

CONTRACT DOCUMENTS

AND

SPECIFICATIONS

FOR

**PROJECT NO. RMUA ES 2020-11 & BAMA HC21020
HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS
FAP 25-005-L | FAP 24-0002-L | FAP 24-0016L**

ATTENDANCE AT PRE-BID CONFERENCE IS MANDATORY

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VOLUME V

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

STANDARD DETAILS

**VOLUME 5 OF 5
SEALS PAGE**

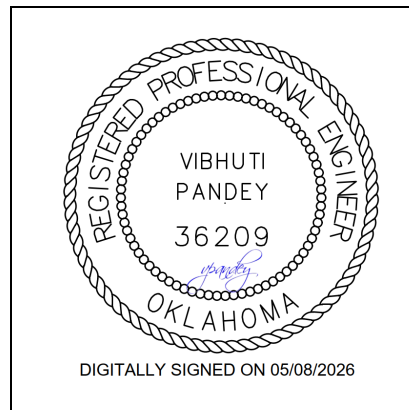
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STANDARD DETAILS

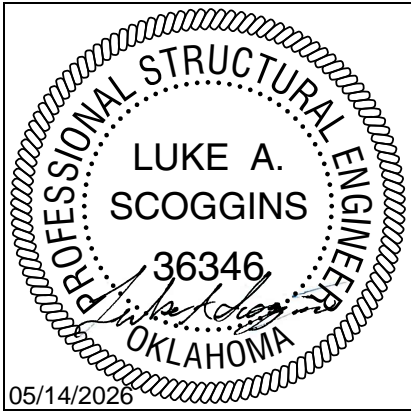


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May 15, 2026

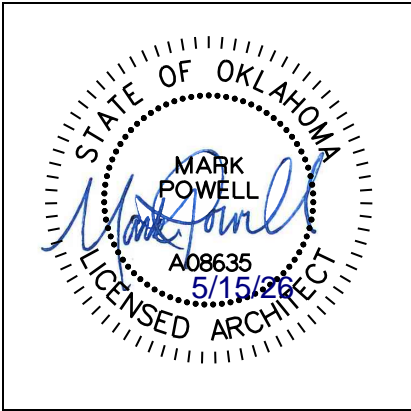
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HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS



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HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS



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HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS



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Saul Torres

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

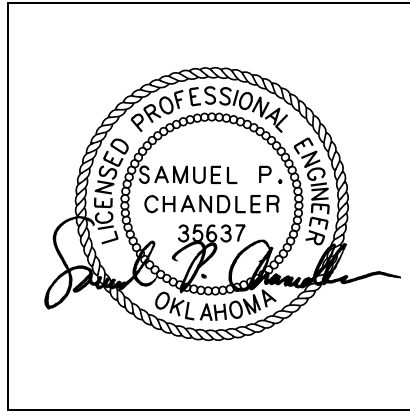


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Blair I. Baderstadt

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

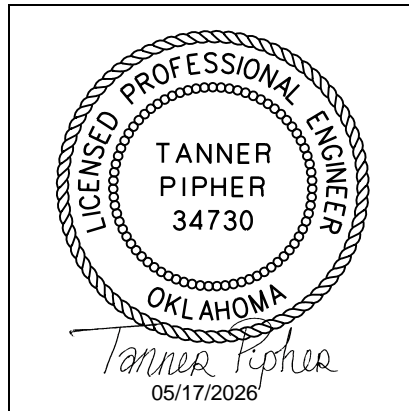


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Samuel P. Chandler

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS



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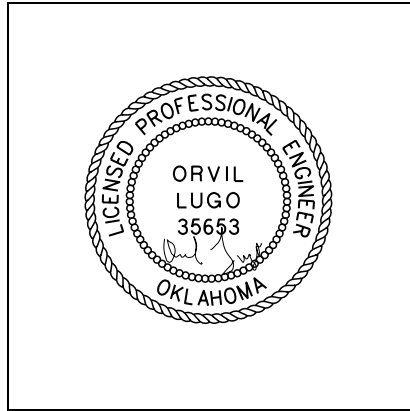
Tanner Pipher

SEALS PAGE

MAY 2026

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Orvil Lugo

END OF SECTION

STANDARD DETAILS

DETAIL NO.	DESCRIPTION
0300 SERIES	
0310-051	FORM SNAP-TIE HOLE
0310-052	ALTERNATE FORM TIE-THROUGH BOLT
0315-001	PLASTIC WATERSTOP
0315-003	HYDROPHILIC/GROOVE WATERSTOP
0315-011	WATERSTOP JOINTS
0315-012	WATERSTOP CONNECTION
0315-142	SLAB CONSTRUCTION JOINT
0315-151	WALL VERTICAL CONSTRUCTION JOINT
0315-154	WALL BASE CONSTRUCTION JOINT
0315-182	BASE SLAB CONTROL JOINT
0315-201	WALL VERTICAL CONTROL JOINT
0330-001	OPENING REINFORCEMENT
0330-003	TYPICAL WALL CORNER AND INTERSECTION REINFORCEMENT
0330-004	REINFORCEMENT AT HORIZONTAL CONSTRUCTION JOINT (1 OF 2)
	REINFORCEMENT AT HORIZONTAL CONSTRUCTION JOINT (2 OF 2)
0330-005	VERTICAL WALL REINFORCING / DOWEL PLACEMENT
0330-006	CIRCULAR TANK HORIZONTAL WALL REINFORCING STAGGERED SPLICES
0330-016	PIPE ENCASEMENT
0330-017	PIPE ENCASEMENT
0330-041	SLAB AT DOOR OPENING
0330-056	CONCRETE EQUIPMENT PAD - TYPE A
	CONCRETE EQUIPMENT PAD - TYPE E
	CONCRETE EQUIPMENT PAD - TYPE F
	CONCRETE EQUIPMENT PAD - TYPE H
	CONCRETE EQUIPMENT PAD - TYPE K
	CONCRETE EQUIPMENT PAD - NOTES
0330-057	ANCHOR BOLT DETAILS (1 OF 2)
	ANCHOR BOLT DETAILS (2 OF 2)
0330-061	PIPE SUPPORT - CONCRETE SADDLE
0330-080	CONCRETE CURB
0330-082	FLOOR DRAIN
0330-084	CONDUIT IN STRUCTURAL CONCRETE
0330-105	ADHESIVE DOWEL
0330-106	SURFACE TREATMENT OF NEW OPENINGS IN EXISTING CONCRETE
0330-141	EXISTING SLAB OPENING REPAIR
0330-143	CONCRETE DEMOLITION
0340-095	SPLASHBLOCK
0400 SERIES	
0422-001	REINFORCED MASONRY WALL CORNERS (SINGLE & DOUBLE MAT)
0422-003	CMU OPENING REINFORCEMENT (1 OF 2)
	CMU OPENING REINFORCEMENT (2 OF 2)
0422-004	INTERMEDIATE REINFORCED MASONRY SHEAR WALL
0422-005	CMU WALL PIER
0422-006	CMU WALL COLUMN
0422-031	CMU CONTROL JOINT
0422-041	CMU WALL AT RAKE
0422-102	BASE OF WALL

STANDARD DETAILS

DETAIL NO.	DESCRIPTION
0422-105	PIPE/DUCT PENETRATION
0422-106	WALL PENETRATION
0422-201	FACILITY ENTRANCE MARKER
0500 SERIES	
0512-001	COLUMN BASE - STEEL
0512-020	TYPICAL BEAM CONNECTION - STEEL
0512-022	BEAM SINGLE PLATE SHEAR CONNECTION - STEEL
0512-056	BEAM/WALL CONNECTION - STEEL (1 OF 2)
	BEAM/WALL CONNECTION - STEEL (2 OF 2)
0512-067	BEAM SEAT/EXTERIOR WALL - STEEL
0512-121	LIFTING EYE
0513-004	POLYMER FILL STATION
0531-002	METAL DECK BEARING WALL TOP CONNECTION
0531-003	METAL DECK/WALL CONNECTION
0551-041	STAIR DETAILS - STEEL (1 OF 5)
	STAIR DETAILS - STEEL (2 OF 5)
	STAIR DETAILS - STEEL (3 OF 5)
	STAIR DETAILS - STEEL (4 OF 5)
	STAIR DETAILS - STEEL (5 OF 5)
0551-042	STAIR LANDING WITH SUPPORTS - STEEL
0551-101	LADDER - ALUMINUM - PRE-ENGINEERED PIPE UNDER COVER - TYPE 'D' (1 OF 2)
	LADDER - ALUMINUM - PRE-ENGINEERED PIPE WITH EXTENSION - TYPE 'E' (2 OF 2)
0551-141	LADDER - STEEL - FLAT BAR DETAILS (1 OF 2)
	LADDER - STEEL - FLAT BAR DETAILS (2 OF 2)
0552-001	RAILING - 2 RAIL - ALUMINUM (1 OF 5)
	RAILING POST ANCHORAGE TYPE 'A' - ALUMINUM (2 OF 5)
	RAILING POST ANCHORAGE TYPE 'B' - ALUMINUM (3 OF 5)
	RAILING POST ANCHORAGE TYPE 'C' - ALUMINUM (4 OF 5)
	RAILING POST ANCHORAGE TYPE 'D' - ALUMINUM (5 OF 5)
0553-001	STANDARD GRATING (1 OF 4)
	STANDARD GRATING (2 OF 4)
	STANDARD GRATING (3 OF 4)
	STANDARD GRATING (4 OF 4)
0558-002	BEAM SEAT CLOSURE PLATE
0559-026	GUARD POST - INTERIOR
0600 SERIES	
0644-001	CABINET
0644-002	CABINET
0644-100	VANITY COUNTERTOP
0700 SERIES	
0741-111	LOW EAVE
0741-112	RAKE
0741-113	HIGH EAVE
0741-114	LOW EAVE AT WALL
0741-115	RAKE AT WALL
0741-117	HIGH EAVE AT WALL
0742-502	PREFABRICATED METAL CANOPY

STANDARD DETAILS

DETAIL NO.	DESCRIPTION
0770-007	EQUIPMENT CURB HEAD
0770-008	EQUIPMENT CURB RAKE
0770-009	EQUIPMENT CURB SILL
0770-050	DUCT PENETRATION / ROOF THIMBLE
0770-102	FLEXIBLE BASE PIPE SEAL
0800 SERIES	
0811-003	DOOR HEAD
0811-004	DOOR JAMB
0811-029	SIDELIGHT JAMB AND SILL
0811-031	TRANSOM / DOOR
0811-032	DOOR HEAD AND JAMB
0811-033	RELIGHT HEAD AND JAMB
0811-101	DOOR HEAD
0811-102	DOOR JAMB
0811-103	DOOR HEAD
0811-104	DOOR JAMB
0811-105	SIDELIGHT HEAD
0833-101	OVERHEAD COILING DOOR HEAD
0833-102	OVERHEAD COILING DOOR JAMB AND SILL
0841-101	WINDOW / TRANSOM HEAD AND SILL
0871-001	DOOR SILL
0871-002	DOOR SILL
0871-003	DOOR SILL
0871-004	DOOR SILL
0890-001	LOUVER HEAD AND SILL
0900 SERIES	
0929-101	DEFLECTION HEAD
0929-401	SOFFIT
0929-402	SOFFIT
0931-100	SHOWER STALL
0931-101	WALL TILE PATTERN
0931-102	WALL TILE PATTERN AT SHOWERS
0931-103	TILE TRANSITION (AT END OF WALL)
1000 SERIES	
1014-001	DANGER SIGN
1014-002	CAUTION SIGN
1014-004	HANDICAPPED PARKING SIGN
1014-006	HAZARDOUS MATERIAL SIGNAL
1014-102	BUILDING NAME SIGN (TYPE 1)
1014-103	BUILDING NAME SIGN (TYPE 2)
1051-001	LOCKER BASE - CONCRETE
1334-001	LOW EAVE
1334-002	RAKE
1334-003	HIGH EAVE
1334-004	RIDGE
1334-005	OUTSIDE CORNER
1334-006	WALL PANEL TERMINATION

STANDARD DETAILS

DETAIL NO.	DESCRIPTION
1334-007	LOW EAVE
1334-008	RAKE
1334-101	LOW EAVE
1334-102	RAKE TRIM
1334-103	PIPE PENETRATION
1334-104	WALL BASE
1334-105	EXTERIOR WALL PENETRATION
1334-106	RIDGE AT INSULATED ROOF PANEL
1334-107	OUTSIDE CORNER
1334-303	LUMINAIRE MOUNTING AT METAL WALL PANEL
2000 SERIES	
2100-003	FA - DUCT SMOKE DETECTOR MOUNTING DETAIL
2100-004	FA - EXPOSED STRUCTURE DETECTOR DETAIL
2100-005	FA - DETECTOR DETAIL - DROP CEILING
2100-006	FA - DEVICE MOUNTING DETAIL
2205-110	WALL PENETRATION
2205-420	WALL MOUNTED PIPE SUPPORT
2210-300	INTERIOR HOSE VALVE
2210-700	WATER TEMPERING VALVE
2210-720	HOSE RACKS (1 OF 2)
	HOSE RACKS (2 OF 2)
2213-110	WALL CLEANOUT
2213-120	WALL CLEANOUT (WCO)
2213-140	FLOOR CLEANOUT (FCO)
2213-170	FLOOR DRAIN
2213-180	DOUBLE TWO-WAY CLEANOUT DETAIL
2213-190	RUNNING U-TRAP
2214-100	DRAINAGE DRYWELL
2233-150	WATER HEATER W/RECIRC PUMP
2242-120	FIXTURES
2305-412	FLOOR PENETRATION - DRY AREA
2305-804	DUCTWORK SUPPORT
2321-603	REFRIGERANT PIPING
2331-004	FAN SCROLL DRAIN
2331-100	LOW PRESSURE DUCT CONSTRUCTION - TRANSITIONS/TURNS/ETC.
2331-108	FLEXIBLE DUCT CONNECTION
2331-109	LOW PRESSURE DUCT CONSTRUCTION
2331-111	ROUND DUCT TAKEOFF
2331-112	RECTANGULAR DUCT TAKEOFF
2331-360	VERTICAL DUCT SUPPORT
2331-884	DUCT SADDLE SUPPORT
2331-898	VENT GAS TRAP AND DRAIN
2331-899	FOUL AIR TEST PORT
2331-900	DUCT SUPPORT DETAIL - GRADE MOUNTED
2334-300	DUCTED ROOF MOUNTED FAN
2337-100	CELING DIFFUSER TAKE-OFFS

STANDARD DETAILS

DETAIL NO.	DESCRIPTION
2337-809	DUCT MOUNTED AIR OUTLET OR INLET
2337-811	HDPE PIPE TO STAINLESS STEEL DUCT TRANSITION
2337-100	CONDENSATE DRAIN TRAP (TYP)
2605-002	DEVICE MOUNTING, WALL OR COLUMN
2605-008b	DEVICE MOUNTING SIDE MOUNTED PEDESTAL - ALUMINUM
2605-010	CONCRETE ANCHOR INSTALLATION
2605-011b	DEVICE MOUNTING, PEDESTAL
2605-017	CONDUIT SUPPORT ON STRUCTURE
2605-100b	TERMINATION OF SHIELDED INSTRUMENTATION CABLE
2605-100c	UNACCEPTABLE METHOD OF GROUNDING INSTRUMENTATION CABLE SHIELD
2605-101	MSC CABLE TERMINATION
2605-102	TERMINAL JUNCTION BOX (TJB)
2605-201	GROUND TRIANGLE
2605-202	GROUND TEST WELL
2605-203	CONDUIT GROUNDING
2605-204	PAD MOUNTED TRANSFORMER AND PAD MOUNTED SWITCH GROUNDING
2605-207	GROUNDING GENERAL STAIRWAY
2605-300	CONDUIT RACKING SYSTEM
2605-302	CONDUIT RACKING SYSTEM, VERTICAL
2605-303	CONDUIT TO EQUIPMENT FROM CEILING
2605-304	CONDUIT ENTRANCE
2605-305	CONDUIT TRANSITION AND SUPPORT
2605-306	INTERIOR WALL PENETRATION
2605-307	CONDUIT UNDERGROUND ENTRANCE
2605-308b	WATERTIGHT WALL CONDUIT SEAL
2605-309	FLUSH CONDUIT STUB
2605-312	FLASHING
2605-317	CONDUIT EXPANSION JOINT
2605-400b	DUCTBANK (1 OF 2)
2605-400c	DUCTBANK (1 OF 2)
2605-423b	TRENCH AND CONDUIT PLACEMENT
2605-443	MANHOLE WITH GROUNDING (1 OF 2)
	MANHOLE WITH GROUNDING (1 OF 2)
2605-444	HANDHOLE
2605-445	CONDUIT HANDHOLE/MANHOLE ENTRANCE
2605-446	CONDUIT HANDHOLE/MANHOLE ENTRANCE
2605-448	CABLE RACK
2605-601	DEVICE MOUNTING, COMPUTER OUTLET BOX
2650-102	EXTERIOR BULDING LIGHT CONTROL
2650-112	LIGHT OVERRIDE RELAY
2650-219	LUMINAIRE MOUNTING
2650-220	LUMINAIRE MOUNTING
3000 SERIES	
3123-110	TYPICAL TRENCH
3123-115	SURFACE RESTORATION
3123-120	TRANCH PIPE CROSSING
3123-916	TYPICAL TRENCH FOR APPURTENANCE PIPING

STANDARD DETAILS

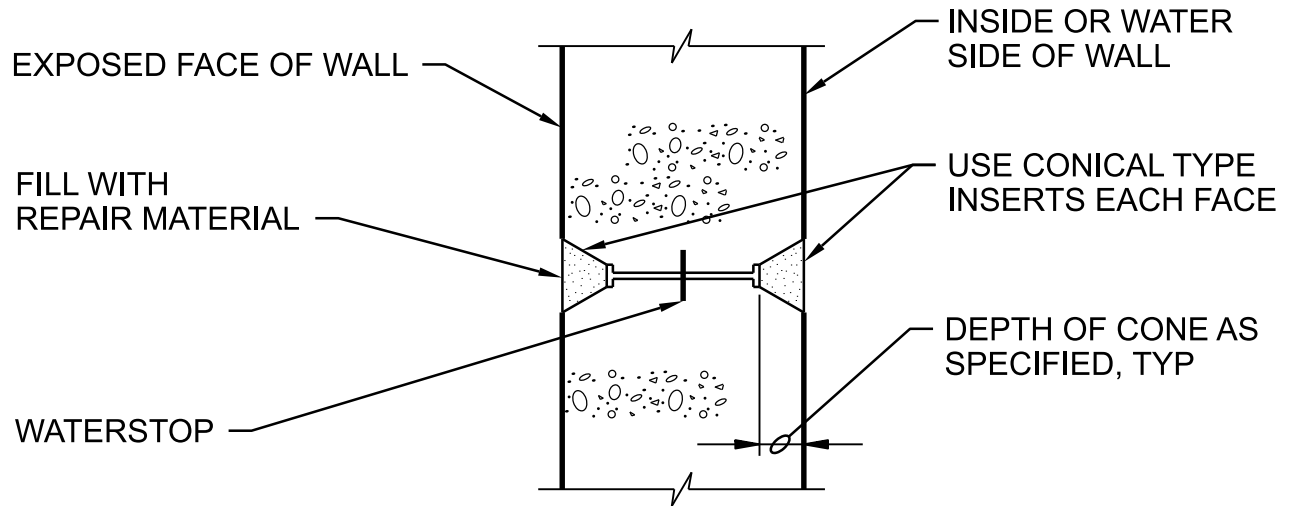
DETAIL NO.	DESCRIPTION
3123-917	UNIMPROVED AREA TRENCH BACKFILL SECTION
3123-918	LAWN AREA TRENCH BACKFILL SECTION
3123-919	PAVED AREA TRENCH BACKFILL SECTION
3123-920	GRAVEL SURFACE TRENCH BACKFILL SECTION
3123-925	TRENCH MARKING TAPE (LARGE DIAMETER PIPELINES)
3123-927	TRENCH RAMP
3125-130	GRAVEL CONSTRUCTION ENTRANCE
3125-135	WHEEL WASH
3125-140	TEMPORARY STOCKPILE COVERING
3125-165	SEDIMENT FENCE
3125-170	STRAW BALES
3125-186	BIOFILTER BAG INLET BARRIER
3212-210	ASPHALT CONCRETE PAVEMENT
3212-215	PAVEMENT CONNECTION
3213-220	TYPICAL CONCRETE SIDEWALK
3213-222A	SPLASH PAN DETAILS (1 OF 2)
3213-222B	SPLASH PAN DETAILS (2 OF 2)
3213-226	SIDEWALK ACCESS RAMPS/MID-BLOCK
3213-240	CONCRETE PAVEMENT
3213-244	TYPICAL TRENCH REPAIR
3213-245	CONCRETE TO EXISTING CONCRETE CONNECTION
3213-250	CONCRETE TO ASPHALT TRANSITION
3215-260	GRAVEL SURFACING
3216-315	CONCRETE CURB
3216-330	CONCRETE VALLEY GUTTER
3217-350	PRECAST CONCRETE WHEELSTOP
3217-370	HANDICAP SYMBOL
3230-400	HANDICAP SIGN AND MOUNTING
3231-410	CHAIN LINK FENCE
3231-415	DOUBLE SWING GATE
3231-420	PEDESTRIAN GATE
3305-710	MANHOLE BASE SECTION - 6" TO 24" PIPE
3305-713	MANHOLE CHANNEL INTERSECTION
3305-720	ECCENTRIC MANHOLE TOP SECTION
3305-722	FLAT TOP MANHOLE
3305-725	MANHOLE FRAME AND COVER
3305-730	PIPE CONNECTIONS
3305-740	EXTERIOR CLEANOUT
3305-950	REINFORCED CONCRETE ENCASEMENT
3305-954	PERMANENT GUARD POST
3305-981	EXHAUST VENT
3311-765	THRUST BLOCK NOTES AND DETAILS (1 OF 2)
	THRUST BLOCK NOTES AND DETAILS (2 OF 2)
3312-800	GATE VALVE & BURIED VALVE BOX
3344-780	CATCH BASIN
3344-781	CURB AND GUTTER CATCH BASIN
3344-782	CATCH BASIN FRAME AND GRATE
3344-791	CAST-IN-PLACE TRENCH DRAIN
3471-811	REMOVABLE GUARD POST
4000 SERIES	
4005-500	PIPE SUPPORT - SADDLE SUPPORT PEDESTAL TYPE - ADJUSTABLE
4005-501	PIPE SUPPORT - SADDLE SUPPORT PEDESTAL TYPE - NON-ADJUSTABLE
4005-503	PIPE SUPPORT - WALL MOUNT
4005-505	PIPE SUPPORT - WALL MOUNTED

STANDARD DETAILS

DETAIL NO.	DESCRIPTION
4005-507	PIPE SUPPORT - WALL MOUNTED
4005-508	PIPE SUPPORT - WALL MOUNTED - MEDIUM
4005-511	PIPE SUPPORT - WALL MOUNTED, VERTICAL
4005-512	PIPE SUPPORT VERTICAL, HEAVY DUTY
4005-516	PIPE SUPPORT
4005-516A	PIPE SUPPORT, GUIDE, AND PIPE ANCHOR
4005-516B	PIPE SUPPORT, GUIDE, AND PIPE ANCHOR
4005-517	BASE BEND
4005-518	BASE BEND
4005-521	STACKED PIPE WALL SYSTEM
4005-550	OVERHEAD PIPE HANGER
4005-551	OVERHEAD PIPE HANGER
4005-552	OVERHEAD PIPE HANGER
4005-553	OVERHEAD PIPE HANGER
4005-554	OVERHEAD PIPE HANGER
4005-557	PIPE HANGER
4005-558	TRAPEZE PIPE HANGER
4005-803	STACKED PIPE SUPPORT
4027-004	VENT/DRAIN FOR INNER PIPE
4027-110	BIOFILTER IRRIGATION SPRINKLER DETAIL
4027-111	SHOP BROOMS AND BROOM HOLDER
4027-154	NON-FREEZE POST HYDRANT
4027-181	TYPE 1 FLUSHING CONNECTION
4027-182	TYPE 2 FLUSHING CONNECTION
4027-183	FLUSHING CONNECTION
4027-185	TAPPED FLANGE W/ FLUSHING CONNECTION
4027-187	CLDI PROCESS LINE CLEAN-OUT SETTING
4027-188	CENTRATE SAMPLE TAP AND FUNNEL
4027-191	LINE DRAIN VALVE INSTALLATION
4027-192	LINE DRAIN VALVE INSTALLATION
4027-194	PRESSURE TEST POINT
4027-201	MUD VALVE
4027-205	PIPE HIGH POINT VENT
4027-207	AIR RELEASE VALVE
4027-600	DUCTILE IRON WALL PIPE
4027-601	MECHANICAL JOINT WALL PIPE FOR DIP
4027-602	MECHANICAL JOINT WALL PIPE
4027-604	TYPE B PIPE SLEEVE
4027-607	WALL PIPE PENETRATION SEAL
4027-609	DUCTILE WALL PIPES
4027-610	WALL PENETRATION SEAL
4027-619	PLASTIC PIPE WALL PENETRATION SEAL
4027-620	FLOOR SLEEVE
4027-622	FLOOR PIPE
4027-625	SLAB ON GRADE PIPE PENETRATIONS
4027-640	BURIED GATE VALVE BOX
4027-640A	SPECIAL BURIED PLUG VALVE BOX
4027-642	STOP AND DRAIN VALVE BOX

STANDARD DETAILS

DETAIL NO.	DESCRIPTION
4027-643	SERVICE TAP
4027-645	BURIED VALVE WITH PEDISTAL MOUNTED OPERATOR
4027-959	INJECTION RING
4027-960	CHEMICAL PIPE TO TUBE TRANSITION
4027-961	PVC PIPE PENETRATION
4027-962	CHEMICAL TUBING CONNECTION
4027-964	PIPE TRANSITION
4027-966	DOUBLE CONTAINMENT MANUAL LEAK DETECTION
4027-968	CONTAINMENT CAP
4027-992	CHEMICAL TUBING TRANSITION - SECONDARY CONTAINMENT
4027-994	CHEMICAL TUBING TRANSITION - SECONDARY CONTAINMENT
4091-027	LEVEL SWITCH CAPACITANCE TYPE
4091-068	TEMPERATURE ELEMENT AND TRANSMITTER INSTALLATION - PIPE FITTING MOUNTED
4091-139	FREESTANDING INSTRUMENT ENCLOSURE
4091-217	THERMAL MASS FLOWELEMENT INSTALLATION
4091-222M	FLOW TRANSMITTER - MAGNETIC
4091-248ED	TYPICAL FLOAT TYPE LEVEL SWITCH WITH JUNCTION BOX INSTALLATION
4091-249	FLOAT LEVEL SWITCH INSTALLATION BELOW CONCRETE
4091-251	RADAR LEVEL ELEMENT - CANTILEVER MOUNT
4091-257	LEVEL TRANSMITTER - RADAR - TANK MOUNT
4091-266AG	STILLING WELL FOR SUBMERSIBLE TRANSDUCER
4091-267AG	SUBMERSIBLE LEVEL TRANSMITTER INSTALLATION
4091-300	PRESSURE AND PRESSURE DIFFERENTIAL TRANSMITTER INSTALLATION
4091-302	PRESSURE INSTRUMENT INSTALLATION - DIAPHRAGM SEAL
4091-304	PRESSURE INSTRUMENT INSTALLATION - ANNULAR SEAL
4091-304B	PRESSURE INSTRUMENT INSTALLATION - DIRECTLY MOUNTED
4091-305	PRESSURE CONNECTION INSTALLATION - DETAIL 1 OF 2
	PRESSURE CONNECTION INSTALLATION - DETAIL 2 OF 2
4091-380	FIELD INSTRUMENT MOUNTING - STANCHION
4091-382	STANDARD FREESTANDING PANEL MOUNTING
4091-384	RAIN HOOD INSTALLATION
4091-388	WALL MOUNTED PANEL OR INSTRUMENT INSTALLATION
4091-388PD	EQUIPMENT RACK MOUNTED PANEL, TERMINAL BOX OR INSTRUMENT INSTALLATION
4091-400	DENSITY METER INSTALLATION
4091-402D	PANEL MOUNTING RACK (1 OF 2)
	PANEL MOUNTING RACK (2 OF 2)
4091-415AG	TYPE "SS-3" SURGE SUPPRESSOR INSTALLATION 2-WIRE INSTRUMENT
4091-420US	TYPE "SS-4" SURGE SUPPRESSOR INSTALLATION 4-WIRE INSTRUMENT
4091-441X	TYPICAL I/O WIRING DIAGRAMS (1 OF 2)
	TYPICAL I/O WIRING DIAGRAMS (2 OF 2)
4091-451D	UPS MAINTENANCE/BYPASS WIRING DETAIL
4091-452D	UPS 120V TO 24VDC OR 12VDC WIRING DIAGRAM
4431-100A	COMPOST FLOOR AERATION (1 OF 2)
	COMPOST FLOOR AERATION (2 OF 2)
REFERENCE - CITY OF BROKEN ARROW	
STD SS 08	PRECAST MANHOLE DETAIL

**NOTE:**

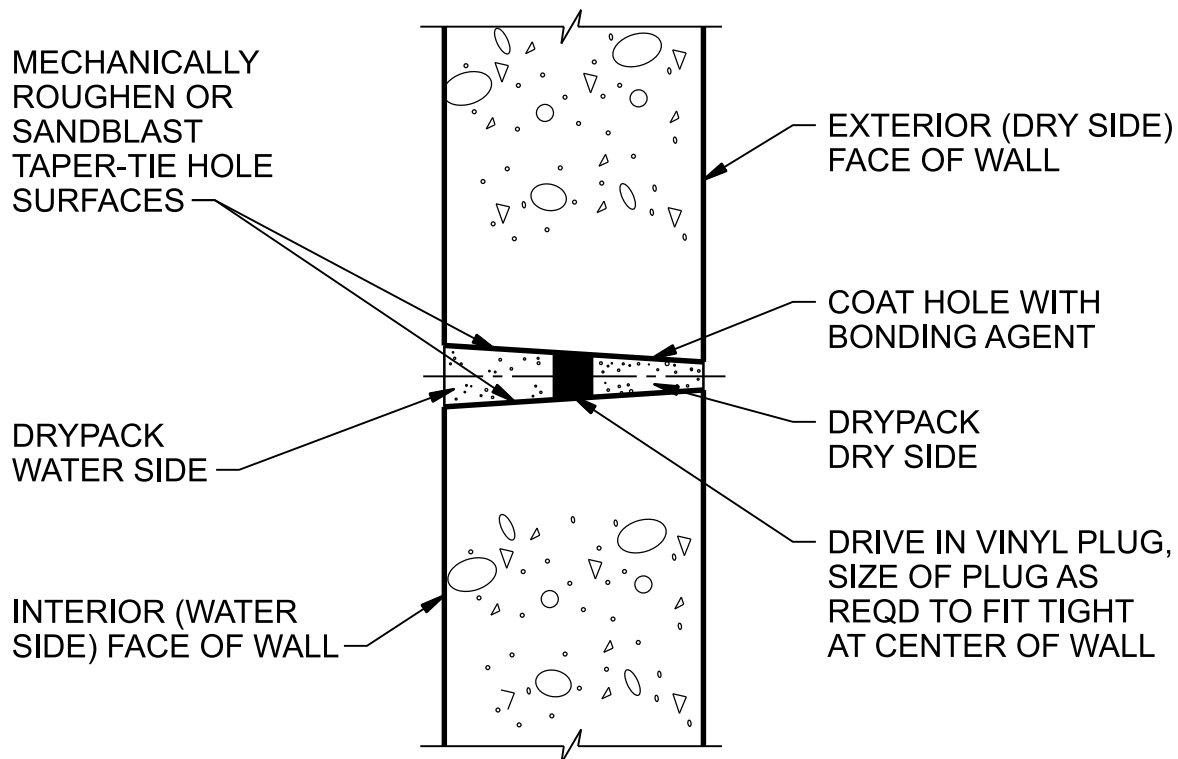
THE SPACING OF FORM TIES ON EXPOSED PORTIONS OF WALLS SHALL BE APPROXIMATELY EQUAL HORIZONTALLY AND VERTICALLY AND SHALL BE UNIFORM IN EACH DIRECTION.

FORM SNAP-TIE HOLE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0310-051

**NOTE:**

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

CONSTRUCTION STEPS:

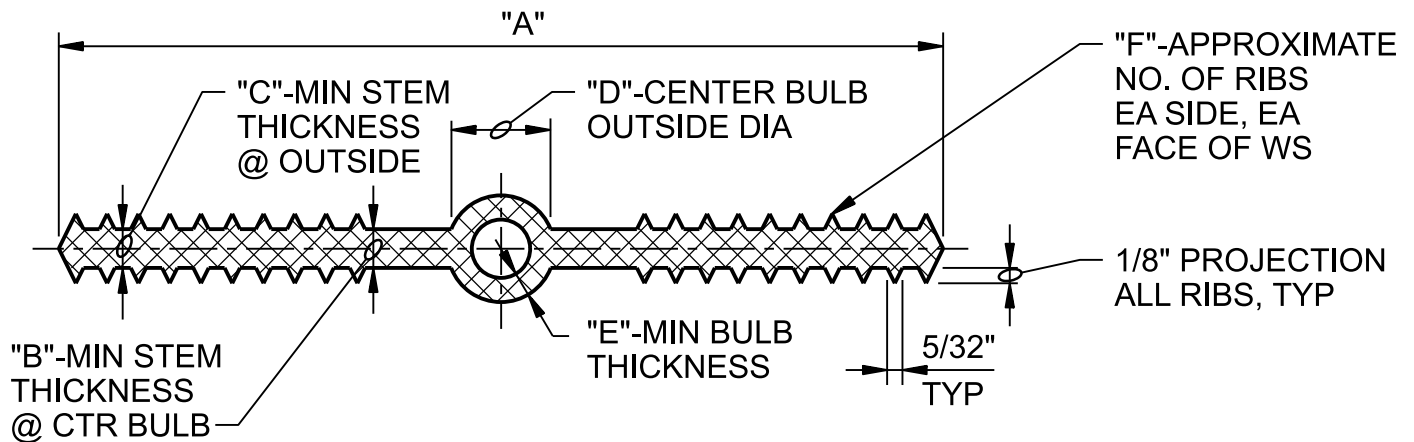
1. SANDBLAST OR MECHANICALLY ROUGHEN WITH ELECTRIC EQUIPMENT.
2. DRIVE IN VINYL PLUG.
3. COAT HOLE ON DRY SIDE OF PLUG AND WHILE BONDING AGENT IS TACKY, DRYPACK.
4. COAT HOLE ON WATER SIDE OF PLUG AND WHILE BONDING AGENT IS TACKY, DRYPACK.
5. USE CATEGORY II, NON-SHRINK GROUT AS SPECIFIED.

ALTERNATE FORM TIE-THROUGH BOLT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0310-052



SIZE	"A"	"B"	"C"	"D"	"E"	"F"
6"x3/8"	6"	3/8"	3/8"	7/8"	1/4"	6
9"x3/8"	9"	3/8"	3/8"	1"	1/4"	8

NOTES:

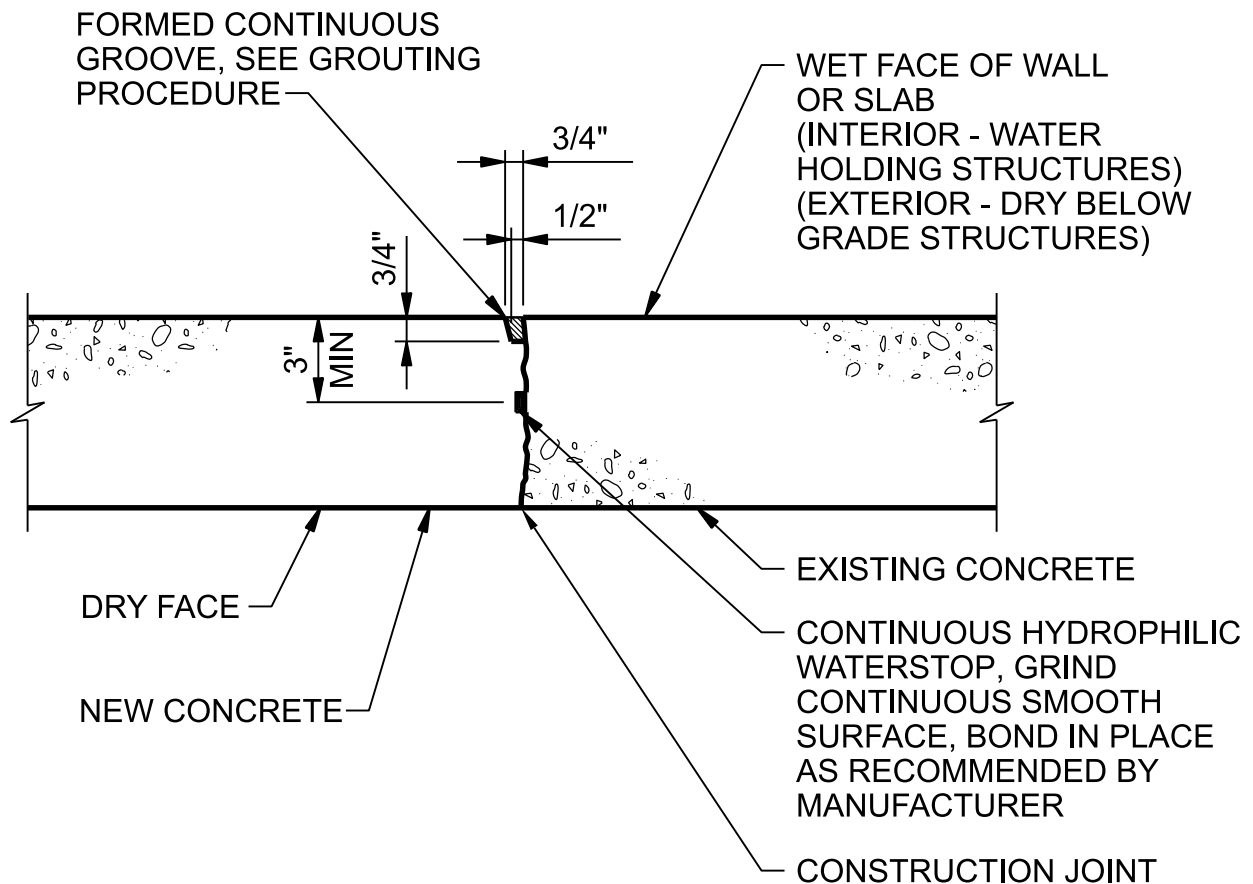
1. NON-ROUND CENTER BULBS SHALL HAVE A MINIMUM OUTSIDE DIMENSION OF 'D'.
2. SEE SPLICE DETAIL (0315-011)
3. BULB TYPE WATERSTOP SHOWN IS REQUIRED FOR EXPANSION AND CONTROL JOINTS. SIMILAR WATERSTOPS WITHOUT CENTER BULB MAY BE SUBSTITUTED AT CONSTRUCTION JOINTS.
4. USE 6 INCH WATERSTOPS IN ALL CONSTRUCTION JOINTS UNLESS SPECIFICALLY SHOWN OTHERWISE.

PLASTIC WATERSTOP

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0315-001

**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.

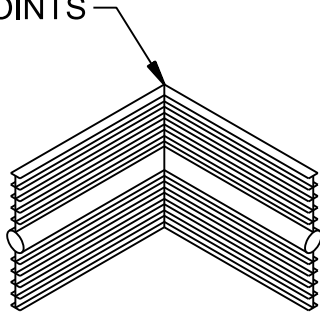
HYDROPHILIC/GROOVE WATERSTOP

NTS

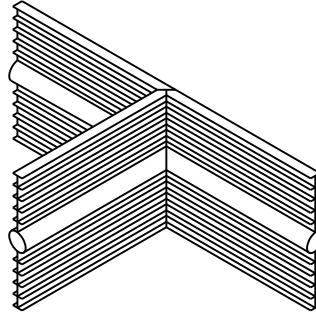
HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0315-003

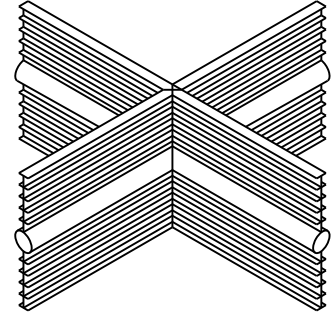
MITER CORNERS OF VERTICAL JOINTS & WELD SIMILAR AS SHOWN BELOW FOR IN-PLANE JOINTS



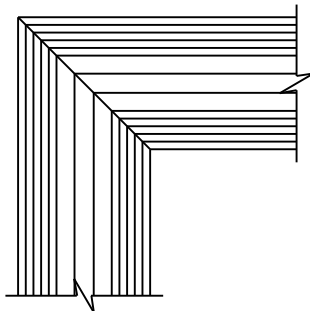
VERTICAL ELL



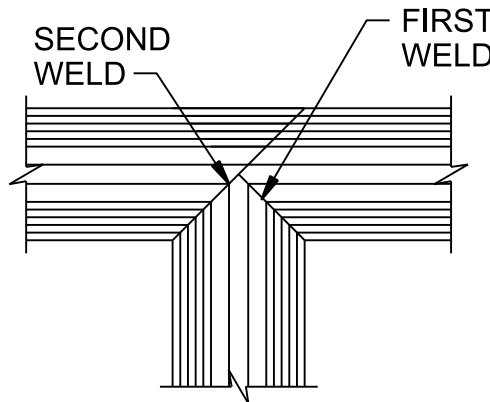
VERTICAL TEE



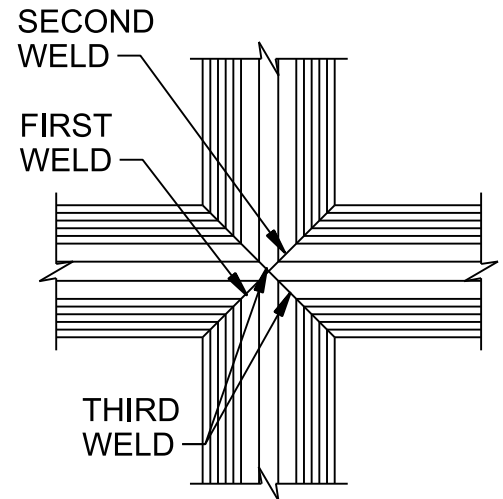
VERTICAL CROSS



FLAT ELL



FLAT TEE



FLAT CROSS

NOTE:

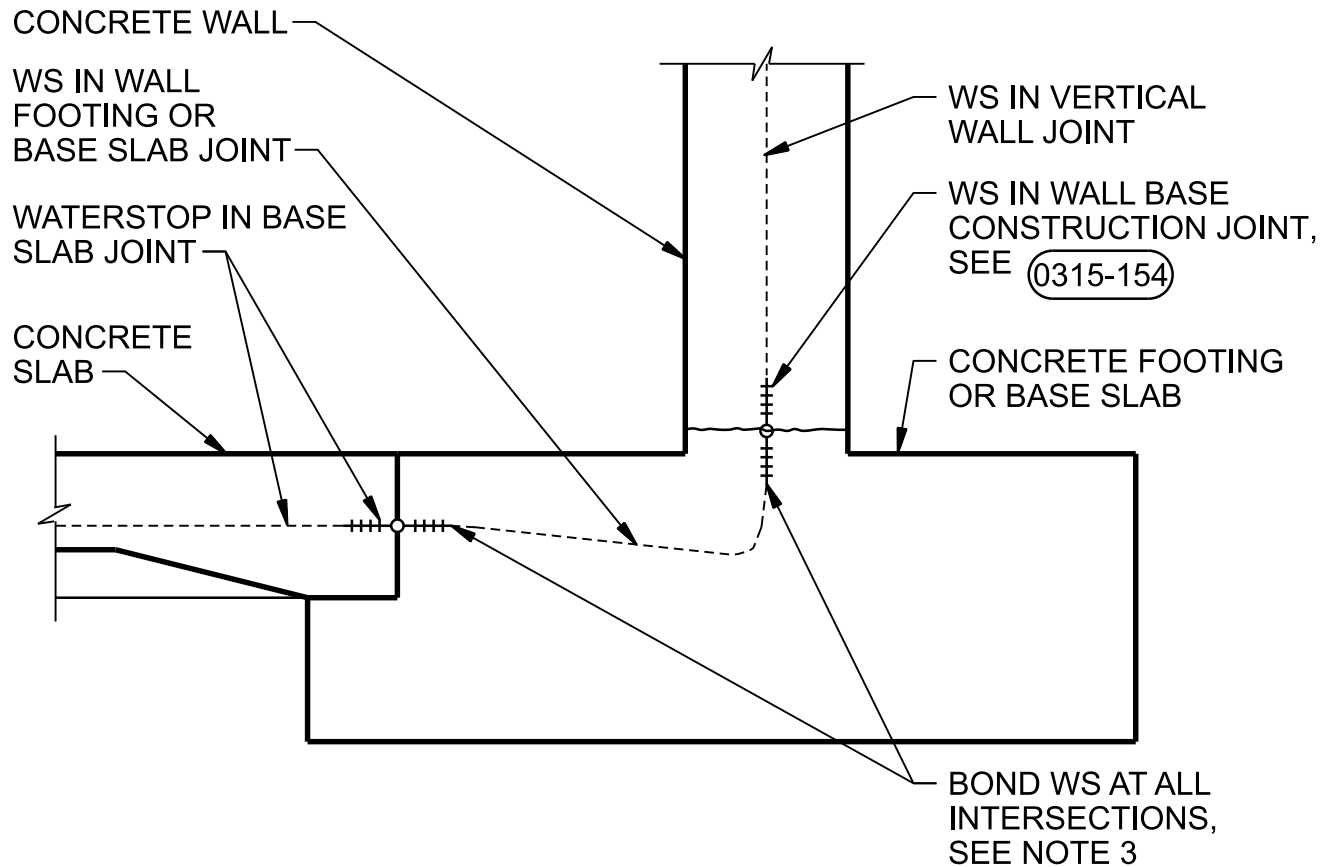
ALL WELDS SHALL BE PER WATERSTOP MANUFACTURER'S RECOMMENDATIONS.

WATERSTOP JOINTS

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0315-011



NOTES:

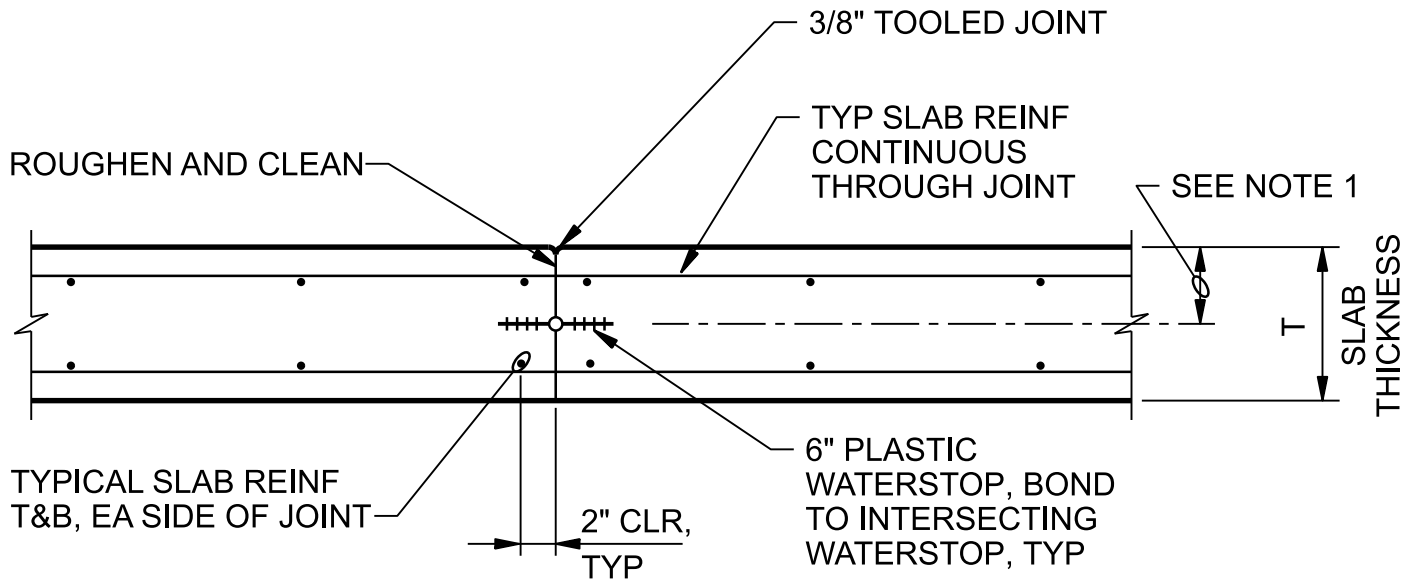
1. SUBMIT DETAILS OF SPLICING AND LOCATION.
2. BOND OR SPLICE ALL HORIZONTAL TRANSVERSE WATERSTOPS IN BASE SLAB JOINTS TO CONTINUOUS LONGITUDINAL WATERSTOP IN WALL BASE FOR COMPLETE SEAL.
3. BOND OR SPLICE ALL VERTICAL WATERSTOPS IN WALL JOINTS TO LONGITUDINAL WATERSTOP IN WALL BASE FOR COMPLETE SEAL, SEE (0315-011) FLAT CROSS JOINT.
4. FOR PLASTIC WATERSTOP DETAILS, SEE (0315-001)

WATERSTOP CONNECTION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0315-012



NOTE:

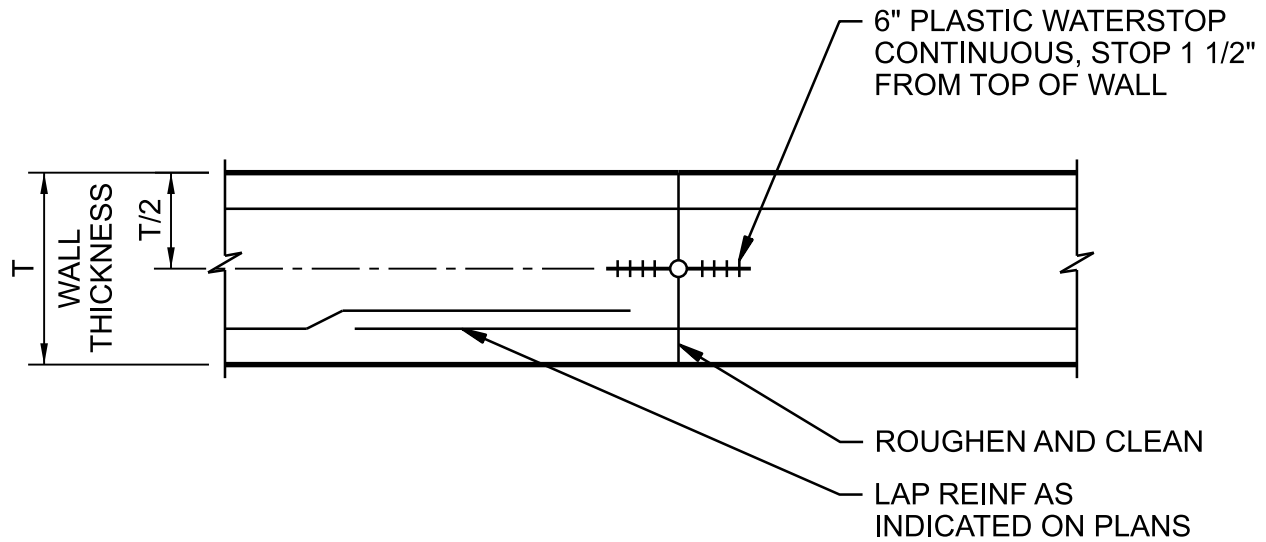
WATERSTOP DEPTH = T/2 OR 5 1/2" MAXIMUM.

SLAB CONSTRUCTION JOINT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0315-142



PLAN

NOTE:

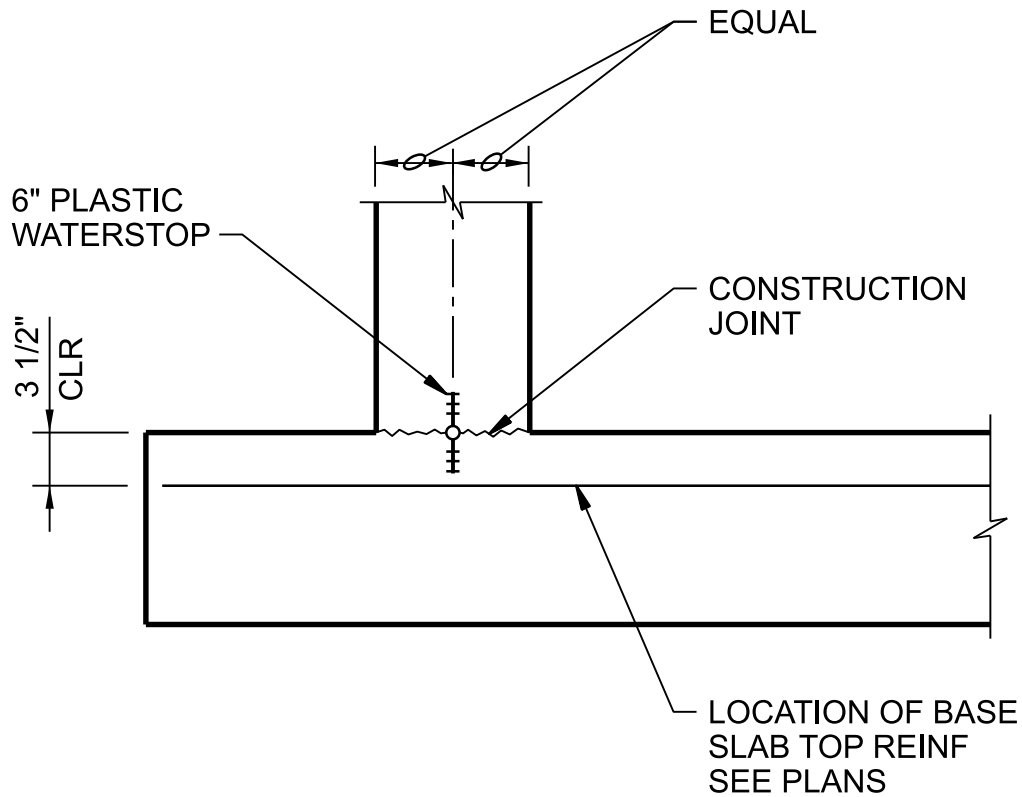
ALL REINFORCEMENT CONTINUOUS ACROSS JOINT.

WALL VERTICAL CONSTRUCTION JOINT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0315-151



NOTES:

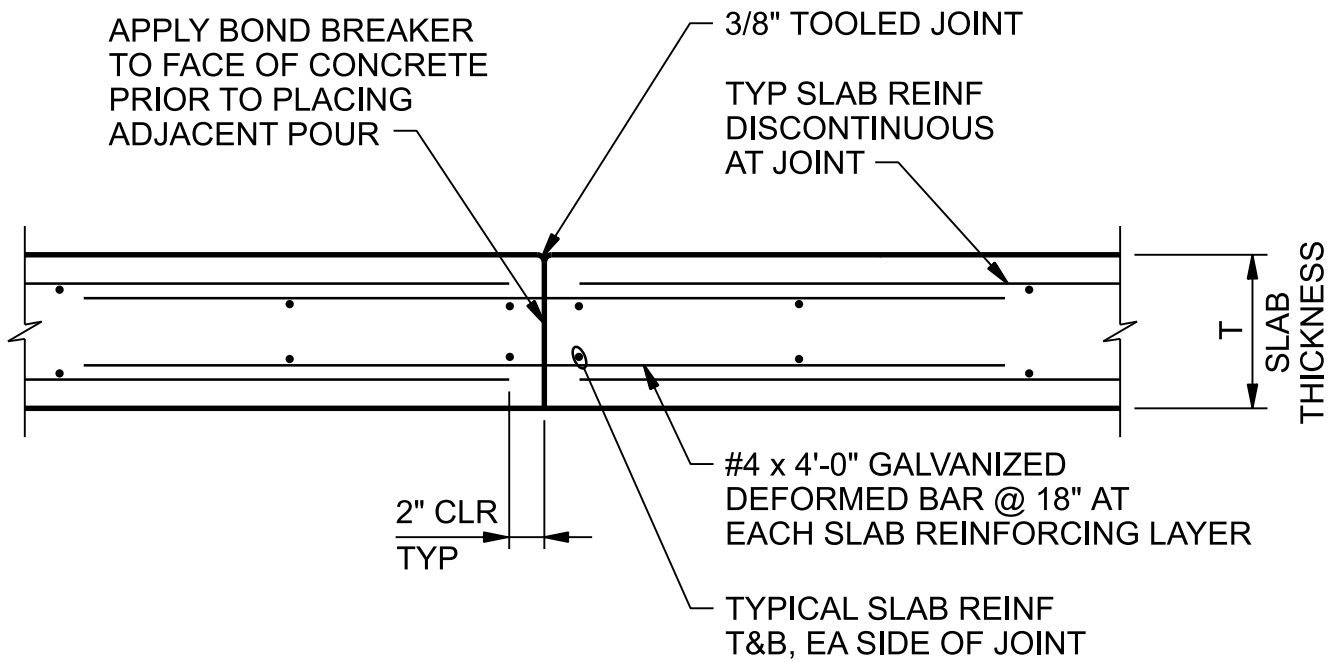
1. FOR WALLS WITH SINGLE MAT OF REINFORCING LOCATE WATERSTOP ON LIQUID FACE, 1" CLEAR OF REINFORCEMENT.
2. SECURE WATERSTOP IN-PLACE AS SPECIFIED.

WALL BASE CONSTRUCTION JOINT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0315-154



NOTE:

TWO LAYERS OF REINFORCING SHOWN. ONE LAYER IS SIMILIAR.

BASE SLAB CONTROL JOINT

NTS

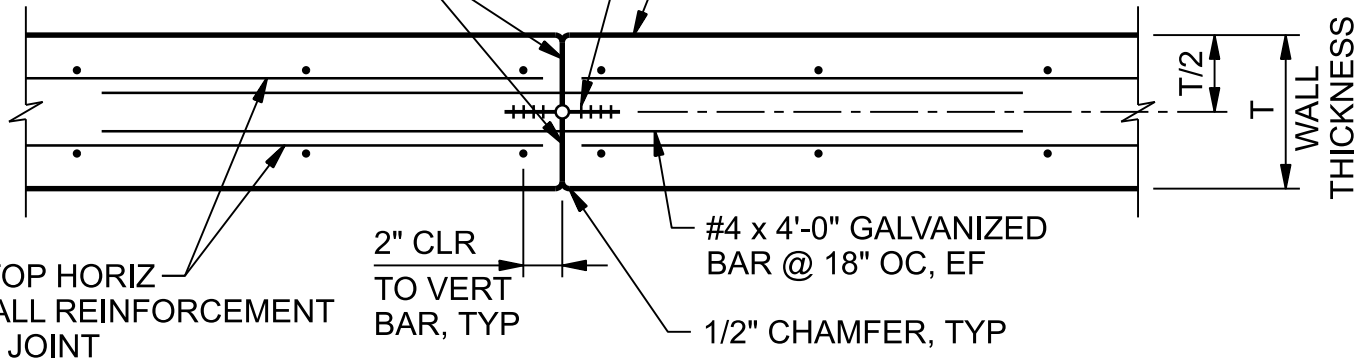
HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0315-182

APPLY BOND BREAKER TO FACE OF CONCRETE PRIOR TO PLACING ADJACENT POUR, PREVENT BOND BREAKER FROM CONTACTING WATERSTOP

6" PLASTIC WATERSTOP, BOND TO WATERSTOP AT WALL BASE

INTERIOR OR EXTERIOR FACE OF WALL



STOP HORIZ WALL REINFORCEMENT AT JOINT

2" CLR TO VERT BAR, TYP

#4 x 4'-0" GALVANIZED BAR @ 18" OC, EF

1/2" CHAMFER, TYP

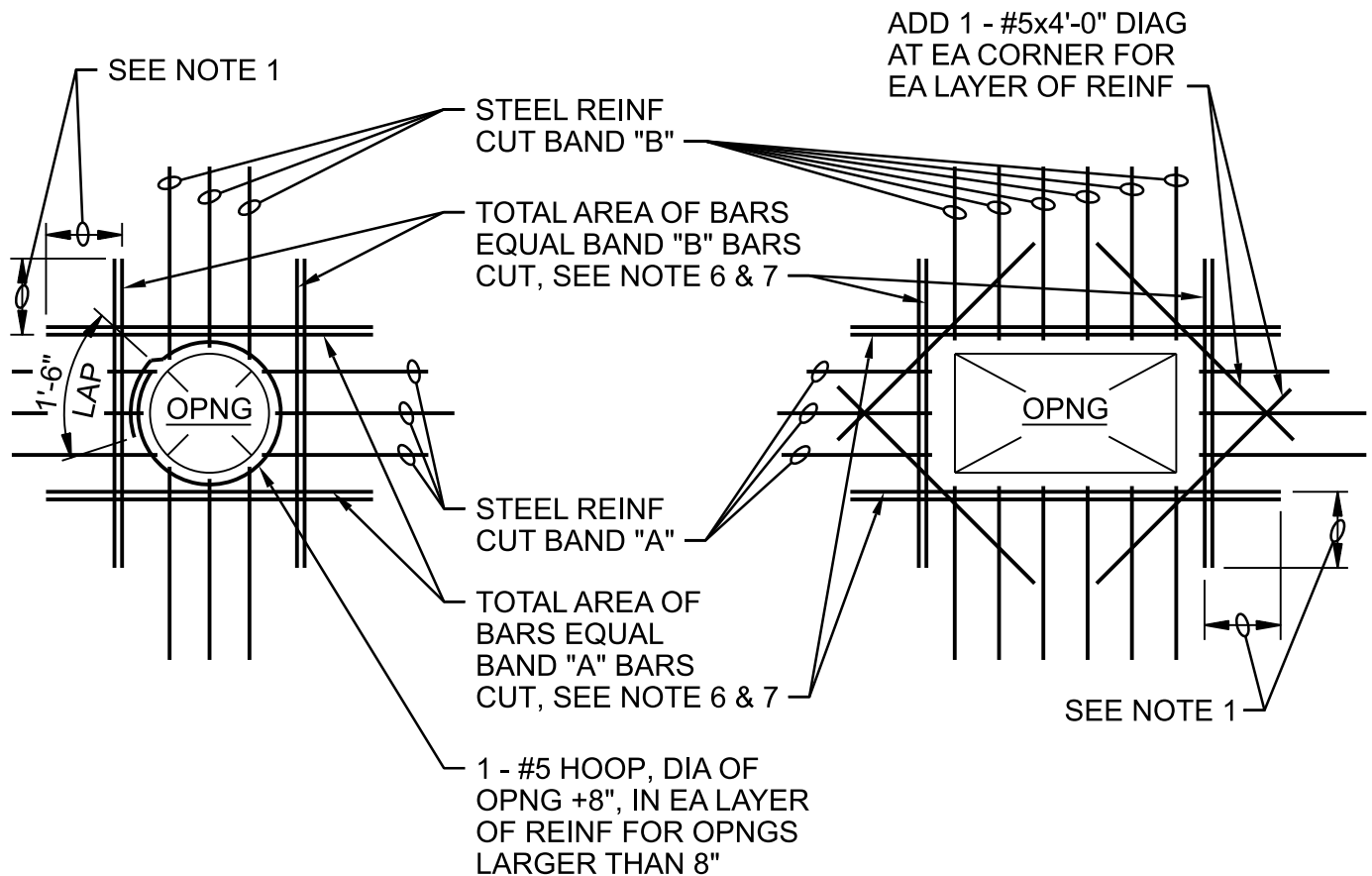
PLAN

WALL VERTICAL CONTROL JOINT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0315-201



NOTES:

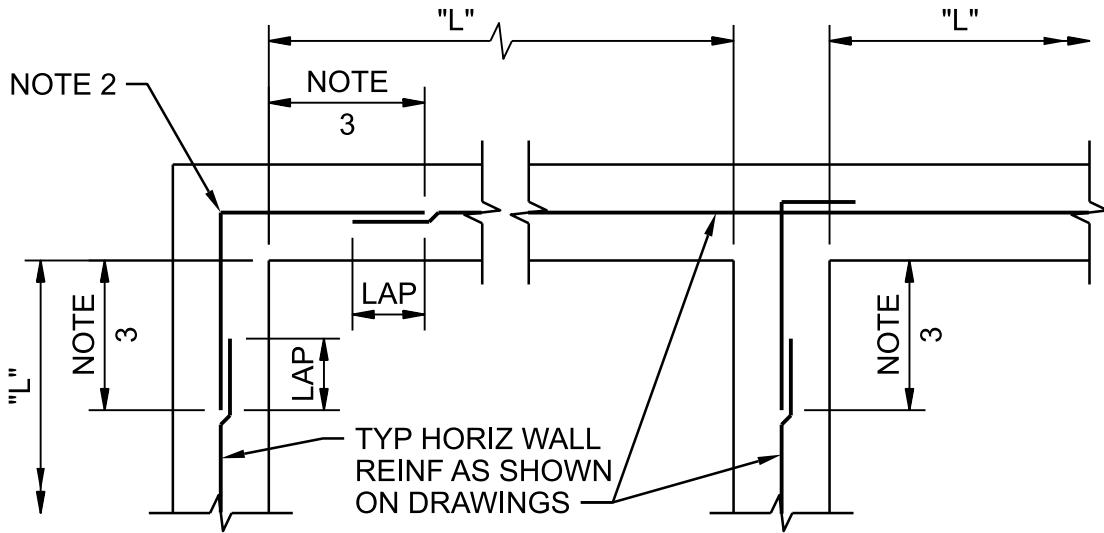
1. PROVIDE MINIMUM LAP, SEE GENERAL STRUCTURAL NOTES.
2. TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS OF BELOW GRADE AND HYDRAULIC STRUCTURES AND ALL STRUCTURAL CONCRETE SLABS UNLESS INDICATED OTHERWISE ON PLANS.
3. DO NOT WELD REINFORCEMENT TO PIPES, SLEEVES AND INSERTS.
4. PROVIDE A MINIMUM OF 2 "A" 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 REINFORCEMENT

NTS

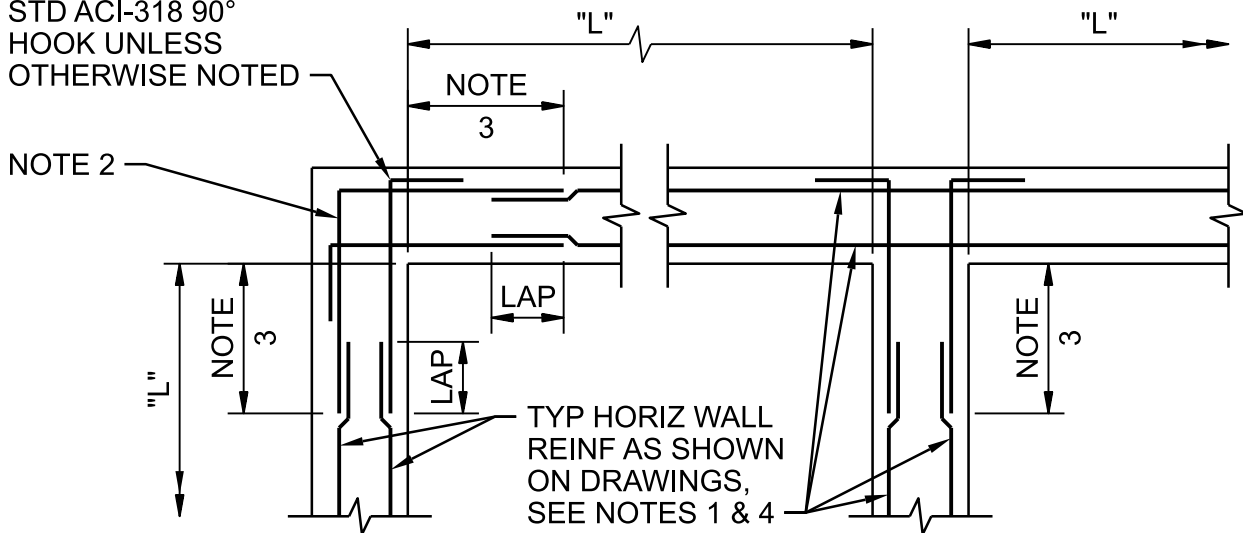
HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0330-001



SINGLE REINFORCEMENT MAT

STD ACI-318 90°
HOOK UNLESS
OTHERWISE NOTED



DOUBLE REINFORCEMENT MAT

NOTES:

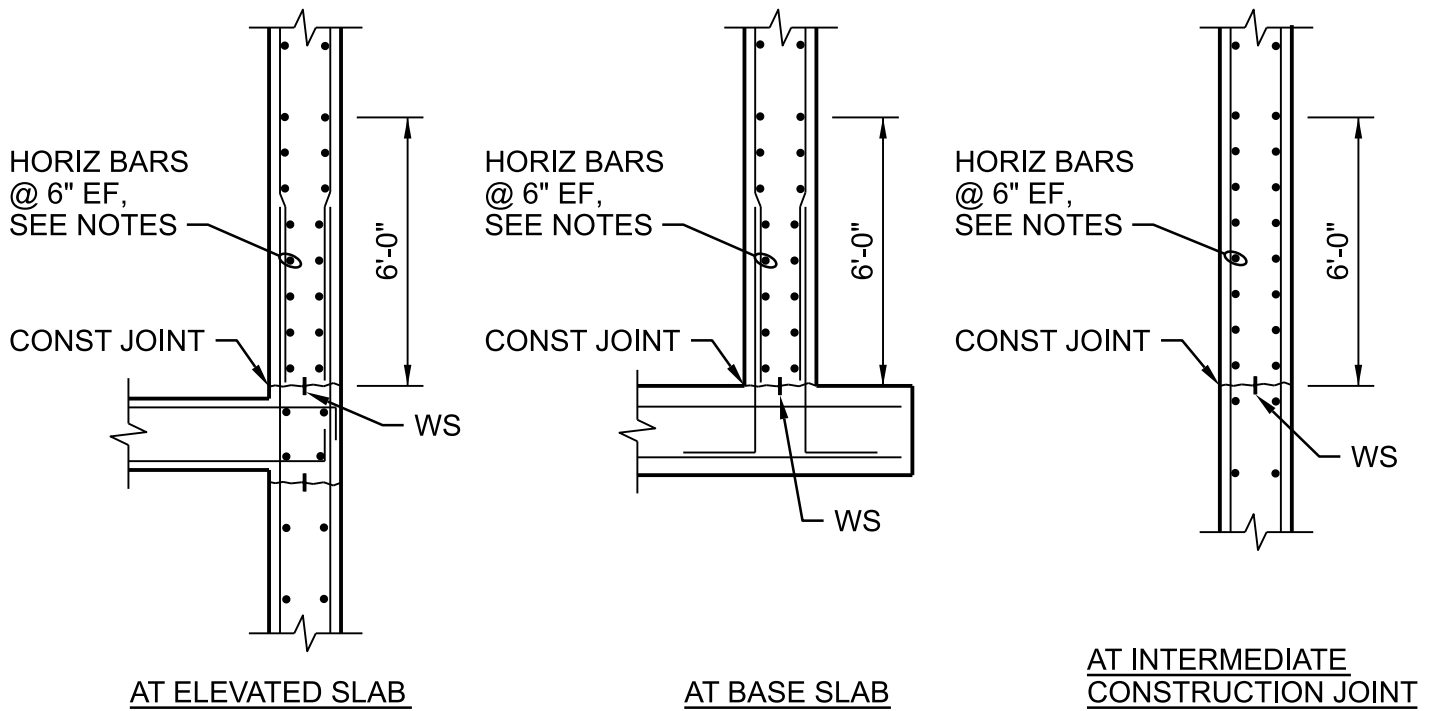
1. WHERE SHOWN ON PLANS, ADDITIONAL HORIZONTAL WALL CORNER AND INTERSECTION REINFORCEMENT SHALL BE ALTERNATED WITH THE TYPICAL HORIZONTAL REINFORCEMENT SHOWN IN THIS DETAIL.
2. CORNER BARS SHALL MATCH SIZE OF TYPICAL HORIZONTAL REINFORCEMENT SHOWN IN SECTIONS.
3. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, 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. TYPICAL HORIZONTAL REINFORCEMENT SHALL BE LAPPED WHERE SHOWN OR AS INDICATED IN THE GENERAL STRUCTURAL NOTES.
5. WHERE LAPPED BARS ARE DIFFERENT SIZE, USE THE LAP LENGTH REQUIRED FOR THE SMALLER OF THE TWO REINFORCEMENT BARS BEING SPLICED.

TYPICAL WALL CORNER & INTERSECTION REINFORCEMENT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0330-003



NOTES:

1. PROVIDE HORIZONTAL BARS AT 6" SPACING EACH FACE IN THE FIRST 6'-0" ABOVE ALL HORIZONTAL WALL CONSTRUCTION JOINTS IN LIQUID CONTAINING AND BELOW-GRADE STRUCTURES. WHERE TYPICAL WALL HORIZONTAL BARS ARE AT 12" SPACING, PROVIDE ADDITIONAL BARS FOR 6" SPACING.
2. HORIZONTAL BAR SIZE FOR THE 6'-0" ZONE SHALL BE THE TYPICAL WALL HORIZONTAL BAR SIZE SHOWN ON THE DRAWINGS OR THE MINIMUM BAR SIZE IN THE TABLE BELOW, WHICHEVER IS GREATER.

WALL THICKNESS (INCHES)	MINIMUM BAR SIZE
10	#5
12, 14	#6
16, 18, 20	#7
≥22	#8

3. PROVIDE CORNER BARS AT 6" SPACING EACH FACE TO LAP WITH THE BARS SHOWN ABOVE, SEE (0330-003).

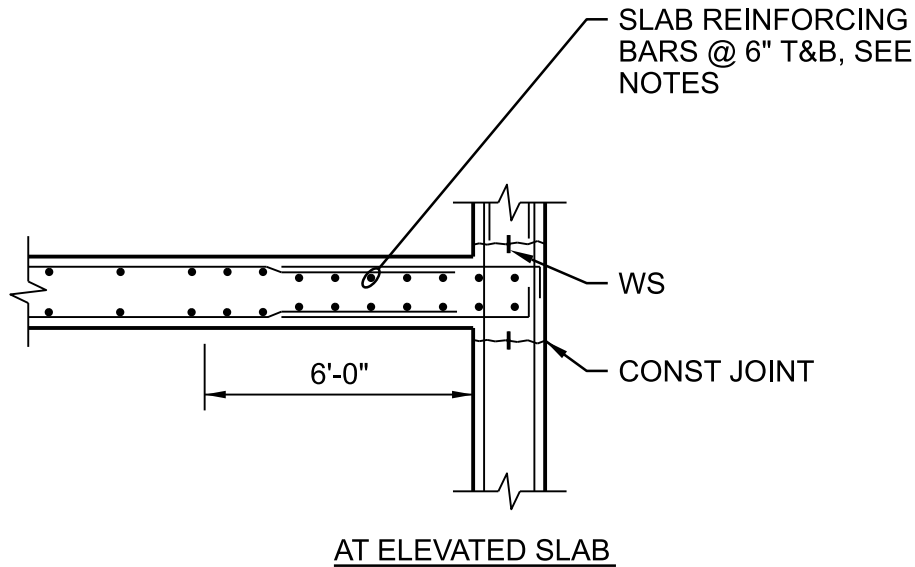
REINFORCEMENT AT HORIZONTAL CONSTRUCTION JOINT

NTS

DETAIL 1 OF 2

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

(0330-004)



NOTES:

1. THIS DETAIL APPLIES TO STRUCTURAL ELEMENTS THAT ARE PART OF HYDRAULIC STRUCTURES OR PART OF BELOW-GRADE STRUCTURES. WHERE SPACING OF TYPICAL SLAB BARS IS GREATER THAN 6", PROVIDE ADDITIONAL BARS FOR NET SPACING OF 6" MAXIMUM.
2. BAR SIZE FOR THE 6'-0" ZONE SHALL BE THE TYPICAL SLAB BAR SIZE SHOWN ON THE DRAWINGS OR THE MINIMUM BAR SIZE IN THE TABLE BELOW, WHICHEVER IS GREATER.

SLAB THICKNESS (INCHES)	MINIMUM BAR SIZE
$H \leq 10"$	#5
$10" > H \leq 14"$	#6
$14" > H \leq 20"$	#7
$H > 20"$	#8

REINFORCEMENT AT HORIZONTAL CONSTRUCTION JOINT

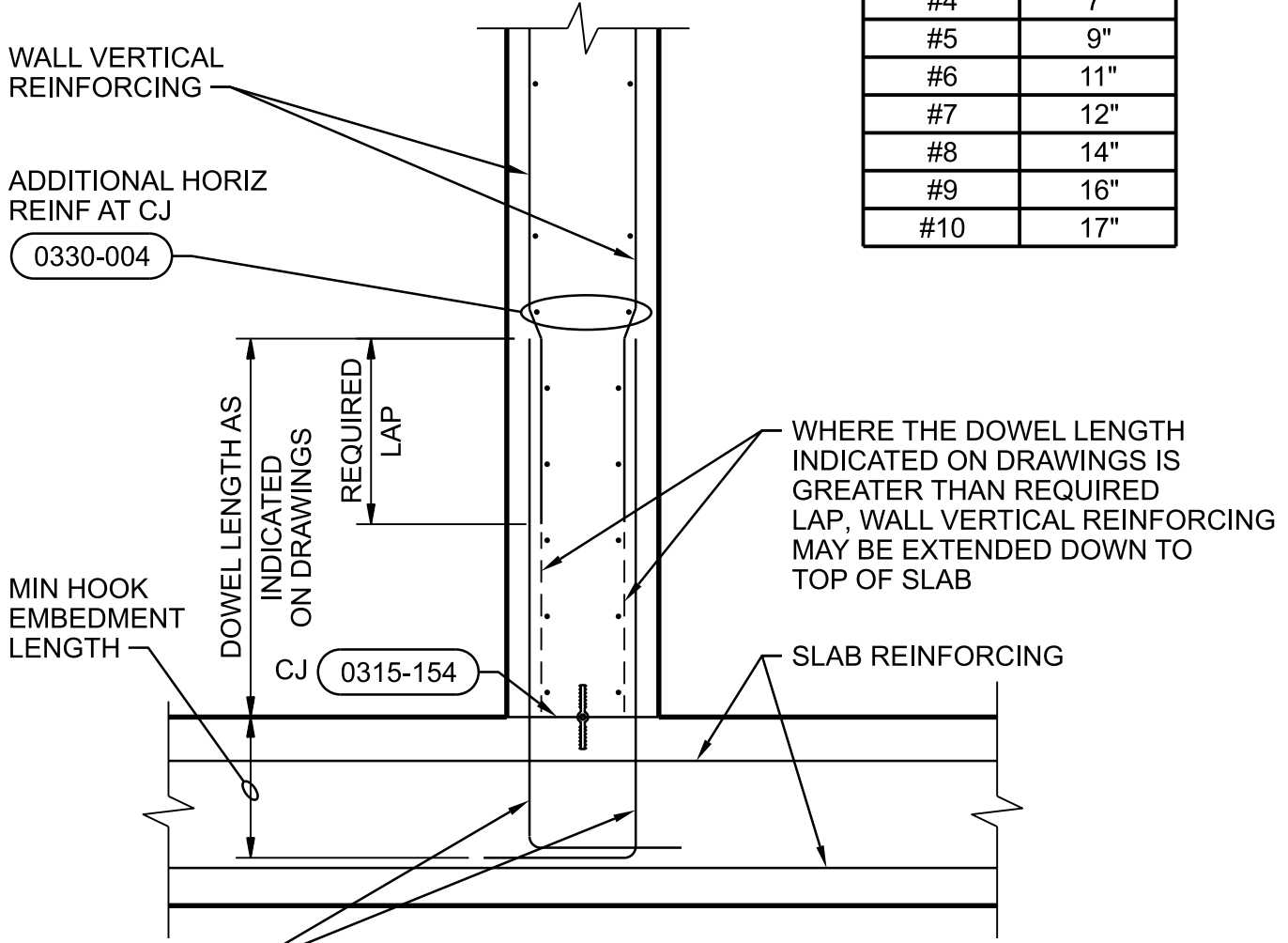
NTS

DETAIL 2 OF 2

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0330-004

ACI MINIMUM HOOK EMBEDMENT LENGTH	
BAR SIZE	MIN EMBED
#4	7"
#5	9"
#6	11"
#7	12"
#8	14"
#9	16"
#10	17"



WALL SECTION

NOTE:

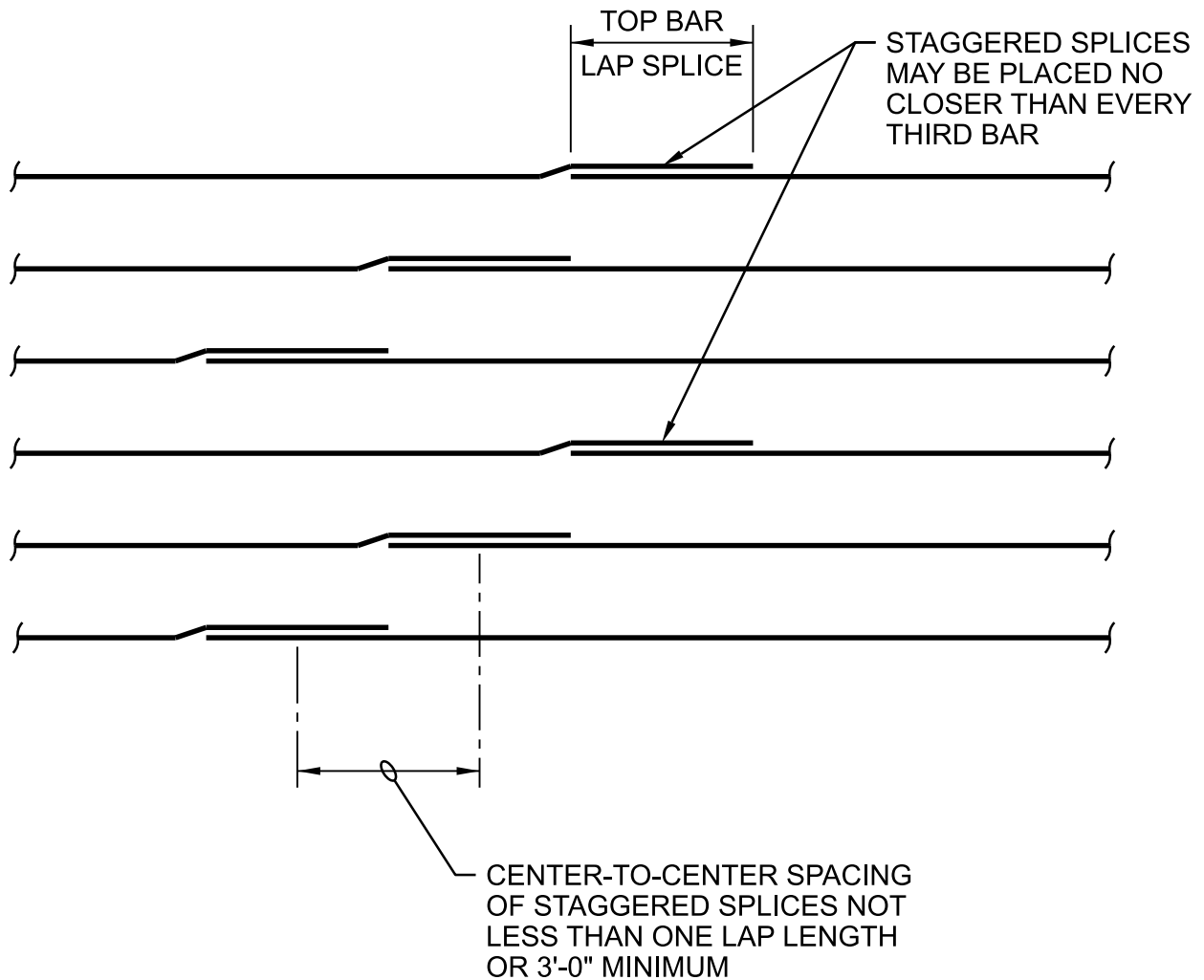
UNLESS NOTED OTHERWISE, ALL DOWEL HOOKS SHALL EXTEND TO AND BE TIED OFF TO BOTTOM MAT OF SLAB REINFORCING.

VERTICAL WALL REINFORCING / DOWEL PLACEMENT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0330-005

**NOTE:**

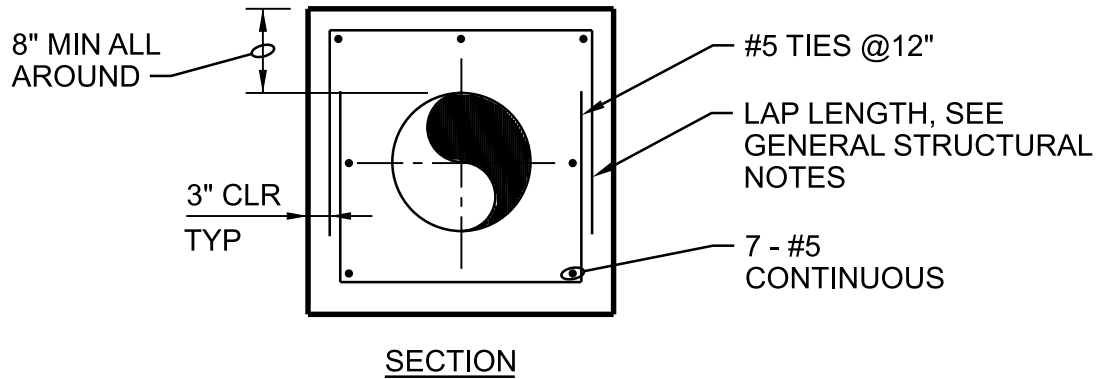
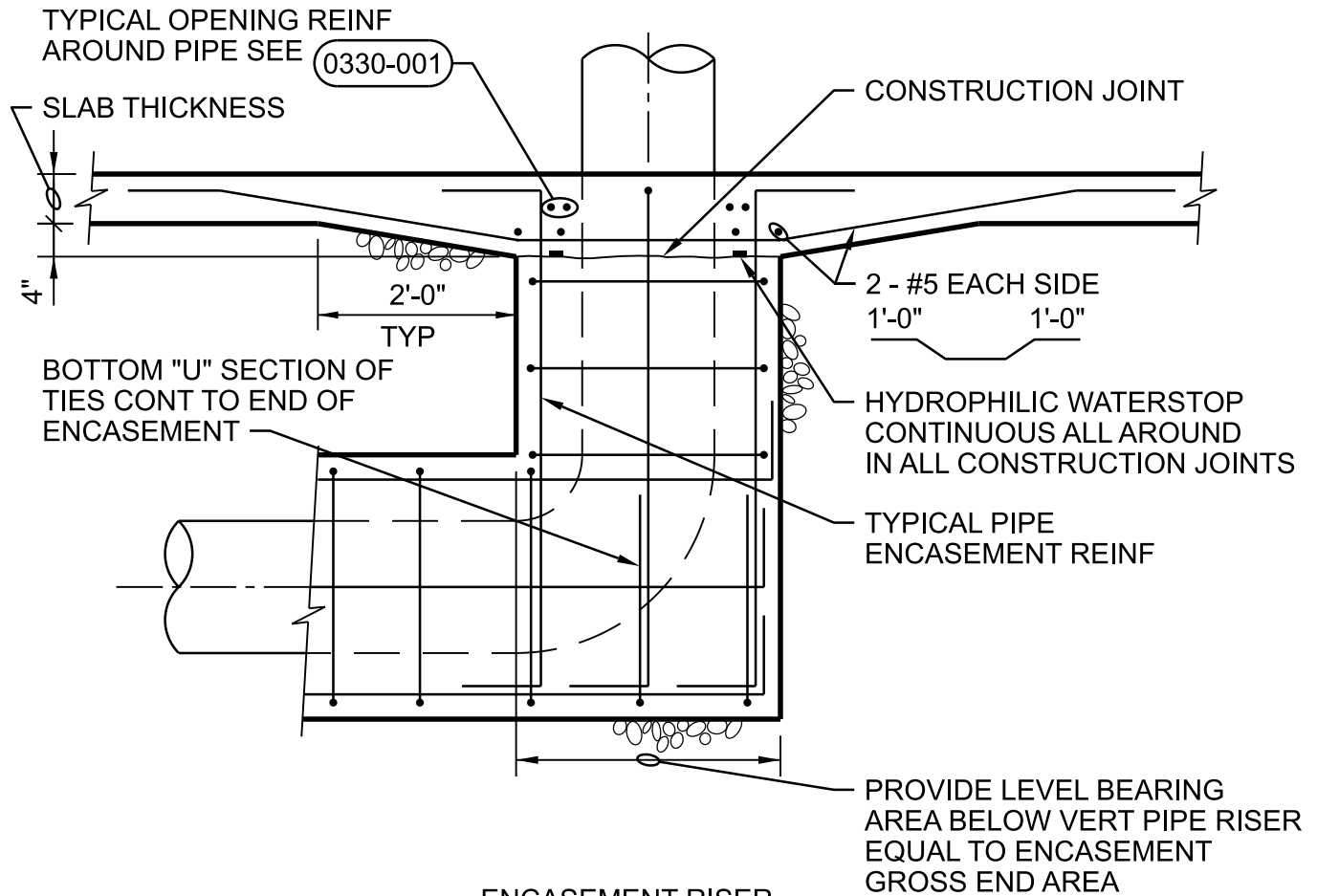
1. VERTICAL BARS NOT SHOWN FOR CLARITY.
2. SPLICES AT EACH FACE OF WALL MAY OCCUR AT SAME LOCATION.

CIRCULAR TANK HORIZONTAL WALL REINFORCEMENT STAGGERED SPLICES

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0330-006



NOTE:

SECTION APPLIES TO PIPES W/ DIAMETERS 18" AND SMALLER. FOR 20" DIAMETER PIPES AND LARGER, SEE 0330-017

PIPE ENCASEMENT

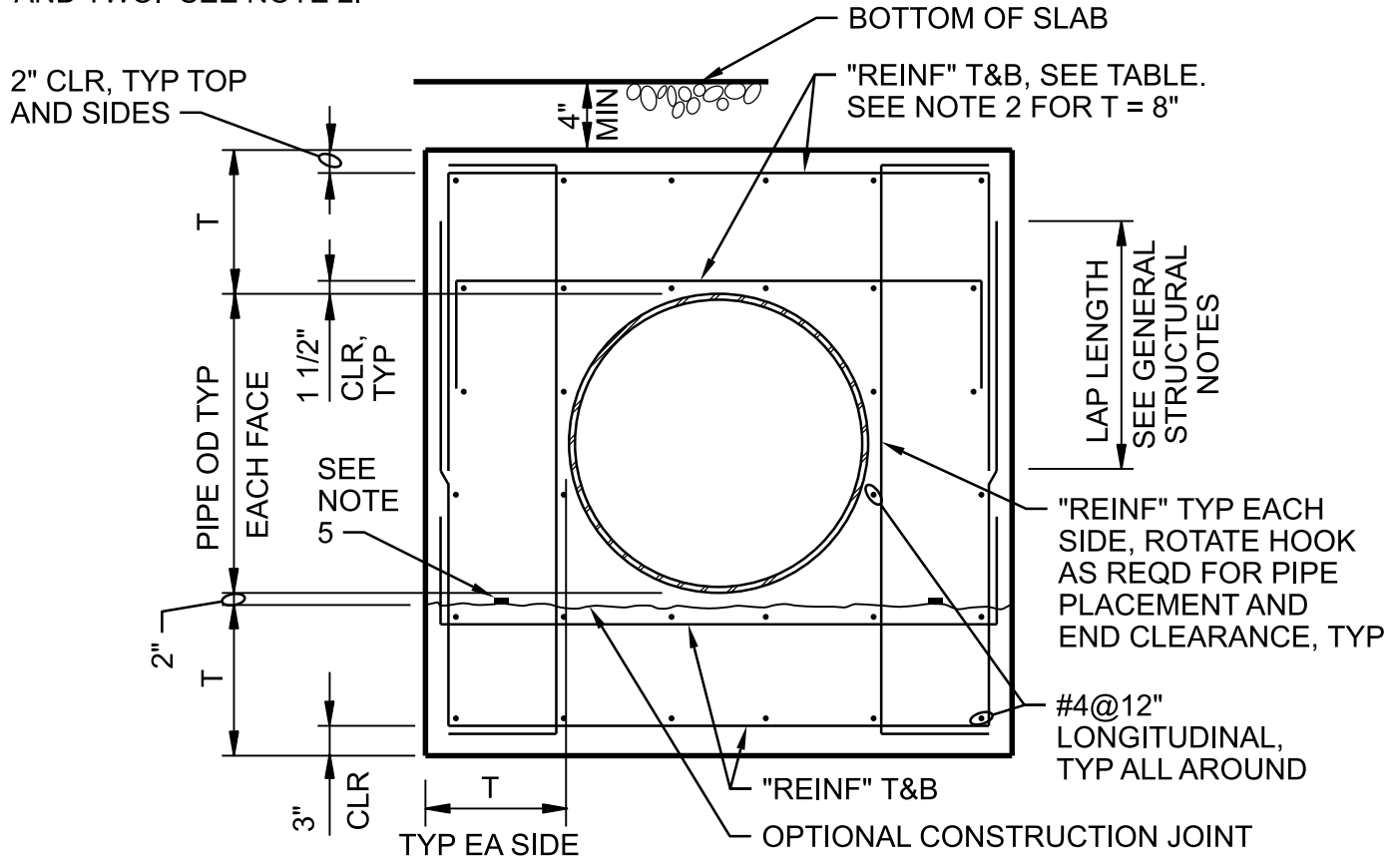
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0330-016

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:

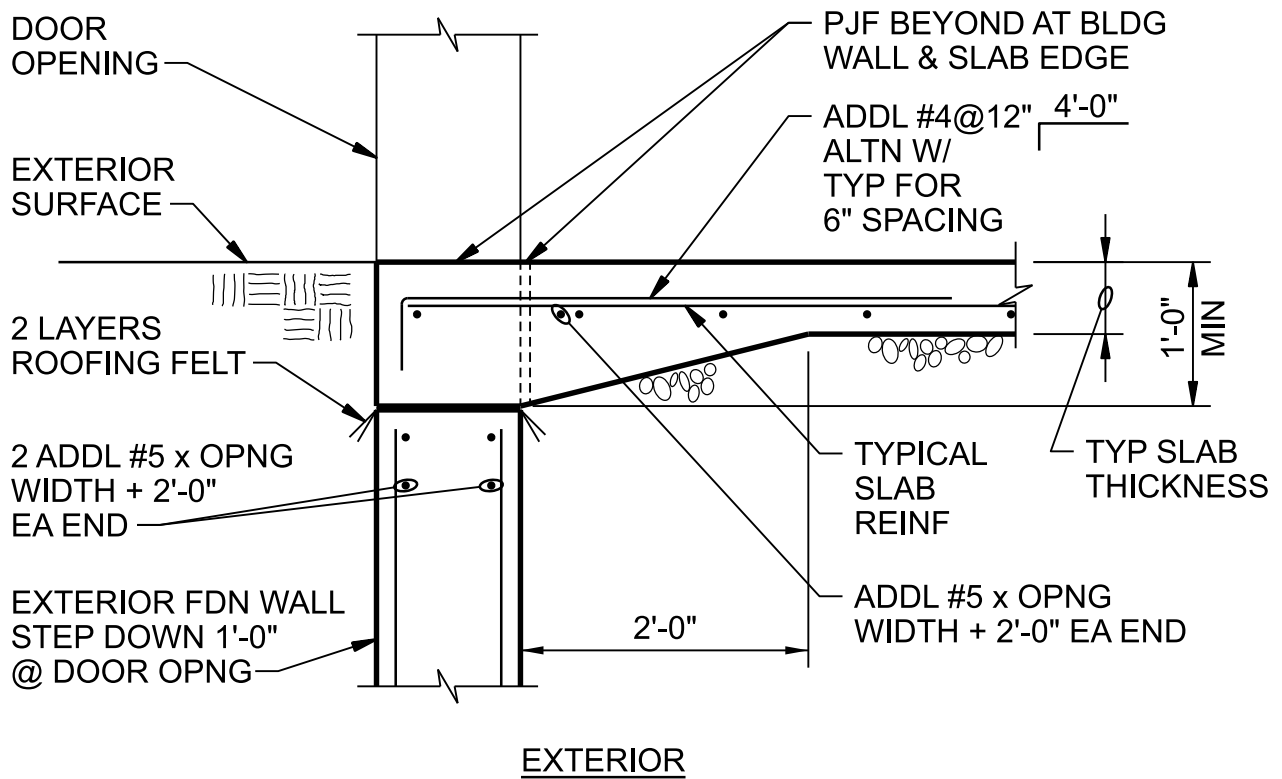
1. THIS DETAIL APPLIES TO PIPE DIAMETER OF 20" AND LARGER. FOR SMALLER THAN 20", SEE DETAIL (0330-016).
2. FOR T=8" REINFORCEMENT SHALL BE ONE LAYER AND CENTERED IN SLABS OR WALLS. SIM (0330-016).
3. FOR ENCASEMENT AT PIPE RISER, SEE (0330-016).
4. "H" IS FILL HEIGHT OR WATER DEPTH OR COMBINATION ABOVE PIPE.
5. HYDROPHILIC WATERSTOP CONTINUOUS ALL AROUND IN ALL CONSTRUCTION JOINTS.

PIPE ENCASEMENT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0330-017

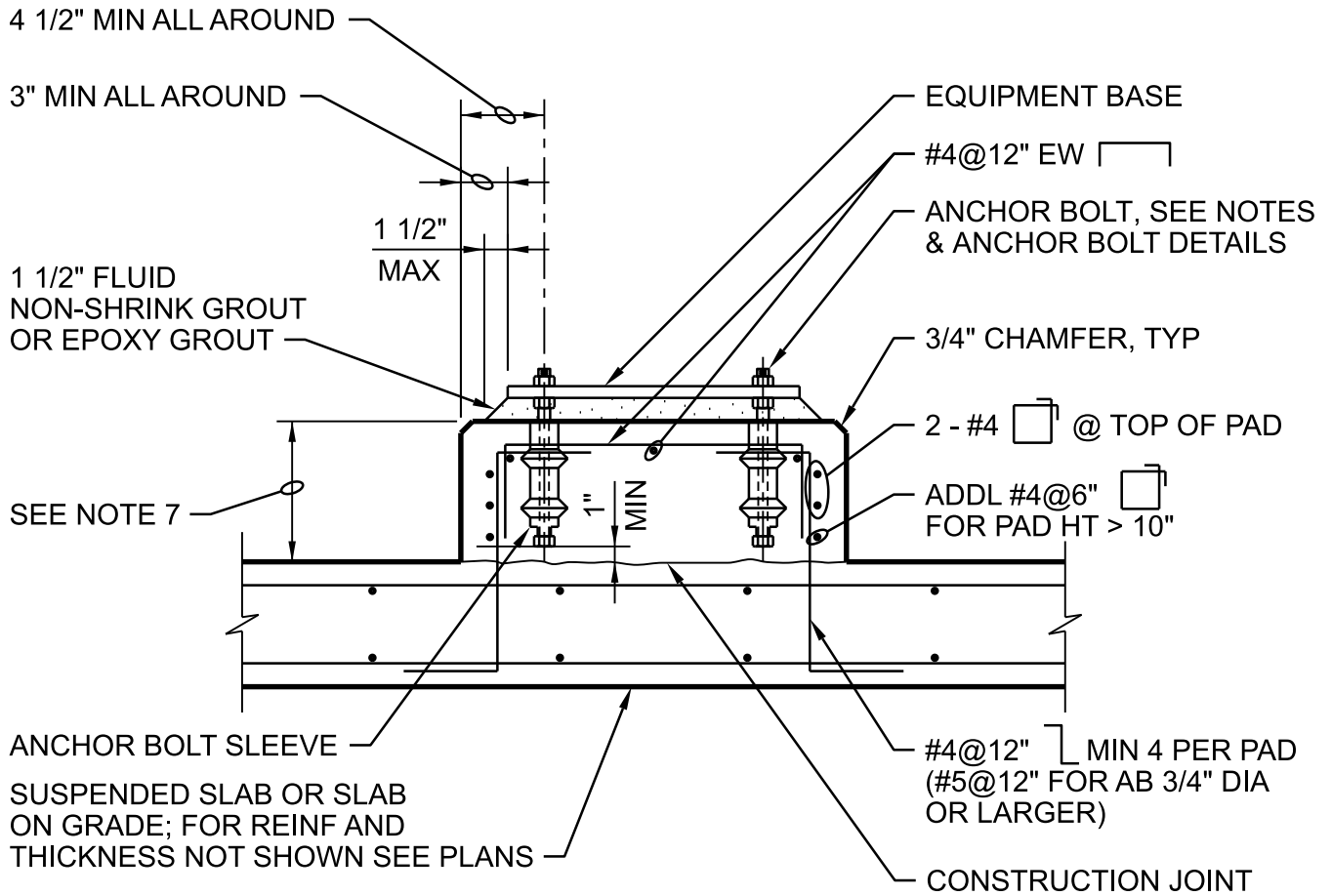


SLAB AT DOOR OPENING

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0330-041



TYPE 'A'

GENERAL NOTE:

FOR GENERAL NOTES SEE DETAIL 6 OF 6.

CONCRETE EQUIPMENT PAD - TYPE 'A'

NTS

DETAIL 1 OF 6

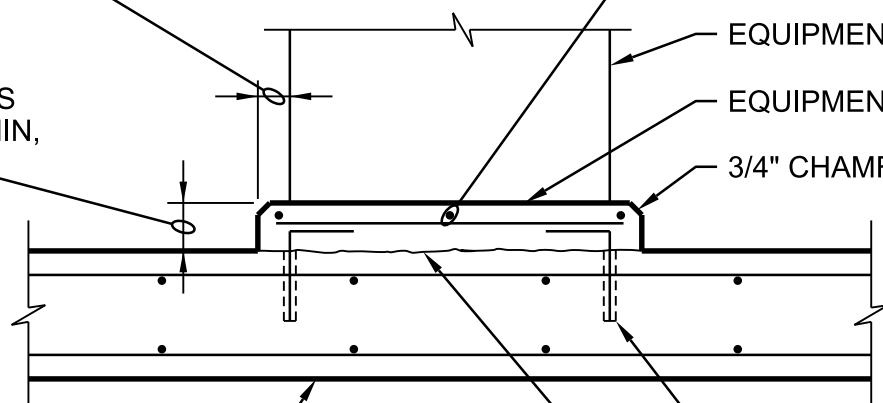
0330-056

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

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

0330-105

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'

GENERAL NOTE:

FOR GENERAL NOTES SEE DETAIL 6 OF 6.

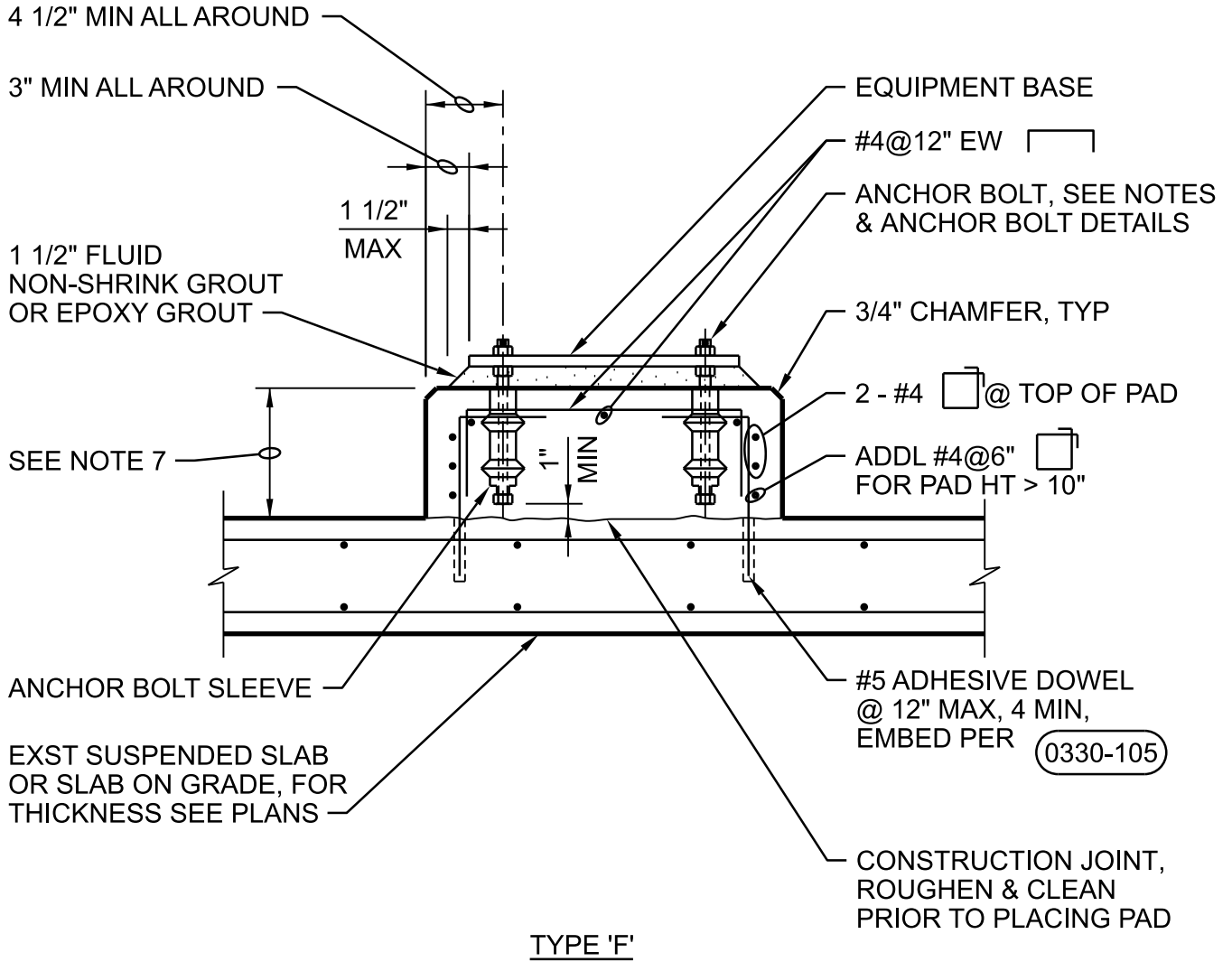
CONCRETE EQUIPMENT PAD - TYPE 'E'

NTS

DETAIL 2 OF 6

0330-056

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



GENERAL NOTE:
FOR GENERAL NOTES SEE DETAIL 6 OF 6.

CONCRETE EQUIPMENT PAD - TYPE 'F'

NTS

DETAIL 3 OF 6

0330-056

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

6" MIN, TYP UNLESS NOTED OTHERWISE ON PLANS

3/4" CHAMFER, TYP

THICKENED EDGE OF SLAB ALL AROUND

#5@12" EW T&B

EQUIPMENT

CONCRETE ANCHORS, SEE NOTE

FINISH GRADE

4"

1'-6" MIN

1
1.5

6" MIN

2 - #5 CONT

NOTE:

1. WHEN ANCHORAGE OF EQUIPMENT TO PAD IS REQUIRED, USE CONCRETE ANCHORS SPECIFIED.
2. AT CONTRACTOR'S OPTION, SLAB MAY BE PLACED AT SINGLE THICKNESS WITH BOTTOM OF SLAB TO MATCH BOTTOM OF THICKENED EDGE SHOWN. LOCATE BOTTOM REINFORCING MAT AT 3" CLEAR.

TYPE 'H'

GENERAL NOTE:

FOR GENERAL NOTES SEE DETAIL 6 OF 6.

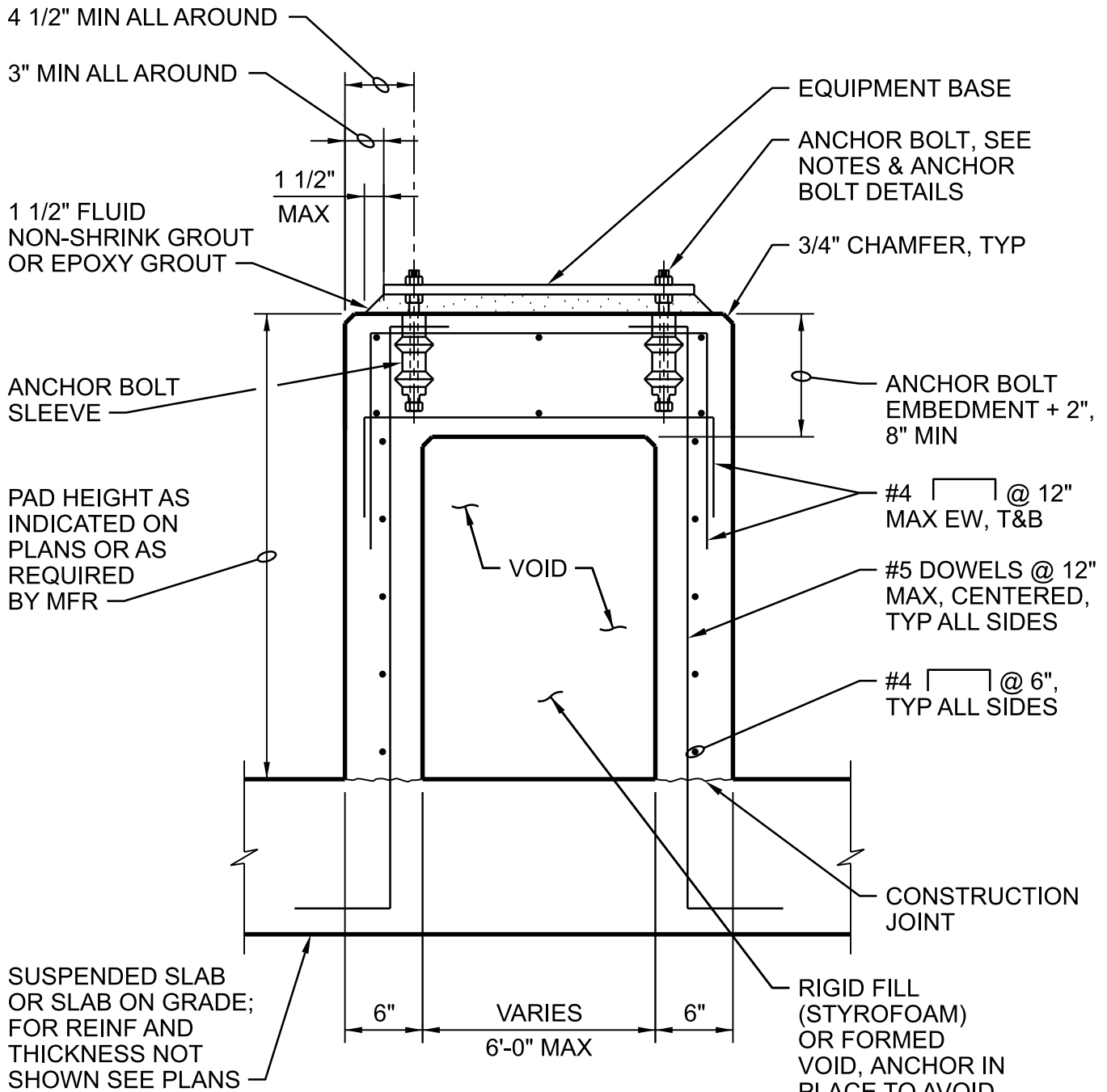
CONCRETE EQUIPMENT PAD - TYPE 'H'

NTS

DETAIL 4 OF 6

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0330-056



NOTE:
DO NOT USE FOR VIBRATORY EQUIPMENT OR FOR EQUIPMENT THAT WEIGHS MORE THAN 2000 POUNDS.

TYPE 'K'

GENERAL NOTE:
FOR GENERAL NOTES SEE DETAIL 6 OF 6.

CONCRETE EQUIPMENT PAD - TYPE 'K'

NTS

DETAIL 5 OF 6

0330-056

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

NOTES:

1. PAD SIZE SHALL BE MINIMUM INDICATED OR AS SHOWN ON THE PLANS OR AS INDICATED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
2. THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER AND AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE OR OTHER ACCEPTABLE MEANS, MATCHING THE BASE PLATE, WHILE PAD IS BEING PLACED.
3. ANCHOR BOLT SLEEVES SHALL BE USED TO PROVIDE MINIMUM ANCHOR BOLT MOVEMENT OF 1/2" IN ALL HORIZONTAL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER.
4. ANCHOR BOLT SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT AFTER BOLTS ARE ALIGNED. SEE (0330-057)
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS INDICATED OTHERWISE.
6. WEDGES, SHIMS, OR LEVELING NUTS SHALL BE USED TO SUPPORT THE BASE WHILE THE GROUT IS PLACED. WEDGES OR SHIMS SHALL BE REMOVED AFTER GROUT IS SET AND PACK VOID WITH GROUT.
7. 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.
8. TYPE "D" PAD SHALL BE USED ONLY WHERE SPECIFICALLY INDICATED. PLACE THE SURROUNDING FLOOR SLAB AFTER THE EQUIPMENT PAD.
9. AT CONTRACTOR'S OPTION, CONCRETE ANCHORS MAY BE USED IN LIEU OF CAST-IN-PLACE ANCHOR BOLTS FOR EQUIPMENT ANCHOR BOLTS LESS THAN 3/4" DIAMETER WHEN APPROVED BY THE EQUIPMENT MANUFACTURER AND APPROVED BY THE ENGINEER. ANCHORS SHALL BE INSTALLED WITH 4" MINIMUM EDGE DISTANCE IN EACH DIRECTION.

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

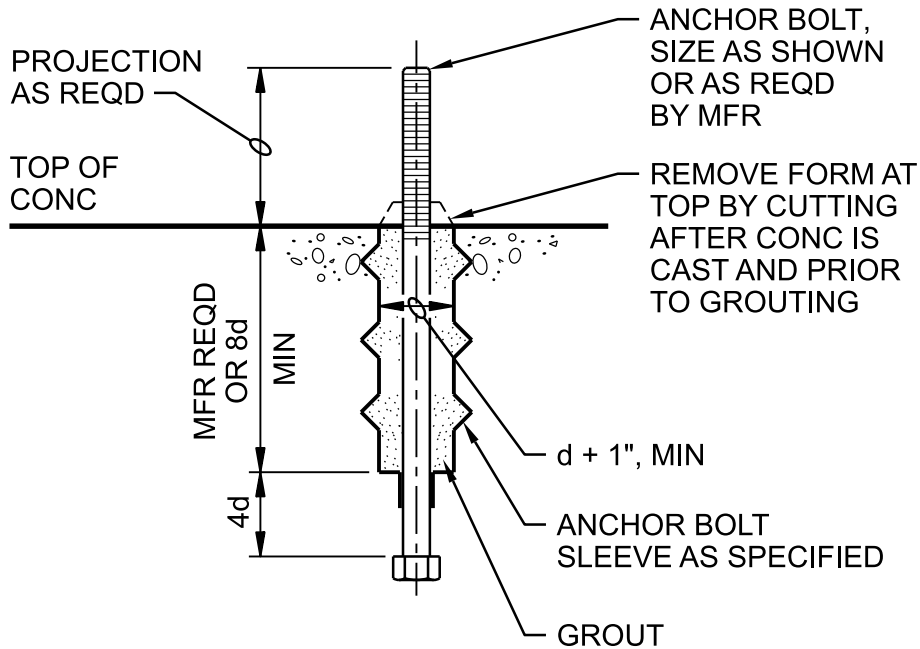
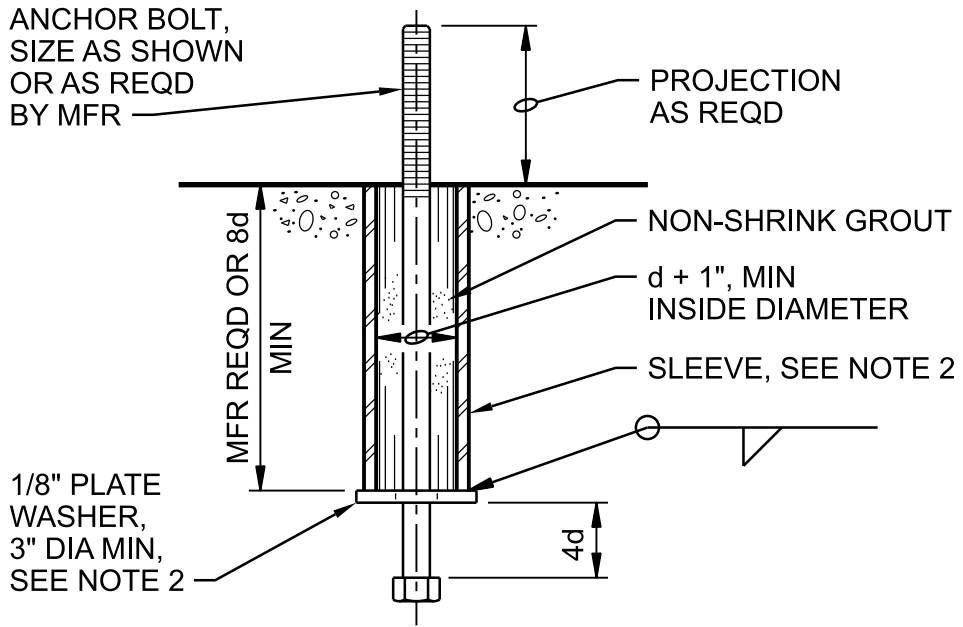
CONCRETE EQUIPMENT PAD - NOTES

NTS

DETAIL 6 OF 6

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

(0330-056)



MACHINERY ANCHOR BOLT DETAIL

NOTES:

1. FOR CONCRETE EQUIPMENT PAD DETAILS AND NOTES NOT SHOWN SEE (0330-056)
2. MATERIAL TO MATCH BOLT.

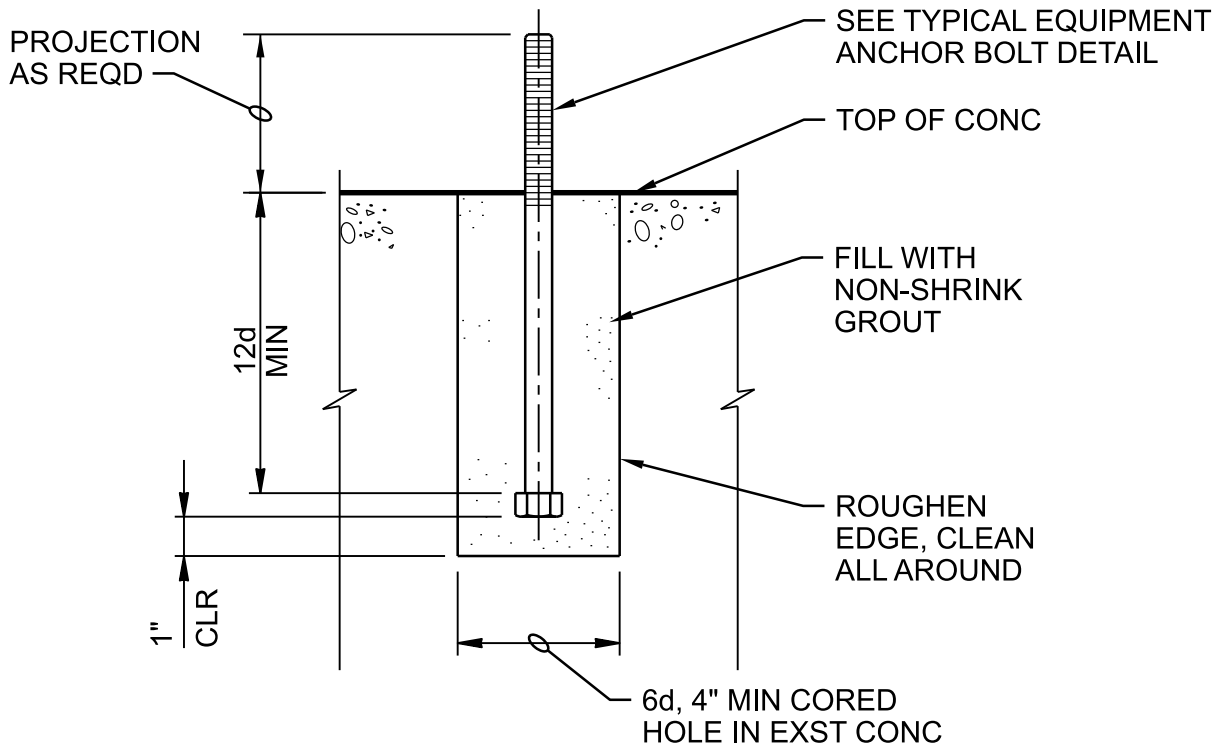
ANCHOR BOLT DETAILS

NTS

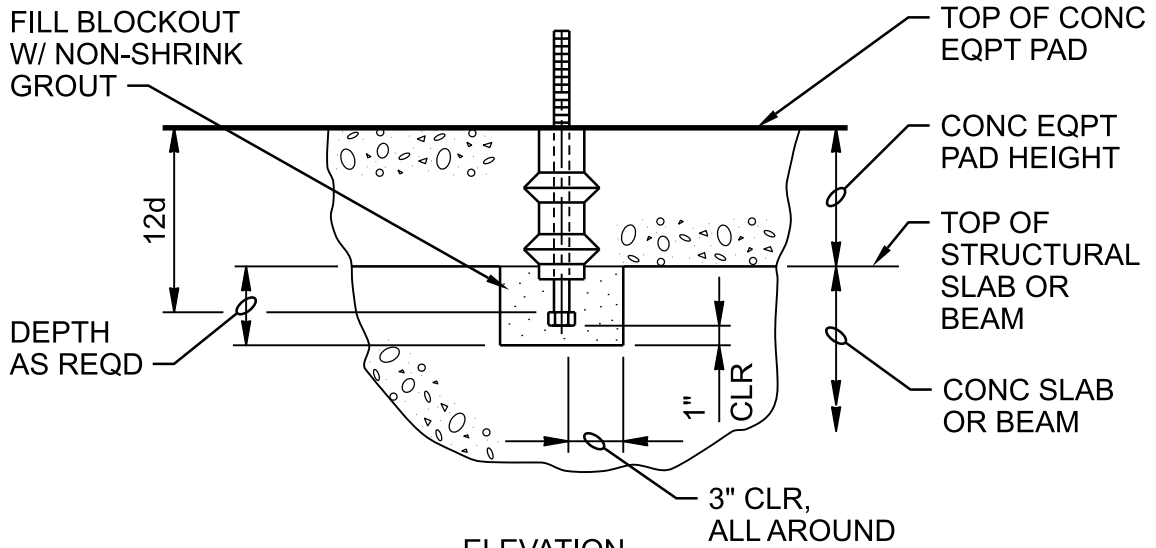
DETAIL 1 OF 2

(0330-057)

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



ANCHOR BOLT RETROFIT



ELEVATION

ANCHOR BOLT BLOCKOUT

NOTES:

1. FOR CONCRETE EQUIPMENT PAD DETAILS AND NOTES NOT SHOWN SEE (0330-056)
2. MATERIAL TO MATCH BOLT.

ANCHOR BOLT DETAILS

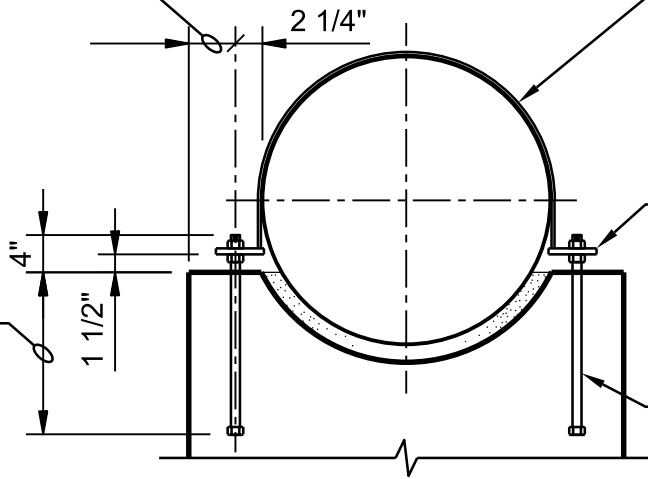
NTS

DETAIL 2 OF 2

(0330-057)

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

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

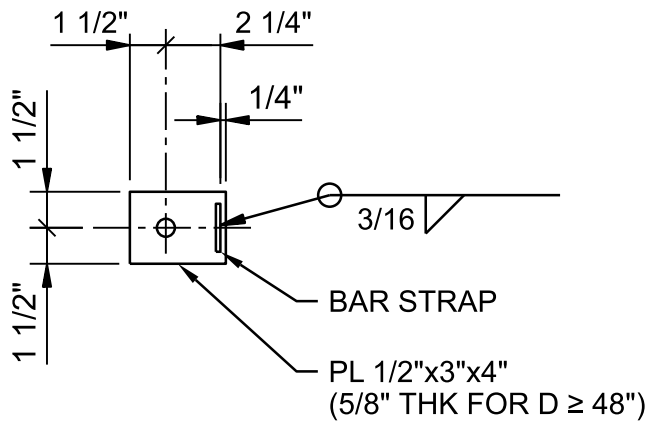


BAR STRAP 'S' BENT TO
OD OF PIPE, SEE TABLE,
HOT DIP GALVANIZE
AFTER FABRICATION,
SEE NOTES 5 & 6

SEE STRAP PL
DETAIL BELOW

3/4" DIA ANCHOR BOLTS
WITH LEVELING NUTS
CENTERED IN SADDLE
(USE 1" DIA FOR D > 48")

PIPE STRAP



BAR STRAP

PL 1/2"x3"x4"
(5/8" THK FOR D ≥ 48")

PLAN

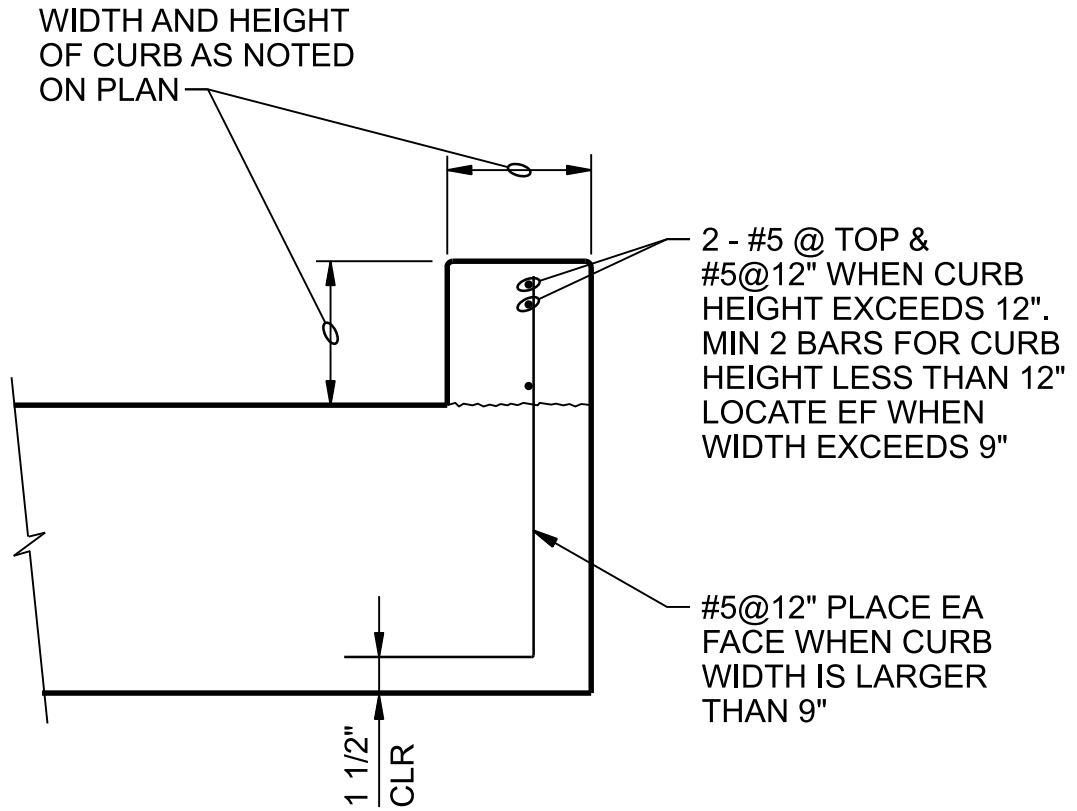
PIPE STRAP PLATE

PIPE SUPPORT - CONCRETE SADDLE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0330-061

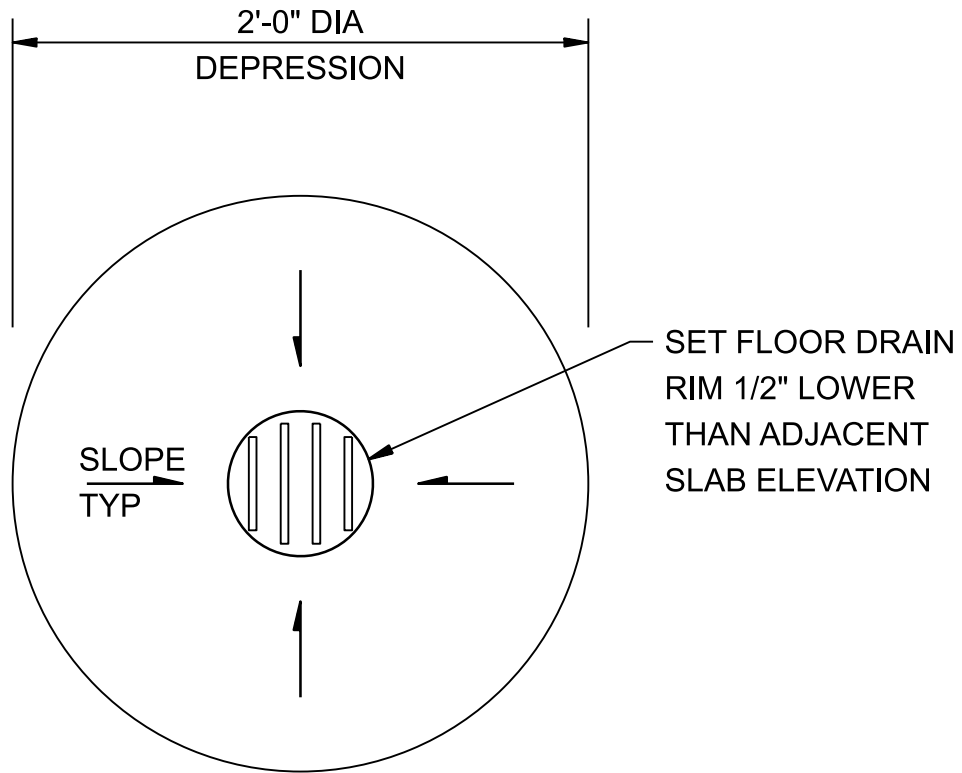


CONCRETE CURB

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0330-080

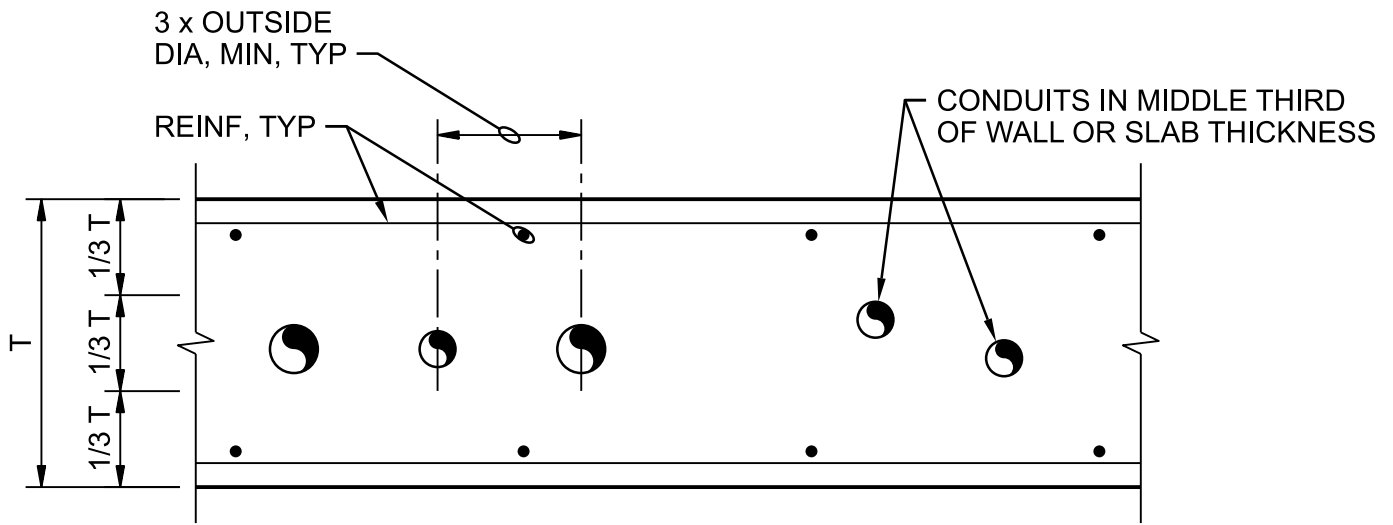


FLOOR DRAIN

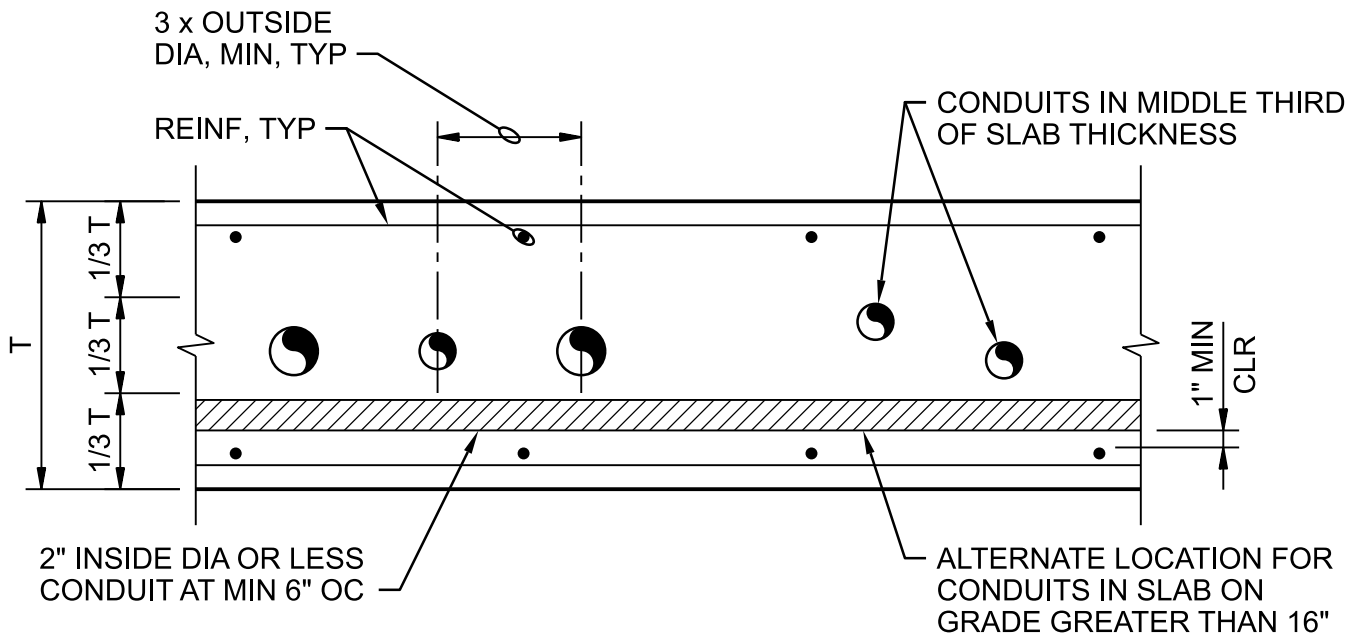
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0330-082



WALL OR ELEVATED SLAB



SLAB ON GRADE

NOTES:

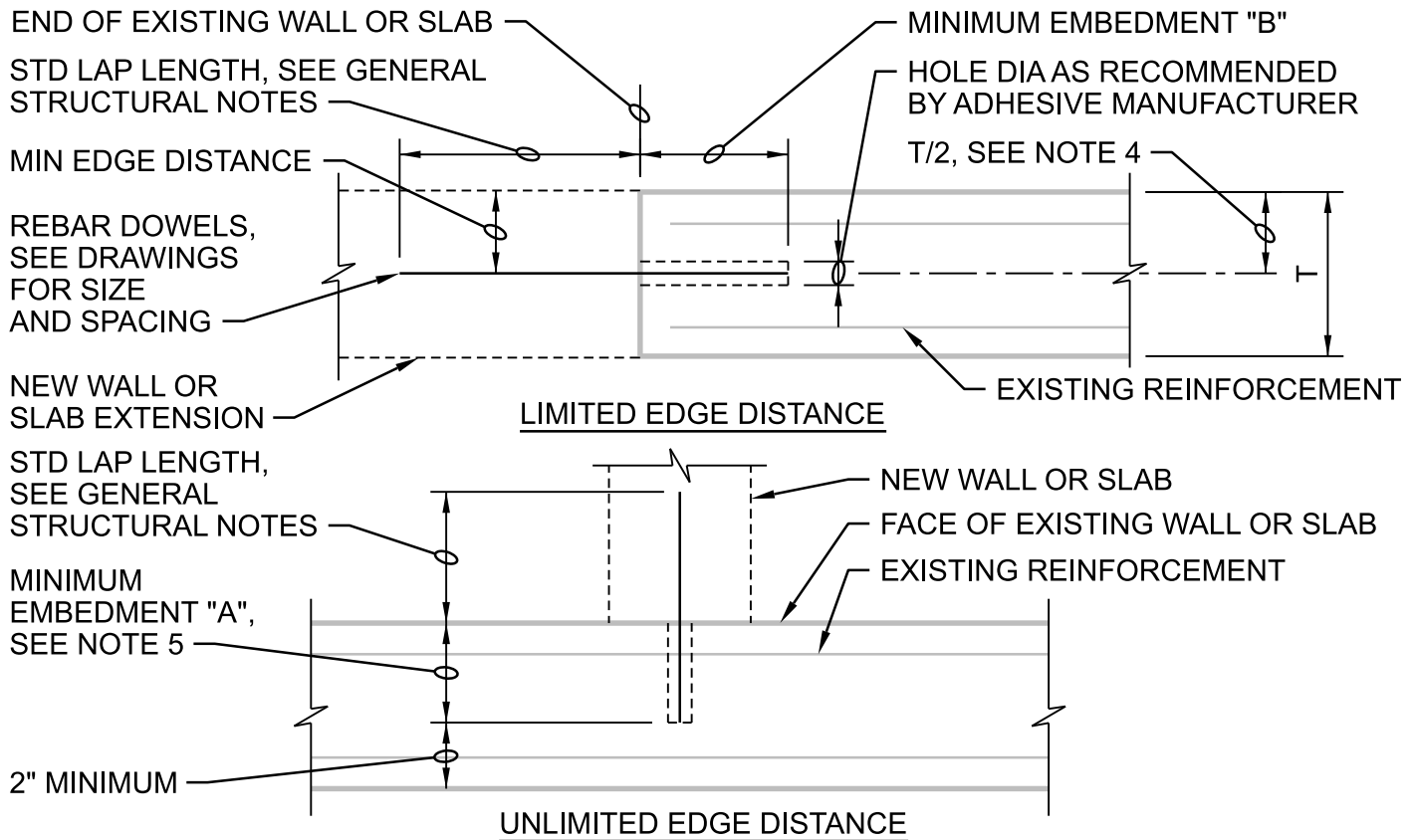
1. AT EXIT OR ENTRY TO SLAB, REINFORCE OPENINGS CREATED BY MULTIPLE CONDUITS PER (0330-001).
2. FOR SHORT SECTIONS OF ELEMENTS, SUCH AS WALL PIERS, PLACE CONDUITS AS DIRECTED BY ENGINEER.

CONDUIT IN STRUCTURAL CONCRETE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0330-084



DOWEL SIZE	MINIMUM EDGE DISTANCE	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:

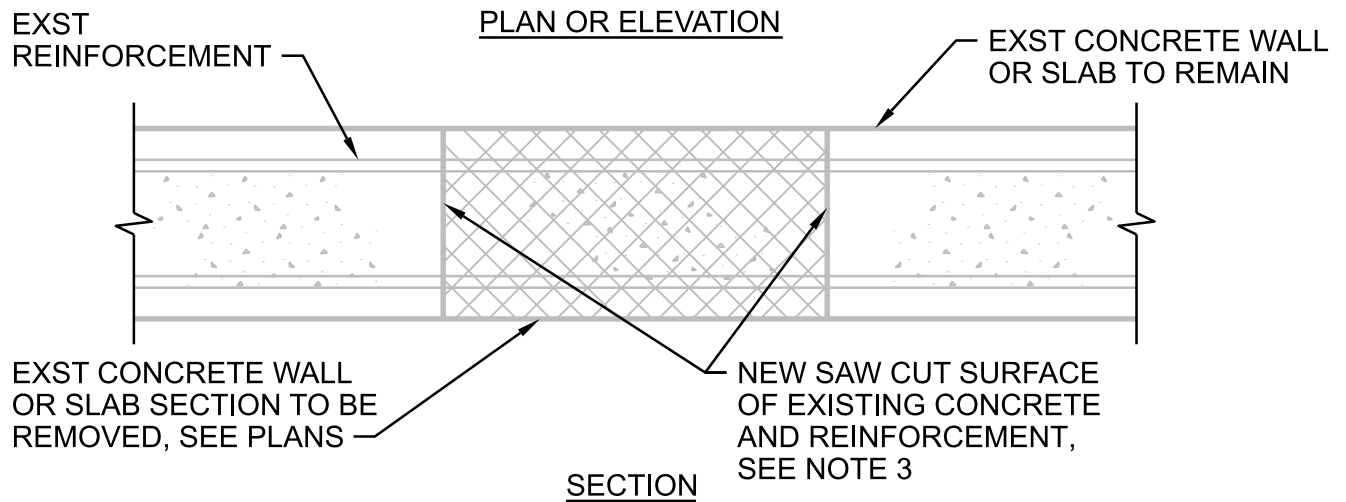
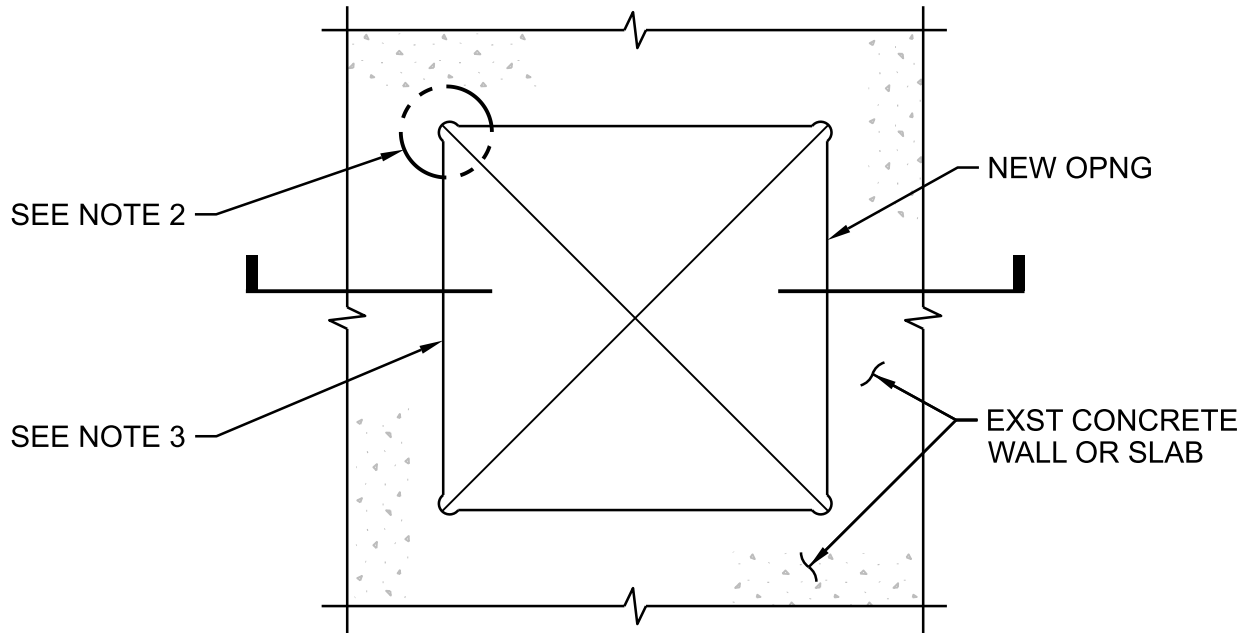
1. CONFORM TO REQUIREMENTS OF SPECIFICATION SECTION 03 63 00, CONCRETE DOWELING.
2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
3. USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
4. LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.
5. PROVIDE MINIMUM EMBEDMENT "A" SHOWN IN TABLE UNLESS SHORTER EMBEDMENT DEPTH IS CALLED OUT ON DRAWINGS.

ADHESIVE DOWEL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0330-105



NEW OPENING IN EXISTING WALL OR SLAB

NOTES:

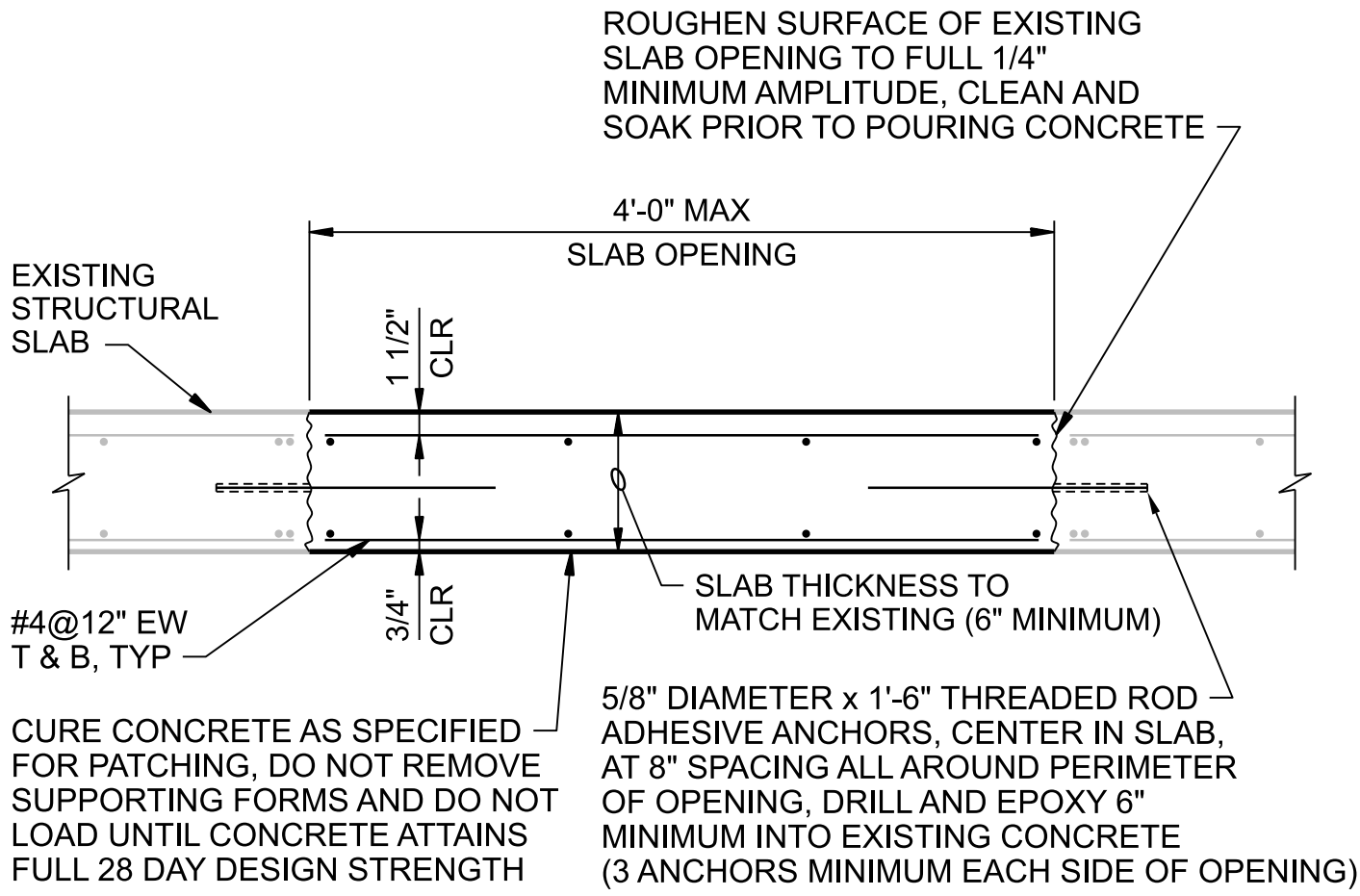
1. SUPPORT ADJACENT ELEVATED SLABS AND CUT SLAB SECTION UNTIL CUTTING OPERATION IS COMPLETE.
2. CORE DRILL CORNERS TO DIAMETER REQUIRED TO PREVENT OVER CUTTING OF REINFORCEMENT AND CONCRETE BEYOND OPENING.
3. PREPARE AND PROTECT EXPOSED STEEL REINFORCEMENT, SEE (0330-143)

SURFACE TREATMENT OF NEW OPENINGS IN EXISTING CONCRETE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0330-106



EXISTING SLAB OPENING REPAIR

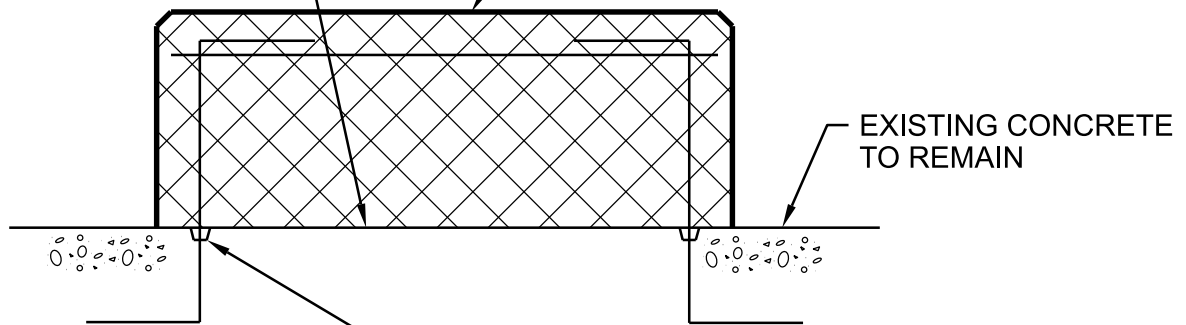
NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0330-141

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



EXISTING CONCRETE 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:

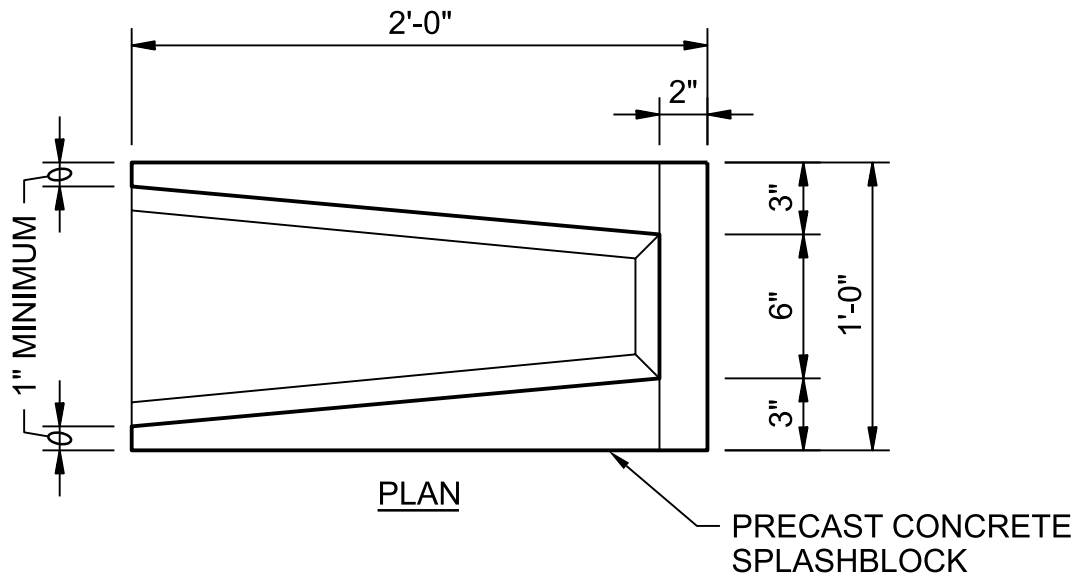
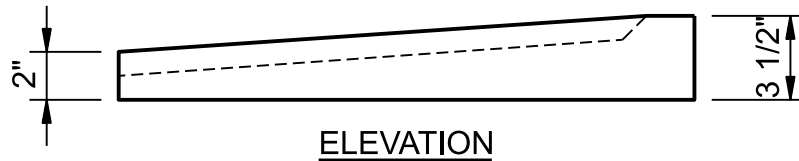
1. REMOVE CONCRETE OUT TO SOUND CONCRETE.
2. IF CHIPPING INTO THE SURFACE OF THE EXISTING SLAB OR WALL TO REMAIN IS REQUIRED, MAKE EDGES PERPENDICULAR TO THE SURFACE. DO NOT FEATHER EDGES.
3. FILL DEFECTIVE AREA WITH AN APPROVED PREPACKAGED REPAIR MATERIAL TO MATCH APPEARANCE OF ADJACENT CONCRETE SURFACES.
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

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0330-143

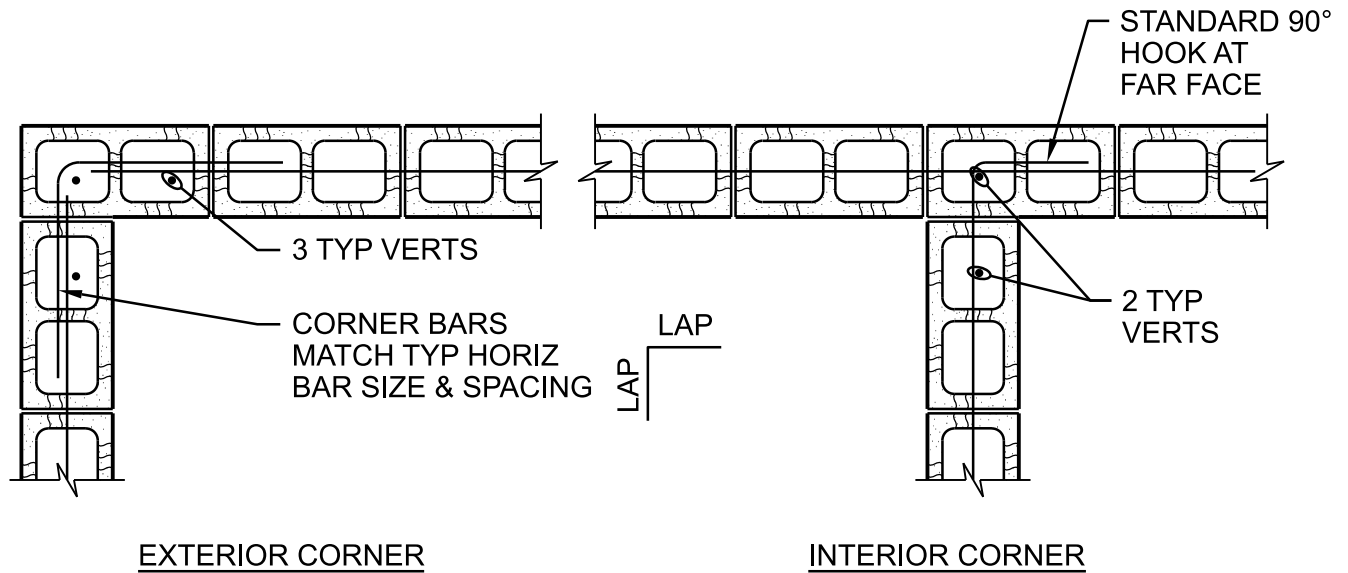


SPLASHBLOCK

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0340-095



SINGLE MAT PLAN FOR HORIZONTAL BARS

NOTES:

1. LAP=48 BAR DIAMETERS, BUT NOT LESS THAN 2'-0" FOR HORIZONTAL BARS UNLESS NOTED OTHERWISE.
2. AT OPENINGS, CONTROL JOINTS, OR CORNERS LESS THAN 6'-0" IN LENGTH, SEE DETAILS (0422-003), (0422-005) AND (0422-006).

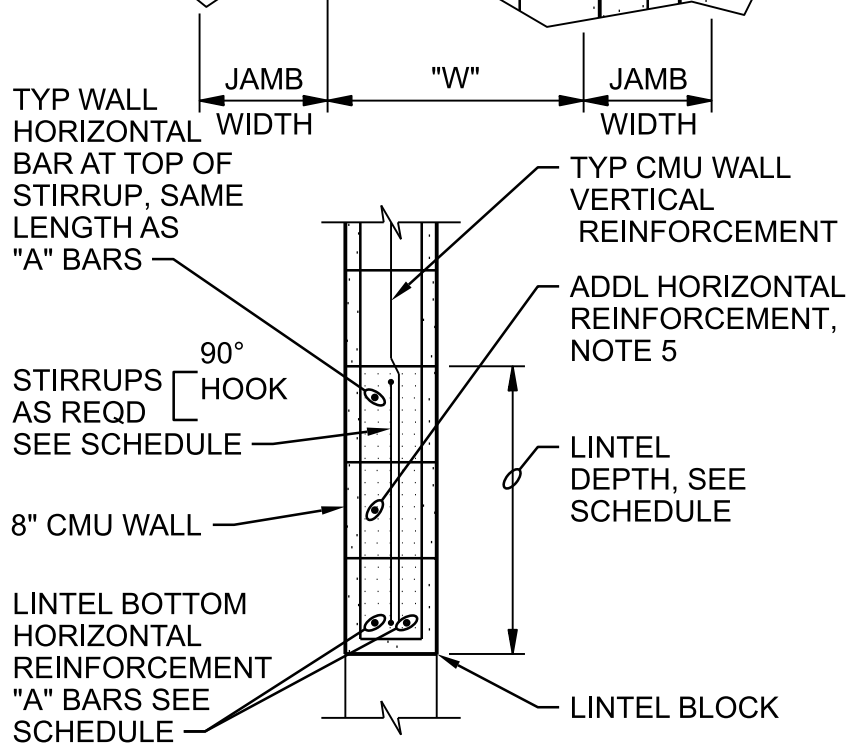
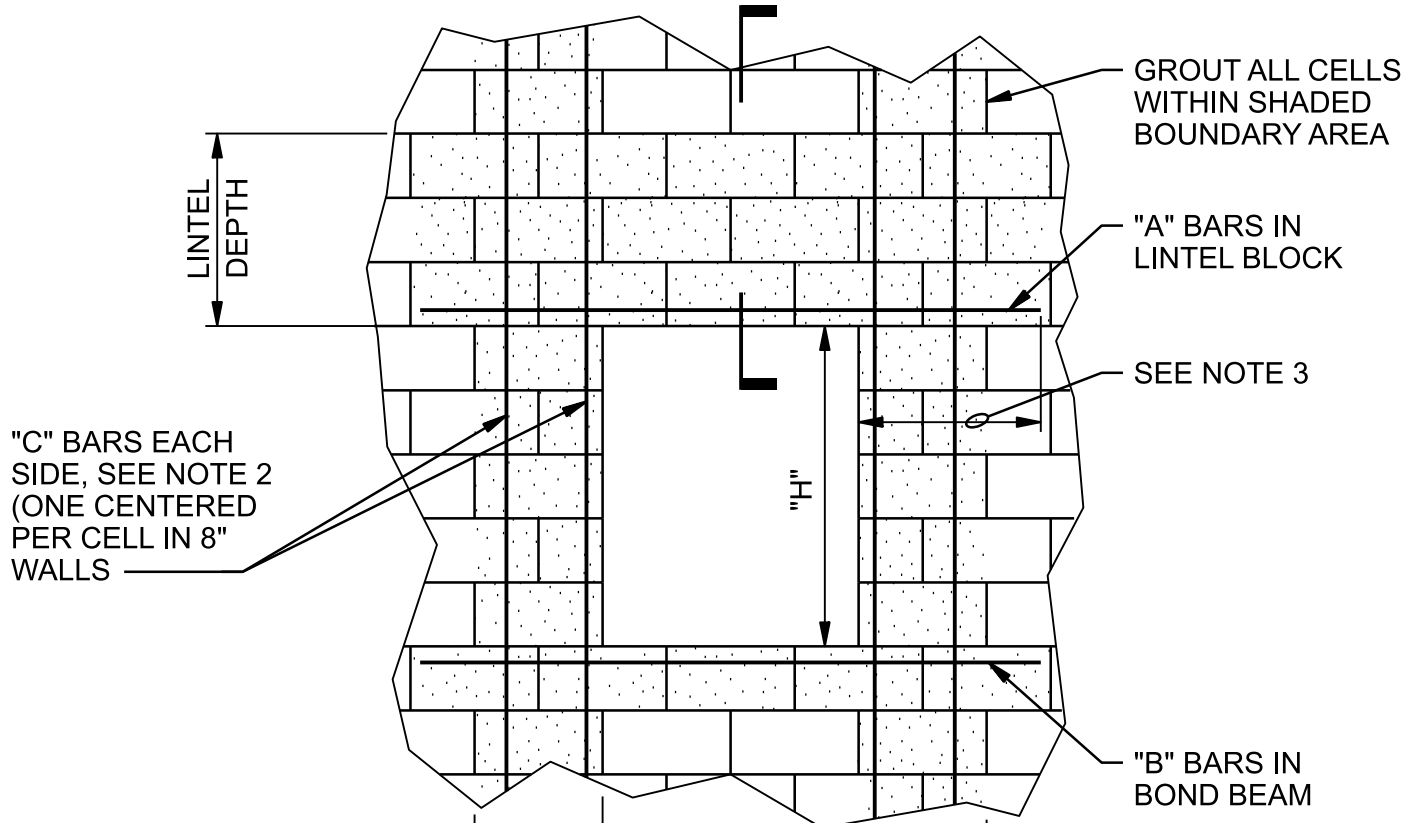
REINFORCED MASONRY

WALL CORNERS (SINGLE & DOUBLE MAT)

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0422-001



8" LINTEL SECTION

CMU OPENING REINFORCEMENT

NTS

DETAIL 1 OF 2

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0422-003

CMU OPENING REINFORCEMENT SCHEDULE						
8" WALLS						
W	LINTEL DEPTH	STIRRUP SIZE, SPG	"A" BARS	"B" BARS	"C" BARS	JAMB WIDTH
≤2'-8"	8"	-	1	1	1	8"
>2'-8"≤4'-0"	16"	-	2	1	1	8"
>4'-0"≤6'-0"	24"	#3@8"	2	1	2	16"
>6'-0"≤8'-0"	32"	#3@16"	2	2	3	24"
>8'-0"≤10'-0"	48"	#3@24"	2	2	3	24"

NOTES:

1. USE BAR QUANTITIES AND SIZES GIVEN IN LINTEL SCHEDULE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
2. EXTEND "C" BARS 48 BAR DIAMETERS, BUT NOT LESS THAN 2'-0" BEYOND TOP AND BOTTOM OF OPENING EXCEPT THAT WHEN "H" OR "W" EXCEEDS 2'-0", "C" BARS SHALL EXTEND FULL HEIGHT.
3. "A" AND "B" BARS SHALL EXTEND 48 BAR DIAMETERS, BUT NOT LESS THAN 2'-0" EACH SIDE OF THE OPENINGS. WHERE THERE IS LESS THAN 8'-0" BETWEEN ADJACENT OPENINGS, EXTEND REINFORCEMENT CONTINUOUS TO 2'-8" BEYOND FURTHEST OPENING.
4. FOR BAR SIZES, MATCH TYPICAL WALL REINFORCEMENT AS SHOWN ON THE BUILDING WALL SECTIONS.
5. FOR LINTEL DEPTHS EQUAL TO OR GREATER THAN 48" PROVIDE ADDITIONAL LAYER OF HORIZONTAL REINFORCEMENT AT 12" FROM BOTTOM OF LINTEL. MATCH SIZE OF TYPICAL WALL HORIZONTAL REINFORCEMENT.

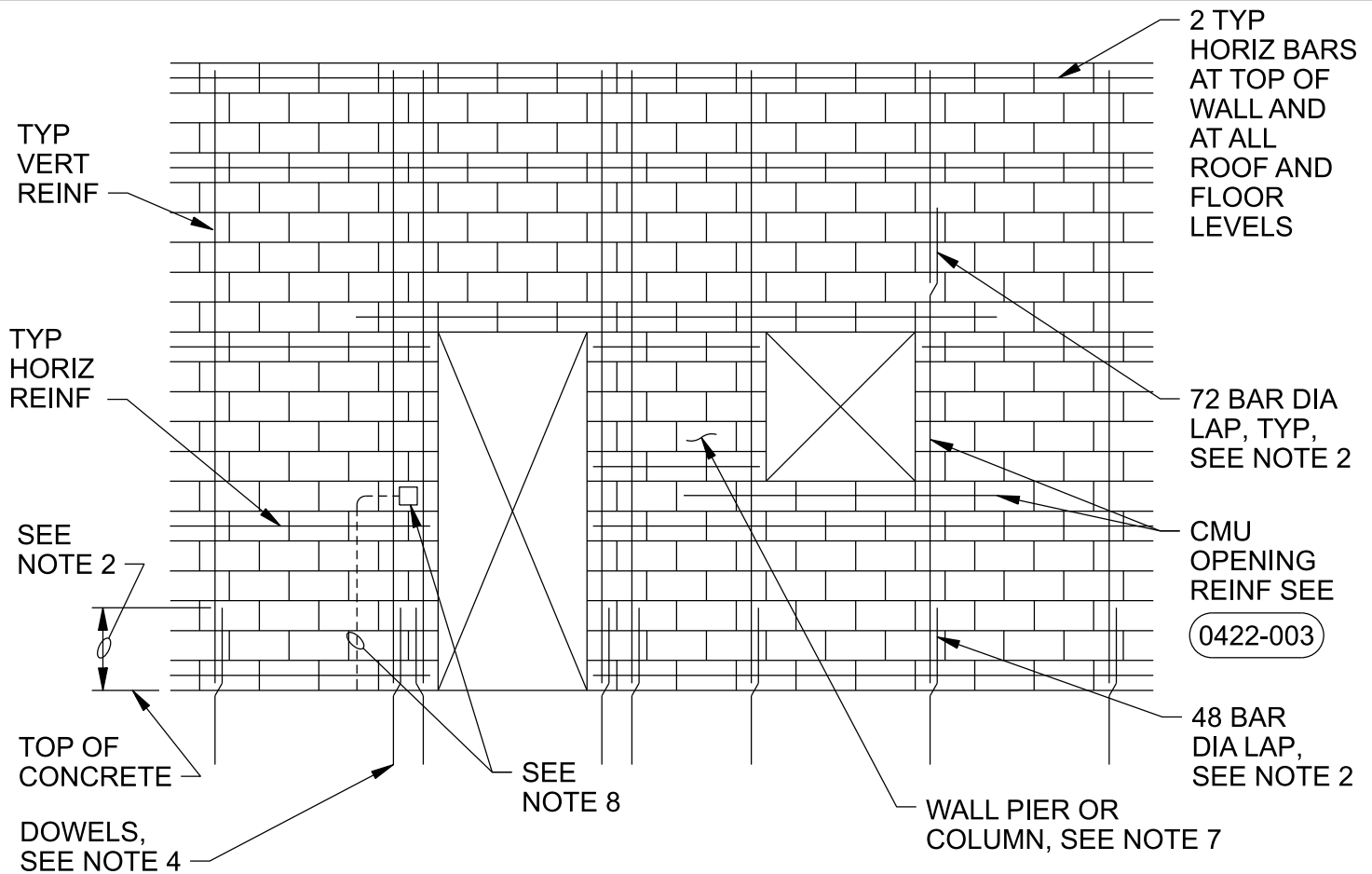
CMU OPENING REINFORCEMENT

NTS

DETAIL 2 OF 2

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0422-003



ELEVATION

NOTES:

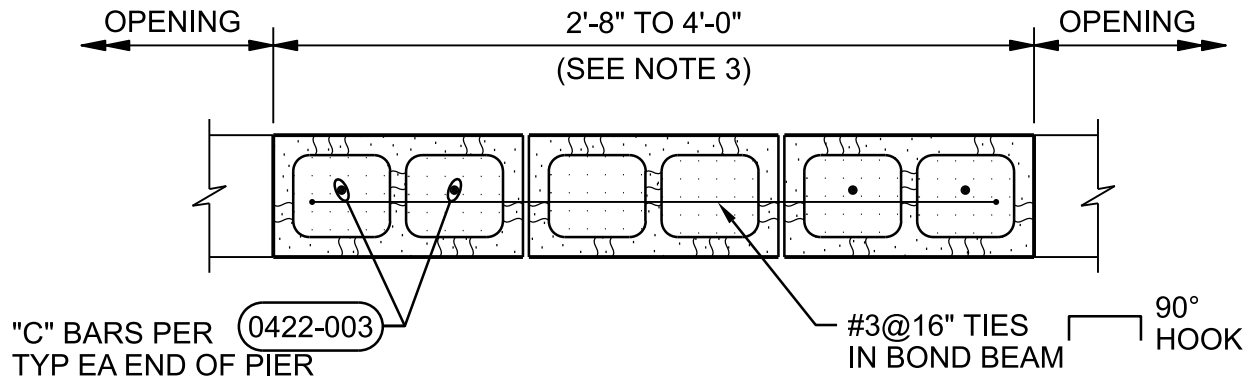
1. FOR TYPICAL WALL REINFORCEMENT, SEE WALL SECTIONS AND DETAILS FOR EACH FACILITY. FOR MINIMUM REINFORCEMENT REQUIREMENTS, SEE GENERAL STRUCTURAL NOTES.
2. LAP VERTICAL REINFORCEMENT WITH WALL DOWELS 48 BAR DIAMETERS (2'-0" MIN), LAP ALL OTHER VERTICAL BARS 72 BAR DIAMETERS.
3. HORIZONTAL JOINT REINFORCEMENT SPLICE = 1'-4".
4. PROVIDE DOWEL BARS IN FOUNDATION TO MATCH ALL VERTICAL REINFORCEMENT.
5. FOR ADDED REINFORCEMENT AT WALL INTERSECTIONS AND CORNERS, SEE (0422-001).
6. GROUT EACH SIDE OF OPENING AS NOTED IN TYPICAL OPENING REINFORCEMENT DETAIL (0422-003).
7. FOR HORIZONTAL REINFORCEMENT AT OPENINGS SEE PIER AND COLUMN DETAILS (0422-005) AND (0422-006).
8. DO NOT PLACE VERTICAL CONDUIT IN THE SAME CELL AS VERTICAL REINFORCEMENT.

INTERMEDIATE REINFORCED MASONRY SHEAR WALL

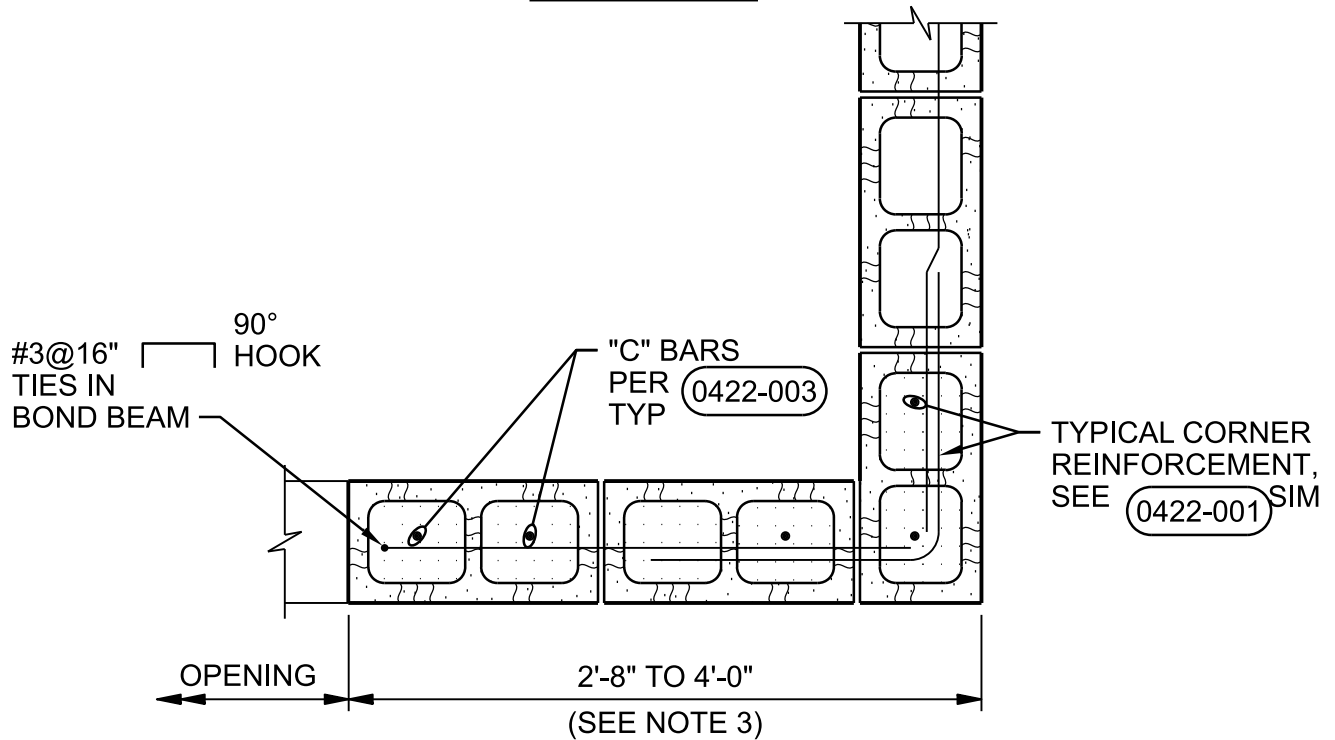
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0422-004



INTERIOR PLAN



CORNER PLAN

8" CMU WALL

NOTES:

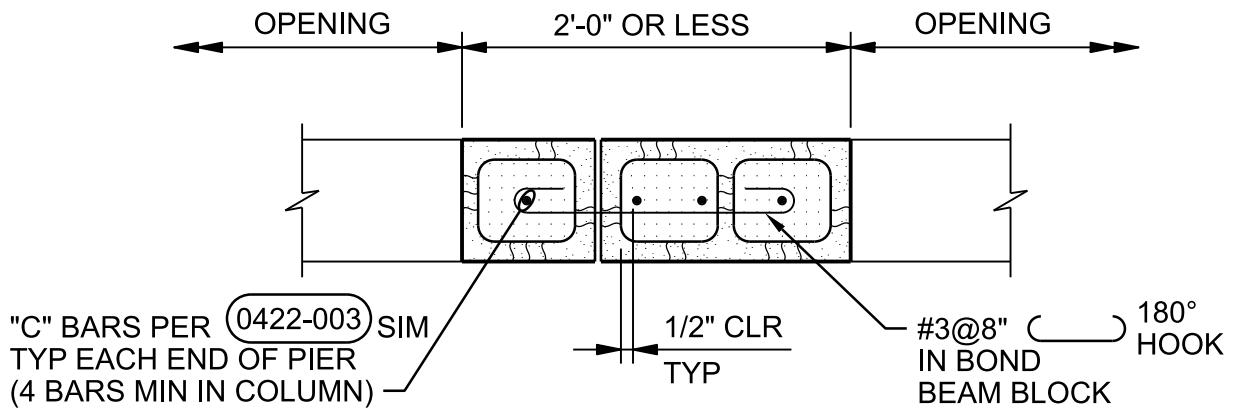
- 1. SOLID GROUT PIERS FULL WALL HEIGHT.
- 2. WHERE PIERS ARE CENTERED BELOW BEAM BEARING, REDUCE TIE SPACING TO 8".
- 3. FOR 8" CMU WALL PIERS 2'-0" AND LESS, SEE WALL COLUMN DETAIL (0422-006)

CMU WALL PIER

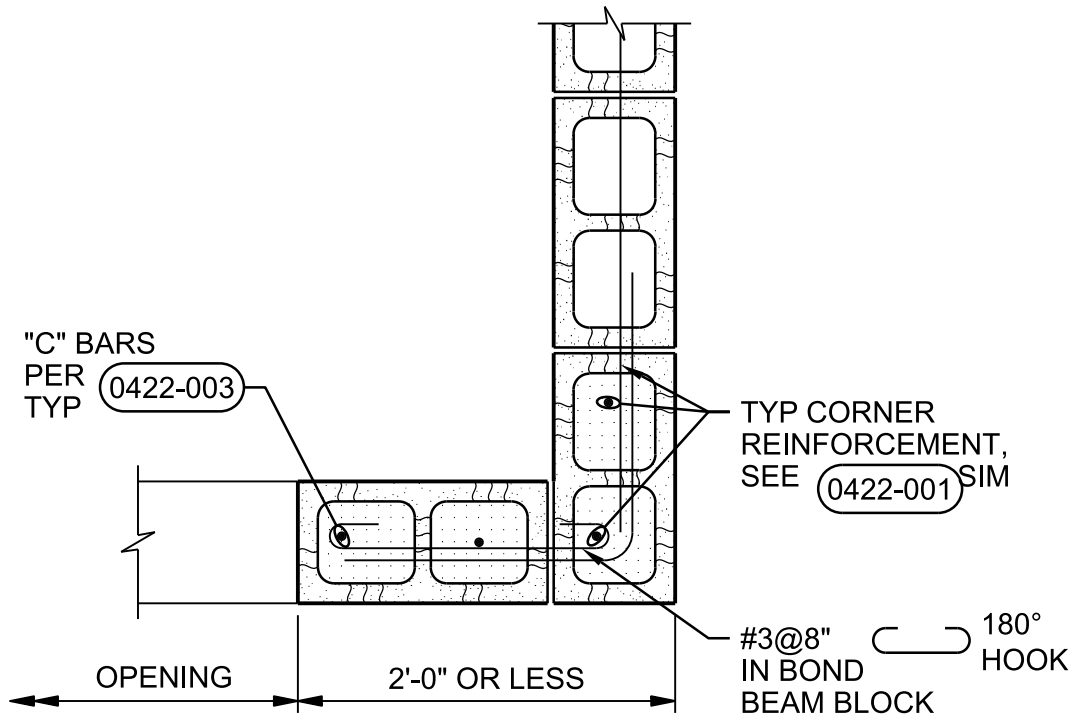
NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0422-005



INTERIOR PLAN



CORNER PLAN

8" CMU WALL

NOTE:

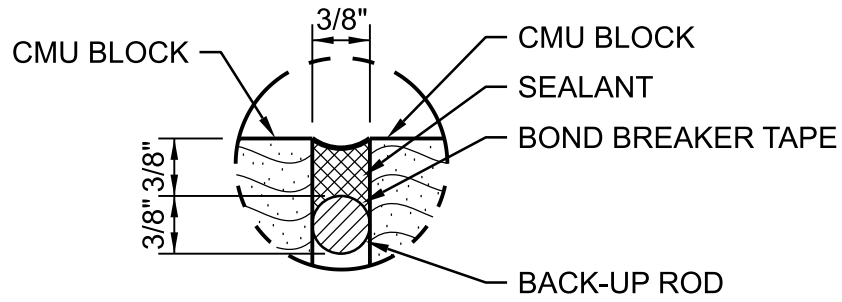
GROUT WALL COLUMNS FULL WALL HEIGHT.

CMU WALL COLUMN

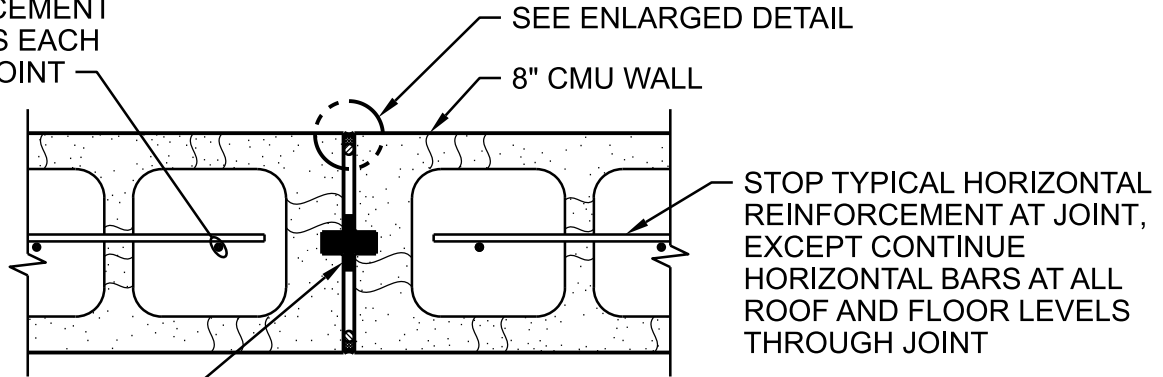
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HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0422-006



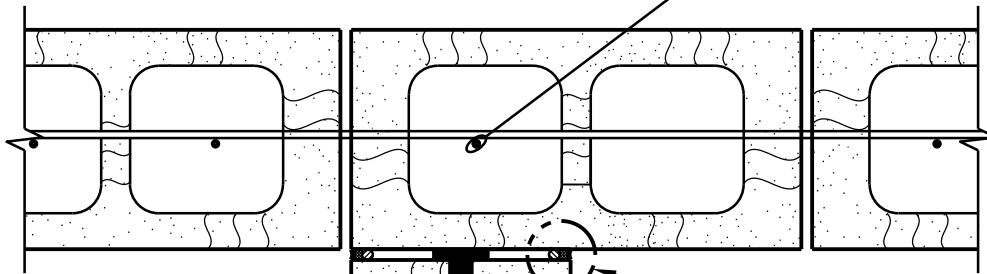
PROVIDE TYPICAL VERTICAL REINFORCEMENT IN 2 CELLS EACH SIDE OF JOINT



PREFABRICATED CONTROL JOINT

STRAIGHT WALL

PROVIDE TYPICAL VERTICAL REINFORCEMENT IN CELL CENTERED ON JOINT



PROVIDE TYPICAL VERTICAL REINFORCEMENT IN TWO CELLS

SEE ENLARGED DETAIL, TYP

PREFABRICATED JOINT

8" CMU WALL

T-WALL

NOTE:

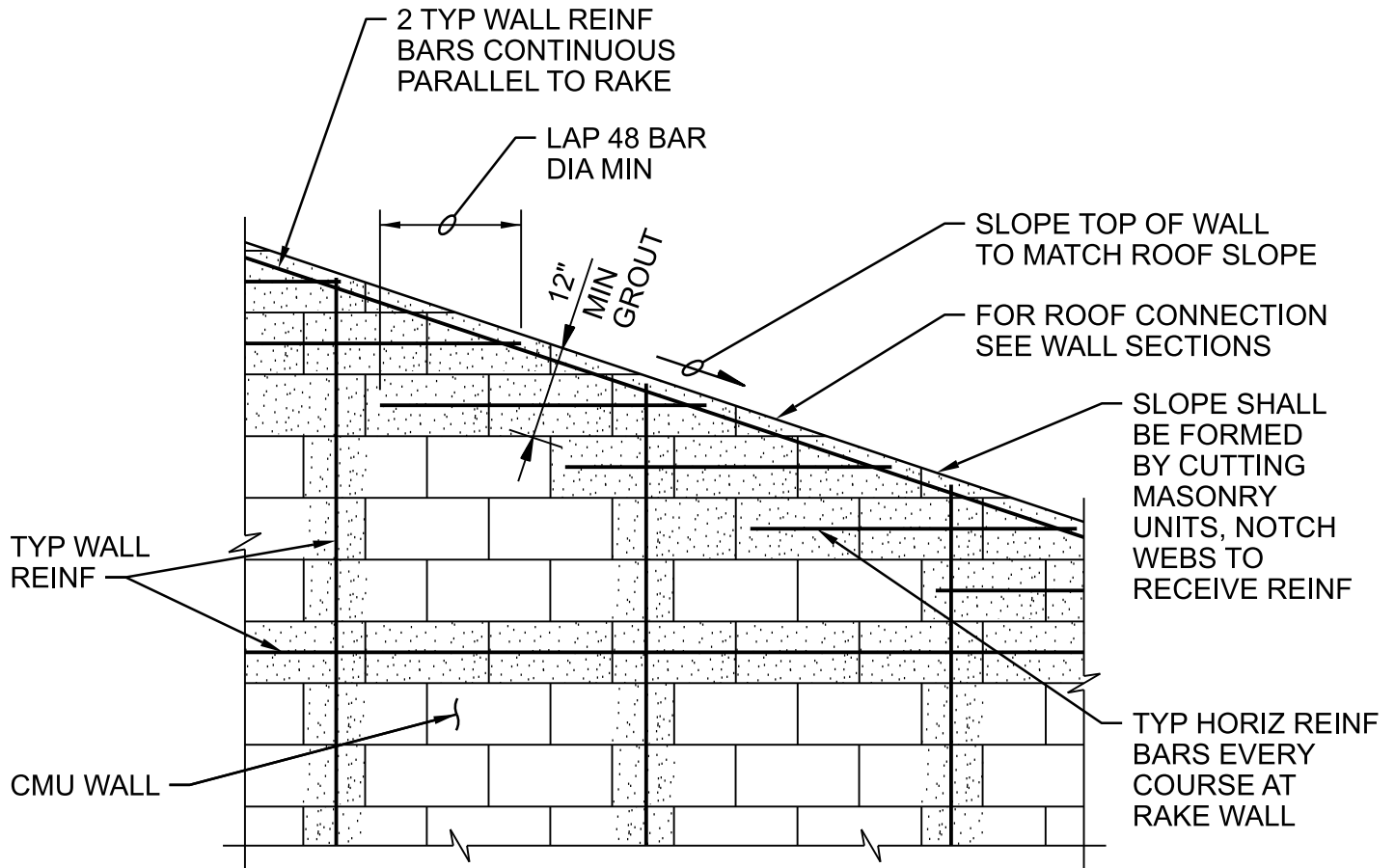
FOR MASONRY CONTROL JOINT LOCATIONS SEE PLANS.

CMU CONTROL JOINT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0422-031



NOTE:

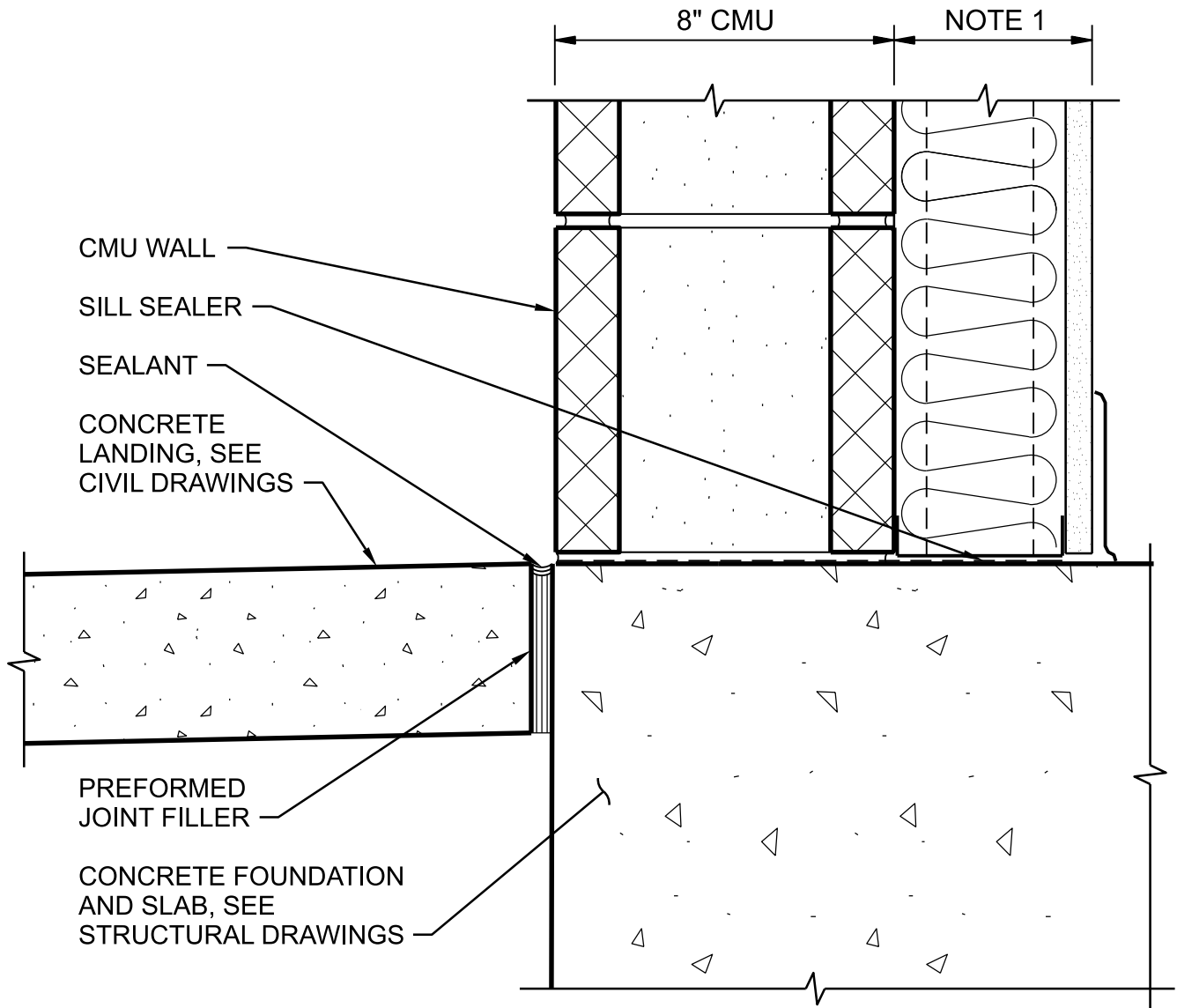
GROUT MINIMUM 12" AT TOP OF WALL.

CMU WALL AT RAKE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0422-041



NOTES:

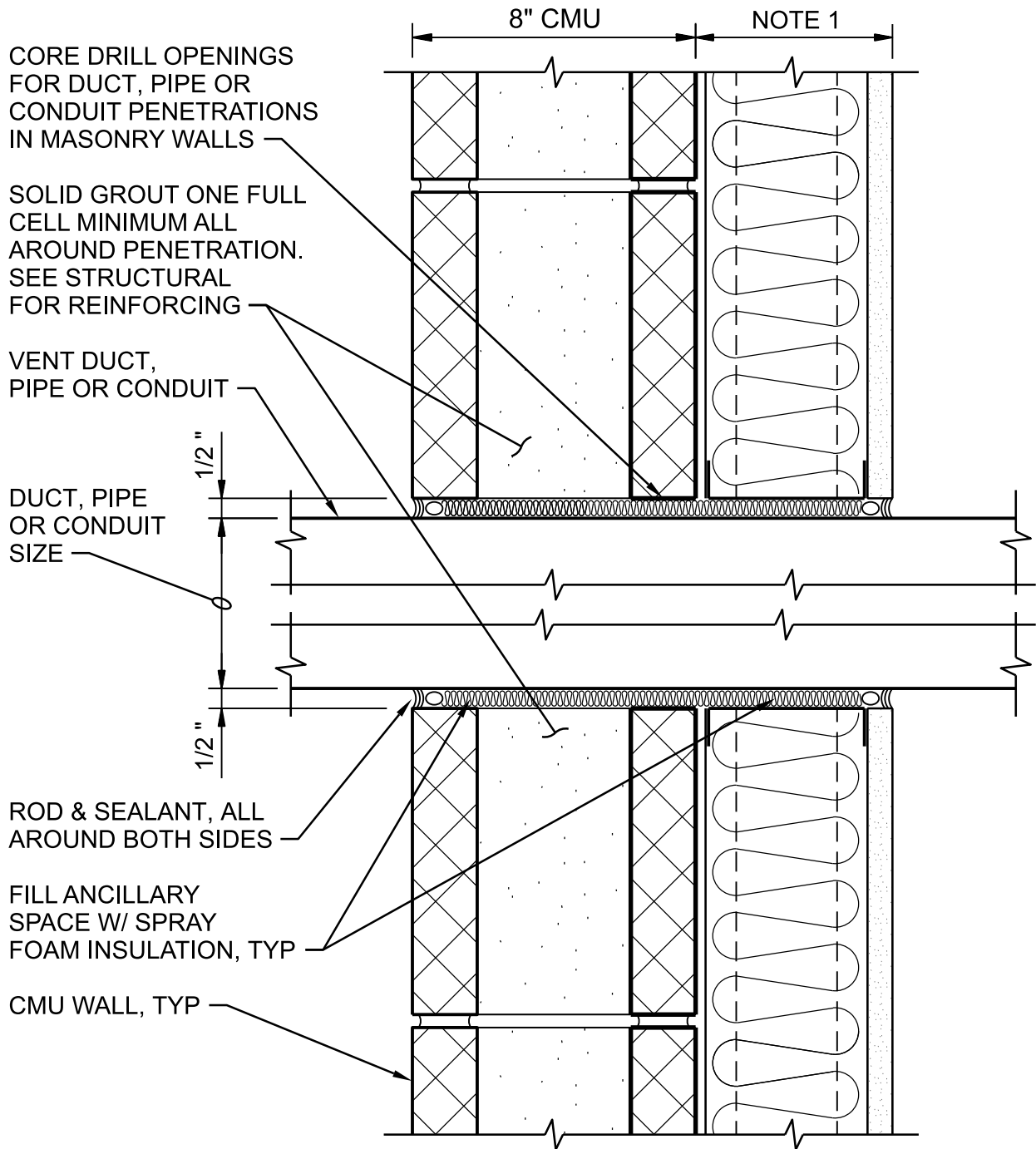
- 1. METAL STUD FRAMING, GWB AND RUBBER BASE WHERE OCCURS, SEE WALL TYPES.

BASE OF WALL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0422-102



NOTES:

- 1. METAL STUD FRAMING AND GWB WHERE OCCURS, SEE WALL TYPES.

PIPE / DUCT PENETRATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0422-105

EXISTING RIGID INSULATION, CUT
IN CLEAN FASHION TO PREVENT
DAMAGE TO SURFACES THAT
WILL REMAIN AND TO FACILITATE
THE INSTALLATION OF NEW WORK

EXISTING AIR SPACE, ADD
MORTAR NET AROUND OPENING

LEDGER, SEE STRUCTURAL
DRAWINGS, TYP

1/4" DIA x 1 1/2" SST
SELF-TAPPING
MASONRY SCREWS
WITH SST WASHER
AT 6" OC MAX, TYP

PREFINISHED
GALVANIZED SHEET
METAL FLASHING, FIT
TIGHT AROUND DUCT
OR MECHANICAL
EQUIPMENT, TYP

WEEP VENTS AT 24" OC

COORDINATE MASONRY
OPENING DIMENSION
WITH SPECIFIED
EQUIPMENT

3"
CLR, TYP
PROCESS
EQUIPMENT

FLASHING
AT PROCESS
EQUIPMENT SET
IN SEALANT, TYP

SPRAY-FOAM INSULATION

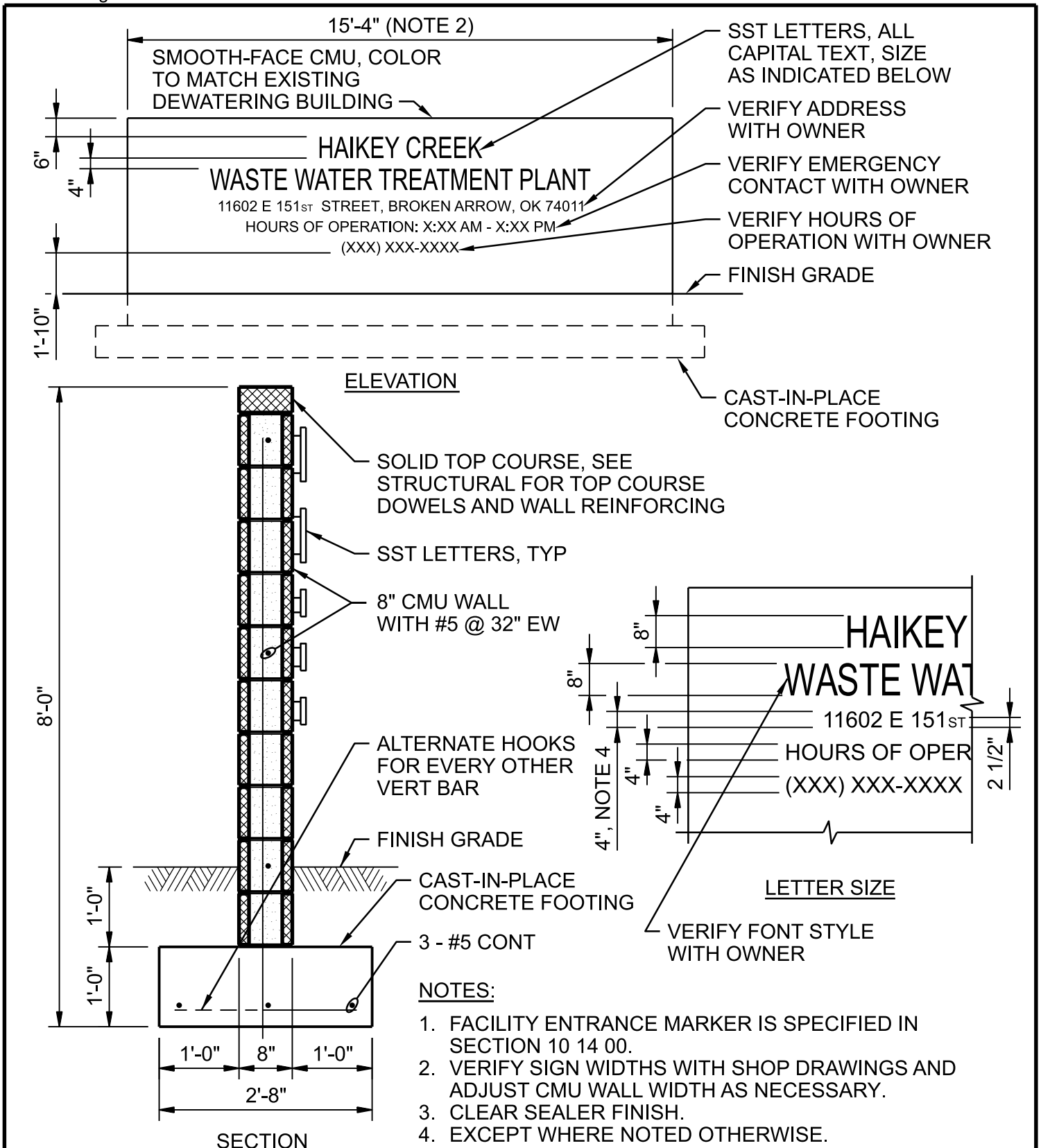
EXISTING
CMU VENEER

WALL PENETRATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0422-106

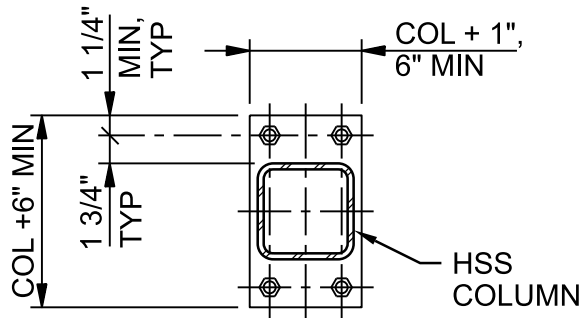


FACILITY ENTRANCE MARKER

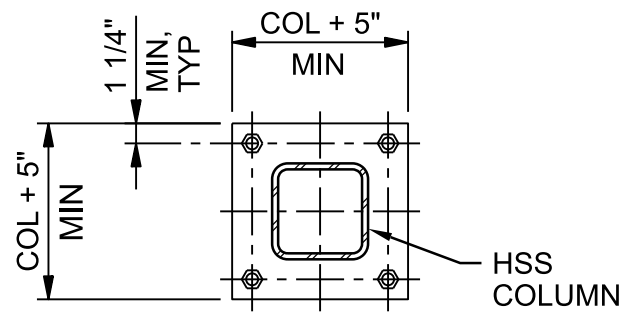
NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

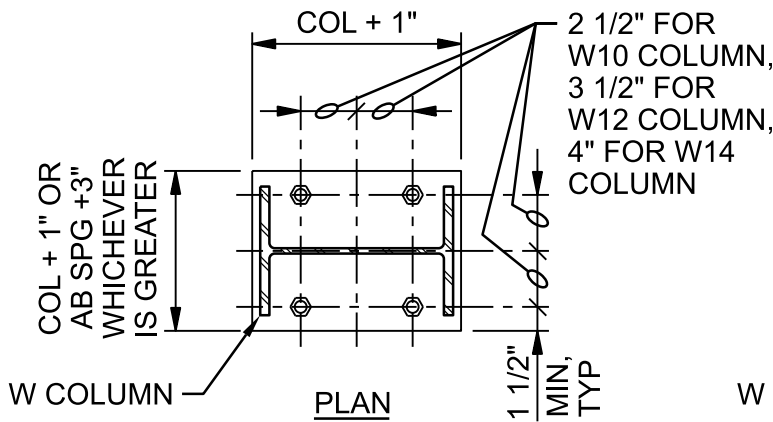
0422-201



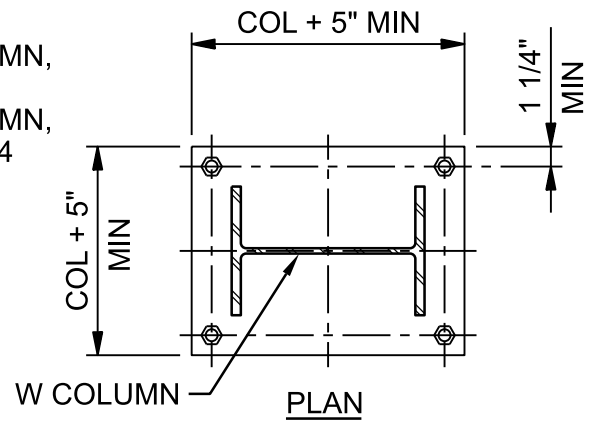
PLAN



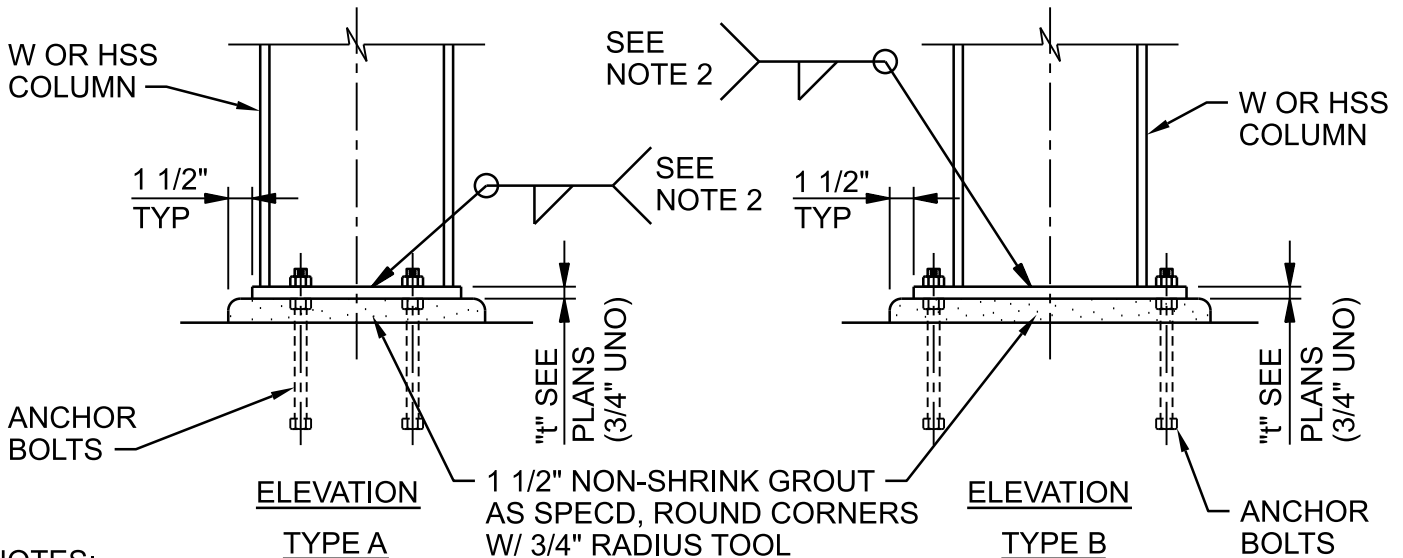
PLAN



PLAN



PLAN



ELEVATION

TYPE A

ELEVATION

TYPE B

NOTES:

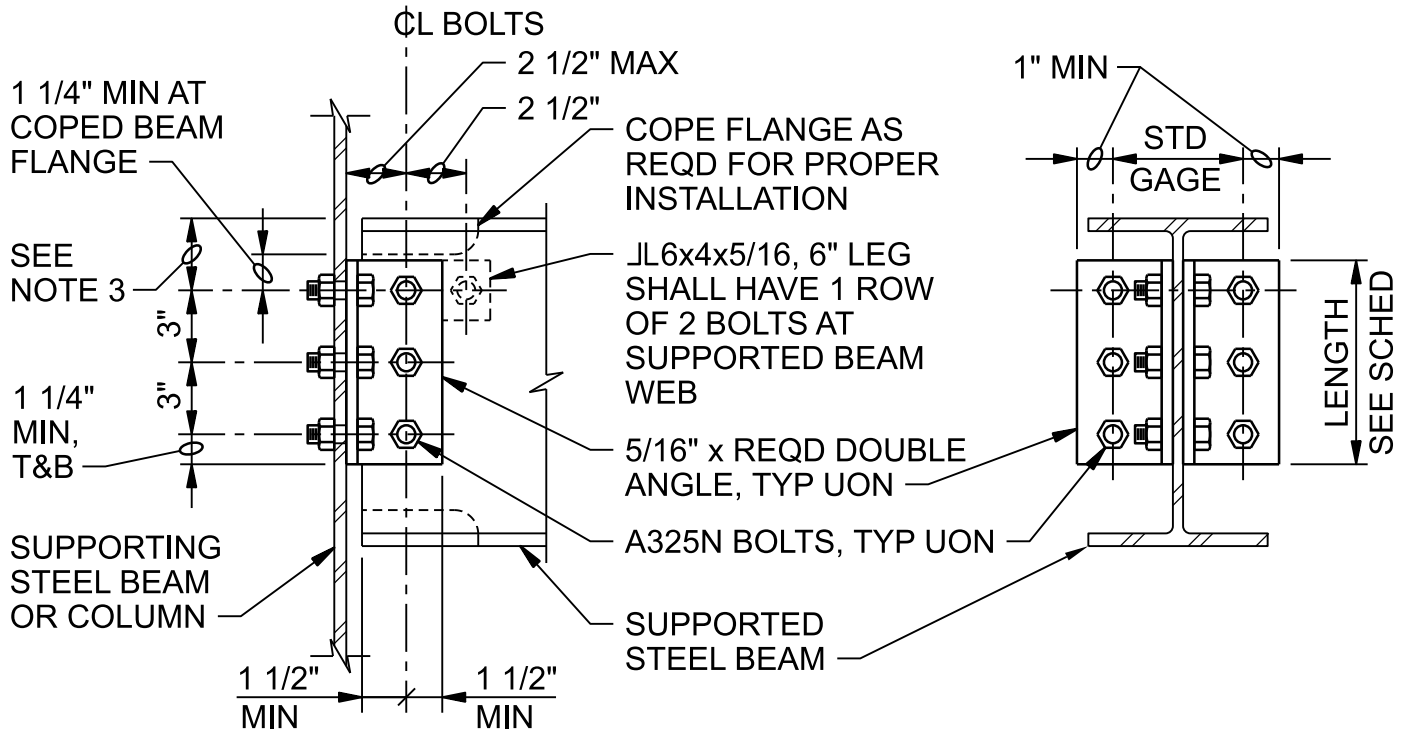
- UNLESS OTHERWISE NOTED, ANCHOR BOLTS SHALL BE 3/4" DIA x REQUIRED WITH LEVELING NUTS AND 1'-0" MINIMUM EMBED AND BASEPLATES SHALL BE CENTERED ON COLUMN.
- WELD SIZE SHALL BE DETERMINED BY THE THICKEST MEMBER JOINED; MINIMUM WELD SIZE SHALL BE 3/16" FILLET FOR MATERIAL THICKNESSES UP TO AND INCLUDING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

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0512-001



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"	JL 6"x4"x5/16"
4	1	3/4"	0'-2 1/2"	JL 6"x4"x5/16"

NOTES:

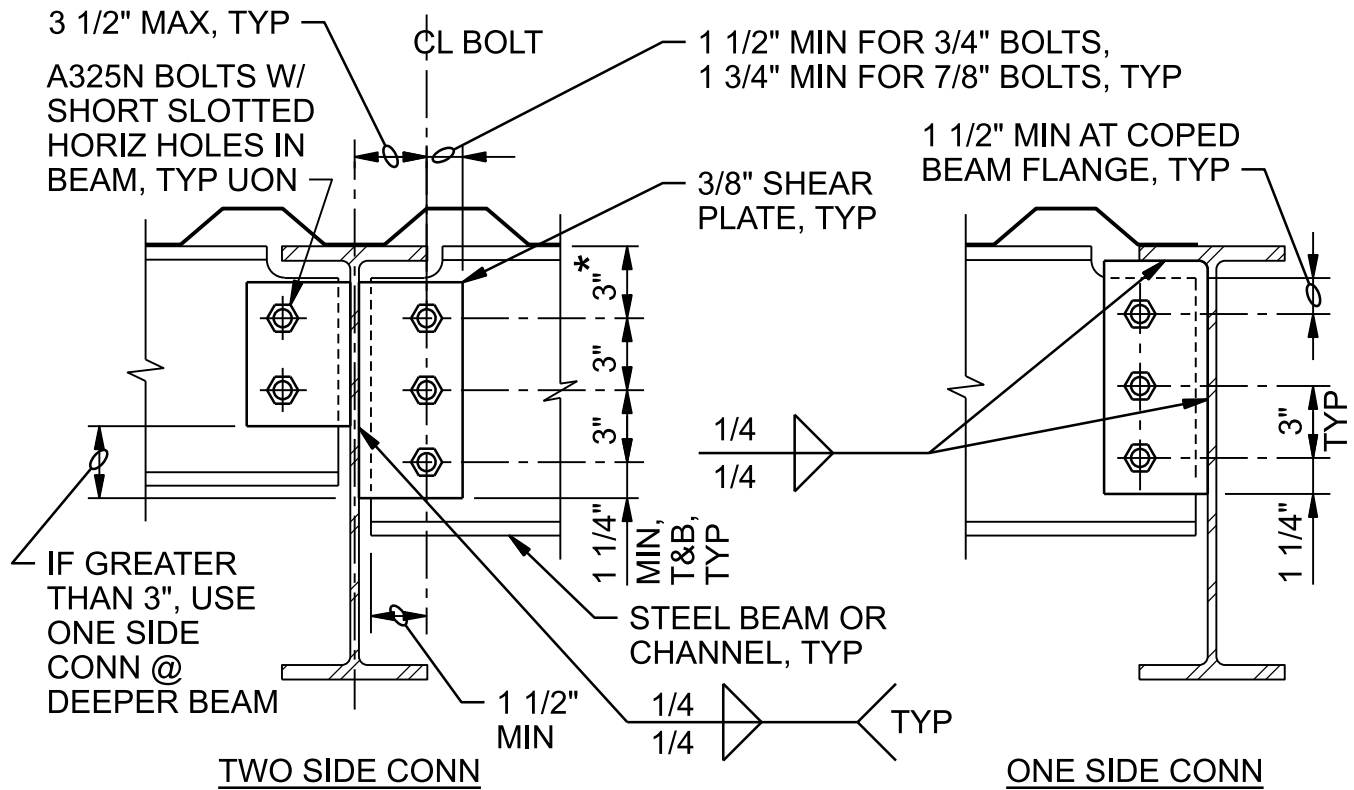
1. ALL BEAM FRAMING CONNECTIONS SHALL CONFORM TO THIS DETAIL UNLESS SPECIFICALLY NOTED OTHERWISE OR APPROVED IN WRITING BY THE ENGINEER.
2. PROVIDE ADDITIONAL 1 1/2" LENGTH TO DOUBLE ANGLE FOR STAGGERED BOLT CONNECTIONS WHEN REQUIRED OR USED.
3. DIMENSION SHALL BE 3" UNLESS OTHERWISE REQUIRED FOR PROPER FABRICATION.

TYPICAL BEAM CONNECTION - STEEL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0512-020



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:

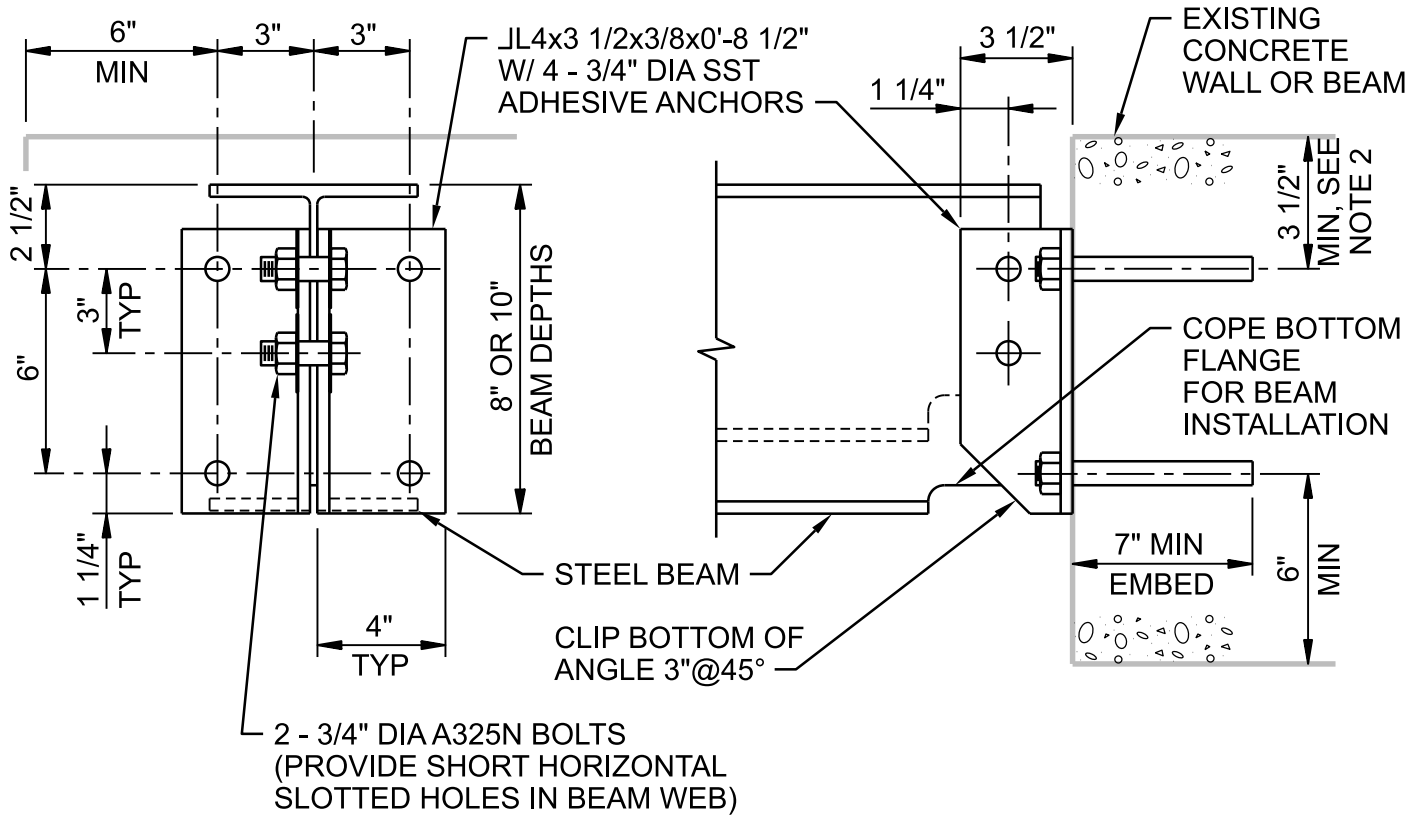
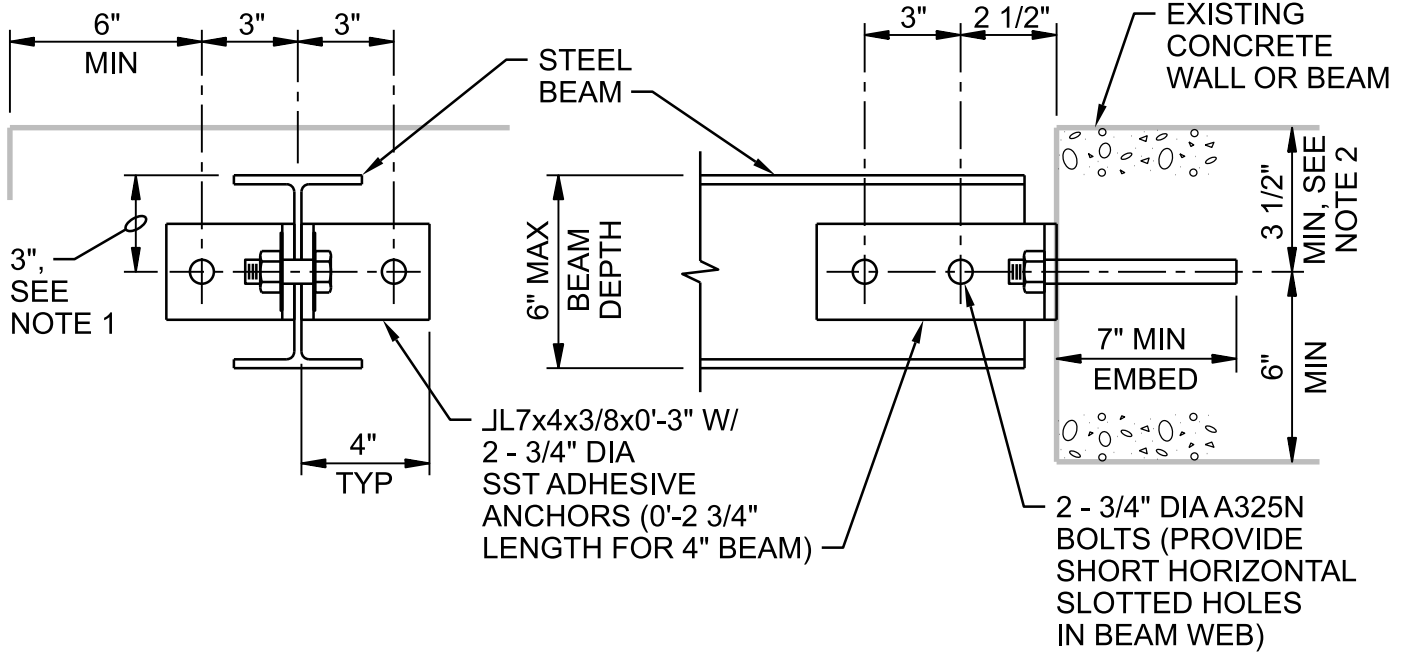
1. THIS DETAIL APPLIES ONLY WHERE SPECIFICALLY SHOWN ON DRAWINGS.
2. (*) DIMENSION SHALL BE 3" UNLESS OTHERWISE REQUIRED FOR PROPER FABRICATION.

BEAM SINGLE PLATE SHEAR CONNECTION - STEEL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0512-022



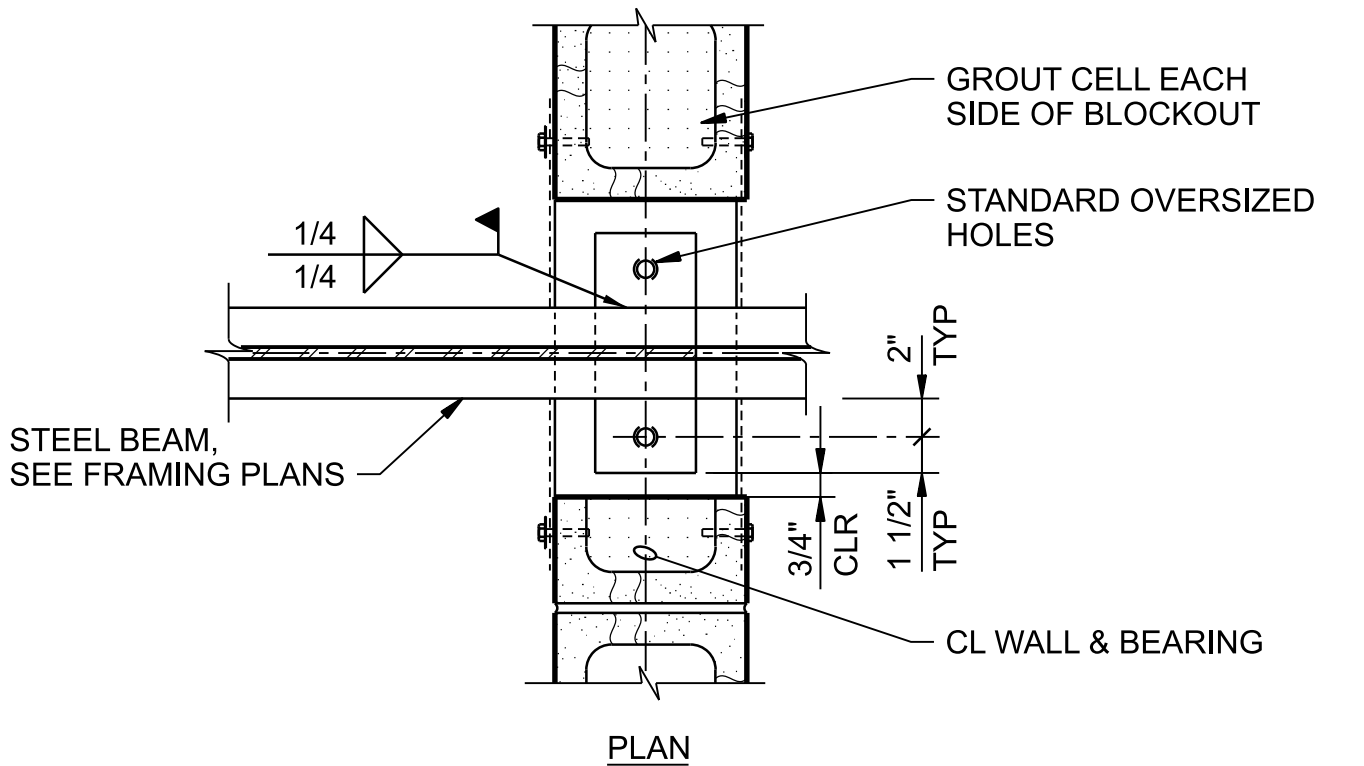
BEAM / WALL CONNECTION - STEEL

NTS

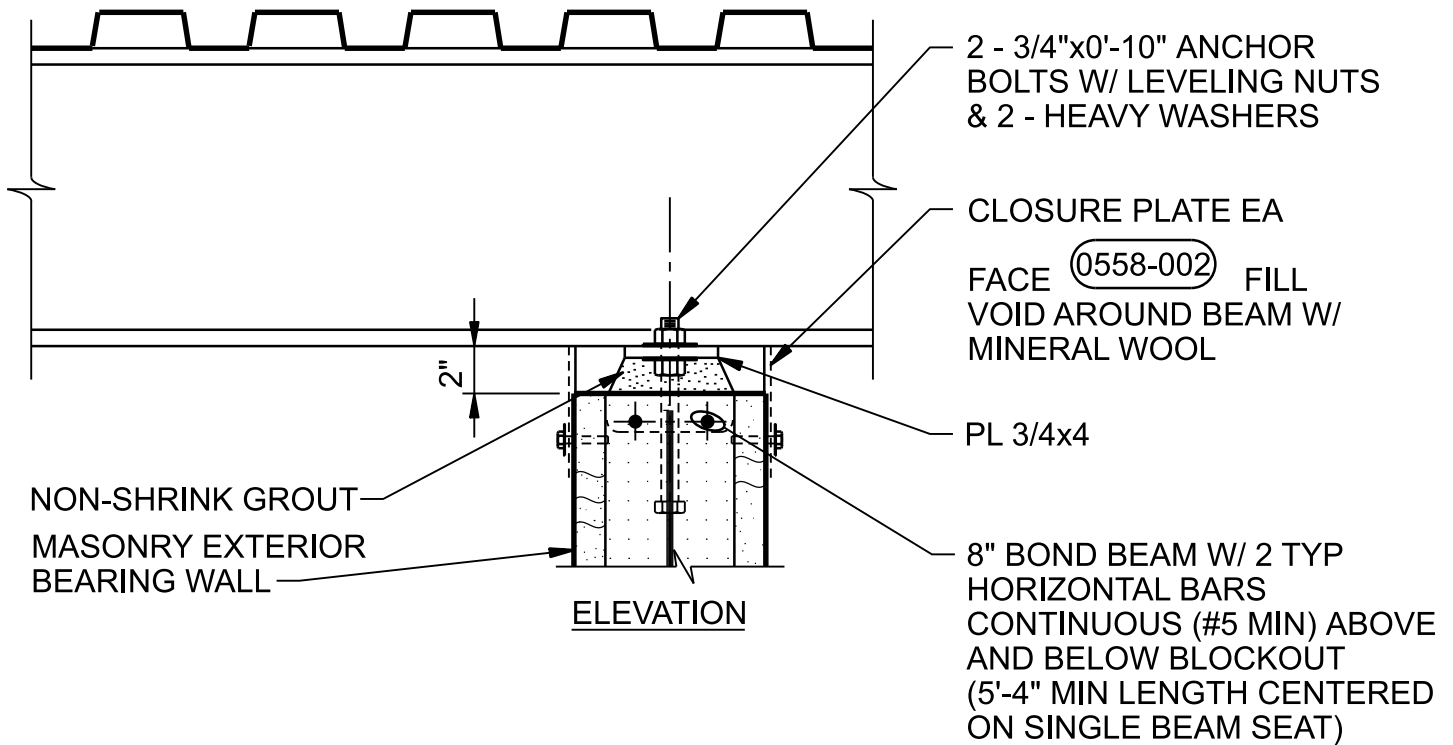
DETAIL 1 OF 2

0512-056

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



PLAN



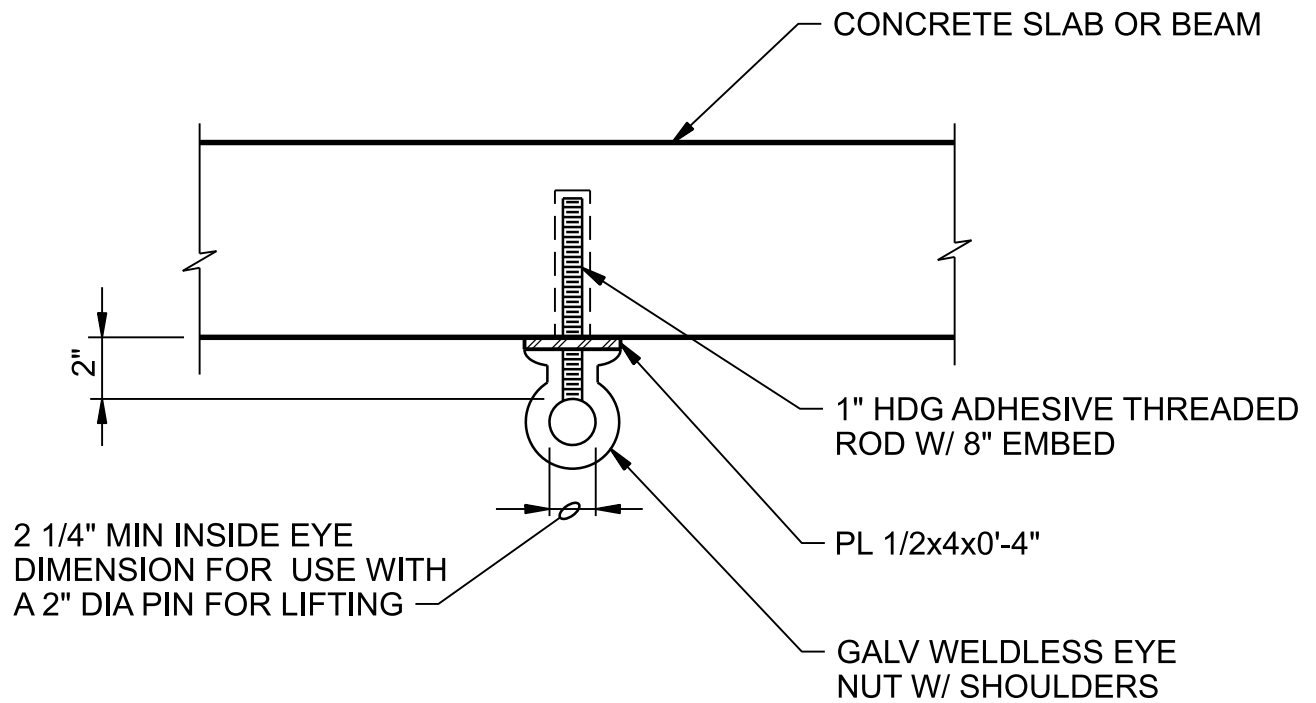
ELEVATION

BEAM SEAT/EXTERIOR WALL - STEEL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0512-067

**NOTES:**

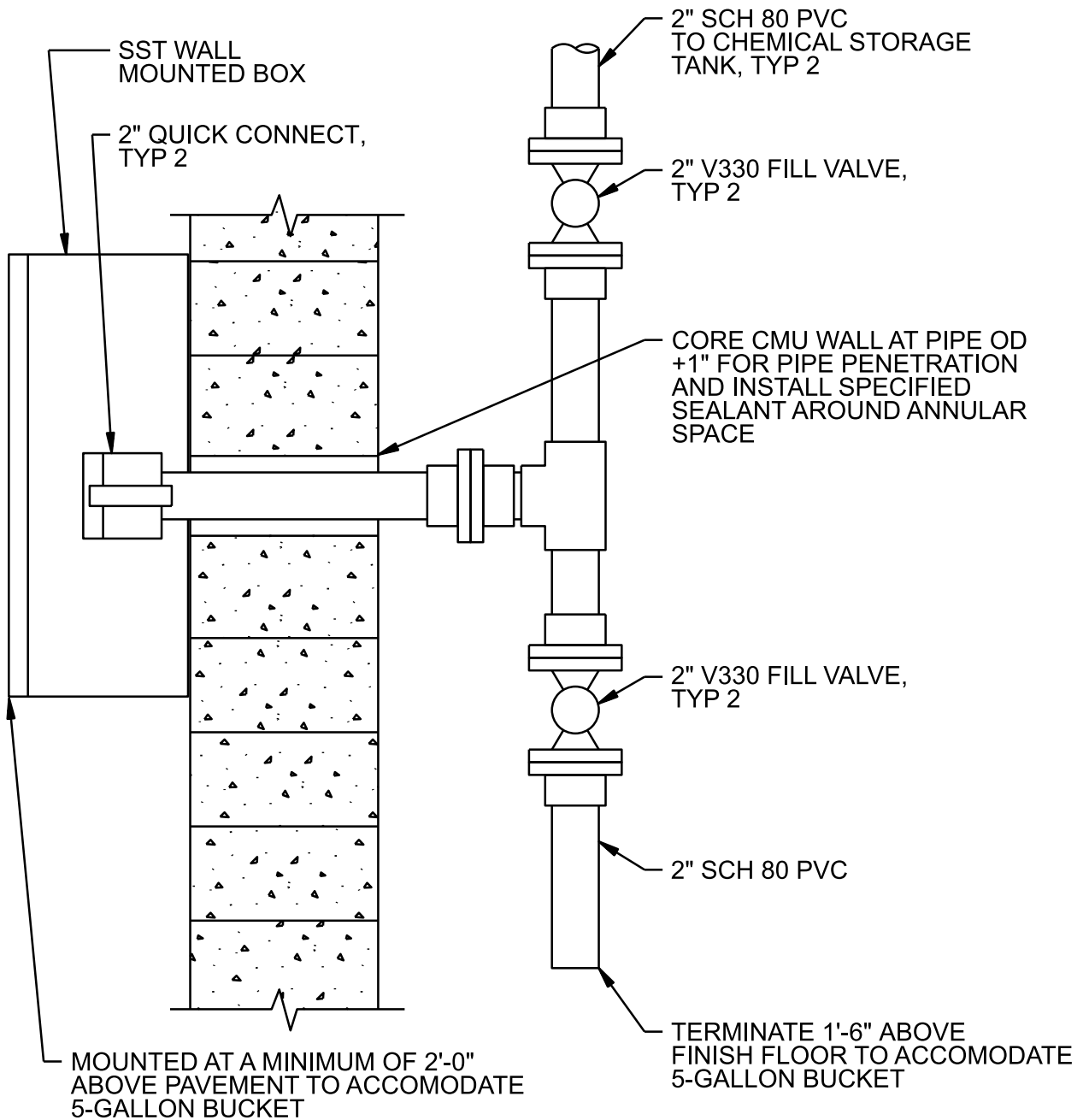
1. MAXIMUM LOAD RATING FOR LIFTING EYE 1000 LBS.
2. SUBMIT DATA ON EYE BOLT WITH SHOP DRAWINGS.

LIFTING EYE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0512-121

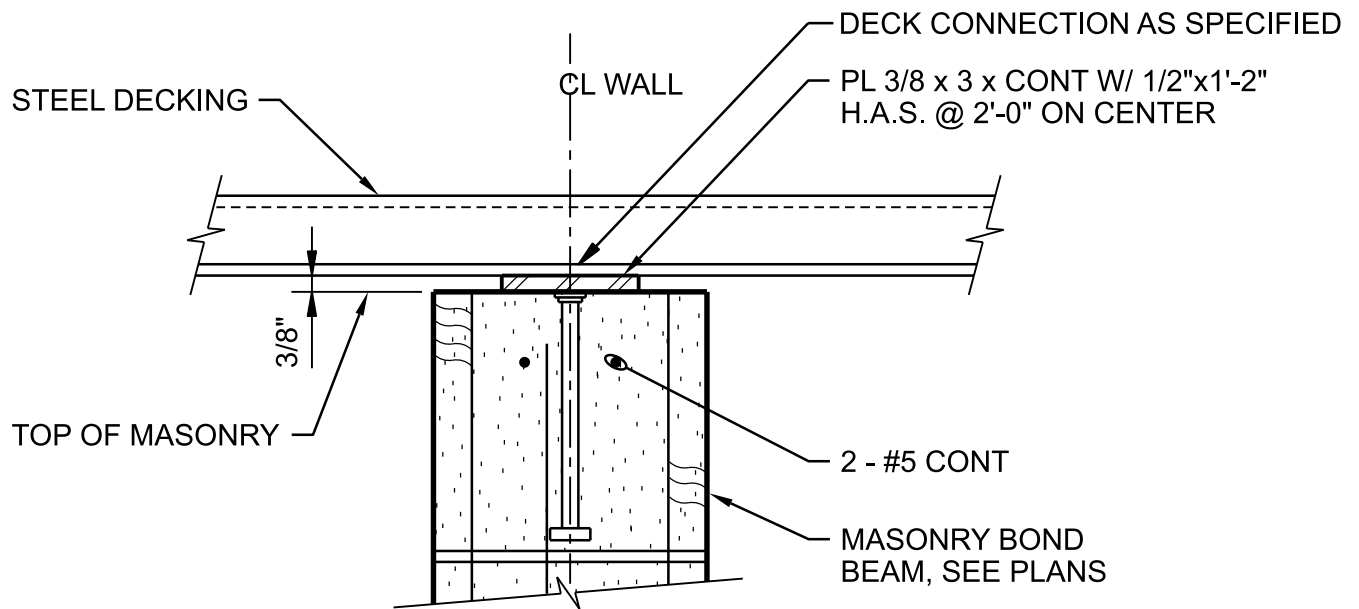


POLYMER FILL STATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

0513-004

**NOTE:**

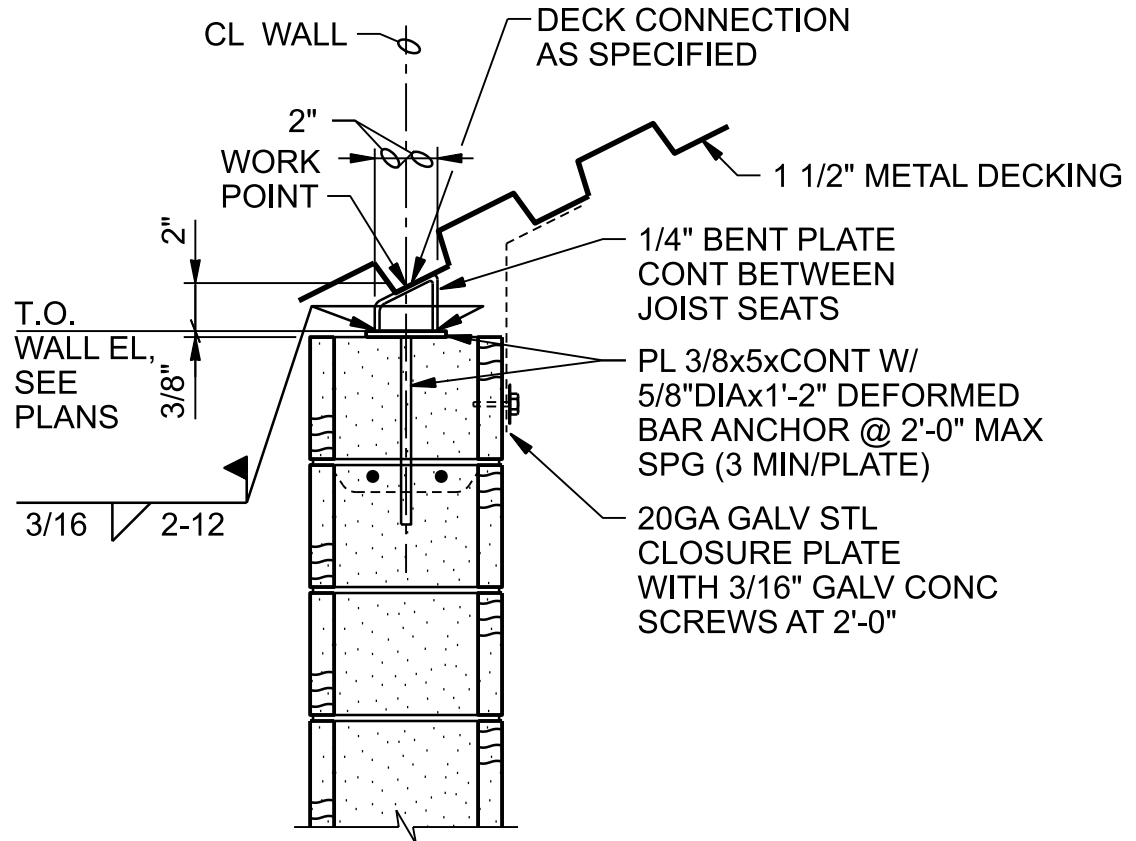
WHERE DECKING SPAN IS PARALLEL TO WALL, LOCATE VALLEY OF DECKING CENTERED ON WALL.

METAL DECK BEARING WALL TOP CONNECTION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0531-002



METAL DECK/WALL CONNECTION

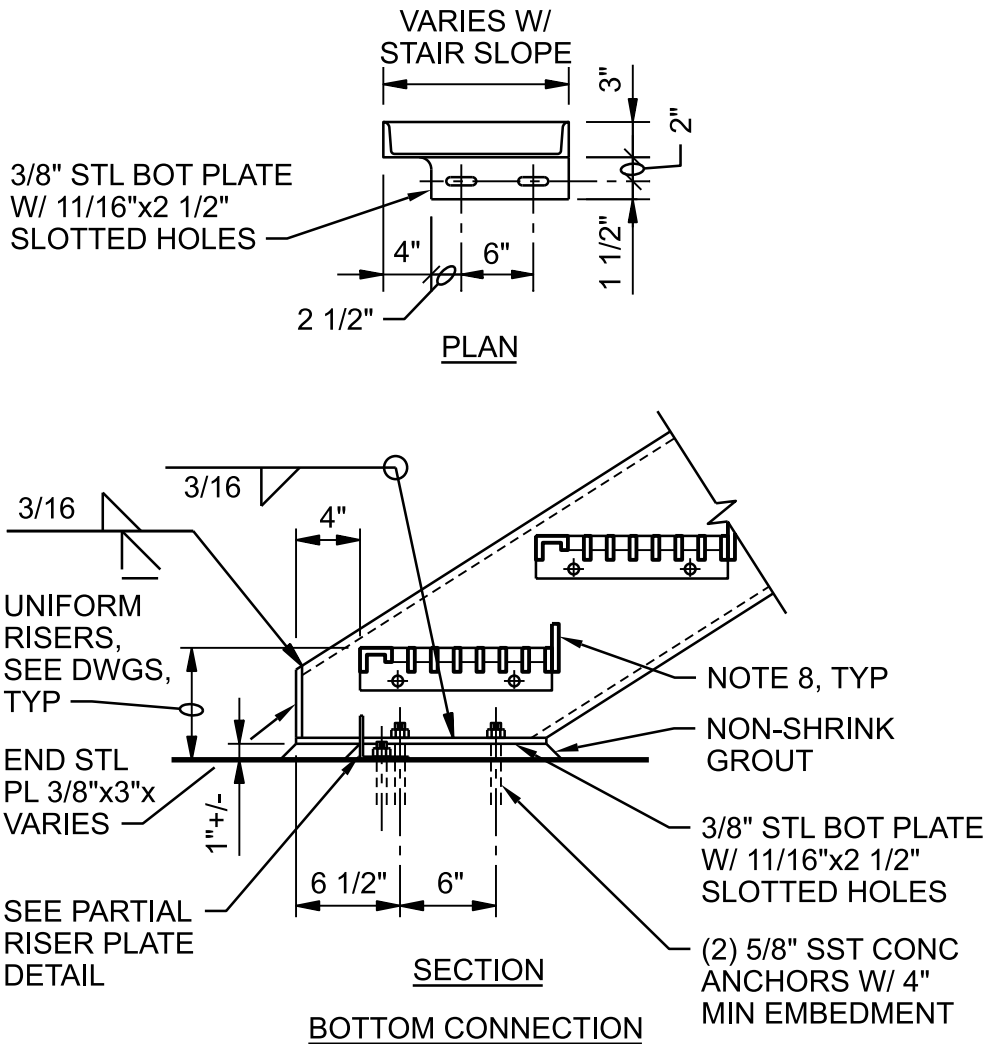
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0531-003

NOTES:

1. PROVIDE PROTECTION FOR DISSIMILAR METALS AND FOR STEEL IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
2. AMERICAN STANDARD C12x20.7 STEEL STRINGERS TYPICAL EXCEPT WHERE OTHERWISE NOTED ON PLANS.
3. ALUMINUM GRATING TREADS UNLESS OTHERWISE NOTED ON PLANS. PROVIDE DISSIMILAR METAL PROTECTION AS SPECIFIED.
4. STAIR RAILING NOT SHOWN.
5. STAIR MANUFACTURER TO COORDINATE BOLTED TREADS AND RAILING CONNECTIONS.
6. FIELD VERIFY DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION.
7. HOT DIP GALVANIZE ALL MEMBERS AND FASTENERS AFTER FABRICATION.
8. 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.



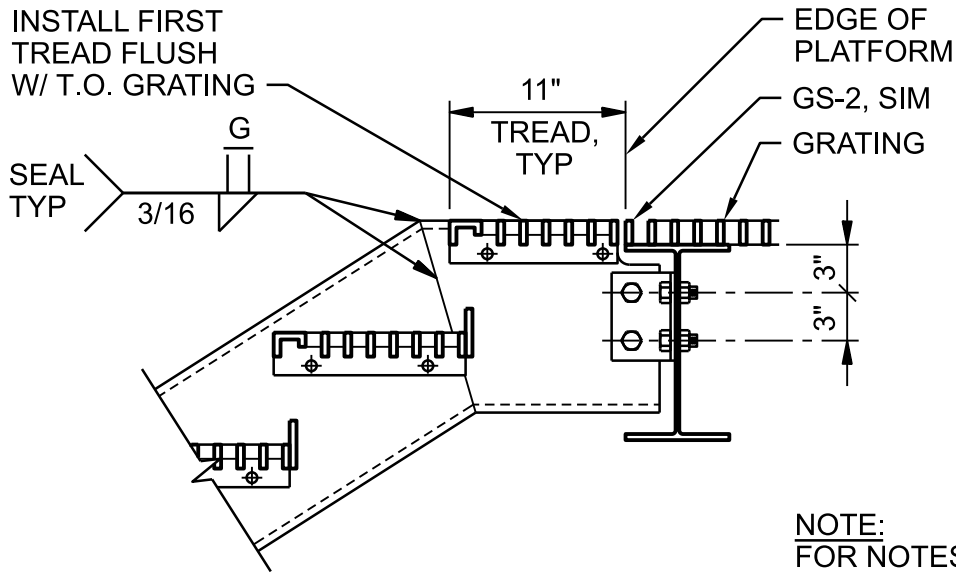
STAIR DETAILS - STEEL

NTS

DETAIL 1 OF 5

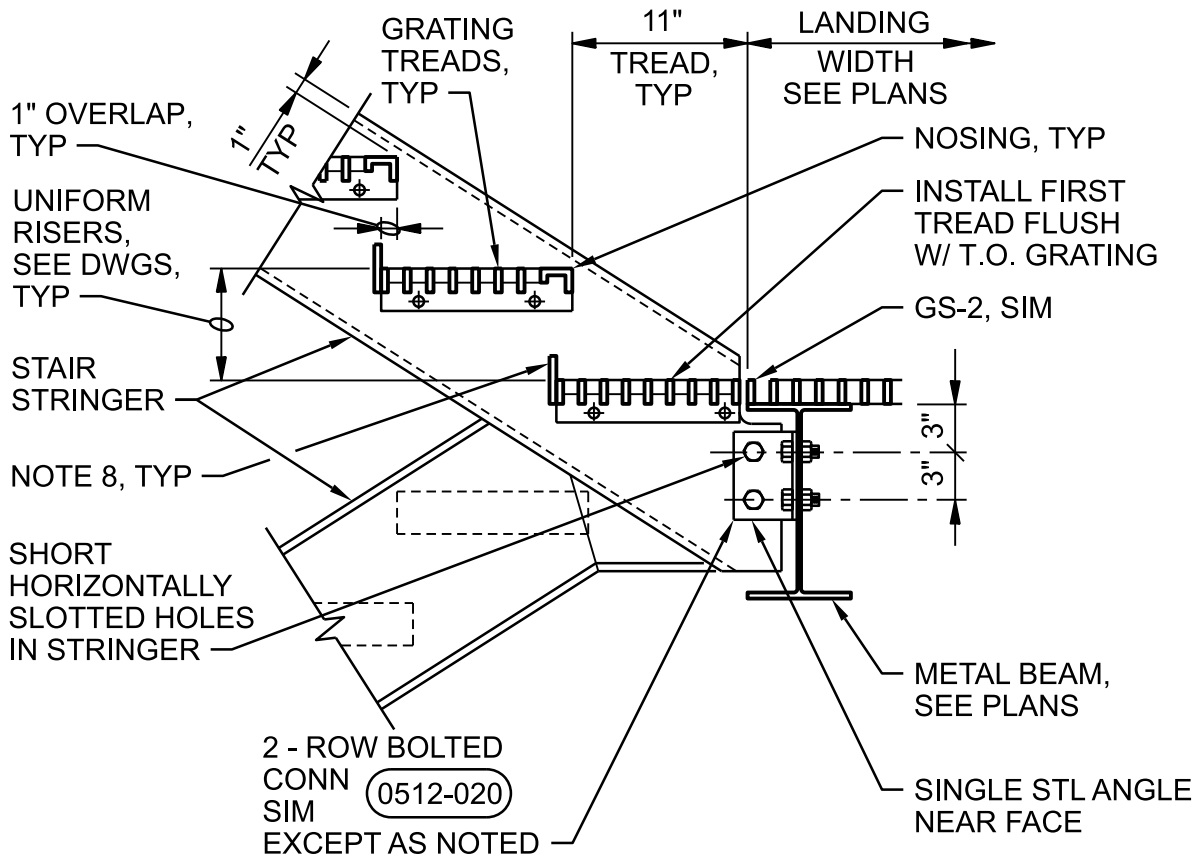
0551-041

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT



NOTE:
FOR NOTES NOT SHOWN
SEE LANDING CONNECTION.

TOP CONNECTION - STEEL



LANDING CONNECTION - STEEL

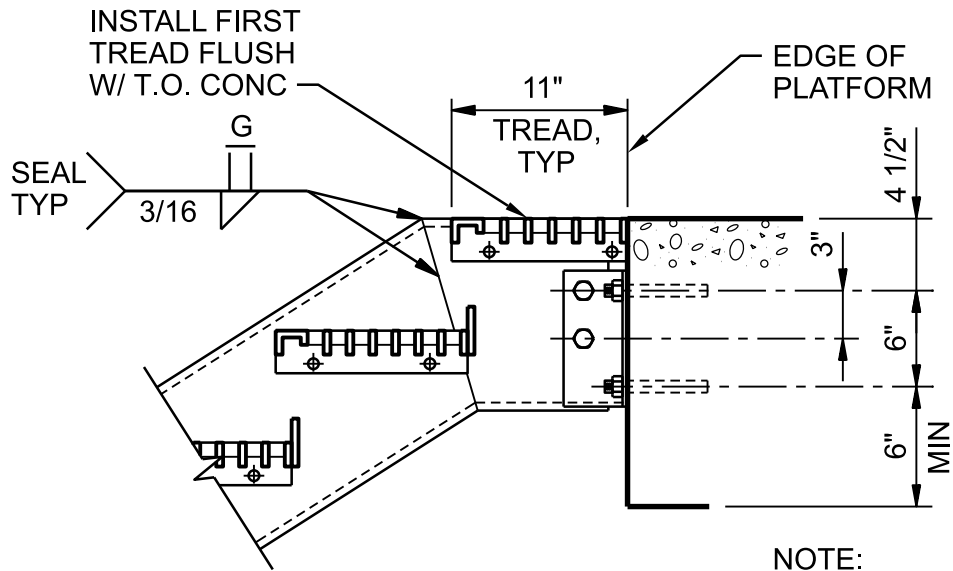
STAIR DETAILS - STEEL

NTS

DETAIL 2 OF 5

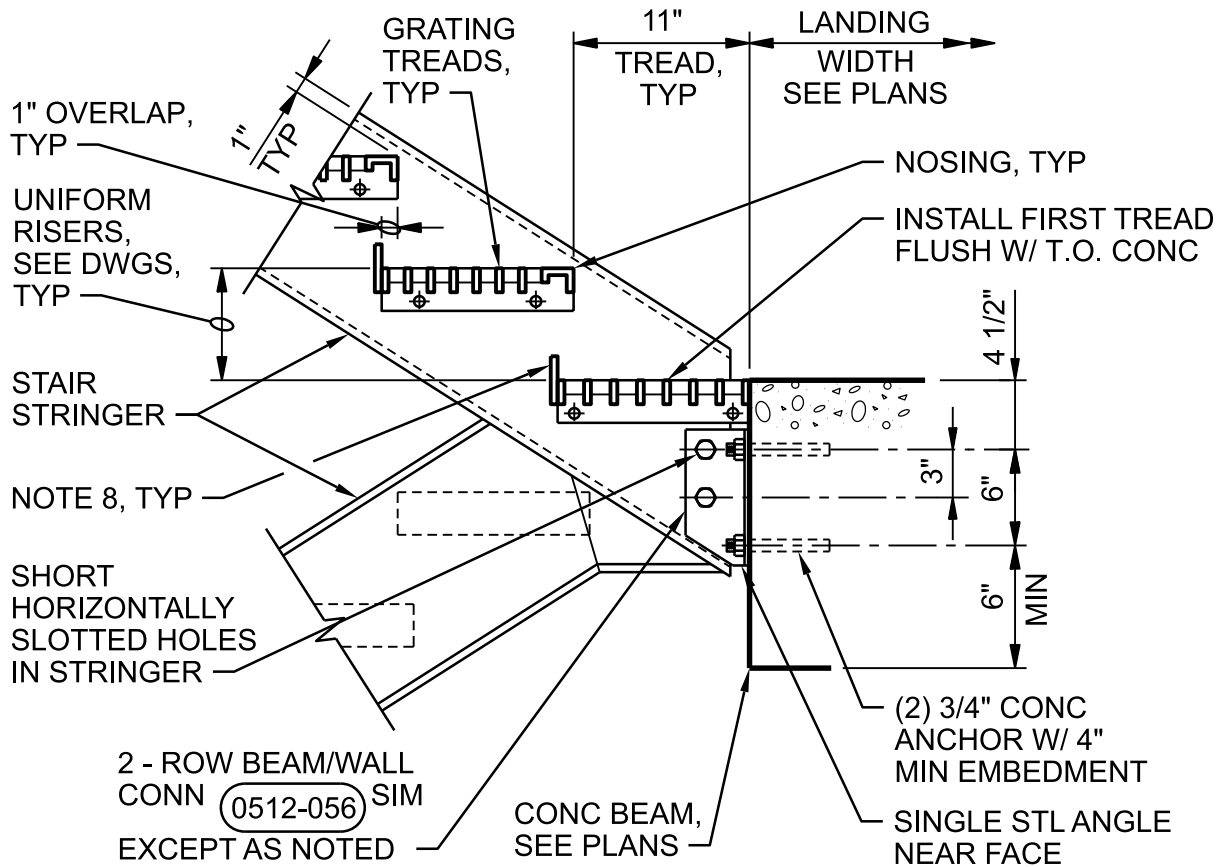
0551-041

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



TOP CONNECTION - CONCRETE

NOTE:
FOR NOTES NOT SHOWN
SEE LANDING CONNECTION.



LANDING CONNECTION - CONCRETE

STAIR DETAILS - STEEL

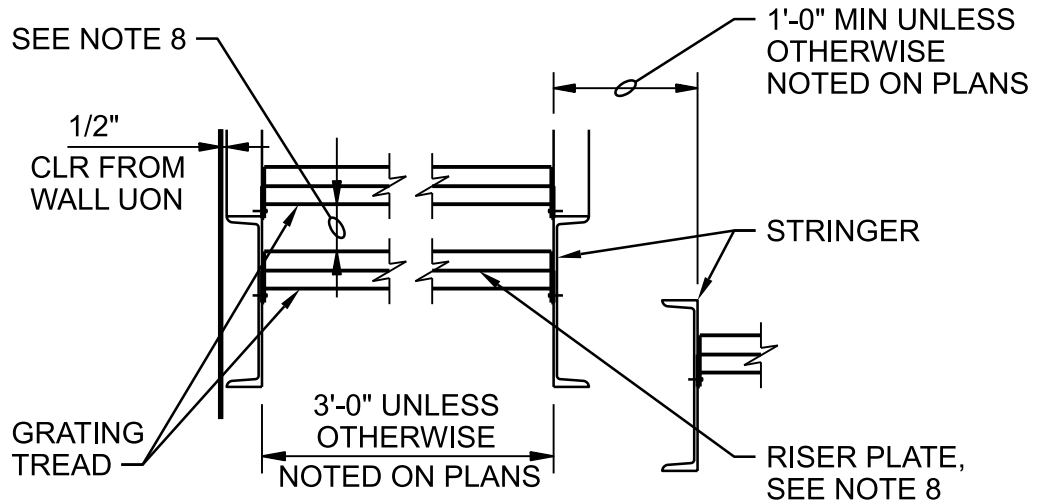
NTS

DETAIL 3 OF 5

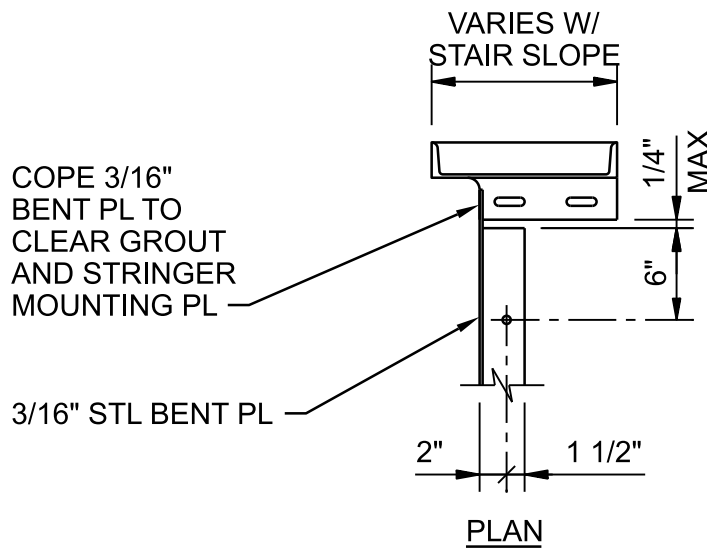
0551-041

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

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

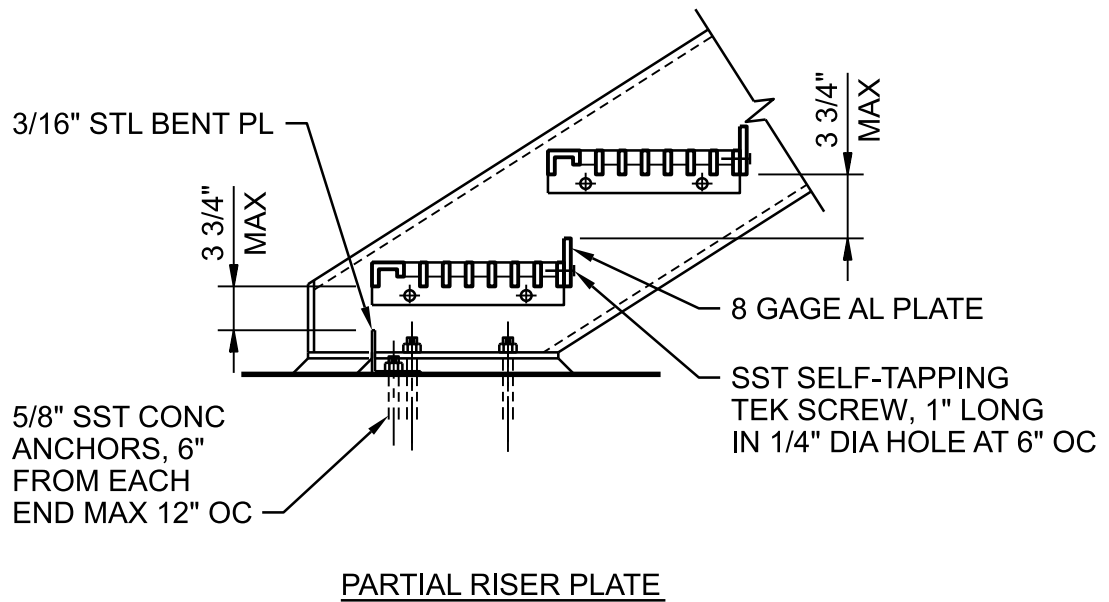
STAIR DETAILS - STEEL

NTS

DETAIL 4 OF 5

0551-041

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT



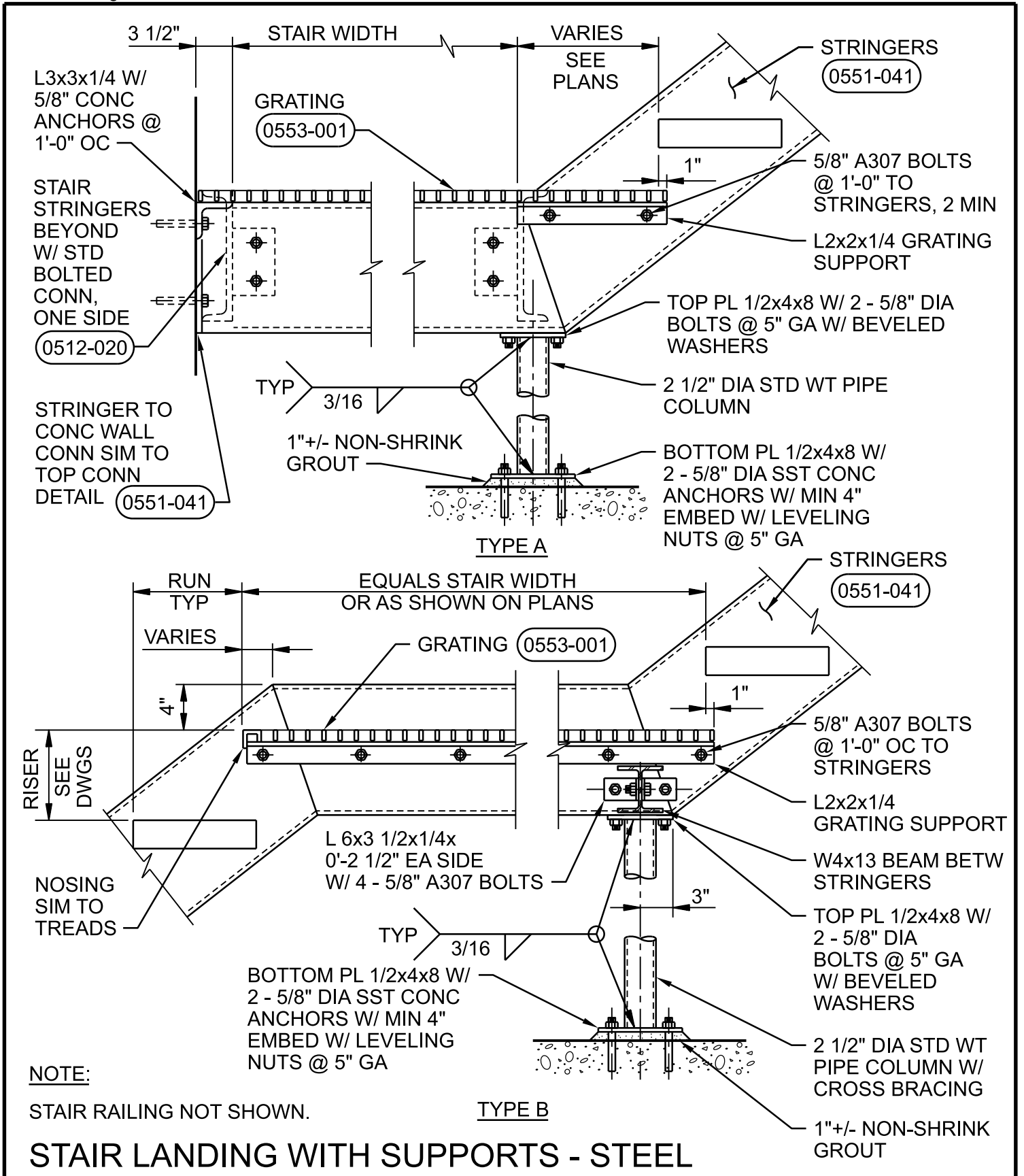
STAIR DETAILS - STEEL

NTS

DETAIL 5 OF 5

0551-041

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



NOTE:

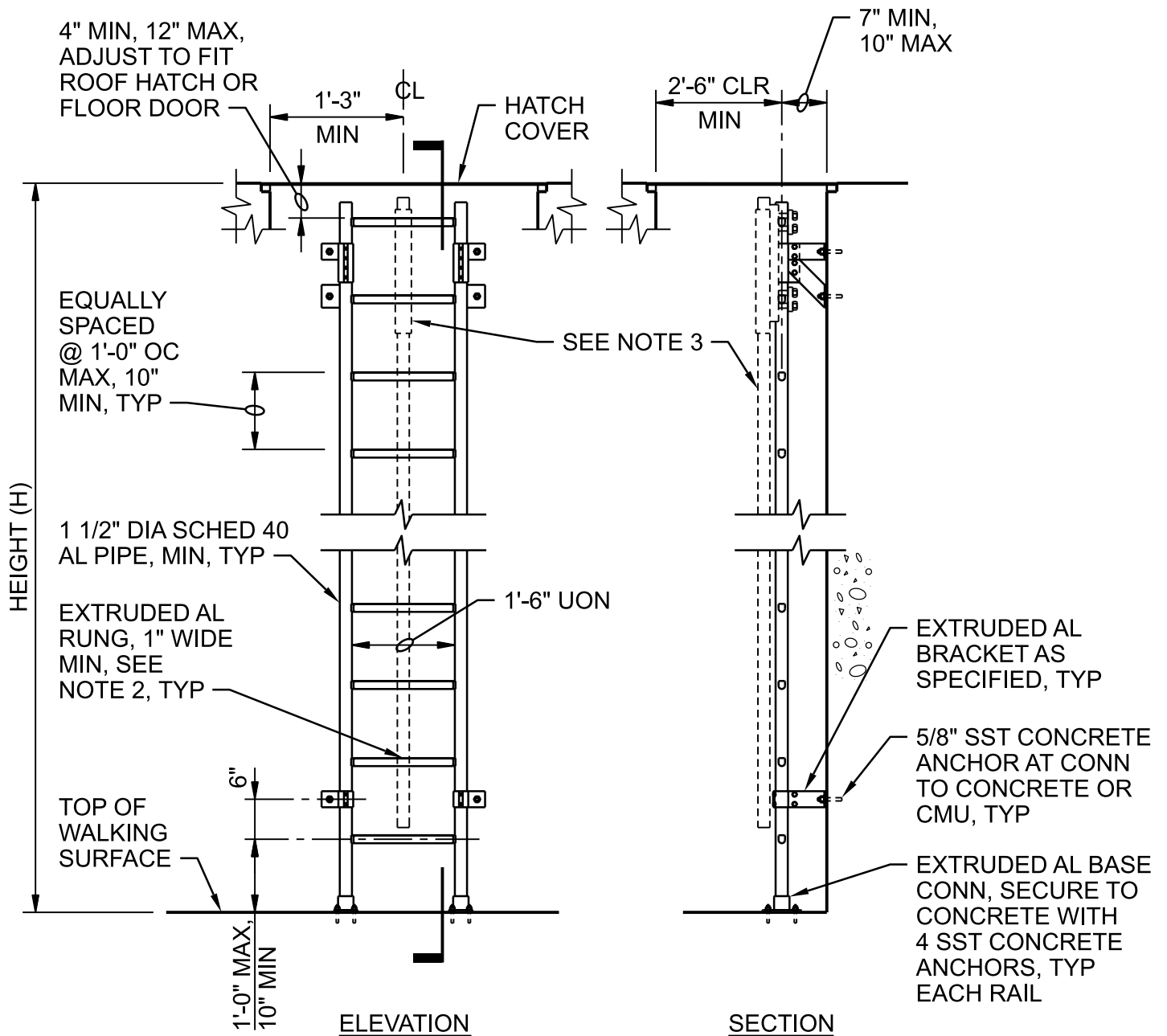
STAIR RAILING NOT SHOWN.

STAIR LANDING WITH SUPPORTS - STEEL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0551-042



NOTES:

1. PROVIDE PROTECTION FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
2. PROVIDE CORRUGATED, KNURLED OR DIMPLED SURFACE ON TOP OF RUNG.
3. FOR H LESS THAN OR EQUAL TO 24'-0" PROVIDE LADDER SAFETY POST, FOR H GREATER THAN 24'-0" PROVIDE SAFETY CLIMB DEVICE WITH LADDER POST EXTENSION.

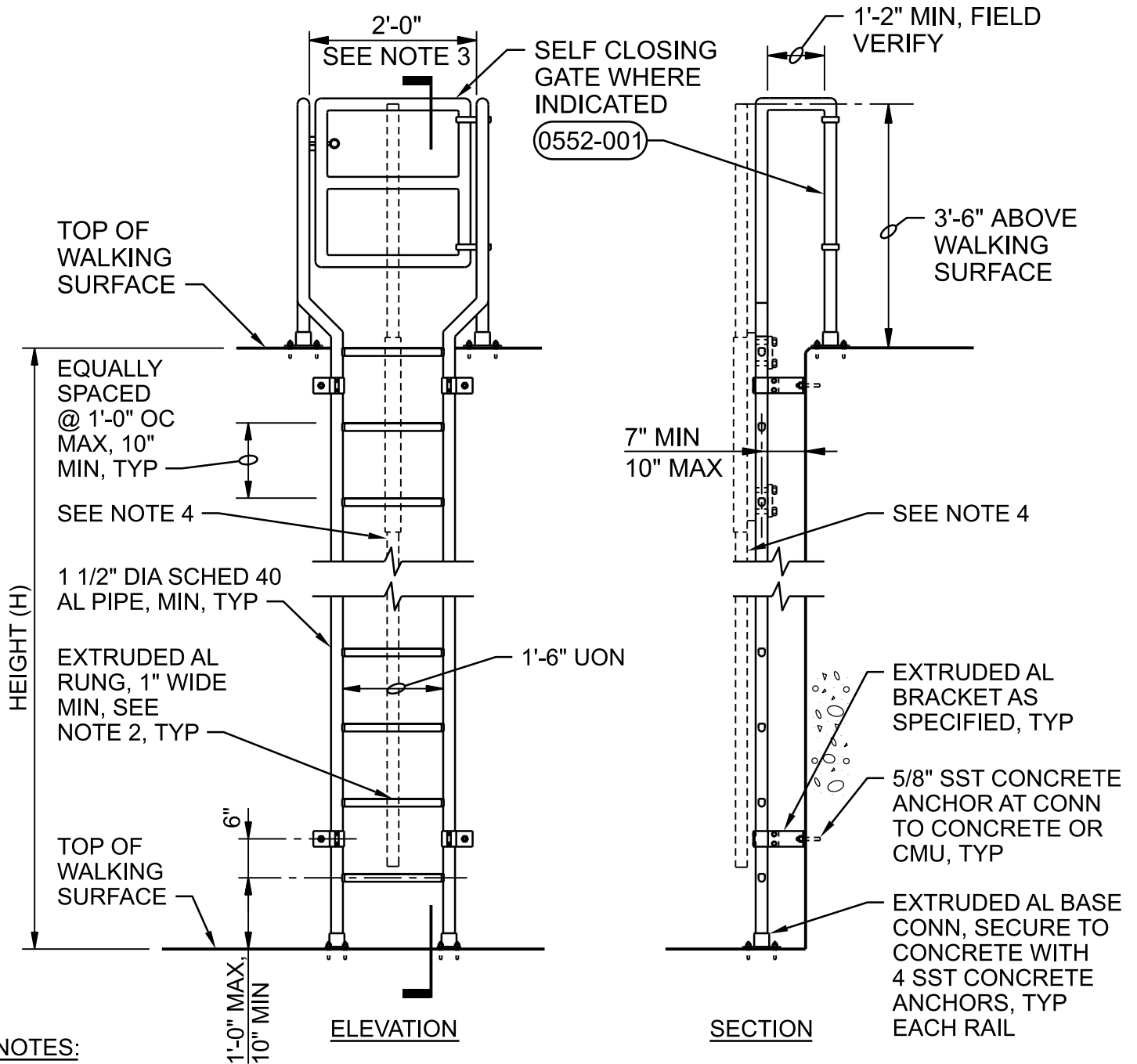
**LADDER - ALUMINUM - PRE-ENGINEERED
PIPE UNDER COVER - TYPE 'D'**

NTS

DETAIL 1 OF 2

0551-101

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



NOTES:

1. PROVIDE PROTECTION FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
2. PROVIDE CORRUGATED, KNURLED OR DIMPLED SURFACE ON TOP OF RUNG.
3. INCREASE WIDTH OF FLARE TO 2'-6" WHEN LADDER SAFETY CLIMB DEVICE IS USED.
4. FOR H GREATER THAN 24'-0" PROVIDE SAFETY CLIMB DEVICE.

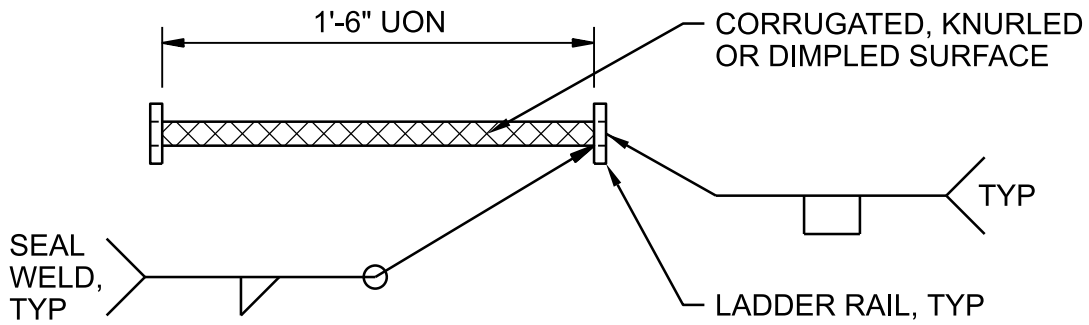
**LADDER - ALUMINUM - PRE-ENGINEERED
PIPE WITH EXTENSION TYPE 'E'**

NTS

DETAIL 2 OF 2

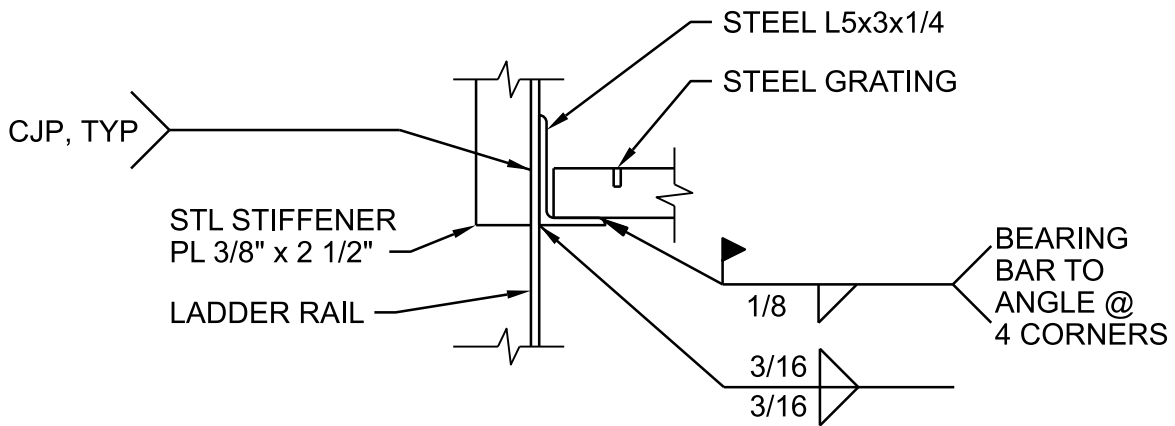
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0551-101



PLAN

RUNG DETAIL



SECTION

GRATING CONNECTION DETAIL

NOTE:

HOT DIP GALVANIZE STEEL AFTER FABRICATION, UNLESS OTHERWISE NOTED.

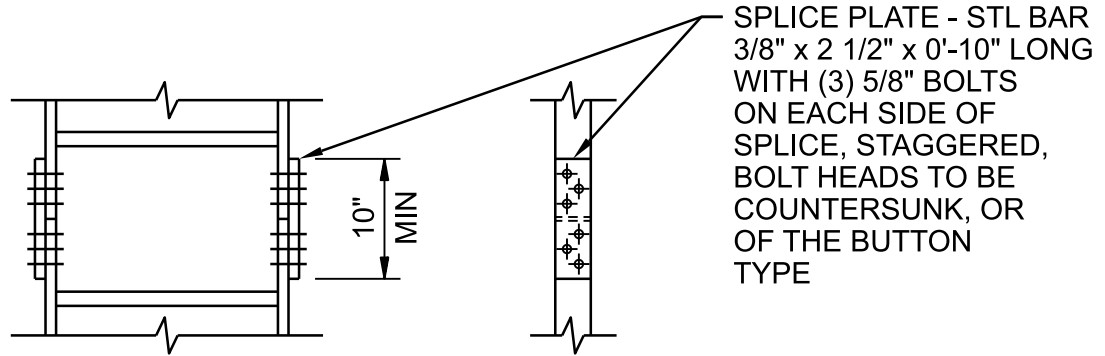
LADDER - STEEL - FLAT BAR DETAILS

NTS

DETAIL 1 OF 2

0551-141

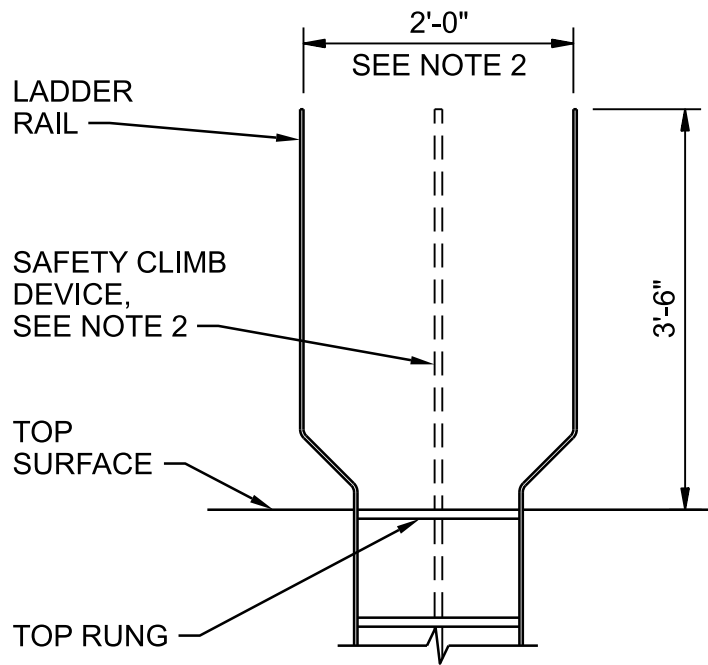
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



FRONT ELEVATION

SIDE ELEVATION

RAIL SPLICE DETAIL



ELEVATION

FLARE DETAIL

NOTES:

1. HOT DIP GALVANIZE STEEL AFTER FABRICATION, UNLESS OTHERWISE NOTED.
2. INCREASE WIDTH OF FLARE TO 2'-6" WHEN LADDER SAFETY CLIMB DEVICE IS USED.

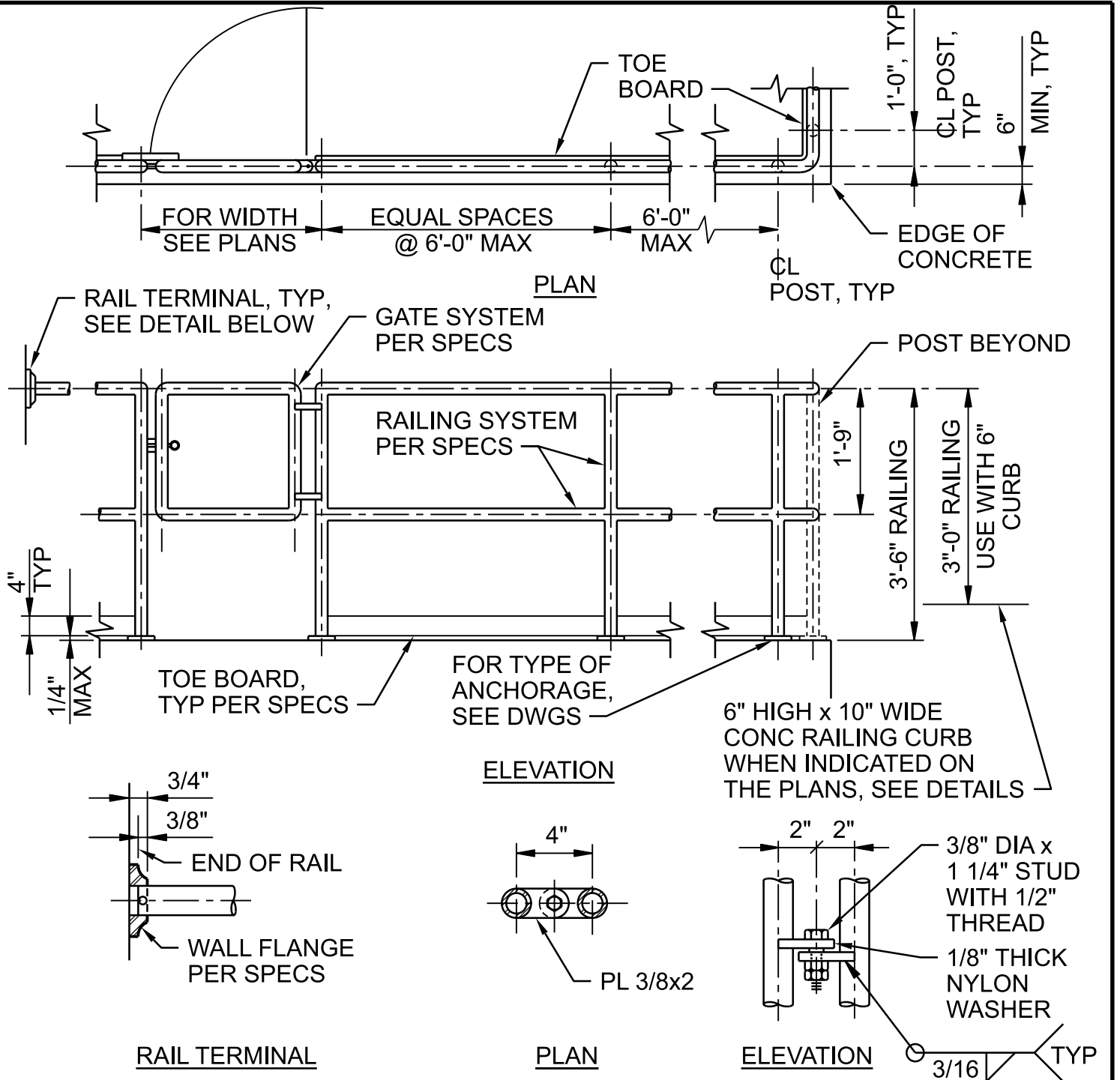
LADDER - STEEL - FLAT BAR DETAILS

NTS

DETAIL 2 OF 2

0551-141

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT



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.

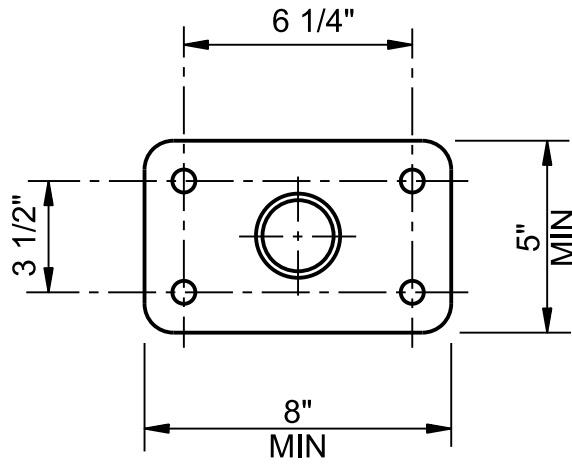
RAILING - 2 RAIL - ALUMINUM

NTS

DETAIL 1 OF 5

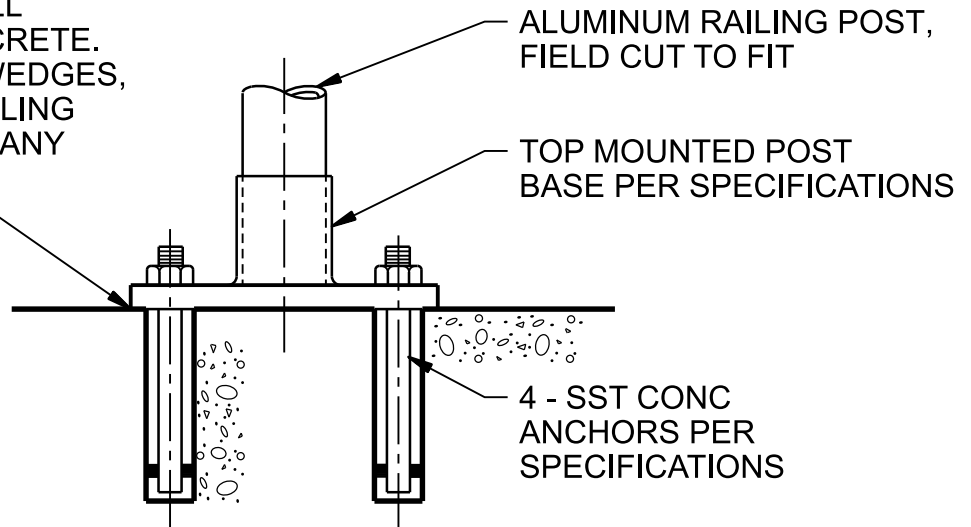
0552-001

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT



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.

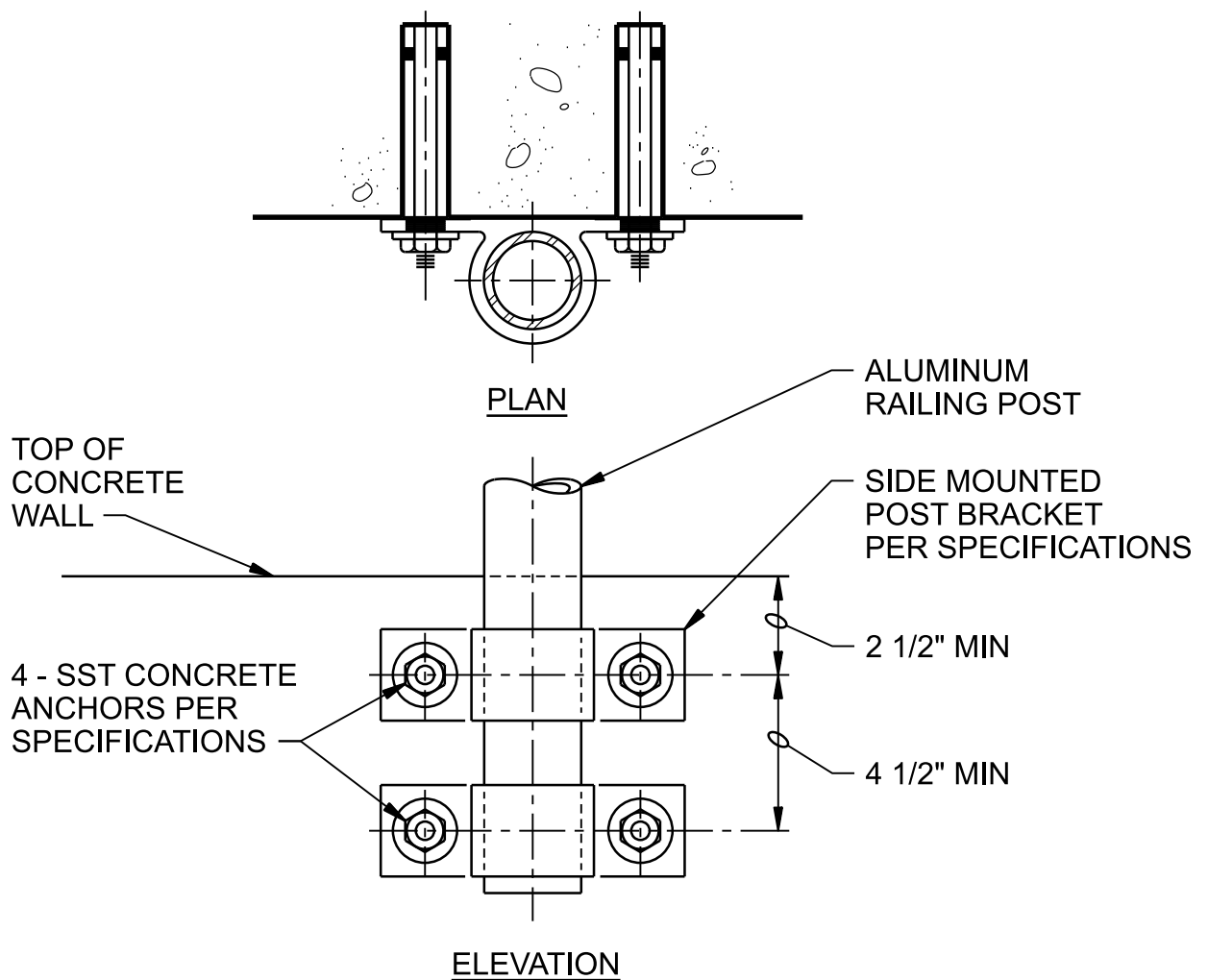
RAILING POST ANCHORAGE TYPE 'A' - ALUMINUM

NTS

DETAIL 2 OF 5

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0552-001



ELEVATION

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.

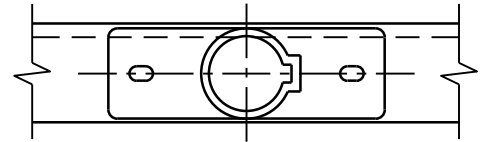
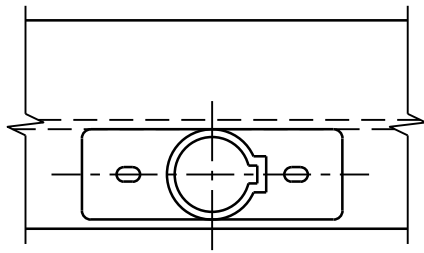
RAILING POST ANCHORAGE TYPE 'B' - ALUMINUM

NTS

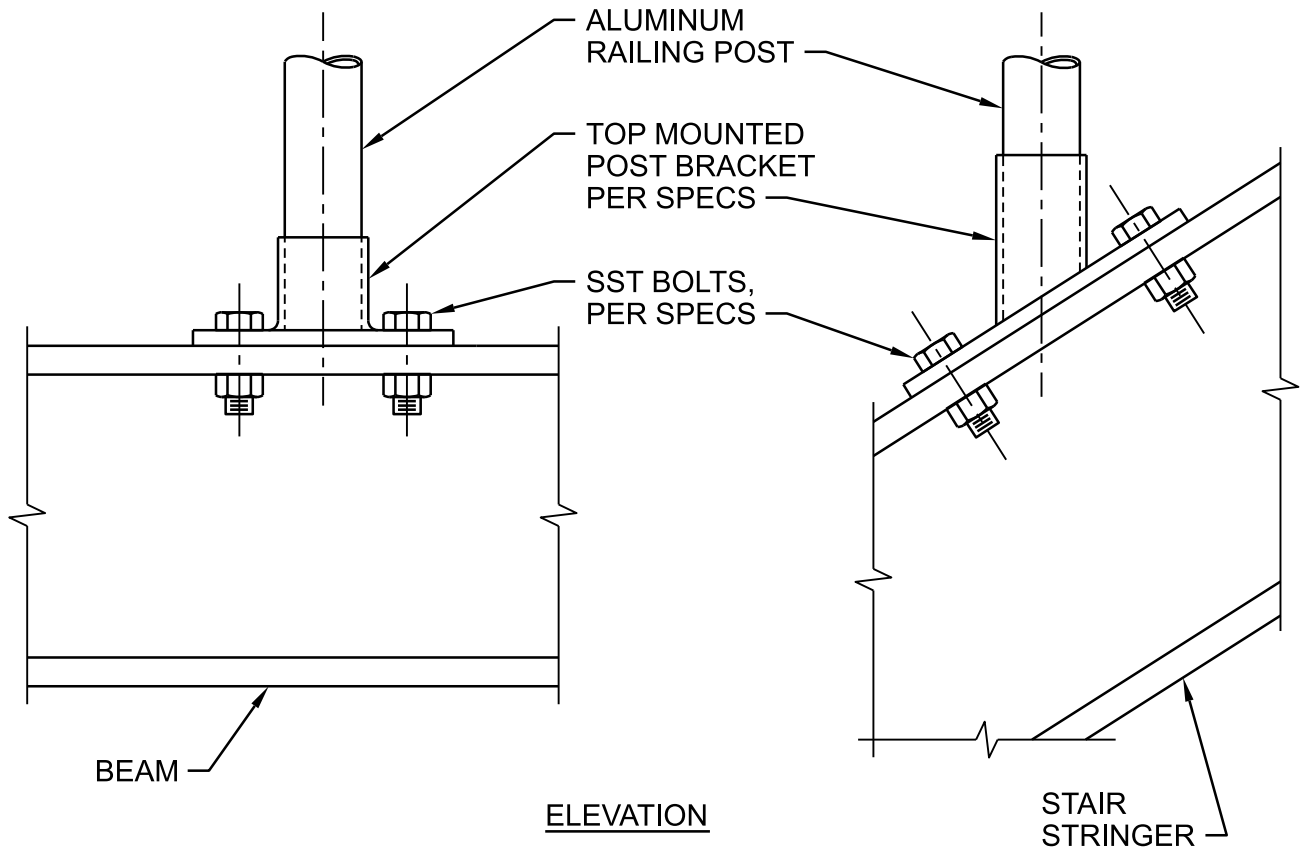
DETAIL 3 OF 5

0552-001

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT



PLAN



ELEVATION

TYPE 'C'

NOTE:

PROVIDE PROTECTION FOR DISSIMILAR METALS PER SPECIFICATIONS.

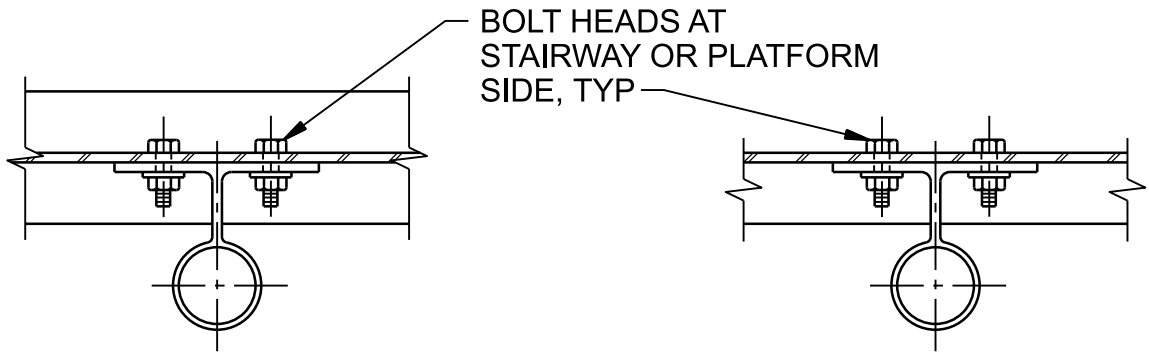
RAILING POST ANCHORAGE TYPE 'C' - ALUMINUM

NTS

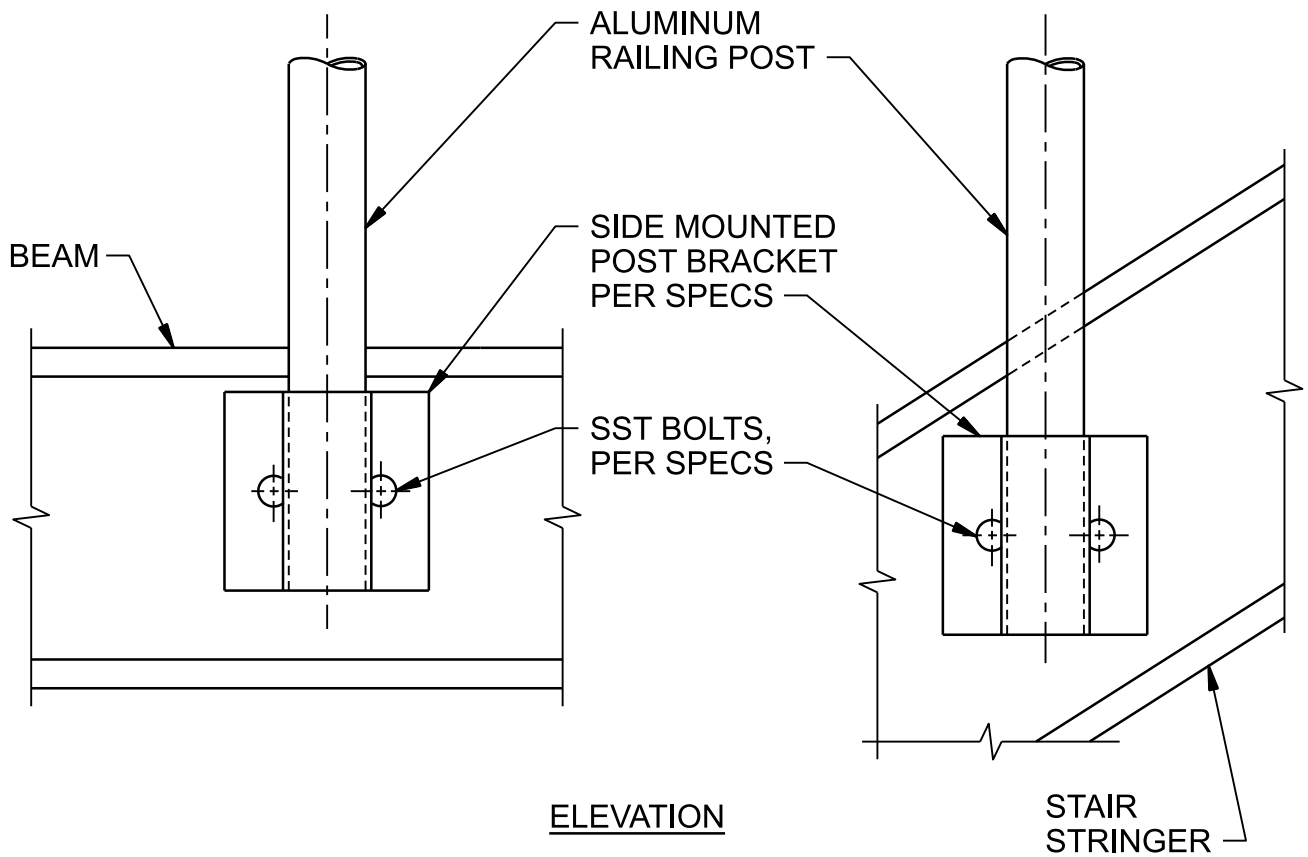
DETAIL 4 OF 5

0552-001

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



PLAN



ELEVATION

TYPE 'D'

NOTE:

PROVIDE PROTECTION FOR DISSIMILAR METALS PER SPECIFICATIONS.

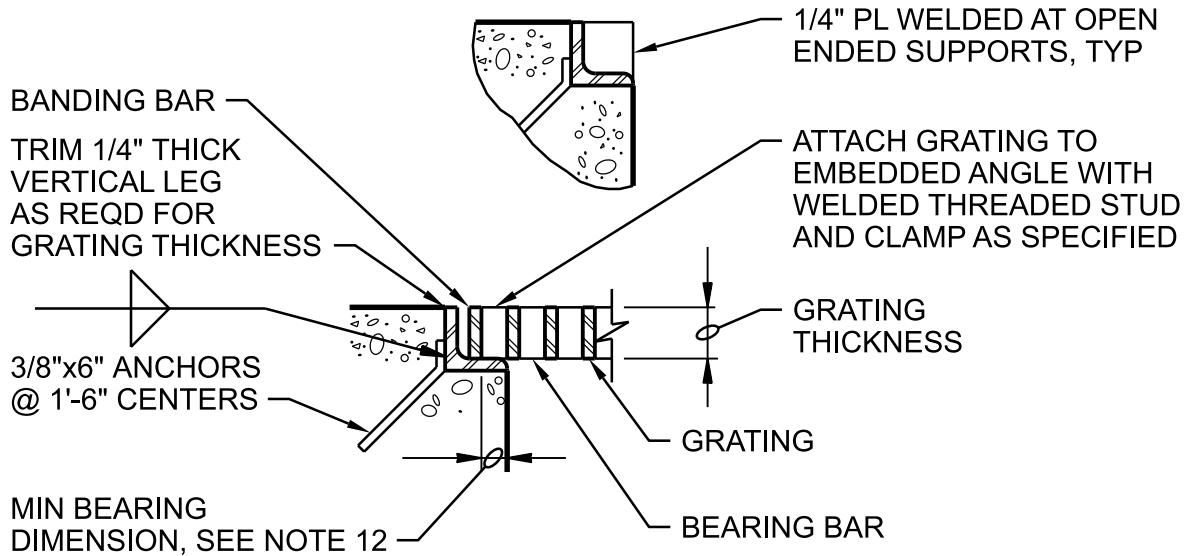
RAILING POST ANCHORAGE TYPE 'D' - ALUMINUM

NTS

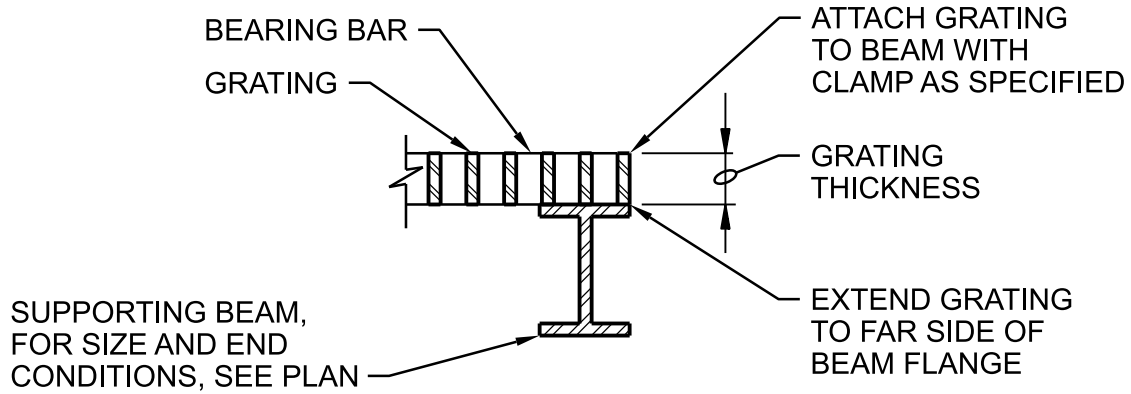
DETAIL 5 OF 5

0552-001

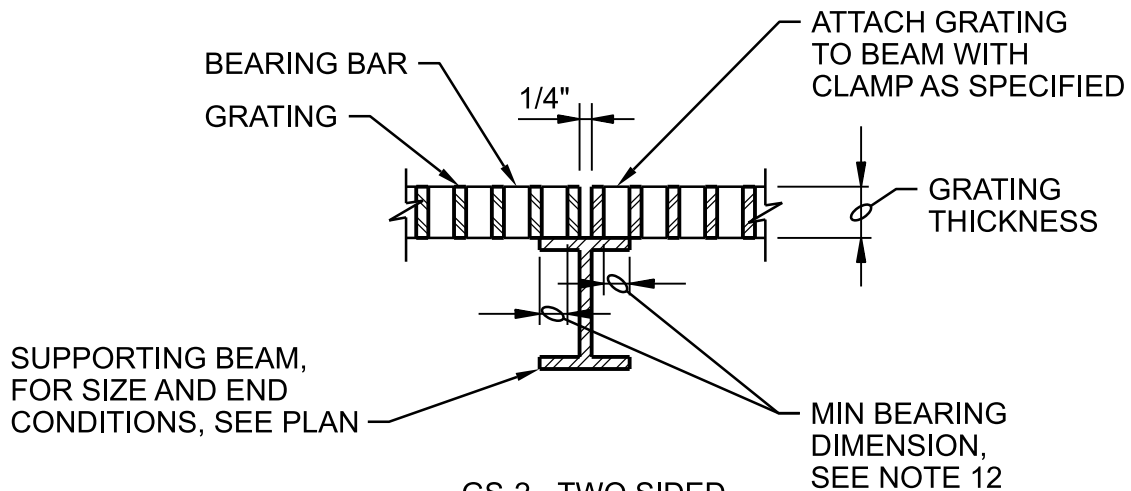
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



GS-1



GS-2 - ONE SIDED



GS-2 - TWO SIDED

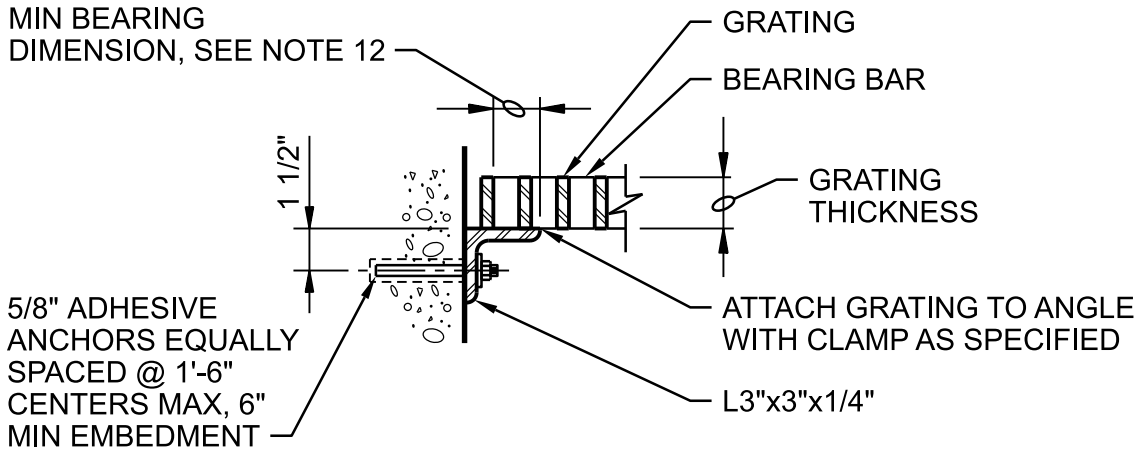
STANDARD GRATING

NTS

DETAIL 1 OF 4

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

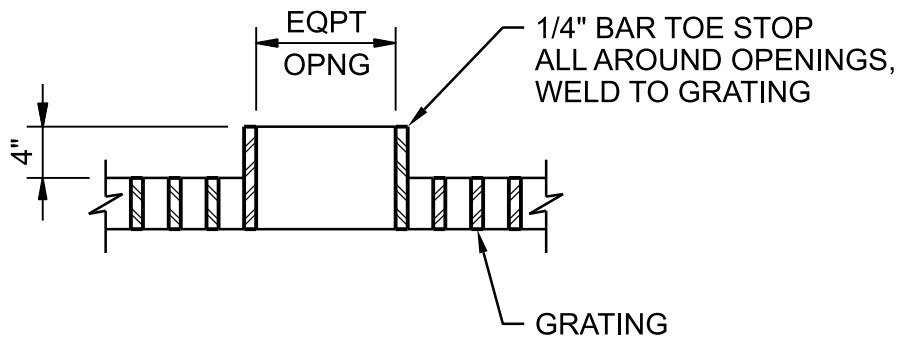
0553-001



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

0553-001

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

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

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

DETAIL 3 OF 4

0553-001

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"	

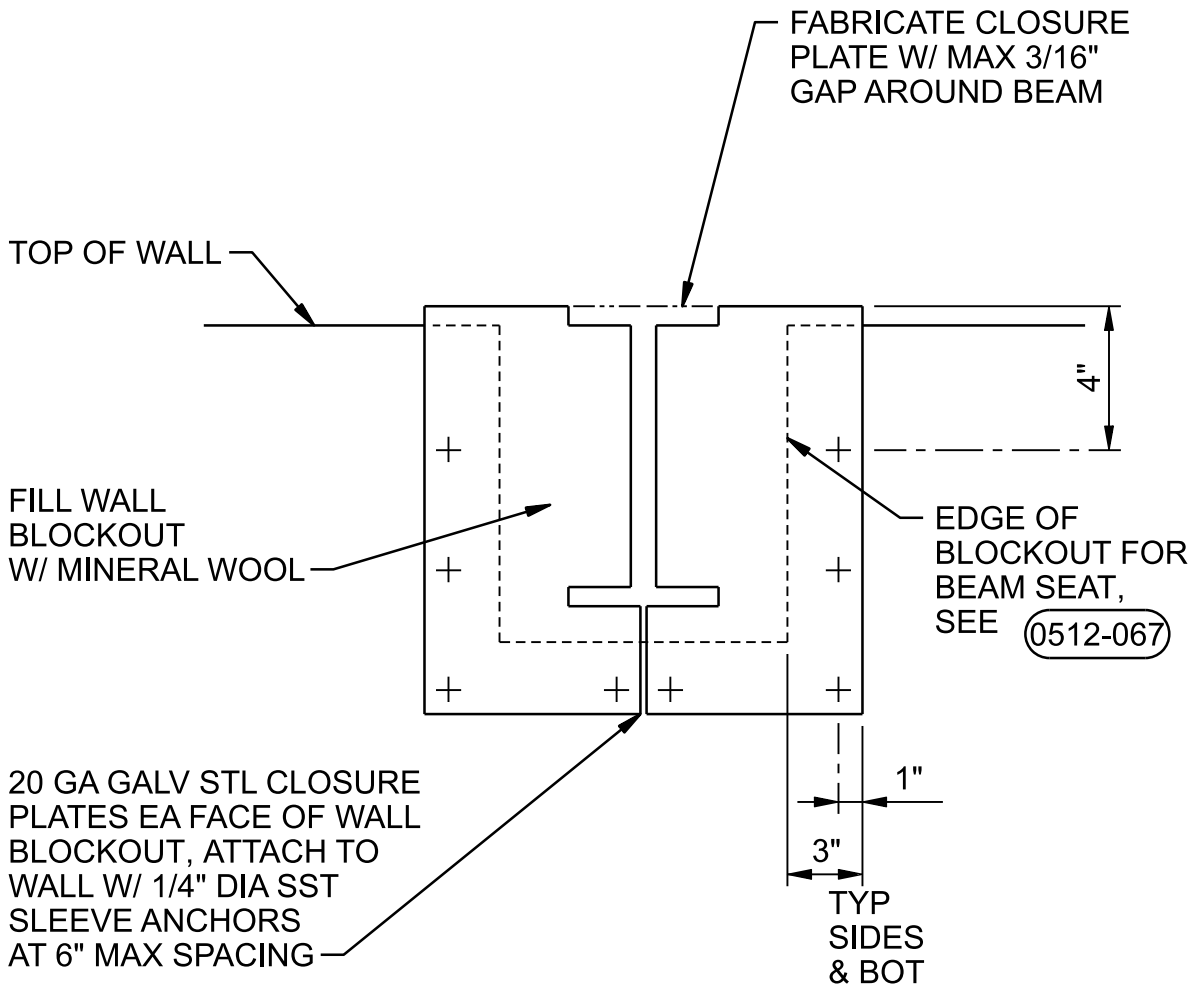
STANDARD GRATING

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

DETAIL 4 OF 4

0553-001

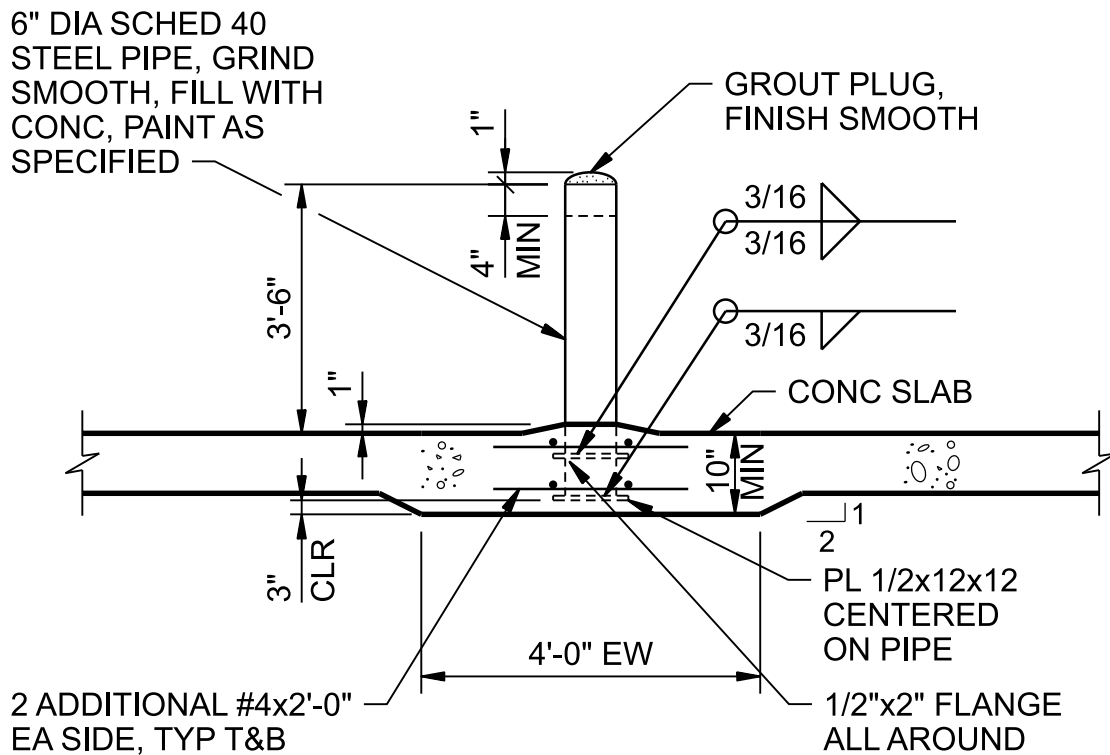


BEAM SEAT CLOSURE PLATE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0558-002



NOTES:

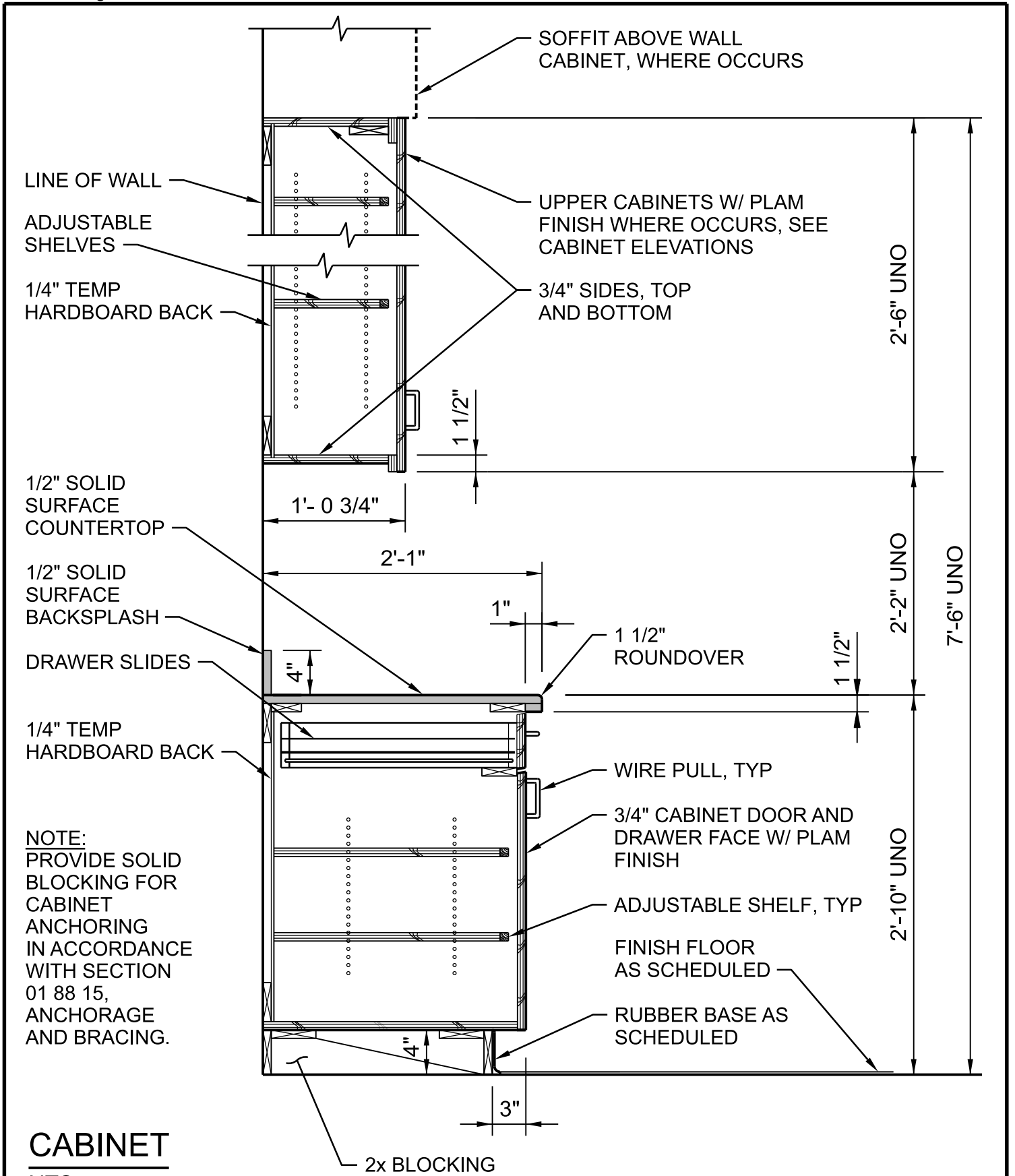
1. HOT DIPPED GALVANIZE AFTER FABRICATION.
2. FOR EXTERIOR GUARD POST, SEE (3305-954)

GUARD POST - INTERIOR

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0559-026

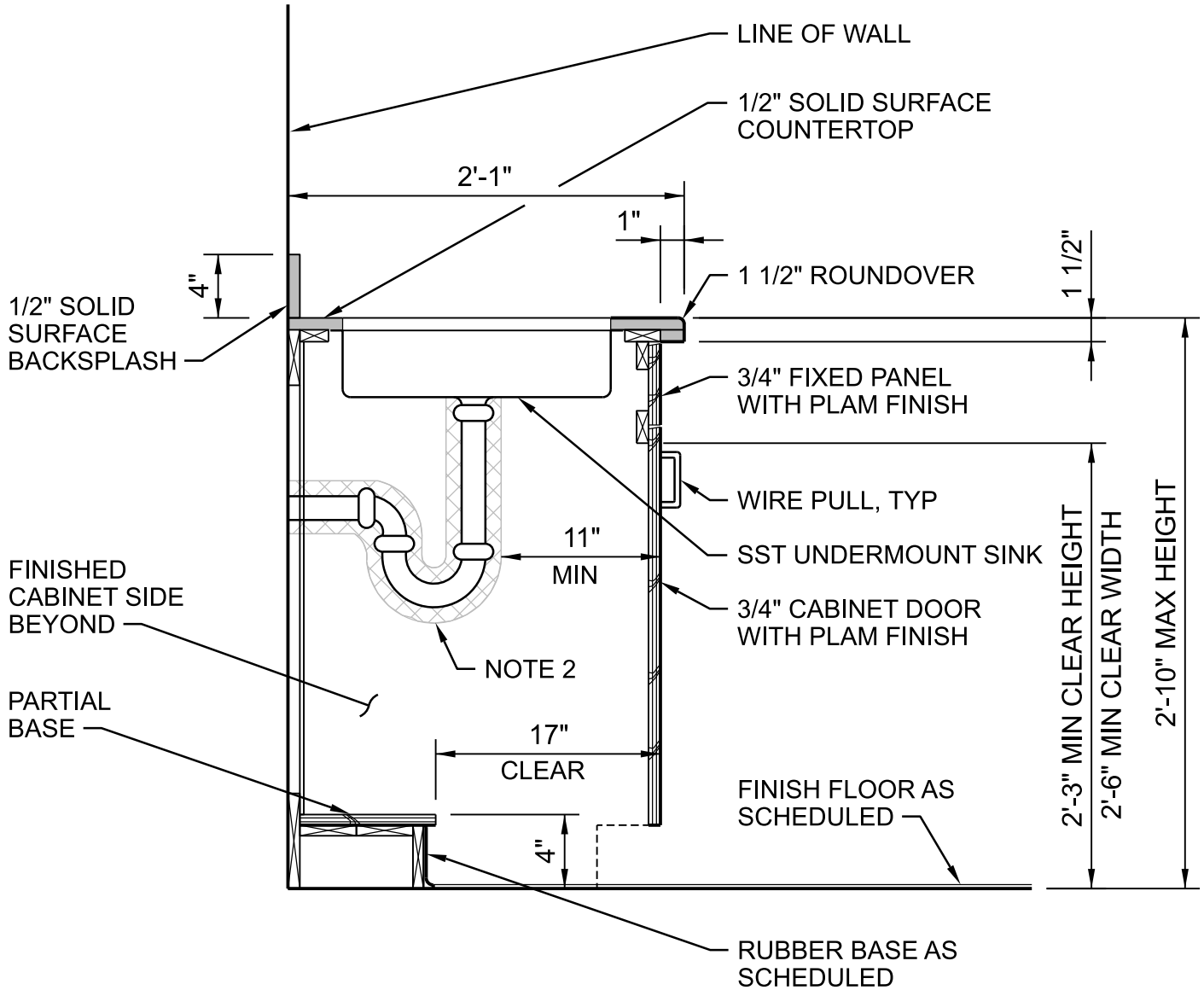


NOTE:
 PROVIDE SOLID
 BLOCKING FOR
 CABINET
 ANCHORING
 IN ACCORDANCE
 WITH SECTION
 01 88 15,
 ANCHORAGE
 AND BRACING.

CABINET
 NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0644-001



NOTES :

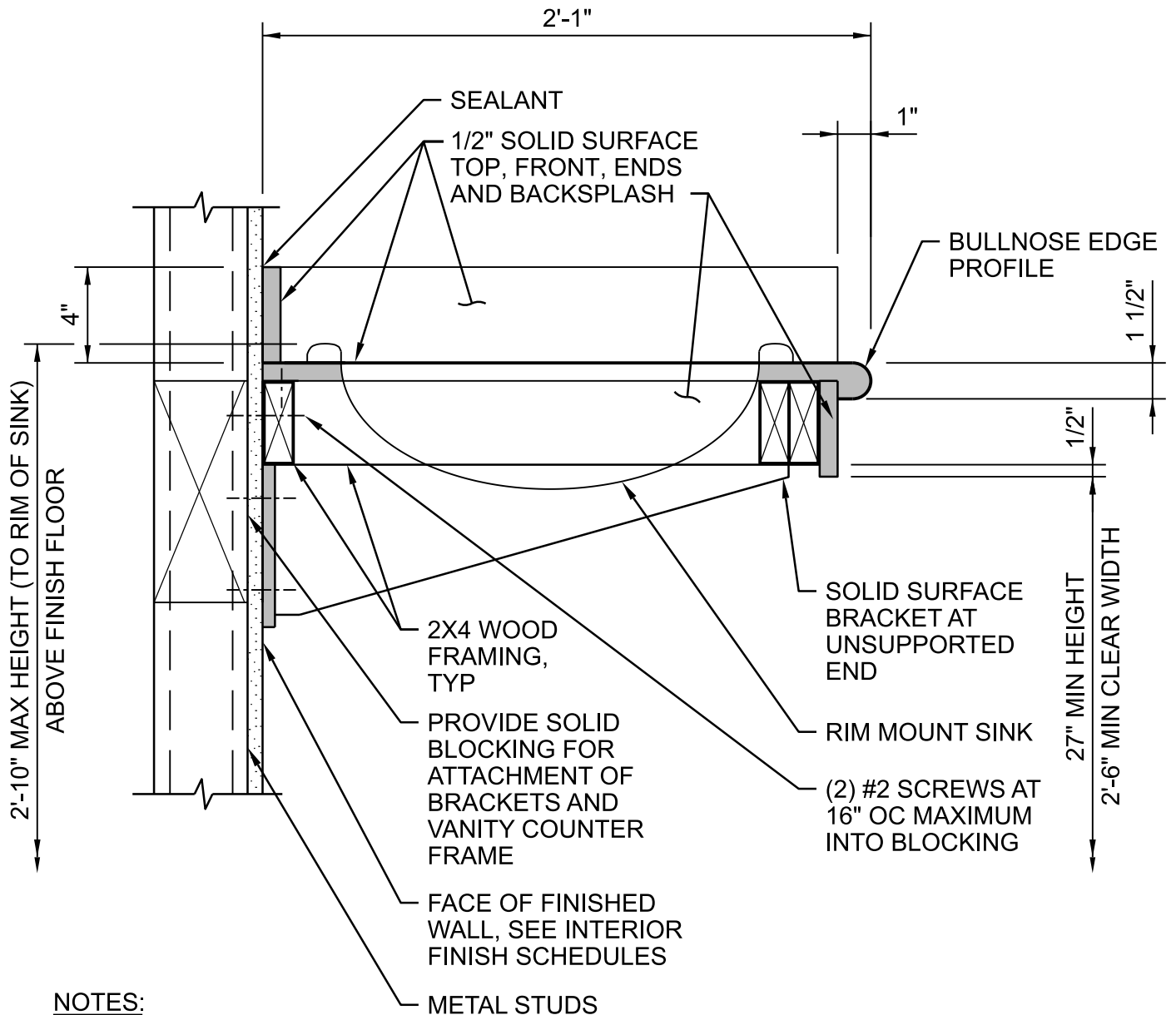
1. PROVIDE SOLID BLOCKING FOR CABINET ANCHORING IN ACCORDANCE WITH SECTION 01 88 15, ANCHORAGE AND BRACING.
2. EXPOSED PIPES AND SURFACES SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT WITH SHARP OR ABRASIVE SURFACES.

CABINET

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0644-002



NOTES:

1. MAINTAIN MINIMUM CLEAR WIDTH FOR ADA FORWARD APPROACH BETWEEN SUPPORT BRACKETS.
2. EXPOSED PIPES AND SURFACES SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT WITH SHARP OR ABRASIVE SURFACES. SEE SPECIFICATION SECTION 22 40 00, PLUMBING FIXTURES FOR INSULATION.
3. PROVIDE ADA TOE AND KNEE CLEARANCES IN ACCORDANCE WITH ADA SECTIONS 306.2 AND 306.3.
4. PROVIDE SOLID BLOCKING FOR CABINET ANCHORING IN ACCORDANCE WITH SECTION 01 88 15, ANCHORAGE AND BRACING.

VANITY COUNTERTOP

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0644-100

STANDING SEAM
METAL PANEL
ROOFING SYSTEM

SELF-ADHERING
UNDERLAYMENT,
EXTEND TO
BOTTOM OF
NAILERS

RIGID ROOF
INSULATION

TREATED
WOOD NAILERS



GUTTER
FLASHING

SMACNA STYLE F
6"x4 1/2" METAL
GUTTER WITH
STRAPS
AT ALT SEAMS

SHEET
METAL FASCIA

3"x4" METAL
DOWNSPOUT

METAL
DECKING

TOP CHORD
OF METAL
JOIST

STEEL CHANNEL,
SEE STRUCTURAL DWGS

METAL SOFFIT
PANEL SYSTEM

C-METAL TRIM

CONTINUOUS CLEAT

NOTES:

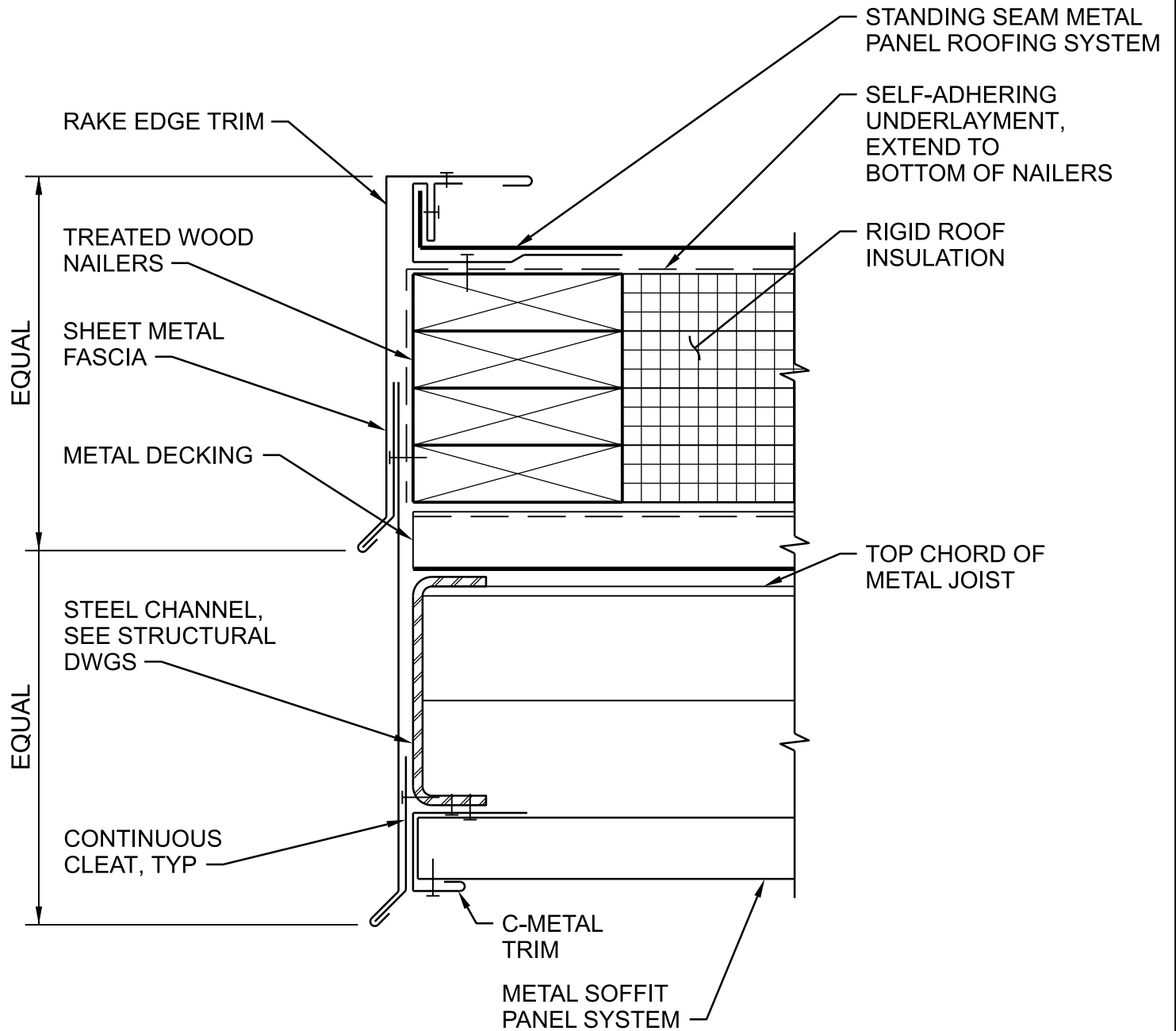
1. PROVIDE STRUCTURAL FRAMING AS REQUIRED TO SUPPORT SOFFIT PANEL SYSTEM AND MEET PROJECT DESIGN LOADS.

LOW EAVE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0741-111



NOTES:

- 1. PROVIDE STRUCTURAL FRAMING AS REQUIRED TO SUPPORT SOFFIT PANEL SYSTEM AND MEET PROJECT DESIGN LOADS.

RAKE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0741-112

STANDING SEAM
METAL PANEL
ROOFING SYSTEM

SELF-ADHERING
UNDERLAYMENT,
EXTEND TO
BOTTOM OF NAILERS

RIGID ROOF
INSULATION

METAL DECKING

STRUCTURAL
STEEL BEAM

METAL SOFFIT PANEL SYSTEM

HIGH-EAVE CLOSURE
FLASHING

Z-CLOSURE

TREATED WOOD
NAILERS

SHEET METAL
FASCIA

STEEL
CHANNEL, SEE
STRUCTURAL
DWGS

C-METAL TRIM

CONTINUOUS
CLEAT, TYP

EQUAL

EQUAL

NOTES:

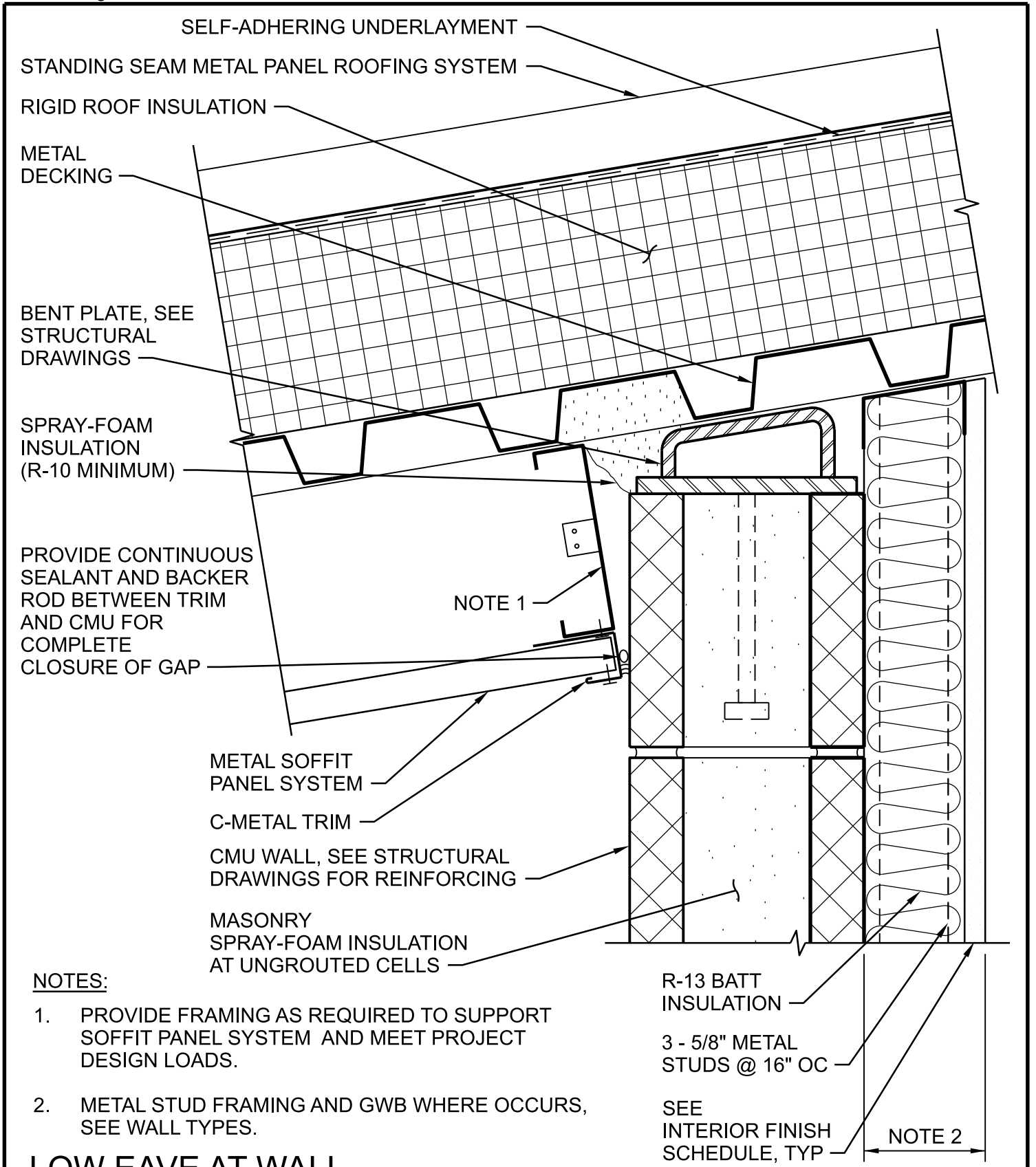
- 1. PROVIDE FRAMING AS REQUIRED TO SUPPORT SOFFIT PANEL SYSTEM AND MEET PROJECT DESIGN LOADS.

HIGH EAVE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0741-113

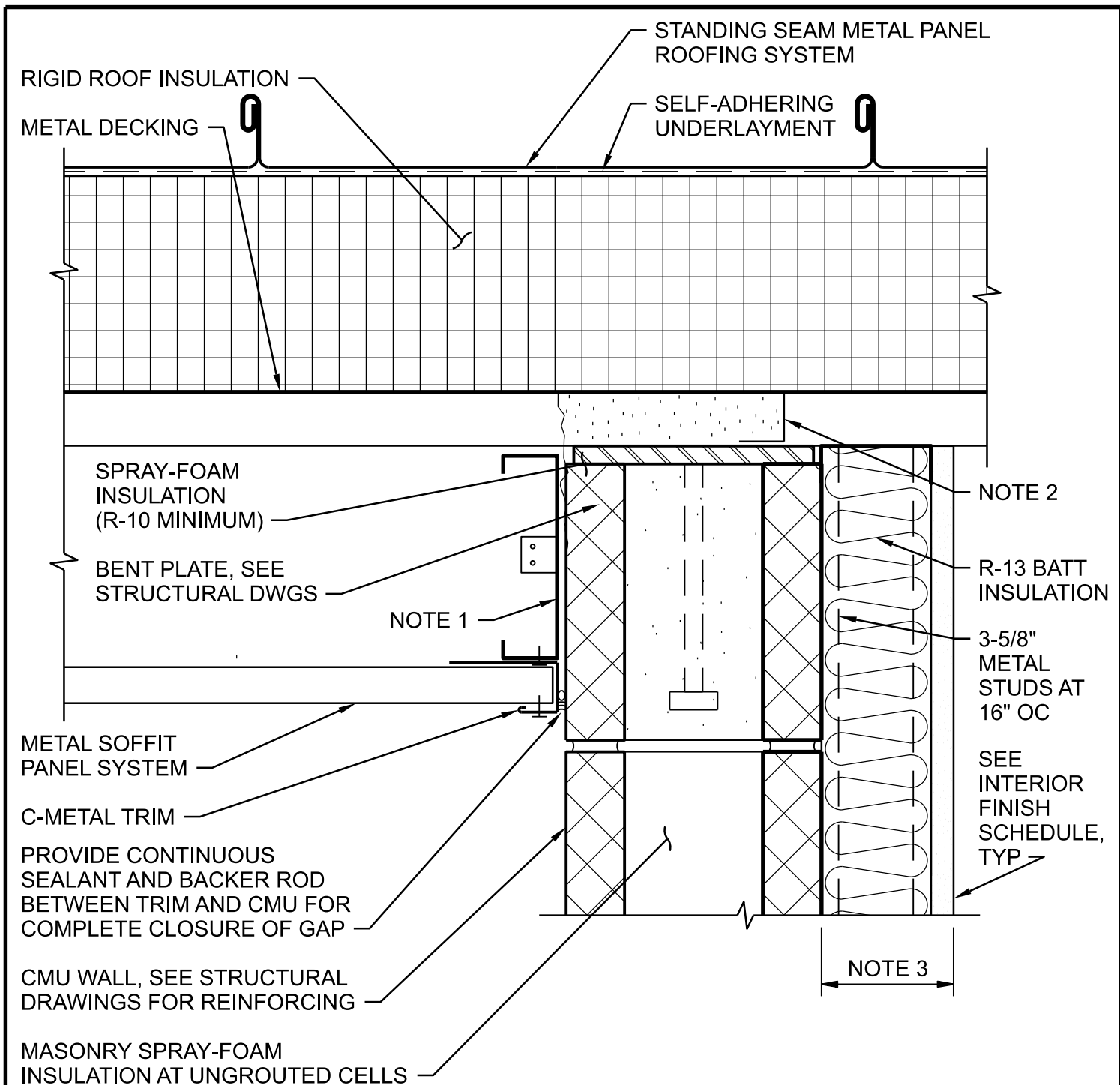


LOW EAVE AT WALL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0741-114



NOTES:

1. PROVIDE FRAMING AS REQUIRED TO SUPPORT SOFFIT PANEL SYSTEM AND MEET PROJECT DESIGN LOADS.
2. STEEL UNDERSIDE PROFILE CLOSURE BY METAL DECK MFR. PROVIDE SEALANT AT GAPS.
3. METAL STUD FRAMING AND GWB WHERE OCCURS, SEE WALL TYPES.

RAKE AT WALL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0741-115

STANDING SEAM METAL PANEL ROOFING SYSTEM

SELF-ADHERING UNDERLAYMENT

RIGID ROOF INSULATION

METAL DECKING

BENT PLATE, SEE STRUCTURAL DRAWINGS

R-13 BATT INSULATION

3 - 5/8" METAL STUDS @ 16" OC

SEE INTERIOR FINISH SCHEDULE, TYP

PROVIDE CONTINUOUS SEALANT AND BACKER ROD BETWEEN TRIM AND CMU FOR COMPLETE CLOSURE OF GAP

SPRAY-FOAM INSULATION (R-10 MINIMUM)

NOTE 1

METAL SOFFIT PANEL SYSTEM

C-METAL TRIM

CMU WALL, SEE STRUCTURAL DRAWINGS FOR REINFORCING

MASONRY SPRAY-FOAM INSULATION AT UNGROUTED CELLS

NOTE 2

NOTES:

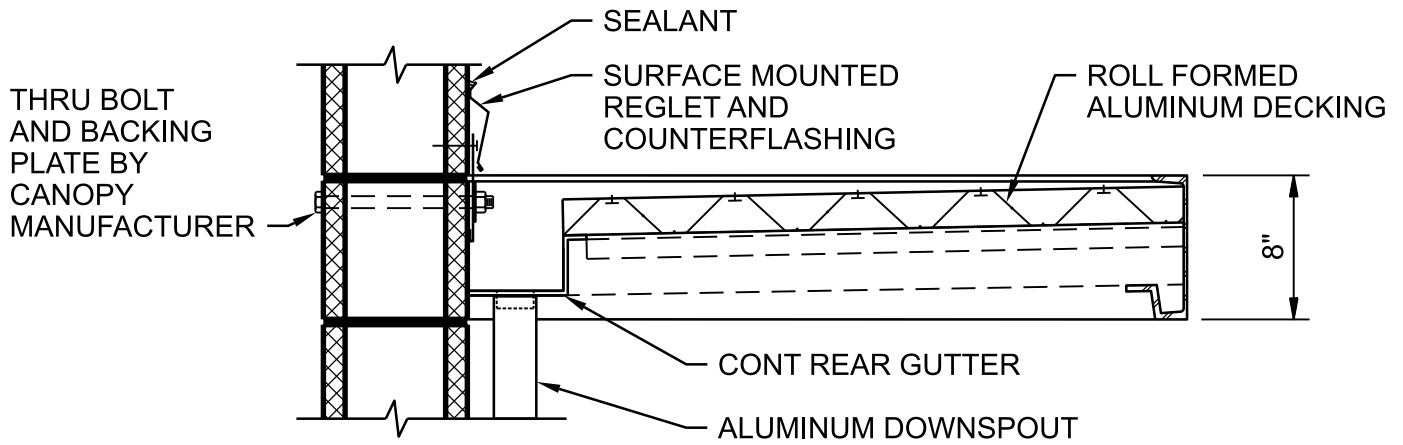
- 1. PROVIDE FRAMING AS REQUIRED TO SUPPORT SOFFIT PANEL SYSTEM AND MEET PROJECT DESIGN LOADS.
- 2. METAL STUD FRAMING AND GWB WHERE OCCURS, SEE WALL TYPES.

HIGH EAVE AT WALL

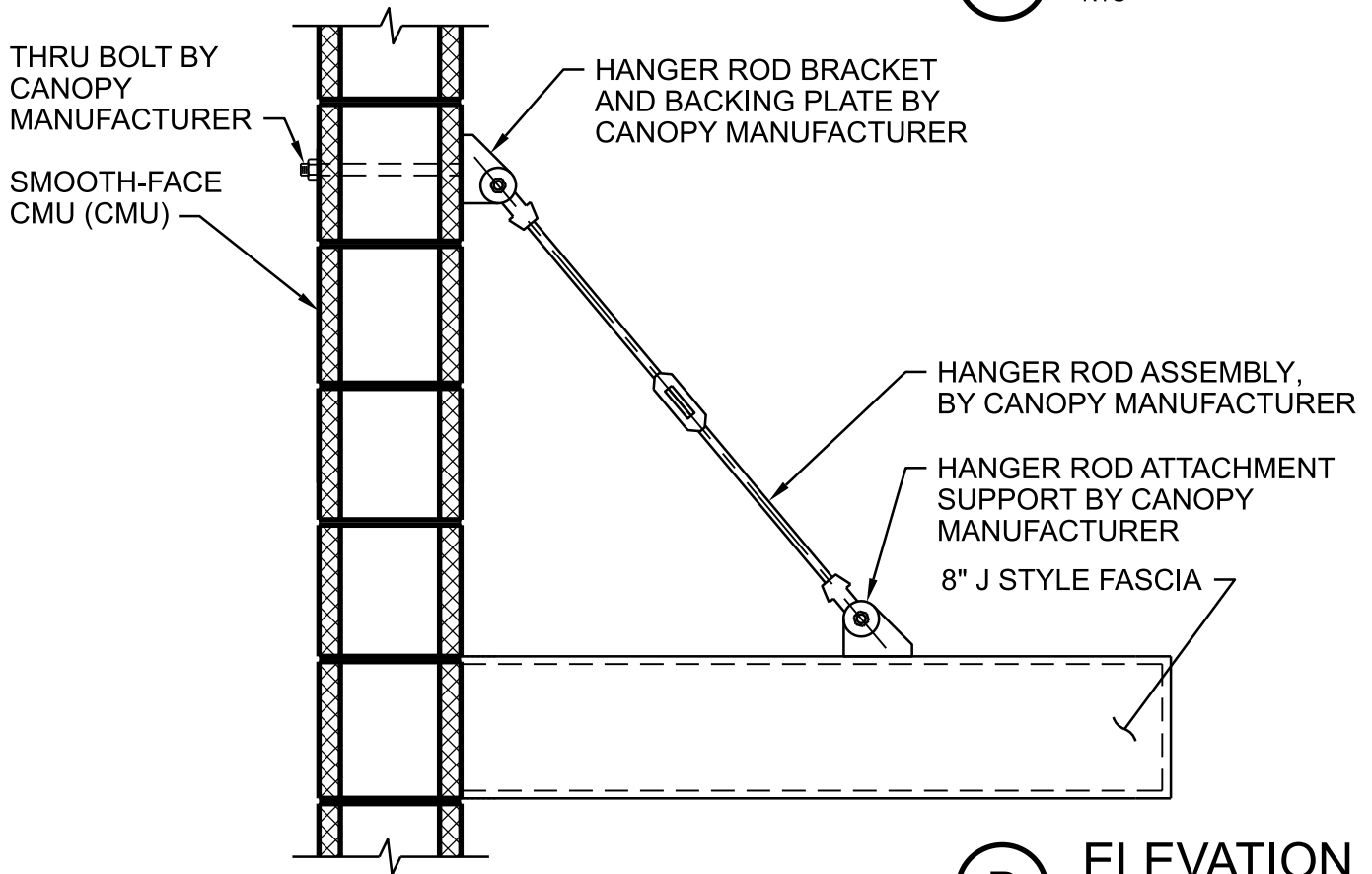
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0741-117



A SECTION
NTS



B ELEVATION
NTS

NOTES:

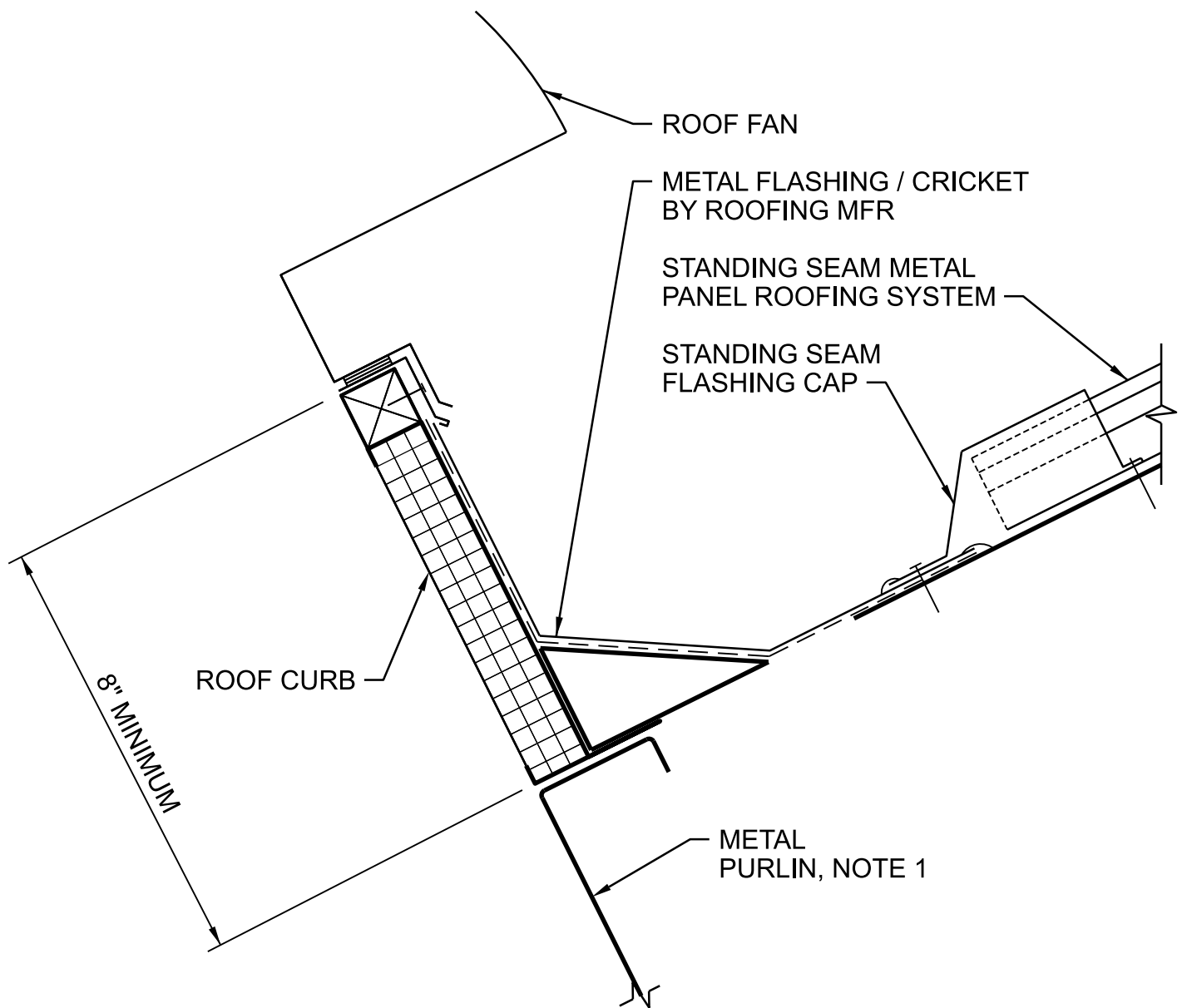
- 1. FRAMING WHERE REQUIRED BY METAL CANOPY MFR.
- 2. SEE ELEVATIONS FOR CANOPY CLEAR HEIGHT.

PREFABRICATED METAL CANOPY

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0742-502



NOTES:

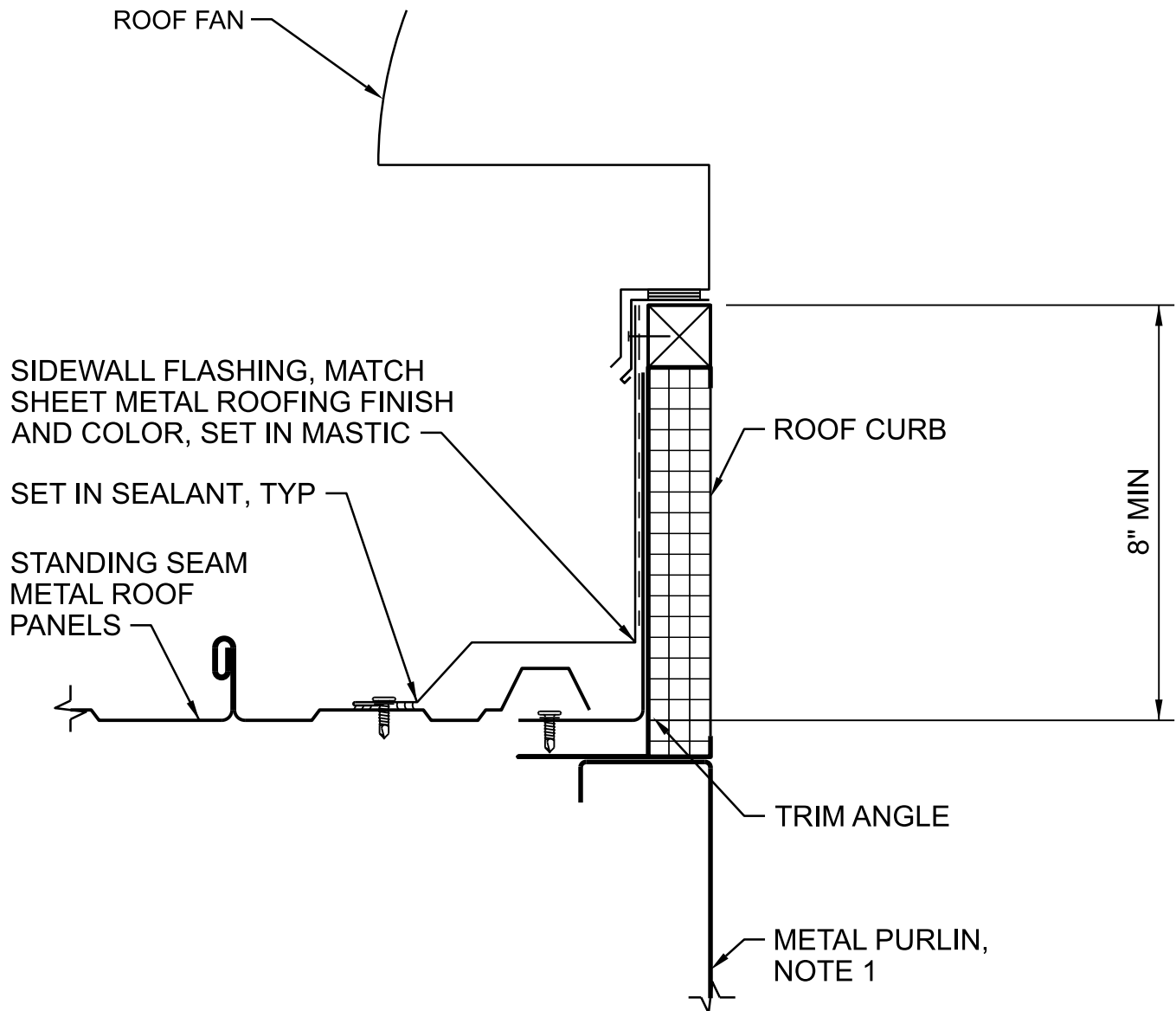
1. PROVIDE ADDITIONAL ROOF FRAMING AS REQUIRED TO SUPPORT ROOF CURB.
2. FLASHING AT ROOF OPENING IS GENERIC AND INCLUDED TO SHOW GENERAL INTENT ONLY. ALL DETAILING TO BE ACCORDING TO METAL BUILDING MANUFACTURER'S STANDARD.

EQUIPMENT CURB HEAD

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0770-007



NOTES:

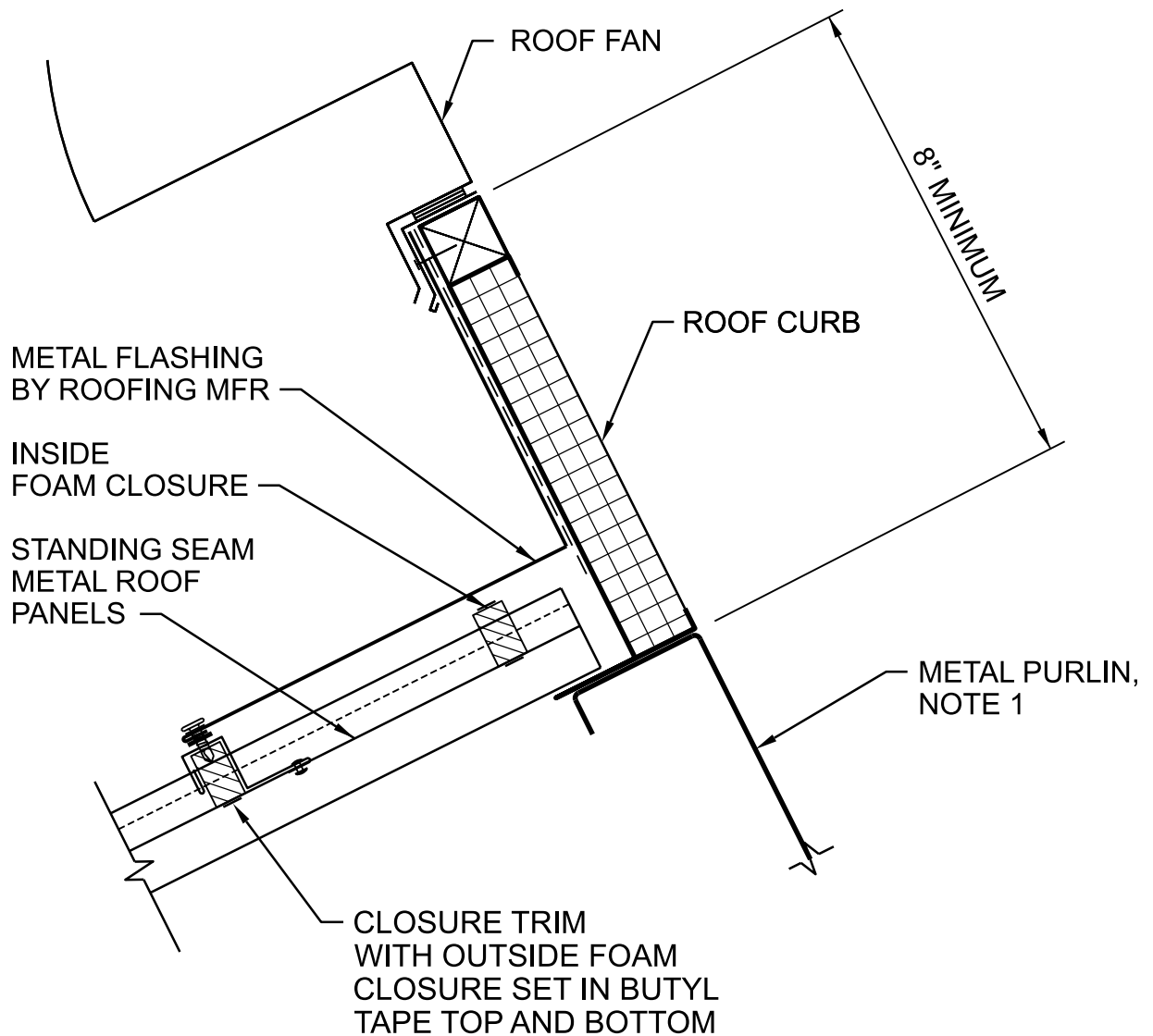
1. PROVIDE ADDITIONAL ROOF FRAMING AS REQUIRED TO SUPPORT ROOF CURB.
2. FLASHING AT ROOF OPENING IS GENERIC AND INCLUDED TO SHOW GENERAL INTENT ONLY. ALL DETAILING TO BE ACCORDING TO METAL BUILDING MFR'S STANDARD.

EQUIPMENT CURB RAKE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0770-008



NOTES:

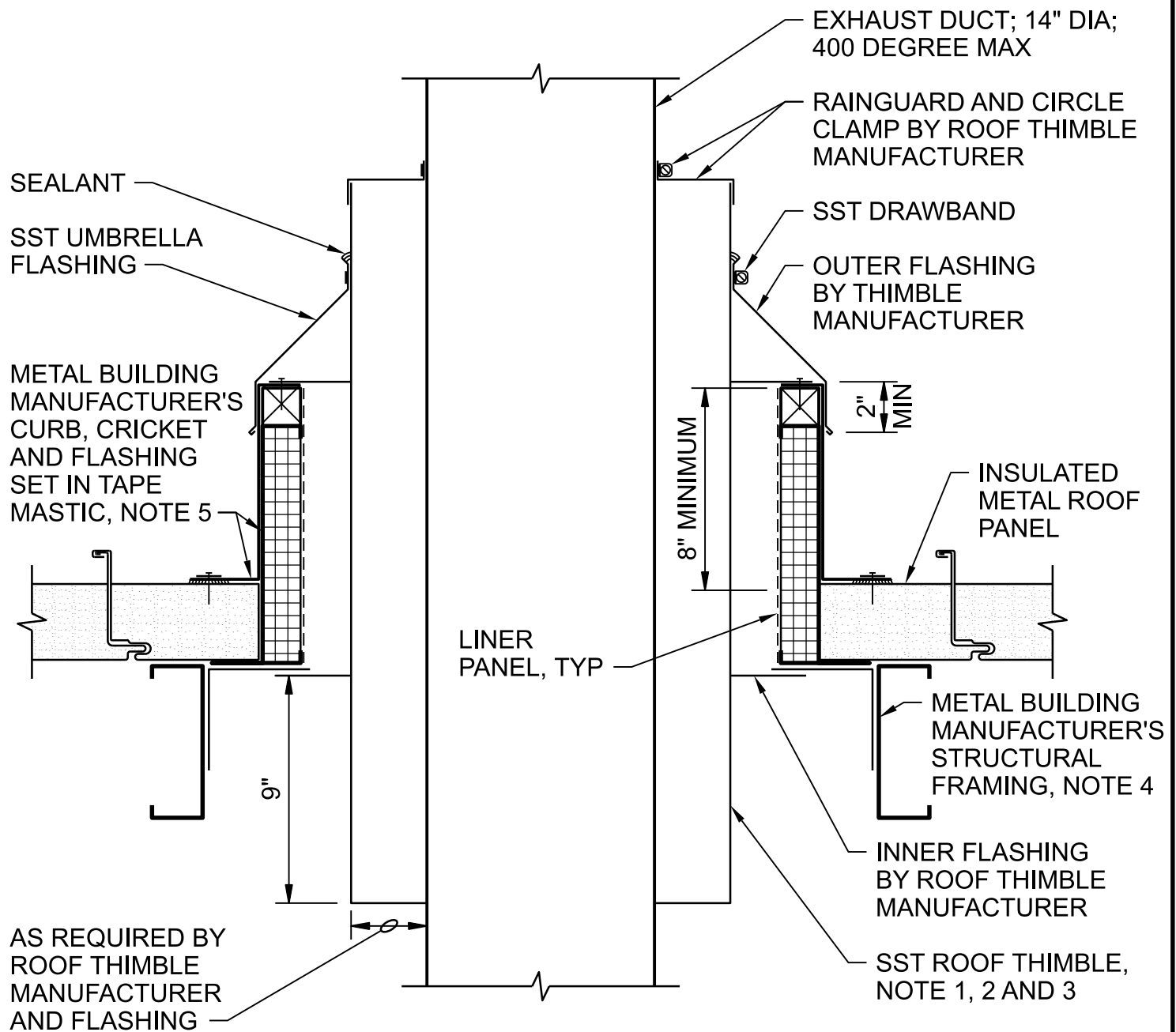
1. PROVIDE ADDITIONAL ROOF FRAMING AS REQUIRED TO SUPPORT ROOF CURB.
2. FLASHING AT ROOF OPENING IS GENERIC AND INCLUDED TO SHOW GENERAL INTENT ONLY. ALL DETAILING TO BE ACCORDING TO METAL BUILDING MANUFACTURER'S STANDARD.

EQUIPMENT CURB SILL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0770-009



NOTES:

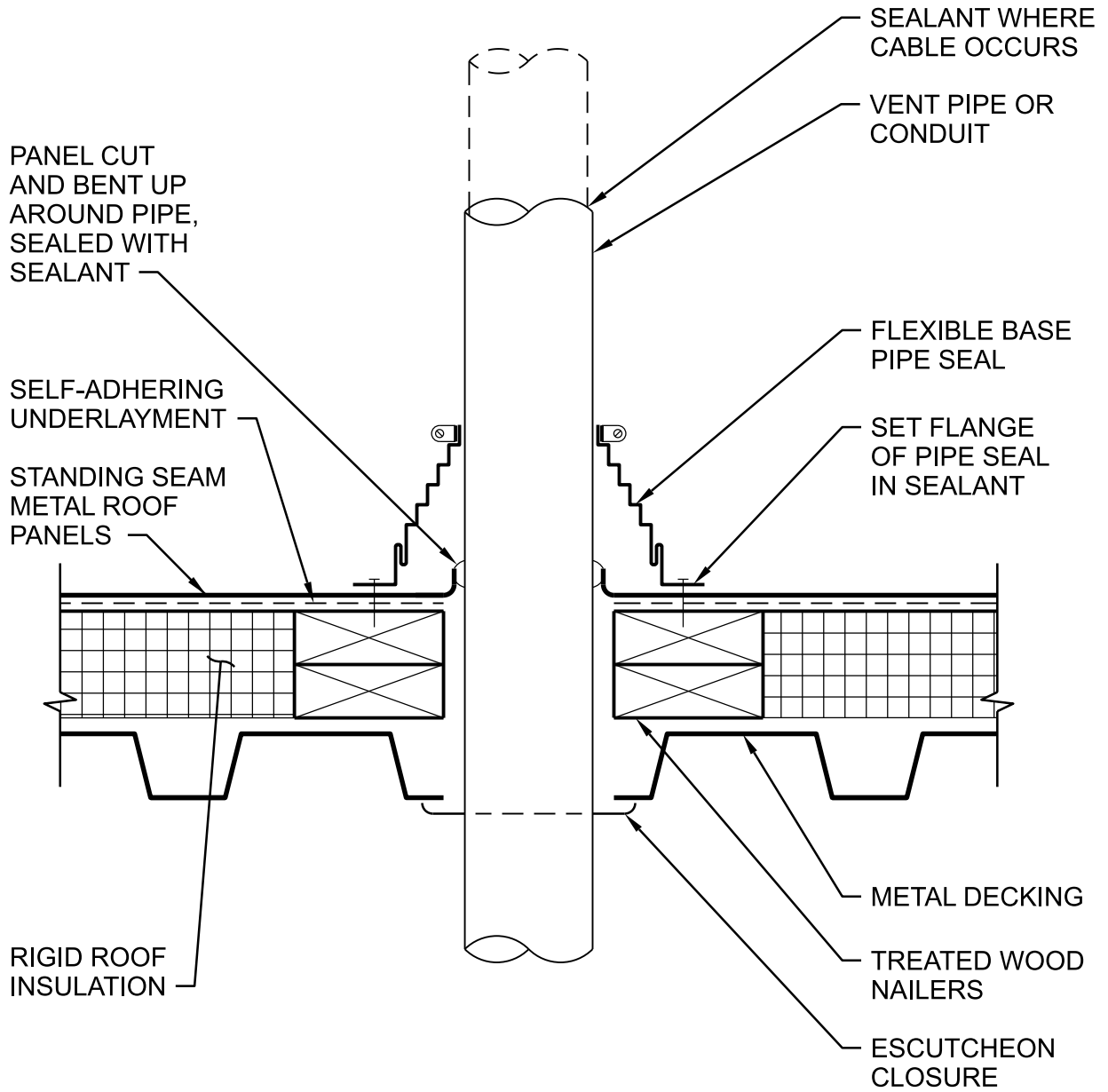
1. ROOF THIMBLE BASIS OF DESIGN MANUFACTURER: INEXHAUST INNOVATIVE EXHAUST SOLUTIONS, INC.
2. SIZE AS REQUIRED TO ACCOMMODATE FLASHING CONFIGURATION SHOWN.
3. INSTALLATION TO MEET REQUIREMENTS OF NFPA 37.
4. PROVIDE ADDITIONAL ROOF FRAMING AS REQUIRED TO SUPPORT ROOF CURB.
5. FLASHING AT ROOF OPENING IS GENERIC AND INCLUDED TO SHOW GENERAL INTENT ONLY. ALL DETAILING TO BE ACCORDING TO METAL BUILDING MANUFACTURER'S STANDARD.

DUCT PENETRATION / ROOF THIMBLE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0770-050



NOTES:

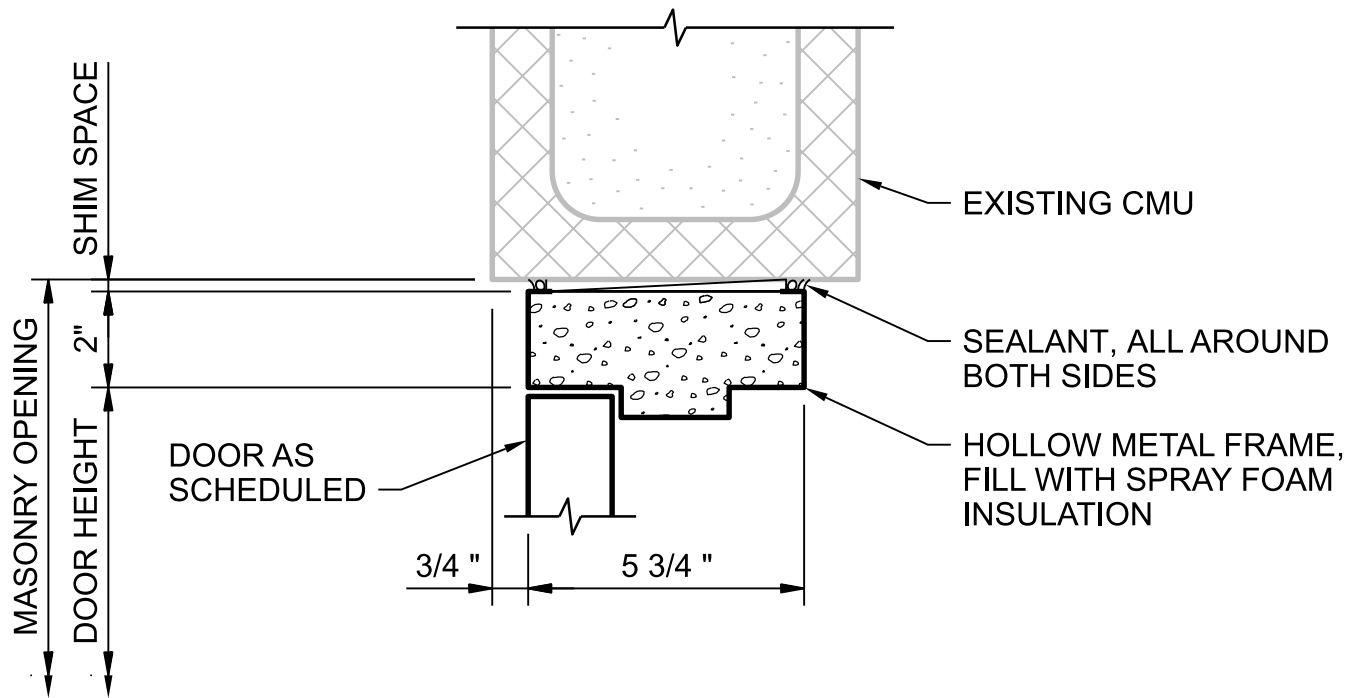
- 1. PIPE PENETRATION TO BE IN PAN OF STANDING SEAM ROOF PANEL ONLY.

FLEXIBLE BASE PIPE SEAL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0770-102

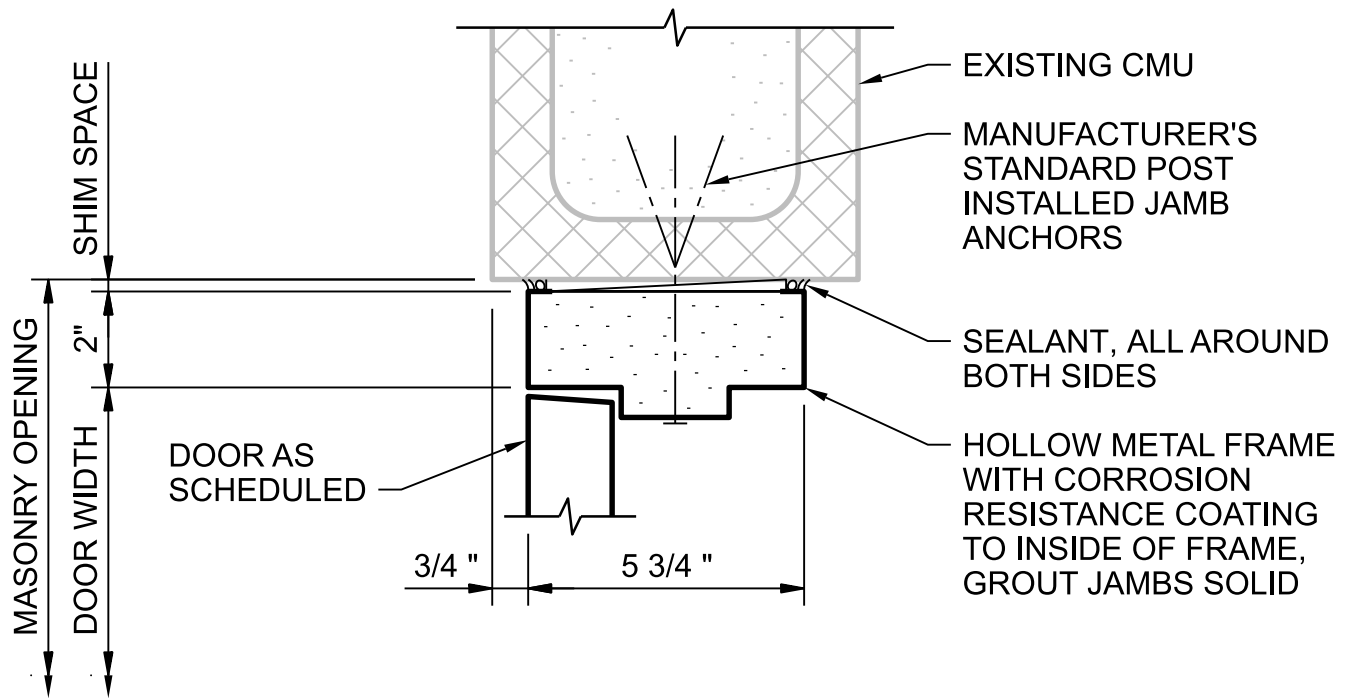


DOOR HEAD

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0811-003

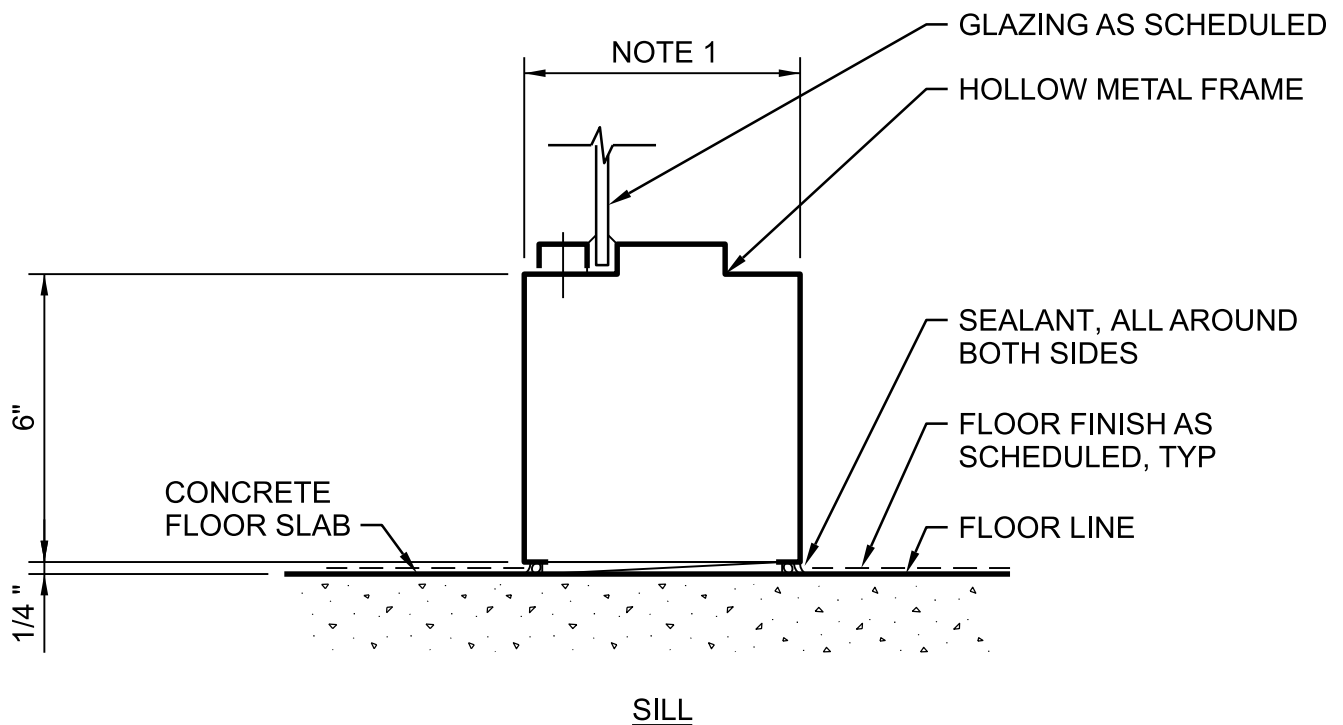
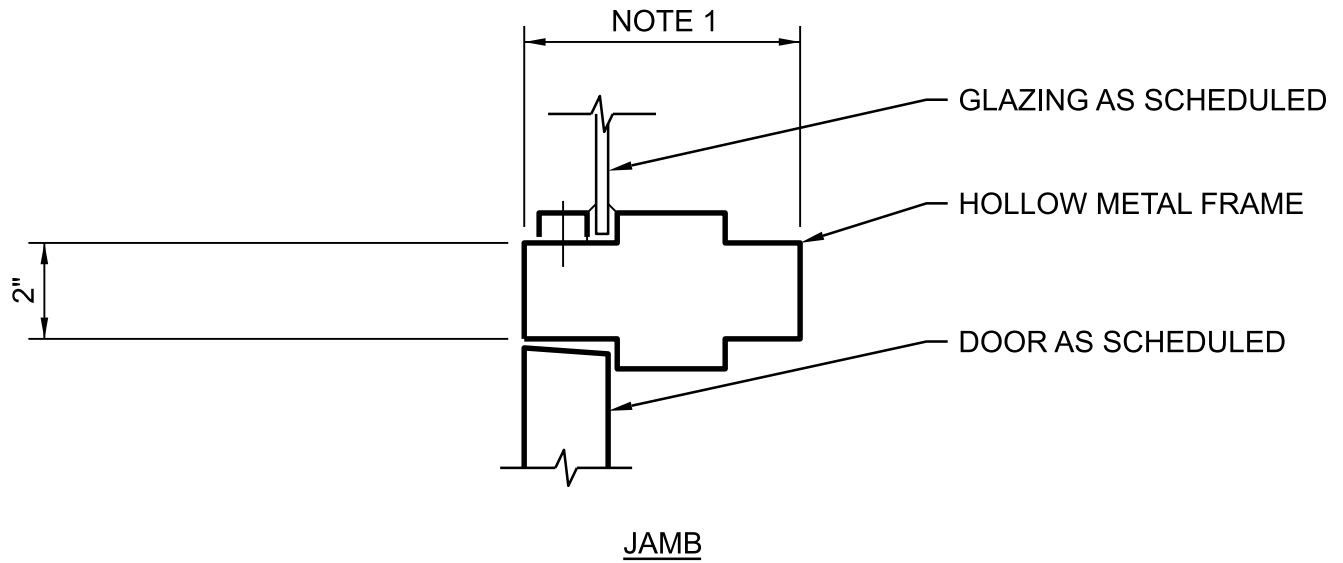


DOOR JAMB

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0811-004



NOTES:

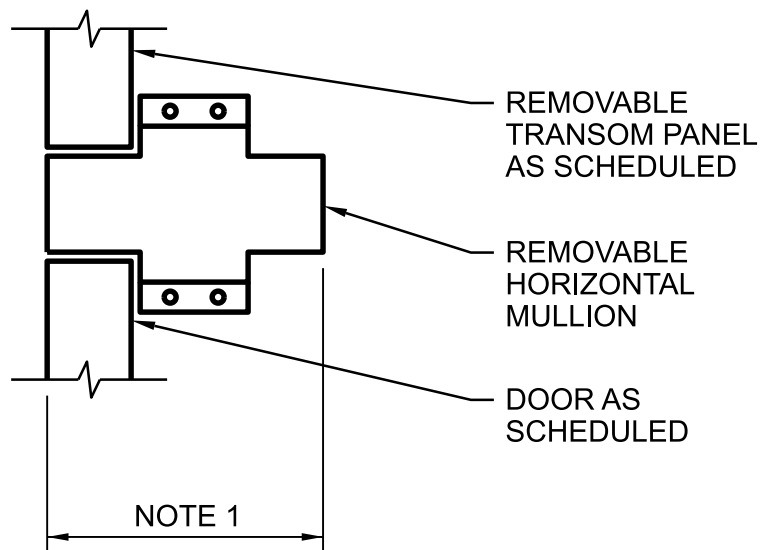
- 1. MATCH FRAME WIDTH OF SCHEDULED JAMB / HEAD DETAIL AT WALL.

SIDELIGHT JAMB AND SILL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0811-029



NOTES:

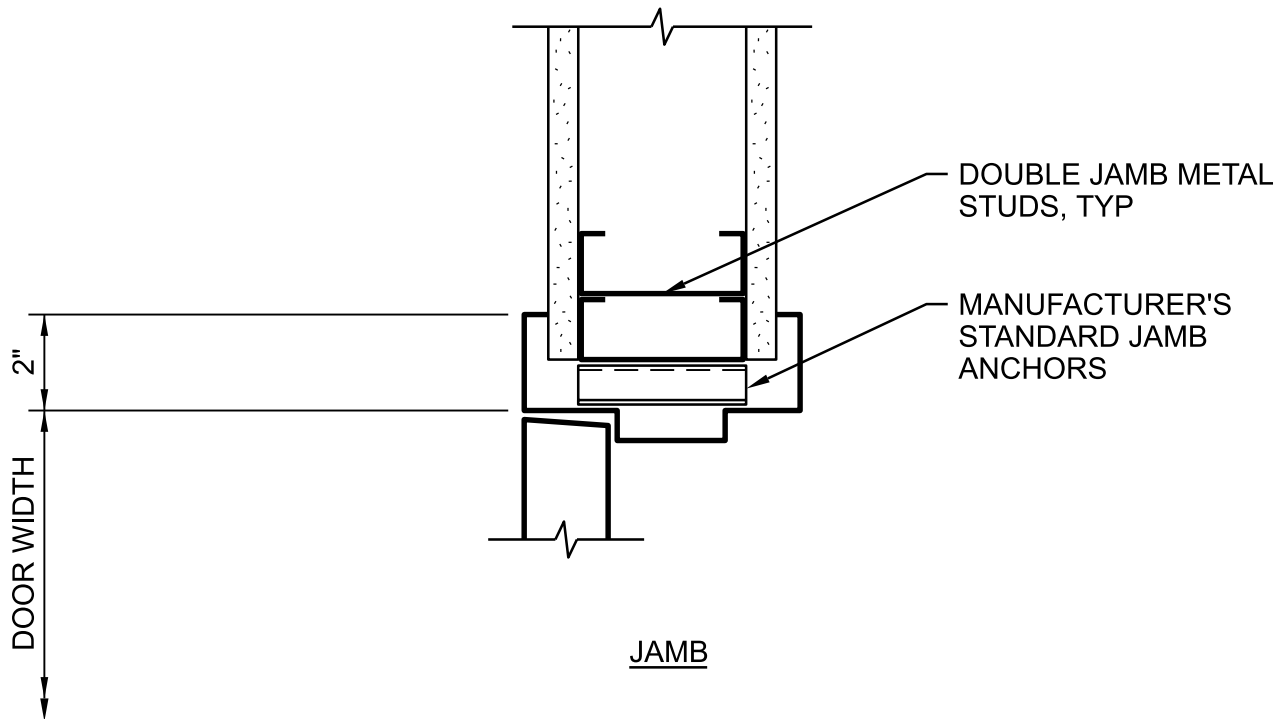
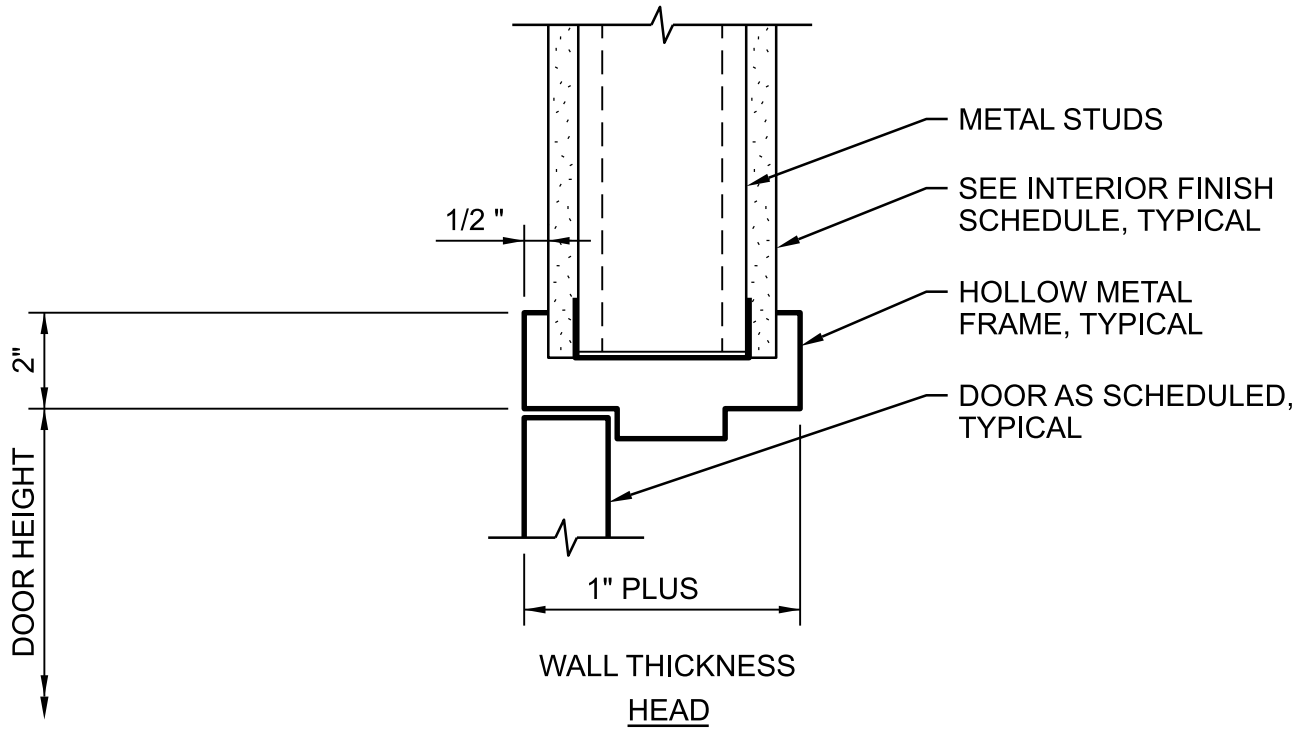
- 1. MATCH FRAME WIDTH OF SCHEDULED JAMB / HEAD DETAIL AT WALL.

TRANSOM / DOOR

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0811-031

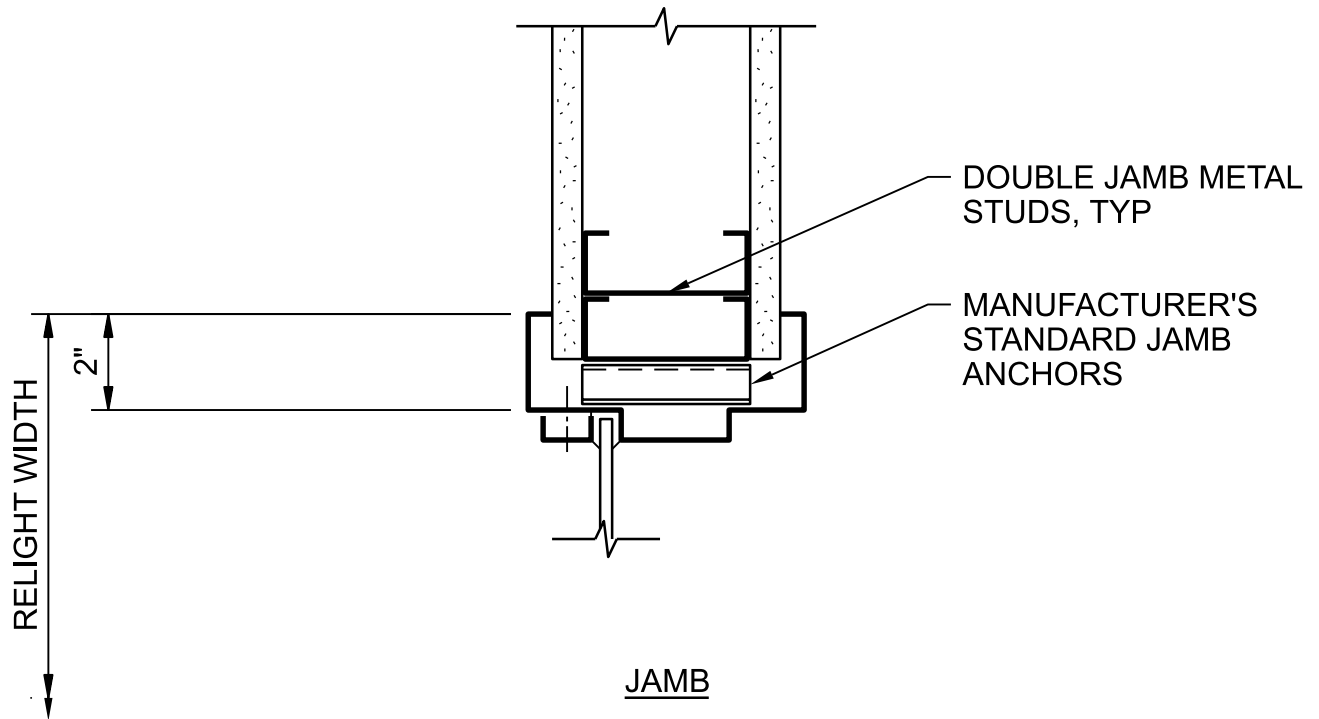
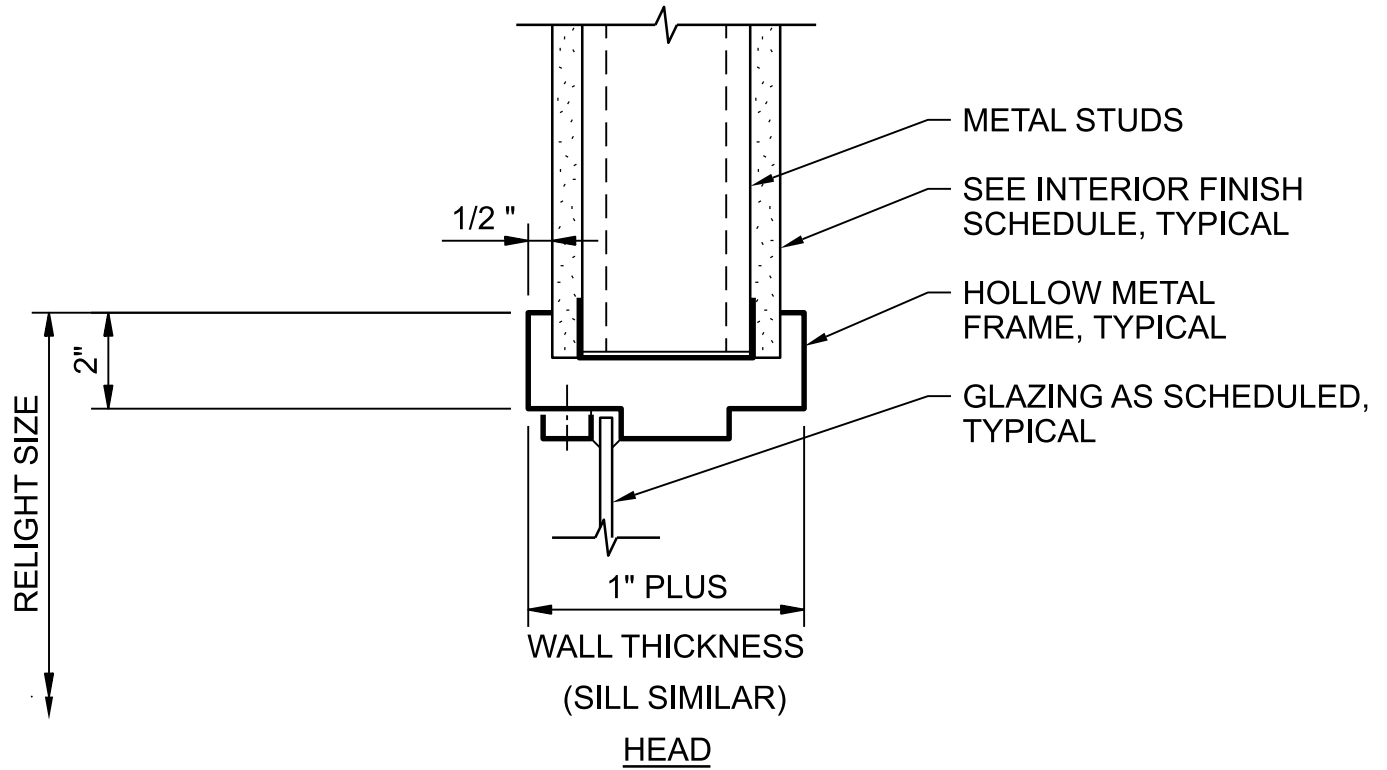


DOOR HEAD AND JAMB

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0811-032

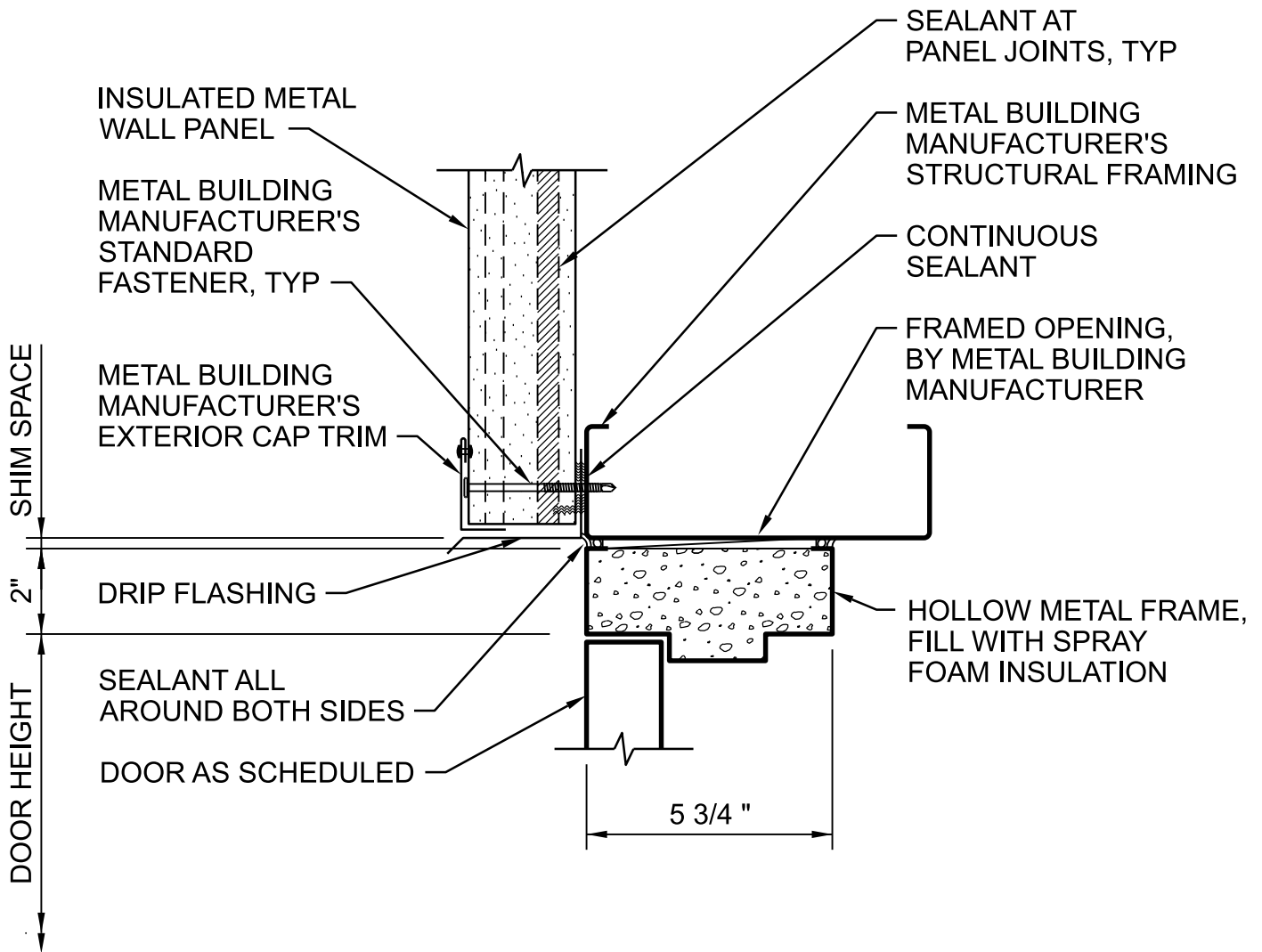


RELIGHT HEAD AND JAMB

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0811-033

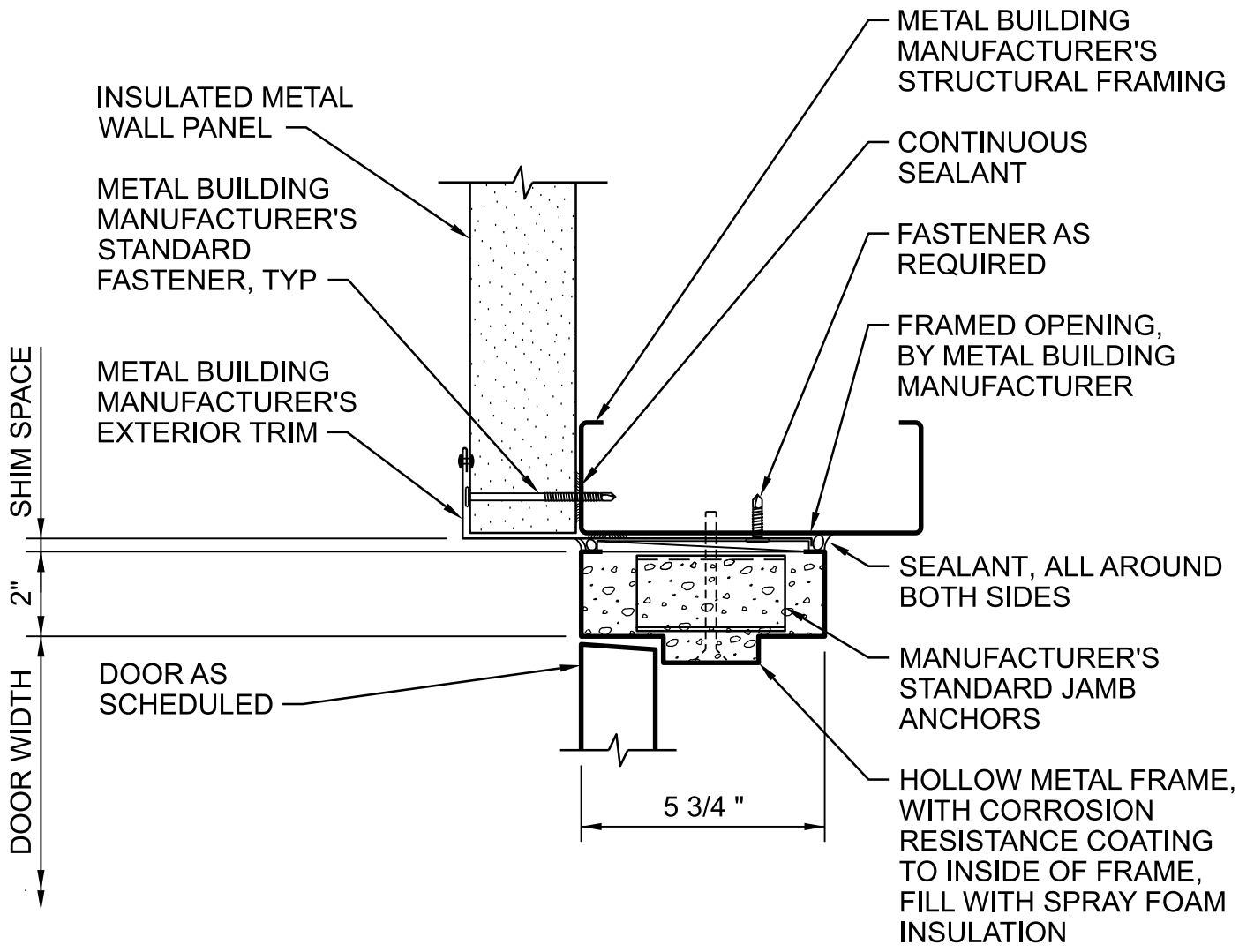


DOOR HEAD

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0811-101

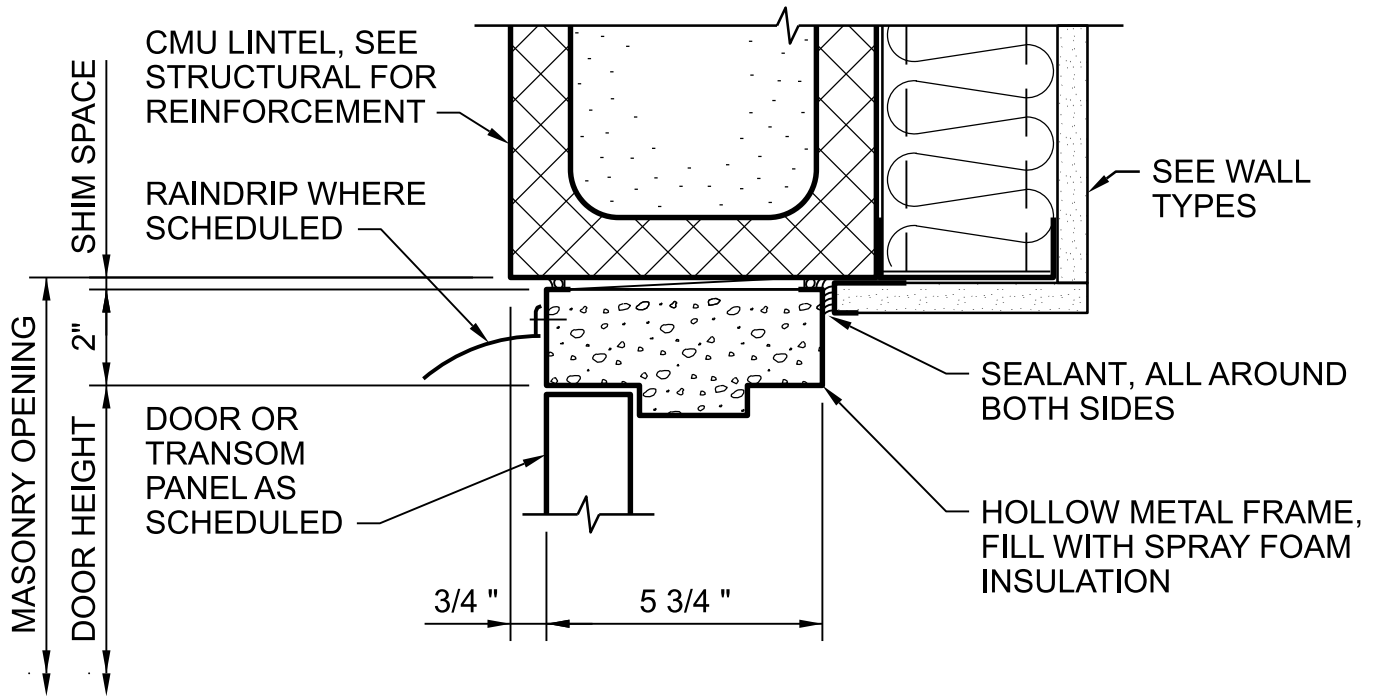


DOOR JAMB

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0811-102

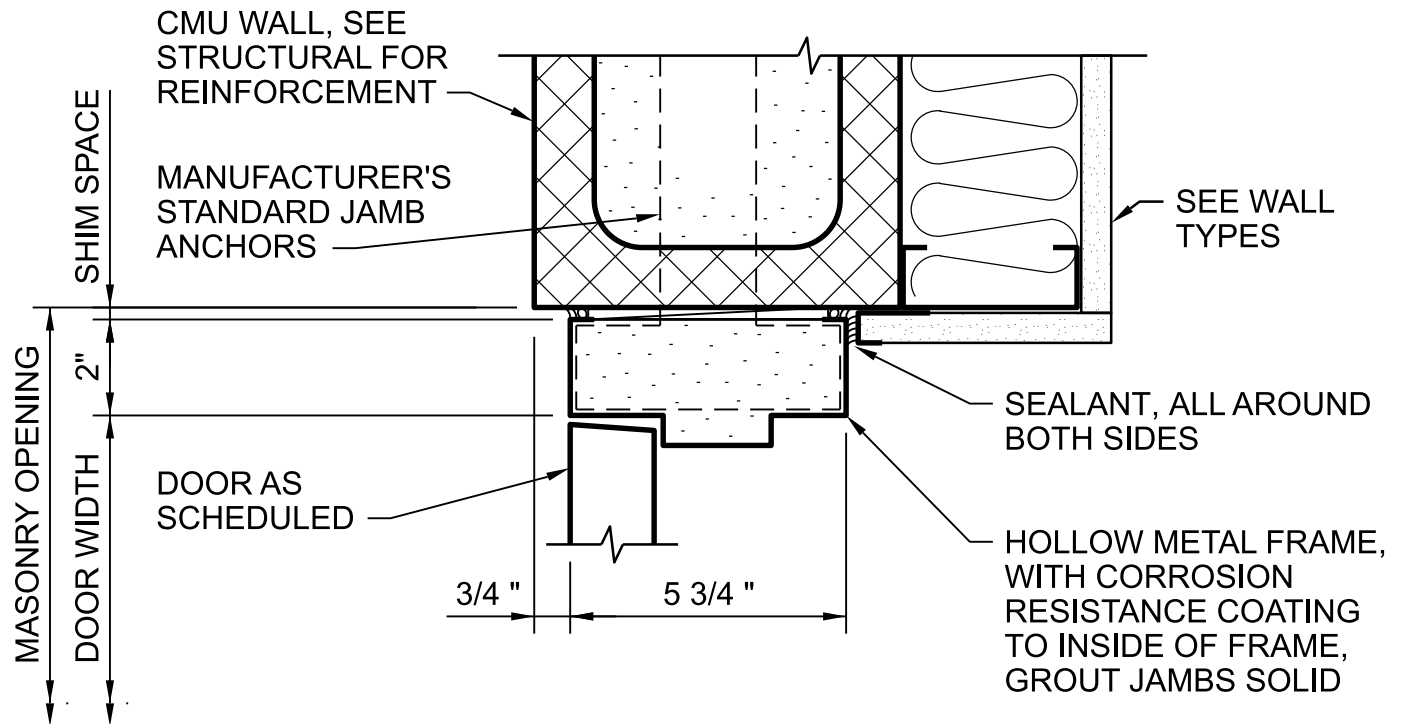


DOOR HEAD

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0811-103

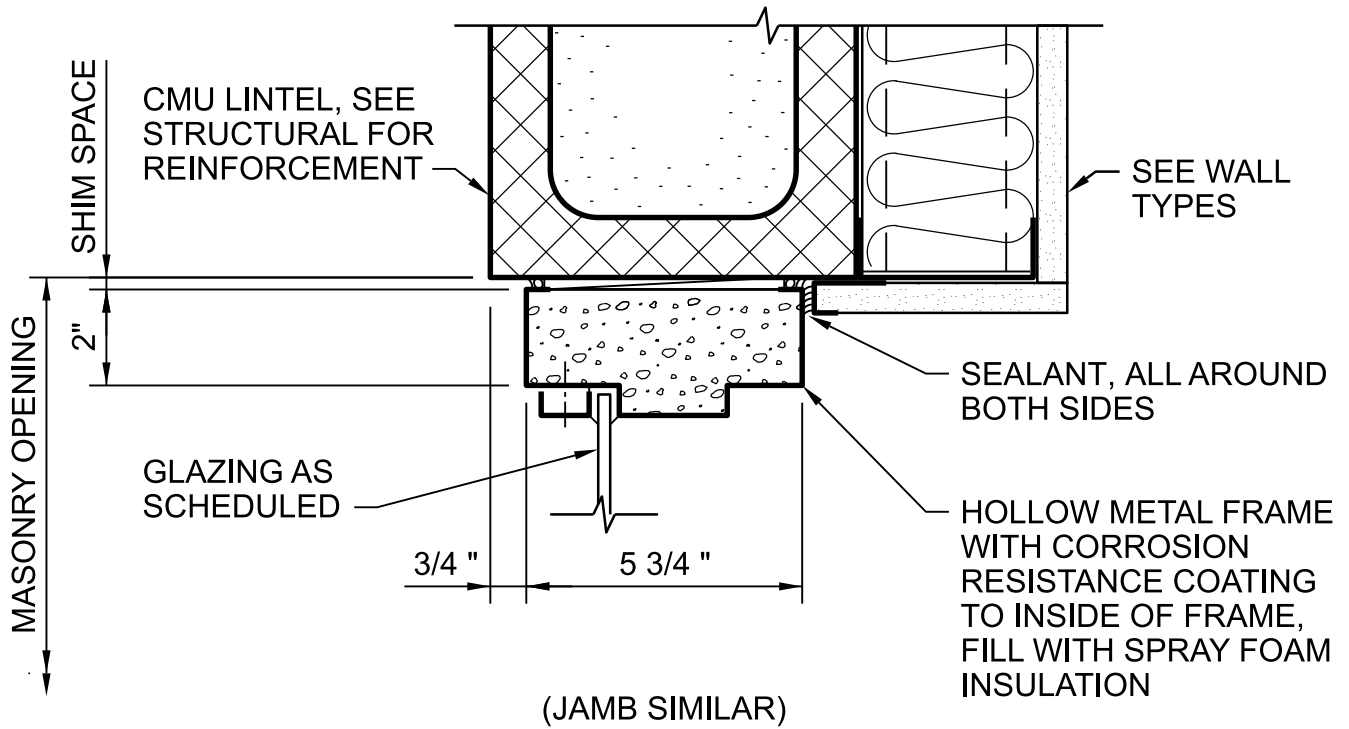


DOOR JAMB

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0811-104

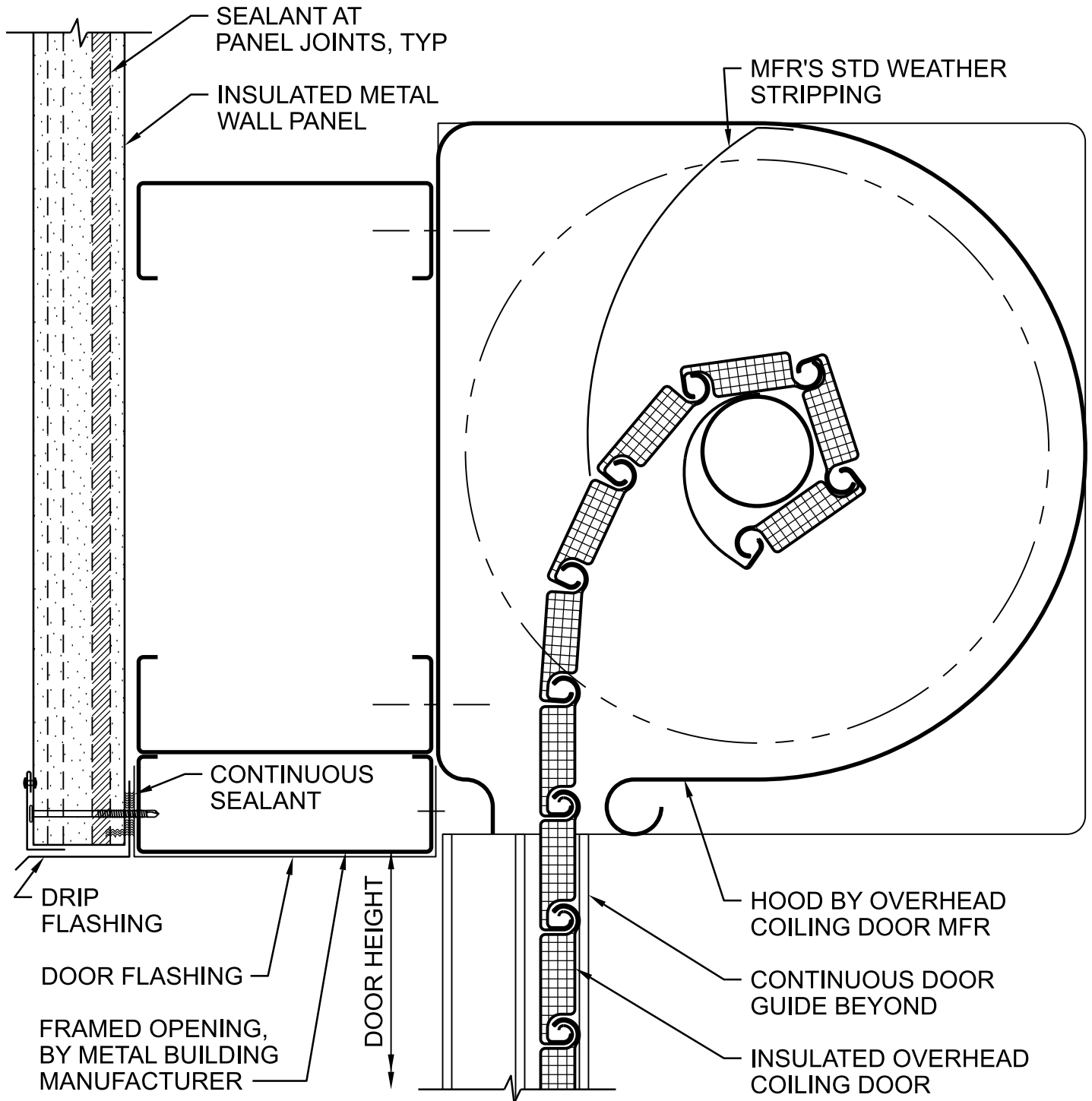


SIDELIGHT HEAD

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0811-105



NOTES:

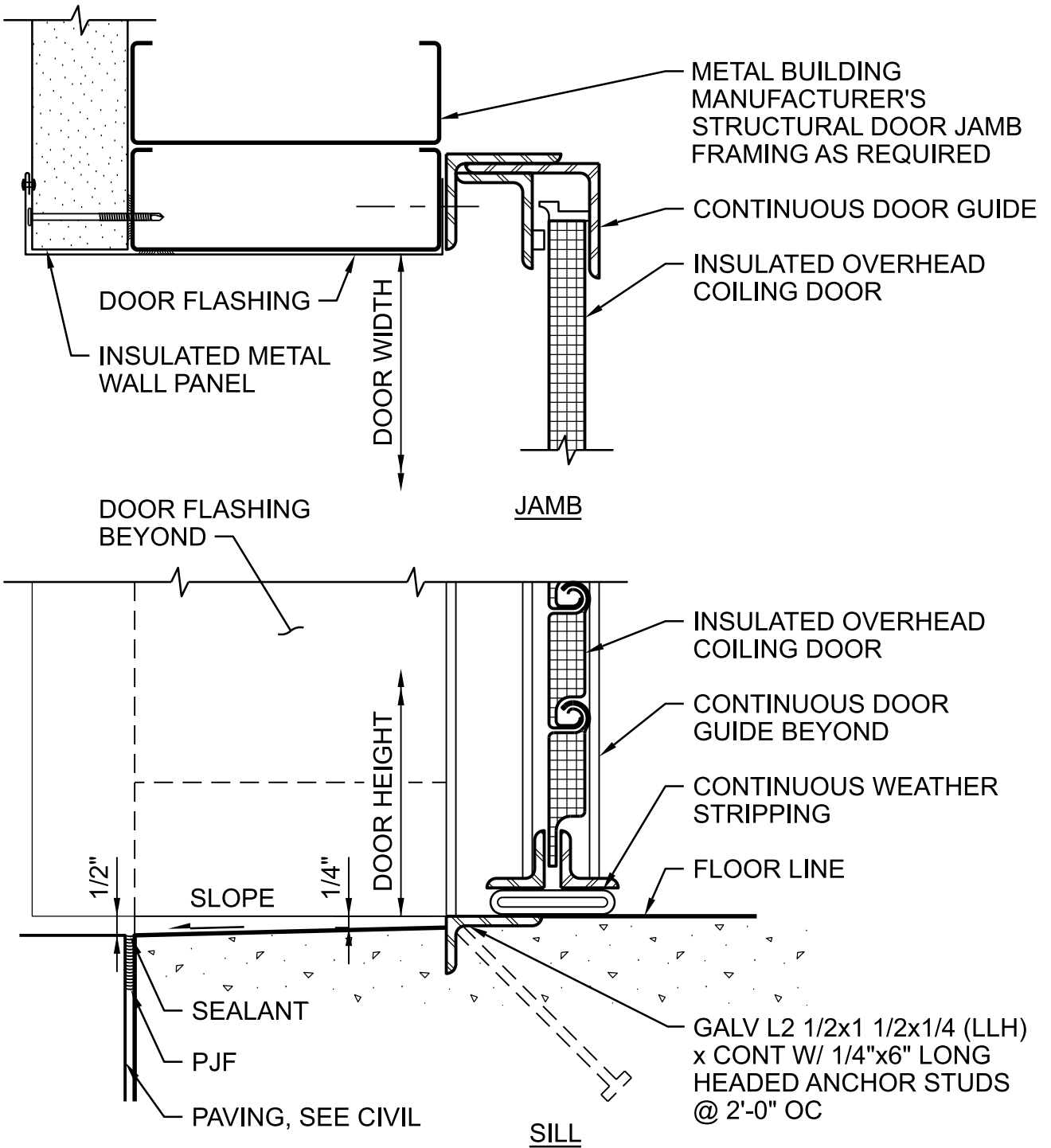
FRAMING AND FLASHING AT WALL OPENING IS GENERIC AND INCLUDED TO SHOW GENERAL INTENT ONLY. ALL DETAILING TO BE METAL BUILDING MANUFACTURER'S STANDARD AND AS NEEDED TO SUIT CONDITIONS SHOWN ON DRAWINGS AND TO PROVIDE A WEATHER TIGHT SEAL.

OVERHEAD COILING DOOR HEAD

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0833-101



NOTES:

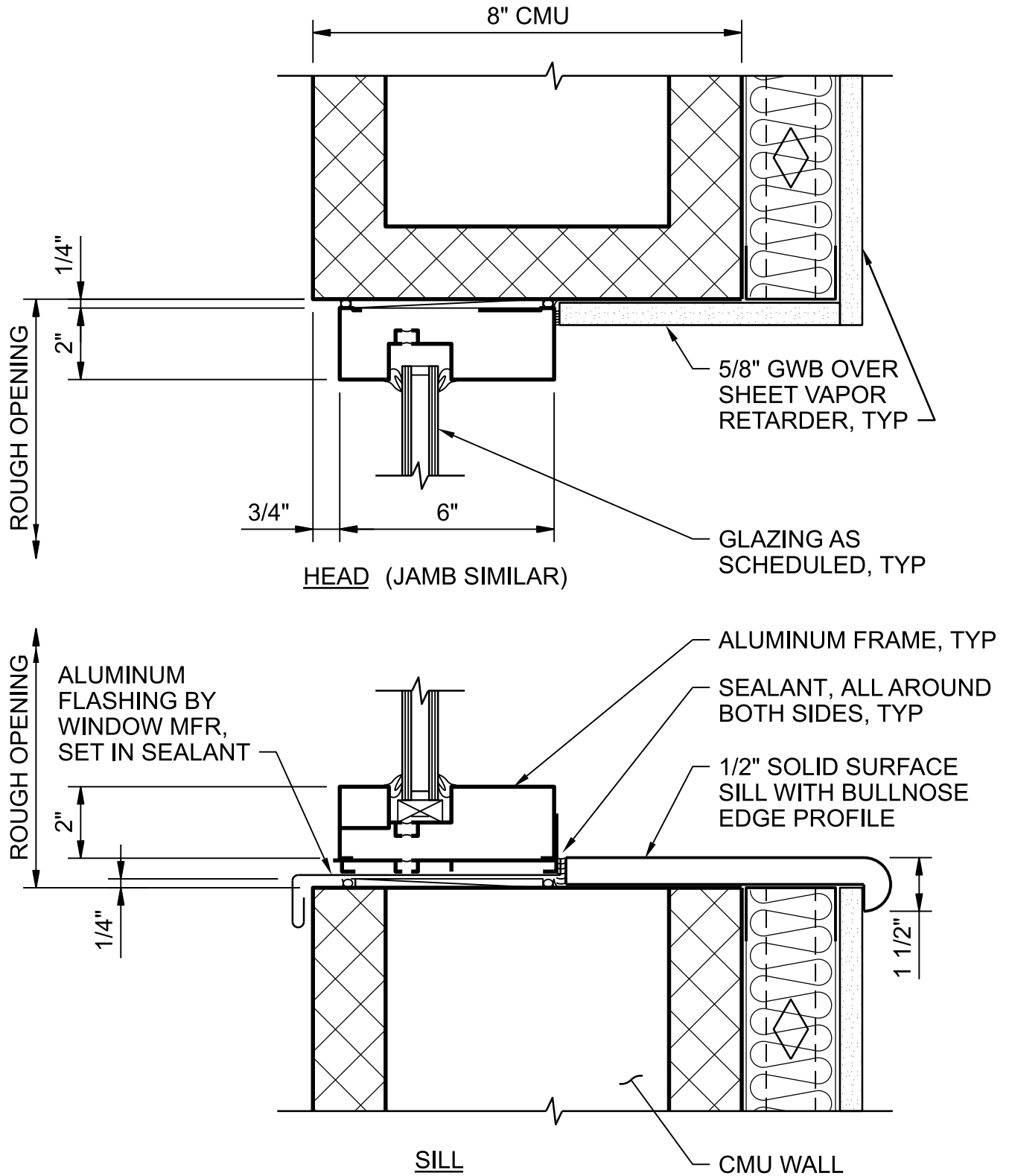
FRAMING AND FLASHING AT WALL OPENING IS GENERIC AND INCLUDED TO SHOW GENERAL INTENT ONLY. ALL DETAILING TO BE METAL BUILDING MANUFACTURER'S STANDARD AND AS REQUIRED TO PROVIDE A WEATHER TIGHT SEAL.

OVERHEAD COILING DOOR JAMB AND SILL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0833-102

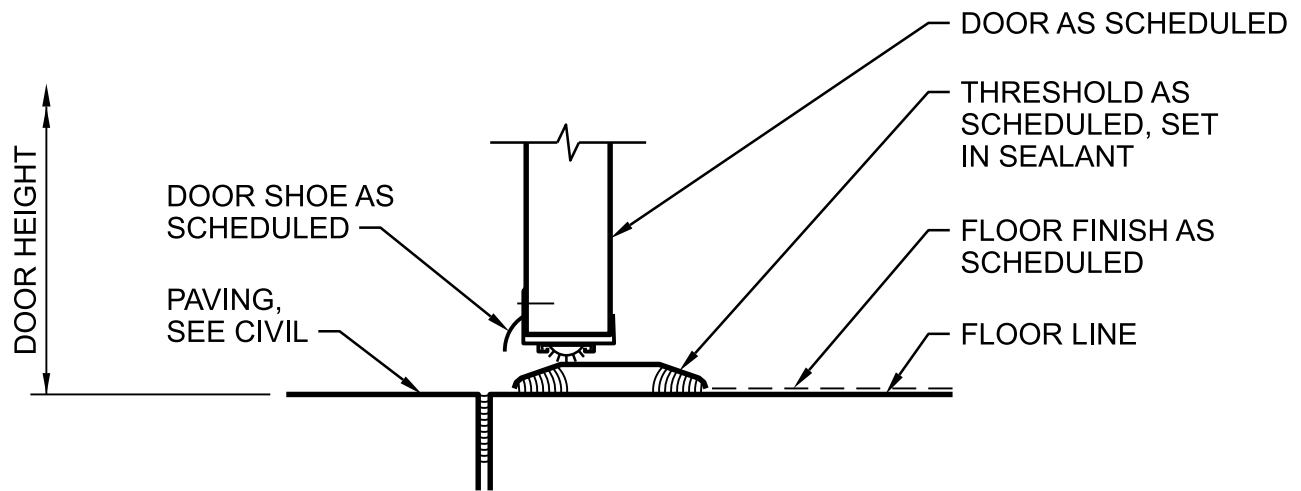


WINDOW / TRANSOM HEAD AND SILL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0841-101

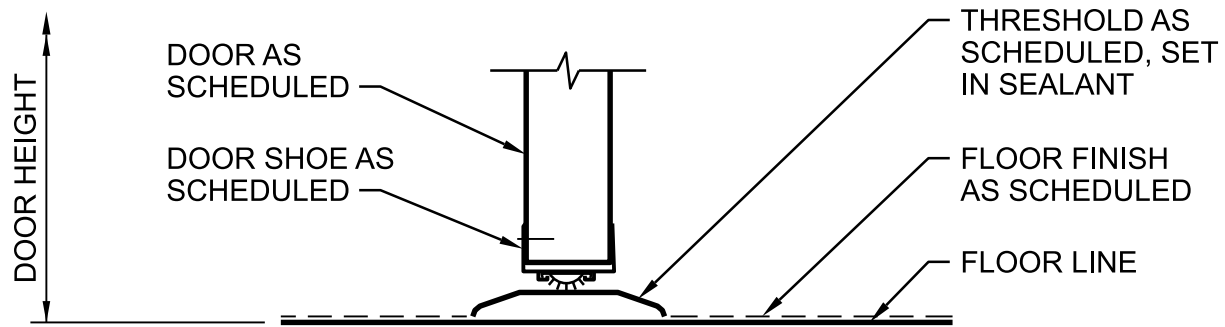


DOOR SILL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0871-001

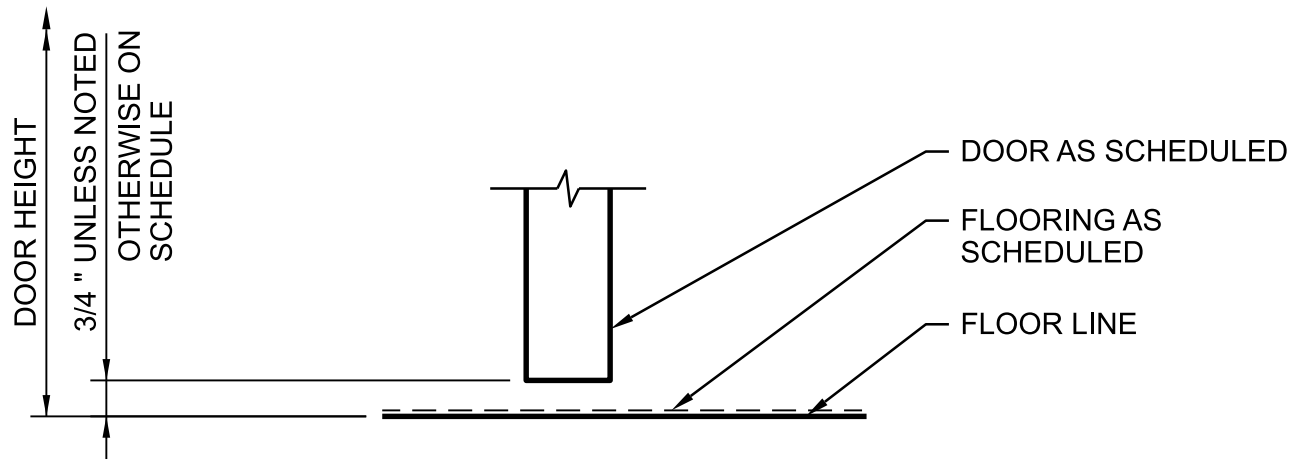


DOOR SILL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0871-002

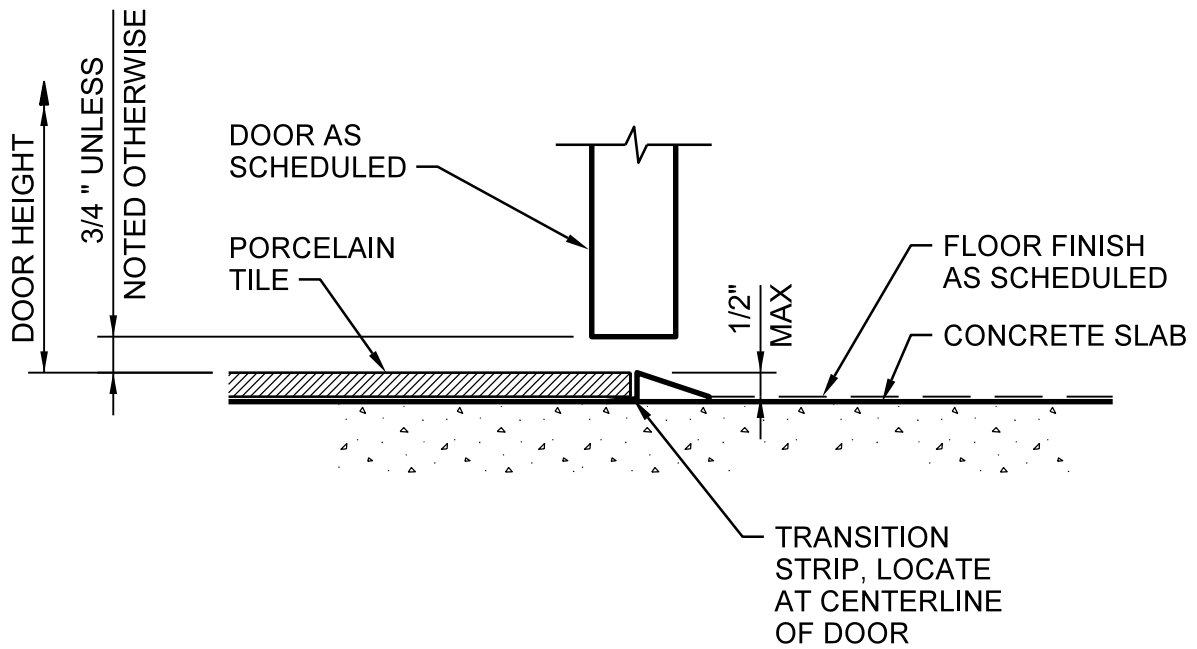


DOOR SILL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0871-003



DOOR SILL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0871-004

EXISTING
CMU VENEER
ASSEMBLY

EXISTING
CMU WALL

FIELD VERIFY
LOUVER OPENING
SIZE

SEALANT,
TYPICAL

LOUVER
MANUFACTURER'S
STANDARD CLIP

SCREEN AS
SPECIFIED

LOUVER AS
SCHEDULED

6"

(JAMB SIMILAR)

HEAD

6"

FIELD VERIFY
LOUVER OPENING
SIZE

SILL FLASHING
BY LOUVER
MANUFACTURER,
SET IN SEALANT

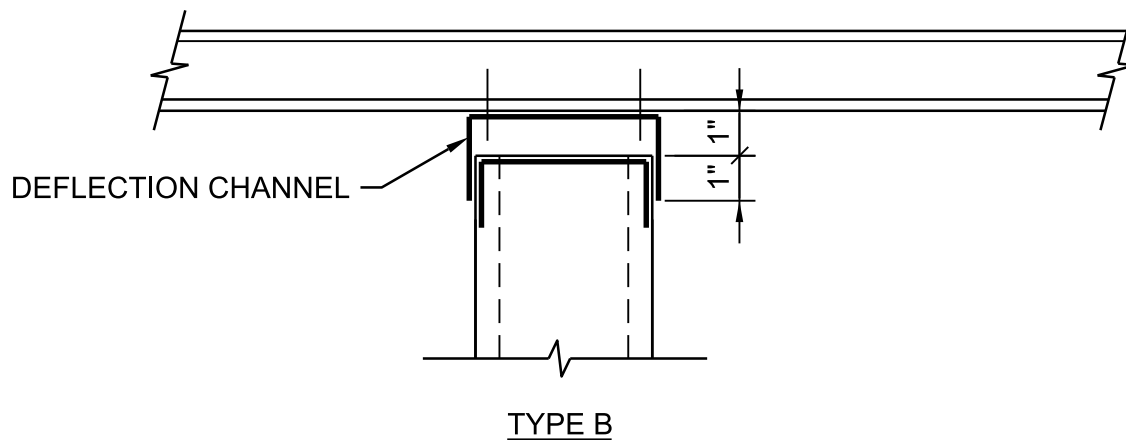
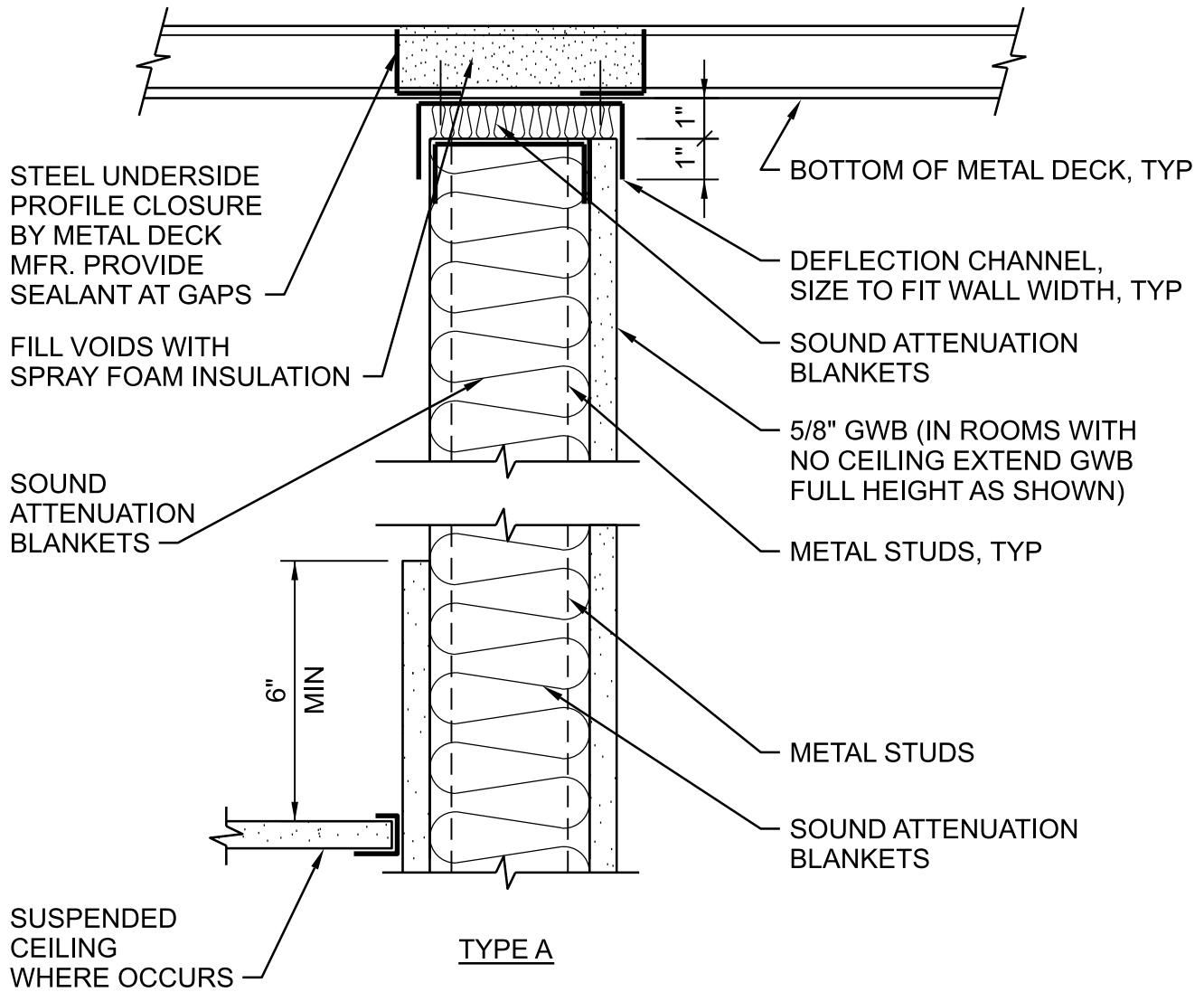
SILL

LOUVER HEAD AND SILL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0890-001

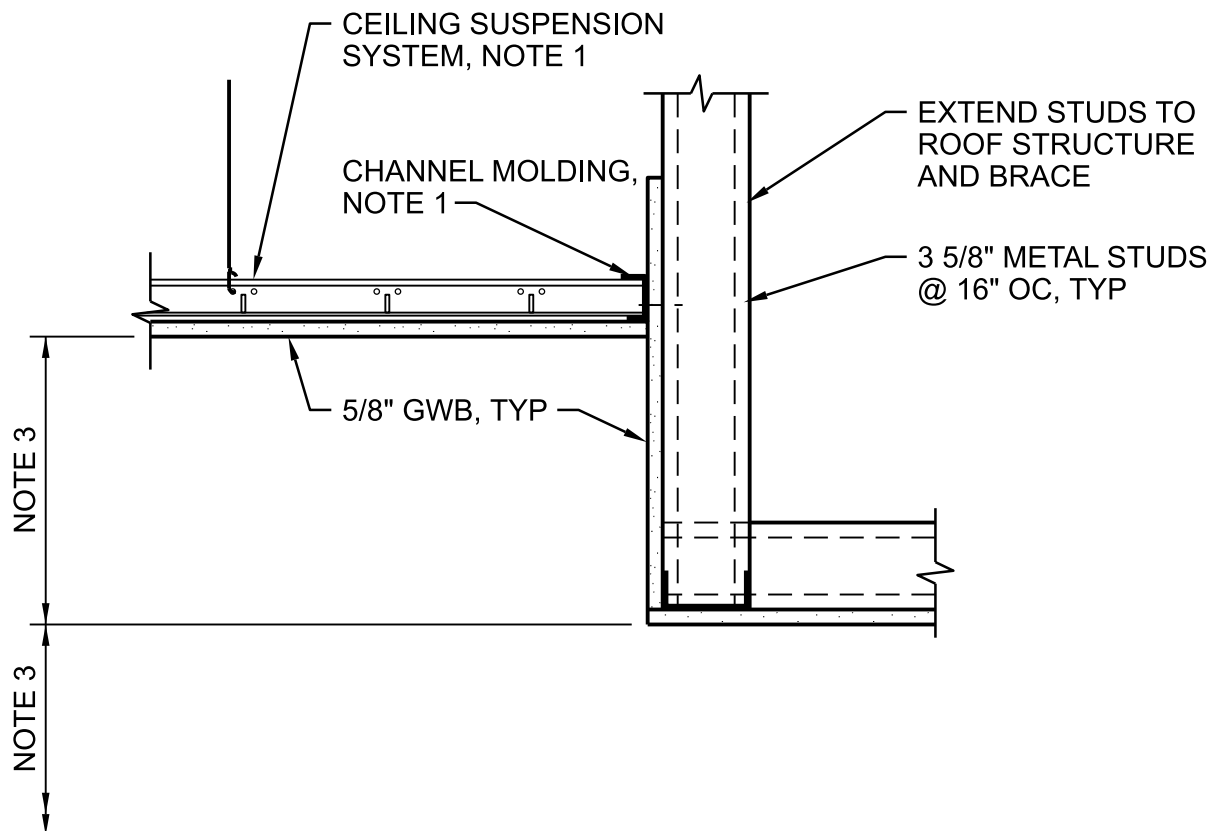


DEFLECTION HEAD

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0929-101



NOTES:

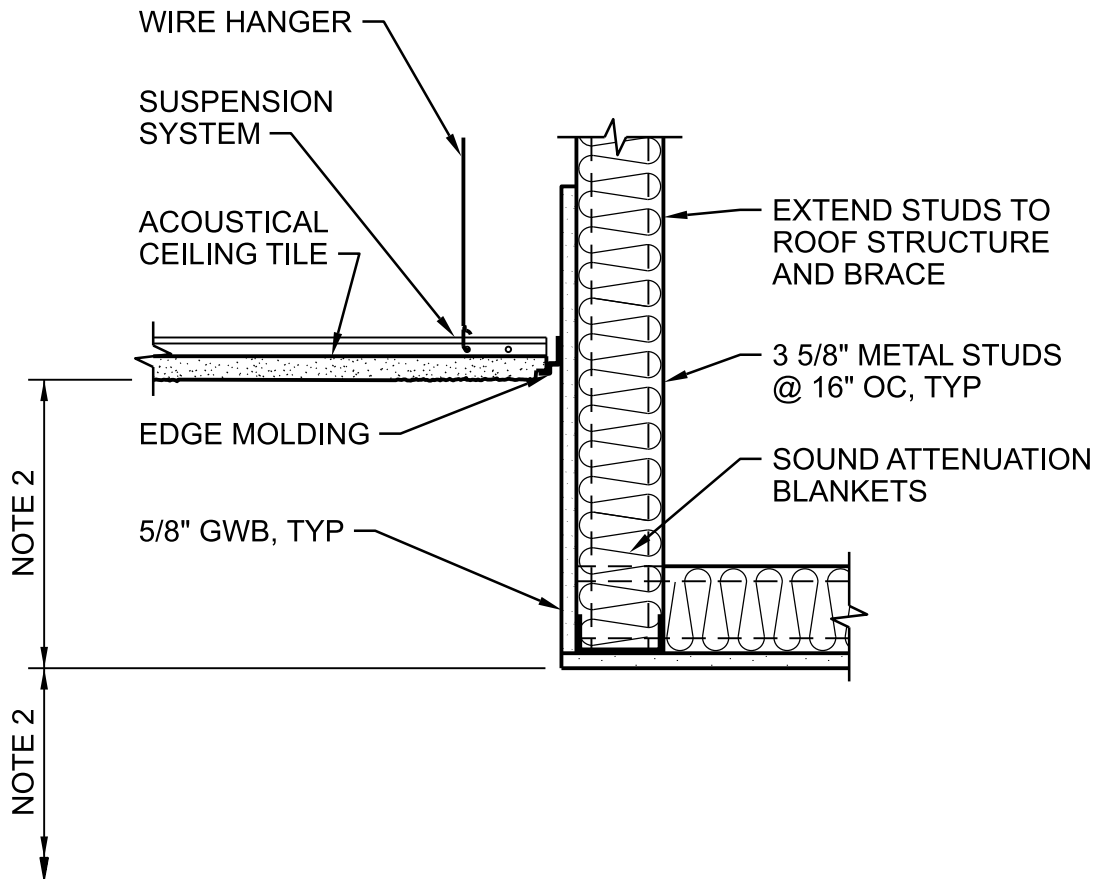
1. ITEMS TO BE PROVIDED BY DRYWALL CEILING SUSPENSION SYSTEM MANUFACTURER.
2. INSTALL SUSPENDED DRYWALL CEILING SUSPENSION SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 01 88 15, ANCHORAGE AND BRACING. PROVIDE BRACING AS REQUIRED.
3. REFER TO DRAWINGS FOR HEIGHTS.

SOFFIT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0929-401



NOTES:

1. INSTALL SUSPENDED ACOUSTICAL CEILING SUSPENSION SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 01 88 15, ANCHORAGE AND BRACING. PROVIDE BRACING AS REQUIRED.
2. REFER TO DRAWINGS FOR HEIGHTS.

SOFFIT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0929-402

CEMENTITIOUS
BACKER BOARD
OVER METAL STUDS

WALL MEMBRANE,
LAP OVER
SHOWER MEMBRANE

PORCELAIN WALL TILE
SHOWER SURROUND

NOTE:
INSTALL SHOWER WALLS TO MEET
THE REQUIREMENTS OF THE TILE
COUNCIL OF AMERICA, METHOD W244.
INSTALL SHOWER FLOOR TO MEET
THE REQUIREMENTS OF THE TILE
COUNCIL OF AMERICA, METHOD B415.

SHOWER PAN
MEMBRANE LINER,
CARRY ALL AROUND
SHOWER UNDER
ENTIRE FLOOR
AND UP WALL 1'-0"

RECESSED CONCRETE
FLOOR SLAB, SEE
STRUCTURAL DRAWINGS

SHOWER SECTION

1" TO 1-3/4" REINFORCED
MORTAR BED, SLOPE 1/4" PER FOOT

COVE

FLOOR TILE

WEEP HOLES

SHOWER
DRAIN

CRUSHED
TILE OR
STONE

SCHEDULED
FLOOR TILE

SHOWER

SLOPE MORTAR
BED 1/4" PER FT TO
SHOWER DRAIN

OUTSIDE FACE
OF SHOWER

2
1 TYP

1/2"

2" RECESSED CONCRETE
FLOOR SLAB, SEE
STRUCTURAL DWGS

FLOOR TILE

SHOWER PAN
MEMBRANE LINER

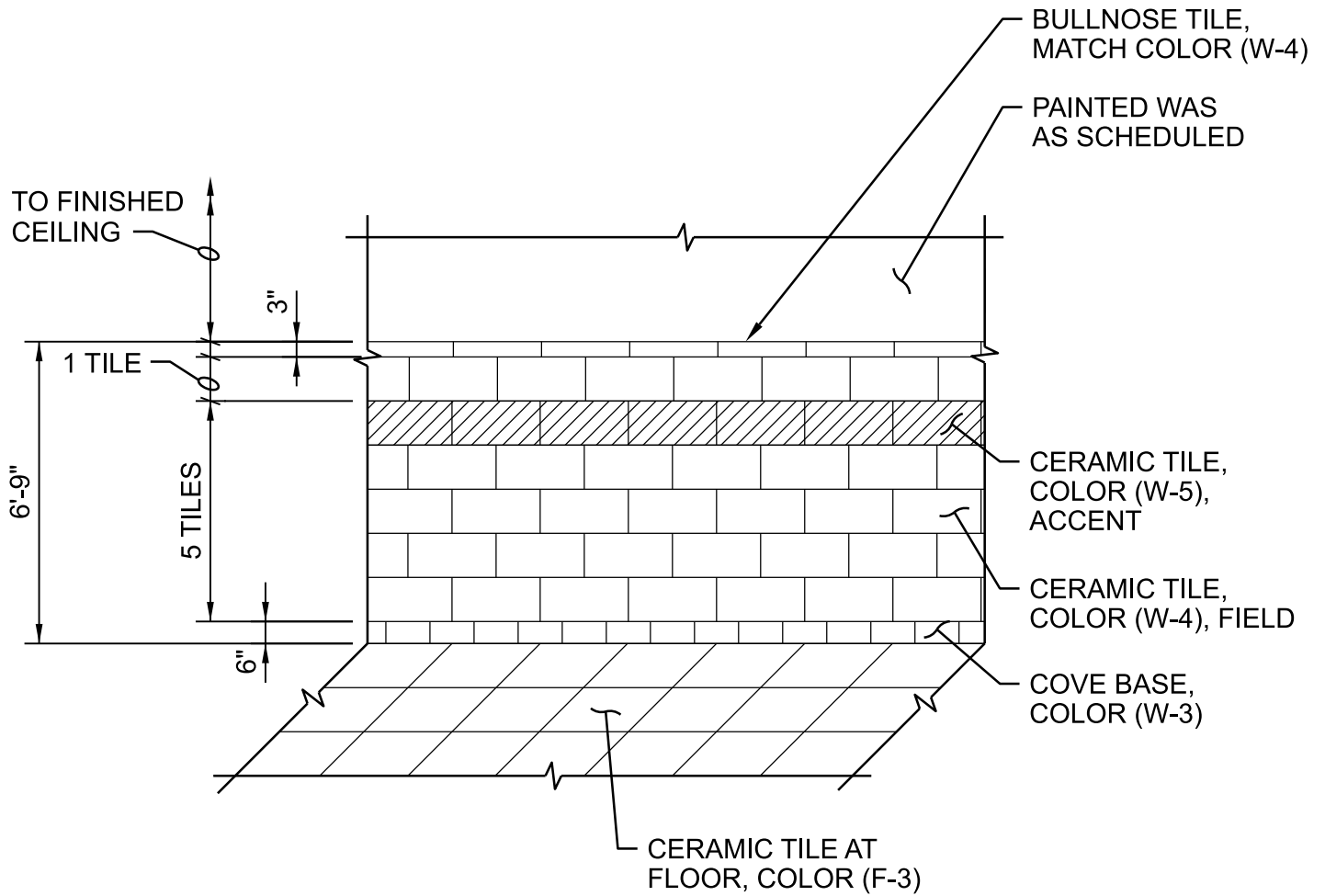
SHOWER CURB DETAIL

SHOWER STALL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0931-100



NOTES:

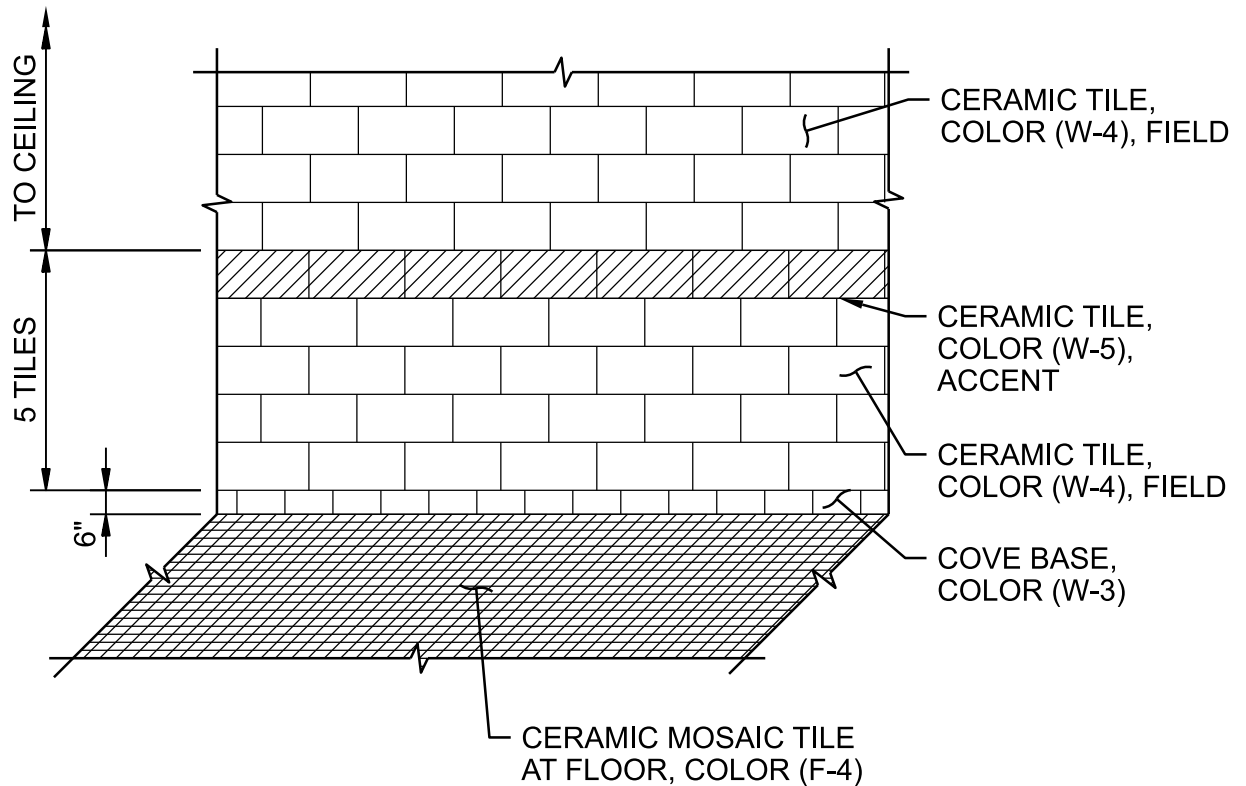
1. SEE COLOR LIST ON DRAWINGS FOR LETTER-NUMBER DESIGNATIONS.
2. FOR GROUT COLOR SEE COLOR LIST ON DRAWINGS.
3. WALL TILE PATTERN TO BE 1/2 OFFSET.

WALL TILE PATTERN

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0931-101



NOTES:

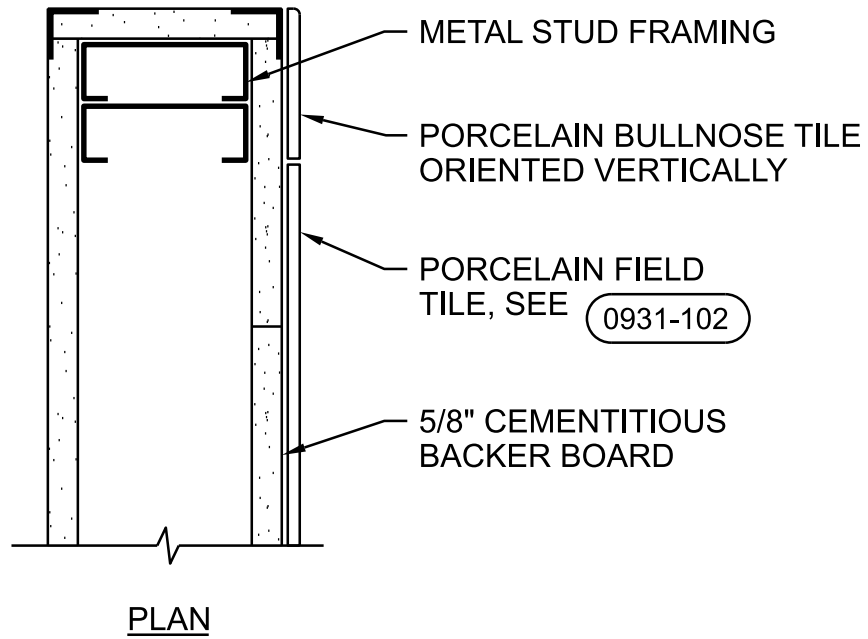
1. SEE COLOR LIST ON DRAWINGS FOR LETTER-NUMBER DESIGNATIONS.
2. FOR GROUT COLOR SEE COLOR LIST ON DRAWINGS.
3. WALL TILE PATTERN TO BE 1/2 OFFSET.

WALL TILE PATTERN AT SHOWERS

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

0931-102

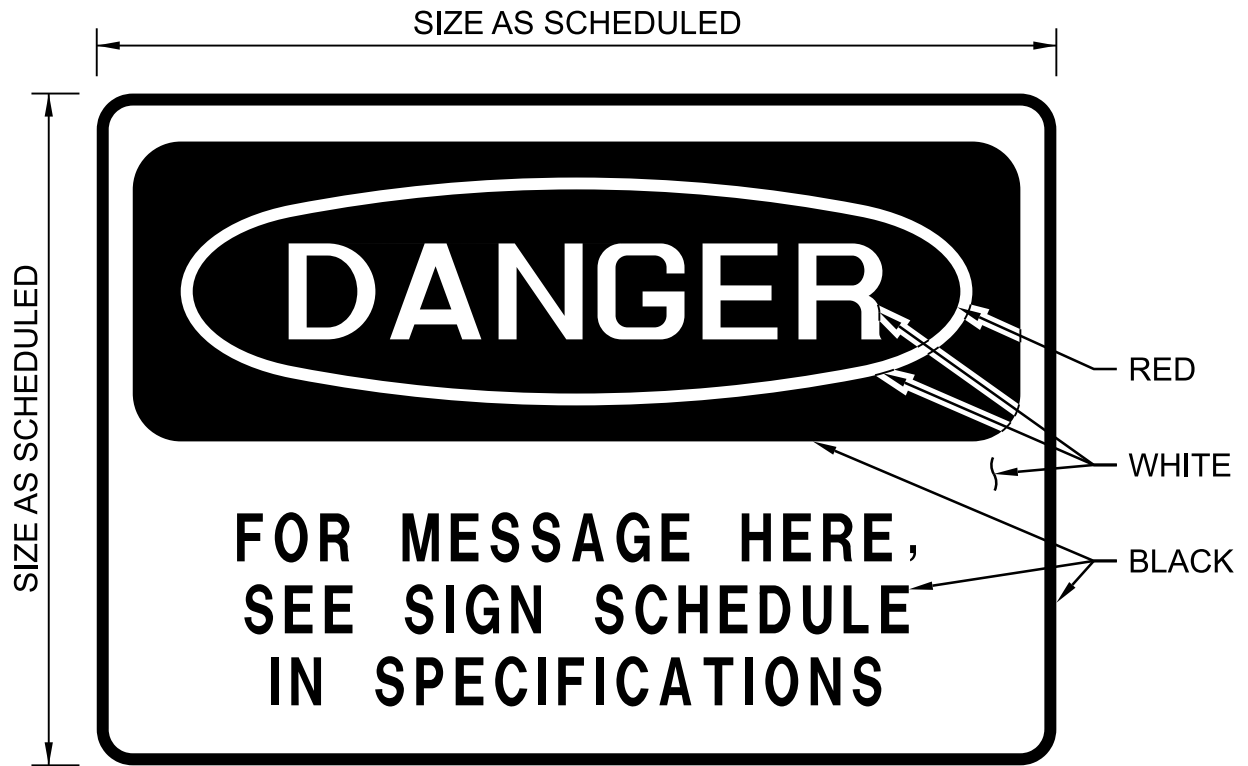


TILE TRANSITION (AT END OF WALL)

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

0931-103

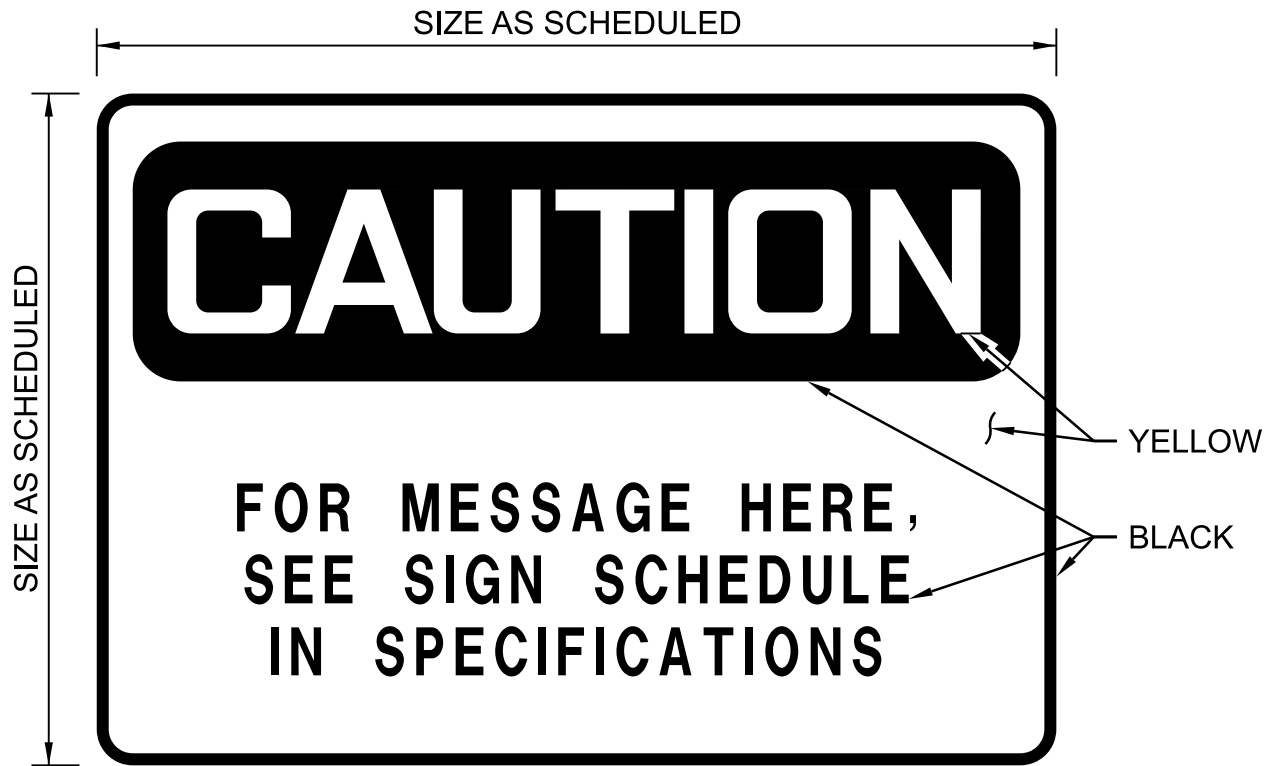


DANGER SIGN

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1014-001

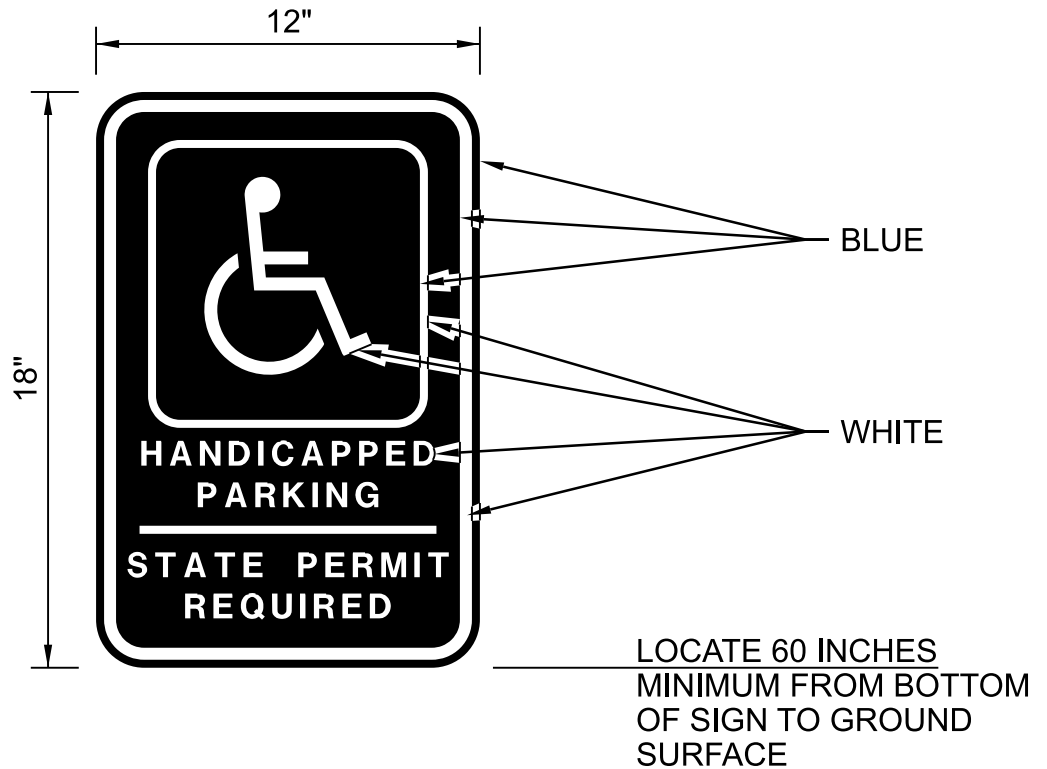


CAUTION SIGN

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1014-002



NOTES:

1. VERIFY REQUIREMENTS OF THIS SIGN WITH STATE OF OKLAHOMA LAWS AND REGULATIONS.
2. THE COLOR OF THE TEXT AND BORDER SHALL BE WHITE AND THE BACKGROUND SHALL BE BLUE.

HANDICAPPED PARKING SIGN

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

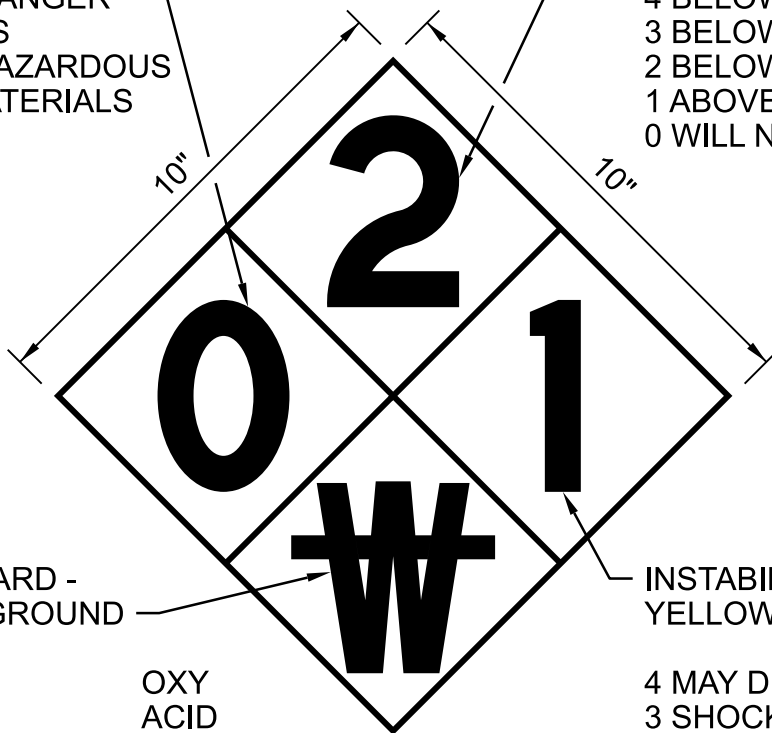
1014-004

HEALTH HAZARD -
BLUE BACKGROUND

4 DEADLY
3 EXTREME DANGER
2 HAZARDOUS
1 SLIGHTLY HAZARDOUS
0 NORMAL MATERIALS

FLAMMABILITY HAZARD -
RED BACKGROUND

FLASH POINTS
4 BELOW 73 F
3 BELOW 100 F
2 BELOW 200 F
1 ABOVE 200 F
0 WILL NOT BURN



SPECIAL HAZARD -
WHITE BACKGROUND

OXIDIZER
ACID
ALKALI
CORROSIVE
USE NO WATER
RADIATION HAZARD

OXY
ACID
ALK
COR
W
☢

INSTABILITY HAZARD -
YELLOW BACKGROUND

4 MAY DETONATE
3 SHOCK & HEAT MAY DETONATE
2 VIOLENT CHEMICAL CHANGE
1 UNSTABLE IF HEATED
0 STABLE

NOTES:

1. LETTER HEIGHT: 4"
LETTER COLOR: BLACK
2. NUMBERS AND LETTERS ON ABOVE SIGNAL DETAIL
ARE EXAMPLES ONLY. SEE SPECIFICATION 10 14 00
FOR REQUIREMENTS ON THIS PROJECT.

HAZARDOUS MATERIAL SIGNAL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

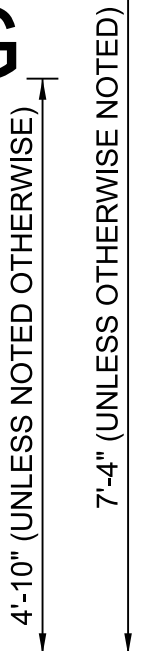
1014-006

BUILDING NAME
SIGN (MESSAGE) AS
SHOWN ON DRAWINGS

12" TALL
LETTER, TYP

DEWATERING CENTRIFUGE BUILDING

INDIVIDUAL FABRICATED
ALUMINUM LETTER, TYP,
PROVIDE IN SIZE SPECIFIED



FF EL

NOTES:

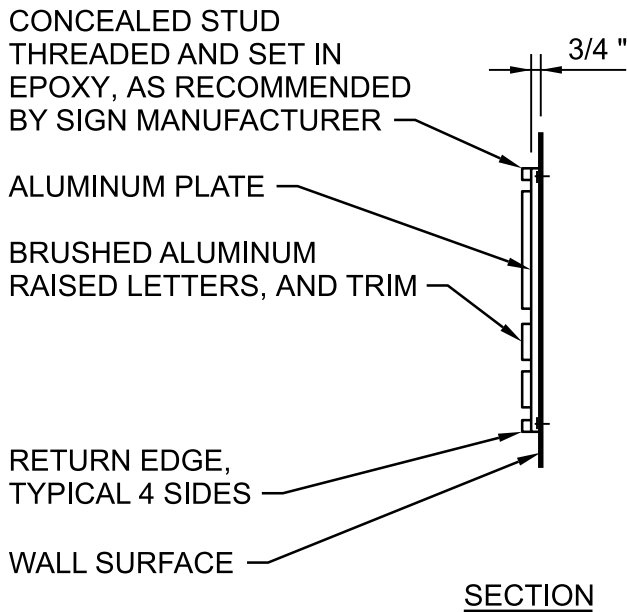
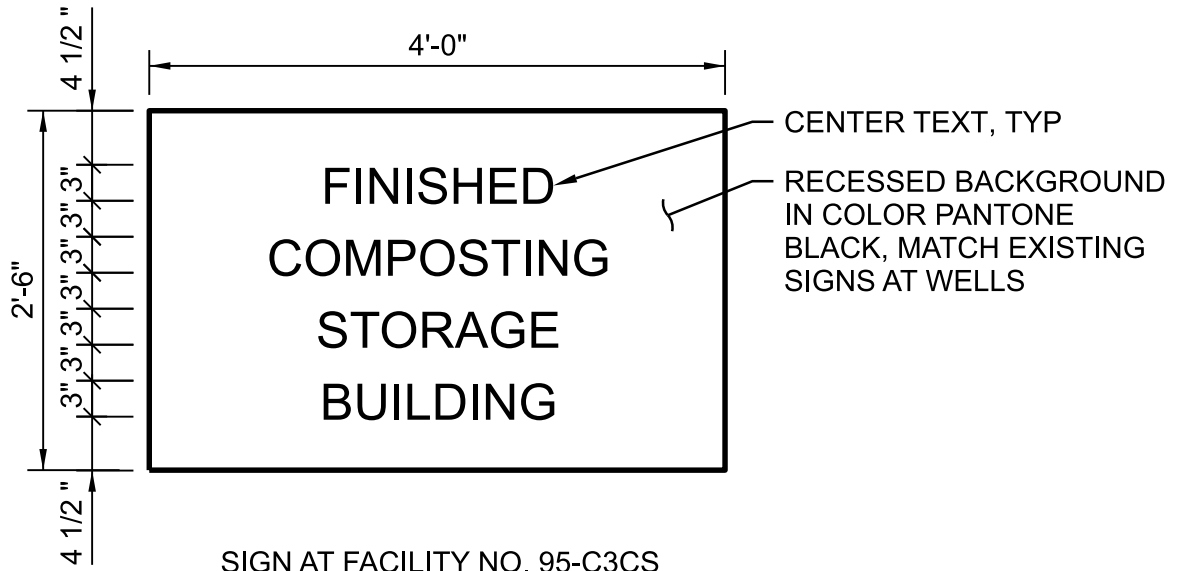
- 1. SEE SPECIFICATION SECTION 10 14 00, SIGNAGE, FOR FURTHER INFORMATION.

BUILDING NAME SIGN (TYPE 1)

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1014-102



NOTES:

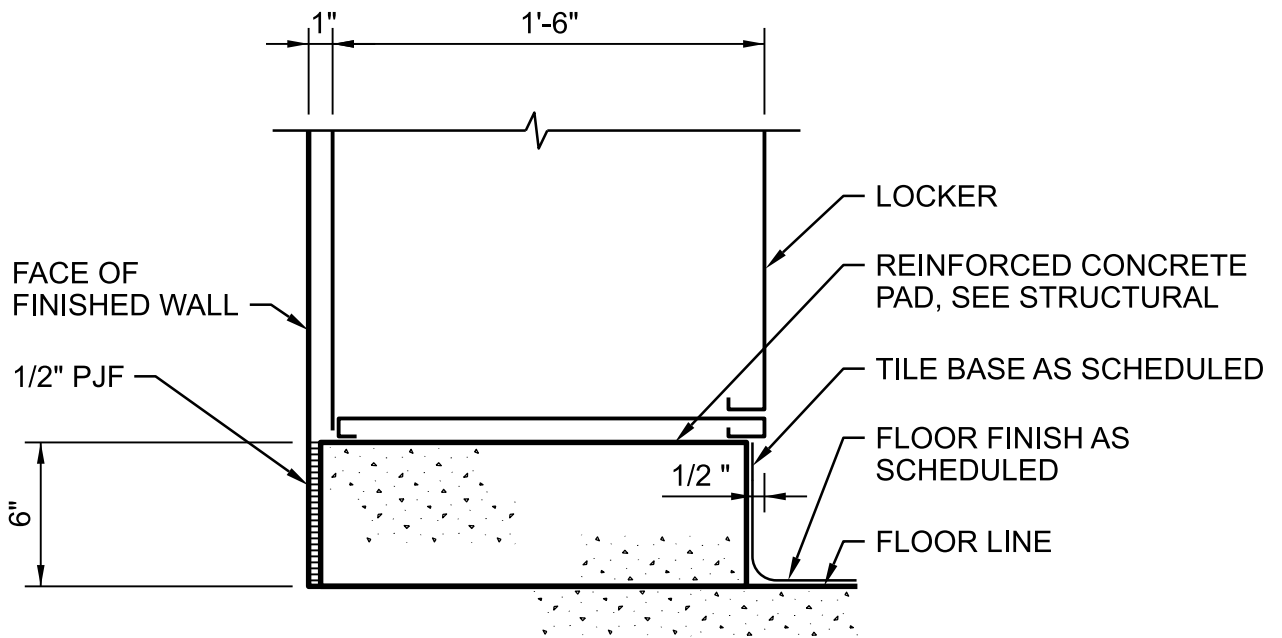
1. SEE SPECIFICATIONS FOR SIGN REQUIREMENTS.
2. LOCATE SIGNS AS SHOWN ON ARCHITECTURAL ELEVATION DRAWINGS.

BUILDING NAME SIGN (TYPE 2)

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

1014-103



LOCKER BASE - CONCRETE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1051-001

STANDING SEAM
METAL ROOF PANEL

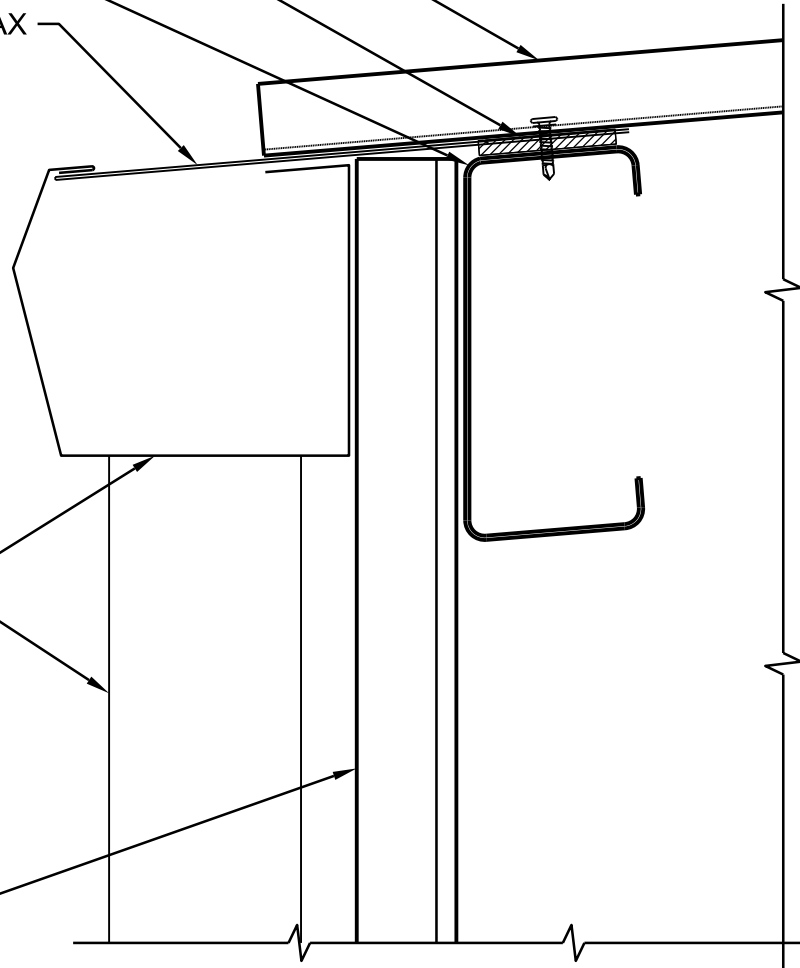
THERMAL BLOCK

METAL PURLIN
(EAVE STRUT)

EAVE GUTTER
STRAP, 3'-0" OC, MAX

ROOFING
MANUFACTURER'S
STANDARD EAVE
GUTTER AND
DOWNSPOUT

METAL WALL
PANEL, SEE
ELEVATIONS
FOR EXTENTS

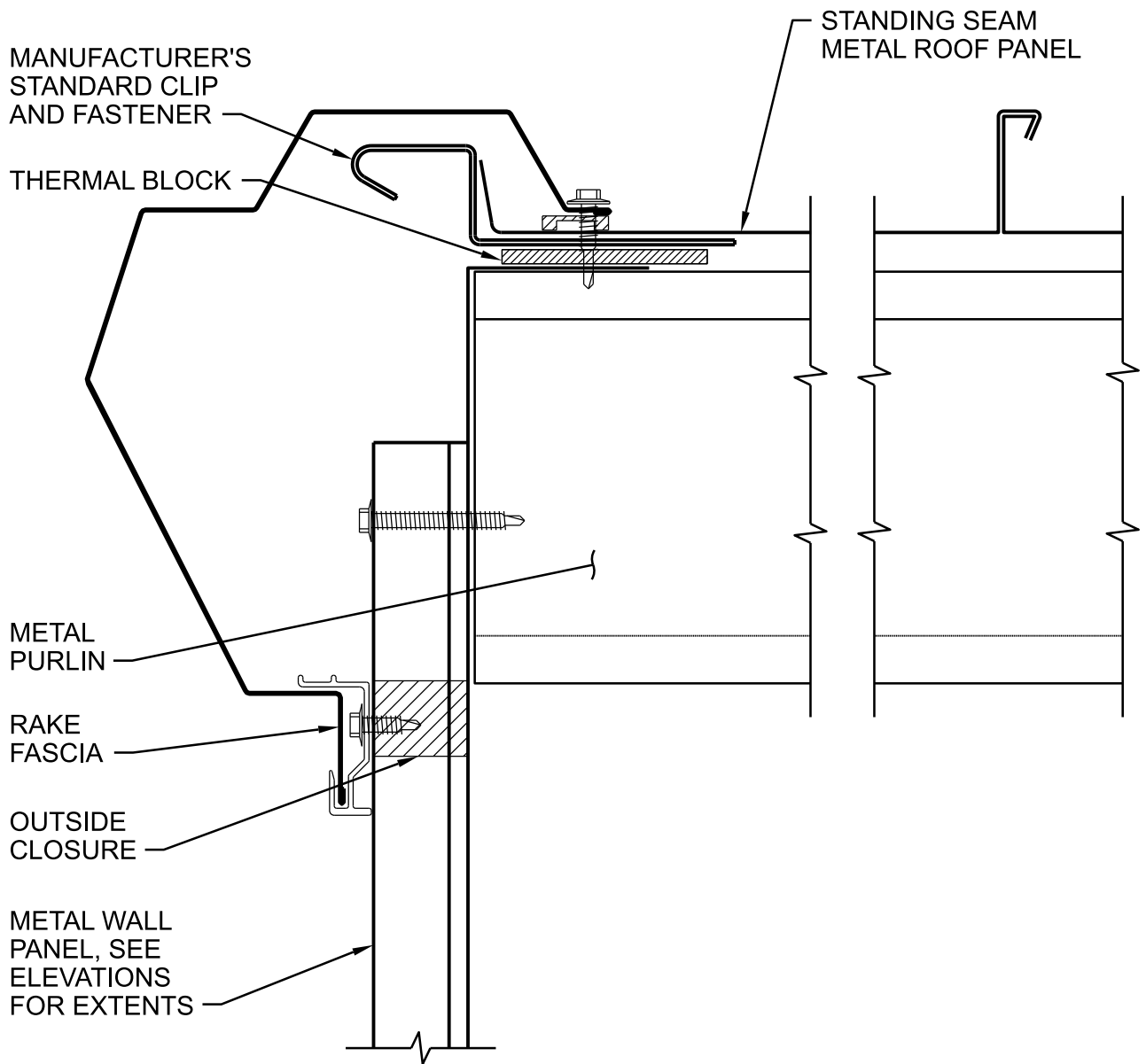


LOW EAVE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-001

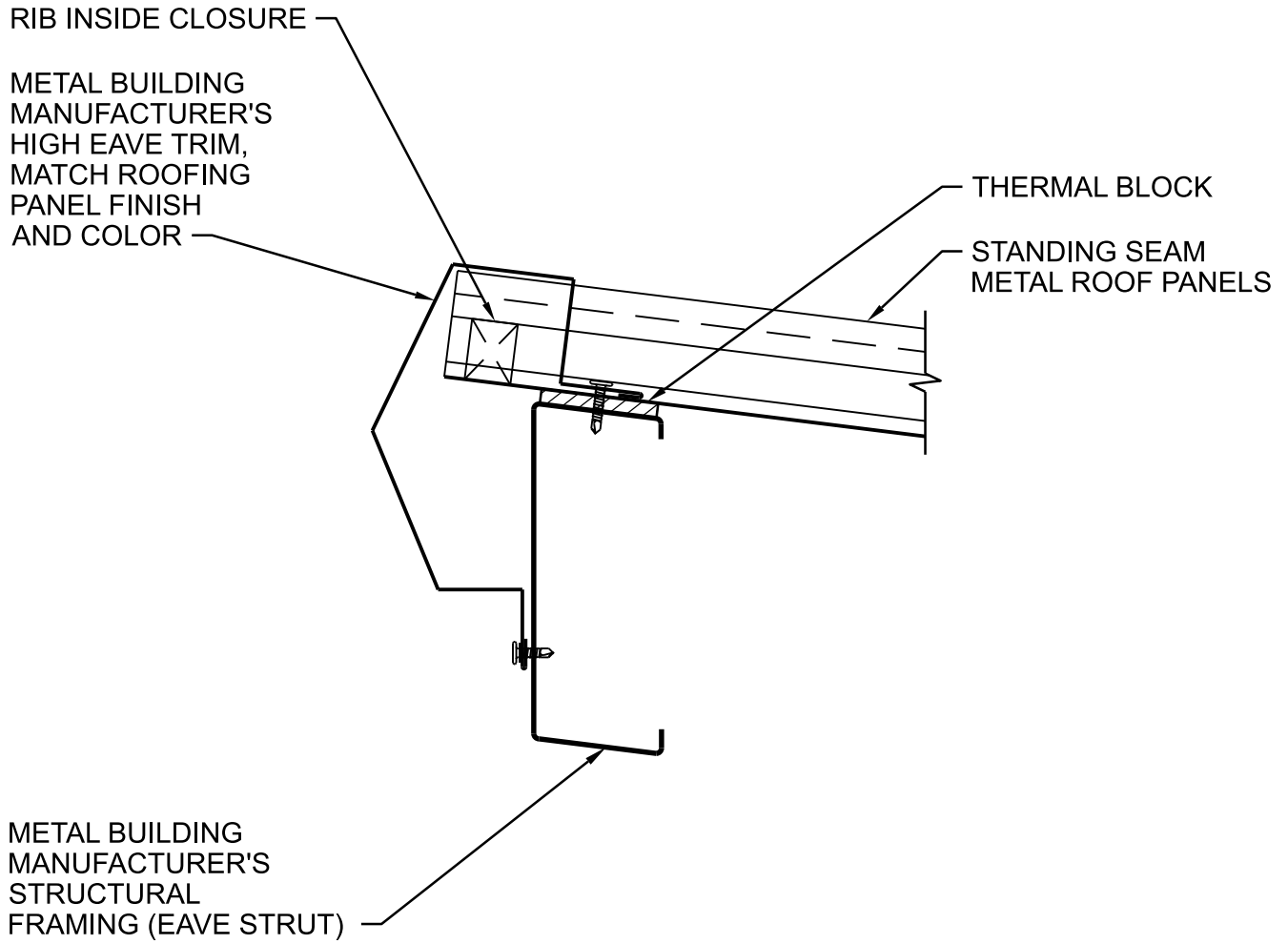


RAKE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-002



HIGH EAVE

NTS

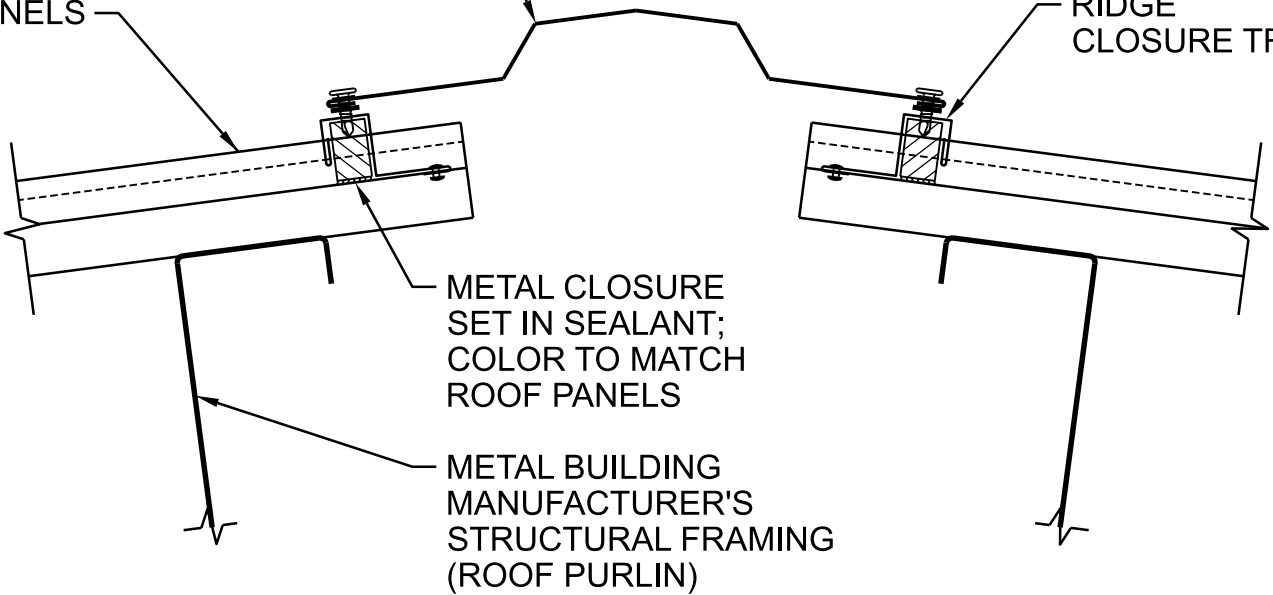
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-003

RIDGE FLASHING, MATCH SHEET
METAL ROOFING FINISH
AND COLOR, SET IN MASTIC

STANDING SEAM
METAL ROOF
PANELS

RIDGE
CLOSURE TRIM



METAL CLOSURE
SET IN SEALANT;
COLOR TO MATCH
ROOF PANELS

METAL BUILDING
MANUFACTURER'S
STRUCTURAL FRAMING
(ROOF PURLIN)

RIDGE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

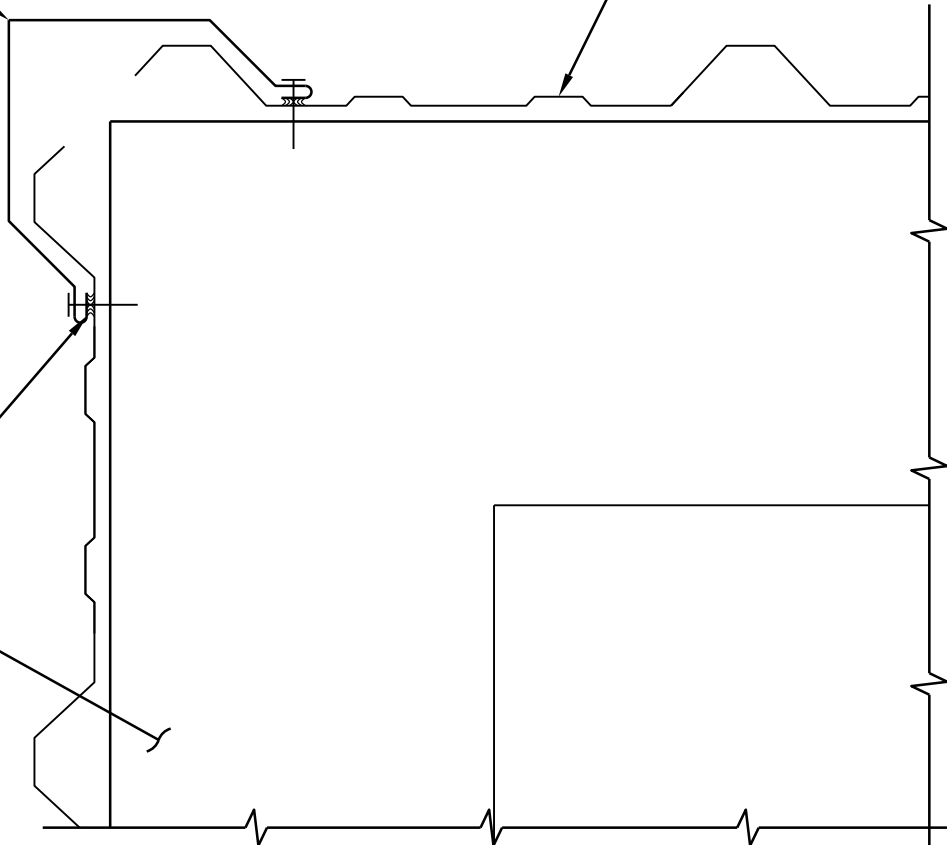
1334-004

OUTSIDE
CORNER TRIM

METAL
WALL PANEL

BUTYL
SEALANT, TYP

STRUCTURAL
STEEL GIRT

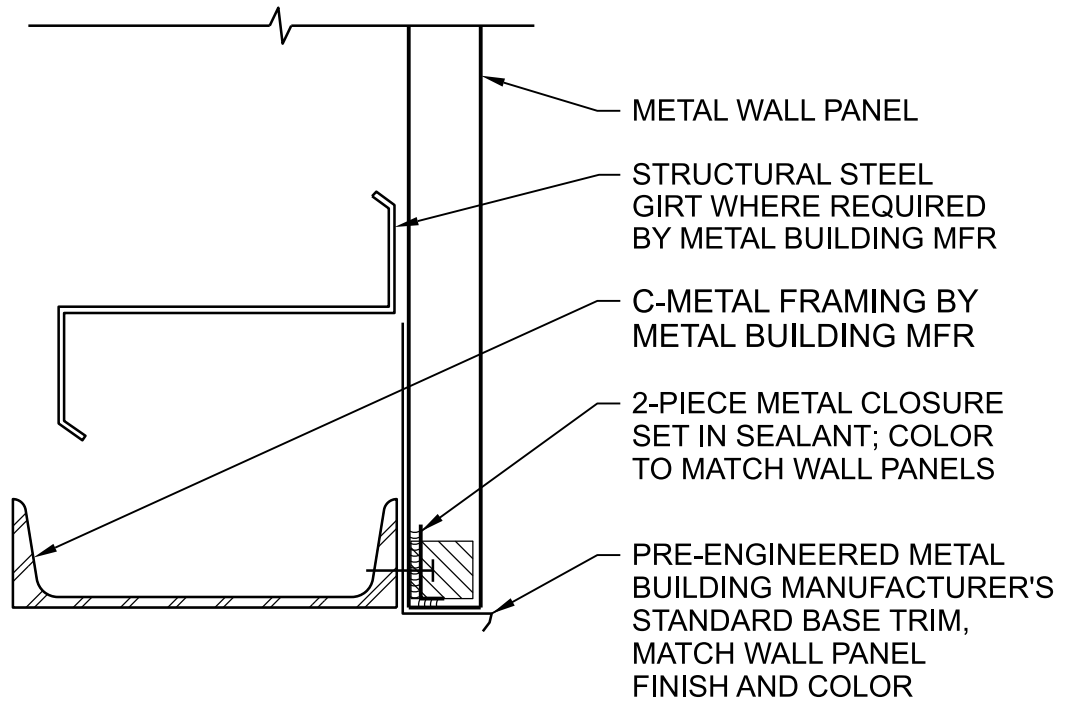


OUTSIDE CORNER

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-005



WALL PANEL TERMINATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-006

EAVE GUTTER STRAP,
3'-0" OC, MAX

STANDING SEAM
METAL ROOF PANEL

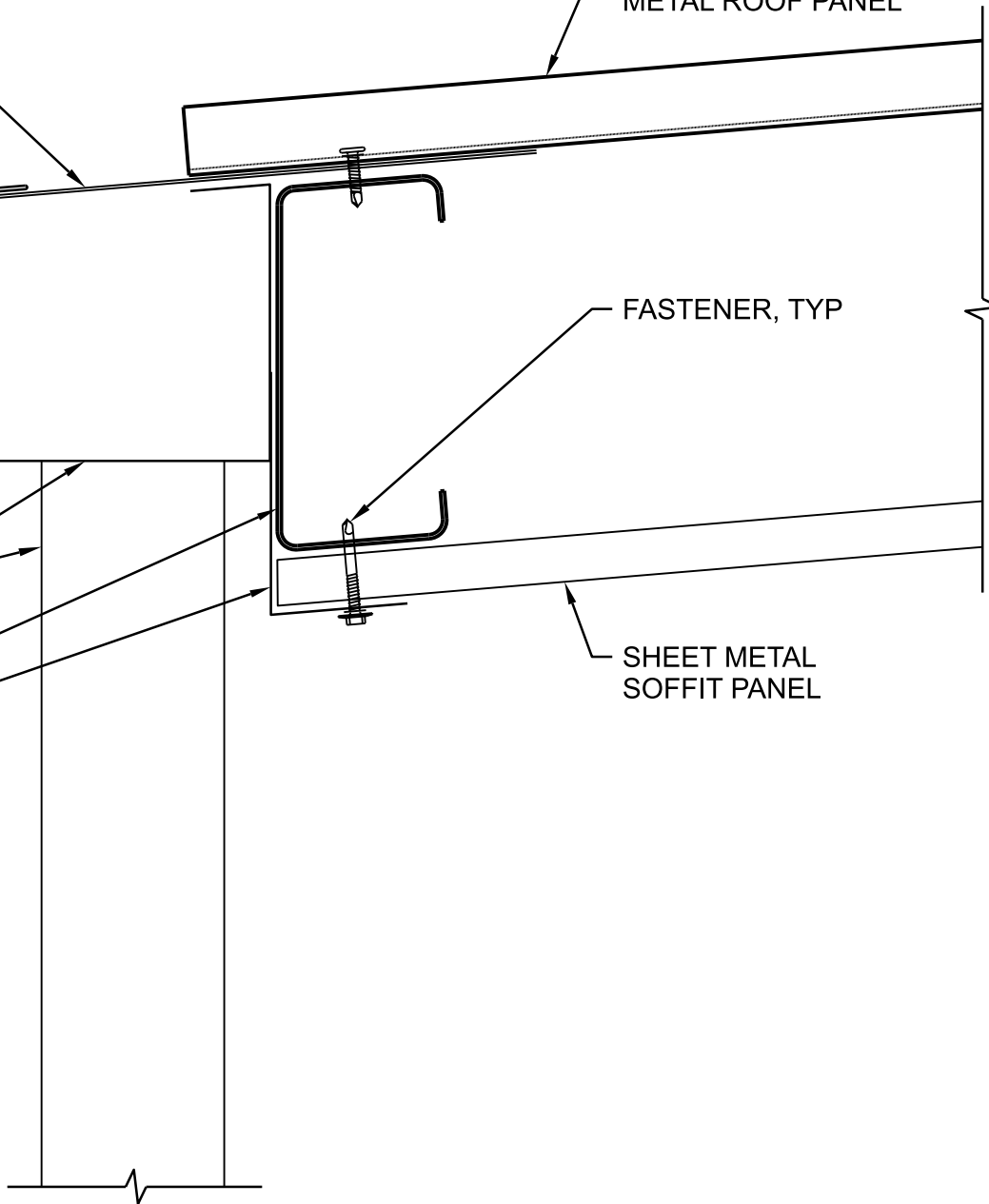
ROOFING
MANUFACTURER'S
STANDARD EAVE
GUTTER AND
DOWNSPOUT

FASTENER, TYP

METAL PURLIN
(EAVE STRUT)

SHEET METAL
SOFFIT PANEL

FLASHING

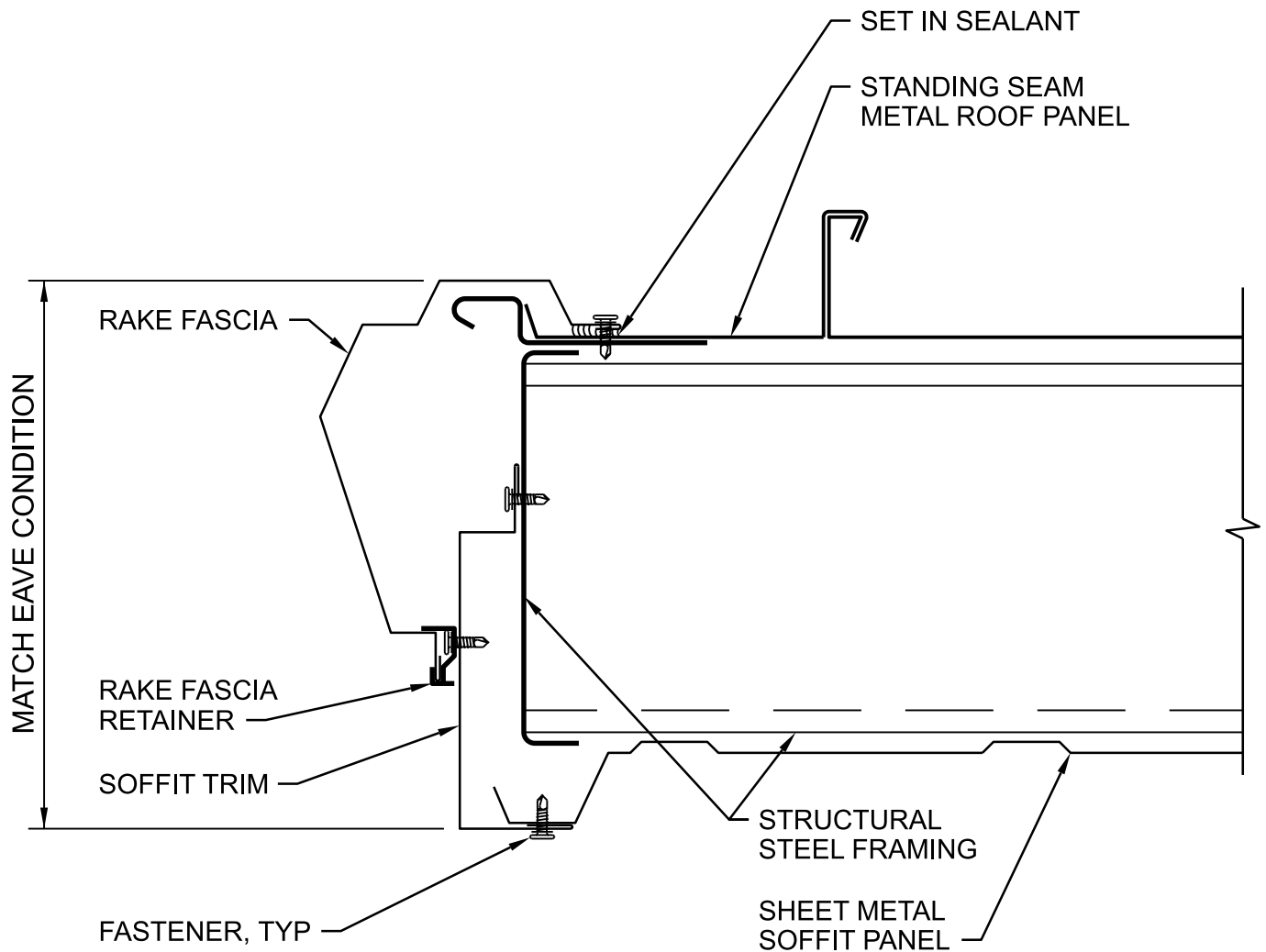


LOW EAVE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

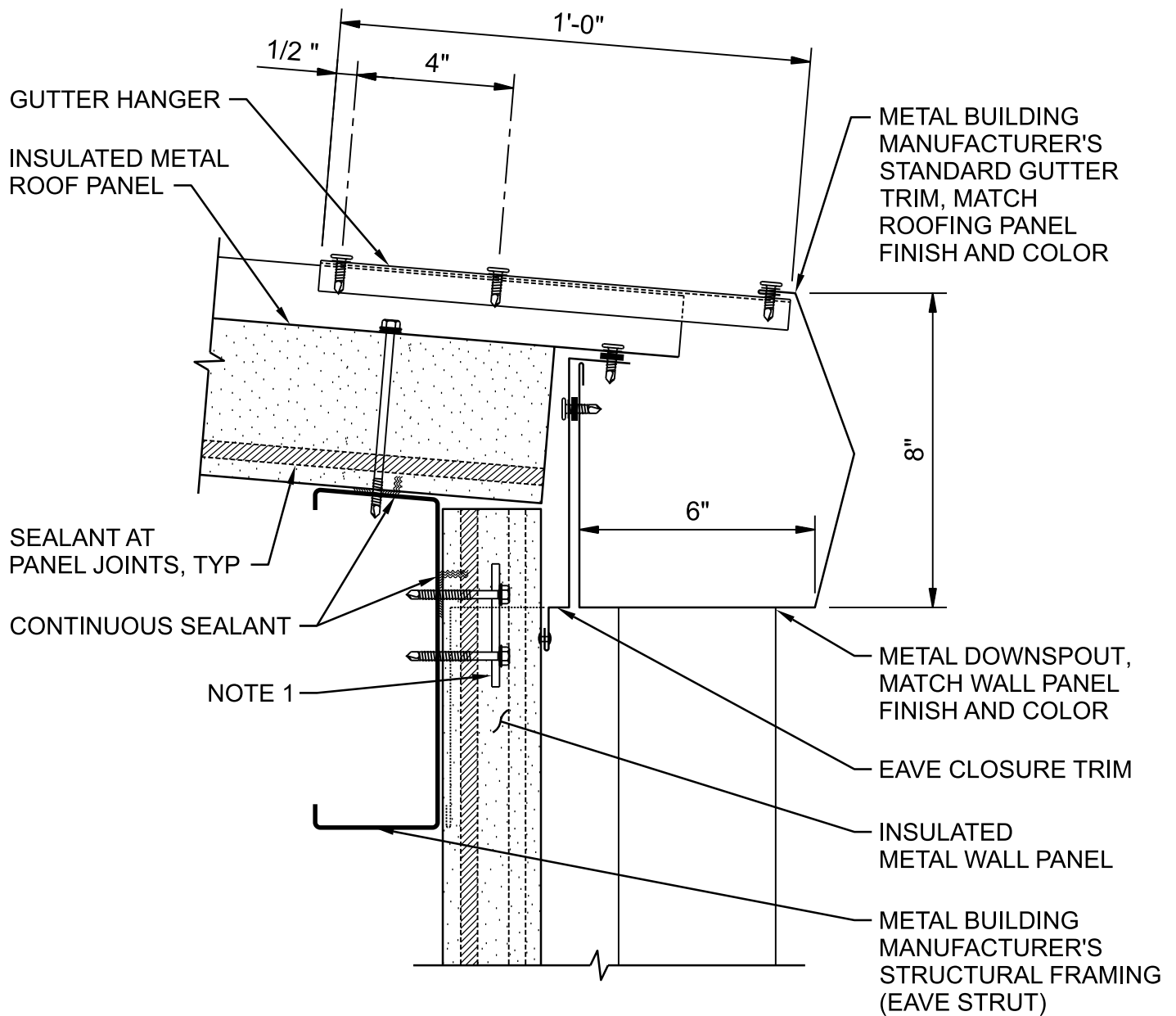
1334-007



RAKE
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-008



NOTES:

1. METAL BUILDING MANUFACTURER'S STANDARD CONCEALED CLIP AND FASTENERS.

LOW EAVE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

1334-101

METAL BUILDING
MANUFACTURER'S
STANDARD RAKE TRIM,
MATCH ROOFING PANEL
FINISH AND COLOR

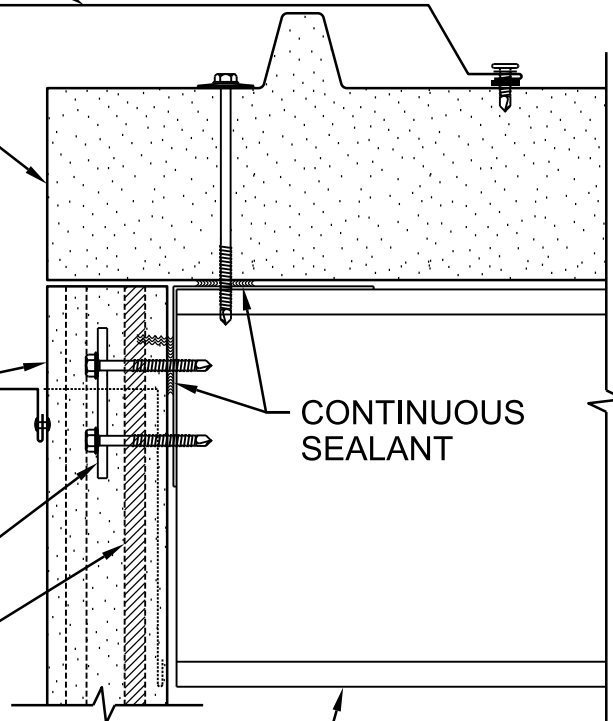
INSULATED METAL
ROOF PANEL

INSULATED METAL
WALL PANEL

MANUFACTURER'S
STANDARD CONCEALED
CLIP AND FASTENERS

SEALANT AT
PANEL JOINTS, TYP

METAL BUILDING
MANUFACTURER'S STRUCTURAL FRAMING



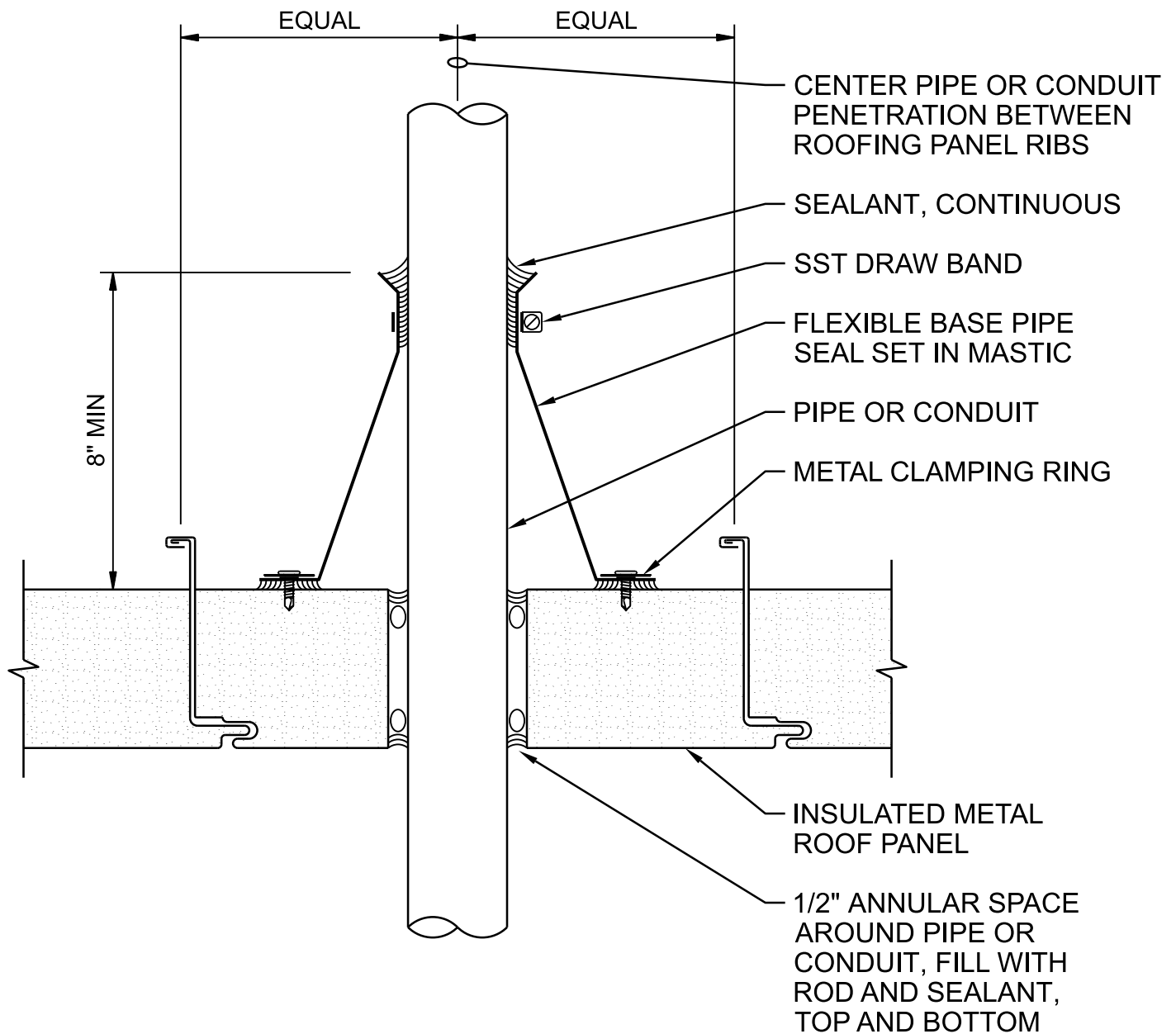
CONTINUOUS
SEALANT

RAKE TRIM

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-102

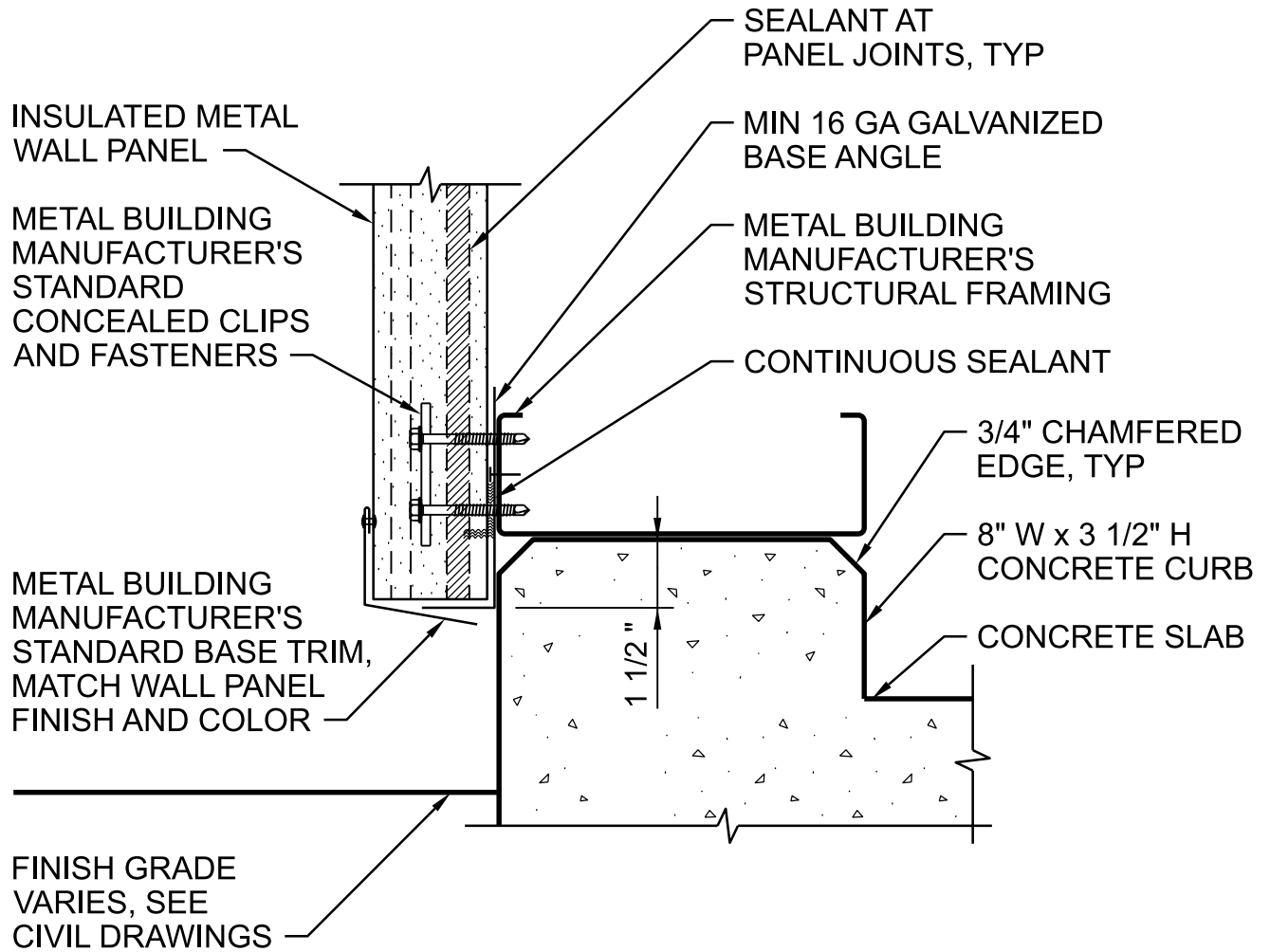


PIPE PENETRATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

1334-103



WALL BASE

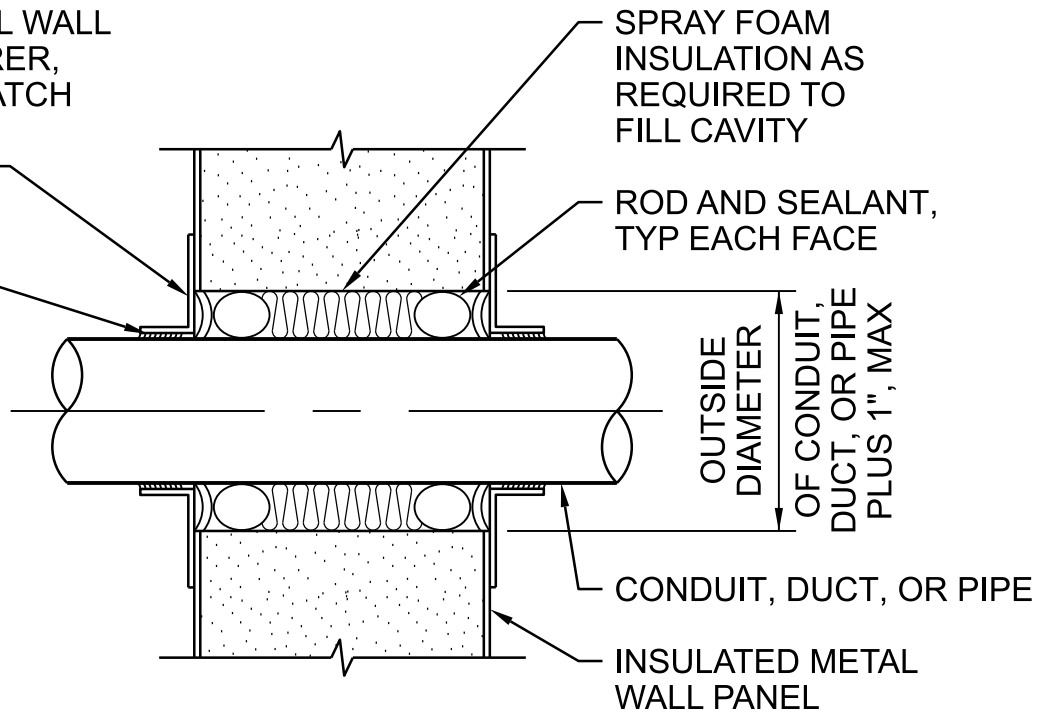
NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

1334-104

SHEET METAL ESCUTCHEON
BY INSULATED METAL WALL
PANEL MANUFACTURER,
TYP, SEE NOTE 2. MATCH
METAL WALL PANEL
FINISH AND COLOR

SEALANT, TYP



NOTES:

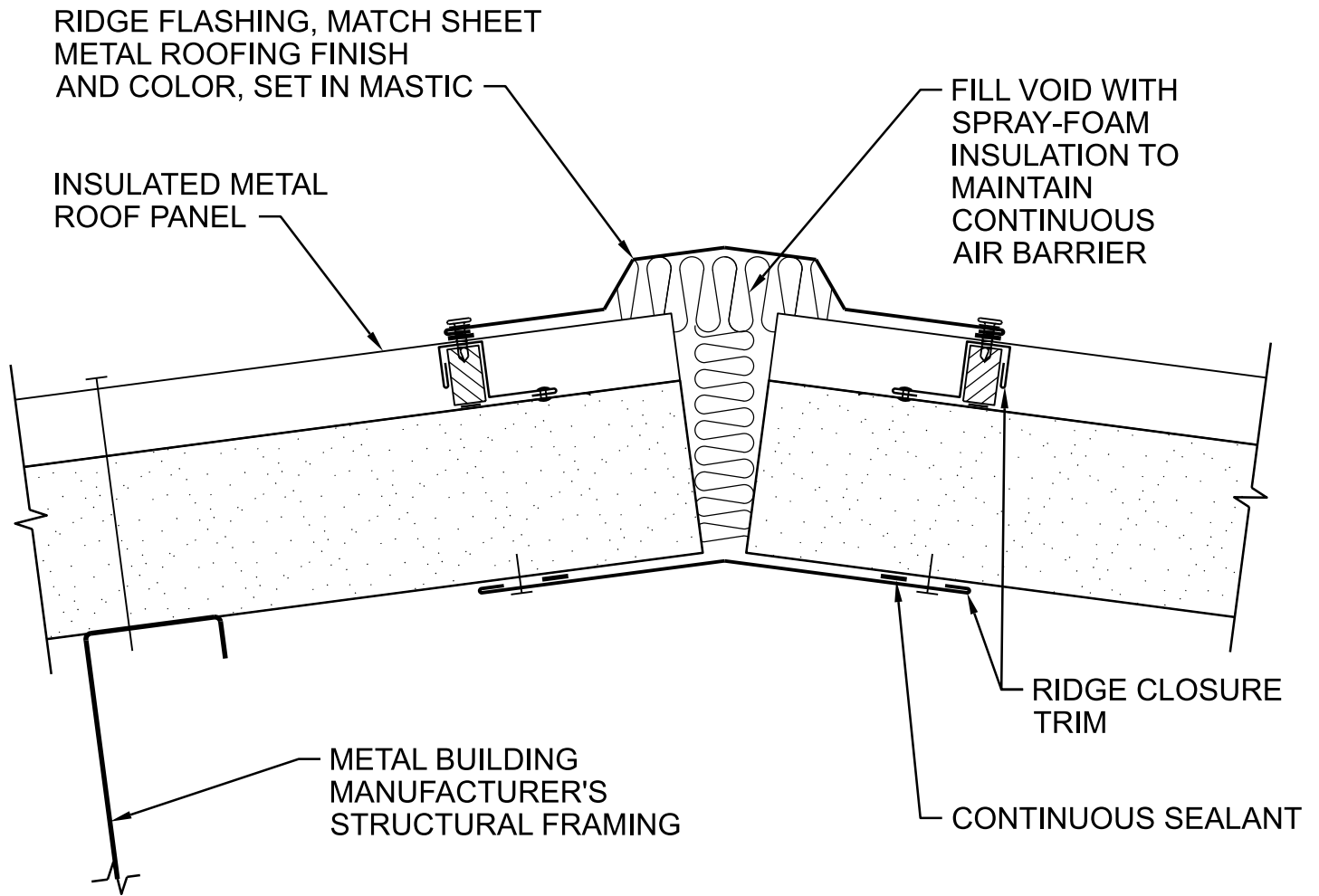
1. OVER SIZE PENETRATION TO PROVIDE 1/2" ANNULAR SPACE FOR ROD AND SEALANT.
2. PROVIDE ISOLATION TAPE WHERE SHEET METAL IS IN CONTACT WITH DUCT, CONDUIT OR PIPE.

EXTERIOR WALL PENETRATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-105

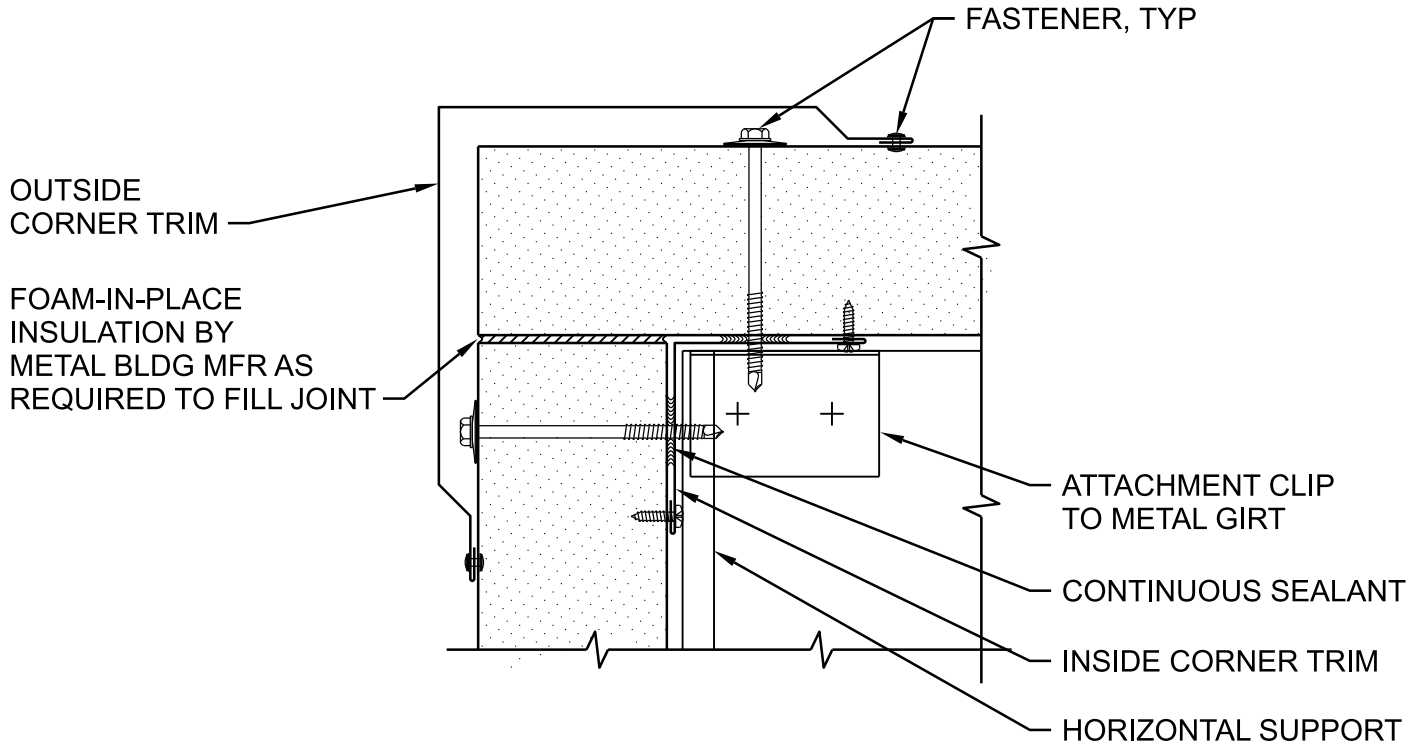


RIDGE AT INSULATED ROOF PANEL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-106

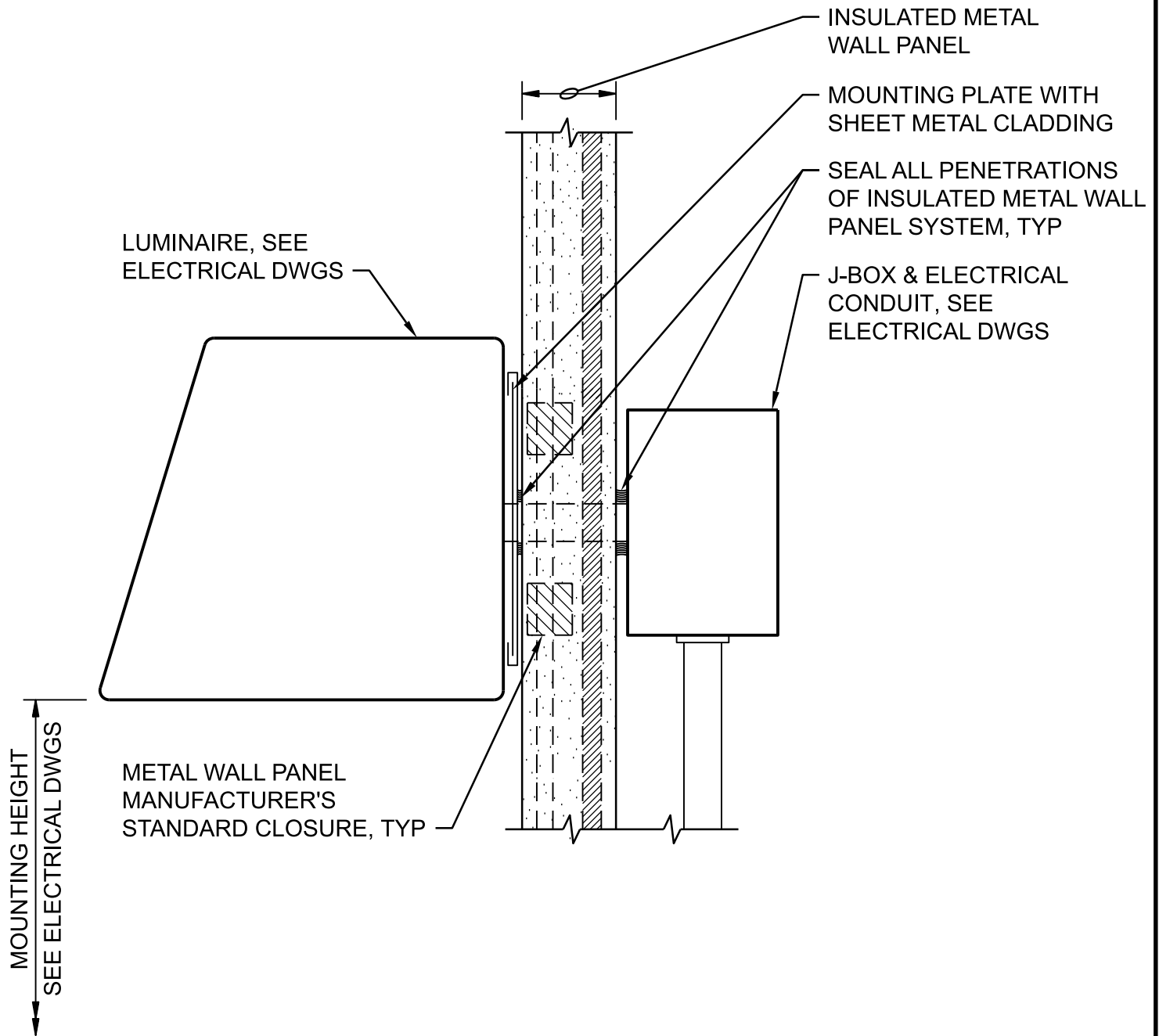


OUTSIDE CORNER

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

1334-107

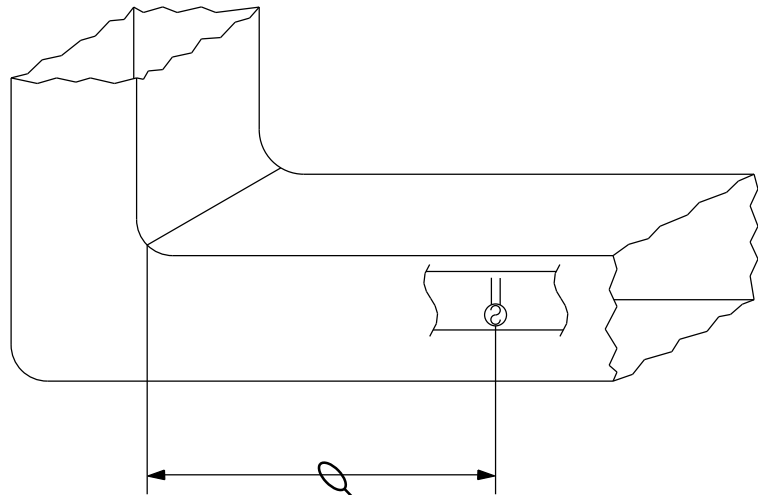


LUMINAIRE MOUNTING AT METAL WALL PANEL

NTS

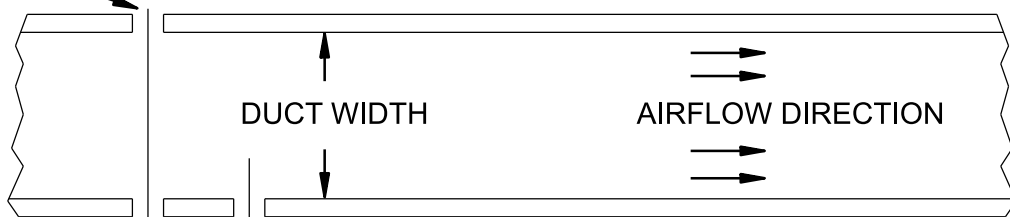
HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

1334-303



6 DUCT WIDTHS MINIMUM

TUBE SUPPORT HOLE



INSERT RUBBER PLUG THIS END OF INLET TUBE

EXPECTED AIRFLOW DIRECTION

DIRECTOR

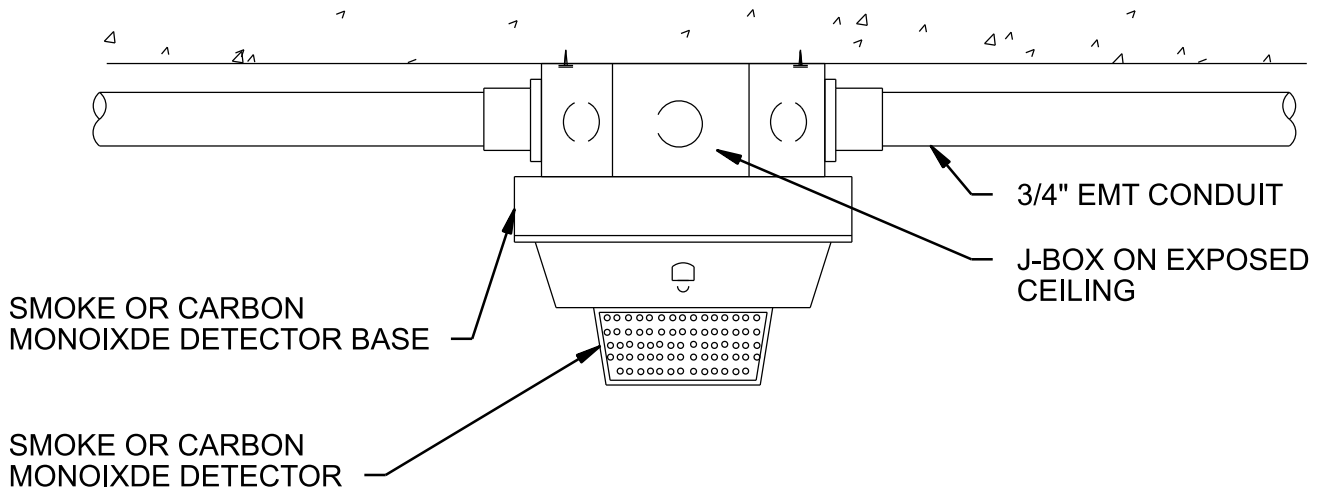
RETURN TUBE SLANT CUT FACE ORIENTED DOWNSTREAM OF AIRFLOW. DO NOT INSERT RUBBER PLUG

FA - DUCT SMOKE DETECTOR MOUNTING DETAIL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2100-003

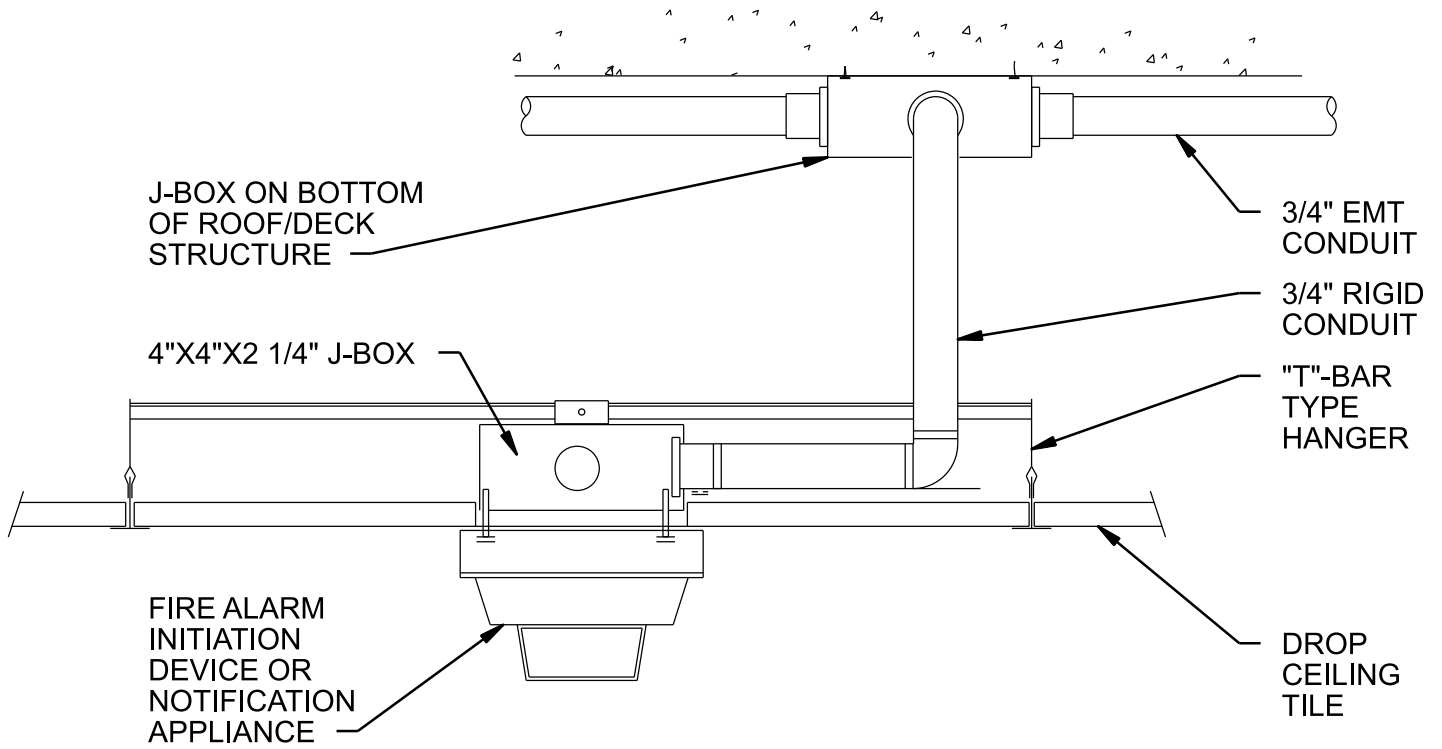


FA - EXPOSED STRUCTURE DETECTOR DETAIL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

2100-004

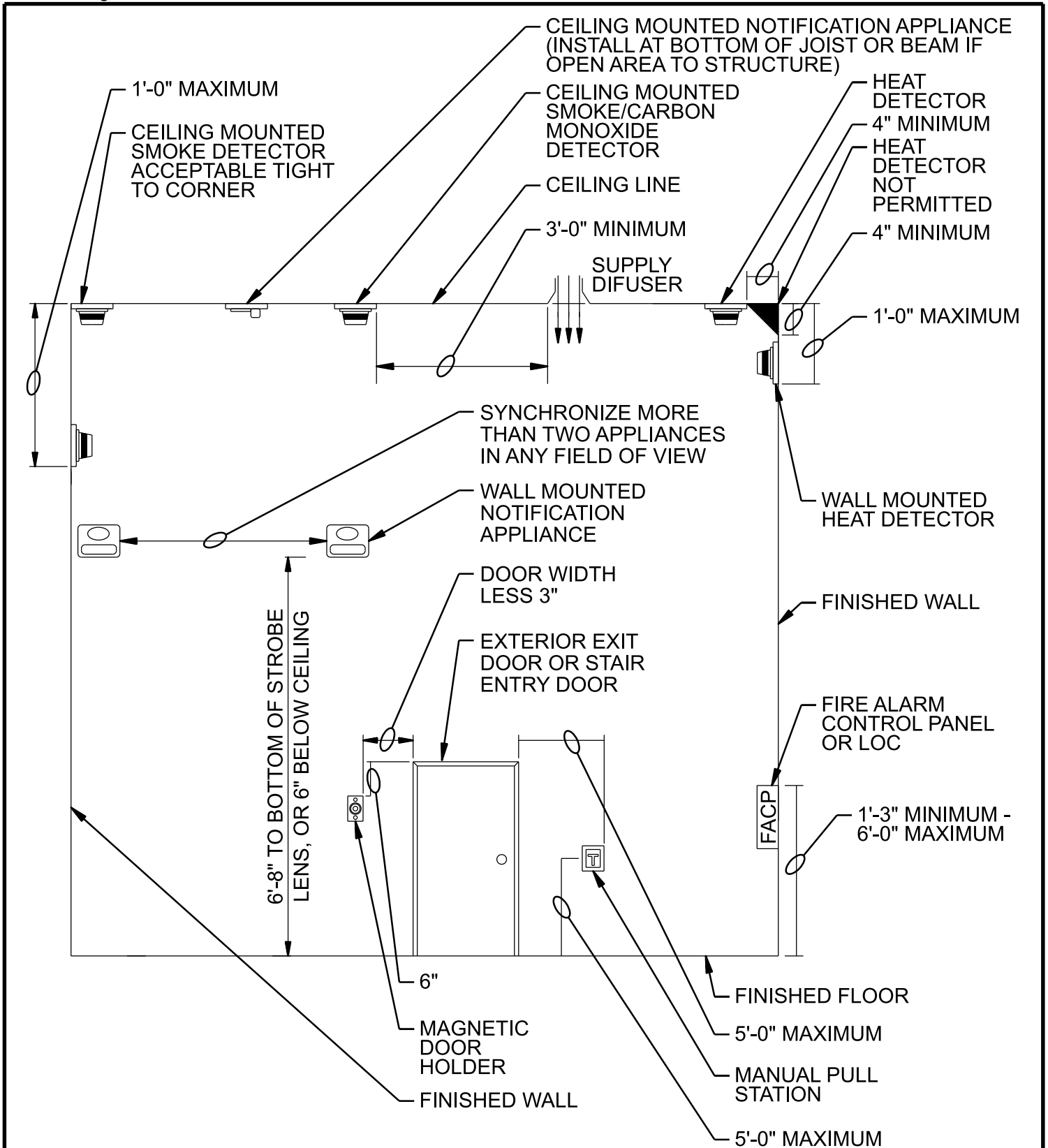


FA - DETECTOR DETAIL-DROP CEILING

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

2100-005

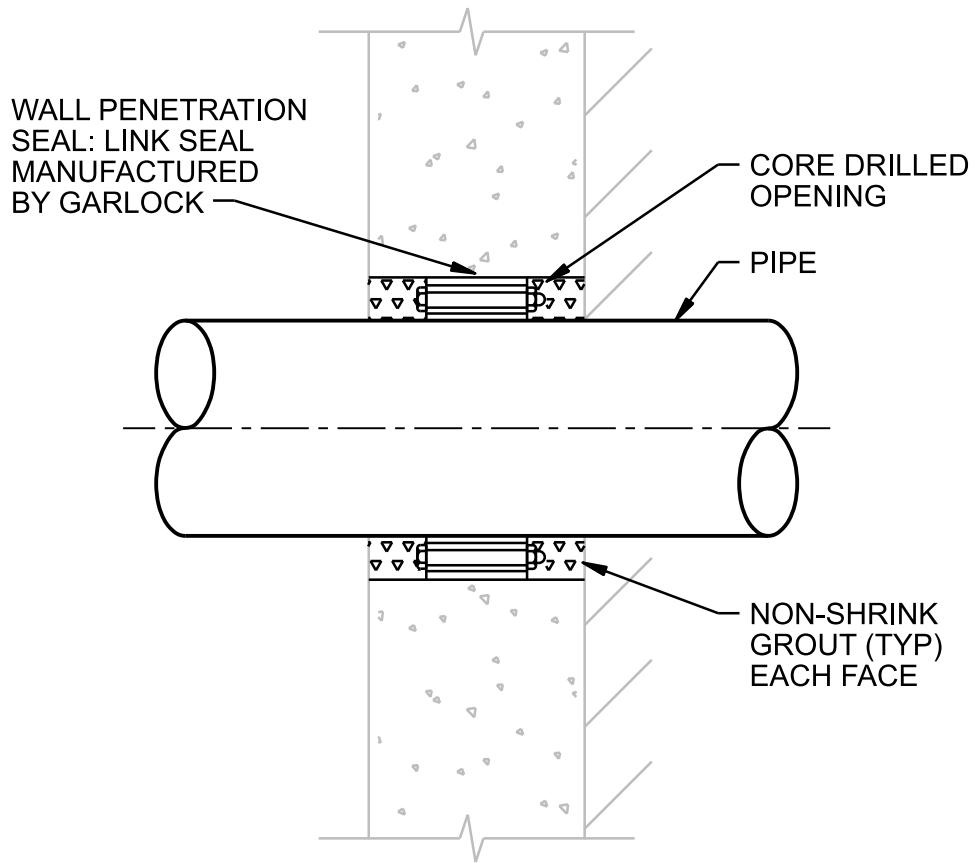


FA - DEVICE MOUNTING DETAIL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

2100-006

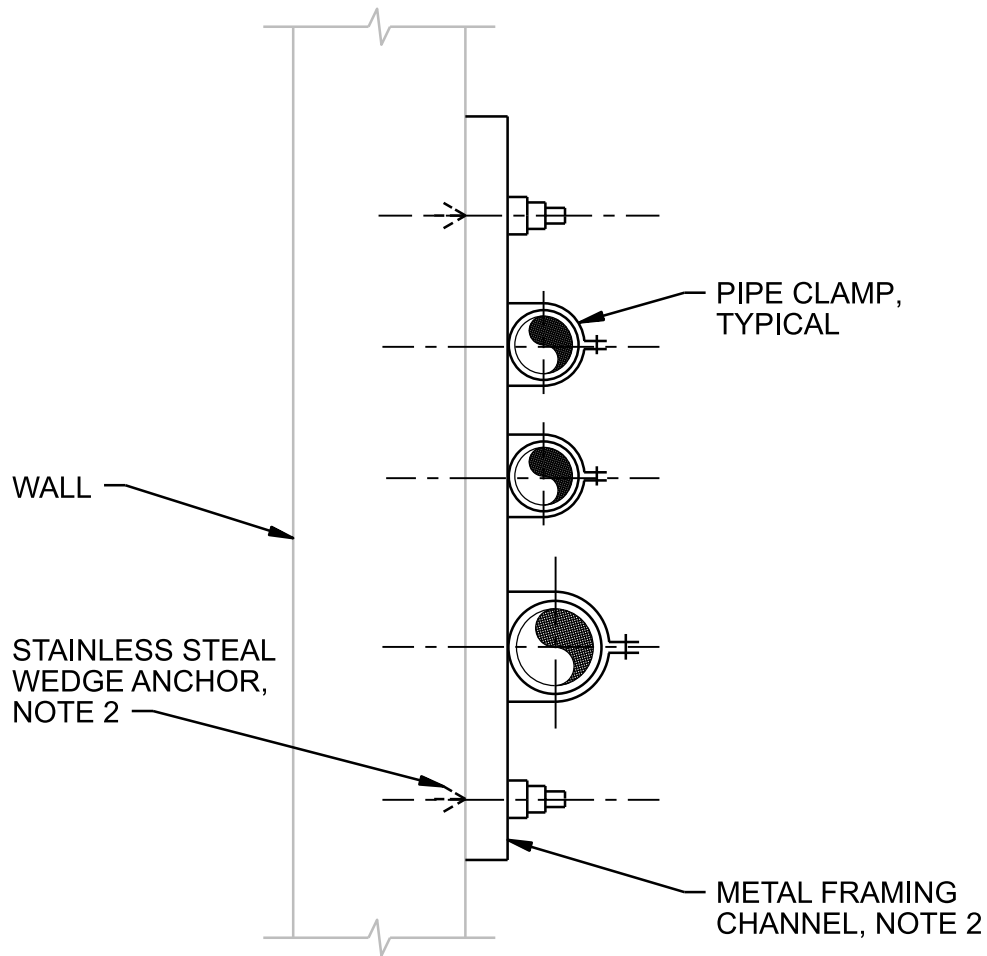


WALL PENETRATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2205-110



NOTES:

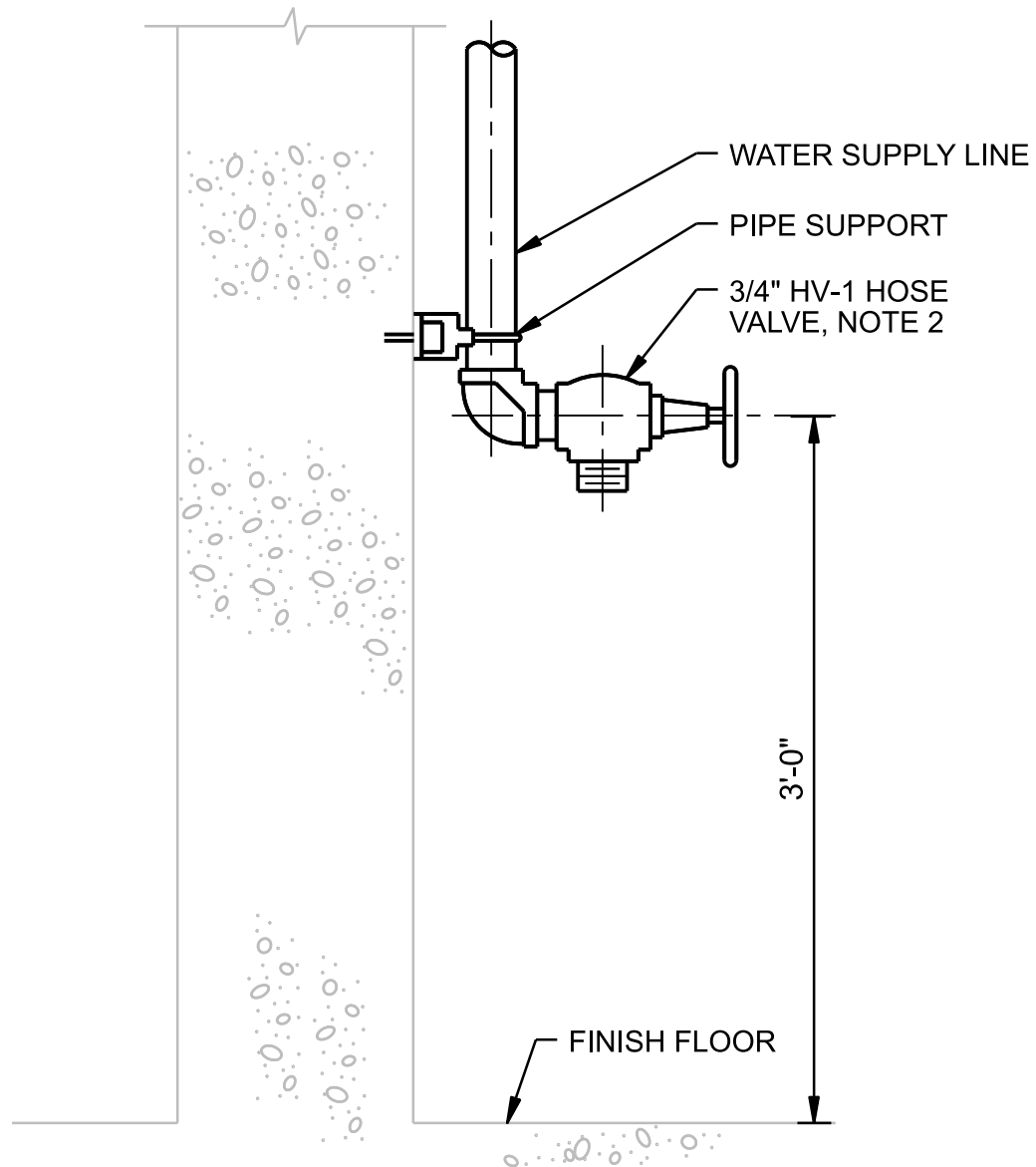
1. PIPE INSULATION SHIELD REQUIRED FOR INSULATED PIPE, NEOPRENE SLEEVE REQUIRED FOR PLASTIC AND COPPER PIPE AT SUPPORT. SEE SPECIFICATIONS.
2. PROVIDE SST WEDGE ANCHOR AND FRP FRAMING CHANNEL (BY "AICKIN" OR EQUAL) IN LOCATIONS DESIGNATED ON DRAWINGS.

WALL MOUNTED PIPE SUPPORT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2205-420



NOTES

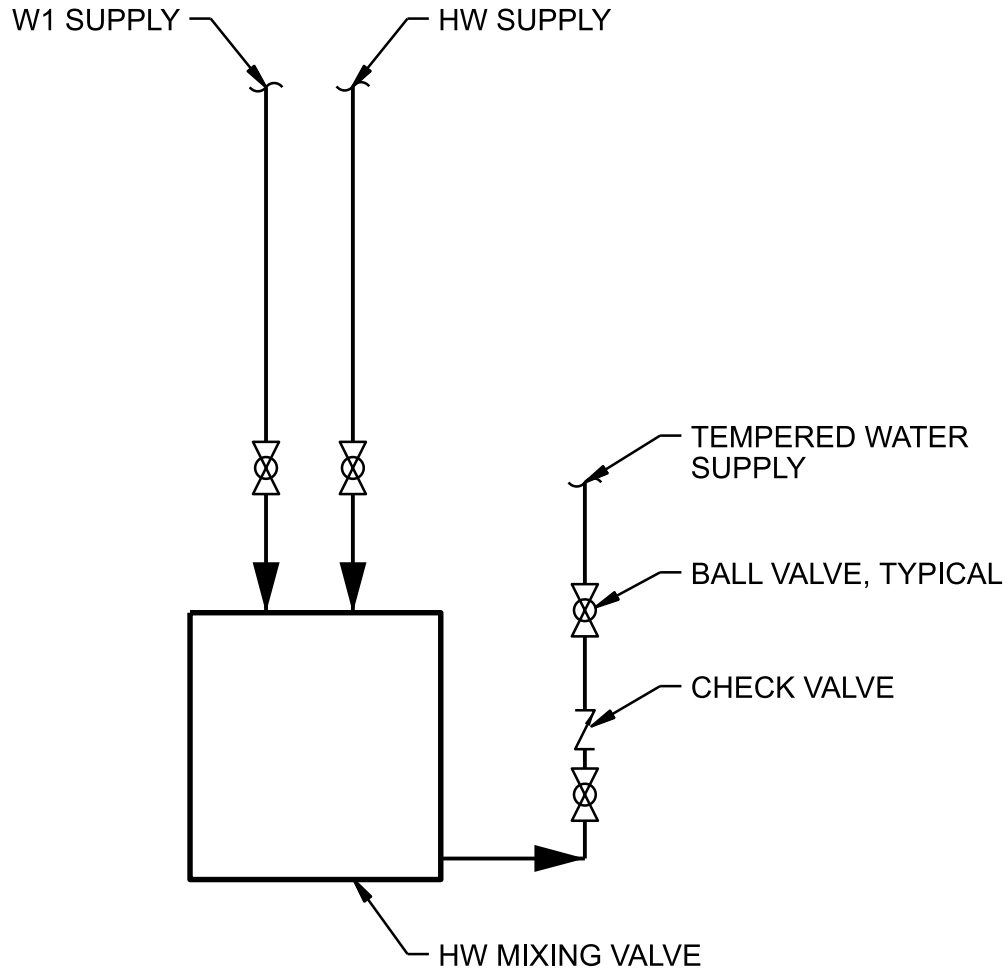
1. ROTATE HOSE VALVE 30° OFF WALL.
2. FOR HOSE VALVE SIZE SEE PLANS.

INTERIOR HOSE VALVE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2210-300

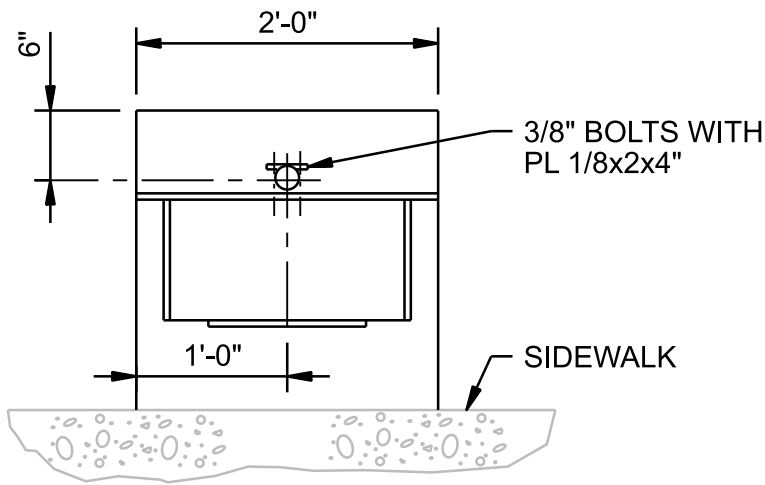


WATER TEMPERING VALVE

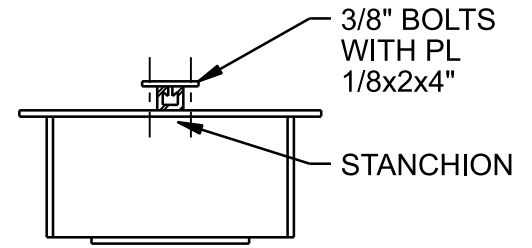
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

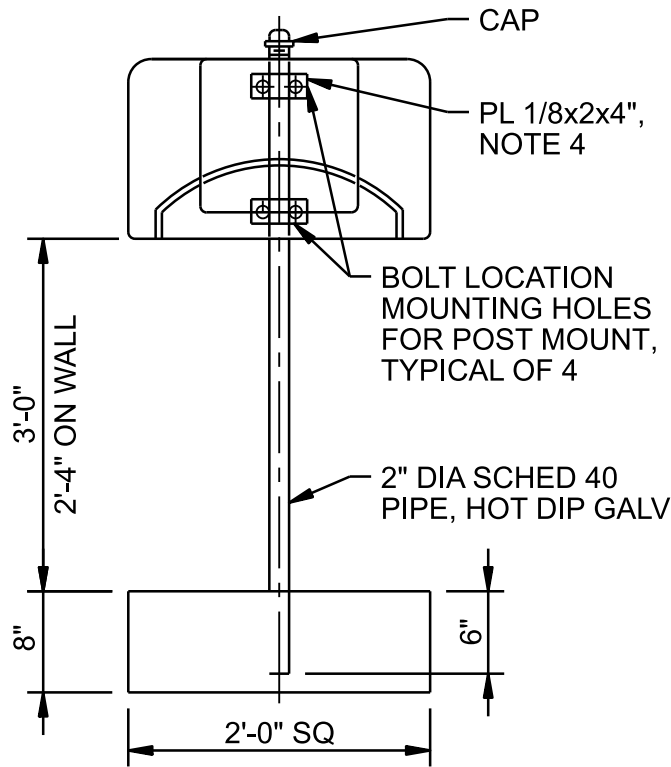
2210-700



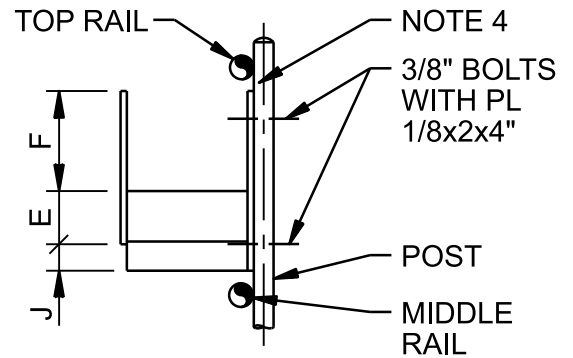
PLAN-POST MOUNT



STANCHION MOUNTED



SECTION



HANDRAIL POST MOUNTED

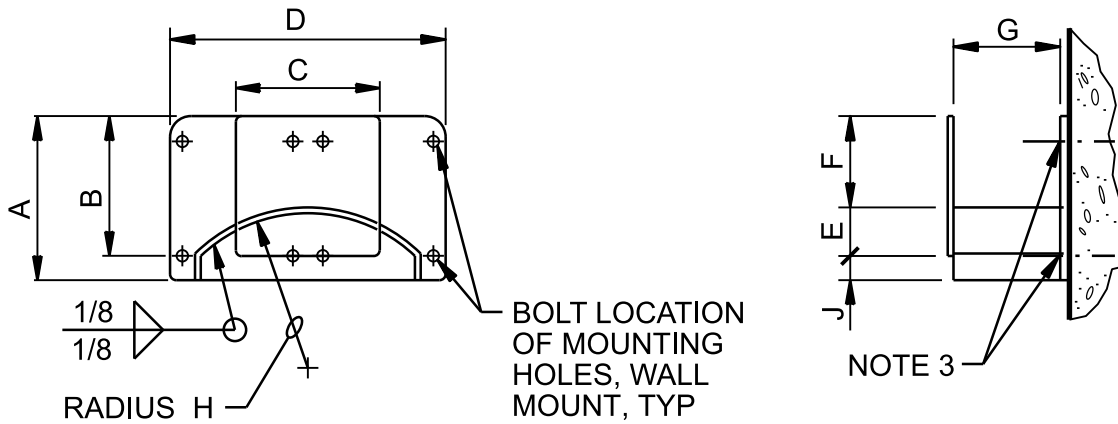
HOSE RACKS

NTS

DETAIL 1 OF 2

2210-720

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT



WALL MOUNTED

RACK TYPE	DIMENSION IN INCHES								
	A	B	C	D	E	F	G	H	J
TYPE A-3/4" & 1" HOSE	10-1/2	9	9	18	3	6	7-1/2	9-3/4	1-1/2
TYPE B-1 1/2" HOSE	14	12	12	24	4	8	10	13	2

NOTES:

1. INTERIOR UNITS SHALL BE FABRICATED FROM 1/8" A-36 STEEL PLATE AND ENTIRE UNIT SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
2. EXTERIOR UNITS SHALL BE FABRICATED FROM 3/16" 6061-T6 ALUMINUM ALLOY PLATE.
3. ATTACH TO CONCRETE WALL WITH (4) - 3/8" STAINLESS STEEL STUD TYPE WEDGE ANCHORS.
4. ATTACH TO VERTICAL HANDRAIL OR INDIVIDUAL POST WITH PLATES AND (4)- 3/8" STAINLESS STEEL BOLTS.
5. ATTACH TO STEEL COLUMN WITH (4)- 3/8" ROUND HEAD BOLTS, ONE IN EACH CORNER INSERT DOUBLE SPACER NUTS BETWEEN COLUMN AND HOSE RACK.

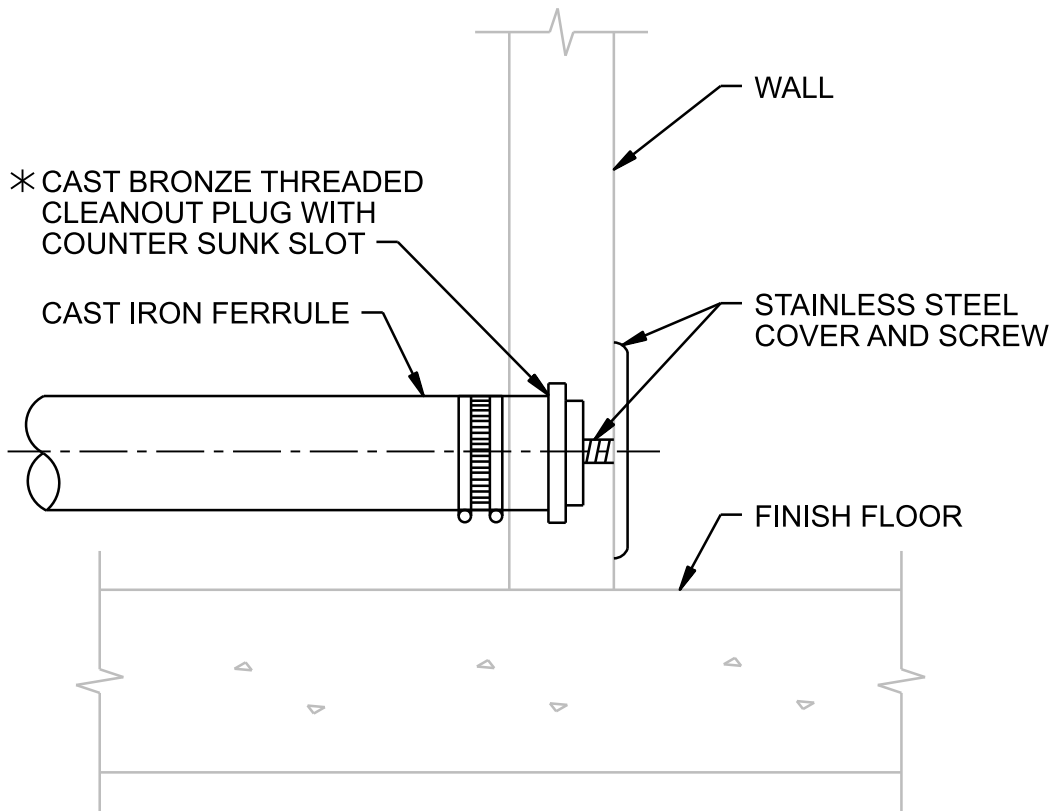
HOSE RACKS

NTS

DETAIL 2 OF 2

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2210-720

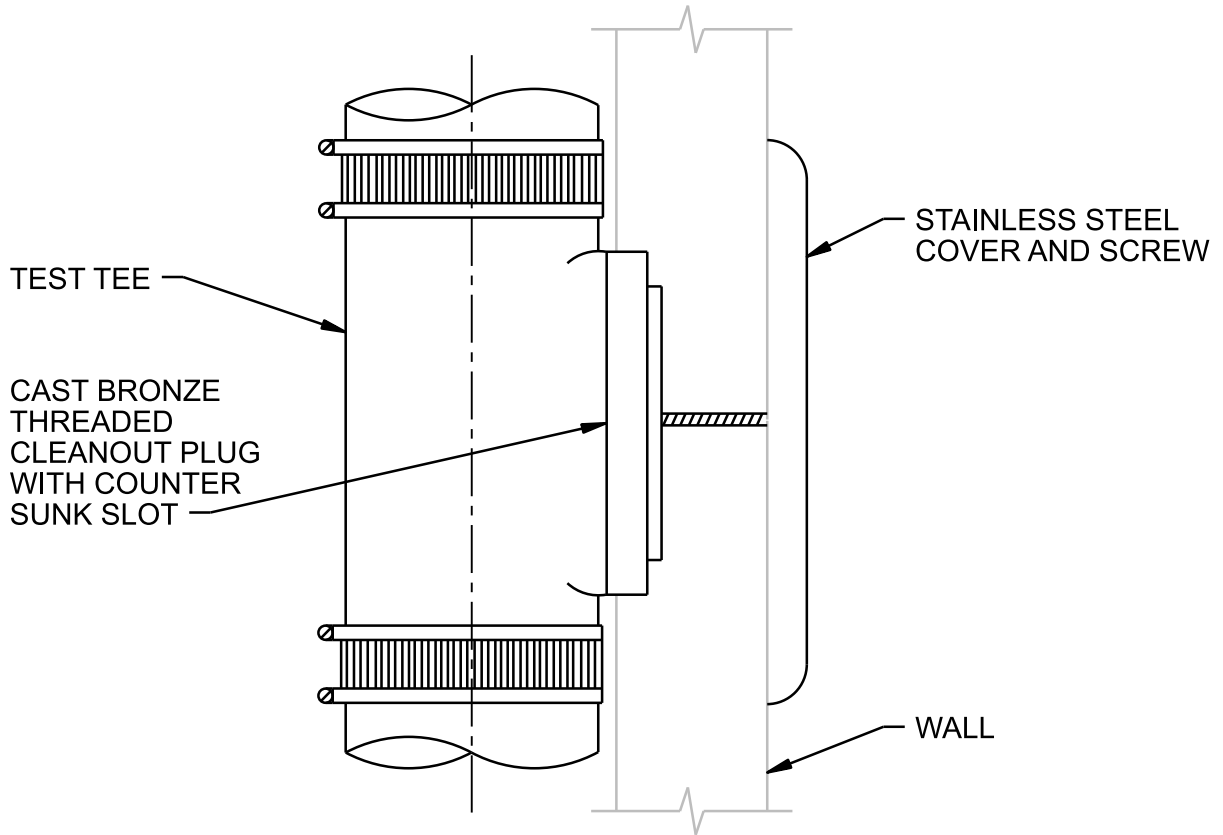


WALL CLEANOUT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2213-110

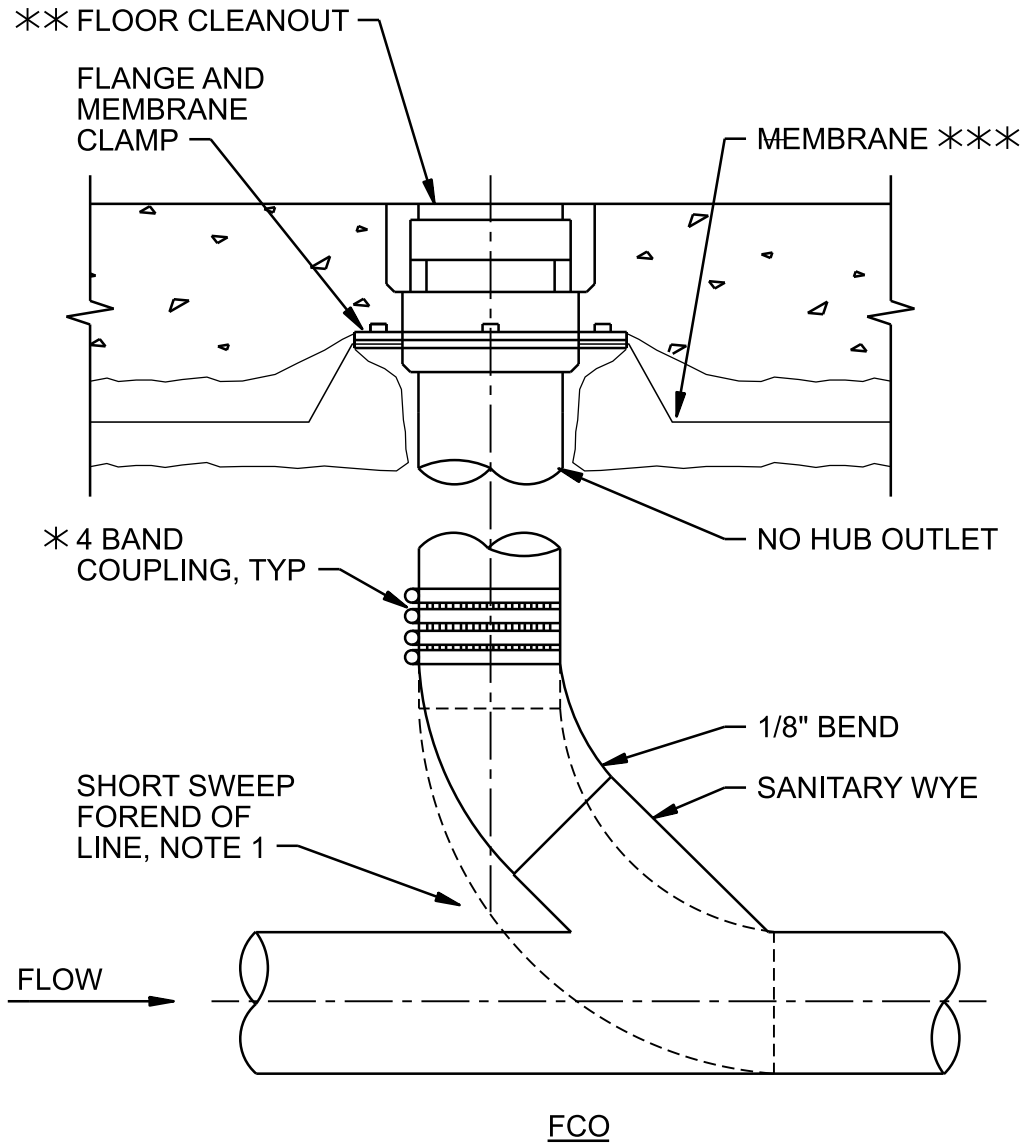


WALL CLEANOUT (WCO)

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2213-120



NOTES:

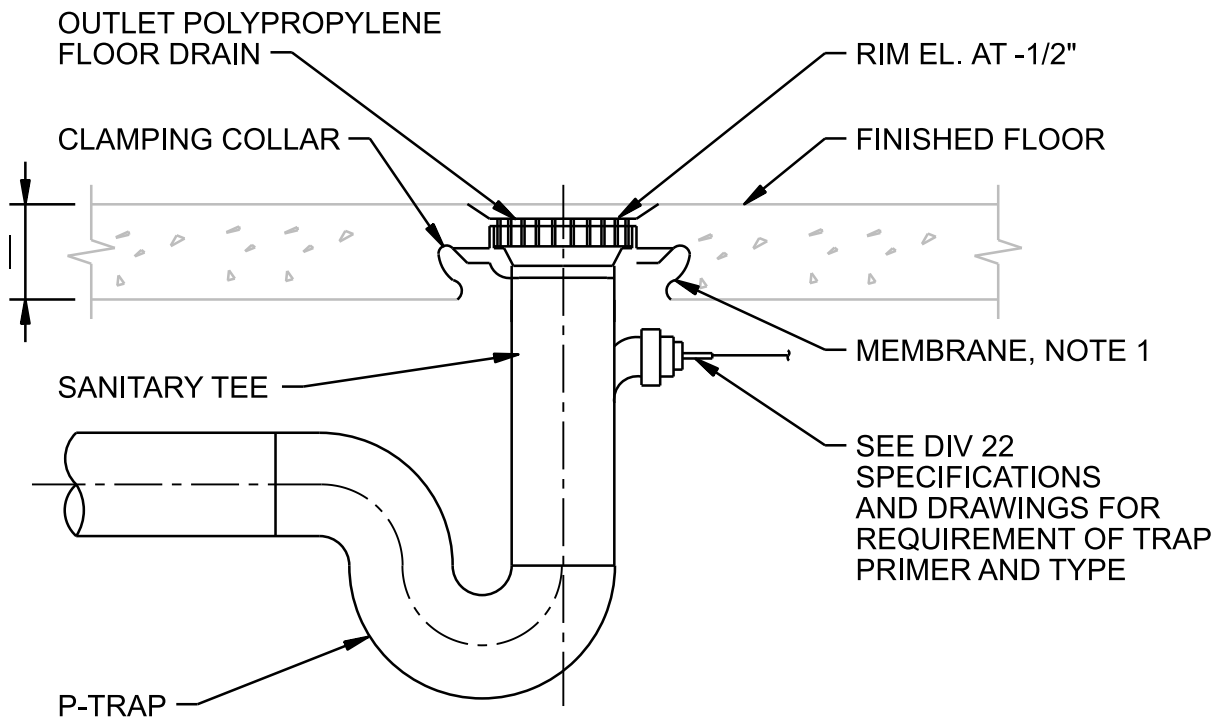
1. FOR CLEANOUT LOCATED AT THE END OF RUN, REPLACE WYE AND 1/8" BEND WITH A SHORT SWEEP ELBOW.

FLOOR CLEANOUT (FCO)

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2213-140



NOTE:

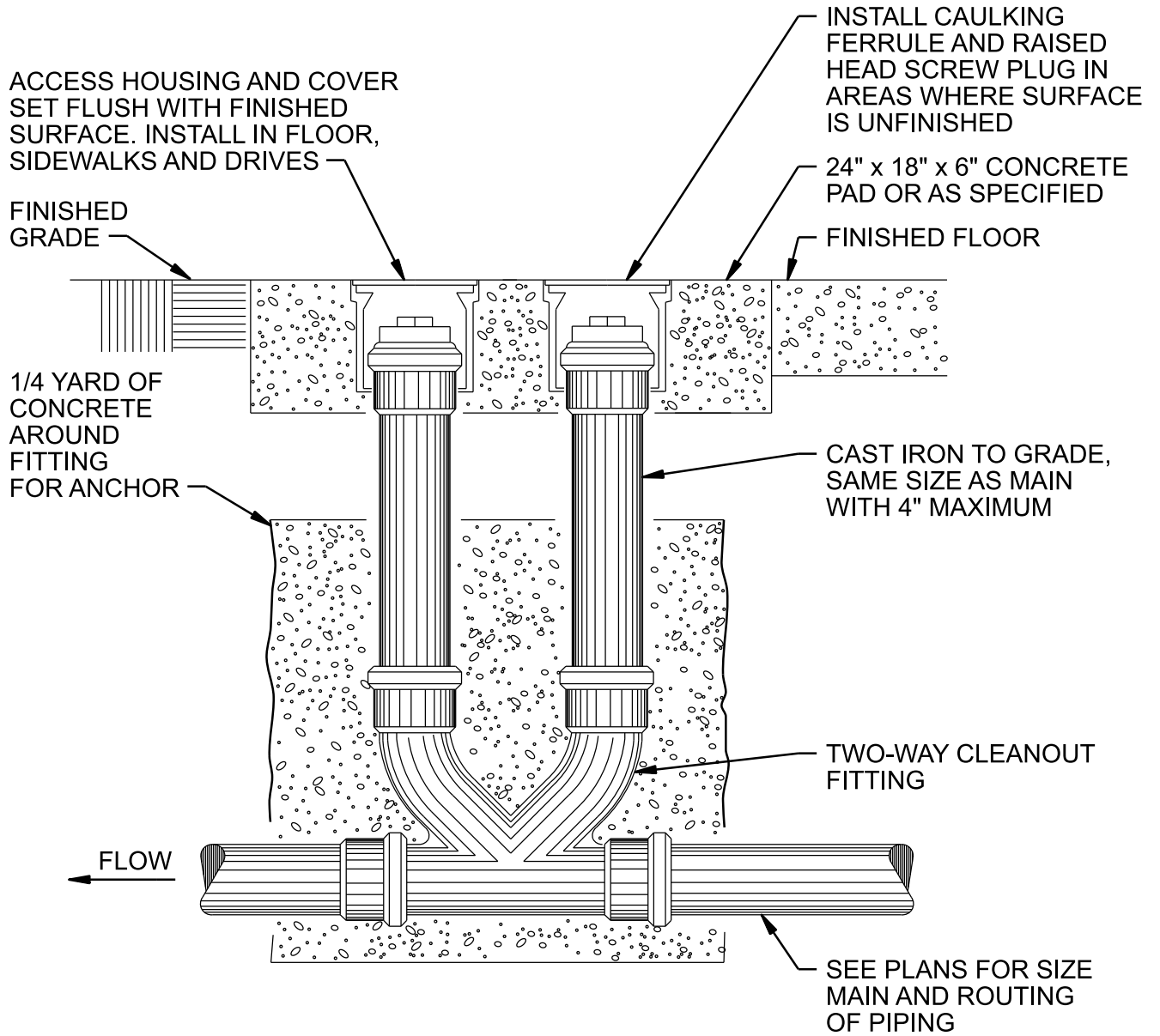
- 1. IF MEMBRANE IS EXISTING, ATTACH TO FLASHING COLLAR.

FLOOR DRAIN

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2213-170

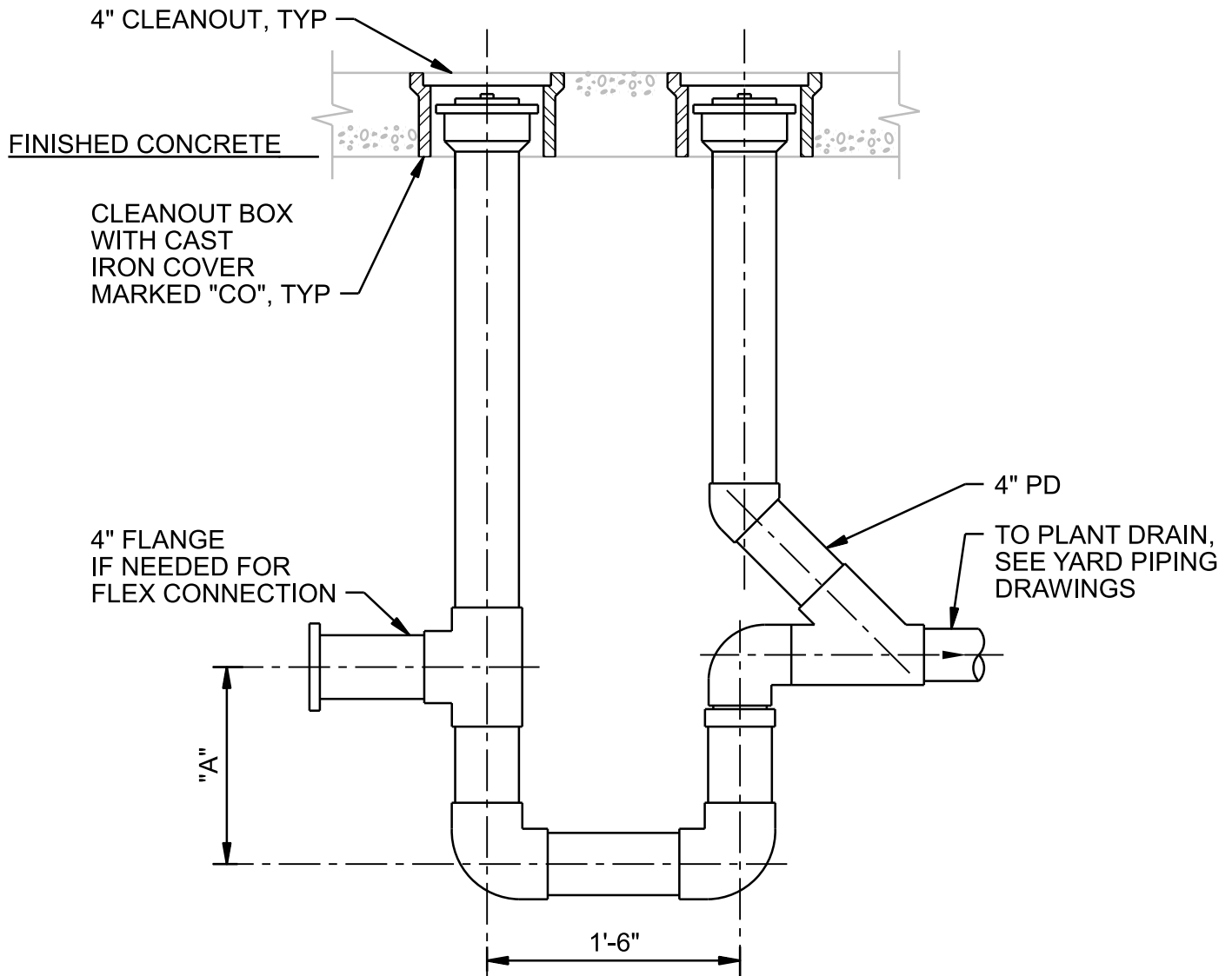


DOUBLE TWO-WAY CLEANOUT DETAIL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2213-180



NOTES:

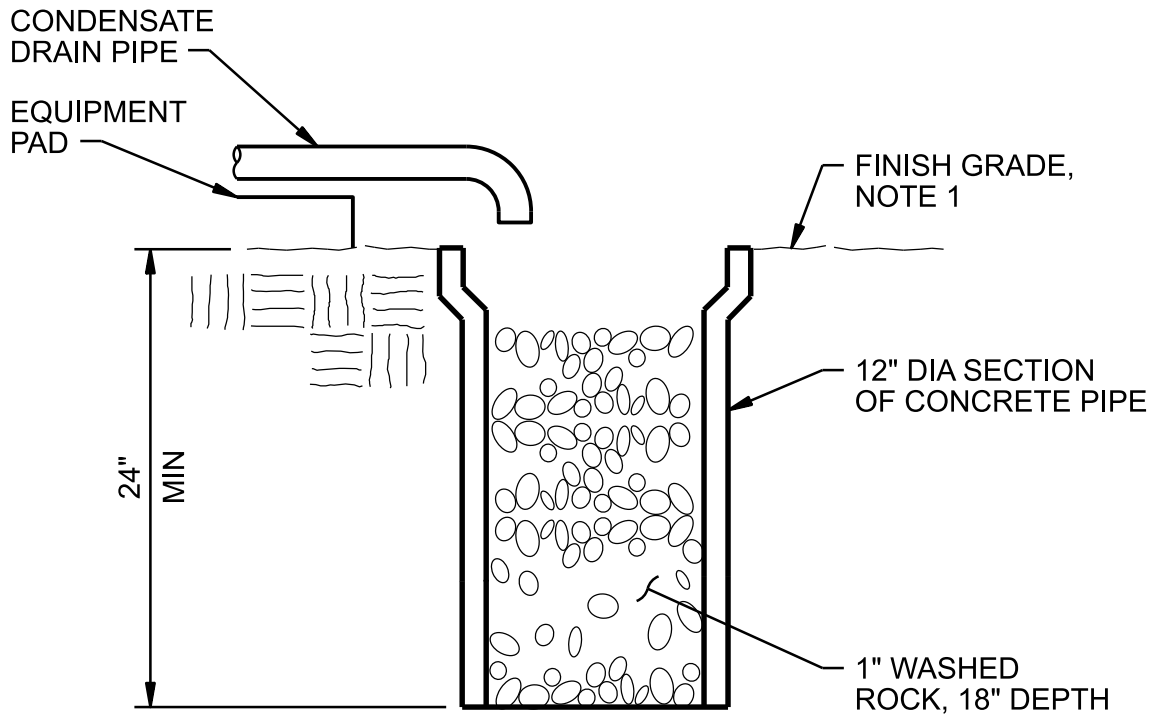
1. ROTATE TEE(S) TO ALIGN WITH CONNECTION TO YARD PIPING DRAIN AND FACILITY CONNECTIONS.
2. MINIMUM DISTANCE "A" TO FAN STATIC PRESSURE (IN W.C.) PLUS 2".
3. PROVIDE CONCRETE COLLARS IN LOCATIONS WHERE RUNNING U-TRAP IS NOT WITHIN PAVED AREAS.

RUNNING U-TRAP

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2213-190



NOTES:

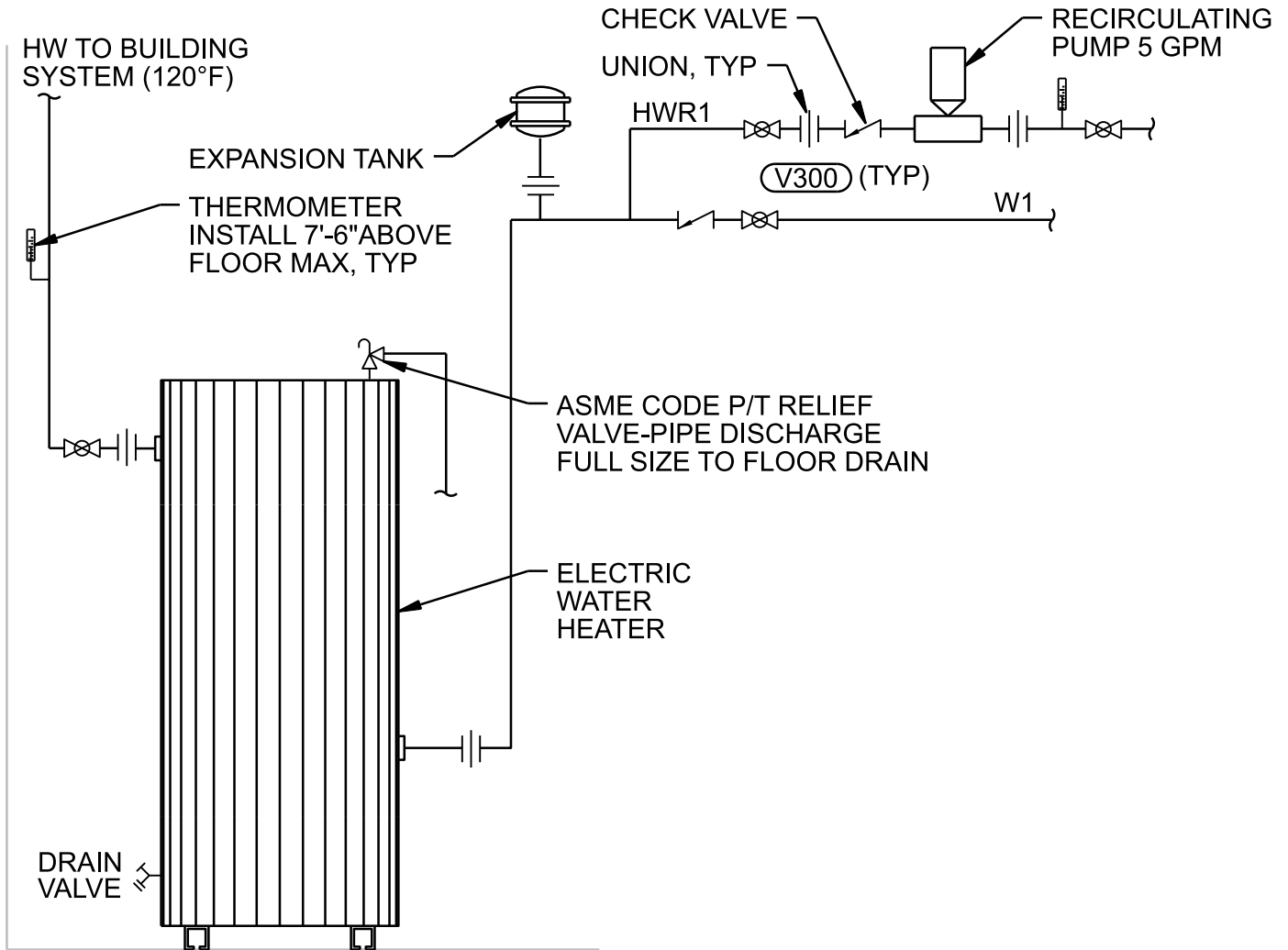
1. COORDINATE BLOCKOUTS FOR DRYWELLS WITH CONCRETE PAVING. REFER TO CIVIL DRAWINGS.

DRAINAGE DRYWELL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2214-100



NOTES:

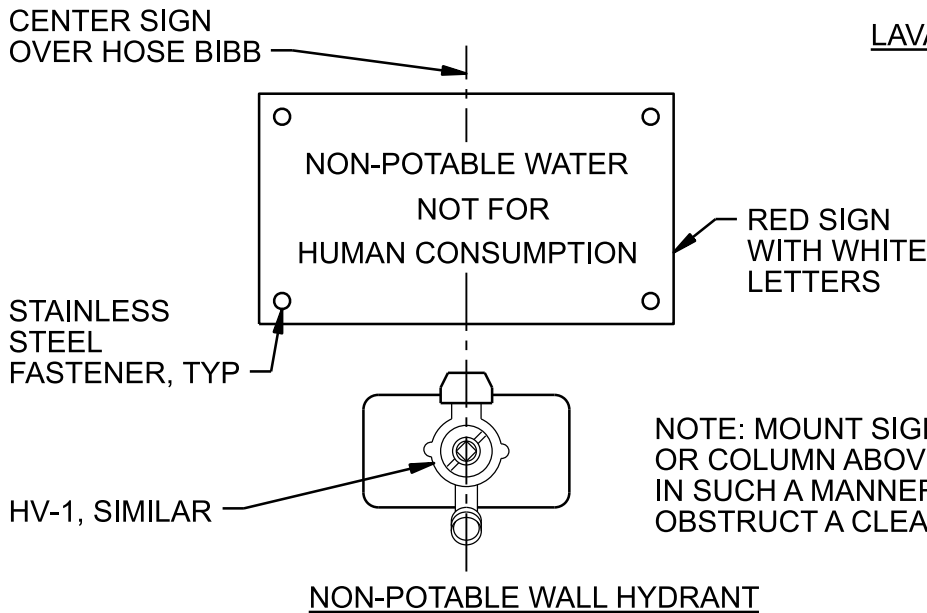
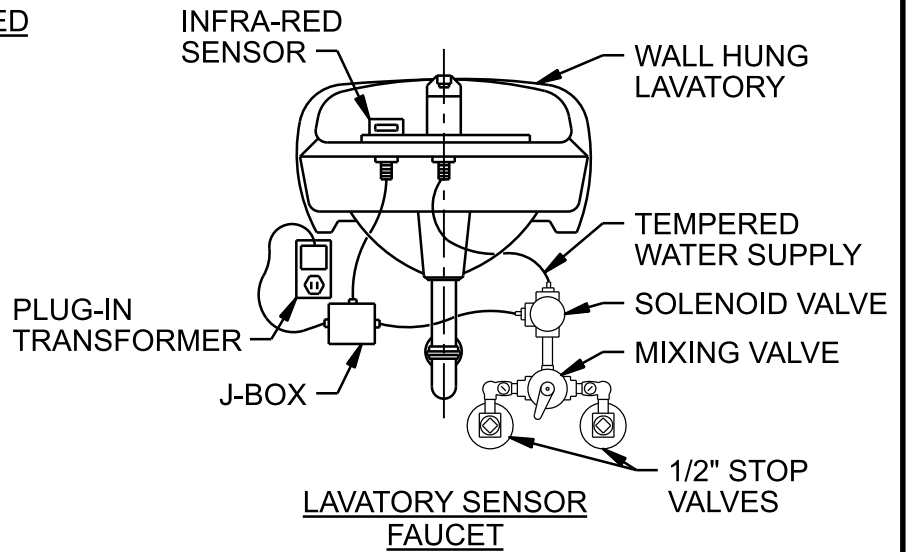
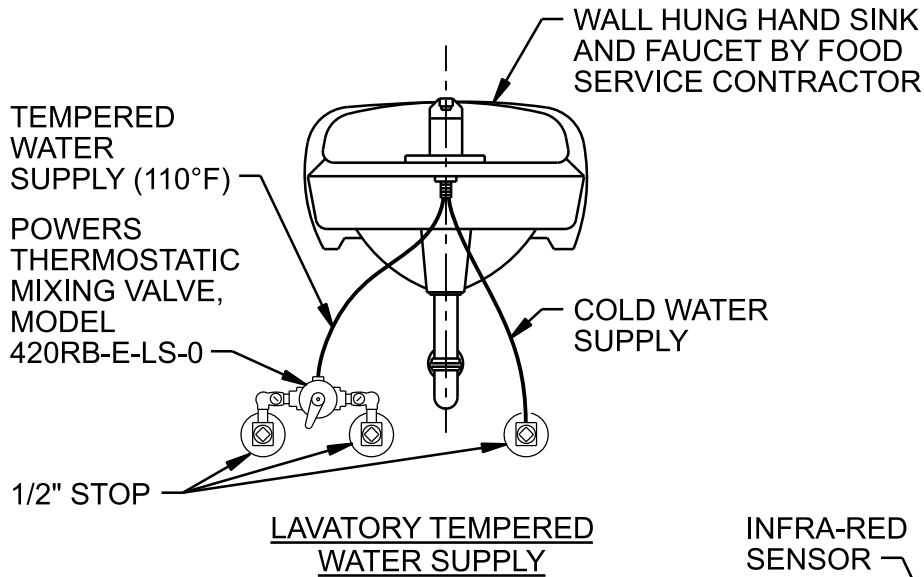
1. INSTALLATION MUST BE ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

WATER HEATER W/RECIRC PUMP

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2233-150

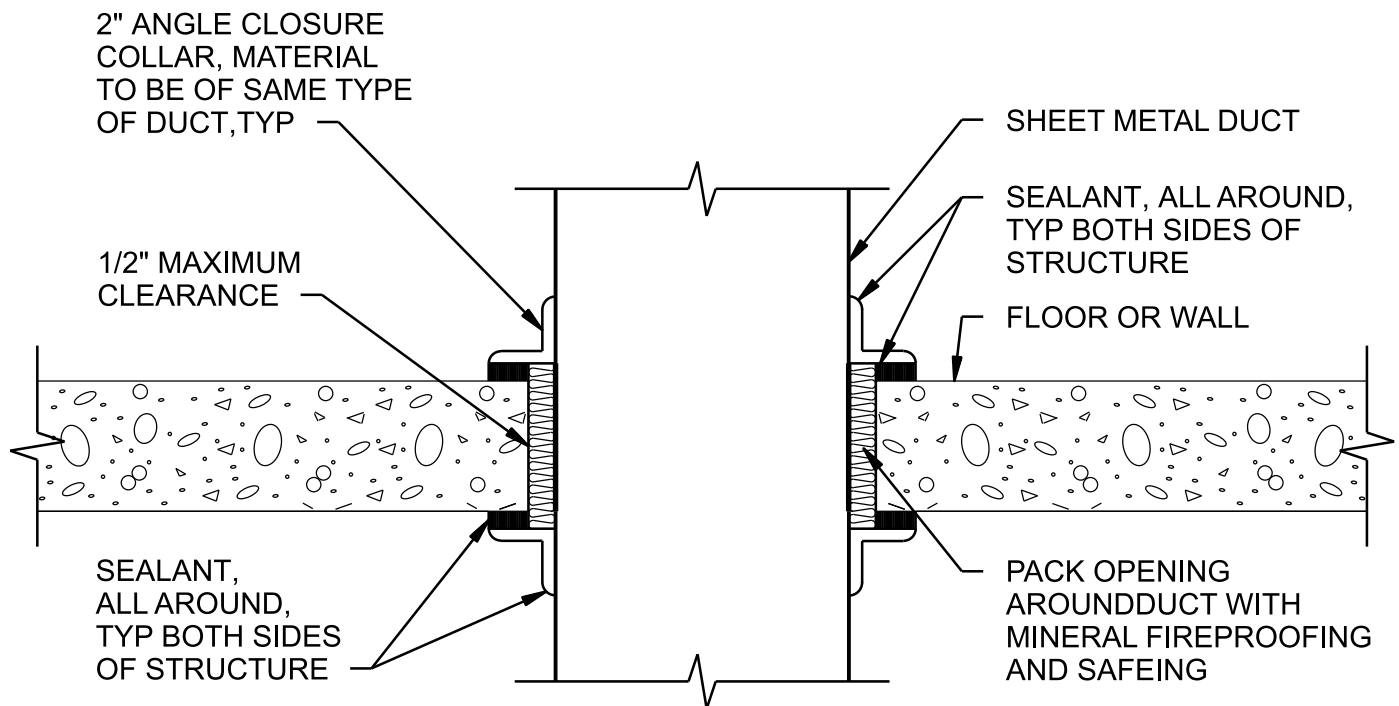


FIXTURES

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2242-120



NOTES:

1. WALL PENETRATION SIMILAR.
2. 2" ANGLE CLOSURE COLLAR OF SAME MATERIAL AS DUCT.

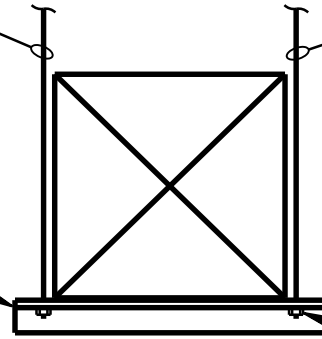
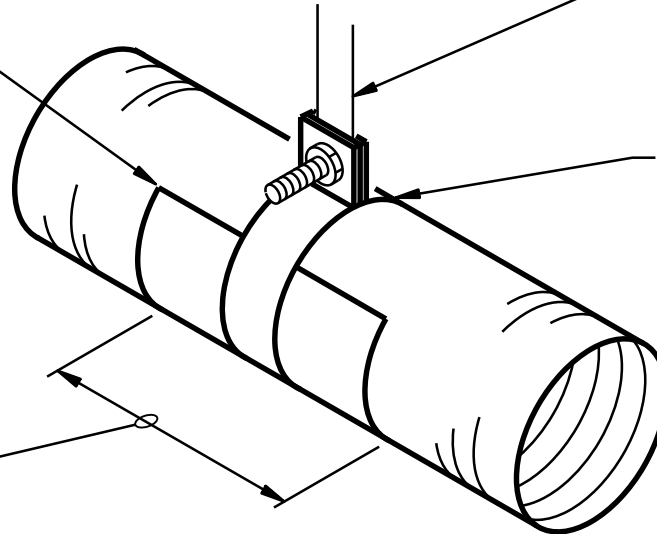
FLOOR PENETRATION - DRY AREA

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2305-412

ALL-THREAD ROD

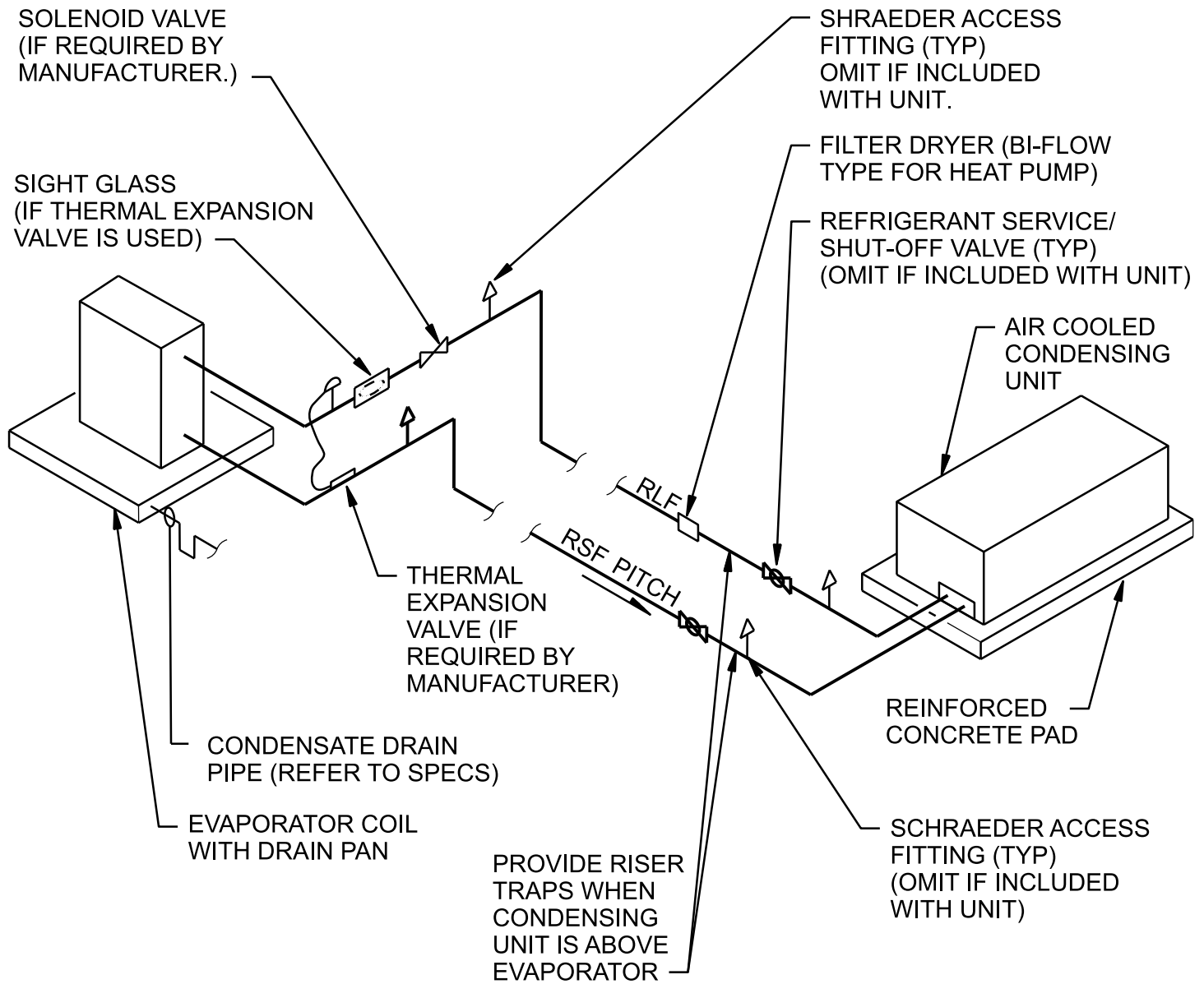
KINDORF HANGER
WITH ALL THREAD
ROD IN TRAPEZE
CONFIGURATIONATTACH TO
STRUCTURE WITH
BEAM CLAMPS
OR MASONRY
EXPANSION BOLTSNUT WITH LOCK
WASHERRECTANGULAR DUCTWORKSTAINLESS STEEL
SHEET METAL SADDLEATTACH TO
STRUCTURE PER
SMACNA
RECOMMENDATIONS1" MINIMUM
BAND CLAMPLENGTH EQUALS
DIAMETER OF DUCTRIGID/FLEXIBLE ROUND DUCTWORKNOTES:

1. DO NOT USE POWDER POWERED FASTENING SYSTEMS TO ATTACH SUPPORTS TO STRUCTURE.
2. SUPPORT SYSTEM MUST NOT DAMAGE DUCT, INSULATION, OR CAUSE DUCT SHAPE DEFORMATION.
3. HANGER SIZES SHALL BE IN ACCORDANCE WITH SMACNA, LATEST EDITION.

DUCTWORK SUPPORTNTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2305-804



NOTES:

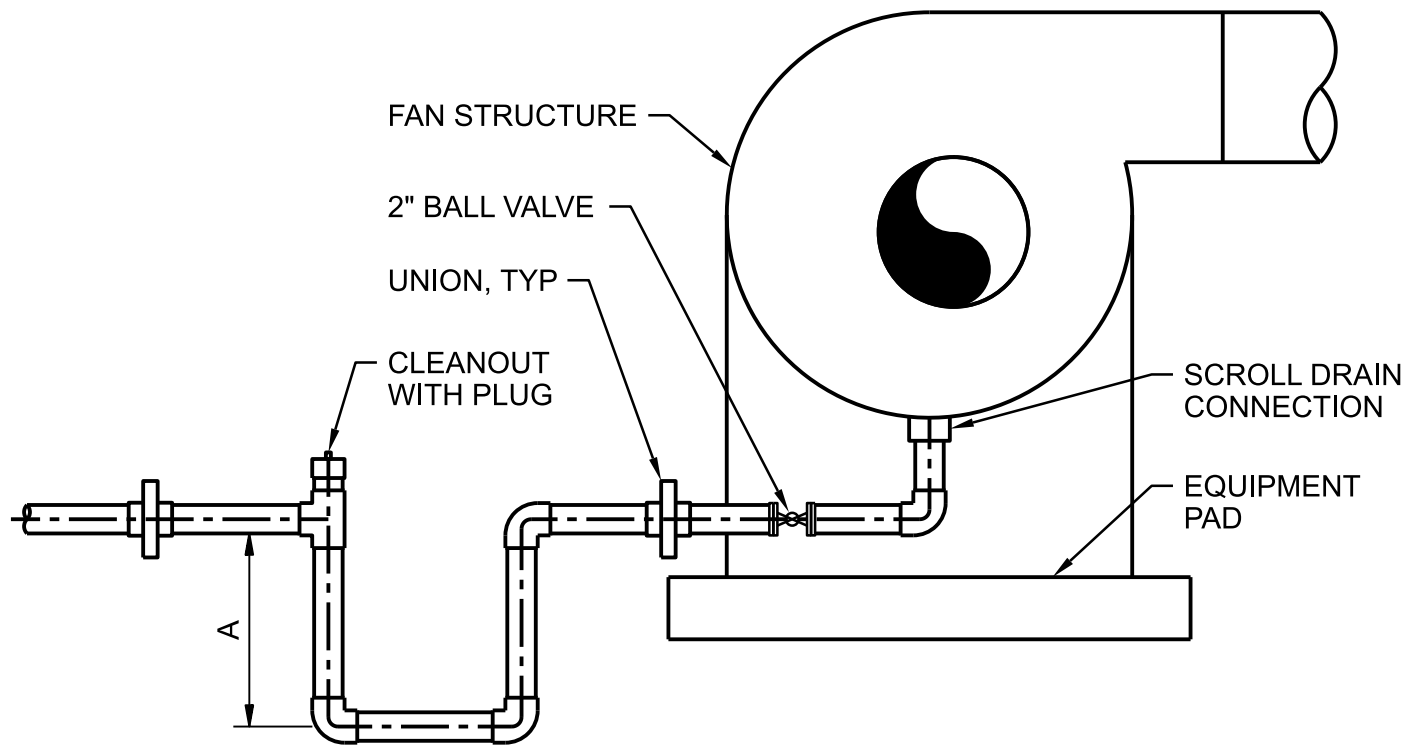
1. CONTRACTOR SHALL SUBMIT A REFRIGERANT PIPING DIAGRAM APPROVED BY THE CONDENSING UNIT MANUFACTURER BEFORE PROCEEDING WITH WORK (REFER TO SPECIFICATIONS FOR REFRIGERANT PIPING INSTALLATION REQUIREMENTS).
2. DELETE ANY VALVES OR MATERIALS THAT ARE FURNISHED WITH UNIT.
3. REFRIGERANT PIPING SHALL BE SIZED PER MANUFACTURER OPTIMUM PERFORMANCE RATING.

REFRIGERANT PIPING

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2321-603



NOTES:

1. PROVIDE BLOCKOUT IN STRUCTURAL SLAB AS NEEDED FOR REQUIRED TRAP DEPTH.
2. INSULATE AND HAT TRACE ALL EXPOSED PIPING PER SPECIFICATION.
3. DRAIN PIPING SHALL BE PER PIPING SCHEDULE.
4. MINIMUM DISTANCE "A" TO FAN STATIC PRESSURE (IN W.C.) PLUS 2" .

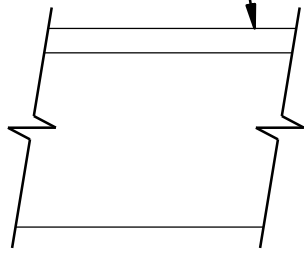
FAN SCROLL DRAIN

NTS

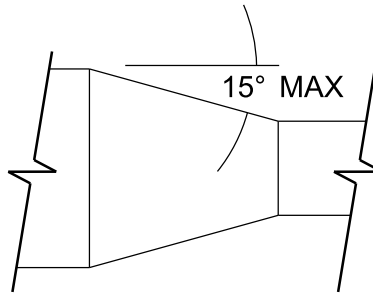
HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2331-004

LINED DUCT WHERE INDICATED

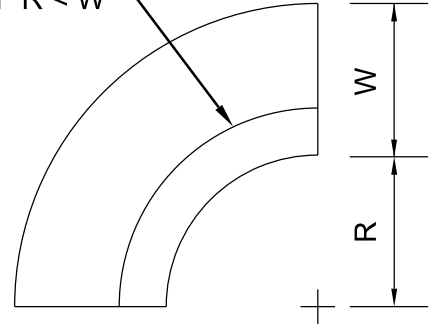


DUCT



TRANSITION

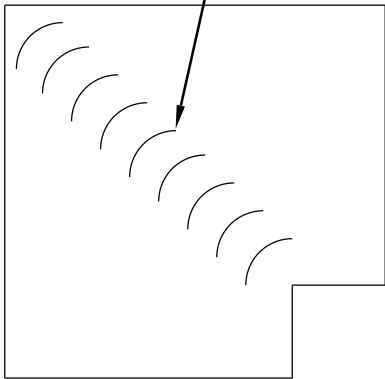
SPLITTER VANE REQ'D IF $R < W$



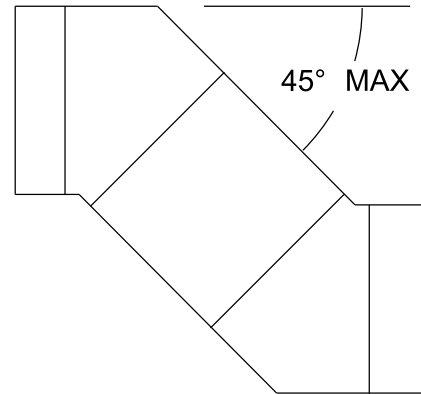
RADIUS ELBOW

$R = W$

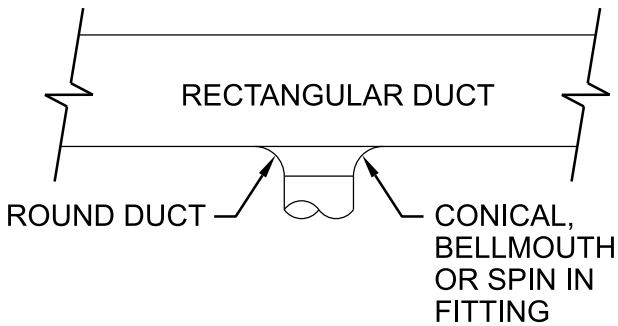
DUCT TURNING VANES AS SPEC. TO SUIT ELBOW



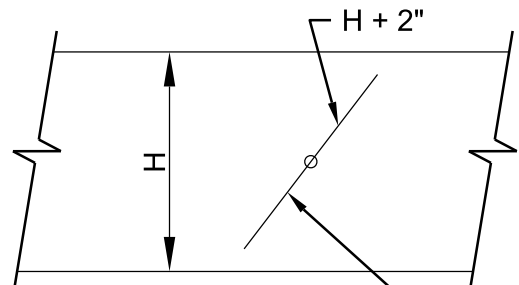
VANED ELBOW



OFFSET



ROUND DUCT TAKE OFF



18 GA. SHEET METAL DAMPER WITH LOCKING QUADRANT AND END BEARINGS.

VOLUME DAMPER

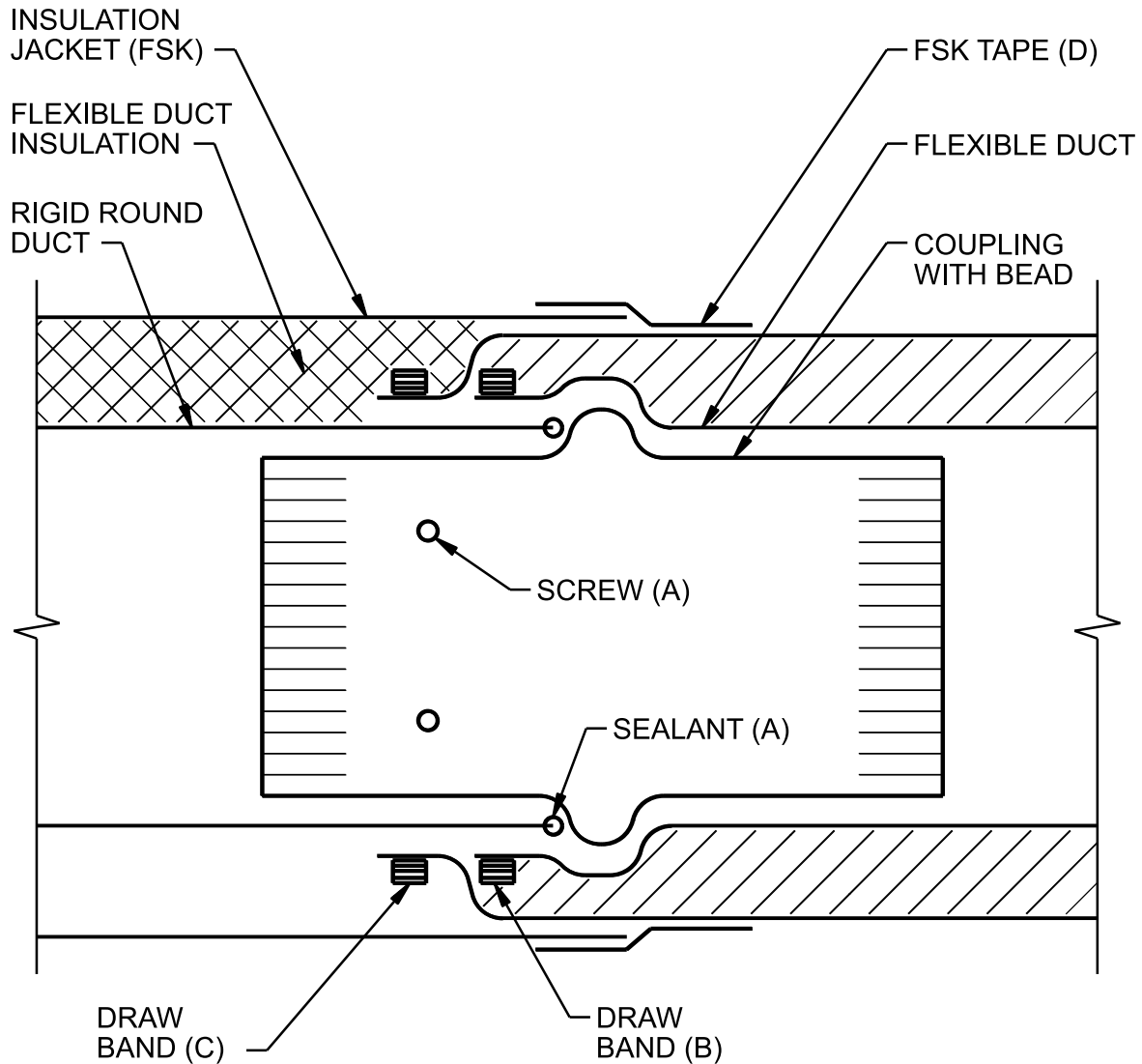
SINGLE BLADE - $H \leq 8"$
MULTI BLADE - $H > 8"$

LOW PRESSURE DUCT CONSTRUCTION - TRANSITIONS/TURNS/ETC.

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2331-100



NOTES:

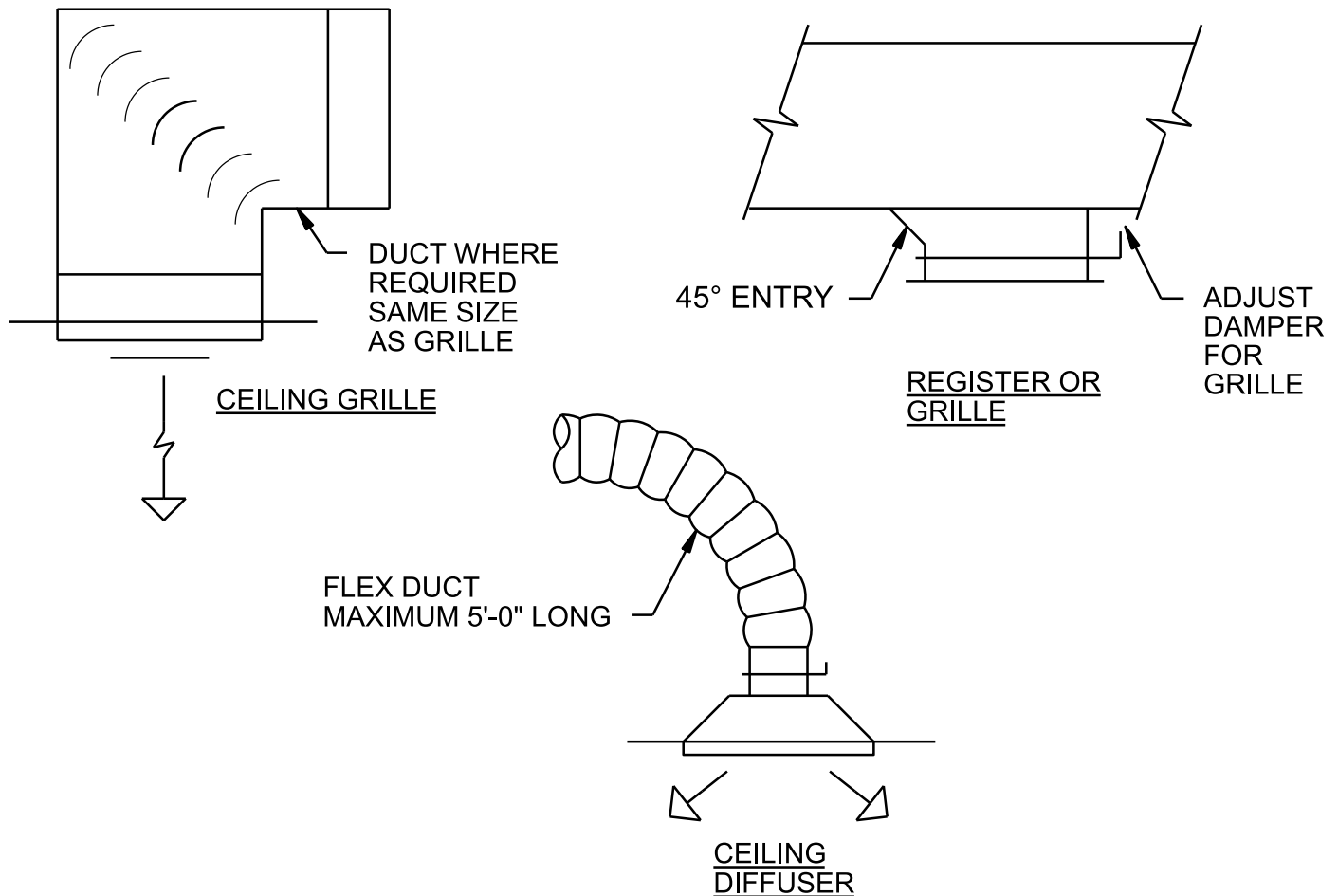
1. SECURE RIGID DUCT TO COUPLING WITH SHEET METAL SCREWS (3" MINIMUM). APPLY SEALANT AT JOINT.
2. PULL FLEXIBLE DUCT'S INNER LINER OVER COUPLING BEAD AND SECURE WITH SS DRAW BAND.
3. SECURE FLEXIBLE DUCT INSULATION AND OUTER JACKET WITH METAL OR PLASTIC DRAW BAND.
4. PULL RIGID DUCT INSULATION AND BUTT JOINT TO TERMINATION OF FLEXIBLE DUCT. APPLY 75MM WIDE FSK TAPE TO CREATE VAPOR BARRIER SEAM.

FLEXIBLE DUCT CONNECTION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2331-108



NOTES:

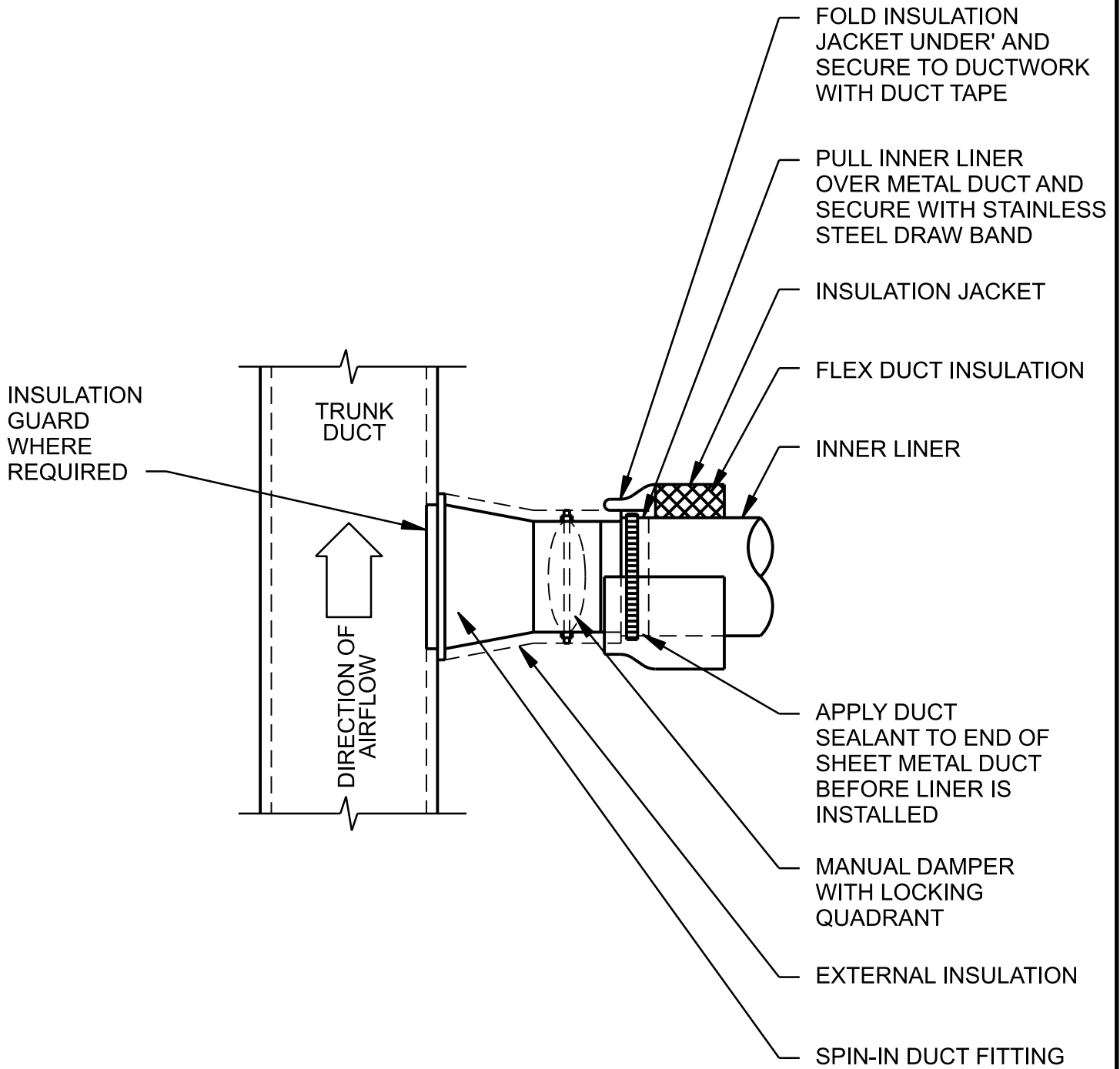
1. LOW PRESSURE CONSTRUCTION SHALL BE IN ACCORDANCE WITH LOCAL MECHANICAL CODES AND THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION INC. HVAC DUCT CONSTRUCTION STANDARDS UNLESS OTHERWISE INDICATED ON DRAWINGS.
2. CEILING DIFFUSER SIZES ARE NECK SIZES AND ARE TO BE LOCATED IN THE T-BAR GRIDS IN ALL SUSPENDED CEILING SYSTEMS. WHERE REFLECTED CEILING PLANS ARE PROVIDED LOCATE DIFFUSERS AND GRILLES AS INDICATED.
3. ALL DUCT SIZES SHOWN ARE NET FREE ARE DIMENSIONS.
4. PROVIDE SPLITTER OR VOLUME DAMPER AT EACH SUPPLY DUCT TAKE-OFF IN ACCORDANCE WITH TYPICAL DUCT CONSTRUCTION DETAILS.
5. PROVIDE VOLUME DAMPERS FOR EACH GRILLE AT EACH RETURN CONNECTION AND ANY OTHER LOCATIONS INDICATED ON THE DRAWINGS IN ACCORDANCE WITH TYPICAL DUCT RE-CONSTRUCTION DETAILS. DAMPERS TO BE INSTALLED MINIMUM 5'-0" FROM GRILLE.

LOW PRESSURE DUCT CONSTRUCTION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2331-109



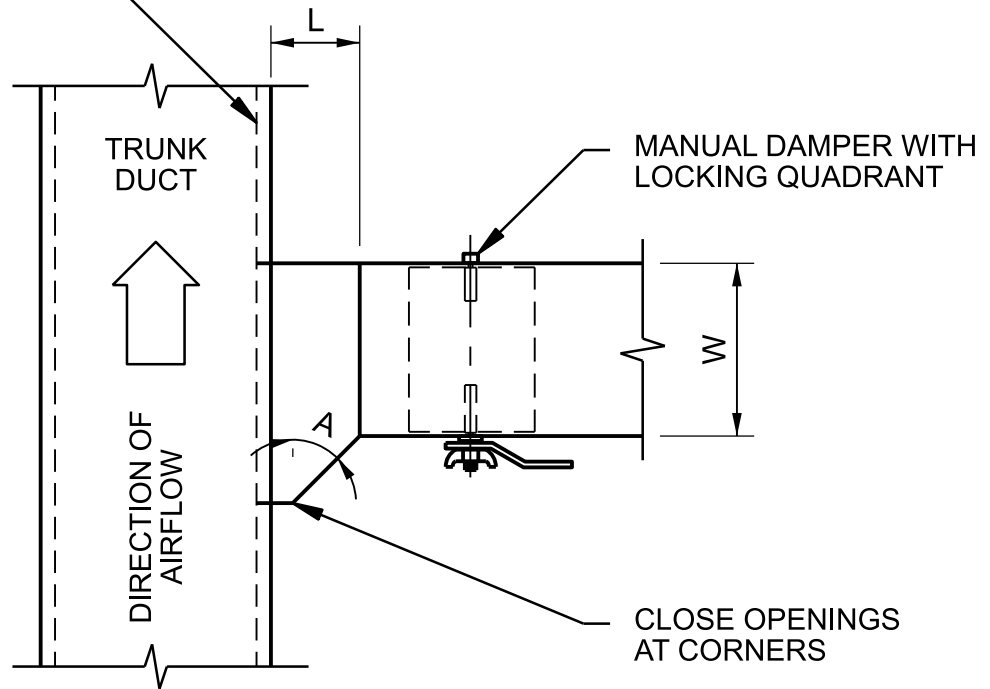
ROUND DUCT TAKEOFF

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2331-111

1" INSULATION GUARD
WHERE REQUIRED FOR
INTERNALLY LINED
DUCTWORK



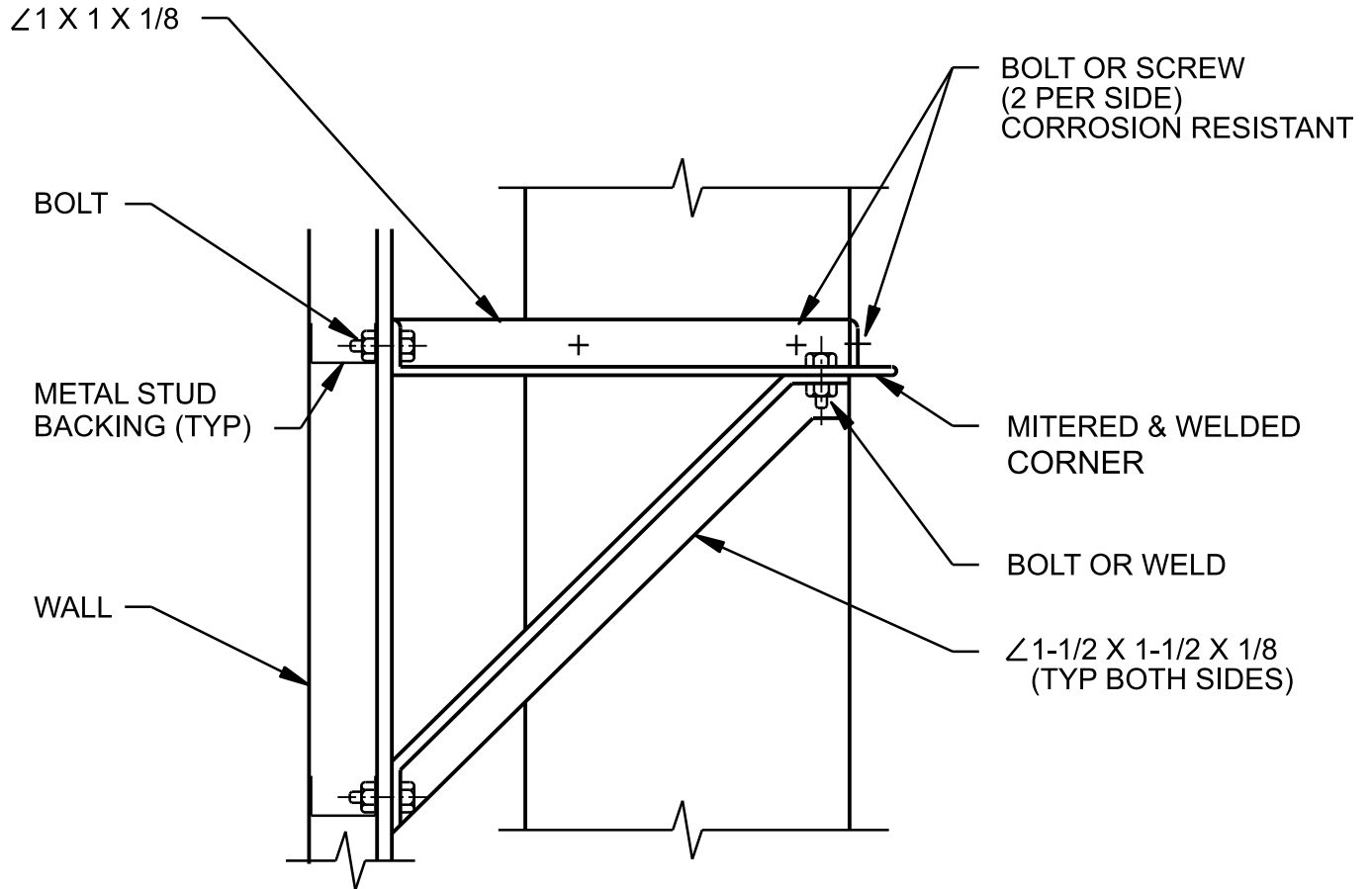
$L = 1/4" W, 4" \text{ MINIMUM}$
 $A = 45^\circ$

RECTANGULAR DUCT TAKEOFF

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2331-112



NOTES:

1. REFERENCE MATERIAL SELECTION TABLE ON SHEET 01-G-0085 FOR MATERIAL TYPES.

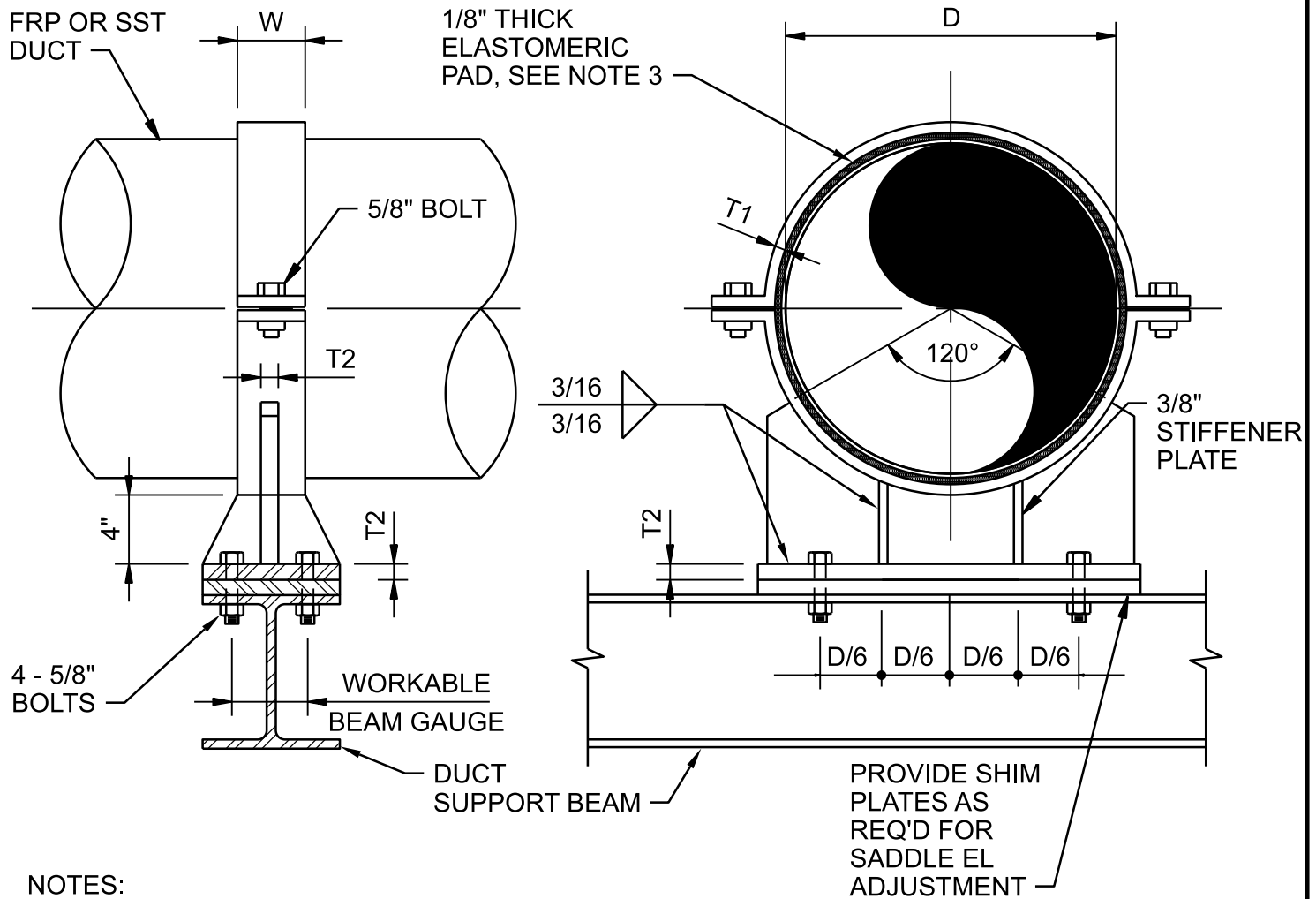
VERTICAL DUCT SUPPORT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2331-360

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:

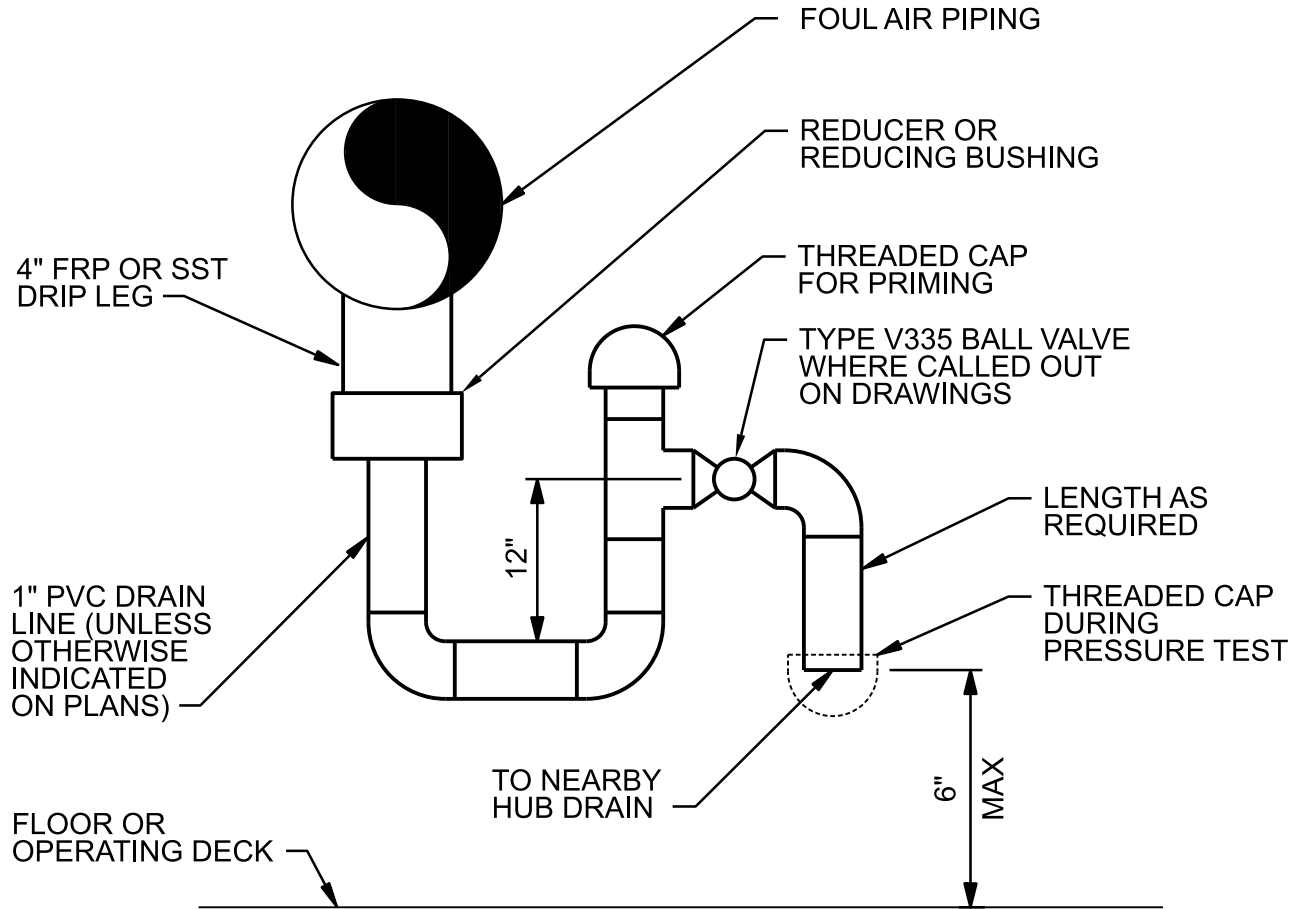
1. PROVIDE SADDLE SUPPORT WHERE SHOWN ON DRAWINGS WITH NECESSARY SUPPORT SPACING REQUIREMENTS MEETING SPECIFICATION 23 31 16.16
2. REFER TO MATERIAL SELECTION TABLE AND AREA CLASSIFICATION TABLE FOR MATERIALS OF CONSTRUCTION.
3. WHERE THIS DETAIL IS SPECIFIED AS A "GUIDE" ON PLANS, DO NOT INSTALL ELASTOMERIC 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.

DUCT SADDLE SUPPORT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2331-884



NOTES:

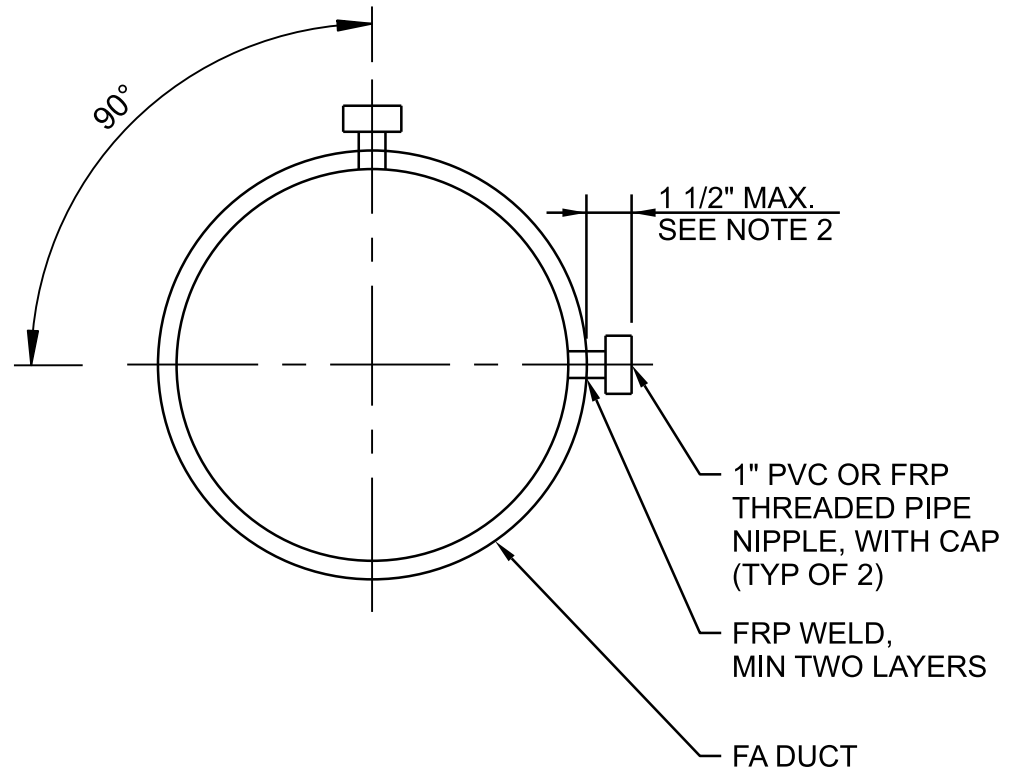
1. DETAIL TAILORED TO FRP DUCT, SIMILAR FOR STAINLESS STEEL LINED DUCT SYSTEM.
2. COAT EXPOSTED PVC PIPING FOR UV PROTECTION.

VENT GAS TRAP AND DRAIN

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2331-898



NOTES:

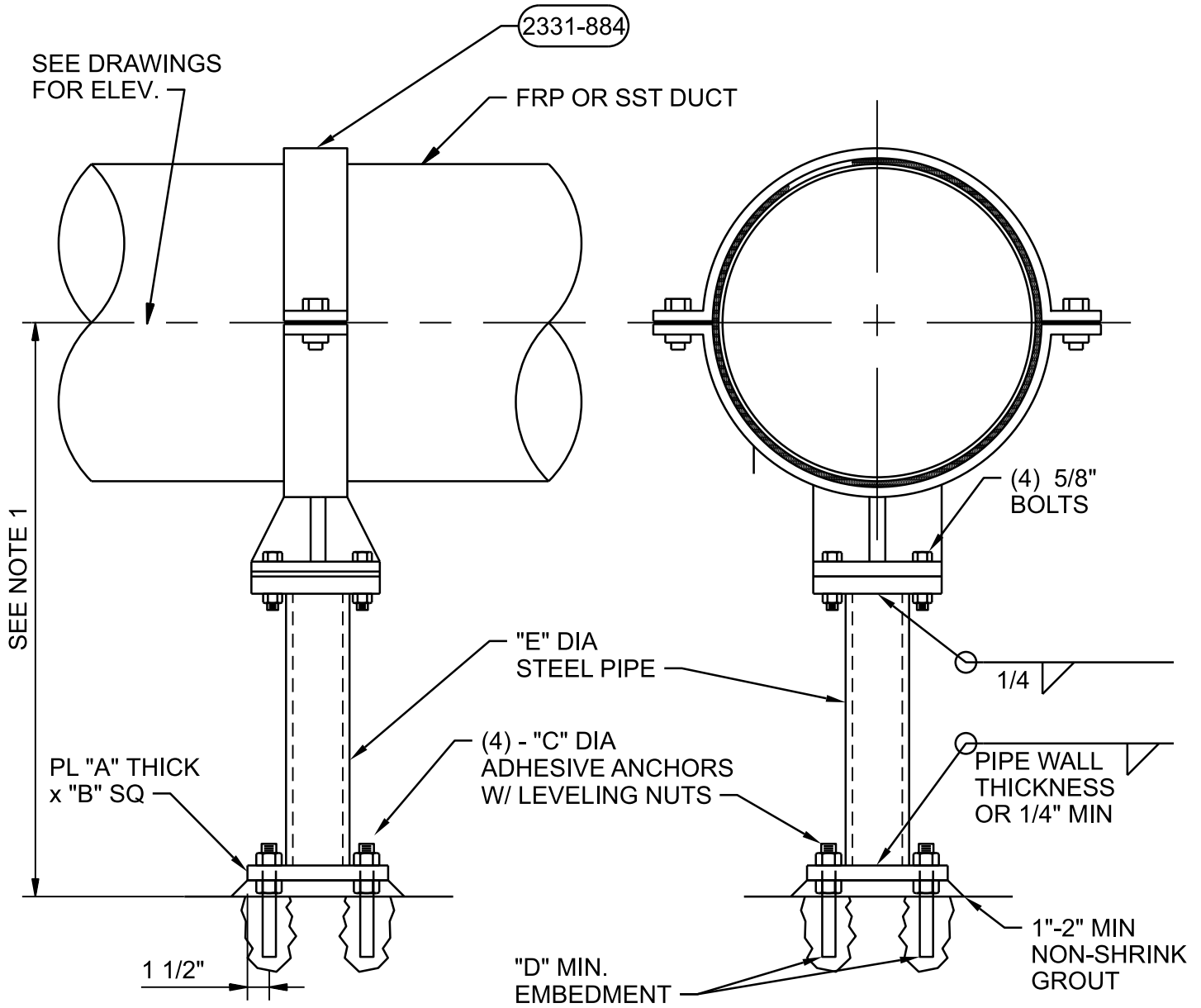
1. INSTALL TEST PORT WITH A MINIMUM LENGTH OF 3 DUCT DIAMETERS OF STRAIGHT DUCT UPSTREAM AND MINIMUM OF 1 DUCT DIAMETER OF STRAIGHT DUCT DOWNSTREAM
2. AS CONSTRUCTED EACH PORT MUST BE ABLE TO FREELY PASS A DWYER SERIES 160 PITOT TUBE.
3. WHERE POSSIBLE ON HORIZONTAL DUCT RUNS DO NOT INSTALL TEST PORTS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

FOUL AIR TEST PORT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2331-899



NOTES:

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

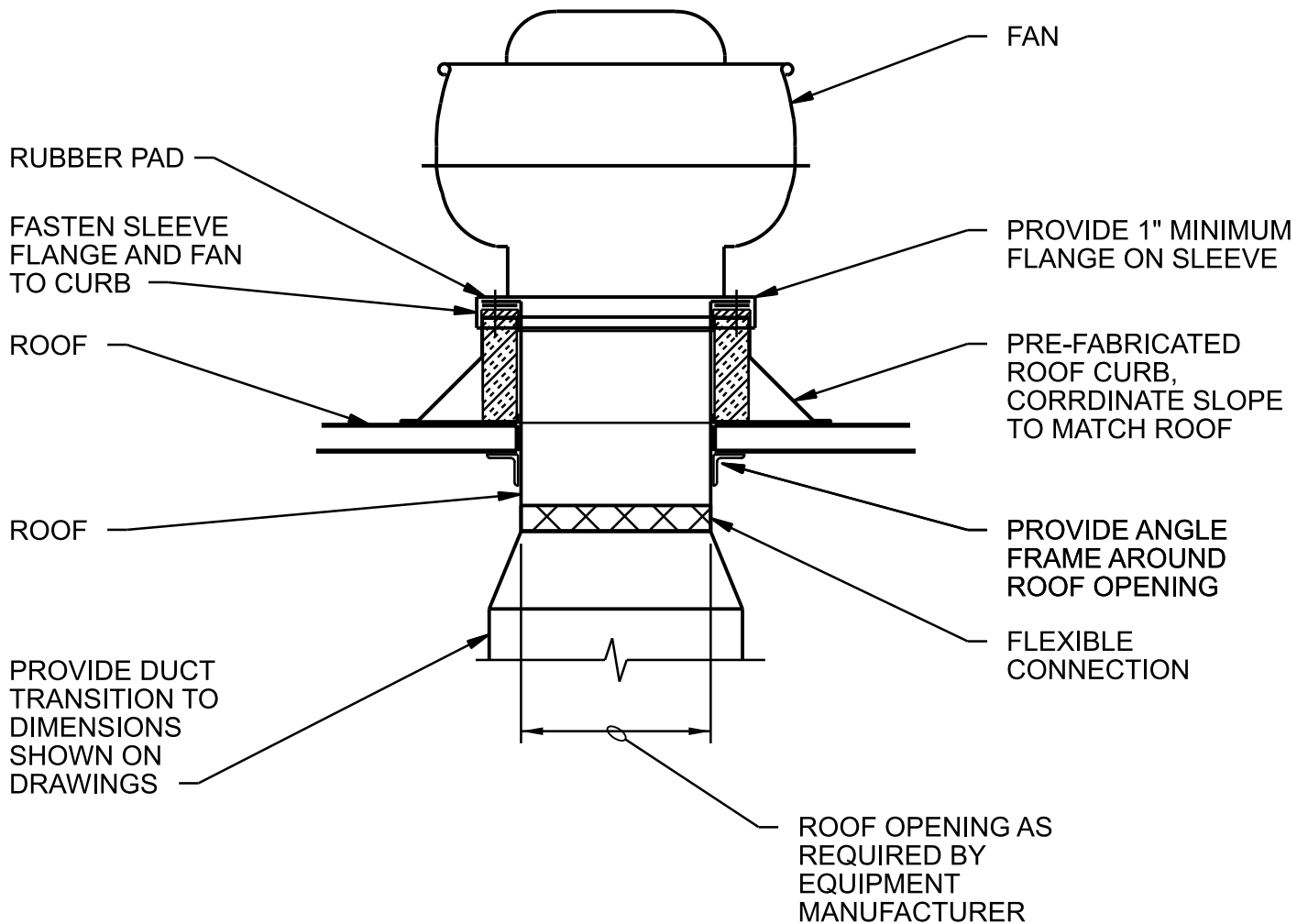
DUCT DIA (IN)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (FT)
14 - 48	3/4	15	3/4	10	8	13

DUCT SUPPORT DETAIL - GRADE MOUNTED

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2331-900



NOTES:

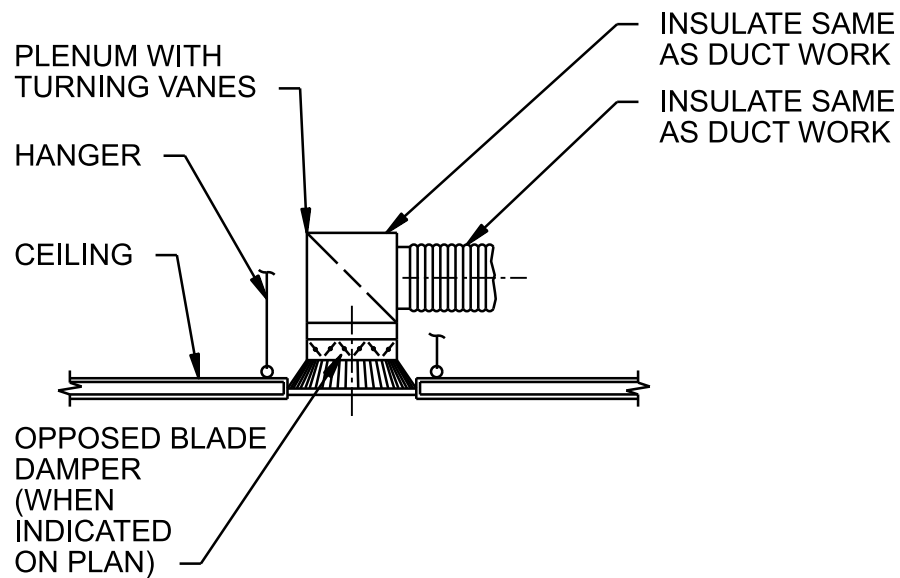
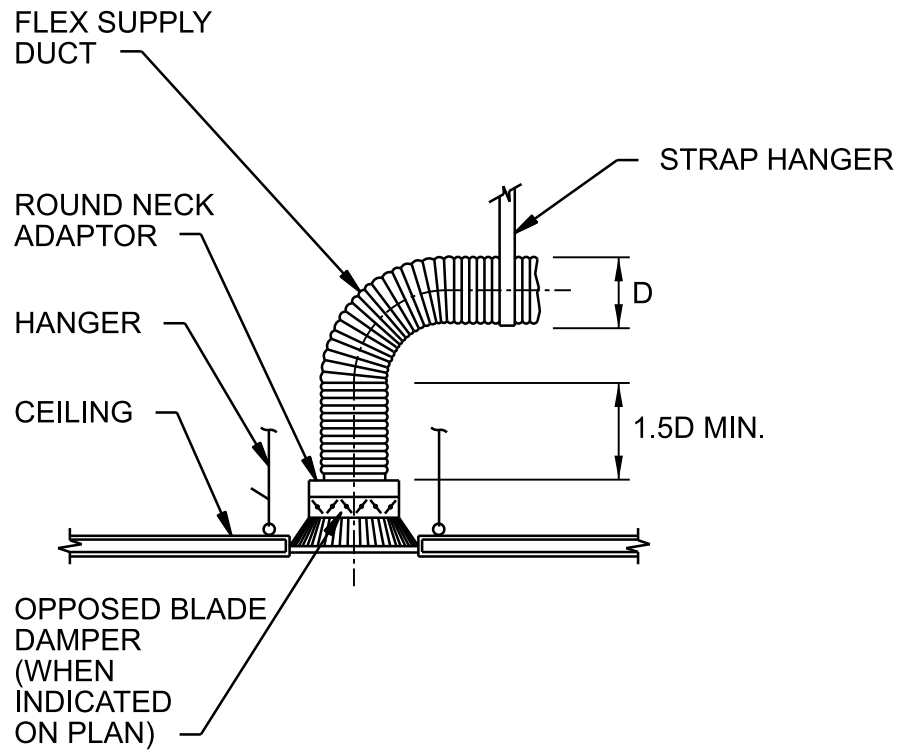
1. REFER TO ARCHITECTURAL DRAWINGS FOR ROOF CONSTRUCTION AND CURB FLASHING.
2. REFER TO STRUCTURAL DRAWINGS FOR ROOF OPENING DETAILS.

DUCTED ROOF MOUNTED FAN

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2334-300



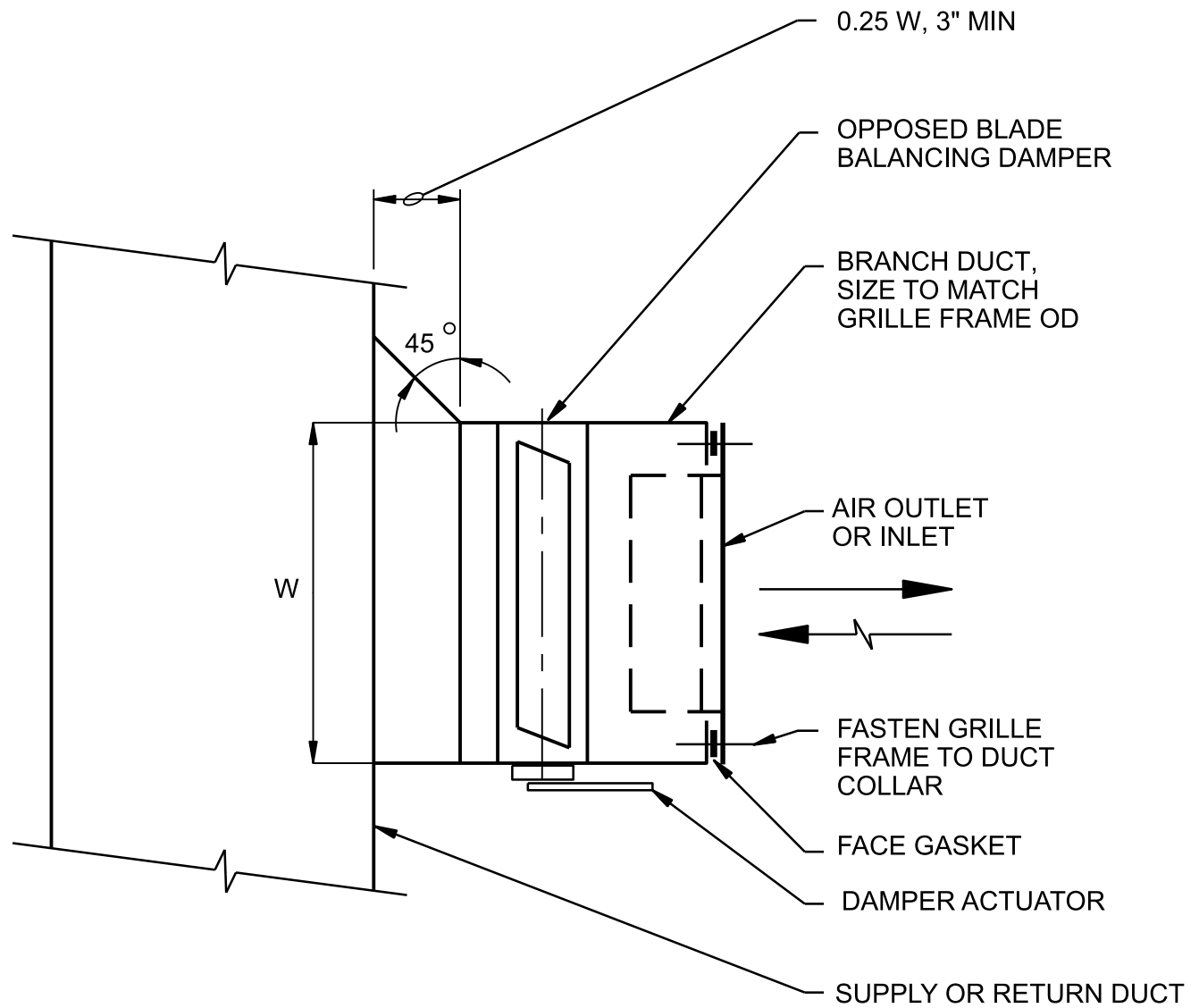
ALTERNATIVE - WHEN SPACE IS LIMITED

CEILING DIFFUSER TAKE-OFFS

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2337-100

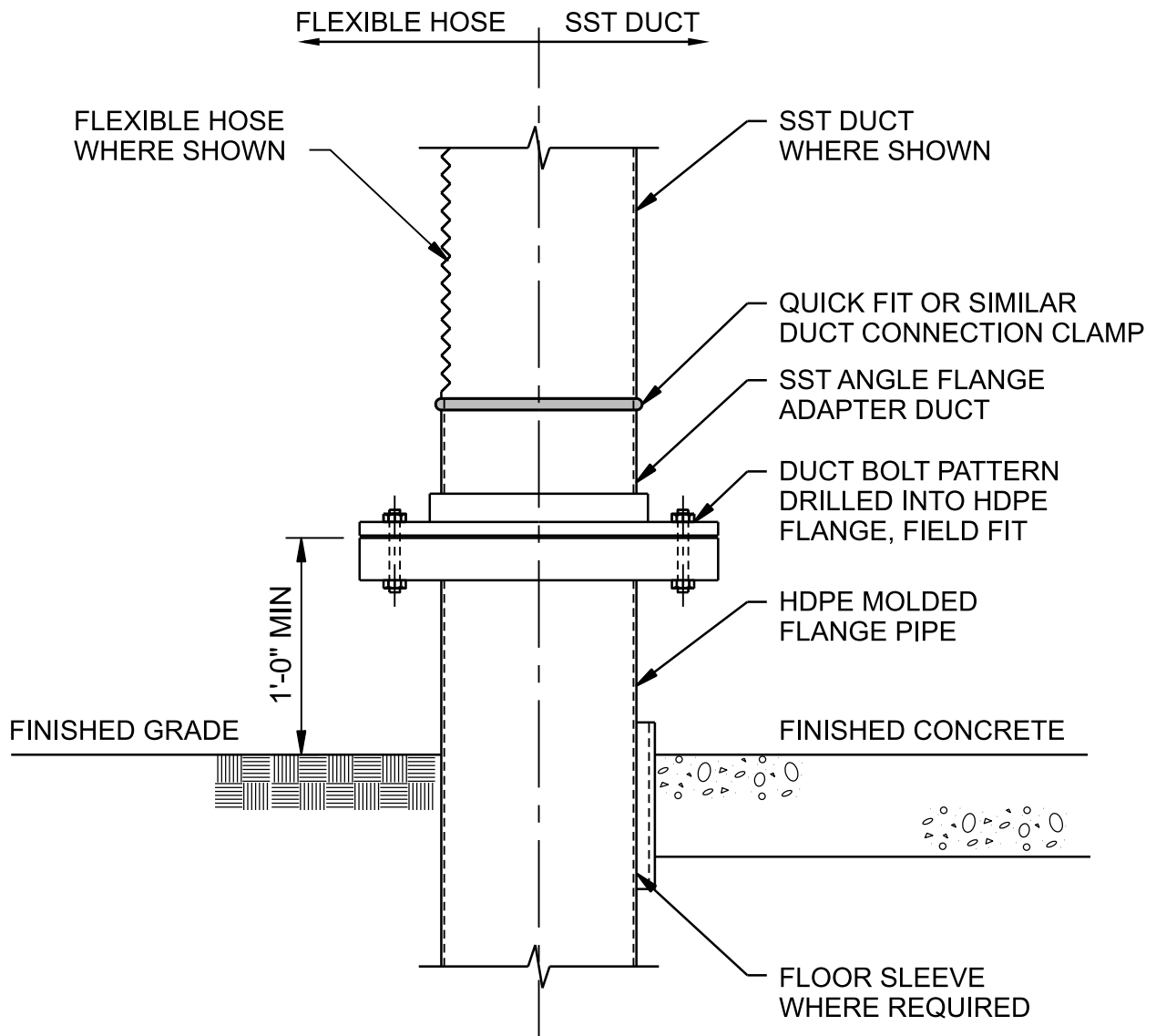


DUCT MOUNTED AIR OUTLET OR INLET

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2337-809



NOTES:

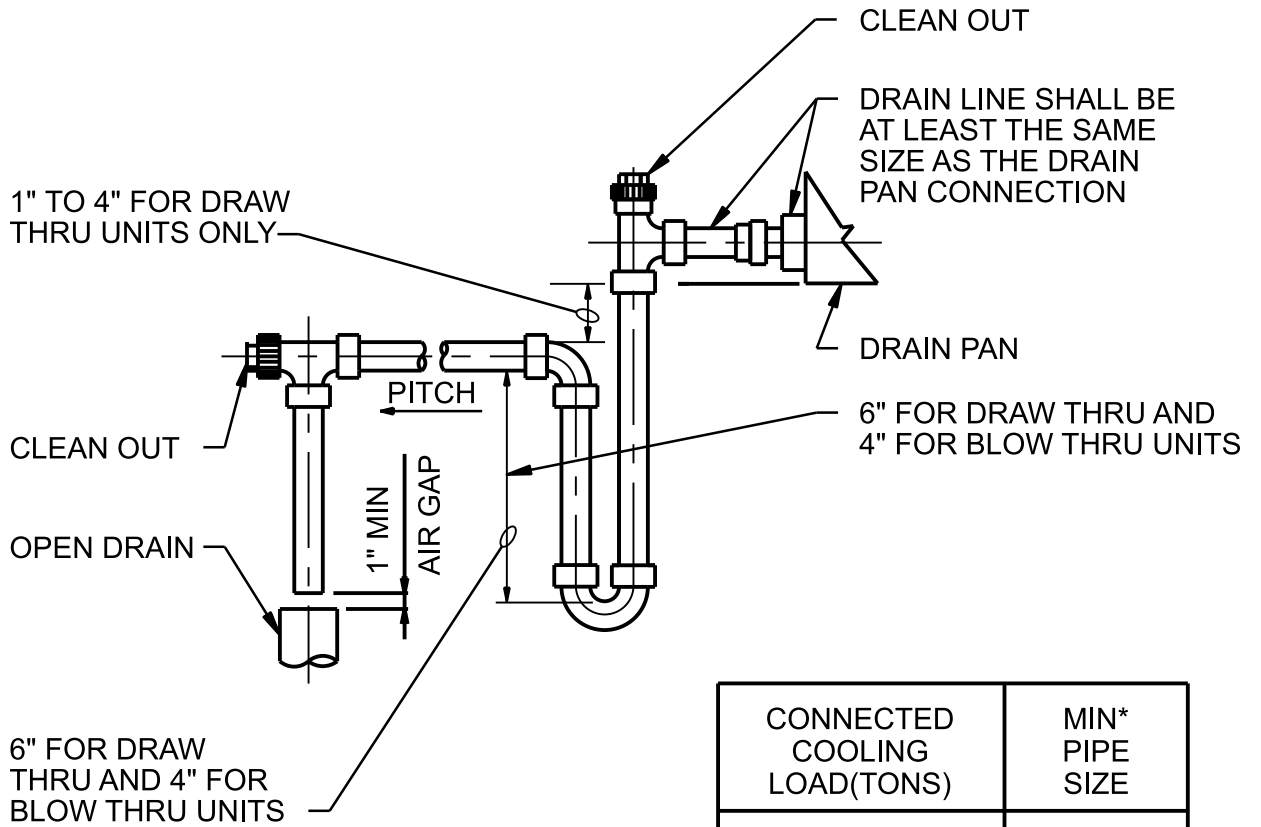
1. INSTALL ANGLE FLANGE GASKET ON ALL CONNECTIONS.
2. ALL FASTENERS TO BE STAINLESS STEEL INCLUDING BOLTS, NUTS AND WASHERS.

HDPE PIPE TO STAINLESS STEEL DUCT TRANSITION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2337-811



CONNECTED COOLING LOAD(TONS)	MIN* PIPE SIZE
2	3/4"
2.1-5	1"
5.1-50	1-1/2"
51-160	2"
161-300	3"
301-425	4"

* NOT SMALLER THAN OUTLET SIZE

NOTES:

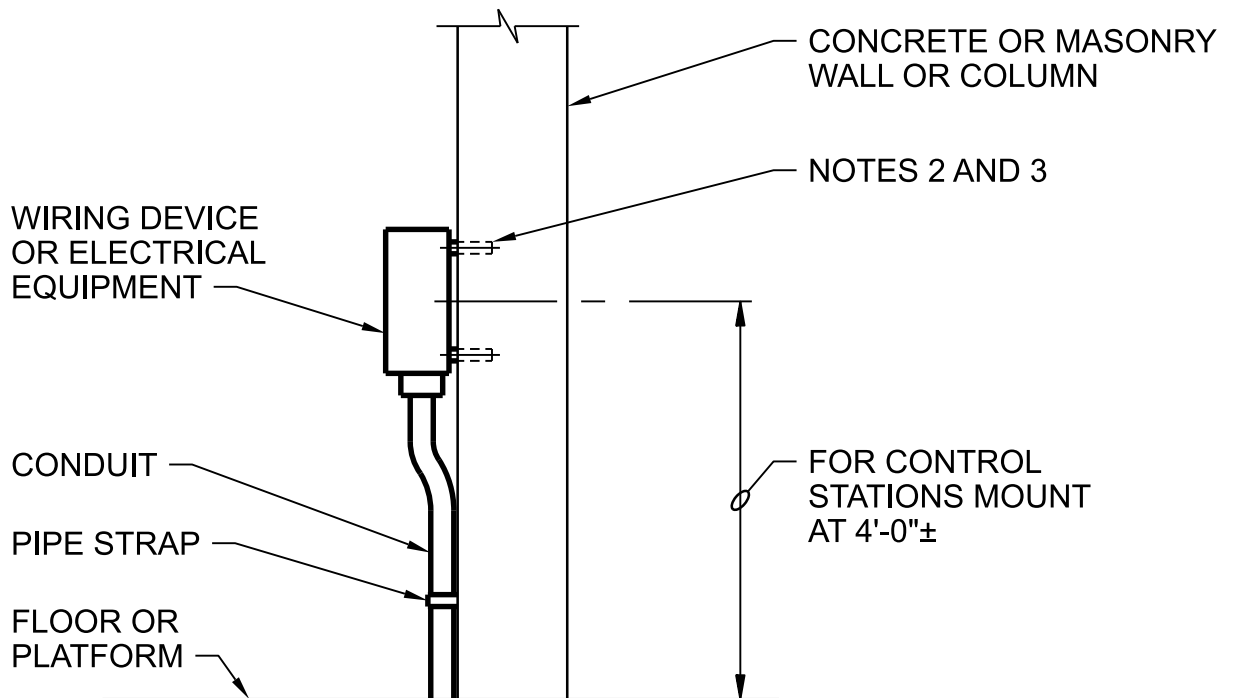
1. MANUALLY PRIME TRAP BEFORE START UP.
2. SUPPORT DRAIN LINES TO PREVENT SAG.
3. ALLOW SUFFICIENT SPACE BELOW PAN FOR TRAP AND PITCH TO DRAIN.

CONDENSATE DRAIN TRAP (TYP)

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2377-100



NOTES:

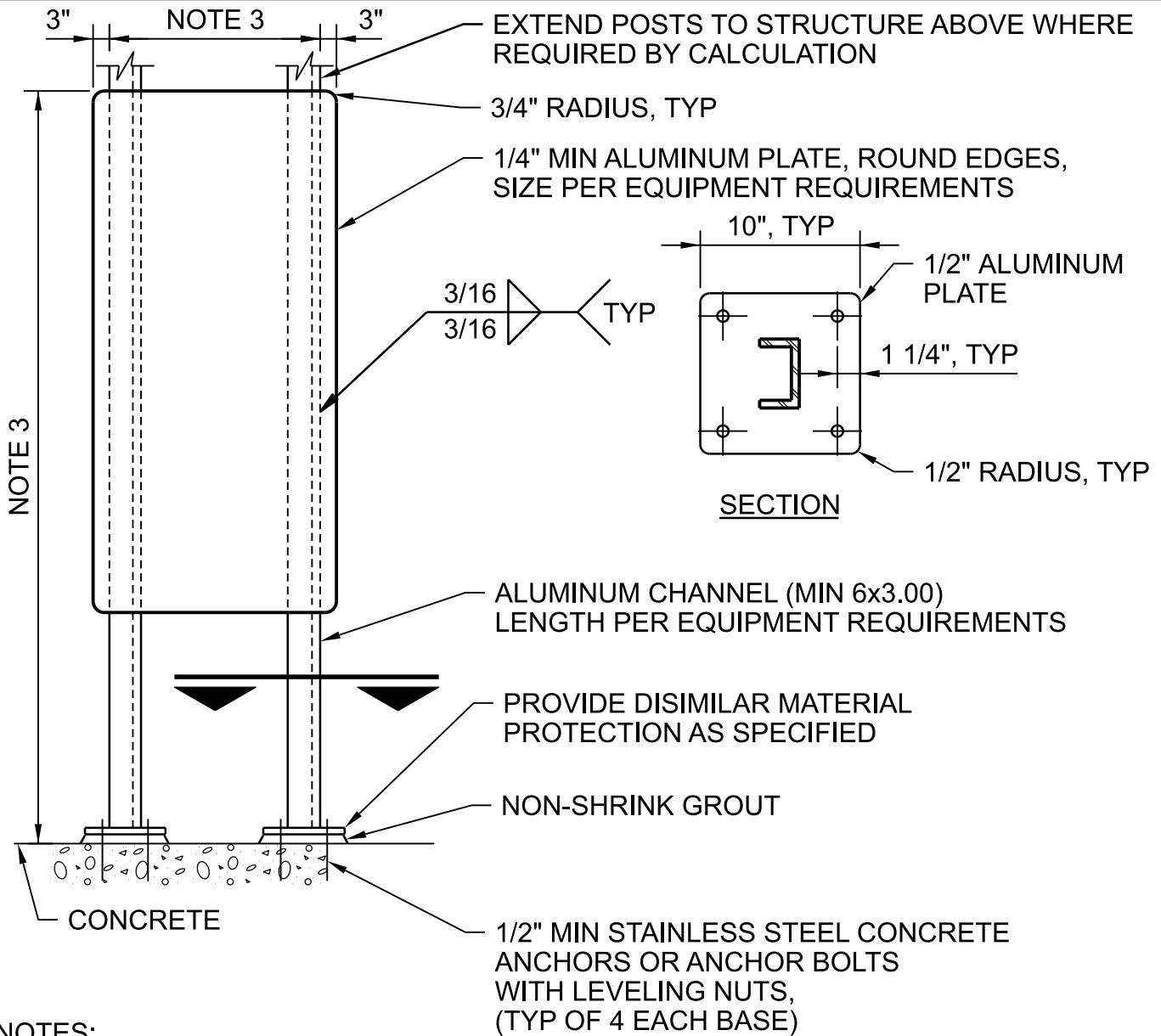
1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. USE BOTH WASHER AND LOCK WASHERS UNDER ALL NUTS.
2. ON CONCRETE WALLS USE STAINLESS STEEL CONCRETE ANCHORS. MOUNT ENCLOSURE ON SPACERS OF MIN 1/2" SCHEDULE 80 PVC CONDUIT.
3. BOXES 6 INCHES SQUARE AND SMALLER SHALL BE SUPPORTED BY TWO ANCHORS, MIN. LARGER 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

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-002



NOTES:

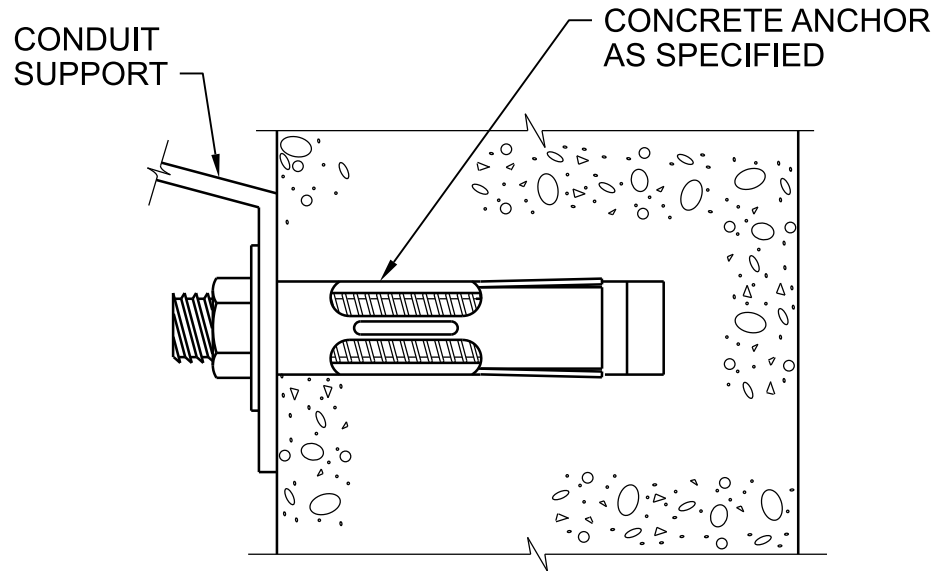
1. USE STAINLESS STEEL MOUNTING HARDWARE. USE WASHER AND SPLIT LOCK WASHER UNDER ALL NUTS.
2. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES AS REQUIRED BY CALCULATIONS.
3. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

DEVICE MOUNTING SIDE MOUNTED PEDESTAL - ALUMINUM

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-008b

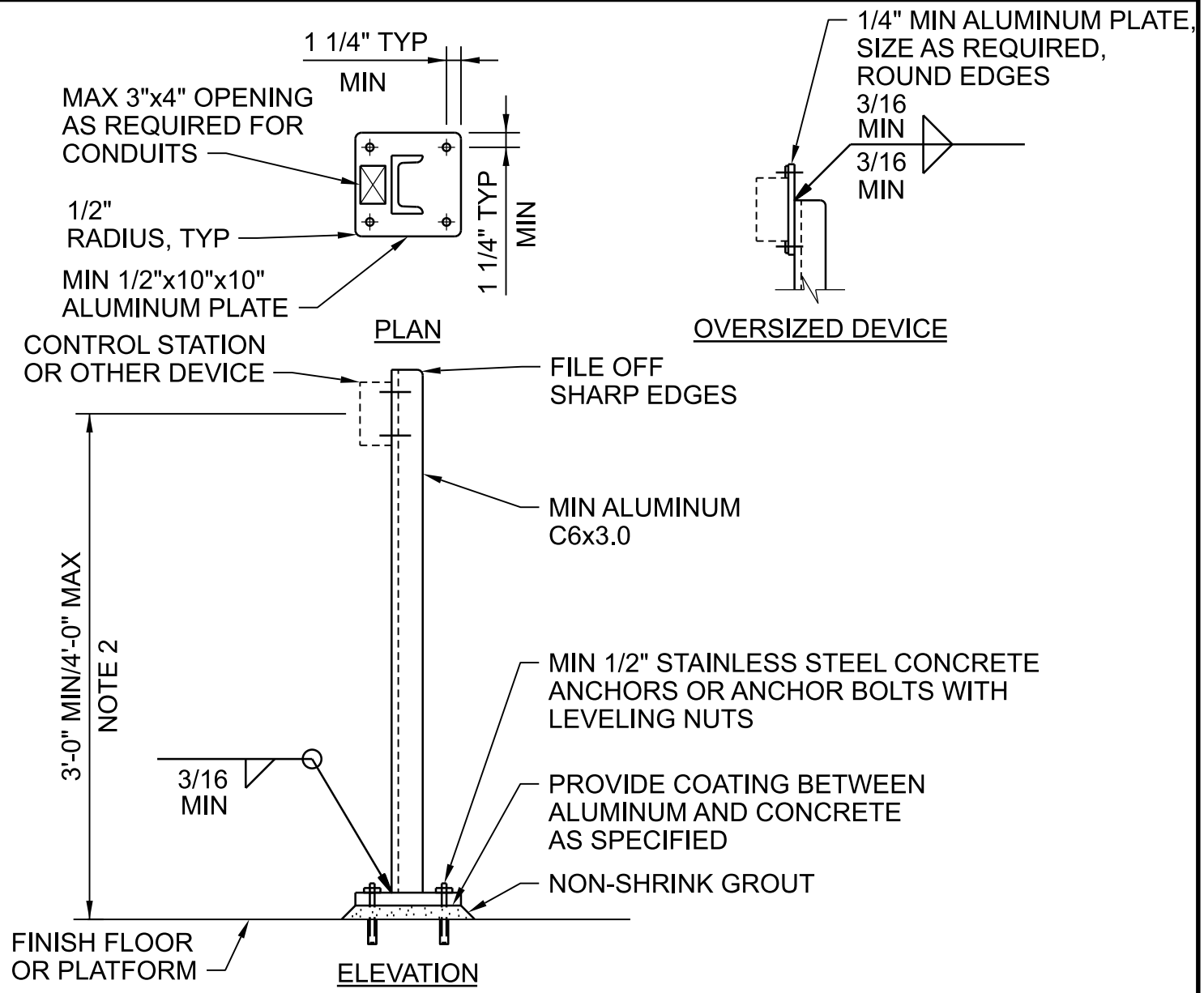


CONCRETE ANCHOR INSTALLATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-010



NOTES:

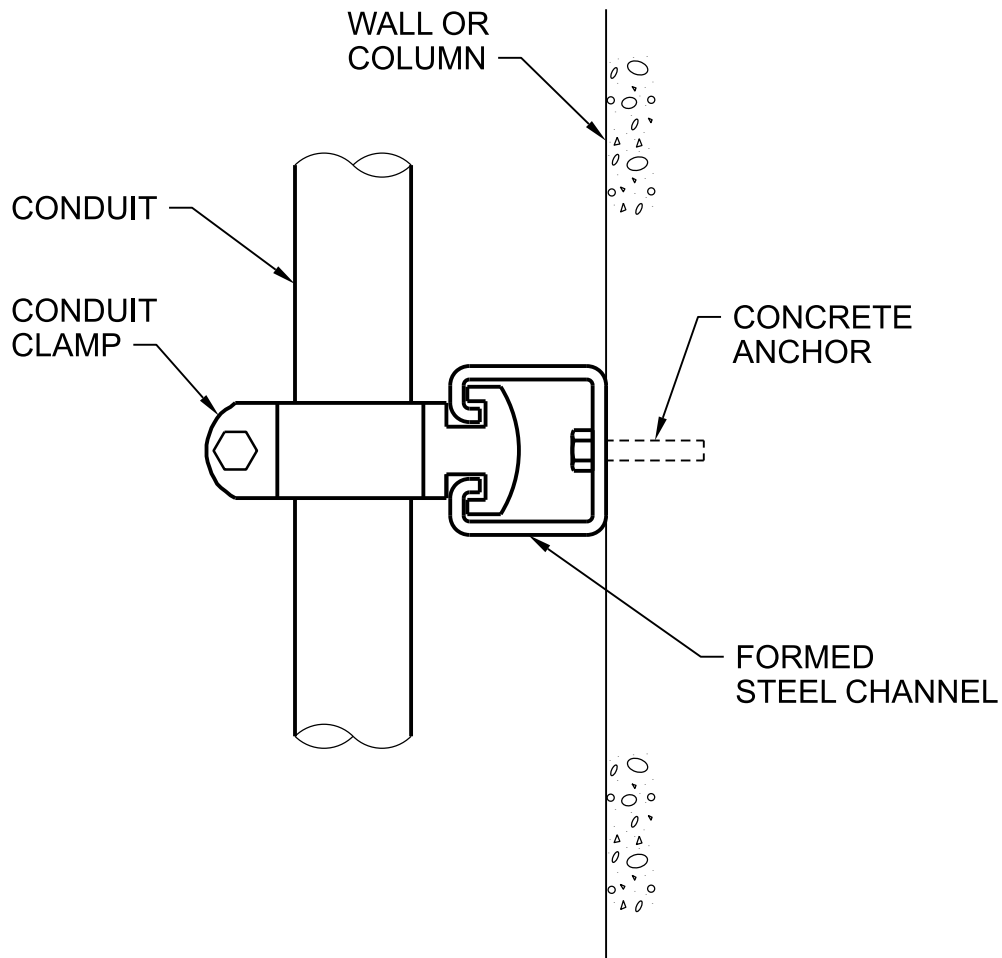
1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. USE WASHERS AND LOCK WASHERS UNDER ALL NUTS AND BOLTS.
2. EXTEND POSTS TO STRUCTURE ABOVE WHERE REQUIRED BY CALCULATION. EXTENSION SHALL ACCOMODATE DEFLECTION OF THE SUPPORTING STRUCTURE.
3. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES AS REQUIRED BY CALCULATIONS.
4. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

DEVICE MOUNTING, PEDESTAL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-011b

**NOTES:**

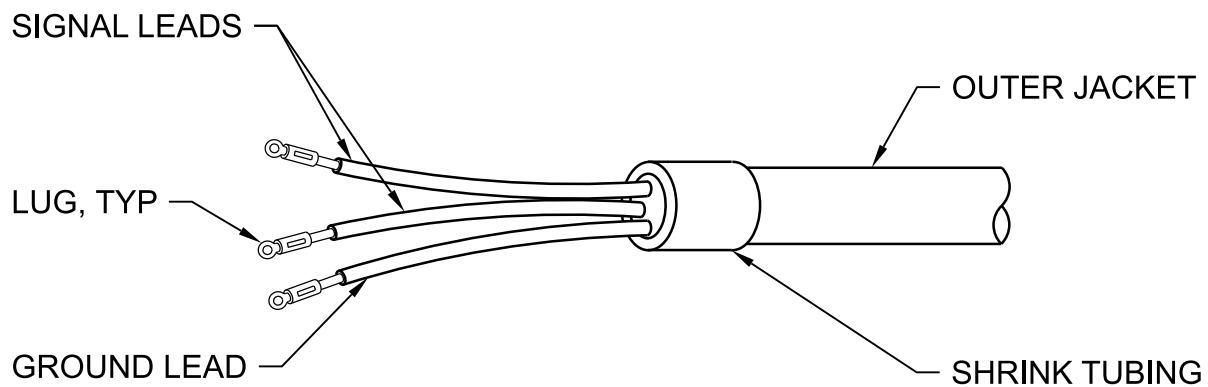
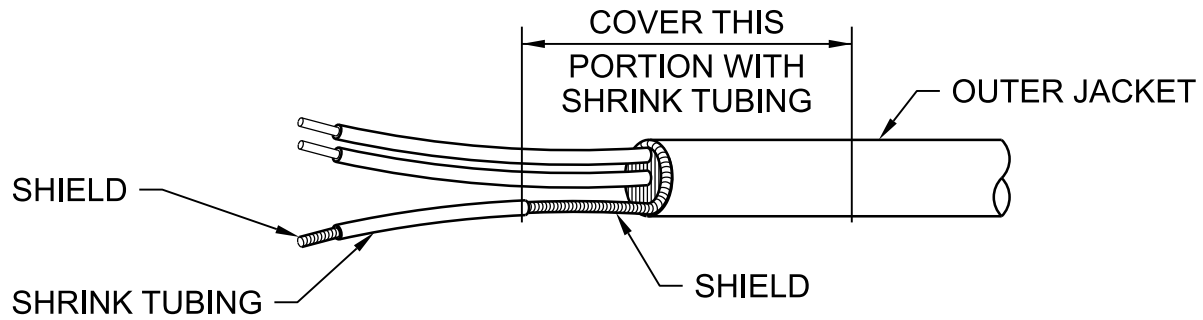
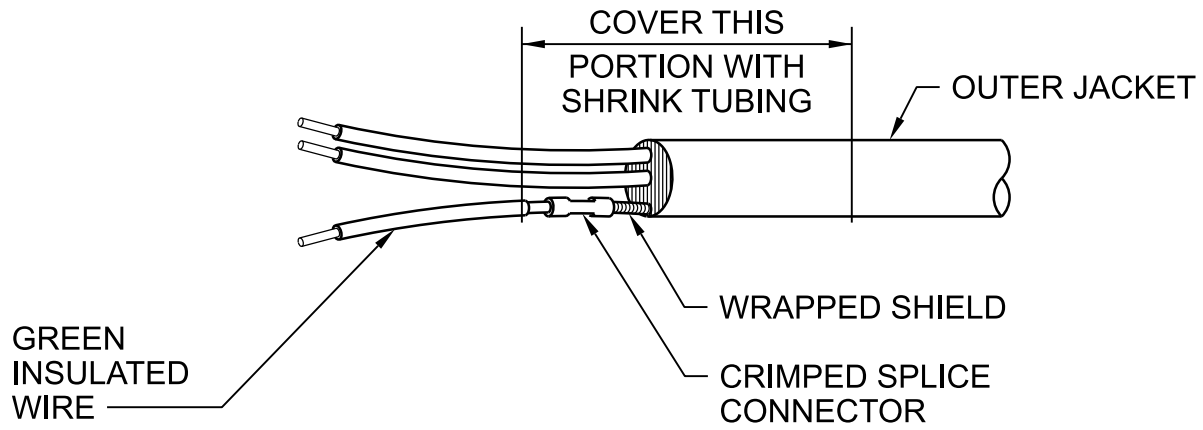
1. SUPPORT ALL EXPOSED CONDUITS ON FORMED STEEL CHANNELS.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

CONDUIT SUPPORT ON STRUCTURE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-017



NOTES:

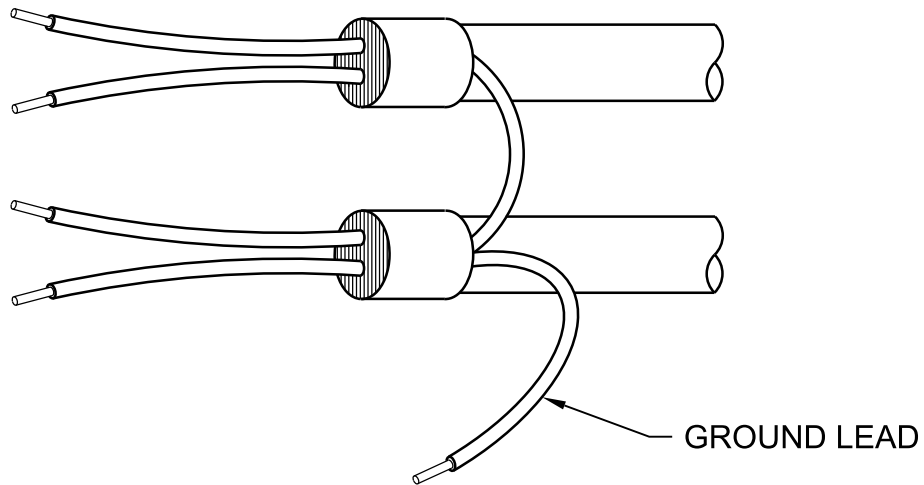
1. ALL SHIELDED INSTRUMENTATION CABLE SHALL BE TERMINATED IN ACCORDANCE WITH THIS DETAIL WHERE GROUNDING IS REQUIRED.

TERMINATION OF SHIELDED INSTRUMENTATION CABLE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-100b

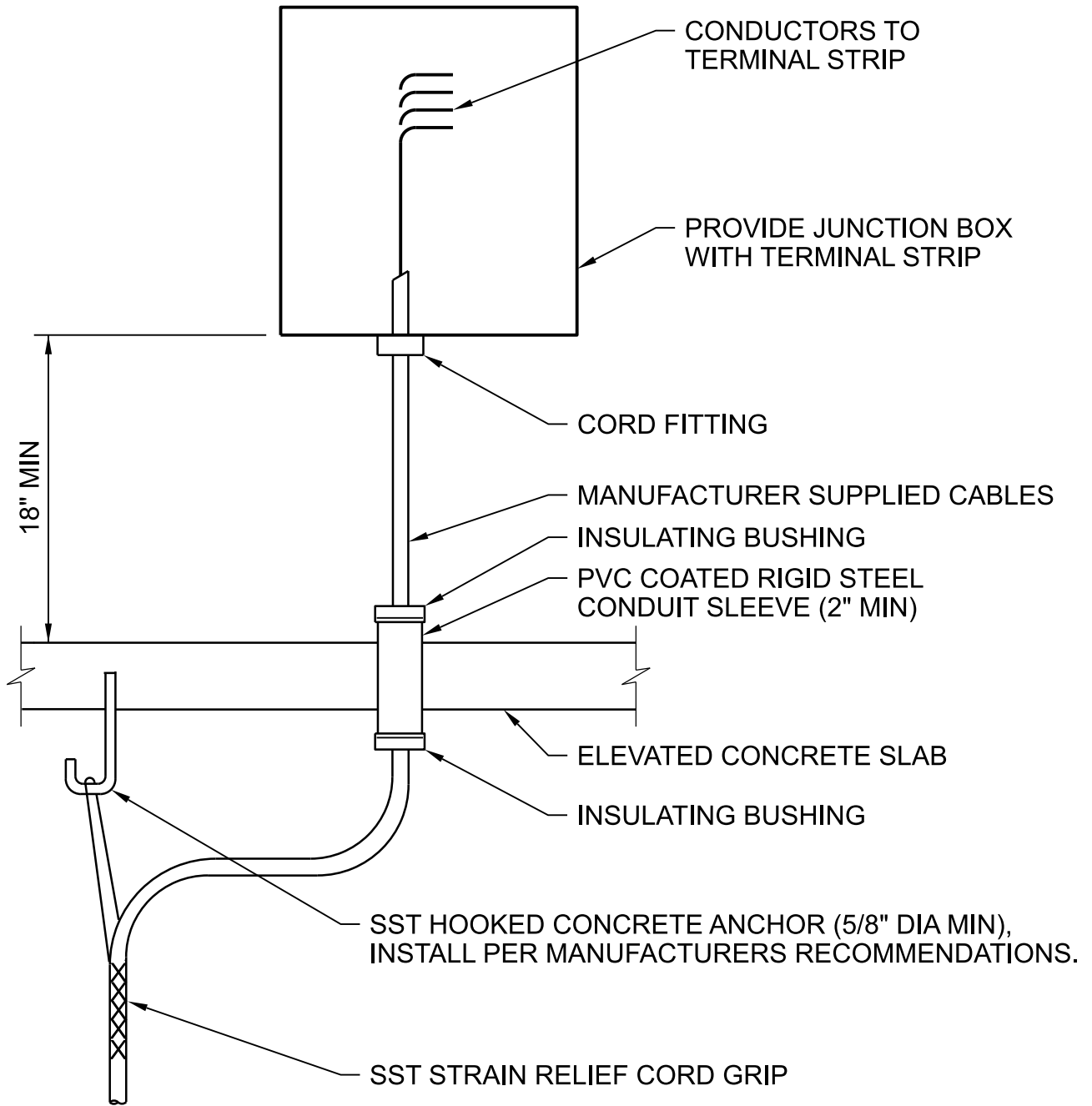


UNACCEPTABLE METHOD OF GROUNDING
INSTRUMENTATION CABLE SHIELD

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-100c



NOTES:

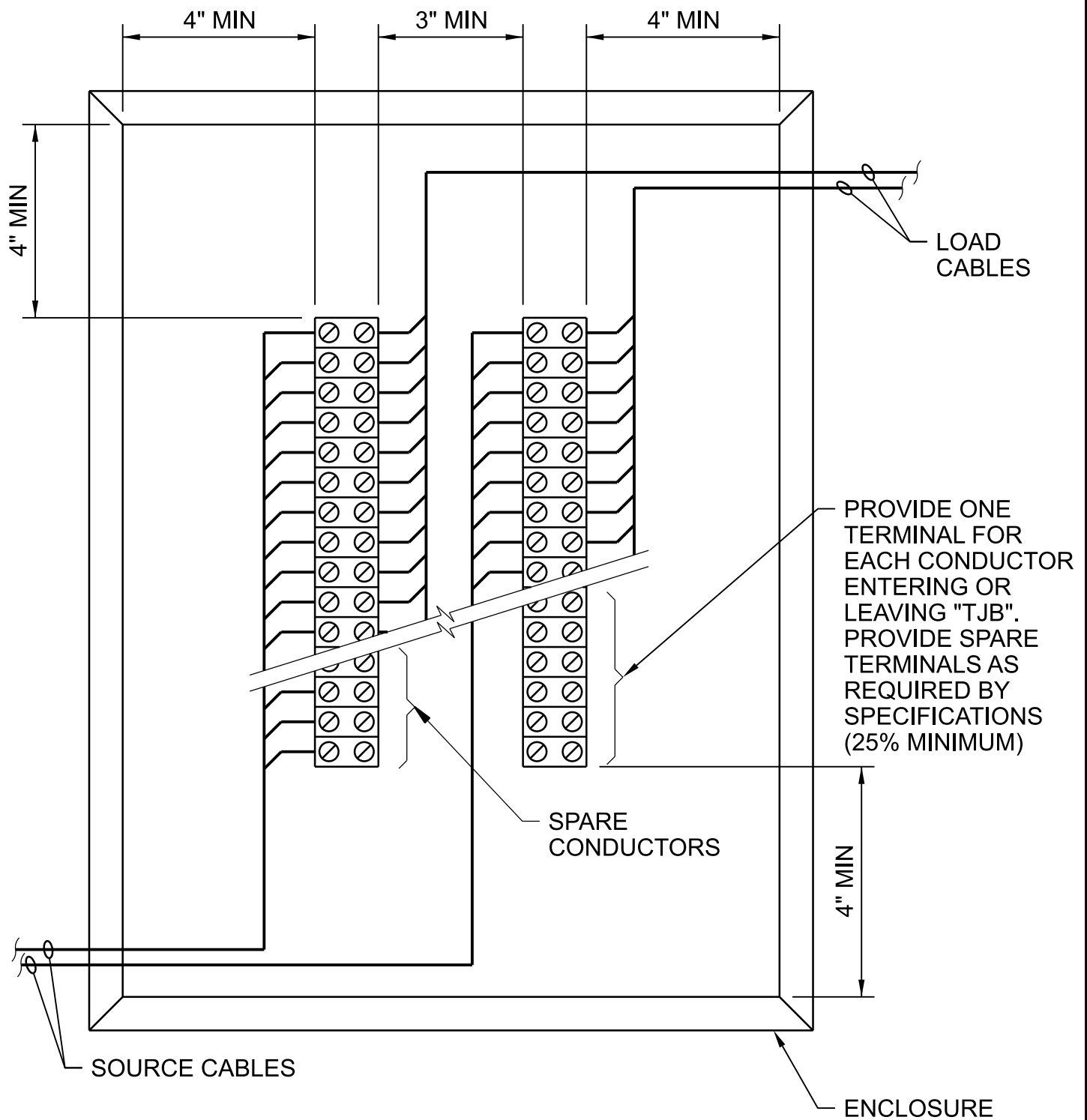
1. ALL HARDWARE SHALL BE STAINLESS STEEL.
2. THIS DETAIL SHALL BE USED FOR TERMINATION OF ALL MANUFACTURER SUPPLIED CABLES (MSC) EXITING A WET WELL IF NO OTHER DETAIL IS CALLED OUT ON THE DRAWINGS.
3. FILL CONDUIT SLEEVE WITH EXPANDABLE SEALING COMPOUND.

MSC CABLE TERMINATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-101

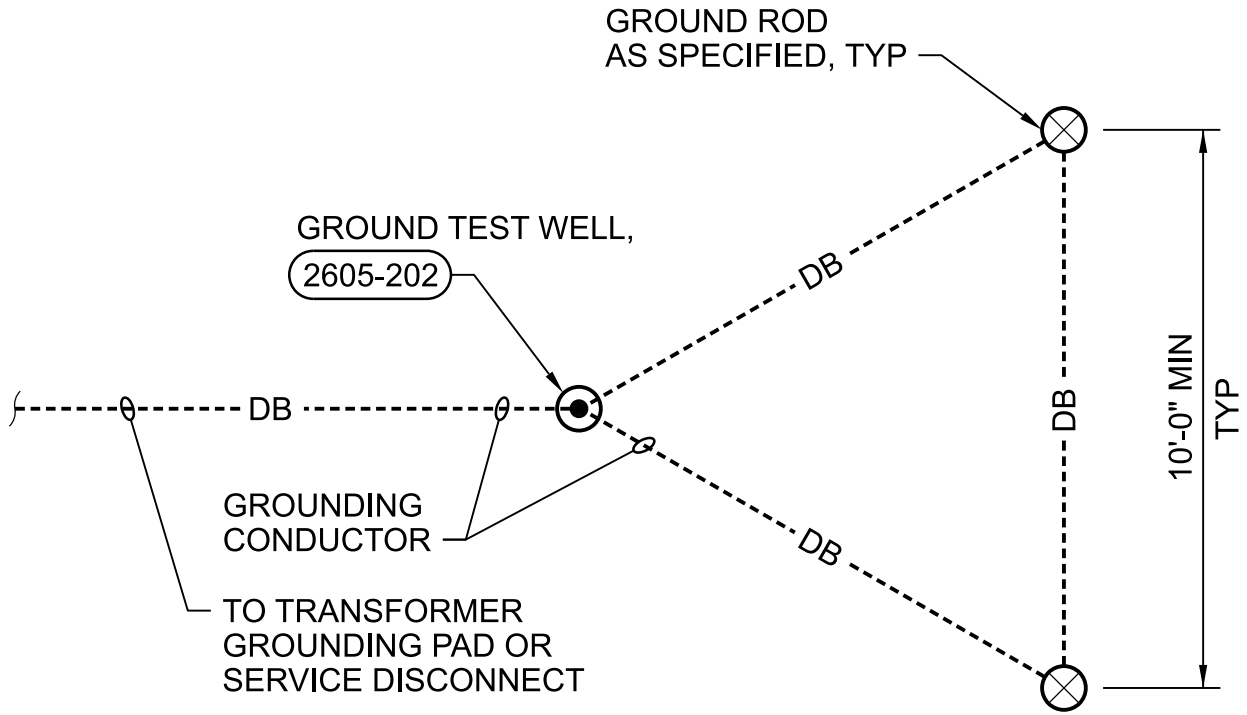


TERMINAL JUNCTION BOX (TJB)

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-102

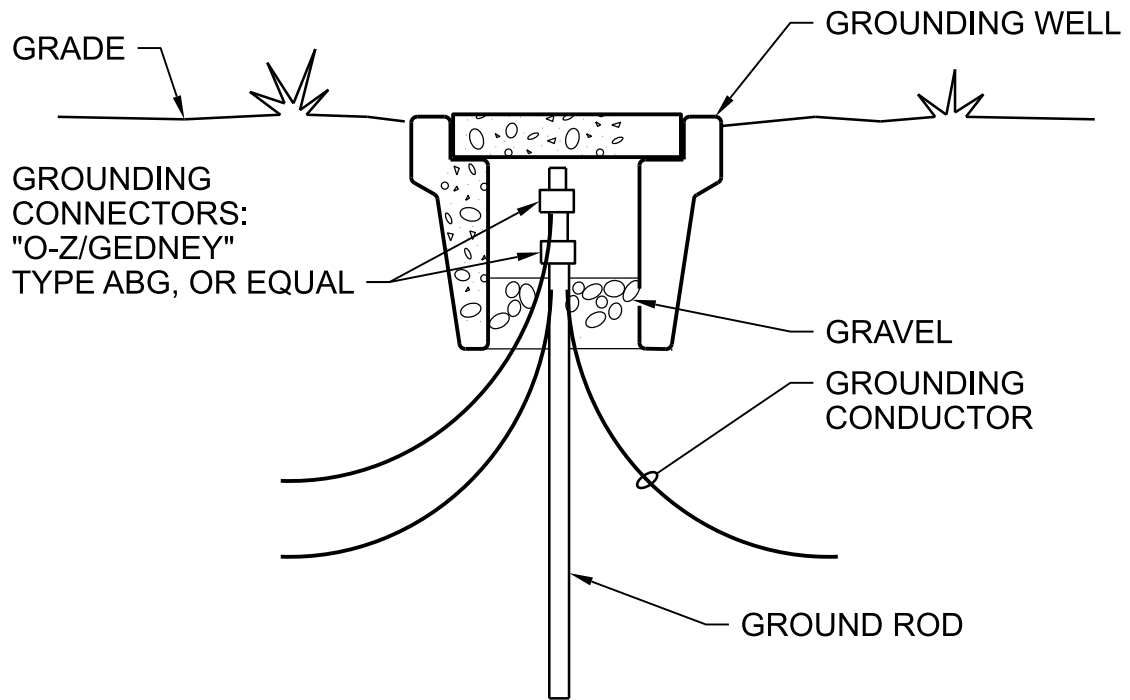


GROUND TRIANGLE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-201

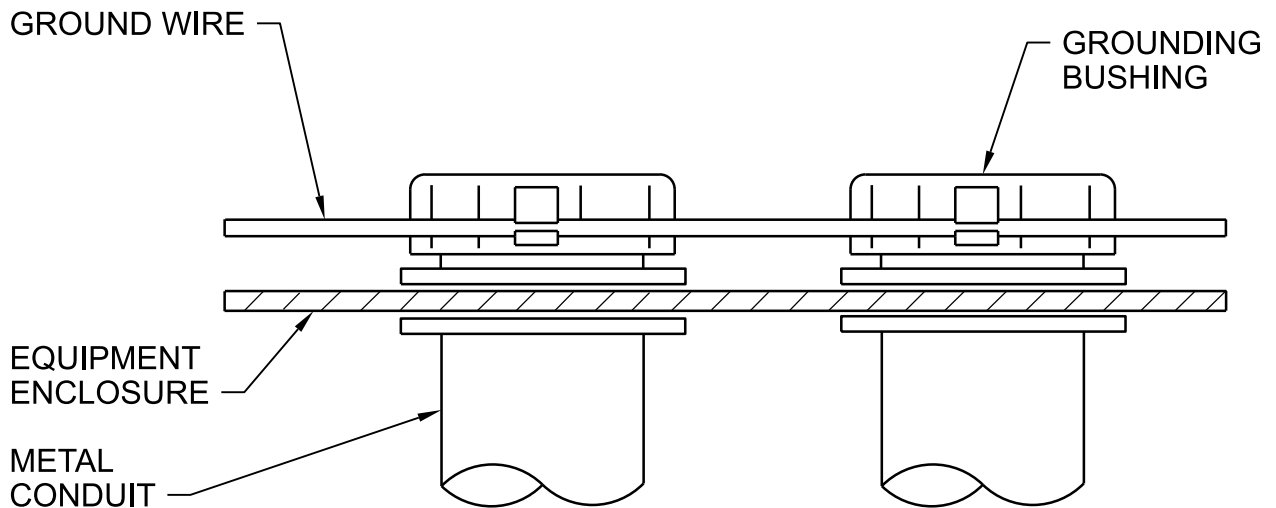


GROUND TEST WELL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-202



NOTES:

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

CONDUIT GROUNTING

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-203

GROUND ROD

TO GROUND TRIANGLE,

2605-201

#2/0 BARE CU GROUNDING CONDUCTOR

EQUIPMENT PAD

EQUIPMENT

PROVIDE GROUND CONDUCTOR FROM EACH TRANSFORMER RING TO EACH MCC GROUND BUS

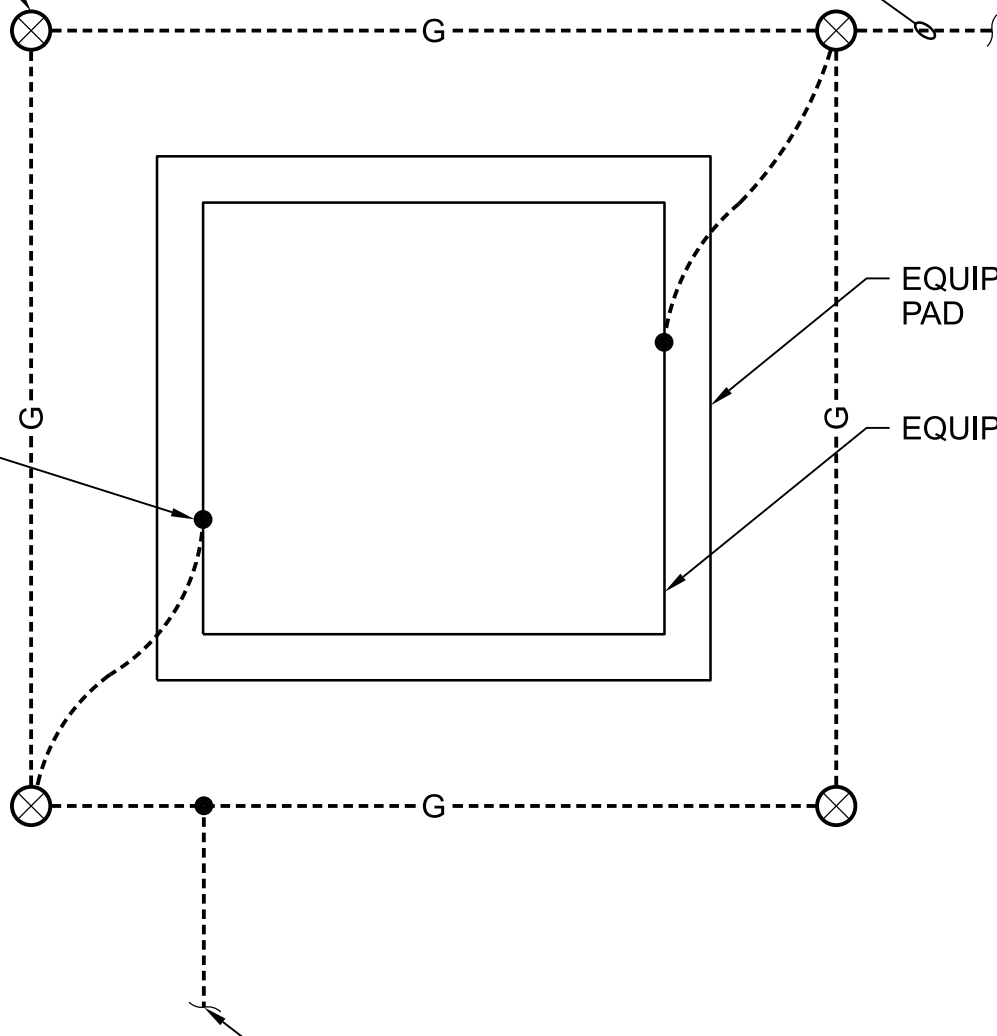
PLAN

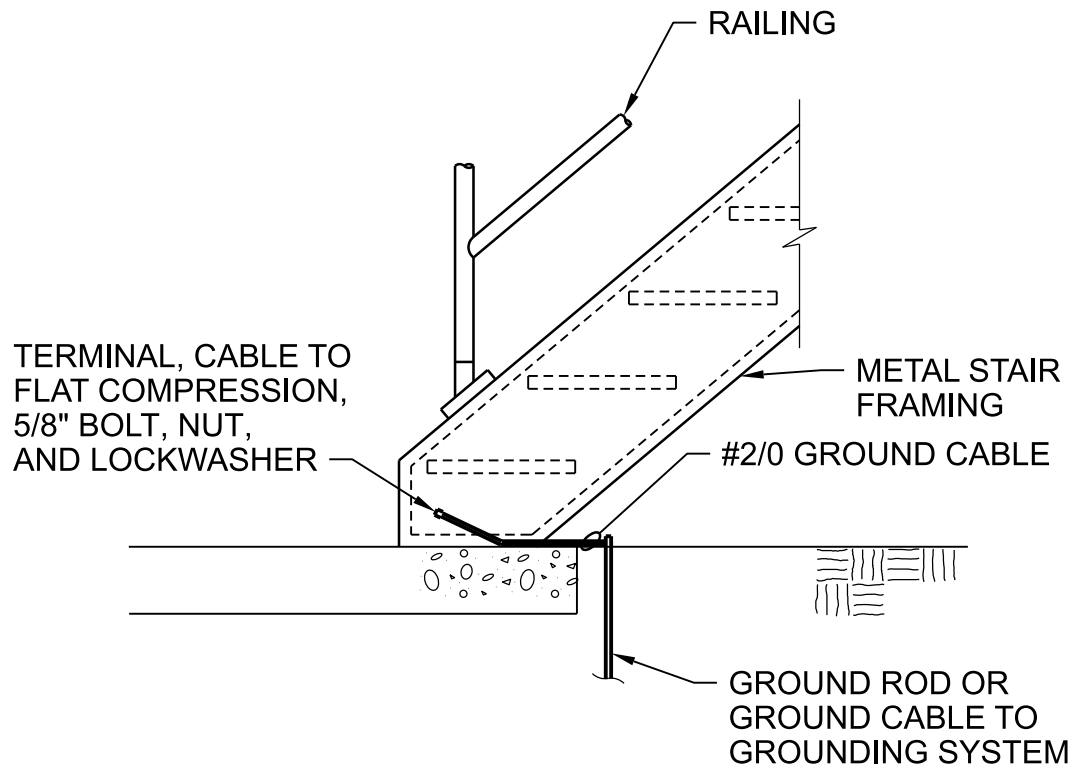
PAD MOUNTED TRANSFORMER AND PAD MOUNTED SWITCH GROUNDING

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-204



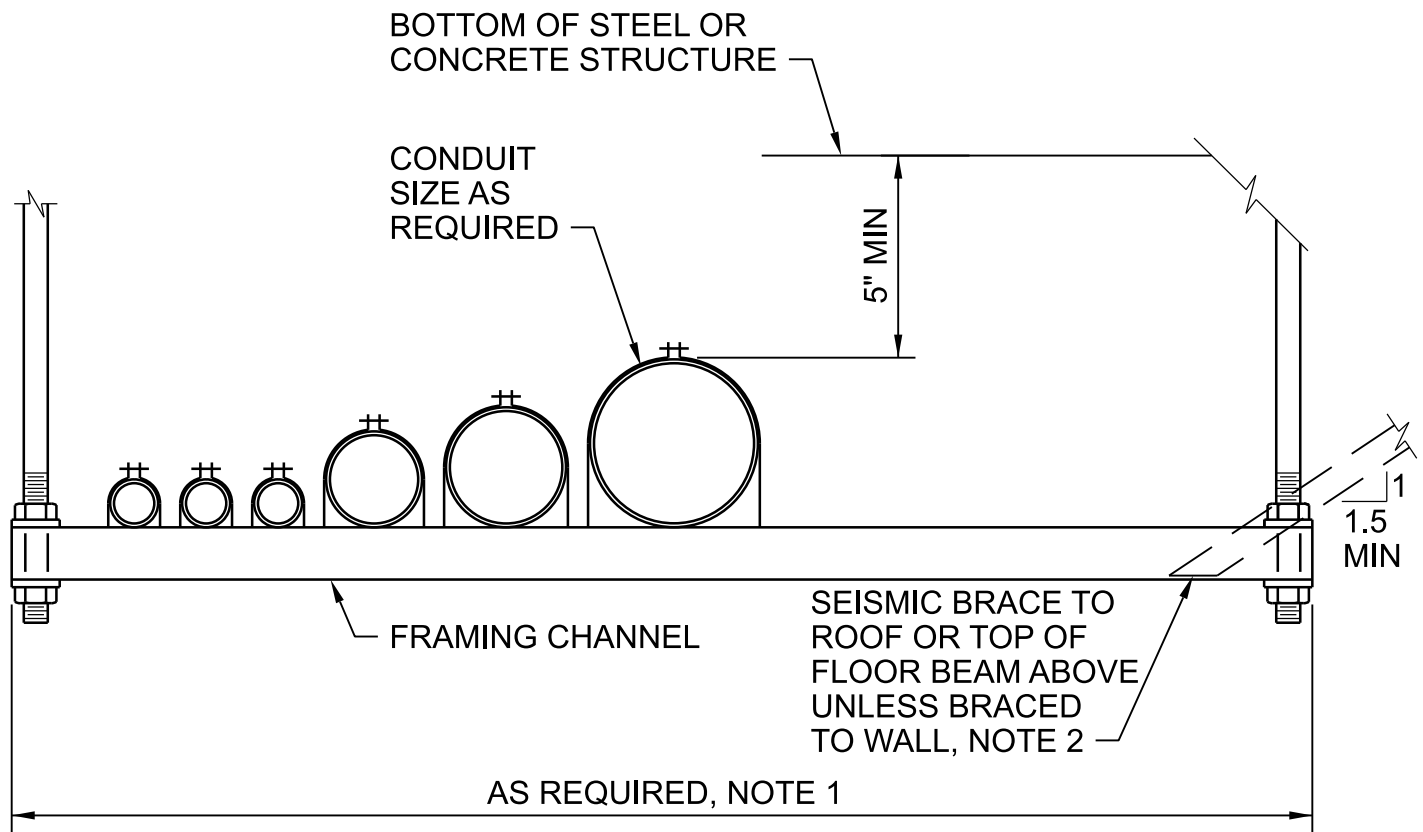


GROUNDING, GENERAL STAIRWAY

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-207



SINGLE RACK

NOTES:

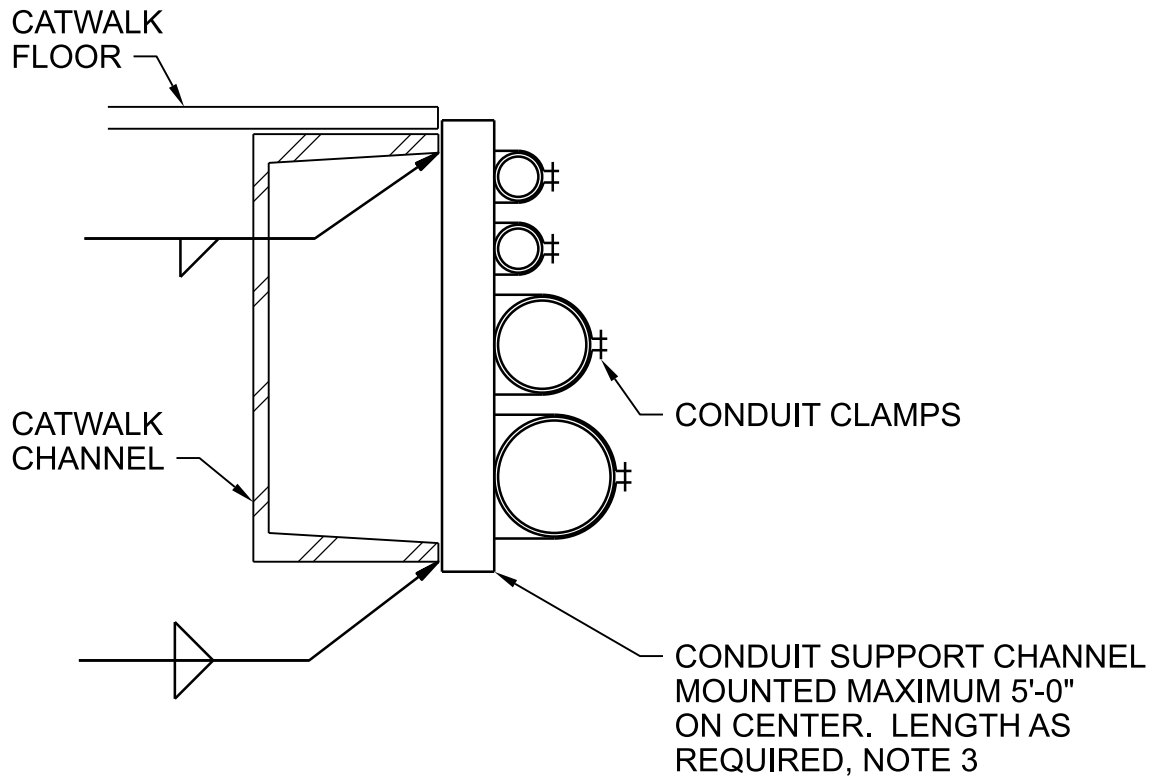
1. LENGTH VARIES WITH NUMBER OF CONDUITS TO BE SUPPORTED AND SPACING BETWEEN CONDUITS.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.
3. USE STAINLESS STEEL HARDWARE IN WET AND/OR CORROSIVE AREAS.
4. SPACE CONDUIT SUFFICIENTLY TO ALLOW REMOVAL OF ONE CONDUIT WITHOUT DISTURBING ADJACENT CONDUITS.

CONDUIT RACKING SYSTEM

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-300

**NOTES:**

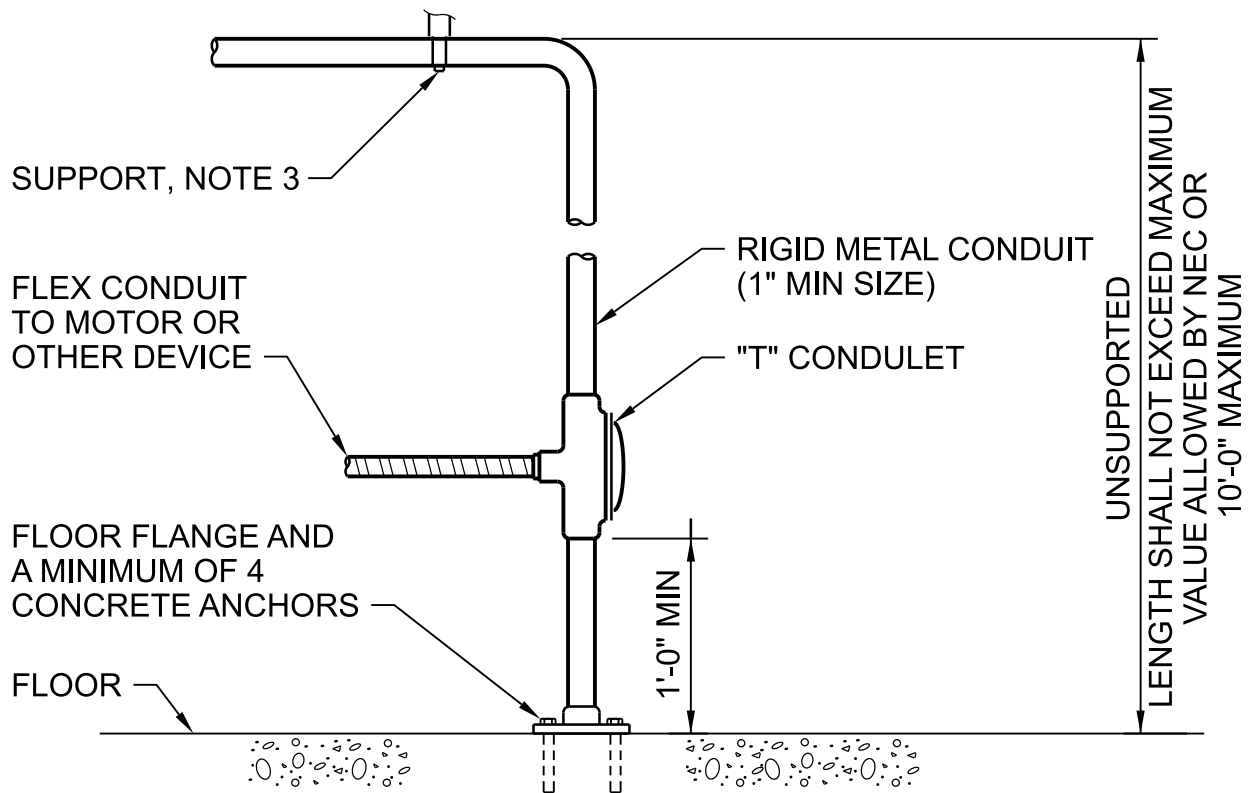
1. EXPOSED CONDUIT AND CONDUIT CLAMPS IN AREAS SUBJECT TO ACCELERATED CORROSION SHALL BE PVC COATED RIGID STEEL.
2. MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
3. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

CONDUIT RACKING SYSTEM, VERTICAL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-302



NOTES:

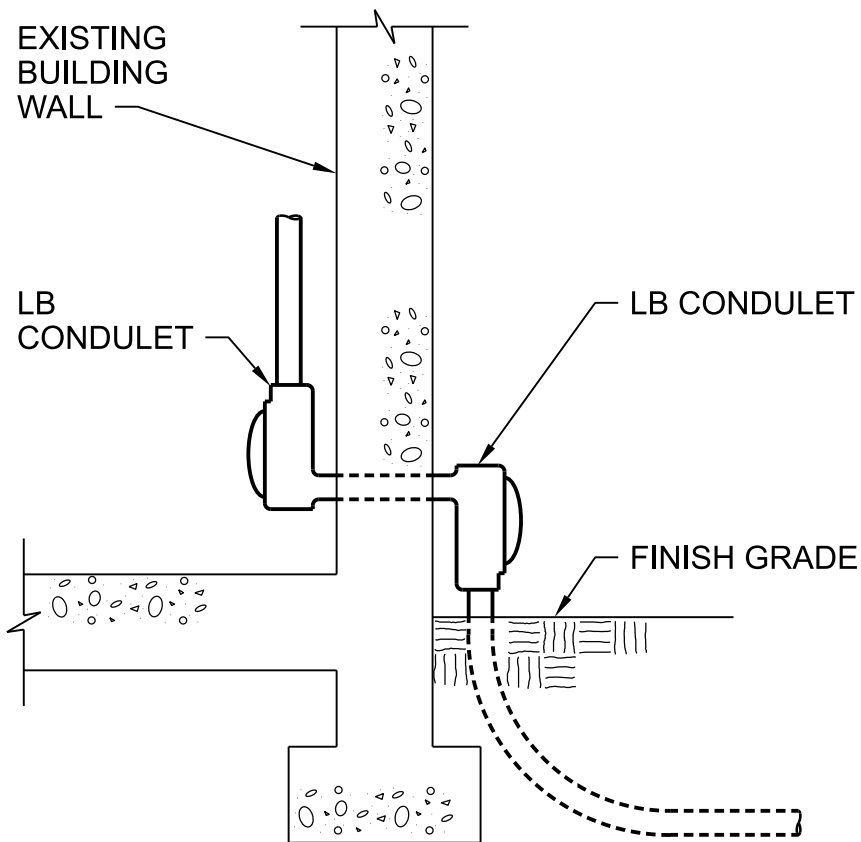
1. INSTALLATION OF CONDUIT TO A MOTOR OR OTHER DEVICE WHERE A FLEXIBLE CONNECTION IS REQUIRED AND NO JUNCTION BOXES OR CONTROL DEVICES ARE REQUIRED SHALL BE MADE IN ACCORDANCE WITH THIS DETAIL.
2. ALL HARDWARE SHALL BE STAINLESS STEEL.
3. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

CONDUIT TO EQUIPMENT FROM CEILING

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-303



NOTES:

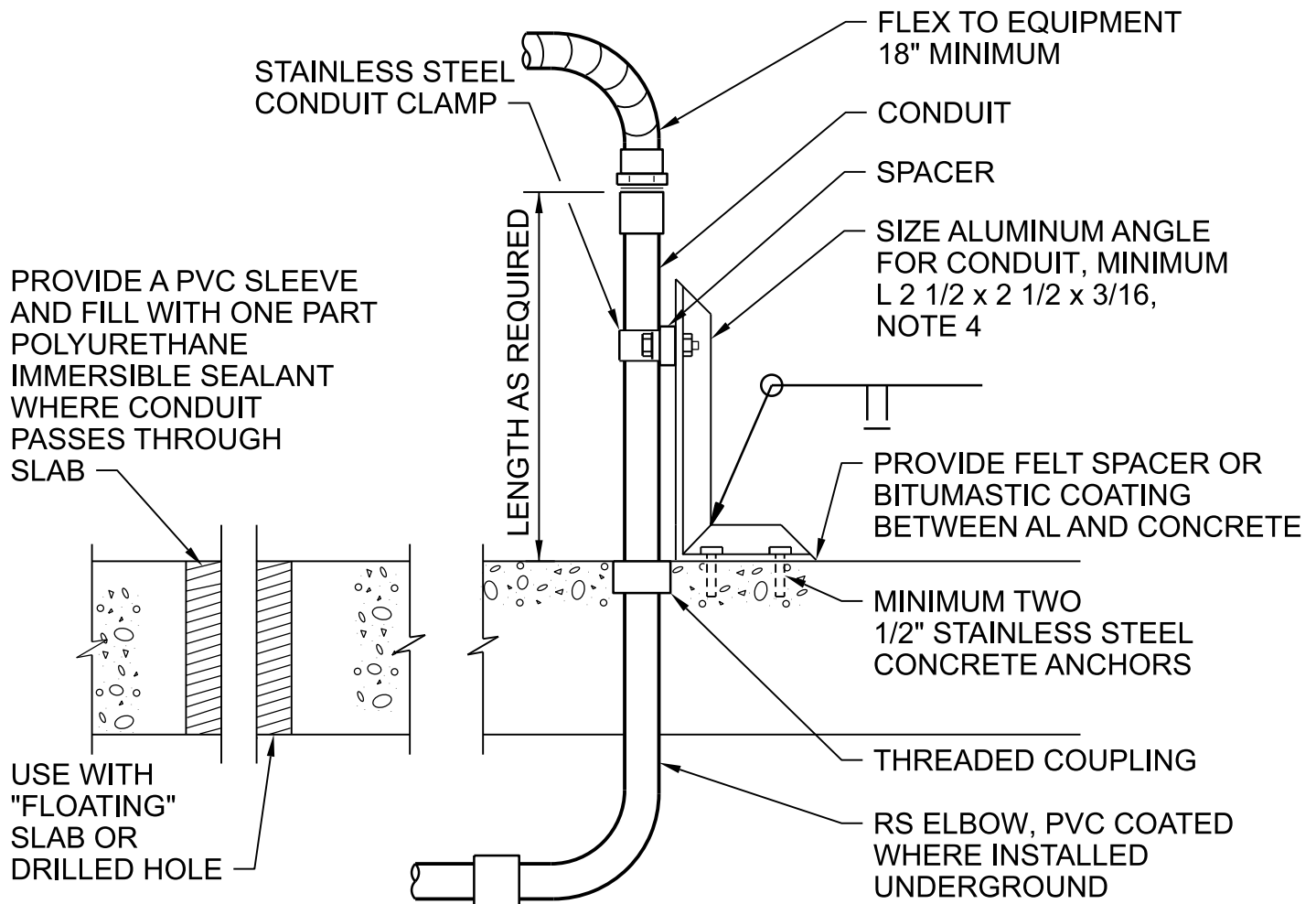
1. INSTALL CONDUITS THROUGH EXISTING WALLS IN ACCORDANCE WITH THIS DETAIL IF NOT OTHERWISE INDICATED.
2. DRILL HOLE USING METHODS THAT LEAVE A SMOOTH OPENING. SEAL OPENING AROUND CONDUIT, INSIDE, AND OUTSIDE, WITH ONE PART POLYURETHANE IMMERSIBLE SEALANT.

CONDUIT ENTRANCE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-304

**NOTES:**

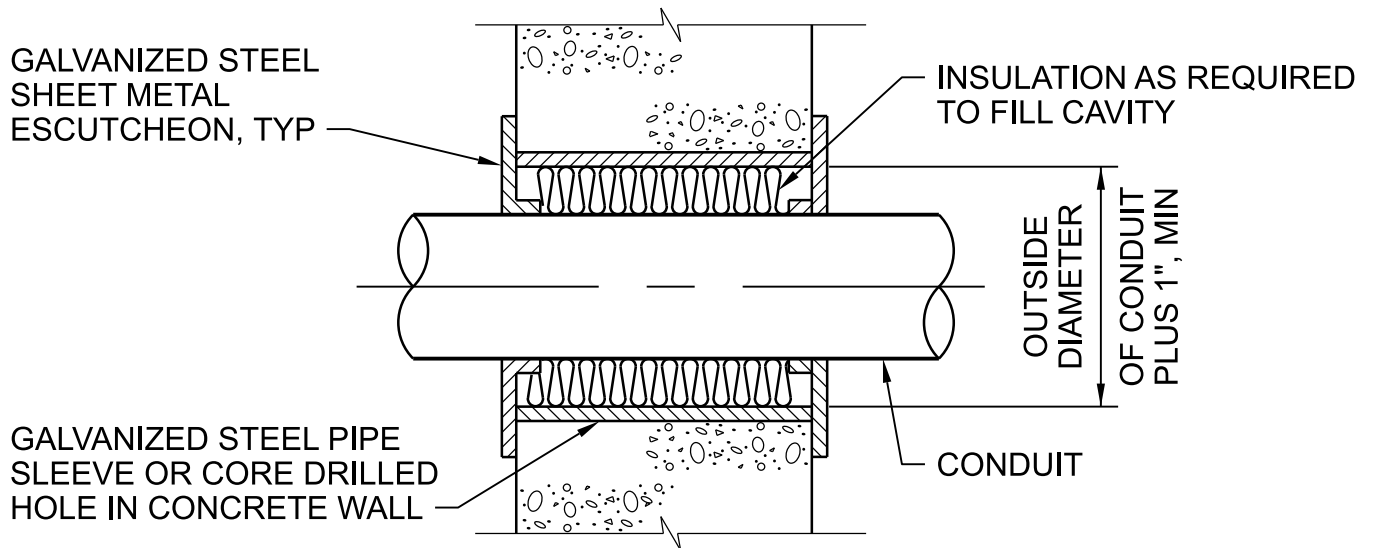
1. PROVIDE SUPPORT FOR ALL METAL CONDUITS WHICH EXTEND MORE THAN 18 INCHES OUT OF THE SLAB WITHIN 3 INCHES OF THE END OF THE CONDUIT.
2. PROVIDE SUPPORT FOR ALL PVC CONDUIT WITHIN 3 INCHES OF THE END OF THE CONDUIT.
3. THIS DETAIL SHALL BE USED FOR SUPPORT OF ALL CONDUITS WHICH ARE NOT OTHERWISE SUPPORTED IN A RIGID MANNER SUCH AS AGAINST AN EQUIPMENT BASE, WALL, COLUMN, ETC, AS REQUIRED ABOVE.
4. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

CONDUIT TRANSITION AND SUPPORT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-305



NOTES:

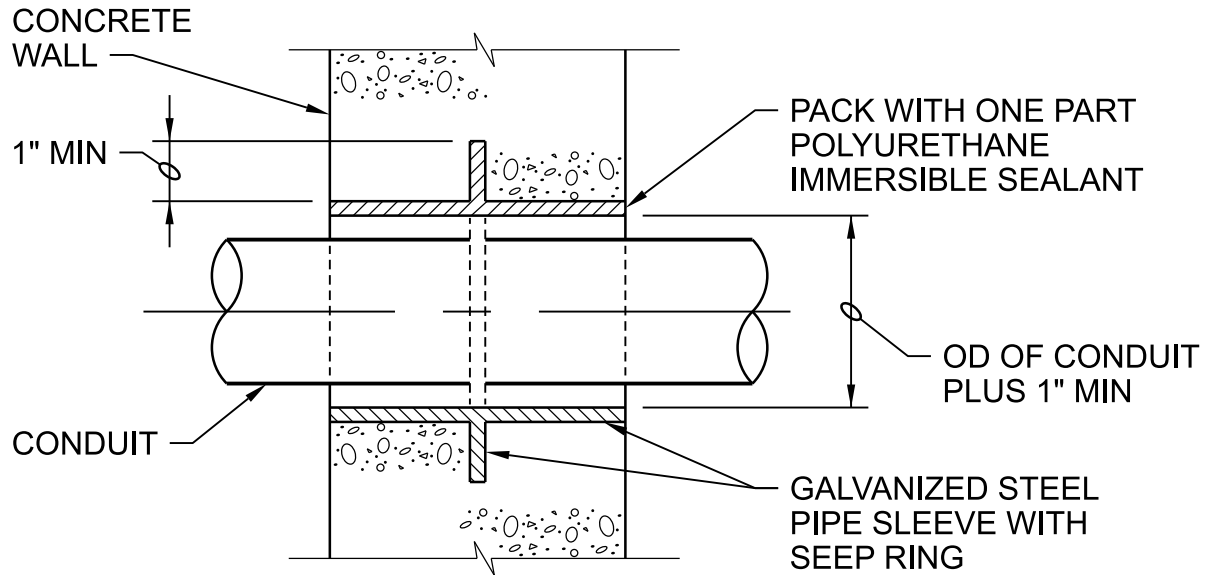
1. CONDUITS WHICH INDIVIDUALLY PASS THRU AN INTERIOR WALL SHALL BE INSTALLED IN ACCORDANCE WITH THIS DETAIL. IF WALL IS A FIRE WALL, FILL CAVITY WITH FIRE STOP SEALANT AS SPECIFIED.

INTERIOR WALL PENETRATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-306



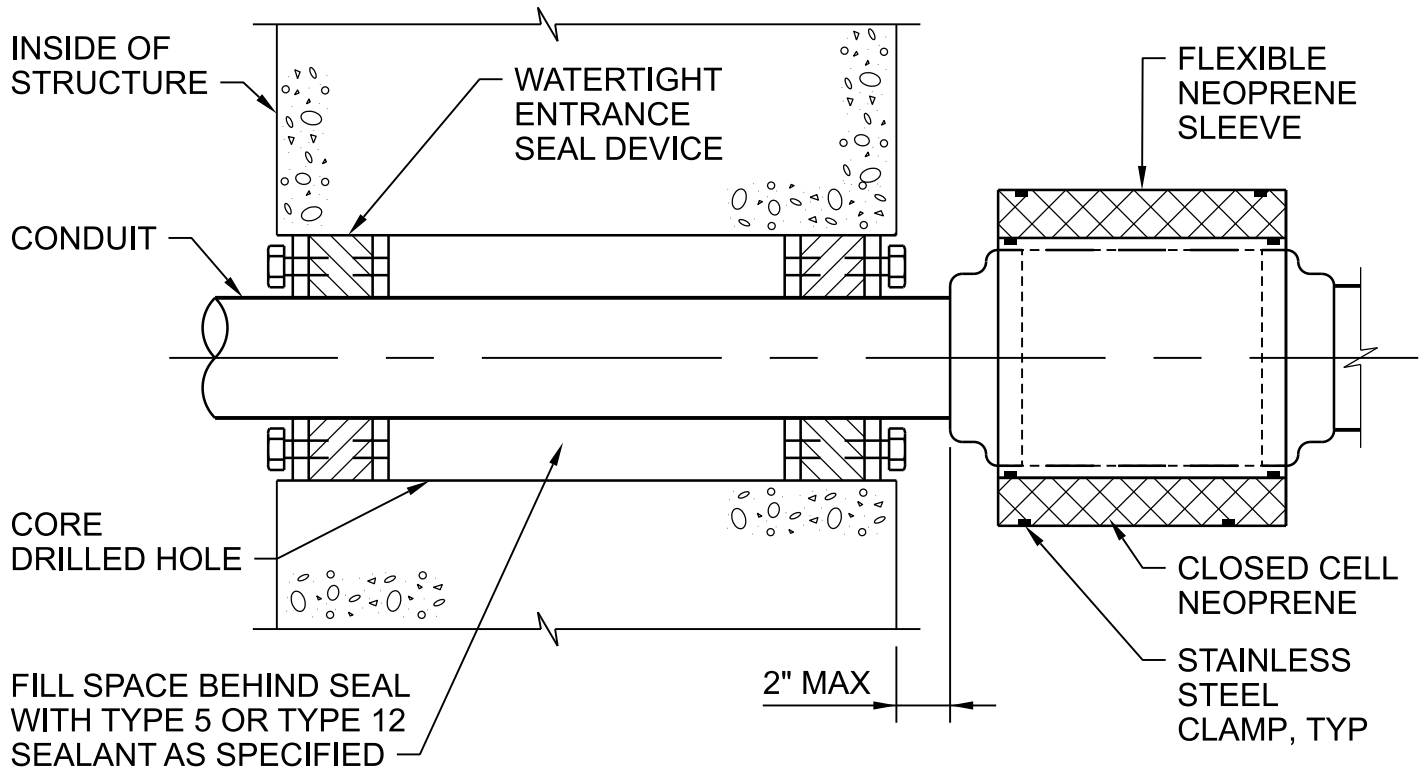
CONDUIT UNDERGROUND ENTRANCE

NTS

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HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-307



NOTES:

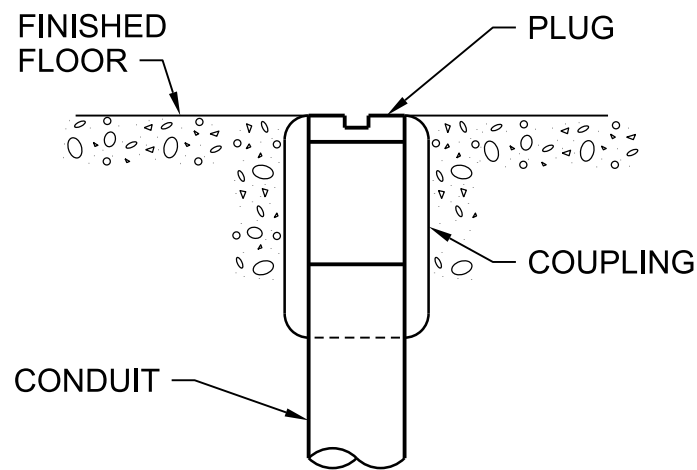
1. USE WATERTIGHT CONDUIT SEAL WHERE CONDUIT PENETRATIONS OF EXISTING BUILDING EXTERIOR WALLS ARE BELOW GRADE.

WATERTIGHT WALL CONDUIT SEAL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-308b

**NOTES:**

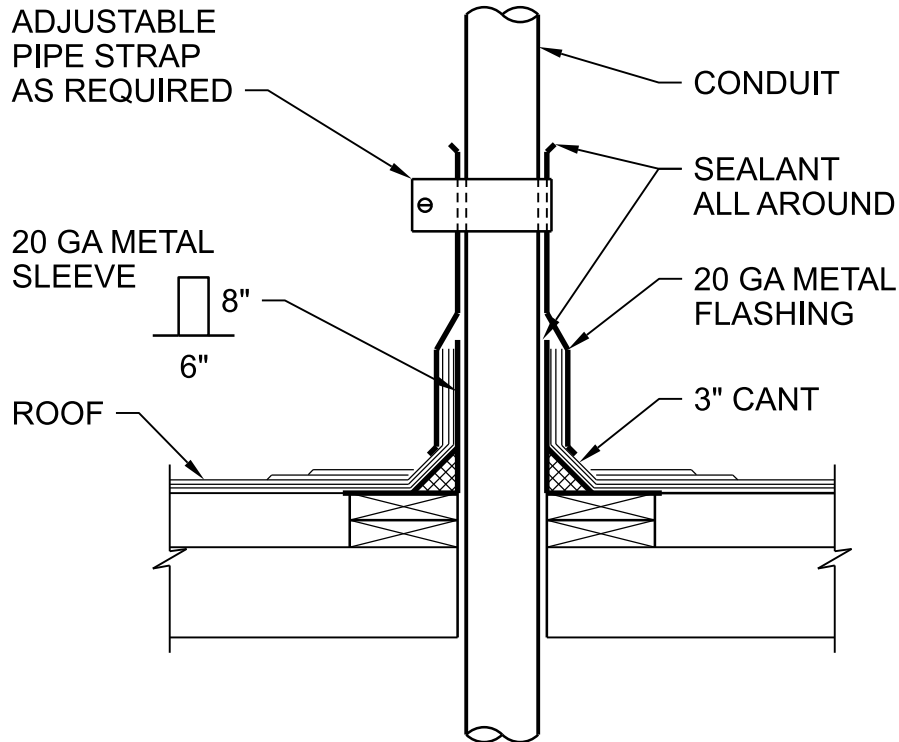
1. CONDUITS WHICH ARE STUBBED UP IN A CONCRETE SLAB FOR FUTURE EXTENSION SHALL BE INSTALLED IN ACCORDANCE WITH THIS DETAIL.

FLUSH CONDUIT STUB

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-309



NOTES:

1. CONDUITS WHICH PASS THROUGH A ROOF SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS DETAIL.

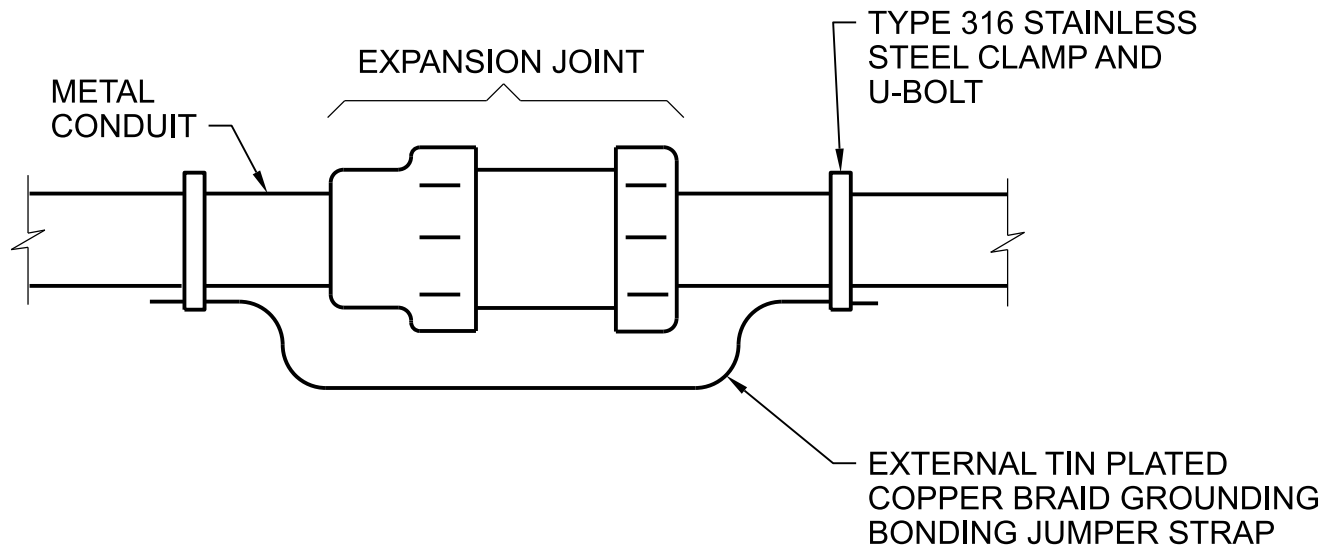
FLASHING

NTS

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HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-312



NOTES:

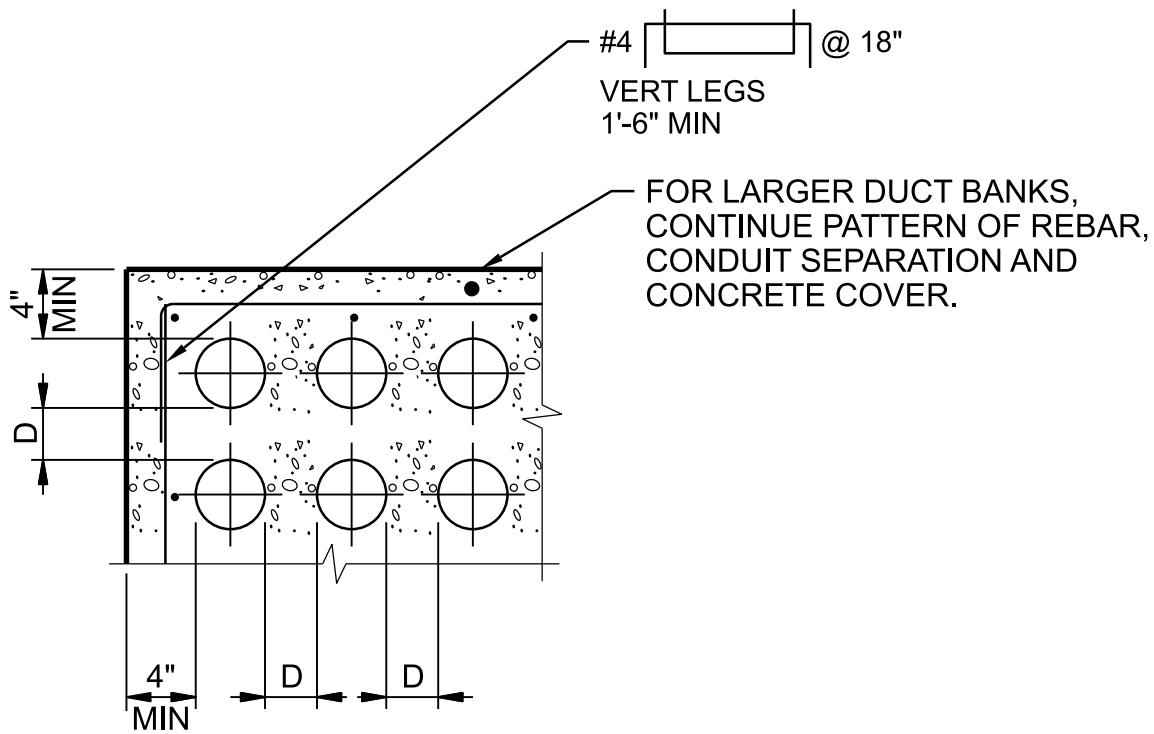
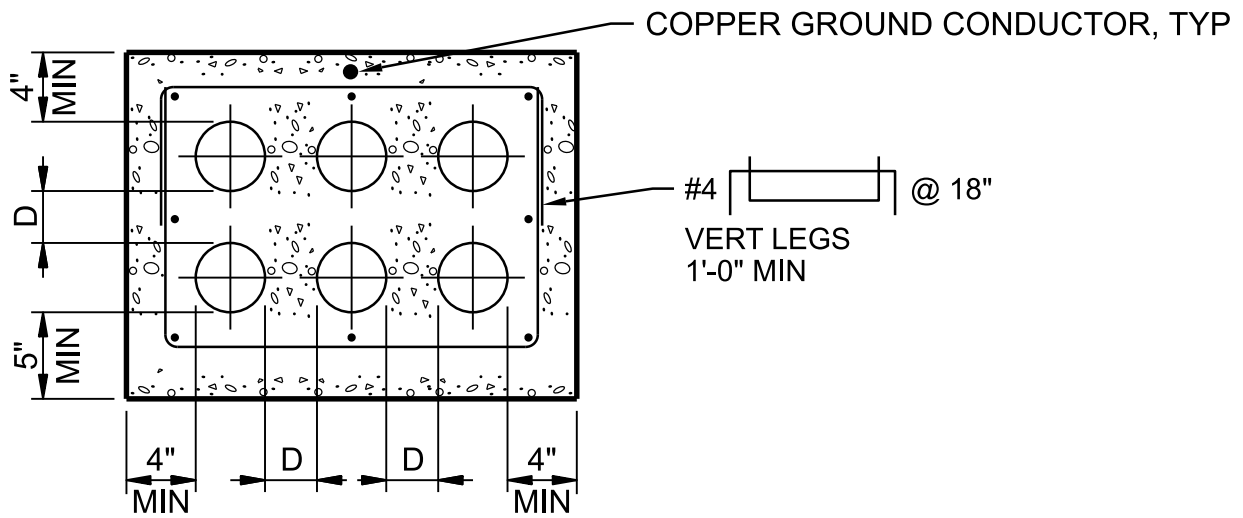
1. COUPLINGS TO BE INSTALLED AT CONCRETE EXPANSION JOINTS OR 100' INTERVALS.

CONDUIT EXPANSION JOINT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-317



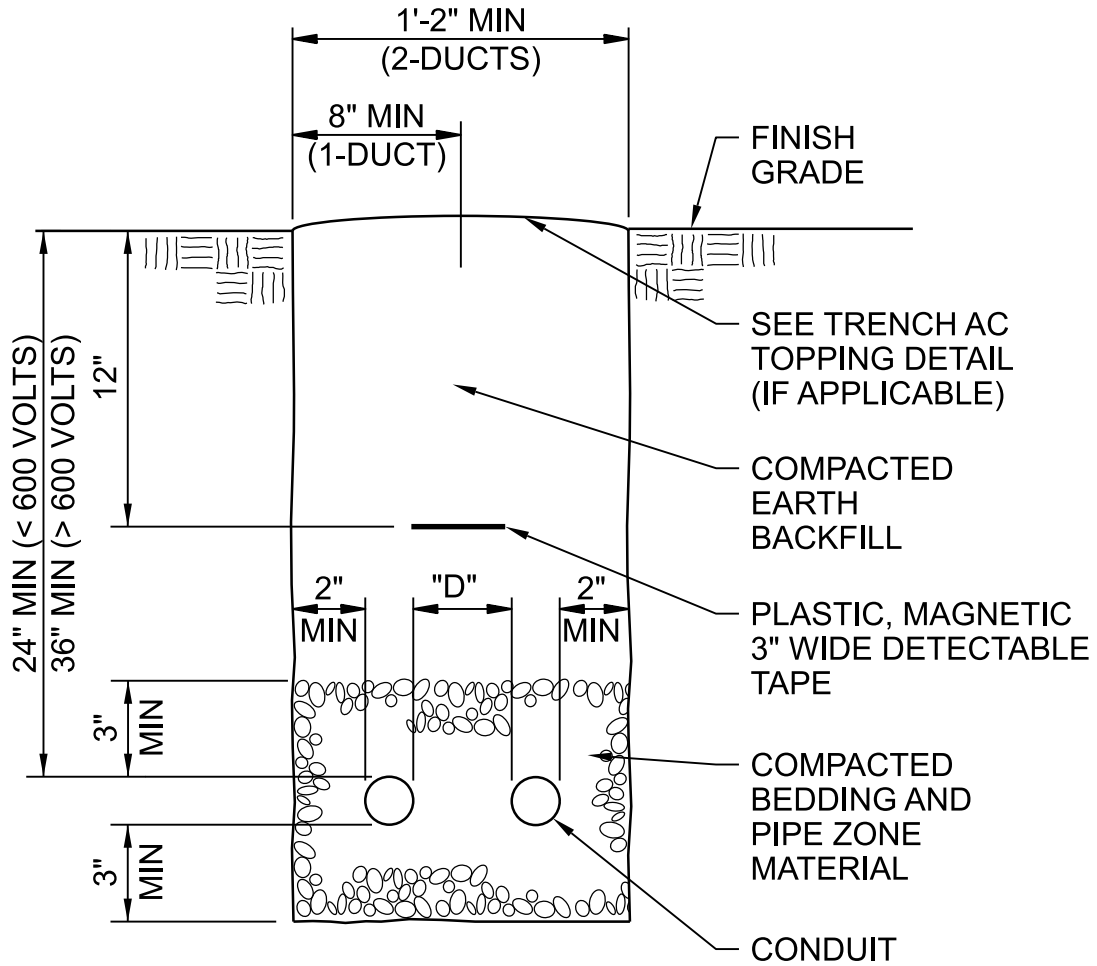
DUCT BANK

NTS

DETAIL 2 OF 2

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-400c



D = 3" MIN FOR 2" AND LARGER CONDUIT

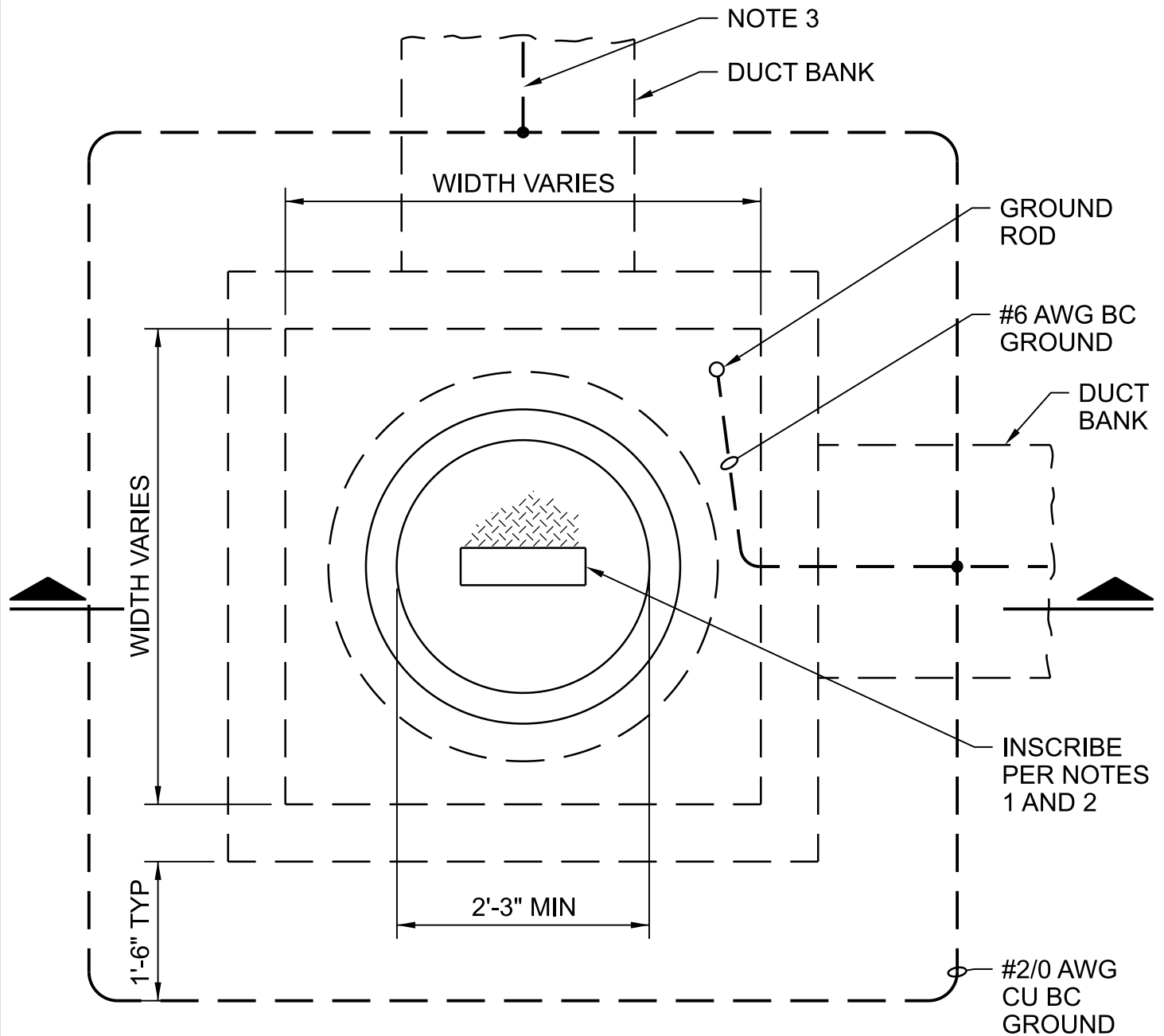
D = 2" MIN FOR 1 1/2" AND SMALLER CONDUIT

TRENCH AND CONDUIT PLACEMENT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-423b



PLAN

NOTES:

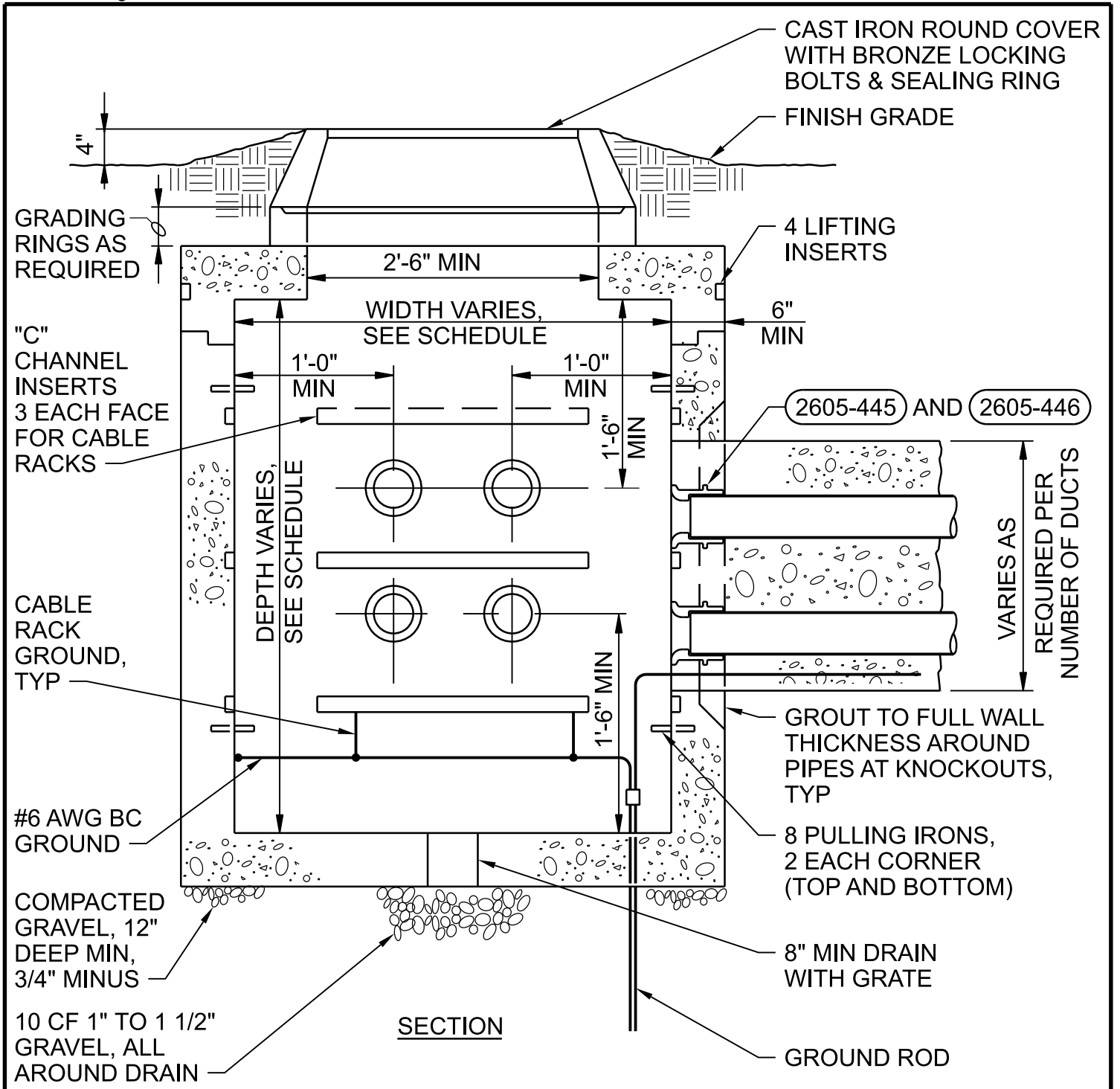
1. INSCRIBE "ELECTRICAL HIGH VOLTAGE" IF ANY CIRCUIT IN MANHOLE IS ABOVE 600V.
2. INSCRIBE "ELECTRICAL LOW VOLTAGE" IF ALL CIRCUITS IN MANHOLE ARE 600V OR LESS.
3. INSTALL #2/0 AWG BARE COPPER GROUND CENTERED ON TOP OF ALL DUCT RUNS.

MANHOLE-WITH GROUNDING

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-443a

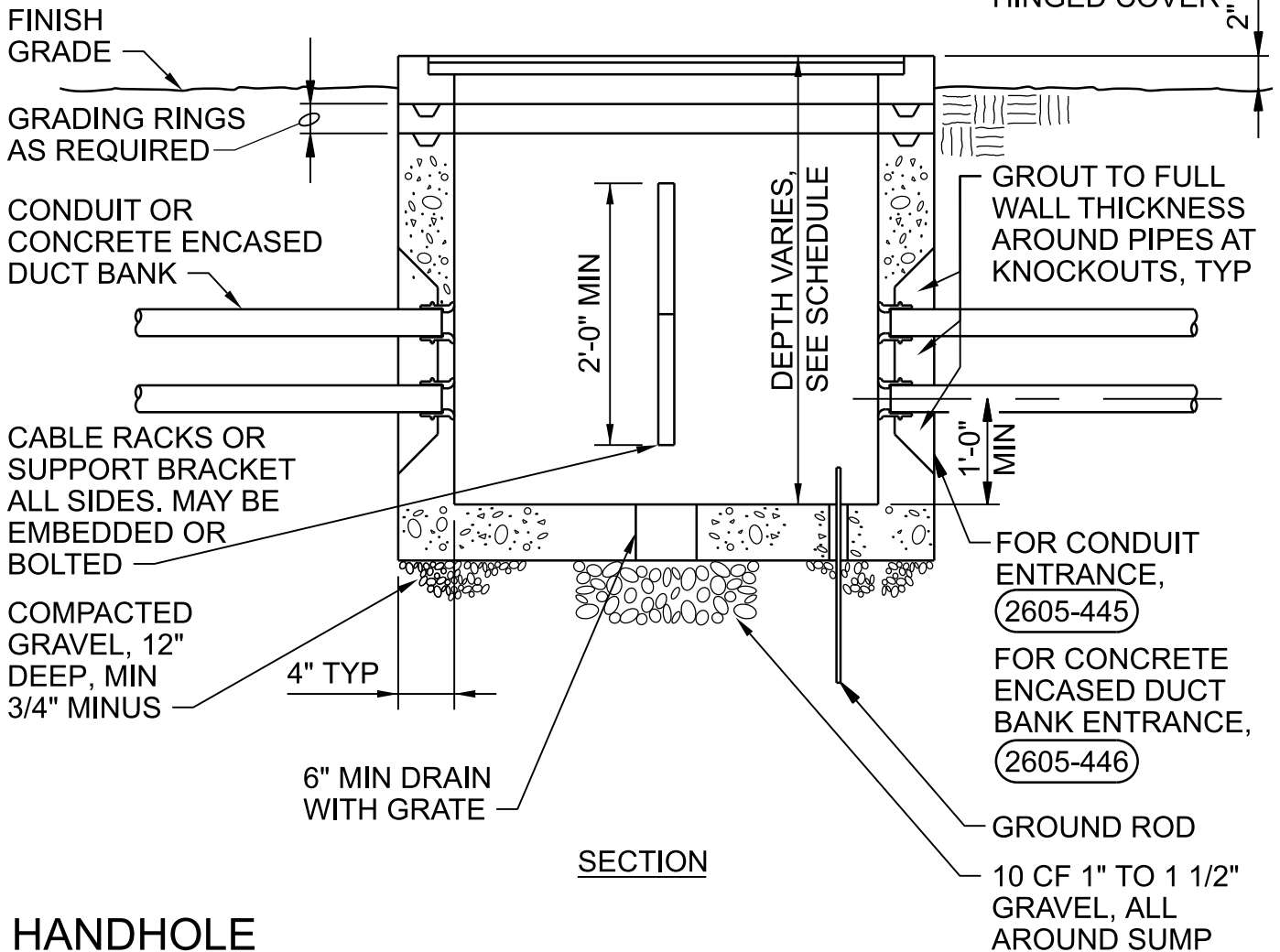
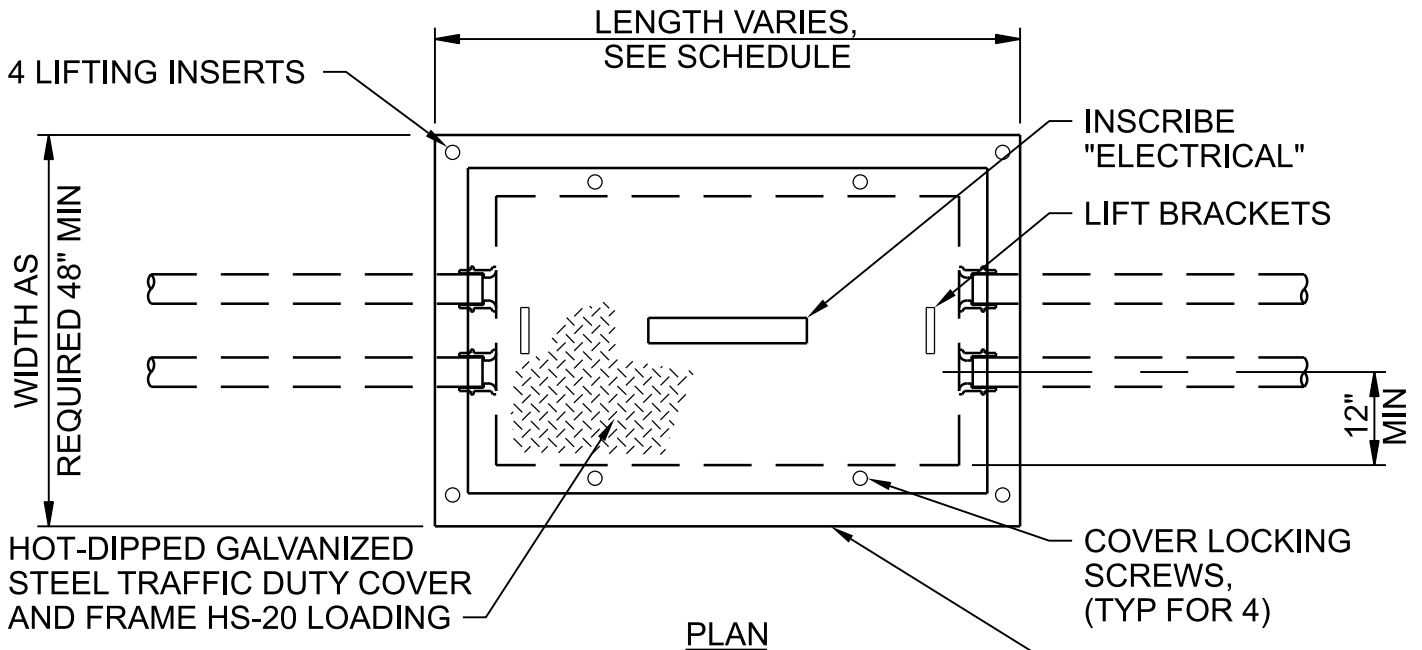


MANHOLE-WITH GROUNDING

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-443b

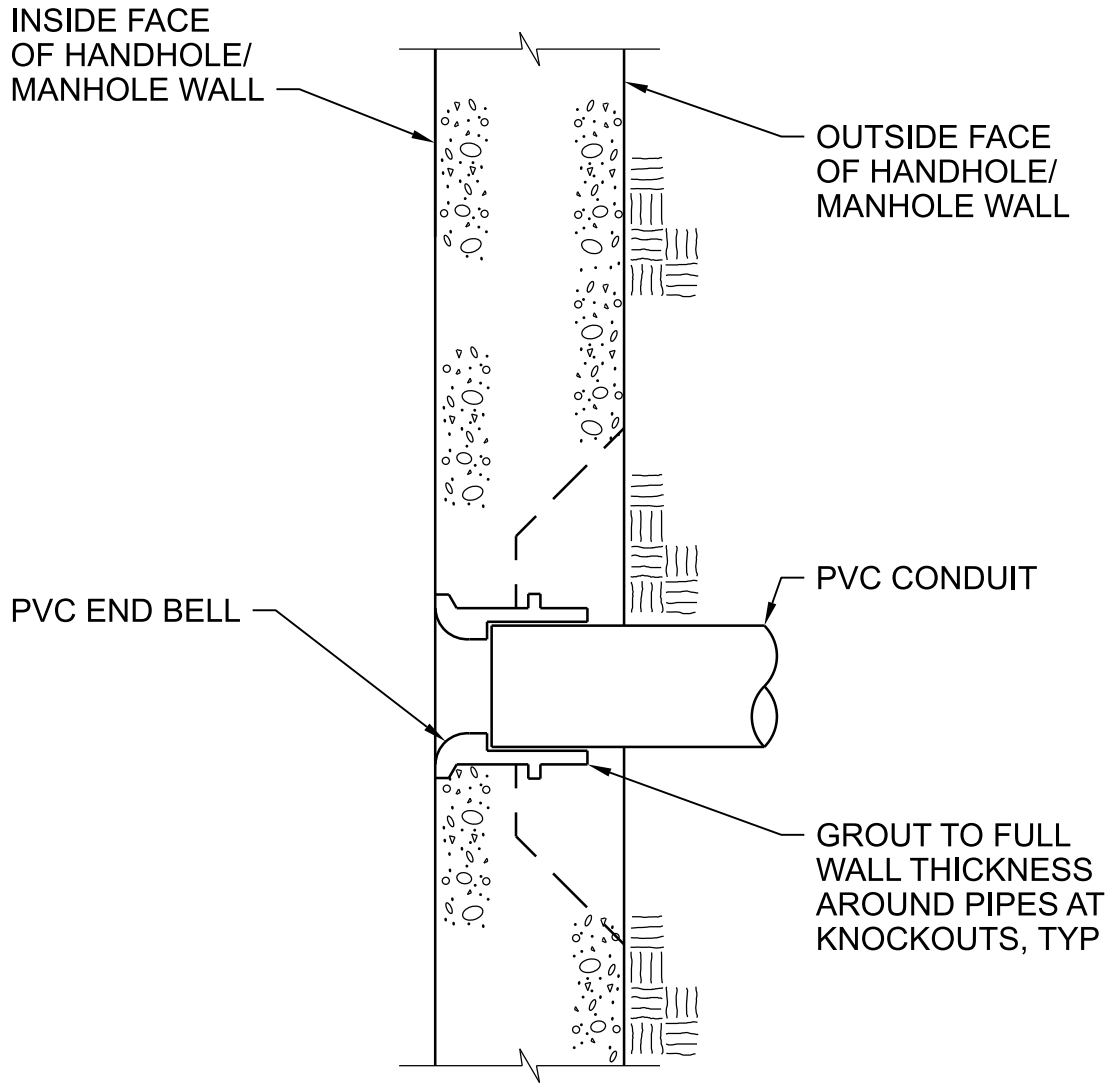


HANDHOLE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

2605-444

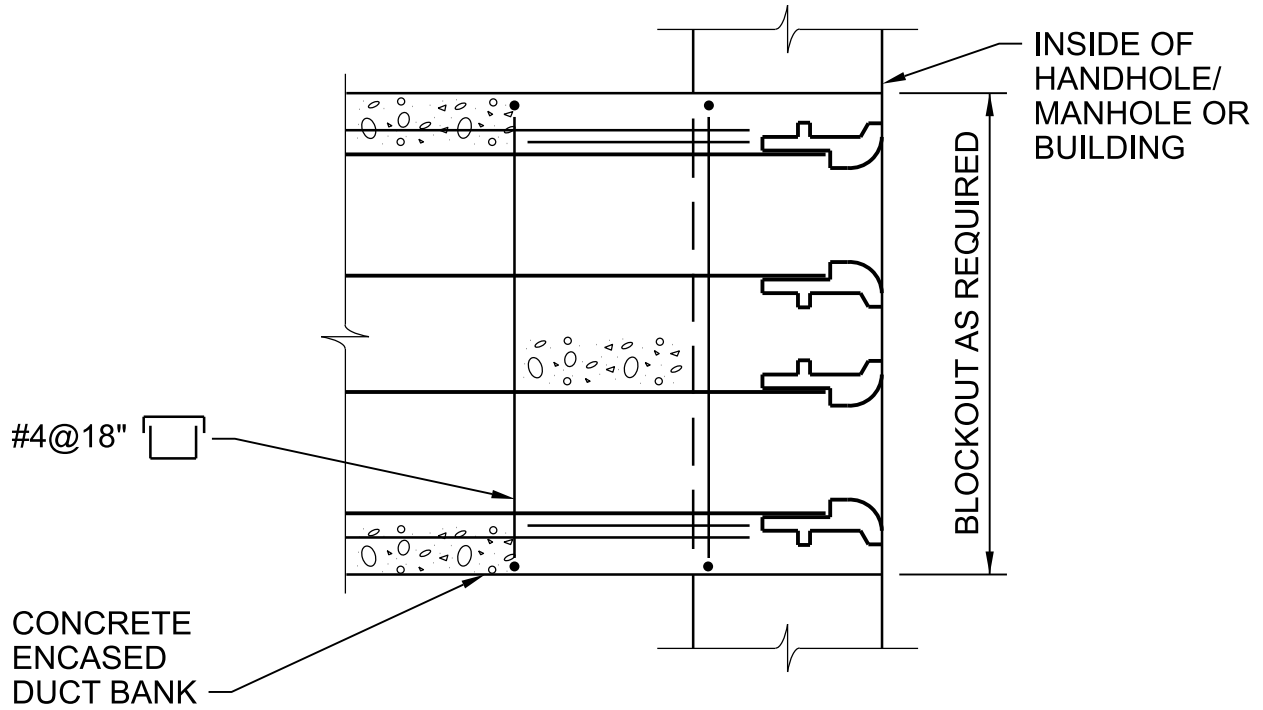


CONDUIT HANDHOLE/MANHOLE ENTRANCE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-445



NOTES:

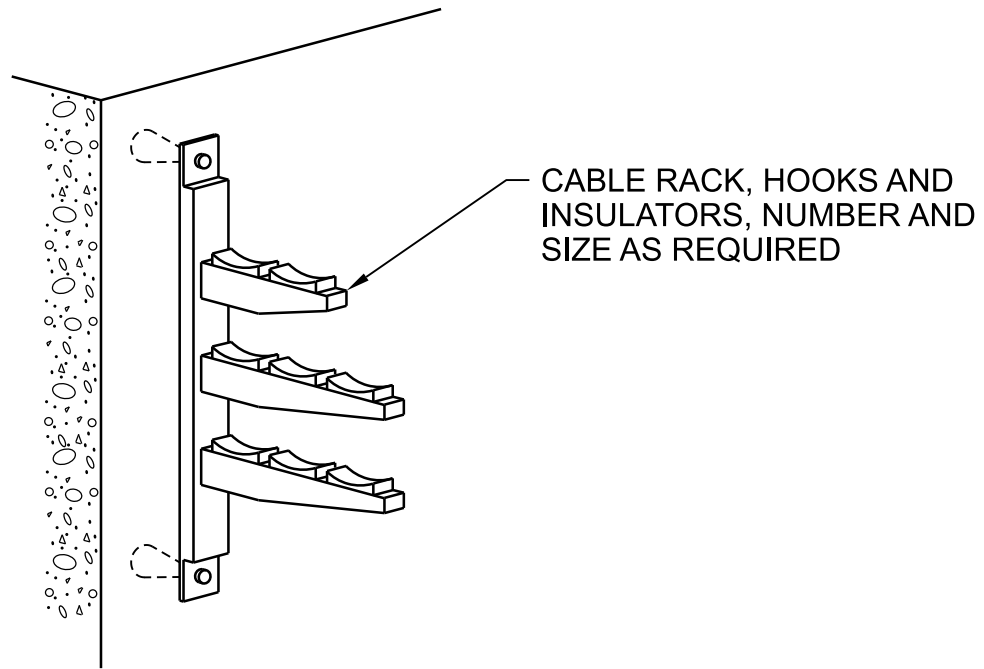
- 1. EXTEND REBAR A MINIMUM OF 2' BEYOND THE LIMIT OF EXCAVATION.

CONDUIT HANDHOLE/MANHOLE ENTRANCE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-446

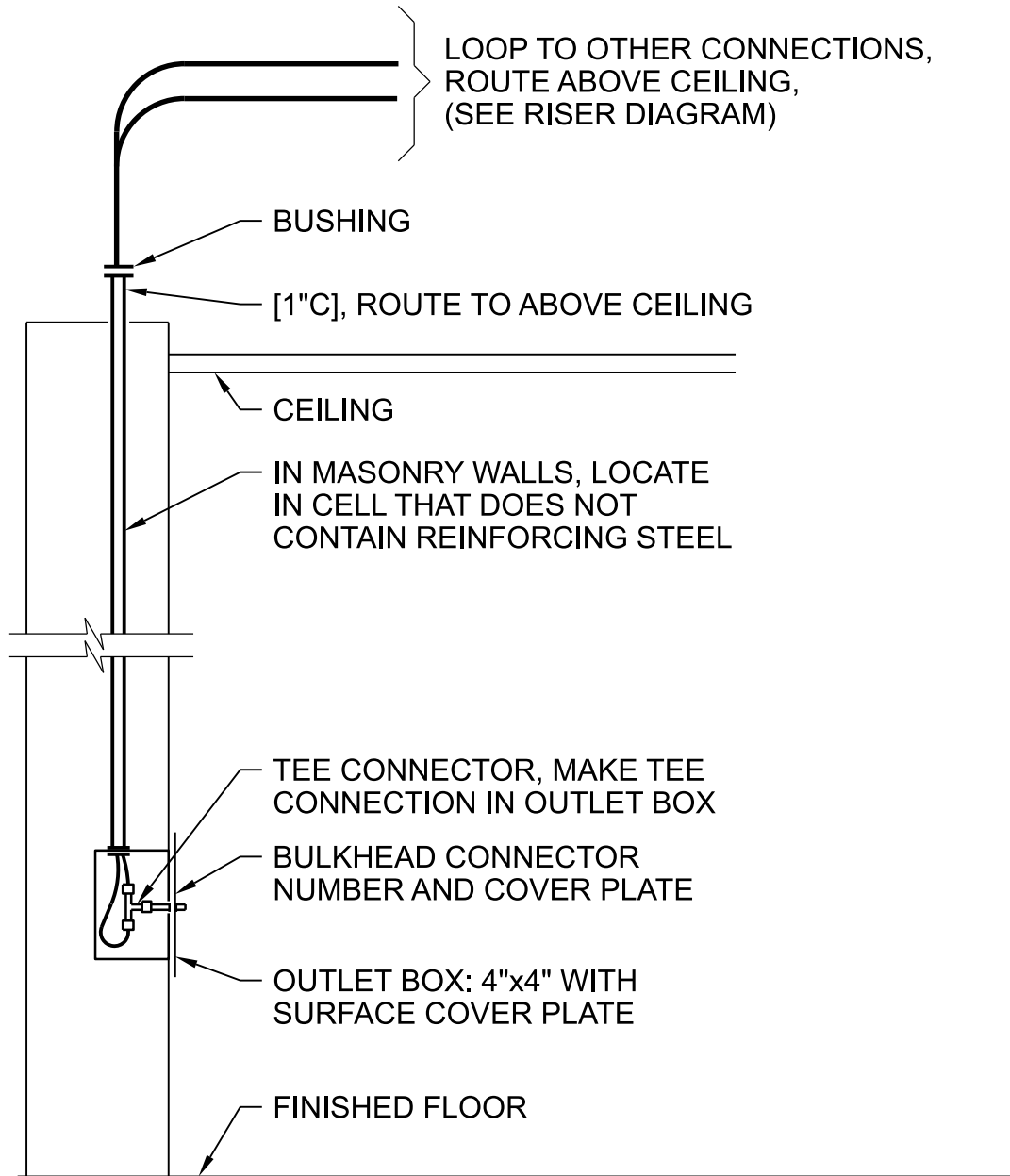


CABLE RACK

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-448

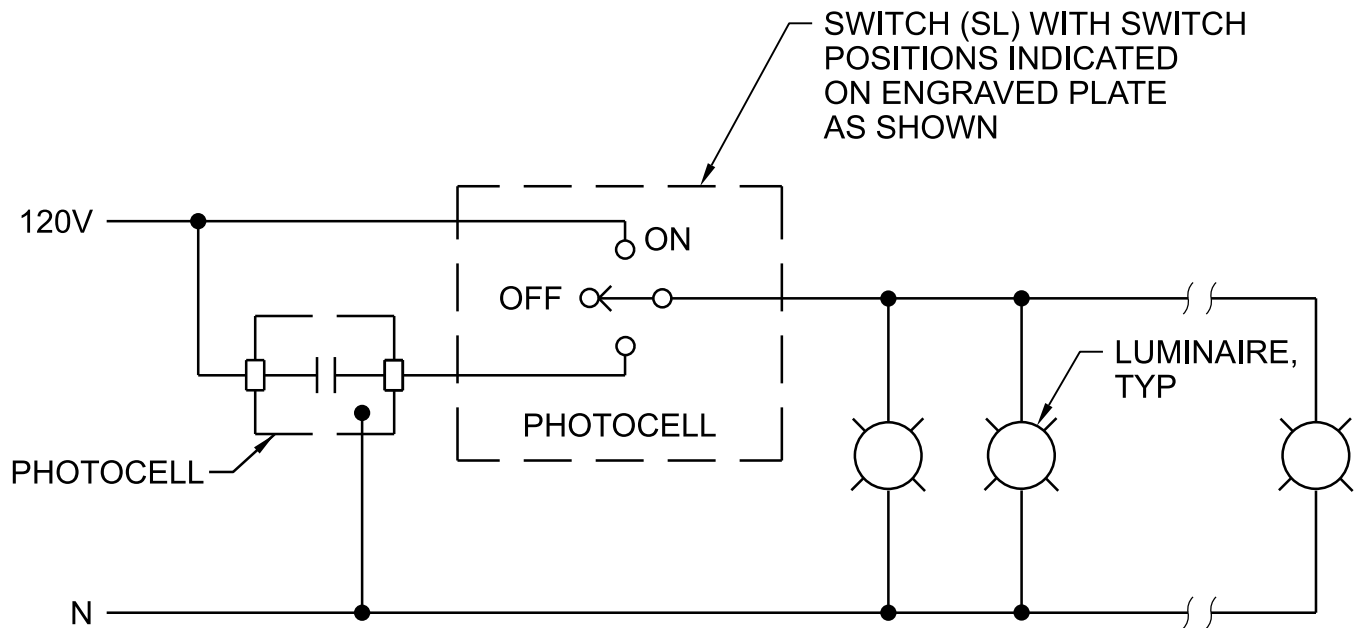


DEVICE MOUNTING, COMPUTER OUTLET BOX

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2605-601

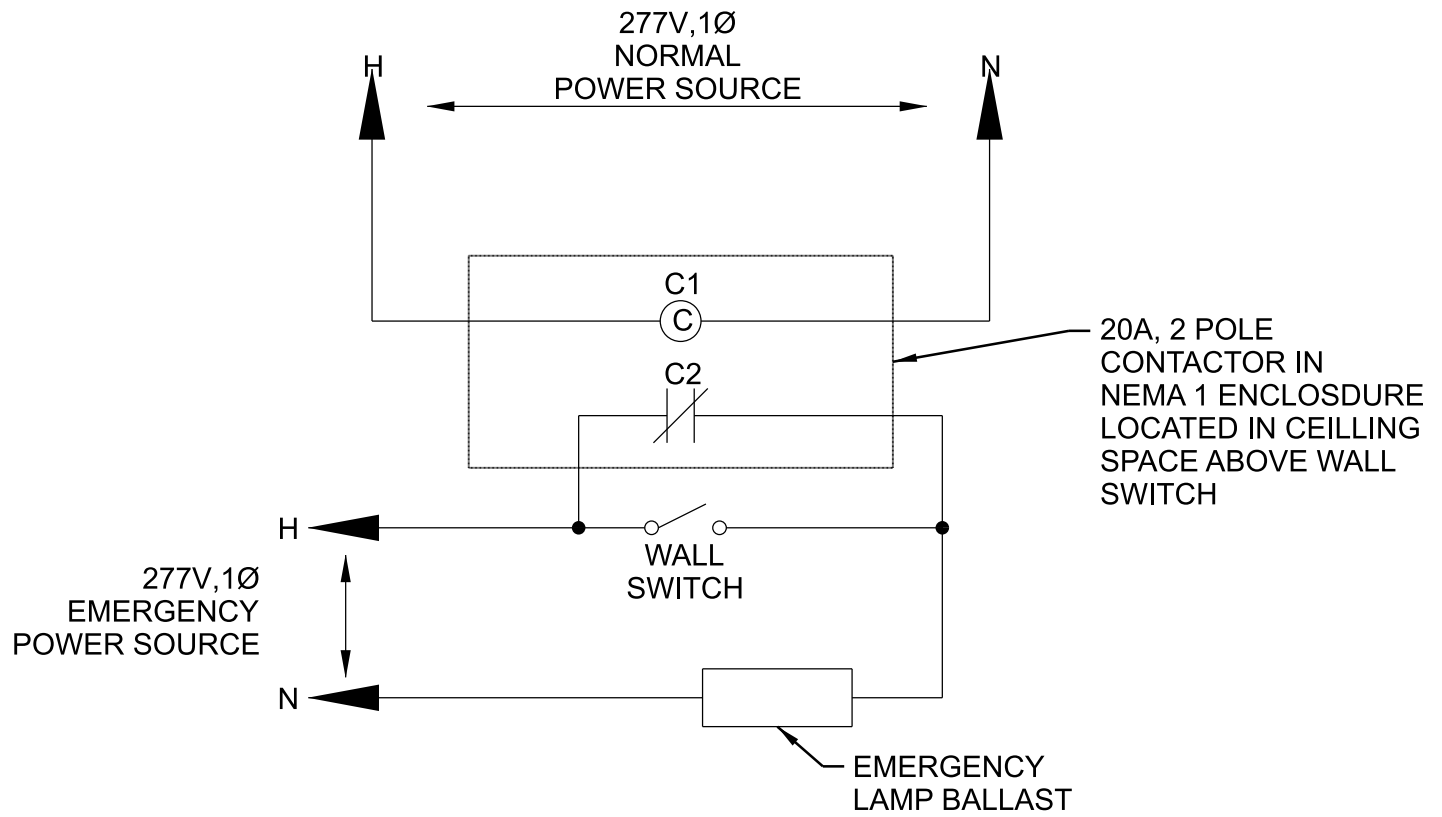


EXTERIOR BUILDING LIGHT CONTROL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2650-102

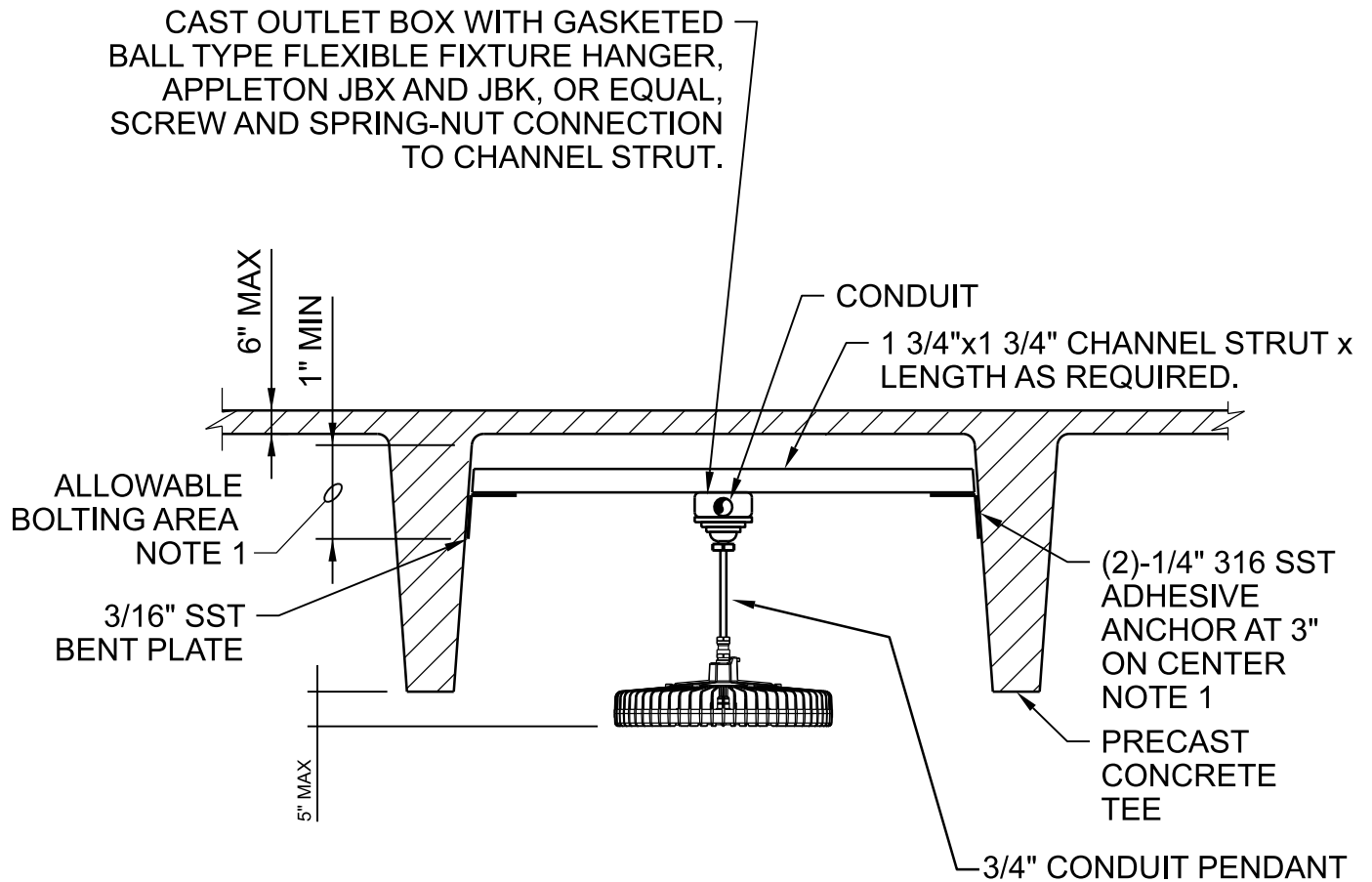


LIGHT OVERRIDE RELAY

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2650-112



NOTES:

1. CONTRACTOR SHALL COORDINATE BOLTING AREA AND ANCHOR LOCATION WITH PRECAST MANUFACTURER PRIOR TO FABRICATION.
2. PROVIDE ADDITIONAL CHANNEL STRUT, SPACED AS REQUIRED TO SUPPORT CONDUIT.

LUMINAIRE MOUNTING

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2650-219

LUMINAIRE
PER LUMINAIRE
SCHEDULE

REMOVABLE
POLE CAP

MOUNTING BRACKET
FURNISHED BY
POLE MANUFACTURER

PER LUMINAIRE
SCHEDULE

DUPLEX RECEPTACLE
AND WETHERPROOF
COVER WHERE REQUIRED
PER PLANS

CONCRETE
PLATFORM

2'-0" MIN

GROUT

ANCHOR
BOLTS AND
LEVELING NUTS

(2) 3/4" CONDUITS
ROUTE IN SLAB,
TURN UP INSIDE
POLE

NOTES:

- 1. CONTRACTOR SHALL COORDINATE POLE LOCATIONS WITH HANDRAILS.
- 2. POLE SUPPLIER SHALL DESIGN POLE ANCHORAGE TO CONCRETE. SUBMIT CALCULATIONS SIGNED AND SEAL BY OK. P.E.

LUMINAIRE MOUNTING

NTS

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BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

2650-220

NEW SURFACING,
OR SURFACE
RESTORATION,
SEE PLANS

TRENCH
BACKFILL
ABOVE
PIPE ZONE

12" MIN

PIPE OUTSIDE
DIAMETER

PIPE BEDDING
MATERIAL

TRENCH
STABILIZATION
WHERE REQD

DEPTH OF
COVER

MARKING
TAPE AS
SPECIFIED

PIPE ZONE

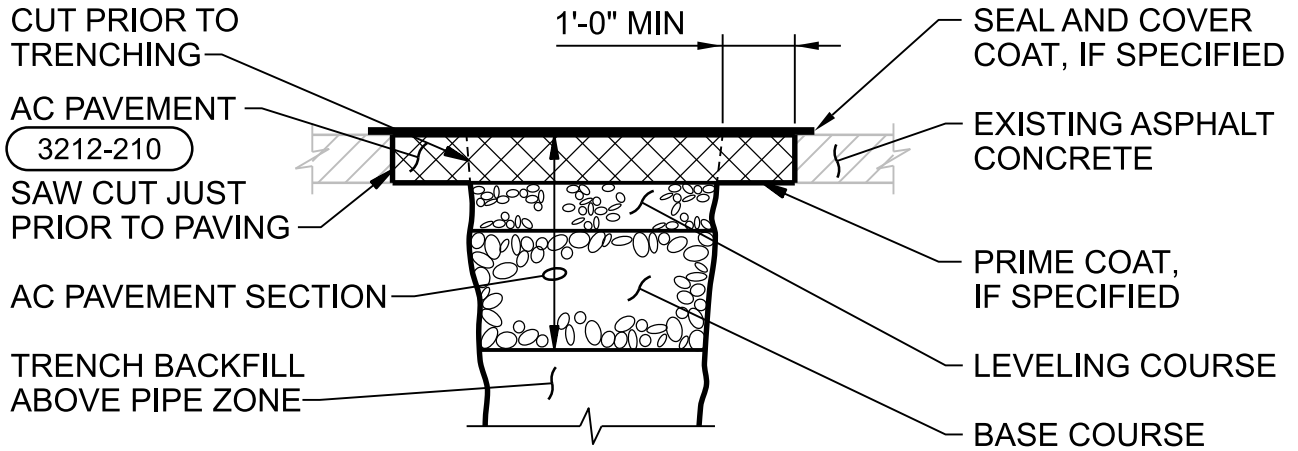
MIN WIDTH
PIPE OD+1'-6"

TYPICAL TRENCH

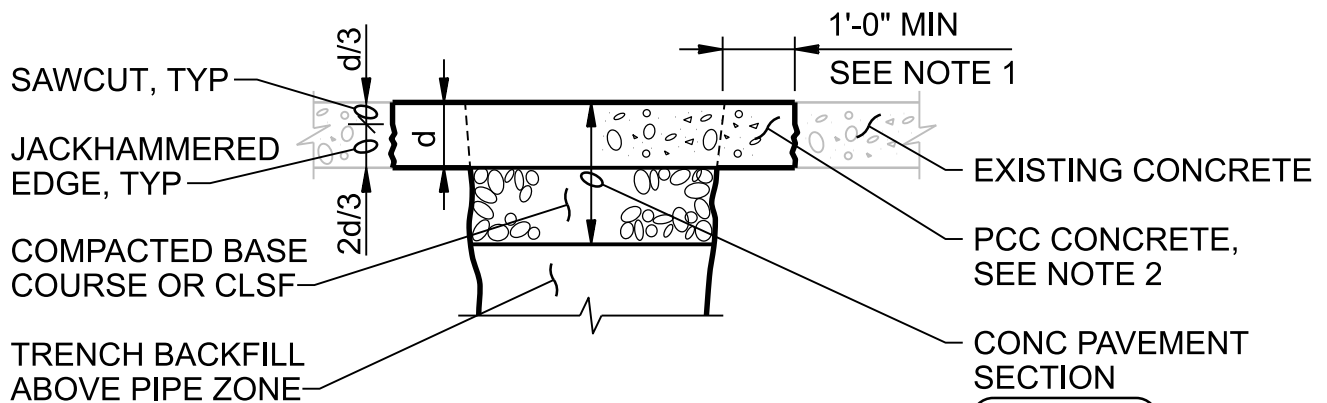
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

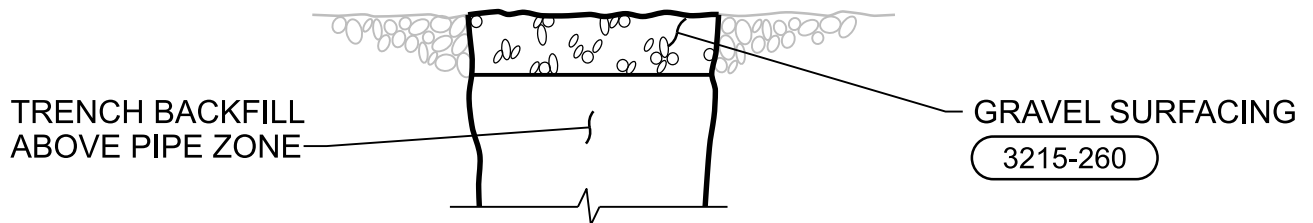
3123-110



ASPHALT SURFACING



PCC CONCRETE SURFACING



GRAVEL SURFACING

NOTES:

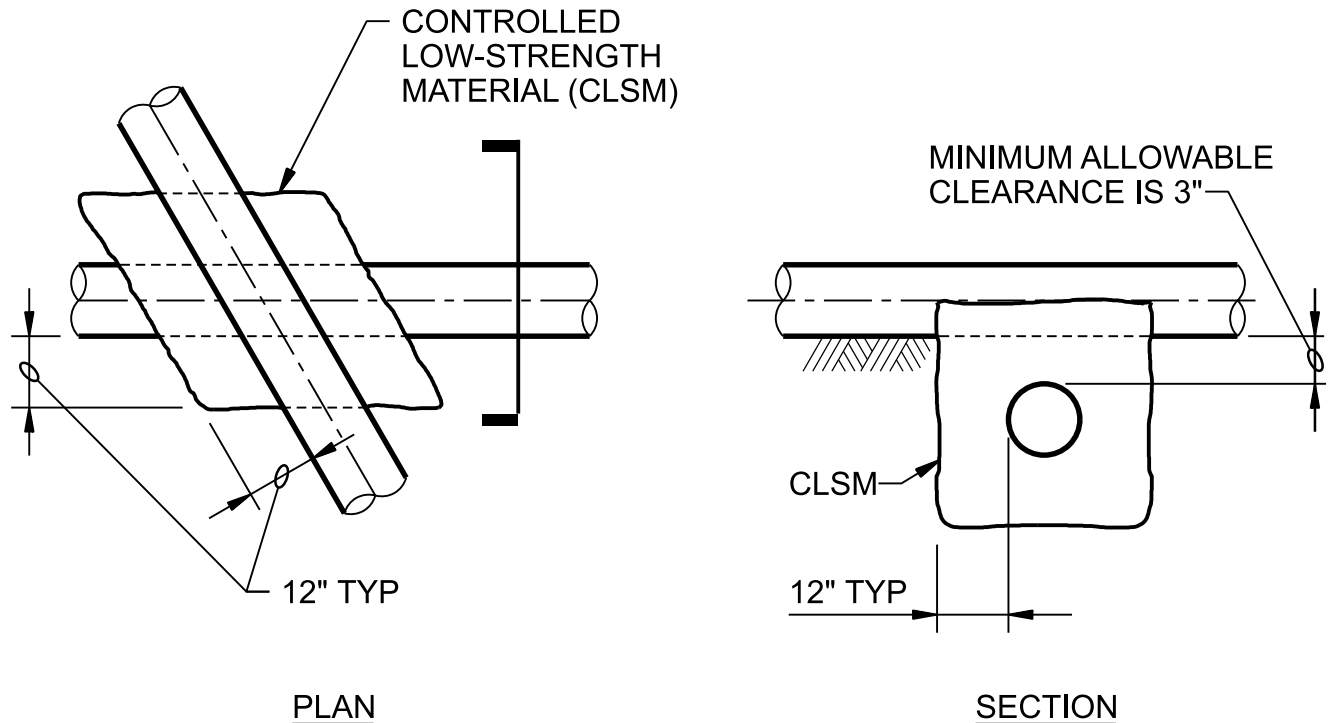
1. IF LOCATION OF TRENCH SAW CUT IS WITHIN 2 FEET OF AN EXISTING JOINT OR EDGE OF CONCRETE, REPLACE ENTIRE CONCRETE TO THE JOINT OR EDGE.
2. CONSTRUCT JOINTS ACROSS NEW CONCRETE TO MATCH EXISTING JOINT TYPES AND LOCATIONS.

SURFACE RESTORATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3123-115



NOTES:

CLSM SUPPORT IS REQUIRED:

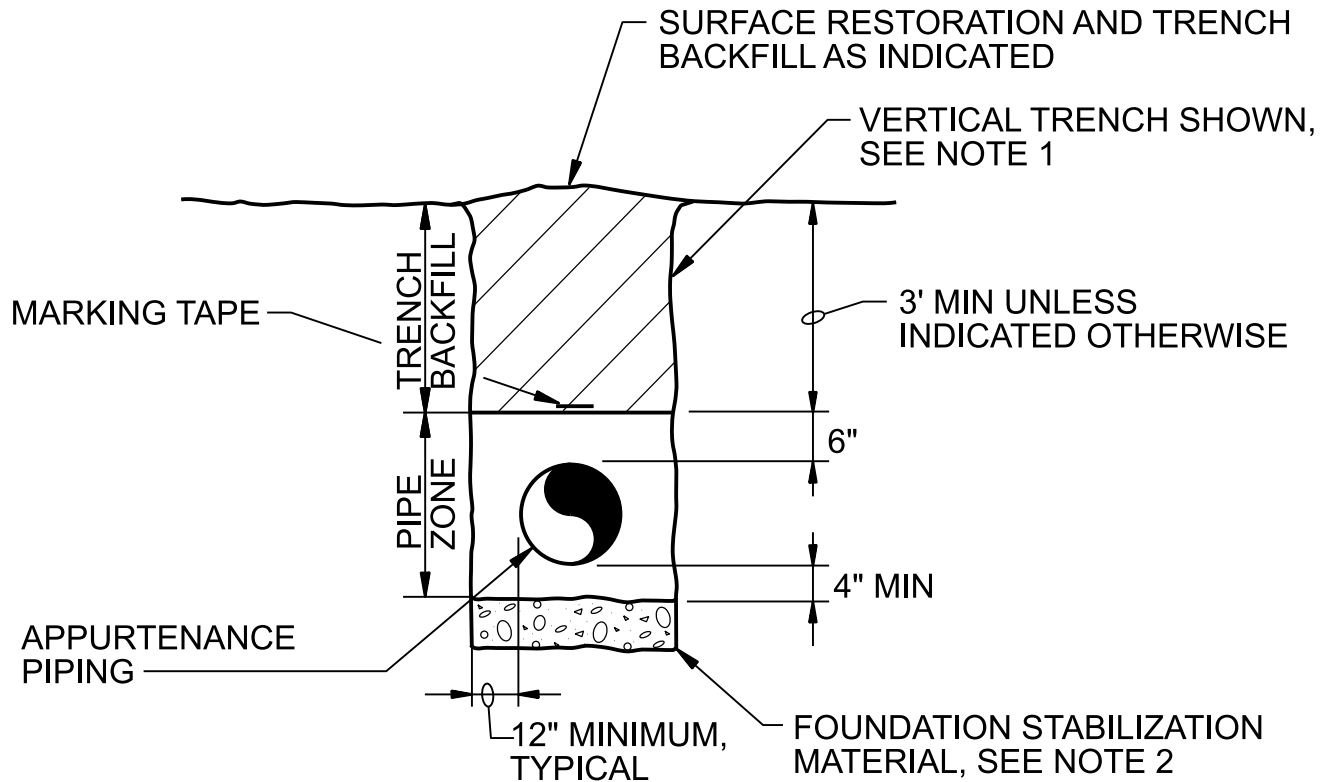
1. WHEN BOTH PIPELINES ARE NEW AND CLEARANCE BETWEEN THEM IS LESS THAN 12".
2. WHEN A NEW PIPELINE IS CROSSING OVER AN EXISTING PIPELINE AND THE CLEARANCE BETWEEN THEM IS LESS THAN 12".
3. AT ALL PIPE CROSSINGS WHERE A NEW PIPELINE IS CROSSING UNDER AN EXISTING PIPELINE.
4. REFER TO SPECIFICATION SECTION 31 23 23.15 FOR CLSM REQUIREMENTS.

TRENCH PIPE CROSSING

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3123-120



NOTES:

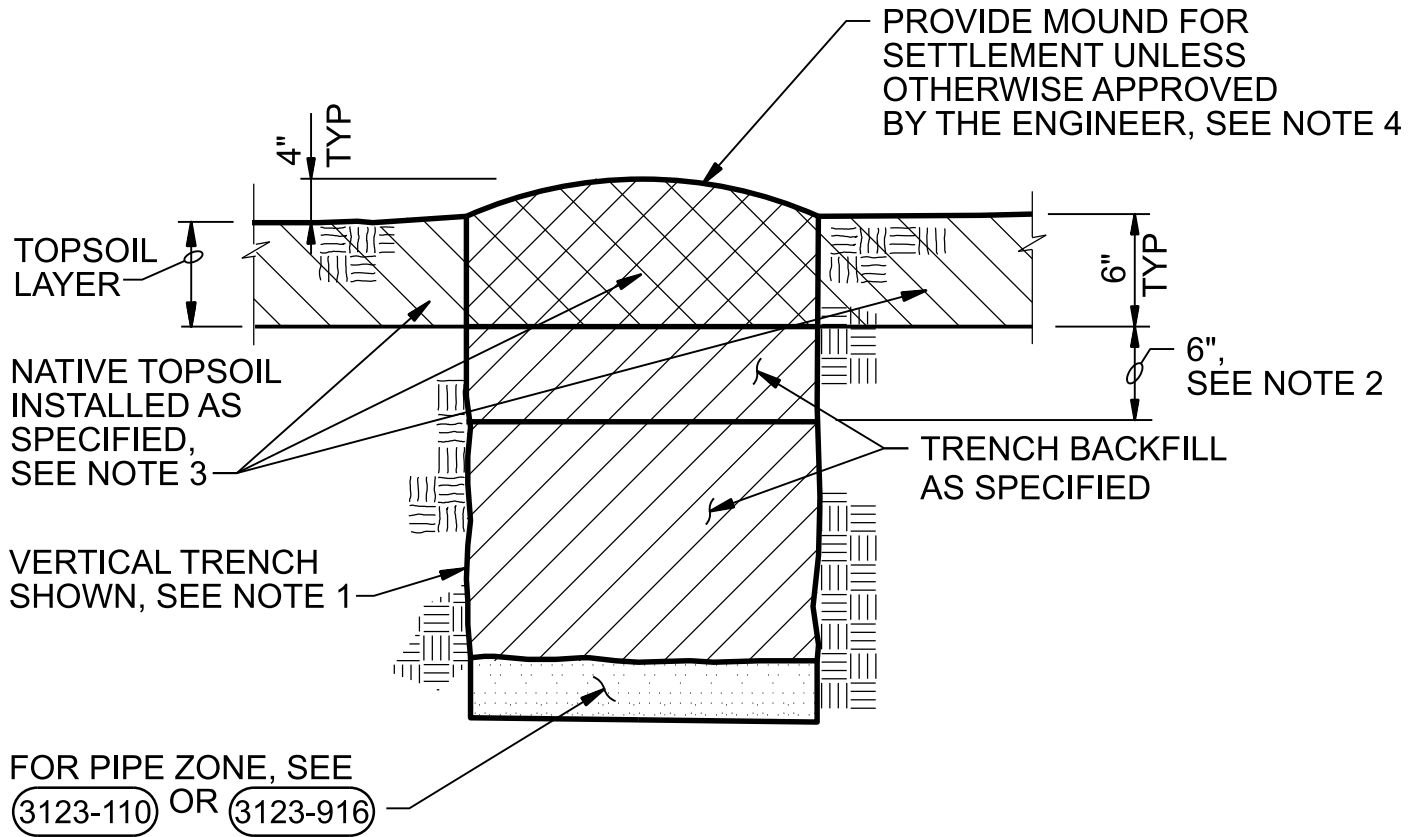
1. CONTRACTOR SHALL SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION AND SAFETY AND IN ACCORDANCE WITH CURRENT OSHA REQUIREMENTS.
2. FOUNDATION STABILIZATION MATERIAL SHALL BE INSTALLED ONLY AS APPROVED AND DIRECTED BY THE ENGINEER AND IN ACCORDANCE WITH THE SPECIFICATIONS.

TYPICAL TRENCH FOR APPURTENANCE PIPING

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3123-916



NOTES:

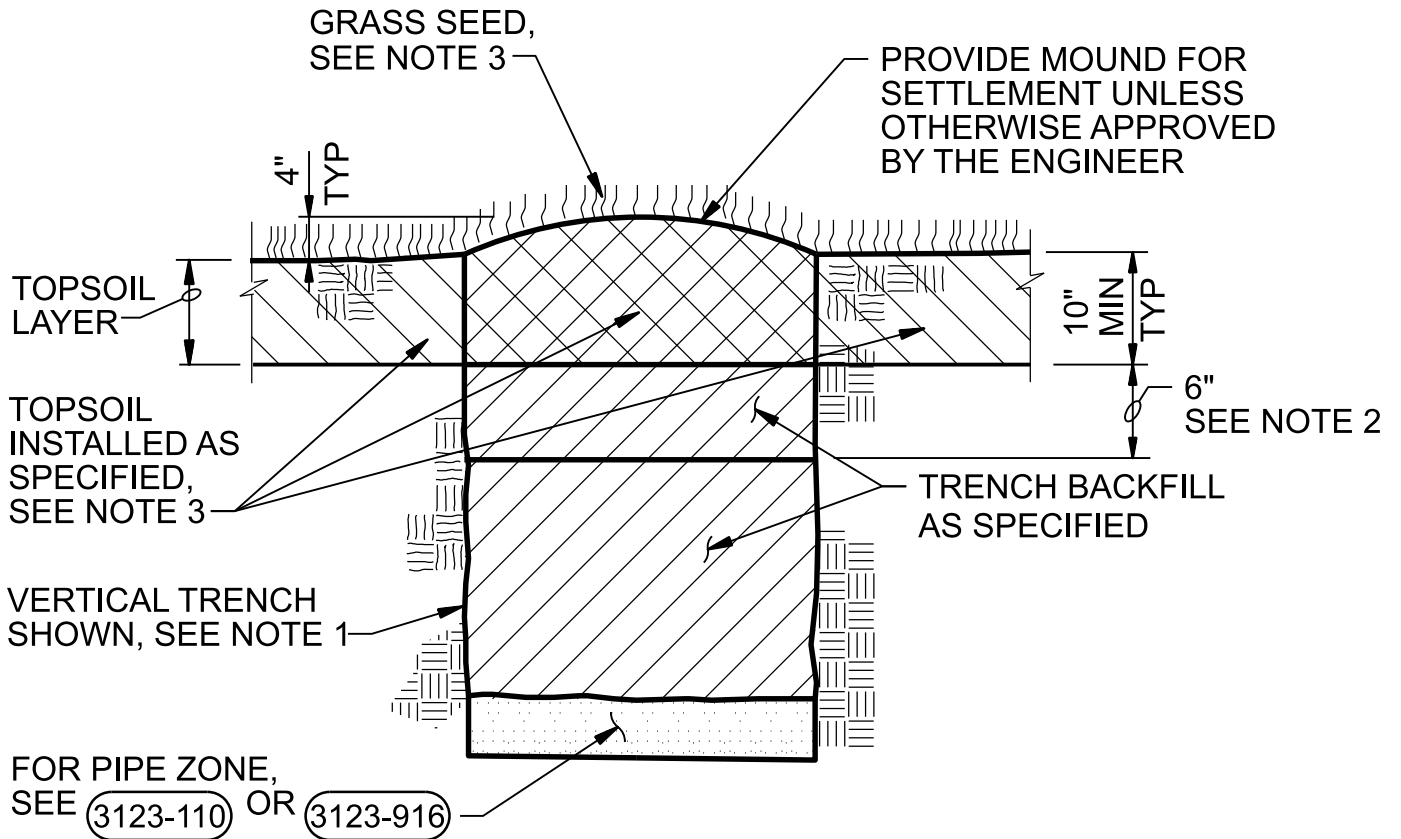
1. CONTRACTOR SHALL SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION AND SAFETY AND IN ACCORDANCE WITH CURRENT OSHA REQUIREMENTS.
2. THE TOP 6" OF TRENCH BACKFILL, BENEATH THE TOPSOIL LAYER, SHOULD BE INSTALLED, SMOOTHED, BUT LEFT UN-COMPACTED.
3. TOPSOIL SHALL EXTEND BEYOND TOP OF TRENCH AND TO THE LIMITS SPECIFIED.
4. HYDROSEED AS SPECIFIED, UNLESS OTHERWISE INDICATED.

UNIMPROVED AREA TRENCH BACKFILL SECTION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3123-917



NOTES:

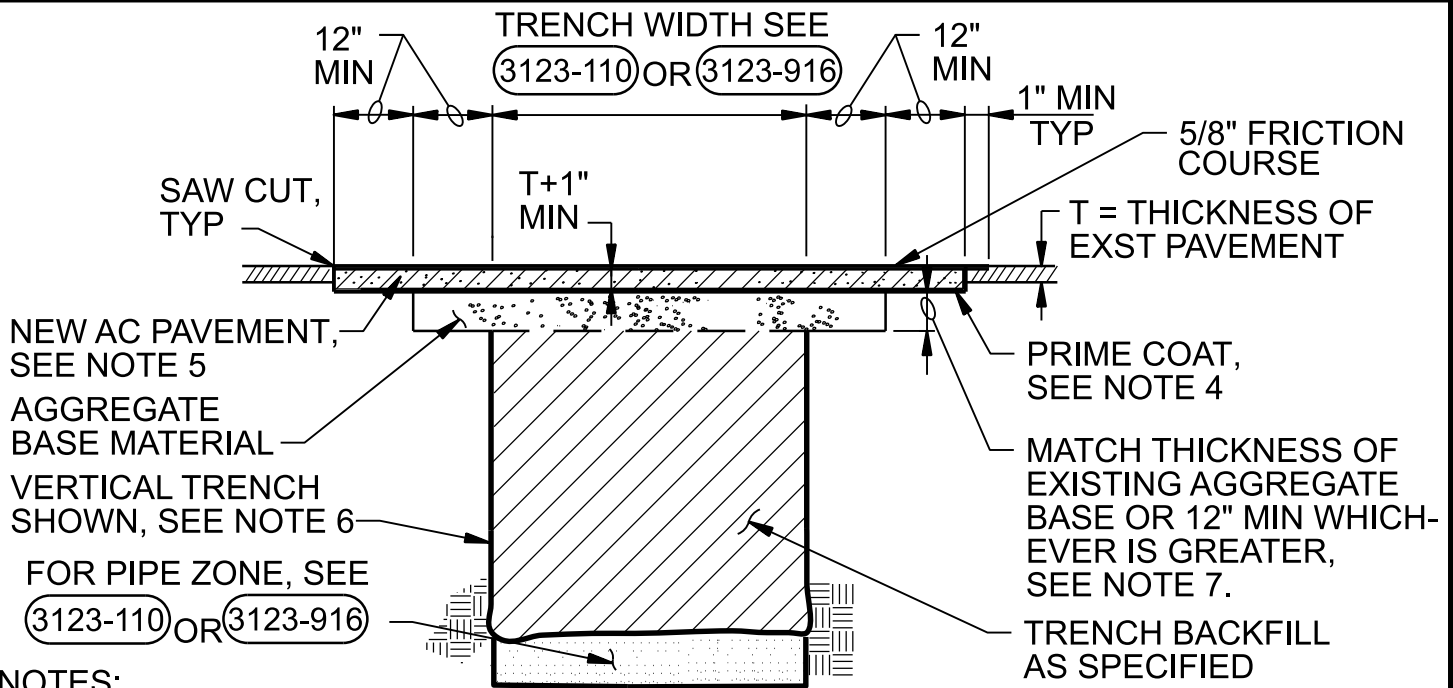
1. CONTRACTOR SHALL SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION AND SAFETY AND IN ACCORDANCE WITH CURRENT OSHA REQUIREMENTS.
2. THE TOP 6" OF TRENCH BACKFILL, BENEATH THE TOPSOIL LAYER, SHOULD BE INSTALLED, SMOOTHED, BUT LEFT UN-COMPACTED.
3. TOPSOIL AND GRASS SEED SHALL EXTEND BEYOND TOP OF TRENCH AND TO THE LIMITS SPECIFIED.

LAWN AREA TRENCH BACKFILL SECTION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3123-918



NOTES:

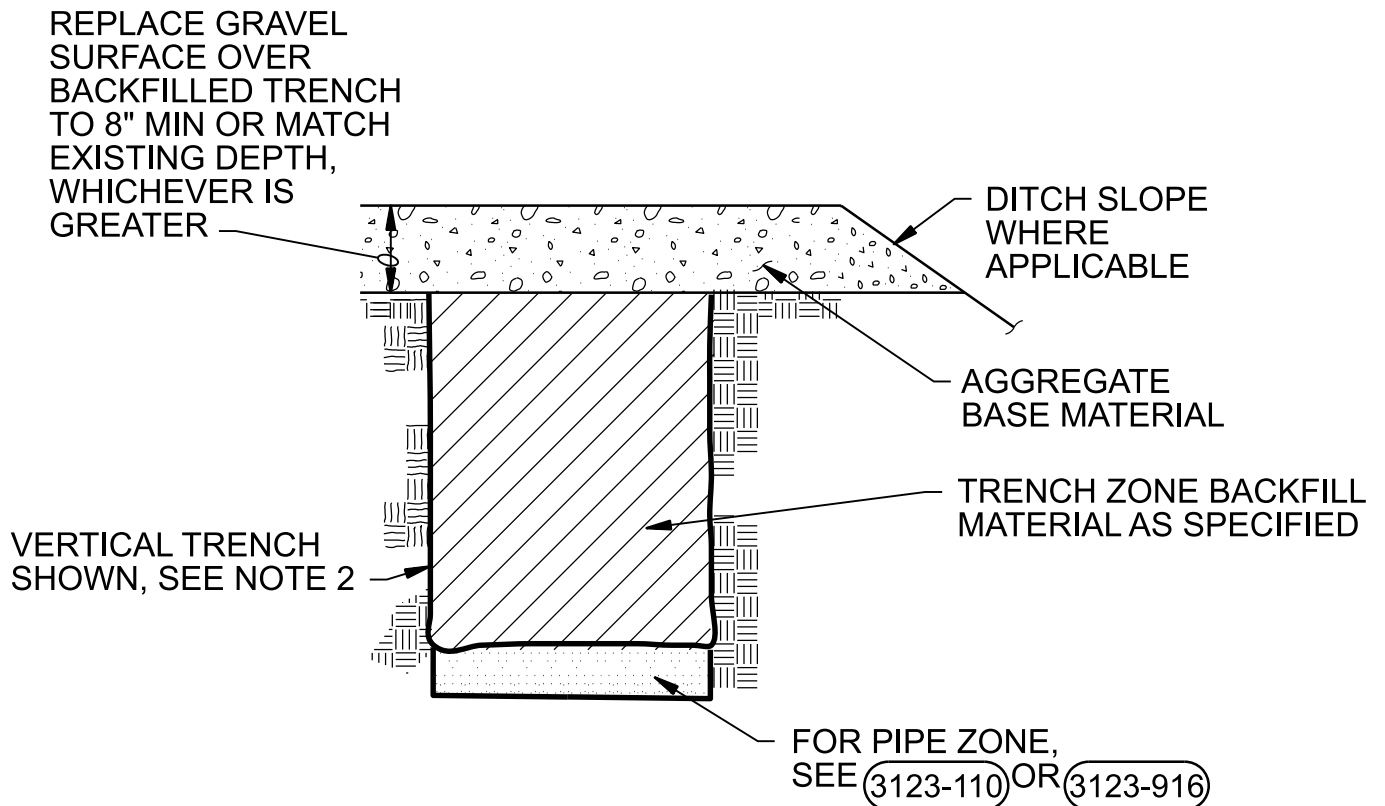
1. COMPACTION OF BACKFILL SHALL BE VERIFIED BY THE CONTRACTOR AND APPROVED BY THE CONSTRUCTION MANAGER AS SPECIFIED.
2. CONTRACTOR SHALL PERMANENTLY REPLACE ALL PAVEMENT SURFACES, STRIPING, AND TRAFFIC CONTROLS PRIOR TO REMOVING DETOURS.
3. PRIOR TO PLACEMENT OF PERMANENT PAVING, EXISTING PAVEMENT SHALL BE SAW CUT OUTSIDE THE LIMITS OF CONTRACTOR-DISTURBED PAVEMENT TO A NEAT STRAIGHT LINE. ALL CRACKED PAVEMENT WITHIN 10 FEET EITHER SIDE OF THE TRENCH AND ALL CONTRACTOR-DAMAGED PAVEMENT REGARDLESS OF DISTANCE FROM TRENCH SHALL BE REMOVED AND REPLACED.
4. PRIOR TO PLACEMENT OF PERMANENT PAVING, A PRIME COAT SHALL BE APPLIED AS SPECIFIED.
5. HOT ASPHALTIC CONCRETE PAVEMENT SHALL BE PLACED IN TWO LIFTS PLUS A FRICTION COURSE. A TACK COAT SHALL BE PLACED BETWEEN LIFTS AND ALONG ALL VERTICAL SURFACES OF EXISTING PAVEMENT. A TACK COAT SHALL ALSO BE PLACED PRIOR TO PLACEMENT OF FRICTION COURSE.
6. CONTRACTOR SHALL SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION AND SAFETY AND IN ACCORDANCE WITH CURRENT OSHA REQUIREMENTS.
7. IF NO EXISTING AGGREGATE BASE IS FOUND, INSTALL AGGREGATE BASE MATERIAL TO THE MINIMUM DEPTH INDICATED UNDER ALL AREA'S REQUIRING AC PAVEMENT.
8. WHERE THE EDGE LINE OF THE PAVEMENT REMOVED FOR THE PIPELINE TRENCH EXCAVATION COMES WITHIN FIVE (5) FEET OF THE OUTER EDGE OF THE PAVEMENT AGAINST GUTTER OR CURB FACE, THE EXISTING PAVING SHALL BE REMOVED TO THE GUTTER LINE OR CURB FACE. ALL ASSOCIATED COST FOR THIS REQUIREMENT SHALL BE INCLUDED IN THE BID.

PAVED AREA TRENCH BACKFILL SECTION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3123-919



NOTES:

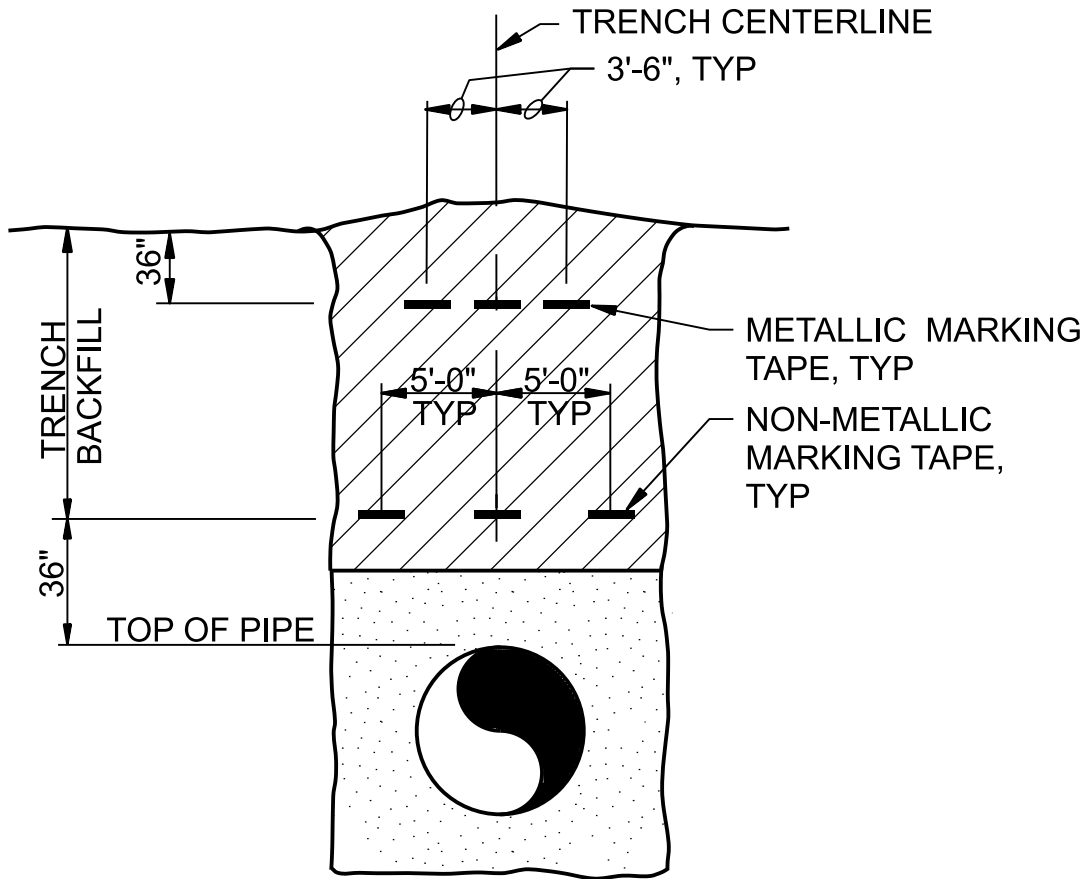
1. COMPACTION OF BACKFILL SHALL BE AS INDICATED.
2. CONTRACTOR SHALL SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION AND SAFETY AND IN ACCORDANCE WITH CURRENT OSHA REQUIREMENTS.

GRAVEL SURFACE TRENCH BACKFILL SECTION

NTS

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CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3123-920

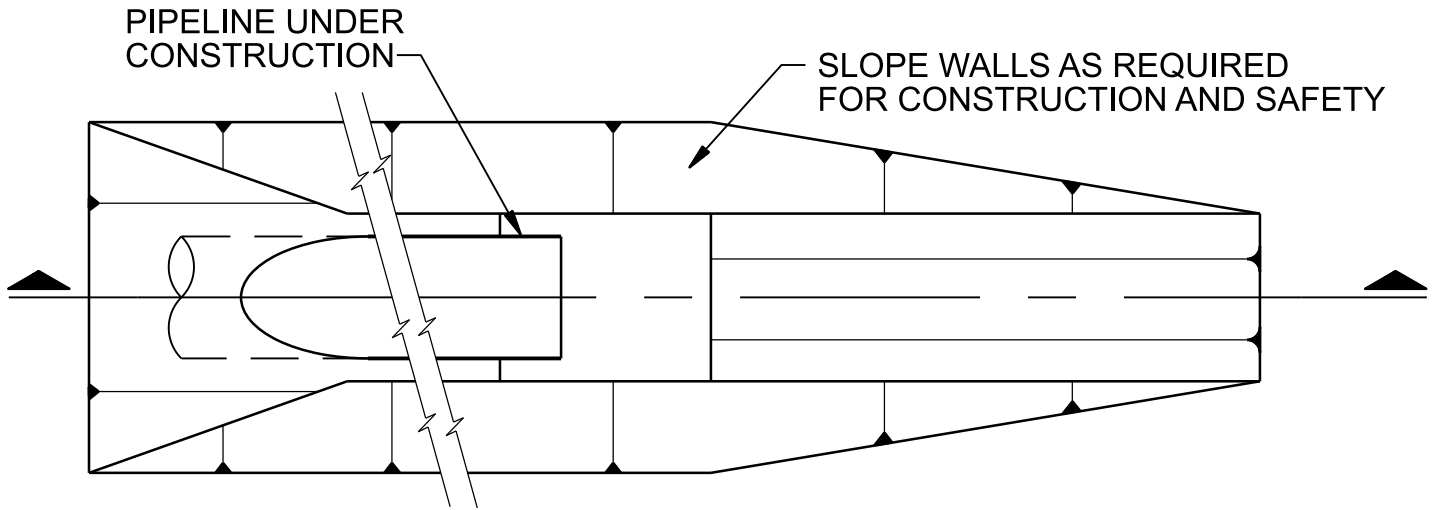


TRENCH MARKING TAPE (LARGE DIAMETER PIPELINES)

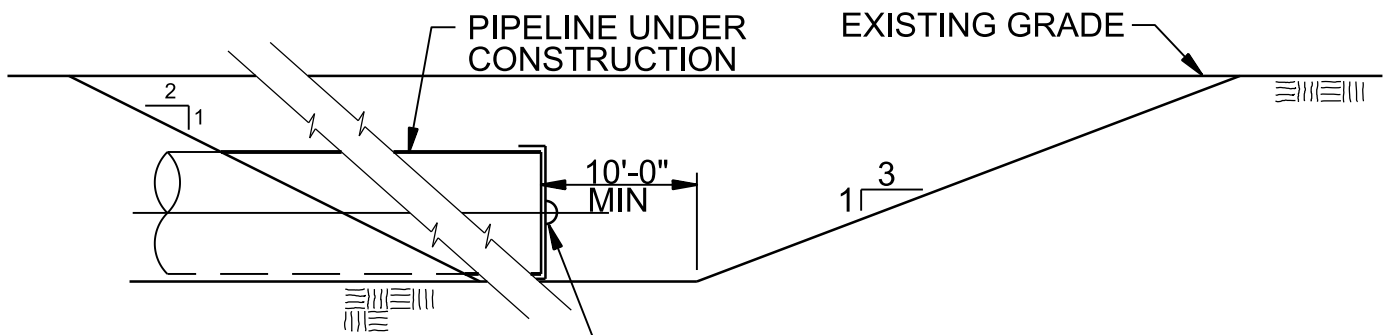
NTS

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BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3123-925



PLAN



SECTION

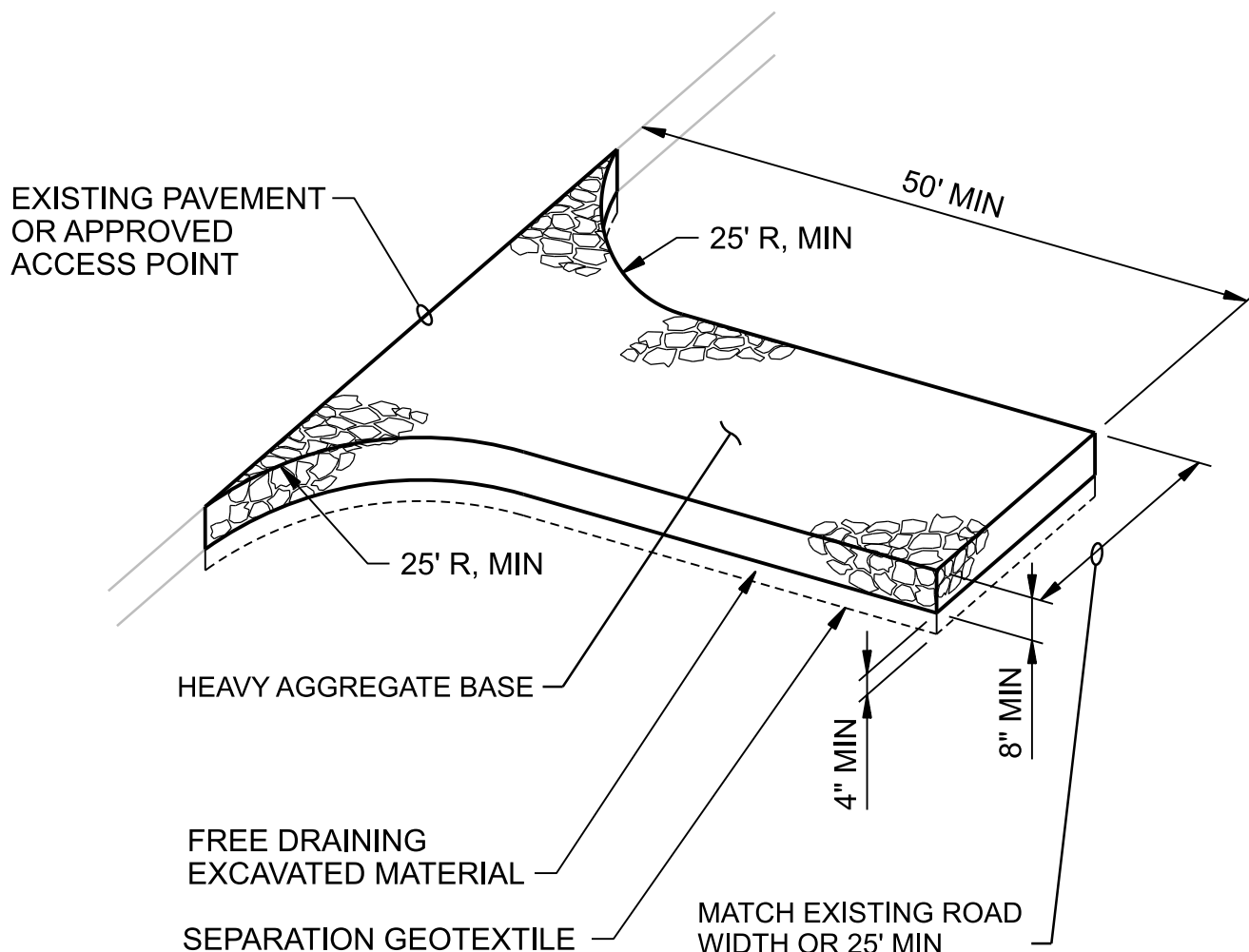
CAP END OF PIPE WITH SUBMITTAL-APPROVED WATER-TIGHT FACTORY MANUFACTURED GASKETED END PLUG WITH LIFTING / PULLING HOOKS FOR EASE OF INSTALLATION / REMOVAL TO CONTROL ACCESS AND KEEP PIPE CLEAN / DRY AT ALL TIMES DURING IDLE PERIODS.

TRENCH RAMP

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HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3123-927



NOTES:

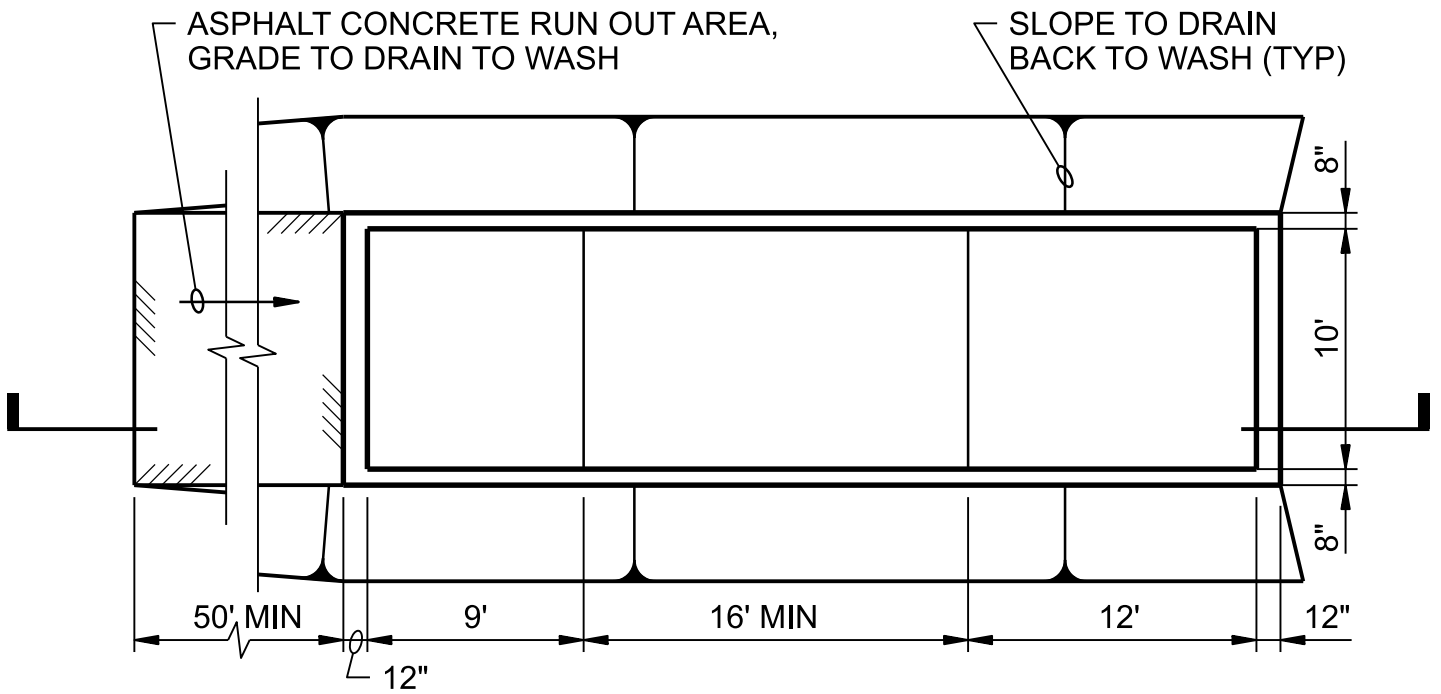
1. ADDITIONAL GRAVEL MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.
2. REMOVE GRAVEL ENTRANCE AND REPLACE WITH NEW BASE COURSE PRIOR TO COMPLETION OF ACCESS ROAD.

GRAVEL CONSTRUCTION ENTRANCE

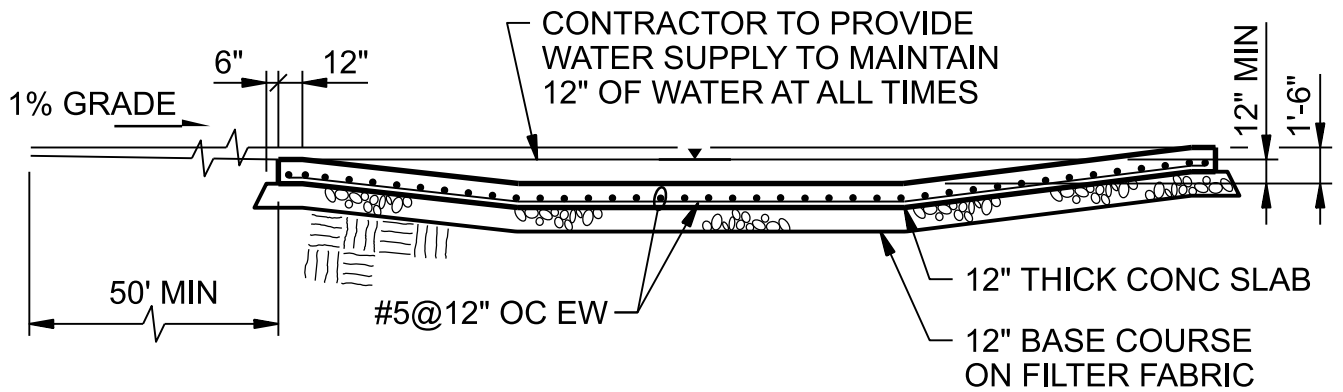
NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3125-130



PLAN



SECTION

NOTE:

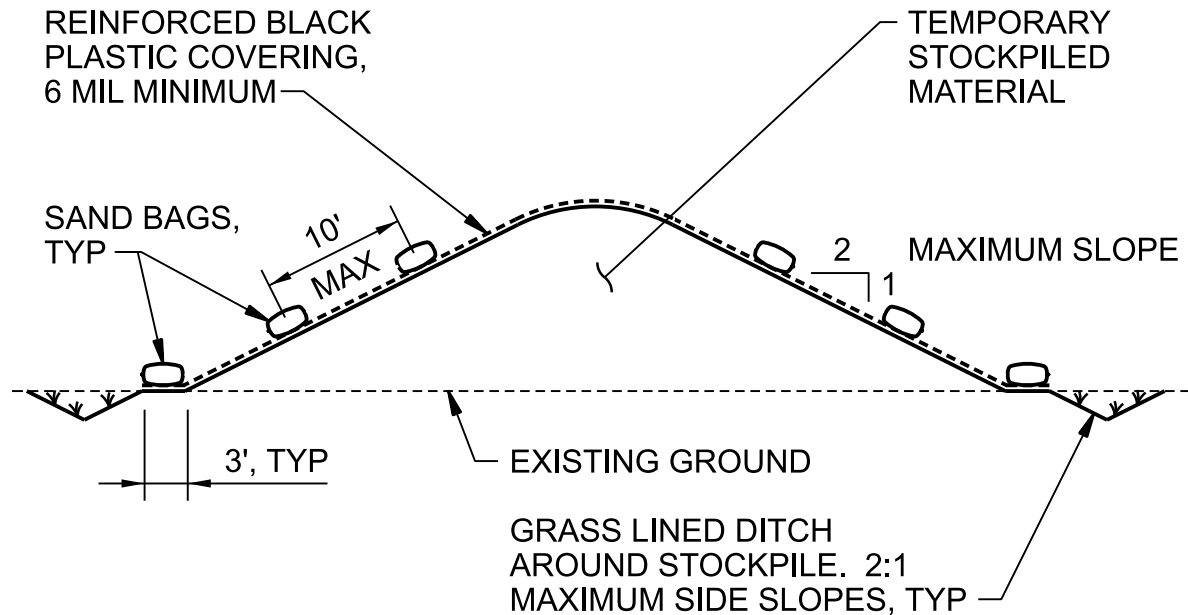
CONTRACTOR TO REMOVE ACCUMULATED SEDIMENT FROM WHEEL WASH, MAY BE PIPED TO AN APPROVED SEDIMENT TRAP.

WHEEL WASH

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3125-135



NOTES:

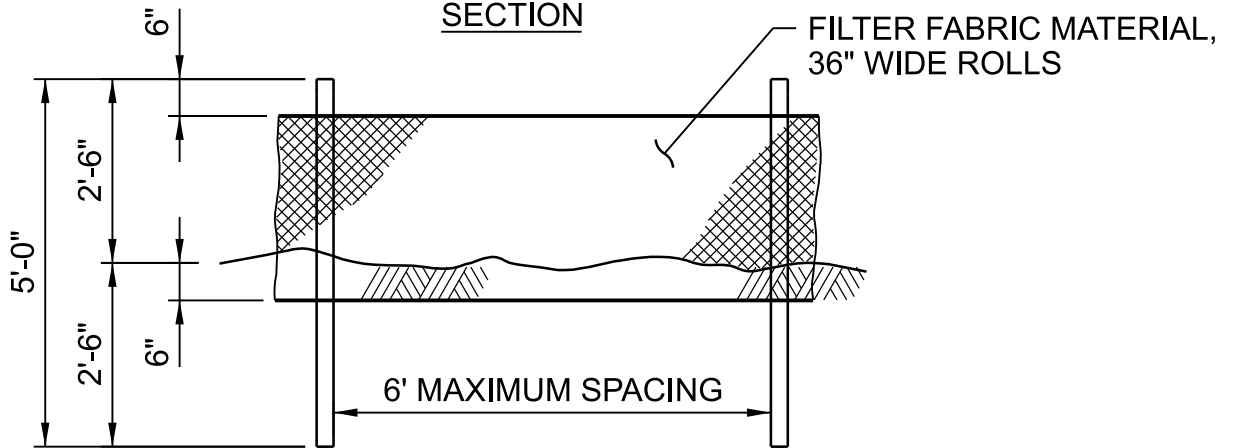
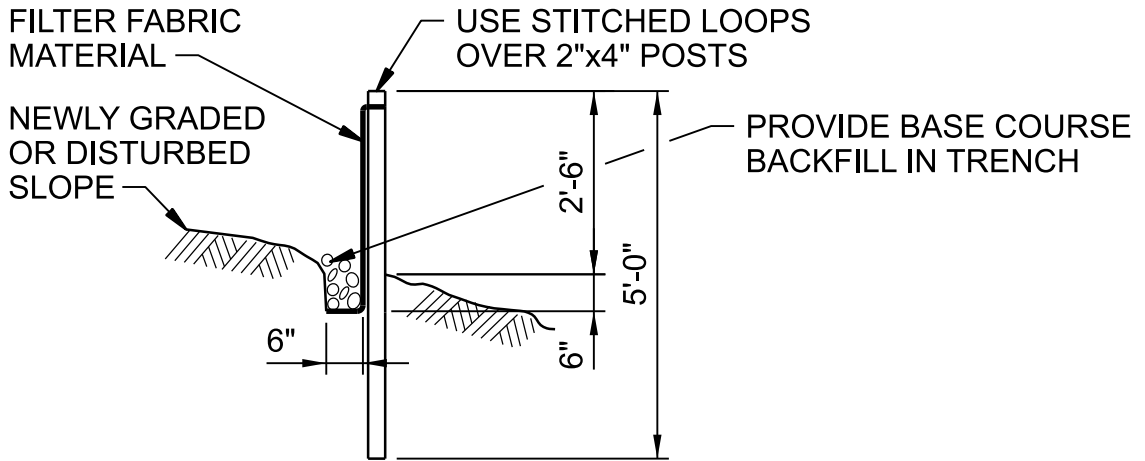
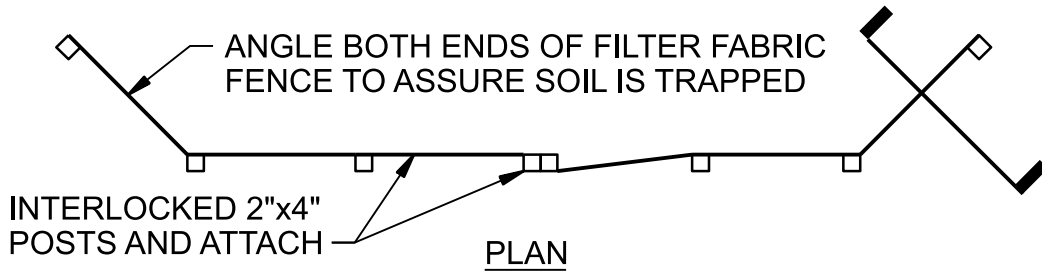
1. ALL SEAMS SHALL BE TAPED OR WEIGHTED DOWN FULL LENGTH. ALL SEAMS SHALL HAVE A MINIMUM 12" OVERLAP.
2. SEAMS PARALLEL TO THE SLOPE CONTOUR SHALL HAVE THE UPHILL SHEET OVERLAP THE DOWN HILL SHEET.
3. NO SURFACE RUN-OFF SHALL BE ALLOWED TO RUN UNDER THE PLASTIC COVERING.
4. DRAINAGE FROM AREAS COVERED BY REINFORCED PLASTIC SHEETING SHALL BE CONTROLLED SUCH THAT NO DISCHARGE OCCURS DIRECTLY ONTO UNCONTROLLED DISTURBED AREAS OF THE CONSTRUCTION SITE.
5. ALL SAND BAGS SHALL BE MAINTAINED IN PLACE WITH ROPE.

TEMPORARY STOCKPILE COVERING

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3125-140



NOTES:

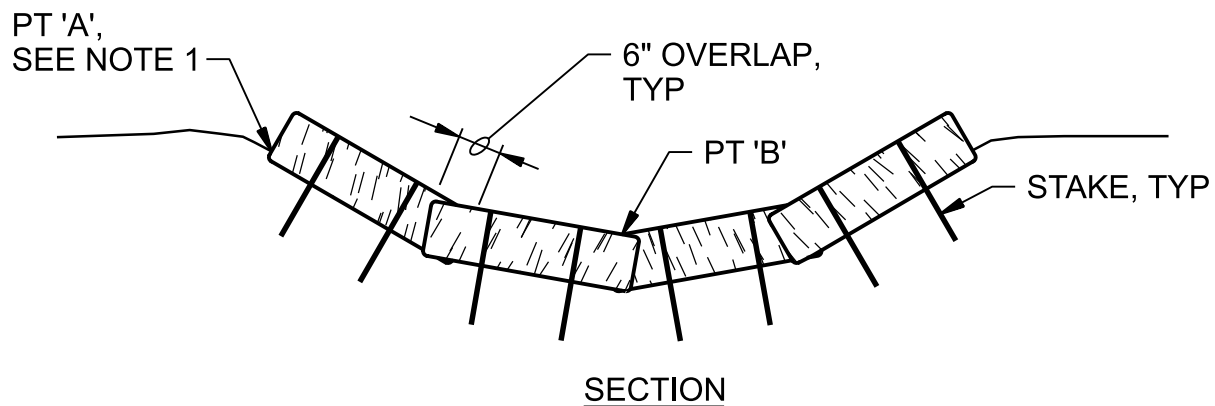
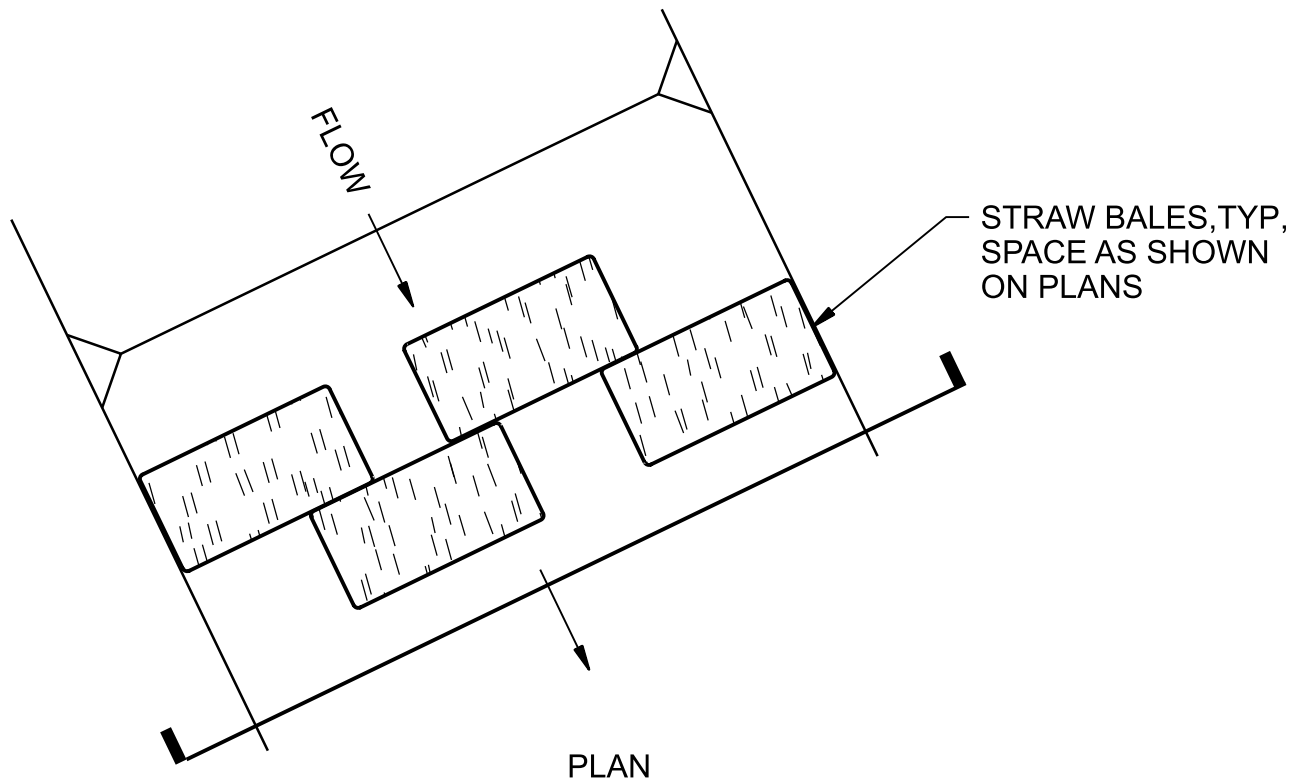
1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. 2"x4" DOUGLAS FIR OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

SEDIMENT FENCE

NTS

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 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3125-165

NOTES:

1. POINT 'A' MUST BE 6" MINIMUM HIGHER THAN PT 'B'.
2. STAKING OF BALES IS REQUIRED USING (2)2"x2"x3' LONG WOOD STAKES OR APPROVED EQUAL PER BALE.
3. DRIVE STAKES MINIMUM 12" INTO GROUND AND FLUSH WITH TOP OF BALES.
4. EMBED BALES MINIMUM OF 4" INTO GROUND SURFACE.
5. BIOFILTER BAGS TO BE USED, IF SPECIFIED.

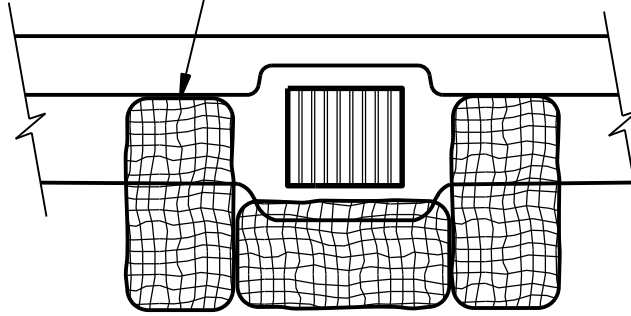
STRAW BALES IN DITCHES

NTS

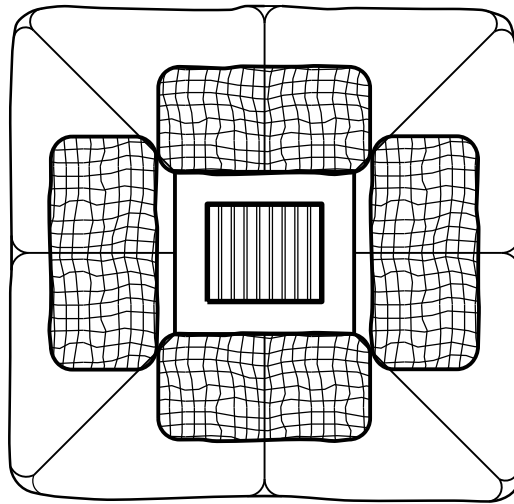
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3125-170

MAY BE USED SHORT TERM
WITH UTILITY WORK AND WITH
PHASING OF DEVELOPMENT



CURB INLET



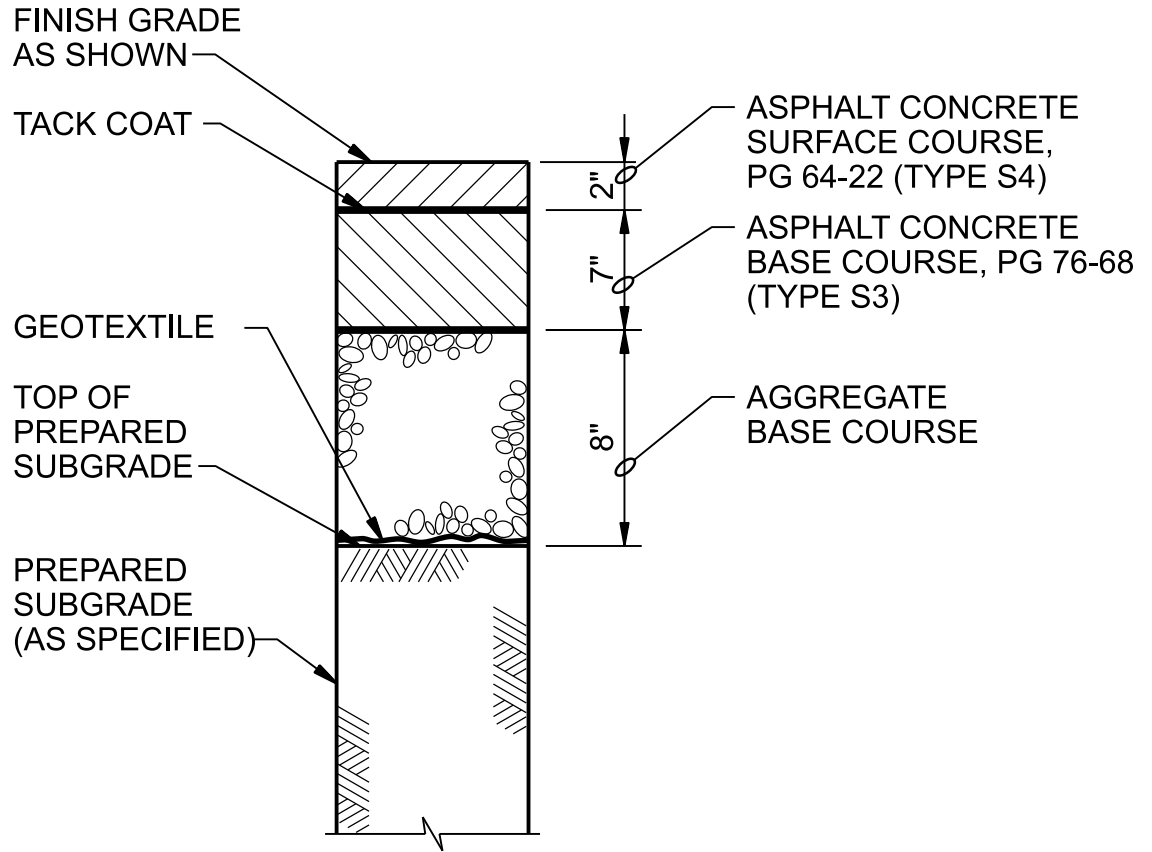
AREA DRAIN

BIOFILTER BAG INLET BARRIER

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3125-186



NOTE:

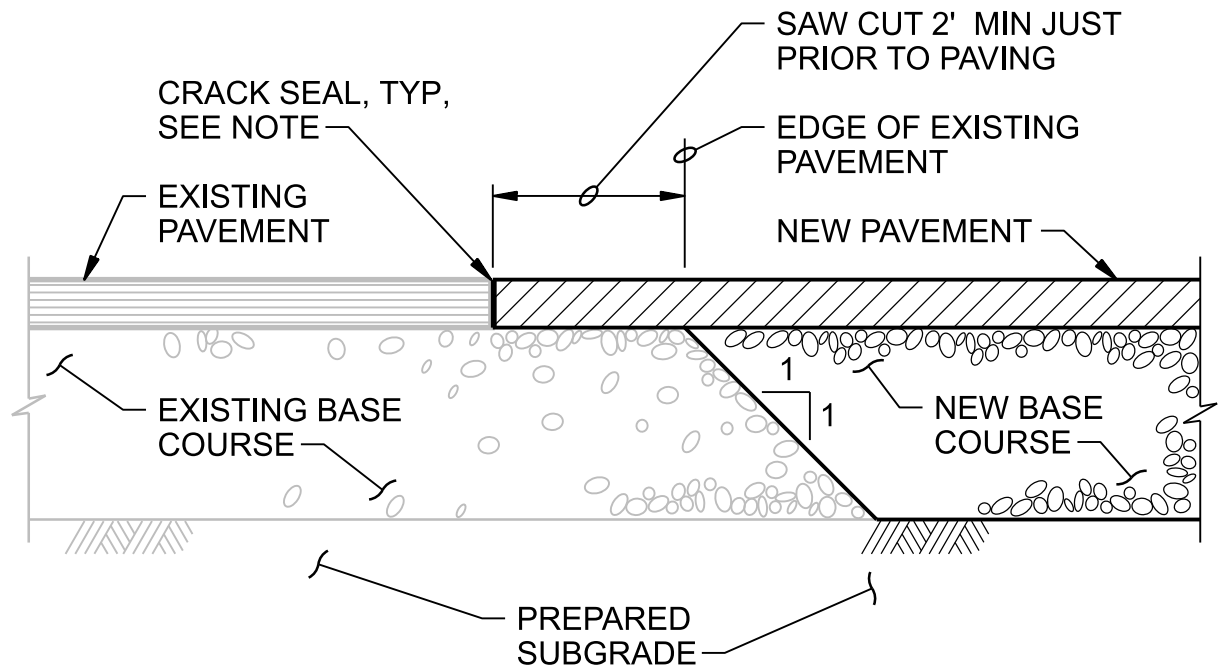
1. ASPHALT CONCRETE PAVEMENT SHALL USE SUPERPAVE MIXTURES AS NOTED ABOVE AND AS REQUIRED IN SPECIFICATION SECTION 32 12 16.

ASPHALT CONCRETE PAVEMENT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3212-210

**NOTE:**

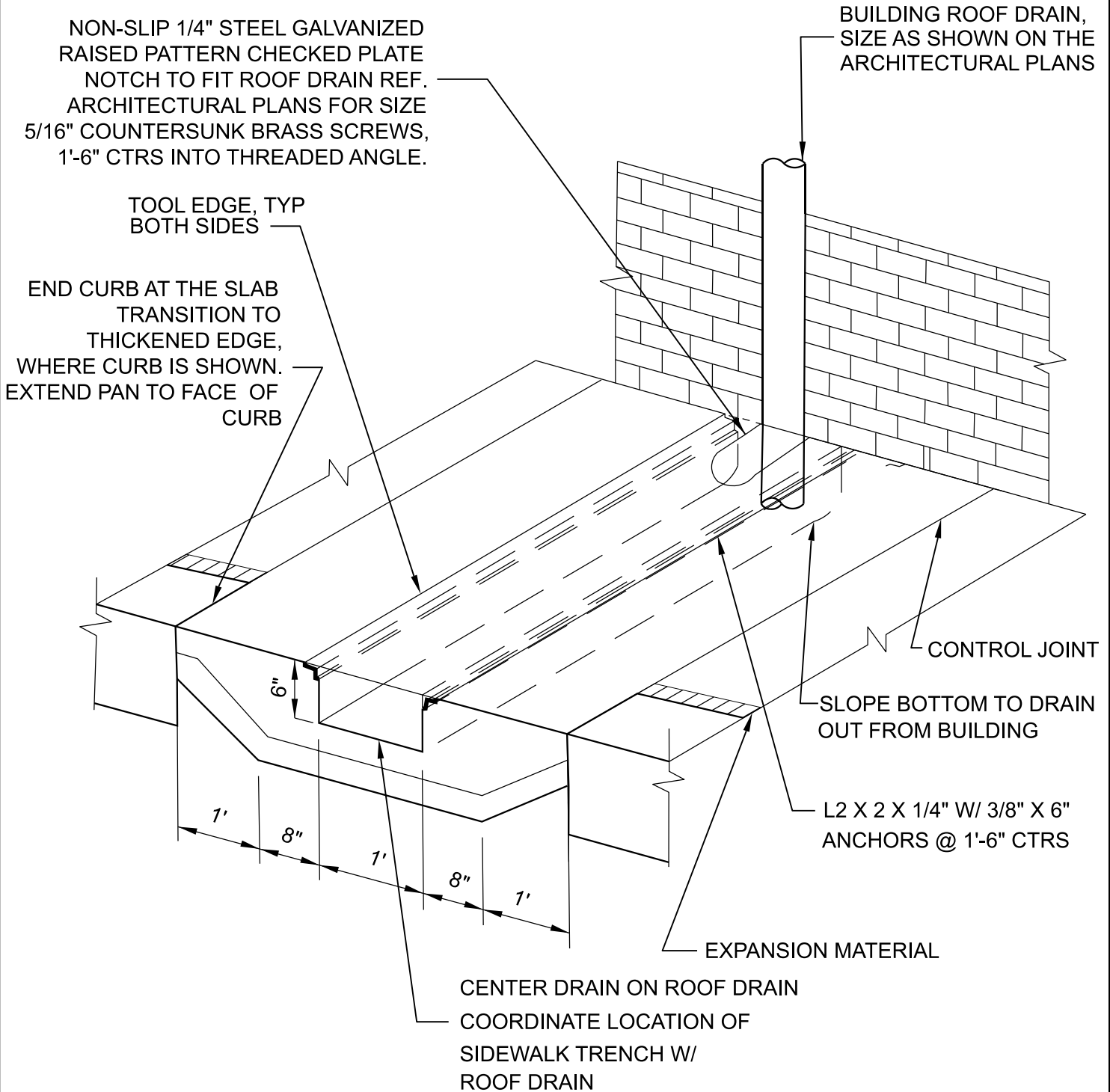
PAINT EDGE OF EXISTING ASPHALT WITH TACK COAT PRIOR TO PAVING.
 CRACK SEAL JOINT AFTER PAVING OPERATION HAS BEEN COMPLETED.

PAVEMENT CONNECTION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3212-215



NOTES:

- 1. LENGTH OF DRAIN EQUALS WIDTH OF SIDEWALK.
- 2. SIDEWALK SPLASH PAN CONCRETE SHALL BE PLACED MONOLITHICALLY.
- 3. PROVIDE CONTRACTION JOINTS AT SPLASH PAN WHERE EXITS TO GUTTER.

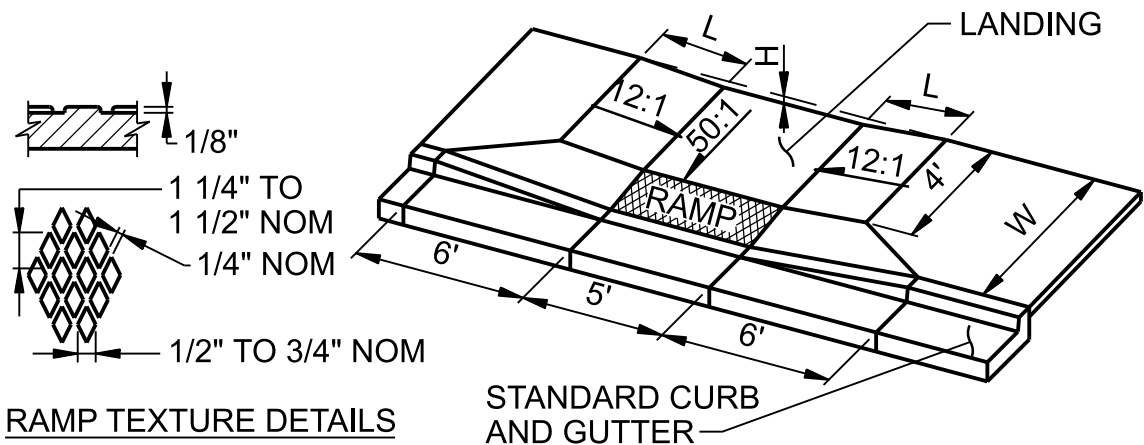
SPLASH PAN

NTS

SHEET 1 OF 2

3213-222A

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

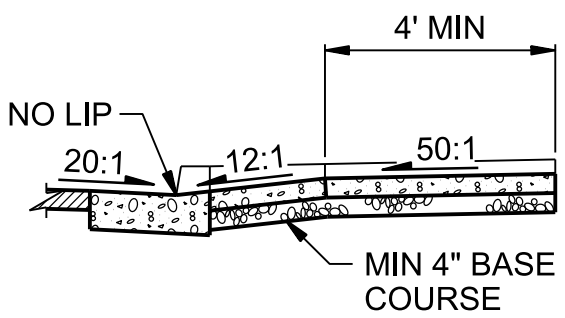


W	L	H
5'	4.84'	4-7/8"
5.5'	4.46'	4-1/2"
6'	4.08'	4-1/8"
6.5'	3.70'	3-3/4"
7'	3.32'	3-5/16"
7.5'	2.94'	2-15/16"
8'	2.56'	2-9/16"
8.5'	2.18'	2-3/16"
9'	1.80'	1-13/16"
9.5'	1.42'	1-3/8"
10'	1.04'	1-1/16"
10.5'	0.66'	0-5/8"

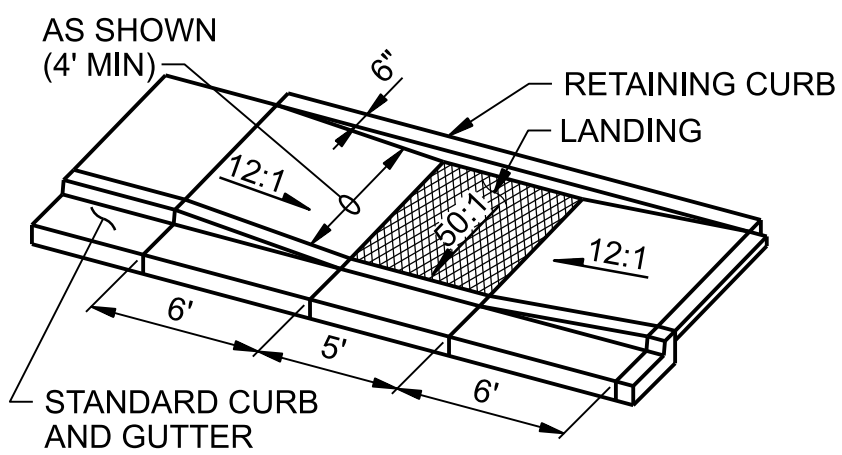
RAMP TEXTURE DETAILS

STANDARD CURB AND GUTTER

CURB RAMP (TYPE 3)



TYPICAL SECTION THROUGH COMBINED CURB RAMP



AS SHOWN (4' MIN)

RETAINING CURB LANDING

STANDARD CURB AND GUTTER

CURB RAMP (TYPE 4)

NOTES:

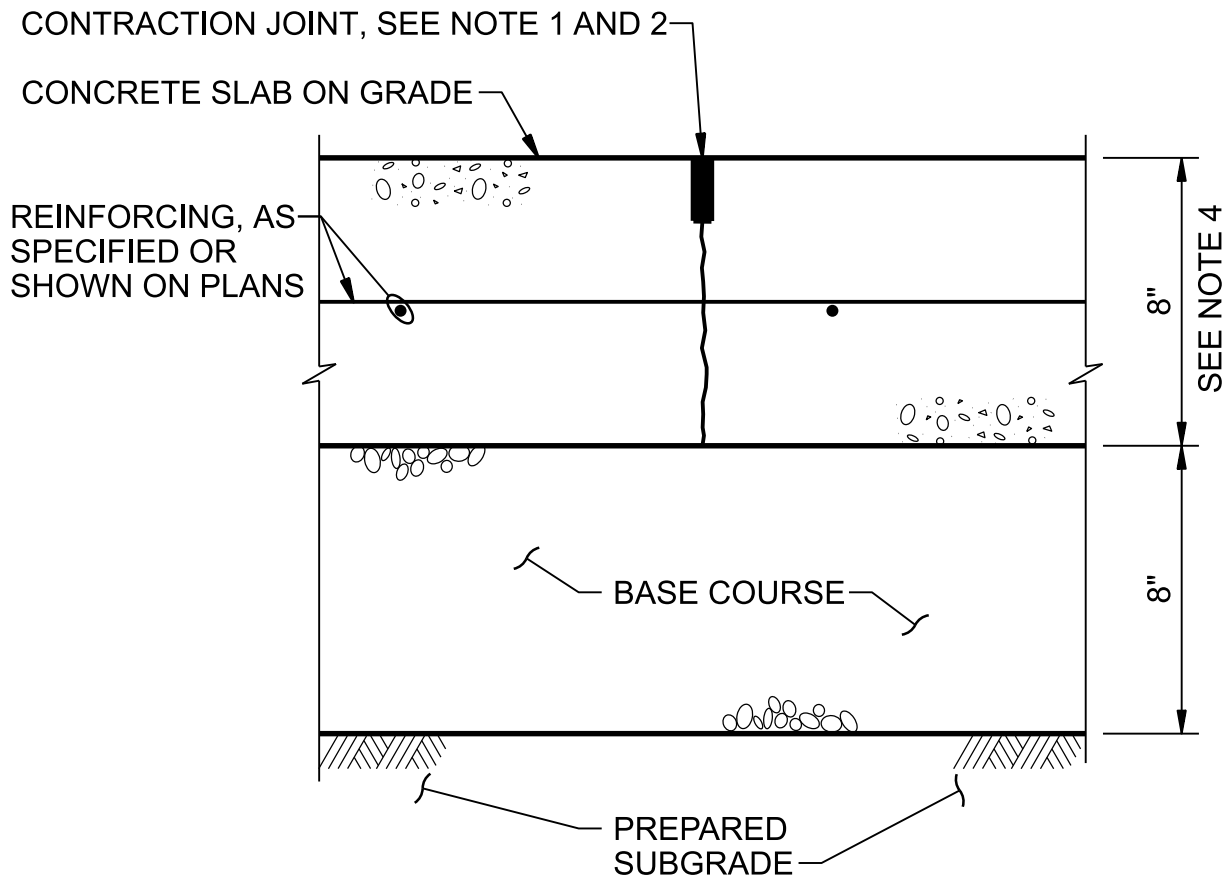
1. EXCEPTIONS TO THE REQUIREMENTS IN THIS DRAWING MUST BE APPROVED BY THE ENGINEER AND MUST COMPLY WITH THE "AMERICANS WITH DISABILITIES ACT" (ADA).
2. LANDINGS SHALL BE PLACED AT THE TOP OF EACH RAMP. LANDING SLOPES SHALL NOT EXCEED 50:1 IN ANY DIRECTION. THE SLOPE OF THE SURFACING AT THE BOTTOM OF THE RAMP SHALL NOT EXCEED 20:1 FOR A DISTANCE OF 2' (SEE TYPICAL SECTION ABOVE).
3. MINIMUM LANDING DIMENSIONS SHALL BE 4'x4'.
4. RAMP SURFACE SHALL BE TEXTURED WITH RAISED DIAMOND TEXTURE. TEXTURING SHALL BE DONE WITH AN EXPANDED METAL GRATE STAMPED INTO THE CONCRETE.
5. FOR CURBS, GUTTERS, AND SIDEWALKS, SEE SPECIFICATION SECTION 32 16 00.

SIDEWALK ACCESS RAMPS/MID-BLOCK

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3213-226



NOTES:

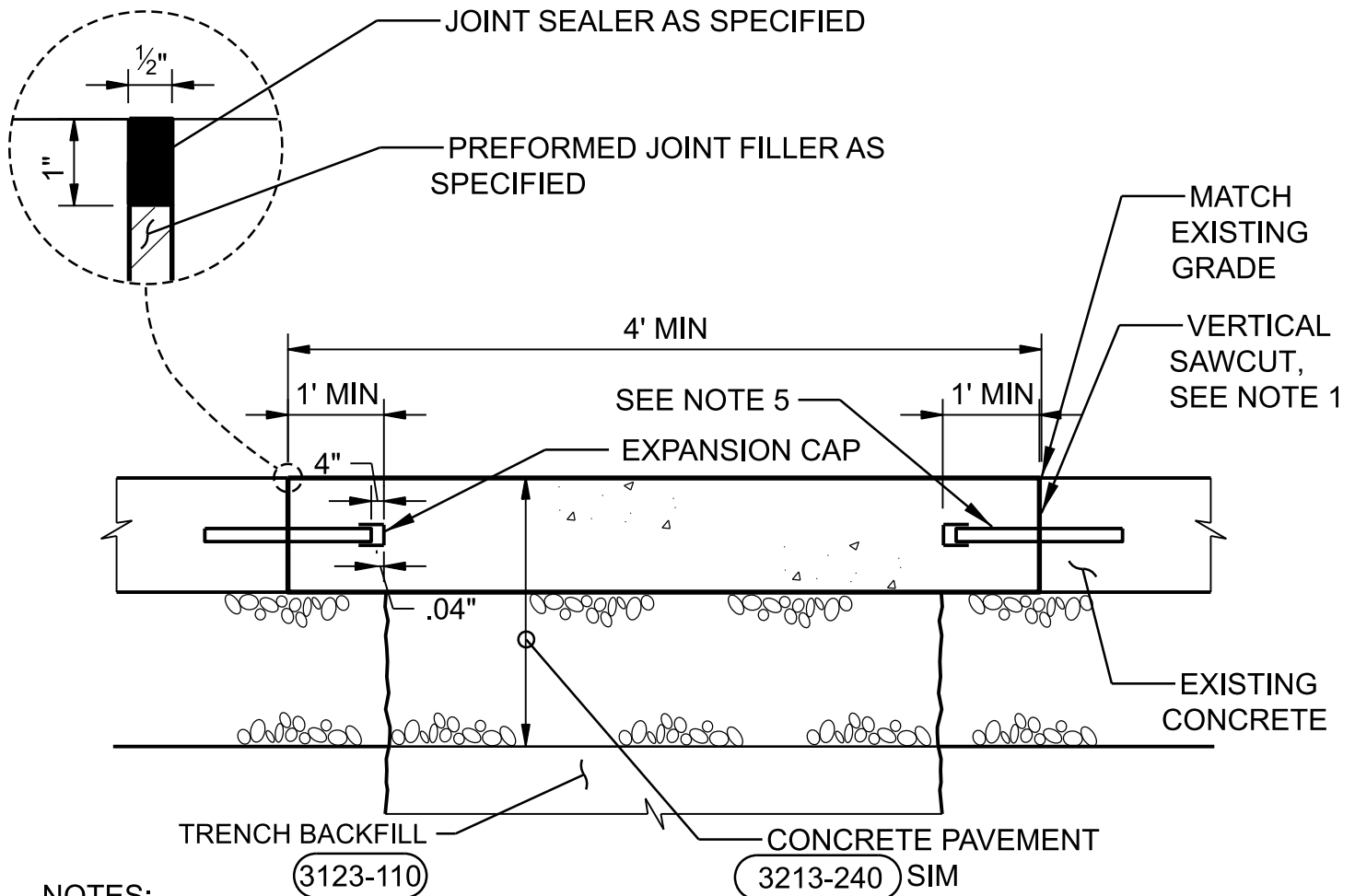
1. CONTRACTION JOINT SHALL BE MADE, CLEANED WITH COMPRESSED AIR, AND FILLED WITH SEALANT AS SPECIFIED.
2. CONCRETE JOINT SPACING: 15' MAX, 10' MIN
3. INSTALL 1/2" PREMOLDED JOINT FILLER FULL DEPTH WHERE CONCRETE PAVEMENT ABUTS CONCRETE CURB, BUILDING OR ANY RIGID STRUCTURE.
4. PROVIDE A 12" THICK BY 18" WIDE THICKENED EDGE AROUND PERIMETER OF SLAB. TRANSITION THICKENED EDGE TO NORMAL 8" THICKNESS IN 18".
5. CONTRACTOR SHALL SUBMIT A DETAILED JOINTING PLAN SHOWING LOCATIONS OF ALL EXPANSION, CONTRACTION, AND CONSTRUCTION JOINTS.
6. FOR CONCRETE MATERIAL, SEE SPECIFICATION SECTION 32 13 13.

CONCRETE PAVEMENT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3213-240



NOTES:

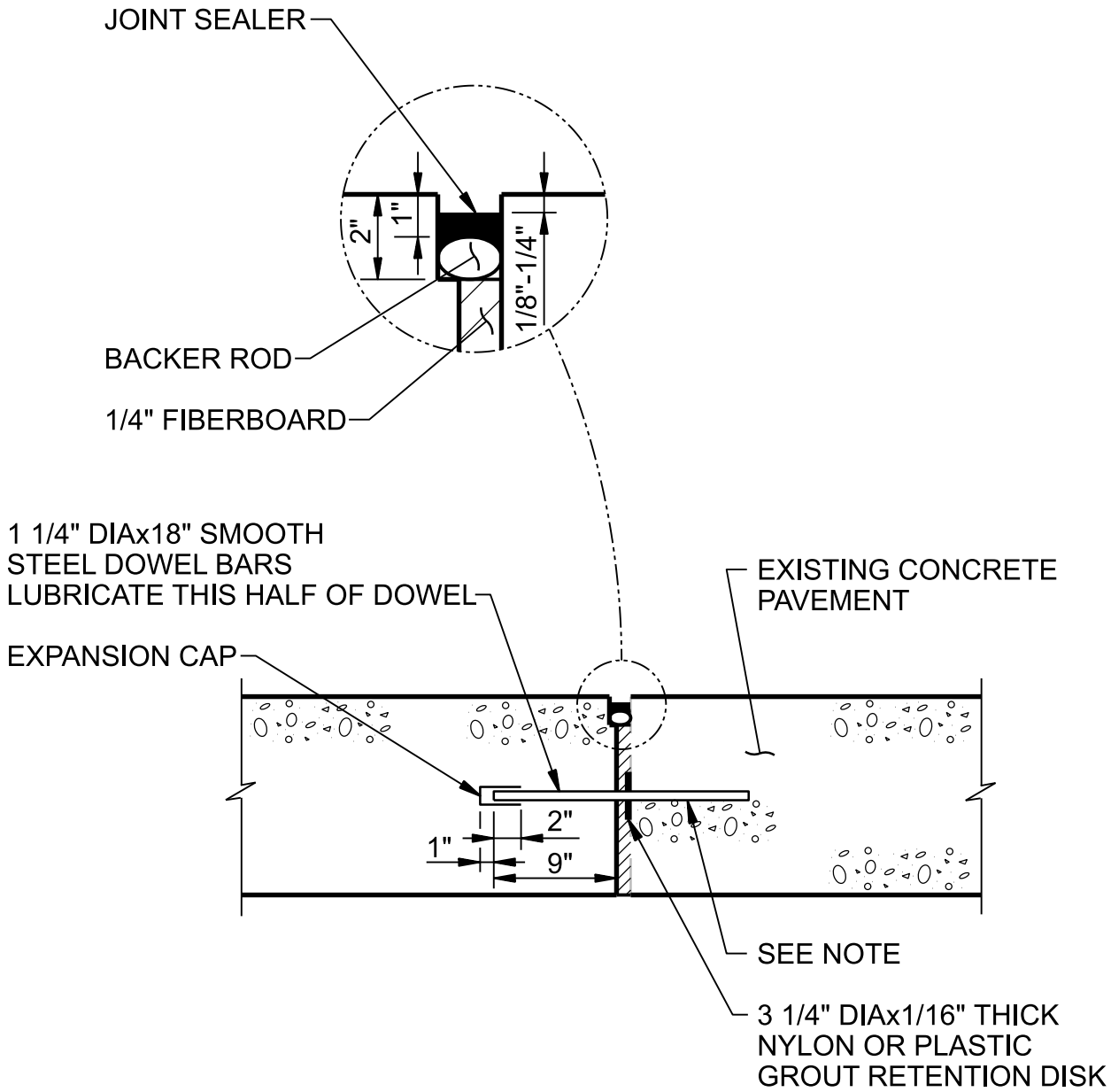
1. CUTS SHALL BE DONE WITH A CONCRETE SAW. INTERMITTENT PUNCHING WITH A POINTED JACK HAMMER SHALL NOT BE PERMITTED. IF LOCATION OF TRENCH SAW CUT IS WITHIN 2 FEET OF AN EXISTING JOINT OR EDGE OF CONCRETE, REPLACE ENTIRE CONCRETE TO THE JOINT OR EDGE.
2. SAWCUTS WILL BE MADE PARALLEL TO TRENCH.
3. CONSTRUCT JOINTS ACROSS NEW CONCRETE TO MATCH EXISTING JOINT TYPES AND LOCATIONS.
4. FOR ALL PRODUCTS NOTED IN THIS DETAIL, CONTRACTOR SHALL SUBMIT PRODUCT DATA TO ENGINEER FOR APPROVAL.
5. 1 1/2" DIAMETER X 18" SMOOTH STEEL DOWEL BARS, LUBRICATE THIS HALF OF DOWEL. GANG-DRILL HOLES FOR DOWELS AT 12" ON CENTER. CLEAN HOLES WITH COMPRESSED AIR AND PLACE NON-SHRINK GROUT AT BACK OF HOLE BEFORE DOWEL INSERTION. DOWELS SHALL CONFORM TO AASHTO M227/M227M, GRADE 70 AND SHALL BE SPACED AT 12" O.C ALONG JOINTS.

TYPICAL TRENCH REPAIR

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 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3213-244



NOTE:

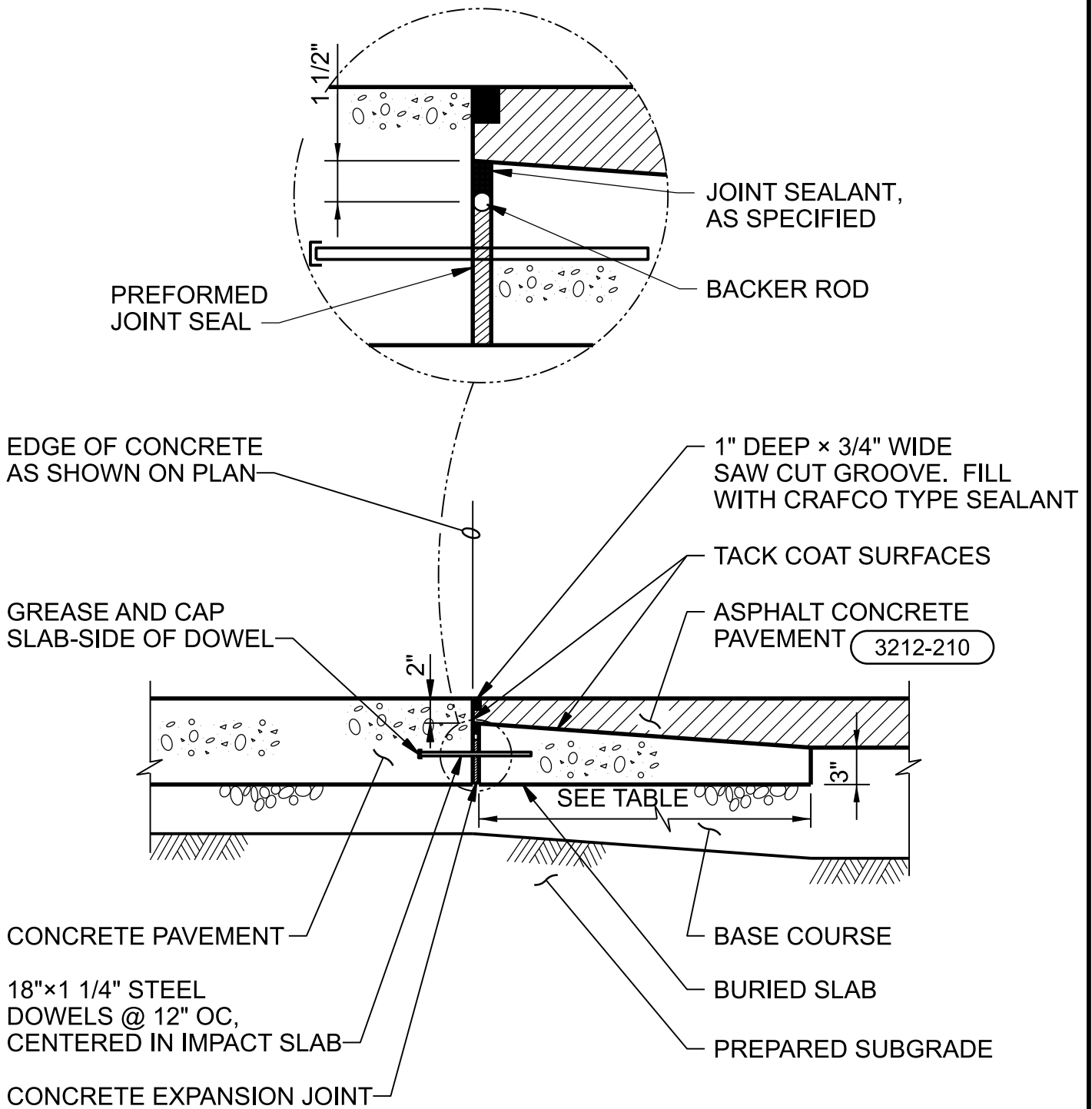
GANG-DRILL HOLES FOR DOWELS AT 12" CENTERS. CLEAN HOLES WITH COMPRESSED AIR AND PLACE NON-SHRINK GROUT AT BACK OF HOLE BEFORE DOWEL INSERTION.

CONCRETE TO EXISTING CONCRETE CONNECTION

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3213-245

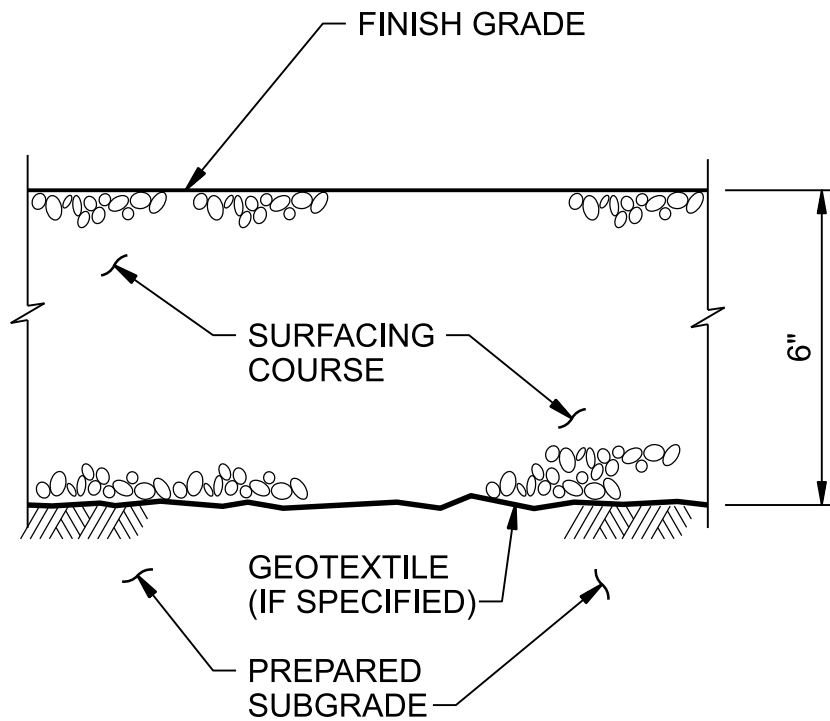


CONCRETE TO ASPHALT TRANSITION

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 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3213-250

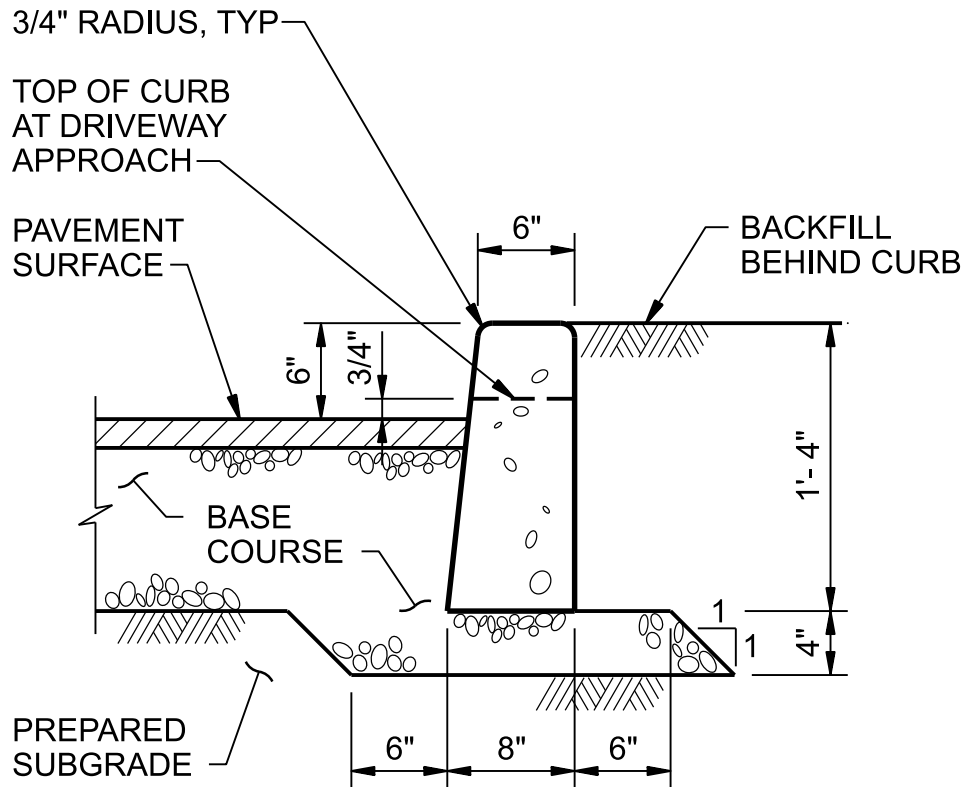


GRAVEL SURFACING

NTS

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BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3215-260



NOTE:

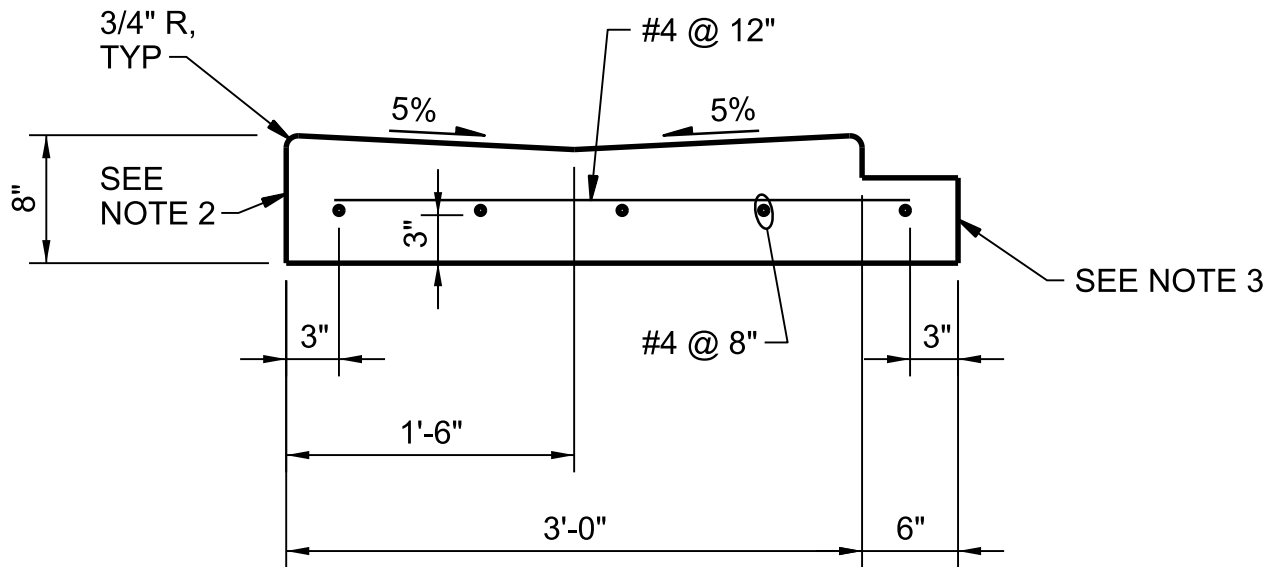
1. FOR CURBS, SEE SPECIFICATION SECTION 32 16 00.

CONCRETE CURB

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3216-315



NOTES:

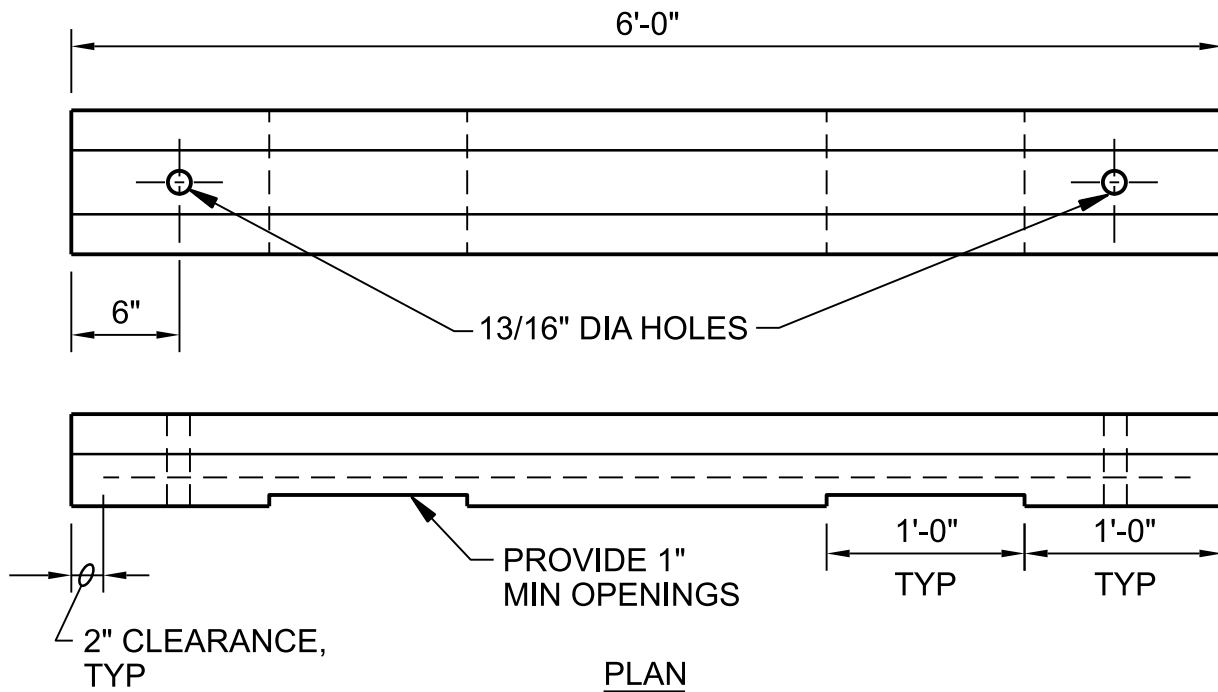
1. FOR CURBS, SEE SPECIFICATION SECTION 32 16 00.
2. PLACE PREMOLDED FILLER AGAINST VERTICAL FACE WHERE VALLEY GUTTER ABUTS CONCRETE.
3. CONSTRUCT 6" x 3" DEPRESSED BENCH WHERE VALLEY GUTTER ABUTS ASPHALT PAVEMENT.
4. WHEN BENCH IS NOT REQUIRED, CONSTRUCT 1" BATTER ON VERTICAL FACE.
5. PROVIDE 3" MINIMUM COVER ON ALL REINFORCING STEEL.

CONCRETE VALLEY GUTTER

NTS

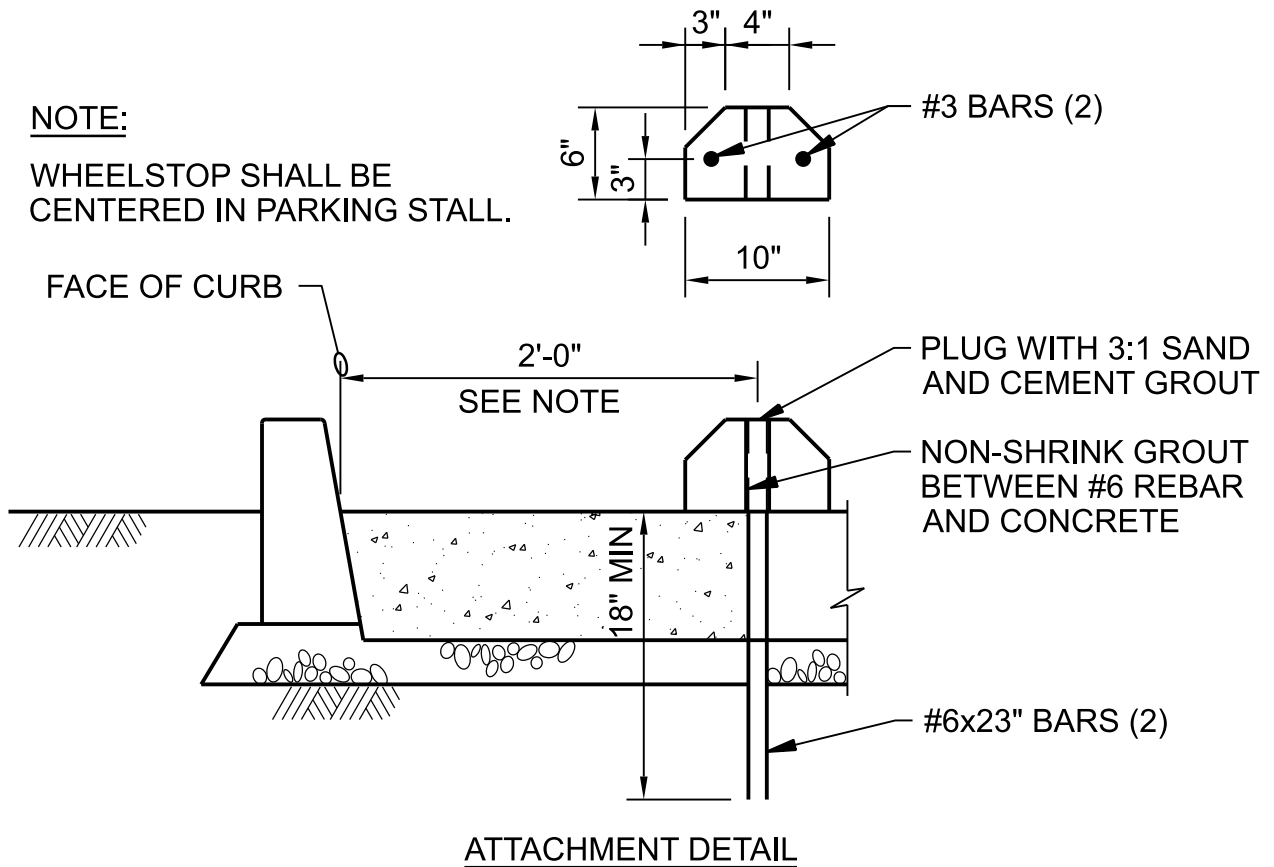
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3216-330



NOTE:

WHEELSTOP SHALL BE CENTERED IN PARKING STALL.

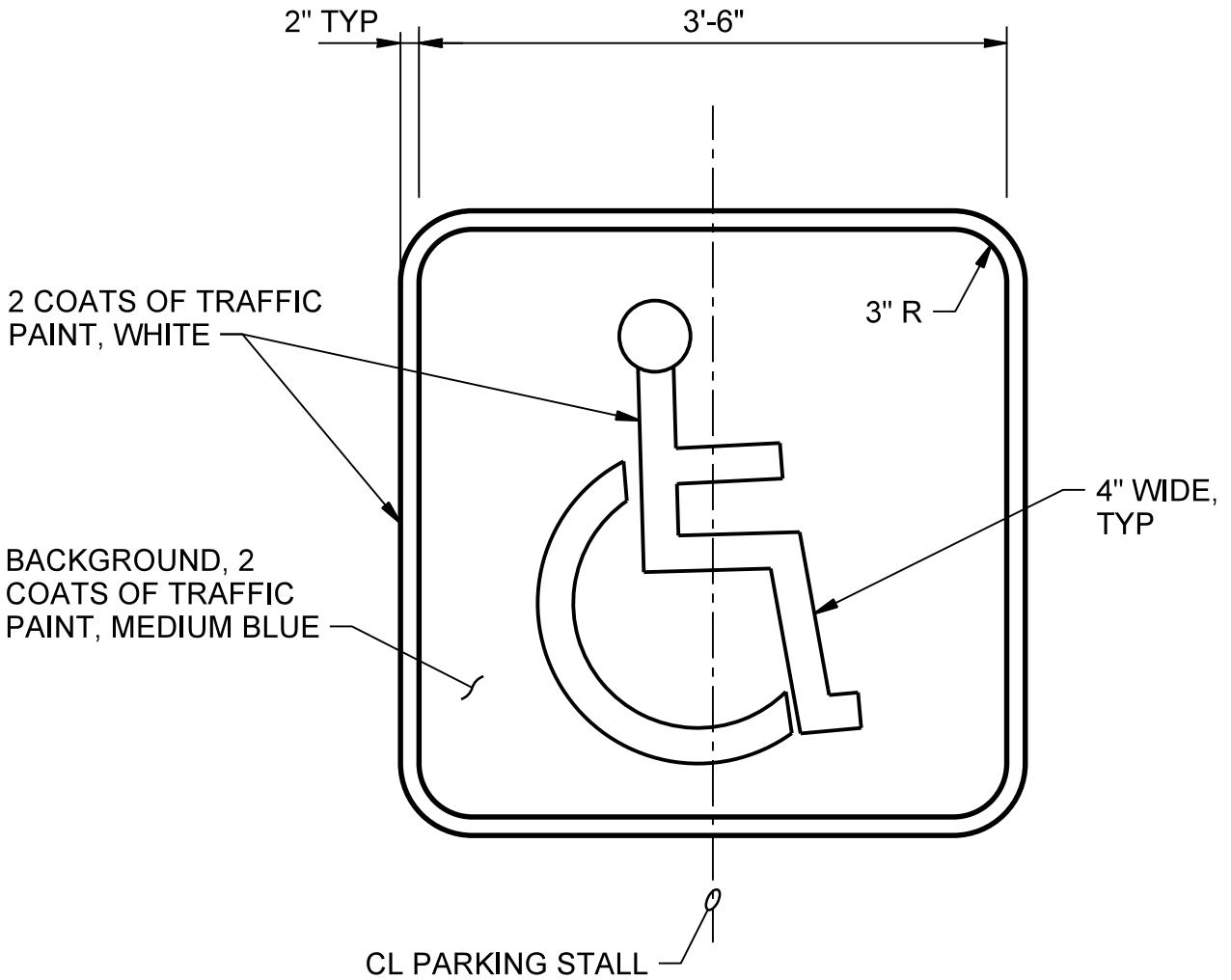


PRECAST CONCRETE WHEELSTOP

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3217-350

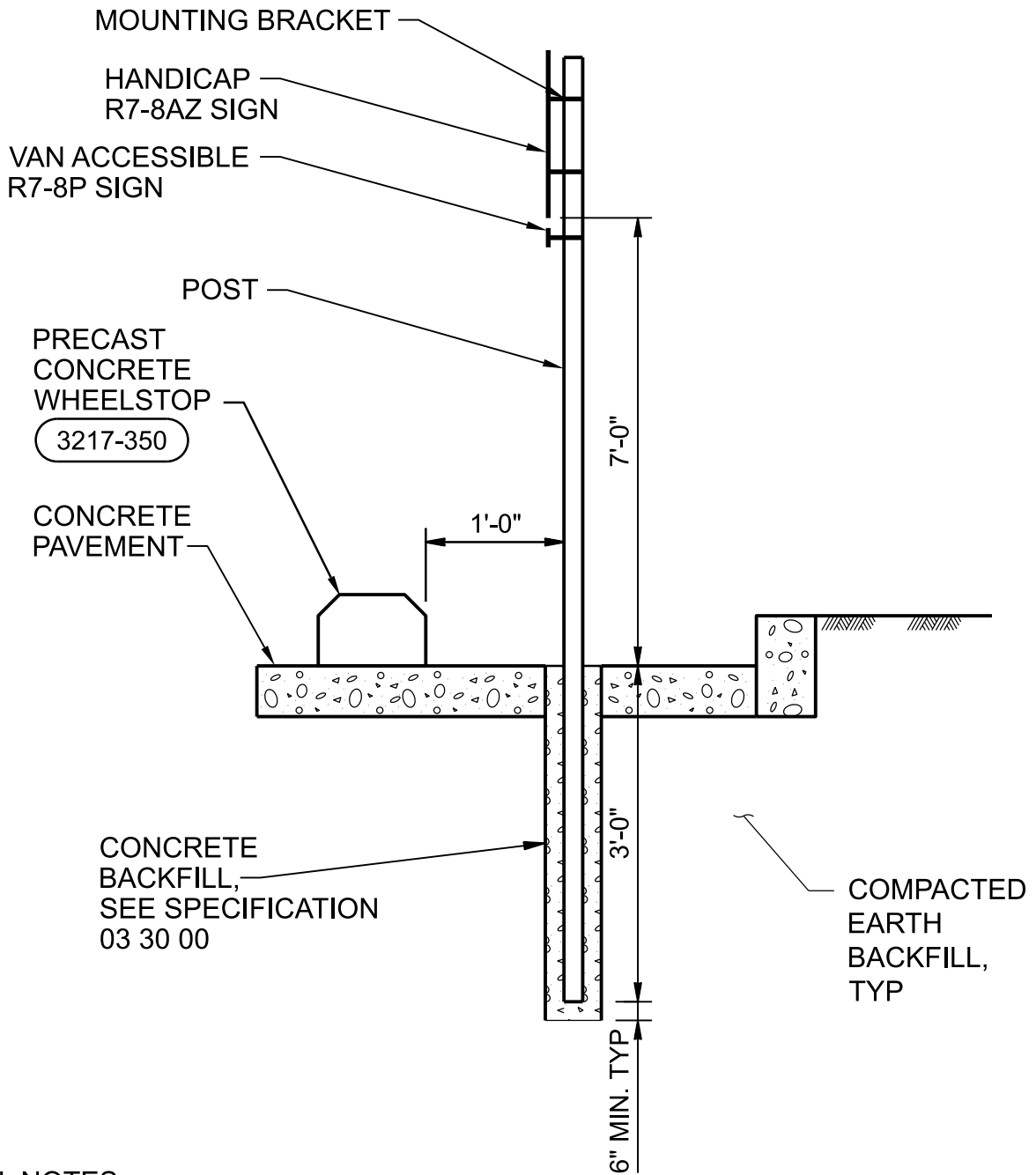


HANDICAPPED SYMBOL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3217-370



GENERAL NOTES:

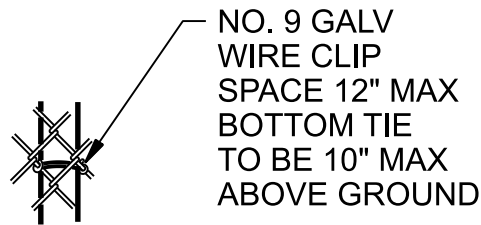
1. SIGN WORDING, LAYOUT, AND MATERIAL TO BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) CODES AND STANDARD SIGNS.
2. SIGN POST, FOUNDATION AND MOUNTING SYSTEM SHALL COMPLY WITH MUTCD AND OKLAHOMA DEPARTMENT OF TRANSPORTATION REQUIREMENTS.

HANDICAP SIGN AND MOUNTING

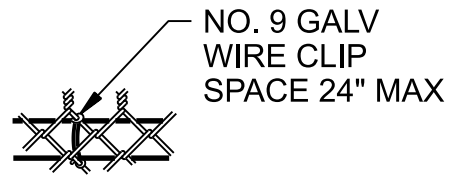
NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

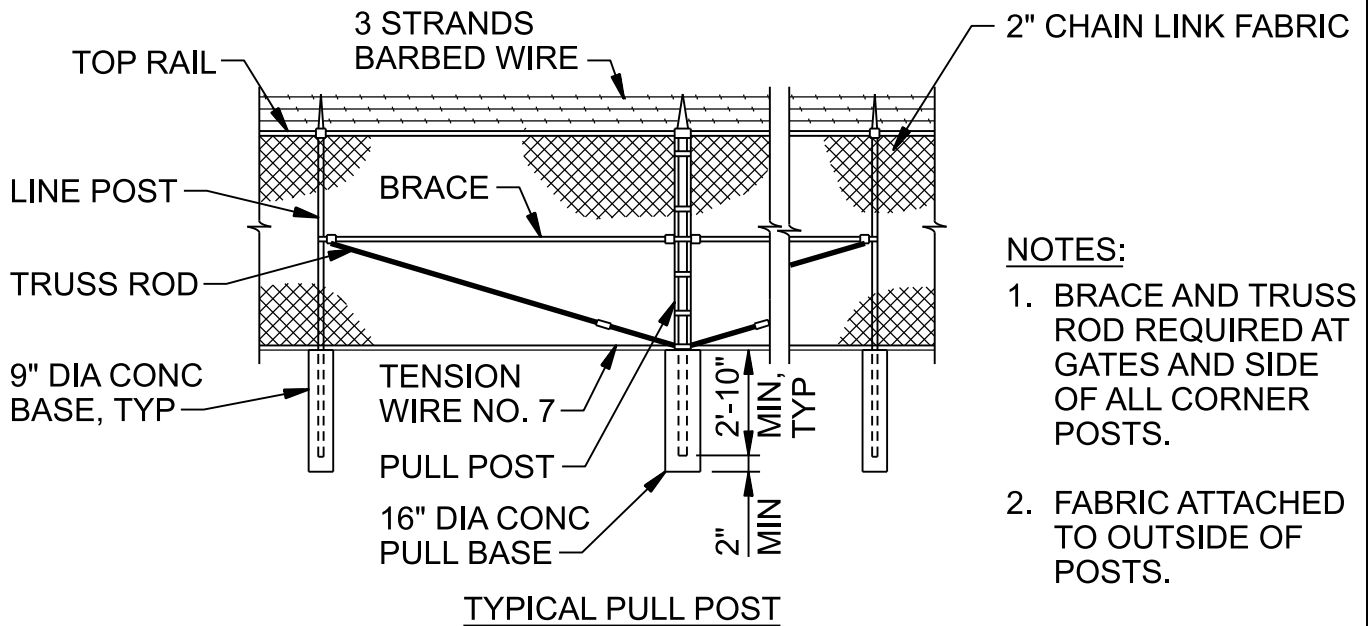
3230-400



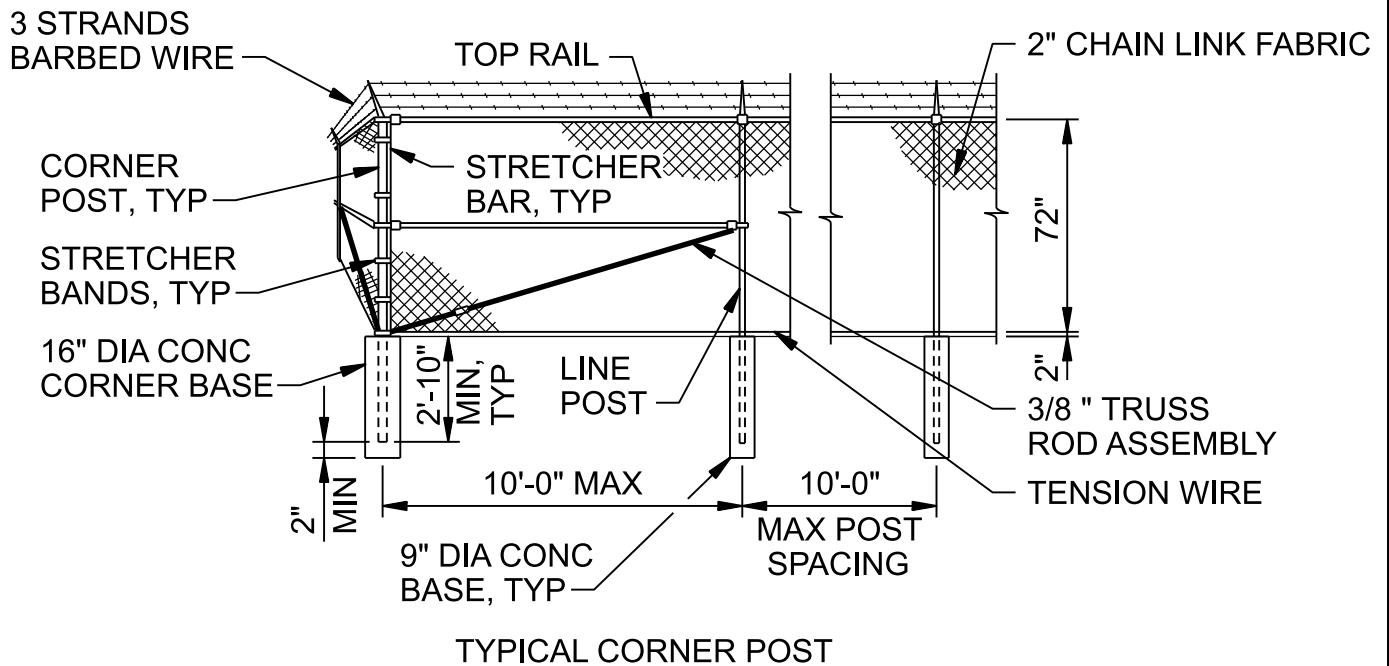
LINE POST CONNECTION



TOP RAIL CONNECTION



- NOTES:
1. BRACE AND TRUSS ROD REQUIRED AT GATES AND SIDE OF ALL CORNER POSTS.
 2. FABRIC ATTACHED TO OUTSIDE OF POSTS.



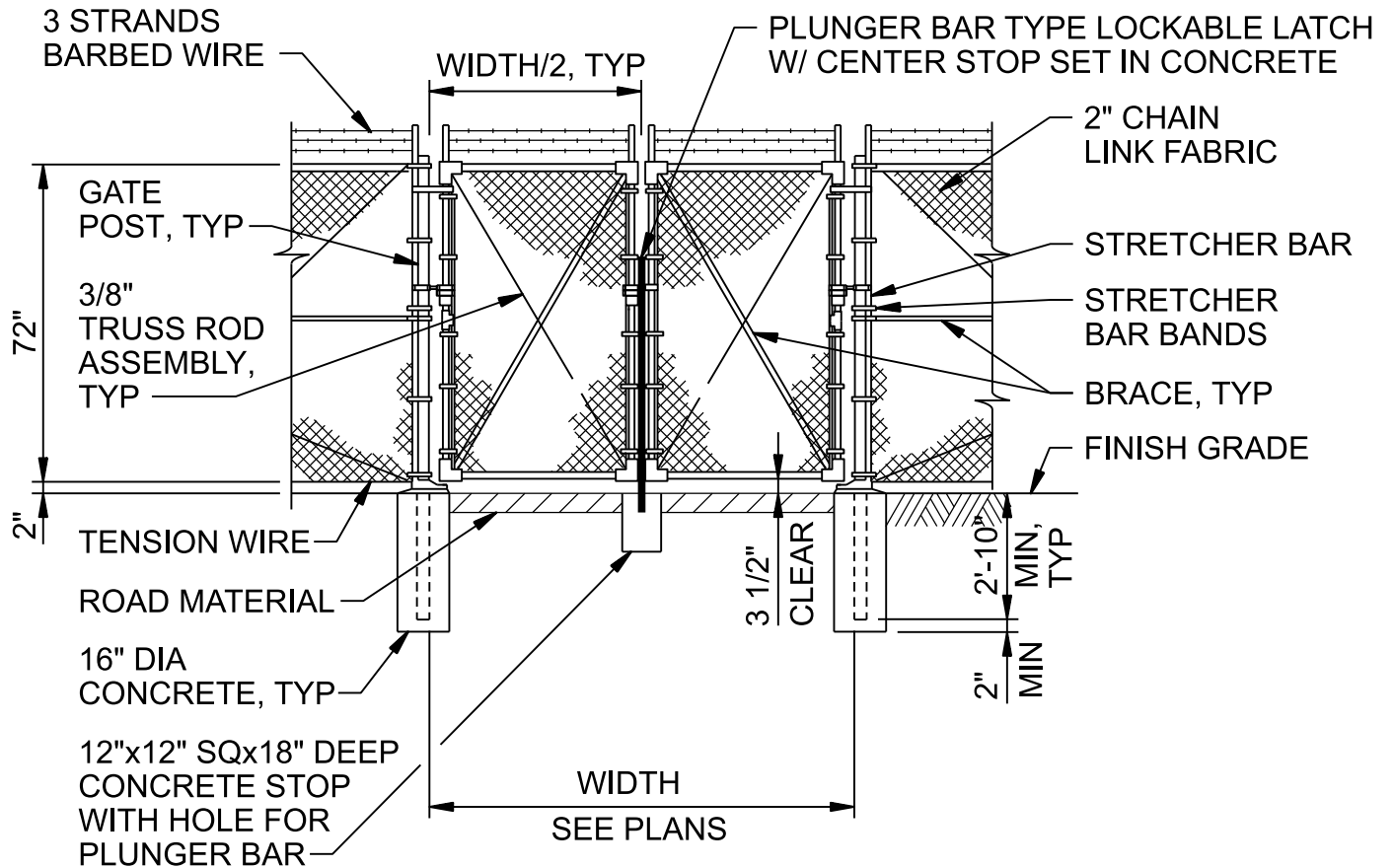
TYPICAL CORNER POST

CHAIN LINK FENCE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3231-410



NOTES:

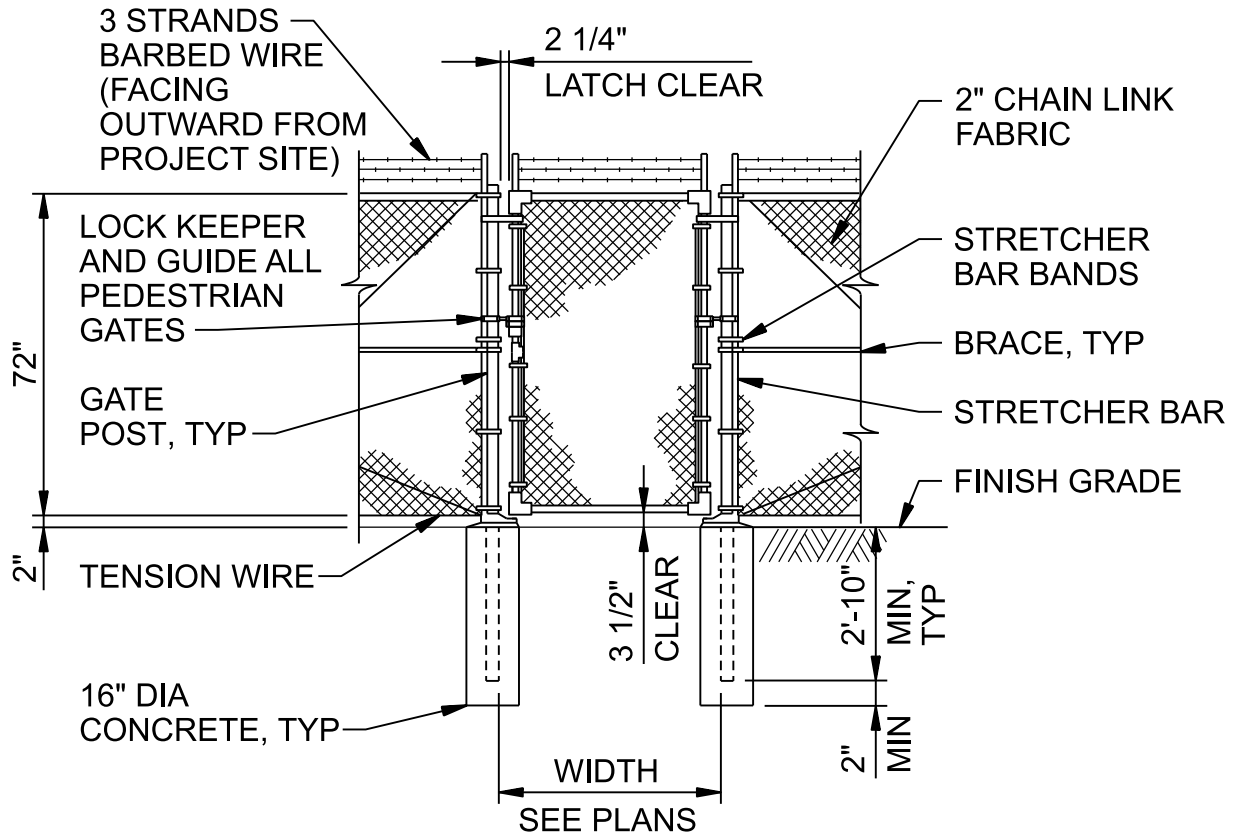
1. DOUBLE SWING GATES ALONG E 151ST STREET SOUTH SHALL BE MANUALLY OPERATED UNLESS NOTED OTHERWISE ON PLANS.

DOUBLE SWING GATE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3231-415

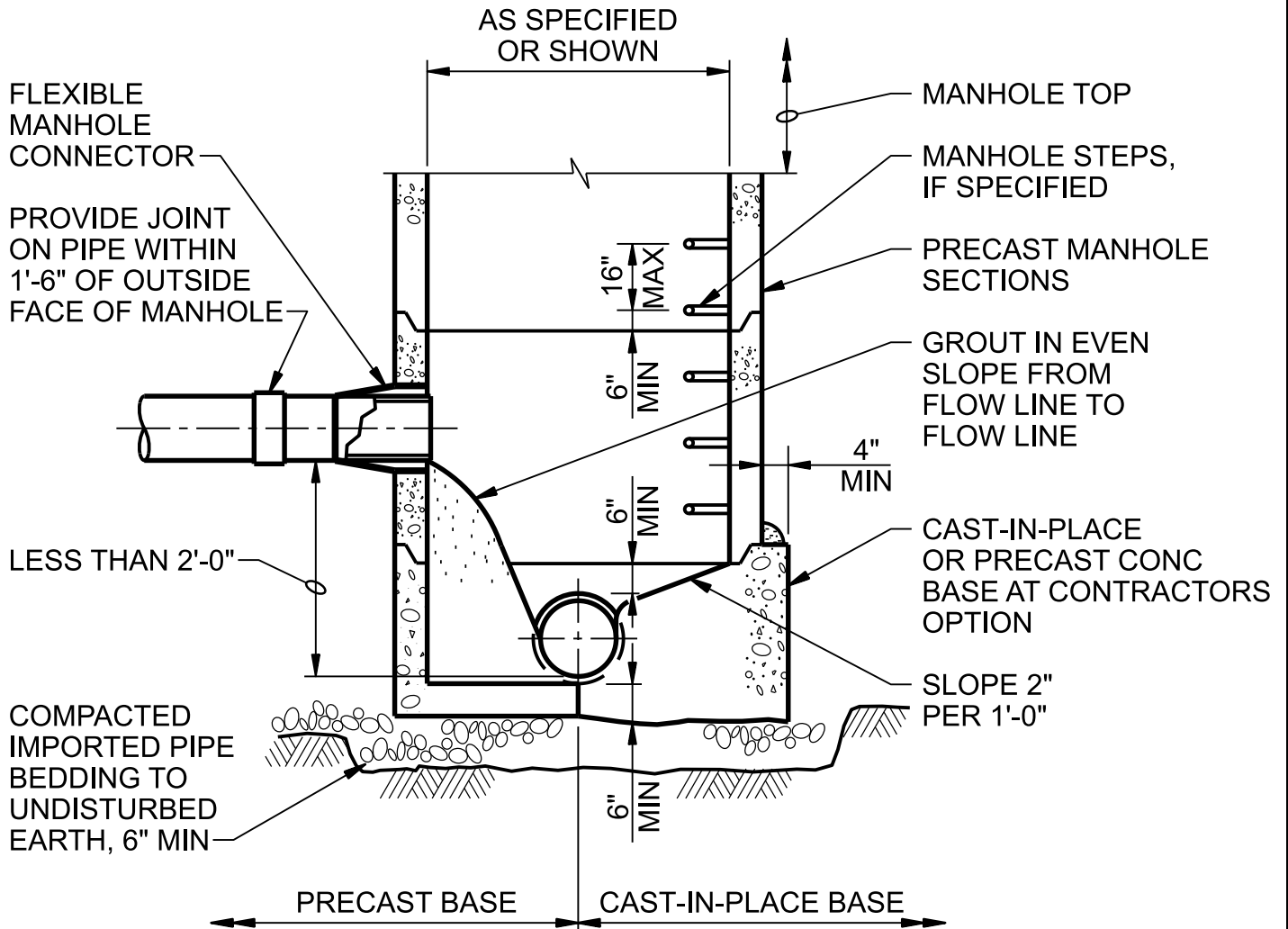


PEDESTRIAN GATE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3231-420



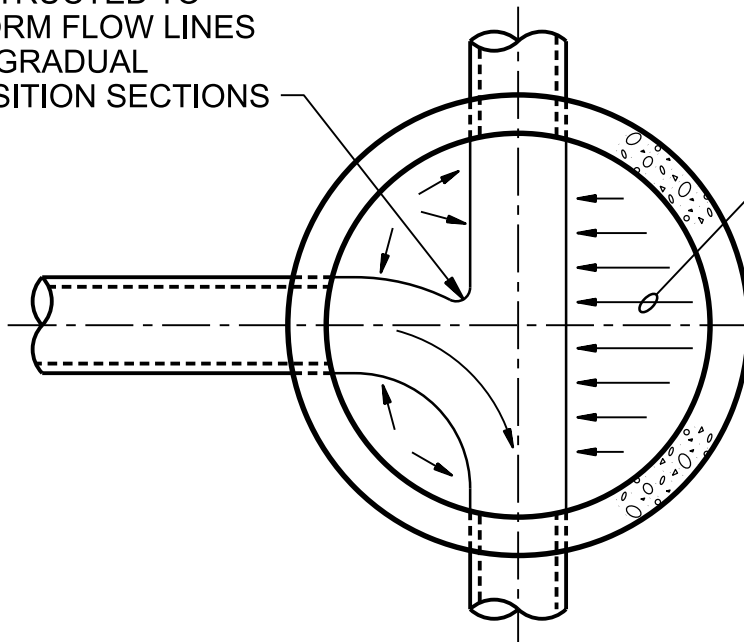
MANHOLE BASE SECTION - 6" TO 24" PIPE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3305-710

INVERT OF CHANNEL
CONSTRUCTED TO
UNIFORM FLOW LINES
WITH GRADUAL
TRANSITION SECTIONS



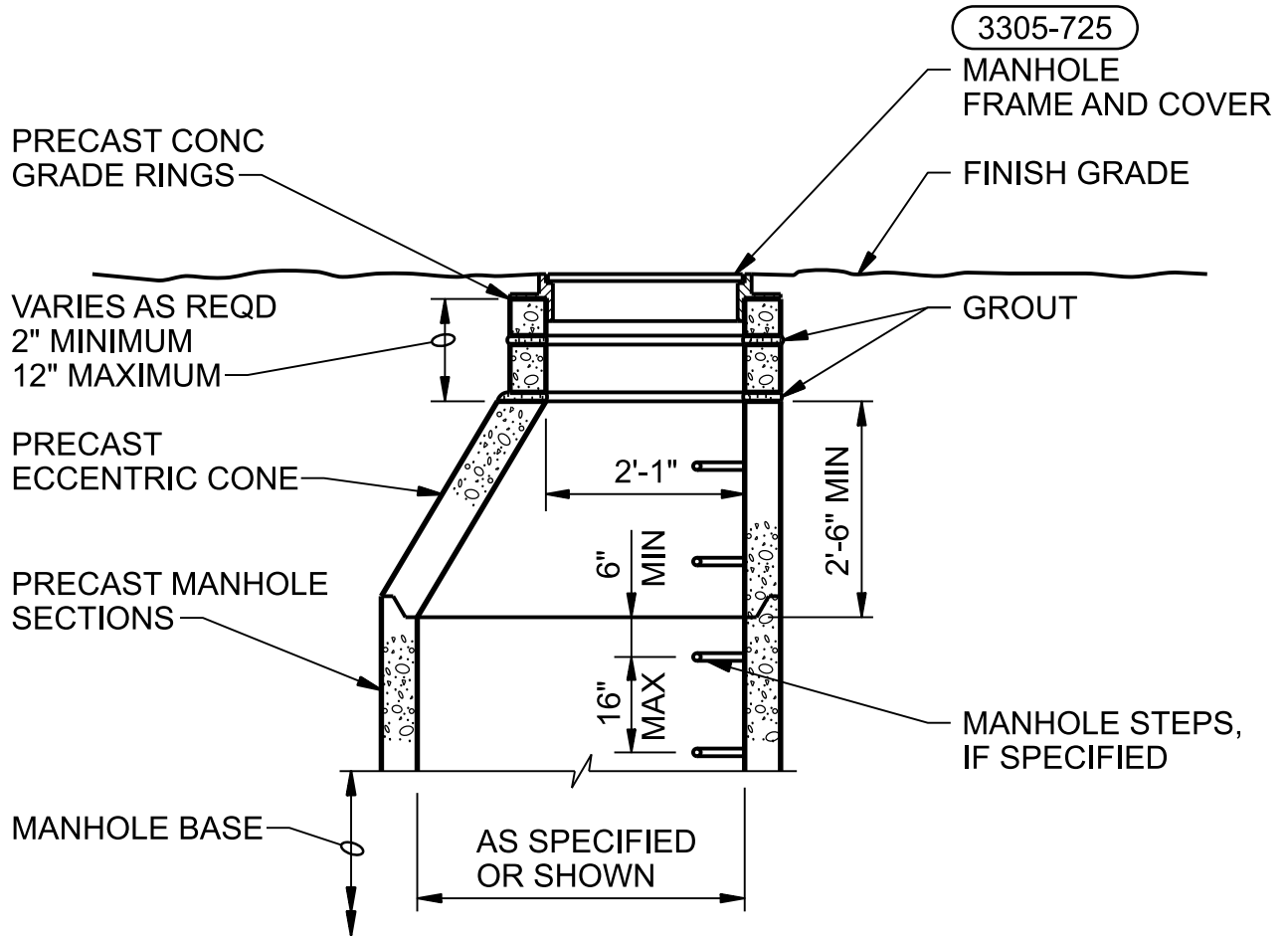
SLOPE 2"
PER FOOT, TYP

MANHOLE CHANNEL INTERSECTION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3305-713

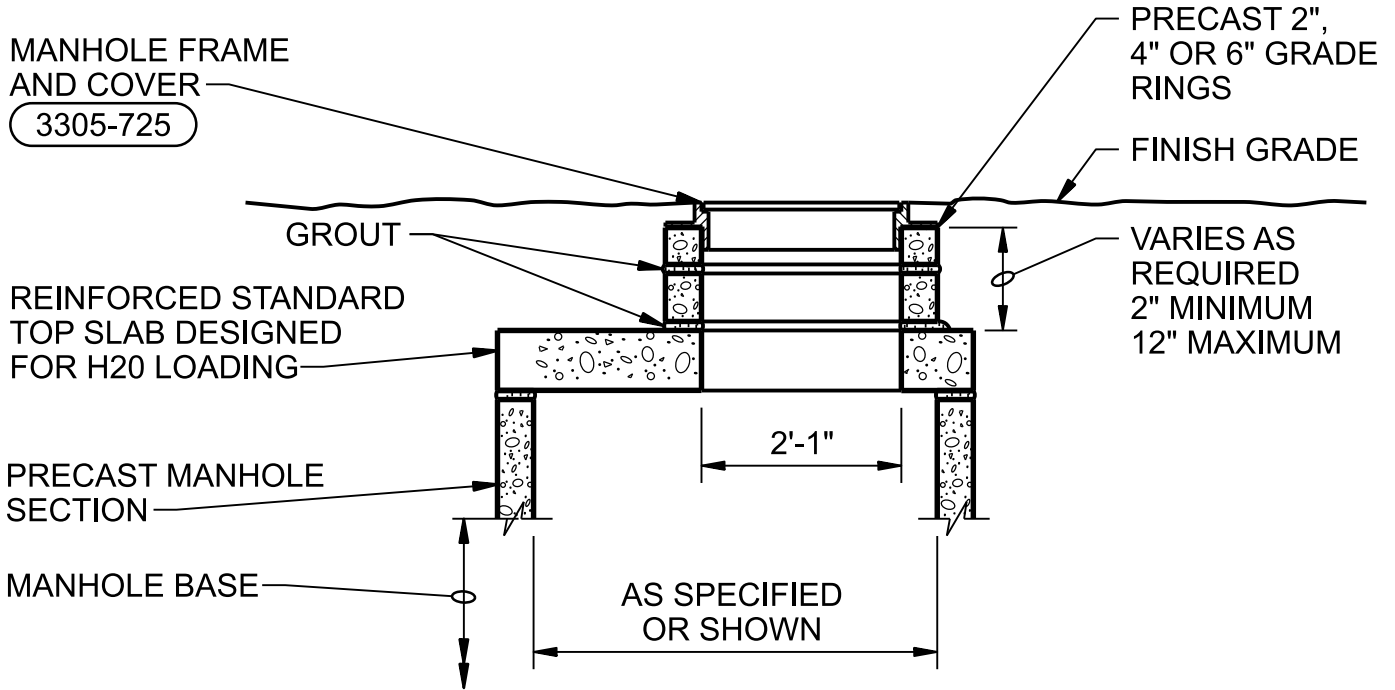


ECCENTRIC MANHOLE TOP SECTION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3305-720

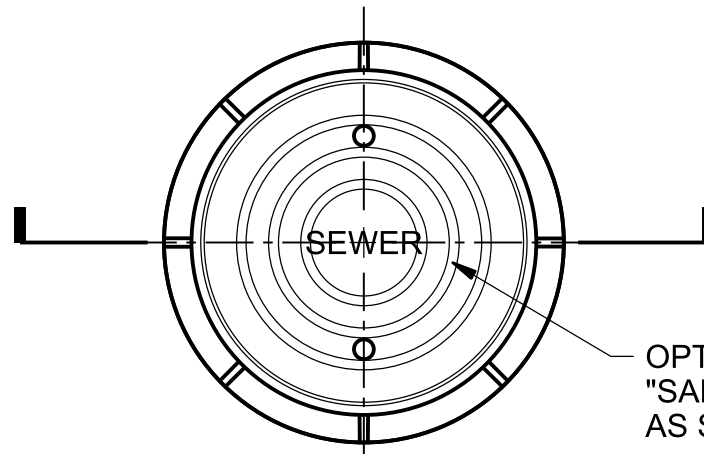


FLAT TOP MANHOLE

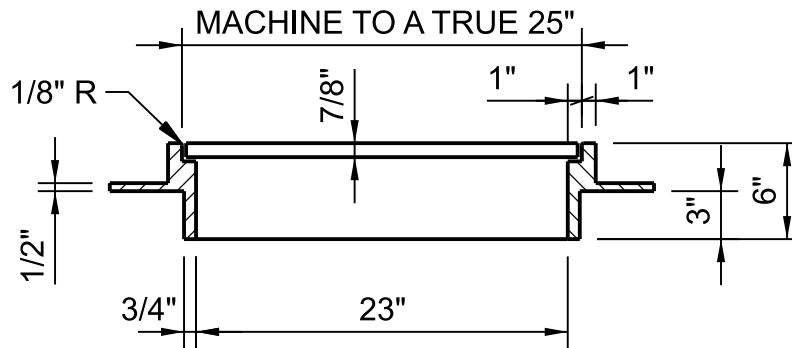
NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3305-722



SOLID COVER



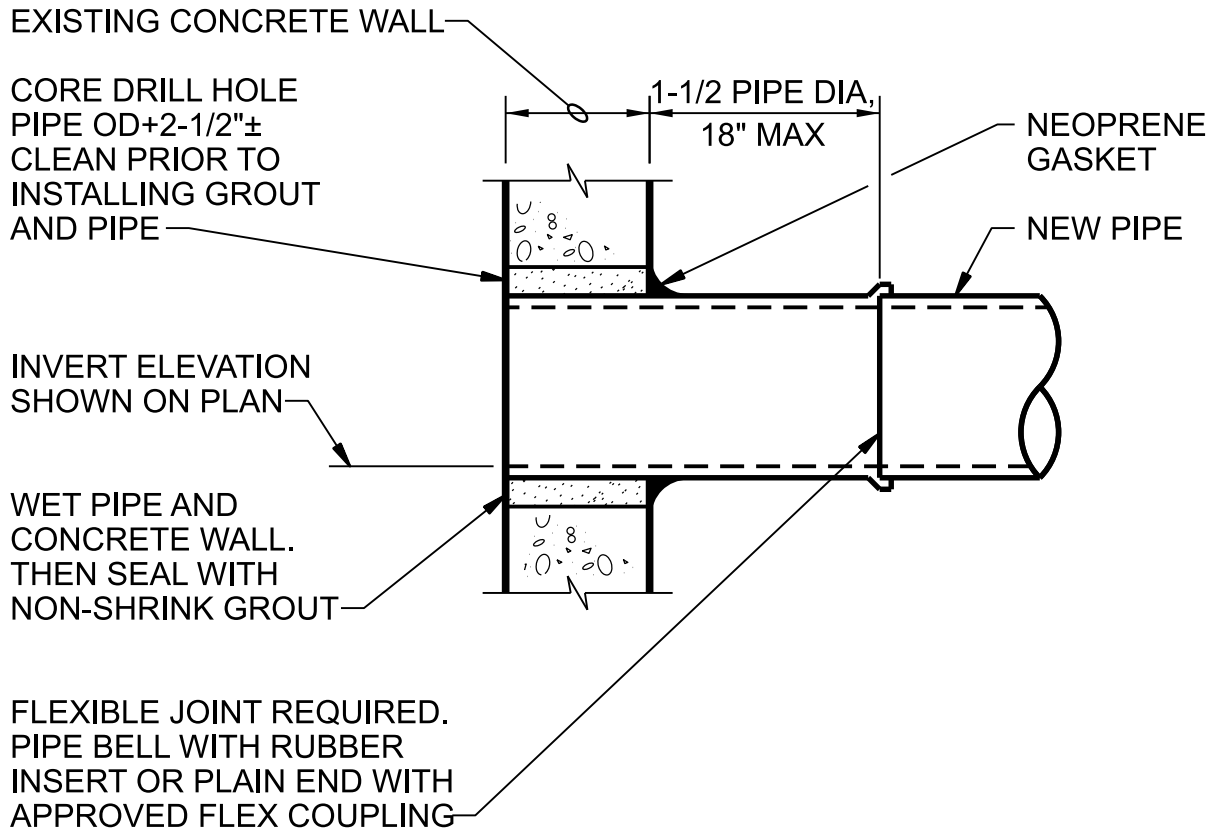
SECTION

MANHOLE FRAME AND COVER

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3305-725

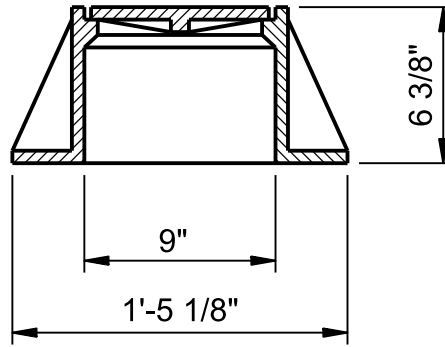


PIPE CONNECTIONS

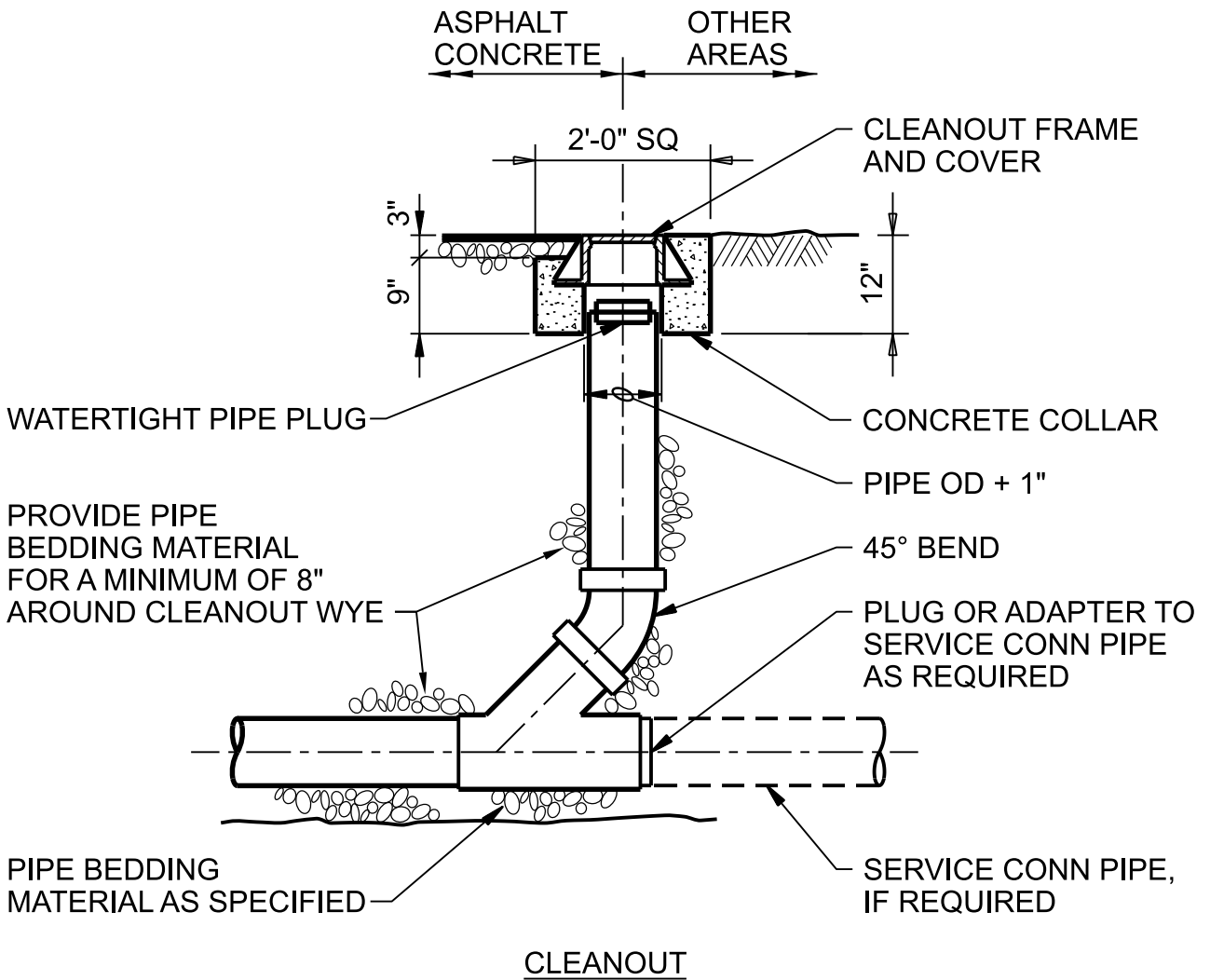
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3305-730



CLEANOUT FRAME AND COVER



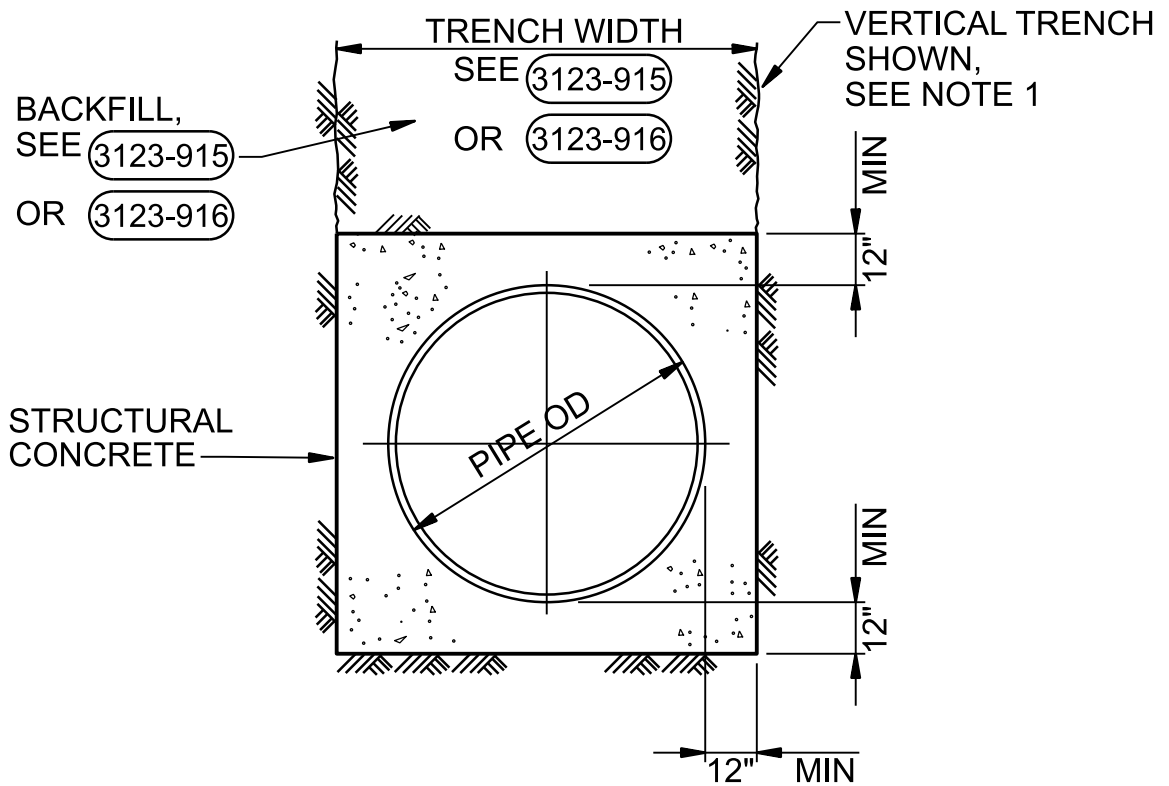
CLEANOUT

EXTERIOR CLEANOUT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3305-740



NOTES:

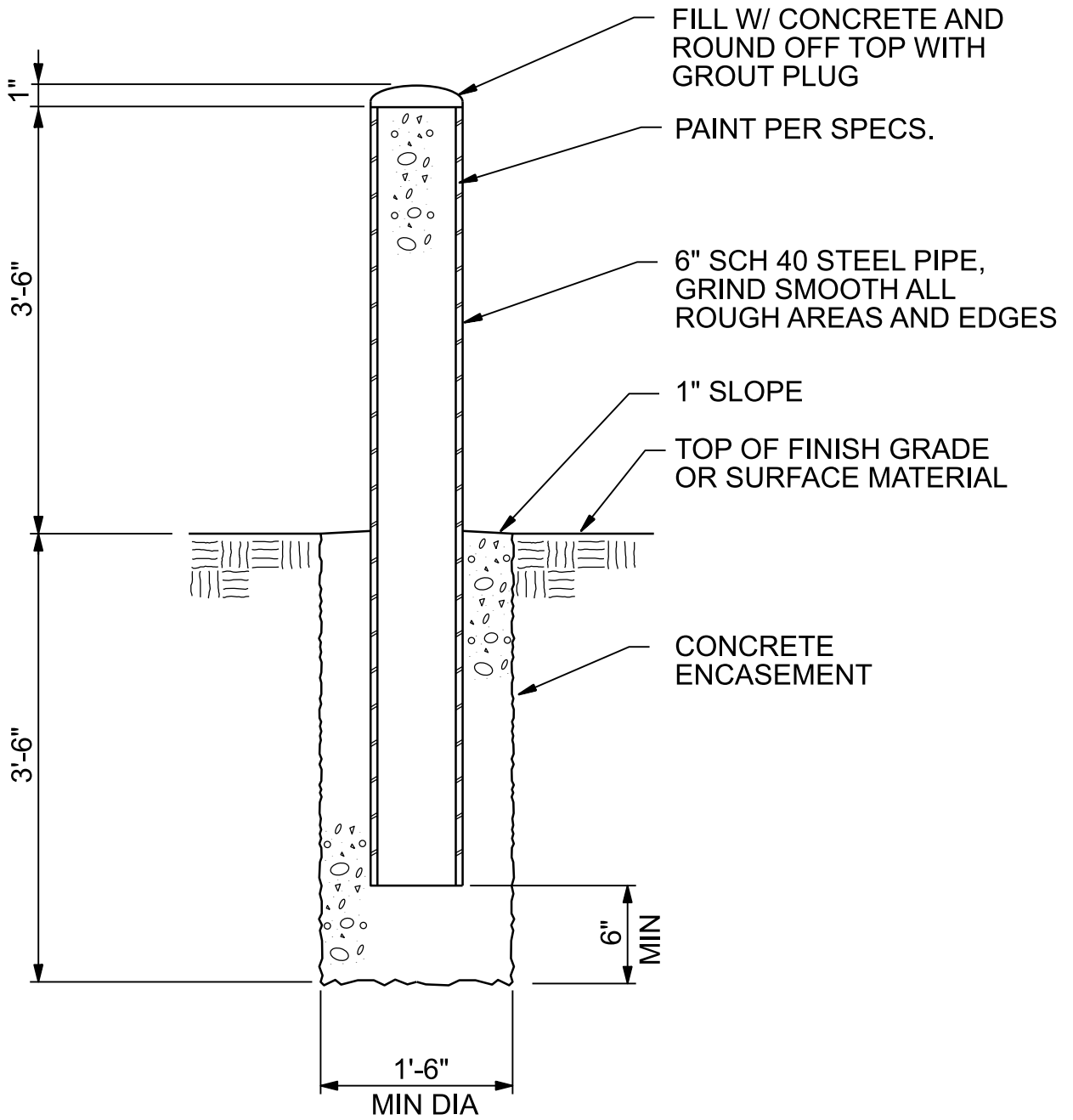
1. VERTICAL TRENCH WALLS SHOWN. CONTRACTOR SHALL SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION AND SAFETY IN ACCORDANCE WITH CURRENT OSHA REQUIREMENTS.
2. PEA GRAVEL BAGS, SANDBAGS, OR PRECAST SHAPED CONCRETE BLOCKS (12" MIN WIDTH) DESIGNED TO HANDLE THE INTENDED LOADS, MAY BE USED TO SUPPORT PIPE WHEN PLACING CONCRETE.

REINFORCED CONCRETE ENCASEMENT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3305-950

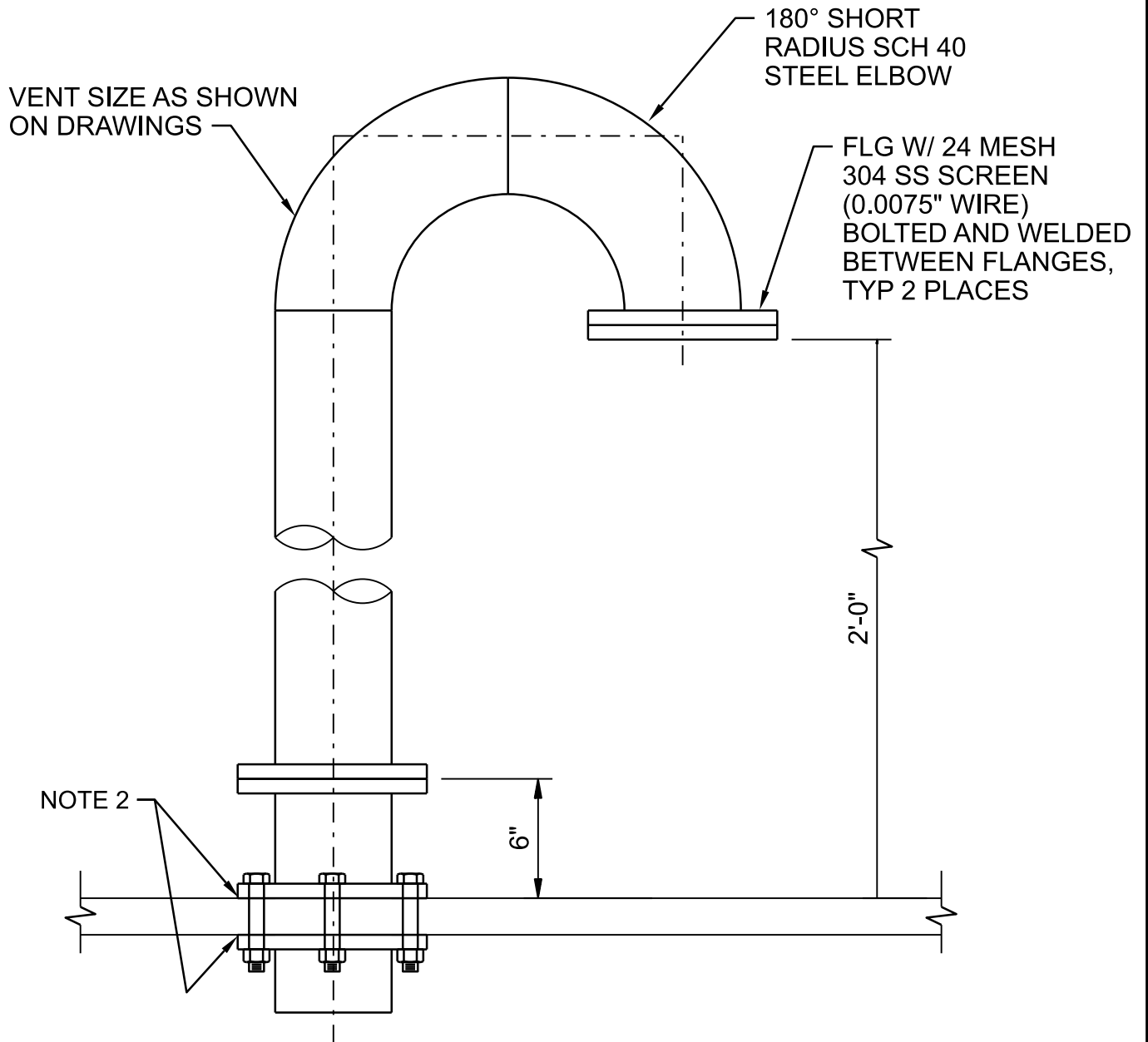


PERMANENT GUARD POST

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3305-954



NOTE:

1. COAT EXPOSED PIPE IN ACCORDANCE WITH SECTION 09 90 00, PAINTING SYSTEM NO. 5.
2. CAULK IN PLACE WITH FIBERGLASS CAULKING TO SECURE IN PLACE.

EXHAUST VENT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3305-981

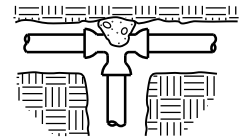
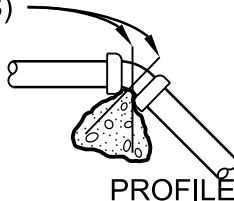
BEARING AREA OF THRUST BLOCKS IN SQ. FT. (HORIZONTAL BENDS)							
FITTING SIZE	TEE, WYE, PLUG, OR CAP	90° BEND PLUGGED CROSS	TEE PLUGGED RUN		BEND ANGLE		
			A ₁	A ₂	45°	22 1/2°	11 1/4°
4	1.0	1.4	1.9	1.4	1.0	-	-
6	2.1	3.0	4.3	3.0	1.6	1.0	-
8	3.8	5.3	7.6	5.4	2.9	1.5	1.0
10	5.9	8.4	11.8	8.4	4.6	2.4	1.2
12	8.5	12.0	17.0	12.0	6.6	3.4	1.7
14	11.5	16.3	23.0	16.3	8.9	4.6	2.3
16	15.0	21.3	30.0	21.3	11.6	6.0	3.0
18	19.0	27.0	38.0	27.0	14.6	7.6	3.8
20	23.5	33.3	47.0	33.3	18.1	9.4	4.7
24	34.0	48.0	68.0	48.0	26.2	13.6	6.8

VOLUME OF THRUST BLOCK IN CUBIC YARDS
(VERTICAL BENDS)

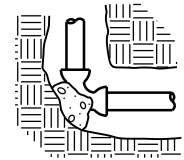
FITTING SIZE	BEND ANGLE		
	45°	22 1/2°	11 1/4°
4	1.1	0.4	0.2
6	2.7	1.0	0.4
8	4.0	1.5	0.6
10	6.0	2.3	0.9
12	8.5	3.2	1.3
14	11.5	4.3	1.8
16	14.8	5.6	2.3

FITTING SIZE	ROD SIZE	EMBEDMENT
12" AND LESS	#6	30"
14"-16"	#8	36"

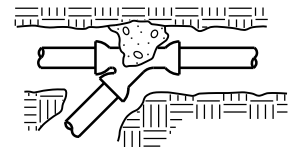
GALVANIZED RODS OVER FITTING AND EMBEDDED IN CONCRETE (SEE TABLE FOR SIZES)



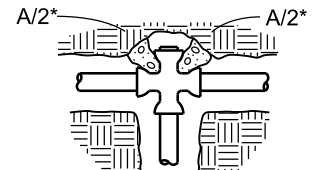
TEE



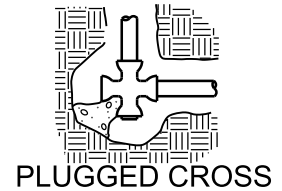
BEND



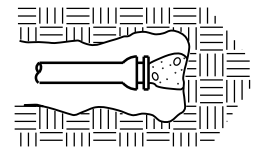
WYE



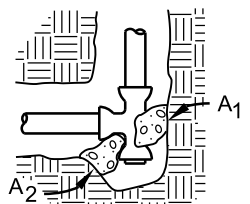
PLUGGED CROSS*



PLUGGED CROSS



1/4" PLYWOOD OVER FACE OF BOLTS



PLUGGED TEE

* EACH AREA (A/2) IS 1/2 OF TABULATED TOTAL AREA

THRUST BLOCK NOTES AND DETAILS

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

SHEET 1 OF 2

3311-765A

THRUST BLOCK NOTES

1. KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES.
2. CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED EARTH.
3. REQUIRED VOLUMES OR BEARING AREAS AT FITTINGS SHALL BE AS INDICATED BELOW, ADJUSTED, IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) AND ALLOWABLE SOIL BEARING STRESS(ES) STATED IN THE SPECIFICATIONS.
4. THRUST BLOCK VOLUMES FOR VERTICAL BENDS HAVING UPWARD RESULTANT THRUSTS ARE BASED ON TEST PRESSURE OF 150 PSIG AND THE WEIGHT OF CONCRETE = 4050 LBS/CU YD. TO COMPUTE VOLUMES FOR DIFFERENT TEST PRESSURES, USE THE FOLLOWING EQUATION: $VOLUME = (TEST\ PRESS./150) \times (TABLE\ VALUE)$.
5. BEARING AREAS FOR HORIZONTAL BEND THRUST BLOCKS ARE BASED ON TEST PRESSURE OF 150 PSIG AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 LBS/SQ FT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, MULTIPLY TABLE VALUES BY THE FACTOR $(13.33)(P'/S'_b)$, WHERE:
 - P' = ACTUAL TEST PRESSURE, PSIG
 - S'_b = ACTUAL SOIL BEARING PRESSURE, PSF.
6. THRUST BLOCKS FOR VERTICAL BENDS HAVING DOWNWARD RESULTANT THRUSTS SHALL BE THE SAME AS FOR HORIZONTAL BENDS.
7. BEARING AREAS, VOLUMES, AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER THIS STANDARD
8. BEARING AREA OF THRUST BLOCK SHALL NOT BE LESS THAN 1.0 SQ FT.
9. VERTICAL BENDS THAT REQUIRE A THRUST BLOCK VOLUME EXCEEDING 5 CUBIC YARDS REQUIRE SPECIAL BLOCKING DETAILS. SEE PLANS FOR VOLUMES SHOWN TO LEFT OF SOLID LINE IN TABLE.
10. TEST PRESSURES ARE SHOWN IN THE PIPING SCHEDULE.
11. ALLOWABLE SOIL BEARING STRESS IS 2000 LBS/SQ FT.
12. REFER TO SEPARATE DETAILS FOR THRUST WALLS.
13. REFER TO GENERAL STRUCTURAL NOTES ON DRAWINGS.

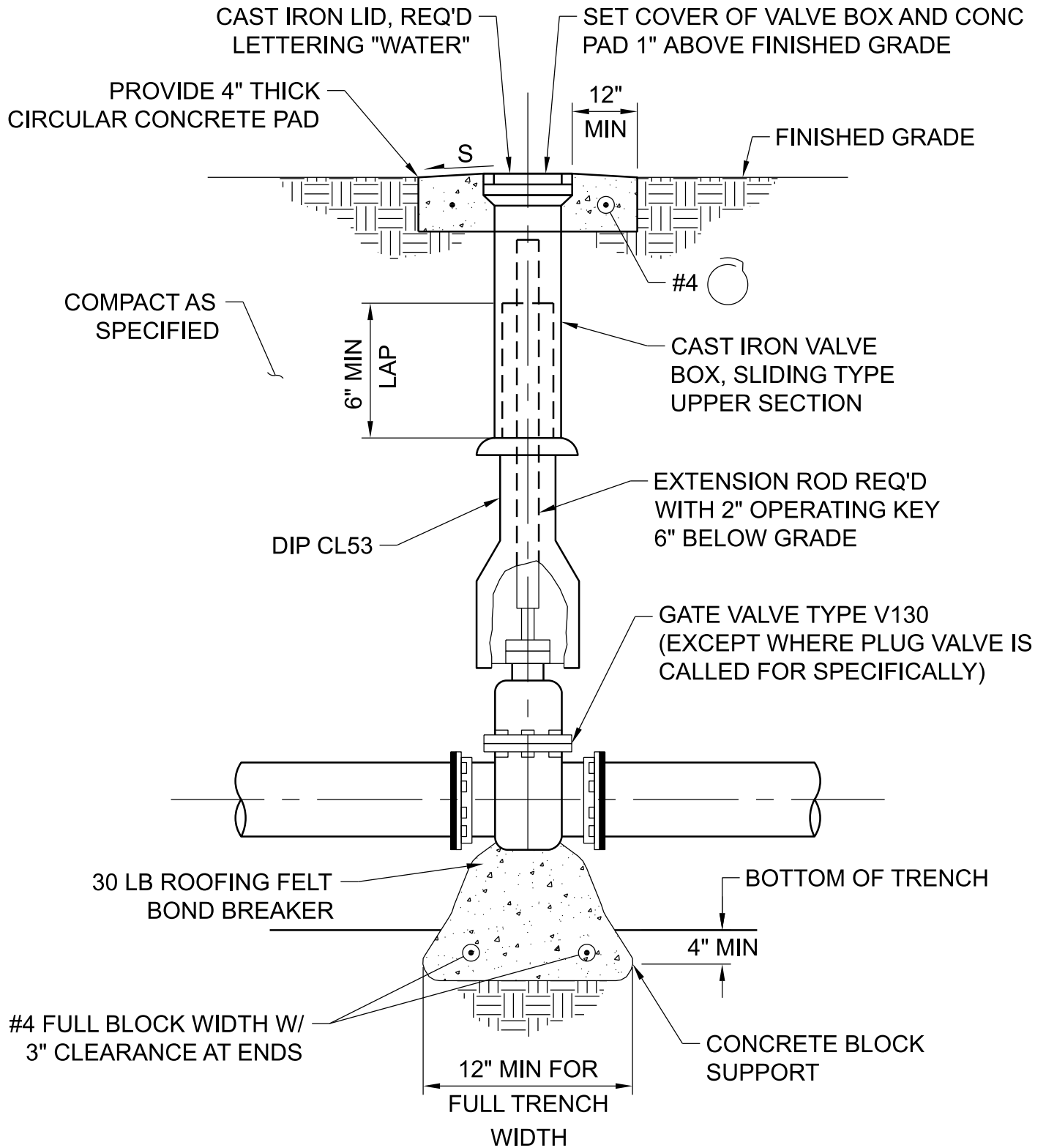
THRUST BLOCK NOTES AND DETAILS

NTS

SHEET 2 OF 2

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3311-765B

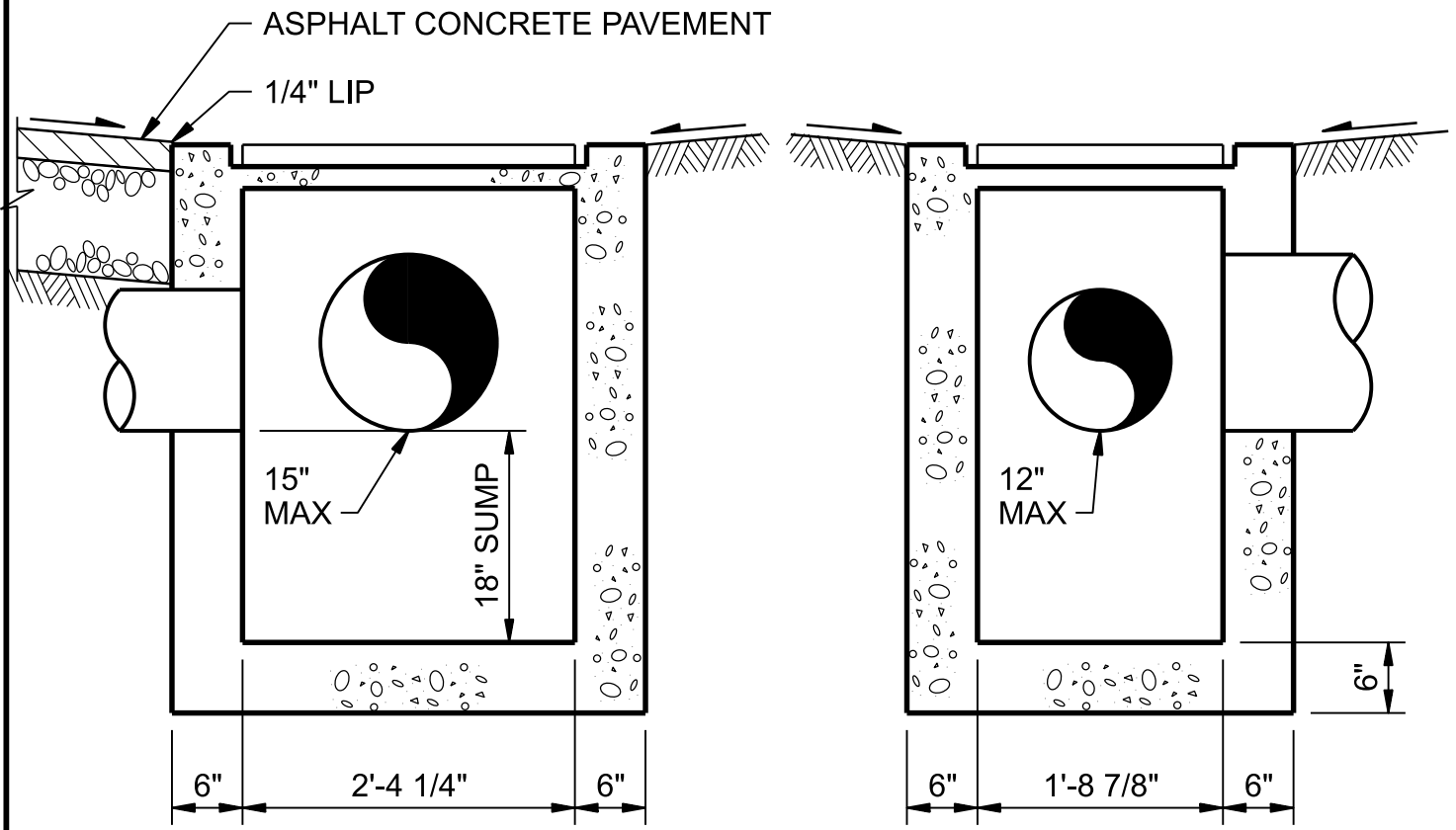
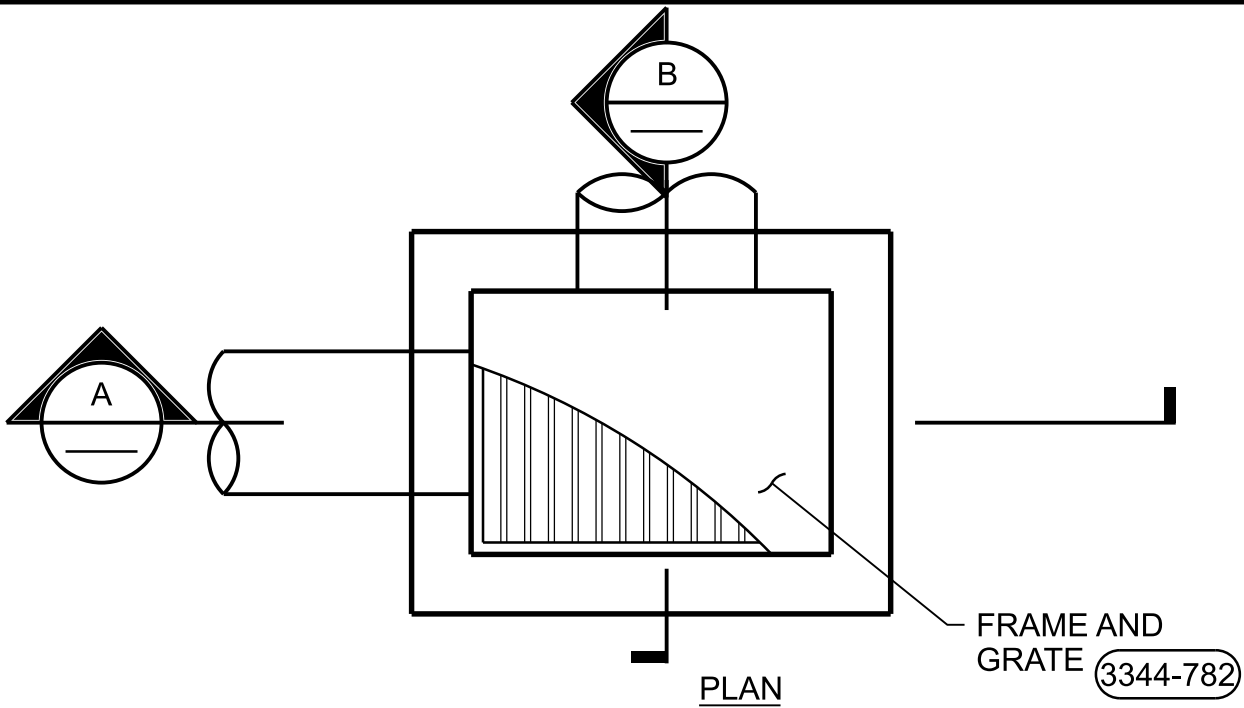


GATE VALVE & BURIED VALVE BOX

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3312-800



A SECTION NTS

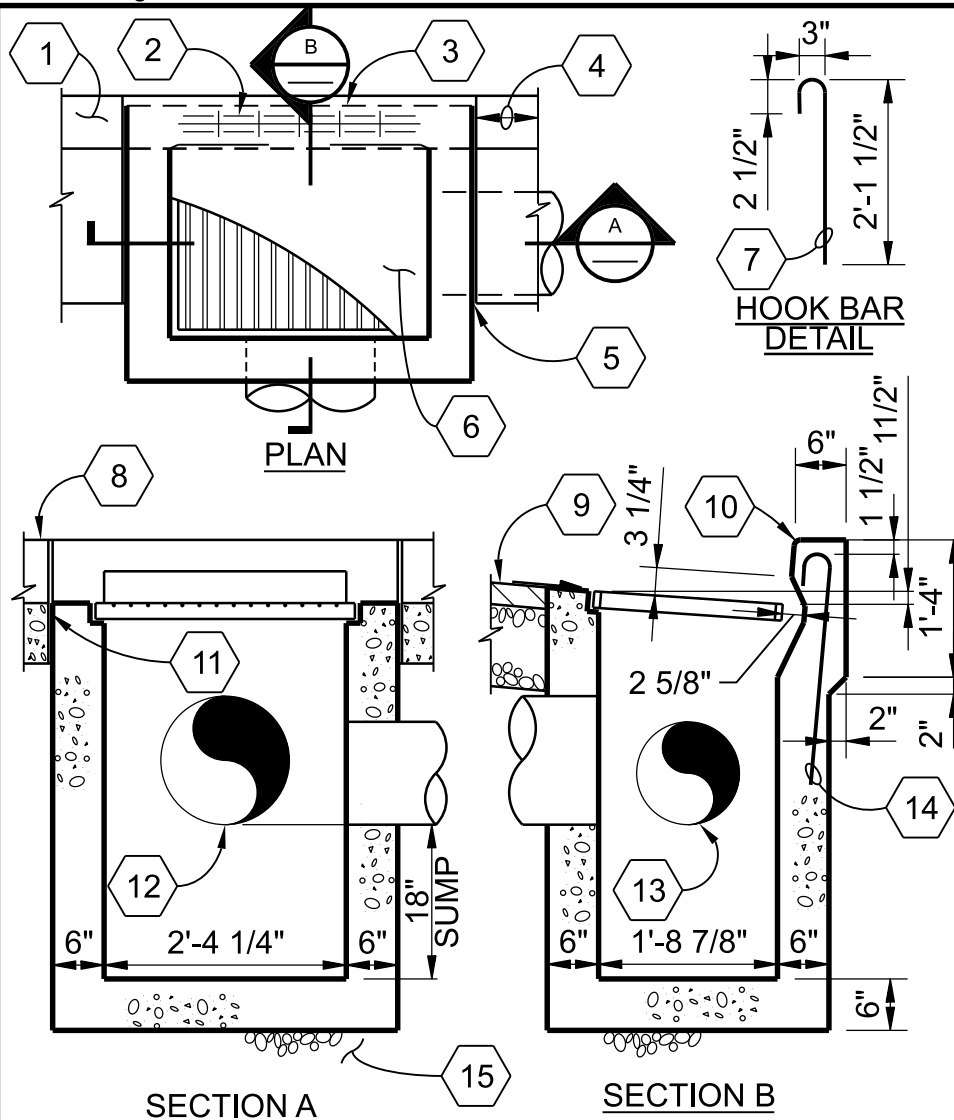
B SECTION NTS

CATCH BASIN

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3344-780



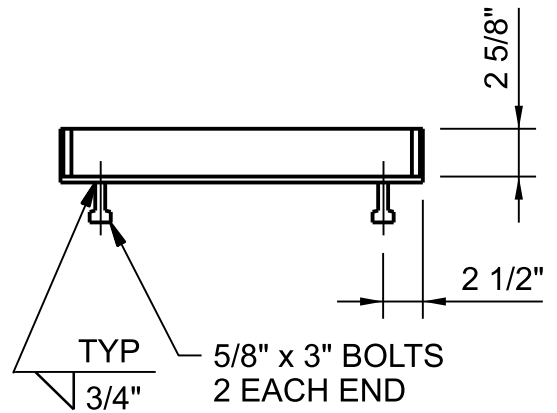
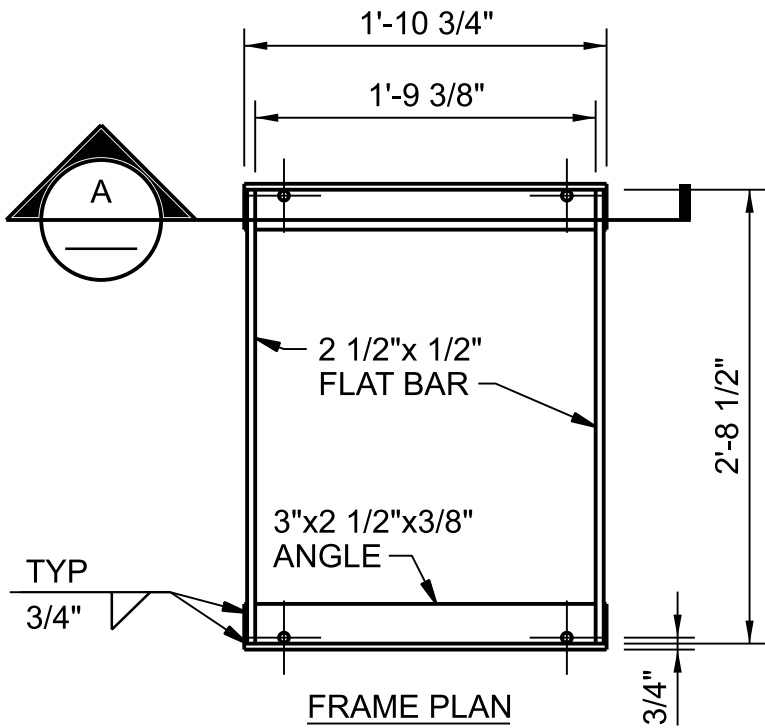
1. CONCRETE CURB AND GUTTER, TYP
2. #3 BARS
3. #5@6"
4. 3'-0" TO EXPANSION JOINT, TYP
5. 1/2" PJF, TYP
6. FRAME AND GRATE
3344-782
7. #5 BAR
8. CURB AND GUTTER
9. TOP OF PAVEMENT
10. 3/4" RADIUS
11. 1/2" PJF, TYP
12. 15" MAX
13. 12" MAX
14. SEE HOOK BAR DETAIL
15. 6" MIN BASE COURSE ON PREPARED SUBGRADE

CURB AND GUTTER CATCH BASIN

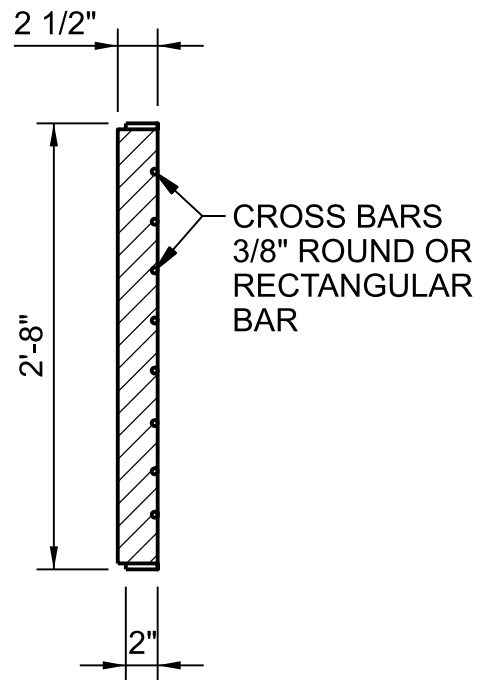
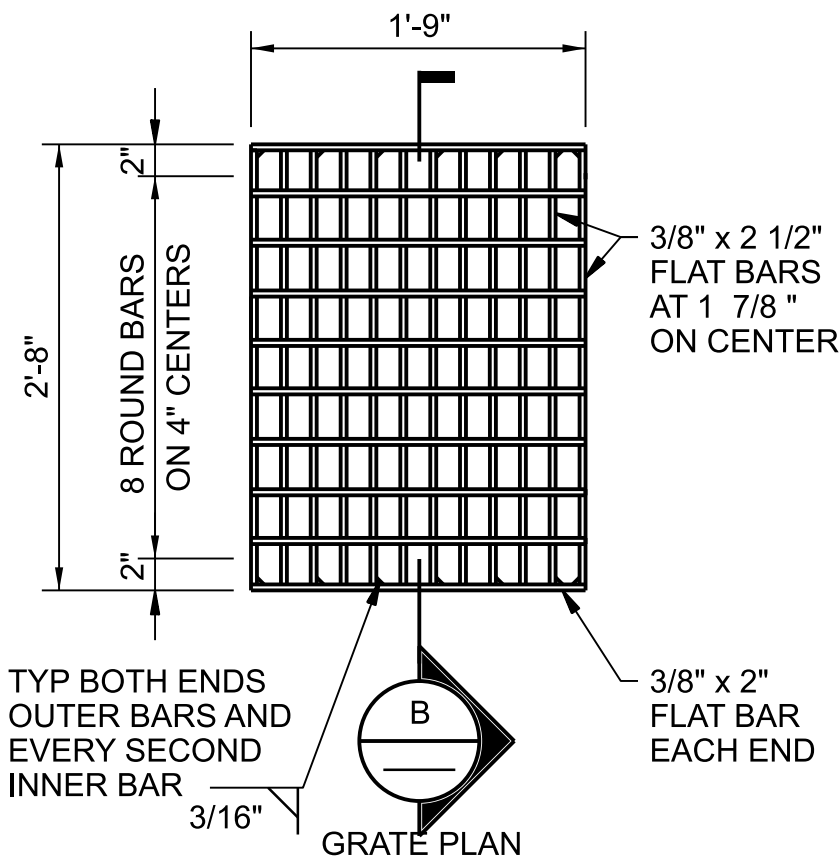
NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3344-781



(A) SECTION NTS



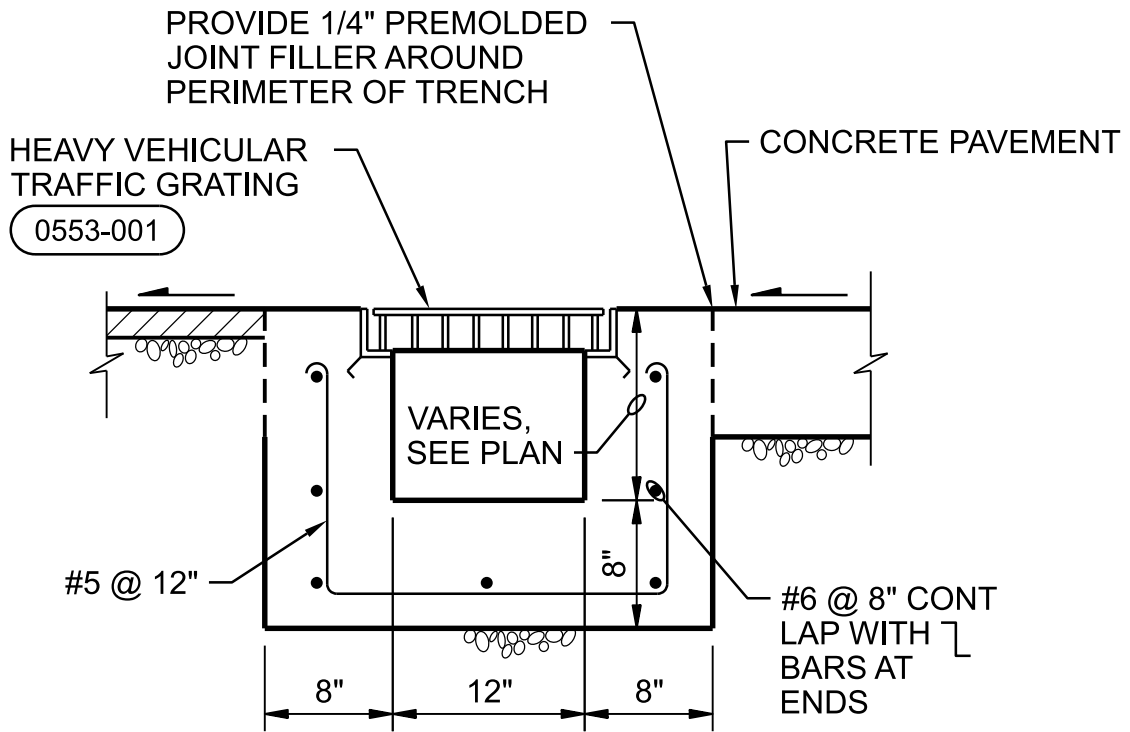
(B) SECTION NTS

CATCH BASIN FRAME AND GRATE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

3344-782

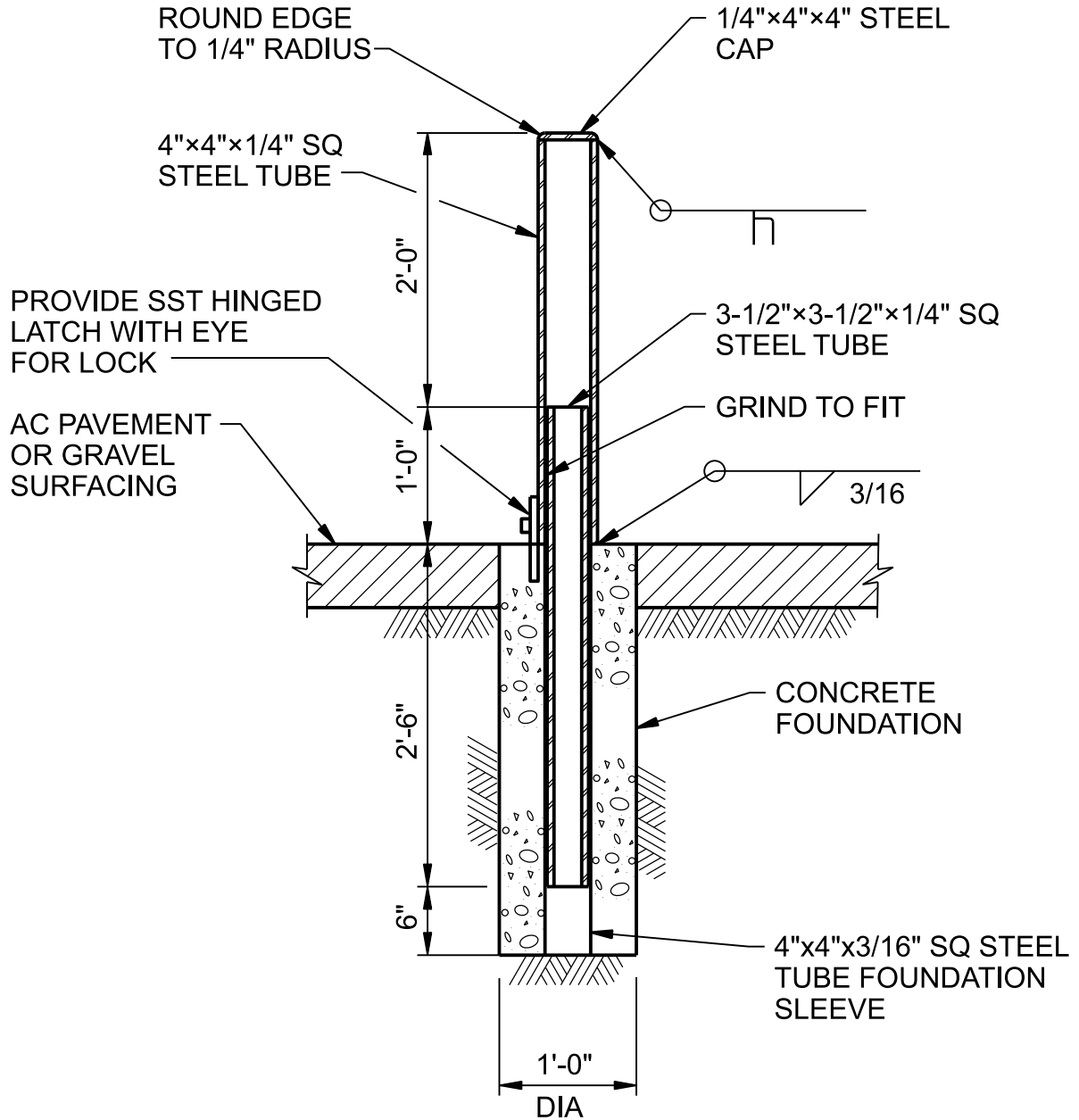


CAST IN PLACE TRENCH DRAIN

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3344-791



NOTE:

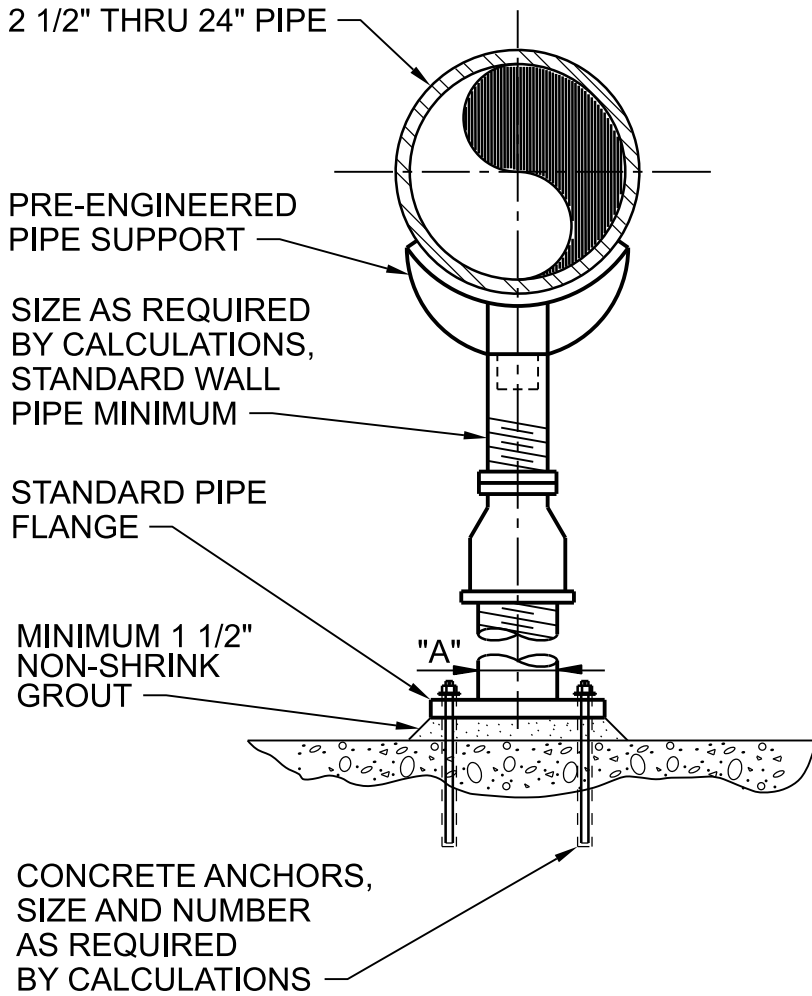
HOT DIP GALVANIZED BOLLARD AND BOLLARD FOUNDATION SLEEVE AFTER FABRICATION.

REMOVABLE GUARD POST

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

3471-811



DIMENSION TABLE	
PIPE SIZE	"A" MINIMUM NOMINAL PIPE SIZE
2-1/2"	2-1/2"
3"	2-1/2"
4"	3"
6"	3"
8"	3"
10"	3"
12"	3"
14"	4"
16"	4"
20"	6"
24"	6"
30"	6"
36"	6"

NOTES:

1. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.
2. MATERIAL AS SPECIFIED IN AREA CLASSIFICATION AND MATERIAL SELECTION TABLE.

**PIPE SUPPORT
SADDLE SUPPORT PEDESTAL TYPE - ADJUSTABLE**

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4005-500

PRE-ENGINEERED
U-BOLT

2 1/2" THRU 36" PIPE

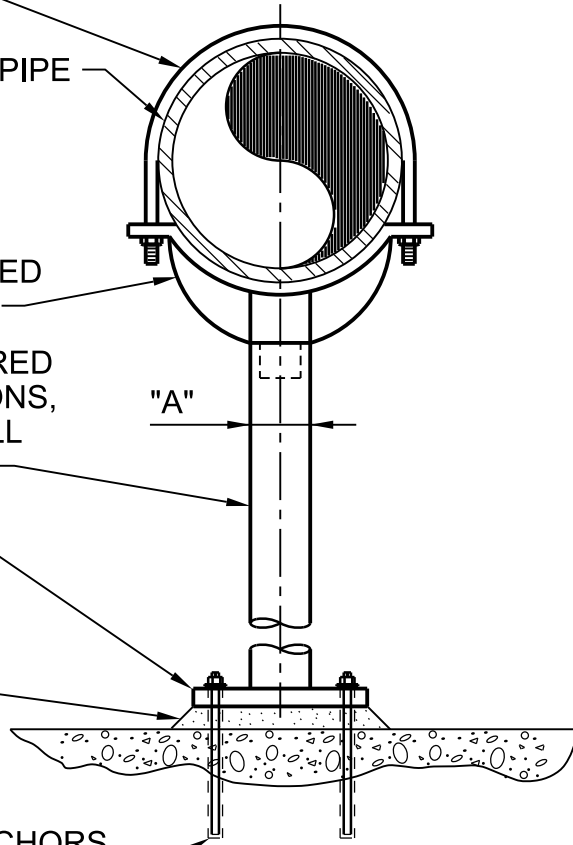
PRE-ENGINEERED
PIPE SUPPORT

SIZE AS REQUIRED
BY CALCULATIONS,
STANDARD WALL
PIPE MINIMUM

STANDARD
PIPE FLANGE

MINIMUM 1 1/2"
NON-SHRINK
GROUT

CONCRETE ANCHORS,
SIZE AND NUMBER
AS REQUIRED BY
CALCULATION



DIMENSION TABLE	
PIPE SIZE	"A" MINIMUM NOMINAL PIPE SIZE
2-1/2"	2-1/2"
3"	2-1/2"
4"	3"
6"	3"
8"	3"
10"	3"
12"	3"
14"	3"
16"	3"
20"	4"
24"	4"
30"	4"
36"	4"

NOTE:

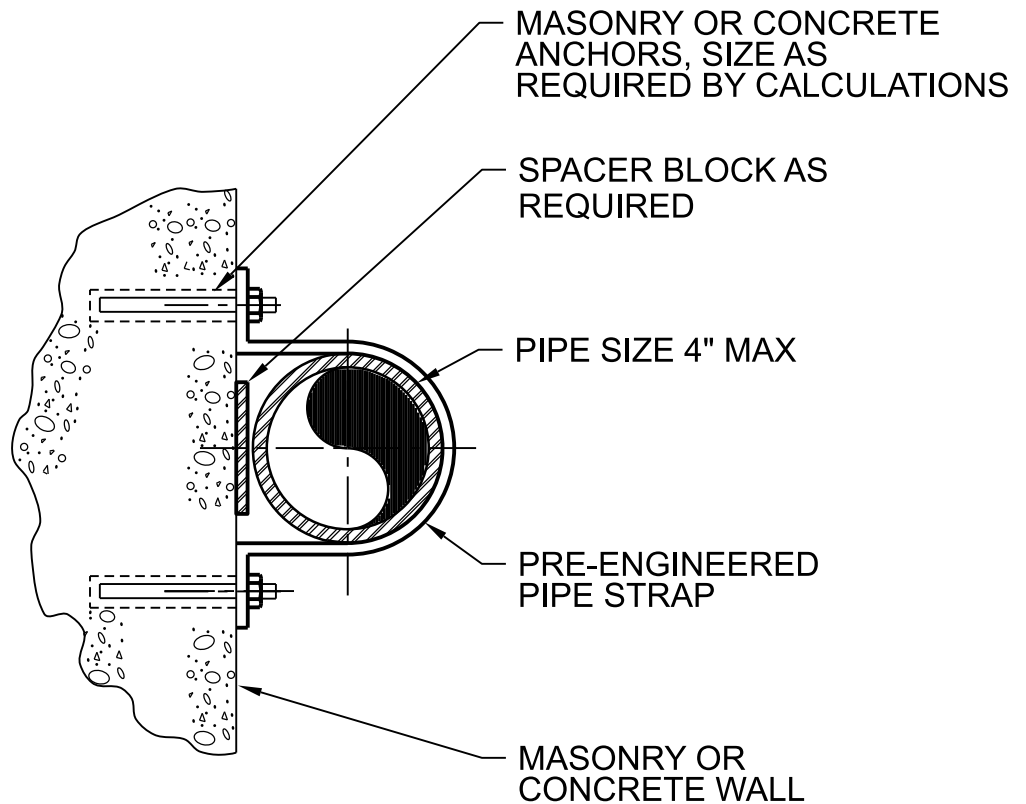
SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

**PIPE SUPPORT SADDLE SUPPORT
PEDESTAL TYPE - NON-ADJUSTABLE**

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4005-501



NOTES:

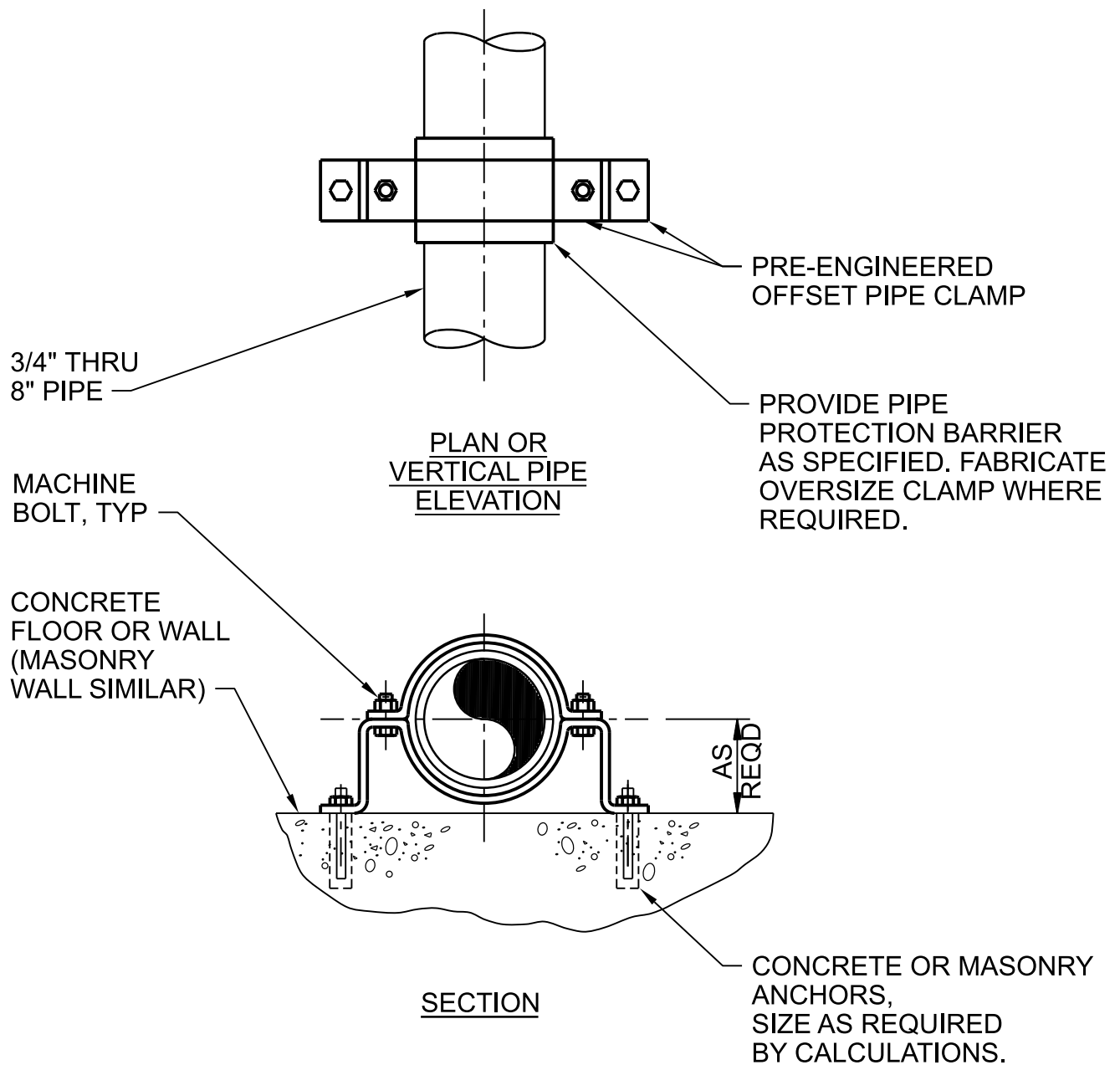
1. ONLY FOR VERTICAL PIPES.
2. NOT FOR USE ON CEILINGS OR BOTTOMS OF BEAMS.
3. PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED. FABRICATE OVERSIZE STRAP WHERE REQUIRED.
4. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

PIPE SUPPORT - WALL MOUNT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-503

**NOTES:**

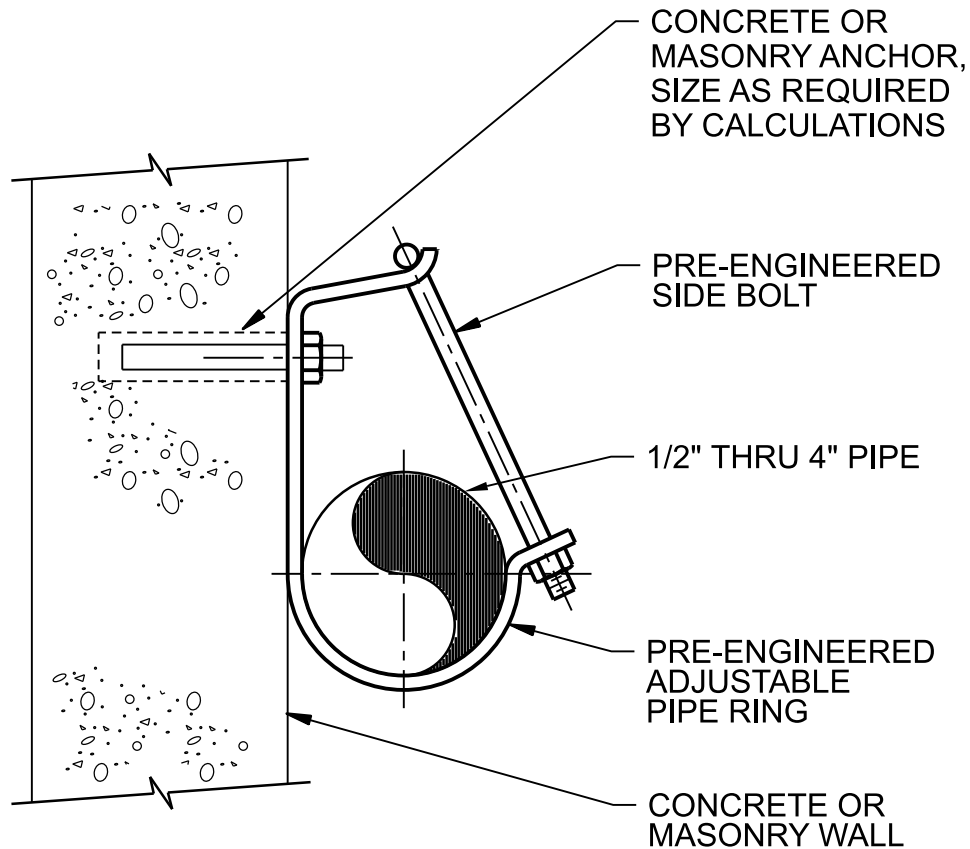
1. ONLY FOR VERTICAL OR FLOOR MOUNTED PIPES.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

PIPE SUPPORT - WALL MOUNTED

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4005-505

**NOTES:**

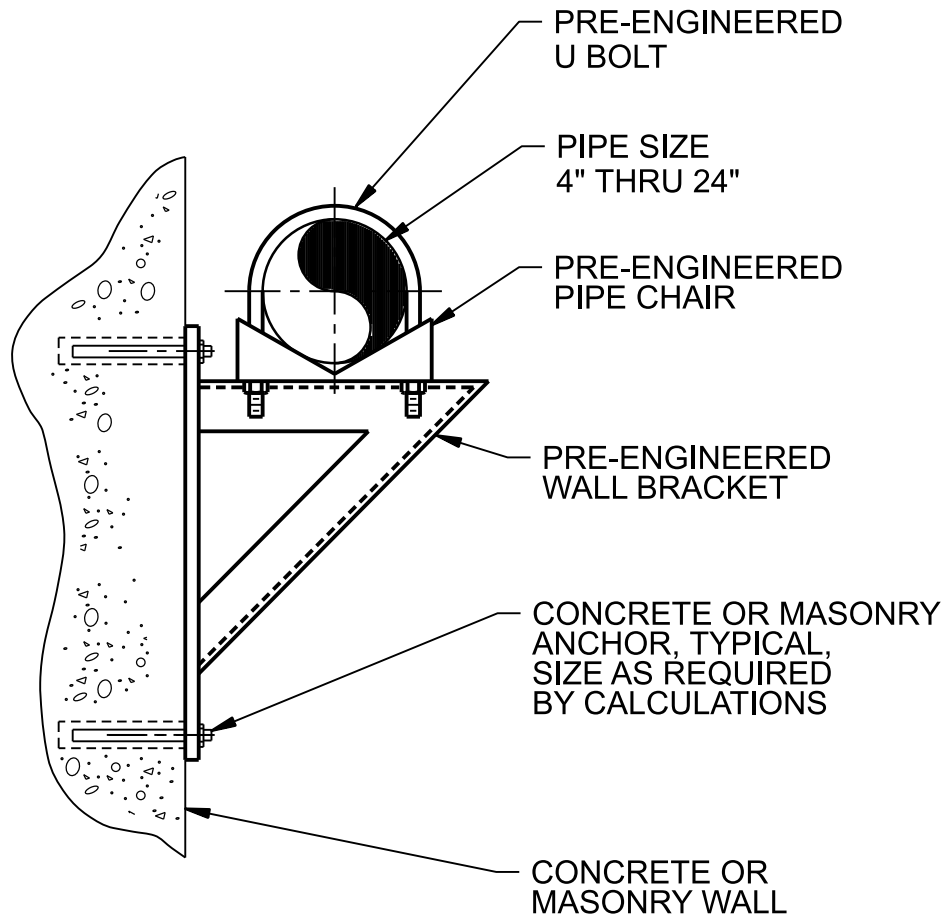
1. PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

PIPE SUPPORT - WALL MOUNTED

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-507

**NOTES:**

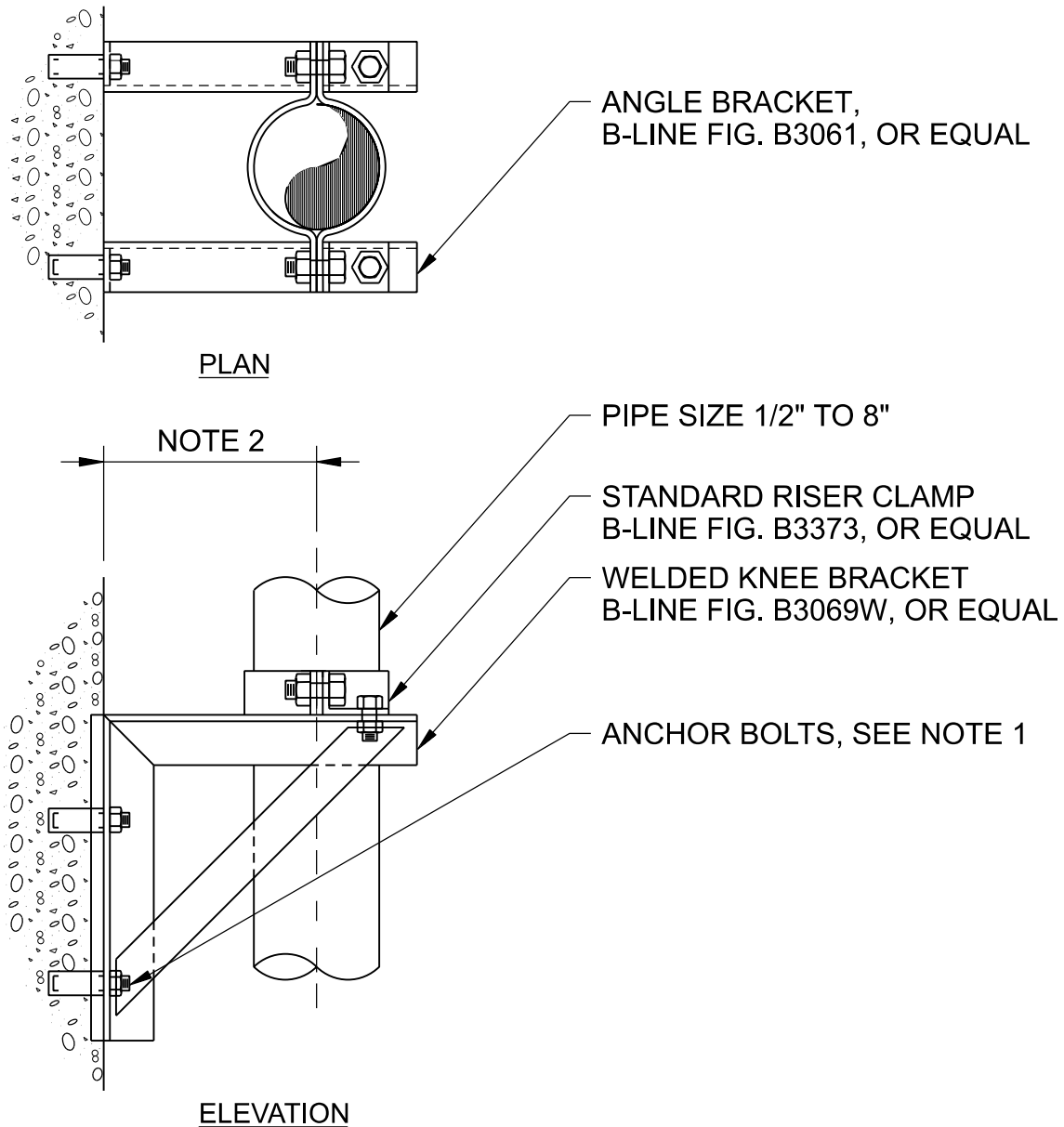
1. WALL BRACKET SHALL BE MEDIUM HEAVY DUTY AS REQUIRED BY CALCULATIONS.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

PIPE SUPPORT - WALL MOUNTED - MEDIUM

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-508

**NOTES:**

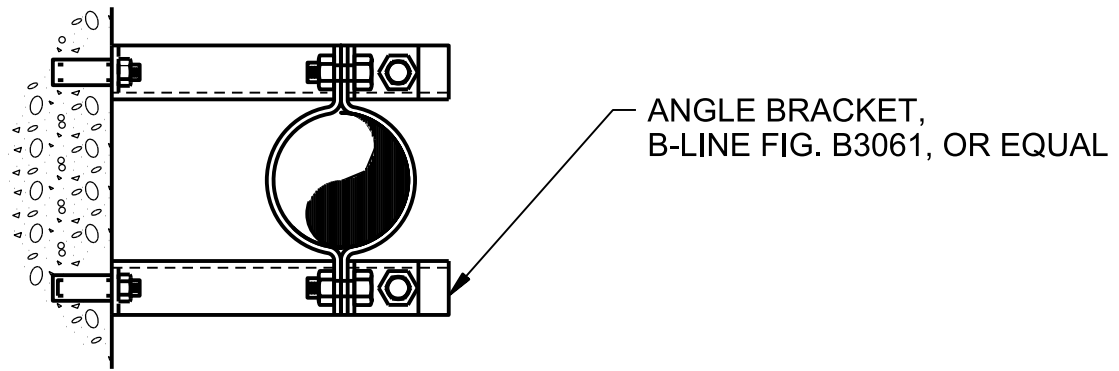
1. PROVIDE CONCRETE ANCHOR DIAMETER TO FIT IN PIPE SUPPORT.
2. 16" MAX OR AS OTHERWISE SHOWN ON DRAWINGS.
3. PROVIDE 1/8" THK NEOPRENE PAD BETWEEN PIPE CLAMP AND FA DUCT, WHERE USED FOR FA.

PIPE SUPPORT WALL MOUNTED, VERTICAL

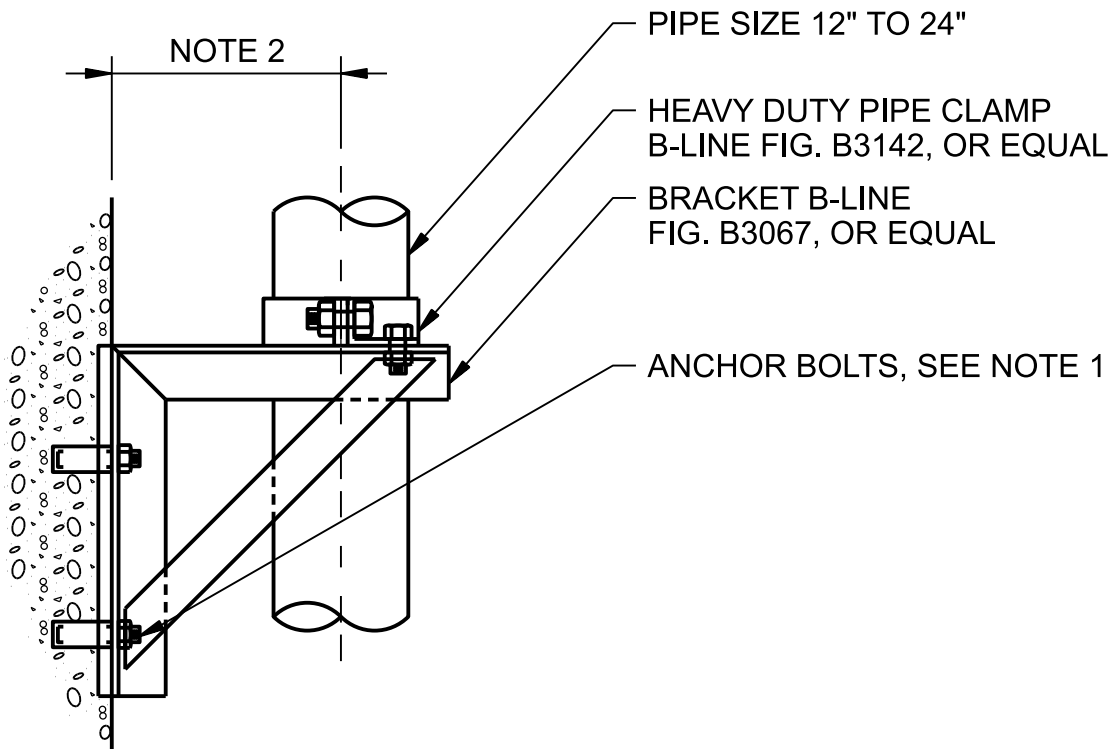
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4005-511



PLAN



ELEVATION

NOTES:

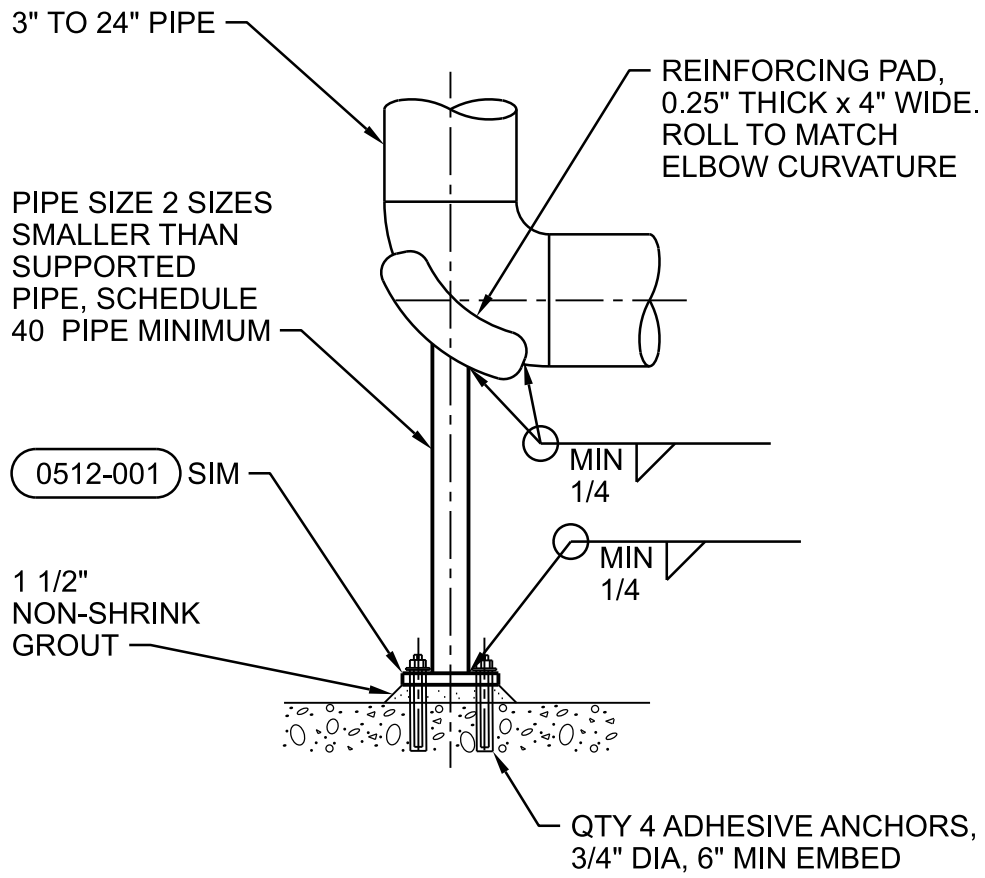
1. PROVIDE CONCRETE ANCHOR DIAMETER TO FIT IN PIPE SUPPORT.
2. AS SHOWN ON DRAWINGS.

PIPE SUPPORT VERTICAL, HEAVY DUTY

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4005-512



NOTE:

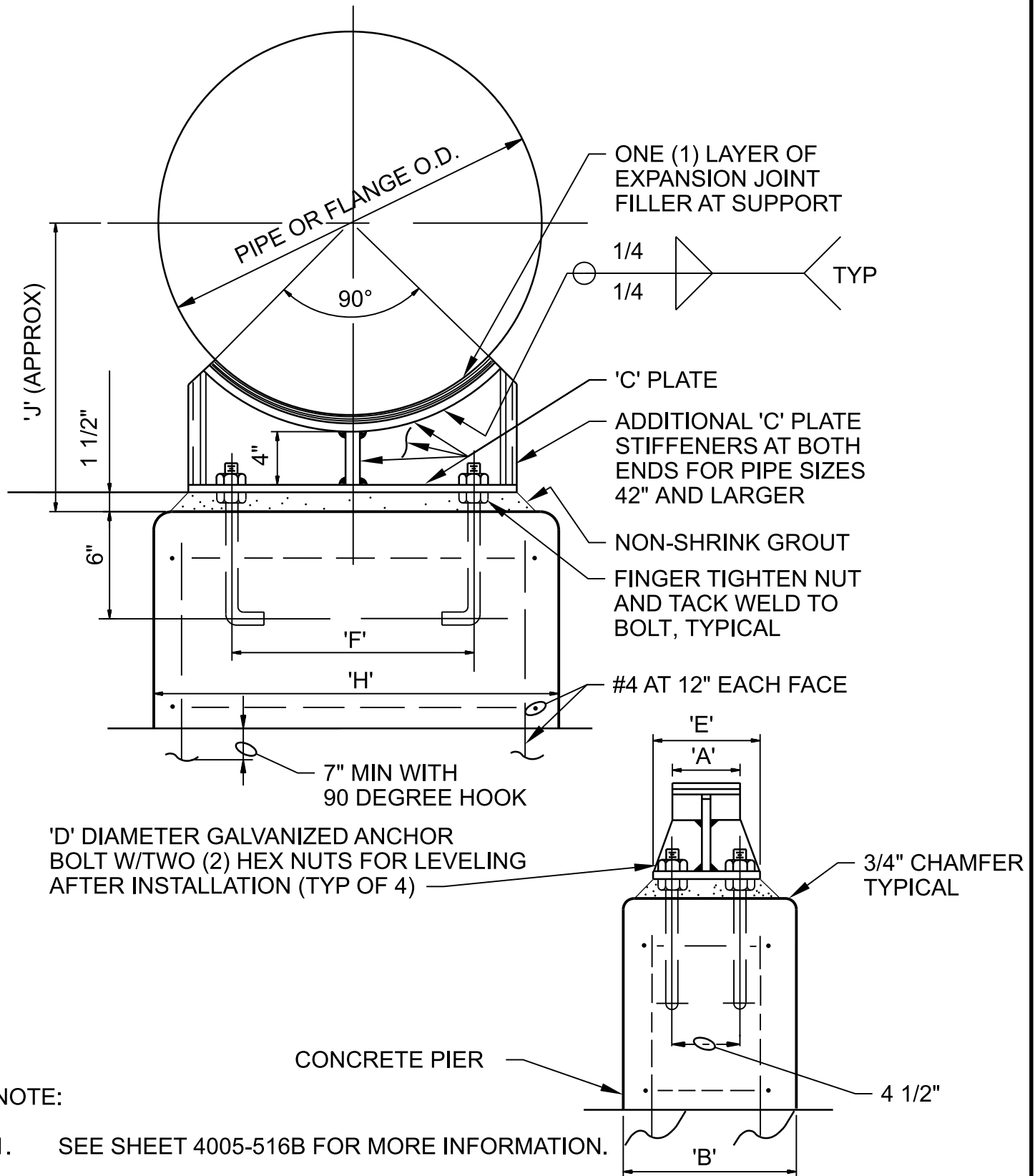
1. PIPE SUPPORT MATERIAL TO MATCH MATERIAL OF SUPPORTED PIPE.

PIPE SUPPORT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-516



NOTE:

1. SEE SHEET 4005-516B FOR MORE INFORMATION.

PIPE SUPPORT, GUIDE, AND PIPE ANCHOR

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4005-516A

DIMENSIONS IN INCHES

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

NOTES:

1. WHEN SUPPORTING PIPE AND FLANGE ALTERNATELY ON THE SAME LINE, CONCRETE PIERS FOR PIPE SUPPORTS SHALL ALL HAVE THE SAME DIMENSION 'H' FOR FLANGE SUPPORT.
2. HOT DIP GALVANIZE AFTER FABRICATION.
3. USE A325 BOLTS AND ANCHOR BOLTS.

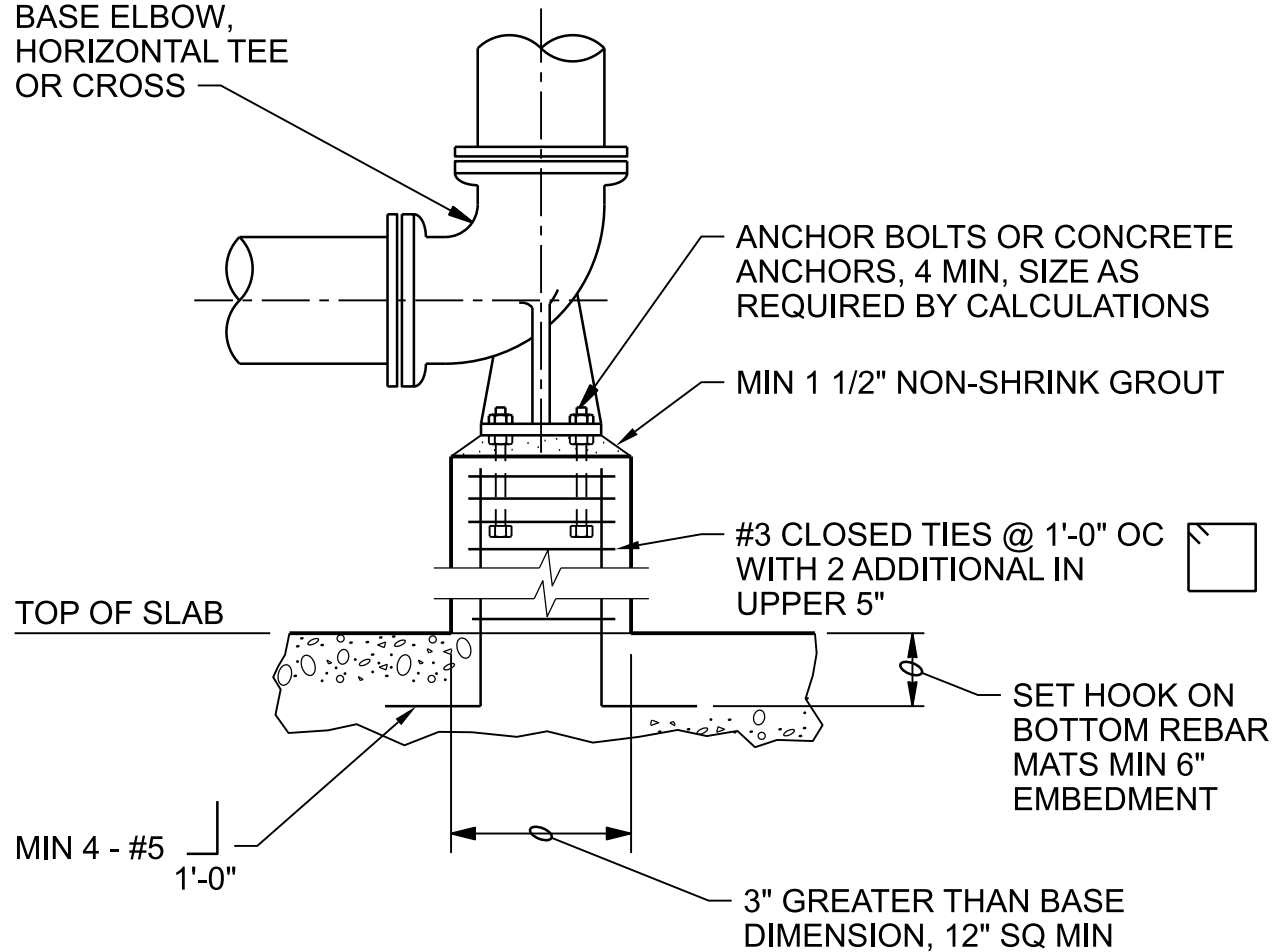
PIPE SUPPORT, GUIDE, AND PIPE ANCHOR

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4005-516B

24" OR LESS
PRE-ENGINEERED
BASE ELBOW,
HORIZONTAL TEE
OR CROSS



NOTES:

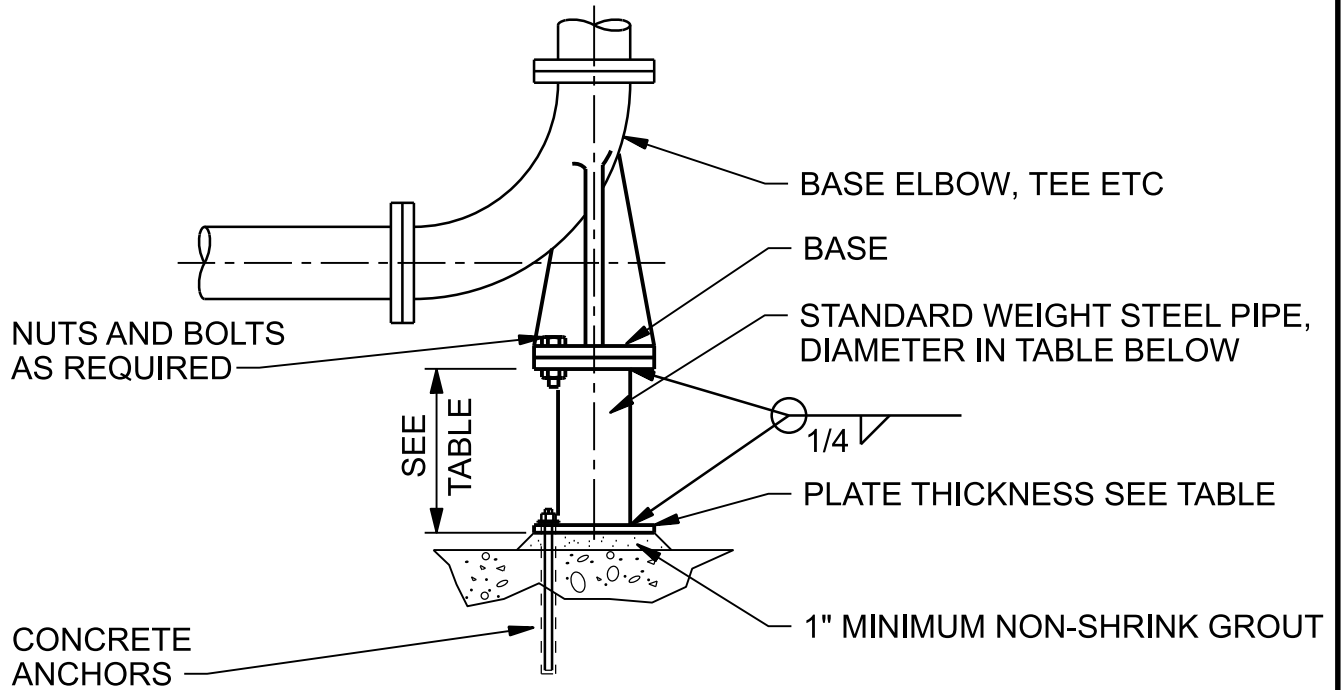
1. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORAGES AS SPECIFIED.
2. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES AS REQUIRED BY CALCULATIONS.

BASE BEND

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4005-517



DIMENSION TABLE				
PIPE SIZE	SUPPORT DIAMETER	PLATE		ANCHOR BOLT DIAMETER
		DIAMETER	THICKNESS	
3"	1 1/2"	5"	3/8"	3/8"
4"	2"	6"	3/8"	3/8"
6"	3"	7"	3/8"	3/8"
8" and 10"	4"	9"	1/2"	1/2"
12" thru 16"	6"	11"	1/2"	1/2"
18" thru 24"	8"	13 1/2"	5/8"	5/8"
30"	10"	16"	5/8"	5/8"
36"	12"	19"	5/8"	5/8"
42"	16"	23 1/2"	3/4"	3/4"
48"	18"	25"	3/4"	3/4"
54"	20"	30"	3/4"	3/4" (USE 6)
60"	24"	32"	3/4"	3/4" (USE 6)

NOTES:

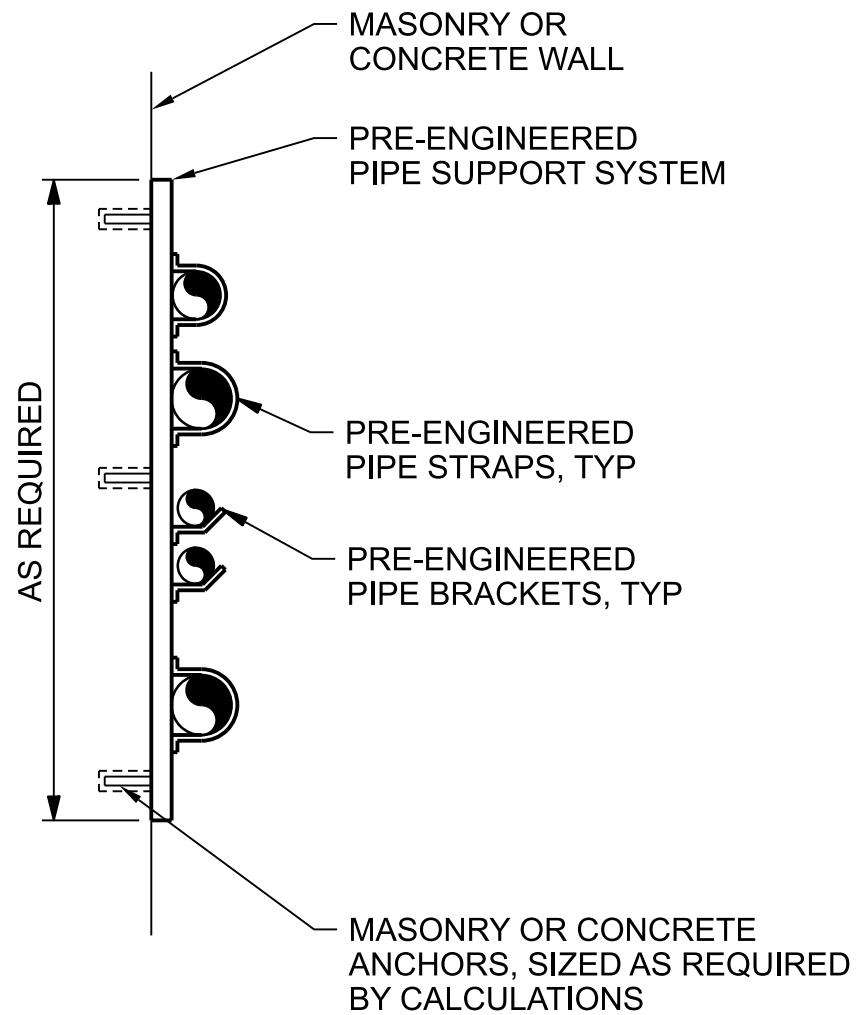
1. ALSO USE FOR SUPPORT OF HORIZONTAL TEE OR CROSS.

BASE BEND

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-518

**NOTES:**

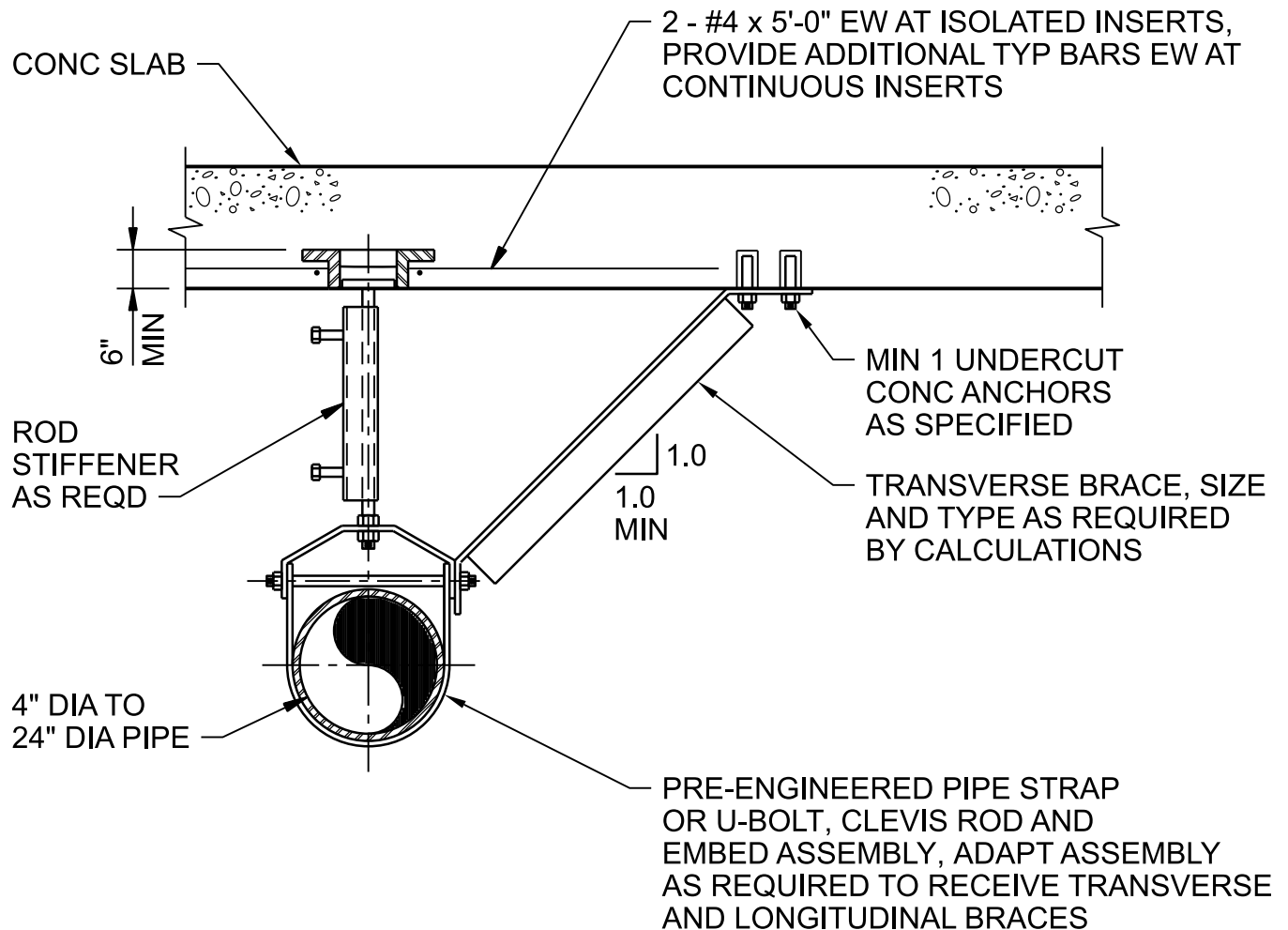
1. PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED.
2. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORAGES AS SPECIFIED.

STACKED PIPE WALL SYSTEM

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-521

**NOTES:**

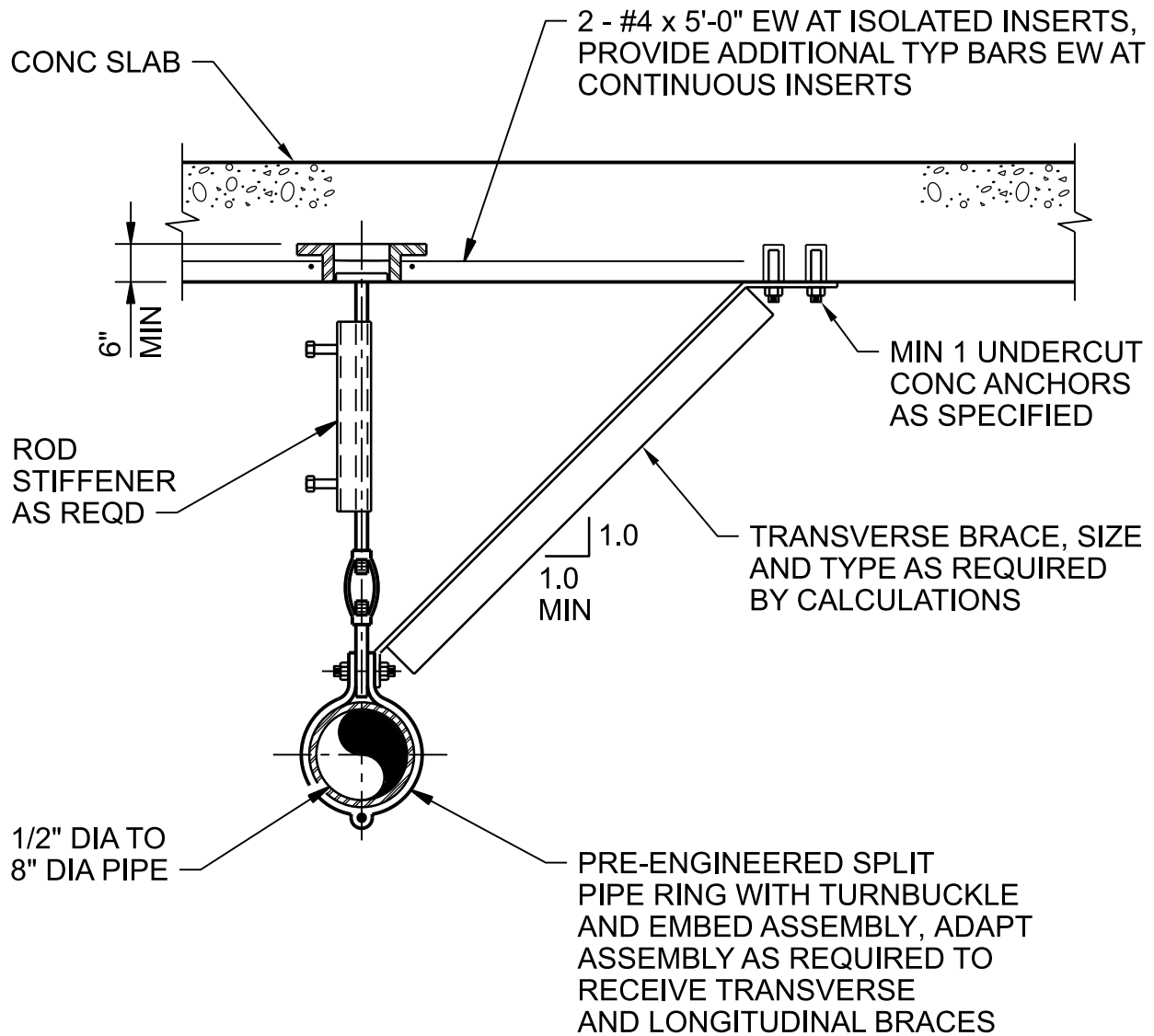
1. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORS AS SPECIFIED.
2. LONGITUDINAL BRACE BEYOND (NOT SHOWN) AS REQUIRED BY CALCULATIONS, SEE **4005-5XX**

OVERHEAD PIPE HANGER

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-550

**NOTES:**

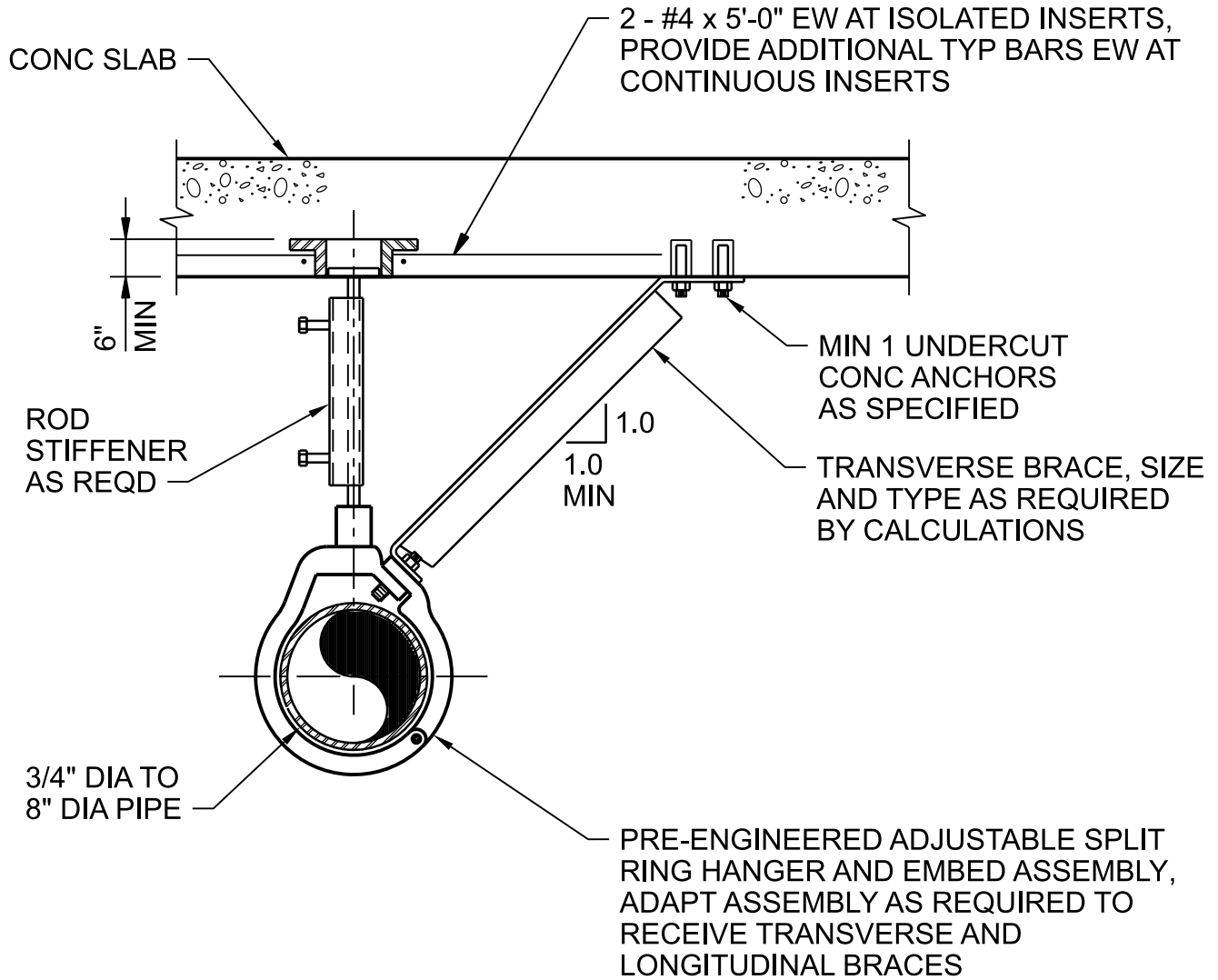
1. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORS AS SPECIFIED.
2. LONGITUDINAL BRACE BEYOND (NOT SHOWN) AS REQUIRED BY CALCULATIONS, SEE **4005-5XX**

OVERHEAD PIPE HANGER

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-551



NOTES:

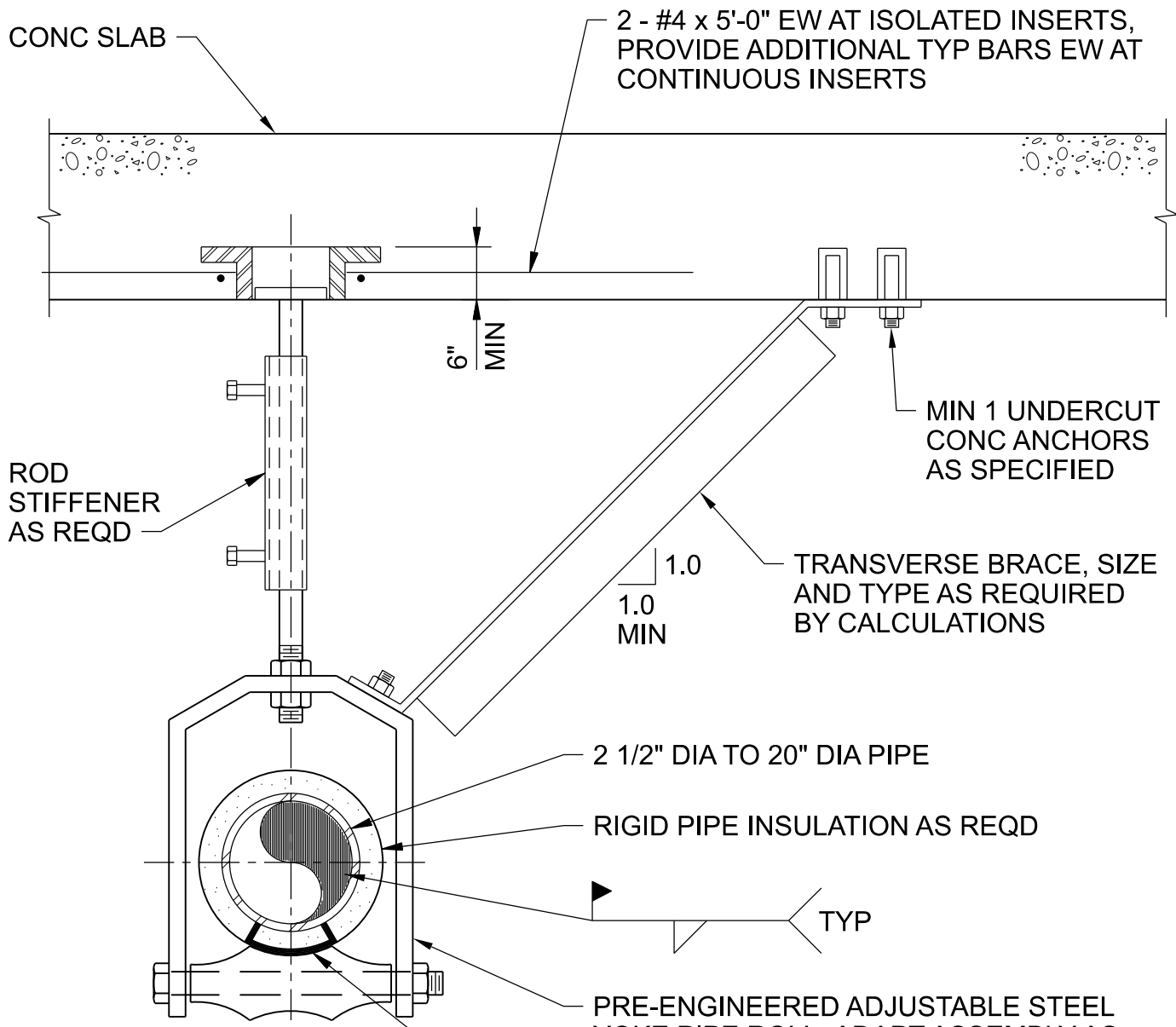
1. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORS AS SPECIFIED.
2. LONGITUDINAL BRACE BEYOND (NOT SHOWN) AS REQUIRED BY CALCULATIONS, SEE **4005-5XX**

OVERHEAD PIPE HANGER

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-552



1. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORS AS SPECIFIED.

2. LONGITUDINAL BRACE BEYOND (NOT SHOWN) AS REQUIRED BY CALCULATIONS.

PRE-ENGINEERED ADJUSTABLE STEEL YOKE PIPE ROLL, ADAPT ASSEMBLY AS REQUIRED TO RECEIVE TRANSVERSE AND LONGITUDINAL BRACES

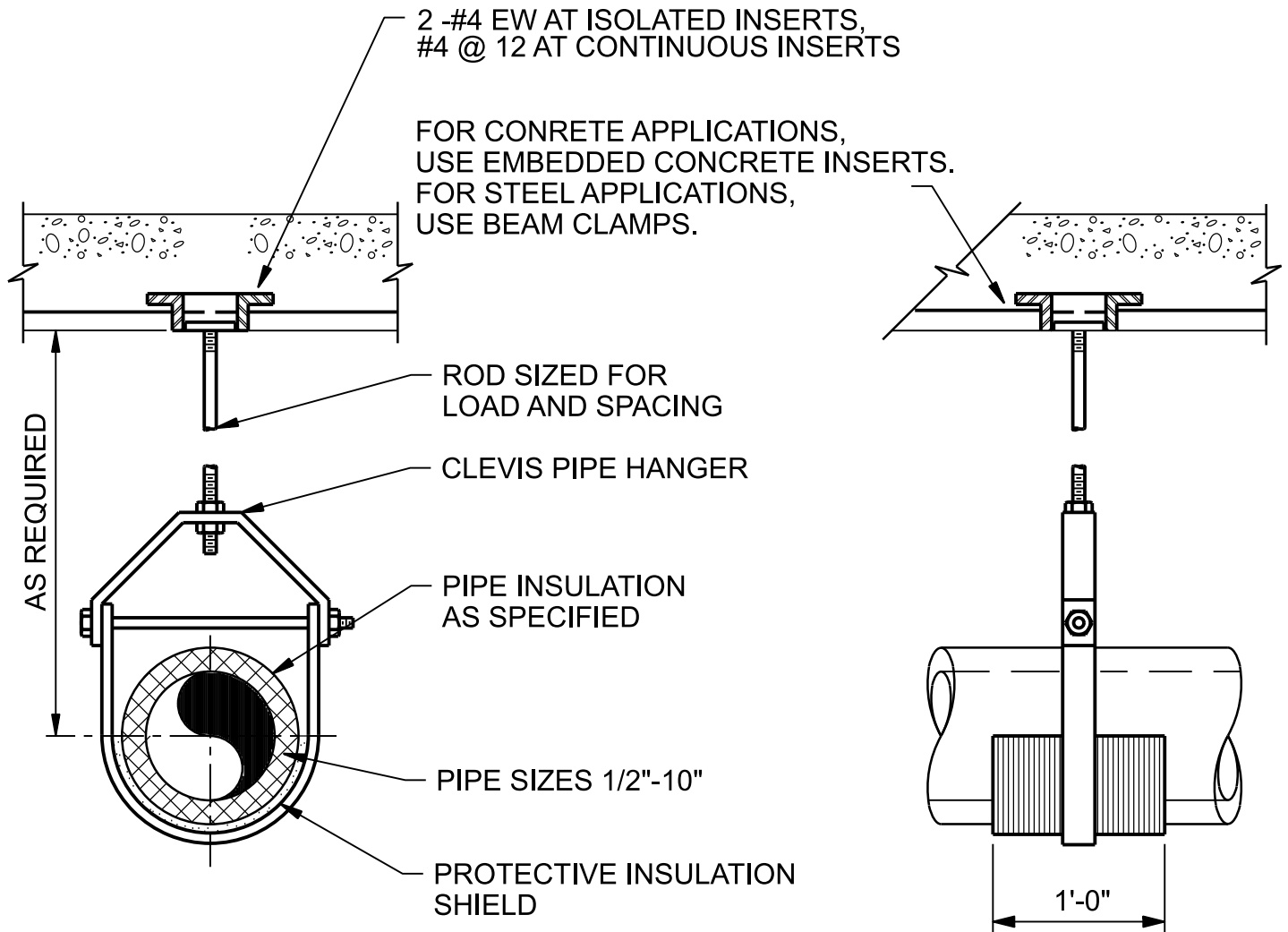
INSULATION PROTECTION SADDLE. SIZE TO FIT INSULATION AND PIPE SIZE

OVERHEAD PIPE HANGER

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-553



NOTES:

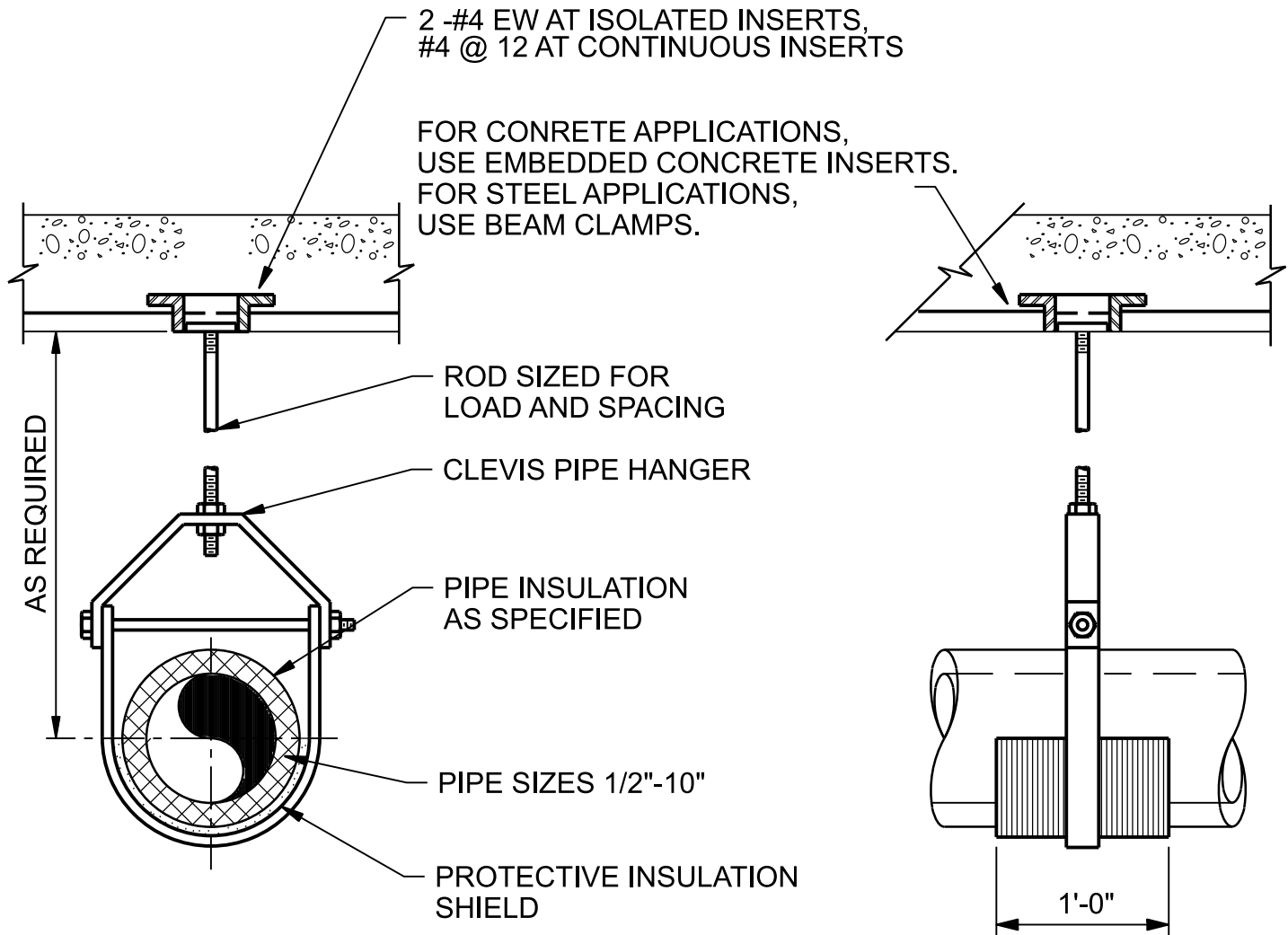
1. PIPE HANGERS SHALL BE OVERSIZED AS REQUIRED TO ACCOMMODATE THICKNESS OF INSULATION SPECIFIED. HANGER SHALL NOT COME INTO CONTACT WITH THE INSULATION DIRECTLY, EITHER AT THE VERTICAL YOKE OR AT THE POINT OF SUPPORT. FOR REQUIREMENTS ON INSULATION SHIELD USED WITH PIPE HANGERS, SEE SPECIFICATIONS.

OVERHEAD PIPE HANGER

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4005-554



NOTES:

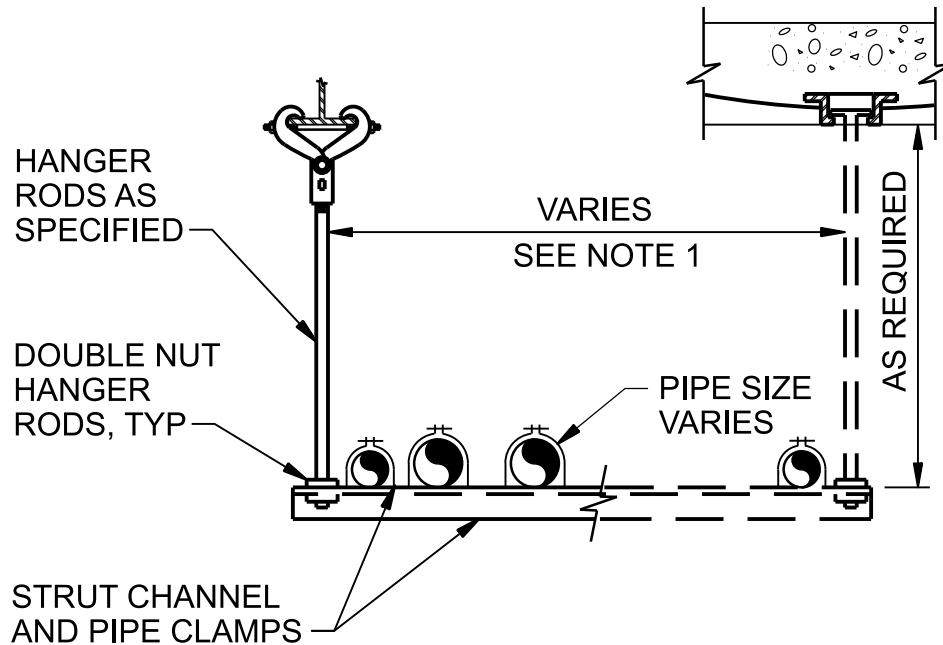
1. PIPE HANGERS SHALL BE OVERSIZED AS REQUIRED TO ACCOMMODATE THICKNESS OF INSULATION SPECIFIED. HANGER SHALL NOT COME INTO CONTACT WITH THE INSULATION DIRECTLY, EITHER AT THE VERTICAL YOKE OR AT THE POINT OF SUPPORT. FOR REQUIREMENTS ON INSULATION SHIELD USED WITH PIPE HANGERS, SEE SPECIFICATIONS.

PIPE HANGER

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-557



NOTES:

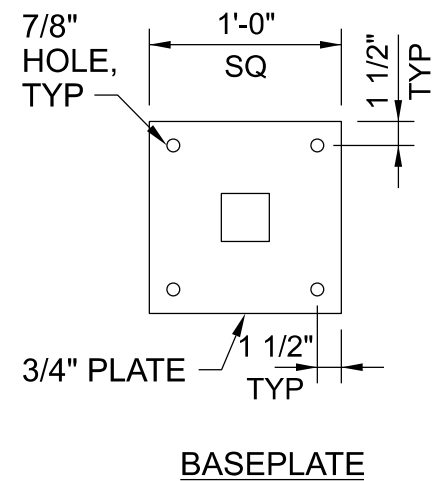
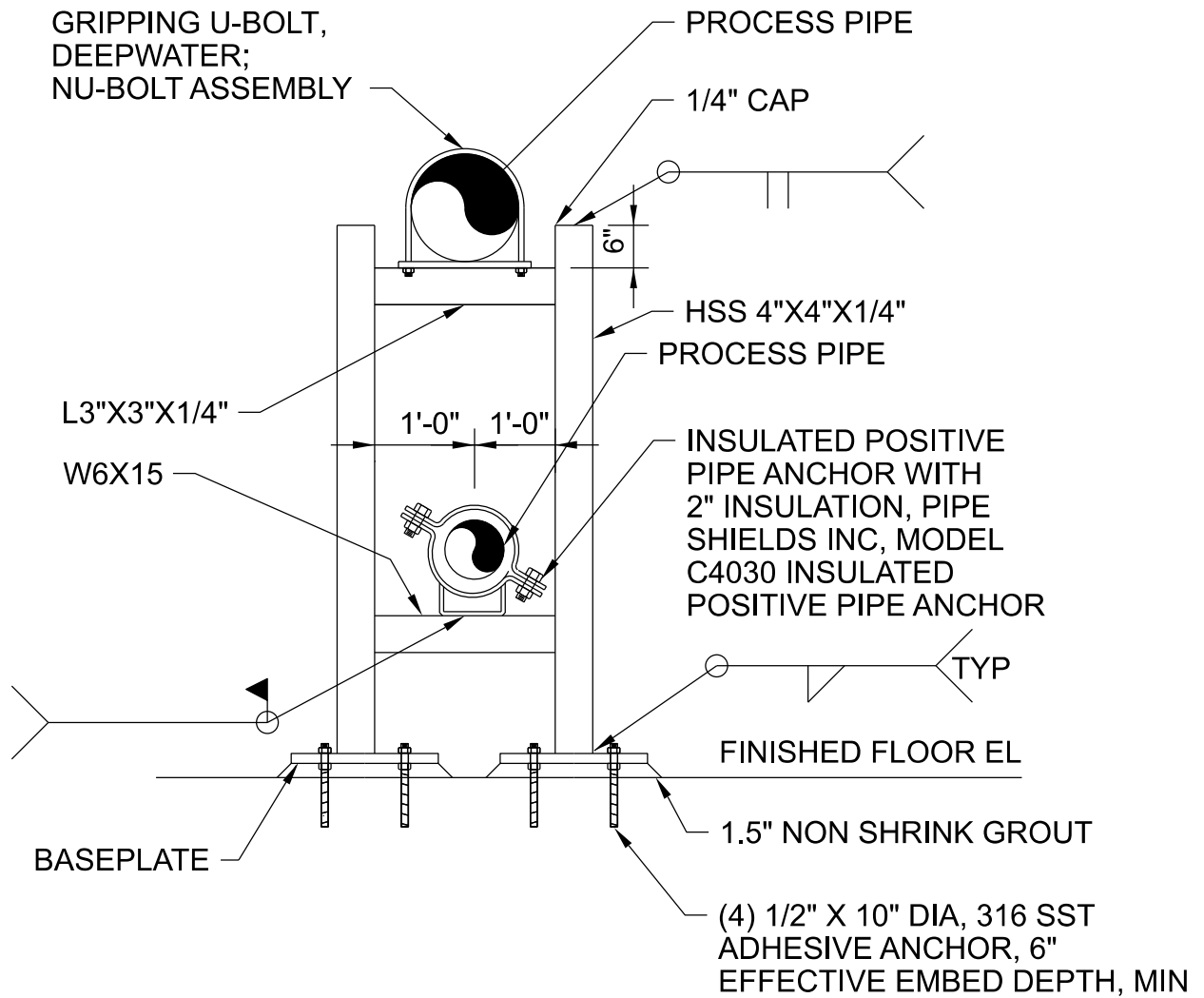
1. LENGTH VARIES WITH NUMBER OF PIPES TO BE SUPPORTED, AND SPACING BETWEEN PIPES.
2. MATERIALS SHALL BE APPROPRIATE FOR THE FLUID SERVICE AND EXPOSURE CONDITIONS PER 40 05 15 PIPING SUPPORT SYSTEMS.

TRAPEZE PIPE HANGER

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4005-558



NOTES:

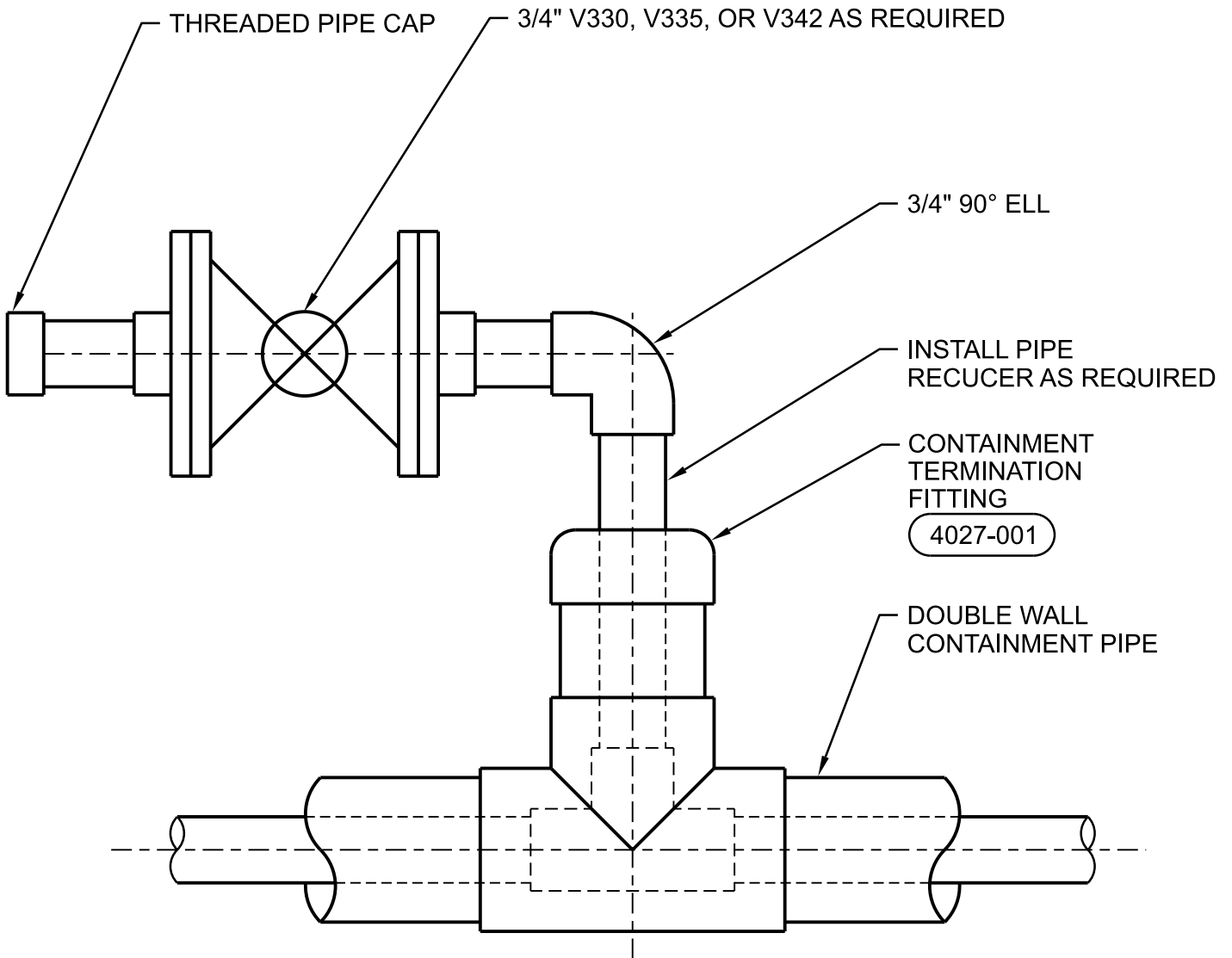
1. SEE MATERIAL CLASSIFICATION TABLE.
2. U-BOLT CLAMP USED FOR NON-INSULTATE PROCESS PIPES. PIPE CLAMP BRACKET USED FOR INSULATED AIR PROCESS PIPES.

STACKED PIPE SUPPORT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4005-803



NOTES:

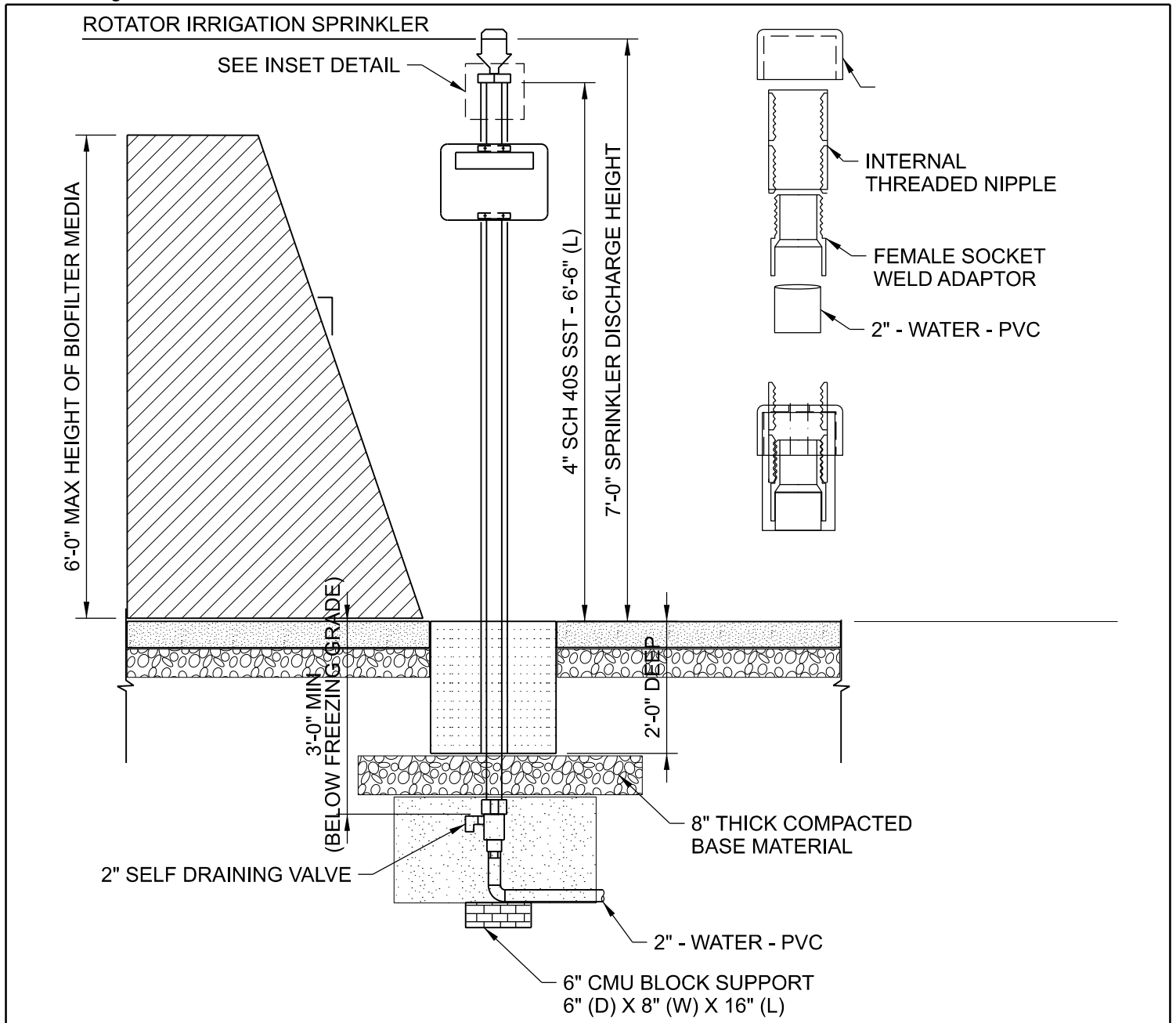
1. VERIFY FITTINGS DETAILS WITH MANUFACTURER
2. INVERT FITTING FOR INNER PIPE DRAIN

VENT/DRAIN FOR INNER PIPE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-004

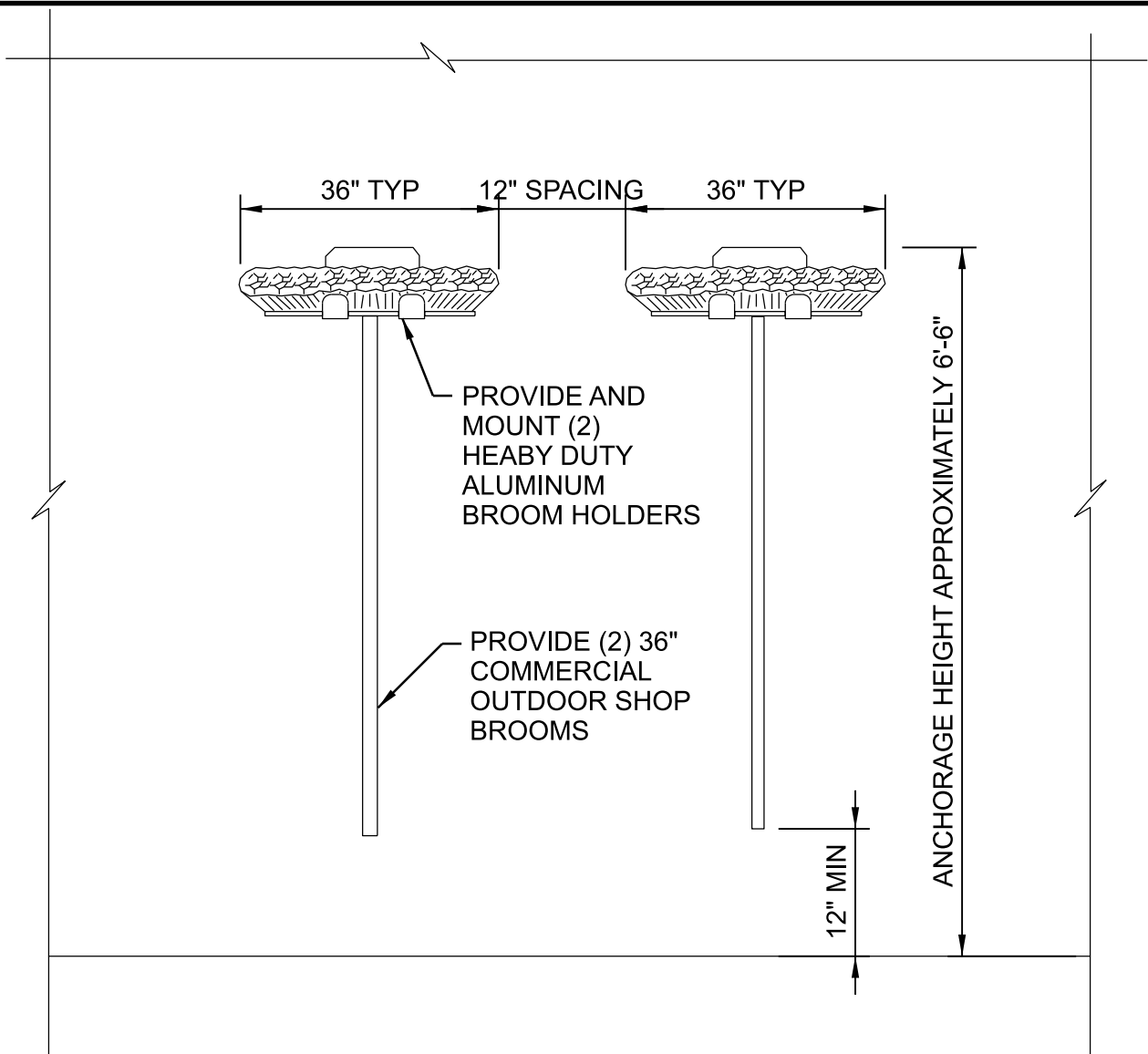


BIOFILTER IRRIGATION SPRINKLER DETAIL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-110

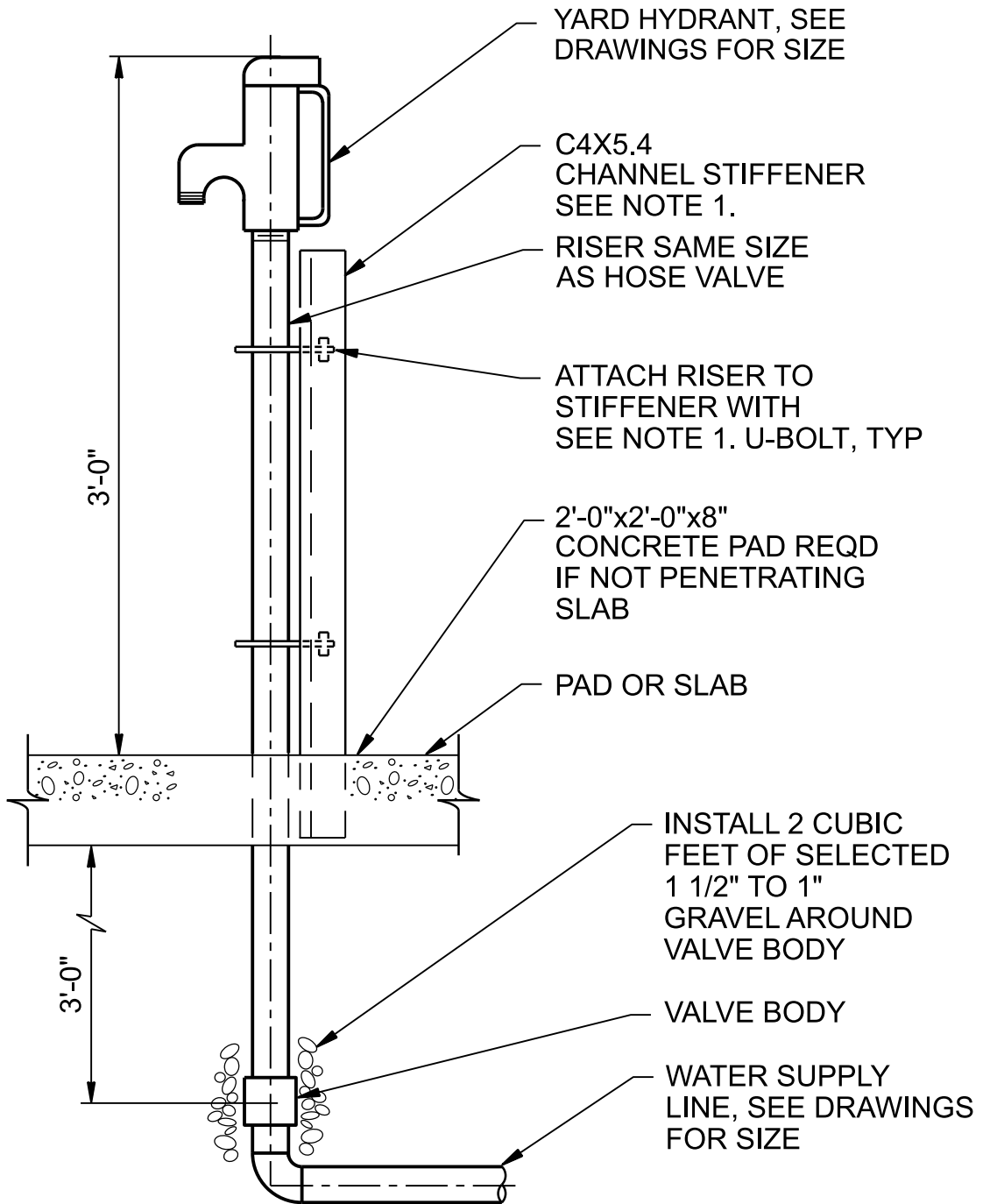


SHOP BROOMS AND BROOM HOLDER

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-111



NOTES:

1. MATERIAL AS SPECIFIED IN AREA CLASSIFICATION AND MATERIAL SELECTION TABLE.

NON-FREEZE POST HYDRANT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

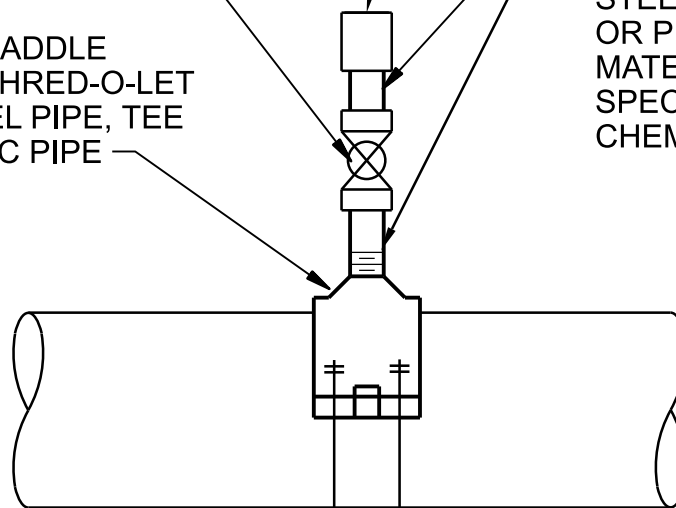
4027-154

1" BALL VALVE FOR MAIN PIPE SIZE LESS THAN OR EQUAL TO 3". 1 1/2" BALL VALVE FOR MAIN PIPE SIZE GREATER THAN 3". V300 FOR WATER, SLUDGE OR PROCESS DRAIN SERVICE. V306 FOR LAS AND PA CHEMICAL SERVICE. V317 FOR SA CHEMICAL SERVICE

HOSE COUPLING TO MATCH VALVE SIZE. FEMALE HALF CAMLOCK STYLE COMPATIBLE WITH MALE HALF ON HOSES. THREADED CONNECTION, BRASS WITH BUNAN GASKET FOR WATER, SLUDGE AND PROCESS DRAIN SERVICES. POLYPROPYLENE WITH EPDM FOR CHEMICAL

DOUBLE STRAP SADDLE FOR DI PIPE OR THRED-O-LET WELDED TO STEEL PIPE, TEE FOR PVC OR CPVC PIPE

NIPPLE FOR THREADED VALVES. HALF NIPPLE FOR SOCKET VALVES. GALVANIZED STEEL FOR WATER, SLUDGE OR PROCESS DRAIN SERVICE. MATERIAL TO MATCH THAT SPECIFIED FOR PIPE FOR CHEMICAL SERVICE



NOTES:

1. TAPPING OF DUCTILE IRON FITTINGS ALLOWED AT BOSS ONLY.

TYPE 1 FLUSHING CONNECTION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

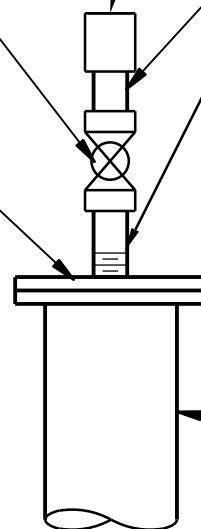
4027-181

1" BALL VALVE FOR MAIN PIPE SIZE LESS THAN OR EQUAL TO 3". 1 1/2" BALL VALVE FOR MAIN PIPE SIZE GREATER THAN 3". V300 FOR WATER, SLUDGE OR PROCESS DRAIN SERVICE. V306 FOR LAS AND PA CHEMICAL SERVICE. V317 FOR SA CHEMICAL SERVICE

HOSE COUPLING TO MATCH VALVE SIZE. FEMALE HALF CAMLOCK STYLE COMPATIBLE WITH MALE HALF ON HOSES. THREADED CONNECTION, BRASS WITH BUNAN GASKET FOR WATER, SLUDGE AND PROCESS DRAIN SERVICES. POLYPROPYLENE WITH EPDM FOR CHEMICAL

BLIND FLANGE DRILLED AND TAPPED FOR NIPPLE

NIPPLE FOR THREADED VALVES. HALF NIPPLE FOR SOCKET VALVES. GALVANIZED STEEL FOR WATER, SLUDGE OR PROCESS DRAIN SERVICE. MATERIAL TO MATCH THAT SPECIFIED FOR PIPE FOR CHEMICAL SERVICE



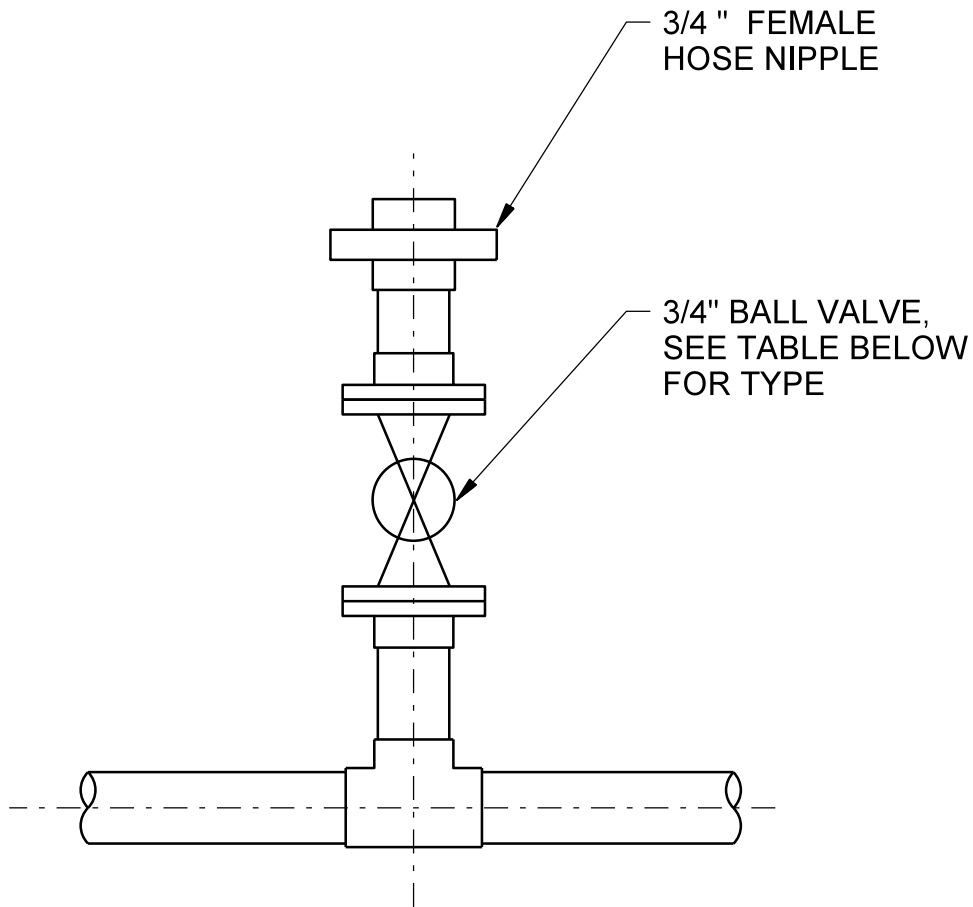
TEE, WYE, CROSS OR END OF PIPE AS SHOWN ON PLANS

TYPE 2 FLUSHING CONNECTION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-182



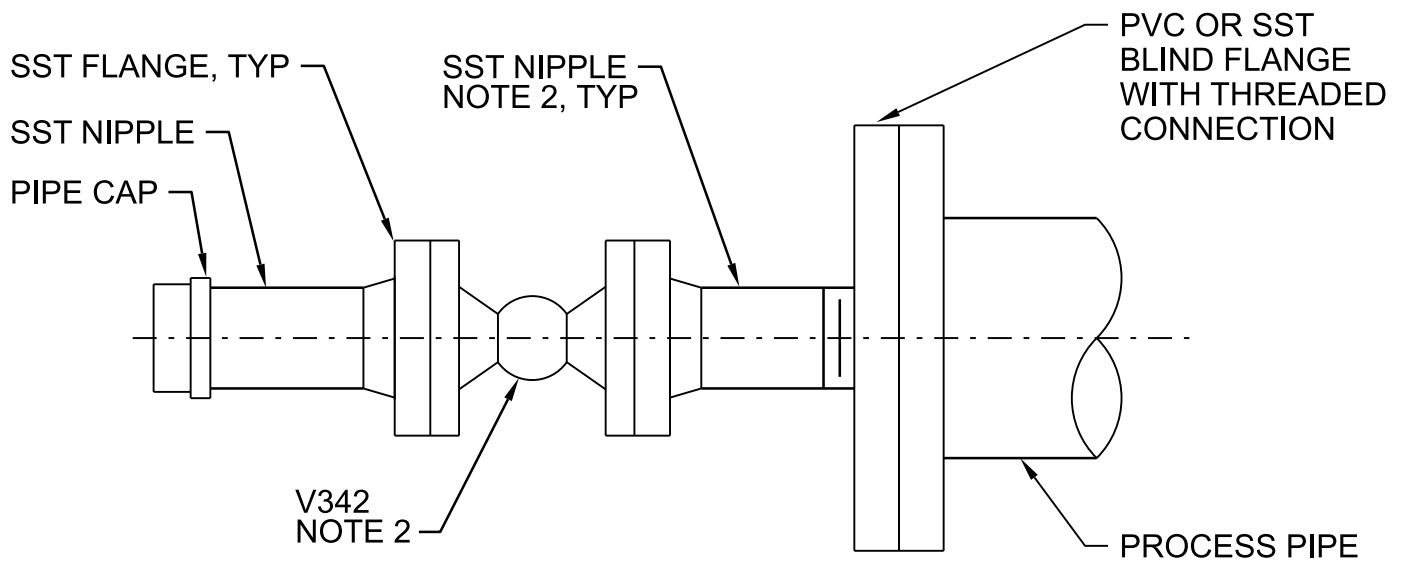
SERVICE	BALL VALVE TYPE
CST	V340
ALM	V335
FECL3	V335
PACL	V335
POS	V330
SHC	V335

FLUSHING CONNECTION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-183



PLAN

NOTES:

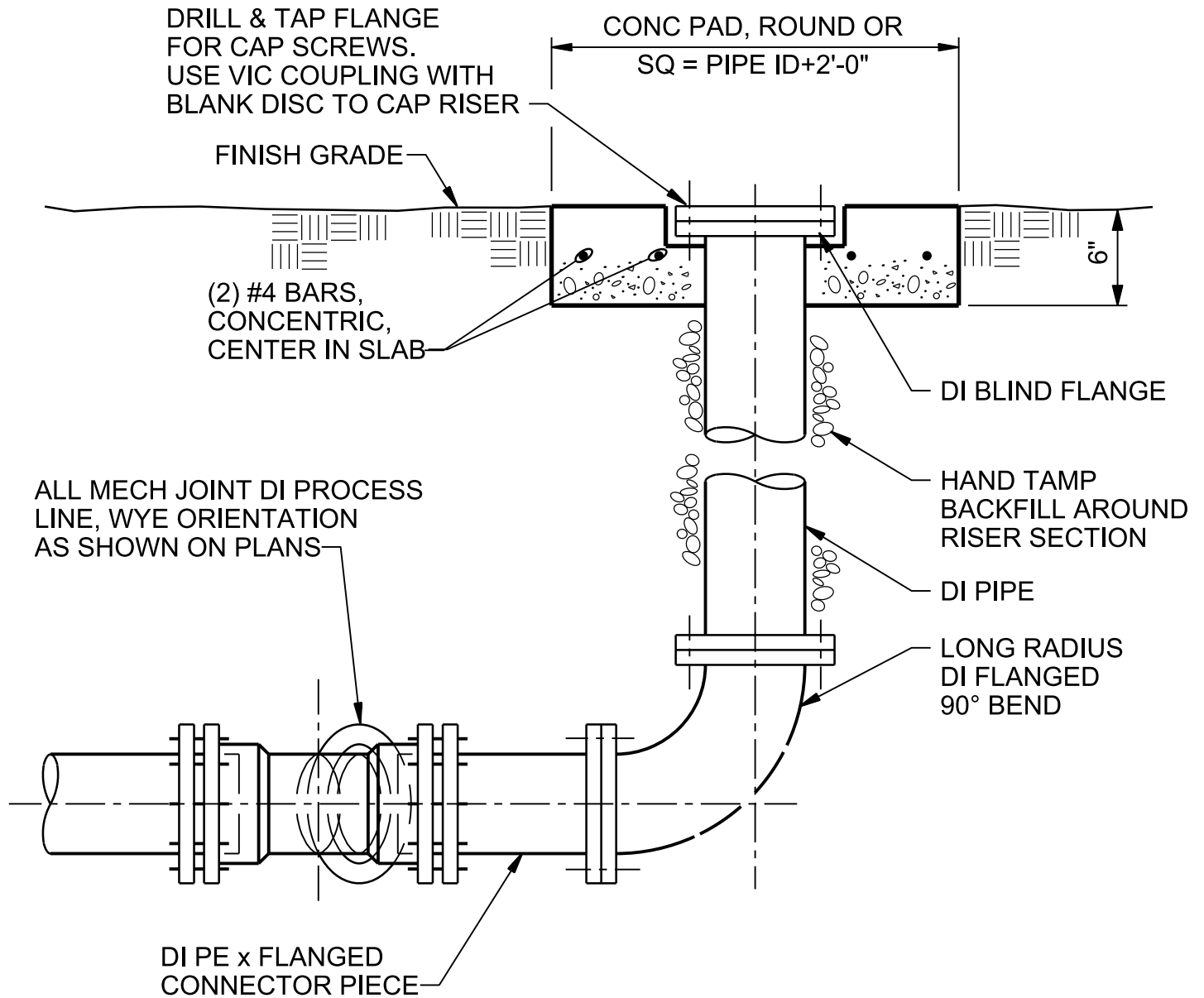
1. INSTALL DOWNWARD OR HORIZONTAL.
2. 3/4" UNLESS NOTED OTHERWISE ON DRAWINGS.

TAPPED FLANGE W/ FLUSHING CONNECTION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-185



ALL MECH JOINT DI PROCESS LINE, WYE ORIENTATION AS SHOWN ON PLANS

NOTES:

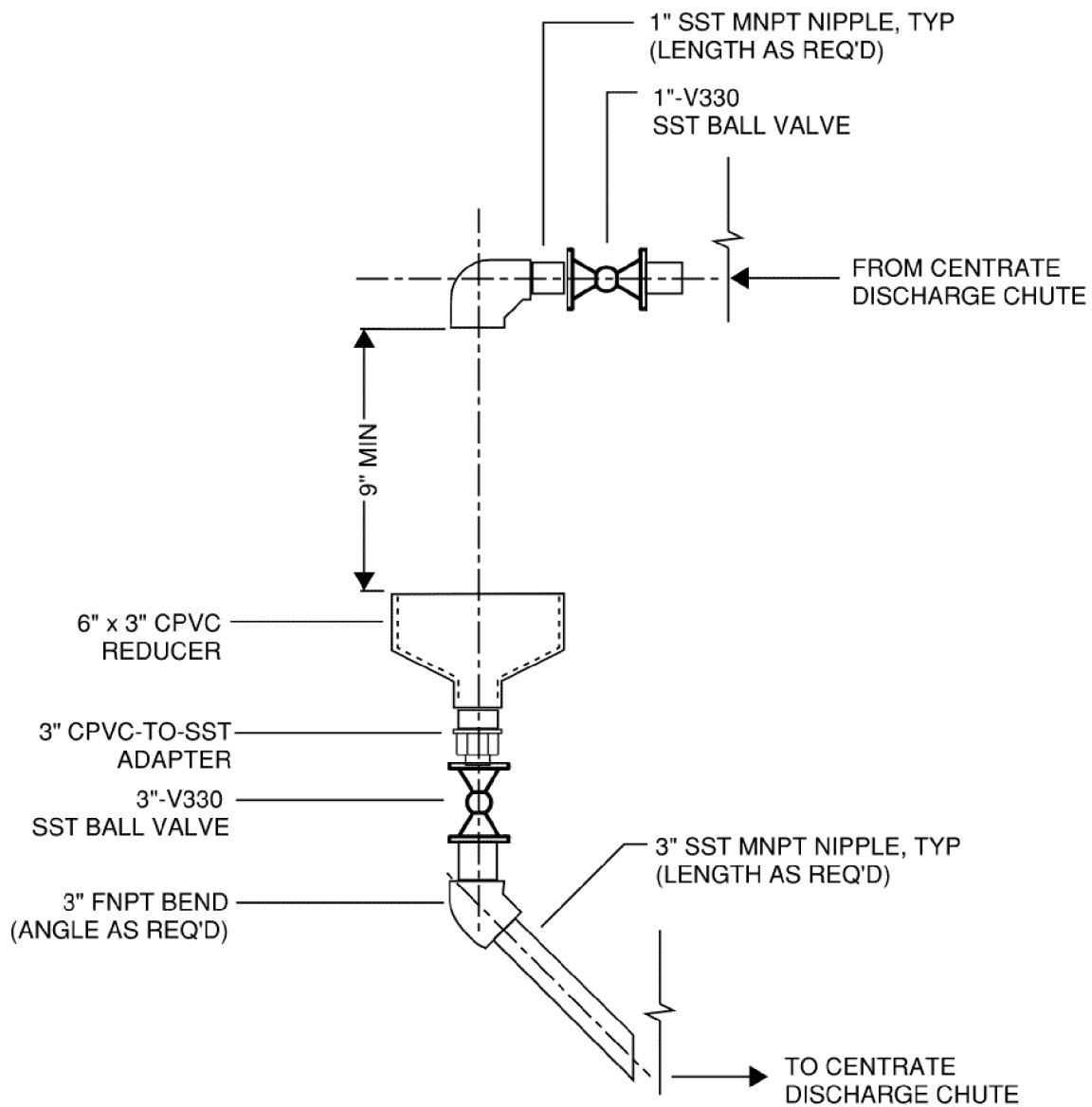
- 1. SAME SIZE AS PROCESS LINE TO A MAX OF 6 INCHES.

CLDI PROCESS LINE CLEAN-OUT SETTING

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-187



NOTES:

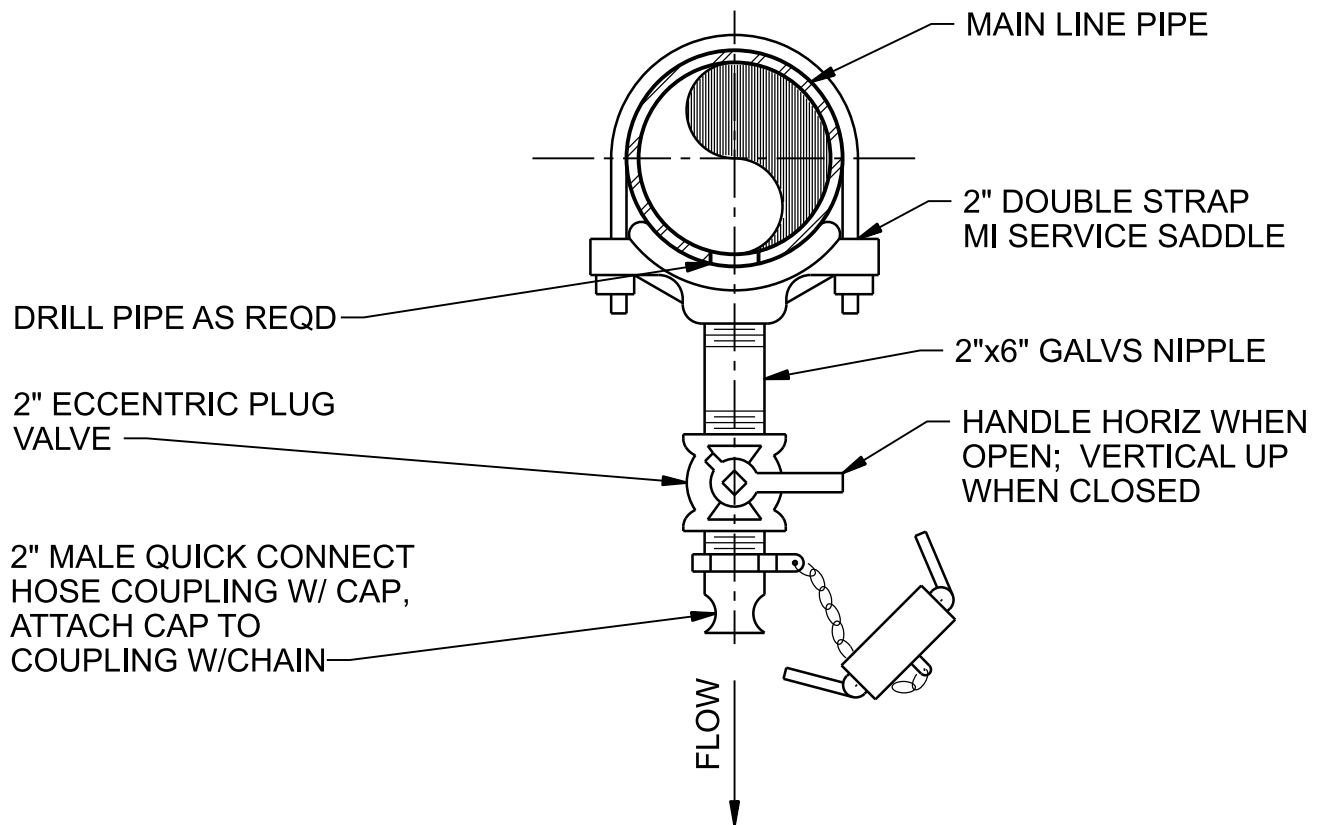
1. 3" BALL VALVE MAY BE INSTALLED IN THE VERTICAL OR HORIZONTAL POSITION TO ACCOMODATE INSTALLATION.
2. A MINIMUM AIR GAP SPACING OF 9-INCHES REQUIRED FOR 1-LITER SAMPLE BOTTLES.
3. PIPE RETURN MUST MAINTAIN POSITIVE SLOPE TOWARDS CENTRATE DISCHARGE CHUTE.

CENTRATE SAMPLE TAP AND FUNNEL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4027-188

**NOTES:**

1. FOR LINE SIZE 2" AND SMALLER, FITTINGS AND VALVES SHALL BE SAME SIZE AS LINE.

LINE DRAIN VALVE INSTALLATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4027-191

MAIN PROCESS LINE

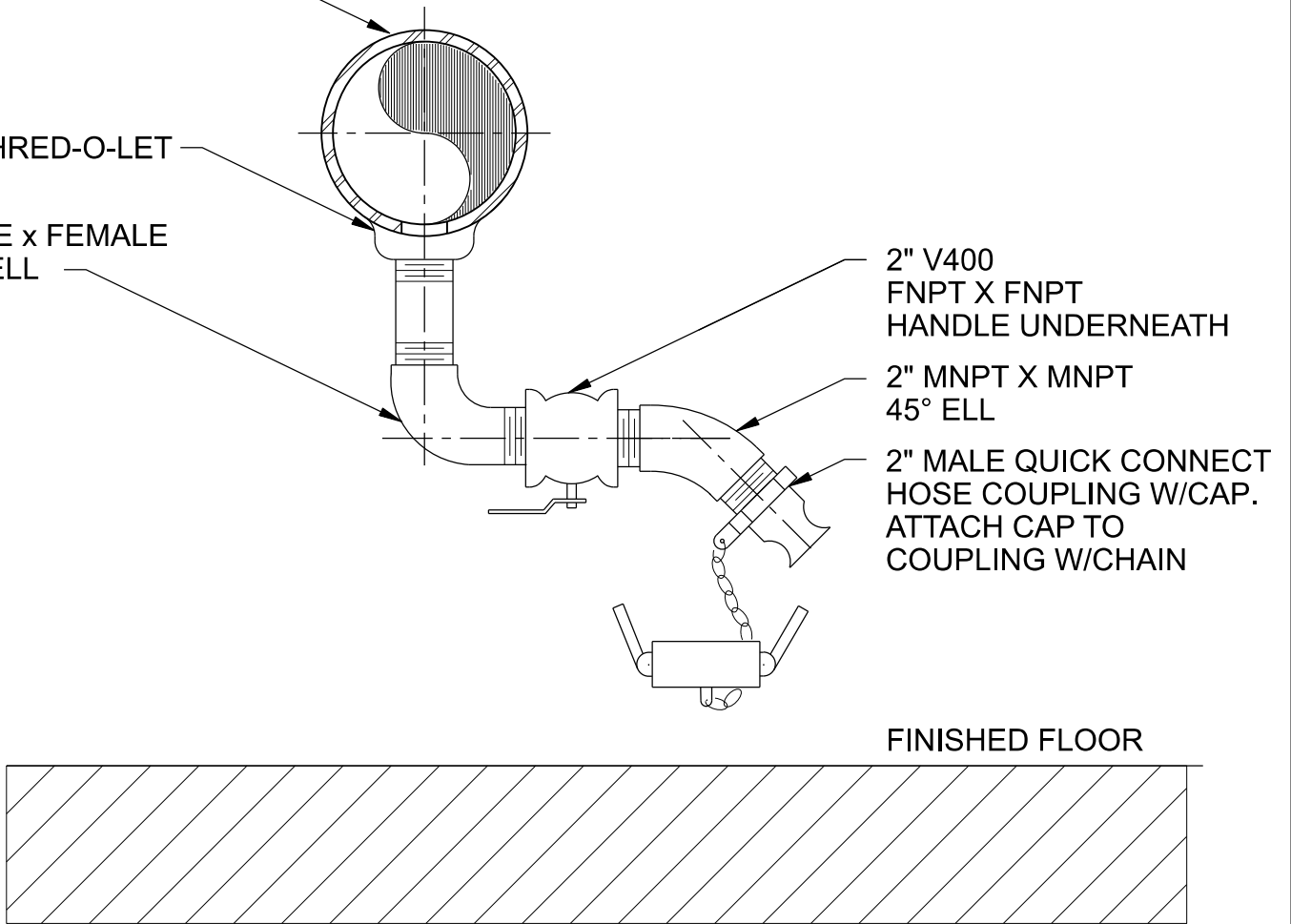
2" THRED-O-LET

MALE x FEMALE
90° ELL

2" V400
FNPT X FNPT
HANDLE UNDERNEATH

2" MNPT X MNPT
45° ELL

2" MALE QUICK CONNECT
HOSE COUPLING W/CAP.
ATTACH CAP TO
COUPLING W/CHAIN



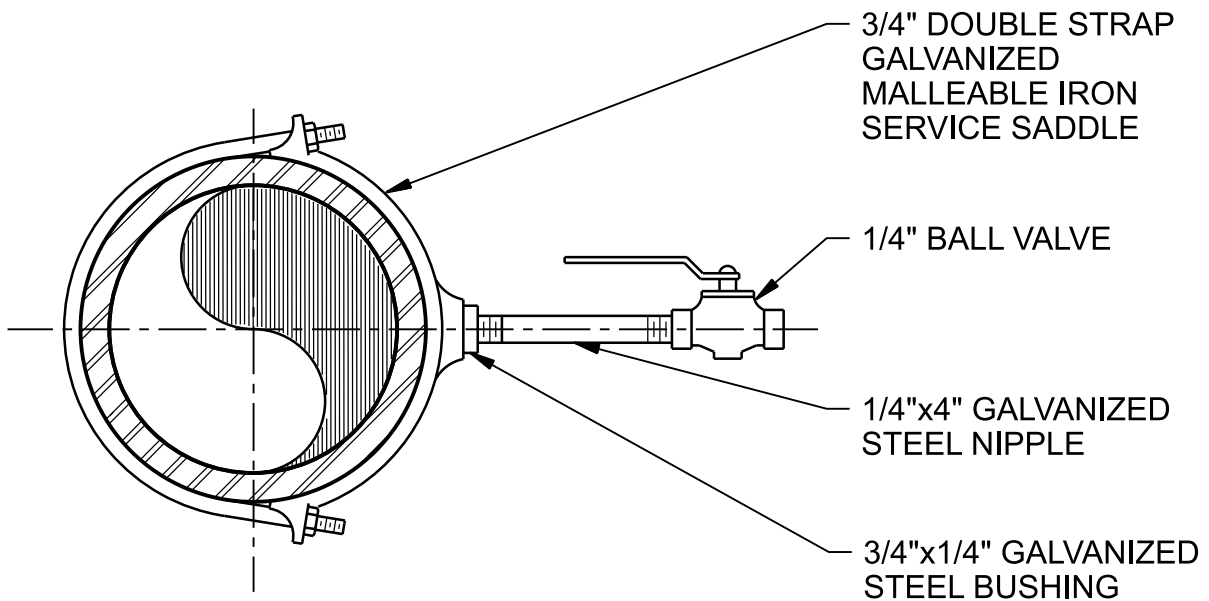
FINISHED FLOOR

LINE DRAIN VALVE INSTALLATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-192

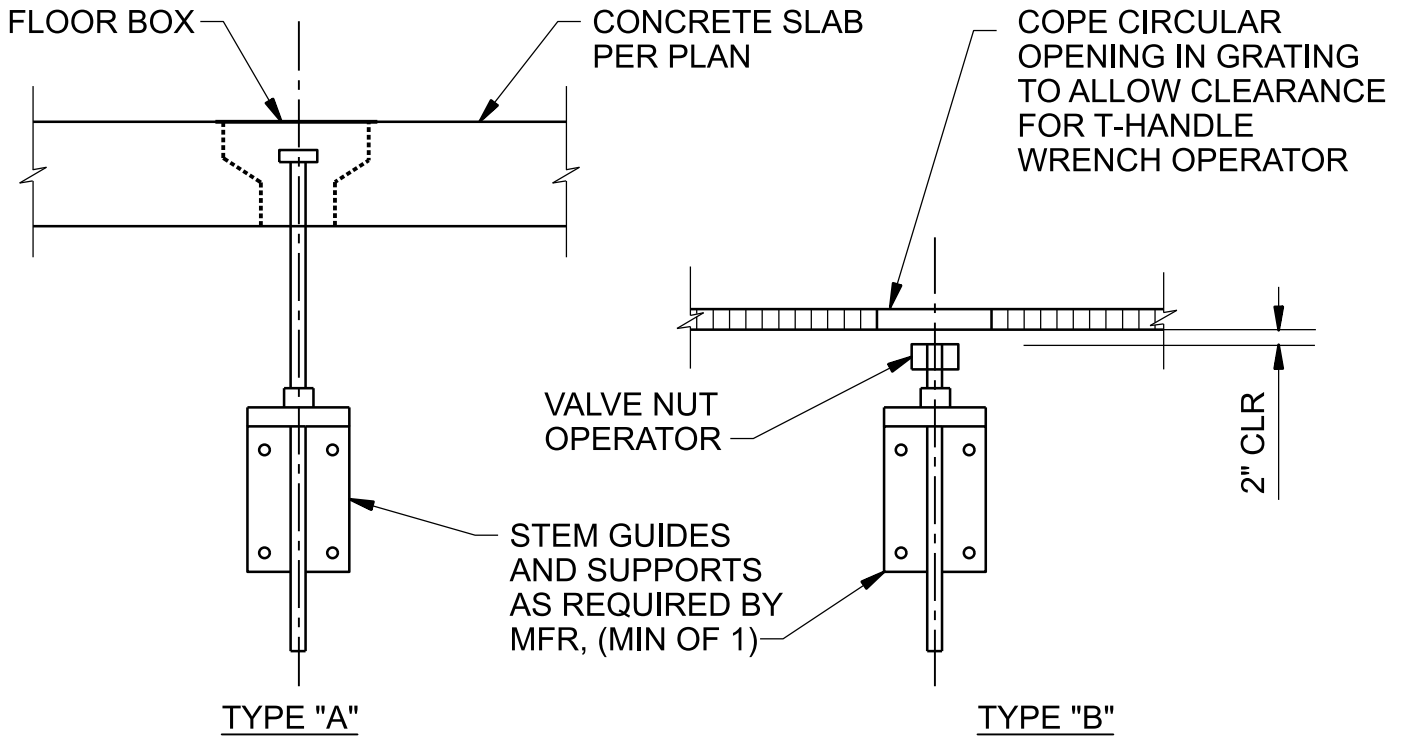


PRESSURE TEST POINT

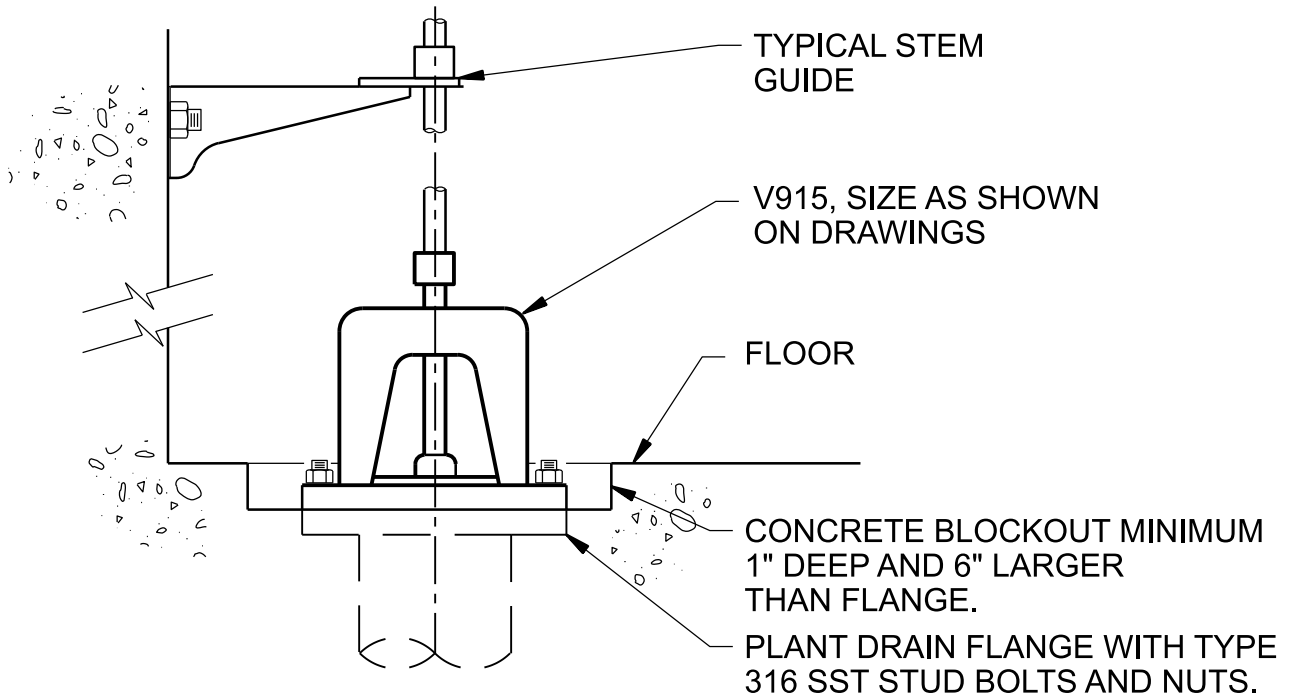
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4027-194



VALVE NUT INSTALLATION



MUD VALVE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-201

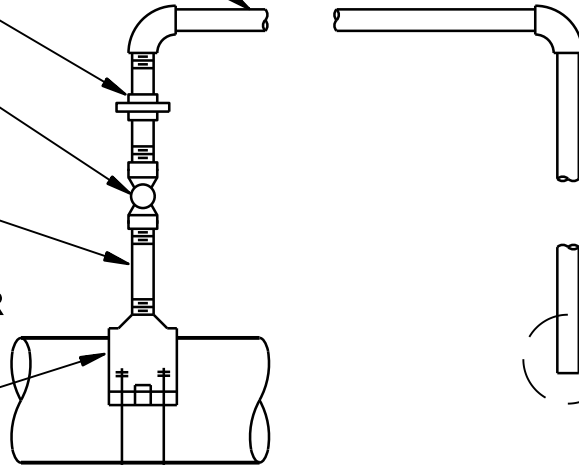
1" GALV STEEL
VENT PIPE UNLESS
NOTED OTHERWISE

UNION

1" V300
BALL VALVE

GALV STEEL
NIPPLE

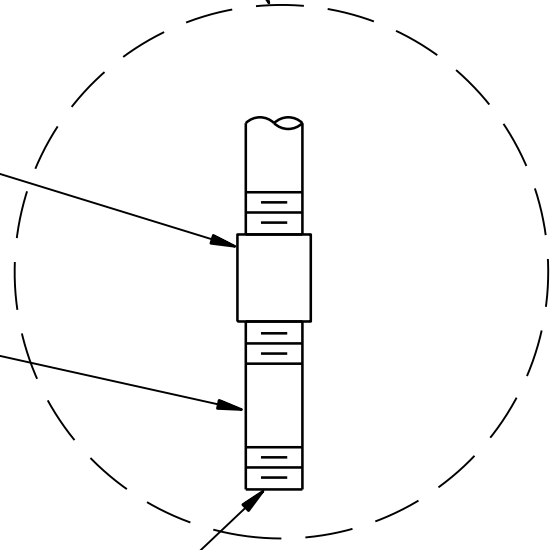
DOUBLE STRAP
SERVICE SADDLE
FOR CLDI PIPE OR
THRED-O-LET
WELDED TO
STEEL PIPE



NPT x NPT
COUPLING

CAST BRASS NPSM x NPT,
MALE x MALE,
NIPPLE ADAPTER
WITH HEXAGONAL
WRENCH FEATURE.

ROUTE TO HUB DRAIN OR
SCUPPER IF WITHIN 20-FEET,
IF FURTHER THAN 20-FEET
HORIZONTAL DISTANCE
FROM VENT CONNECTION
TERMINATE 3'-0" ABOVE FLOOR



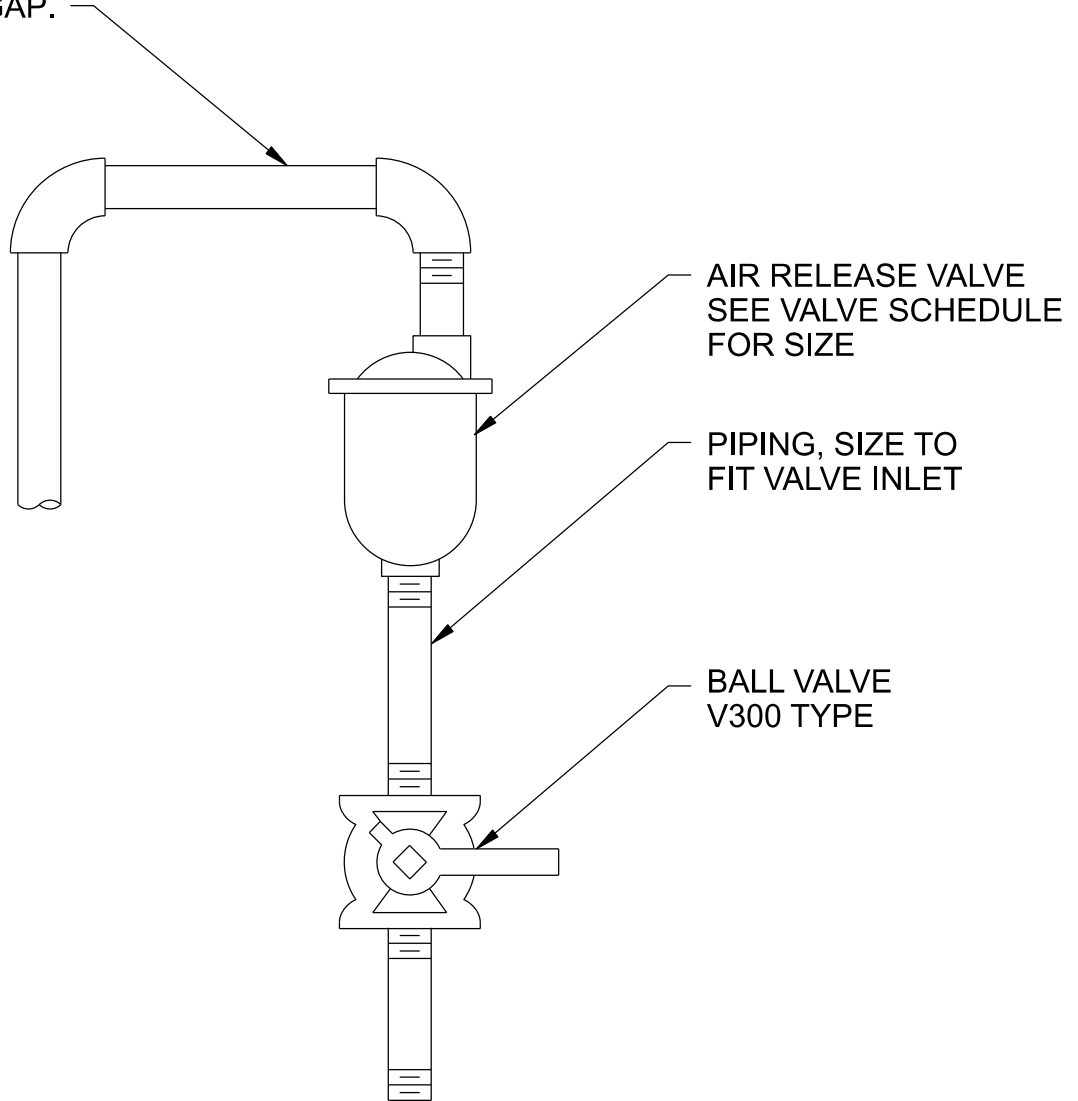
PIPE HIGH POINT VENT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-205

ROUTE COPPER PIPE DISCHARGE LINE TO NEAREST DRAIN. VERIFY SIZE OF COPPER PIPE WITH VALVE MANUFACTURER. PROVIDE 18" MINIMUM AIR GAP.

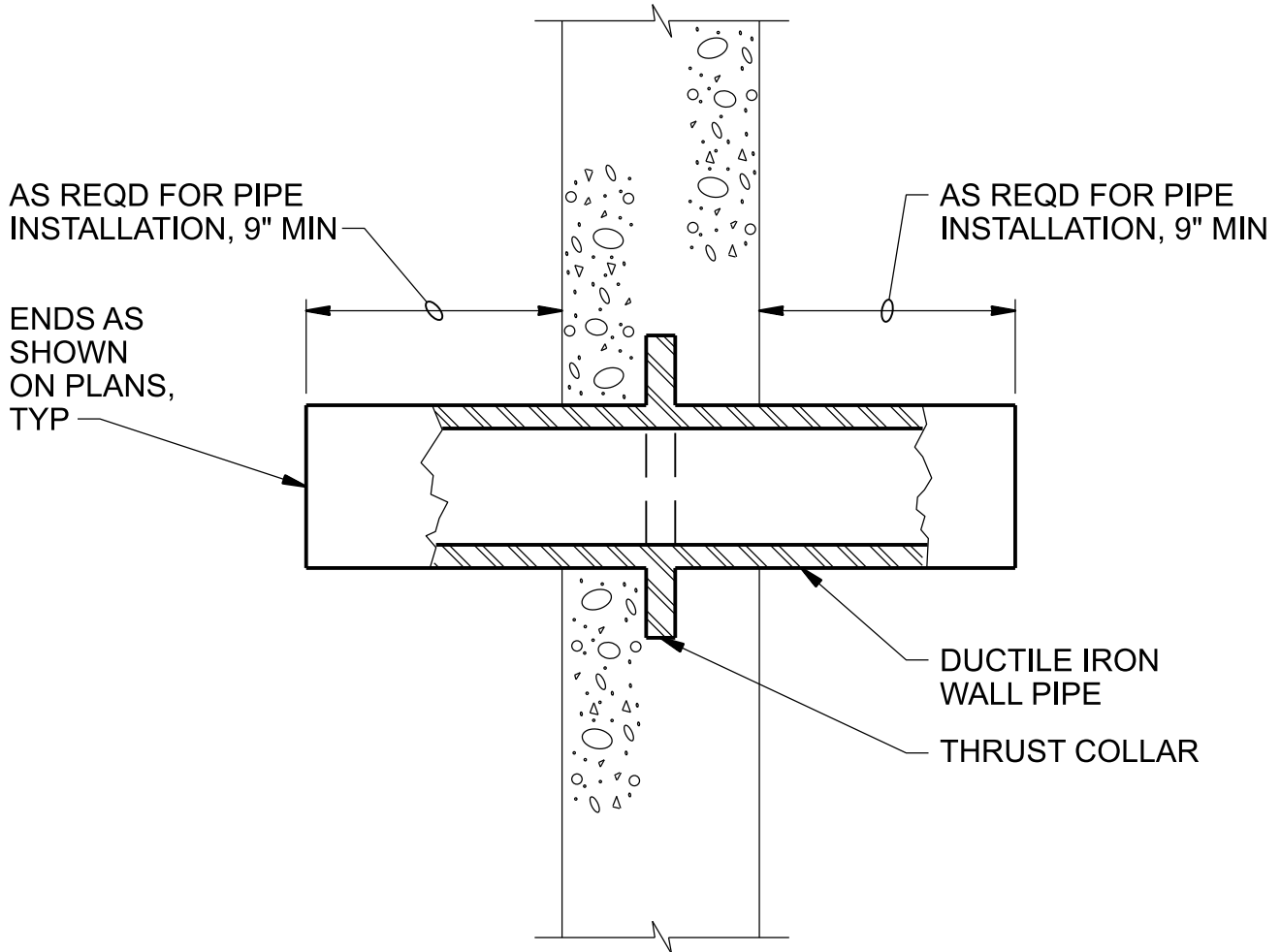


AIR RELEASE VALVE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-207



NOTES:

- 1. COAT WALL PIPE WITH SPECIFIED PAINT SYSTEM PRIOR TO CONCRETE PLACEMENT.

DUCTILE IRON WALL PIPE

NTS

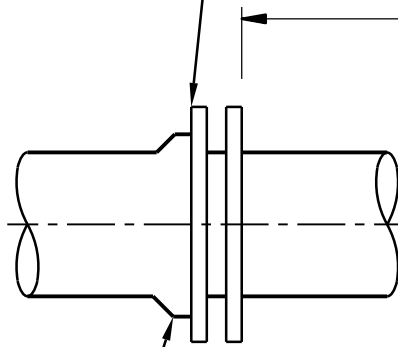
HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-600

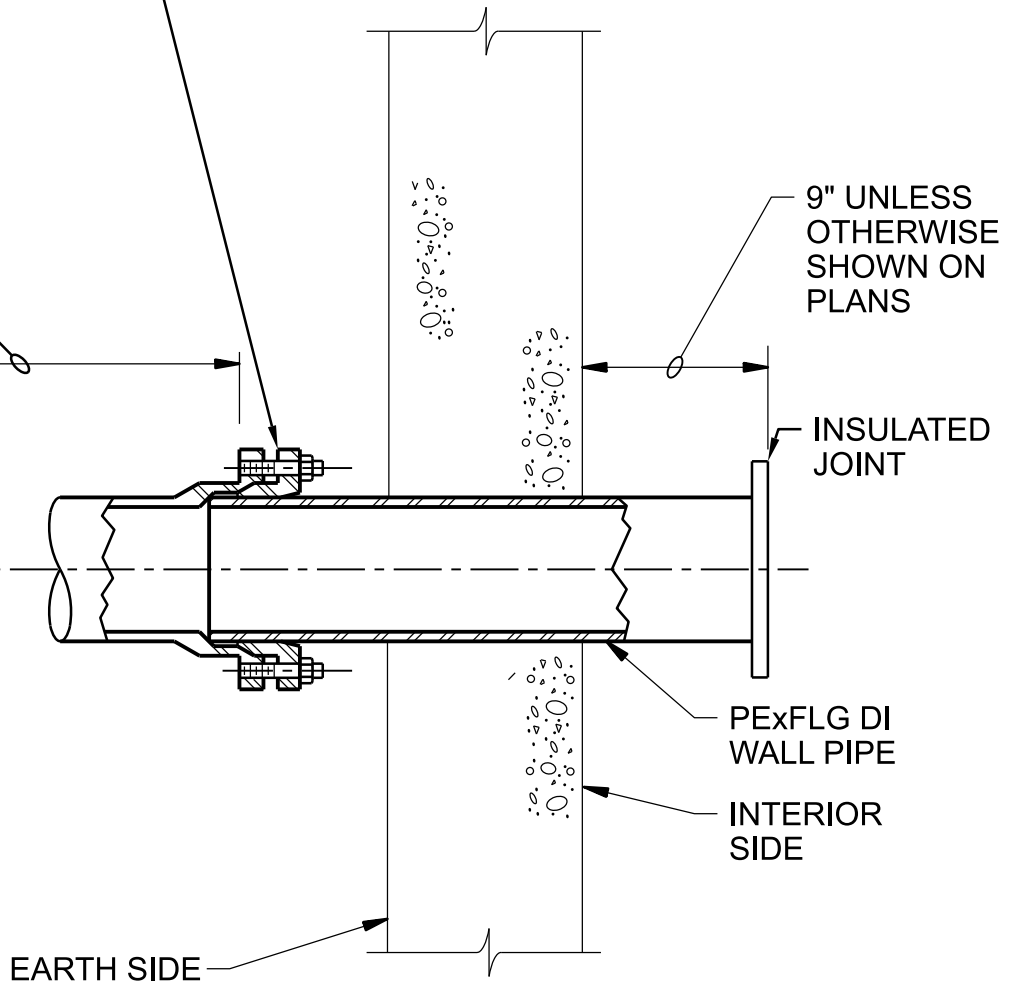
RESTRAINED JOINT AS SPECIFIED

THE GREATER OF
2'-0" OR 2 X PIPE
DIAMETER MIN,
10'-0" MAX

RESTRAINED
JOINT AS
SPECIFIED



DI PIPE



9" UNLESS
OTHERWISE
SHOWN ON
PLANS

INSULATED
JOINT

PEXFLG DI
WALL PIPE

INTERIOR
SIDE

EARTH SIDE

NOTES:

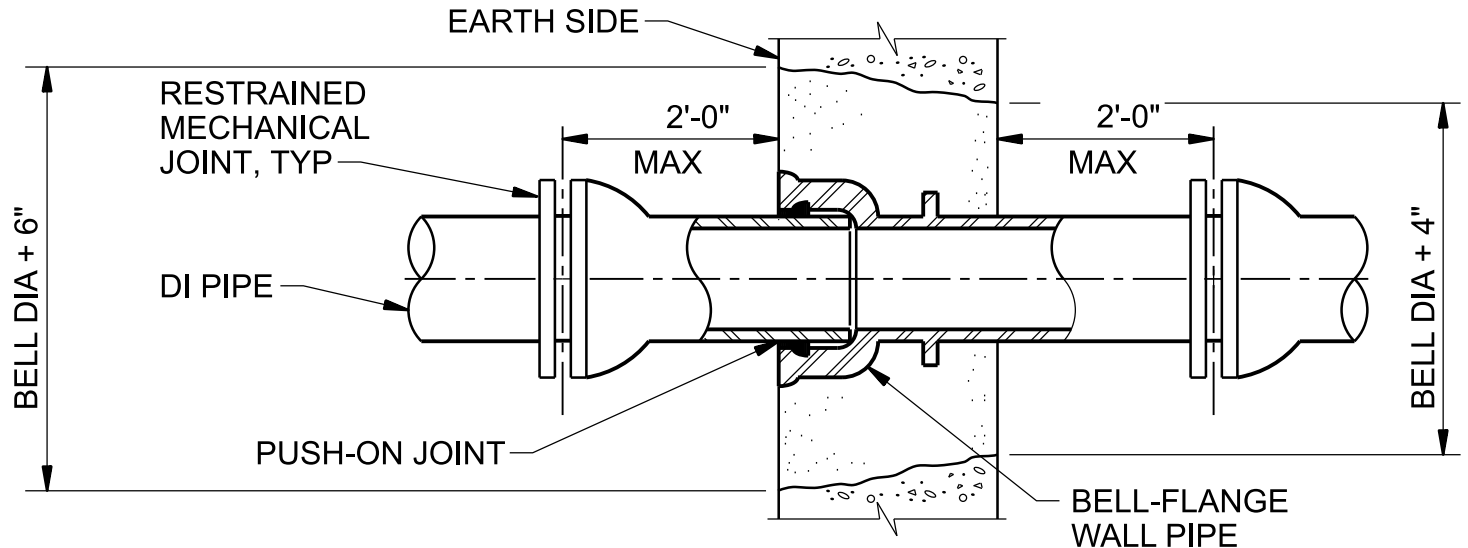
1. COAT WALL PIPE WITH SPECIFIED PAINT SYSTEM PRIOR TO CONCRETE PLACEMENT.
2. DO NOT ALLOW PIPE AND THRUST COLLAR TO COME INTO CONTACT WITH REINFORCING STEEL. PROVIDE 2" MINIMUM CLEARANCE. TEST FOR ELECTRICAL ISOLATION BEFORE AND AFTER CONCRETE POUR.

MECHANICAL JOINT WALL PIPE FOR DIP

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-601



NOTES:

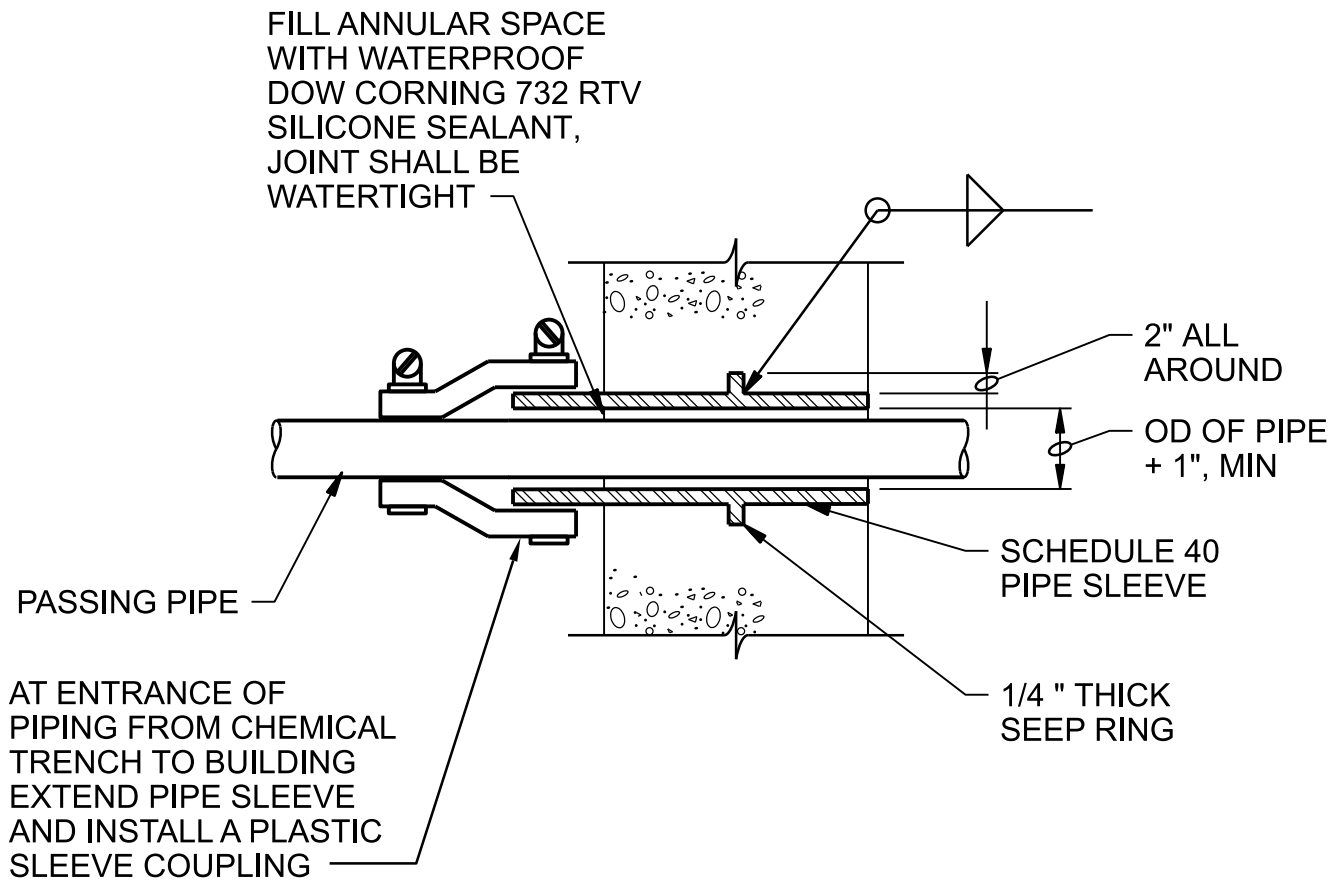
1. IN EXISTING CONCRETE, BREAK OUT WALL AND REMOVE ONLY ENOUGH REINFORCING STEEL TO INSTALL PIPE. APPLY APPROVED WATERPROOF BONDING AGENT OVER EXISTING CONCRETE SURFACE BEFORE PLACING NON-SHRINK GROUT. DRY PACK FROM EARTH SIDE. COAT WALL PIPE WITH SPECIFIED PAINT SYSTEM BEFORE GROUT PLACEMENT.

MECHANICAL JOINT WALL PIPE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-602



NOTES:

1. DO NOT USE WHERE SUBJECT TO HYDROSTATIC PRESSURE.
2. FOR SLEEVE MATERIAL, REFER TO AREA CLASSIFICATION AND MATERIAL SELECTION TABLE AND MATCH PIPE SUPPORT MATERIALS. WHEN A SLEEVE PASSES FROM ONE EXPOSURE TO THE OTHER, THE WORST-CASE EXPOSURE WILL GOVERN THE SLEEVE MATERIAL.

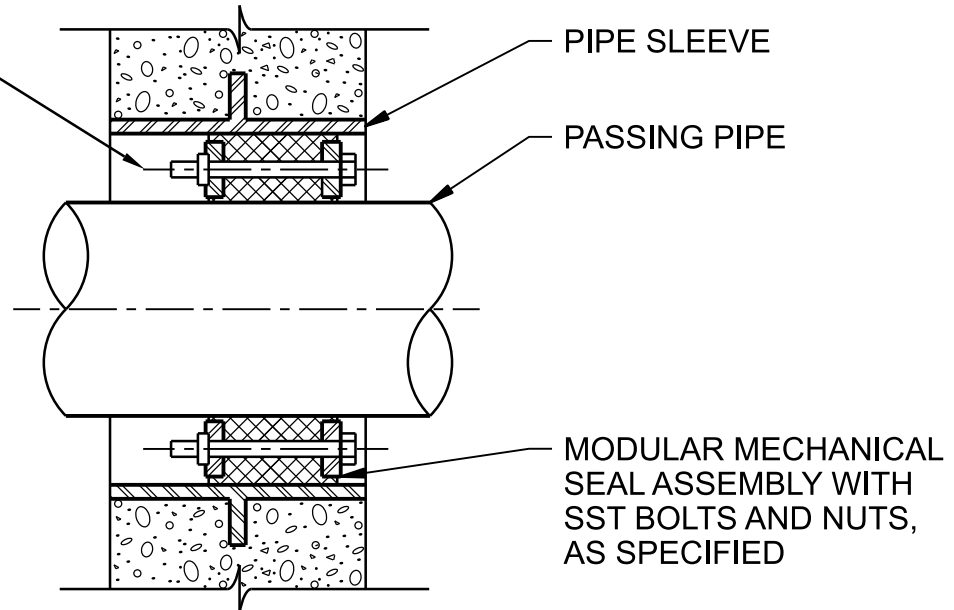
TYPE B PIPE SLEEVE

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-604

GROUT PACK ANNULAR
SPACE 1" DEEP
MINIMUM IF EXPOSED
TO WATER OR SOIL.



NOTES:

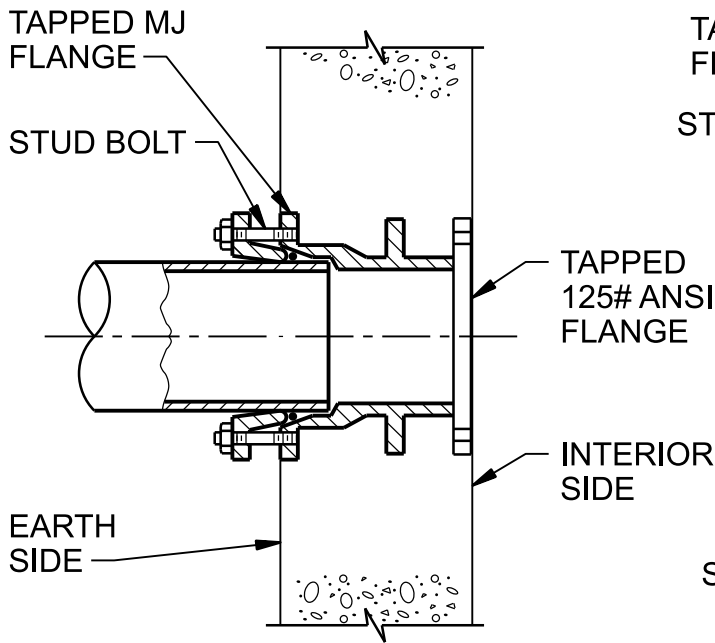
1. PIPE SLEEVE TO BE 304 STAINLESS STEEL FOR PENETRATION ON WATER HOLDING BASIN OR CHEMICAL CONTAINMENT AREA.
2. PIPE SLEEVE TO BE HOT DIP GALVANIZED FOR OTHER AREAS.
3. FOR PIPING 6-INCH AND SMALLER, PENETRATION MAY BE CORE DRILLED IN FIELD AND NO PIPE SLEEVE IS REQUIRED.
4. FOR EXISTING CAST IN PLACE WALLS, OMIT PIPE SLEEVE AND CORE DRILL TO DIAMETER RECOMMENDED BY MECHANICAL SEAL ASSEMBLY MANUFACTURER. INSIDE SURFACE MUST BE SMOOTH. PREPARE AND COAT EXPOSED STEEL REINFORCEMENT WITH SYSTEM NO. 7.
5. FOR EXISTING PRECAST PANEL WALLS, DO NOT LOCATE CORE DRILL WITHIN 12" OF PANEL EDGE AND EMBEDS. CONDUCT FERROSCAN TO LOCATE EMBEDS AND REINFORCING. IF REINFORCING WILL BE CUT, SUBMIT TO ENGINEER FOR REVIEW AND APPROVAL.

WALL PIPE PENETRATION SEAL

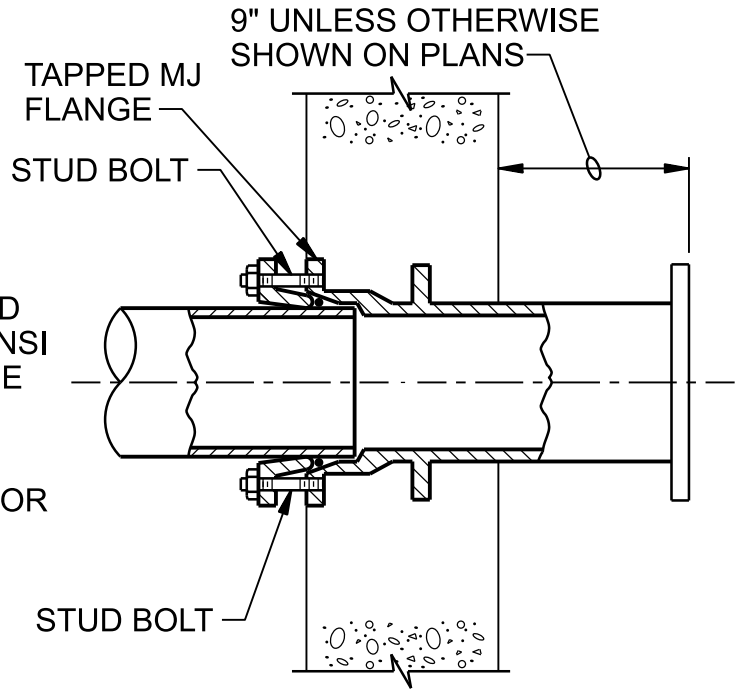
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

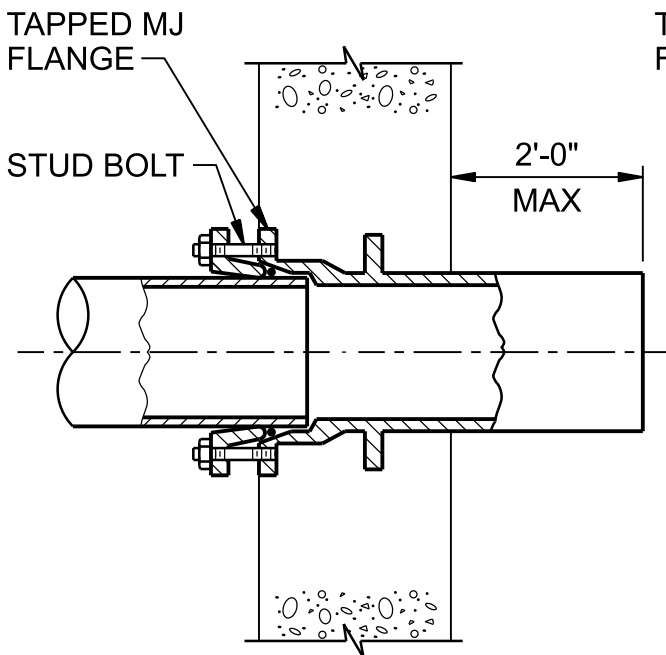
4027-607



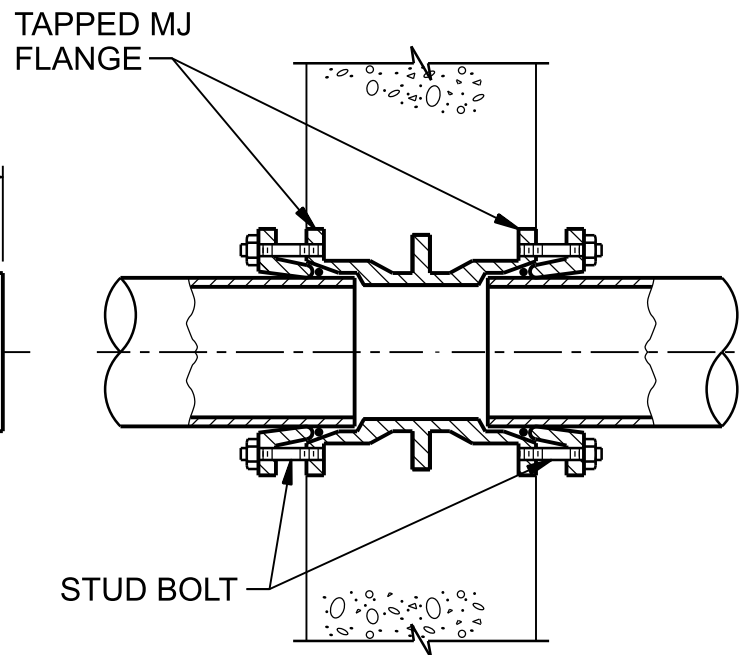
MECHANICAL JOINT X FLUSH FLANGE



MECHANICAL JOINT X FLANGE



MECHANICAL JOINT X PLAIN END



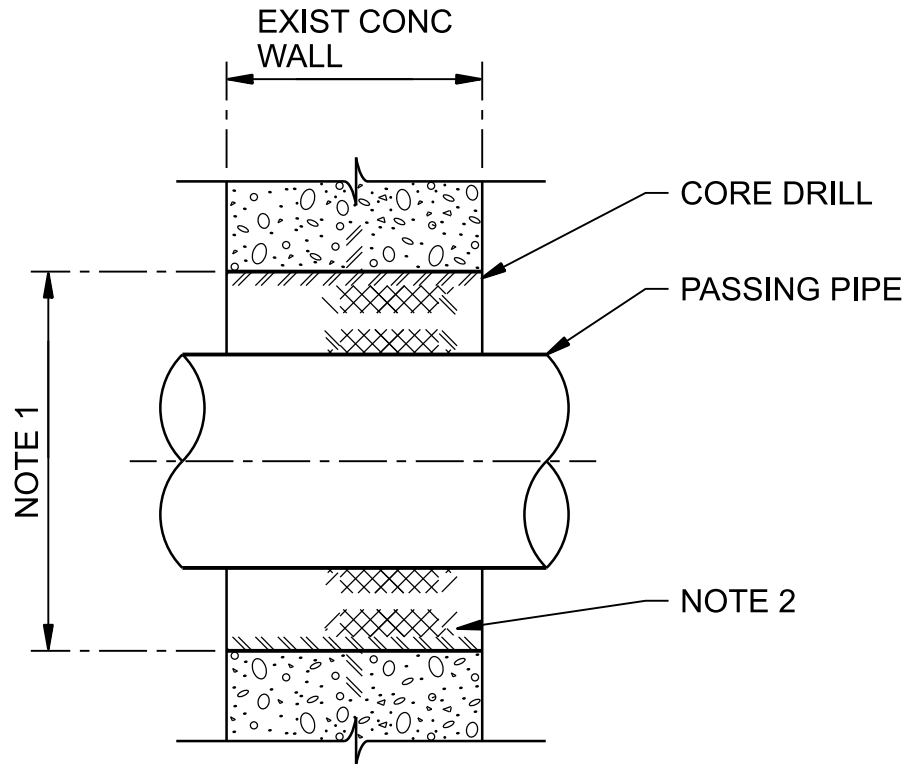
MECHANICAL JOINT X MECHANICAL JOINT

DUCTILE IRON WALL PIPES

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-609



NOTES:

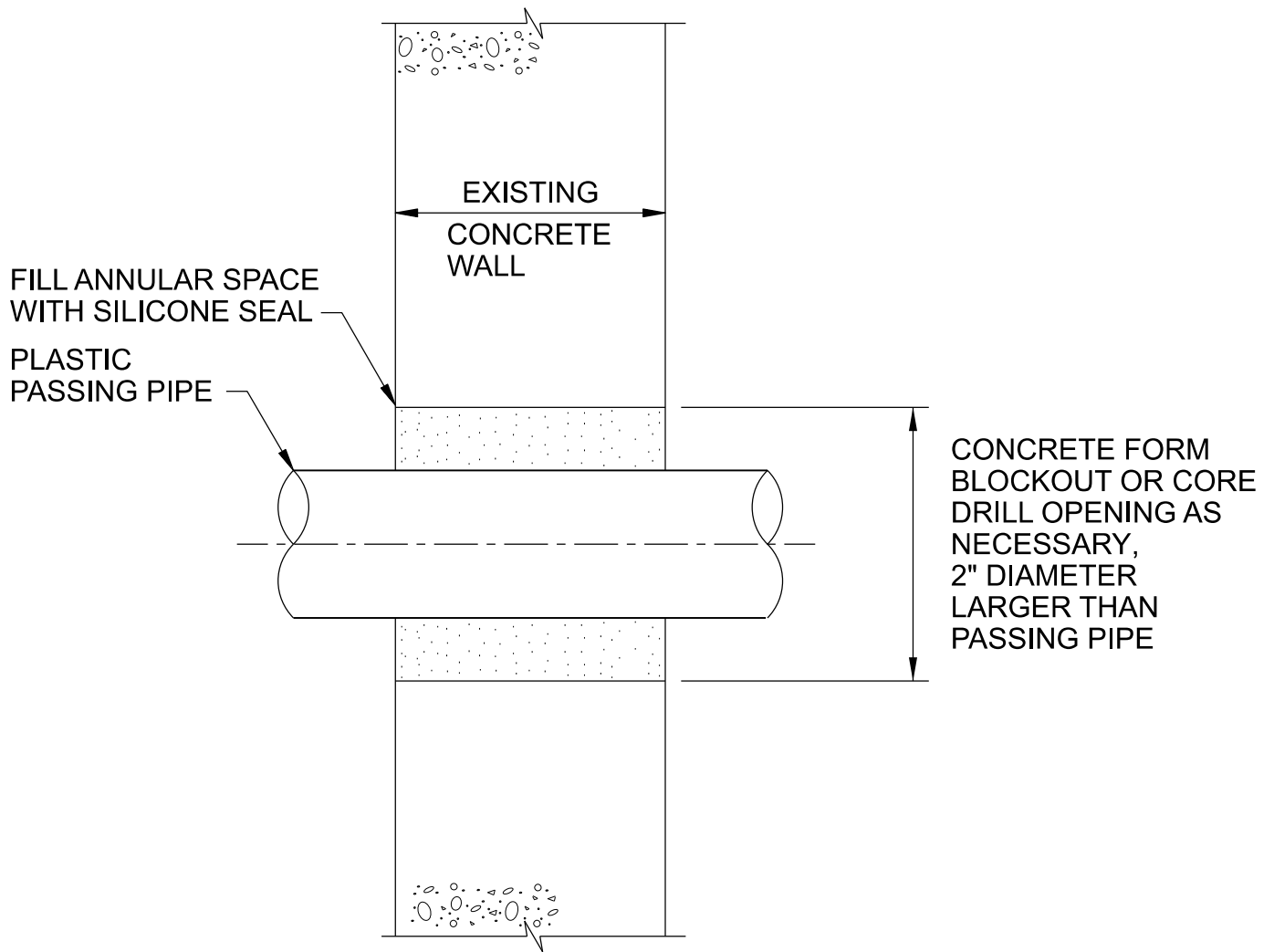
1. CORE DRILL HOLE DIAMETER SHALL BE PIPE O.D. + 2 1/2".
2. FILL SPACE WITH NON-SHRINK GROUT. CLEAN AND PREPARE CORE-DRILL SURFACES AS RECOMMENDED BY GROUT MANUFACTURER. PIPE SHALL REMAIN CENTERED IN CORE DRILL.

WALL PENETRATION SEAL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-610

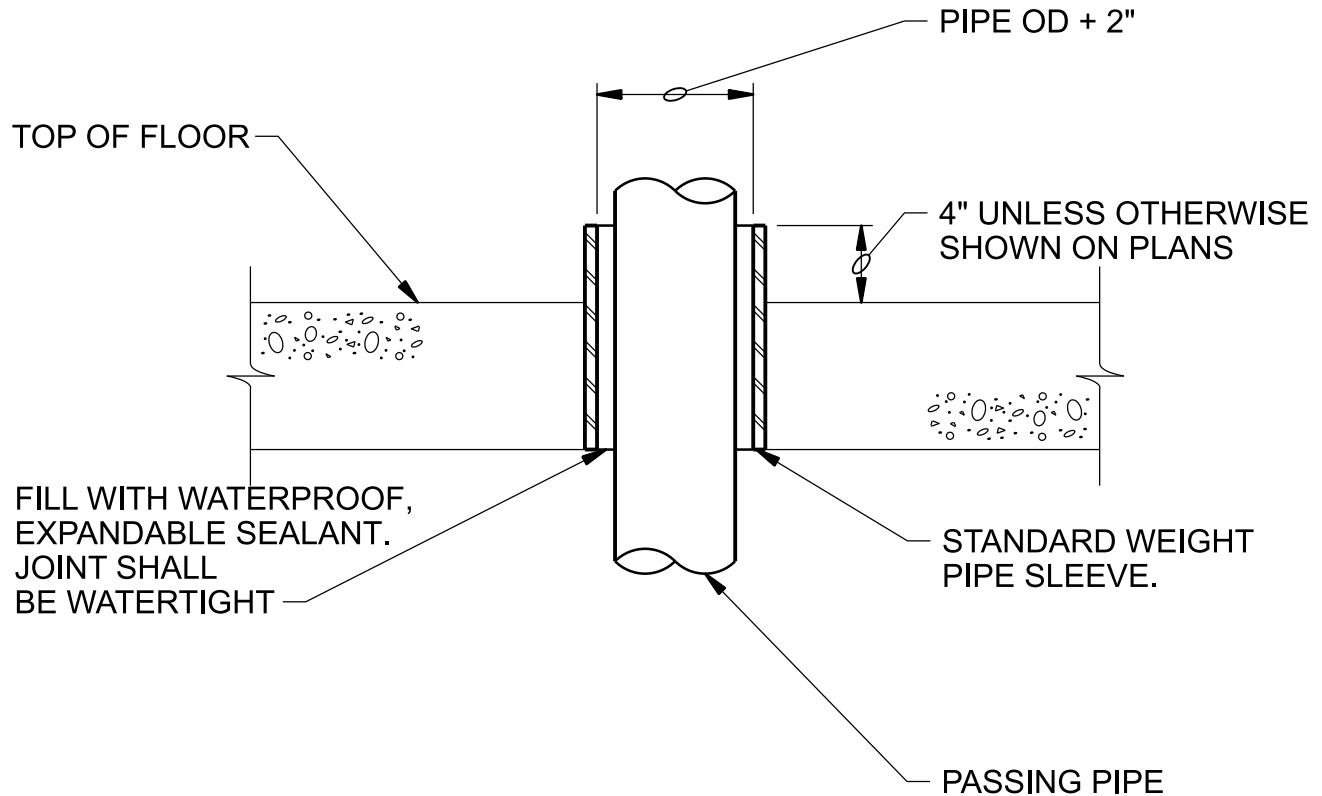


PLASTIC PIPE WALL PENETRATION SEAL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-619



NOTES:

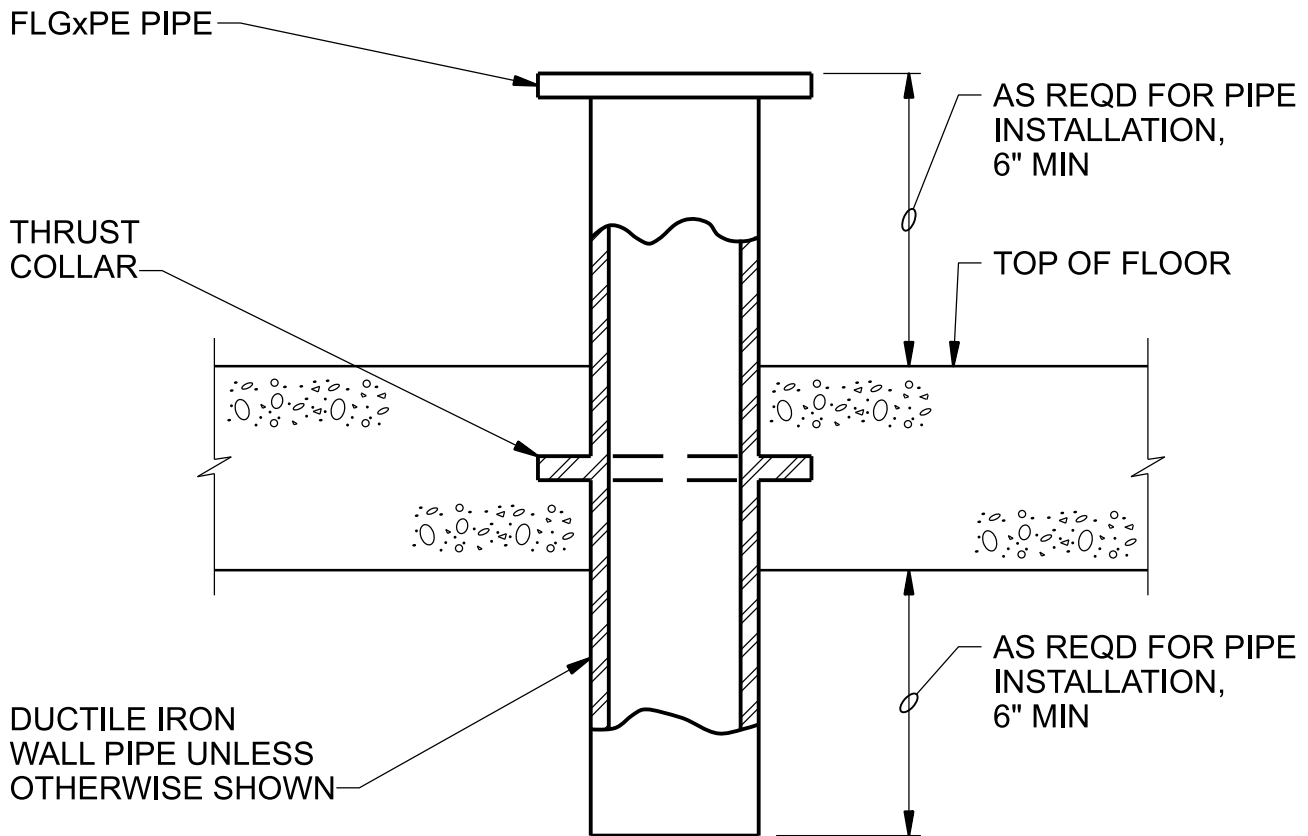
1. FOR SLEEVE MATERIAL, REFER TO AREA CLASSIFICATION AND MATERIAL SELECTION TABLE AND MATCH PIPE SUPPORT MATERIALS. WHEN A SLEEVE PASSES FROM ONE EXPOSURE TO THE OTHER, THE WORST-CASE EXPOSURE WILL GOVERN THE SLEEVE MATERIAL.

FLOOR SLEEVE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-620



NOTES:

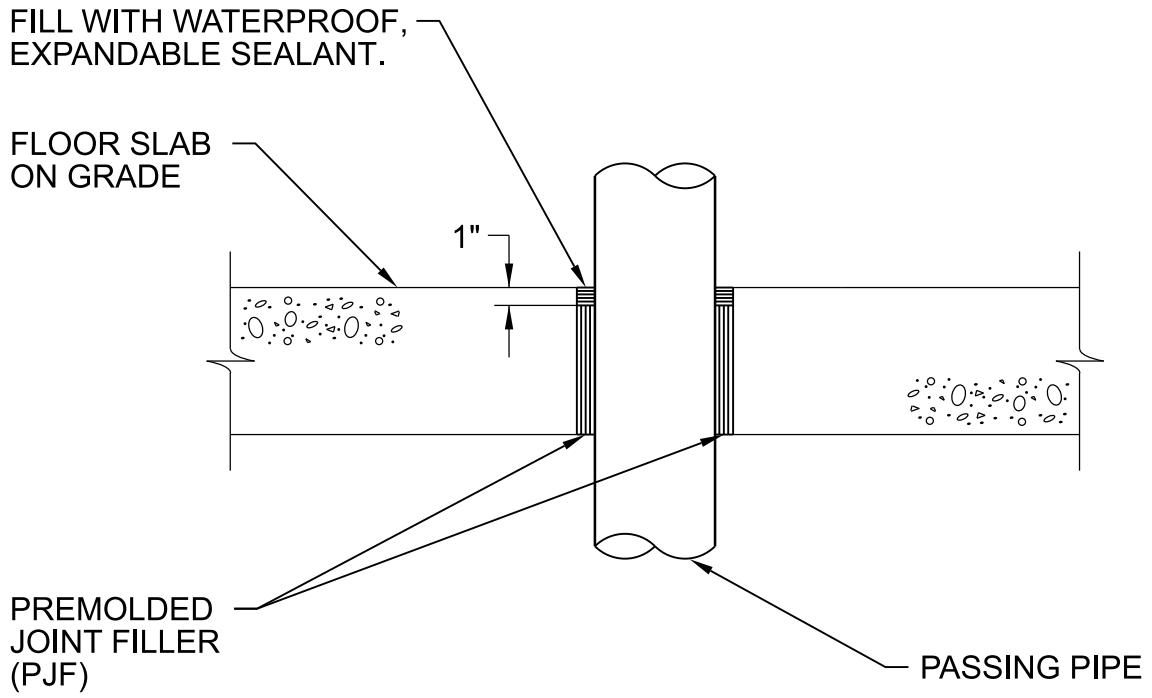
1. COAT FLOOR PIPE WITH SPECIFIED PAINT SYSTEM PRIOR TO CONCRETE PLACEMENT.

FLOOR PIPE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-622



SLAB ON GRADE PIPE PENETRATIONS

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-625

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

CAST IRON LID

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

FINISHED GRADE

COMPACTED BACKFILL

CAST IRON VALVE BOX, SLIDING TYPE, UPPER SECTION

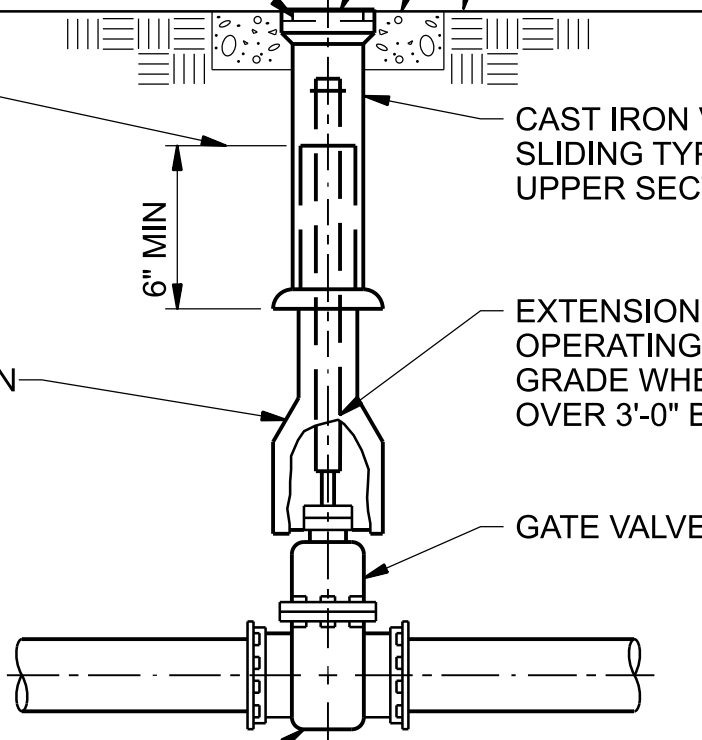
6" MIN

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

VALVE SIZE AND ENDS AS SPECIFIED OR INDICATED ON PLANS

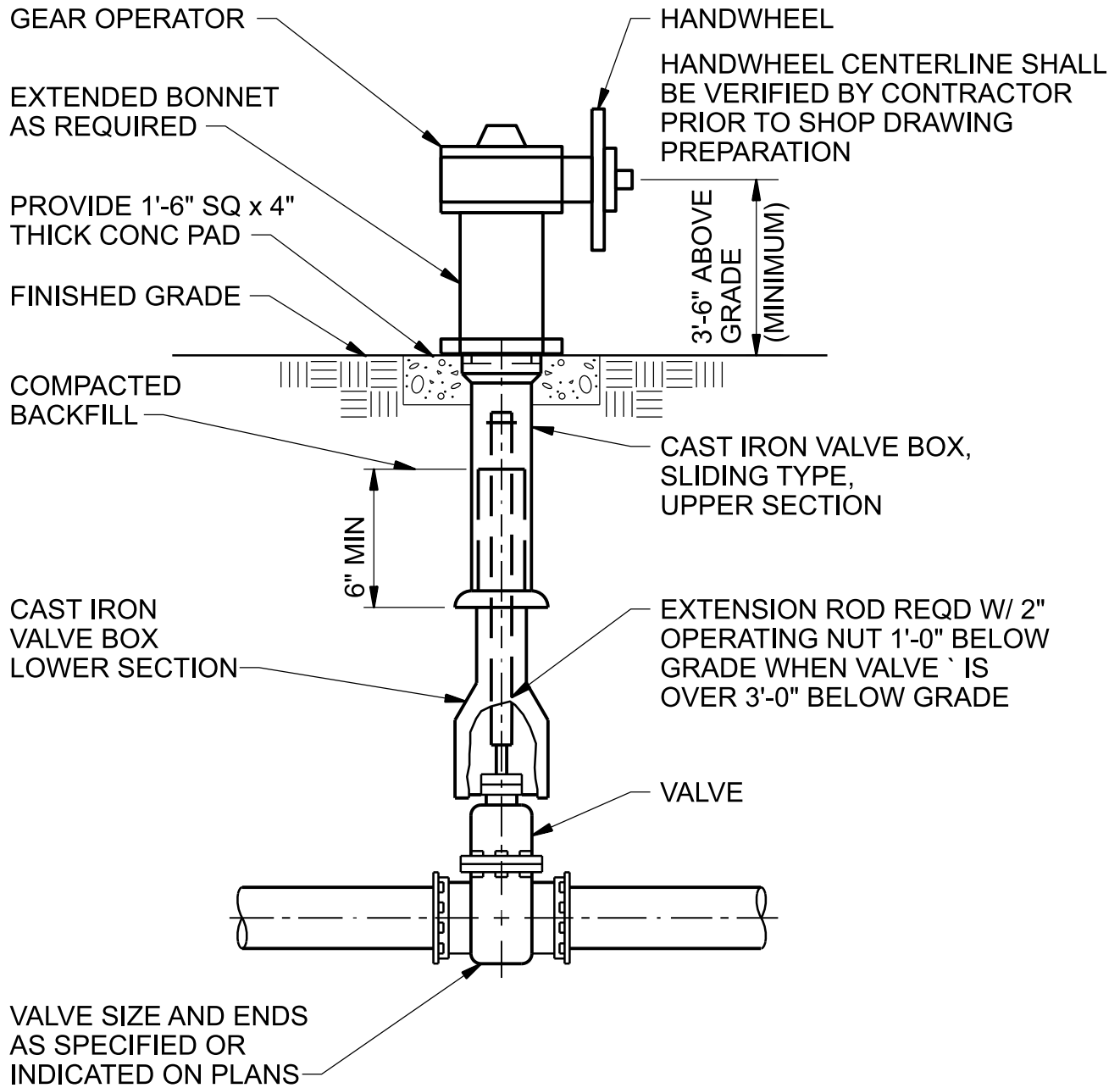


BURIED GATE VALVE BOX

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4027-640

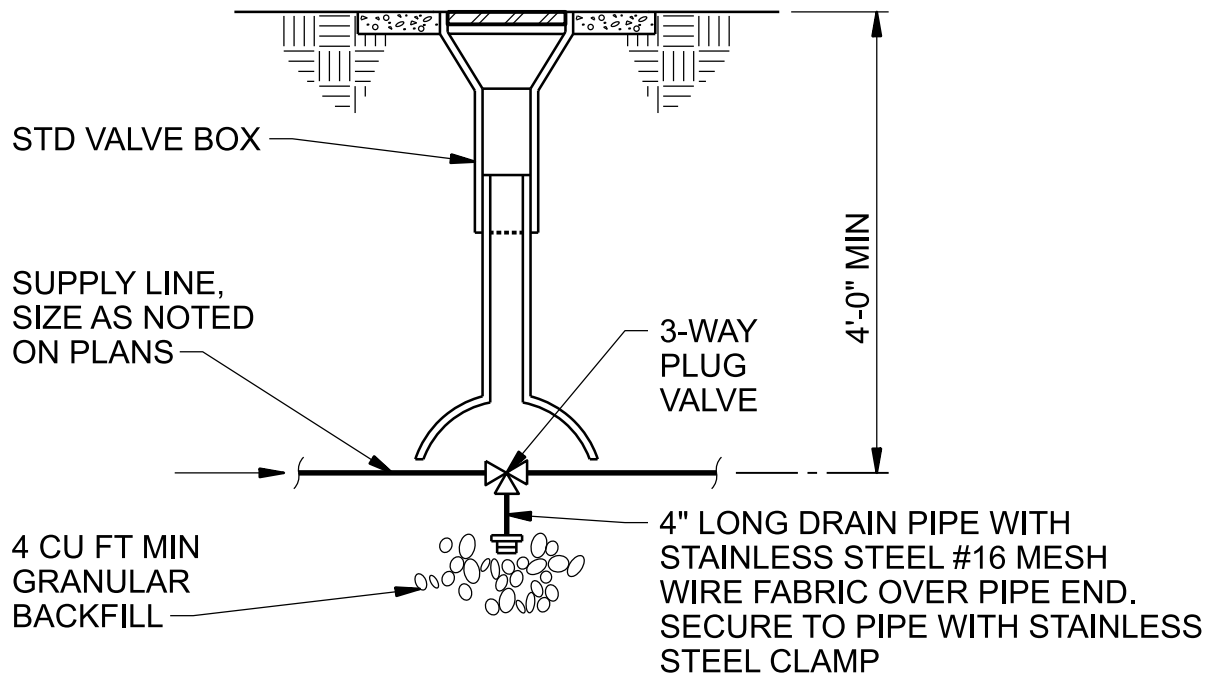


SPECIAL BURIED PLUG VALVE BOX

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4027-640A

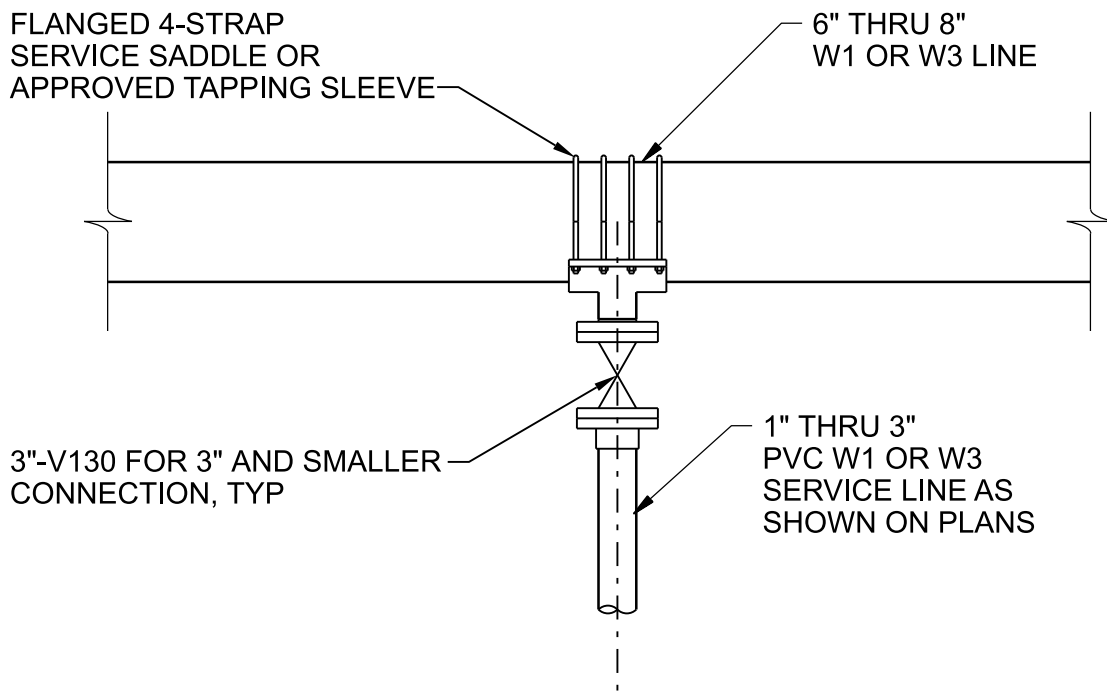


STOP AND DRAIN VALVE BOX

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-642



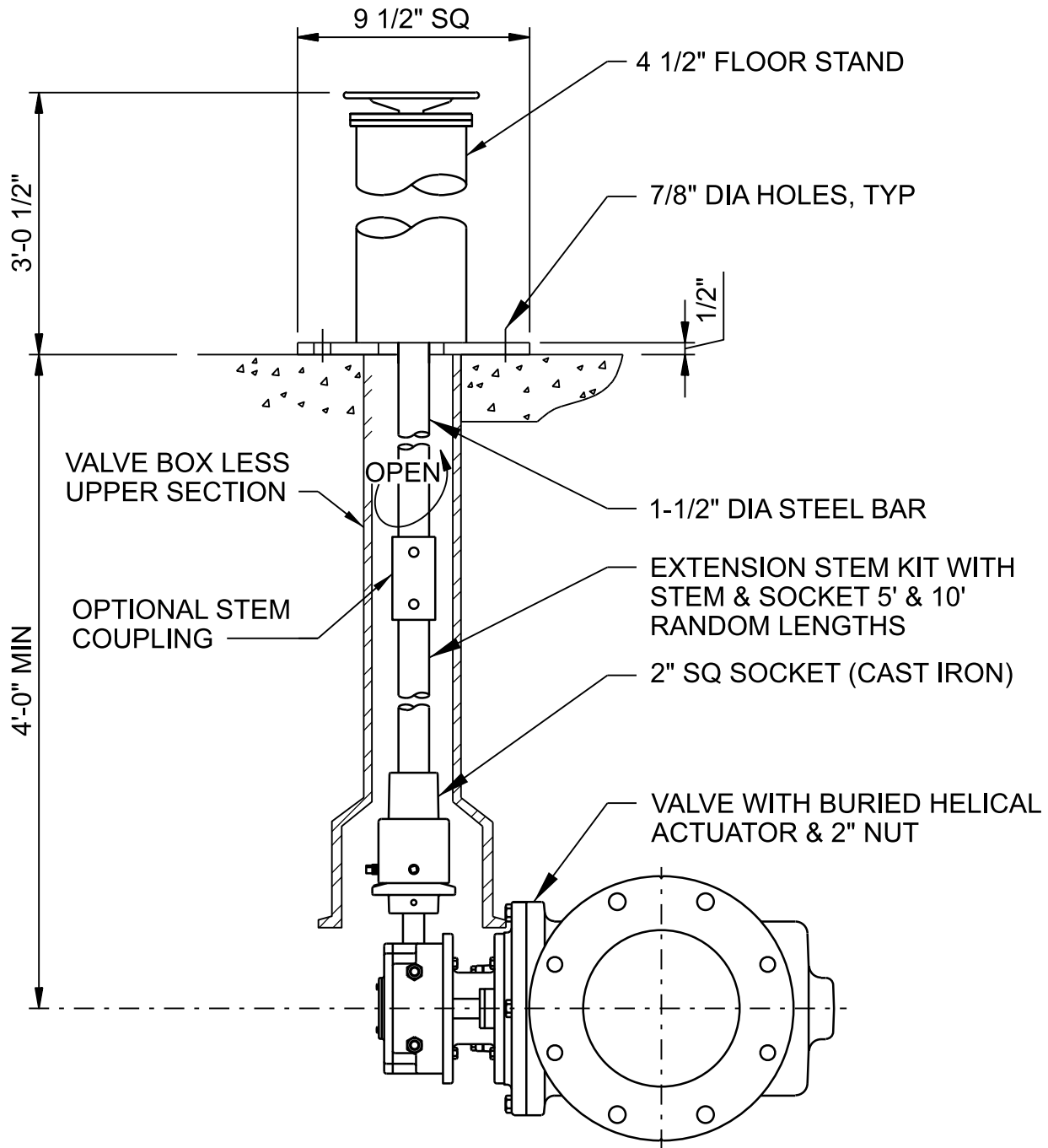
PLAN

SERVICE TAP

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-643

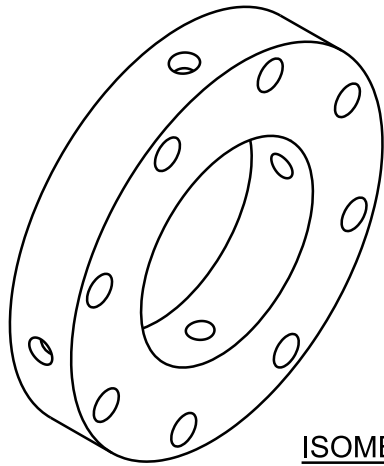


**BURIED VALVE WITH
PEDISTAL MOUNTED OPERATOR**

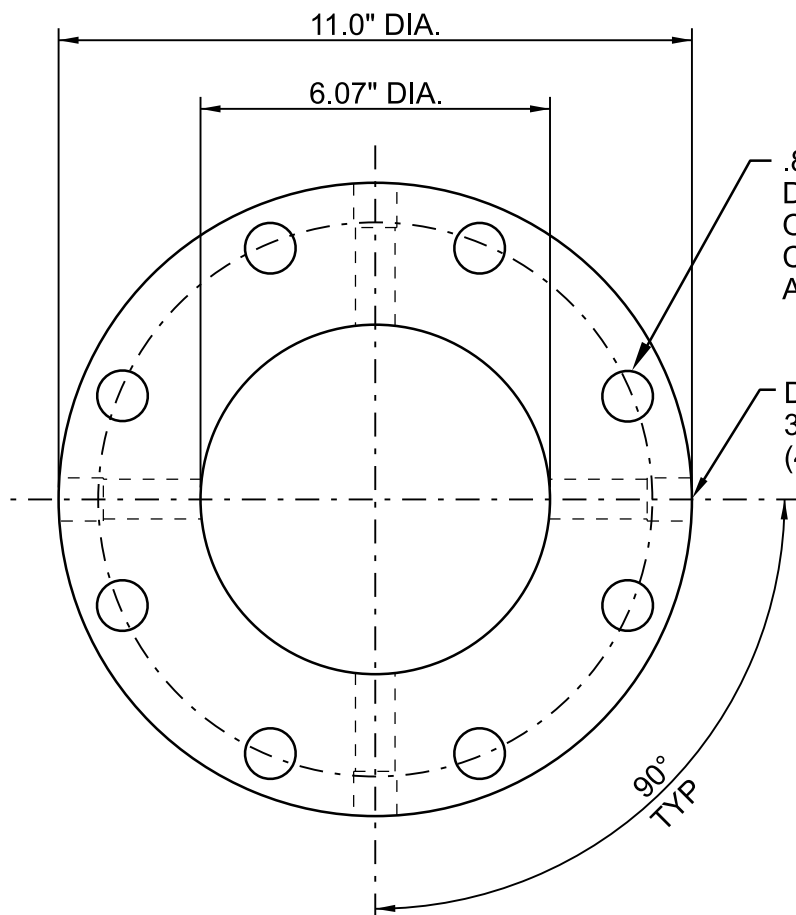
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-645



ISOMETRIC

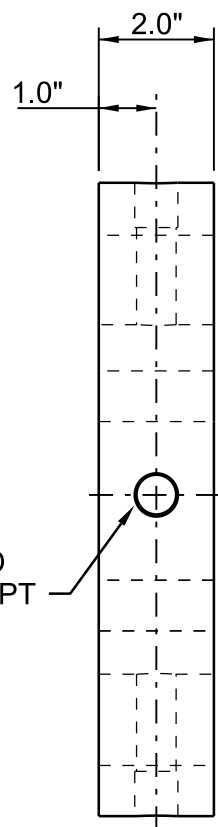


FRONT VIEW

.88 DIA. HOLES
DRILLED THRU
ON A 9.50 BOLT
CIRCLE (PER
ANSI B16.5 150#)

DRILL AND TAP
3/4" NPT
(4 TOTAL)

DRILL AND
TAP 3/4" NPT



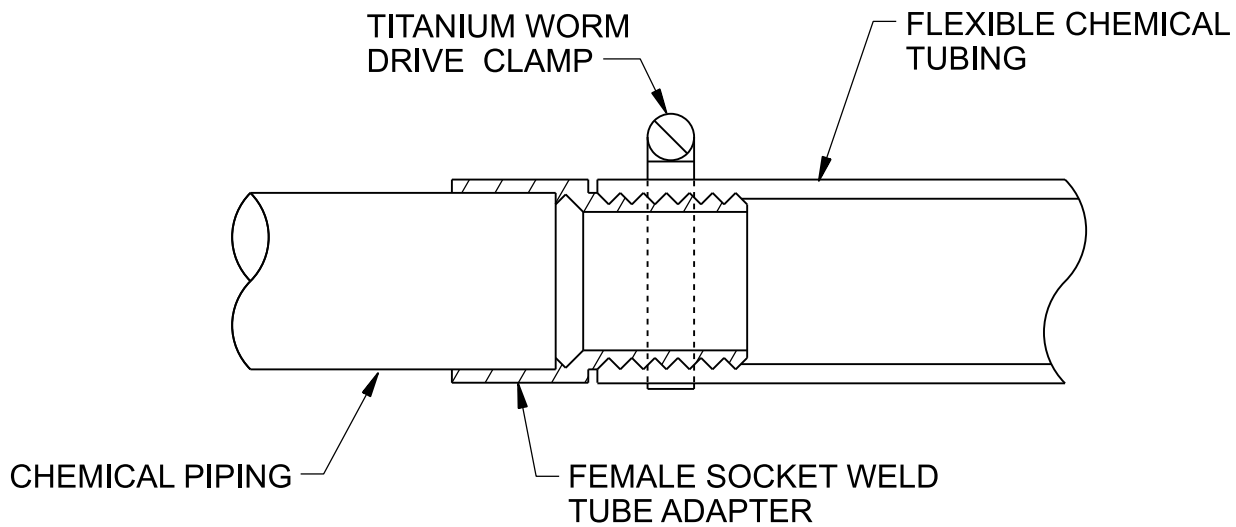
SIDE VIEW

INJECTION RING

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4027-959



CHEMICAL PIPE TO FLEXIBLE TUBING TRANSITION

NOTES:

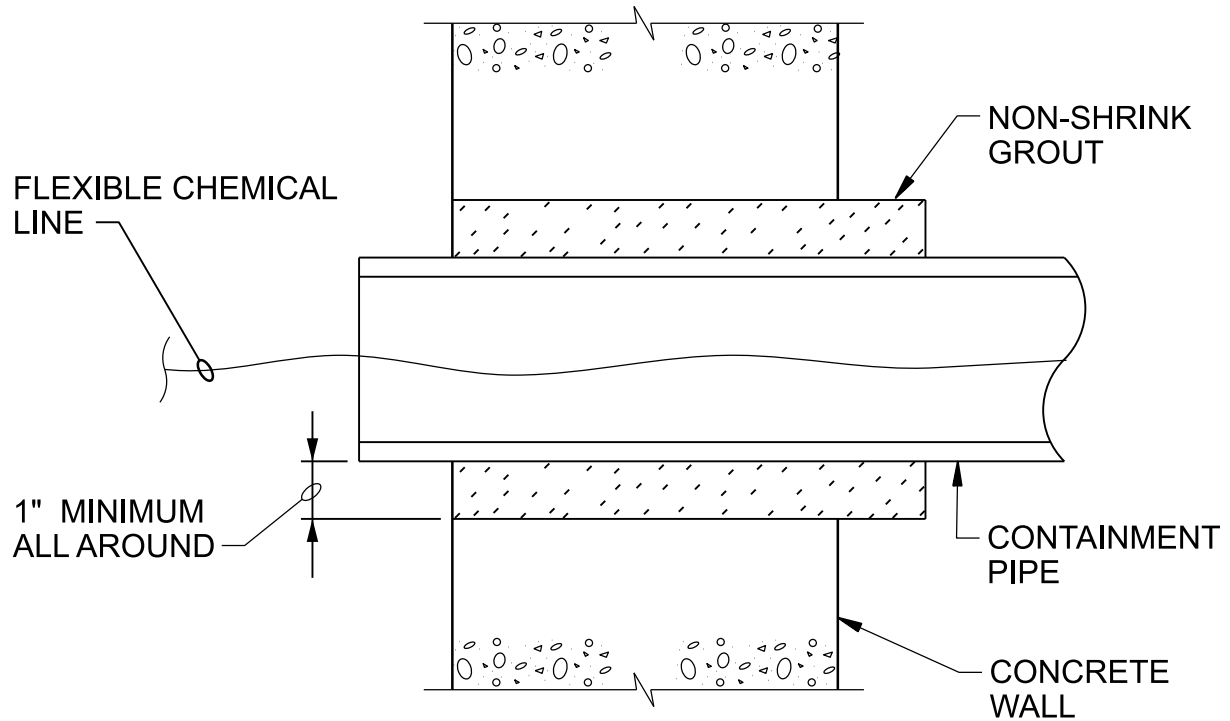
1. REFER TO SPECIFICATIONS FOR PIPE MATERIAL.

CHEMICAL PIPE TO TUBE TRANSITION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-960

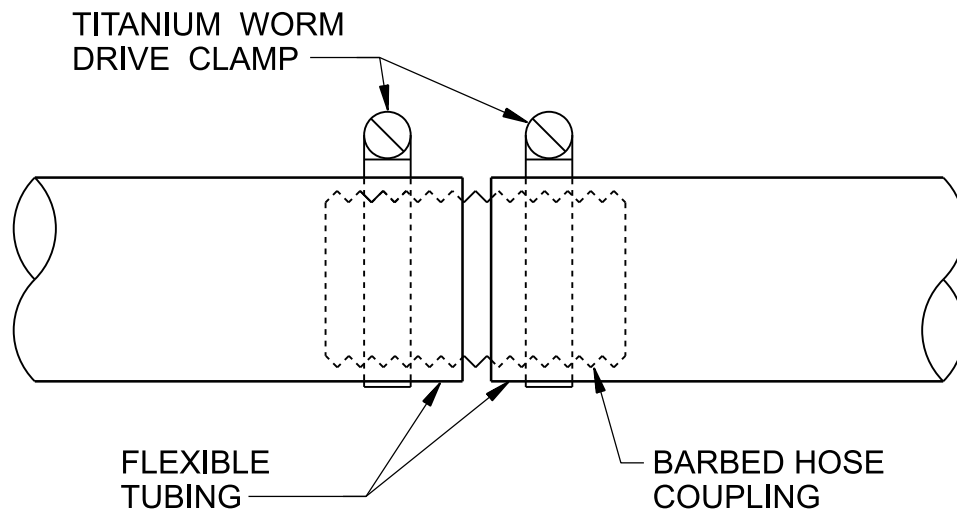


PVC PIPE PENETRATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-961



NOTES:

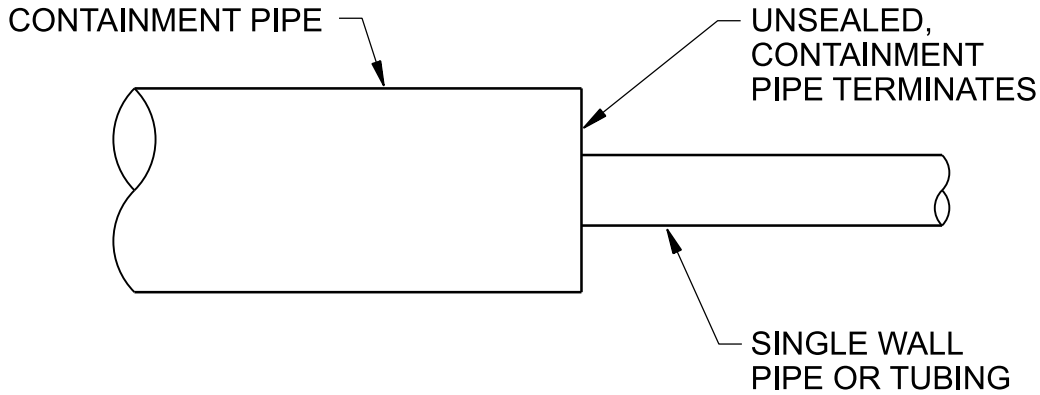
1. REFER TO SPECIFICATIONS FOR TUBING MATERIAL.

CHEMICAL TUBING CONNECTION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-962



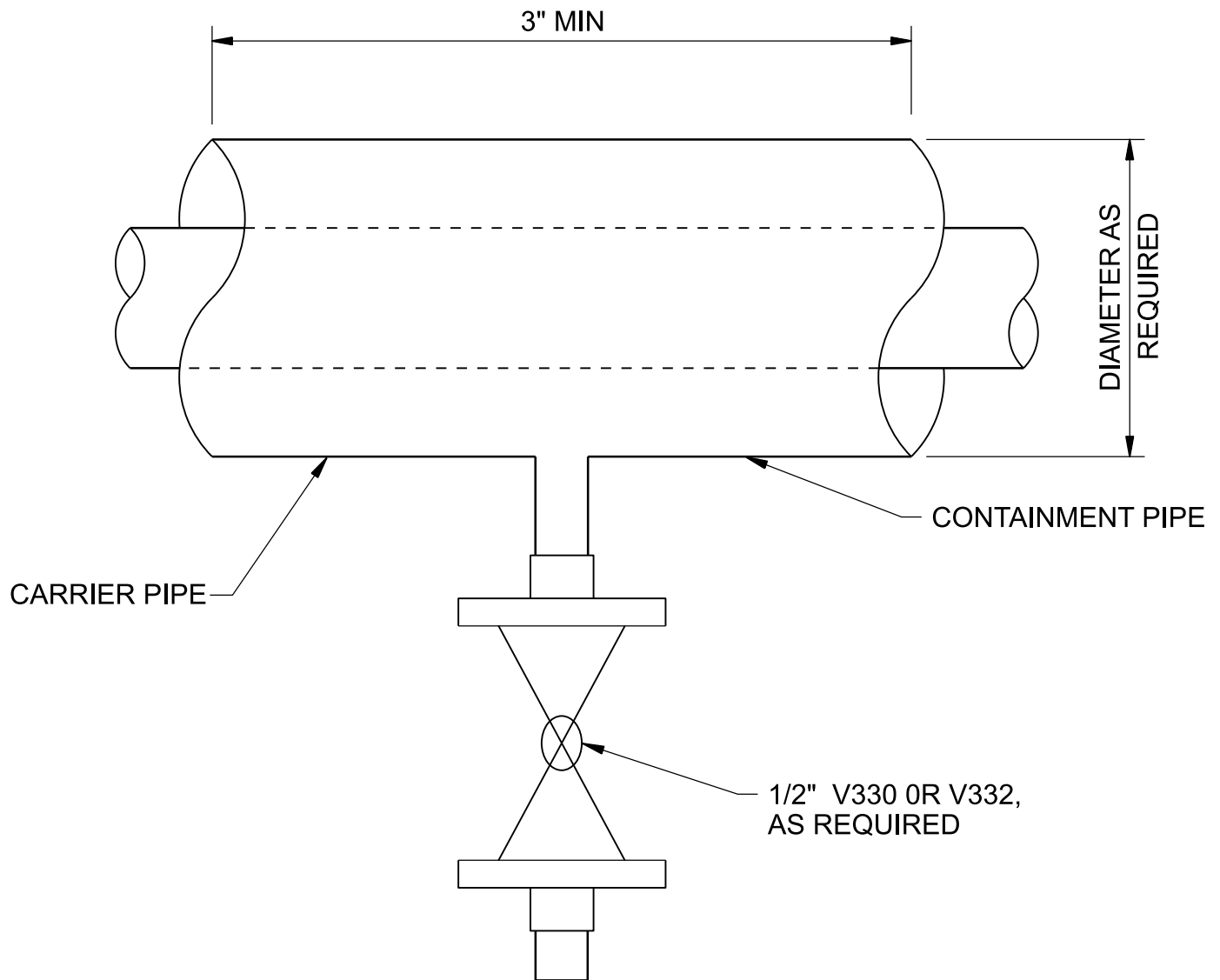
UNSEALED DOUBLE WALL TO SINGLE WALL PIPE TRANSITION

PIPE TRANSITION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-964



NOTES:

- 1. FOR ALL PVC CONTAINMENT USE CLEAR PVC PIPE WITH SOCKET SOLVENT FITTING. FOR POLYPROPELENE CONTAINMENT, USE 1" x 2" POLYPROPELENE PIPE.

DOUBLE CONTAINMENT MANUAL LEAK DETECTION

NTS

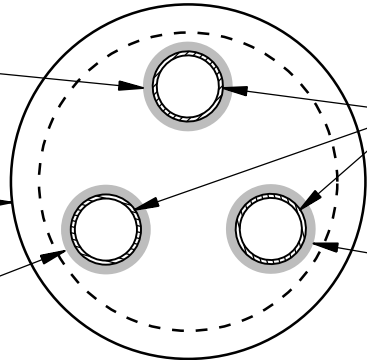
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-966

DRILL HOLE ID TO
TUBE OD PLUS
1/8", TYP

SOCKET
WELD PVC CAP

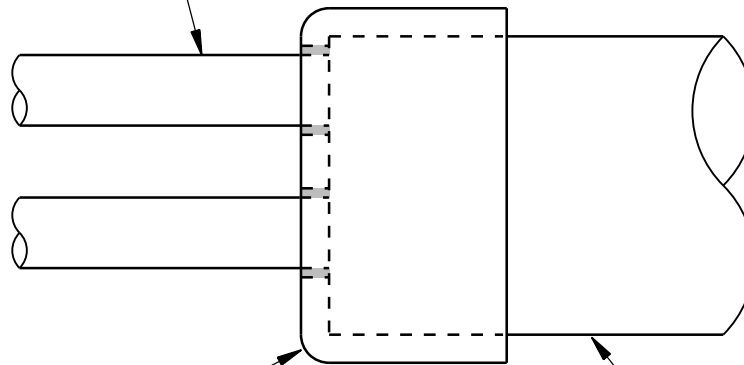
SILICON SEALANT



CHEMICAL TUBING
AS SPECIFIED, TYP

NUMBER OF TUBES IN
CONTAINMENT PIPE AS
SPECIFIED ON DRAWINGS

CHEMICAL TUBING, TYP



SOCKET
WELD PVC CAP

PVC
CONTAINMENT
PIPE

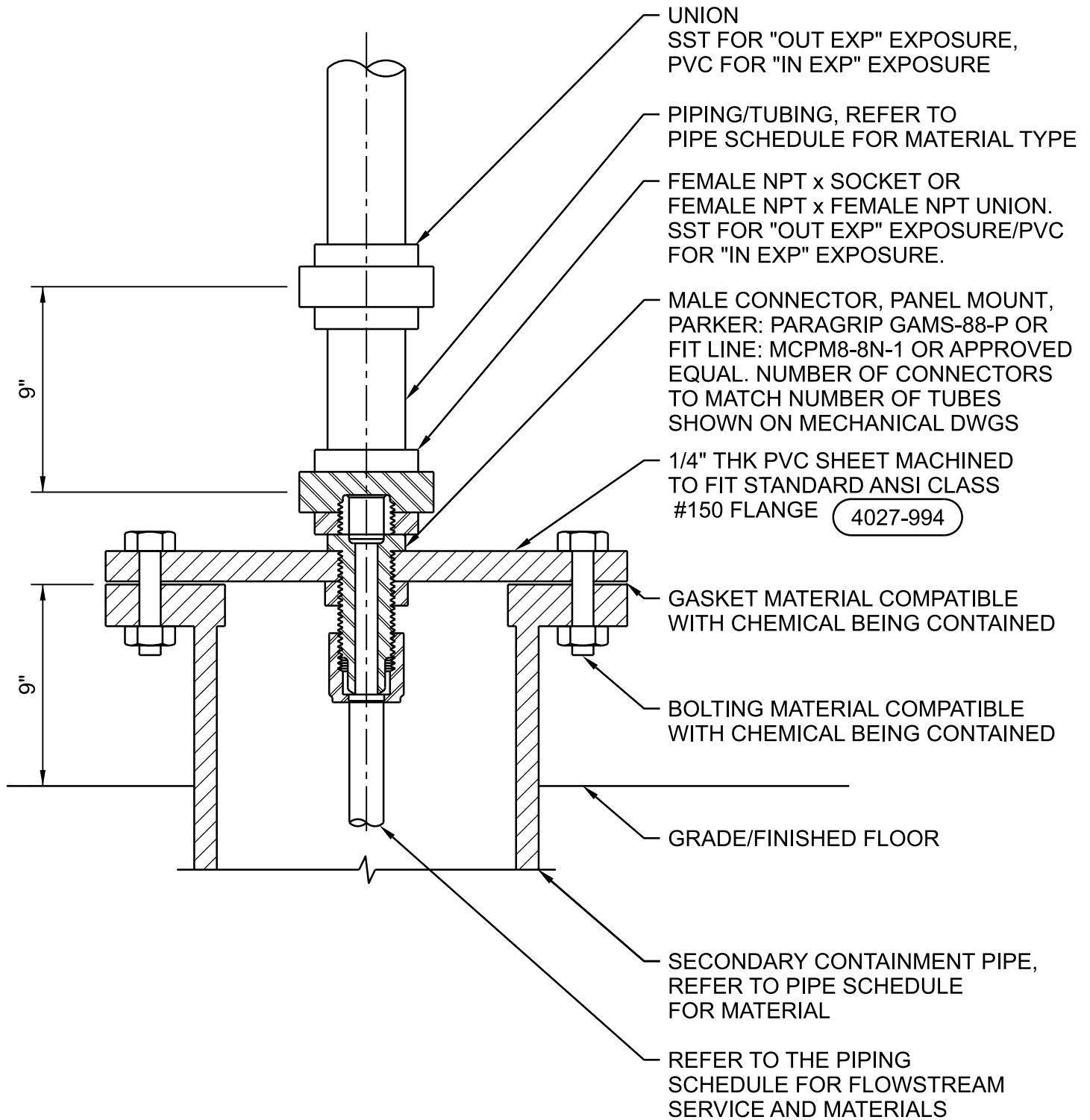
THREADED PVC CONTAINMENT CAP

CONTAINMENT CAP

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-968



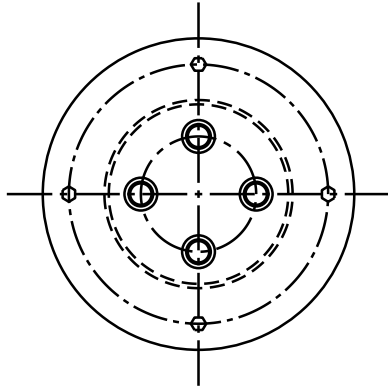
CHEMICAL TUBING TRANSITION
SECONDARY CONTAINMENT

NTS

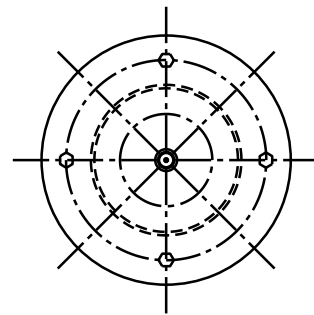
HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

4027-992

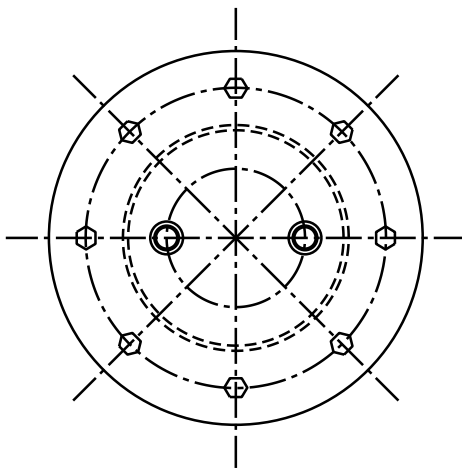
3" CONTAINMENT SIZE
1/2" TUBE SIZE



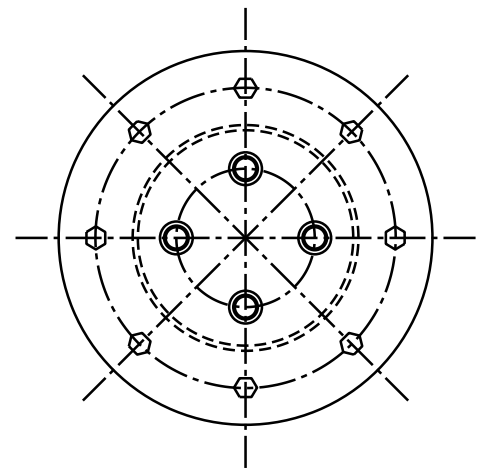
2" CONTAINMENT SIZE
1/2" TUBE SIZE



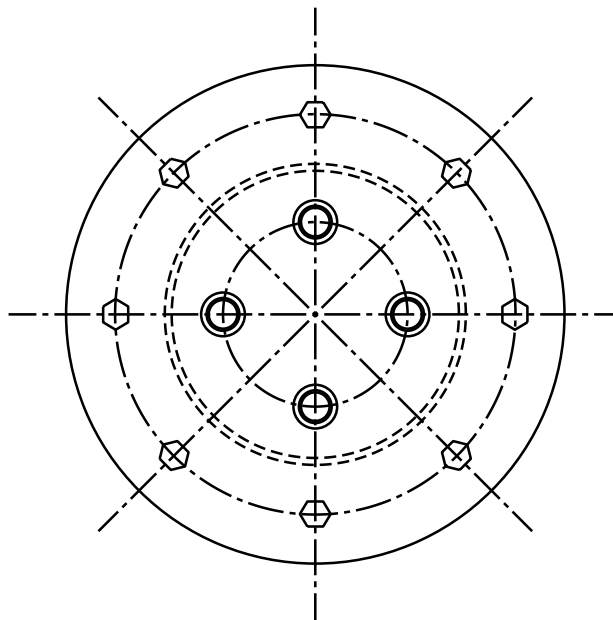
4" CONTAINMENT SIZE
1" TUBE SIZE



4" CONTAINMENT SIZE
3/4" OR 1/2" TUBE SIZE



6" CONTAINMENT SIZE
1" TUBE SIZE

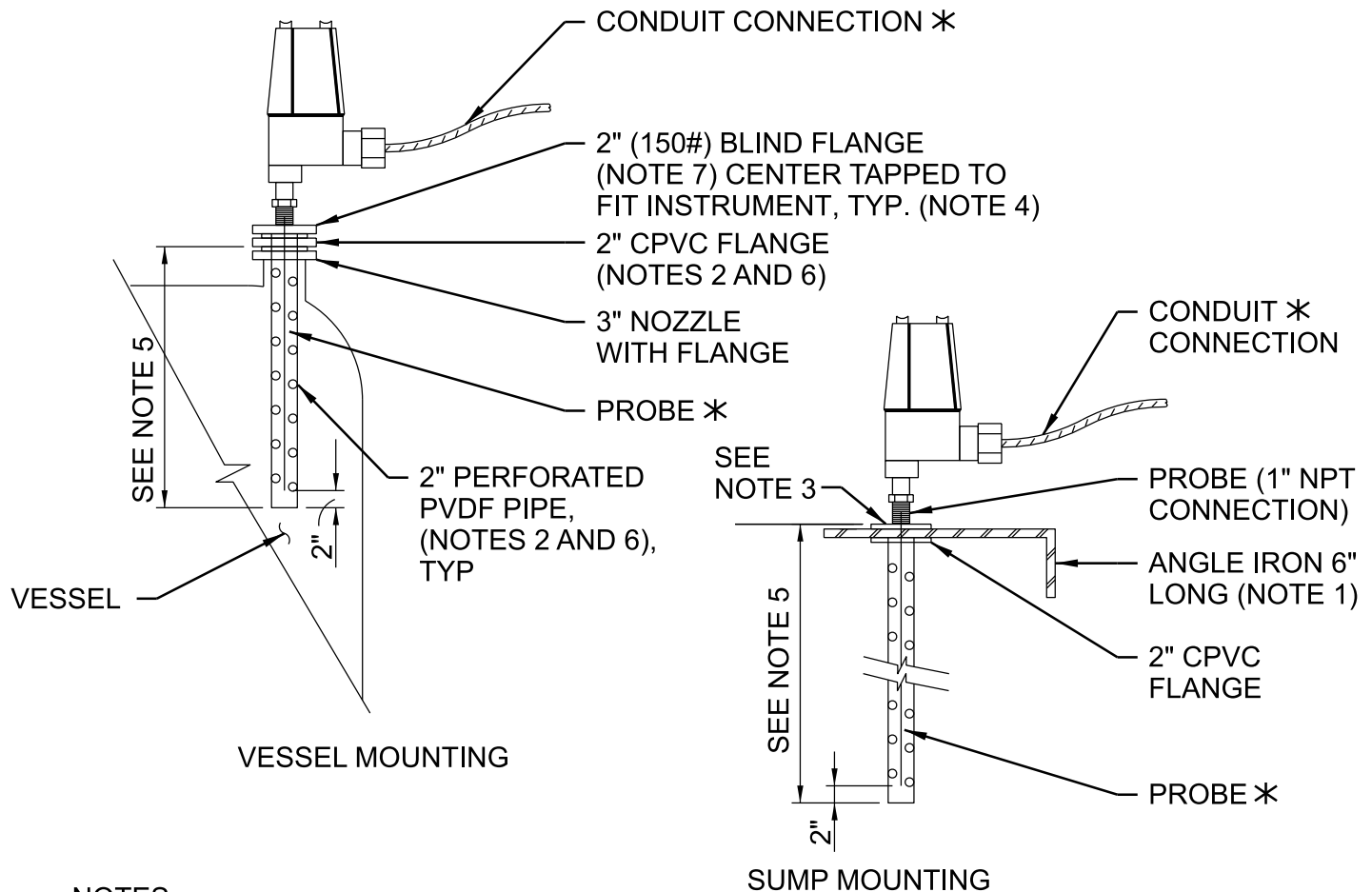


CHEMICAL TUBING TRANSITION - SECONDARY CONTAINMENT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4027-994

**NOTES:**

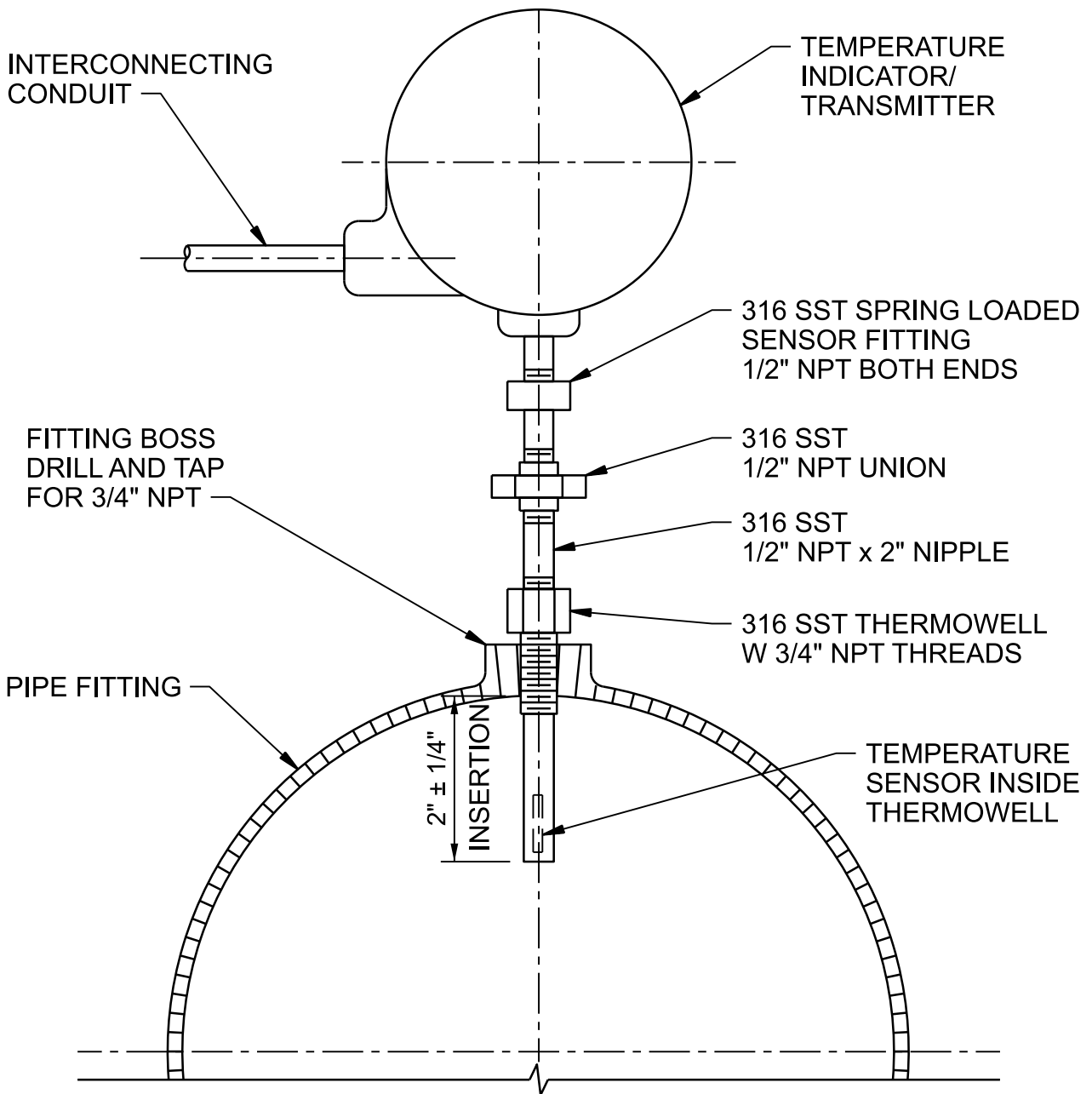
1. CONTRACTOR TO GALVANIZE AND ATTACH TO SUMP WALL WITH TWO 3/8" STUDS.
2. DRILL AND TAP FLANGE FOR 2" PIPE AND "BACKWELD" PVDF TO FLANGE.
3. DRILL INTO 6" ANGLE IRON A 1-15/16" HOLE IN CENTER AND (4) 13/16" HOLES IN BOLT PATTERN TO MATCH 2" (150#) FLANGE BOLT ARRANGEMENT. BOLT CPVC AND 313 SS FLANGES TOGETHER THROUGH ANGLE IRON.
4. DRILL AND TAP BLIND FLANGE TO FIT INSTRUMENT.
5. REFER TO INSTRUMENTATION SPECIFICATION FOR LENGTH OF PROBE.
6. OMIT PERFORATED PIPE IF VESSEL (OR SUMP) IS BOTTOM FILLED AND THERE IS NO AGITATION.
7. MATERIALS OF CONSTRUCTION SHALL MATCH FLOWING MEDIA MATERIALS, AREA CLASSIFICATION AND PLANT STANDARDS REQUIREMENTS.
8. COMPONENTS DESIGNATED BY * SUPPLIED BY INSTRUMENT MANUFACTURER.

LEVEL SWITCH CAPACITANCE TYPE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-027



NOTES:

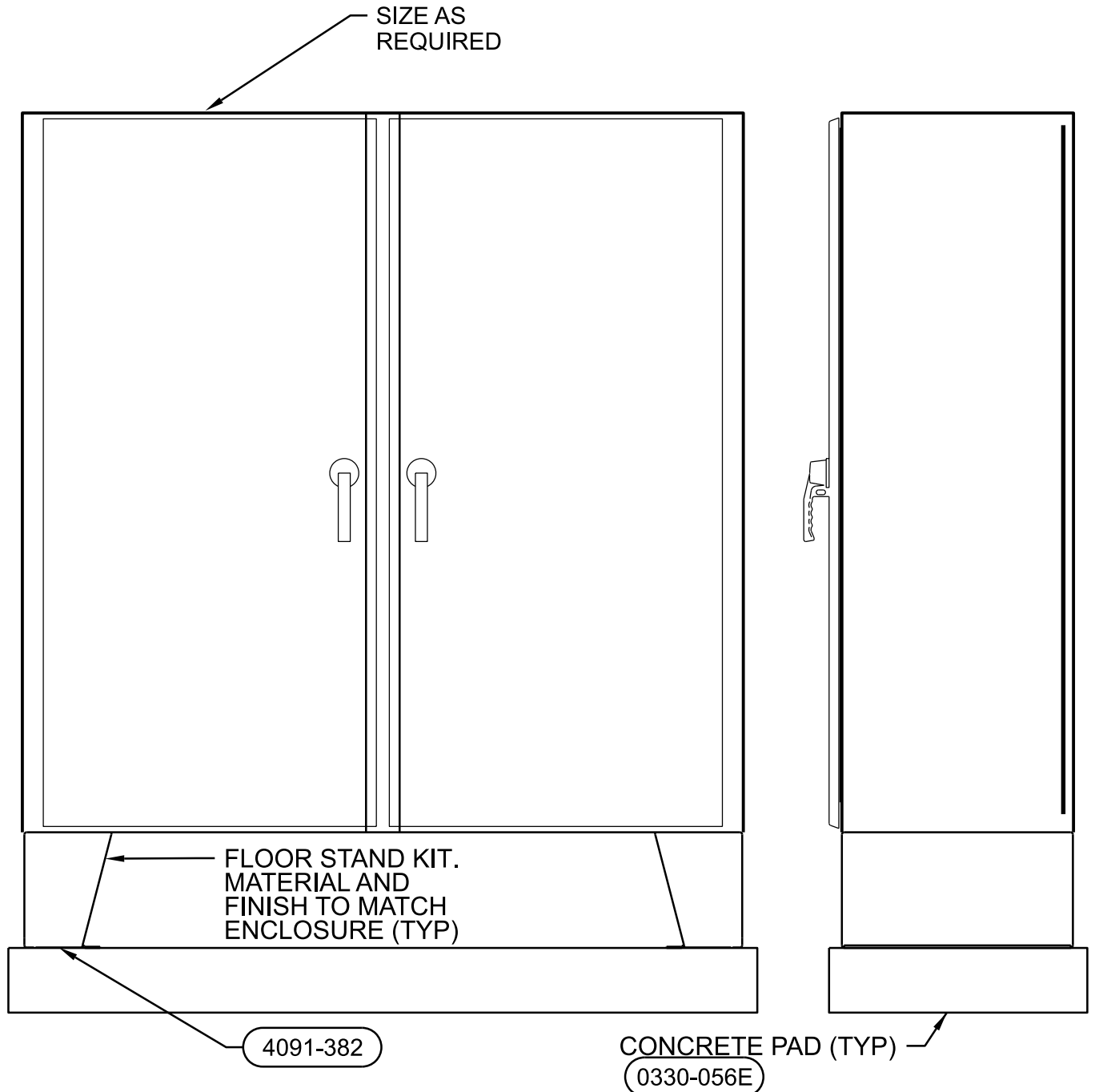
1. USE TEFLON TAPE ON ALL NPT CONNECTIONS.

TEMPERATURE ELEMENT AND TRANSMITTER INSTALLATION - PIPE FITTING MOUNTED DETAIL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-068

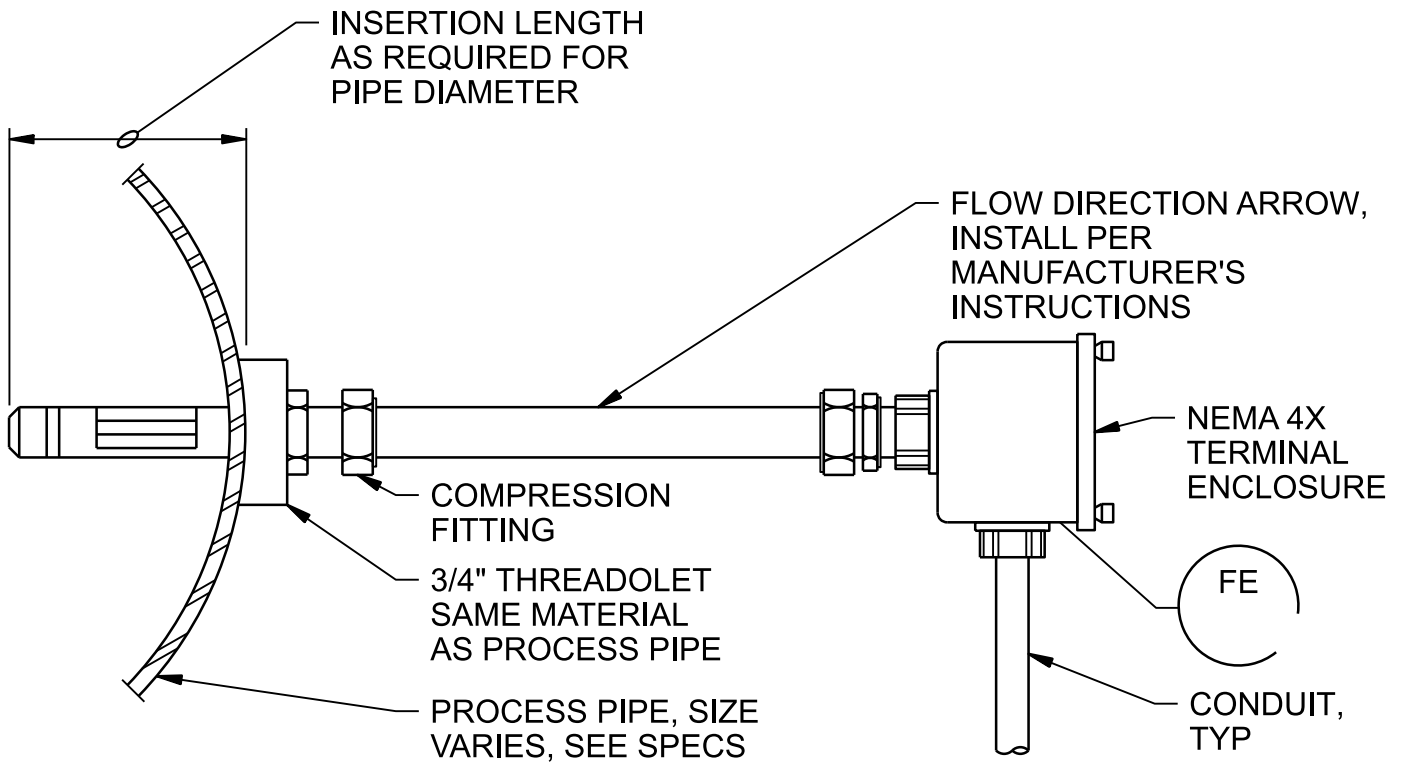


FREESTANDING INSTRUMENT ENCLOSURE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-139



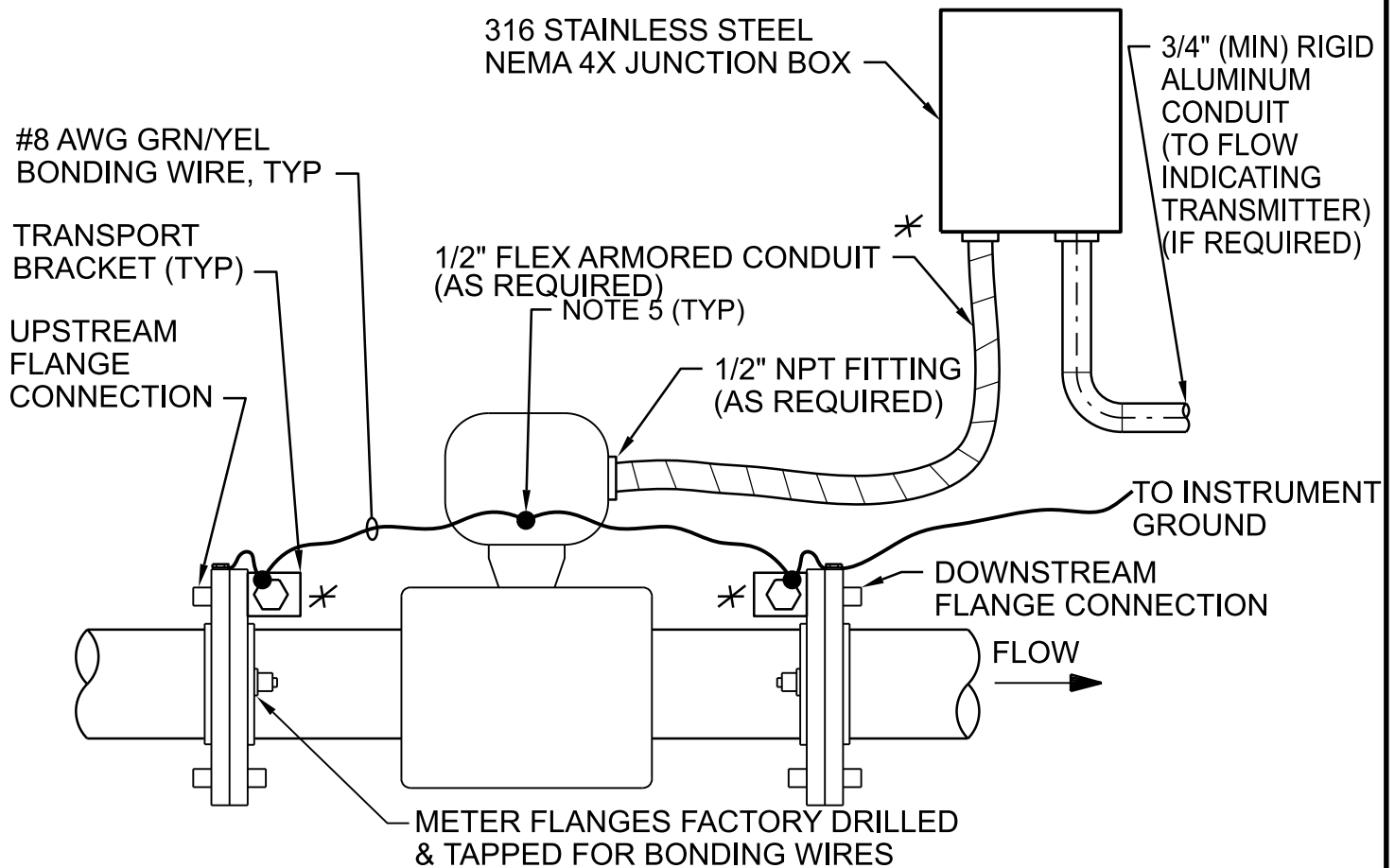
PROCESS AIR SERVICE

THERMAL MASS FLOW ELEMENT INSTALLATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4091-217

**NOTES:**

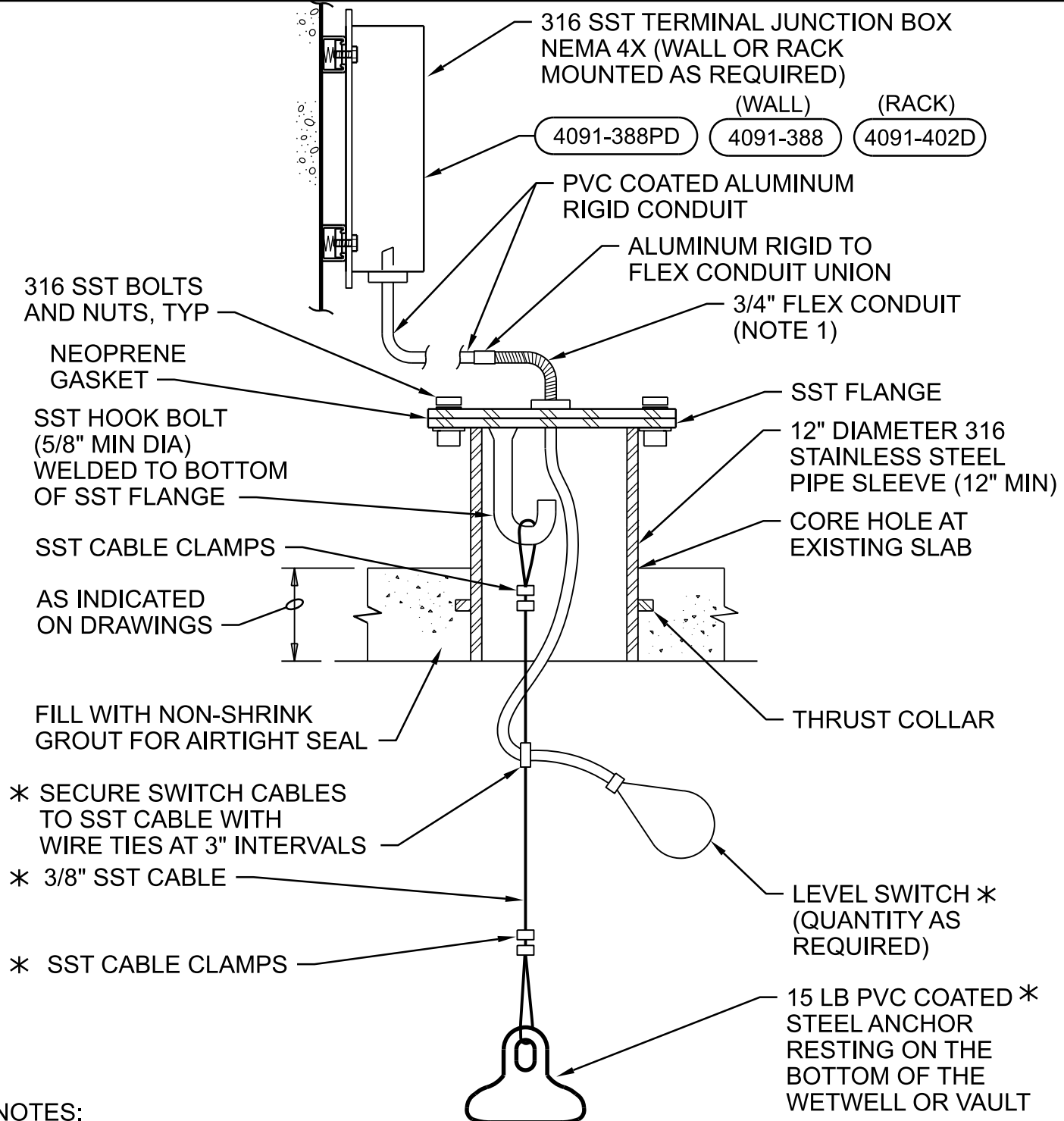
1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.
2. IF PIPE IS NON-CONDUCTIVE BOND MAGMETER TO ONE OF THE FOLLOWING ACCEPTABLE GROUNDS:
A) METALLIC WATER PIPE IF BURIED PORTION IS MORE THAN 10'.
B) STRUCTURAL STEEL.
3. FOR REMOTE TRANSMITTER MOUNTING FOR AN OUTDOOR INSTALLATION (RACK MOUNTED), SEE DETAIL 4091-388PD.
4. FOR REMOTE TRANSMITTER MOUNTING FOR AN INDOOR INSTALLATION (RACK MOUNTED), SEE DETAIL 4091-388.
5. ALL GROUND CONNECTIONS SHALL BE #2/0 TINNED BARE COPPER CONDUCTORS.

MAGNETIC FLOWMETER INSTALLATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4091-222M



NOTES:

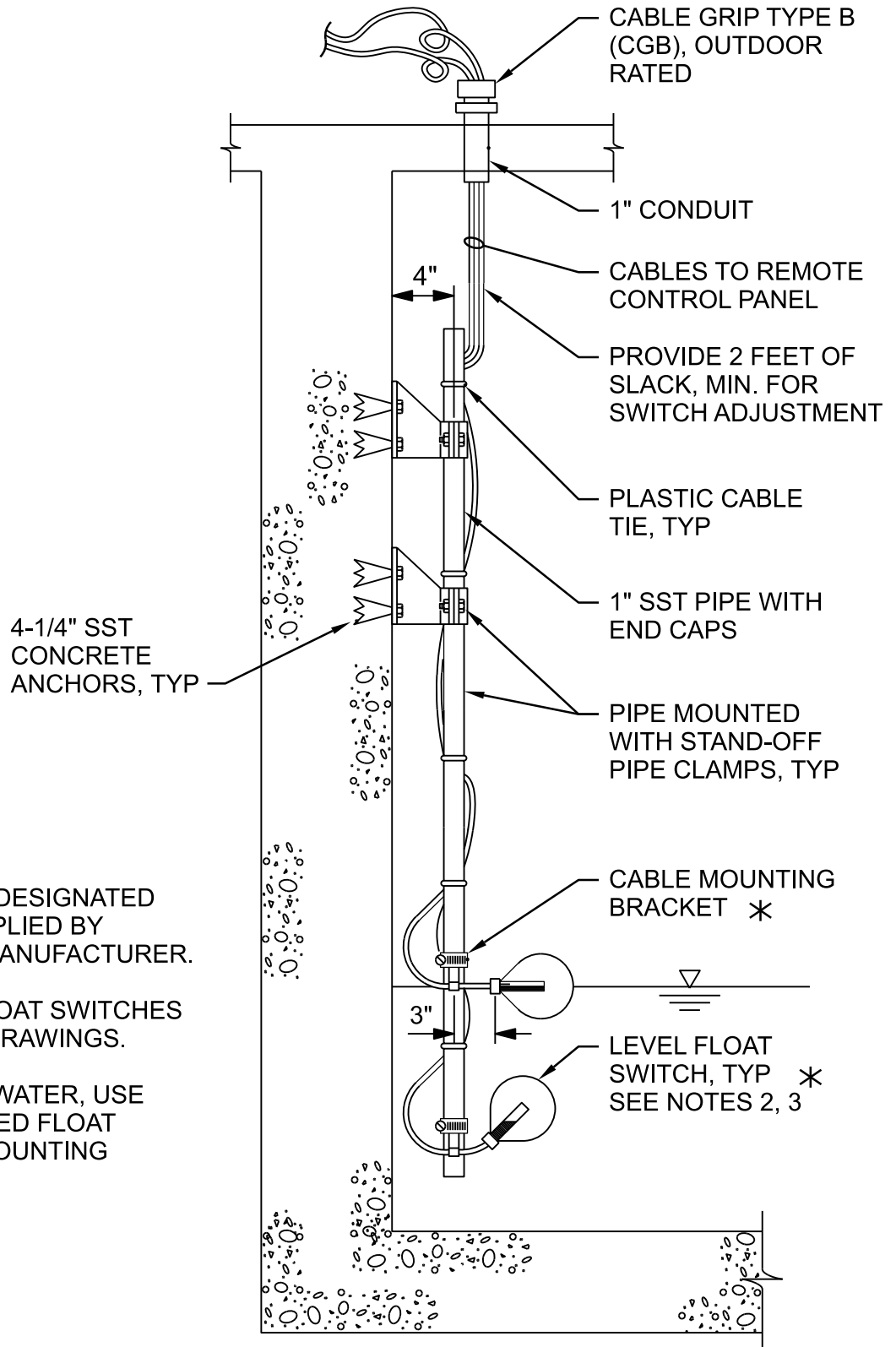
1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER. SEE MANUFACTURER MANUAL FOR DETAILS.

**TYPICAL FLOAT TYPE LEVEL SWITCH WITH
JUNCTION BOX INSTALLATION**

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4091-248ED



NOTES:

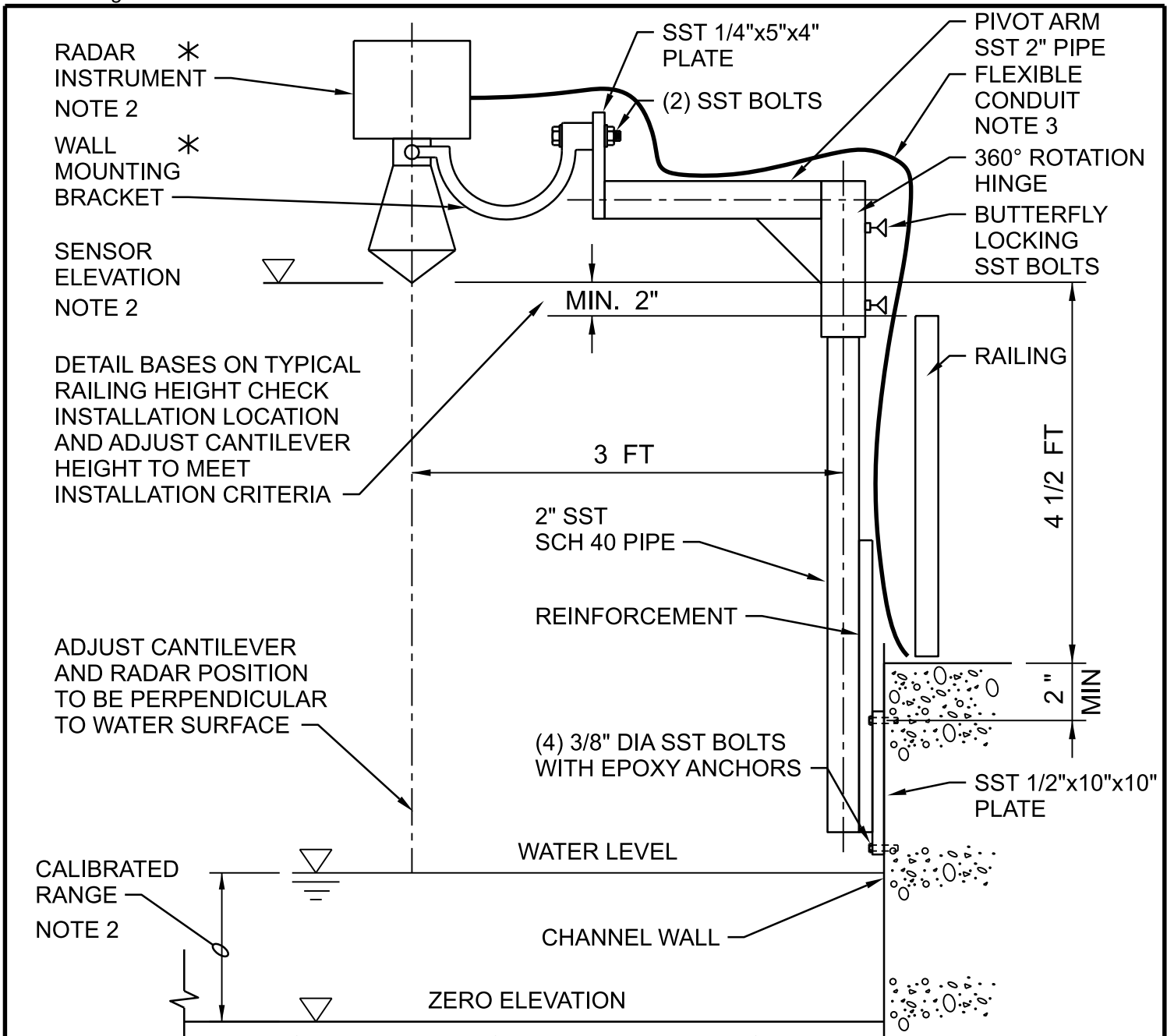
1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.
2. NUMBER OF FLOAT SWITCHES AS SHOWN IN DRAWINGS.
3. FOR FINISHED WATER, USE NSF61 APPROVED FLOAT SWITCH AND MOUNTING HARDWARE.

FLOAT LEVEL SWITCH INSTALLATION BELOW CONCRETE

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-249



RADAR *
INSTRUMENT
NOTE 2

WALL *
MOUNTING
BRACKET

SENSOR
ELEVATION
NOTE 2

SST 1/4"x5"x4"
PLATE

(2) SST BOLTS

PIVOT ARM
SST 2" PIPE

FLEXIBLE
CONDUIT
NOTE 3

360° ROTATION
HINGE

BUTTERFLY
LOCKING
SST BOLTS

DETAIL BASES ON TYPICAL
RAILING HEIGHT CHECK
INSTALLATION LOCATION
AND ADJUST CANTILEVER
HEIGHT TO MEET
INSTALLATION CRITERIA

MIN. 2"

3 FT

2" SST
SCH 40 PIPE

REINFORCEMENT

RAILING

4 1/2 FT

2" MIN

ADJUST CANTILEVER
AND RADAR POSITION
TO BE PERPENDICULAR
TO WATER SURFACE

(4) 3/8" DIA SST BOLTS
WITH EPOXY ANCHORS

SST 1/2"x10"x10"
PLATE

CALIBRATED
RANGE
NOTE 2

WATER LEVEL

CHANNEL WALL

ZERO ELEVATION

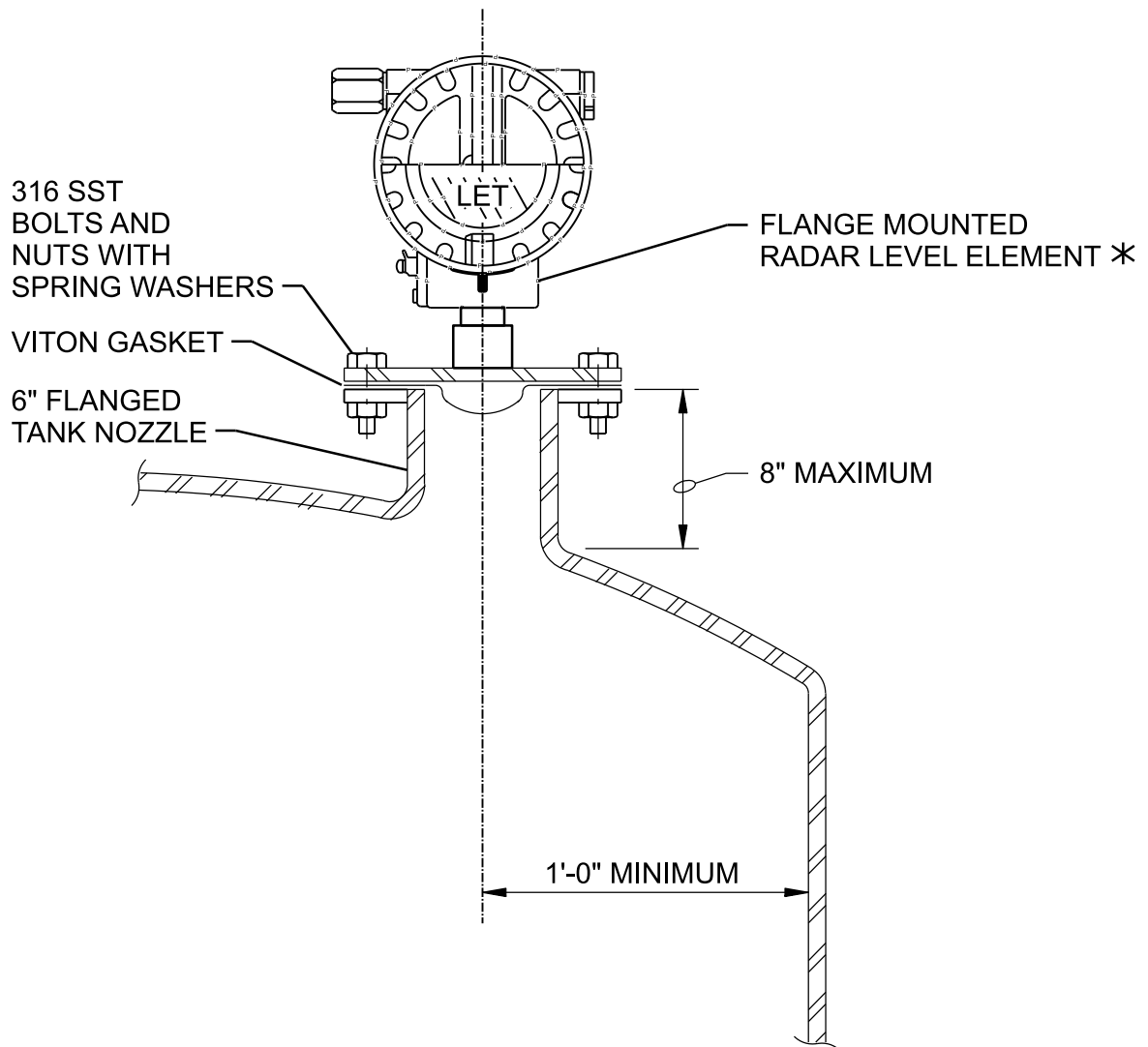
- NOTES:**
1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER. SEE MANUFACTURER MANUAL FOR DETAILS.
 2. SEE INSTRUMENT DATA SHEET.
 3. ROUTE CABLE FREE AIR IN ORDER TO MAINTAIN FULL RANGE OF MOVEMENT.
 4. REFER TO MATERIAL SELECTION TABLE ON DRAWINGS FOR MATERIAL TYPES NOT OTHERWISE SPECIFIED.
 5. ROUND OFF ALL EXPOSED EDGES AND CORNERS.

RADAR LEVEL ELEMENT - CANTILEVER MOUNT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4091-251



NOTES:

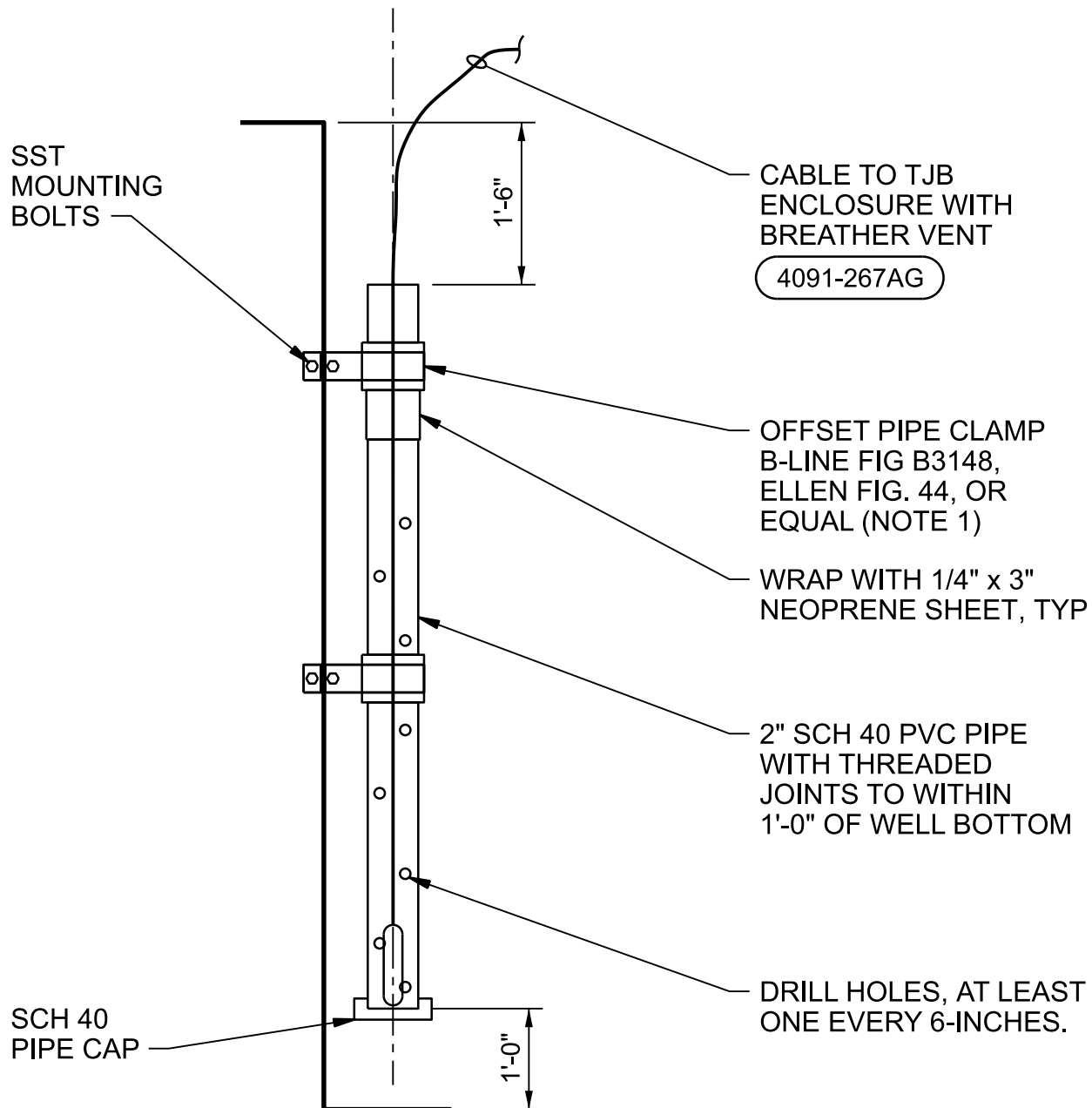
1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

LEVEL TRANSMITTER - RADAR - TANK MOUNT

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-257



NOTES:

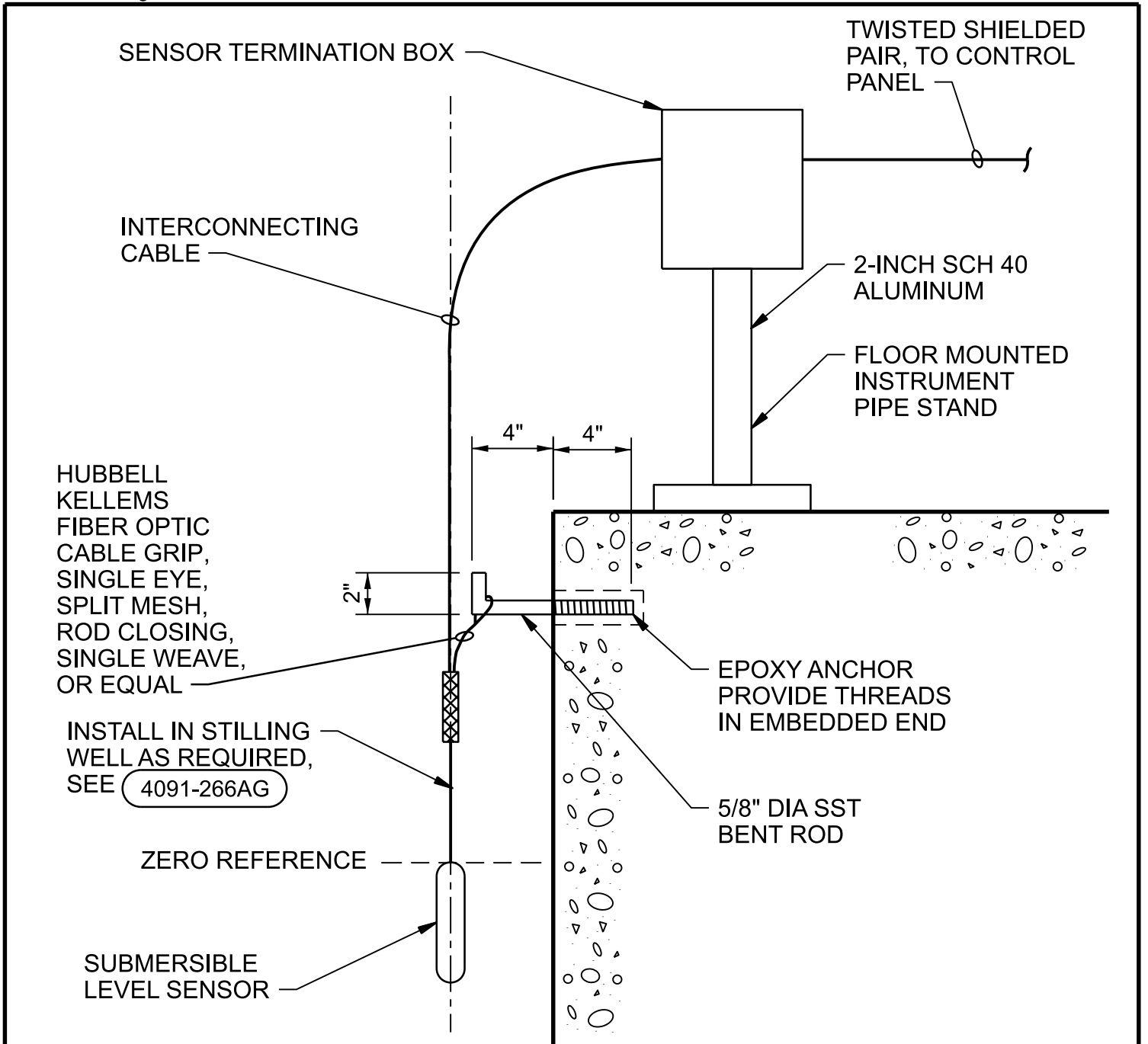
1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER. SEE MANUFACTURER MANUAL FOR DETAILS.
2. SPACE CLAMPS AT 10 FT APART, MINIMUM 3 CLAMPS.
3. PROVIDE STRAIN RELIEF AS PER DETAIL (4091-267AG)

STILLING WELL FOR SUBMERSIBLE TRANSDUCER

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4091-266AG

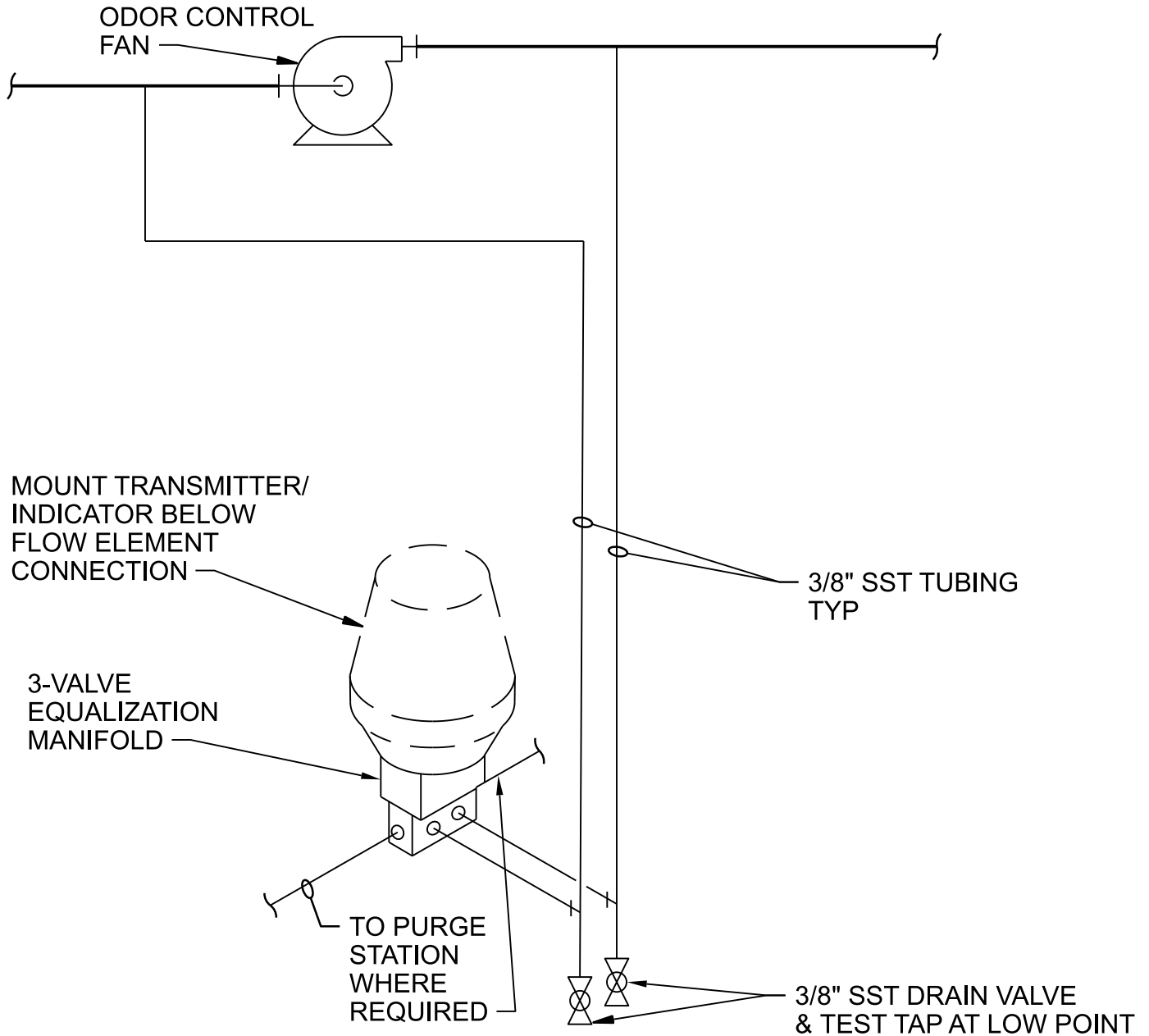


SUBMERSIBLE LEVEL TRANSMITTER INSTALLATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-267AG



NOTES:

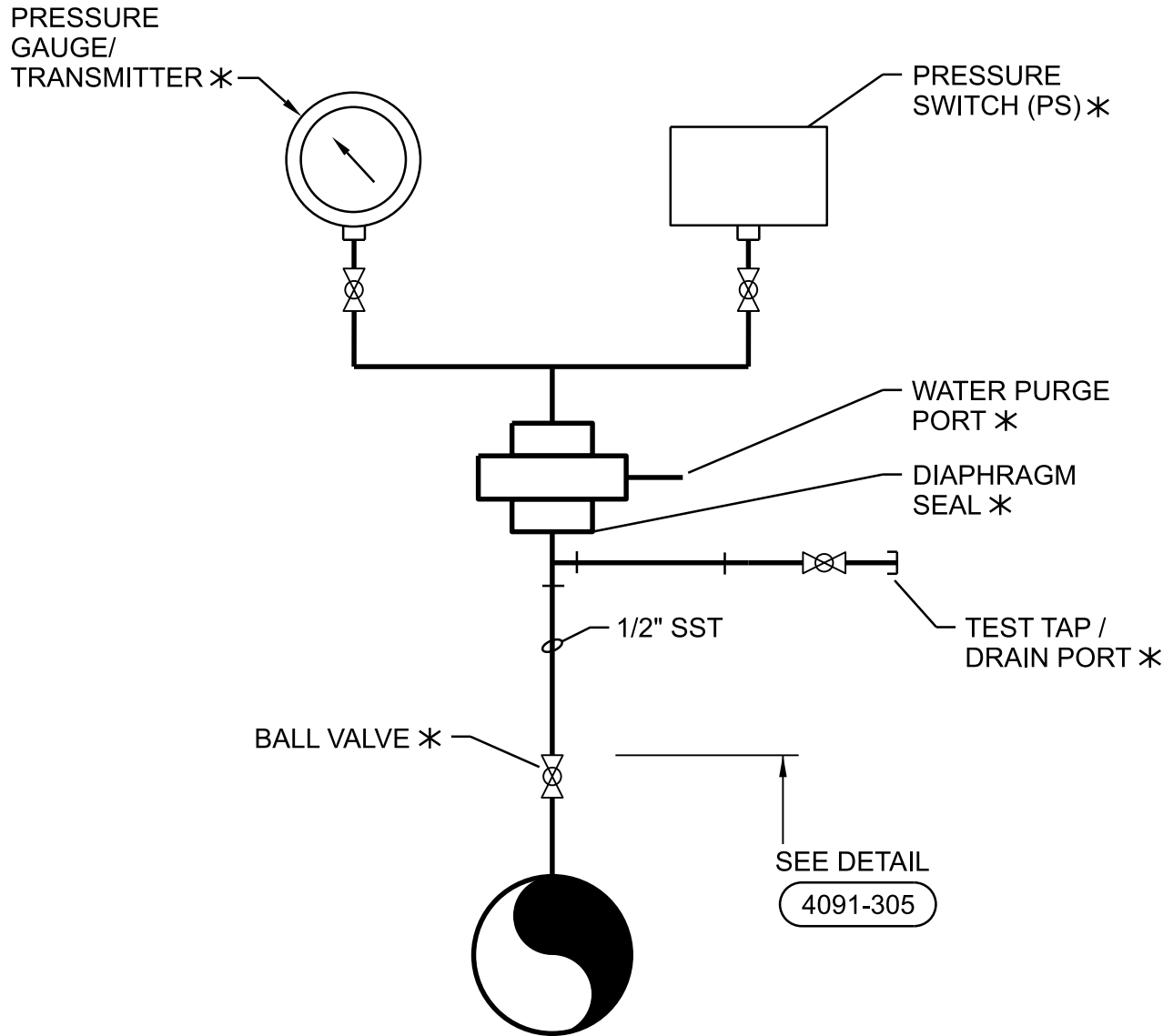
1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER. SEE MANUFACTURER MANUAL FOR DETAILS.
2. ALL LINES SHALL HAVE A CONTINUOUS SLOPE OF 1/4" PER FOOT MIN (1" PER FOOT PREFERRED).

**PRESSURE AND PRESSURE DIFFERENTIAL TRANSMITTER
INSTALLATION**

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-300



NOTES:

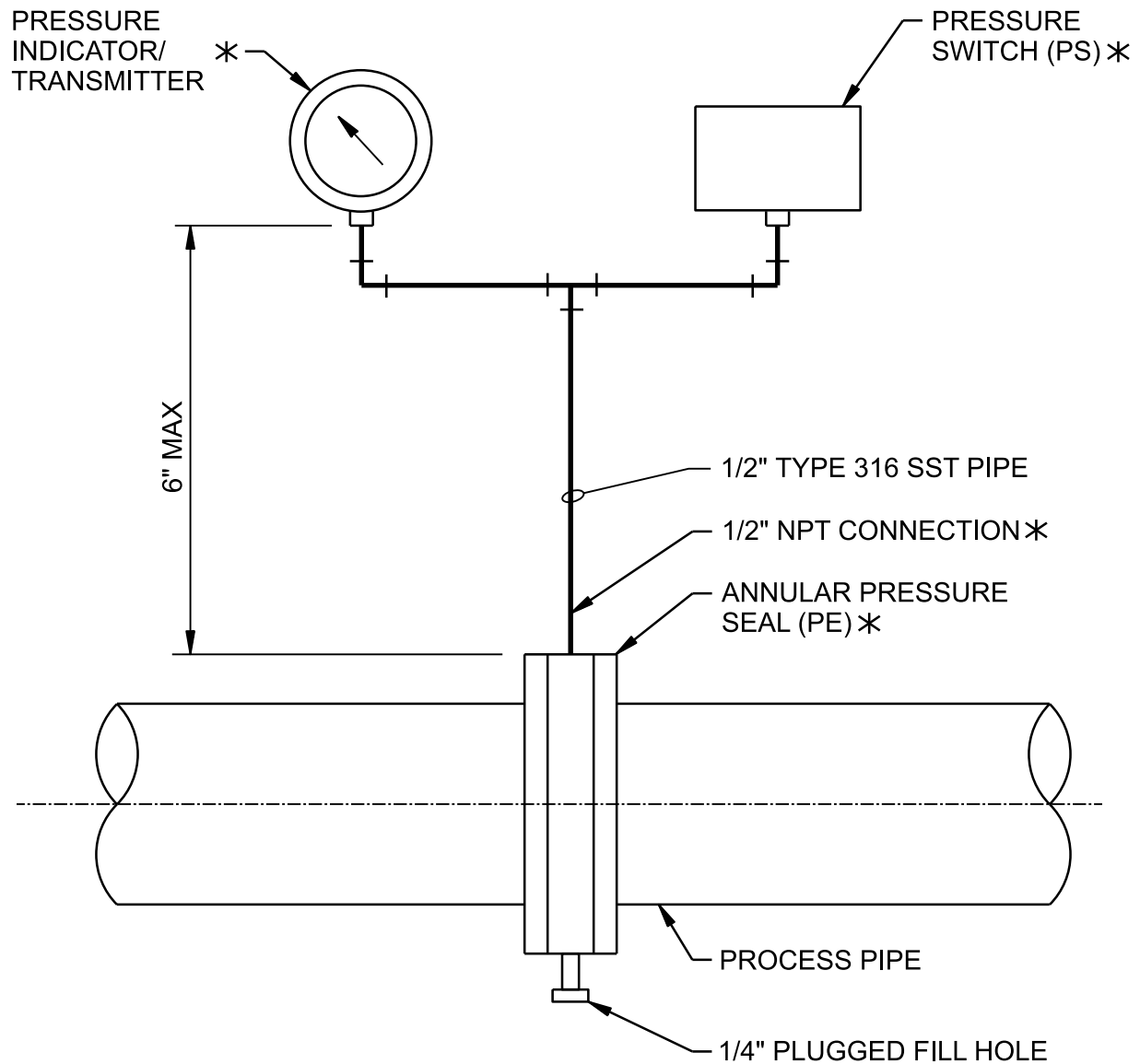
1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.
2. ADD THERMAL INSULATION FOR OUTDOOR INSTRUMENTS.

PRESSURE INSTRUMENT INSTALLATION - DIAPHRAGM SEAL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-302

**NOTES:**

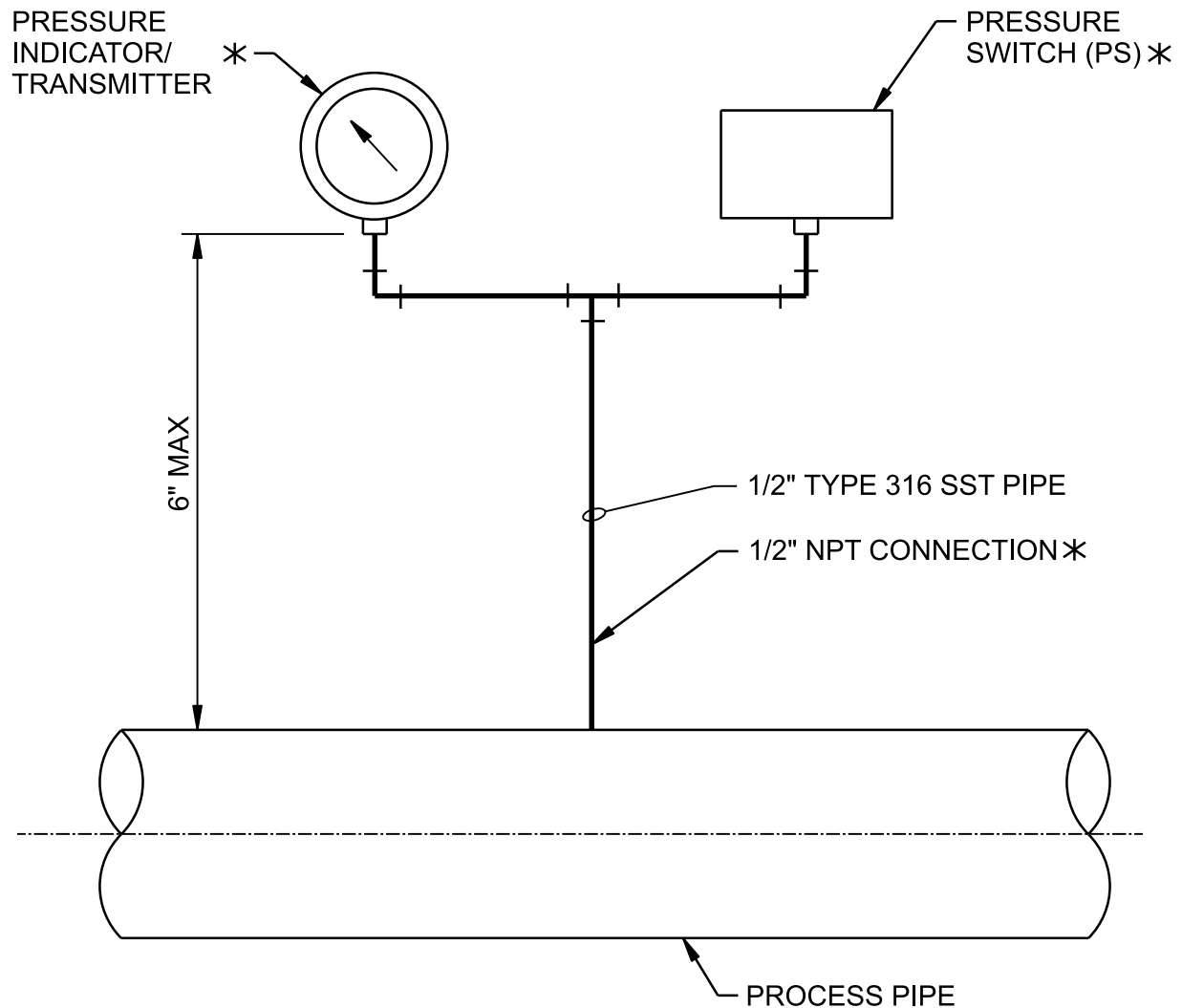
1. INDICATOR AND SWITCH INSTALLATION SHOWN. FOR SINGLE INSTRUMENT INSTALLATIONS, MOUNT DEVICE DIRECTLY TO SEAL.
2. INSTALL PRESSURE INSTRUMENTS IN A VERTICAL ORIENTATION FOR VIEWING EASE.
3. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

PRESSURE INSTRUMENT INSTALLATION - ANNULAR SEAL

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-304



NOTES:

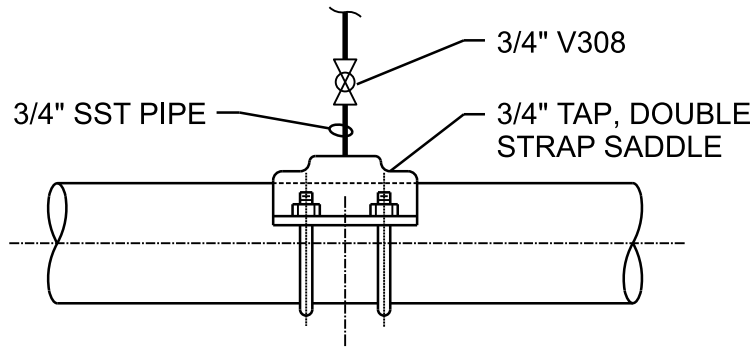
1. INDICATOR AND SWITCH INSTALLATION SHOWN. FOR SINGLE INSTRUMENT INSTALLATIONS, MOUNT DEVICE DIRECTLY TO SEAL.
2. INSTALL PRESSURE INSTRUMENTS IN A VERTICAL ORIENTATION FOR VIEWING EASE.
3. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

**PRESSURE INSTRUMENT INSTALLATION -
DIRECTLY MOUNTED**

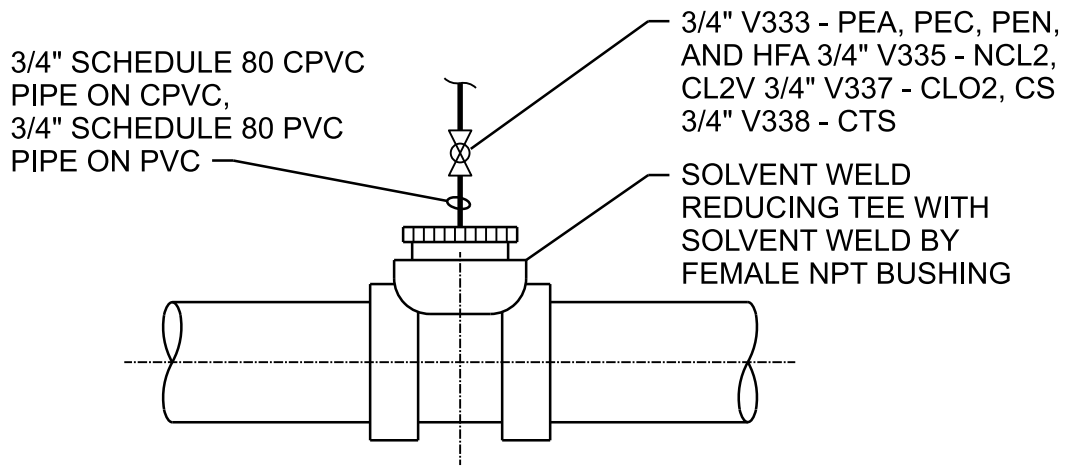
NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

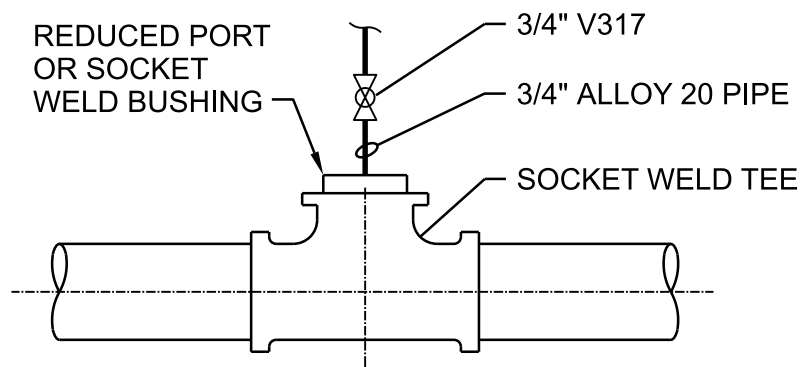
4091-304B



PVC PIPE GREATER THAN 6" DIAMETER



PVC PIPE LESS THAN 6" DIAMETER



ALLOY 20 PIPE

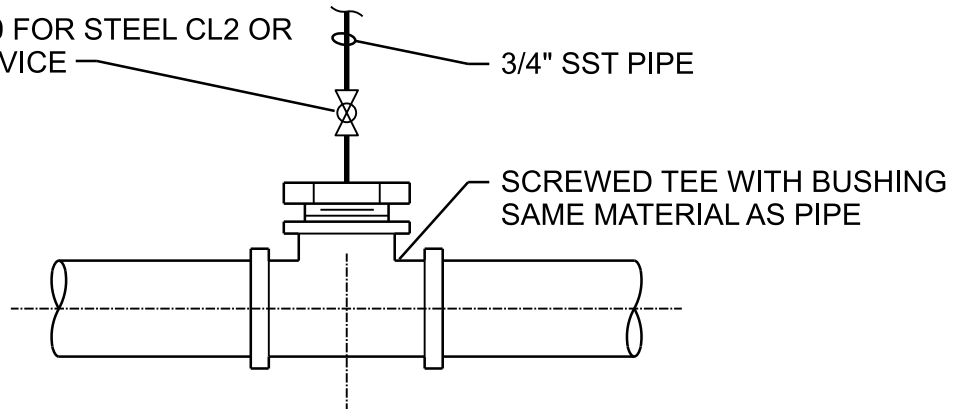
PRESSURE CONNECTION INSTALLATION - DETAIL 1 OF 2

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

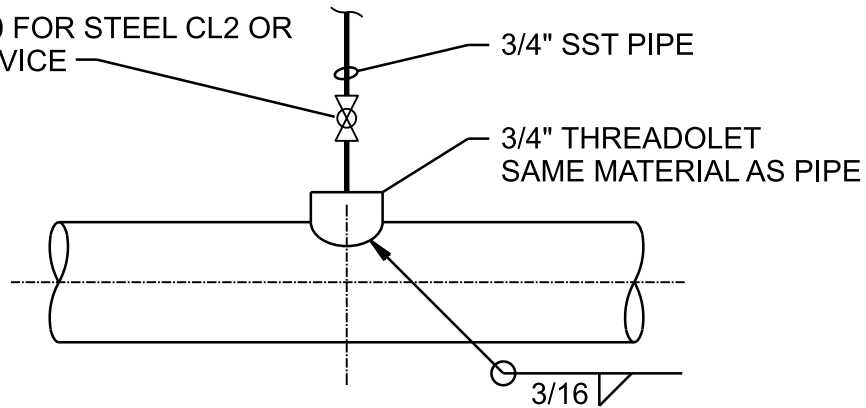
4091-305

3/4" V300 FOR STEEL PIPE
 3/4" V306 FOR SST PIPE
 EXCEPT:
 3/4" V310 FOR STEEL CL2 OR
 CL2 SERVICE



STEEL & SST PIPE 3 1/2" AND SMALLER

3/4" V300 FOR STEEL PIPE
 3/4" V306 FOR SST PIPE
 EXCEPT:
 3/4" V310 FOR STEEL CL2 OR
 CL2 SERVICE



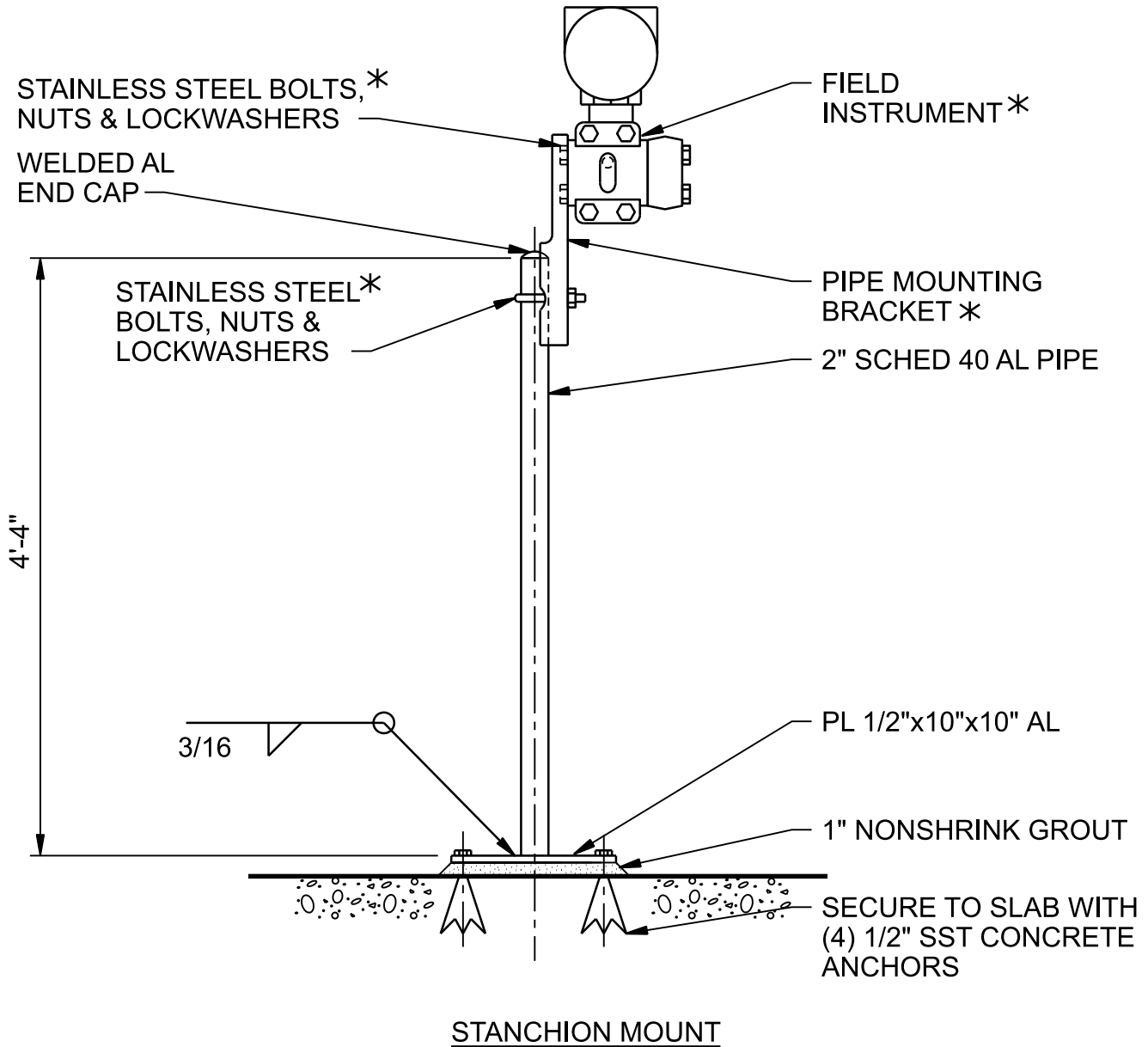
STEEL & SST PIPE 4" AND LARGER

PRESSURE CONNECTION INSTALLATION - DETAIL 2 OF 2

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-305



STANCHION MOUNT

NOTES:

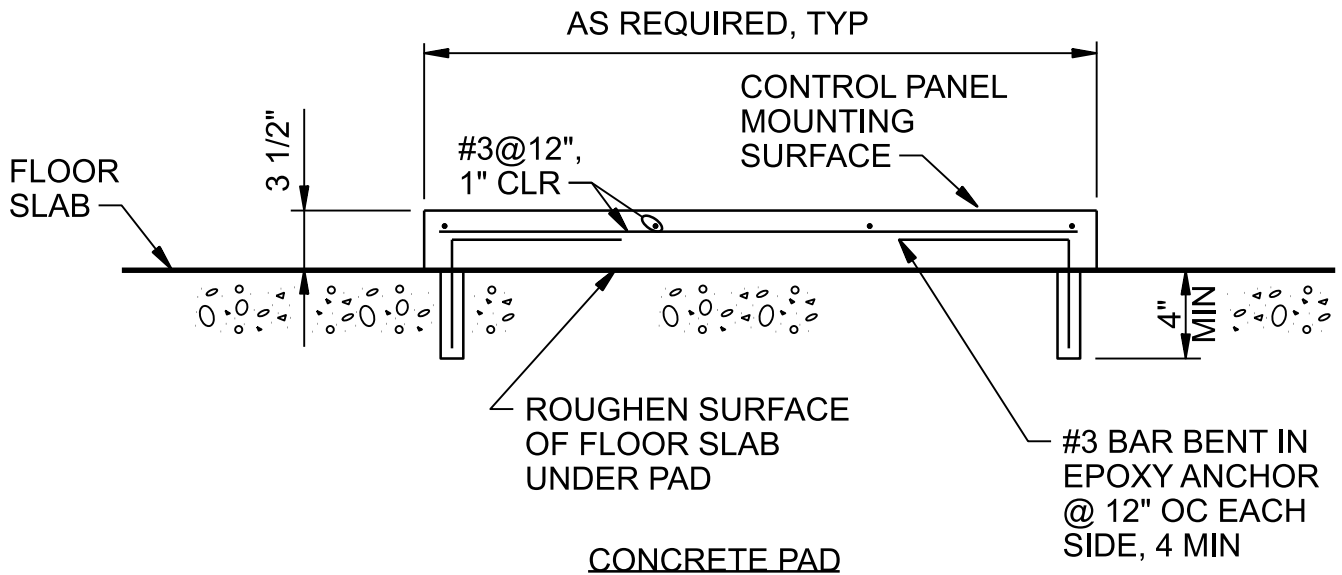
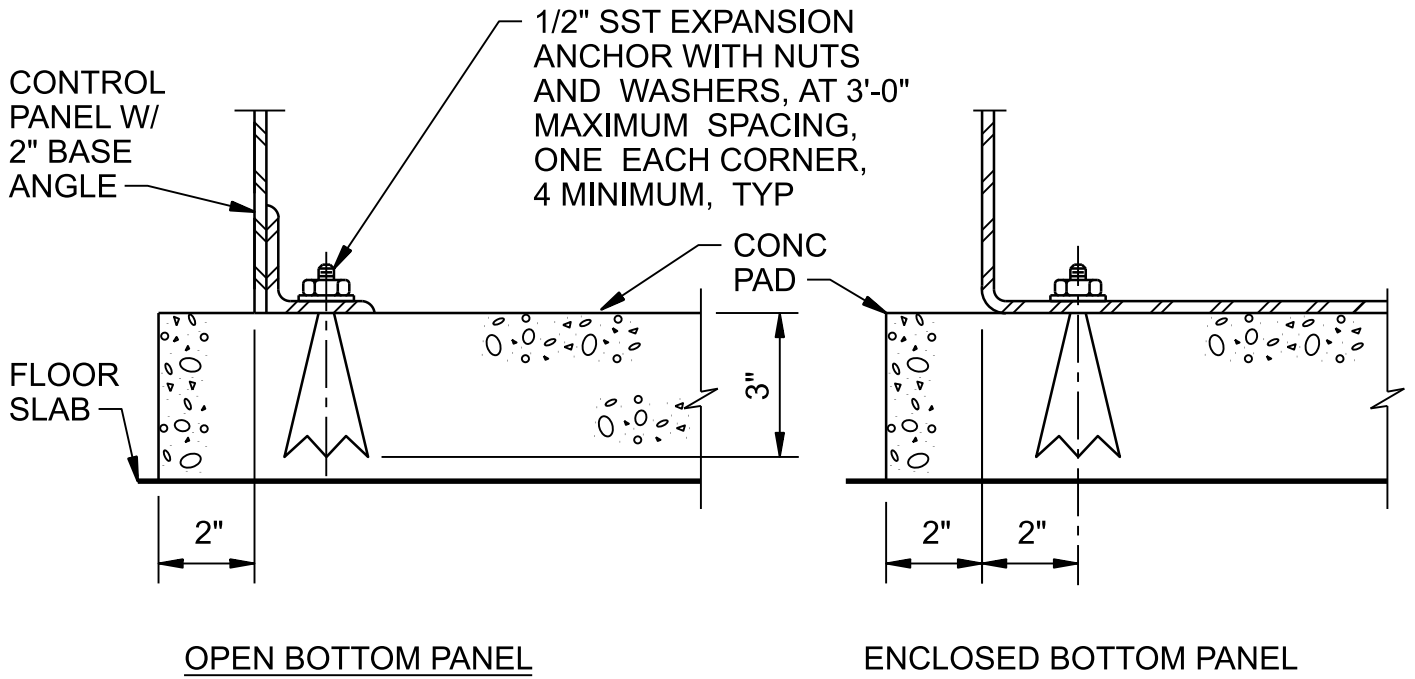
1. PAINT ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS FOR PAINTING.
2. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

FIELD INSTRUMENT MOUNTING - STANCHION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-380



STANDARD FREESTANDING PANEL MOUNTING

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-382

BACK FORMED OF SINGLE SHEET 10 GA ALUMINUM, TACK WELD TO TOP & SIDES AS REQUIRED

TOP & SIDES FORMED OF SINGLE SHEET 10 GA ALUMINUM

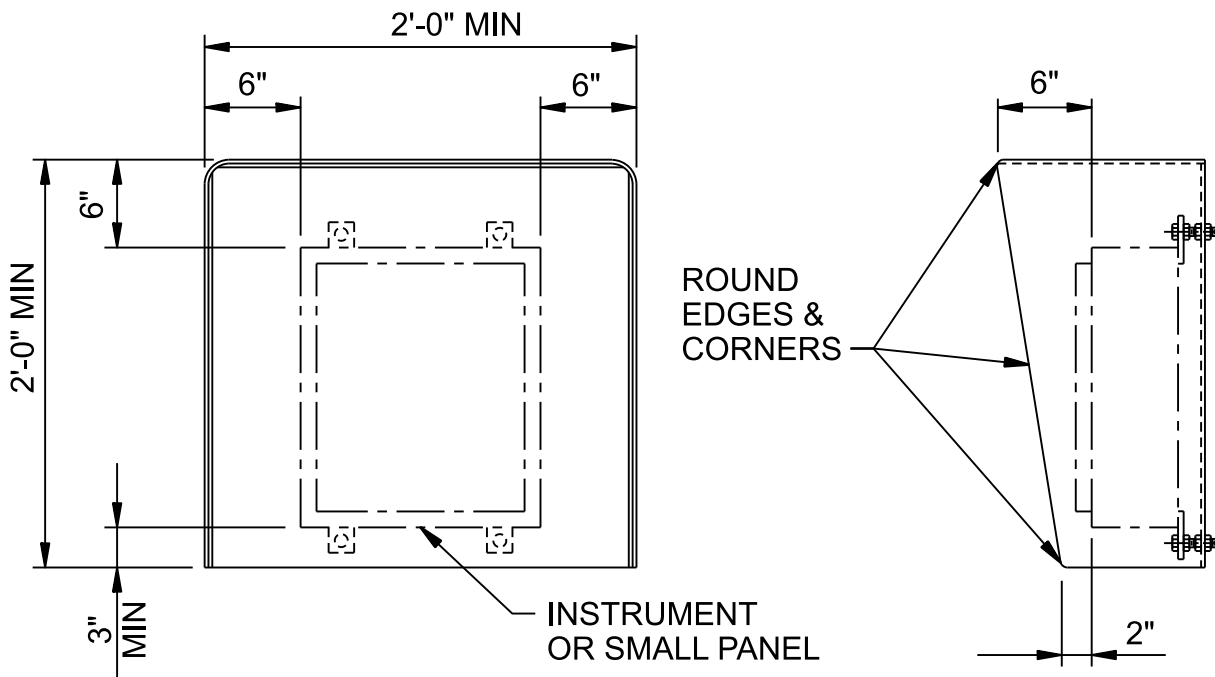
3/8" SST STUD BOLT WITH SST NUTS AND WASHERS, TYP OF 4

INSTRUMENT/HOOD SUPPORT ANGLE OR UNISTRUT (SHOWN) AS APPLICABLE

RAINHOOD

INSTRUMENT MOUNTING FOOT

INSTRUMENT ENCLOSURE



NOTES:

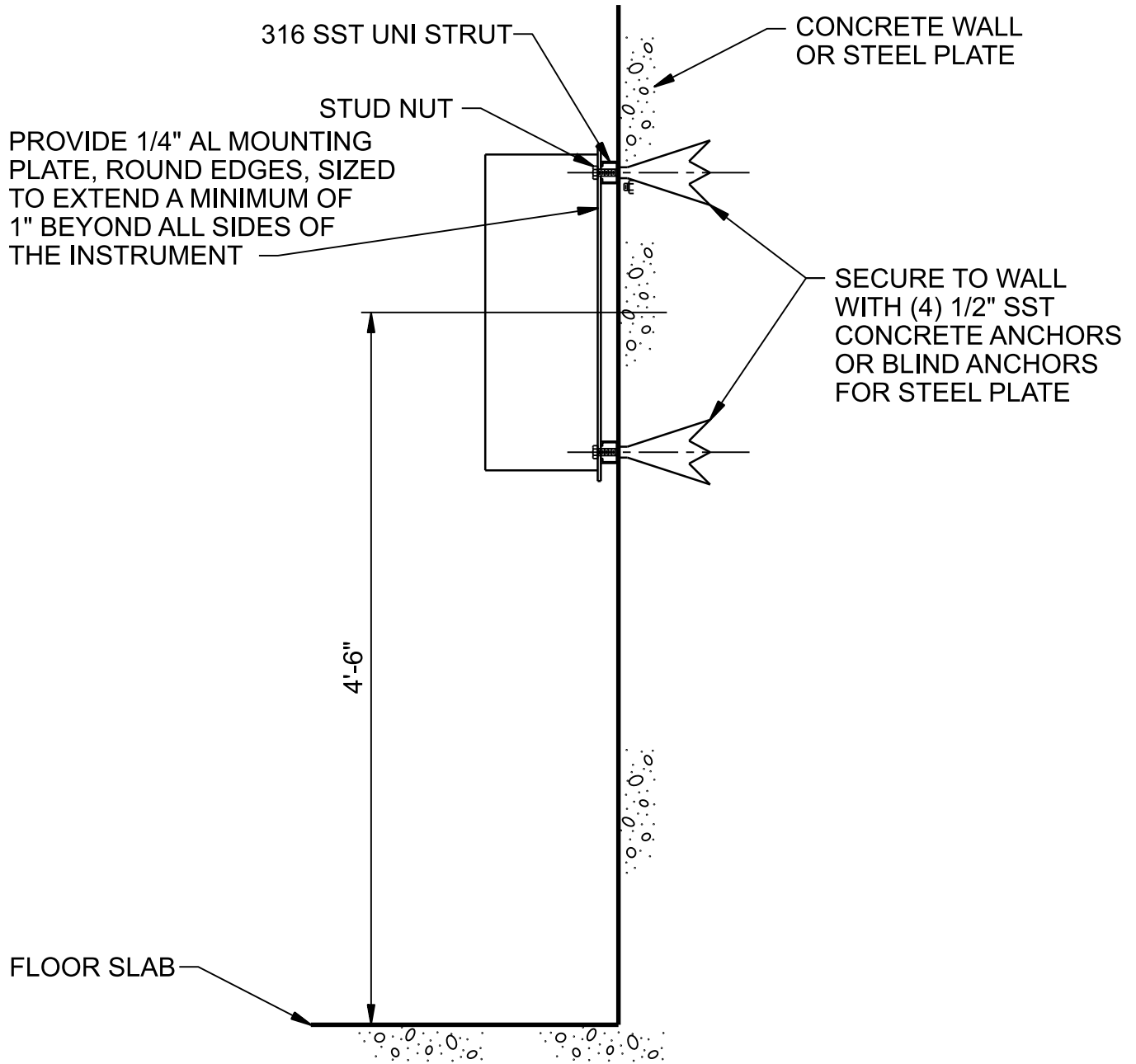
1. ALL EXPOSED EDGES TO BE GROUND SMOOTH AND BURR FREE.
2. MOUNT RAIN HOOD BETWEEN INSTRUMENT AND MOUNTING BRACKET. DRILL HOLES IN RAIN HOOD AS PER MOUNTING HOLES FOR INSTRUMENT.

RAIN HOOD INSTALLATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-384

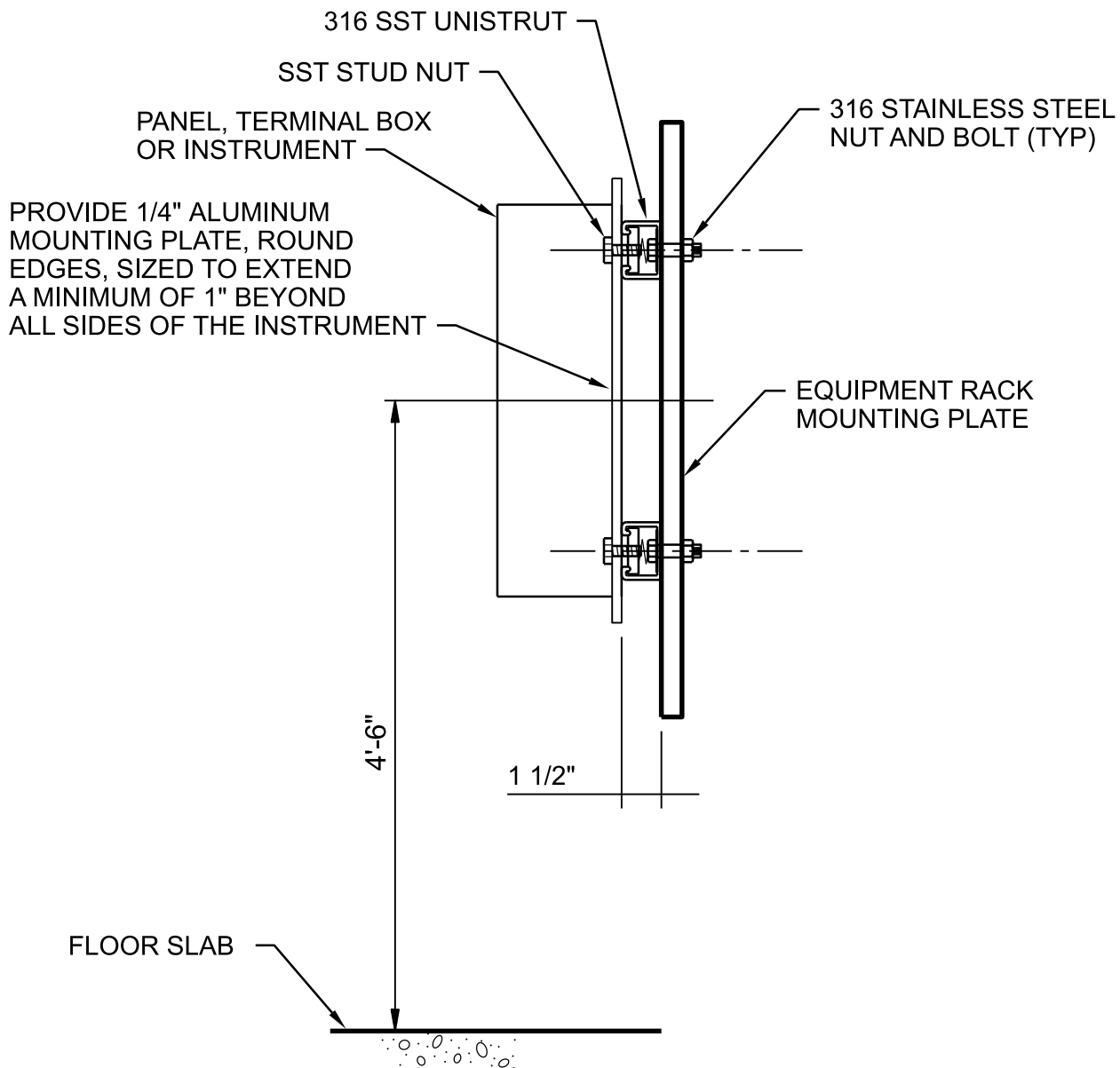


WALL MOUNTED PANEL OR INSTRUMENT INSTALLATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4091-388

**NOTES:**

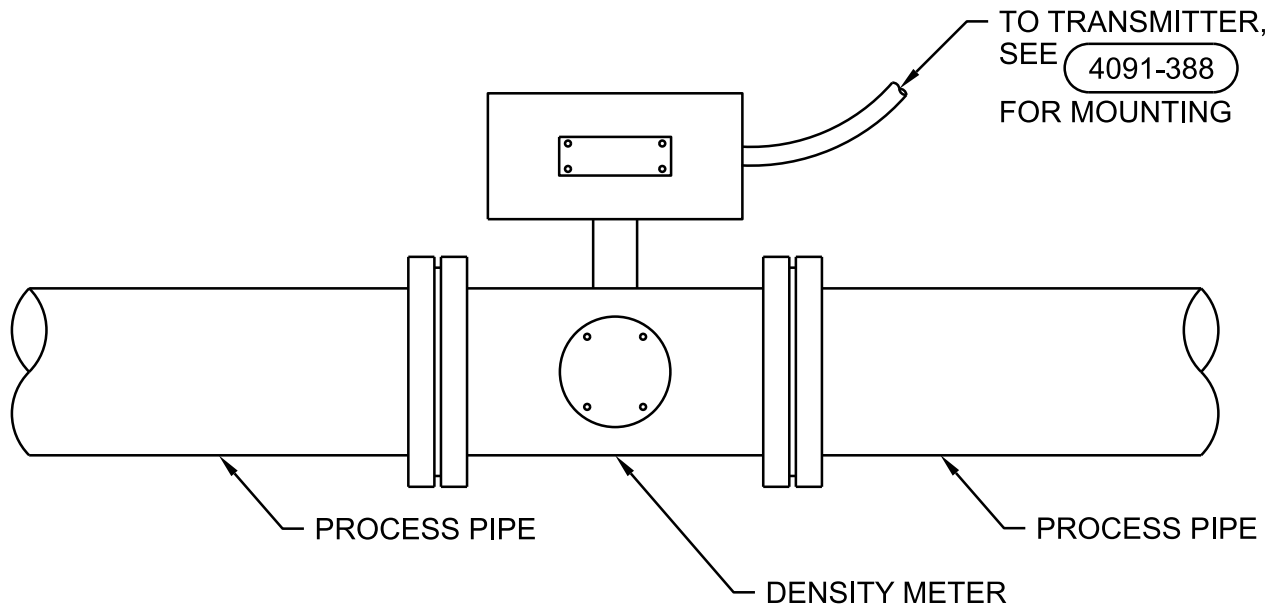
1. REFER TO AREA CLASSIFICATION TABLES FOR ANCHOR MATERIAL REQUIREMENTS.
2. FOR OUTDOOR INSTALLATIONS, USE SUN SHIELD AS SHOWN ON 4091-384.
3. FOR EQUIPMENT RACK, SEE DETAIL 4091-402D.

EQUIPMENT RACK MOUNTED PANEL, TERMINAL BOX OR INSTRUMENT INSTALLATION

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-388PD

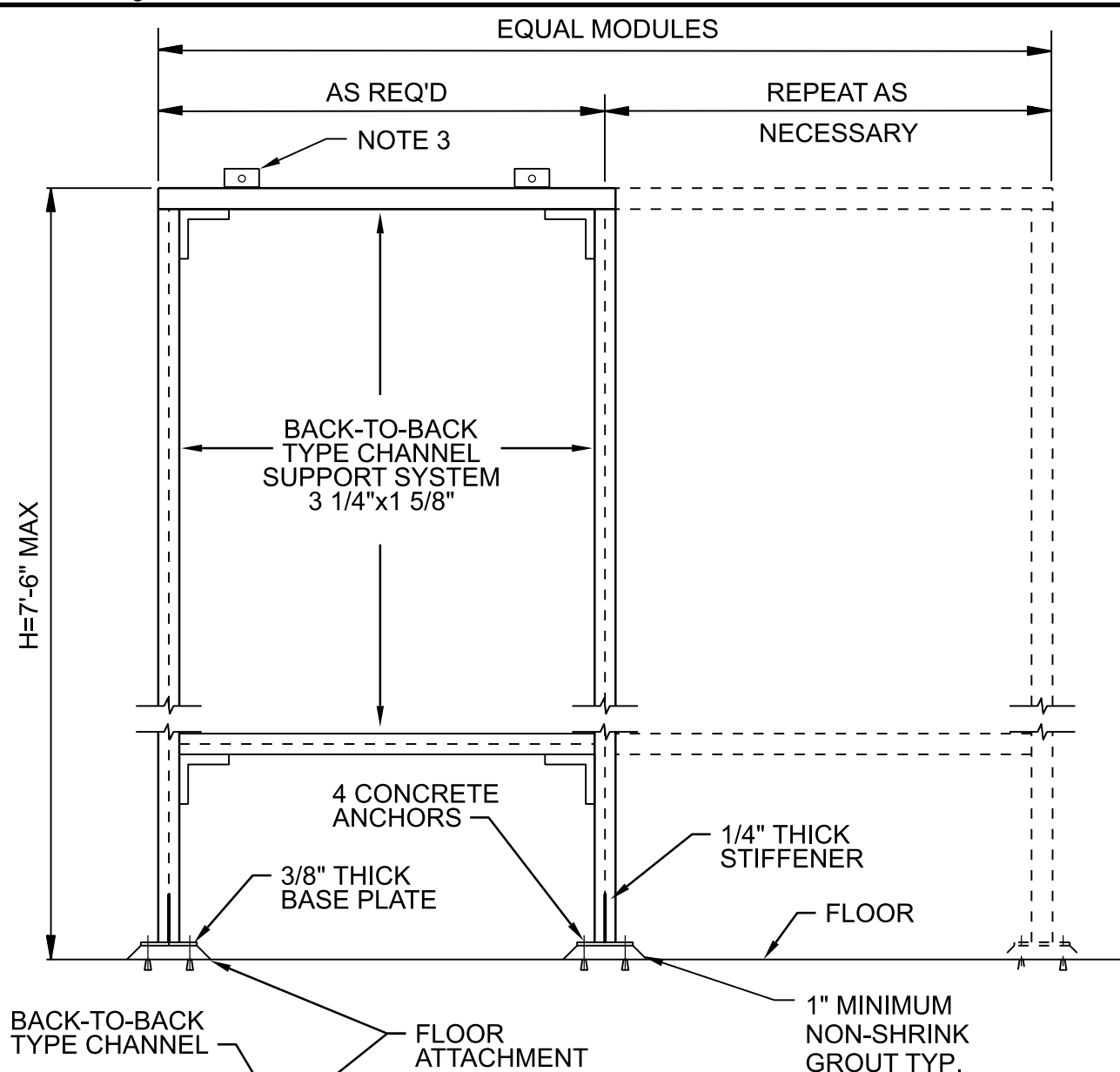


DENSITY METER INSTALLATION

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

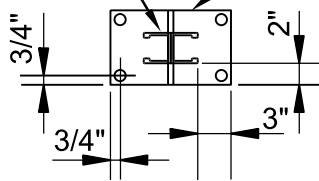
4091-400



BACK-TO-BACK TYPE CHANNEL

FLOOR ATTACHMENT

1" MINIMUM NON-SHRINK GROUT TYP.



ELEVATION

NOTE: SEE SHEET 2 FOR NOTES

PANEL MOUNTING RACK (1 OF 2)

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4091-402D

NOTES:

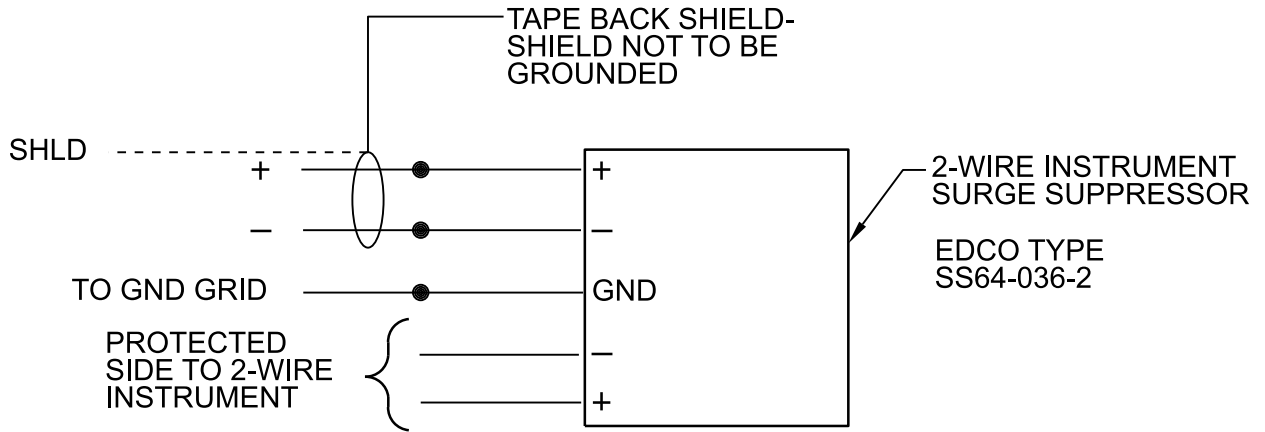
1. TOTAL WEIGHT OF PANEL(S) SHALL NOT EXCEED 750 LB IN EACH MODULE.
2. FOR PANELS WITH "H" GREATER THAN 4'-0". ONE HORIZONTAL MEMBER MUST BE LOCATED WITHIN THE MIDDLE THIRD OF THE FRAME HEIGHT. PROVIDE ADD'L MEMBERS AS NECESSARY FOR PANEL MOUNTING.
3. PROVIDE L 2 1/2"x 2 1/2"x 1/4"x 0'-3" ANGLE TYP AT EACH PANEL MOUNT.
4. THIS DETAIL APPLIES TO NON-FREE STANDING ELECTRICAL EQUIPMENT WHICH IS NOT MOUNTED ON A FREE STANDING FRAME OR IS NOT WALL MOUNTED.
5. FOR OUTDOOR APPLICATIONS, PROVIDE RAINHOOD/ SOLAR SHIELD AS PER DETAIL (4091-384)
6. PROVIDE #6 XHHW COPPER GROUND WIRE FROM EACH PANEL AND INSTRUMENT MOUNTED ON RACK TO GROUND STUD. CONNECTION TO GROUND GRID SPECIFIED UNDER DIVISION 26.
7. ALL MATERIALS SHALL BE 316 SST.

PANEL MOUNTING RACK (2 OF 2)

NTS

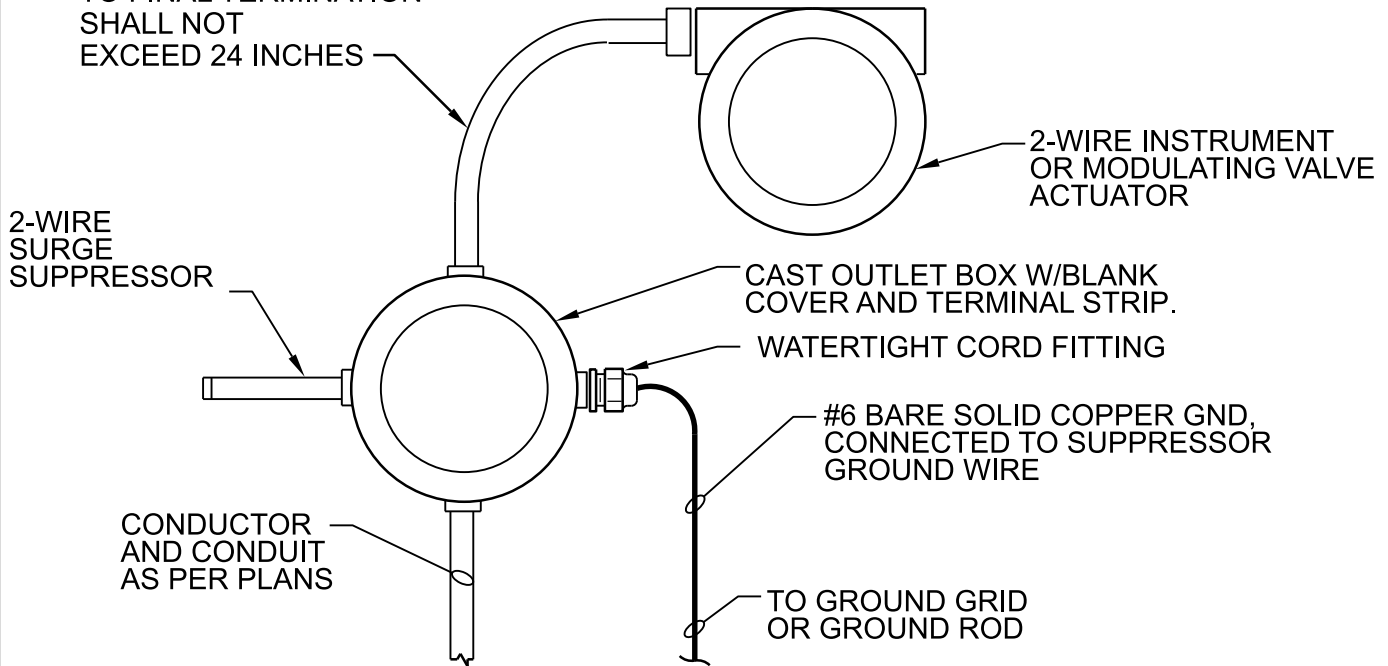
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

(4091-402D)



WIRING DIAGRAM

FLEX CONDUIT CABLE RUN FROM SURGE SUPPRESSOR TO FINAL TERMINATION SHALL NOT EXCEED 24 INCHES

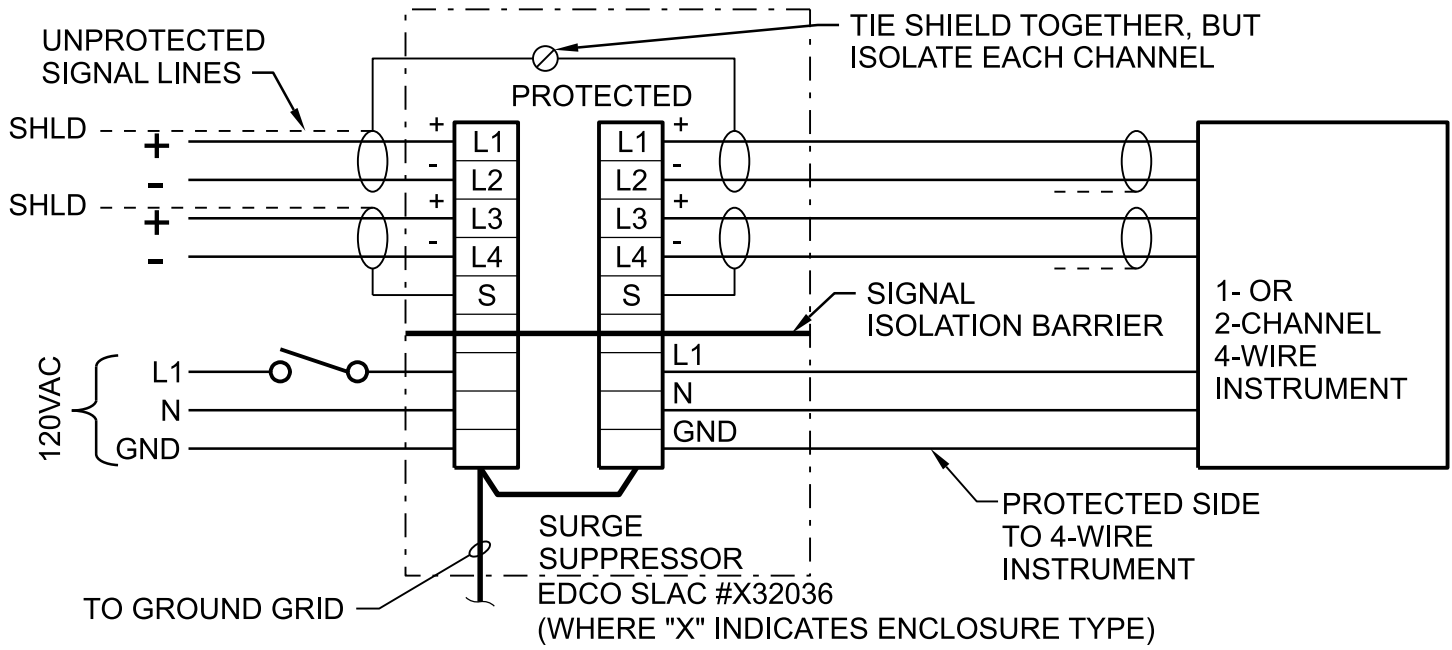


TYPE "SS-3" SURGE SUPPRESSOR INSTALLATION 2-WIRE INSTRUMENT/MODULATING VALVE ACTUATOR

NTS

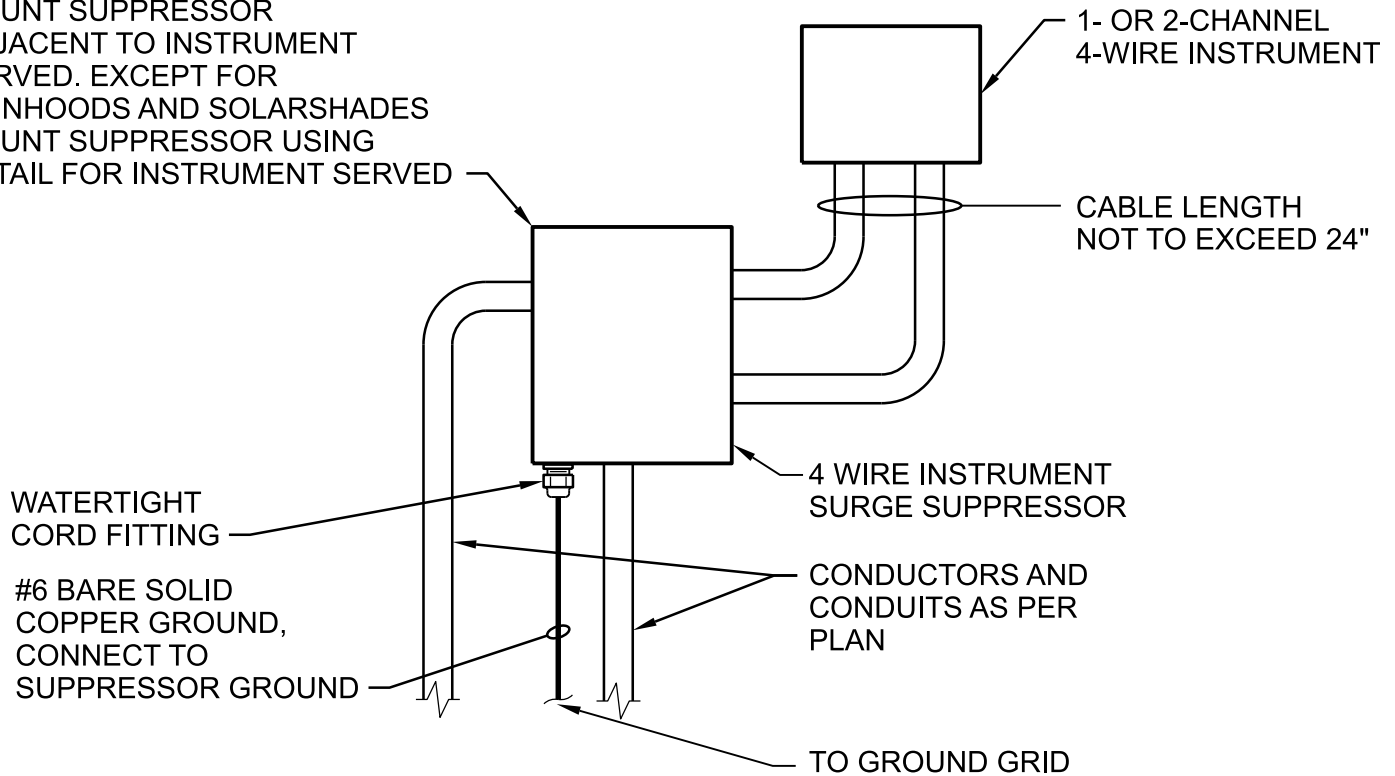
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4091-415AG



WIRING DIAGRAM

MOUNT SUPPRESSOR ADJACENT TO INSTRUMENT SERVED. EXCEPT FOR RAINHOODS AND SOLARSHADES MOUNT SUPPRESSOR USING DETAIL FOR INSTRUMENT SERVED



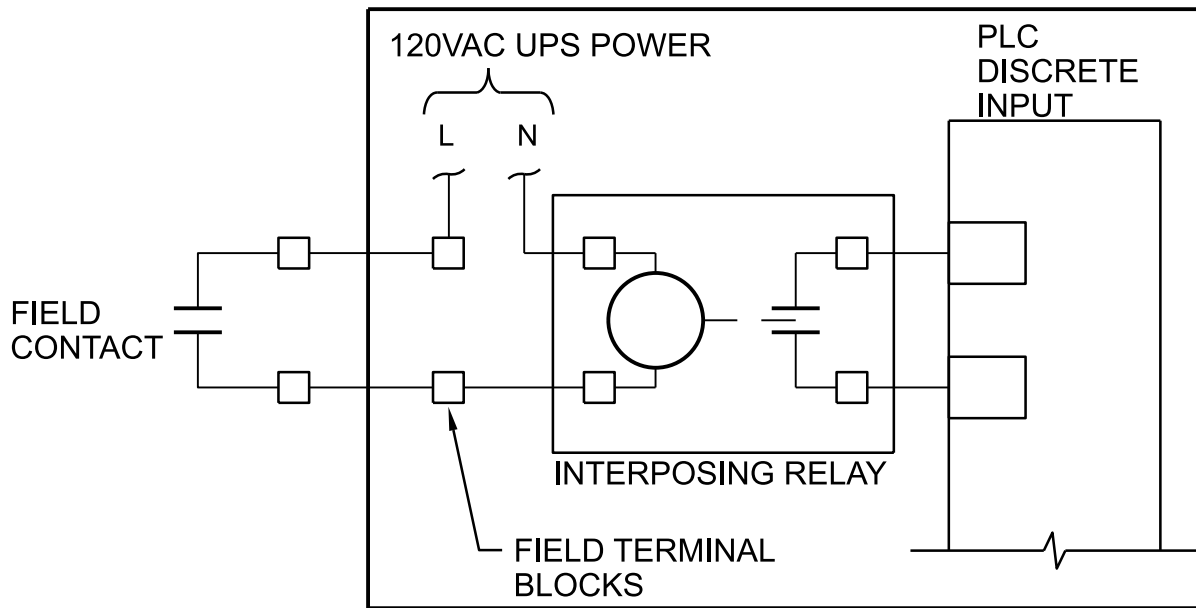
TYPE "SS-4" SURGE SUPPRESSOR INSTALLATION 4-WIRE INSTRUMENT

NTS

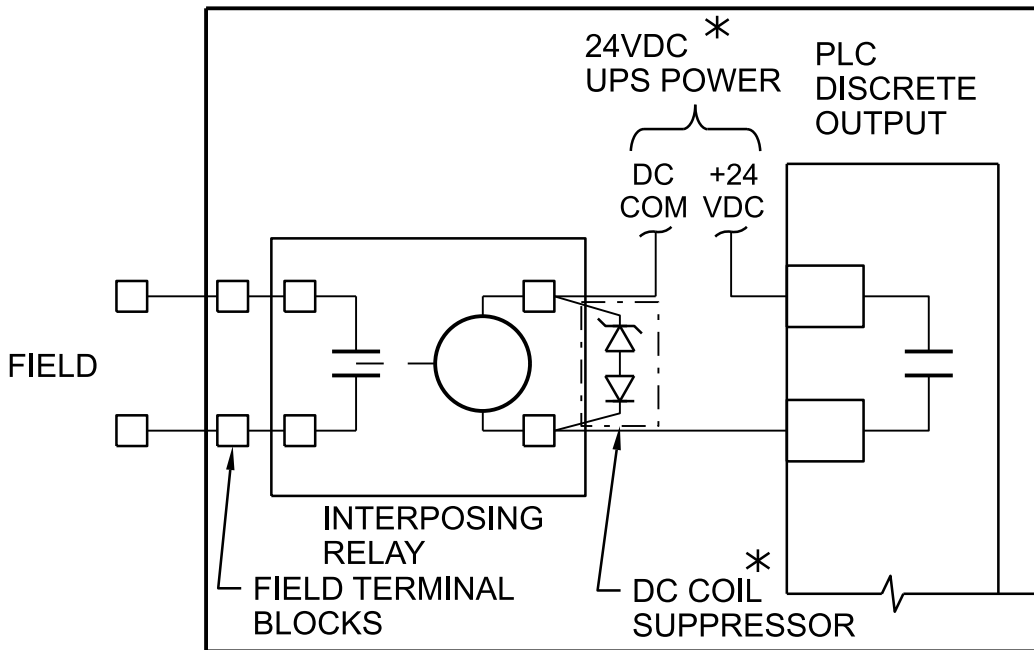
HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4091-420US

TYPICAL DISCRETE INPUT



TYPICAL DISCRETE OUTPUT



NOTES:

1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURE. SEE MANUFACTURE MANUAL FOR DETAILS.
- * 2. 120VAC UPS POWER FOR ALLEN-BRADLEY PLC DISCRETE I/O. DC COIL SUPPRESSOR NOT REQUIRED FOR AC INTERPOSING RELAY COIL.
3. ADD POWER AS REQUIRED FOR SOLENOID VALVE, ETC.

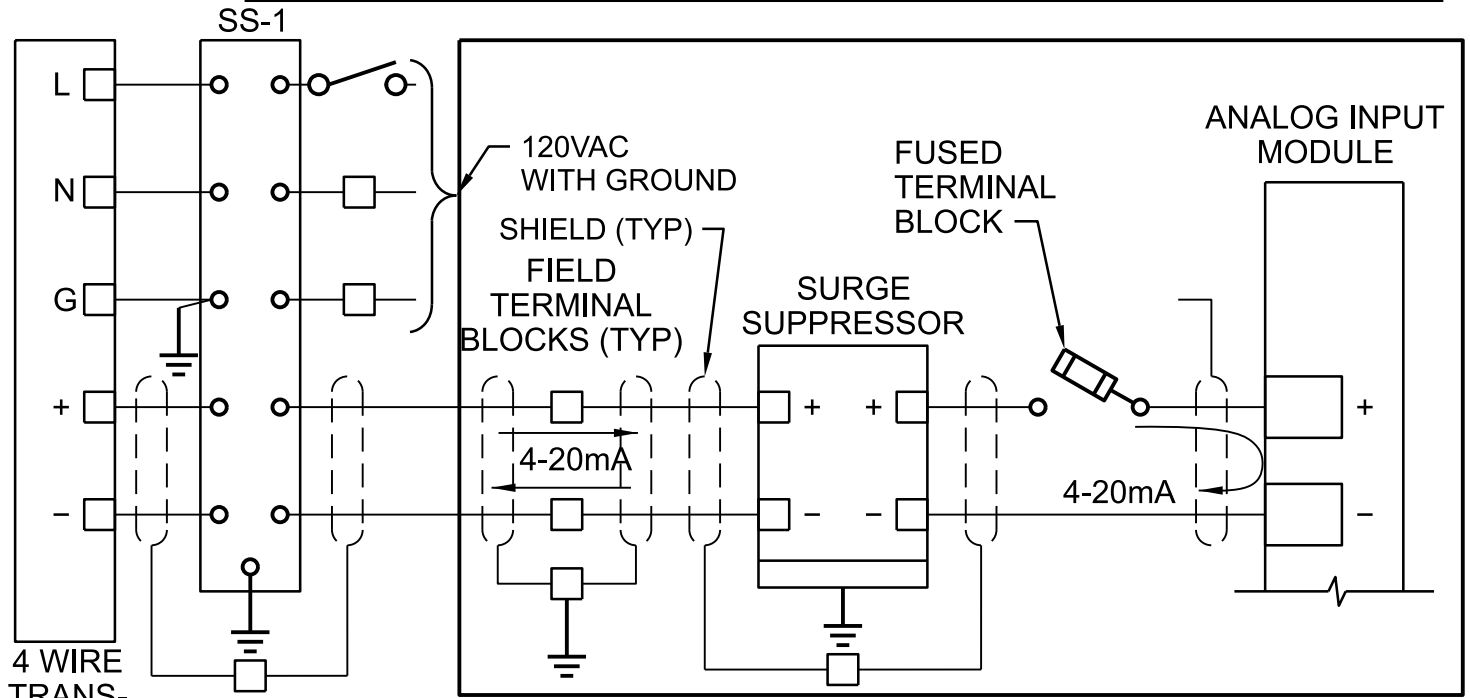
TYPICAL I/O WIRING DIAGRAMS (1 OF 2)

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4091-441X

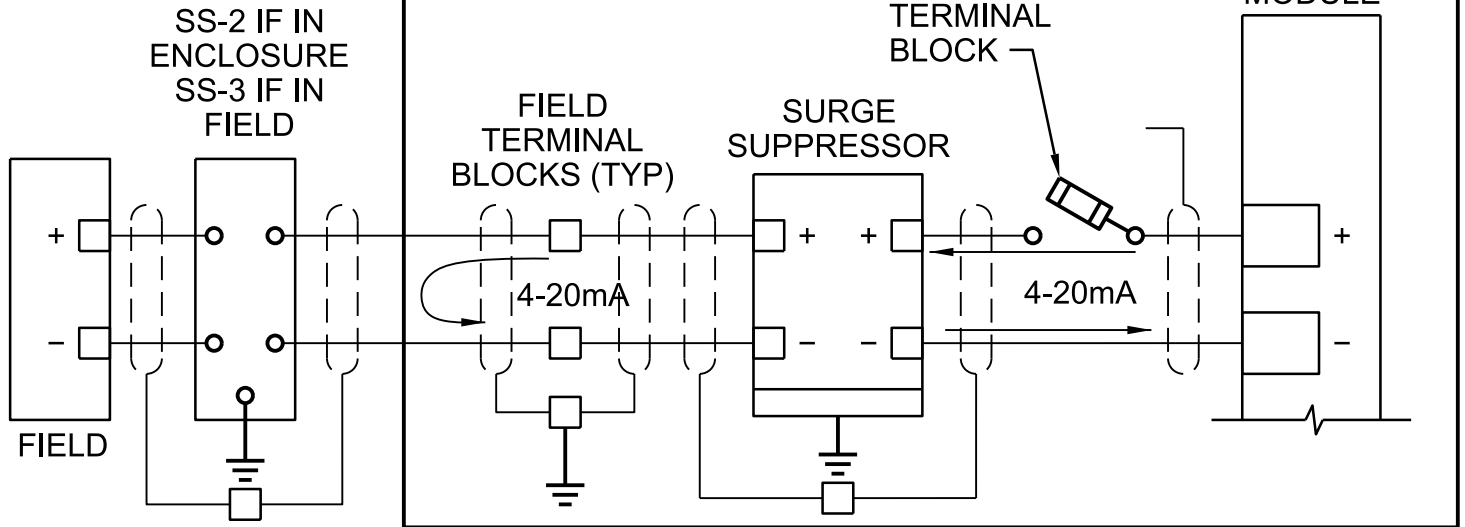
TYPICAL ANALOG INPUT - 4-WIRE TRANSMITTER



4 WIRE TRANSMITTER

EDCO SLAC MOUNTED IN 316 STAINLESS STEEL NEMA 4X ENCLOSURE

TYPICAL ANALOG OUTPUT



NOTES:

1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURE. SEE MANUFACTURE MANUAL FOR DETAILS.

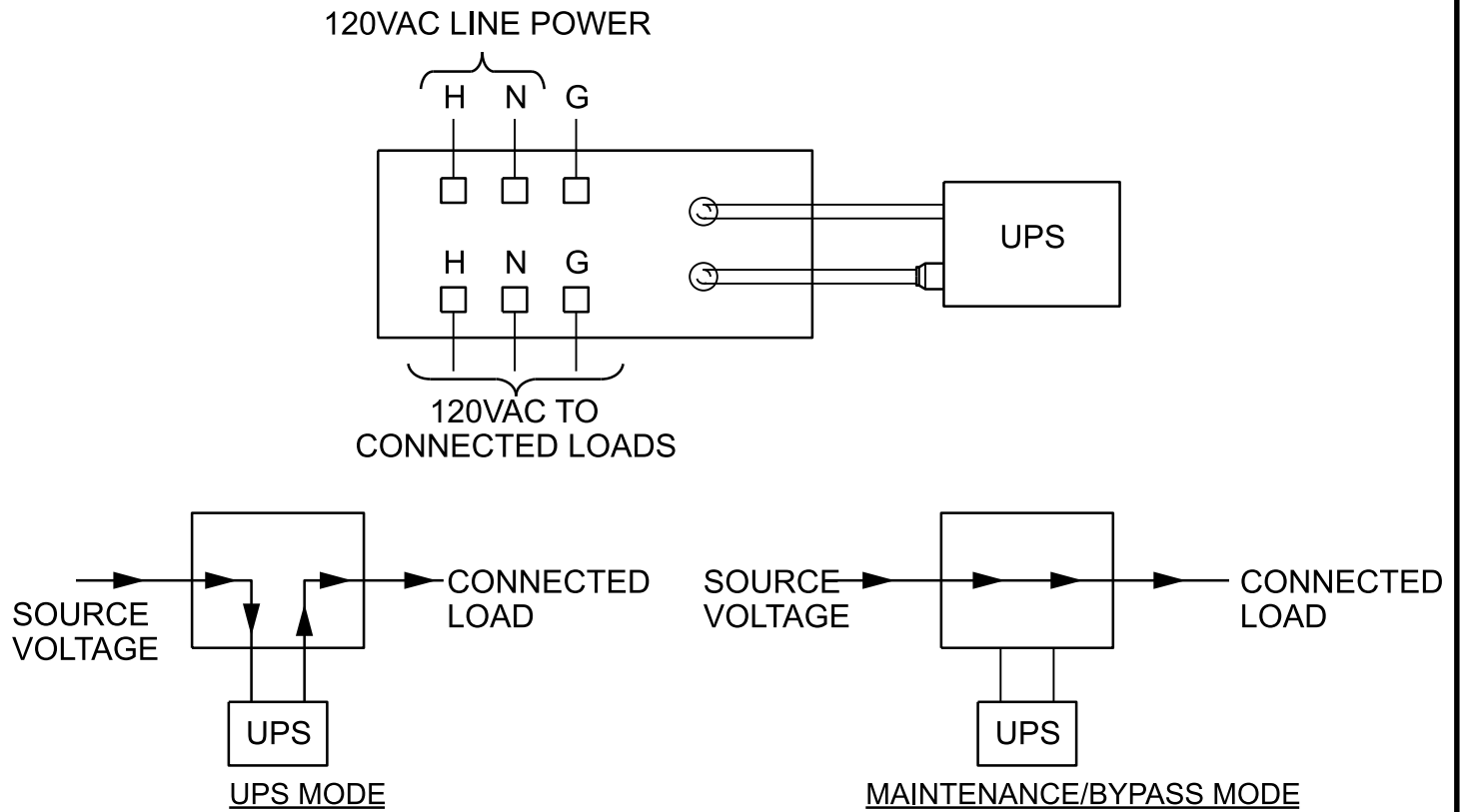
* 2. 120VAC UPS POWER FOR ALLEN-BRADLEY PLC DISCRETE I/O. DC COIL SUPPRESSOR NOT REQUIRED FOR AC INTERPOSING RELAY COIL.

TYPICAL I/O WIRING DIAGRAMS (2 OF 2)

NTS

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-441X

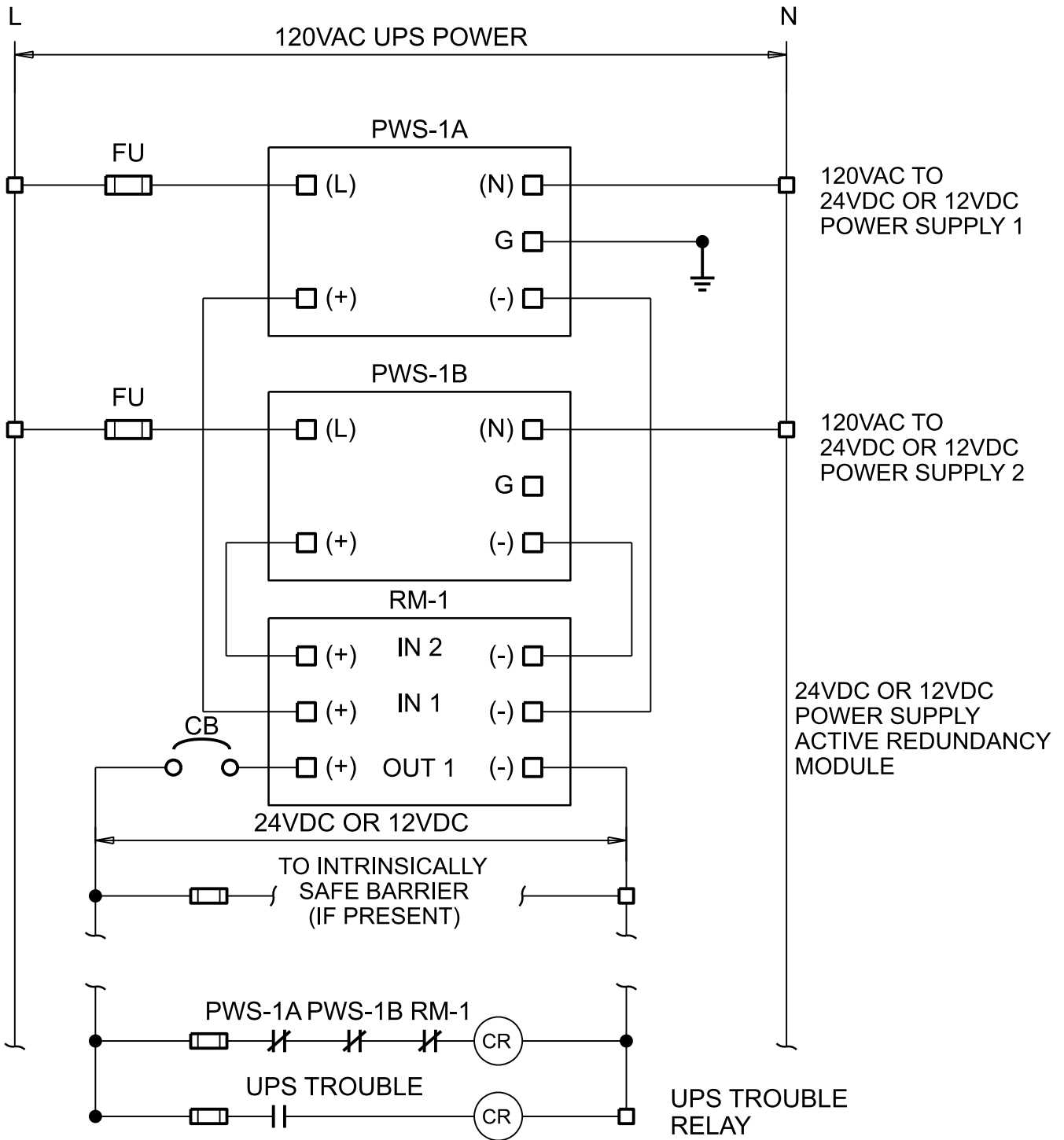


UPS MAINTENANCE/BYPASS WIRING DETAIL

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

4091-451D



NOTE: WIRE FAULT CONTACTS OF BOTH POWER SUPPLIES AND ACTIVE REDUNDANCY MODULES IN SERIES AND WIRE TO A DC RELAY FOR MONITORING THE "POWER SUPPLY OK" STATUS.

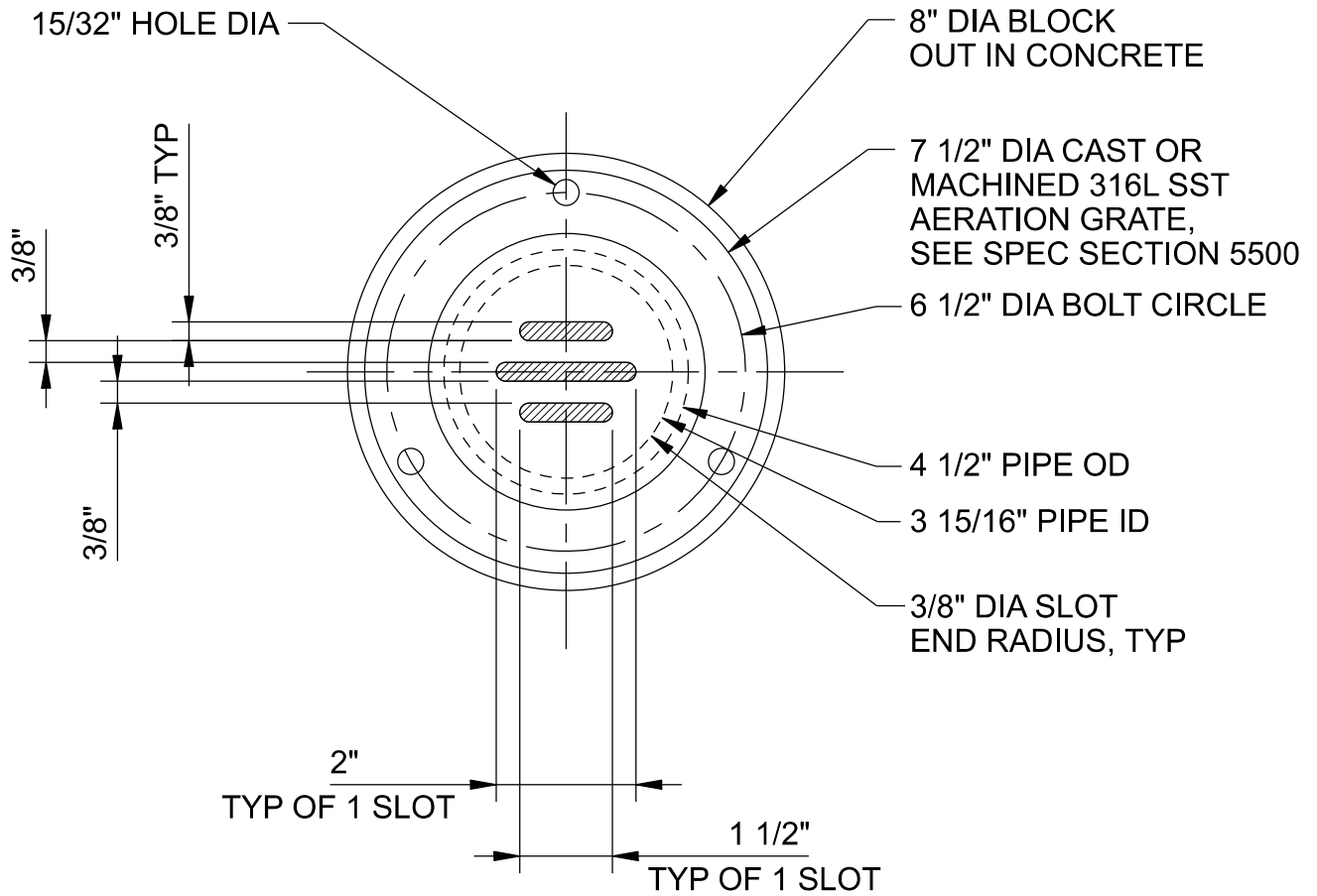
UPS 120V TO 24VDC OR 12VDC WIRING DIAGRAM

NTS

HAIKY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 WATER AND SEWER DEPARTMENT

4091-452D

LEGEND
 PWS POWER SUPPLY
 RM REDUNDANCY MODULE



PLAN

COMPOST FLOOR AERATION

NTS

DETAIL 1 OF 2

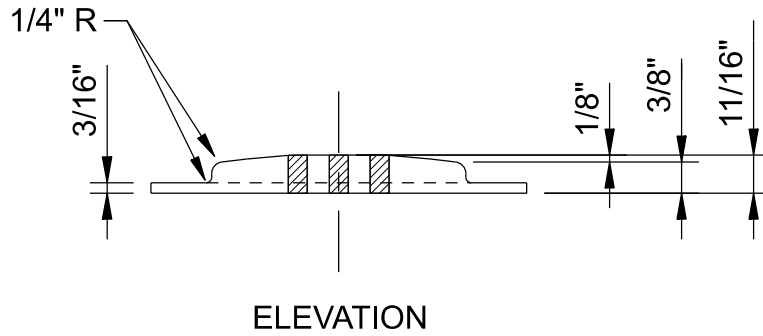
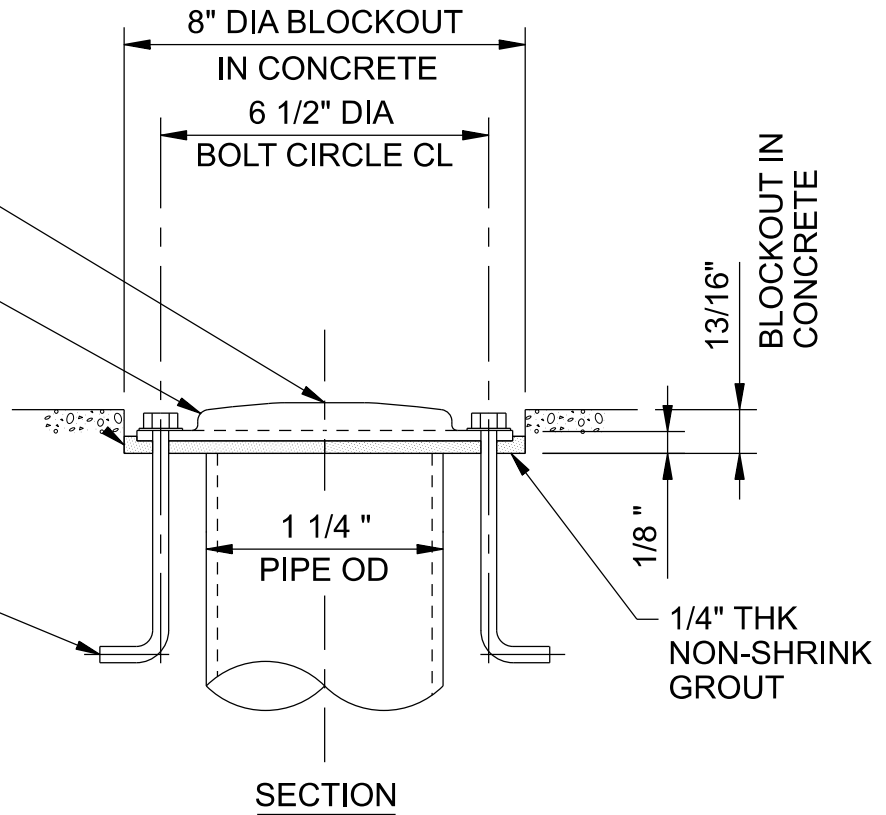
4431-100A

HAIKEY CREEK WWTP
 BIOSOLIDS IMPROVEMENT
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

7 1/2" DIA CAST OR MACHINED 316L SST AERATION GRATE, SET LEVEL IN NON-SHRINK GROUT WITH MAXIMUM 1/8" CROWN ABOVE THE PLANE OF TOP OF CONCRETE

FOR AERATION GRATE THICKNESS SEE ELEVATION

3/8" x 5" SST ANCHOR BOLT, WASHER AND NUT, TYP OF 3 PER AERATION GRATE. GRIND DOWN TO REMOVE AND PROTUSIONS ABOVE CONCTRTE



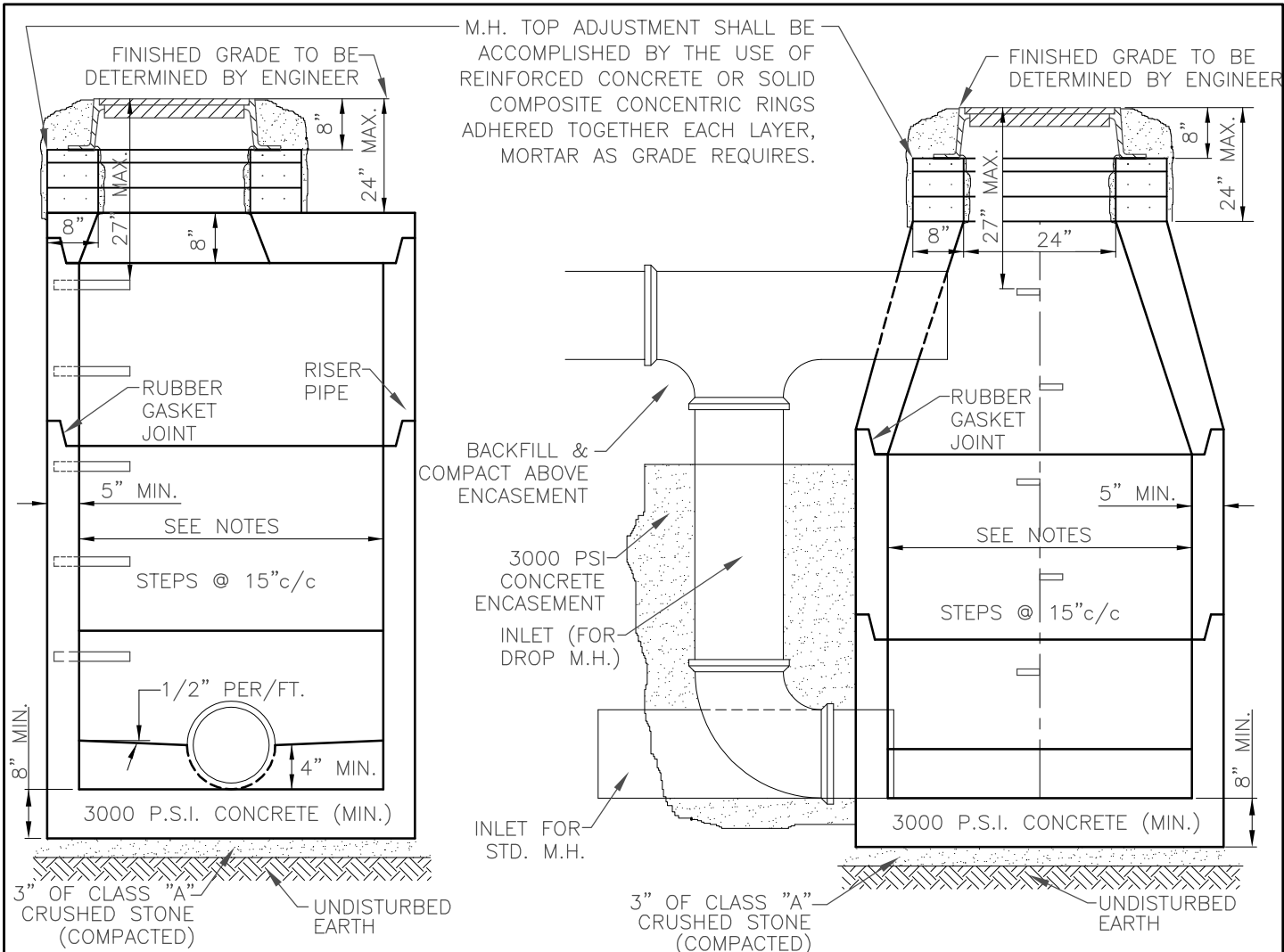
COMPOST FLOOR AERATION

NTS

DETAIL 2 OF 2

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

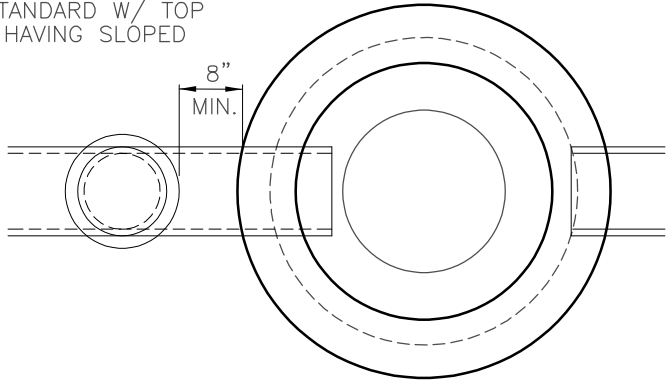
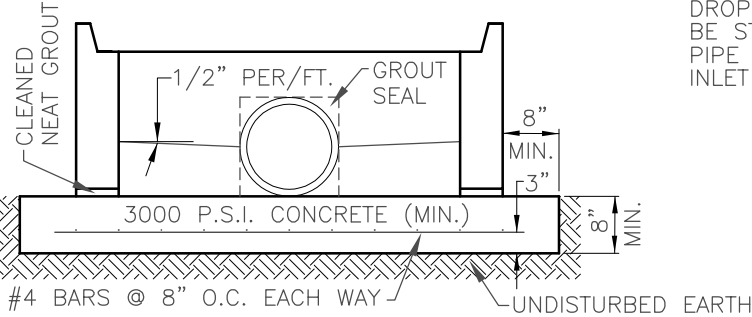
4431-100A



**PRECAST MANHOLE
FLAT TOP**

**PRECAST MANHOLE
TAPERED TOP**

NOTE:
DROP INLET TO BE STANDARD W/ TOP PIPE HAVING SLOPED INLET



CAST-IN-PLACE BASE

STANDARD & DROP MANHOLE

NOTES:

1. SHALL CONFORM TO CURRENT ASTM C478.
2. 8" TO 18" PIPE, 4' ID MANHOLE REQUIRED.
3. 21" TO 27" PIPE, 5' ID MANHOLE REQUIRED.
4. OVER 27" PIPE MANHOLE ID AS SPECIFIED BY ENGINEER.
5. MANHOLES LESS THAN 4'-6" IN HEIGHT SHALL HAVE A FULL 4'-0" ID OR LARGER FROM TOP TO BOTTOM.
6. JOINTS & LIFTING HOLES WILL BE GROUTED & COATED WITH MASTIC ON THE EXTERIOR.

PRECAST MANHOLE DETAIL



STANDARD DRAWING: STD SS 08

LAST REVISION DATE: 8/01/99

DRAWN BY: ZSS	CHECKED BY: TSR	APPROVED: KDS	DATE: 02/01/2024
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