

FILENAME: y:\inter-departmental\development engineering projects\public works standards\20 pws revision copy\details\300_wastewater\wastewater cad\301.dwg, Plotted 12/8/2025 10:29 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)

4,000PSI PCC
SLOPE SHELVES
1:12 TYP.



FLOW



3" MIN.

KOR-N-SEAL OR APPROVED
EQUAL MANHOLE ADAPTER (TYP.)

PLAN

NOTES:

1. FOR A 48" DIA. MANHOLE THE MAXIMUM INCOMING PIPE DIAMETER IS 15". A LARGER DIAMETER INCOMING PIPE WILL REQUIRE A SPECIAL DESIGN.

MANHOLE FRAME AND
COVER AS SPECIFIED

FINISHED GRADE

STANDARD MANHOLE
STEPS SHALL BE
ORIENTED OVER THE
LEAST OBSTRUCTED
PORTION OF THE SHELF
AND SHALL NOT
CONFLICT WITH ANY PIPE
OR APPURTENANCE.

SEE STANDARD
MANHOLE DRAWINGS

RELINER® OR APPROVED
EQUAL INSIDE DROP BOWL
SECURED WITH STAINLESS
STEEL FASTENERS

RUBBER BOOT

EXTERNAL PIPE COUPLER

CLASS "B"
PIPE ZONE

CONTROLLED
LOW-STRENGTH MATERIAL
REQUIRED UP TO BEDDING

RELINER® OR APPROVED EQUAL STAINLESS
STEEL STRAPS SECURED TO STRUCTURE
WITH STAINLESS STEEL FASTENERS, AT 4'
INTERVALS (MIN. OF 2)

PVC DROP PIPE OF DIAMETER
APPROPRIATE TO DROP BOWL SIZE PER
MANUFACTURER'S SPECIFICATIONS

INSTALL 45 DEG
FITTING

2" PIPE
PROTRUSION

2" MIN.

SECTION A-A

FORMED CHANNEL
@1:12 SLOPE

CITY OF
GRESHAM

STANDARD INSIDE DROP MANHOLE

PWS VERSION: JAN 2026

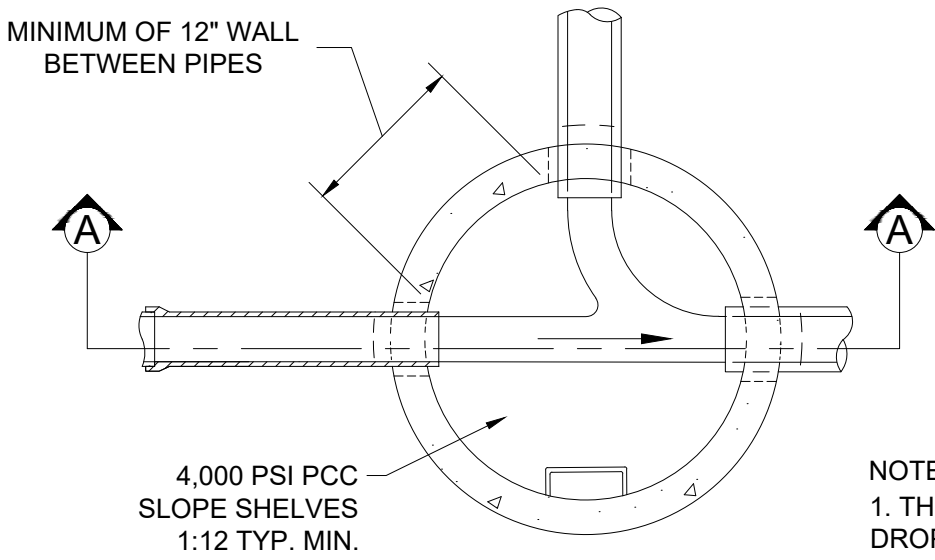
DRAWN AAD

REV. DATE NOV 2025

APPR.

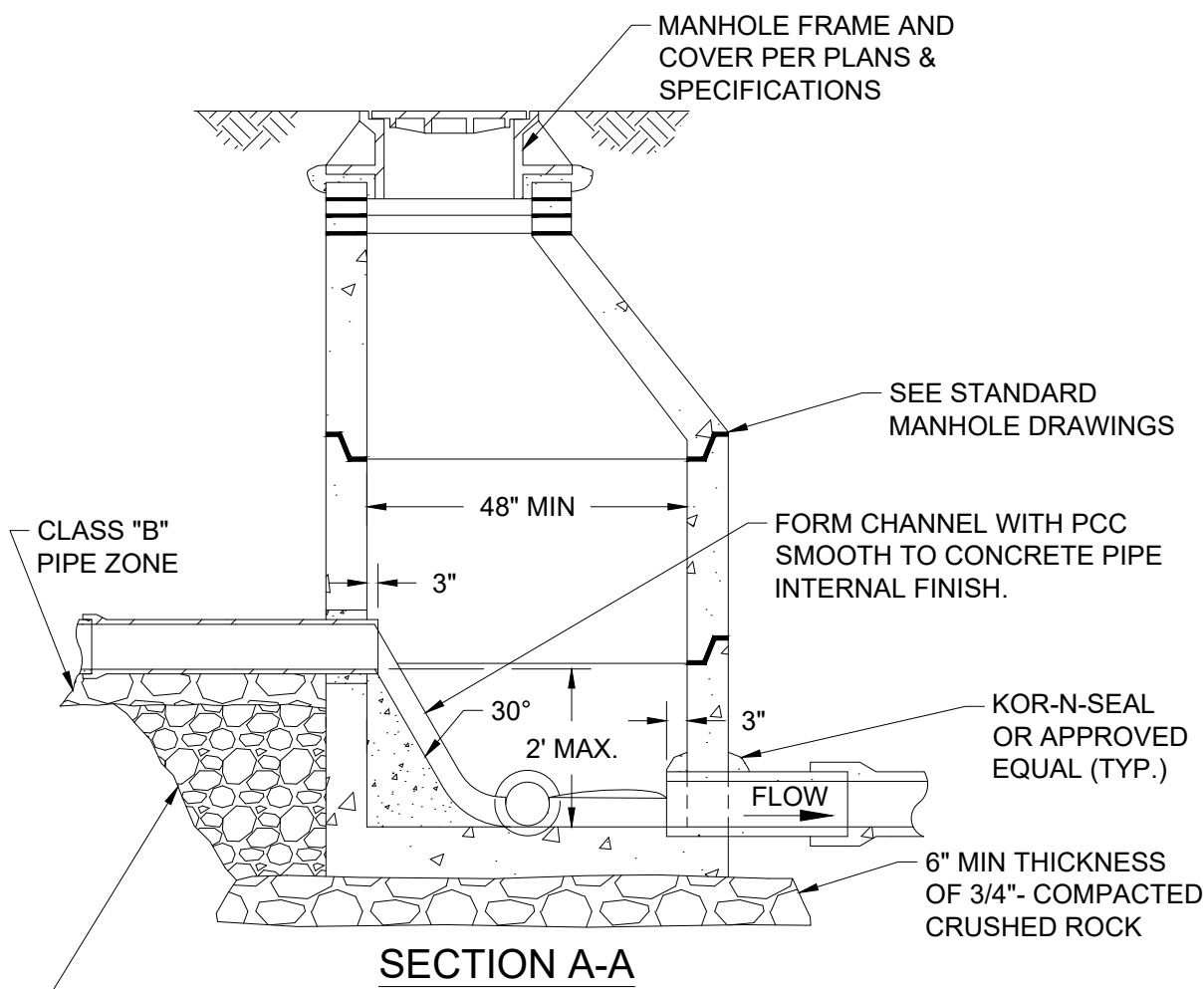
DETAIL NO. 301

FILENAME: y:\inter-departmental\development\engineering\projects\public works standards\20 pws revision copy\details\300_wastewater\wastewater cad\302.dwg, Plotted 11/21/2025 11:52 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



NOTES:
1. THIS DESIGN TO BE USED FOR ALL DROPS 2 FEET AND LESS.

PARTIAL TOP VIEW



SECTION A-A

IMPORTED SELECT (CRUSHED AGGREGATE)
BACKFILL COMPACTED TO 95% M.D.D. PER ASTM
D1557, OR C.D.F. AS REQUIRED.

**CITY OF
GRESHAM**

SHALLOW INSIDE DROP MANHOLE

PWS VERSION: JAN 2026

DRAWN	AAD
REV. DATE	NOV 2025
APPR.	
DETAIL NO.	302

1" LETTERING FLAT FACED
RECESSED FLUSH

(2) TAPERED HOLES ON 16 1/2" B.C.
3/4" DIA. TOP 1" DIA. BOTTOM

3/4" LETTERING FLAT FACE
RECESSED FLUSH

1" LETTERING FLAT
FACE RECESSED FLUSH

1 7/16"

(1) OPEN
PICKHOLE

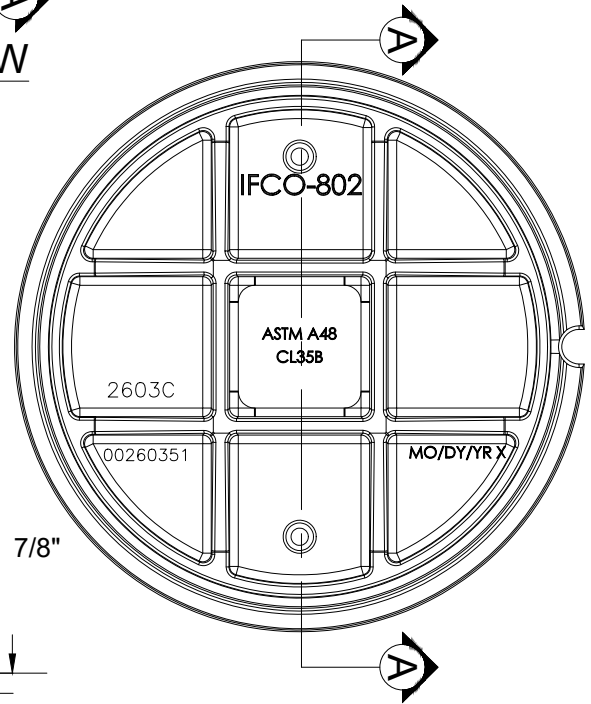
15/16"

PLAN VIEW

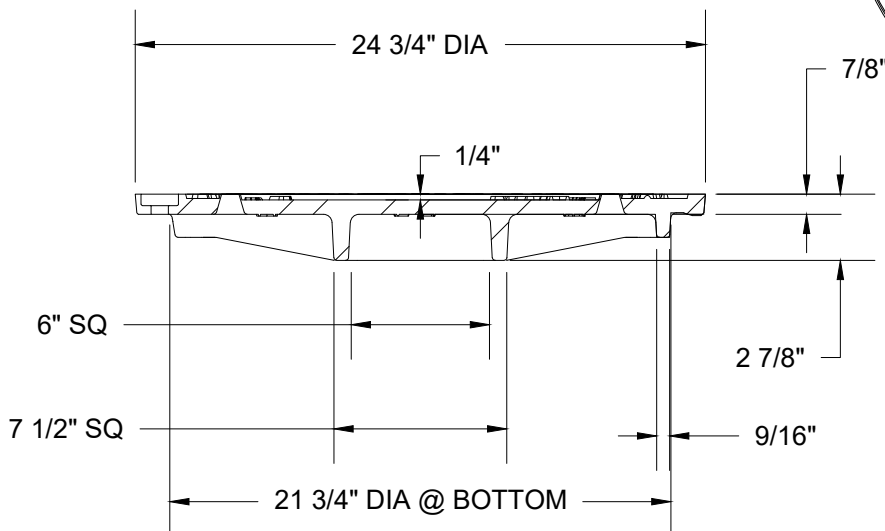
NOTES:

1. ALL MANHOLES LOCATED IN-ROAD
PAVEMENT SHALL USE THE STANDARD
MANHOLE COVER AS PRODUCED BY: EJ, OR
EQUAL

2. MATERIAL SHALL BE GREY IRON,
ASTM A-48, CLASS 35-B.
APPROXIMATE WT. = 134 lbs.



COVER BACK



SECTION A-A

**CITY OF
GRESHAM**

STANDARD WASTEWATER MANHOLE COVER

PWS VERSION: JAN 2026

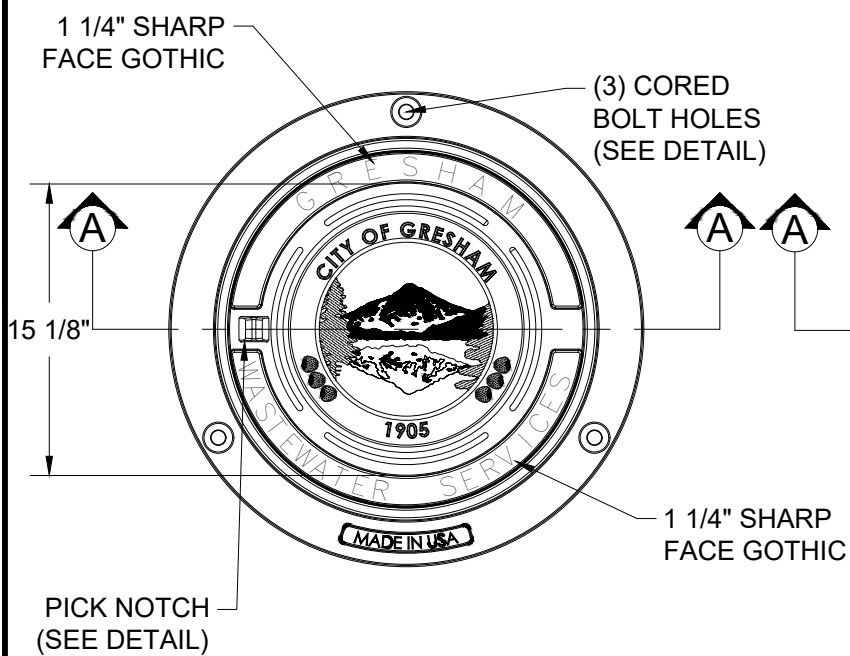
DRAWN AAD

REV. NOV 2025
DATE

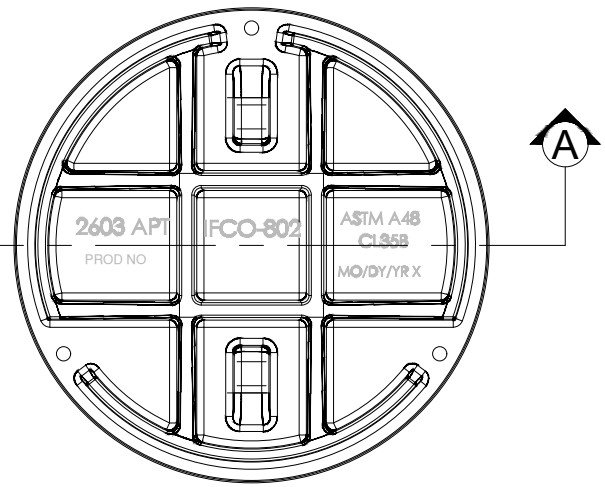
APPR. *[Signature]*

DETAIL NO. 303

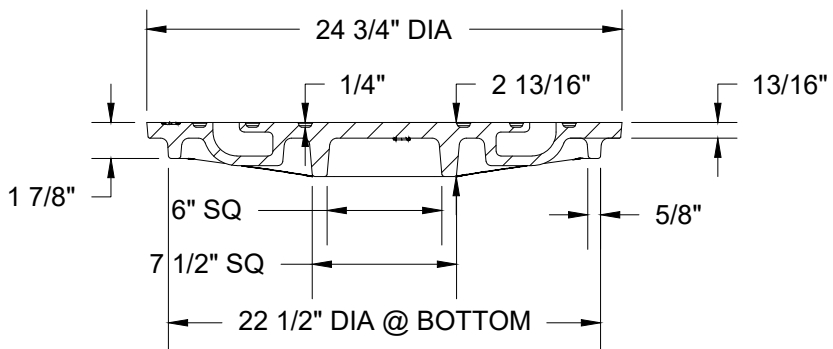
FILENAME: y:\inter-departmental\development engineering projects\public works standards\20 pws revision copy\details\300_wastewater copy\details\300_wastewater copy\304.dwg, Plotted 11/21/2025 11:53 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



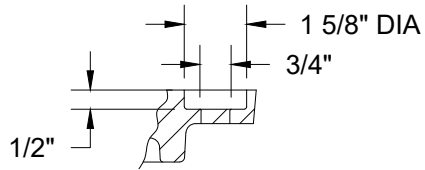
PLAN



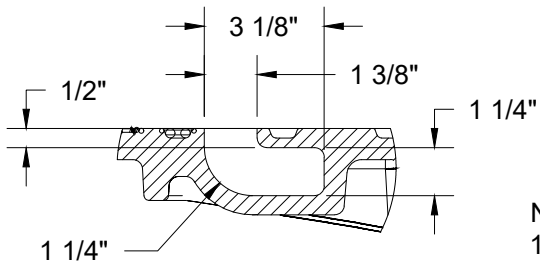
BOTTOM VIEW



SECTION A-A



BOLT HOLE



PICK NOTCH

- NOTES:
1. MATERIAL SHALL BE GRAY IRON, ASTM A-48, CLASS 35-B. APPROXIMATE WT.= 134 LBS. MANHOLE COVER AS PRODUCED BY: EJ OR EQUAL

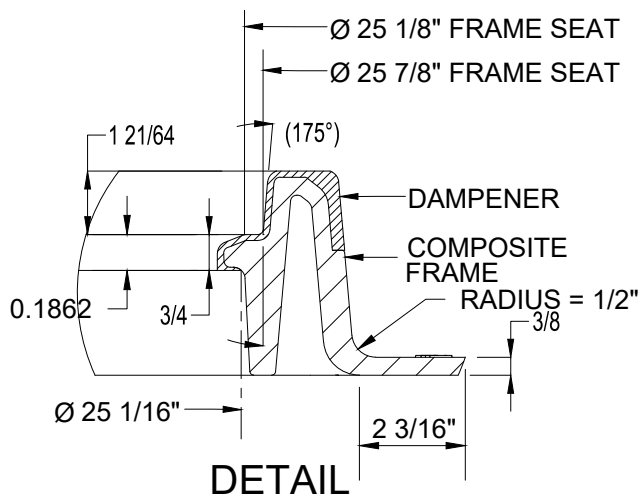
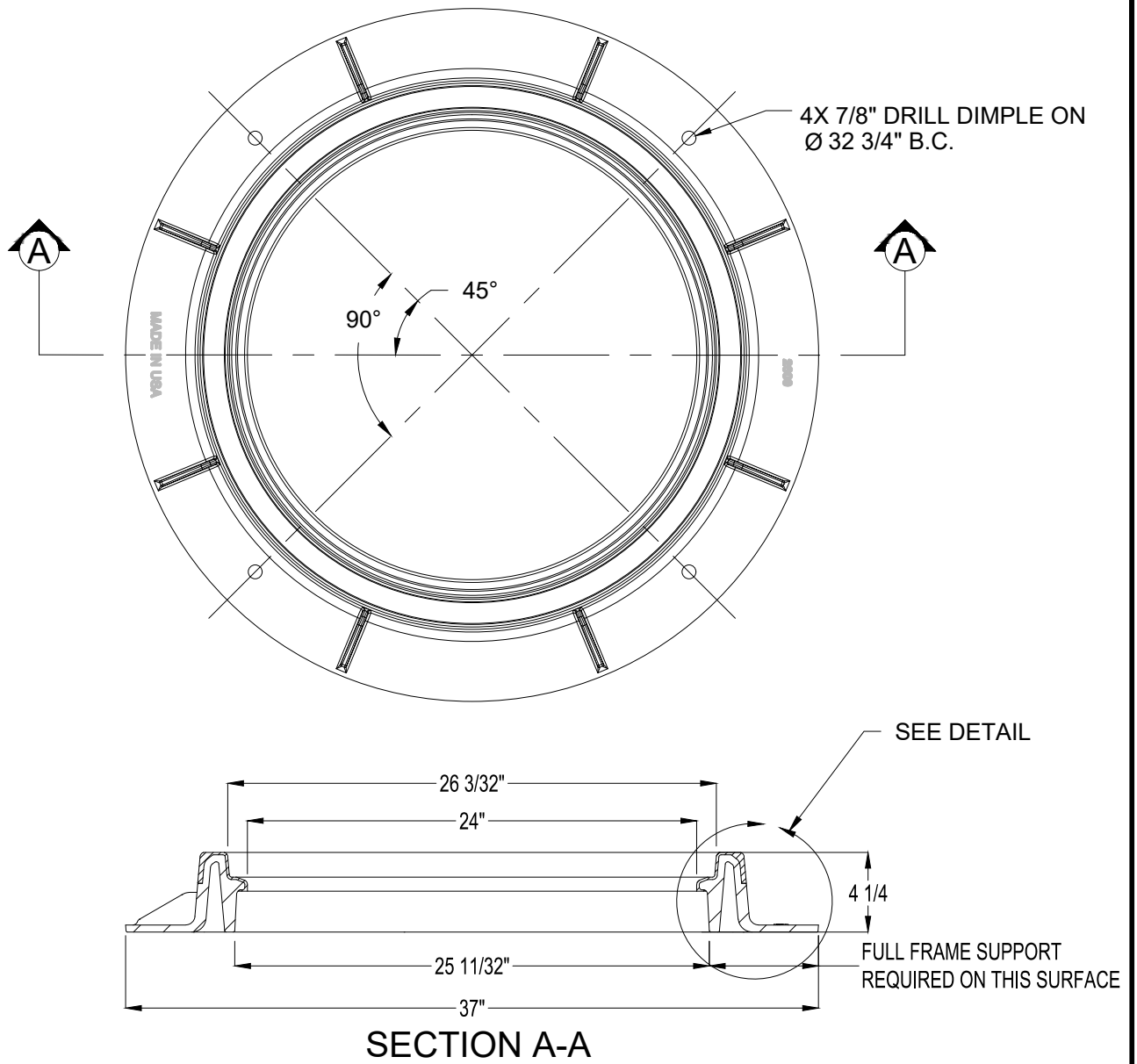


**WASTEWATER TAMPERPROOF AND
WATERTIGHT MANHOLE COVER**

PWS VERSION: JAN 2026

DRAWN	AAD
REV. DATE	NOV 2025
APPR.	
DETAIL NO.	304

FILENAME: y:\inter-departmental\development\engineering projects\public works standards\20 pws revision copy\details\300_wastewater copy\details\300_wastewater cad\305.dwg, Plotted 11/21/2025 11:53 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



NOTES:

1. MATERIAL TO BE EJ 2600 DUROSTREET COM260210, LOAD RATING H25 (50,00 LBS), OR EQUAL ESTIMATED WEIGHT 42 LBS.
2. TO BE USED ONLY WHEN PAIRED WITH COMPOSITE MANHOLE COVER STD DETAIL 306

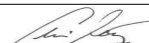
**CITY OF
GRESHAM**

OFF-ROAD ELEVATED MANHOLE FRAME

PWS VERSION: JAN 2026

DRAWN **AAD**

REV. **NOV 2025**
DATE

APPR. 

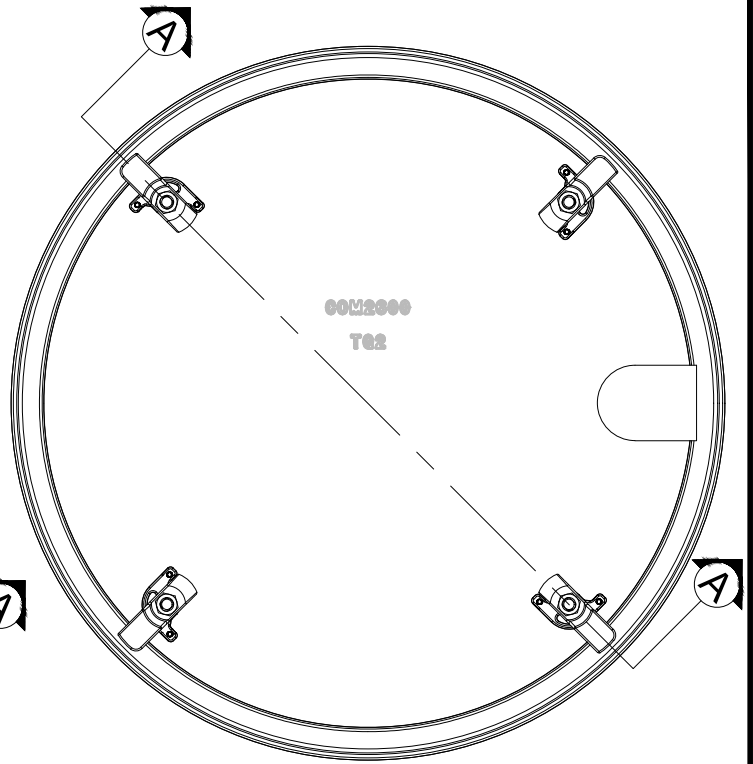
DETAIL NO. **305**

FILENAME: y:\inter-departmental\development engineering projects\public works standards\20 pws revision copy\details\300_wastewater\wastewater cad\306.dwg, Plotted 11/21/2025 11:53 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)

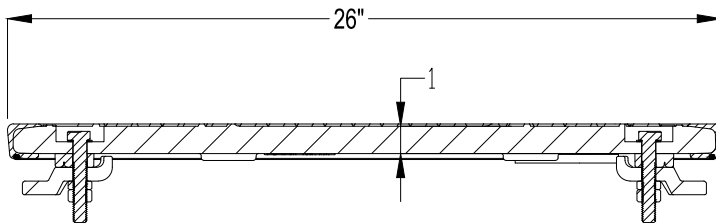


1/4 TURN PENTA HEAD LATCH (SEE DETAIL)

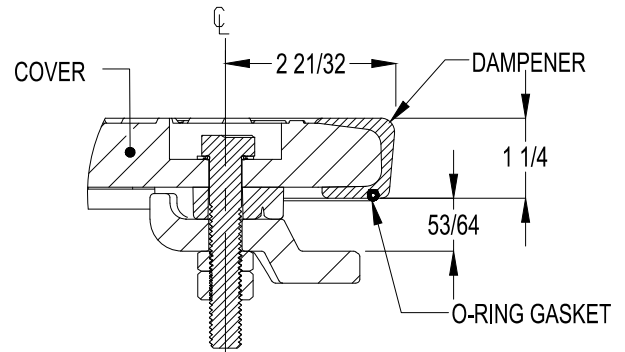
PLAN



BOTTOM



SECTION A-A



PENTA HEAD DETAIL

NOTES:

1. MATERIAL TO BE EJ 2600 DUROSTREET COM260210, LOAD RATING H25 (50,00 LBS), ESTIMATED WEIGHT 39 LBS, OR EQUAL
2. TO BE USED ONLY WHEN PAIRED WITH COMPOSITE MANHOLE FRAME STD DETAIL 305

**CITY OF
GRESHAM**

**OFF-ROAD ELEVATED WATERTIGHT MANHOLE
COVER**

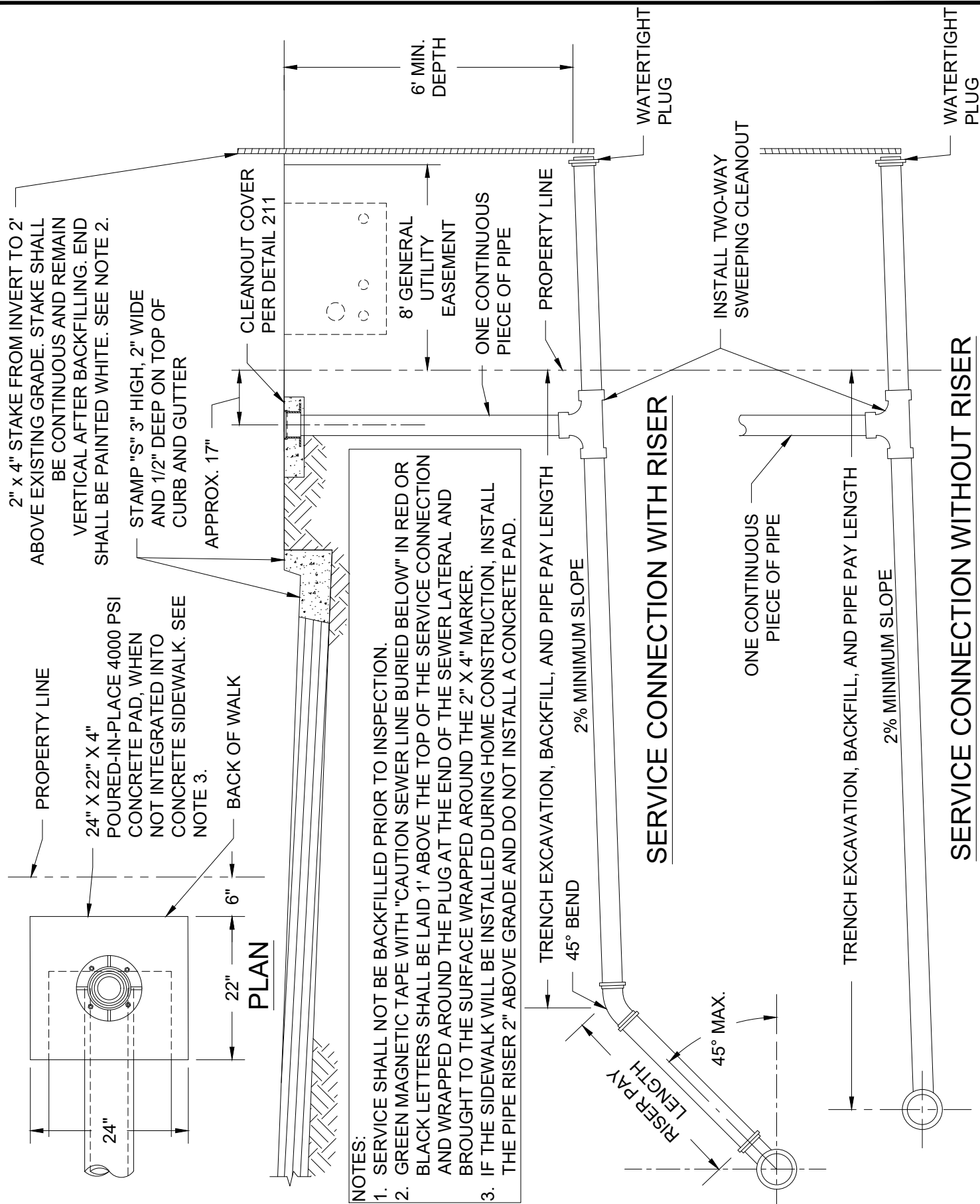
PWS VERSION: JAN 2026

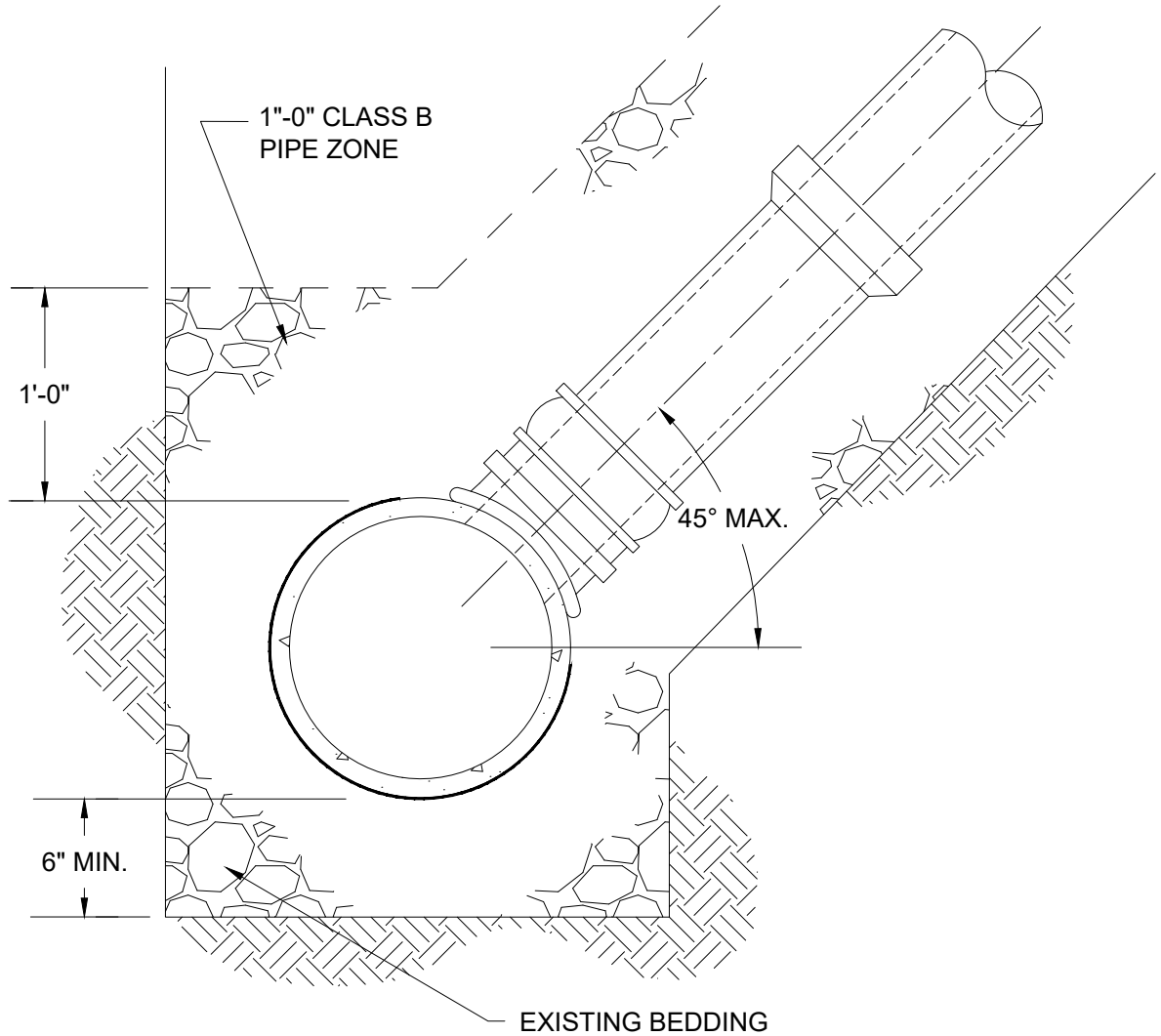
DRAWN **AAD**

REV. **NOV 2025**
DATE

APPR. *[Signature]*

DETAIL NO. **306**





NOTES:

1. THE TAP SHALL NOT BE MADE EXCEPT IN THE PRESENCE OF A CITY INSPECTOR; NOR SHALL ANY CONNECTION BE MADE WITHOUT CITY APPROVAL.
2. A "SEALTITE SADDLE" OR "INSERT-A-TEE" (OR APPROVED EQUAL) TYPE CONNECTION SHALL BE USED AND SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. FUSION SADDLES WILL BE USED FOR HDPE PIPE CONNECTIONS.
3. THE HOLE MADE IN MAIN SHALL BE CORED.
4. CENTERLINE OF TAP TO BE ABOVE SPRINGLINE.
5. 4" MAXIMUM HOLE FOR 8" MAIN UNLESS OTHERWISE APPROVED BY THE ENGINEER.

**CITY OF
GRESHAM**

**TAP IN EXISTING MAIN FOR SANITARY
SEWER LATERAL**

PWS VERSION: JAN 2026

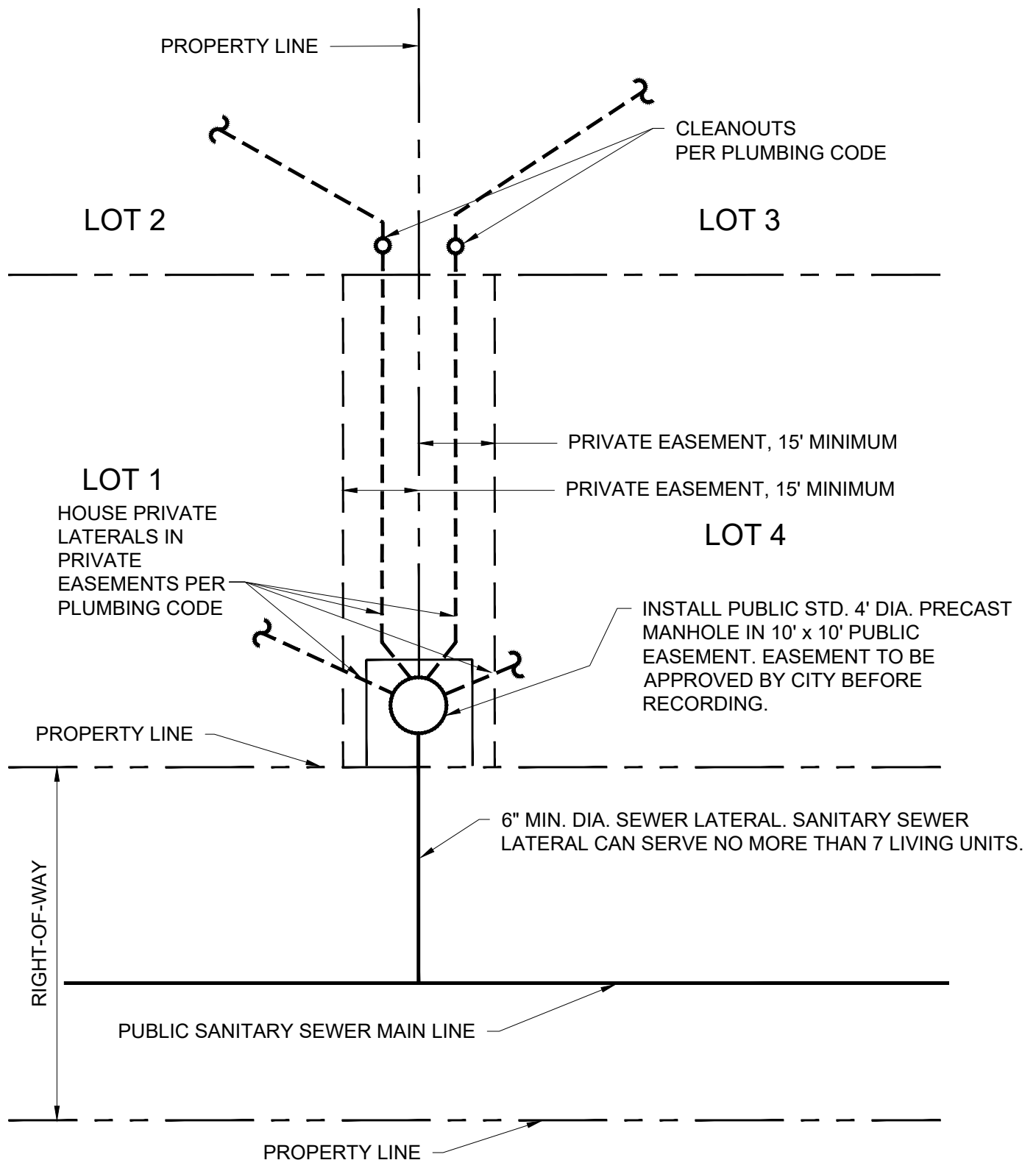
DRAWN **KCK**

REV. **JAN 2019**
DATE

APPR. 

DETAIL NO. **308**

FILENAME: y:\inter-departmental\development engineering projects\public works standards\20 pws revision copy\details\300_wastewater\wastewater cad\309.dwg, Plotted 11/21/2025 11:53 AM, By: Anthony Dollowitch, ANSI FULL BLEED A (8.50 X 11.00 INCHES)



NOTES:

1. CONNECTION PLAN FOR 4 LOT COMMON LATERAL (3 LOTS SIMILAR).
2. EASEMENTS TO BE RECORDED & A COPY THEREOF SUBMITTED TO CITY PRIOR TO CONSTRUCTION.
3. PRIVATE EASMENT ARRANGMENT SHOWN TO BE USED ONLY WHEN SEWER IN PUBLIC ROAD RIGHT-OF-WAY CANNOT BE USED AS DETERMINED BY THE ENGINEER

CITY OF
GRESHAM

WASTEWATER CONNECTION, 3 OR 4 LOTS
WITH PRIVATE EASEMENTS

PWS VERSION: JAN 2026

DRAWN AAD

REV. DATE OCT 2025

APPR.

DETAIL NO. 309

CITY OF
GRESHAM

JOINT DETAIL
REINFORCED CONCRETE (T=LESS THAN 4 5/8")

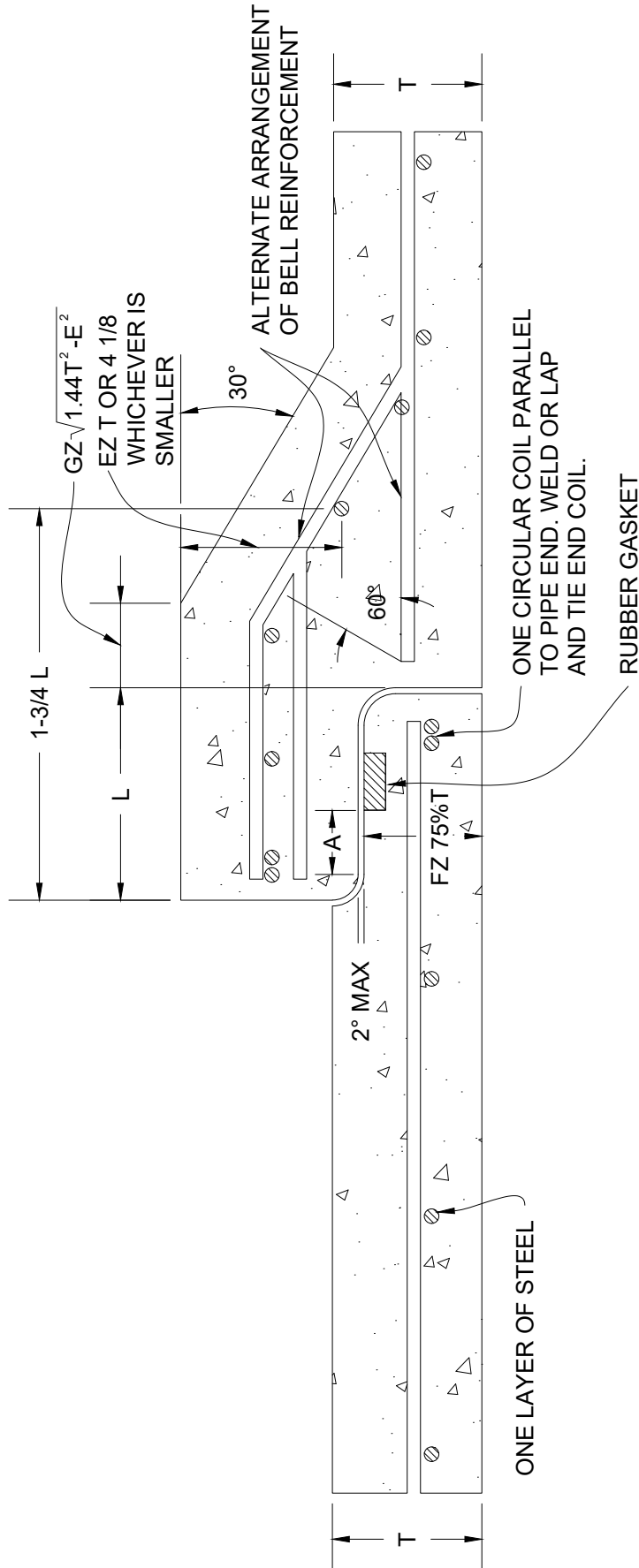
PWS VERSION: JAN 2026

DRAWN KRB

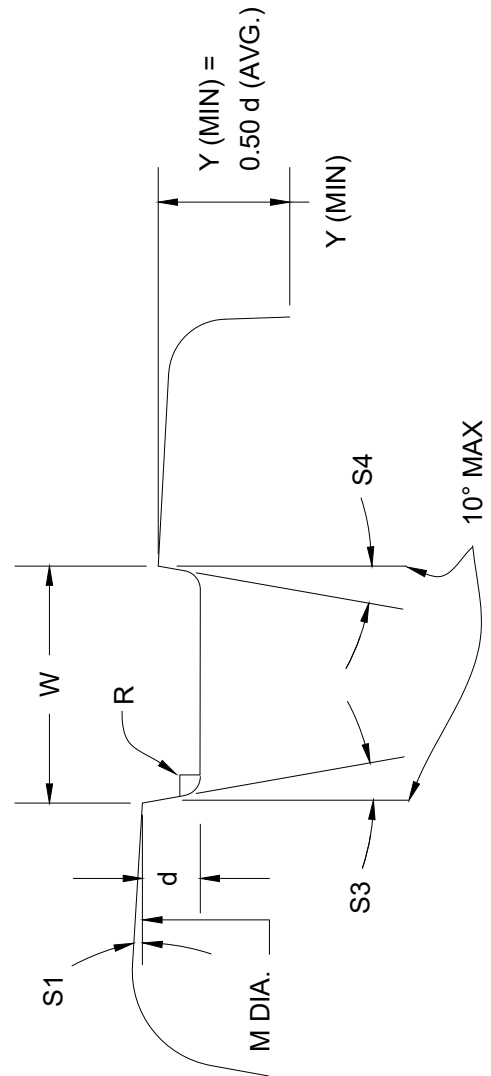
REV. DATE JAN 2019

APPR.

DETAIL NO. 310

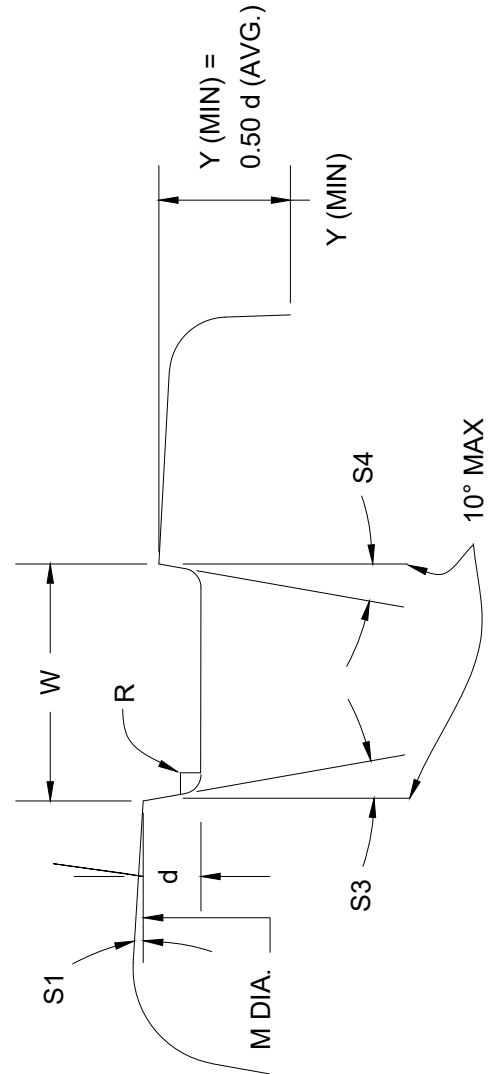
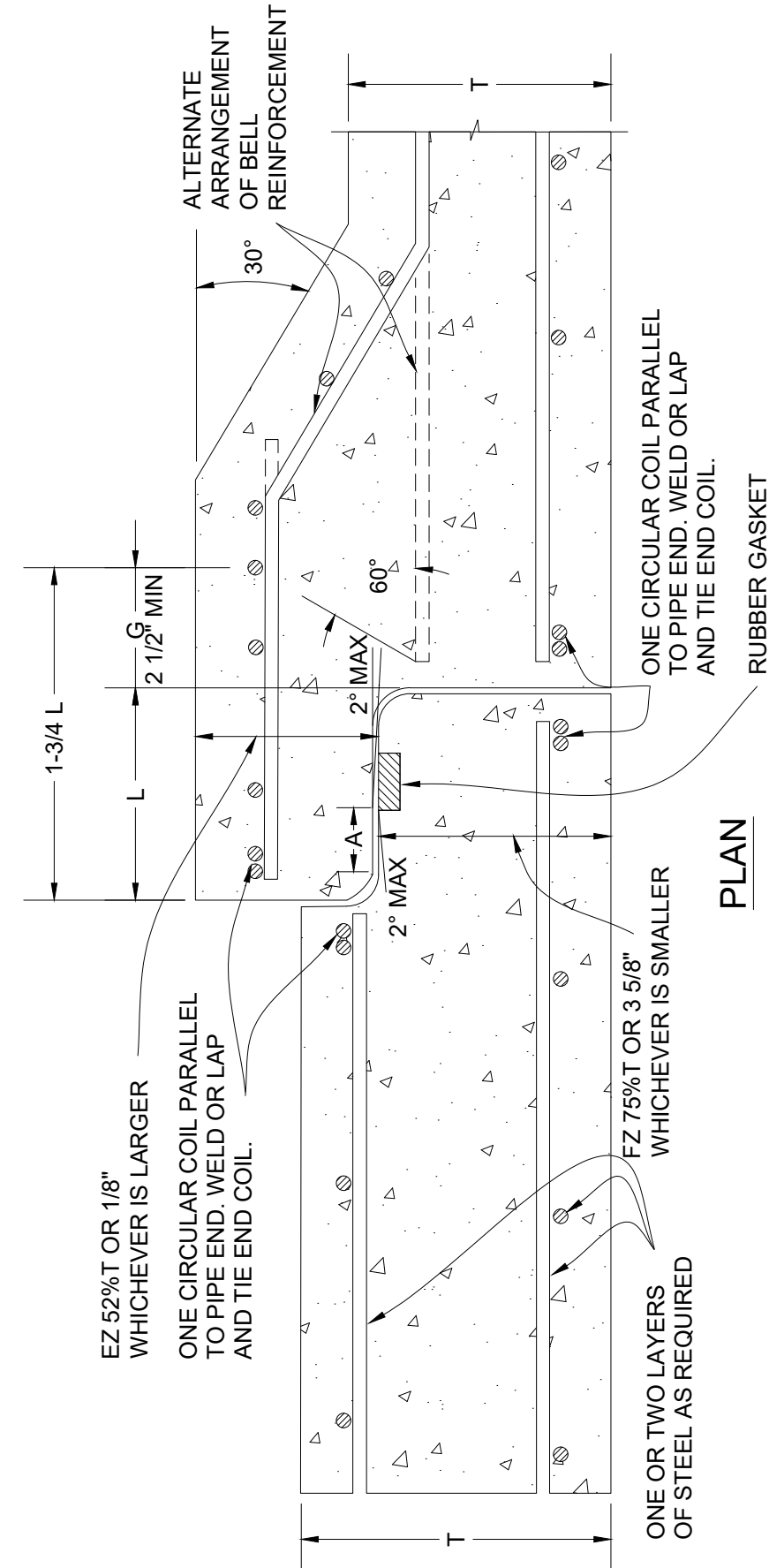


PLAN



SIGOT GROOVE DETAIL

NOTE:
SEE STANDARD DETAIL 312 FOR
VARIABLE DIMENSIONS.



SPIGOT GROOVE DETAIL

NOTE:
SEE STANDARD DETAIL 312 FOR
VARIABLE DIMENSIONS.

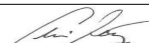
CITY OF
GRESHAM

JOINT DETAIL
REINFORCED CONCRETE (T=4 5/8" AND
LARGER)

PWS VERSION: JAN 2026

DRAWN KRB

REV. DATE JAN 2019

APPR. 

DETAIL NO. 311

[illegible][illegible]

Δ DEG.	A	A ₁	B	C	E	F	T	L	X	Y
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0

Figure 1 consists of two schematic diagrams, (a) and (b), illustrating the geometry of the test specimens. Both diagrams show a cross-section of a pipe with a central groove. Diagram (a) shows a specimen with a longitudinal groove. The dimensions labeled are: L (total length), G (groove length), B (groove width), A (groove depth), K (fillet radius), F (fillet thickness), d (fillet diameter), H (fillet height), and T (total thickness). The diameters are labeled as M D.I.A. (mean diameter) and N D.I.A. (nominal diameter). The groove width is specified as 1/8 inch. Diagram (b) shows a specimen with a transverse groove. The dimensions labeled are: A (groove width), C (groove depth), B (groove width), H (fillet height), and T (total thickness). The diameters are labeled as M D.I.A. (mean diameter) and N D.I.A. (nominal diameter). The groove width is specified as 1/8 inch. Both diagrams include labels for 'PIPE' and 'GROOVE'.

SPIGOT GROOVE DETAIL

JOINT TYPE R-3

NOTES:

1. CONTRACTOR SHALL SUBMIT ALL INFORMATION REQUIRED BY THE TABLES, UNLESS DIMENSION SHOWN IN THE TABLES IS NOT APPLICABLE TO THE SPECIFIC TYPE OF PIPE JOINT FURNISHED, IN WHICH CASE IT SHALL BE LEFT BLANK.
2. ALL DIMENSIONS SHALL BE GIVEN IN INCHES, UNLESS OTHERWISE NOTED, AND ARE FOR BELL AND SPIGOT IN CONCENTRIC POSITION.
3. JOINT CLEARANCE DIMENSION K IS AT CLOSEST POINT WITHIN DISTANCE A.

$$\text{GAP}_{\text{MIN}} = B - A - W/2 - H_{\text{MAX}} =$$

$$\text{GAP}_{\text{MAX}} = B - W/2 - H_{\text{MAX}} =$$