

DURHAM WATER RESOURCE
RECOVERY FACILITY
ODOR CONTROL PHASE 3
HEADWORKS
PROJECT NO. 7202



CLEAN WATER SERVICES
TIGARD, OREGON

FINAL DESIGN
STANDARD DETAILS

Jacobs.

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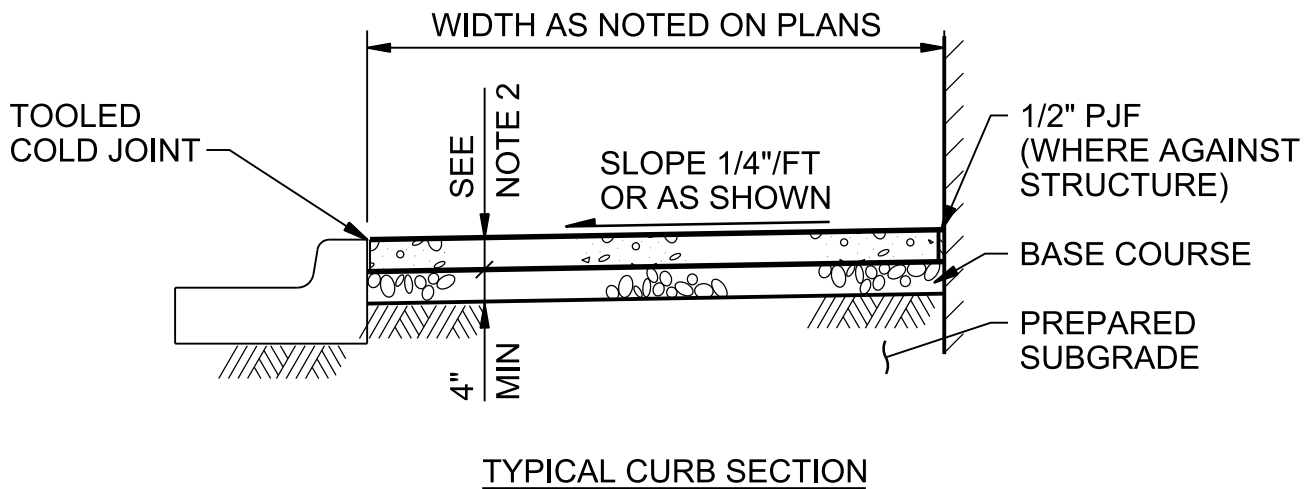
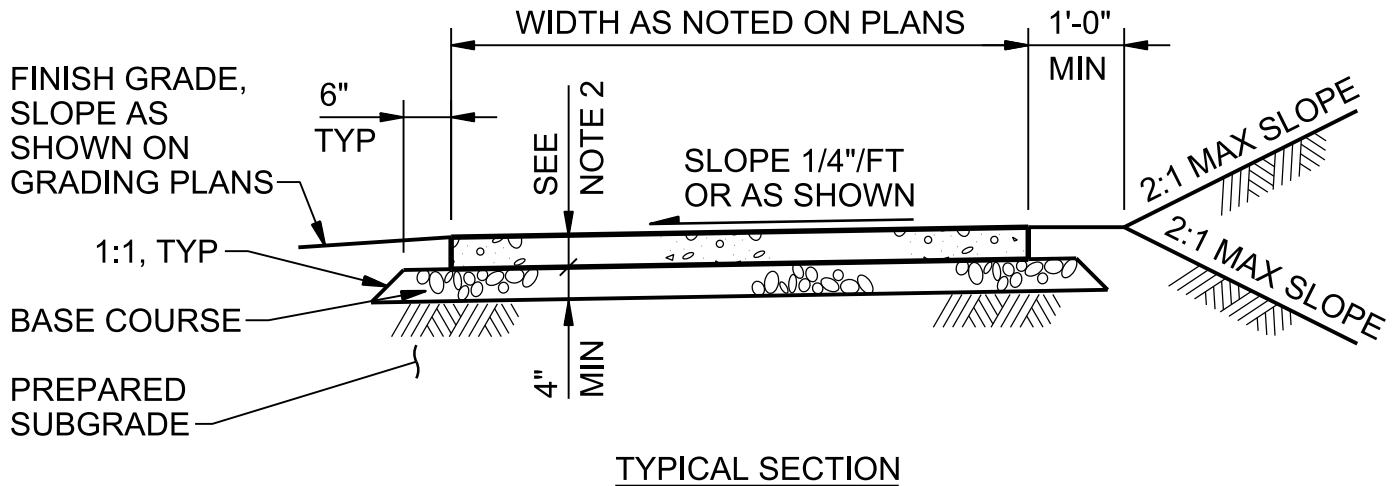
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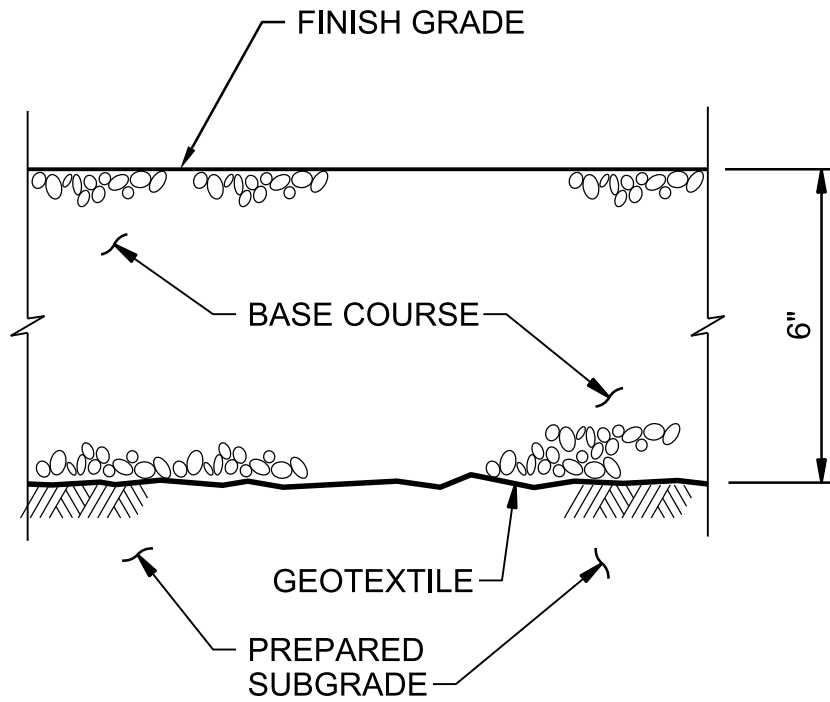


NOTES:

1. SIDEWALKS 8 FEET AND WIDER SHALL HAVE A LONGITUDINAL CONTRACTION JOINT AT THE MIDPOINT.
2. CONCRETE DEPTH FOR STANDARD SIDEWALKS SHALL BE NOMINAL 4" MINIMUM, THICKNESS IN DRIVEWAY SHALL BE 6" MINIMUM.

TYPICAL CONCRETE SIDEWALK

NTS

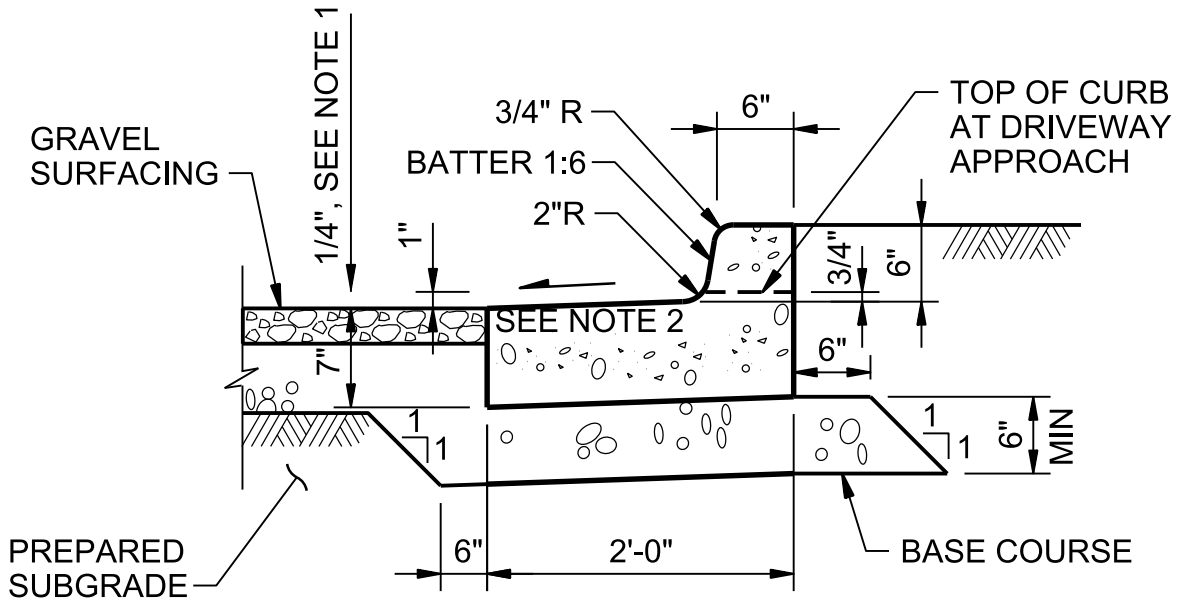


GRAVEL SURFACING

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

2240



NOTE:

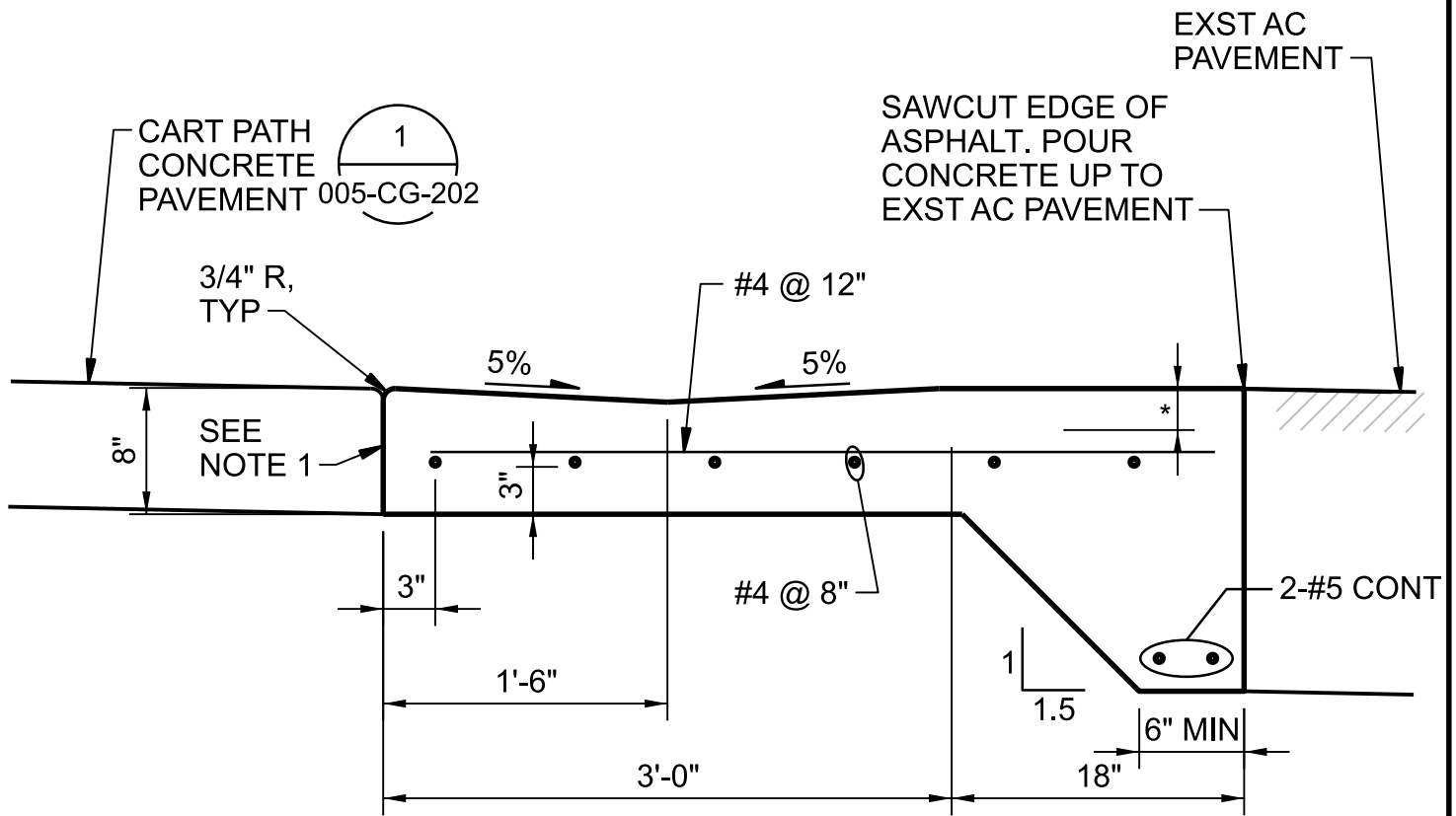
1. 1/4" PAVEMENT LIP ON LOW SIDE GUTTERS ONLY.
2. WHEN USED ON THE HIGH SIDE OF ROADWAYS, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE SLOPE OF THE ADJACENT PAVEMENT, UNLESS OTHERWISE DETAILED ON THE PLANS.

CONCRETE CURB AND GUTTER

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 ODOR CONTROL PHASE 3 HEADWORKS

2250



NOTES:

1. PLACE PREMOLDED FILLER AGAINST VERTICAL FACE WHERE VALLEY GUTTERS ABUTS CONCRETE.
2. CONSTRUCT 1" BATTER ON VERTICAL FACE.

CONCRETE VALLEY GUTTER WITH THICKENED EDGE

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NEW SURFACING, OR
SURFACE RESTORATION,
SEE PLANS AND
SPECIFICATIONS

TRENCH BACKFILL
ABOVE PIPE ZONE

12" MIN

PIPE OUTSIDE
DIAMETER

PIPE BEDDING
MATERIAL

SUBGRADE
GEOTEXTILE

MIN WIDTH
PIPE OD+2'-0"

MARKING TAPE
AS SPECIFIED

TRACER WIRE AS
SPECIFIED

PIPE ZONE

NOTES:

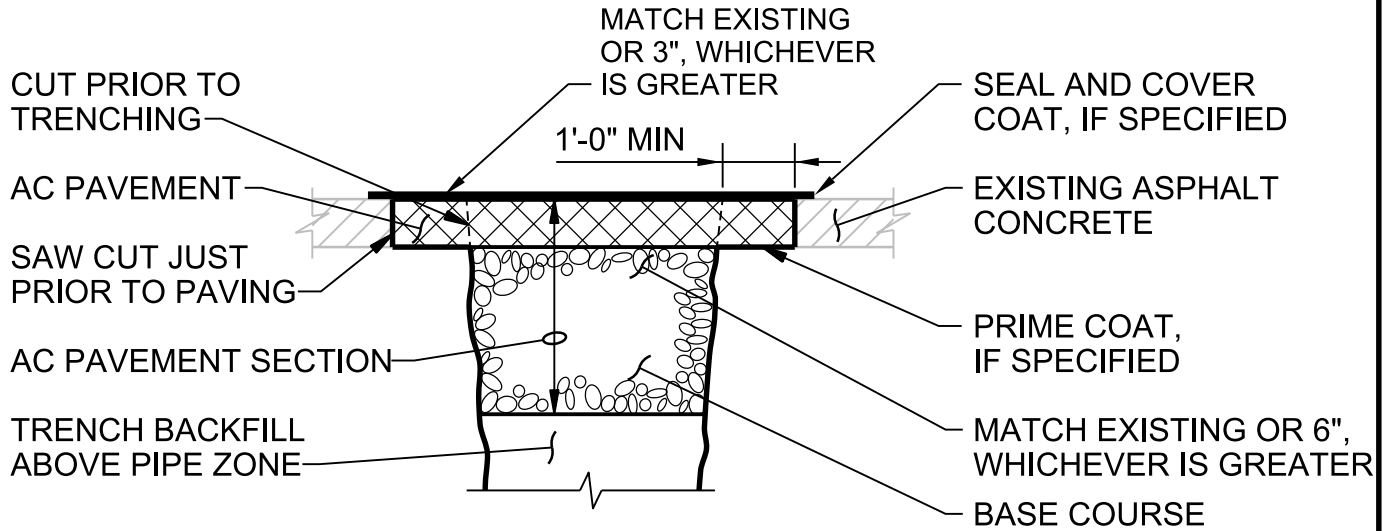
1. REFER TO SPECIFICATION SECTION 02320, TRENCH BACKFILL FOR MATERIAL TYPE.

TYPICAL TRENCH

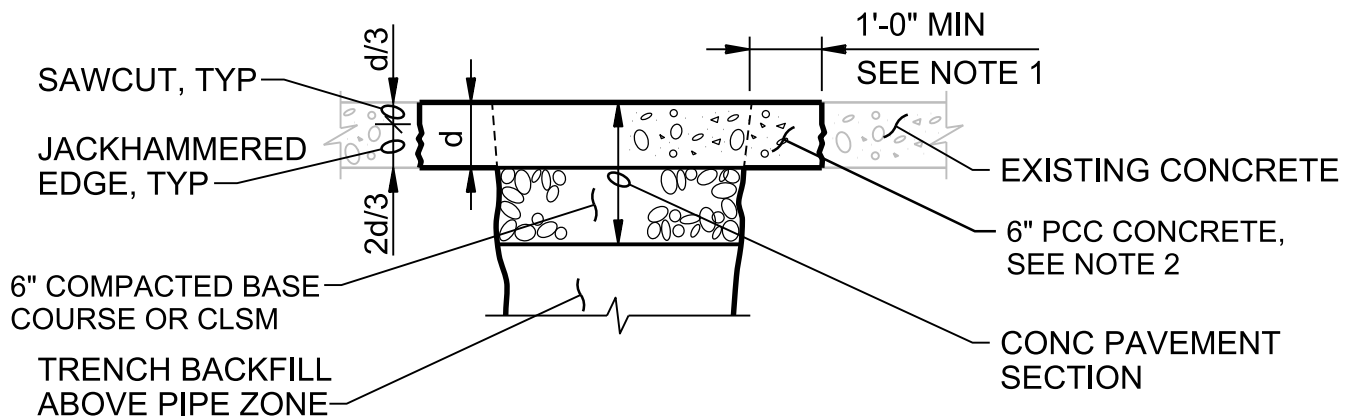
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ODOR CONTROL PHASE 3 HEADWORKS

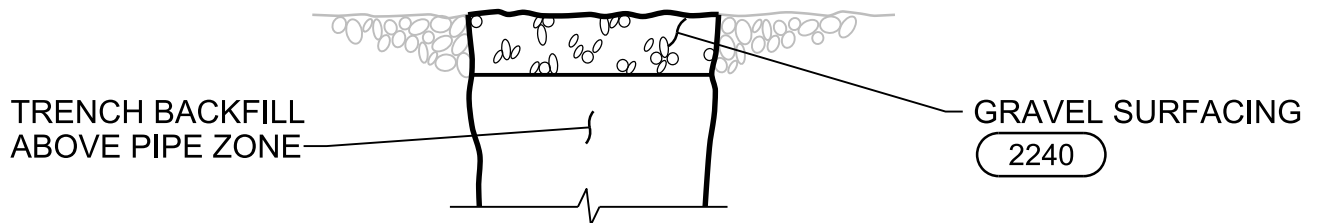
2310



ASPHALT SURFACING



PCC CONCRETE SURFACING



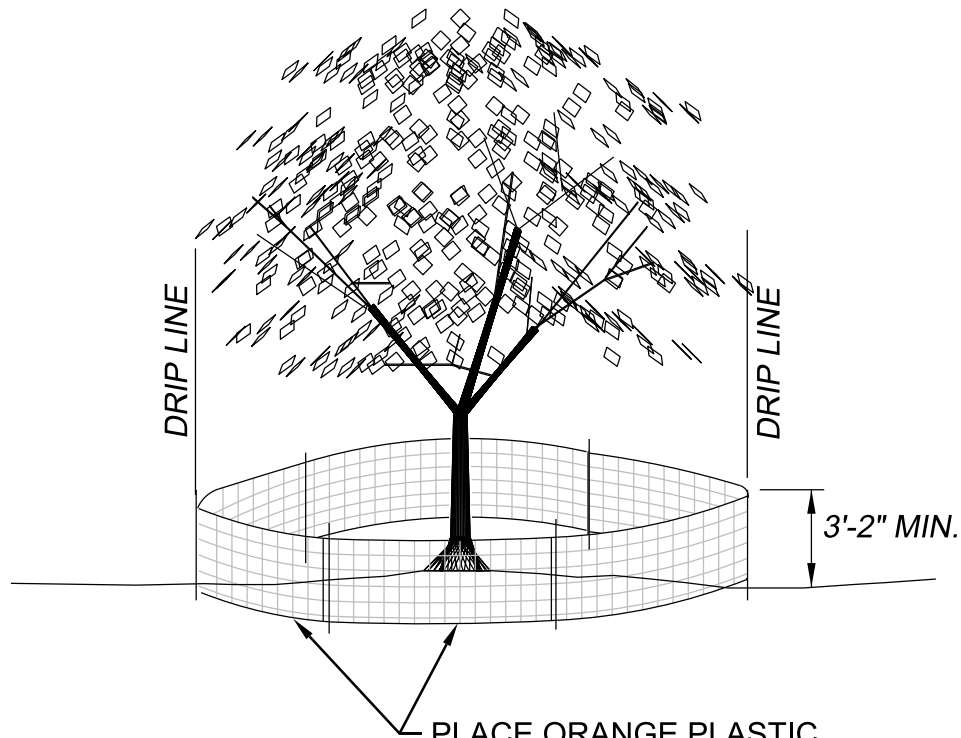
GRAVEL SURFACING

NOTES:

1. IF LOCATION OF TRENCH SAW CUT IS WITHIN 2 FEET OF AN EXISTING JOINT OR EDGE OF CONCRETE, REPLACE ENTIRE CONCRETE TO THE JOINT OR EDGE.
2. CONSTRUCT JOINTS ACROSS NEW CONCRETE TO MATCH EXISTING JOINT TYPES AND LOCATIONS.

SURFACE RESTORATION

NTS



PLACE ORANGE PLASTIC
CONSTRUCTION FENCING AROUND
TREE OR PROTECTED VEGETATION
PERIMETERS AT DRIP LINE, PRIOR
TO ANY CONSTRUCTION ACTIVITIES
ON SITE.

NOTE:

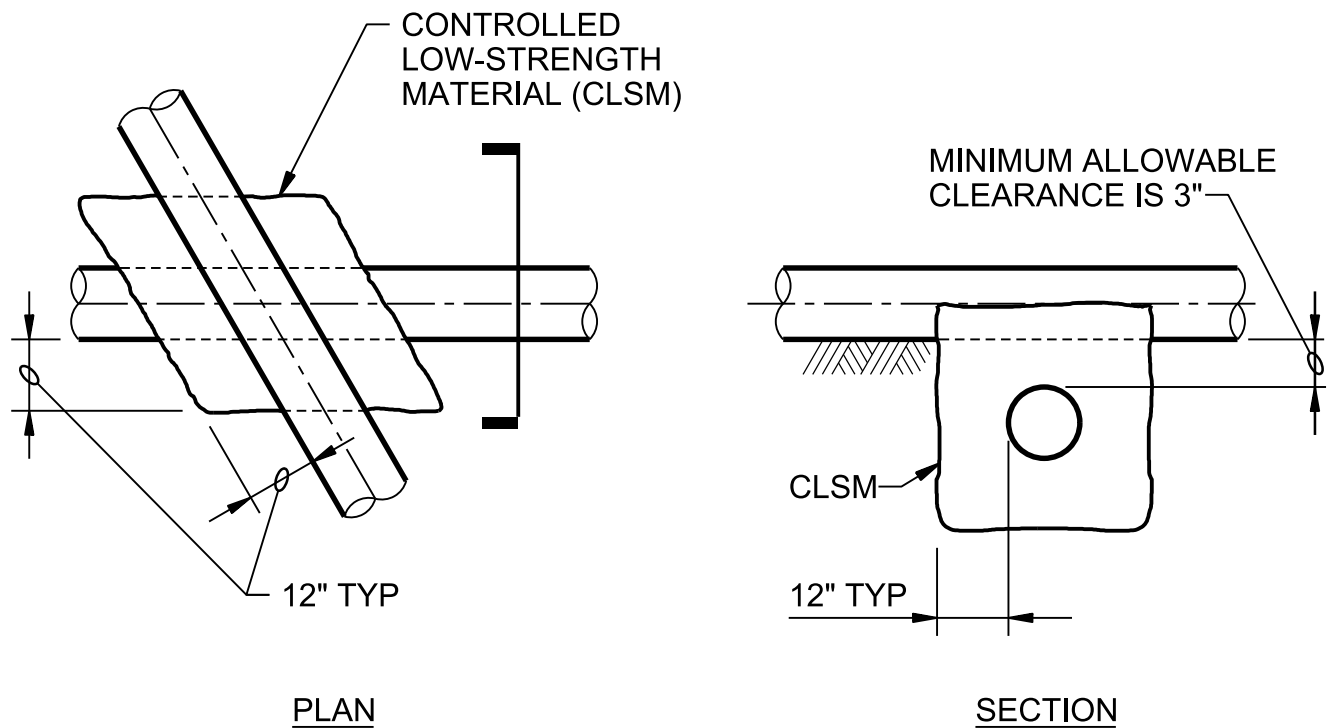
1. USE WOOD OR METAL FENCE POSTS. POST SPACING & DEPTH SHALL BE INSTALLED TO ADEQUATELY SUPPORT THE FENCE IN AN UPRIGHT MANNER.
2. MAXIMUM FENCE OPENINGS SHALL BE 2"X2".

TREE/VEGETATION PROTECTION FENCING

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DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

2321

NOTES:

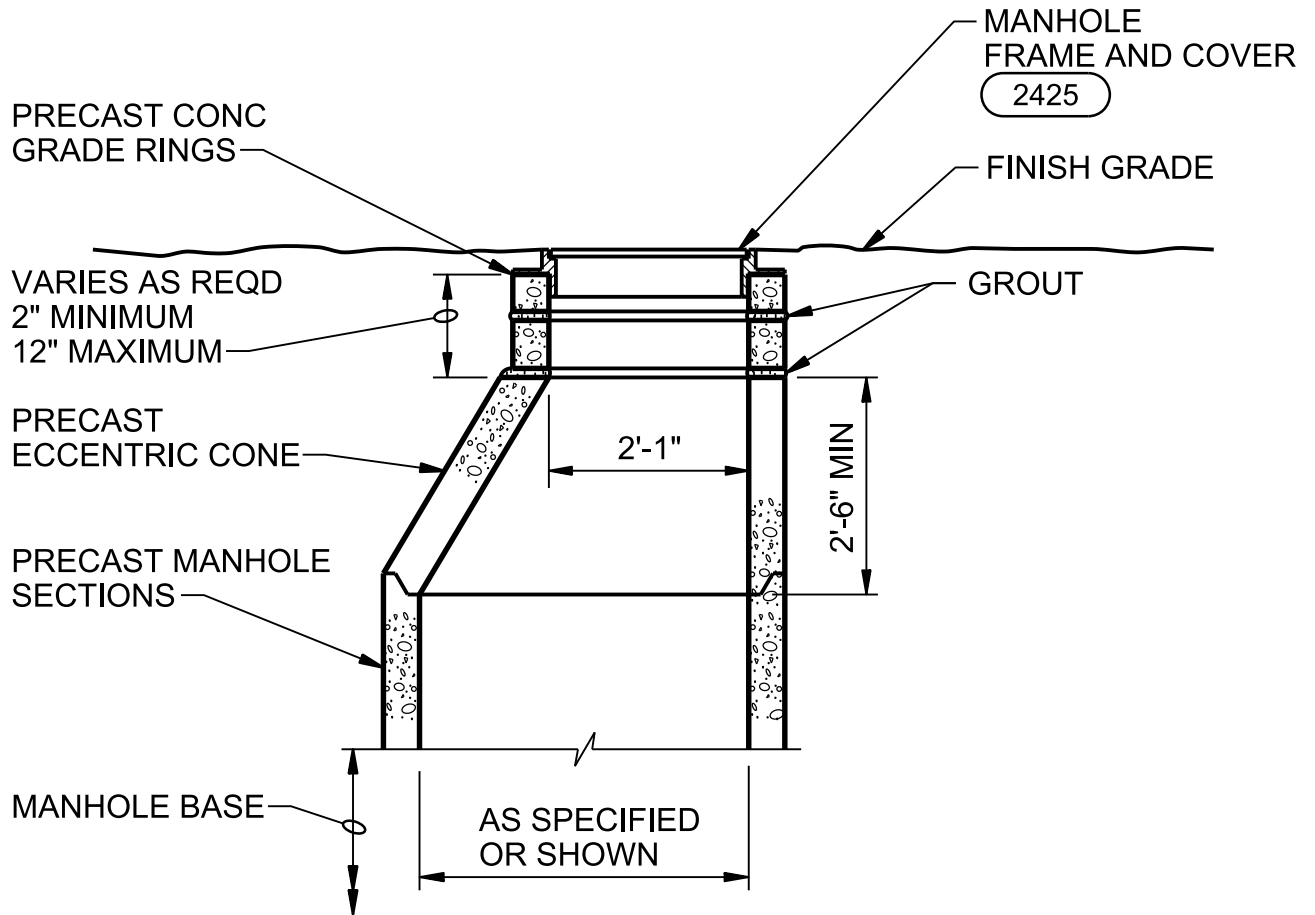
1. CLSM SUPPORT IS REQUIRED:
 - A. WHEN A NEW PIPELINE IS CROSSING OVER AN EXISTING PIPELINE AND THE CLEARANCE BETWEEN THEM IS LESS THAN 12".
 - B. AT ALL PIPE CROSSINGS WHERE A NEW PIPELINE IS CROSSING UNDER AN EXISTING PIPELINE.
2. REFER TO SPECIFICATION SECTION 02320 FOR CLSM REQUIREMENTS.

TRENCH PIPE CROSSING

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2335

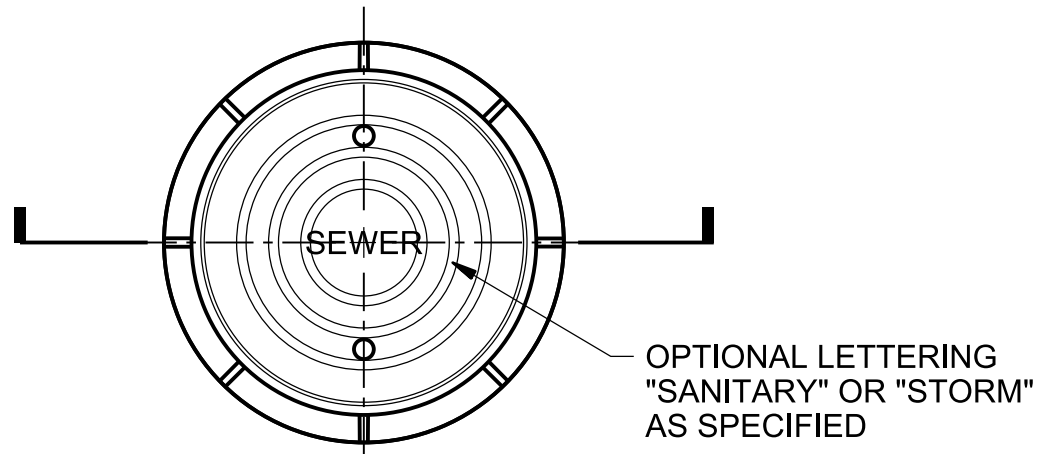


ECCENTRIC MANHOLE TOP SECTION

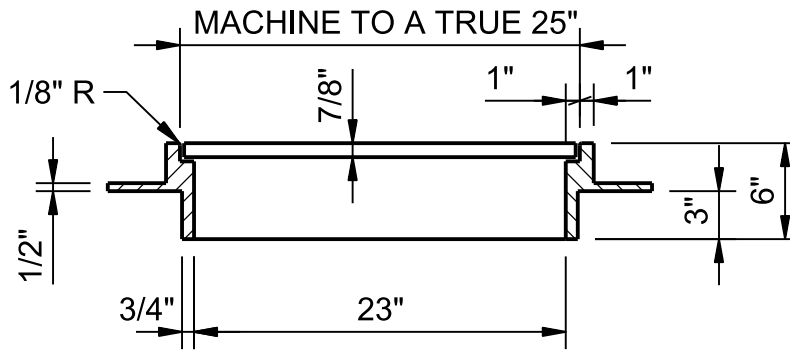
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2420



SOLID COVER



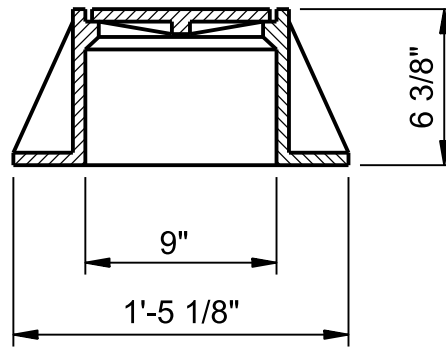
SECTION

MANHOLE FRAME AND COVER

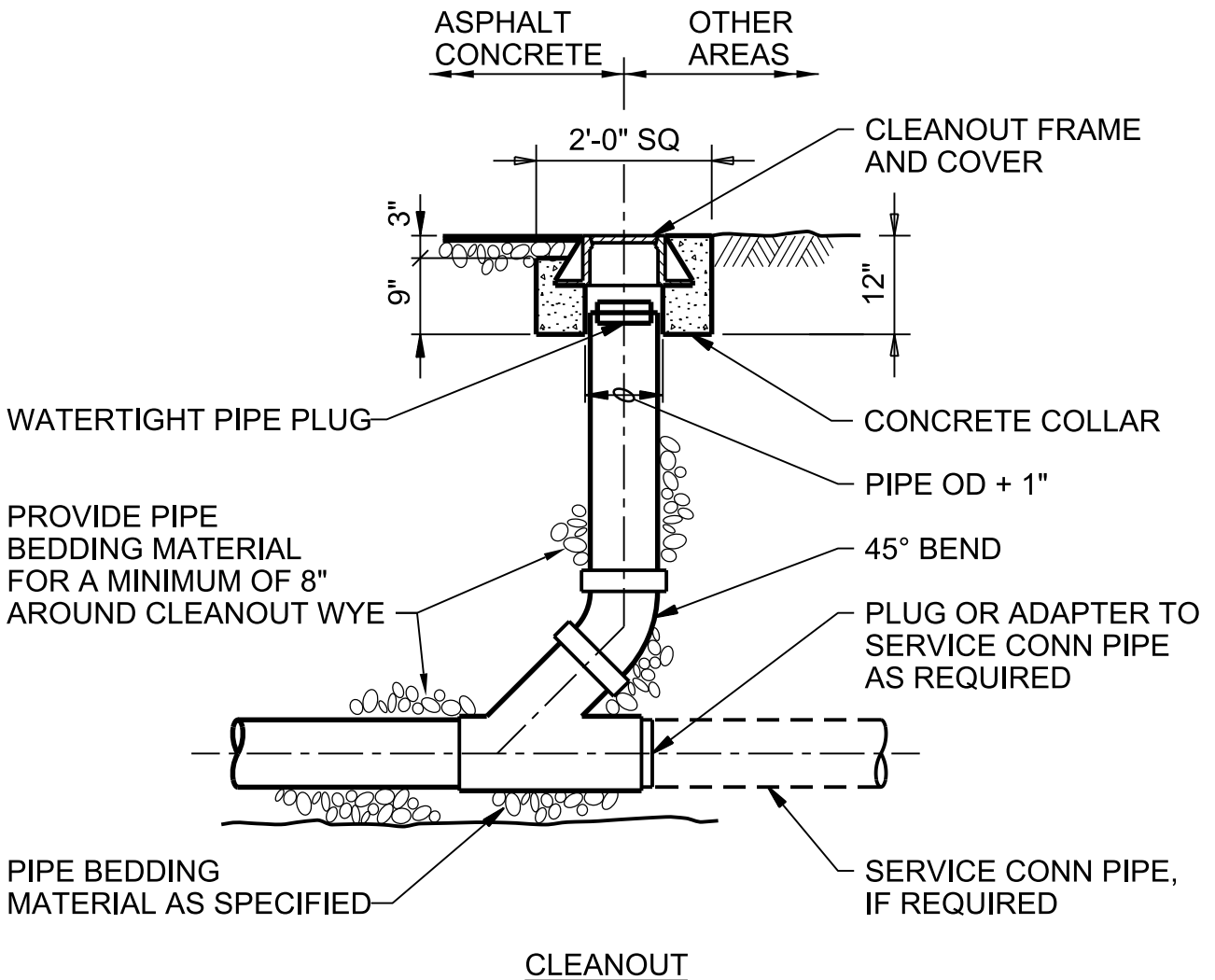
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DURHAM WRRF
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2425



CLEANOUT FRAME AND COVER



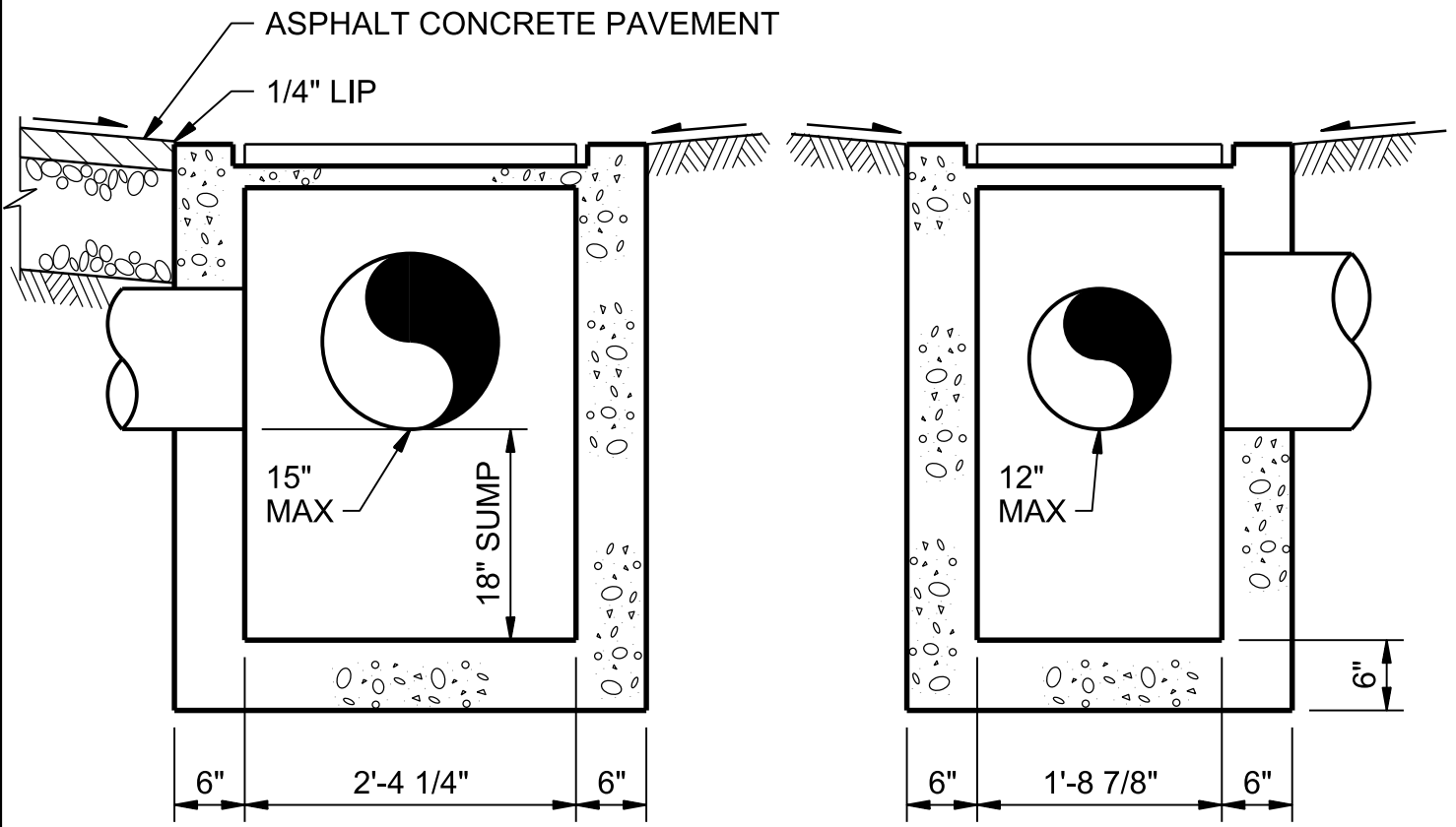
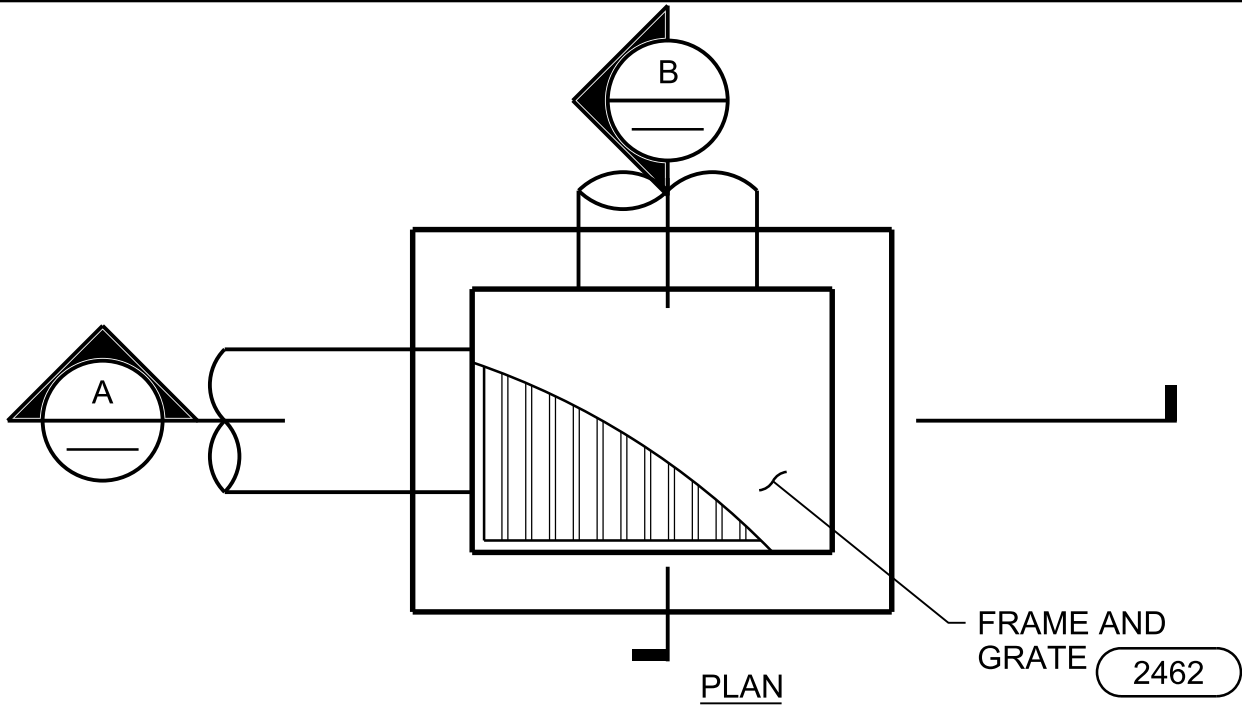
CLEANOUT

EXTERIOR CLEANOUT

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CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

2440



A SECTION NTS

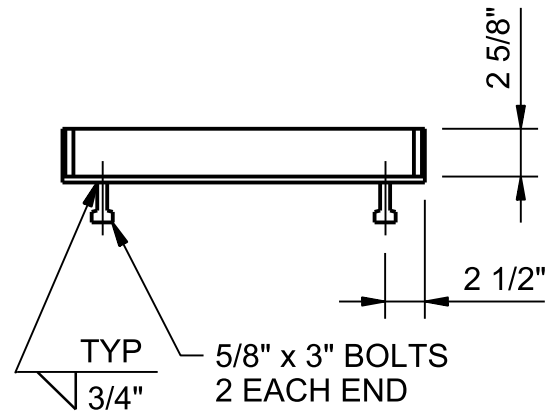
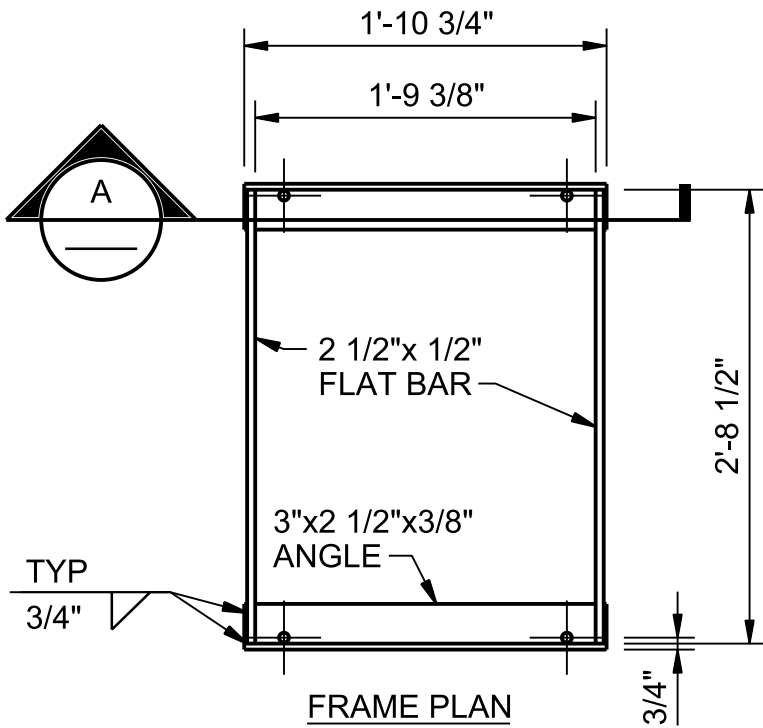
B SECTION NTS

CATCH BASIN

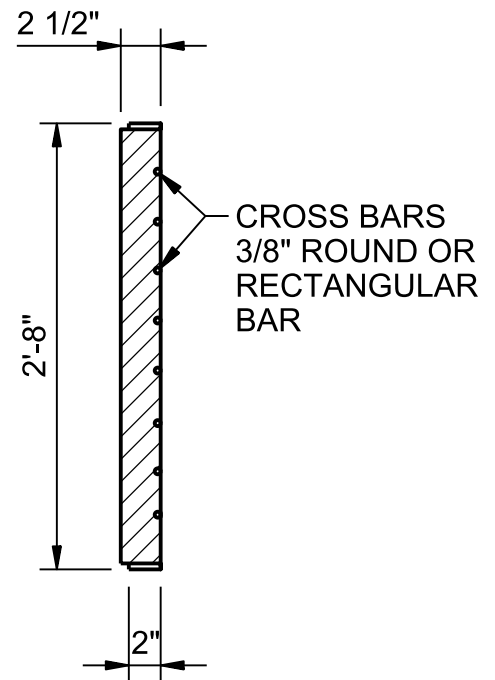
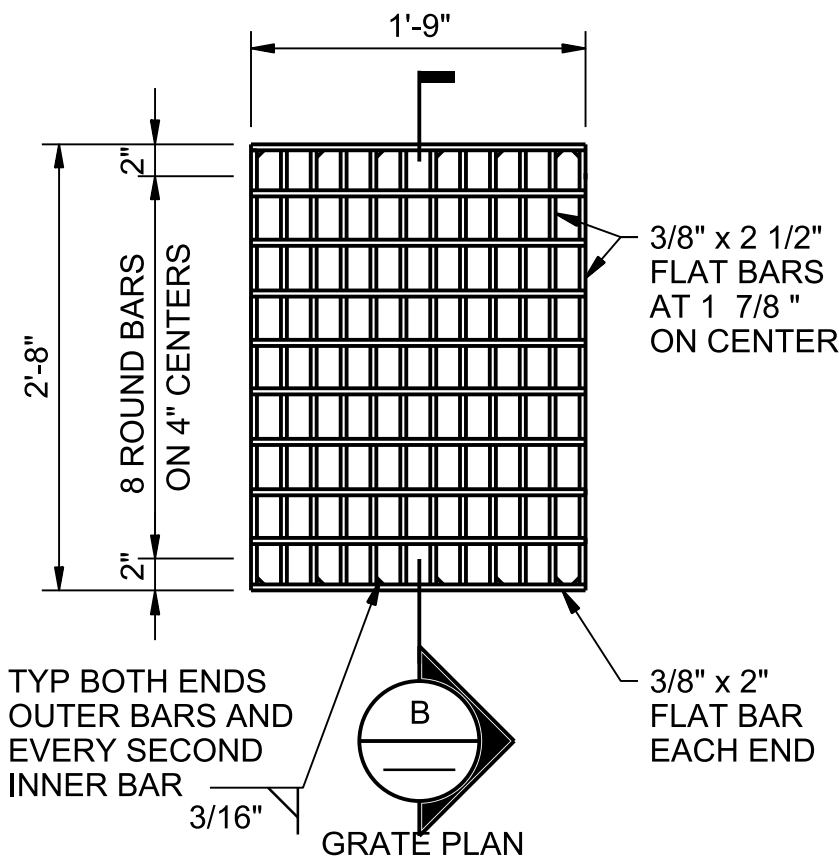
NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

2460



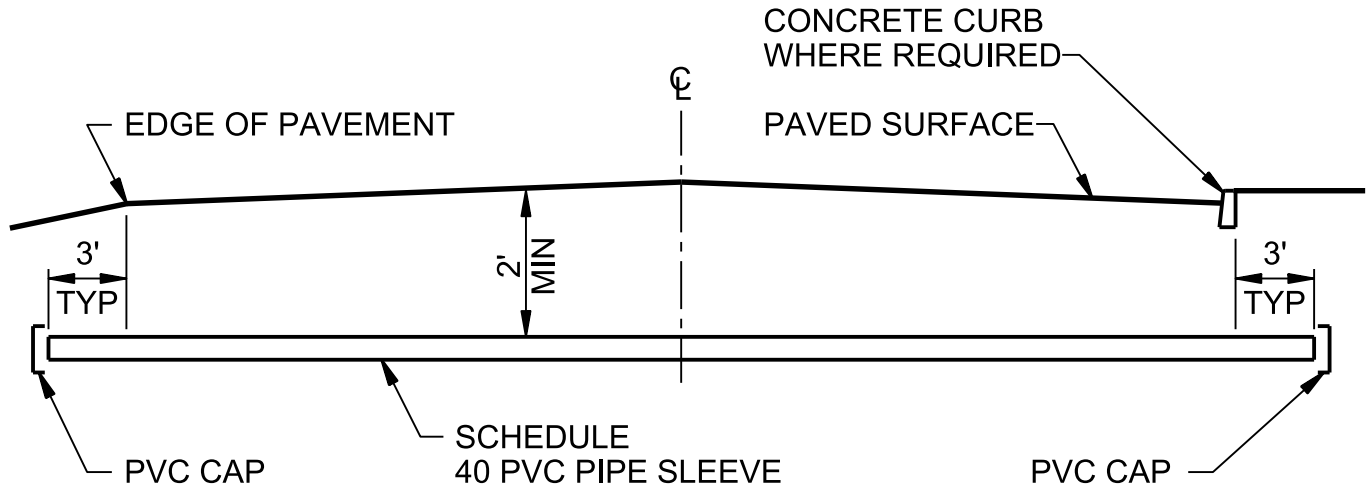
(A) SECTION NTS



(B) SECTION NTS

CATCH BASIN FRAME AND GRATE

NTS



NOTES:

1. INSTALL PIPE SLEEVE UNDER THE ROAD PRIOR TO PLACING ROAD SURFACING.
2. DIRECTLY ATTACH (ZIP TOE OR TAPE) 14 GAUGE BLUE TRACE WIRE ALONG LENGTH OF PIPE SLEEVE.
3. STAKE BOTH ENDS OF PIPE SLEEVE WITH A 2" CAPPED, VERTICAL PVC PIPE, 12" MIN ABOVE FINISH GRADE AND 18" MIN BELOW FINISH GRADE. WRAP ENDS OF TRACE WIRE AROUND PVC STAKE.
4. BACKFILL PIPE SLEEVE WITH SAND FOR THE PIPE BEDDING AND PIPE ZONE.

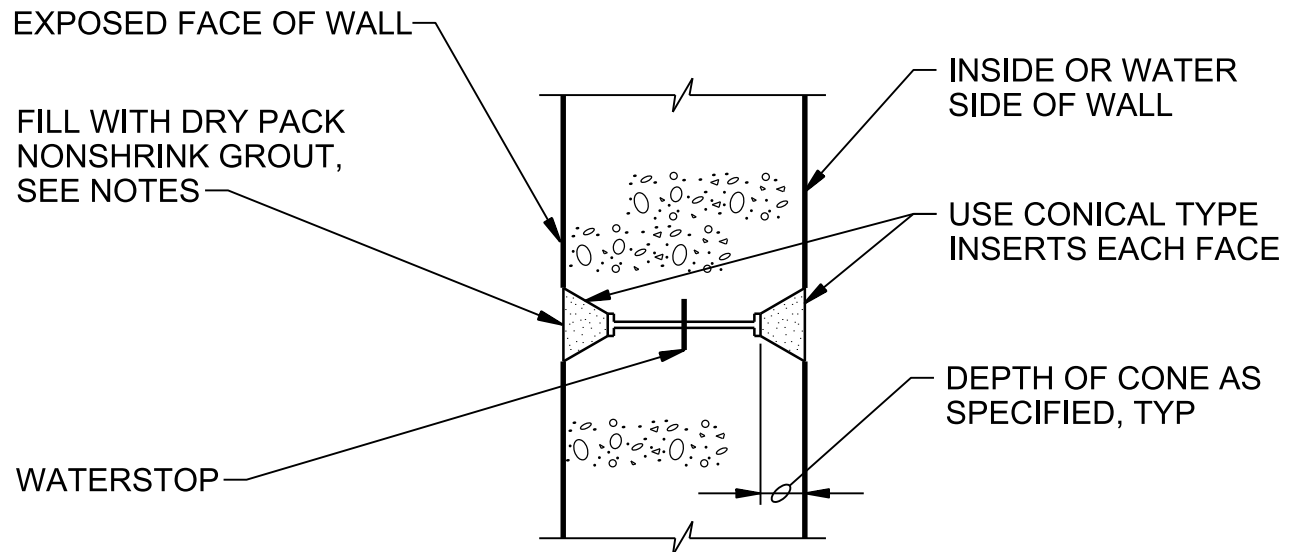
PIPE SLEEVE

NTS

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

2856

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NOTES:

1. THE SPACING OF FORM TIES ON EXPOSED PORTIONS OF WALLS SHALL BE APPROXIMATELY EQUAL HORIZONTALLY AND VERTICALLY AND SHALL BE UNIFORM IN EACH DIRECTION.
2. DRY PACK METHOD SHALL BE AS SPECIFIED USING STEEL TOOLS.

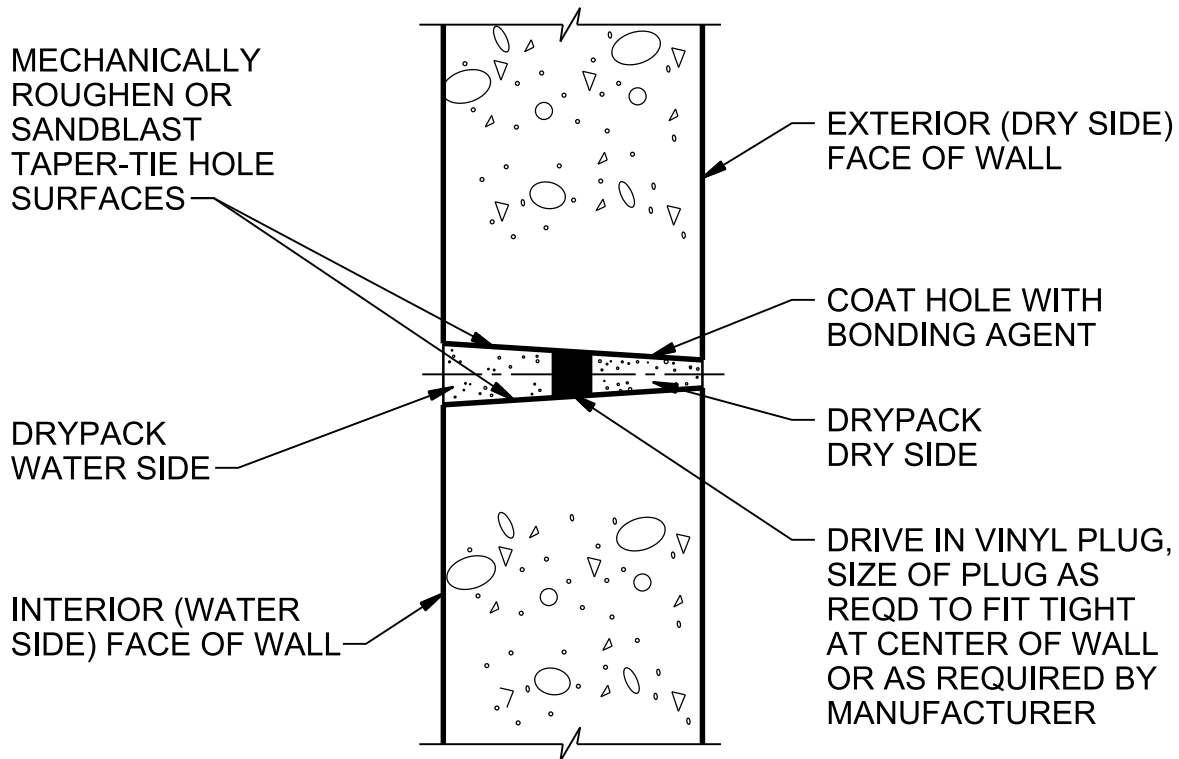
FORM SNAP-TIE HOLE

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CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

3051

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**NOTE:**

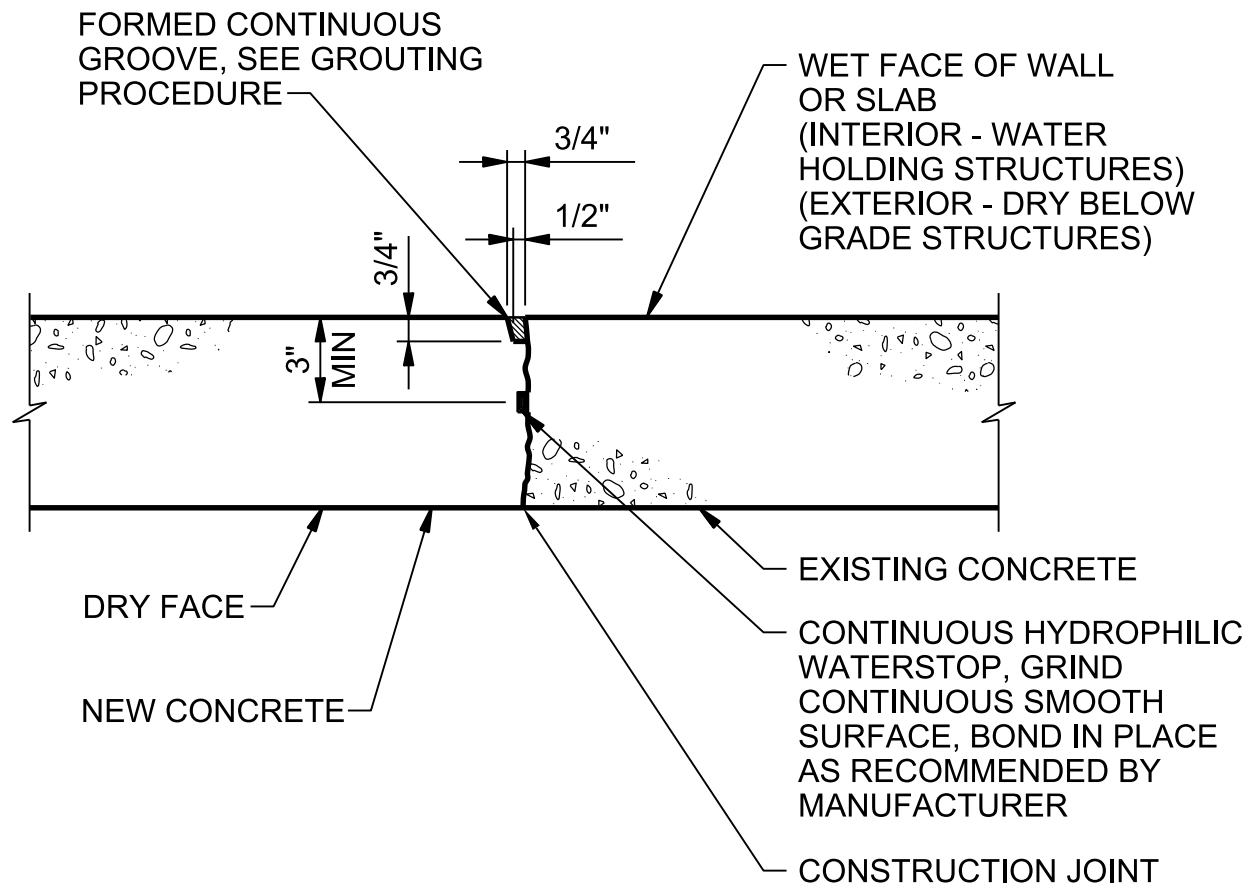
MINIMUM HOLE DIAMETER AT EXTERIOR FACE = 1". TAPER HOLE SO THAT MINIMUM HOLE DIAMETER AT INTERIOR FACE = 1 1/4"

CONSTRUCTION STEPS:

1. SANDBLAST OR MECHANICALLY ROUGHEN WITH ELECTRIC EQUIPMENT.
2. DRIVE IN VINYL PLUG.
3. COAT HOLE ON DRY SIDE OF PLUG AND WHILE BONDING AGENT IS TACKY, DRYPACK.
4. COAT HOLE ON WATER SIDE OF PLUG AND WHILE BONDING AGENT IS TACKY, DRYPACK.
5. USE CATEGORY II, NON-SHRINK GROUT AS SPECIFIED.

ALTERNATE FORM TIE-THROUGH BOLT

NTS

**NOTE:**

FOR USE IN NON-MOVING CONSTRUCTION JOINTS AND ONLY WHERE SPECIFICALLY INDICATED ON PLANS.

GROUTING PROCEDURE:

1. WAIT UNTIL NEW CONCRETE MINIMUM 28 DAYS OLD PRIOR TO GROUTING GROOVE.
2. ROUGHEN AND CLEAN SURFACES OF GROOVE WITH POWER WIRE BRUSH OR SANDBLASTING.
3. SATURATE AREA FOR 24 HOURS PRIOR TO GROUTING.
4. DRY PACK WITH TYPE II NON-SHRINK GROUT.
5. USE STEEL HAMMER AND STEEL TOOL TO DENSELY PACK GROUT INTO GROOVE.
6. WATER CURE GROUT FOR 4 DAYS MINIMUM.

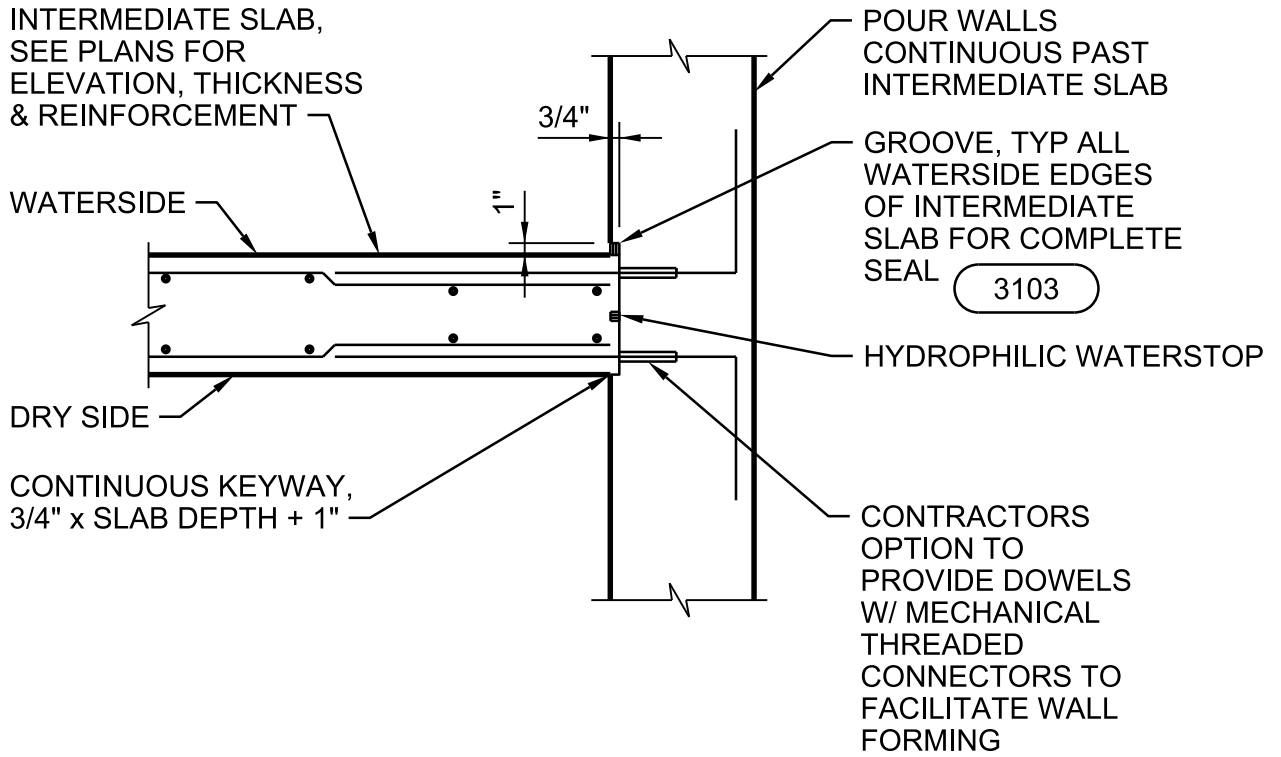
HYDROPHILIC/GROOVE WATERSTOP

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

3103

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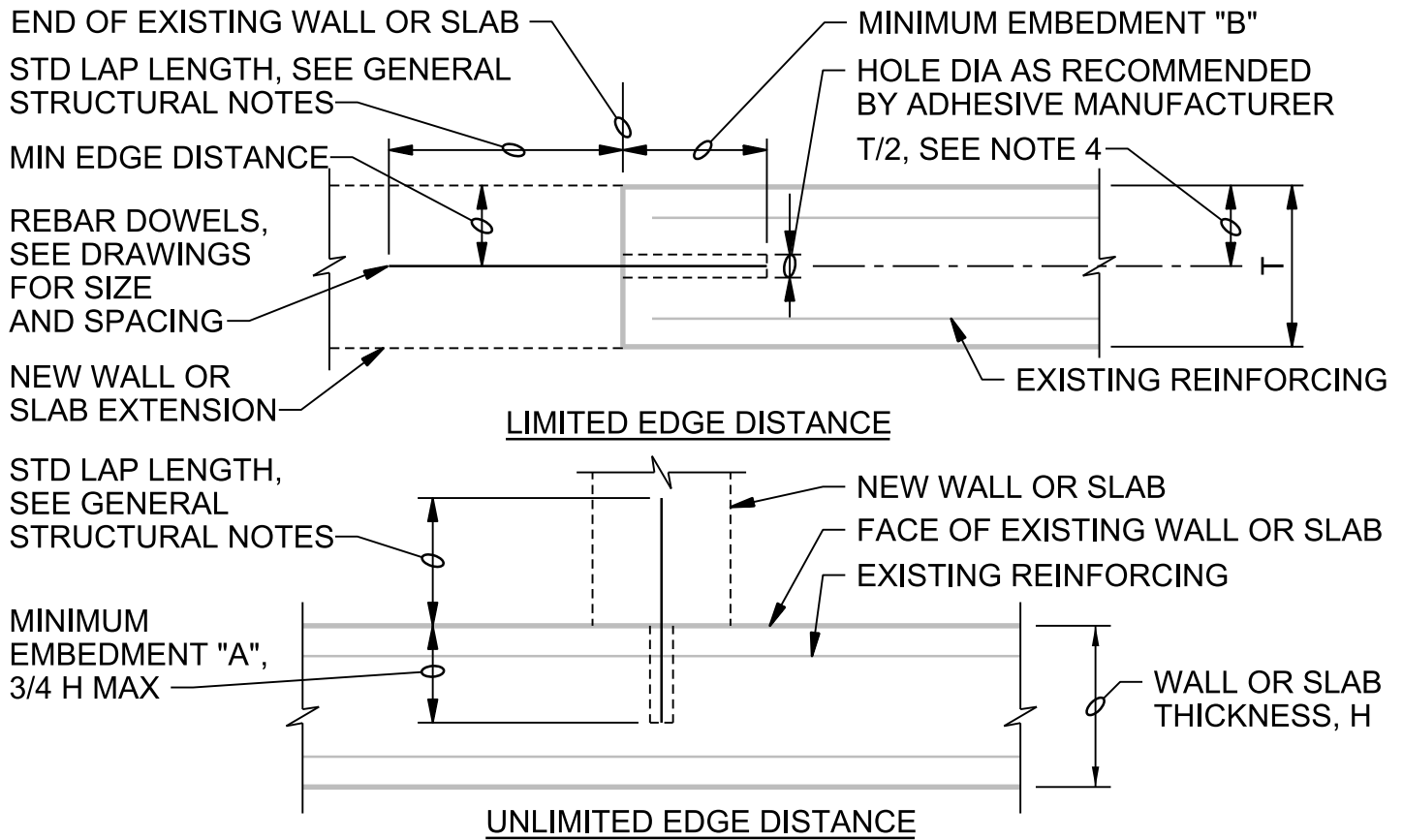


SLAB CONSTRUCTION JOINT AT WALL

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DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

3143



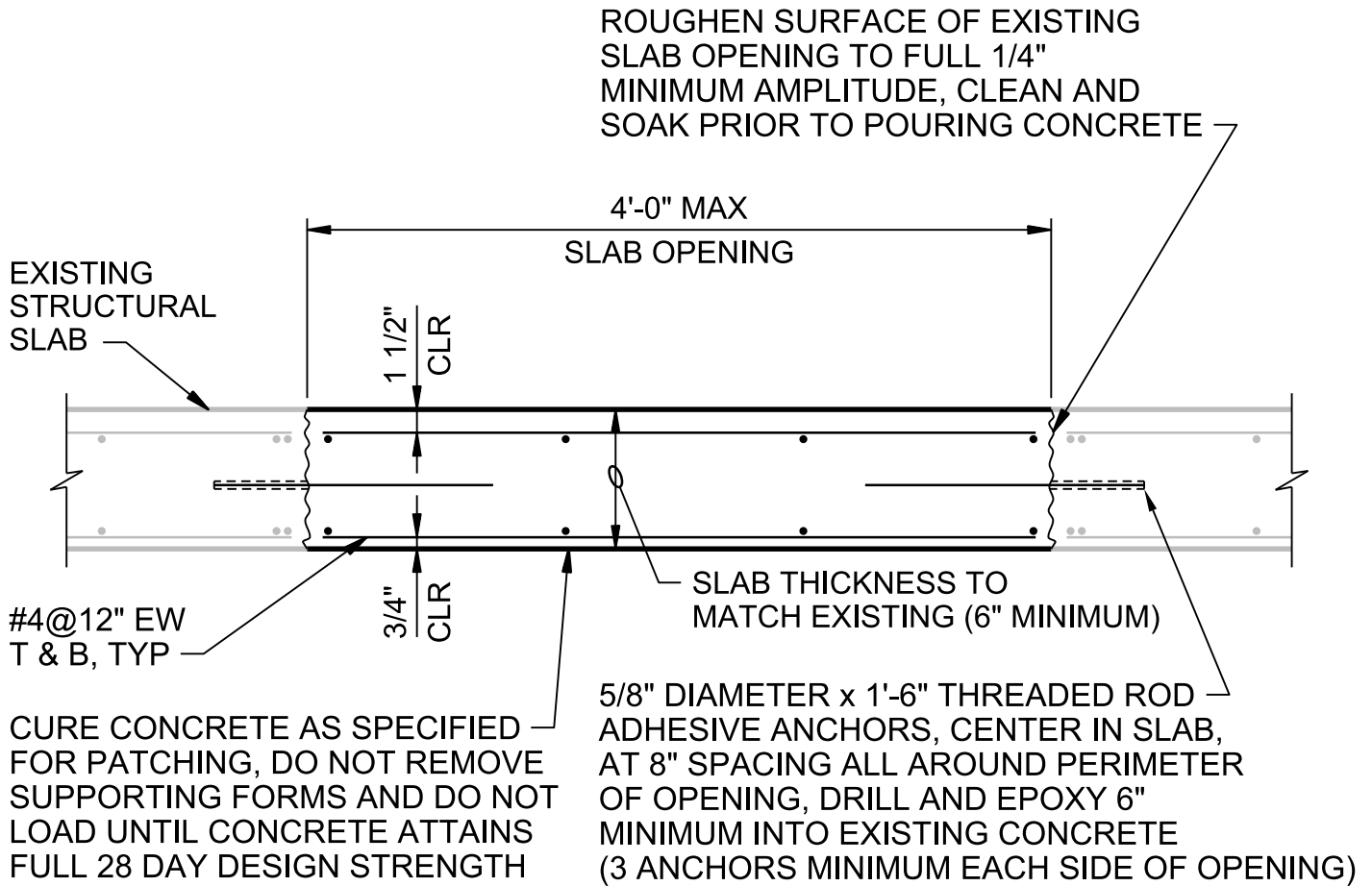
DOWEL SIZE	MINIMUM EDGE DIST	MINIMUM EMBEDMENT A	MINIMUM EMBEDMENT B
#3	2 1/2"	5"	8"
#4	3 1/2"	7"	11"
#5	4"	8"	13"
#6	5"	10 1/2"	16"
#7	6"	12 1/2"	20"
#8	7"	14"	22"
#9	7 1/2"	15"	24"

NOTES:

1. CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 03215, CONCRETE DOWELING.
2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
3. USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
4. LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.

ADHESIVE DOWEL

NTS



EXISTING SLAB OPENING REPAIR

NTS

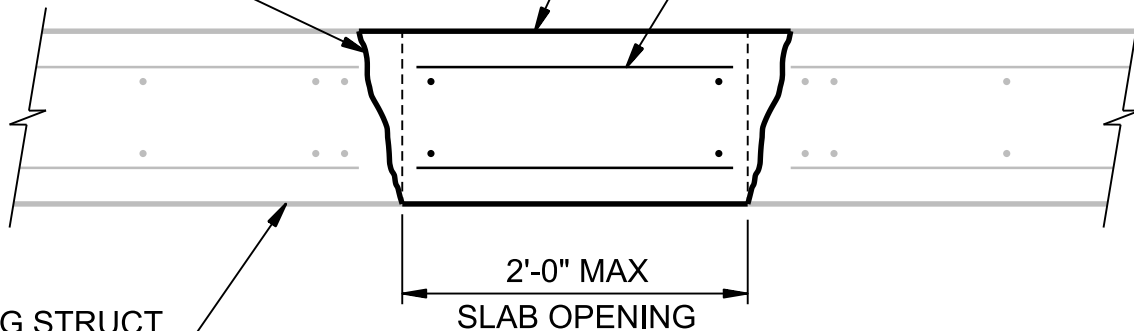
CLEAN WATER SERVICES
 DURHAM WRRF
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3271

CHIP SIDES OF EXISTING
 OPENING BACK TO 3:12
 SLOPE AS SHOWN ROUGHEN
 SURFACE TO FULL 1/4"
 MINIMUM AMPLITUDE, CLEAN
 AND SOAK PRIOR TO POURING
 CONCRETE

CURE CONCRETE AS
 SPECIFIED FOR PATCHING,
 DO NOT REMOVE
 SUPPORTING FORMS &
 DO NOT LOAD UNTIL
 CONCRETE ATTAINS FULL
 28-DAY STRENGTH

REINF WITH #4@12" EW, T&B,
 1 1/2" CLEAR, FOR ALL OPENING
 LARGER THAN 1'-0"



EXISTING STRUCT
 CONCRETE SLAB

NOTE:

FOR REPAIR OF LARGER SLAB OPENINGS SEE (3271)

EXISTING SLAB OPENING REPAIR

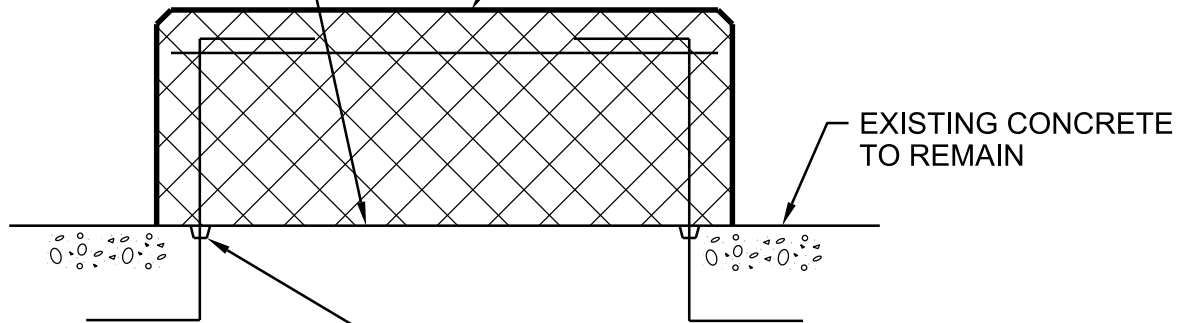
NTS

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

3272

FINISH SLAB OR WALL UNDER REMOVED CONCRETE TO MATCH EXISTING ADJACENT CONCRETE FINISH, REPAIR ROUGH OR DAMAGED SURFACES AS NOTED

SAW-CUT AND CHIP TO REMOVE EXISTING CONCRETE TO BE REMOVED, USE CARE NOT TO DAMAGE EXISTING ADJACENT CONCRETE SURFACES TO REMAIN



CORE DRILL 2" DIAMETER HOLE, 1 1/2" DEEP, CHIP, AND REMOVE EXISTING REINFORCEMENT AND EQUIPMENT ANCHORS TO 1 1/2" MIN BELOW TOP OF EXISTING CONCRETE TO REMAIN, CLEAN AND SOAK, AND PATCH WITH REPAIR MATERIAL

NOTES:

1. REMOVE CONCRETE OUT TO SOUND CONCRETE.
2. IF CHIPPING INTO THE SURFACE OF THE EXISTING SLAB OR WALL TO REMAIN IS REQUIRED, MAKE EDGES PERPENDICULAR TO THE SURFACE. DO NOT FEATHER EDGES.
3. FILL DEFECTIVE AREA WITH AN APPROVED PREPACKAGED REPAIR MATERIAL TO MATCH APPEARANCE OF ADJACENT CONCRETE SURFACES.
4. USE APPROVED BONDING AGENT ON SURFACES TO BE PATCHED PRIOR TO PLACING REPAIR MATERIAL.
5. DEMONSTRATE METHODS FOR REPAIR USING ACTUAL MATERIALS, METHODS, AND CURING PROCEDURES REQUIRED BY MATERIAL MANUFACTURERS. CONSULT WITH BONDING AGENT MANUFACTURER AND REPAIR MATERIAL MANUFACTURER ON TECHNIQUES.

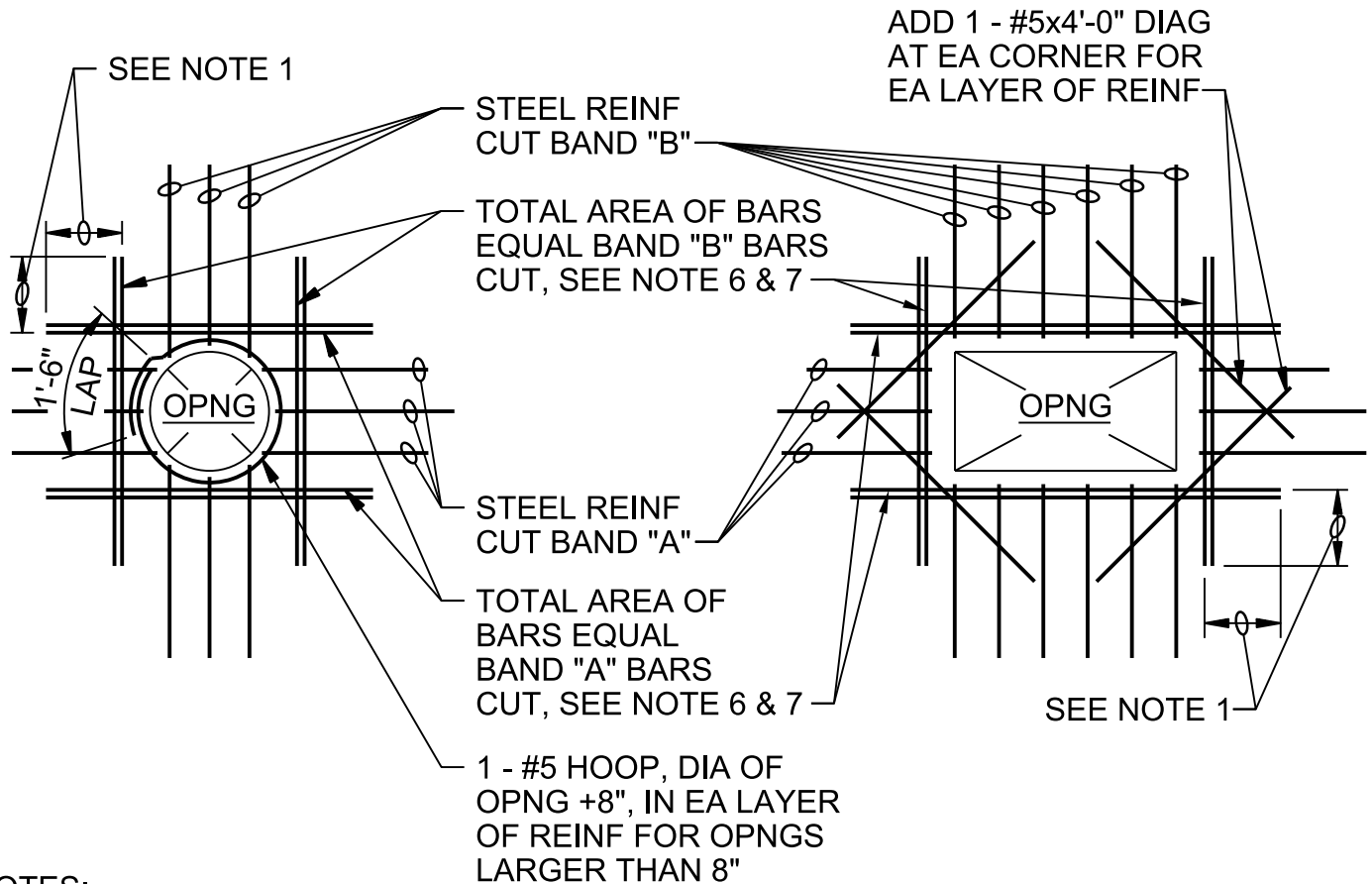
CONCRETE DEMOLITION

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

3273

JACOBS



NOTES:

1. PROVIDE MINIMUM LAP, SEE GENERAL STRUCTURAL NOTES.
2. TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS OF BELOW GRADE AND HYDRAULIC STRUCTURES AND ALL STRUCTURAL CONCRETE SLABS UNLESS INDICATED OTHERWISE ON PLANS.
3. DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.
4. PROVIDE A MINIMUM OF 2 "A" BARS AND 2 "B" BARS EACH SIDE OF OPENING (1 EACH FACE), INCLUDING DOWELS AND CORNER BARS, TYPICAL.
5. FOR OPENINGS LARGER THAN 8'-0", REINFORCE SAME AS FOR 8'-0" OPENINGS.
6. SPACE AT 3 BAR DIAMETERS (OR 3" MINIMUM) ON CENTER. LOCATE HALF OF TOTAL AREA ON EACH SIDE OF OPENING.
7. AT OPENINGS WITHIN 12" OF AN INTERSECTING WALL OR SLAB, PROVIDE ONLY THE EXTRA REINFORCEMENT WHICH WILL FIT, AT THE BAR SPACING IN NOTE 6.

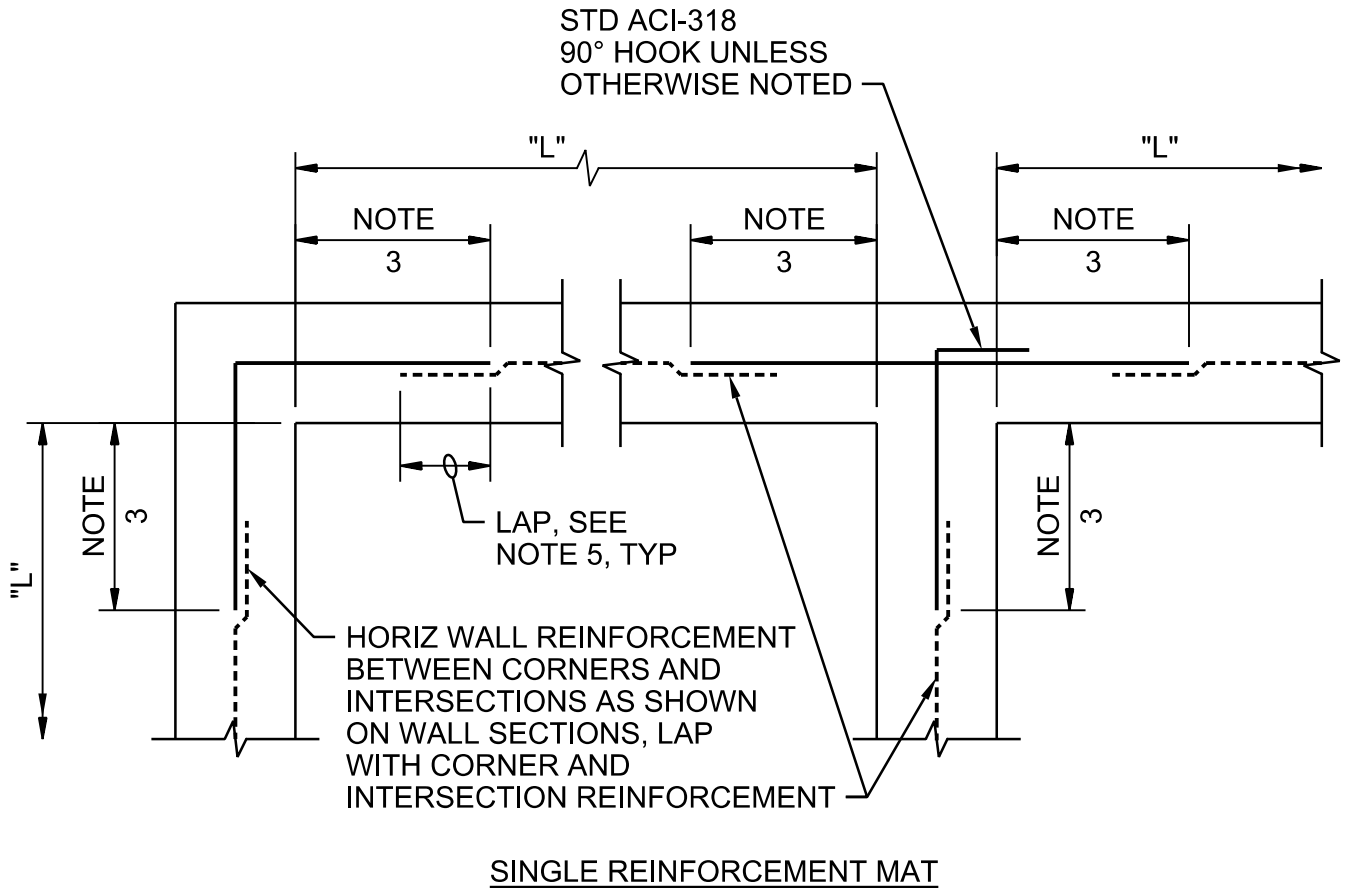
OPENING REINFORCING

NTS

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ODOR CONTROL PHASE 3 HEADWORKS

3301

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TYPICAL WALL CORNER & INTERSECTION REINFORCEMENT

NTS

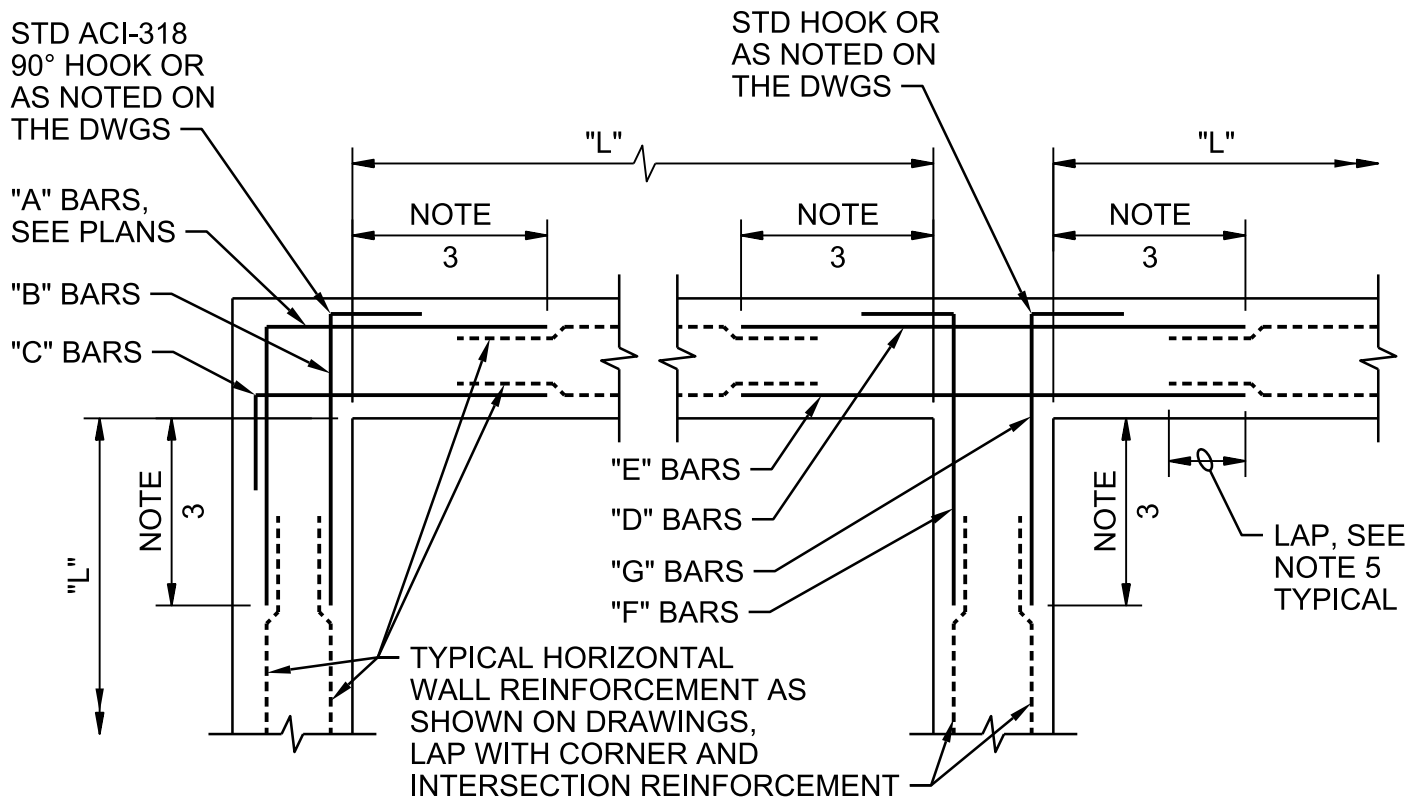
DETAIL 1 OF 3

CLEAN WATER SERVICES

DURHAM WRF

ODOR CONTROL PHASE 3 HEADWORKS

3303



DOUBLE REINFORCEMENT MAT

TYPICAL WALL CORNER & INTERSECTION REINFORCEMENT

NTS

DETAIL 2 OF 3

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

3303

NOTES:

1. TYPICAL HORIZONTAL WALL CORNER AND INTERSECTION REINFORCEMENT LAYOUT IS SHOWN TO AVOID CONGESTION AND PERMIT PROPER PLACEMENT, FOR SIZE AND SPACING SEE PLANS. ALL HORIZONTAL REINFORCEMENT AT CORNERS AND INTERSECTIONS SHALL BE FABRICATED AND INSTALLED WITH SPLICES LOCATED WHERE SHOWN REGARDLESS OF BAR SIZE AND SPACING.
2. WHERE THE CORNER OR INTERSECTION REINFORCEMENT SIZE AND SPACING IS NOT SHOWN, NOTED OR TABULATED ON THE PLANS, THE SIZE AND SPACING SHALL BE THE SAME AS THE WALL HORIZONTAL REINFORCEMENT SHOWN ON THE WALL SECTIONS OR AS NOTED FOR THE REINFORCEMENT BETWEEN THE CORNERS OR INTERSECTIONS.
3. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 3" SHALL BE THE LESSER OF L/4, 10 FEET, OR 1.0 TIMES THE HEIGHT OF THE WALL, EXCEPT THAT IN NO CASE SHALL IT BE LESS THAN A LAP LENGTH.
4. L = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION.
5. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 5" SHALL BE EQUAL TO ONE "LAP LENGTH" AS REQUIRED BY THE GENERAL STRUCTURAL NOTES. USE THE LAP LENGTH AS REQUIRED FOR THE SMALLER OF THE TWO REINFORCEMENT BARS BEING SPLICED.
6. UNLESS OTHERWISE NOTED, "B" AND "C" BARS ARE THE SAME SIZE AND SPACING AND "F" AND "G" BARS ARE THE SAME SIZE AND SPACING.

TYPICAL WALL CORNER & INTERSECTION REINFORCEMENT

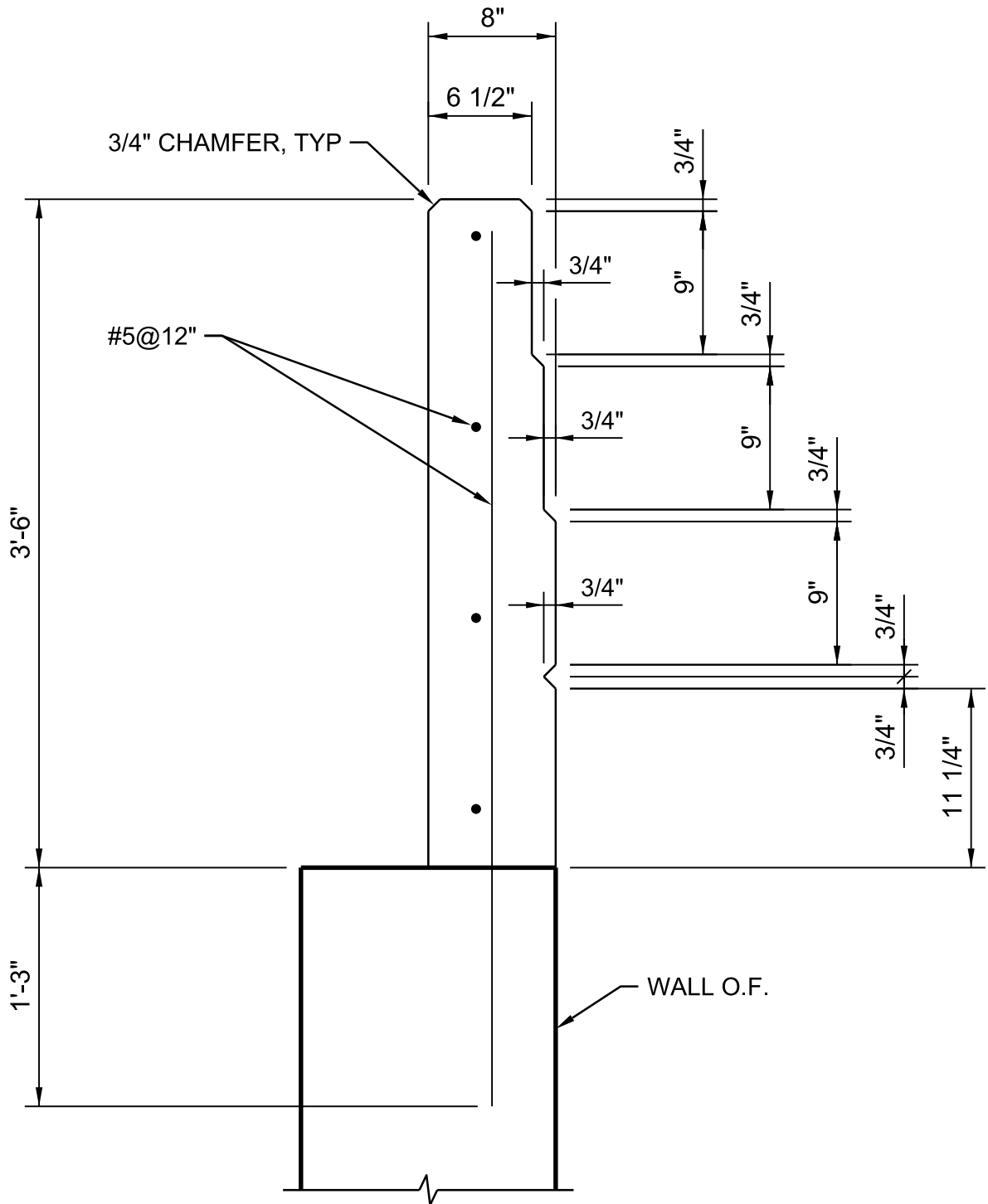
NTS

DETAIL 3 OF 3

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

3303

JACOBS

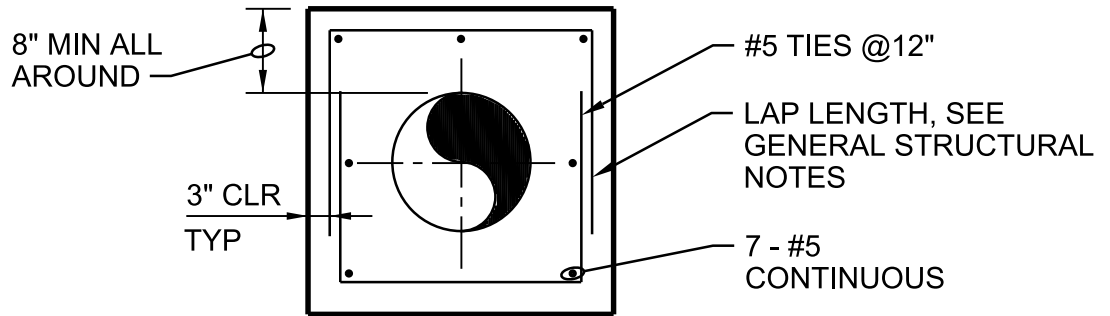
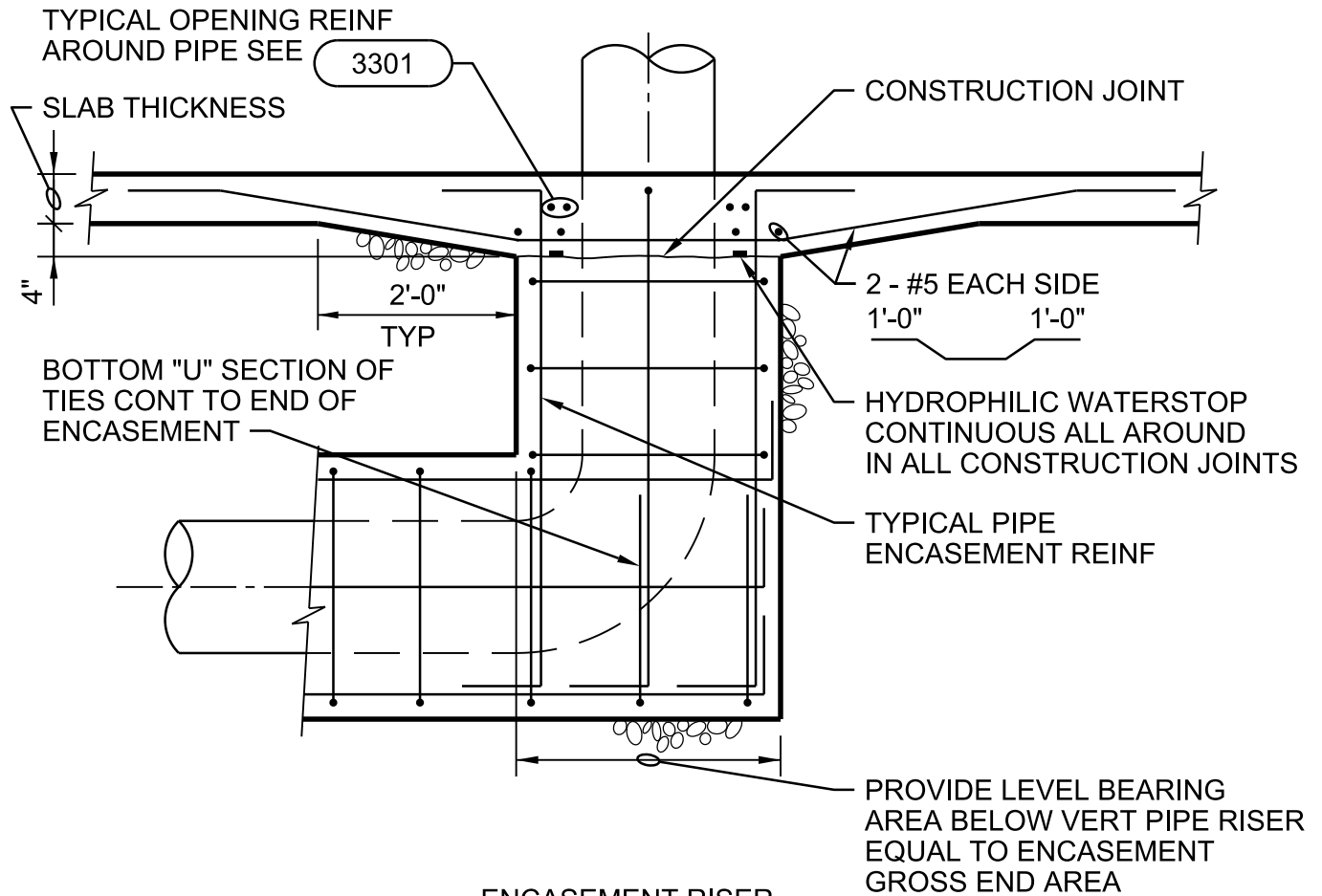


PARAPET DETAIL

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

3310



NOTES:

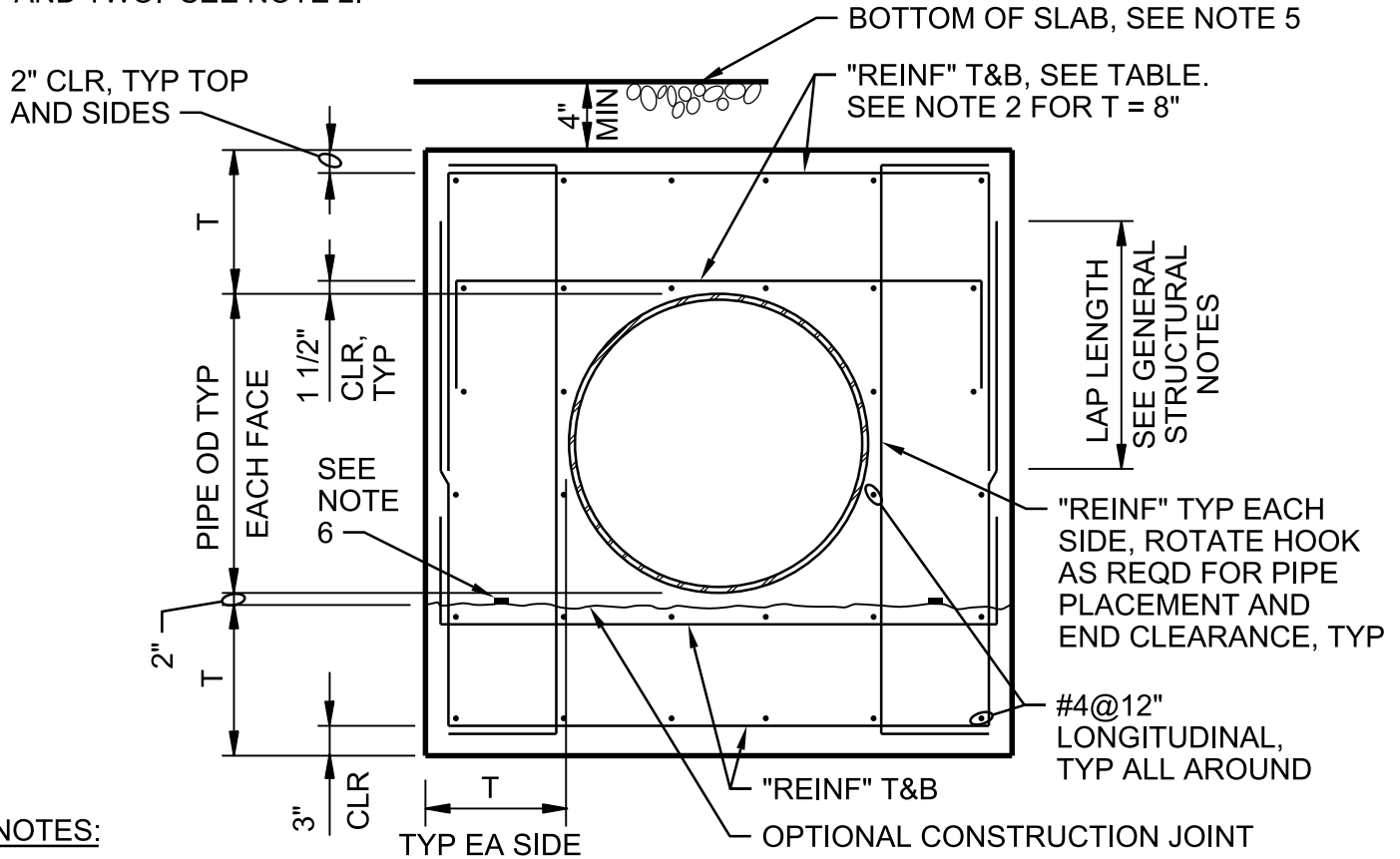
- 1. SECTION APPLIES TO PIPES W/ DIAMETERS 18" AND SMALLER. FOR 20" DIAMETER PIPES AND LARGER, SEE 3317

PIPE ENCASEMENT

NTS

PIPE ENCASEMENT TABLE								
PIPE DIA (IN.)	H=10 FEET		H=20 FEET		H=30 FEET		H=40 FEET	
	T (in)	REINF	T (in)	REINF	T (in)	REINF	T (in)	REINF
20 THRU 30	8	#5@12"	10	#5@12"	10	#5@12"	10	#6@12"
36 THRU 42	10	#5@12"	10	#6@12"	10	#7@12"	10	#6@6"
48 THRU 54	10	#6@12"	10	#7@12"	10	#7@6"	12	#7@6"
UP TO 60	10	#6@12"	10	#6@6"	14	#7@6"	14	#7@6"

HEAVY DARK LINE INDICATES BREAK BETWEEN ONE LAYER OF REINFORCEMENT AND TWO. SEE NOTE 2.



NOTES:

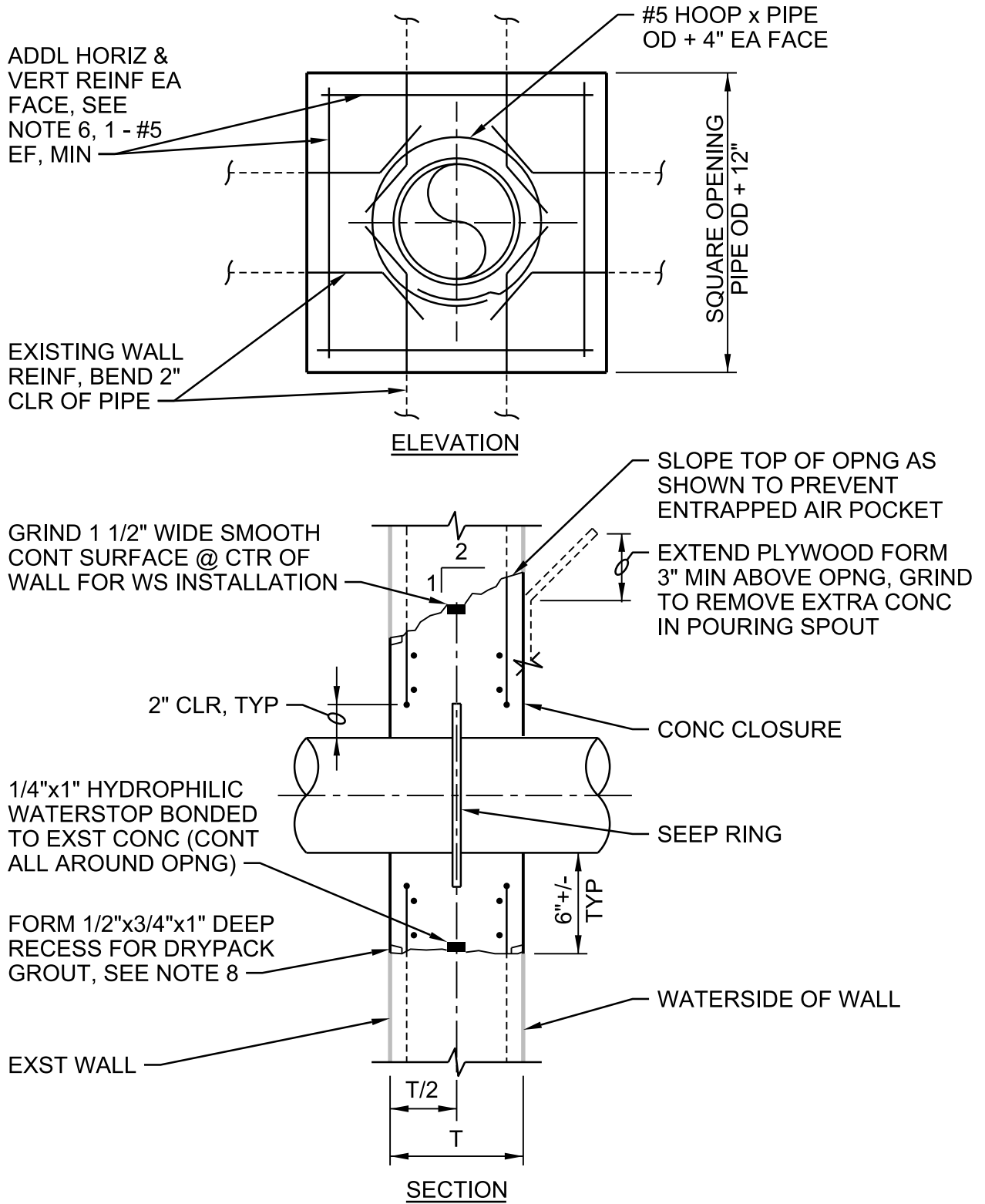
1. THIS DETAIL APPLIES TO PIPE DIAMETER OF 20" AND LARGER. FOR SMALLER THAN 20", SEE DETAIL 3316.
2. FOR T=8" REINFORCEMENT SHALL BE ONE LAYER AND CENTERED IN SLABS OR WALLS. SIM 3316.
3. FOR ENCASEMENT AT PIPE RISER, SEE 3316.
4. "H" IS FILL HEIGHT OR WATER DEPTH OR COMBINATION ABOVE PIPE.
5. HYDROPHILIC WATERSTOP CONTINUOUS ALL AROUND IN ALL CONSTRUCTION JOINTS.

PIPE ENCASEMENT

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

3317



TYPE 'A' - WITHOUT CLOSURE COLLAR

PIPE PENETRATION - EXISTING WALL

NTS

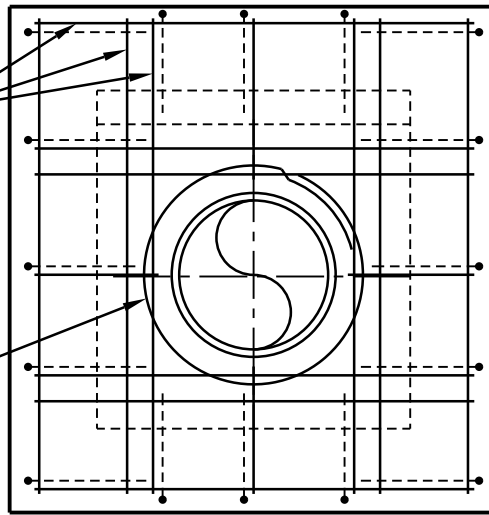
DETAIL 1 OF 3

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

3322

#5@12" EW
W/ 2 - #5@3"
T&B & EA
SIDE OF PIPE

#5 HOOP x
PIPE OD + 4"



ELEVATION

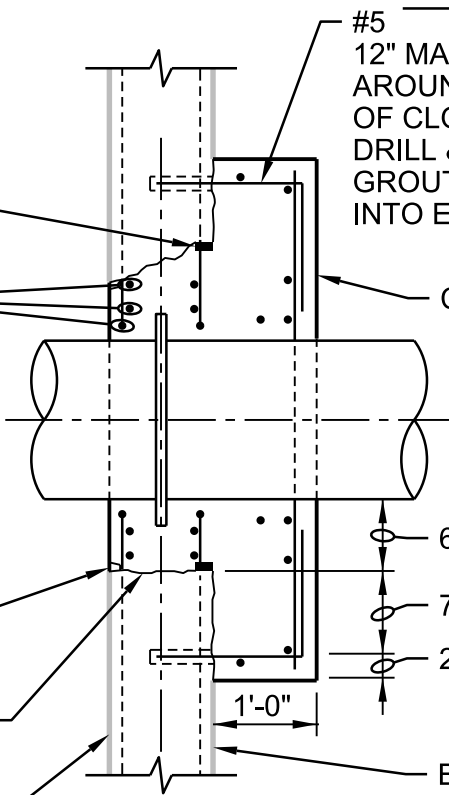
1/4"x1" HYDROPHILIC
WATERSTOP BONDED
TO SMOOTH SAWCUT
SURFACE OF EXST
WALL CONT ALL
AROUND

EXST WALL
REINFORCING,
SEE PIPE
PENETRATION
W/O CLOSURE
COLLAR

FORM 1/2"x3/4"x1"
DEEP RECESS FOR
DRYPACK GROUT
ALL AROUND

ROUGHEN SURFACE

WATERSIDE OF WALL



#5 12" DOWELS @
12" MAX SPG ALL
AROUND PERIMETER
OF CLOSURE COLLAR,
DRILL & EPOXY
GROUT 5 1/2" MIN
INTO EXST WALL

CONC CLOSURE COLLAR

6" +/-, TYP

7", TYP

2", TYP

1'-0"

BACKFILLED SIDE OF WALL

SECTION

TYPE 'B' - WITH CLOSURE COLLAR

PIPE PENETRATION - EXISTING WALL

NTS

DETAIL 2 OF 3

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

3322

NOTES:

1. SAW-CUT 1-INCH DEEP x PIPE OD + 12" SQUARE SCORE LINE ON EACH FACE OF WALL. (VERIFY DEPTH OF CUT TO CLEAR REINFORCING.) (INCREASE HEIGHT AS NOTED AT TOP ON WATERSIDE FACE FOR POURING.)
2. CHIP TO REMOVE THE CONCRETE WITHIN THE SCORE LINE, WHILE PRESERVING THE EXISTING WALL REINFORCING.
3. CUT EXISTING REINFORCING AT CENTER OF OPENING AND BEND TO CLEAR PIPE.
4. GRIND 1 1/2" WIDE x CONT SMOOTH SURFACE ALL AROUND THE OPENING AT CENTER OF WALL. CLEAN SURFACES AND BOND CONTINUOUS HYDROPHILIC WATERSTOP IN PLACE.
5. INSTALL WALL PIPE. (COAT CONCRETE ENCASED PORTION OF PIPE WITH SPECIFIED COATING SYSTEM.)
6. INSTALL ADDITIONAL REINFORCING EACH FACE, EACH SIDE, ABOVE AND BELOW PIPE. HORIZONTAL REINFORCING TO HAVE COMBINED AREA EQUAL TO AREA OF HORIZONTAL REINFORCING CUT. VERTICAL REINFORCING TO HAVE COMBINED AREA EQUAL TO AREA OF VERTICAL REINFORCING CUT.
7. SOAK CONCRETE SURFACES AND WITHIN 15-MINUTES CAST CONCRETE CLOSURE. (CONCRETE CLOSURE MUST BE CAST BEFORE HYDROPHILIC WATERSTOP EXPANDS). FORM GROOVE ON ALL SIDES OF OPENING EXCEPT AT TOP ON THE POUR SIDE.
8. CLEAN SURFACES OF FORMED GROOVE WITH POWER WIRE BRUSH OR SANDBLASTING AND DRY-PACK WITH NON-SHRINK GROUT AFTER NEW CONCRETE MIN 28-DAYS OLD.
9. DO NOT ALLOW PIPE OR SEEP RING TO COME INTO CONTACT WITH REINFORCING STEEL. PROVIDE 2" CLEARANCE MINIMUM. CONFIRM ELECTRICAL ISOLATION, AS DEFINED IN NACE SP0169, BEFORE AND AFTER CONCRETE POUR.

PIPE PENETRATION - EXISTING WALL

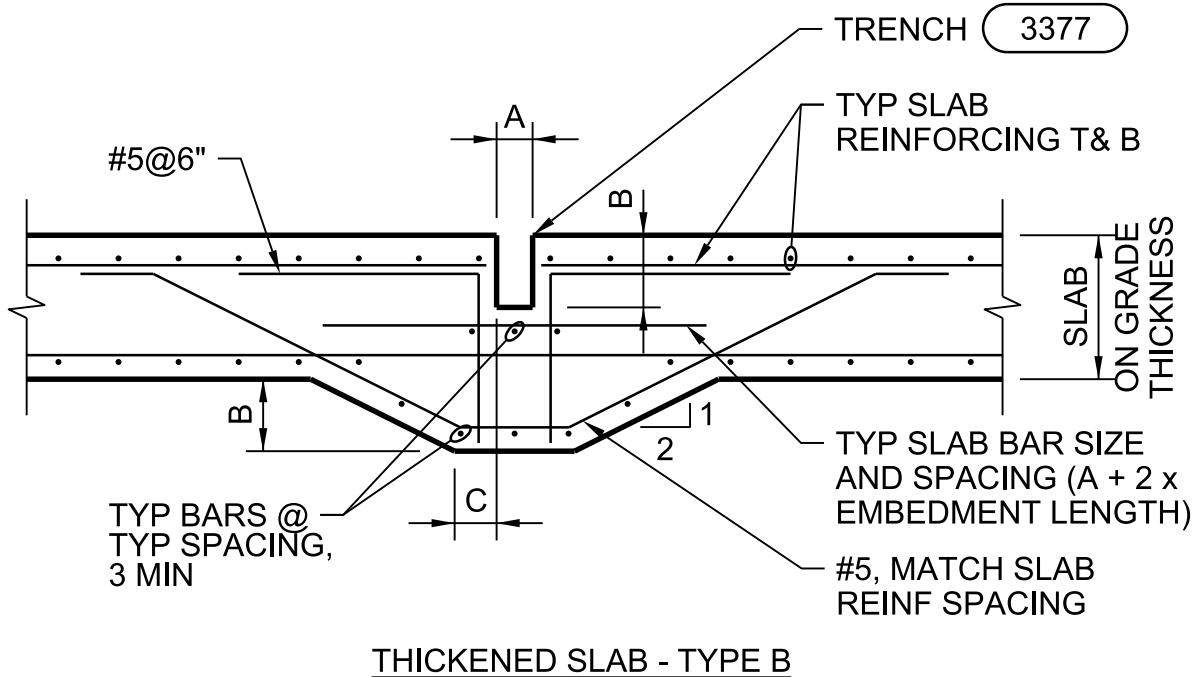
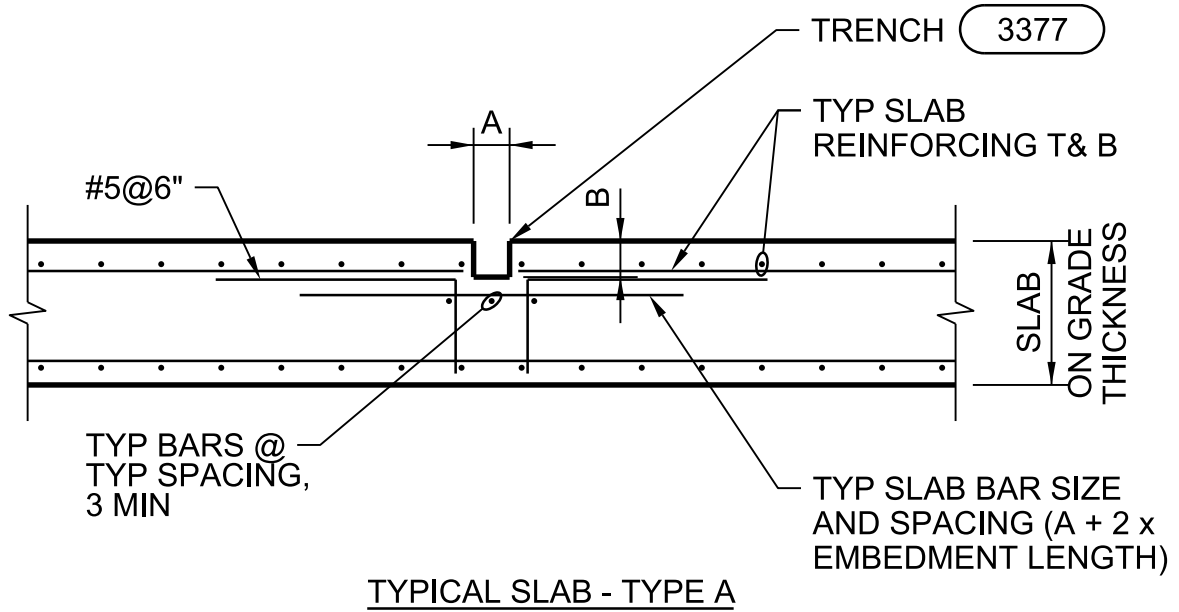
NTS

DETAIL 3 OF 3

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

3322

JACOBS



DIMENSIONS:

- A = TRENCH WIDTH: SEE PLANS
- B = TRENCH DEPTH: SEE PLANS
- C = 6" WHEN: A < 1'-0"
- C = 1'-0" WHEN: A ≥ 1'-0"

TRENCH REINFORCING

NTS

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

3343

2" MIN ALL AROUND
OR AS REQUIRED BY
ANCHORAGE
CALCULATIONS

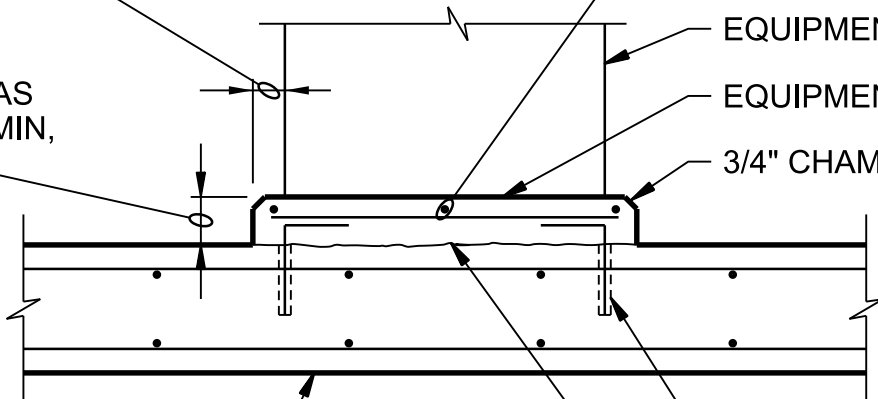
#3@12" EW, 1" CLR
FOR PAD HT < 4",
#4@12" EW, 1 1/2" CLR
FOR PAD HT > 4"

PAD HEIGHT AS
REQD, 3 1/2" MIN,
10" MAX

EQUIPMENT

EQUIPMENT PAD

3/4" CHAMFER, TYP



EXST OR NEW SUSPENDED
SLAB OR SLAB ON GRADE,
FOR THICKNESS SEE PLANS

#4 ADHESIVE DOWEL
@ 12" OC @ PERIMETER

3265

CONSTRUCTION JOINT,
ROUGHEN & CLEAN PRIOR
TO PLACING PAD

NOTES:

1. WHEN ANCHORAGE OF EQUIPMENT TO PAD IS REQUIRED, USE CONCRETE ANCHORS SPECIFIED.
2. CONCRETE PADS FOR ELECTRICAL EQUIPMENT SHALL BE 3 1/2" HIGH, UNLESS NOTED OTHERWISE.

TYPE E

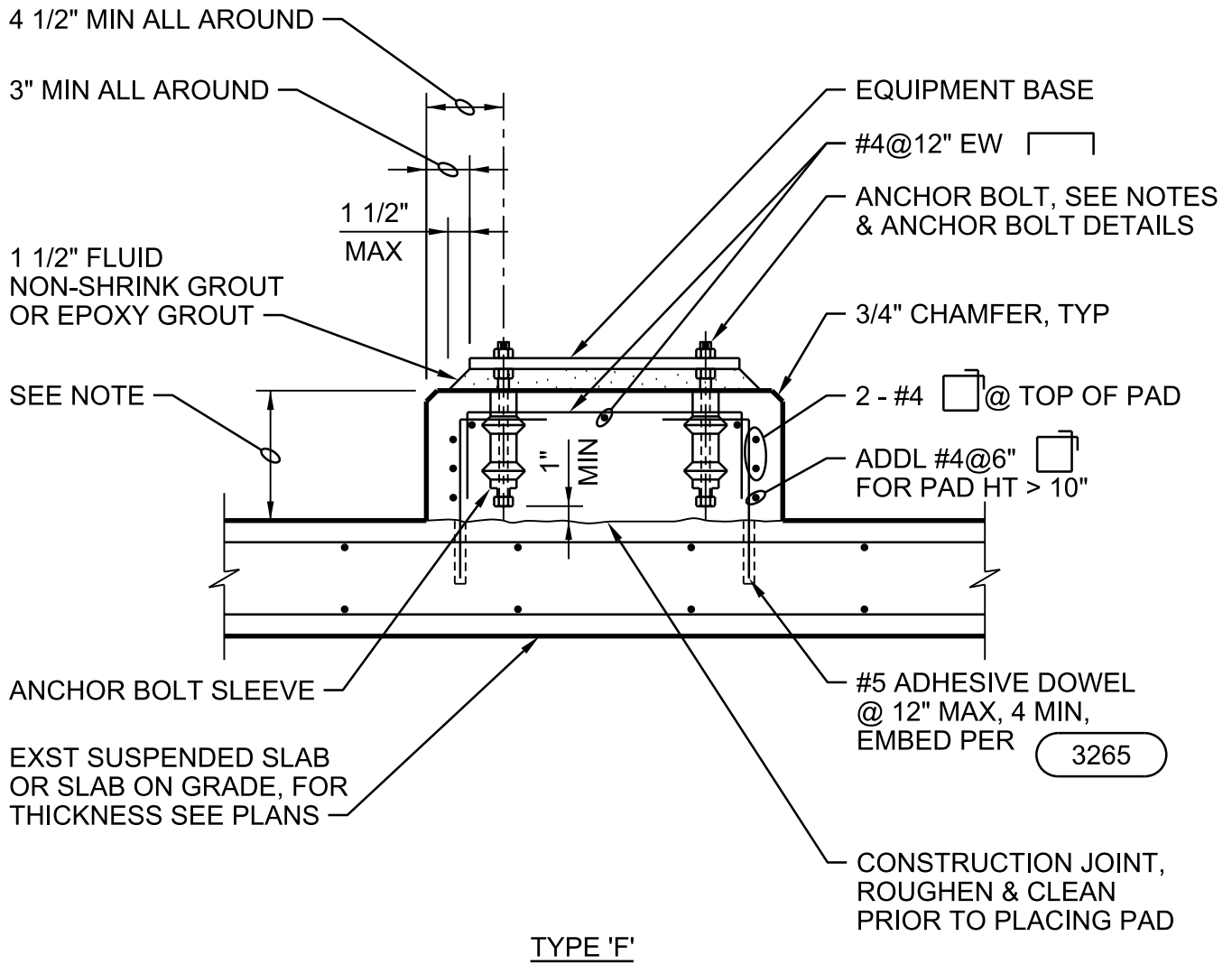
CONCRETE EQUIPMENT PAD - TYPE E

NTS

DETAIL 1 OF 2

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

3356



NOTE:
 HEIGHT OF PADS SHALL BE MINIMUM REQUIRED FOR ANCHOR BOLT CLEARANCE TO KEEP ANCHOR BOLT ABOVE SUPPORTING SLAB (SEE TABLE BELOW). WHERE EQUIPMENT OR PIPING ELEVATION REQUIRE A PAD HEIGHT LESS THAN THE MINIMUM SHOWN, USE TYPE "B" EQUIPMENT PAD WITH BLOCKOUT.

AB DIA (IN.)	1/2	5/8	3/4	7/8	1	1 1/4	1 3/8	1 1/2	1 3/4	2
MIN PAD HT (IN.)	7	8 1/2	10	11	12 1/2	15	16 1/2	18	21	24

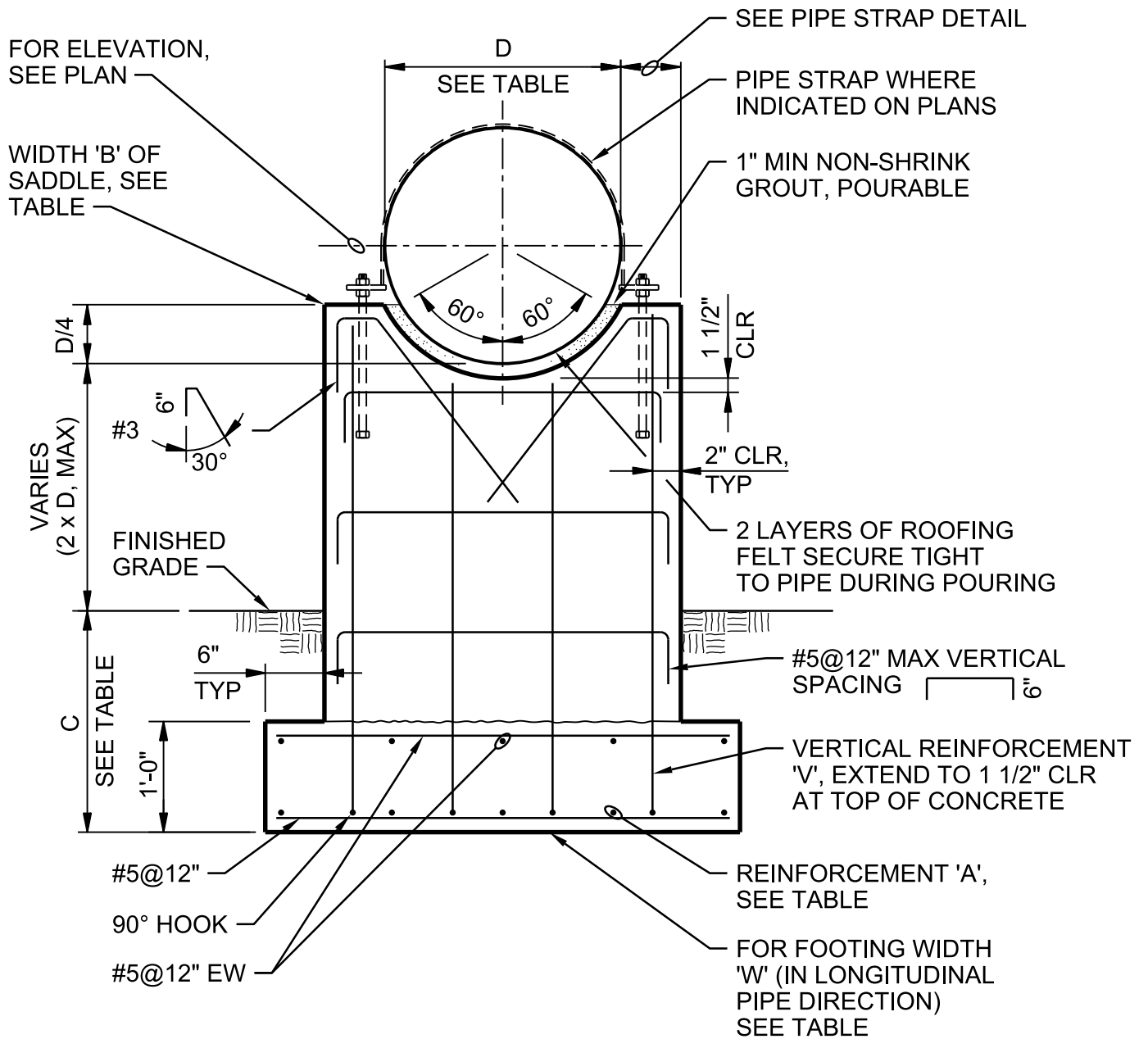
CONCRETE EQUIPMENT PAD - TYPE 'F'

NTS

DETAIL 2 OF 2

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

3356



TYPE 'B' SADDLE

PIPE SUPPORT - CONCRETE SADDLE

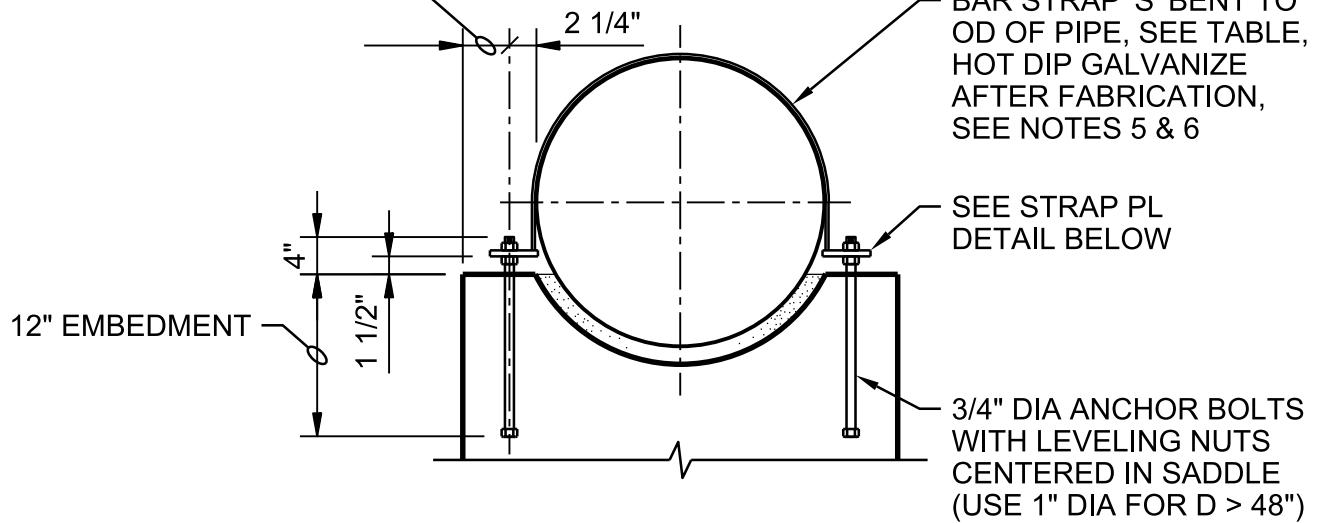
NTS

DETAIL 2 OF 4

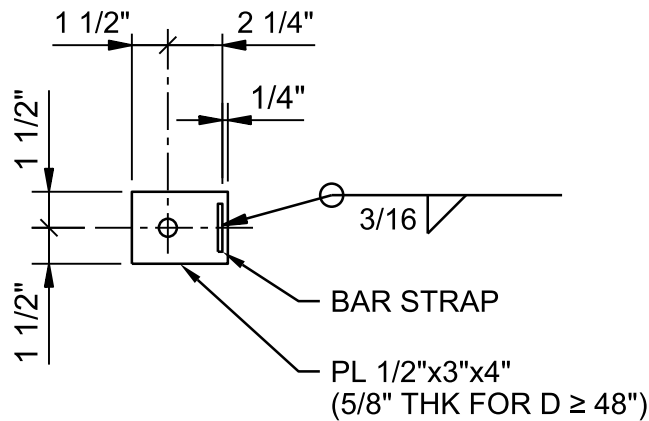
CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

3361

4 1/2" FOR 3/4" ANCHOR BOLT,
6" FOR 1" ANCHOR BOLT



PIPE STRAP



PLAN

PIPE STRAP PLATE

PIPE SUPPORT - CONCRETE SADDLE

NTS

DETAIL 3 OF 4


CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

3361

PIPE SADDLE TABLE					
PIPE DIAMETER D	SADDLE WIDTH B	LAYERS OF REINFORCEMENT	VERTICAL REINFORCEMENT V	PIPE STRAP SIZE S	NO. OF STRAPS
D ≤ 12"	9"	1 (CTRD)	#5@12"	3/16"x2"	1
12" < D ≤ 24"	9"	1 (CTRD)	#5@12"	3/16"x2 1/2"	1
24" < D ≤ 36"	10"	2 (EF)	#5@12"	1/4"x2"	1
36" < D ≤ 48"	12"	2 (EF)	#5@12"	1/4"x3"	1
48" < D ≤ 60"	16"	2 (EF)	#6@12"	3/8"x3"	2
60" < D ≤ 72"	18"	2 (EF)	#6@12"	3/8"x3"	2

TYPE 'B' PIPE SADDLE FOOTING TABLE			
PIPE DIAMETER D	FOOTING WIDTH W	REINFORCEMENT A	FOOTING DEPTH C
D ≤ 12"	1'-6"	#5@12"	2'-0"
12" < D ≤ 24"	2'-0"	#5@12"	2'-0"
24" < D ≤ 36"	3'-0"	#5@12"	2'-0"
36" < D ≤ 48"	4'-0"	#5@12"	2'-0"
48" < D ≤ 60"	6'-0"	#5@6"	2'-0"
60" < D ≤ 72"	8'-0"	#5@6"	2'-0"

NOTES:

- FOR 'B'=10" OR THICKER, USE 2 LAYERS OF REINFORCEMENT, TURN HORIZONTAL BARS 90° TO HOOK AROUND VERTICALS , 1 1/2" COVER.
- FORM 3/4" BEVEL ON ALL EXPOSED CORNERS OF SUPPORT.
- USE TYPE 'A' SADDLE IN ALL LOCATIONS WHERE A SLAB (NEW OR EXISTING) OCCURS. USE TYPE 'B' IN OTHER LOCATIONS.
- FOR LOCATIONS WHERE PIPE STRAP IS REQUIRED, REFER TO DRAWINGS. UNLESS INDICATED OTHERWISE A STRAP IS NOT REQUIRED.
- AT SUBMERGED CONDITIONS, STRAP SHALL BE STAINLESS STEEL.
- PROVIDE 3/4" x (STRAP WIDTH PLUS 1" WIDE) NEOPRENE PAD BETWEEN STRAP AND PIPE.

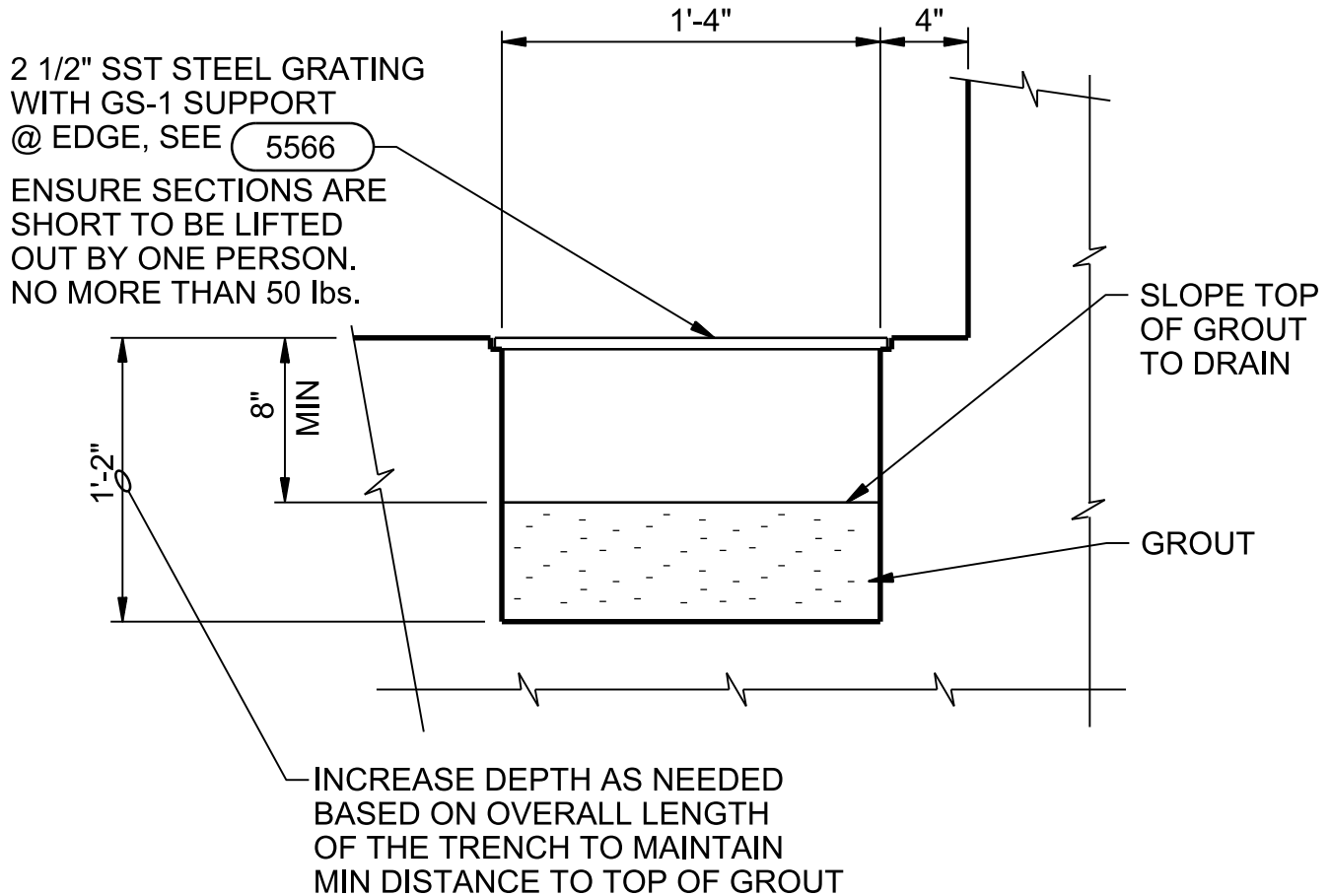
PIPE SUPPORT - CONCRETE SADDLE

NTS

DETAIL 4 OF 4

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

3361



NOTES:

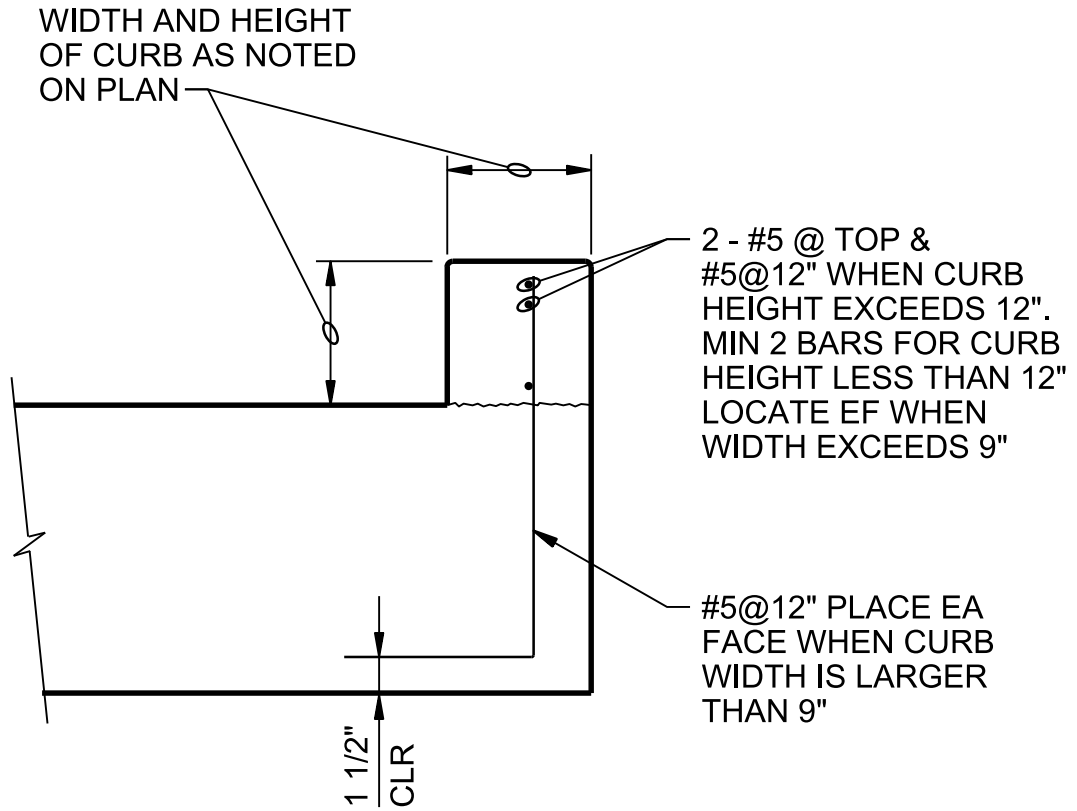
- 1. PROVIDE GRATING WHERE GUTTER CROSSES WALKWAY OR WORKING AREAS.
- 2. WHERE TRENCH IS ADJACENT TO WALL DO NOT PROVIDE GRATING UNLESS SPECIFICALLY SHOWN.

FORMED CONCRETE TRENCH

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

3377

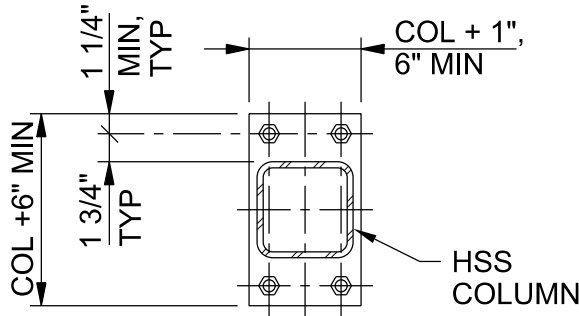


CONCRETE CURB

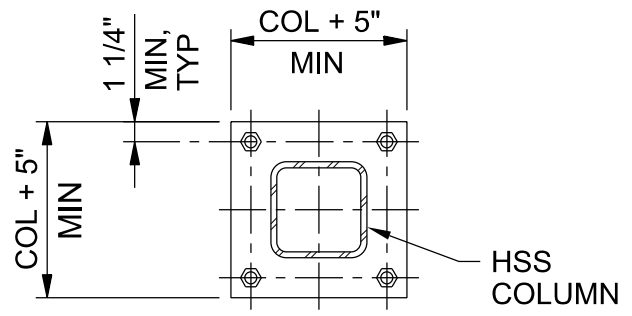
NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

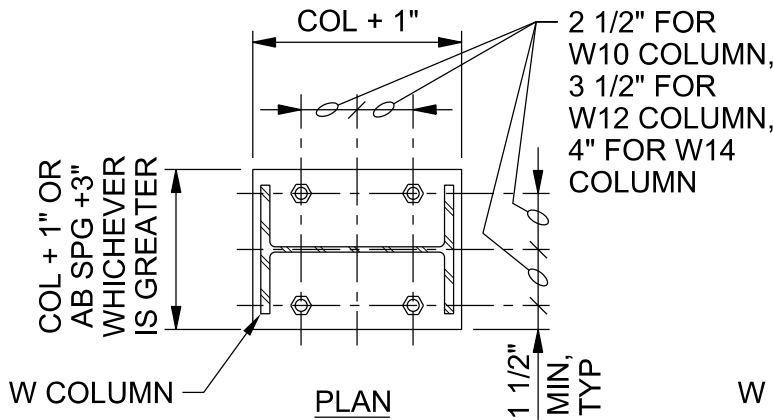
3380



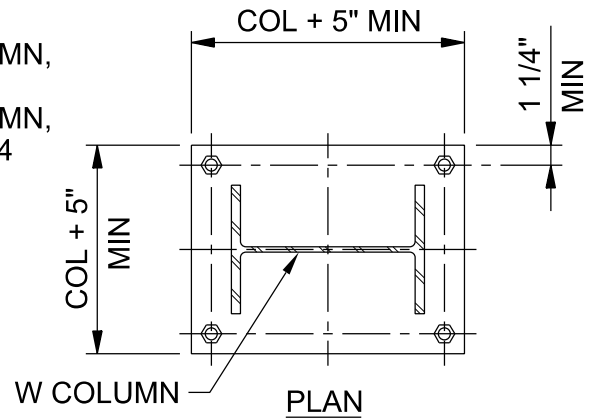
PLAN



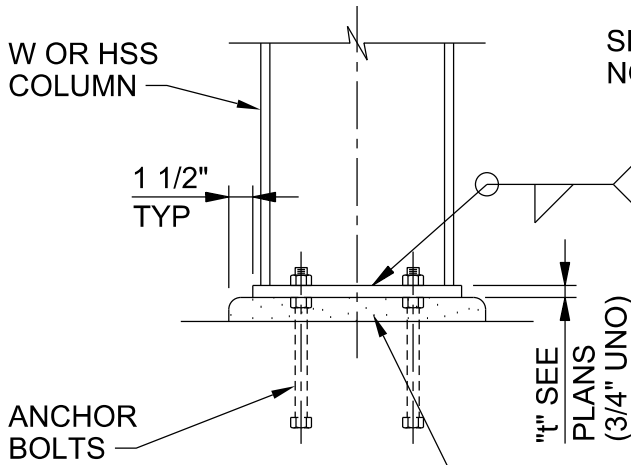
PLAN



PLAN

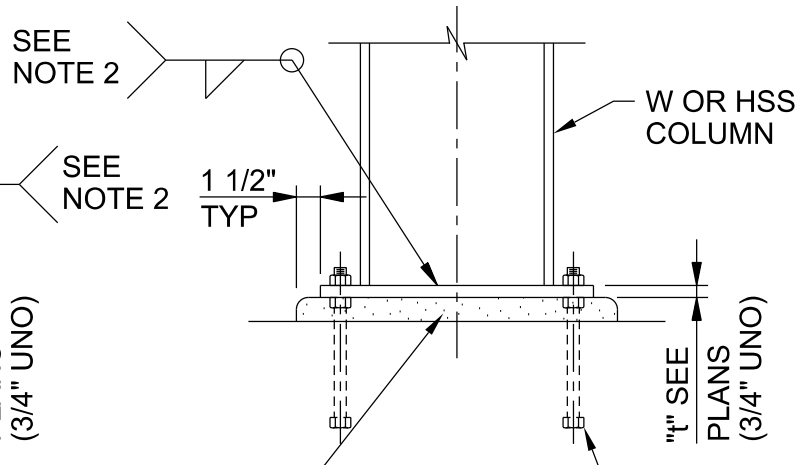


PLAN



ELEVATION

TYPE A



ELEVATION

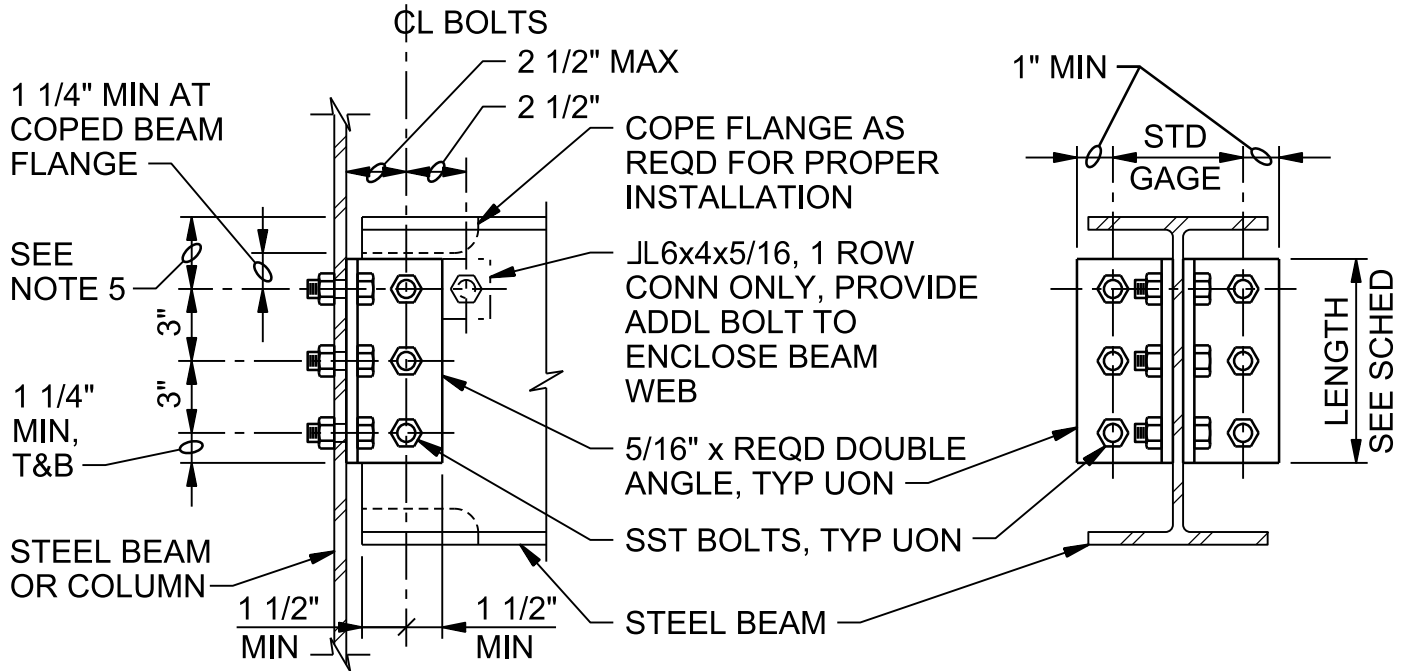
TYPE B

NOTES:

- UNLESS OTHERWISE NOTED, ANCHOR BOLTS SHALL BE 3/4" DIA x REQUIRED WITH LEVELING NUTS AND 1'-0" MINIMUM EMBED AND BASEPLATES SHALL BE CENTERED ON COLUMN.
- WELD SIZE SHALL BE DETERMINED BY THE THICKEST MEMBER JOINED; MINIMUM WELD SIZE SHALL BE 3/16" FILLET FOR MATERIAL THICKNESSES UP TO AND INCLUDING 1/2", 1/4" FILLET FOR THICKNESSES OVER 1/2" TO 3/4", AND 5/16" FILLET FOR MATERIAL THICKNESSES OVER 3/4". ALL WELDS SHALL BE SINGLE-PASS WELDS.

COLUMN BASE - STEEL

NTS



NOMINAL BEAM DEPTH, INCHES	ROWS OF BOLTS	BOLT DIA, INCHES	DOUBLE ANGLE, LENGTH, INCHES	COMMENTS
27	7	3/4"	1'-8 1/2"	-
24	6	3/4"	1'-5 1/2"	-
21	5	3/4"	1'-2 1/2"	-
16-18	4	3/4"	0'-11 1/2"	-
12-15	3	3/4"	0'-8 1/2"	-
8-10	2	3/4"	0'-5 1/2"	-
6	1	3/4"	0'-3"	SEE NOTE 3
4	1	3/4"	0'-2 1/2"	SEE NOTE 3

NOTES:

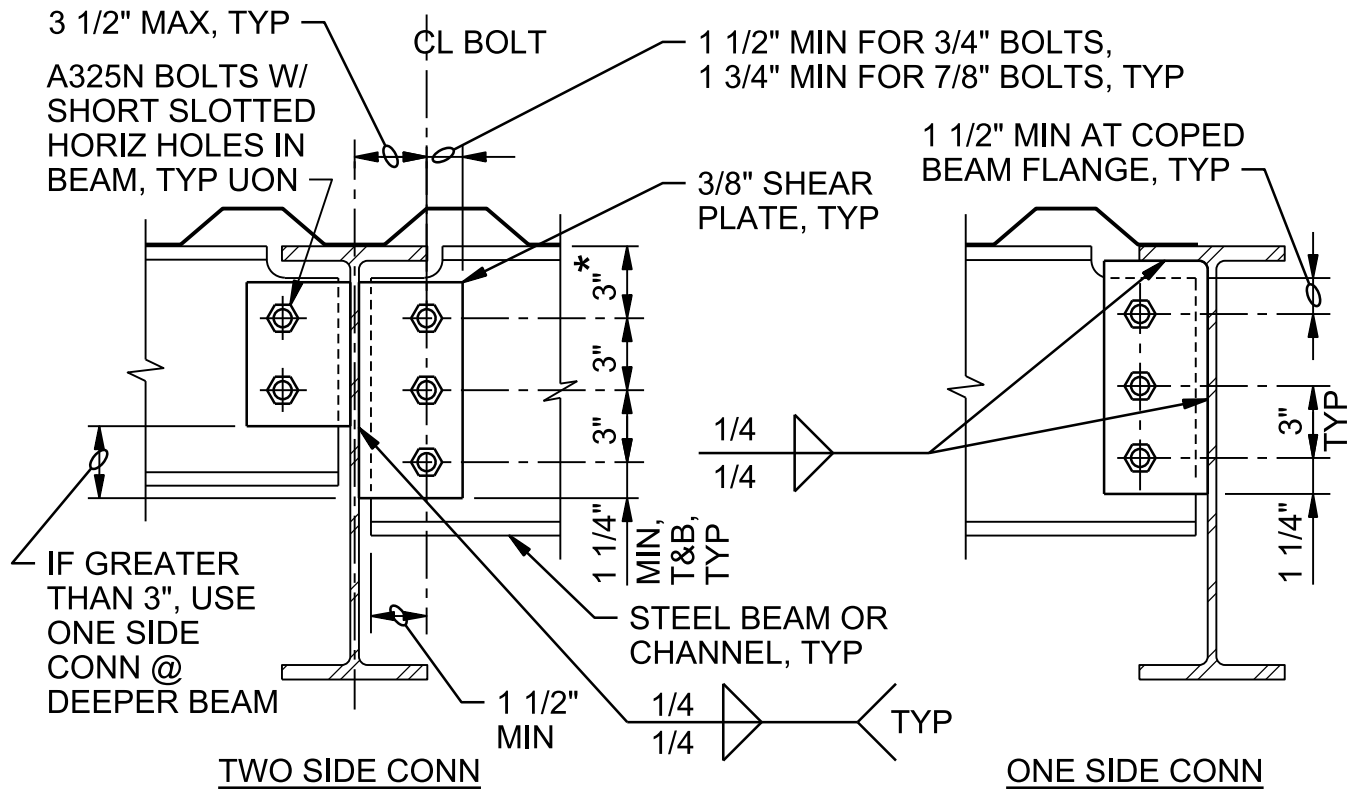
- UNLESS OTHERWISE NOTED, NUMBER OF ROWS IS EQUAL TO NUMBER OF BOLTS TO ENCLOSE BEAM WEB.
- ALL BEAM FRAMING CONNECTIONS SHALL CONFORM TO THIS DETAIL UNLESS SPECIFICALLY NOTED OTHERWISE OR APPROVED IN WRITING BY THE ENGINEER.
- FOR NOMINAL BEAM DEPTHS LESS THAN 8", EXTEND LONG LEG OF DOUBLE ANGLE ALONG BEAM WEB AND PROVIDE ADDITIONAL BOLT TO ENCLOSE BEAM WEB AS SHOWN.
- PROVIDE ADDITIONAL 1 1/2" LENGTH TO DOUBLE ANGLE FOR STAGGERED BOLT CONNECTIONS WHEN REQUIRED OR USED.
- DIMENSION SHALL BE 3" UNLESS OTHERWISE REQUIRED FOR PROPER FABRICATION.

TYPICAL BEAM CONNECTION - STEEL

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

5020



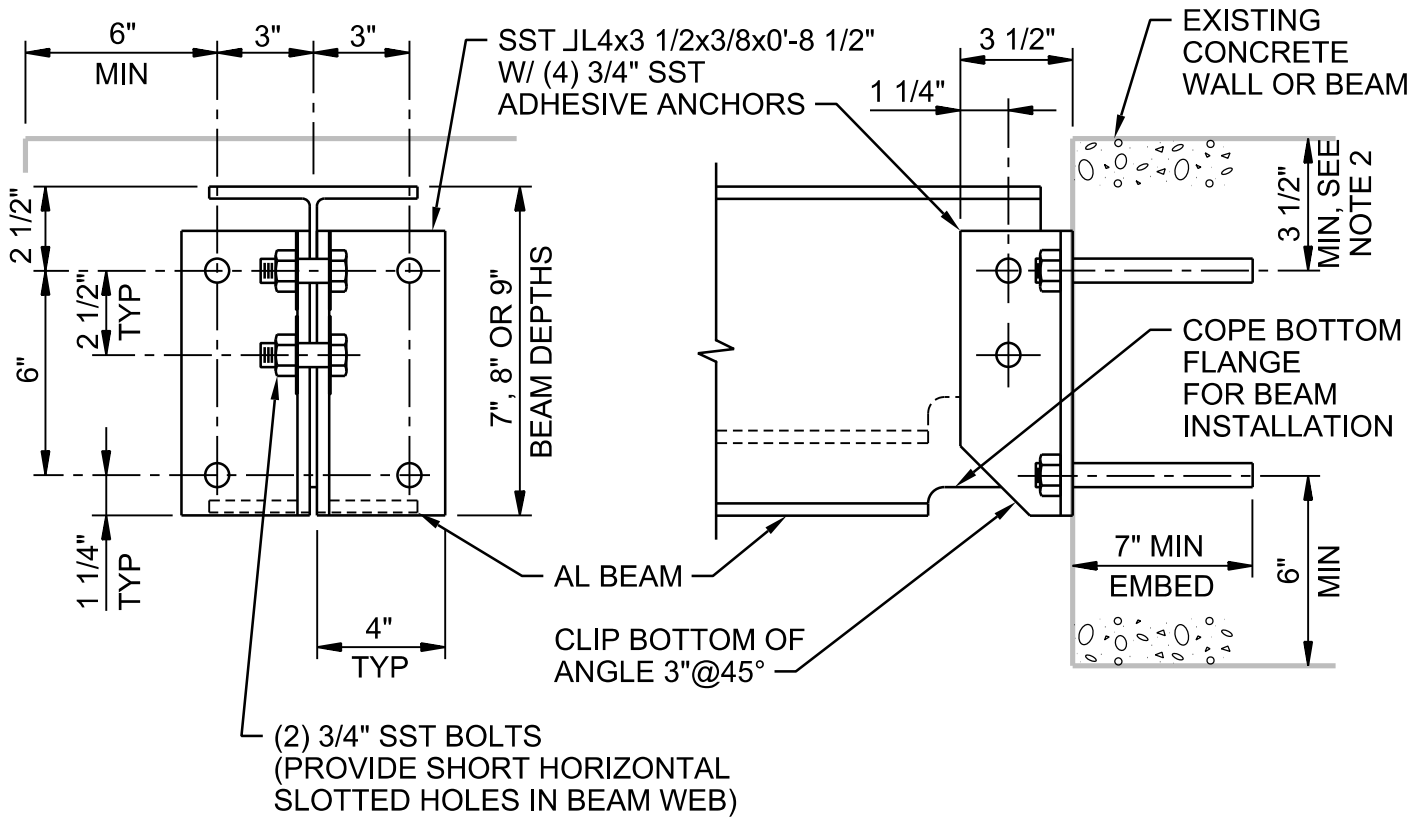
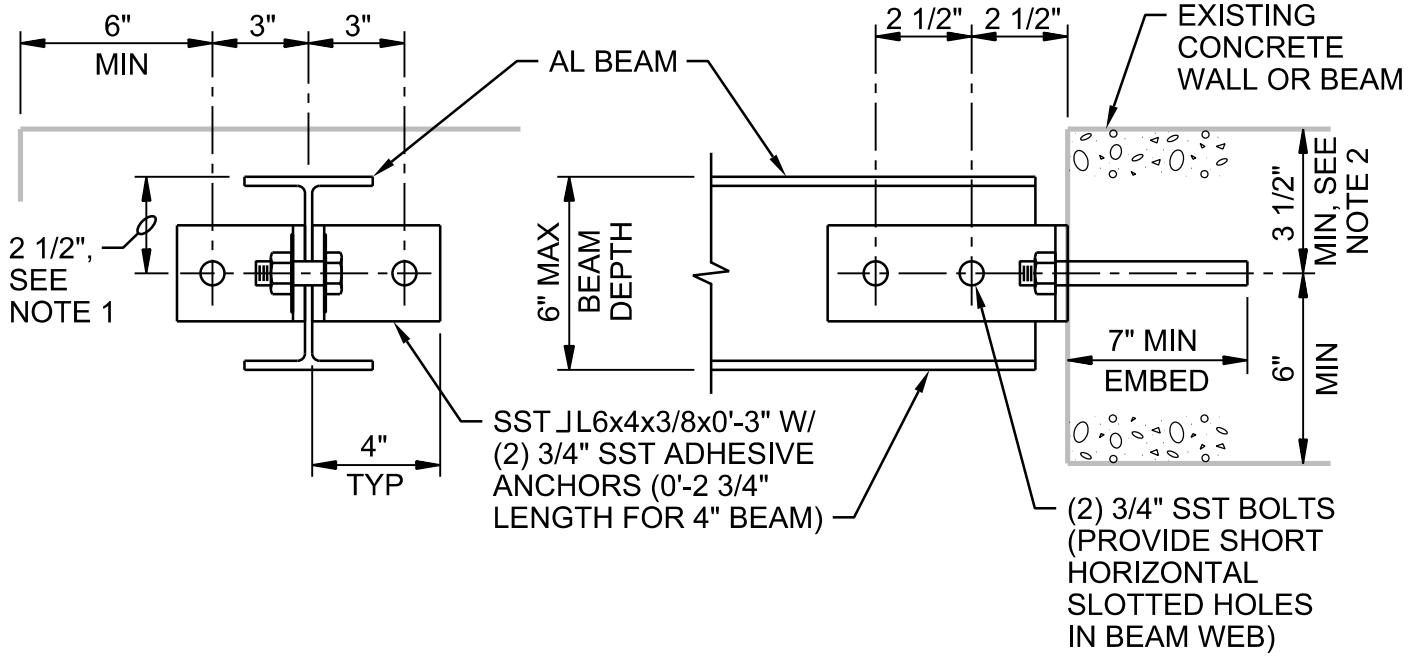
NOMINAL BEAM DEPTH, INCHES	ROWS OF BOLTS	BOLT DIA, INCHES	LENGTH OF SHEAR PLATE
27	8	7/8"	2'-0"
24	7	3/4"	1'-8 1/2"
21	6	3/4"	1'-5 1/2"
18	5	3/4"	1'-2 1/2"
16	4	3/4"	11 1/2"
12-15	3	3/4"	8 1/2"
8-10	2	3/4"	5 1/2"

NOTES:

1. THIS DETAIL APPLIES ONLY WHERE SPECIFICALLY SHOWN ON DRAWINGS.
2. CONNECTION DETAIL SHOWN APPLICABLE ONLY TO BEAMS BRACED BY METAL DECK (COMPOSITE OR NON-COMPOSITE); FOR OTHER BEAM FRAMING CONDITIONS, SEE DETAIL 5020
3. (*) DIMENSION SHALL BE 3" UNLESS OTHERWISE REQUIRED FOR PROPER FABRICATION.

BEAM SINGLE PLATE SHEAR CONNECTION - STEEL

NTS



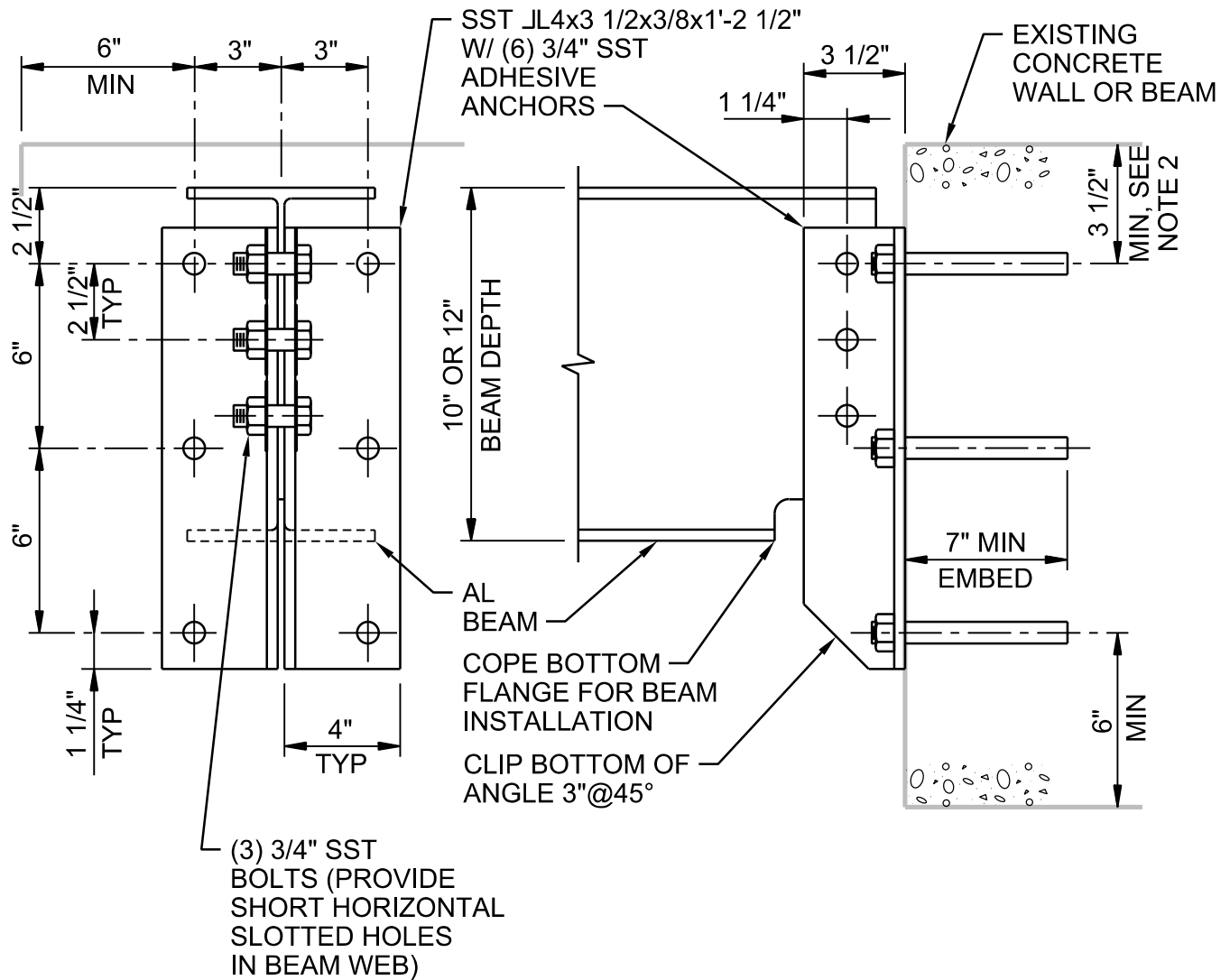
BEAM / WALL CONNECTION - ALUMINUM

NTS

DETAIL 1 OF 2

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

5056



NOTES:

1. 2 1/2" DIMENSION TYPICAL EXCEPT 2" FOR 4" BEAMS.
2. DO NOT CUT EXISTING CONCRETE BEAM TOP REINFORCING DURING DRILL-IN ANCHOR INSTALLATION. FIELD LOCATE BEAM REINFORCING PRIOR TO FABRICATION WITH GROUND PENETRATING RADAR OR OTHER ACCEPTABLE MEANS. ADD LENGTH TO CLIP ANGLES AS REQUIRED TO LOWER ANCHORS TO CLEAR REINFORCING WHILE MAINTAINING SPACING AND EDGE DISTANCE AS SHOWN.
3. WHERE BOTH ENDS OF BEAM ARE ATTACHED TO A WALL, PROVIDE LONG HORIZONTALLY SLOTTED HOLES IN BEAM WEB AT ONE END. TIGHTEN NUTS SNUG TIGHT, BACK OFF 1/2 TURN, AND LOCK WITH DOUBLE NUT.
4. PROVIDE PROTECTION FOR DISSIMILAR MATERIALS PER SPECIFICATIONS.

BEAM / WALL CONNECTION - ALUMINUM

NTS

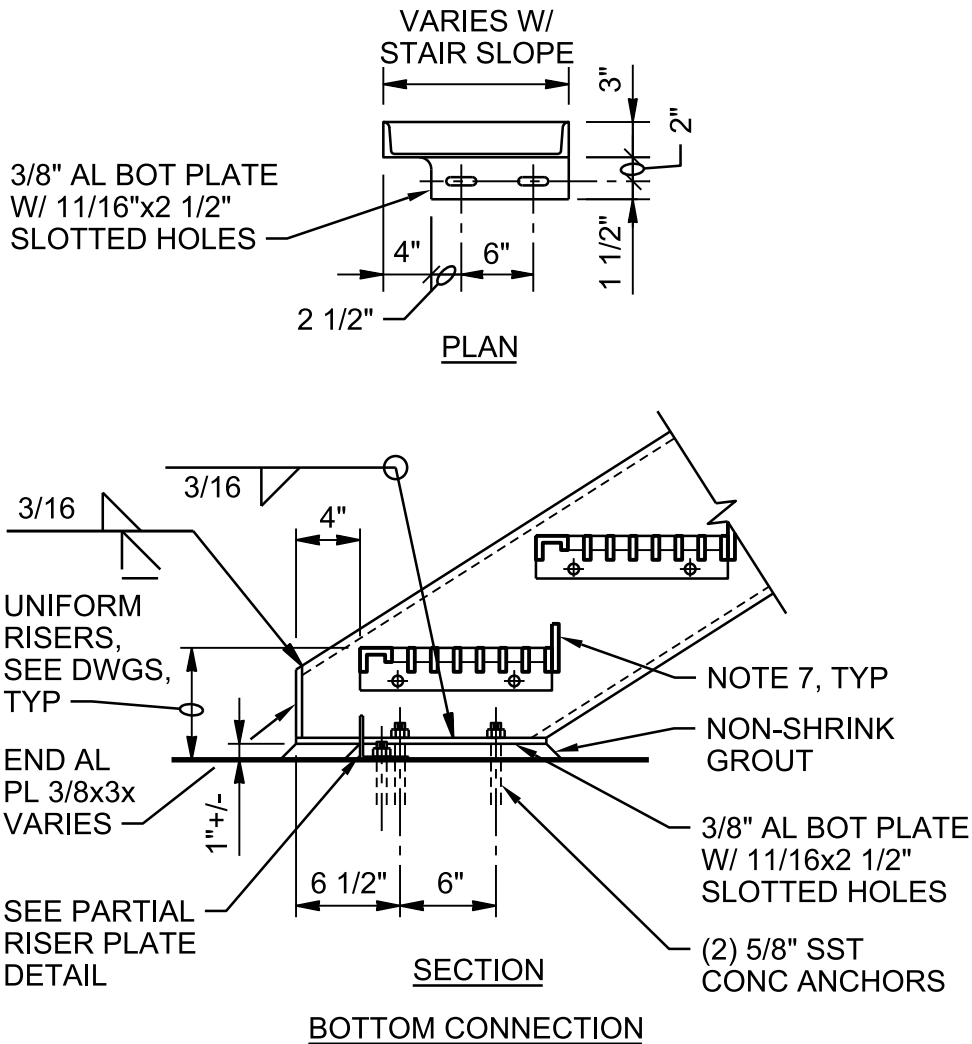
DETAIL 2 OF 2

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

5056

NOTES:

1. PROVIDE PROTECTION FOR DISSIMILAR METALS AND FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
2. AMERICAN STANDARD C12x7.41 ALUMINUM STRINGERS TYPICAL EXCEPT WHERE OTHERWISE NOTED ON PLANS.
3. STAIR RAILING NOT SHOWN.
4. STAIR MANUFACTURER TO COORDINATE BOLTED TREADS AND RAILING CONNECTIONS.
5. ALL FASTENERS SHALL BE STAINLESS STEEL.
6. FIELD VERIFY DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION.
7. FOR RISER PLATE SEE PARTIAL RISER PLATE DETAIL UNLESS NOTED OTHERWISE. CLEARANCE BETWEEN TOP OF RISER PLATE AND BOTTOM OF TREAD TO BE 3 3/4" MAXIMUM. FOR STAIRS WITH PICKET RAILING EXTEND RISER PLATE PER FULL RISER PLATE DETAIL.



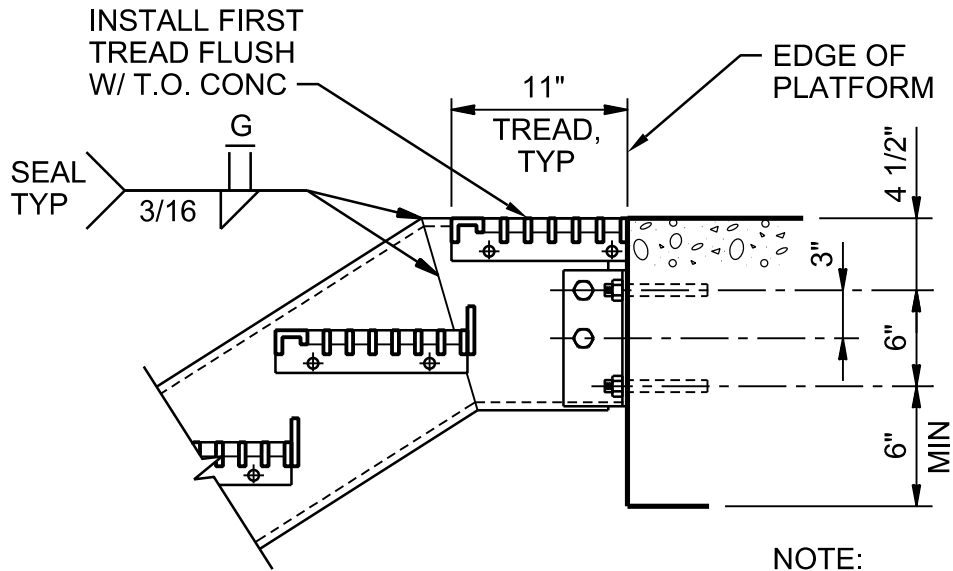
STAIR DETAILS - ALUMINUM

NTS

DETAIL 1 OF 4

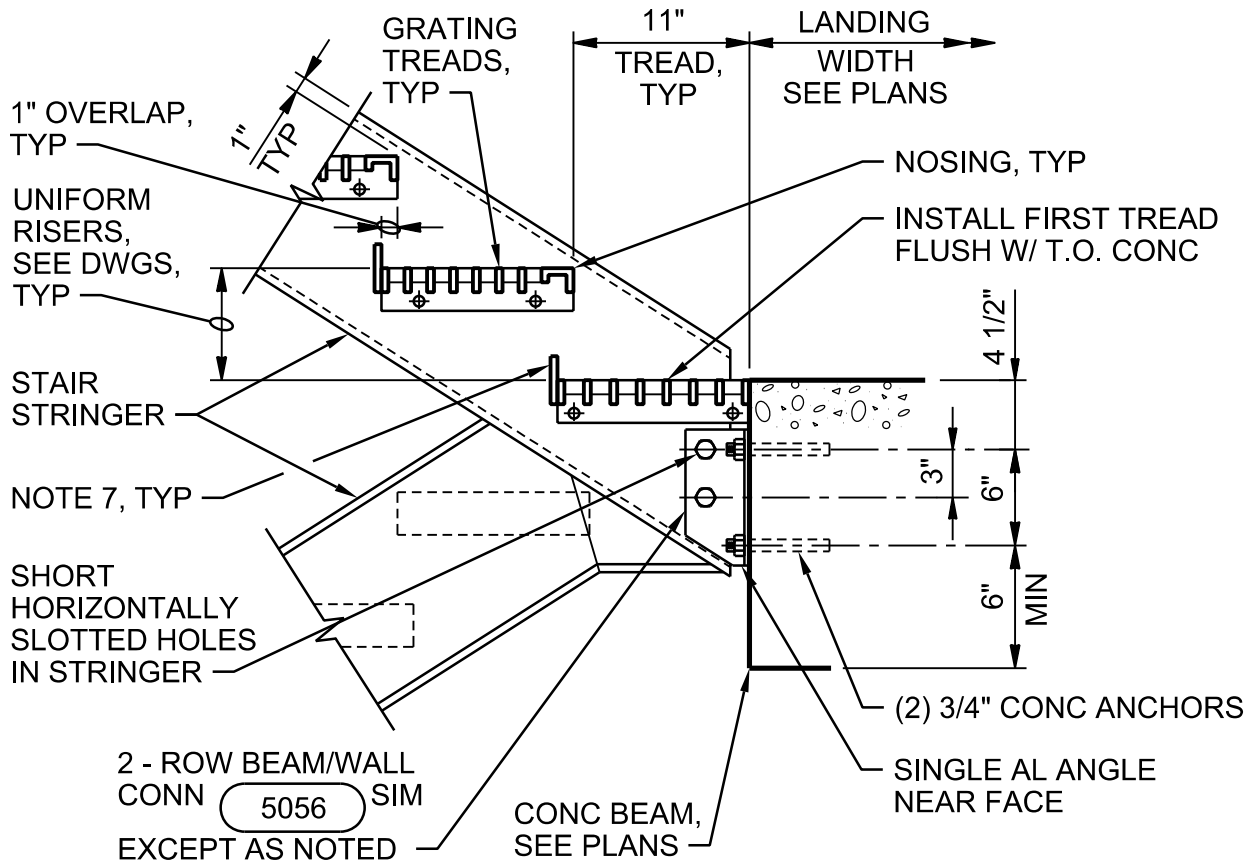
CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

5501



TOP CONNECTION - CONCRETE

NOTE:
FOR NOTES NOT SHOWN
SEE LANDING CONNECTION.



LANDING CONNECTION - CONCRETE

STAIR DETAILS - ALUMINUM

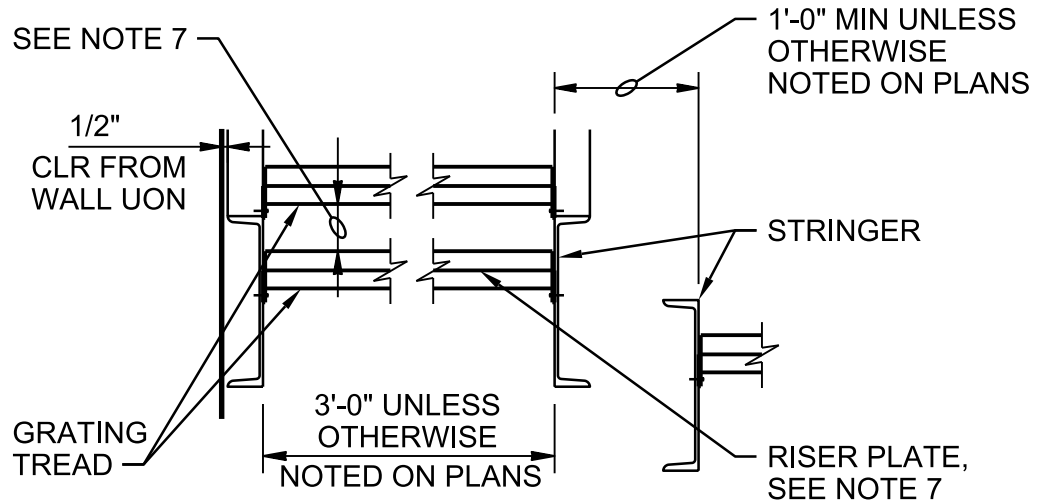
NTS

DETAIL 2 OF 4

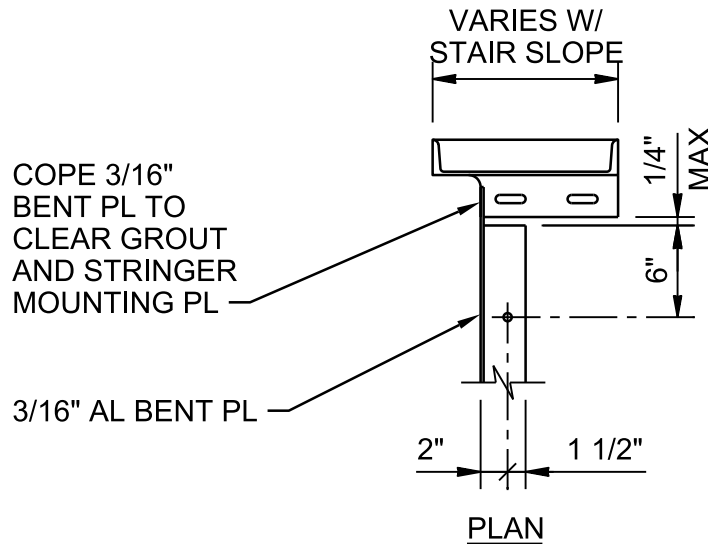
CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

5501

STAIRWAY WIDTH	TREAD BEARING BARS
	ALUMINUM TREAD
2'-3" OR LESS	1" x 3/16"
2'-9" OR LESS	1 1/4" x 3/16"
3'-3" OR LESS	1 1/2" x 3/16"
4'-7" OR LESS	1 3/4" x 3/16"



STAIR TREADS



BOTTOM CLOSURE PLATE

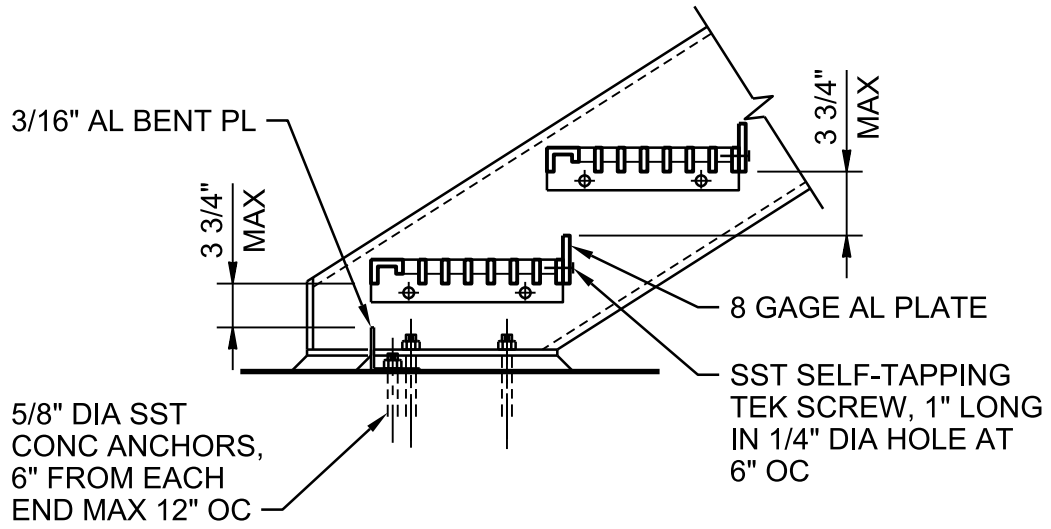
STAIR DETAILS - ALUMINUM

NTS

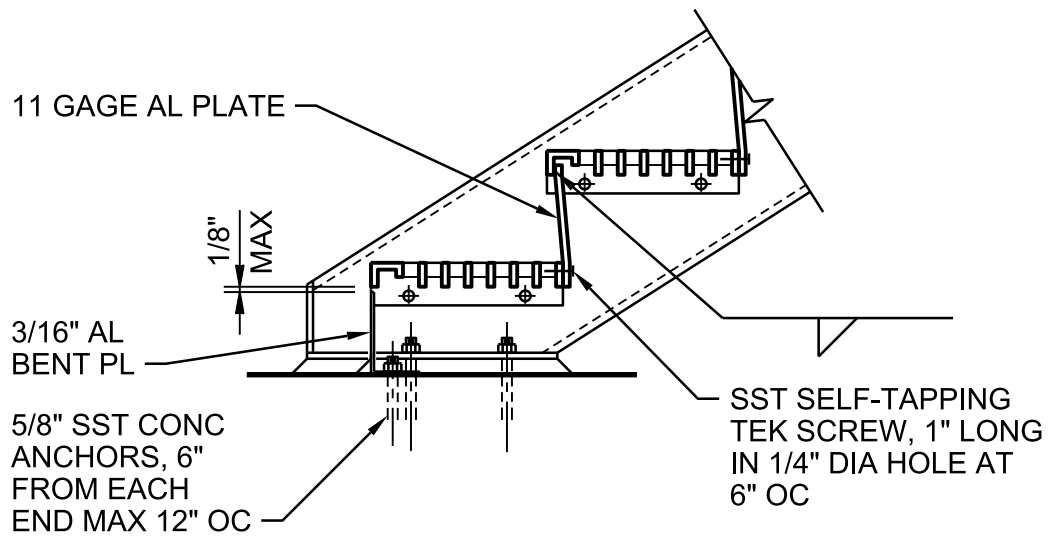
DETAIL 3 OF 4

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

5501



PARTIAL RISER PLATE



FULL RISER PLATE

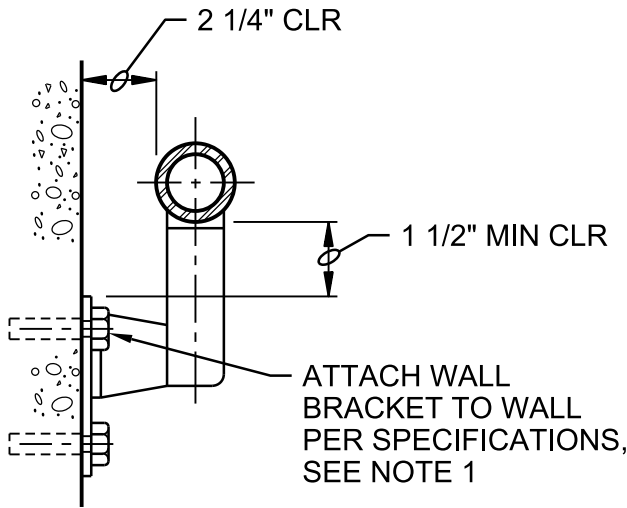
STAIR DETAILS - ALUMINUM

NTS

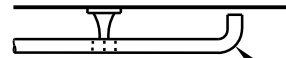
DETAIL 4 OF 4

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

5501



WALL BRACKET DETAIL

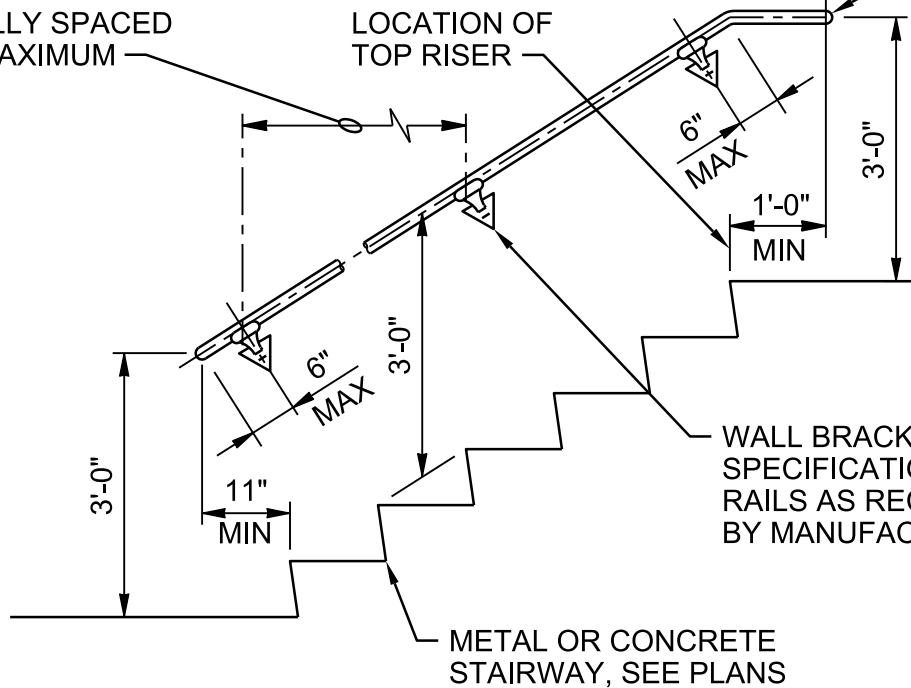


PLAN

EQUALLY SPACED
6'-0" MAXIMUM

LOCATION OF
TOP RISER

RETURN END
OF HANDRAIL
TO WALL AT
BOTH ENDS



WALL BRACKETS PER
SPECIFICATIONS, ATTACH TO
RAILS AS RECOMMENDED
BY MANUFACTURER

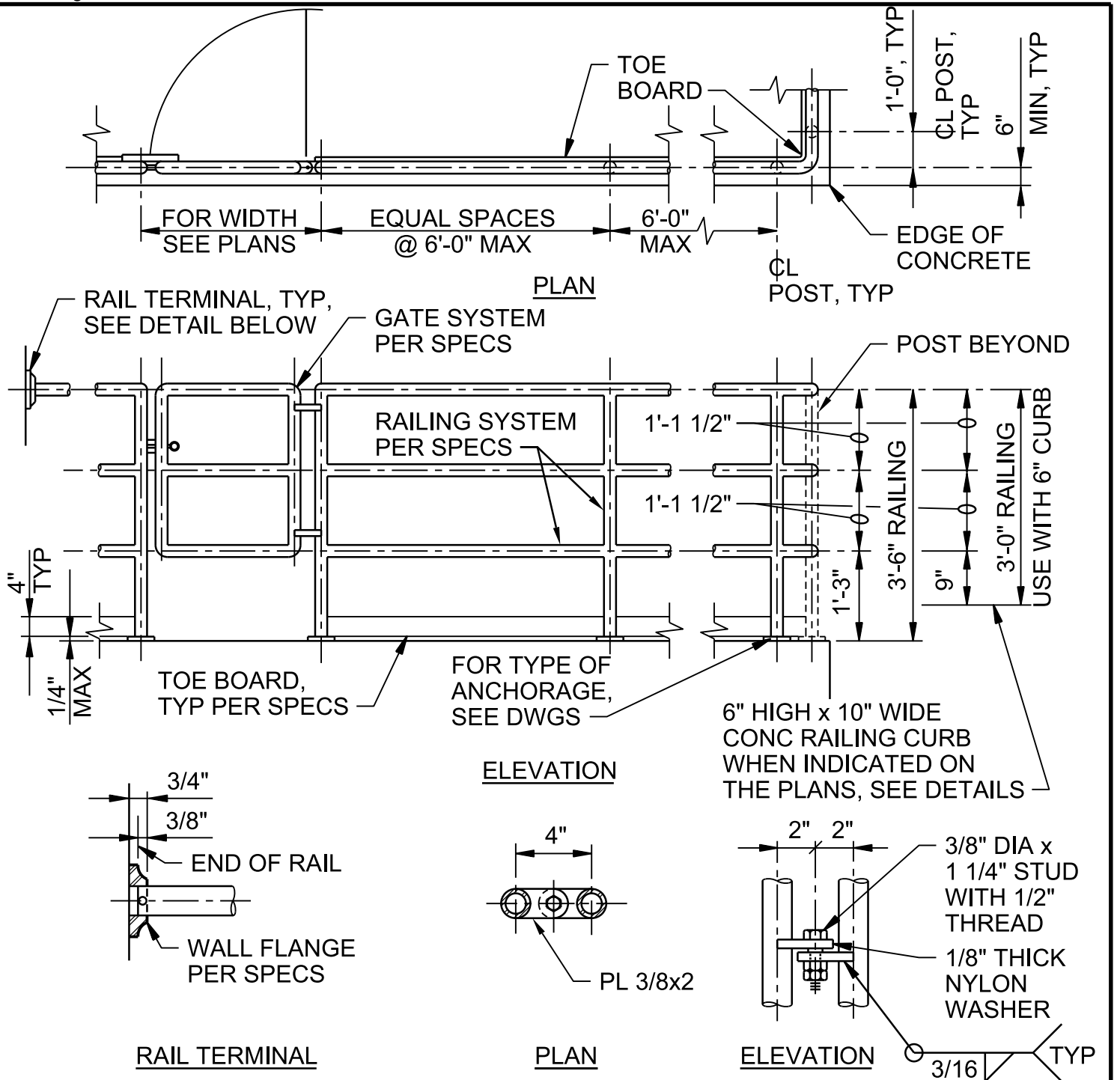
METAL OR CONCRETE
STAIRWAY, SEE PLANS

NOTE:

1. FOR ANCHORAGE TO WOOD OR METAL STUD FRAMING PROVIDE SOLID BLOCKING.
2. PROVIDE PROTECTION FOR DISSIMILAR METALS AND FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.

WALL HANDRAIL - ALUMINUM

NTS



NOTES:

1. FASTEN RAIL TO WALL FLANGE PER MANUFACTURER'S RECOMMENDATIONS.
2. WALL FLANGE TO BE MOUNTED TO WALL WITH (2) 3/8" DIA SST WEDGE ANCHORS.
3. AT CONTRACTOR'S OPTION FABRICATE HINGES OR PROVIDE OTHER HINGES PER SPECIFICATIONS. ANODIZE FINISH AFTER ALL WELDING PER SPECIFICATIONS.

RAILING - 3 RAIL - ALUMINUM

NTS

DETAIL 1 OF 5

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

5521

LOCATE POST AT EACH END OF INTERMEDIATE LANDING, WHERE NO LANDING REQD SEE DETAIL BELOW

RAILING SYSTEM PER SPECS

EQUAL SPACING 5'-0" MAX

1'-1 1/2"

HANDRAIL

3'-6" MIN

3'-0"

1'-0" MIN

1'-1 1/2"

3'-0"

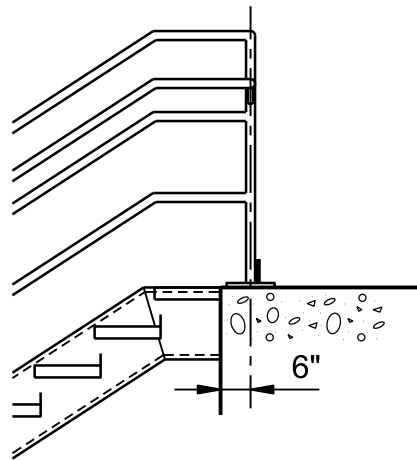
3'-6" MIN

SEE RAILING POST ANCHORAGE DETAIL

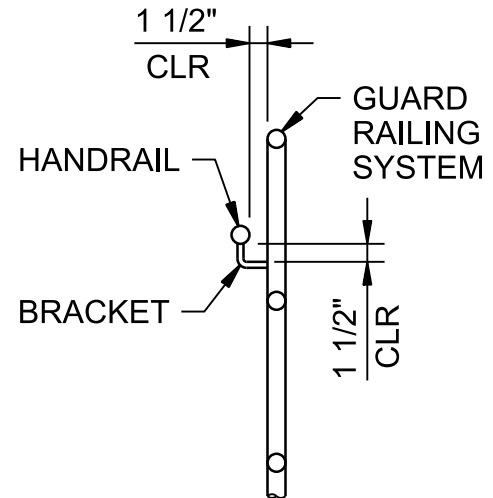
METAL STRINGER SHOWN, CONC STAIRS SIM

FOR RETURN AT HANDRAIL SEE NOTE 2

11" MIN 4"



RAILING DETAIL WITHOUT LANDING



RAILING SECTION

NOTES:

- 1. PROVIDE TOE BOARD AT LANDING WHERE REQUIRED.
- 2. RETURN ENDS OF HANDRAIL TO GUARD AT BOTH ENDS.

RAILING - 3 RAIL STAIR - ALUMINUM (IBC)

NTS

DETAIL 2 OF 5

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

5521

LOCATE POST AT EACH END OF INTERMEDIATE LANDING TO PROVIDE SMOOTH TRANSITION TO 3'-6" GUARDRAIL, WHERE NO LANDING REQD, SEE DETAIL BELOW

RAILING SYSTEM PER SPECS

EQUAL SPACING
5'-0" MAX

1'-1 1/2"

2'-10"

1'-1 1/2"

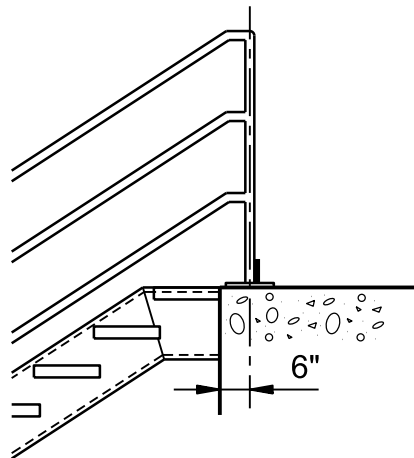
3'-6"

1'-0" MIN

SEE RAILING POST ANCHORAGE DETAIL

METAL STRINGER SHOWN, CONC STAIRS SIM

11" 4"



RAILING DETAIL WITHOUT LANDING

NOTES:

- 1. PROVIDE TOE BOARD AT LANDING WHERE REQUIRED.

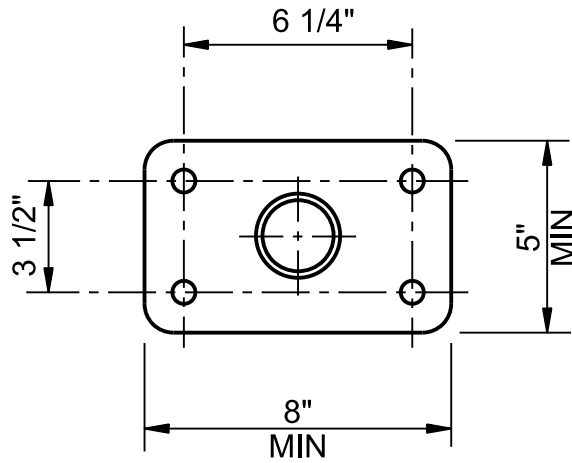
RAILING - 3 RAIL STAIR - ALUMINUM (UBC)

NTS

DETAIL 3 OF 5

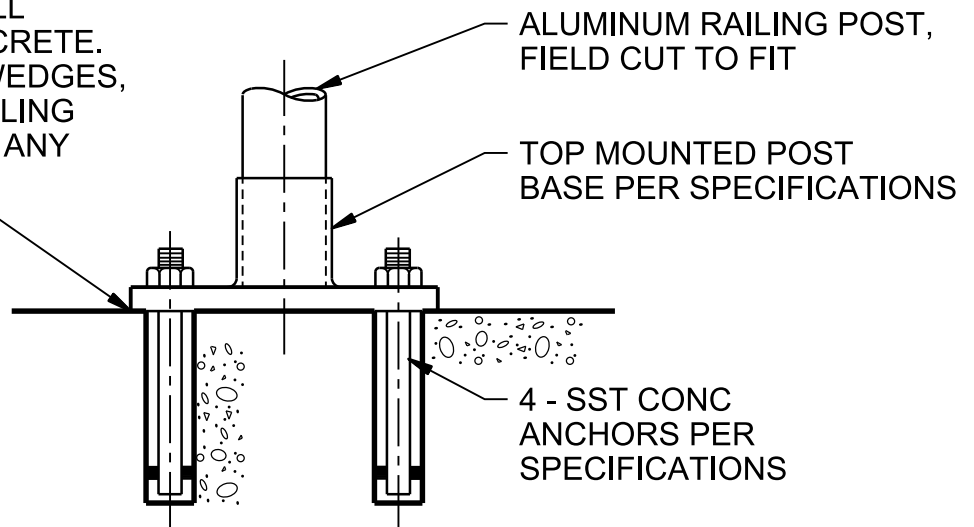
CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

5521



PLAN

THE BASEPLATE SHALL SIT SOLIDLY ON CONCRETE. THE USE OF SHIMS, WEDGES, GROUT, ETC FOR RAILING POST ALIGNMENT OR ANY OTHER REASON WILL NOT BE PERMITTED



ELEVATION

TYPE 'A'

NOTE:

PROVIDE PROTECTION FOR DISSIMILAR METALS AND FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.

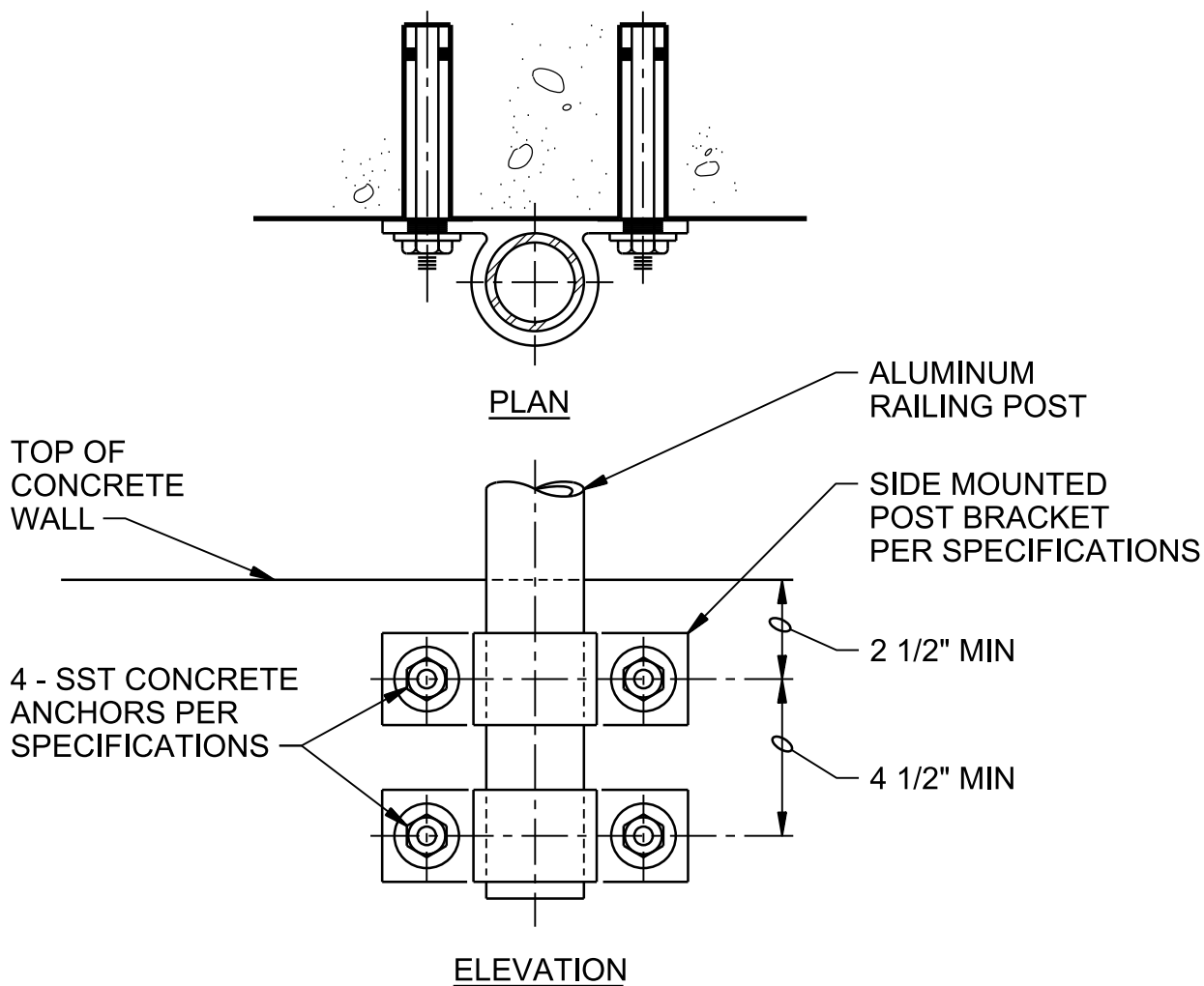
RAILING POST ANCHORAGE TYPE 'A' - ALUMINUM

NTS

DETAIL 4 OF 5

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

5521



TYPE 'B'

NOTES:

1. PROVIDE PROTECTION FOR DISSIMILAR METALS AND FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
2. USE SIDE MOUNTED POST BRACKET AS A TEMPLATE FOR THE ANCHOR BOLTS.

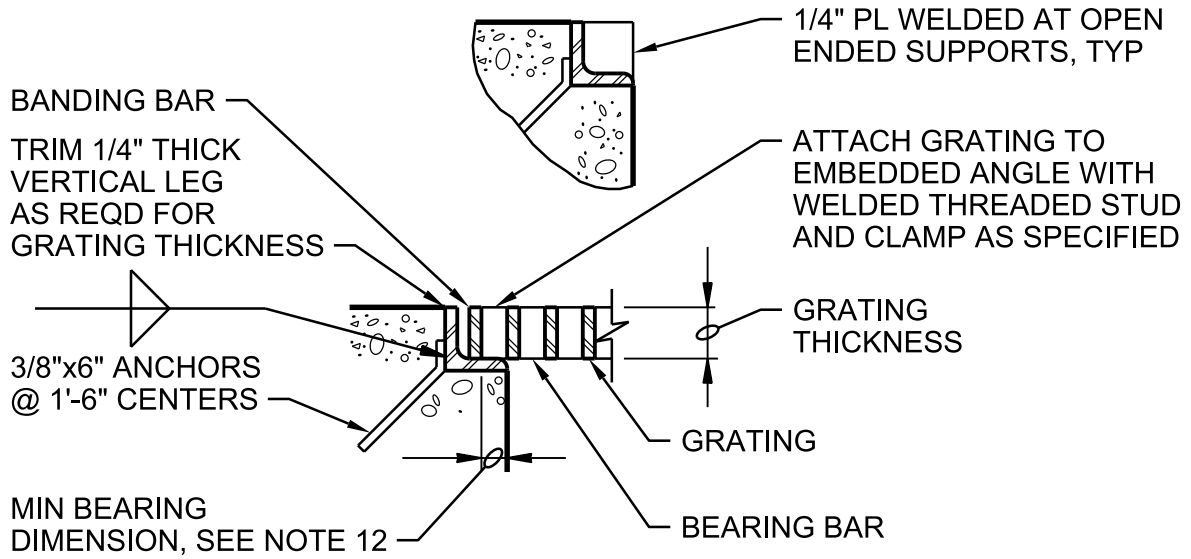
RAILING POST ANCHORAGE TYPE 'B' - ALUMINUM

NTS

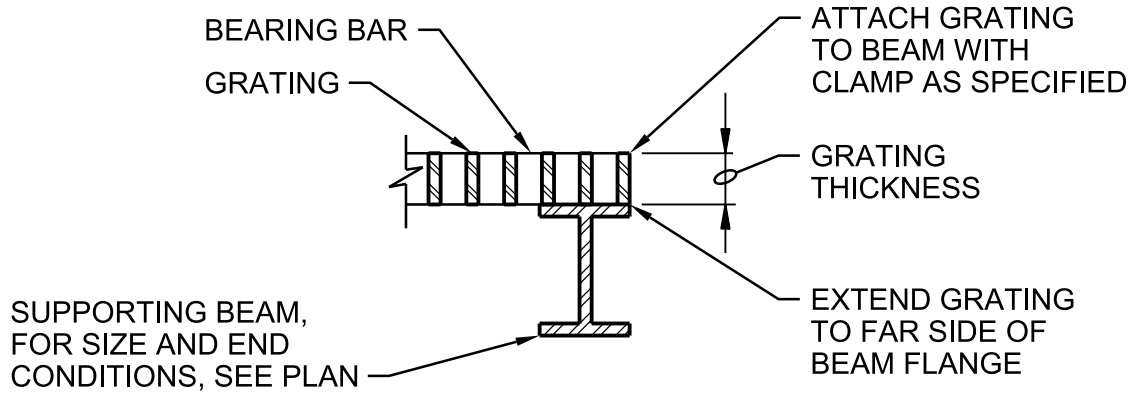
DETAIL 5 OF 5

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

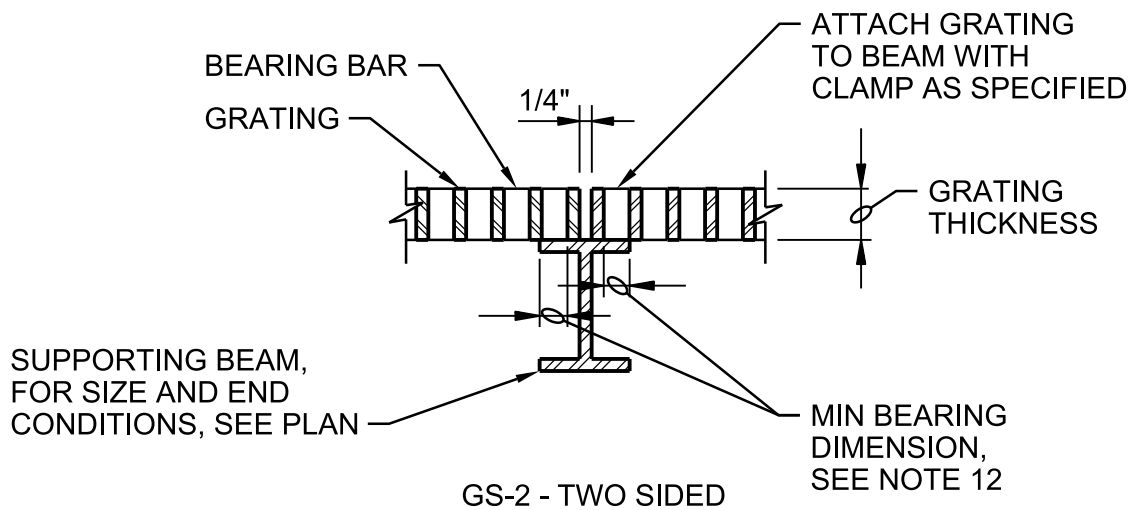
5521



GS-1



GS-2 - ONE SIDED



GS-2 - TWO SIDED

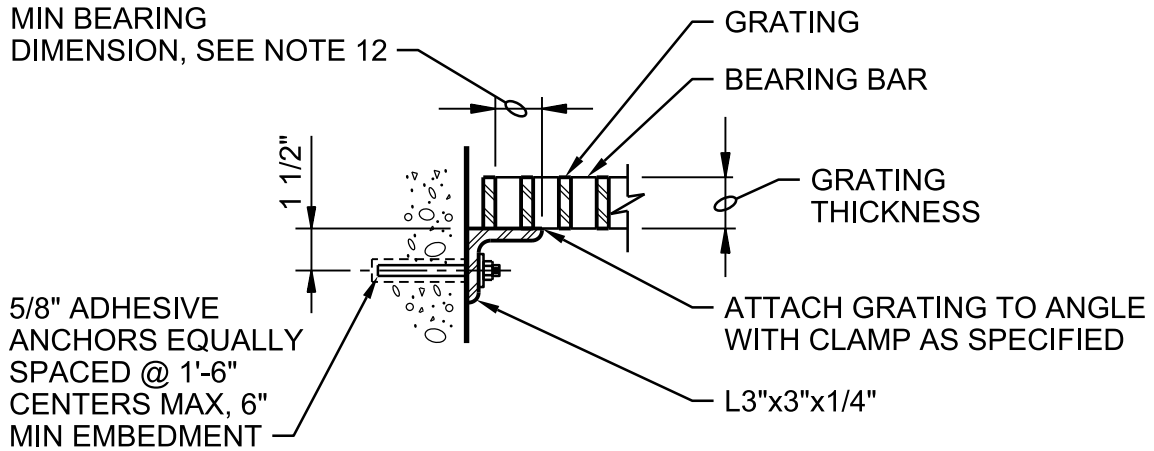
STANDARD GRATING

NTS

DETAIL 1 OF 4

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

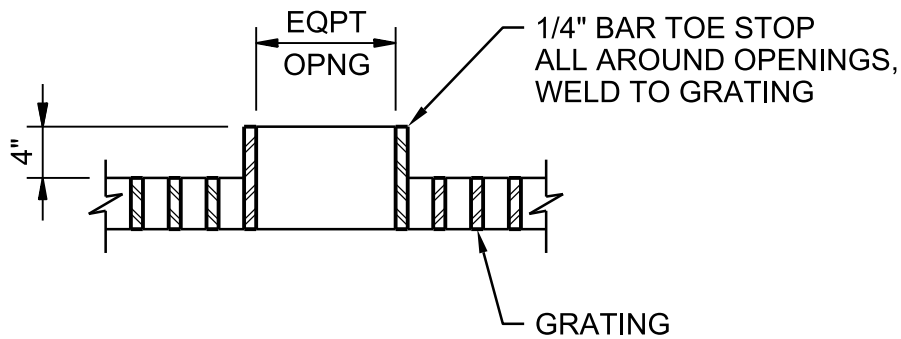
5566



NOTES:

1. USE GS-3 ONLY FOR LIGHT DUTY GRATING, TYPE 'A'.
2. INSTALL ANCHORS MAXIMUM 4" FROM EACH END.
3. WHEN ANCHOR IS WITHIN 4" OF A CONCRETE EDGE, UTILIZE MANUFACTURER'S LOW-TORQUE INSTALLATION PROCEDURES.

GS-3



EQUIPMENT OPENINGS

STANDARD GRATING

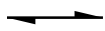
NTS

DETAIL 2 OF 4

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

5566

GENERAL NOTES:

1. GRATING SHALL BE LIGHT DUTY GRATING UNLESS OTHERWISE NOTED ON DRAWINGS.
2. GRATING SPAN IS INDICATED BY  , SEE PLAN.
3. INDIVIDUAL GRATING SECTIONS SHALL NOT EXCEED 3'-0" IN WIDTH OR WEIGH MORE THAN 150 POUNDS, UNLESS INDICATED OTHERWISE, FOR TYPES 'A' & 'B' GRATING. TYPE 'C' GRATING SHALL HAVE A MINIMUM WIDTH OF 2'-0" REGARDLESS OF WEIGHT.
4. SHOP DRAWINGS BASED ON FIELD DIMENSIONS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO FABRICATION.
5. MATERIAL FOR SUPPORTS OF STEEL AND ALUMINUM GRATING TO BE SAME AS GRATING, EXCEPT METAL SUPPORTS THAT ARE TO BE EMBEDDED IN CONCRETE SHALL BE TYPE 316 STAINLESS STEEL.
6. UNLESS NOTED OTHERWISE ON PLANS, GRATING THICKNESS SHALL BE AS TABULATED IN "GRATING THICKNESS TABLE" FOR APPLICABLE GRATING TYPE.
7. FOR SERRATED BEARING BARS, INCREASE GRATING THICKNESSES SHOWN IN TABLES BY 1/4".
8. BEARING BAR THICKNESS FOR GRATING TO BE 3/16" MINIMUM. SEE SPECIFICATIONS FOR SPACING OF BEARING AND CROSS BARS.
9. BAND ALL EDGES. MATCH DEPTH OF BEARING BAR.
10. TYPE OF MATERIAL USED SHALL BE AS SHOWN ON PLANS OR AS SPECIFIED. THIS STANDARD DETAIL INCLUDES 2 TYPES, ALTHOUGH BOTH MAY NOT BE INCLUDED IN PROJECT.
11. THE HORIZONTAL CLEARANCE BETWEEN THE GRATING AND GRATING SUPPORTS SHALL NOT BE LESS THAN 1/4" NOR GREATER THAN 1/2" AND AS SPECIFIED.
12. MINIMUM BEARING HORIZONTAL DIMENSION = 1" FOR GRATING DEPTH 2 1/4" OR LESS. MINIMUM BEARING HORIZONTAL DIMENSION = 2" FOR GRATING DEPTH GREATER THAN 2 1/4"

STANDARD GRATING

NTS

DETAIL 3 OF 4

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

5566

JACOBS

LIGHT DUTY GRATINGTYPE 'A'
(100 PSF)

GRATING THICKNESS TABLE

MAXIMUM SPAN	STEEL	ALUMINUM
3'-6"	1"	1 1/4"
4'-0"	1"	1 1/2"
4'-6"	1"	1 3/4"
5'-0"	1 1/4"	1 3/4"
5'-6"	1 1/4"	2"
6'-0"	1 1/2"	2 1/4"
6'-6"	1 1/2"	2 1/4"
7'-0"	1 3/4"	2 1/2"

MEDIUM DUTY GRATINGTYPE 'B'
(500 PSF)

GRATING THICKNESS TABLE

MAXIMUM SPAN	STEEL	ALUMINUM
< 2'-0"	1"	1"
2'-6"	1"	1 1/4"
3'-0"	1 1/4"	1 1/2"
3'-6"	1 1/4"	1 3/4"
4'-0"	1 1/2"	2"
4'-6"	1 3/4"	2 1/4"
5'-0"	1 3/4"	2 1/2"
5'-6"	2"	DO NOT USE ALUMINUM GRATING
6'-0"	2 1/4"	
6'-6"	2 1/2"	

HEAVY DUTY GRATINGTYPE 'C'
(H 20 WHEEL LOAD)

GRATING THICKNESS TABLE

MAXIMUM SPAN	STEEL	ALUMINUM
1'-0"	2"x3/16"	DO NOT USE ALUMINUM GRATING
1'-8"	2 1/2"x1/4"	
2'-0"	2 1/2"x3/8" OR 3"x1/4"	
2'-6"	3"x3/8" OR 4"x1/4"	
3'-3"	3 1/2"x3/8"	
4'-0"	4"x3/8"	
5'-0"	4 1/2"x3/8"	

STANDARD GRATING

NTS

DETAIL 4 OF 4

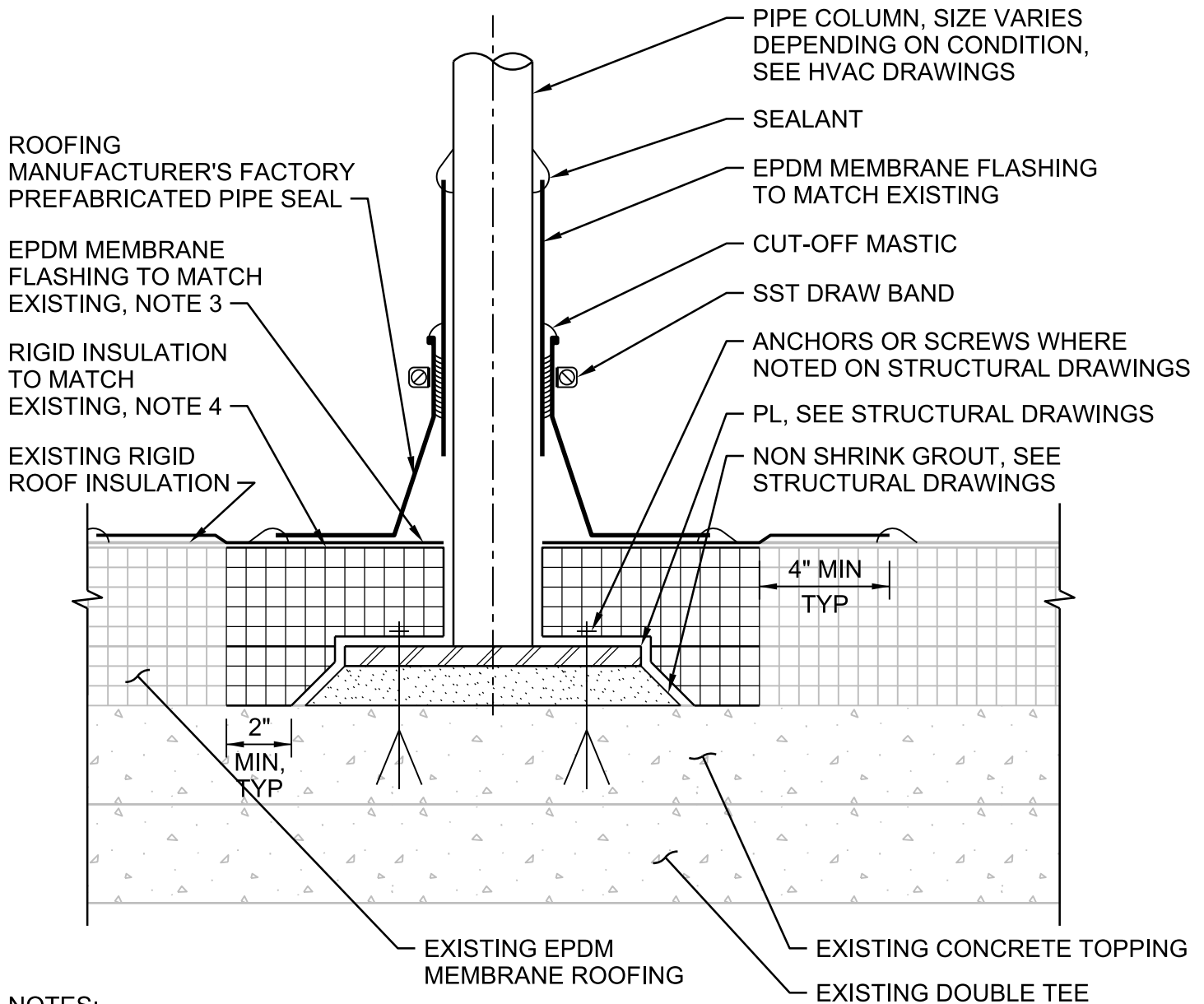
CLEAN WATER SERVICES

DURHAM WRRF

ODOR CONTROL PHASE 3 HEADWORKS

5566

JACOBS

**NOTES:**

1. CUT EPDM MEMBRANE AND INSULATION IN CLEAN FASHION TO PREVENT DAMAGE TO SURFACES THAT WILL REMAIN AND TO FACILITATE THE INSTALLATION OF NEW WORK. COMPLETELY REMOVE EXISTING ROOF ASSEMBLY TO ROOF DECK, WHERE NOTED.
2. INSPECT DECK FOR DAMAGE AND NOTIFY ENGINEER OF AREAS THAT REQUIRE REPAIR.
3. INSTALL A COMPLETE ROOF SYSTEM OF COMPATIBLE MATERIALS THAT WILL CREATE A MONOLITHIC WATERTIGHT SINGLE-PLY ROOF MEMBRANE. IN ACCORDANCE WITH MEMBRANE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION, COMPLYING WITH EXISTING WARRANTABLE ROOF SYSTEM AND MANUFACTURER'S STANDARD DETAILS. FULLY ADHERE MEMBRANE TO SUBSTRATE.
4. FASTEN INSULATION TO DECK FOLLOWING ROOFING MANUFACTURER'S INSTRUCTIONS.

ROOF FLASHING AT PIPE SUPPORT

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

07531

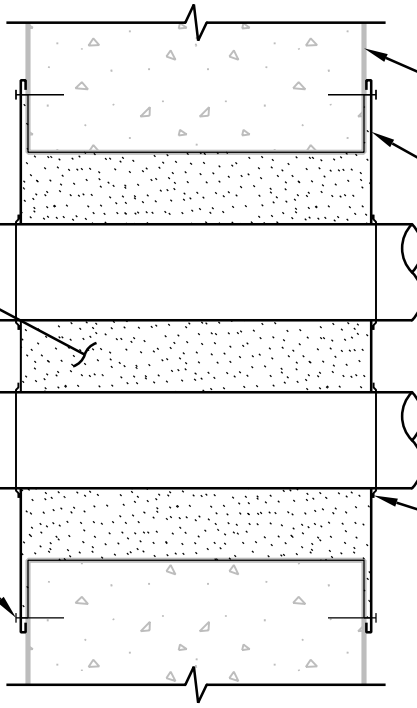
JACOBS

SPRAY-FOAM INSULATION

CONDUIT, TYP

1/4" DIA x 1-1/2" SST SELF-TAPPING SCREWS WITH WASHERS AT 6" ON CENTER MAX, TYP

EXTERIOR

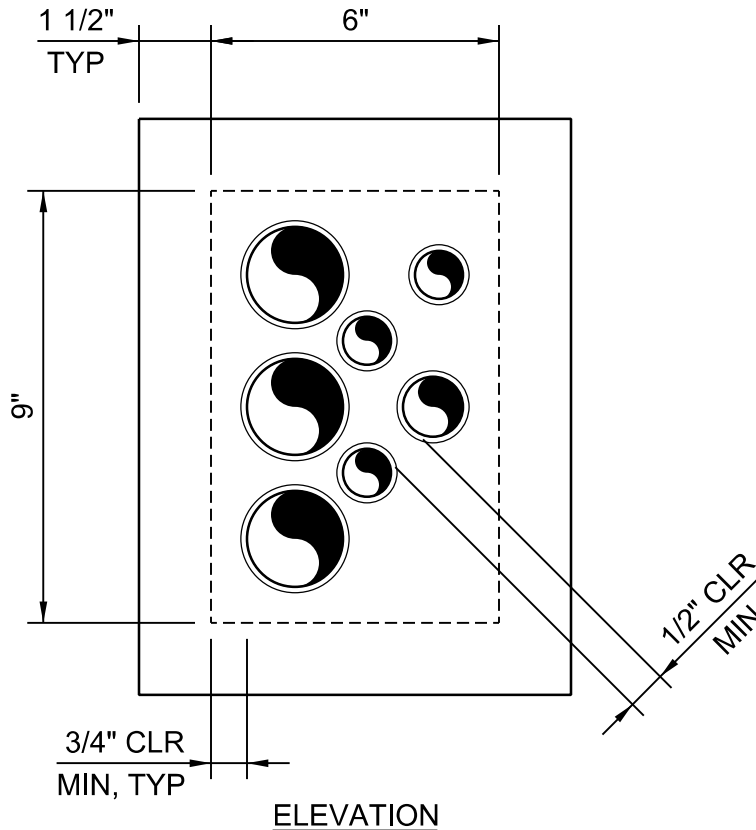


EXISTING CONCRETE WALL

2-PIECE PREFINISHED GALVANIZED SHEET METAL FLASHING WITH HEMMED EDGES, FITTIGHT AROUND CONDUITS, TYP

ESCUTCHEON SET IN SEALANT, TYP

INTERIOR



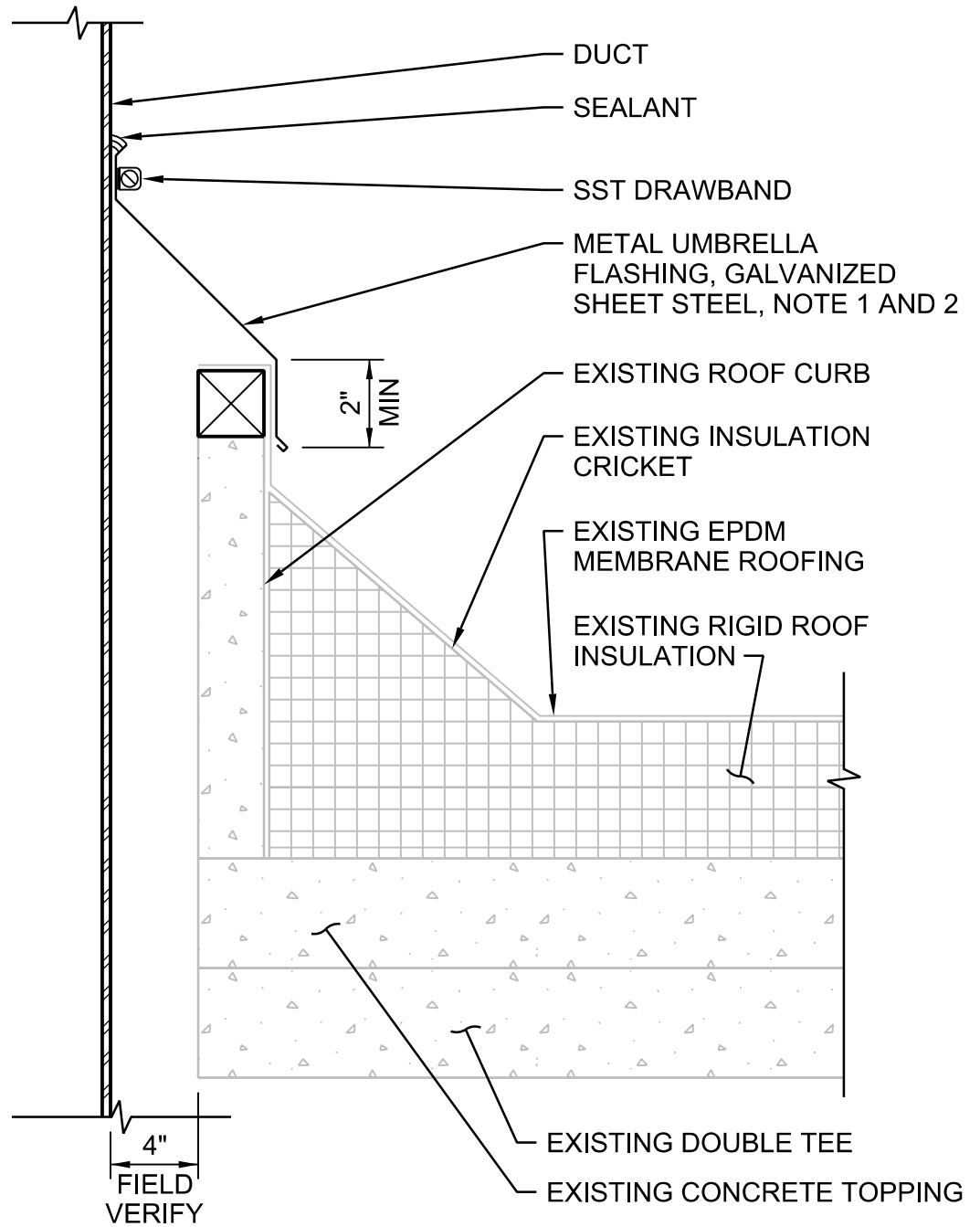
ELEVATION

PIPE PENETRATION CLOSURE

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

07621

**NOTES:**

1. ASTM A924, GRADE A OR ASTM A653, G90 ZINC COATING, COMMERCIAL QUALITY COPPER BEARING STEEL, MINIMUM 22 GAUGE.
2. FABRICATE IN ACCORDANCE WITH SMACNA 1013 THAT APPLIES TO DESIGN, DIMENSIONS, METAL, AND OTHER CHARACTERISTICS OF ITEM INDICATED. FABRICATE WITHOUT EXCESSIVE OIL CANNING, BUCKLING, AND TOOL MARKS AND TRUE TO LINE AND LEVELS INDICATED, WITH EXPOSED EDGES FOLDED BACK TO FORM HEMS. PROVIDE WATERTIGHT CLOSURES AT EXPOSED ENDS OF COUNTERFLASHING.

DUCT PENETRATION

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

07701

JACOBS

NOTES:

1. ASTM A924, GRADE A OR ASTM A653, G90 ZINC COATING, COMMERCIAL QUALITY COPPER BEARING STEEL, MINIMUM 22 GAUGE.

1/4" THICK GALVANIZED STEEL PLATE, FASTEN W/ 3/8" WEDGE ANCHORS AT 12" SPACING (3 SIDES) AND BENT PLATE 2" VERTICAL AT THE DUCT OPENING SID

NOTES (CONTINUED):

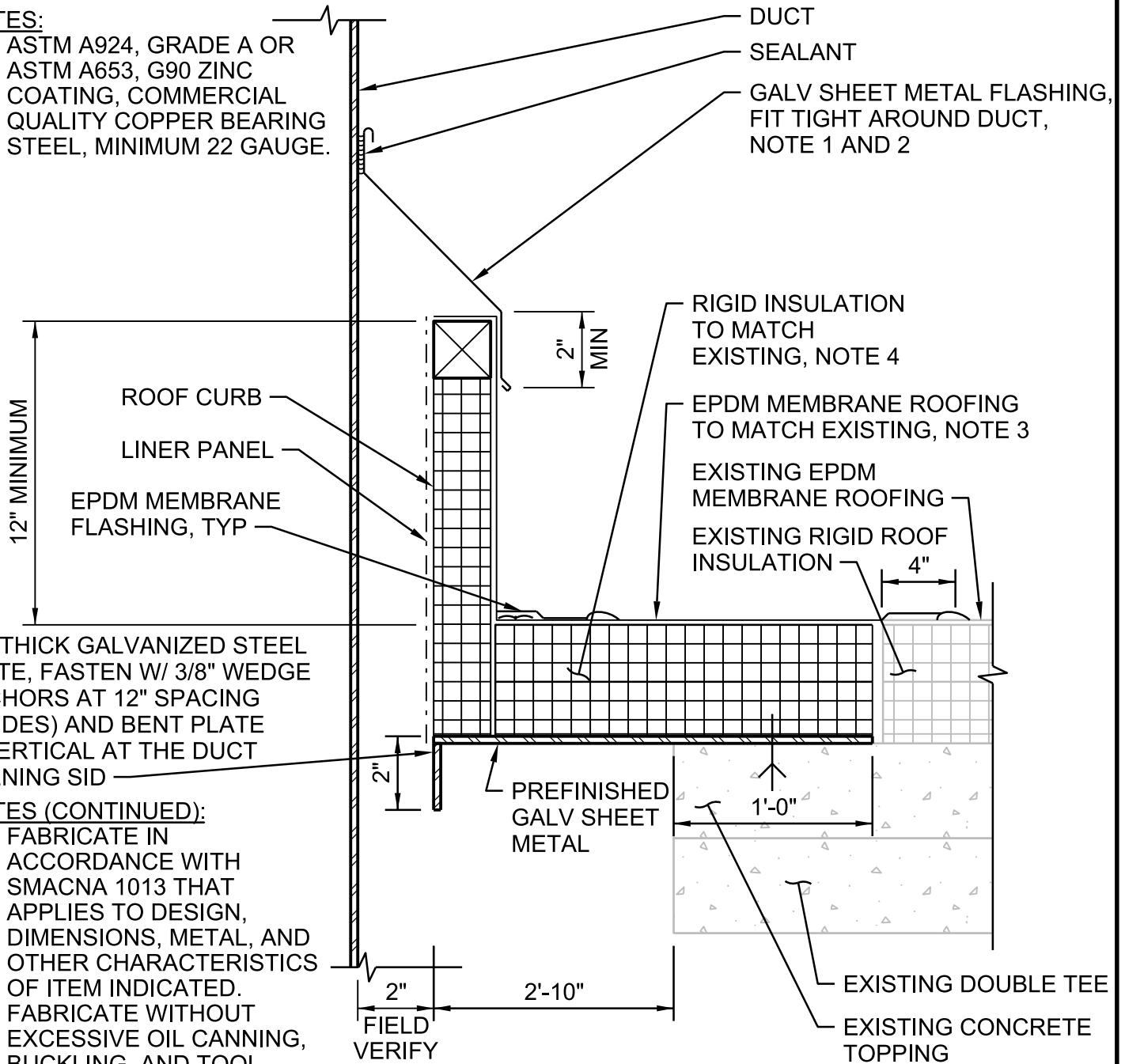
2. FABRICATE IN ACCORDANCE WITH SMACNA 1013 THAT APPLIES TO DESIGN, DIMENSIONS, METAL, AND OTHER CHARACTERISTICS OF ITEM INDICATED. FABRICATE WITHOUT EXCESSIVE OIL CANNING, BUCKLING, AND TOOL MARKS AND TRUE TO LINE AND LEVELS INDICATED, WITH EXPOSED EDGES FOLDED BACK TO FORM HEMS. PROVIDE WATERTIGHT CLOSURES AT EXPOSED ENDS OF COUNTERFLASHING.

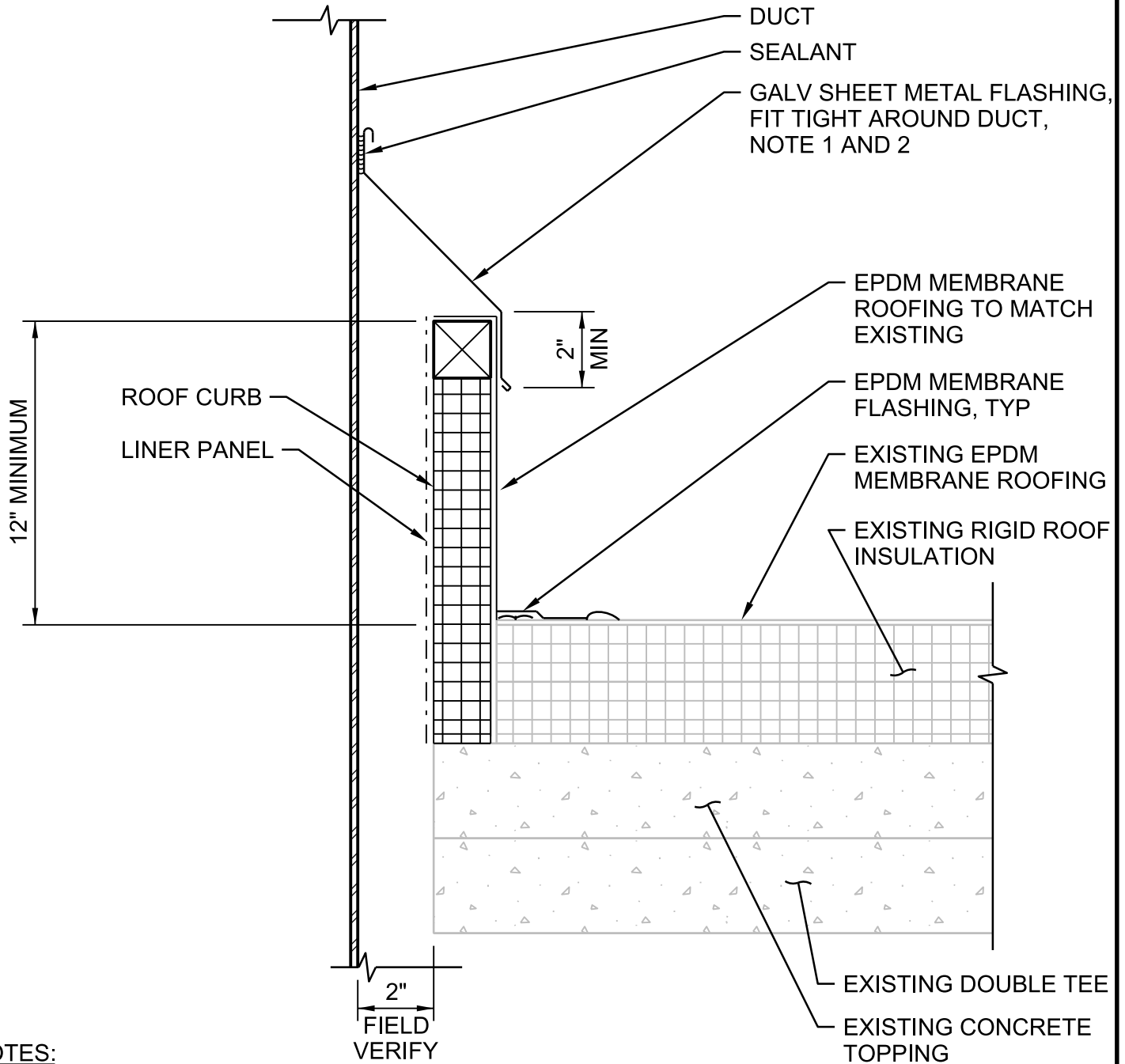
NOTES (CONTINUED):

3. INSTALL A COMPLETE ROOF SYSTEM OF COMPATIBLE MATERIALS THAT WILL CREATE A MONOLITHIC WATERTIGHT SINGLE-PLY ROOF MEMBRANE, IN ACCORDANCE WITH MEMBRANE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION, COMPLYING WITH EXISTING WARRANTABLE ROOF SYSTEM AND MANUFACTURER'S STANDARD DETAILS. FULLY ADHERE MEMBRANE TO SUBSTRATE.
4. FASTEN INSULATION TO DECK FOLLOWING ROOFING MEMBRANE MANUFACTURER'S INSTRUCTIONS.

DUCT PENETRATION

NTS





NOTES:

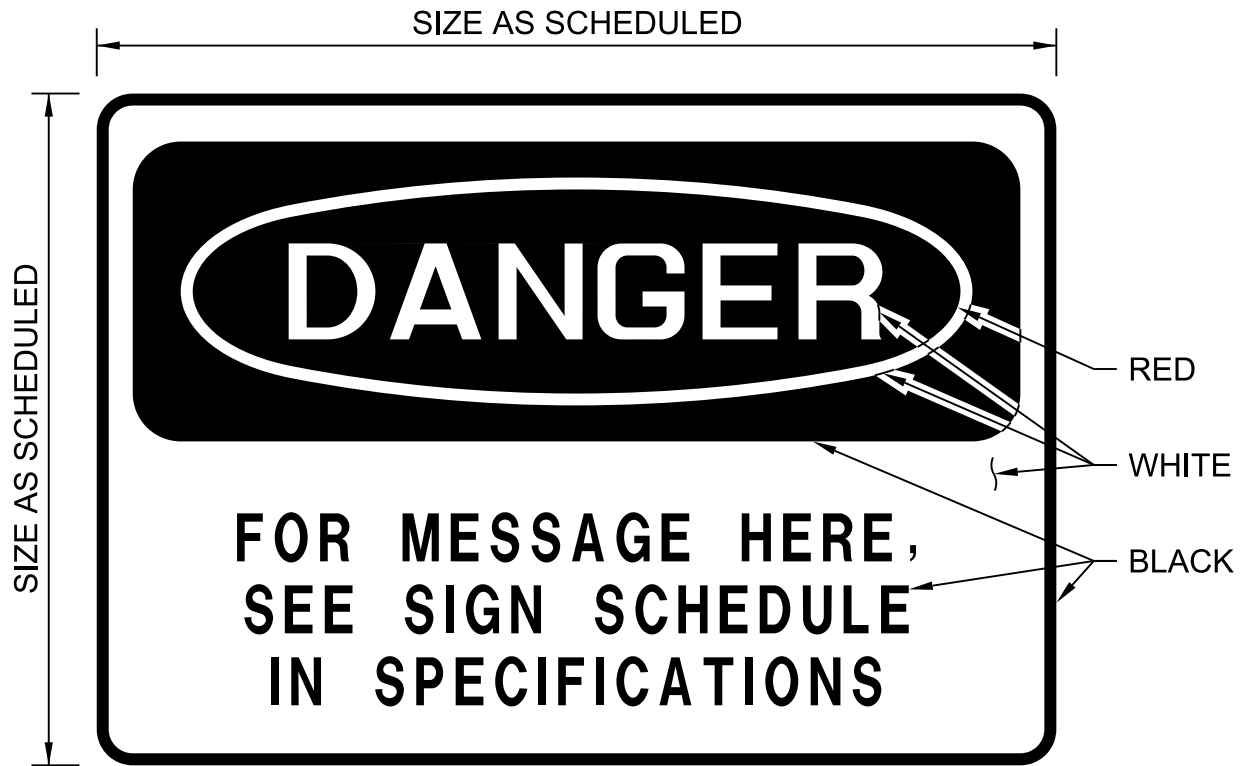
1. ASTM A924, GRADE A OR ASTM A653, G90 ZINC COATING, COMMERCIAL QUALITY COPPER BEARING STEEL, MINIMUM 22 GAUGE.
2. FABRICATE IN ACCORDANCE WITH SMACNA 1013 THAT APPLIES TO DESIGN, DIMENSIONS, METAL, AND OTHER CHARACTERISTICS OF ITEM INDICATED. FABRICATE WITHOUT EXCESSIVE OIL CANNING, BUCKLING, AND TOOL MARKS AND TRUE TO LINE AND LEVELS INDICATED, WITH EXPOSED EDGES FOLDED BACK TO FORM HEMS. PROVIDE WATERTIGHT CLOSURES AT EXPOSED ENDS OF COUNTERFLASHING.

DUCT PENETRATION

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

07703

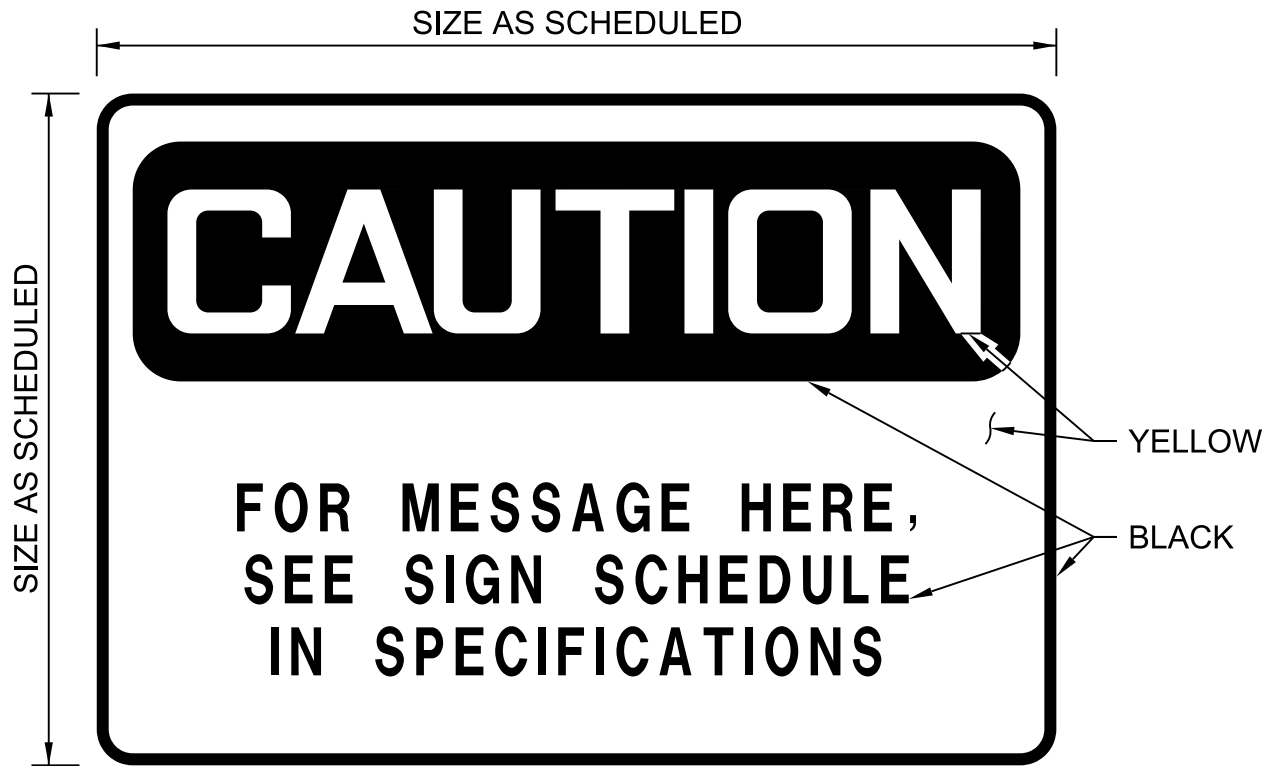


DANGER SIGN

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

10141

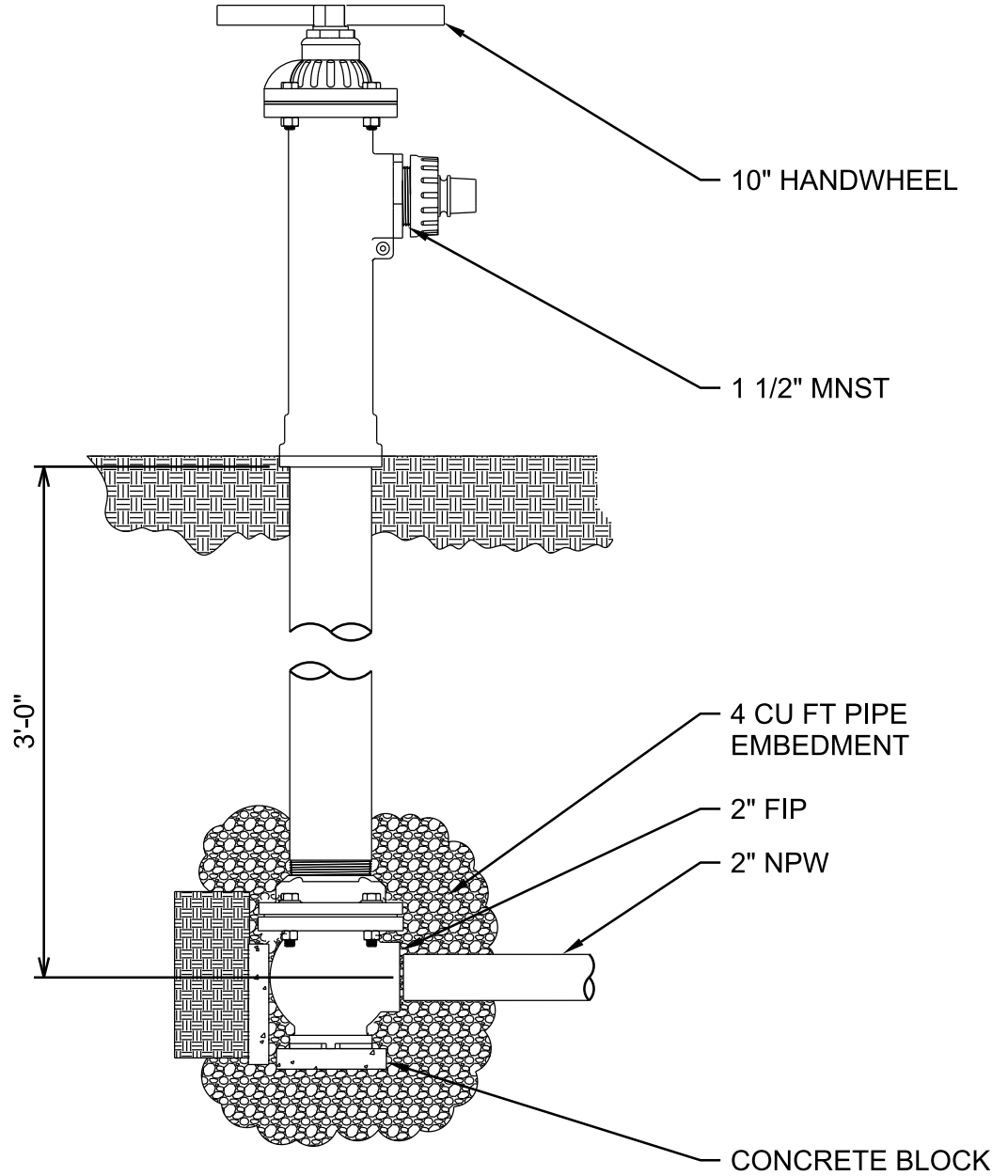


CAUTION SIGN

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

10142



NOTES:

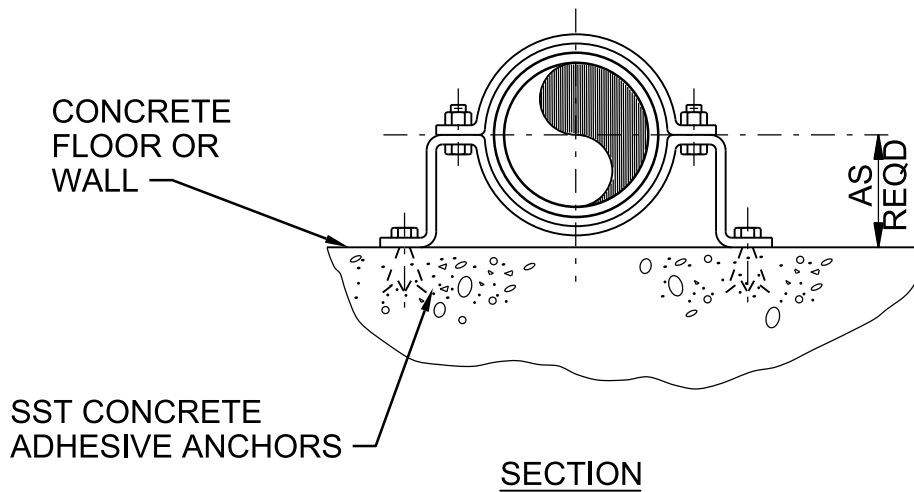
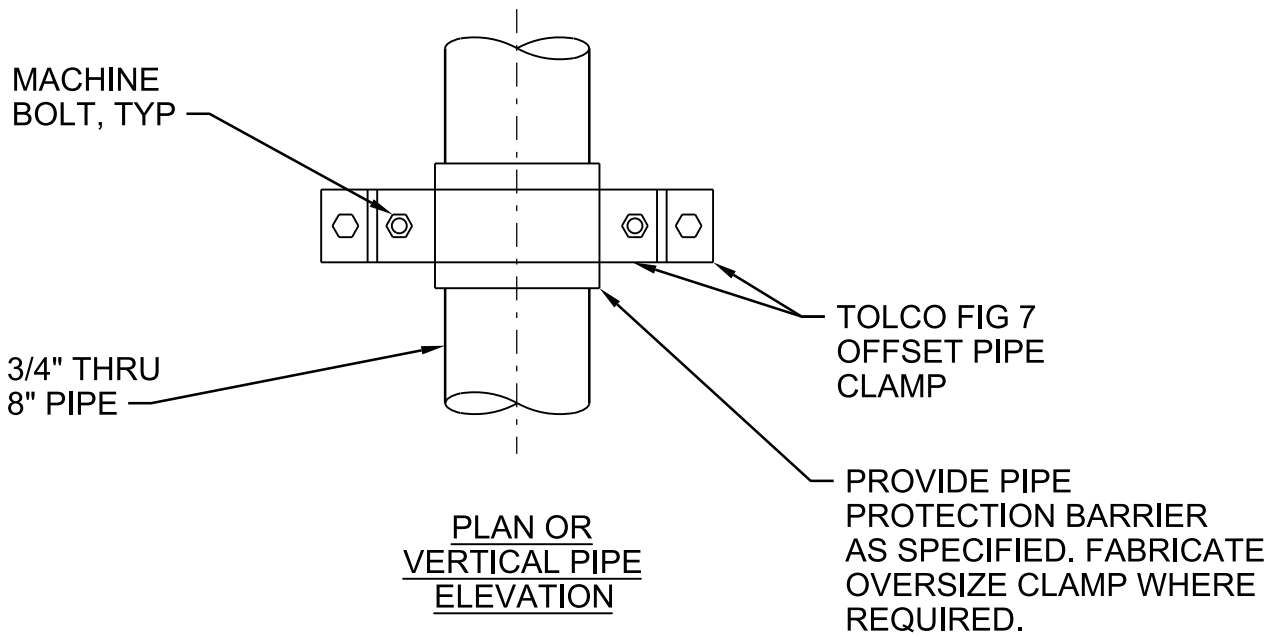
- 1. POST HYDRANT TO BE KUPFERLE #2 HYDRANT MODEL #2-3.0-A-A-B-C-X-X-A-X.
- 2. PROVIDE SHUT-OFF VALVE WHERE SHOWN ON PLANS. REFER TO DETAIL 15640

POST HYDRANT

NTS

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

15154



NOTE:

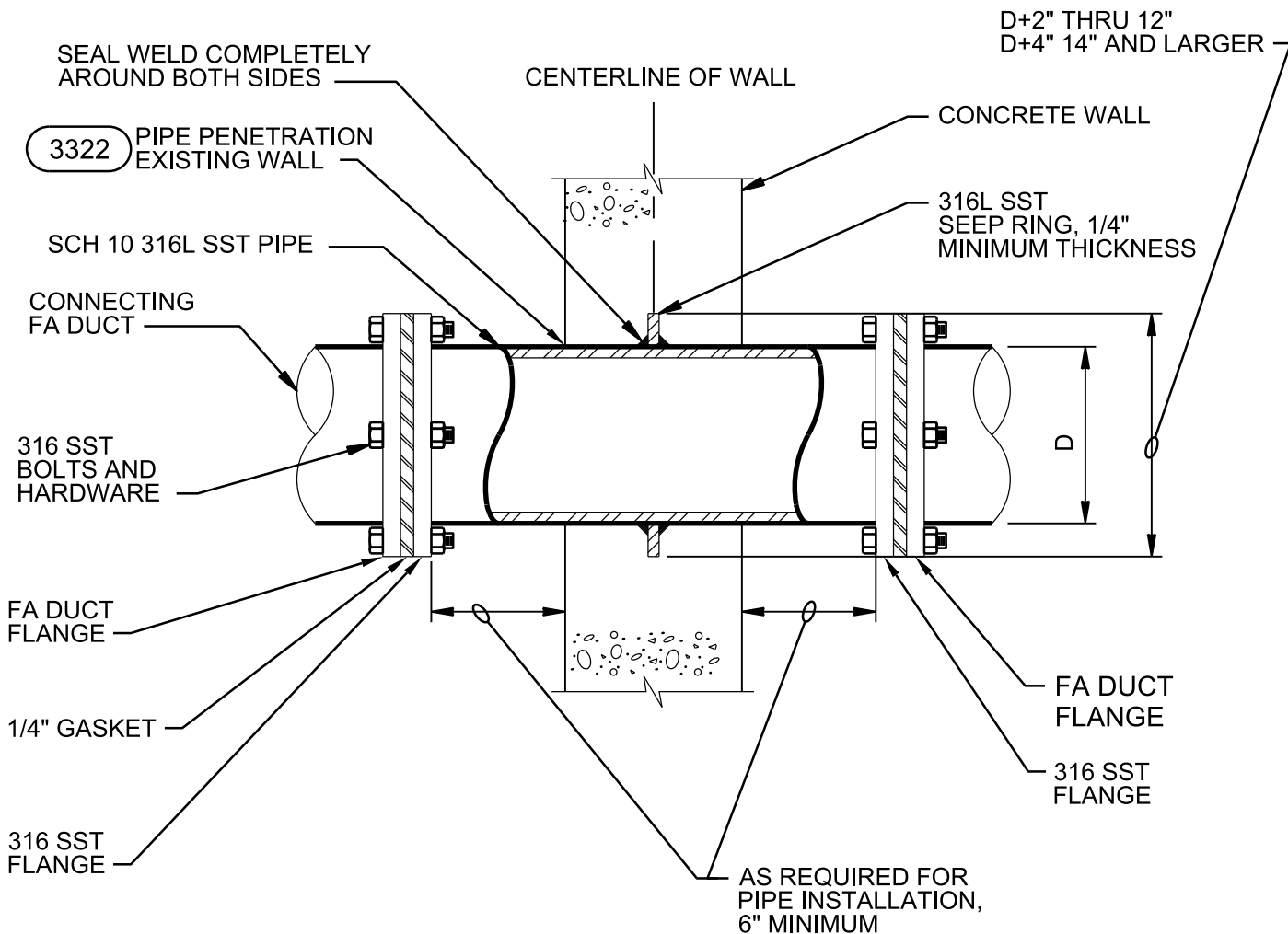
ALL MATERIALS SHALL BE PER THE AREA CLASSIFICATION AND MATERIALS OF CONSTRUCTION TABLE LOCATED ON DRAWINGS.

PIPE SUPPORT - WALL MOUNTED

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

15505



NOTES:

1. DIAMETER OF PIPE TO MATCH THE SIZE AS SHOWN ON DRAWINGS
2. COORDINATE FLANGE DIMENSIONS AND BOLTING PATTERN TO MATCH CONNECTING DUCTWORK.

STAINLESS STEEL FA WALL PIPE

NTS

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

15608

SET COVER OF VALVE BOX AND CONC PAD 1/4 " BELOW GRADE IN PAVEMENT OR SHOULDER, AND FLUSH WITH GRADE ELSEWHERE

INSERT MARKER IN VALVE BOX CONCRETE PAD

CAST IRON LID

PROVIDE 1'-6" SQ x 4" THICK CONC PAD

FINISHED GRADE

COMPACTED BACKFILL

CAST IRON VALVE BOX, SLIDING TYPE, UPPER SECTION

6" MIN

CAST IRON VALVE BOX LOWER SECTION

EXTENSION ROD REQD W/ 2" OPERATING NUT 1'-0" BELOW GRADE WHEN VALVE IS OVER 3'-0" BELOW GRADE

GATE VALVE (V132)

VALVE SIZE AND ENDS AS SPECIFIED OR INDICATED ON PLANS

PRE-STAMP WITH PIPE SIZE/SERVICE

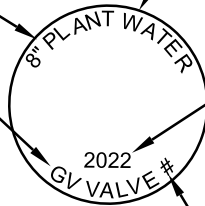
2" DIAMETER CONCRETE BENCH MARKER, SEE NOTE

PRE-STAMP WITH VALVE TYPE

PRE-STAMP WITH YEAR VALVE INSTALLED

VALVE # AS ASSIGNED BY OWNER OR ENGINEER

NOTE: MANUFACTURERS AND PRODUCT: BRASS SURV-KAP MODEL NO. M/M-B2S OR MARK-IT SURVEY MARKERS AND MONUMENTS (A DIVISION OF DESERT GROUP, INC) MODEL C/M-2B.

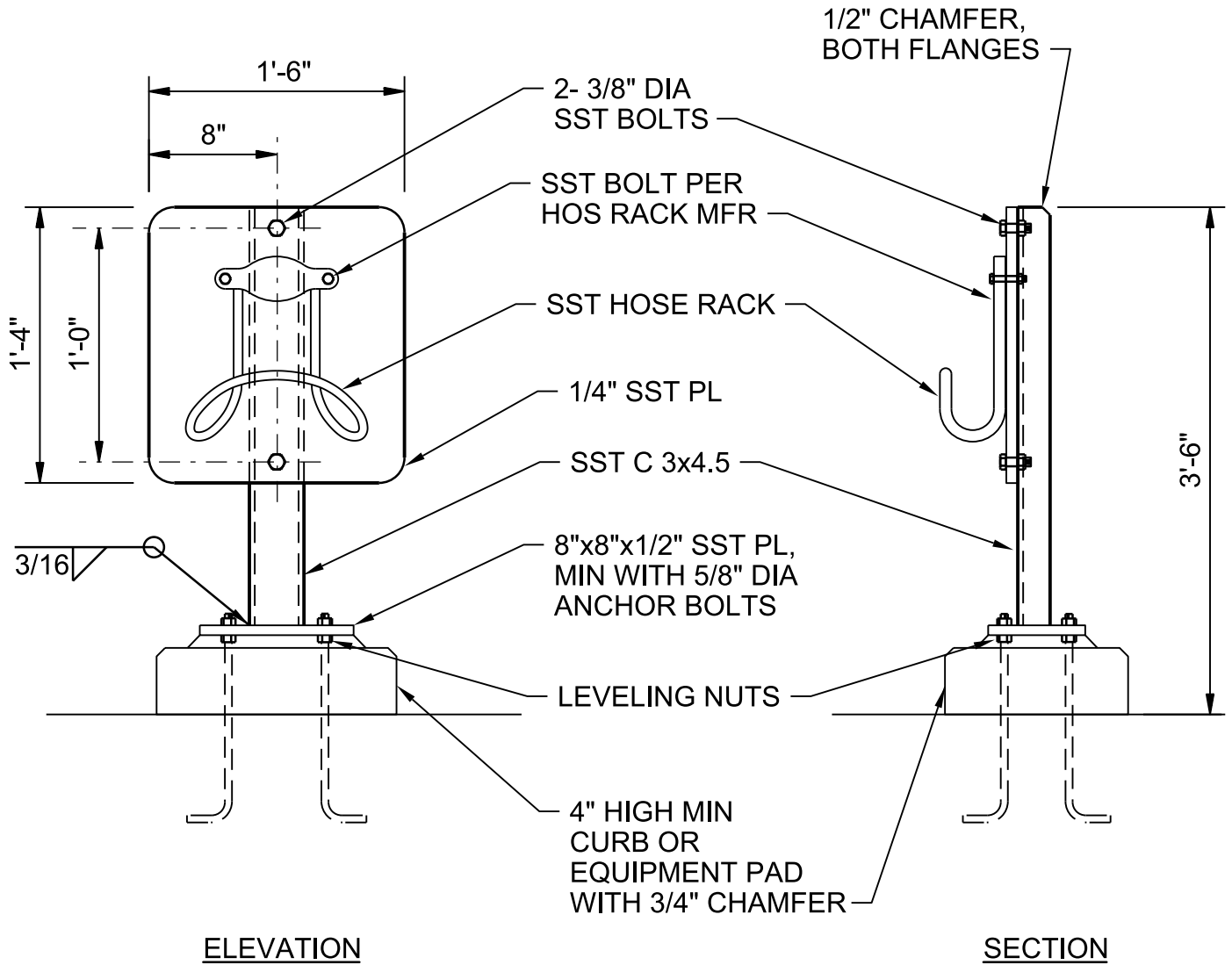


BURIED GATE VALVE BOX

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

15640



NOTES:

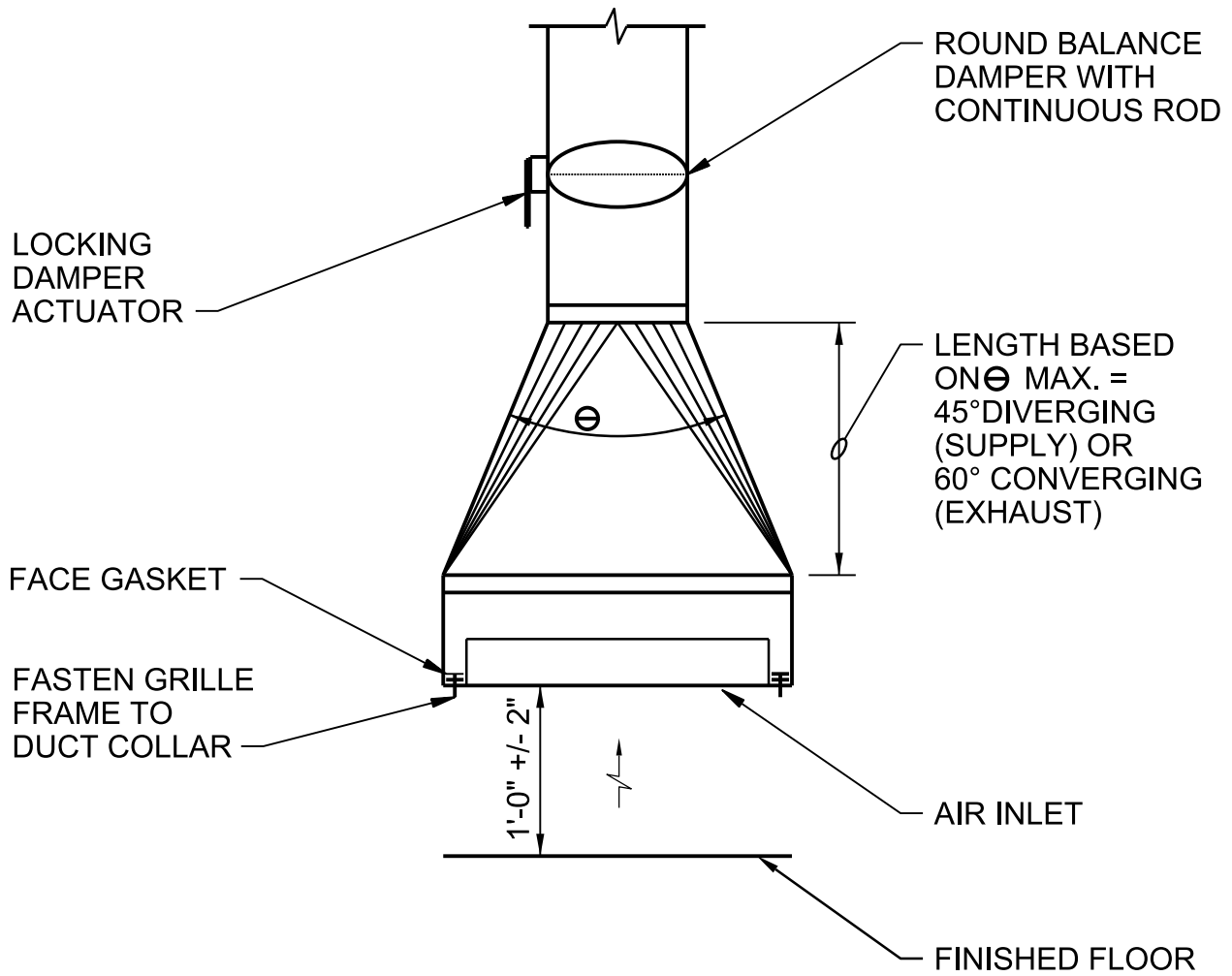
1. REMOVE ALL BURRS AND SHARP EDGES.
2. PROVIDE 1/2" MIN RADIUS ON ALL CORNERS.

FLOOR MOUNTED HOSE RACK

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

15720

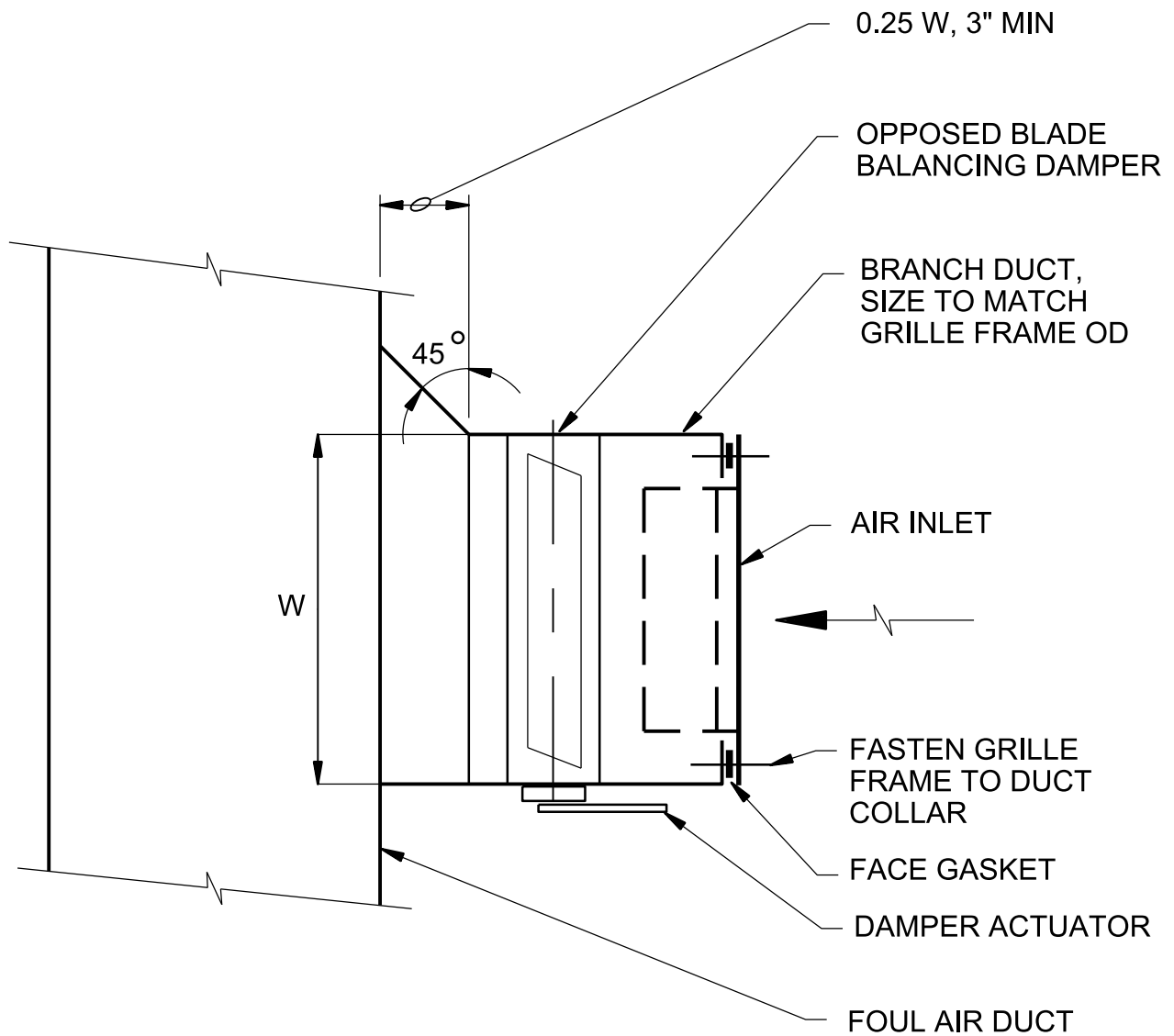


LOW ROUND DUCT MOUNTED AIR INLET

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

15810-5



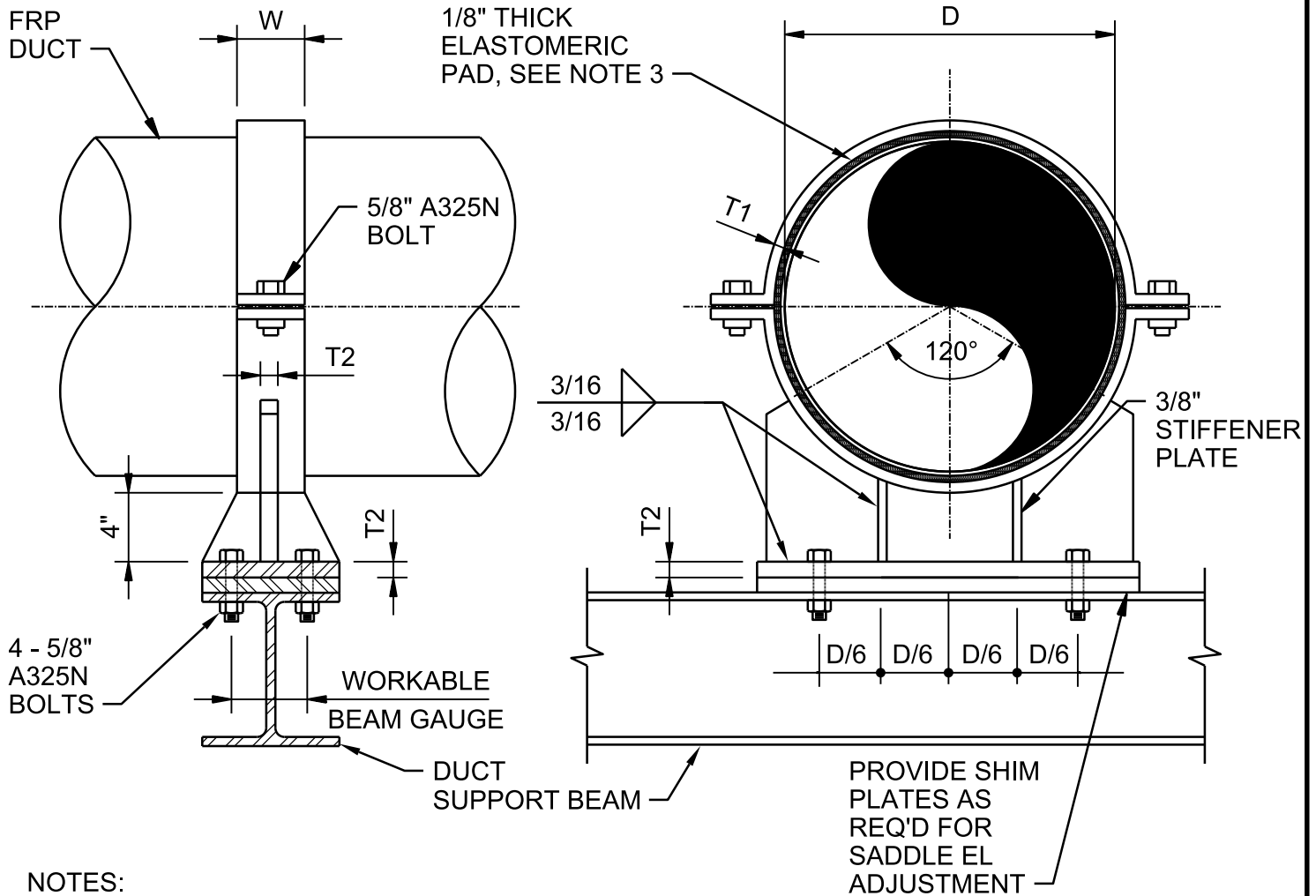
HIGH DUCT MOUNTED AIR INLET

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

15810-9

FA DUCT DIAMETER (IN)	WIDTH, W (IN)	THICKNESS T1 (IN)	THICKNESS T2 (IN)	TYPICAL FILLET WELD SIZE (IN)
< 30	2 1/2	1/4	3/8	3/16
30 - 48	4	1/4	3/8	3/16



NOTES:

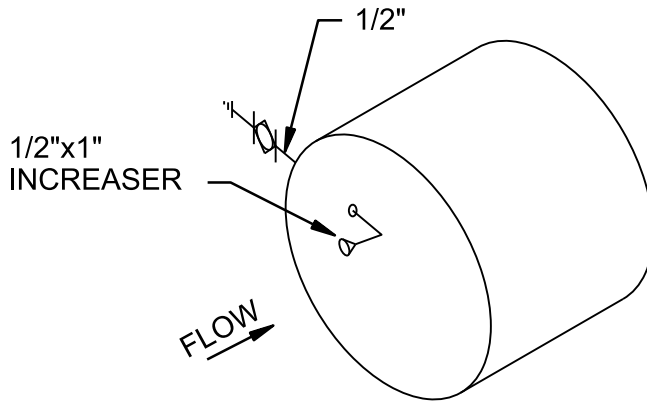
1. PROVIDE SADDLE SUPPORT WHERE SHOWN ON DRAWINGS WITH NECESSARY SUPPORT SPACING REQUIREMENTS MEETING SPECIFICATION 15892.
2. REFER TO AREA CLASSIFICATION AND MATERIALS OF CONSTRUCTION TABLE..
3. WHERE THIS DETAIL IS SPECIFIED AS A "GUIDE" ON PLANS, DO NOT INSTALL ELASTOMERIC PAD, INSTALL 1/4" SPACER BETWEEN PIPE STRAPS AND PROVIDE 1/4" THICK TEFLON PTFE ADHESIVE SHEET ON LOWER PIPE STRAP IN CONTACT WITH DUCT.

FRP DUCT SADDLE SUPPORT

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

15884



ISOMETRIC

4" FRP CONNECTION
W/316 SST BLIND FLANGE

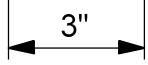
DRILL FLANGE AND WELD
1/2" SS PIPE TO FLANGE

1/2" BALL VALVE
(V306)

CAP

1/2" HOSE BARB

1/4" FILLET WELD



1/2" 316 SST

90 DEG ELBOW,
TURN INTO FA
FLOW, PROVIDE
1/2"x1" INCREASER
@ END

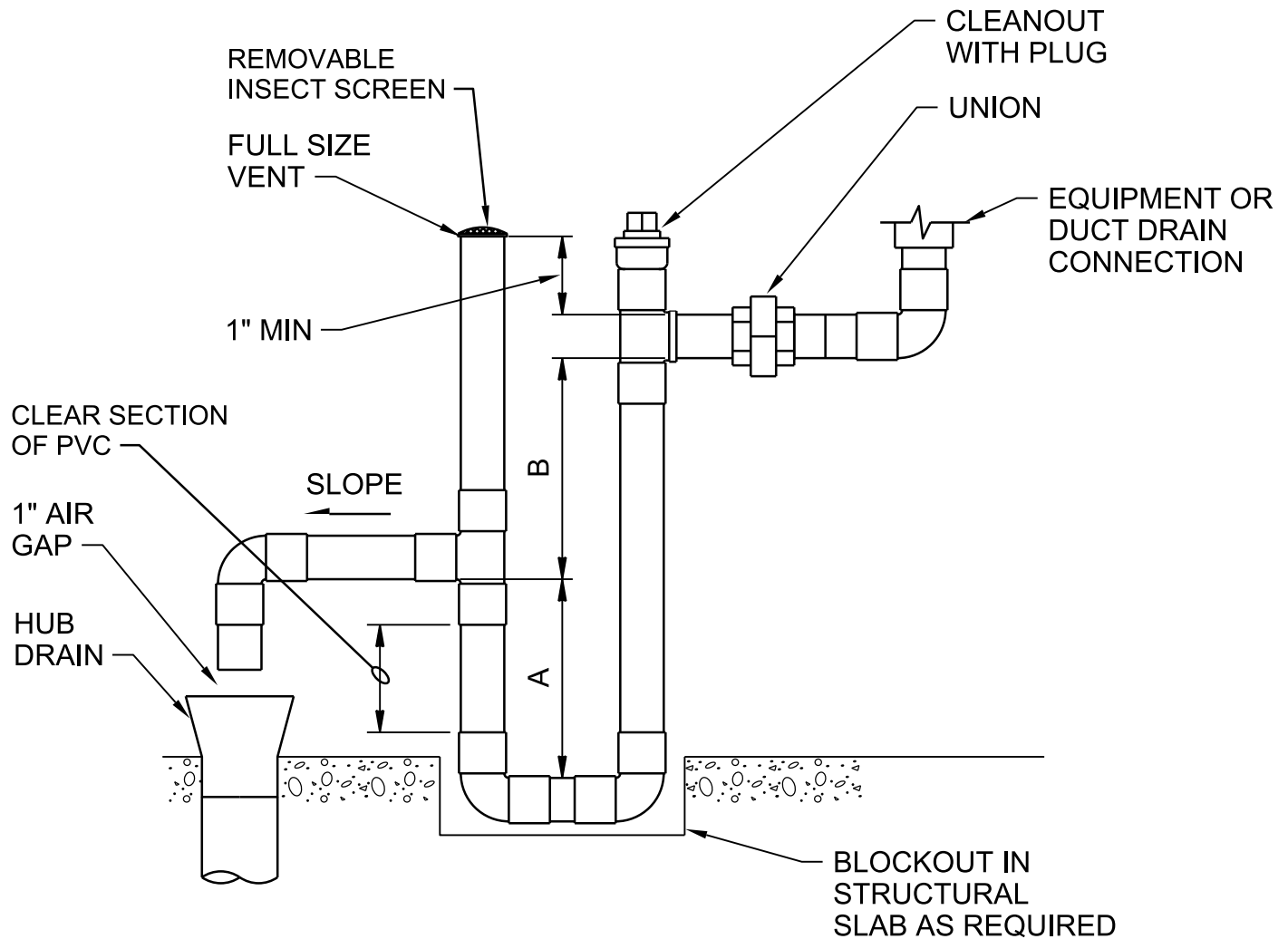
FA DUCT WALL

NOTES:

- 1. FOR SAMPLE CONNECTIONS LOCATED MORE THAN 7'-6" ABOVE WALKING SURFACE, EXTEND SAMPLE PIPING AS REQUIRED TO LOCATE VALVE AND HOSE BARB 3'-0" ABOVE WALKING SURFACE.

GAS SAMPLE PROBE

NTS



NOTES:

1. MINIMUM DRAIN PIPE SIZE TO BE EQUAL TO CONNECTION PROVIDED WITH EQUIPMENT OR AS INDICATED ON DRAWING.
2. MINIMUM DISTANCE "A" EQUAL TO ONE HALF SYSTEM NEGATIVE STATIC PRESSURE (IN. W.C.) PLUS 1" OR SYSTEM POSITIVE STATIC PRESSURE PLUS 1".
3. MINIMUM DISTANCE "B" EQUAL TO SYSTEM NEGATIVE STATIC PRESSURE (IN. W.C.) PLUS 1" OR ZERO FOR SYSTEM POSITIVE PRESSURE. MINIMIZE LENGTH OF VERTICAL SECTION OF THE OUTLET PIPE AND AVOID BLOCKOUT IN THE SLAB IF POSSIBLE.
4. PROVIDE BLOCKOUT IN STRUCTURAL PAD AS NEEDED FOR REQUIRED TRAP DEPTH, IF NECESSARY.
5. ALL PIPING TO BE SCHEDULE 80 PVC, EXCEPT CLEAR SECTION SHOWN.

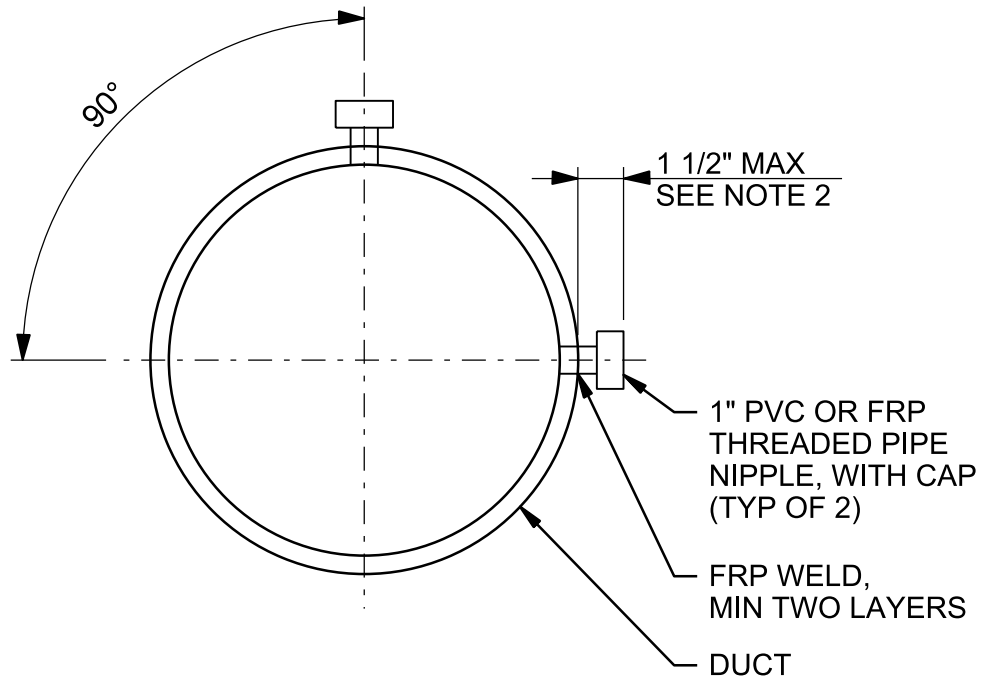
EQUIPMENT DRAIN TRAP

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

15898

JACOBS



NOTES:

1. INSTALL TEST PORT WITH A MINIMUM LENGTH OF 3 DUCT DIAMETERS OF STRAIGHT DUCT UPSTREAM AND MINIMUM OF 1 DUCT DIAMETER OF STRAIGHT DUCT DOWNSTREAM.
2. AS CONSTRUCTED EACH PORT MUST BE ABLE TO FREELY PASS A DWYER SERIES 160 PITOT TUBE.
3. WHERE POSSIBLE ON HORIZONTAL DUCT RUNS DO NOT INSTALL TEST PORTS WITHIN 45 DEGREES OF THE DUCT INVERT.

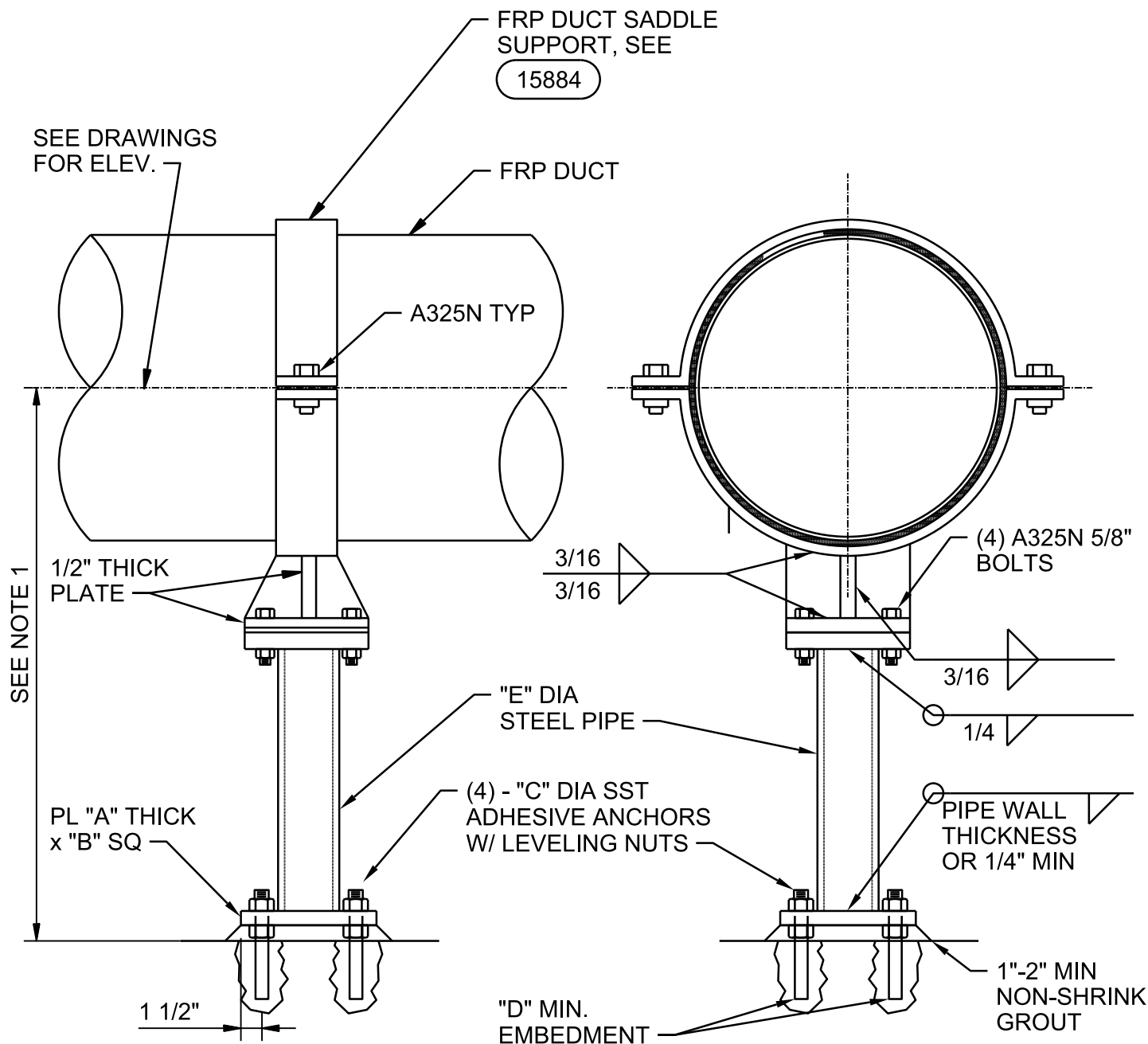
FOUL AIR TEST PORT

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

15899

JACOBS



NOTES:

1. MAXIMUM HEIGHT OF F.
2. REFER TO MATERIAL SELECTION TABLE FOR MATERIALS OF CONSTRUCTION.

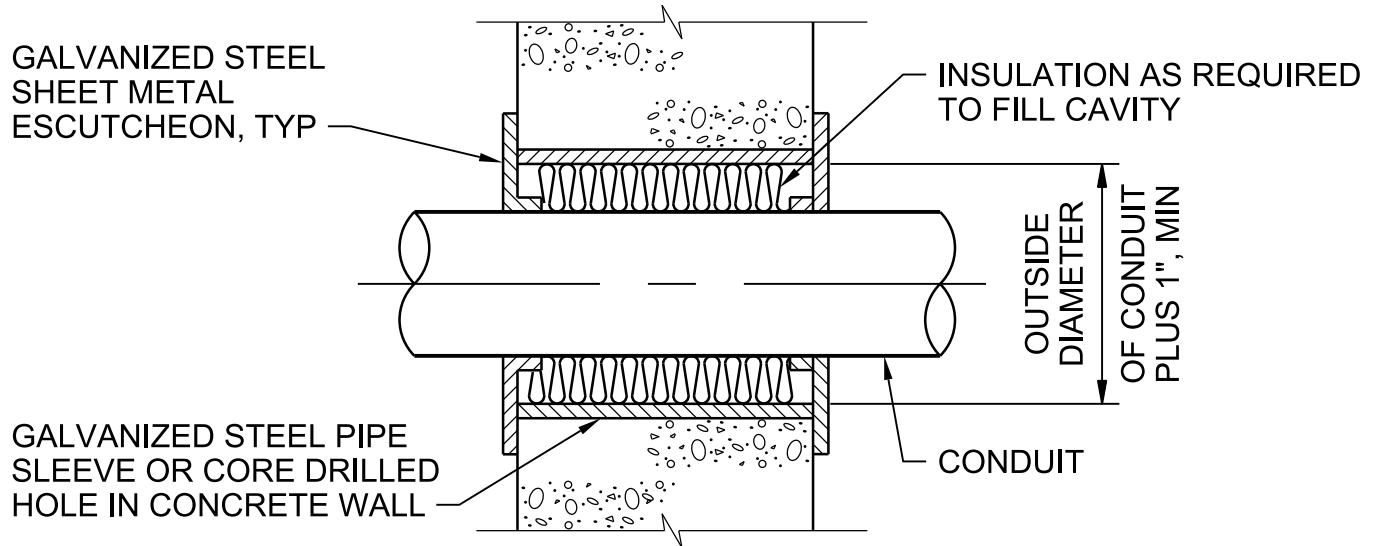
DUCT DIA (IN)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (FT)
14 - 48	3/4	15	3/4	10	8	13

FRP DUCT SUPPORT DETAIL-GRADE MOUNTED

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

15900



NOTES:

1. CONDUITS WHICH INDIVIDUALLY PASS THRU AN INTERIOR WALL SHALL BE INSTALLED IN ACCORDANCE WITH THIS DETAIL. IF WALL IS A FIRE WALL, FILL CAVITY WITH FIRE STOP SEALANT AS SPECIFIED.

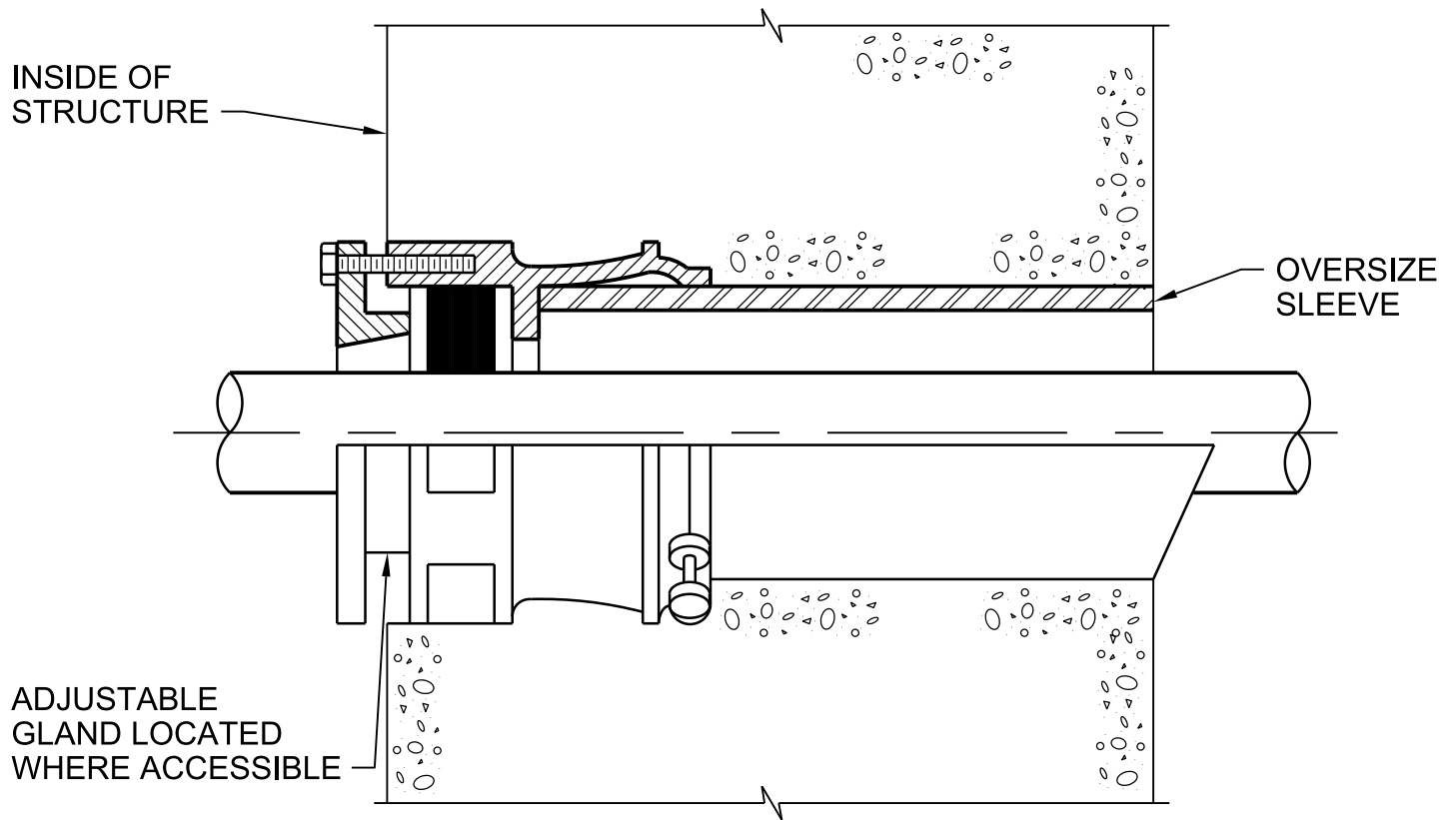
INTERIOR WALL PENETRATION

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

16106

JACOBS



NOTES:

1. USE WATERTIGHT CONDUIT SEAL WHERE CONDUIT PENETRATIONS OF BUILDING EXTERIOR WALLS ARE BELOW GRADE. MADE BELOW OR ABOVE GRADE.

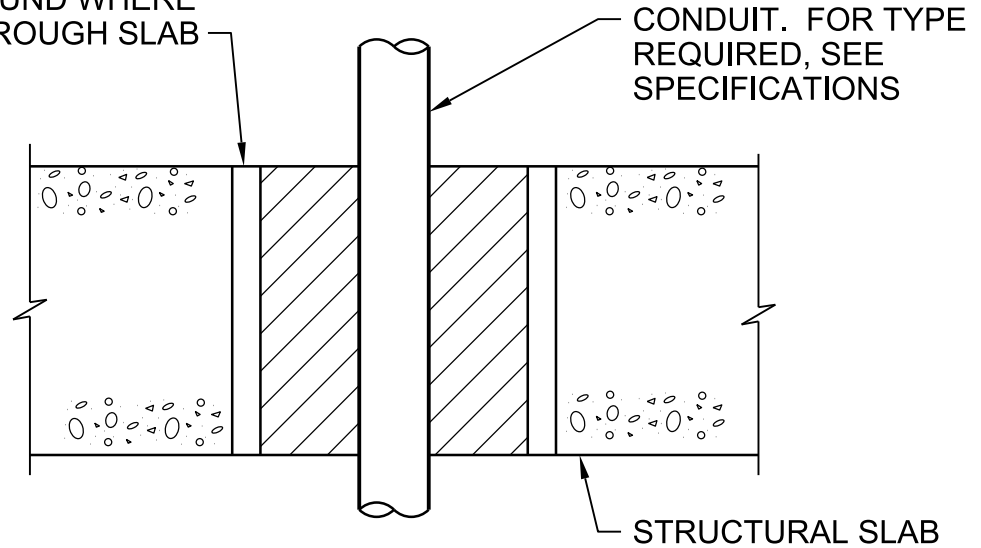
WATERTIGHT WALL CONDUIT SEAL

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

16108

PROVIDE A PVC SLEEVE AND
FILL WITH A SUITABLE PLASTIC
EXPANDABLE COMPOUND WHERE
CONDUIT PASSES THROUGH SLAB



NOTES:

1. ALL CONDUITS THROUGH CONCRETE FLOOR SLABS AND EQUIPMENT PADS SHALL BE INSTALLED IN ACCORDANCE WITH THIS DETAIL.

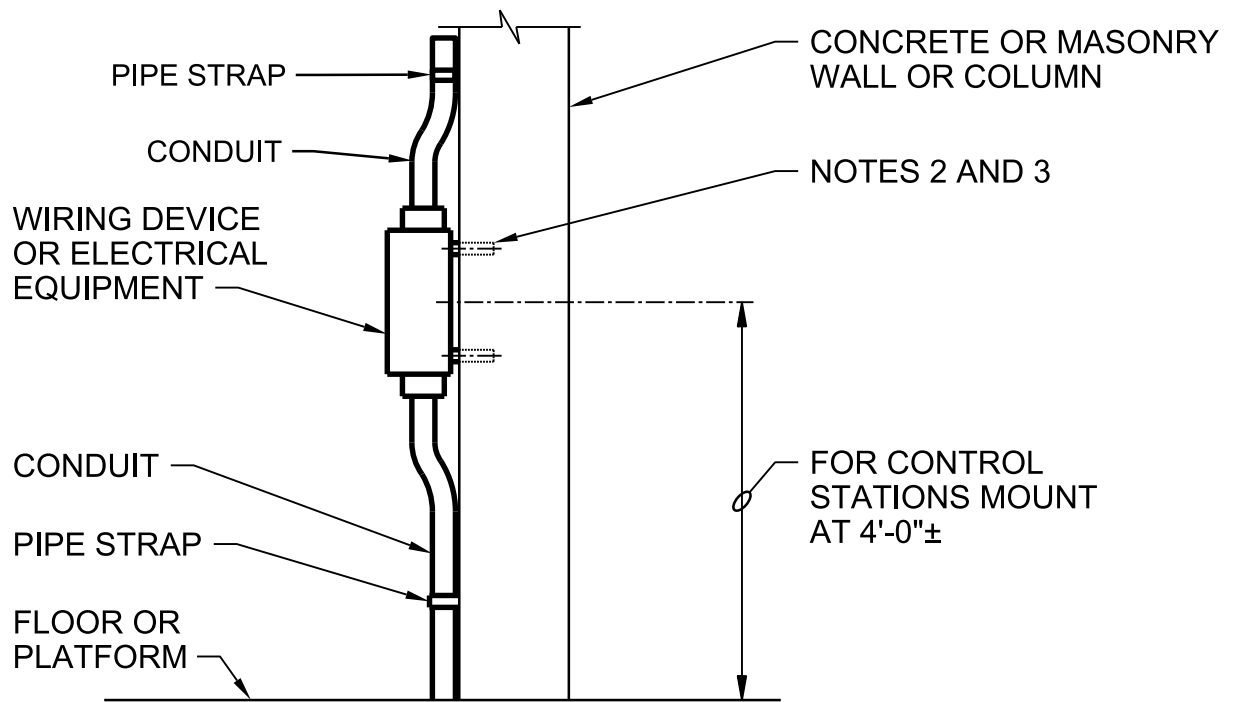
SLAB PENETRATION

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

16110

JACOBS



NOTES:

1. ALL MOUNTING HARDWARE SHALL BE PER AREA CLASSIFICATION AND MATERIALS OF CONSTRUCTION TABLE. USE BOTH WASHER AND LOCK WASHERS UNDER ALL NUTS.
2. ON CONCRETE WALLS USE STAINLESS STEEL CONCRETE ANCHORS. MOUNT ENCLOSURE ON SPACERS OF MIN 1/2" SCHEDULE 80 PVC CONDUIT.
3. BOXES 6 INCHES SQUARE AND SMALLER SHALL BE SUPPORTED BY TWO ANCHORS, MIN. LARGER BOXES SHALL BE SUPPORTED AS REQUIRED BY CALCULATION; FOUR ANCHORS MIN.
4. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

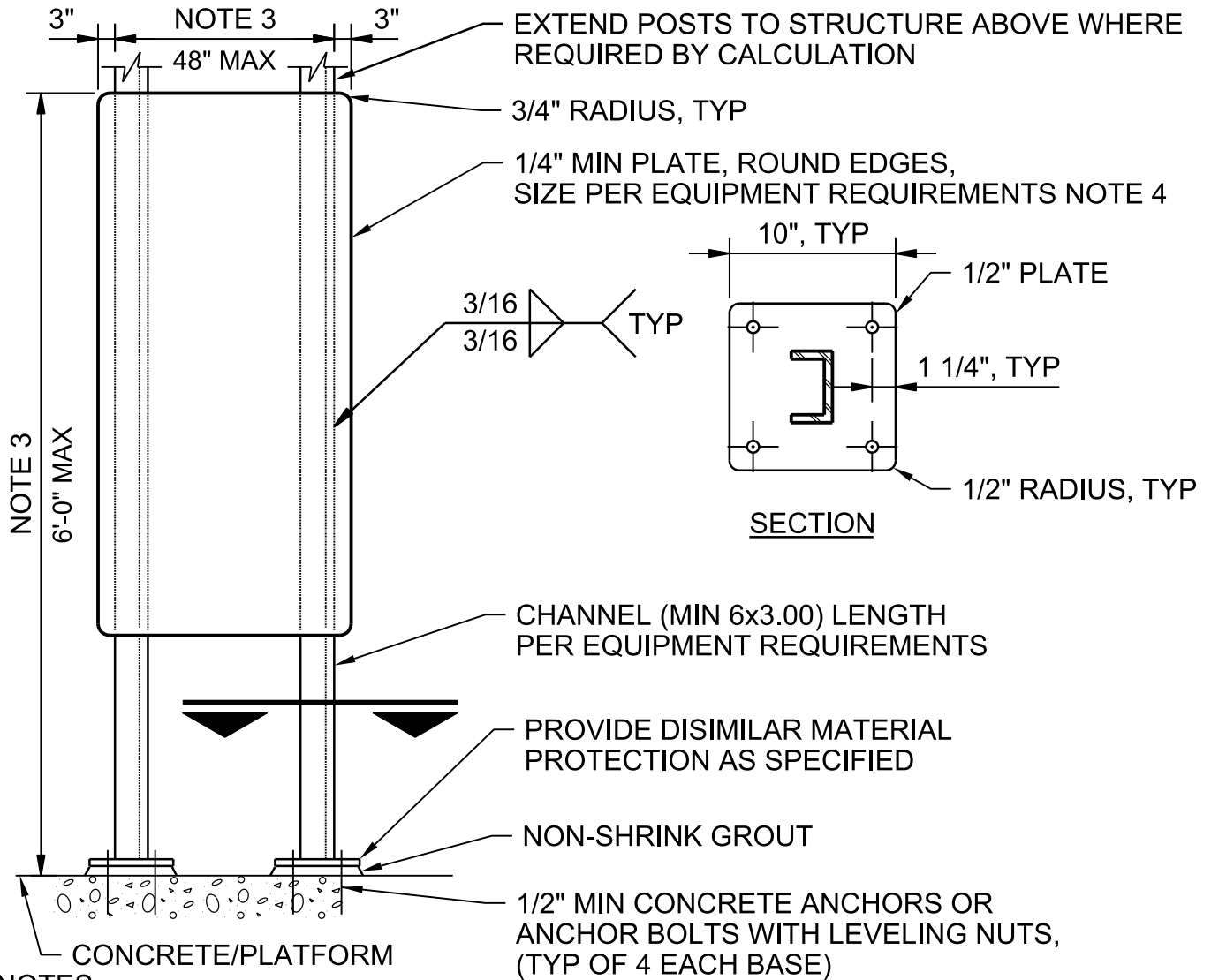
DEVICE MOUNTING, WALL OR COLUMN

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

16152

JACOBS



NOTES:

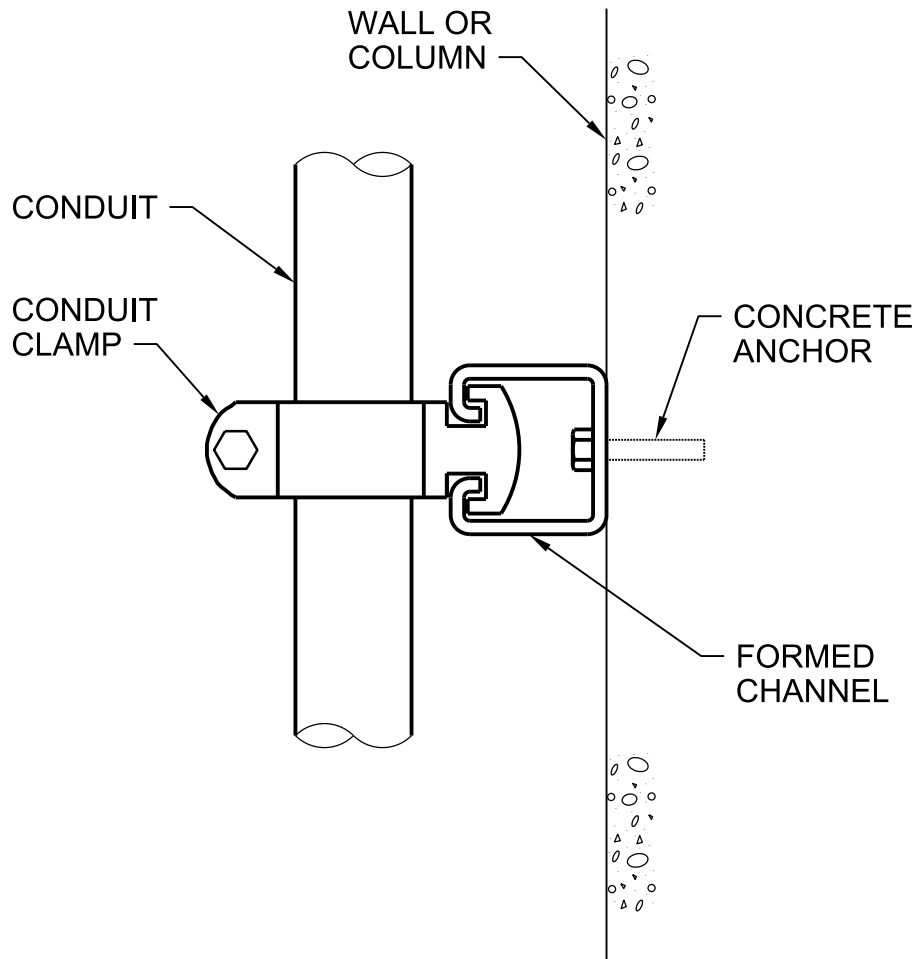
1. SEE AREA CLASSIFICATION AND MATERIALS OF CONSTRUCTION TABLE FOR MOUNTING HARDWARE. USE WASHER AND SPLIT LOCK WASHER UNDER ALL NUTS.
2. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES AS REQUIRED BY CALCULATIONS.
3. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.
4. DIMENSIONS OF MOUNTING PLATE SHALL BE AS REQUIRED FOR EQUIPMENT TO BE MOUNTED. EDGE OF MOUNTING PLATE SHALL EXTEND A MINIMUM OF 2 INCHES EACH SIDE OF THE MOUNTED EQUIPMENT.

DEVICE MOUNTING EQUIPMENT PEDESTAL

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

16158b



NOTES:

1. SUPPORT ALL EXPOSED CONDUITS ON FORMED CHANNELS.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

CONDUIT SUPPORT ON STRUCTURE

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

16167

JACOBS

ORIENTATE HINGE TO LAY-DOWN
POLE IN UNOBSTRUCTED AREA

POLE BASE
COVER

BONDING
JUMPER

GROUNDING
BUSHING

MIN 1"
NON-SHRINK
GROUT

FINISHED
GRADE

2" CLR

3'-0" MIN

THERMAL
WELD

5'-0" MIN

6" PITCH
GROUND GRID
CONDUCTOR
SIZE AS INDICATED
ON DRAWINGS OR
SPECIFICATIONS
INSTALL AS REQUIRED

GROUND ROD

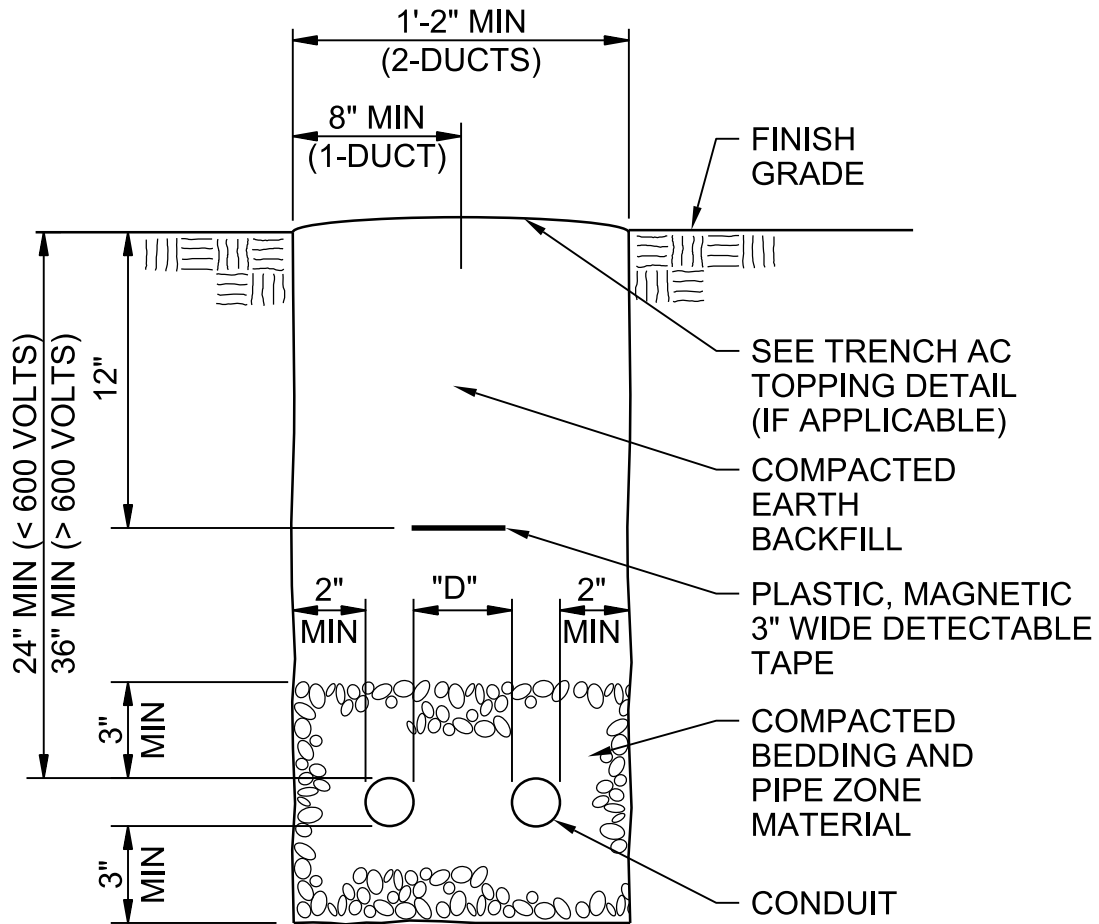
3" CLR

POLE LIGHT/BASE

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

16201



D = 3" MIN FOR 2" AND LARGER CONDUIT

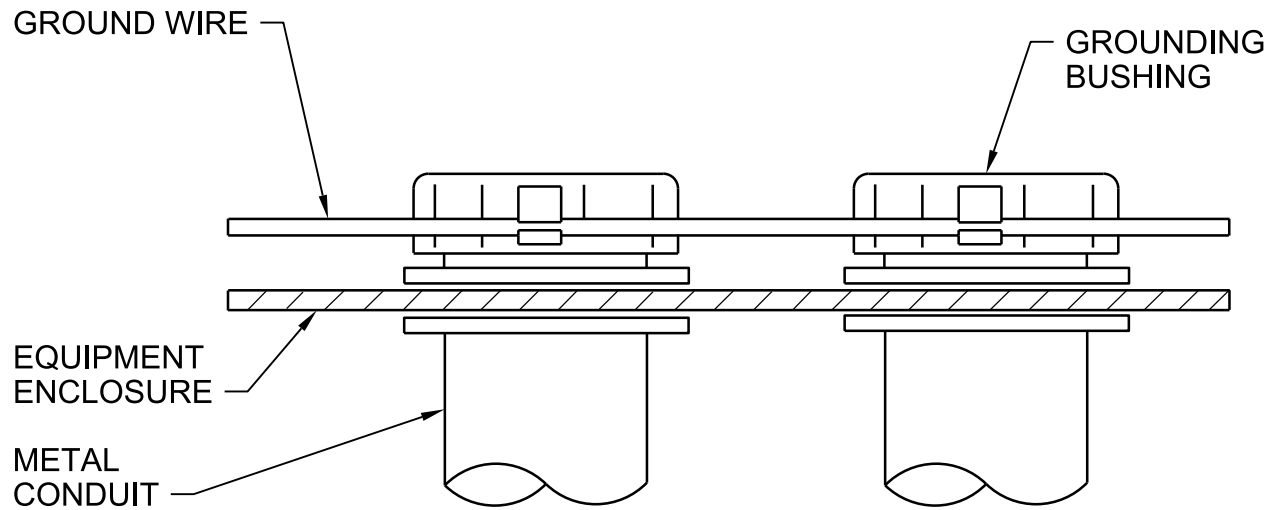
D = 2" MIN FOR 1 1/2" AND SMALLER CONDUIT

TRENCH AND CONDUIT PLACEMENT

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

16325b



NOTES:

1. THE ENDS OF ALL CONDUITS REQUIRED TO BE GROUNDED BY THE SPECIFICATIONS SHALL BE GROUNDED IN ACCORDANCE WITH THIS DETAIL.

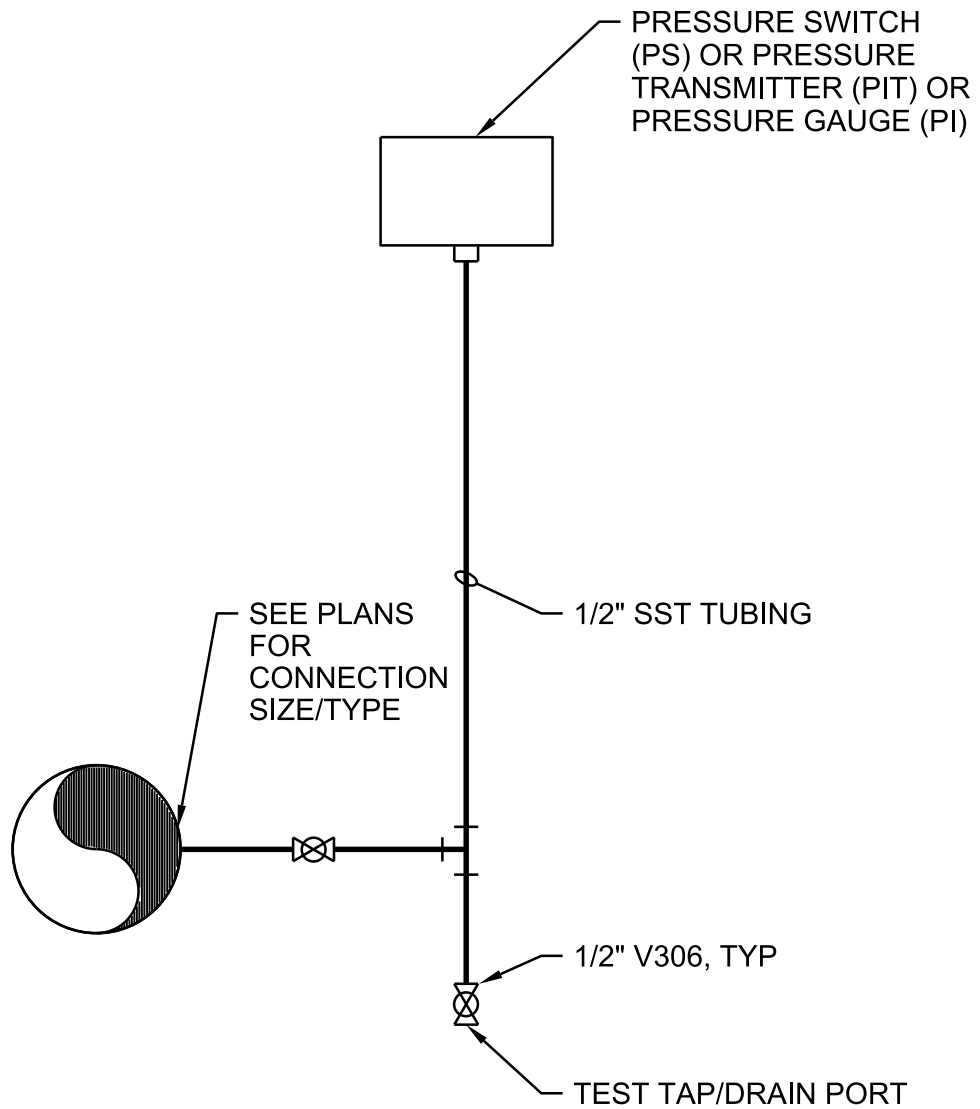
CONDUIT GROUNDING

NTS

CLEAN WATER SERVICES
DURHAM WRRF
ODOR CONTROL PHASE 3 HEADWORKS

16452

JACOBS



NOTES:

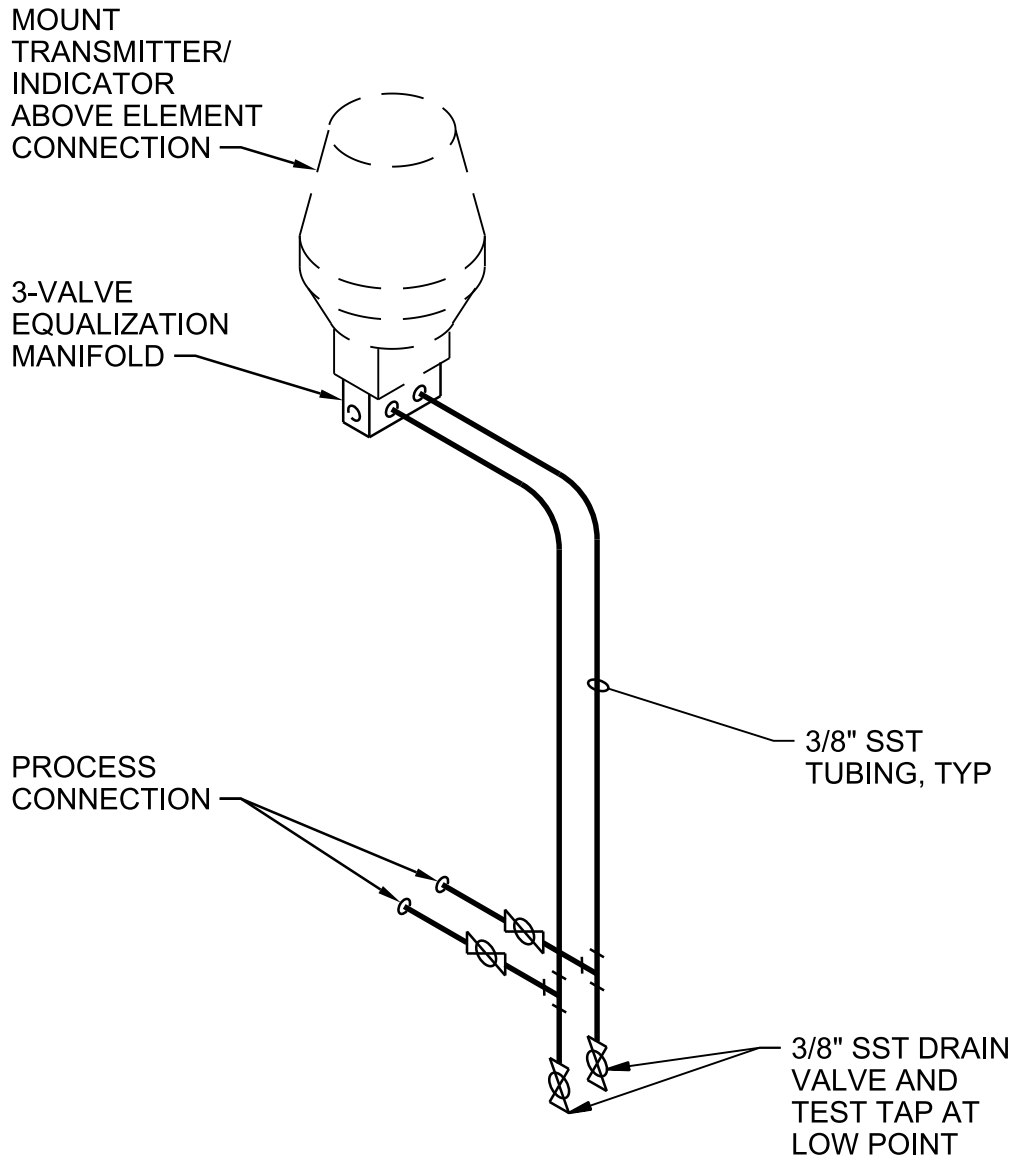
1. INSTALL PRESSURE INSTRUMENTS IN A VERTICAL ORIENTATION FOR VIEWING EASE.
2. ALL LINES SHALL HAVE A CONTINUOUS SLOPE OF 1/4" PER FOOT MIN (1" PER FOOT PREFERRED). SLOPE DOWNWARD TO TEST TAP FOR AIR SERVICE.
3. BEND HARD TUBING WHERE POSSIBLE WHEN TURNING AND CHANGING PLANES. MINIMIZE THE NUMBER OF COMPRESSION FITTINGS.

PRESSURE INSTRUMENT - DIRECT MOUNTING

NTS

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

17304



NOTES:

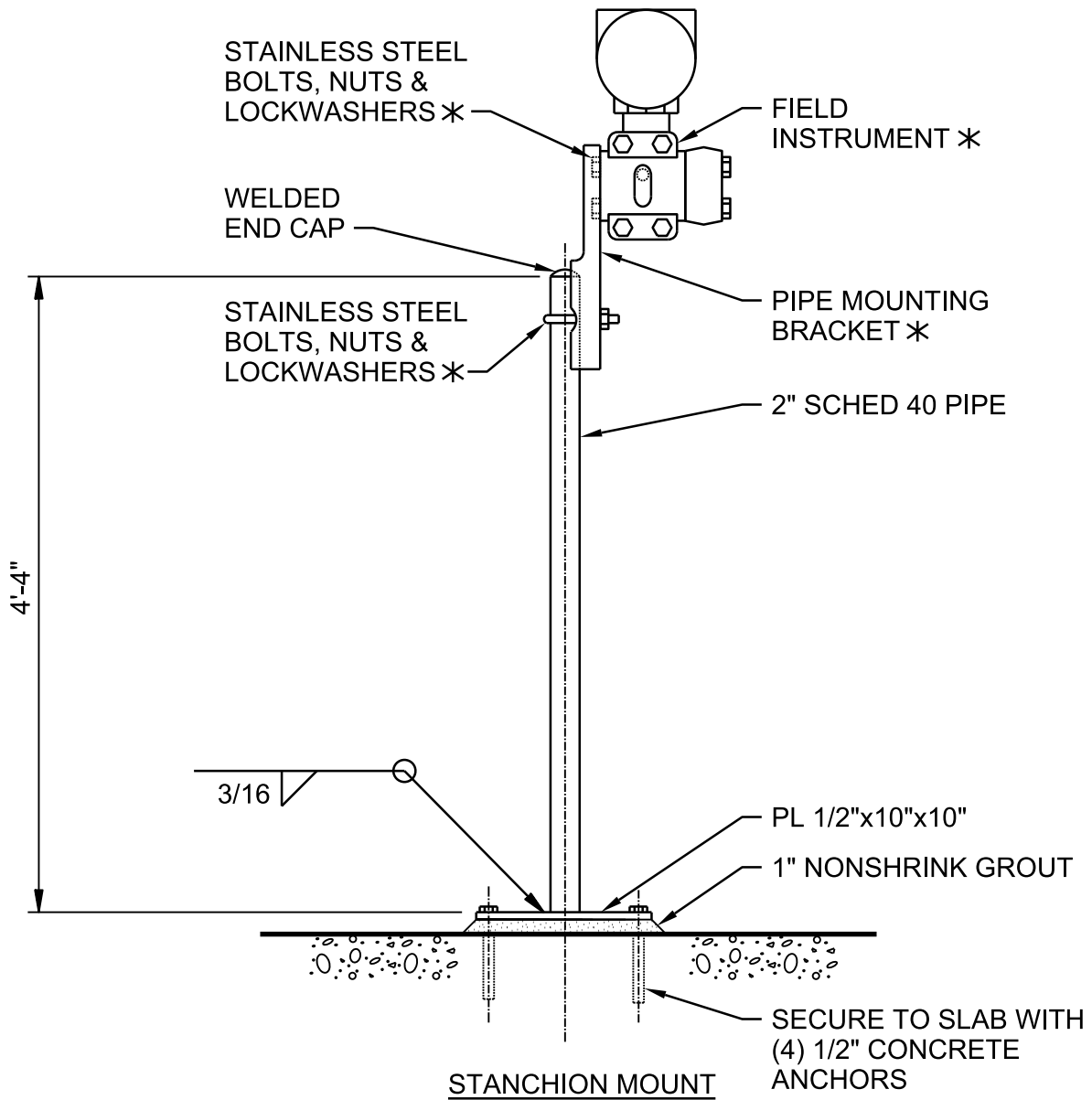
1. ALL LINES SHALL HAVE A CONTINUOUS SLOPE OF 1/4" PER FOOT MIN (1" PER FOOT PREFERRED). SLOPE DOWNWARD TO TEST TAP FOR AIR SERVICE.
2. BEND HARD TUBING WHERE POSSIBLE WHEN TURNING AND CHANGING PLANES. MINIMIZE THE NUMBER OF COMPRESSION FITTINGS.

PRESSURE DIFFERENTIAL TRANSMITTER

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

17309



NOTES:

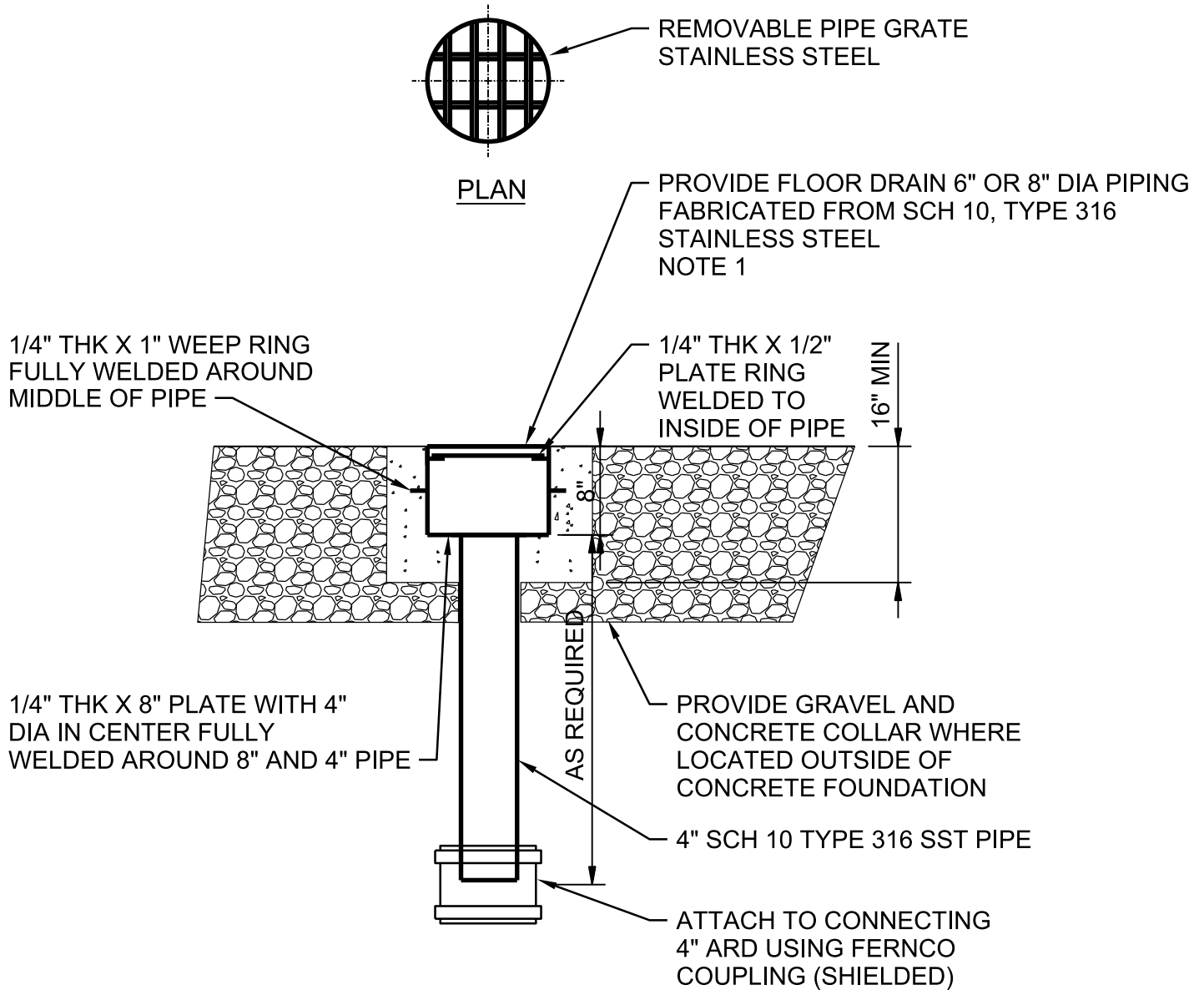
1. REFER TO MATERIAL SELECTION TABLE FOR MATERIALS OF CONSTRUCTION.
2. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

FIELD INSTRUMENT MOUNTED-STANCHION

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

17380



NOTES:

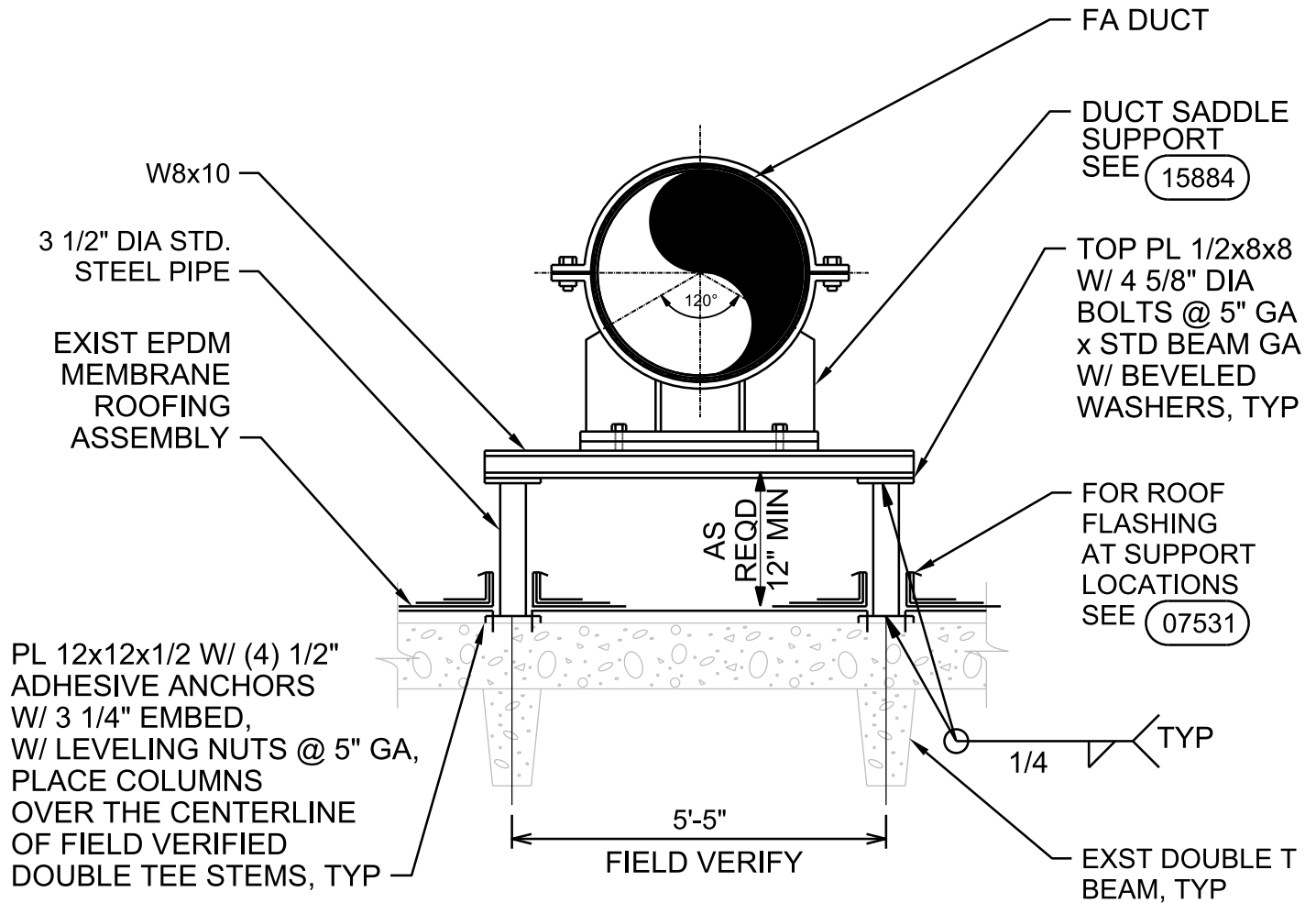
1. USE 6" DIA DRAIN AT EQUIPMENT DRAINS OR FA DUCT CONDENSATE DRAINS.
USE 8" DIA DRAIN FOR AREA DRAINS.

FLOOR DRAIN

NTS

CLEAN WATER SERVICES
DURHAM WRF
ODOR CONTROL PHASE 3 HEADWORKS

22401



NOTE:

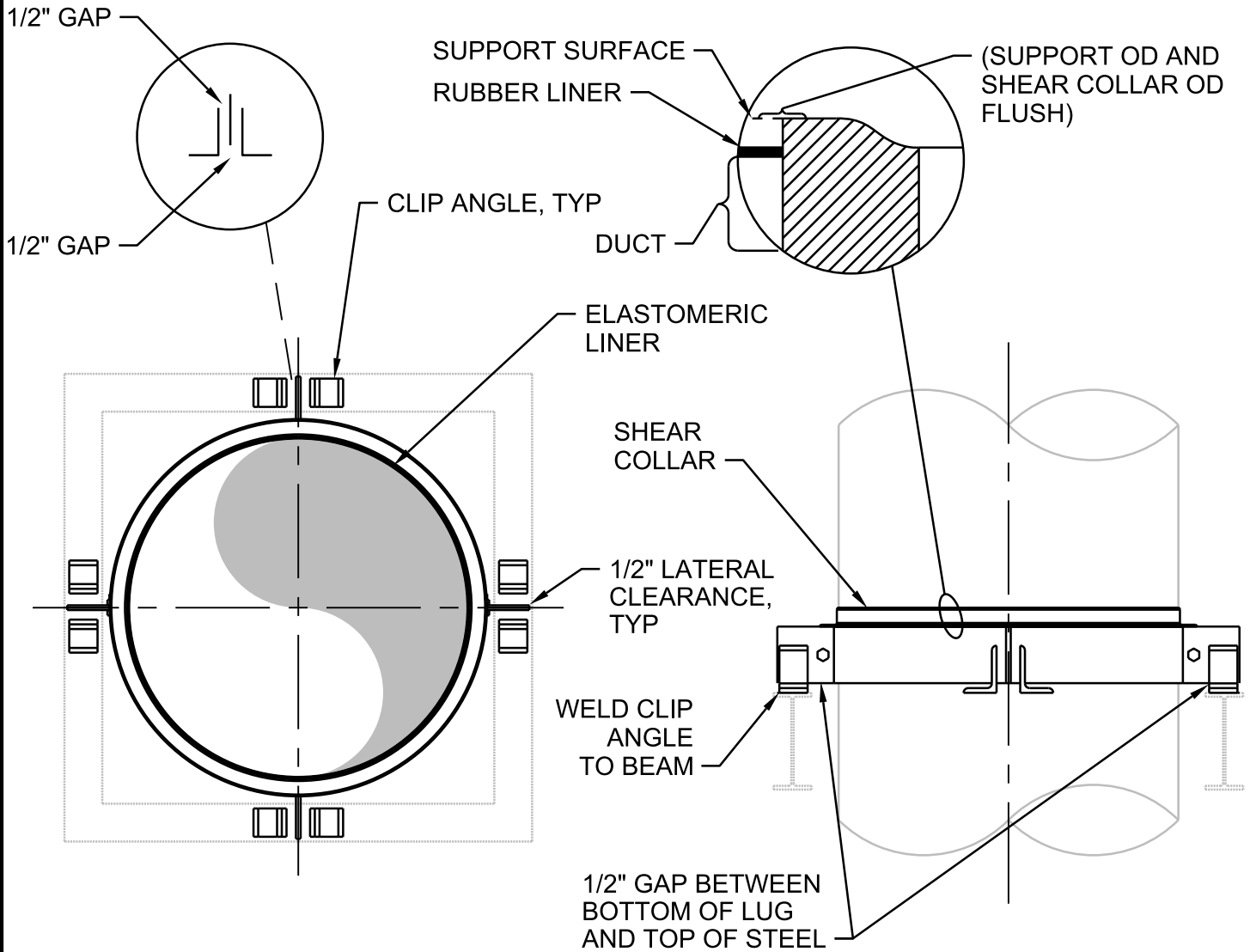
1. REFER TO AREA CLASSIFICATION AND MATERIALS OF CONSTRUCTION TABLE.

ABOVE ROOF DUCTING AND SUPPORT

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

22402



NOTES:

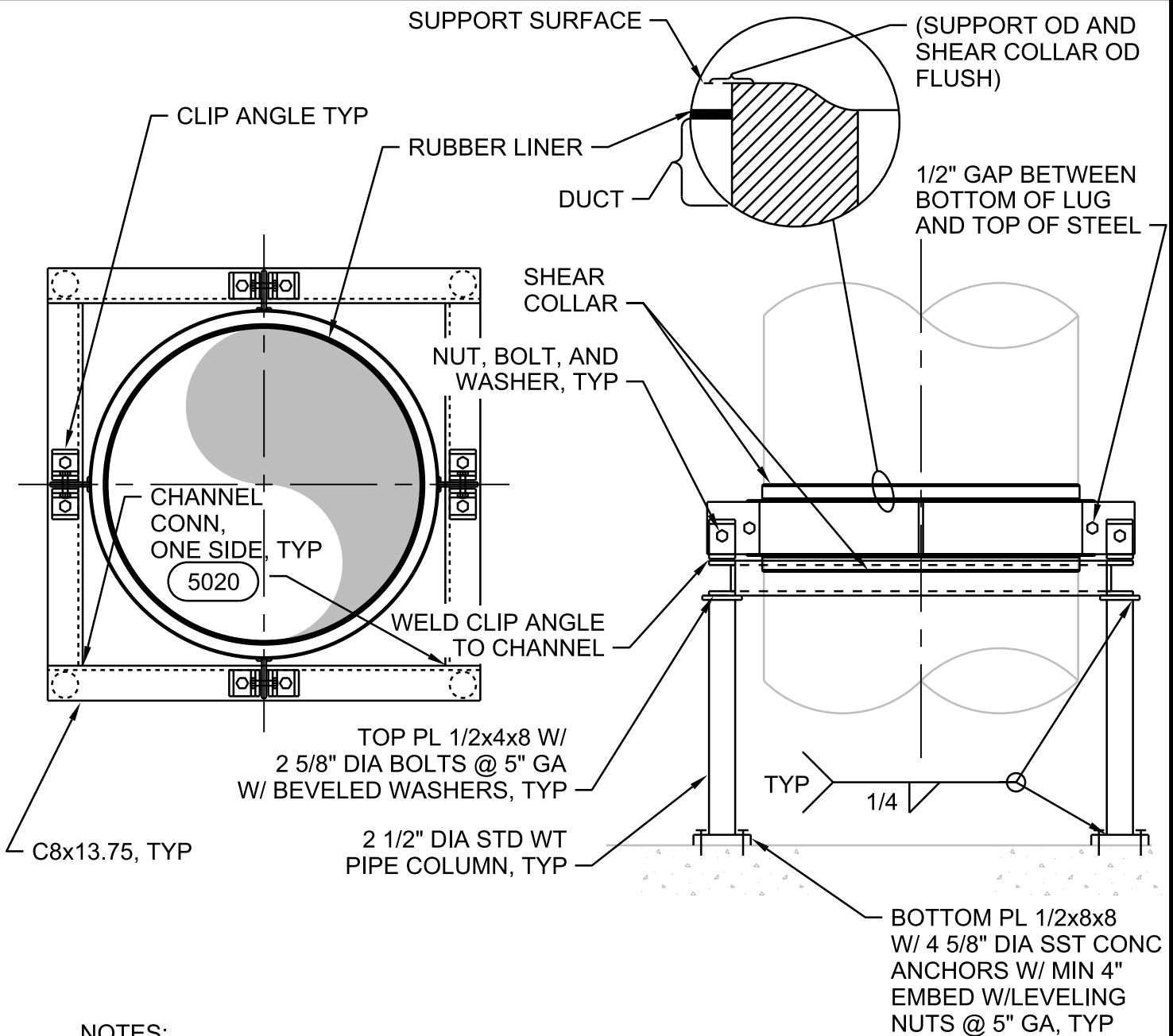
1. PROVIDE JOVE ANCHOR RISER HEAVY DUTY MODEL DS-6GQ. INSTALL IN ACCORDANCE TO MANUFACTURERS INSTALLATION RECOMMENDATIONS. COORDINATE SHEAR COLLAR WITH DUCT MANUFACTURER.
2. PROVIDE JTI SHEAR COLLAR MODEL SC. INSTALL IN ACCORDANCE TO MANUFACTURERS INSTALLATION RECOMMENDATIONS. COORDINATE SHEAR COLLAR WITH DUCT MANUFACTURER.
3. REFER TO AREA CLASSIFICATION AND MATERIALS OF CONSTRUCTION TABLE.

DUCT SUPPORT

NTS

CLEAN WATER SERVICES
 DURHAM WRRF
 ODOR CONTROL PHASE 3 HEADWORKS

22403



NOTES:

1. PROVIDE JOVE ANCHOR RISER HEAVY DUTY MODEL DS-6Q. INSTALL IN ACCORDANCE TO MANUFACTURERS INSTALLATION RECOMMENDATIONS. COORDINATE SHEAR COLLAR WITH DUCT MANUFACTURER.
2. PROVIDE JTI SHEAR COLLAR MODEL SC. INSTALL IN ACCORDANCE TO MANUFACTURERS INSTALLATION RECOMMENDATIONS. COORDINATE SHEAR COLLAR WITH DUCT MANUFACTURER.
3. REFER TO AREA CLASSIFICATION AND MATERIALS OF CONSTRUCTION TABLE.

DUCT SUPPORT

NTS

CLEAN WATER SERVICES
 DURHAM WRF
 ODOR CONTROL PHASE 3 HEADWORKS

22404