



## **SECTION II**

### **MISCELLANEOUS DETAILS**

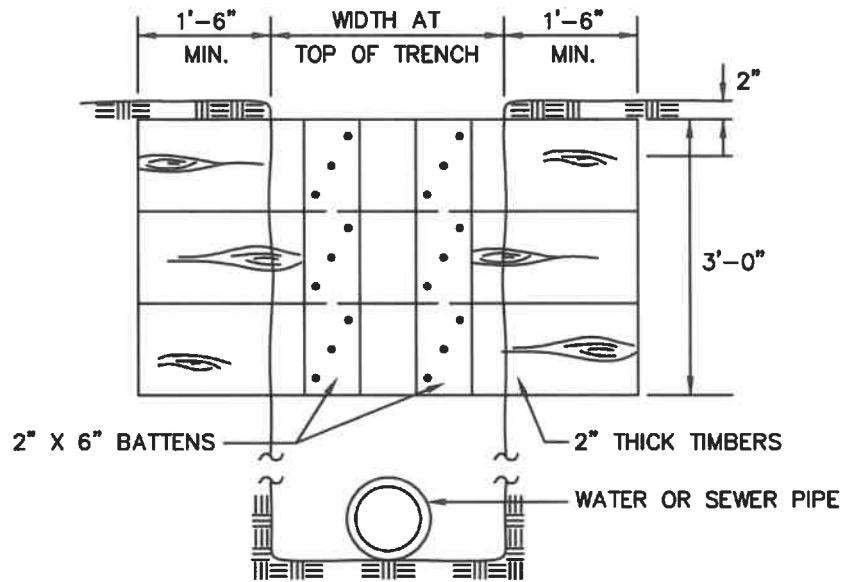
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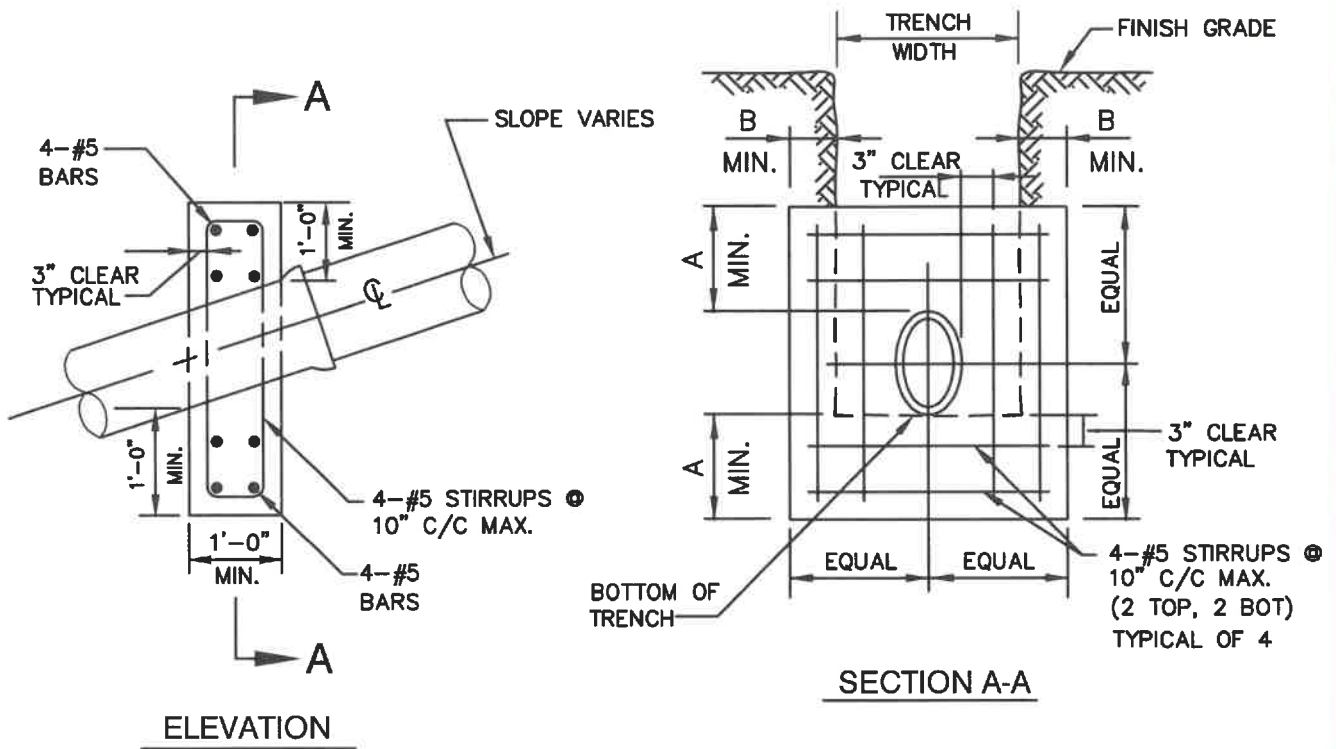


**FRONT VIEW**

**TRENCH EROSION CHECK**

ALL WOOD TO BE SOUTHERN (YELLOW) PINE #1 OR #2

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/17/2021</u>  Chief Engineer	STANDARD DETAIL TRENCH EROSION CHECK	M 3.0
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PIPE DIAMETER	PIPE SLOPE	MAXIMUM SPACING	"A" MINIMUM	"B" MINIMUM
≤ 12"	20% TO 35%	40'	9"	9"
	35% TO 49%	20'	18"	18"
14" TO 24"	20% TO 35%	40'	12"	12"
	35% TO 49%	20'	24"	24"

CONCRETE ANCHOR

GENERAL NOTES:

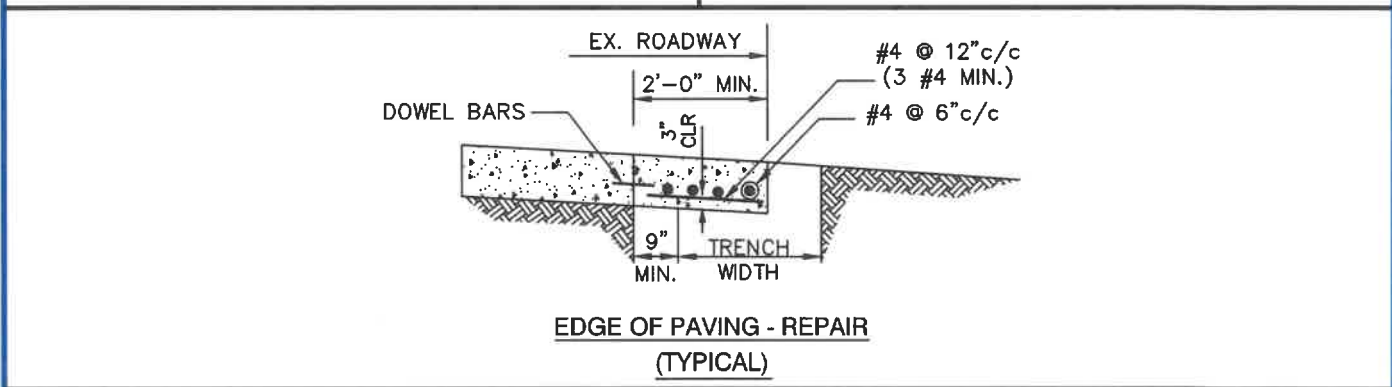
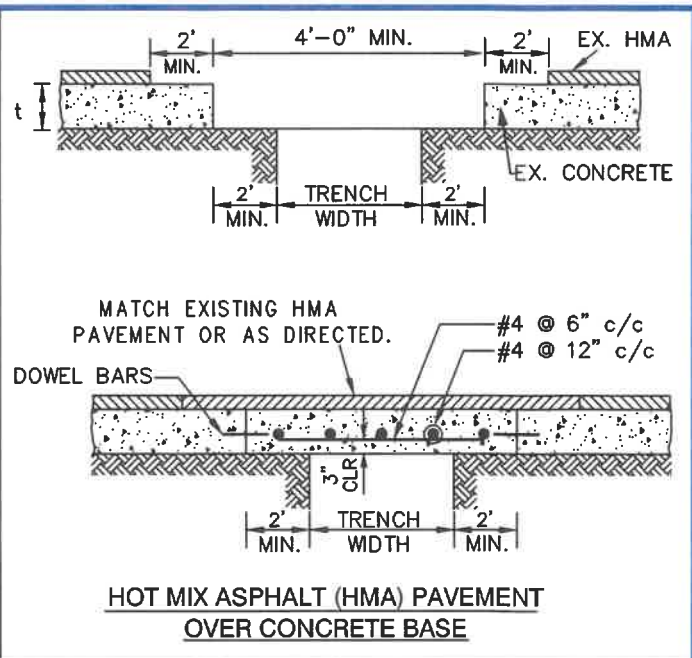
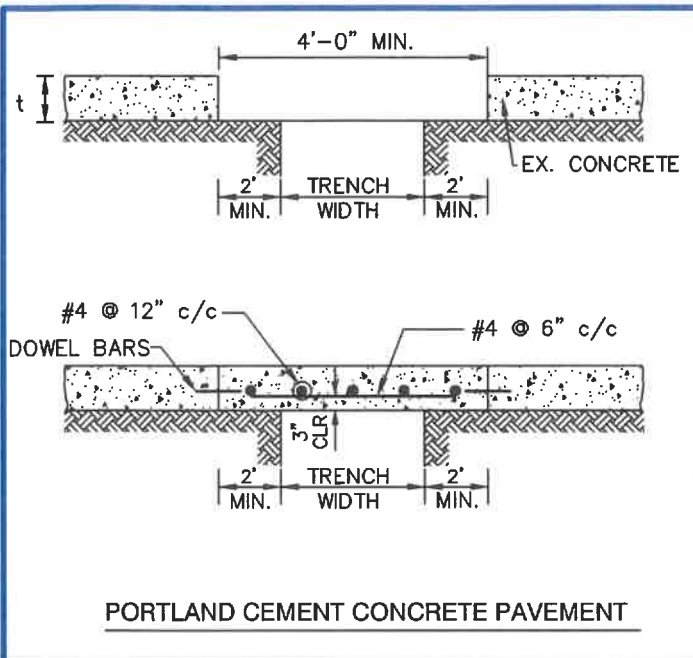
1.  $f'_c = 4000$  PSI @ 28 DAYS.
2. ALL REINFORCING STEEL TO BE ASTM A-615 GRADE 60.
3. CARRY ALL BEARING SURFACES TO FIRM SUBGRADE. PLACE CONCRETE ANCHOR AGAINST DOWNGRADE SIDE OF BELL.

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*M. Harmon*  
Chief Engineer

STANDARD DETAIL  
CONCRETE ANCHOR  
FOR 24-INCH AND  
SMALLER PIPELINE

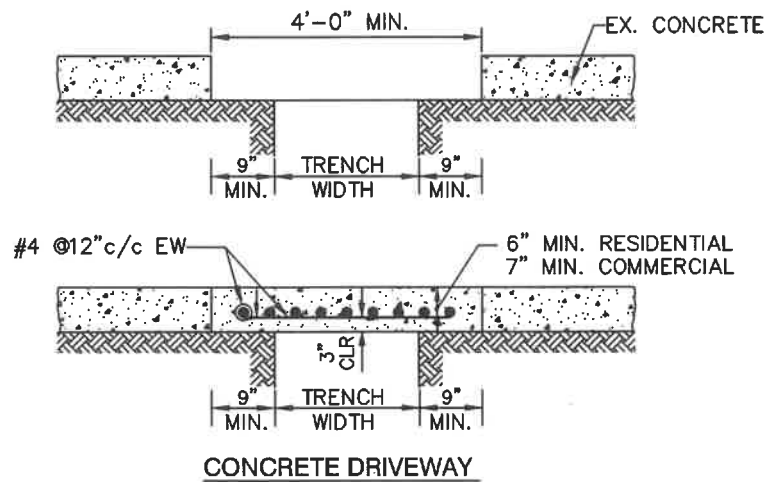
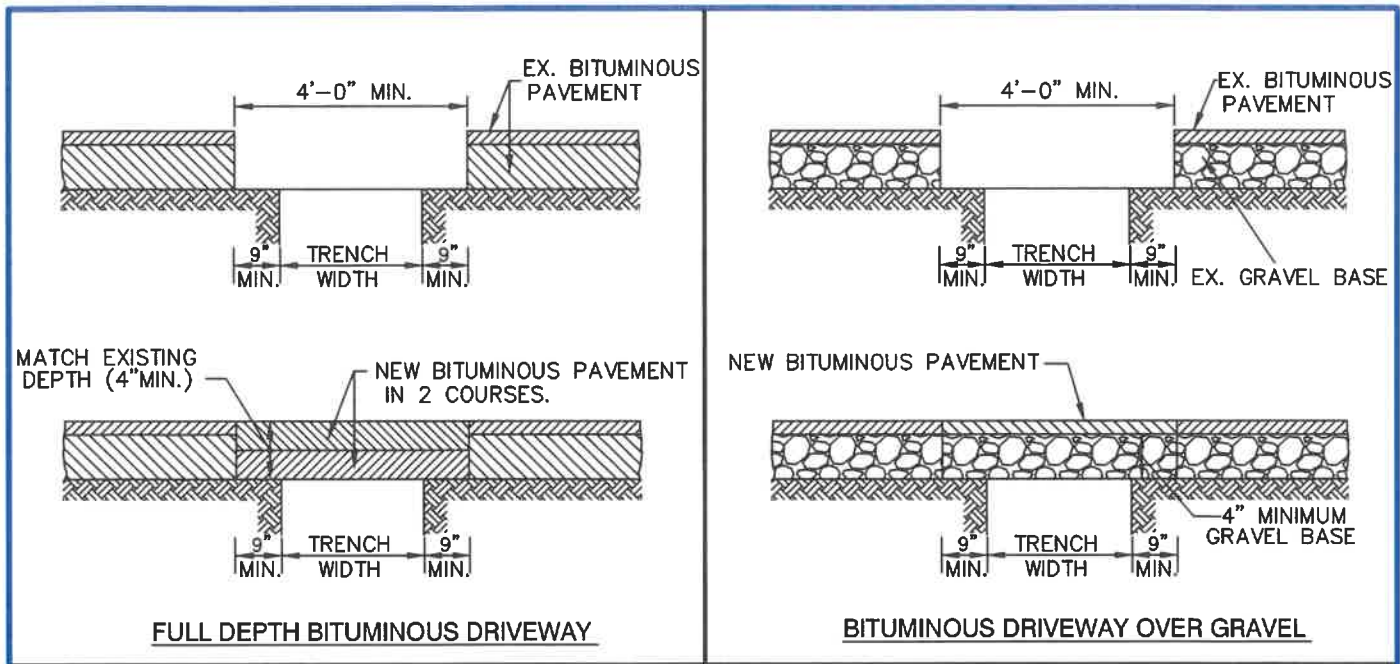
M  
4.0



**NOTES.**

1. MAKE ALL SAW CUTS PERPENDICULAR USING A DIAMOND SAW BLADE.
2. PRIOR TO PLACING CONCRETE, CLEAN AND WET EDGES OF CUTS. COMPACT AND DAMPEN SUBGRADE BEFORE PLACING REBARS.
3. ALL CONCRETE SHALL BE HIGH EARLY STRENGTH WITH MIN.  $f'_c=2500$  PSI @ 12 HOURS &  $f'_c=4000$  PSI @ 28 DAYS.
4. LOAD TRANSFER DOWEL BARS SHALL BE INSTALLED AT MID DEPTH OF THE CONCRETE PAVEMENT SECTION.
5. HOLES FOR DOWELS SHALL BE DRILLED TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS AND SHALL BE MAINTAINED IN A LONGITUDINALLY PARALLEL POSITION.
6. DRILL HOLES 9" DEEP AND  $\frac{1}{4}$ " LARGER IN DIAMETER THAN THE DOWELS. USE THE FOLLOWING DOWEL PLACEMENT FOR TRENCH IN TRANSVERSE DIRECTION TO TRAFFIC.
  - 6.1.  $t \leq 6"$ , USE 18" LONG #6 DOWEL @ 12" C/C.
  - 6.2.  $t > 6"$ , USE 18" LONG #8 DOWEL @ 18" C/C.
  - 6.3. CONTACT ENGINEER IF  $t < 5"$ .
7. FOR TRENCH IN LONGITUDINAL DIRECTION TO TRAFFIC, DOWEL SPACING SHALL BE 36" C/C.
8. ALL LOAD TRANSFER DOWEL BARS SHALL BE EPOXY COATED.
9. ALL EXPOSED EDGES OF EXISTING HMA PAVEMENT AND SURFACE OF CONCRETE BASE SHALL BE PRIMED BEFORE NEW HMA IS PLACED.
10. CONSTRUCTION, BACKFILL AND OTHER REQUIREMENTS FOR TRENCH SHALL BE PER WSSC STANDARD DETAILS M8.0 ,8.1A ,8.1B AND 8.1C.

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/17/21</u>   Chief Engineer	STANDARD DETAIL <b>REPAIR FOR          CONCRETE AND COMPOSITE          PAVEMENTS IN AREAS WITHOUT          JURISDICTIONAL REQUIREMENTS</b>	$\frac{M}{5.0}$
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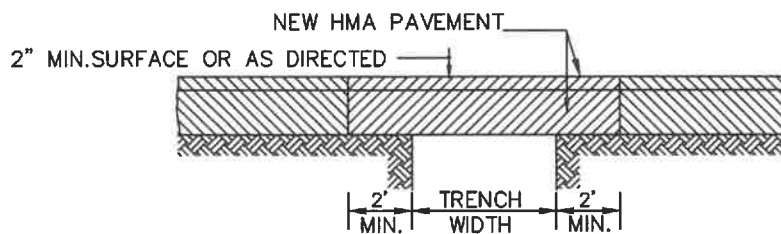
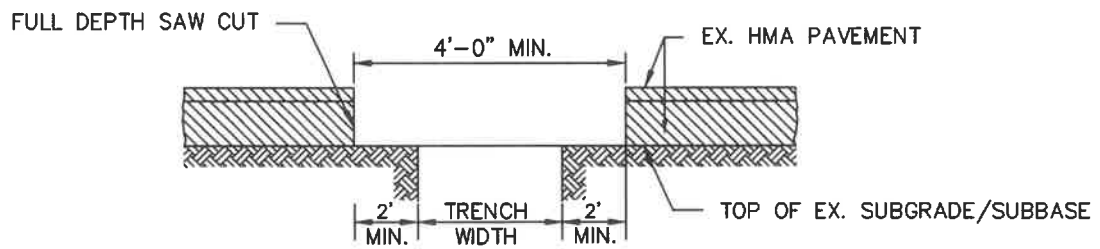


**NOTES.**

1. MAKE ALL SAW CUTS PERPENDICULAR USING A DIAMOND SAW BLADE.
2. PRIOR TO PLACING CONCRETE, CLEAN AND WET EDGES OF CUTS. COMPACT AND DAMPEN SUBGRADE BEFORE PLACING REBARS.
3. ALL CONCRETE SHALL BE HIGH EARLY STRENGTH WITH MIN.  $f'_c=2500$  PSI @ 12 HOURS &  $f'_c=4000$  PSI @ 28 DAYS.
4. PRIOR TO PLACING PAVEMENT, ALL UTILITY STRUCTURES SHALL BE BROUGHT TO GRADE.
5. REMOVE EXISTING CONCRETE DRIVEWAY TO NEAREST JOINT WHEN SO DIRECTED BY THE ENGINEER.
6. ALL EXPOSED EDGES OF EXISTING PAVEMENT AND SURFACE OF CONCRETE BASE SHALL BE PRIMED BEFORE NEW BITUMINOUS SECTION IS PLACED
7. CONSTRUCTION, BACKFILL AND OTHER REQUIREMENTS FOR TRENCH SHALL BE PER WSSC STANDARD DETAILS M8.0 ,8.1A ,8.1B AND 8.1C.

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/17/21</u>  Chief Engineer	STANDARD DETAIL REPAIR FOR CONCRETE AND BITUMINOUS ASPHALT DRIVEWAYS	M 5.1
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**HOT MIX ASPHALT (HMA) PAVEMENT**

**NOTES.**

1. EXISTING PAVEMENT SHALL BE SAW CUT FULL DEPTH.
2. PRIOR TO PLACING HMA, COMPACT SUBGRADE PER WSSC SPECIFICATIONS.
3. ALL UTILITY STRUCTURES SHALL BE BROUGHT TO GRADE PRIOR TO PLACING HMA PAVEMENT.
4. ALL HMA SURFACE SHALL BE PLACED TO A DEPTH EQUAL TO THE DEPTH OF EXISTING PAVEMENT THICKNESS. THE MINIMUM THICKNESS OF HMA SHALL BE 2 INCHES.
5. CONSTRUCTION, BACKFILL AND OTHER REQUIREMENTS FOR TRENCH SHALL BE PER WSSC STANDARD DETAILS M8.0 ,8.1A ,8.1B AND 8.1C.
6. WHERE CAVE-IN UNDER EXISTING HMA PAVEMENT OCCURS, THE EXISTING PAVEMENT SHALL BE SAW CUT 2' BEYOND THE LIMITS OF THE CAVE-IN.

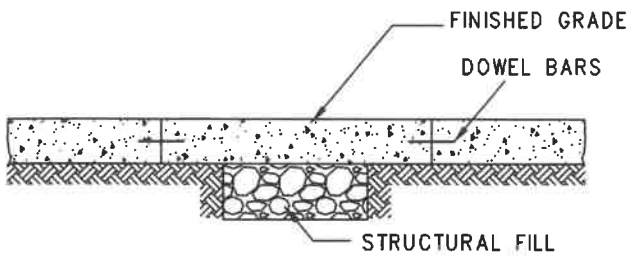
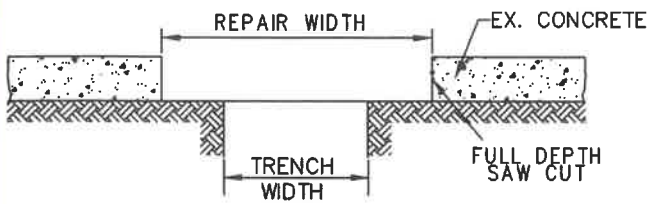
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*M. H. Harmon*  
Chief Engineer

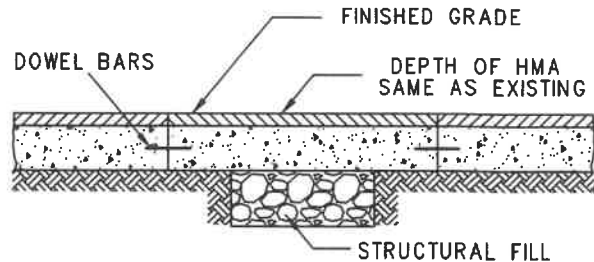
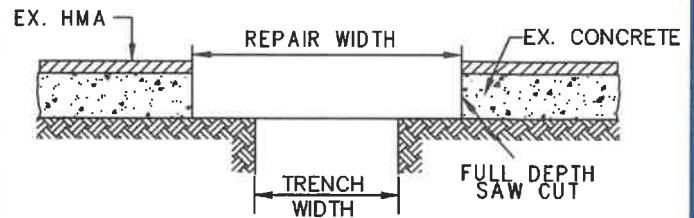
STANDARD DETAIL  
REPAIR FOR HOT MIX ASPHALT  
(HMA) PAVEMENTS IN AREAS  
WITHOUT JURISDICTIONAL  
REQUIREMENTS

M  
5.2





**PORTLAND CEMENT CONCRETE PAVEMENT**



**HOT MIX ASPHALT (HMA) PAVEMENT WITH PORTLAND CEMENT CONCRETE BASE**

**GENERAL GUIDELINES**

1. LOAD TRANSFER DOWEL BARS SHALL BE INSTALLED AT MID DEPTH OF THE CONCRETE PAVEMENT SECTION.
2. MAKE ALL SAW CUTS PERPENDICULAR USING A DIAMOND SAW BLADE.
3. PRIOR TO PLACING CONCRETE, CLEAN THE ADJACENT VERTICAL SURFACES.
4. ALL LOAD TRANSFER DOWEL BARS SHALL BE EPOXY COATED.
5. HOLES FOR DOWELS SHALL BE DRILLED TO THE REQUIRED DEPTH USING FRAME MOUNTED DRILLS AND SHALL BE MAINTAINED IN A LONGITUDINALLY PARALLEL POSITION.
6. THE ROADWAY SHALL BE PATCHED WITH THE SAME TYPE MATERIAL REMOVED UNLESS SPECIFIED.

**NOTES**

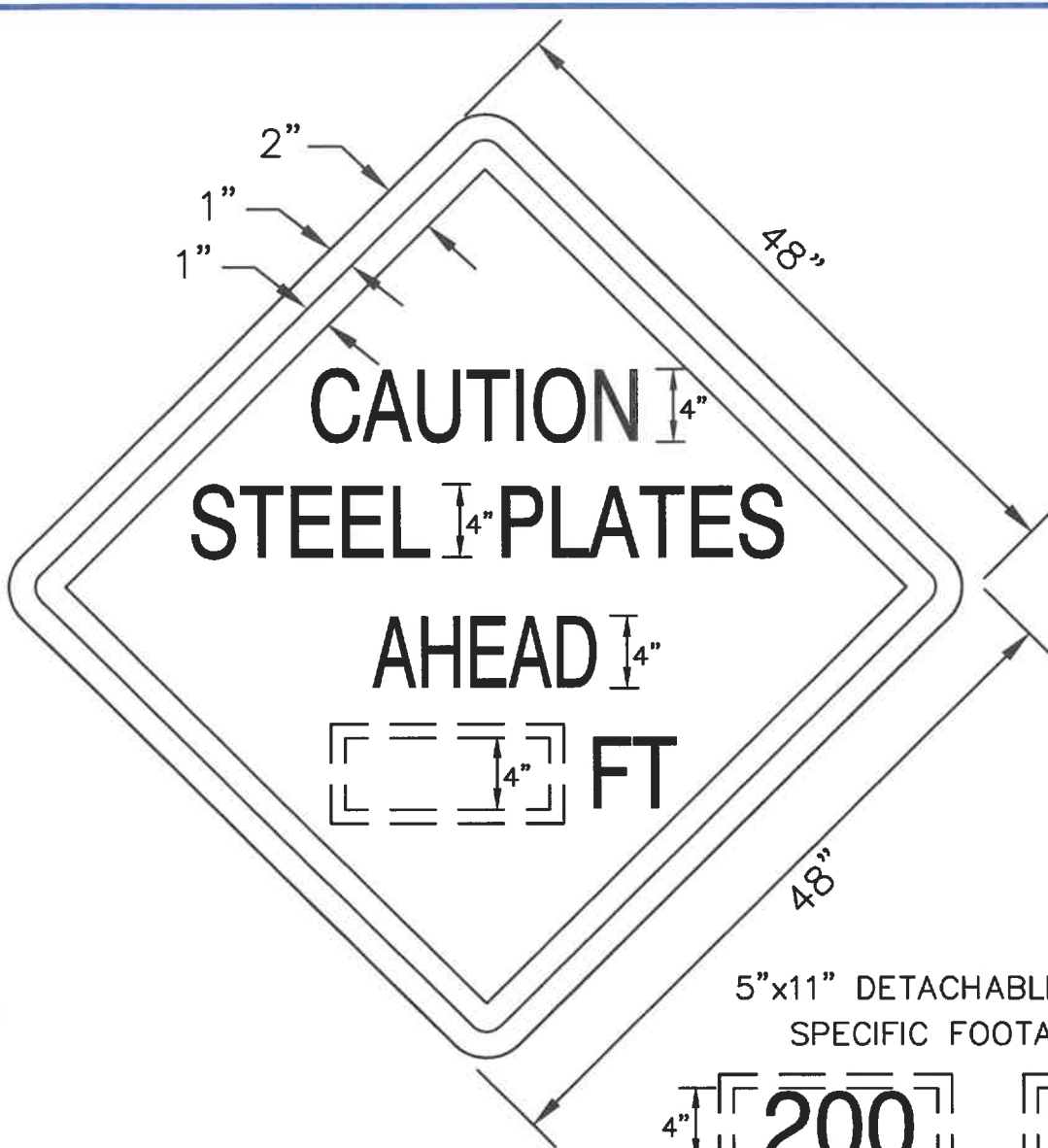
1. REFER TO JURISDICTIONAL REQUIREMENTS FOR DOWEL BAR TYPES, REINFORCEMENT, CONCRETE MIX, TRENCH BACKFILL AND OTHER PLACEMENT REQUIREMENTS.
2. APPLICABLE JURISDICTIONAL REQUIREMENTS SHALL GOVERN OVER THE ABOVE GENERAL REQUIREMENTS IF THERE ARE CONFLICTS.
3. USE THE LATEST VERSIONS OF ALL APPLICABLE JURISDICTIONAL STANDARDS.
  - 3.1. MSHA ROADS- MD STANDARD NO. 577.02, 577.03, 577.04, 577.05, 577.06, 577.10 AND 578.01 & STANDARD SPECIFICATION 522.
  - 3.2. PRINCE GEORGE'S COUNTY ROADS. DPWT, SPECIFICATIONS AND STANDARDS FOR ROADWAYS & BRIDGES.
  - 3.3. MONTGOMERY COUNTY ROADS - STANDARD MC 801.01, 801.03 & MCDOT UTILITY PATCH SPECIFICATIONS AND METHODS OF CONSTRUCTION.

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*Mike Hammer*  
Chief Engineer

STANDARD DETAIL  
GENERAL GUIDELINES FOR  
REPAIRING CONCRETE/COMPOSITE  
PAVEMENTS IN AREAS WITH  
JURISDICTIONAL REQUIREMENTS

M  
5.3




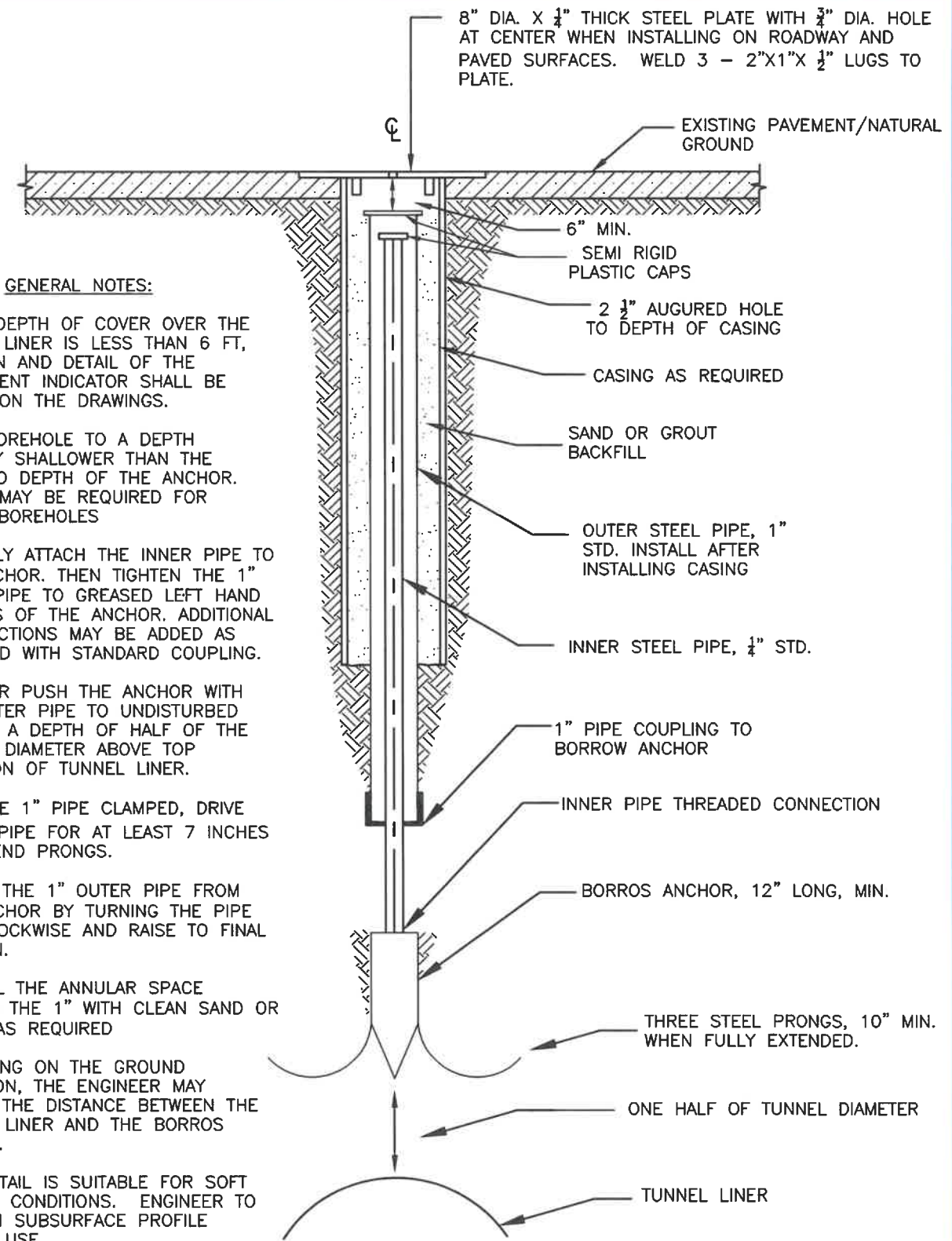
5"x11" DETACHABLE PLATES WITH SPECIFIC FOOTAGE SHOWN



GENERAL NOTES:

1. LOCATE SIGNS 200 FEET IN ADVANCE OF THE STEEL PLATE WHERE POSSIBLE. OTHERWISE, PROVIDE A DETACHABLE PLATE ON THE SIGN INDICATING THE DISTANCE IN FOOTAGE FROM THE SIGN TO THE STEEL PLATE.
2. THE SIGN SHALL BE OF PLYWOOD OR METAL, REFLECTABLE ORANGE IN COLOR, AND HAVE 4 INCH HIGH LETTERS IN BLACK.
3. PLACE SIGN AT HEIGHTS SET FORTH IN THE MARYLAND SHA MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS & HIGHWAYS.
4. THE SIGN SHALL NOT BE REMOVED UNTIL COMPLETION OF PAVING ACTIVITY.

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/17/21</u>   Chief Engineer	STANDARD DETAIL  CAUTION SIGN FOR STEEL PLATES	M 6.0
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**GENERAL NOTES:**

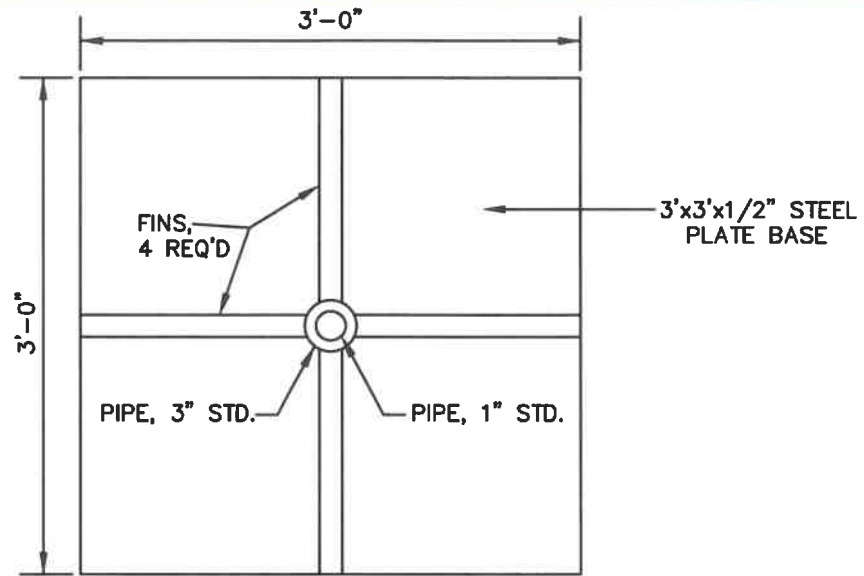
1. IF THE DEPTH OF COVER OVER THE TUNNEL LINER IS LESS THAN 6 FT, LOCATION AND DETAIL OF THE SETTLEMENT INDICATOR SHALL BE SHOWN ON THE DRAWINGS.
2. DRILL BOREHOLE TO A DEPTH SLIGHTLY SHALLOWER THAN THE INTENDED DEPTH OF THE ANCHOR. CASING MAY BE REQUIRED FOR CAVING BOREHOLES
3. SECURELY ATTACH THE INNER PIPE TO THE ANCHOR. THEN TIGHTEN THE 1" OUTER PIPE TO GREASED LEFT HAND THREADS OF THE ANCHOR. ADDITIONAL PIPE SECTIONS MAY BE ADDED AS REQUIRED WITH STANDARD COUPLING.
4. DRIVE OR PUSH THE ANCHOR WITH THE OUTER PIPE TO UNDISTURBED SOIL TO A DEPTH OF HALF OF THE TUNNEL DIAMETER ABOVE TOP ELEVATION OF TUNNEL LINER.
5. WITH THE 1" PIPE CLAMPED, DRIVE THE  $\frac{1}{4}$ " PIPE FOR AT LEAST 7 INCHES TO EXTEND PRONGS.
6. DETACH THE 1" OUTER PIPE FROM THE ANCHOR BY TURNING THE PIPE INTO CLOCKWISE AND RAISE TO FINAL POSITION.
7. BACKFILL THE ANNULAR SPACE AROUND THE 1" WITH CLEAN SAND OR GROUT AS REQUIRED
8. DEPENDING ON THE GROUND CONDITION, THE ENGINEER MAY ADJUST THE DISTANCE BETWEEN THE TUNNEL LINER AND THE BORROS ANCHOR.
9. THIS DETAIL IS SUITABLE FOR SOFT GROUND CONDITIONS. ENGINEER TO CONFIRM SUBSURFACE PROFILE BEFORE USE.

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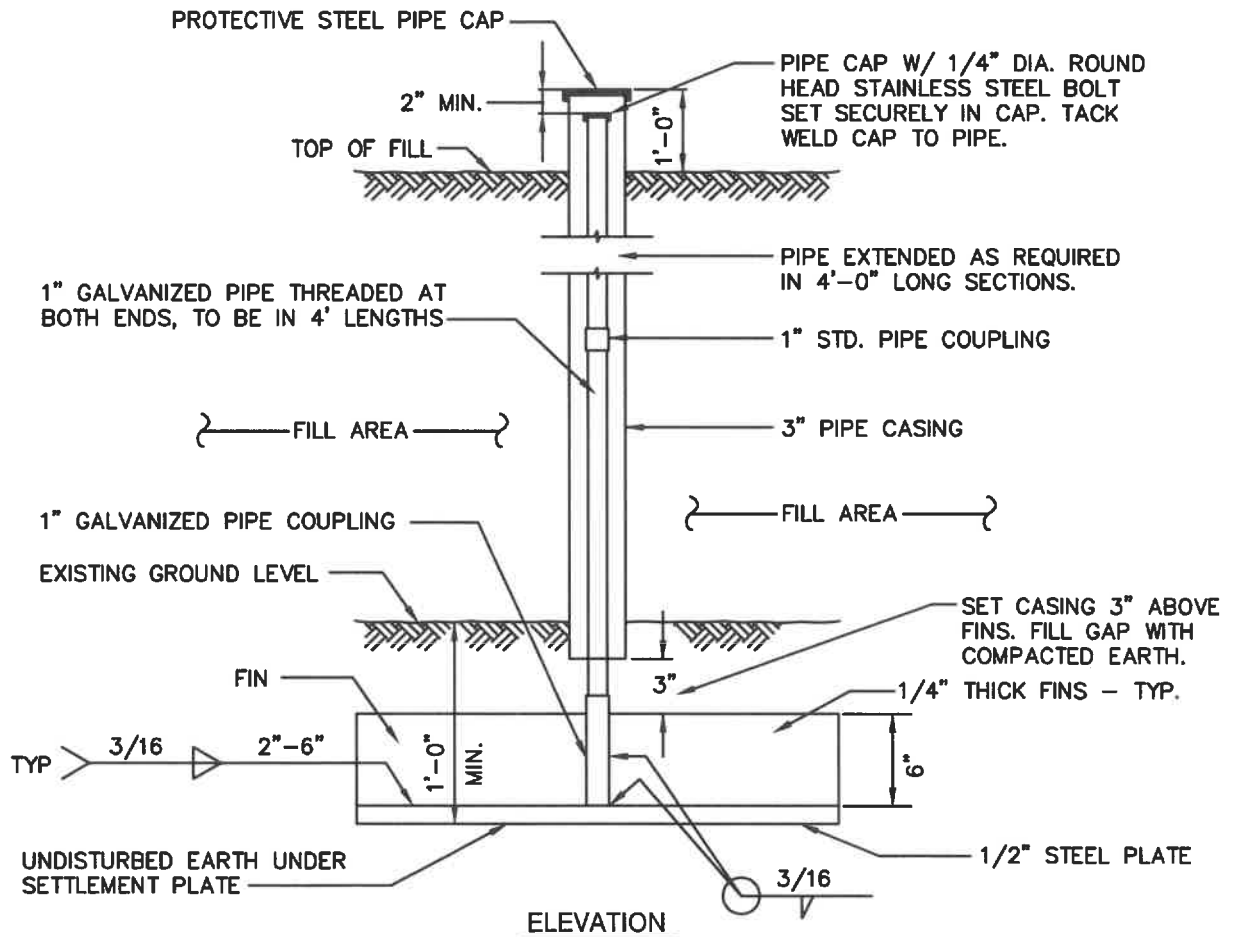
APPROVED: 6/17/21  
*Mark Hammer*  
Chief Engineer

STANDARD DETAIL  
EARTH TUNNEL SUBSURFACE  
BORROS POINT  
SETTLEMENT INDICATOR

$\frac{M}{7.0}$



PLAN



ELEVATION

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APPROVED: 6/17/21

*M. J. Harner*  
Chief Engineer

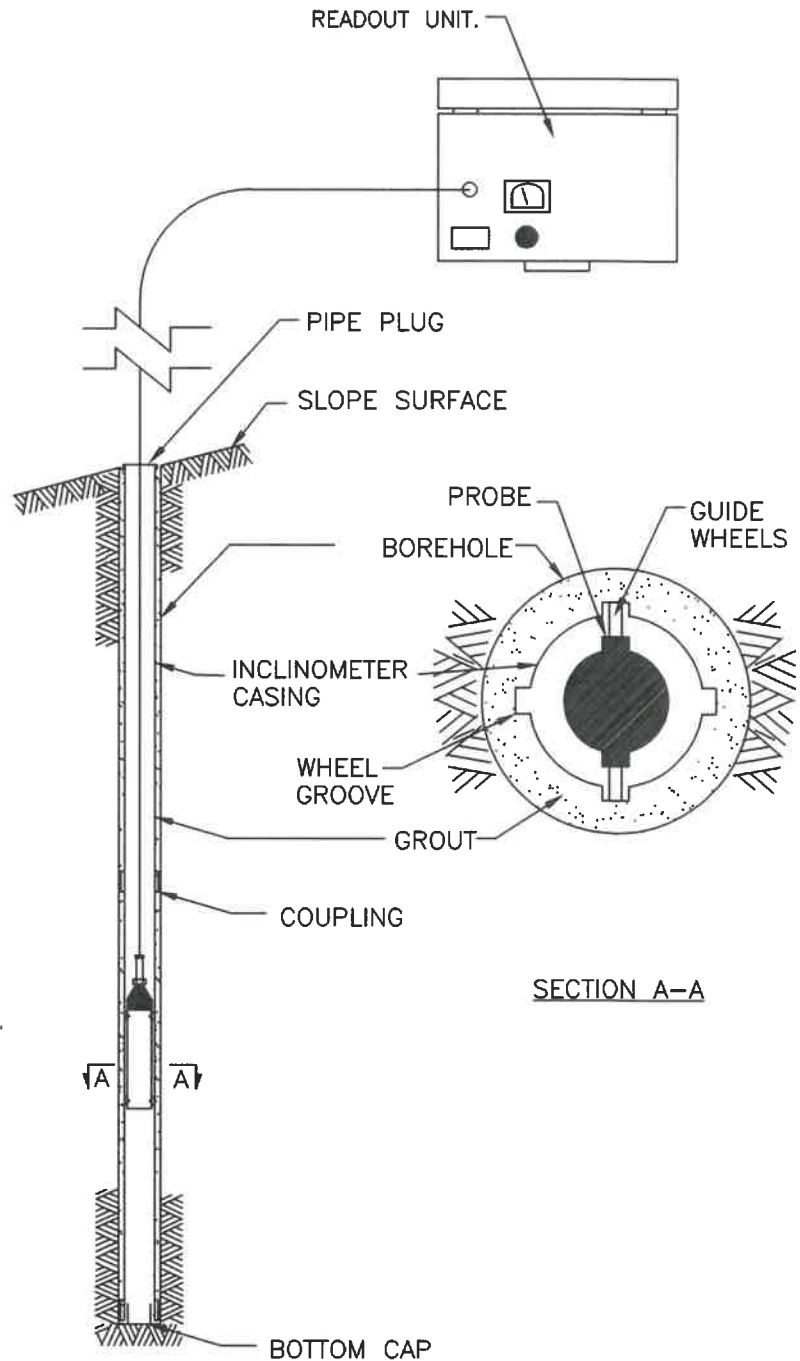
STANDARD DETAIL

SETTLEMENT PLATE  
DETAIL FOR FILL

M  
7.1

GENERAL NOTES:

1. DRILL BOREHOLE TO THE DESIRED DEPTH. INCLINOMETER SHALL BE INSTALLED A MINIMUM OF 20 FT. BEYOND THE EXPECTED SLIP SURFACE. BOREHOLE CASING MAY BE REQUIRED FOR CAVING BOREHOLES.
2. INCLINOMETER CASINGS SHALL BE PVC AND 3.34 IN OD FOR SLOPE INSTABILITY AND LONG TERM MONITORING AND 2.75" OD FOR OTHER MONITORING DURING CONSTRUCTION.
3. CASING SHALL HAVE FOUR BROACHED INTERNAL WHEEL GROOVES EQUALLY SPACED 90 DEGREES APART WITH TWIST TOLERANCE BETTER THAN ONE DEGREE PER 10 FT OF LENGTH.
4. COUPLINGS SHALL BE TELESCOPING WITH SELF-ALIGNING GROOVES AND SHALL BE COMPATIBLE WITH GUILD CASINGS.
5. BACKFILL THE ANNULAR SPACE AROUND GUILD CASING WITH BENTONITE OR PORTLAND CEMENT GROUT.
6. PIPE PLUG SHALL BE SEMI RIGID PLASTIC TO PREVENT DIRT FROM ENTERING THE CASING.
7. BOTTOM CAPS SHALL BE SEMI RIGID PLASTIC TO FORM A WATER TIGHT SEAL USING COMMERCIAL GRADE ABS SOLVENT CEMENT.
8. PROBE SHALL BE BIAxIAL CONSISTING OF TWO FORCE ACCELEROMETERS MOUNTED AT 90 DEGREES WITH 20 INCH WHEELBASE.
9. READOUT UNIT SHALL BE COMPATIBLE WITH PROBE, CASING AND SHALL BE PORTABLE AUTOMATIC DATA LOGGER UNIT WITH POWER SUPPLY, DIGITAL READOUT OF PROBE INCLINATION AND RECORDING CAPACITY.



SECTION A-A

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/15/21</u>   Chief Engineer	STANDARD DETAIL  SLOPE MOVEMENT INDICATOR INCLINOMETER	$\frac{M}{7.2}$
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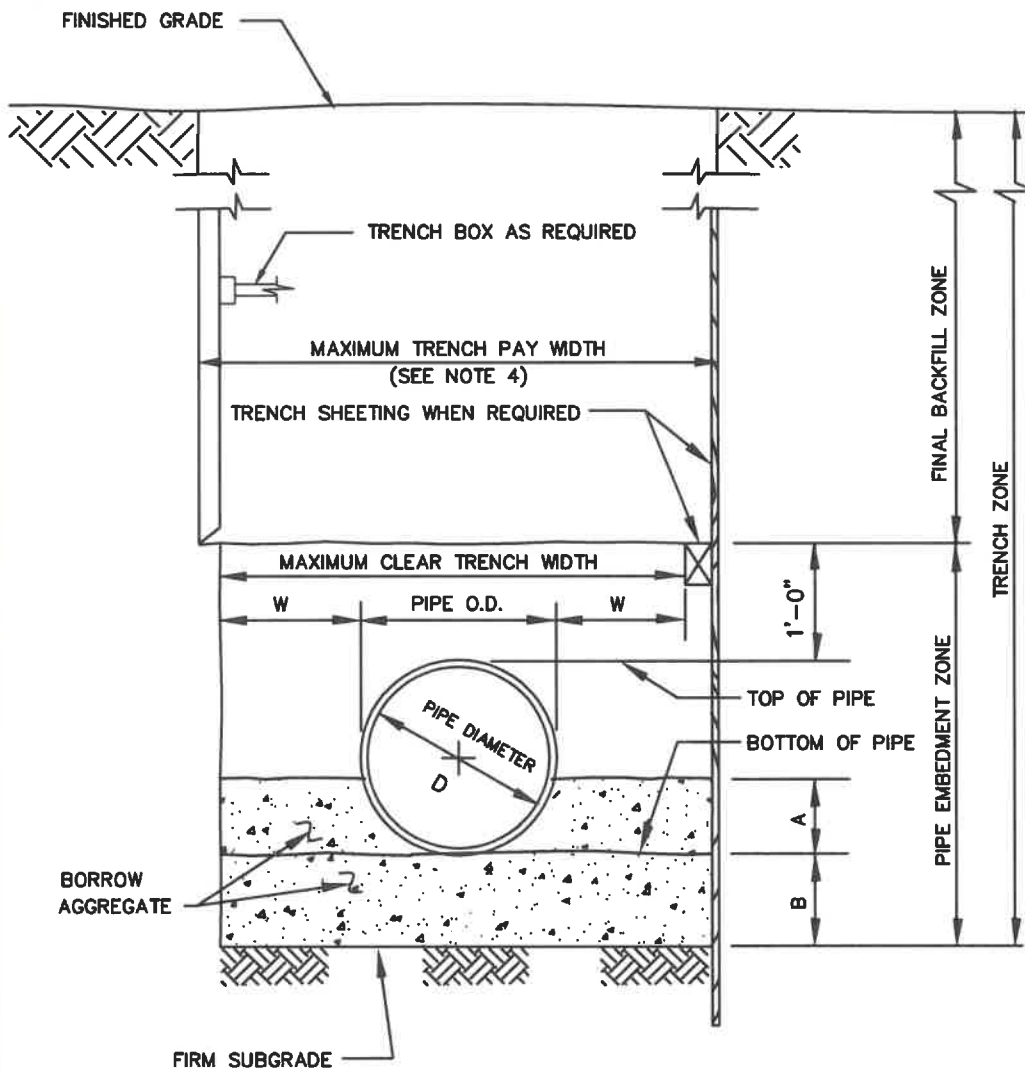


**NOTES:**

1. THE "W" DIMENSION SHALL BE USED TO CALCULATE MAXIMUM TRENCH PAY WIDTH.
2. THE "W" DIMENSION SHALL NOT BE LESS THAN 8" FOR PIPE INSTALLATION.
3. MAXIMUM TRENCH PAY WIDTH EQUALS 2W + PIPE O.D. - OTHERWISE, THE MAXIMUM TRENCH PAY WIDTH IN AREAS OF REQUIRED TRENCH BOX/SHEETING EQUALS 2W + PIPE O.D. + 24", EXCEPT FOR AREAS BELOW THE TRENCH BOX WHERE THE TRENCH WIDTH EQUALS 2W + PIPE O.D.
4. FOR MAXIMUM ALLOWABLE COVER, SEE DETAIL S/8.0.

PIPE SIZE D	W	A	B
4	12	2	6
6	11	3	6
12	8	6	6
15	8	6	6
18	8	6	6
21	8	7	6
24	12	8	6
27	12	8	6
30	12	9	6
33	15	10	6
36	15	10	6
42	15	13	6
48	18	15	6
54	18	16	6
60	18	18	6
66	18	21	6
72	18	21	6
78	18	23	6
84	18	25	6
90	18	26	6
96	18	28	12
102	18	30	12
108	18	32	12
112	24	34	12
120	24	36	12

ALL DIMENSIONS IN INCHES

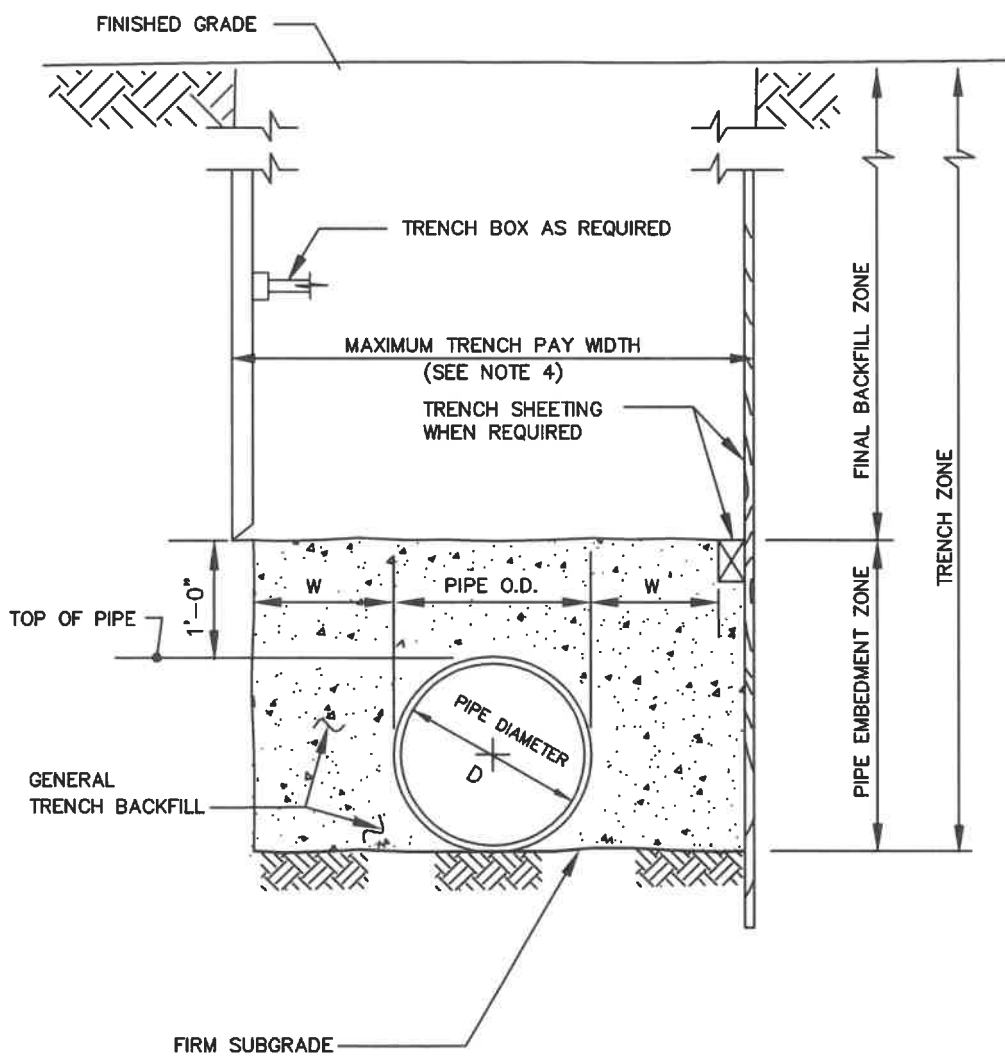


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Chief Engineer

STANDARD DETAIL  
TRENCH DETAIL - RIGID PIPE  
GRAVITY RCP SEWER

M  
8.0




PIPE SIZE D	W
3	12
4	12
6	11
8	10
10	9
12	8
14	8
16	8
18	8
20	8
24	12
30	12
36	15
42	15
48	18

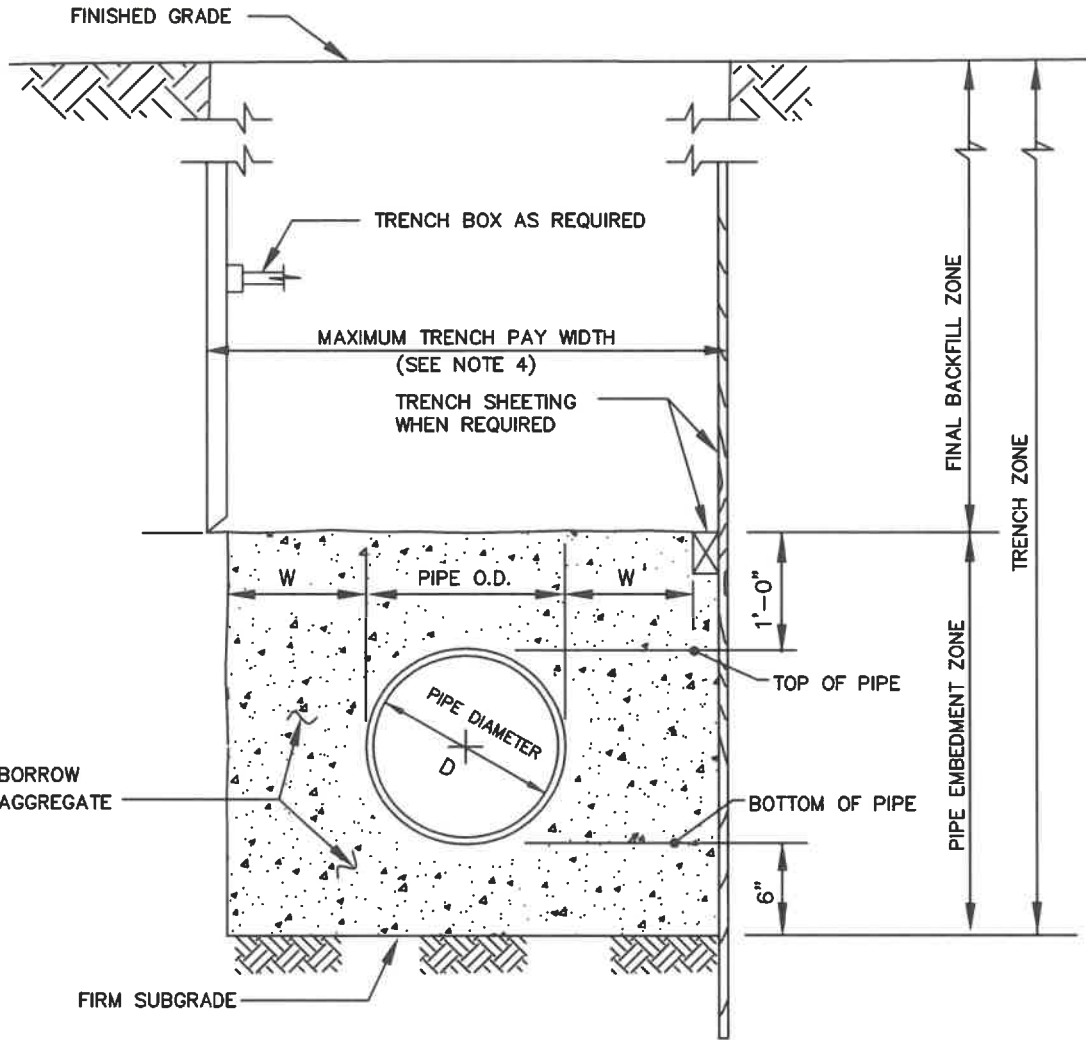
ALL DIMENSIONS  
IN INCHES

**NOTES:**

1. FOR MAXIMUM ALLOWABLE COVER, SEE DETAILS W/6.0, AND W/6.1.
2. THE "W" DIMENSION SHALL BE USED TO CALCULATE MAXIMUM TRENCH PAY WIDTH.
3. THE "W" DIMENSION SHALL NOT BE LESS THAN 8" FOR ALL PIPE INSTALLATION.
4. THE MAXIMUM TRENCH PAY WIDTH EQUALS 2W + PIPE O.D., OTHERWISE THE MAXIMUM TRENCH PAY WIDTH IN AREAS OF REQUIRED TRENCH BOX/SHEETING EQUALS 2W + PIPE O.D. + 24", EXCEPT FOR AREAS BELOW THE TRENCH BOX WHERE THE TRENCH WIDTH EQUALS 2W + PIPE O.D.

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/17/21</u>  Chief Engineer	STANDARD DETAIL <b>TRENCH DETAIL - FLEXIBLE PIPE (DUCTILE IRON 24-INCH AND SMALLER AND PVC AWWA C-900/905)</b>	<b>M</b> <hr/> <b>8.1a</b>
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DUCTILE IRON PIPE SIZE	
"D"	"W"
30	12
36	15
42	15
48	18
54	18

ALL DIMENSIONS IN INCHES

CASING PIPE SIZE	
"D"	"W"
20	8
21	8
22	8
24	12
30	12
36	15
42	15
48	18
54	18
60	18
66	18
72	18
78	18
84	18
90	18

ALL DIMENSIONS IN INCHES

**NOTES:**

1. FOR MAXIMUM ALLOWABLE COVER, SEE DETAIL W/6.0.
2. THE "W" DIMENSION SHALL BE USED TO CALCULATE MAXIMUM TRENCH PAY WIDTH.
3. THE "W" DIMENSION SHALL NOT BE LESS THAN 8" FOR ALL PIPE INSTALLATION.
4. THE MAXIMUM TRENCH PAY WIDTH EQUALS 2W + PIPE O.D., OTHERWISE THE MAXIMUM TRENCH PAY WIDTH IN AREAS OF REQUIRED TRENCH BOX/SHEETING EQUALS 2W + PIPE O.D. + 24", EXCEPT FOR AREAS BELOW THE TRENCH BOX WHERE THE TRENCH WIDTH EQUALS 2W + PIPE O.D.

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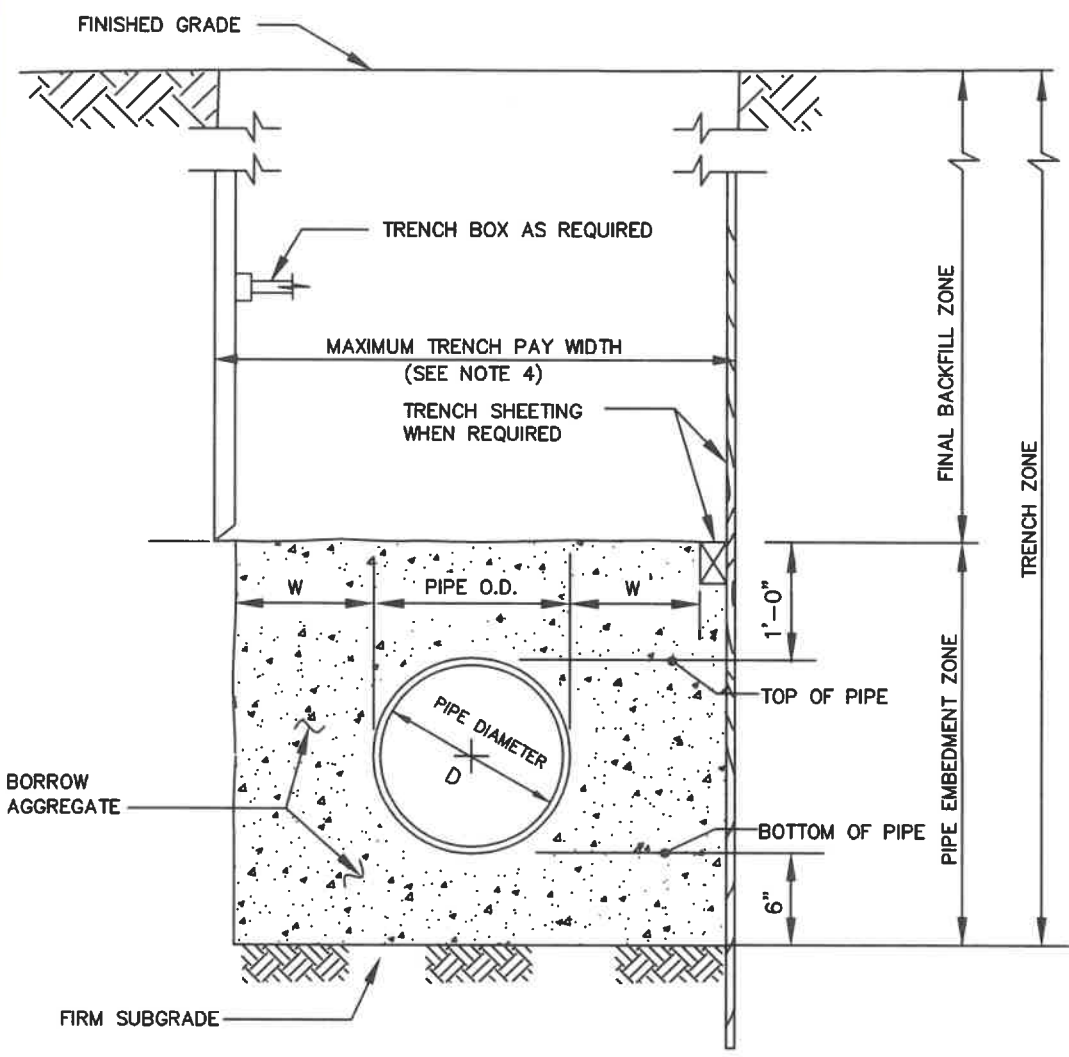
APPROVED: 6/17/21  
*Mike Harmon*  
Chief Engineer

STANDARD DETAIL  
TRENCH DETAIL - FLEXIBLE PIPE  
FLEXIBLE PIPE DUCTILE IRON  
30-INCH AND LARGER  
AND OPEN-CUT CASING PIPES

M  
8.1b


PIPE SIZE D	W
4	12
6	11
8	10
10	9
12	8
15	8
18	8
21	8
24	12
27	12
30	12
36	15
42	15
48	18

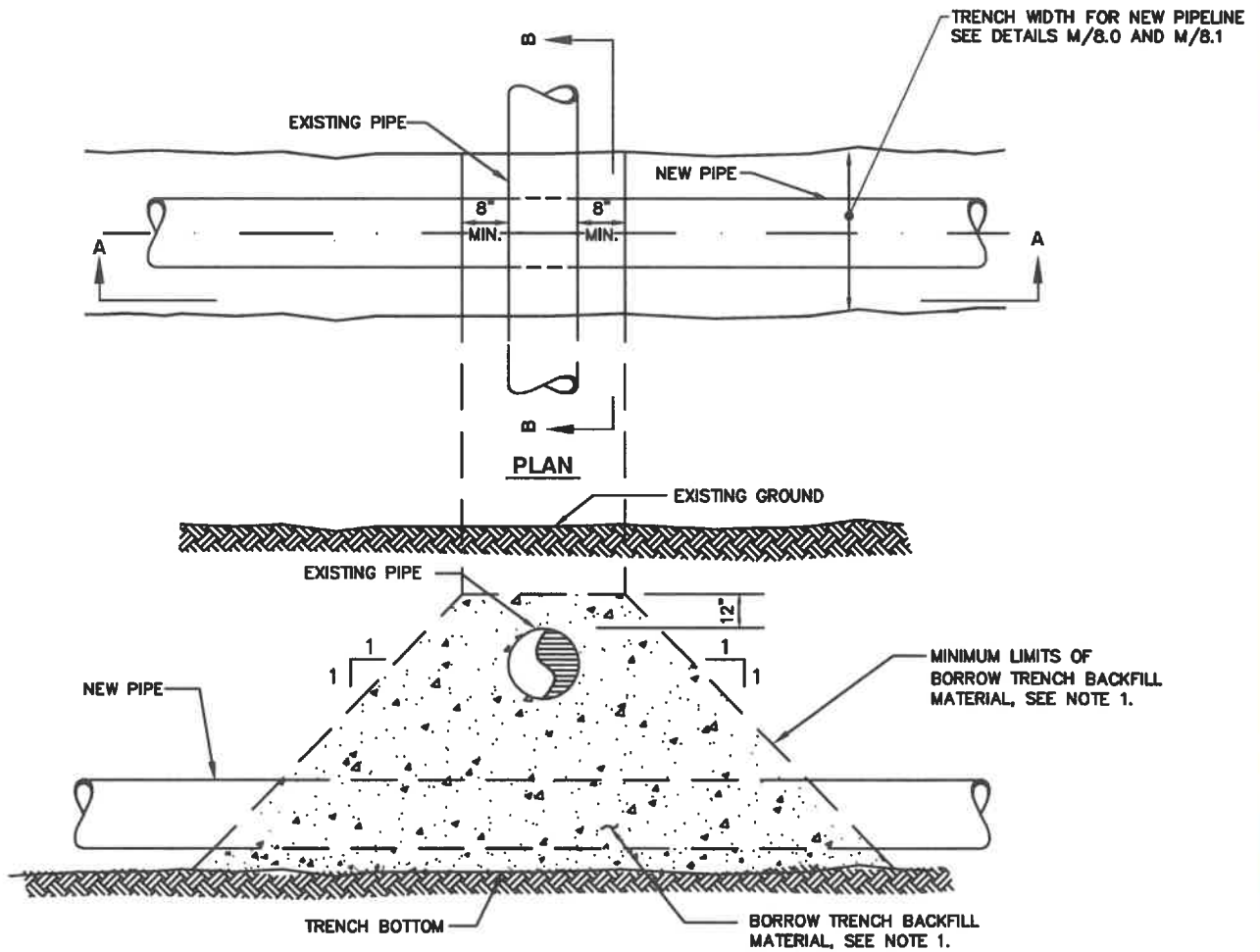
ALL DIMENSIONS  
IN INCHES



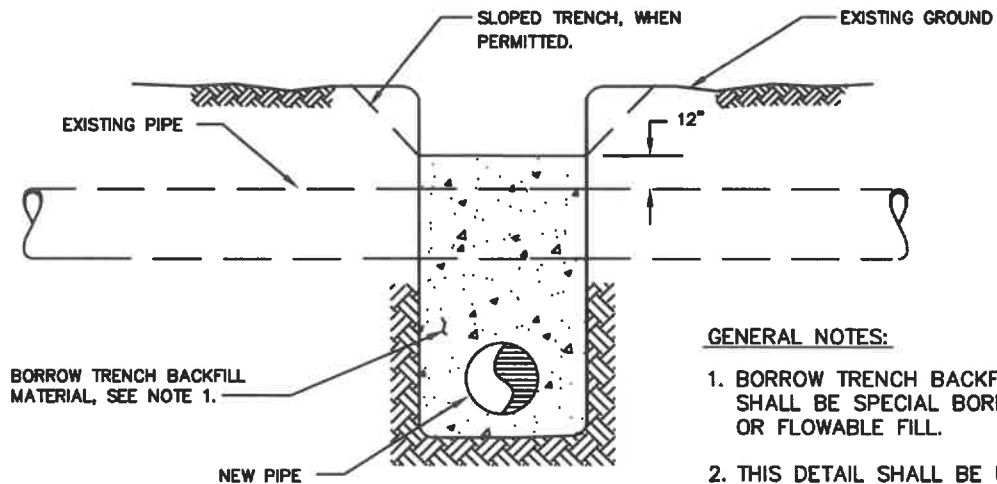
**NOTES:**

1. FOR MAXIMUM ALLOWABLE COVER, SEE DETAIL S/8.1.
2. THE "W" DIMENSION SHALL BE USED TO CALCULATE MAXIMUM TRENCH PAY WIDTH.
3. THE "W" DIMENSION SHALL NOT BE LESS THAN 8" FOR ALL PIPE INSTALLATION.
4. THE MAXIMUM TRENCH PAY WIDTH EQUALS 2W + PIPE O.D., OTHERWISE THE MAXIMUM TRENCH PAY WIDTH IN AREAS OF REQUIRED TRENCH BOX/SHEETING EQUALS 2W + PIPE O.D. + 24", EXCEPT FOR AREAS BELOW THE TRENCH BOX WHERE THE TRENCH WIDTH EQUALS 2W + PIPE O.D.

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/17/21</u>   Chief Engineer	STANDARD DETAIL  <b>TRENCH DETAIL - FLEXIBLE PIPE GRAVITY PVC SEWER (SDR 35)</b>	$\frac{M}{8.1c}$
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**SECTION A-A**



**SECTION B-B**

**GENERAL NOTES:**

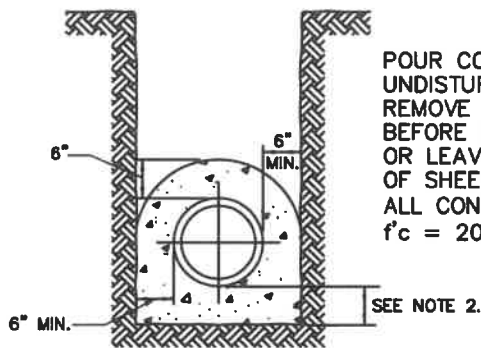
1. BORROW TRENCH BACKFILL MATERIAL SHALL BE SPECIAL BORROW MATERIAL OR FLOWABLE FILL.
2. THIS DETAIL SHALL BE USED AT LOCATIONS INDICATED ON THE DRAWINGS.

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APPROVED: 6/17/21  
*Mild Hammer*  
Chief Engineer

STANDARD DETAIL  
EXISTING WSSC  
PIPELINE CROSSING  
TRENCH DETAILS

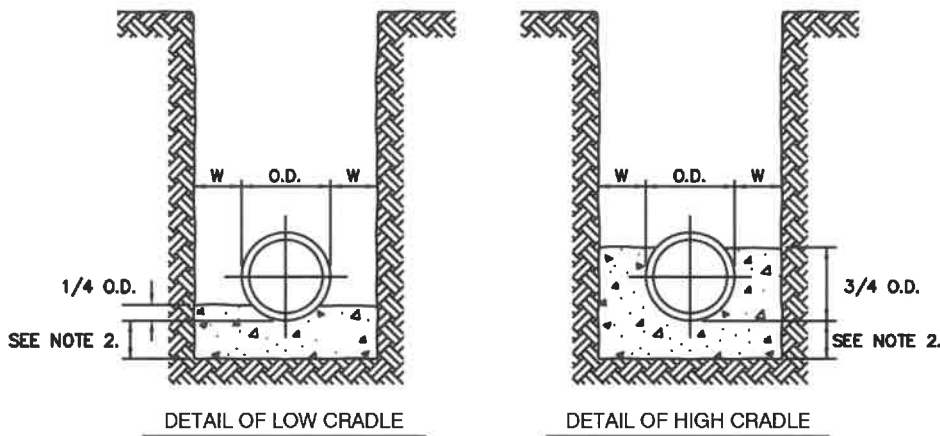
M  
8.3



POUR CONCRETE AGAINST UNDISTURBED EARTH. REMOVE TRENCH SHEETING BEFORE POURING CONCRETE OR LEAVE LOWER PORTION OF SHEETING IN PLACE. ALL CONCRETE SHALL BE  $f'_c = 2000 \text{ PSI} @ 28 \text{ DAYS}$ .

ENCASEMENT DETAIL

NORMAL PIPE DIAMETER	Maximum Payment	
	Cu. Ft. Per Lin.Ft.	Conc. Encasement
4" & 6"	2.64	
8"	2.86	
10"	3.02	
12"	3.46	
15"	4.10	
16" & 18"	5.40	
20" & 21"	6.13	
24"	7.67	
27"	8.91	
30"	9.86	
33"	12.45	
36"	13.53	
42"	15.71	
48"	19.82	
54"	22.98	
60"	25.06	
66"	27.81	
72"	30.62	



CRADLE DETAILS

POUR CONCRETE AGAINST UNDISTURBED EARTH. REMOVE TRENCH SHEETING BEFORE POURING CONCRETE OR LEAVE LOWER PORTION OF SHEETING IN PLACE. ALL CONCRETE SHALL BE  $f'_c = 2000 \text{ PSI} @ 28 \text{ DAYS}$ .

NORMAL PIPE DIAMETER	Maximum Payment	
	Cu. Ft. Per Lin.Ft.	
	High Cradle	Low Cradle
4" & 6"	1.62	0.98
8"	1.79	1.06
10"	1.91	1.17
12"	2.25	1.30
15"	2.73	1.56
16" & 18"	3.75	2.06
20" & 21"	4.35	2.38
24"	5.62	2.97
27"	6.72	3.73
30"	7.48	4.16
33"	9.69	5.18
36"	10.61	5.67
42"	12.53	6.72
48"	16.12	8.41
54"	18.39	9.67
60"	20.76	10.96
66"	23.22	12.34
72"	25.76	13.77

NOTES:

1. FOR TRENCH WIDTH "W", SEE DETAILS M/8.0, M/8.1a, M/8.1b AND M/8.1c.
2. FOR PIPE SIZES OF 24" DIAMETER & SMALLER, THE DIMENSION SHALL BE 3" MIN. FOR PIPE SIZES LARGER THAN 24" DIAMETER, THE DIMENSION SHALL BE 4" MIN.

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APPROVED: 6/17/21  
*Mike Harmon*  
Chief Engineer

STANDARD DETAIL  
CONCRETE ENCASEMENT  
AND CRADLE DETAILS  
FOR SEWER MAINS

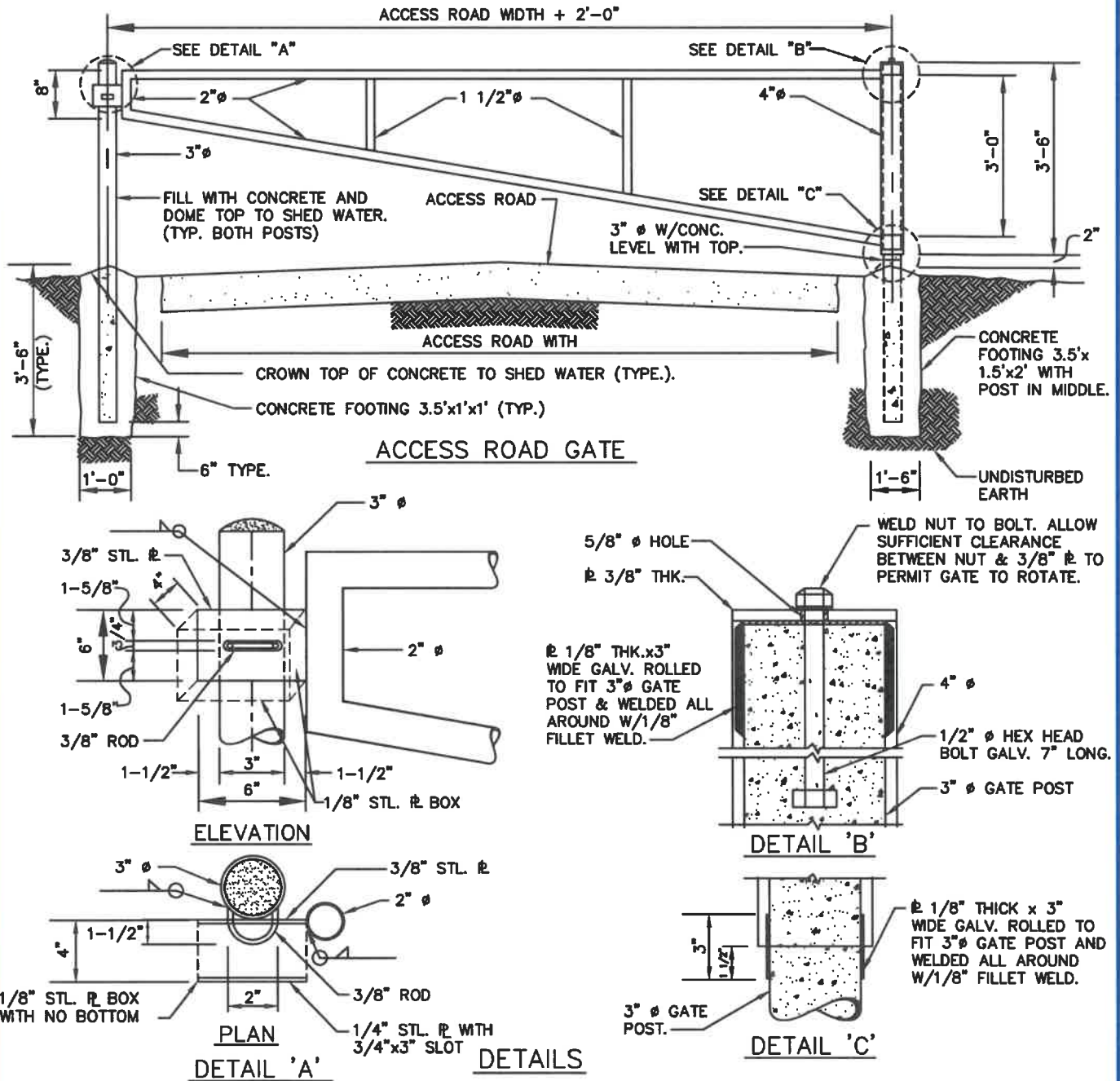
M  
9.0





**NOTES**

1. ALL METAL USED IN THE MANUFACTURE OF THE ACCESS ROAD GATE TO BE HOT DIP GALVANIZED. ALL WELDS & PIPE TO BE PAINTED & TOUCHED UP IN ACCORDANCE WITH SPECIFICATION AND IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. ALL JOINTS TO BE WELDED ALL AROUND WITH 3/16" WELDS.
3. ALL PIPE TO BE SCHEDULE 40 STEEL, DIAMETERS SHOWN ARE NOMINAL PIPE SIZE.
4. PADLOCK WILL BE FURNISHED BY WSSC.
5. CONTRACTOR SHALL PROVIDE AN ADDITIONAL 3"Ø POST WITH 3/8" ROD. LOCATE TO HOLD GATE IN AN OPEN POSITION 90° FROM THAT SHOWN BELOW.
6. GATE TO SWING IN TOWARDS WSSC PROPERTY.
7. WIDTH OF GATE NOT TO EXCEED 16 FEET.

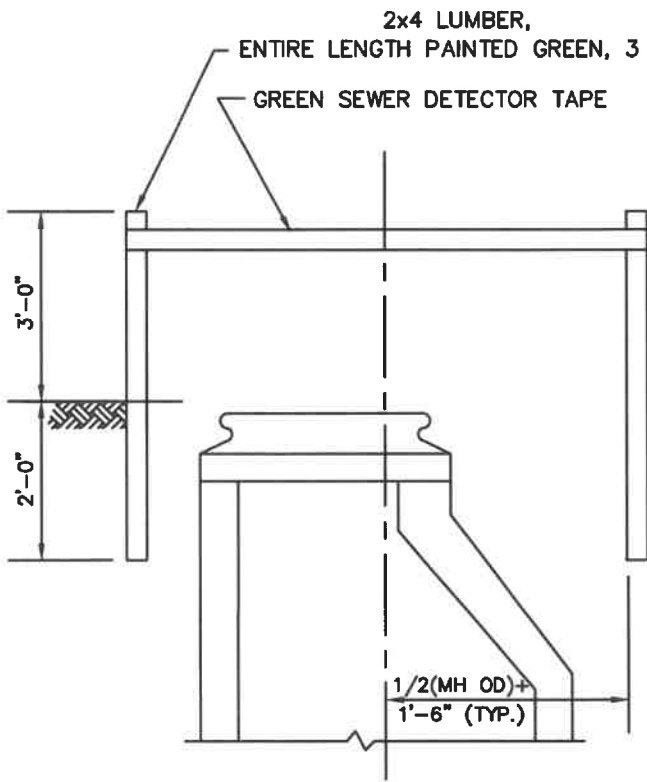
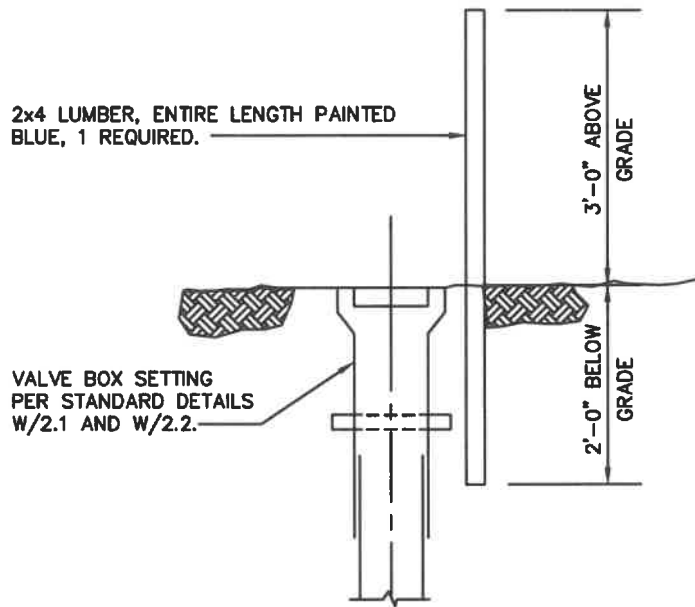


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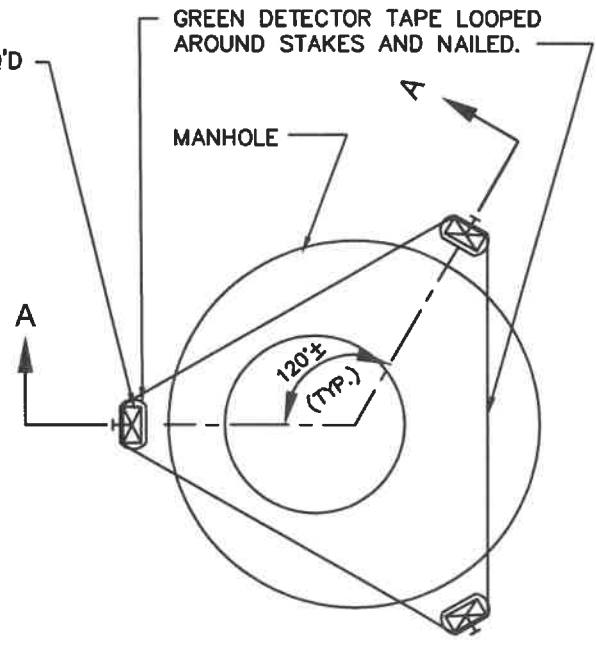
APPROVED: 6/17/21  
*Mike Harner*  
Chief Engineer

STANDARD DETAIL  
**ACCESS ROAD GATE**


M  
11.0



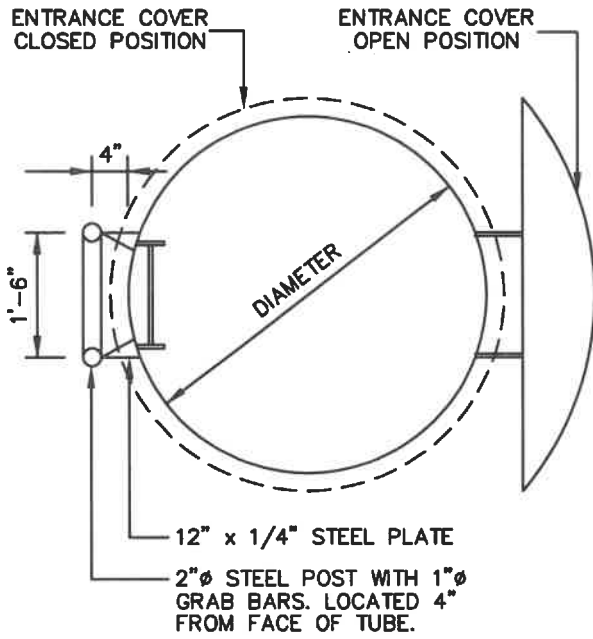
SECTION A A



PLAN VIEW

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/17/21</u>  Chief Engineer	STANDARD DETAIL MARKER STAKES FOR MANHOLES, VALVES BOXES AND VENTS	M 12.0
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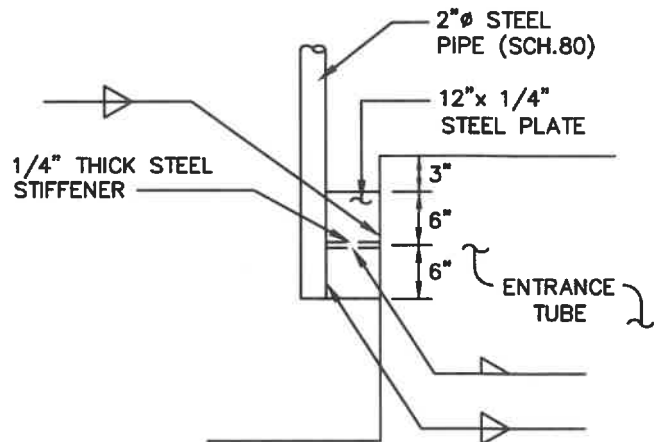




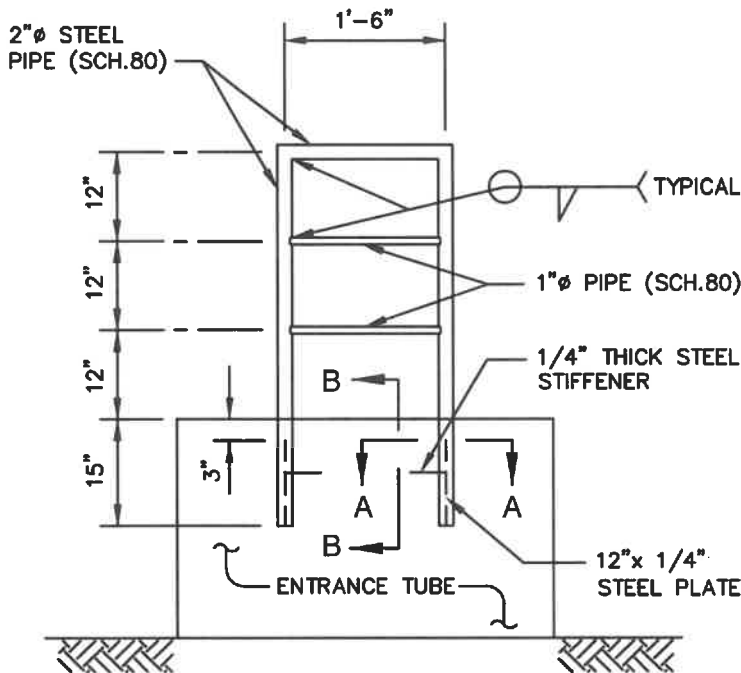
PLAN

NOTES:

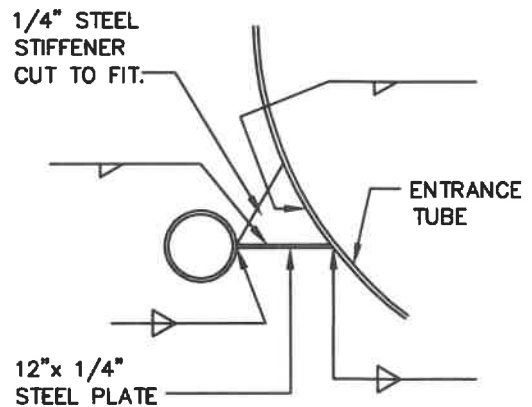
1. ALL STEEL SHALL BE ASTM A-36.
2. WELDS SHALL BE 3/16" WIDE.
3. ENTRANCE COVER SHALL OPEN MINIMUM 85° FROM HORIZONTAL.
4. PAINT NEW MEMBERS AND WELDED AREA TO MATCH COATING SYSTEM AND COLOR WITH OTHERS.



SECTION 'BB'



ELEVATION



SECTION 'AA'

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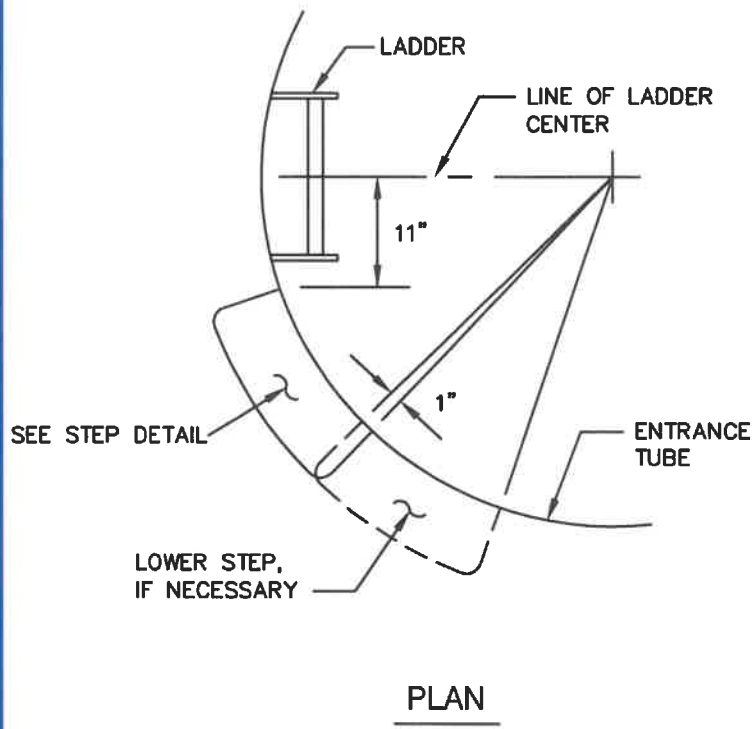
APPROVED: 6/17/21

*Mike Hammer*  
Chief Engineer

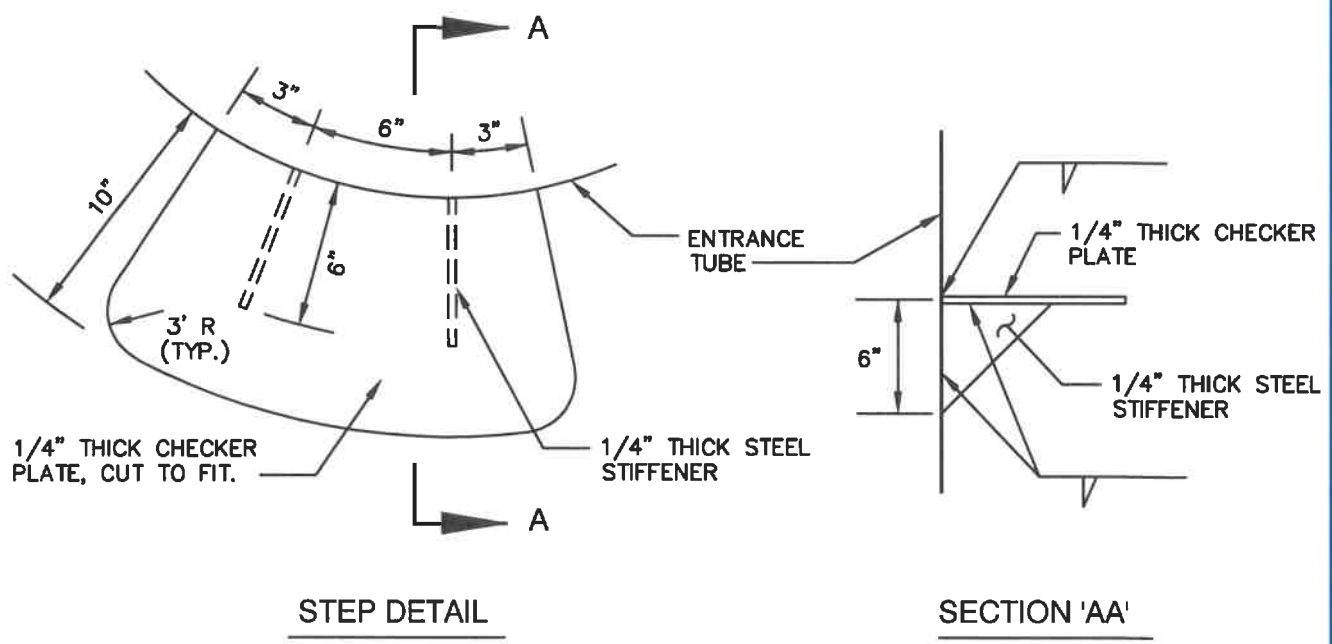
STANDARD DETAIL


DRY WELL ACCESS  
GRAB BAR  
(FOR PACKAGE PUMPING STATION)

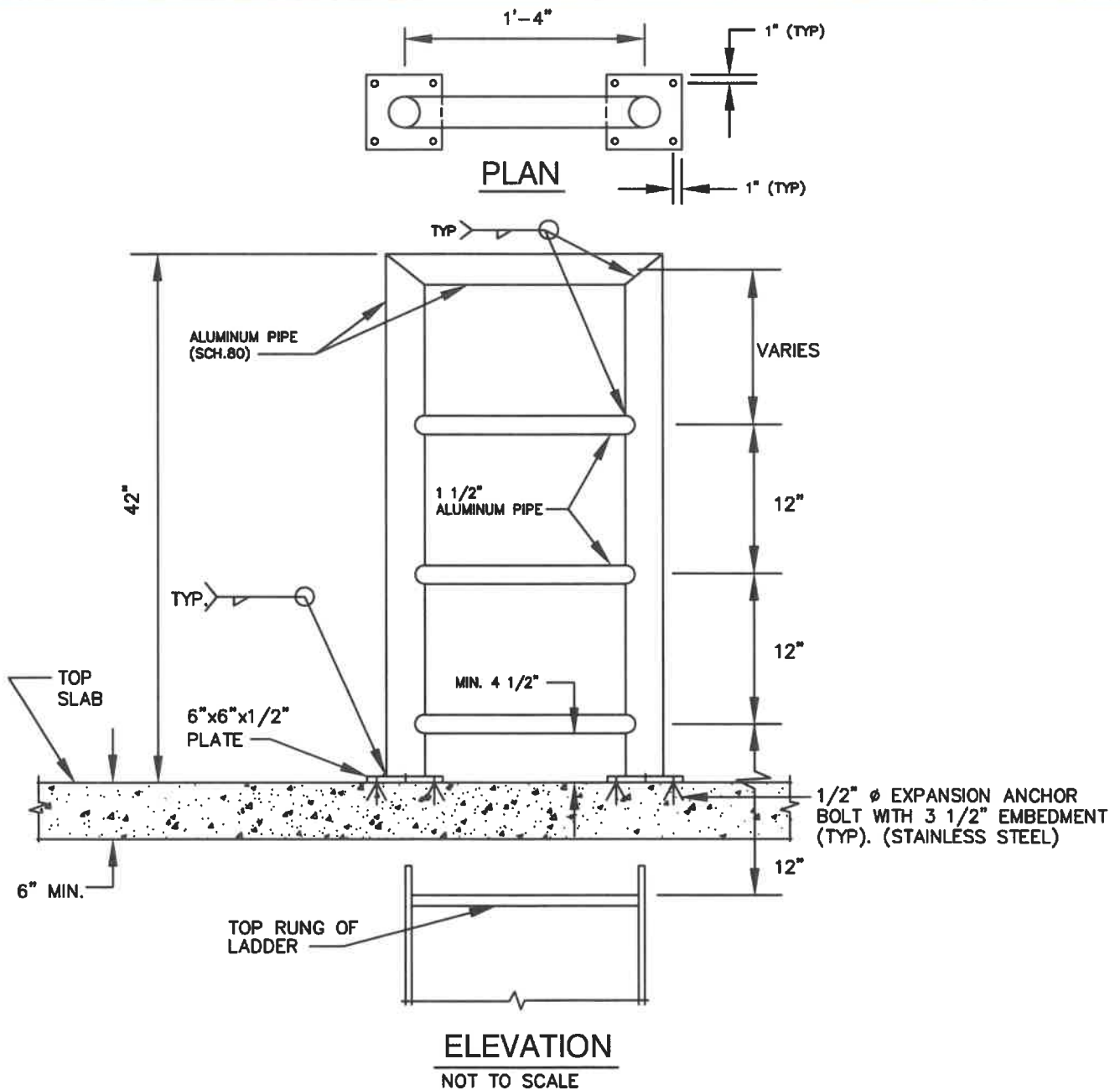
M  
13.0



- NOTES:**
1. ALL STEEL SHALL BE ASTM A-36.
  2. WELDS SHALL BE 3/16" WIDE.
  3. NO STEP IS REQUIRED IF ENTRANCE TUBE IS LESS THAN 12" HIGH.
  4. ONE STEP IS REQUIRED AT 12" FROM FINISHED GRADE IF ENTRANCE TUBE IS BETWEEN 12" AND 24" HIGH.
  5. TWO STEPS ARE REQUIRED AT 12" SPACING FROM FINISHED GRADE, IF ENTRANCE TUBE IS BETWEEN 24" AND 36" HIGH.
  6. SPECIAL DESIGN IS REQUIRED FOR STEP, IF ENTRANCE TUBE IS MORE THAN 36" HIGH.
  7. PAINT NEW MEMBERS AND WELDED AREA TO MATCH COATING SYSTEM AND COLOR WITH OTHERS.



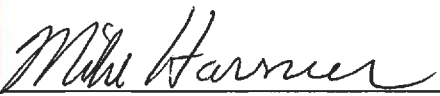
WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/12/21</u>  Chief Engineer	STANDARD DETAIL DRYWELL ACCESS STEP (FOR PACKAGE PUMPING STATION)	M 14.0
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**NOTES:**

1. ALL ALUMINUM SHALL BE 6061 T-6 MATERIAL.
2. WELD SHALL BE 1/4" WIDE.
3. BITUMINOUS COAT ALUMINUM SURFACE IN CONTACT WITH CONCRETE.
4. GRAB BAR IS LOCATED 6" FROM EDGE OF OPENING UNLESS OTHERWISE NOTED.

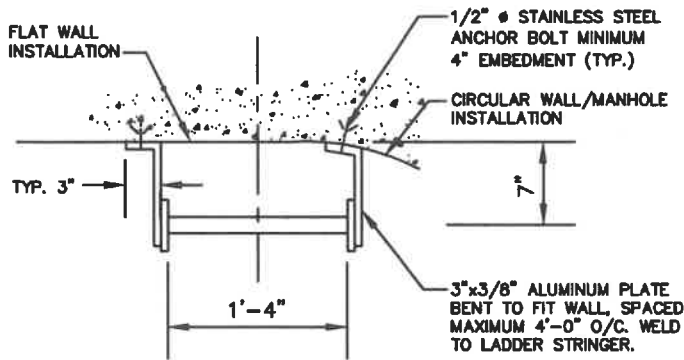
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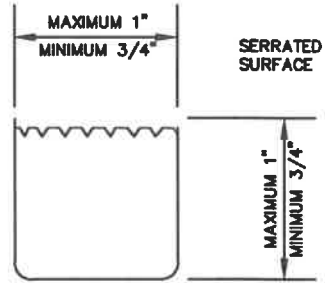
STANDARD DETAIL

ALUMINUM  
GRAB BAR

M  
15.0

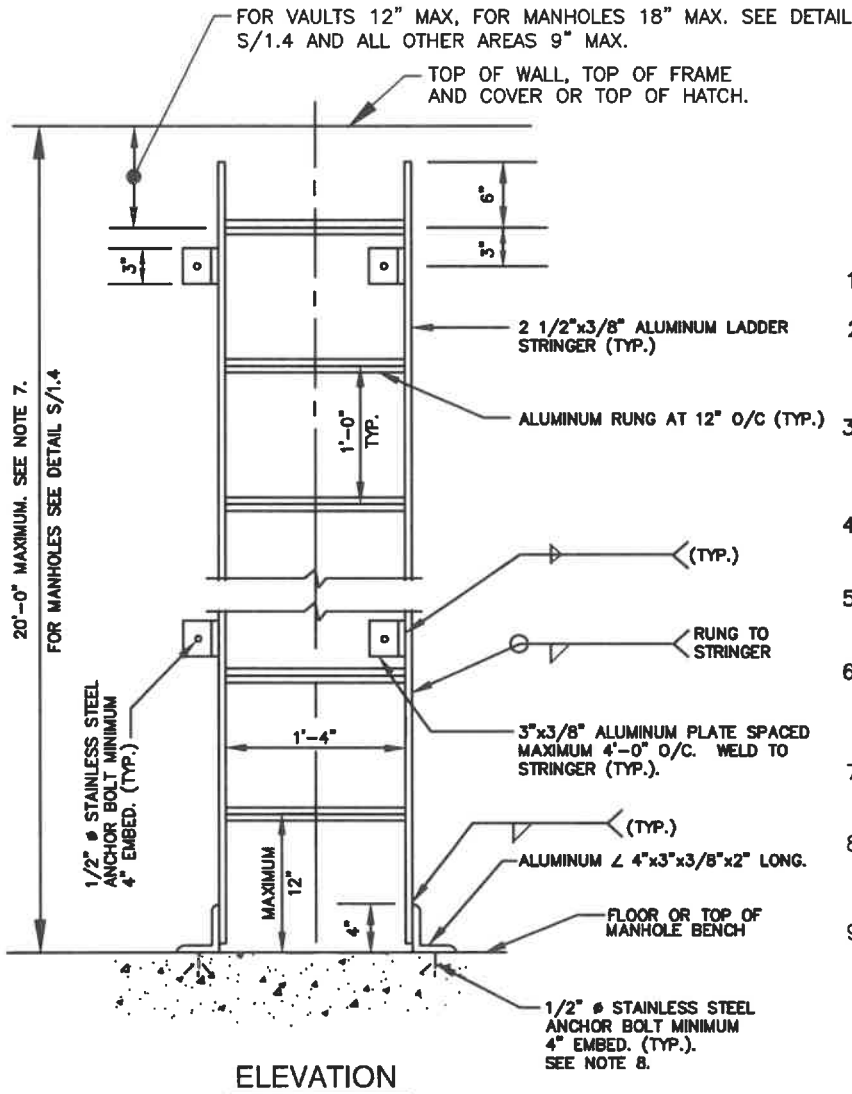


PLAN



ALUMINUM RUNG DETAIL

RUNG SHALL BE FREE OF SHARP EDGES.



ELEVATION

NOTES

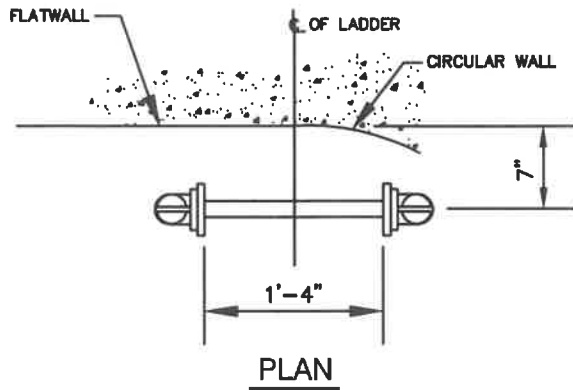
1. RUNG SHALL BE SOLID.
2. WHERE ALUMINUM CONTACTS CONCRETE, COAT ALUMINUM WITH AN EPOXY COATING SYSTEM.
3. ACCESS OPENING SHALL BE MINIMUM 30" SQUARE OR 30" DIAMETER FRAME AND COVER.
4. RUNG SHALL BEAR ON STRINGER 3/16" MINIMUM.
5. ALL WELDS SHALL BE MINIMUM 3/16" WIDE.
6. KEEP LADDER FREE OF OBSTACLES THAT WILL INTERFERE WITH THE PLACEMENT OF FEET OR HANDS.
7. FOR DEPTH OVER 20' PROVIDE FALL PREVENTION SYSTEM.
8. FOR SEWER MANHOLES SET ANCHOR BOLTS MIN 6" FROM EDGE OF CHANNEL.
9. FOR LADDER EXTENSIONS, SEE DETAIL M/16.1.

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Chief Engineer

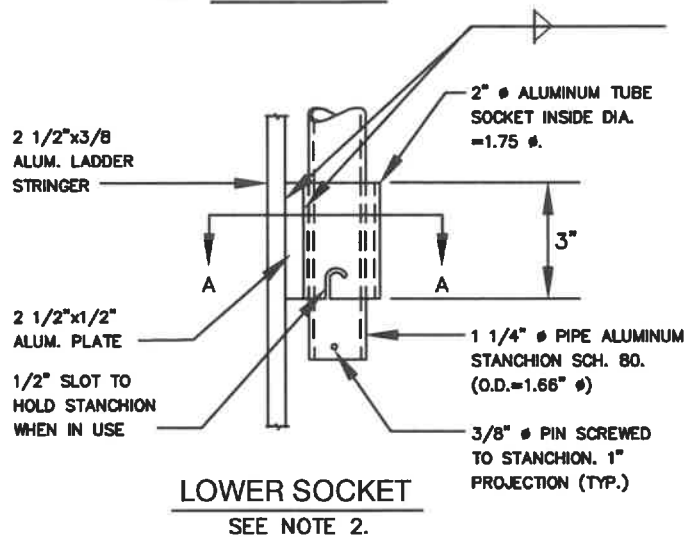
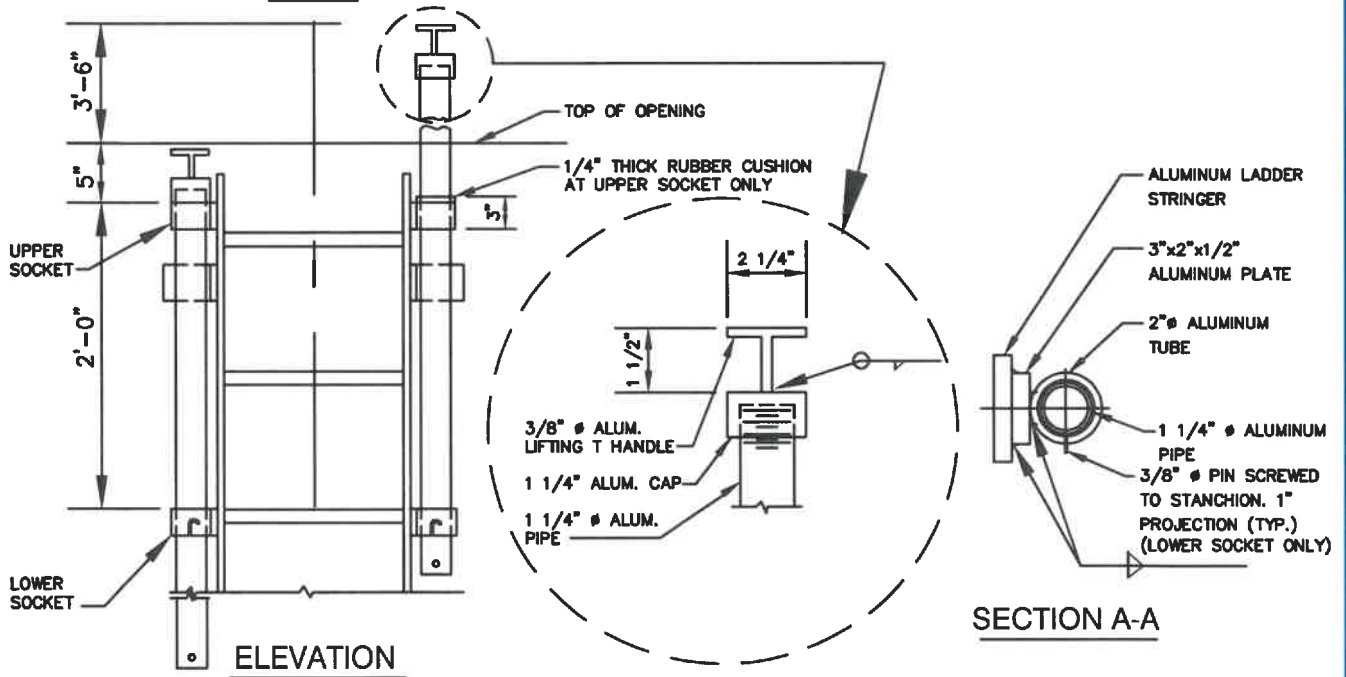
STANDARD DETAIL  
ALUMINUM LADDER

M  
16.0

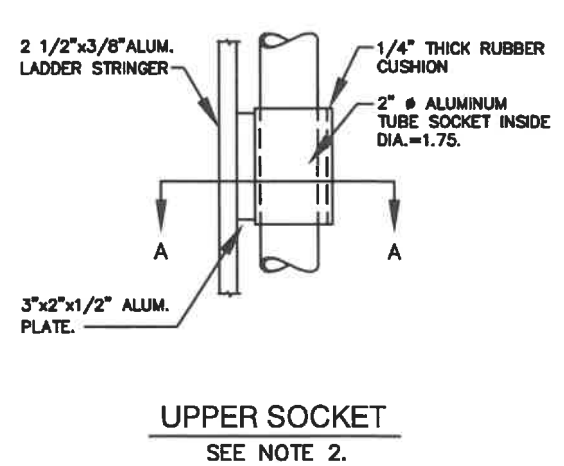


**NOTE:**

1. ALL ALUMINUM SHALL BE 6061-T6 ALLOY.
2. PREFABRICATED CASTING SOCKET MAY BE USED.
3. LOCATION OF TOP SOCKET MAY BE LOWERED IF LIFTING T OBSTRUCTS COVER OF ACCESS WHEN CLOSED.
4. SEE DETAIL M/16.0 FOR LADDER DETAIL.
5. "T" HANDLE SHALL BE ORIENTED PERPENDICULAR TO  $\phi$  OF RUNG WHEN FULLY EXTENDED AND LOCKED IN PLACE.
6. ALL WELDS SHALL BE MIN. 3/16" WIDE.



**LOWER SOCKET**  
SEE NOTE 2.



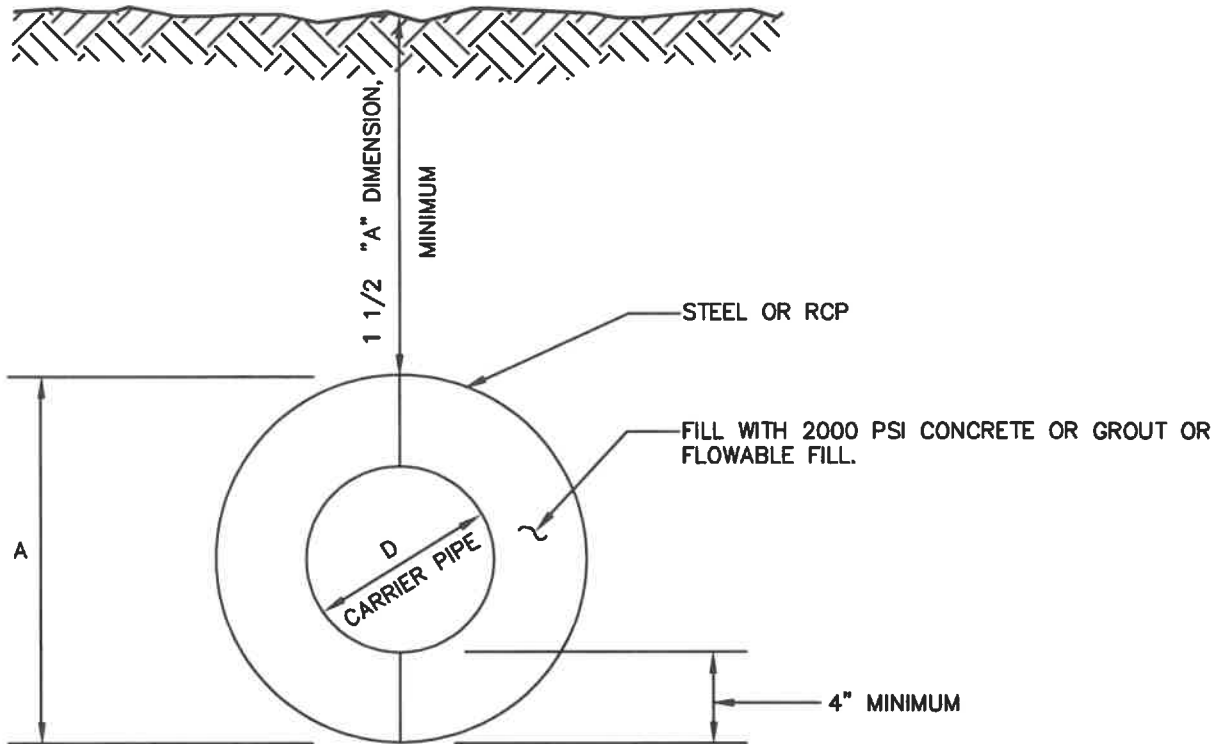
**UPPER SOCKET**  
SEE NOTE 2.

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*Mike Hammer*  
Chief Engineer

STANDARD DETAIL  
**LADDER EXTENSION**


M  
16.1



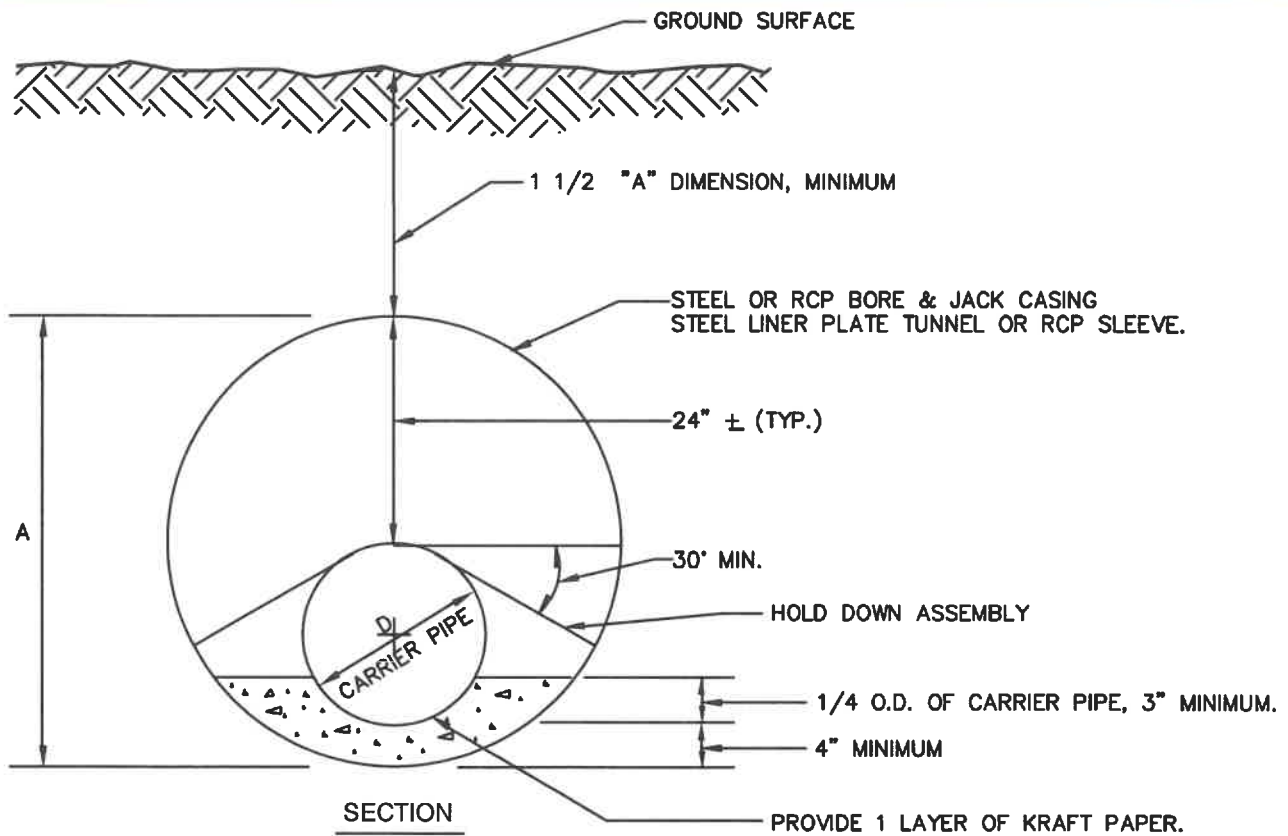
CARRIER PIPE (DIA.)	CASING DIAMETER		RCP SLEEVE DIAMETER	
	STEEL	RCP	FOR D.I. CARRIER PIPE	FOR RCP CARRIER PIPE
15" OR LESS	36"	48"	48"	48"
16" TO 24"	48"	48"	48"	48"
27" & 30"	54"	54"	54"	54"
36"	60"	60"	60"	60"
42"			66"	66"
48"			72"	78"
54"			78"	84"
60"			84"	90"

**NOTES:**

1. STEEL CASING PIPE MINIMUM WALL THICKNESS TO BE 3/8". PROVIDE CLASS OF RCP AND STEEL LINER PLATE REQUIREMENTS AS SHOWN ON THE DRAWING.
2. PROVIDE SUPPORTS TO PREVENT CARRIER PIPE FLOATATION DURING PLACEMENT OF CONCRETE OR GROUT OR FLOWABLE FILL.

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/17/21</u>   Chief Engineer	STANDARD DETAIL  TUNNEL/BORE AND JACK DETAILS FOR SEWERS	M 17.0
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CARRIER PIPE (DIA.)	CASING DIAMETER		RCP SLEEVE (DIA.)
	STEEL	RCP	
12" OR LESS	36"	48"	48"
16" OR LESS	48"	48"	48"
18"	48"	48"	48"
20"	54"	54"	54"
24"	60"	60"	60"
30"	60"		60"
36"			72"
42"			72"
48"			78"
54"			84"*

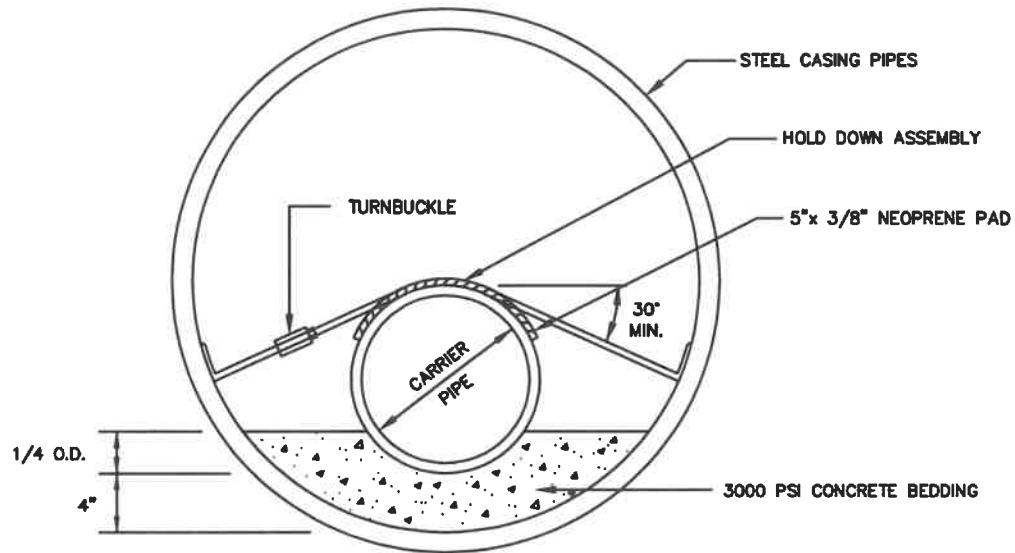
**NOTES:**

1. HOLD DOWN ASSEMBLY STEEL SHALL BE ASTM A36, HOT-DIP GALVANIZED, AND SHOP COATED WITH COAL TAR EPOXY. A MINIMUM OF ONE PER PIPE AT BELL END AND ONE LOCATED TWO FEET INSIDE EACH END OF THE TUNNEL.
2. GROUT MAY BE SUBSTITUTED FOR CONCRETE AS BEDDING FOR CARRIER PIPES UP TO 16" DIAMETER.
3. THE PIPE JOINTS SHALL BE KEPT CLEAR OF CONCRETE OR GROUT FOR 6" ON EITHER SIDE OF THE JOINT.
4. FOR OTHER DETAILS SEE DETAILS M/17.2, M/17.3 AND M/17.4.

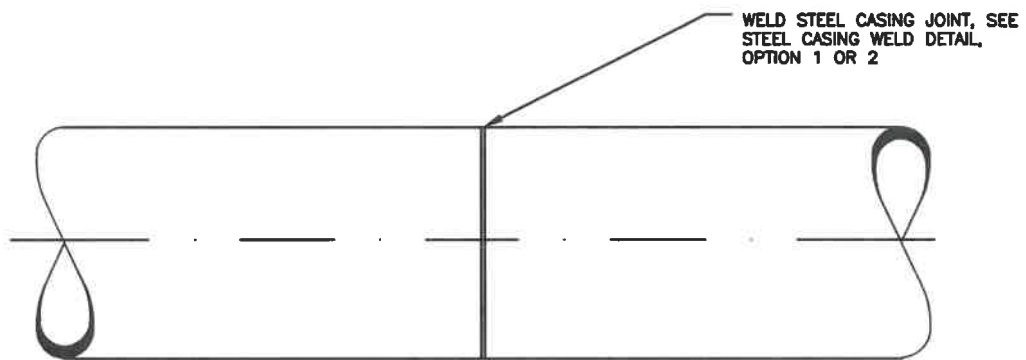
\* SPECIAL DESIGN OF PIPE MAY BE REQUIRED.

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>6/17/21</u>   Chief Engineer	STANDARD DETAIL <b>TUNNEL/BORE AND JACK          DETAILS FOR WATER MAINS          FORCE MAINS, AND          PRESSURE SEWERS</b>	M <hr/> 17.1
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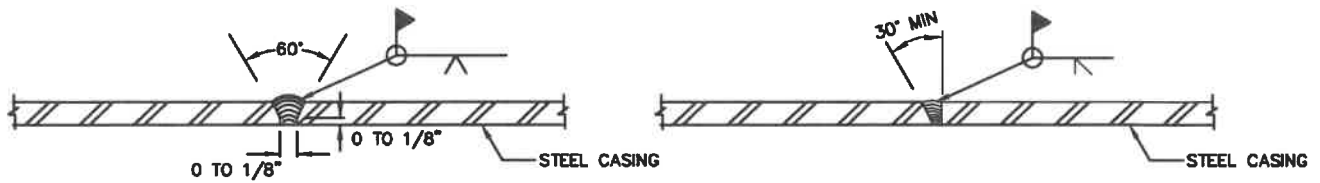




SECTION



STEEL CASING PIPE



OPTION 1

OPTION 2

STEEL CASING WELD DETAIL (TYP.)

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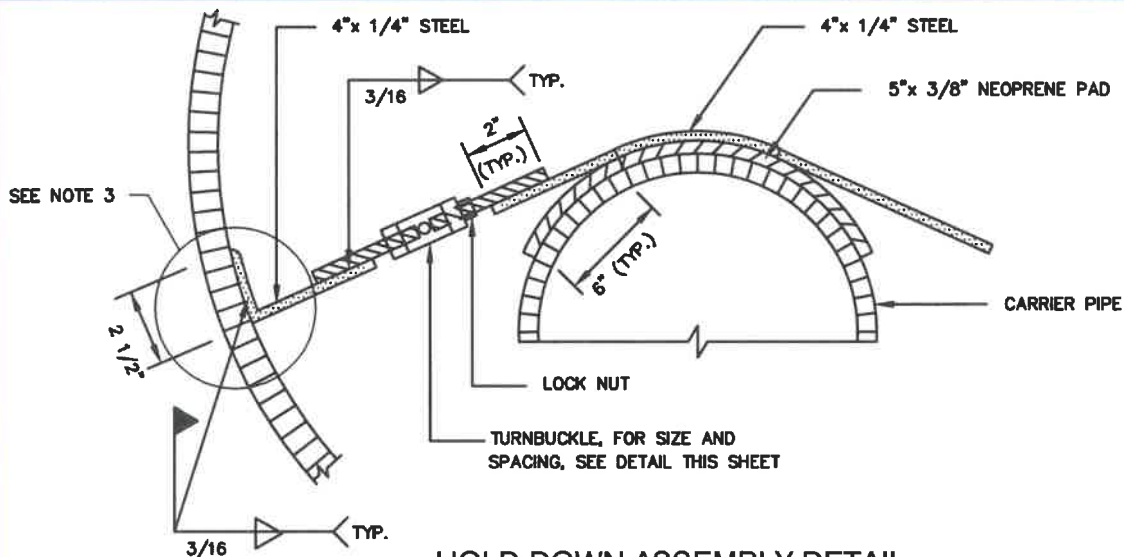
APPROVED: 6/17/21

*Mark Hammer*  
Chief Engineer

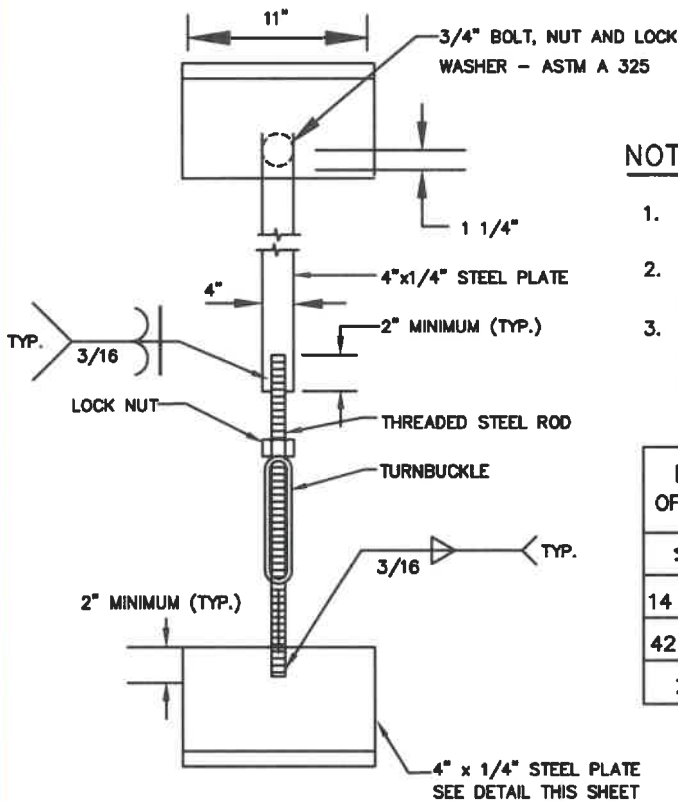
STANDARD DETAIL

HOLD DOWN ASSEMBLY  
FOR BORE AND JACK  
STEEL CASING PIPES

M  
17.2



**HOLD DOWN ASSEMBLY DETAIL**



**STRAP DETAIL FOR CONNECTION TO LONGITUDINAL FLANGE OF LINER PLATES**

**NOTES:**

1. AFTER HOLD DOWN ASSEMBLY IS IN PLACE, TOUCH UP WITH COAL TAR EPOXY.
2. FOR OTHER REQUIREMENTS, SEE DETAILS M/17.1, M17.2 AND M/17.4.
3. COAT WELD AREA WITH FIELD COATING, OVERLAP FIELD COATING ONTO HOLD DOWN ASSEMBLY AND CASING PIPE A MINIMUM OF 2 INCHES.

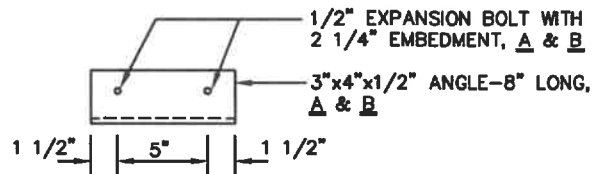
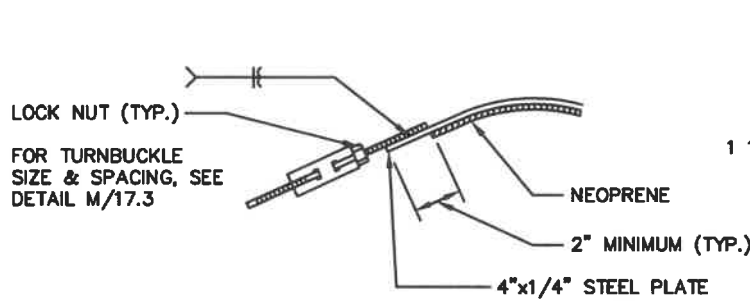
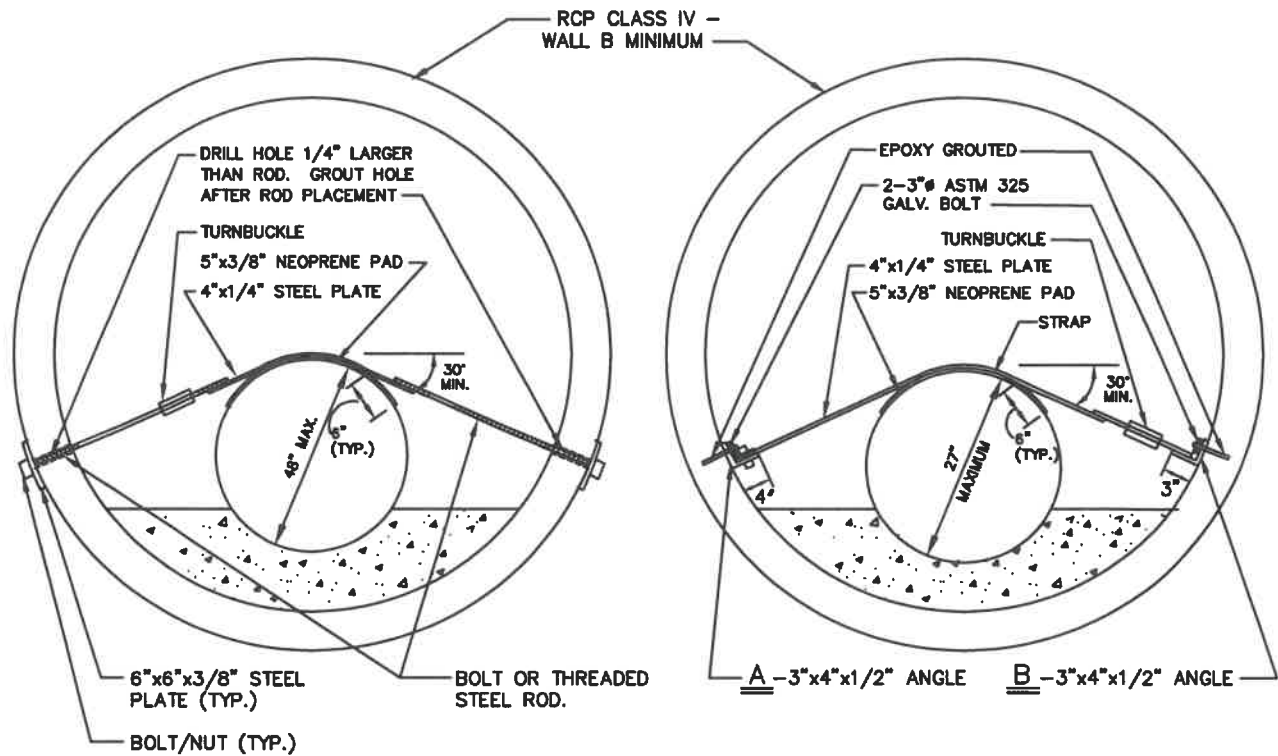
DIA. OF PIPE	SIZE		NO. OF ASSEMBLIES PER LENGTH OF DIP
	TURNBUCKLE	THREADED ROD	
≤12"	1/2"	1/2"	1
14 TO 36	3/4"	3/4"	2
42 & 48	1"	1"	2
>48	SPECIAL DESIGN REQUIRED		

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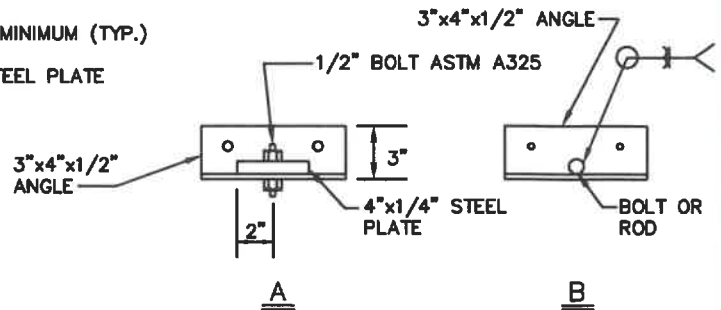
APPROVED: 6/17/21  
*Mike Harmer*  
Chief Engineer

STANDARD DETAIL  
**HOLD DOWN ASSEMBLY  
FOR STEEL CASING PIPE**

M  
17.3



SECTION: RCP SLEEVE- INSTALLED BY OPEN EXCAVATION



SECTION: RCP SLEEVE - INSTALLED BY TUNNELING (MAX. DIAMETER OF CASING LIMITED TO 60")

NOTES:

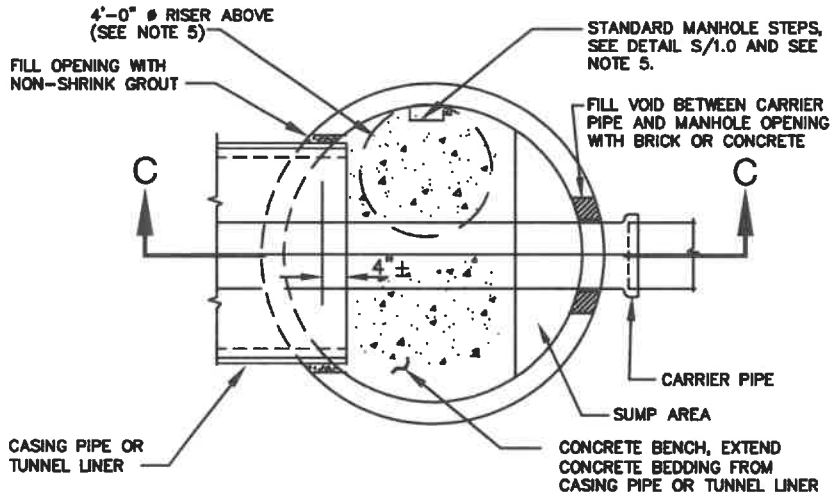
1. PROVIDE ONE STRAP PER LENGTH OF PIPE.
2. FOR OTHER REQUIREMENTS SEE DETAILS M/17.1, M/17.2 AND M/17.3.
3. NO WELDING OR CUTTING WILL BE PERMITTED IN THE FIELD.

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*M. Hornum*  
Chief Engineer

STANDARD DETAIL  
HOLD DOWN ASSEMBLY  
FOR RCP CASING PIPE

M  
17.4



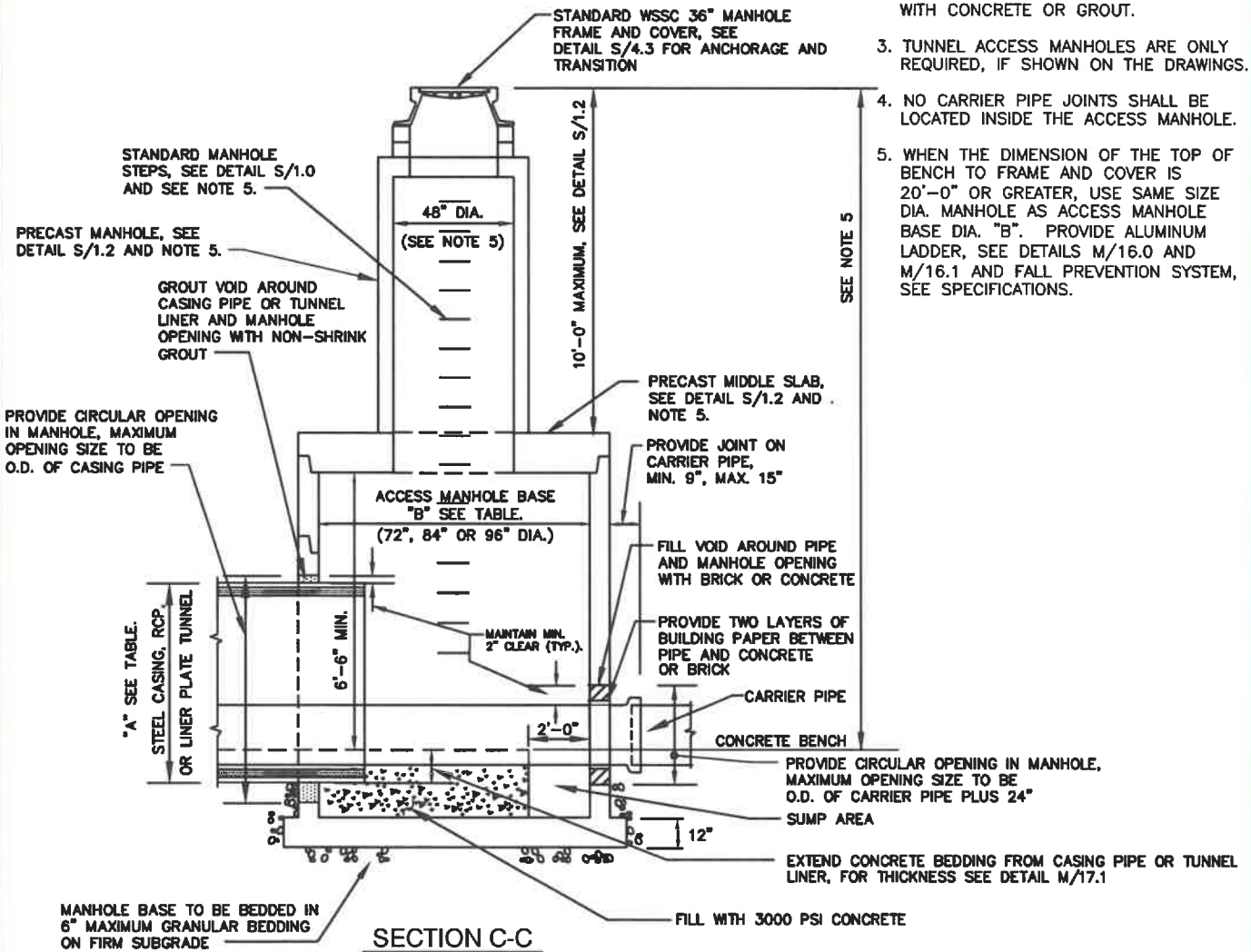
PLAN

ACCESS MANHOLE BASE DIA.

A	B(MANHOLE DIA.)
36" STEEL CASING	72"
48" STEEL CASING	84"
54" STEEL CASING	84"
60" STEEL CASING	84"
48" RCP	84"
54" RCP	96"
60" RCP	96"

NOTES

1. FOR CASING PIPE OF TUNNEL LINER REQUIREMENTS, SEE DETAILS M/17.1, M/17.2, M/17.3 AND M/17.4.
2. THIS DETAIL IS FOR WATER AND SEWER MAINS INSTALL IN CASING PIPES OR TUNNEL LINER THAT ARE NOT FILLED WITH CONCRETE OR GROUT.
3. TUNNEL ACCESS MANHOLES ARE ONLY REQUIRED, IF SHOWN ON THE DRAWINGS.
4. NO CARRIER PIPE JOINTS SHALL BE LOCATED INSIDE THE ACCESS MANHOLE.
5. WHEN THE DIMENSION OF THE TOP OF BENCH TO FRAME AND COVER IS 20'-0" OR GREATER, USE SAME SIZE DIA. MANHOLE AS ACCESS MANHOLE BASE DIA. "B". PROVIDE ALUMINUM LADDER, SEE DETAILS M/16.0 AND M/16.1 AND FALL PREVENTION SYSTEM, SEE SPECIFICATIONS.



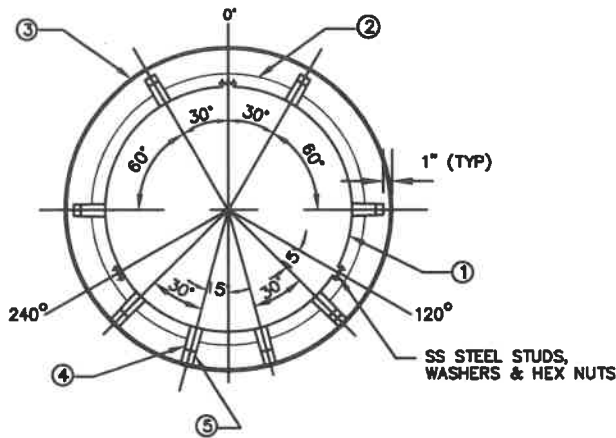
SECTION C-C

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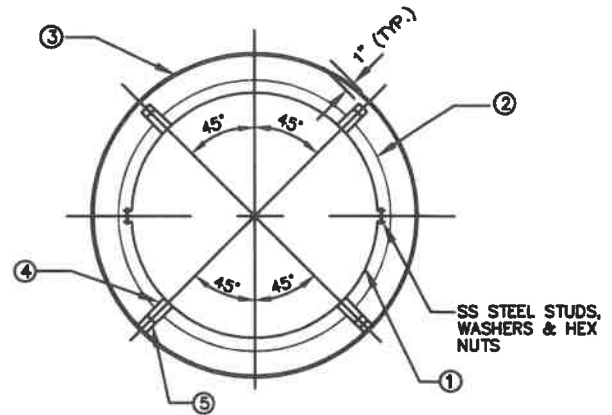
APPROVED: 6/17/21  
*Mark Hammer*  
Chief Engineer

STANDARD DETAIL  
TUNNEL ACCESS  
MANHOLE

M  
17.5



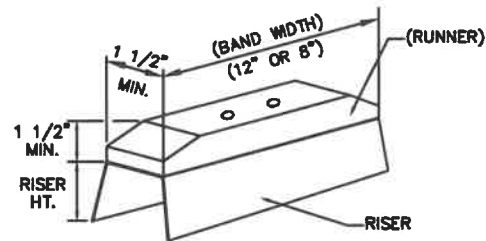
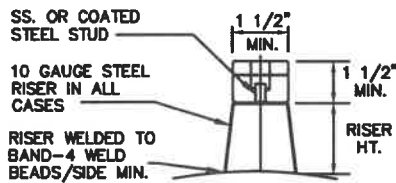
**RISER LOCATION FOR 14" THRU 36" DIA.  
CARRIER PIPE WITH 12" BAND WIDTH**



**RISER LOCATION FOR 12" DIA. & LESS  
CARRIER PIPE WITH 8" BAND WIDTH**

1. BAND AROUND CARRIER PIPE
2. BELL
3. STEEL OR RCP CASING

4. RISER
5. RUNNER



**RUNNER AND RISER DETAIL**

<b>CASING PIPE DIA.</b>	20" STL.	22" STL.	24"	30"	36"	42"	48"	54"
	21" RCP	24" RCP						
<b>CARRIER PIPE DIA.</b>	4"-8"	10"	12"	16"	20"	24"	30"	36"

**NOTES:**

1. SEE DETAIL M/17.7 FOR OTHER REQUIREMENTS.
2. THIS DETAIL IS ONLY USED FOR TUNNELS FOR WATER MAINS AND SEWER FORCE MAINS.

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Chief Engineer

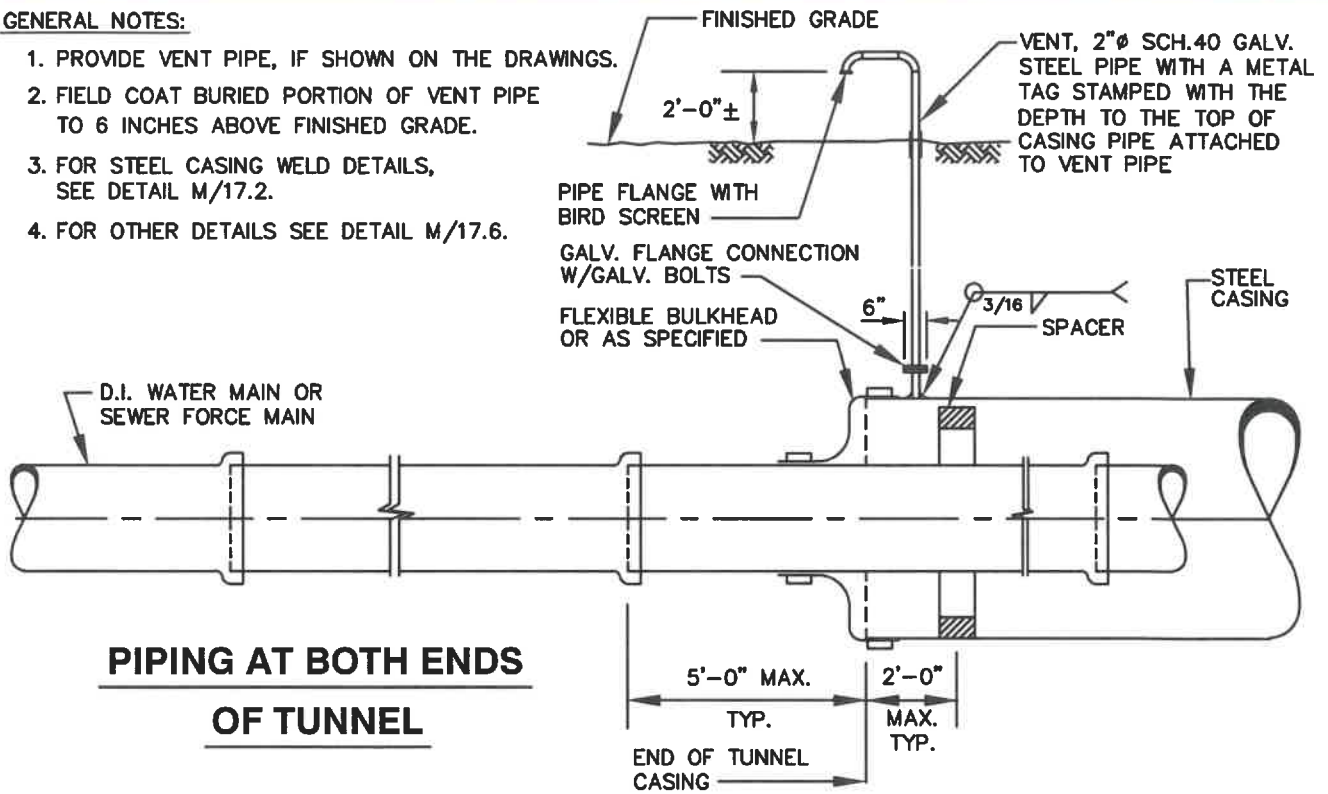
STANDARD DETAIL  
CASING AND CASING  
SPACER DETAILS

M  
17.6

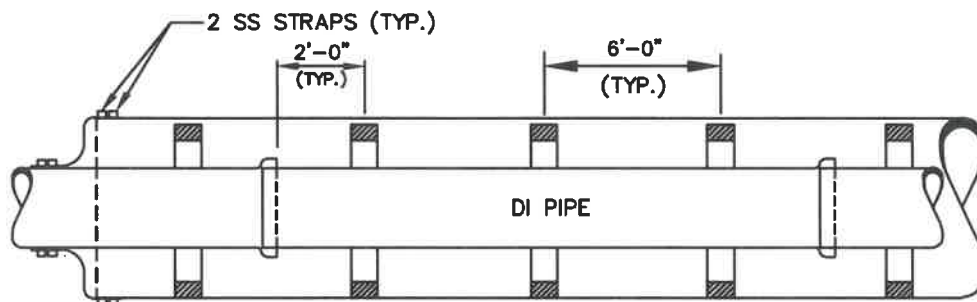


**GENERAL NOTES:**

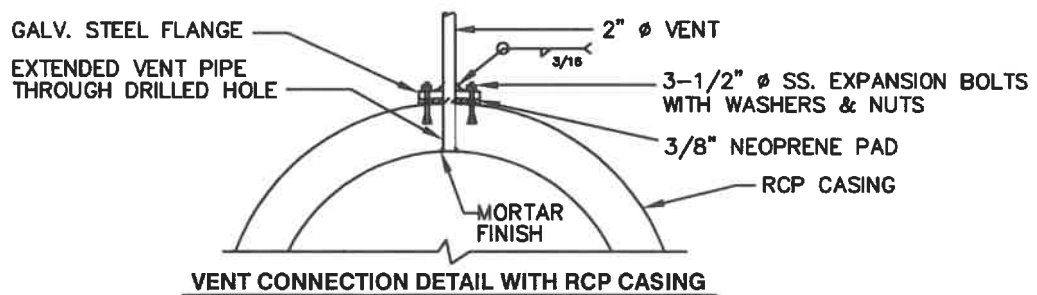
1. PROVIDE VENT PIPE, IF SHOWN ON THE DRAWINGS.
2. FIELD COAT BURIED PORTION OF VENT PIPE TO 6 INCHES ABOVE FINISHED GRADE.
3. FOR STEEL CASING WELD DETAILS, SEE DETAIL M/17.2.
4. FOR OTHER DETAILS SEE DETAIL M/17.6.



**PIPING AT BOTH ENDS OF TUNNEL**



**TYPICAL D.I. PIPE AND SPACER LAYOUT INSIDE TUNNEL**



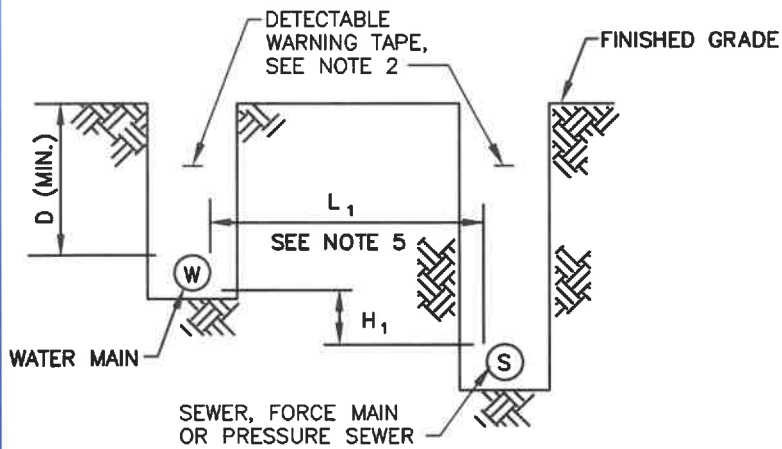
**VENT CONNECTION DETAIL WITH RCP CASING**

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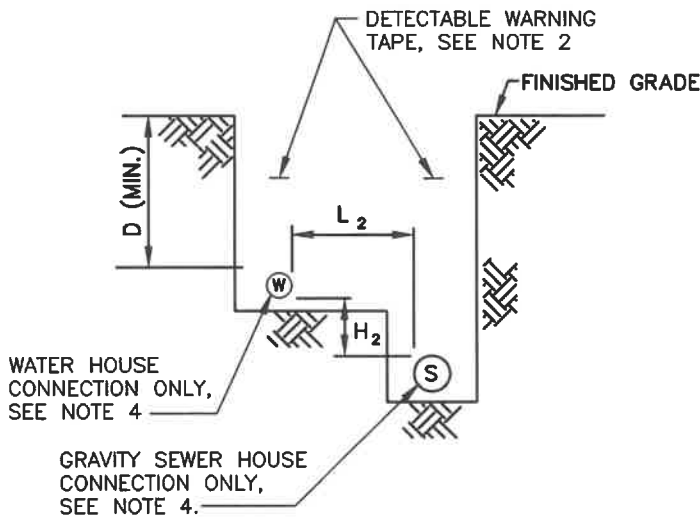
APPROVED: *6/13/21*  
*M. Harner*  
Chief Engineer

STANDARD DETAIL  
SPACER SPACING  
AND PIPE LAYOUT AT  
ENDS OF TUNNEL.

M  
17.7



**TYPICAL TRENCH DETAIL FOR  
WATER MAIN, SEWER MAIN, SEWER FORCE MAIN,  
PRESSURE SEWER, AND PRESSURE SHC TO WHC**



**TYPICAL TRENCH DETAIL FOR  
WATER AND SEWER HOUSE CONNECTIONS ONLY**

**NOTES:**

1. FOR TRENCH DETAILS AND BEDDING REQUIREMENTS, SEE DETAILS M/8.0, M/8.1a, M/8.1b AND M/8.1c.
2. FOR DETECTABLE WARNING TAPE, SEE SPECIFICATIONS.
3. FOR WATER HOUSE CONNECTIONS (WHC). INSTALL THE WHC TO THE LEFT OF THE SEWER LOOKING AT THE PROPERTY LINE, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
4. COMBINED TRENCH INSTALLATION IS ONLY FOR 2" AND SMALLER WATER HOUSE CONNECTIONS AND GRAVITY SEWER HOUSE CONNECTIONS.
5. MINIMUM DISTANCE TO ALL STRUCTURES TO ALL PIPELINES IS 5'-0"
6. FOR WHC AND PRESSURE SHC PROVIDE MIN 10' CLEAR OD TO OD.

H<sub>1</sub> = INVERT OF 3" AND LARGER WATER TO TOP OF SEWER.

H<sub>2</sub> = INVERT OF 2" AND SMALLER WATER HOUSE CONNECTION (WHC) TO TOP OF GRAVITY SEWER HOUSE CONNECTION (SHC).

OD = OUTSIDE DIAMETER.

L<sub>1</sub> = MINIMUM DISTANCE HORIZONTALLY CLEAR BETWEEN OD OF 3" AND LARGER WATER MAIN TO OD OF SEWER MAIN.

L<sub>2</sub> = MINIMUM DISTANCE HORIZONTALLY CLEAR BETWEEN OD OF 2" AND SMALLER WATER HOUSE CONNECTION TO OD OF GRAVITY SEWER HOUSE CONNECTION.

D = MINIMUM COVER OVER WATER OR WATER HOUSE CONNECTION.

L <sub>1</sub>	H <sub>1</sub>
10'-0" AND GREATER	NO REQUIREMENT
7'-0" TO LESS THAN 10'-0"	1'-6" MIN.

L <sub>2</sub>	H <sub>2</sub>
MINIMUM 1'-6"	MINIMUM 1'-6"
10'-0" AND GREATER	LESS THAN 1'-6"

**DEPTH REQUIREMENTS**

WATER SIZE	D
3" AND LARGER	4'-0" MINIMUM
2" AND SMALLER	3'-6" MINIMUM, EXCEPT 4'-0" MINIMUM AT PROPERTY LINE.

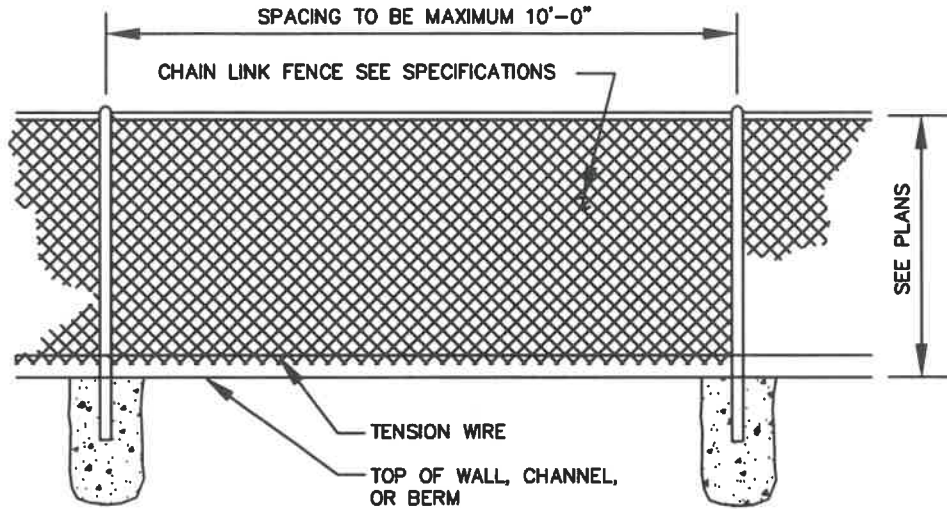
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Chief Engineer

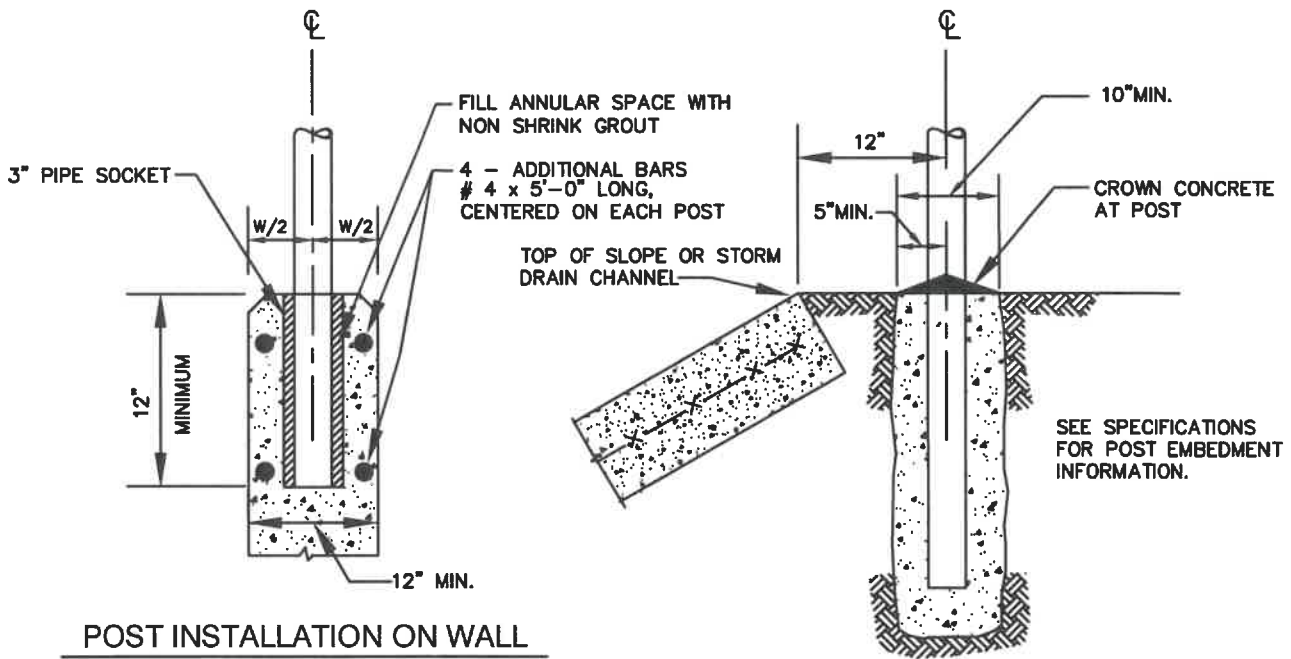
SPECIAL DETAIL  
**MINIMUM CLEARANCE  
OF WATER PARALLEL  
TO SEWER.**

M  
18.0





CHAIN LINK FENCE DETAIL



POST INSTALLATION ON WALL

POST INSTALLATION  
ALONG CHANNEL

NOTE:

REFER TO DRAWINGS AND SPECIFICATIONS FOR GATE INFORMATION

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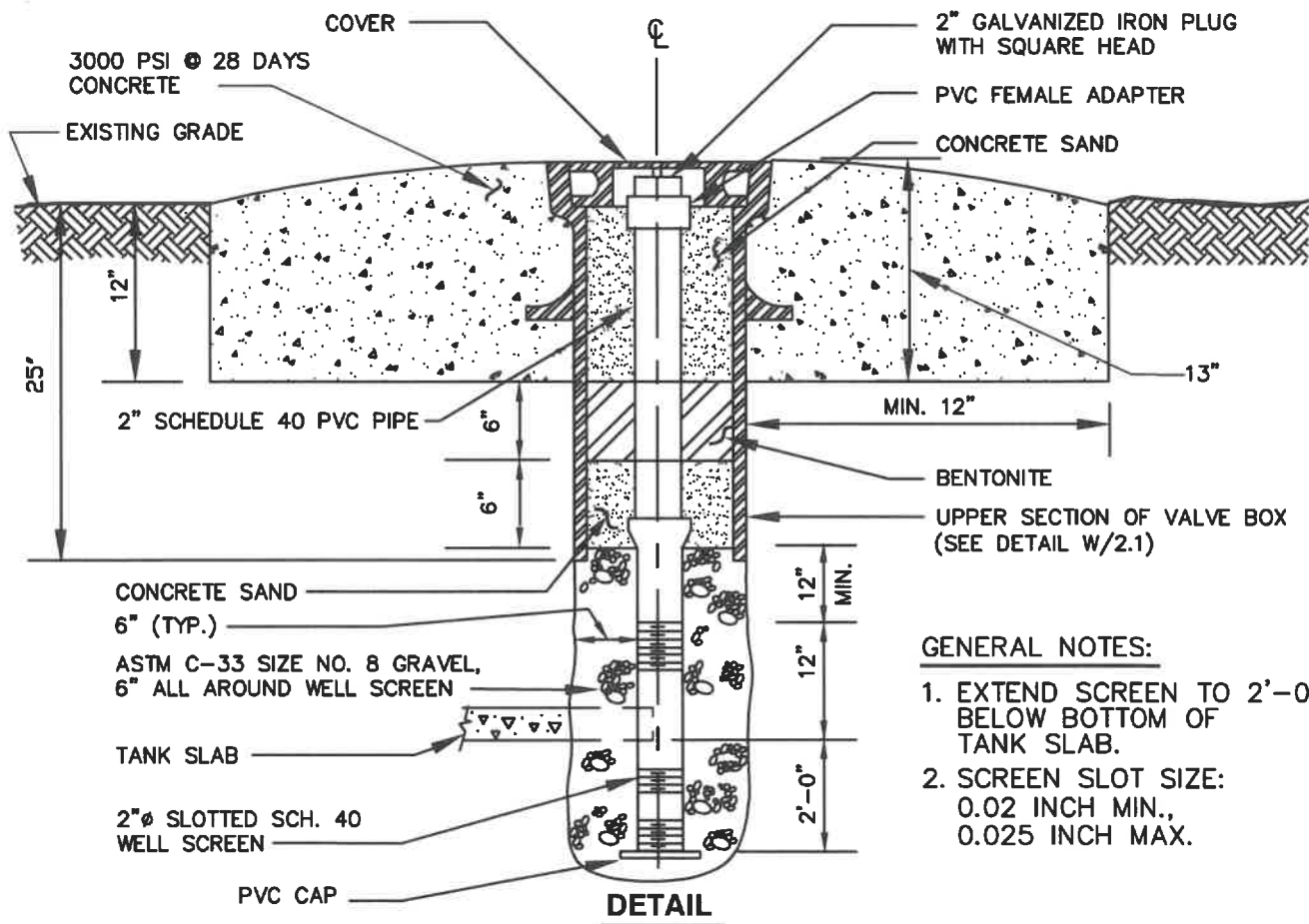
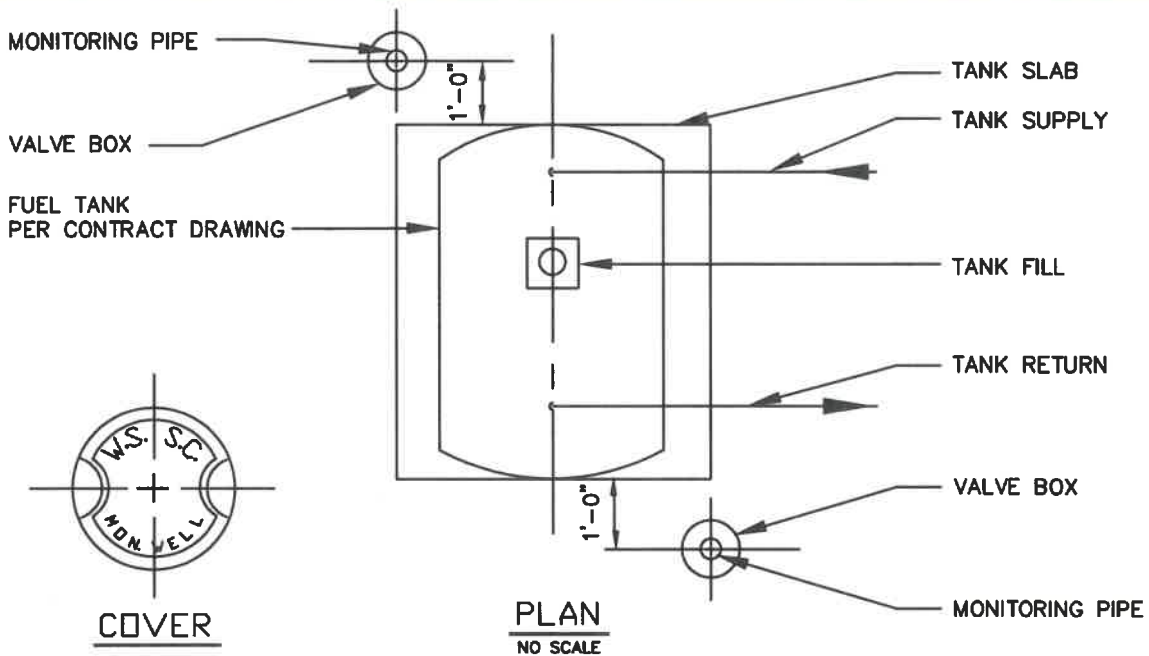
*Nick Hammer*

Chief Engineer

STANDARD DETAIL

CHAIN LINK  
FENCE DETAILS

M  
19.0



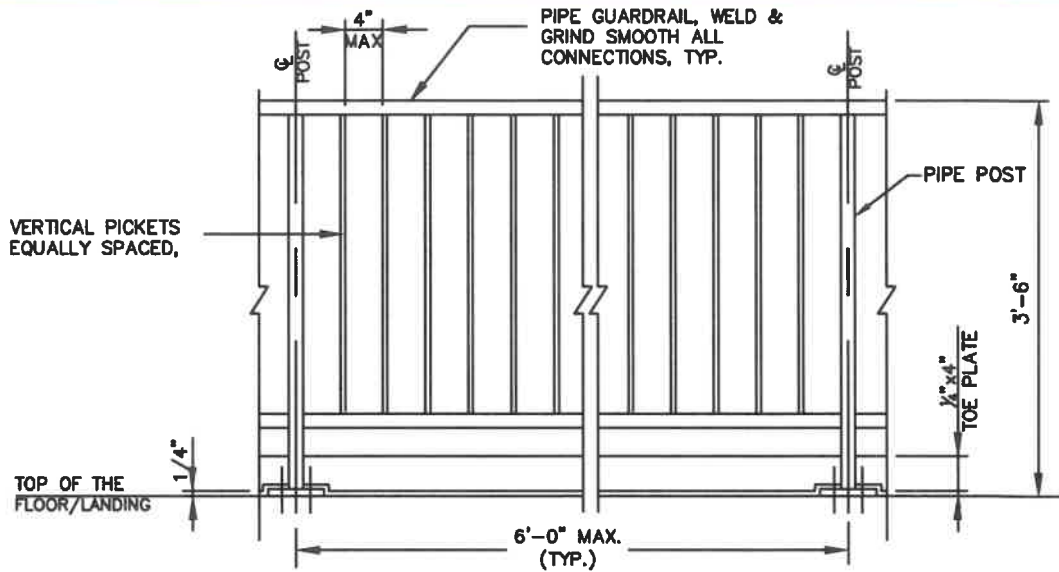
- GENERAL NOTES:**
1. EXTEND SCREEN TO 2'-0" BELOW BOTTOM OF TANK SLAB.
  2. SCREEN SLOT SIZE: 0.02 INCH MIN., 0.025 INCH MAX.

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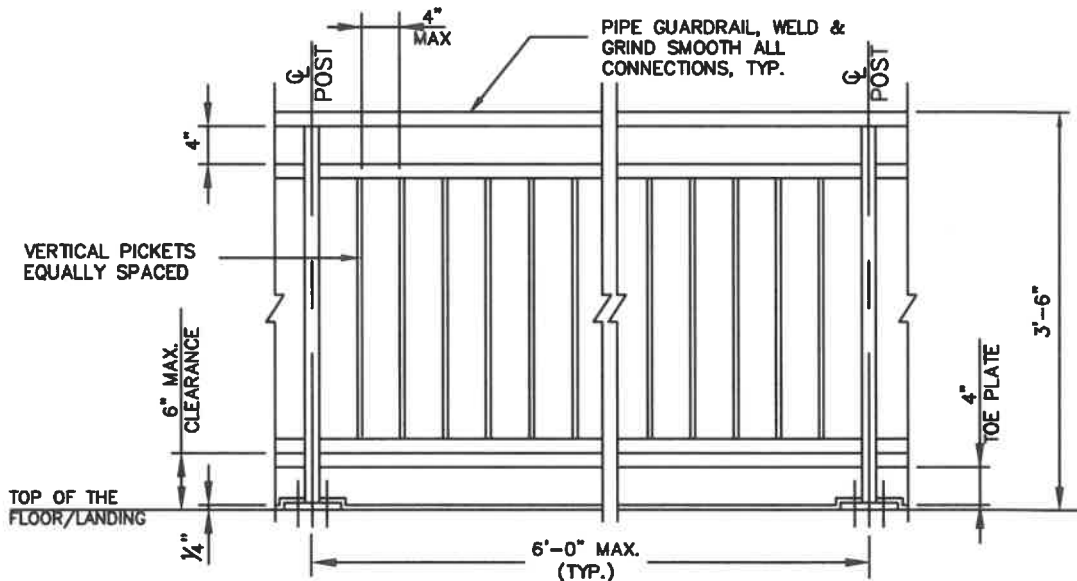
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*M. W. Hansen*  
Chief Engineer

STANDARD DETAIL  
**MONITORING PIPE  
OF FUEL TANK**

M  
20.0



**GUARDRAIL TYPE A**



**GUARDRAIL TYPE B**

**GENERAL NOTES:**

1. GUARDRAILS TO BE DESIGNED PER LATEST EDITION OF INTERNATIONAL BUILDING CODE (IBC).
2. GUARD RAILS SHALL BE DESIGNED FOR:
  - a. CONCENTRATED LOAD OF 200 LBS APPLIED AT ANY POINT AND AT ANY DIRECTION ALONG THE TOP RAILING MEMBER.
  - b. UNIFORM LOAD OF 50 LBS/LINEAR FOOT APPLIED HORIZONTALLY AT THE TOP OF THE GUARD RAIL AND A SIMULTANEOUS UNIFORM LOAD OF 100 LBS/LINEAR FOOT APPLIED VERTICALLY.
  - c. HORIZONTAL CONCENTRATED LOAD OF 200 LBS/SQUARE FOOT AT ANY POINT IN THE GUARDRAIL SYSTEM, INCLUDING INTERMEDIATE RAILS OR POSTS.
3. SIZES AND CONNECTIONS OF POSTS, RAILS, AND ANCHORS SHALL BE AS SHOWN ON THE DRAWINGS.
4. MINIMUM DIAMETER OF RAIL 1 1/2"OD.

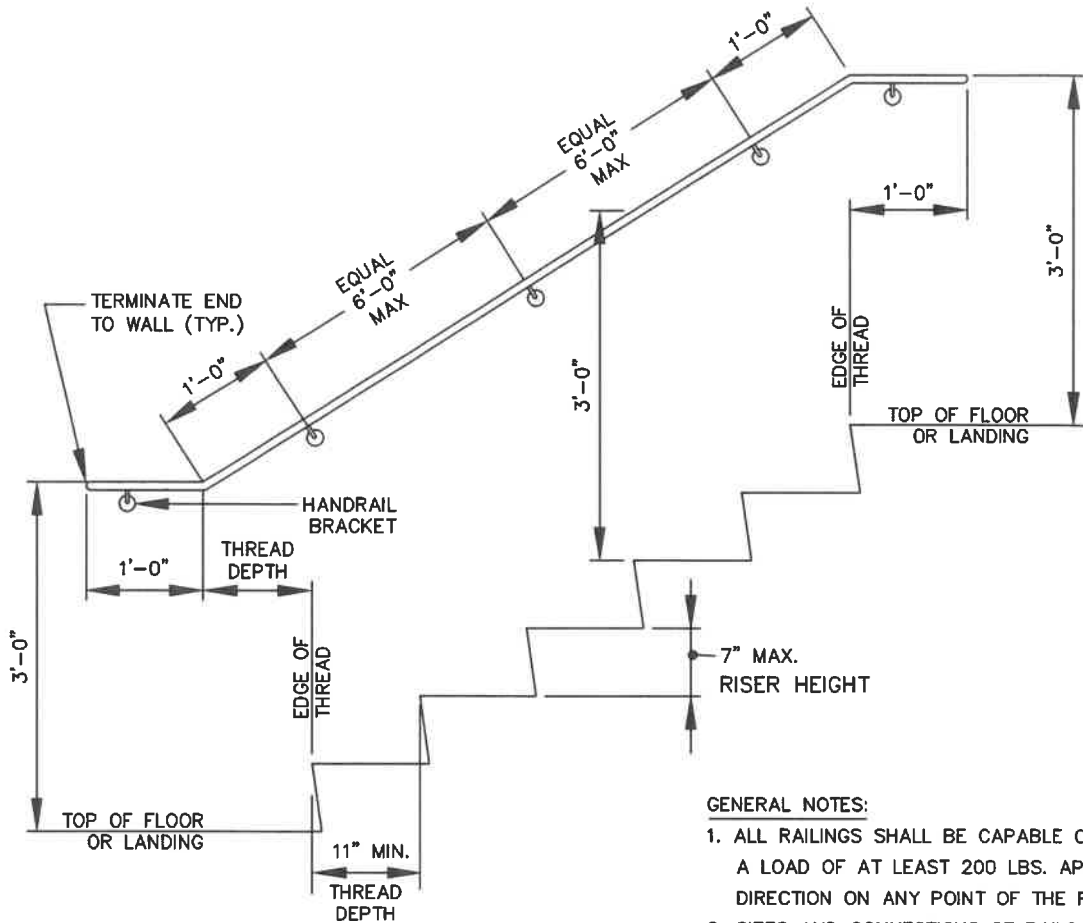
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Chief Engineer

STANDARD DETAIL

GUARDRAIL  
(ALL AREAS)

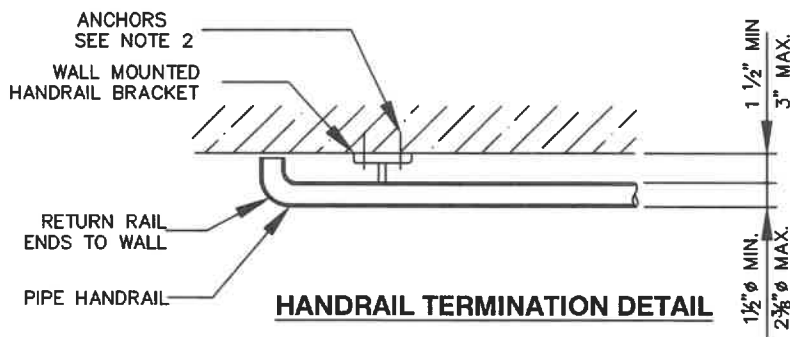
M  
21.0



**ELEVATION (STRAIGHT STAIR)**

**GENERAL NOTES:**

1. ALL RAILINGS SHALL BE CAPABLE OF WITHSTANDING A LOAD OF AT LEAST 200 LBS. APPLIED IN ANY DIRECTION ON ANY POINT OF THE RAIL.
2. SIZES AND CONNECTIONS OF RAILS SHALL BE AS SHOWN ON DRAWINGS.
3. HANDRAILS TO BE DESIGNED PER LATEST INTERNATIONAL BUILDING CODE (IBC)



**HANDRAIL TERMINATION DETAIL**

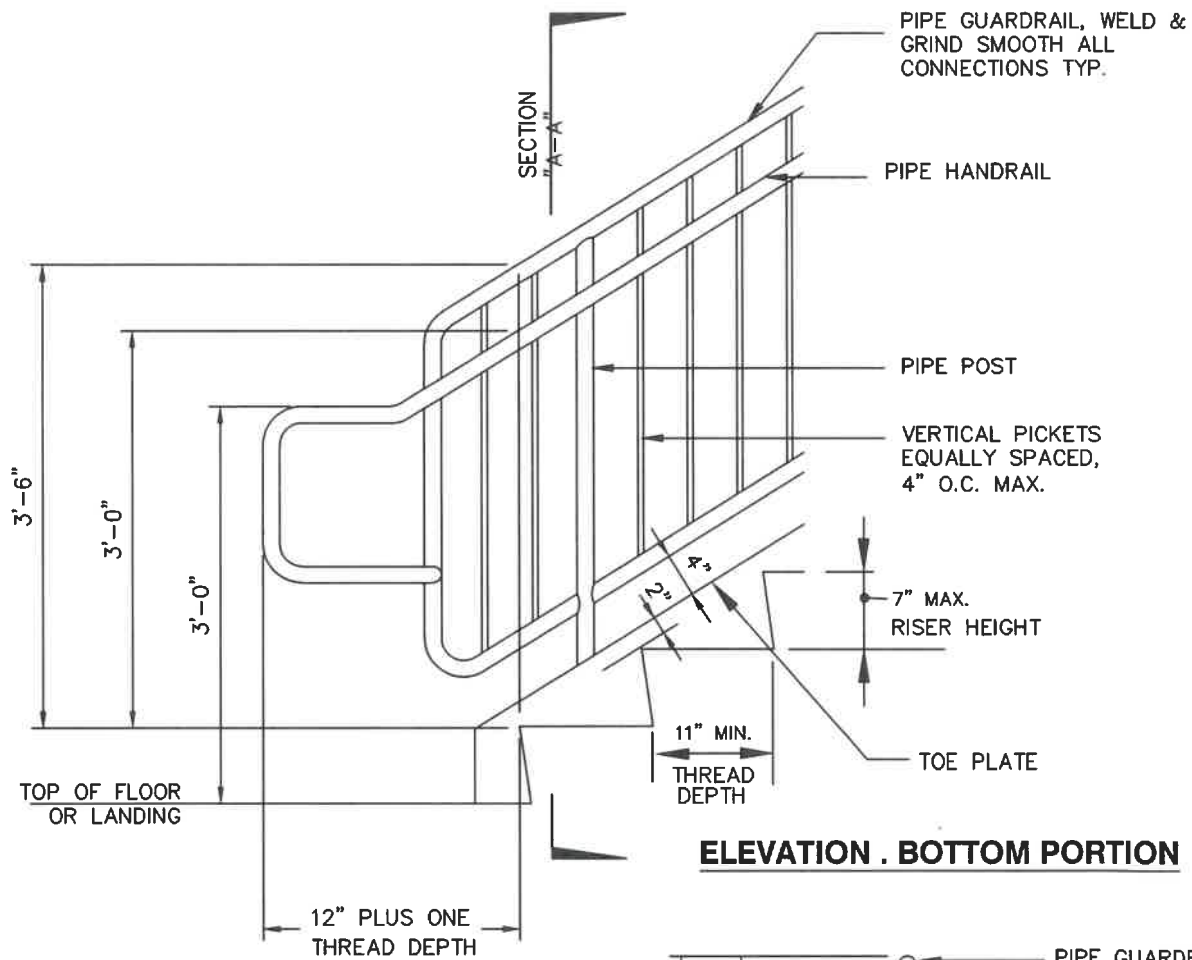
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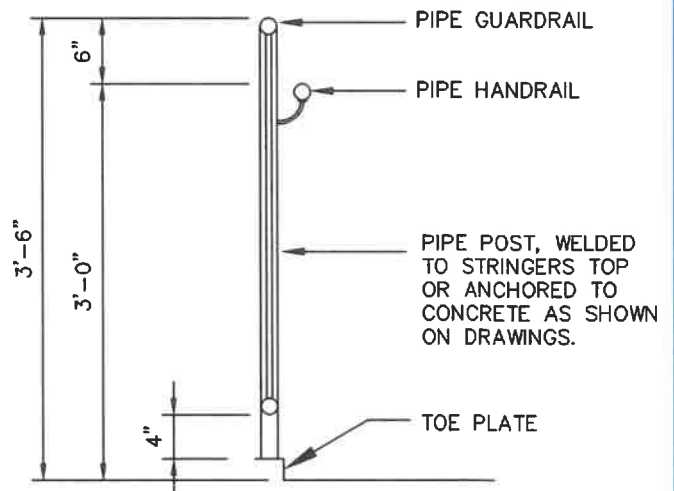
*Mick Hammer*  
Chief Engineer

STANDARD DETAIL  
HANDRAIL ON STAIRS

M  
21.1



**ELEVATION . BOTTOM PORTION**



**SECTION A-A**

**GENERAL NOTES:**

1. ALL RAILINGS SHALL BE CAPABLE OF WITHSTANDING A LOAD OF AT LEAST 200 LBS. APPLIED IN ANY DIRECTION ON ANY POINT OF THE RAIL.
2. SIZES AND CONNECTIONS OF RAILS SHALL BE AS SHOWN ON DRAWINGS.
3. HANDRAILS TO BE DESIGNED PER LATEST INTERNATIONAL BUILDING CODE (IBC)
4. GUARDRAILS TYPE "B" ARE SHOWN AS TYPICAL.
5. FOR OTHER DETAILS SEE DETAIL M/21.3

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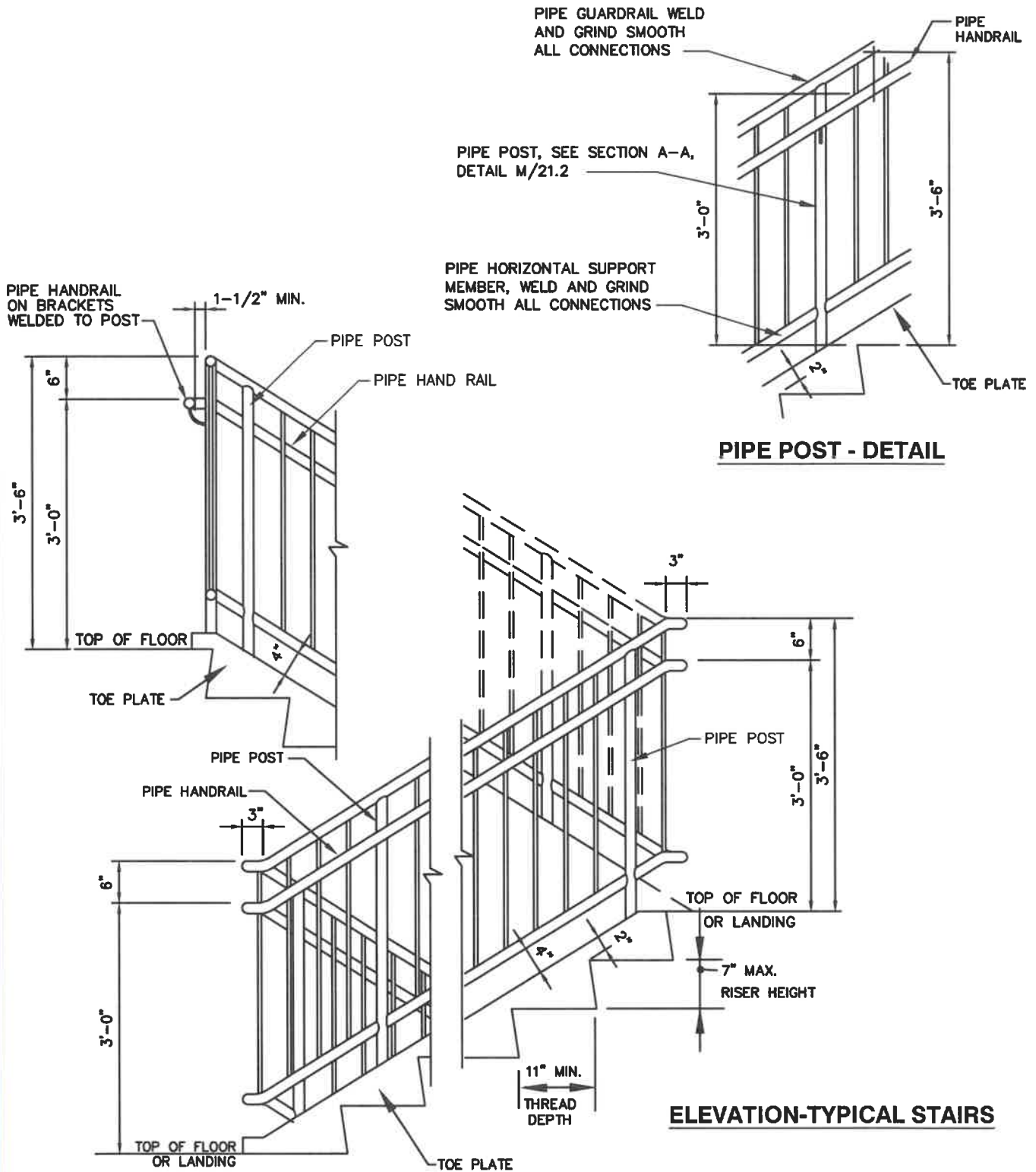
STANDARD DETAIL

STAIR RAIL

M  
21.2



NOTE:  
FOR ADDITIONAL NOTES AND DETAILS, SEE DETAIL M/21.2.

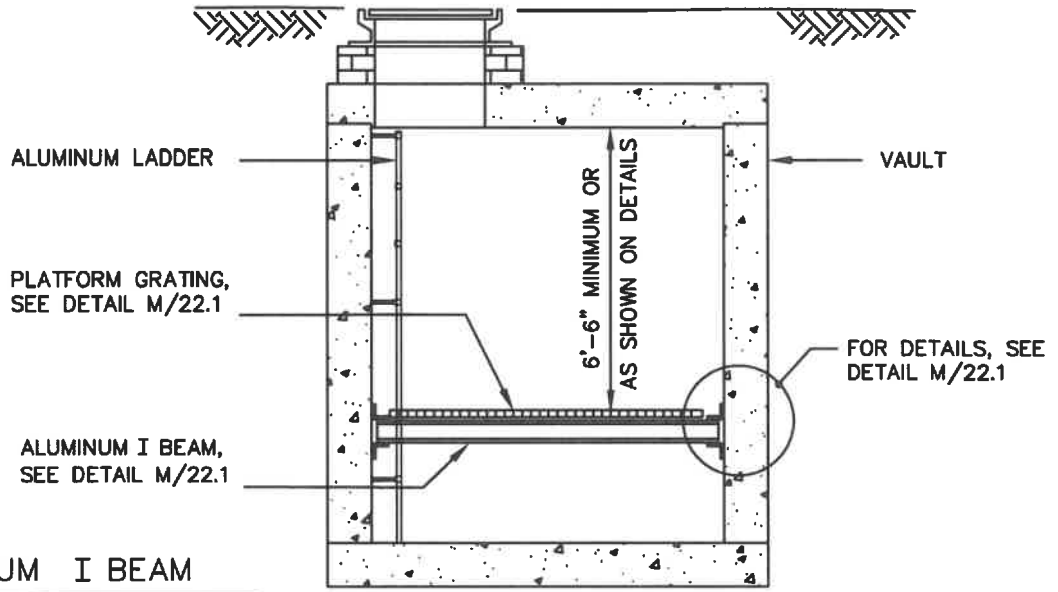


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Chief Engineer

STANDARD DETAIL  
STAIR RAIL

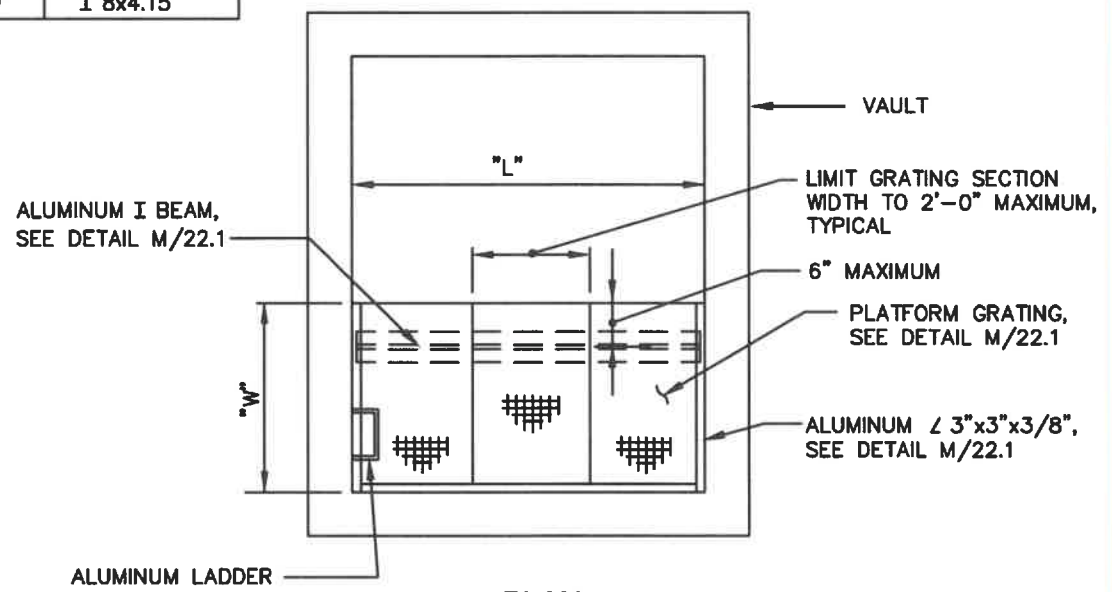
M  
21.3



SECTION

ALUMINUM I BEAM

"W" MAXIMUM	"L" MAXIMUM	I BEAM
6'-0"	16'-0"	I 10x8.64
4'-0"	12'-0"	I 8x5.8
3'-0"	10'-0"	I 8x4.15



PLAN

GENERAL NOTES:

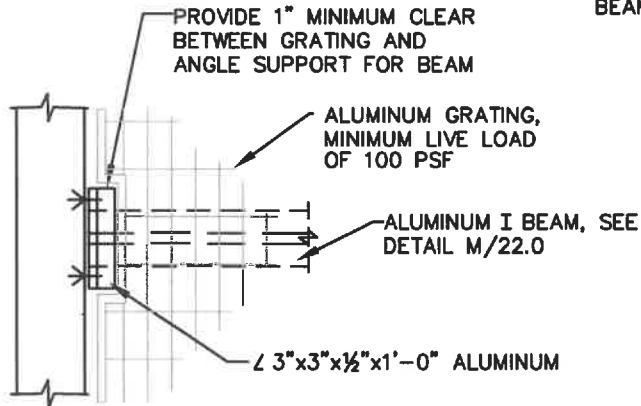
1. ALUMINUM STRUCTURAL MEMBERS SHALL BE ALUMINUM ALLOY 6061-T6 AND SHALL CONFORM TO ASTM B-308. ALUMINUM PLATES SHALL CONFORM TO ASTM B-209.
2. COAT ALUMINUM IN CONTACT WITH CONCRETE WITH AN EPOXY COATING SYSTEM, SEE SPECIFICATIONS.

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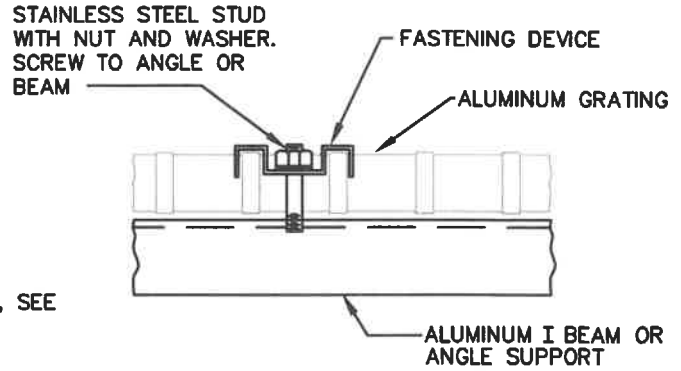
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Chief Engineer

STANDARD DETAIL  
ALUMINUM  
PLATFORM GRATING  
FOR VAULTS

M  
22.0



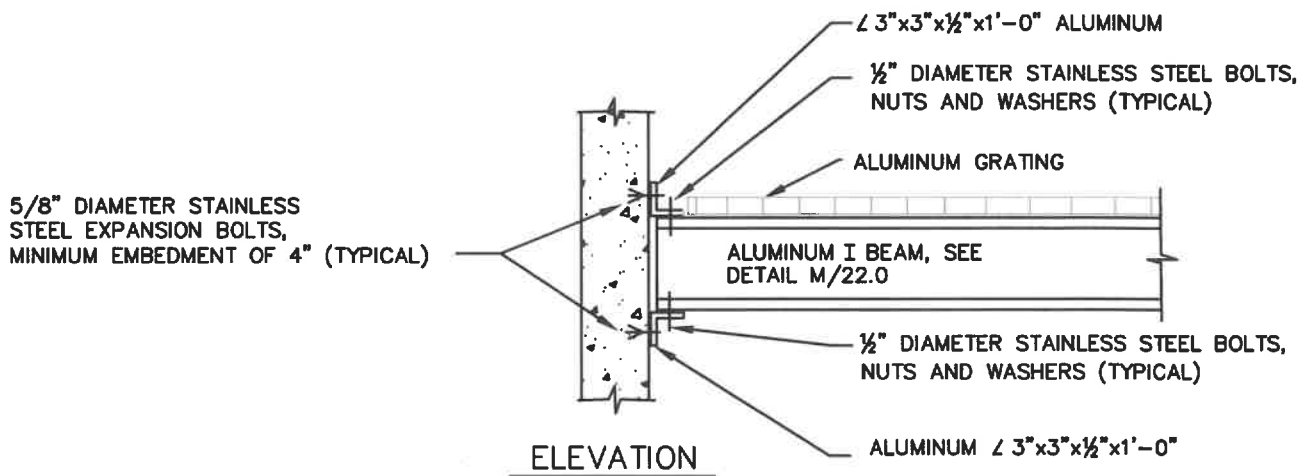
PARTIAL PLAN



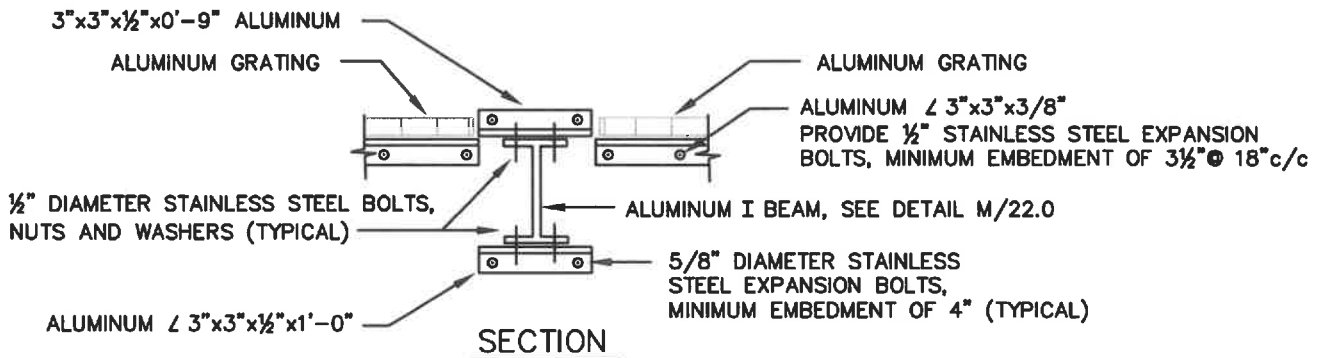
GRATING ANCHORING DETAIL

NOTE:

FASTENING DEVICE PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MINIMUM OF 4 FASTENERS PER GRATING UNIT.



ELEVATION



SECTION

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STANDARD DETAIL  
ALUMINUM  
PLATFORM GRATING  
FOR VAULTS

M  
22.1