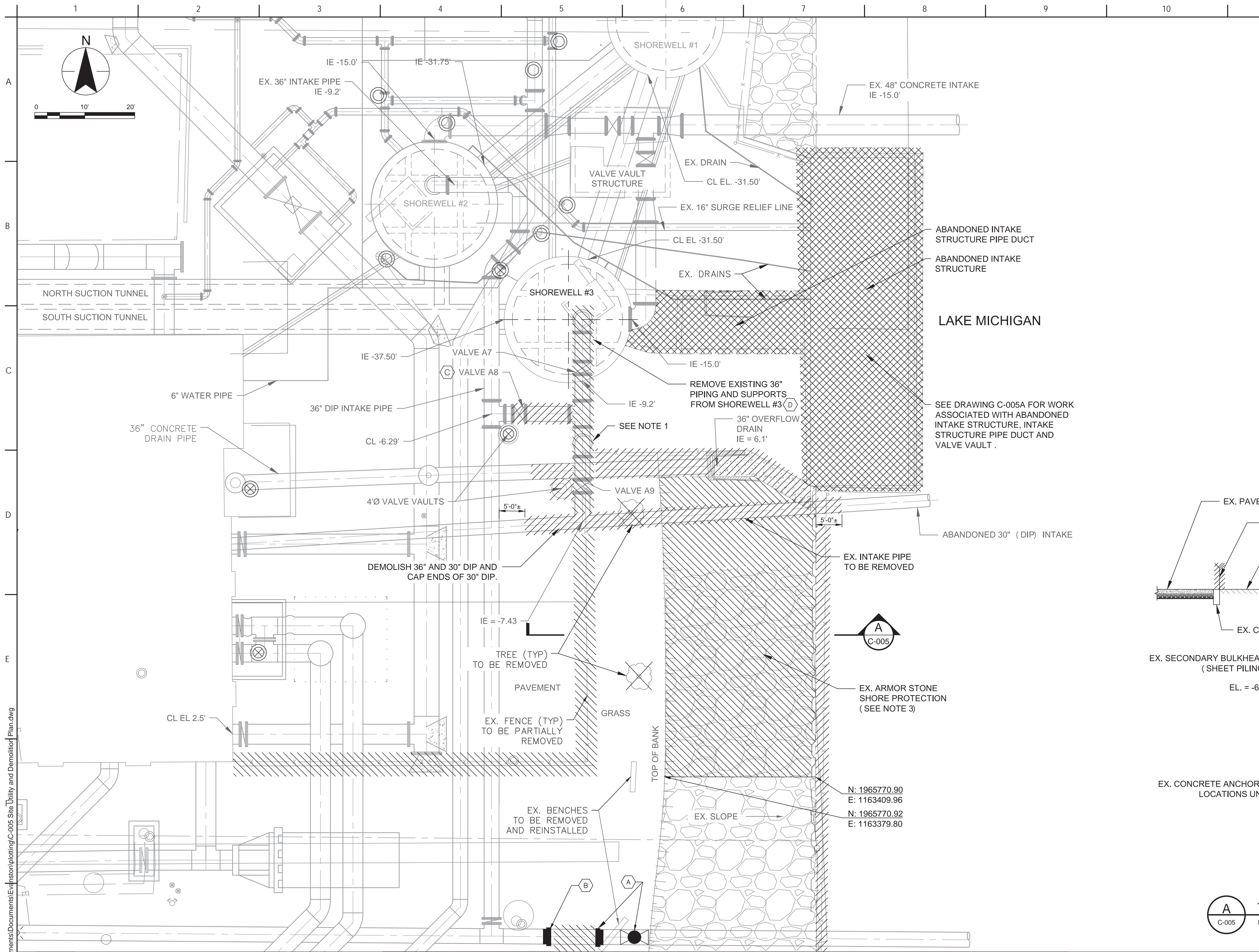
City of Evanston

CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 CIVIL
 STANDARD DETAILS - III

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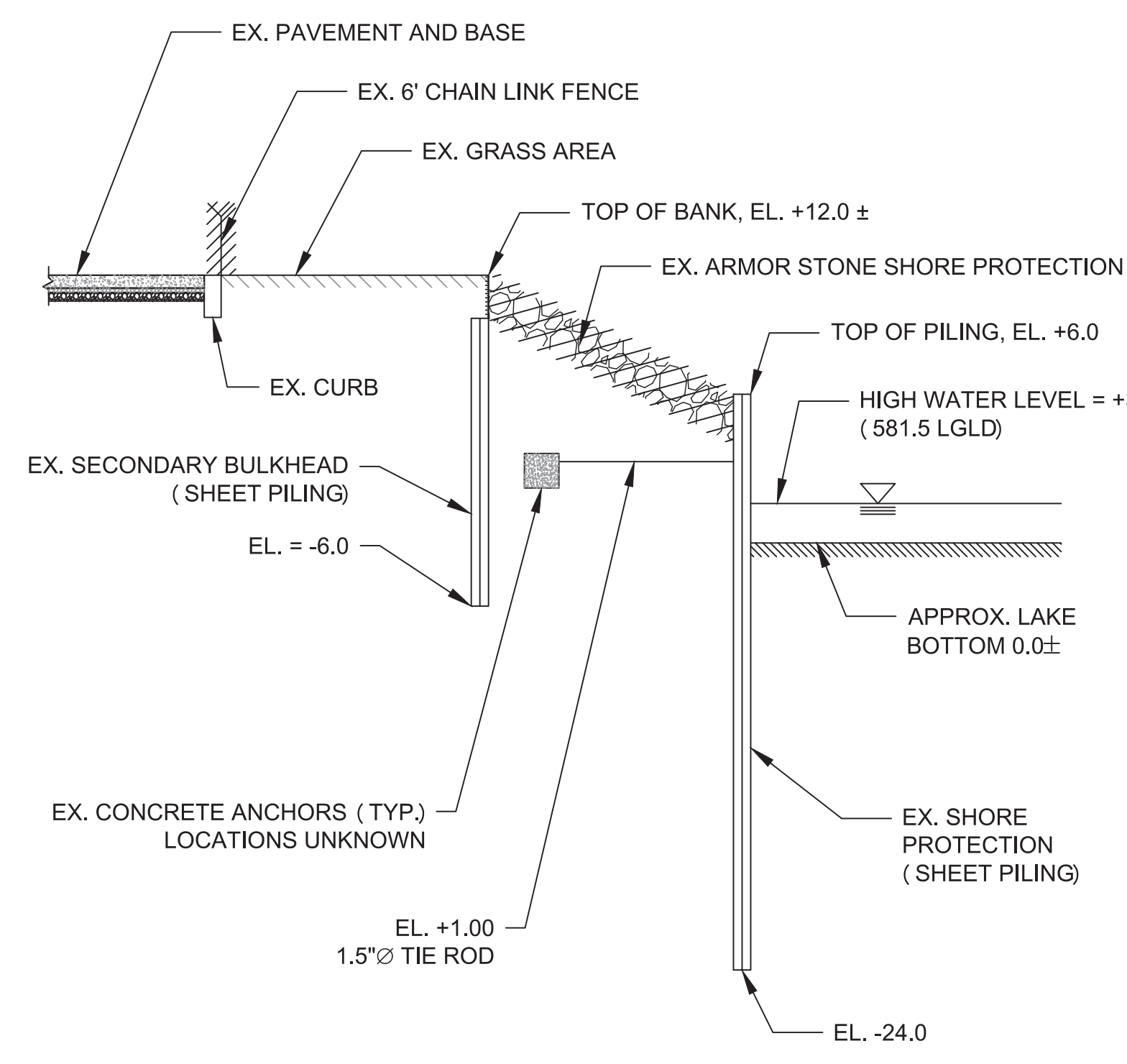
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JOB NO. 173440108
 DRAWING NO. C-004
 SHEET NO. 12 OF 63



- ### GENERAL SHEET NOTES
1. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EXISTING 36" AND 30" PIPE. REMOVE ALL SUPPORTS WITHIN SHOREWELL #3 ASSOCIATED WITH 36" PIPE.
 2. THE CONTRACTOR SHALL PERFORM EXPLORATORY INVESTIGATIONS AS NEEDED TO LOCATE THE SECONDARY BULKHEAD AND ANCHORING SYSTEMS OF THE EXISTING SHEET PILING SYSTEM.
 3. THE EXISTING SHEETING SYSTEM IS TO BE LEFT IN PLACE. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF EXISTING SYSTEM DURING CONSTRUCTION.
 4. COORDINATE REMOVAL OF ANCHOR STONE WITH DRAWING C-017.
 5. CONTRACTOR IS RESPONSIBLE FOR SUPPORT OF ALL PIPING AND STRUCTURES AS NECESSARY TO COMPLETE THE WORK.
 6. CONTRACTOR SHALL MAINTAIN PLANT DRAINAGE BYPASS PUMPING AS REQUIRED AFTER DEMOLITION HAS OCCURRED.

- ### SHEET KEY NOTES
- A. INSTALL LINE STOP FOR ABANDONMENT OF THE EXISTING 36" INTAKE PIPE TO THE EAST. REMOVE SECTION OF EXISTING PIPE AFTER LINE STOP IS INSTALLED, THEN PLUG THE EXISTING 36" INTAKE PIPE TO THE EAST. ABANDON LINE STOP IN PLACE. FILL VOID BETWEEN LINE STOP AND PLUG WITH CLSM.
 - B. PLUG AND BRACE EXISTING INTAKE PIPE TO THE WEST. PROVIDE WATERTIGHT PLUG SUITABLE FOR THE MATERIAL AND DIAMETER OF THE EXISTING 36" INTAKE PIPE.
 1. CONTRACTOR SHALL EXPOSE EXISTING INTAKE PIPE BACK TO THE EXISTING VALVE TO THE EAST. FIELD VERIFY AND REPORT CONDITIONS OF THE PIPE AND SURROUNDING SOILS TO THE ENGINEER PRIOR TO PROCEEDING WITH CAPPING AND BRACING.
 2. THRUST RESTRAINT SHALL BE PROVIDED AT THE CAP. BEARING AREA OF THRUST BLOCK SHALL BE MINIMUM 100 SQ. FT.
 3. CONTRACTOR TO SUBMIT PLUG AND THRUST BLOCK DETAIL SHEETS FOR REVIEW AND APPROVAL BY ENGINEER.
 - C. VALVE A8 CURRENTLY OPEN AND DOES NOT OPERATE.
 - D. REFER TO STRUCTURAL DRAWINGS FOR EXISTING PIPE SUPPORT PHOTOS.



A
C-005
TYPICAL SECTION - EXISTING SHORELINE
N.T.S.

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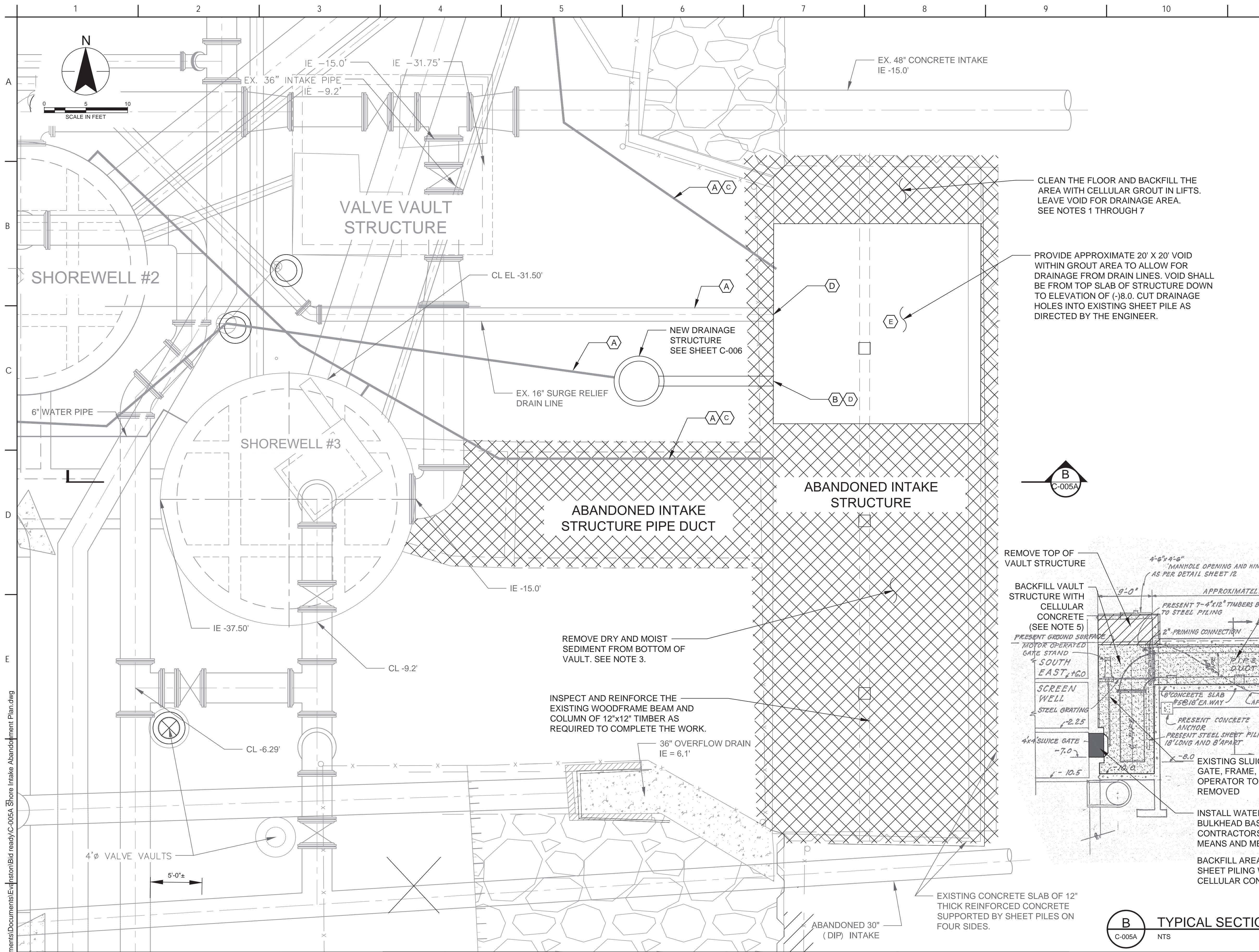
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
CIVIL
SITE UTILITY
AND DEMOLITION PLAN

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	JOB NO. 173440108 DRAWING NO. C-005 SHEET NO. 13 OF 63
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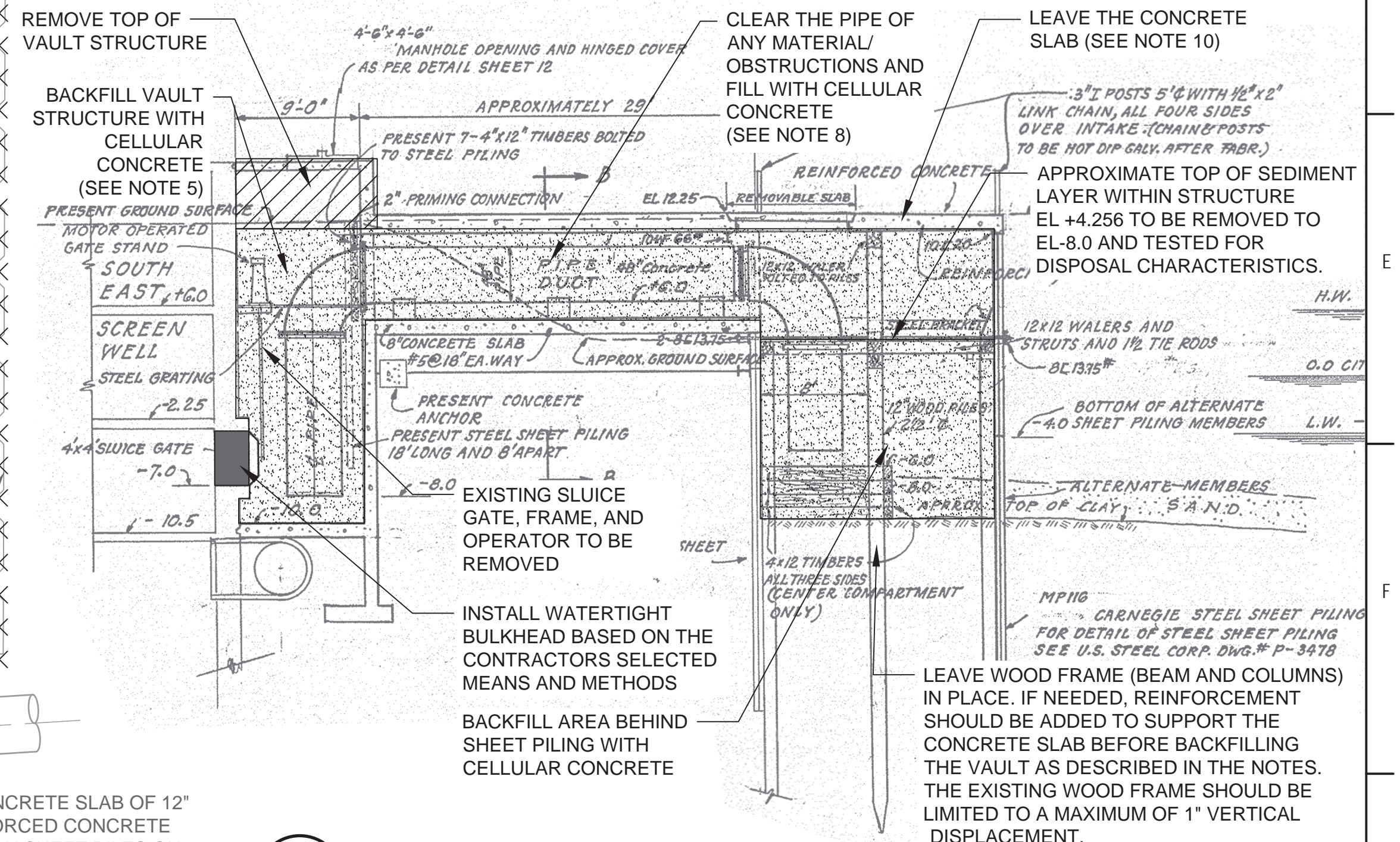


GENERAL SHEET NOTES

- BACKFILLING THE VAULT AND ABANDONED INTAKE PIPE:
MINIMUM REQUIREMENTS:
1. INSPECT THE SITE AND VAULT FOR CONFORMANCE WITH OSHA SAFETY REQUIREMENTS AND CONFINED SPACE ENTRY.
 2. INSPECT THE WOOD FRAME SUPPORT SYSTEM (BEAM AND COLUMNS) LOCATED AT MIDSPAN BENEATH THE CONCRETE SLAB AND REINFORCE AS NECESSARY.
 3. REMOVE SEDIMENT FROM BOTTOM OF VAULT TO A DEPTH OF EL- 8.00.
 4. PLUG ALL HOLES WITHIN THE SHEETPILE AND BACKFILL WITH CELLULAR CONCRETE.
 5. CELLULAR CONCRETE PLACEMENT SHALL BE IN LIFTS OF 3 FT PER DAY.
 6. FILL ENTIRE VAULT VOLUME WITH CELLULAR GROUT WITH STRENGTH OF AT LEAST 2000 PSI, UNIT WEIGHT OF 70 PCF AND VERY LOW PERMEABILITY K-10-6 CM/SEC.
 7. INSTALL AT LEAST SIX VENT HOLES THROUGH THE CONCRETE SLAB TO MONITOR THE LEVEL OF CONCRETE AND TO USE WHEN FILLING THE VAULT TO THE TOP WITH CELLULAR CONCRETE.
 8. DRILL 6 - 3-INCH-CORE HOLES IN THE ABANDONED INTAKE 48" CONCRETE PIPE INTAKE AT DIFFERENT LEVELS AND PUMP CELLULAR CONCRETE WITH MONITORING AND VENTING HOLES TO COMPLETELY FILL THE PIPE.
 9. TWO WEEKS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A METHOD STATEMENT AS PER SPECIFICATIONS AND ABOVE REQUIREMENTS FOR CITY REVIEW AND APPROVAL.
 10. SEE REFERENCE DRAWINGS FOR EXISTING STRUCTURE DETAILS.
 11. THE CONTRACTOR SHALL MONITOR AND PREVENT CELLULAR CONCRETE/ GROUT FROM BEING RELEASED INTO THE LAKE.
 12. THE CONTRACTOR SHALL DEVELOP A SHEET PILE MOVEMENT MONITORING PLAN DURING BACKFILLING OF THE VAULT.

SHEET KEY NOTES

- A. CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF THE DRAIN LINES/ SURGE RELIEF LINE AND VERIFY THAT THEY ARE IN SERVICE AT LEAST 150 FEET FROM UP FROM THE END IN THE SHOREWELL FOR PIPES 6" AND SMALLER, OR AT LEAST 300 FEET FOR PIPES LARGER THAN 6". CONTRACTOR SHALL SUBMIT THE VIDEO INSPECTION TO THE OWNER FOR REVIEW.
- B. ONCE THE DRAIN LINES HAVE BEEN VERIFIED AND REVIEWED, THE CONTRACTOR SHALL INSTALL NEW 12" PVC (AWWA C900) PIPE AT A MIN SLOPE OF 1.0%.
- C. DRAIN LINE TO BE ABANDONED. VERIFY WITH OWNER PRIOR TO ABANDONMENT.
- D. AT THE DISCHARGE POINT OF EACH DRAIN PIPE THE CONTRACTOR SHALL INSTALL AN INLINE ELASTOMERIC CHECK VALVE, TIDEFLEX CHECKMATE ULTRAFLEX, OR APPROVED EQUAL.
- E. BACKFILL VOID WITH CA-5 FROM (-)8.0 UP TO AN ELEVATION 2 FEET BELOW DRAIN INVERTS. PLACE LAYER GEOTEXTILE FABRIC AT BOTTOM. BETWEEN GRANULAR BACKFILL AND SEDIMENT. PROVIDE FORMWORK AND LEAVE IN PLACE AS NEEDED TO CREATE VOID IN CELLULAR GROUT AND CONTAIN GRANULAR BACKFILL WITHIN THE VOID AREA.



B TYPICAL SECTION - EXISTING SHORELINE
C-005A NTS

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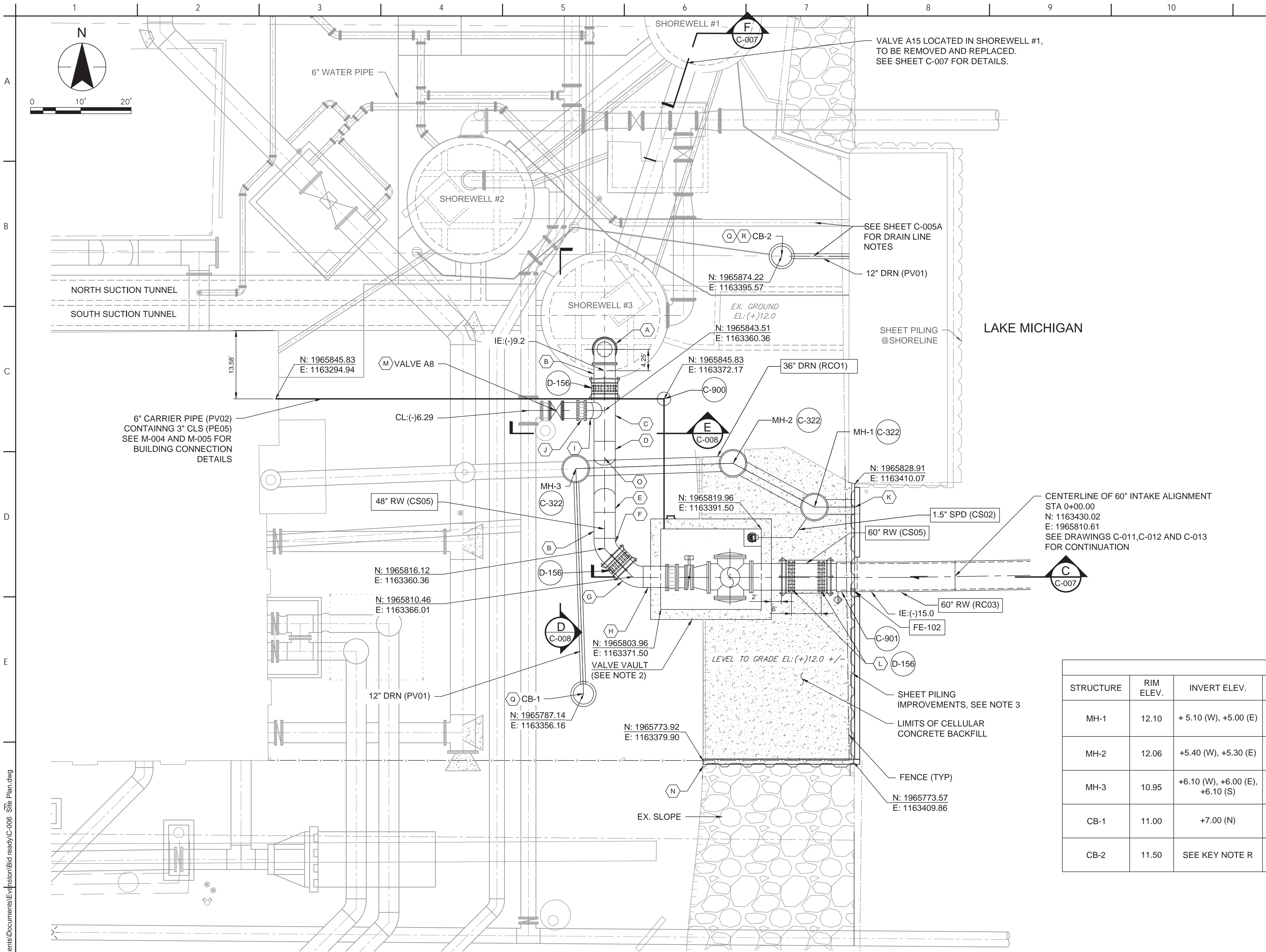
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
CIVIL
SHORE INTAKE
ABANDONMENT PLAN

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 173440108 DRAWING NO. C-005A SHEET NO. 14 OF 63
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GENERAL SHEET NOTES

- 36" OVERFLOW DRAIN TO BE REROUTED TO ACCOMMODATE SHEET PILING IMPROVEMENTS. PROVIDE OPENING IN NEW SHEET PILING AT OVERFLOW DISCHARGE POINT.
- SEE MECHANICAL DRAWINGS FOR INFORMATION PERTAINING TO PIPING, VALVES, AND EQUIPMENT WITHIN VALVE VAULT.
- SEE DRAWING C-017 FOR SHEET PILE SYSTEM.
- SEE DRAWING C-009 FOR SITE RESTORATION AND GRADING.
- MANHOLE AND CATCH BASINS SHALL BE INSTALLED WITH HEAVY DUTY FRAME AND GRATE; NEENAH N-1713 FRAME AND R-2504 GRATE, OR APPROVED EQUAL.

SHEET KEY NOTES

- 48" 90° FL ELBOW W/36" ACCESS MH (STEEL)
- 48" PIPE (STEEL)
- 48"x 36" TEE (WELDED STEEL)
- 48" 45° VERT. BEND (WELDED STEEL)
- 48" 45° VERT. BEND (WELDED STEEL)
- 48" 45° HORZ. BEND (WELDED STEEL)
- 48" 45° HORZ. BEND (WELDED STEEL)
- 48" FL x PE SPOOL PIECE (STEEL)
- WELDED JOINT
- RESTRAINED INSULATING TRANSITION COUPLING, FL X MJ
- INSTALL 36" ELASTOMERIC INLINE CHECK VALVE AT DRAIN OUTLET; TIDEFLEX CHECKMATE ULTRAFLEX, OR APPROVED EQUAL.
- DOUBLE HARNESS JOINT PER AWWA M11
- CONTRACTOR TO REPLACE EXISTING 36" BUTTERFLY VALVE (A8) AND OPERATOR AND MAINTAIN EXISTING VALVE VAULT.
 - IF CONDITION DICTATES VAULT REPLACEMENT THE CONTRACTOR SHALL ADVISE THE OWNER AND ENGINEER.
 - EXPOSE EXISTING VALVE AND TEE TO EXAMINE PIPE JOINTS AND TO LOCATE ANY EXISTING THRUST RESTRAINT.
 - EXISTING VALVE A8 IS CURRENTLY OPEN AND NON-FUNCTIONAL.
- INSTALL NEW WROUGHT IRON FENCE FROM SW CORNER OF NEW SHEET PILING TO THE SOUTH TO THE EXISTING WROUGHT IRON FENCE. SEE SHEET C-009.
- MINIMUM VERTICAL CLEARANCE OF 10 FEET BETWEEN 36" DRN AND 48" RW.
- EXTEND DRAIN TO SHEET PILE WITH 6" PVC AND TRANSITION COUPLING. BURN HOLE IN EXISTING SHEET PILE TO INSTALL OUTLET. INSTALL ELASTOMERIC INLINE CHECK VALVE; TIDEFLEX CHECKMATE ULTRAFLEX, OR APPROVED EQUAL.
- INSTALL HYDRODYNAMIC SEPARATOR UNIT, CONTECH STORMCEPTOR, MODEL STC 450I.
 - SUBMIT PRODUCT DATA SHEETS, DETAILS, AND MAINTENANCE MANUALS TO THE ENGINEER FOR APPROVAL.
 - FIELD VERIFY INVERT ELEVATIONS PRIOR TO ORDERING.
 - STRUCTURE SHALL BE AASHTO HS20 LOAD RATED.
 - SEE PROJECT SPECIFICATIONS FOR BACKFILL REQUIREMENTS.
- FIELD VERIFY DRAIN LINE INVERT AS NEEDED TO INSTALL HYDRODYNAMIC SEPARATOR. INVERT OF OUTLET PIPE SHALL BE A MINIMUM 3 INCHES BELOW INVERT OF INLET PIPE.

DRAINAGE STRUCTURES					
STRUCTURE	RIM ELEV.	INVERT ELEV.	NORTHING	EASTING	NOTES
MH-1	12.10	+ 5.10 (W), +5.00 (E)	1965824.31	1163402.07	60" Ø MANHOLE SOLID FRAME & LID WITH "DRAIN" CAST INTO TOP NEENAH R-1713, OR EQUAL
MH-2	12.06	+5.40 (W), +5.30 (E)	1965833.02	1163385.88	60" Ø MANHOLE SOLID FRAME & LID WITH "DRAIN" CAST INTO TOP NEENAH R-1713, OR EQUAL
MH-3	10.95	+6.10 (W), +6.00 (E), +6.10 (S)	1965831.96	1163354.64	60" Ø MANHOLE SOLID FRAME & LID WITH "DRAIN" CAST INTO TOP NEENAH R-1713, OR EQUAL
CB-1	11.00	+7.00 (N)	1965787.14	1163356.16	48" Ø HYDRODYNAMIC SEPARATOR OPEN FRAME & GRATE NEENAH R-2500-G, OR EQUAL
CB-2	11.50	SEE KEY NOTE R	1965874.22	1163395.57	48" Ø HYDRODYNAMIC SEPARATOR OPEN FRAME & GRATE NEENAH R-2500-G, OR EQUAL

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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 CIVIL
 SITE PLAN

VERIFY SCALES
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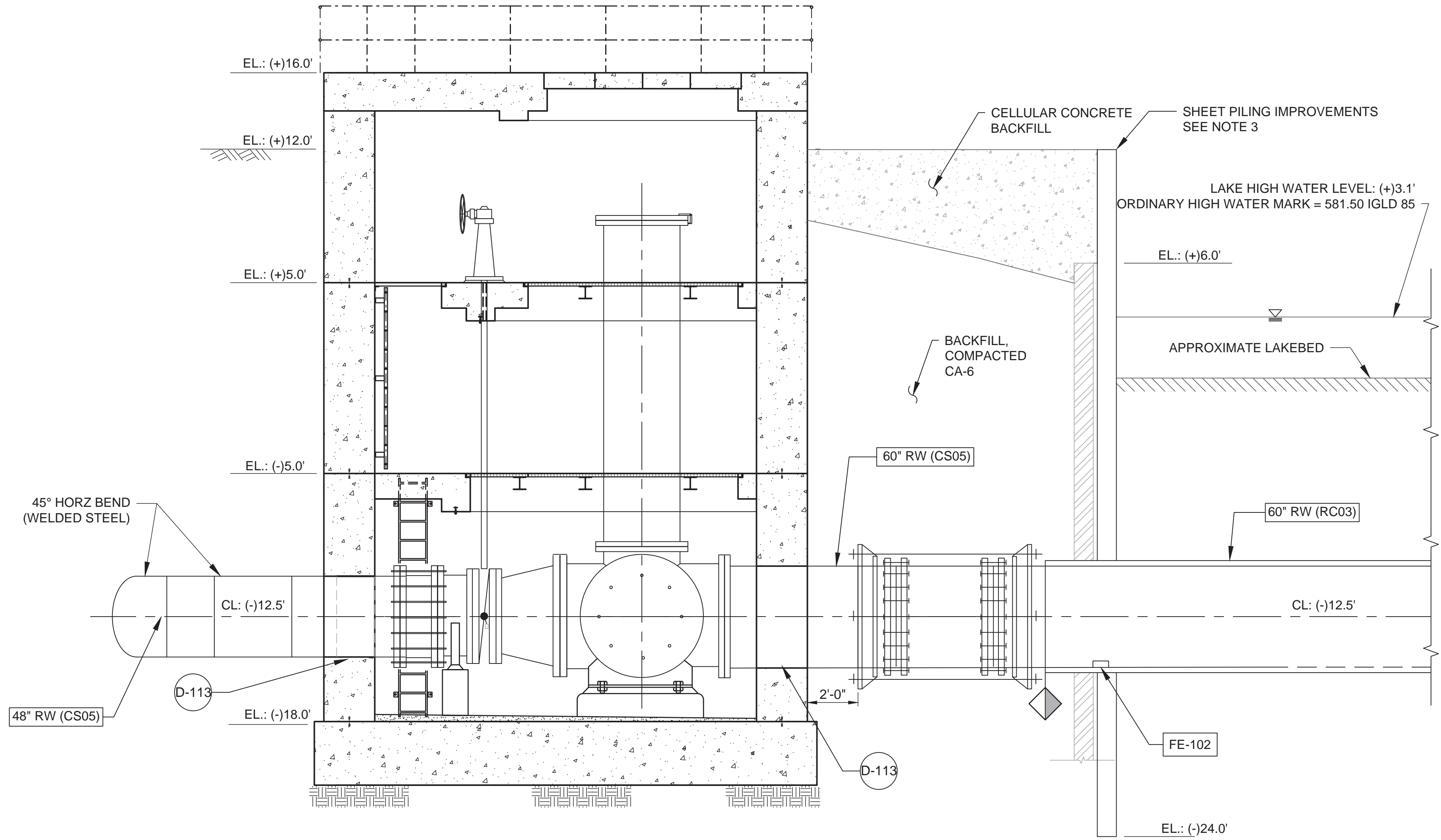
JOB NO.
 173440108
 DRAWING NO.
C-006
 SHEET NO.
15 OF 63

GENERAL SHEET NOTES

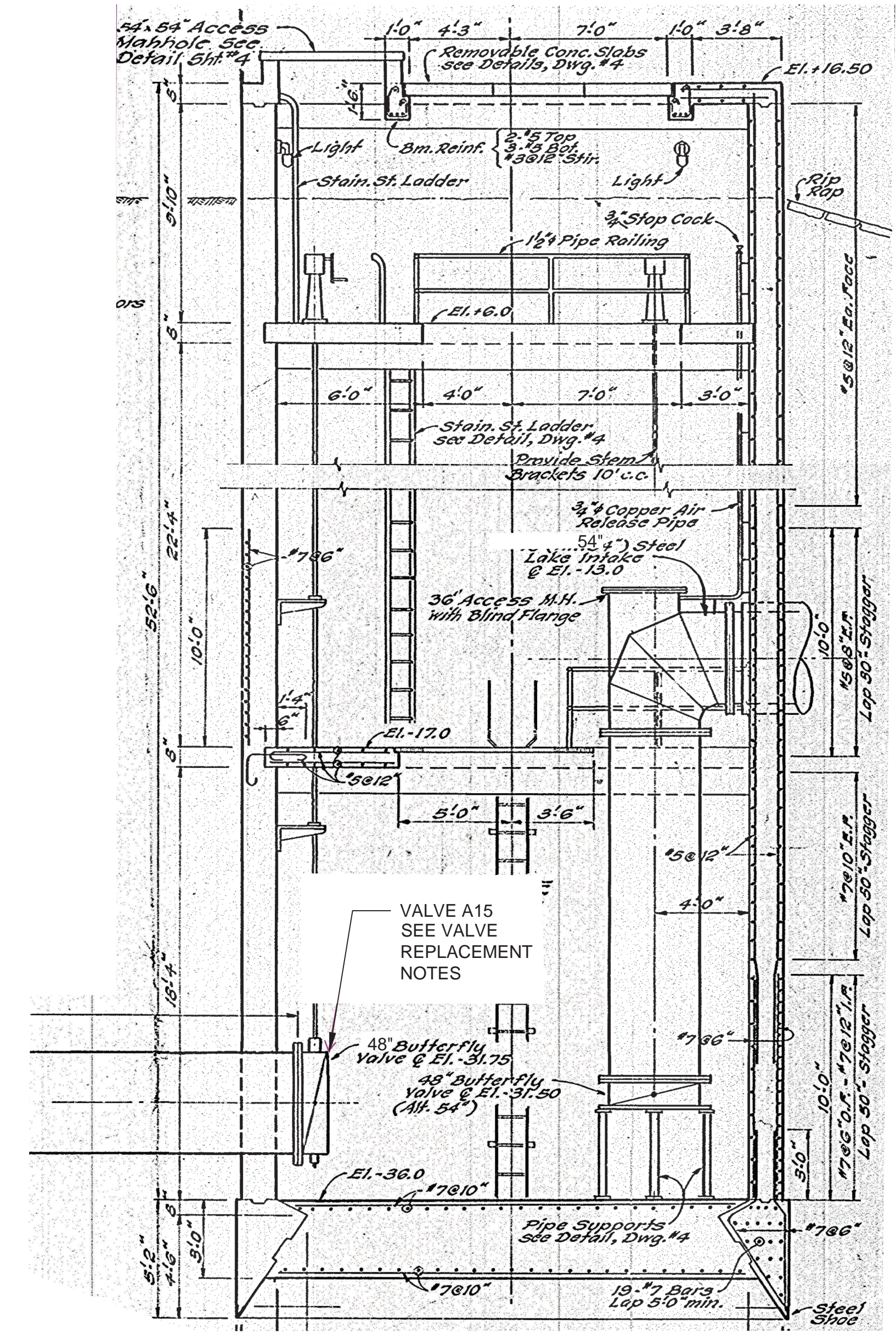
1. REFER TO SPECIFICATIONS FOR CONNECTION DETAILS BETWEEN THE 60-INCH RC03 PIPE AND CS05 PIPE
2. SEE MECHANICAL DRAWING M-005 FOR INFORMATION ON PIPING, VALVES, AND EQUIPMENT WITHIN VAULT.
3. SEE DRAWING C-017 FOR SHEET PILING IMPROVEMENTS.

VALVE REPLACEMENT NOTES

1. THE CONTRACTOR SHALL REMOVE AND REPLACE THE EXISTING 48" BUTTERFLY VALVE (A15) WITHIN SHOREWELL #1
2. EXISTING VALVE A15 IS CURRENTLY CLOSED WITH A BULKHEAD.
3. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EXISTING 48" BUTTERFLY VALVE, AND FIELD VERIFY CONDITIONS OF THE EXISTING STEM, OPERATOR, AND SUPPORTS. FIELD CONDITIONS SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.
4. THE EXISTING BUTTERFLY VALVE SHALL BE REPLACED WHILE MAINTAINING THE EXISTING STEM AND OPERATOR UNLESS FOUND INCOMPATIBLE WITH THE REPLACEMENT VALVE OR IN A CONDITION THAT WOULD PROHIBIT FUTURE USE.
5. IF REQUIRED, FURTHER REPLACEMENT OF STEM, OPERATOR, SUPPORTS, OR STRUCTURAL MODIFICATIONS SHALL BE COORDINATED WITH THE ENGINEER.
6. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AS NEEDED TO PROCEED WITH THE DEWATERING OF SHOREWELL #1 TO EVALUATE AND REPLACE THE EXISTING VALVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL BULKHEADS AS REQUIRED TO ISOLATE THE SHOREWELL.



C SECTION-VALVE VAULT
C-006 SCALE: 1/4"=1'-0"



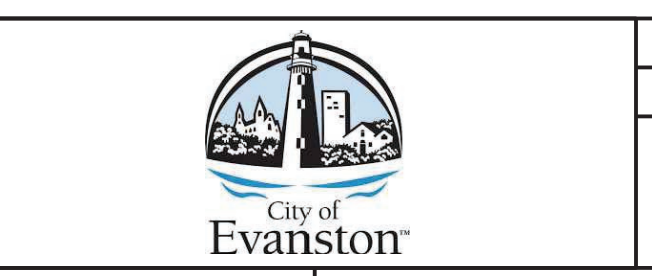
F SECTION - SHOREWELL #1
F-006 SCALE: 1/4"=1'-0"

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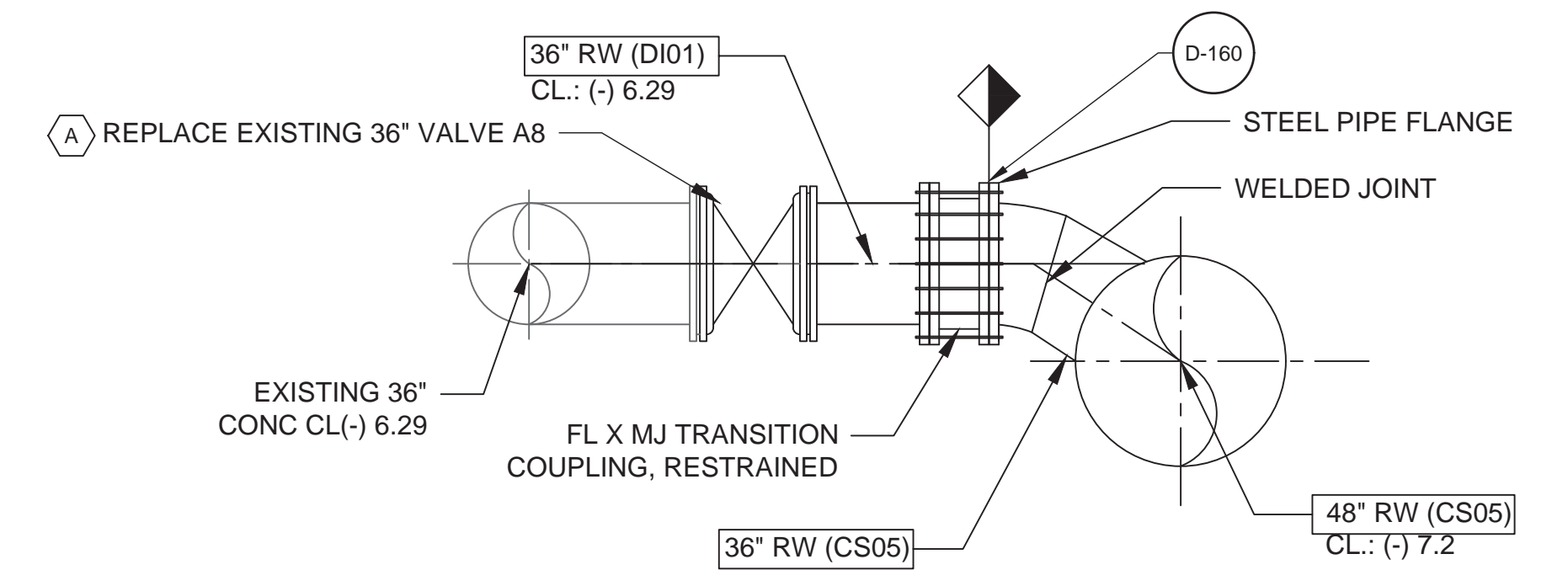


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1909 RAW WATER INTAKE REPLACEMENT
CIVIL
YARD PIPE SECTIONS - I

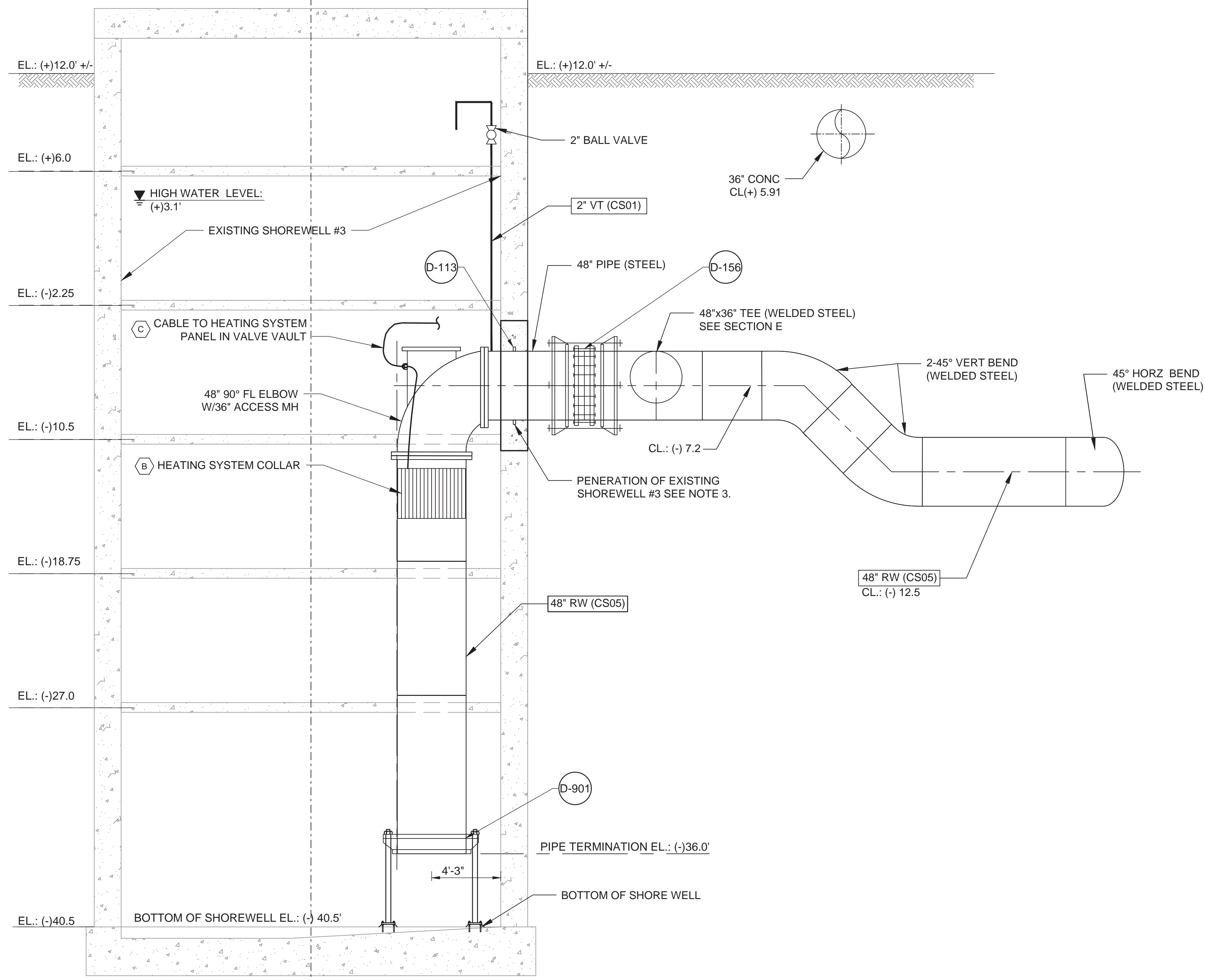
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DRAWING NO. C-007
SHEET NO. 16 OF 63

- ### GENERAL SHEET NOTES
- FLOOR THICKNESS IN THE EXISTING SHOREWELL #3 VARIES.
 - PIPING, SUPPORTS, AND EQUIPMENT IN EXISTING SHOREWELL #3 NOT SHOWN FOR CLARITY. SEE REFERENCE DRAWINGS FOR INFORMATION PERTAINING TO EXISTING PIPING, SUPPORTS, AND EQUIPMENT WITHIN SHOREWELL #3.
 - FOR PENETRATION OF SHOREWELL #3 REFER TO DRAWING S-010.
 - FOR PIPE SUPORT IN SHOREWELL #3 REFER TO DRAWING S-010.
- ### SHEET KEY NOTES
- CONTRACTOR SHALL FIELD VERIFY EXISTING VALVE TYPE AND CONNECTION TYPE PRIOR TO ORDERING PIPE.
 - INSTALL HEATING COLLAR. VERIFY POSITION WITH HEATING SYSTEM MANUFACTURER.
 - INSTALL HEATING SYSTEM CABLE THROUGH TOP FLANGE WITH CABLE GLAND. ROUTE CABLE THROUGH SHOREWELL WALL TO HEATING SYSTEM PANEL IN VALVE VAULT. VERIFY CABLE AND PENETRATION REQUIREMENTS WITH HEATING SYSTEM MANUFACTURER.



E SECTION - PIPING CONNECTION TO THE EXISTING
C-006 SCALE: 1/4"=1'-0"



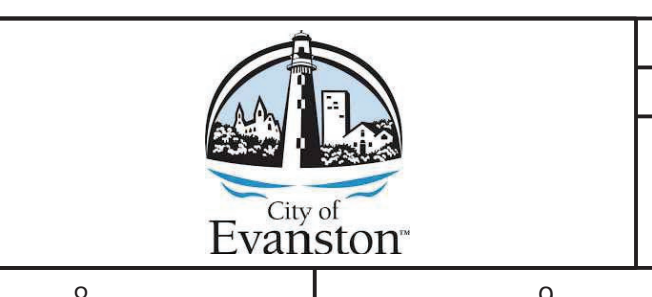
D SECTION - SHOREWELL #3
C-006 SCALE: 1/4"=1'-0"

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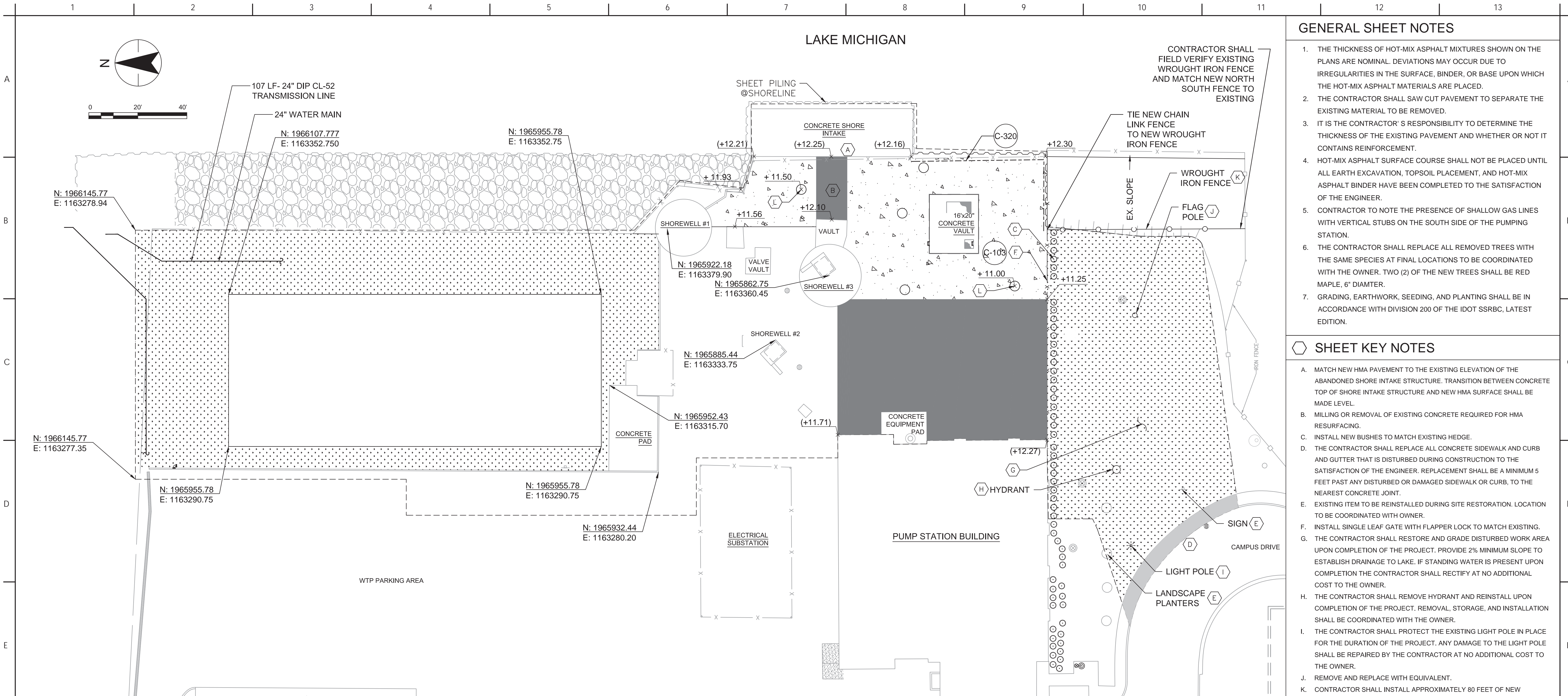
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1909 RAW WATER INTAKE REPLACEMENT
CIVIL
YARD PIPE SECTIONS - II

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DRAWING NO.
C-008
SHEET NO.
17 OF 63



GENERAL SHEET NOTES

1. THE THICKNESS OF HOT-MIX ASPHALT MIXTURES SHOWN ON THE PLANS ARE NOMINAL. DEVIATIONS MAY OCCUR DUE TO IRREGULARITIES IN THE SURFACE, BINDER, OR BASE UPON WHICH THE HOT-MIX ASPHALT MATERIALS ARE PLACED.
2. THE CONTRACTOR SHALL SAW CUT PAVEMENT TO SEPARATE THE EXISTING MATERIAL TO BE REMOVED.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE THICKNESS OF THE EXISTING PAVEMENT AND WHETHER OR NOT IT CONTAINS REINFORCEMENT.
4. HOT-MIX ASPHALT SURFACE COURSE SHALL NOT BE PLACED UNTIL ALL EARTH EXCAVATION, TOPSOIL PLACEMENT, AND HOT-MIX ASPHALT BINDER HAVE BEEN COMPLETED TO THE SATISFACTION OF THE ENGINEER.
5. CONTRACTOR TO NOTE THE PRESENCE OF SHALLOW GAS LINES WITH VERTICAL STUBS ON THE SOUTH SIDE OF THE PUMPING STATION.
6. THE CONTRACTOR SHALL REPLACE ALL REMOVED TREES WITH THE SAME SPECIES AT FINAL LOCATIONS TO BE COORDINATED WITH THE OWNER. TWO (2) OF THE NEW TREES SHALL BE RED MAPLE, 6" DIAMETER.
7. GRADING, EARTHWORK, SEEDING, AND PLANTING SHALL BE IN ACCORDANCE WITH DIVISION 200 OF THE IDOT SSRBC, LATEST EDITION.

SHEET KEY NOTES

- A. MATCH NEW HMA PAVEMENT TO THE EXISTING ELEVATION OF THE ABANDONED SHORE INTAKE STRUCTURE. TRANSITION BETWEEN CONCRETE TOP OF SHORE INTAKE STRUCTURE AND NEW HMA SURFACE SHALL BE MADE LEVEL.
- B. MILLING OR REMOVAL OF EXISTING CONCRETE REQUIRED FOR HMA RESURFACING.
- C. INSTALL NEW BUSHES TO MATCH EXISTING HEDGE.
- D. THE CONTRACTOR SHALL REPLACE ALL CONCRETE SIDEWALK AND CURB AND GUTTER THAT IS DISTURBED DURING CONSTRUCTION TO THE SATISFACTION OF THE ENGINEER. REPLACEMENT SHALL BE A MINIMUM 5 FEET PAST ANY DISTURBED OR DAMAGED SIDEWALK OR CURB, TO THE NEAREST CONCRETE JOINT.
- E. EXISTING ITEM TO BE REINSTALLED DURING SITE RESTORATION. LOCATION TO BE COORDINATED WITH OWNER.
- F. INSTALL SINGLE LEAF GATE WITH FLAPPER LOCK TO MATCH EXISTING.
- G. THE CONTRACTOR SHALL RESTORE AND GRADE DISTURBED WORK AREA UPON COMPLETION OF THE PROJECT. PROVIDE 2% MINIMUM SLOPE TO ESTABLISH DRAINAGE TO LAKE. IF STANDING WATER IS PRESENT UPON COMPLETION THE CONTRACTOR SHALL RECTIFY AT NO ADDITIONAL COST TO THE OWNER.
- H. THE CONTRACTOR SHALL REMOVE HYDRANT AND REINSTALL UPON COMPLETION OF THE PROJECT. REMOVAL, STORAGE, AND INSTALLATION SHALL BE COORDINATED WITH THE OWNER.
- I. THE CONTRACTOR SHALL PROTECT THE EXISTING LIGHT POLE IN PLACE FOR THE DURATION OF THE PROJECT. ANY DAMAGE TO THE LIGHT POLE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- J. REMOVE AND REPLACE WITH EQUIVALENT.
- K. CONTRACTOR SHALL INSTALL APPROXIMATELY 80 FEET OF NEW WROUGHT IRON FENCE AT TOP OF SLOPE. FIELD VERIFY FENCE AND MATCH EXISTING.
- L. GRADE TO DRAIN, 1.0% MINIMUM SLOPE. SEE SHEET C-006 FOR DRAINAGE STRUCTURE REQUIREMENTS. DRAIN AWAY FROM BUILDINGS TO DRAINAGE STRUCTURES. NO STANDING WATER SHALL BE PRESENT UPON COMPLETION.

LEGEND

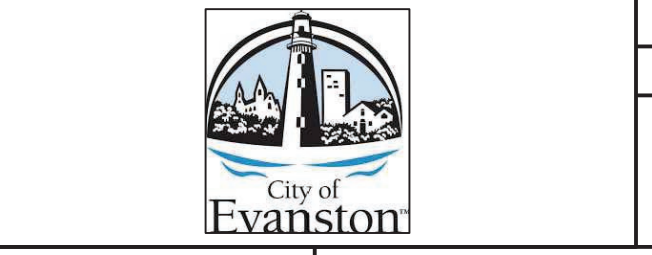
- HMA REMOVAL AND PAVING
- FULL DEPTH PAVEMENT CONSTRUCTION
- CONCRETE PAVING (LIGHT DUTY) SIDEWALKS ETC
- SEEDING

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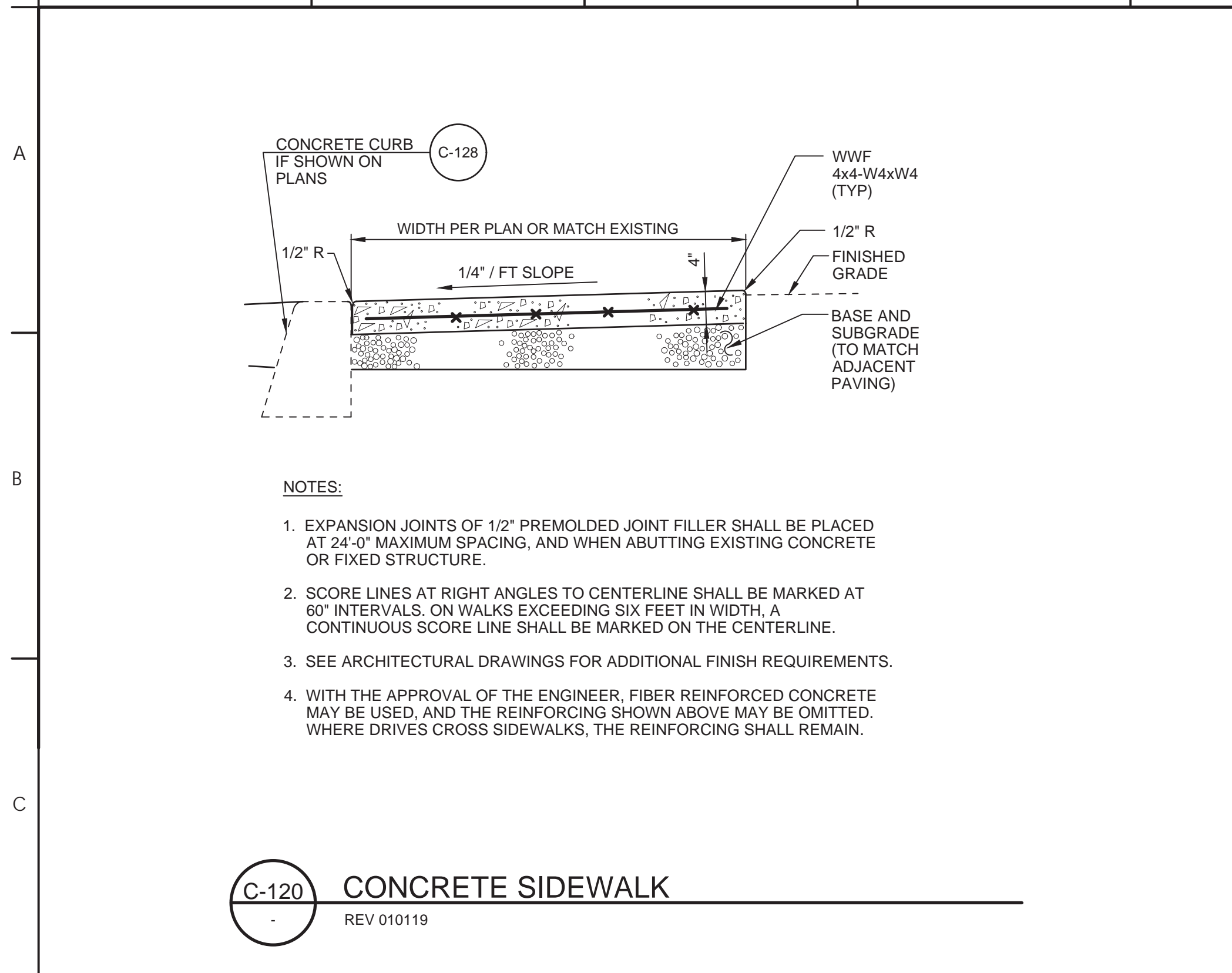
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 RESTORATION PLAN

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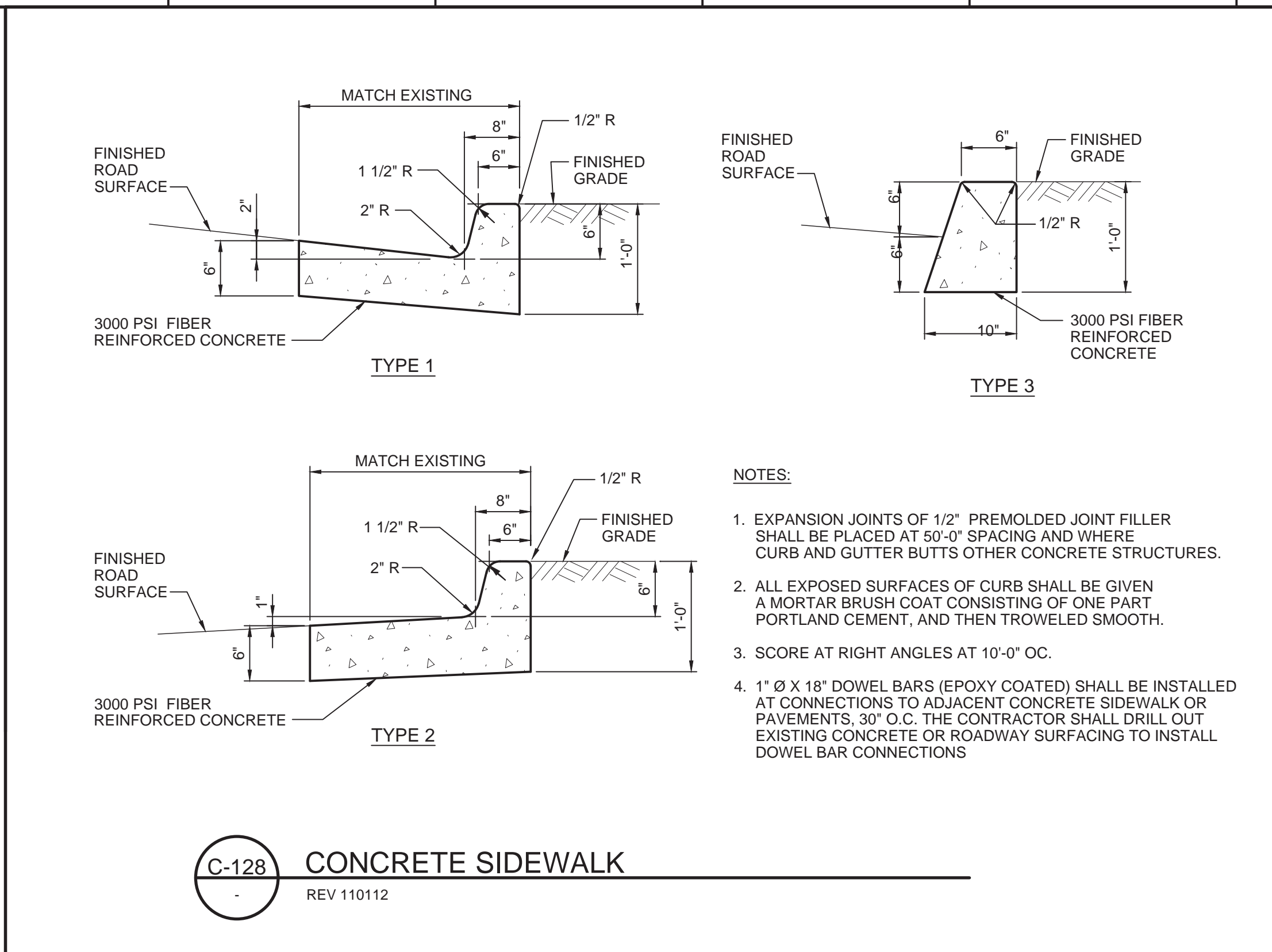
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173440108
DRAWING NO.
C-009
SHEET NO.
18 OF 63



NOTES:

1. EXPANSION JOINTS OF 1/2" PREMOLDED JOINT FILLER SHALL BE PLACED AT 24'-0" MAXIMUM SPACING, AND WHEN ABUTTING EXISTING CONCRETE OR FIXED STRUCTURE.
2. SCORE LINES AT RIGHT ANGLES TO CENTERLINE SHALL BE MARKED AT 60" INTERVALS, ON WALKS EXCEEDING SIX FEET IN WIDTH. A CONTINUOUS SCORE LINE SHALL BE MARKED ON THE CENTERLINE.
3. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL FINISH REQUIREMENTS.
4. WITH THE APPROVAL OF THE ENGINEER, FIBER REINFORCED CONCRETE MAY BE USED, AND THE REINFORCING SHOWN ABOVE MAY BE OMITTED. WHERE DRIVES CROSS SIDEWALKS, THE REINFORCING SHALL REMAIN.

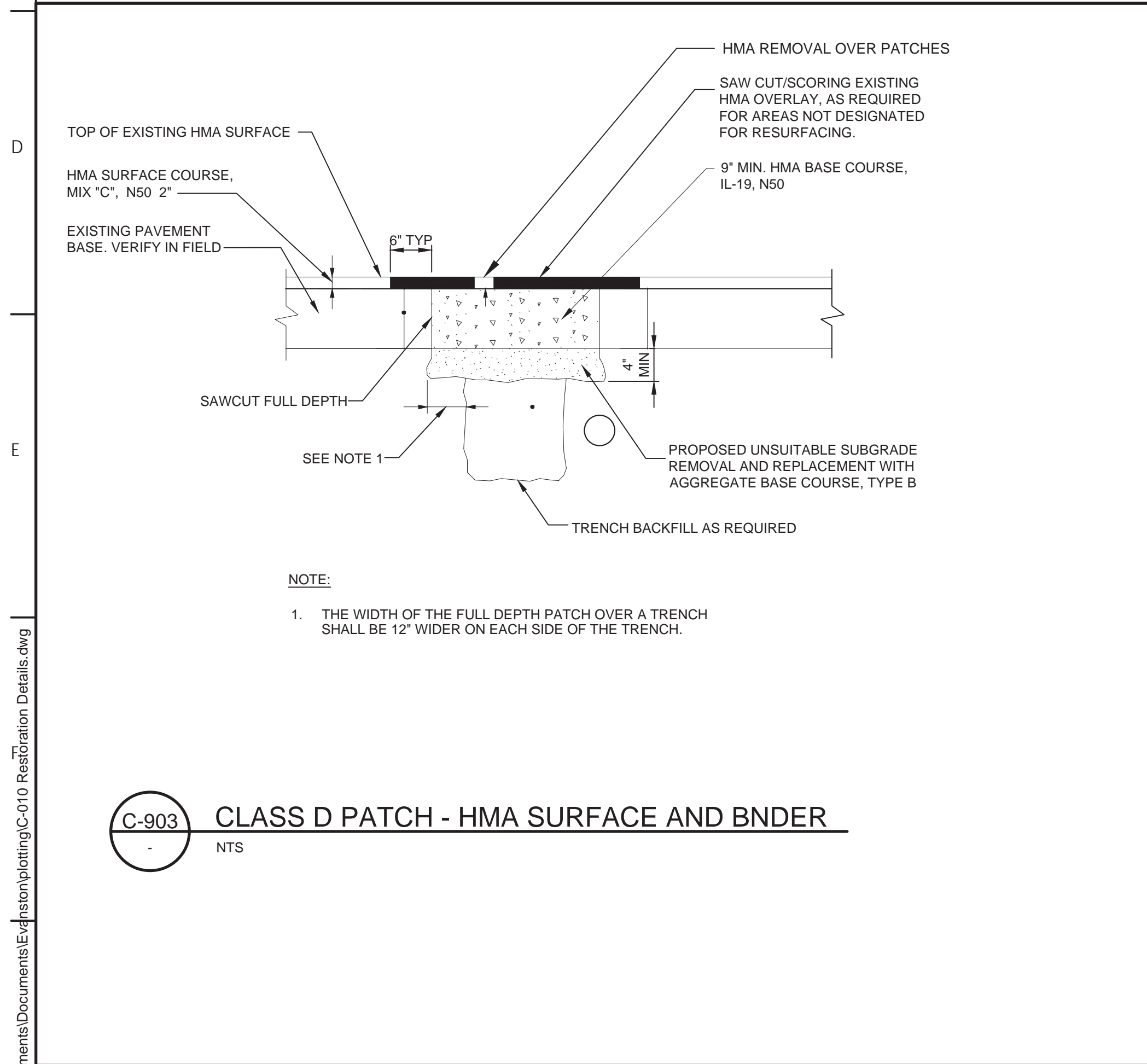
C-120 CONCRETE SIDEWALK
REV 010119



NOTES:

1. EXPANSION JOINTS OF 1/2" PREMOLDED JOINT FILLER SHALL BE PLACED AT 50'-0" SPACING AND WHERE CURB AND GUTTER BUTTS OTHER CONCRETE STRUCTURES.
2. ALL EXPOSED SURFACES OF CURB SHALL BE GIVEN A MORTAR BRUSH COAT CONSISTING OF ONE PART PORTLAND CEMENT, AND THEN TROWELED SMOOTH.
3. SCORE AT RIGHT ANGLES AT 10'-0" OC.
4. 1" Ø X 18" DOWEL BARS (EPOXY COATED) SHALL BE INSTALLED AT CONNECTIONS TO ADJACENT CONCRETE SIDEWALK OR PAVEMENTS, 30" O.C. THE CONTRACTOR SHALL DRILL OUT EXISTING CONCRETE OR ROADWAY SURFACING TO INSTALL DOWEL BAR CONNECTIONS

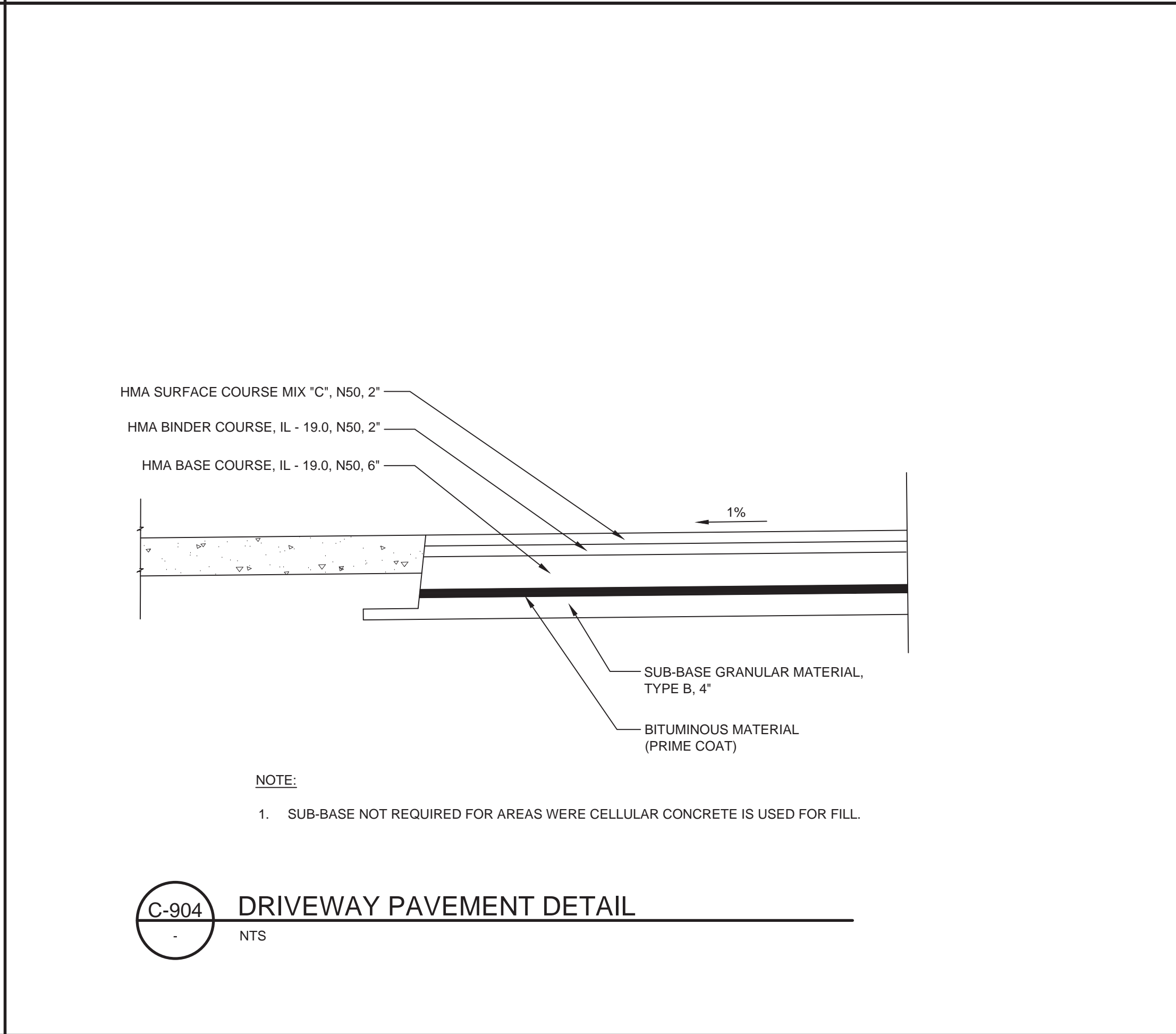
C-128 CONCRETE SIDEWALK
REV 110112



NOTE:

1. THE WIDTH OF THE FULL DEPTH PATCH OVER A TRENCH SHALL BE 12" WIDER ON EACH SIDE OF THE TRENCH.

C-903 CLASS D PATCH - HMA SURFACE AND BNDER
NTS



NOTE:

1. SUB-BASE NOT REQUIRED FOR AREAS WERE CELLULAR CONCRETE IS USED FOR FILL.

C-904 DRIVEWAY PAVEMENT DETAIL
NTS

DESIGNED	DF
DRAWN	TH
CHECKED	BK
DATE	04/2022

REV	DATE	BY	DESCRIPTION
1			
2			
3			
4			

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City of Evanston

CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
CIVIL
RESTORATION DETAILS

VERIFY SCALES
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0 1"
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JOB NO. 173440108
DRAWING NO. C-010
SHEET NO. 19 OF 63

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INTAKE STATIONING AND COORDINATES REDACTED FROM DRAWING. INFORMATION WILL BE PROVIDED TO ATTENDEES OF THE MANDATORY PRE-BID MEETING WHO SUBMIT THE NON-DISCLOSURE AGREEMENT.

PROPOSED INTAKE PIPE SEGMENTS				
SEGMENT	LENGTH (FT)	BEARING DIRECTION	BEGINNING STATION	END STATION
A	866.49	REDACTED FOR BID		
B	1,888.94			
C	2,844.57			

PROPOSED INTAKE PIPE POINTS				
POINT	DESCRIPTION	NORTHING	EASTING	STATION
1	BEGINNING STA (60" INTAKE)	REDACTED FOR BID		
2	HORIZONTAL BEND			
3	HORIZONTAL BEND			
4	END STA (CENTER OF INTAKE CONE)			

GENERAL SHEET NOTES

1. THE PLANS ARE NOT INTENDED TO SHOW EVERY FITTING, OFFSET, OR SIMILAR ITEM. PIPING SYSTEMS SHALL INCLUDE ALL UNIONS, FITTINGS, ANCHORS, VALVES, GASKETS, BRACING, JOINT RESTRAINTS, SPECIALS, OR OTHER APPURTENANCES NECESSARY FOR THE PROPER INSTALLATION OF THE INTAKE PIPE TO THE ORIENTATION AND DIMENSIONS INDICATED ON THE PLANS.
2. THE CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF EXISTING INTAKES AND STRUCTURES TO THE EXTENT NECESSARY PRIOR TO INSTALLATION OF THE NEW INTAKE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING THE LOCATION OF THE NEW INTAKE BASED ON THE ALIGNMENT INFORMATION PROVIDED. ALIGNMENT MAY BE MODIFIED IF WARRANTED BASED ON THE CONTRACTOR'S FIELD EXPLORATIONS PRIOR TO COMMENCING WORK. ANY ALIGNMENT DEVIATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. INTAKE PIPE AND FITTINGS SHALL BE OBTAINED BY THE CONTRACTOR BASED ON THE FINAL APPROVED ALIGNMENT. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL TO THE ENGINEER ALL INTAKE PIPING SYSTEM COMPONENTS PRIOR TO PROCEEDING WITH THE WORK.
4. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE INTAKE PIPING WITH THE HEATING SYSTEM MANUFACTURER TO ENSURE THAT ALL DIMENSIONS, FITTINGS, BASKETS, OR SPECIALTY FABRICATIONS ARE COMPATIBLE FOR INSTALLATION. THE CONTRACTOR SHALL PROVIDE COMPLETE SUBMITTAL DATA FOR ALL PIPING SYSTEMS AND HEATING SYSTEM ELEMENTS TO DEMONSTRATE COMPATIBILITY FOR INSTALLATION PRIOR TO PROCEEDING WITH THE WORK. INTAKE SHALL EXTEND SUCH THAT THE CENTERLINE OF THE FURTHEST CONE IS AT STATION 56+00.
5. THE REMOVAL OF ANY STRUCTURE THAT IS REQUIRED FOR THE INSTALLATION OF THE NEW INTAKE SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF EXISTING PIPE AND STRUCTURES TO THE EXTENT NECESSARY FOR THE INSTALLATION OF THE NEW INTAKE. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL WASTE MATERIALS PER THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL LIMIT ALL CONSTRUCTION ACTIVITIES IMPACTING THE LAKEBED OF LAKE MICHIGAN TO THE WORK AREA DELINEATED ON THE PLANS UNLESS OTHERWISE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL MAKE ALL REASONABLE EFFORTS TO MINIMIZE IMPACT TO THE LAKEBED DURING EXCAVATION AND INSTALLATION OF THE INTAKE PIPE. NO UNNECESSARY LAKEBED DISTURBANCES SHALL BE MADE.
7. EXACT LOCATION OF INTAKES TO BE SHARED WITH SELECTED CONTRACTOR UPON AWARD OF CONTRACT.

INTAKE ABANDONMENT NOTES

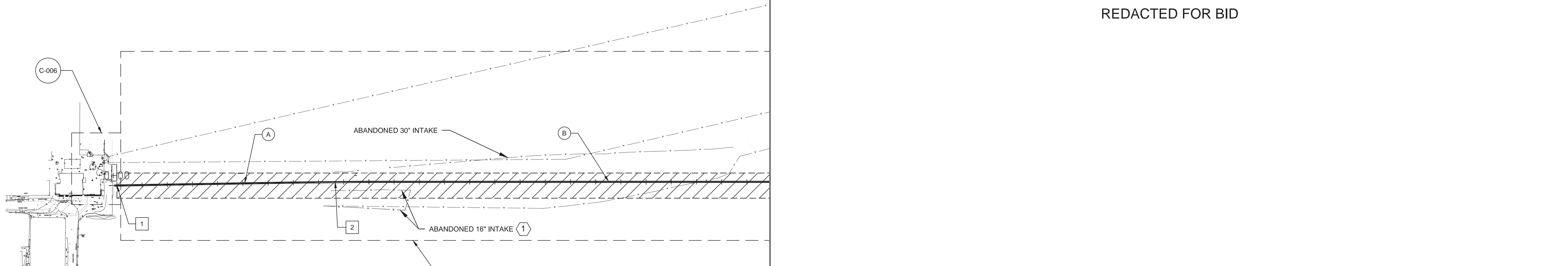
1. EXISTING INTAKE CONES TO BE ABANDONED SHALL BE CUT TO WITHIN 1 FOOT OF LAKEBED AND FILLED WITH ROUNDED COBBLE.
2. WHERE IT IS REQUIRED TO CUT THE EXISTING INTAKE TO REMOVE SECTIONS FOR THE INSTALLATION OF THE NEW INTAKE PIPE, THE CONTRACTOR SHALL PLUG THE ENDS OF THE ABANDONED INTAKE PIPE WITH ROUNDED COBBLE.

SHEET KEYNOTES

1. REMOVE, SALVAGE, AND PROVIDE OWNER WITH EXISTING 8 FT X 8 FT X 4FT ABANDONED CAST IRON INTAKE SCREEN. CUT EXISTING BOLTS AS REQUIRED FOR REMOVAL. AFTER REMOVAL THE EXISTING INTAKE SHALL BE PLUGGED WITH ROUNDED COBBLE.

LEGEND

100' WORK AREA LIMITS



PLAN VIEW

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DESIGNED	DF
DRAWN	TH
CHECKED	BK
DATE	04/2022

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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 CIVIL
 INTAKE PLAN

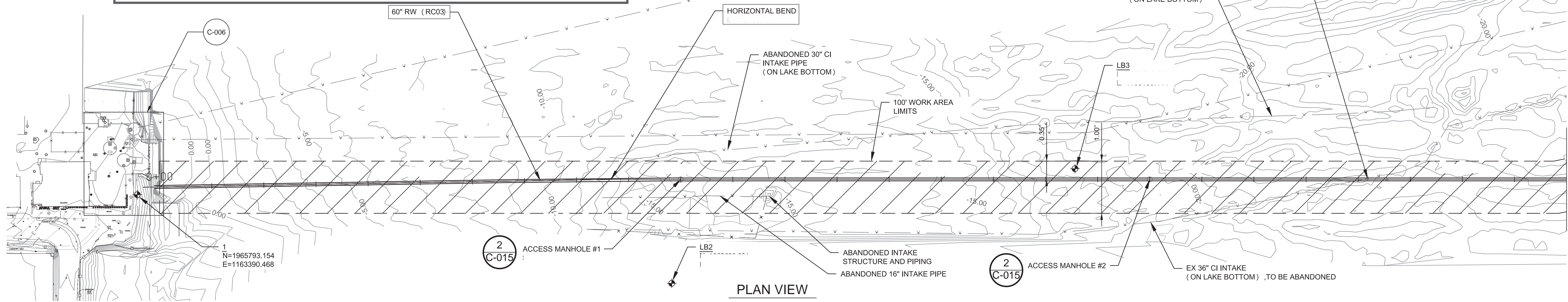
VERIFY SCALES
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 SHEET NO. 20 OF 63



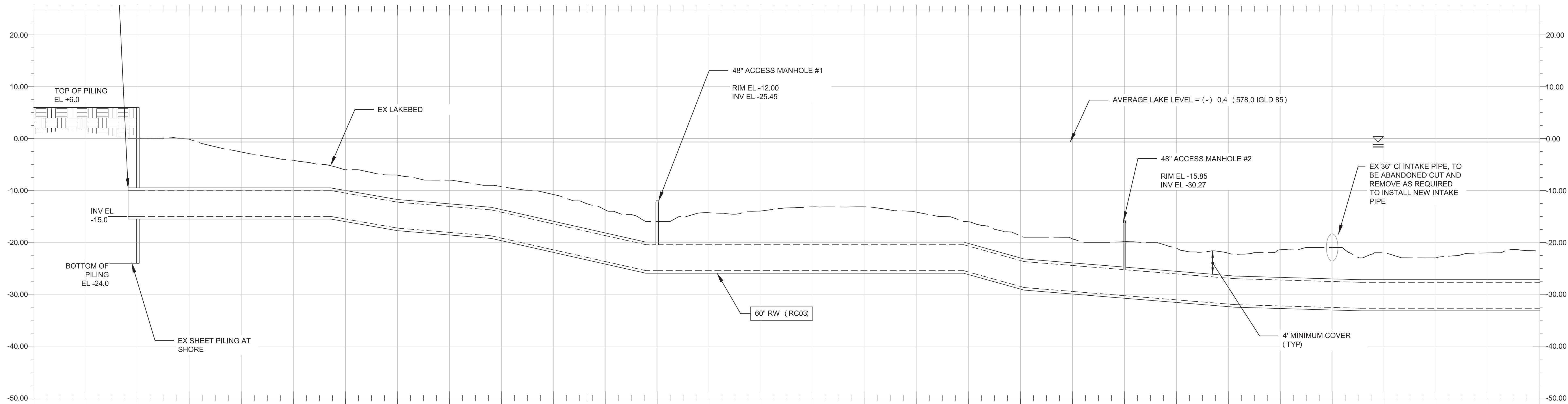
INTAKE STATIONING AND COORDINATES REDACTED FROM DRAWING. INFORMATION WILL BE PROVIDED TO ATTENDEES OF THE MANDATORY PRE-BID MEETING WHO SUBMIT THE NON-DISCLOSURE AGREEMENT.

GENERAL SHEET NOTES
 1. FOR BORING LOGS REFER TO SHEETS G-006 AND G-007. ALSO REFER TO SPECIFICATIONS APPENDICES A AND B FOR ALL GEOTECHNICAL TEST DATA.
 2. ELEVATIONS ON PROFILE INDICATE LAKE BOTTOM.

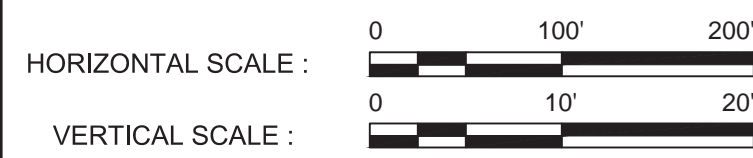


PLAN VIEW

SEE SHEET C-006 FOR CONTINUATION OF PIPE



PROFILE VIEW

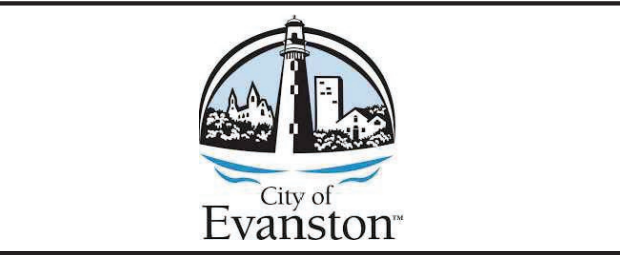


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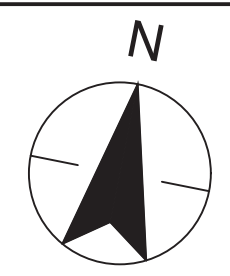


CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 CIVIL
 INTAKE PIPE PLAN & PROFILE - I

VERIFY SCALES
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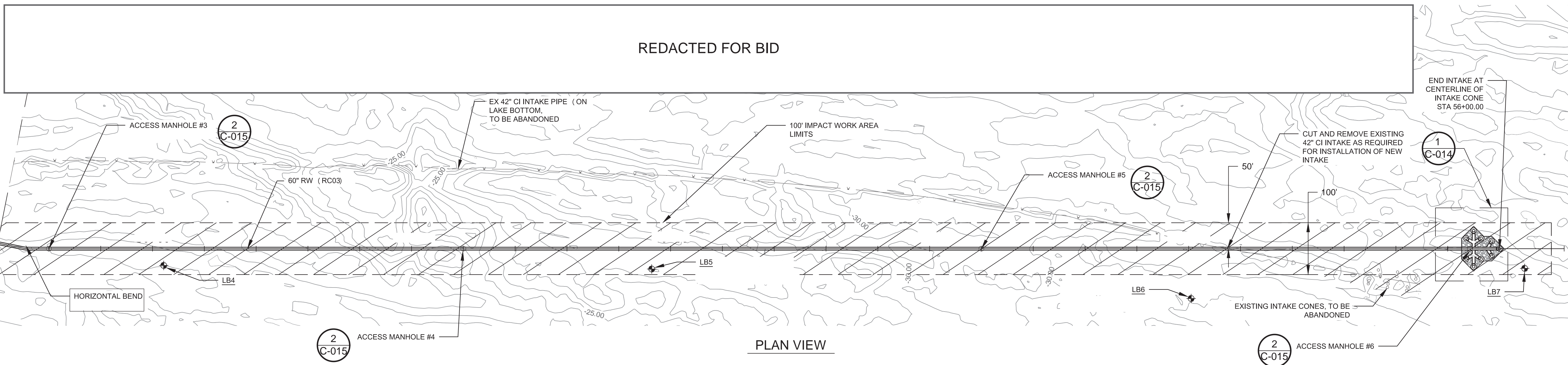
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 SHEET NO. 21 OF 63

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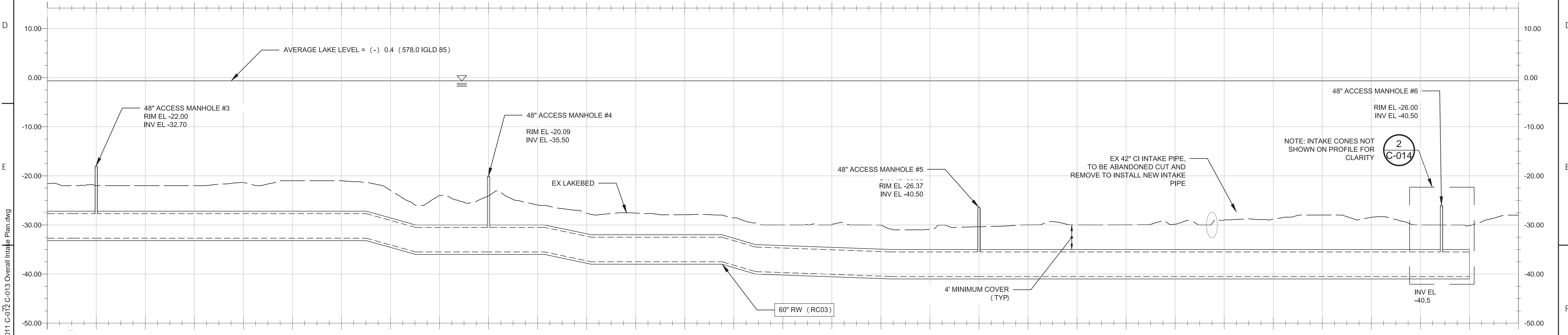


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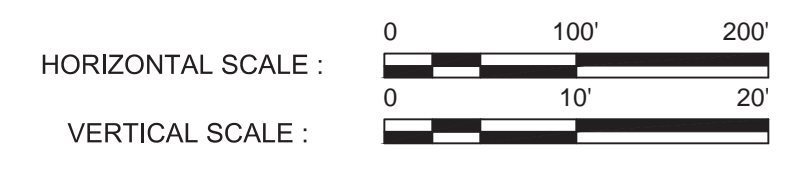
GENERAL SHEET NOTES
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 2. ELEVATIONS ON PROFILE INDICATE LAKE BOTTOM.



PLAN VIEW



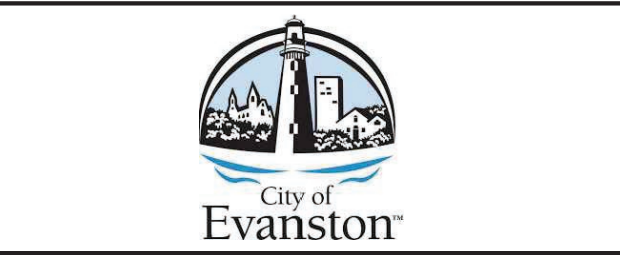
PROFILE VIEW



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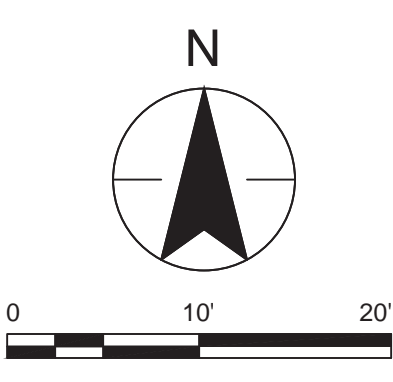


CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 CIVIL
 INTAKE PIPE PLAN AND PROFILE - II

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JOB NO.
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 DRAWING NO.
C-013
 SHEET NO.
22 OF 63

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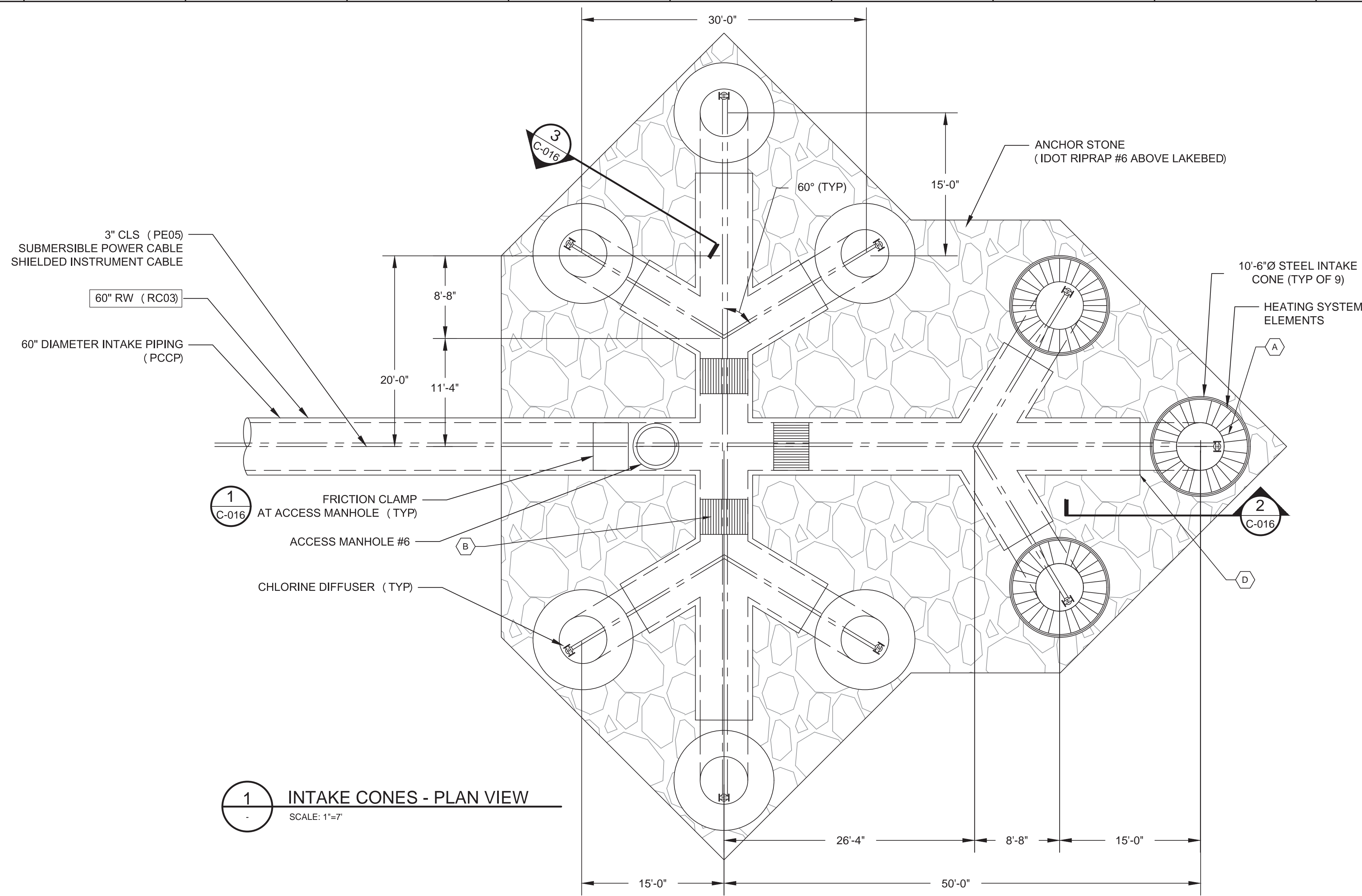


GENERAL SHEET NOTES

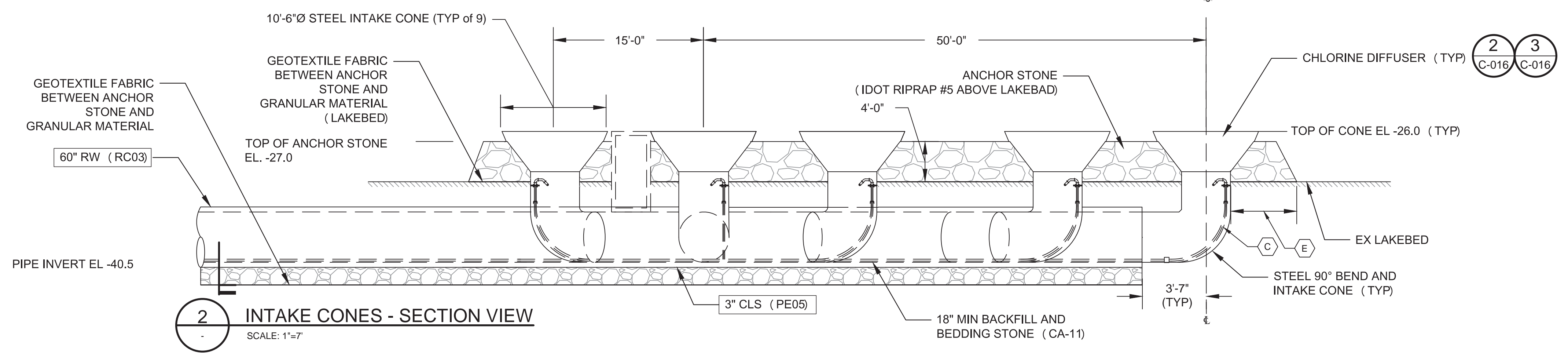
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2. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE INTAKE PIPING WITH THE HEATING SYSTEM MANUFACTURER TO ENSURE THAT ALL DIMENSIONS, FITTINGS, BASKETS, OR SPECIALTY FABRICATIONS ARE COMPATIBLE FOR INSTALLATION. THE CONTRACTOR SHALL PROVIDE COMPLETE SUBMITTAL DATA FOR ALL PIPING SYSTEMS AND HEATING SYSTEM ELEMENTS TO DEMONSTRATE COMPATIBILITY FOR INSTALLATION PRIOR TO PROCEEDING WITH THE WORK.
3. TRENCH BACKFILL AND BEDDING FOR INTAKE STRUCTURE PIPE BRANCHES SHALL BE PER THE REQUIREMENTS FOR MARINE PIPE TRENCH, PLACE GRANULAR MATERIAL, ANCHOR STONE, AND GEOTEXTILE FABRIC AS INDICATED IN DETAIL(S). ADDITIONAL ANCHOR STONE TO BE PLACED AROUND STRUCTURE (ABOVE LAKEBED) AS SHOWN ON THIS SHEET.

SHEET KEYNOTES

- A. INSTALL INTAKE HEATING CONE INSERTS ON EASTERN CONE ARRAY, 3 TOTAL.
- B. INSTALL HEATING COLLARS AT EACH BRANCH, 3 TOTAL. POSITIONS TO BE VERIFIED BY HEATING SYSTEM MANUFACTURER.
- C. BENDS FOR CHLORINE FEED LINES AND HEATING SYSTEM CABLE SHALL BE PER MANUFACTURER TOLERANCES. PROVIDE FITTINGS AS NECESSARY TO MEET BENDING REQUIREMENTS.
- D. TRANSITION FROM PCCP TO STEEL PIPE AT CONE FITTINGS. CONES AND VERTICAL BENDS SHALL BE FABRICATED STEEL, TYPICAL OF 9. SUBMIT DETAIL OF FITTINGS AND TRANSITIONS BETWEEN PCCP AND STEEL PIPE MATERIALS.
- E. ANCHOR STONE TO EXTEND A MINIMUM OF 6 FEET BEYOND BOTTOM OF CONE (TYP.)



1 INTAKE CONES - PLAN VIEW
SCALE: 1"=7'

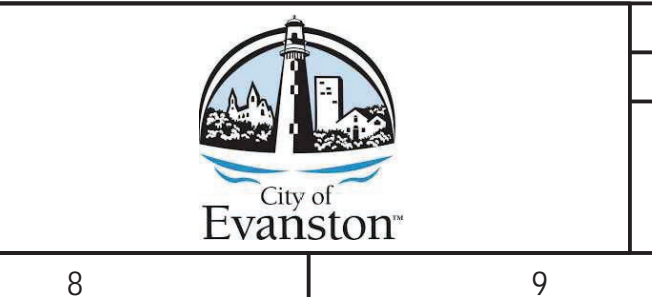


2 INTAKE CONES - SECTION VIEW
SCALE: 1"=7'

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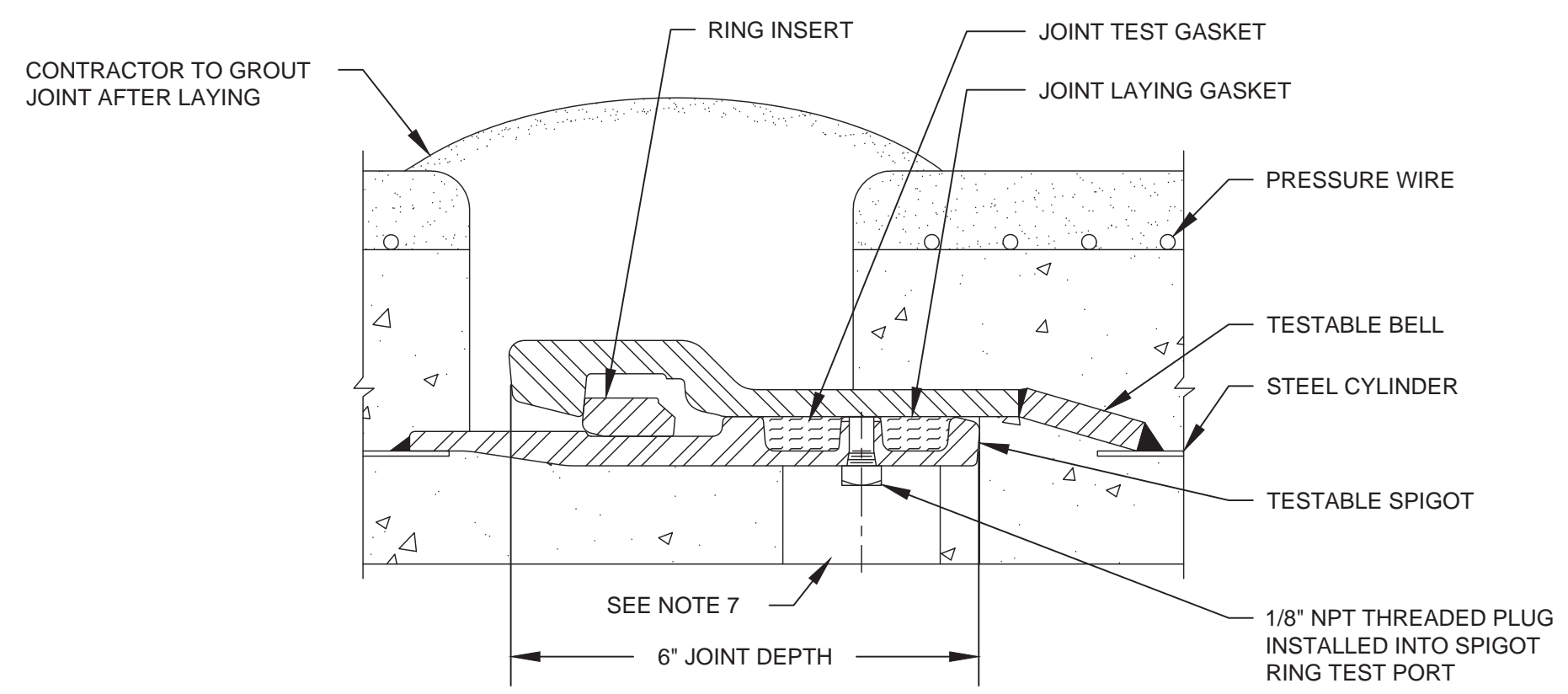


CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
CIVIL
INTAKE STRUCTURE PLAN AND SECTION

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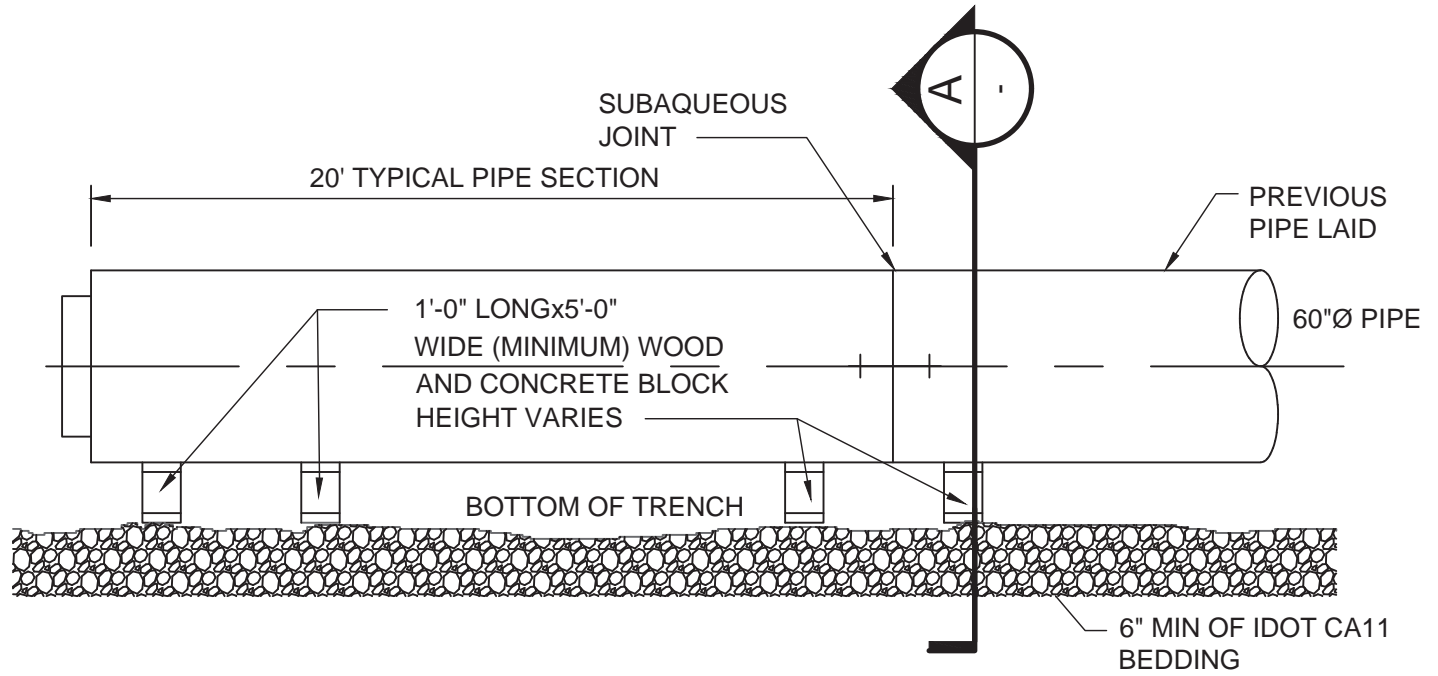
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SHEET NO. 23 OF 63

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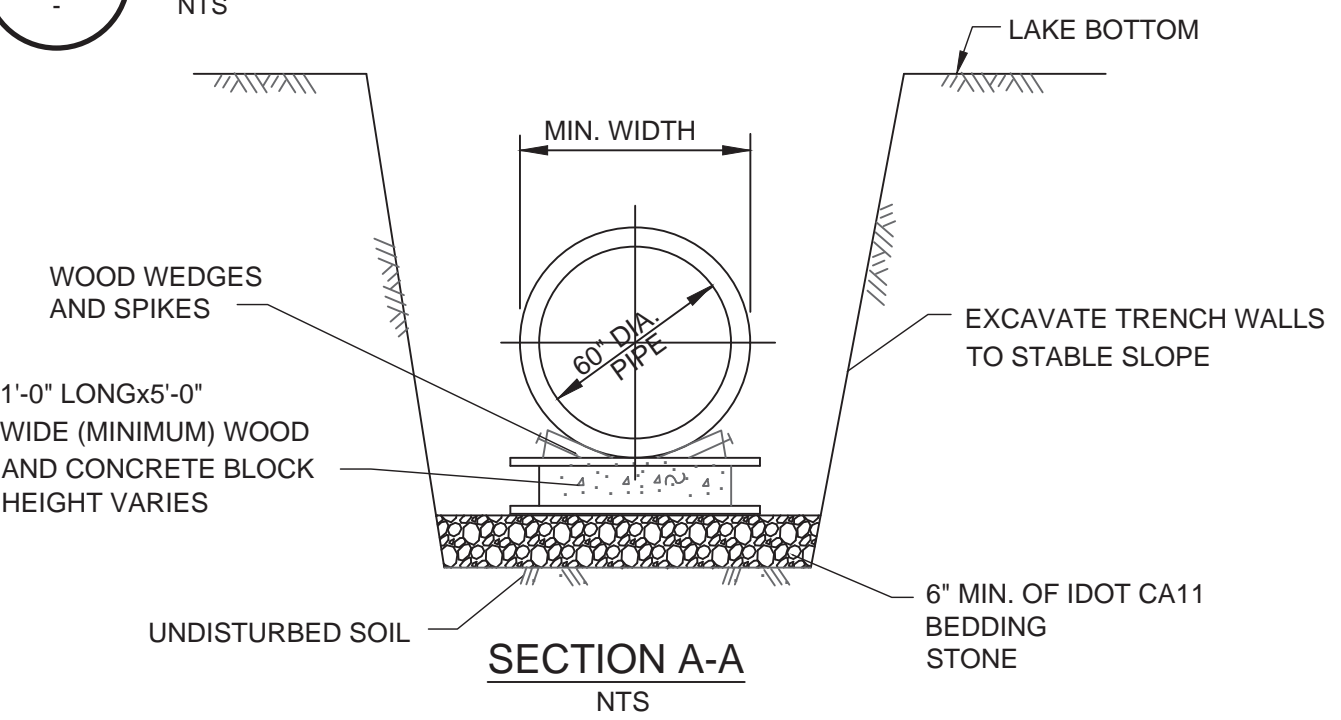
- NOTES:**
1. JOINTS SHALL BE ASSEMBLED PER THE SPECIFICATIONS AND MANUFACTURER REQUIREMENTS.
 2. INSTALL TEST ASSEMBLY INTO SPIGOT RING TEST HOLE. EXERCISE CARE TO AVOID CROSS THREADING.
 3. PRESSURE THE TEST ASSEMBLY TO 50 P.S.I. AND HOLD FOR 3 MINUTES. LOSS IN PRESSURE SHOULD NOT EXCEED 5 P.S.I. FOR A SUCCESSFUL TEST.
 4. AFTER TEST, RELEASE PRESSURE AND REMOVE TEST ASSEMBLY. REPLACE 1/8" NPT PLUG.
 5. TEST HOLE TO BE FILLED WITH PORTLAND CEMENT MORTAR AFTER TESTING AND INSTALLATION OF PLUG.
 6. TEST AS SOON AFTER ASSEMBLY AS POSSIBLE.
 7. PLACE GROUT BAND AROUND THE JOINTS AND POUR FULL WITH A WET GROUT.
 8. GROUT JOINT BEFORE LINE IS PRESSURIZED.

1 SUBAQUEOUS PCCP JOINT, RESTRAINED
NTS

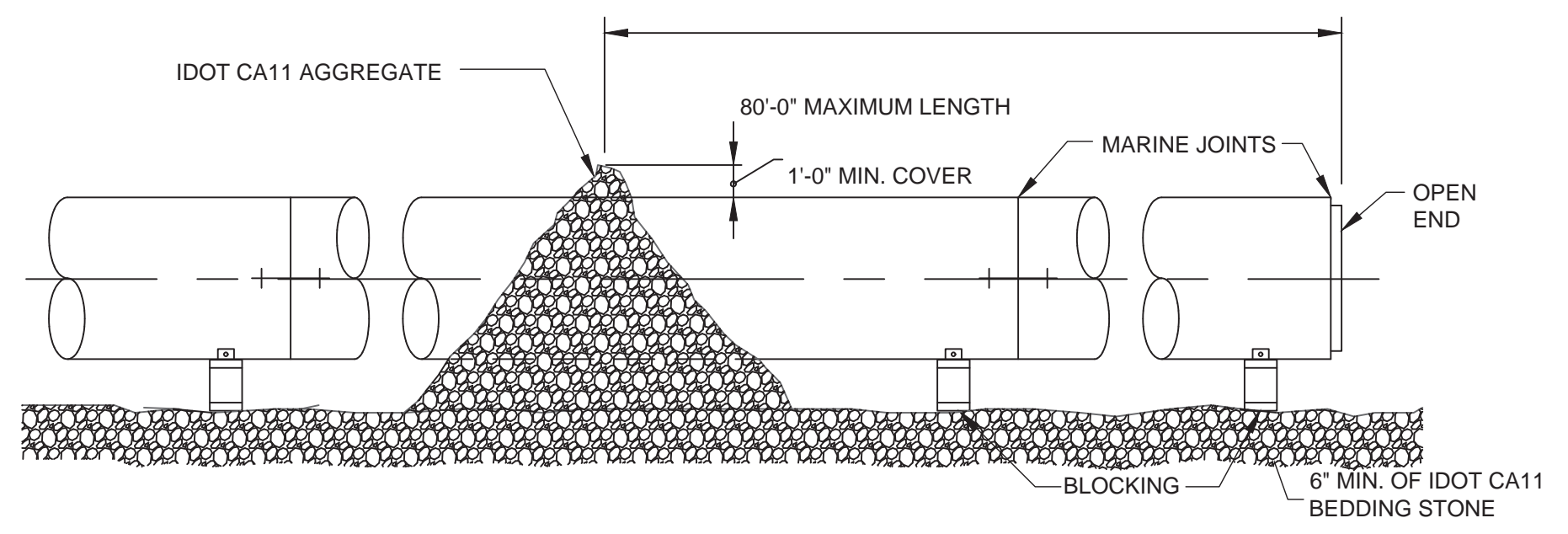


- NOTES:**
1. BLOCK SPACING SHALL BE TAKEN INTO CONSIDERATION BY MANUFACTURER FOR DESIGN OF PIPE.

4 INSTALLATION PIPE BLOCKING DETAIL
NTS

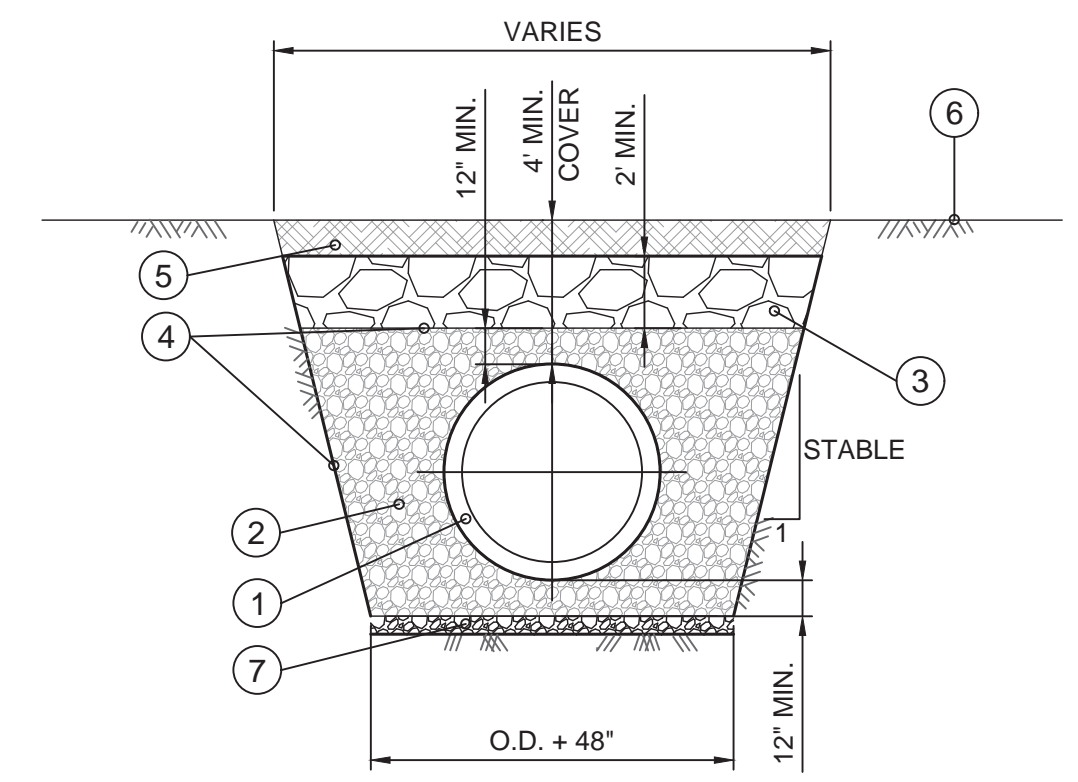


A SECTION A-A
NTS



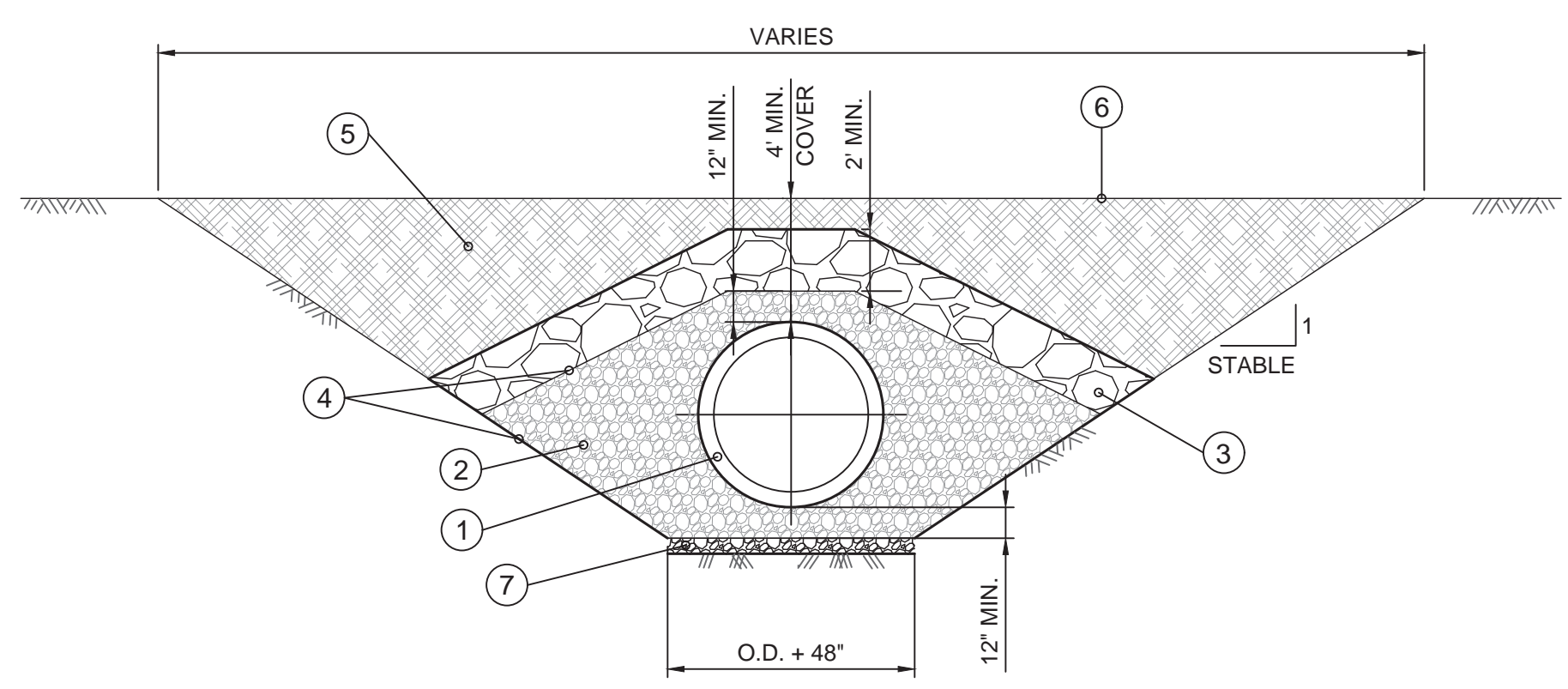
- NOTES FOR PIPE BLOCKING:**
1. AS THE NEXT PIPE IS BEING INSTALLED AND AFTER BEING BLOCKED TO GRADE, THE PIPE JOINT AND ELEVATION OF THE PREVIOUS PIPE LAID SHOULD BE CHECKED FOR ANY MOVEMENT OR SETTLEMENT. IF SETTLEMENT IS NOTED, MEASURE SUCH, AS ADDITIONAL BLOCKING SHOULD BE TAKEN TO CORRECT.
 2. WOOD WEDGES TO BE CUT FROM 8"x8" TIMBER A MINIMUM OF 14" LONG.
 3. MINIMUM LENGTH OF WOOD & CONCRETE BLOCKS TO BE 12". THE TOP AND BOTTOM PLANKS SHALL HAVE A MINIMUM THICKNESS OF 2" AND A MINIMUM WIDTH OF 60".
 4. BLOCKING SHALL BE OF THE HEIGHT REQUIRED TO SUPPORT THE PIPE TO GRADE AND PLACED PERPENDICULAR TO AND UNDER THE PIPE AS SHOWN ABOVE. IF MORE THAN TWO BLOCKS HIGH ARE REQUIRED, BLOCKING SHALL BE RESTRAINED PRIOR TO USE.
 5. SINGLE WOOD PLANKS MAY BE USED ON TOP OF THE BLOCKING TO ADJUST THE PIPE TO GRADE. THESE PLANKS SHALL BE AT LEAST 12"x4". BEFORE THE PIPE SLINGS ARE FULLY SLACKED AND REMOVED, WEDGES SHALL BE PLACED AND SPIKED TO BLOCKING OR PLANKS.
 6. PRIOR TO MASS TRENCH EXCAVATION UNDERWATER, AT THE LAKEBED, THE CONTRACTOR IS REQUIRED TO PERFORM A TRIAL TRENCH TEST SECTION FOR A LENGTH OF 50 FEET TO OPTIMIZE THE TRENCH SLOPE STABILITY AND SLOPE IN THE SAND AND CLAY LAYERS.
 7. DURING TRENCH EXCAVATION IN THE LAKE BOTTOM, DO NOT PLACE EXCAVATED MATERIAL OR ANY OTHER SURCHARGE IN THE VICINITY OF THE TRENCH BANK. IF NEEDED, THE MATERIAL SHALL BE PLACED AT A DISTANCE OF MORE THAN ONE TRENCH DEPTH FROM THE TRENCH SLOPE BREAK (BEYOND THE SLOPE OF 1H:1V ZONE).

5 INTERMITTENT BACKFILL REQUIREMENTS STONE
NTS



- 1 60"Ø PCCP INTAKE PIPE (AWWA C301)
- 2 GRANULAR BACKFILL (IDOT CA 11)
- 3 ANCHOR STONE (IDOT RIPRAP #3, DESIGNATION A)
- 4 GEOTEXTILE FABRIC AROUND GRANULAR MATERIAL
- 5 NATIVE BACKFILL MATERIAL
- 6 LAKEBED
- 7 BEDDING STONE AS NEED FOR LEVELING, 6" MIN. (IDOT CA 11)

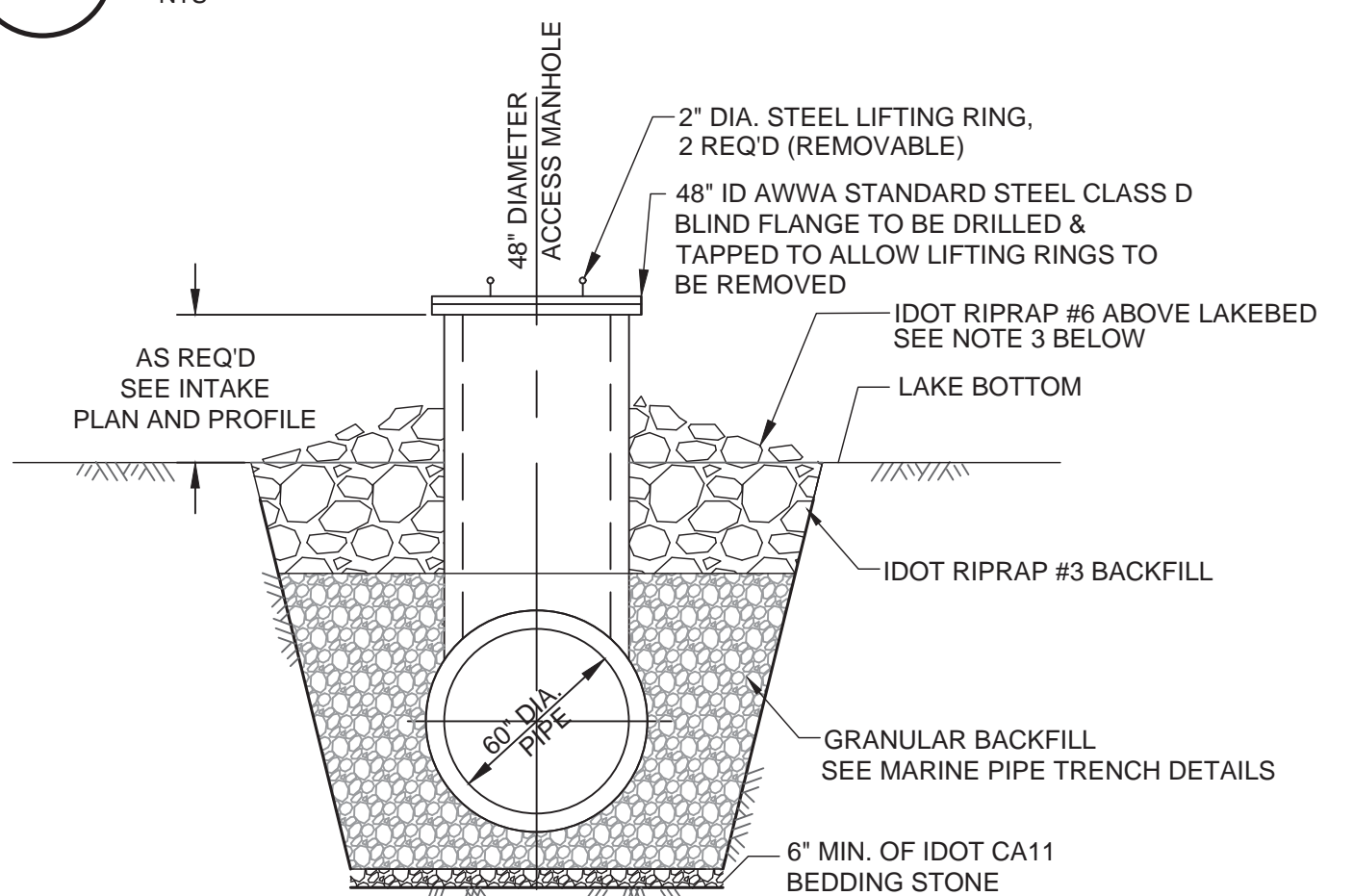
6 MARINE PIPE TRENCH
SCALE: 3/16" = 1'-0"



- 1 60"Ø PCCP INTAKE PIPE (AWWA C301)
- 2 GRANULAR BACKFILL (IDOT CA 11)
- 3 ANCHOR STONE (IDOT RIPRAP #3, DESIGNATION A)
- 4 GEOTEXTILE FABRIC AROUND GRANULAR MATERIAL
- 5 NATIVE BACKFILL MATERIAL
- 6 LAKEBED
- 7 BEDDING STONE AS NEED FOR LEVELING, 6" MIN. (IDOT CA 11)

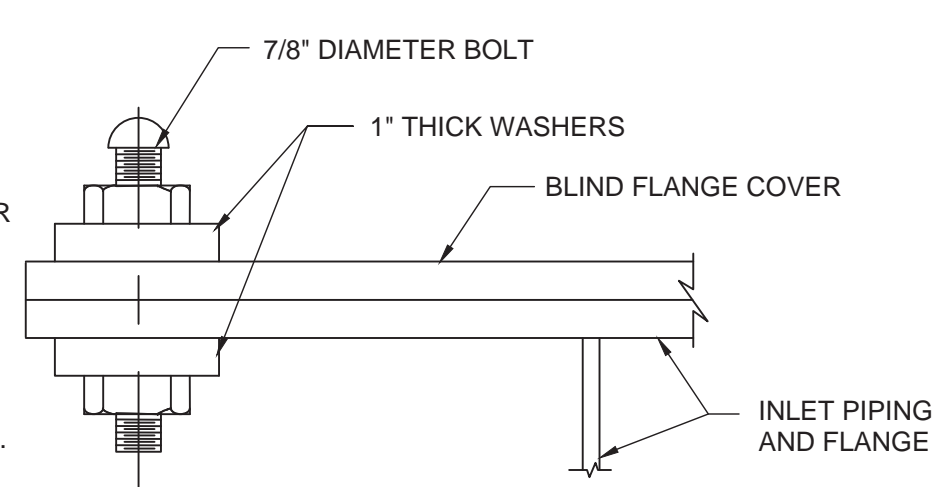
NOTE:
TRENCH REQUIREMENT ANTICIPATED IN NEAR-SHORE AREAS WHERE THE NEED FOR EXTENDED SLOPE ANGLES MAY BE REQUIRED DUE TO SOIL CONDITIONS OR OVEREXCAVATION REQUIREMENTS IN SHALLOWER WATERS (< 10' DEPTHS).

7 MARINE PIPE TRENCH, NEAR-SHORE AREAS
SCALE: 3/16" = 1'-0"



- NOTES FOR PIPE BLOCKING:**
1. INSERT BOLT IN EVERY THIRD OPENING. BOLTS TO HAVE 1" THICK SPACER WASHER(S) ON BOTH ENDS TO FACILITATE FUTURE REMOVAL SEE BLIND FLANGE BOLTING DETAIL THIS DRAWING.
 2. SEE MARINE PIPE TRENCH DETAIL FOR BACKFILL REQUIREMENTS.
 3. PLACE ANCHOR STONE (IDOT RIPRAP #5) TO 1 FOOT BELOW RIM. SLOPE TO LAKE BOTTOM.

2 INTAKE PIPE ACCESS MANHOLE
NTS



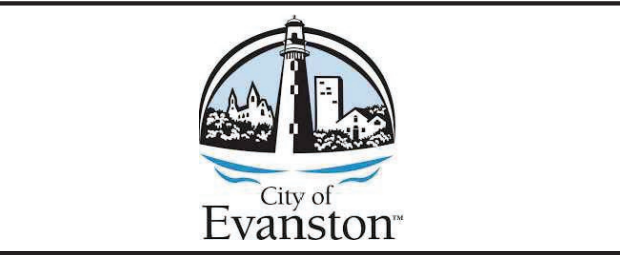
- NOTES:**
1. WASHERS TO PROTECT FLANGE & COVER IN THE EVENT THE BOLT NEEDS TO BE BURNED OFF.
 2. PROVIDE SAE 316 STAINLESS STEEL HARDWARE (MARINE GRADE).
 3. BOLT AND NUTS SHALL BE PTFE COATED.

3 BLIND FLANGE BOLTING DETAIL
NTS

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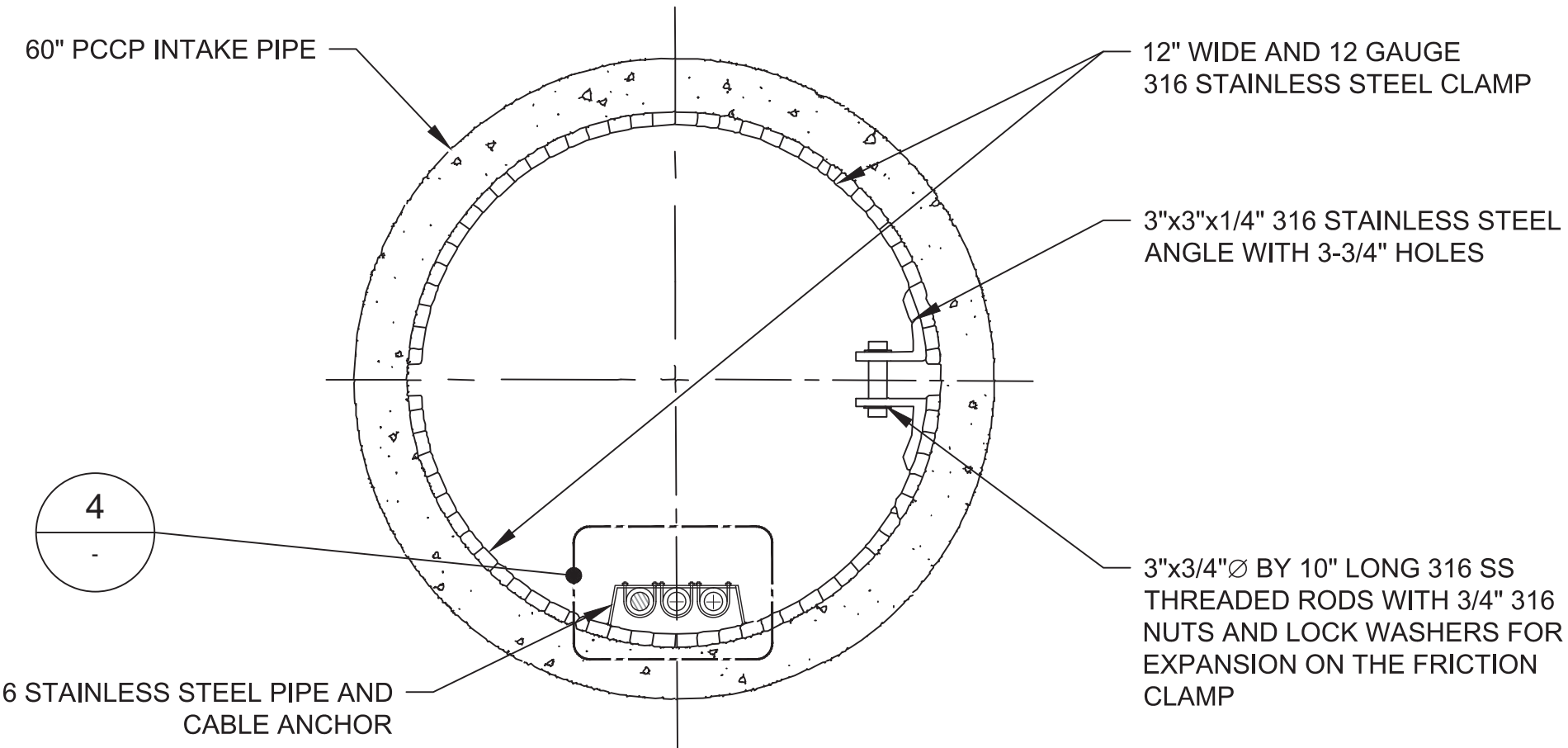
CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
CIVIL
INTAKE DETAILS - I

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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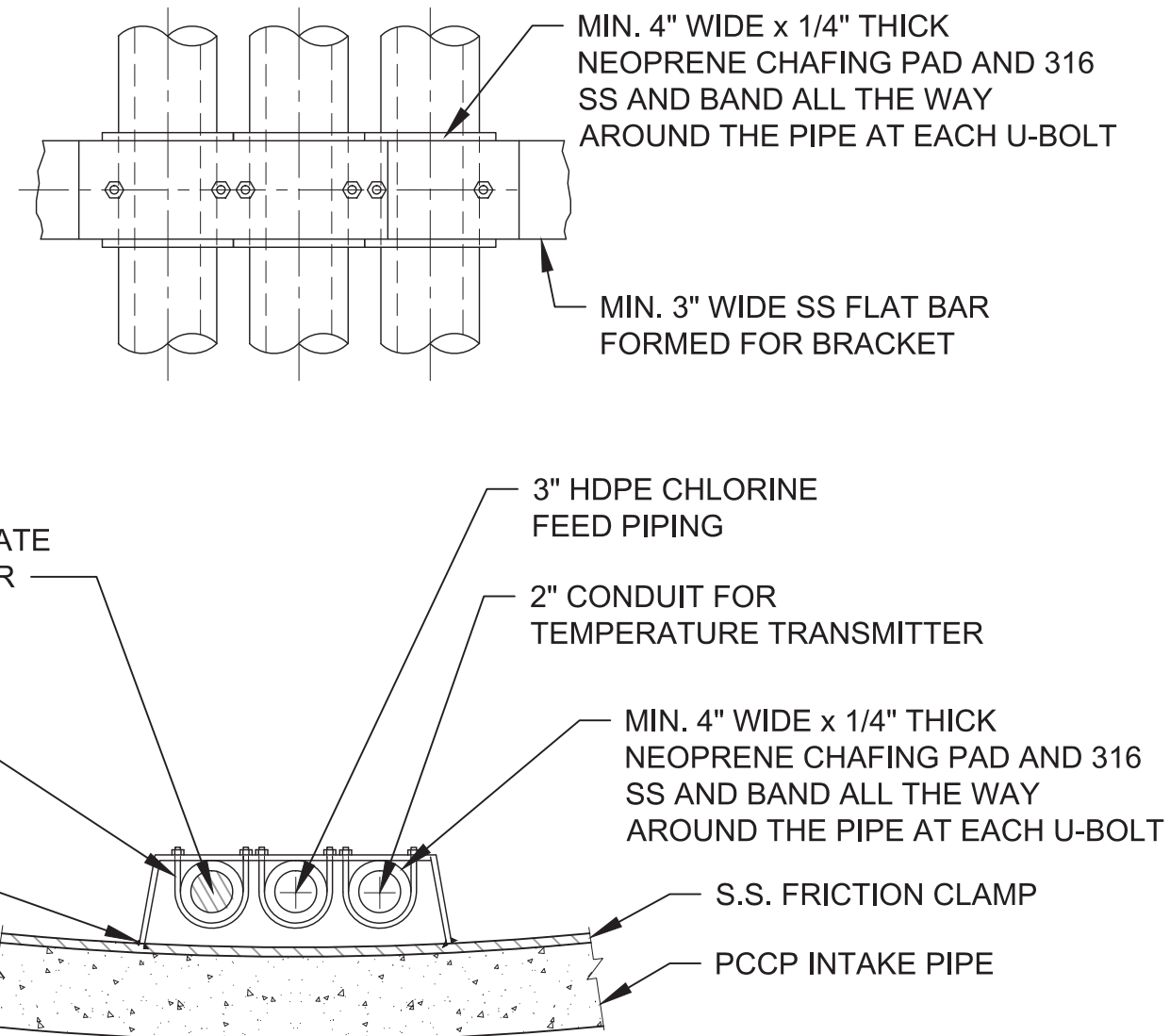
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DRAWING NO.	C-015
SHEET NO.	24 OF 63

NOTES:

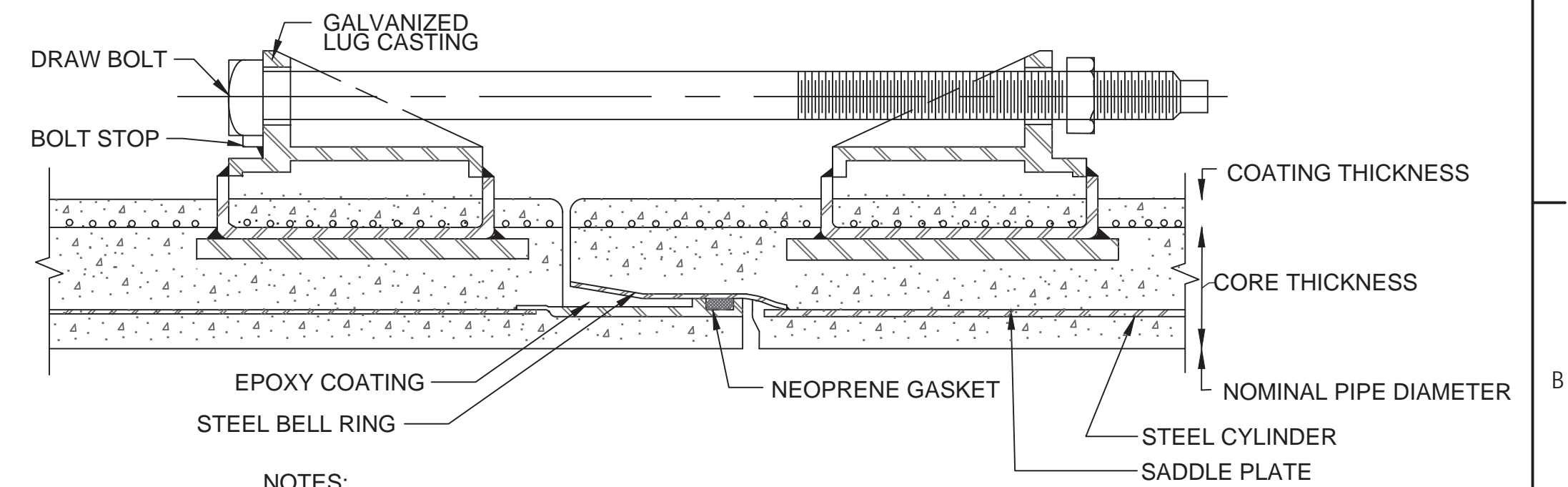
1. FRICTION CLAMPS SHALL BE INSTALLED AT EACH ACCESS MANHOLE LOCATION.
2. 3"Ø HDPE PIPE AND SUBMERSIBLE CABLES SHALL BE PROTECTED WITH 1/4" VITON OR PTFE LINER TO IMPROVE FRICTION AGAINST THE STAINLESS STEEL CLAMP.
3. ALL CABLES SHALL BE SECURED TOGETHER EVERY 25 FEET WITH 316 S.S. CABLE (300 LB MINIMUM TENSILE STRENGTH).



1 FRICTION CLAMP DETAIL
NTS

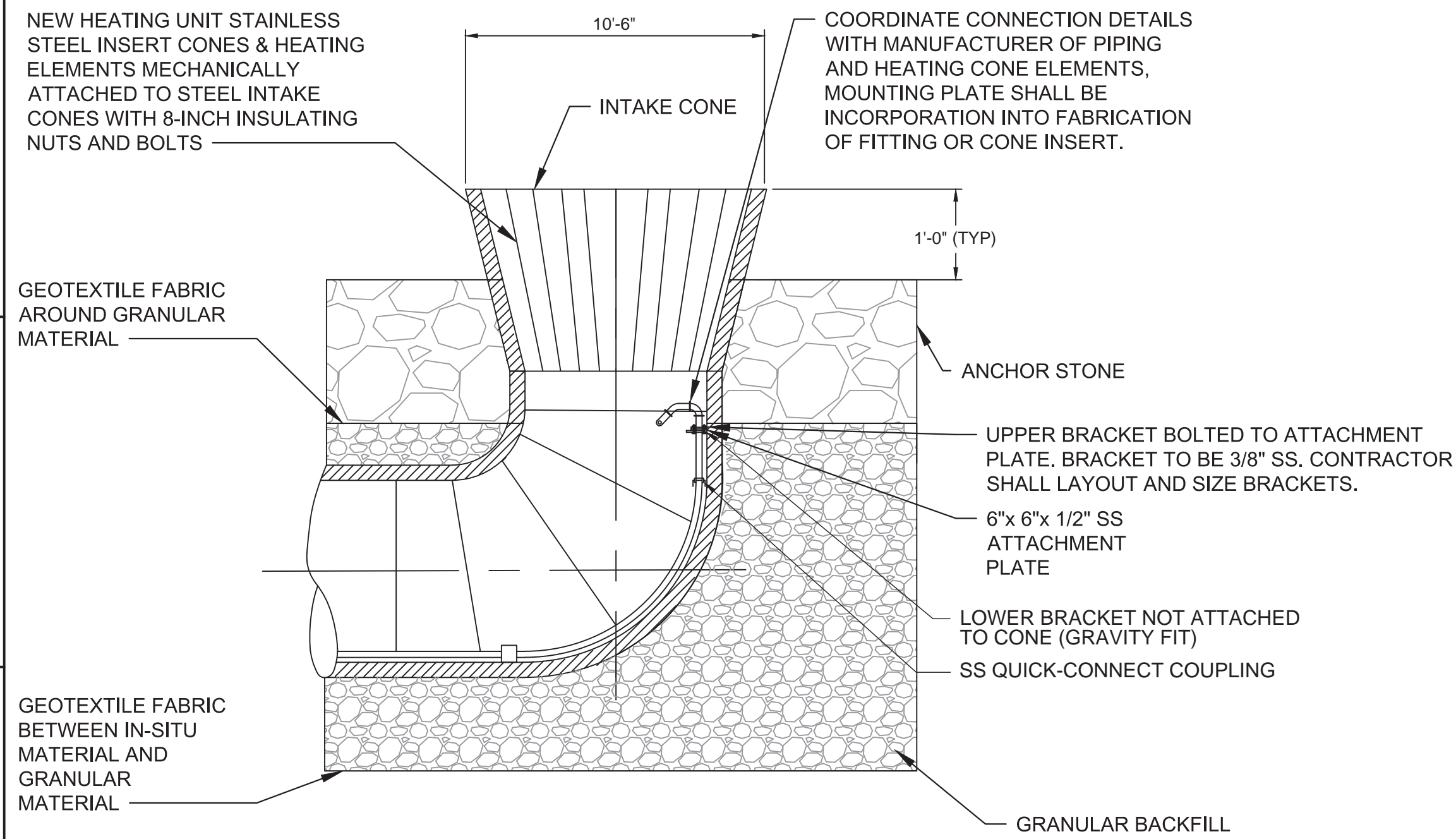


4 FRICTION CLAMP BRACKET DETAIL
NTS

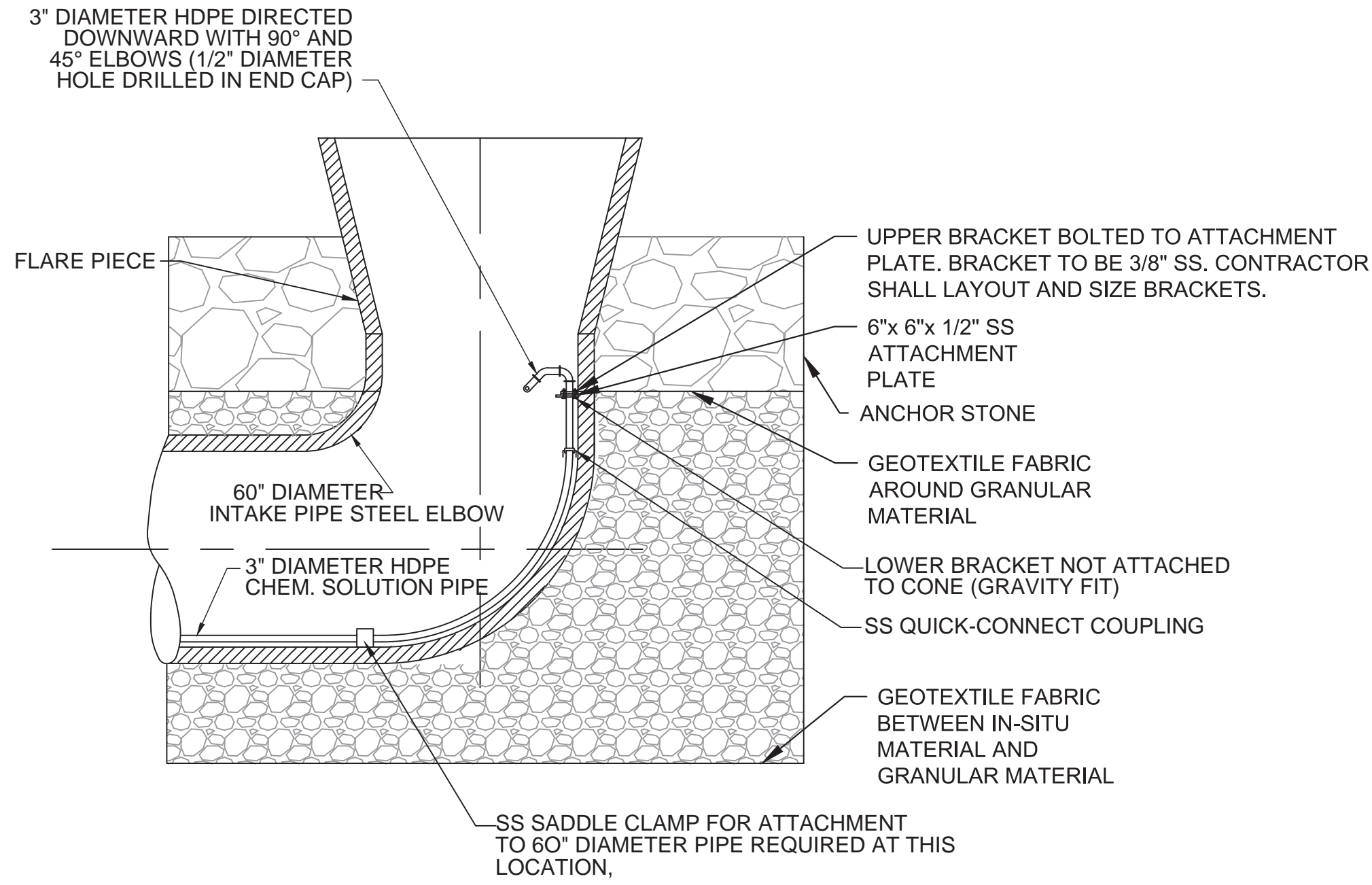


- NOTES:
1. TO BE USED ONLY WHEN APPROVED BY THE ENGINEER AT JOINTS WHERE VACUUM JOINT CONNECTION CAN NOT BE UTILIZED.
 2. NOT FOR RESTRAINED HARNESS CONNECTIONS
 3. JOINTS SHALL BE TESTABLE RESTRAINED TYPE PER DETAIL 1.

7 PCCP MARINE HARNESSED JOINT (SUBAQUEOUS JOINT)
NTS



2 CHLORINE FEED AT HEATING ELEMENT
NTS



3 CHLORINE FEED DETAIL
NTS

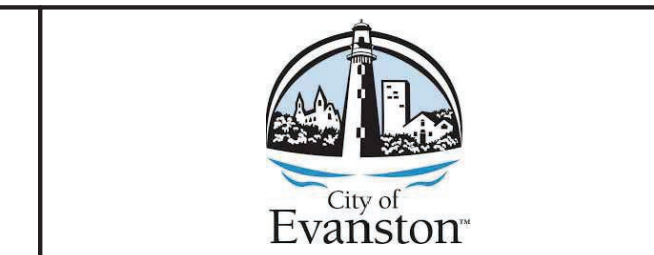
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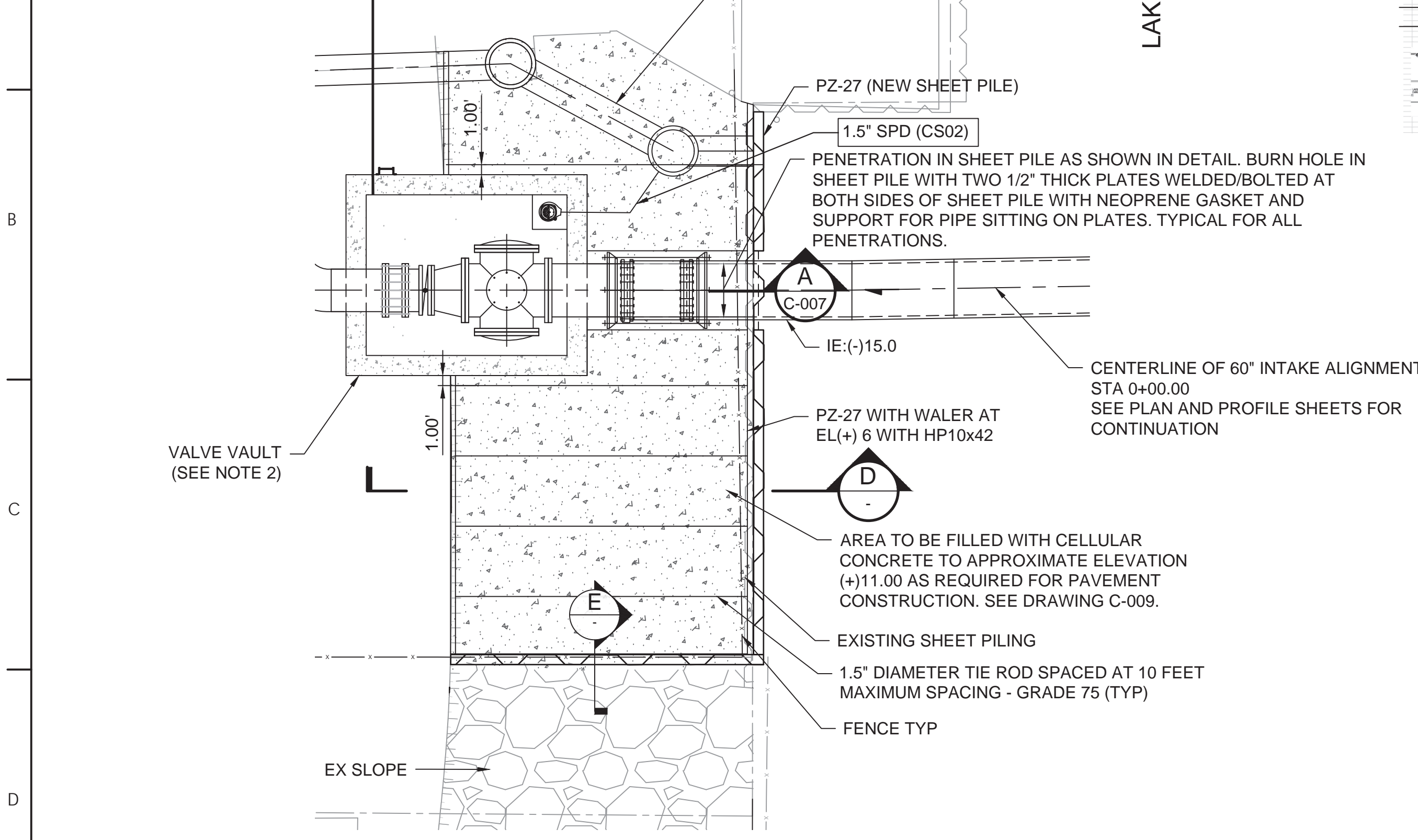
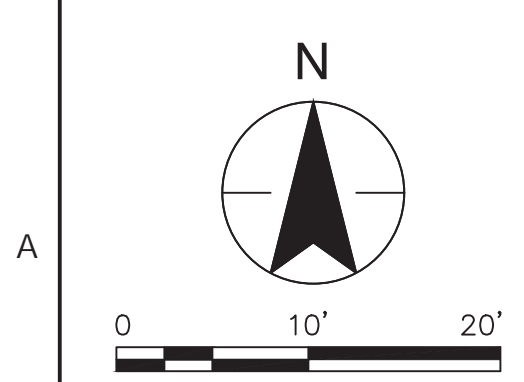
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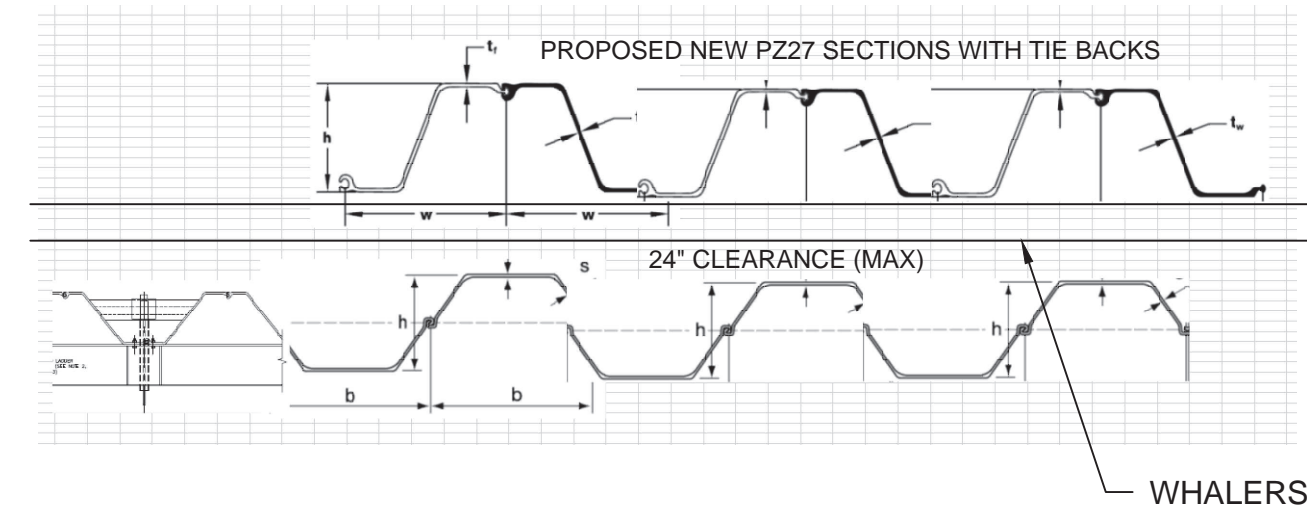
CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
CIVIL
INTAKE DETAILS - II

VERIFY SCALES
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0 1"
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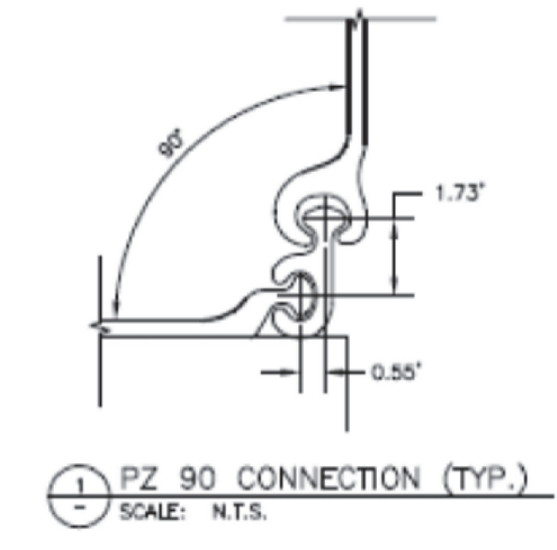
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DRAWING NO. C-016
SHEET NO. 25 OF 63



SHEET PILING PLAN
SCALE: 1"=10'



F SHEET PILING DETAIL
NTS

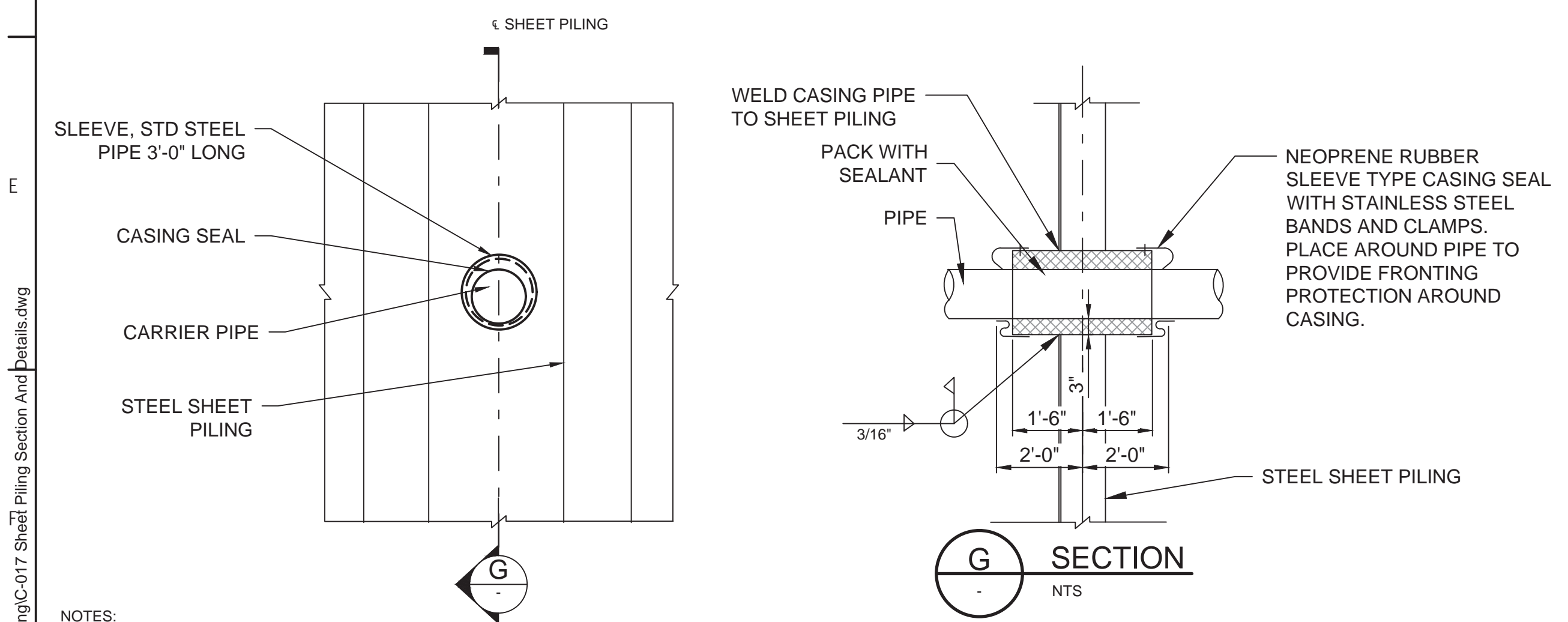


GENERAL SHEET NOTES

- 36" OVERFLOW DRAIN TO BE REROUTED TO ACCOMMODATE SHEET PILING IMPROVEMENTS. PROVIDE OPENING IN NEW SHEET PILING AT OVERFLOW DISCHARGE POINT.
- SEE MECHANICAL DRAWINGS FOR INFORMATION PERTAINING TO PIPING, VALVES, AND EQUIPMENT WITHIN VALVE VAULT.

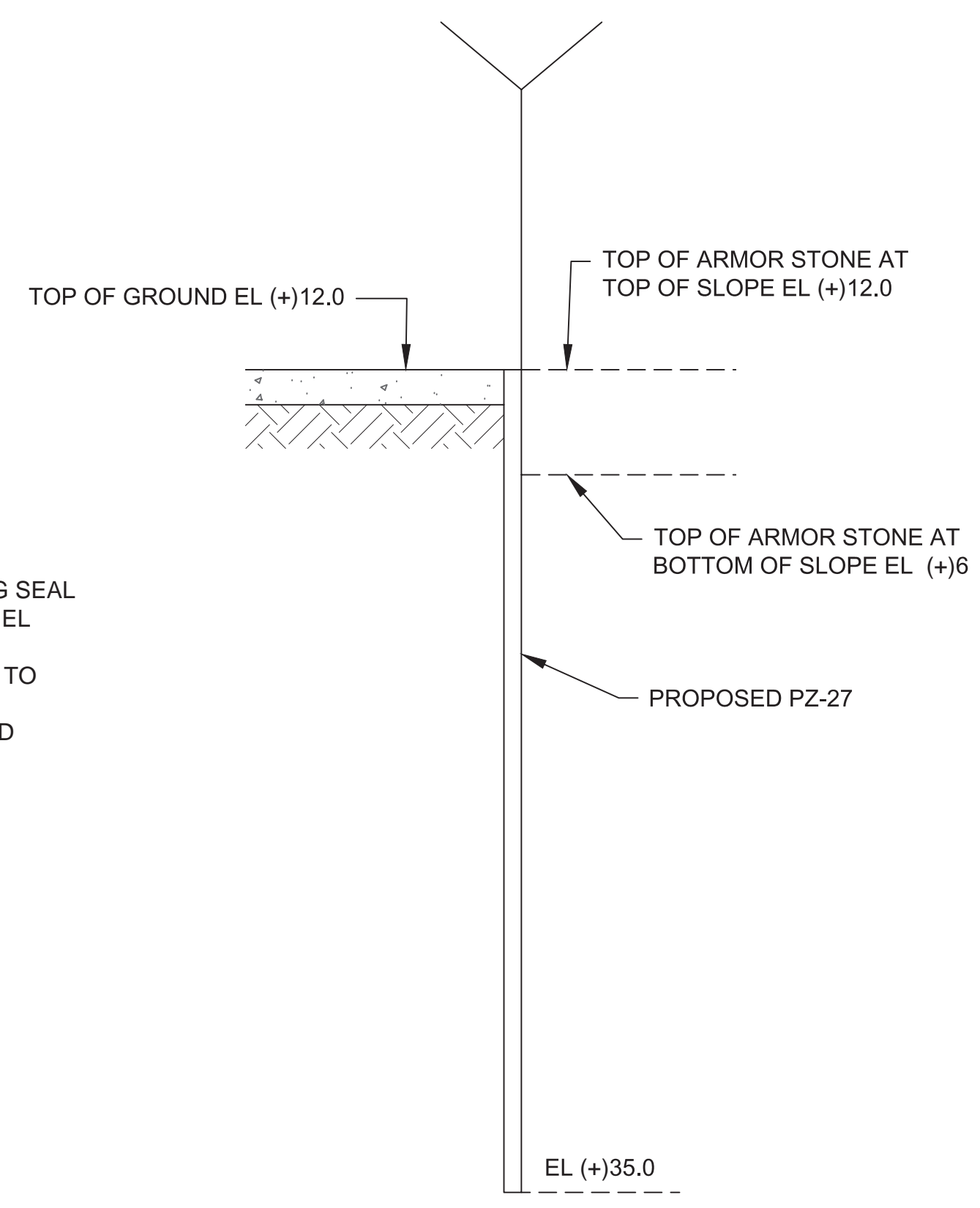
NOTES FOR NEW SHEETPILE

- MINIMUM REQUIREMENTS:
- INSTALL THE SHEET PILE PZ-27 AT MINIMUM DISTANCE OF 1 FT FROM THE EXISTING SHEET PILE. THE SHEET PILE SHALL BE BETWEEN EL (+)12 TO EL (-)24.
 - ADD A WALER AT EL (+)6 BOLTED TO PZ-27. EACH PAN WITH TWO BOLTS OF 1-1/4" DIA, A-325.
 - ADD TIE BACKS OF 1-1/2" DIAMETER, GRADE 75 TO THE WALER AT 10-FT SPACING
 - MOVE THE ARMOR STONE IN FRONT OF NEW SHEET PILE
 - BACKFILL BEHIND SHEET PILE WITH CELLULAR GROUT WITH STRENGTH OF AT LEAST 2000 PSI AND UNIT WEIGHT OF 70 PCF AND VERY LOW PERMEABILITY $K < 10^{-6}$ cm/sec.
 - SEE SPECIFICATION SECTION 31 62 19, STEEL SHEET PILING, FOR ADDITIONAL REQUIREMENTS PERTAINING TO THE SHEET PILING SYSTEM.

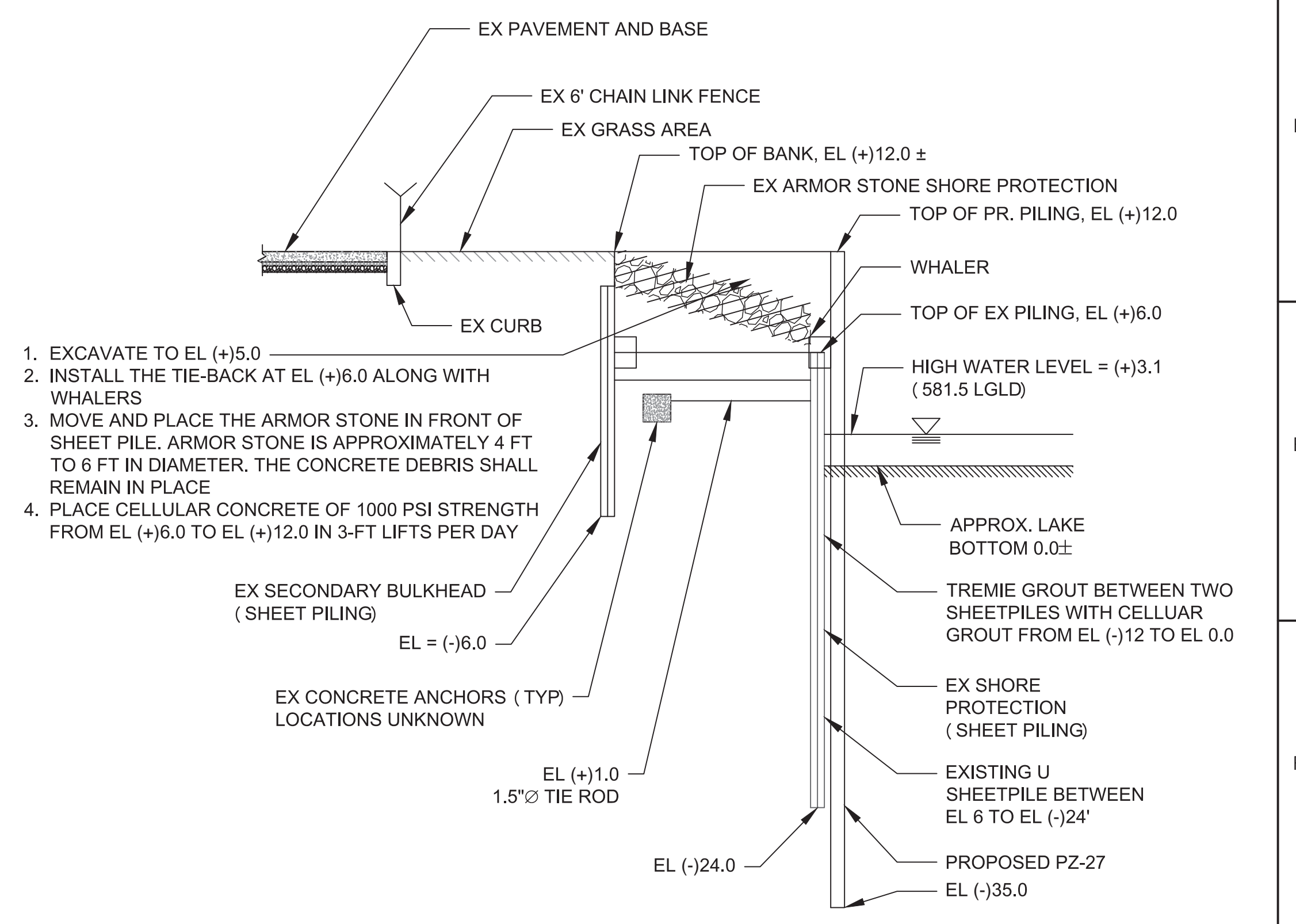


TYPICAL PIPE THRU STEEL SHEET PILING
NTS

- NOTES:
- CONTRACTOR SHALL SUBMIT DETAILS FOR SHEET PILE PENETRATIONS FOR APPROVAL BY THE ENGINEER; INCLUDING PROPOSED WELDS, COVER PLATES, BRACKETS, CASING PIPE, SEALANTS, SLEEVES, NUTS, BOLTS, AND FASTENERS.
 - ALL NUTS, BOLTS, CLAMPS, AND FASTENERS SHALL MARINE GRADE 316 STAINLESS STEEL.
 - CASING PIPE DIAMETER SHALL BE SIZED TO PROVIDE A MINIMUM OF 6 INCHES BETWEEN THE INSIDE OF THE CASING PIPE AND THE LARGEST OUTSIDE DIAMETER OF THE CARRIER PIPE.



E SECTION
NTS



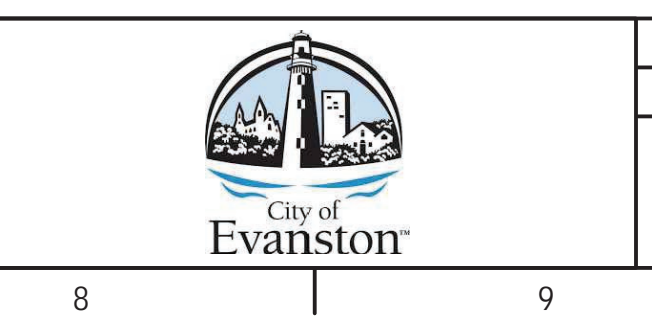
- EXCAVATE TO EL (+)5.0
- INSTALL THE TIE-BACK AT EL (+)6.0 ALONG WITH WHALERS
- MOVE AND PLACE THE ARMOR STONE IN FRONT OF SHEET PILE. ARMOR STONE IS APPROXIMATELY 4 FT TO 6 FT IN DIAMETER. THE CONCRETE DEBRIS SHALL REMAIN IN PLACE
- PLACE CELLULAR CONCRETE OF 1000 PSI STRENGTH FROM EL (+)6.0 TO EL (+)12.0 IN 3-FT LIFTS PER DAY

D TYPICAL SECTION - EXISTING SHORELINE
NTS

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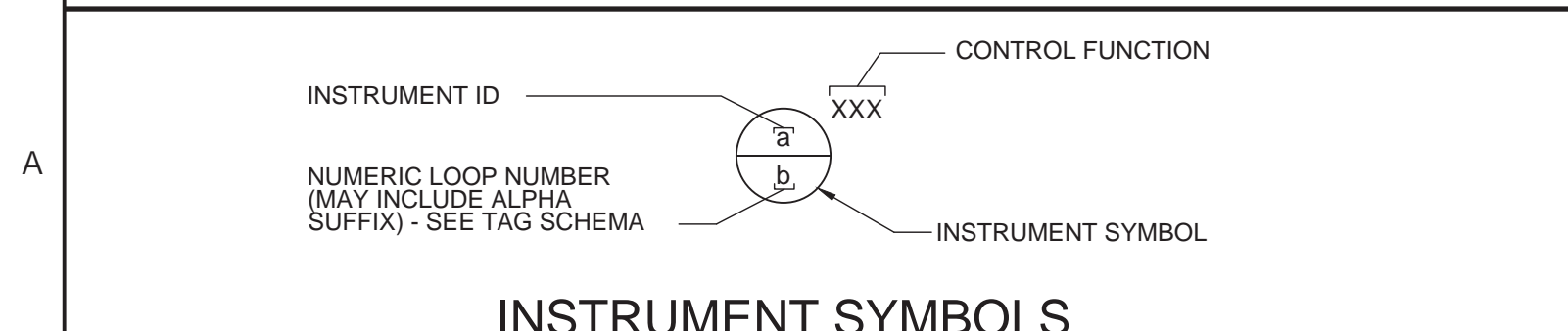


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1909 RAW WATER INTAKE REPLACEMENT
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SHEET PILING SECTION AND DETAILS

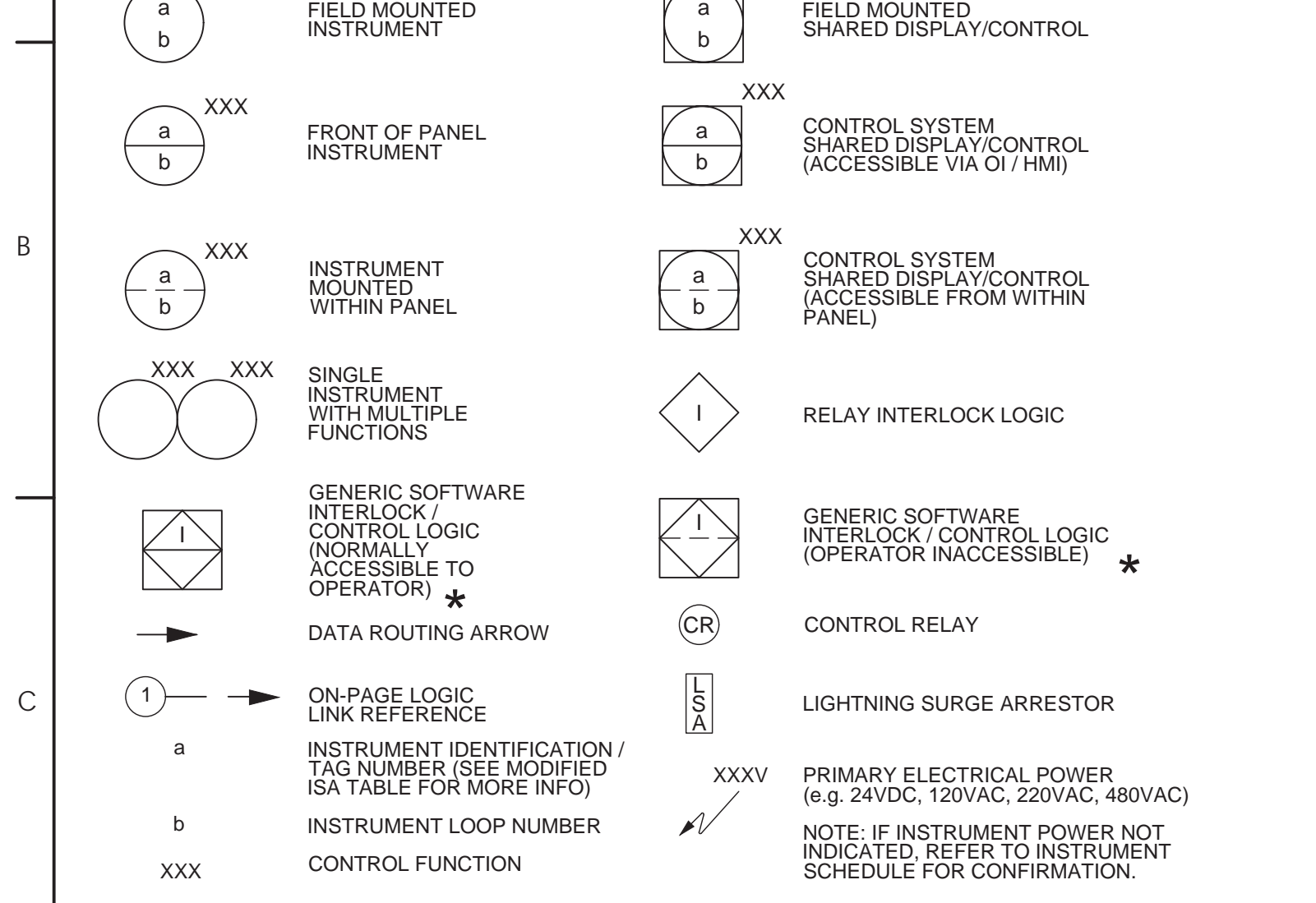
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DRAWING NO.
C-017
SHEET NO.
26 OF 63

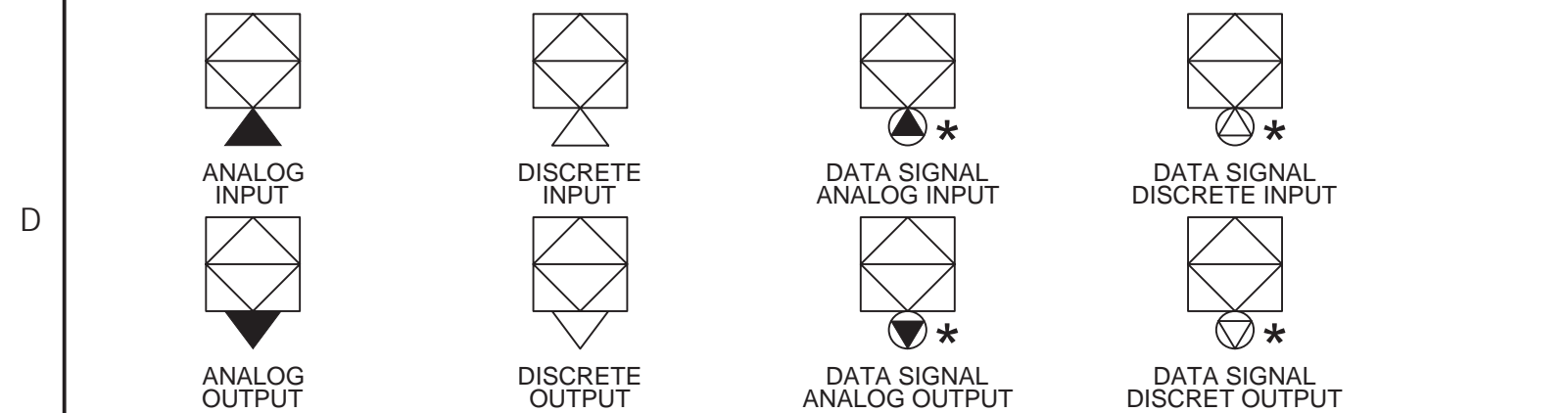
INSTRUMENTATION CALL - OUT



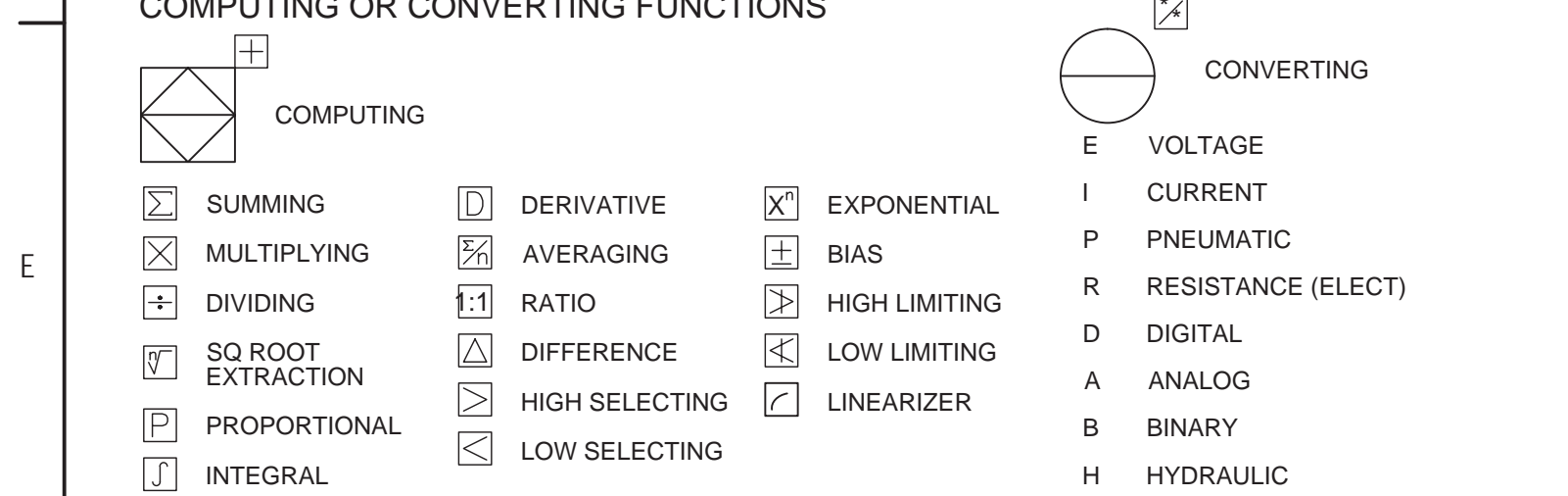
INSTRUMENT SYMBOLS



* REFER TO SPEC SECTION 409300 (PROJECT CONTROL PHILOSOPHY) FOR DETAILS.
PLC / REMOTE I/O POINTS



* FIELD NETWORK INTERFACE. SEE SPECIFICATION FOR MORE INFORMATION
COMPUTING OR CONVERTING FUNCTIONS



CONTROL FUNCTION DESIGNATIONS

AHC	AUTO / HOLD / CLOSE	L/R	LOCAL / REMOTE	RDY	READY
AM	AUTO / MANUAL	LSR	LOCAL / STOP / REMOTE	R/L	RAISE / LOWER
AS	AIR SUPPLY	MOA	MANUAL / OFF / AUTO	RSL	RAISE / STOP / LOWER
BEAR	BEARING	MN	MAINTENANCE / NORMAL	RST	RESET
CLSD	CLOSED	O/C	OPEN / CLOSE	RTD	RESISTANCE TEMPERATURE DETECTOR
CV	CONTROL VARIABLE	OCA	OPEN / CLOSE / AUTO	SD	SHUTDOWN
DEV	DEVIATION	OLA	OVERLOAD	SEL	SELECT
E-STOP	EMERGENCY STOP	OLH	OFF / LOW / HIGH	SP	SET POINT
ETM	ELAPSED TIME METER	O/O	ON / OFF	S/R	START / RESET
FOR	FORWARD / OFF / REVERSE	O/R	OVERRIDE	S/S	START / STOP
HML	HIGH / MID / LOW	OOR	OUT OF RANGE	STR	START
HOA	HAND / OFF / AUTO	OSC	OPEN / STOP / CLOSE	STP	STOP
HOR	HAND / OFF / REMOTE	PID	PROPORTIONAL / INTEGRAL / DERIVATIVE	TMR	TIMER
LEAK	MOISTURE INTRUSION	POT	POTENTIOMETER	WIND	WINDING
LOR	LOCAL / OFF / REMOTE	PV	PROCESS VARIABLE		

NOTE:
1. REFER TO DRAWING GI-2 FOR ANALYTICAL INSTRUMENT DESIGNATIONS.

ISA TABLE (MODIFIED)

	FIRST LETTER		SUCCEEDING LETTER(S)		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION				
C	CONDUCTIVITY			CONTROL	CLOSED
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			FORWARD
G			GAUGE, GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE	MOMENTARY			MIDDLE, INTERMEDIATE
N	TORQUE		ISOLATE	ISOLATOR	
O			ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		REVERSE
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	INTRUSION	X AXIS			
Y	EVENT, STATE, OR PRESENCE	Y AXIS		COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

TAG SCHEMA

TYPICAL INSTRUMENT & CONTROL VALVE TAGGING

TYPICAL INSTRUMENT & CONTROL VALVE TAGGING

TIC-101B -- INSTRUMENT SCHEDULE (FULL TAG)
TIC - - - - - INSTRUMENT / VALVE ID
101 -- TAG NUMBER
B - - SUFFIX

TYPICAL EQUIPMENT TAG FORMAT

TYPICAL EQUIPMENT TAG FORMAT

P-101 -- EQUIPMENT SCHEDULE (FULL TAG)
P - - - - - EQUIPMENT ID
101 -- TAG NUMBER

TYPICAL VALVE TAG / SPEC FORMAT

TYPICAL VALVE TAG / SPEC FORMAT

VF-001 -- MANUAL VALVE SCHEDULE (FULL TAG)
VF - - - - - VALVE TYPE CALLOUT
001 -- TAG NUMBER

SHEET NUMBER TAG FORMAT

I-001_A - - - SHEET SCHEDULE (FULL TAG)
I-001 - - - - - P&ID BORDER (PARTIAL TAG)
12 - - - - - DISCIPLINE CODE
001 - - - - - SHEET NUMBER
A - - - - - REVISION

TYPICAL PIPE LINE TAG FORMAT

12-RW-CS08 - - - - - PIPE LINE SCHEDULE (FULL TAG)
12 - - - - - NOMINAL PIPE DIAMETER
RW - - - - - FLUID CODE
CS08 - - - - - PIPE SPEC

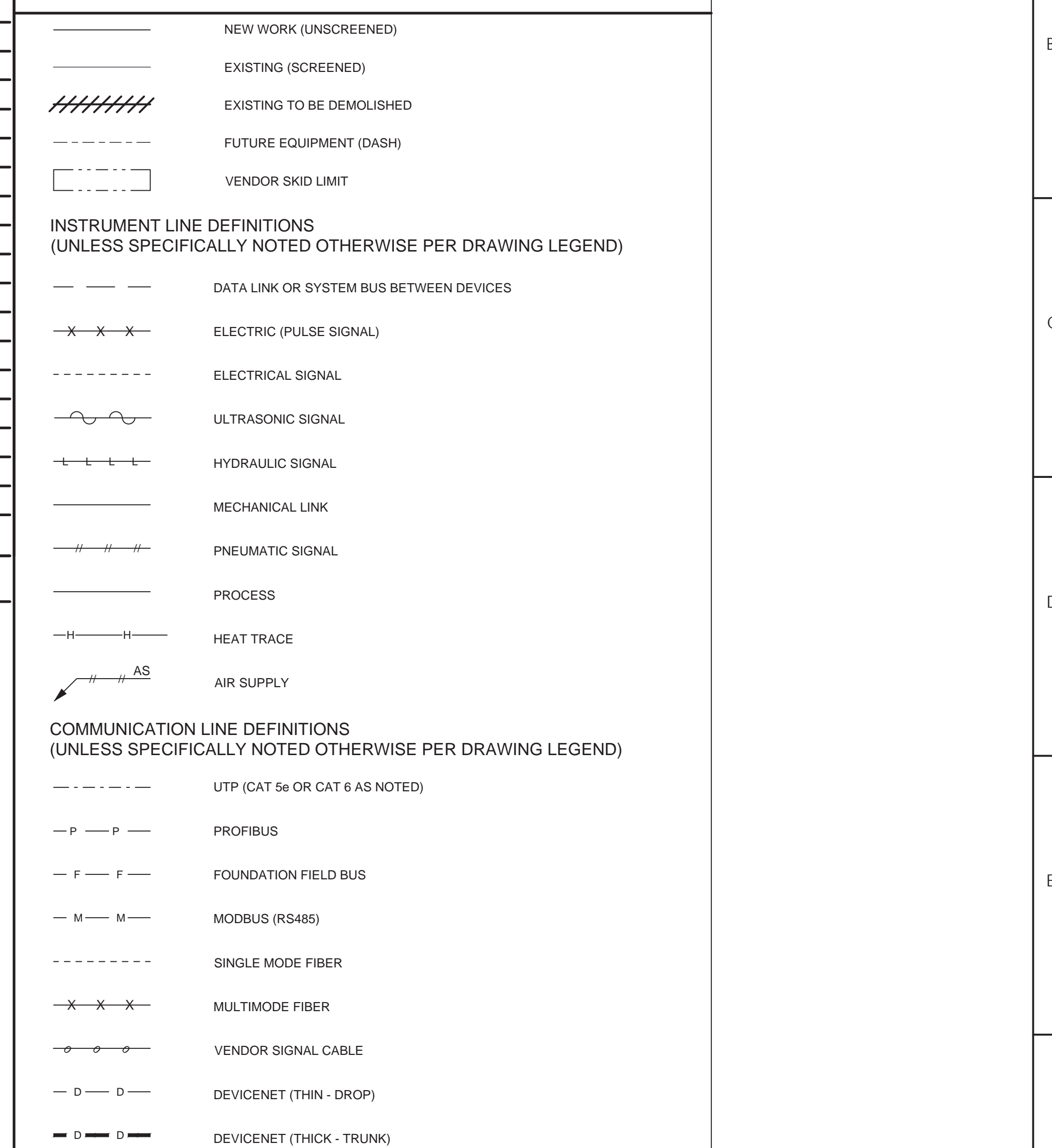
STANDARD VALVE TYPE CALLOUTS

VB - BALL VALVE
VC - CHECK VALVE
VF - BUTTERFLY VALVE
VO - GLOBE VALVE
VG - GATE VALVE
VP - PLUG VALVE
VD - DIAPHRAGM VALVE

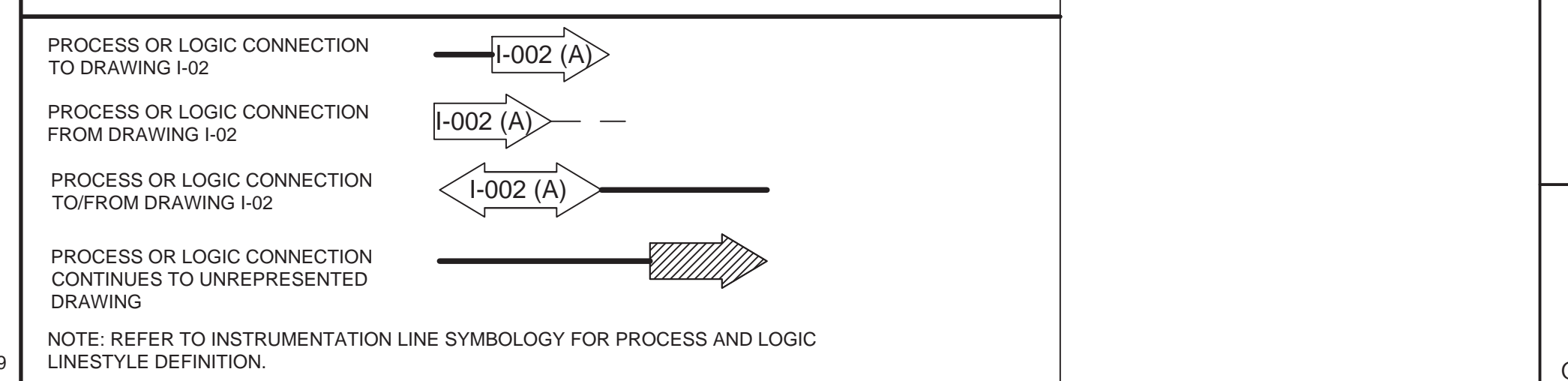
GENERAL INSTRUMENTATION NOTES

- THE SYMBOLS AND NOMENCLATURE SHEETS ARE REPRESENTATIVE OF A GENERAL STANDARD. THEREFORE, IT SHOULD BE UNDERSTOOD THAT NOT ALL INFORMATION PRESENTED WILL BE RELEVANT TO THIS PROJECT.
- ADDITIONAL INSTRUMENTATION AND CONTROL SYMBOLS MAY BE USED AS REQUIRED. SYMBOLS AND NOMENCLATURE WILL BE EITHER BASED ON ISA STANDARD 5.1-INSTRUMENTATION SYMBOLS AND IDENTIFICATION OR DEFINED ELSEWHERE IN THE P&ID SET.
- SEE ELECTRICAL AND PROJECT GENERAL SHEETS FOR ADDITIONAL SYMBOLS AND ABBREVIATIONS.
- TO CAPTURE THE COMPLETE PROCESS CONTROL INTENT, THE P&IDS MUST TO BE REVIEWED IN CONJUNCTION WITH THE PROJECT CONTROL PHILOSOPHY (SPEC SECTION 409300), THE PROJECT I/O AND INSTRUMENT SCHEDULES AND OTHER SECTIONS REFERENCED HEREIN.

INSTRUMENTATION LINE SYMBOLOGY



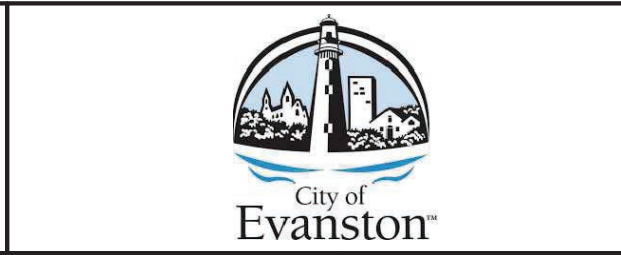
SIGNAL AND PROCESS OFF-PAGE CONNECTORS



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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
INSTRUMENTATION
SYMBOLS AND NOMENCLATURE - I

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SHEET NO. 27 OF 63

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FLOW INSTRUMENTS

<p>ORIFICE PLATE WITH VENA CONTRACTA, RADIUS, OR PIPE TAPS CONNECTED TO DIFFERENTIAL-PRESSURE -TYPE FLOW TRANSMITTER</p>	<p>VENTURI TUBE WITH (DIFFERENTIAL PRESSURE) FLOW TRANSMITTER</p>	<p>THERMAL MASS FLOW METER</p>	<p>MAGNETIC FLOWMETER WITH REMOTE FLOW TRANSMITTER</p>	<p>SONIC FLOWMETER DOPPLER OR TRANSIT TIME</p>	<p>SONIC FLOWMETER CLAMP ON TYPE</p>	<p>SINGLE PORT PITOT TUBE OR PITOT-VENTURI TUBE</p>
<p>CORIOLIS FLOWMETER</p>	<p>VORTEX FLOW METER</p>	<p>VARIABLE AREA FLOW INDICATOR (ROTAMETER)</p>	<p>PADDLE WHEEL FLOW METER</p>	<p>TURBINE OR PROPELLER TYPE FLOW METER</p>	<p>FLOW DETECTION SWITCH THERMAL TYPE</p>	<p>WEIR</p>

LEVEL INSTRUMENTS

PRESSURE OR VACUUM INSTRUMENTS

<p>LEVEL TRANSMITTER BUBBLER TYPE</p>	<p>GAUGE GLASS (EXTERNALLY CONNECTED)</p>	<p>LEVEL TRANSMITTER, SEALED DIFFERENTIAL PRESSURE TYPE (MOUNTED ON TANK)</p>	<p>LEVEL TRANSMITTER PRESSURE ACTUATED</p>	<p>LEVEL DETECTION SWITCH FLOAT ACTUATED TYPE</p>	<p>LEVEL DETECTION SWITCH VIBRATING FORK TYPE</p>	<p>PRESSURE GAUGE WITH DIAPHRAGM SEAL</p>	<p>PRESSURE GAUGE WITH LIQUID FILLED ANNULAR SEAL SYSTEM</p>
<p>LEVEL TRANSMITTER CAPACITANCE OR DIELECTRIC OR RF ADMITTANCE TYPE</p>	<p>LEVEL TRANSMITTER NON-CONTACTING ULTRASONIC TYPE REMOTE MOUNTED</p>	<p>LEVEL TRANSMITTER HYDROSTATIC TYPE</p>	<p>LEVEL TRANSMITTER NON-CONTACTING RADAR TYPE</p>	<p>LEVEL TRANSMITTER GUIDED WAVE RADAR TYPE</p>	<p>LEVEL DETECTION SWITCH CONDUCTANCE TYPE</p>	<p>PRESSURE INDICATING TRANSMITTER</p>	<p>PRESSURE INDICATOR DIRECT - CONNECTED</p>

POSITION INSTRUMENTS

ANALYTICAL INSTRUMENTS

TEMPERATURE INSTRUMENTS

<p>LIMIT SWITCH ON MOTORIZED VALVE INDICATING CLOSED POSITION</p>	<p>VALVE POSITION TRANSMITTER ON PNEUMATIC ACTUATED VALVE</p>	<p>FLOW THROUGH ANALYZING ELEMENT WITH REMOTE TRANSMITTER</p>	<p>BIMETALLIC TYPE THERMOMETER, GLASS THERMOMETER, OR OTHER LOCAL UNCLASSIFIED TEMPERATURE INDICATOR</p>	<p>THERMOCOUPLE, RESISTANCE BULB (RTD) OR THERMISTOR (TH) TEMPERATURE TRANSMITTER WITH THERMOWELL</p>
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WEIGHT INSTRUMENTS

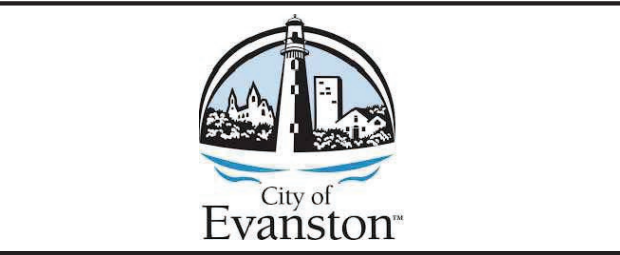
<p>STRAIN GAUGE CONNECTED TO SEPARATE WEIGHT TRANSMITTER (TAG STRAIN GAUGE WE)</p>	<p>HYDRAULIC ACTUATED WEIGHT TRANSMITTER</p>
--	--

ALK	ALKALINITY	LEL	LOWER EXPLOSIVE LIMIT
CL ₂	CHLORINE CONCENTRATION	NO ₃ / NO ₂	NITRATE / NITRITE
COMB	COMBUSTIBLE GAS	NH ₃ / NH ₄	AMMONIA / AMMONIUM
COND	CONDUCTIVITY	O ₂	OXYGEN CONCENTRATION
COD	CHEMICAL OXYGEN DEMAND	O ₃	OZONE
DO	DISSOLVED OXYGEN	ORP	OXIDATION - REDUCTION POTENTIAL
HC	HYDROCARBON	PC	PARTICLE COUNTER
H ₂ O ₂	HYDROGEN PEROXIDE	pH	HYDROGEN ION CONCENTRATION
H ₂ S	HYDROGEN SULFIDE	SCU	STREAMING CURRENT UNIT
		SO	SULFUR DIOXIDE
		TH ²	TOTAL HARDNESS
		TKN	TOTAL KJELDAHL NITROGEN
		TN	TOTAL NITROGEN
		TOC	TOTAL ORGANIC CARBON
		TURB	TURBIDITY
		TSS	TOTAL SUSPENDED SOLIDS
		UVI	ULTRA VIOLET INTENSITY
		UVT	ULTRA VIOLET TRANSMITTANCE

NOTE : IN THE CASE WHERE MULTIPLE SENSORS ARE TIED TO A SINGLE TRANSMITTER OR IN THE CASE OF GAS DETECTION, THE ANALYTIC CALLOUT WILL BE ASSIGNED TO THE SENSOR.

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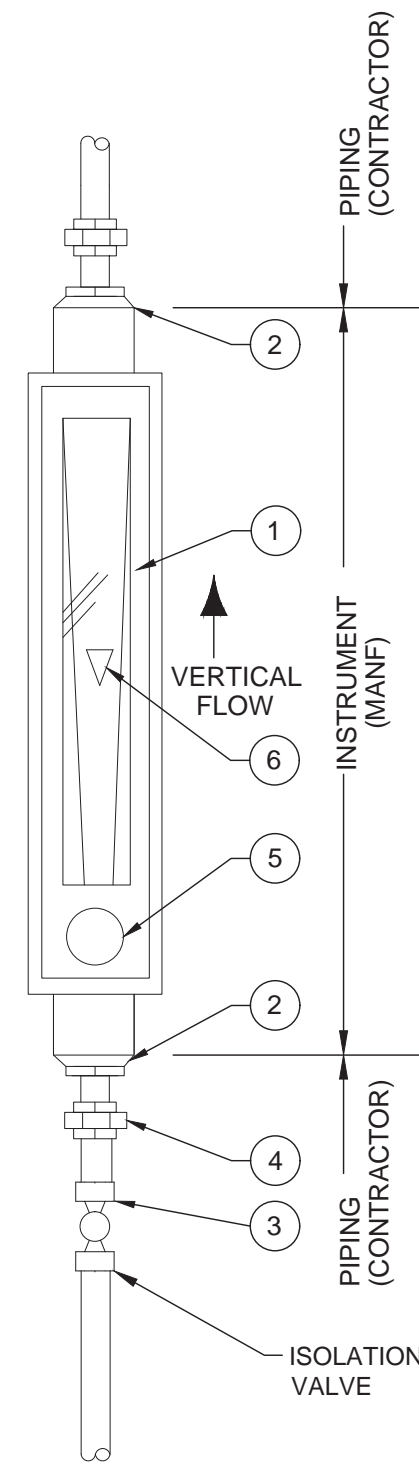
CITY OF EVANSTON
 173440108
 1909 RAW WATER INTAKE REPLACEMENT
 INSTRUMENTATION
 SYMBOLS AND NOMENCLATURE - II

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**GLASS TUBE ROTAMETER
INLINE INSTALLATION**

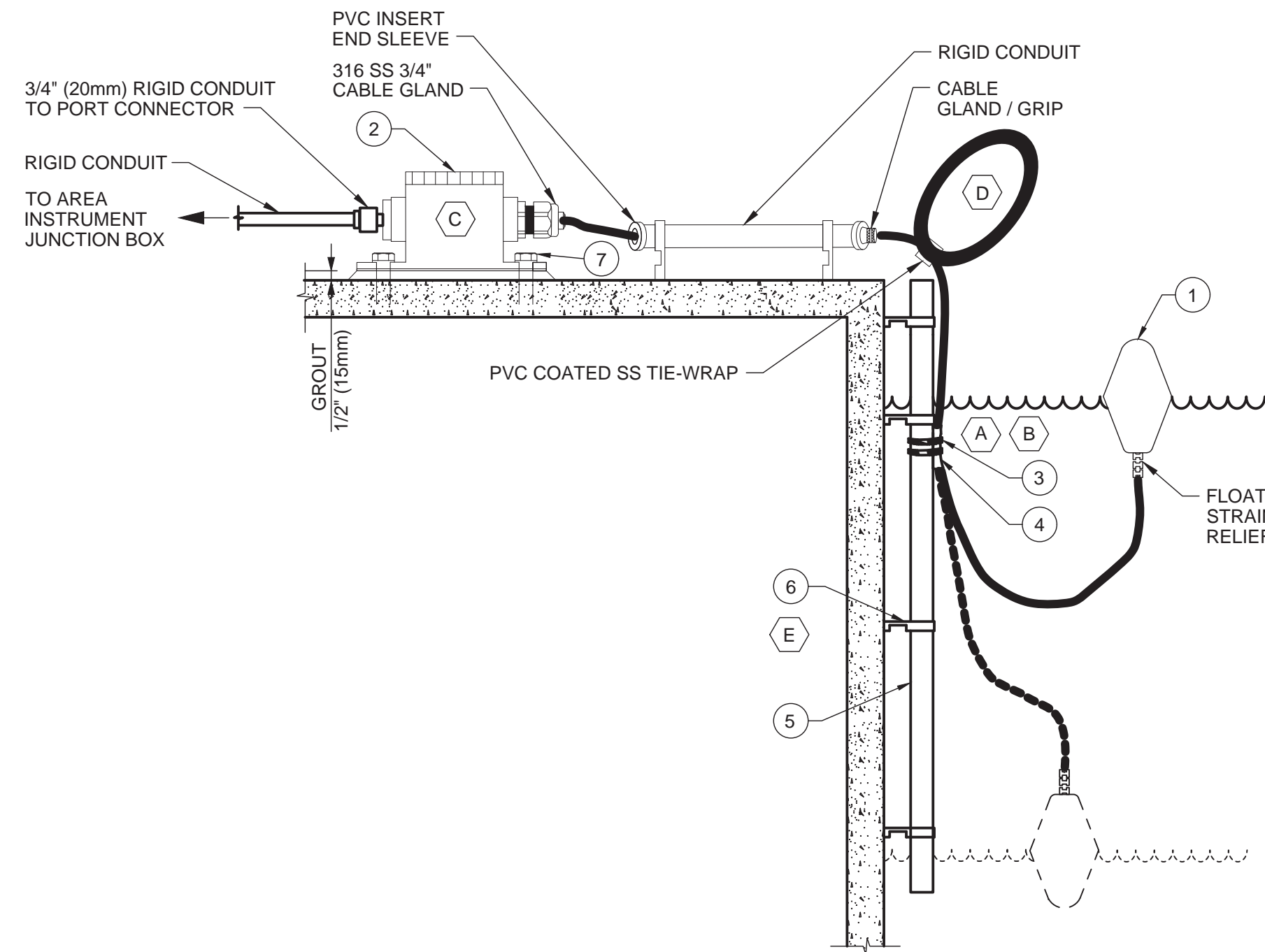


- GENERAL NOTES:**
1. WETTED MATERIALS SHALL BE CHEMICALLY INERT TO THE PROCESS.
 2. REFER TO P&IDS AND DATA SHEETS FOR PROCESS PIPING SIZE AND MATERIAL.
 3. INSTALLATION OF ANY FLANGED UNITS SHALL BE CARRIED OUT IN COOPERATION WITH THE PIPING CONTRACTOR.

- KEYNOTES:**
- A. MATERIAL SELECTION AND SIZE SUBJECT TO PROCESS, PROCESS CONDITIONS AND INSTALLATION ENVIRONMENT.

BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	SUPPLY	MATERIAL / RATING (WATER)	MATERIAL / RATING (CHEMICAL)
1	1	CALIBRATED GLASS TUBE ENCLOSURE	MANF	316 SS BODY	316 SS / POLY-CARBONATE BODY (INDOOR ONLY)
2	2	THREADED END FITTING (FNPT)	MANF	316 SS	316 SS / PVC
3	3	BALL ISOLATION VALVE	CONTRACTOR	(A)	(A)
4	AR	PIPING UNION	CONTRACTOR	(A)	(A)
5	1	INTEGRAL ADJUSTMENT NEEDLE VALVE	MANF	PER MANF	PER MANF
6	1	INTEGRAL FLOAT	MANF	316 SS	316 SS / GLASS / PVDF

I-106 ROTAMETER



SUSPENDED FLOAT

- GENERAL NOTES:**
1. PROVIDE MECHANICAL SUPPORT AND FITTINGS FOR ROUTED CONDUIT.
 2. SWITCHES SHALL BE MOUNTED AND ORIENTED IN ACCORDANCE WITH THE MANUFACTURER REQUIREMENTS.
 3. INSTALLATION OF ANY FLANGED UNITS SHALL BE CARRIED OUT IN COOPERATION WITH THE PIPING AND/ OR TANK SUPPLIER CONTRACTOR.
 4. WETTED MATERIALS SHALL BE CHEMICALLY INERT TO THE PROCESS.
 5. REFER TO DIVISION 26 SPECIFICATIONS FOR FLEX AND RIGID CONDUIT MATERIAL AND USAGE LIMITATIONS.
 6. REFER TO TANK MECHANICAL DATA SHEETS OR DETAILS FOR TANK NOZZLE SIZE AND SPACING. INSTRUMENT INSTALLATION IN THE TANK MANWAY IS NOT PERMITTED.
 7. USE PVC COATED SS TIE-WRAPPS TO NEATLY COIL AND SECURE ANY EXCESS FLOAT CABLING AS SHOWN.

- KEYNOTES:**
- A. POSITION THE ADJUSTABLE STRAIN RELIEF ON THE CABLE TO ALLOW ONE HALF THE DISTANCE OF THE DIFFERENTIAL BAND BETWEEN THE END OF THE ADJUSTABLE STRAIN RELIEF AND THE END OF THE STRAIN RELIEF ON THE FLOAT.
 - B. FOR SUSPENDED FLOAT, PROVIDE CABLE TIE AT MIDPOINT AND TOP OF ADJUSTABLE STRAIN RELIEF AS SHOWN, PLUS ONE CABLE TIE FOR EVERY 12" (300mm) OF CABLE LENGTH.
 - C. TERMINAL JUNCTION BOX SHALL BE WALL OR FLOOR MOUNTED IN EASILY ACCESSED LOCATION WITHIN 30 FEET (10 METERS) OF INSTRUMENT INSTALLATION. FOR FLOOR MOUNT PROVIDE 1/2" (15mm) THICK GROUTING. FOR WALL MOUNT, LOCATE APPROXIMATELY 36" (1 METER) ABOVE GRADE. IF AREA INSTRUMENT JUNCTION BOX IS WITHIN 33 FEET (10 METERS) OF INSTRUMENT INSTALLATION, TERMINAL BOX WILL NOT BE REQUIRED AND INSTRUMENT CABLE MUST BE ROUTED WITHOUT SPLICE OF ANY KIND.
 - D. MAINTENANCE LOOP SHALL INCLUDE 3 FEET (1 METER) LENGTH OF CABLE SECURED WITH PVC-COATED SS TIE WRAPS, BEND RADIUS NO LESS THAN 8" (200mm).
 - E. PROVIDE MOUNTING BRACKET SUPPORT FOR EVERY 3FT (1M) OF PIPE LENGTH.

BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	SUPPLY	MATERIAL/RATING (WATER)	MATERIAL/RATING (CHEMICAL)
1	1	SUSPENDED BALL FLOAT SWITCH WITH INTEGRAL CABLE	MANF	PVC	PVC
2	AR	LOCKABLE SCREW LID TERMINAL JUNCTION BOX WITH DIN-RAIL MOUNTED TERMINAL BLOCK (MIN DIMENSIONS: 2" (53mm) (h)x4" (110mm) (Ø))	MANF	NEMA 4X / GRP	NEMA 4X / GRP
3	AR	CABLE TIES	CONT	PVC COATED 316 SS	PVC COATED 316 SS
4	1	ADJUSTABLE STRAIN RELIEF	MANF	NEOPRENE	NEOPRENE
5	1	FLOAT SUPPORT PIPE	CONT	PVC (SCH 80)	PVC (SCH 80)
6	AR	MOUNTING BRACKET WITH 5/8" (16mm) SS ANCHOR BOLTS (E)	CONT	316 SS	316 SS
7	AR	SS BOLTS / ANCHORS	CONT	316 SS	316 SS

I-151 FLOAT LEVEL DETECTION SWITCH

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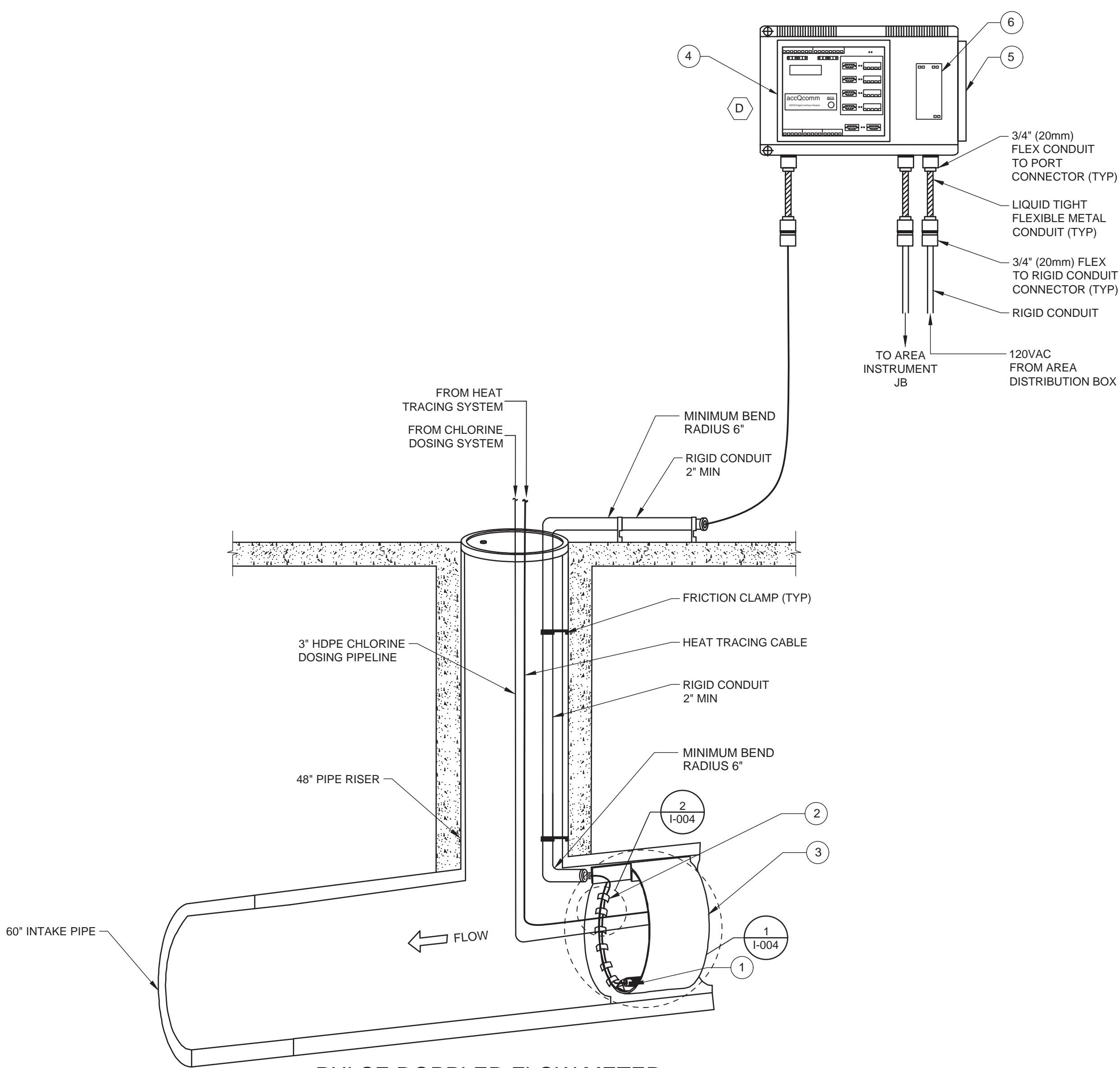
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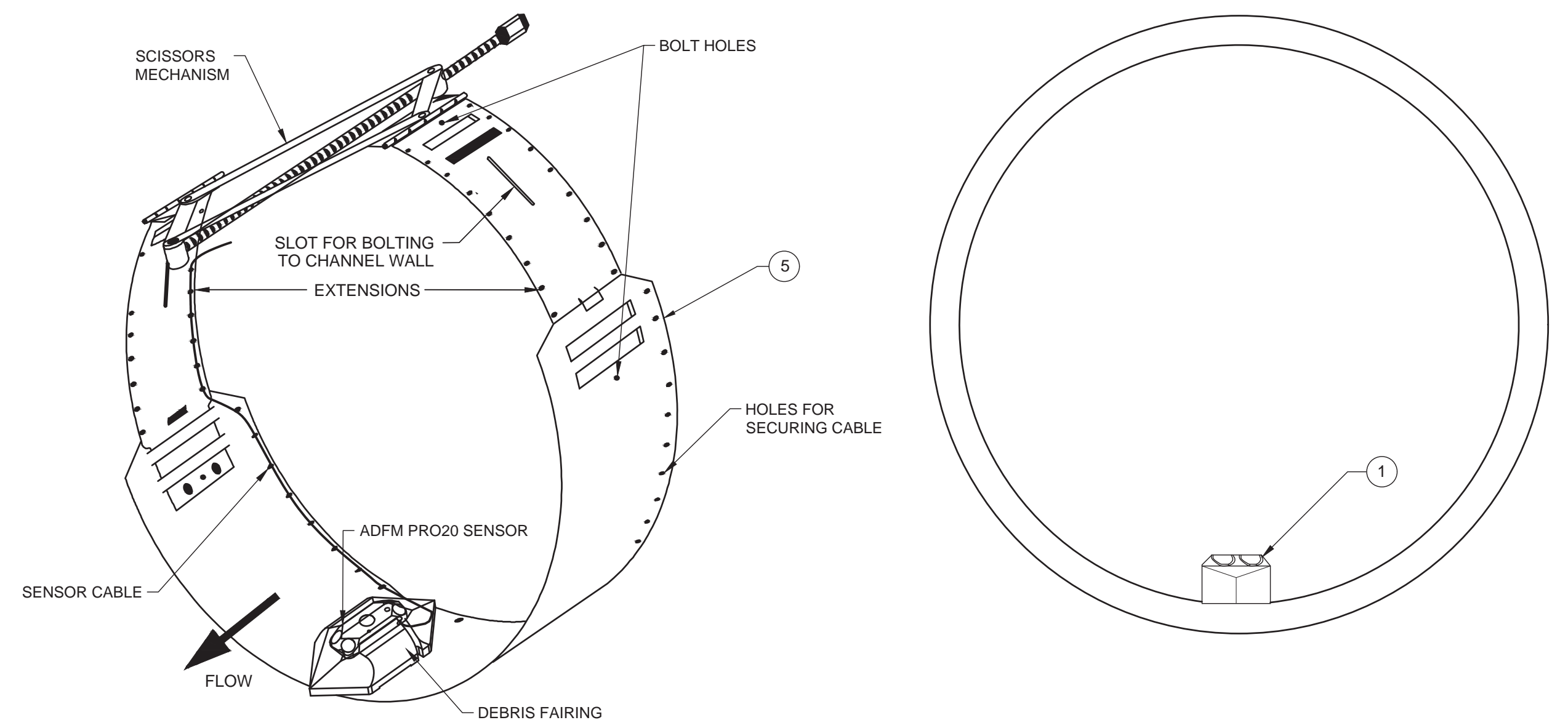
CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
INSTRUMENTATION
INSTALLATION DETAILS - I

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
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JOB NO.
173440108
DRAWING NO.
I-003
SHEET NO.
29 OF 63

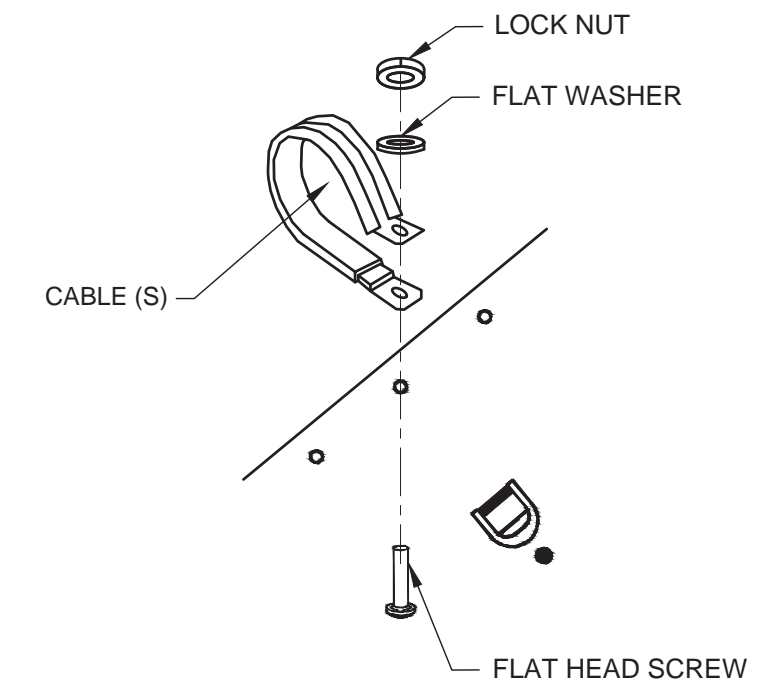


**PULSE DOPPLER FLOW METER
INSTALLED ON ROUND PIPE**



1 INSTALLATION RING
SCALE: NO SCALE

SENSOR MOUNTING (INLINE VIEW)



2 SECURING THE CABLE(S) WITH SST STRAPS
SCALE: NO SCALE

BILL OF MATERIALS				
ITEM	QTY	DESCRIPTION	SUPPLY	MATERIAL/RATING (WATER)
1	1	ADFM PRO20 SENSOR WITH DEBRIS FAIRING (A)(B)(C)	MANF	PER MANF
2	AR	PRO20 SENSOR CABLE	MANF	PER MANF
3	1	INSTALLATION RING	MANF	PER MANF
4	1	INTERFACE MODULE	MANF	-
5	1	NEMA 4X ENCLOSURE	MANF	316 SS
6	1	24 VDC POWER SUPPLY	CONTRACTOR	-

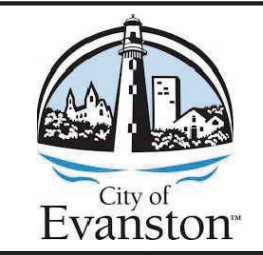
- GENERAL NOTES:**
- REFER TO P&IDS AND DATA SHEETS FOR PROCESS PIPING SIZE AND MATERIAL.
 - PROVIDE MECHANICAL SUPPORT FOR ROUTED CONDUIT.
 - REFER TO DIVISION 26 SPECIFICATIONS FOR FLEX AND RIGID CONDUIT MATERIAL AND USAGE LIMITATIONS.
- KEYNOTES:**
- SENSOR INSTALLATION AS RECOMMENDED BY THE MANUFACTURER.
 - FLOW SENSOR MUST BE INSTALLED WITH A MINIMUM OF 5 STRAIGHT PIPE DIAMETERS UPSTREAM AND 2 STRAIGHT PIPE DIAMETERS DOWNSTREAM.
 - SENSOR FREQUENCY- AS DETECTED BY LINE SIZE AND VELOCITY PER MANUFACTURER RECOMMENDATION.
 - ENCLOSURE SHALL BE WALL MOUNTED AT 48" ABOVE GRADE

I-901 PULSE DOPPLER FLOW METER

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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
INSTRUMENTATION
INSTALLATION DETAILS - II

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JOB NO. 173440108
DRAWING NO. I-004
SHEET NO. 30 OF 63

A

B

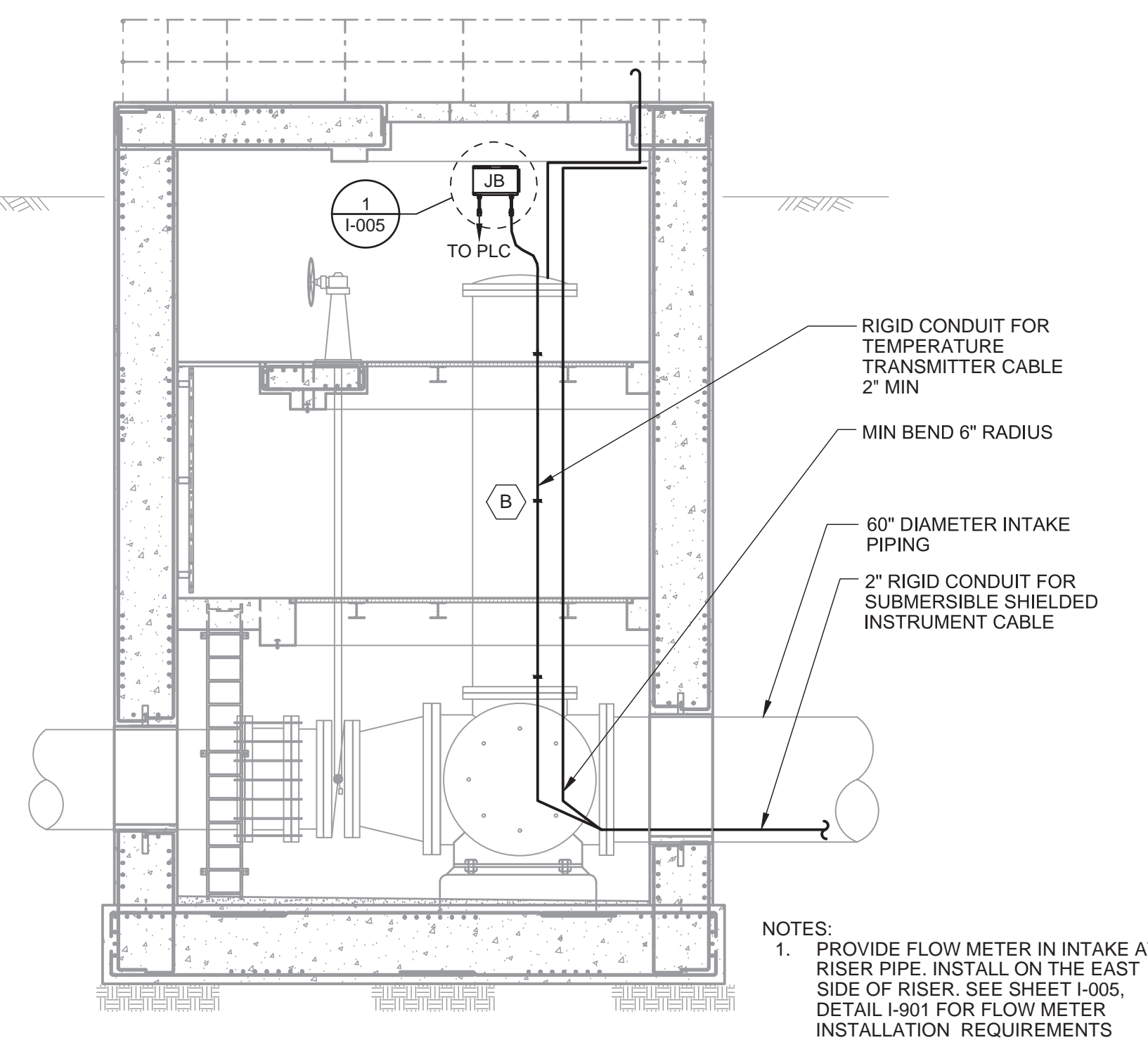
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D

E

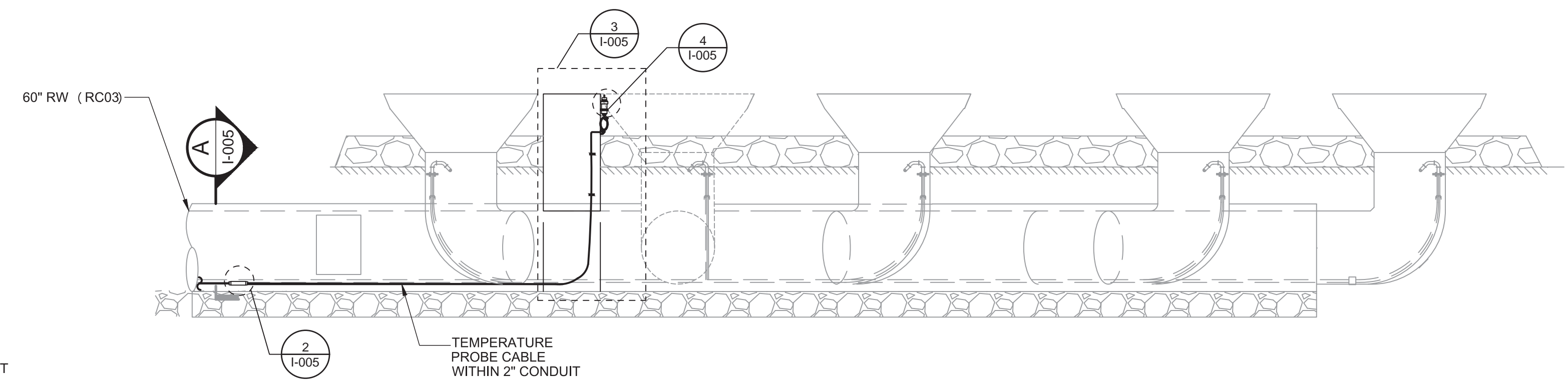
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- KEYNOTES:**
- A. MAINTENANCE LOOP SHALL INCLUDE 40 FEET LENGTH OF CABLE SECURED WITH PVC-COATED SS TIE WRAPS, BEND RADIUS NO LESS THAN 8" (200MM). A SS HOOK SHALL BE INSTALLED OUTSIDE OF MANHOLE TO SECURE CABLE LOOP.
 - B. PROVIDE MOUNTING BRACKET SUPPORT FOR EVERY 3FT (1M) OF PIPE LENGTH.
 - C. SECURE TEMPERATURE TRANSMITTER WITH SS CLAMPS TO THE SIDE OF MANHOLE. CONTRACTOR SHALL COORDINATE WITH MANHOLE MANUFACTURER FOR SENSOR CLAMP INSTALLATION.
 - D. MANUFACTURER APPROVED CABLE SPLICER SHALL BE USED.

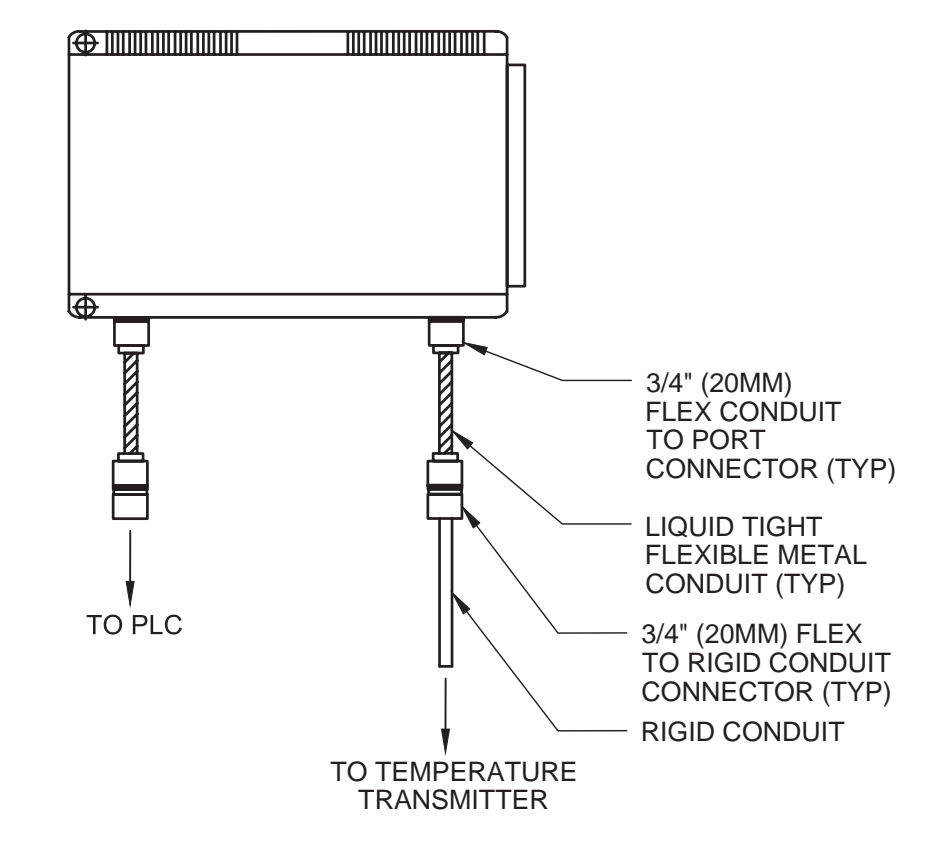


VALVE VAULT SECTION

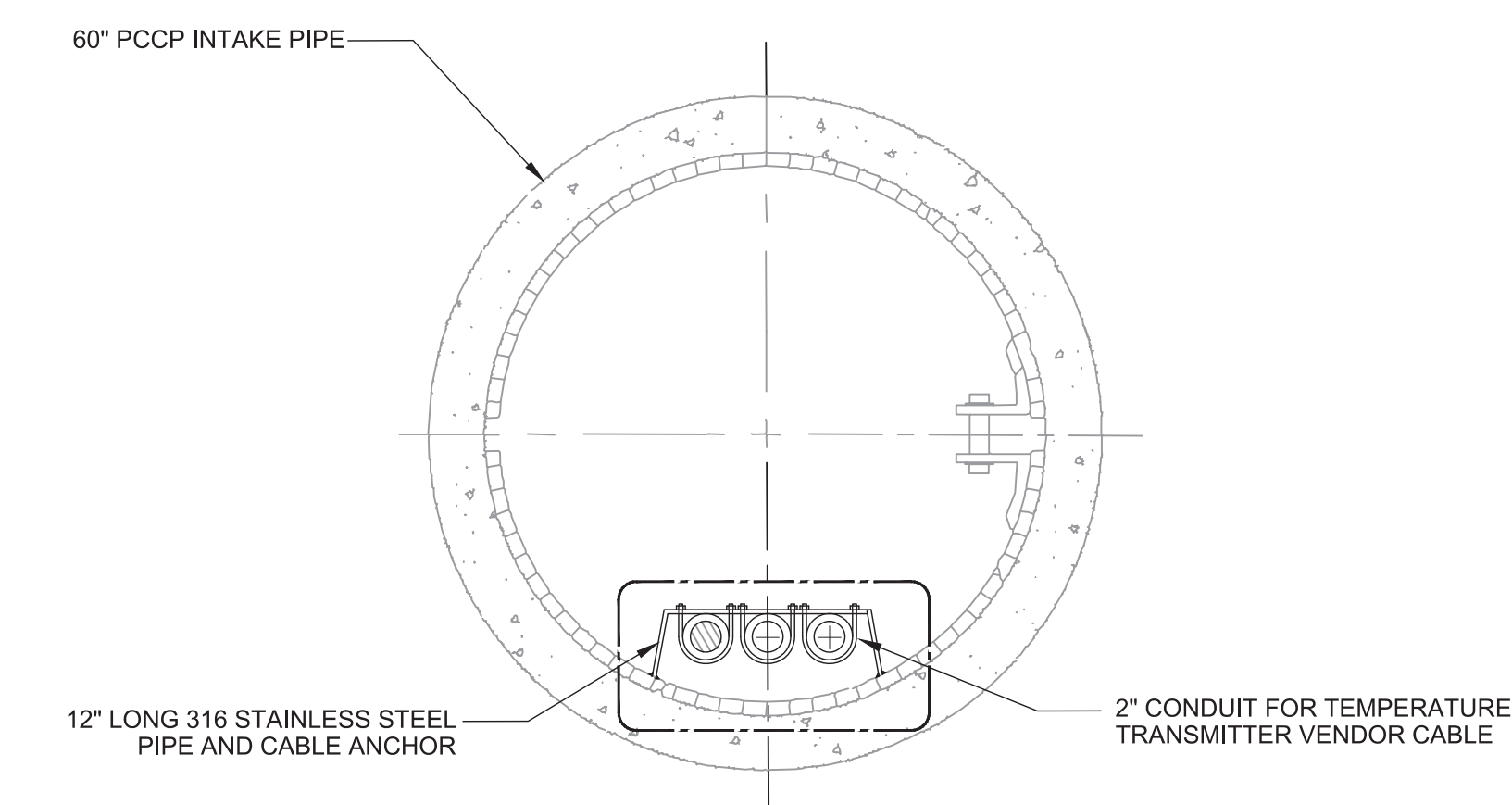
NOTES:
 1. PROVIDE FLOW METER IN INTAKE AT RISER PIPE. INSTALL ON THE EAST SIDE OF RISER. SEE SHEET I-005, DETAIL I-901 FOR FLOW METER INSTALLATION REQUIREMENTS



I-902 INTAKE TEMPERATURE PROBE

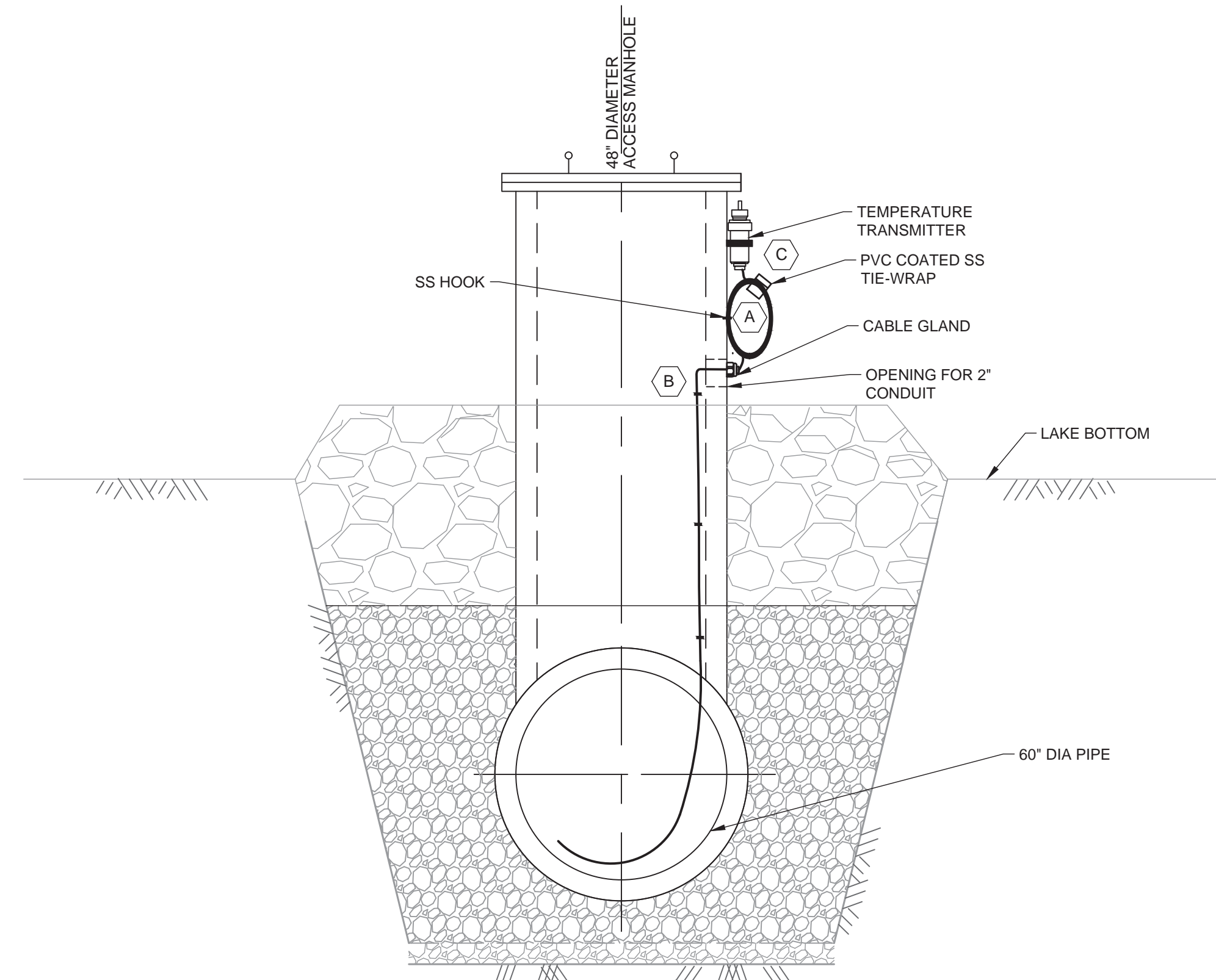


1 JUNCTION BOX
 I-005 SCALE: NO SCALE

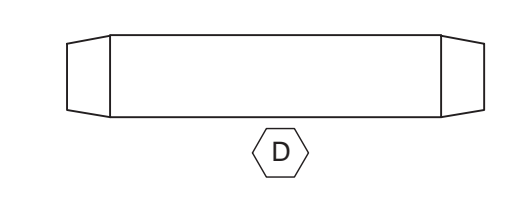


NOTE: SEE SHEET C-016 FOR COMPLETE FRICTION CLAMP DETAILS

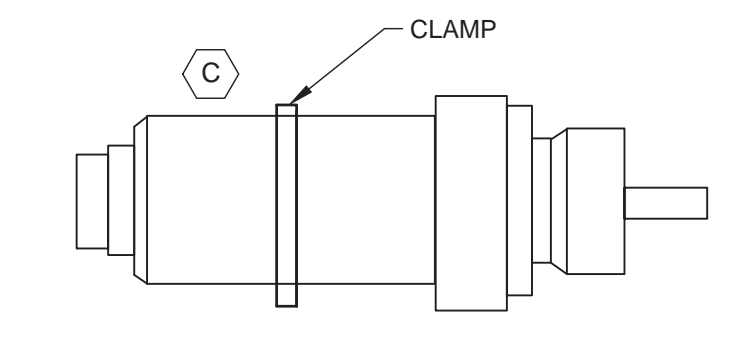
A SECTION FRICTION CLAMP DETAIL
 I-005 SCALE: NO SCALE



3 INTAKE PIPE ACCESS MANHOLE
 I-005 SCALE: NO SCALE



2 CABLE SPLICER
 I-005 SCALE: NO SCALE



4 TEMPERATURE TRANSMITTER
 I-005 SCALE: NO SCALE

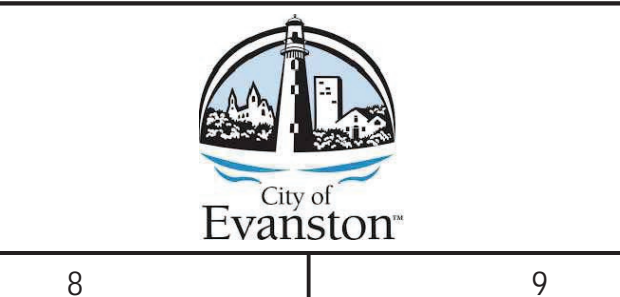
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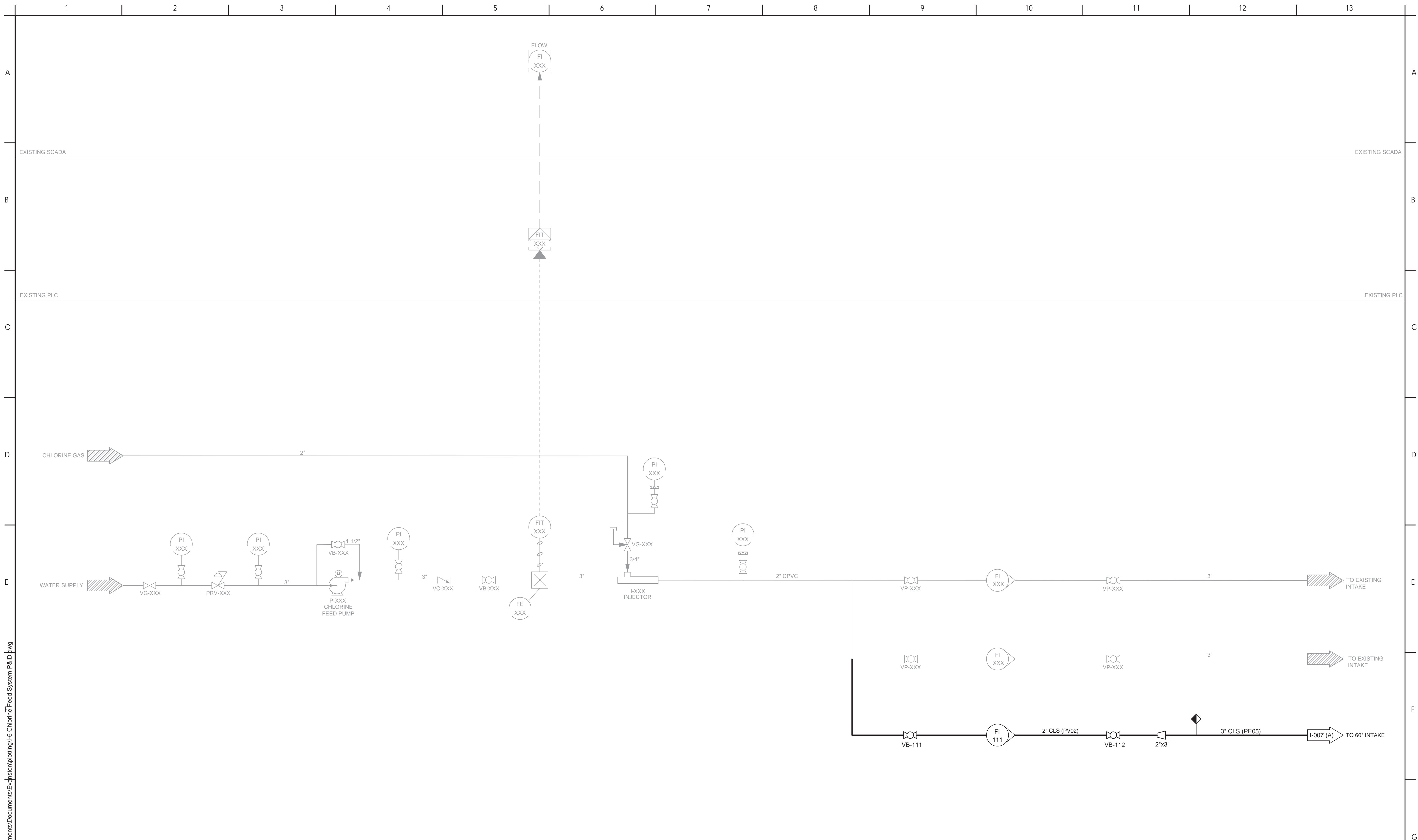


CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 INSTRUMENTATION
 INSTALLATION DETAILS - III

VERIFY SCALES
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 173440108
 DRAWING NO.
 I-005
 SHEET NO.
 31 OF 63



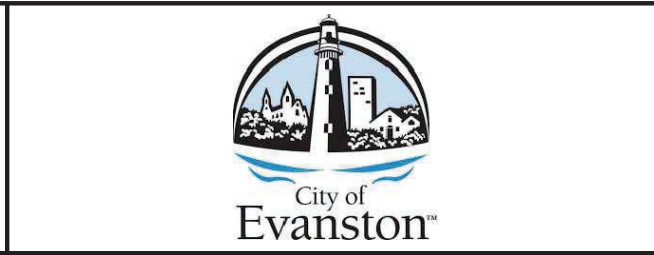
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DESIGNED	AY
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DATE	04/2022

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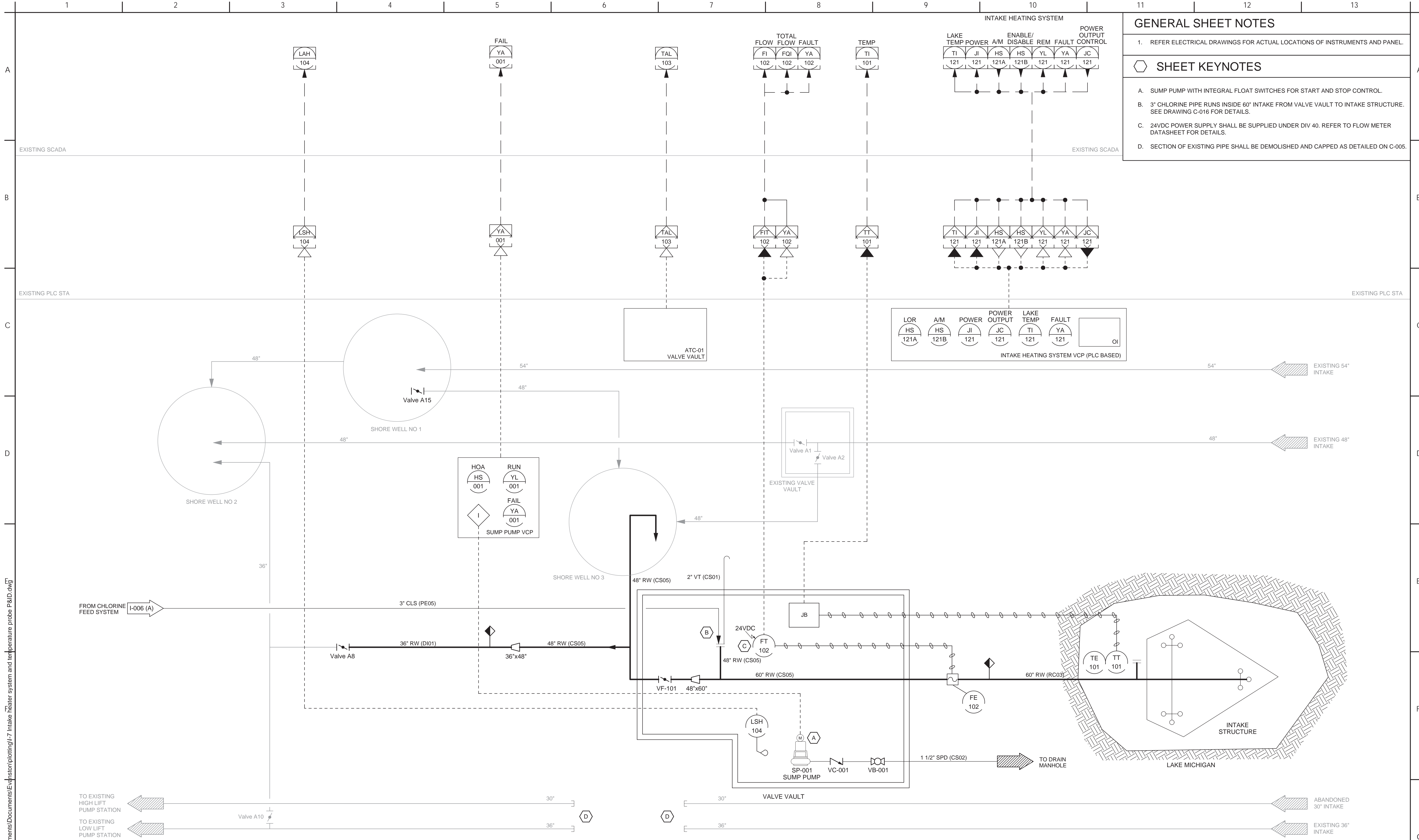
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
INSTRUMENTATION
CHLORINE FEED SYSTEM P&ID

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 173440108
DRAWING NO. I-006
SHEET NO. 32 OF 63



GENERAL SHEET NOTES

- REFER ELECTRICAL DRAWINGS FOR ACTUAL LOCATIONS OF INSTRUMENTS AND PANEL.

SHEET KEYNOTES

- SUMP PUMP WITH INTEGRAL FLOAT SWITCHES FOR START AND STOP CONTROL.
- 3" CHLORINE PIPE RUNS INSIDE 60" INTAKE FROM VALVE VAULT TO INTAKE STRUCTURE. SEE DRAWING C-016 FOR DETAILS.
- 24VDC POWER SUPPLY SHALL BE SUPPLIED UNDER DIV 40. REFER TO FLOW METER DATASHEET FOR DETAILS.
- SECTION OF EXISTING PIPE SHALL BE DEMOLISHED AND CAPPED AS DETAILED ON C-005.

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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
INSTRUMENTATION
INTAKE HEATER SYSTEM AND VALVE VAULT P&ID

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
173440108
DRAWING NO.
I-007
SHEET NO.
33 OF 63

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GENERAL NOTES

GENERAL

THESE NOTES ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE.

STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE COORDINATED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. BOLT SIZES, TYPES, AND PATTERNS SHALL BE VERIFIED WITH THE MANUFACTURER. ALL BOLT PATTERNS SHALL BE TEMPLATED TO ENSURE ACCURACY OF PLACEMENT.

MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS BUT REQUIRED BY OTHER CONTRACT DRAWINGS, SHALL BE PROVIDED FOR PRIOR TO PLACING CONCRETE.

STRUCTURAL DRAWINGS SHALL BE USED IN COORDINATION WITH MECHANICAL, ELECTRICAL, CIVIL DRAWINGS AND SHOP DRAWINGS PROVIDED BY MANUFACTURERS OF EQUIPMENT.

STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL, HYDROSTATIC, AND BACKFILL LOADS ON THE COMPLETED STRUCTURES. THE STRUCTURES HAVE NOT BEEN DESIGNED TO RESIST THESE LOADS WHILE ONLY PARTIALLY CONSTRUCTED. DURING CONSTRUCTION, THE STRUCTURES SHALL BE PROTECTED FROM ALL CONSTRUCTION LOADS BY BRACING AND BALANCING UNTIL ALL STRUCTURAL ELEMENTS ARE IN PLACE, AND ALL CONCRETE HAS REACHED THE SPECIFIED 28 DAY COMPRESSIVE STRENGTH. OVERLOADING OF ANY STRUCTURAL ELEMENT IS PROHIBITED.

UNLESS OTHERWISE SHOWN, ON ALL STRUCTURAL DRAWINGS THE FINISHED GRADE AROUND STRUCTURES IS SHOWN THUS, *FINISHED GRADE* INDICATING EITHER GROUND SURFACE, TOP OF CONCRETE SLAB, OR AC PAVEMENT. FOR DETAILS OF FINISH SURFACES SEE CIVIL DRAWINGS.

STRUCTURAL STEEL

STEEL CONSTRUCTION SHALL CONFORM TO THE SPECIFICATIONS AND STANDARDS AS CONTAINED IN THE FOURTEENTH EDITION OF THE AISC STEEL CONSTRUCTION MANUAL.

STRUCTURAL WIDE FLANGE SHAPES SHALL BE STEEL MEETING ASTM A-992 SPECIFICATIONS.

OTHER SHAPES, BARS, PLATES AND SHEETS SHALL BE OF STEEL MEETING ASTM A-36 SPECIFICATIONS.

PIPE, PIPE COLUMNS, AND BOLLARDS SHALL BE OF STEEL MEETING ASTM A-53, TYPE E OR S, GRADE B STANDARD WEIGHT, UNO

HSS SHALL BE OF STEEL MEETING ASTM A-500 GRADE B.

STEEL JOISTS, BEAMS, AND GIRDERS SHALL NOT BE RELOCATED WITHOUT APPROVAL BY THE ENGINEER.

ALL WELDING SHALL BE BY THE SHIELDED ARC METHOD AND SHALL CONFORM TO AWS CODE FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION. QUALIFICATIONS OF WELDERS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR STANDARD QUALIFICATION PROCEDURE OF THE AWS.

CONCRETE (EXCEPT PRECAST CONCRETE)

UNLESS OTHERWISE NOTED OR SPECIFIED, ALL STRUCTURAL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI IN 28 DAYS.

REINFORCEMENT STEEL SHALL BE DEFORMED BARS CONFORMING IN QUALITY TO THE REQUIREMENTS OF ASTM A-615, "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 60

COLUMN SPIRALS SHALL CONFORM TO ASTM A-615, "DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT, GRADE 60 OR ASTM A-82 "STEEL WIRE, PLAIN, FOR CONCRETE REINFORCEMENT".

ALL DETAILING, FABRICATING AND PLACING OF REINFORCING BARS, UNLESS OTHERWISE INDICATED, SHALL BE IN ACCORDANCE WITH ACI-315, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION.

TOLERANCES IN PLACING REINFORCEMENT SHALL BE:
+/- 3/8 INCH FOR MEMBERS WITH DEPTH D <= 8 INCHES
+/- 1/2 INCH FOR MEMBERS WITH DEPTH D > 8 INCHES

ALL CONSTRUCTION JOINTS, SHALL BE ROUGH AND THOROUGHLY CLEANED FOR BOND.

LOCATION OF ALL CONSTRUCTION JOINTS SHALL BE AS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER. ALL CONSTRUCTION JOINTS LOCATED ON THE DRAWINGS OR REQUIRED FOR CONSTRUCTION BUT NOT SHOWN ON THE DRAWINGS, SHALL HAVE A 6" FLATSTRIP WATERSTOP IF IN CONTACT WITH WATER. IN ADDITION, JOINTS IN ALL SLABS COVERED WITH WATER SHALL HAVE BOTH A 6" FLATSTRIP WATERSTOP AND A SEALANT GROOVE.

DOWELS, PIPE, WATERSTOPS AND OTHER INSTALLED MATERIALS AND ACCESSORIES SHALL BE HELD SECURELY IN POSITION WHILE CONCRETE IS BEING PLACED.

UNLESS OTHERWISE INDICATED, ASIDE FROM NORMAL ACCESSORIES USED TO HOLD REINFORCING BARS FIRMLY IN POSITION, THE FOLLOWING SHALL BE ADDED:

- A) IN SLABS #5 RISER BARS AT 36 INCHES OC MAXIMUM TO SUPPORT TOP REINFORCING BARS.
- B) IN WALLS WITH 2 CURTAINS #3 U OR Z SHAPE SPACERS AT 6 FEET OC EACH WAY.

VERTICAL REINFORCEMENT FOR CONCRETE OR MASONRY SHALL BE SPLICED WITH DOWEL BARS OF THE SAME SIZE AND SPACING FROM THE FOUNDATION USING A STANDARD SPLICE LENGTH UNLESS INDICATED OTHERWISE.

SEALANT SHALL BE PLACED AT THE TOP OF ALL JOINTS RECEIVING EXPANSION JOINT FILLER. SEALANT DEPTH SHALL BE THE JOINT FILL THICKNESS OR 1/2", WHICHEVER IS LESS.

ALL GROUT SHALL BE NON-SHRINK GROUT, UNLESS INDICATED OTHERWISE.

UNLESS OTHERWISE SHOWN CONCRETE WALLS AND SLABS SHALL BE REINFORCED AS FOLLOWS: #4@12" EW, CENTER OF 6" SECTIONS; #5@12" EW, CENTER OF 8" SECTIONS; #4 @ 12" EW EF OF 10" SECTIONS; #5@12" EW EF OF 12" AND THICKER SECTIONS.

METAL CLIPS OR SUPPORTS SHALL NOT BE PLACED IN CONTACT WITH THE FORMS OR THE SUBGRADE. CONCRETE BLOCKS (OR DOBIES) SUPPORTING BARS ON SUBGRADE SHALL BE IN SUFFICIENT NUMBERS TO SUPPORT THE BARS WITHOUT SETTLEMENT, BUT IN NO CASE SHALL SUCH SUPPORT BE CONTINUOUS.

DOWELS SHALL BE WIRED OR OTHERWISE HELD IN POSITION. THEY SHALL NOT BE SHOVED INTO FRESHLY PLACED CONCRETE.

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, LAPS OF REINFORCEMENT SHALL BE AS SHOWN ON DETAIL S-143.

REINFORCING BARS AND ACCESSORIES SHALL NOT BE IN CONTACT WITH ANY PIPE, PIPE FLANGE OR METAL PARTS EMBEDDED IN CONCRETE. A MINIMUM OF 2 INCHES CLEARANCE SHALL BE PROVIDED AT ALL TIMES.

ALL ITEMS EMBEDDED IN CONCRETE SHALL BE SPACED ON CENTER AT LEAST 3 TIMES THEIR OUTSIDE DIMENSION. THE OUTSIDE DIMENSION SHALL NOT EXCEED ONE THIRD OF THE MEMBER THICKNESS

UNLESS OTHERWISE SHOWN ON THE DRAWINGS CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS:

FOR CONCRETE PLACED AGAINST EARTH (SEE CONSTRUCTION JOINT DETAILS FOR THIN SLABS-ON-GRADE, BOTTOM COVER MAY BE LESS THAN 3" IF SO INDICATED) _____ 3"

FOR SURFACES IN CONTACT WITH WATER OR WEATHER AND FORMED SURFACES IN CONTACT WITH EARTH _____ 2"

FOR CONCRETE NOT EXPOSED TO WEATHER, OR IN CONTACT WITH WATER OR EARTH _____ 1 1/2"

UNLESS OTHERWISE NOTED, WALLS AND SLABS SHOWN WITH A SINGLE LAYER OF REINFORCEMENT SHALL HAVE THAT REINFORCEMENT CENTERED

SLABS WITH SLOPING SURFACES SHALL HAVE THE INDICATED SLAB THICKNESS MAINTAINED AS THE MINIMUM. SLAB-ON-GRADE BOTTOMS MAY EITHER SLOPE WITH THE TOP SURFACE OR BE LEVEL. REINFORCING IN SLABS WITH SLOPING SURFACES SHALL BE PLACED AT THE REQUIRED CLEARANCE FROM THE SLAB SURFACES.

STRUCTURAL STANDARD DETAILS

DETAILS ON STRUCTURAL STANDARD DETAIL SHEETS ARE PART OF STANTEC'S STRUCTURAL STANDARD DETAILS.

THESE DETAILS ARE TO BE USED WHEN REFERRED TO OR WHEN NO OTHER MORE RESTRICTIVE OR DIFFERENT DETAILS ARE INDICATED ON THE DRAWINGS.

DETAILS NOT PERTAINING TO THE PROJECT ARE MARKED THUS

CONDUIT COORDINATION NOTES

REFER TO THE NOTES BELOW, AND ELECTRICAL AND STRUCTURAL DRAWINGS AND SPECIFICATIONS, FOR CONDUIT PLACEMENT REQUIREMENTS. CONDUIT NOT IN CONFORMANCE WITH THESE REQUIREMENTS SHALL NOT BE INSTALLED WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER OF RECORD.

FOR CONDUIT RUNNING IN THE PLANE OF CONCRETE SLABS OR WALLS:

THE OUTSIDE DIAMETER OF THE CONDUIT SHALL NOT EXCEED ONE-THIRD OF MEMBER THICKNESS.

CONDUIT SHALL NOT BE SPACED CLOSER THAN 3 OUTSIDE DIAMETERS ON CENTER;

CONDUIT SHALL BE LOCATED ONLY WITHIN THE MIDDLE THIRD OF THE MEMBER ;

CONDUIT SHALL NOT BE SUPPORTED DIRECTLY ON REBAR.

FOR CONDUIT RUNNING THROUGH THE PLANE OF CONCRETE SLABS OR WALLS:

COORDINATE CONDUIT PLACEMENT TO AVOID OR MINIMIZE IMPACT TO REBAR PLACEMENT.

CONDUIT SHALL BE 2 INCHES MINIMUM CLEAR OF REBAR.

REBAR MAY BE SHIFTED 2 INCHES MAXIMUM TO AVOID CONDUIT.

WHERE REBAR MUST BE CUT TO ACCOMMODATE CONDUIT PLACEMENT, PROVIDE ADDITIONAL REINFORCEMENT PER DETAIL S-144 OR S-148, CONSIDERING THE CONDUIT PENETRATION(S) AS AN EQUIVALENT CIRCULAR OR RECTANGULAR OPENING, RESPECTIVELY.

CONDUIT SHALL NOT BE RUN IN OR THROUGH GRADE BEAMS.

SEE DETAIL S-182 FOR ADDITIONAL REQUIREMENTS.

GENERAL DESIGN CRITERIA

DESIGN IN ACCORDANCE WITH THE CITY OF EVANSTON BUILDING CODE, WHICH ADOPTS THE 2012 EDITION OF THE INTERNATIONAL BUILDING CODE, EXCEPT WHERE OTHER APPLICABLE CODES OR THE FOLLOWING NOTES ARE MORE RESTRICTIVE.

LOADINGS:

SOIL LOADS:

ALLOWABLE BEARING PRESSURE (PSF): _____ 3600
GROUNDWATER ELEVATION: _____ +11.3± (AT FG)
SOIL UNIT WEIGHT (PCF): _____ 130
LATERAL EARTH PRESSURE COEFFICIENT, AT-REST (K_a): _____ 1.0
FROST DEPTH (INCHES): _____ 42

LIVE LOADS:

TOP SLABS, INACCESSIBLE TO VEHICULAR TRAFFIC (PSF): _____ 300
PROCESS AND ELECTRICAL ACCESS: _____ 300
PLATFORMS AND STAIRS: _____ 100
ALL OTHER LIVE LOADS: _____ TABLE 4-1
ASCE 7-10

WIND LOADS:

ULTIMATE DESIGN WIND SPEED (3 SEC - MPH): _____ 120
NOMINAL DESIGN WIND SPEED (3 SEC - MPH): _____ 93
RISK CATEGORY: _____ III
WIND EXPOSURE: _____ B

SEISMIC LOADS:

RISK CATEGORY: _____ III
SEISMIC IMPORTANCE FACTOR (I_e): _____ 1.25
MAPPED SPECTRAL RESPONSE COEFFICIENT (S_s): _____ 0.124g
MAPPED SPECTRAL RESPONSE COEFFICIENT (S₁): _____ 0.059g
DESIGN SPECTRAL RESPONSE COEFFICIENT (S_{ds}): _____ 0.133g
DESIGN SPECTRAL RESPONSE COEFFICIENT (S_{d1}): _____ 0.094g
SITE CLASS: _____ D
SEISMIC DESIGN CATEGORY: _____ B

SNOW LOADS:

GROUND SNOW LOAD (P_g) (PSF): _____ 25

FLOOD LOADS:

FLOOD HAZARD ZONE: _____ X
(AREA X DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANGE FLOOD PLAIN)

FLOOD HAZARD ZONE BASED ON FEMA FIRM MAP NUMBER 17031C0270J DATED 8/19/2008

STRUCTURE SPECIFIC DESIGN CRITERIA

DESIGNED TO MEET THE SERVICEABILITY REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES PER ACI 350-06.

VALVE VAULT STRUCTURE

BASIC SEISMIC-FORCE-RESISTING SYSTEM: _____ ALL OTHER SELF-SUPPORTING STRUCTURES PER ASCE 7-10 TABLE 15.4-2
37
DESIGN BASE SHEAR(V) (KIPS): _____ 0.03
SEISMIC RESPONSE COEFFICIENT (C_s): _____ 1.25
RESPONSE MODIFICATION COEFFICIENT (R): _____ EQUIVALENT LATERAL FORCE PROCEDURE
ANALYSIS PROCEDURE: _____

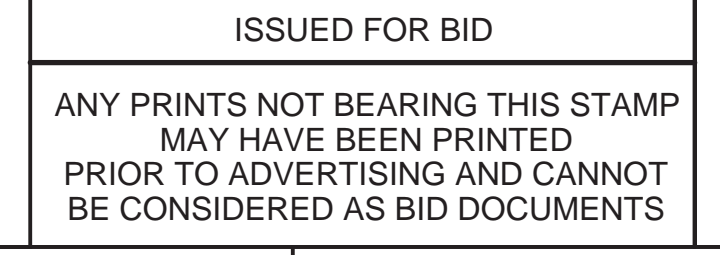
LIST OF EQUIPMENT CONSIDERED IN DESIGN SHOWN IN THE CONTRACT DOCUMENTS					
STRUCTURE NAME (AREA)	EQUIPMENT	MANUFACTURER CONSIDERED IN DESIGN	EQUIPMENT LOAD (DRY WEIGHT)	EQUIPMENT FOOTPRINT	EQUIPMENT OPERATING FREQUENCY
PUMP HOUSE BATTERY ROOM	TRANSFORMER	HAMMOND	1600 LB	38"x34"	N/A
VALVE VAULT	BUTTERFLY VALVE	DEZURIK	5750 LB	48" DIA	N/A
	JIB CRANE	GORBEL	5.22 KIP (THRUST RXN TO WALL)	60" C/C VERT SUPPORTS 10' REACH	N/A
	HEATING SYSTEM PANELS	HULSINGER	2000 LB EA	30"x24" 48"x24"	N/A
	ACTUATOR	DEZURIK	200 LB	13" DIA	N/A (THRU STEM)

NOTE: THE STRUCTURES ARE DEIGNED BASED ON PRELIMINARY EQUIPMENT LOADS AND OPERATING FREQUENCIES PROVIDED BY MANUFACTURERS LISTED HERE. THE LOADS AND OPERATING FREQUENCIES USED IN THE DESIGN ARE INDICATED FOR THEIR RESPECTIVE STRUCTURE/AREA. ANY CHANGE TO A DIFFERENT MANUFACTURER OR THE PRELIMINARY LOADS SHALL BE SUBMITTED BY THE CONTRACTOR FOR EVALUATION BY THE OWNER/ENGINEER PRIOR TO THE CONSTRUCTION OF THE SUPPORTING STRUCTURE OR INSTALLATION OF EQUIPMENT.

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REV	DATE	BY	DESCRIPTION
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
STRUCTURAL
GENERAL NOTES AND DESIGN CRITERIA

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	173440108
0 1'	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	S-001
	SHEET NO.
	34 OF 63

STATEMENT OF SPECIAL INSPECTIONS

1. SPECIAL INSPECTIONS ARE REQUIRED IN ACCORDANCE WITH THE 2012 IBC CHAPTER 17. THE OWNER WILL ENGAGE THE SERVICES OF A QUALIFIED SPECIAL INSPECTOR, WHO WILL PROVIDE ALL SERVICES NECESSARY TO MEET THE IBC SPECIAL INSPECTION REQUIREMENTS.
2. SPECIAL INSPECTIONS WILL BE PROVIDED DURING ALL FABRICATION AND CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE NOTES AND SCHEDULES ON THIS DRAWING.
3. SPECIAL INSPECTION FOR MECHANICAL AND ELECTRICAL EQUIPMENT WILL BE PROVIDED AS INDICATED BELOW:
 - A. MECHANICAL AND ELECTRICAL COMPONENTS AS NOTED BELOW:
 1. PERIODIC SPECIAL INSPECTION IS REQUIRED DURING THE ANCHORAGE OF ELECTRICAL EQUIPMENT FOR EMERGENCY OR STANDBY POWER SYSTEMS
 2. PERIODIC SPECIAL INSPECTION IS REQUIRED DURING THE INSTALLATION OF ANCHORAGE OF OTHER ELECTRICAL EQUIPMENT.
 3. PERIODIC SPECIAL INSPECTION IS REQUIRED DURING THE INSTALLATION OF VIBRATION ISOLATION SYSTEMS.
4. ADDITIONAL SPECIAL INSPECTIONS WILL BE PROVIDED WHERE REQUIRED BY IBC CHAPTER 17.

DEFINITIONS

1. REFER TO SECTION 1702 AND CHAPTER 2 OF THE 2012 IBC FOR DEFINITION OF TERMS APPLICABLE TO SPECIAL INSPECTIONS AND STRUCTURAL OBSERVATIONS.
 - A. SPECIFIC DEFINITIONS

HIGH STRENGTH BOLT	FASTENER IN COMPLIANCE WITH ASTM F3125 OR AN ALTERNATE FASTENER AS PERMITTED IN AISC 360-10 SECTION J3.1.
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CONTRACTOR RESPONSIBILITY

1. EACH CONTRACTOR RESPONSIBLE FOR THE FABRICATION OR CONSTRUCTION OF A MAIN WIND-FORCE-RESISTING SYSTEM OR MAIN SEISMIC-FORCE RESISTING SYSTEM OR COMPONENT LISTED ABOVE SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.

DEFERRED SUBMITTALS:

DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN WHICH ARE PROVIDED BY THE CONTRACTOR AND THEREFORE WERE NOT SUBMITTED AT THE TIME OF THE PERMIT APPLICATION, AND WHICH ARE TO BE SUBMITTED TO THE PERMITTING AGENCY PRIOR TO FABRICATION OR INSTALLATION OF THAT PORTION OF THE WORK.

NO WORK SHALL BE PERFORMED FOR DEFERRED SUBMITTAL ITEMS UNTIL THE PLANS FOR SUCH WORK HAVE BEEN REVIEWED AND FOUND ACCEPTABLE BY THE STRUCTURAL ENGINEER OF RECORD AND APPROVED BY THE BUILDING OFFICIAL.

DRAWINGS AND CALCULATIONS FOR THESE ITEMS SHALL BE SIGNED AND SEALED BY A LICENSED ILLINOIS STRUCTURAL ENGINEER. NO FABRICATION SHALL COMMENCE UNTIL THE FINAL APPROVAL HAS BEEN ISSUED BY THE BUILDING OFFICIAL AND THE STRUCTURAL ENGINEER OF RECORD.

THE DEFERRED SUBMITTALS SHALL INCLUDE AS A MINIMUM, BUT NOT BE LIMITED TO, THE FOLLOWING ITEMS:

SPECIFICATION SECTION	ITEM
01 33 17	EQUIPMENT ANCHORAGE
05 50 00	HANDRAIL SYSTEM
06 80 00	FRP GRATING AND STRUCTURAL SHAPES

INSPECTION OF SOILS

1. SPECIAL INSPECTION FOR SOIL WILL BE IN ACCORDANCE WITH 2012 IBC SECTION 1705.6 AND THE FOLLOWING TABLE.

VERIFICATION AND INSPECTION	INSPECTION	
	CONTINUOUS	PERIODIC
VERIFY MATERIALS BELOW FOOTINGS AND SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	-	X
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	-	X
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	-	X
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	-
PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	-	X

INSPECTION OF CONCRETE CONSTRUCTION

1. SPECIAL INSPECTION FOR CONCRETE CONSTRUCTION WILL BE IN ACCORDANCE WITH 2012 IBC SECTION 1705.3 AND THE FOLLOWING TABLE.

VERIFICATION AND INSPECTION	INSPECTION		REFERENCED STANDARD (A)	IBC REFERENCE
	CONTINUOUS	PERIODIC		
INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING STEEL, AND PLACEMENT.	-	X	ACI 318: 3.5, 7.1 - 7.7	1910.4
INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1705.2.2 ITEM 2b.	-	-	AWS D1.4 ACI 318: 3.5.2	-
INSPECTION OF ANCHORS CAST IN CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED.	-	X	ACI 318 - 8.1.3, 21.2.8	1908.5, 1909.1
INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS (B).	-	X	ACI 318- 3.8.6, 8.1.3, 21.2.8	1909.1
VERIFYING USE OF REQUIRED DESIGN MIX.	-	X	ACI 318: CH. 4, 5.2 - 5.4	1904.2, 1910.2, 1910.3
AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	-	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	1910.10
INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	-	ACI 318: 5.9, 5.10	1910.6, 1910.7, 1910.8
INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	X	ACI 318: 5.11 - 5.13	1910.9
ERECTION OF PRECAST CONCRETE MEMBERS	-	X	ACI 318: CH. 16	-
INSPECTION OF PRESTRESSED CONCRETE:				
A. APPLICATION OF PRESTRESSING FORCES.	X	-	ACI 318: 18.20	-
B. GROUTING OF BONDED PRESTRESSING TENDONS IN THE SEISMIC FORCE-RESISTING SYSTEM.	X	-	ACI 318: 18.18.4	-
VERIFICATION OF IN-SITU CONCRETE STRENGTH PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	X	ACI 318: 6.2	-
INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	-	X	ACI 318: 6.1.1	-

(A) WHERE APPLICABLE, SEE ALSO IBC SECTION 1705.12, SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE.

(B) SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH ACI 355.2 OR OTHER QUALIFICATION PROCEDURES. WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED, SPECIAL INSPECTION REQUIREMENTS WILL BE AS SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND WILL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO COMMENCEMENT OF THE WORK.

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CITY OF EVANSTON

1909 RAW WATER INTAKE REPLACEMENT

STRUCTURAL

NOTES AND SPECIAL INSPECTIONS

VERIFY SCALES

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0 1"

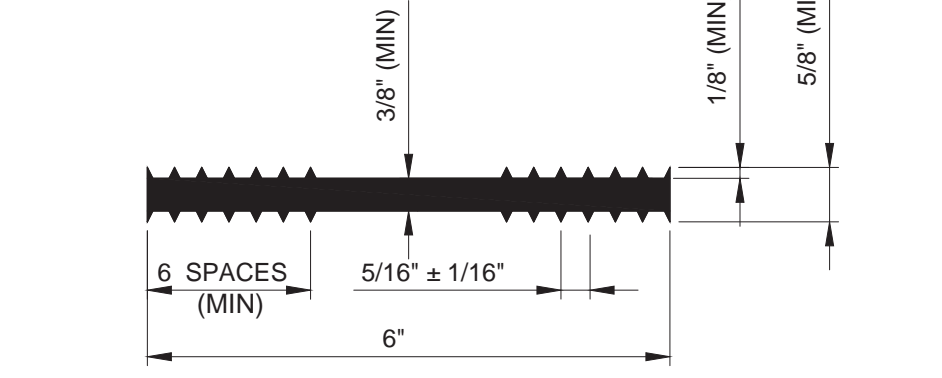
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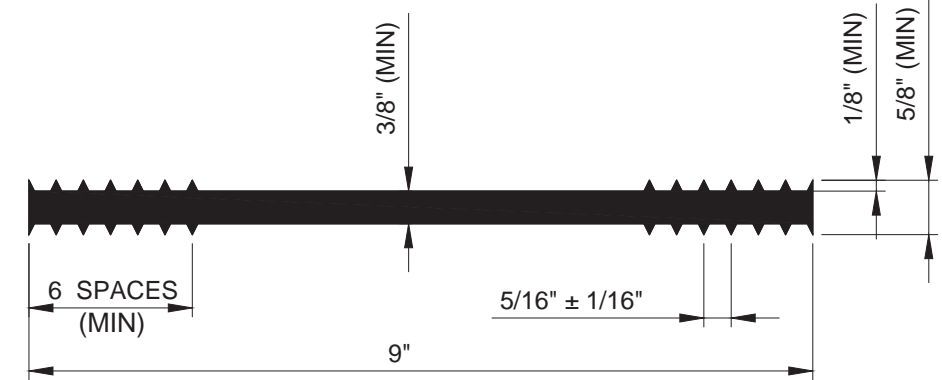
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S-002

SHEET NO.
35 OF 63

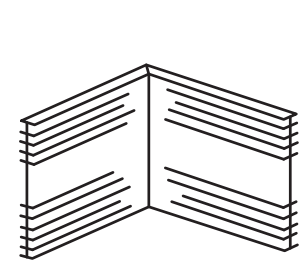
S-105 6" FLATSTRIP WATERSTOP
REV 010119



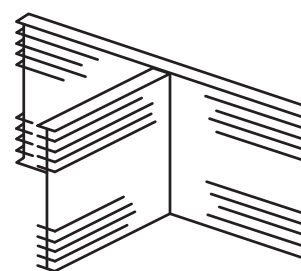
S-106 9" FLATSTRIP WATERSTOP
REV 010119



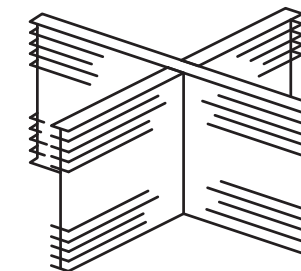
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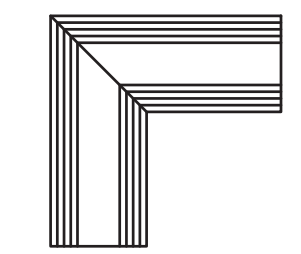
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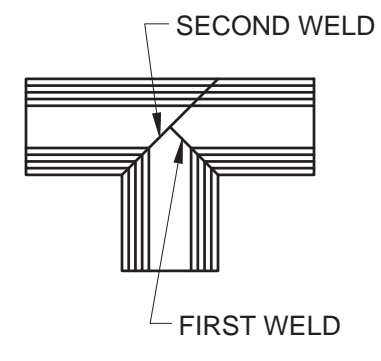
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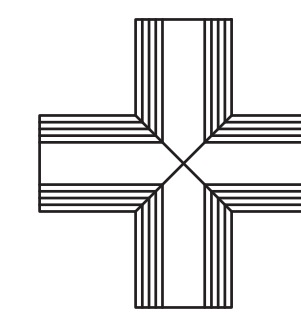
FLAT ELL



FLAT TEE

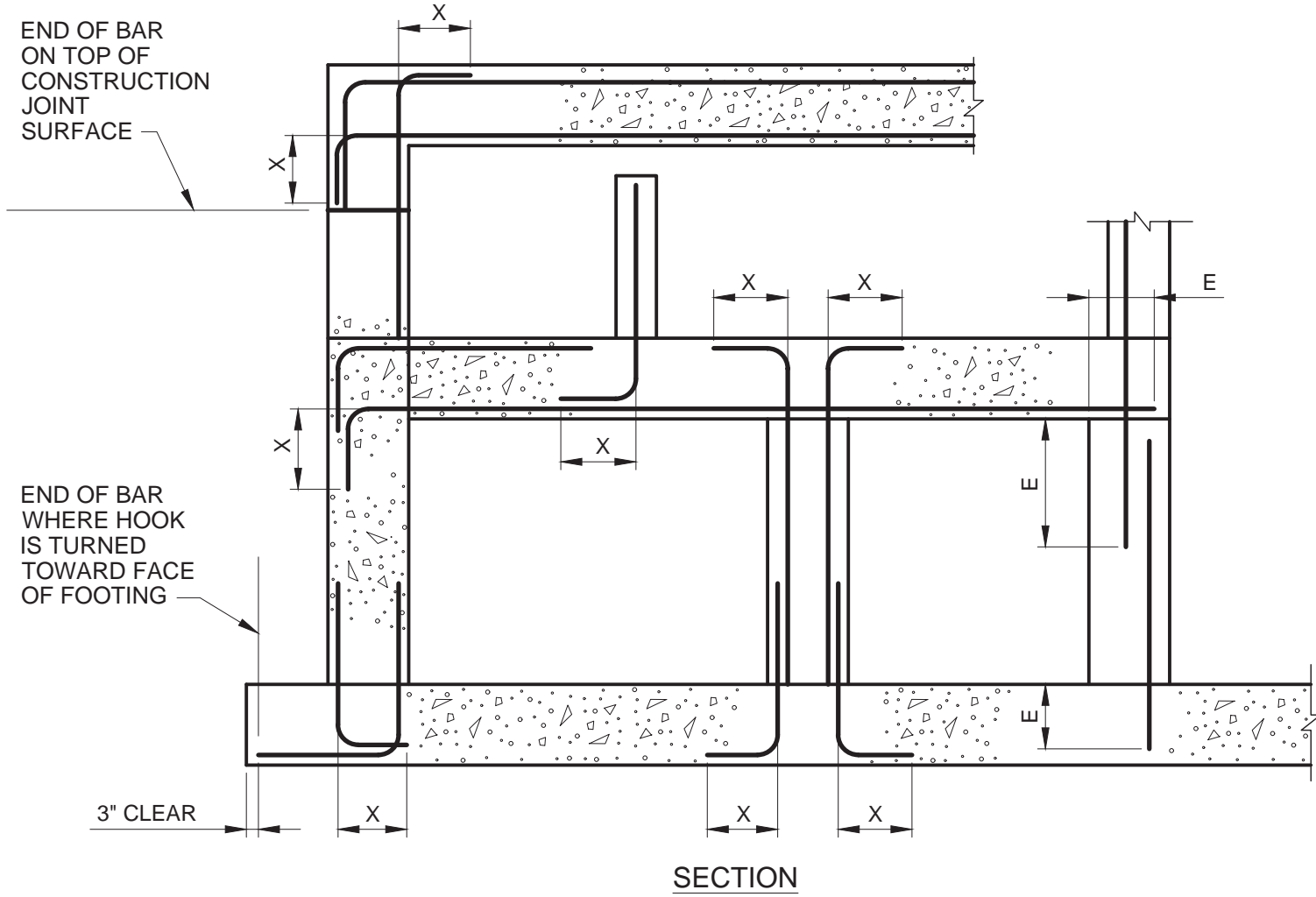
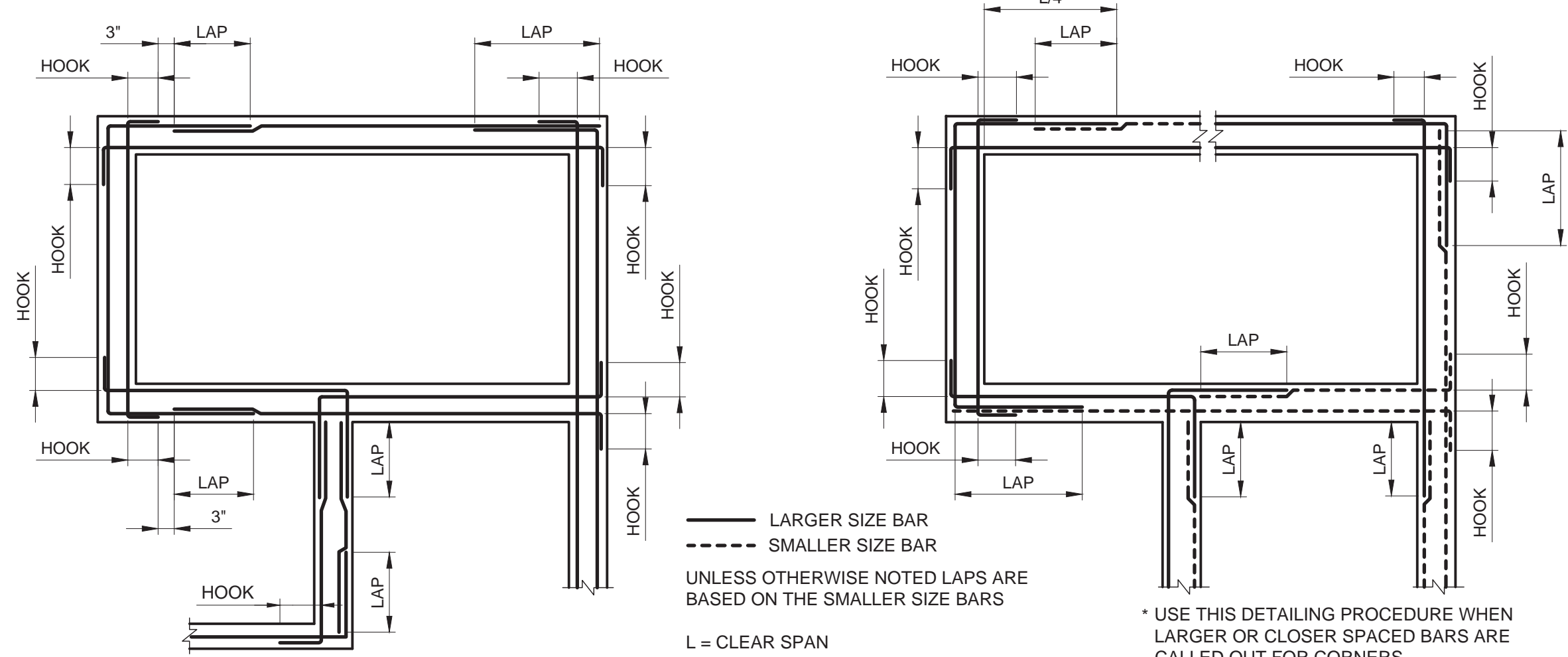


FLAT CROSS



S-108 PREFABRICATED WATERSTOP JOINTS
REV 010119

S-141 HORIZONTAL REINFORCEMENT AT WALL INTERSECTIONS
REV 010119



BAR SIZE	LENGTH (*)		
	HOOK X	LAP	EMBEDMENT E
#3	6"	16" (21")	12" (16")
#4	8"	16" (21")	12" (16")
#5	10"	20" (26")	15" (20")
#6	12"	28" (37")	22" (28")
#7	14"	48" (62")	37" (48")
#8	16"	62" (81")	48" (62")
#9	19"	79" (102")	61" (79")
#10	22"	100" (130")	77" (100")
#11	24"	123" (160")	95" (123")

- NOTES:
- USE LAP LENGTHS AS DETERMINED FROM THESE TABLES UNLESS SHOWN OTHERWISE.
 - THE TABLES SHOWN ARE FOR $f_c=4000$ psi, $f_y=60,000$ psi, 1.5" MIN CONCRETE COVER AND 3" MIN BAR SPACING.
 - MULTIPLY THE LAP AND E SHOWN IN THESE TABLES BY 1.5 FOR EPOXY COATED REINFORCING.
 - WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED, LAP LENGTH SHALL BE THE LARGER OF: EMBEDMENT LENGTH OF LARGER BAR OR LAP LENGTH OF SMALLER BAR
 - USE REINFORCING BAR COUPLERS FOR SPLICES OF #11 AND LARGER BARS UNLESS DRAWINGS INDICATE LAP SPLICES SHOWN IN TABLE ARE ACCEPTABLE.
 - ALL DOWEL BARS SHALL EXTEND AN EMBEDMENT LENGTH E INTO ANOTHER MEMBER OR ACROSS A CONSTRUCTION JOINT UNLESS SHOWN TO SPLICE WITH OTHER BARS OR TO EXTEND TO THE FAR FACE OF THE MEMBER AND END WITH A STANDARD HOOK.

S-143 STANDARD 90° BAR HOOKS, EMBEDMENT LENGTHS AND LAP LENGTHS
REV 010119

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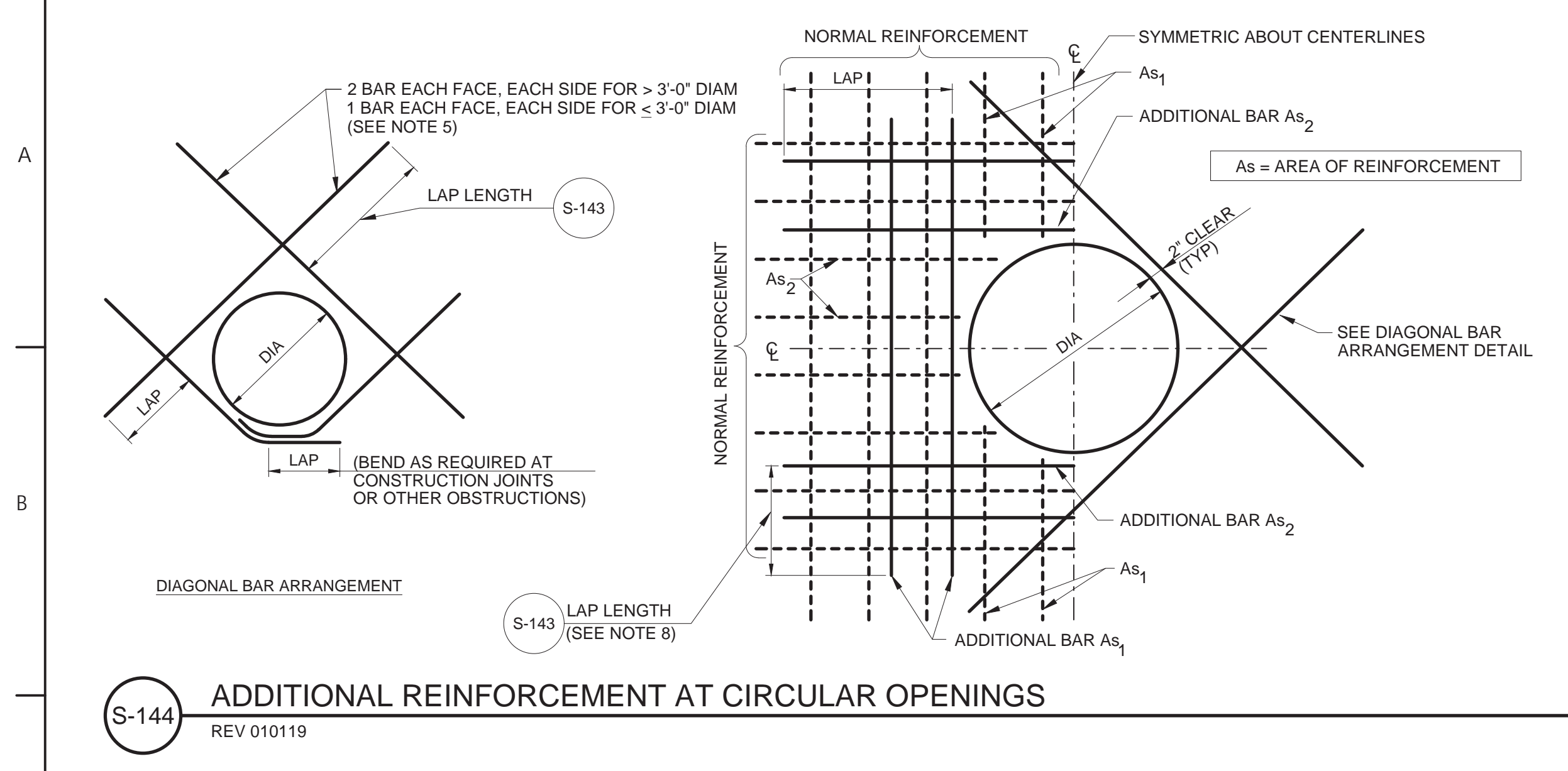
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
STRUCTURAL
STANDARD DETAILS - I

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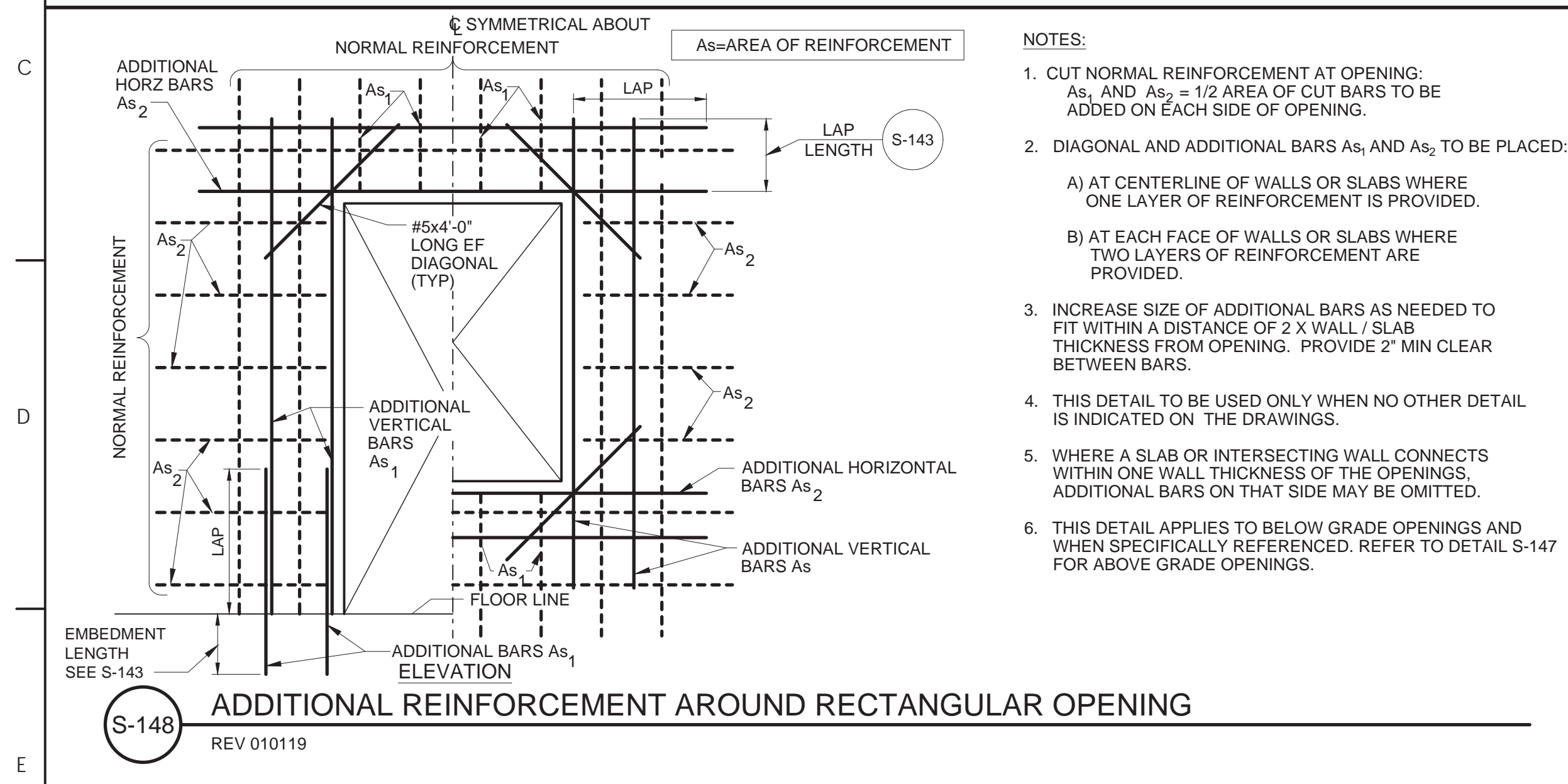
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DRAWING NO. S-003
SHEET NO. 36 OF 63



NOTES:

- THIS DETAIL TO BE USED AT ALL CIRCULAR OPENINGS EXCEPT WHEN OTHER DETAILING IS INDICATED ON THE DRAWINGS.
- CUT NORMAL REINFORCEMENT 2" CLEAR OF OPENING.
- CUT NORMAL REINFORCEMENT AT OPENINGS:
 - AS₁ AND AS₂ = 1/2 AREA OF TOTAL CUT BARS TO BE ADDED ON EACH SIDE OF OPENING.
- DIAGONAL AND ADDITIONAL BARS AS₁ AND AS₂ TO BE PLACED.
 - AT CENTERLINE OF WALLS OR SLABS WHERE ONE LAYER OF REINFORCEMENT IS PROVIDED.
 - AT EACH FACE OF WALLS OR SLABS WHERE TWO LAYERS OF REINFORCEMENT ARE PROVIDED.
- UNLESS OTHERWISE NOTED, SIZE OF DIAGONAL BARS SHALL BE THE SIZE OF THE LARGEST NORMAL REINFORCING BAR CUT.
- INCREASE SIZE OF ADDITIONAL BARS AS NEEDED TO FIT WITHIN A DISTANCE OF 2X WALL/ SLAB THICKNESS FROM OPENING, PROVIDE 2" MIN CLEAR BETWEEN BARS.
- WHERE A SLAB OR INTERSECTING WALL CONNECTS WITHIN ONE WALL THICKNESS OF THE OPENING, ADDITIONAL BARS ON THAT SIDE OF THE OPENING MAY BE OMITTED.
- WHEN THE LAP LENGTH OF THE ADDITIONAL BARS CANNOT BE ACHIEVED DUE TO AN ADJACENT WALL OR SLAB, ADDITIONAL CORNER BARS OR SLAB DOWELS, RESPECTIVELY, MATCHING THE CUT BARS, ARE TO BE INCLUDED IN THE ADJACENT WALL OR SLAB TO LAP WITH THE ADDITIONAL BARS.

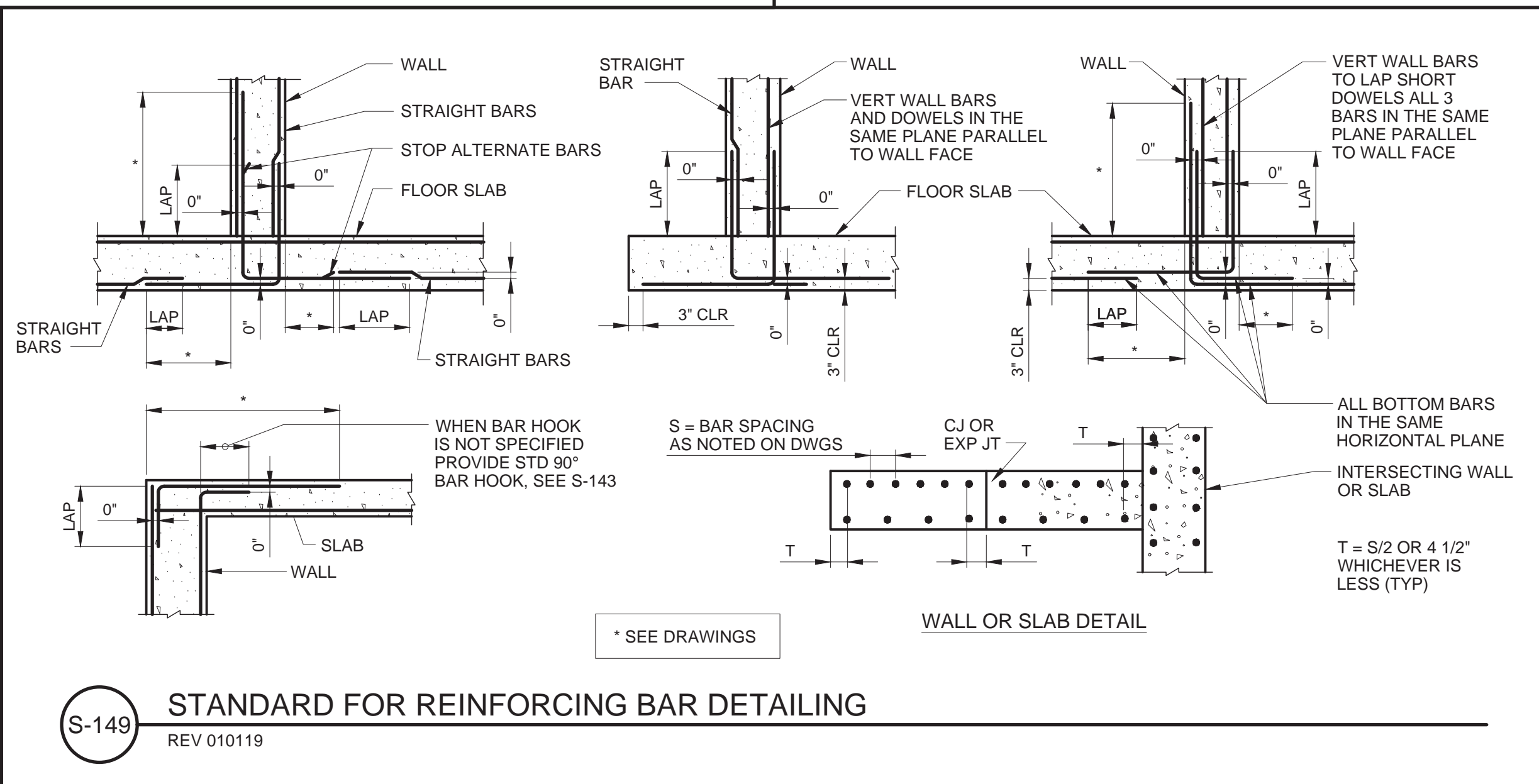
S-144 ADDITIONAL REINFORCEMENT AT CIRCULAR OPENINGS
REV 010119



NOTES:

- CUT NORMAL REINFORCEMENT AT OPENING: AS₁ AND AS₂ = 1/2 AREA OF CUT BARS TO BE ADDED ON EACH SIDE OF OPENING.
- DIAGONAL AND ADDITIONAL BARS AS₁ AND AS₂ TO BE PLACED:
 - AT CENTERLINE OF WALLS OR SLABS WHERE ONE LAYER OF REINFORCEMENT IS PROVIDED.
 - AT EACH FACE OF WALLS OR SLABS WHERE TWO LAYERS OF REINFORCEMENT ARE PROVIDED.
- INCREASE SIZE OF ADDITIONAL BARS AS NEEDED TO FIT WITHIN A DISTANCE OF 2X WALL / SLAB THICKNESS FROM OPENING. PROVIDE 2" MIN CLEAR BETWEEN BARS.
- THIS DETAIL TO BE USED ONLY WHEN NO OTHER DETAIL IS INDICATED ON THE DRAWINGS.
- WHERE A SLAB OR INTERSECTING WALL CONNECTS WITHIN ONE WALL THICKNESS OF THE OPENINGS, ADDITIONAL BARS ON THAT SIDE MAY BE OMITTED.
- THIS DETAIL APPLIES TO BELOW GRADE OPENINGS AND WHEN SPECIFICALLY REFERENCED. REFER TO DETAIL S-147 FOR ABOVE GRADE OPENINGS.

S-148 ADDITIONAL REINFORCEMENT AROUND RECTANGULAR OPENING
REV 010119

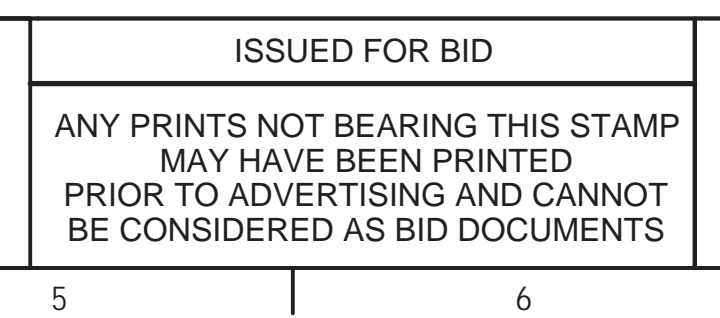


S-149 STANDARD FOR REINFORCING BAR DETAILING
REV 010119

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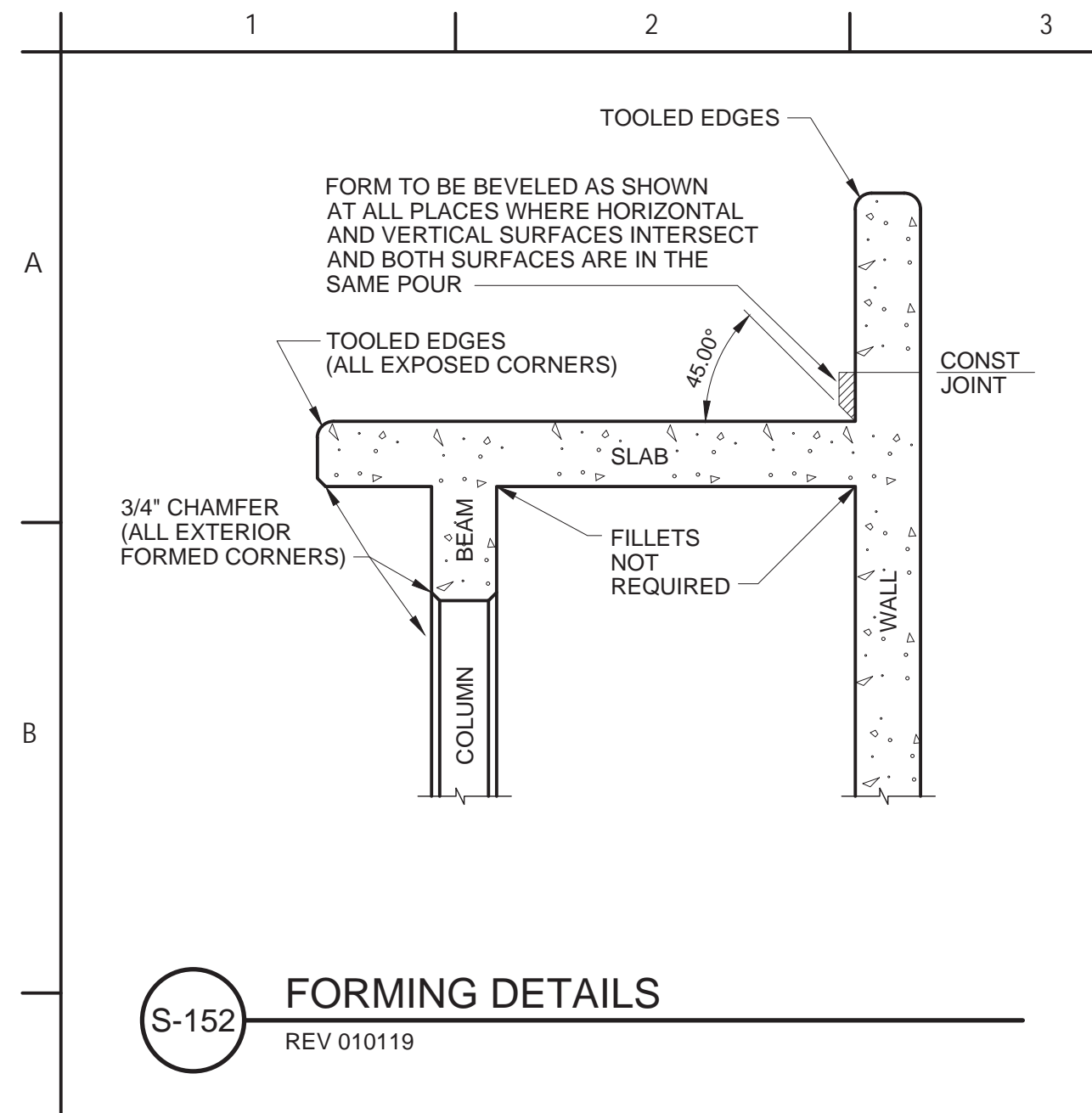
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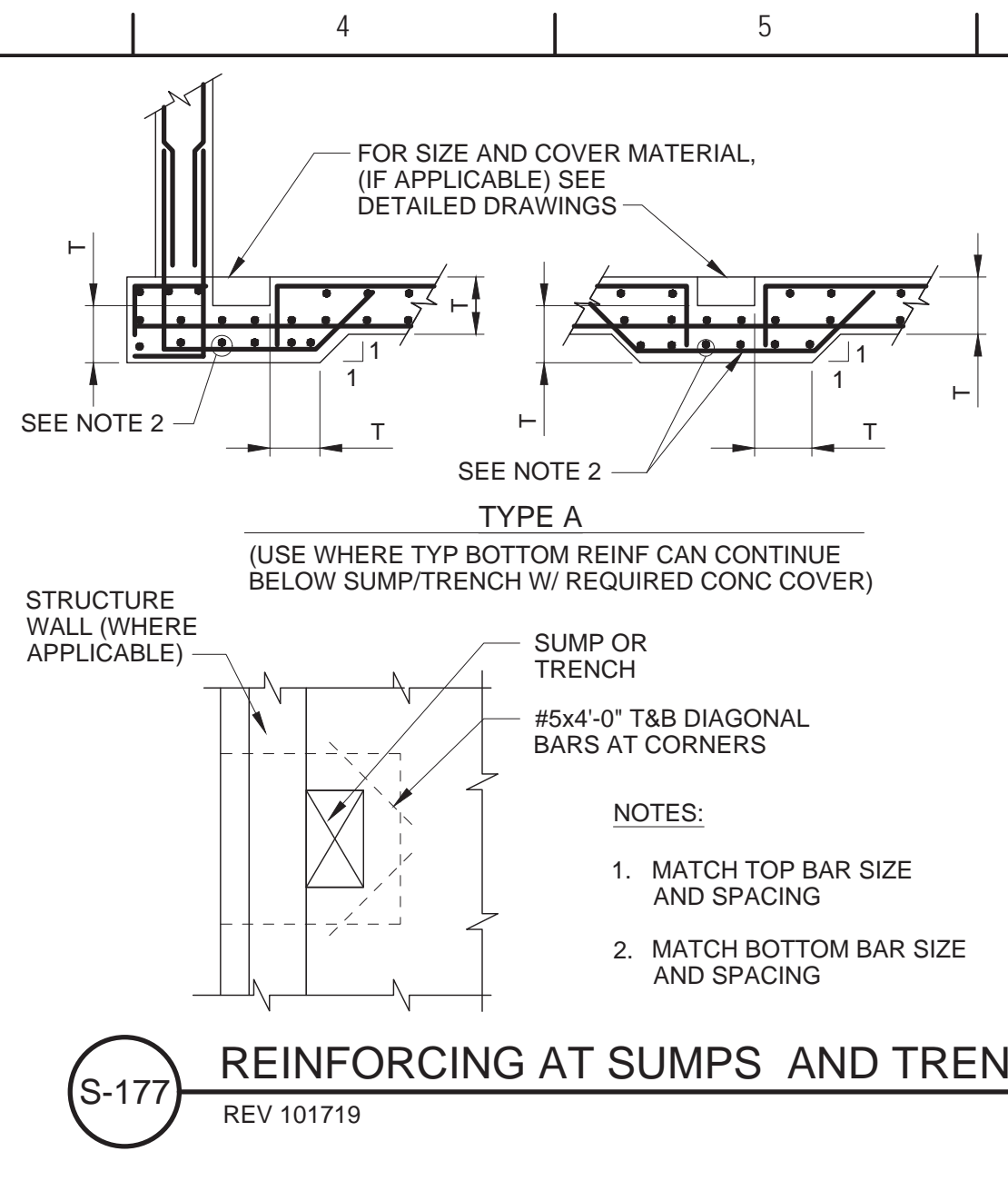
CITY OF EVANSTON
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STANDARD DETAILS - II

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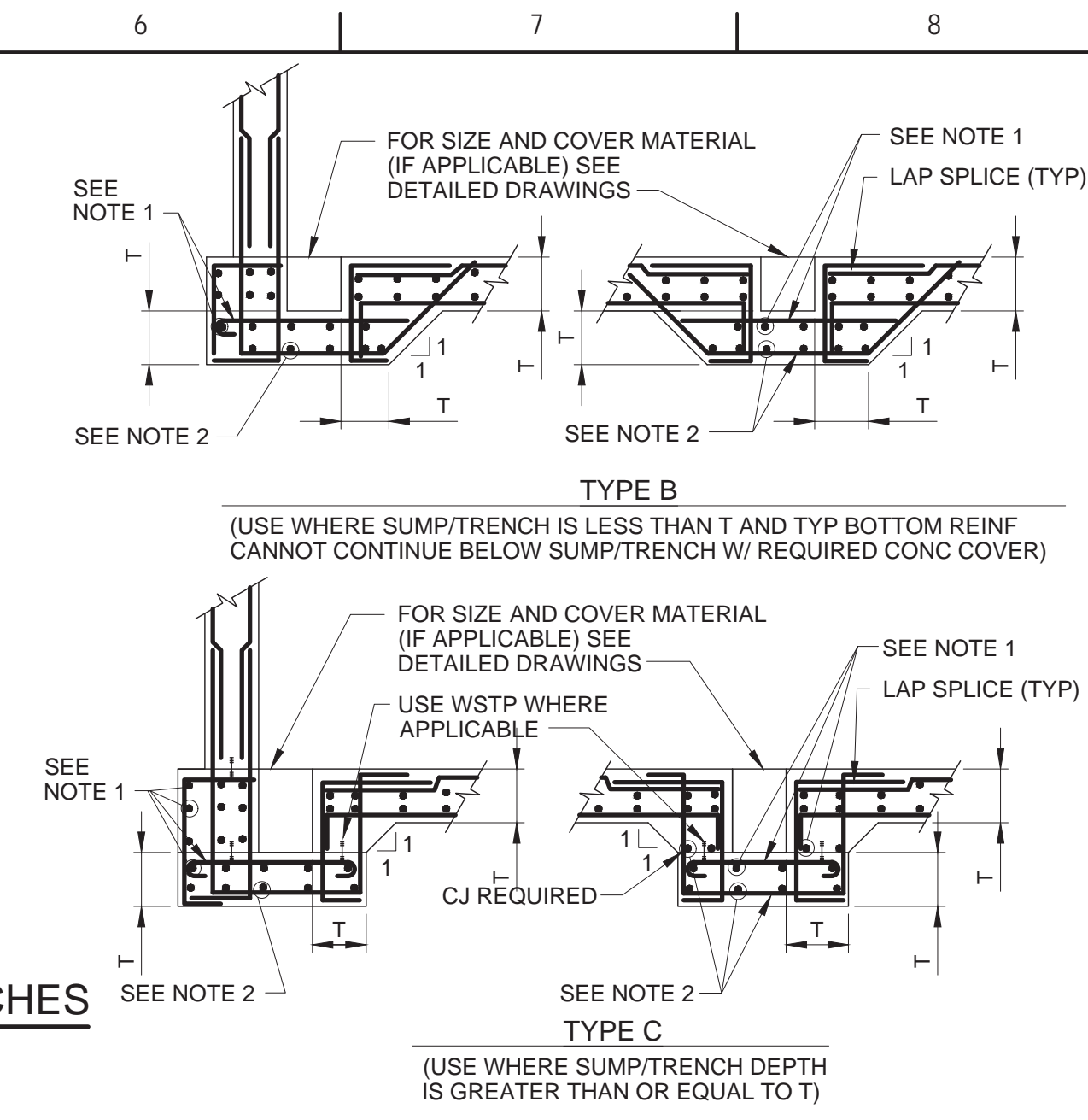
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DRAWING NO. S-004
SHEET NO. 37 OF 63



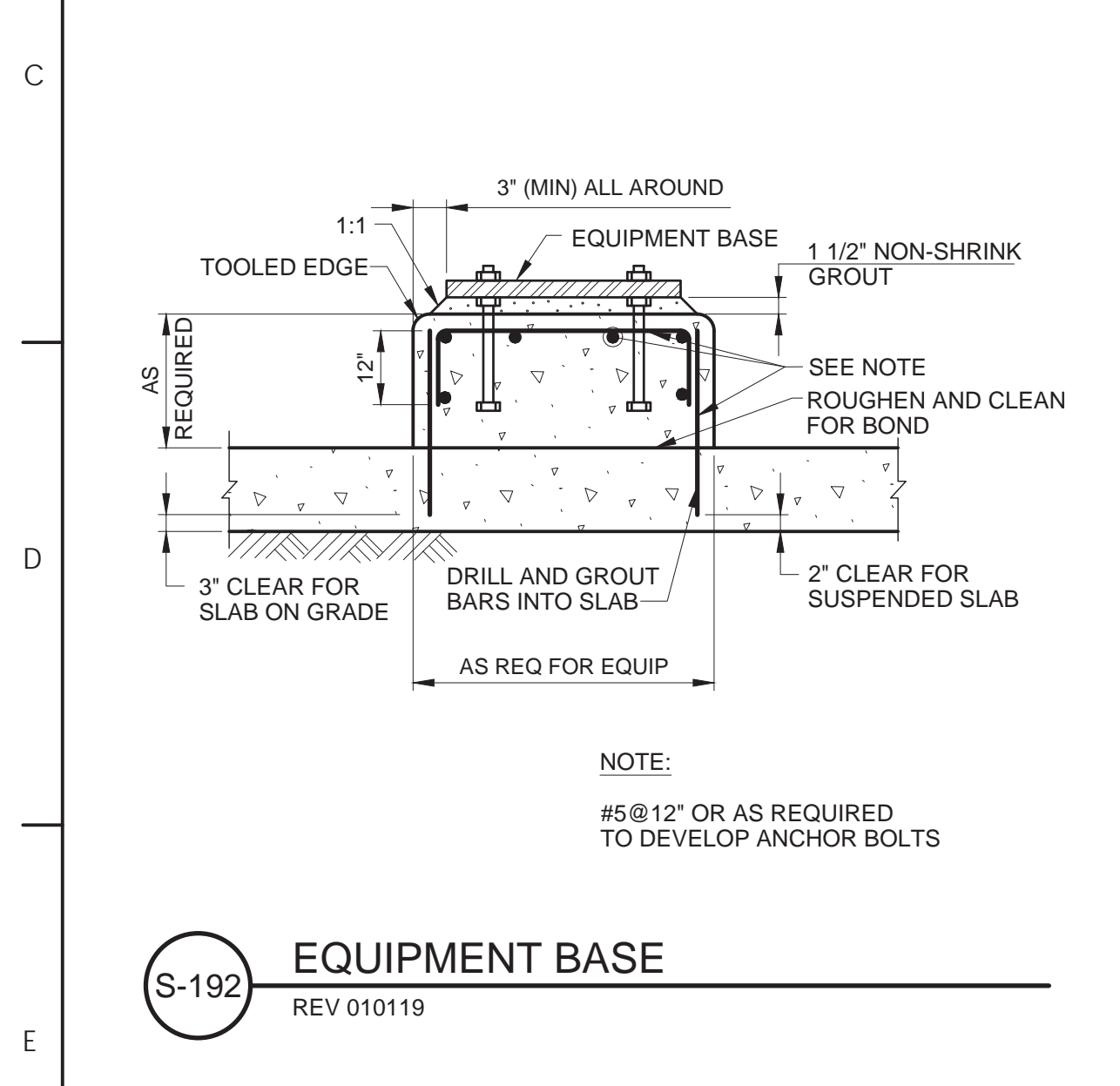
S-152 FORMING DETAILS
REV 010119



S-177 REINFORCING AT SUMPS AND TRENCHES
REV 101719



S-191 EQUIPMENT PAD



S-192 EQUIPMENT BASE
REV 010119

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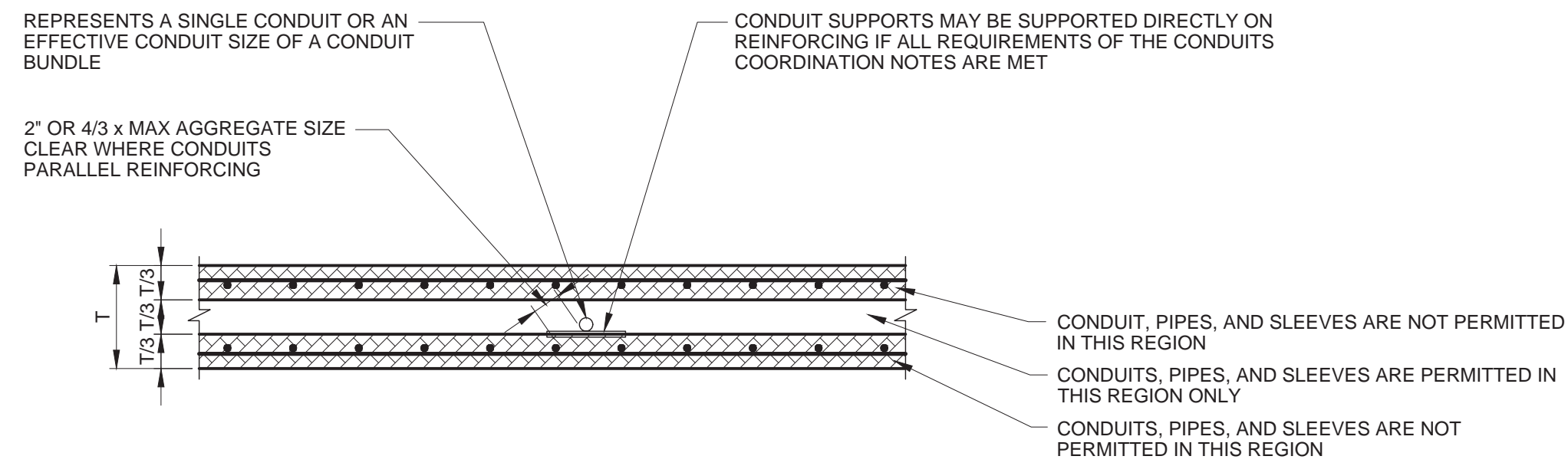
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CITY OF EVANSTON
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STANDARD DETAILS - III

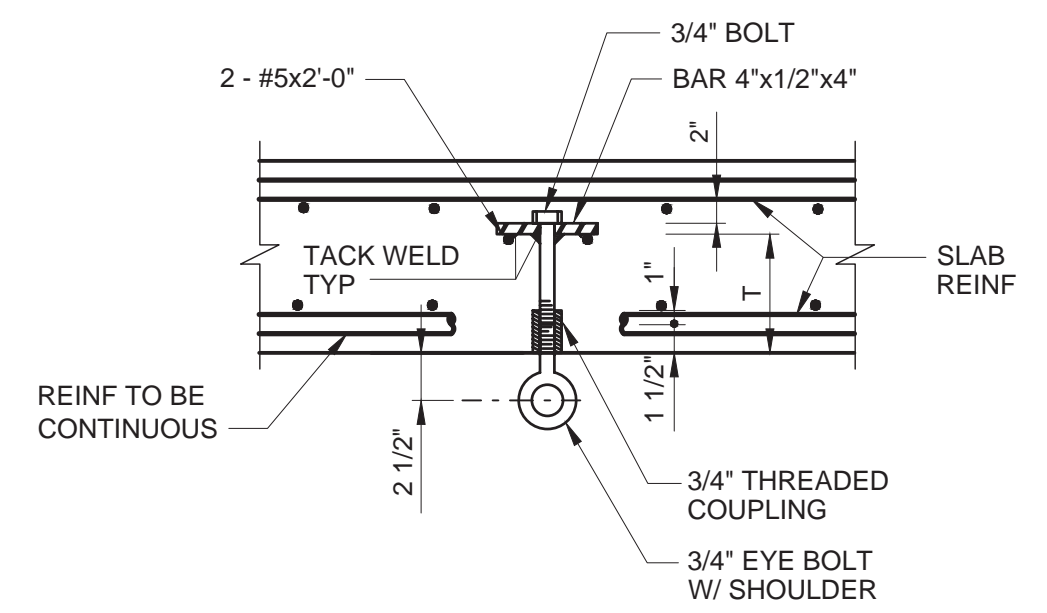
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DRAWING NO.
S-005
SHEET NO.
38 OF 63



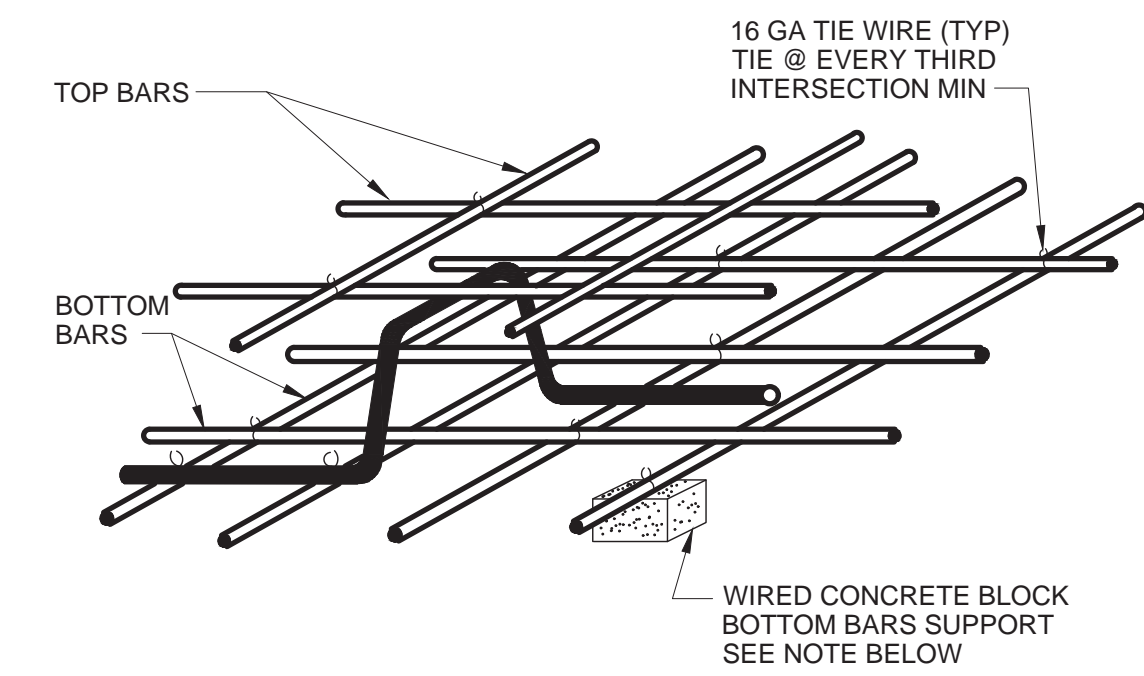
- NOTES:**
- THIS DETAIL APPLIES FOR ALL REINFORCED CONCRETE SLABS, WALLS AND BEAMS, UNLESS NOTED OTHERWISE.
 - CONDUITS, PIPING, OR OTHER NON-STRUCTURAL ITEMS ARE PROHIBITED FROM BEING LOCATED IN REINFORCED CONCRETE AS SHOWN.

EMBEDMENTS NOT PERPENDICULAR TO THE PLANE OF THE REINFORCED CONCRETE



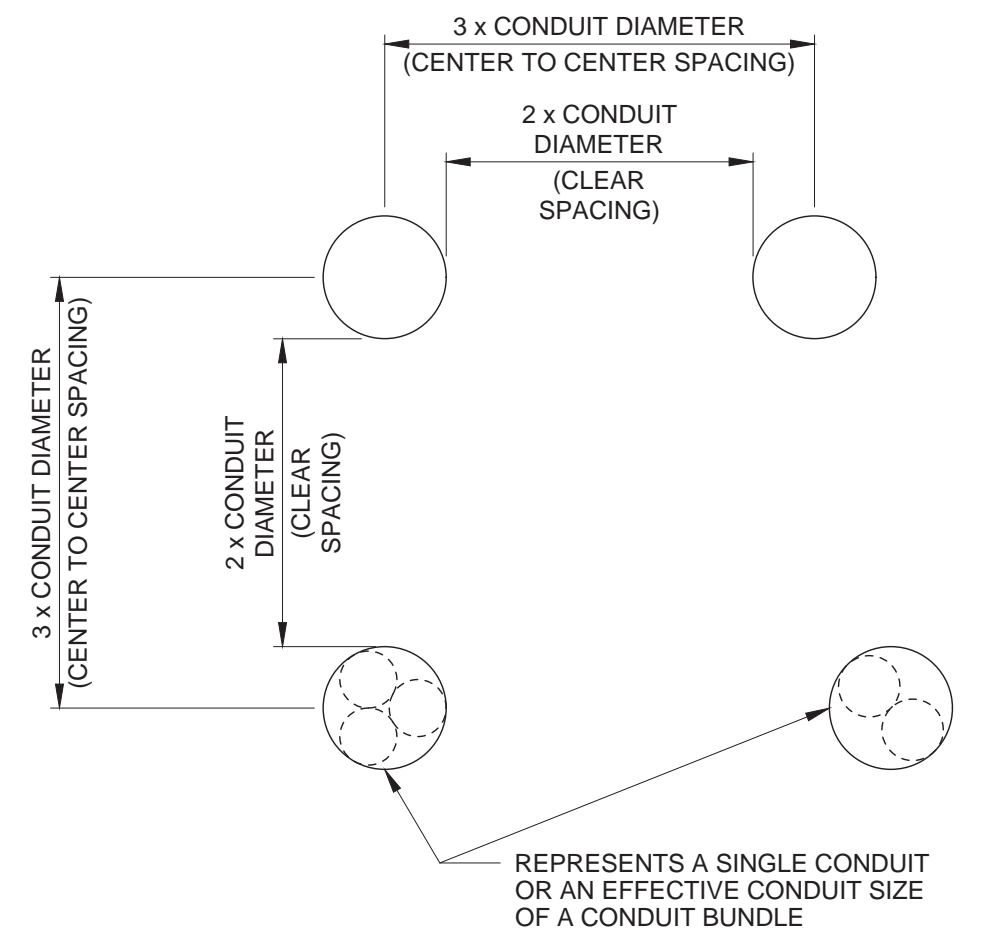
- NOTES:**
- ALL METAL PARTS SHALL BE GALVANIZED STEEL.
 - A CLEARANCE OF 2" MIN SHALL BE MAINTAINED BETWEEN THE LIFTING EYE ASSEMBLY AND THE REINFORCING STEEL.
 - LOAD CAPACITY T=5' 3000 LBS (UNFACTORED LIVE LOAD)

S-195 LIFTING EYE

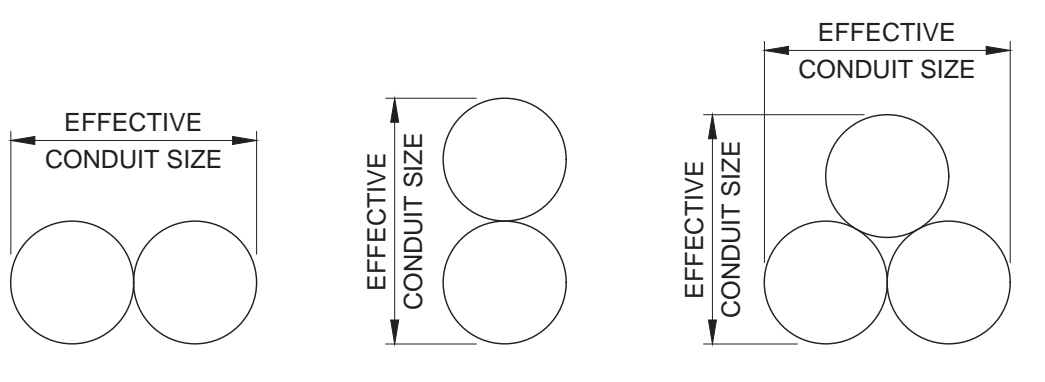


- NOTE:**
- METAL BAR SUPPORTS, IF USED IN SLABS NOT ON GROUND, SHALL NOT MAKE CONTACT WITH FORMS

S-204 REINFORCEMENT SUPPORT
REV 010119

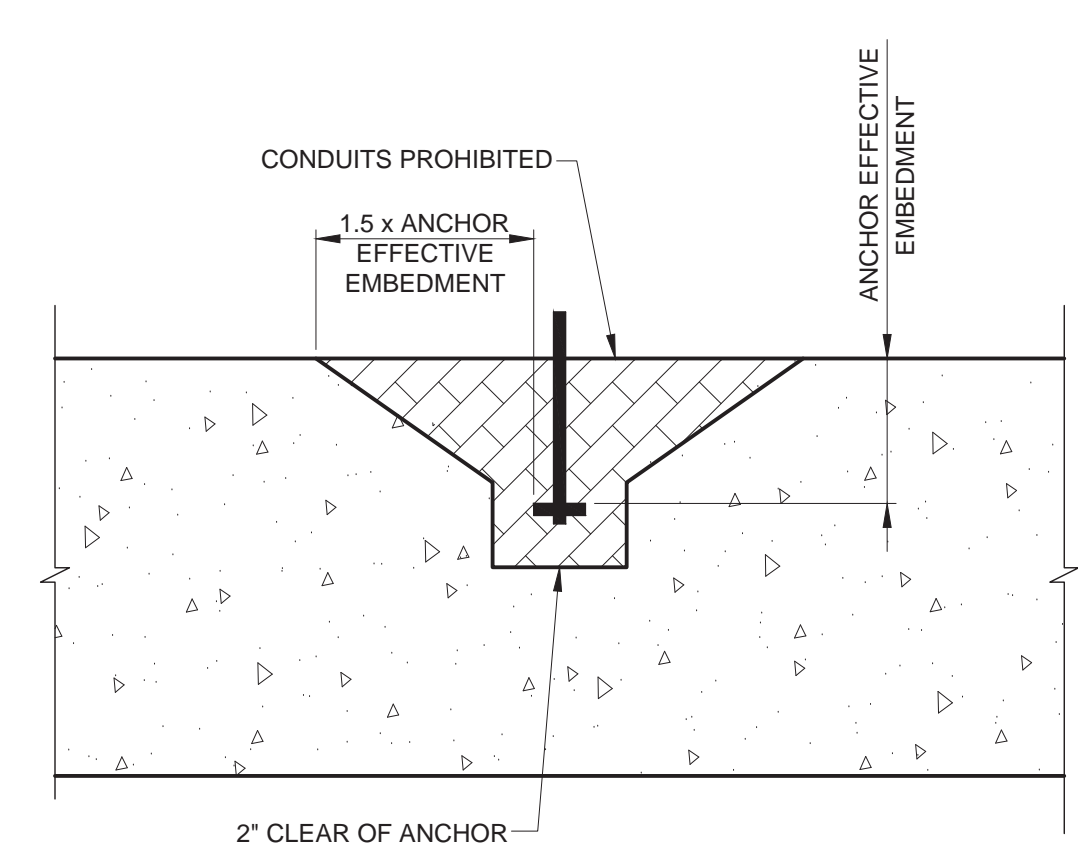


CONDUIT SPACING REQUIREMENTS

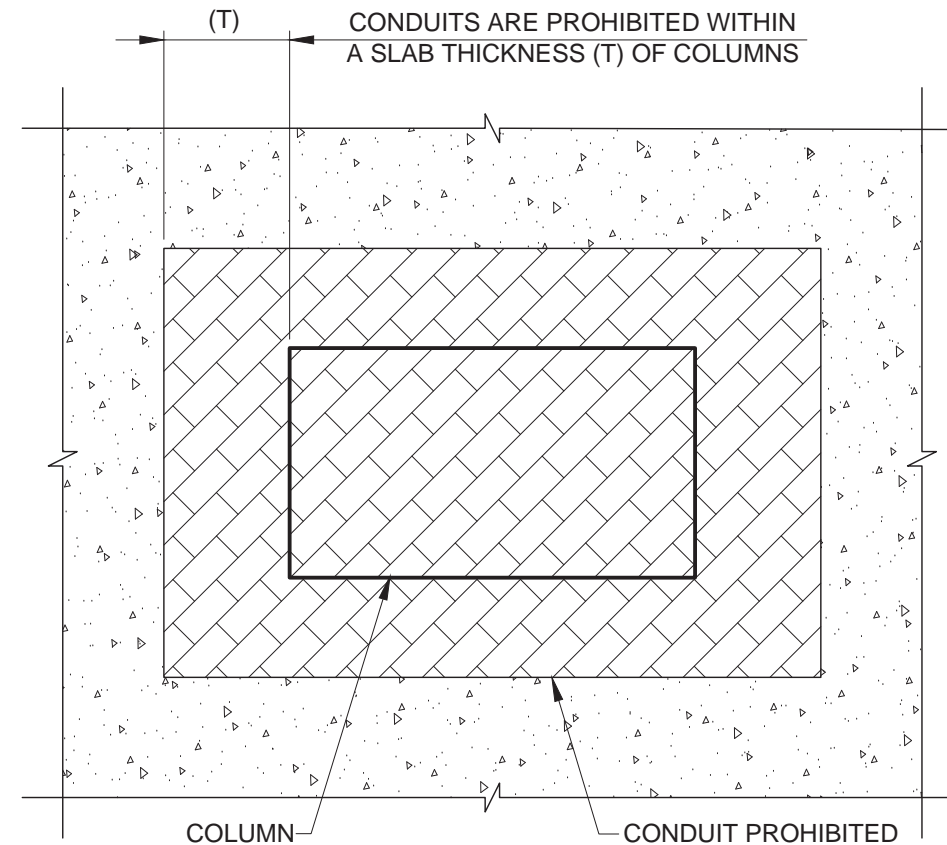


SMALL CONDUITS MAY BE BUNDLED AS SHOWN, PROVIDED THE MAXIMUM EFFECTIVE CONDUIT SIZE DOES NOT EXCEED ONE THIRD THE CONCRETE SECTION THICKNESS

CONDUIT BUNDLE REQUIREMENTS



ANCHOR ROD AND CONDUIT SPACING REQUIREMENTS



CONDUIT TO COLUMN CLEARANCE REQUIREMENTS

S-182 EMBEDMENT REQUIREMENTS
REV 022020

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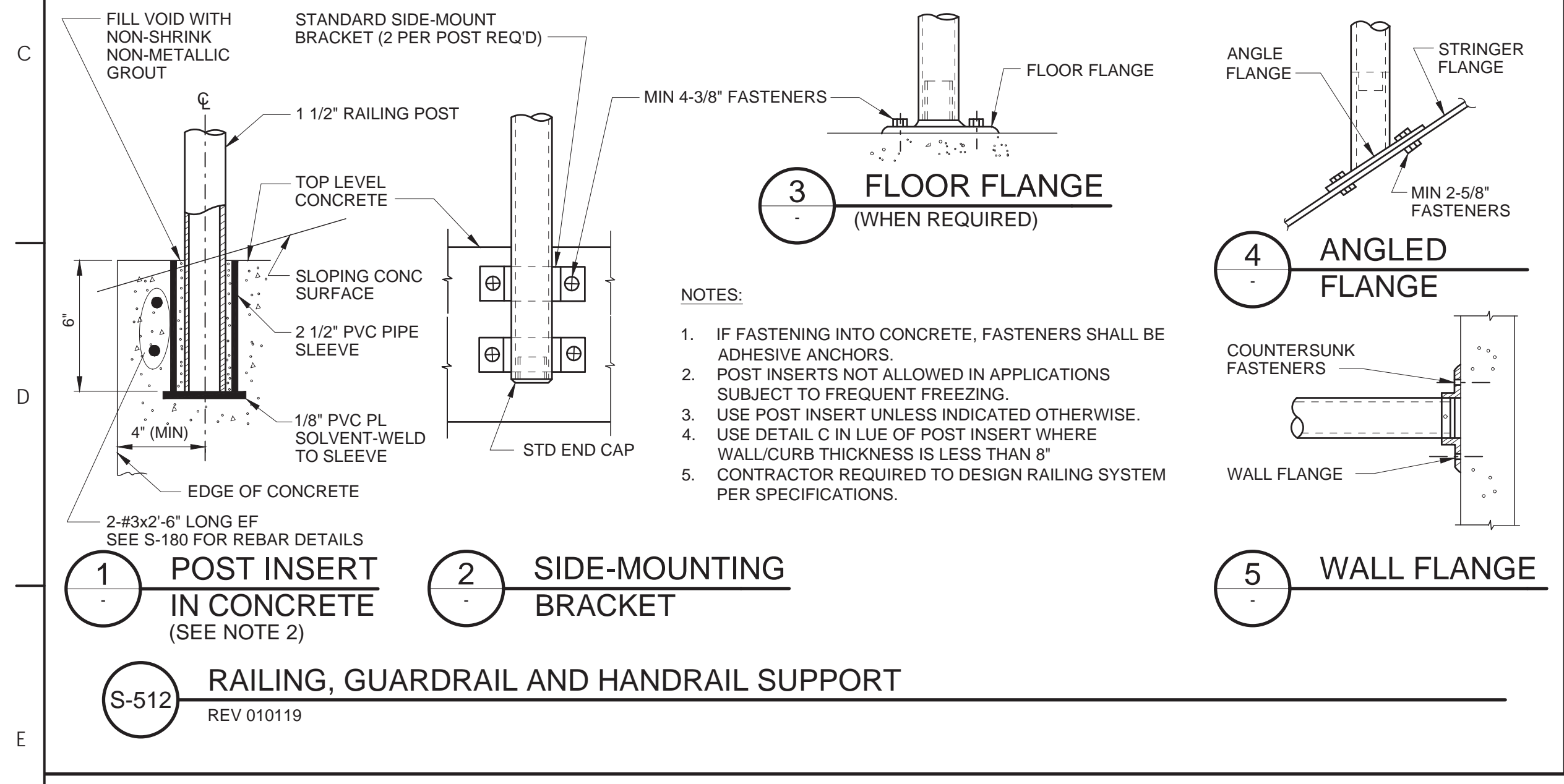
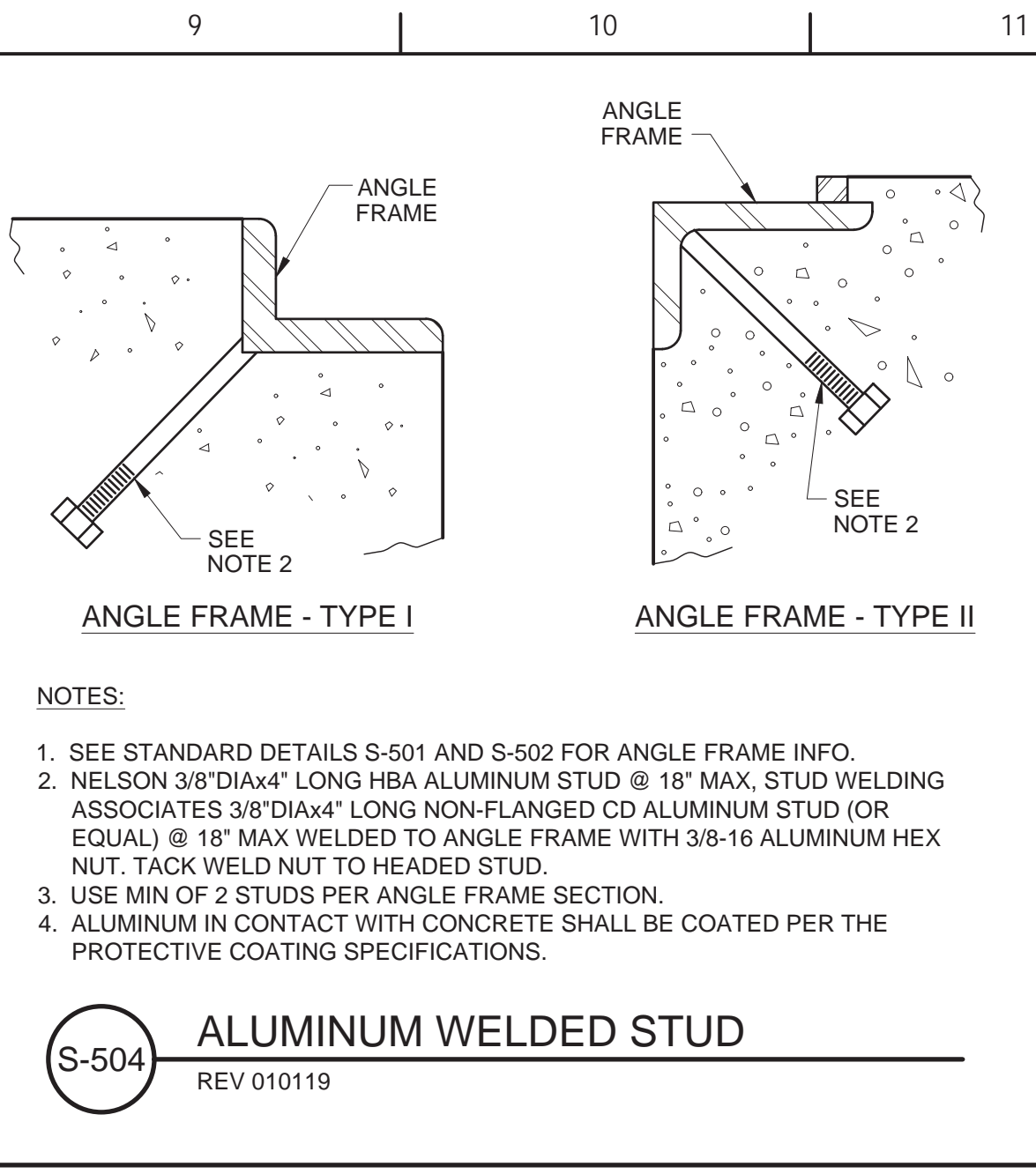
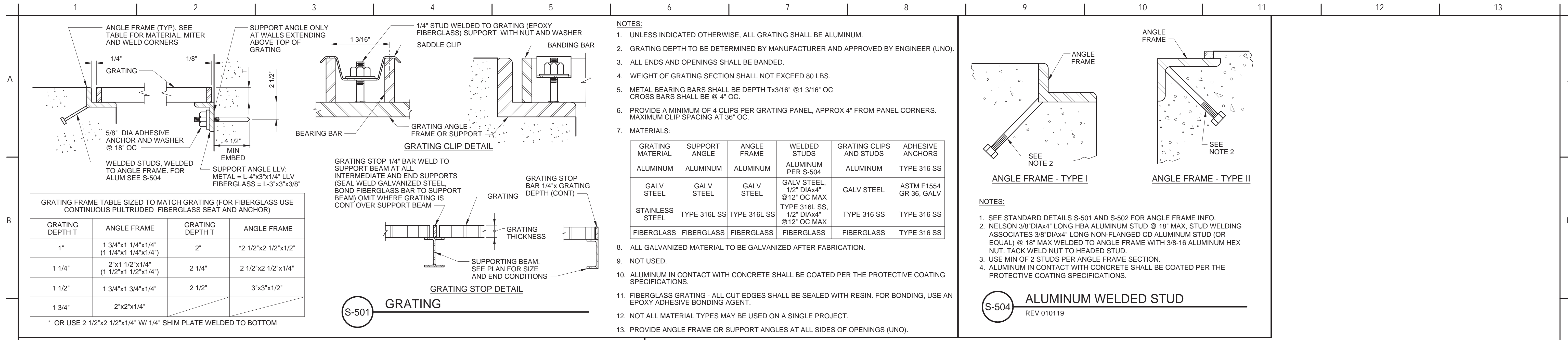
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350 N. ORLEANS ST., SUITE 1301
CHICAGO, ILLINOIS 60654-1983
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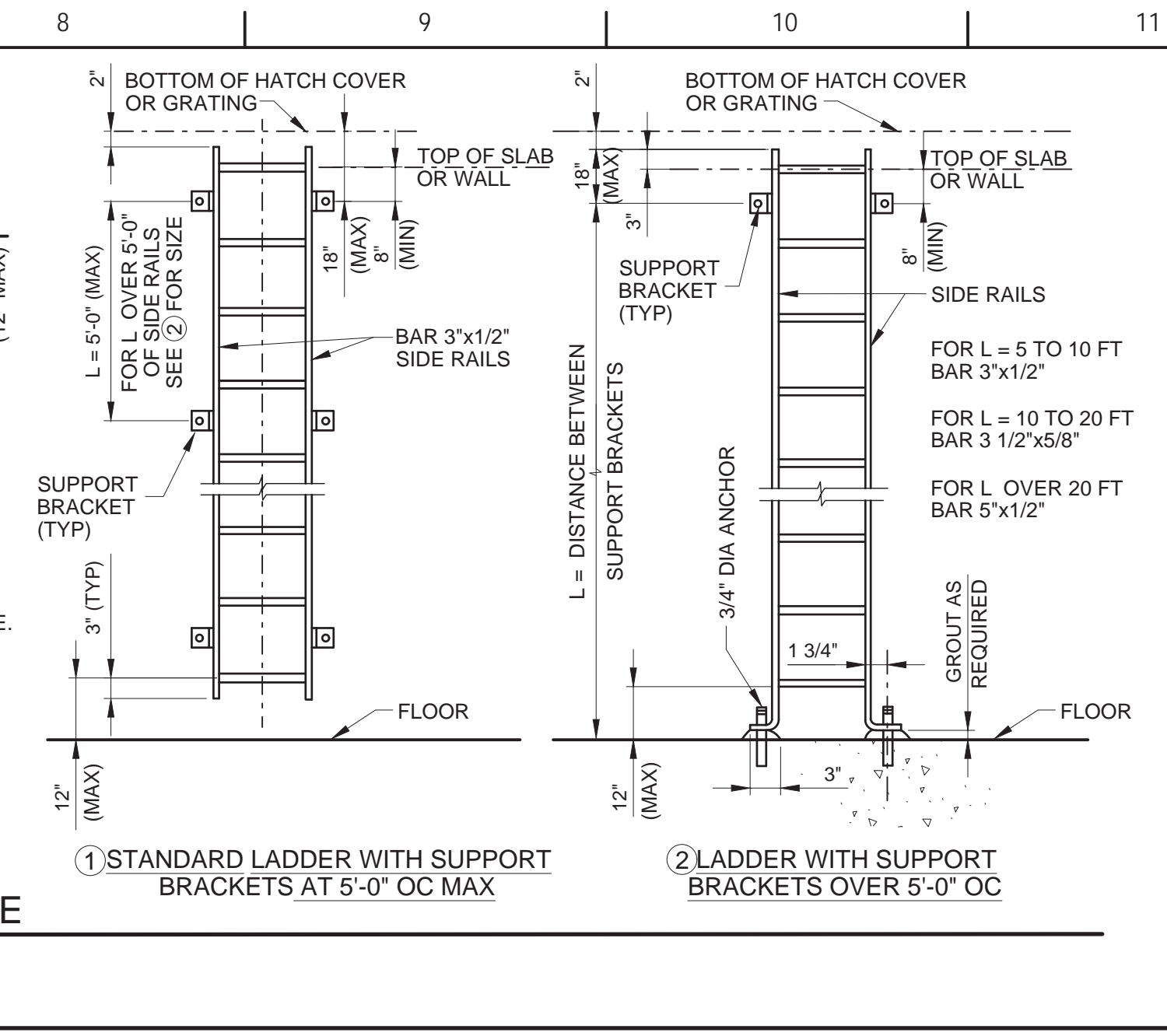
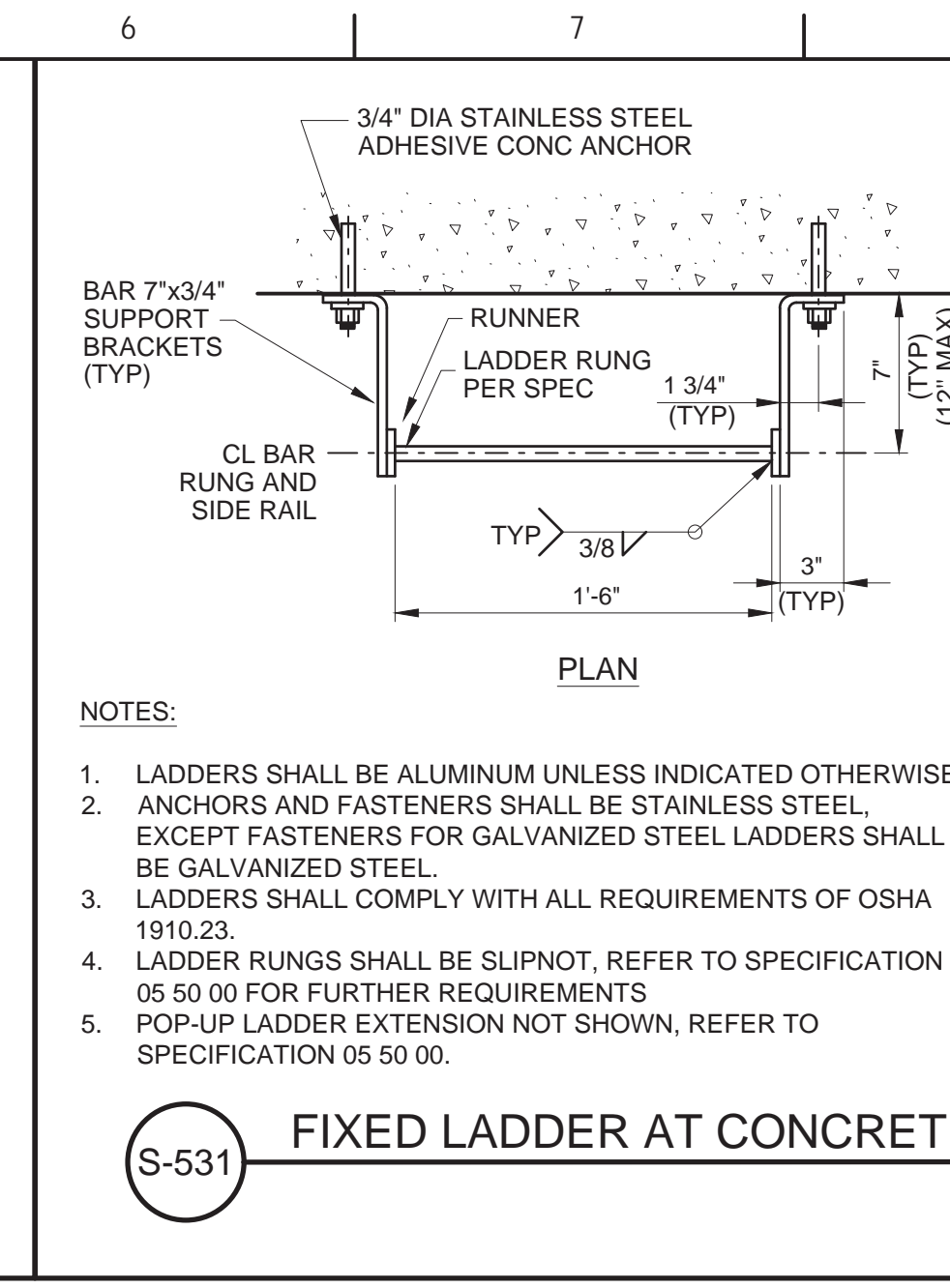
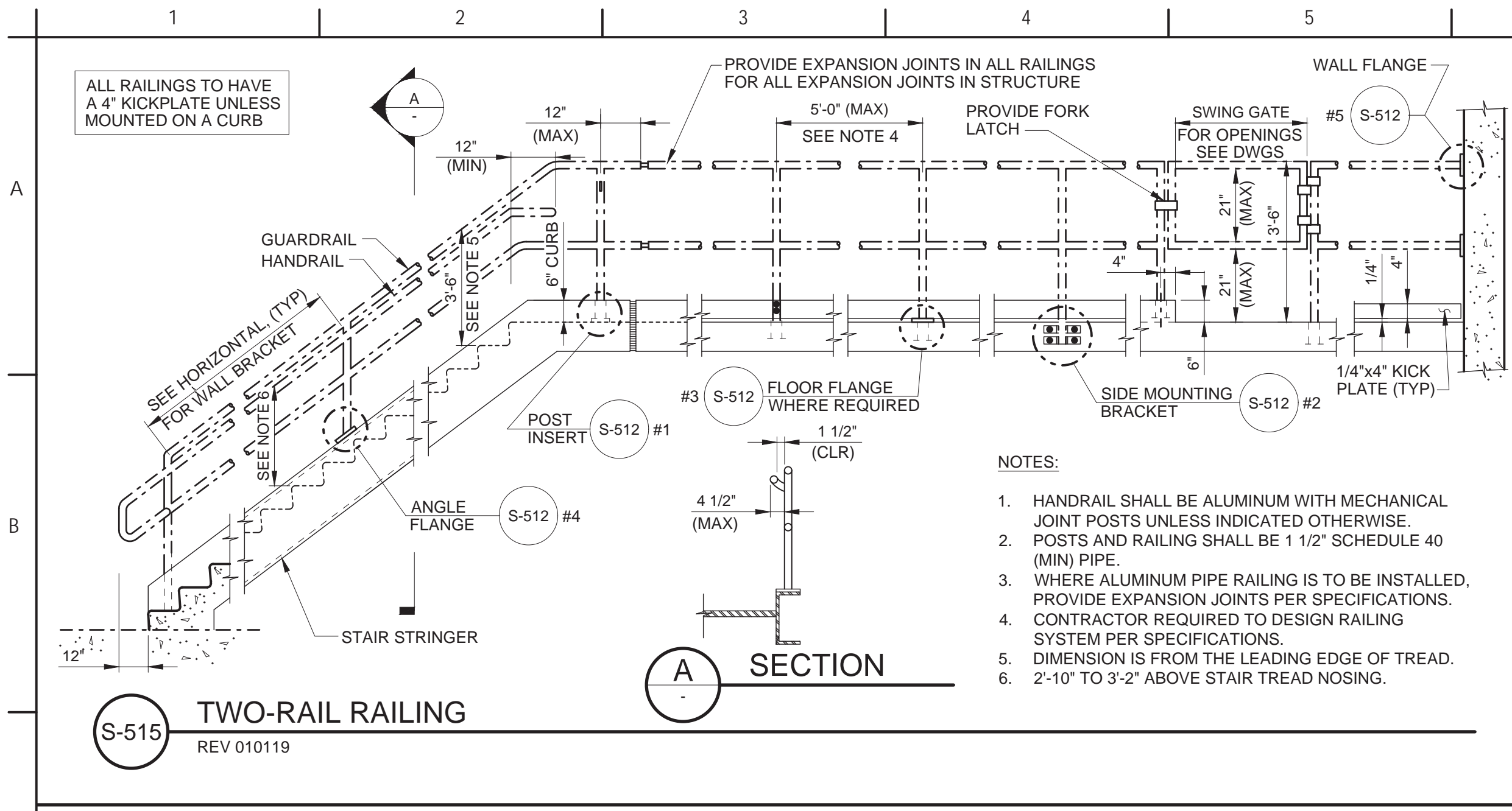


CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
STRUCTURAL
STANDARD DETAILS - IV

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CITY OF EVANSTON

1909 RAW WATER INTAKE REPLACEMENT

STRUCTURAL

STANDARD DETAILS - VI

VERIFY SCALES

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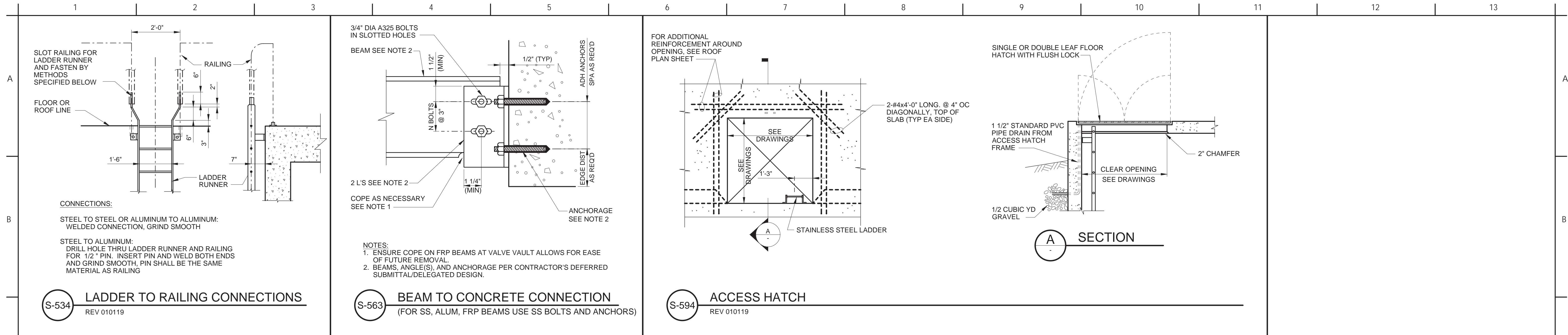
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SHEET NO. 41 OF 63

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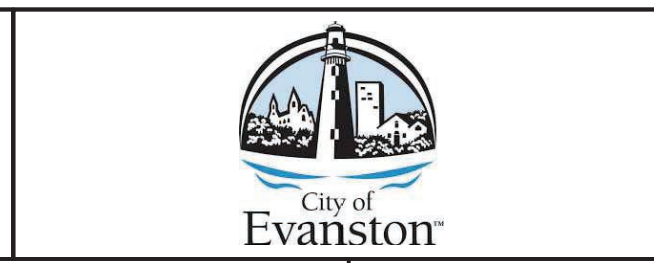


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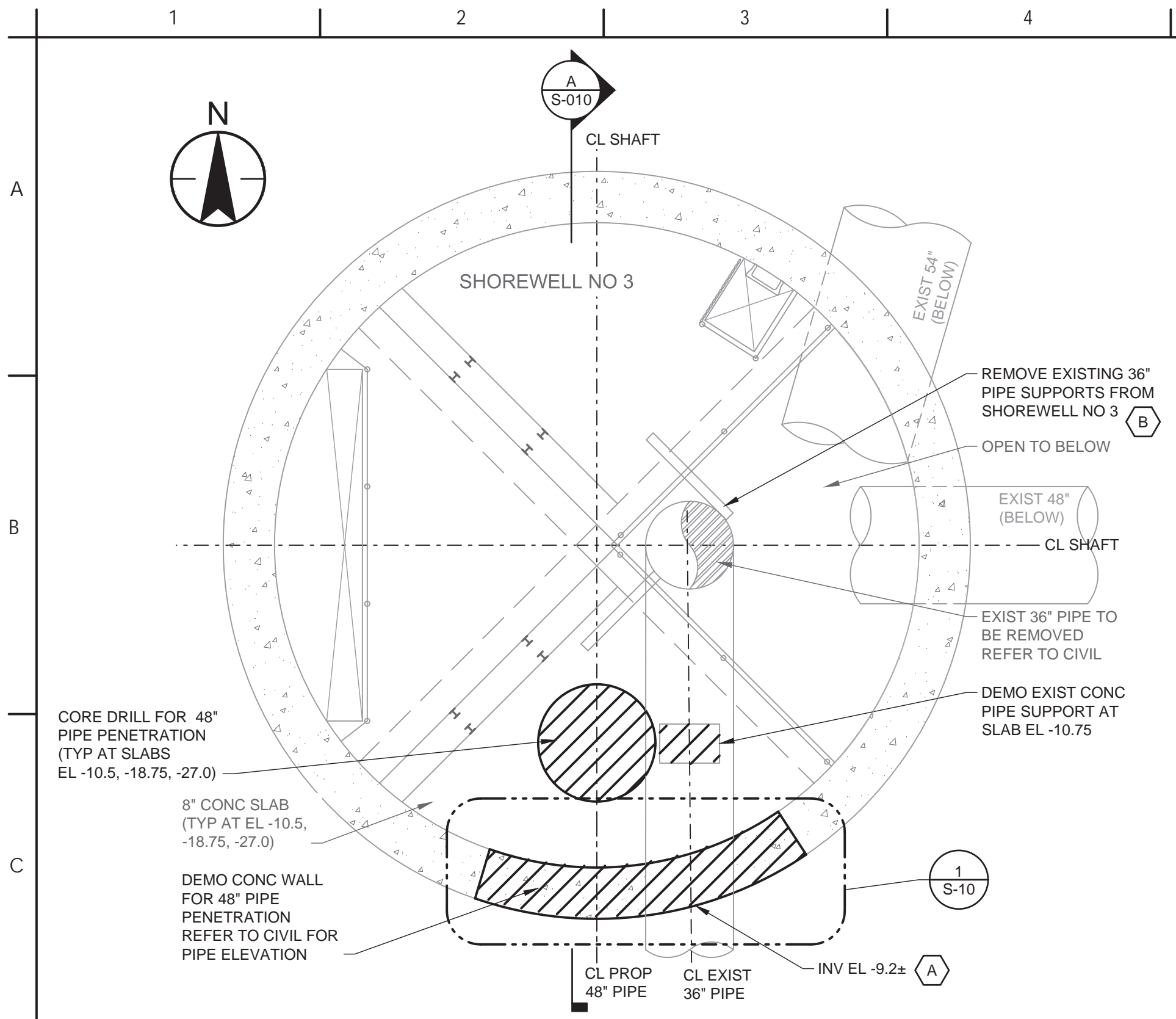
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
STRUCTURAL
STANDARD DETAILS - VII

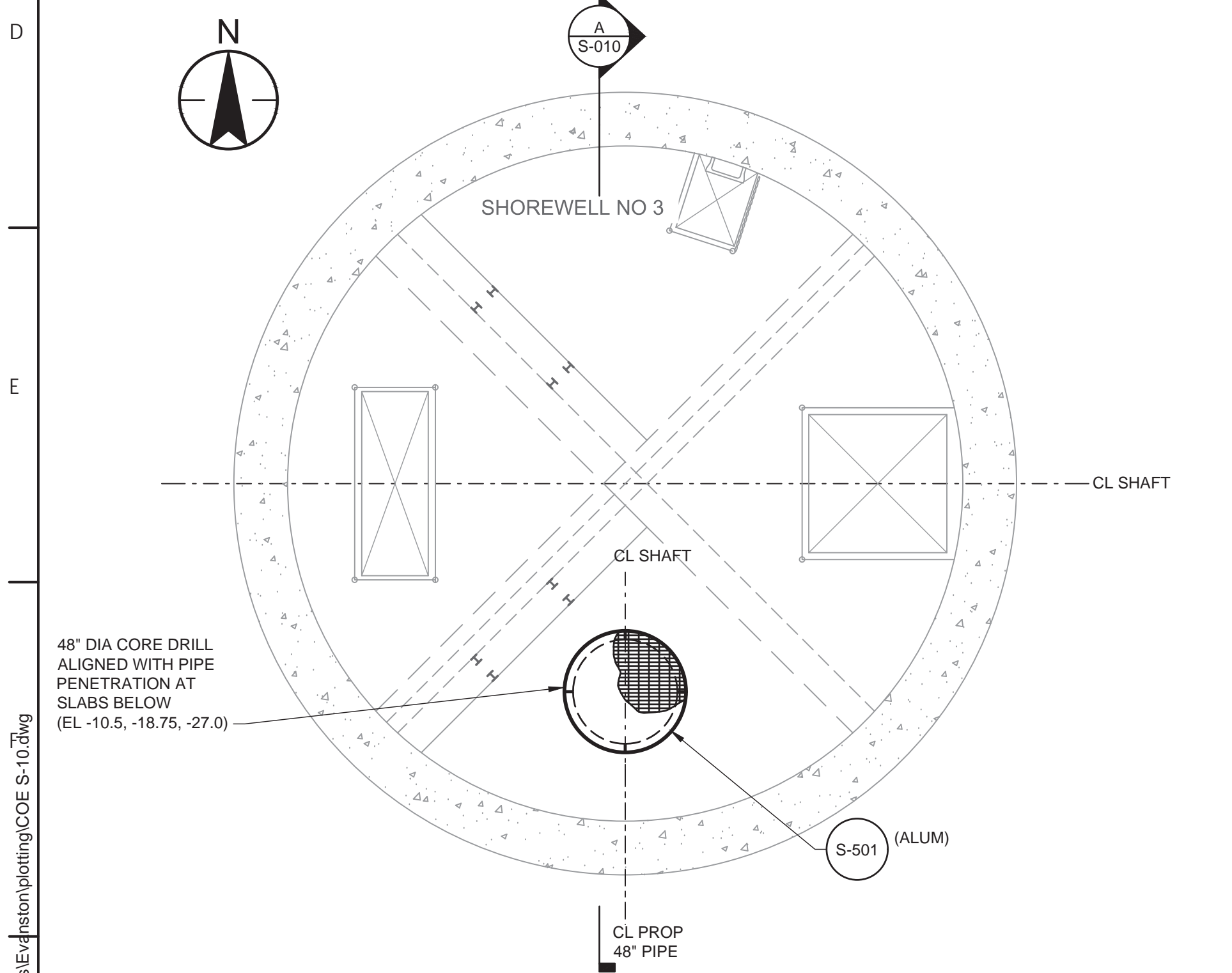
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JOB NO. 173440108
DRAWING NO. S-009
SHEET NO. 42 OF 63



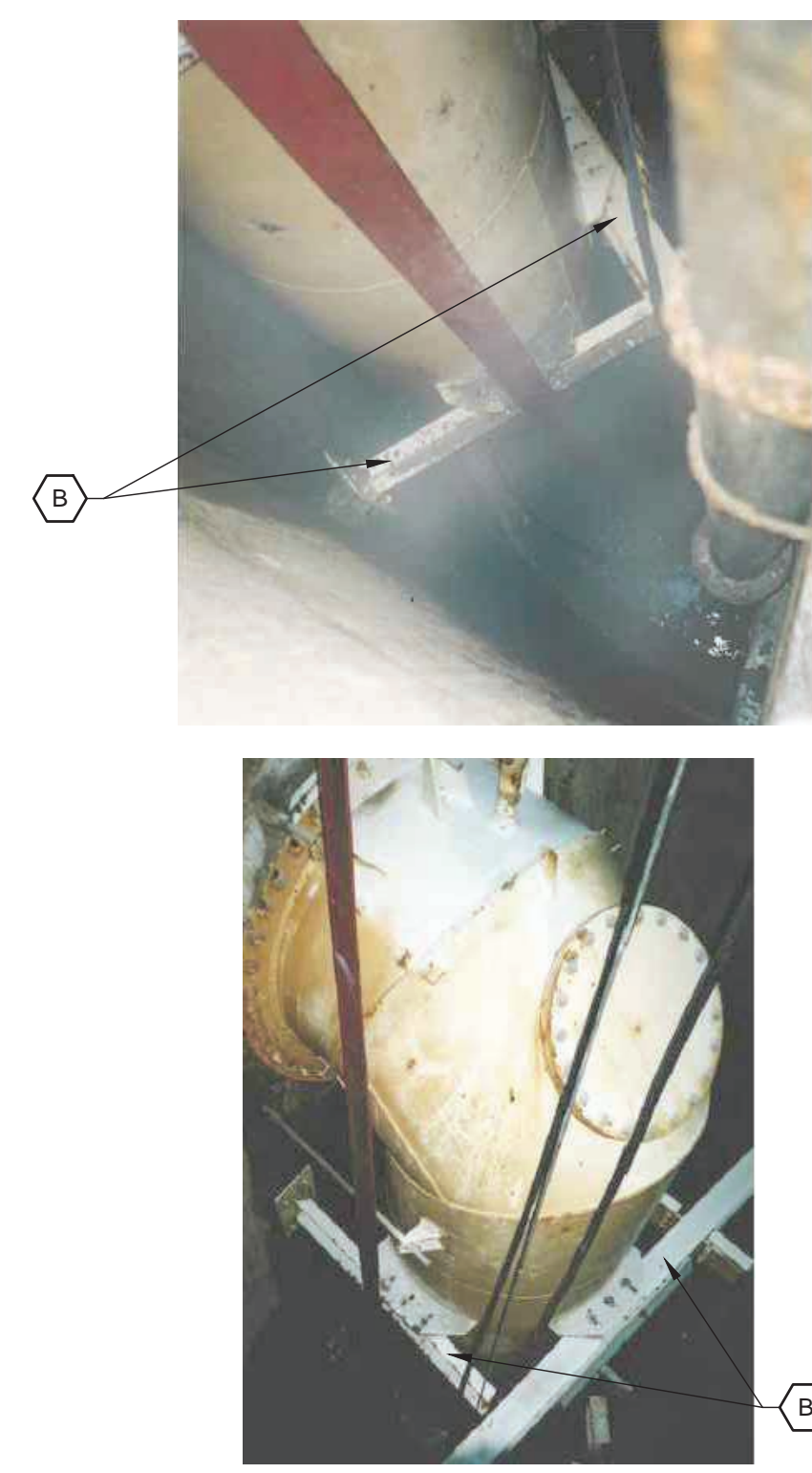
SHOREWELL NO 3 TYPICAL PLAN

SCALE: 1/4" = 1'-0"
 NOTE: EXISTING CONDITIONS SHOWN IN PLAN AT EL -10.5. EXISTING CONDITIONS AT EL -18.75 AND EL -27.00 ARE SIMILAR.



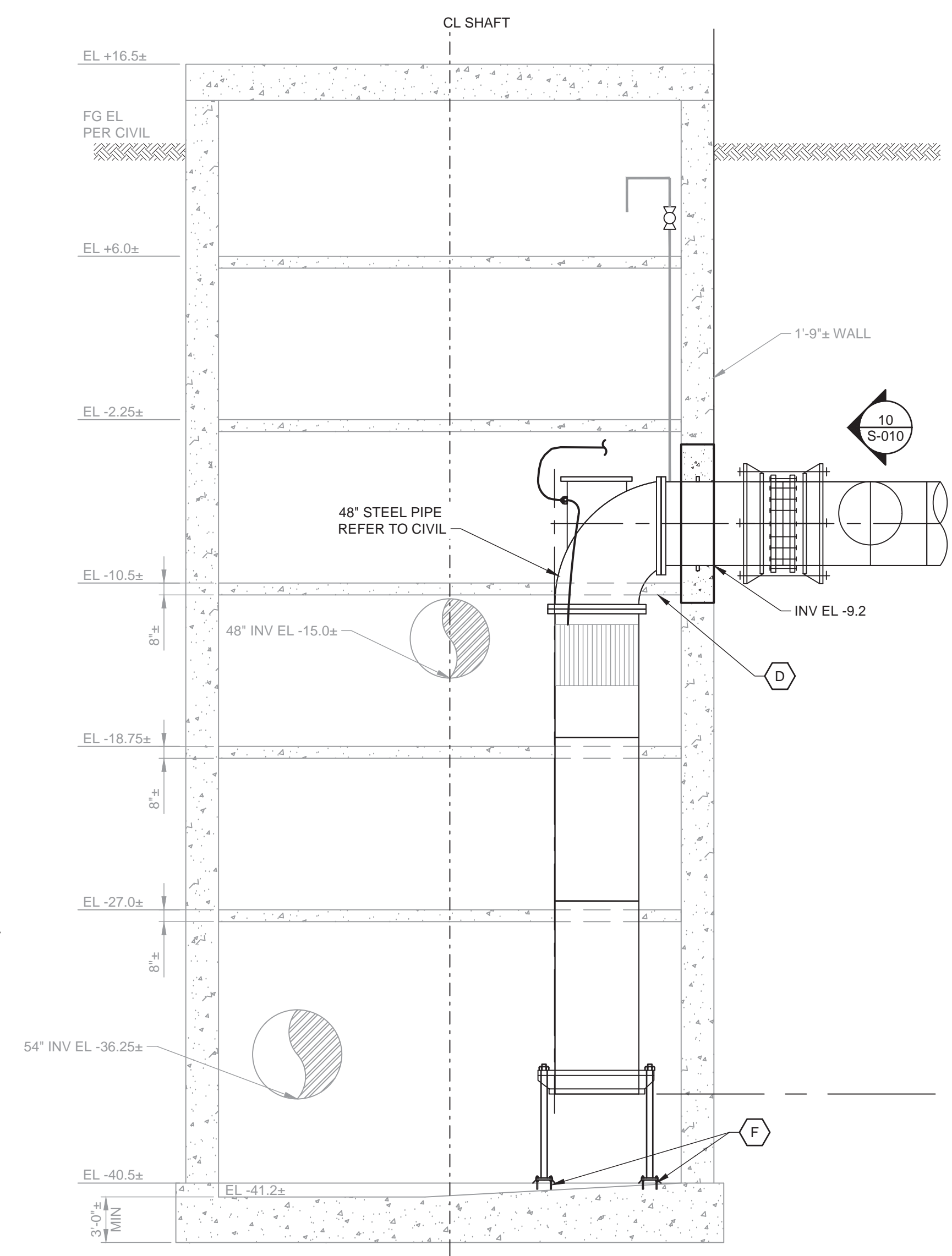
SHOREWELL NO 3 PLAN AT EL -2.25

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



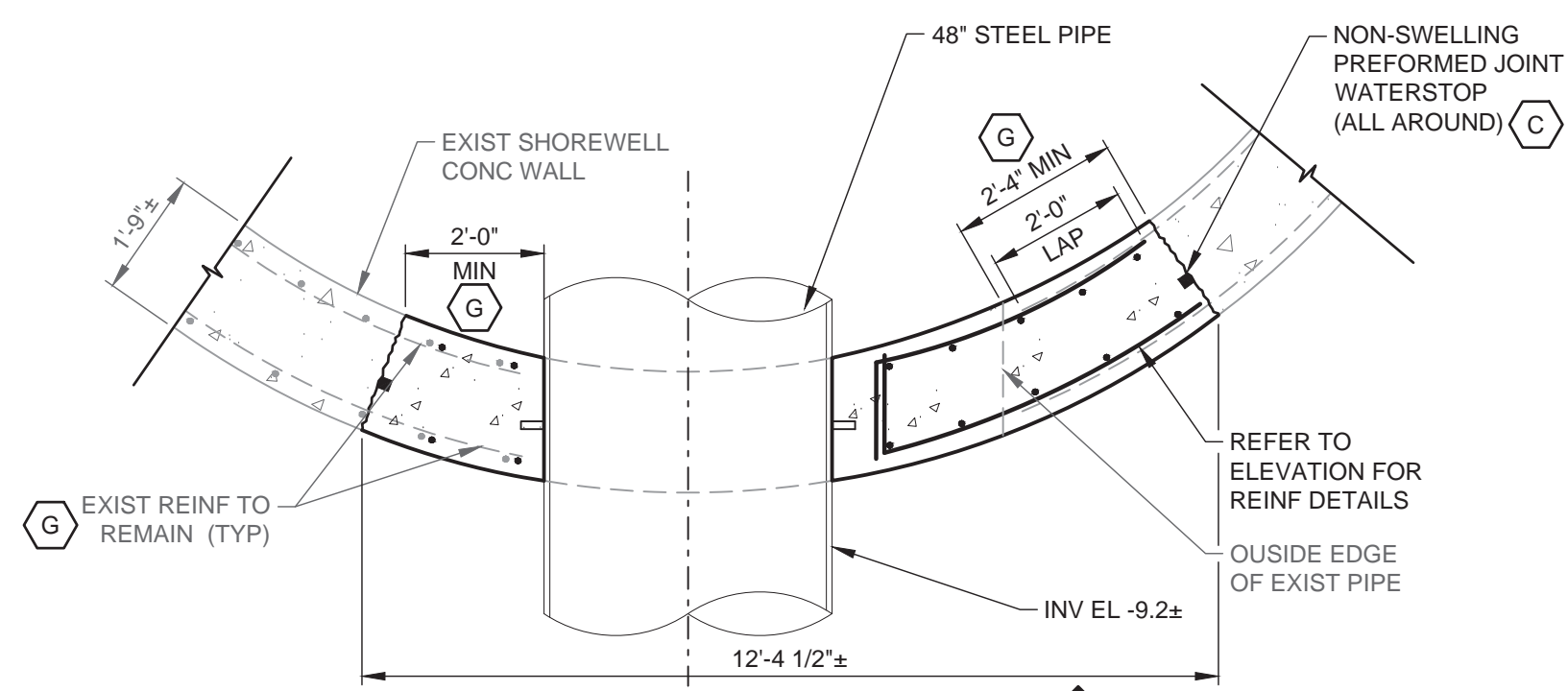
STRUCTURAL PIPE SUPPORT PHOTOS

NO SCALE



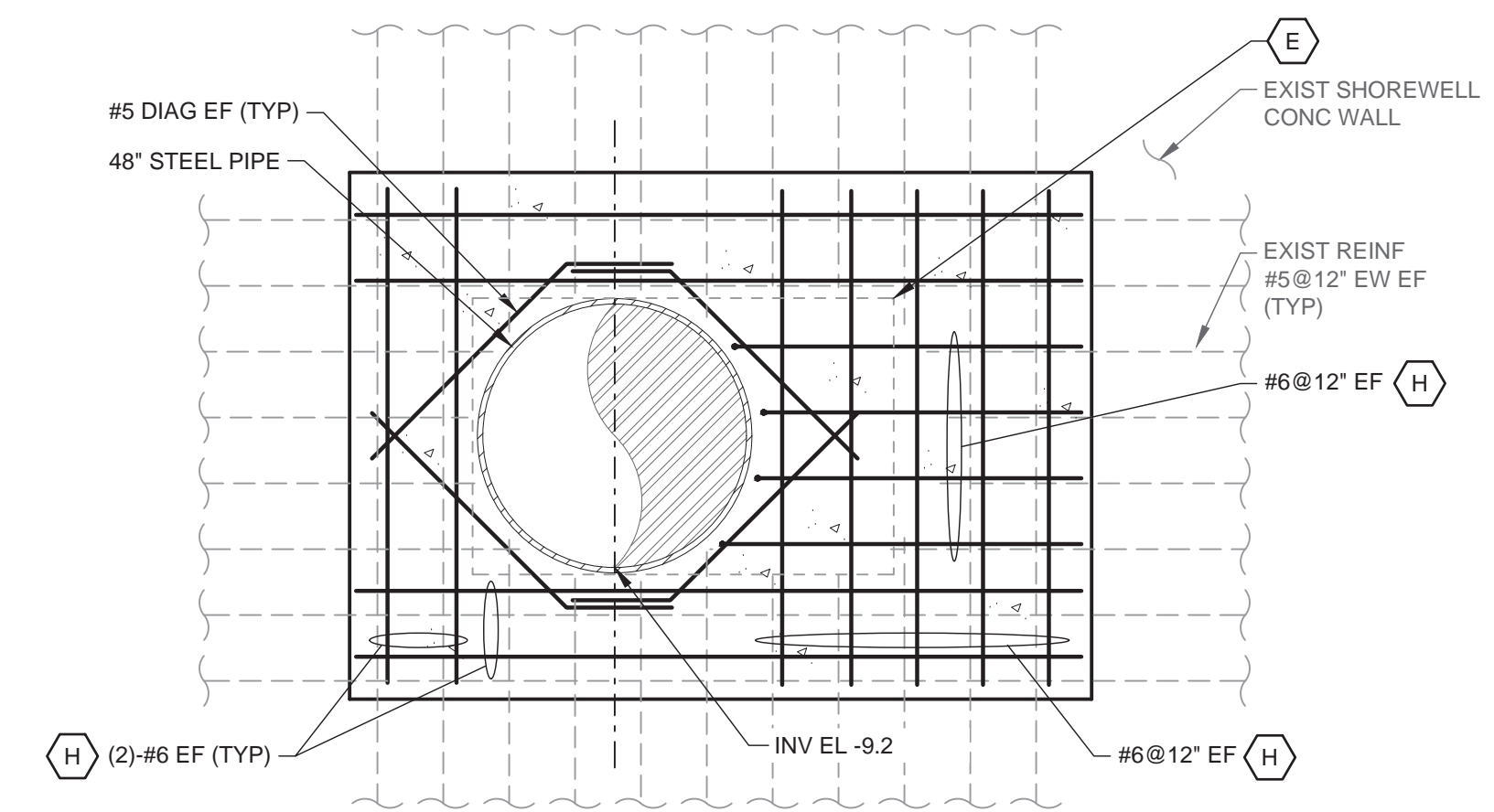
A SECTION

SCALE: 3/16" = 1'-0"



1 DETAIL

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



10 ELEVATION

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

GENERAL SHEET NOTES

- EXISTING STRUCTURE DIMENSIONS AND CONFIGURATION ARE BASED ON AS-BUILT DRAWINGS AND ARE APPROXIMATE. THE CONTRACTOR SHALL CONFIRM ALL CONTROLLING FIELD DIMENSIONS AND CONDITIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS.
- CONTRACTOR SHALL ANTICIPATE SHOREWELL NO 3 SUPPORT OF EXCAVATION SYSTEM REMAINS AND WILL REQUIRE PENETRATION IN ORDER TO COMPLETE THE SHOREWELL NO 3 MODIFICATION WORK.
- WHERE CONCRETE DEMOLITION OF PIPE SUPPORT OR PAD LEAVES EXPOSED REINFORCEMENT, CONTRACTOR SHALL BURN BACK REINFORCEMENT TO WITHIN 2" FROM TOP OF SLAB. FILL VOIDS IN SLAB WITH NON-SHRINK GROUT PRODUCT WHICH ALLOWS FOR SUBMERSION.

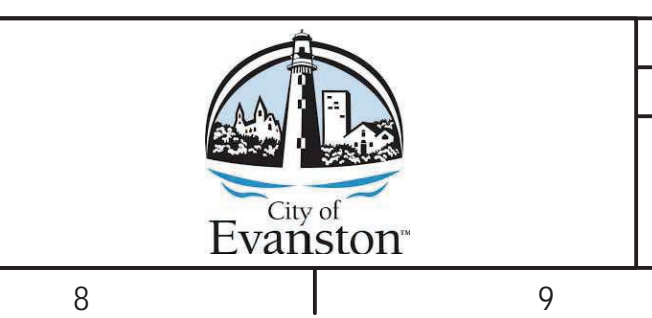
SHEET KEYNOTES

- EXISTING PIPE WALL PENETRATION INCLUDES WALL THIMBLE. PER AS-BUILT DRAWINGS. WALL THIMBLE SHALL BE REMOVED FOR INSTALLATION OF PROPOSED PIPE. EXISTING WALL REINFORCEMENT SHALL BE MAINTAINED AND INCORPORATED INTO PROPOSED CONCRETE.
- CONTRACTOR SHALL ASSUME EXISTING PIPE SUPPORTS OCCUR ON THREE (3) LEVELS. STRUCTURAL PIPE SUPPORT PHOTOS ARE SHOWN FOR BIDDING PURPOSES ONLY AND MAY NOT REPRESENT CURRENT FIELD CONDITIONS. CONTRACTOR SHALL ASSUME PIPE PENETRATION LEVEL INCLUDES PIPE SUPPORT HANGERS TO THE SUSPENDED SLAB ABOVE. ALL STRUCTURAL PIPE SUPPORTS OF EXISTING 36" PIPE TO BE REMOVED ALONG WITH PIPING. WHERE EMBEDDED METAL CONNECTIONS OCCUR, CONTRACTOR SHALL REMOVE STRUCTURAL SUPPORT MEMBER UP TO EMBEDDED PLATE (OR OTHER), EMBEDDED PLATE MEMBERS OR CONNECTIONS TO REMAIN.
- NON-SWELLING PREFORMED JOINT WATERSTOP SHALL BE SYNKO-FLEX WATERSTOP BY HENRY, OR APPROVED EQUAL.
- CONTRACTOR IS RESPONSIBLE FOR SHORING EXISTING SLAB DURING DEMOLITION ACTIVITIES. SHORING SHALL REMAIN IN PLACE UNTIL CONCRETE HAS REACHED 75 PERCENT OF ITS 28-DAY COMPRESSIVE STRENGTH.
- CONTRACTOR SHALL COORDINATE INSTALLATION OF 48" PIPING WITH LIMITS OF EXISTING REINFORCEMENT WITHIN OPENING IN SHOREWELL CONCRETE WALL. WHERE LIMITATIONS OCCUR DUE TO LIMITS OF REINFORCEMENT AND SIZE OF PIPING TO BE INSTALLED, CONTRACTOR SHALL ENGAGE OWNER/ENGINEER.
- CONTRACTOR SHALL COORDINATE APPROVED BASE PLATE GROUT PRODUCT WITH MANUFACTURER'S REQUIREMENTS FOR MAXIMUM THICKNESS. GROUT MAY BE REQUIRED TO BE PLACED IN LIFTS.
- REMOVE EXISTING CONCRETE BY CHIPPING OR OTHER METHODS SO AS TO MAINTAIN EXISTING REINFORCEMENT. EXIST REINF TO REMAIN. CUT 2" CLEAR OF OUTSIDE DIAMETER OF PIPE.
- PROVIDE FULL LAP LENGTH WITH EXISTING REINFORCEMENT.

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DATE	04/2022

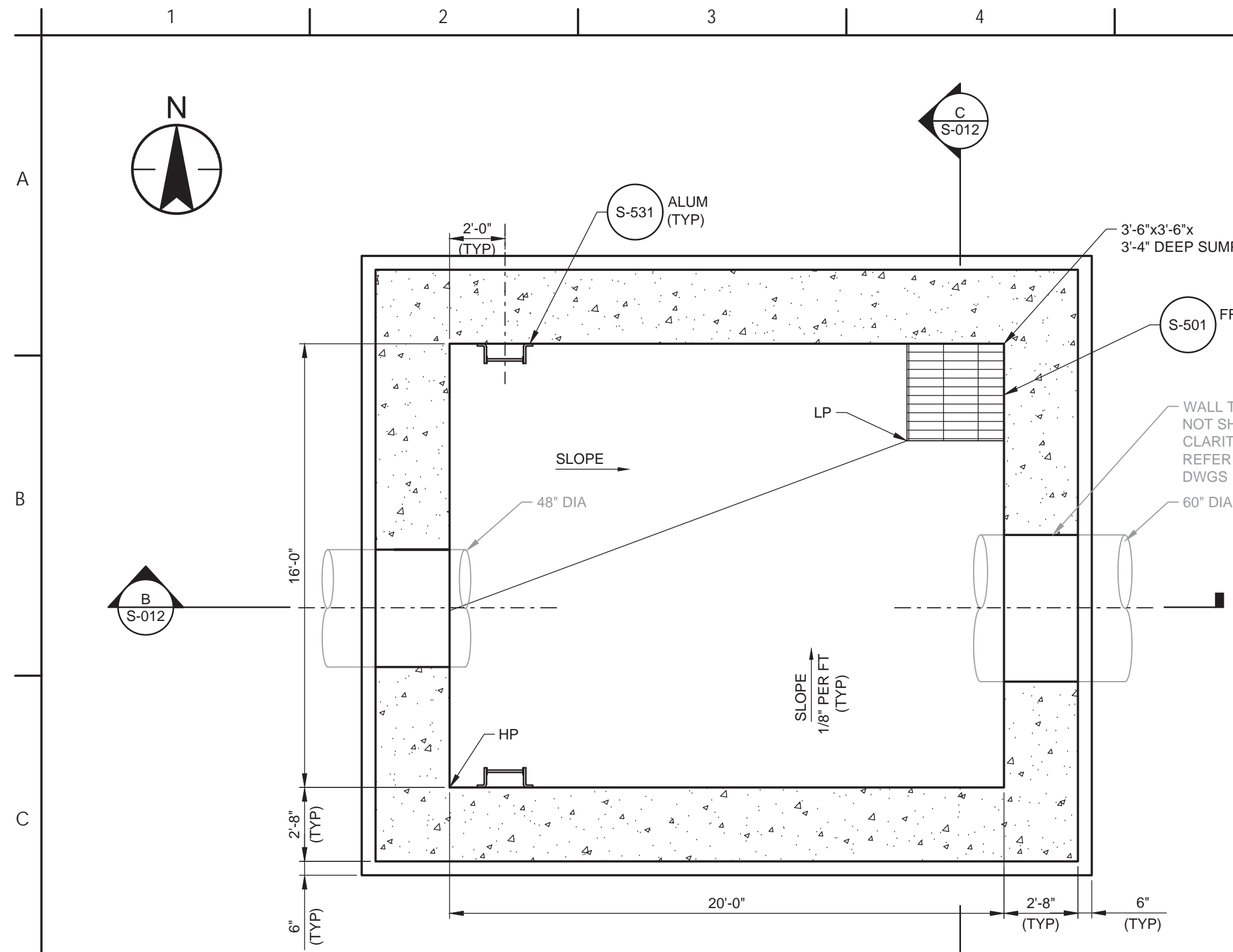
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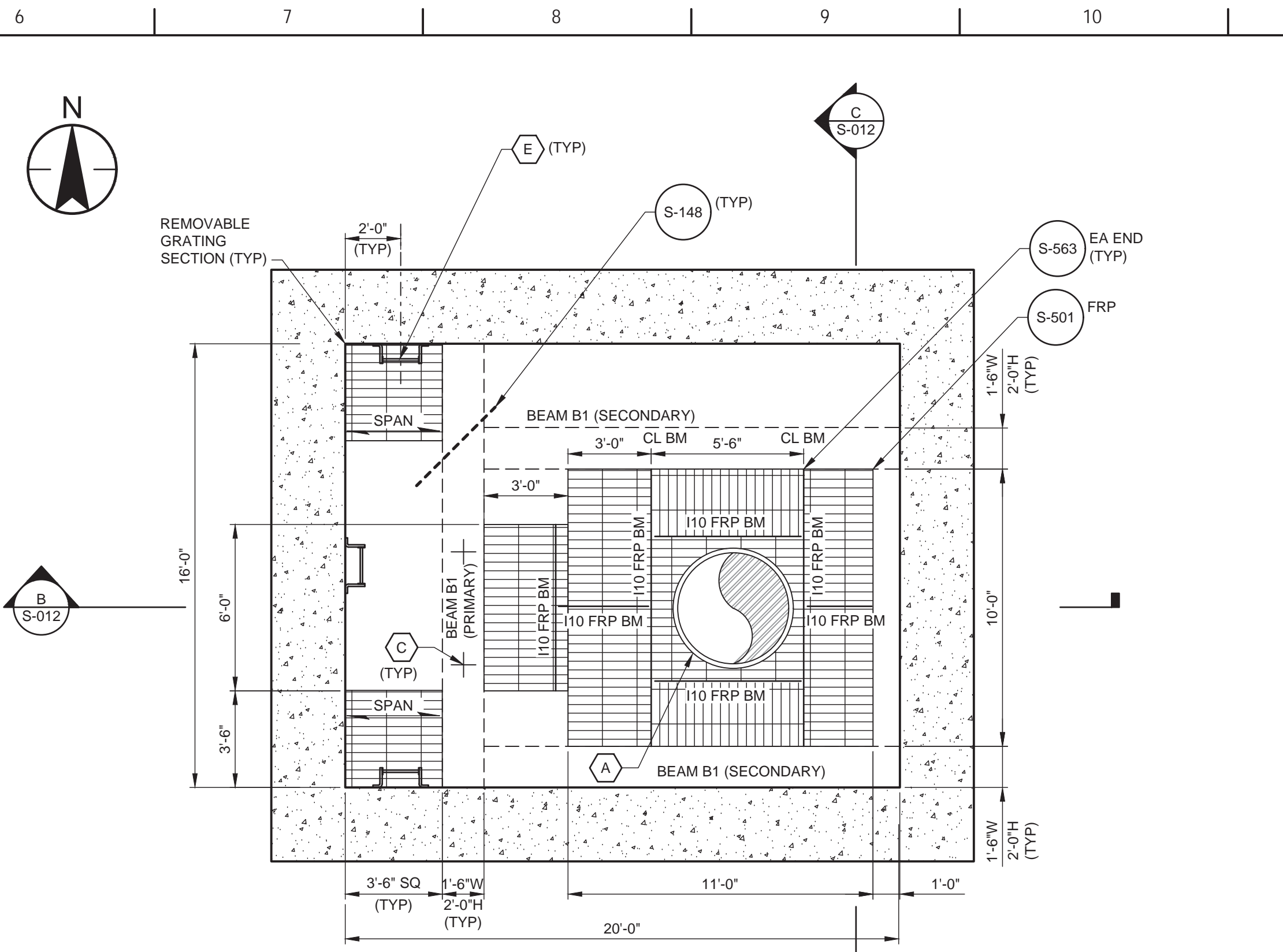
CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 STRUCTURAL
 SHOREWELL NO 3 MODIFICATIONS

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 173440108 DRAWING NO. S-010 SHEET NO. 43 OF 63
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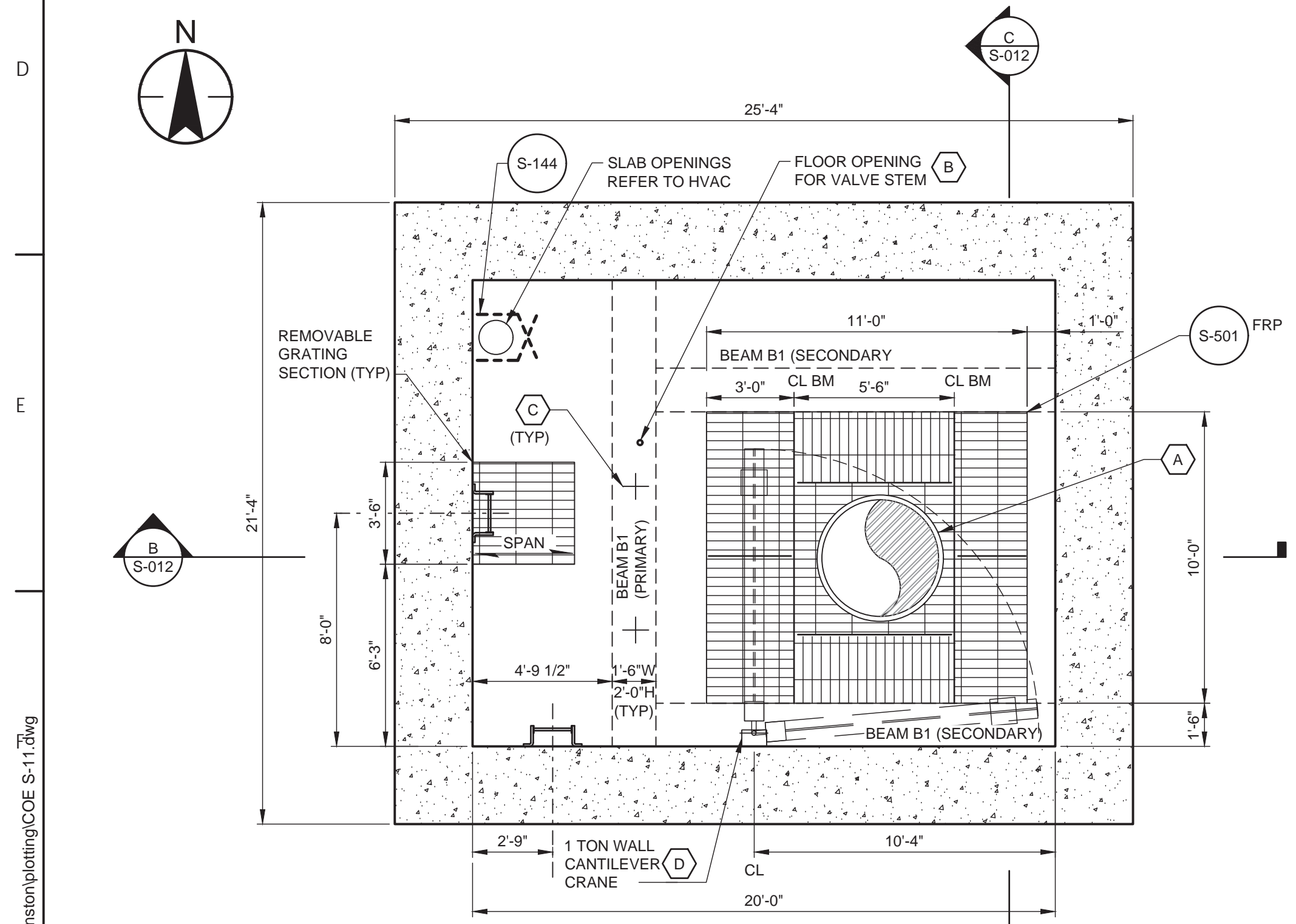
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BOTTOM LEVEL PLAN EL -18
SCALE: 1/4" = 1'-0"

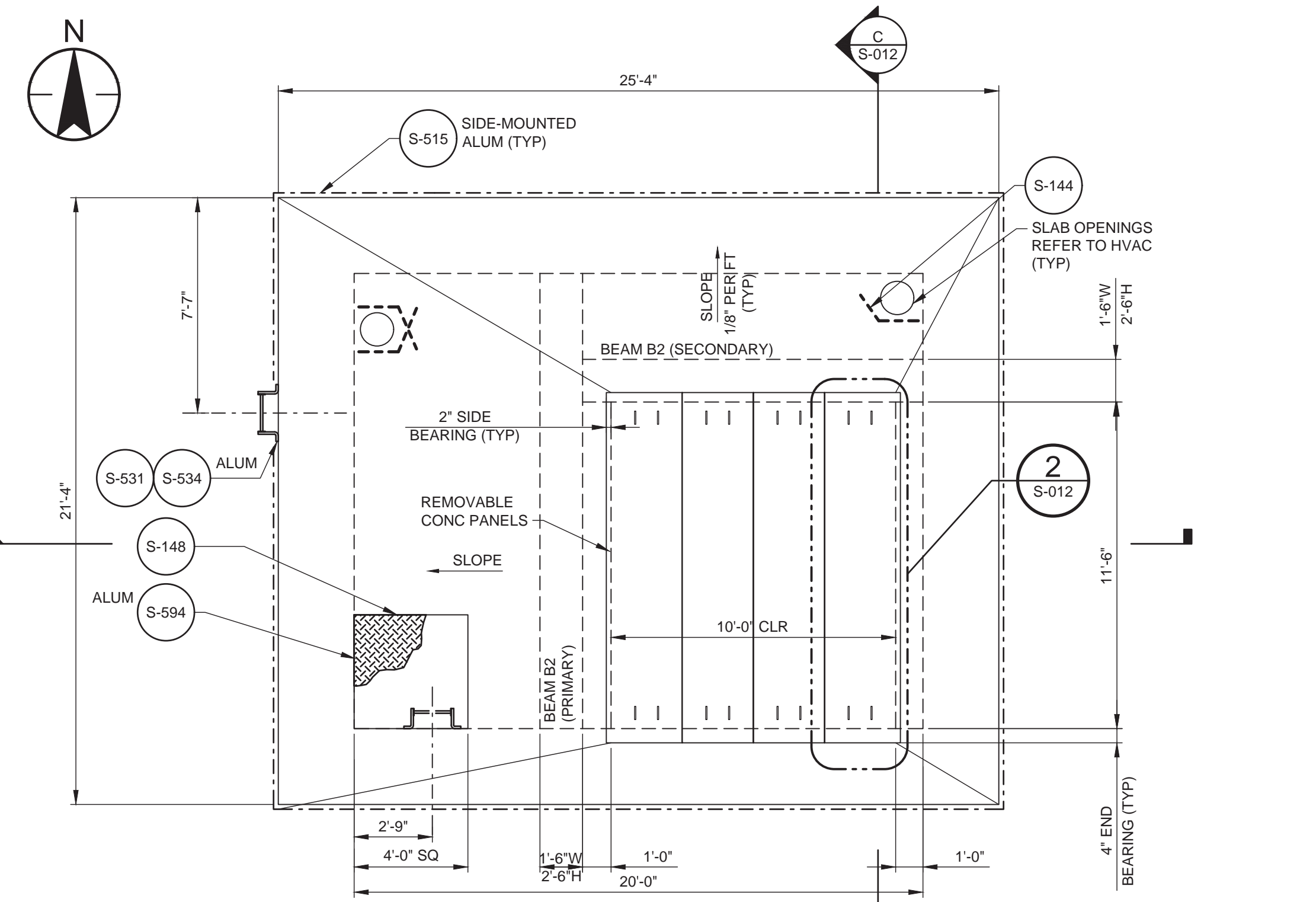


LOWER INTERMEDIATE PLAN EL -5
SCALE: 1/4" = 1'-0"



UPPER INTERMEDIATE PLAN EL +5
SCALE: 1/4" = 1'-0"

NOTE:
SEE UPPER INTERMEDIATE PLAN FOR FRP
BEAM DESIGNATIONS NOT SHOWN.



TOP LEVEL PLAN EL +16
SCALE: 1/4" = 1'-0"

GENERAL SHEET NOTES

- REINFORCEMENT LOCATION AT EQUIPMENT EMBED OR AT ANCHOR EMBED SHALL BE COORDINATED BY THE CONTRACTOR WITH THE EQUIPMENT MANUFACTURER'S SHOP DRAWINGS. REINFORCEMENT SHALL BE POSITIONED TO AVOID INTERFERENCES AND SHALL MAINTAIN MAXIMUM SPACING INDICATED.
- PENETRATIONS THAT ARE MINOR IN SIZE ARE NOT SHOWN FOR CLARITY. CONTRACTOR SHALL COORDINATE PENETRATIONS NOT SHOWN BETWEEN CROSS DISCIPLINE DRAWINGS.

FRP BEAM AND GRATING NOTES

- FRP GRATING AND FRP BEAM LAYOUT IS PROVIDED AS A PRELIMINARY CONCEPT. CONTRACTOR SHALL COORDINATE BEAM LAYOUT WITH ALLOWABLE GRATING SPAN AND SUBMIT FOR REVIEW AND APPROVAL. LIVE LOAD SHALL MATCH FLOOR LIVE LOAD CAPACITY OF 300 PSF. PANEL LAYOUT IS NOT SHOWN AND TO BE DETERMINED BY CONTRACTOR AS A DEFERRED SUBMITTAL/DELEGATED DESIGN ITEM.
- A SERVICE LEVEL REACTION OF 6 KIP MAXIMUM AT EACH BEAM END TO CONCRETE SLAB HAS BEEN ASSUMED. WHERE CONTRACTOR'S DEFERRED SUBMITTAL/DELEGATED DESIGN REACTION EXCEEDS THIS VALUE, CONTRACTOR SHALL ENGAGE OWNER/ENGINEER.

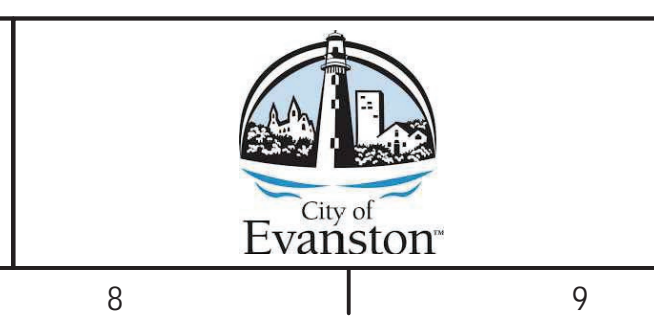
SHEET KEYNOTES

- PROVIDE 2" CLEARANCE BETWEEN PIPE AND EDGE OF GRATING SECTION, ALL AROUND.
- VALVE ACTUATOR NOT SHOWN, REFER TO MECHANICAL DRAWINGS.
- LOCATE LIFTING HOOK AT CENTERLINE OF CONCRETE BEAM. REFER TO SECTIONS FOR DETAIL CALLOUTS. LIFTING EQUIPMENT SHALL UTILIZE 2-POINT PICK BASED OFF LOADING SHOWN BY DETAILS AND EQUIPMENT WEIGHT ON S-001 DRAWING.
- 1-TON JIB CRANE TO BE DESIGNED, DETAILED, FURNISHED AND INSTALLED BY THE CONTRACTOR. SEE SPECIFICATIONS SECTION 43 52 04. INSTALL STOP BAR PER MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
- POP-UP LADDER EXTENSION NOT SHOWN FOR CLARITY, TYPICAL. REFER TO SPECIFICATIONS.

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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
STRUCTURAL
VALVE VAULT PLANS

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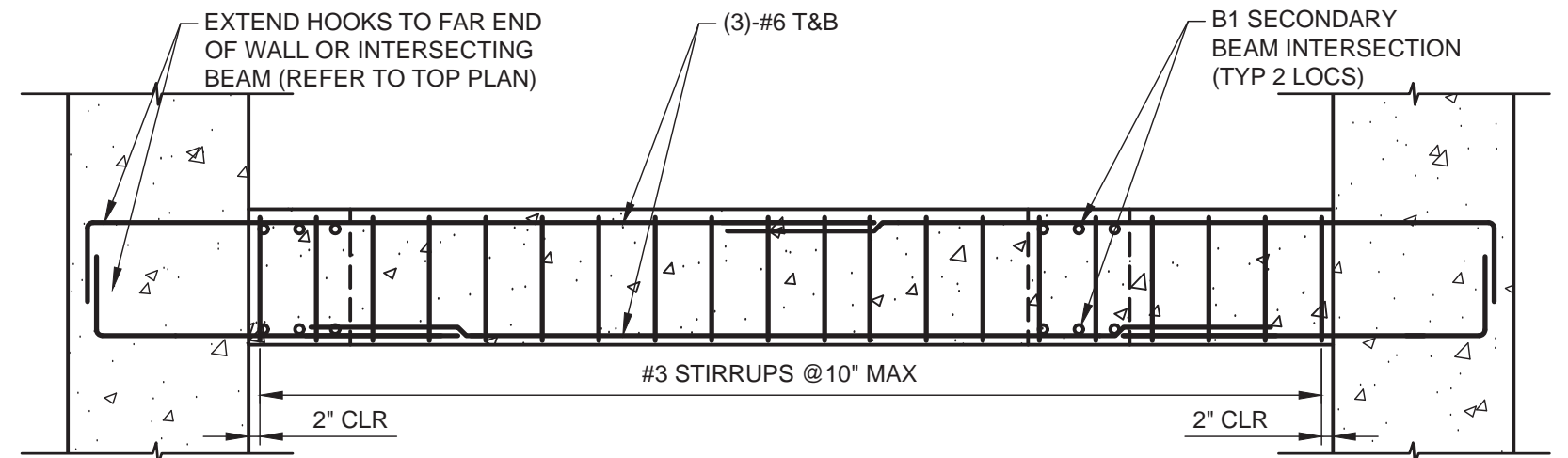
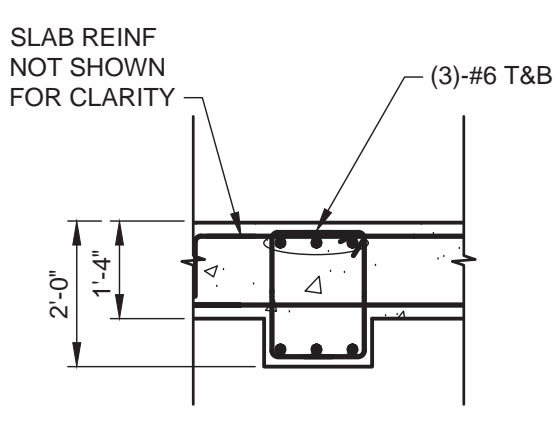
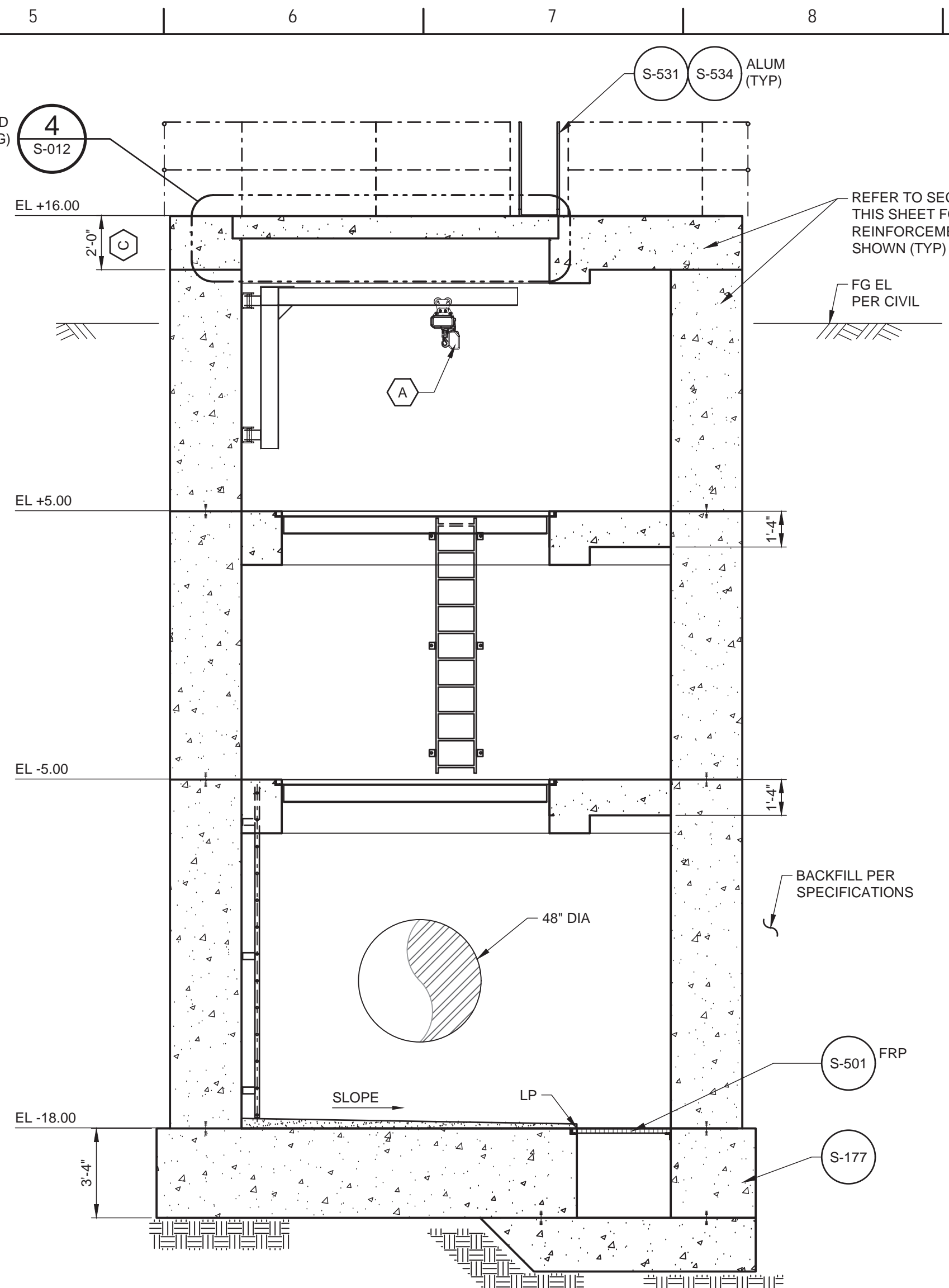
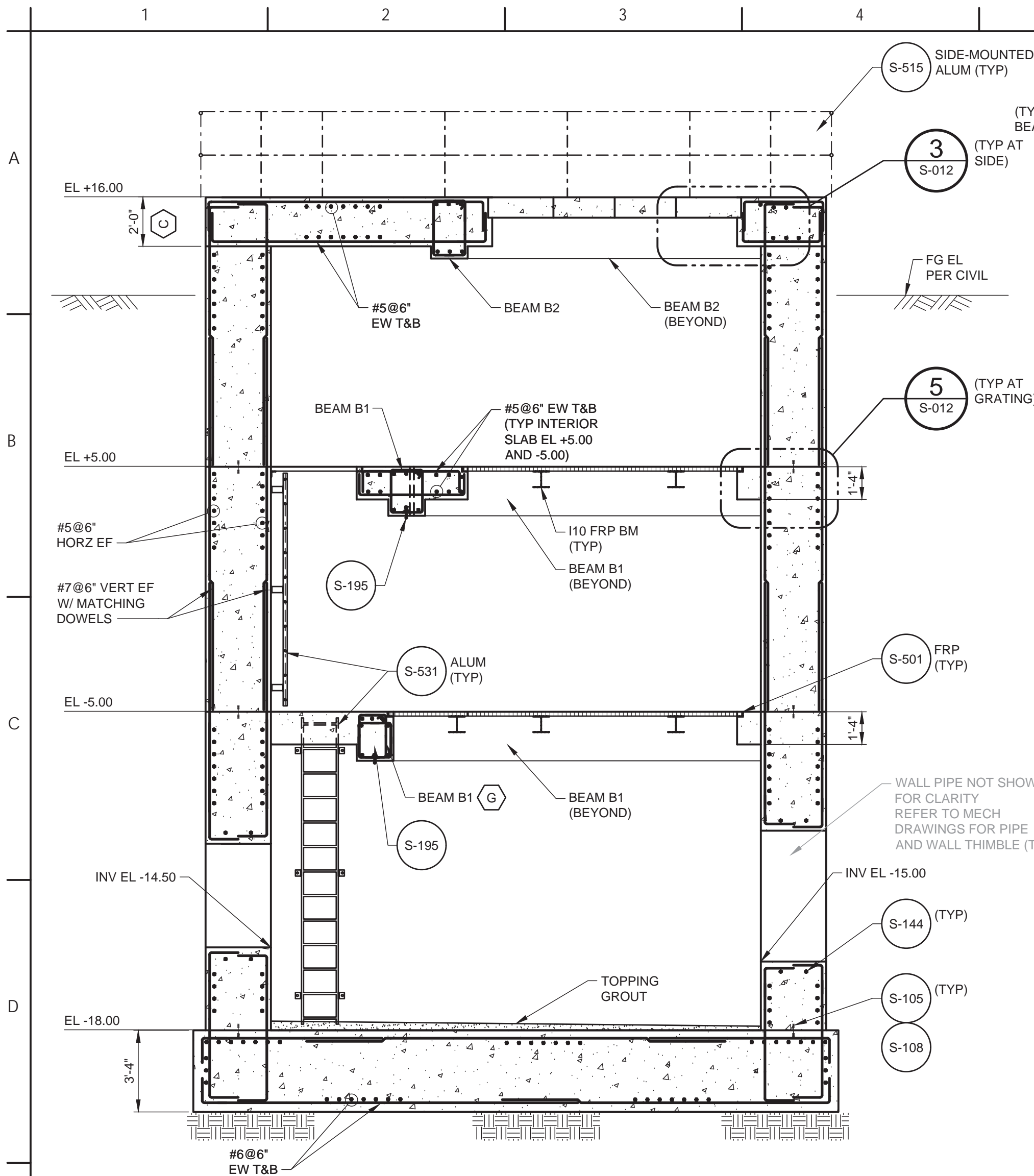
JOB NO.
173440108
DRAWING NO.
S-011
SHEET NO.
44 OF 63

GENERAL SHEET NOTES

1. REINFORCEMENT LOCATION AT EQUIPMENT EMBED OR AT ANCHOR EMBED SHALL BE COORDINATED BY THE CONTRACTOR WITH THE EQUIPMENT MANUFACTURER'S SHOP DRAWINGS. REINFORCEMENT SHALL BE POSITIONED TO AVOID INTERFERENCES AND SHALL MAINTAIN MAXIMUM SPACING INDICATED.

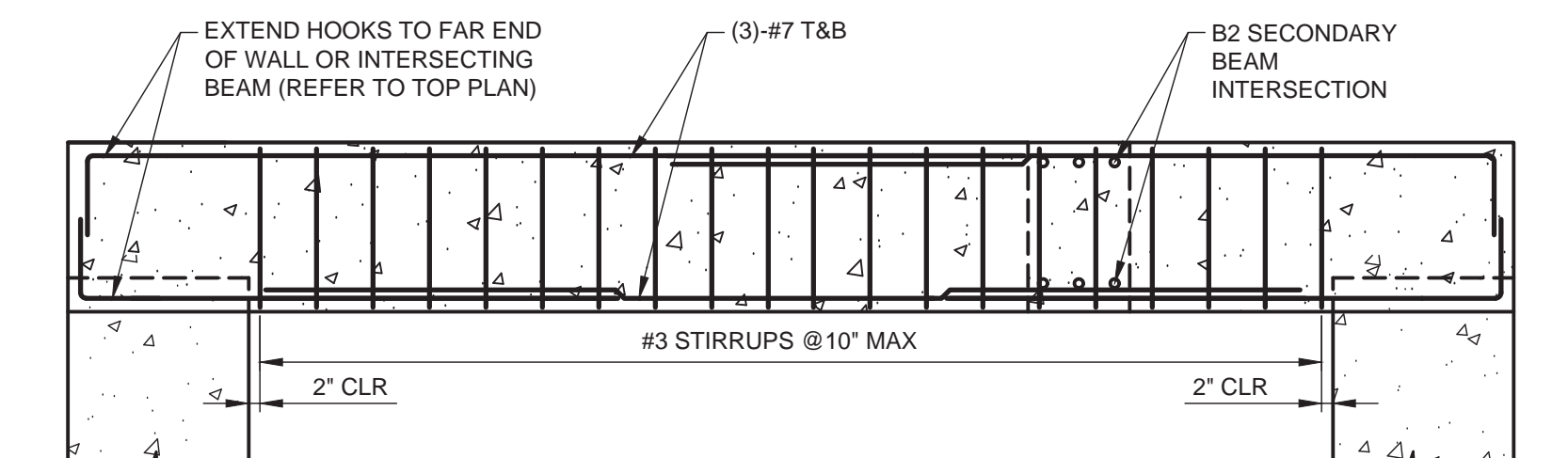
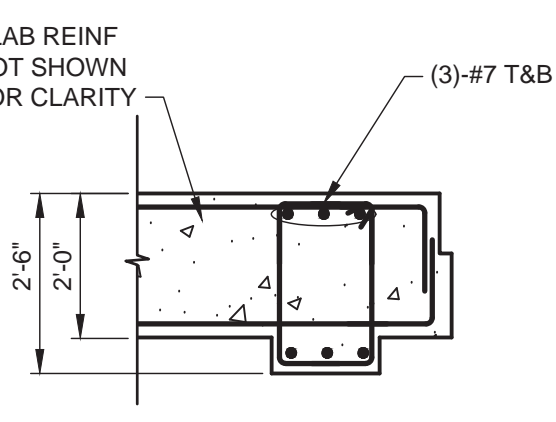
SHEET KEYNOTES

- A. CONTRACTOR SHALL COORDINATE INSTALLATION LEVEL OF THE JIB CRANE WITH MANUFACTURER'S APPROVED SHOP DRAWINGS. INSTALLATION LEVEL SHALL ENSURE HOIST CLEARANCE IS 6'-0" MINIMUM ABOVE FINISHED FLOOR AT EL +5.00.
- B. PROVIDE MECHANICAL COUPLERS AT INTERIOR FLOOR SLAB CONNECTION TO VAULT WALL, TYPICAL.
- C. TOP SLAB THICKNESS PROVIDED IS THE MINIMUM THICKNESS. REFER TO SHEET S-011, TOP LEVEL PLAN, FOR SLOPE REQUIREMENTS.
- D. REMOVABLE PANEL LIFTING SYSTEM SHALL BE DAYTON SUPERIOR SWIFT LIFT SYSTEM OR APPROVED EQUAL. PROVIDE (4) - P52 SWIFT LIFT ANCHORS, 1 TON CAPACITY, 316 SS. PROVIDE (4) - SWIFT LIFT LIFTING EYES. EDGE DISTANCE INDICATED SHALL BE COORDINATED BY CONTRACTOR WITH APPROVED LIFTING SYSTEM REQUIREMENTS.
- E. DIMENSION PROVIDED IS TO CENTERLINE OF PANEL JOINTS. ALLOWANCE SHALL BE MADE FOR JOINT CONFIGURATION AND INSTALLATION TOLERANCES.
- F. PACK WITH JOINT FILLER MATERIAL FLUSH TO TOP OF PANEL.
- G. REINFORCEMENT SHOWN AS TYPICAL WHERE GRATING BEARING SEAT INTERRUPTS BEAM REINFORCEMENT TIES. PROVIDE REINFORCEMENT AS SHOWN, TYPICAL AT LOWER INTERMEDIATE PLAN AND UPPER INTERMEDIATE PLAN WHERE GRATING BEARING SEATS OCCUR.



BEAM B1
SCALE: 3/8" = 1'-0"

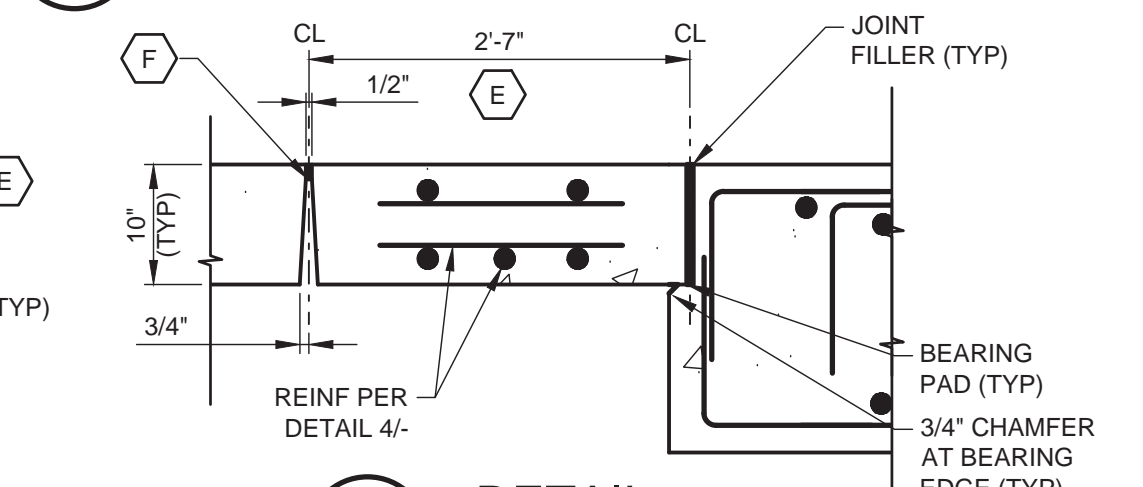
NOTE:
BEAM B1 IS SHOWN FOR LOWER AND UPPER INTERMEDIATE SLAB PRIMARY BEAM AS NOTED ON PLANS. THE INTERSECTING B1 SECONDARY BEAMS SHALL HAVE T&B REINF BARS POSITIONED TO INTERSECT THE B1 PRIMARY BEAM. REFER TO BEAM INTERSECTION SHOWN ABOVE.



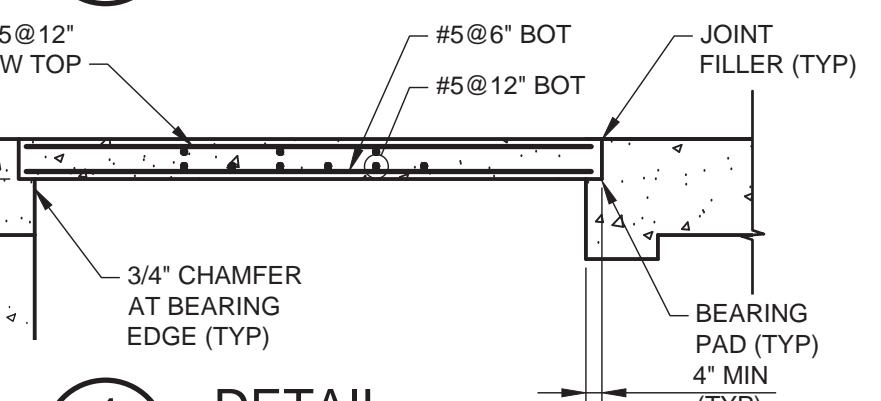
BEAM B2
SCALE: 3/8" = 1'-0"

NOTE:
BEAM B2 IS SHOWN FOR TOP SLAB PRIMARY BEAM AS NOTED ON PLANS. THE INTERSECTING B2 SECONDARY BEAM SHALL HAVE T&B REINF BARS POSITIONED TO INTERSECT THE B2 PRIMARY BEAM. REFER TO BEAM INTERSECTION SHOWN ABOVE.

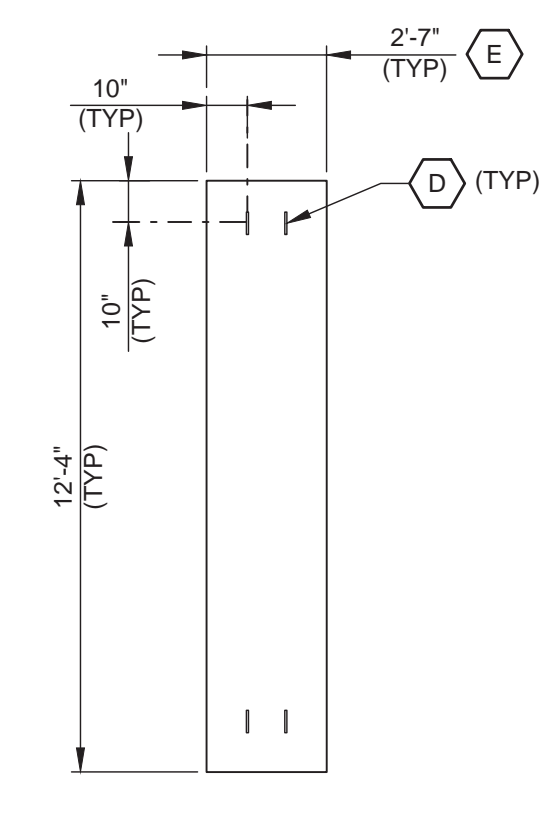
B SECTION
S-012 SCALE: 1/4" = 1'-0"



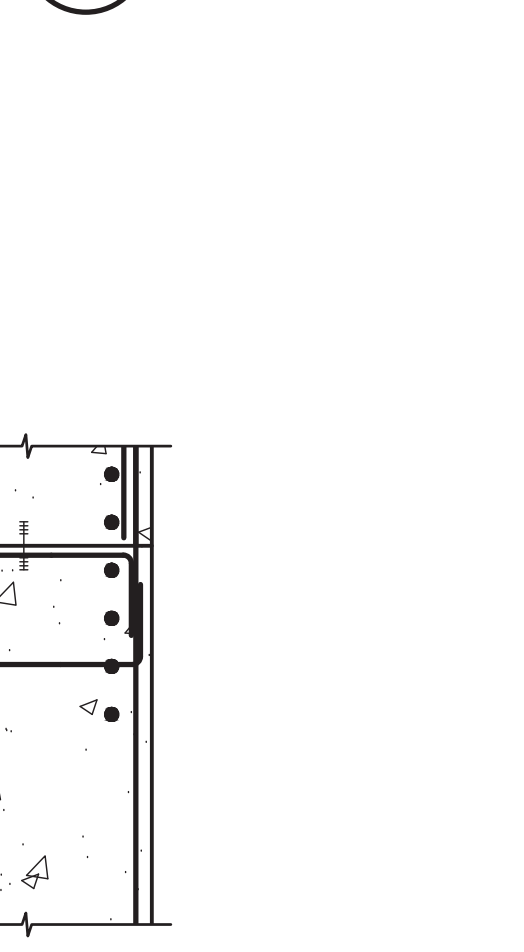
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S-012 SCALE: 1/4" = 1'-0"



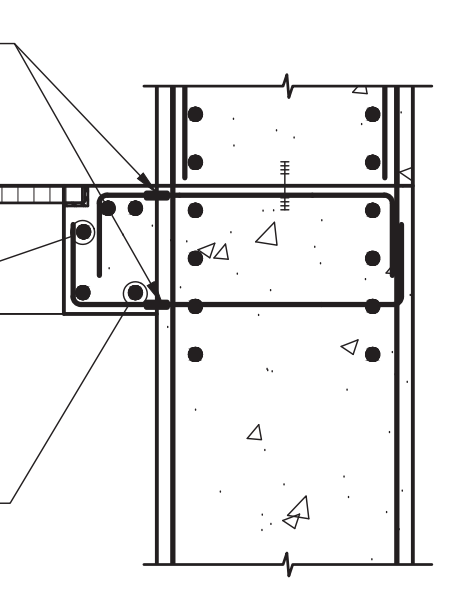
2 DETAIL
S-012 SCALE: 1/4" = 1'-0"



C SECTION
S-012 SCALE: 1/4" = 1'-0"



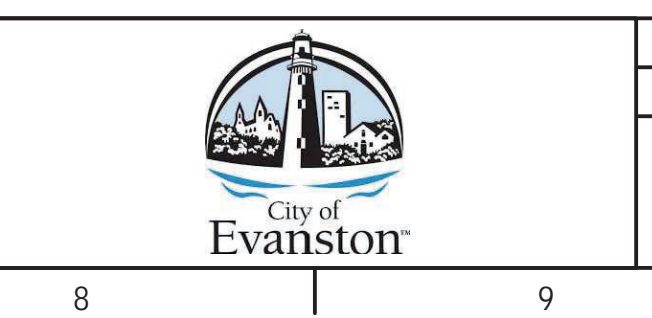
5 DETAIL
S-012 SCALE: 1/2" = 1'-0"



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1909 RAW WATER INTAKE REPLACEMENT
STRUCTURAL
VALVE VAULT SECTIONS AND DETAILS

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GENERAL NOTES

GENERAL

1. PROCESS MECHANICAL EQUIPMENT AND PIPING LOCATIONS, DIMENSIONS, AND LAYOUTS ARE BASED ON THE EQUIPMENT SELECTED AND SPECIFIED BY THE ENGINEER. IF THE CONTRACTOR PROPOSES TO FURNISH EQUIPMENT THAT REQUIRES AN ARRANGEMENT OR SPACE OTHER THAN THAT INDICATED ON THE DRAWINGS OR AS SPECIFIED, THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER FOR APPROVAL DETAILED DRAWINGS AND EQUIPMENT LISTS (FOR IMPACTED DISCIPLINES) SHOWING EQUIPMENT AND PIPING LOCATIONS, DIMENSIONS, AND LAYOUTS PROPOSED. THIS INFORMATION SHALL INCLUDE, BUT NOT BE LIMITED TO, PLANS, SECTIONS, DETAILS, AND SCHEMATICS OF EQUIPMENT AND APPURTENANCES REQUIRED. THE CONTRACTOR SHALL PROVIDE DETAILS OF CHANGES TO ADJACENT PIPE ROUTING TO ACCOMMODATE TIE-IN LOCATIONS FOR PROPOSED EQUIPMENT.
2. OTHER DISCIPLINE BACKGROUND DRAWINGS AND DIMENSIONS SHOWN ON THE PROCESS MECHANICAL DRAWINGS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL CLARIFY DISCREPANCIES BETWEEN DISCIPLINES WITH THE ENGINEER PRIOR TO THE FABRICATION OR CONSTRUCTION.
3. EQUIPMENT FOUNDATION AND PAD DIMENSIONS SHOWN ON THE PROCESS MECHANICAL DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL COORDINATE EQUIPMENT PAD DIMENSIONS WITH THE MANUFACTURER TO ACCOMMODATE THE ACTUAL SIZE OF EQUIPMENT FURNISHED (AS SHOWN ON THE APPROVED SHOP DRAWINGS) AND AVAILABLE SPACE. REFER TO THE STRUCTURAL DRAWINGS AND STRUCTURAL STANDARD DETAILS FOR EQUIPMENT PAD DESIGN REQUIREMENTS.
4. EQUIPMENT BASES HAVING DRAIN OUTLETS, EQUIPMENT DRAINS, AND PIPING DRAINS SHALL BE PIPED WITH A CONTINUOUS SLOPE TO THE NEAREST FLOOR DRAIN, FLOOR SINK, HUB DRAIN, OR TRENCH DRAIN. DRAIN PIPE NOMINAL DIAMETER AND MATERIAL SHALL BE PER THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. DRAIN PIPING SHALL BE SUITABLY SUPPORTED AND ROUTED IN SUCH A MANNER TO AVOID TRIP HAZARDS.
5. WHERE WELDING OF STAINLESS STEEL IS REQUIRED, PASSIVATE STAINLESS STEEL AFTER WELDING.

PIPING

1. CONTRACTOR SHALL PROVIDE INTERCONNECTING PIPING, FITTINGS, WALL PIPES, AND PIPE SUPPORTS (INCLUDING THOSE REQUIRED FOR INSTRUMENTS, DRAINS, AND OTHER APPURTENANCES) AS REQUIRED FOR A COMPLETE PROCESS MECHANICAL PIPING SYSTEM.
2. FOR CLARITY, SMALL DIAMETER PROCESS PIPING MAY NOT BE SHOWN IN ITS ENTIRETY. THE CONTRACTOR SHALL REFER TO THE CONTRACT DOCUMENTS TO DETERMINE THE NEW WORK ASSOCIATED WITH EACH PIPING SYSTEM TO COMPLETE THE WORK.
3. PROCESS MECHANICAL PIPING SYSTEMS AND EQUIPMENT SHALL BE INSTALLED IN SUCH A WAY TO BE EASILY DISMANTLED AND REMOVED WITHOUT DISTURBING THE REMAINING AND ADJACENT EQUIPMENT, PIPING, AND SUPPORTS.
4. PIPING CONNECTED TO PROCESS MECHANICAL EQUIPMENT SHALL BE INSTALLED AND SUPPORTED SUCH THAT IT DOES NOT IMPART STRAIN ON THE EQUIPMENT.
5. UNLESS OTHERWISE SHOWN, HORIZONTAL REDUCERS INSTALLED IN PIPING SYSTEMS SHALL BE ECCENTRIC (BOTTOM FLAT). HORIZONTAL REDUCERS CONNECTED TO PUMP SUCTIONS SHALL BE ECCENTRIC (TOP FLAT).
6. UNLESS OTHERWISE SHOWN, ELBOWS 2-1/2" AND LARGER SHALL BE STANDARD LONG RADIUS ELBOWS. WHERE REQUIRED IN TIGHT AREAS FOR FIT-UP, USE SHORT RADIUS OR REDUCING ELBOWS.
7. A MINIMUM HEADROOM CLEARANCE HEIGHT OF 7'-6" SHALL BE PROVIDED FOR OVERHEAD PROCESS MECHANICAL PIPING SYSTEMS.
8. SLEEVE COUPLINGS, FLANGED COUPLING ADAPTERS, AND FLEXIBLE COUPLINGS SUBJECT TO A POSITIVE INTERNAL FLUID PRESSURE SHALL BE PROVIDED WITH RESTRAINT SYSTEMS.
9. EXPOSED PIPING SUBJECT TO FREEZING SHALL BE INSULATED AND HEAT TRACED (IF HEAT TRACE IS SPECIFIED). SEE THE SPECIFICATION SECTION 'PIPING , GENERAL' FOR HEAT TRACE AND INSULATION REQUIREMENTS.
10. SEAL WELD THREADED PIPE INSTALLATIONS FOR LIQUID OR GASEOUS CHLORINE, LIQUID OR GASEOUS SULFUR DIOXIDE, SODIUM HYDROXIDE, AND ACIDS UNDER PRESSURE. WHEN CONNECTING TO THREADED COMPONENTS OR EQUIPMENT, PROVIDE SEAL WELDED BREAKOUT CONNECTIONS (FLANGED TYPE).

PIPE SUPPORTS

1. FOR MATERIALS, SPACING, AND ADDITIONAL REQUIREMENTS RELATED TO PIPE SUPPORTS, SEE THE SPECIFICATION SECTION 'PIPE SUPPORTS'.
2. PROVIDE PIPE SUPPORTS REQUIRED FOR A COMPLETE PIPING SYSTEM. PIPE SUPPORTS SHALL BE PROVIDED WHERE REQUIRED BY THE SPECIFICATION SECTION 'PIPE SUPPORTS' AND/OR AT POINTS MARKED WITH AN 'X' ON PLAN VIEW DRAWINGS.
3. WHEN FIBERGLASS OR PVC-COATED PIPE SUPPORT MATERIALS ARE CUT OR DRILLED, THE CUT EXPOSED END OF THE MATERIAL SHALL BE RE-COATED OR SEALED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. PIPE SUPPORTS FOR PLASTIC PIPE OR FIBERGLASS PIPE SHALL BE PROVIDED WITH EXTRA WIDE PIPE SADDLES OR METALLIC SHIELDS WITH LOOSE FIT AROUND THE FULL CIRCUMFERENCE OF THE PIPE AT EACH PIPE SUPPORT.
5. PIPE SUPPORTS FOR COPPER PIPE OR TUBING SHALL BE PROVIDED WITH A 2" WIDE BY 1/8" THICK STRIP OF RUBBER FABRIC (OR SIMILAR SUITABLE MATERIAL) AROUND FULL CIRCUMFERENCE OF THE PIPE AT EACH PIPE SUPPORT.
6. SUPPORT STRUT CHANNEL ENDS THAT EXTEND INTO PERSONNEL TRAFFIC AREAS SHALL HAVE PLASTIC END CAPS.

VALVES AND GATES

1. VALVE AND GATE ACTUATORS SHALL BE MOUNTED TO ALLOW PROPER OPENING AND CLOSING WITHOUT INTERFERENCE WITH ADJACENT PIPING OR EQUIPMENT. UNLESS INDICATED ON THE DRAWINGS, ORIENTATION OF OPERATORS SHALL BE APPROVED BY THE ENGINEER
2. UNLESS INDICATED ON THE DRAWINGS, REFER TO THE MANUFACTURER'S RECOMMENDATIONS AND PROJECT SPECIFICATIONS REGARDING THE LOCATION OF THE VALVE SEAT (UPSTREAM OR DOWNSTREAM) AND STEM ORIENTATION.

CHEMICAL AREAS

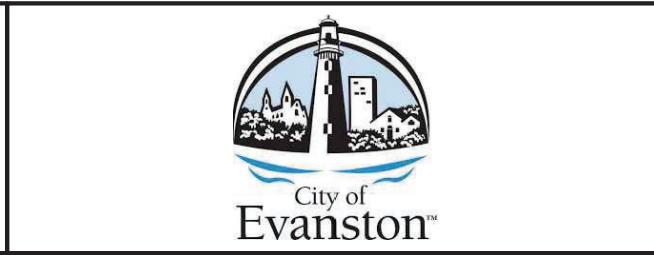
1. AREAS CONTAINING CHEMICAL FEED EQUIPMENT OR PROVIDING CHEMICAL STORAGE SHALL BE CONSIDERED CORROSIVE AREAS. CHEMICAL STORAGE AREAS, CHEMICAL PIPING TRENCHES, AND CHEMICAL INJECTION VAULTS PROVIDE CHEMICAL CONTAINMENT AND SHALL BE COATED FOR CHEMICAL CONTAINMENT AS REQUIRED BY THE 'PROTECTIVE COATING' SPECIFICATION.

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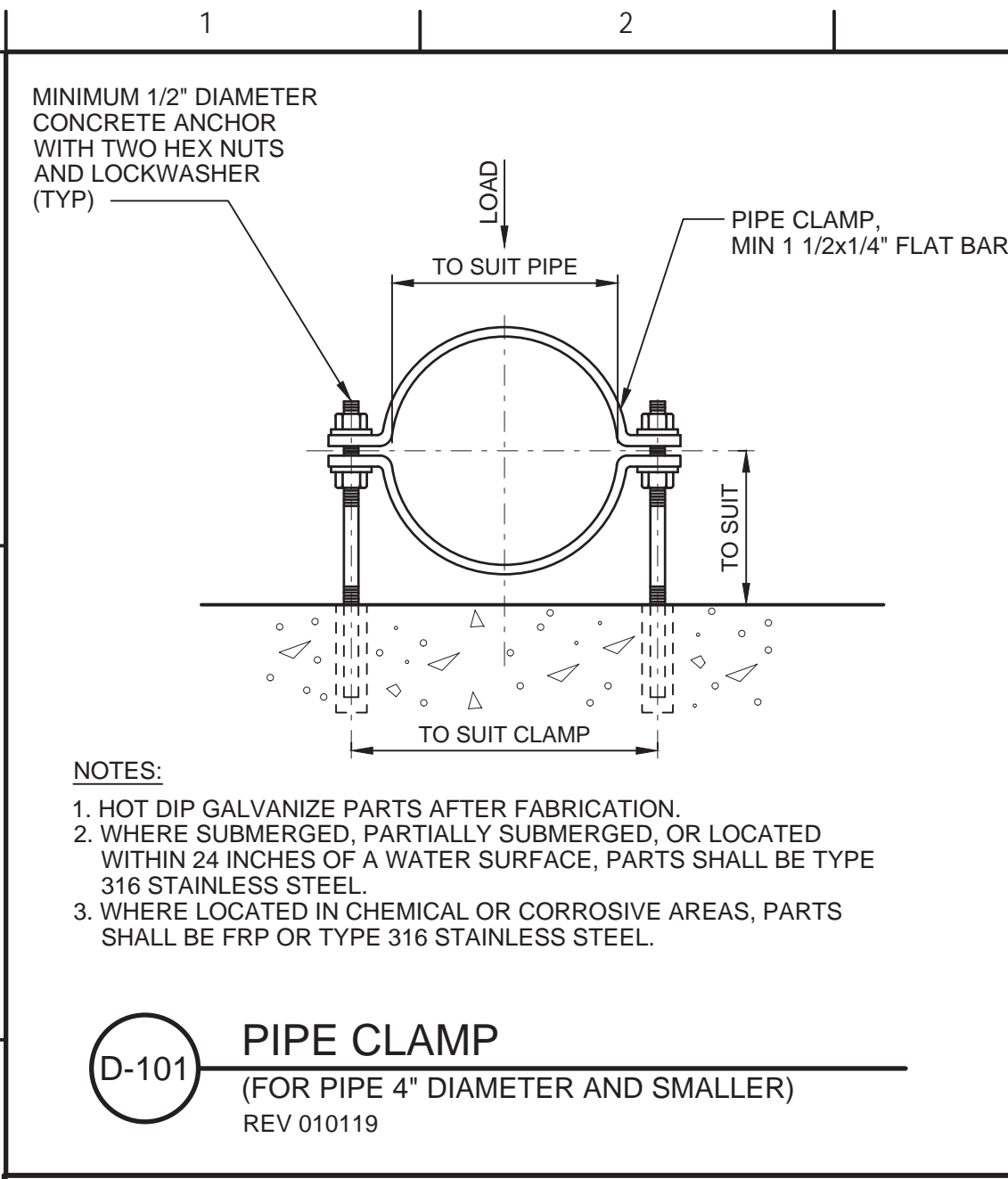
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 MECHANICAL
 NOTES

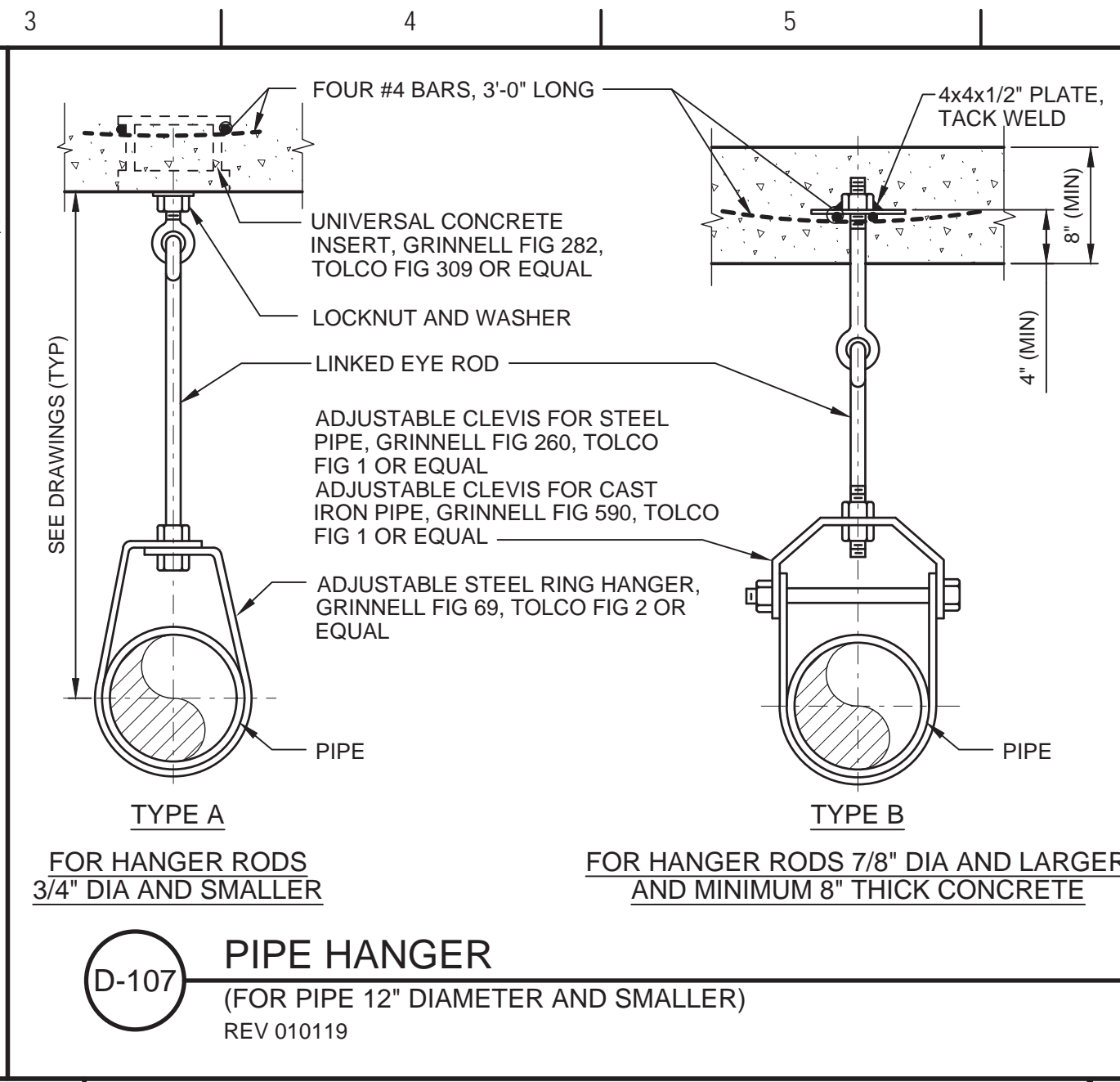
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 DRAWING NO. M-001
 SHEET NO. 46 OF 63



- NOTES:
- HOT DIP GALVANIZE PARTS AFTER FABRICATION.
 - WHERE SUBMERGED, PARTIALLY SUBMERGED, OR LOCATED WITHIN 24 INCHES OF A WATER SURFACE, PARTS SHALL BE TYPE 316 STAINLESS STEEL.
 - WHERE LOCATED IN CHEMICAL OR CORROSIVE AREAS, PARTS SHALL BE FRP OR TYPE 316 STAINLESS STEEL.

D-101 PIPE CLAMP
(FOR PIPE 4" DIAMETER AND SMALLER)
REV 010119

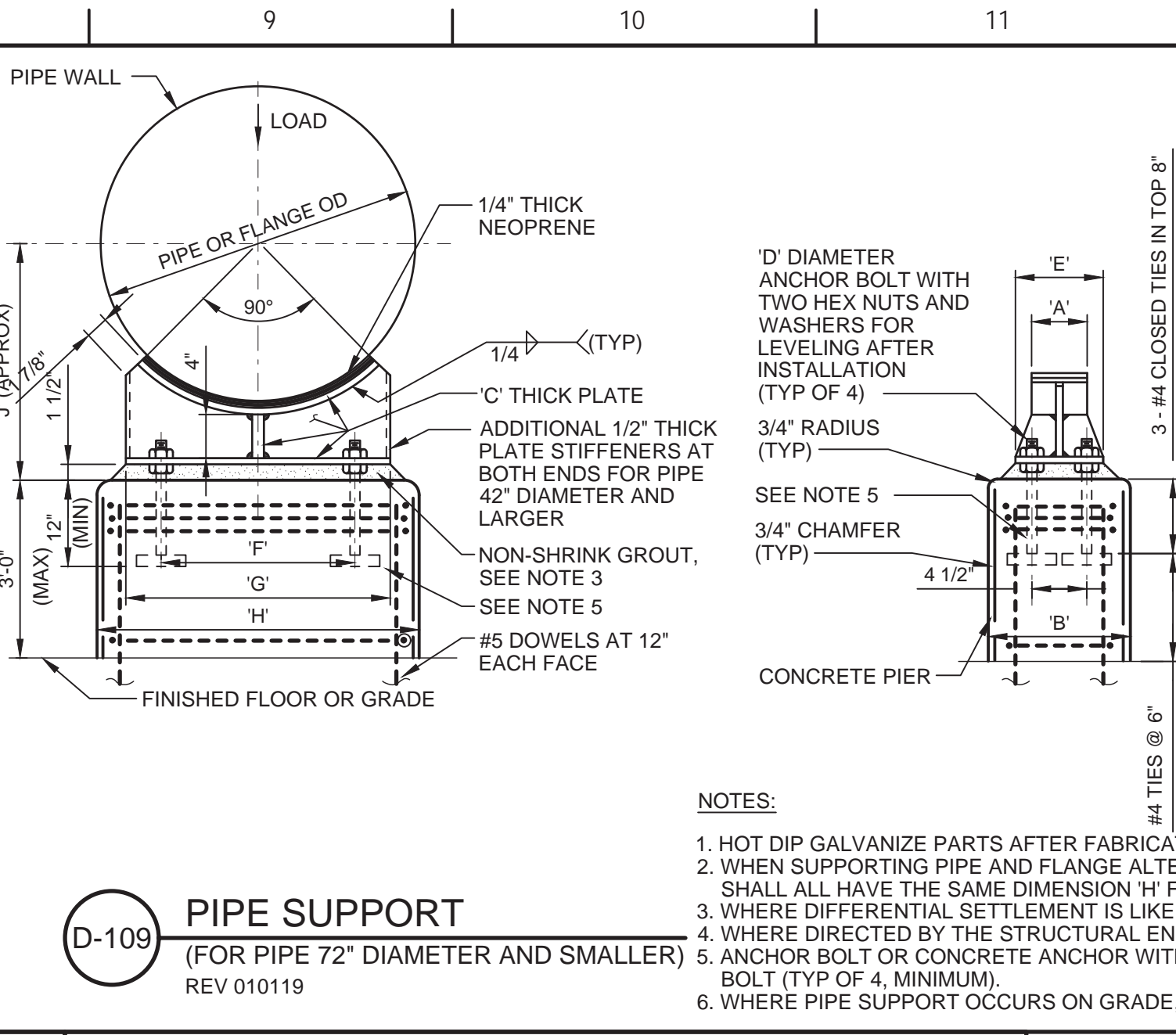


D-107 PIPE HANGER
(FOR PIPE 12" DIAMETER AND SMALLER)
REV 010119

NOMINAL PIPE DIAMETER (INCHES)	ROD DIAMETER (INCHES)	MAX SUPPORT SPACING (FEET)		WEIGHT LIMIT (LBS)	
		STEEL PIPE	DI PIPE	TYPE A	TYPE B
		1 AND SMALLER	3/8	6	10
1 1/4 TO 2	3/8	10	10	300	610
2 1/2 TO 3 1/2	1/2	12	10	525	1130
4 TO 5	5/8	14	10	650	1430
6 TO 8	3/4	17	10	1000	1940
10 TO 12	7/8	18	10	1430	3600

NOTES:

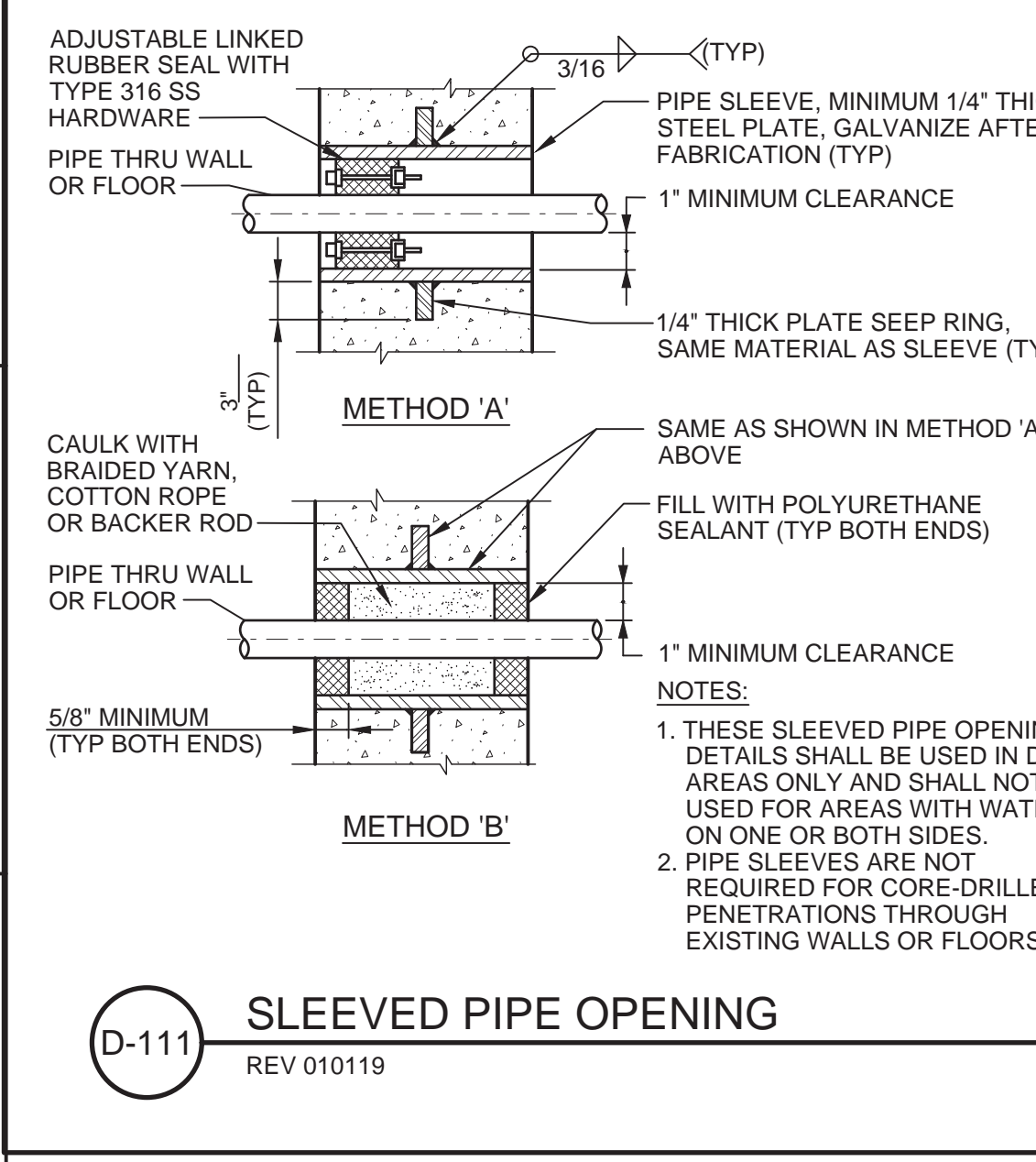
- HOT DIP GALVANIZE PARTS AFTER FABRICATION.
- FOR PIPES 2" DIAMETER AND SMALLER, EYE BOLTS IN CONCRETE ANCHORS MAY BE USED.
- MAXIMUM LOAD FOR CONCRETE INSERT (TYPE A) SHALL BE 1,430 LBS AND FOR 4" SQ BEARING PLATE (TYPE B) SHALL BE 3,600 LBS.
- CONCRETE STRENGTH SHALL BE 3000 PSI MINIMUM.
- DESIGN IS FOR STATIC LOAD ONLY.



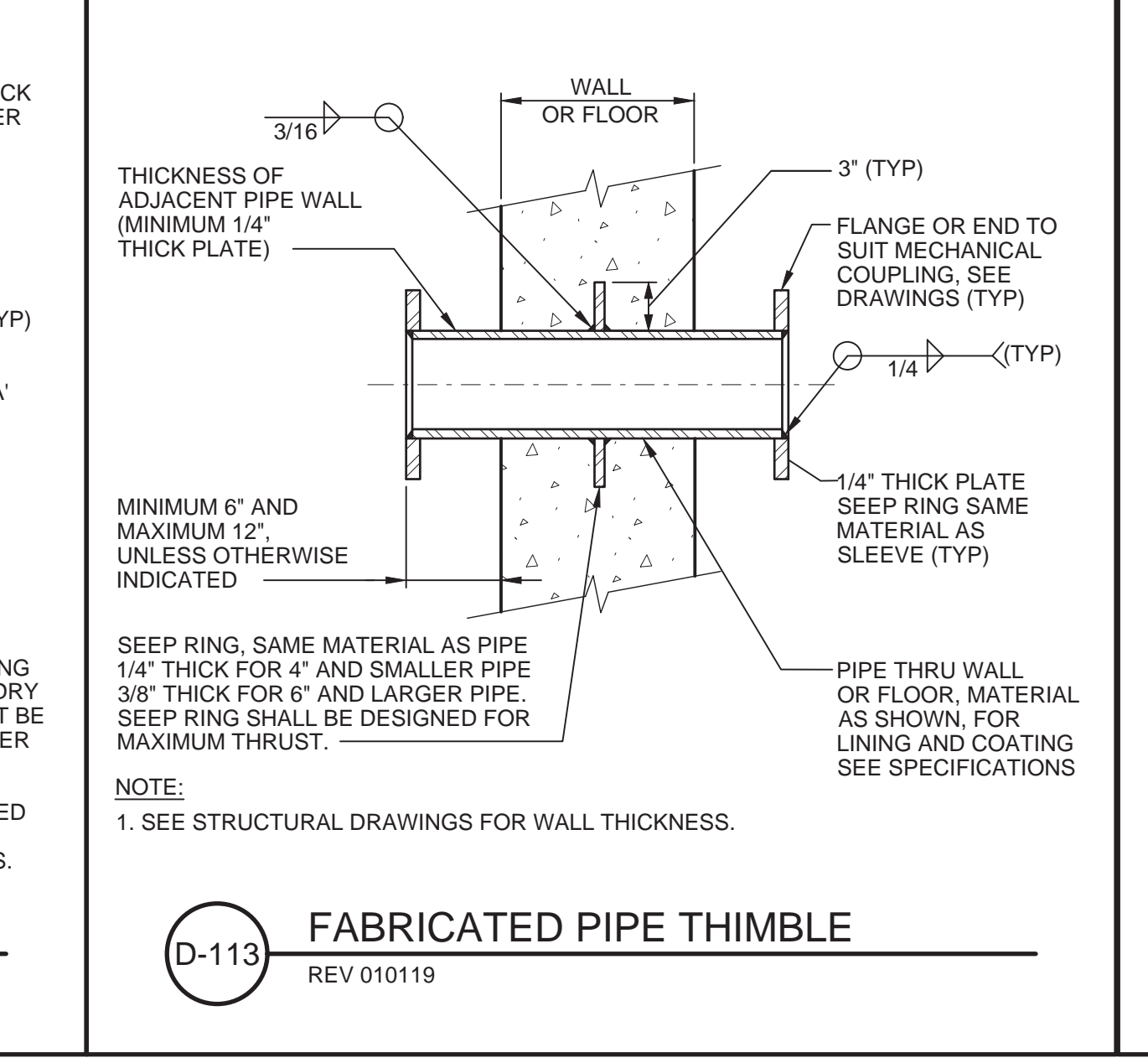
D-109 PIPE SUPPORT
(FOR PIPE 72" DIAMETER AND SMALLER)
REV 010119

NOMINAL PIPE DIAMETER	DIMENSIONS IN INCHES												
	SUPPORTING												
	PIPE						FLANGE						
	A	B	C	D	E	F	G	H	J	F	G	H	J
6	4	12	3/8	5/8	7	4 1/2	6	12	10	6 1/2	9	16	13
8	4	12	3/8	5/8	7	5	8	13	11	7 1/2	9	16	14
10	4	12	3/8	5/8	7	6	9	15	12	9	13	18	15
12	4	12	3/8	5/8	7	7	11	17	13	10	15	20	16
14	4	12	3/8	5/8	7	8	12	17	14	11	16	21	17
16	4	12	3/8	5/8	7	9	13	19	15	12	18	24	18
18	4	12	3/8	5/8	7	10	14	20	16	13	19	24	19
20	5	12	3/8	5/8	7	10	15	21	17	15	21	26	21
22	5	12	3/8	5/8	7	12	18	24	18	16	23	28	22
24	5	12	3/8	5/8	7	13	19	24	19	16	24	30	23
26	5	12	3/8	3/4	7	14	21	27	20	18	26	32	24
30	5	12	3/8	3/4	7	16	23	28	22	20	29	34	26
34	5	15	3/8	3/4	7	18	26	32	24	22	33	39	29
36	6	15	3/8	3/4	7	19	27	32	25	24	34	40	30
42	6	18	1/2	1	9	21	31	36	28	27	39	45	33
48	6	18	1/2	1	9	24	36	42	31	30	44	50	37
54	6	18	1/2	1	9	28	40	46	34	34	48	56	40
60	6	18	1/2	1	9	32	45	52	37	36	54	60	44
66	6	18	1/2	1	9	33	49	56	40	40	59	66	47
72	6	18	1/2	1	9	36	53	60	43	44	63	70	50

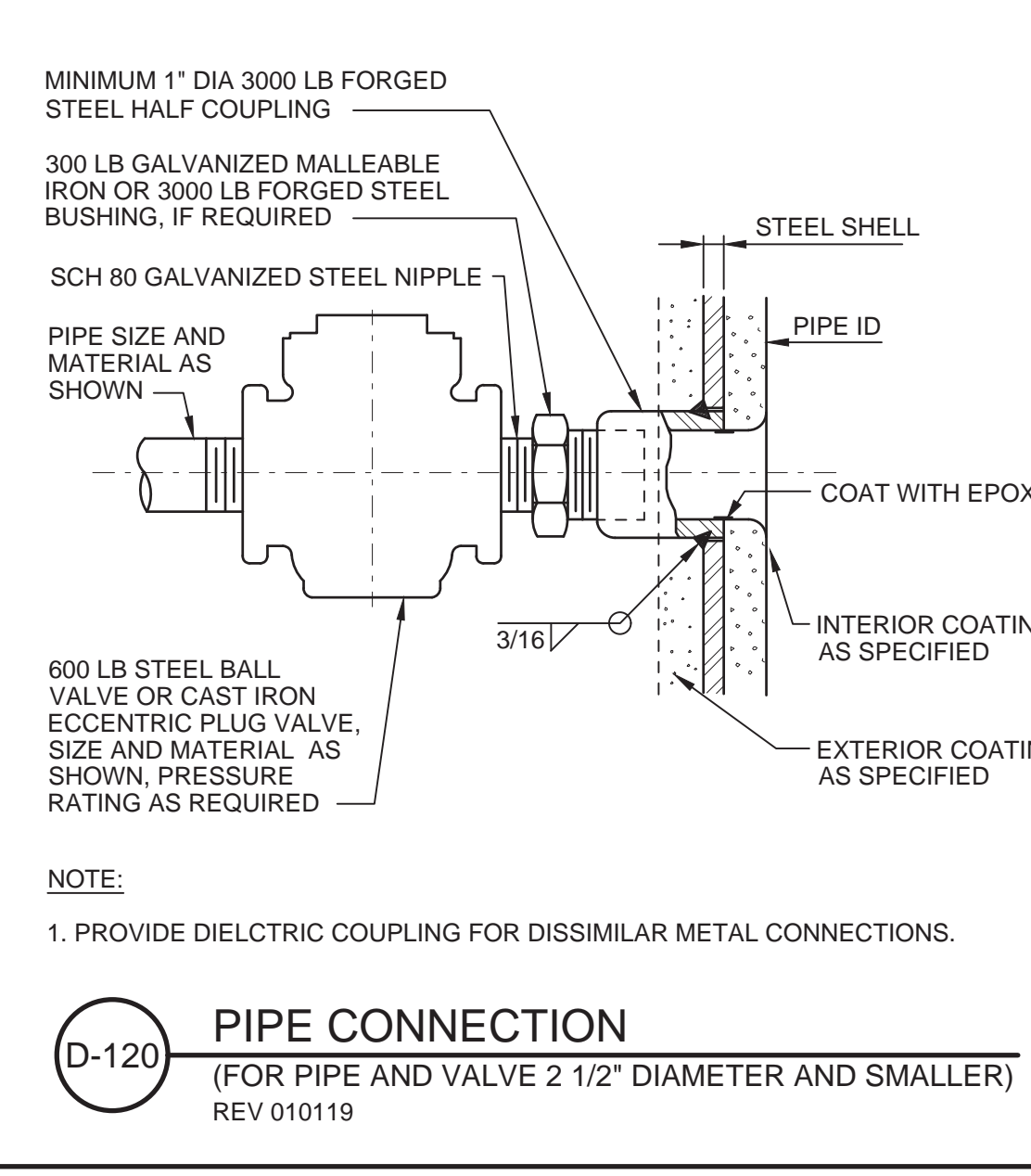
- NOTES:
- HOT DIP GALVANIZE PARTS AFTER FABRICATION.
 - WHEN SUPPORTING PIPE AND FLANGE ALTERNATELY ON THE SAME LINE, CONCRETE PIERS FOR PIPE SUPPORTS SHALL ALL HAVE THE SAME DIMENSION 'H' FOR FLANGE SUPPORT.
 - WHERE DIFFERENTIAL SETTLEMENT IS LIKELY TO OCCUR, OMIT GROUT AS DIRECTED BY THE ENGINEER.
 - WHERE DIRECTED BY THE STRUCTURAL ENGINEER, BOTTOM OF PIERS SHALL EXTEND BELOW BOTTOM OF SLAB.
 - ANCHOR BOLT OR CONCRETE ANCHOR WITH TWO NUTS AND ONE WASHER. PROVIDE 4x1/2x4" BAR WELDED TO BOLT (TYP OF 4, MINIMUM).
 - WHERE PIPE SUPPORT OCCURS ON GRADE, REFER TO STRUCTURAL DRAWINGS FOR DETAILS.



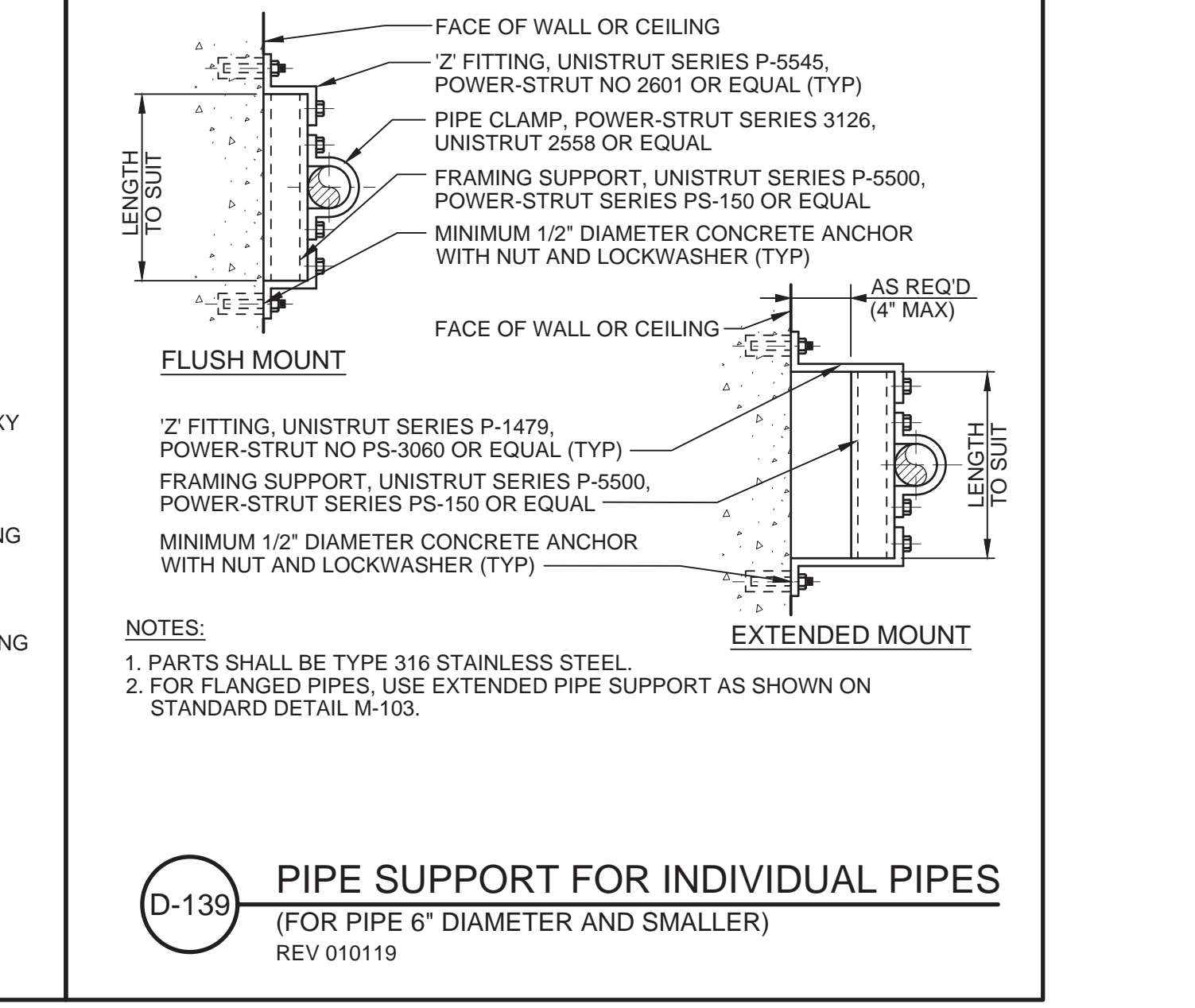
D-111 SLEEVED PIPE OPENING
REV 010119



D-113 FABRICATED PIPE THIMBLE
REV 010119



D-120 PIPE CONNECTION
(FOR PIPE AND VALVE 2 1/2" DIAMETER AND SMALLER)
REV 010119



D-139 PIPE SUPPORT FOR INDIVIDUAL PIPES
(FOR PIPE 6" DIAMETER AND SMALLER)
REV 010119

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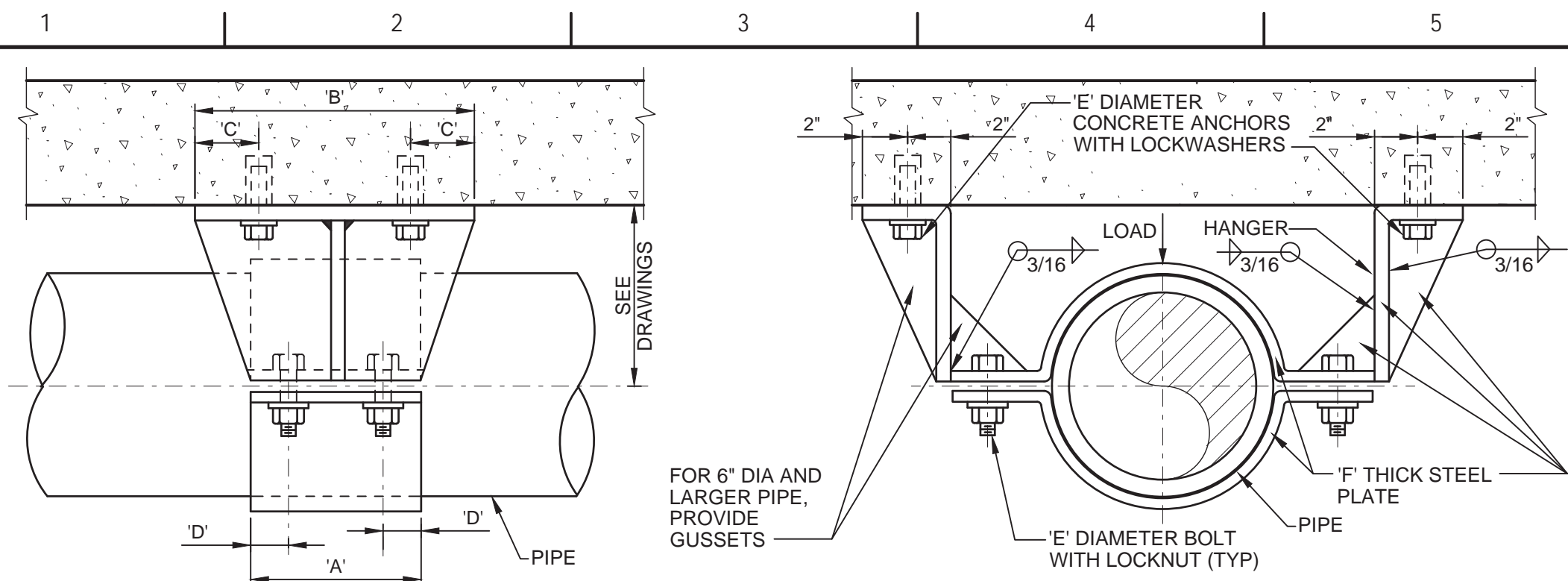
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
MECHANICAL
STANDARD DETAILS - I

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	JOB NO. 173440108 DRAWING NO. M-002 SHEET NO. 47 OF 63
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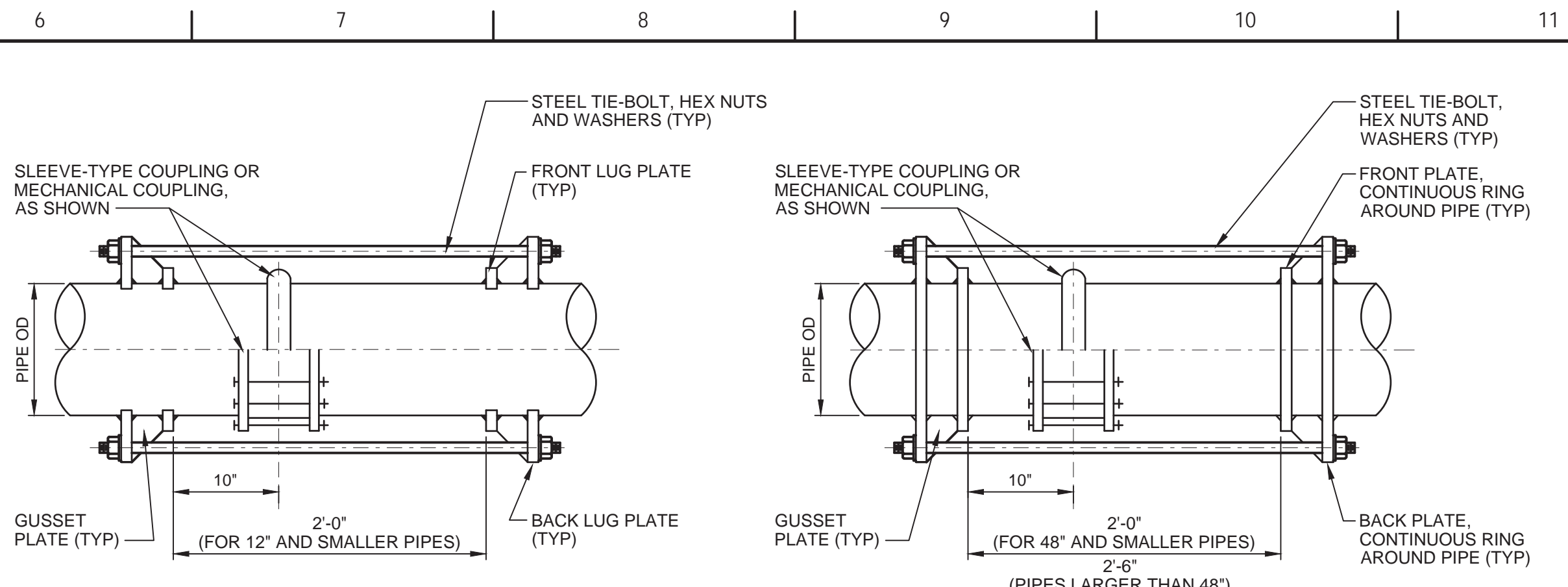
FOR 6" DIA AND LARGER PIPE, PROVIDE GUSSETS

'E' DIAMETER BOLT WITH LOCKNUT (TYP)

DIMENSIONS IN INCHES						
NOMINAL PIPE DIAMETER	'A'	'B'	'C'	'D'	'E'	'F'
3 TO 8	6	10	1 1/2	1	5/8	1/4
10 TO 14	8	12	2	1 1/2	3/4	3/8
16 TO 24	12	22	2	1 1/2	3/4	3/8
48	18	30	4	2	1	1/2

- NOTES:
- HOT DIP GALVANIZE PARTS AFTER FABRICATION.
 - FOR 16" TO 48" DIAMETER PIPES, PROVIDE CONCRETE ANCHORS AT 9" SPACING AND TWO GUSSETS AT 6" SPACING EACH SIDE OF HANGER.
 - ANCHORS IN VALVE VAULT SHALL BE EMBEDDED.

D-154 PIPE ANCHOR SUSPENDED FROM CONCRETE
REV 010119

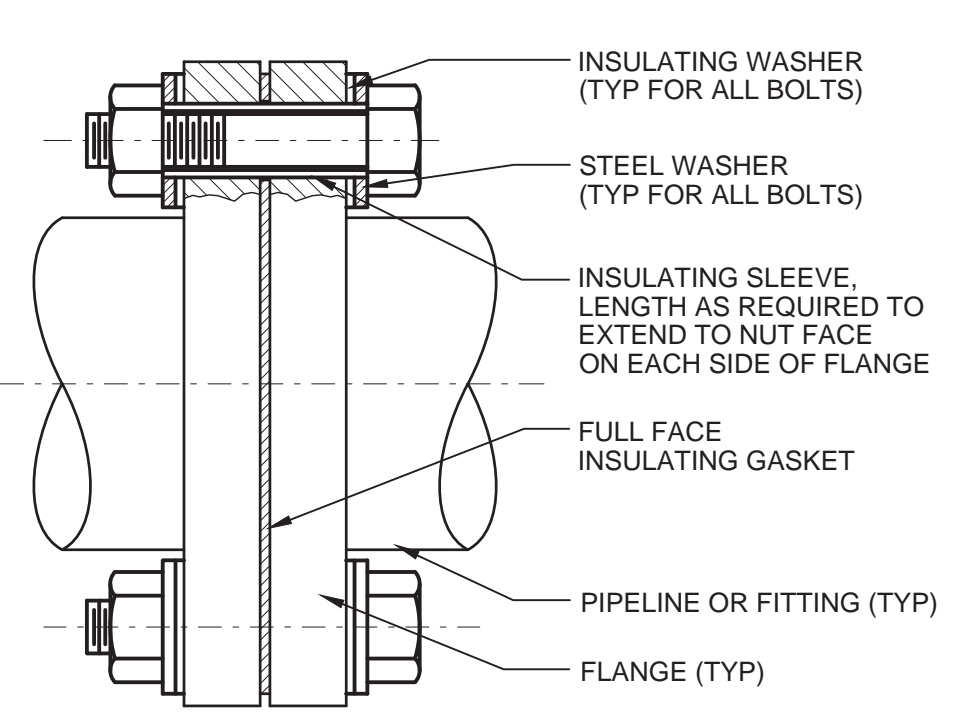


TYPE P (FOR 12" AND SMALLER PIPES)

TYPE RR (PIPES LARGER THAN 48")

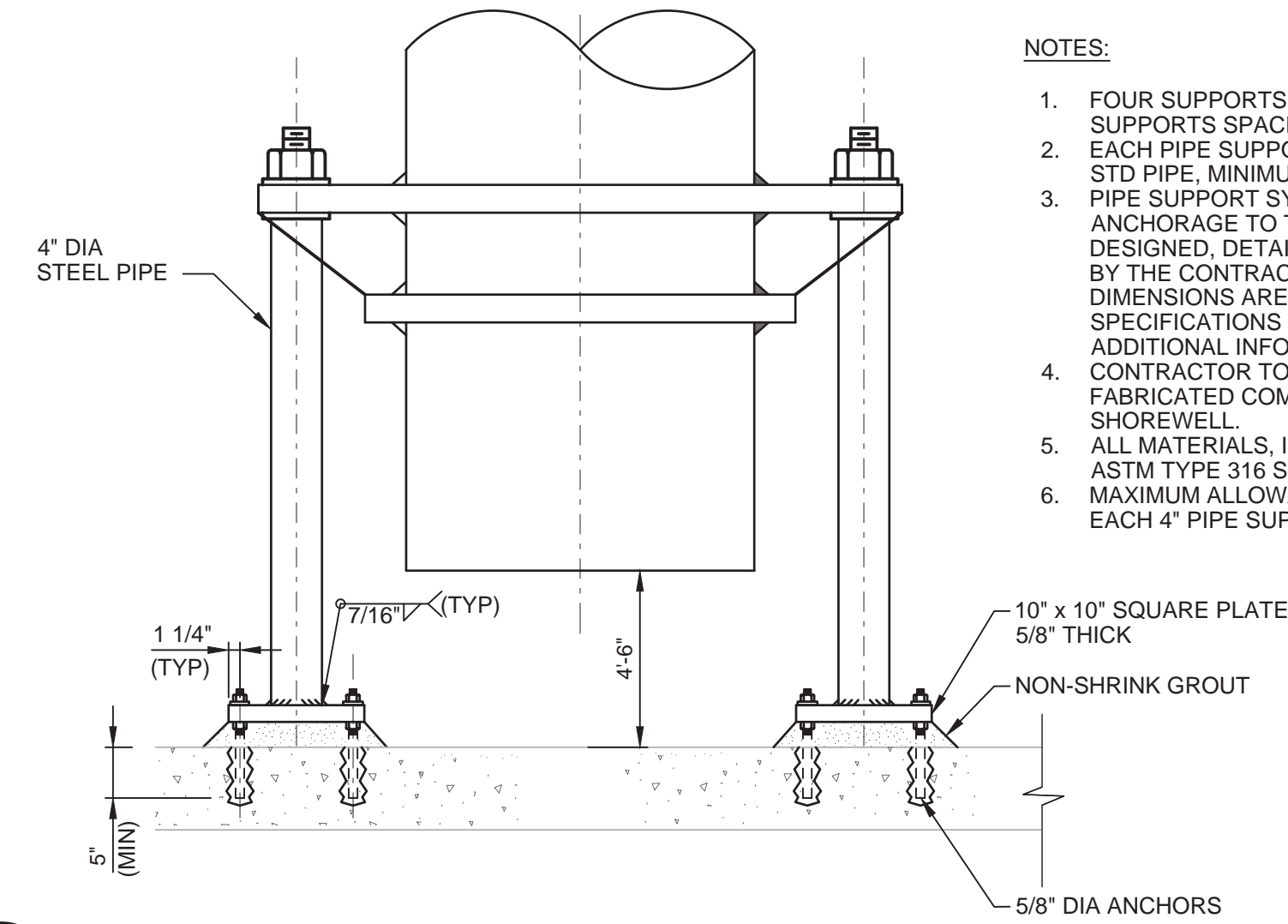
- NOTES:
- SEE AWWA MANUAL M-11 FOR HARNESS SET SIZE, TYPE AND DESIGN REQUIREMENTS.
 - WHERE BURIED, TIE-BOLTS, HEX NUTS AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL.
 - COAT EXPOSED STEEL SURFACES OF HARNESS SET PER 'PROTECTIVE COATING' SPECIFICATION, SYSTEM FM-11.

D-156 HARNESSED JOINT
REV 010119



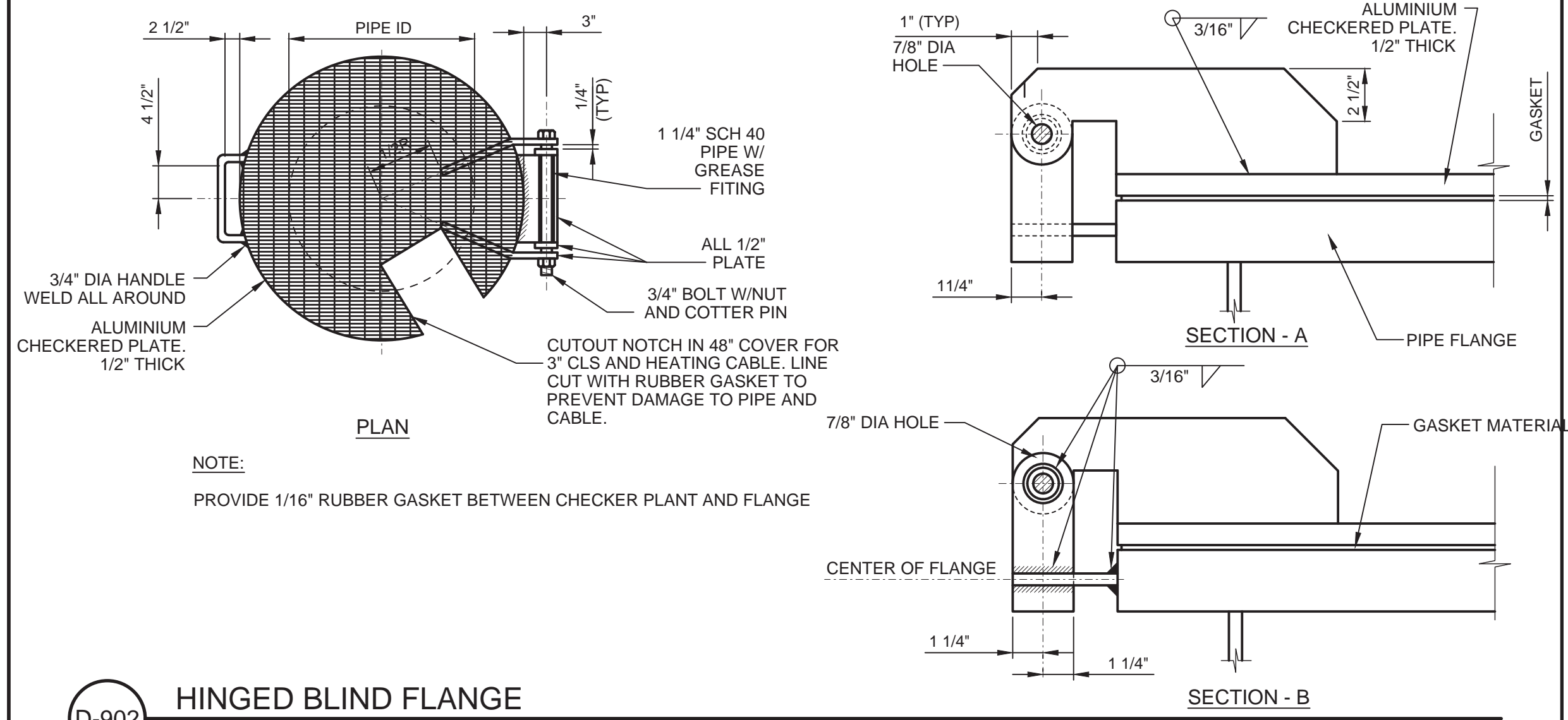
- NOTES:
- ABOVE GRADE INSULATING FLANGE INSTALLATION SHOWN.
 - FOR BURIED INSULATING FLANGE INSTALLATION, DO NOT INSTALL INSULATING WASHER ON PROTECTED SIDE OF INSULATING FLANGE.
 - AFTER ASSEMBLING JOINT, COAT BURIED INSULATING FLANGES WITH EPOXY AND WRAP WITH A BUTYL RUBBER ADHESIVE-BACKED POLYETHYLENE TAPE.

D-160 INSULATING FLANGE
REV 010119



- NOTES:
- FOUR SUPPORTS AROUND PIPE DIAMETER SUPPORTS SPACED AT EACH QUARTER POINT.
 - EACH PIPE SUPPORT SHALL BE A NOMINAL 4 IN STD PIPE, MINIMUM.
 - PIPE SUPPORT SYSTEM, CONNECTIONS AND ANCHORAGE TO THE FOUNDATION SHALL BE DESIGNED, DETAILED, FURNISHED AND INSTALLED BY THE CONTRACTOR. MINIMUM SIZES AND DIMENSIONS ARE INDICATED ON THE DETAIL. SEE SPECIFICATIONS SECTION 01 33 17 FOR ADDITIONAL INFO.
 - CONTRACTOR TO VERIFY CLEARANCE FOR SHOP FABRICATED COMPONENTS FOR ENTRY INTO THE SHOREWELL.
 - ALL MATERIALS, INCLUDING ANCHORS, SHALL BE ASTM TYPE 316 SS.
 - MAXIMUM ALLOWABLE SERVICE LOAD APPLIED TO EACH 4" PIPE SUPPORT IS 2650 LB.

D-901 PIPE SUPPORT AT SHOREWELL 3



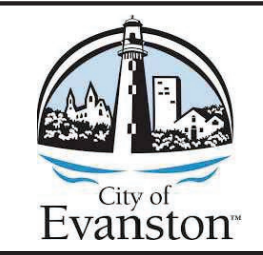
NOTE:
PROVIDE 1/16" RUBBER GASKET BETWEEN CHECKER PLANT AND FLANGE

D-902 HINGED BLIND FLANGE

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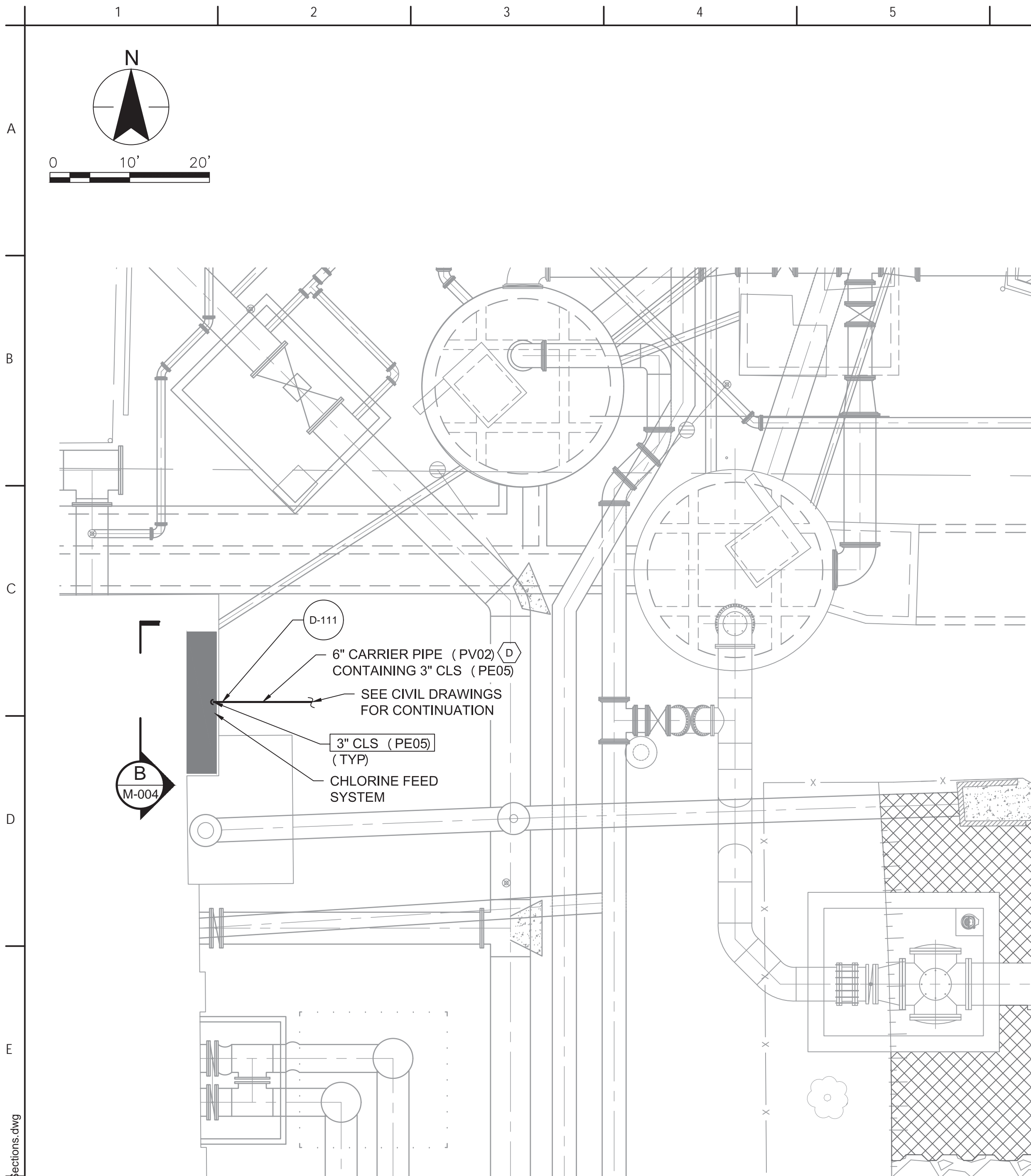
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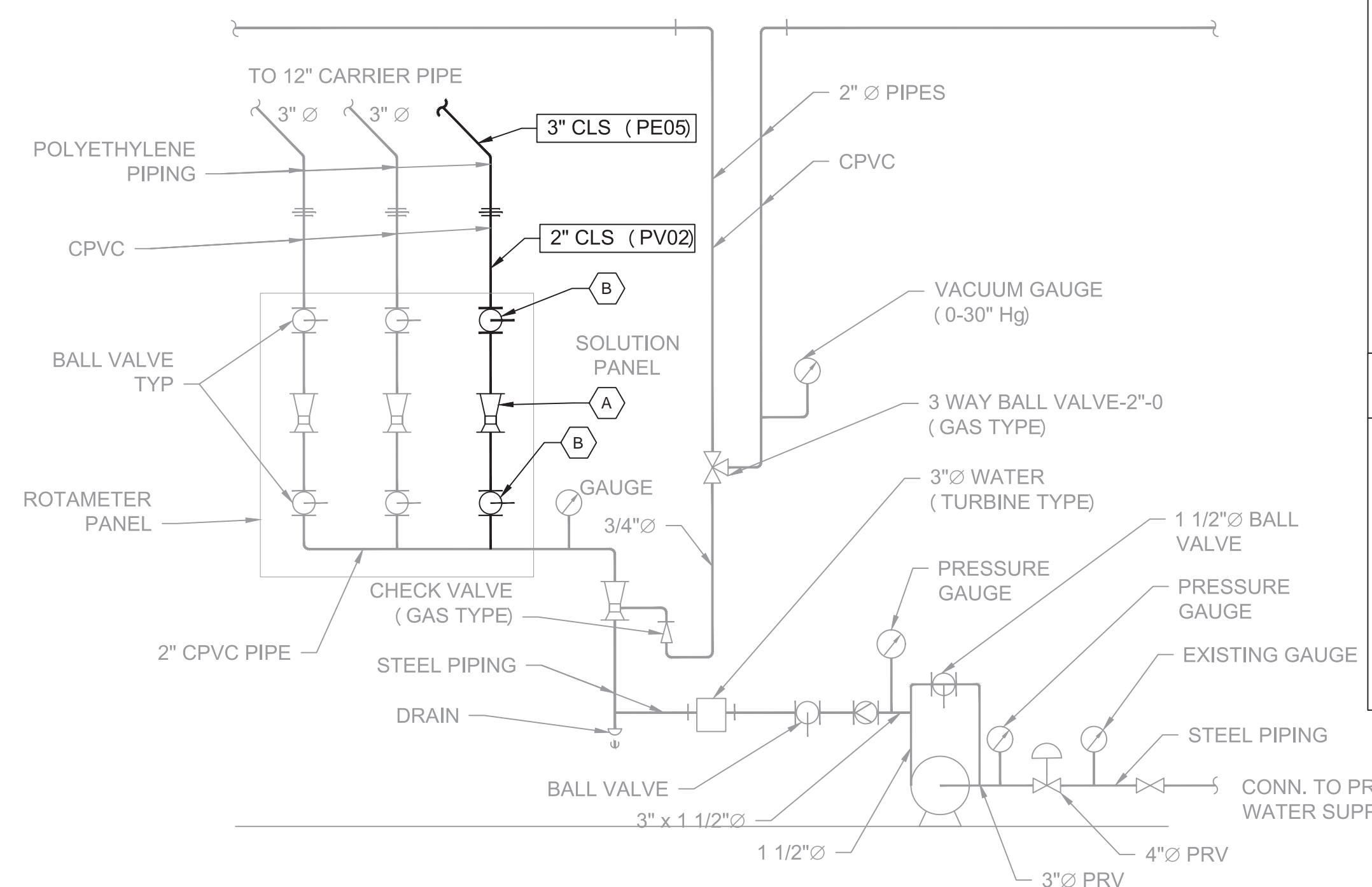
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MECHANICAL
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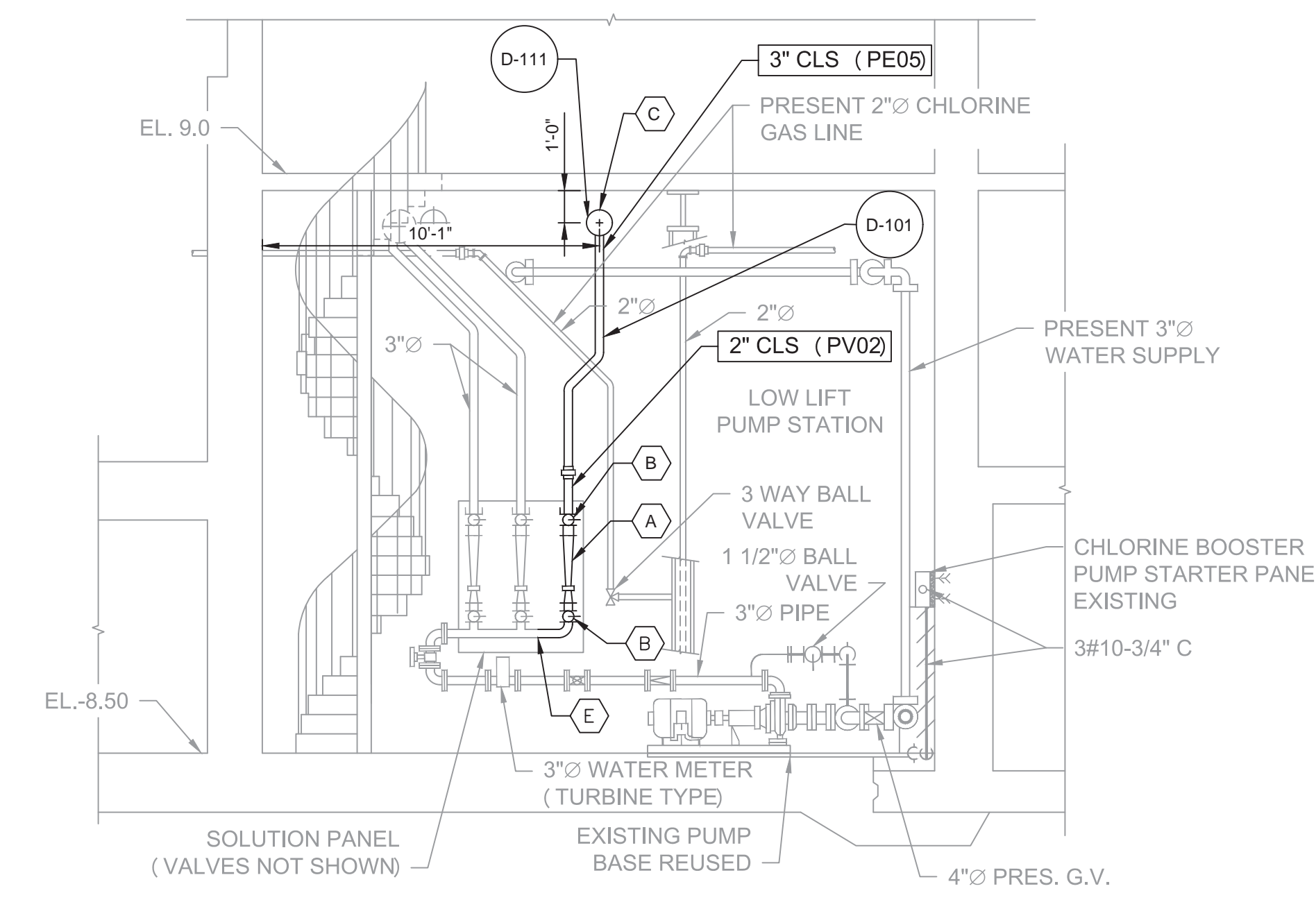
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DRAWING NO. M-003
SHEET NO. 48 OF 63



1 ENLARGED SITE PLAN
M-004 SCALE: 1"=10'-0"



A CHLORINE FEED SYSTEM SCHEMATIC
M-004 SCALE: NTS



B PUMP ROOM SECTION
M-004 SCALE: 1/4"=1'-0"

GENERAL SHEET NOTES

- CONTRACTOR SHALL VERIFY EXISTING CONDITION PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
- CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING EQUIPMENT, PIPING, AND OTHER ITEMS TO REMAIN IN SERVICE. ALL EQUIPMENT OR PIPING DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COMPENSATION.
- NEW ROTAMETER SHALL BE MOUNTED TO EXISTING ROTAMETER PANEL AS RECOMMENDED BY THE MANUFACTURER.

SHEET KEYNOTES

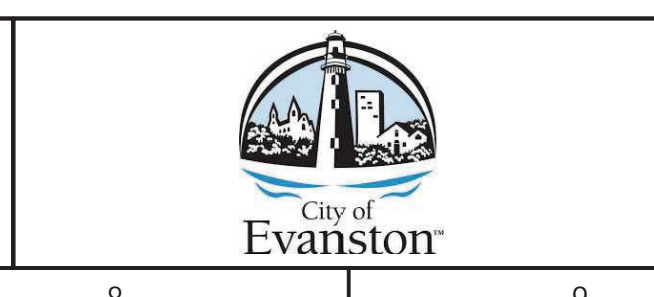
- A 2" ROTAMETER
- B 2" CPVC BALL VALVE
- C CORE NEW HOLE THROUGH WALL
- D 6" CARRIER PIPE SHALL EXTEND TO THE INNER FACE OF THE WALL
- E REMOVE EXISTING CAP AND CONNECT TO EXISTING 2" CPVC PIPE.

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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
MECHANICAL
CHLORINE SYSTEM PLAN AND SECTIONS

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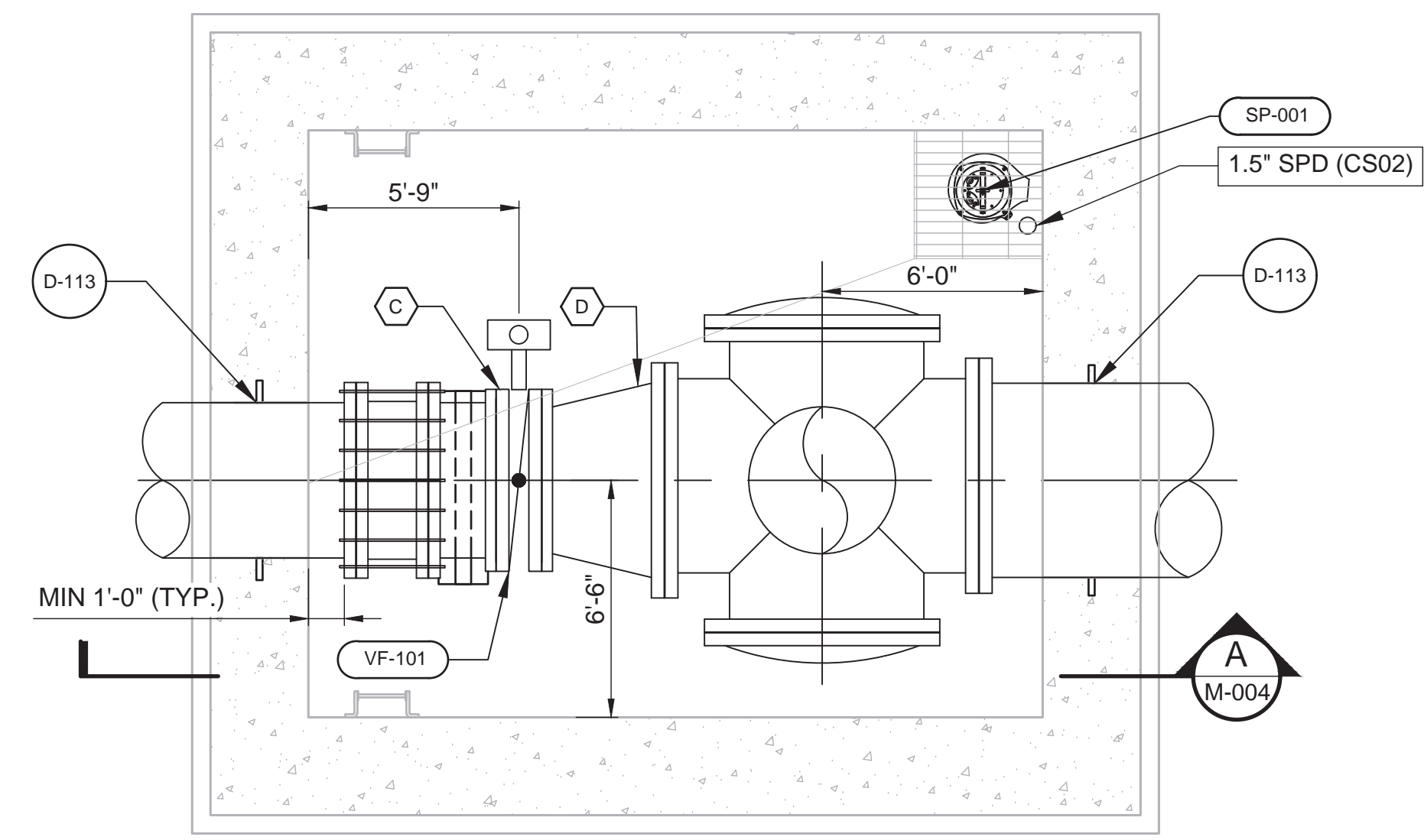
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DRAWING NO.
M-004
SHEET NO.
49 OF 63

GENERAL SHEET NOTES

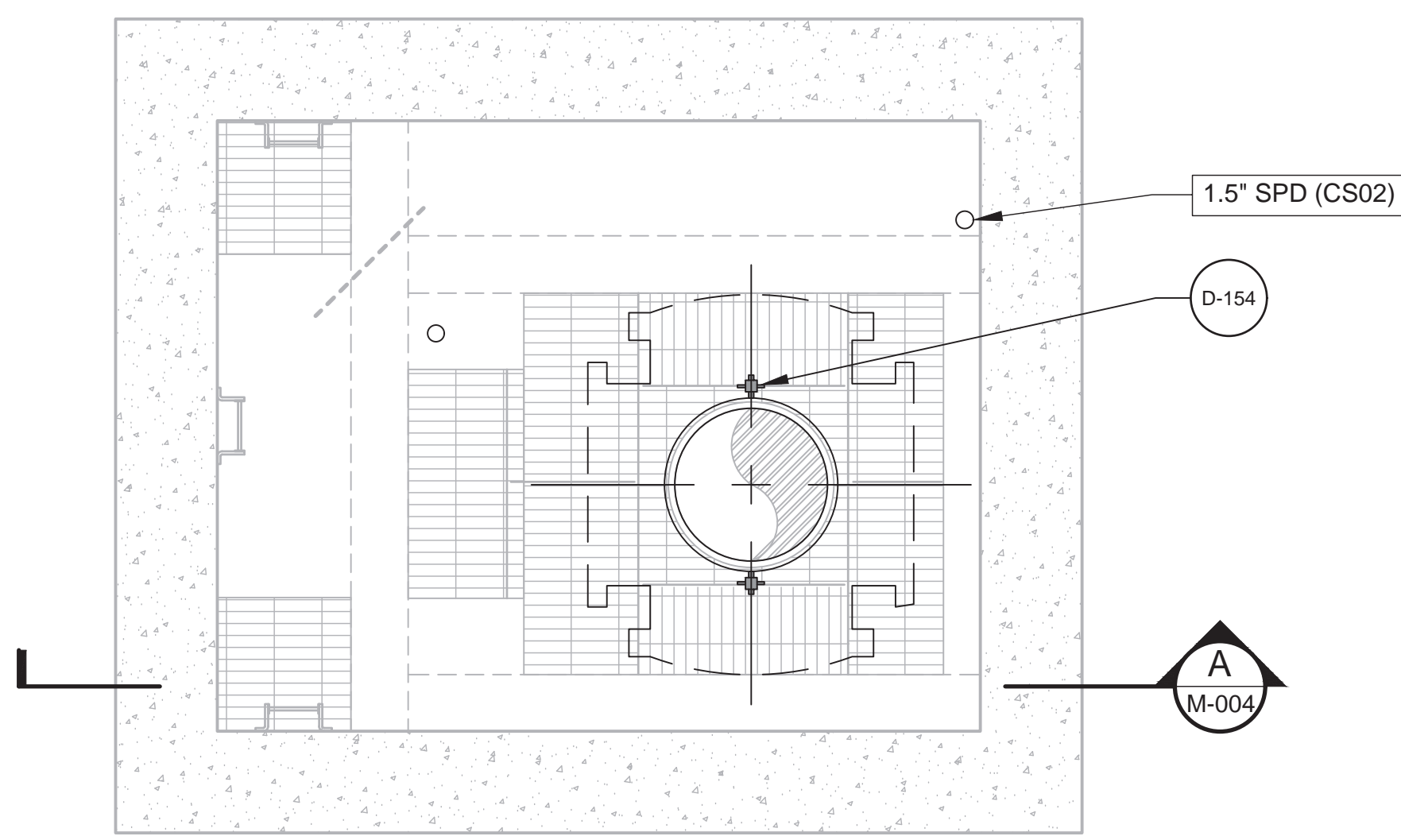
- SEE STRUCTURAL DRAWING FOR REFERENCE.
- 1.5" SUMP PUMP DISCHARGE (AT LEAST 6" COVER) TO 60" MH AS SHOWN ON C-006.
- COORDINATE VALVE STEM PENETRATION WITH STRUCTURAL.
- CONTRACTOR SHALL PROVIDE INTERMEDIATE SUPPORT OF VALVE STEM AS RECOMMENDED BY VALVE MANUFACTURER.
- CONTRACTOR TO PROVIDE STANDARD BLIND FLANGE FOR PIPELINE TESTING. AFTER TESTING TO REPLACE WITH HINGED PLATE AS SHOWN ON DRAWING.
- PIPE SUPPORT ANCHORS SHALL BE COORDINATED WITH STRUCTURAL SUPPORT MEMBERS TO AVOID CONFLICT.

SHEET KEYNOTES

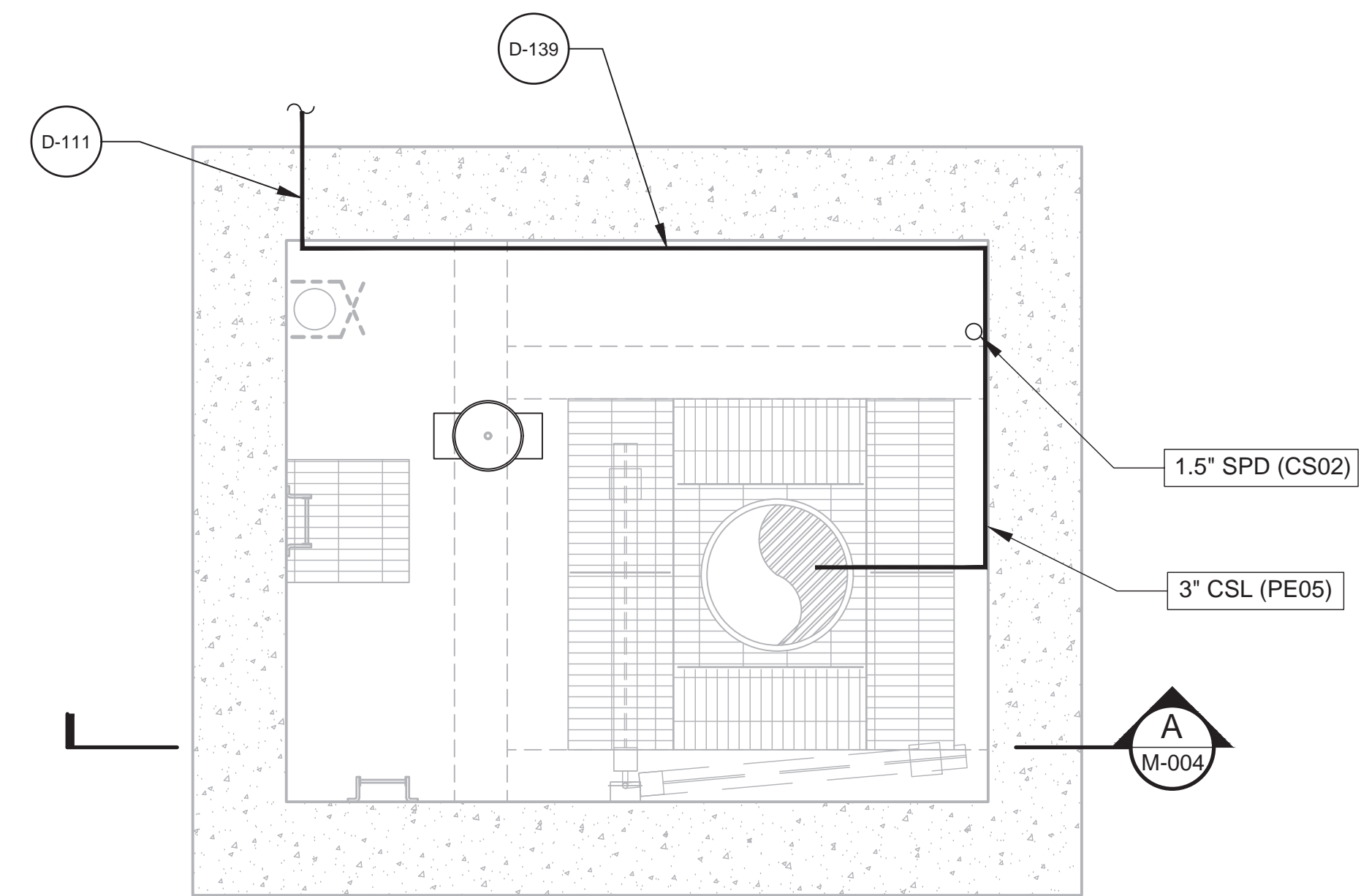
- A 48" FL x FL DISMANTLING JOINT
- B 48" FL x FL SPOOL PIECE
- C 48" BUTTERFLY VALVE W/ OPERATOR
- D 60" x 48" FL CONCENTRIC REDUCER
- E 60" CROSS WITH 48" RISER PIPE
- F 60" BLIND FLANGE (STEEL)
- G 48" BLIND FLANGE (STEEL), PROVIDE CUT OUT AS NECESSARY TO ACCOMMODATE POWER CABLES, 3" CSL PIPE, AND CABLES FOR FLOWMETER AND TEMPERATURE PROBE
- H 2" DRAIN CONNECTION
- I INSTALL FRICTION CLAMP AT RISER FOR PIPE AND CABLE WITH ANCHOR BRACKET AT TOP OR SIDE OF PIPE IN ORDER TO ACCOMMODATE FLOW METER INSTALLATION RING.



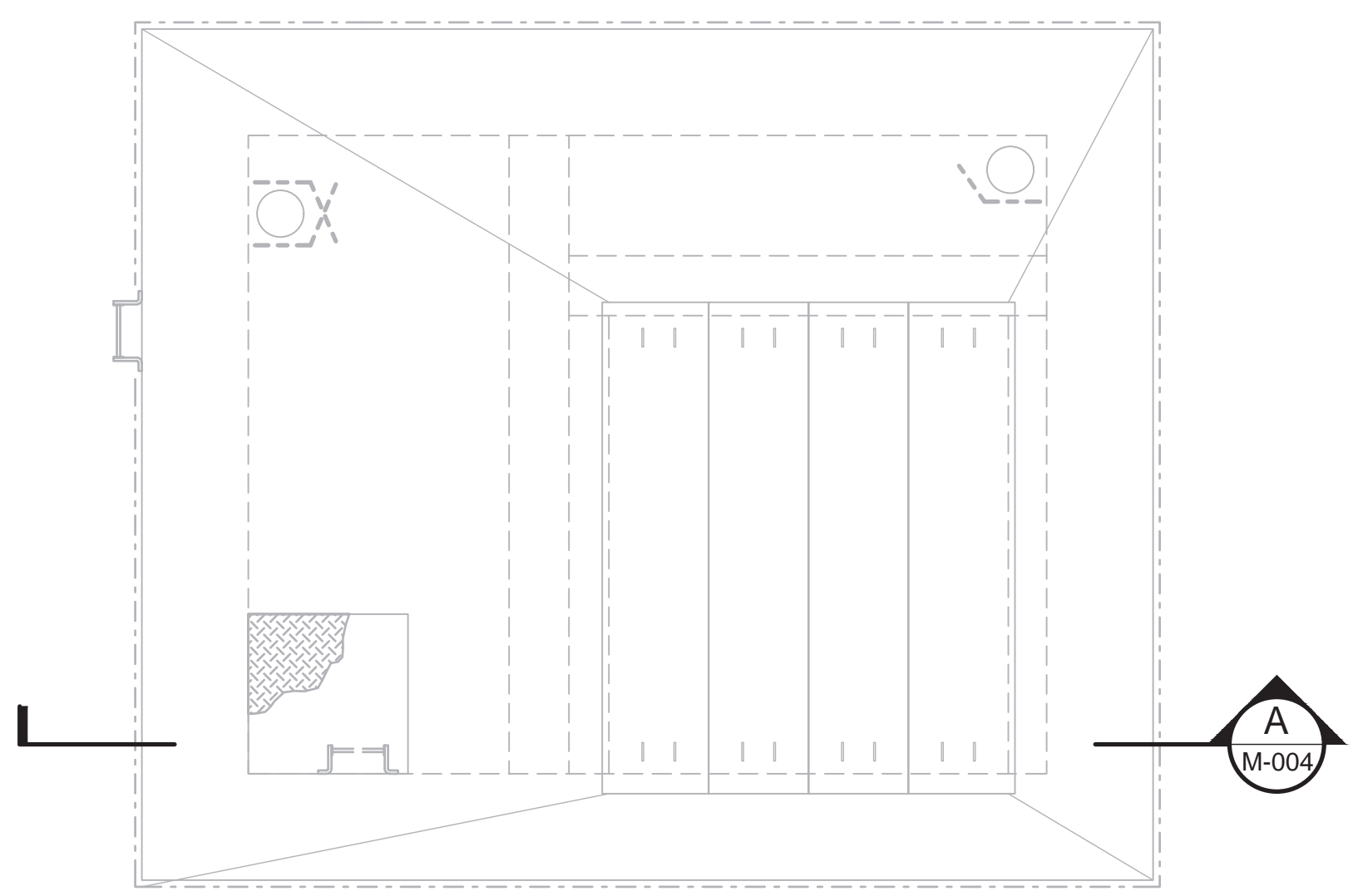
BOTTOM LEVEL- ELEV.-18.0'
SCALE: 1/4"=1'-0"



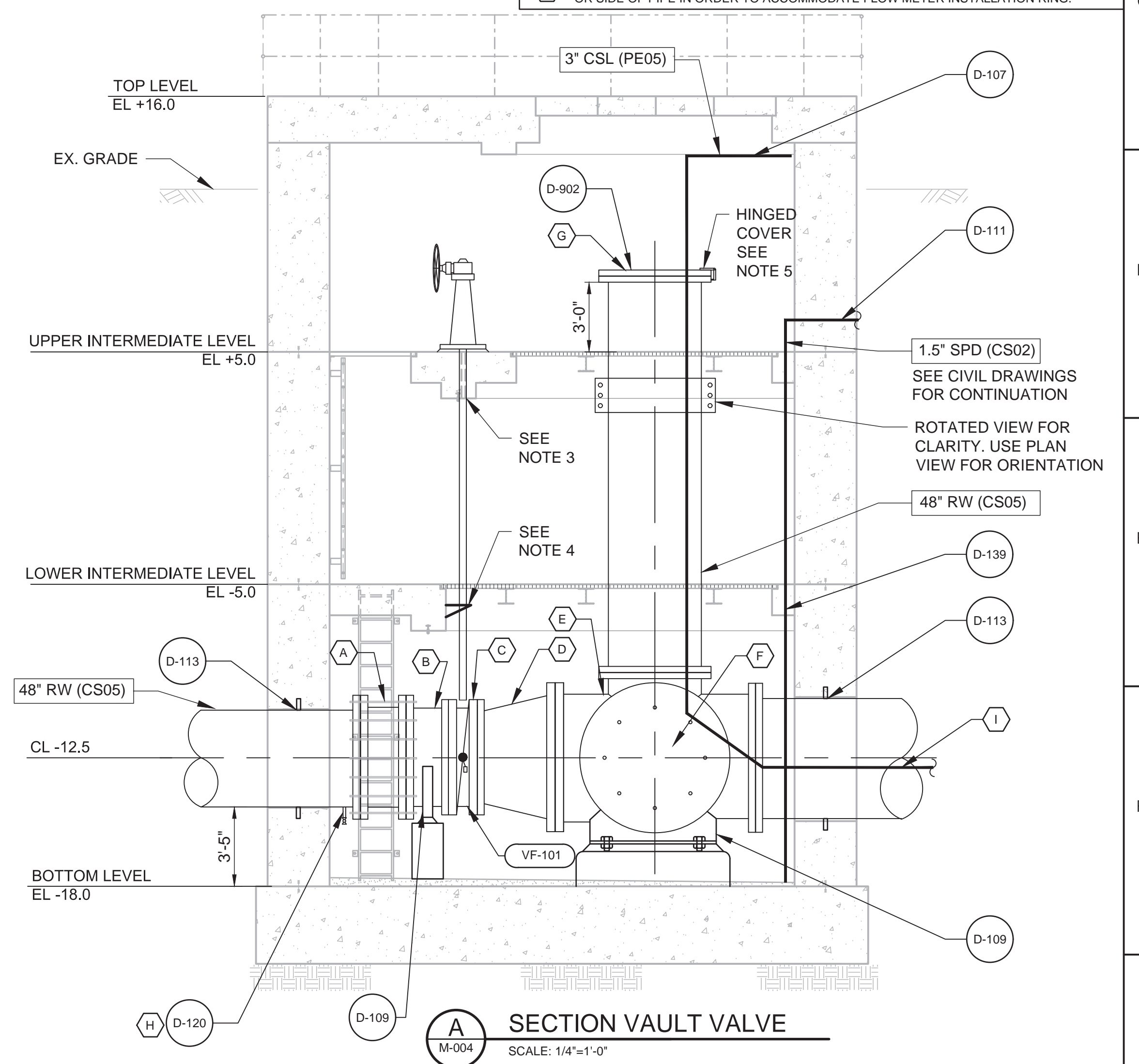
LOWER INTERMEDIATE PLAN- ELEV.-5.0'
SCALE: 1/4"=1'-0"



UPPER INTERMEDIATE PLAN-ELEV.+5.0'
SCALE: 1/4"=1'-0"



TOP LEVEL PLAN - ELEV.+16.0'
SCALE: 1/4"=1'-0"



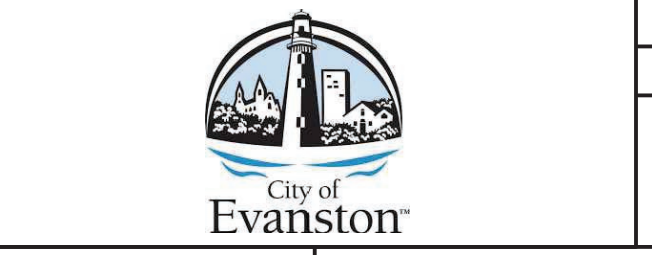
SECTION VAULT VALVE
SCALE: 1/4"=1'-0"

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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
MECHANICAL
VALVE VAULT PLAN AND SECTIONS

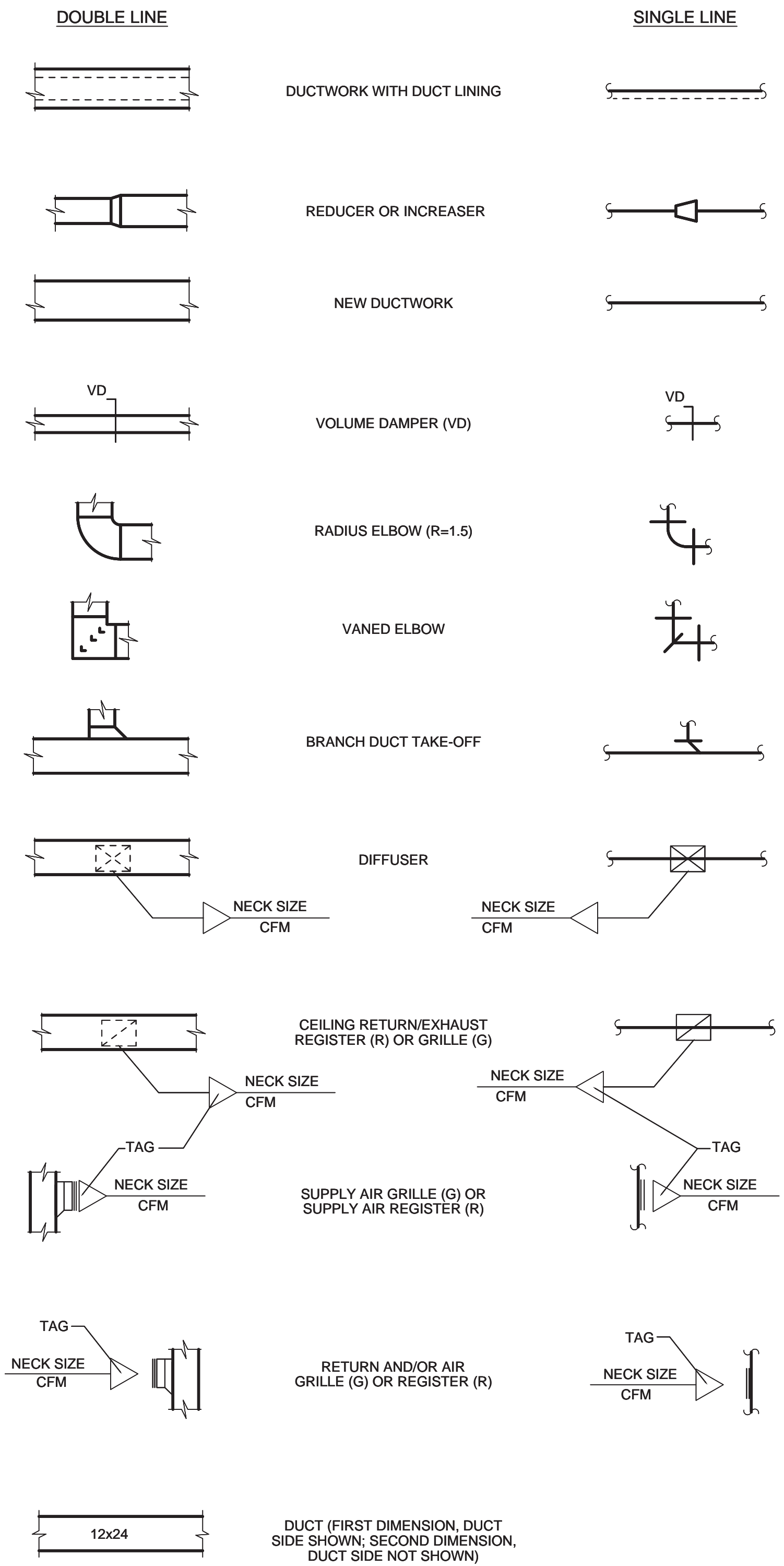
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M-005
SHEET NO.
50 OF 63

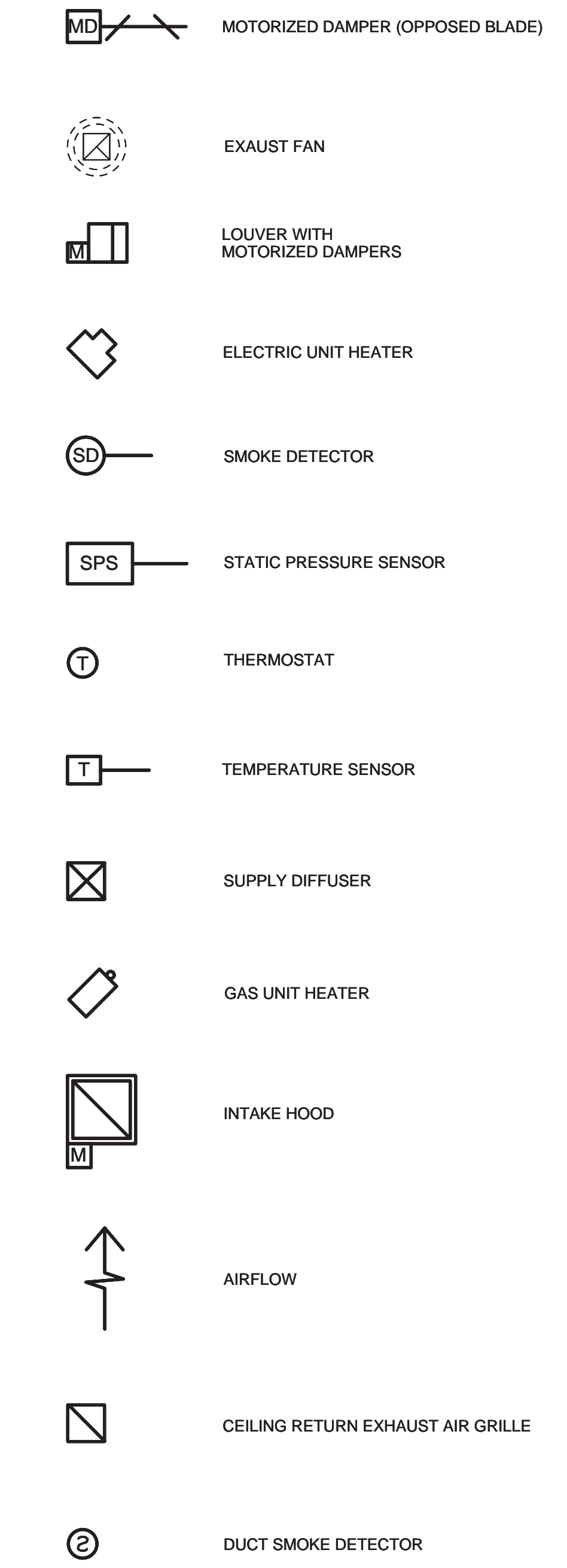
ABBREVIATIONS

AC	AIR CONDITIONING UNIT
AFF	ABOVE FINISHED FLOOR
ALT	ALTITUDE
ATC	AUTOMATIC TEMPERATURE CONTROL
BDD	BACK DRAFT DAMPER
BHP	BRAKE HORSE POWER
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
DB	DRY BULB
EA	EXHAUST AIR
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
FFL	FINISH FLOOR
HP	HORSEPOWER
KW	KILOWATT
LV	LOUVER
M	MOTOR OPERATED DAMPER
MTD	MOUNTED
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OD AMB	OUTDOOR AMBIENT TEMPERATURE
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SD	SMOKE DETECTOR
S/S	STAINLESS STEEL
TYP	TYPICAL
VD	VOLUME DAMPER
V-PH-CY	VOLTS-PHASE-CYCLE
WB	WET BULB

LEGEND



EQUIPMENT SYMBOLS



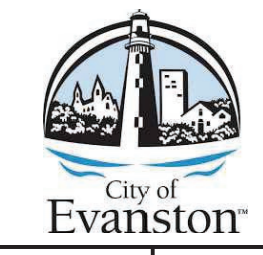
GENERAL HVAC NOTES

- SCOPE OF WORK
 - THE HVAC CONTRACTOR IS RESPONSIBLE FOR ALL WORK, MATERIALS, AND LABOR TO SATISFY A COMPLETE WORKING SYSTEM WHETHER SPECIFIED OR IMPLIED.
 - ALL WORK IS TO BE PERFORMED IN STRICT COMPLIANCE WITH THE INTERNATIONAL MECHANICAL CODE, ALL LOCAL CODES AND ALL OTHER REGULATIONS GOVERNING THE WORK OF THIS NATURE.
 - BEFORE SUBMITTING ANY PROPOSAL, THE HVAC CONTRACTOR SHALL EXAMINE THE PROPOSED SITE AND SHALL DETERMINE THE CONDITIONS THAT MAY AFFECT THE WORK. NO ALLOWANCE SHALL BE MADE BECAUSE THE HVAC CONTRACTOR FAILS TO MAKE SUCH EXAMINATIONS.
 - ALL EQUIPMENT AND MATERIALS SHALL BE AS SPECIFIED OR "APPROVED EQUAL" BY THE ENGINEER.
- SHOP DRAWINGS
 - REFER TO THE SPECIFICATIONS FOR SHOP DRAWING REQUIREMENTS.
- DUCTWORK
 - DUCTWORK SHALL BE ALUMINUM ONLY, CONSTRUCTED IN ACCORDANCE WITH SMACNA STANDARDS. ALL DUCTWORK SHALL BE THE LOW VELOCITY TYPE, UNLESS SPECIFIED OTHERWISE.
 - THE HVAC CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED FIRE DAMPERS AND ACCESS PANELS IN ALL DUCTWORK THAT PENETRATES A HORIZONTAL OR VERTICAL FIRE PARTITION, OR AS OTHERWISE SHOWN ON THE DRAWINGS.
 - ALL BRANCH DUCTS SHALL HAVE VOLUME DAMPERS.
 - WHERE FLOW EXCEEDS 150 CFM, THE CONTRACTOR SHALL USE SMOOTH RADIUS ELBOWS OR TURNING VANES.
 - ALL DUCT JOINTS SHALL BE SEALED IN ACCORDANCE WITH SMACNA STANDARDS AND ACCEPTED GOOD PRACTICE.
 - ALL DUCT DIMENSIONS ARE NET INSIDE VALUES. DIMENSIONS MAY BE CHANGED PROVIDED THAT THE NET FREE AREA IS MAINTAINED.
 - ALL CONCEALED DUCTWORK SHALL BE INSULATED WITH 1" FIBERGLASS INSULATING BLANKET WITH ALUMINUM FOIL FACING.
- HVAC CONTROLS
 - THE HVAC CONTRACTOR SHALL SUPPLY AND INSTALL ALL CONTROL WIRING AND THERMOSTATS AS REQUIRED.
- ELECTRICAL
 - THE HVAC CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR LOCATION OF POWER WIRING TO EACH HVAC UNIT.
- PIPE SUPPORTS
 - ALL PIPE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE IN A NEAT AND WORKMANLIKE MANNER. THE USE OF WIRE OR METAL STRAPS TO SUPPORT PIPES WILL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL NOT EXCEED 8 FEET FOR ALL PIPING. PLASTIC PIPING SHALL BE SUPPORTED EVERY 4 FEET.
- MISCELLANEOUS
 - ALL EXTERIOR OPENINGS SHALL BE PROPERLY CAULKED AND SEALED TO PREVENT INFILTRATION OF OUTSIDE AIR INTO THE CONDITIONED SPACE.
 - COORDINATE THE INSTALLATION OF ALL ROOF FLASHING AT ROOF PENETRATIONS.
 - THE HVAC CONTRACTOR SHALL VERIFY ALL FIGURES, CONDITIONS, AND DIMENSIONS AT THE JOB SITE.
 - THE MECHANICAL PLANS ARE DIAGRAMATIC IN NATURE AND ARE BASED ON ONE MANUFACTURER'S EQUIPMENT. THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL OF THE DETAILS FOR THE EQUIPMENT. THE HVAC CONTRACTOR SHALL VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT AND ENSURE THAT IT WILL FIT IN THE AVAILABLE SPACE.
- TESTING AND BALANCING
 - THE HVAC SYSTEMS SHALL BE TESTED AND BALANCED BY AN INDEPENDENT AGENCY, UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. A SEALED TYPE WRITTEN REPORT SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER.
- GUARANTEE
 - MATERIALS, EQUIPMENT, AND INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE. DEFECTS THAT APPEAR DURING THAT PERIOD SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
 - COMPRESSOR SHALL COME WITH MANUFACTURER'S STANDARD 5-YEAR WARRANTY.

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1909 RAW WATER INTAKE REPLACEMENT
 HVAC
 GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

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JOB NO. 173440108
 DRAWING NO. H-001
 SHEET NO. 51 OF 63

FAN SCHEDULE

GENERAL SHEET NOTES

EQUIPMENT NO	SERVICE	LOCATION	CFM	STATIC PRESS (IN WG)	MOTOR					MANUFACTURER & MODEL	OPTIONS-ACCESSORIES
					BHP	HP	RPM	VOLT-PH-CY	ENCLOSURE		
EF-01	VAULT	UPPER INTERMEDIATE LEVEL	1090	0.75	0.3	3/4	3500	208-3-60	TEFC	GREENHECK MODEL AX-31-160-0410-M7	1-7

- EQUIPMENT MANUFACTURERS AND MODEL NUMBERS ARE THE BASES FOR DESIGN. SEE SPECIFICATION FOR APPROVED EQUALS.
- SIZES OF FLOOR, WALL AND MOUNT PENETRATIONS ARE GIVEN FOR REFERENCE ONLY AND SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OR ORDERING OF THE EQUIPMENT.
- THE HVAC CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE GENERAL CONTRACTOR, THE FINAL SIZE AND LOCATION OF THE FLOOR, WALL AND ROOF OPENINGS REQUIRED FOR THE HVAC EQUIPMENT INSTALLATION.

- NOTES:**
- COATED WITH GREENHECK HI-PRO POLYESTER COATING OR EQUAL, FAN AND ATTACHED ACCESSORIES
 - DIRECT DRIVE
 - MOTOR WITH CLASS F OR GREATER INSULATION
 - UL/CUL-705 - POWER VENTILATORS
 - PROVIDE DISCONNECT SWITCH
 - CORROSION RESISTANT GRAVITY BACK DRAFT DAMPER, GREENHECK MODEL WDR
 - PROVIDE CORROSION RESISTANT FASTENERS

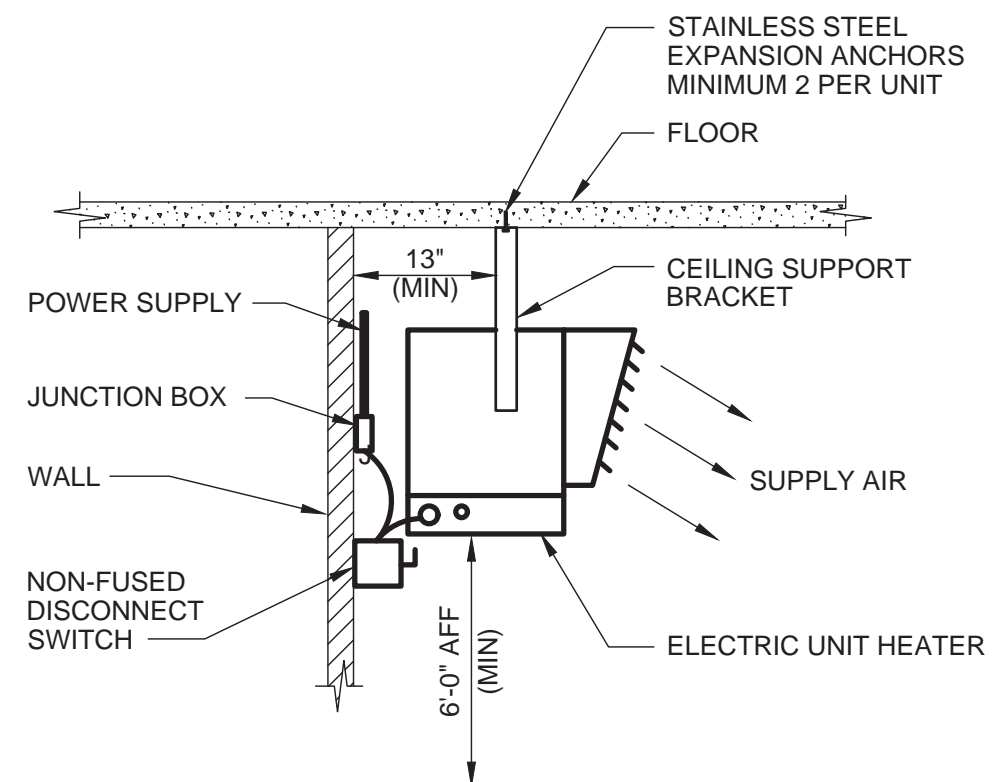
ELECTRIC UNIT HEATER SCHEDULE

EQUIPMENT NO	SERVICE	LOCATION	FAN			ELECTRIC HEATER		ELECTRICAL REQUIREMENTS			MANUFACTURER & MODEL	OPTIONS-ACCESSORIES
			RATED CFM	HP	RPM	KW	AIR TEMP RISE (F)	VOLT-PH-CY	FULL LOAD AMPS			
EUH-01	VAULT	UPPER INTERMEDIATE LEVEL	1180	1/15	1050	10	28	208-3-60	27.8	CHROMALOX MODEL HD3D - 1000 TSP	1-3	

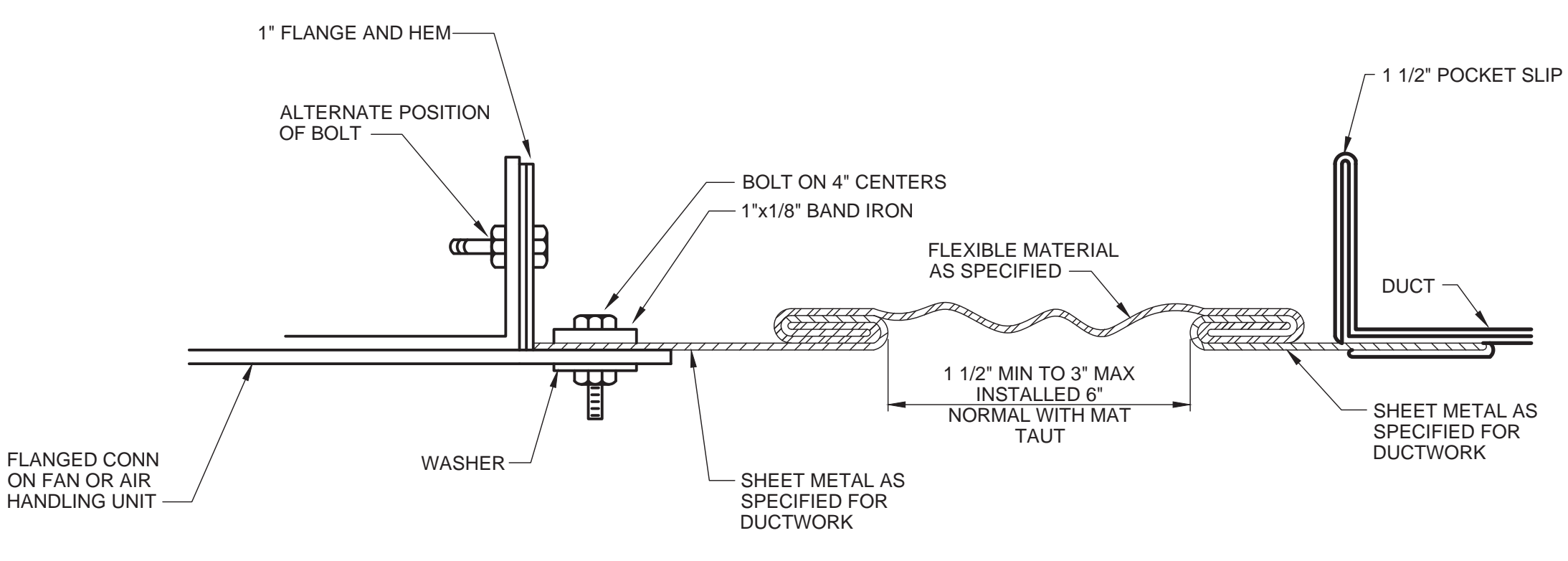
- NOTES:**
- BUILD IN THERMOSTAT
 - HOSE DOWN TYPE, CORROSION RESISTANT ELECTRIC UNIT HEATER
 - PROVIDE DISCONNECT SWITCH

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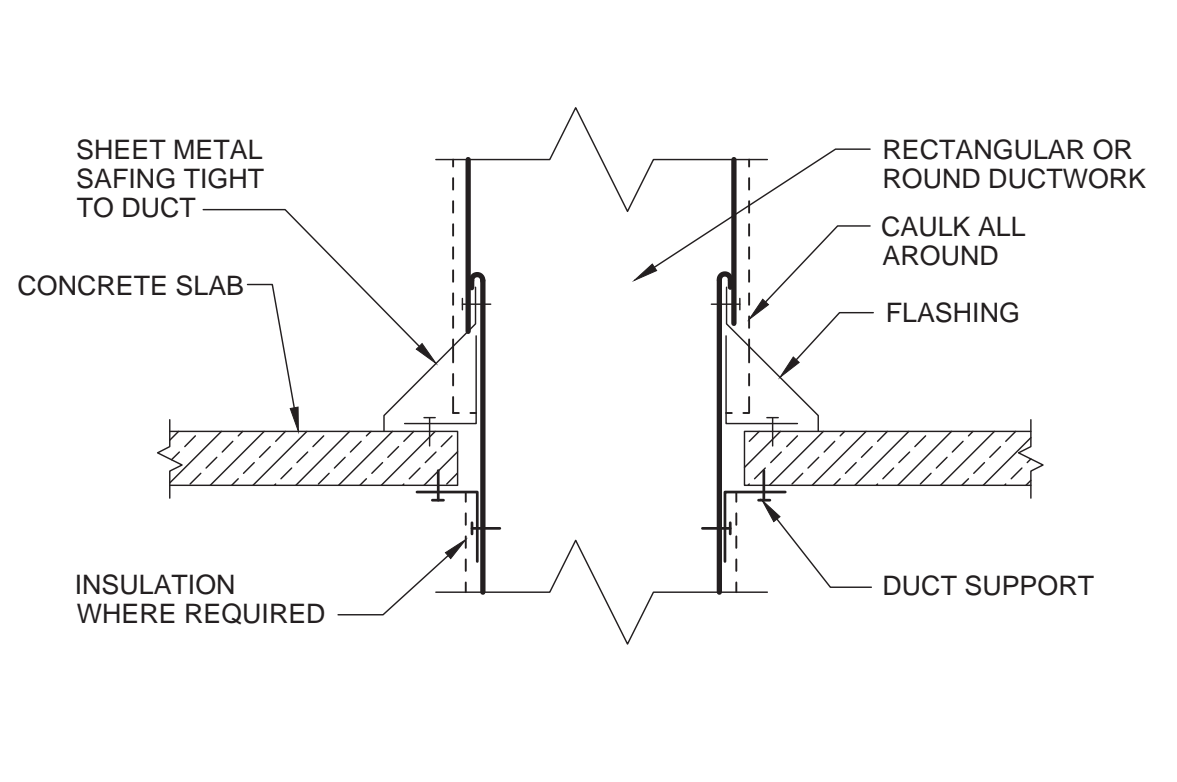
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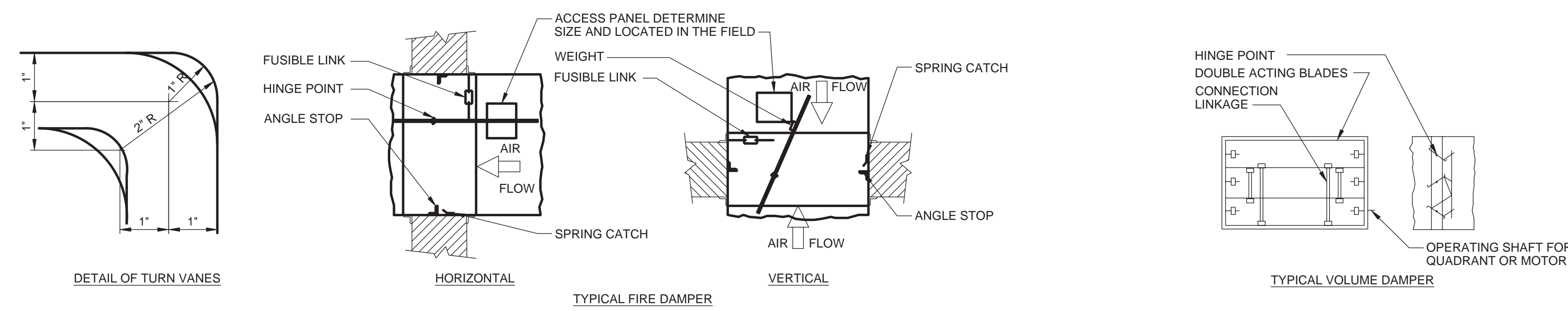
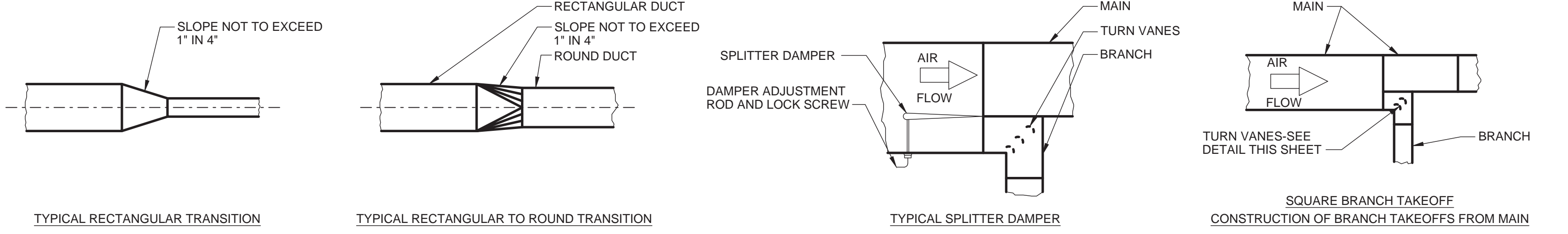
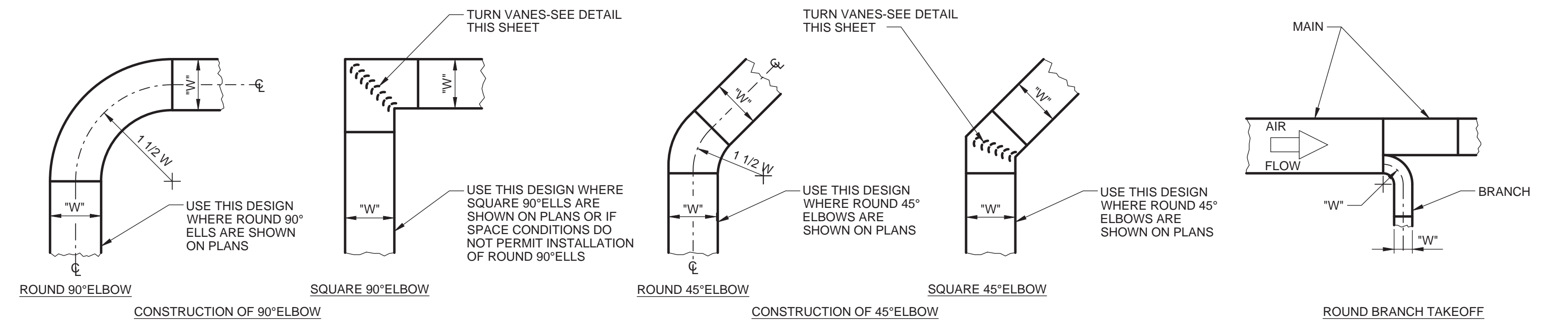
M-301 ELECTRIC UNIT HEATER
(CEILING MOUNTED)



M-401 RECTANGULAR OR ROUND FLEXIBLE CONNECTION
REV 010119



M-421 DUCT PENETRATION THRU CONCRETE
(NON FIRE RATED)



M-403 LOW PRESSURE DUCT CONSTRUCTION
REV 010119

- INSTALLATION NOTES:**
1. ALL DUCTS SHALL BE CONSTRUCTED AND ERECTED IN A NEAT AND WORKMANLIKE MANNER.
 2. DUCTS SHALL BE CONSTRUCTED OF THE WEIGHTS, GAGES AND MATERIAL SHOWN IN THE SCHEDULE ON THESE DRAWINGS.
 3. THE DIMENSION SHOWN FOR ALL DUCTS SHOWN IN PLAN GIVE THE WIDTH FIRST AND THEN THE HEIGHT.
 4. DUCT RISERS SHOULD BE SUPPORTED BY ANGLES AT EVERY FLOOR.
 5. AIR TURN SHALL BE INSTALLED IN ALL ABRUPT ELBOWS TO PREVENT TURBULENCE.
 6. DUCTS SHALL BE SECURELY ATTACHED TO THE BUILDING CONSTRUCTION IN AN APPROVED MANNER.
 7. DIVERGING TRANSITION PIECES SHALL BE MADE AS GRADUAL AS POSSIBLE.
 8. INSTALL FIRE DAMPERS IN ACCORDANCE WITH UL 555.
 9. ACCESS PANELS SHOULD BE PLACED BEFORE AND/OR AFTER EQUIPMENT INSTALLED IN THE DUCT.
 10. DUCT AREA SHOULD NOT BE DECREASED MORE THAN 10 PERCENT WHEN OBSTRUCTIONS CANNOT BE AVOIDED, AND THEN A STREAMLINED FITTING SHOULD BE USED.
 11. FLEXIBLE FABRIC CONNECTIONS (OR EQUAL) SHOULD BE USED ON BOTH INLETS AND OUTLETS OF ALL FANS AND AIR HANDLING UNITS.
 12. JOINTS AND SEAMS OF SUPPLY DUCTS SHALL BE FASTENED SECURELY AND MADE AIR TIGHT.

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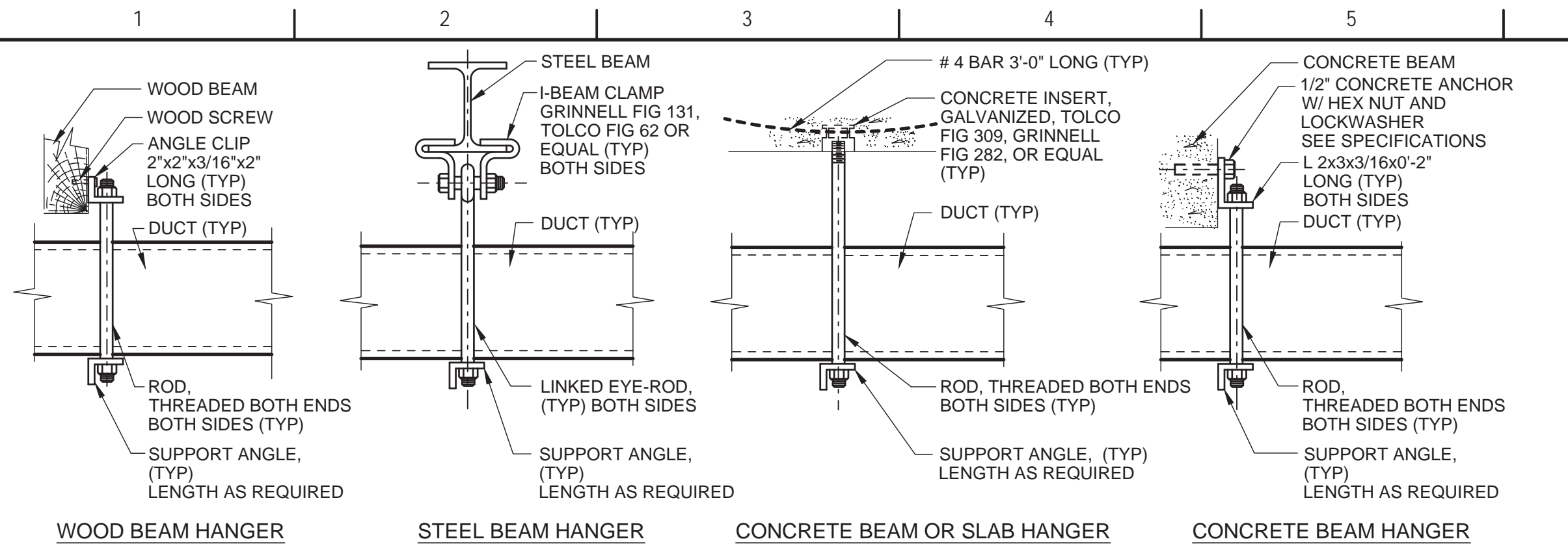
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CITY OF EVANSTON

CITY OF EVANSTON
173440108
DRAWING NO.
H-003
SHEET NO.
53 OF 63

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1909 RAW WATER INTAKE REPLACEMENT
HVAC
STANDARD DETAILS - I



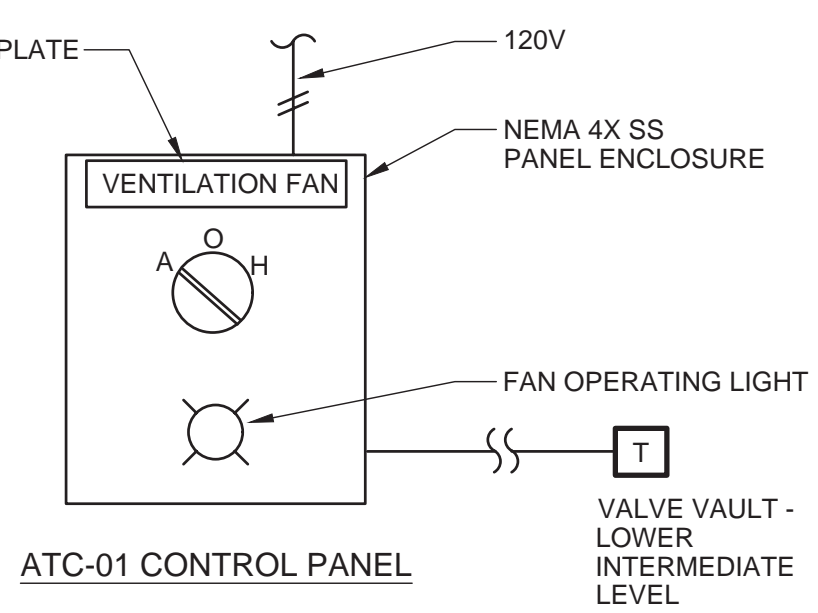
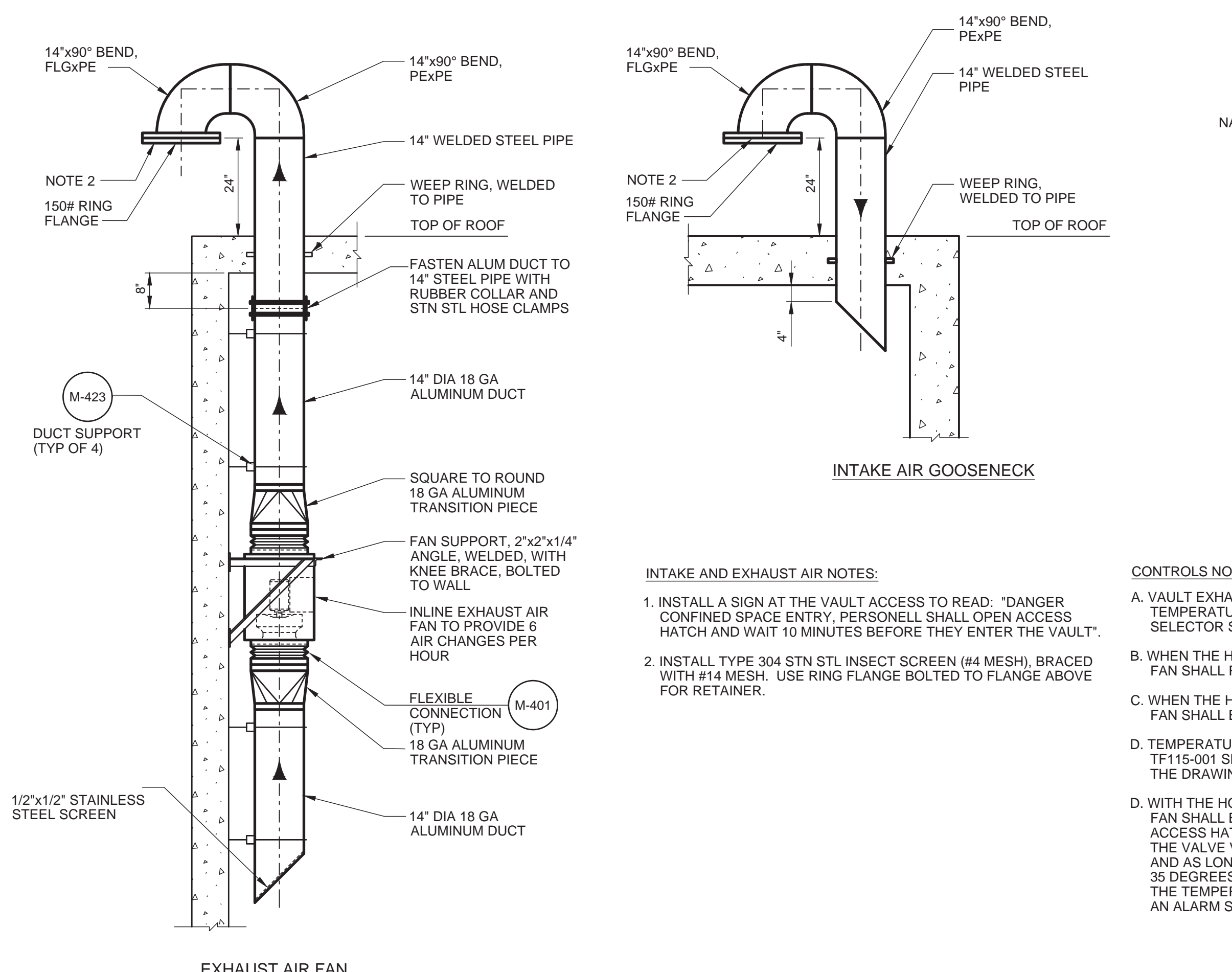
NOTE:
ALL PARTS SHALL BE 304 OR 316 STAINLESS STEEL.

HANGER SIZING AND SPACING (INCHES)			
MAXIMUM DUCT SIZE	ROD DIA	SUPPORT ANGLE	MAXIMUM SPACING
36x12	3/8"	1 1/2"x1 1/2"x1/8"	8'-0" ON CENTER
48x18	1/2"	2"x2"x1/8"	8'-0" ON CENTER
60x24	1/2"	2"x2"x3/16"	6'-0" ON CENTER
80x24	1/2"	2"x2"x1/4"	6'-0" ON CENTER

M-423 AIR DUCTS HANGING DETAILS

GENERAL INFORMATION ABOUT HVAC CONTROLS

- HVAC CONTROLS: HVAC CONTROLS LOGIC IS BASED ON STAND ALONE HVAC CONTROLS.
- THE HVAC CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING DELIVERY OF ALL HVAC ALARMS AND CONTROLS BETWEEN THE HVAC CONTROL PANEL AND SCADA WITH THE I&C CONTRACTOR.
- CONDUIT AND WIRING OF ALL HVAC CONTROLS INCLUDING 120 VOLTS CONTROLS SHALL BE PROVIDED BY DIVISION 23.
- CONDUIT AND WIRING BETWEEN THE HVAC CONTROL PANELS AND THE SCADA DCS SHALL BE PROVIDED BY DIVISION 26.
- HVAC AUTOMATIC TEMPERATURE CONTROL PANELS SHALL CONTAIN ALL ACCESSORIES NECESSARY TO PROVIDE THE CONTROL SEQUENCES DESCRIBED HEREIN.
- ALL AUTOMATIC TEMPERATURE CONTROL PANELS (ATCS) SHALL INCLUDE HOA SWITCHES, HIGH AND LOW SPEED CONTROLLERS, AND EXTRA DRY CONTACTS FOR SENDING SIGNALS TO SCADA
- ATC CONTROL PANEL CONSTRUCTION: PANELS SHALL BE 316 STAINLESS STEEL, NEMA 4X CONSTRUCTION, AND INCLUDE A HINGED FRONT DOOR WITH LOCKING HANDLE.
- ALL MANUAL SWITCHES AND DIRECT READING GAUGES SHALL BE FLUSH-MOUNTED ON THE FRONT FACE, AND BE IDENTIFIED BY ENGRAVED AND RIVETED BAKELITE OR LAMINATED PLASTIC NAMEPLATES WITH BLACK LETTERS ON WHITE BACKGROUND.
- MANUAL SWITCHES AND PILOT LIGHTS SHALL BE HEAVY DUTY, OIL TIGHT CONSTRUCTION.
- ATC PANEL CONSTRUCTION AND COMPONENTS SHALL CONFORM TO SPECIFICATION 26 05 15.
- DIVISION 23 SHALL BE RESPONSIBLE FOR ALL HVAC CONTROL PANELS AND WIRING TO AND FROM THE ATCS AND HVAC EQUIPMENT. DIVISION 23 CONTRACTOR SHALL COORDINATE WITH DIVISION 28 CONTRACTOR FOR COMPATIBILITY BETWEEN SMOKE DETECTORS AND FIRE ALARM CONTROL UNIT, AS WELL AS COMPATIBILITY BETWEEN FIRE ALARM CONTROL UNIT AND ATCS.
- THE NUMBER OF HARDWARE AND SOFTWARE POINTS PROVIDED IN THE SEQUENCES OF OPERATION IS THE MINIMUM NUMBER OF POINTS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AS MANY HARDWARE AND SOFTWARE POINTS AS NEEDED TO COMPLETE THE CONTROLS SEQUENCES, PLUS 10 EXTRA SOFTWARE AND 10 SPARE HARDWARE POINTS PER SYSTEM
- TEMPERATURE SENSOR - (TS) FURNISH AND MOUNT PECO MODEL # TF115-001 SPDT ROOM TEMPERATURE SENSORS IN NEMA 4X ENCLOSURE, LOCATIONS AS SHOWN ON THE DRAWINGS



INTAKE AND EXHAUST AIR NOTES:

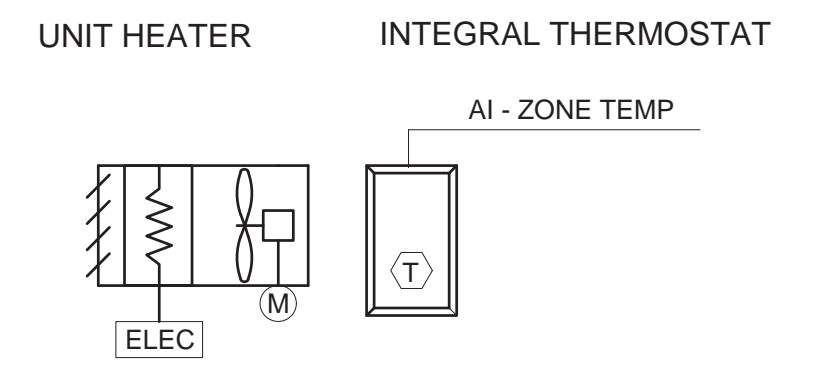
- INSTALL A SIGN AT THE VAULT ACCESS TO READ: "DANGER CONFINED SPACE ENTRY. PERSONNEL SHALL OPEN ACCESS HATCH AND WAIT 10 MINUTES BEFORE THEY ENTER THE VAULT".
- INSTALL TYPE 304 STN STL INSECT SCREEN (#4 MESH), BRACED WITH #14 MESH. USE RING FLANGE BOLTED TO FLANGE ABOVE FOR RETAINER.

CONTROLS NOTES

- VAULT EXHAUST FAN SHALL BE PROVIDED WITH AN AUTOMATIC TEMPERATURE CONTROL PANEL WITH A HAND - OFF - AUTOMATIC SELECTOR SWITCH AND AN OPERATING LIGHT.
- WHEN THE HOA SELECTOR SWITCH IS IN THE 'HAND' POSITION, THE FAN SHALL RUN CONTINUOUSLY AND THE LIGHT SHALL BE ON.
- WHEN THE HOA SELECTOR SWITCH IS IN THE 'OFF' POSITION, THE FAN SHALL BE OFF AND THE LIGHT SHALL BE OFF.
- TEMPERATURE SENSOR (TS) - FURNISH AND MOUNT PECO MODEL # TF115-001 SPDT ROOM TEMPERATURE SENSOR WHERE SHOWN ON THE DRAWINGS.
- WITH THE HOA SELECTOR SWITCH IS IN THE 'AUTO' POSITION, THE FAN SHALL BE CONTROLLED BY A LIMIT SWITCH ON THE VAULT ACCESS HATCH, AND A TEMPERATURE SENSOR LOCATED IN THE VALVE VAULT. WHEN THE VAULT ACCESS HATCH IS OPEN, AND AS LONG AS THE EXHAUST AIR TEMPERATURE IS ABOVE 35 DEGREES F, THE FAN SHALL START AND RUN CONTINUOUSLY. IF THE TEMPERATURE INSIDE THE VAULT DROPS BELOW 35 DEGREES F, AN ALARM SHALL BE SENT TO SCADA.

M-520 VAULT VENTILATION

ELECTRIC UNIT HEATERS (TYPICAL OF ALL)



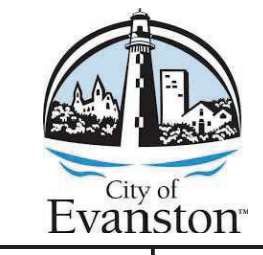
ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING SETPOINTS AT THE INTEGRAL THERMOSTAT. THE TEMPERATURE SETPOINT OF THE HEATERS SHALL BE ADJUSTED AT 50°F (ADJ).

FAN:
THE FAN SHALL RUN ANYTIME THE ZONE TEMPERATURE DROPS BELOW HEATING SETPOINT, UNLESS SHUTDOWN ON SAFETIES.

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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
HVAC
STANDARD DETAILS - II AND CONTROLS

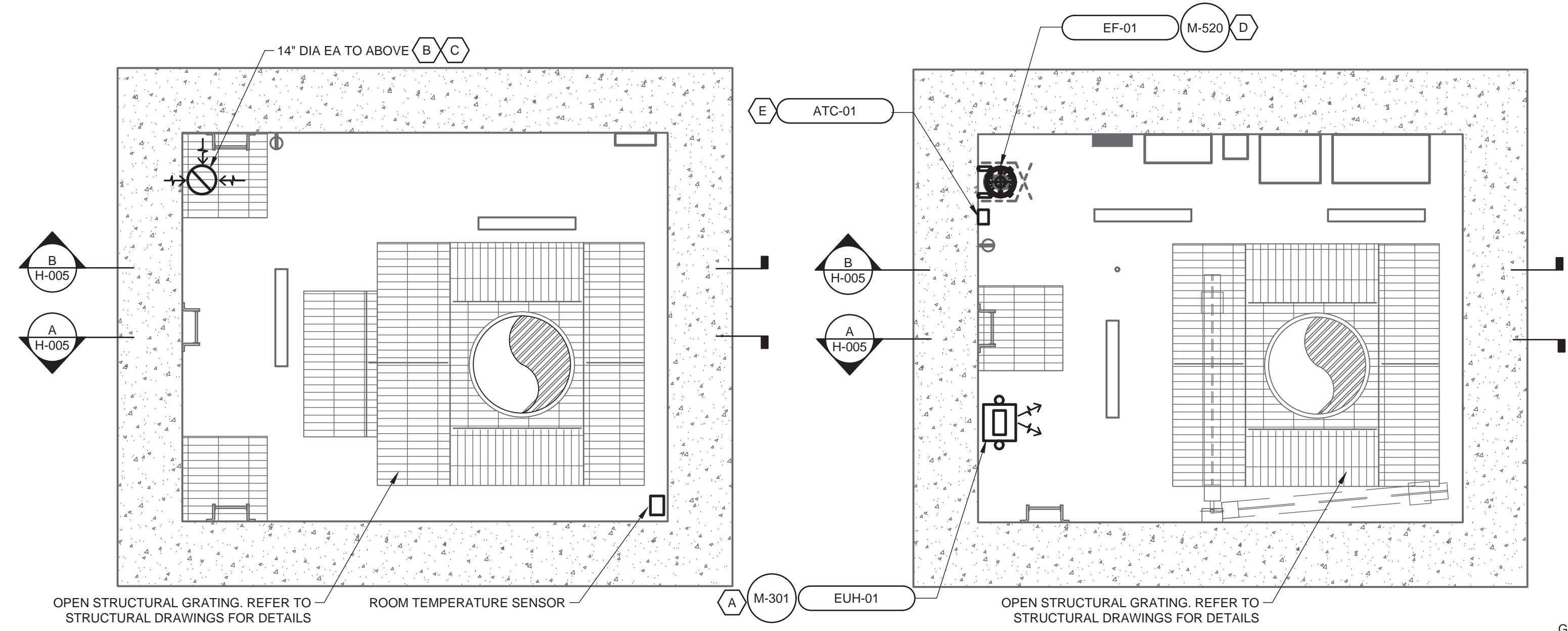
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SHEET NO. 54 OF 63



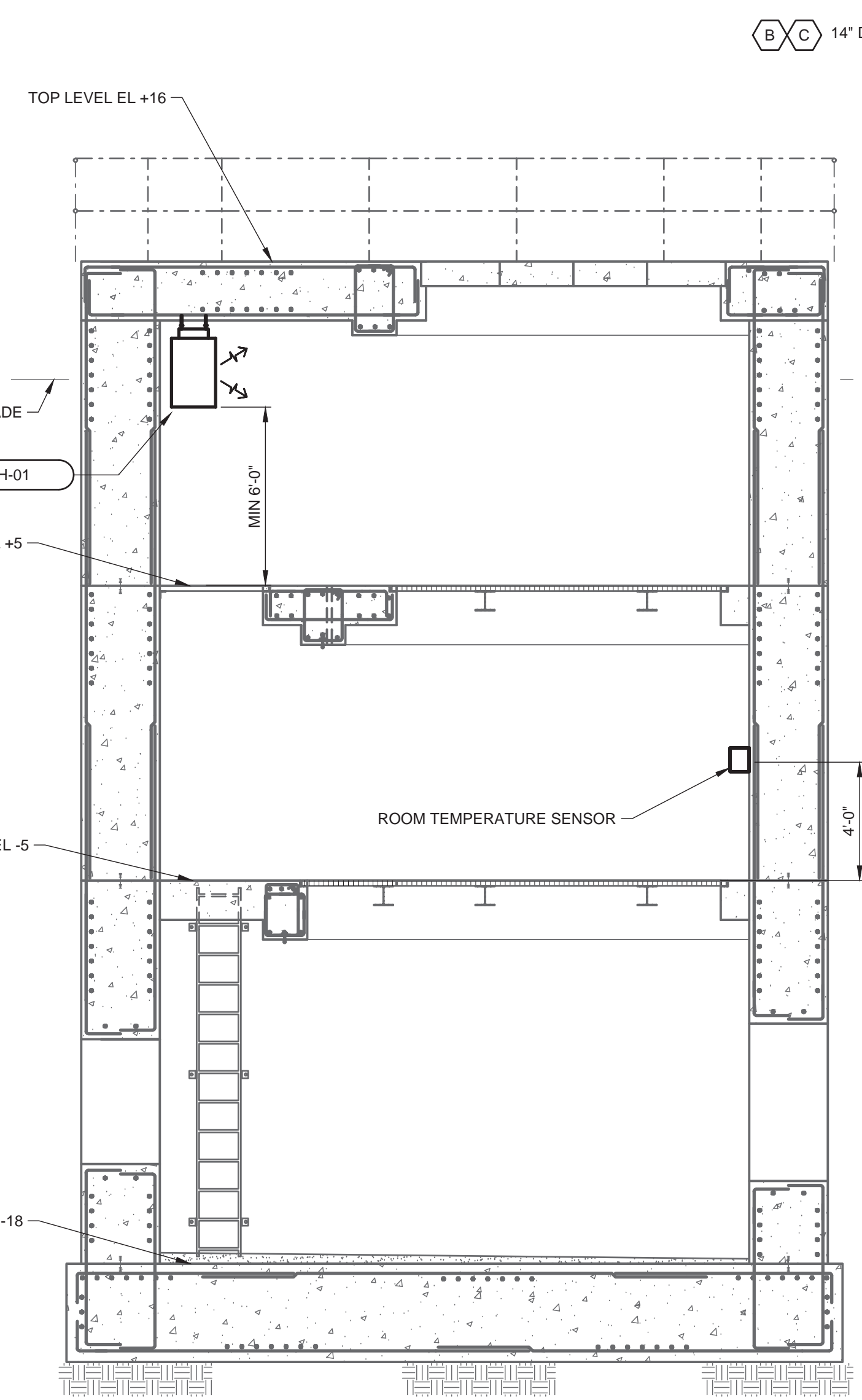
SHEET KEYNOTES

- A. SUPPORT HEATER FROM THE STRUCTURE ABOVE
- B. INSTALL 1/2"x1/2" STAINLESS STEEL WIRE MESH SCREEN AT THE INLET AND OUTLET OF THE DUCT
- C. SEE DETAIL M-520 FOR DUCTWORK MATERIAL
- D. SUPPORT FAN FROM VAULT WALL WITH FAN MANUFACTURER PROVIDED SUPPORTS
- E. INSTALL ATC-01 AT 4'-0" AFF

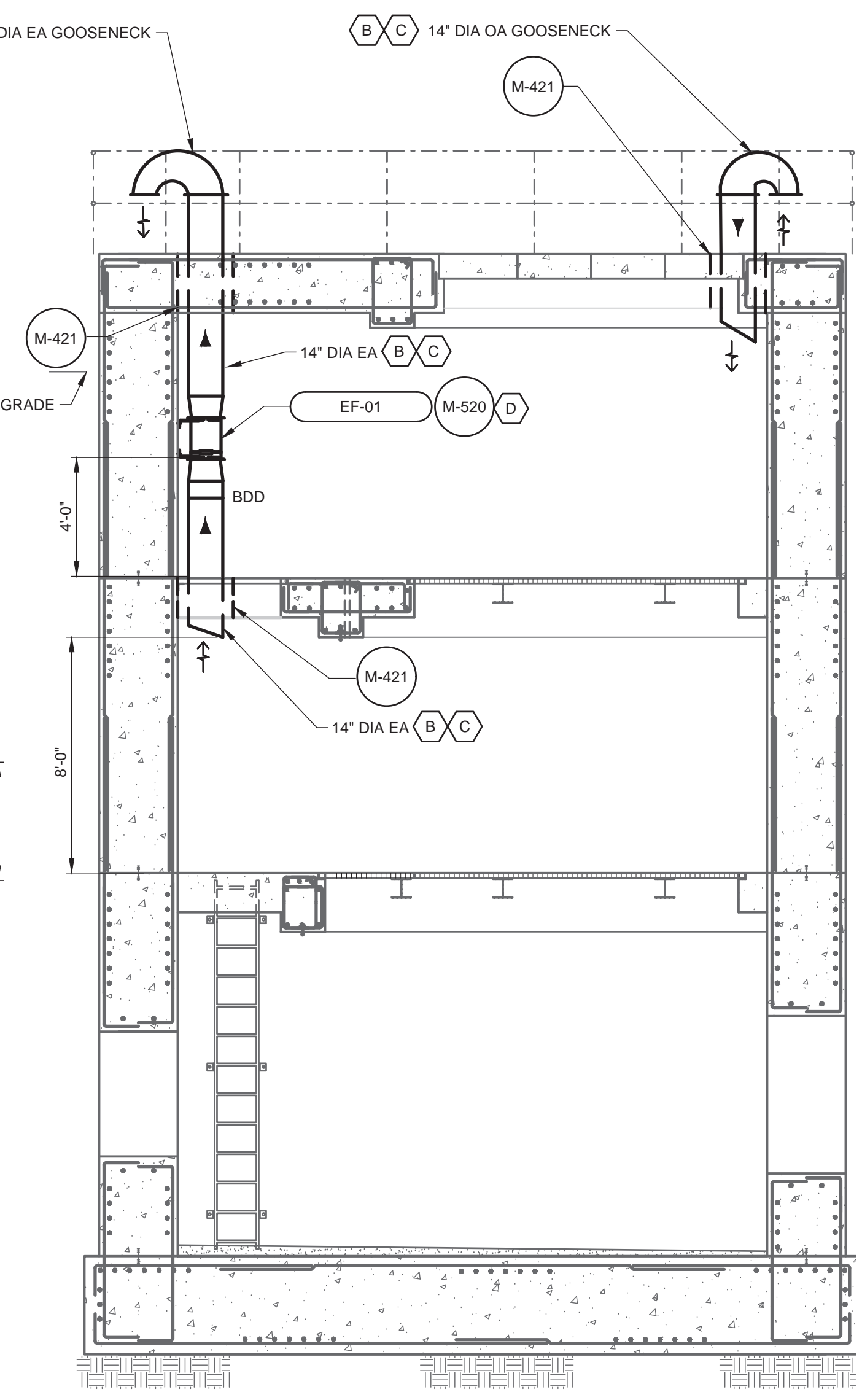


LOWER INTERMEDIATE PLAN EL -5
SCALE: 1/4" = 1'-0"

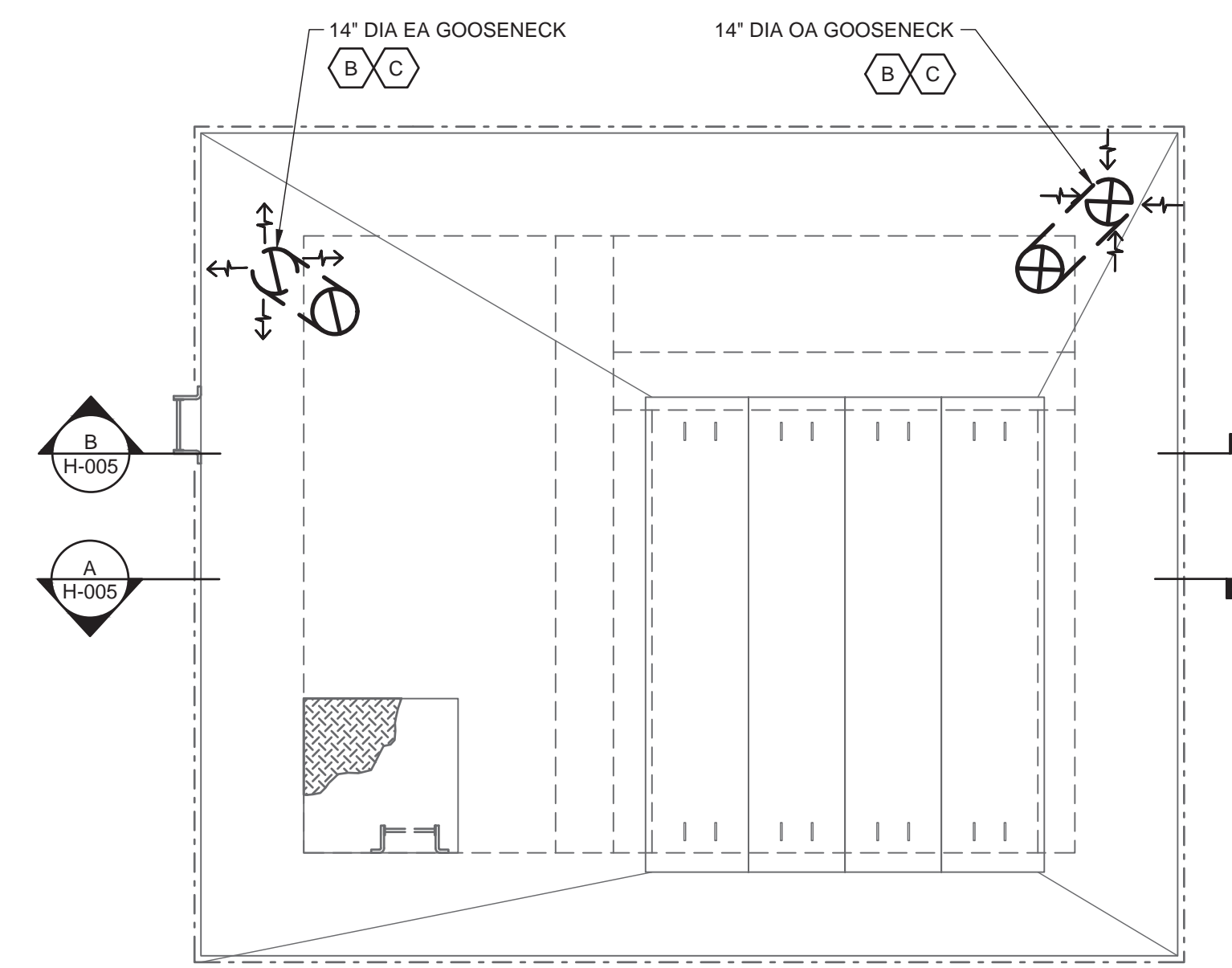
UPPER INTERMEDIATE PLAN EL +5
SCALE: 1/4" = 1'-0"



A SECTION
H-005 SCALE: 1/4" = 1'-0"



B SECTION
H-005 SCALE: 1/4" = 1'-0"



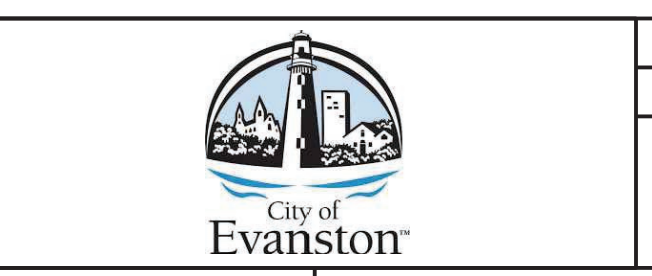
TOP LEVEL PLAN EL +16
SCALE: 1/4" = 1'-0"

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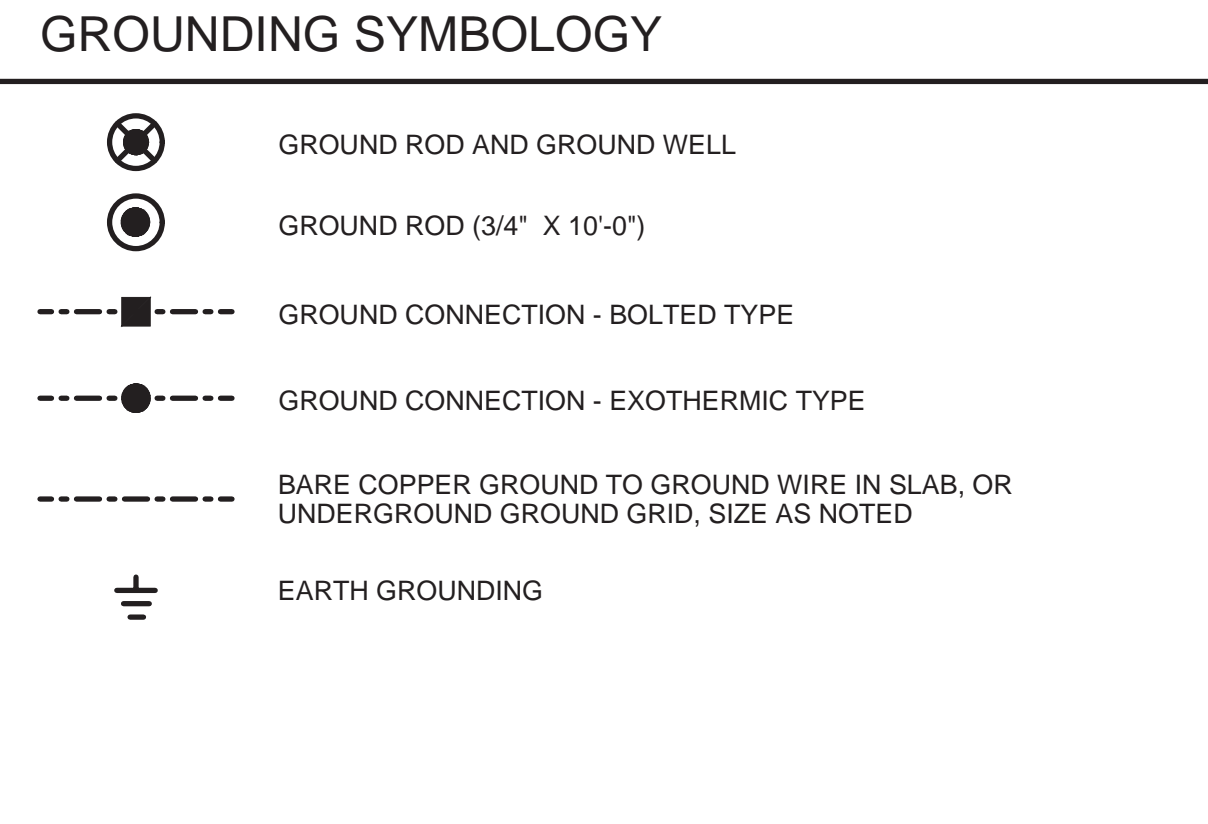
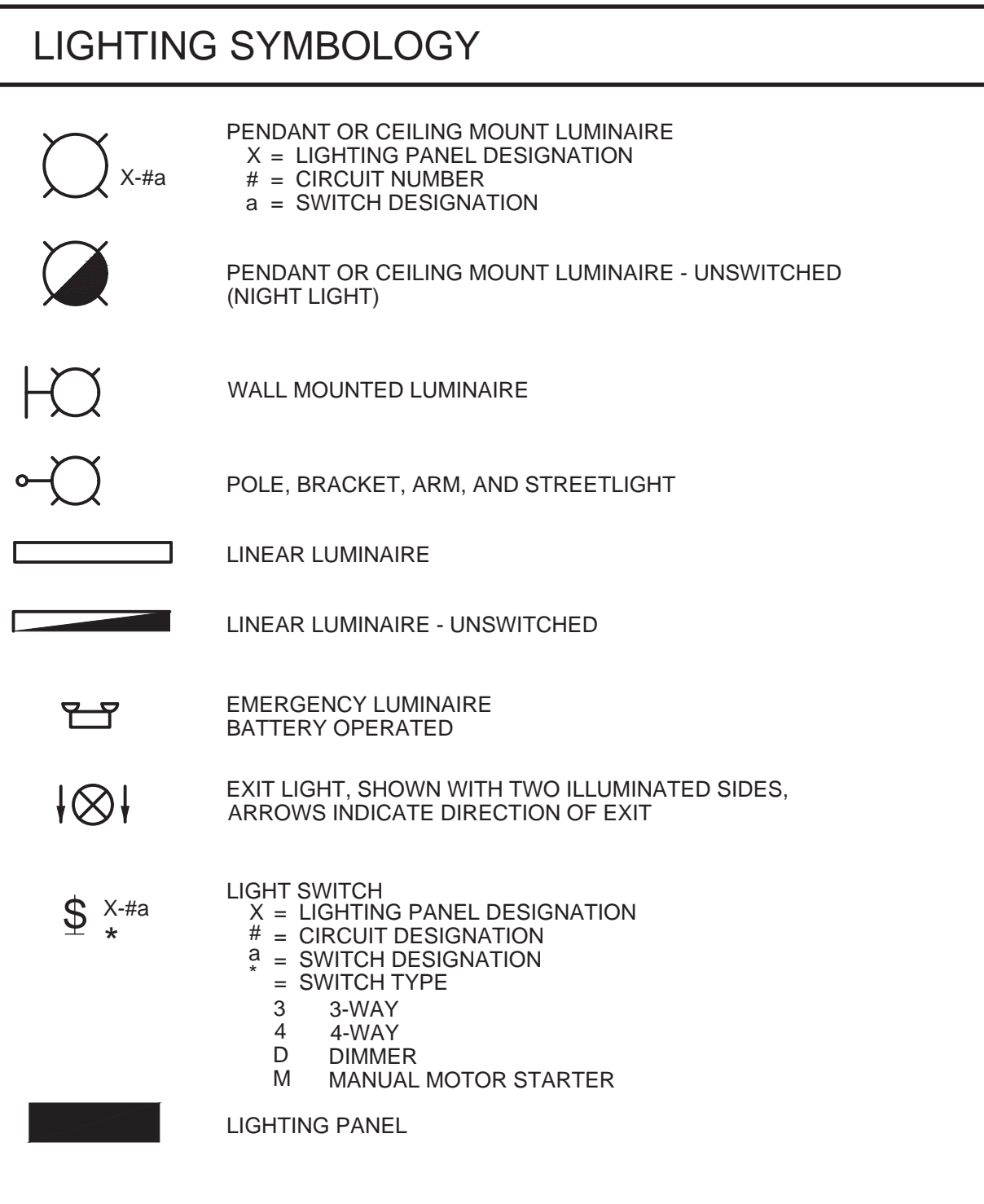
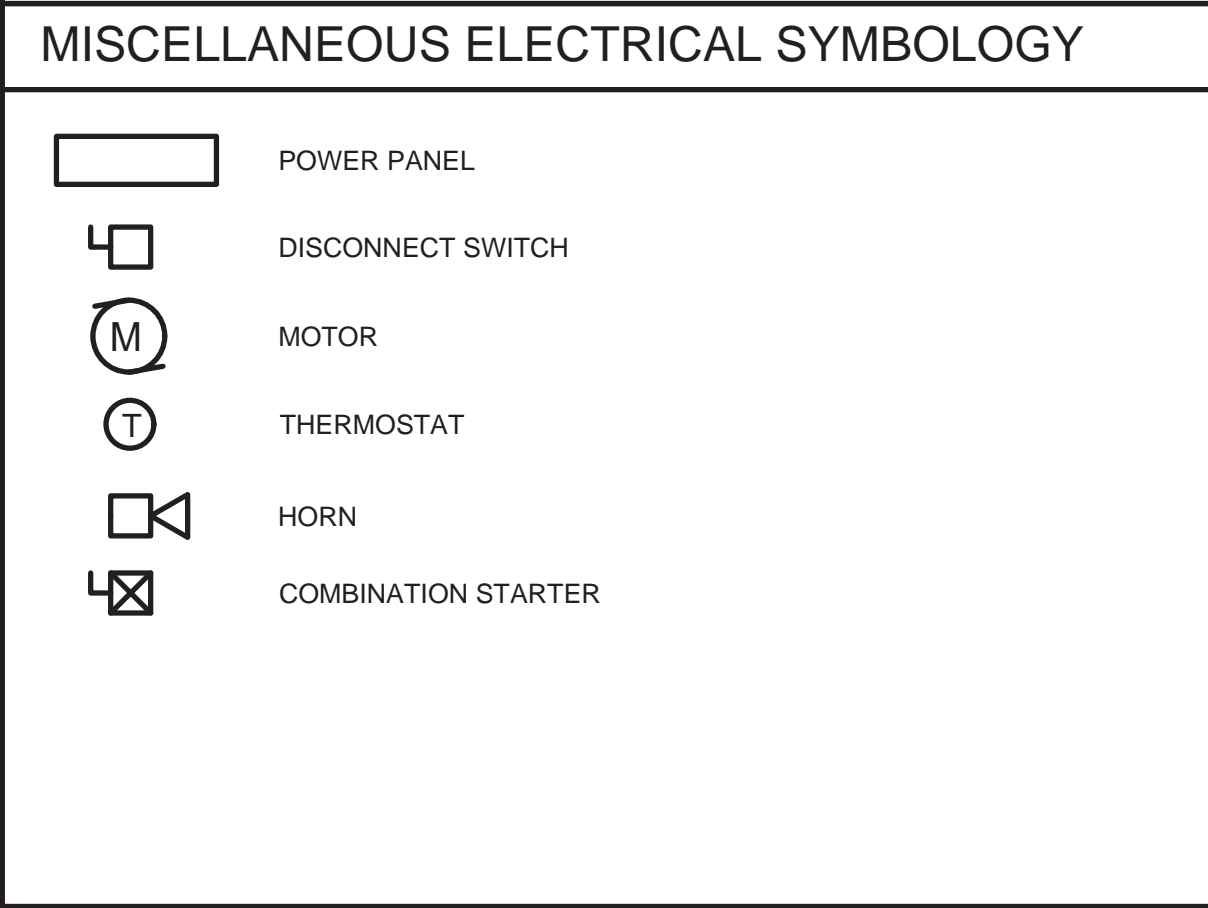
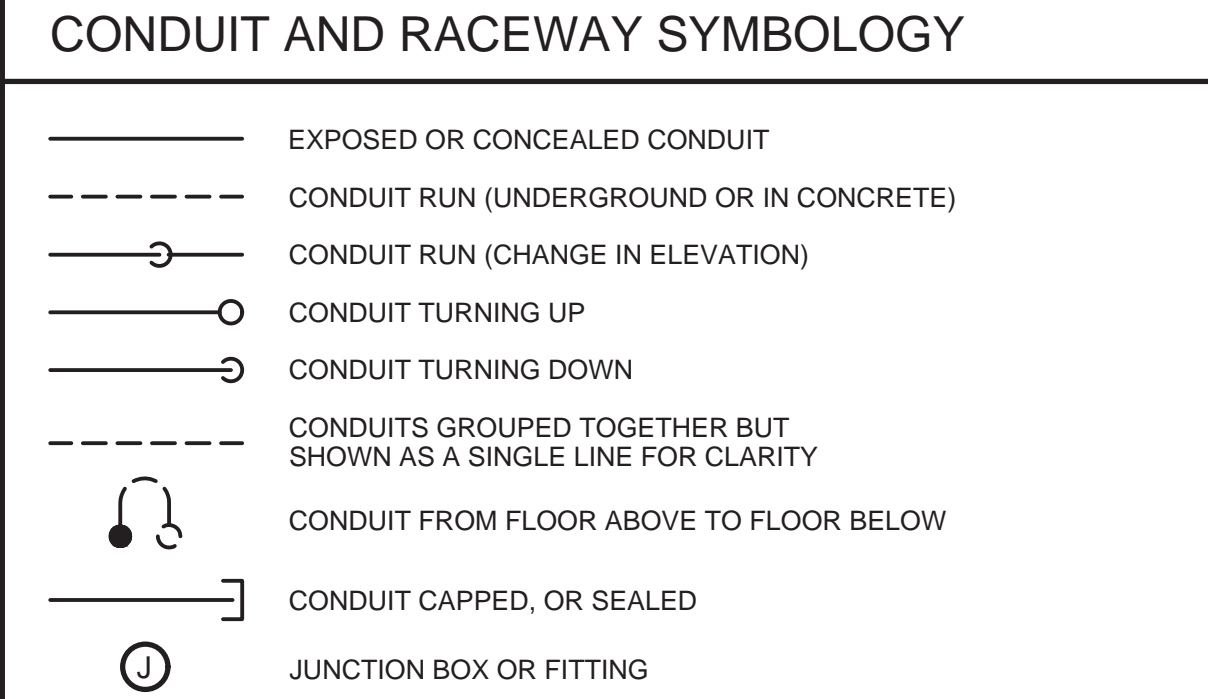
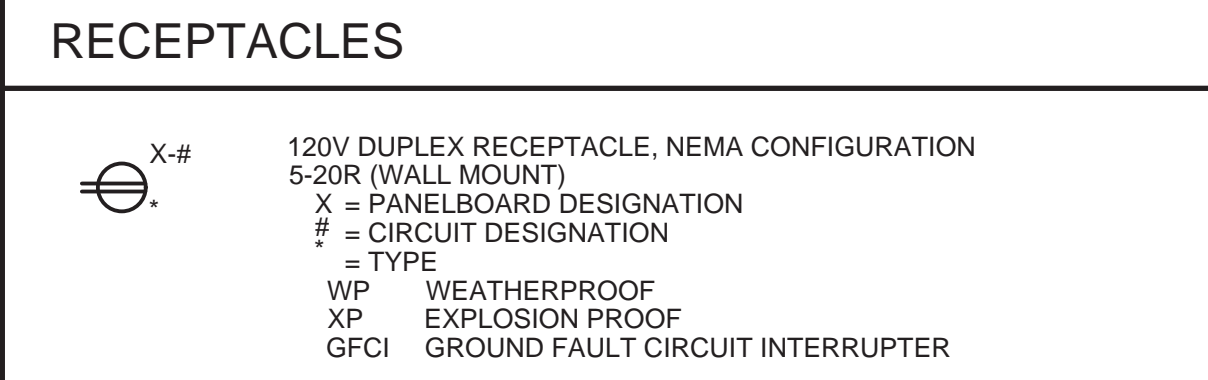
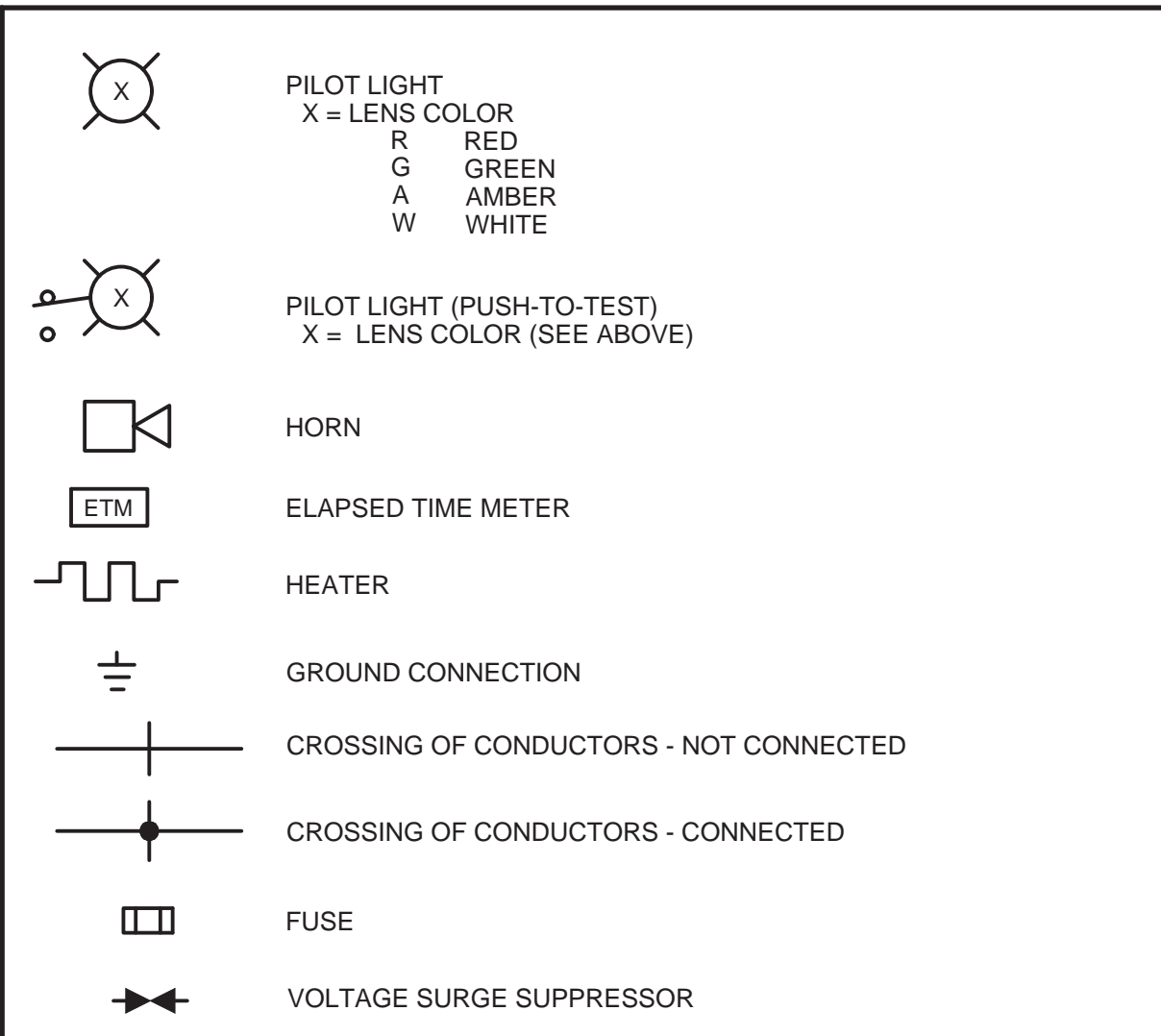
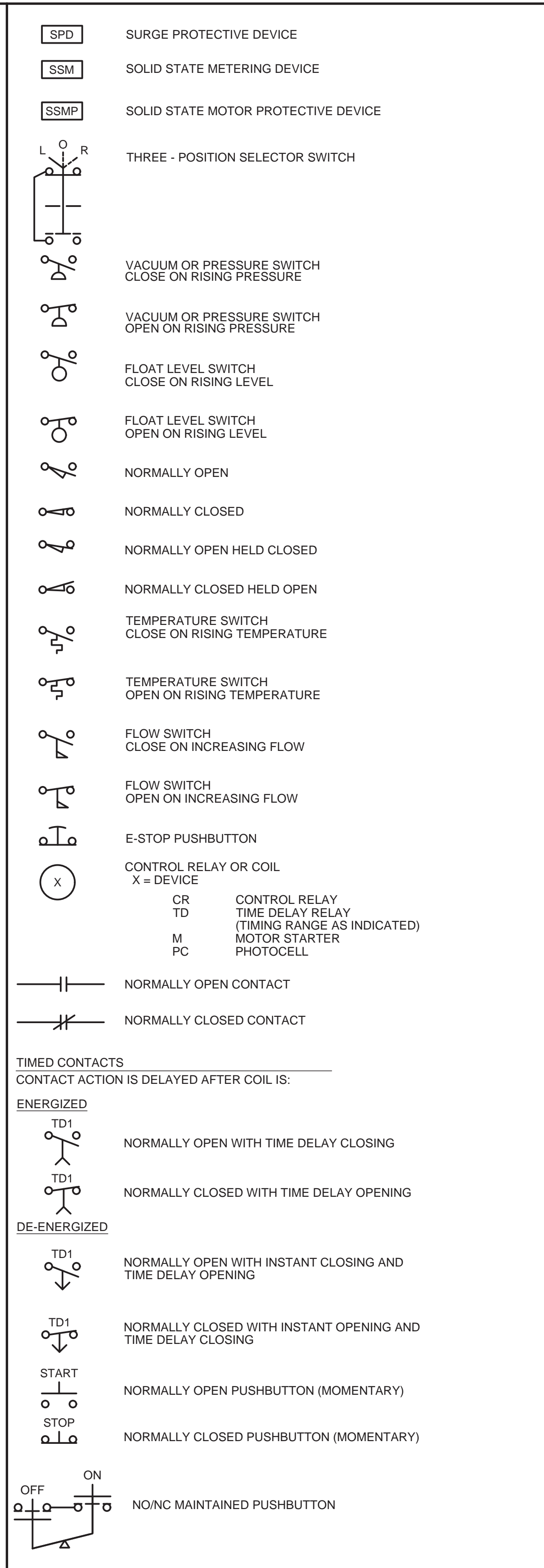
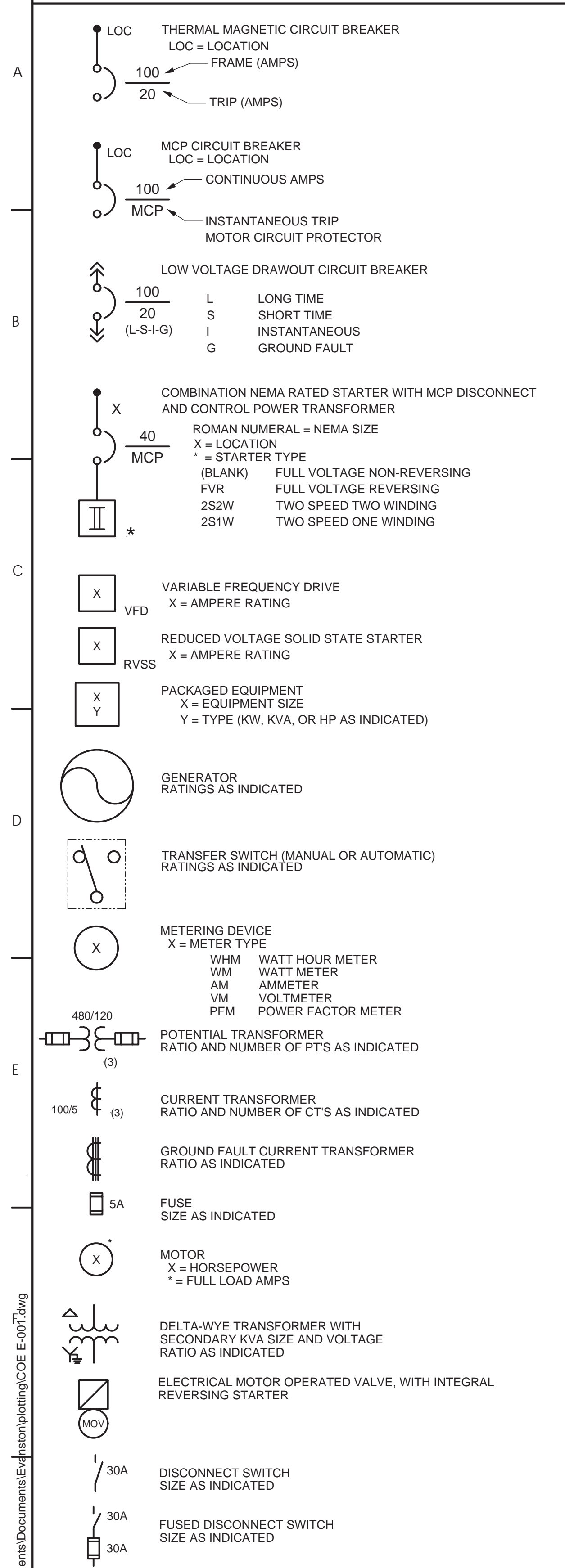
CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
HVAC
VALVE VAULT PLANS AND SECTIONS

VERIFY SCALES
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H-005
SHEET NO.
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SINGLE LINE DIAGRAM, SCHEMATIC DIAGRAM SYMBOLOGY AND PLAN SYMBOLOGY

GENERAL ELECTRICAL NOTES



- ALL RACEWAYS AND EQUIPMENT SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES. EVANSTON HAS ADOPTED THE 2011 NEC WITH EVANSTON AMENDMENTS.
- THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF TERMINAL BOXES AND CONDUIT ENTRANCES OF ALL EQUIPMENT AGAINST APPROVED SHOP DRAWINGS BEFORE STUBBING UP CONDUITS.
- REFER TO SPECIFICATION SECTION 260533 FOR REQUIREMENTS RELATED TO FLEXIBLE CONDUIT INSTALLATION.
- CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT OR STRUCTURAL CONDITIONS. EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BEAMS AND WALLS. REFER TO SPECIFICATION SECTION 260533.
- CONDUIT STUB-UPS SHALL NOT BE MORE THAN 6 INCHES FROM THE CENTERLINE OF TERMINAL BOXES.
- IN THE EVENT OF INTERFERENCE BETWEEN ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND OTHER EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING AND THE ENGINEER SHALL APPROVE PROPOSED CHANGES BEFORE THEY ARE MADE.
- ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INTERIOR OF EXTERIOR WALLS ABOVE GRADE OR IN OTHER LOCATIONS CONSIDERED DAMP OR WET SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4 INCH (MINIMUM) AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
- LOCATION OF PULLBOXES ARE APPROXIMATE. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION WITH MECHANICAL PIPING AND SHALL BE 6 INCHES (MINIMUM) AWAY FROM MECHANICAL PIPING FLOW LINES.
- ONLY MAJOR PULLBOXES ARE SHOWN. THE CONTRACTOR SHALL PROVIDE ADDITIONAL PULLBOXES WHERE REQUIRED TO MAKE A WORKABLE INSTALLATION.
- THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE DETAILS WHETHER OR NOT THEY ARE REFERENCED ON THE DRAWINGS.
- ALL CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION AND DEFLECTION TYPE FITTINGS. FOR LOCATIONS OF EXPANSION JOINTS, REFER TO THE STRUCTURAL DWGS.
- LUMINAIRES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS, WITH THE DISTANCE BEING MEASURED FROM THE BOTTOM OF THE LUMINAIRE TO THE FINISHED FLOOR. THE APPROPRIATE MOUNTING BRACKETS AND HARDWARE SHALL BE SUPPLIED.
- ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE CENTERLINE OF THE TOP CIRCUIT BREAKER OPERATING HANDLE IN THE UPPERMOST POSITION TO THE FINISHED FLOOR SHALL NOT EXCEED 6'-7".
- THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
- CONNECTIONS BETWEEN RIGID CONDUIT AND MOTOR TERMINAL BOXES OR SIMILAR EQUIPMENT SUBJECT TO VIBRATION SHALL BE FLEXIBLE LIQUID-TIGHT CONDUIT.
- CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTION TO MOTORS AND OTHER EQUIPMENT.
- CONDUITS FOR FUTURE EQUIPMENT OR EXTENSIONS SHALL BE TERMINATED AS SHOWN IN DETAIL OR AS SPECIFIED.
- ALL MOTOR STARTER CONTROL POWER TRANSFORMERS SHALL BE SIZED TO PROVIDE SUFFICIENT VOLT-AMPERE CAPACITY FOR OPERATING ALL LOCAL AND REMOTE ELECTRICAL DEVICES ASSOCIATED WITH CONTROL OF THE MOTOR IN ADDITION TO THE STARTER COIL.
- ALL FREE STANDING PANELS SHALL BE SET ON CONCRETE HOUSEKEEPING PADS WITH LEVELING CHANNELS EMBEDDED IN THE PAD.
- ALL RECEPTACLES IN OUTDOOR AND ANTICIPATED WET AREAS SHALL BE GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES WITH WEATHERPROOF COVERS.
- ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY THE SCOPE OF WORK WITH FIELD CONDITIONS. PARTICULAR ATTENTION SHOULD BE GIVEN TO NEW CONDUIT RUNS IN EXISTING BUILDINGS.
- EQUIPMENT LOCKOUTS SHALL BE IN STRICT ACCORDANCE WITH OWNER'S REQUIREMENTS.
- FOR LIGHTING AND RECEPTACLE SYSTEMS, ONLY CIRCUIT NUMBERS ARE SHOWN. CONTRACTOR SHALL PROVIDE ALL NECESSARY CONDUITS, WIRES, FITTINGS, JUNCTION BOXES AND ALL NECESSARY COMPONENTS SHOWN OR NOT SHOWN ON THE DRAWINGS, TO MAKE THE ELECTRICAL INSTALLATION COMPLETE AND OPERATIONAL. ALL CONDUIT RUNS SHALL BE CONCEALED UNLESS INDICATED OTHERWISE. CIRCUIT LOADING SHALL BE AS INDICATED IN THE PANEL SCHEDULES. ALL LIGHTING AND RECEPTACLE CIRCUITS SHALL INCLUDE GROUND WIRE.

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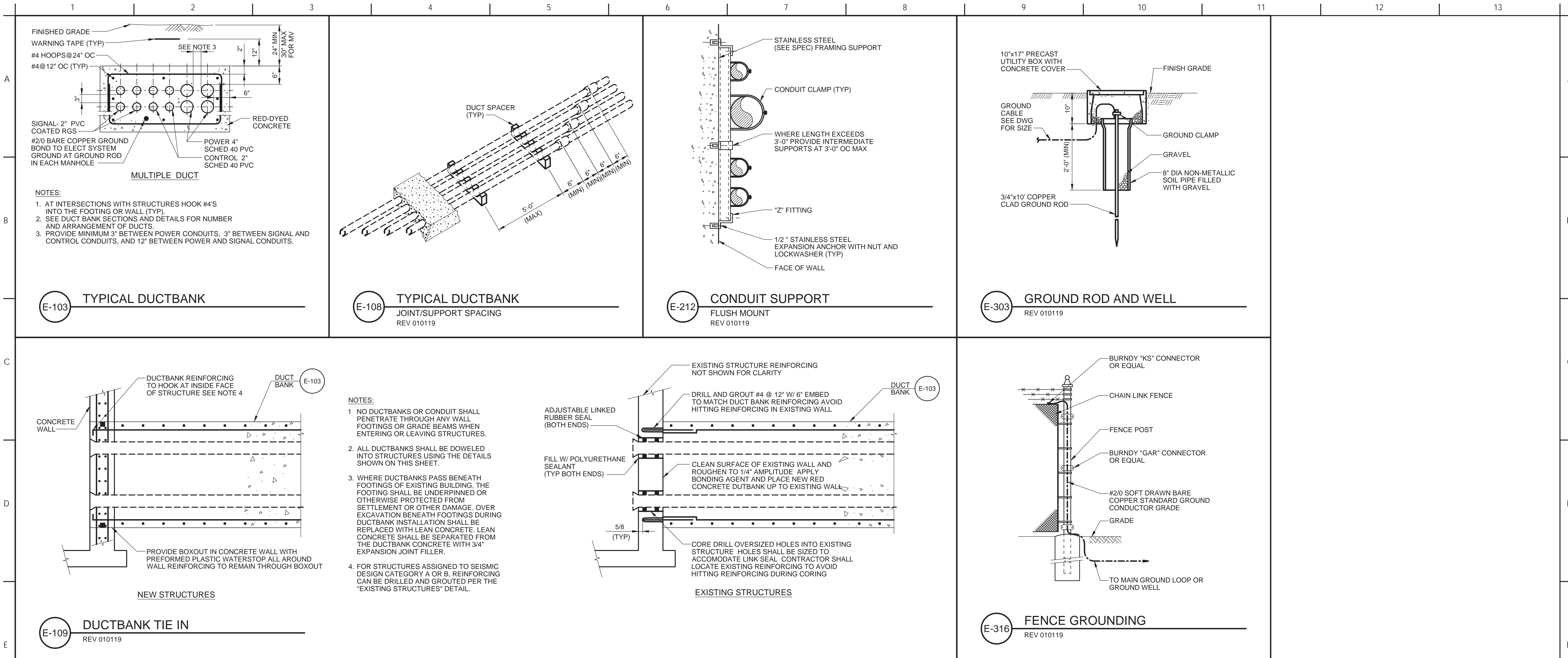
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
ELECTRICAL
GENERAL SYMBOLS

VERIFY SCALES
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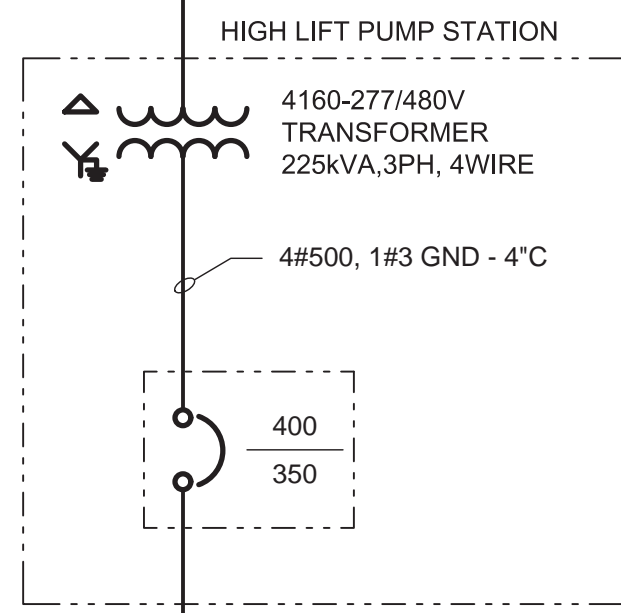
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SHEET KEYNOTES

- A. LOCATE MOTOR STARTER BENEATH THE EXHAUST FAN, 4' AFF.
- B. DISCONNECT PROVIDED BY HEATER VENDOR.
- C. CONTRACTOR SHALL DEMOLISH EXISTING WESTINGHOUSE AMPGARD COMPARTMENT 11F COMPONENTS AND REPLACE WITH A 400A LATCHING CONTACTOR WITH 50A FUSES. SEE SHEET E-008 FOR SCHEMATIC.
- D. TEMPERATURE PROBE - TT/TE 101, LOCATED AT INTAKE STRUCTURE - CONDUIT WILL BE SUBMERGED, CONTRACTOR SHALL USE PVC CONDUIT FROM JB TO PROBE. SEE I-005 FOR MORE INFORMATION.
- E. 24VDC POWER SUPPLY LOCATED IN ENCLOSURE.

4160 V INCOMING POWER FEED FROM HIGH LIFT PUMP STATION MCC (COMPARTMENT 11F)

3#8, 1#10 GND - 2" C (5KV CABLE)



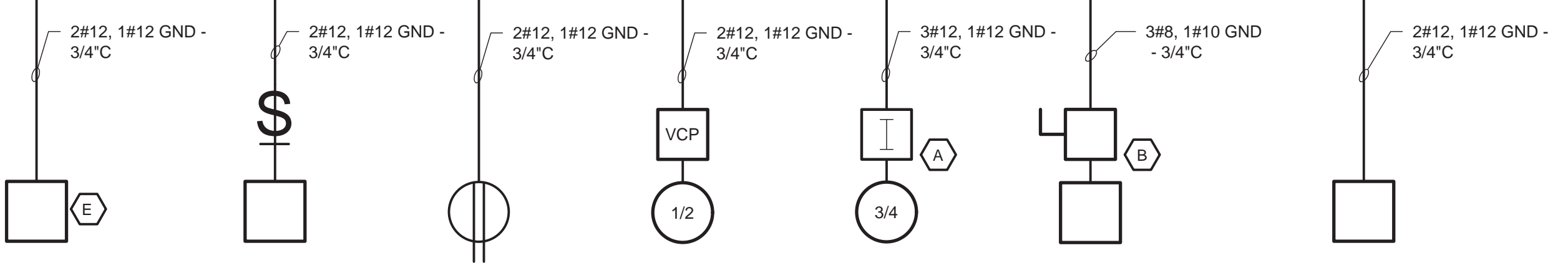
4#500, 1#3 GND - 4" C

POWER PANEL (PP-1)

3#6, 1#10 GND - 1" C

3#250KCMIL, 1#4 GND - 3" C

22.5kVA MINI POWER CENTER MPC-1



FLOW METER ENCLOSURE FT-102
 LIGHTING (TYP)
 RECEPTACLES (TYP)
 SUMP PUMP SP-001
 EXHAUST FAN EF-01
 ELECTRIC HEATER EH-01
 AUTOMATIC TEMPERATURE CONTROL ATC-01

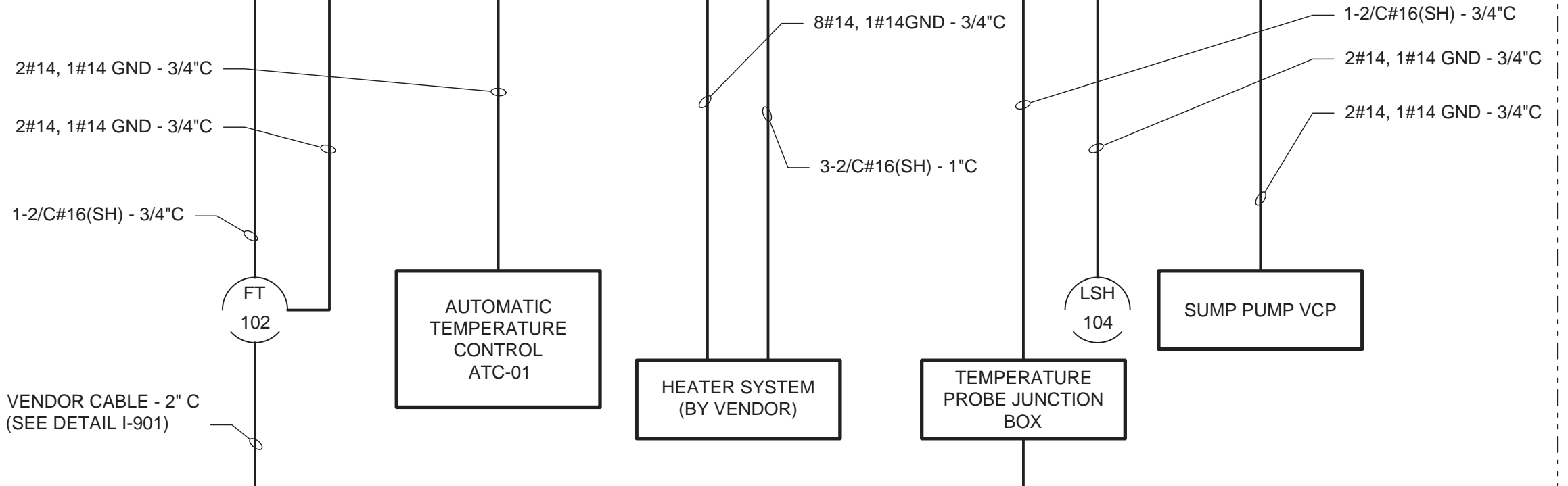
VENDOR PACKAGE



HEATER SYSTEM TRANSFORMER

LOCATED AT INTAKE
 INTAKE HEATING SYSTEM (VENDOR PACKAGE)

TRANSITION TO DUCTBANK (SEE SHEETS E-004 AND E-007 FOR CONTINUATION)



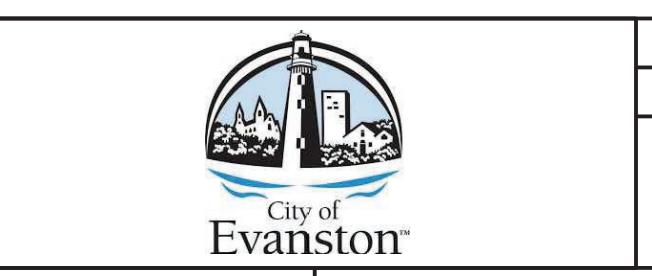
2#14, 1#14 GND - 3/4" C
 2#14, 1#14 GND - 3/4" C
 1-2/C#16(SH) - 3/4" C
 8#14, 1#14 GND - 3/4" C
 3-2/C#16(SH) - 1" C
 FT 102
 FE 102
 AUTOMATIC TEMPERATURE CONTROL ATC-01
 HEATER SYSTEM (BY VENDOR)
 TEMPERATURE PROBE JUNCTION BOX
 SUMP PUMP VCP
 VENDOR CABLE - 2" C (SEE DETAIL I-901)
 VENDOR CABLE - 2" C
 TT 101
 TE 101

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CHECKED	DR
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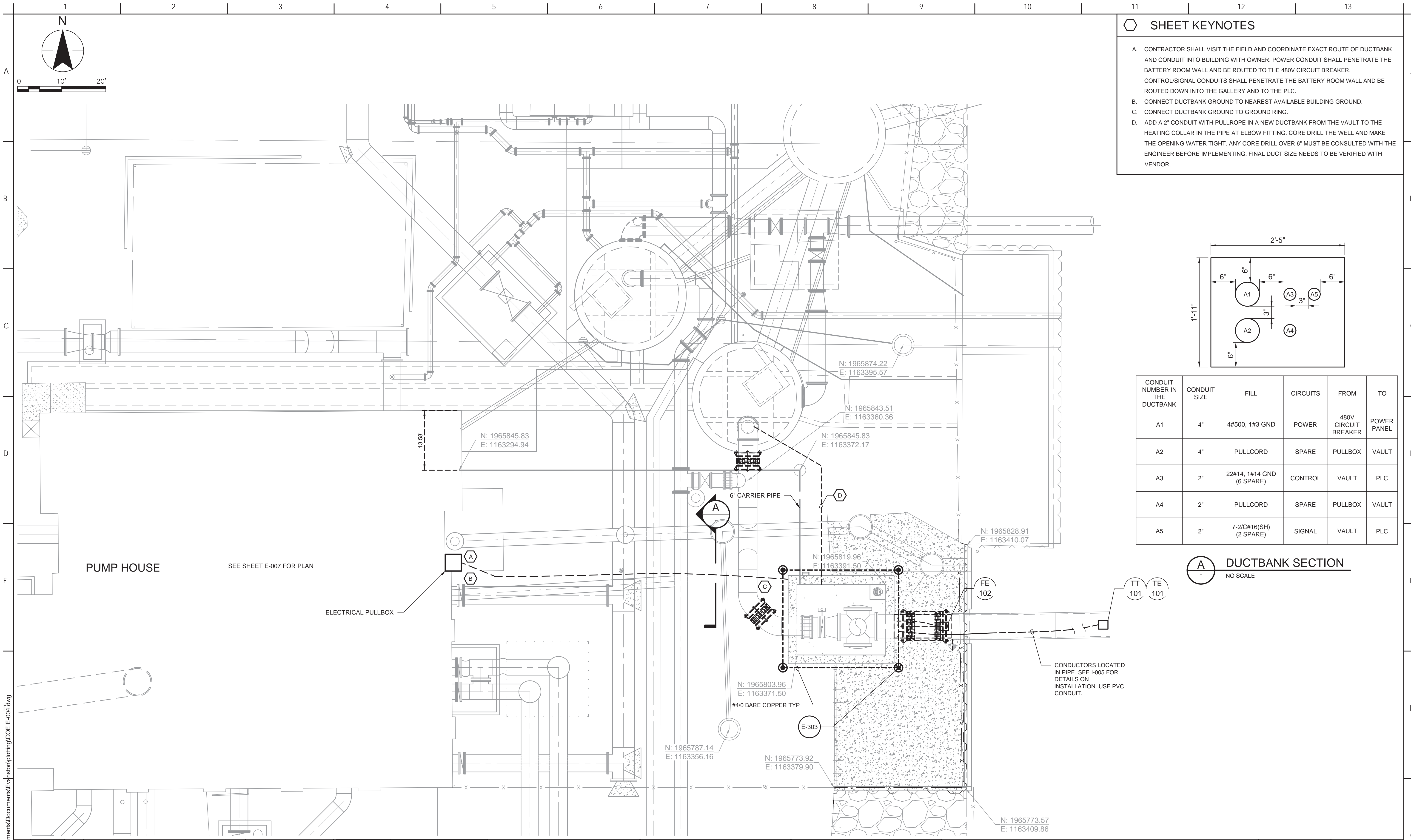
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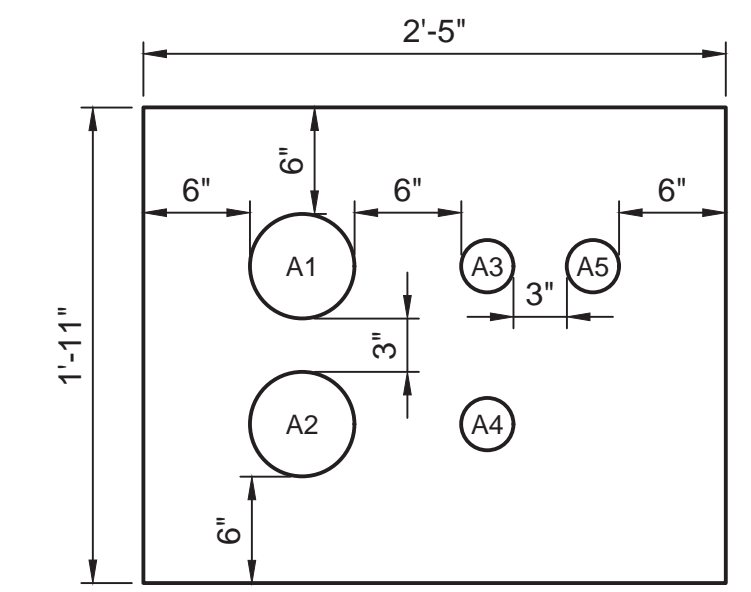
CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 ELECTRICAL
 SINGLE LINE DIAGRAM

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
 173440108
 DRAWING NO.
E-003
 SHEET NO.
58 OF 63



- ### SHEET KEYNOTES
- CONTRACTOR SHALL VISIT THE FIELD AND COORDINATE EXACT ROUTE OF DUCTBANK AND CONDUIT INTO BUILDING WITH OWNER. POWER CONDUIT SHALL PENETRATE THE BATTERY ROOM WALL AND BE ROUTED TO THE 480V CIRCUIT BREAKER. CONTROL/SIGNAL CONDUITS SHALL PENETRATE THE BATTERY ROOM WALL AND BE ROUTED DOWN INTO THE GALLERY AND TO THE PLC.
 - CONNECT DUCTBANK GROUND TO NEAREST AVAILABLE BUILDING GROUND.
 - CONNECT DUCTBANK GROUND TO GROUND RING.
 - ADD A 2" CONDUIT WITH PULLROPE IN A NEW DUCTBANK FROM THE VAULT TO THE HEATING COLLAR IN THE PIPE AT ELBOW FITTING. CORE DRILL THE WELL AND MAKE THE OPENING WATER TIGHT. ANY CORE DRILL OVER 6" MUST BE CONSULTED WITH THE ENGINEER BEFORE IMPLEMENTING. FINAL DUCT SIZE NEEDS TO BE VERIFIED WITH VENDOR.



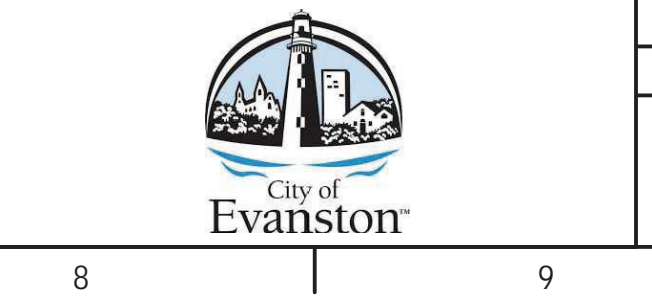
CONDUIT NUMBER IN THE DUCTBANK	CONDUIT SIZE	FILL	CIRCUITS	FROM	TO
A1	4"	4#500, 1#3 GND	POWER	480V CIRCUIT BREAKER	POWER PANEL
A2	4"	PULLCORD	SPARE	PULLBOX	VAULT
A3	2"	22#14, 1#14 GND (6 SPARE)	CONTROL	VAULT	PLC
A4	2"	PULLCORD	SPARE	PULLBOX	VAULT
A5	2"	7-2/C#16(SH) (2 SPARE)	SIGNAL	VAULT	PLC

A DUCTBANK SECTION
NO SCALE

REV	DATE	BY	DESCRIPTION
1			
2			
3			

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DRAWN	DS
CHECKED	DR
DATE	04/2022

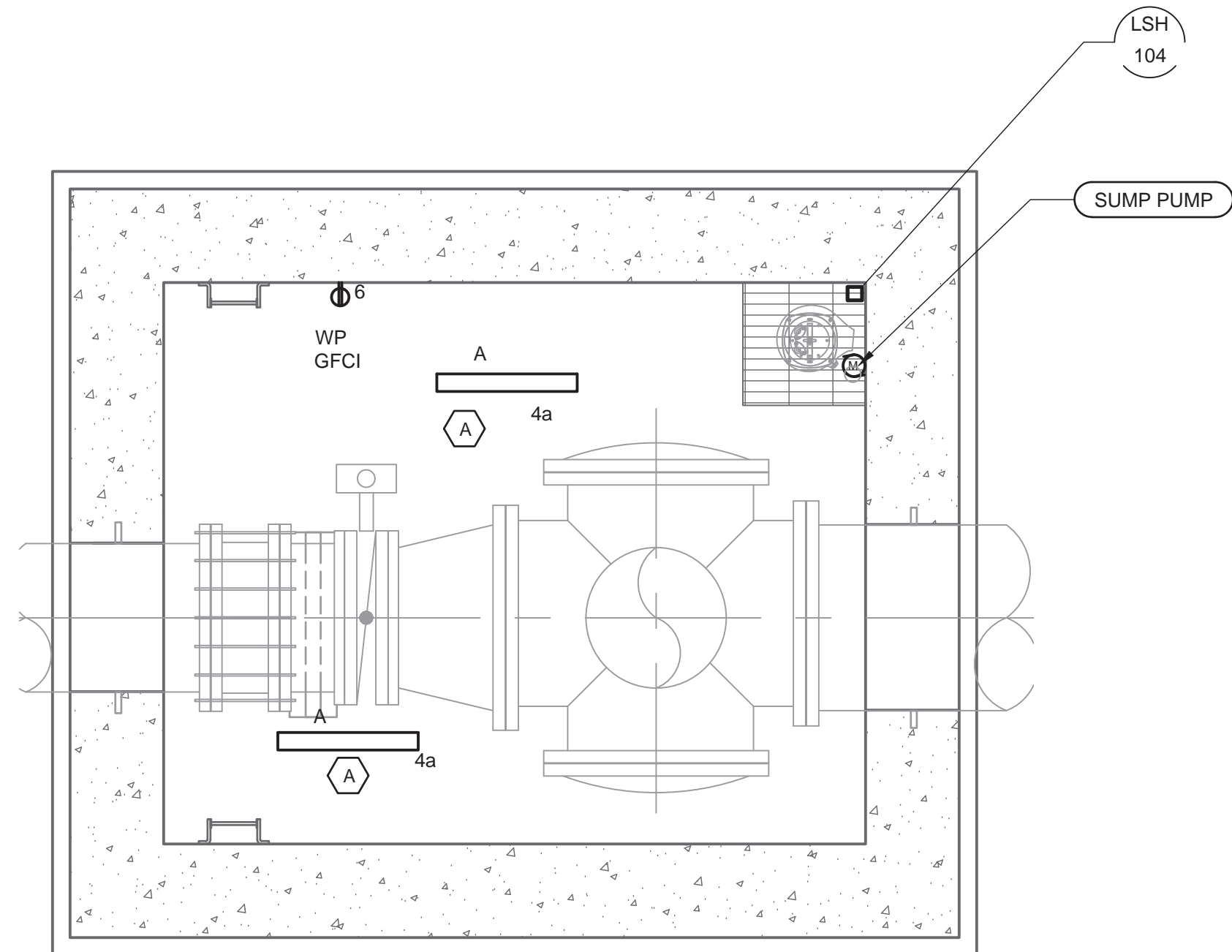
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
 ELECTRICAL
 SITE PLAN

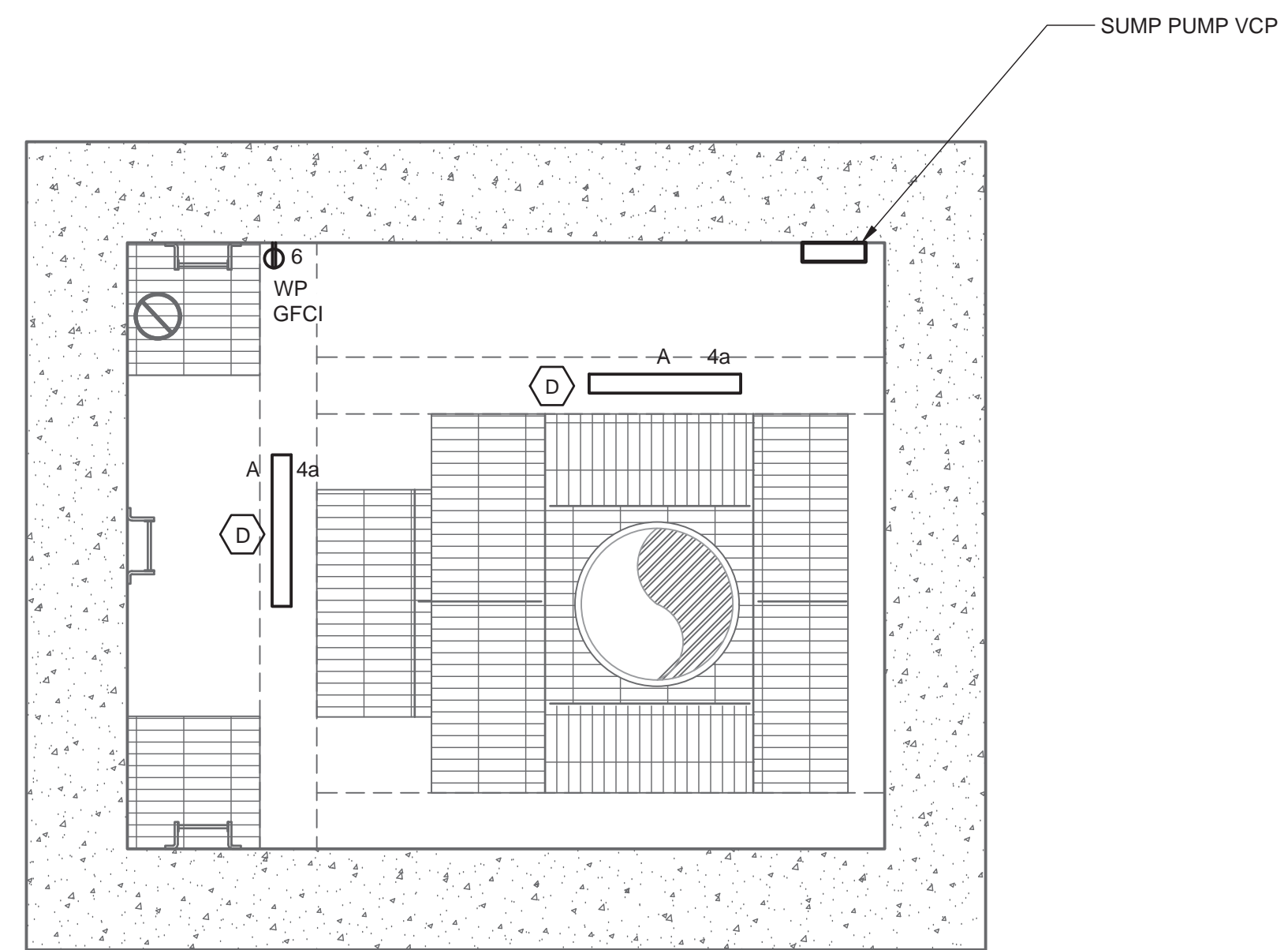
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173440108
 DRAWING NO.
E-004
 SHEET NO.
59 OF 63



BOTTOM LEVEL PLAN EL -18

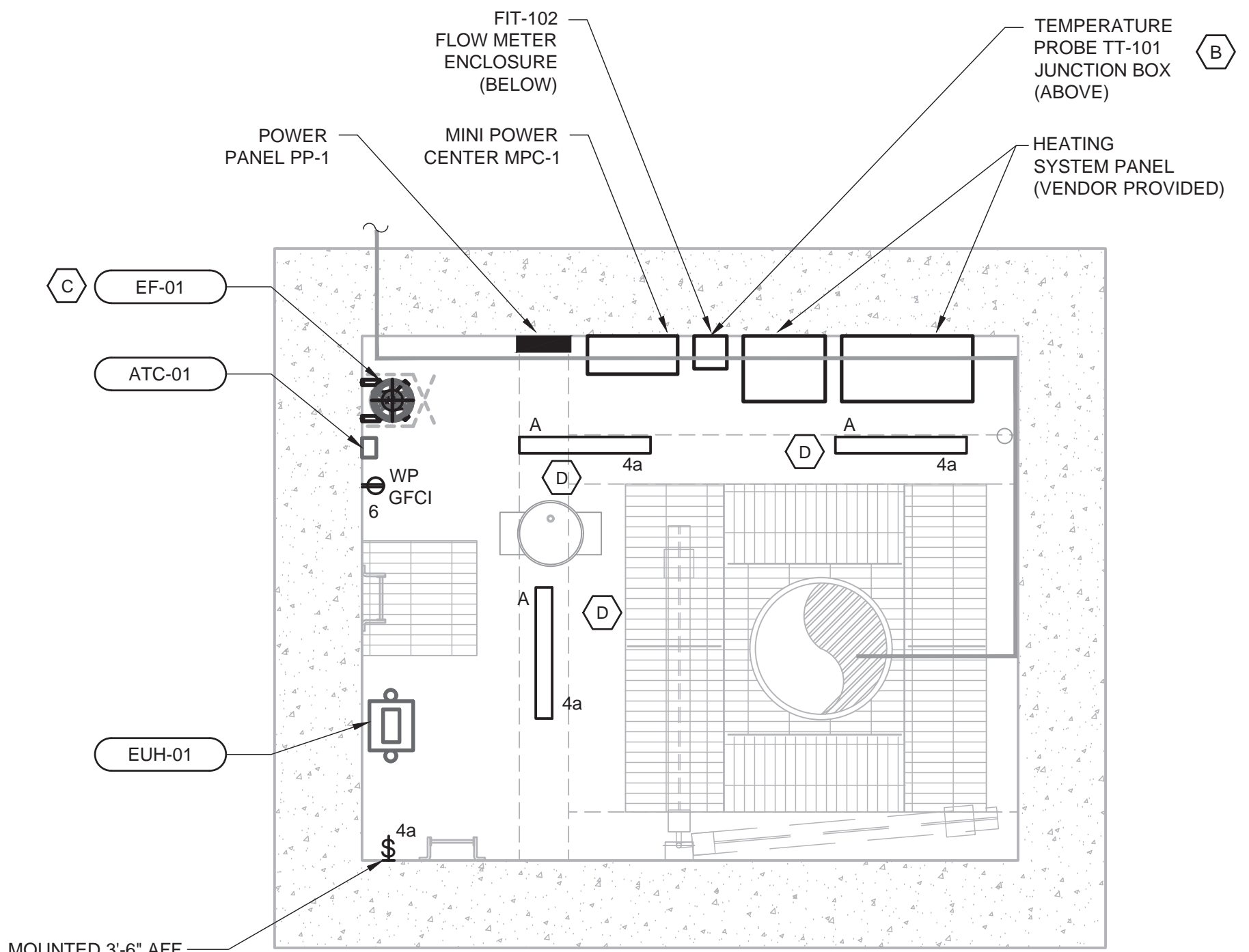
SCALE: 1/4" = 1'-0"



LOWER INTERMEDIATE PLAN EL -5

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

- GENERAL SHEET NOTES**
- JUNCTION AND PULL BOXES ARE NOT SHOWN, BUT SHALL BE INSTALLED AS REQUIRED.
- SHEET KEYNOTES**
- LUMINAIRES SHALL BE SURFACE MOUNTED TO THE CEILING.
 - MOUNT TT-101 JUNCTION BOX 12" ABOVE FLOW METER.
 - LOCATE MOTOR STARTER BENEATH THE EXHAUST FAN, 4" AFF.
 - LUMINAIRES SHALL BE SURFACE MOUNTED TO BEAM.



UPPER INTERMEDIATE PLAN EL +5

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

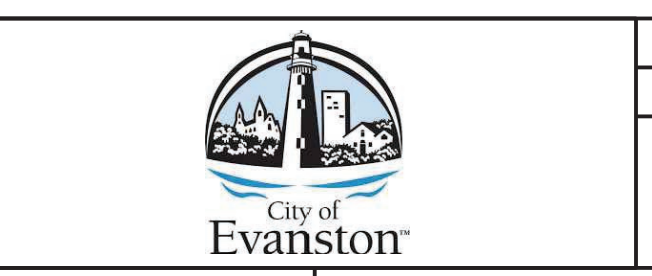
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CITY OF EVANSTON

1909 RAW WATER INTAKE REPLACEMENT

ELECTRICAL
VAULT PLANS

VERIFY SCALES
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JOB NO.
173440108
DRAWING NO.
E-005
SHEET NO.
60 OF 63

PANELBOARD: MPC-1(22.5KV MINI-POWER CENTER)										VOLTS: 120/208			
LOCATION: VALVE VAULT										PHASE: 3			
FED FROM: PP-1										WIRE: 4			
MAIN BKR AMPS: 70					MOUNTING: SURFACE								
LOAD DESCRIPTION	NOTE	KVA			CKT	BKR	BKR	CKT	KVA			NOTE	LOAD DESCRIPTION
		A	B	C					A	B	C		
EXHAUST FAN EF-01		0.42			1	15 3P	15	2	1.0				SUMP PUMP SP-001
			0.42		3		20	4		0.2			VAULT LIGHTS
				0.42	5		20	6			0.54		VAULT RECEPTACLES
ELECTRIC HEATER EUH-01		3.33			7	35 3P	20	8	1.0				ATC-01
			3.33		9		20	10		1.0			FT-102 FLOW METER
				3.33	11		20	12			0.0		SPARE
SPARE		0.0			13	20	20	14	0.0				SPARE
SPACE			0.0		15			16		0.0			SPACE
SPACE				0.0	17			18		0.0			SPACE
		3.75	3.75	3.75	TOTAL			2.0	1.2	0.54			
		PHASE LOAD			TOTAL PANEL LOAD								
		5.75	4.95	4.29	14.99	KVA							

PANELBOARD: POWER PANEL PP-1										VOLTS: 480/277			
LOCATION: VALVE VAULT										PHASE: 3			
FED FROM: PP-1										WIRE: 4			
MAIN BKR AMPS: 350					MOUNTING: SURFACE								
LOAD DESCRIPTION	NOTE	KVA			CKT	BKR	BKR	CKT	KVA			NOTE	LOAD DESCRIPTION
		A	B	C					A	B	C		
INTAKE HEATER SYSTEM		56.0			1	250 3P	60	2	5.75				MPC-1 MINIPOWER CENTER
			56.0		3		60	4		4.95			
				56.0	5		60	6			4.29		
SPARE		0.0			7	20 3P	20	8	0.0				SPARE
			0.0		9		20	10		0.0			
				0.0	11		20	12			0.0		
		56.0	56.0	56.0	TOTAL			5.75	4.95	4.29			
		PHASE LOAD			TOTAL PANEL LOAD								
		61.75	60.95	60.29	182.99	KVA							

LUMINAIRE SCHEDULE						
TYPE	LAMP WATTAGE	LAMP TYPE	VOLTS	MOUNTING	MANUFACTURER AND CATALOG NUMBER OR APPROVED EQUAL	DESCRIPTION
A	24 W	LED	120V	SURFACE	HOLOPHANE EMS L48 4000LK IMAFD MD 120V GZ10 40K 90CRI BE6WCP	ENCLOSED AND GASKETED LINEAR LED SURFACE MOUNTED LUMINAIRE. 4' LENGTH. HOUSING SHALL BE FIBERGLASS, SUITABLE FOR DAMP AND WET LOCATION. MINIMUM 4000 LUMENS, 90CRI, 4000K COLOR TEMP. COLD WEATHER EMERGENCY BATTERY PACK INCLUDED WITH FIXTURE.

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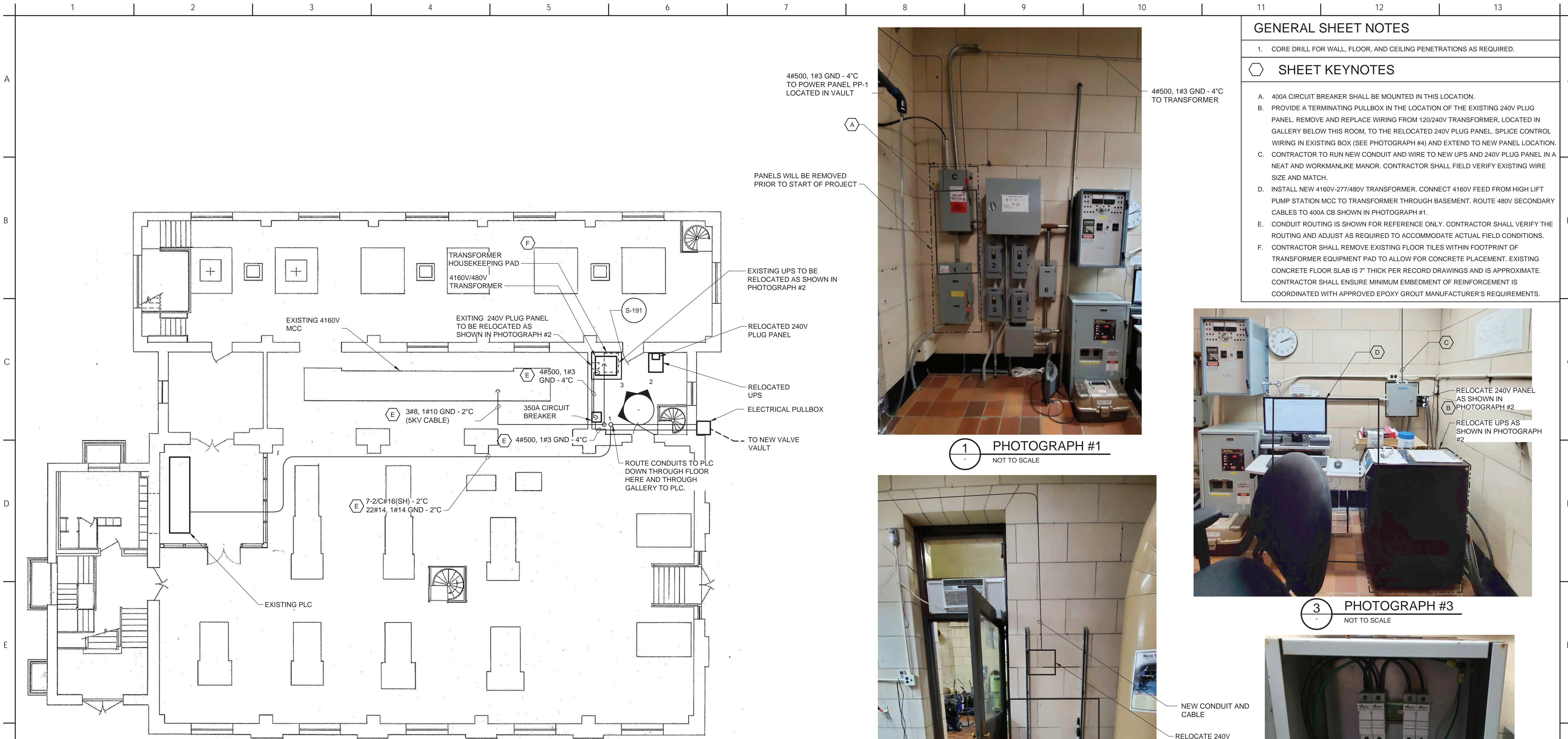
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DRAWN <u> DS </u>				ELECTRICAL 1909 RAW WATER INTAKE REPLACEMENT PANEL AND LUMINAIRE SCHEDULE			
CHECKED <u> DR </u>							
DATE <u> 04/2022 </u>							

GENERAL SHEET NOTES

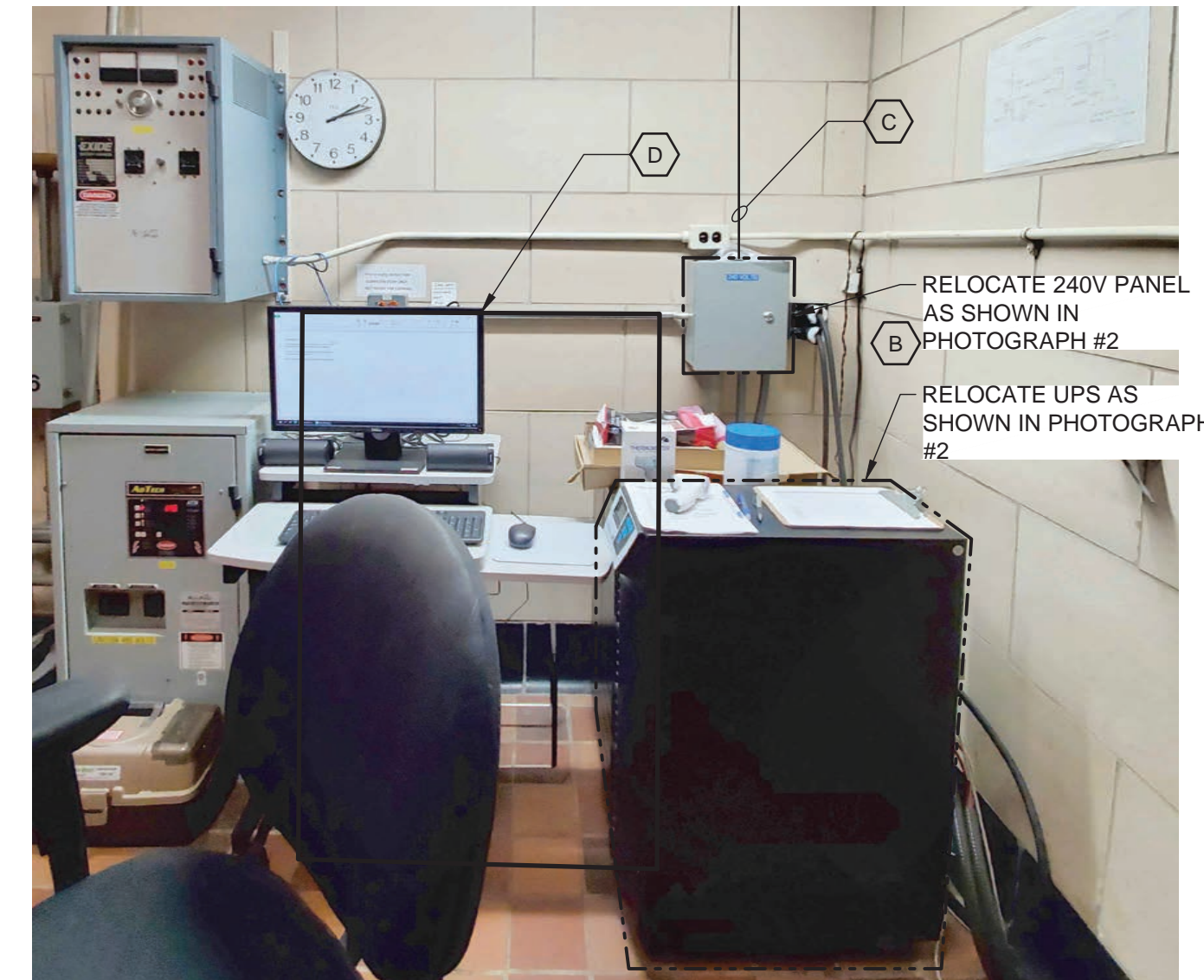
1. CORE DRILL FOR WALL, FLOOR, AND CEILING PENETRATIONS AS REQUIRED.

SHEET KEYNOTES

- A. 400A CIRCUIT BREAKER SHALL BE MOUNTED IN THIS LOCATION.
- B. PROVIDE A TERMINATING PULLBOX IN THE LOCATION OF THE EXISTING 240V PLUG PANEL. REMOVE AND REPLACE WIRING FROM 120/240V TRANSFORMER, LOCATED IN GALLERY BELOW THIS ROOM, TO THE RELOCATED 240V PLUG PANEL. SPLICE CONTROL WIRING IN EXISTING BOX (SEE PHOTOGRAPH #4) AND EXTEND TO NEW PANEL LOCATION.
- C. CONTRACTOR TO RUN NEW CONDUIT AND WIRE TO NEW UPS AND 240V PLUG PANEL IN A NEAT AND WORKMANLIKE MANNER. CONTRACTOR SHALL FIELD VERIFY EXISTING WIRE SIZE AND MATCH.
- D. INSTALL NEW 4160V-277/480V TRANSFORMER. CONNECT 4160V FEED FROM HIGH LIFT PUMP STATION MCC TO TRANSFORMER THROUGH BASEMENT. ROUTE 480V SECONDARY CABLES TO 400A CB SHOWN IN PHOTOGRAPH #1.
- E. CONDUIT ROUTING IS SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY THE ROUTING AND ADJUST AS REQUIRED TO ACCOMMODATE ACTUAL FIELD CONDITIONS.
- F. CONTRACTOR SHALL REMOVE EXISTING FLOOR TILES WITHIN FOOTPRINT OF TRANSFORMER EQUIPMENT PAD TO ALLOW FOR CONCRETE PLACEMENT. EXISTING CONCRETE FLOOR SLAB IS 7" THICK PER RECORD DRAWINGS AND IS APPROXIMATE. CONTRACTOR SHALL ENSURE MINIMUM EMBEDMENT OF REINFORCEMENT IS COORDINATED WITH APPROVED EPOXY GROUT MANUFACTURER'S REQUIREMENTS.



1 PHOTOGRAPH #1
NOT TO SCALE



3 PHOTOGRAPH #3
NOT TO SCALE



2 PHOTOGRAPH #2
NOT TO SCALE

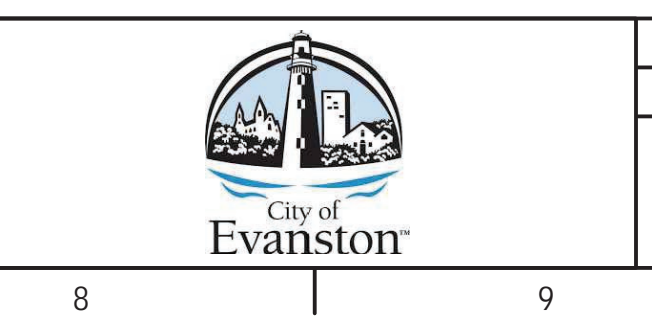


4 PHOTOGRAPH #4
NOT TO SCALE

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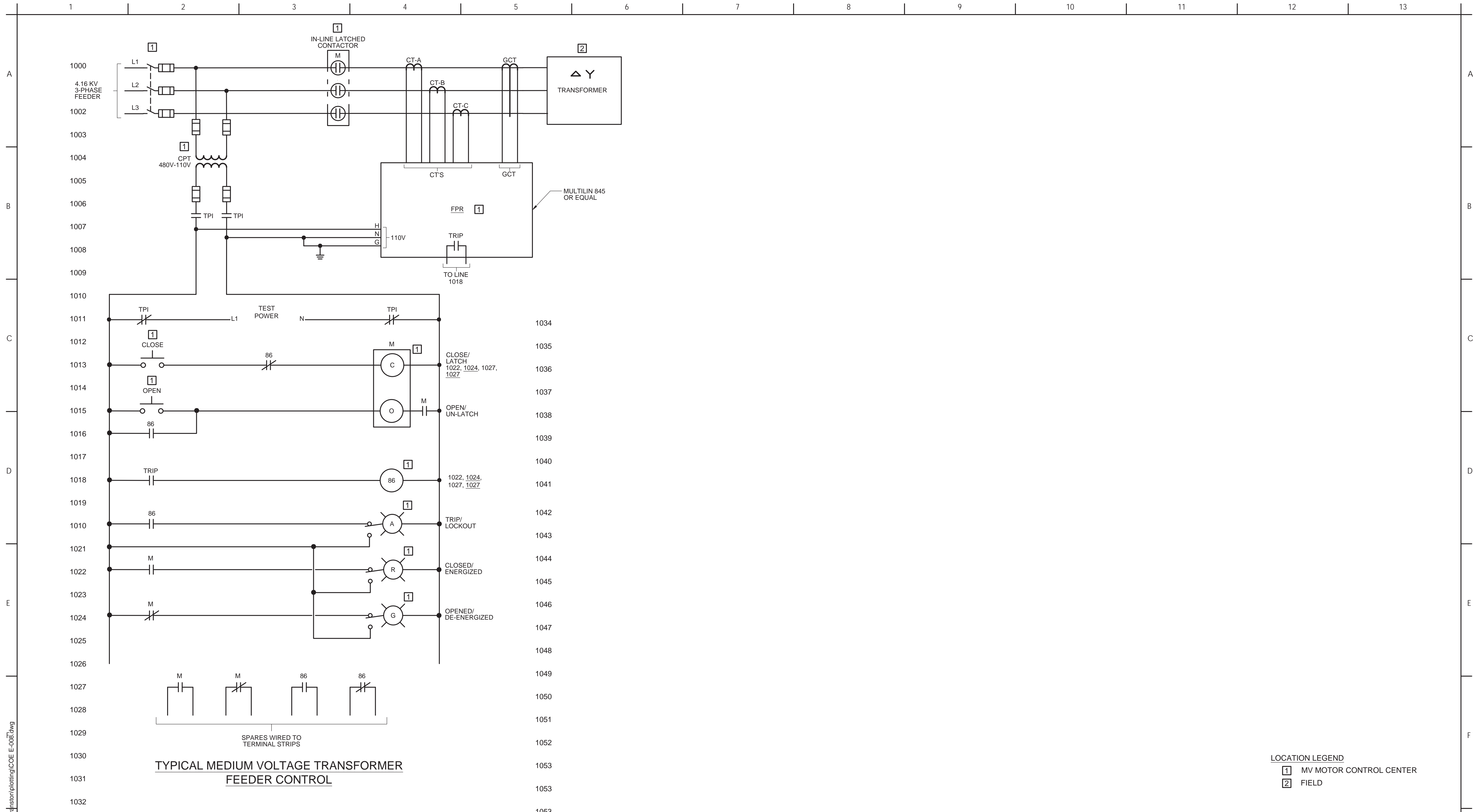
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CITY OF EVANSTON
1909 RAW WATER INTAKE REPLACEMENT
ELECTRICAL
PUMP HOUSE PLANS AND DETAILS

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SHEET NO.
62 OF 63

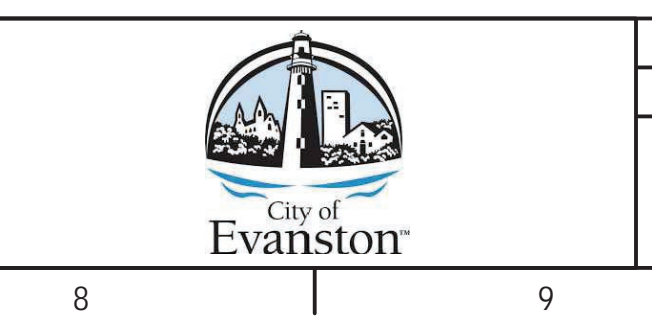


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CITY OF EVANSTON

1909 RAW WATER INTAKE REPLACEMENT

ELECTRICAL
SCHEMATIC DIAGRAM

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DRAWING NO.
E-008
SHEET NO.
63 OF 63