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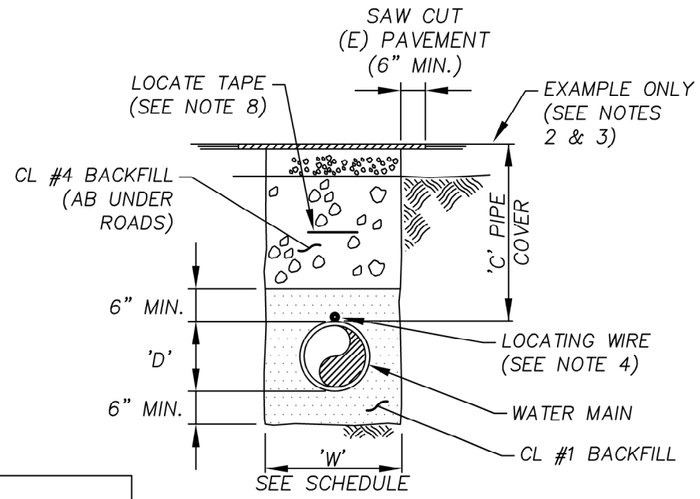
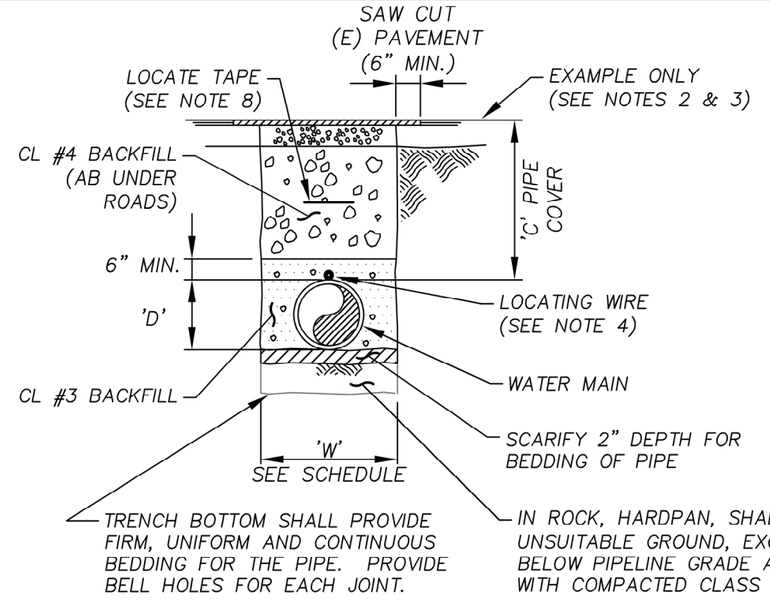
Standard Detail Abbreviation Reference

'C'	Pipe Cover
'd'	Depth of Soil Bearing Surface
'D'	Pipe Diameter
'W'	Trench Width
#___	Number (Preceding)
___#	Pounds (Following)
(DC)	Double Check
(E)	Existing
--	--
AB	Aggregate Base
AC	Asphaltic Concrete
AH	Amp Hours
APPROX.	Approximately
CAT.	Catalog
CF	Cubic Foot/Feet
CI	Cast Iron
CL	Class
CMP	Corregated Metal Pipe
CY	Cubic Yard
D	Nominal Pipe Diameter
DCVA	Double Check Valve Assembly
DI	Ductile Iron
ELEV.	Elevation
EQUIV.	Equivalent
FIP	Female Iron Pipe
FLGD	Flanged
FMP	Flanged Metal Pipe
FT	Foot/Feet
GA.	Gauge
GALV.	Galvanized
GPH	Gallons per Hour
GPM	Gallons per Minute
HP	High Pressure
ID	Inner Diameter
IPS	Iron Pipe Size
L	Long
LBS	Pounds

MAX.	Maximum
MFGR	Manufacturer
MIL	Millimeter
MIN.	Minimum
MIP	Male Iron Pipe
MJ	Mechanical Joint
NA	Not Applicable
NEG.	Negative
NO.	Number
o.c.	On Center
o.c.e.w.	On Center Each Way
OD	Outer Diameter
PE	Polyethylene
PSI	Pounds per Square Inch
PVC	Polyvinyl Chloride
R	Radius
RC	Relative Compaction
REQD	Required
RP	Reduced Pressure
SCH.	Schedule
SDR	Standard Dimensional Ratio
SE	Sand Equivalent (Per CalTrans Method 217)
SEC.	Section
SHT	Sheet
SQ FT	Square Foot/Feet
SQ.	Square
SS	Stainless Steel
TBD	To Be Determined
THD.	Threaded
TYP.	Typical
VERT.	Vertical
W	Watts
w/	With
WL	Water line
x	By



NON–METALLIC WATER MAIN



METALLIC WATER MAIN & SERVICE LINE

TRENCH WIDTH 'W' SCHEDULE		
WATER MAIN SIZE 'D' 1/	MIN. TRENCH WIDTH FOR TANGENTS AND CURVES OVER 1000' RADIUS	MIN. TRENCH WIDTH FOR CURVES LESS THAN 1000' RADIUS
4"	18"	24"
6" & 8"	24"	30"
10" & LARGER	OD + 16"	OD + 16"

1/ 2" WATER MAIN INSTALLED AS SERVICE LINE

PIPE COVER 'C' SCHEDULE 3/		
ITEM	MIN.	MAX.
WATER MAIN	PER PROFILE ON PLAN SHEETS	
SERVICE LINE & LATERALS	24"	48"
HYDRANT LATERAL	30"	48"

2/ SERVICE LINES OR LATERALS OVER 2"ø SHALL BE INSTALLED AS WATER MAINS.
3/ THE PROFILE, WHERE SHOWN ON THE PLANS, SHALL GOVERN OVER THIS SCHEDULE.

BACKFILL CLASSIFICATION					
CLASS #1 MATERIAL	CLEAN SAND–FREE FROM DELETERIOUS MATERIAL WITH SE* OF AT LEAST 50 AND MEETING THIS PERCENT BY WEIGHT GRADATION.	SIEVE SIZE	NATURAL SAND	CRUSHED SAND	DECOMPOSED GRANITE
		1½"	100	--	--
		¾"	75–100	100	100
		#4	55–100	75–100	75–100
		#200	0–15	0–5	0–5
CLASS #2 MATERIAL	SELECT EARTH FREE FROM DELETERIOUS MATERIAL AND PASSING 1" SCREEN.				
CLASS #3 MATERIAL	SELECT EARTH FREE FROM DELETERIOUS MATERIAL AND PASSING 2" SCREEN.				
CLASS #4 MATERIAL	SELECT EARTH FREE FROM DELETERIOUS MATERIAL AND PASSING 4" SCREEN.				

*SAND EQUIVALENT PER CALTRANS METHOD 217

TRENCH BACKFILL COMPACTION SCHEDULE–STANDARD PROCTOR (90)		
ITEM	INSIDE ROADWAY 4/	OUTSIDE ROADWAY
WATER MAIN	95% MIN.	85% MIN.
SERVICE LINES & ARV LATERALS	95% MIN.	85% MIN.
HYDRANT LATERAL	95% MIN.	95% MIN.

4/ DEFINED AS AREA BETWEEN TOP OF CUT AND TOE OF FILL OF ROADWAY CROSS SECTION.

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "WATER MAINS" AND "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. TRENCH DETAILS FOR PIPELINES LOCATED ALONG OR ACROSS ROADWAYS SHALL CONFORM TO REQUESTS OF THE APPROPRIATE REGULATORY BODY.
3. TRENCHES LOCATED OUTSIDE OF ROADWAYS SHALL HAVE BACKFILL SLIGHTLY MOUNDED OVER THE TRENCH UNLESS DETERMINED BY THE DISTRICT ENGINEER THAT A MOUND IS NOT NECESSARY.
4. LOCATING WIRE SHALL CONFORM TO DRAWING NID SD4.
5. COMMON TRENCH WITH OTHER UTILITIES WILL NOT BE ALLOWED.
6. TRENCHES IN COUNTY ROADWAYS SHALL FOLLOW COUNTY REQUIREMENTS.
7. CONTRACTOR SHALL COMPACT HAUNCHES OF PIPE IN SUCH WAY THAT MATERIAL BELOW THE CENTERLINE OF PIPE SUPPORTING PIPE WILL BE COMPACTED.
8. LOCATE TAPE SHALL BE PLACED A MINIMUM 12" ABOVE TOP OF PIPE, MINIMUM 3" WIDE AND SHALL CONTAIN LETTERING "CAUTION BURIED WATER LINE BELOW".
9. CLAY PLUGS SHALL BE USED IN THE TRENCH TO PREVENT MIGRATION OF WATER DOWN THE PIPELINE TRENCH, AS REQUIRED AND BY THE DIRECTION OF THE DISTRICT ENGINEER (SECTION 12 – WATER MAINS, 12–3.09–D).
10. CROSS COUNTRY PIPE INSTALLATION (NOT UNDER ROADWAYS) MAY HAVE DIFFERENT BACKFILL REQUIREMENTS AND AS APPROVED BY THE DISTRICT ENGINEER.

WATER MAIN, SERVICE LINE AND LATERAL TRENCH DETAILS

NID

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DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD1
SHT 1 of 1

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10/04/22

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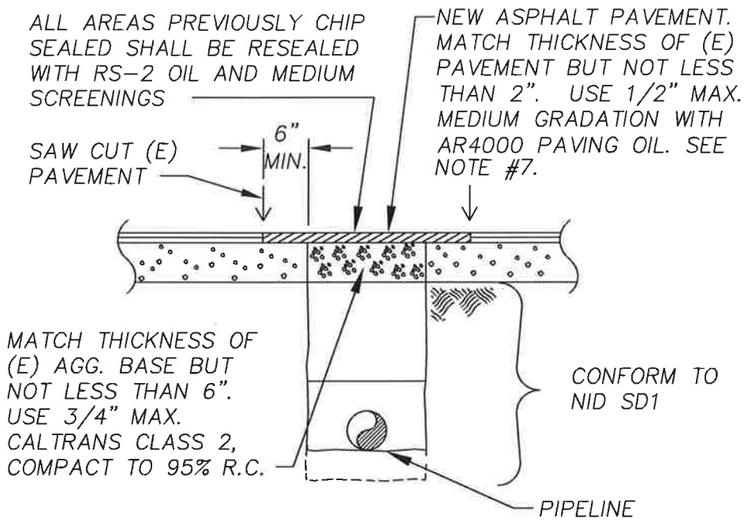
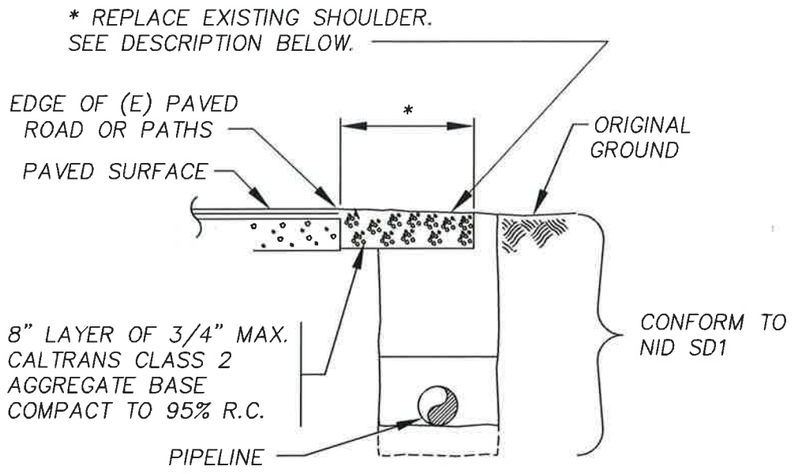


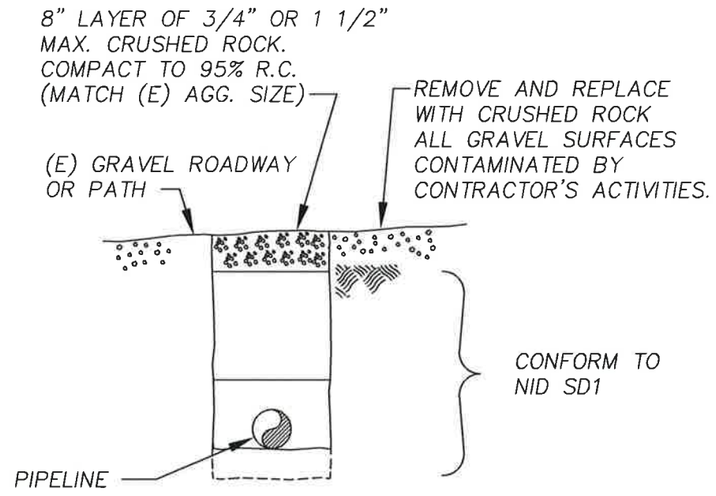
PIPELINES ALONG OR ACROSS PAVED ROADS OR PATHS SEE NOTE #6



PIPELINE ALONG GRAVELED SHOULDERS OF PAVED ROADS OR PATHS

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "WATER MAINS" IN THE SPECIFICATIONS.
2. ALL DETAILS REFER TO EXISTING ROADS AND PATHS. THE STRUCTURE OVER PIPELINES INSTALLED IN CONJUNCTION WITH NEW ROADS AND PATHS SHALL CONFORM TO DETAILS SHOWN ELSEWHERE ON THE PLANS
3. THE TERM "PIPELINE" REFERS TO ALL PIPELINES, INCLUDING, BUT NOT LIMITED TO, WATER MAINS, SERVICE LINES, ARV LATERALS, AND BLOWOFF DISCHARGE PIPES.
4. THE TERM "ROADS" REFERS TO ANY AREAS WITH PAVED OR GRAVELED SURFACES WHICH MAY BE SUBJECTED TO TRAFFIC LOADS INCLUDING, BUT NOT LIMITED TO, PRIVATE ROADS, DRIVEWAYS, PARKING AREAS, PAVED SHOULDERS, AND EMERGENCY VEHICLE ACCESS ROADS.
5. THE TERM "PATH" REFERS TO ALL IMPROVED PATHS, PAVED OR GRAVELED, INCLUDING, BUT NOT LIMITED TO, BICYCLE PATHS (NOT INTEGRAL WITH A ROAD), PEDESTRIAN PATHS, WALK WAYS, AND LANDSCAPE PATHS.
6. PIPELINES CROSSING PAVED RESIDENTIAL DRIVEWAYS SHALL BE CONSIDERED AS PIPELINES ALONG PAVED ROADS, EXCEPT AS NOTED OTHERWISE ON THE PLANS.
7. ROADS OR PATHS PAVED WITH CONCRETE SHALL BE RECONSTRUCTED USING MATERIALS AND TECHNIQUES MATCHING THE ORIGINAL PAVEMENT.
8. SURFACE RESTORATION OF OTHER ROADS AND PATHS SHALL CONFORM TO THE REQUIREMENTS OF THE APPROPRIATE REGULATORY BODY.



PIPELINES ALONG OR ACROSS GRAVELED ROADS OR PATHS

SURFACE RESTORATION OF ROADS AND PATHS

NID

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DRAWING NO.
SD2
SHT 1 of 1

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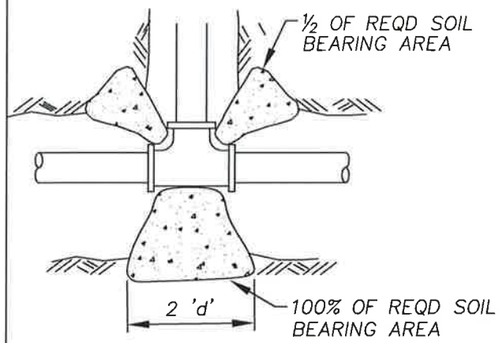
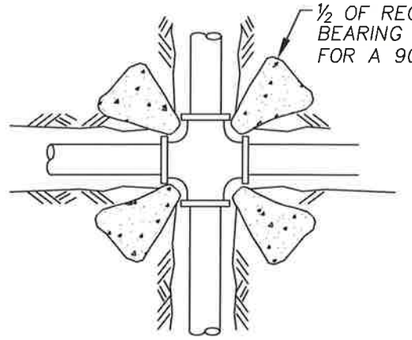
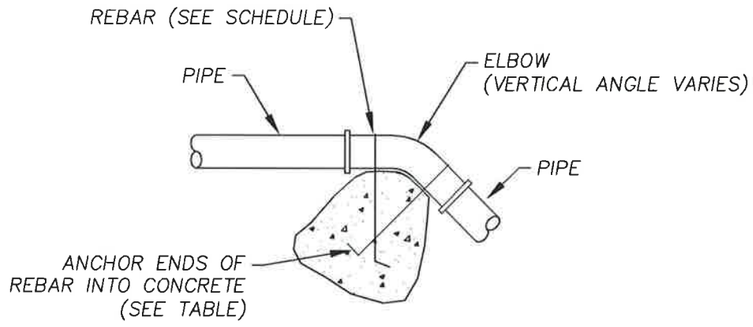


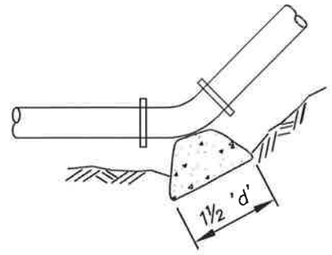
TEE – PLAN VIEW



CROSS – PLAN VIEW



VERTICAL ELBOW–PLAN VIEW



ELBOW – PLAN VIEW

'd' = DEPTH OF SOIL BEARING SURFACE

NOTES:

1. MATERIALS AND INSTALLATION SHALL CONFORM TO REACTION BLOCKING FOR "WATER MAINS" IN THE SPECIFICATIONS.
2. THRUST BLOCKS SHALL BE PLACED AT ALL HORIZONTAL DEFLECTIONS IN EXCESS OF 6 DEGREES AND ALL DOWNWARD VERTICAL DEFLECTIONS IN EXCESS OF 6 DEGREES (USE VALUES FOR 11¼ DEGREES IN TABLE).
3. SOIL BEARING AREAS ARE BASED ON A 2,000 PSI SOIL PRESSURE AND WORKING PRESSURE OF 150 PSI PLUS 1.50 FACTOR OF SAFETY AND A 75 PSI SURGE (TOTAL 300 PSI). CALCULATION FOR BEARING AREAS FOR WORKING PRESSURE HIGHER THAN 150 PSI MUST BE APPROVED BY THE DISTRICT ENGINEER. ADJUST SOIL BEARING PRESSURE AS NECESSARY, WITH APPROVAL FROM THE DISTRICT ENGINEER.
4. CONCRETE SHALL BE PLACED BETWEEN THE FITTING AND UNDISTURBED SOIL.
5. THRUST BLOCKS SHALL BE NEATLY FORMED USING PLYWOOD OR SANDBAGS. FORMING MATERIALS SHALL BE REMOVED UPON INITIAL CURE OF CONCRETE AND PRIOR TO BACKFILLING. CONCRETE TO CURE A MINIMUM 24 HOURS PRIOR TO ANY DISTURBANCE AND BACKFILL.
6. THRUST BLOCKS SHALL BE CONSTRUCTED USING A MINIMUM 2,000 PSI CONCRETE.
7. CONCRETE SHALL NOT BE PLACED ON OR AROUND PIPE, BELLS, FLANGES OR OTHER JOINTS. IF UNAVOIDABLE, AND WITH APPROVAL OF THE DISTRICT ENGINEER, THESE AREAS SHALL BE PROTECTED WITH A DOUBLE WRAP OF 6 MIL POLYETHYLENE FILM.
8. THRUST BLOCKS PLACED ON BLIND FLANGES ADJACENT TO OTHER THRUST BLOCKS ON THE SAME FITTING SHALL BE SEPARATED FROM THE PERMANENT THRUST BLOCKS WITH A PLYWOOD DIVIDER IN ORDER TO FACILITATE ITS REMOVAL.
9. THRUST BLOCKS FOR PIPES 14" AND LARGER TO BE APPROVED BY DISTRICT ENGINEER.
10. THRUST BLOCKS FOR REDUCERS TO BE APPROVED BY DISTRICT ENGINEER.
11. REBAR HOOPS FOR VERTICAL THRUST BLOCKS TO BE EPOXY COATED.
12. RESTRAINED PIPE CAN BE UTILIZED INSTEAD OF THRUST BLOCKS AND SHALL BE PRE–APPROVED BY THE DISTRICT ENGINEER.

THRUST BLOCK SCHEDULE

PIPE SIZE	REQUIRED SOIL BEARING (SQ. FT.) – SEE NOTE #4.					
	BLIND END OR TEE	ELBOW				CROSS
		90°	45°	22½°	11¼°	
4"& 6"	5	6	4	2	1	6
8"	8	11	6	3	2	11
10"	12	17	10	5	3	17
12"	17	24	13	7	4	24

VERTICAL ELBOW THRUST BLOCK SCHEDULE

PIPE SIZE	CUBIC YARDS CONCRETE				
	ELBOW				
	90°	45°	22½°	11¼°	REBAR
4"& 6"	2.5	1.5	1.0	0.5	#5
8"	4.5	2.5	1.5	1.0	#5
10"	6.5	4.0	2.5	1.5	#6
12"	9.0	5.5	3.0	2.0	#8

THRUST BLOCKS

NID

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DIRECTOR OF ENGINEERING

DRAWING NO.
SD3
SHT 1 of 1

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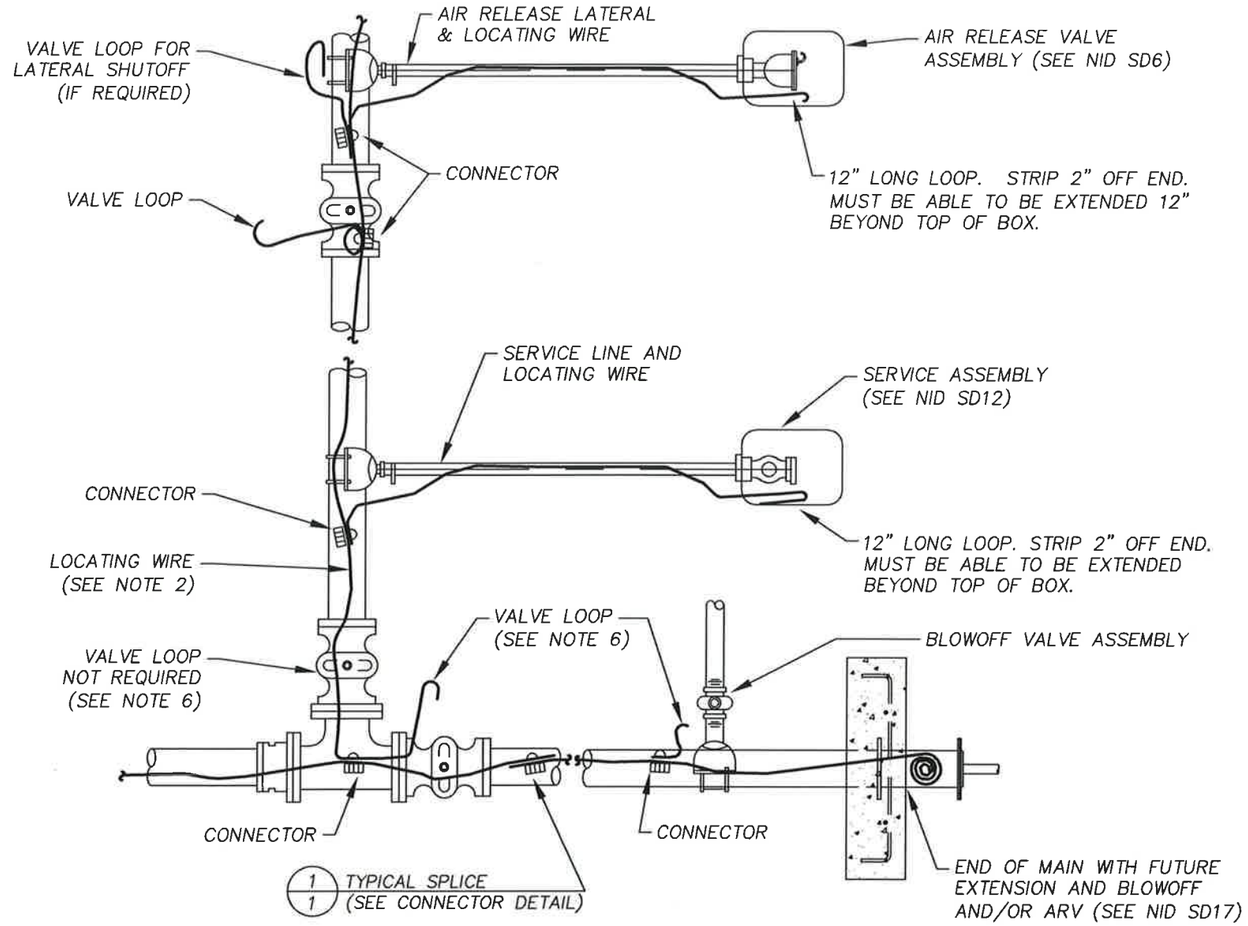
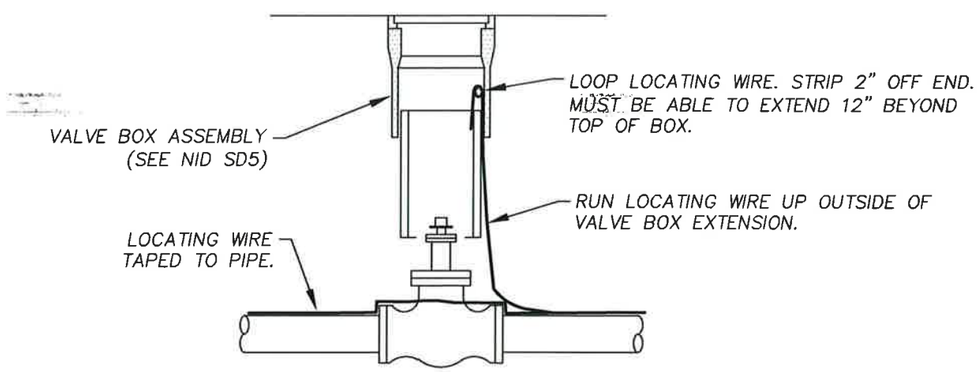
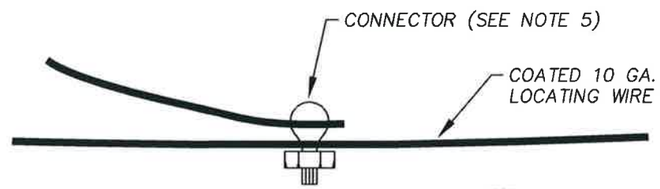




VALVE LOOP DETAIL

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO LOCATING WIRE AND CONNECTORS FOR "WATER MAINS" IN THE SPECIFICATIONS.
2. LOCATING WIRE SHALL BE COATED 10 GAUGE SOLID COPPER.
3. LOCATING WIRE SHALL BE PLACED ABOVE AND CENTERED OVER ALL NON-METALLIC PIPE AND OVER ALL METALLIC PIPE USING "O" RING JOINTS WITHOUT BONDING STRAPS.
4. LOCATING WIRE SHALL BE PLACED OVER ALL SERVICE LINES INCLUDING PRIVATE SERVICE LATERALS AND AIR RELEASE VALVE LATERALS.
5. ALL CONNECTORS FOR SPLICES AND OTHER CONNECTIONS TO THE LOCATING WIRES SHALL BE MADE WITH SPLIT BOLT OR PARALLEL CONNECTORS-(NO WIRE NUTS). ALL SPLICES AND CONNECTIONS AND THE CONNECTOR SHALL BE WRAPPED THROUGHLY WITH VINYL ELECTRICAL TAPE. DISTRICT USES CRIMP CONNECTORS.
6. VALVE LOOPS ARE REQUIRED FOR ONLY ONE (1) VALVE IN A CLUSTER OF VALVES PROVIDING THEY ARE ALL WITHIN A 2' RADIUS.
7. ALL BLOWOFF VALVES AND AIR RELEASE LATERAL SHUTOFF VALVES (IF REQUIRED) SHALL BE INSTALLED WITH A LOCATING WIRE VALVE LOOP.
8. ALL LOCATING WIRE SHALL BE TESTED FOR CONTINUITY.
9. LOCATING WIRE SHALL BE CENTERED ON AND TAPED TO THE PIPE.



1/1 CONNECTOR DETAIL

LOCATING WIRE

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SD4
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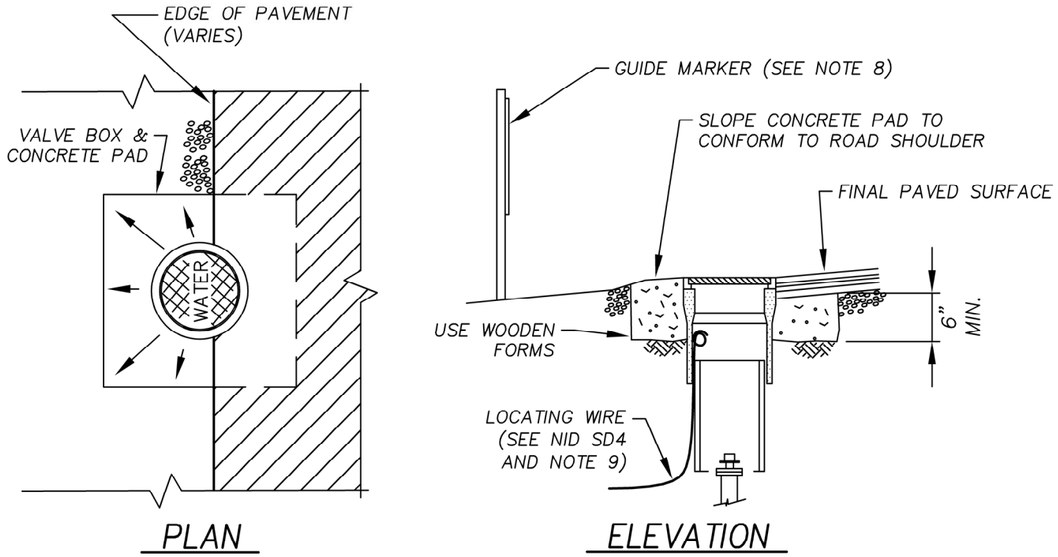
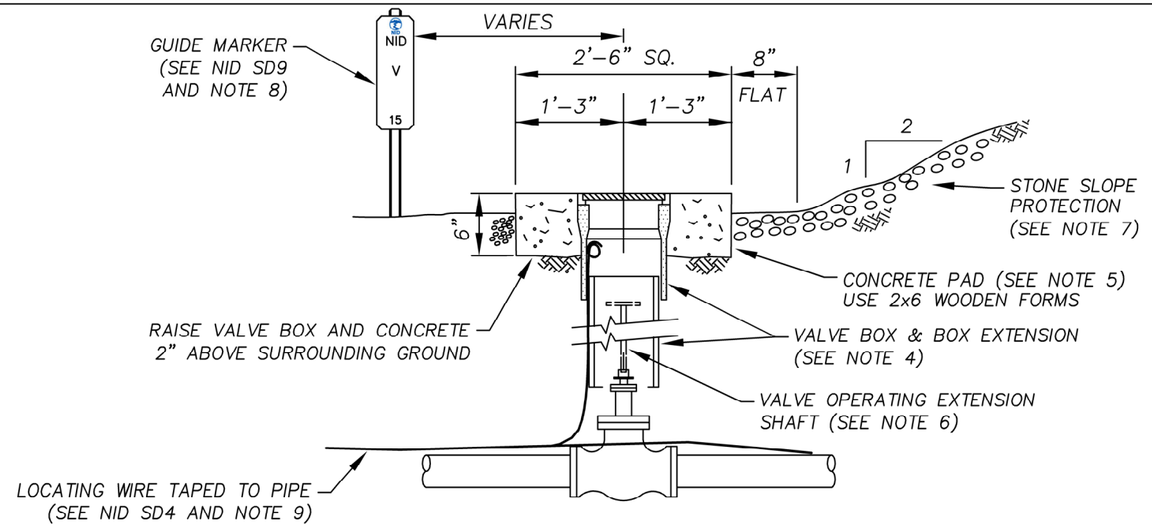
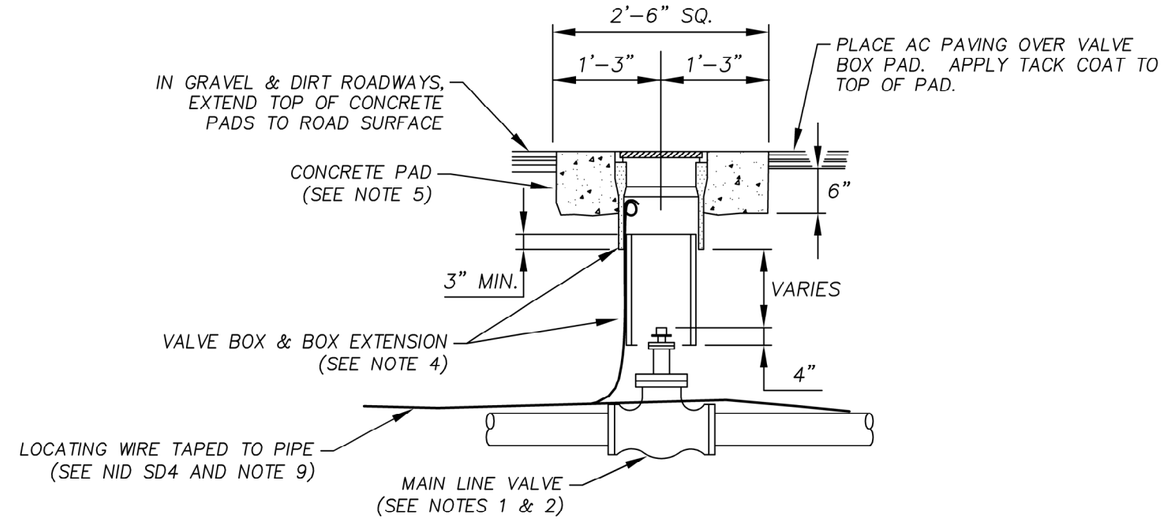


PLAN ELEVATION

VALVE BOX IN ROAD SHOULDER



OUTSIDE ROAD ASSEMBLY



INSIDE ROAD ASSEMBLY

NOTES:

1. ALL MATERIALS AND INSTALLATIONS SHALL CONFORM TO "MAIN LINE VALVE ASSEMBLIES" IN THE SPECIFICATIONS.
2. VALVES SHALL BE OF THE TYPE ALLOWED IN THE SPECIFICATIONS.
3. JOINTS SHALL BE FLANGED JOINTS EXCEPT WHERE SPECIFIC TYPES OF JOINTS ARE SHOWN ON THE PLANS OR DESIGNATED IN THE SPECIFICATIONS. ALL JOINTS SHALL BE PROTECTED FROM CORROSIONS AS REQUIRED IN THE SPECIFICATIONS.
4. VALVE BOXES SHALL BE CHRISTY G5 WITH A RATTLEPROOF CAST IRON LID MARKED "WATER". BOX EXTENSIONS SHALL BE PRECAST CONCRETE OR 8" C900 PVC PIPE WITH MINIMUM SDR OF 25 AND ENDS CUT SQUARE. BOX EXTENSIONS SHALL BE CENTERED OVER THE VALVE OPERATING NUT AND CONCENTRIC WITH THE VALVE STEM.
5. VALVE BOX PADS SHALL BE 3,000 PSI CONCRETE.
6. A VALVE OPERATOR EXTENSION SHAFT SHALL BE FURNISHED AND INSTALLED FOR ALL VALVES WITH OPERATING NUT PLACED 60" OR MORE BELOW THE TOP OF THE VALVE BOX. REFER TO DRAWING NID SD10.
7. PLACE STONE SLOPE PROTECTION OF NO. 3 BACKING ROCK PER CALTRANS SEC. 72 ON ALL CUT SLOPES SURROUNDING VALVE ASSEMBLIES AS DIRECTED.
8. A GUIDE MARKER SHALL BE FURNISHED AND INSTALLED AS DIRECTED. REFER TO DRAWING NID SD10.
9. LOCATING WIRE MUST BE ABLE TO EXTEND 12" ABOVE THE TOP OF THE VALVE BOX LID.

MAIN LINE VALVE ASSEMBLY

DRAWING NO.
SD5
SHT 1 of 1

NID

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DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

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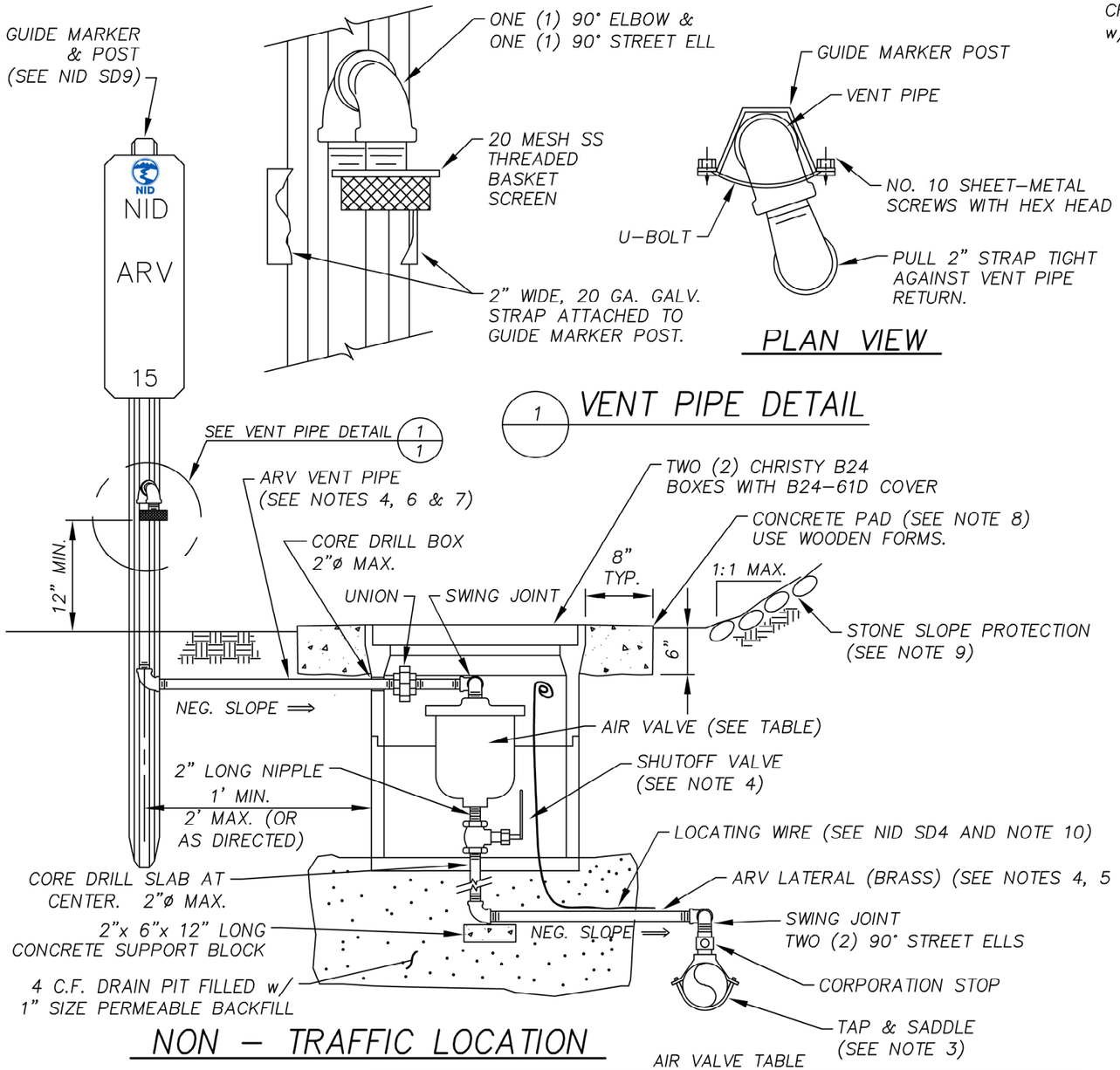
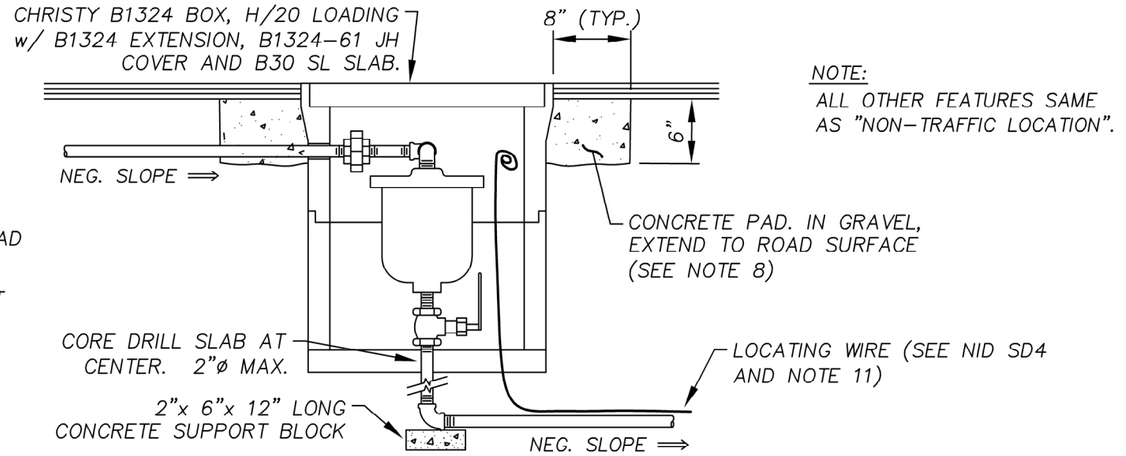


NON – TRAFFIC LOCATION

AIR VALVE TABLE

VALVE TYPE 1/	VALVE SIZE (INCHES)	MAX. ORIFICE (INCHES)	APCO	CRISPIN
AIR & VACUUM RELEASE	1"		142	
AIR RELEASE	¾"	1/16"	65 (150 PSI MAX)	M8 MIDGET
	1"	3/32"–3/16"	200A	P 10
COMBINATION AIR RELEASE	1"	3/32"	143C	UL 10

1/ VALVES LISTED ARE RATED FOR 150 PSI WORKING PRESSURE UNLESS OTHERWISE NOTED.



NOTE:
ALL OTHER FEATURES SAME AS "NON-TRAFFIC LOCATION".

TRAFFIC LOCATION

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "AIR RELEASE VALVE ASSEMBLIES" IN THE SPECIFICATIONS.
2. THE SIZE, TYPE AND LOCATION OF ARV ASSEMBLIES SHALL BE AS NOTED ON THE PLANS. LOCATIONS ARE APPROXIMATE AND SHALL BE AS DIRECTED.
3. THE TAP AND SADDLE FOR THE CONNECTION TO THE WATER MAIN SHALL CONFORM TO "WATER MAIN TAPS" IN THE SPECIFICATIONS.
4. LATERAL VENT PIPES AND SHUTOFF VALVES (BALL VALVE) SHALL BE THE SAME NOMINAL SIZE AS THE ARV. REFER TO DRAWING NID SD1 FOR TRENCH DETAILS.
5. LATERAL PIPE, VALVES AND FITTINGS SHALL BE BRASS.
6. VENT PIPE AND FITTINGS SHALL BE GALVANIZED IRON.
7. THE SADDLE AND ALL BURIED LATERAL AND VENT PIPES, INCLUDING THOSE ENCASED IN CONCRETE, SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
8. CONCRETE FOR VALVE BOX PADS SHALL BE 3000 PSI.
9. PLACE STONE SLOPE PROTECTION OF NO. 3 BACKING ROCK PER CALTRANS SEC. 72, ON ALL CUT SLOPES SURROUNDING ARV ASSEMBLIES, AS DIRECTED.
10. LOCATING WIRE MUST BE ABLE TO EXTEND 12" ABOVE THE TOP OF THE VALVE BOX LID.
11. VENT PIPE MIN HEIGHT OF 12" MAY BE EXTENDED PURSUANT TO COUNTY FLOOD ZONE REQUIREMENTS – DISTRICT ENGINEER TO VERIFY.

3/4" & 1" AIR RELEASE VALVE ASSEMBLY

DRAWING NO.
SD6
SHT 1 of 1

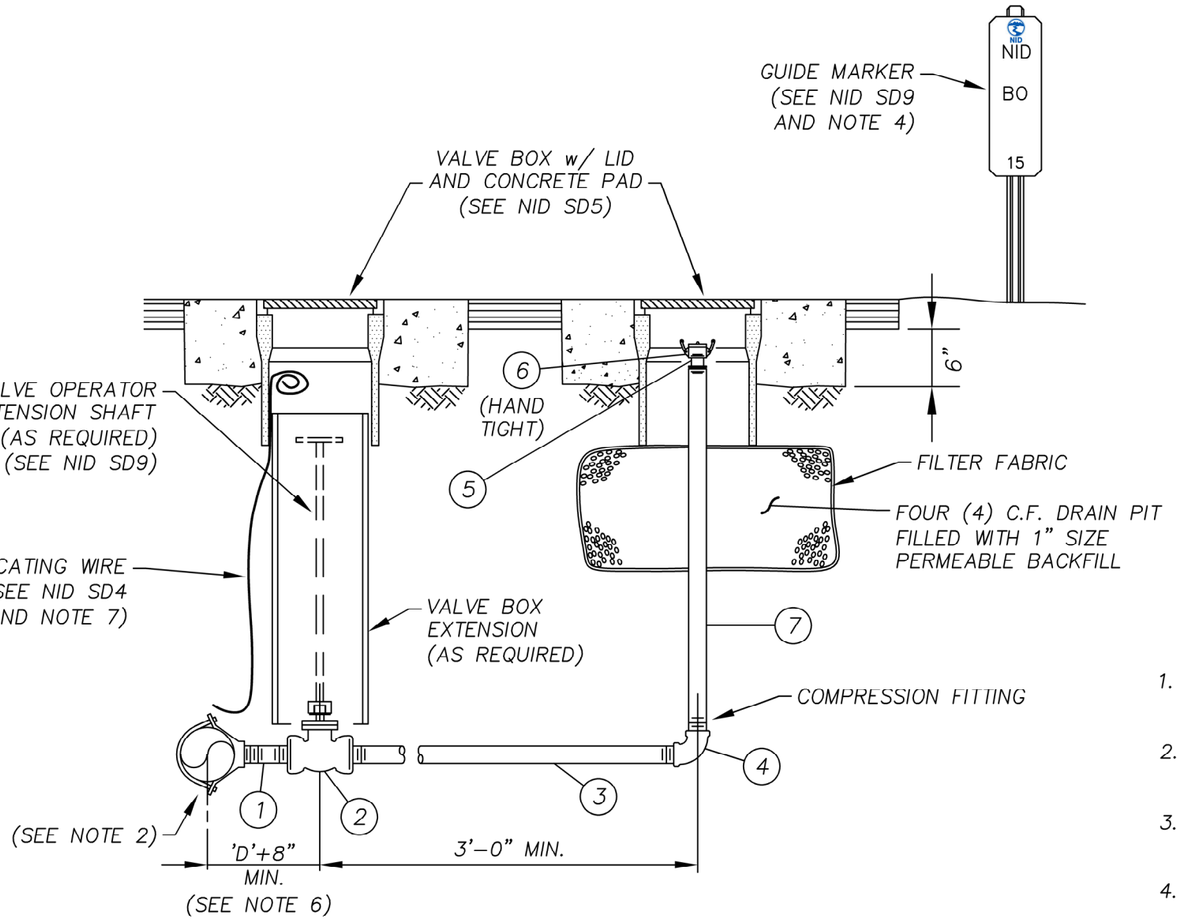
NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE



BLOWOFF ASSEMBLY W/ RISER

1. 2" BRASS NIPPLE
2. 2" RESILIENT SEAT CAST IRON VALVE w/ 2" HUB NUT
3. 2" BRASS PIPE
4. 2" 90° ELBOW, BRASS
5. 2" MALE CAM LOCK COUPLING, TYPE E STAINLESS STEEL
6. 2" CAM LOCK DUST CAP, TYPE DC PVC
7. BRASS PIPE

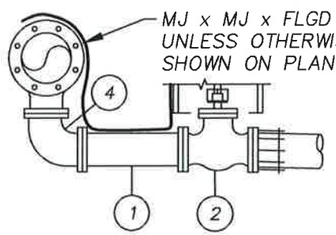
NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "BLOWOFF VALVE ASSEMBLIES" IN THE SPECIFICATIONS.
2. THE TAP AND SADDLE FOR THE CONNECTION TO THE WATER MAIN SHALL CONFORM TO "WATER MAIN TAPS" IN THE SPECIFICATIONS.
3. PIPE, SADDLE, AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
4. A GUIDE MARKER SHALL BE FURNISHED AND INSTALLED AS DIRECTED. REFER TO DRAWING NID SD9.
5. REFER TO DRAWING NID SD1 FOR TRENCH DETAILS.
6. LOCATE VALVE AND RISER TO NOT INTERFERE WITH ROADSIDE DRAINAGE OR OTHER STRUCTURES.
7. LOCATING WIRE MUST BE ABLE TO EXTEND 12" ABOVE THE TOP OF THE VALVE BOX LID. REFER TO DRAWING NID SD4.

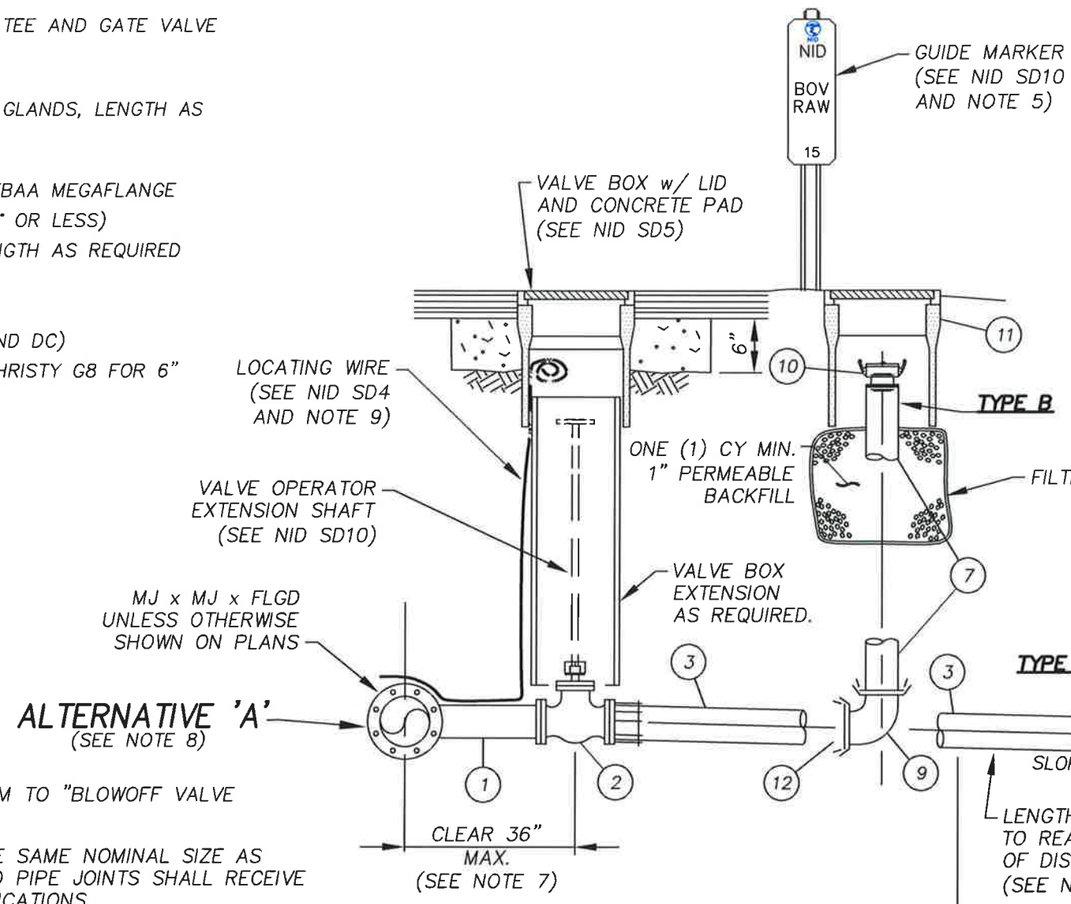
2" TREATED WATER BLOWOFF ASSEMBLY	DRAWING NO. SD7 SHT 1 of 1
NID APPROVED: DOUG RODERICK, P.E. DIRECTOR OF ENGINEERING	REVISION DATE 10/04/22

NOT TO SCALE

1. 4" OR LARGER FLGD DUCTILE IRON SPOOL BETWEEN TEE AND GATE VALVE (SEE NOTE 7)
2. 4" OR LARGER FLGD x FLGD AND FCA GATE VALVE
3. 4" OR LARGER MJ DUCTILE IRON PIPE w/ RETAINER GLANDS, LENGTH AS REQUIRED
4. 4" OR LARGER FLGD 90° ELBOW
5. 4" OR LARGER FLGD FLAP VALVE w/ SERIES 2100 EBAA MEGAFLANGE
6. 4" OR LARGER MJ ELBOW w/ RETAINER GLANDS (45° OR LESS)
7. 4" OR LARGER FLGD x PE DUCTILE IRON SPOOL, LENGTH AS REQUIRED
8. 4" OR LARGER FLGD ELBOW (45° OR LESS)
9. 4" OR LARGER MJ 90° ELBOW w/ RETAINER GLANDS
10. 4" MALE CAM LOCK w/ PVC DUST CAP (TYPES E AND DC)
11. VALVE BOXES SHALL BE CHRISTY G5 FOR 4" AND CHRISTY G8 FOR 6" AND 8" BLOWOFF VALVES.
12. PIPE JOINTS SHALL BE RESTRAINED.



ALTERNATIVE 'B'
(SEE NOTE 8)



ALTERNATIVE 'A'
(SEE NOTE 8)

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "BLOWOFF VALVE ASSEMBLIES" IN THE SPECIFICATIONS.
2. ALL FITTINGS, VALVES AND PIPE SHALL BE OF THE SAME NOMINAL SIZE AS SHOWN ON THE PLANS. ALL FITTINGS, VALVES AND PIPE JOINTS SHALL RECEIVE POSITIVE RESTRAINT AS DESCRIBED IN THE SPECIFICATIONS.
3. FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
4. DISCHARGE FROM 4" OR LARGER TYPE "A" BLOWOFFS SHALL BE DIRECTED HORIZONTALLY TO MAINTAIN FULL FLAP VALVE CLOSURE. STONE SLOPE PROTECTION SHALL BE EXTENDED AS REQUIRED TO PROTECT SLOPE AT IMPACT POINT. BLOWOFFS MAY ALSO BE DIRECTED INTO DRAINAGE STRUCTURES, SUCH AS CULVERTS OR DROP INLETS AS SHOWN ON THE PLANS OR AS DIRECTED.
5. A GUIDE MARKER SHALL BE FURNISHED AND INSTALLED AS DIRECTED. REFER TO DRAWING NID SD10.
6. REFER TO DRAWING NID SD1 FOR TRENCH DETAILS.
7. LOCATE VALVE AT 36" MAXIMUM FROM MAIN (MAY BE EXCEEDED WITH APPROVAL OF DISTRICT ENGINEERING MANAGER) SO AS NOT TO INTERFERE WITH ROADSIDE DRAINAGE OR OTHER STRUCTURES.
8. ALTERNATIVE 'A' SHALL BE USED WITH 4" BLOWOFFS ON MAINS UP TO 8" DIAMETER, 6" BLOWOFFS ON MAINS UP TO 10" DIAMETER AND 8" BLOWOFFS ON MAINS UP TO 12" DIAMETER. ALTERNATIVE 'B' WILL BE AT THE DIRECTION OF THE DISTRICT.
9. LOCATING WIRE MUST BE ABLE TO EXTEND 12" ABOVE THE TOP OF THE VALVE BOX LID. REFER TO DRAWING NID SD4.

4" OR LARGER RAW WATER BLOWOFF TYPE A & B

DRAWING NO.
SD8
SHT 1 of 1

NID

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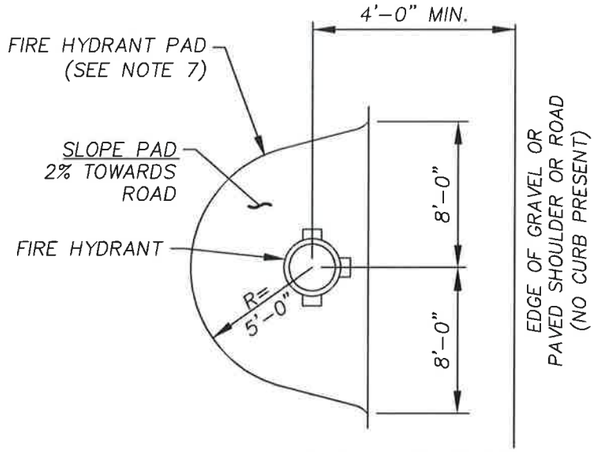
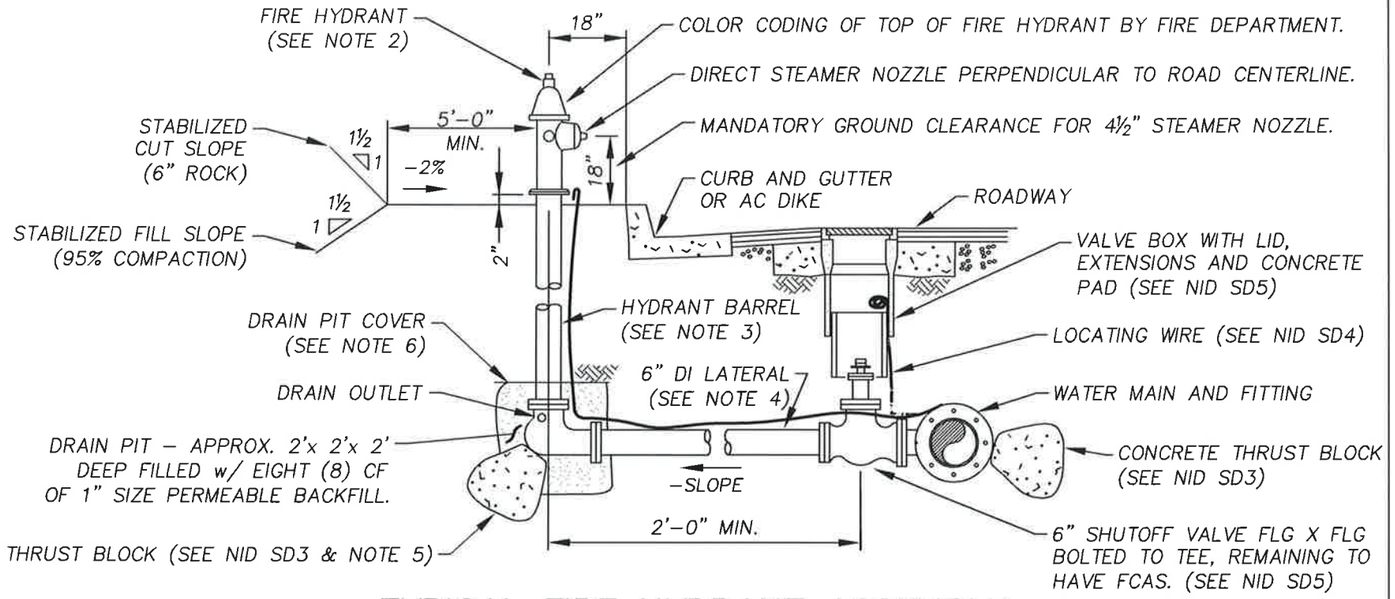
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

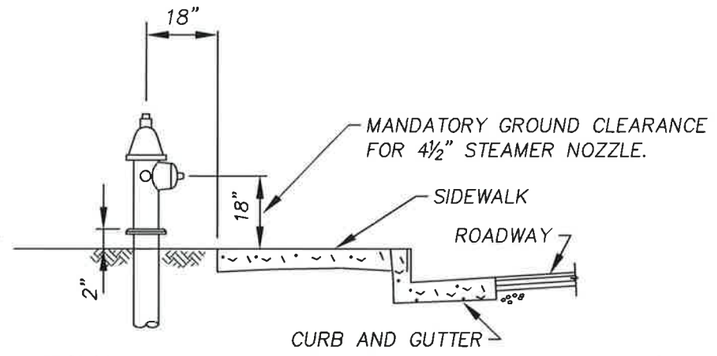
NOT TO SCALE



FIRE HYDRANT PAD CUT OR FILL



TYPICAL FIRE HYDRANT ASSEMBLY



TYPICAL SIDEWALK FIRE HYDRANT LOCATION

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "FIRE HYDRANT ASSEMBLIES" IN THE SPECIFICATIONS.
2. FIRE HYDRANTS SHALL BE AWWA C502 HAVING ONE 4½" STEAMER NOZZLE AND TWO 2½" HOSE NOZZLES WITH 250 PSI RATING. THE HYDRANT MAIN VALVE OPENING SHALL BE 5¼". FIRE HYDRANTS SHALL BE ONE OF THE FOLLOWING MODELS:

   CLOW F–2545 (MEDALLION)
   M & H 929 (RELIANT)
   MUELLER SUPER CENTURION 250
   WATEROUS PACER WB–67–250
3. FIRE HYDRANT BARRELS SHALL BE EXTENDED WHERE UNAVOIDABLE IN ORDER TO MAKE PROPER GRADE. STACKING EXTENSIONS (USING MORE THAN ONE) WILL NOT BE ALLOWED.
4. FIRE HYDRANT LATERALS SHALL BE DUCTILE IRON WITH FLANGED JOINTS, RESTRAINED MECHANICAL JOINTS, OR RESTRAINED JOINTS AS REQUIRED FOR "WATER MAINS" IN THE DISTRICT'S STANDARD SPECIFICATIONS. THE LATERAL SHALL BE PROVIDED WITH POSITIVE RESTRAINT BETWEEN THE SHUTOFF VALVE AND THE FIRE HYDRANT. REFER TO DRAWING NID SD1 FOR TRENCH DETAILS.
5. WHEN POURING THE THRUST BLOCK, CARE SHALL BE TAKEN NOT TO ALLOW CONCRETE TO PLUG OR INTERFERE WITH THE HYDRANT DRAIN HOLES.
6. THE PERMEABLE BACKFILL PLACED IN THE DRAIN PIT SHALL BE COMPLETELY COVERED WITH A LAYER OF 15# FELT ROOFING PAPER OR 6 MIL POLYETHYLENE FILM.
7. THE FIRE HYDRANT PAD SHALL BE CONSTRUCTED IN ACCORDANCE WITH CALTRANS SECTION 19 "EARTHWORK" AND COMPACTED TO 95% RELATIVE COMPACTION. PAD REQUIREMENTS SHALL APPLY TO ALL FIRE HYDRANT LOCATIONS.
8. JUTE NETTING AND SEEDING OF SLOPED AREAS IS REQUIRED.
9. FIRE HYDRANT TO BE RECEIVED PRE–PAINTED WITH ENAMEL PAINT IN "OSHA YELLOW" ON ALL ITEMS ABOVE THE GROUND (SHALL NOT BE PAINTED AT TIME OF INSTALLATION).
10. FIRE HYDRANTS SHALL BE BAGGED WITH BLACK PLASTIC BAG AND TAPED TO INDICATE THE HYDRANT IS OUT OF SERVICE IMMEDIATELY UPON INSTALLATION BY THE CONTRACTOR. ONCE FACILITY IS IN SERVICE, DISTRICT STAFF WILL REMOVE THE BAGS.

FIRE HYDRANT ASSEMBLY

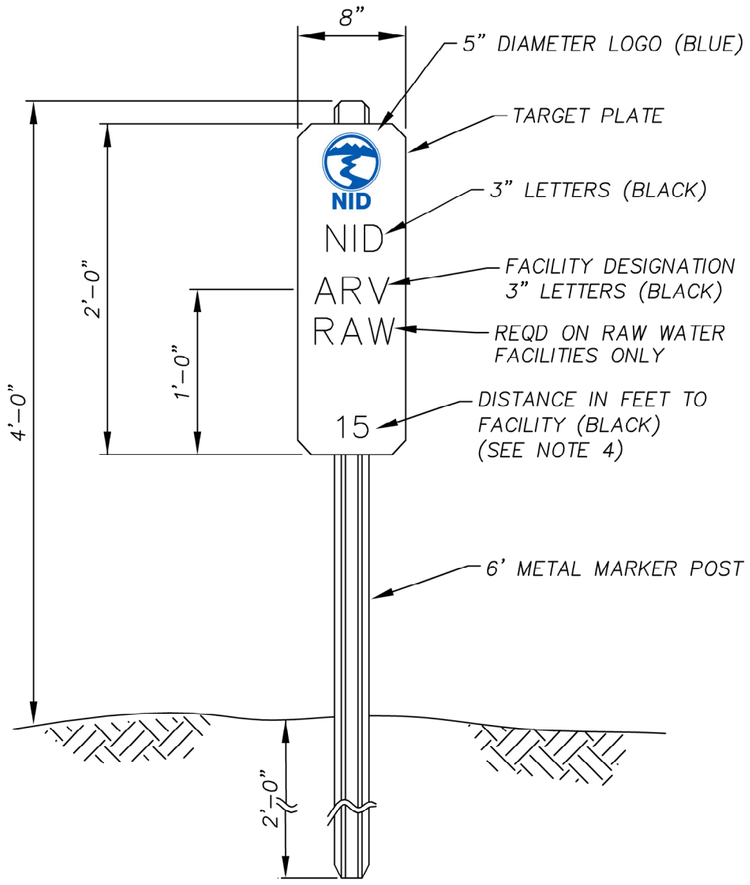
DRAWING NO.
SD9
SHT 1 of 1

NID

APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE

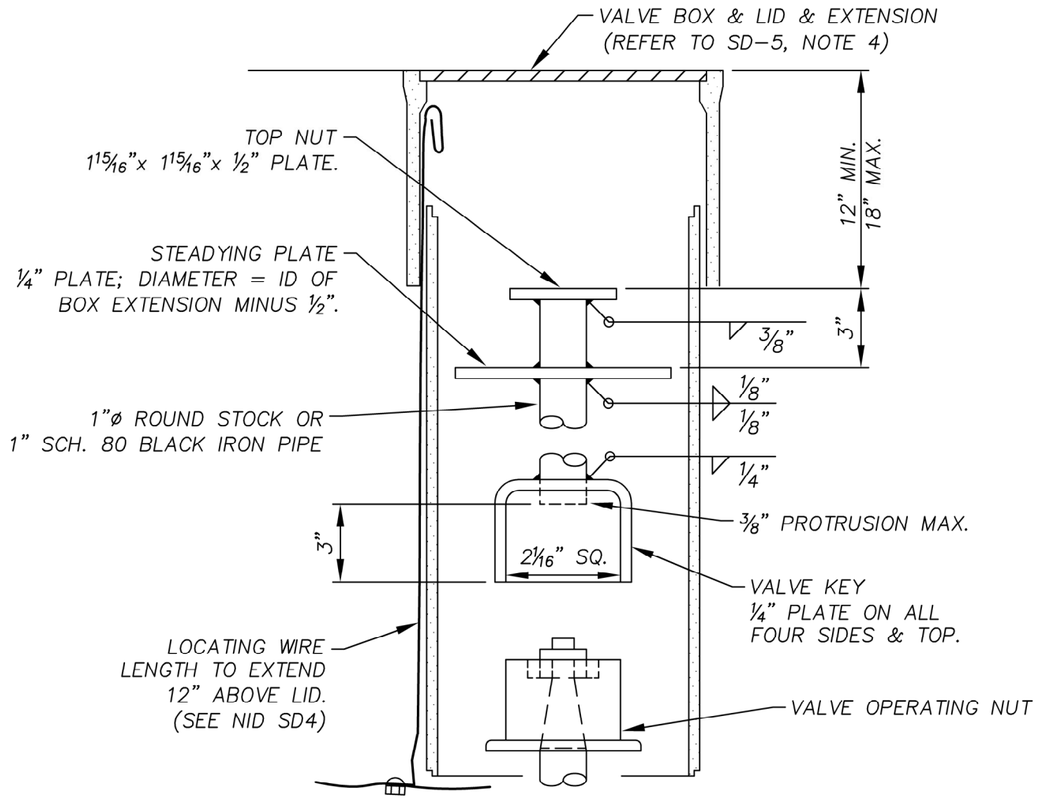


GUIDE MARKER DETAIL

FACILITY DESIGNATION	
MAINLINE VALVE	V
ACCESS POINT	AP
AIR RELEASE VALVE	ARV
BLOWOFF	BO
PRESSURE REDUCING STATION	PRS
PRIVATE FIRE SERVICE	PFS
RECORDING STATION	RS
WATER MAIN LOCATION	WM
METER	M

NOTES: GUIDE MARKER

1. ALL MATERIALS AND INSTALLATIONS SHALL CONFORM TO THE SPECIFICATIONS.
2. GUIDE MARKERS SHALL BE FURNISHED AND INSTALLED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE PROJECT MANAGER.
3. POSTS SHALL BE TYPE 'M' AND SHALL CONFORM TO CALTRANS SECTION 82.
4. ALL NUMBERS AND LETTERS SHALL BE BLOCK STYLE AND STENCILED IN BLACK ON A WHITE BACKGROUND. DISTRICT WILL APPLY DISTANCE IN FEET.



VALVE OPERATING SHAFT EXTENSION

NOTES: VALVE OPERATING SHAFT EXTENSION

1. A VALVE OPERATING SHAFT EXTENSION SHALL BE FURNISHED AND INSTALLED WITH ALL BURIED VALVES WHEN THE OPERATING NUT IS LOCATED MORE THAN 60" BELOW THE TOP OF THE VALVE BOX.
2. AFTER FABRICATION, COAT ENTIRE ASSEMBLY WITH TWO COATS OF ASPHALT VARNISH OR COAL TAR ENAMEL, BLACK IN COLOR.

GUIDE MARKER & VALVE OPERATING SHAFT EXTENSION

NID

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DIRECTOR OF ENGINEERING

DRAWING NO.
SD10
SHT 1 of 1

REVISION DATE
10/04/22

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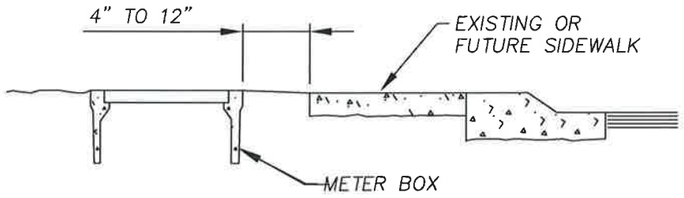
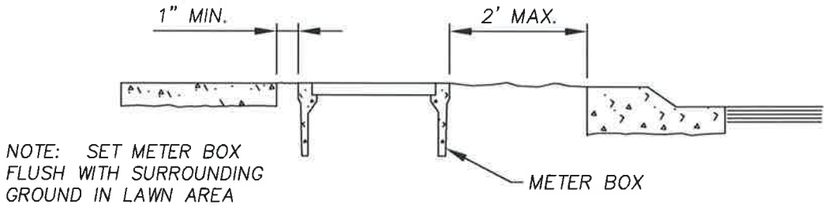
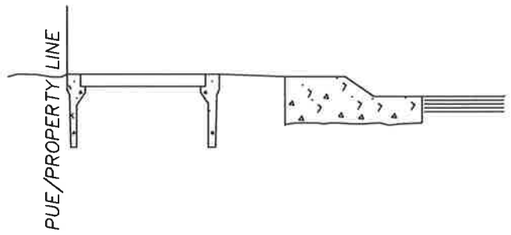


SIDEWALK INSTALLATION

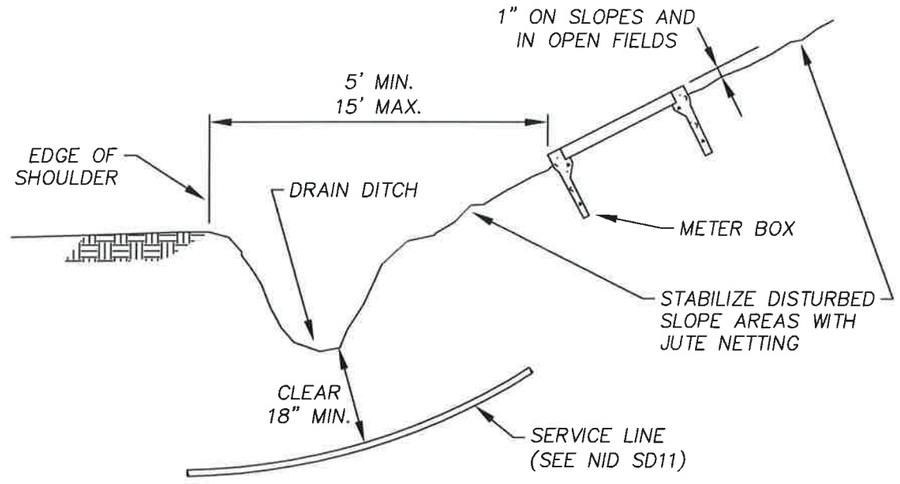


NOTE: SET METER BOX FLUSH WITH SURROUNDING GROUND IN LAWN AREA

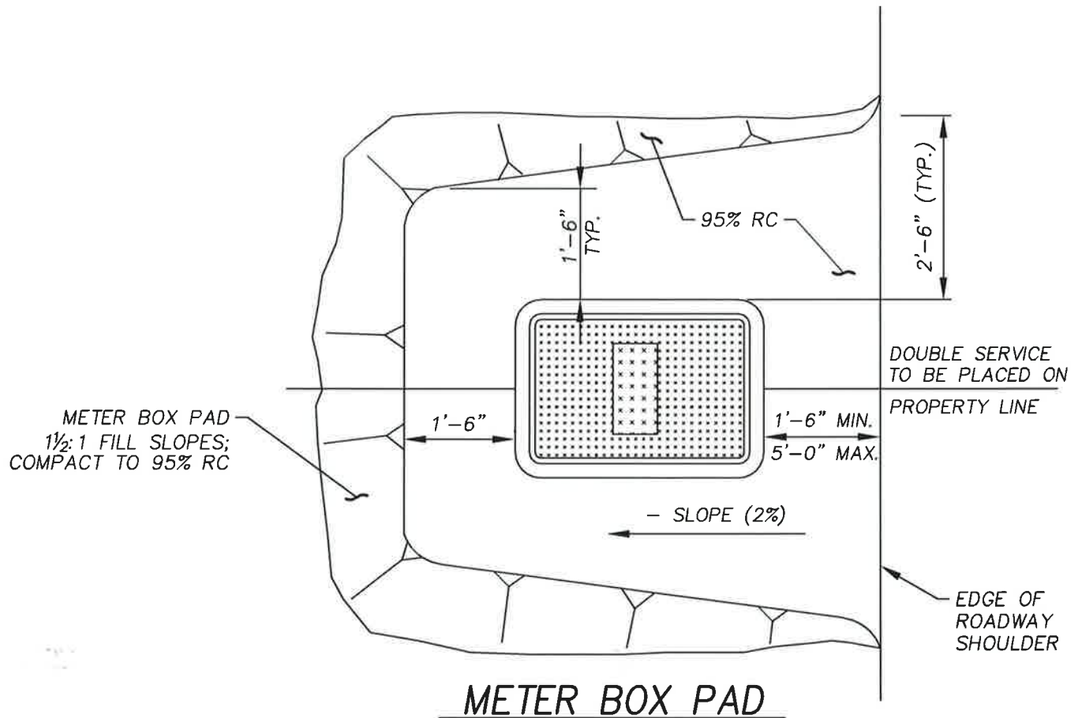
CURB OR UTILITY STRIP INSTALLATION



PUE'S AND PROPERTY LINES



CUT SLOPE INSTALLATION



METER BOX PAD

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL COMPLY WITH SERVICE ASSEMBLIES IN THE SPECIFICATIONS.
2. METER BOXES SHALL BE LOCATED AS SHOWN ON THE PLANS OR AS DIRECTED.
3. A COMPACTED METER BOX PAD SHALL BE FURNISHED FOR ALL AREAS WHERE THE GROUND SLOPES DOWNWARD AWAY FROM THE ROAD AT A SLOPE GREATER THAN 4:1.
4. CUT SLOPE AND FILL SLOPE INSTALLATIONS SHALL ALSO BE USED IN COMBINATION WITH SIDEWALK AND CURB INSTALLATIONS IF NECESSARY.
5. REFER TO DRAWING NID SD12 FOR ADDITIONAL ASSEMBLY REQUIREMENTS.
6. METER BOX LOCATIONS SHOWN ARE FOR NON–TRAFFIC AREAS ONLY.

METER BOX LOCATION

DRAWING NO.
SD11
SHT 1 of 1

NID

APPROVED:
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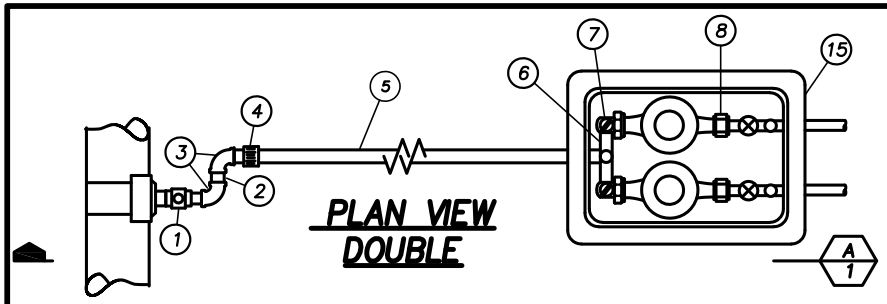
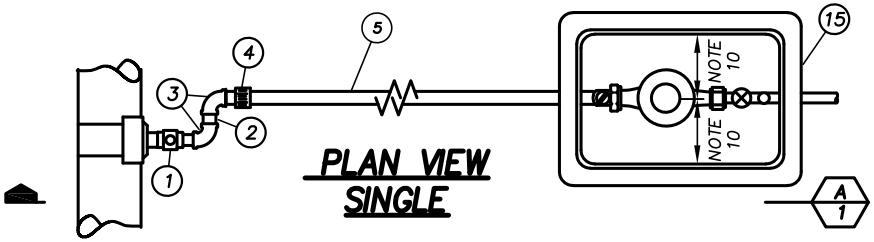
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

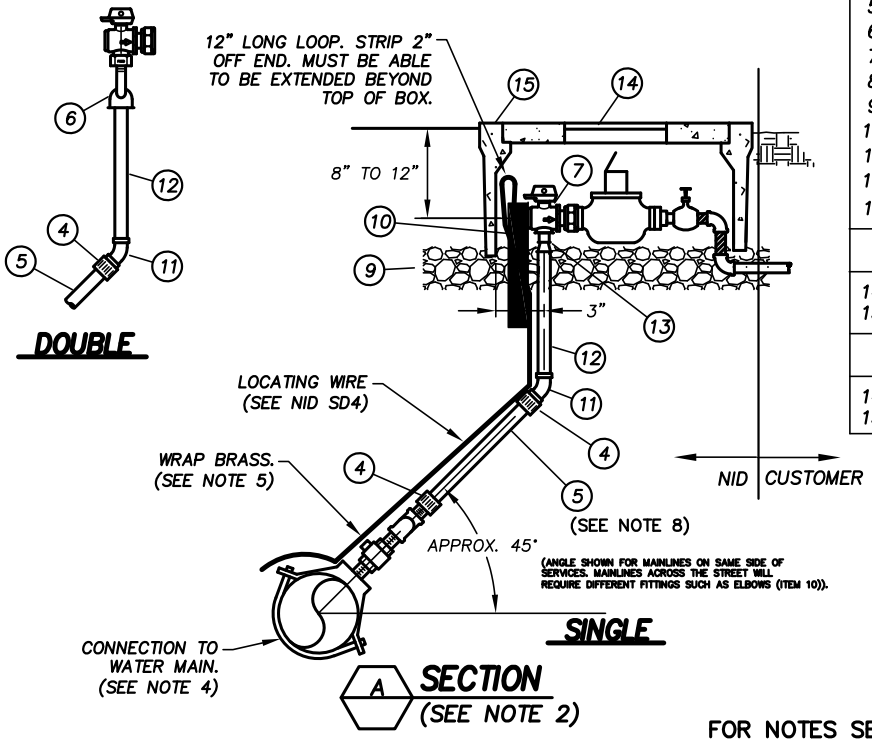
NOT TO SCALE





5/8", 3/4" & 1" METER ASSEMBLIES		SINGLE		DOUBLE	
NO.	DESCRIPTION	SIZE	FORD CAT. NO.	SIZE	FORD CAT. NO.
1.	CORPORATION STOP – MIP x MIP	1.50	FB500–6	1.50	FB500–6
2.	BRASS NIPPLE THD.	1.50		1.50	
3.	BRASS ELBOW	1.50		1.50	
4.	MIP x IPS PE PACK JOINT w/ STIFFENER	1.50	C86	1.50	C86
5.	PC333 (DR7) POLYETHYLENE PIPE PE4710 (ONE PIECE)	1.50		1.50	
6.	1½" FIP x TWO (2) 1" MIP "U" BRANCH w/ 9" SPACING	NA		1.5x1	U18–64–9
7.	ANGLE BALL VALVE (FIP x METER SWIVEL NUT) 1/	1.00	BA13–444W–NL	1.00	BA13–444W–NL
8.	GATE VALVE (SEE NOTE 11)				
9.	6" COMPACTED AGG BASE				
10.	TEMPORARY 2x4 STAKE FOR VERTICAL AND SPACING				
11.	BRASS 45° ELBOW (MAY VARY)	1.50		1.50	
12.	BRASS SPOOL	1.50		1.50	
13.	1½"x 1" BELL REDUCER AND 1" CLOSE NIPPLE				
	5/8" & 3/4" METER ASSEMBLIES	**SINGLE**		**DOUBLE**	
14.	ARMORCAST #A6000489T–H10/#A6000491T–H10	H10–11" x 21"		H10–18" x 19"	
15.	CHRISTY METER BOX	B16		B24	2/
	1" METER ASSEMBLIES	**SINGLE**		**DOUBLE**	
14.	CHRISTY LID w/ READING LID	B30G w/5" x 8"		B40M w/10" x16"	
15.	CHRISTY METER BOX	B30		B40	2/

1/ SET METER VALVES PARALLEL TO METER BOX CENTERLINE.
2/ SET BOX SO THAT LONG DIMENSION OF READING LID SETS PERPENDICULAR TO METERS.



FOR NOTES SEE SHEET 2 of 2

5/8", 3/4" & 1" METER SINGLE & DOUBLE

DRAWING NO. SD12
SHT 1 of 2

NID

APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE 11/02/23

NOT TO SCALE

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. METER ASSEMBLIES SHOWN ARE FOR NON-TRAFFIC AREAS ONLY. ASSEMBLIES LOCATED IN TRAFFIC AREAS SHALL USE BOXES, LIDS, AND SLABS ALL RATED FOR AN H_20 LOADING AND CONFORMING TO THE SPECIFICATIONS AND SHALL BE FLUSH WITH GRADE.
3. THE LOCATION OF METER BOXES SHALL BE SHOWN ON THE PLANS AND PER NID SD11.
4. THE CONNECTION TO THE WATER MAIN SHALL CONFORM TO "WATER MAIN TAPS" IN THE SPECIFICATIONS.

   DI PIPE: ROMAC STYLE 202, FORD STYLE F202 OR APPROVED EQUAL.
   PVC PIPE: ROMAC STYLE 202S OR 202N, FORD STYLE F202 OR FC202, OR APPROVED EQUAL.
5. THE SADDLE, BRASS COUPLINGS, PIPE AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
6. REFER TO DRAWINGS NID SD1 FOR TRENCH DETAILS AND NID SD4 FOR LOCATING WIRE DETAILS EXCEPT COPPER PIPE REQUIRES 6" BEDDING AND COVER WITH CLASS #1 MATERIAL.
7. FORD AND CHRISTY CATALOG NUMBERS ARE GIVEN FOR COMPARISON PURPOSES. SUBSTITUTES CONFORMING TO THE SPECIFICATIONS MUST BE APPROVED BY THE DISTRICT ENGINEER.
8. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. REMNANT PIECES JOINED BY COUPLINGS WILL NOT BE ALLOWED.
9. ALL METER VALVES SHALL BE SUPPLIED WITH LOCKING NUTS.
10. METERS TO BE PARALLEL AND LEVEL RELATIVE TO CENTERLINE OF METER BOX.
11. GATE VALVE TO MATCH METER SIZE EXCEPT USE ½" VALVE FOR ⅝" METER SERVICE.
12. INSTALLATION OF HIGH PRESSURE SERVICES (HP > 150 PSI) ARE AT THE DISCRETION OF THE ENGINEERING MANAGER.

5/8", 3/4" & 1" METER SINGLE & DOUBLE

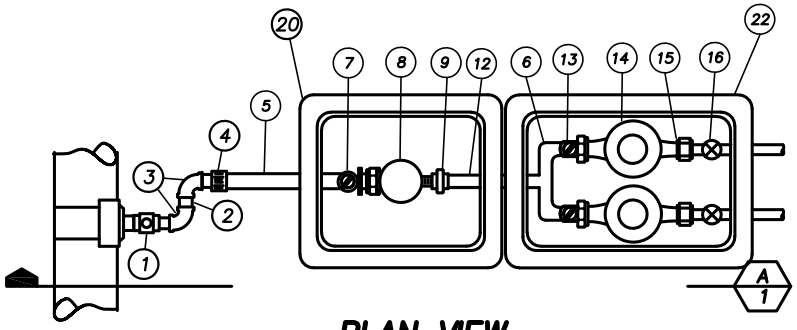
NID

APPROVED:

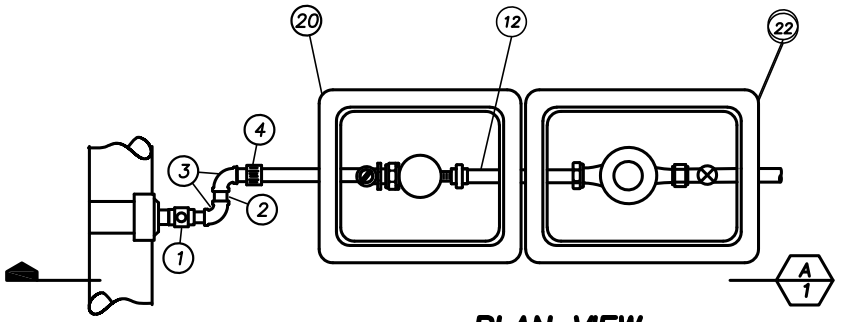
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD12
SHT 2 of 2

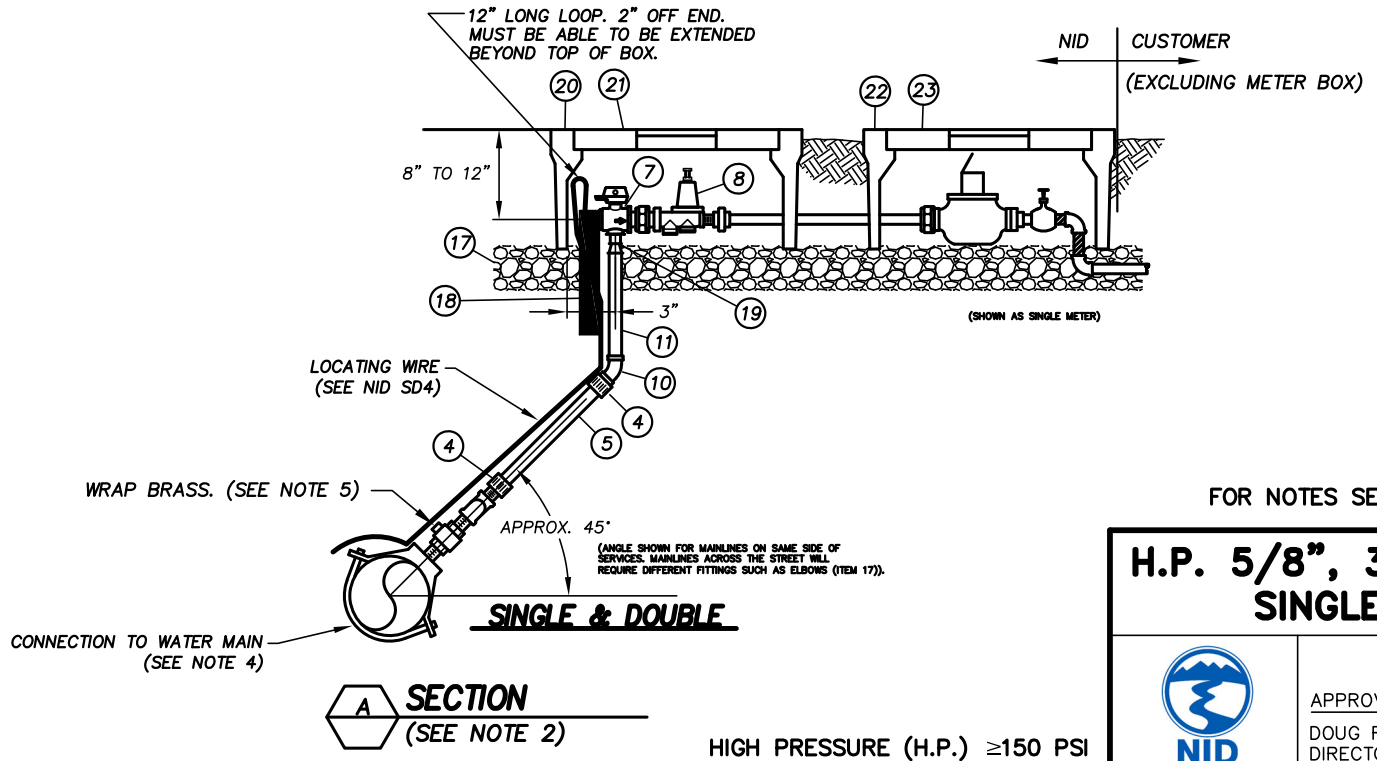
REVISION DATE
11/02/23



PLAN VIEW
DOUBLE



PLAN VIEW
SINGLE



SINGLE & DOUBLE

A SECTION
(SEE NOTE 2)

HIGH PRESSURE (H.P.) ≥150 PSI

FOR NOTES SEE SHEET 2 OF 2

H.P. 5/8", 3/4" & 1" METER SINGLE & DOUBLE

DRAWING NO.
SD12HP
SHT 1 of 2

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
11/02/23

NOT TO SCALE

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL COMFORM TO "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. METER ASSEMBLIES SHOWN ARE FOR NON-TRAFFIC AREAS ONLY. ASSEMBLIES LOCATED IN TRAFFIC AREAS SHALL USE BOXES, LIDS AND SLABS ALL RATED FOR AN H20 LOADING (OR TIER 22) AND CONFORMING TO THE SPECIFICATIONS AND SHALL BE FLUSH WITH GRADE.
3. THE LOCATION OF METER BOXES SHALL BE AS SHOWN ON THE PLANS AND PER DRAWING NID SD11.
4. THE CONNECTION TO THE WATERMAIN SHALL CONFORM TO "WATERMAIN TAPS" IN THE SPECIFICATIONS.
   D.I. PIPE: ROMAC STYLE 202, FORD STYLE F202 OR APPROVED EQUAL
   PVC PIPE: ROMAC STYLE 202S OR 202N, FORD STYLE FS202 OF FC202 OR APPROVED EQUAL
5. THE SADDLE, BRASS COUPLINGS, PIPE AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
6. REFER TO DRAWINGS NID SD1 FOR TRENCH DETAILS AND NID SD4 FOR LOCATING WIRE DETAILS EXCEPT COPPER PIPE REQUIRES 6" BEDDING AND COVER WITH CLASS #1 MATERIAL.
7. FORD AND CHRISTY CATALOG NUMBERS ARE GIVEN FOR COMPARISION PURPOSES. SUBSTITUTES CONFORMING TO THE SPECIFICATIONS MUST BE APPROVED BY THE DISTRICT ENGINEER.
8. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. REMNANT PIECES JOINED BY COUPLINGS WILL NOT BE ALLOWED.
9. ALL METER VALVES SHALL BE SUPPLIED WITH LOCKING NUTS.
10. METERS TO BE PARALLEL AND LEVEL RELATIVE TO CENTERLINE OF METER BOX.
11. GATE VALVE TO MATCH METER SIZE EXCEPT USE 1/2" VALVE FOR 5/8" METER SERVICE.
12. INSTALLATION OF HIGH PRESSURE SERVICES (HP) ARE AT THE DISCRETION OF THE DIRECTOR OF ENGINEERING.

5/8", 3/4" & 1" METER ASSEMBLIES		SINGLE		DOUBLE	
I.D. NO.	DESCRIPTION	SIZE	FORD CAT. NO.	SIZE	FORD CAT. NO.
1.	CORPORATION STOP – MIP x MIP	1.50	FB500-6	1.50	FB500-6
2.	BRASS NIPPLE THD.	1.50		1.50	
3.	BRASS ELBOW	1.50		1.50	
4.	MIP x IPS 300 PSI PACK JOINT	1.50	C84-44-G-NL	1.50	C84-44-G-NL
5.	PC333 (DR7) POLYETHELENE PIPE PE4710 (ONE PIECE)	1.50		1.50	
6.	1" FIP x (TWO) 1" MIP "U" BRANCH w/ 9" SPACING	N/A		1.00	U18-64-9
7.	ANGLE BALL VALVE (FIP x METER SWIVEL NUT) 1/	1.00	BA13-444W-NL	1.00	BA13-444W-NL
8.	1" PRESSURE REDUCING VALVE WATTS LF223S-BU-HP				
9.	UNION	1.00		1.00	
10.	BRASS 45 ELBOW (SWIVEL JOINT ALSO ACCEPTABLE)	1.50		1.50	
11.	BRASS SPOOL	1.50		1.50	
12.	BRASS SPOOL	1.00		1.00	
13.	STRAIGHT BALL VALVE FIP X FIP	1.00		1.00	
14.	METER – 5/8", 3/4" OR 1"				
15.	METER COUPLING – 5/8", 3/4", 1"				
16.	GATE VALVE (SEE NOTE 11)				
17.	6" COMPACTED AGG BASE				
18.	TEMPORARY 2" x 4" STAKE FOR VERTICAL AND SPACING				
19.	1 1/2" x 1" BELL REDUCER AND 1" CLOSE NIPPLE				
20.	CHRISTY METER BOX	B16			
21.	ARMORCAST #A6000489T-H10	H10-11" x 21"			
	5/8" & 3/4" METER ASSEMBLIES	SINGLE		DOUBLE	
22.	CHRISTY METER BOX	H10-11" x 21"		B24 2/	
23.	ARMORCAST #A6000489T-H10/#A6000491T-H10H10			H10H10-18" x 19"	
	1" METER ASSEMBLIES	SINGLE		DOUBLE	
22.	CHRISTY METER BOX	B30		B40 2/	
23.	CHRISTY LID w/ READING LID	B30G w/5" x8"		B40M w/10" x16"	

1/ SET METER VALVES PARALLEL TO METER BOX CENTERLINE.

2/ SET BOX SO THAT LONG DIMENSION OF READING LID SETS PERPENDICULAR TO METERS.

HIGH PRESSURE (H.P.) ≥150 PSI

H.P. 5/8", 3/4" & 1" METER SINGLE & DOUBLE

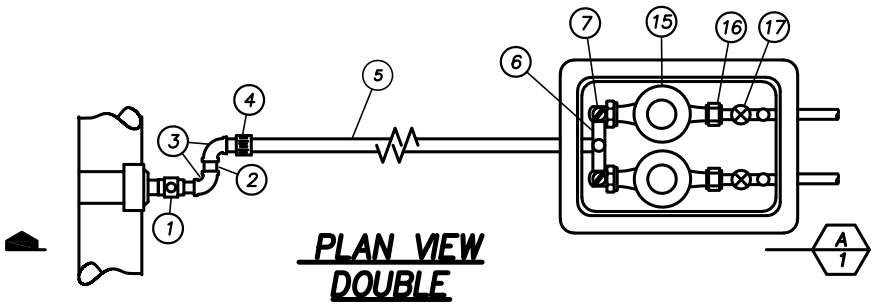
DRAWING NO. SD12HP SHT 2 of 2

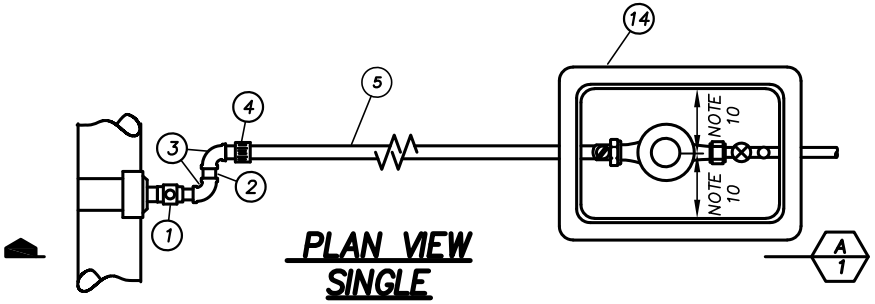
NID

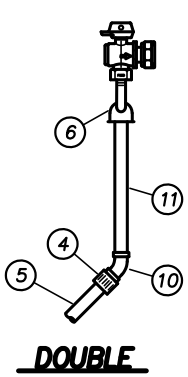
APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE 11/02/23







1" METER ASSEMBLIES		SINGLE		DOUBLE	
NO.	DESCRIPTION	SIZE	FORD CAT. NO.	SIZE	FORD CAT. NO.
1.	CORPORATION STOP – MIP x MIP	1.50	FB500–6	1.50	FB500–6
2.	BRASS NIPPLE THD.	1.50		1.50	
3.	BRASS ELBOW	1.50		1.50	
4.	MIP x IPS PE PACK JOINT w/ STIFFENER	1.50	C86–66–IDR7	1.50	C86–66–IDR7
5.	PC333 (DR7) POLYETHYLENE PIPE PE4710 (ONE PIECE)	1.50		1.50	
6.	1½" FIP x TWO (2) 1" MIP "U" BRANCH w/ 9" SPACING	NA		1.5x1	U18–64–9–NL
7.	ANGLE BALL VALVE (FIP x METER SWIVEL NUT) 1/	1.00	BA13–444W–NL	1.00	BA13–444W–NL
8.	6" COMPACTED AGG BASE				
9.	TEMPORARY 2x4 STAKE FOR VERTICAL AND SPACING				
10.	BRASS 45° ELBOW (SWIVEL JOINT ALSO ACCEPTABLE)	1.50		1.50	
11.	BRASS SPOOL	1.50		1.50	
12.	1½"x 1" BELL REDUCER AND 1" CLOSE NIPPLE				
13.	CHRISTY LID, FIBRELYTE W PROBE HOLE OPTION – 38 LB	FL36P		FL36P	
14.	CHRISTY METER BOX	B36		B36 2/	
15.	1" BADGER METER, N10–0860.0	1.00		1.00	
16.	1" METER COUPLING, N10–0630.0, SPM 3R – 1"X2.625"	1.00		1.00	
17.	1" GATE VALVE	1.00		1.00	

1/ SET METER VALVES PARALLEL TO METER BOX CENTERLINE.

2/ SET BOX SO THAT LONG DIMENSION OF READING LID SETS PERPENDICULAR TO METERS.

FOR NOTES SEE SHEET 2 of 2

1" METER FOR FIRE SERVICE SINGLE & DOUBLE

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD13
SHT 1 of 2

REVISION DATE
11/03/23

NOT TO SCALE

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. METER ASSEMBLIES SHOWN ARE FOR NON-TRAFFIC AREAS ONLY. ASSEMBLIES LOCATED IN TRAFFIC AREAS SHALL USE BOXES, LIDS, AND SLABS ALL RATED FOR AN H_2O LOADING AND CONFORMING TO THE SPECIFICATIONS AND SHALL BE FLUSH WITH GRADE.
3. THE LOCATION OF METER BOXES SHALL BE SHOWN ON THE PLANS AND PER NID SD11.
4. THE CONNECTION TO THE WATER MAIN SHALL CONFORM TO "WATER MAIN TAPS" IN THE SPECIFICATIONS.

   DI PIPE: ROMAC STYLE 202, FORD STYLE F202 OR APPROVED EQUAL.
   PVC PIPE: ROMAC STYLE 202S OR 202N, FORD STYLE F202 OR FC202, OR APPROVED EQUAL.
5. THE SADDLE, BRASS COUPLINGS, PIPE AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
6. REFER TO DRAWINGS NID SD1 FOR TRENCH DETAILS AND NID SD4 FOR LOCATING WIRE DETAILS.
7. FORD AND CHRISTY CATALOG NUMBERS ARE GIVEN FOR COMPARISON PURPOSES. SUBSTITUTES CONFORMING TO THE SPECIFICATIONS MUST BE APPROVED BY THE DISTRICT ENGINEER.
8. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. REMNANT PIECES JOINED BY COUPLINGS WILL NOT BE ALLOWED.
9. ALL METER VALVES SHALL BE SUPPLIED WITH LOCKING NUTS.
10. METERS TO BE PARALLEL AND LEVEL RELATIVE TO CENTERLINE OF METER BOX.
11. INSTALLATION OF HIGH PRESSURE SERVICES (HP, >150 PSI) ARE AT THE DISCRETION OF THE DIRECTOR OF ENGINEERING.
12. SHOULD THE PROPERTY OWNER HAVE A DEDICATED FIRE SYSTEM DOWNSTREAM OF THE NID METER THAT MAY POTENTIALLY IMPACT THE NID TREATED WATER SYSTEM, NID MAY REQUIRE THE INSTALLATION OF A CHECK DEVICE. THE PRESENCE OR FUTURE INSTALLATION OF A PRIVATE FIRE SYSTEM SHALL BE DETERMINED AT TIME OF APPLICATION TO THE DISTRICT FOR NID SERVICE.

1" METER FOR FIRE SERVICE SINGLE & DOUBLE

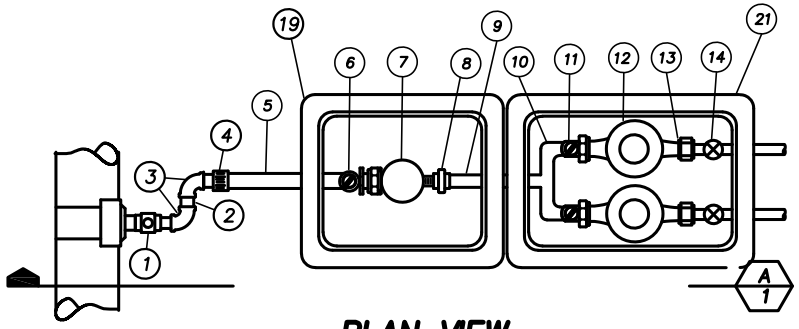
NID

APPROVED:

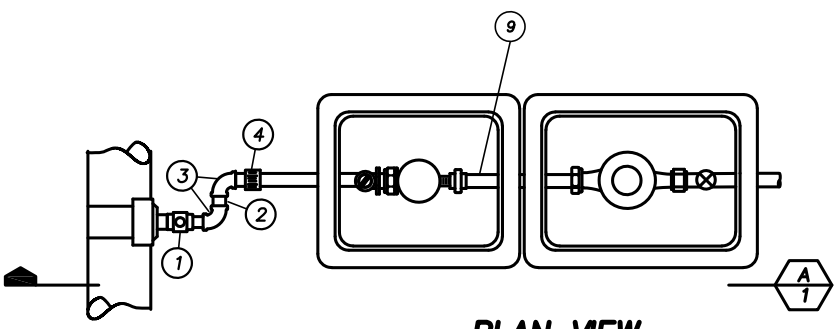
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD13
SHT 2 of 2

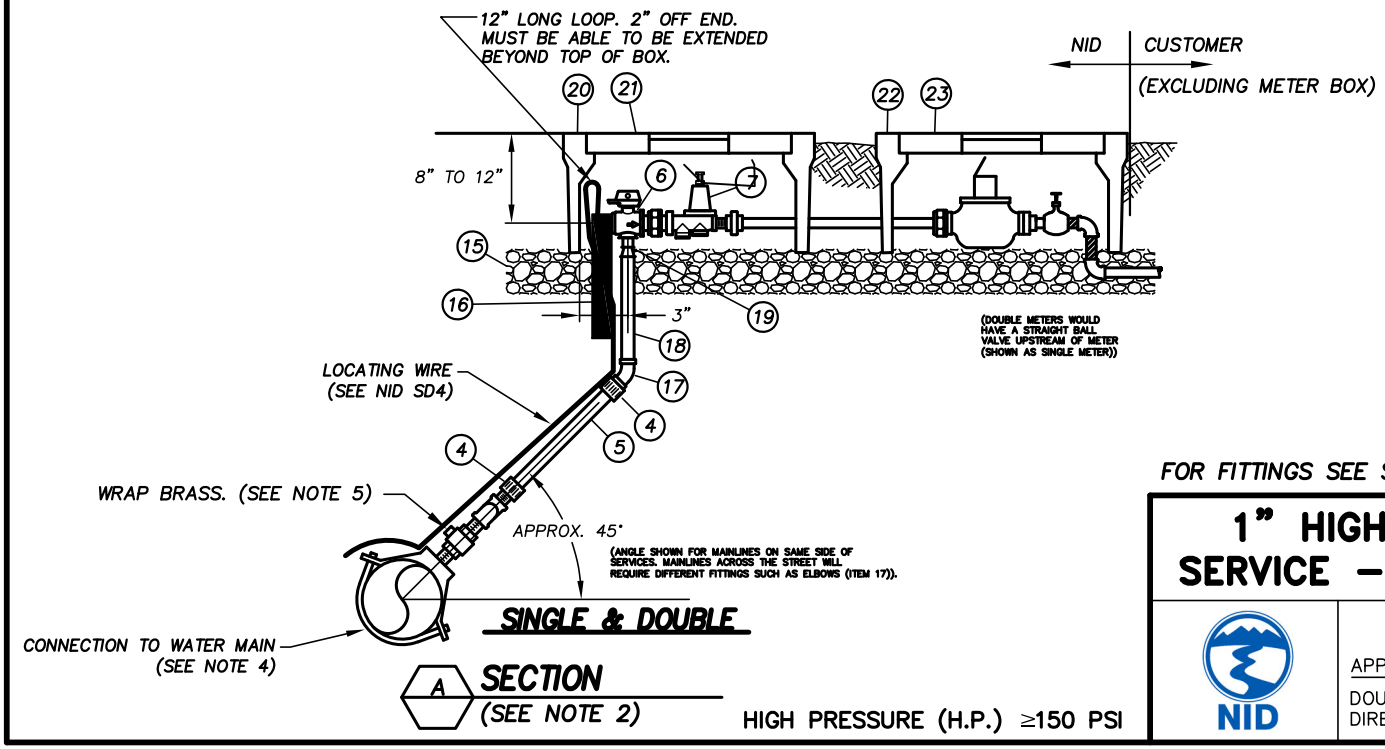
REVISION DATE
11/03/23



PLAN VIEW
DOUBLE



PLAN VIEW
SINGLE



SINGLE & DOUBLE

A SECTION
(SEE NOTE 2)

HIGH PRESSURE (H.P.) ≥150 PSI

FOR FITTINGS SEE SHEET 2 of 2

1" HIGH PRESSURE FIRE SERVICE – SINGLE & DOUBLE

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD13HP
SHT 1 of 2

REVISION DATE
11/03/23

NOT TO SCALE

NOTES:

1. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. METER ASSEMBLIES SHOWN ARE FOR NON-TRAFFIC AREAS ONLY. ASSEMBLIES LOCATED IN TRAFFIC AREAS SHALL USE BOXES, LIDS, AND SLABS ALL RATED FOR AN H20 LOADING AND CONFORMING TO THE SPECIFICATIONS AND SHALL BE FLUSH WITH GRADE.
3. THE LOCATION OF METER BOXES SHALL BE SHOWN ON THE PLANS AND PER NID SD11.
4. THE CONNECTION TO THE WATERMAIN SHALL CONFORM TO "WATERMAIN TAPS" IN THE SPECIFICATION.

   DI PIPE: ROMAC STYLE 202, FORD STYLE F202 OR APPROVED EQUAL

   PVC PIPE: ROMAC STYLE 202S, OR 202N, FORD STYLE F202 OR FC202 OR APPROVED EQUAL.
5. THE SADDLE, BRASS COUPLINGS, PIPE AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
6. REFER TO DRAWINGS NID SD1 FOR TRENCH DETAILS AND NID SD4 FOR LOCATING WIRE DETAILS.
7. FORD AND CHRISTY CATALOG NUMBERS ARE GIVEN FOR COMPARISON PURPOSES. SUBSTITUTES CONFORMING TO THE SPECIFICATIONS MUST BE APPROVED BY THE DISTRICT ENGINEER.
8. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. REMNANT PIECES JOINED BY COUPLINGS WILL NOT BE ALLOWED.
9. ALL METERS VALVES SHALL BE SUPPLIED WITH LOCKING NUTS.
10. METERS TO BE PARALLEL AND LEVEL RELATIVE TO CENTERLINE OF METER BOX.
11. INSTALLATION OF HIGH PRESSURE SERVICES (HP) ARE AT THE DISCRETION OF THE ENGINEERING MANAGER.
12. SHOULD THE PROPERTY OWNER HAVE A DEDICATED FIRE SYSTEM DOWNSTREAM OF THE NID METER THAT MAY POTENTIALLY IMPACT THE NID TREATED WATER SYSTEM, NID MAY REQUIRE THE INSTALLATION OF A CHECK DEVICE. THE PRESENCE OR FUTURE INSTALLATION OF A PRIVATE FIRE SYSTEM SHALL BE DETERMINED AT TIME OF APPLICATION TO THE DISTRICT FOR NID SERVICE.

1" HIGH PRESSURE SERVICE METER		SINGLE		DOUBLE	
NO.	DESCRIPTION	SIZE	FORD CAT. NO.	SIZE	FORD CAT. NO.
1.	CORPORATION STOP – MIP x MIP	1.50	FB500-6-NL	1.50	FB500-6-NL
2.	BRASS NIPPLE – THREADED	1.50		1.50	
3.	BRASS ELBOW	1.50		1.50	
4.	MIP x IPS 300 PSI PACK JOINT	1.50	C84-66-G-NL	1.50	C84-66-G-NL
5.	PC333 (DR7) POLYETHYLENE PIPE PE4710 (ONE PIECE)	1.50		1.50	
6.	ANGLE BALL VALVE (FIP x FIP)	1.00	BA11-444W-NL	1.00	BA11-444W-NL
7.	PRESSURE REDUCING VALVE WATTS LF223S-B-U-HP	1.00		1.00	
8.	UNION	1.00	B81-444W-NL	1.00	B81-444W-NL
9.	BRASS SPOOL	1.00		1.00	
10.	1" FIP x TWO (2) 1" MIP "U" BRANCH w/ 9" SPACING	NA			
11.	STRAIGHT BALL VALVE (FIP x FIP)	1.00		1.00	
12.	1" BADGER METER, N10-0860.0	1.00		1.00	
13.	1" METER COUPLING, N10-0630.0, SPM 3R – 1"X2.625"	1.00		1.00	
14.	GATE VALVE, CUSTOMER	1.00		1.00	
15.	6" COMPACTED AGG BASE	1.00		1.00	C38-24-1.5-NL
16.	TEMPORARY 2x4 STAKE FOR VERTICAL AND SPACING				
17.	BRASS 45° ELBOW (A SWIVEL JOINT ALSO ACCEPTABLE)	1.50		1.50	
18.	BRASS SPOOL	1.50		1.50	
19.	1½" x 1" BELL REDUCER AND 1" CLOSE NIPPLE				
20.	CHRISTY METER BOX	B16		B16	
21.	CHRISTY B16 BOX LID 1/				
22.	CHRISTY METER BOX	B36		B36	
23.	CHRISTY LID, FIBRELYTE W PROBE HOLE OPTION – 38 LB				

1/ SET BOX SO THAT LONG DIMENSION OF READING LID SETS PERPENDICULAR TO METERS.

HIGH PRESSURE (H.P.) ≥150 PSI

1" HIGH PRESSURE FIRE SERVICE – SINGLE & DOUBLE

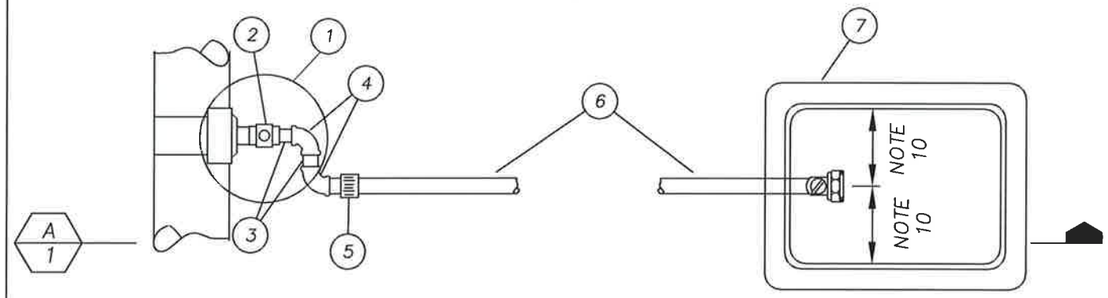
NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD13HP
SHT 2 of 2

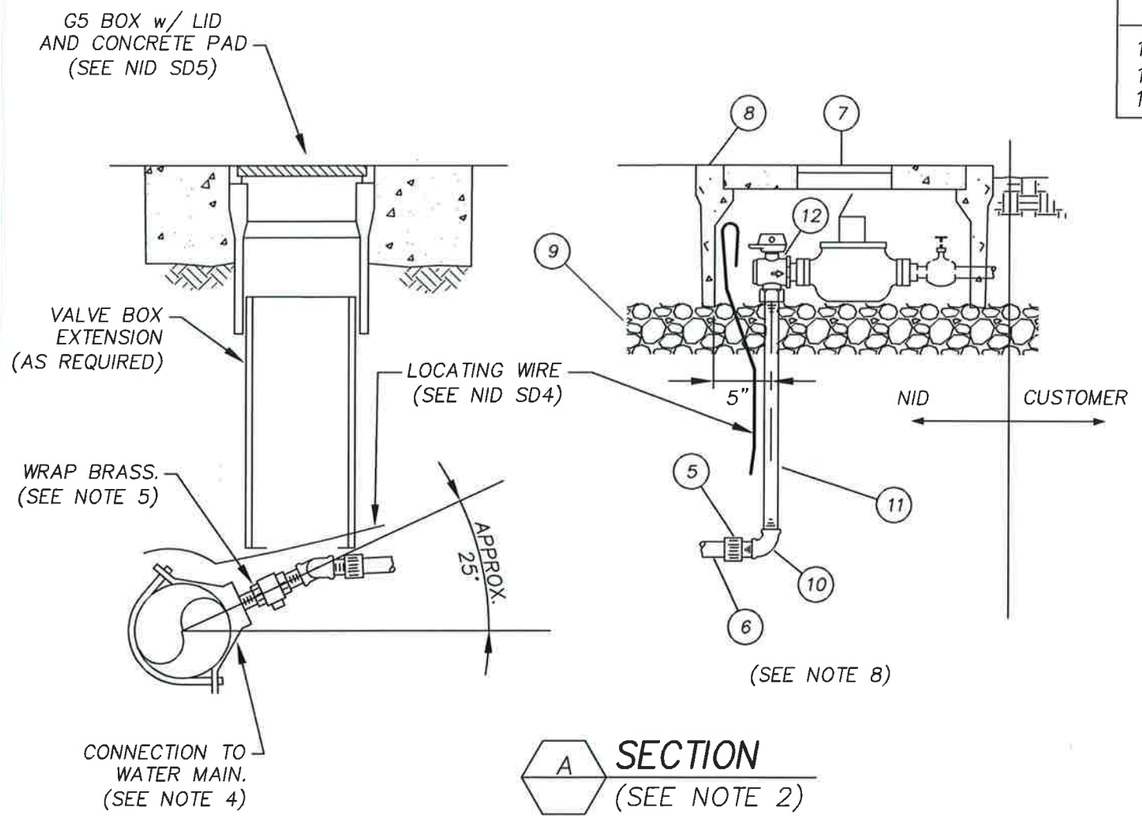
REVISION DATE
11/03/23



PLAN VIEW
(SEE NOTE 2)

1–1/2" & 2" METER ASSEMBLIES		
NO.	DESCRIPTION	FORD CAT. NO.
1	CHRISTY G5 BOX WITH LID	
2	2" GATE VALVE – 2" MIP x 2" MIP	FB500–7
3	2" BRASS NIPPLE THD.	
4	2" BRASS ELBOW	
5	2" MIP x 2" PVC PACK JOINT	C87–77–IDR7
6	2" PVC PIPE SCH. 80 (ONE PIECE, IF LENGTH EXCEEDS ONE 20' JOINT, USE FORD C77–77 STRAIGHT COUPLING. NO GLUED JOINTS)	
7	CHRISTY B36G LID w/ 5"x 8" CI HINGED READING LID	
8	CHRISTY B36 METER BOX	
9	6" COMPACTED AGG BASE	
	1–1/2" METER ASSEMBLIES	
10	2"x 1½" BRASS REDUCING ELBOW	
11	1½" BRASS SPOOL THD.	
12	1½" ANGLE BALL VALVE (1½" FIP x 1½" METER FLANGE) 1/	BFA13–666W
	2" METER ASSEMBLIES	
10	2" BRASS ELBOW	
11	2" BRASS SPOOL THD.	
12	2" ANGLE BALL VALVE (2" FIP x 2" METER FLANGE) 1/	BFA13–777W

1/ SET METER VALVES PARALLEL TO METER BOX CENTERLINE.



A SECTION
(SEE NOTE 2)

FOR NOTES SEE SHEET 2 of 2

1–1/2" & 2" METER ASSEMBLY

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD14
SHT 1 of 2

REVISION DATE
10/04/22

NOT TO SCALE

NOTE:

1. ALL MATERIALS AND INSTALLATION SHALL COMFORM TO "SERVICE ASSEMBLIES" IN THE SPECIFICATIONS.
2. METER ASSEMBLIES SHOWN ARE FOR NON-TRAFFIC AREAS ONLY. ASSEMBLIES LOCATED IN TRAFFIC AREAS SHALL USE BOXES, LIDS AND SLABS ALL RATED FOR AN H20 LOADING AND CONFORMING TO THE SPECIFICATIONS AND SHALL BE FLUSH WITH GRADE.
3. THE LOCATION OF METER BOXES SHALL BE AS SHOWN ON THE PLANS AND PER DRAWING NID SD11.
4. THE CONNECTION TO THE WATER MAIN SHALL CONFORM TO "WATER MAIN TAPS" IN THE SPECIFICATIONS.

   DI PIPE: ROMAC STYLE 202, FORD STYLE F202 OR APPROVED EQUAL
   PVC PIPE: ROMAC STYLE 202S OR 202N, FORD STYLE FS202 OF FC202, OR APPROVED EQUAL
5. THE SADDLE, BRASS COUPLINGS, PIPE AND FITTINGS SHALL BE PRIMED AND WRAPPED FOR CORROSION PROTECTION AS DESCRIBED IN THE SPECIFICATIONS.
6. REFER TO DRAWINGS NID SD1 FOR TRENCH DETAILS AND NID SD4 FOR LOCATING WIRE DETAILS.
7. FORD AND CHRISTY CATALOG NUMBERS ARE GIVEN FOR COMPARISION PURPOSES. SUBSTITUTES CONFORMING TO THE SPECIFICATIONS MUST BE APPROVED BY THE DISTRICT ENGINEER.
8. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. IF LENGTH EXCEEDS ONE 20' JOINT, USE FORD C77-77 STRAIGHT COUPLING. NO GLUED JOINTS.
9. ALL METER VALVES SHALL BE SUPPLIED WITH LOCKING NUTS.
10. CENTER METER BOX OVER METER VALVE AS SHOWN.

1-1/2" & 2" METER ASSEMBLY

NID

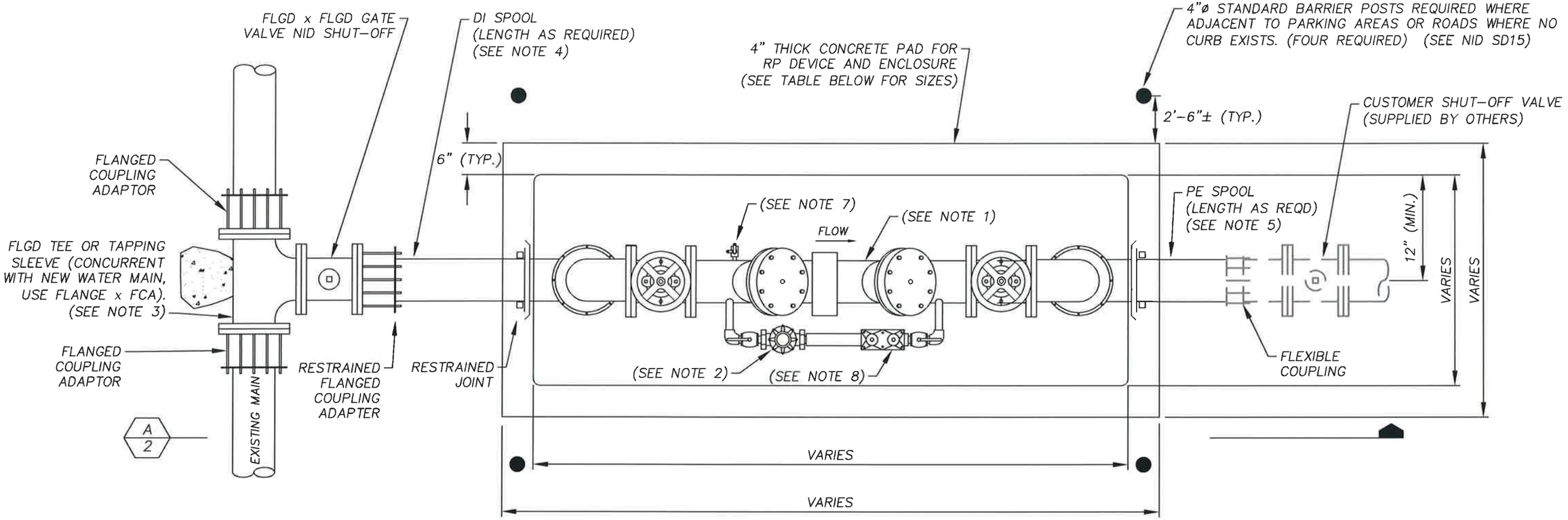
APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD14
SHT 2 of 2

REVISION DATE
10/04/22

NOT TO SCALE



PLAN VIEW

REDUCED PRESSURE DEVICE SPECIFICS

RP DEVICE SIZE	MINIMUM SERVICE LATERAL DIAMETER*	CONCRETE PAD SIZE	PLACER WATERWORKS MODEL NUMBER
4" (SEE NOTE 10)	6"	4'–0" x 8'–6"	PW/BE4DW–S
6"	6"	4'–8" – 11'–0"	PW/BE4DW–M
8"	8"	4'–8" x 11'–0"	PW/BE4DW–M

* THE DISTRICT MAY REQUIRE LARGER DIAMETER SERVICE LATERALS & DETECTOR CHECKS IN CERTAIN SITUATIONS

FOR SECTION AND NOTES SEE SHEETS 2 and 3 of 3

PRIVATE FIRE SERVICE REDUCED PRESSURE

NID

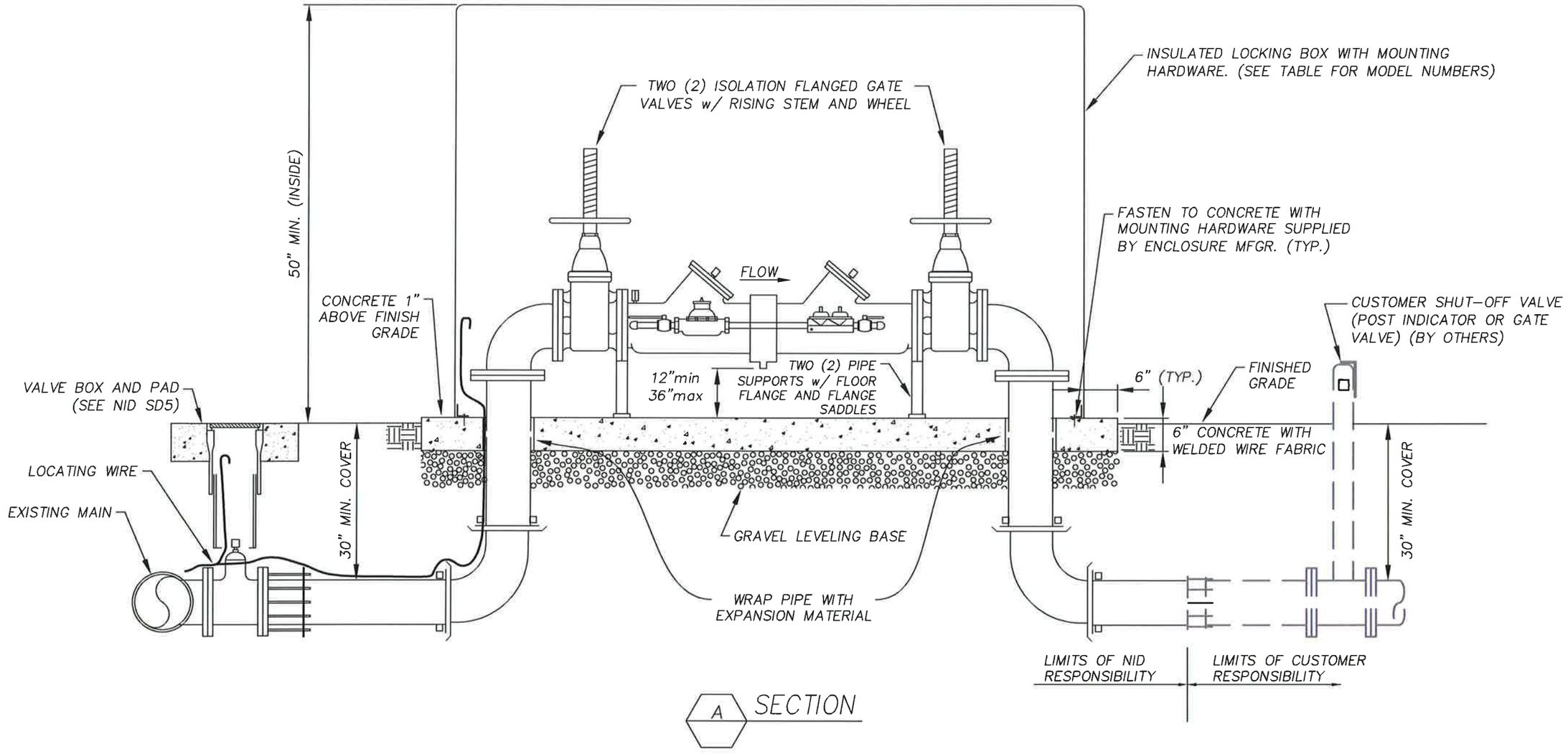
APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD15
SHT 1 of 3

REVISION DATE
10/04/22

NOT TO SCALE



A SECTION

PRIVATE FIRE SERVICE REDUCED PRESSURE

DRAWING NO.
SD15
SHT 2 of 3

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE

NOTES:

1. REDUCED PRESSURE DEVICE SHALL BE WATTS LF957-RPDA-0SY-LM (3" TO 10") OR AMES LFC500-RPDA-0SY-LM.
2. THE METER SHALL BE PURCHASED THROUGH AND INSTALLED BY THE DISTRICT.
3. HOT TAPPING OF MAINS MAY BE ALLOWED FOR LATERALS NOT EXCEEDING 75% OF THE DIAMETER OF THE MAIN. HOT TAPPING ON AC OR CAST IRON PIPES NOT APPROVED UNLESS PRIOR APPROVAL BY DISTRICT FOR SPECIAL CONDITIONS. TAPPING SLEEVE TYPES WILL BE AS DETERMINED BY THE DISTRICT.
4. LATERALS SHALL BE DUCTILE IRON PIPE WITH CEMENT MORTAR LINING, MECHANICAL JOINTS AND RETAINER RINGS. THE LATERAL SHALL PROVIDE POSITIVE RESTRAINT BETWEEN THE WATER MAIN AND THE CUSTOMER PIPE.
5. FLANGED JOINTS CAN REPLACE MECHANICAL JOINTS WITH PRIOR DISTRICT APPROVAL.
6. ALL MATERIALS AND WORK SHALL CONFORM TO NID STANDARD SPECIFICATIONS. PROVIDE SUBMITTALS ON ALL MATERIALS AND EQUIPMENT.
7. LOCKING TEST COCK SHALL BE MUELLER B-20200, FORD BH11-233 OR APPROVED EQUIVALENT FOR 8" OR LARGER.
8. METER CHECK VALVE SHALL BE PER SIZE AND MODEL SHOWN IN THE TABLE BELOW.
9. LOCATE CONCRETE PAD ON APPLICANT'S PROPERTY. PAD WILL NOT BE ALLOWED WITHIN COUNTY RIGHT OF WAY. APPLICANT SHALL GRANT AN EASEMENT TO NID FOR OPERATION, MAINTENANCE AND REPLACEMENT.
10. FOR 4" FIRE SERVICES, INSTALL A 6"x 4" REDUCER UPSTREAM OF ENCLOSURE.

CHECK VALVE MODEL

SIZE	MAKE	MODEL
¾"	WATTS	LF009M3-QT
1"	WATTS	LF009M2-QT
1½"	WATTS	LF009M2-QT
2"	WATTS	LF009M2-QT
3"-10"	WATTS	LF909-DNRS

PRIVATE FIRE SERVICE REDUCED PRESSURE

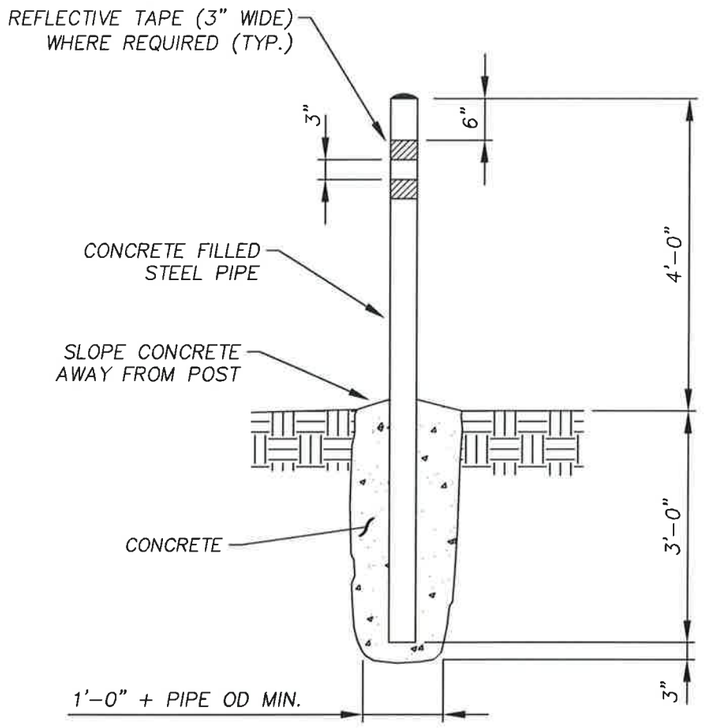
NID

APPROVED:

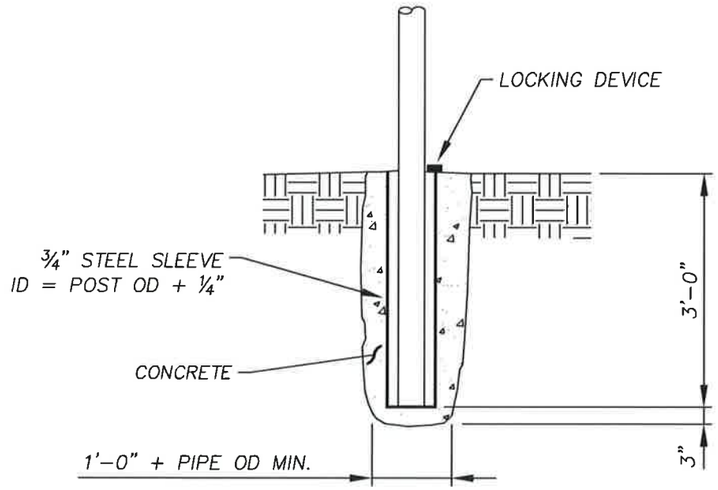
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD15
SHT 3 of 3

REVISION DATE
10/04/22



STANDARD BARRIER POST



REMOVABLE BARRIER POST

ID = INSIDE DIAMETER
OD = OUTSIDE DIAMETER

NOTES:

1. PIPE DIAMETER AS SPECIFIED ON PLANS, MINIMUM OF 4" DIAMETER.
2. PRIOR TO PAINTING, GRIND SHARP EDGES THAT WILL BE EXPOSED.
3. ALTERNATE MATERIALS:
   - A. SCH. 40 GALVANIZED STEEL PIPE WITH 3" WIDE REFLECTIVE TAPE (TWO STRIPS PER BARRIER POST)
   - B. SCH. 40 GALVANIZED STEEL PIPE, EXTERIOR ETCHED AND PAINTED WITH TRAFFIC YELLOW.
   - C. SCH. 40 BLACK STEEL PIPE, EXTERIOR DE-GREASED, WIRE BRUSHED, PRIMED AND PAINTED WITH TRAFFIC YELLOW.
4. ALL BARRIER POSTS TO MATCH IN APPEARANCE AT ONE INSTALLATION.

BARRIER POSTS

NID

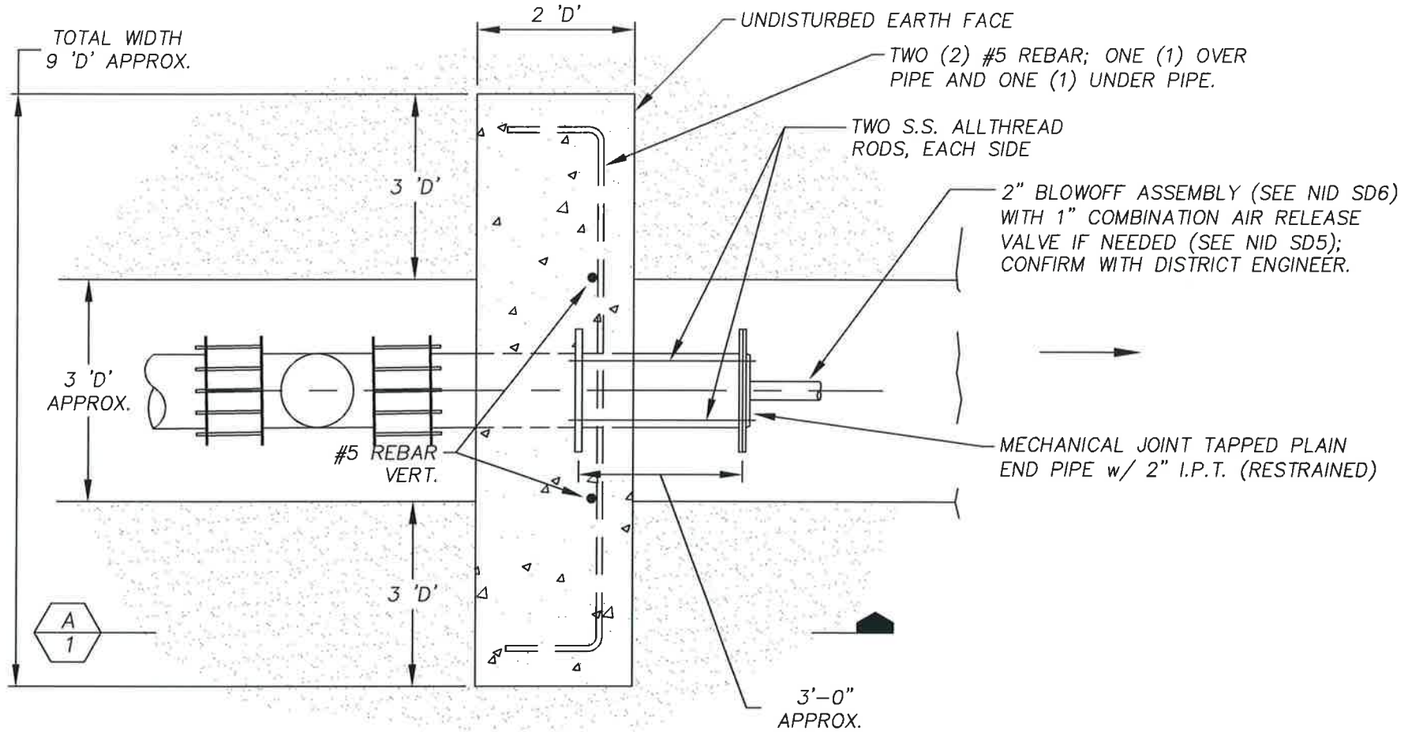
APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD16
SHT 1 of 1

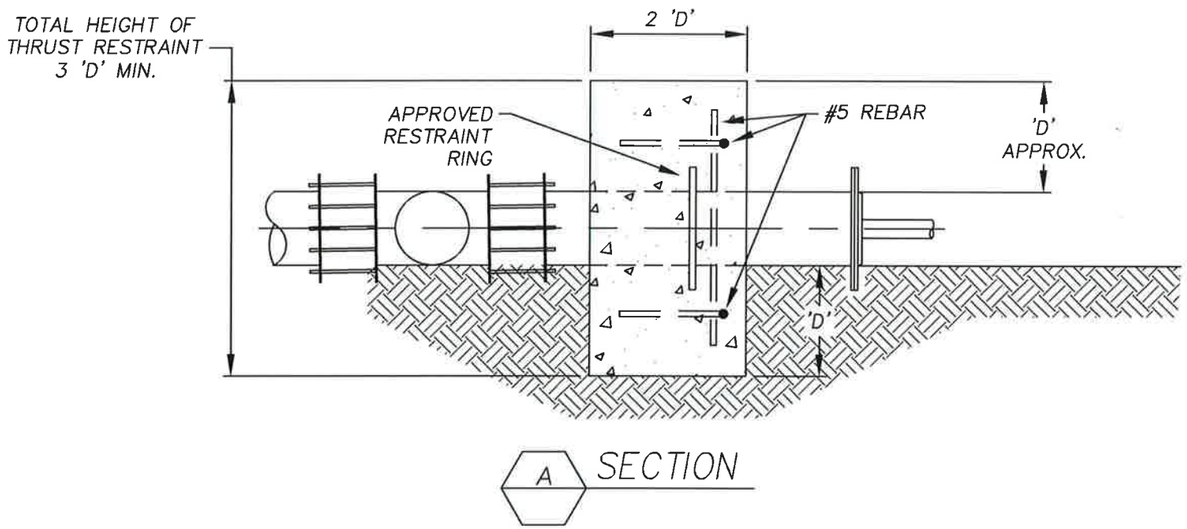
REVISION DATE
10/04/22

NOT TO SCALE



PLAN VIEW

'D' = NOMINAL PIPE DIAMETER



A SECTION

NOTES:

GATE VALVE SHOWN SHALL BE CONFIRMED BY DISTRICT IF NECESSARY; CONSULT WITH DISTRICT ENGINEER.

RESTRAIN RING TO END CAP WITH ALL THREAD.

END OF MAIN WITH FUTURE EXTENSION

NID

APPROVED:

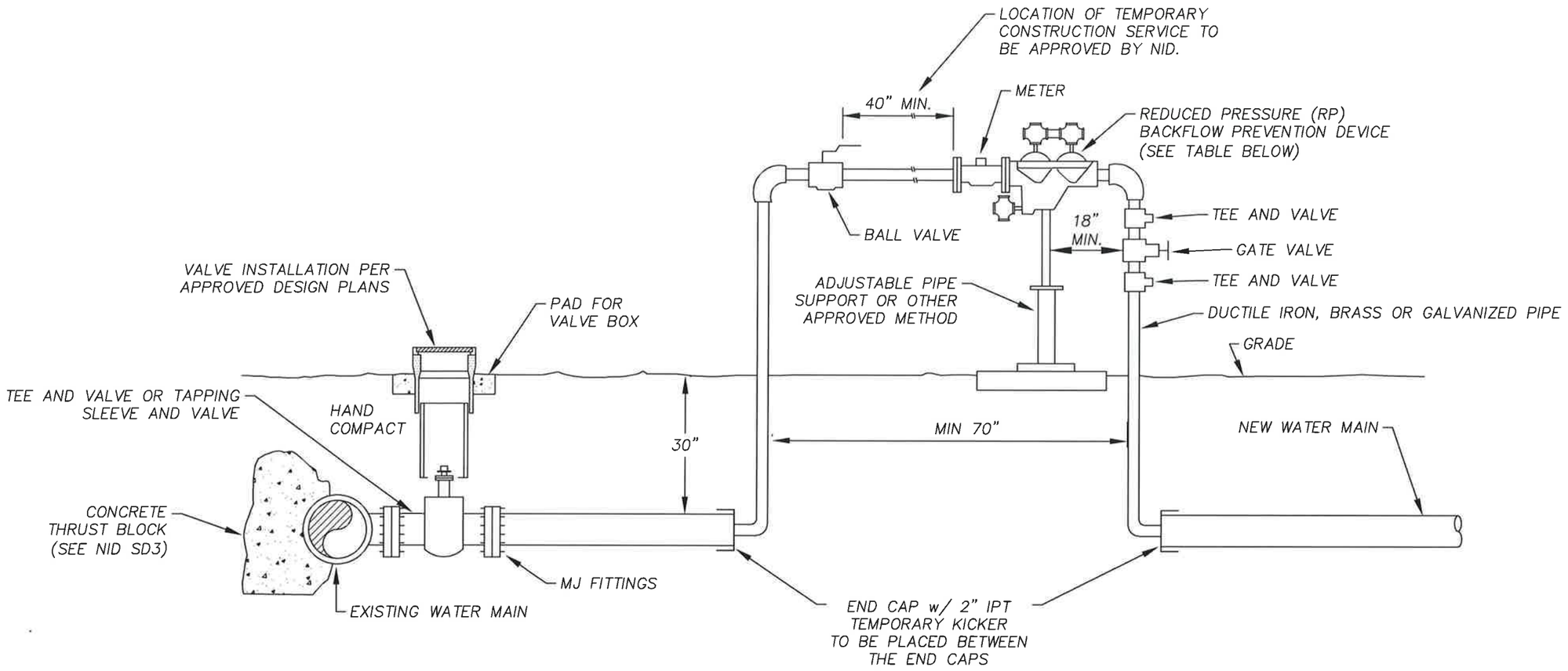
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD17
SHT 1 of 1

REVISION DATE
10/04/22

NOT TO SCALE

→ FOR CONSTRUCTION USE ONLY ←



REDUCED PRESSURE DEVICE

SIZE	MAKE	MODEL
2"	WATTS	LF009M2-QT
3"-4"	WATTS	LF909-DNRS

FOR NOTES SEE SHEET 2 of 2

2" THROUGH 4" TEMPORARY CONSTRUCTION WATER SERVICE

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD18
SHT 1 of 2

REVISION DATE
10/04/22

NOT TO SCALE

NOTES:

1. CONTRACTOR/CUSTOMER SHALL APPLY AT NID FOR TEMPORARY WATER SERVICE FIVE TO FOURTEEN DAYS PRIOR TO REQUIRED SERVICE DATE.
2. ONLY THE METER WILL BE FURNISHED BY NID. THE METER WILL BE INSTALLED BY THE CONTRACTOR/CUSTOMER AND INSPECTED BY NID. CONTRACTOR TO ADD A PRESSURE REDUCING VALVE BETWEEN BALL VALVE AND METER FOR PRESSURES ABOVE 150 PSI.
3. METER SHALL BE A MINIMUM 12 INCHES ABOVE GRADE.
4. ALL FITTINGS, PIPING, VALVES AND MATERIALS, INCLUDING THE APPROVED REDUCED PRESSURE (RP) BACKFLOW PREVENTION DEVICE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR/CUSTOMER.
5. CONTRACTOR/CUSTOMER FURNISHED REDUCED PRESSURE (RP) BACKFLOW PREVENTION DEVICE MUST BE AT SITE WHEN INSPECTED BY NID. THE APPROVED BACKFLOW PREVENTION DEVICE SHALL BE TESTED AND CERTIFIED BY A CERTIFIED BACKFLOW PREVENTION TECHNICIAN (FURNISHED BY CONTRACTOR/CUSTOMER) AT TIME OF METER INSTALLATION. PROOF OF TESTING AND CERTIFICATION SHALL BE PROVIDED TO THE DISTRICT
6. CONTRACTOR/CUSTOMER SHALL PROVIDE PROTECTION FOR ASSEMBLY FROM COLD, WEATHER, THEFT, ETC.
7. TEMPORARY CONSTRUCTION METER TO REMAIN UNTIL REMOVAL IS APPROVED BY NID IN WRITING.
8. WHEN THE NEW SYSTEM IS ACCEPTED, THE TEMPORARY CONSTRUCTION METER ASSEMBLY IS TO BE COMPLETELY REMOVED FROM MJ SOLID SLEEVE TO MJ SOLID SLEEVE AND NEW WATER MAIN PIPE INSTALLED AND CHLORINATED PER AWWA STANDARDS.
9. BY APPLYING FOR SERVICE, CONTRACTOR/CUSTOMER AGREES TO TAKE WATER SERVICE FROM NID IN ACCORDANCE WITH THE APPROPRIATE RATE SCHEDULE AND IN ACCORDANCE WITH DISTRICT RULES AND REGULATIONS, OR ANY SUPERCEDING RATE SCHEDULE AND/OR RULES AND REGULATIONS.
10. ALL FIRE HYDRANTS SUPPORTED BY THIS FACILITY SHALL BE BAGGED WITH BLACK PLASTIC BAG AND TAPED TO INDICATE THE HYDRANT IS OUT OF SERVICE IMMEDIATLY UPON INSTALLATION BY THE CONTRACTOR. ONCE FACILITY IS IN SERVICE, DISTRICT STAFF WILL REMOVE THE BAGS.
11. A TEMPORARY CONNECTION SHALL BE AT ALL CONNECTIONS TO THE EXISTING WATER SYSTEM. LOCATION OF TEMPORARY CONNECTION SHALL BE INDICATED ON APPROVED DEVELOPMENT PLANS. ANY CHANGES SUBJECT TO APPROVAL BY ENGINEERING MANAGER.

2" THROUGH 4" TEMPORARY CONSTRUCTION WATER SERVICE

NID

APPROVED:

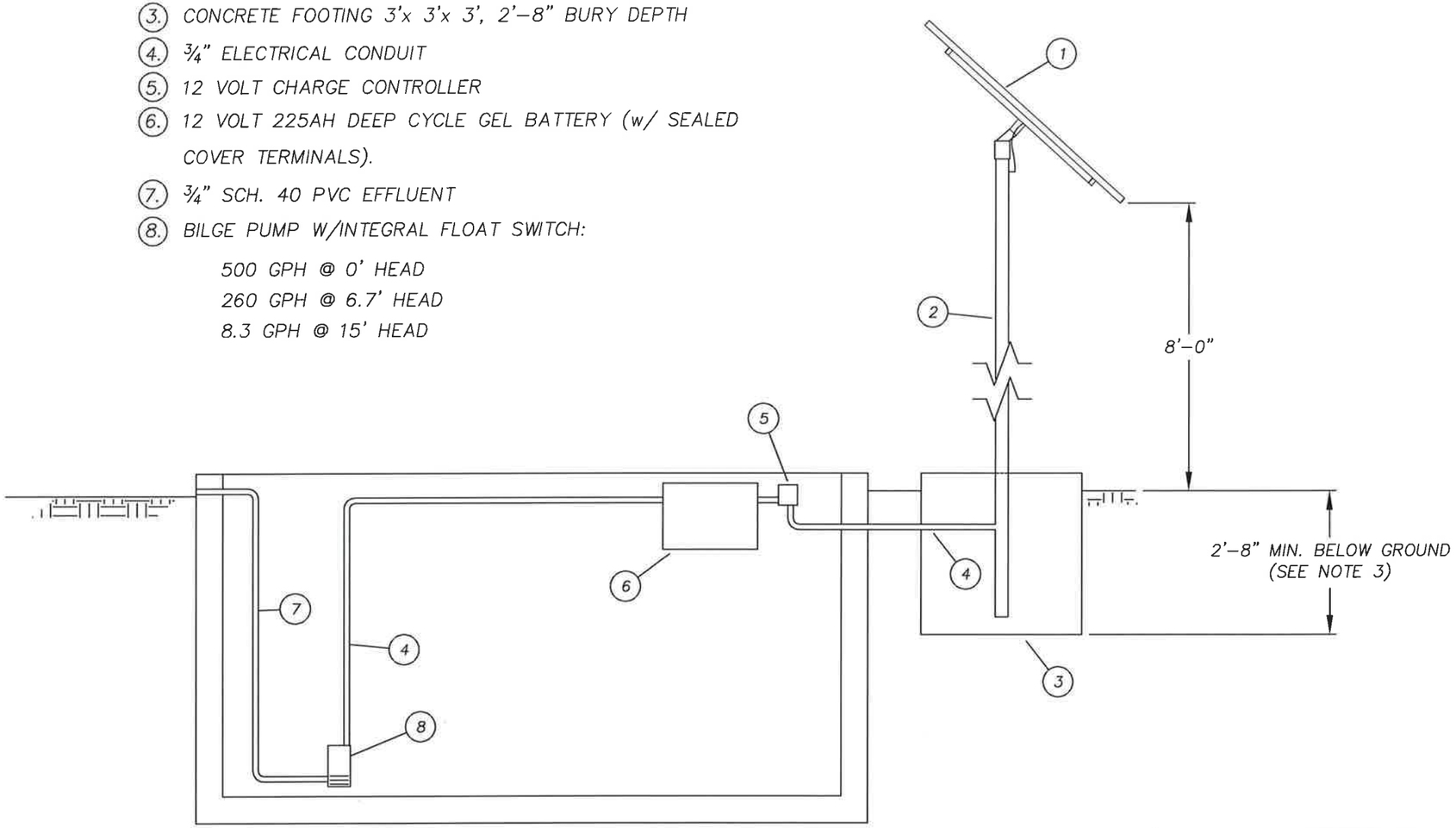
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD18
SHT 2 of 2

REVISION DATE
10/04/22

1. TWO 135W SOLAR PANELS
2. 2½" SCH. 40 STEEL PIPE (w/ TWO (2) COATS EPOXY PAINT)
3. CONCRETE FOOTING 3'x 3'x 3', 2'–8" BURY DEPTH
4. ¾" ELECTRICAL CONDUIT
5. 12 VOLT CHARGE CONTROLLER
6. 12 VOLT 225AH DEEP CYCLE GEL BATTERY (w/ SEALED COVER TERMINALS).
7. ¾" SCH. 40 PVC EFFLUENT
8. BILGE PUMP W/INTEGRAL FLOAT SWITCH:

   500 GPH @ 0' HEAD
   260 GPH @ 6.7' HEAD
   8.3 GPH @ 15' HEAD



VAULT SECTION VIEW

SOLAR BILGE PUMP

DRAWING NO.
SD19
SHT 1 of 1

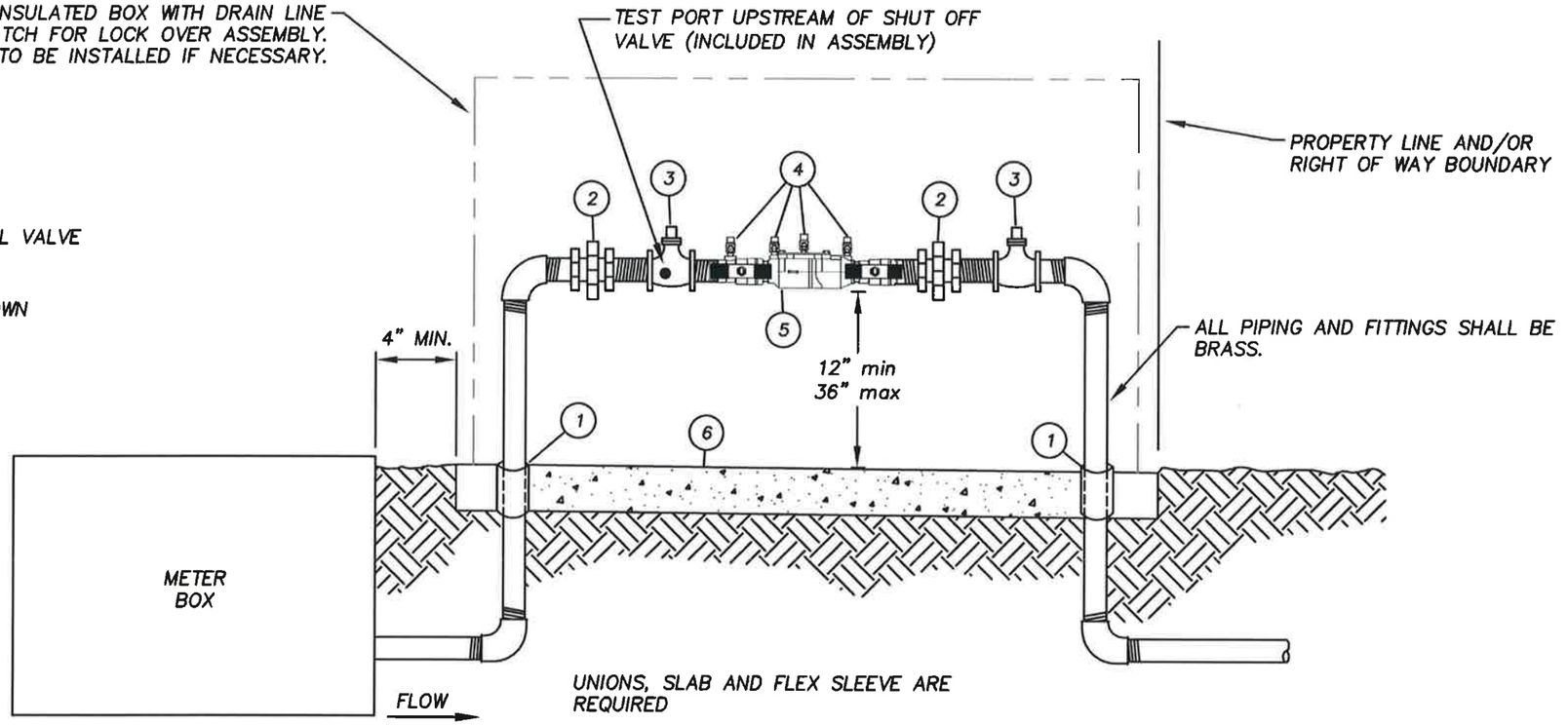
NID

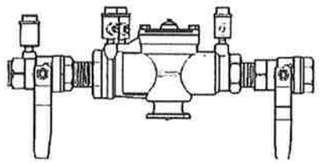
APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE

1. ½" THICK ARMOR FLEX SLEEVE
2. UNION
3. RESILIENT GATE OR BRONZE BALL VALVE
4. TEST PORT
5. CHECK VALVE MODEL LF007 SHOWN
6. 4" CONCRETE X 18" WIDE





CHECK VALVE MODEL LF009

DISTRICT INSTALLED, OWNED AND MAINTAINED 3/4" TO 2" REDUCED PRESSURE BACKFLOW PREVENTION DEVICE INSTALLATION

WARNING:

BACKFLOW PREVENTERS INSTALLED ON CLOSED SYSTEMS WITH WATER HEATERS MAY CAUSE EXCESSIVE PRESSURE INCREASES DUE TO THERMAL WATER EXPANSION AND/OR WATER HAMMER DOWNSTREAM OF THE BACKFLOW PREVENTER. EXCESSIVE PRESSURE INCREASES MAY CAUSE DAMAGE OR FAILURE TO SYSTEMS WHICH MAY BE HAZARDOUS. THE CUSTOMER OR THE PLUMBING CONTRACTOR SHOULD INSTALL ADEQUATE THERMAL EXPANSION DEVICES TO PREVENT POSSIBLE EXCESSIVE PRESSURE INCREASES WITHIN WATER SYSTEM.

NOTES:

1. REDUCED PRESSURE BACKFLOW PREVENTERS SHALL BE PER TABLE SHEET 2.
2. MATERIALS AND INSTALLATION FOR PIPE, FITTINGS AND VALVES SHALL BE IN ACCORDANCE WITH DISTRICT SPECIFICATIONS.
3. ALL ABOVE GROUND JOINTS FOR 3" OR LARGER PIPE SHALL BE FLANGED.
4. BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED LEVEL.
5. BACKFLOW PREVENTION DEVICES SHALL NOT BE INSTALLED IN A VAULT.
6. BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WITH THE STANDARD DETAILS.
7. ● SYMBOL ON DETAILS REPRESENTS TEST PORT.
8. LENGTH OF BOX VARIES DEPENDING ON THE SIZE OF THE CHECK VALVE.

REDUCED PRESSURE BACKFLOW PREVENTION DEVICE

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD20
SHT 1 of 2

REVISION DATE
10/04/22

NOT TO SCALE

CHECK VALVE MODEL

APPLICATION	TYPE	SIZE	MAKE	MODEL
BACKFLOW PREVENTION ASSEMBLY FOR DRINKING WATER CONNECTIONS SERVING RESIDENTIAL DUAL PLUMBED LOTS, (I.E. WELL, IRRIGATION WATER, SPRING)	DOUBLE CHECK BACKFLOW PREVENTION ASSEMBLY (DC) LEAD FREE	¾"	WATTS	LF007M3-QT
		1"	WATTS	LF007M1-QT
		1½"	WATTS	LF007M2-QT
		2"	WATTS	LF007M1-QT
BACKFLOW PREVENTION ASSEMBLY FOR DRINKING WATER CONNECTIONS SERVING COMMERCIAL/INDUSTRIAL OR HIGH HAZARD RESIDENTIAL LOTS	REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTION ASSEMBLY (RP) LEAD FREE	¾"	WATTS	LF009M3-QT
		1"	WATTS	LF009M2-QT
		1½"	WATTS	LF009M2-QT
		2"	WATTS	LF009M2-QT

REDUCED PRESSURE BACKFLOW PREVENTION DEVICE

NID

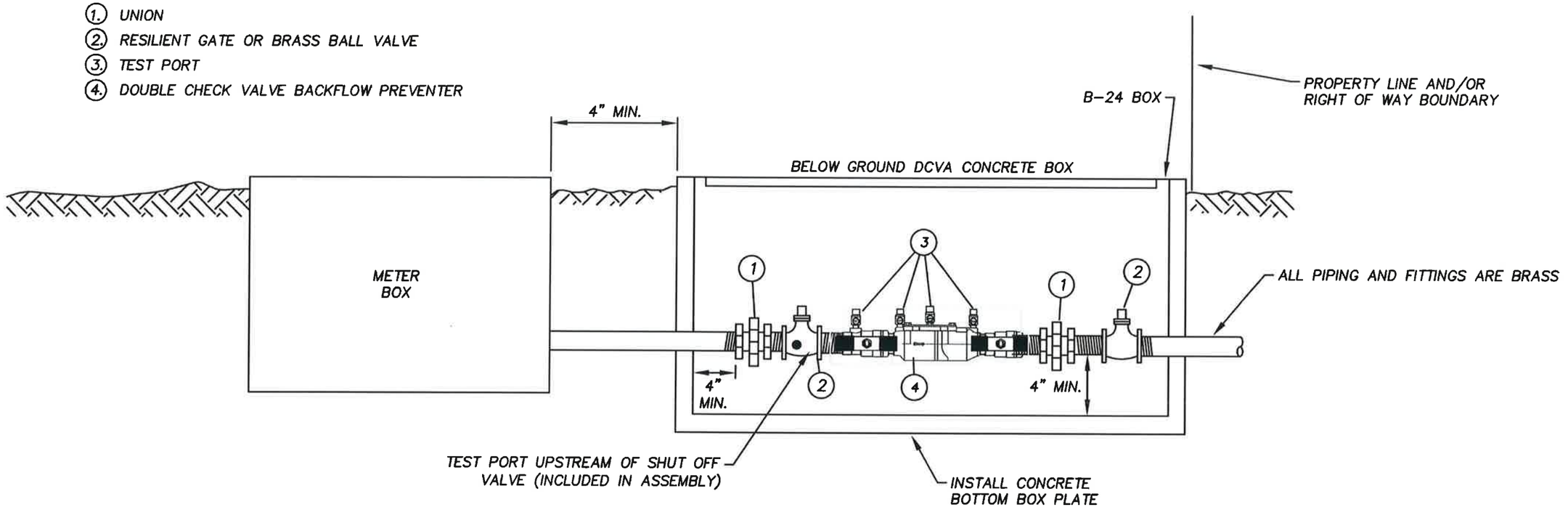
APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD20
SHT 2 of 2

REVISION DATE
10/04/22

1. UNION
2. RESILIENT GATE OR BRASS BALL VALVE
3. TEST PORT
4. DOUBLE CHECK VALVE BACKFLOW PREVENTER



3/4" & 1" DOUBLE CHECK VALVE BACKFLOW PREVENTION INSTALLATION FOR SINGLE FAMILY RESIDENTIAL UNITS

NOTES:

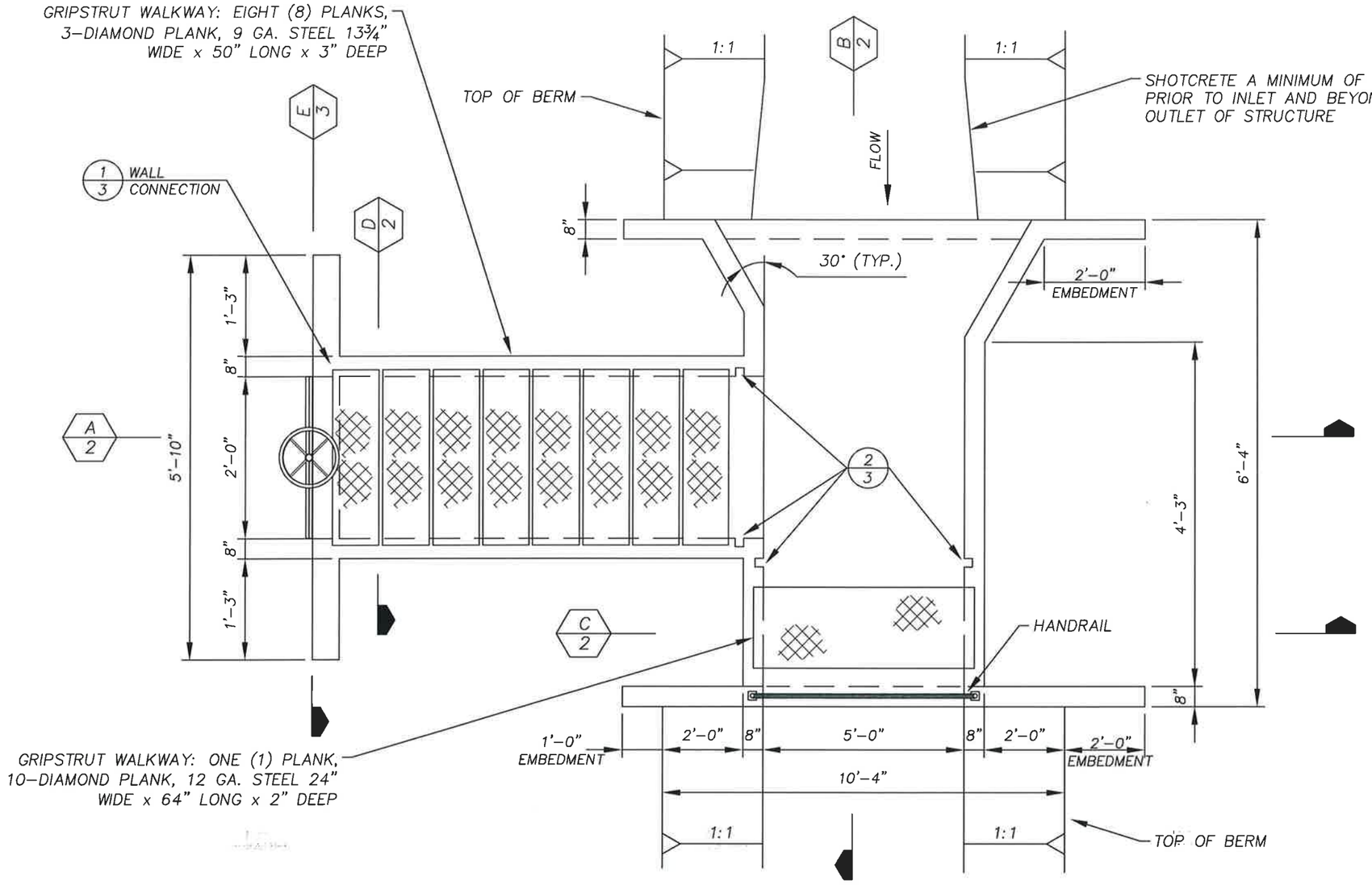
1. DOUBLE CHECK VALVE BACKFLOW PREVENTERS SHALL BE APPROVED BY THE DISTRICT.
2. MATERIALS AND INSTALLATION FOR PIPE, FITTINGS AND VALVES SHALL BE IN ACCORDANCE WITH DISTRICT SPECIFICATIONS.
3. ALL ABOVE GROUND JOINTS FOR 3" OR LARGER PIPE SHALL BE FLANGED.
4. DOUBLE CHECK VALVE BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED LEVEL.
5. DOUBLE CHECK VALVE BACKFLOW PREVENTION DEVICES SHALL NOT BE INSTALLED IN A VAULT UNLESS OTHERWISE NOTED.
6. DOUBLE CHECK VALVE BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WITH THE STANDARD DETAILS.
7. DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY SHALL BE WATTS LF007M3-QT FOR ¾" AND WATTS LF007M1-QT FOR 1" SERVICES.
8. PIPE PENETRATIONS THROUGH CONCRETE VAULTS NEED TO BE SLEEVED AND SEALED TO ELIMINATE WATER LEAKAGE.
9. ● SYMBOL ON DETAIL REPRESENTS TEST PORT.

WARNING:

BACKFLOW PREVENTERS INSTALLED ON CLOSED SYSTEMS WITH WATER HEATERS MAY CAUSE EXCESSIVE PRESSURE INCREASES DUE TO THERMAL WATER EXPANSION AND/ OR WATER HAMMER DOWNSTREAM OF THE BACKFLOW PREVENTER. EXCESSIVE PRESSURE INCREASES MAY CAUSE DAMAGE OR FAILURE TO WATER SYSTEMS WHICH MAY BE HAZARDOUS. THE CUSTOMER OR THE PLUMBING CONTRACTOR SHOULD INSTALL ADEQUATE THERMAL EXPANSION DEVICES TO PREVENT POSSIBLE EXCESSIVE PRESSURE INCREASES WITHIN WATER SYSTEMS.

DOUBLE CHECK VALVE BACKFLOW PREVENTION DEVICE	DRAWING NO. SD21 SHT 1 of 1
NID APPROVED: DOUG RODERICK, P.E. DIRECTOR OF ENGINEERING	REVISION DATE 10/04/22

NOT TO SCALE



NOTES:

DIMENSIONS SHOWN FOR REPRESENTATIONAL PURPOSES. DIMENSIONS TO CHANGE TO FIT SPECIFIC CANAL AND PROJECT.

SPILL STRUCTURE PLAN VIEW

FOR SECTIONS AND DETAILS SEE SHEETS 2 and 3 of 3

SPILLWAY FACILITY

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD22
SHT 1 of 3

REVISION DATE
10/04/22

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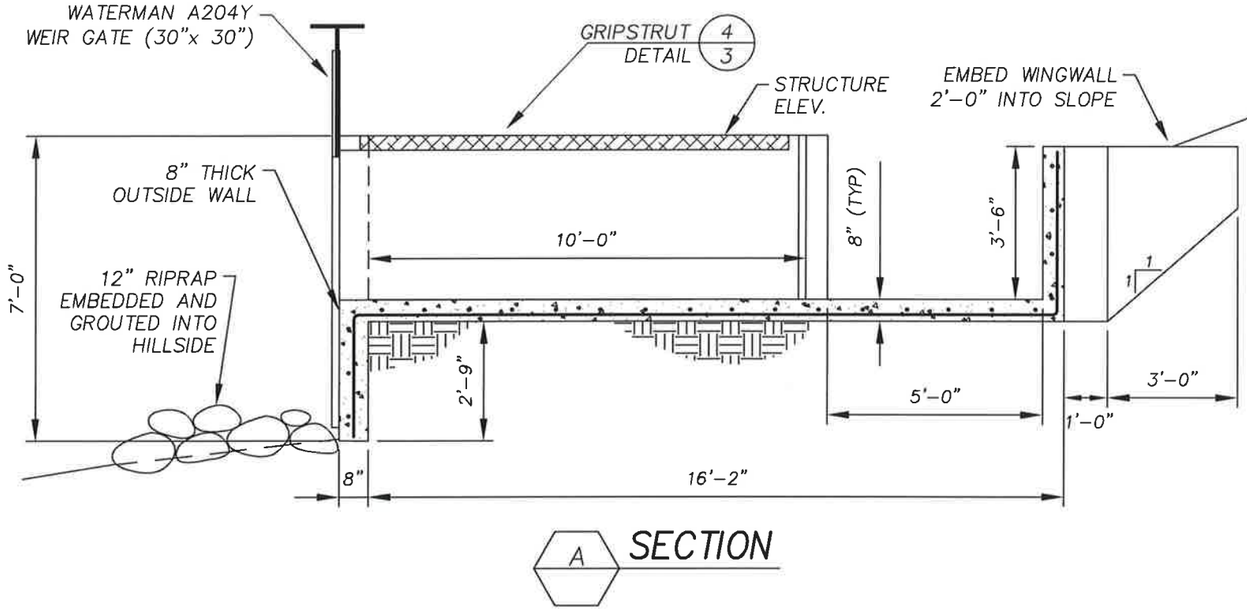
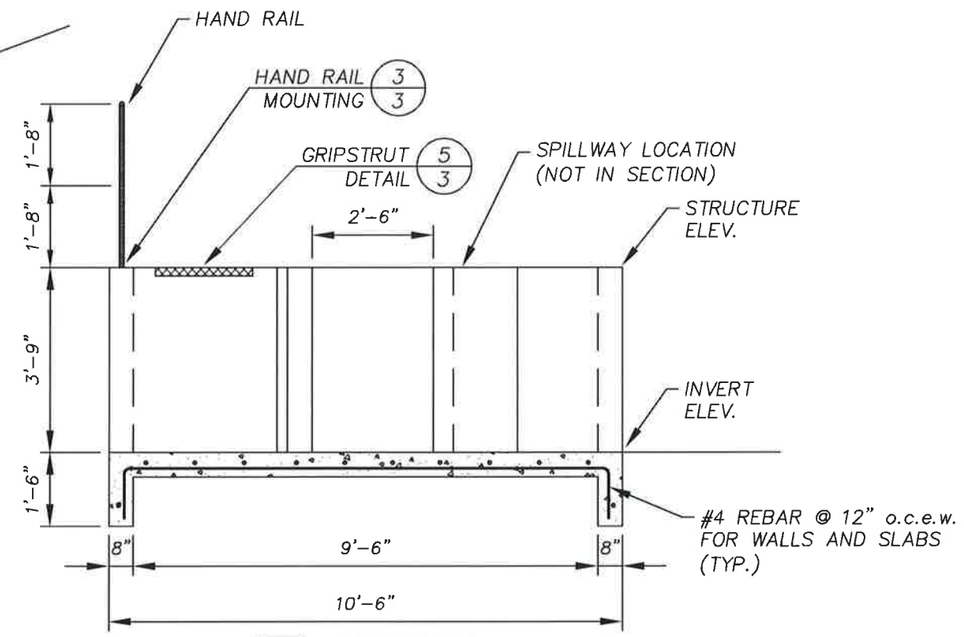


A SECTION



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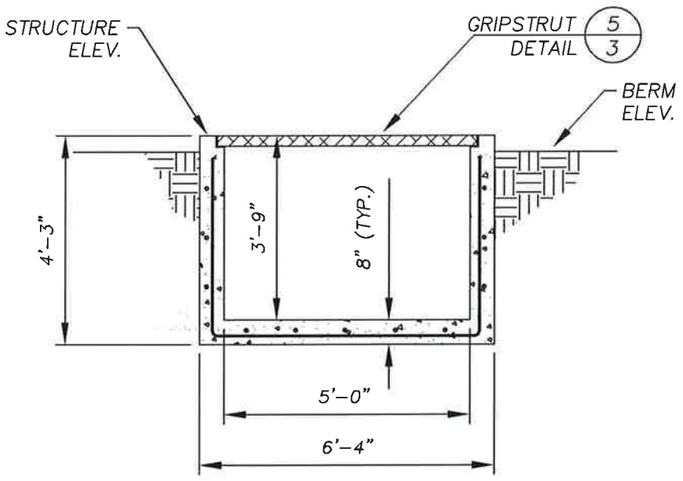

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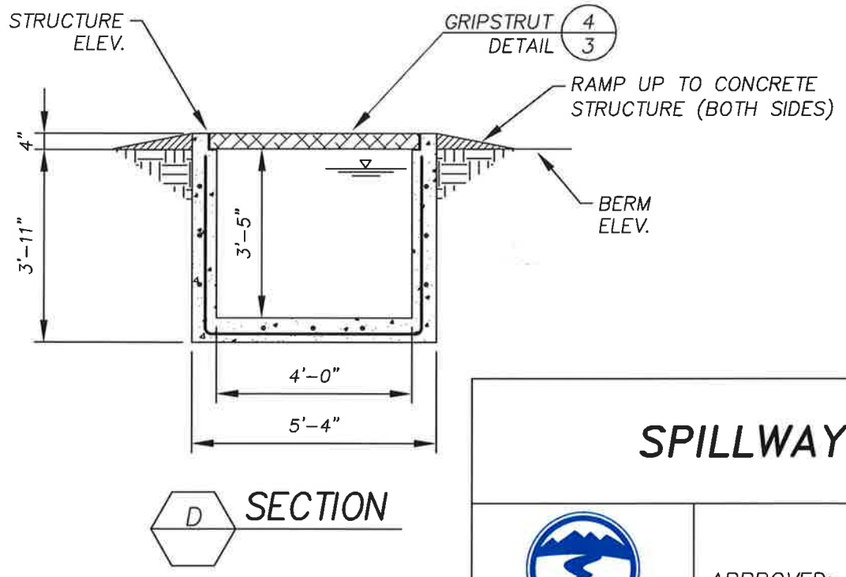

D SECTION

SPILLWAY FACILITY

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD22
SHT 2 of 3

REVISION DATE
10/04/22

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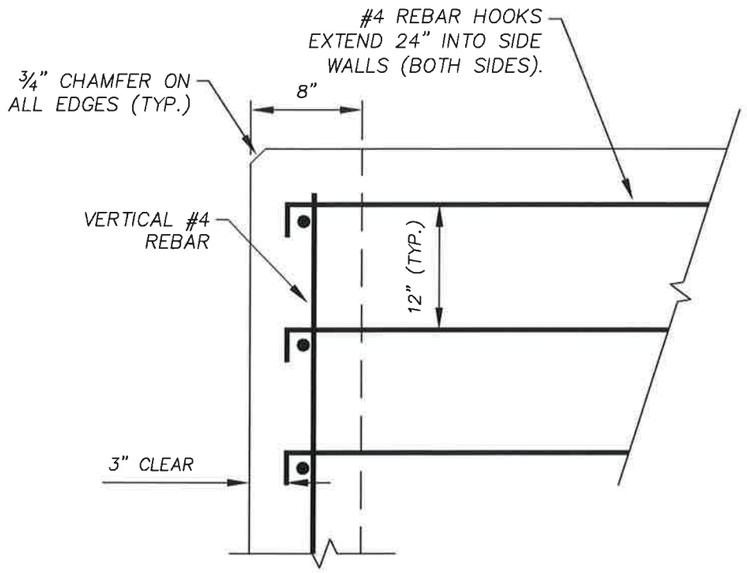
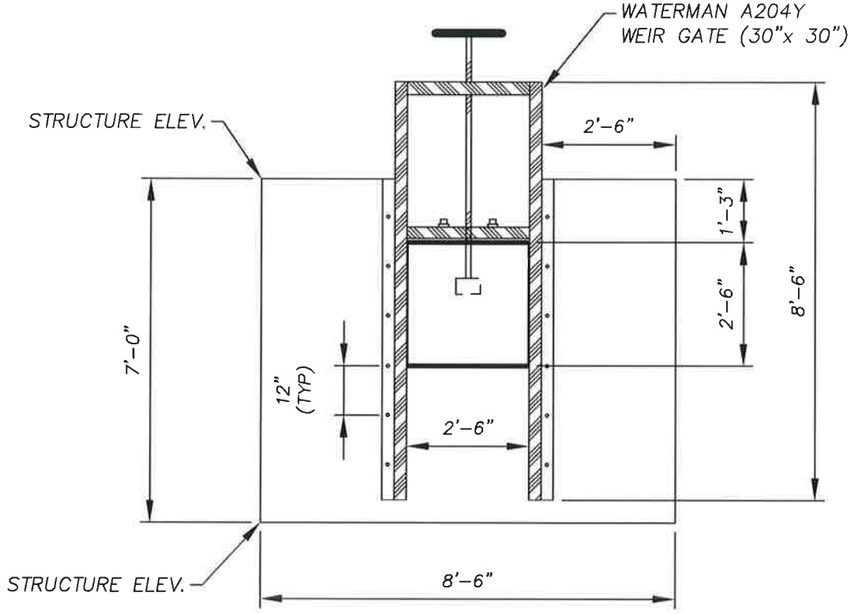
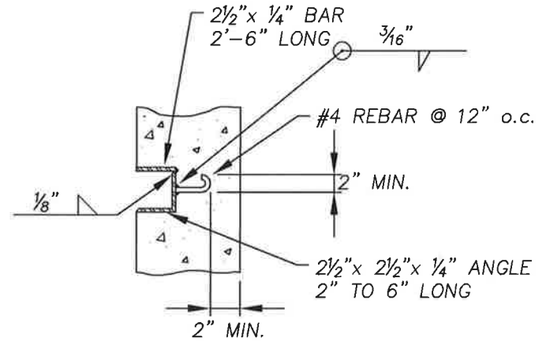


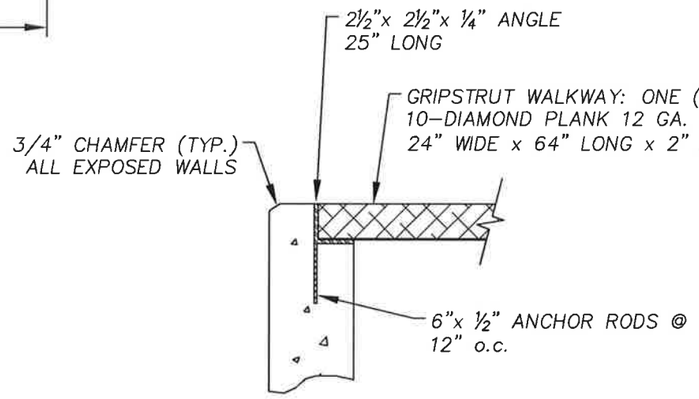
1 WALL CONNECTION DETAIL



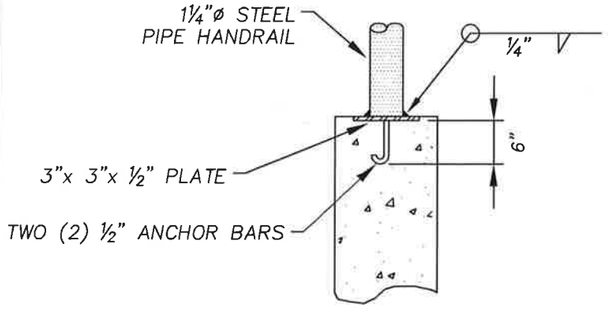
E SECTION



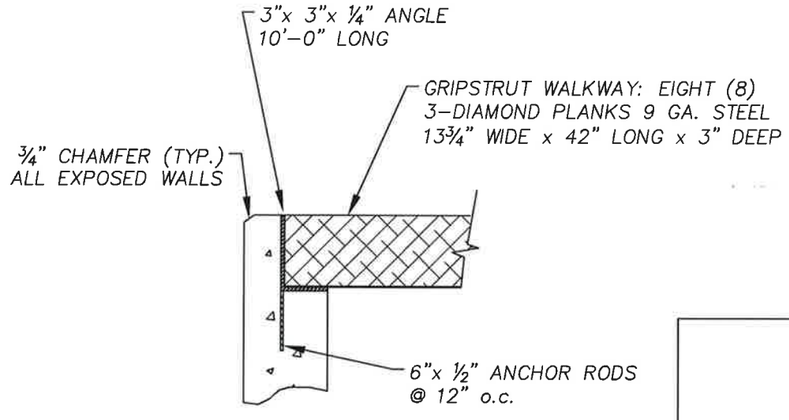
2 WEIRBOARD CHANNEL



5 GRIPSTRUT DETAIL



3 HANDRAIL MOUNTING



4 GRIPSTRUT DETAIL

SPILLWAY FACILITY

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD22
SHT 3 of 3

REVISION DATE
10/04/22

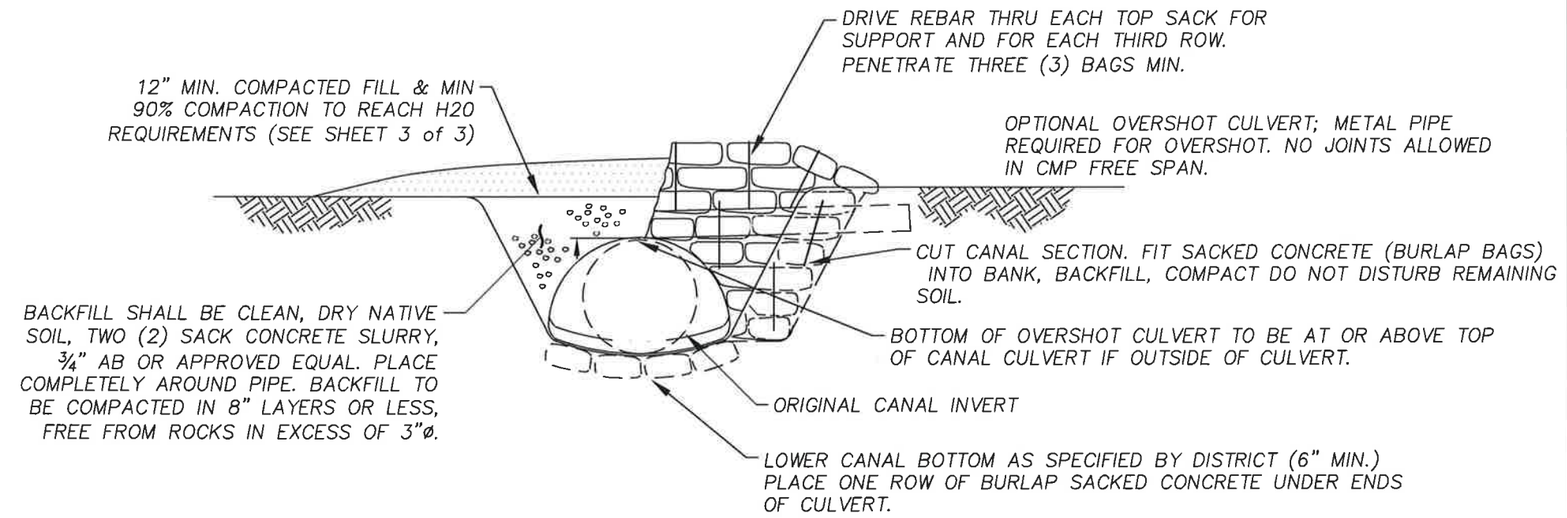
NOT TO SCALE

NOTES:

1. ENDWALLS SHALL BE CONSTRUCTED OF **BURLAP SACKS** (NO PAPER SACKS) FILLED WITH CONCRETE OR APPROVED ALTERNATE SUCH AS REINFORCED CONCRETE WALLS OR CONCRETED ROCK WALLS.
2. ALL CONCRETE SHALL BE A MINIMUM OF FIVE (5) SACK PER YARD MIX.
3. ALL DRAINAGE CREATED BY NEW CONSTRUCTION SHALL BE DIVERTED OVER THE CANAL. DITCHES AND/OR OVERSHOT CULVERTS SHALL BE PLACED AS APPROVED BY THE DISTRICT. NO DRAINAGE WILL BE ALLOWED IN CANAL.
4. ROUND, DOUBLE WALLED HIGH DENSITY POLYETHYLENE (HDPE) PIPE OR ARCHED VINYL COATED GALVANIZED CORRUGATED PIPE (12 GAGE MINIMUM) MAY BE USED. STEEL, ALUMINUM OR OTHER PIPES CAN ONLY BE USED WITH SPECIAL APPROVAL OF THE DISTRICT ENGINEER.
5. CULVERT SIZE SHALL BE DETERMINED BY THE DISTRICT ENGINEER, BUT SHALL BE 18" MINIMUM OR EQUAL.
6. IF THIS IS A REPLACEMENT, THE LENGTH OF CULVERT REPLACEMENT SHALL BE AGREED UPON BETWEEN THE DISTRICT AND THE LAND OWNER.
7. EXCEPT FOR REPLACEMENTS, CULVERT LENGTH SHALL BE DETERMINED BY OWNER. THE FOLLOWING FORMULA CAN BE USED:

   $L=W+3+2(H\times\frac{1}{4})$ WHERE:

   L=LENGTH OF CULVERT
   W=DESIRED ROAD WIDTH PLUS DRAINAGE DITCHES
   H=HEIGHT OF ROAD SURFACE FROM BOTTOM OF PIPE
   (RISE OF PIPE PLUS COVER OVER PIPE.)
8. USE OF MANUFACTURED FLARED END SECTION IS OPTIONAL. FLARED END SECTION WILL NOT REPLACE REQUIREMENT FOR BURLAP SACKS.
9. MINOR MODIFICATIONS TO MEET FIELD CONDITIONS SUBJECT TO APPROVAL BY DISTRICT'S DIRECTOR OF ENGINEERING.



C CULVERT HEADWALL (TYP.)

PIPE DIA.(ID)	ARCH EQUIVALENT SPAN x RISE	MIN. COVER (*) CMP**	HDPE
18"	**21" x 15"**	12"	12"
21"	**24" x 18"**	12"	12"
24"	**28" x 20"**	12"	12"
30"	**35" x 24"**	12"	12"
36"	**42" x 29"**	12"	12"
42"	**49" x 33"**	12"	12"
48"	**57" x 38"**	12"	12"
54"	**64" x 43"**	12"	24"
60"	**71" x 47"**	12"	24"
66"	**77" x 52"**	12"	NA
72"	**83" x 57"**	12"	NA

*TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT (SUCH AS GRAVEL) OR TOP OF PIPE TO TOP OF RIGID PAVEMENT. SHOULD MEET H20 LOADING CAPACITY.

**CMP THICKNESS SHALL FOLLOW MANUFACTURE'S REQUIREMENTS FOR THE MINIMUM 12' OF COVER WHICH VARIES DEPENDING ON THE PIPE DIAMETER. DISTRICT ENGINEER TO APPROVE PIPE THICKNESS FOR THE APPLICATION.

CANAL CULVERT INSTALLATION

DRAWING NO.
SD23
SHT 1 of 3

NID

APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

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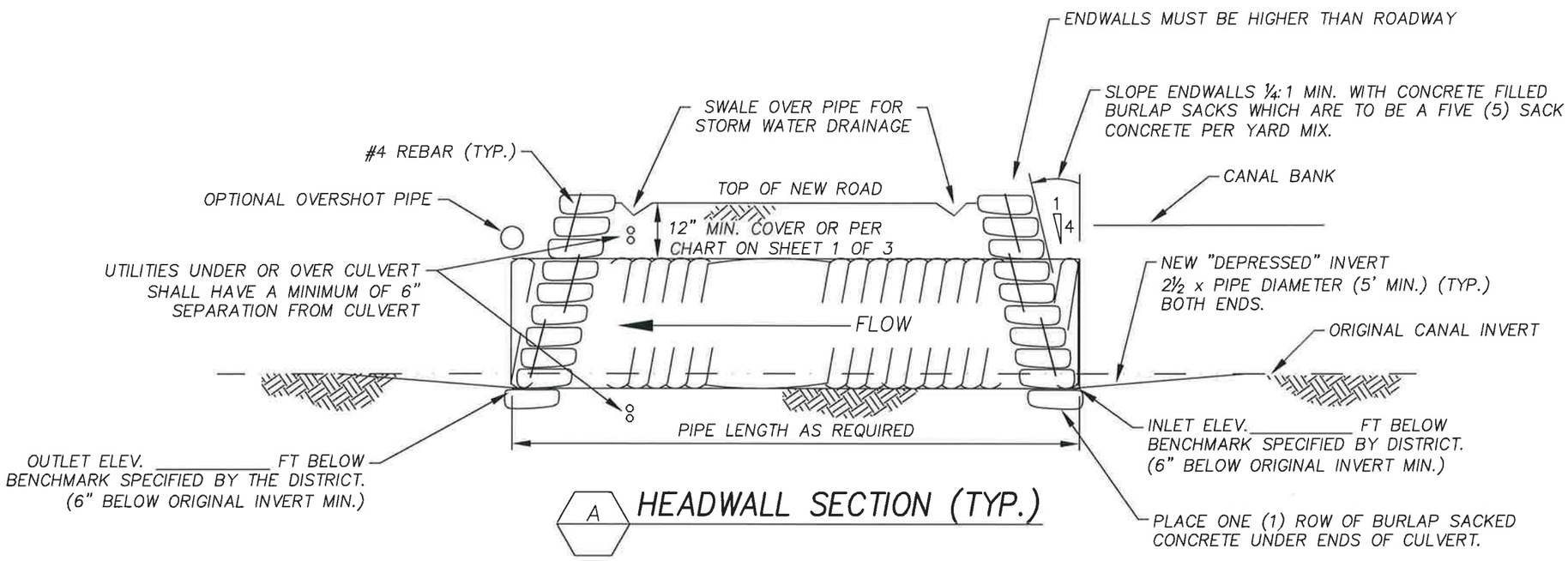
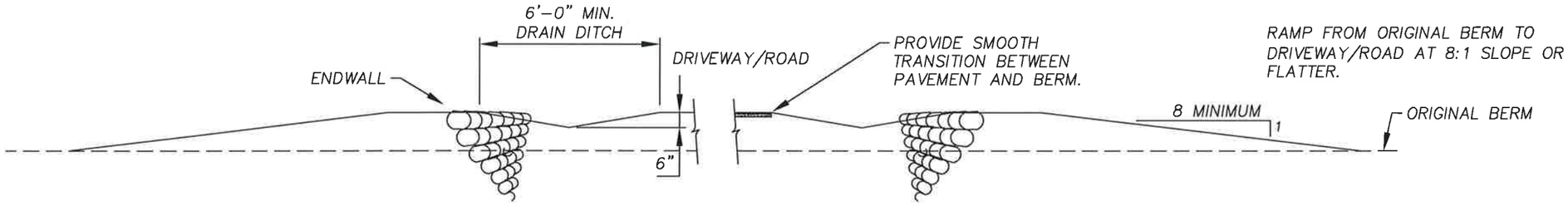


A HEADWALL SECTION (TYP.)



B 'V' DITCH SECTION ALONG BERM
CROSS SECTION AT CANAL BERM

CANAL CULVERT INSTALLATION

DRAWING NO.
SD23
SHT 2 of 3

NID

APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

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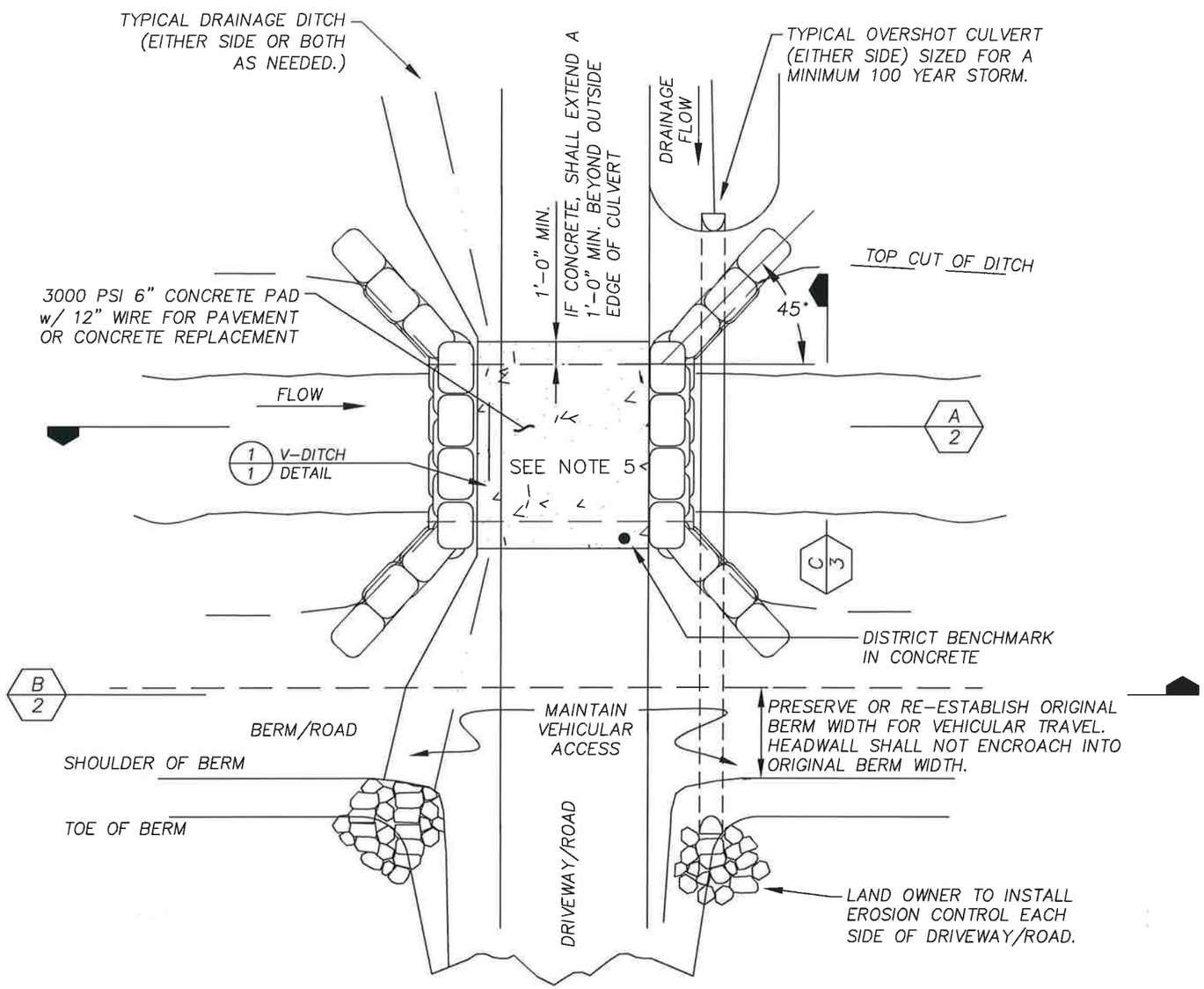
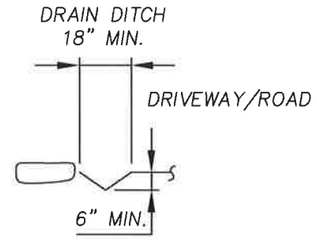


PLAN VIEW

FOR SECTIONS AND NOTES SEE SHEETS 2 and 3 of 3



1 'V' DITCH DETAIL

CROSS SECTION AT DRIVEWAY/ROAD

NOT TO SCALE

CANAL CULVERT INSTALLATION

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD23
SHT 3 of 3

REVISION DATE
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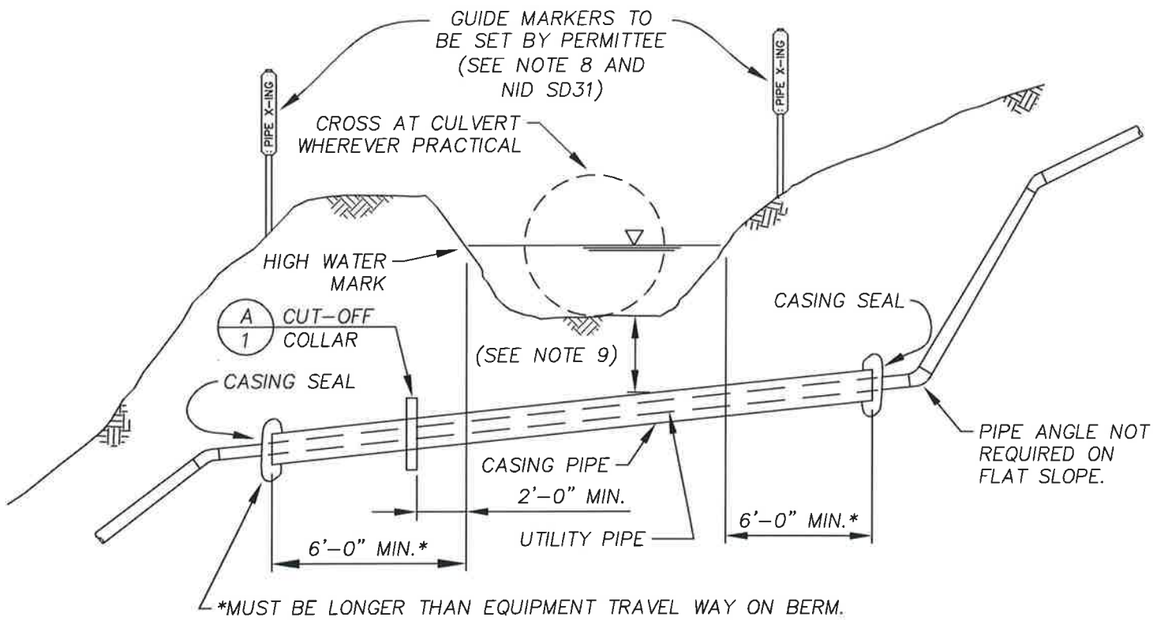


CANAL UTILITY CROSSING

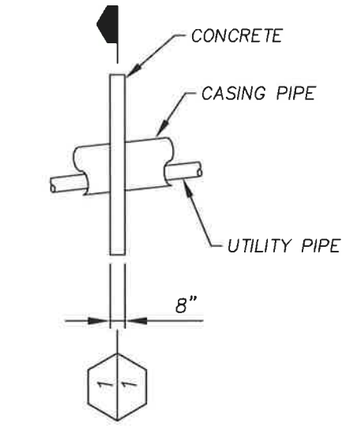
NOTES:

1. THE CANAL CROSSING SHALL BE UNDER A CULVERT WHEREVER PRACTICAL. CENTER THE CROSSING ON THE CULVERT PIPE.
2. WATERLINE, ELECTRICAL AND TELECOM CAN CROSS IN THE SAME CASING PIPE. ELECTRICAL AND TELECOM MUST BE ENCLOSED IN SEPARATE PIPES WITHIN THE CASING.
3. CASING PIPE SHALL BE EITHER CONTINUOUS #10 GAUGE DIPPED AND WRAPPED STEEL OR CMP WITH #16 GAUGE FOR STEEL AND #14 GAUGE FOR ALUMINUM OR C-900 PVC. A CASING SHALL BE AT LEAST TWO (2) INCHES LARGER INTERIOR DIAMETER THAN THE EXTERIOR WATER PIPE DIAMETER (4" DIAMETER MINIMUM). THE CASING PIPE ON UPHILL SIDE SHALL EXTEND TO ABOVE THE ELEVATION OF THE MAXIMUM WATER LEVEL.
4. CANAL OUTAGES MUST BE APPROVED BY THE DISTRICT IN ADVANCE. IF A CASING PIPE ELBOW IS TO BE INSTALLED, IT MUST BE FABRICATED BEFORE THE OUTAGE IS SCHEDULED – MINIMUM TWO (2) WEEKS NOTIFICATION. EFFORT SHALL BE MADE TO REDUCE TURBIDITY IN CANAL AFTER INSTALLATION.
5. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY OR HIGHER. RECONSTRUCTION IN GUNITED SECTIONS SHALL REQUIRE SPECIAL ATTENTION AS DIRECTED BY THE DISTRICT.
6. THE CASING PIPE MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.
7. BOTH ENDS OF THE CASING PIPE SHALL BE SEALED WITH BURLAP SACKS FILLED WITH CONCRETE OR AN APPROVED EQUIVALENT (NOT SHOWN).
8. GUIDE MARKERS SHALL BE INSTALLED BY THE PERMITTEE AS DIRECTED BY THE DISTRICT. SEE NID SD31 FOR DETAILS.
9. CLEARANCE:

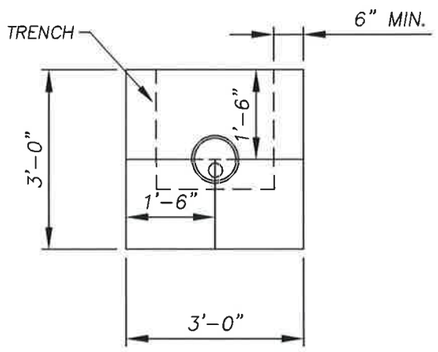
   1'-6" MINIMUM UNDER CANAL AS DETERMINED BY DISTRICT
   1'-0" MINIMUM UNDER CULVERT AS DETERMINED BY DISTRICT

   DISTRICT MAY REQUIRE FLOW FILL (TWO-SACK SLURRY).

10. FOR SEWER CROSSING SEE SD-26



A DETAIL



1 SECTION

NOT TO SCALE

CANAL UTILITY CROSSING (UNDER)

NID

APPROVED:

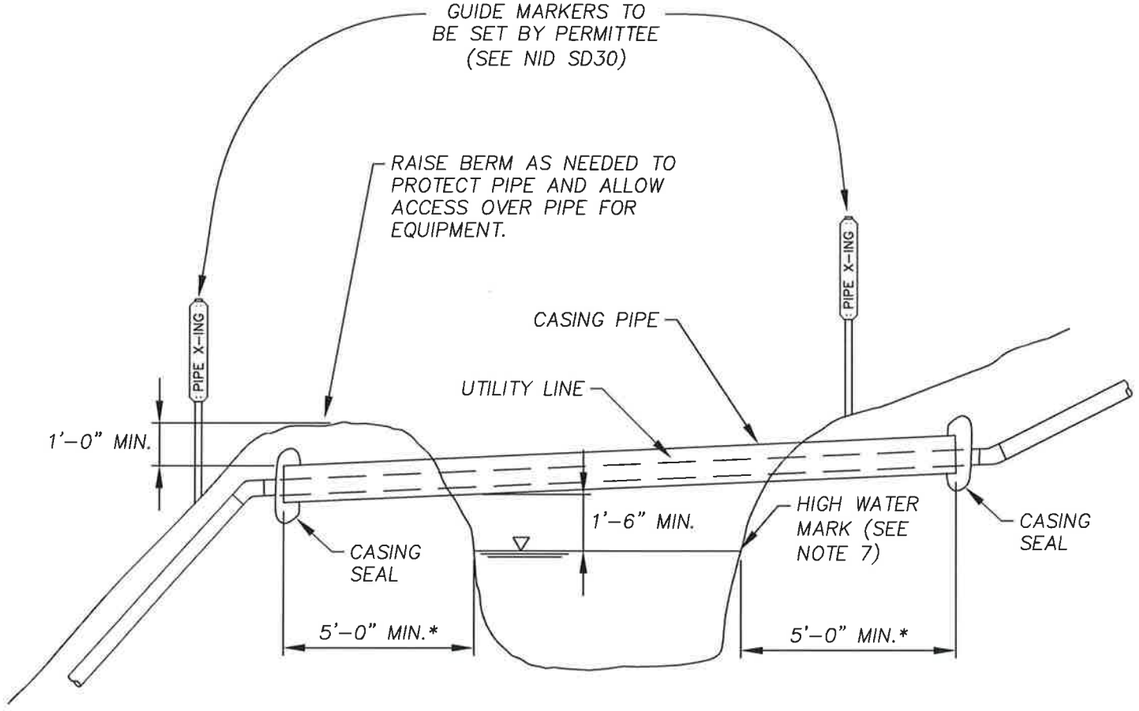
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD24
SHT 1 of 1

REVISION DATE
10/04/22

NOTES:

1. UTILITY CROSSINGS INSTALLED OVER THE CANAL WILL NOT BE APPROVED UNLESS PHYSICAL CONSTRAINTS PRECLUDE AN UNDER CANAL INSTALLATION. ALL OVER CANAL CROSSINGS SHALL BE REVIEWED AND APPROVED ON AN INDIVIDUAL BASIS.
2. WATERLINE, ELECTRICAL AND TELECOM CAN CROSS IN THE SAME CASING PIPE. ELECTRICAL AND TELECOM MUST BE ENCLOSED IN A SEPARATE PIPE WITHIN THE CASING.
3. CASING PIPE SHALL BE EITHER CONTINUOUS DUCTILE IRON OR A FOOTBRIDGE CROSSING (SD-30) WITH THE FOLLOWING CASING PIPE SECURED BELOW: #10 GAUGE DIPPED AND WRAPPED STEEL PIPE OR CMP WITH #16 GAUGE FOR STEEL AND #14 GAUGE FOR ALUMINUM. A CASING SHALL BE AT LEAST TWO (2) INCHES LARGER INTERIOR DIAMETER THAN THE EXTERIOR WATER PIPE DIAMETER (4" DIAMETER MINIMUM).
4. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY OR GREATER. RECONSTRUCTION IN GUNITED SECTIONS WILL REQUIRE SPECIAL ATTENTION AS DIRECTED BY THE DISTRICT.
5. THE CASING PIPE MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.
6. GUIDE MARKERS SHALL BE INSTALLED BY THE PERMITEE AS DIRECTED BY THE DISTRICT. SEE NID SD31 FOR DETAILS.
7. 18" OR GREATER ABOVE HIGH WATER MARK. IF MINIMUM CANNOT BE ACHIEVED RAISING OF BERM (AND UTILITY LINE) IN THE IMMEDIATE AREA CAN BE CHOSEN AND SHOULD BE APPROVED BY THE DISTRICT ENGINEER TO ACHIEVE THE MIN 18".



*MUST BE LONGER THAN EQUIPMENT TRAVEL WAY ON BERM.

CANAL UTILITY CROSSING (OVER)

DRAWING NO.
SD25
SHT 1 of 1

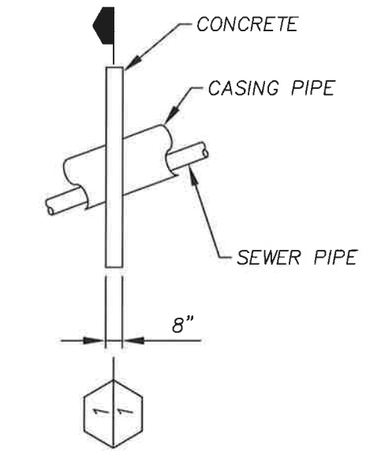
NID

APPROVED:

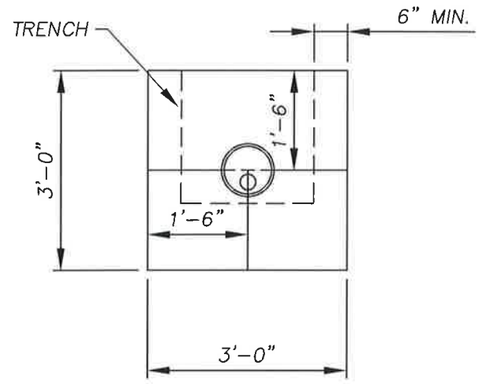
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE



A DETAIL



1 SECTION

CANAL SEWER CROSSING

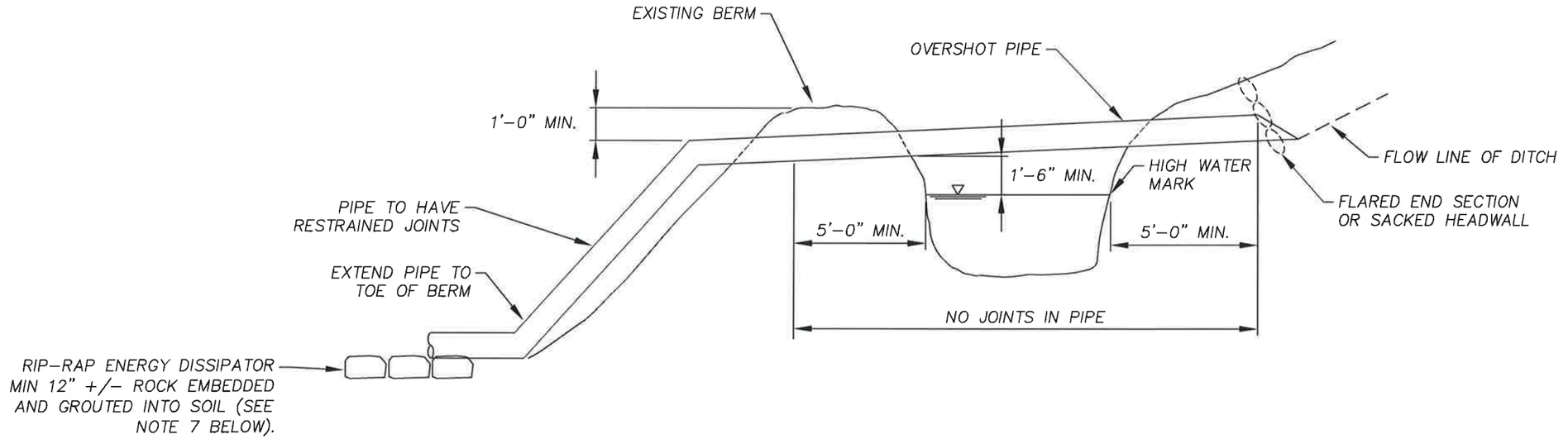
NOTES:

1. CROSS THE CANAL UNDER A CULVERT WHEREVER PRACTICAL. CENTER THE CROSSING ON THE CULVERT PIPE.
2. CASING PIPE SHALL BE EITHER CONTINUOUS #10 GAUGE DIPPED AND WRAPPED STEEL OR CMP WITH #16 GAUGE FOR STEEL AND #14 GAUGE FOR ALUMINUM OR C–900 PVC. A CASING SHALL BE AT LEAST TWO (2) INCHES LARGER INTERIOR DIAMETER THAN THE EXTERIOR WATER PIPE DIAMETER (4" DIAMETER MINIMUM). EXTEND CASING PIPE ON UPHILL SIDE TO ABOVE THE ELEVATION OF THE MAXIMUM CANAL WATER LEVEL.
3. CANAL OUTAGES MUST BE APPROVED BY THE DISTRICT IN ADVANCE. IF A CASING PIPE ELBOW IS TO BE INSTALLED, IT MUST BE FABRICATED BEFORE THE OUTAGE IS SCHEDULED A MINIMUM TWO (2) WEEKS NOTIFICATION.
4. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY. RECONSTRUCTION IN GUNITED SECTIONS WILL REQUIRE SPECIAL ATTENTION AS DIRECTED BY THE DISTRICT.
5. THE CASING PIPE MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.
6. BOTH ENDS OF CASING PIPE SHALL BE SEALED WITH BURLAP SACKS FILLED WITH CONCRETE OR AN APPROVED EQUIVALENT (NOT SHOWN).
7. GUIDE MARKERS SHALL BE INSTALLED BY THE PERMITEE AS DIRECTED BY THE DISTRICT. SEE NID SD31 FOR DETAILS.
8. CLEARANCE:

   1'–6" MINIMUM UNDER CANAL AS DETERMINED BY THE DISTRICT
   1'–0" CLEARANCE UNDER CULVERT AS DETERMINED BY THE DISTRICT
   DISTRICT MAY REQUIRE FLOW–FILL (TWO–SACK SLURRY)

CANAL SEWER CROSSING (UNDER)	DRAWING NO. SD26 SHT 1 of 1
NID APPROVED: DOUG RODERICK, P.E. DIRECTOR OF ENGINEERING	REVISION DATE 10/04/22

NOT TO SCALE



NOTES:

1. OWNER REQUESTED CROSSING (BY DISTRICT ENGINEER APPROVAL ONLY).
2. OVERHEAD UTILITY CROSSINGS WILL NOT NORMALLY BE ALLOWED. REQUESTS FOR THESE TYPES OF CROSSINGS WILL BE REVIEWED ON AN INDIVIDUAL BASIS IF APPROVED.
3. OWNER SHALL BE RESPONSIBLE FOR SIZING OVERSHOT PIPE FOR BOTH DIAMETER AND BEAM STRENGTH.
4. PIPE SHALL BE RIGID SUCH THAT MINIMAL DEFLECTION OCCURS WHEN FULLY LOADED WITH WATER.
5. OVERSHOT PIPE SHALL BE A MINIMUM #12 GAUGE CMP OR APPROVED EQUIVALENT.
6. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY OR GREATER. RECONSTRUCTION IN GUNITED SECTIONS WILL REQUIRE SPECIAL ATTENTION AS DIRECTED BY THE DISTRICT.
7. INLET TO OVERSHOT SHALL HAVE APPROPRIATELY SIZED FLARED END SECTION OR SACKED HEADWALL TO DIRECT FLOW INTO PIPE. RIP–RAP ENERGY DISSIPATER SHALL BE APPROVED BY DISTRICT ENGINEER.
8. THE OVERSHOT MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.
9. IF MINIMUM HEIGHT CANNOT BE ACHIEVED, EXISTING BERMS SHALL BE RAISED IN THE IMMEDIATE AREA TO RAISE OVERSHOT PIPE TO MATCH MINIMUM SEPARATION OF 18' ABOVE HIGH WATER MARK. DISTRICT ENGINEER TO APPROVE.

CANAL STORM WATER CROSSING (OVERSHOT)

NID

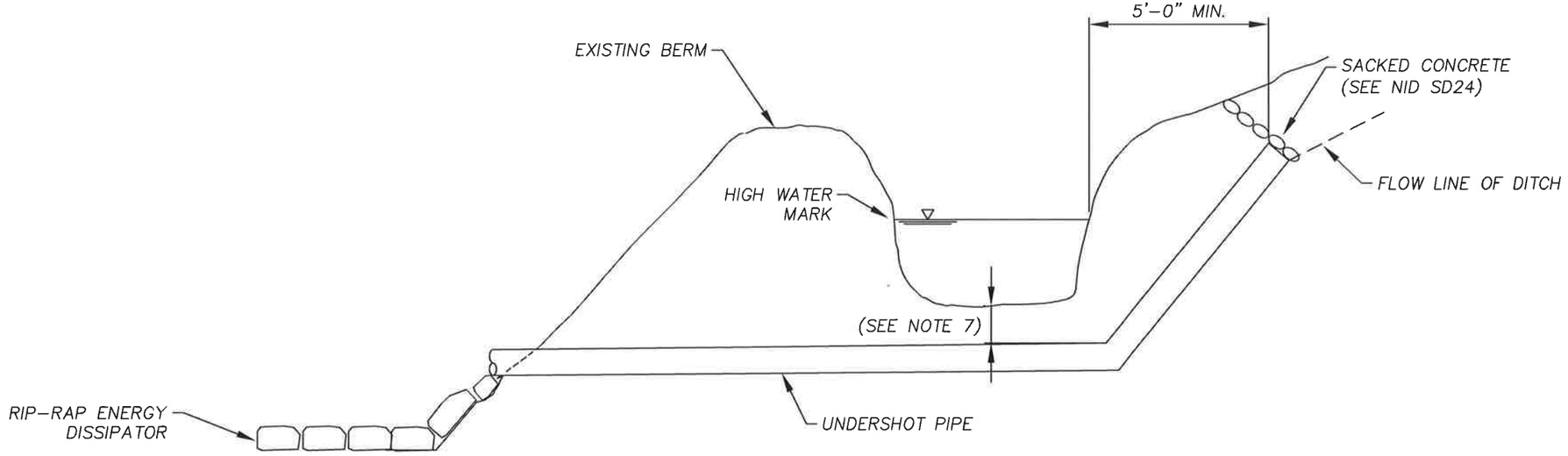
APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD27
SHT 1 of 1

REVISION DATE
10/04/22

NOT TO SCALE



NOTES:

1. OWNER REQUESTED CROSSING (BY DISTRICT ENGINEER APPROVAL ONLY).
2. OWNER SHALL BE RESPONSIBLE FOR SIZING THE UNDERSHOT PIPE.
3. UNDERSHOT PIPE SHALL BE MINIMUM #12 GAUGE CMP OR APPROVED EQUIVALENT.
4. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY OR GREATER. RECONSTRUCTION IN GUNITED SECTIONS WILL REQUIRE SPECIAL ATTENTION AS DIRECTED BY THE DISTRICT.
5. INLET TO UNDERSHOT SHALL HAVE APPROPRIATE SIZED SACKED HEADWALL TO DIRECT FLOW INTO PIPE. RIP–RAP ENERGY DISSIPATER SHALL BE PLACED AT THE OUTLET OF PIPE AT TOE OF CANAL BERM.
6. THE UNDERSHOT MAY REQUIRE EXTENDING BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.
7. CLEARANCE:

   1'–6" MINIMUM UNDER CANAL AS DETERMINED BY THE DISTRICT.
   1'–0" MINIMUM UNDER CULVERT AS DETERMINED BY THE DISTRICT.

CANAL STORM WATER CROSSING (UNDERSHOT)

NID

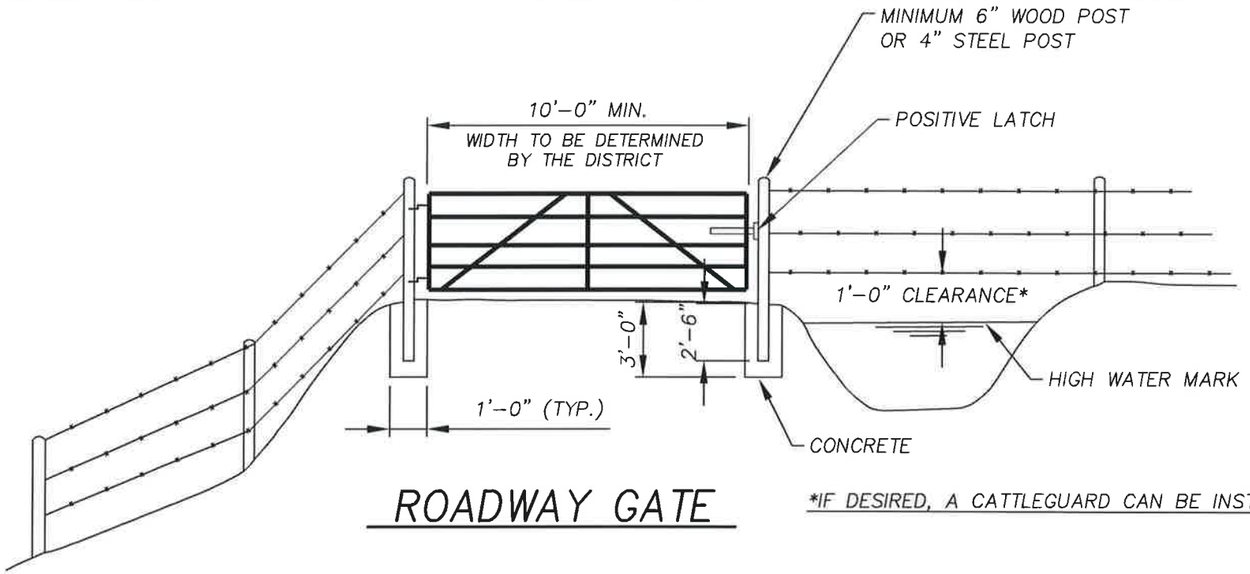
APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

DRAWING NO.
SD28
SHT 1 of 1

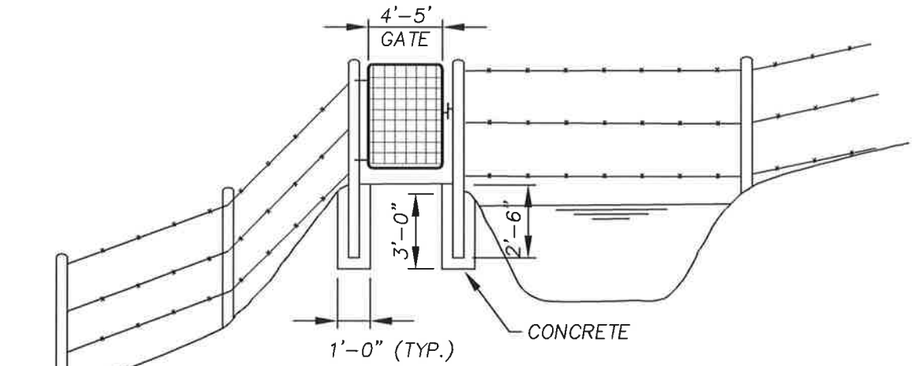
REVISION DATE
10/04/22

NOT TO SCALE

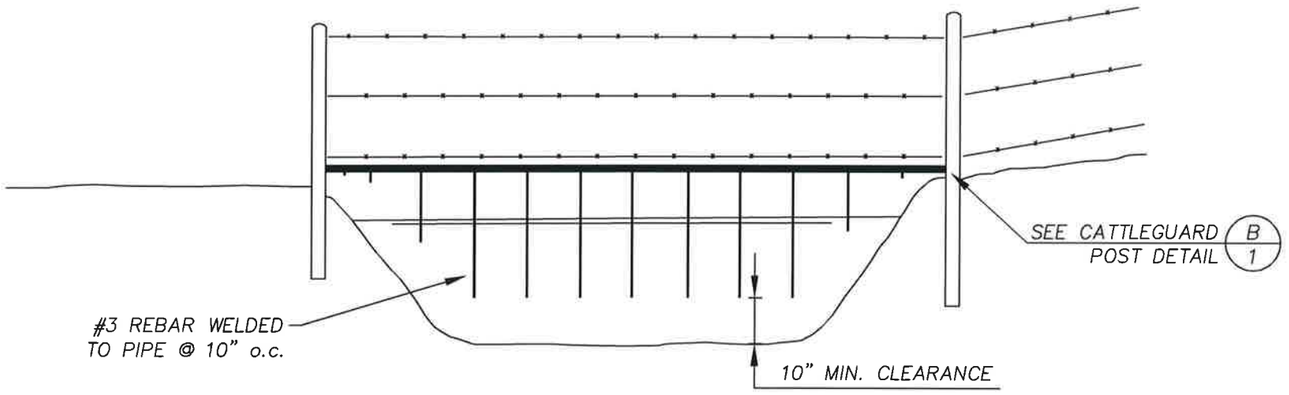


ROADWAY GATE

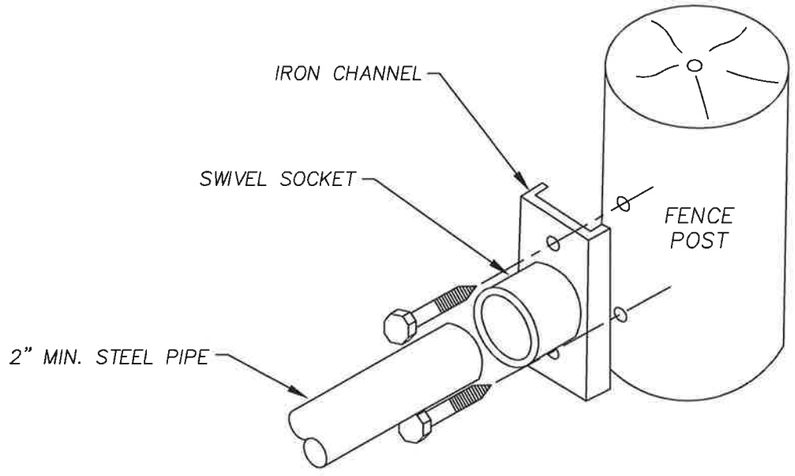
*IF DESIRED, A CATTLEGUARD CAN BE INSTALLED (A/1)



WALK GATE



(A) SWINGING CATTLEGUARD DETAIL
(OPTIONAL)



(B) CATTLEGUARD POST DETAIL
(SWINGING CATTLEGUARD OPTION ONLY)

NOTES:

1. GATES SHALL BE ALUMINUM CHANNEL FARM GATES OR STEEL GATES MADE OF 1⅜" OD GALVANIZED STEEL FRAME #9 GAUGE GALVANIZED STEEL FABRIC WITH 2"x 2" MESH.
2. GATES SHALL SWING FREELY, BE OFF THE GROUND AND REMAIN OPEN WHEN UNLOCKED.
3. IF OWNER DESIRES TO LOCK THE GATE, A CHAIN WILL BE REQUIRED SO A DISTRICT LOCK CAN BE LINKED TO OWNERS LOCK. OWNER TO CONTACT DISTRICT SERVICE WORKER AFTER INSTALLATION FOR DISTRICT LOCK.
4. INSTALLATION OF GATES SHALL BE PER MANUFACTURER'S SPECIFICATIONS.

CANAL FENCE CROSSING

NID

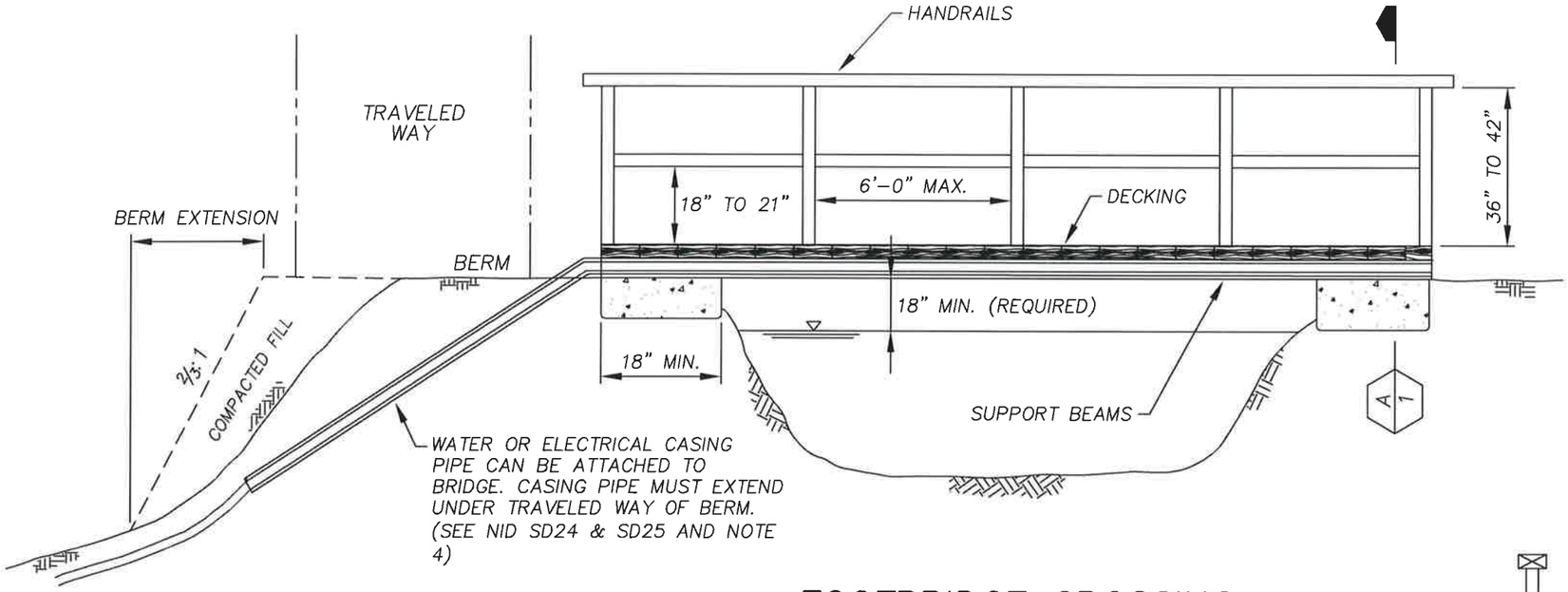
APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

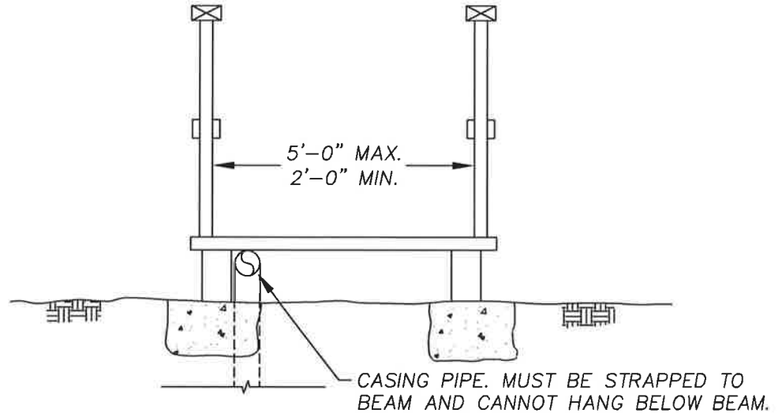
DRAWING NO.
SD29
SHT 1 of 1

REVISION DATE
10/04/22

NOT TO SCALE



FOOTBRIDGE CROSSING



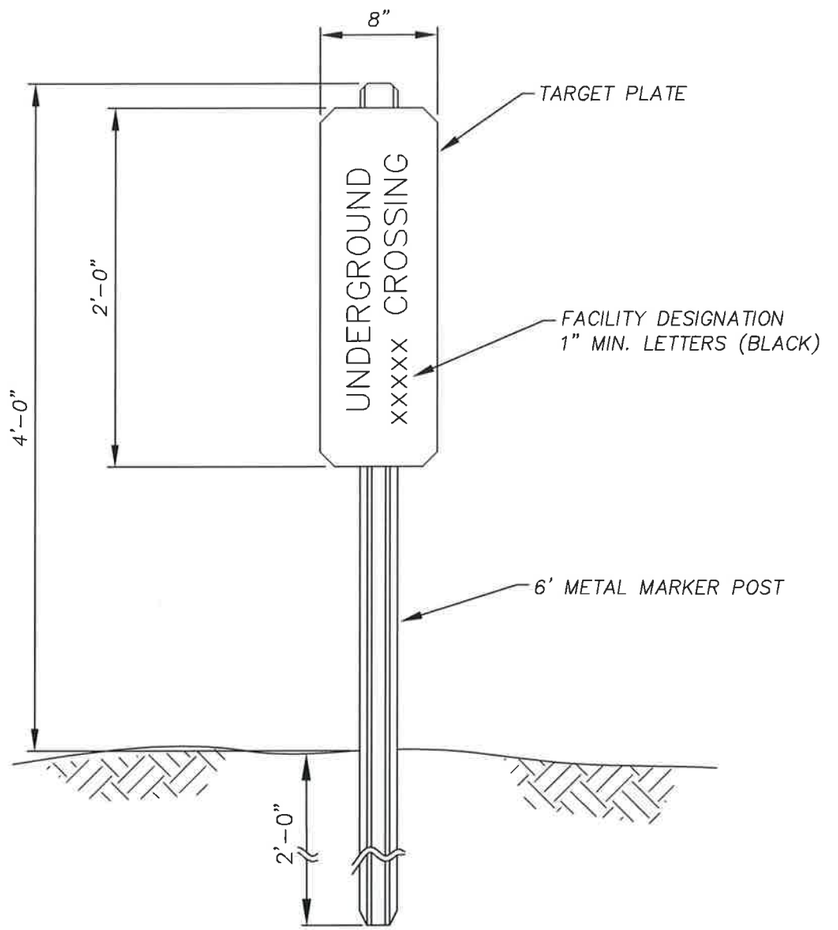
A SECTION

NOTES:

1. THIS DRAWING ILLUSTRATES GENERAL FEATURES OF A TYPICAL FOOTBRIDGE. DESIGN DRAWINGS SHOULD BE SUBMITTED TO THE DISTRICT FOR REVIEW. CONSIDERATIONS WILL BE GIVEN DURING REVIEW PROCESS AS TO SIZE OF CANAL, ETC., IN DETERMINING ACTUAL REQUIREMENTS.
2. SUPPORT BEAMS MUST BE ON CONCRETE FOOTINGS AND NOT IN CONTACT WITH THE GROUND. DECKING, SUPPORT BEAMS AND OTHER BRIDGE FEATURES MAY BE MADE OF METAL AND/OR WEATHER PROTECTED WOOD.
3. WATER OR ELECTRICAL CROSSINGS MAY BE ATTACHED TO THE UNDERSIDE OF THE BRIDGE. SUCH CROSSINGS MUST BE ENCASED. SEE NID SD24 AND SD25.
4. A MINIMUM OF 18" MUST BE MAINTAINED FROM THE HIGH WATER MARK OF THE CANAL AND THE LOWEST PART OF THE BRIDGE OR ANY ATTACHMENTS. NOTHING MUST EXTEND BELOW THE TOP OF THE BERM UNLESS DISTRICT APPROVAL IS GIVEN. EXISTING BERM AND CROSSING FOUNDATIONS CAN BE RAISED IN THE IMMEDIATE AREA TO OBTAIN THE MINIMUM CLEARANCE OF 18" AND SHALL BE APPROVED BY THE DISTRICT ENGINEER.
5. THE BERM MUST BE WIDENED IN THE AREA OF THE BRIDGE TO PROVIDE THE SAME UNENCUMBERED WIDTH THAT THE DISTRICT ENJOYED PRIOR TO BRIDGE INSTALLATION. THIS REQUIREMENT MAY BE WAIVED BY THE DISTRICT.
6. THE LENGTH OF THE BRIDGE MAY BE REQUIRED TO BE EXTENDED BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.
7. A MINIMUM OF ONE HANDRAIL WILL BE REQUIRED.

FOOTBRIDGE CROSSING		DRAWING NO. SD30 SHT 1 of 1
NID	APPROVED: DOUG RODERICK, P.E. DIRECTOR OF ENGINEERING	REVISION DATE 10/04/22

NOT TO SCALE



NOTES:

1. ALL MATERIALS AND INSTALLATIONS SHALL CONFORM TO THE SPECIFICATIONS.
2. GUIDE MARKERS SHALL BE FURNISHED AND INSTALLED AS SHOWN ON THE PLANS, OR AS DIRECTED BY THE PROJECT MANAGER.
3. POSTS SHALL BE TYPE 'M' AND SHALL CONFORM TO CALTRANS SECTION 82.
4. ALL NUMBERS AND LETTERS SHALL BE BLOCK STYLE AND STENCILED IN BLACK ON A WHITE BACKGROUND.
5. ALL UNDERGROUND ENCROACHMENTS SHALL BE MARKED PER DISTRICT STANDARDS.

FACILITY DESIGNATION:

WATERLINE
ELECTRICAL
SEWER
STORM WATER
TELECOM

ENCROACHMENT GUIDE MARKER

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

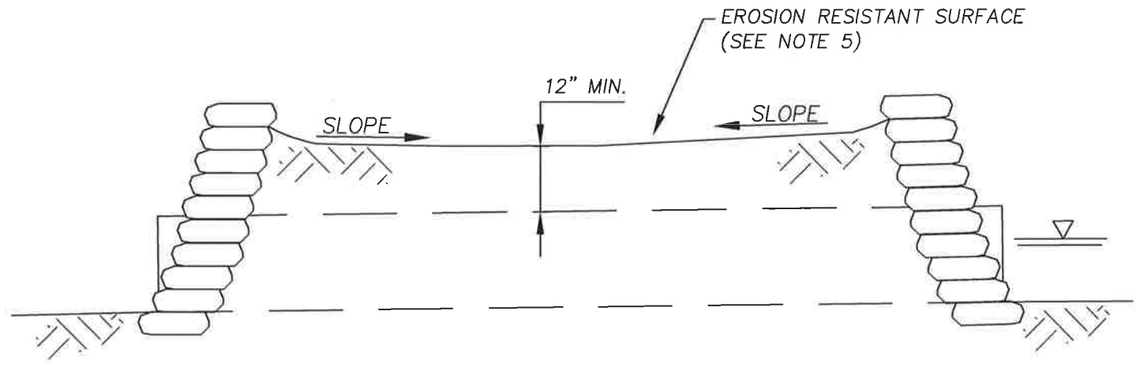
DRAWING NO.
SD31
SHT 1 of 1

REVISION DATE
10/04/22

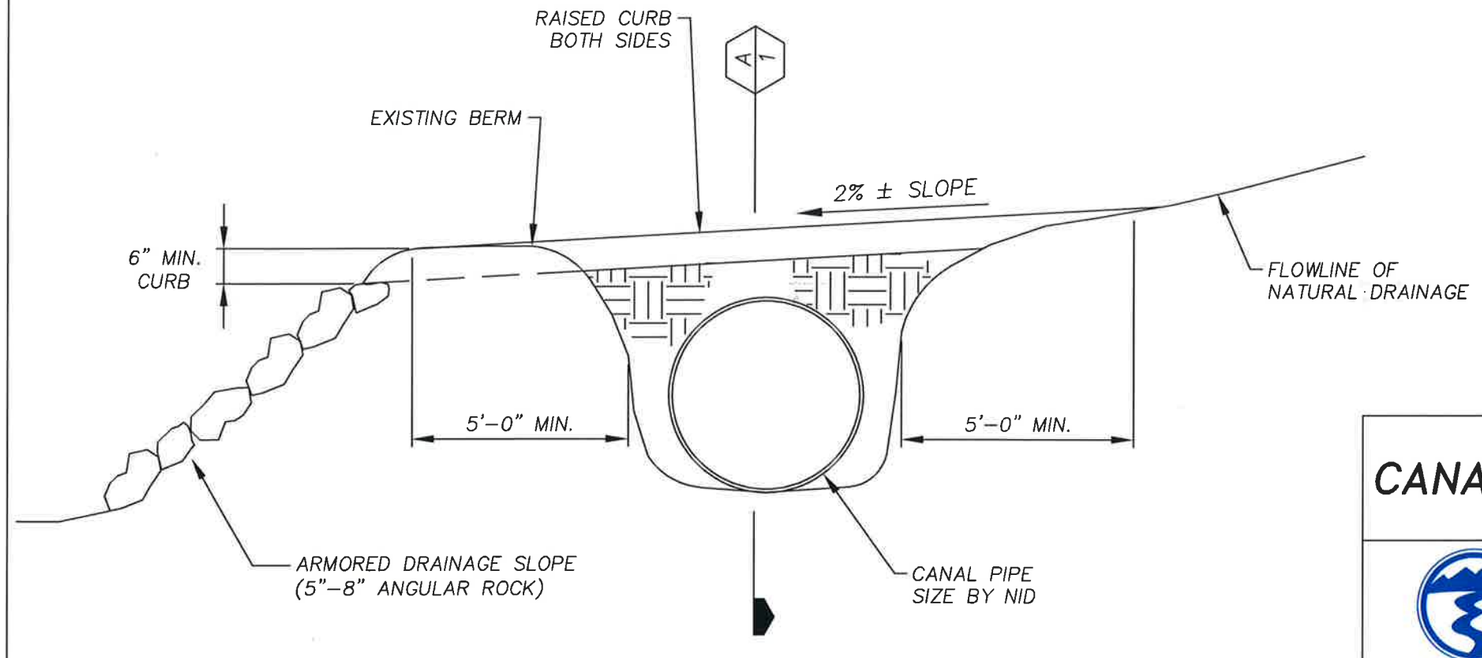
NOT TO SCALE

NOTES:

1. THE CROSSING SHALL ALLOW STORM WATER FLOWS TO PASS OVER A PIPED SECTION OF CANAL. THIS DETAIL MEANT AS A GENERAL GUIDE ONLY; EACH PROJECT WILL HAVE SPECIFIC NEEDS AND REQUIREMENTS TO BE APPROVED BY THE DISTRICT ENGINEER.
2. STORM WATER SHALL BE DIRECTED AS NEAR AS PRACTICABLE TO FLOW IN ITS HISTORICAL PATH OF DRAINAGE.
3. POSITIVE DRAINAGE ACROSS CANAL SHALL BE MAINTAINED.
4. INSTALLATION OF CANAL PIPE SHALL MEET NID SD23 REQUIREMENTS.
5. SURFACE OVER CANAL SHALL BE OF SUCH MATERIAL TO ELIMINATE EROSION. SUCH AS, ANGULAR ROCK, ANCHORED FILTER FABRIC OR ESTABLISHED VEGETATION. CONCRETE OR IMPERVIOUS SURFACES BY DISTRICT APPROVAL ONLY.



SECTION A



CANAL STORM WATER CROSSING

DRAWING NO.
SD32
SHT 1 of 1

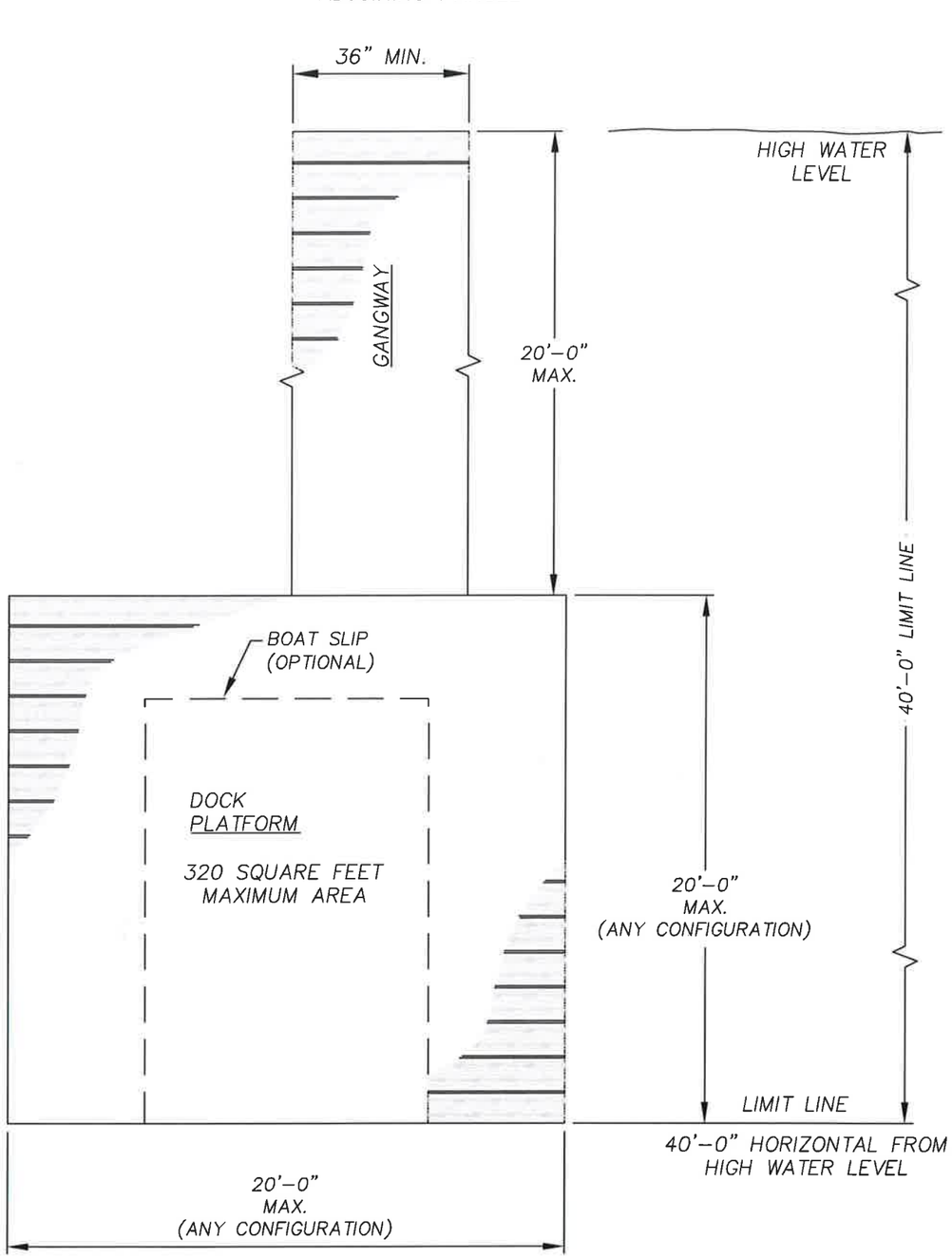
NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE



NOTES:

1. DOCK AND ANCHORAGE MATERIALS SHALL BE OWNER SPECIFIED AND APPROVED BY DISTRICT.
2. JET SKI/WATERCRAFT SLIPS SHALL BE INCLUDED IN DOCK AREA.
3. DOCK AND GANGWAY SHALL BE INSTALLED AS FLOATING, NON PERMANENT AND EASILY REMOVABLE.
4. NO WATER, SEWER, ELECTRICAL OR OTHER UTILITIES WILL BE ALLOWED.
5. NO PERMANENT STRUCTURES, GAZEBOS OR SWIM SLIDES WILL BE ALLOWED ON DOCKS.
6. DOCKS SHALL BE EQUIPPED WITH A METAL PLATE LOCATED ON THE GANGWAY READILY VISIBLE FROM THE RESERVOIR FOR PLACEMENT OF AN IDENTIFICATION TAG ISSUED BY THE DISTRICT.
7. DOCK SHALL BE A MINIMUM OF 20'–0" AWAY FROM THE PROPERTY BOUNDARY UNLESS APPROVED BY THE DISTRICT.
8. LAKE SIDE FACE OF DOCK SHALL NOT EXTEND BEYOND 40'–0" HORIZONTAL DIMENSION FROM HIGH WATER LEVEL.

DOCK DESIGN

NID

APPROVED:

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DRAWING NO.
SD33
SHT 1 of 1

REVISION DATE
10/04/22

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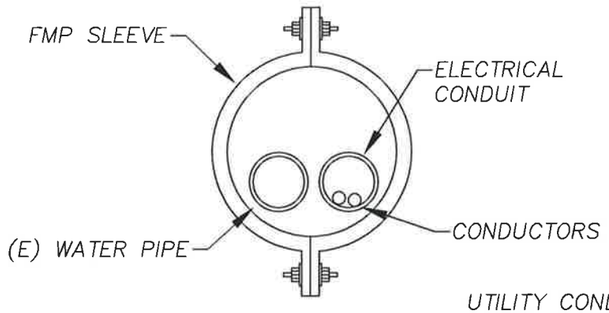
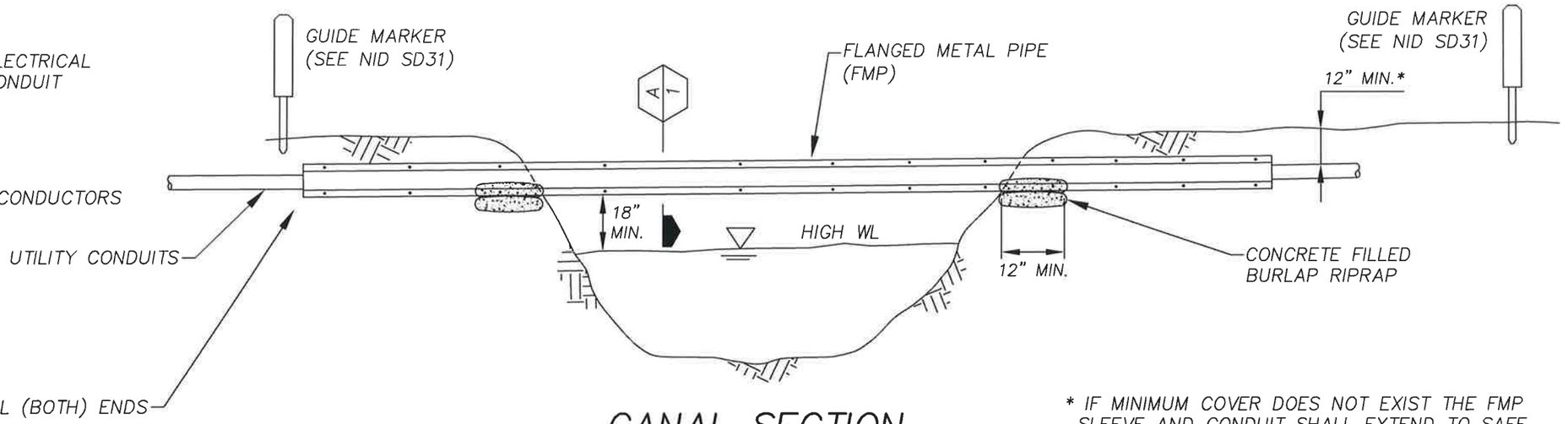
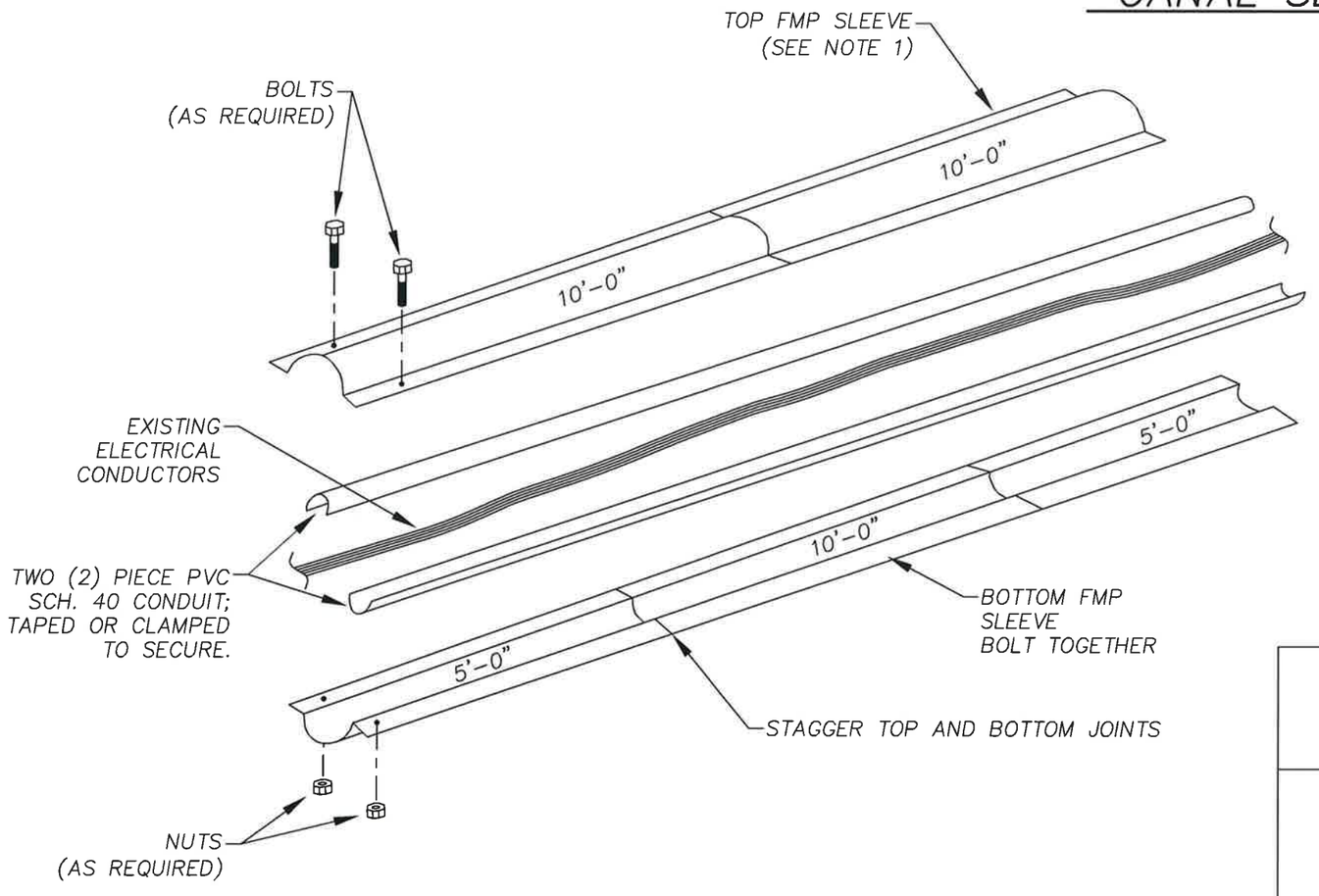


SECTION A



CANAL SECTION

* IF MINIMUM COVER DOES NOT EXIST THE FMP SLEEVE AND CONDUIT SHALL EXTEND TO SAFE DISTANCES. FMP SLEEVE TO EXTEND BEYOND BERM TRAVEL PATH (MIN 5 FEET FROM EDGE OF CANAL SECTION).



NOTES:

1. FINAL ASSEMBLY SHALL HAVE FLANGES VERTICALLY ORIENTED AS SHOWN ABOVE.
2. IF MINIMUM HEIGHT ABOVE HIGH WATERLINE CANNOT BE ACHIEVED BERM ON EITHER SIDE OF CROSSING IN THE IMMEDIATE AREA CAN BE RAISED TO ENSURE 18" IS ACHIEVED WITH MINIMUM 12" OF COVER OVER UTILITY SLEEVE.

UTILITY SLEEVE DETAIL

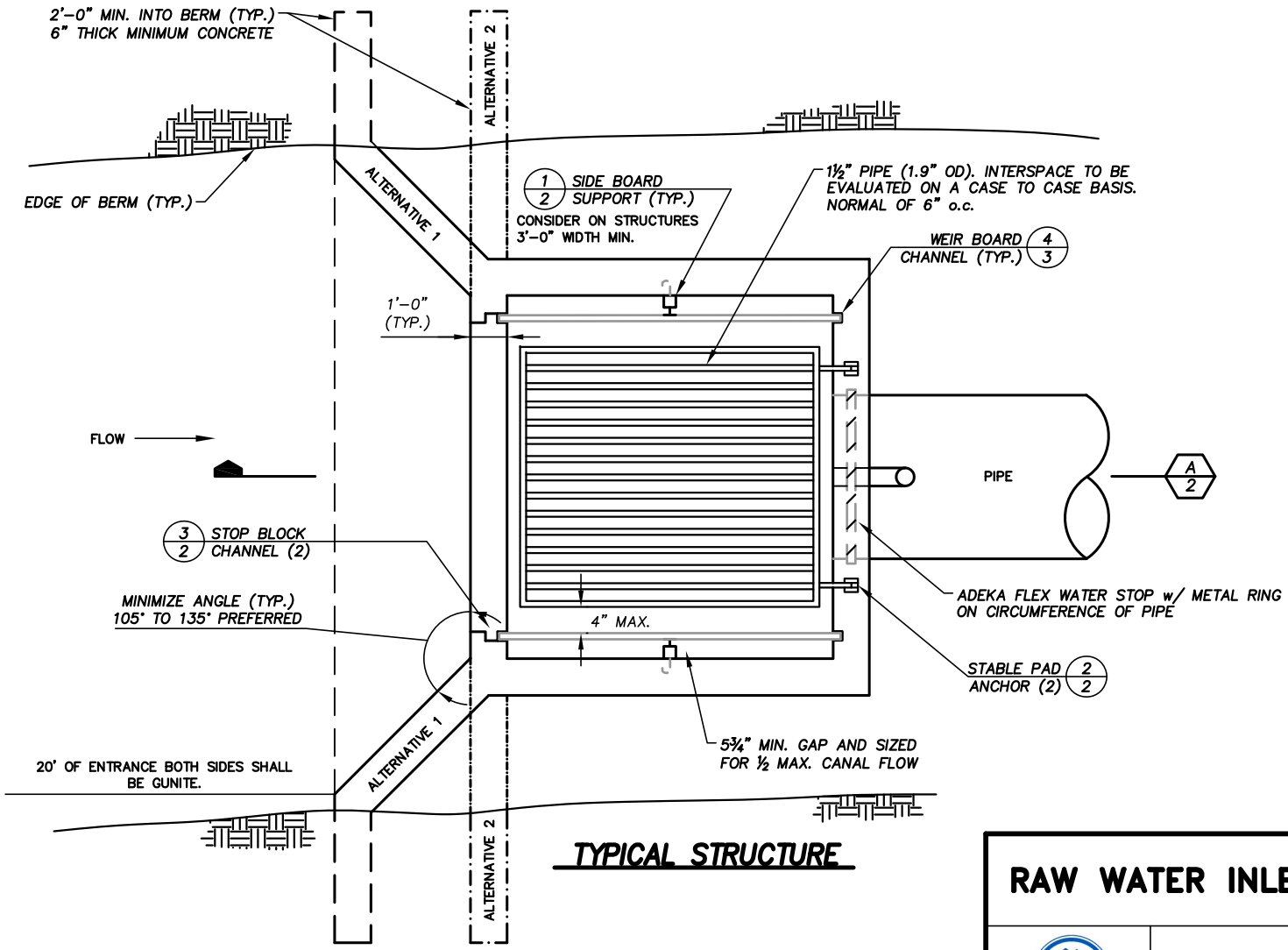
DRAWING NO.
SD34
SHT 1 of 1

NID

APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE



TYPICAL STRUCTURE

RAW WATER INLET STRUCTURE

DRAWING NO.
SD35
SHT 1 of 3

NID

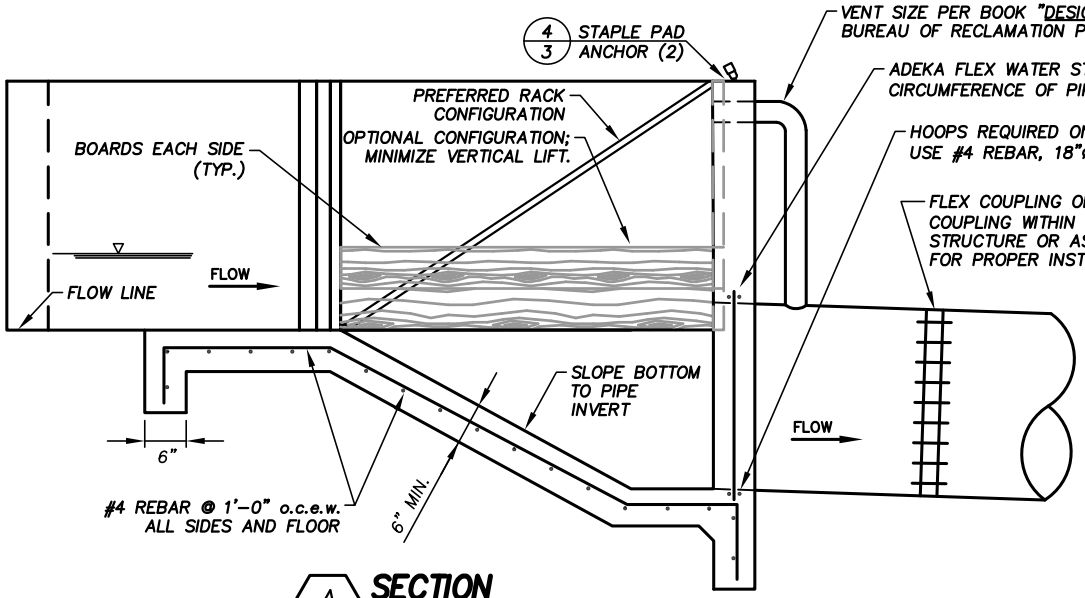
APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

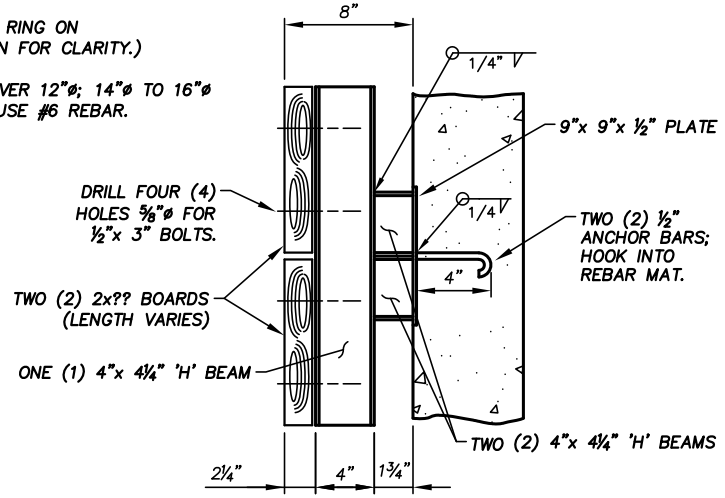
REVISION DATE
8/31/23

FOR SECTION, DETAILS AND NOTES SEE SHEETS 2 and 3 of 3

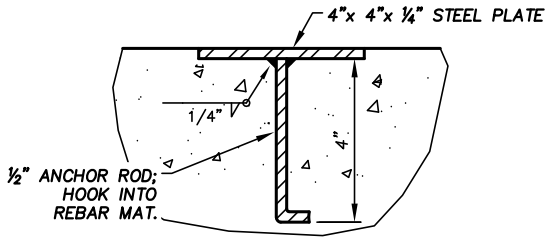
NOT TO SCALE



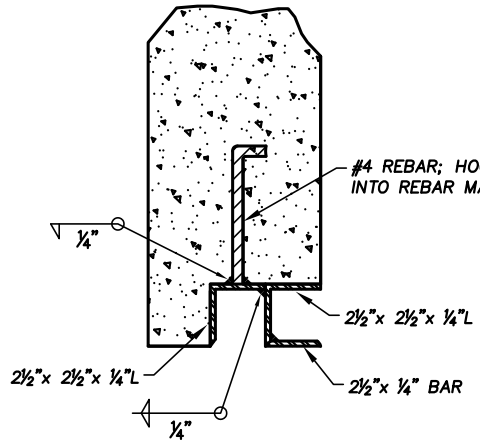
A **SECTION**



1 **SIDE BOARD SUPPORT**



1 **STAPLE PAD ANCHOR**



3 **STOP BLOCK CHANNEL**

RAW WATER INLET STRUCTURE

DRAWING NO. SD35 SHT 2 of 3

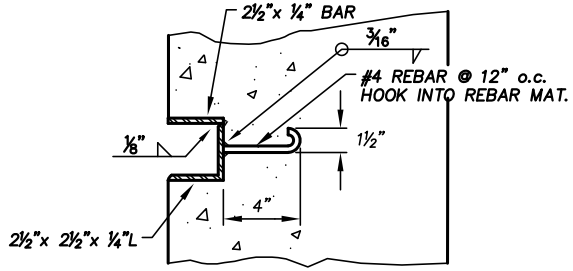
NID

APPROVED:

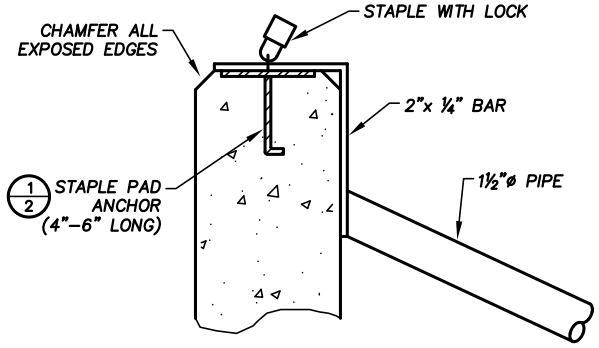
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE 8/31/23

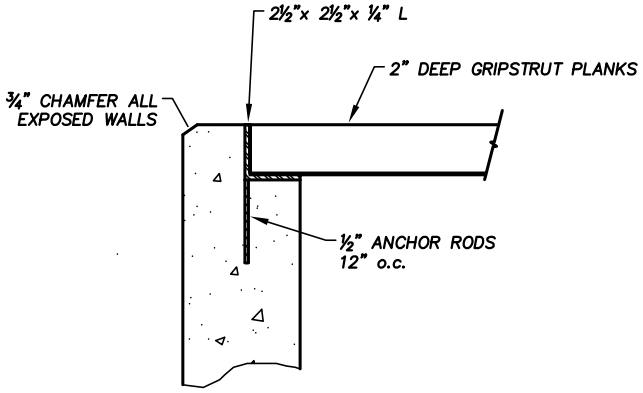
NOT TO SCALE



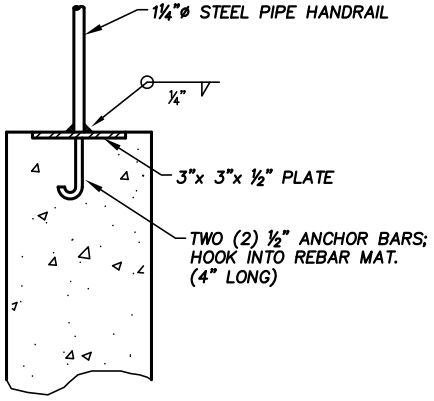
4 WEIR BOARD CHANNEL



5 TRASH RACK SUPPORT



7 GRIPSTRUT DETAIL
(IF REQUIRED)



6 HANDRAIL DETAIL
(IF REQUIRED)

NOTES:

1. THESE DETAILS ARE A BASIC LAYOUT OF THE DISTRICT FACILITY. THE RESPONSIBLE ENGINEER IN CHARGE SHALL FINALIZE THE DETAILS. DIMENSIONS AND ITEMS PER THE DESIGN NEEDS OF THE INDIVIDUAL FACILITY.

RAW WATER INLET STRUCTURE

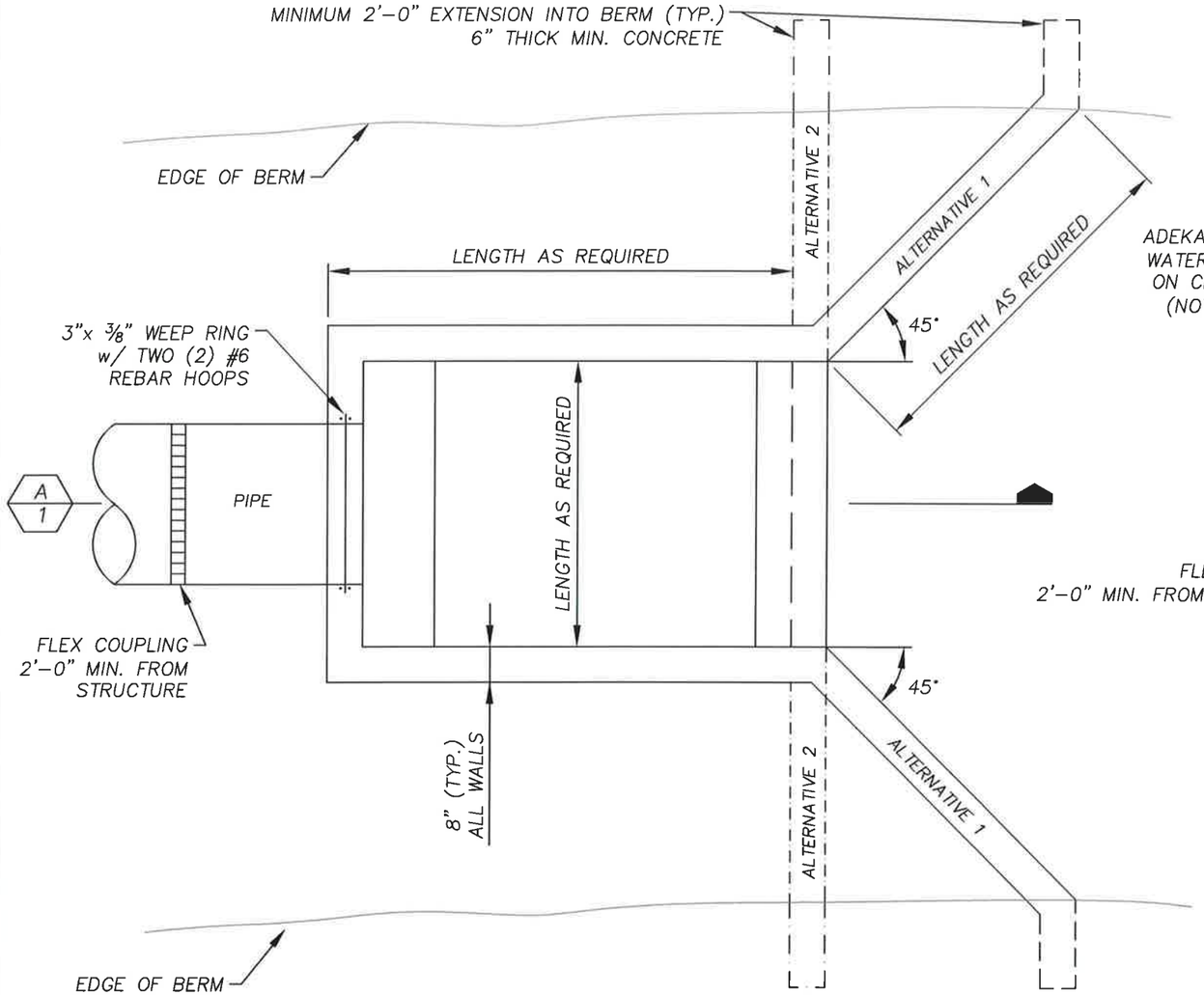
DRAWING NO.
SD35
SHT 3 of 3

NID

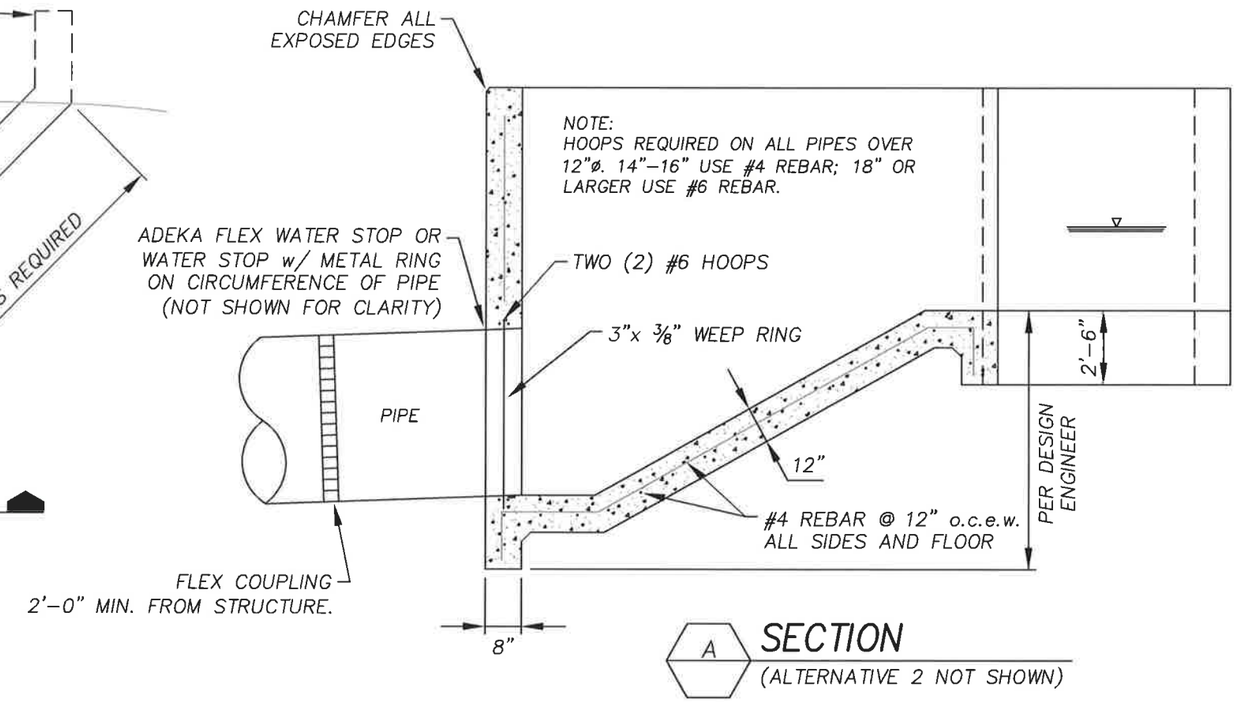
APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
8/31/23

NOT TO SCALE



TYPICAL STRUCTURE



A SECTION
(ALTERNATIVE 2 NOT SHOWN)

NOTES:

1. THESE DETAILS ARE A BASIC LAYOUT OF THE DISTRICT FACILITY. THE RESPONSIBLE ENGINEER IN CHARGE SHALL FINALIZE THE DETAILS, DIMENSIONS AND ITEMS PER THE DESIGN NEEDS OF THE INDIVIDUAL FACILITY.

RAW WATER OUTLET STRUCTURE

WHERE NO FLOW CONTROL IS REQUIRED

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

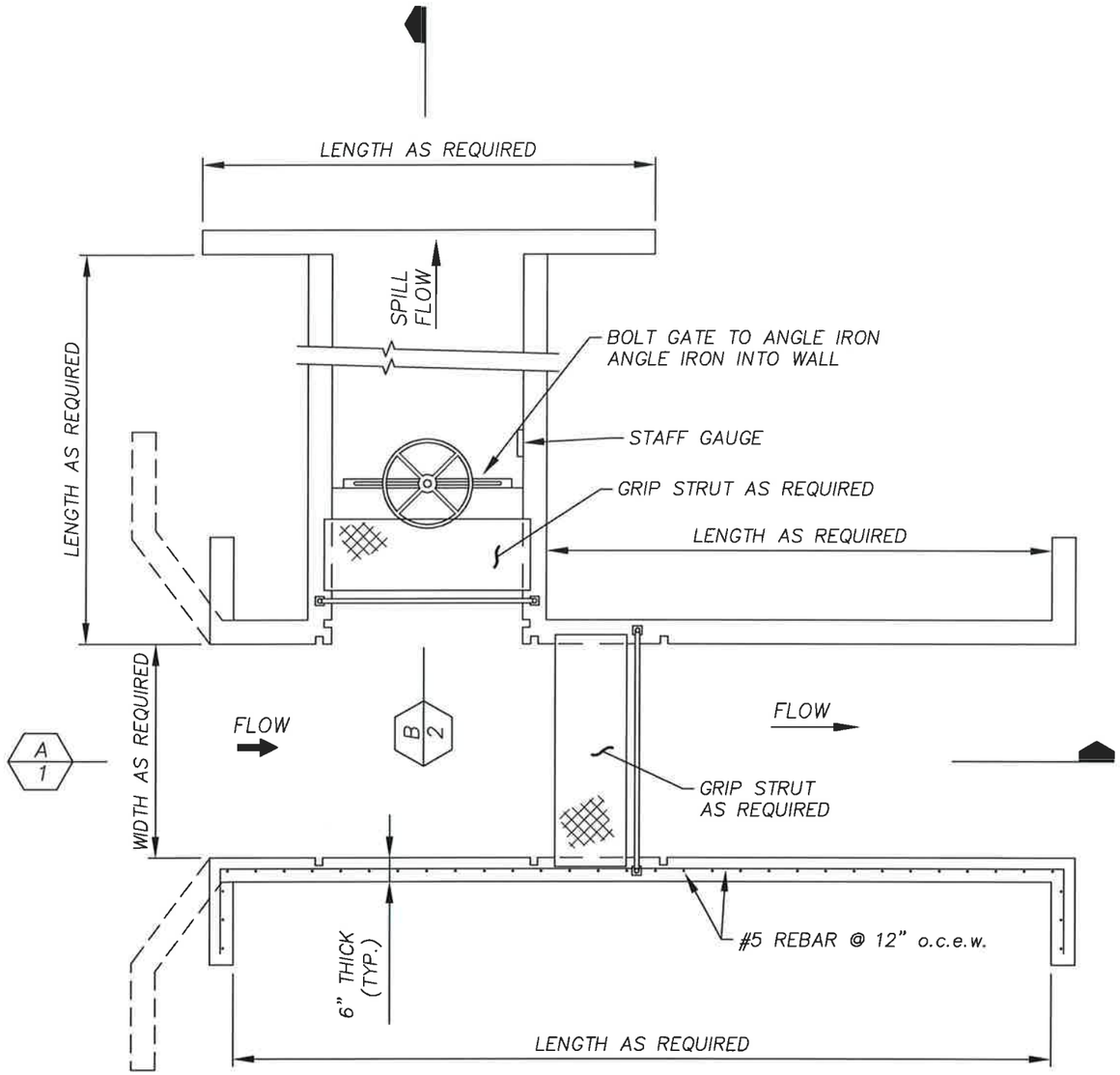
DRAWING NO.
SD36
SHT 1 of 1

REVISION DATE
10/04/22

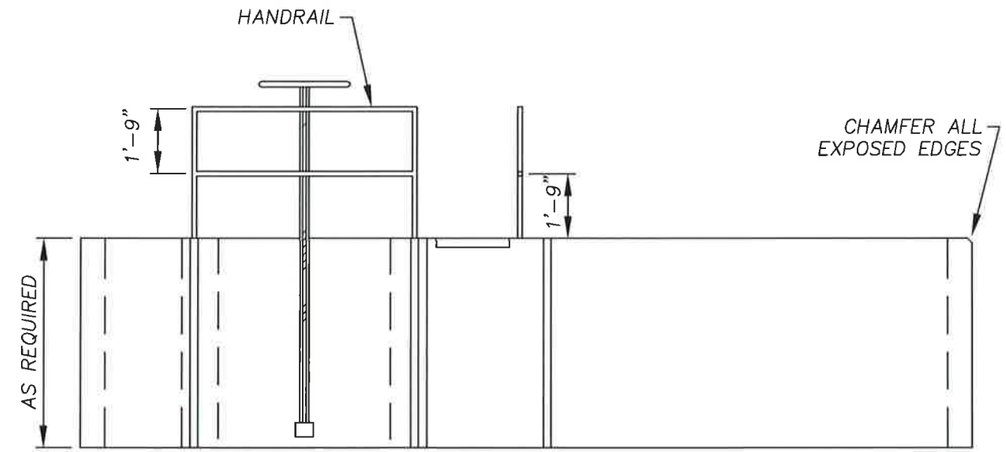
NOT TO SCALE

NOTES:

1. IF PIPE IS USED TO GET THROUGH BERM SECTION, THE MEASURING SECTION OF THE STRUCTURE IS TO BE PLACED AT END OF PIPE.
2. THESE DETAILS ARE A BASIC LAYOUT OF THE DISTRICT FACILITY. THE RESPONSIBLE ENGINEER IN CHARGE SHALL FINALIZE THE DETAILS, DIMENSIONS AND ITEMS PER THE DESIGN NEEDS OF THE INDIVIDUAL FACILITY.



STRUCTURE



A SECTION

STRUCTURE WITH SIDE SPILL

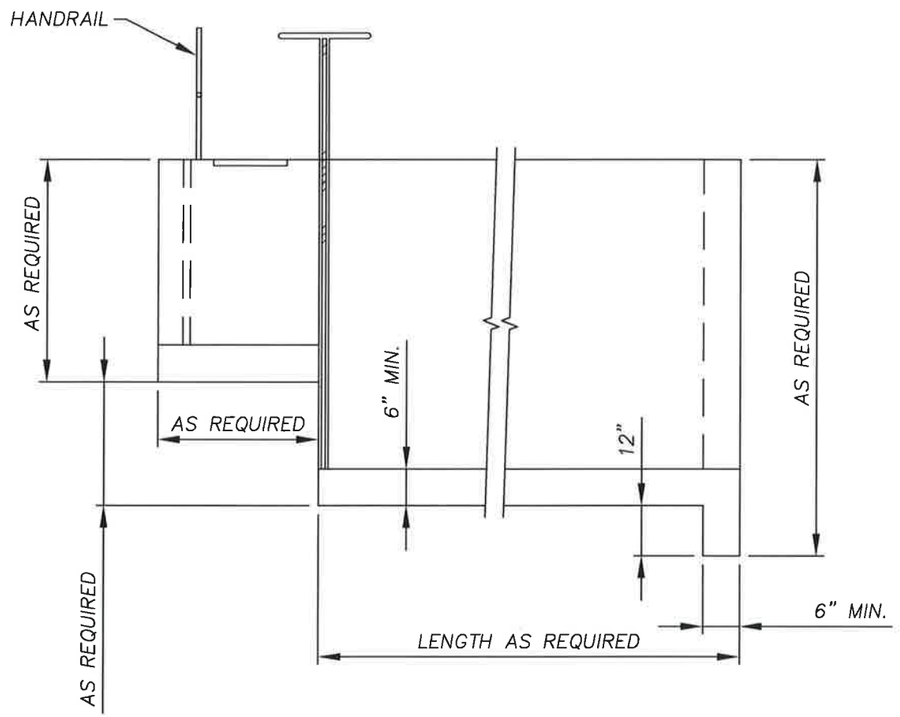
DRAWING NO.
SD37
SHT 1 of 2

NID

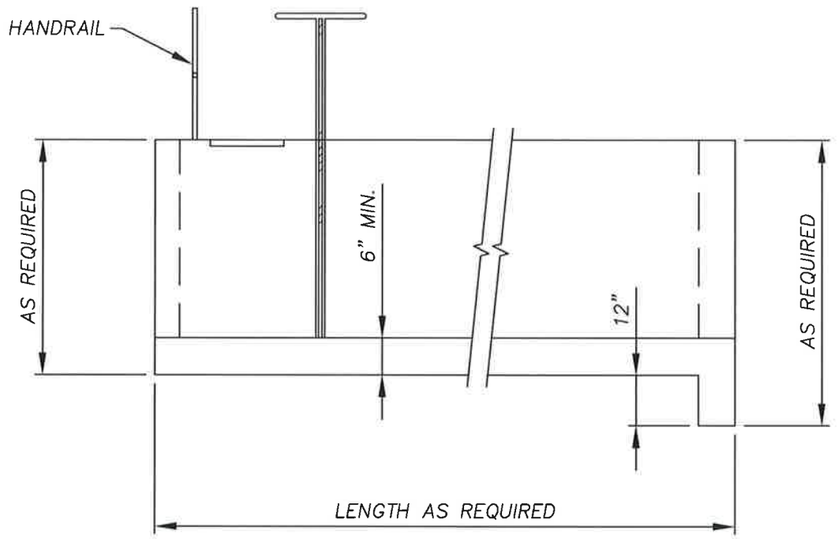
APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE



B SECTION WITH DROP FLOOR
OPTION 'A'



B SECTION WITHOUT DROP FLOOR
OPTION 'B'

STRUCTURE WITH SIDE SPILL

DRAWING NO.
SD37
SHT 2 of 2

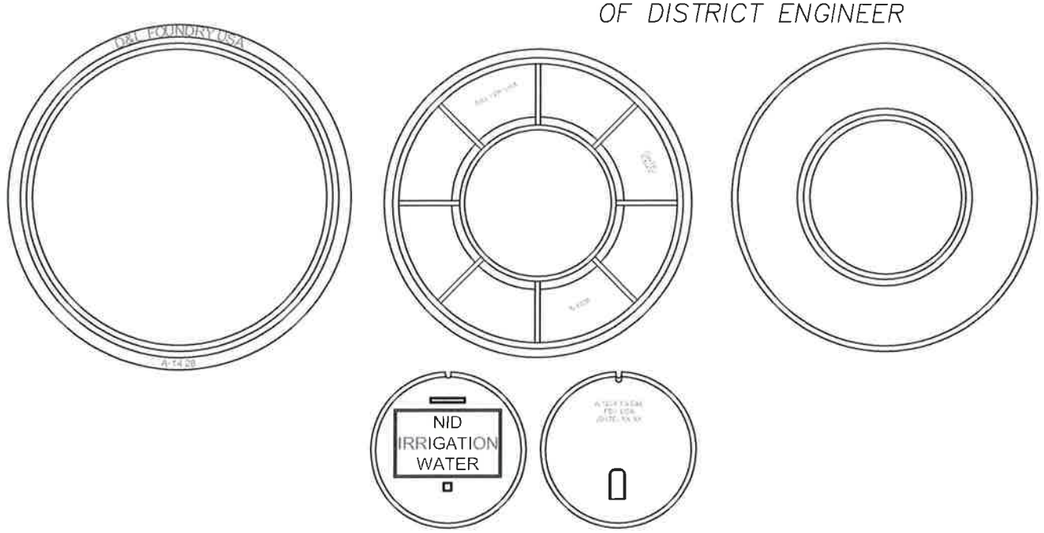
NID

APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE

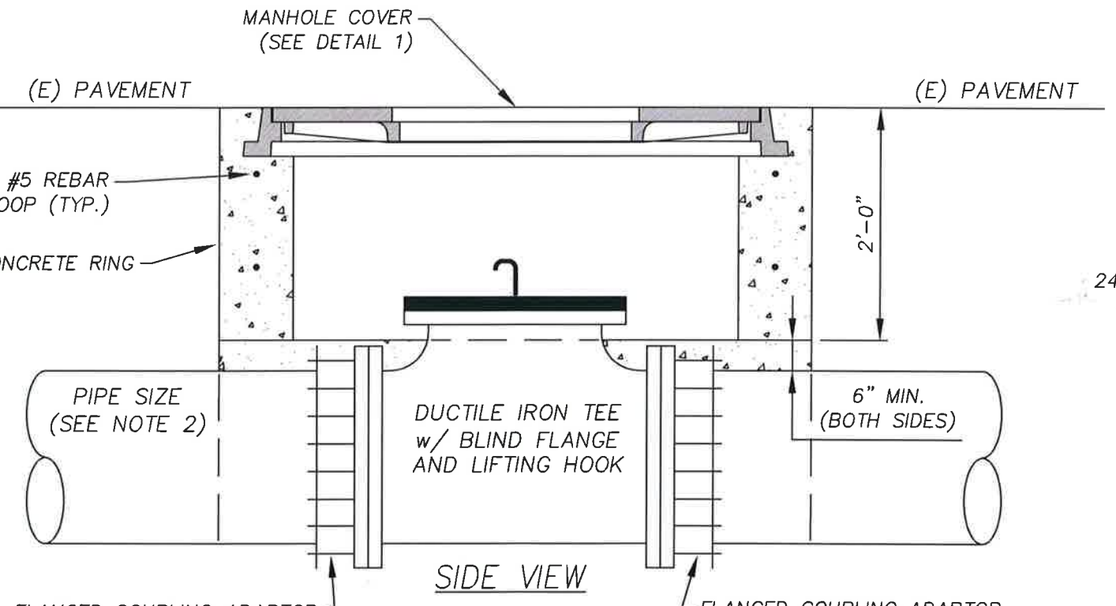
OPTION: PRECAST VAULT PER APPROVAL OF DISTRICT ENGINEER



1 MANHOLE COVER DETAIL

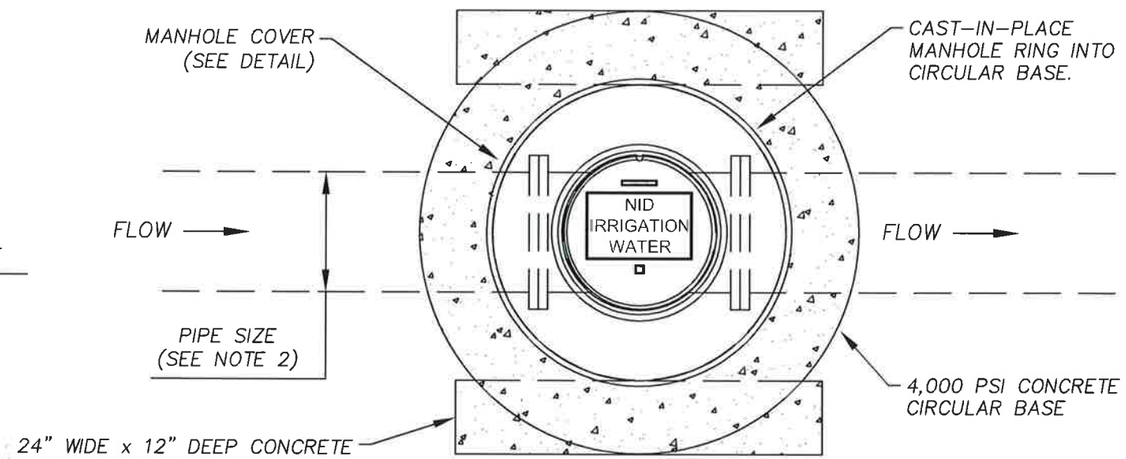
NOTES:

1. PRECAST VAULT PER APPROVAL OF DISTRICT ENGINEER.
2. THESE DETAILS ARE A BASIC LAYOUT OF THE DISTRICT FACILITY. THE RESPONSIBLE ENGINEER IN CHARGE SHALL FINALIZE THE DETAILS, DIMENSIONS AND ITEMS PER THE DESIGN NEEDS OF THE INDIVIDUAL FACILITY.



SIDE VIEW

ACCESS VAULT



TOP VIEW

ACCESS VAULT-PAVED AREAS

DRAWING NO.
SD38
SHT 1 of 1

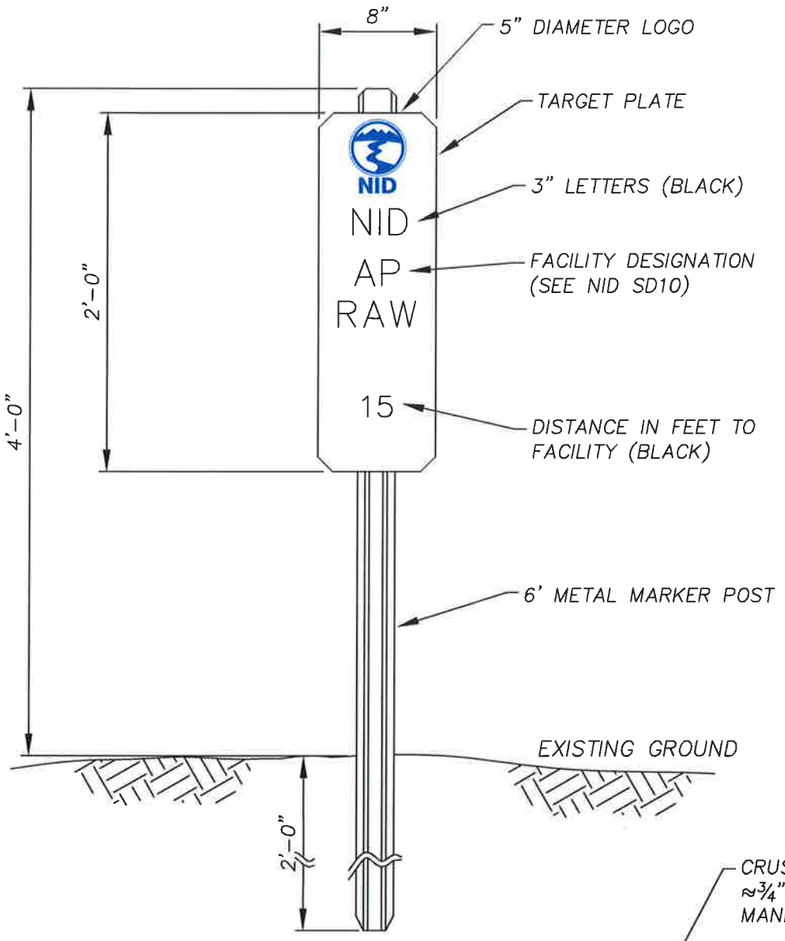
NID

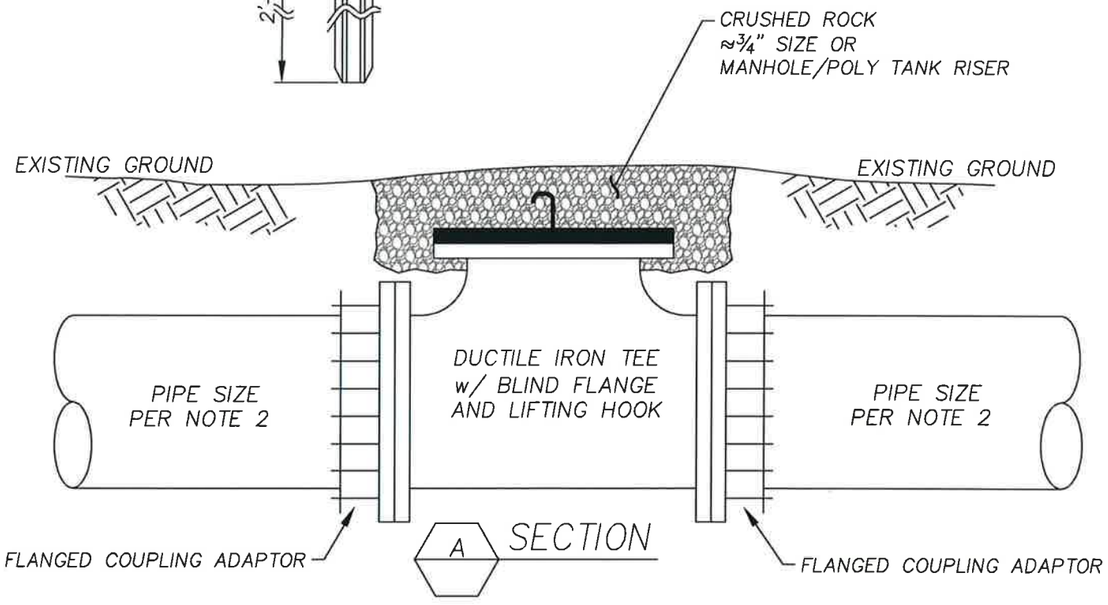
APPROVED:

DOUG RODERICK, P.E.
ENGINEERING MANAGER

REVISION DATE
10/04/22

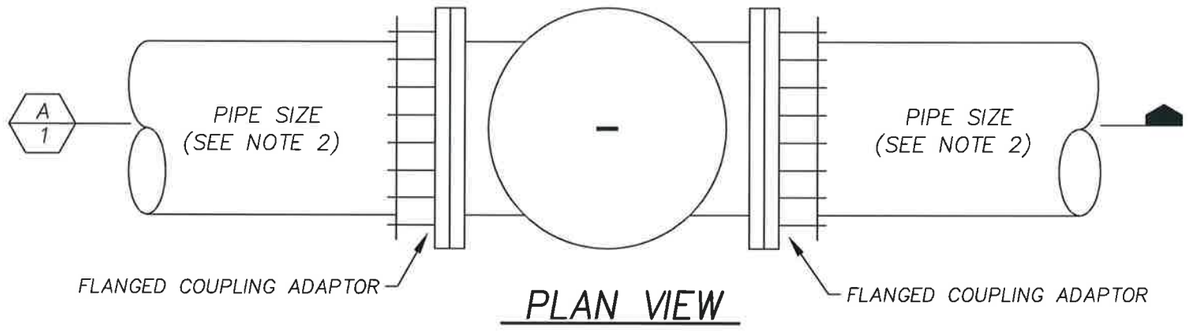
NOT TO SCALE





NOTES:

1. IF DEEPER BURY, NEEDS TO HAVE POLY WRAP AROUND TEE AND FLANGES TO PROTECT BOLTS.
2. THESE DETAILS ARE A BASIC LAYOUT OF THE DISTRICT FACILITY. THE RESPONSIBLE ENGINEER IN CHARGE SHALL FINALIZE THE DETAILS, DIMENSIONS AND ITEMS PER THE DESIGN NEEDS OF THE INDIVIDUAL FACILITY.



PLAN VIEW

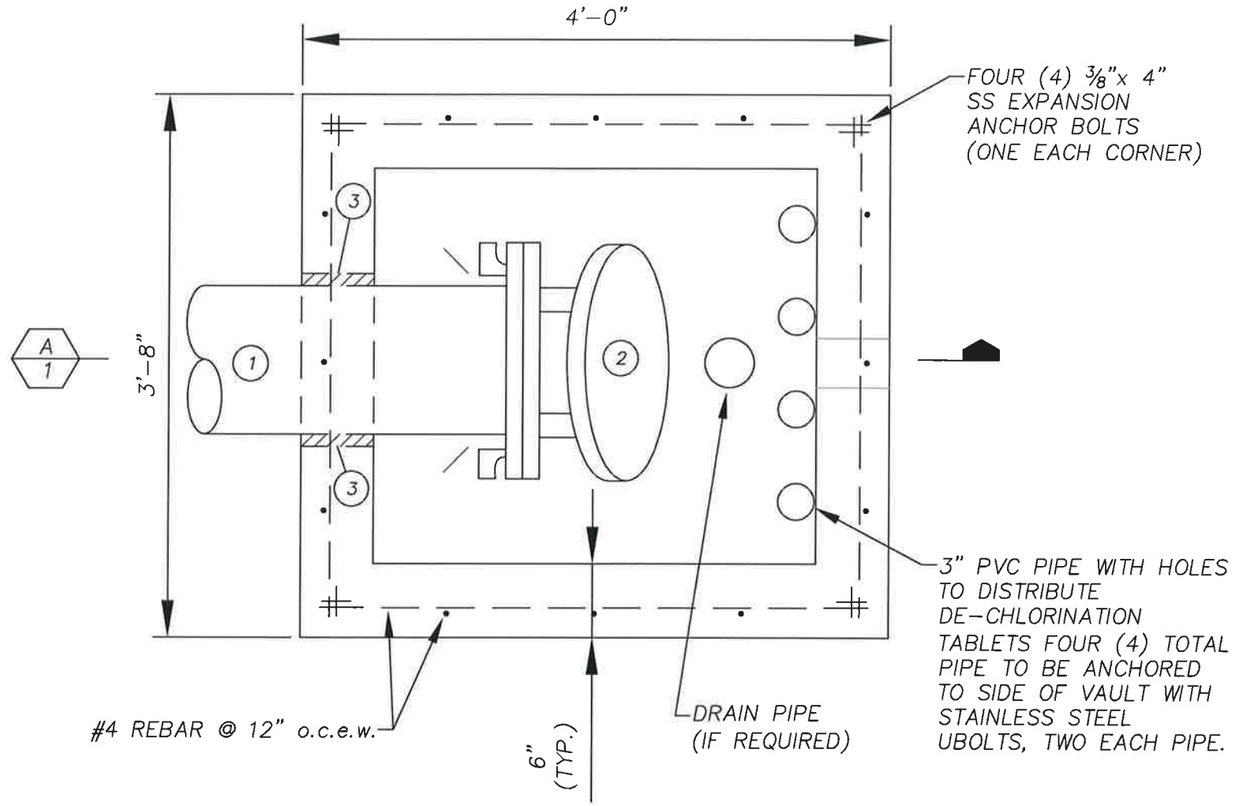
RAW WATER PIPE ACCESS UNPAVED AREAS
(BERMS AND OPEN FIELDS)

DRAWING NO.
SD39
SHT 1 of 1

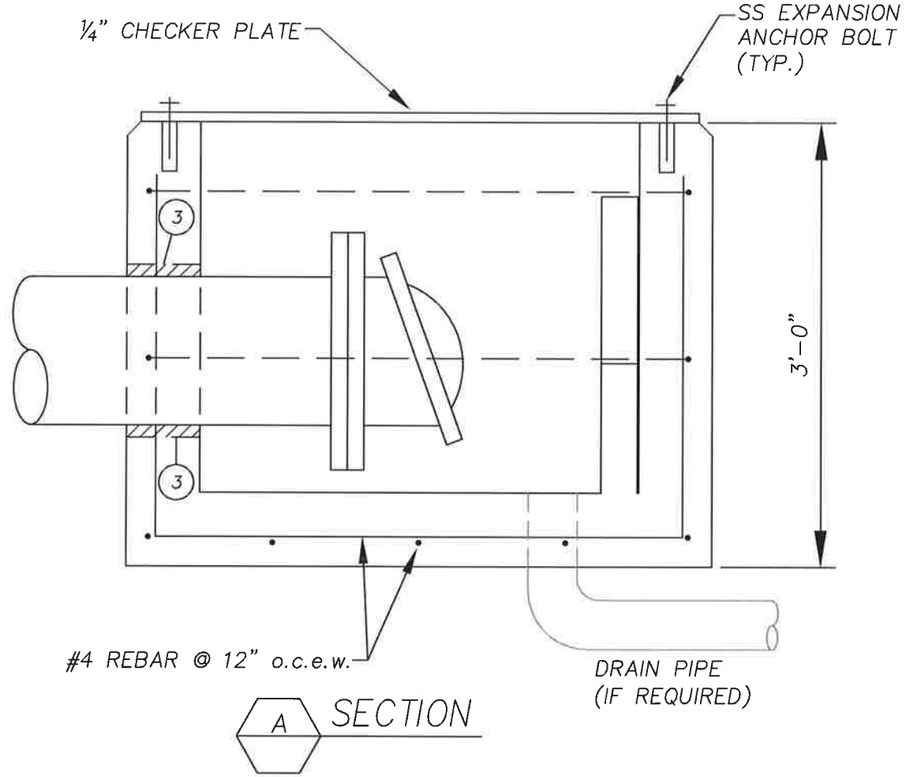
APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE



DISSIPATER STRUCTURE



A SECTION

CHECKERED PLATE NOT SHOWN FOR CLARITY

DISSIPATER STRUCTURE FITTING SCHEDULE	
NO.	DESCRIPTION
(1.)	DUCTILE IRON PE SPOOL, LENGTH AS REQ'D
(2.)	FLG'D FLAP VALVE w/ RESTRAINED FITTINGS
(3.)	NON-SHRINK GROUT

DISSIPATER STRUCTURE (TREATED WATER DISCHARGE)

DRAWING NO.
SD40
SHT 1 of 1

NID

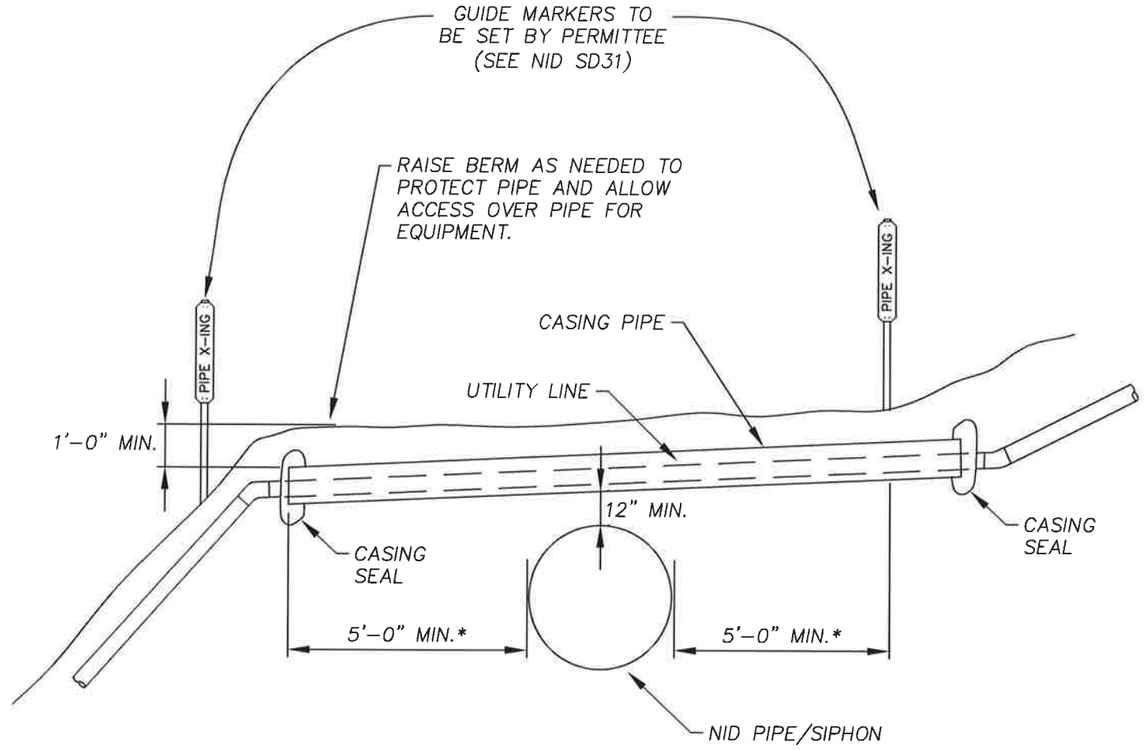
APPROVED:
DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE

NOTES:

1. UTILITY CROSSINGS INSTALLED OVER THE EXISTING NID PIPE WILL NOT BE APPROVED UNLESS PHYSICAL CONSTRAINTS PRECLUDE AN UNDER PIPE INSTALLATION. ALL OVER PIPE CROSSINGS SHALL BE REVIEWED AND APPROVED ON AN INDIVIDUAL BASIS.
2. WATERLINE, ELECTRICAL AND TELECOM CAN CROSS IN THE SAME CASING PIPE. ELECTRICAL AND TELECOM MUST BE ENCLOSED IN A SEPARATE PIPE WITHIN THE CASING.
3. CASING PIPE SHALL BE EITHER OF THE FOLLOWING: DUCTILE IRON, #10 GAUGE DIPPED AND WRAPPED STEEL PIPE OR CMP WITH #16 GAUGE FOR STEEL AND #14 GAUGE FOR ALUMINUM. A CASING SHALL BE AT LEAST TWO (2) INCHES LARGER INTERIOR DIAMETER THAN THE EXTERIOR WATER PIPE DIAMETER (4" DIAMETER MINIMUM).
4. THE NID PIPE BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY OR GREATER.
5. GUIDE MARKERS SHALL BE INSTALLED BY THE PERMITEE AS DIRECTED BY THE DISTRICT. SEE NID SD31 FOR DETAILS.
6. 6" OR GREATER ABOVE BURIED NID PIPE.



*MUST BE LONGER THAN EQUIPMENT TRAVEL WAY ON BERM.

CANAL UTILITY CROSSING (OVER PIPE)

DRAWING NO.
SD41
SHT 1 of 1

NID

APPROVED:

DOUG RODERICK, P.E.
DIRECTOR OF ENGINEERING

REVISION DATE
10/04/22

NOT TO SCALE