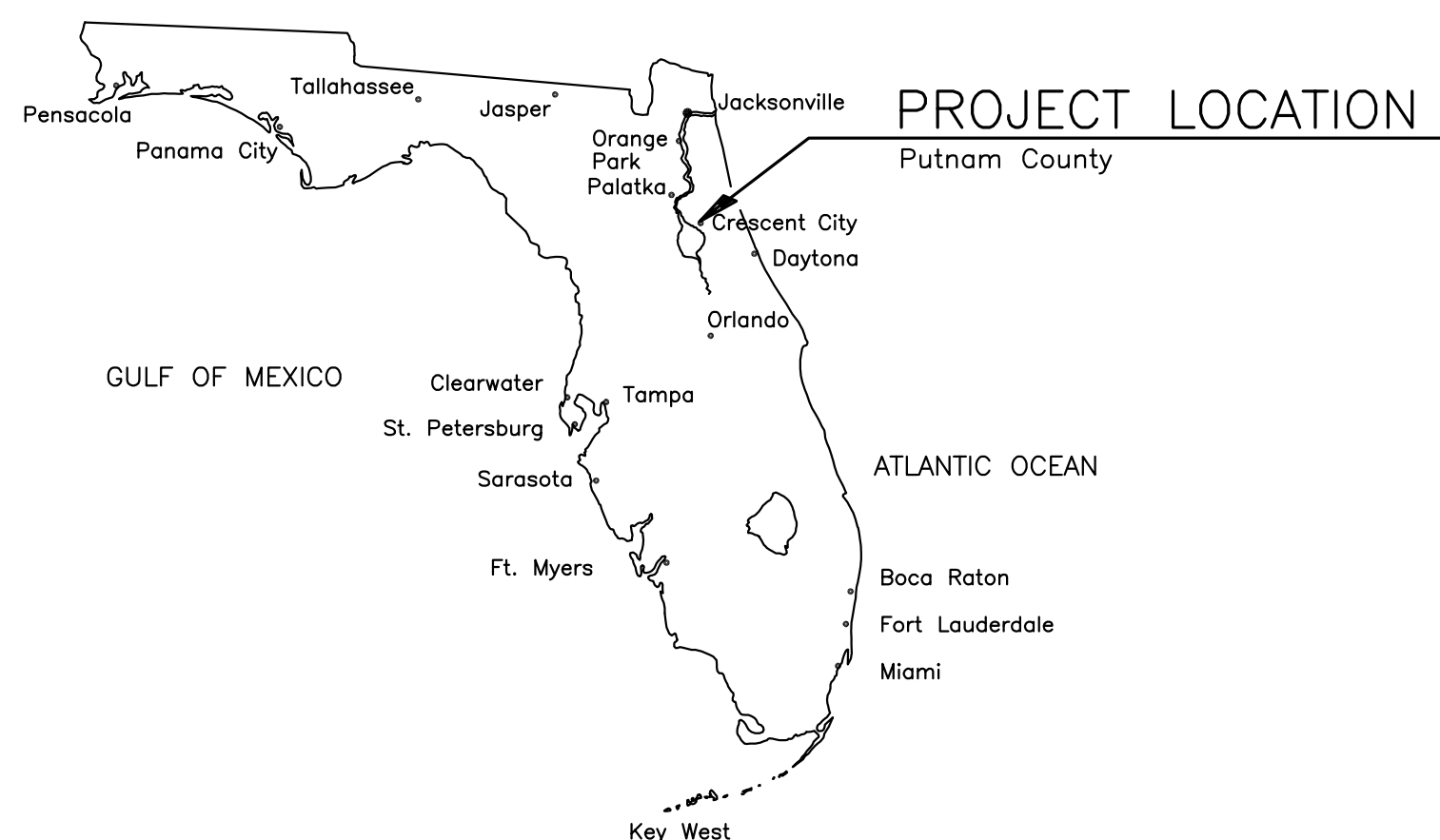


# CDBG 23 NR MAIN ST. WM REPLACEMENT & LIFT STATION GENERATOR

FOR

## CITY OF CRESCENT CITY, FLORIDA

CDBG Contract No. 23DB-N13  
M & A Project No. 9318-61-1



MICHELE MYERS  
MAYOR

H. HARRY BANKS  
VICE MAYOR

LISA KANE DeVITTO  
COMMISSIONER

WILLIAM "B.J." LAURIE  
COMMISSIONER

CYNTHIA BURTON  
COMMISSIONER

CHARLES RUDD  
CITY MANAGER

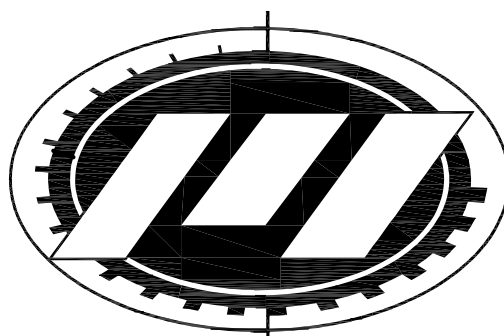
ROBERT PICKENS  
CITY ATTORNEY

### DRAWING INDEX

SHEET NO.	SHEET TITLE
1	COVER SHEET
2	GENERAL NOTES, ABBREVIATIONS & LEGEND
3	KEY MAP
4	OVERALL WATER MAIN MAP
5	CENTRAL AVE TO EUCALYPTUS AVE - PLAN
6	EDGEWOOD AVE TO PALMETTO AVE - PLAN
7	MAGNOLIA AVE TO VERNON AVE - PLAN
8	LIFT STATION GENERATOR - PLAN
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14	ELECTRICAL LEGEND AND NOTES
15	ELECTRICAL LEGEND AND NOTES
16	ELECTRICAL SITE PLAN AND DETAILS
17	ELECTRICAL DETAILS



VICINITY MAP



**MITTAUER**  
& ASSOCIATES, INC.  
CONSULTING ENGINEERS  
580-1 WELLS ROAD, ORANGE PARK, FLORIDA 32073  
TEL. (904) 278-0030 FAX. (904) 278-0840 FLORIDA RY NO. 6569

**REVIEW SET**

10/03/23



## M:\CAD Files\Crescent City\9318611 CDBG 23 NR Main St. Water Main Replacement and Lift Station Generator\Design\SHT2.dwg, 6/27/2024 4:08:58 PM

1. Existing underground utilities have been shown from the best available information. The Contractor shall notify the proper Utility Representative prior to commencing excavation near the utility. The Contractor is responsible for locating all utilities in the path of construction. Contractor shall field determine the location, size, and depth of all existing piping. The Contractor shall call the Sunshine State One center (1-800-432-4770).

3. Contractor is responsible for supporting/protecting & maintaining all existing improvements (i.e., utilities, utility poles, structures, pavement, sidewalks, monitoring wells, foundations, etc.) which may be damaged/undermined or interrupted as a result of his operations. The Contractor shall immediately notify the Engineer of any such damage or interruption. The Contractor shall provide the necessary shoring or support work to protect existing improvements. The Contractor shall maintain a minimum of 5 feet of undisturbed soil around all power poles. Where edge of utility trench would be closer than 5 feet from poles, Contractor shall be required to sheet around pole to maintain 5 feet of undisturbed soil. Where 5 feet of undisturbed soil cannot be maintained, Contractor shall make arrangement with power company to have poles held/braced. All costs associated with supporting/protecting existing improvements shall be borne by the Contractor.

5. Horizontal and vertical controls are subject to adjustments in the field if necessary to avoid utility conflicts upon approval of the Engineer or his representative. Contractor shall not adjust location of pipe or other facilities (either vertically or horizontally) without approval of the Engineer or his representative.

7. The Contractor shall at all times conduct his operations so as to interfere as little as possible with the existing facilities. The Contractor shall develop a program in cooperation with the Owner's operating staff which shall provide for the construction of and putting into service the proposed work in the most orderly manner possible. All work of connection with, cutting into and reconstruction of existing facilities shall be planned so as not to interfere with the existing facility.

9. During any construction activity, including stabilization and revegetation of disturbed surfaces, the Contractor is responsible for the design, selection, permitting, implementation, and operation of all temporary construction protection and sediment control measures required to retain on-site sediment and prevent violations of the State of Florida water quality standards. The Contractor shall use appropriate best management practices described in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual, July 2013, with revisions. All turbidity/silt barriers must be in place downgradient from the construction zone prior to the start of any construction activity in general accordance with the plans and details provided in these documents. The barriers shall remain in place until all the disturbed areas have been properly stabilized.

12. The Contractor shall temporarily relocate the postal mail boxes and clusters as required for the construction of the project and reinstall them in their original locations upon completion of the construction. All work associated with the mail boxes or clusters shall be in accordance with the requirements of the U.S. Post Masters Office.

14. All areas disturbed by construction shall be regraded and sodded.

16. The Contractor shall employ the services of a Florida licensed surveyor who shall be responsible for laying out the work and for establishing the following: project temporary benchmarks; elevation lines and grades; and right-of-way and easement limits for construction. Contractor shall also employ the services of a Florida licensed surveyor to obtain the required record drawing information.

18. Project Benchmark: Project Benchmark: All elevations on these plans are relative to the North American Vertical Datum of 1988 (NAVD 88) based on National Geodetic Survey Benchmark PID A16986 having an elevation of 2.99 feet. See Sheet No. 3 for location and description of Benchmark.

20. Horizontal control for features on the plans are relative to the NAD83 Florida State Planes, East Zone, US Foot coordinate system.

1. All water line work shall be in accordance with FAC 62-555, Permitting and Construction of Public Water Systems. All materials that come in contact with drinking water shall be in conformance with ANSI/NSF International Standard 61 and shall be installed in accordance with applicable AWWA Standards and/or the manufacturer's recommendations.

3. Water lines are designed to finished grade and shall be protected until finished work is complete.

5. Refer to specifications and FDEP rules for separation requirements between potable water mains and other utilities.

7. The location of water services on the plans are approximate. Actual location of services shall be determined in the field by location of existing water lines and as directed by the Engineer and the Owner.

9. Existing Water Meters shall be disconnected from the existing water system and reconnected to the newly installed serviced lines after the new water system is cleared for service. The Contractor is responsible for locating and connecting all existing water services to the new main.

2. All signs and pavement markings shall conform to the Manual on Uniform Traffic Control Devices (MUTCD) and the Florida Department of Transportation Roadway and Traffic Design Standards, latest editions.

5. All pavement striping within Right-of-Way or easements, as well as all stop bars, crosswalks, messages and directional arrows (regardless of location) shall be lead free, thermoplastic pavement markings (FDOT spec. section 711). All other striping shall be reflective paint (FDOT spec. section 710) unless noted otherwise on the drawings or in the project specifications.

6. The aluminum column (post) & connection design shall adhere to FDOT Index 700-010 and the following criteria:

- a. mounting height = 8' maximum
- b. sign(s) area = 25 sq. ft. maximum
- c. sign(s) width: single = 36" maximum  
dual = 48" maximum
- d. driven post only

8. All hardware shall be stainless steel (ASTM F593, ASTM F594, Alloy Group 2, Condition A, CW2 or SH4).

9. All signs furnished under this contract shall be permanently affixed with the date they were fabricated.

1. Contractor shall provide all Maintenance of Traffic (MOT) plans and/or schematics as required per the MUTCD, FDOT, and/or local jurisdiction to obtain R/W permit(s). Standard Index Drawings are provided for reference purposes only. Final MOT plans are the Contractor's responsibility per their construction approval and shall be implemented at their expense.

2. Contractor shall maintain vehicular access to all residences at the end of each workday. No roadway/driveway shall be blocked to vehicular traffic for more than a two (2) hour period.

3. Contractor shall maintain single lane access, at a minimum, at all times. Contractor shall provide detours and/or temporary roadway as necessary. Contractor shall provide all necessary flagging.

4. Contractor shall confine his active work area to no more than 100 feet at a time.

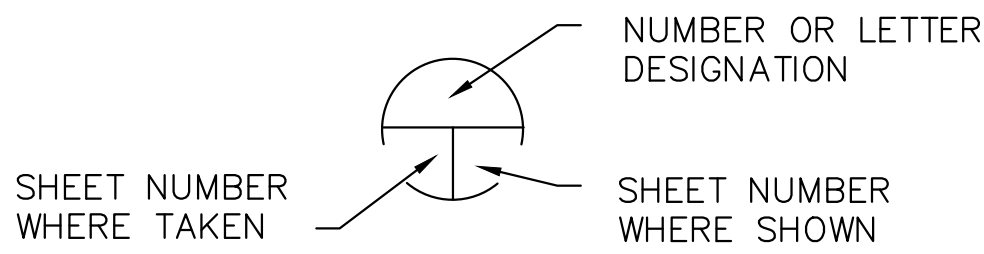
3. The roadway shall be restored to at least a limestone surface before it is reopened to traffic, and before the Contractor moves on to the next construction zone.

b. Dust control measures shall be implemented on all unpaved surfaces until paved.

1. The design intent is to preserve all existing trees within the project corridor. See Technical Specifications 02115 for requirements. Not tree shall be removed or trimmed without the City Manager's approval.

PROPOSED	EXISTING
-- 8" SAN --	SANITARY SEWER
-- 4" FM --	SANITARY FORCE MAIN
MH	MANHOLE
	VALVE
-- 6" W --	WATER MAIN (CONSTRUCTED)
-----	WATER MAIN (DIRECTIONAL DRILL)
	FIRE HYDRANT
	WATER SERVICE (BASE)
	WATER SERVICE (ADDITIVE ALTERNATE)
	TEMPORARY SAMPLE POINT
	TELEPHONE PEDESTAL
	MAIL BOX
-- 18" RCP --	STORM DRAIN PIPE
	STORM DRAIN STRUCTURE
-- 84.0 --	GRADE CONTOURS
	SPOT ELEVATIONS
	POWER POLE/ W/ANCHOR
	UTILITY POLE, LIGHT POLE
-- BT --	BURIED TELEPHONE
-- FO --	FIBER OPTIC CABLE
-- CTV --	CABLE TELEVISION
-- OHE --	OVERHEAD ELECTRIC
-- GAS --	GAS LINE
--- SWALE ---	SWALE
--- X ---	RIGHT-OF-WAY
--- X ---	FENCING
	ASPHALT PAVEMENT OR IMPROVEMENT
	CONCRETE PAVEMENT OR SIDEWALK
	LIMITS OF MILLING AND OVERLAY
-----	STABILIZED ROADWAY OR DRIVEWAY
	LIMITS OF REMOVAL
	OVERLAND FLOW DIRECTION
	TEMPORARY SILT FENCE
	LIMITS OF WOODS
	TREE
	TREE TO BE REMOVED
--- X ---	TEMPORARY TREE BARRICADE

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
ABS	ACRYLONITRILE BUTADIENE STYRENE	MAINT	MAINTAIN OR MAINTENANCE
ABV	ABOVE	MANU(L)LY	MANUALLY
ACP	ASBESTOS CEMENT PIPE	MAX	MAXIMUM
AF	ABOVE FINISH FLOOR (REF. ELEV.)	MES	MISERED END SECTION
AFS	ABOVE FINISH GRADE (REF. ELEV.)	MECH	MECHANICAL
ALUM	ALUMINUM	MFR	MANUFACTURE
ALT	ALTERNATE	MG	MILLION GALLONS(S)
ALPHX	APPROXIMATELY	MGD	MILLION GALLONS PER DAY
ARCH	ARCHITECT(URAL)	MH	MANHOLE
ARV	AIR RELEASE VALVE	MIN	MINIMUM; MINUTE(S)
AS	ASSEMBLY	MISC	MISCELLANEOUS
BE	BURIED ELECTRIC	MJ	MECHANICAL JUNCTION
BFC	BURIED FACE	MON	MONTH
BFO	BURIED FIBER OPTIC	MPH	MILES PER HOUR
BFTU	BUTTERFLY VALVE	MPT	MALE PIPE THREAD
BTUM	BITUMINOUS OR BITUMASTIC	MOUNT	MOUNTED
B	BASELINE	N	NORTH
BLD	BUILDING	NE	NORTHEAST
BLK	BLOCK	NC	NOT IN CONTRACT; NOT INCLUDED
BOT	BOTTOM	NOM	NOMINAL
BT	BURIED TELEPHONE--CABLE	No	NUMBER
C, CND	CANDID	NPT	NATIONAL PIPE THREAD
C, CND	CANDID	NPW	NON--POTABLE WATER
CATV	CABLE TELEVISION	NTS	NOT TO SCALE
CI	CAST IRON	NO	NORTHWEST
CL	CAST IRON PIPE, CAST-IN--PLACE	N/A	NOT APPLICABLE
CE	CENTERLINE	OD	OVERALL DIMENSION
CLF	CHAIN LINK FENCE	OC	ON CENTER
CLR	CLEAR CLEARANCE	OD	OUTSIDE DIAMETER
CM	CONCRETE MONUMENT	OF	OUTSIDE FACE
CMP	CORRUGATED METAL PIPE	OH	OVER HEAD
CMU	CONCRETE MASONRY UNIT	OHE	OVER HEAD ELECTRIC
CNC	CORNER	PWMT, PWMT	PAVEMENT, PAVMT
CNC	CONCRETE	PC	POINT OF CURVE
CNT	CONTINUOUS	PI	POINT OF INTERSECTION
COORD	COORDINATE	PL	PLATE
CP	COUNT POINT	PLF	POUNDS PER LINEAR FOOT
CPVC	CHLORINATED POLYVINYL CHLORIDE	POB	POINT BEGINNING
CUL	CULVERT	PP	POWER POLE
CY	CUBIC YARD	PPM	PARTS PER MILLION
C/D	CENTER TO CENTER	PSF	POUNDS PER SQUARE FOOT
DBL	DOUBLE	PSI	POUNDS PER SQUARE INCH
D/C	DUCTILE IRON	PSI	POINT OF TANGENCY
DI	DIAMETER	PVC	POLYVINYL CHLORIDE
DIM	DIMENSION	PW	POTABLE WATER LINE
DIP	DUCTILE IRON PIPE	QTY	QUANTITY
DPT	DURATION OF TRANSPORTATION	R, RAD	RADIUS
DWG	DRAWING	RCP	REINFORCED CONCRETE PIPE
E	EAST	RED	REDUCER
E, EA	EACH	REBAR	REINFORCING STEEL BARS
EF	EACH FACE	REF	REFERENCE
EL, ELEV	ELEVATION	REINF	REINFORCE(D)(ING)(MENT)
ELEC	ELECTRICAL	REQD	REQUIRED
EP	EDGE OF PAVEMENT	RR	RAILROAD
ESP	EARTH REINFORCED CONCRETE PIPE	RT	RIGHT
ESMT	EASEMENT	R/W	RIGHT-OF-WAY
EW	EACH WAY	S	SEWER, SOUTHWEST
EXP	EXPANSION	SAN	SEWAGE SEWER
EX, EXIST	EXISTING	SCHED	SCHEDULE
EXT	EXTERIOR	SE	SOUTHEAST
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION	SF	SQUARE FOOT OR FEET
FI	FIRE HYDRANT	SHT	SHEET(ING)
FIG	FIGURE	SQ	SQUARE
FIN	FINISH	SR	STATE ROAD
FIN GR	FINISH GRADE	SS	SANITARY SEWER, STAINLESS STEEL
FL	FLANGE JOINT	ST	STREET
FL	FLANGE(D)	STA	STATION
FM	FORCE MAIN	STD	STANDARD
FMP	FIBERGLASS REINFORCED PLASTIC	STL	STEEL
F	FOOT OR FEET	STRUCT	STRUCTURAL
F/F	FOOT TO FACE	SW	SOUTHWEST
G	GALLON(S)	SW	SIDEWALK
GAL	GALVANIZED	TEM	TEMPERARY BENCH MARK
GIP	GALVANIZED IRON PIPE	TC, TOC	TOP OF CONCRETE
GR	GRADE	TEL, TELE	TELEPHONE
GR	GRADE	TEMP	TEMPORARY
GSP	GALVANIZED STEEL PIPE	TOP	TOP FACE
GV	GATE VALVE	THD	THREADED
H	HOLE	THK	THICK(NESS)
HDPE	HIGH-DENSITY POLYETHYLENE	TOB	TOP OF BANK
HGT	HEIGHT	TOE	TOE OF SLOPE
HORIZ	HORIZONTAL	TOS	TOE OF SLOPE; TOP OF STEEL
HWL	HIGH WATER LEVEL	TP	TELEPHONE POLE, TOP OF PAVEMENT
HWY	HIGHWAY	TYPE	TYPE
I	INSIDE DIAMETER	T&B	TOP AND BOTTOM
INS	INSIDE FACE	UNF	UNFINISHED
INCHES	INCHES	UGE	UNDERGROUND ELECTRIC
INF	INFILTRANT	VCP	VERTICALLY CLAY PIPE
INT	INTERSECTION	VERT	VERTICAL
INT	INTERSECTION	VOL	VOLUME
INVERT	INVERT	W	WATER, WEST
IR	IRON PIPE	WM	WATER MAIN
IPS	INTERNATIONAL PIPE STANDARD; IRON PIPE SIZE	WW	WATER SURFACE
LF	LINEAL FEET	WWT	WELDED WIRE FABRIC
L	LINE	WWM	WELDED WIRE MESH
LP	LOW POLE	W	WITH
L	LOW	WO	WITHOUT
LWL	LOW WATER LEVEL	Y	YARD(S)

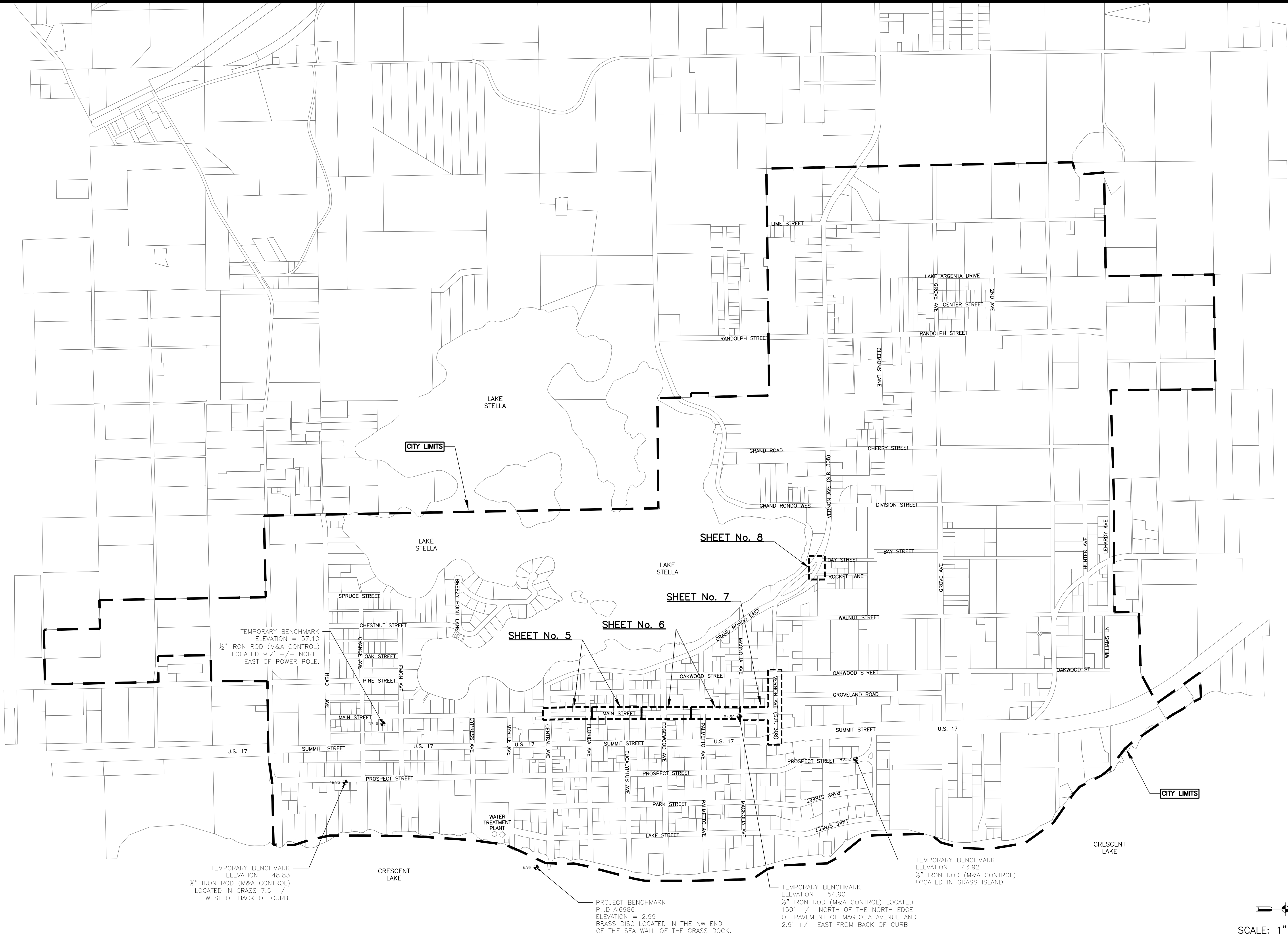


## PROJECT CONTACTS

TYPE	ORGANIZATION	ADDRESS	TELEPHONE	CONTACT PERSON
LINE LOCATIONS	SUNSHINE STATE ONE--CALL OF FLORIDA, INC.	7797 N. UNIVERSITY DR., SUITE 204 F. LAUDERDALE, FL. 33321	(800) 432-4770	CALL 48 HRS BEFORE DIGGING
TELEPHONE	WINDSTREAM FLORIDA, INC.	206 WHITE AVENUE S.E. ALACHUA, FL 32064	(386) 462-6530	GARY CARY
ELECTRIC	FPL	2900 CATHERINE ST. PALATKA, FL 32177	(800) 868-9554	TRACY STERN
INTERNET/TELEPHONE	WINDSTREAM FLORIDA, INC.	206 WHITE AVE. S.E. ALACHUA, FL 32064	(386) 462-6530	GARY CARY
CABLE T.V.	COMCAST	5934 RICHARD ST JACKSONVILLE, FL 32216	(904) 380-7574	LARRY WINBURN
GAS	CITY OF CRESCENT CITY	3 NORTH SUMMIT STREET CRESCENT CITY, FL 32112	(386) 698-2525 EXT. 223	JOHN TURNERY OPERATIONS/DISTRIBUTION
WATER & SEWER	CITY OF CRESCENT CITY	3 NORTH SUMMIT STREET CRESCENT CITY, FL 32112	(386) 698-2525	KEITH HARRIS PUBLIC WORKS DIRECTOR
OWNER	CITY OF CRESCENT CITY	3 NORTH SUMMIT STREET CRESCENT CITY, FL 32112	(386) 698-2525	CHARLES RUDD CITY MANAGER
DESIGN ENGINEER	MITTAUER & ASSOCIATES, INC.	580-1 WELLS ROAD ORANGE PARK, FL 32073	(904) 278-0030	JASON R. SHEPLER, P.E.

CITY OF CRESCENT CITY CDBG 23 NR Main St. WM Replacement & Lift Station Generator General Notes, Abbreviations & Legend Putnam County, Florida  JOB NO. 9318-61-1 SHEET NO. 2			<b>MITT AUER &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS 580-1 WELLS ROAD, ORANGE PARK, FLORIDA 32073 TEL. (904) 278-0030 FAX. (904) 278-0840		DESG _____ MAR _____ DRWN _____ DHS _____ PROJ _____ JRS _____ MGR. _____ DATE 10/03/23				
					_____ 1 INCH _____				
						NO	DATE	BY	
									REVISION DESCRIPTION

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SCALE: 1" = 500'

CITY OF CRESCENT CITY  
CDBG 23 NR Main St. WM Replacement & Lift Station Generator  
Key Map  
Putnam County, Florida

JOB NO.  
9318-61-1  
SHEET NO.

3



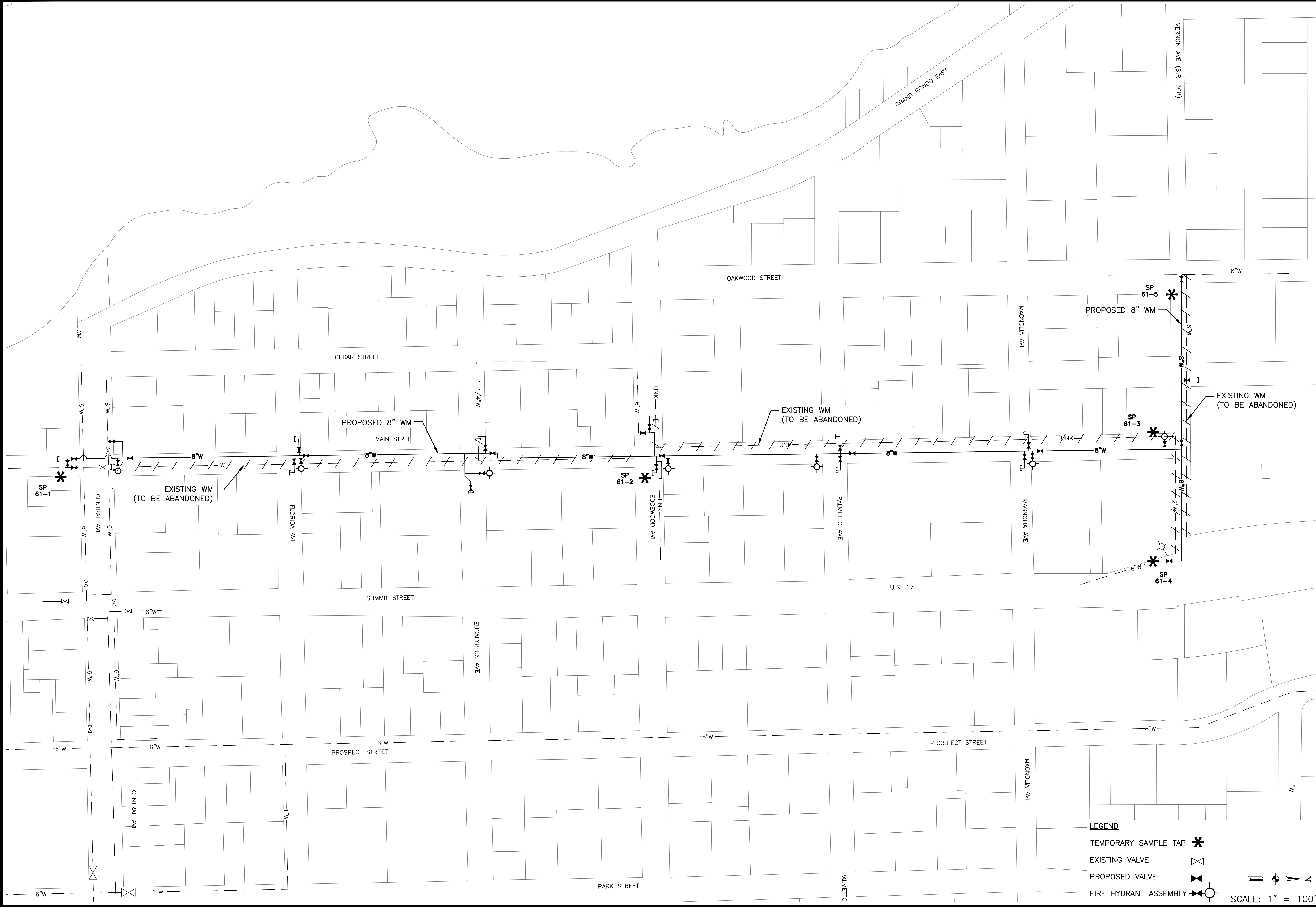
**MITTAUER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
580-1 WELLS ROAD, ORANGE PARK, FLORIDA 32073  
TEL. (904) 278-0030 FAX. (904) 278-0640

DESIGN: MAR  
DRAWN: DHS  
PROJECT: JRS  
DATE: 10/03/23  
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NO.	DATE	BY	REVISION DESCRIPTION



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LEGEND

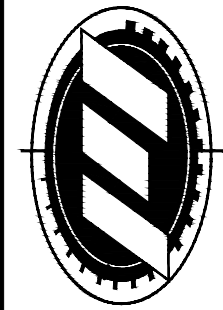
- TEMPORARY SAMPLE TAP \*
- EXISTING VALVE ☒
- PROPOSED VALVE ☒
- FIRE HYDRANT ASSEMBLY ☉

SCALE: 1" = 100'

CITY OF CRESCENT CITY  
CDBG 23 NR Main St. WM Replacement & Lift Station Generator  
Overall Water Main Map  
Putnam County, Florida

JOB NO.  
9318-61-1  
SHEET NO.

4



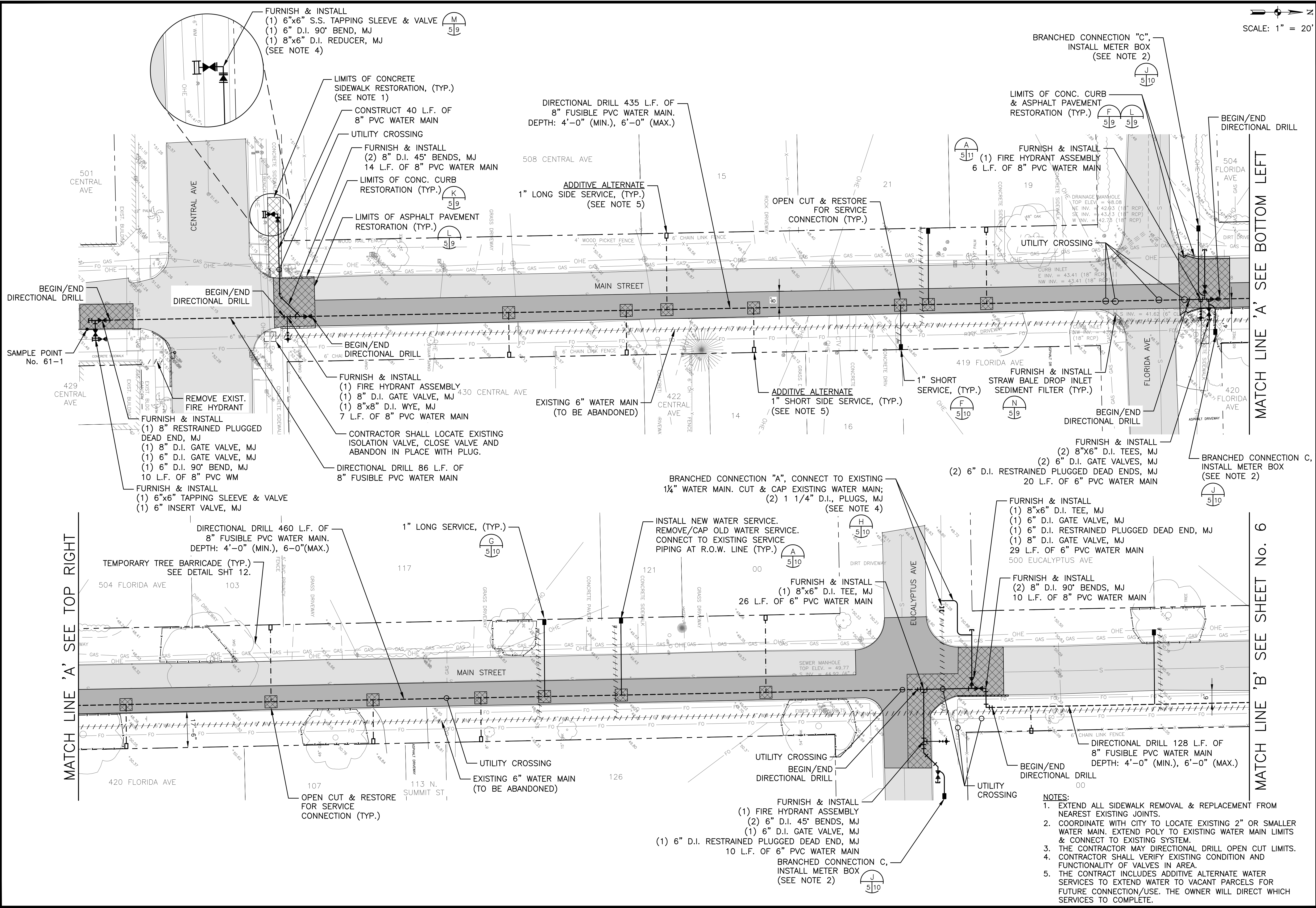
MITTALDER  
& ASSOCIATES, INC.  
CONSULTING ENGINEERS  
580-1 WELLS ROAD, ORANGE PARK, FLORIDA 32073  
TEL. (904) 278-0030 FAX. (904) 278-0640

DESIG. MAR  
DRAWN. DHS  
PROJ. MRS  
DATE 10/03/23  
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CITY OF CRESCENT CITY CDBG 23 NR Main St. Wm Replacement & Lift Station Generator Central Ave to Eucalyptus Ave - Plan Putnam County, Florida		JOB NO. 9318-61-1 SHEET NO. 5	
MITTALTAUER & ASSOCIATES, INC. CONSULTING ENGINEERS 580-1 WELLS ROAD, ORANGE PARK, FLORIDA 32073 TEL. (904) 278-0030 FAX. (904) 278-0640		DESIGN MAR DRAWN DHS PROJ MRS DATE 10/03/23 1 INCH	
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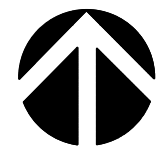
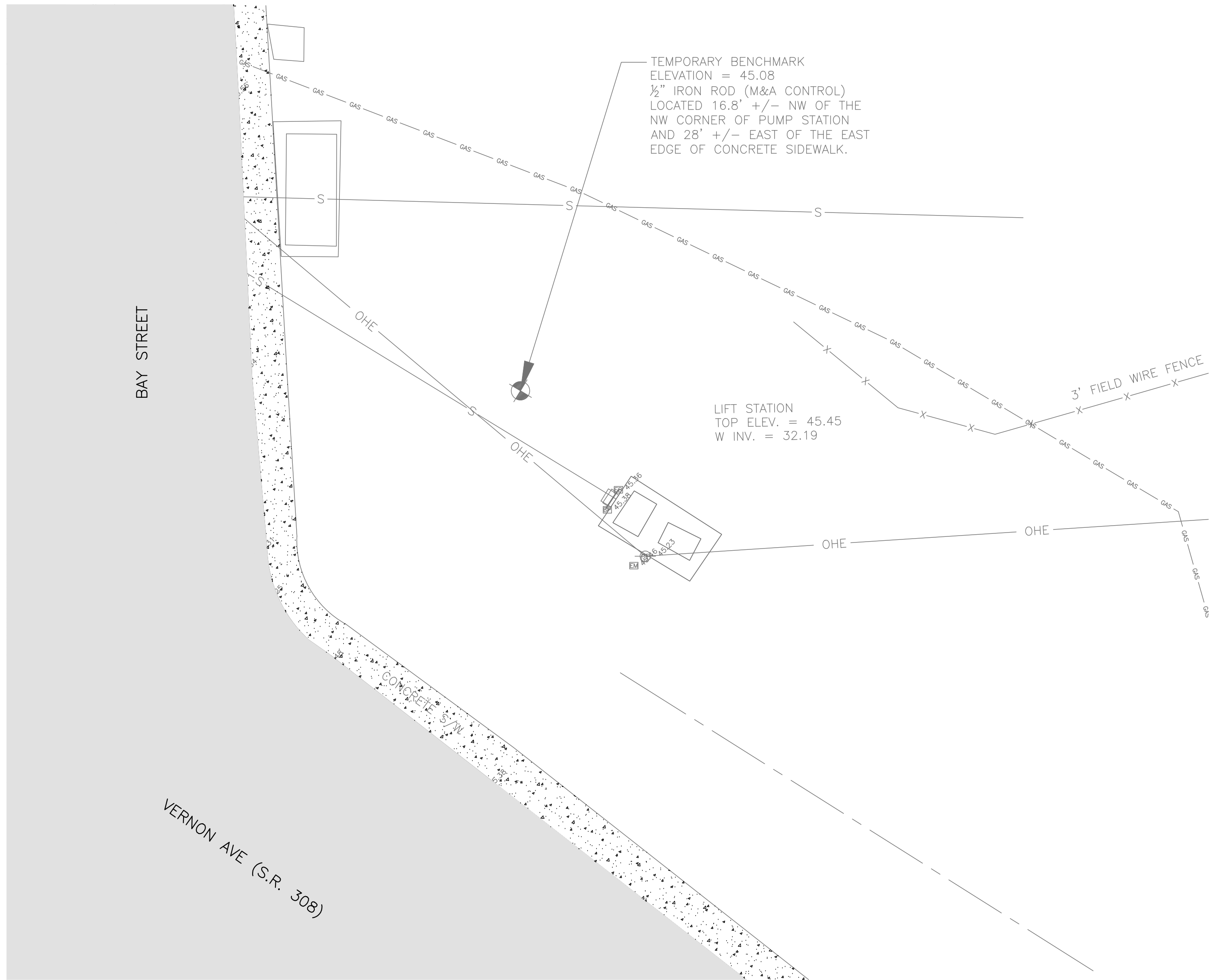


SCALE: 1" = 20'

MATCH LINE 'E' SEE UPPER LEFT

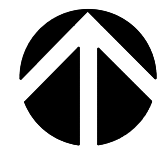
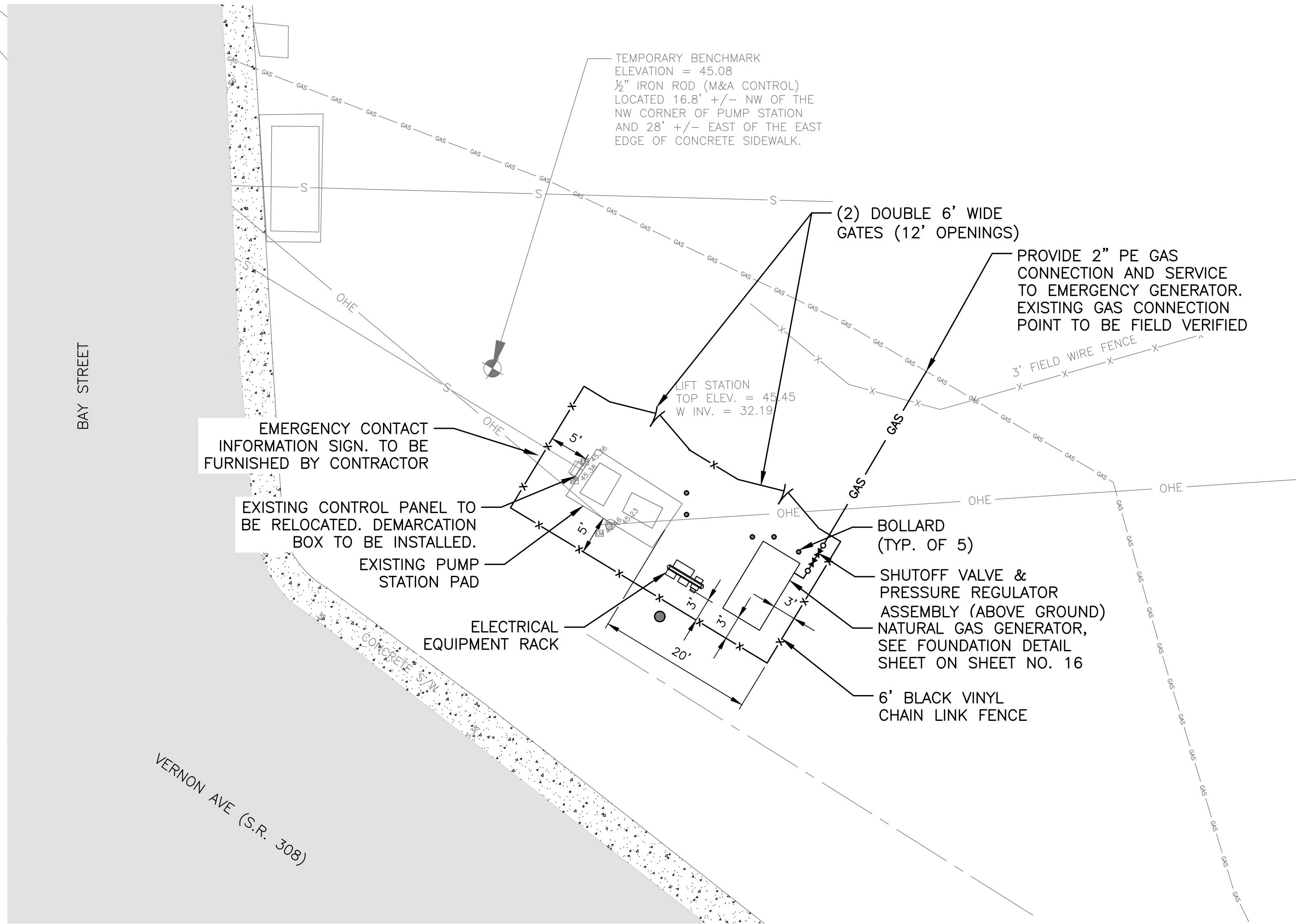


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## LIFT STATION GENERATOR — DEMOLITION

1" = 10'



## LIFT STATION GENERATOR — IMPROVEMENTS

1" = 10'

### NOTES:

1. THE CONTRACTOR SHALL CONSTRUCT THE MAXIMUM AMOUNT OF ELECTRICAL IMPROVEMENTS WHILE THE EXISTING PUMP STATION IS IN OPERATION.
2. THE CONTRACTOR SHALL BYPASS THE EXISTING STATION TO COMPLETE THE NECESSARY ELECTRICAL MODIFICATIONS.
3. ALL FENCING IMPROVEMENTS SHALL BE COMPLETED AFTER PUMP STATION ELECTRICAL WORK IS COMPLETE AND OPERATIONAL.

CITY OF CRESCENT CITY  
CDBG 23 NR Main St. WM Replacement & Lift Station Generator  
Lift Station Generator — Plan  
Putnam County, Florida

JOB NO.  
9318-61-1  
SHEET NO.

8



**MITTAL**  
**& ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
580-1 WELLS ROAD, ORANGE PARK, FLORIDA 32073  
TEL. (904) 278-0030 FAX. (904) 278-0640

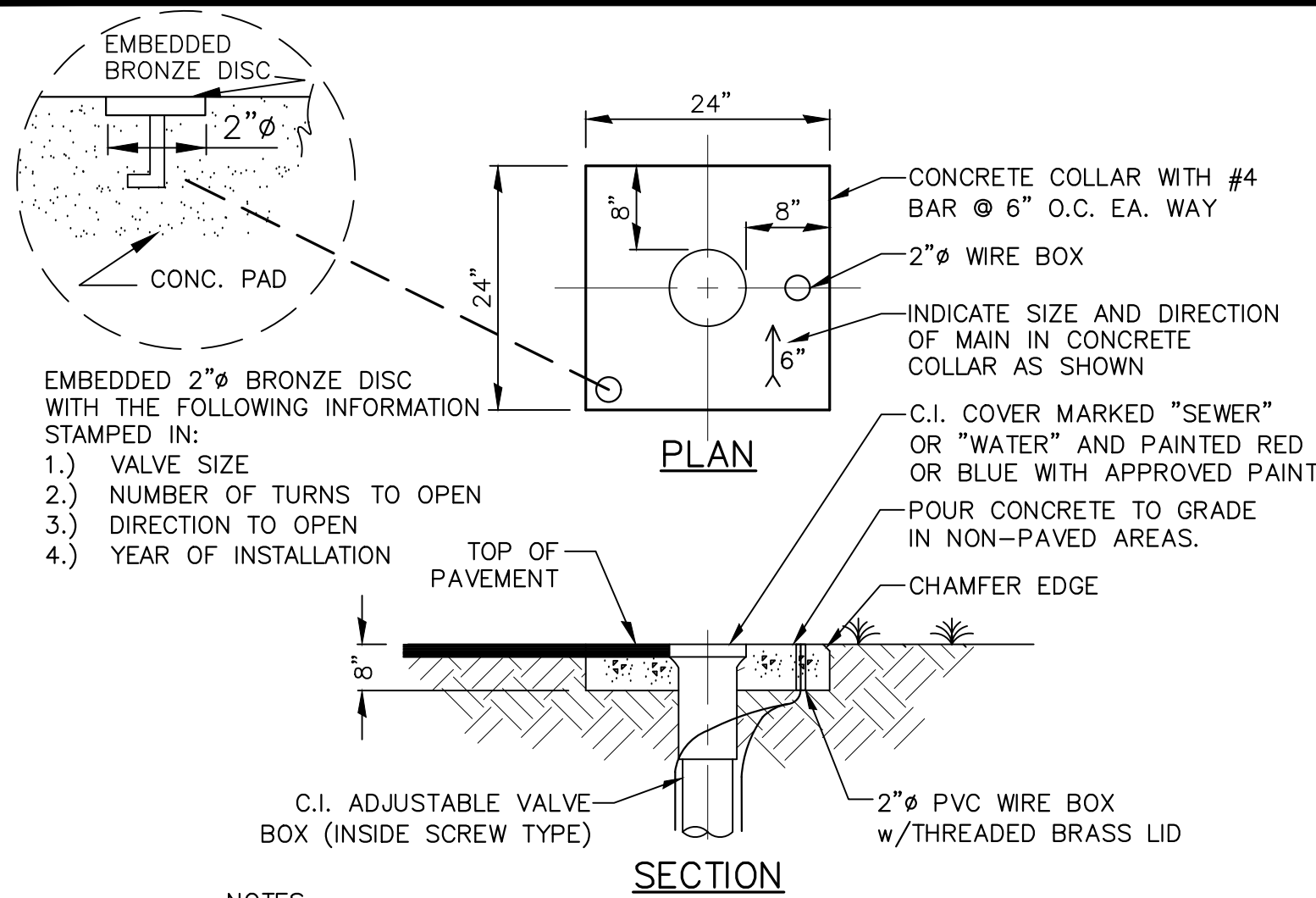
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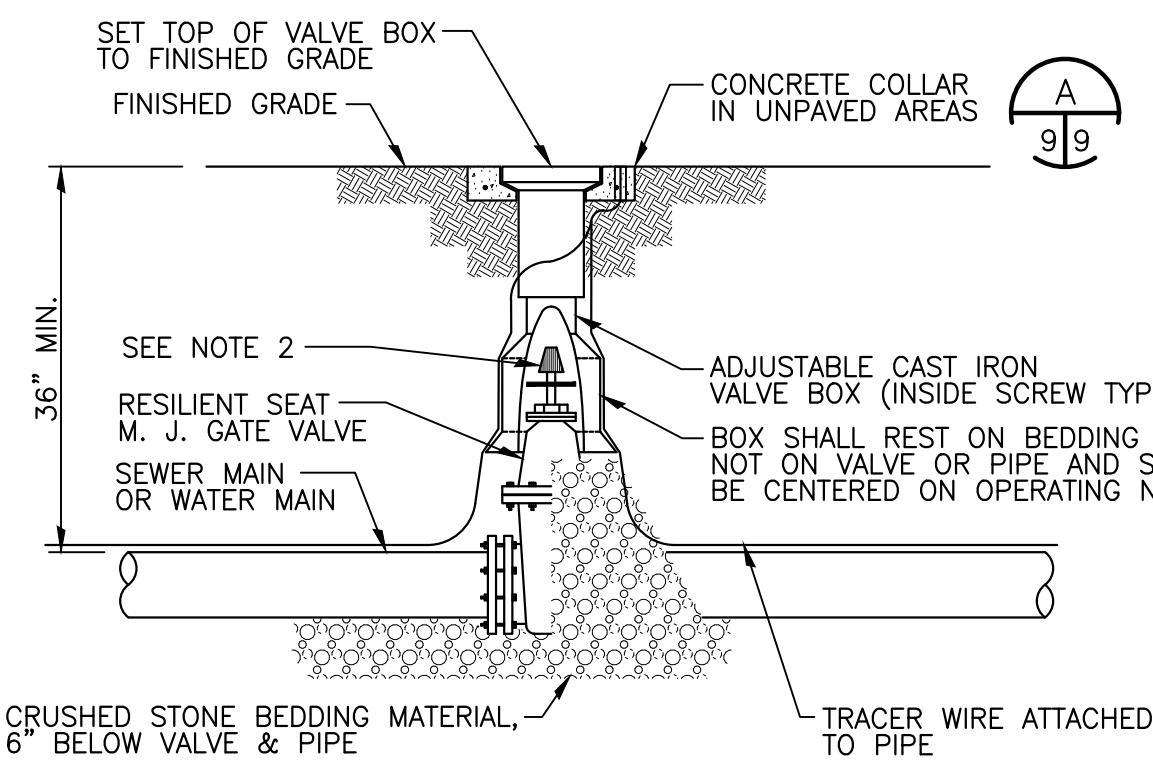
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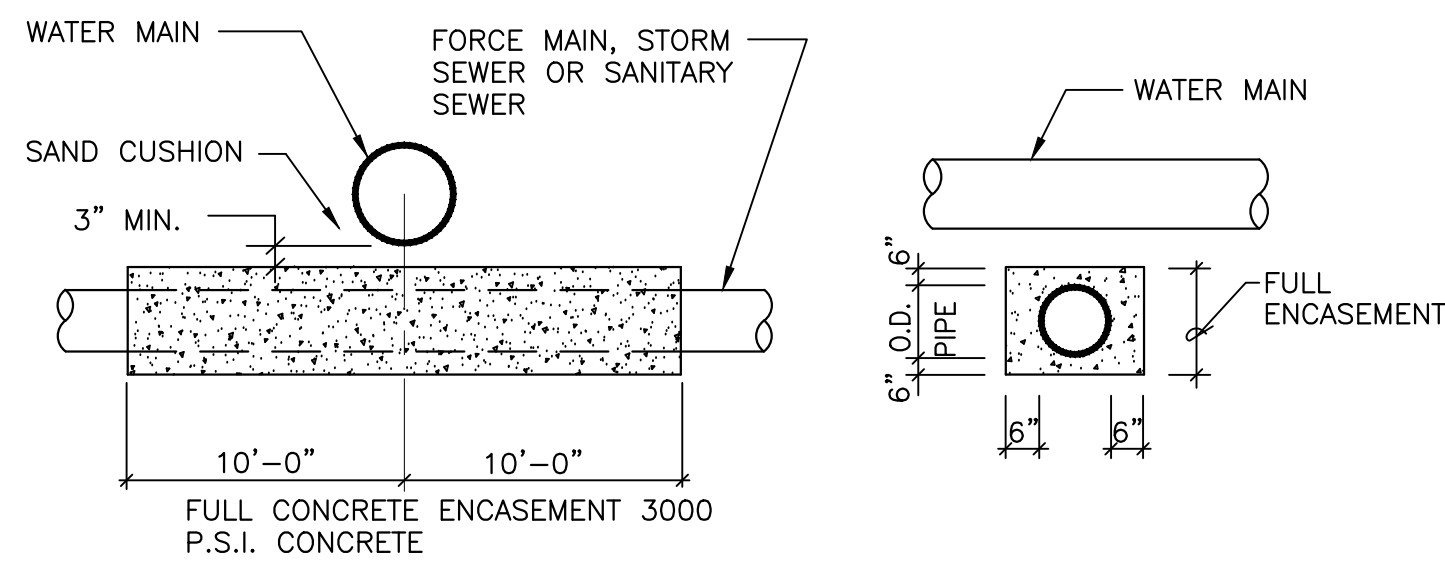
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**VALVE COLLAR DETAIL - 2" THRU 12"**  
NTS



**GATE VALVE AND BOX DETAIL**  
NTS

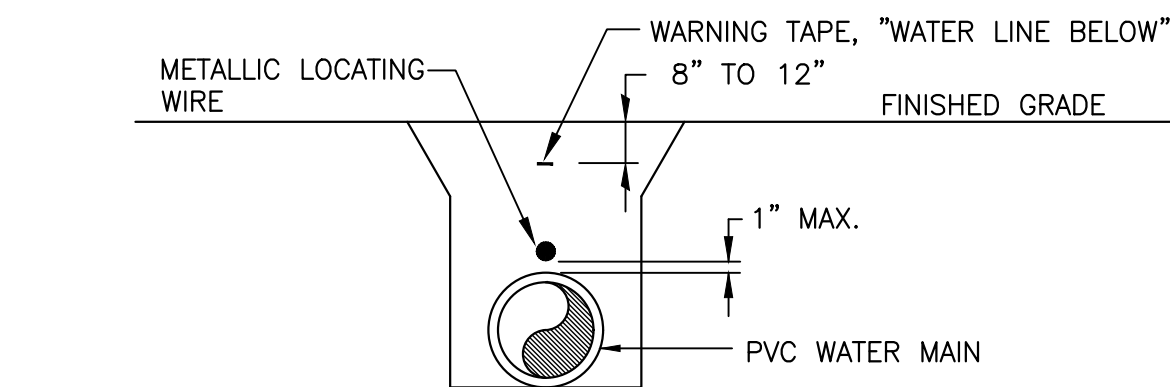


**TYPICAL CONCRETE ENCASEMENT**  
NTS

WATER MAIN PIPE	OTHER PIPING TYPE	MINIMUM HORIZONTAL SEPARATION (FEET)
WATER MAIN PIPE	1. GRAVITY SANITARY SEWER	6-10
	2. GRAVITY SANITARY SEWER (WHERE BOTTOM OF WATER MAIN IS ≥ 6" ABOVE TOP OF GRAVITY SEWER)	3
	3. SEWAGE FORCE MAIN	6-10
	4. GRAVITY STORM SEWER	3
	5. RECLAIMED WATER	3
OTHER PIPE OR UTILITY	6. ELECTRIC, PHONE, CABLE, GAS	2

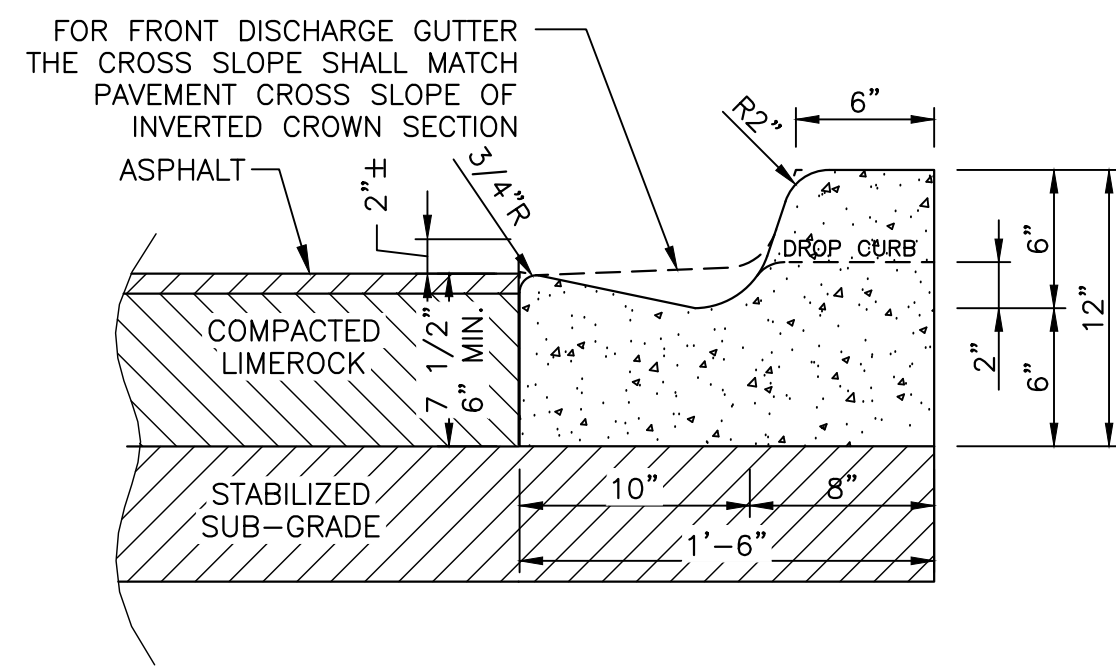
**PLAN VIEW**

**MINIMUM HORIZONTAL SEPARATION REQUIREMENTS**  
NTS

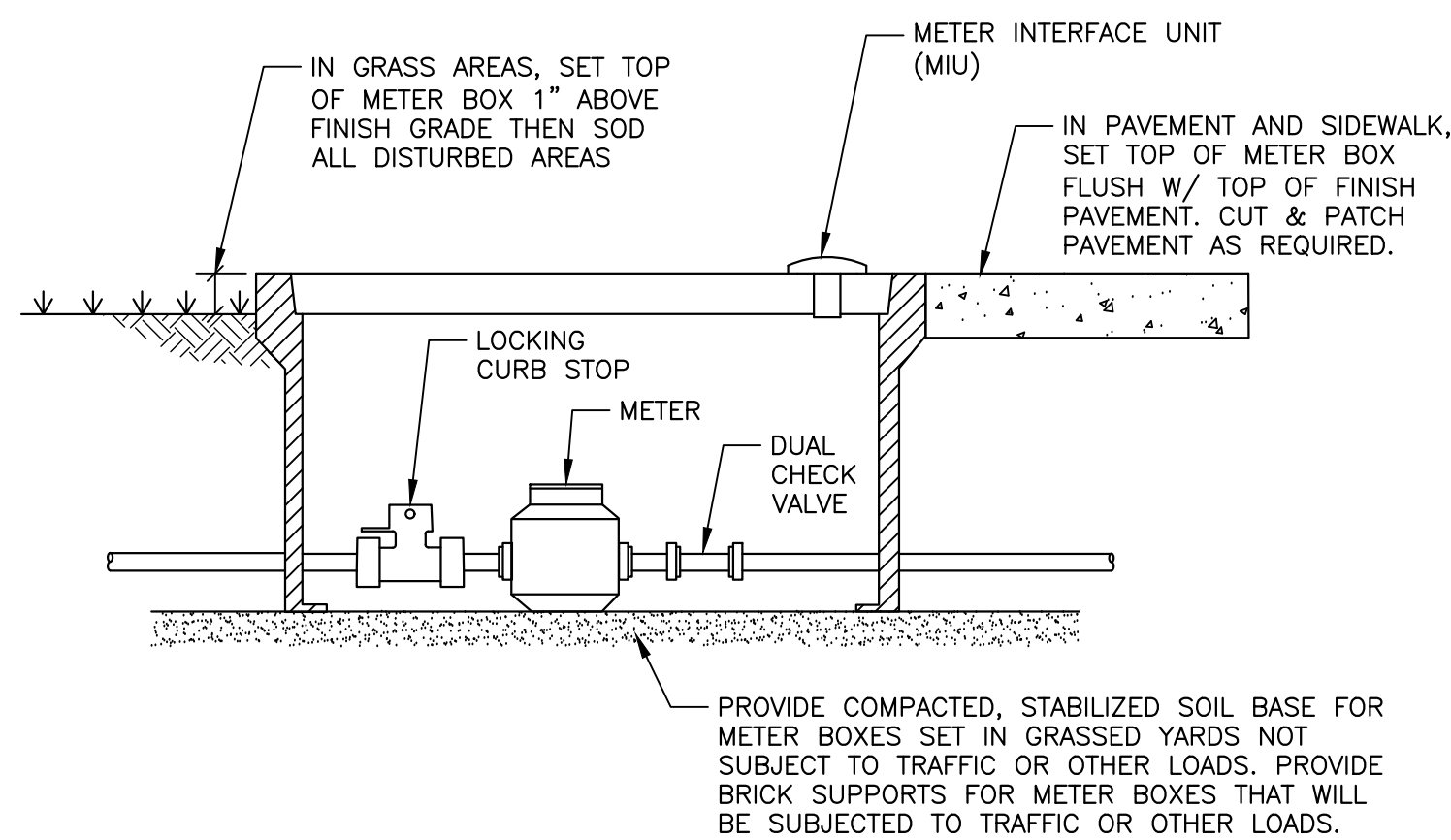


- NOTES:**
1. ALL PVC PIPE SHALL REQUIRE INSULATED METALLIC LOCATING WIRE (12 GAUGE COPPER/UF INSULATION) CAPABLE OF DETECTION BY A CABLE LOCATOR
  2. WIRE SHALL BE ATTACHED TO THE TOP OF PIPE WITH DUCT TAPE, AT LEAST FIVE TIMES PER JOINT. LOCATING WIRE SHALL TERMINATE AT THE TOP OF EACH VALVE BOX

**LOCATING WIRE**  
NTS

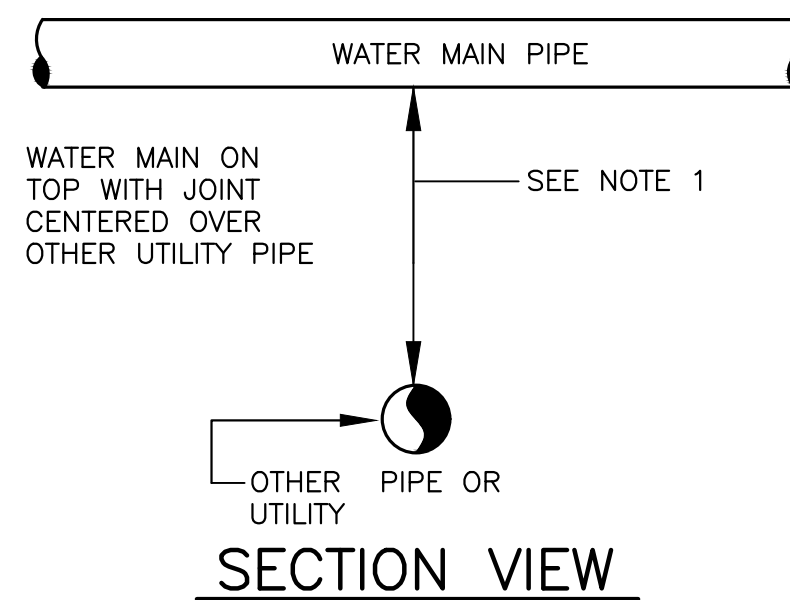


**TYPICAL CURB RESTORATION DETAIL**  
NTS



- NOTES:**
1. METER BOX SHALL BE COMPATIBLE WITH FUTURE AMI METER REPLACEMENT PROGRAM.

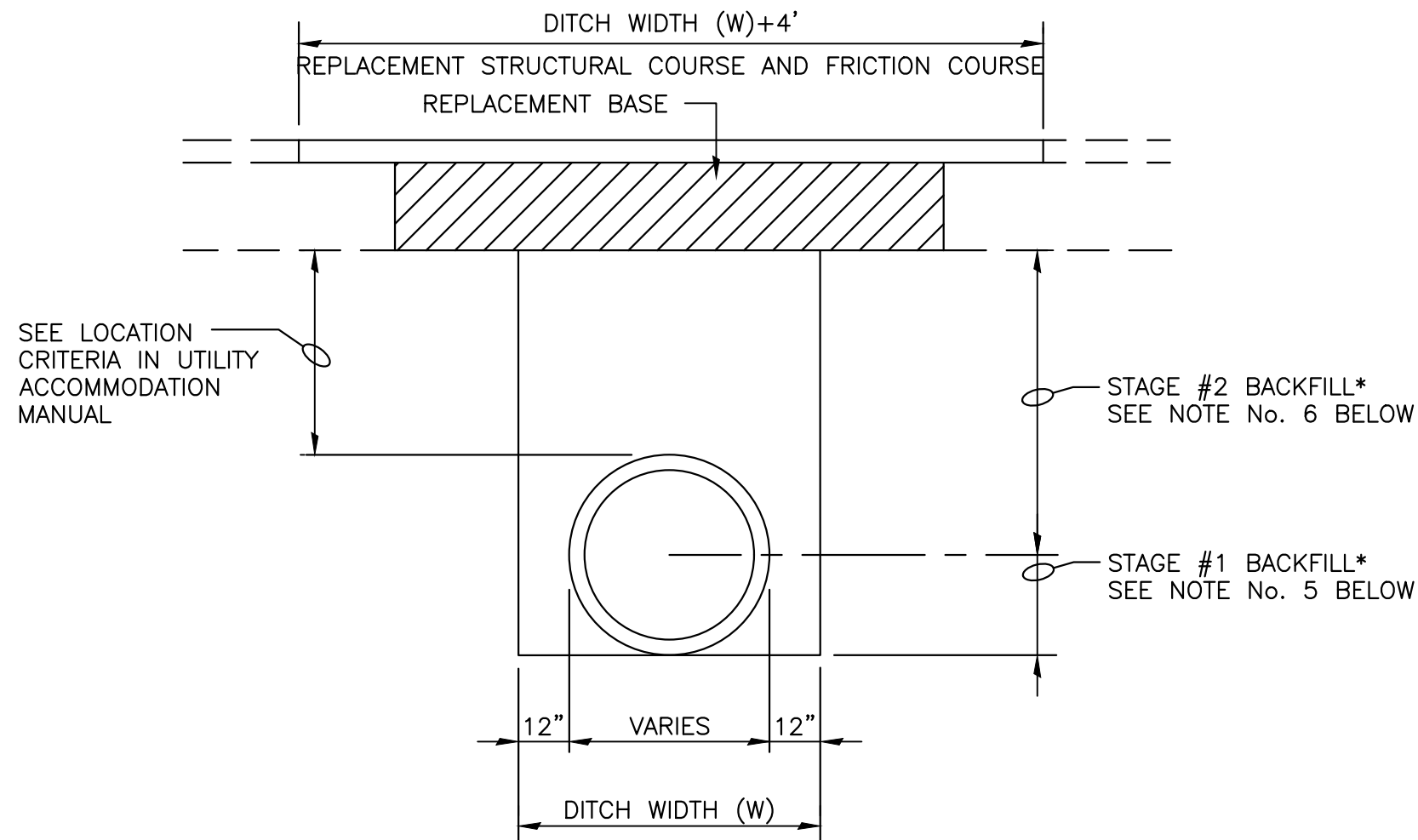
**TYPICAL METER BOX INSTALLATION**  
NTS



**SECTION VIEW**

- NOTE:**
1. IF THE WATER MAIN IS BELOW THE SANITARY SEWER, RECLAIMED WATER MAIN OR STORM SEWER PIPE, THEN A MINIMUM OF 12" VERTICAL SEPARATION IS REQUIRED.

**MINIMUM VERTICAL SEPARATION REQUIREMENTS**  
NTS

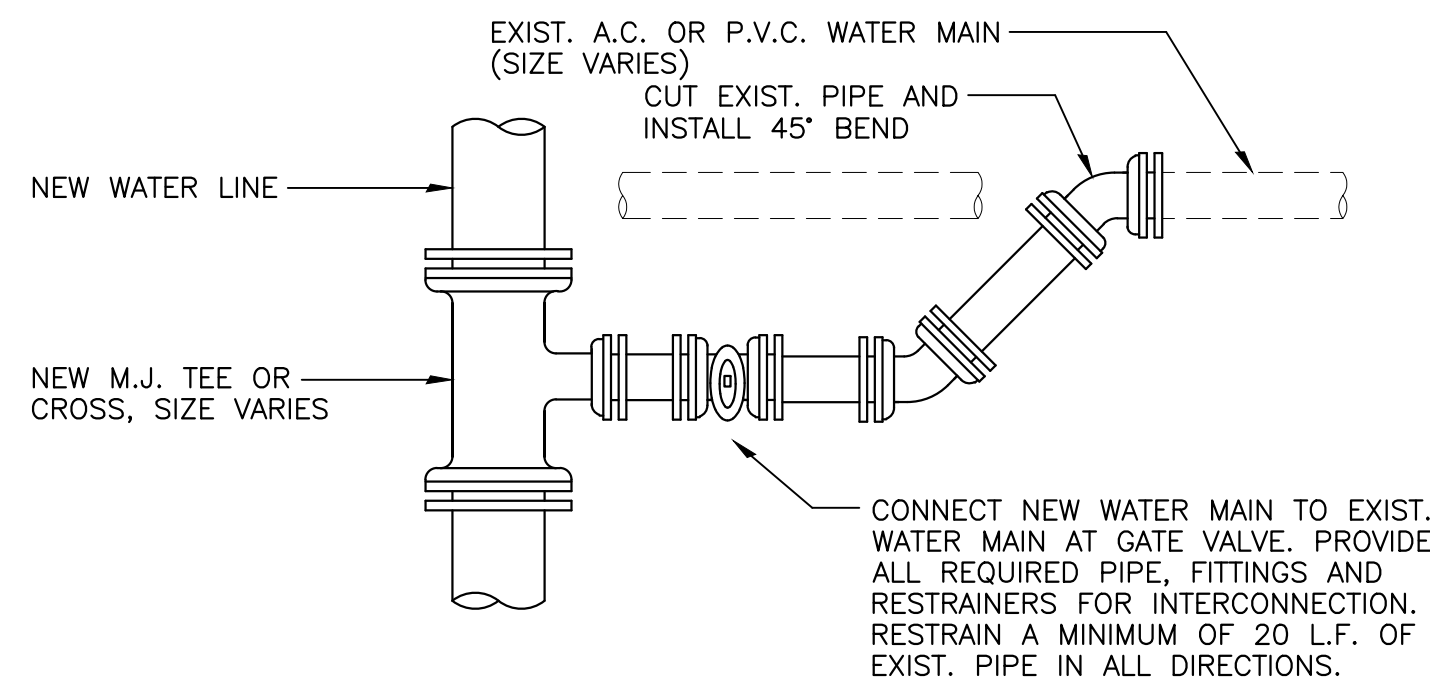


**FLEXIBLE PAVEMENT RESTORATION NOTES**

1. PAVEMENT SHALL BE MECHANICALLY SAWED.
2. THE REPLACEMENT ASPHALT SHALL MATCH THE EXISTING STRUCTURAL AND FRICTION COURSES FOR TYPE AND THICKNESS.
3. FLOWABLE FILL IS TO BE PLACED IN ACCORDANCE WITH SECTION 121 OF THE FDOT SPECIFICATIONS, AS APPROVED BY THE ENGINEER.
4. DO NOT ALLOW THE UTILITY BEING INSTALLED TO FLOAT. IF A METHOD IS PROVIDED TO PREVENT FLOTATION FROM OCCURRING, STAGES #1 AND #2 CAN BE COMBINED IF APPROVED BY THE ENGINEER.
5. IN STAGE #1, PLACE FLOWABLE FILL MIDWAY UP ON BOTH SIDES OF THE UTILITY. ALLOW TO HARDEN BEFORE PLACING STAGE 2.
6. IN STAGE #2, PLACE FLOWABLE FILL TO THE BOTTOM OF THE EXISTING BASE COURSE.

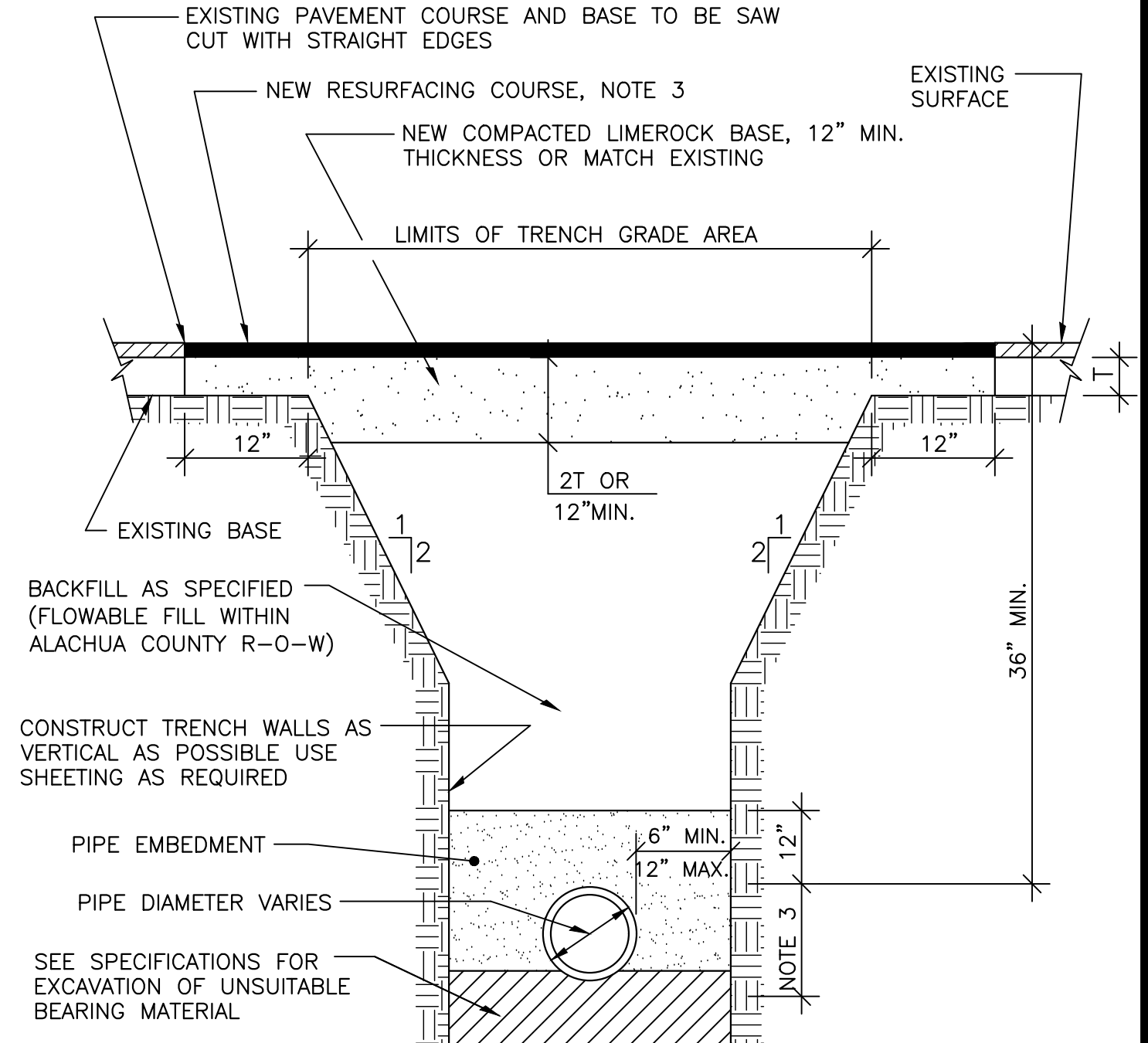
**FLOWABLE FILL**

**TRENCH DETAIL & PAVEMENT REPLACEMENT**  
OPTIONAL TRENCH REPAIR DETAIL  
NTS



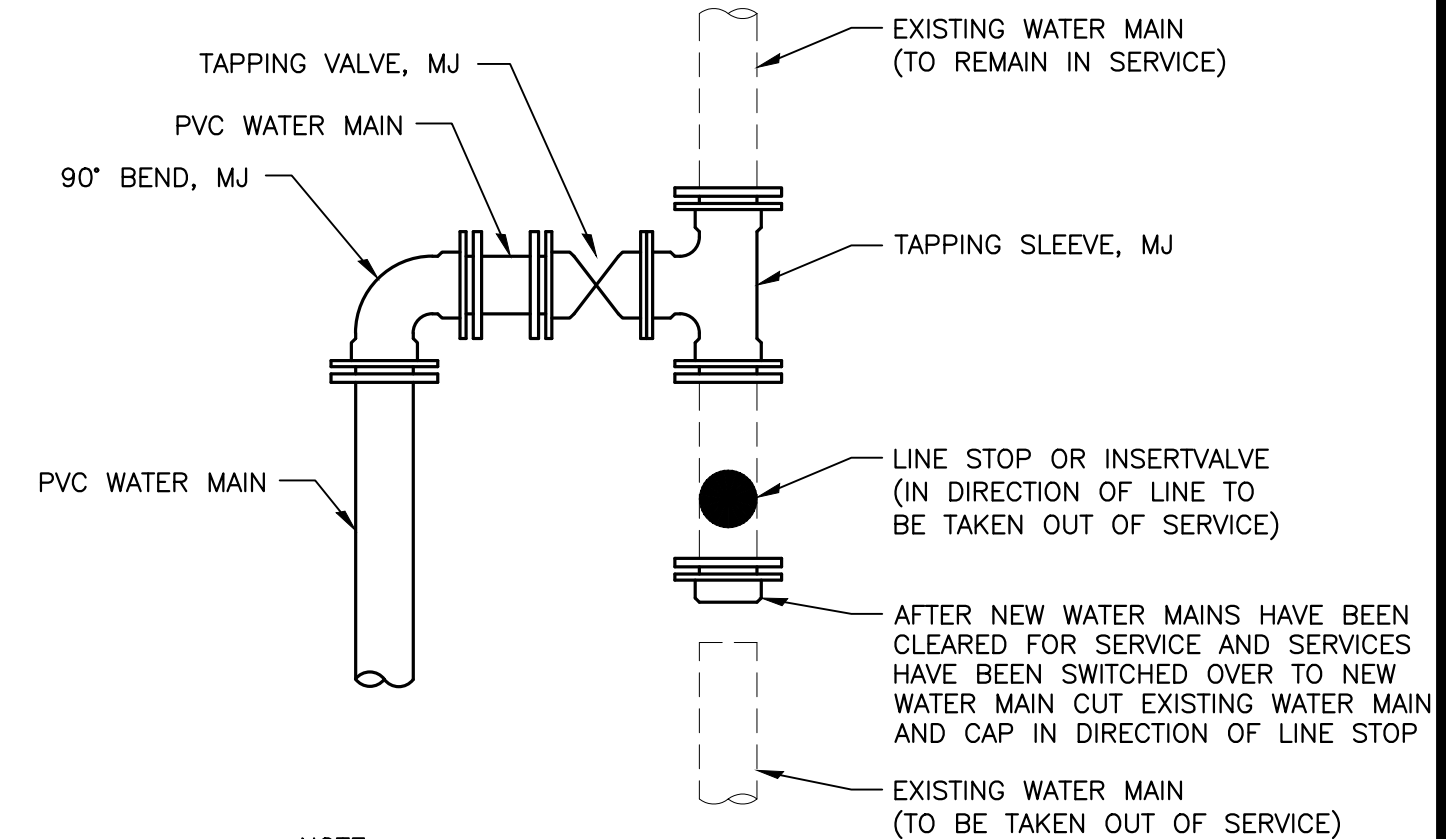
- NOTE:**
1. ALL PIPE, VALVES AND FITTINGS SHALL BE RESTRAINED IN ACCORDANCE WITH SPECIFICATIONS

**TYPICAL EXIST. WATER MAIN RECONNECTION**  
NTS



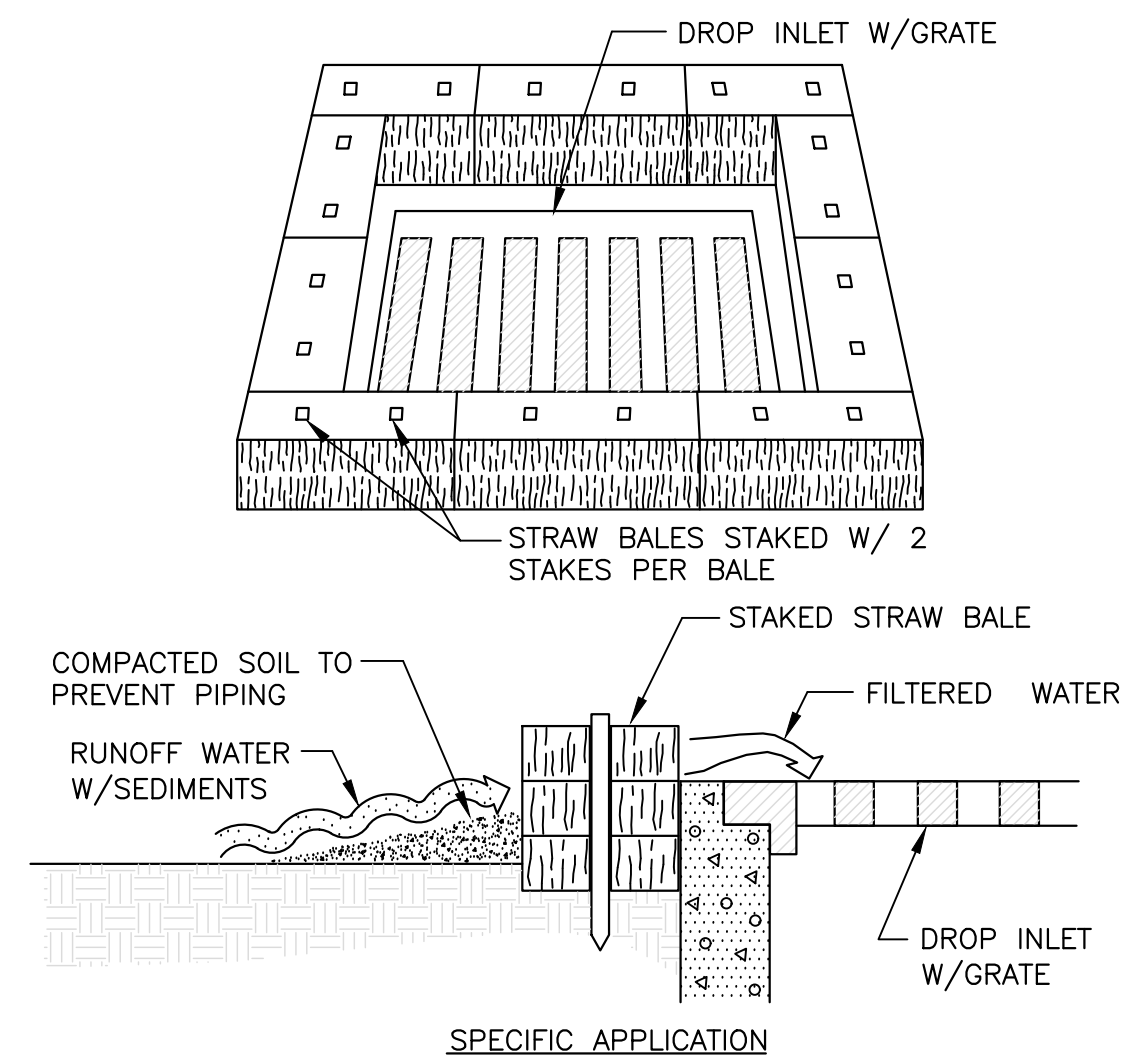
- NOTES:**
1. DEWATERING SHALL CONTINUE UNTIL BACKFILL IS COMPACTED AT LEAST 2 FEET ABOVE WATER TABLE.
  2. SURFACE TREATED PAVEMENT JOINTS SHALL BE LAPPED AND FEATHERED.
  3. PROVIDE 2 INCHES OF TYPE FC 12.5 MIX (NO RAP) ASPHALT.

**TRENCH DETAIL & PAVEMENT REPLACEMENT**  
FOR ROADS IN CITY RIGHT-OF-WAY  
NTS



**NOTE:**  
SEE PLAN SHEETS FOR LINE AND FITTING SIZES

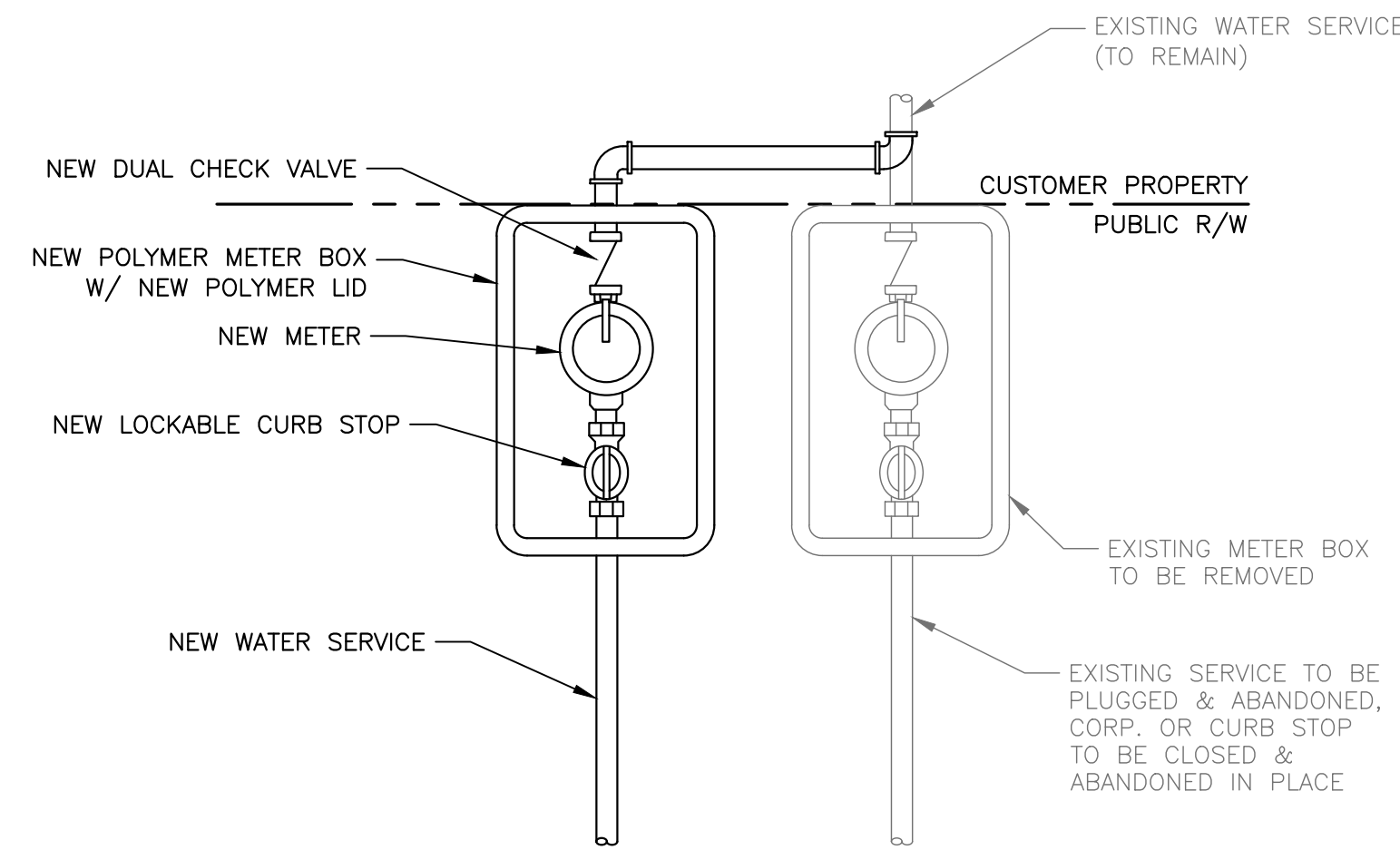
**WET TAP DETAIL**  
NTS



THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA ( SLOPES NO GREATER THAN 5% ) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 CFS ) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

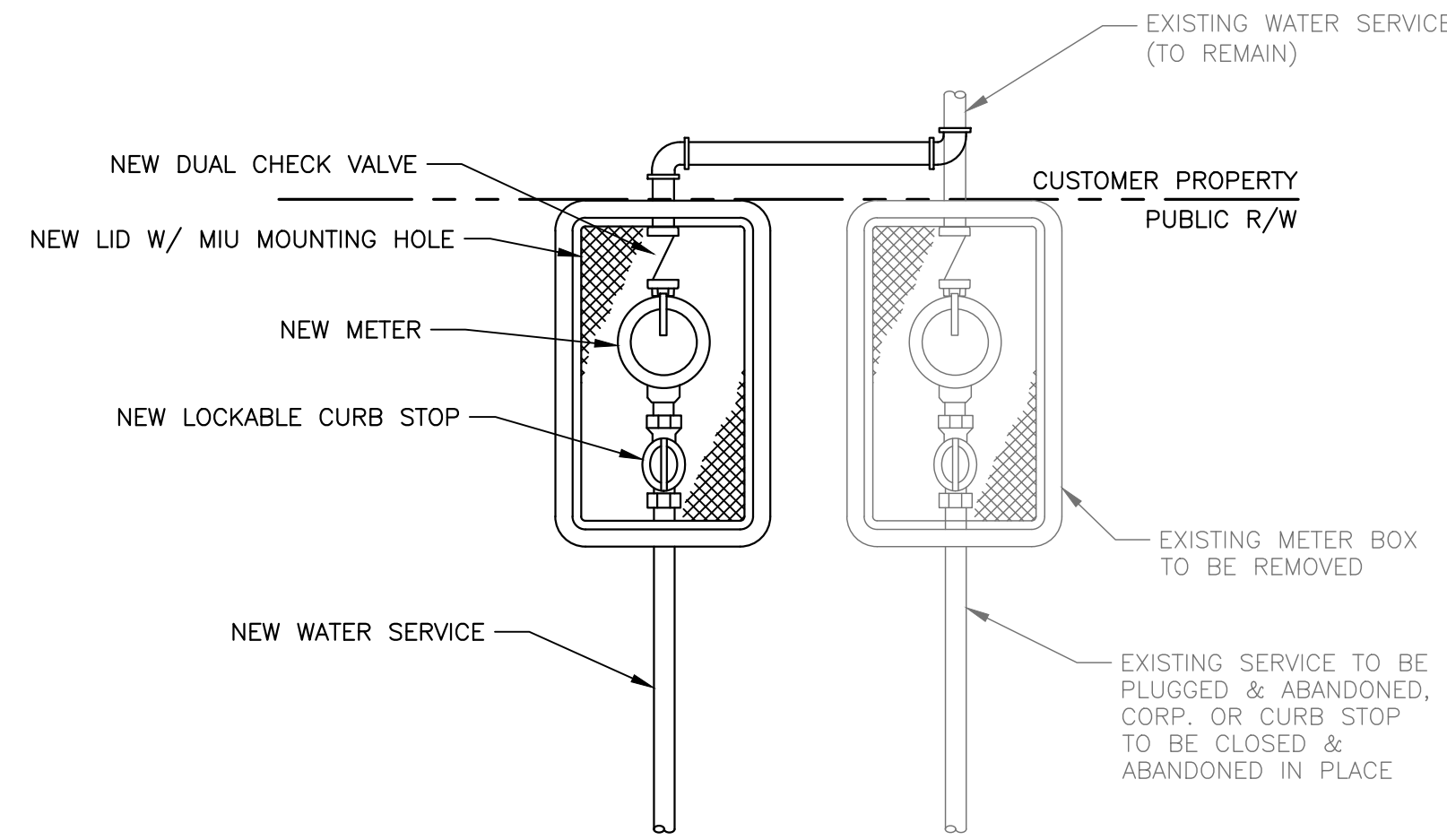
**STRAW BALE DROP INLET SEDIMENT FILTER**  
NTS

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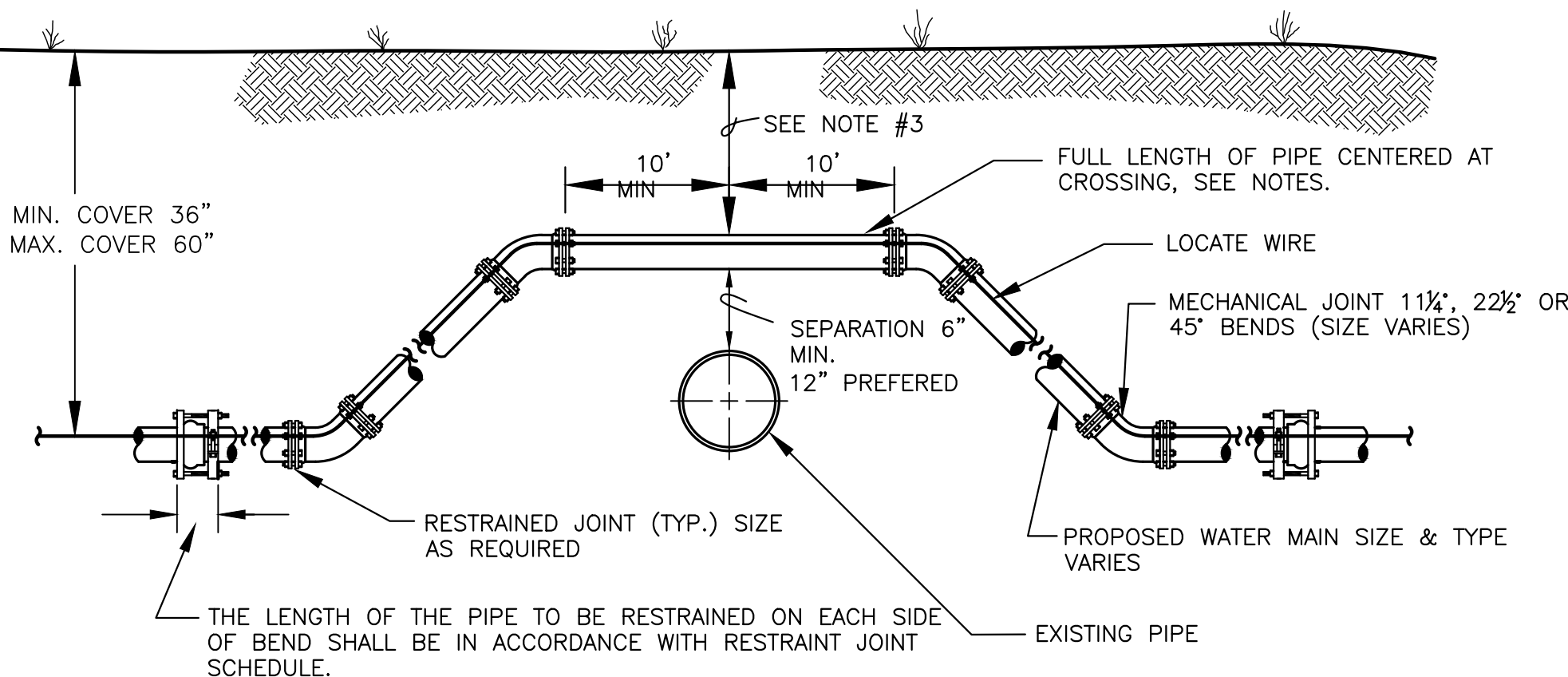
WATER METER REPLACEMENT DETAIL  
(ALL 3/4" METERS)  
(1" RESIDENTIAL METERS)

A  
5/10  
NTS



WATER METER REPLACEMENT DETAIL  
(3/4" & 1" IN CONCRETE PAVEMENT)

D  
1/10  
NTS



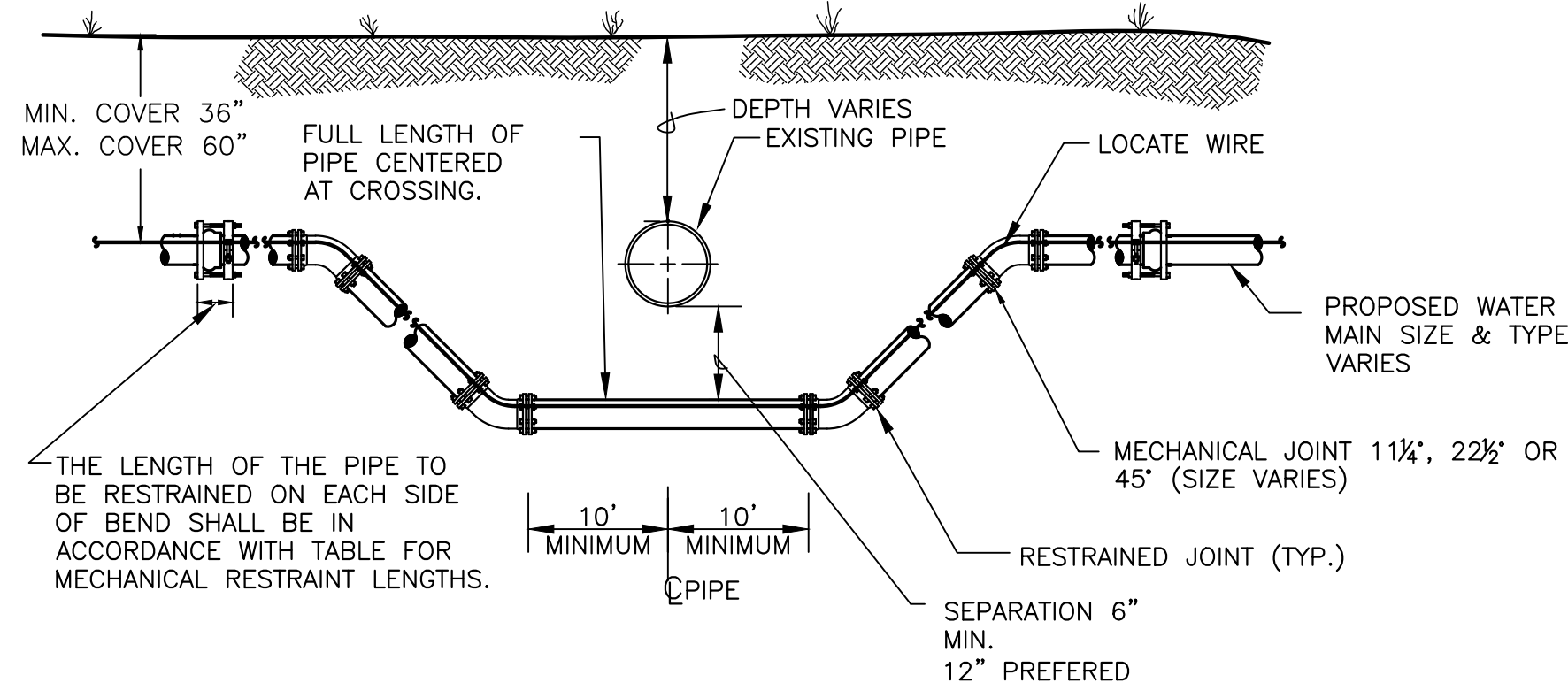
TYPICAL ASPHALT CONNECTIONS

E  
X/10  
NTS

- NOTES:
1. THE SOILS BETWEEN THE NEW MAIN AND THE EXISTING PIPE SHALL BE COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY THE LABORATORY MODIFIED PROCTOR TEST, ASTM D 1557.
  2. MINIMUM VERTICAL SEPARATION REQUIREMENTS MUST BE ACHIEVED.
  3. IF UTILITY CONFLICT IS LOCATED IN A NON-TRAFFIC AREA (NO TRAFFIC LOADS) AND THE NEW PIPE IS D.I.P., THEN THE MINIMUM COVER MAY BE REDUCED TO 24 INCHES (ONLY IN THE AREA OF THE CONFLICT).

TYPE "A" CROSSING

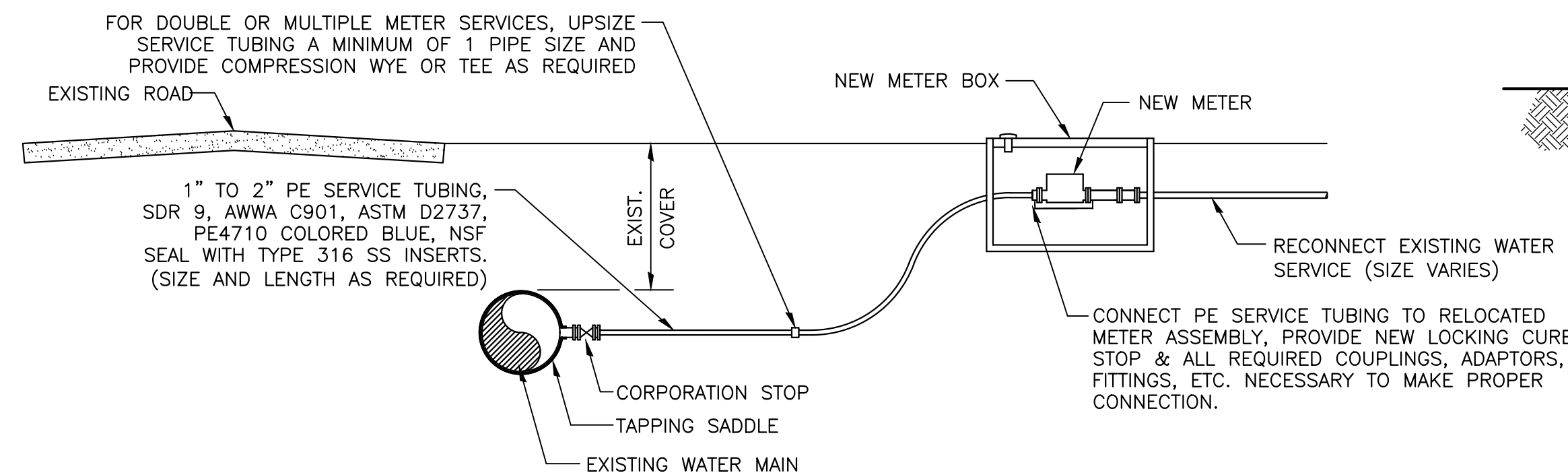
B  
1/10  
NTS



- NOTES:
1. THE SOILS BETWEEN THE NEW MAIN AND THE EXISTING PIPE SHALL BE COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY THE LABORATORY MODIFIED PROCTOR TEST, ASTM D 1557.
  2. MINIMUM VERTICAL SEPARATION REQUIREMENTS MUST BE ACHIEVED.

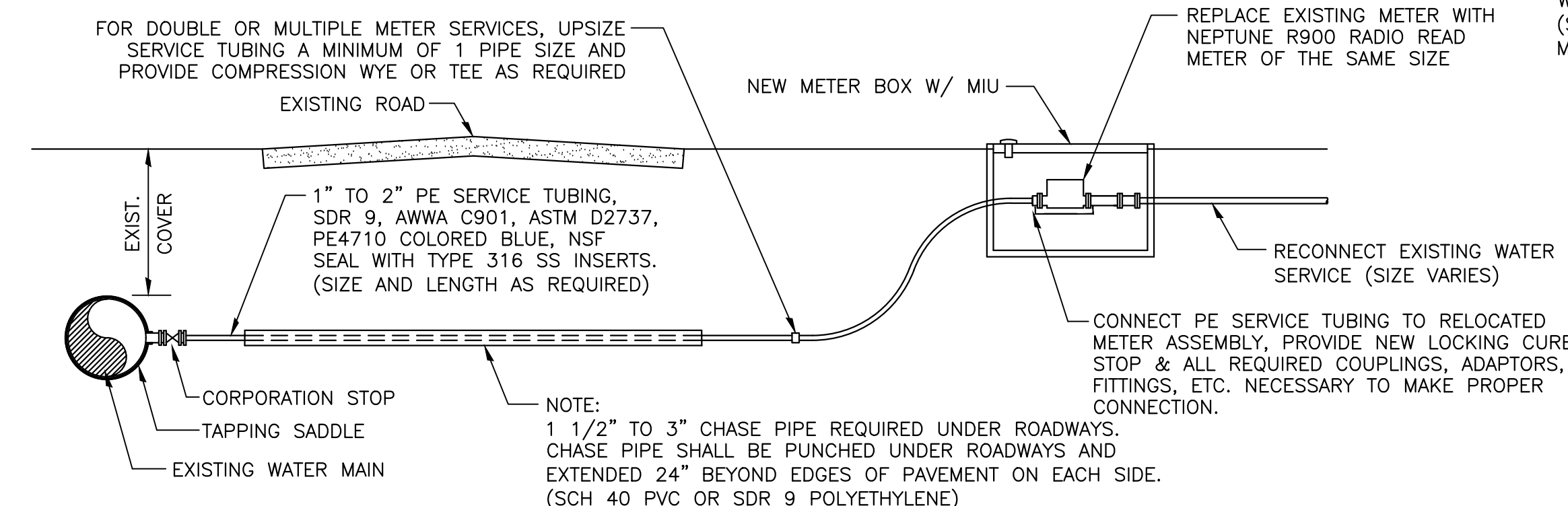
TYPE "B" CROSSING

C  
1/10  
NTS



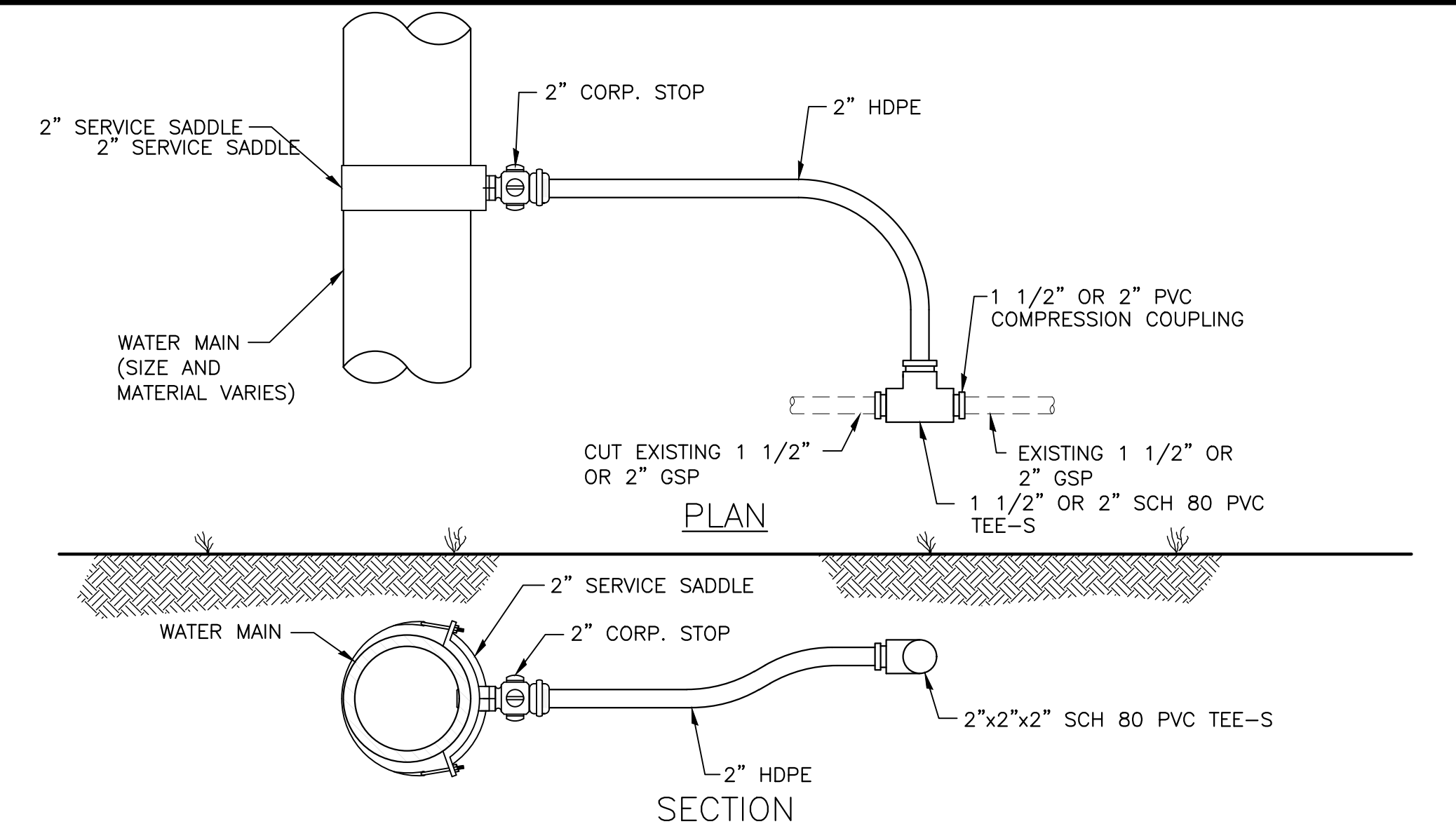
WATER SERVICE REPLACEMENT DETAIL - SHORT SIDE OF ROAD

F  
5-7/10  
NTS



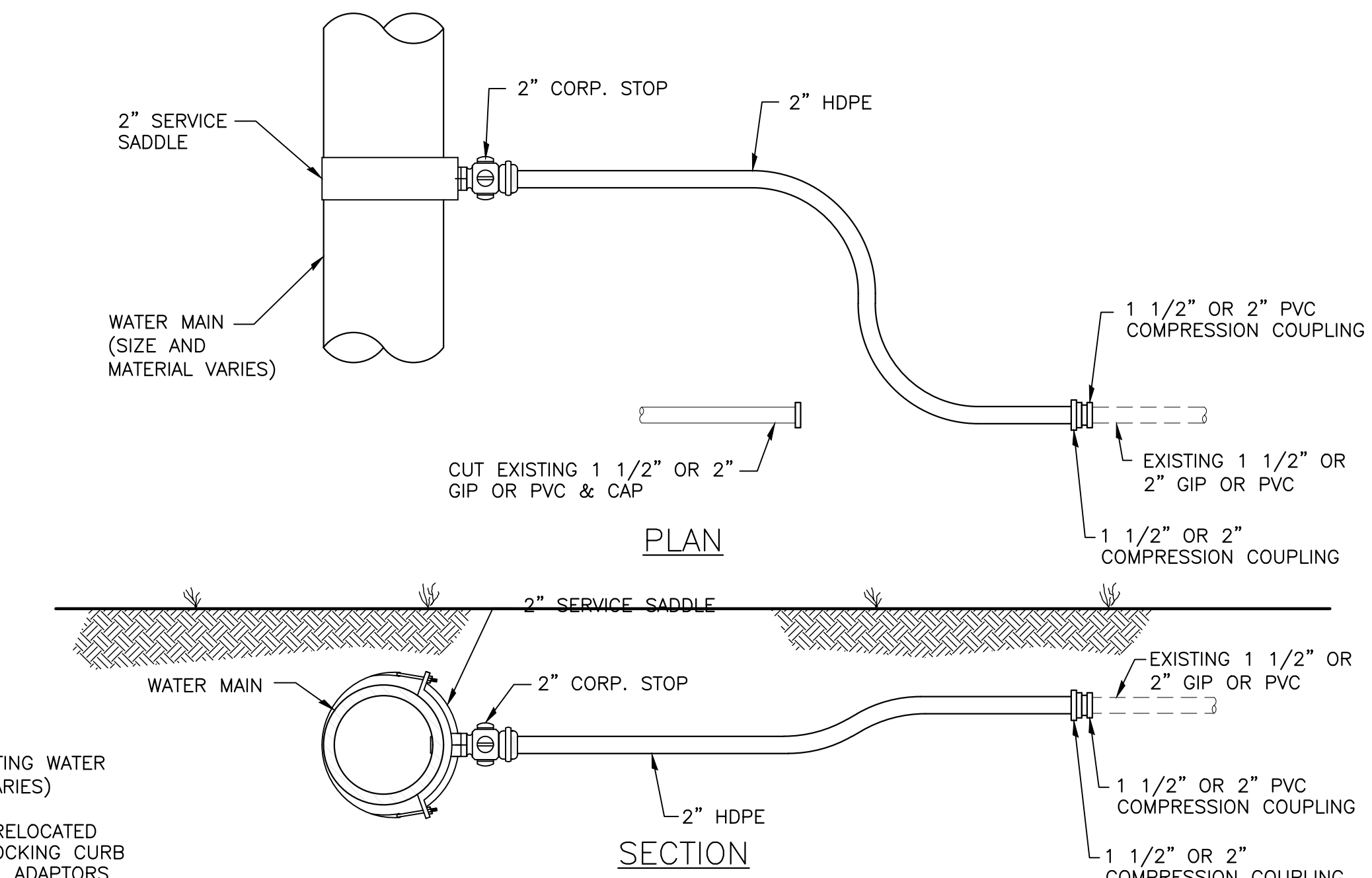
WATER SERVICE REPLACEMENT DETAIL - LONG SIDE OF ROAD

G  
5-7/10  
NTS



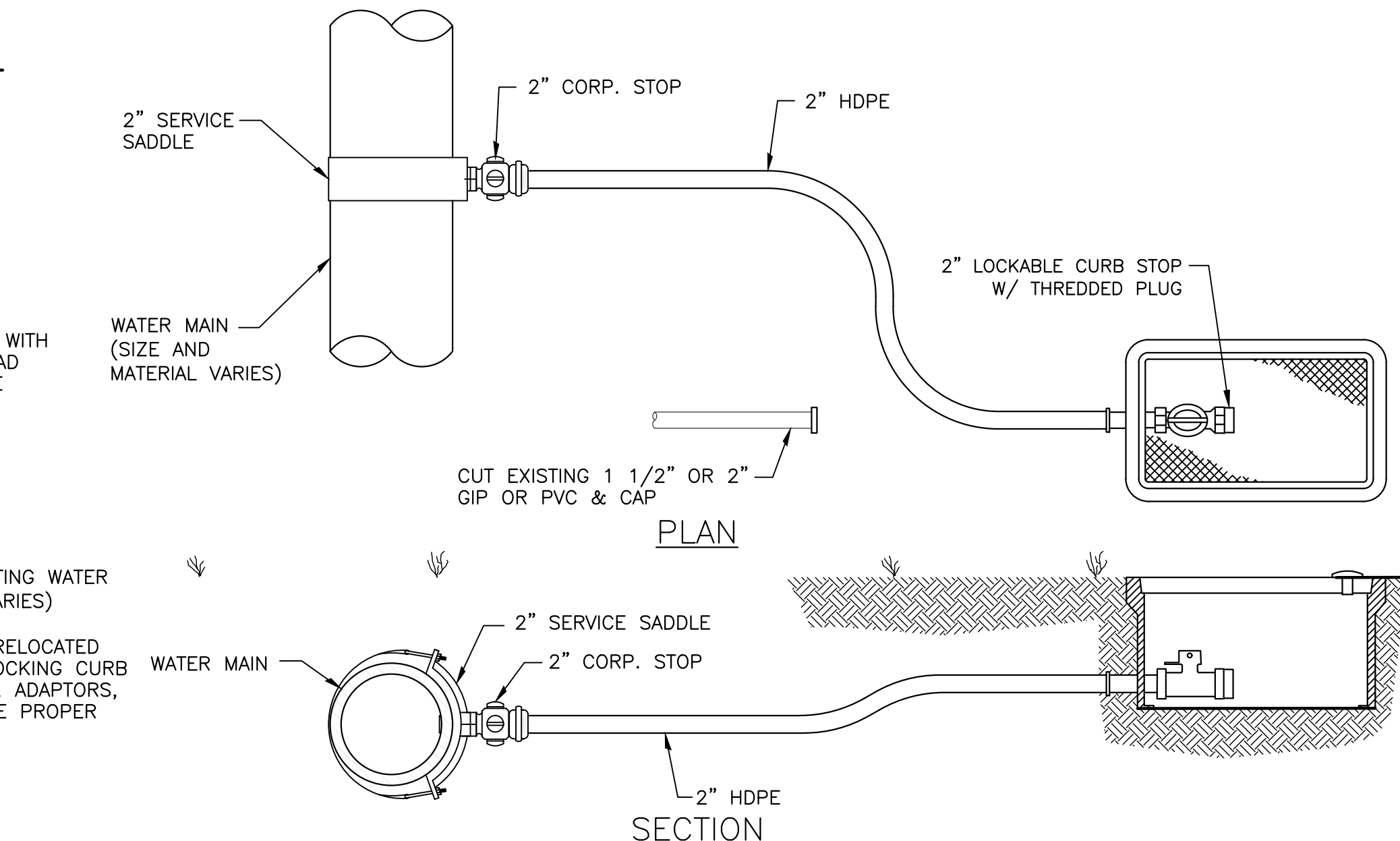
BRANCH CONNECTION DETAIL A

H  
5,6/10  
NTS



BRANCH CONNECTION DETAIL B

I  
1/10  
NTS

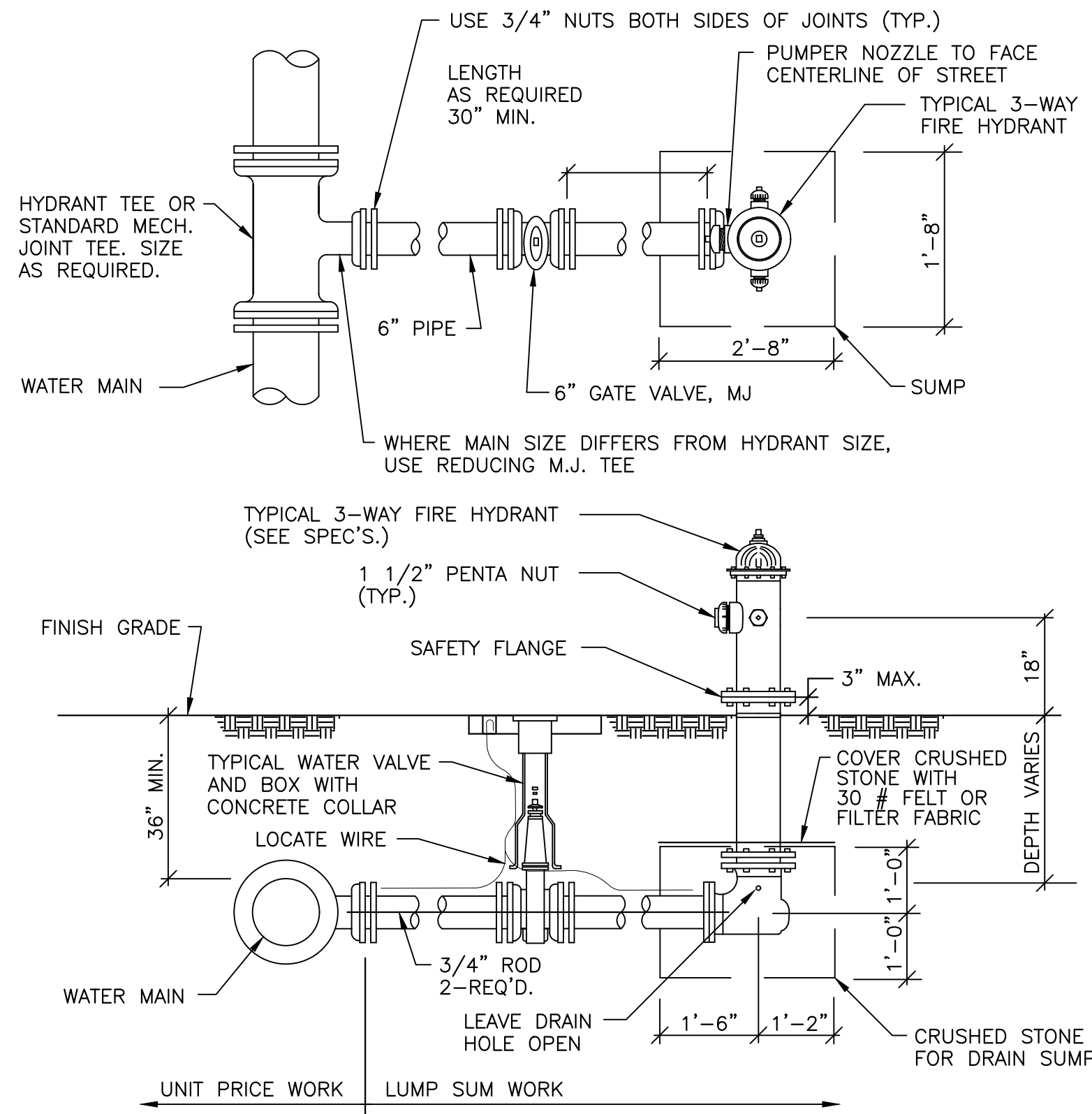


BRANCH CONNECTION DETAIL C

J  
6,7/13  
NTS

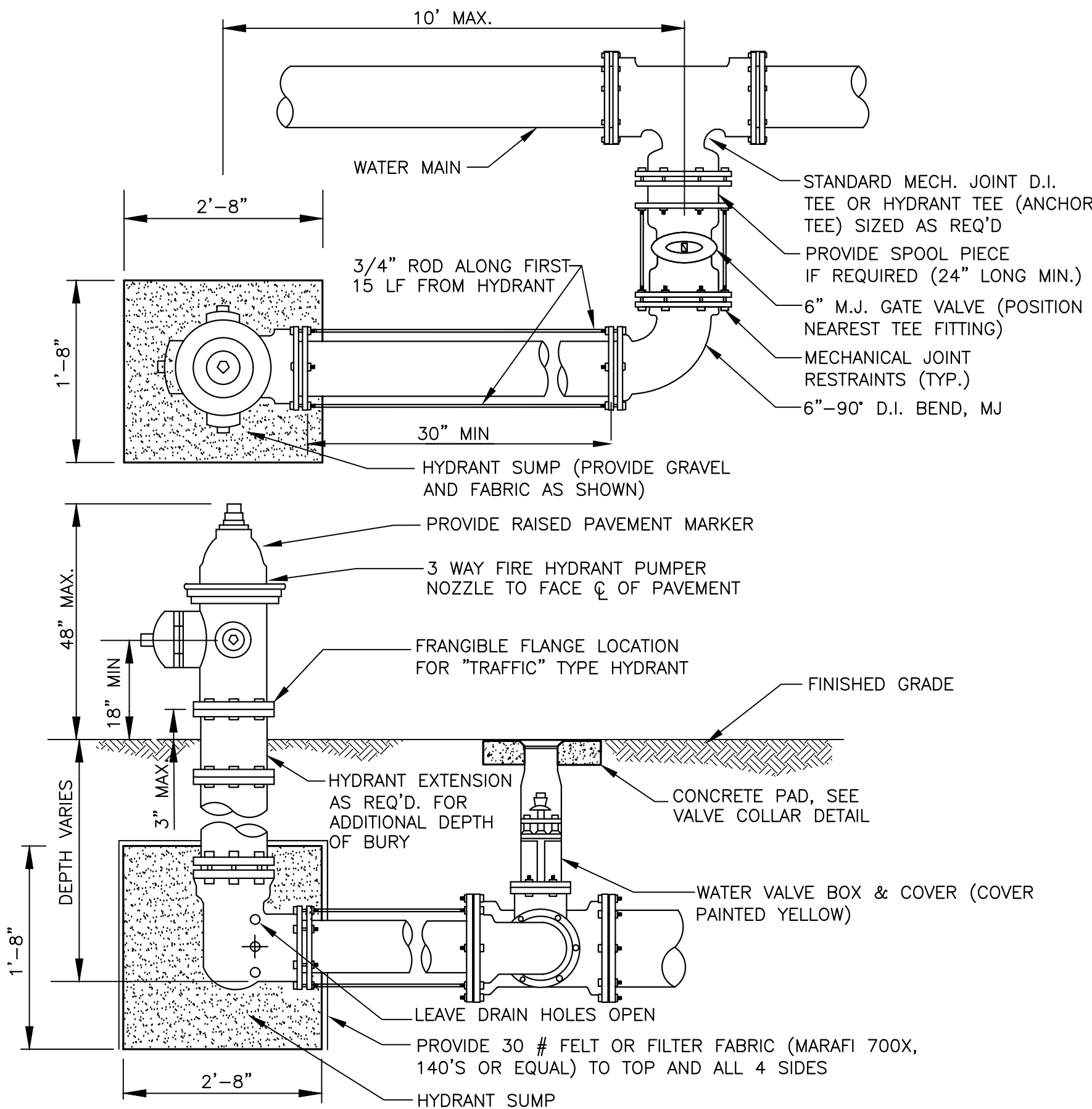


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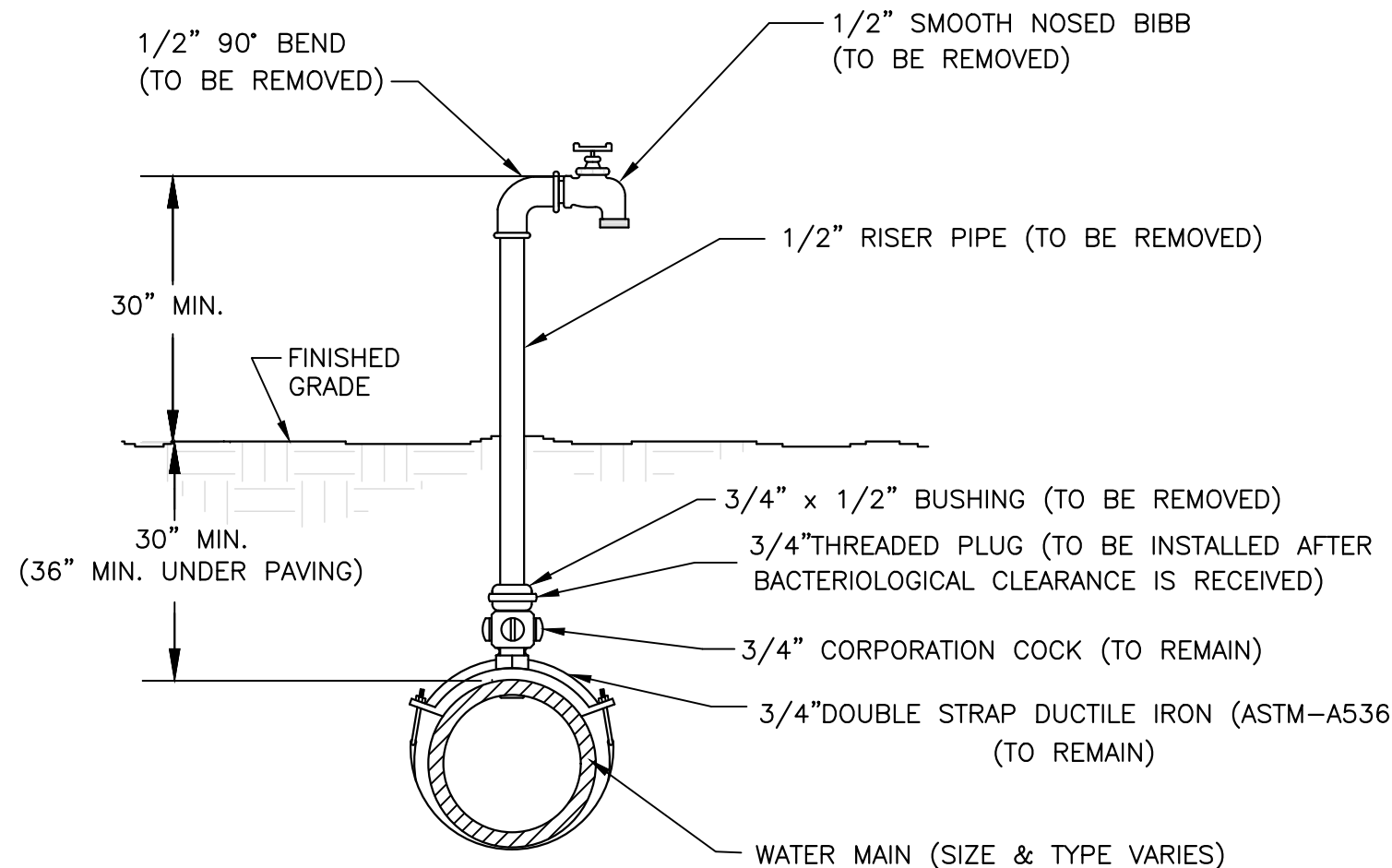


- NOTES:
1. TIE RODS, NUTS, WASHERS AND OTHER FASTENERS SHALL BE ASTM A 246 CORROSION RESISTANT STEEL, OR TYPE 316 STAINLESS STEEL.
  2. ALL PIPE, VALVES AND FITTINGS OF HYDRANT SHALL BE RESTRAINED.
  3. CONTRACTOR SHALL NOT PRE-ORDER THE FIRE HYDRANTS ASSEMBLIES WITH THE SAME LENGTH BARREL. THEY SHALL BE ORDERED AFTER THE CONTRACTOR HAS PREPARED AN INVENTORY OF LENGTHS REQUIRED TO ENSURE PROPER BURY DEPTH TO MEET ACTUAL FIELD CONDITIONS.
  4. COLOR OF HYDRANT SHALL BE MANUFACTURER'S STANDARD INDUSTRIAL FINISH. OWNER SHALL CHANGE COLOR AND PROVIDE BLUE REFLECTIVE MARKER IF DESIRED.

**A** TYPICAL FIRE HYDRANT INSTALLATION  
6/11 NTS

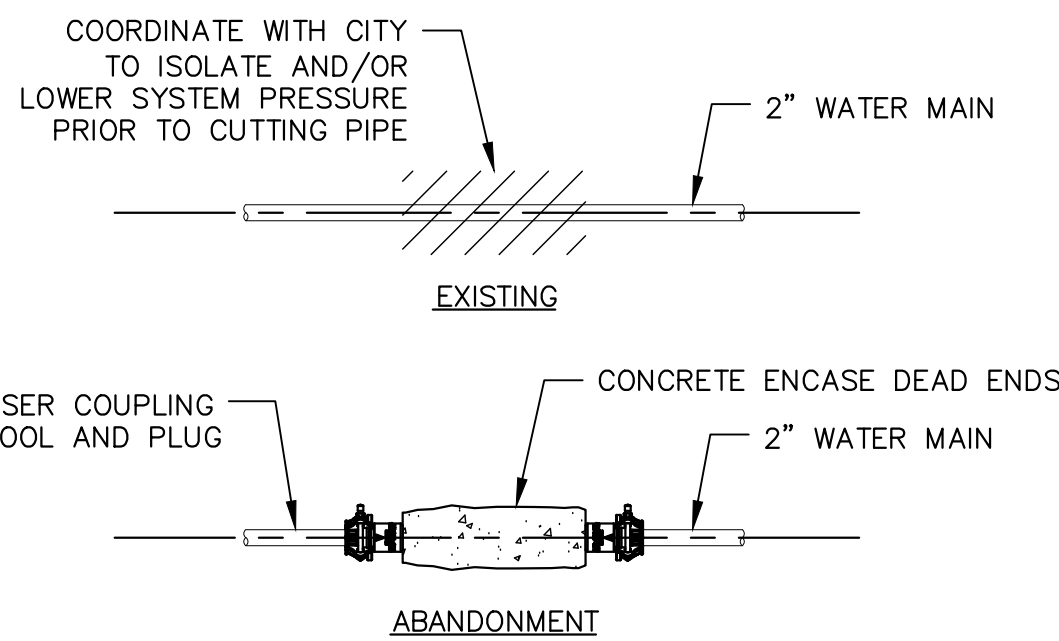


**B** TYPICAL FIRE HYDRANT LIMITED SPACE INSTALLATION  
7/11 NTS

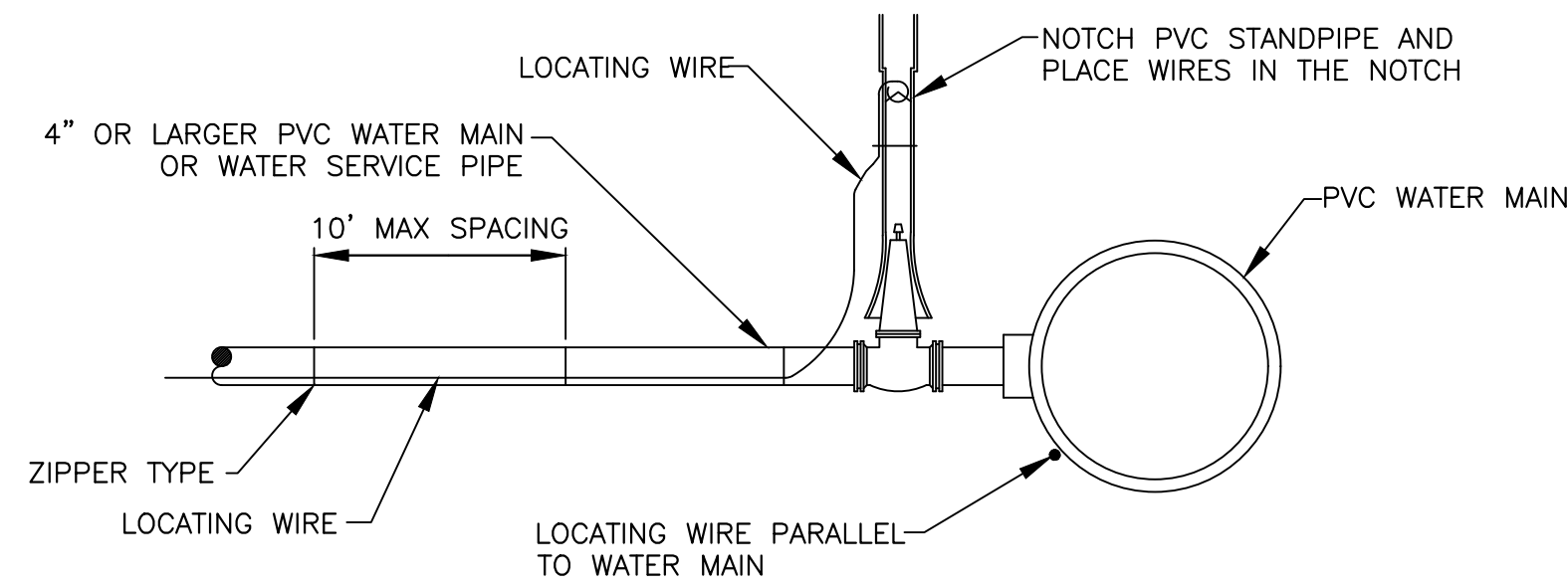


- NOTE:
- 1) LOCATION OF SAMPLE POINT BIBB SHALL NOT BE WITHIN THE ROADWAY BUT ROUTED TO THE ROADWAY SHOULDERS (NON-TRAFFIC AREAS) OF THE ROAD (WHERE APPLICABLE)
  - 2) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL PIPING & FITTINGS NOTED AFTER BACTERIOLOGICAL CLEARANCE FROM THE HEALTH DEPARTMENT.

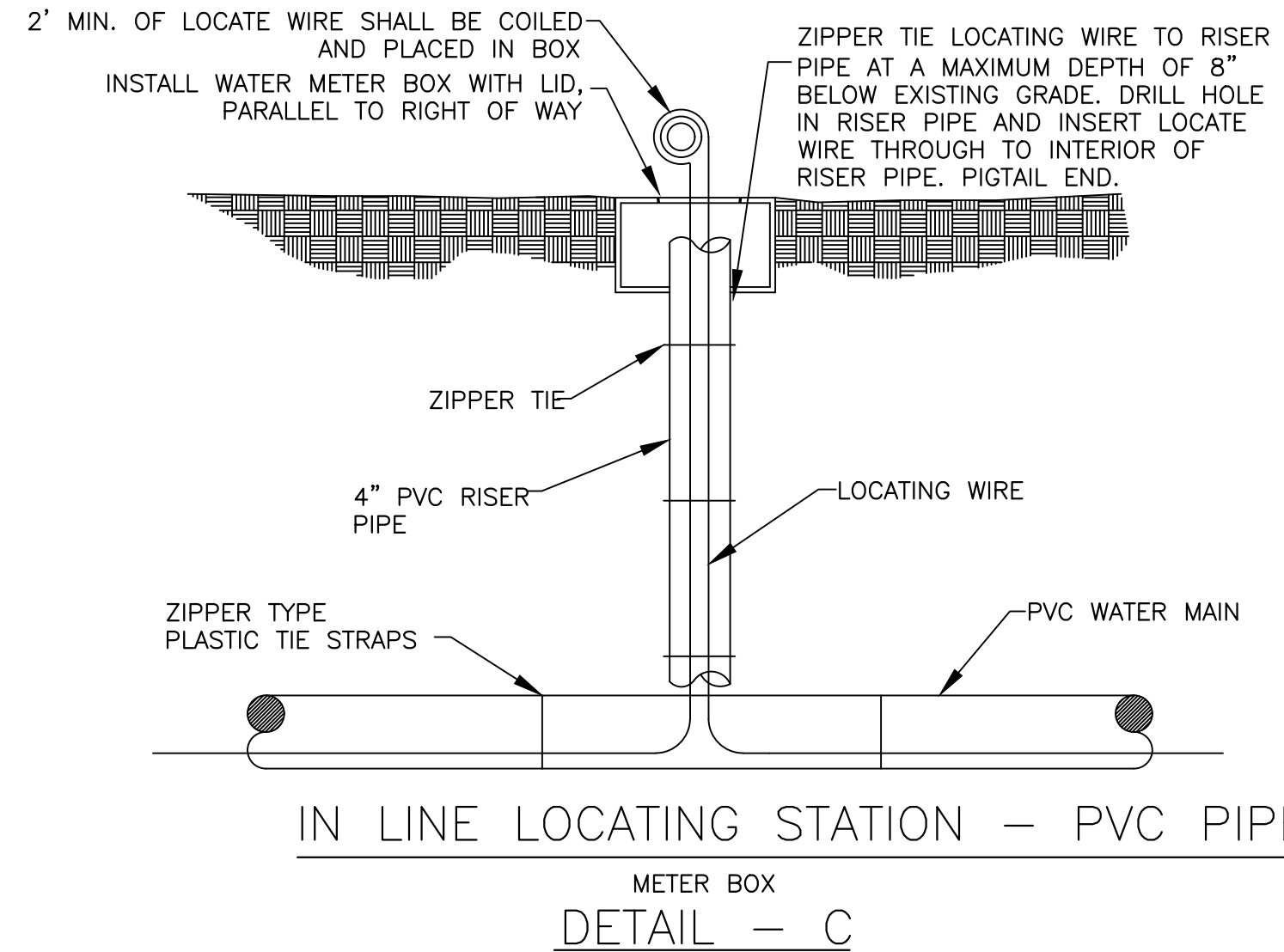
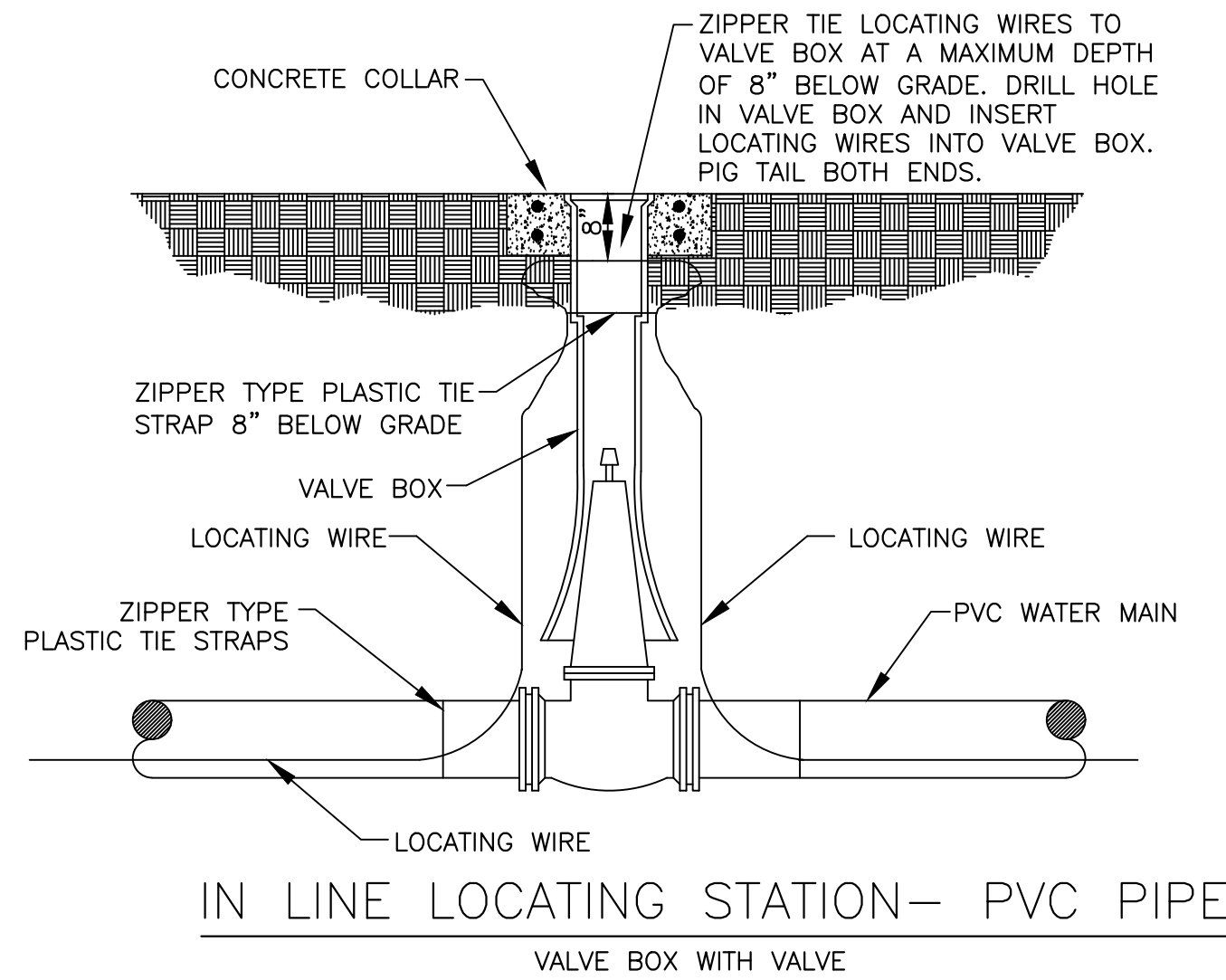
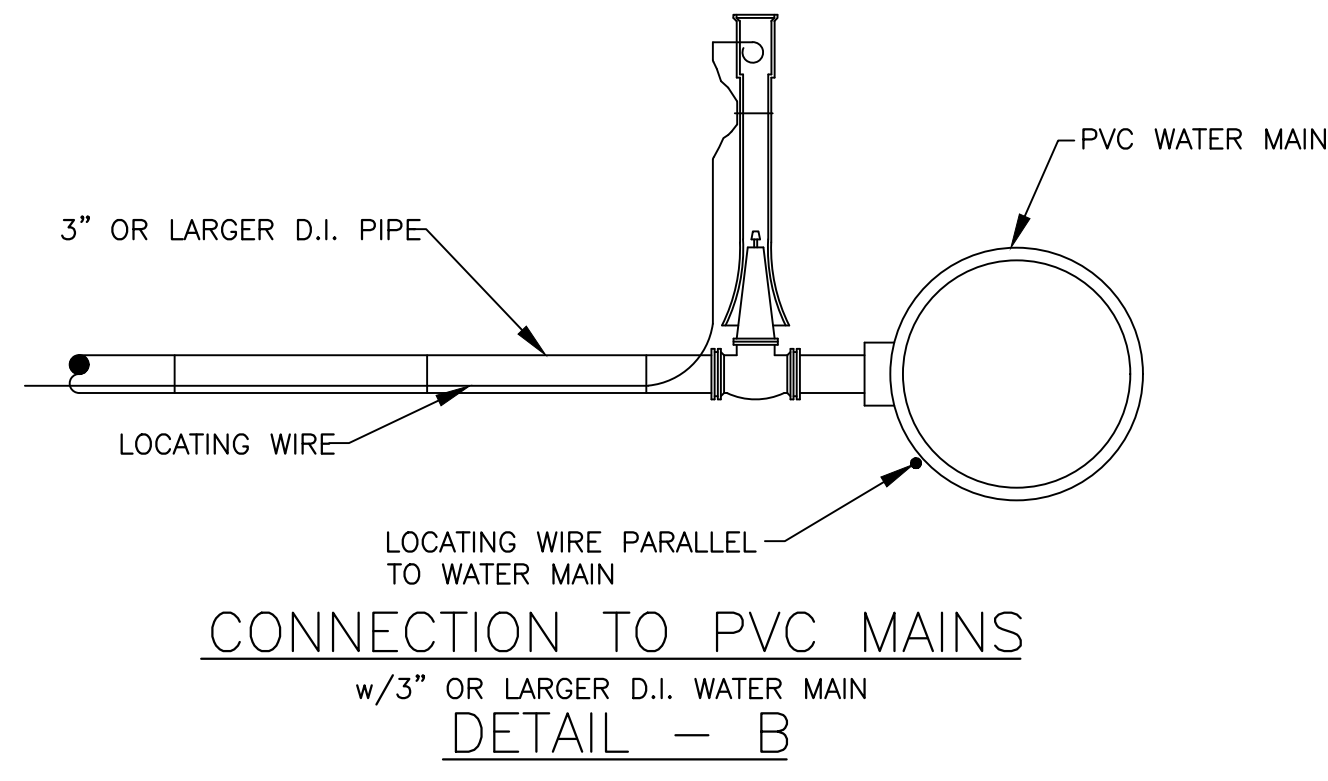
**D** 1/2" TEMPORARY SAMPLE TAP  
X/11 NTS



**E** WATER SYSTEM ABANDONMENT DETAIL  
X/11 (2" OR LESS) NTS

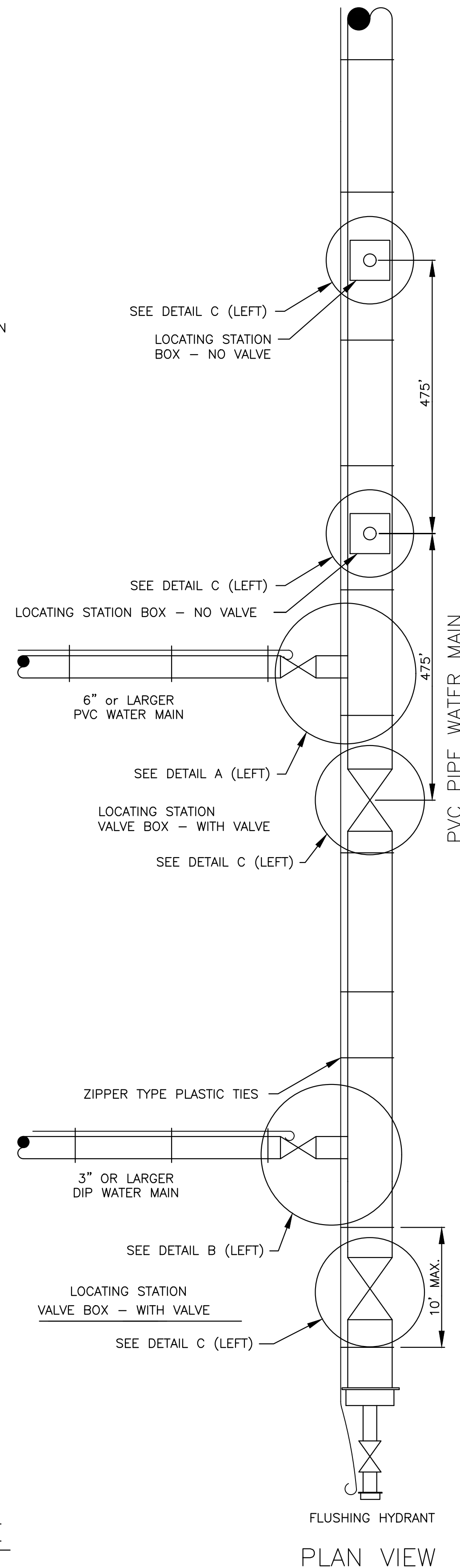


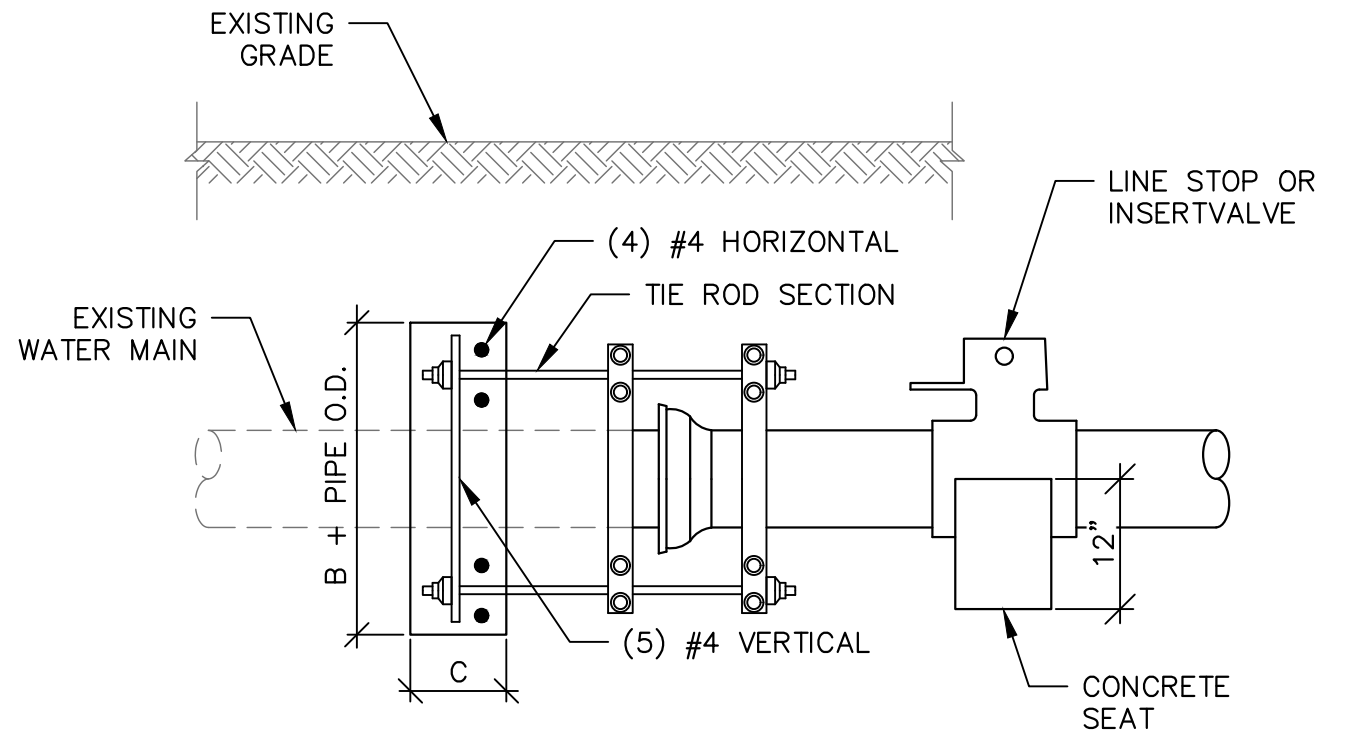
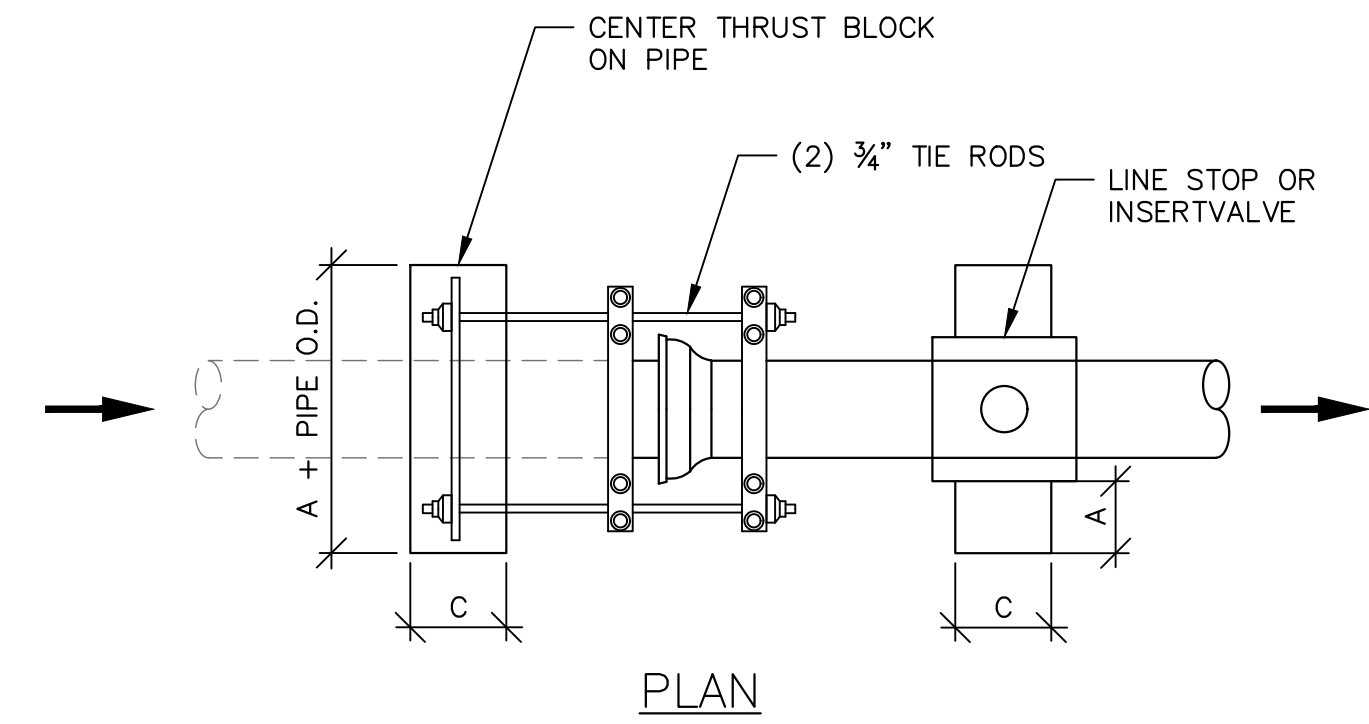
CONNECTION TO PVC MAINS  
DETAIL - A  
4" OR LARGER PVC WATER MAIN



- NOTES:
1. LOCATING WIRE, SEE SPECIFICATION 02513 FOR REQUIREMENTS.
  2. BOXES SHALL NOT BE LOCATED IN SIDEWALKS OR DRIVEWAYS. LOCATE BOXES SPACING SHALL NOT EXCEED 500 FEET.
  3. WHERE IT IS NOT POSSIBLE TO LOCATE THE BOX OUTSIDE OF A PAVED STREET OR PARKING LOT THE LOCATE WIRE SHALL BE PLACED IN A VALVE BOX INSTEAD OF A ROME BOX. VALVE BOX LID SHALL BE MARKED ACCORDING TO THE TYPE OF PIPE SERVED.

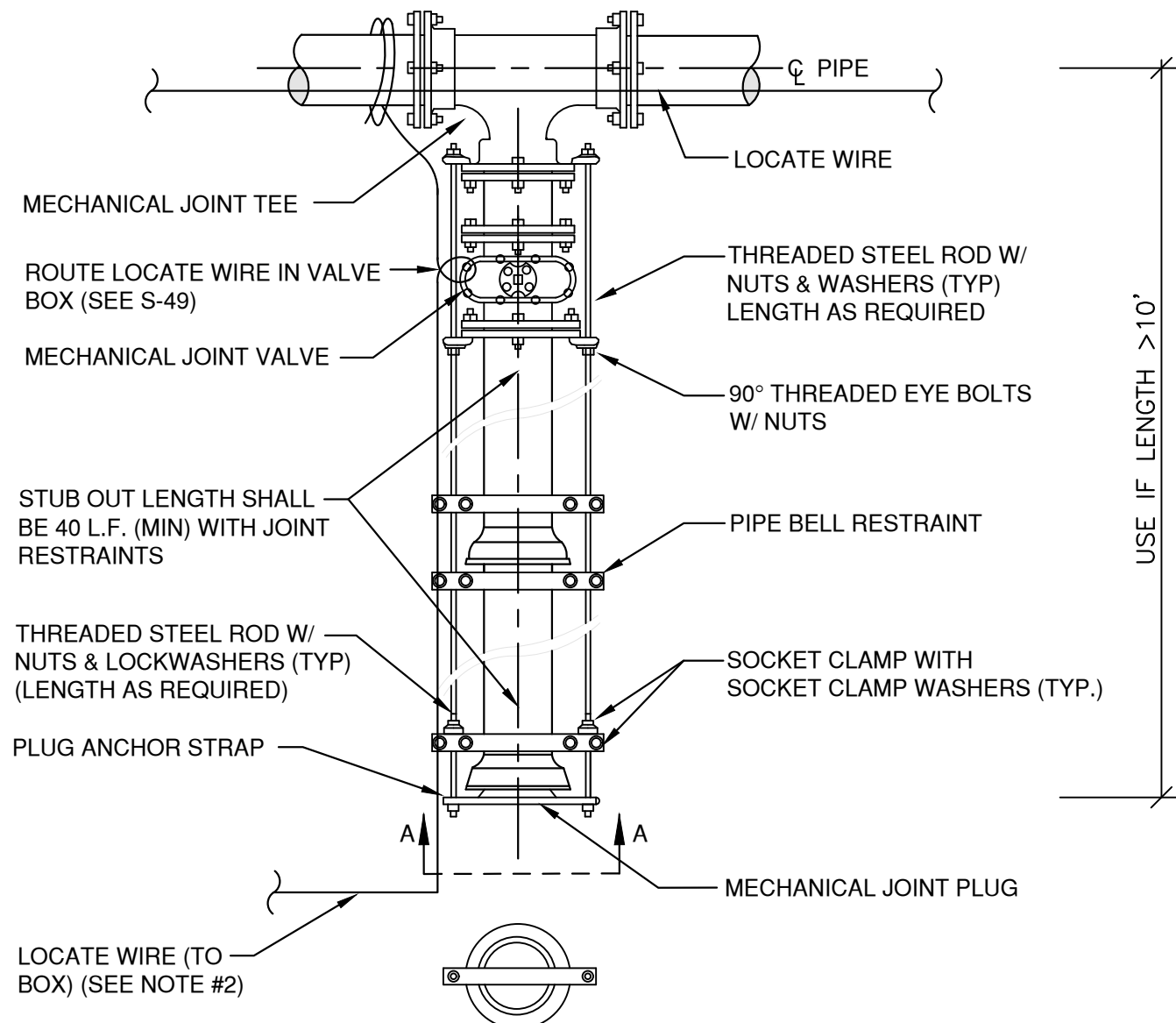
**F** TYPICAL LOCATOR WIRING INSTALLATION DETAILS  
X/11





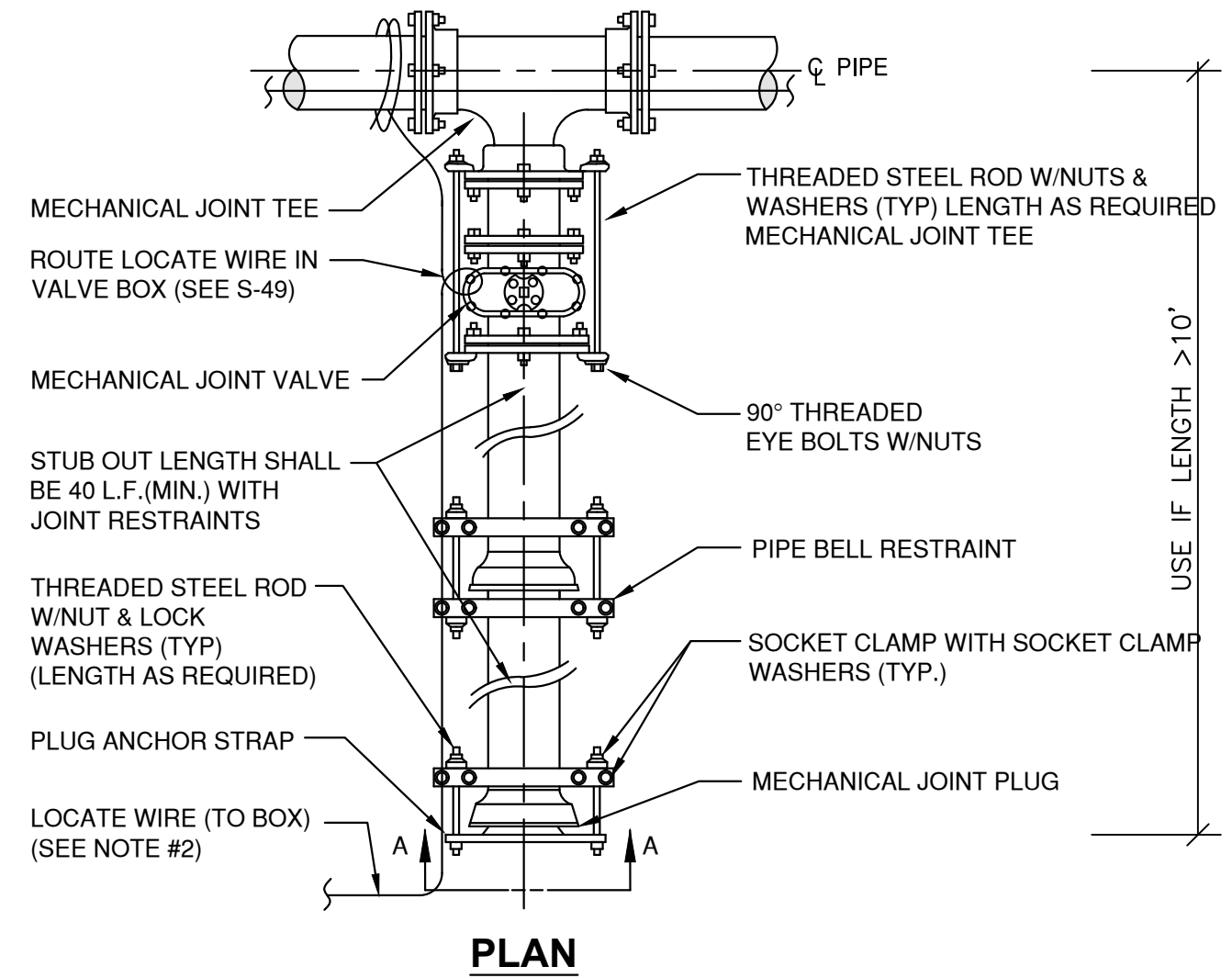
PVC O.D. (SCH. 40)  
 6" - 6.625"  
 8" - 8.625"

**A** LINE STOP & INSERT VALVE DETAIL  
 X/12 NTS



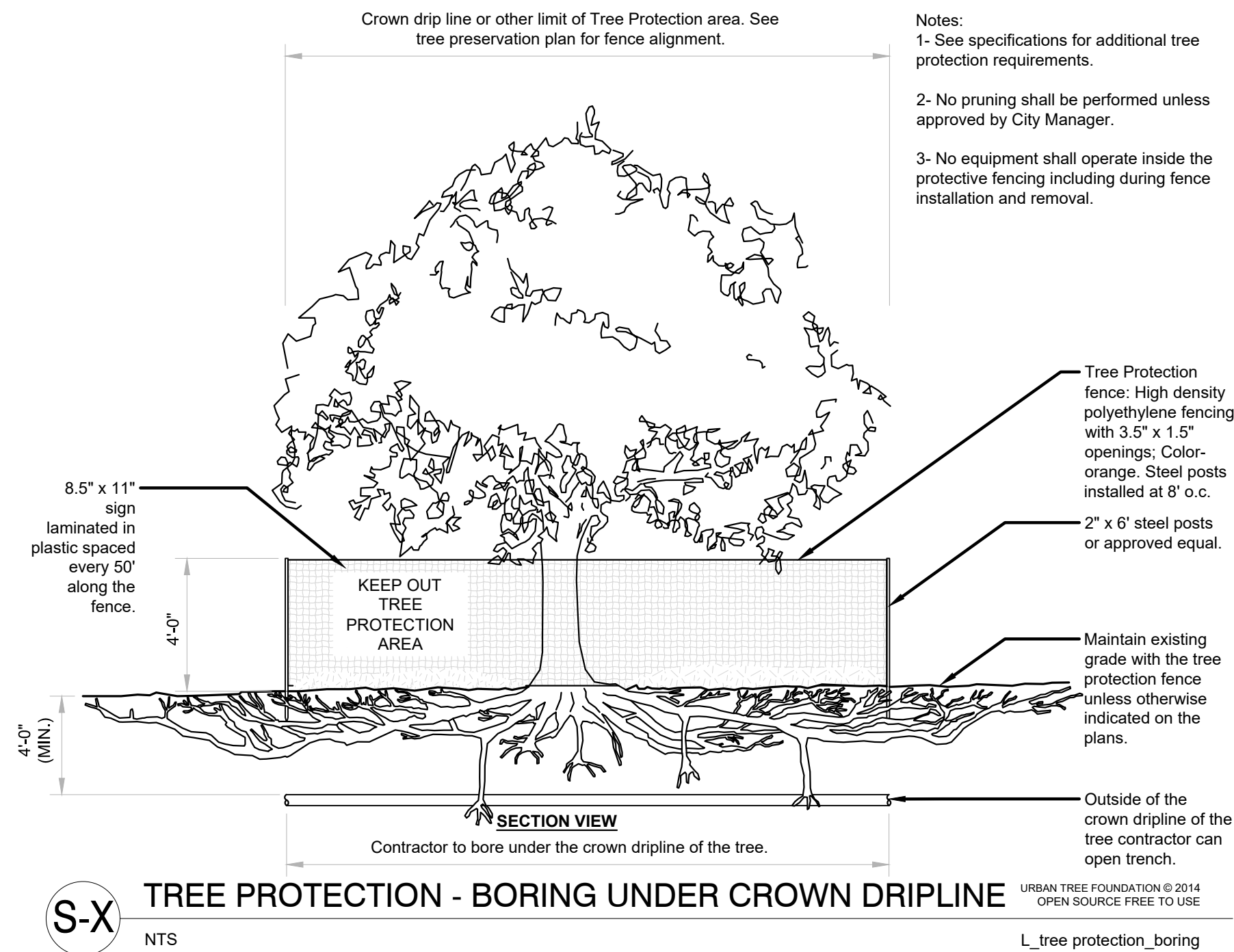
- NOTES:
- IN LIEU OF BELL/ROD RESTRAINTS, MECHANICAL JOINT RESTRAINTS MAY BE USED.
  - LOCATING WIRE REQUIRED, UTILIZING A LOCATE WIRE BOX INSTALLED AT PLUG LOCATION.
  - NUMBER OF TIE RODS REQUIRED IS AS FOLLOWS:  
 3" - 8" DIAMETER MAIN - 2 TIE RODS REQUIRED PER JOINT (3/4" ROD)  
 10" - 12" DIAMETER MAIN - 4 TIE RODS REQUIRED PER JOINT (3/4" ROD)  
 14" - 16" DIAMETER MAIN - 6 TIE RODS REQUIRED PER JOINT (3/4" ROD)  
 18" - 20" DIAMETER MAIN - 8 TIE RODS REQUIRED PER JOINT (3/4" ROD)  
 24" DIAMETER MAIN - 12 TIE RODS REQUIRED PER JOINT (3/4" ROD)  
 30" - 36" DIAMETER MAIN - 14 TIE RODS REQUIRED PER JOINT (1" ROD)  
 42" - 48" DIAMETER MAIN - 16 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)  
 54" DIAMETER MAIN - 18 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)
  - THE LOCATION OF THE DEAD END PLUG SHALL NOT BE UNDER PAVEMENT, IF POSSIBLE. THE STUB OUT SHALL EXTEND BEYOND THE INTERSECTION AREAS OR ROAD CROSSING BY 10 FEET (MIN.) WHERE POSSIBLE.

**B** PLUGGED DEAD END USING TIE RODS  
 X/12 NTS



- NOTES:
- IN LIEU OF BELL/ROD RESTRAINTS, MECHANICAL JOINT RESTRAINTS MAY BE USED.
  - LOCATING WIRE REQUIRED, UTILIZING A LOCATE WIRE BOX INSTALLED AT PLUG LOCATION.
  - NUMBER OF TIE RODS REQUIRED IS AS FOLLOWS:  
 3" - 8" DIAMETER MAIN - 2 TIE RODS REQUIRED PER JOINT (3/4" ROD)  
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 42" - 48" DIAMETER MAIN - 16 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)  
 54" DIAMETER MAIN - 18 TIE RODS REQUIRED PER JOINT (1 1/4" ROD)
  - THE LOCATION OF THE DEAD END PLUG SHALL NOT BE UNDER PAVEMENT, IF POSSIBLE. THE STUB OUT SHALL EXTEND BEYOND THE INTERSECTION AREAS OR ROAD CROSSING BY 10 FEET (MIN.) WHERE POSSIBLE.

**C** PLUGGED DEAD END USING MECHANICAL RESTRAINTS  
 X/12 NTS

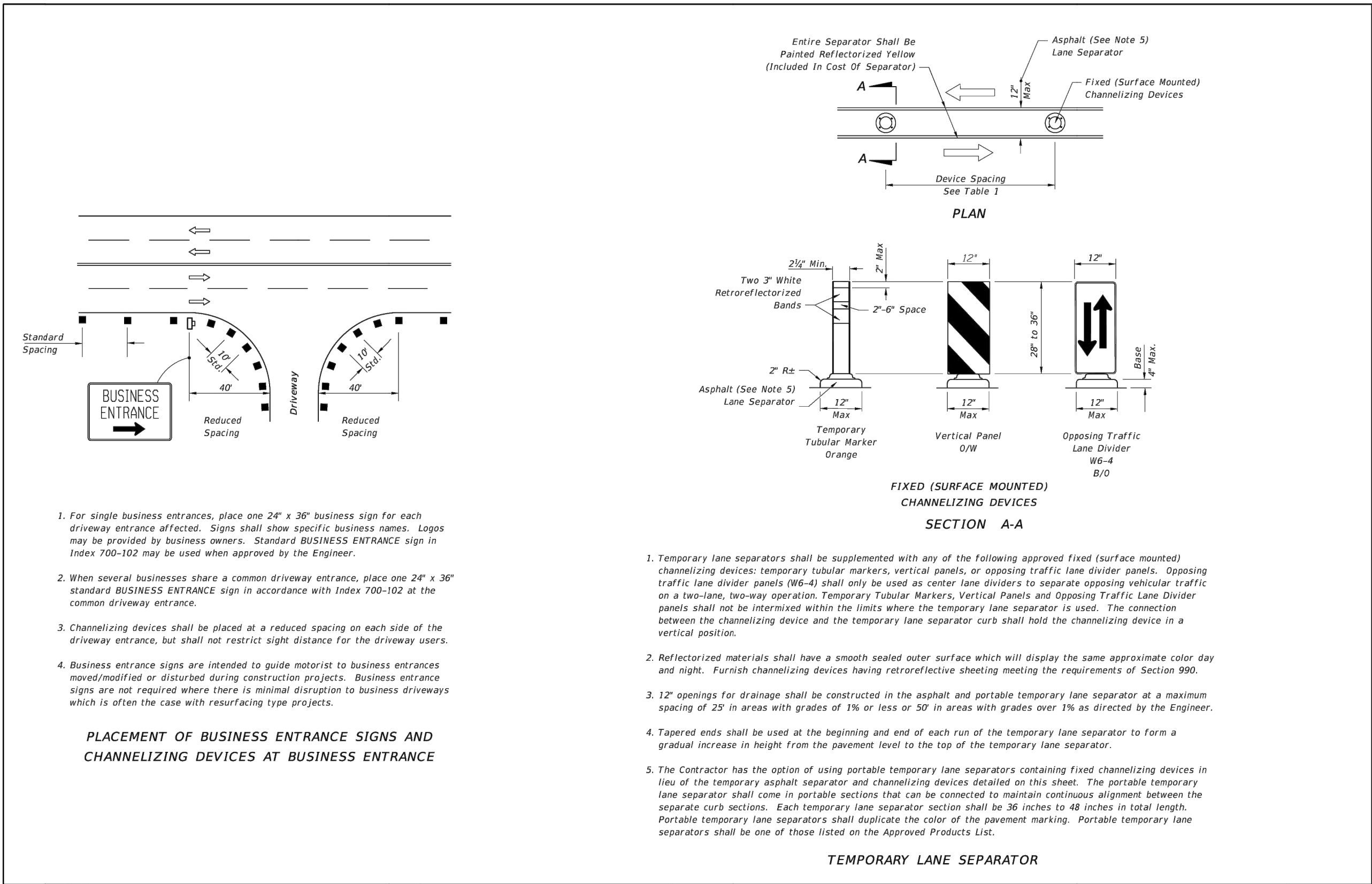




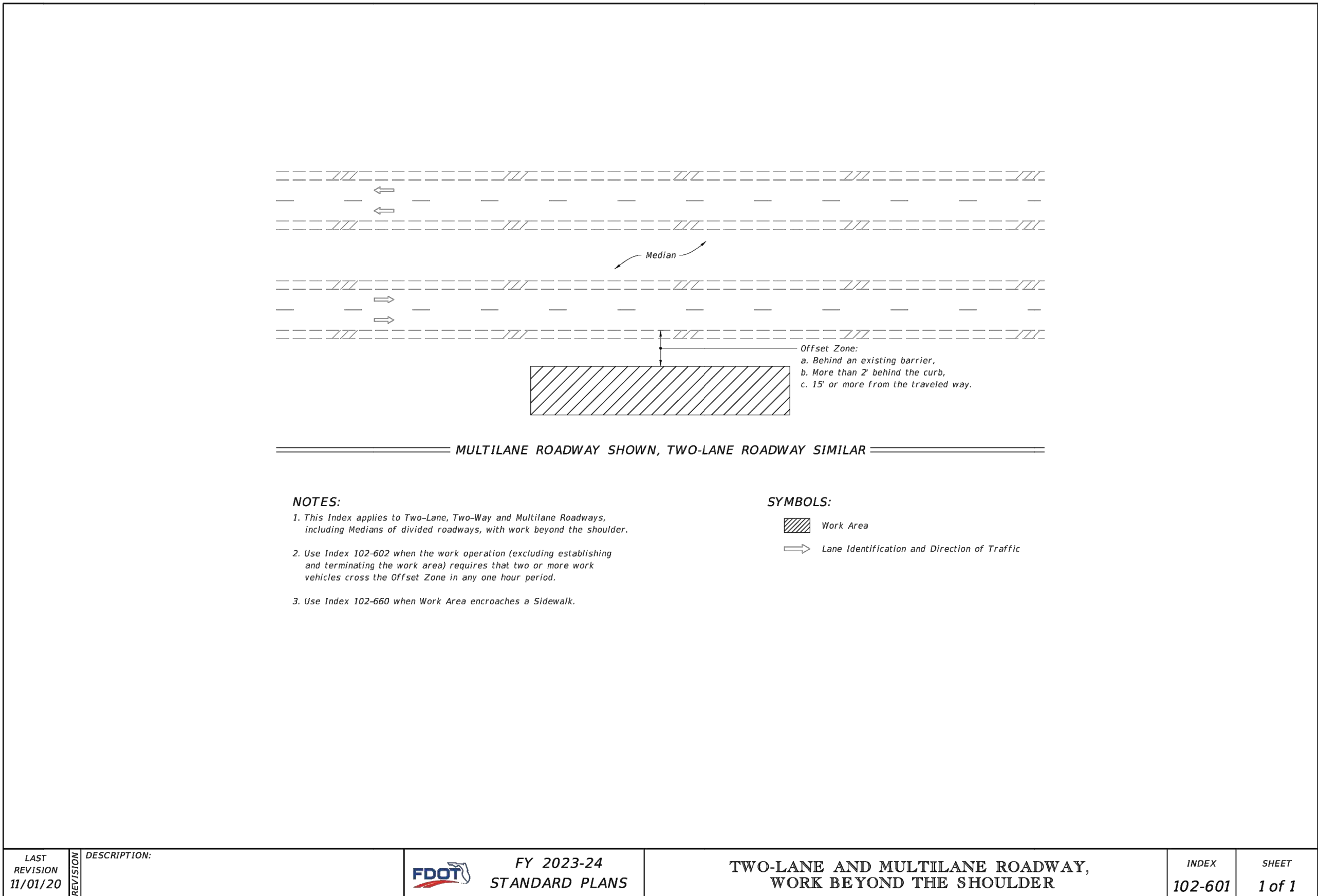
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TRAFFIC CONTROL GENERAL NOTES

1. THE EXISTING POSTED SPEED SHALL BE MAINTAINED FOR THE DURATION OF CONSTRUCTION. WORK ZONE SPEED SHALL NOT BE LESS THAN POSTED SPEED.
2. ARROWS DENOTE DIRECTION OF TRAFFIC ONLY AND DO NOT REFLECT PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR IS TO MAINTAIN AND KEEP STREET NAME IDENTIFICATION SIGNS VISIBLE DURING CONSTRUCTION OPERATIONS TO FACILITATE EMERGENCY VEHICLE TRAFFIC.
4. PLACE BUSINESS ENTRANCE SIGNS IN ACCORDANCE WITH FDOT INDEX 102-600, SHEET 9.
5. EXISTING GUIDE SIGNS AND APPLICABLE WARNING SIGNS ARE TO BE RELOCATED DURING CONSTRUCTION TO ALIGN WITH ALL PHASE TRAFFIC PATTERNS.
6. THE CONTRACTOR SHALL CONTACT TRANSIT AND SCHOOL AUTHORITIES FOR THEIR BUS STOP LOCATIONS AND SCHEDULES TO MAINTAIN SAFE ACCESS TO THE RIDERS AT ALL TIMES.
7. ALL LANE CLOSURES SHALL BE COORDINATED WITH LOCAL EMERGENCY SERVICES. A MINIMUM OF 24 HOURS NOTICE SHALL BE PROVIDED FOR ANY SCHEDULED WORK REQUIRING LANE CLOSURES OR DETOURS.



LAST REVISION	DESCRIPTION	FDOT	FY 2023-24 STANDARD PLANS	GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES	INDEX	SHEET
11/01/20					102-600	9 of 11



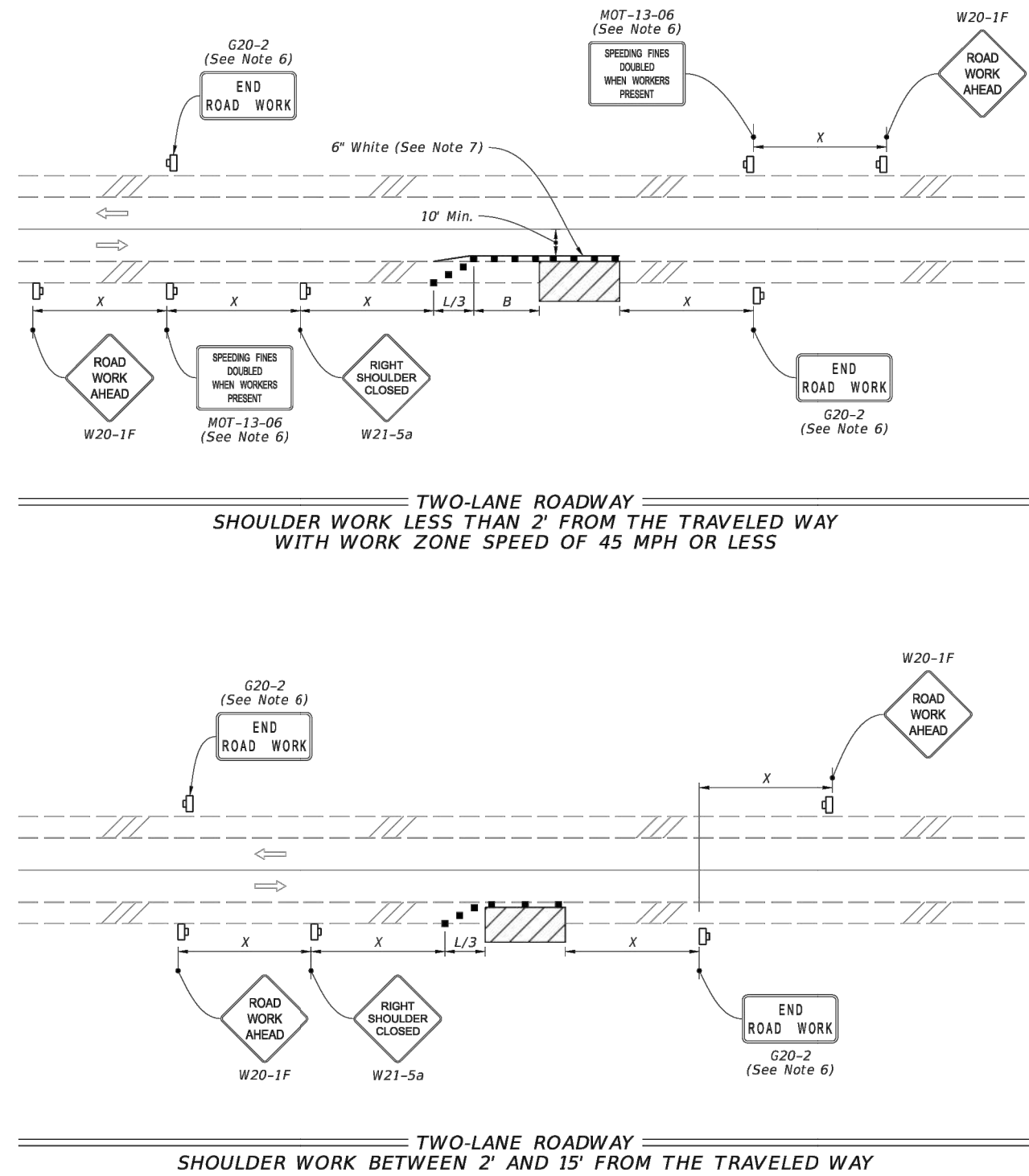
LAST REVISION	DESCRIPTION	FDOT	FY 2023-24 STANDARD PLANS	TWO-LANE AND MULTILANE ROADWAY, WORK BEYOND THE SHOULDER	INDEX	SHEET
11/01/20					102-601	1 of 1

NOTE:

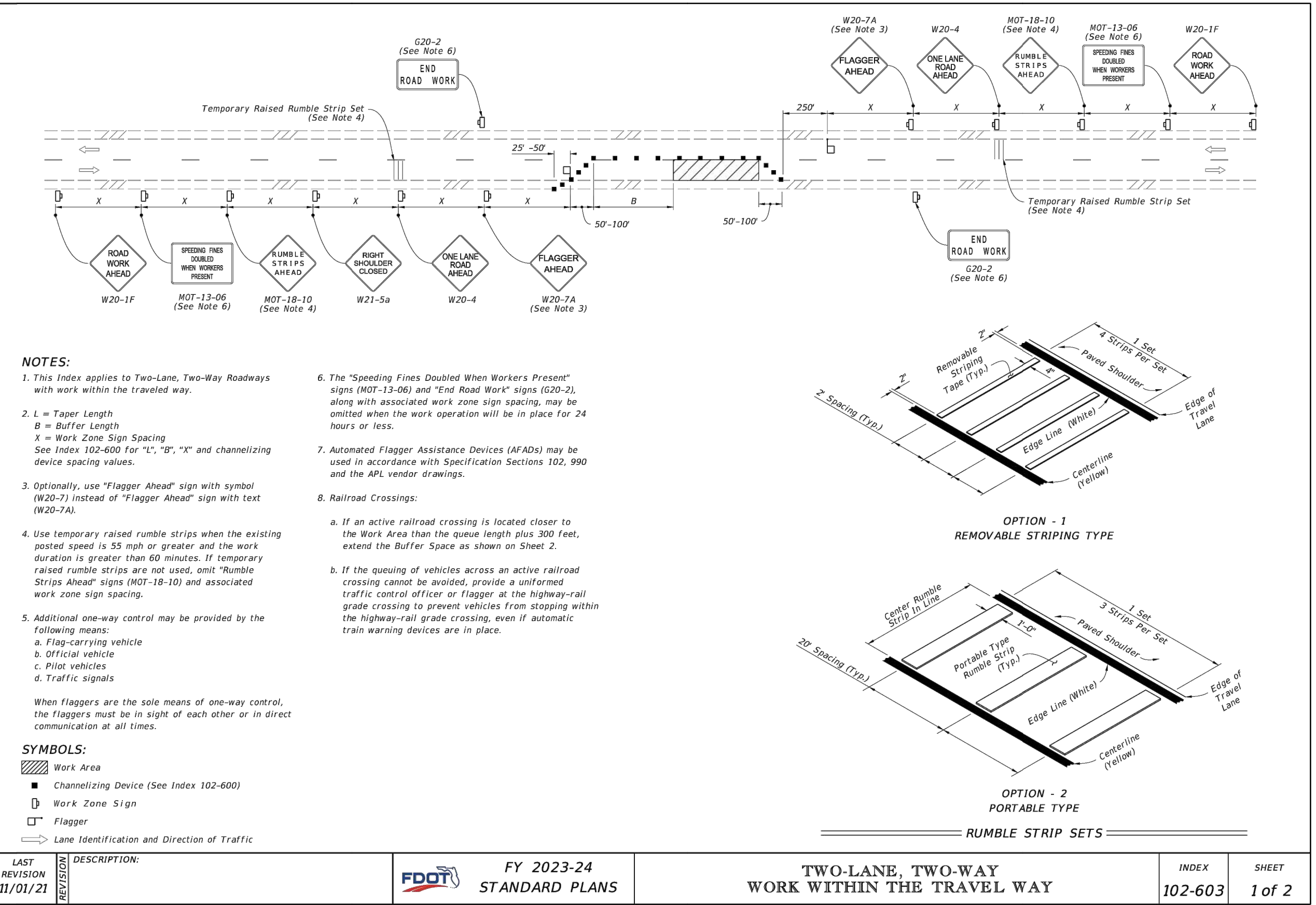
1. This Index applies to Two-Lane, Two-Way and Multilane Roadways, including Medians of divided roadways, with work on the shoulder.
2. L = Taper Length  
X = Work Zone Sign Spacing  
B = Buffer Length  
See Index 102-600 for "L", "X", "B", and channelizing device spacing values.
3. Where work activities are between 2' and 15' from the edge of traveled way, the Engineer may omit signs and channelizing devices for work operations 60 minutes or less.
4. When four or more work vehicles enter the through traffic lanes in a one hour period (excluding establishing and terminating the work area), use a flagger or lane closure to accommodate work vehicle ingress and egress.
5. For work less than 2' from the traveled way and work zone speed is greater than 45 MPH, use a lane closure.
6. The "Speeding Fines Doubled When Workers Present" signs (MOT-13-06) and "End Road Work" signs (G20-2) along with the associated work zone sign spacing distances may be omitted when the work operation is in place for 24 hours or less.
7. Temporary pavement markings may be omitted when the work operation is in place for 3 days or less.
8. Omit "Shoulder Closed" signs (W21-5a) along with associated work zone sign spacing distances for work on the median.
9. When there is no paved shoulder, the "Worker" sign (W21-1) may be used instead of the "Shoulder Closed" sign (W21-5a).

SYMBOLS:

- Work Area
- Channelizing Device (See Index 102-600)
- Work Zone Sign
- Lane Identification and Direction of Traffic



LAST REVISION	DESCRIPTION	FDOT	FY 2023-24 STANDARD PLANS	TWO-LANE AND MULTILANE, WORK ON SHOULDER	INDEX	SHEET
11/01/21					102-602	1 of 2



LAST REVISION	DESCRIPTION	FDOT	FY 2023-24 STANDARD PLANS	TWO-LANE, TWO-WAY WORK WITHIN THE TRAVEL WAY	INDEX	SHEET
11/01/21					102-603	1 of 2



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## GENERAL NOTES

- THE NATIONAL ELECTRICAL CODE, NATIONAL ELECTRIC SAFETY CODE, NECA STANDARD OF INSTALLATION (EDITIONS ADOPTED BY THE AHJ), AND ANSI/NEMA STANDARDS SHALL ESTABLISH THE MINIMUM REQUIREMENTS FOR INSTALLATION, BUT IN ADDITION, ALL WORK SHALL ALSO COMPLY WITH OWNER, OSHA, STATE, COUNTY, LOCAL OR MUNICIPAL CODE REQUIREMENTS AND THE RULES OF THE LOCAL ELECTRIC UTILITY. IN CASE OF CONFLICTS, CONFORM TO THE MORE STRINGENT REQUIREMENTS.
- TO THE BEST OF THE ENGINEER'S KNOWLEDGE, THESE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES AS DETERMINED BY THE LOCAL AUTHORITY IN ACCORDANCE WITH CHAPTER 553 AND 833 OF THE FLORIDA STATUTES. IN CASES OF CONFLICTS BETWEEN THESE DESIGN DOCUMENTS AND REQUIREMENTS OF ANY OF THE ABOVE CRITERIA, CONTACT THE ENGINEER BEFORE PROCEEDING.
- THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INTEND TO CONVEY ELECTRICAL SCOPE OF WORK ONLY. NOT EVERY ELECTRICAL DETAIL, WIRE, OR CONDUIT IS SHOWN. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO PROCUREMENT AND CONSTRUCTION ACTIVITIES.
- FIRE PROTECTION, LIFE SAFETY, AND FIRE ALARM GENERAL REQUIREMENTS IF SHOWN ON THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DESIGN IS DELEGATED IN ACCORDANCE WITH F.A.C. 61G15 OF THE FLORIDA ADMINISTRATIVE CODE TO A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF FLORIDA TO PROVIDE FIRE PROTECTION ENGINEERING AND DESIGN IN ACCORDANCE WITH APPLICABLE AND RELEVANT STANDARDS.
- DEVIATIONS FROM THE INTENT OF THE CONTRACT DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND/OR OWNER PRIOR TO PROCEEDING WITH CONSTRUCTION.
- TO "PROVIDE" MEANS TO PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION, AND SUPERVISION REQUIRED TO FURNISH AND INSTALL.
- CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY COMPONENTS, EQUIPMENT, AND INCIDENTALS REQUIRED FOR A FULLY FUNCTIONAL AND OPERATIONAL ELECTRICAL SYSTEM AS DESCRIBED BY THE INTENT OF THE CONTRACT DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL APPLY FOR, OBTAIN, AND PAY FOR ALL REQUIRED PERMITS AND INSPECTION CERTIFICATES, AND PAY FOR ALL FEES ASSOCIATED WITH THE PROJECT.
- EQUIPMENT AND MATERIALS PROVIDED SHALL BEAR LISTING AND LABELING BY A NATIONALLY RECOGNIZED TESTING AGENCY WHERE SUCH STANDARD HAS BEEN ESTABLISHED FOR THAT TYPE OF EQUIPMENT / MATERIAL.
- ALL SUBMITTALS SHALL BE REVIEWED BY THE PROJECT ENGINEER BEFORE INSTALLATION. SUBMIT SHOP DRAWINGS, CATALOG SHEETS, OR OTHER DESCRIPTIVE DATA WITH SUFFICIENT INFORMATION TO ESTABLISH DESIGN, QUALITY, AND PERFORMANCE.
- PROVIDE EQUIPMENT NAMEPLATES FOR ALL EQUIPMENT. NAMEPLATES SHALL BE ENGRAVED THREE-LAYER LAMINATED PLASTIC, BLACK LETTERS ON WHITE BACKGROUND. USE MINIMUM 1/8 INCH LETTERS FOR IDENTIFYING INDIVIDUAL EQUIPMENT AND LOADS AND 1/4 INCH LETTERS FOR GROUPED EQUIPMENT AND LOADS. PROVIDE ARC FLASH AND SHOCK HAZARD WARNING LABELS FOR ELECTRICAL EQUIPMENT PER NEC 110.16 AND OTHER ELECTRICAL LABELS AS REQUIRED BY OSHA AND NEC.
- USE ONLY COPPER BUILDING WIRE WITH TYPE THWN/THHN (DUAL RATED) OR XHHW INSULATION (GROUND WIRES MAY BE TYPE TW FOR CIRCUITS RATED 100A OR LESS OR TYPE THW FOR CIRCUITS OVER 100A). WIRE SHALL BE SIZED AND COLOR CODED PER THE NEC. CONDUCTORS FOR POWER AND LIGHTING CIRCUITS SMALLER THAN #12 AWG ARE NOT PERMITTED.
- ALL CIRCUITS SHALL BE RUN IN CONDUIT AND SHALL CONTAIN SEPARATE GROUNDING CONDUCTOR SIZED PER NEC TABLE 250.122. ALL CONDUIT SHALL BE SCHEDULE 80 PVC UNLESS OTHERWISE NOTED. FINAL CONNECTIONS (LESS THAN 6 FEET) TO ALL MOTORS AND OTHER VIBRATING EQUIPMENT SHALL BE MADE WITH LIQUID-TIGHT FLEXIBLE METAL CONDUIT (WITH GROUNDING CONDUCTOR). NONMETALLIC FLEX CONDUIT OR TUBING SHALL NOT BE USED. MINIMUM SIZE FOR CONDUIT SHALL BE 3/4". PROVIDE PULLWIRE FOR ALL EMPTY CONDUITS.
- NO MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS (ON ALTERNATING PHASES) SHALL BE COMBINED IN ONE CONDUIT. PROVIDE A DEDICATED NEUTRAL FOR ALL CIRCUITS REQUIRING A NEUTRAL.
- CONTRACTOR SHALL CONFORM WITH ALL OSHA AND NFPA 70E, STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE, REQUIREMENTS FOR ELECTRICAL SAFETY, INCLUDING PROPER LOCK-OUT / TAG-OUT PROCEDURES AND WEARING APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE). CONTRACTOR'S EMPLOYEES SHALL HAVE RECEIVED NFPA 70E ARC FLASH TRAINING.
- CONTRACTOR SHALL PROVIDE SHORT CIRCUIT, PROTECTIVE DEVICE COORDINATION, AND ARC FLASH HAZARD ANALYSIS OF THE PROPOSED ELECTRICAL SYSTEM TO THE ENGINEER FOR REVIEW AND APPROVAL. AFFIX APPROVED ARC FLASH HAZARD LABELS TO ALL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH OSHA, NFPA 70E, AND IEEE 1584 INCLUDING SUCH INFORMATION AS INCIDENT ENERGY LEVELS, SYSTEM DATA, EQUIPMENT IDENTIFICATION, DATES, APPROACH BOUNDARIES, AND PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS.

## ABBREVIATIONS

A OR AMP	AMPERES
AF	AMP FRAME
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
ARC	ALUMINUM RIGID CONDUIT
AT	AMP TRIP
ATC	AUTOMATIC TRANSFER CONTROLLER
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
/C	CONDUCTOR
CB	CIRCUIT BREAKER
CT	CURRENT TRANSFORMER
CBL	CABLE
DS	DISCONNECT SWITCH
ESTOP	EMERGENCY STOP
EX	EXISTING
EP	EXPLOSION PROOF
EF	EXHAUST FAN
EG	EQUIPMENT GROUND
EGC	EQUIPMENT GROUND CONDUCTOR
F	FUSE
G OR GND	GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GF	GROUND FAULT
GFCI	GROUND FAULT CIRCUIT INTERRUPT
GFI	GROUND FAULT INTERRUPTING
H-O-A	HAND-OFF-AUTO
HP	HORSEPOWER
JB	JUNCTION BOX
kVA	KILOVOLT - AMPS
kW	KILOWATTS
kWH	KILOWATT-HOUR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
ME	MOISTURE ELEMENT
MLO	MAIN LUGS ONLY
MSH	MOTOR SPACE HEATER
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OHE	OVERHEAD ELECTRICAL
PH, Ø	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
REC	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
SS	STAINLESS STEEL
SPD	SURGE PROTECTION DEVICE
SWBD	SWITCHBOARD
TE	TEMPERATURE ELEMENT
TSH	TEMPERATURE SWITCH
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITER'S LABORATORIES
V	VOLTS
VA	VOLT AMPS
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
WH	WEATHERHEAD
WP	WEATHER PROOF
XFMR	TRANSFORMER

## FIRE ALARM AND HVAC

FACP	FIRE ALARM CONTROL PANEL
F	MANUAL PULL STATION WALL MOUNTED AT 46 INCHES
S	SMOKE DETECTOR CEILING MOUNTED
SD	DUCT SMOKE DETECTOR
F	AUDIO/STROBE LIGHT COMBINATION WALL MOUNTED AT 80 INCHES
H	AUDIO UNIT WALL MOUNTED AT 80 INCHES
T	THERMOSTAT
R	FIRE ALARM RELAY
FE	FIRE EXTINGUISHER
FS	FLOW SWITCH
PS	LOW PRESSURE SWITCH
TS	TAMPER SWITCH

## ELECTRICAL LEGEND

	UTILITY CONNECTION (VOLTAGE AND PHASES AS INDICATED)
	UTILITY METER
	TWO WINDING TRANSFORMER (VOLTAGE, RATING, IMPEDANCE, CONNECTION CONFIGURATION AS INDICATED) (ANSI STANDARD IMPEDANCE IF NOT SPECIFIED)
	LOW VOLTAGE MOLDED CASE CIRCUIT BREAKER. ("LSIG", "MCP", "GFI", "BLANK" THERMAL MAGNETIC) (AMP RATING AND NUMBER OF POLES AS INDICATED)
	FUSE (FUSE RATING AND CLASSIFICATION AS INDICATED)
	TRANSFER SWITCH ("A" AUTOMATIC, "M" MANUAL) (CURRENT RATING, POLES, BYPASS AS INDICATED)
	EARTH GROUND
	LIMITS OF DEMOLITION
	MISCELLANEOUS ELECTRICAL EQUIPMENT (AS INDICATED ON DRAWINGS)
	SWITCH (AMP RATING AND POLES AS INDICATED)
	INDUCTION MOTOR (HORSEPOWER RATING AS INDICATED)
	GENERATOR (RATING AND VOLTAGE AS INDICATED)
	CURRENT TRANSFORMER (CT) (RATIO AND QUANTITY AS INDICATED)
	POTENTIAL TRANSFORMER (PT) (RATIO AND QUANTITY AS INDICATED)
	EXPOSED CONDUIT RUN MINIMUM SIZE 3/4-INCH
	CONCEALED CONDUIT RUN MINIMUM SIZE 1-INCH
	HOMERUN CIRCUIT WITH TERMINATION LOCATION AS DESIGNATED
	FLEXIBLE CONDUIT MINIMUM SIZE 3/4-INCH
	DISCONNECT SWITCH (RATING AND POLES AS INDICATED)
	FUSED DISCONNECT SWITCH (RATING, FUSE SIZE, AND POLES AS INDICATED)
	MOTOR STARTER (RATING AND POLES AS INDICATED)
	"HH" HAND HOLE, "MH" MANHOLE
	"PB" PULL BOX, "JB" JUNCTION BOX
	CABLE/CONDUIT TAG ("P" POWER, "C" CONTROL, "I" INSTRUMENTATION) ("ATS" EQUIPMENT REFERENCE ("1" SEQUENCE NO.)
	MOTOR TEMPERATURE SWITCH
	MOTOR SPACE HEATER
	MOTOR TEMPERATURE ELEMENT
	MOTOR MOISTURE ELEMENT
	SHUNT TRIP
	SURGE PROTECTIVE DEVICE
	KIRK KEY INTERLOCK

## GROUNDING & LIGHTNING PROTECTION

	CONNECTION TO GROUND GRID. (MECHANICAL / CADWELD PER SPECIFICATIONS)
	GROUND ROD
	GROUND TEST STATION
	GROUNDING GRID OR COUNTERPOISE SYSTEM CONDUCTOR
	LIGHTNING PROTECTION AIR TERMINAL
	LIGHTNING PROTECTION DISSIPATION AIR TERMINAL
	LIGHTNING PROTECTION SYSTEM CONDUCTOR
	LIGHTNING PROTECTION SYSTEM DOWN CONDUCTOR

## OUTLETS AND RECEPTACLES

LP1-12	DUPLEX RECEPTACLE, 20A, 120V, MOUNTED AT 18 INCHES U.N.O. (CIRCUIT AS INDICATED)
LP1-12	QUADPLEX RECEPTACLE, 20A, 120V, MOUNTED AT 18 INCHES U.N.O. (CIRCUIT AS INDICATED)
LP1-12 GFI	DUPLEX RECEPTACLE, GFI, 20A, 120V, MOUNTED AT 18 INCHES U.N.O. (CIRCUIT AS INDICATED)
LP1-12	SPECIAL PURPOSE RECEPTACLE MOUNTED AT 18 INCHES U.N.O. (SEE PLANS FOR DETAILS)
LP1-12	FLOOR MOUNTED DUPLEX RECEPTACLE, 20A, 120V (CIRCUIT AS INDICATED)
J	JUNCTION BOX
▽	DATA OUTLET MOUNTED AT 18 INCHES U.N.O. (SEE PLANS FOR DETAILS)
▼	TELEPHONE OUTLET MOUNTED AT 18 INCHES U.N.O. (SEE PLANS FOR DETAILS)
▽	TELEPHONE / DATA COMBINATION OUTLET MOUNTED AT 18 INCHES U.N.O. (SEE PLANS FOR DETAILS)

## LIGHTING

	CEILING MOUNTED FIXTURE (FIXTURE TYPE AND CIRCUIT AS INDICATED)
	CEILING MOUNTED FIXTURE WITH 90 MIN BATTERY BACKUP (FIXTURE TYPE AND CIRCUIT AS INDICATED)
	CEILING MOUNTED DOWN-LIGHT FIXTURE (FIXTURE TYPE AND CIRCUIT AS INDICATED)
	CEILING MOUNTED DOWN-LIGHT FIXTURE W/ 90 MIN BATTERY BACKUP (FIXTURE TYPE AND CIRCUIT AS INDICATED)
	SURFACE MOUNTED OR SUSPENDED INDUSTRIAL STRIP FIXTURE (FIXTURE TYPE AND CIRCUIT AS INDICATED)
	WALL MOUNTED FIXTURE (FIXTURE TYPE AND CIRCUIT AS INDICATED)
	TWIN HEAD FLOOD FIXTURE WITH BATTERY BACKUP (FIXTURE TYPE AND CIRCUIT AS INDICATED)
	EXIT SIGN FIXTURE, DO NOT SWITCH. PROVIDE ARROWS AS INDICATED, SHADING DENOTES FACE OPERATION (FIXTURE TYPE AND CIRCUIT AS INDICATED)
	POLE MOUNTED LIGHT FIXTURE (FIXTURE TYPE AND CIRCUIT AS INDICATED)
	WALL SWITCH WALL MOUNTED AT 46 INCHES, 20A, 120/277V ("3" THREE WAY, "4" FOUR WAY, "D" DIMMER, "M" MOTOR RATED, "OS" INTEGRAL OCCUPANCY SENSOR)
	LIGHTING CONTROL SENSOR (TYPE AS INDICATED)
	PHOTOCELL

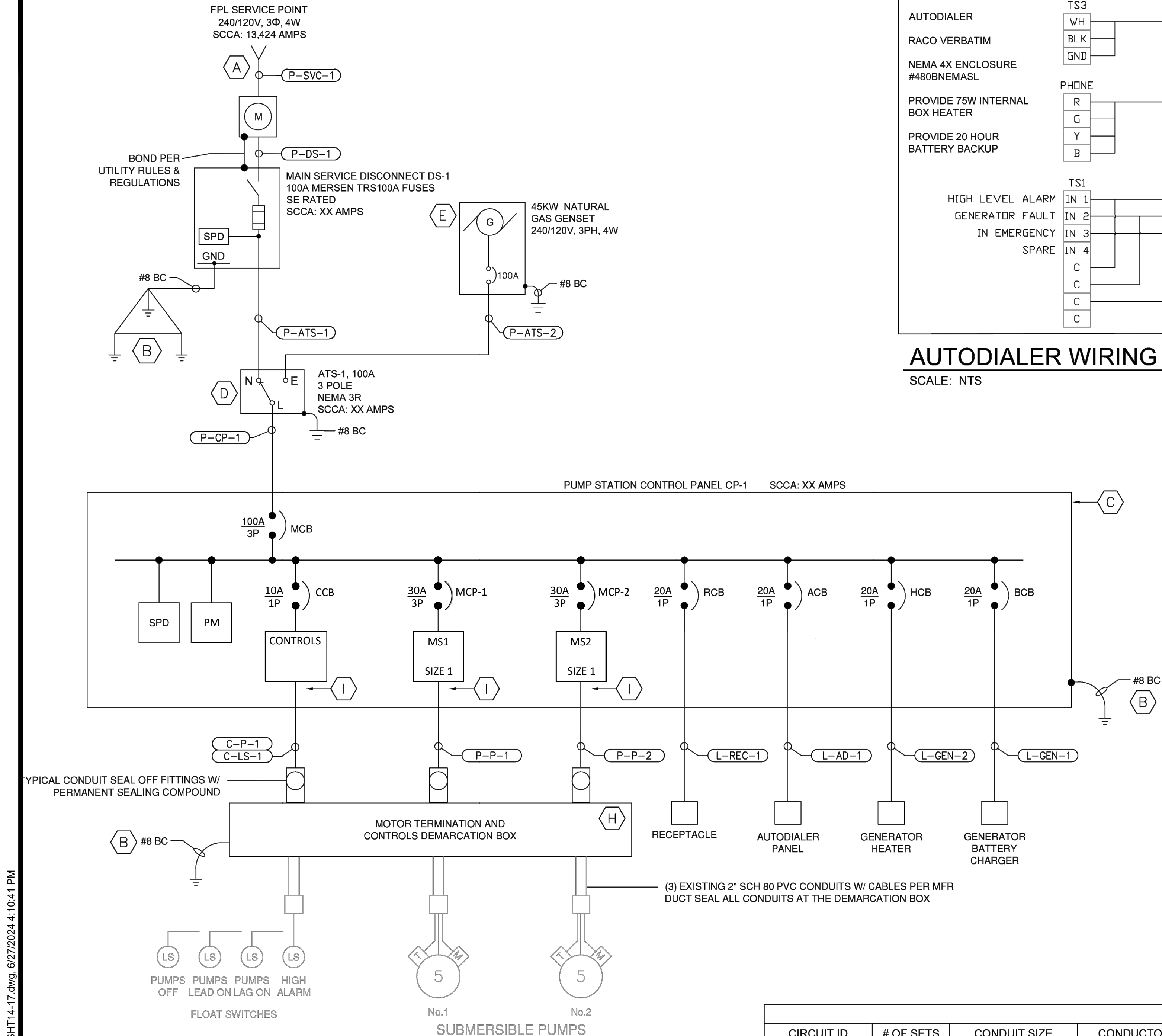
ALL DEVICES/PLATES TO BE IN OWNERS CHOICE OF COLORS.

## ELEMENTARY WIRING SCHEMATICS

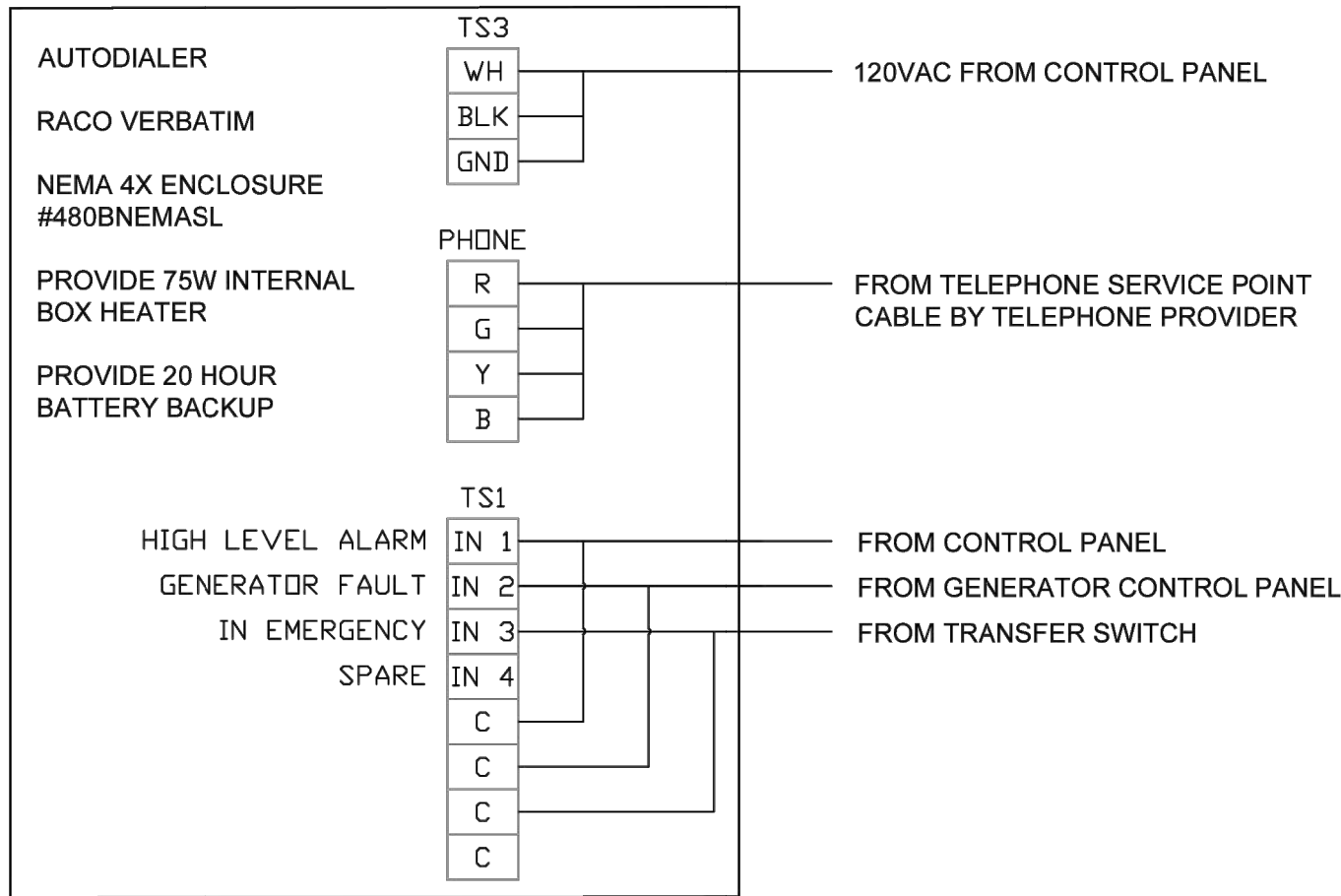
	PRESSURE SWITCH - NORMALLY OPEN
	PRESSURE SWITCH - NORMALLY CLOSED
	DIFFERENTIAL PRESSURE SWITCH - NORMALLY OPEN
	DIFFERENTIAL PRESSURE SWITCH - NORMALLY CLOSED
	TIME DELAY SWITCH - TIMER ON DELAY (CLOSES AFTER TIMER EXPIRES)
	TIMER DELAY SWITCH - TIMER OFF DELAY (OPENS AFTER TIMER EXPIRES)
	VIBRATION SWITCH - NORMALLY OPEN
	VIBRATION SWITCH - NORMALLY CLOSED
	COIL CONTACTS ("C" CONTROL RELAY, "LC" LIGHTING CONTACTOR, "M" MOTOR RELAY, "TD" TIME DELAY)
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	LIMIT SWITCH - NORMALLY OPEN
	LIMIT SWITCH - NORMALLY CLOSED
	LIQUID LEVEL (FLOAT) SWITCH - NORMALLY OPEN
	LIQUID LEVEL (FLOAT) SWITCH - NORMALLY CLOSED
	TEMPERATURE SWITCH - NORMALLY OPEN
	TEMPERATURE SWITCH - NORMALLY CLOSED
	FLOW SWITCH - NORMALLY OPEN
	FLOW SWITCH - NORMALLY CLOSED
	TERMINAL BLOCK (TERMINAL NO. AND TERMINAL BLOCK AS INDICATED)
	EXTERNALLY MOUNTED DEVICE (DASHED LINE INDICATES WIRING EXTERNAL TO PANEL)
	SELECTOR SWITCH ("X" INDICATES SWITCH POSITION AND QUANTITY AS INDICATED)
	MOMENTARY PUSH BUTTON - NORMALLY OPEN
	MOMENTARY PUSH BUTTON - NORMALLY CLOSED
	REMOTE SHUTDOWN/STOP - NORMALLY CLOSED
	SOLENOID VALVE
	RUN TIME METER
	HORN ELEMENT
	EXTERNALLY MOUNTED ALARM LIGHT
	PHOTOCELL
	PUSH TO TEST TYPE PANEL MOUNTED INDICATOR LIGHT ("A" AMBER, "G" GREEN, "R" RED, "W" WHITE, "B" BLUE)



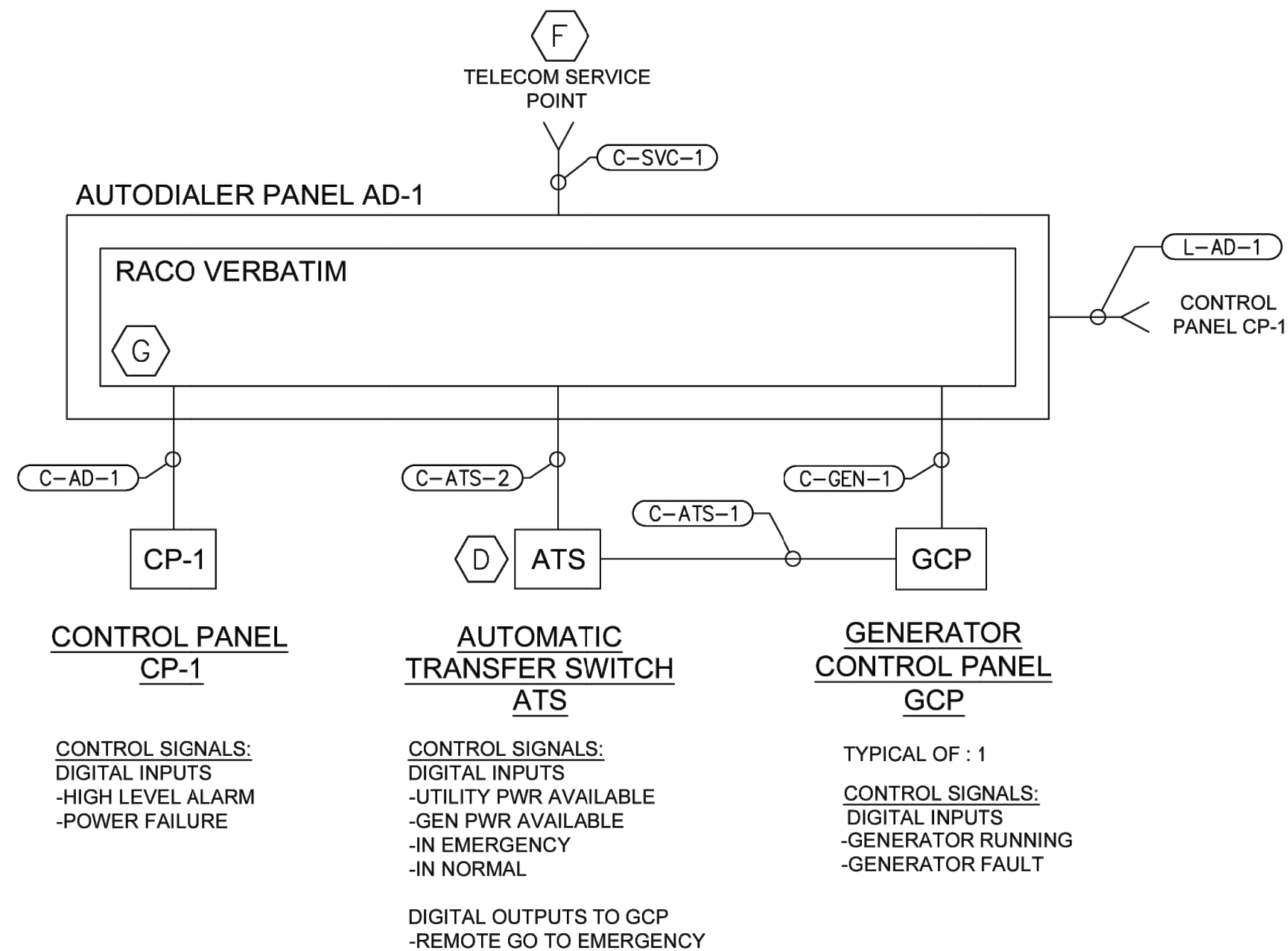
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ELECTRICAL ONE-LINE DIAGRAM  
SCALE: NTS



AUTODIALER WIRING DIAGRAM  
SCALE: NTS



AUTODIALER BLOCK DIAGRAM  
SCALE: NTS

CONDUIT AND CONDUCTOR SCHEDULE						
CIRCUIT ID	# OF SETS	CONDUIT SIZE	CONDUCTOR IN EACH SET	FROM	TO	NOTES
C-AD-1	1	3/4"	4#14, 1#14G	AUTODIALER AD-1	CONTROL PANEL CP-1	
C-ATS-1	1	1"	4#14, 1#14G	AUTO TRANSFER SWITCH ATS-1	GENERATOR CONTROL PANEL	
C-ATS-2	1	3/4"	10#14, 1#14G	AUTO TRANSFER SWITCH ATS-1	AUTODIALER AD-1	
C-GEN-1	1	1"	4#14, 1#14G	GENERATOR CONTROL PANEL	AUTODIALER AD-1	
C-LS-1	1	1"	8#14, 1#14G	CONTROL PANEL CP-1	WETWELL FLOATS	VIA DEMARC BOX
C-P-1	1	1"	8#14, 1#14G	DEMARACTION BOX	CONTROL PANEL CP-1	
C-SVC-1	1	2"	PULLSTRING	AUTODIALER AD-1	TELECOM SERVICE POINT	
L-AD-1	1	3/4"	1#12, 1#12N, 1#12G	CONTROL PANEL CP-1	AUTODIALER AD-1	
L-GEN-1	1	1"	1#12, 1#12N, 1#12G	CONTROL PANEL CP-1	GENERATOR BATTERY CHARGER	
L-GEN-2	1	1"	1#12, 1#12N, 1#12G	CONTROL PANEL CP-1	GENERATOR HEATER	
L-REC-1	1	3/4"	1#12, 1#12N, 1#12G	CONTROL PANEL CP-1	GENERAL PURPOSE RECEPT	
P-ATS-1	1	2"	3#2, 1#2N, 1#2G	SERVICE DISCONNECT DS-1	AUTO TRANSFER SWITCH ATS-1	
P-ATS-2	1	2"	3#2, 1#2N, 1#2G	GENERATOR	AUTO TRANSFER SWITCH ATS-1	
P-CP-1	1	2"	3#2, 1#2N, 1#2G	SERVICE DISCONNECT DS-1	CONTROL PANEL CP-1	
P-DS-1	1	2"	3#2, 1#2N	SERVICE POINT	SERVICE DISCONNECT DS-1	
P-P-1	1	1-1/2"	3#8, 1#8G	CONTROL PANEL CP-1	PUMP 1	VIA DEMARC BOX
P-P-2	1	1-1/2"	3#8, 1#8G	CONTROL PANEL CP-1	PUMP 2	VIA DEMARC BOX
P-SVC-1	1	3"	3#2, 1#2N	FPL SERVICE POINT	SERVICE POINT	

CONDUIT AND CABLE LIST  
SCALE: NTS

ELECTRICAL LOAD CALCULATIONS		
DESCRIPTION	SIZE	AMPS
PUMP NO. 1	5 HP	16
PUMP NO. 2	5 HP	16
CP-1 POWER & CONTROLS	15 KVA	36
CONNECTED LOAD		68
NON COINCIDENT LOAD		0
PEAK DEMAND LOAD		68
.25 X LARGEST MOTOR		4
MIN SERVICE AMPACITY		72
MIN MAIN BREAKER SIZE		90
ELECTRICAL SERVICE REQUIRED:		
100A, 240/120V, 3 PHASE, 4 WIRE		

LOAD CALCULATION  
SCALE: NTS

## GENERAL NOTES

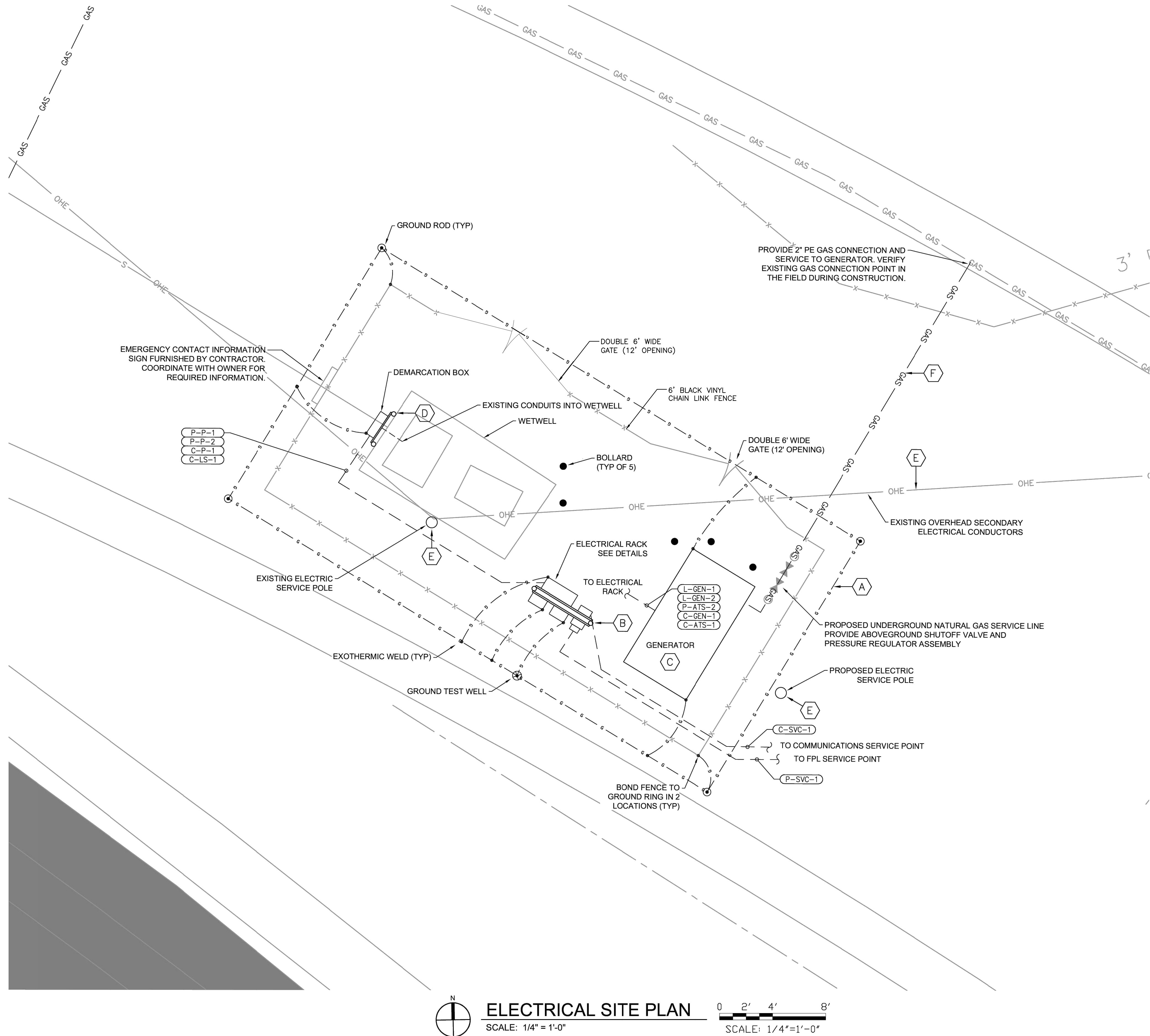
- CONTRACTOR SHALL COORDINATE ELECTRIC SERVICE INSTALLATION WITH FPL. CONTRACTOR WILL FURNISH AND INSTALL ALL RACEWAYS, SERVICE CONDUCTORS, SERVICE EQUIPMENT, WIREWAYS, LOAD CENTERS, AND FEEDERS AS REQUIRED FOR A COMPLETE AND OPERATIONAL INSTALLATION.
- MAXIMUM AVAILABLE FAULT CURRENT FROM THE UTILITY AT THE SECONDARY SIDE OF THE FPL SERVICE TRANSFORMER IS ESTIMATED AT 13,424 AMPS AND SHALL BE CONFIRMED IN THE FIELD DURING CONSTRUCTION. ALL DOWNSTREAM EQUIPMENT SHALL BE SUFFICIENTLY RATED TO WITHSTAND MAXIMUM AVAILABLE FAULT CURRENTS.
- CONTRACTOR SHALL PROVIDE ARC FLASH HAZARD ANALYSIS, PROTECTIVE DEVICE COORDINATION, AND SHORT CIRCUIT STUDY OF THE PROPOSED ELECTRICAL SYSTEM, INCLUDING ALL ELECTRICAL EQUIPMENT SUCH AS PANELBOARDS, CONTROL PANELS, DISCONNECT SWITCHES, AND MOTOR STARTERS. EQUIPMENT SHALL BE LABELED WITH SUCH THINGS AS APPROACH BOUNDARIES, INCIDENT ENERGY LEVELS, AND ACCEPTABLE PPE IN ACCORDANCE WITH OSHA 29 CFR, PART 1910, NEC, NFPA 70E, AND IEEE 1584 CURRENT EDITIONS.
- GROUNDING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH NEC AND AHJ REQUIREMENTS INTERCONNECTING ALL ELECTRICAL EQUIPMENT, EQUIPMENT RACKS, METAL PIPING, AND FOUNDATION REBAR. GROUND LOOP SHALL CONSIST OF 3/4" x 10' COPPER CLAD GROUND RODS WITH #2/0 AWG BARE COPPER GROUND CONDUCTOR AND GREEN INSULATED GEC CONDUCTOR SIZED PER NEC 250.66. GRID SHALL BE TESTED TO A MAXIMUM RESISTANCE OF 10 OHMS. DRIVE ADDITIONAL GROUND RODS AS REQUIRED TO MEET MAXIMUM RESISTANCE REQUIREMENTS.
- DUCT SEAL ALL CONDUIT CONNECTIONS INTO AND OUT OF THE PUMP CONTROL PANEL AND DEMARCATION BOXES.

## KEY NOTES

- THE CONTRACTOR SHALL EXTEND THE UNDERGROUND SERVICE CONDUITS TO THE SERVICE POINT OF CONNECTION AS DESIGNATED BY FPL AND TERMINATE IN ACCORDANCE WITH FPL REQUIREMENTS.
- CONTRACTOR SHALL GROUND AND BOND ALL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NFPA 70, ARTICLE 250 AND LOCAL AUTHORITY HAVING JURISDICTION REQUIREMENTS. BOND GROUND WITH ADJACENT WATER PIPING, STRUCTURAL SUPPORTS AND FOUNDATION REBAR.
- EXISTING CONTROL PANEL TO BE DISCONNECTED AND RELOCATED TO THE NEW ELECTRICAL RACK. DISCONNECT AND REMOVE INCOMING AND OUTGOING CONTROL PANEL POWER AND CONTROL CONDUCTORS. CONTROL PANEL MODIFICATIONS REQUIRED: REMOVE PORTABLE GENERATOR BREAKER AND GENERATOR RECEPTACLE. REPLACE EXISTING 60A MAIN BREAKER AND ASSOCIATED CONDUCTORS WITH A NEW 100A BREAKER AND CONDUCTORS PER NEC. INSTALL (4) BRANCH CIRCUIT BREAKERS FOR STANDBY GENERATOR ACCESSORIES, AUTODIALER PANEL, AND ELECTRICAL RACK RECEPTACLE. INSTALL EATON D7PR2A RELAY IN THE FS4 WETWELL HIGH LEVEL CIRCUIT AND SEND SIGNAL TO AUTODIALER PANEL FOR MONITORING. SEND POWER FAILURE SIGNAL TO AUTODIALER FOR MONITORING. INSTALL A NEW UL 1449, 100KA, 240V, 3 PHASE, 4 WIRE SPD WITH INTEGRAL OVERCURRENT DEVICE IN PANEL PER SPECIFICATION REQUIREMENTS.
- AUTOMATIC TRANSFER SWITCH SHALL BE ASCO 300 SERIES, 240V, 100A, 3 POLE, NEMA 3R, OPEN TRANSITION, WITH SOLID NEUTRAL. ASCO PART NUMBER A300A100C5-17 OR ENGINEER APPROVED EQUAL.
- CUMMINS C45N6 NATURAL GAS GENERATOR USED AS THE BASIS OF DESIGN. REVISE DESIGN AS REQUIRED TO ACCOMMODATE GENERATORS FROM OTHER MANUFACTURERS. NATURAL GAS FUEL SUPPLY SHALL BE BETWEEN 1.5 AND 3.2 KPA. COORDINATE WITH THE GAS SUPPLIER AS REQUIRED.
- COORDINATE WITH PROVIDER IN THE FIELD DURING CONSTRUCTION AND PROVIDE 2-INCH TELECOMMUNICATIONS SERVICE CONDUIT TO TELECOMMUNICATIONS SERVICE POINT.
- AUTODIALER PANEL AD-1 WITH RACO VERBATIM AUTODIALER. CONTRACTOR SHALL COORDINATE WITH OWNER IN THE FIELD DURING CONSTRUCTION FOR SIGNALS TO BE MONITORED VIA THE AUTODIALER.
- INSTALL DEMARCATION BOX IN THE LOCATION OF THE EXISTING CONTROL PANEL. PULL IN EXISTING CONDUCTORS FROM WETWELL AND TERMINATE ON TERMINAL BLOCKS IN ACCORDANCE WITH DETAILS. ROUTE NEW CONDUCTORS BETWEEN THE DEMARCATION BOX AND THE RELOCATED CONTROL PANEL.
- TERMINATE PROPOSED CONDUCTORS IN RELOCATED CONTROL PANEL IN ACCORDANCE WITH THE ORIGINAL CONTROL PANEL DRAWINGS.



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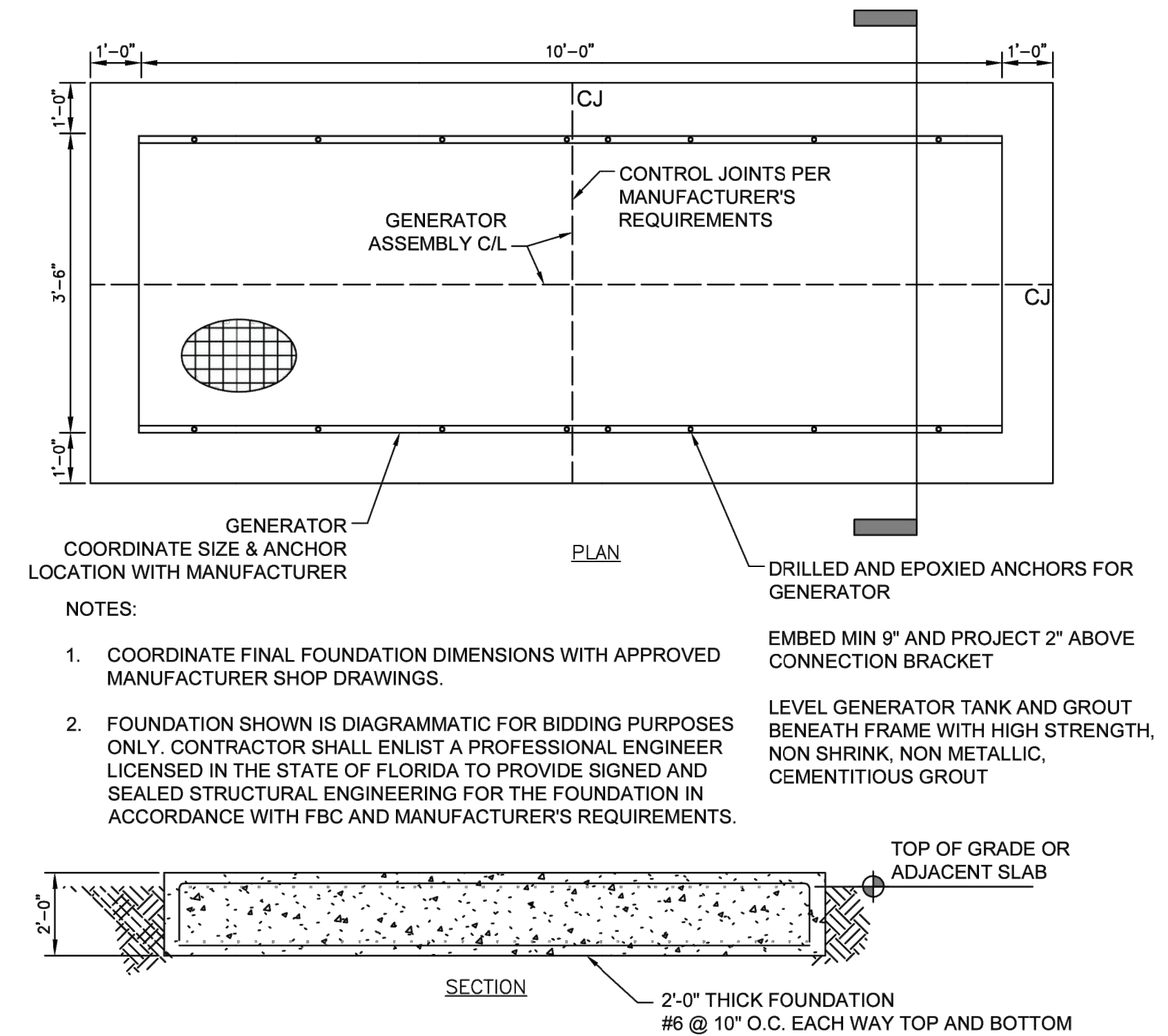


## GENERAL NOTES

1. THE CONTRACTOR SHALL COORDINATE ALL ELECTRICAL AND COMMUNICATIONS SERVICES WITH PROVIDER REPRESENTATIVES IN THE FIELD DURING CONSTRUCTION. CONTRACTOR SHALL PROVIDE ALL RACEWAYS, CONDUCTORS, EQUIPMENT, AND OTHER ASSOCIATED COMPONENTS FOR A COMPLETE AND OPERATIONAL SYSTEM IN ACCORDANCE WITH THESE DRAWINGS AND THE PROVIDERS STANDARDS AND REQUIREMENTS.
2. ELECTRICAL CONTRACTOR SHALL COORDINATE AND COMPLETE ALL WORK IN ACCORDANCE WITH EQUIPMENT MANUFACTURERS REQUIREMENTS AND APPROVED SHOP DRAWINGS.

## KEY NOTES

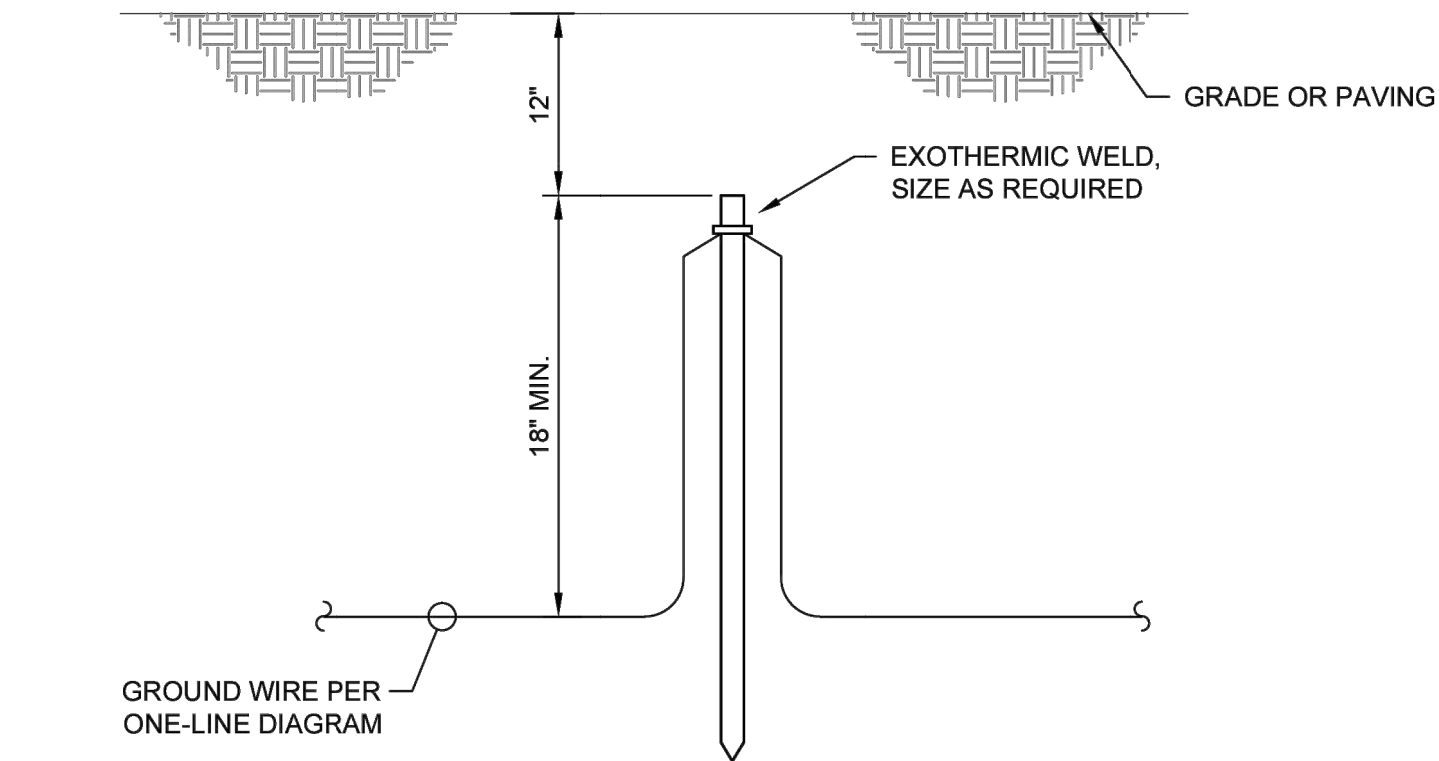
- A. GROUND GRID CONDUCTOR SHALL BE #2/0 AWG BARE COPPER BURIED 30-INCHES DEEP 24-INCHES OUTSIDE LIFT STATION FENCE LINE. BOND TO FENCE IN TWO CORNERS WITH #6 BARE COPPER JUMPERS. BOND ALL LIFT STATION ELECTRICAL EQUIPMENT AND RACKS AS SHOWN IN SINGLE LINE DIAGRAM.
- B. ELECTRICAL RACKS AND ELECTRICAL EQUIPMENT MAXIMUM HEIGHT SHALL BE 6-INCHES LOWER THAN TOP OF SITE FENCE ELEVATION.
- C. CUMMINS C45N6 GENERATOR USED AS BASIS OF DESIGN. COORDINATE FOUNDATION REQUIREMENTS AND ELECTRICAL CONDUIT STUB UP LOCATIONS WITH APPROVED MANUFACTURER SHOP DRAWINGS. BOND GENERATOR TO GROUND GRID IN TWO LOCATIONS IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS. MAINTAIN 3' CLEAR SPACE AROUND GENERATOR FOUNDATION.
- D. RELOCATE EXISTING PUMP CONTROL PANEL TO NEW ELECTRICAL RACK. INSTALL DEMARCATION BOX IN LOCATION OF EXISTING CONTROL PANEL. REROUTE CONDUITS AND CONDUCTORS FROM WETWELL INTO PROPOSED DEMARCATION BOX AND TERMINATE ON TERMINAL BLOCKS. ROUTE NEW CONDUITS AND CONDUCTORS FROM PROPOSED DEMARCATION BOX TO RELOCATED PUMP CONTROL PANEL.
- E. COORDINATE WITH FPL TO INSTALL A NEW SECONDARY ELECTRIC SERVICE POLE OUTSIDE PUMP STATION FENCE AS SHOWN AND RELOCATE OVERHEAD SECONDARY ELECTRIC CONDUCTORS TO NEW SERVICE POLE LOCATION. DEMOLISH EXISTING SECONDARY ELECTRIC SERVICE POLE WITHIN PUMP STATION FENCE.
- F. COORDINATE WITH NATURAL GAS SUPPLIER TO PROVIDE 2" PE TAP AND NEW SERVICE LINE TO PROPOSED GENERATOR WITH SHUTOFF VALVE AND PRESSURE REGULATOR ASSEMBLY. SERVICE SHALL BE RATED BETWEEN 1.5 AND 3.2 KPA.



## GENERATOR FOUNDATION DETAIL

SCALE: NTS

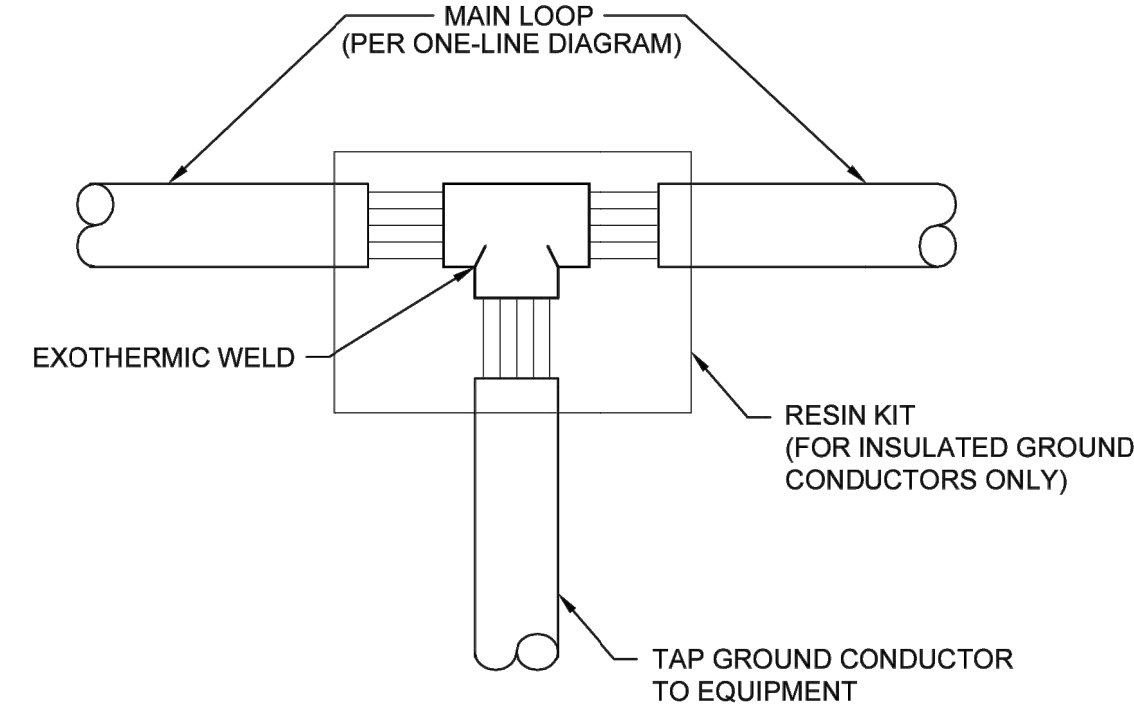




NOTE:  
MINIMUM SYSTEM RESISTANCE TO GROUND SHALL BE 10 OHMS OR LESS. IF THIS RESISTANCE CANNOT BE MET WITH SINGLE 20' RODS, ADD ADDITIONAL SECTIONS TO RODS OR ADD NEW RODS AS REQUIRED SPACED WITH A DISTANCE EQUAL TO LENGTH OF GROUND ROD.

**GROUND ROD ASSEMBLY**

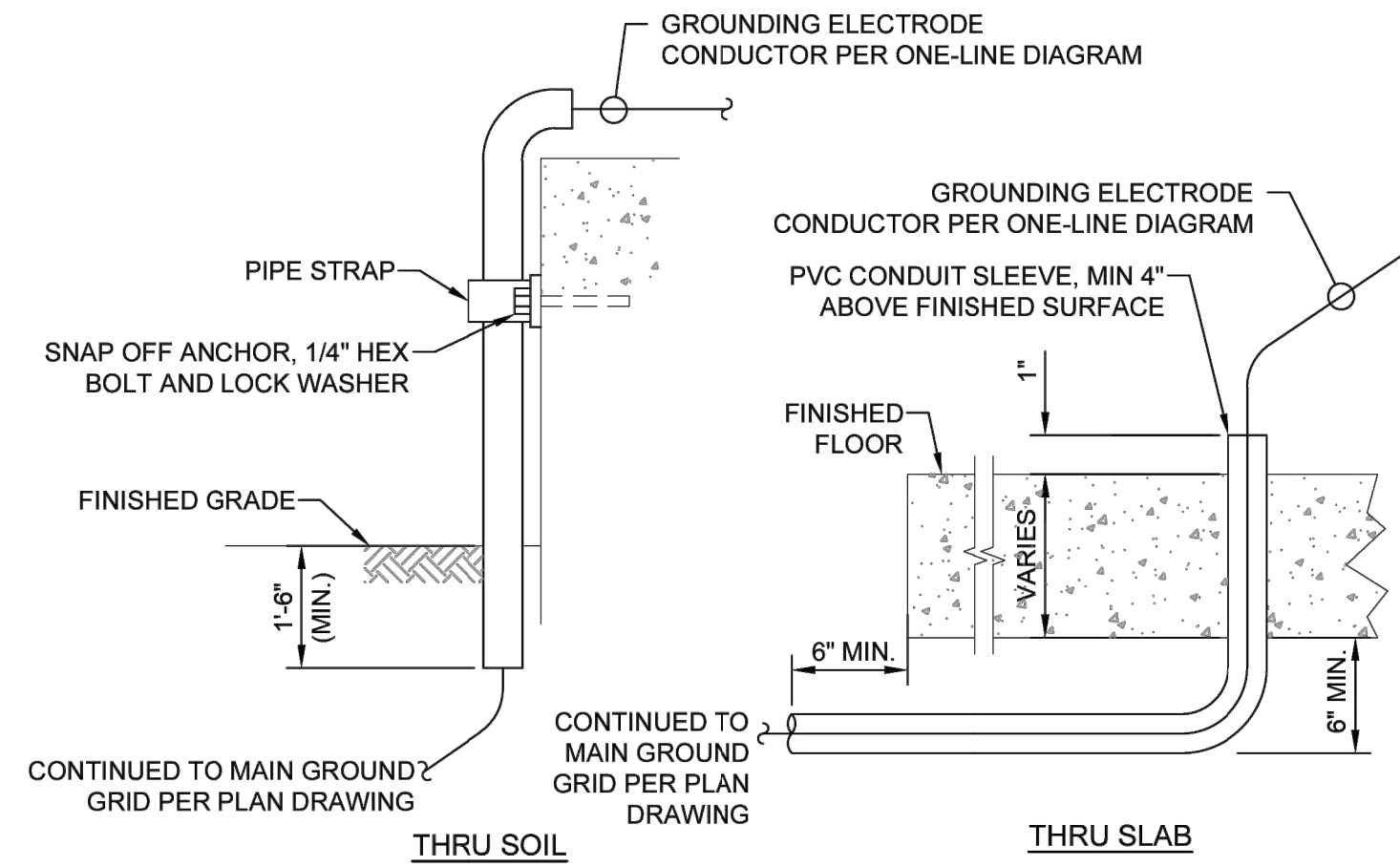
NOT TO SCALE



NOTE:  
STRIP INSULATION BACK ENOUGH FOR EXOTHERMIC WELD BUT NOT PAST RESIN MOLD, WHERE REQUIRED.

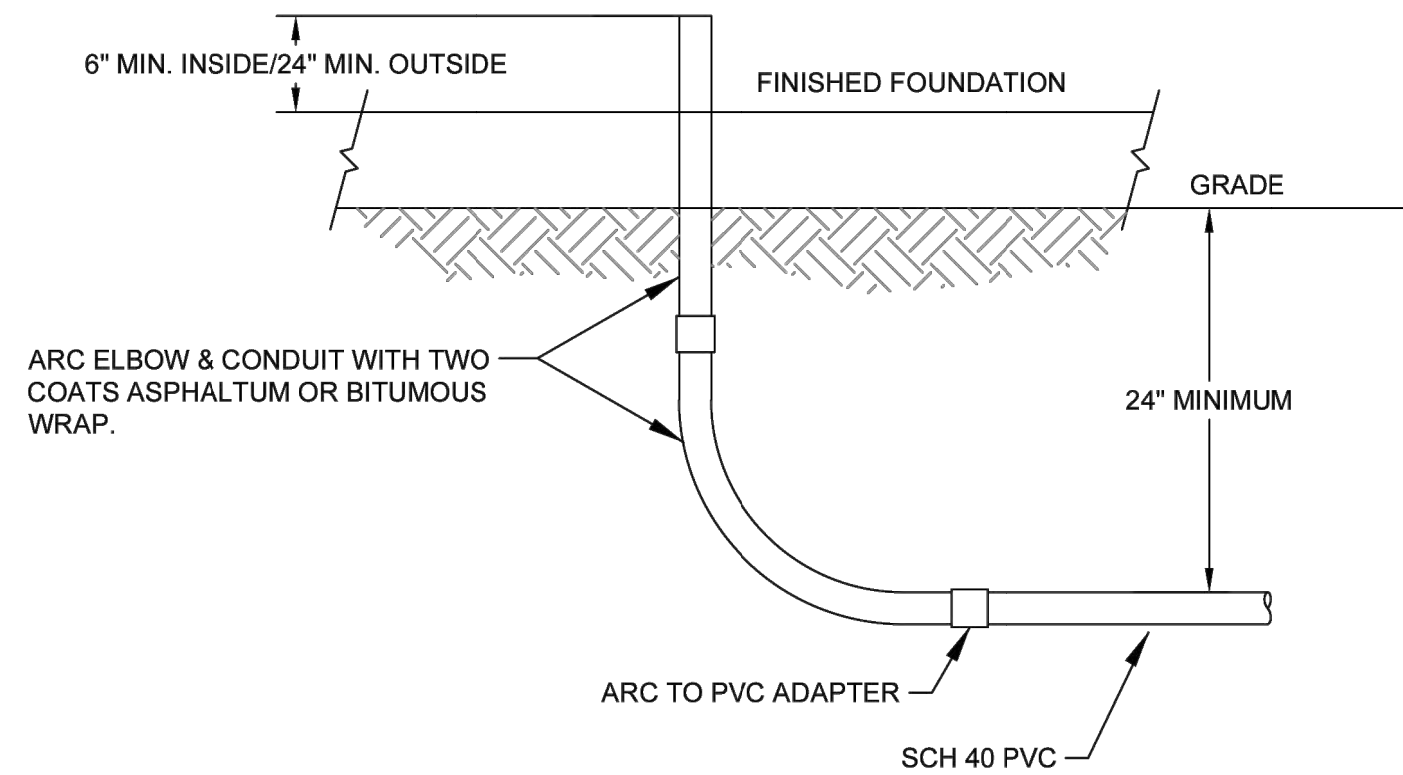
**GROUND CONNECTIONS - CADWELD**

NOT TO SCALE



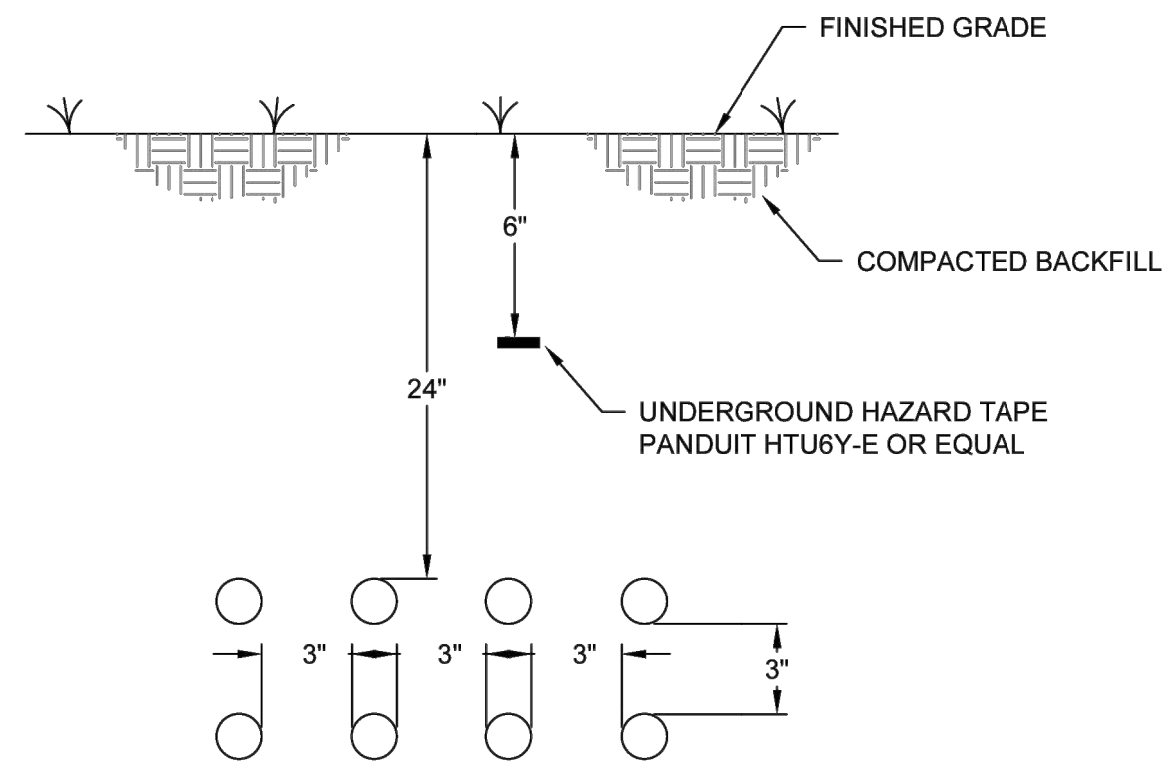
**GROUND STUB UP INSTALLATION DETAIL**

NOT TO SCALE



**U/G PVC CONDUIT INSTALLATION DETAIL**

NOT TO SCALE

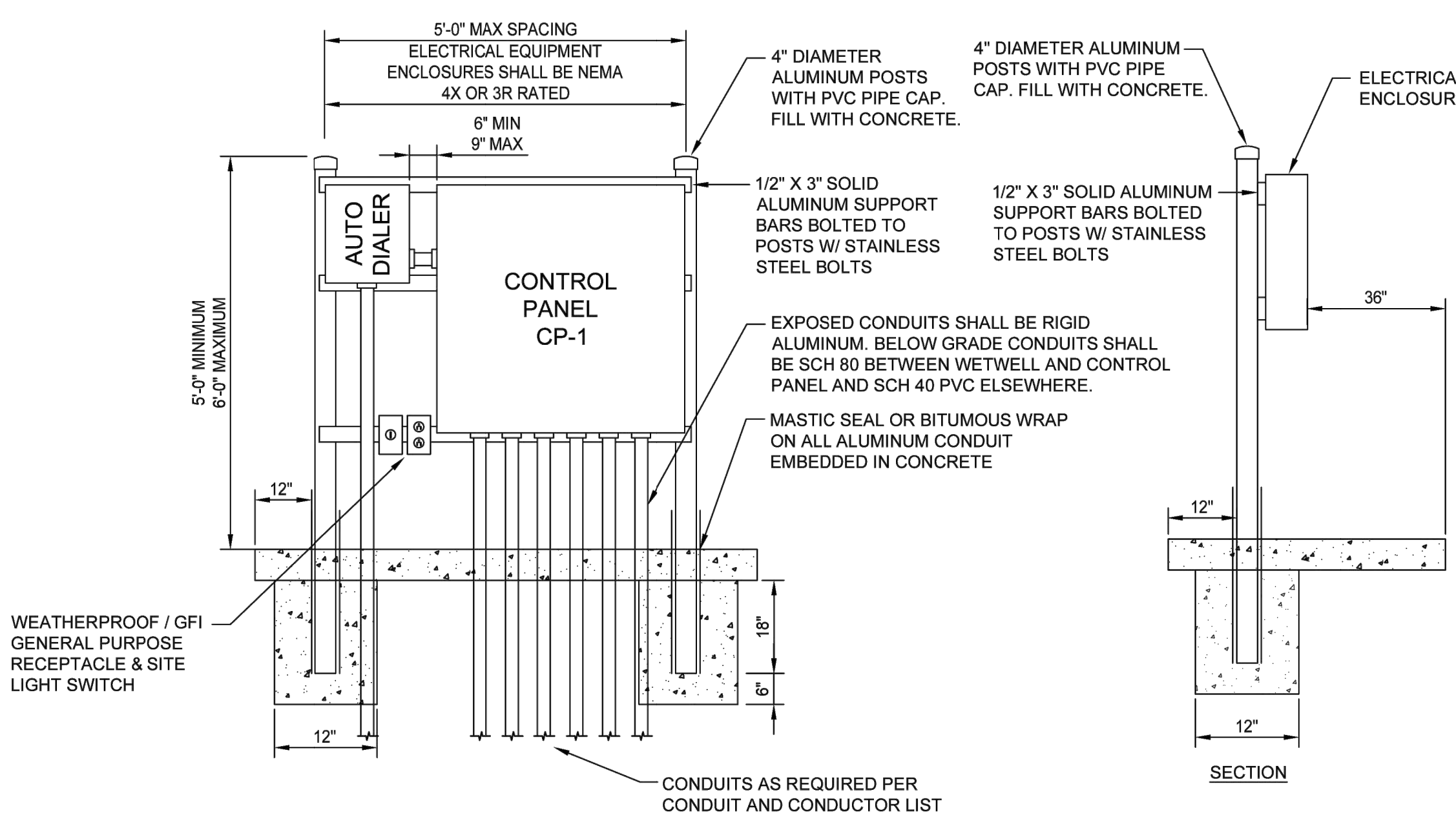


**NOTES:**

1. CONDUITS INSTALLED UNDERGROUND SHALL BE PROVIDED WITH CARLON "SNAP-N-STAC" COMBO SPACERS DESIGNED TO PROVIDE 3" CONDUIT SEPARATION. SPACERS SHALL BE INSTALLED PER MFG. RECOMMENDATIONS.
2. CONDUIT SEPARATION MAY BE REDUCED TO 1-1/2" WITHIN 10' OF HANDHOLE/MANHOLE PROVIDED "FLOWABLE FILL" IS USED AROUND CONDUIT FOR COMPACTION.

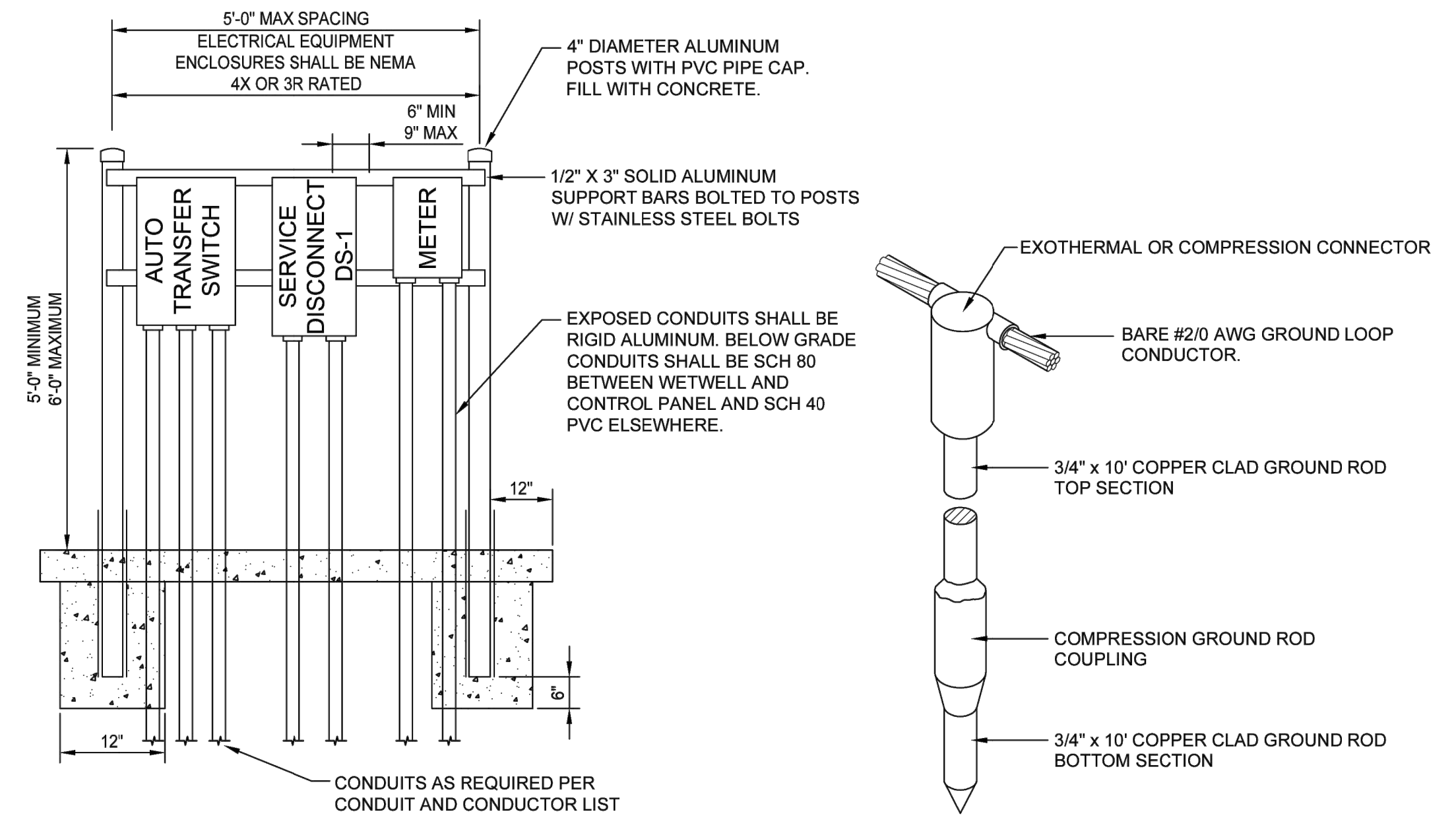
**UNDERGROUND DIRECT BURIED CONDUIT DETAIL**

NOT TO SCALE



**ELECTRICAL EQUIPMENT RACK FRONT DETAIL**

NOT TO SCALE

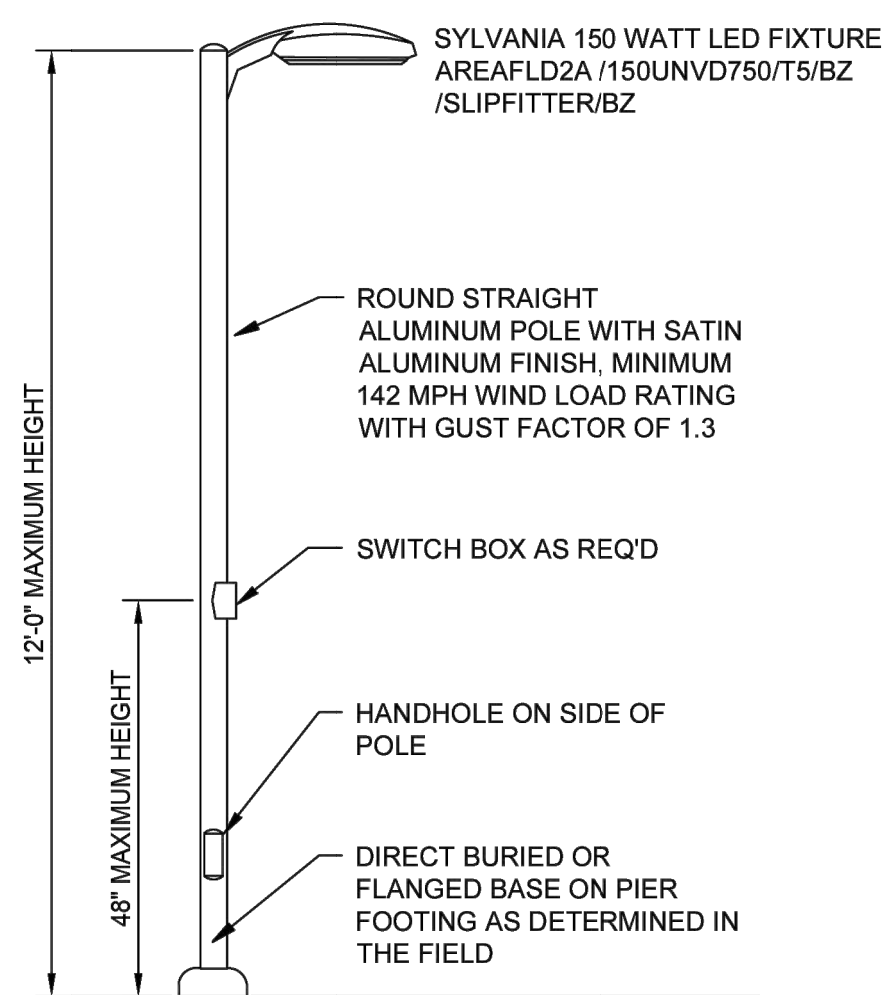


**ELECTRICAL EQUIPMENT RACK BACK DETAIL**

NOT TO SCALE

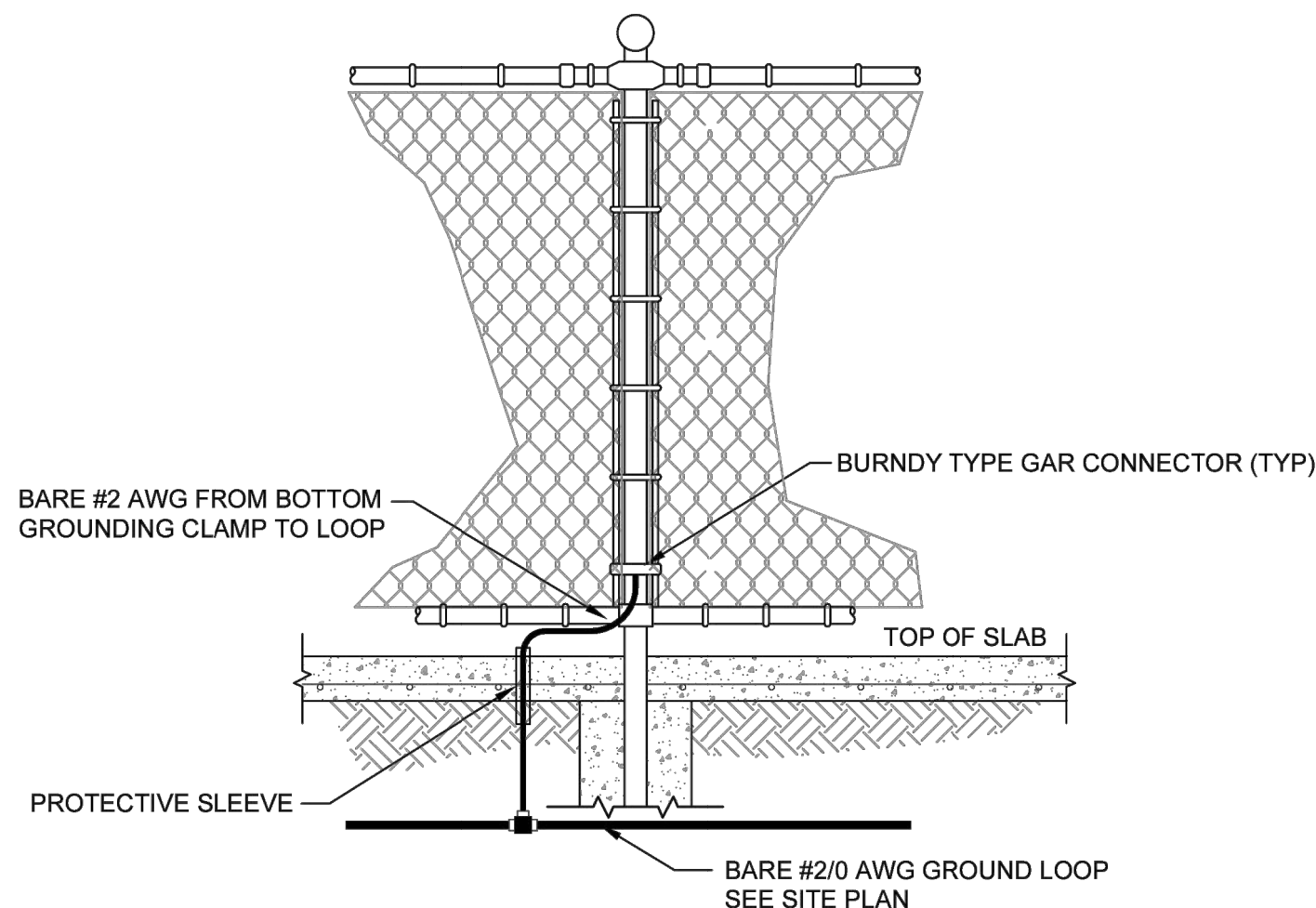
**TYPICAL GROUND ROD DETAIL**

NOT TO SCALE



**AREA LIGHT DETAIL**

NOT TO SCALE

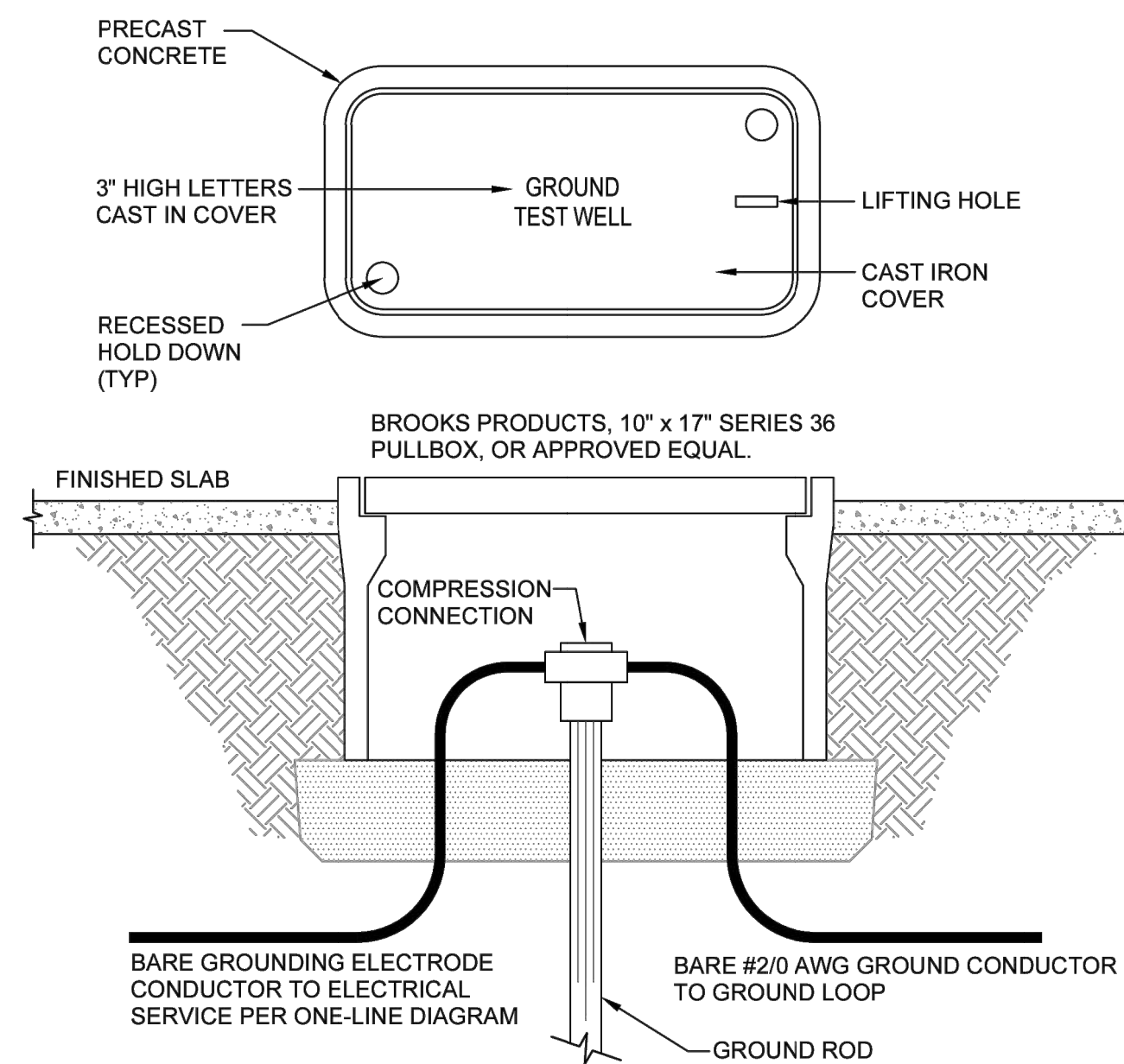


**NOTES:**

1. BOND OPPOSITE CORNER POSTS TO GROUND LOOP.

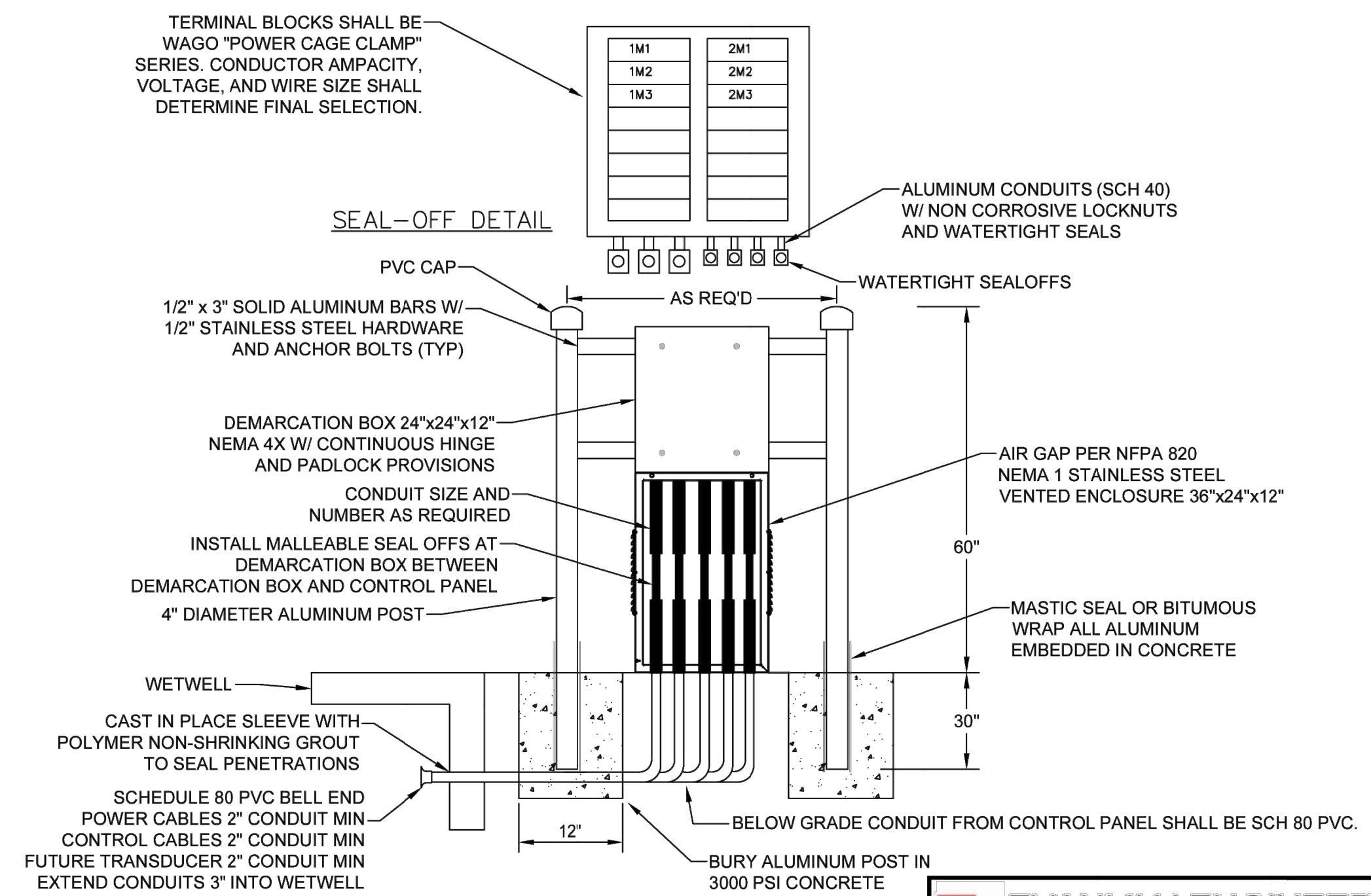
**FENCE GROUNDING CORNER POST DETAIL**

NOT TO SCALE



**GROUND SYSTEM TEST WELL DETAIL**

NOT TO SCALE



**DEMARICATION BOX DETAIL**

NOT TO SCALE