

WEST HARRIS COUNTY REGIONAL WATER AUTHORITY

SURFACE WATER SUPPLY PROJECT

SEGMENT "X"

PROJECT LIMITS DESCRIPTION

48 HOUR NOTICE

CONTRACTOR SHALL NOTIFY HARRIS COUNTY PRIOR TO COMMENCING CONSTRUCTION AND/OR BACKFILLING ANY UTILITIES. CONTRACTOR(S) TO CONTACT MARC BARBE WITH PUBLIC REVIEW DEPARTMENT @ (713-274-3937) OR (marc.barbe@hccpd.org)

*CONSTRUCTION IN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY REQUIRES:

SITE PLANS MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED HCFCD RIGHT-OF-WAY NOTIFICATION. BE ADVISED THAT THE HCFCD RIGHT-OF-WAY NOTIFICATION IS SEPARATE FROM THE SITE DEVELOPMENT PERMIT PACKAGE

- 1.) HCFCD RIGHT-OF-WAY NOTIFICATION (PERMIT)
2.) HCFCD 48-HR PRE-CONSTRUCTION NOTICE

BOTH ARE REQUIRED PRIOR TO ENTERING OR WORKING WITHIN HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHT-OF-WAY. THE HCFCD RIGHT-OF-WAY NOTIFICATION AND 48-HOUR NOTICE MUST BE PROVIDED TO HCFCD AT ddid@hccfd.org
TO APPLY FOR THE HCFCD RIGHT-OF-WAY NOTIFICATION PLEASE GO TO <http://apps.harriscountytx.gov/EPermits> AND APPLY FOR THE HCFCD ROW UNDER ROW NOTIFICATION. FAILURE TO PROVIDE BOTH ITEMS COULD RESULT IN PROJECT DELAYS.

XX% SUBMITTAL

WHCRWA

NFBWA

SURFACE WATER
SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

3	MM/DD/YY	BRIEF DESCRIPTION	XXX
2	MM/DD/YY	BRIEF DESCRIPTION	XXX
1	MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION	APP.

Company Name

Address

Telephone No.

Texas Firm No.

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John D. Doe

XXXXX

08/31/2019

Engineer of Record
Texas Registered Engineering Firm F-#XXX

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

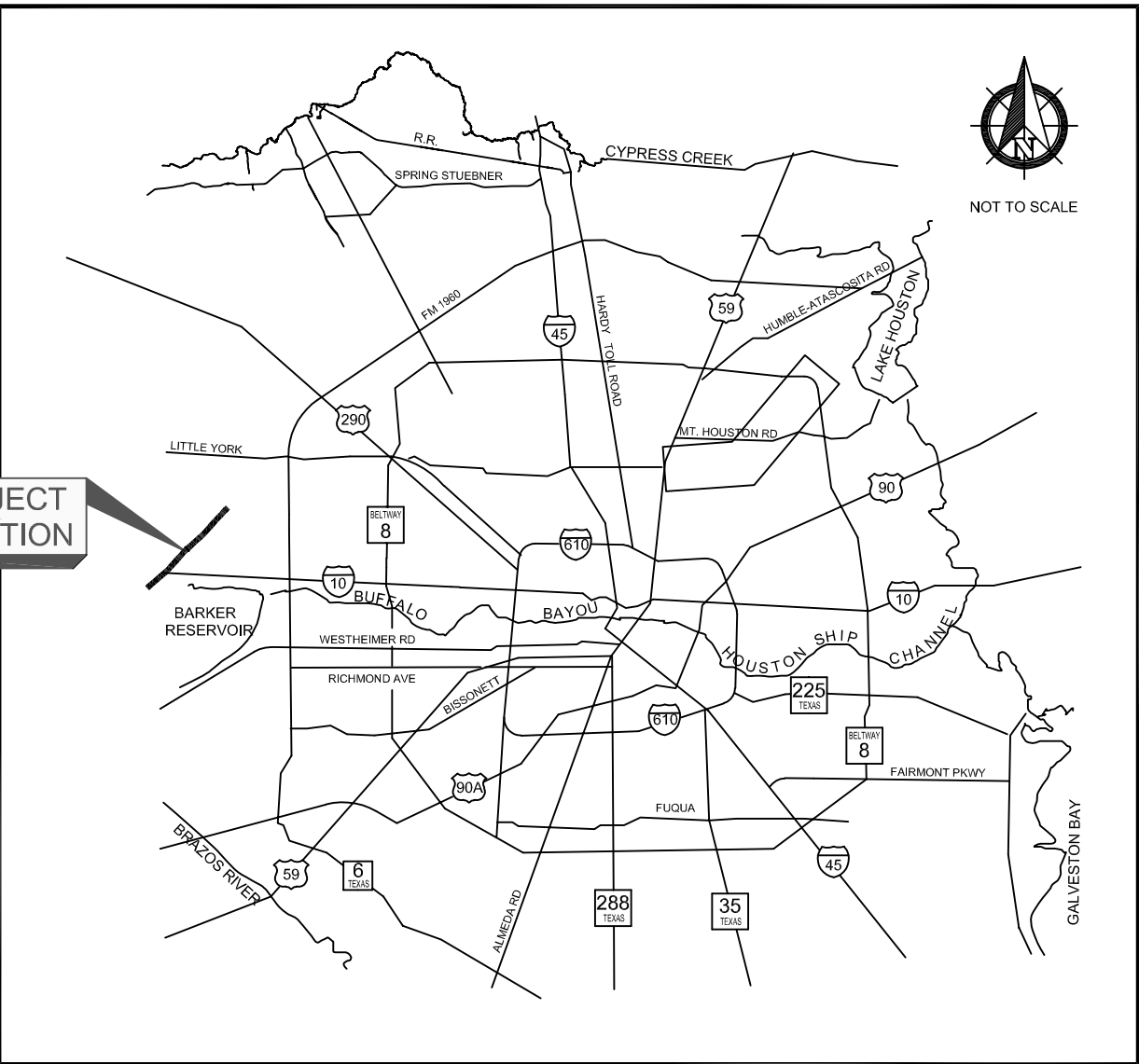
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE
TRAFFIC SIGNAL	

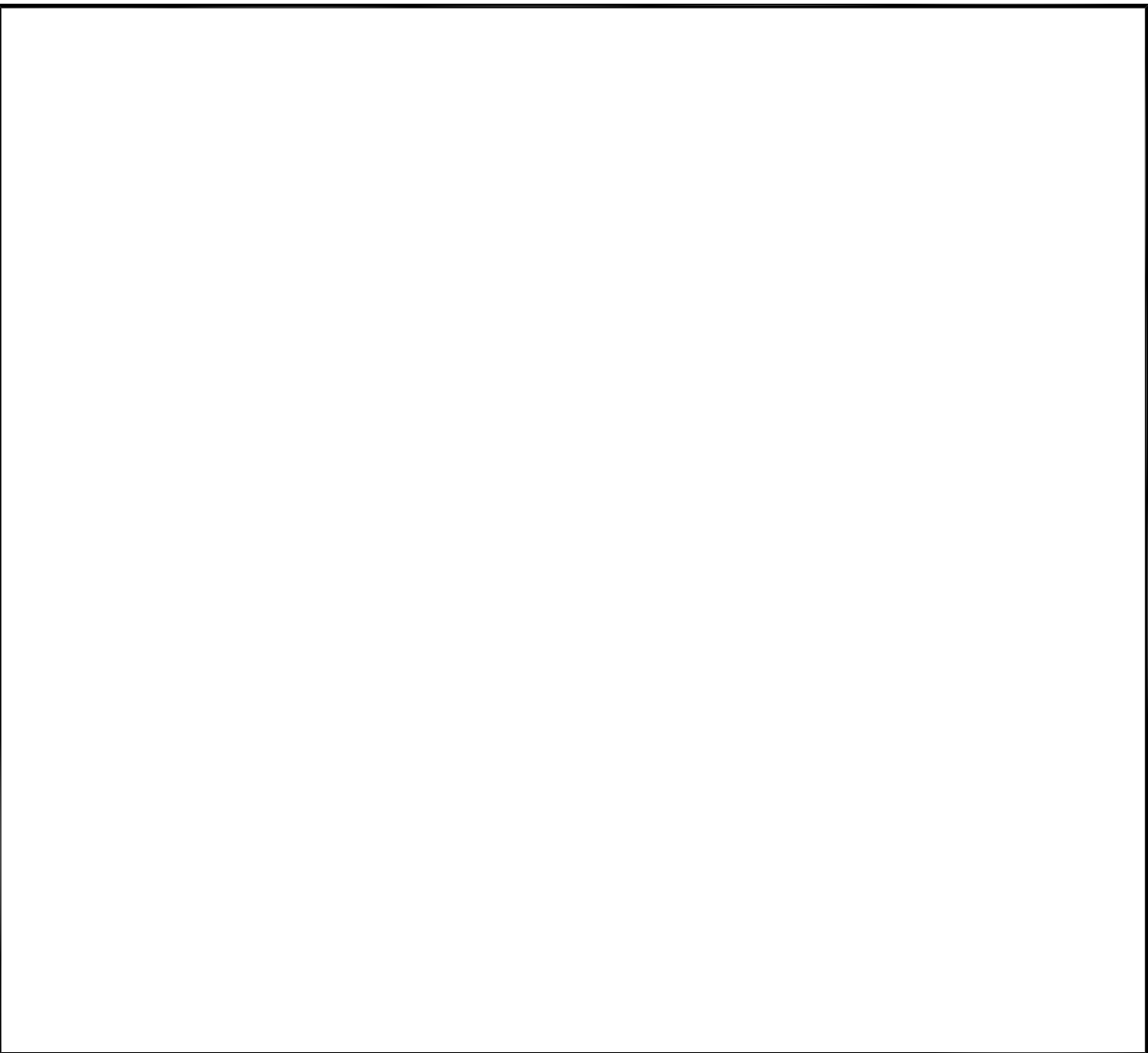
CITY ENGINEER	DATE	DIRECTOR OF HOUSTON PUBLIC WORKS	DATE
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SHEET NO 1 OF XX SHEETS

FOR CITY OF HOUSTON USE ONLY



LOCATION MAP



VICINITY MAP

KEY MAP NO. 0000
GIMS MAP NO. 00000
ZIP CODE NO. 00000

WHCRWA NFBWA

SURFACE WATER SUPPLY PROJECT

WEST HARRIS COUNTY REGIONAL WATER AUTHORITY BOARD OF DIRECTORS

LARRY A. WEPPLER	DIRECTOR PRECINCT #1
JOHN WHEELER	DIRECTOR PRECINCT #2
ERIC HANSEN	DIRECTOR PRECINCT #3
MICHAEL THORNHILL	DIRECTOR PRECINCT #4
MIKE OWENS	DIRECTOR PRECINCT #5
DOUGLAS C. POSTLE	DIRECTOR PRECINCT #6
GARY STRUZICK	DIRECTOR PRECINCT #7
MARK G. JANNECK	DIRECTOR PRECINCT #8
DENNIS GORDEN	DIRECTOR PRECINCT #9

NORTH FORT BEND WATER AUTHORITY BOARD OF DIRECTORS

BRUCE FAY	DIRECTOR PRECINCT #1
ROBERT DARDEN	DIRECTOR PRECINCT #2
DONALD ABRAHAMSON, II	DIRECTOR PRECINCT #3
MELONY F. GAY	DIRECTOR PRECINCT #4
ROBERT L. PATTON	DIRECTOR PRECINCT #5
PETER HOUGHTON	DIRECTOR PRECINCT #6
DANA HOLLINGSWORTH	DIRECTOR PRECINCT #7

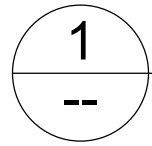
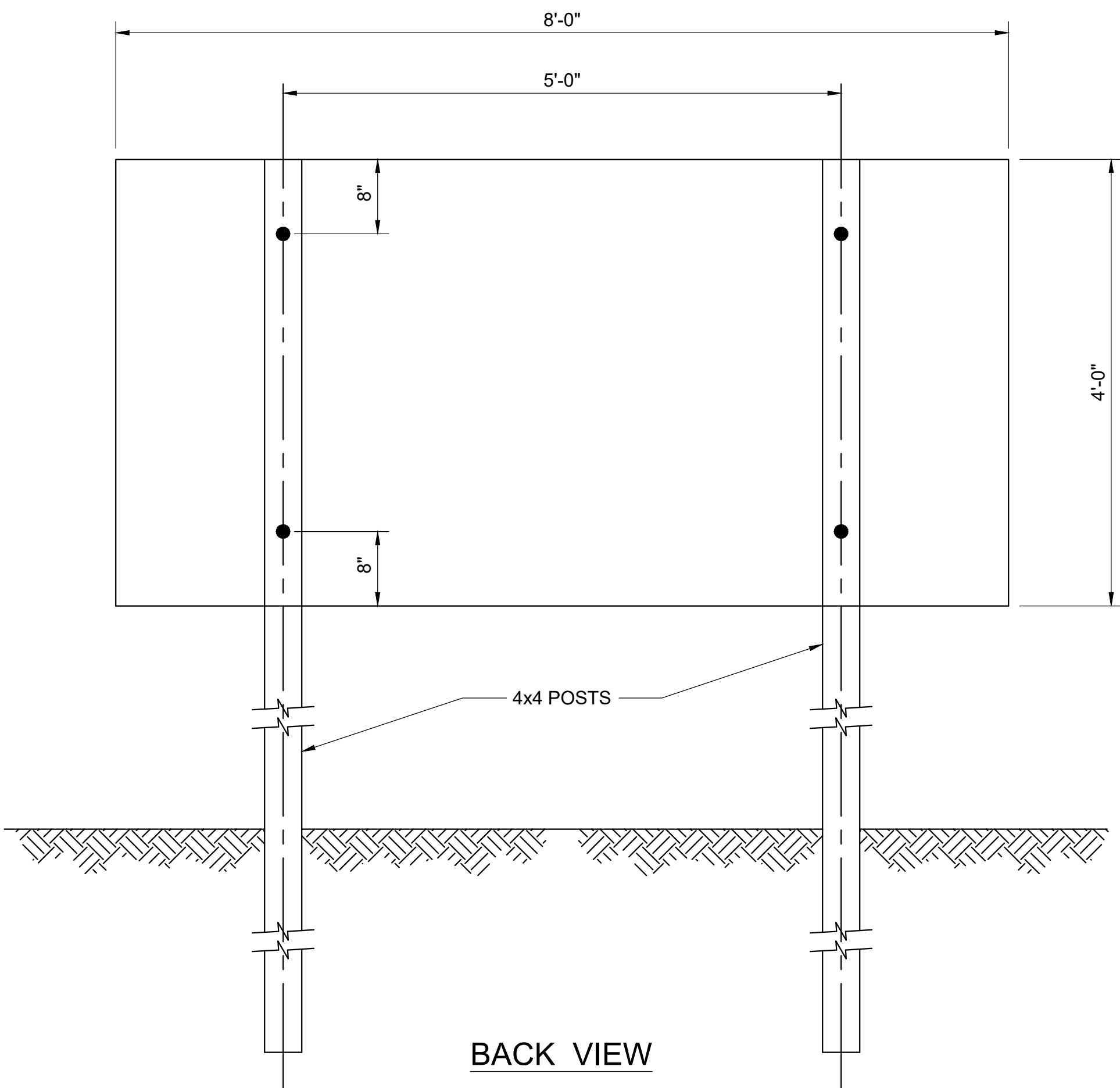
DESIGN VARIANCE GIVEN BY CITY ENGINEER BY EMAIL DATED 1/22/2019. CITY SIGNATURES DO NOT REPRESENT COMPLIANCE WITH THE CITY'S DESIGN STANDARDS, ONLY ACKNOWLEDGEMENT OF THE PROJECT FOR THE PURPOSES OF CONSTRUCTION AND PERMITTING.

CONSTRUCTION ACTIVIES ALLOWED ONLY IN AREAS WHERE THE AUTHORITY HAS EASEMENTS OR THE LEGAL RIGHT TO BE PRESENT

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG!!!
(713) 223-4567
(New Statewide Number Outside Houston)
1-800-545-6005

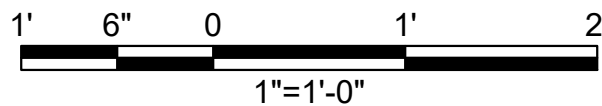
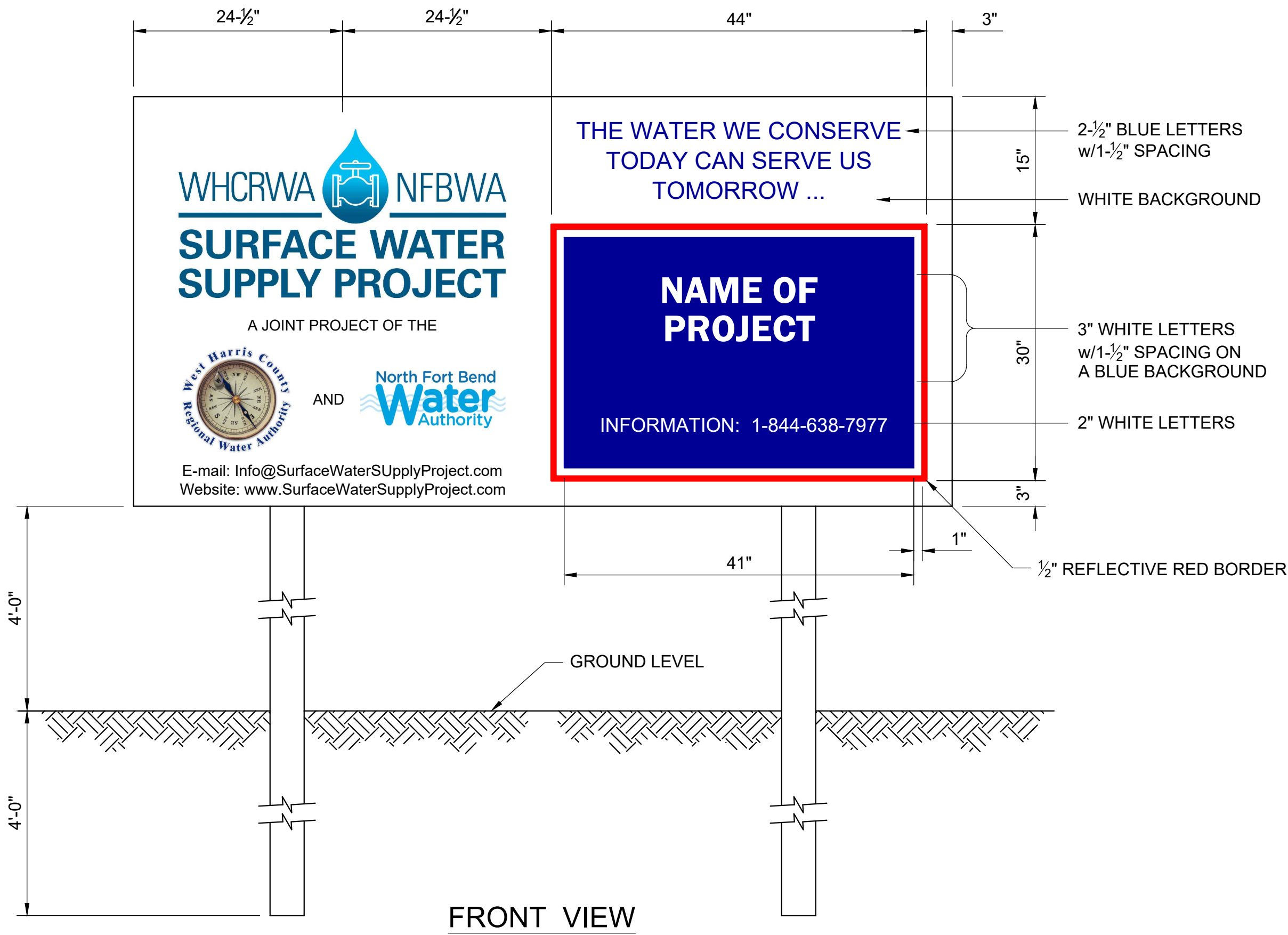
ILMS NO.
C.O.H. LOG. NO.

ISSUE DATE: MONTH/DAY/YEAR



CONSTRUCTION PROJECT SIGN

SCALE: 1"=1'-0"



- NOTES:
1. CONTRACTOR TO PROVIDE 3 SIGNS.
NO SEPARATE PAY.
 2. SIGNS TO BE INSTALLED AT
LOCATIONS AS DIRECTED BY
ENGINEER.



Program Manager
DANNENBAUM
ENGINEERING CORPORATION

Company Name
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Telephone No.
Texas Firm No.

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08/31/2019

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Texas Registered Engineering Firm F-#XXX

SEGMENT "X"

PROJECT SIGN
DETAIL

NOTE: CITY SIGNATURES VALID FOR ONE
YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

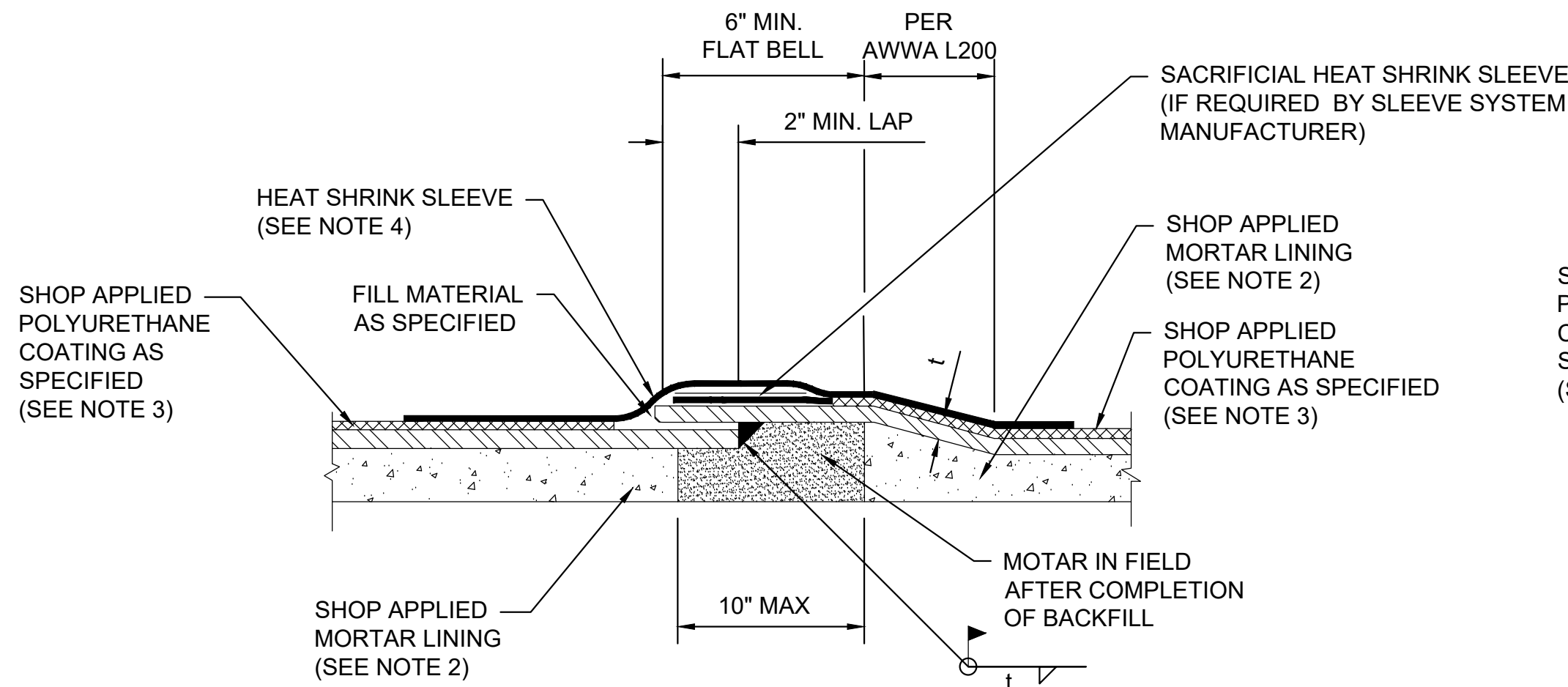
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-01	HORIZ: HORIZ VERT: VERT
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SHEET NO. XX OF XXX	DRAWING SCALE
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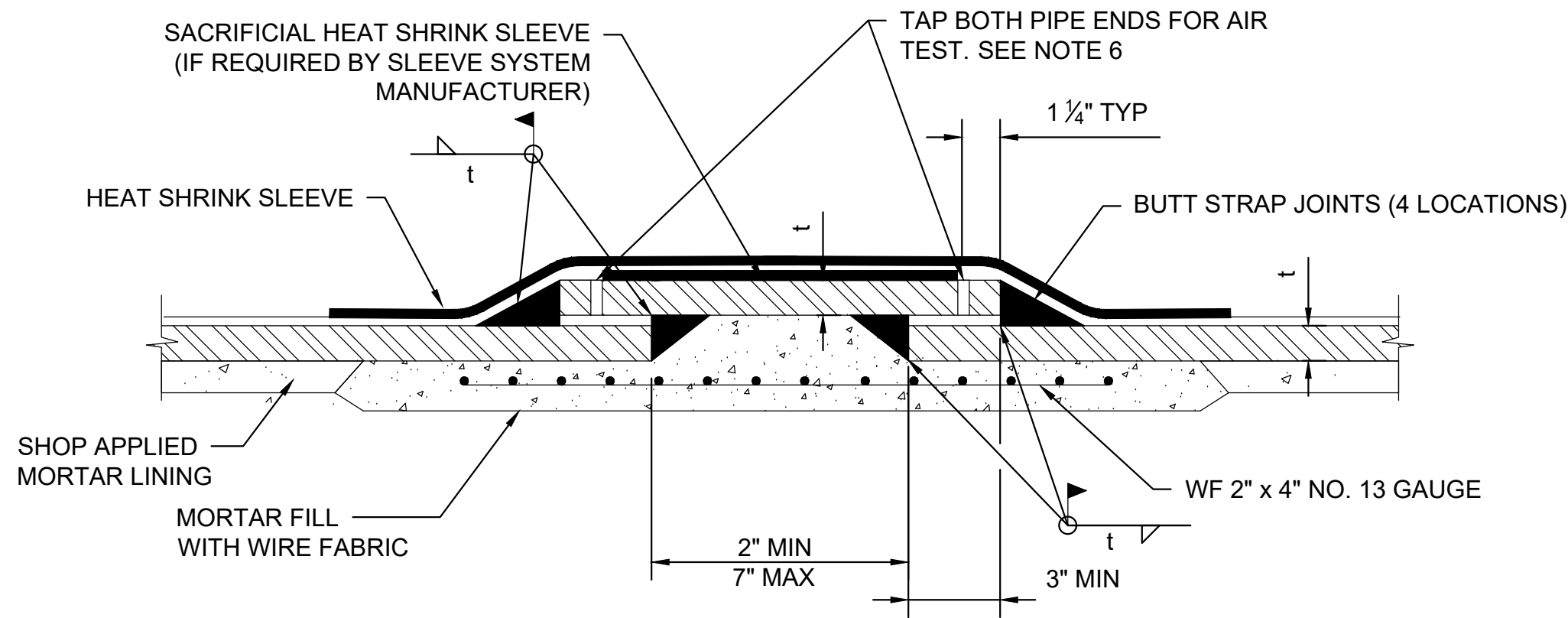
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION
APP.		



NOTES:

- 2" MIN FROM BELL TANGENT TO WELD.
- HOLD BACK SHOP APPLIED MORTAR LINING MIN. 6 INCHES ON BELL END AND 2 INCHES ON SPIGOT END.
- HOLD BACK SHOP APPLIED POLYURETHANE COATING MIN. 5 INCHES ON BELL END AND 4 INCHES ON SPIGOT END.
- FIELD APPLY HEAT SHRINK SLEEVE WITH A MINIMUM OVERLAP OF 4" OVER POLYURETHANE COATING.
- "t" INDICATES THE THICKNESS OF THE STEEL PIPE AT THE SECTION WHERE USED.

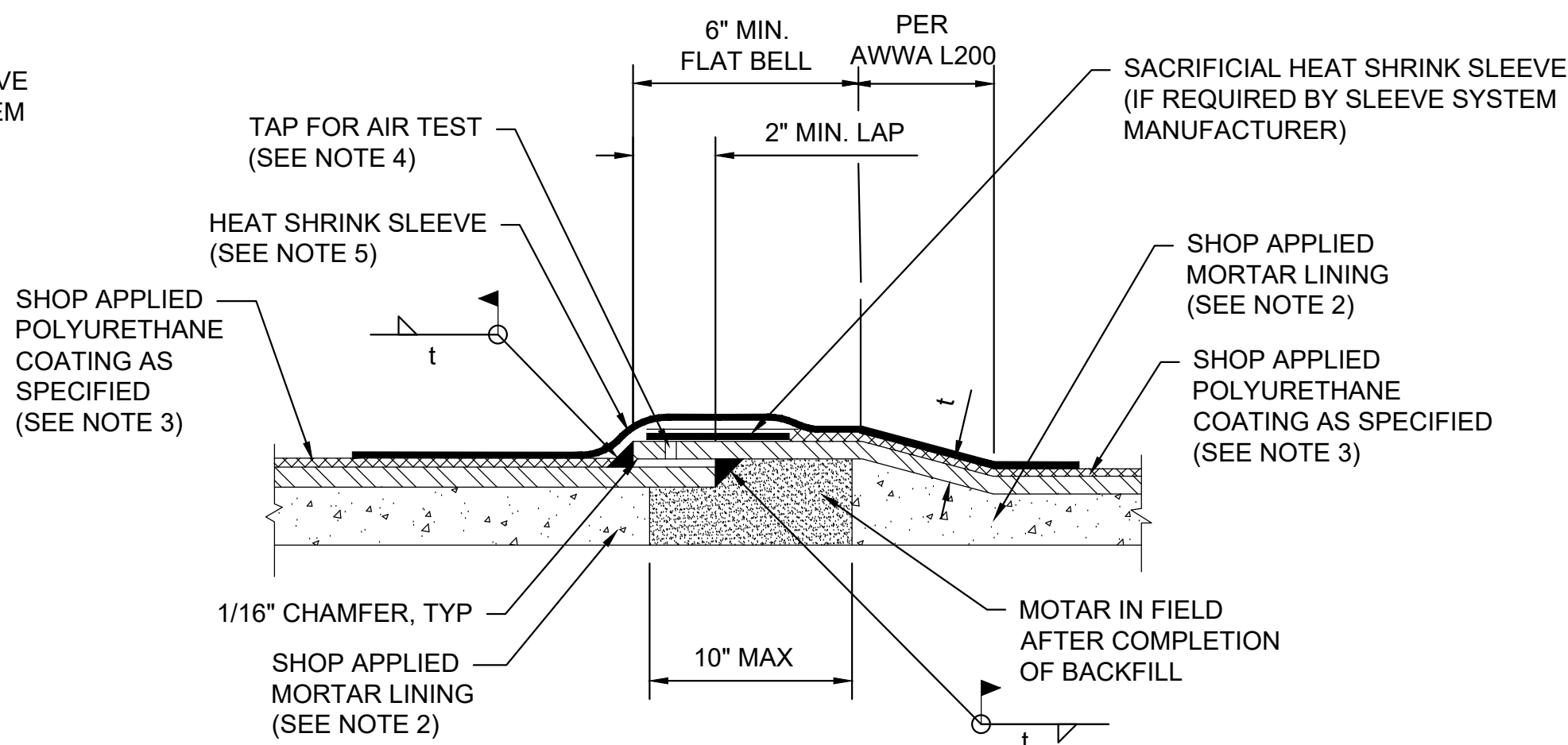
1 SINGLE WELD LAP JOINT DETAIL
POLYURETHANE COATED STEEL PIPE
Scale: NTS.



NOTES:

- ALL BUTT STRAP JOINTS SHALL BE WELDED ON THE EXTERIOR AND INTERIOR BOTH ENDS.
- BUTT STRAPS TO BE FURNISHED IN TWO PIECES AND SHIPPED LOOSE FOR FIELD WELDING. BUTT STRAPS TO INCLUDE TABS TO ACCEPT ALL-THREAD FOR BOLTED CONNECTION TO FACILITATE FIELD LINE-UP AND WELDING.
- 12" MAXIMUM LENGTH OF TYPICAL BUTT STRAP FOR FIELD CLOSING SECTION. (SEE SPECIFICATIONS).
- SEE JOINT DETAILS FOR TYPICAL LAP WELD ON POLYURETHANE COATED STEEL PIPE AND FOR ADDITIONAL INFORMATION ON COATINGS, LININGS AND OTHER REQUIREMENTS.
- "t" INDICATES THE THICKNESS OF THE STEEL PIPE AT THE SECTION WHERE USED.
- DRILL AND TAP 4- 1/4" DIA. HOLES EQUALLY SPACED FOR AIR-SOAP TEST. BEFORE WELDING, DRILL AND TAP HOLES. PLUG WELD HOLES AFTER SUCCESSFUL COMPLETION OF JOINT TEST.
- FIELD APPLY HEAT SHRINK SLEEVE WITH A MINIMUM OVERLAP OF 4" OVER POLYURETHANE COATING.

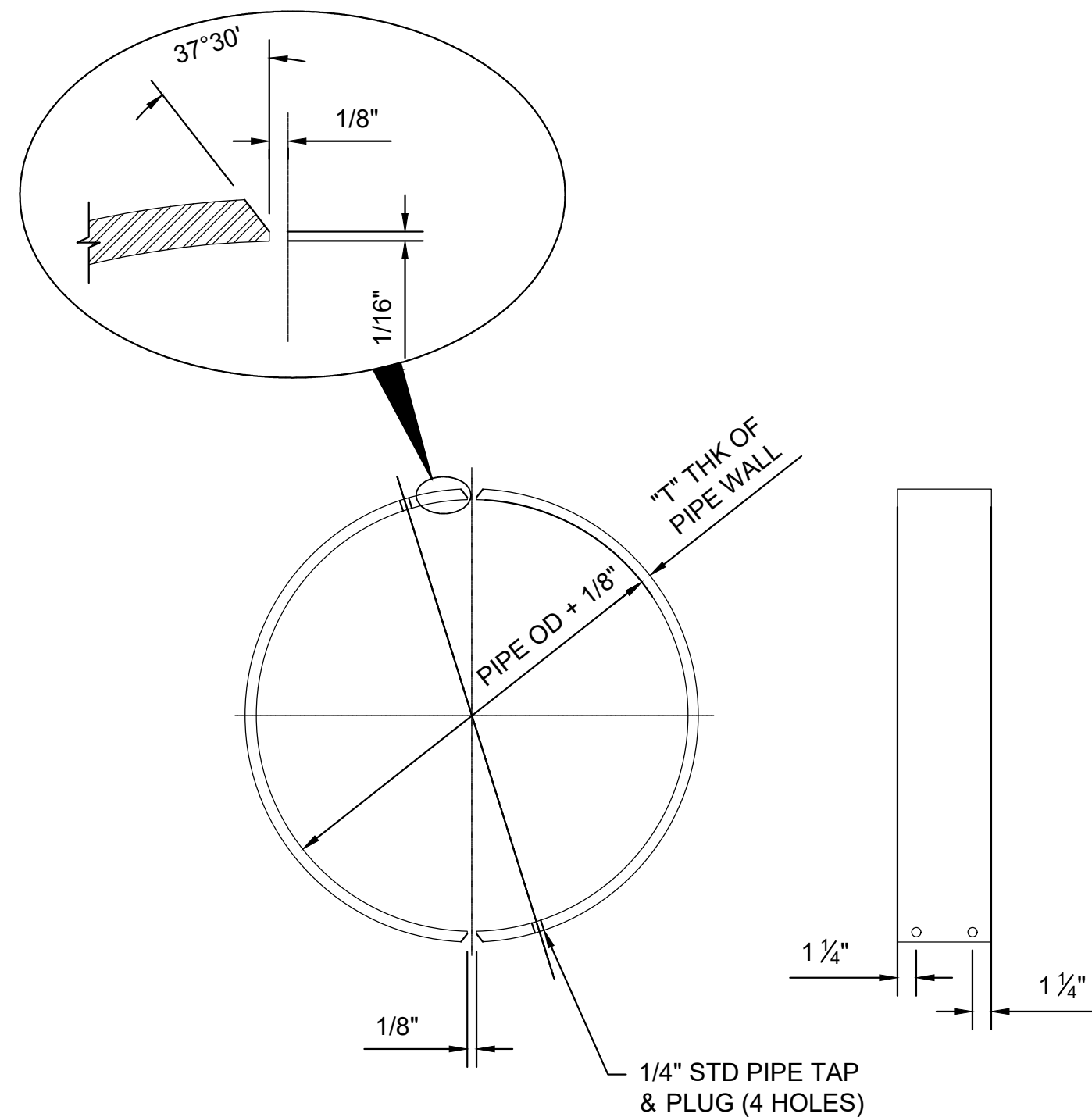
4 WELDED BUTT STRAP JOINT DETAIL
POLYURETHANE COATED STEEL PIPE
Scale: NTS.



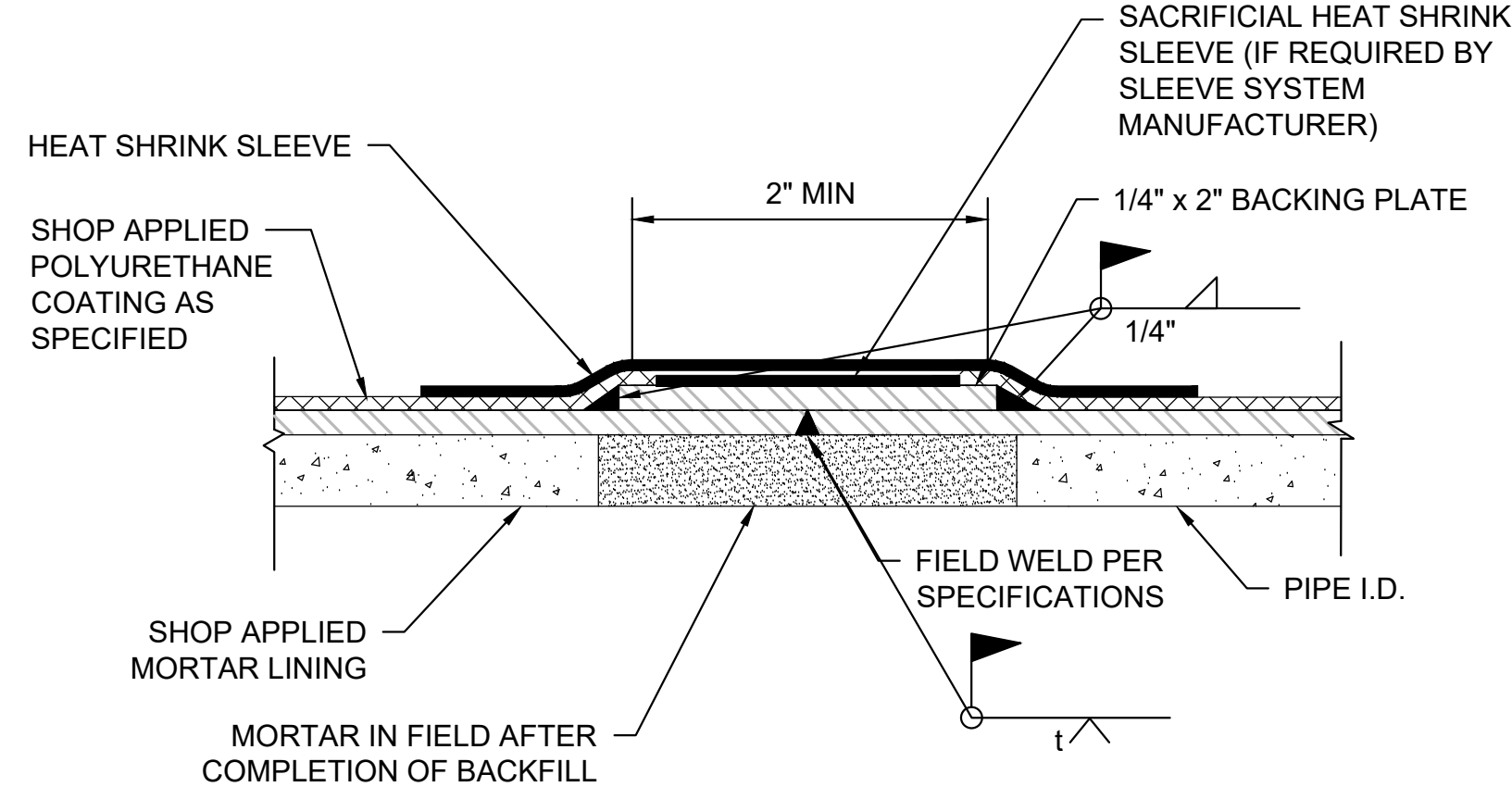
NOTES:

- 2" MIN FROM BELL TANGENT TO WELD.
- HOLD BACK SHOP APPLIED MORTAR LINING MIN. 6 INCHES ON BELL END AND 2 INCHES ON SPIGOT END.
- HOLD BACK SHOP APPLIED POLYURETHANE COATING MIN. 5 INCHES ON BELL END AND 4 INCHES ON SPIGOT END.
- DRILL AND TAP 4- 1/4" DIA. HOLES EQUALLY SPACED FOR AIR-SOAP TEST. BEFORE WELDING, DRILL AND TAP HOLES. PLUG WELD HOLES AFTER SUCCESSFUL COMPLETION OF JOINT TEST.
- FIELD APPLY HEAT SHRINK SLEEVE WITH A MINIMUM OVERLAP OF 4" OVER POLYURETHANE COATING.
- "t" INDICATES THE THICKNESS OF THE STEEL PIPE AT THE SECTION WHERE USED.

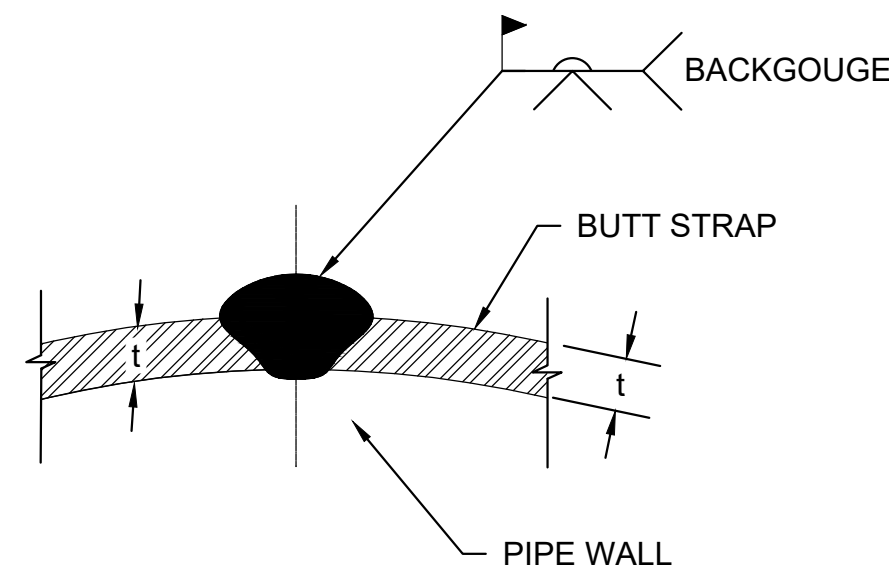
2 DOUBLE WELD LAP JOINT DETAIL
POLYURETHANE COATED STEEL PIPE
Scale: NTS.



5 LOOSE BUTT STRAP
Scale: NTS.



3 BUTT WELD JOINT DETAIL
POLYURETHANE COATED STEEL PIPE
Scale: NTS.



6 LONGITUDINAL WELD - BUTT STRAP
Scale: NTS.

WHCROWA NFBWA
SURFACE WATER
SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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Texas Firm No.

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CONTRACT SEGMENT A1/2

STEEL PIPE DETAILS
(SHEET 1 OF 2)

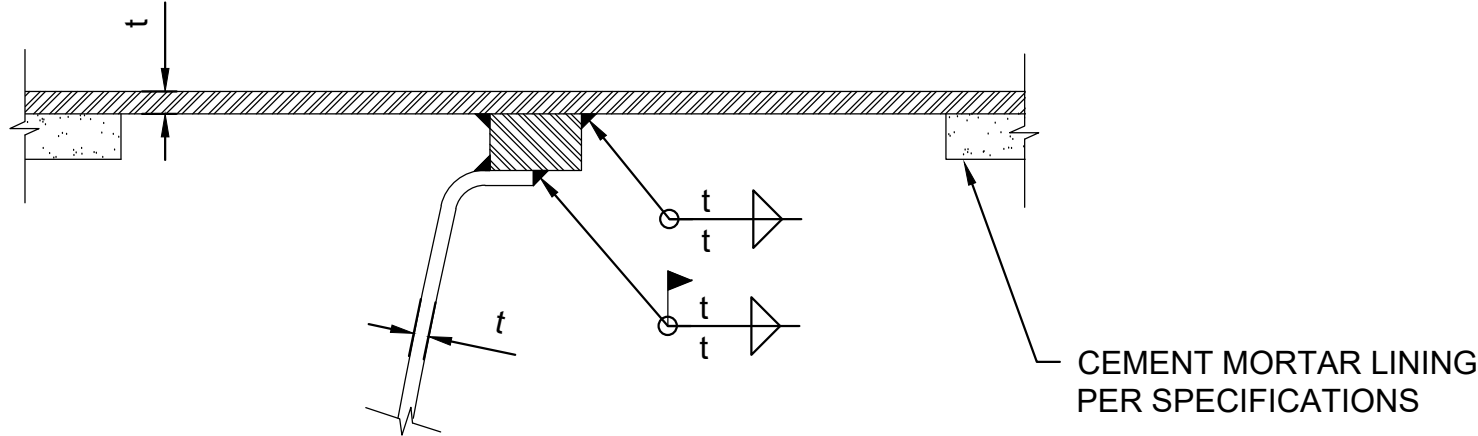
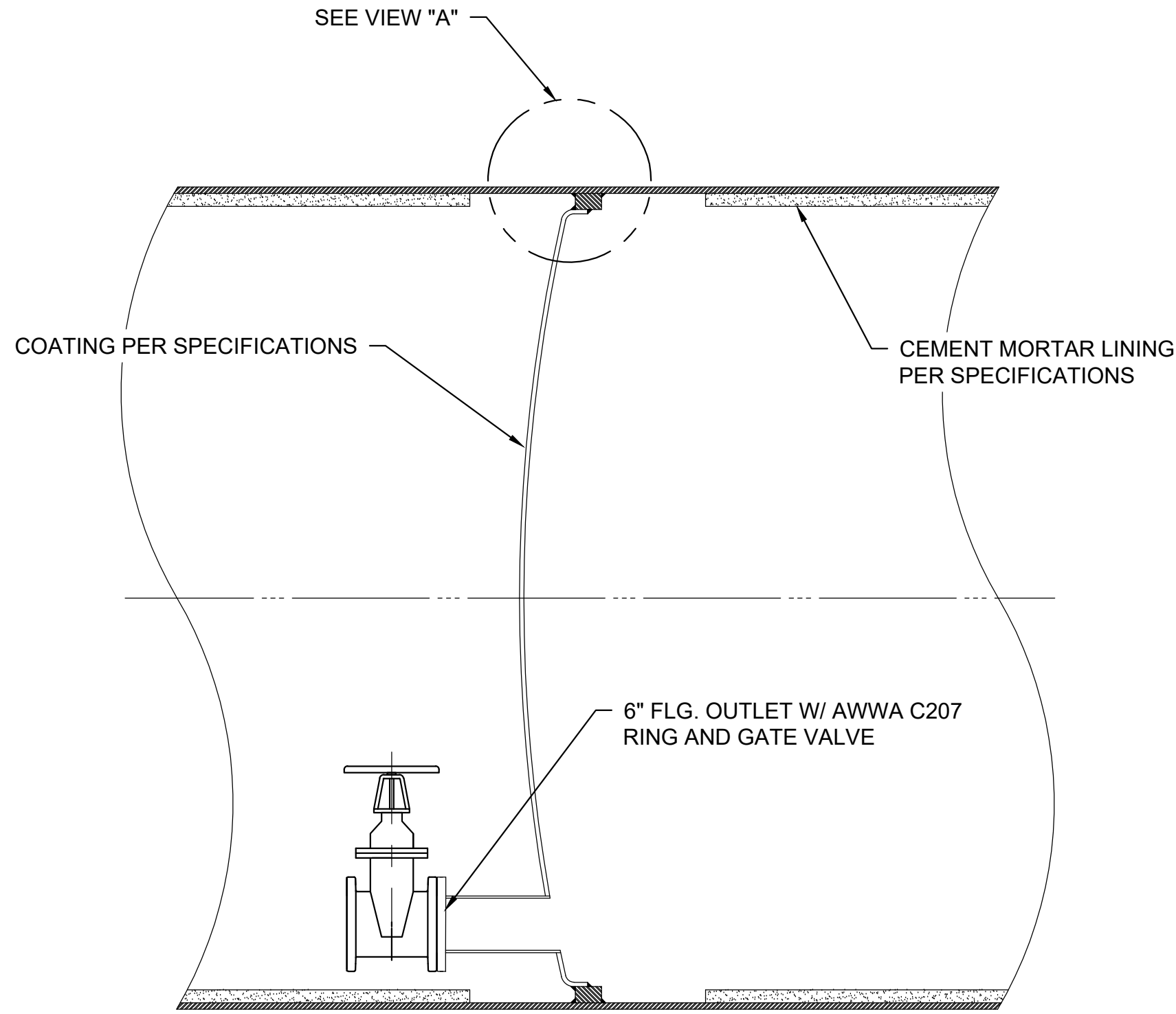
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-02	HORIZ: NTS VERT: NTS
SHEET NO. XX OF XXX	DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY	

MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION



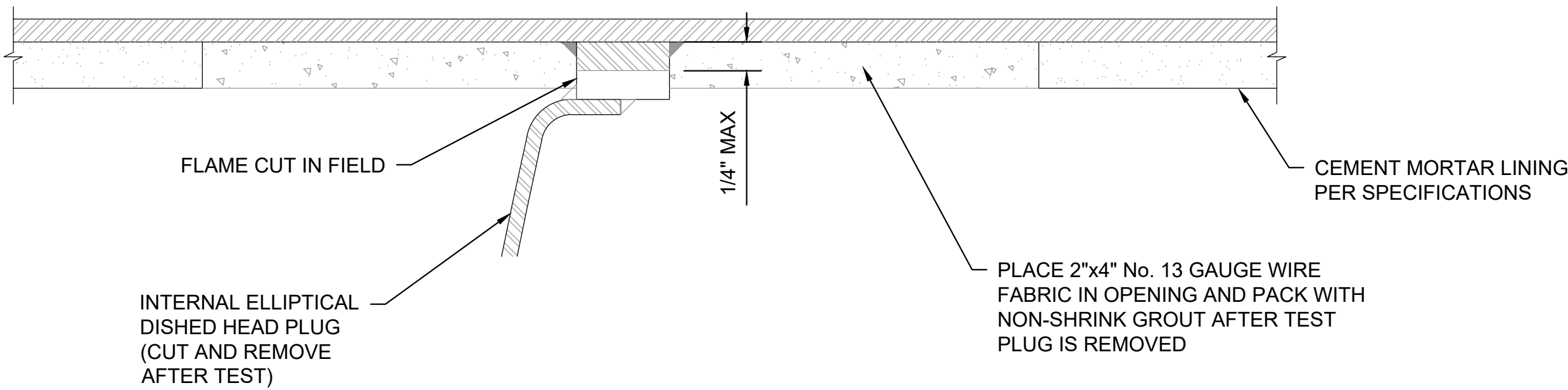
VIEW A
Scale: N.T.S

INTERNAL ELLIPICAL DISHED HEAD PLUG DETAIL
POLYURETHANE COATED STEEL PIPE

1 Scale: N.T.S

NOTES:

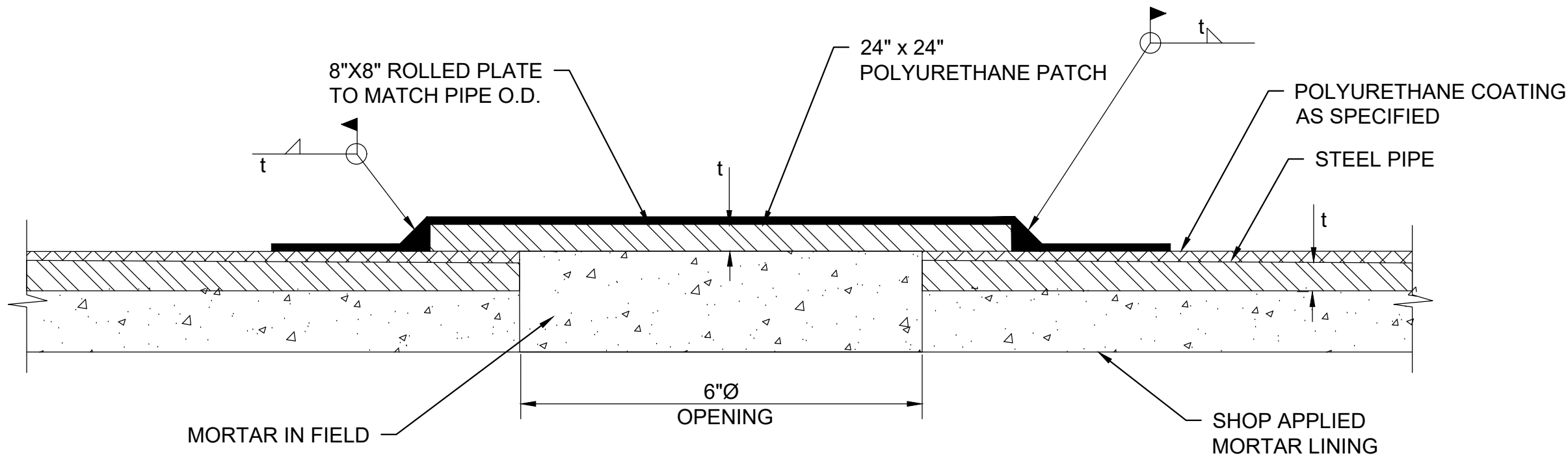
1. DISHED HEAD PLUG TO BE INSTALLED AT LOCATION WHERE AIR CAN BE EXPELLED THROUGH AIR VALVE OR ACCESS MANHOLE DURING FILLING.
2. DISHED HEAD PLUGS SHALL BE CAPABLE OF WITHSTANDING THE HYDROSTATIC TEST PRESSURE FROM EITHER SIDE, WITH THE OPPOSITE SIDE EMPTY OF WATER
3. t = STEEL PIPE WALL THICKNESS AND SIZE OF FILLET ATTACHMENT WELD.



NOTE: USE CAUTION WHEN REMOVING BULK HEADS. ALL GOUGES AND SURFACE DEFECTS SHALL BE REPAIRED AS DIRECTED BY ENGINEER.

INTERNAL ELLIPTICAL DISHED HEAD PLUG REMOVAL
Scale: N.T.S

2 Scale: N.T.S



t = 0.1875"
OUTLET ID = 7.00" (STEEL)
OUTLET OD = 7.25" (STEEL)

NOTES:

1. PASS THROUGH FOR WELD LEADS MAY BE SPACED NO CLOSER THAN 500' AND NO CLOSER THAN 500' FROM AIR VALVE OR ACCESS MANHOLE OUTLETS.
2. PASS-THROUGH TO BE DESIGNED PER AWWA M-11.
3. ROLLED PLATE SHALL BE CENTERED OVER PASS-THROUGH OUTLET AND BE A MINIMUM OF ½" THICK OR EQUAL TO PIPE WALL THICKNESS, WHICHEVER IS GREATER.

3 6" PASS-THROUGH FOR WELD LEADS
Scale: NTS.



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CONTRACT SEGMENT A1/2

STEEL PIPE DETAILS
(SHEET 2 OF 2)

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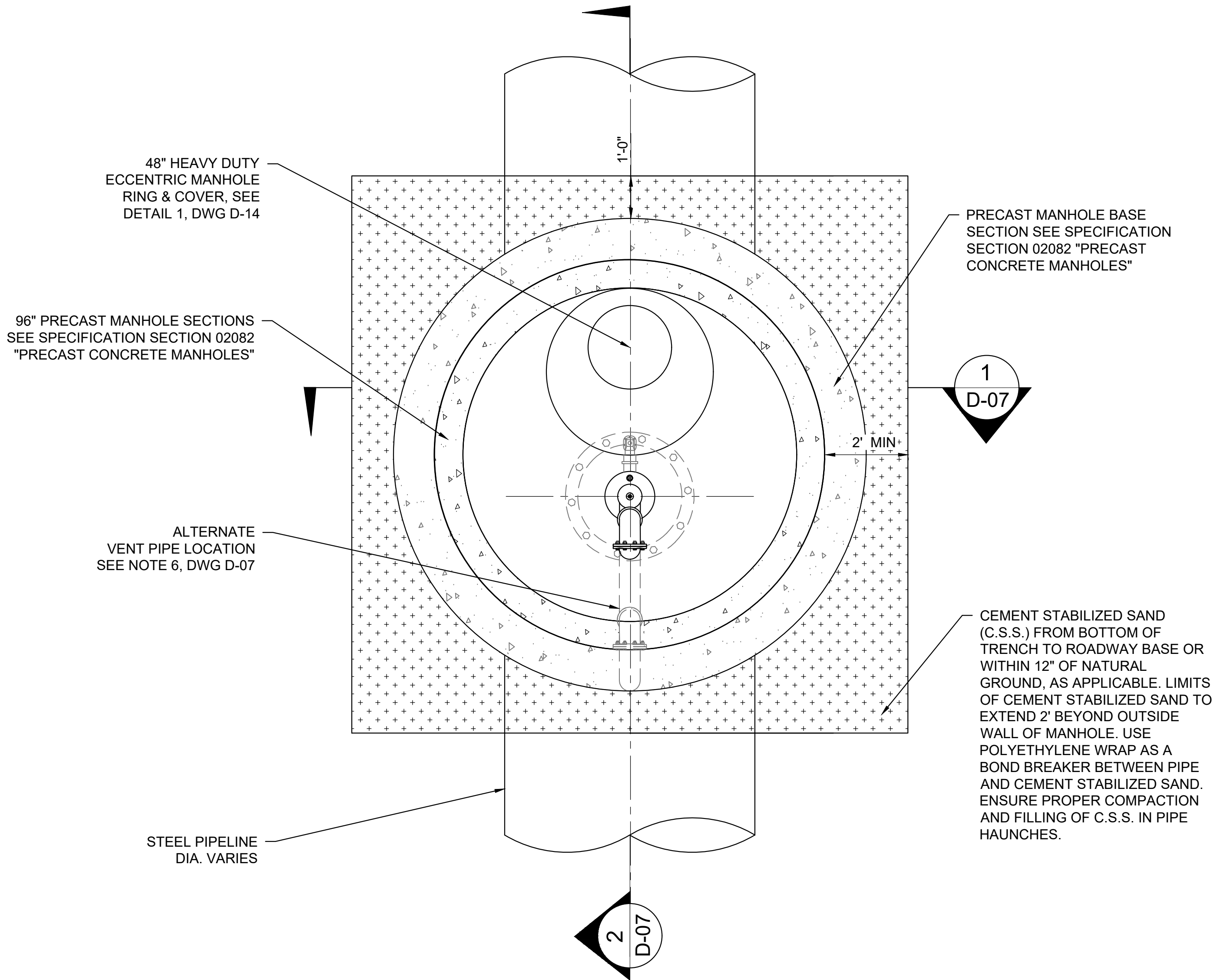
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-03	HORIZ: NTS. VERT: NTS.
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SHEET NO. XX OF XXX	DRAWING SCALE
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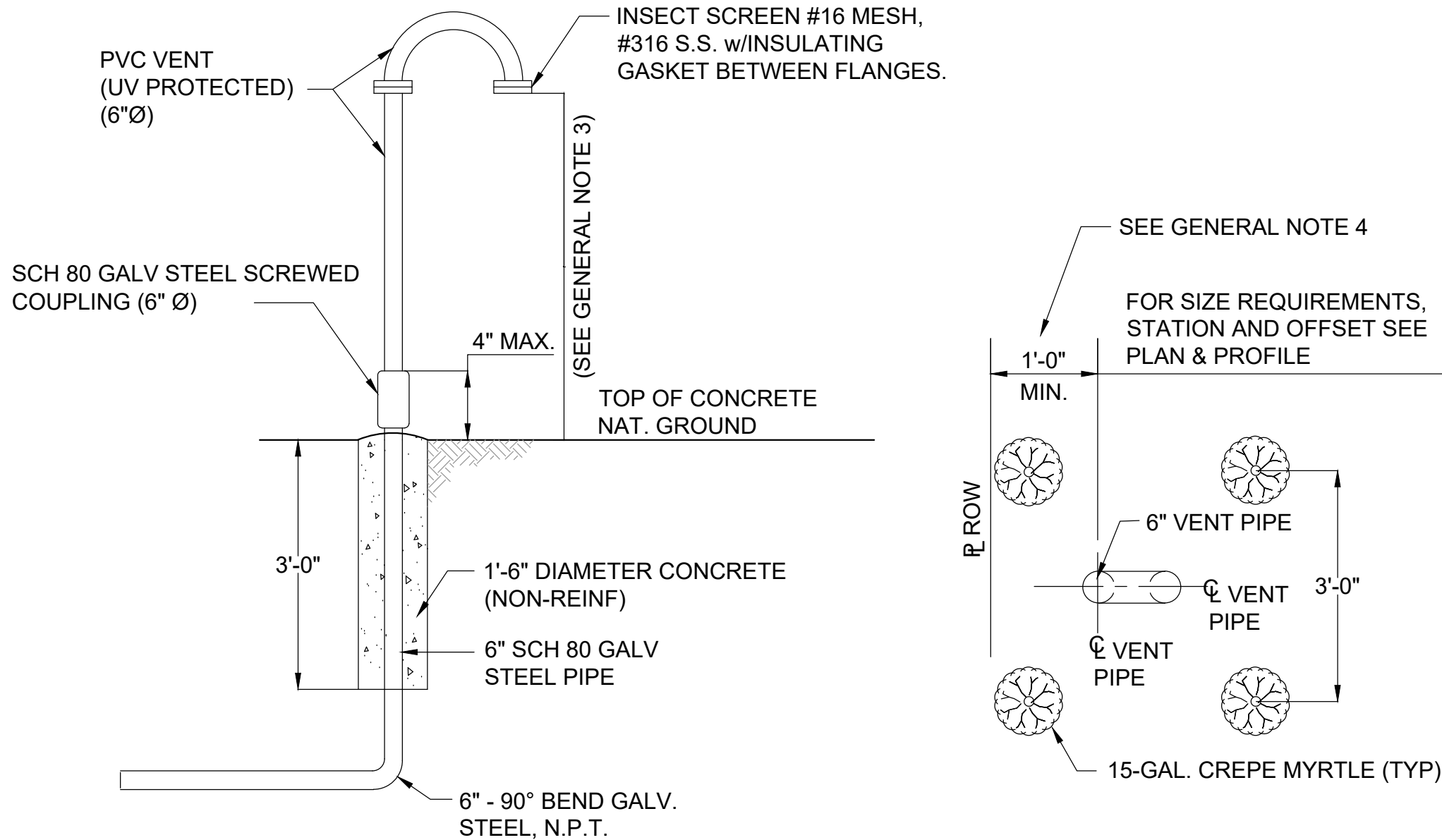
FOR CITY OF HOUSTON USE ONLY



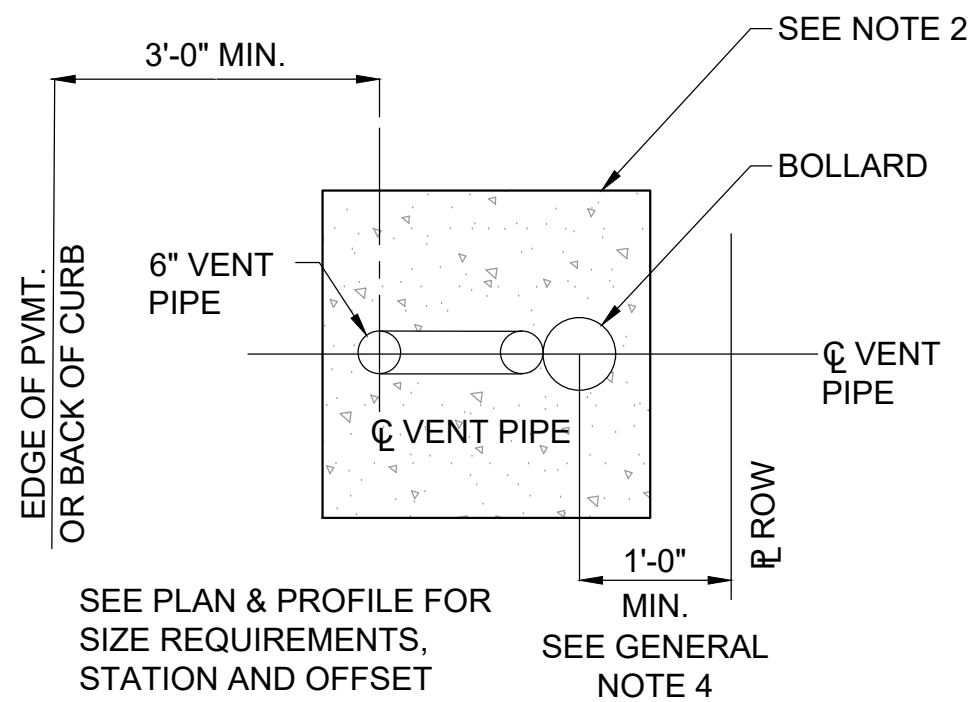
1 COMBINATION AIR VALVE ASSEMBLY IN ACCESS MANHOLE & PIPING PLAN
SCALE: NTS. (FOR WATER LINES 72" & LARGER IN DIAMETER)

GENERAL NOTE:

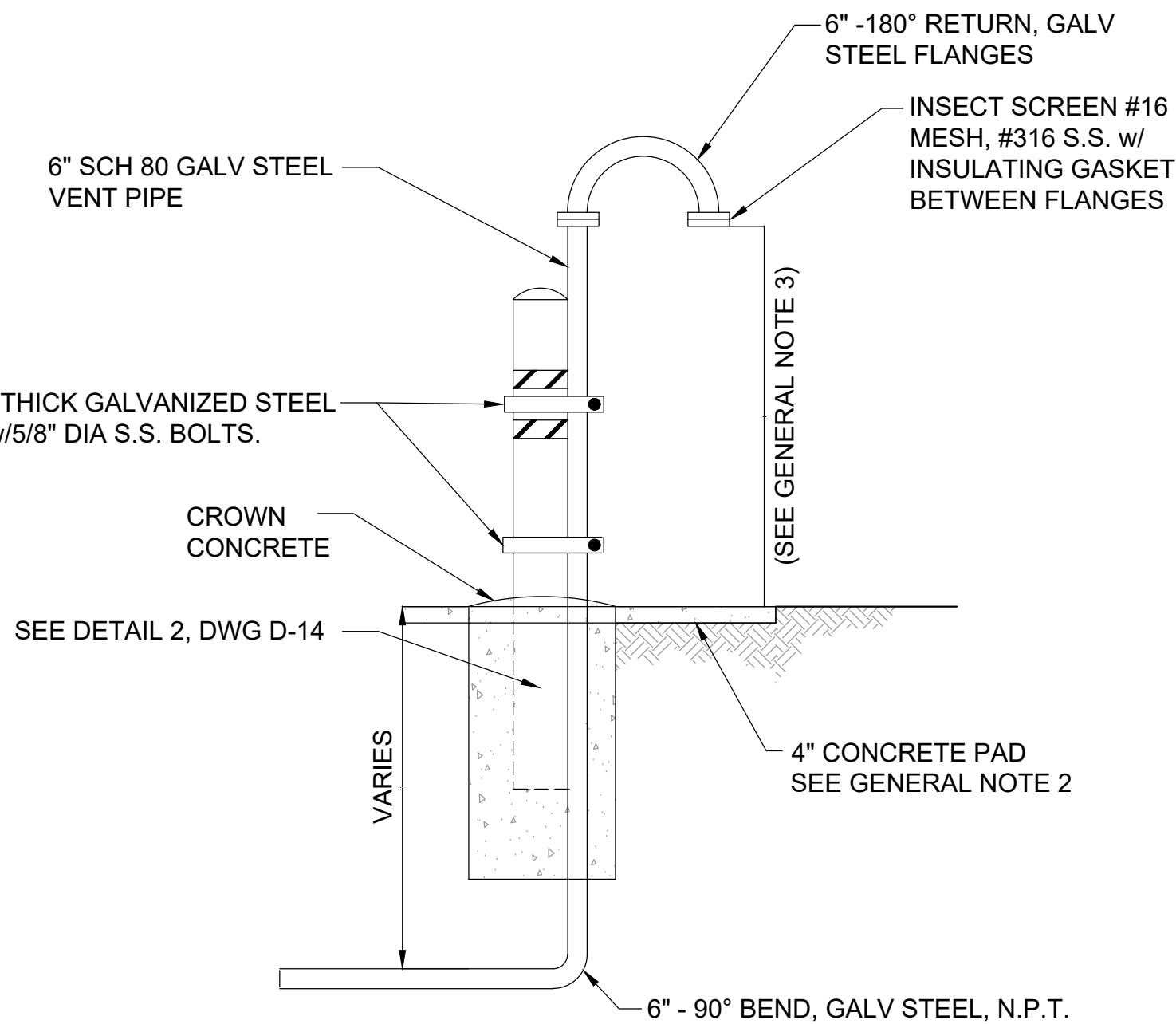
1. DETAILS 2 & 3 SHOULD ONLY BE USED WITH ALTERNATE VENT PIPE CONFIGURATION WHEN VENT PIPE MUST BE BROUGHT OUTSIDE MANHOLE FOOTPRINT AS INDICATED ON PLAN AND PROFILE DRAWINGS. FOR ALL OTHER CASES, REFER TO DWG D-07 AS NORMAL.
2. PROVIDE 3'x3'x4" WWM CONCRETE PAD CENTERED ON VENT PIPE FOR ALTERNATE VENT PIPE LOCATIONS OUTSIDE MANHOLE FOOTPRINT.
3. VERIFY THAT LOCATION OF VENT PIPE SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND, WHICHEVER IS HIGHER.
4. FOR VENT PIPE IN HCFCD ROW, INSTALL VENT PIPE NO MORE THAN 1 FOOT FROM ROW LINE.
5. FOR VENT PIPE IN HCFCD ROW, DO NOT USE DETAIL 2 ON THIS SHEET. TREES NOT TO BE PLANTED IN HCFCD ROW.



2 BREAKWAY VENT PIPE DETAIL
(VENT PIPES WITHIN HARRIS COUNTY ROW)



3 VENT PIPE W/ BOLLARD DETAIL



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CONTRACT SEGMENT A1/2

AIR VALVE DETAILS
(SHEET 1 OF 2)

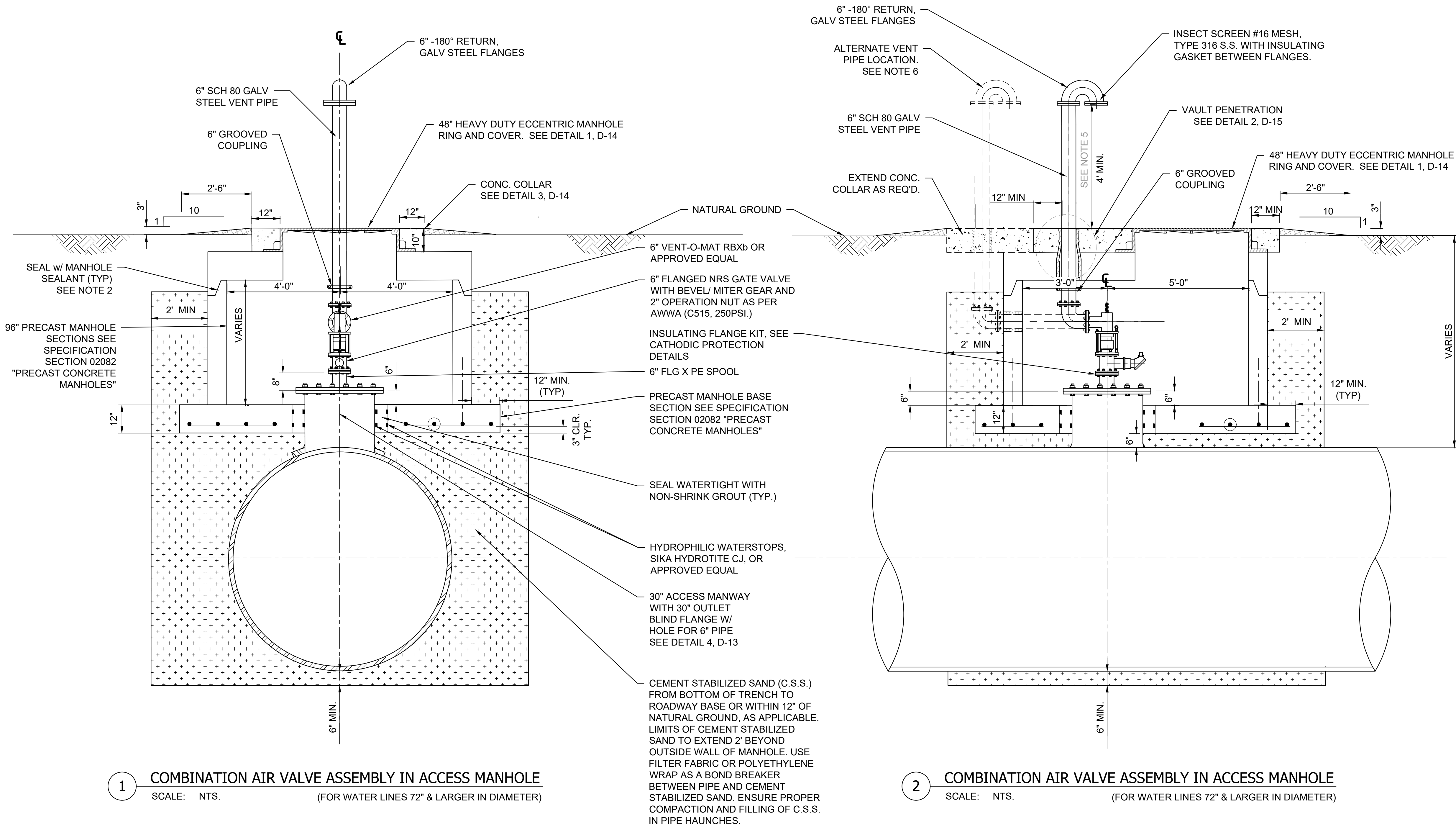
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-06	HORIZ: NTS. VERT: NTS.
SHEET NO. XX OF XXX	DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY	

MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION



1 COMBINATION AIR VALVE ASSEMBLY IN ACCESS MANHOLE
SCALE: NTS. (FOR WATER LINES 72" & LARGER IN DIAMETER)

2 COMBINATION AIR VALVE ASSEMBLY IN ACCESS MANHOLE
SCALE: NTS. (FOR WATER LINES 72" & LARGER IN DIAMETER)

GENERAL NOTES:

- SEE AWWA C207 FOR METHOD OF ATTACHMENT FOR RING TO OUTLET PIPE.
- PROVIDE RAM-NEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
- PROVIDE AN APPROVED PETROLATUM BASED TAPE ENCAPSULATING ALL BOLTS IN ACCESS MANHOLE.
- COATING FOR EXPOSED DUCTILE IRON AND STEEL PIPE AND FITTING IN VAULT SHALL CONFORM TO SPECIFICATION 02518.
- VERIFY THAT LOCATION OF VENT PIPE SCREEN IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND ELEVATION, WHICHEVER IS HIGHER.
- ALTERNATE VENT PIPE CONFIGURATION SHOULD ONLY BE USED AS INDICATED ON PLANS.
- FOR MANHOLES GREATER THAN OR EQUAL TO 8 FEET DEEP, PROVIDE FIXED LADDER WITH FALL PROTECTION SYSTEM: MILLER SAF-T-CLIMB OR APPROVED EQUAL. SEE DETAIL 4, SHEET D-14.



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CONTRACT KM "X"

AIR VALVE DETAILS
(SHEET 2 OF 2)

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

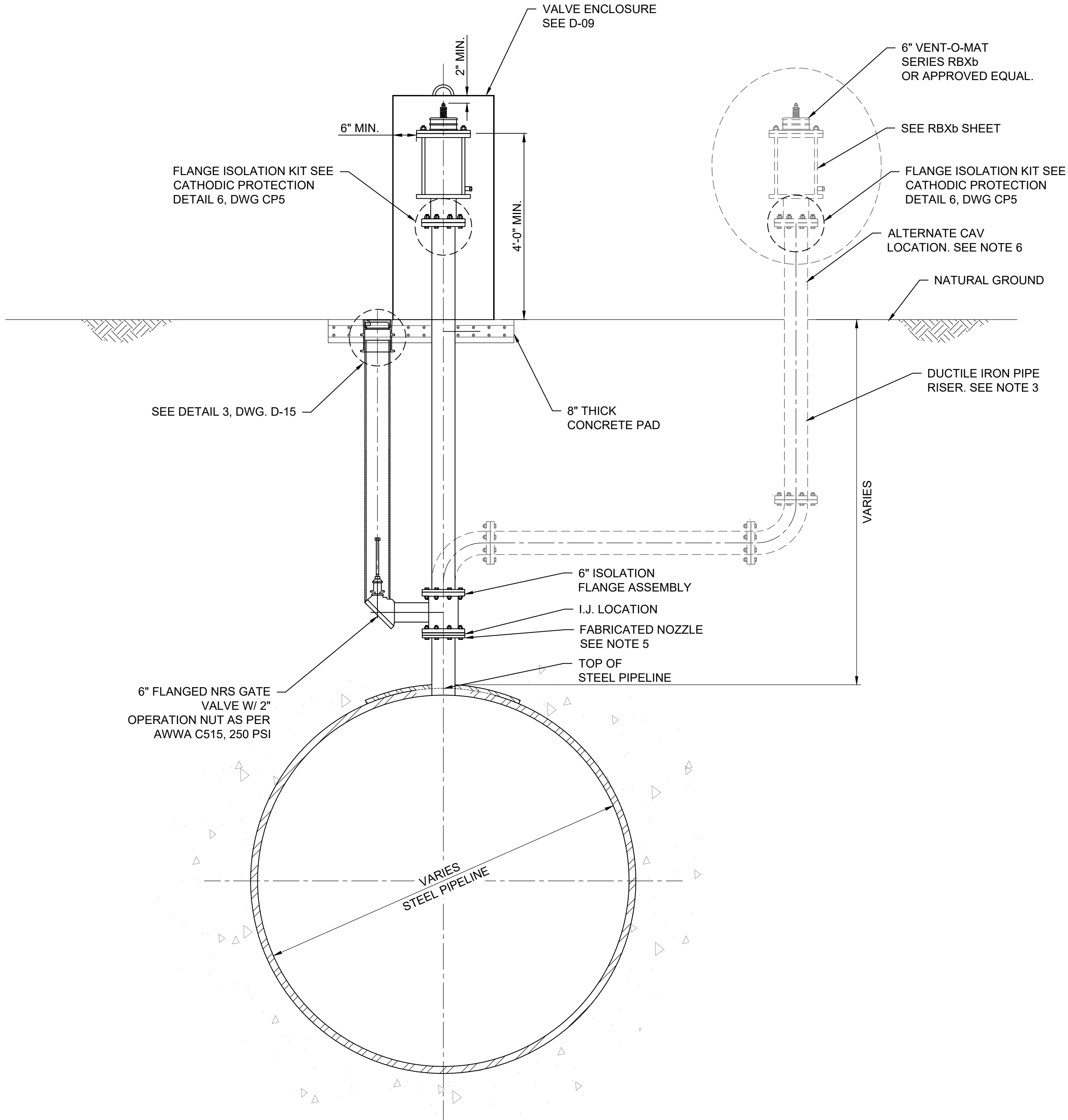
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-07	HORIZ: NTS. VERT: NTS.
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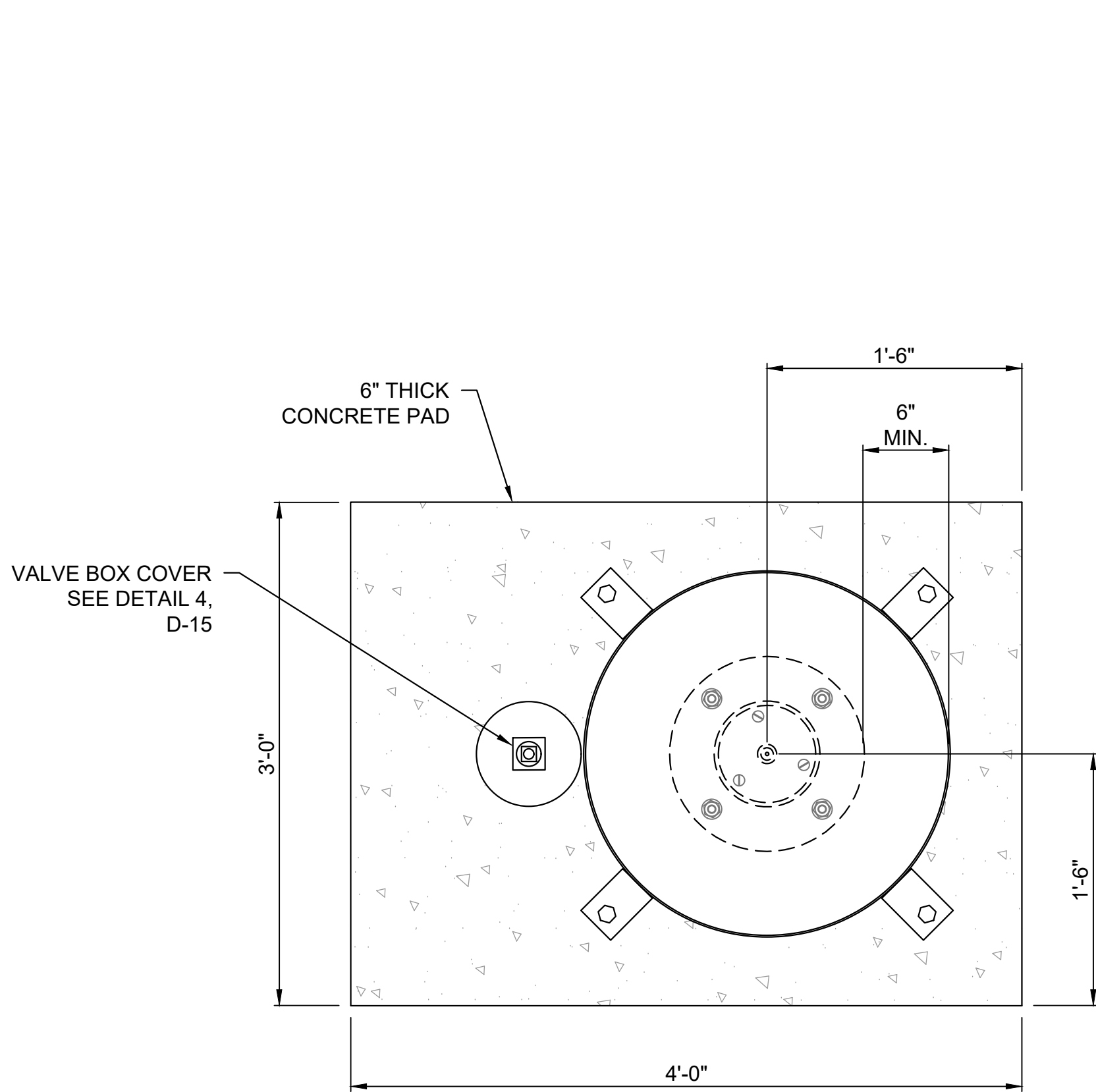
SHEET NO. XX OF XXX	DRAWING SCALE
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FOR CITY OF HOUSTON USE ONLY

MM/DD/YY	BRIEF DESCRIPTION	MM/DD/YY	BRIEF DESCRIPTION	MM/DD/YY	BRIEF DESCRIPTION
XXX	XXX	XXX	XXX	XXX	XXX
NO.	DATE	REVISION			



1 CAV-COMBINATION AIR VALVE
(FOR WATER LINES 72" & LARGER IN DIAMETER)
SCALE: N.T.S.



2 CONCRETE PAD DETAIL
SCALE: N.T.S.

GENERAL NOTES:

- REFER TO PROFILE FOR SPECIFIC DEPTHS.
- SEE PLAN AND PROFILE SHEETS FOR VALVE SIZE AND STATION LOCATIONS.
- PIPE RISER SHALL BE INSTALLED PLUMB UNLESS OTHERWISE SPECIFIED. REFER TO PLAN AND PROFILE SHEETS TO DETERMINE PROPER INSTALLATION.
- D.I. RISERS SHALL BE WRAPPED IN POLYETHYLENE BELOW GROUND, AND PAINTED ABOVE GROUND. PROVIDE AN APPROVED PETROLATUM BASED TAPE TO ENCAPSULATE ALL BOLTS.
- INSULATE FLANGE WITH FULL FACE PHENOLIC GASKET, SLEEVES AND WASHERS.
- ALTERNATE CAV LOCATION TO BE USED AS SHOWN ON PLAN AND PROFILE DRAWINGS AS NECESSARY. ENCLOSURE, CONCRETE PAD AND OTHER ITEMS SHOWN IN DETAIL FOR STANDARD CAV LOCATION ARE NOT SHOWN FOR ALTERNATE CAV ALIGNMENT FOR SIMPLIFICATION PURPOSES.



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CONTRACT SEGMENT A1/2

**ABOVE GRADE AIR VALVE
DETAILS
(SHEET 1 OF 2)**

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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

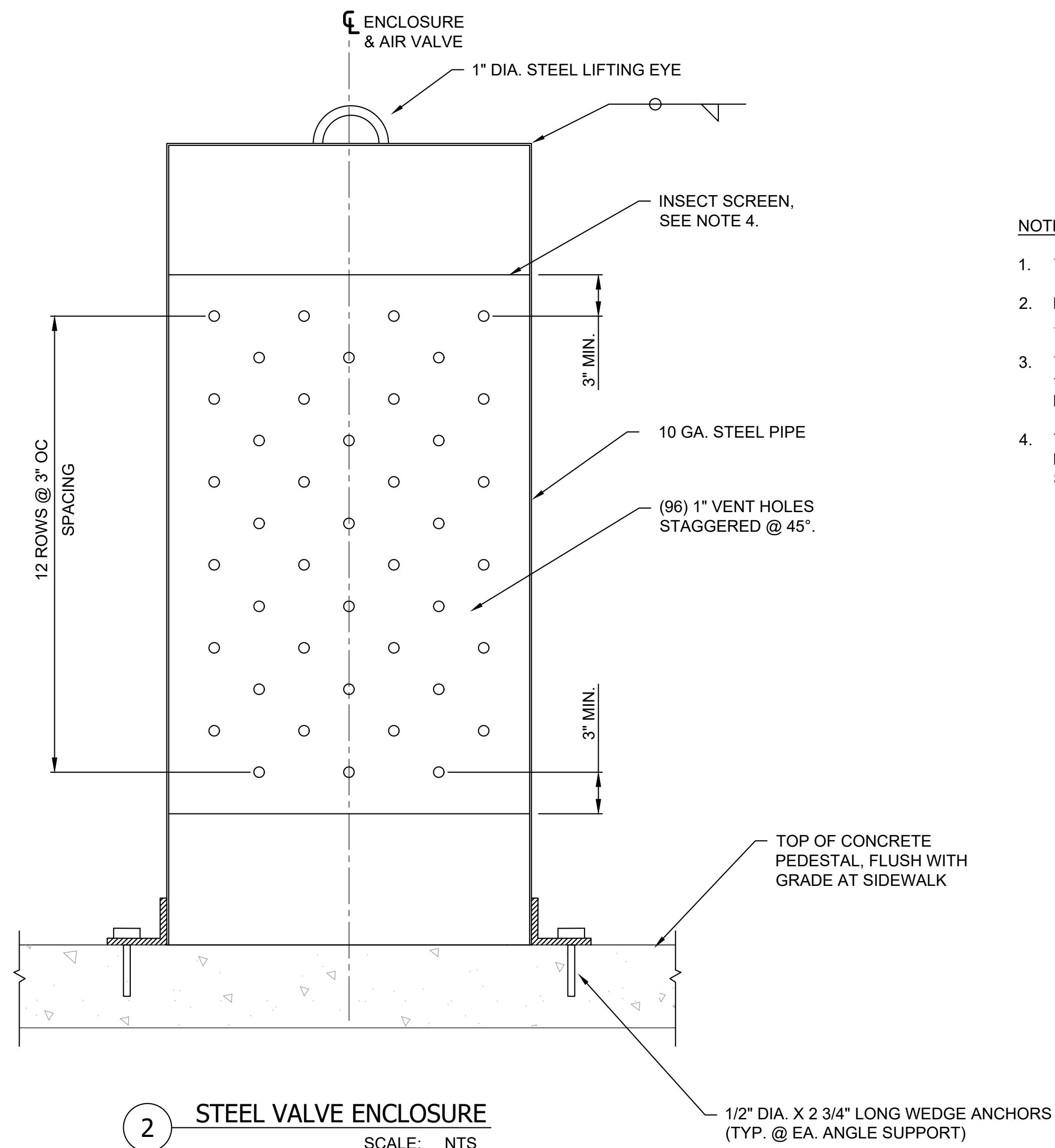
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-08	HORIZ: NTS. VERT: NTS.
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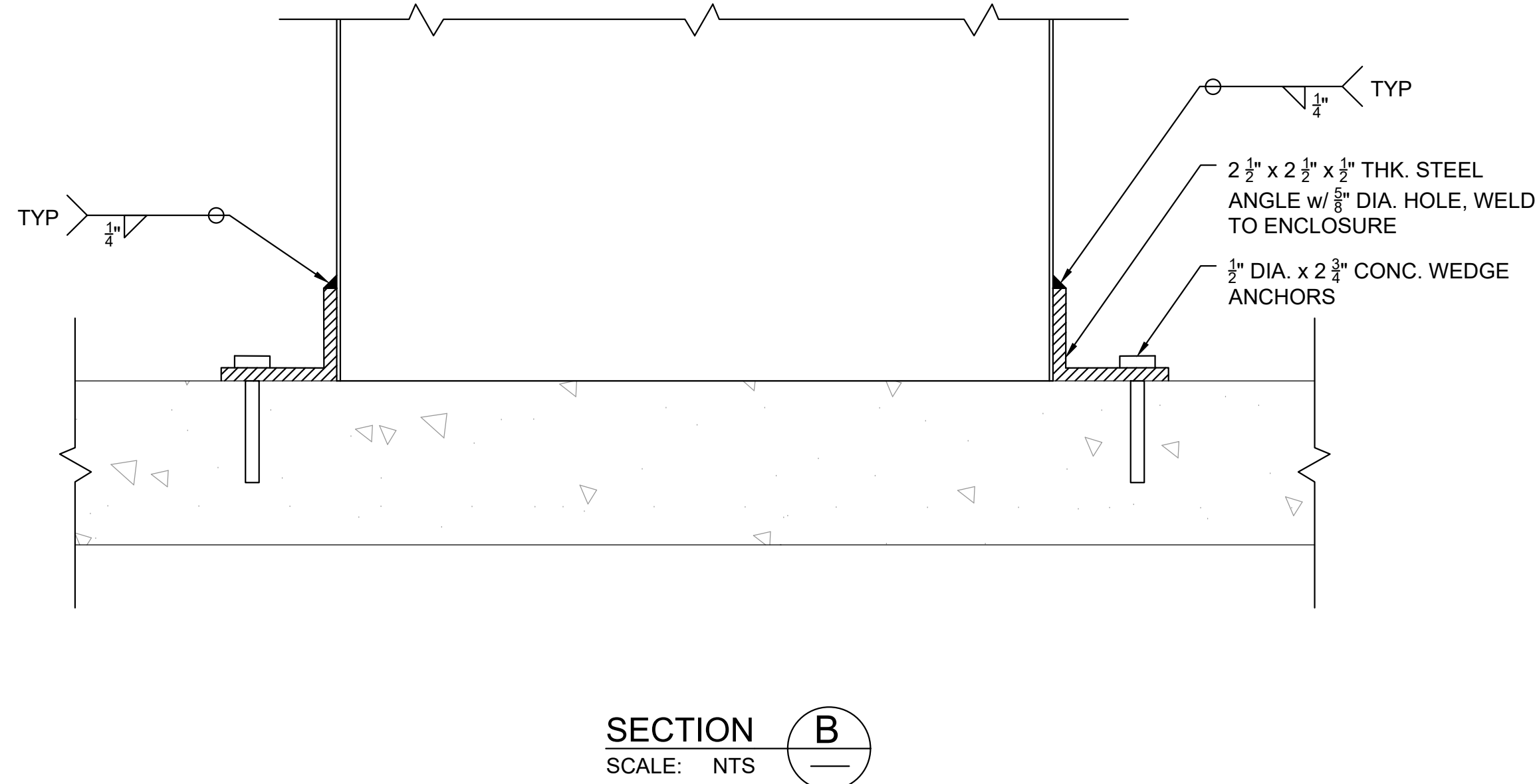
SHEET NO. XX OF XXX	DRAWING SCALE
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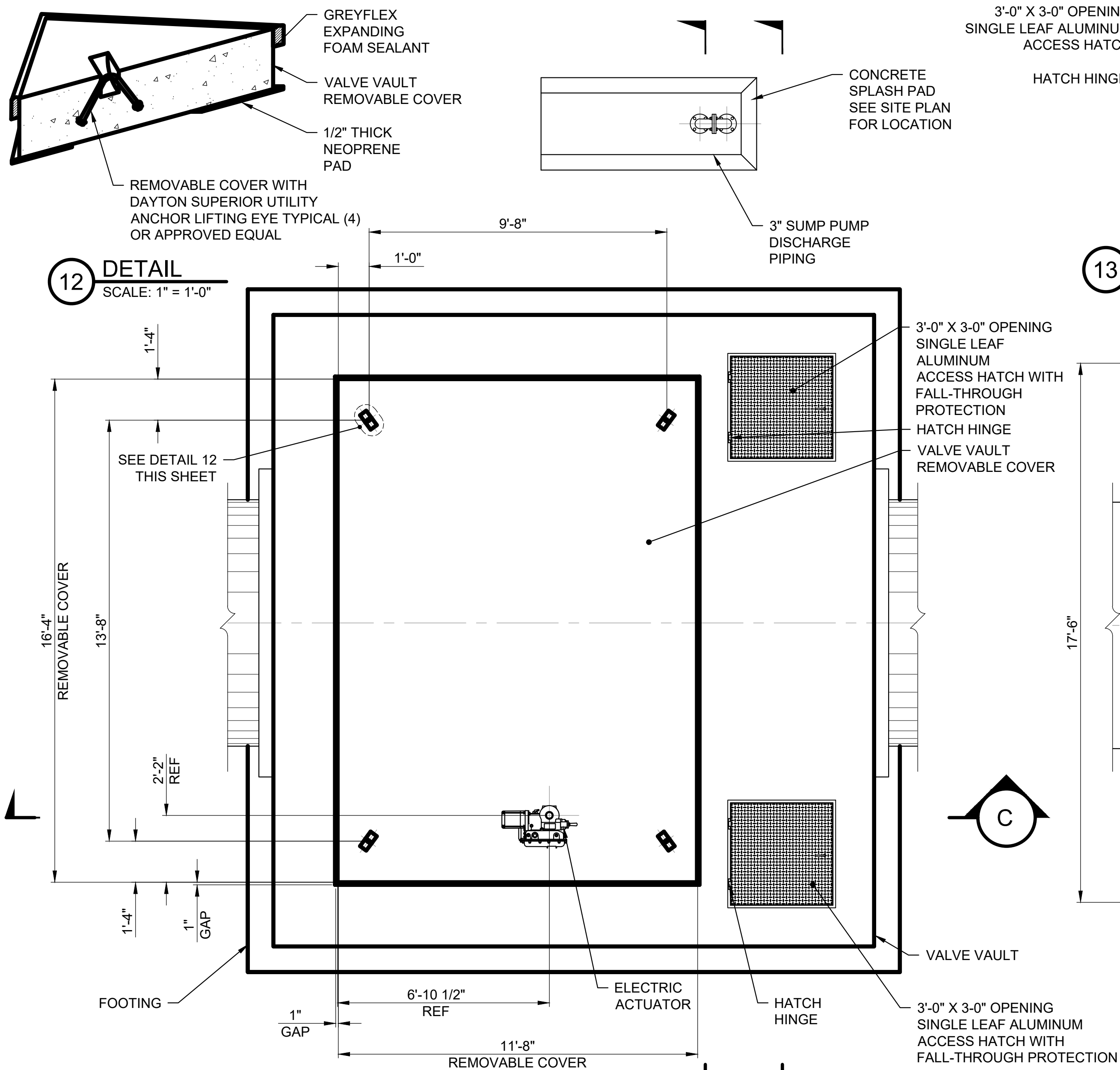
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MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
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APP.		



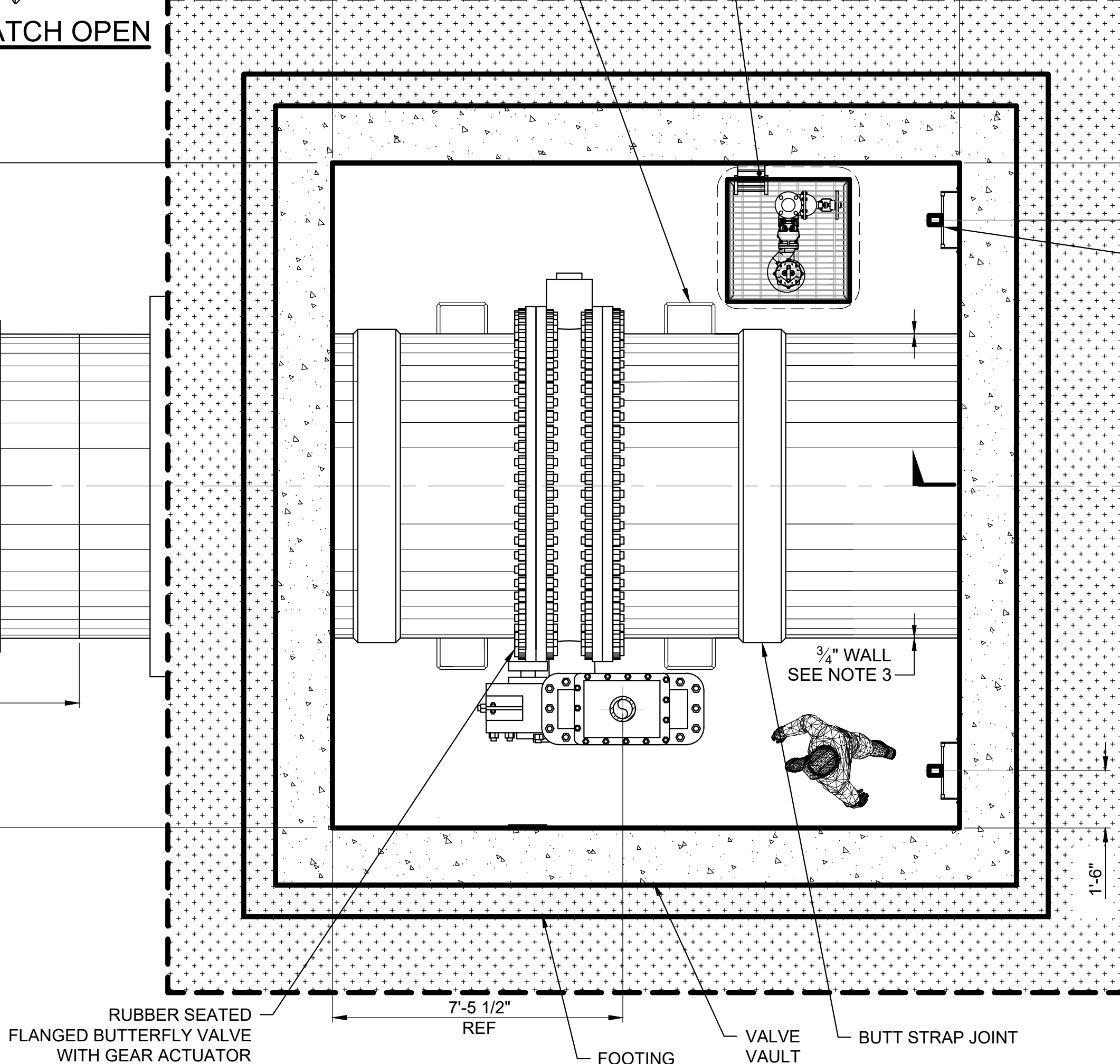
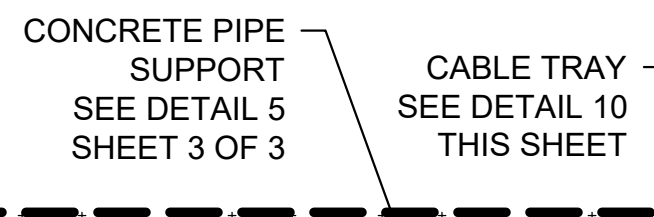
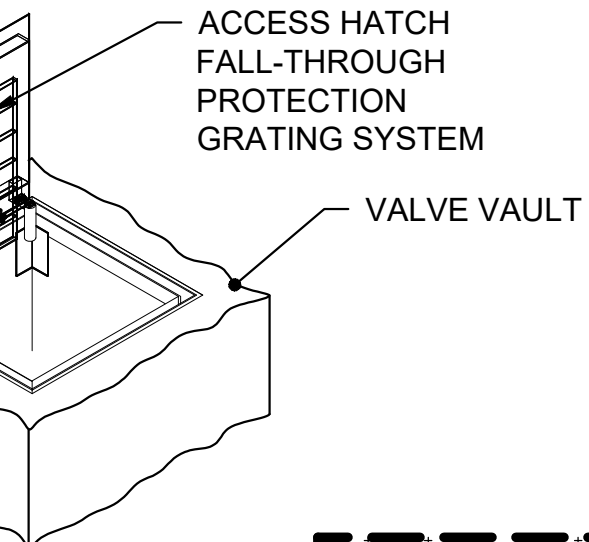
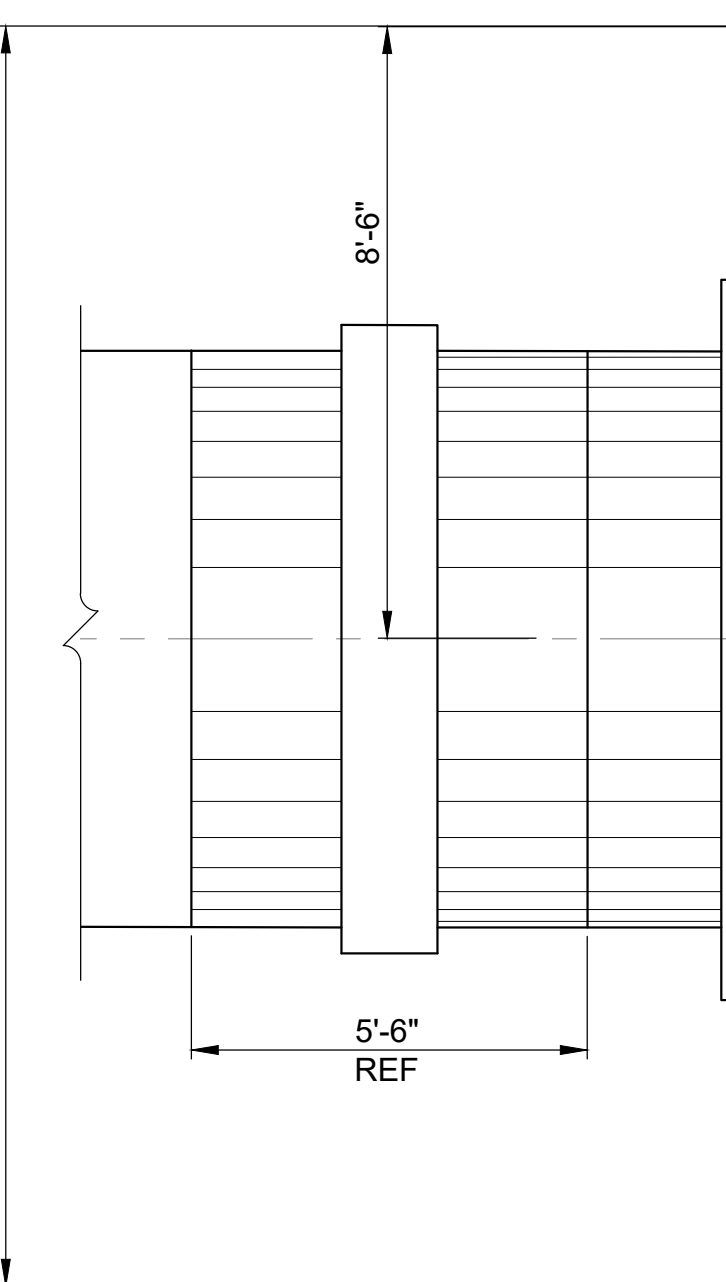
- NOTES:**
1. VALVE ENCLOSURE ASSEMBLY SHALL BE GALVANIZED.
 2. PROVIDE 2" MINIMUM CLEARANCE BETWEEN TOP OF AIR RELEASE VALE AND INSIDE OF ENCLOSURE.
 3. VERIFY THAT VENT OPENING IS 1 FOOT ABOVE 100-YEAR FLOOD PLAIN ELEVATION OR 4 FEET ABOVE NATURAL GROUND ELEVATION, WHICHEVER IS HIGHER.
 4. TACK WELD INSECT SCREEN #16 MESH TO INTERIOR OF ENCLOSURE. CONTRACTOR TO ENSURE WIRE MESH IS SECURE.



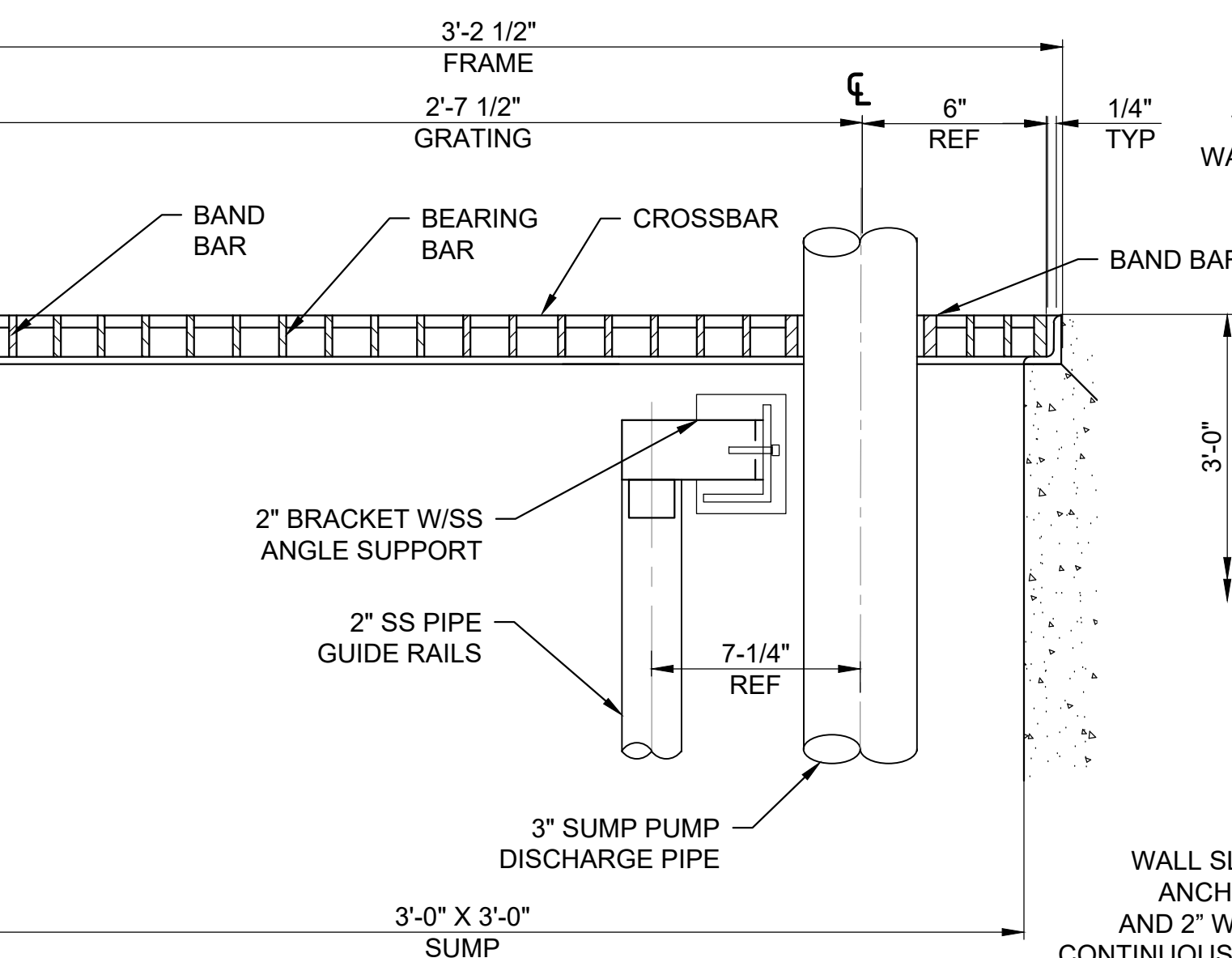


PLAN VIEW
SCALE: 3/8" = 1'-0"

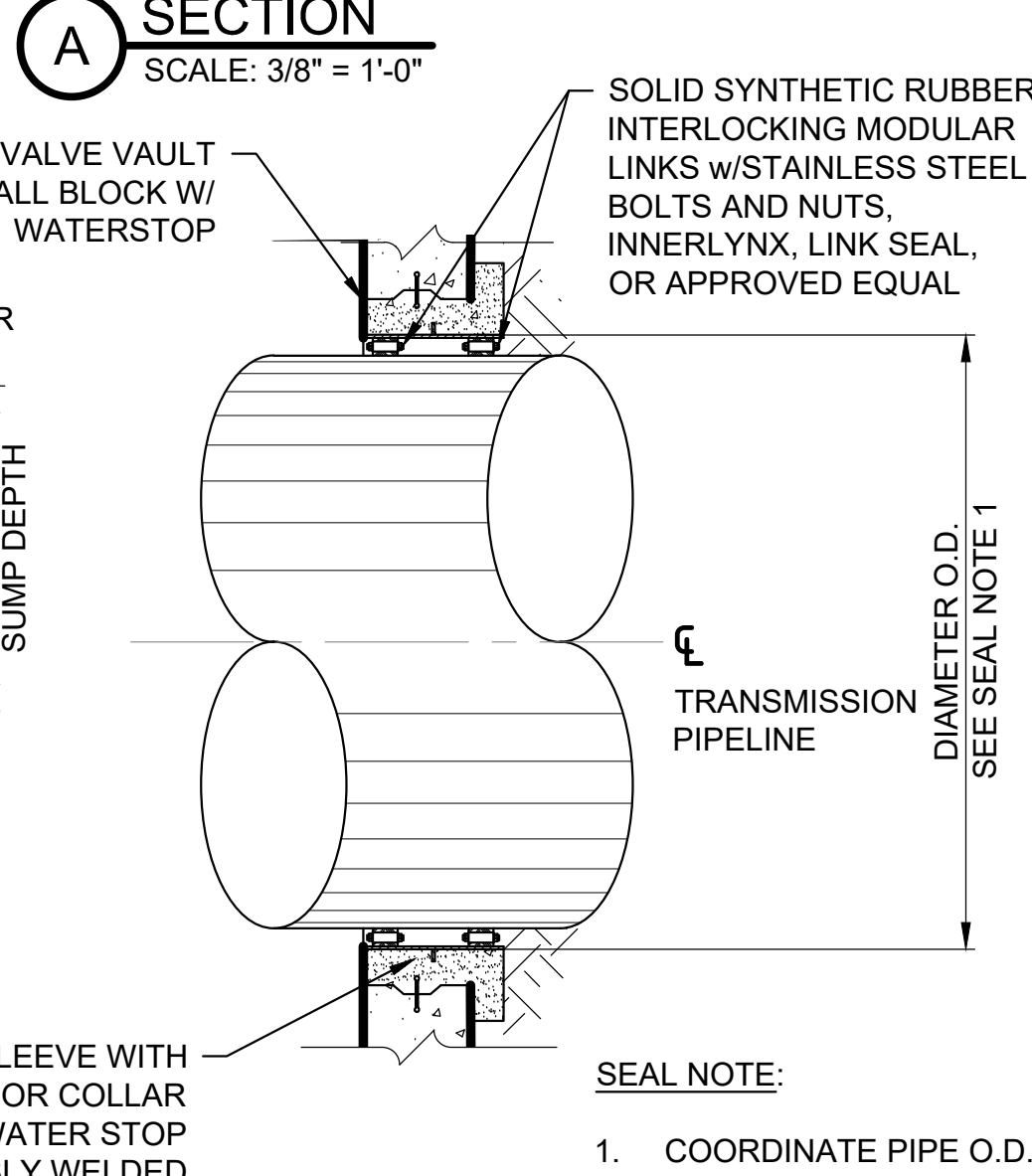
13 ACCESS HATCH OPEN
SCALE: 3/8" = 1'-0"



A SECTION
SCALE: 3/8" = 1'-0"



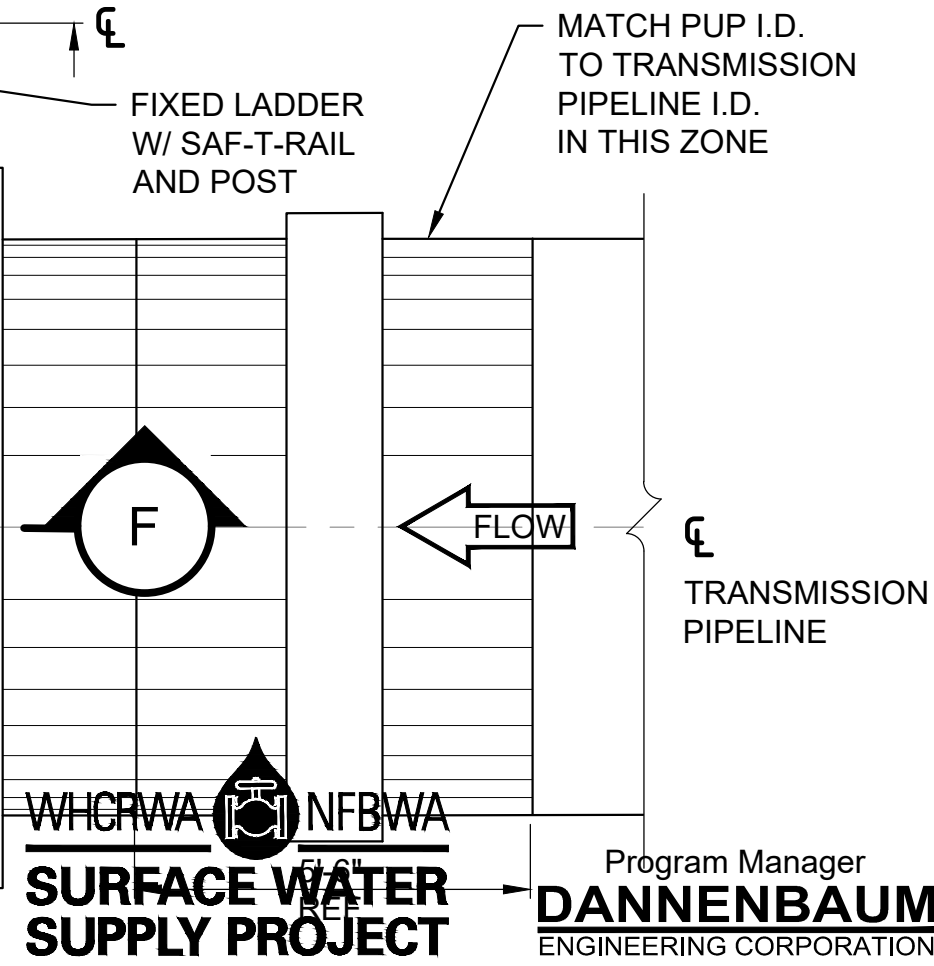
J SECTION
SCALE: 3" = 1'-0"



F SECTION
SCALE: 3/8" = 1'-0"

NOTES:

1. "REF" DIMENSIONS ARE SHOWING CLEARANCES AND ARE FOR REFERENCE ONLY DURING THE DESIGN PHASE.
2. CONFIRM "REF" DIMENSIONS ON SUBMITTAL DRAWINGS FOR CONSTRUCTION.
3. FITTINGS AND SPECIALS IN ISOLATION ZONE SHALL HAVE MINIMUM WALL THICKNESS 3/4" AND INTERIOR LINING 20 MILS EPOXY, NSF61 PER AWWA C210.



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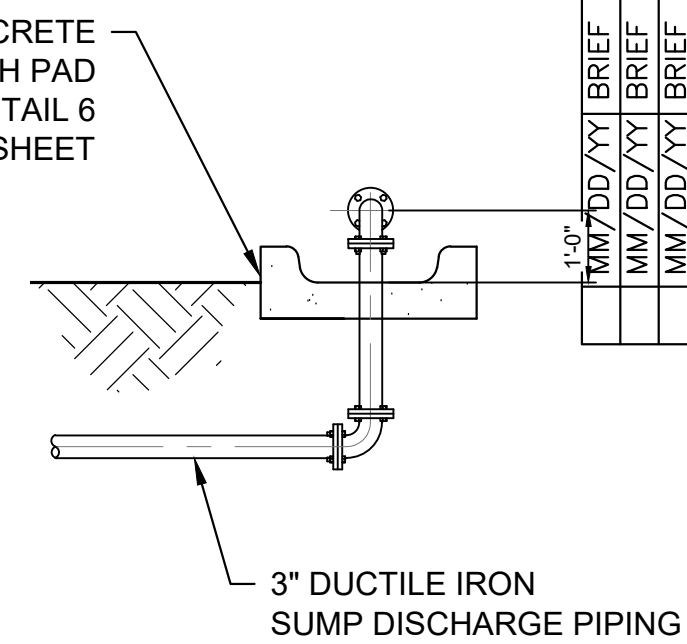
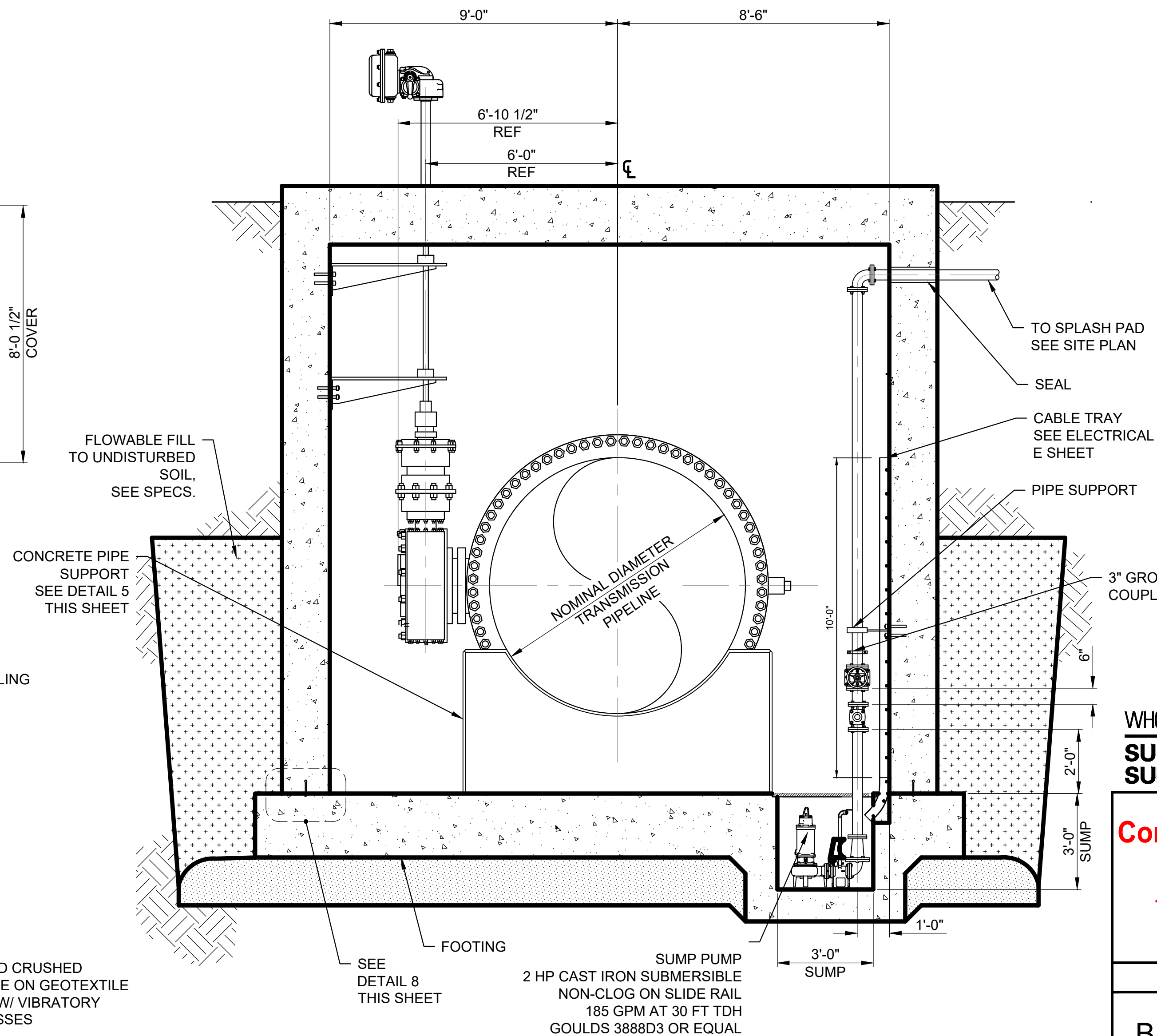
CONTRACT SEGMENT A1/2

BUTTERFLY VALVE VAULT
(SHEET 1 OF 3)


NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE
DRAWING NO. D-10	HORIZ: NTS. VERT: NTS.
SHEET NO. XX OF XXX FOR CITY OF HOUSTON USE ONLY	



- NOTES:**
1. "REF" DIMENSIONS ARE SHOWING CLEARANCES AND ARE FOR REFERENCE ONLY DURING THE DESIGN PHASE.
 2. CONFIRM "REF" DIMENSIONS ON SUBMITTAL DRAWINGS FOR CONSTRUCTION.
 3. THE TOP SURFACE OF THE CONCRETE PIPE SUPPORT BENEATH THE PIPE SHALL BE FORMED OR TROWELED SMOOTH TO A DIMENSIONAL RADIUS EQUAL TO ONE HALF THE ACTUAL PIPE ID. **ENFBWA 3/16 INCH WITHIN +/- 1/8 INCH**

WHCROWA  NFBA
SURFACE WATER
SUPPLY PROJECT

Company Name
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Telephone No.
Texas Firm No.

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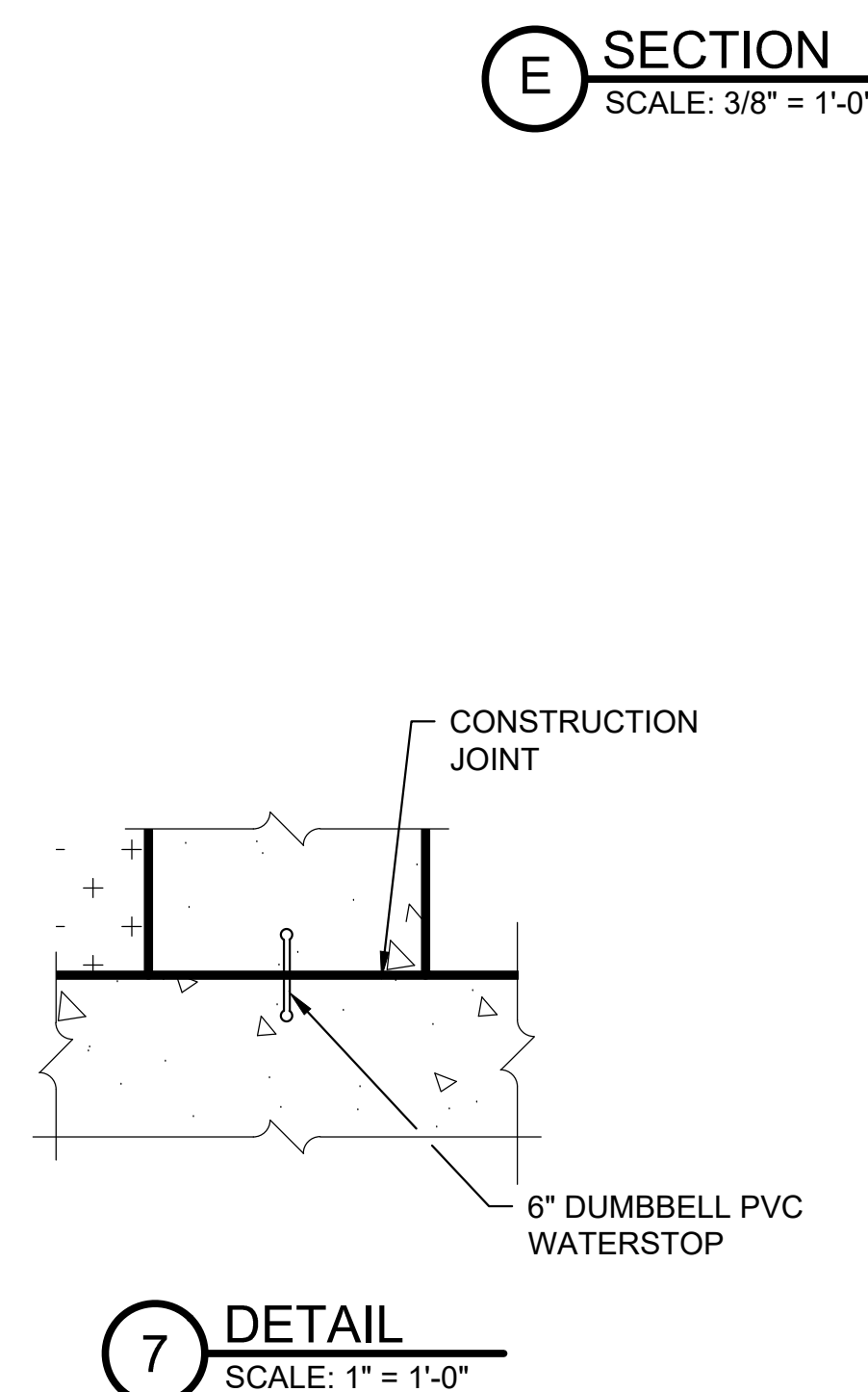
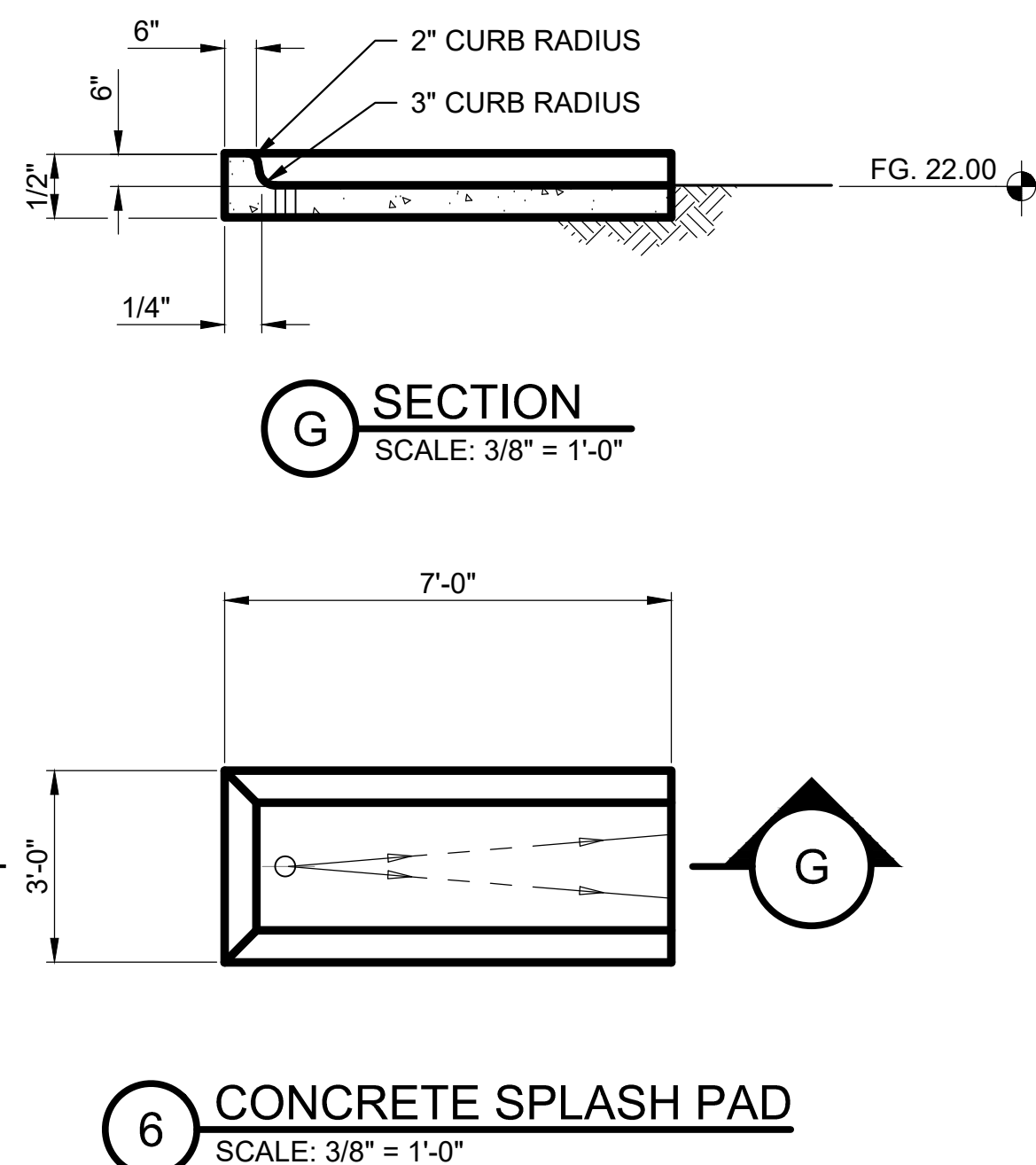
CONTRACT SEGMENT A1/2

BUTTERFLY VALVE VAULT
(SHEET 3 OF 3)

NOTE: CITY SIGNATURES VALID FOR ONE
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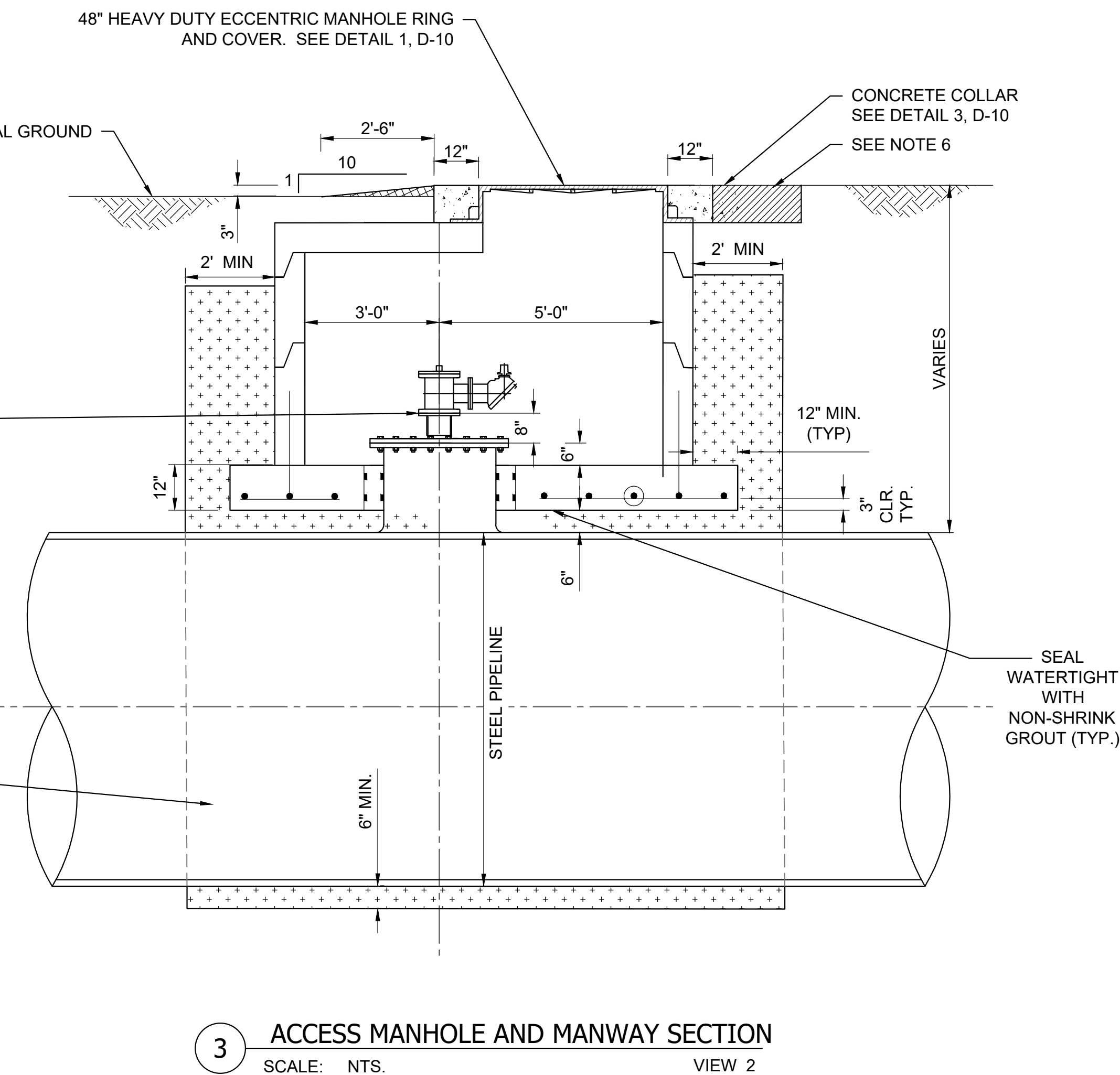
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE
DRAWING NO. D-12	HORIZ: NTS. VERT: NTS.
SHEET NO. XX OF XXX	DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY	





- WHCROWA NFBWA
**SURFACE WATER
 SUPPLY PROJECT**



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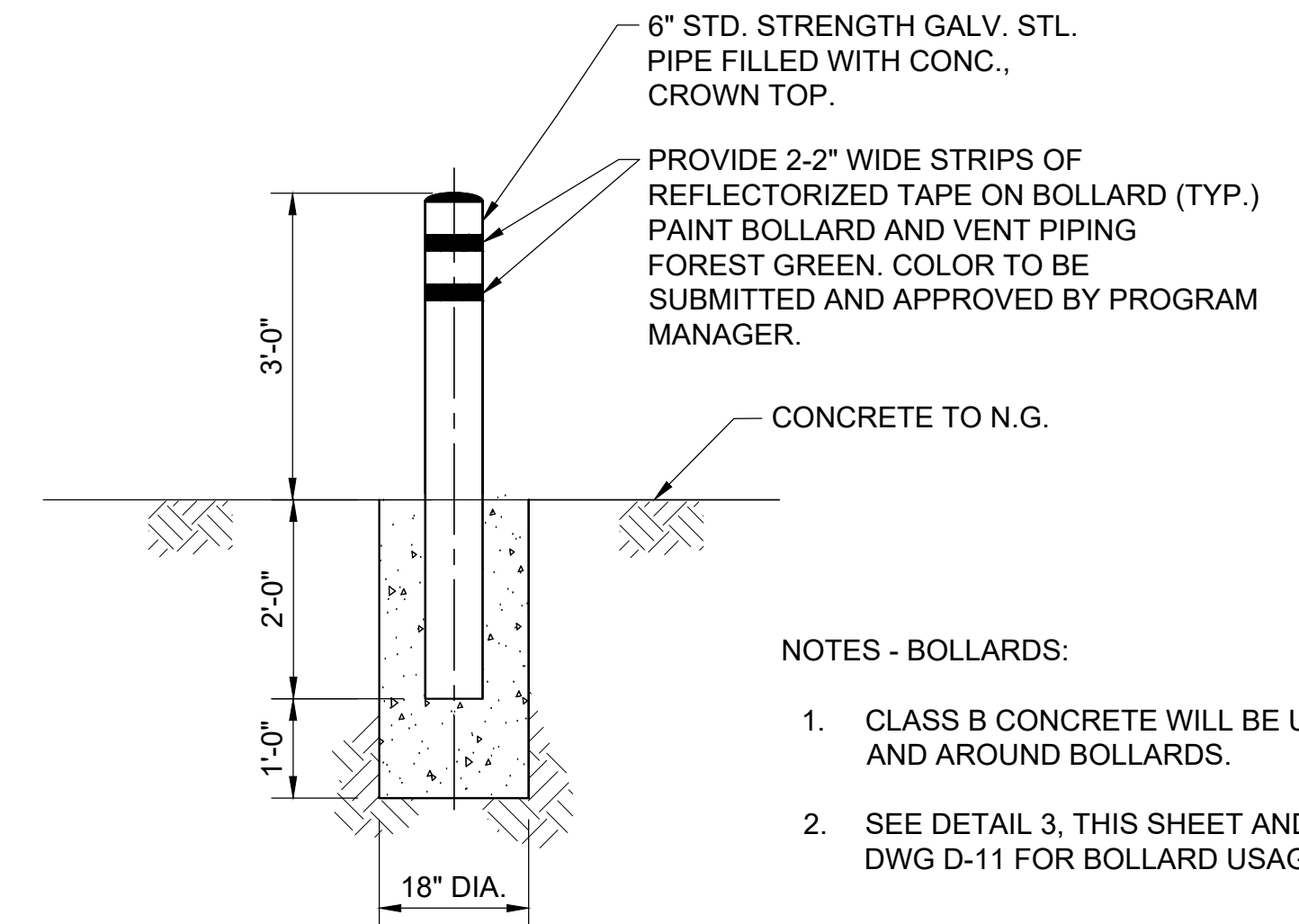
EXTRA LARGE DIAMETER
ACCESS MANHOLE AND MANWAY
(72" WL AND GREATER)

NOTE: CITY SIGNATURES VALID FOR ONE
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CITY OF HOUSTON
HOUSTON PUBLIC WORKS

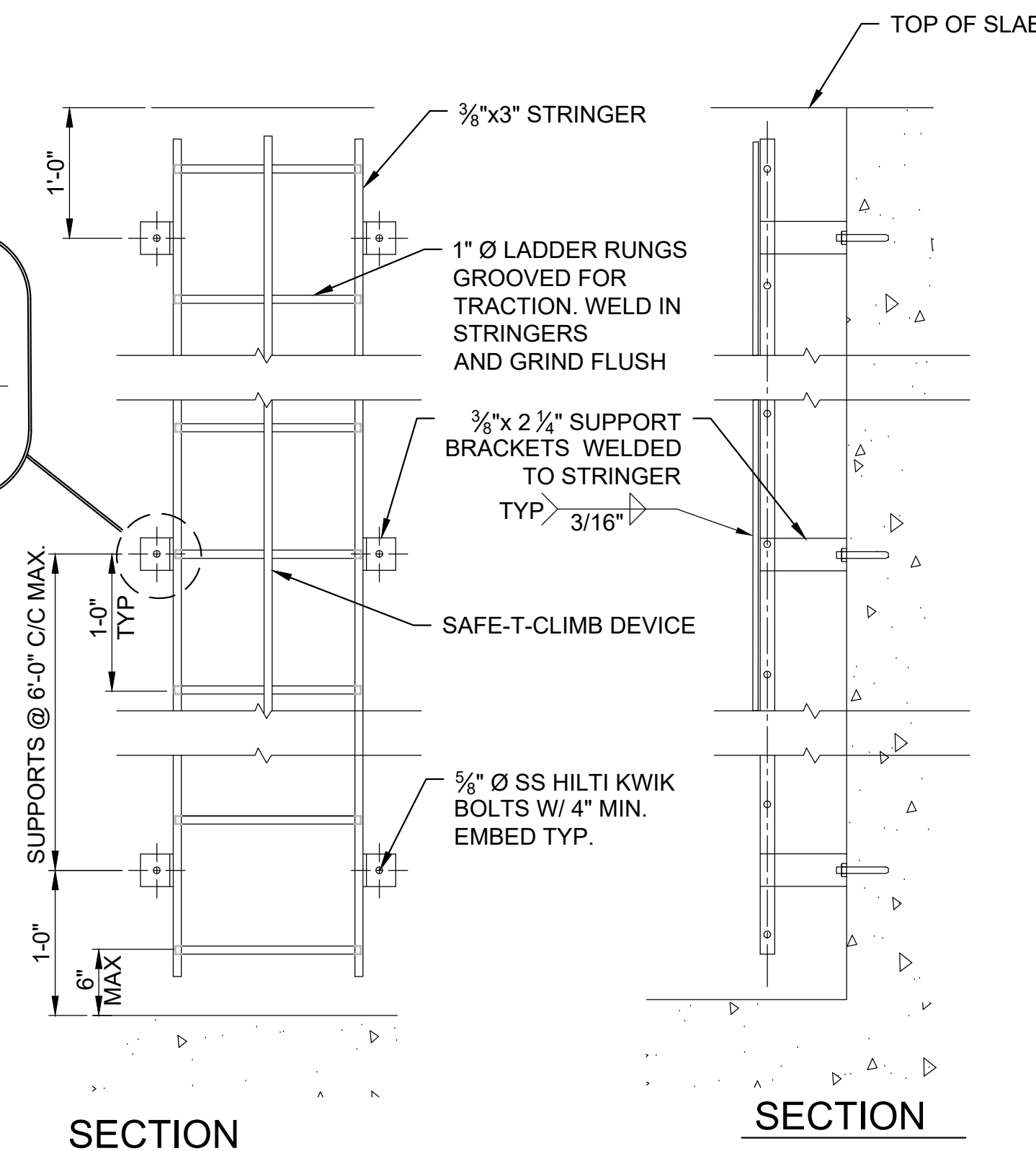
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO. D-13	HORIZ: NTS. VERT: NTS.
SHEET NO. XX OF XXX	DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY	



NOTES - BOLLARDS:

1. CLASS B CONCRETE WILL BE USED IN AND AROUND BOLLARDS.
2. SEE DETAIL 3, THIS SHEET AND DETAIL 6, DWG D-11 FOR BOLLARD USAGE.



WHCRWA NFBWA

**SURFACE WATER
SUPPLY PROJECT**

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

Company Name
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Texas Firm No.

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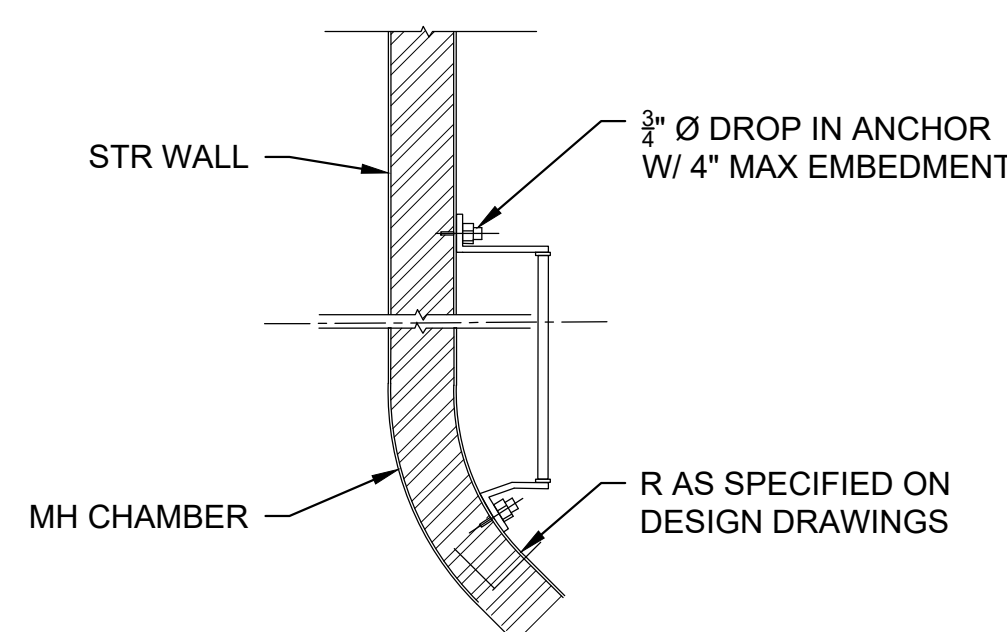
CONTRACT SEGMENT A1/2

MANHOLE COVER DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

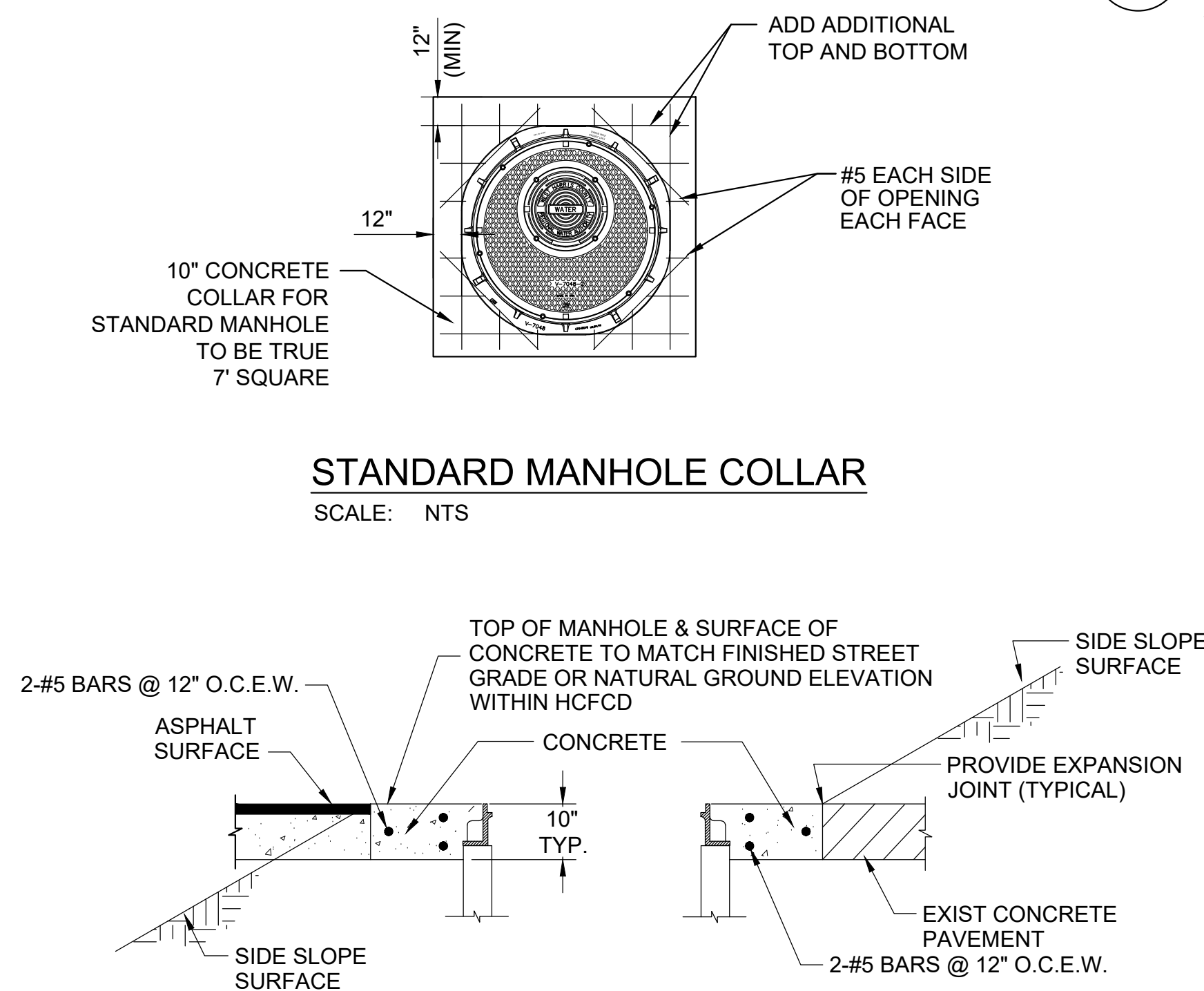
WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE
DRAWING NO. D-14	HORIZ: NTS. VERT: NTS.
SHEET NO. XX OF XXX	DRAWING SCALE
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NOTES:

1. ALL LADDER MEMBERS SHALL BE GALVANIZED STEEL UNLESS OTHERWISE NOTED.

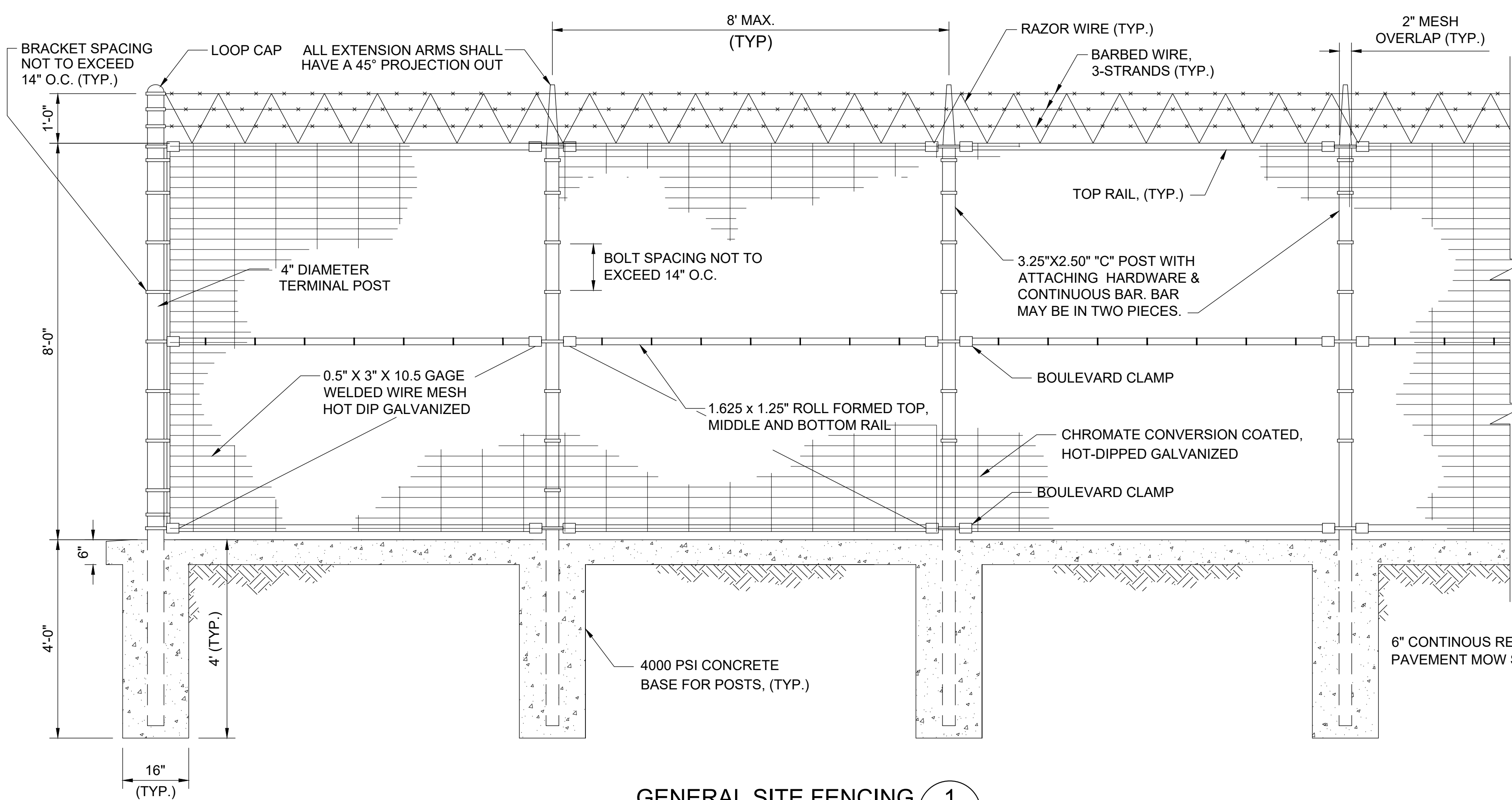
4 LADDER DETAIL
SCALE: NTS.



3 CONCRETE COLLAR
SCALE: NTS

NOTES:

1. CONSTRUCT THE FINAL 2 FEET OF THE MANHOLE AND PLACE CONCRETE WITHIN BLOCKOUT AFTER STREET PAVEMENT HAS BEEN INSTALLED OR NATURAL GROUND HAS BEEN RE-ESTABLISHED.
2. ALL MANHOLE COVERS WITHIN HCFCB ROW SHALL BE FLUSH WITH NATURAL GROUND, SEALED, AND BOLTED.
3. FOR HEAVY DUTY MANHOLE RING, SEE DETAIL 1, THIS DWG.
4. REINFORCEMENT DEPICTED IN DETAIL IS FOR STANDARD CONCRETE COLLAR CONFIGURATION. EXTEND REINFORCEMENT PER SPECIFICATIONS IF ALTERNATE OPTION IS USED.
5. FOR BUTTERFLY VALVE MANHOLES ON WATER MAINS 30-INCHES TO 78-INCHES, CENTER MANHOLE IN CONCRETE COLLAR.
6. INSTALL SQUARE COLLAR w/ BOLLARDS AT CORNERS WITHIN CENTERPOINT ENERGY CORRIDOR. SEE DETAIL 2, THIS SHEET.

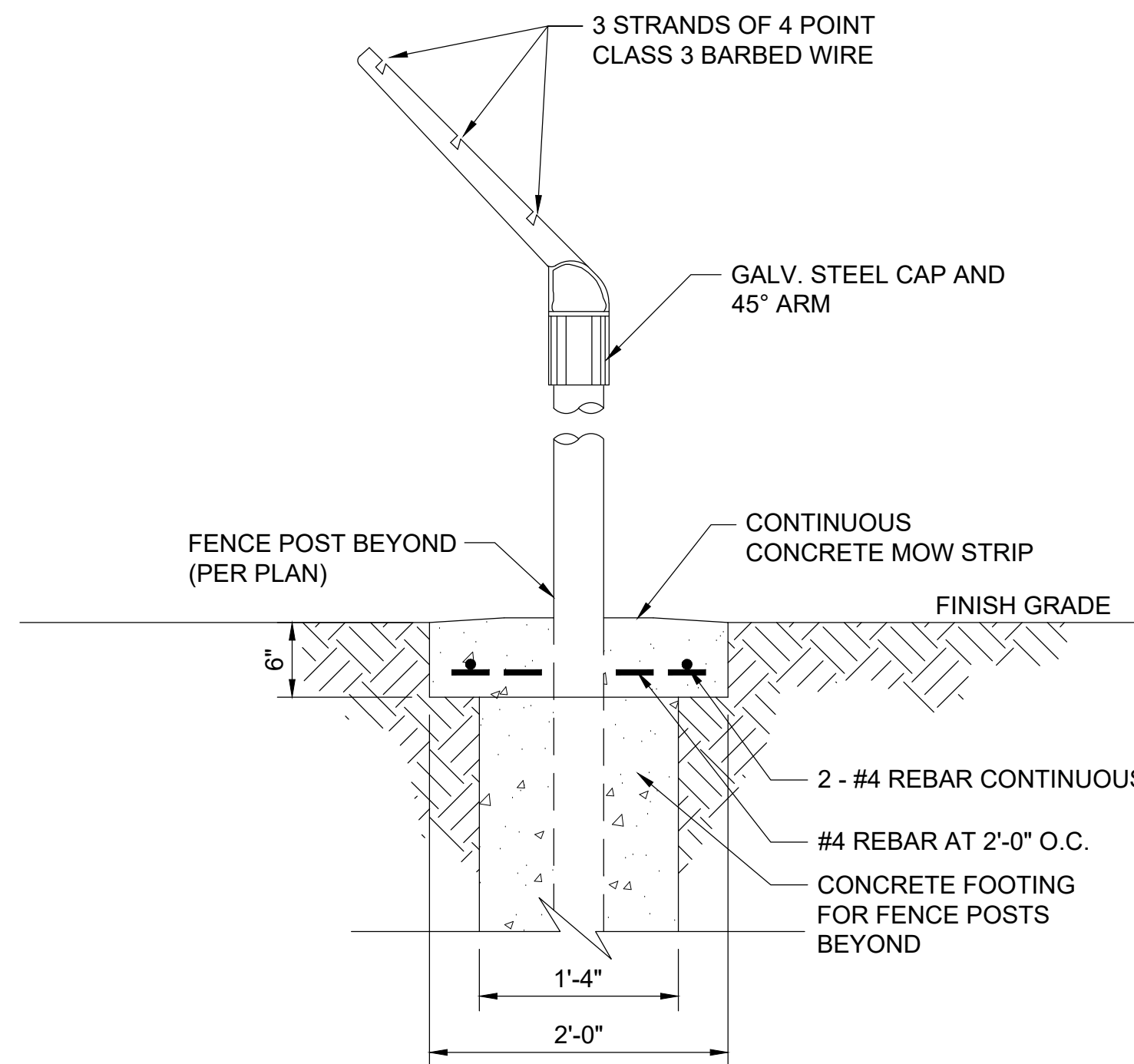


GENERAL SITE FENCING

1
-

N.T.S.

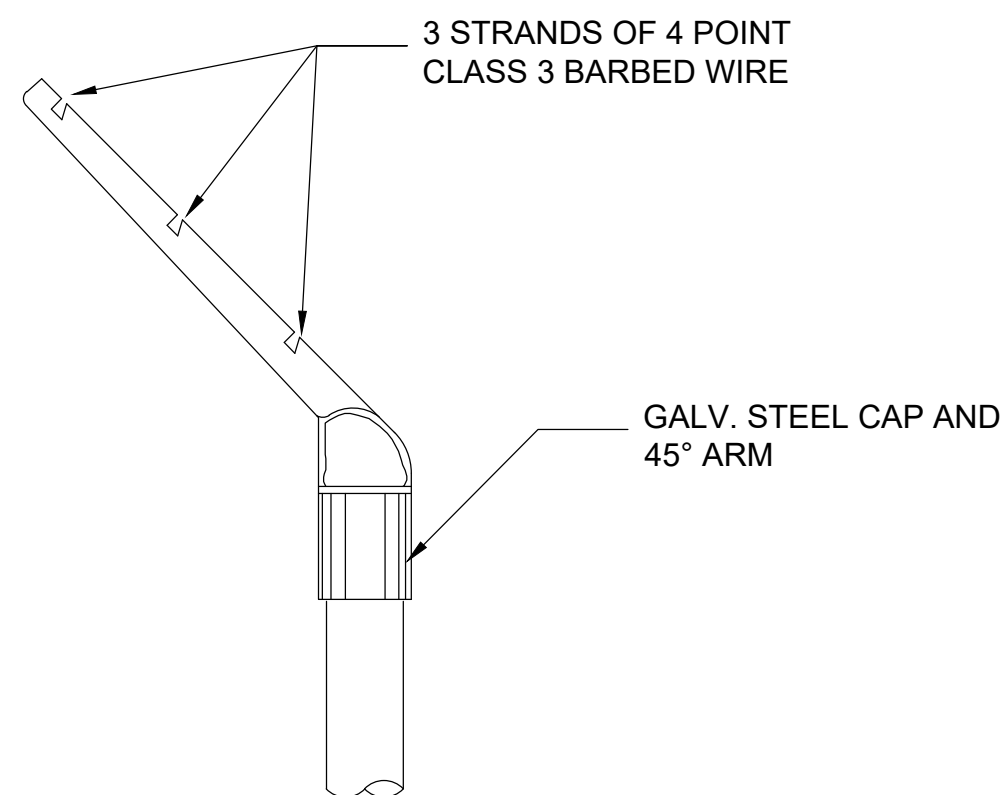
NOTES:
1. TWO-INCH NOMINAL SPACE BETWEEN
BOTTOM OF FENCE AND CONCRETE MOW STRIP



CONCRETE MOW STRIP DETAIL

3
-

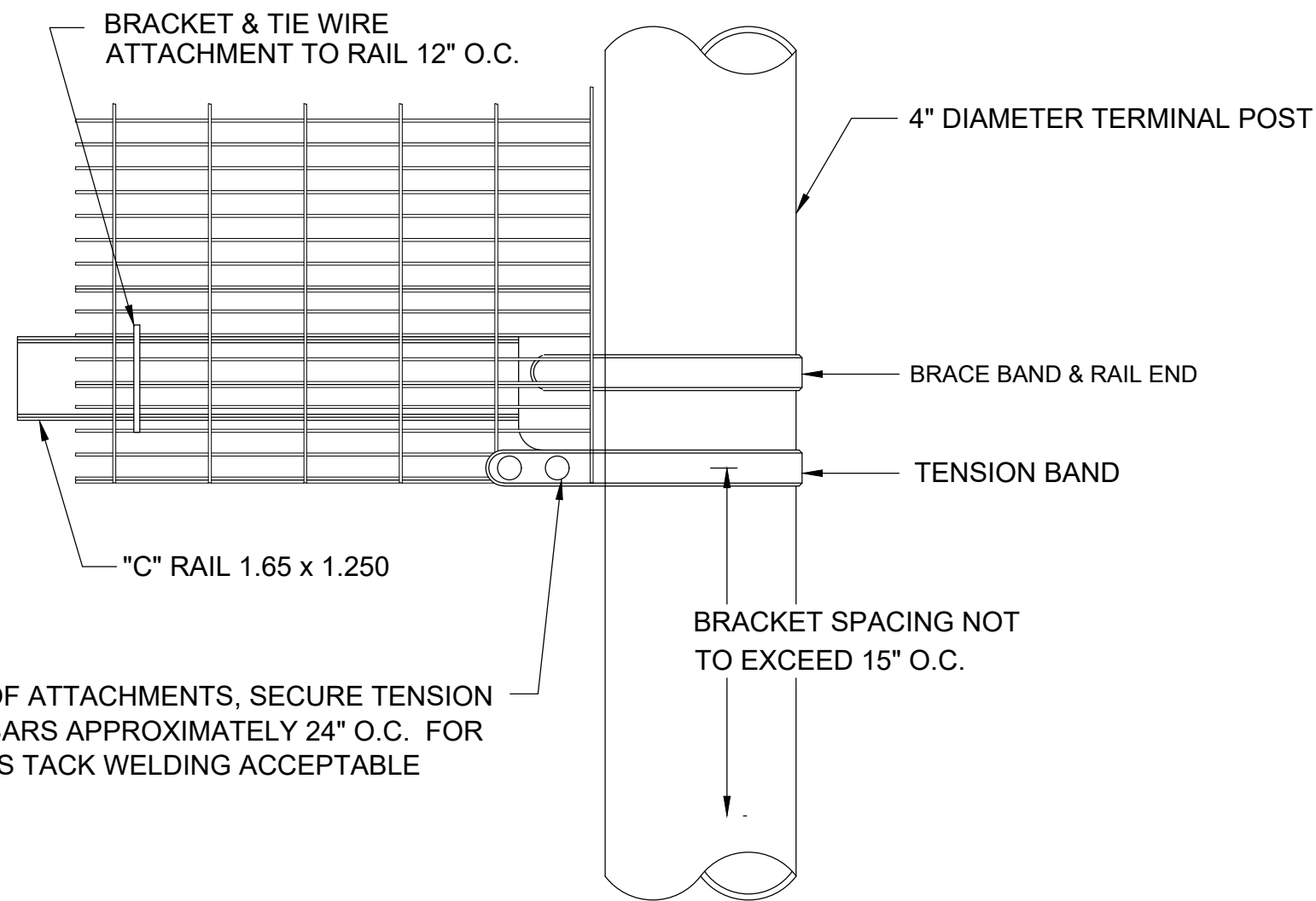
N.T.S.



3 WIRE 45°
BARBED WIRE ARM

4
-

N.T.S.

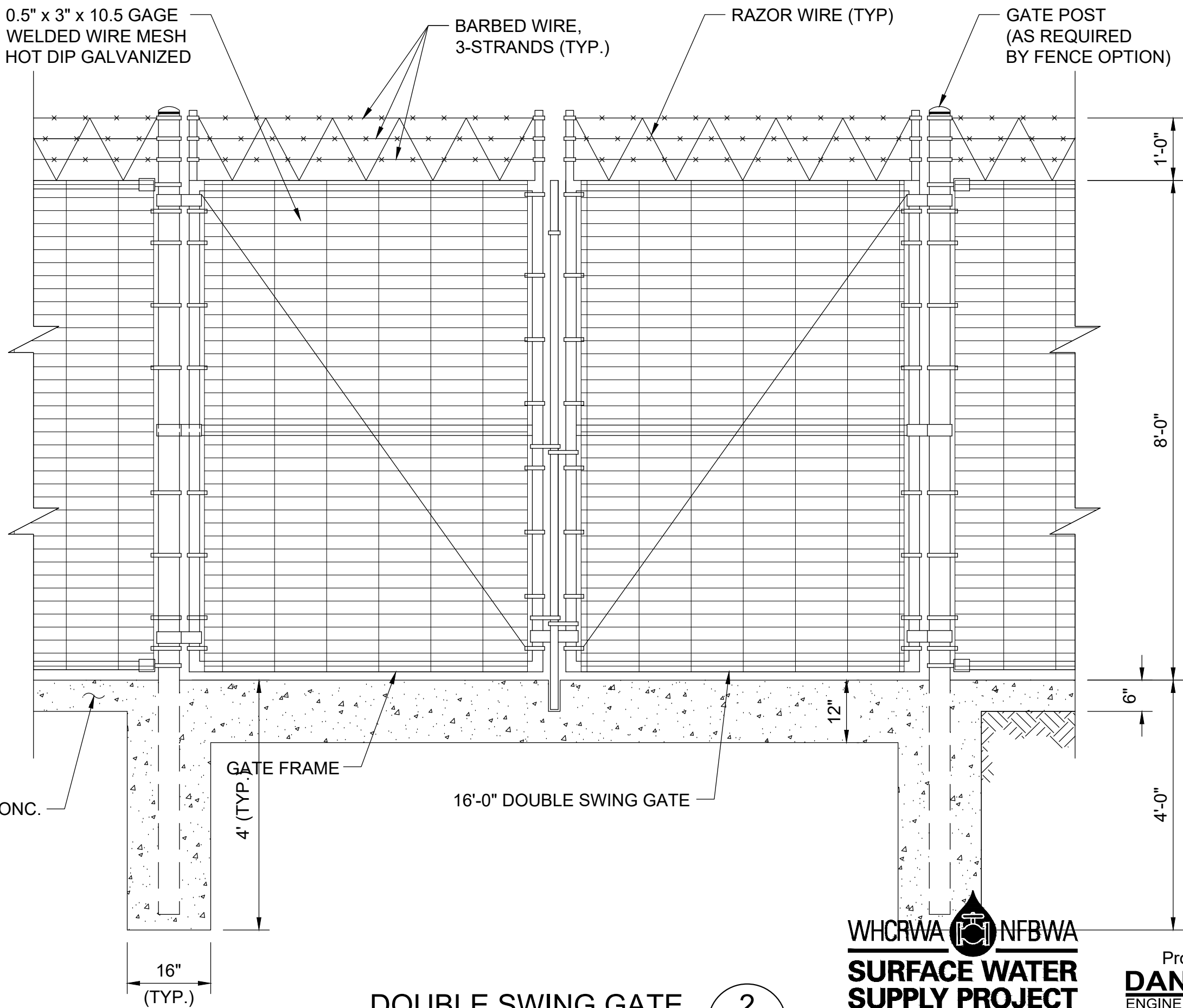


PERIMETER SECURITY FENCE TERMINAL POST CONNECTION

5
-

N.T.S.

USING TAMPER PROOF ATTACHMENTS, SECURE TENSION
BANDS TO TENSION BARS APPROXIMATELY 24" O.C. FOR
GALVANIZED FINISHES TACK WELDING ACCEPTABLE



DOUBLE SWING GATE

2
-

N.T.S.

WHCWA NFBWA
SURFACE WATER
SUPPLY PROJECT

Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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CONTRACT SEGMENT A1/2

SITE FENCING AND
ACCESS GATE DETAILS
(SHEET 1 OF 2)

NOTE: CITY SIGNATURES VALID FOR ONE
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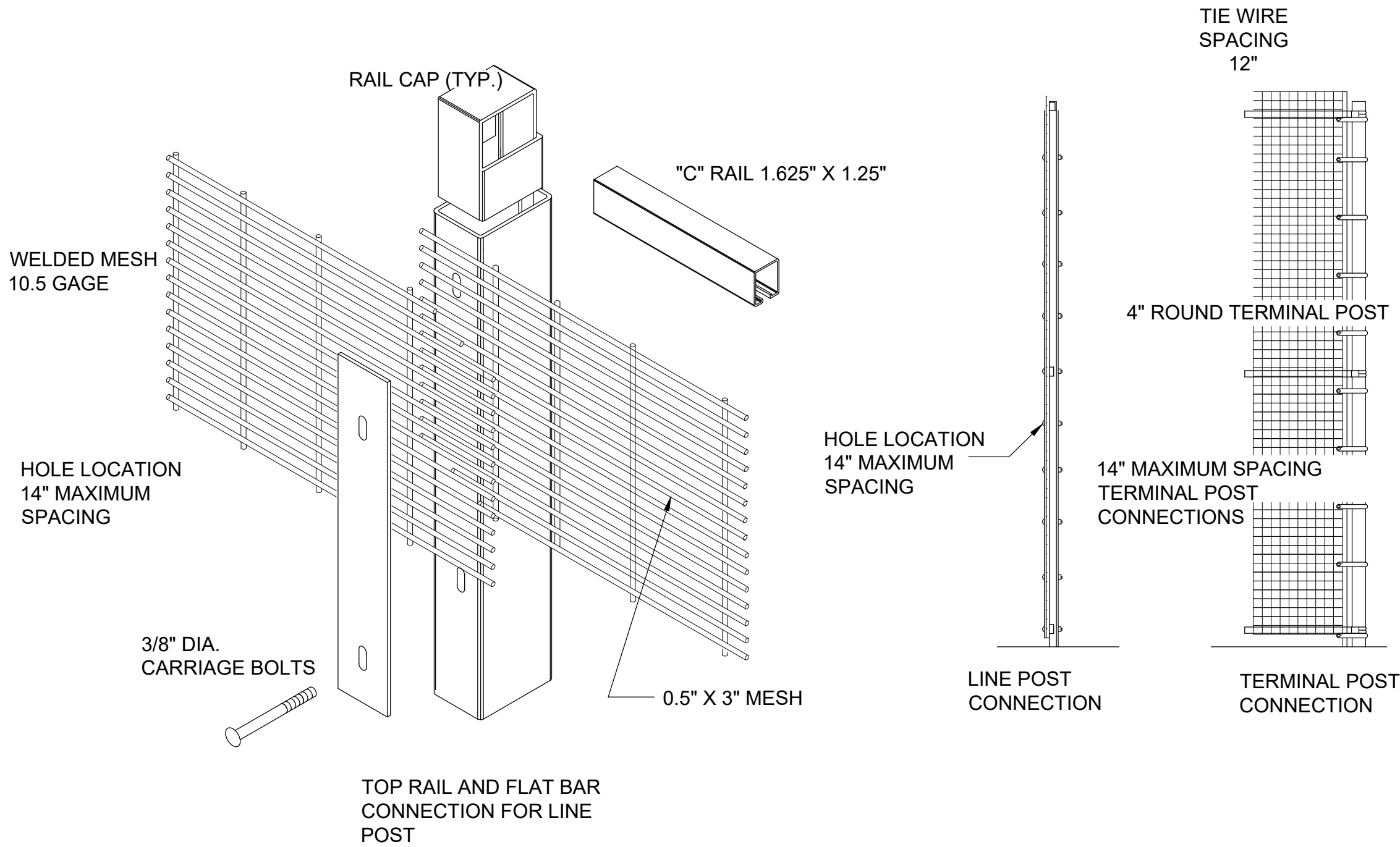
CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER STORM WATER QUALITY
WASTE WATER FACILITIES
STORM WATER TRAFFIC & TRANSPORTATION/
STREET & BRIDGE

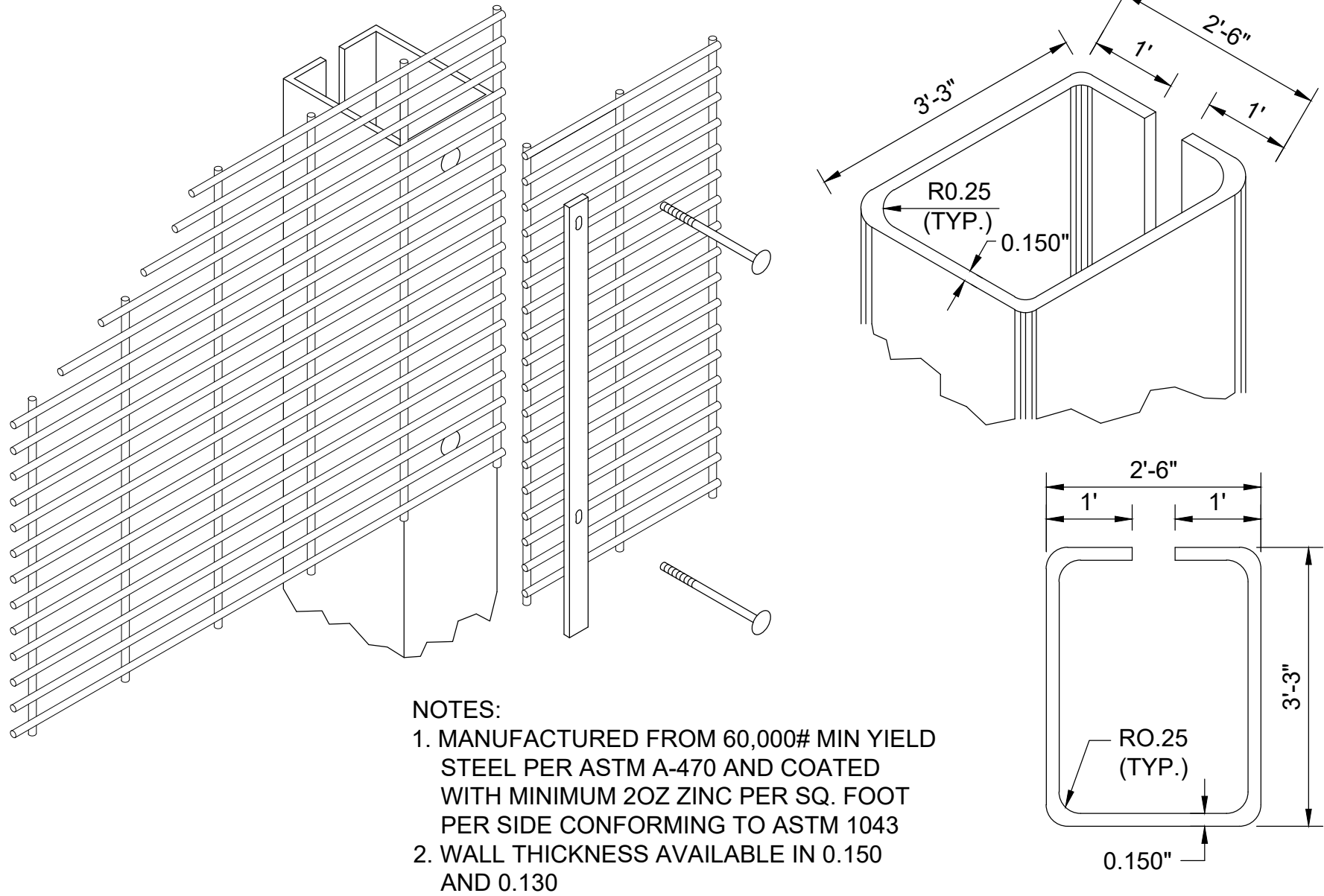
DRAWING NO. D-16
SHEET NO. XX OF XXX
HORIZ: NTS.
VERT: NTS.

DRAWING SCALE
FOR CITY OF HOUSTON USE ONLY

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MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX
NO.	DATE	REVISION
APP.		

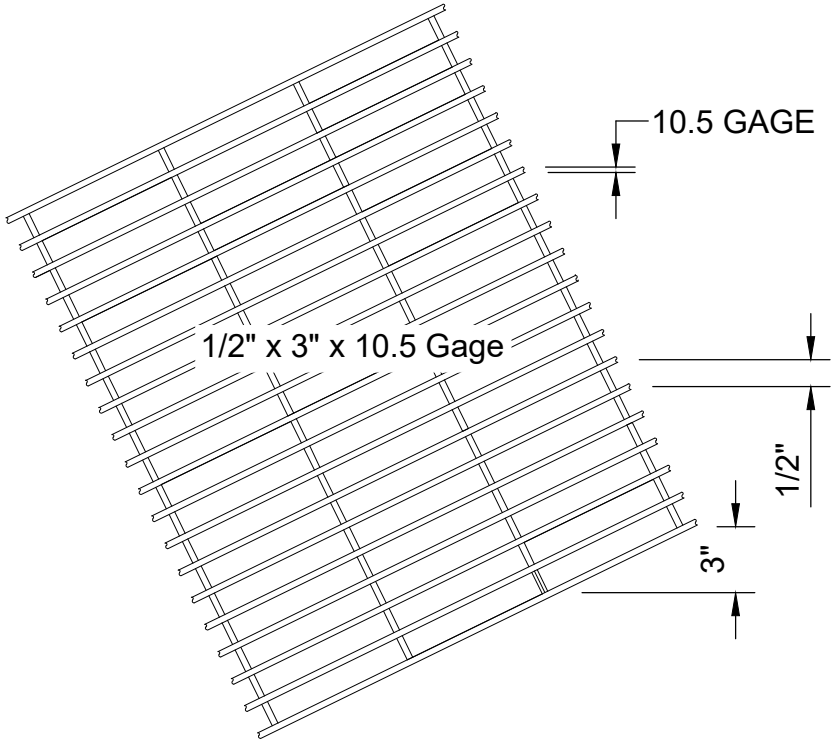


"C" POST CONNECTION DETAIL 6
N.T.S.

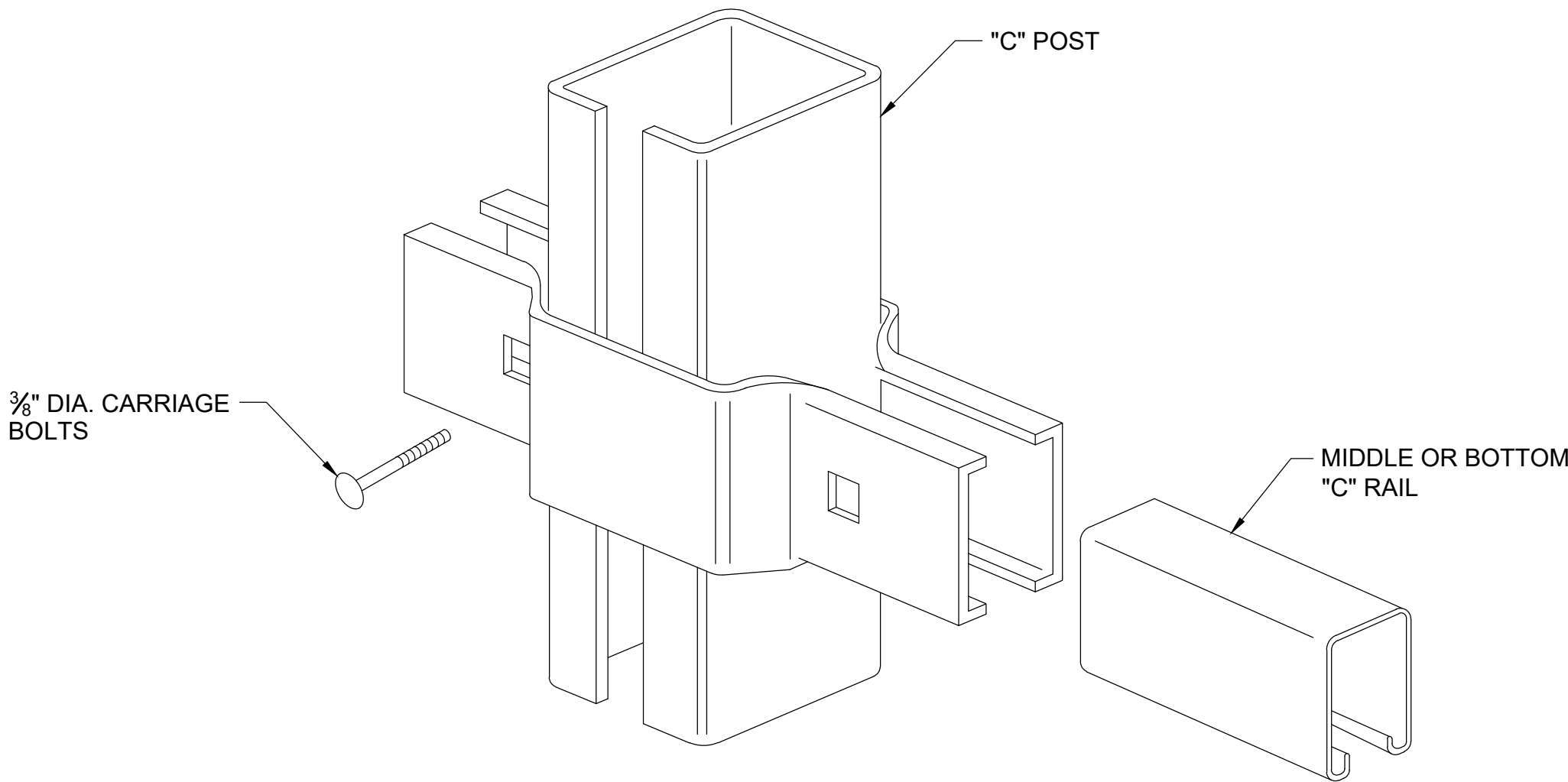


FENCE POST CONNECTION w/CONTINUOUS BAR 7
N.T.S.

WELDED WIRE CORNER GUARDS: SHALL BE FABRICATED FROM LOW CARBON STEEL WIRE AND ELECTRONICALLY CONTROL WELDED, FORMING A SPECIFIED MESH SIZE. THE WIRE SHALL CONFORM TO ASTM A 853 GRADE AISI 1008, HAVING A NOMINAL TENSILE STRENGTH OF 83,000 PSI. AFTER WELDING, THE FABRIC SHALL BE HOT-DIPPED GALVANIZED IN ACORDANCE WITH ASTM A 123.



1/2 IN. x 10.5 GA. WIRE MESH 8
N.T.S.



BOULEVARD CLAMP 9
N.T.S.

WHCWA NFBWA
SURFACE WATER SUPPLY PROJECT
Program Manager
DANNENBAUM
ENGINEERING CORPORATION

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CONTRACT SEGMENT A1/2

SITE FENCING AND ACCESS GATE DETAILS (SHEET 2 OF 2)

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

WATER	STORM WATER QUALITY
WASTE WATER	FACILITIES
STORM WATER	TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

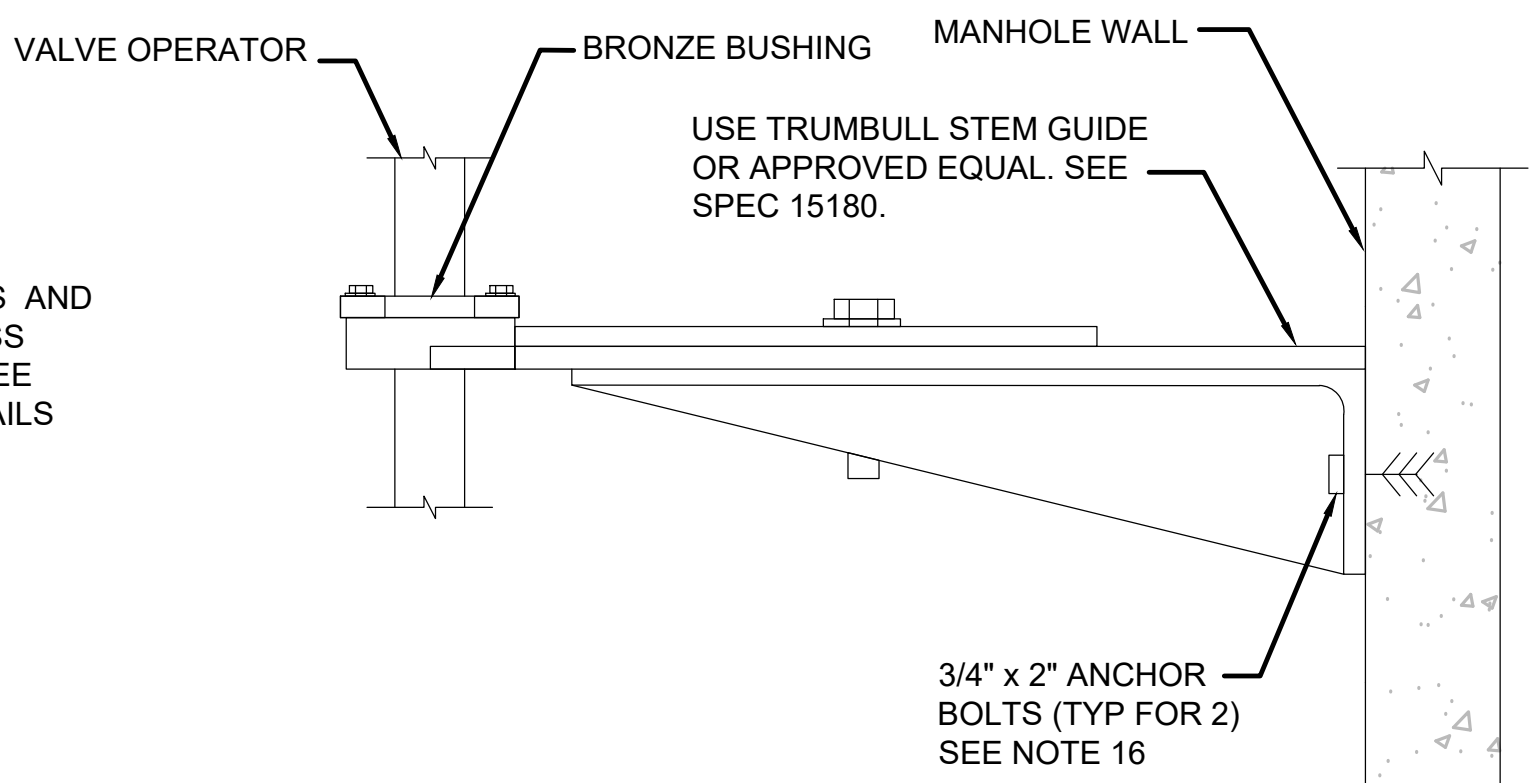
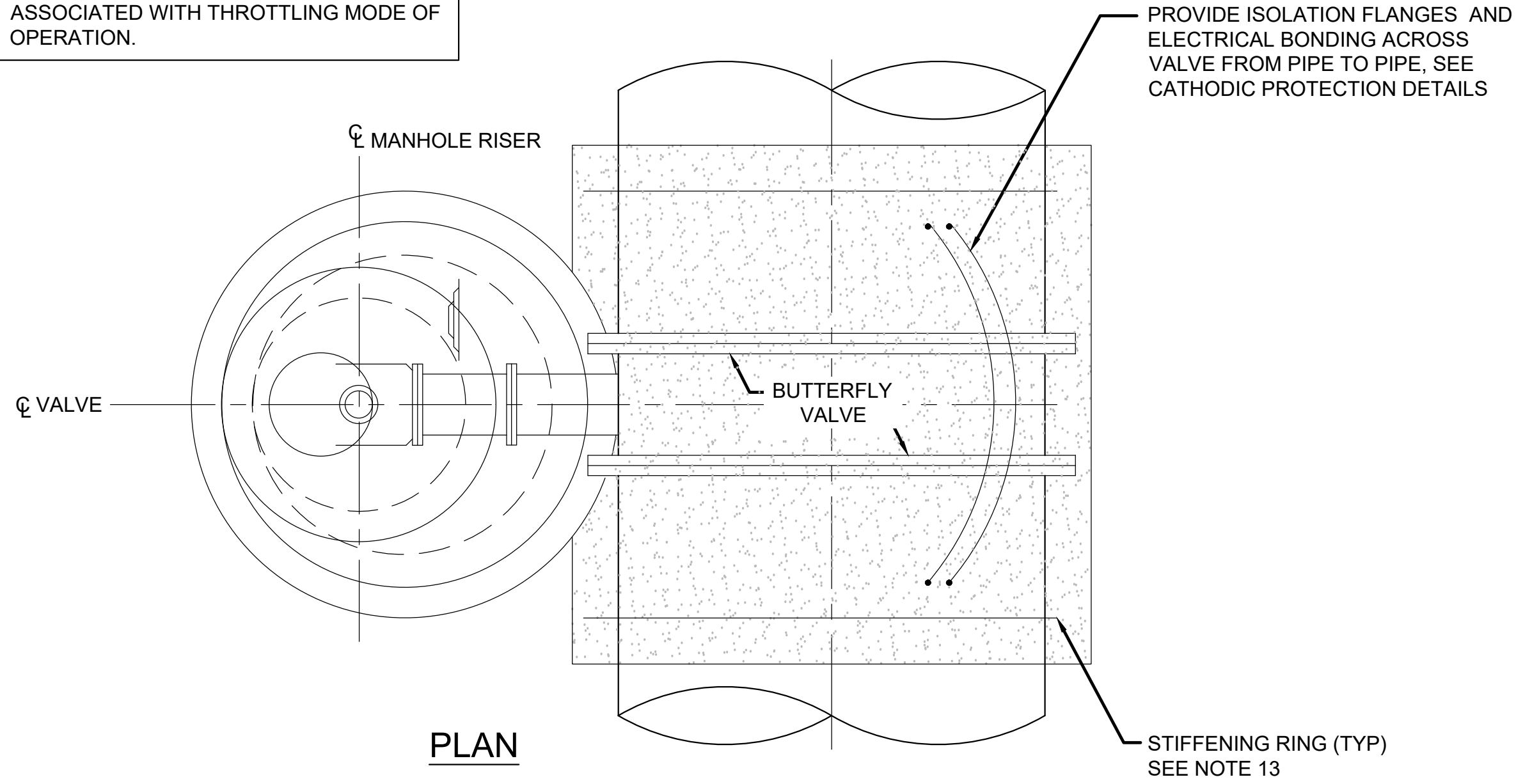
DRAWING NO. D-17	HORIZ: NTS. VERT: NTS.
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SHEET NO. XX OF XXX	DRAWING SCALE
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MM/DD/YY	BRIEF DESCRIPTION	XXX	XXX
MM/DD/YY	BRIEF DESCRIPTION	XXX	XXX
NO.	DATE	REVISION	APP.

NOTE:
SHOULD CONTRACTOR DESIRE TO USE VALVES IN A THROTTLED POSITION FOR FILLING OF LINE SEGMENTS, OBSERVE RECOMMENDATIONS OF VALVE MANUFACTURER TO PRECLUDE DAMAGE ASSOCIATED WITH THROTTLING MODE OF OPERATION.

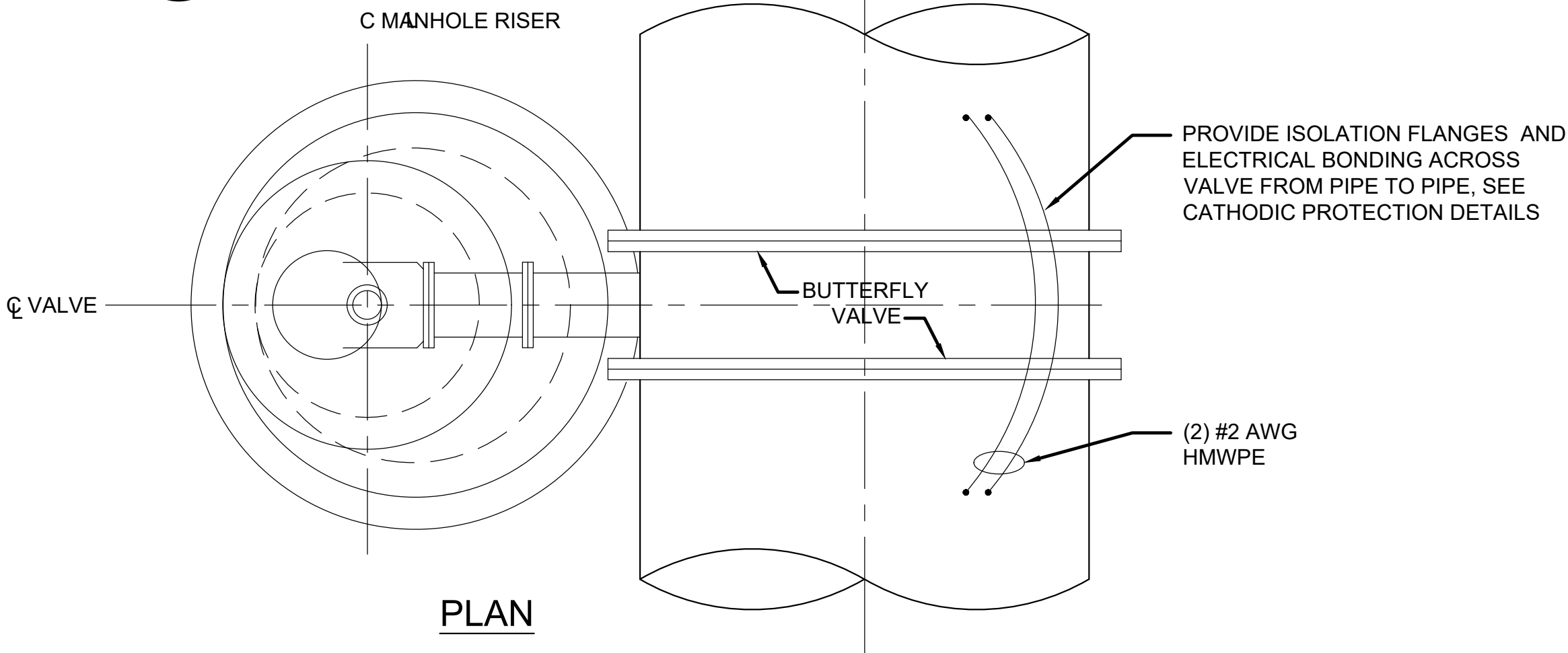


GENERAL NOTES:

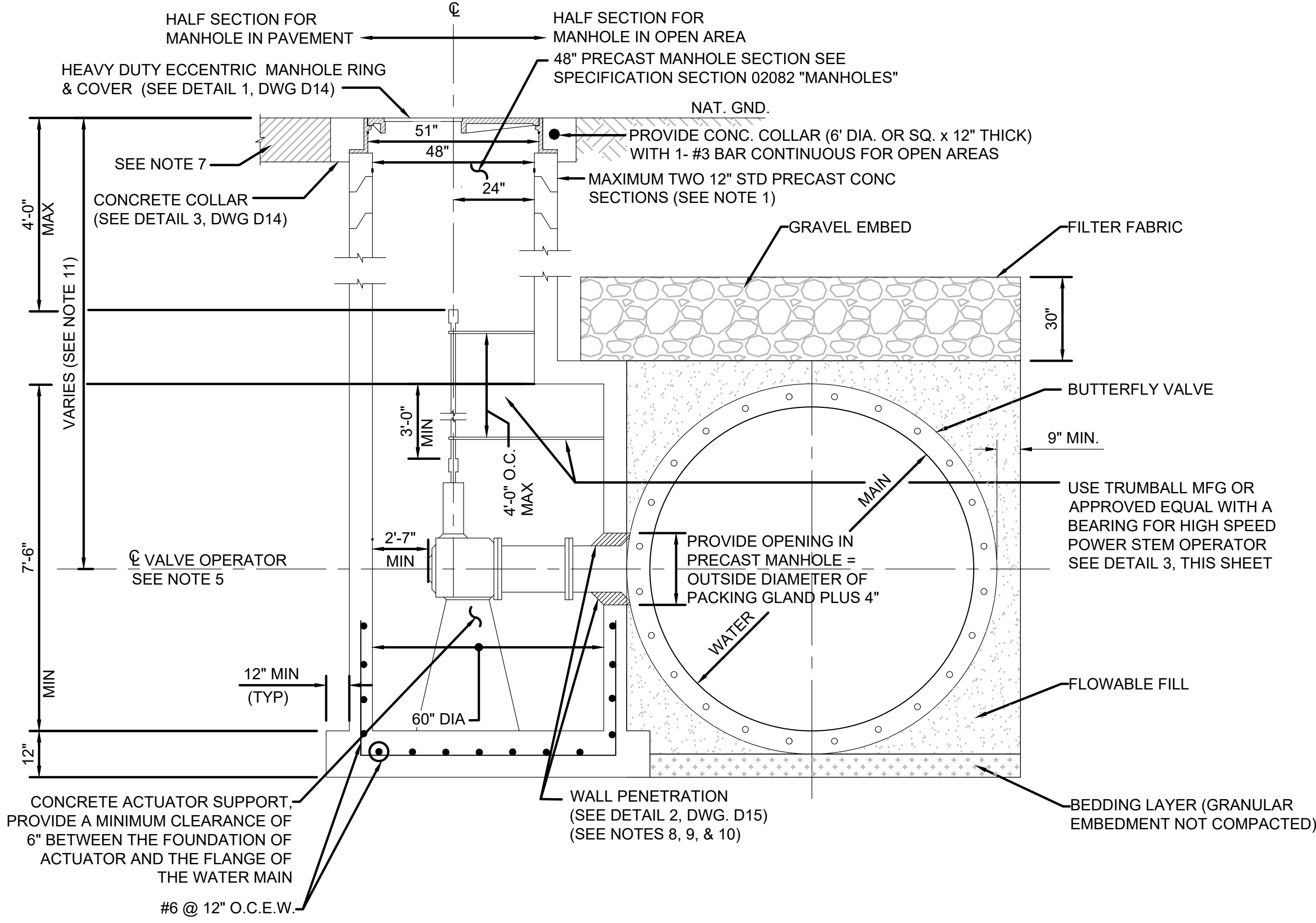
1. PROVIDE RAMNEK OR APPROVED EQUAL BETWEEN PRECAST SEGMENTS OF THE MANHOLE.
2. PROVIDE AN APPROVED PETROLEUM BASED TAPE ENCAPSULATING ALL BOLTS IN MANHOLES & VAULTS.
3. ALL JOINTS SHALL BE BONDED, BONDING DETAILS AT ISOLATION/ BUTTERFLY VALVES. SEE THE CATHODIC PROTECTION DETAILS.
4. FIELD COAT ALL FLANGE BOLTS, FLANGE COUPLING, FLANGE COUPLING ADAPTER AND THRUST TIE ASSEMBLIES AFTER ASSEMBLY TO 35 MDT W/2 COATS OF COAL TAR EXPOXY.
5. 2" OPERATING NUT ON LARGE DIAMETER BUTTERFLY VALVES SHALL TURN CLOCKWISE TO OPEN VALVE ABOVE - GROUND & PLANT VALVES SHALL OPEN COUNTER CLOCKWISE.
6. PLACE MANHOLE ON COMPACTED (95% SPD) BOTTOM.
7. FOR PAVEMENT REPAIR, SEE PAVEMENT REPAIR NOTES ON DWG D-04.
8. POLYSULFIDE SEALANT EXTERIOR SIDE OF WALL PENETRATION ONLY.

9. SOLID SYNTHETIC RUBBER INTERLOCKING MODULAR LINKS W/STAINLESS STEEL BOLTS AND NUTS, THUNDERLINE LINK SEAL, OR APPROVED EQUAL.
10. IF MANHOLE IS CAST IN PLACE CONSTRUCTION, PROVIDE DETAIL(S) FOR WALL PENETRATION INCLUDING EXTRA REINFORCING. DETAILS TO BE SEALED BY PROFESSIONAL ENGINEER LICENSED IN TEXAS.
11. FOR MANHOLES DEEPER THAN 8 FEET, INCREASE SIZE OF ACCESS MANHOLES TO 72-INCH OR 84-INCH DIAMETER & PROVIDE FIXED LADDER WITH SAF-T-CLIMB OR APPROVED EQUAL. SEE DETAIL 4, DWG D-10.
12. FOR CONCRETE COLLAR SEE DETAIL 3, DWG D-10.
13. ON STEEL PIPE, MANUFACTURERS SHALL SUPPLY PIPE OR FITTING/ADAPTORS CONNECTED TO THE BUTTERFLY VALVE WITH MINIMUM 5/8" THICK X 6" TALL STIFFENING RINGS UPSTREAM AND DOWNSTREAM OF BUTTERFLY VALVE. THESE RINGS SHALL BE PLACED 4' FROM THE CENTERLINE OF THE BUTTERFLY VALVE AND SHALL BE DESIGNED SUCH THAT THE PIPE ADJACENT TO VALVE IS LIMITED TO NO MORE THAN 0.25% DEFLECTION AT THE DEPTH OF COVER SHOWN ON THE PLANS.
14. THE CONTRACTOR SHALL ENSURE ALL STULLING IN PIPE ADJACENT TO VALVES REMAINS IN PLACE UNTIL FLOWABLE FILL HAS BEEN PLACED AND CURED.
15. CONTRACTOR SHALL PLACE FLOWABLE FILL IN EQUAL LIFTS ON EITHER SIDE OF PIPE AND VALVE AND ENSURE THE PIPE AND VALVE REMAIN ROUND WITHOUT DEFLECTION UNTIL FLOWABLE FILL CURES.
16. MATCH ANCHOR BOLT MATERIAL TO TRUMBULL STEM GUIDE.

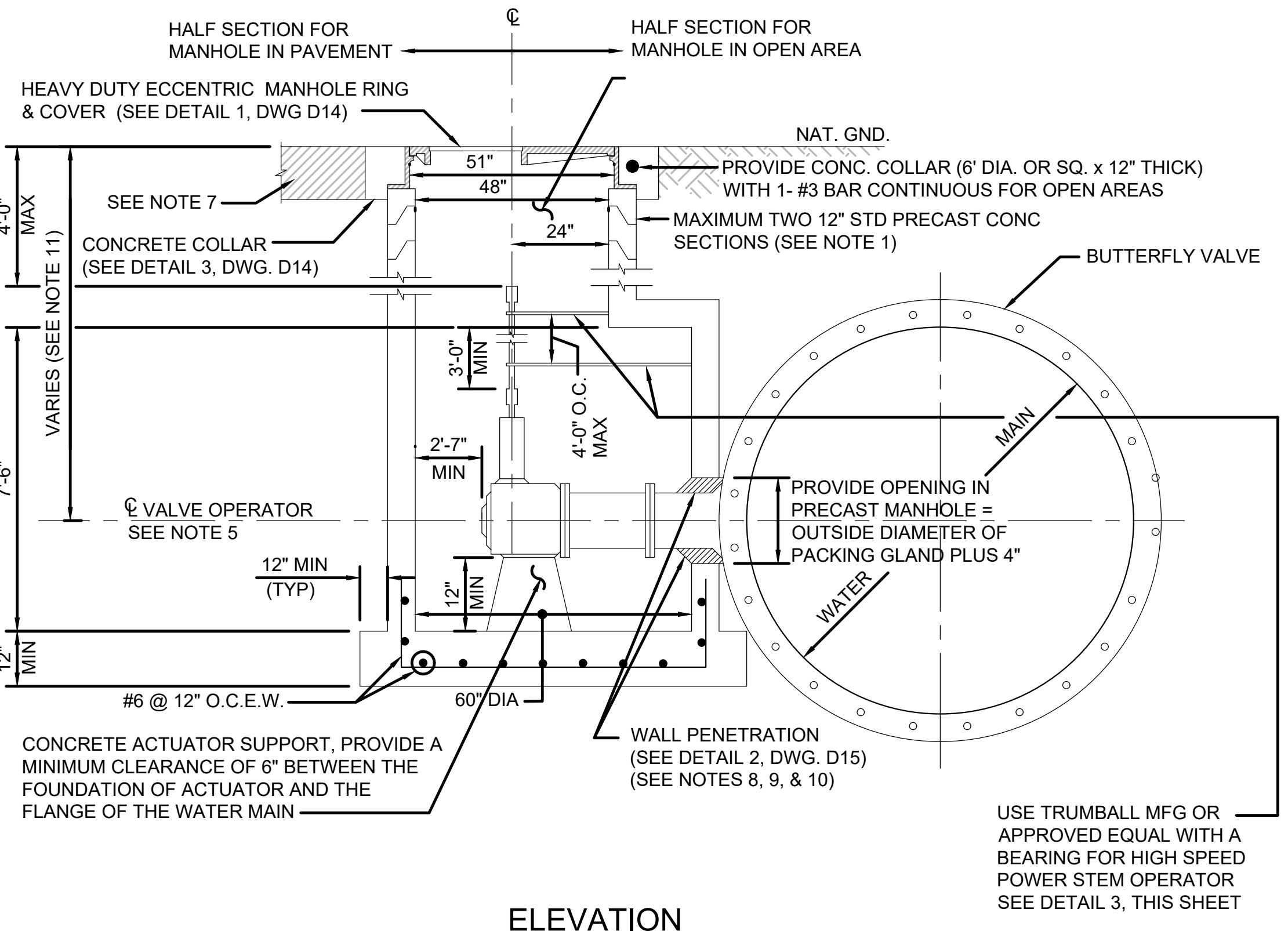
3 VALVE OPERATOR SUPPORT



PLAN



1 BUTTERFLY VALVE w/ OPERATOR MANHOLE
(FOR WATER LINES 54-INCHES AND LARGER)



2 BUTTERFLY VALVE w/ OPERATOR MANHOLE
(FOR WATER LINES 30-INCHES TO 54-INCHES)

WHCROWA

NFBWA

SURFACE WATER

SUPPLY PROJECT

Program Manager

DANNENBAUM

ENGINEERING CORPORATION

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CONTRACT SEGMENT A1/2

VALVE AND SERVICE MANHOLE DETAILS

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

CITY OF HOUSTON

HOUSTON PUBLIC WORKS

WATER

WASTE WATER

STORM WATER

STORM WATER QUALITY

FACILITIES

TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

DRAWING NO.

D-18

HORIZ: NTS.

VERT: NTS.

SHEET NO. XX OF XXX

DRAWING SCALE

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FILE PATH: G:\1110\STANDARDS\SWSP (Standard Details)\Standard Details Sheet Set\D-18 Valve & Service MH Details.dwg

PEN TABLE: SWSP-34x22-PDF.cbt

PLOTTED: 6/3/2020 10:28 AM

NO.	DATE	REVISION	APP.
XXX			
MM/DD/YY		BRIEF DESCRIPTION	XXX
MM/DD/YY		BRIEF DESCRIPTION	XXX
MM/DD/YY		BRIEF DESCRIPTION	XXX