

SEE HRSD SANITARY SEWER MANHOLE
FRAME AND COVER DETAIL. FRAME AND
COVER DETAIL TO BE SPECIFIED BY
THE HRSD ENGINEER

PRECAST CONCRETE
ADJUSTMENT RING (TYP).
RINGS TO BE COATED AND SEALED
SMOOTH ON ALL INSIDE SURFACES,
3/8" THICK (MIN.) WITH HYDRAULIC
CEMENT HIGH STRENGTH GROUT.

MANHOLE CASTING AND ADJUSTMENT RINGS
TO BE SET & EMBEDDED IN BUTYL JOINT
MATERIAL AND CAPPED WITH HYDRAULIC
CEMENT GROUT OVER FRAME FLANGE,
ADJUSTMENT RINGS AND SECTION.

GROUT JOINT INSIDE AND
OUT AFTER INSTALLATION
W/ HYDRAULIC CEMENT GROUT.

25'-0" MAX.

MULTIPLE RISERS (VARIOUS SIZES) ECCENTRIC TAPER UNIT, 12" MAX.
2' MIN. - 4' MAX. (NO LATERAL ENTRY ZONE)

BASE UNIT
SEE CHART 1
6' MAX. (PER RISER)

SEE CHART 1

12"

4" MIN.

12" MIN.

FLEXIBLE BOOT
CONNECTION

MATCH CROWNS OF THE
TRIBUTARY SEWERS WITH THE
CROWN OF THE MAIN SEWER

SEE HRSD DETAIL #26
SANITARY SEWER MANHOLE
INVERT SHAPING DETAIL.

SUPPORT PIPE AND
MANHOLE ON 6" MIN. OF
COMPACTED #57 STONE
(GREATER DEPTHS MAY
BE REQUIRED IN POOR
SOILS)

DEPTH OF MAIN CHANNEL SHALL BE FROM
MAIN SEWER PIPE INVERT TO MAIN SEWER
PIPE CROWN. BENCH SHALL BE SLOPED TO
PREVENT ACCUMULATION OF SOLIDS.

SEE DRAWING #200B FOR NOTES.

NOT TO SCALE



STANDARD PRECAST CONCRETE

MANHOLE W/EXTENDED MONOLITHIC BASE

DRAWING NO.
200A

SHEET
1 OF 2

DATE
7/2025

CHART 1

PIPE SIZE	MANHOLE DIAMETER	BASE UNIT HEIGHT	WALL THICKNESS—MIN.
< OR = 24"	48"	24"—48"	5"
27"—36"	60"	60" (MIN.)	6"
42"	72"	72" (MIN.)	7"
48"	72"	48" (MIN.)	7"

NOTES:

1. PRECAST CONCRETE MANHOLE TO BE IN COMPLIANCE WITH ASTM C-478.
2. PROVIDE A MAXIMUM OF TWO LIFT HOLES PER SECTION. PLUG LIFT HOLES WATERTIGHT WITH RUBBER PLUGS AND GROUT AFTER INSTALLATION.
3. REGARDLESS OF PIPE SIZE, INSIDE DIAMETER OF MANHOLE SHALL BE 60" (MIN.) WHEN MANHOLE DEPTH IS 12' OR GREATER. 60" DIAMETER SHALL BE CONTINUOUS UP TO CONE SECTION.
4. MAXIMUM OF FOUR LATERALS PER MANHOLE.
5. ALL MANHOLES SHALL RECEIVE CONSHIELD ADDITIVE OR APPROVED EQUAL DURING CASTING.
6. CONCRETE USED TO FORM THE BENCH SHALL RECEIVE THE CONSHIED ADDITIVE, OR APPROVED EQUAL.
7. COAT EXTERIOR OF MANHOLE IN ACCORDANCE WITH THE HRSD COATINGS MANUAL, CURRENT REVISION, COATING SYSTEM E-2-C. COATING SHALL BE FIELD APPLIED.



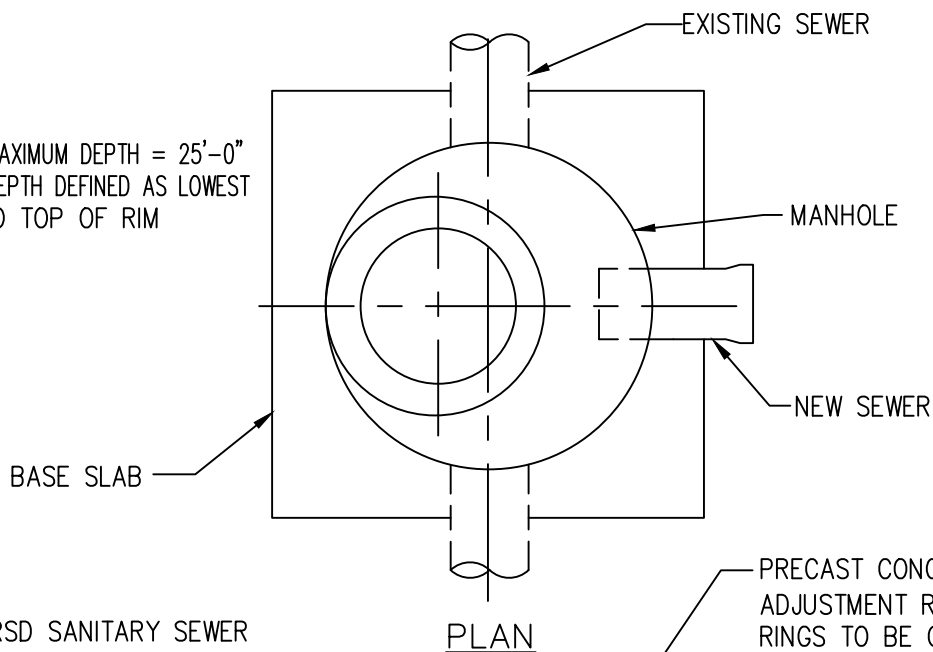
STANDARD PRECAST CONCRETE

MANHOLE W/EXTENDED MONOLITHIC BASE

DRAWING NO. 200B
SHEET 2 OF 2
DATE 7/2025

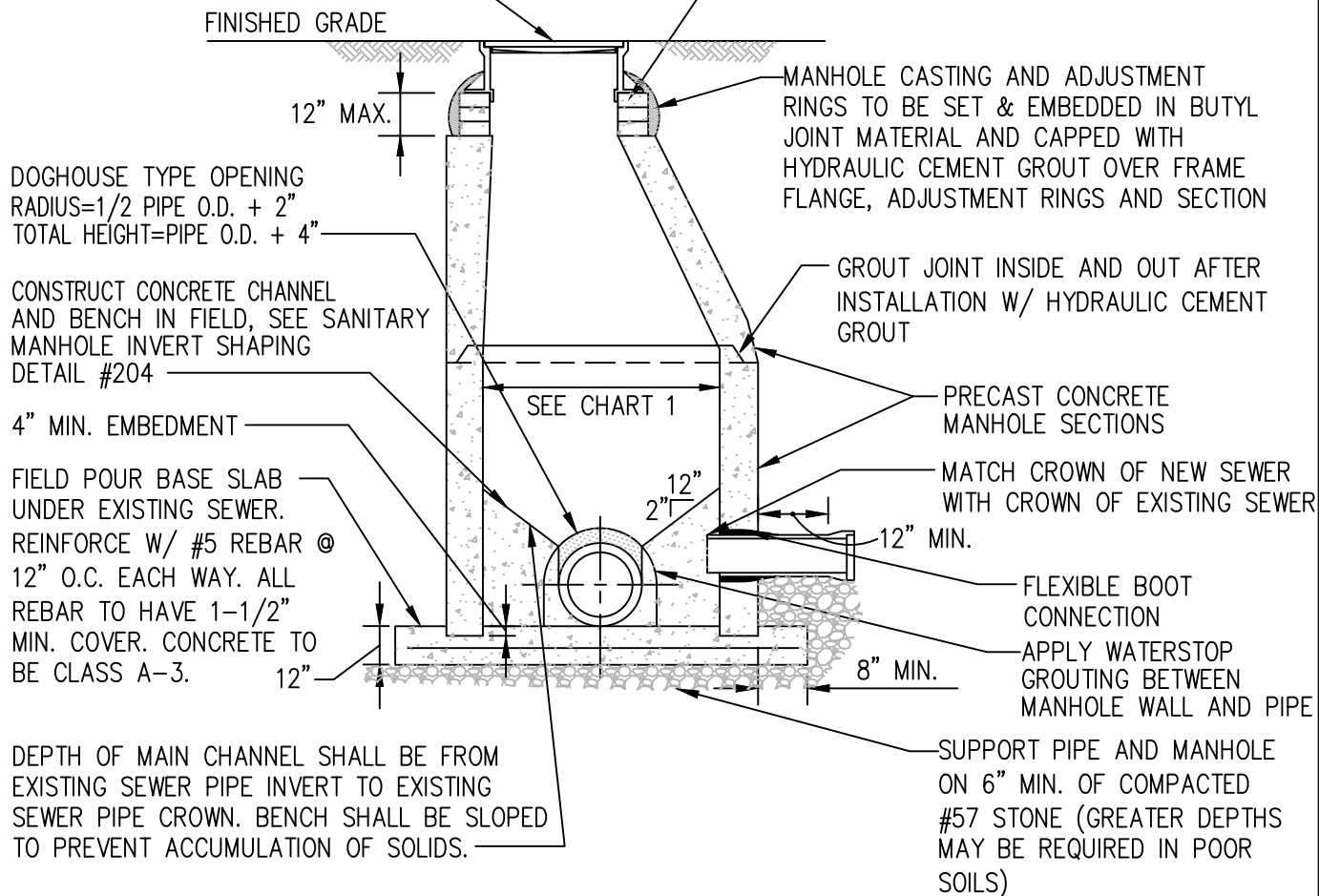
NOTE:

MANHOLE MAXIMUM DEPTH = 25'-0"
MANHOLE DEPTH DEFINED AS LOWEST
INVERT TO TOP OF RIM



SEE HRSD SANITARY SEWER
MANHOLE FRAME AND COVER DETAIL.
FRAME AND COVER TYPE TO BE
SPECIFIED BY HRSD ENGINEER.

PRECAST CONCRETE
ADJUSTMENT RING (TYP).
RINGS TO BE COATED AND SEALED
SMOOTH ON ALL INSIDE SURFACES,
3/8" THICK (MIN.) WITH HYDRAULIC
CEMENT HIGH STRENGTH GROUT.



SEE DETAIL #202B, SHEET 2 OF 2 FOR NOTES.

NOT TO SCALE



STANDARD DESIGN DETAIL

SANITARY SEWER STRADDLE MANHOLE

DRAWING NO.
202A

SHEET
1 OF 2

DATE
7/2025

CHART 1

PIPE SIZE	MANHOLE DIAMETER	BASE UNIT HEIGHT	WALL THICKNESS—MIN.
< OR = 24"	48"	24"—48"	5"
27"—36"	60"	60" (MIN.)	6"
42"	72"	72" (MIN.)	7"
48"	72"	48" (MIN.)	7"

NOTES:

1. PRECAST CONCRETE MANHOLE TO BE IN COMPLIANCE WITH ASTM C-478.
2. PROVIDE A MAXIMUM OF TWO LIFT HOLES PER SECTION. PLUG LIFT HOLES WATERTIGHT WITH RUBBER PLUGS AND GROUT AFTER INSTALLATION.
3. REGARDLESS OF PIPE SIZE, INSIDE DIAMETER OF MANHOLE SHALL BE 60" (MIN.) WHEN MANHOLE DEPTH IS 12' OR GREATER. 60" DIAMETER SHALL BE CONTINUOUS UP TO CONE SECTION.
4. MAXIMUM OF FOUR LATERALS PER MANHOLE.
5. ALL MANHOLES SHALL RECEIVE CONSHIELD ADDITIVE OR APPROVED EQUAL DURING CASTING.
6. COAT EXTERIOR OF MANHOLE IN ACCORDANCE WITH HRSD COATINGS MANUAL, CURRENT REVISION, COATING SYSTEM E-2-C. COATING SHALL BE FIELD APPLIED.
7. CONCRETE USED TO FORM THE BENCH SHALL RECEIVE THE CONSHIELD ADDITIVE, OR APPROVED EQUAL.



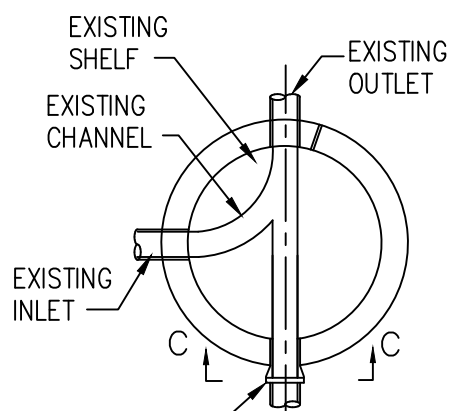
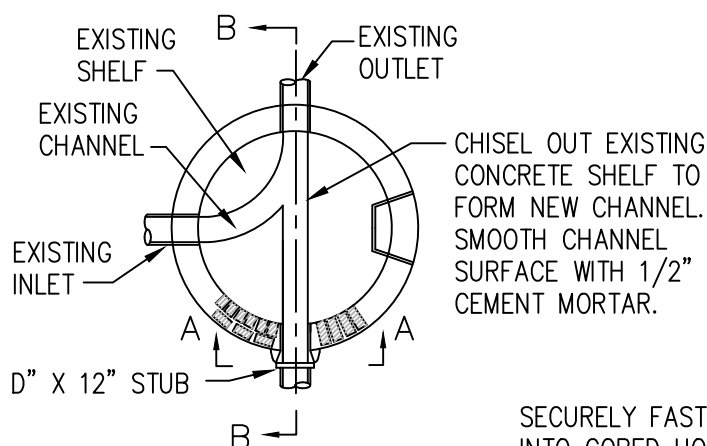
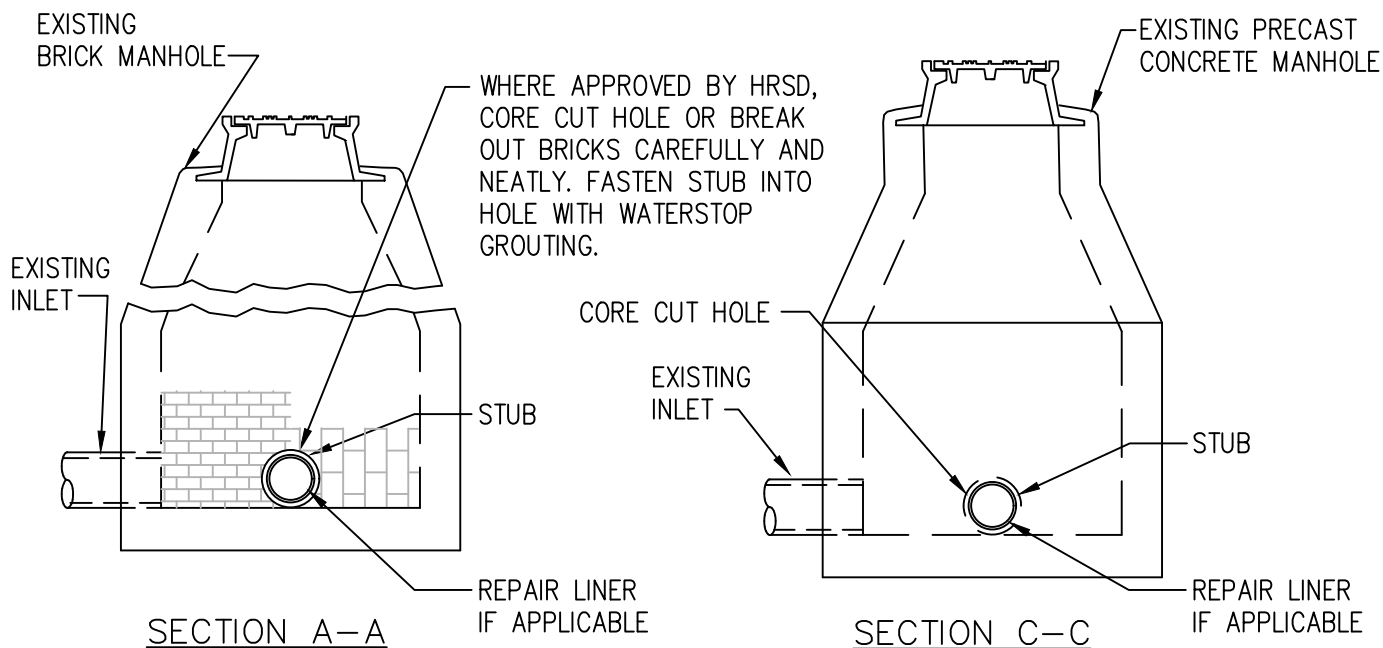
STANDARD DESIGN DETAIL

SANITARY SEWER STRADDLE MANHOLE

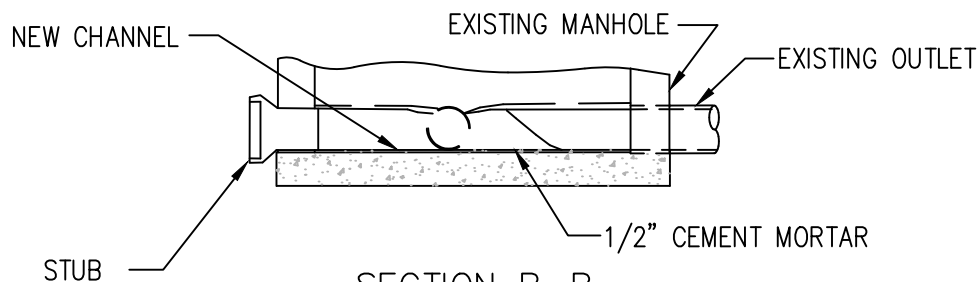
DRAWING NO.
202B

SHEET
2 OF 2

DATE
7/2025



SECURELY FASTEN STUB INTO CORED HOLE WITH FLEXIBLE BOOT CONNECTION



NOTES:
MATCH CROWN OF NEW PIPE STUB TO EXISTING PIPE CROWNS.

NOT TO SCALE



STANDARD DESIGN DETAIL

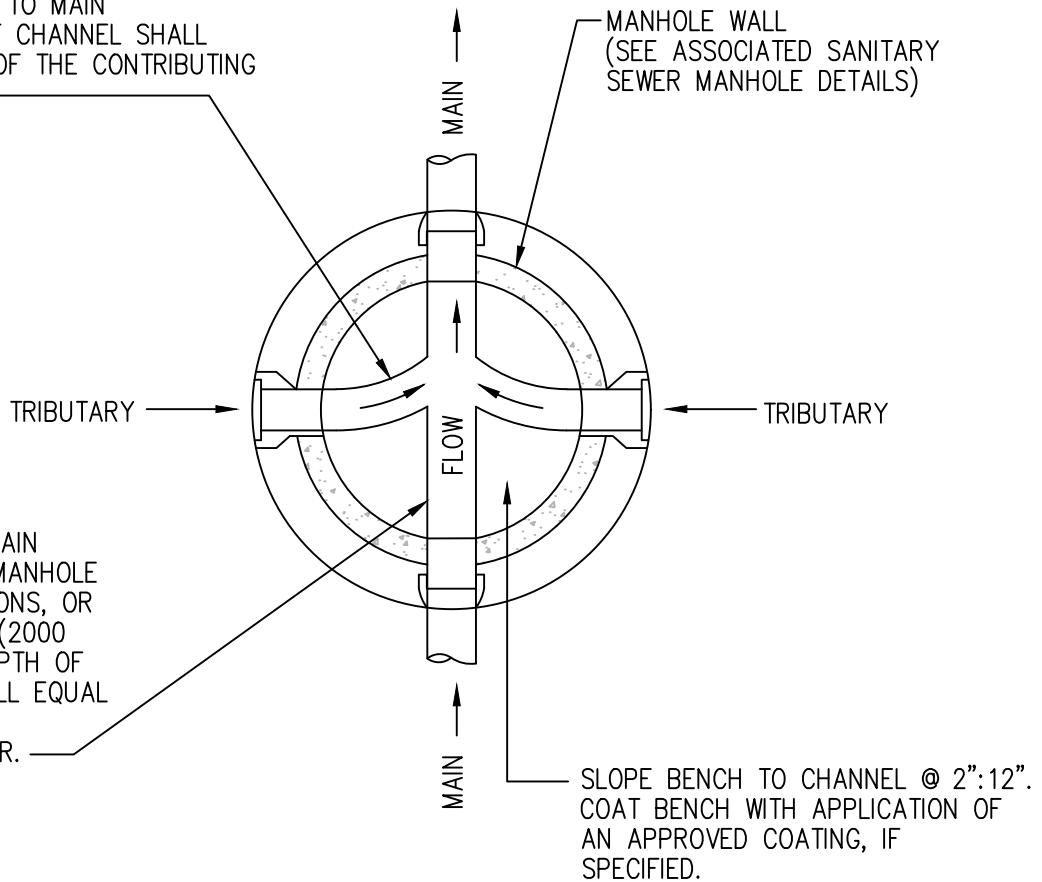
CONNECTION INTO EXISTING MANHOLES

DRAWING NO.
203

SHEET
1 OF 1

DATE
7/2025

FORM TRIBUTARY CHANNELS OF CONCRETE (2000 P.S.I.) (TROWEL FINISH) ON A CONTINUOUS CURVE TO MAIN CHANNEL. DEPTH OF CHANNEL SHALL EQUAL THE DEPTH OF THE CONTRIBUTING SEWER.



INVERT OF SEWER MAIN CARRIED THROUGH MANHOLE W/SPLIT PIPE SECTIONS, OR FORMED CONCRETE (2000 P.S.I.) CHANNEL. DEPTH OF MAIN CHANNEL SHALL EQUAL THE DEPTH OF THE CONTRIBUTING SEWER.

NOTES:

1. SPLIT PIPE ONLY ALLOWED IN STRADDLE MANHOLES.
2. CONCRETE USED TO FORM THE BENCH SHALL RECEIVE THE CONSHIELD ADDITIVE, OR APPROVED EQUAL.
3. BENCH SHALL BE FORMED TO ACCOMMODATE CCTV EQUIPMENT.

NOT TO SCALE



STANDARD DESIGN DETAIL

SEWER MANHOLE FLOW CHANNEL

DRAWING NO.
204

SHEET
1 OF 1

DATE
7/2025

INSIDE DROP
BOWL
(RELINER INC.)
OR APPROVED
EQUAL

STRAP - $\frac{3}{8}$ " X $1\frac{1}{2}$ "
FLAT BAR FABRICATED AND
INSTALLED TO SUPPORT
PIPE (MATERIAL SHALL BE
316 STAINLESS STEEL)
ATTACHED TO MANHOLE
WITH (2) $\frac{3}{8}$ "
316 STAINLESS STEEL
ANCHOR BOLTS, MIN 3"
EMBEDMENT. PROVIDE A
MINIMUM OF TWO STRAPS
(TOP AND BOTTOM) AND
ONE EVERY 4' IN BETWEEN

DROP PIPE MATERIAL
TO MATCH INCOMING
PIPE MATERIAL

90° BEND RESTING ON
RE-FORMED CHANNEL &
TURNED IN DIRECTION
OF EXIST. SEWER FLOW.
SEE HRSD INVERT
SHAPING DETAIL.

MATCH CROWNS OF
THE TRIBUTARY
SEWERS WITH THE
CROWN OF THE MAIN
SEWER

TRACE WIRE SHALL TERMINATE AT
MANHOLE WALL AT A MAX DISTANCE OF
24" BELOW MANHOLE FRAME AND
COVER. TRACER WIRE SHALL BE
ATTACHED TO MANHOLE WALL WITH 316
STAINLESS STEEL CLAMP AND BOLT

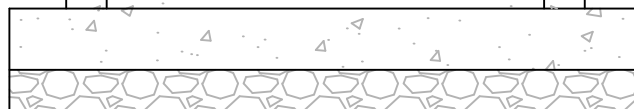
SEE HRSD DETAIL #203,
CONNECTION INTO
EXISTING MANHOLE

GRAVITY LINE

TRACER WIRE AWG-10
SOLID COPPER WIRE
W/POLYETHYLENE
INSULATION. SHALL
BE TAPED AT A
MAXIMUM INTERVAL
OF 4'.

MAX 4"Ø: GRAVITY
MAIN PIPE
MATERIAL SHALL BE
PVC C-900 OR
SDR26

MIN. 3'



NOTES:

1) THIS CONNECTION WILL ONLY BE CONSIDERED FOR
MANHOLES GREATER THAN 6' IN DEPTH FROM RIM
TO INVERT AND WILL ONLY BE APPROVED ON A
CASE BY CASE BASIS BY HRSD OPERATIONS.

2) NO LATERAL ENTRY SHALL BE ALLOWED WITHIN
THE TAPER UNIT OF THE MANHOLE.

3) IF LATERAL CONNECTION IS
GREATER THAN 6' IN DEPTH FROM
GRADE. MARKING TAPE SHALL BE
INSTALLED 3' BELOW GRADE.

NOT TO SCALE



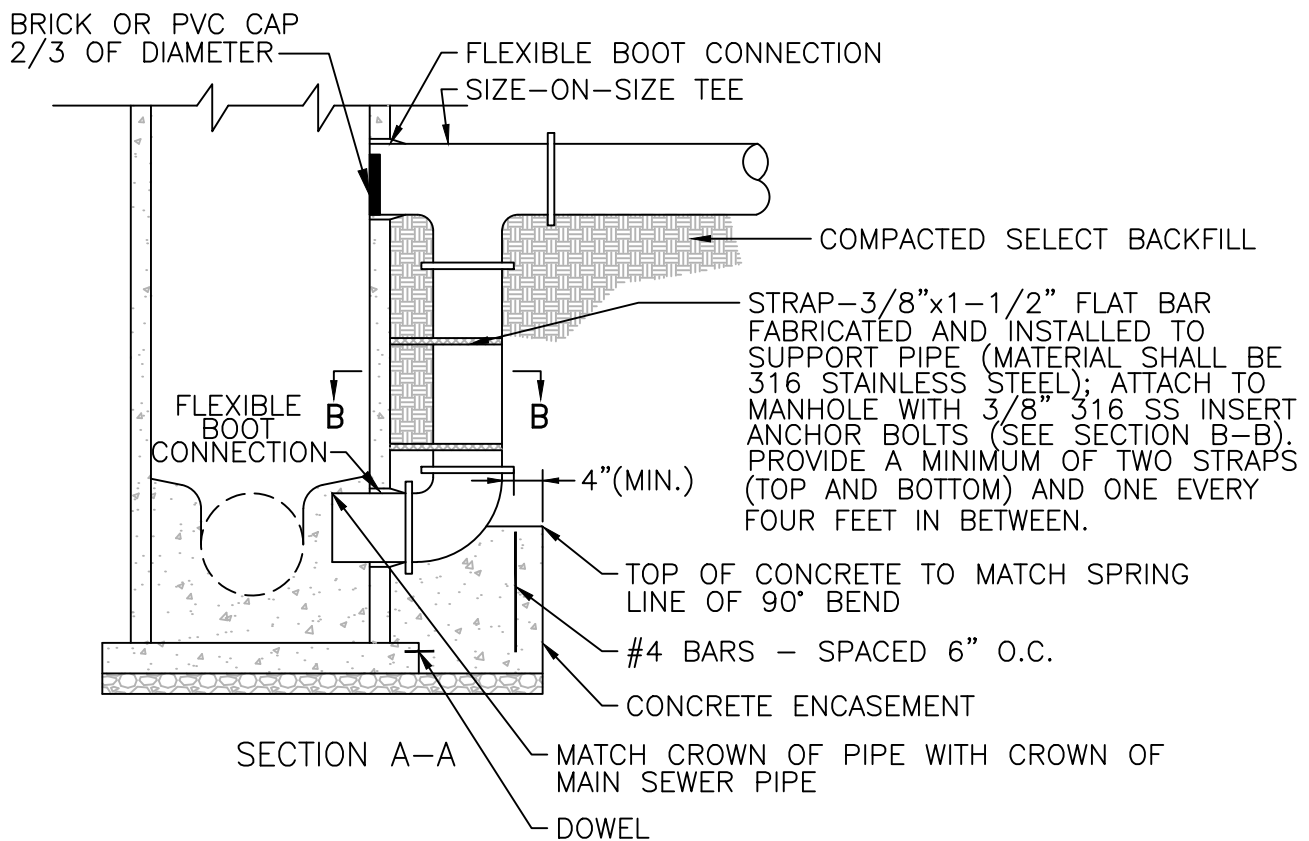
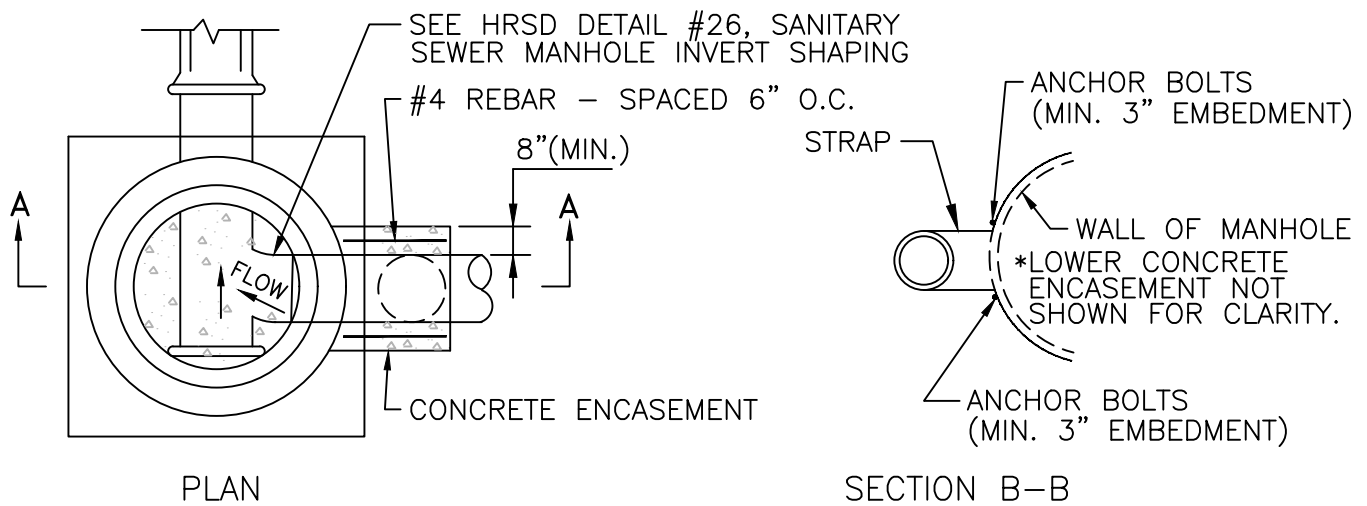
STANDARD DESIGN DETAIL

INTERIOR GRAVITY MAIN DROP
CONNECTION TO EXISTING MANHOLE

DRAWING NO.
205

SHEET
1 OF 1

DATE
7/2025



NOT TO SCALE



STANDARD DESIGN DETAIL

EXTERIOR DROP CONNECTION WITH
PRECAST CONCRETE MANHOLE

DRAWING NO.

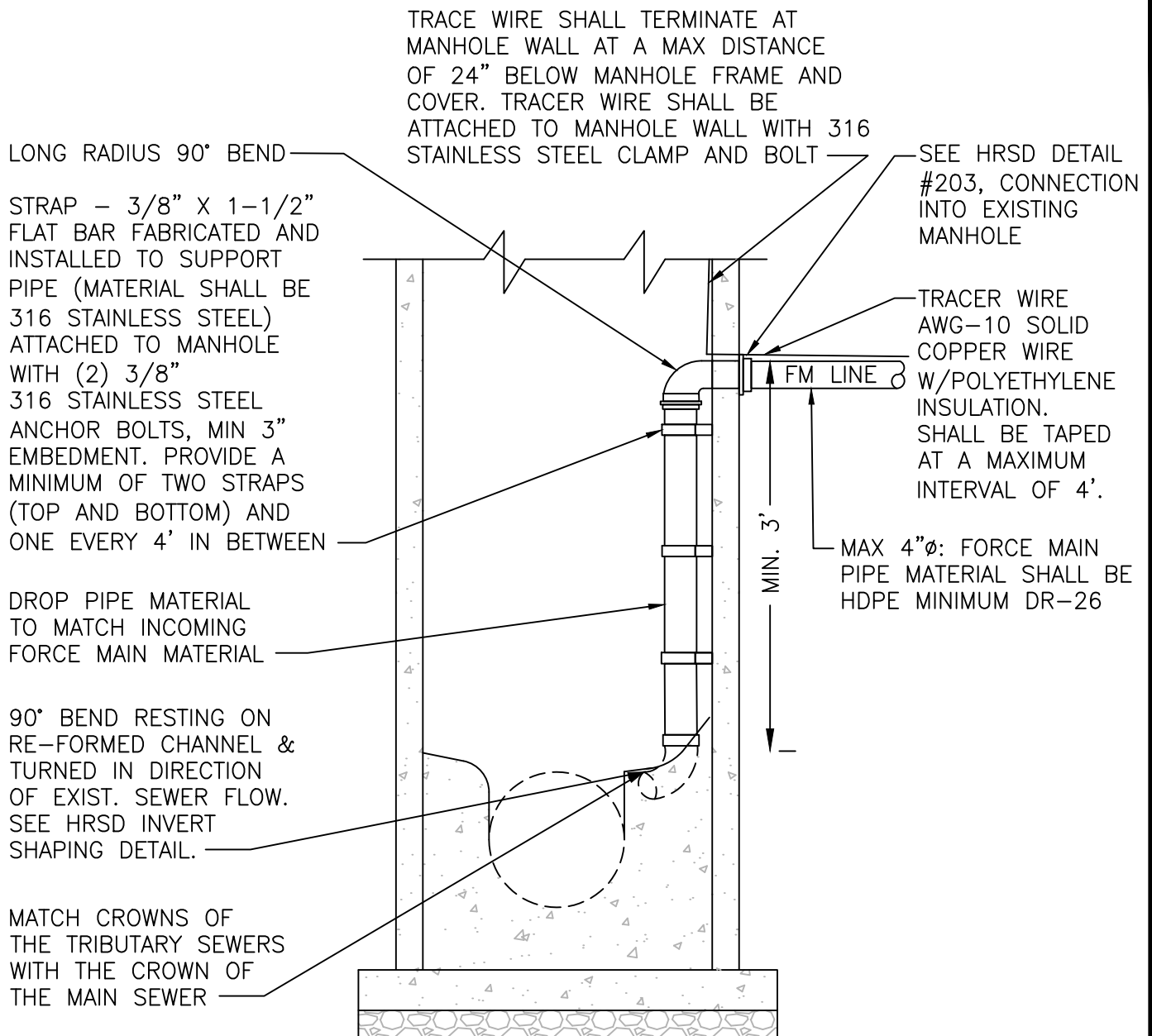
206

SHEET

1 OF 1

DATE

7/2025



NOTES:

- 1) THIS CONNECTION WILL ONLY BE CONSIDERED FOR MANHOLES GREATER THAN 6' IN DEPTH FROM RIM TO INVERT AND WILL ONLY BE APPROVED ON A CASE BY CASE BASIS BY HRSD OPERATIONS.
- 2) NO FORCE MAIN ENTRY SHALL BE ALLOWED WITHIN THE TAPER UNIT OF THE MANHOLE.
- 3) REFERENCE HRPDC SAXOPHONE CONNECTION DETAIL
- 4) ALL BURIED PIPING SHALL BE HDPE DR-17, IF FUSION IS REQUIRED IT SHALL BE BUTT FUSION WELDED
- 5) IF LATERAL CONNECTION IS GREATER THAN 6' IN DEPTH FROM GRADE. MARKING TAPE SHALL BE INSTALLED 3' BELOW GRADE.

NOT TO SCALE



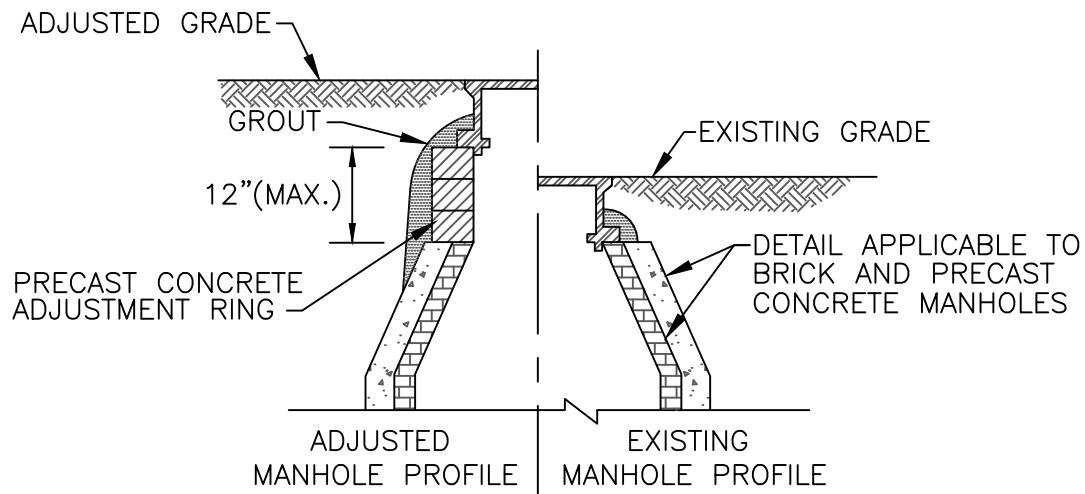
STANDARD DESIGN DETAIL

INTERIOR FORCE MAIN DROP CONNECTION TO EXISTING MANHOLE

DRAWING NO.
207

SHEET
1 OF 1

DATE
7/2025



NOTES:

1. PRECAST CONCRETE ADJUSTMENT RINGS SHALL BE USED TO RAISE THE MANHOLE FRAME FROM THE CONE SECTION. JACK UP RINGS BETWEEN THE FRAME AND COVER ARE NOT ACCEPTABLE.
2. GROUT MIX SHALL BE 1:3 CEMENT:SAND MORTAR. CAP EXTERIOR WITH GROUT OVER FRAME FLANGE, ADJUSTMENT RING(S), AND THE TOP 18" OF THE CONE SECTION. COAT INSIDE SURFACE OF THE ADJUSTMENT RINGS AND SEAL SMOOTH WITH 3/8" THICK GROUT.
3. IN LIEU OF PRECAST CONCRETE, ADJUSTMENT RINGS MAY BE COURSES OF HARD, SOUND, COMMON BRICK LAID RADIALLY AND FULLY SUPPORTING THE FRAME FLANGE. BRICK SHALL BE LAID WITH 1:3 CEMENT:SAND MORTAR WITH SHAVED JOINTS NOT TO EXCEED 3/8" THICKNESS. CAP WITH GROUT OVER FRAME FLANGE, ADJUSTMENT RING(S), AND THE TOP 18" OF THE CONE SECTION (AS SHOWN ABOVE).
4. TOTAL HEIGHT BETWEEN THE TOP OF THE CONE AND THE BOTTOM OF THE FRAME FLANGE SHALL NOT EXCEED 12" (OR 3 OF COURSES OF BRICK) AFTER THE ADJUSTMENT. IF, ON A PRECAST MANHOLE, THE TOTAL HEIGHT IS >12" BEFORE THE ADJUSTMENT, OR IF RAISING THE TOTAL HEIGHT TO 12" PROVIDES INSUFFICIENT ADJUSTMENT, INSERT AN ADDITIONAL PRECAST CONCRETE STANDARD MANHOLE SECTION BETWEEN THE CONE SECTION AND THE UPPER MOST BARREL SECTION. THE NEW SECTION SHALL HAVE RECEIVED THE CONSHIELD ADDITIVE DURING CASTING. IF, ON A BRICK MANHOLE, THE TOTAL HEIGHT IS >12" BEFORE THE ADJUSTMENT, OR IF RAISING THE TOTAL HEIGHT TO 12" PROVIDES INSUFFICIENT ADJUSTMENT, CONTACT THE HRSD ENGINEER FOR DIRECTION.
5. THE EXISTING BARREL SECTION(S), FOUNDATION, FOOT PAD, AND MANHOLE PIPES SHALL NOT BE DISTURBED.
6. MANHOLES TO BE LOWERED MAY BE LOWERED BY REMOVING EXISTING ADJUSTMENT RINGS. IF ADJUSTMENT RINGS ARE NOT PRESENT BETWEEN THE FRAME AND THE CONE SECTION, OR IF THEIR REMOVAL PROVIDES INSUFFICIENT ADJUSTMENT, CONTACT THE HRSD ENGINEER.

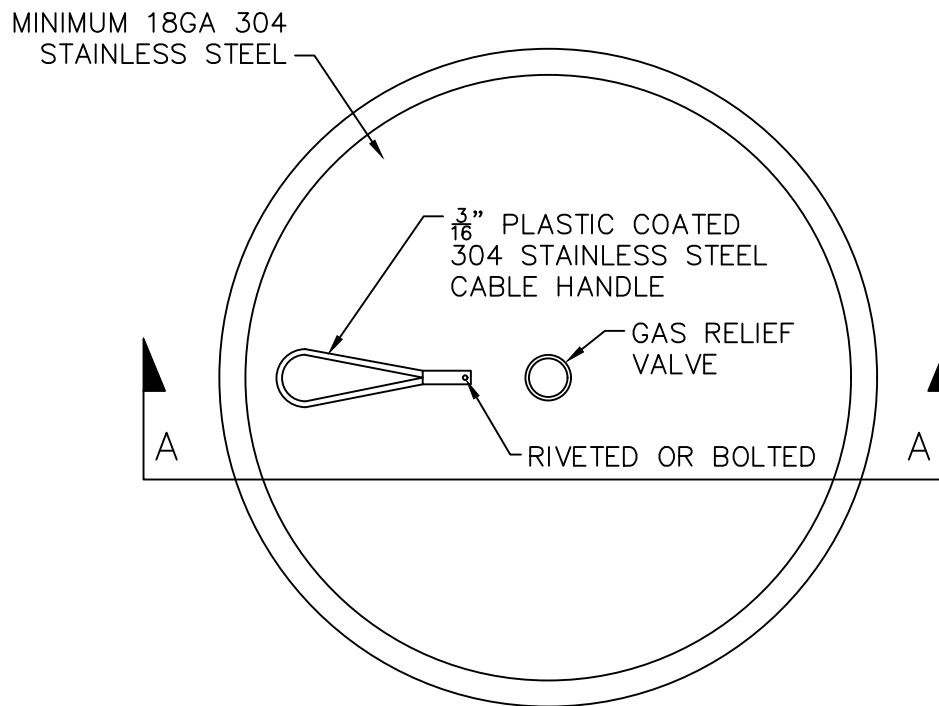
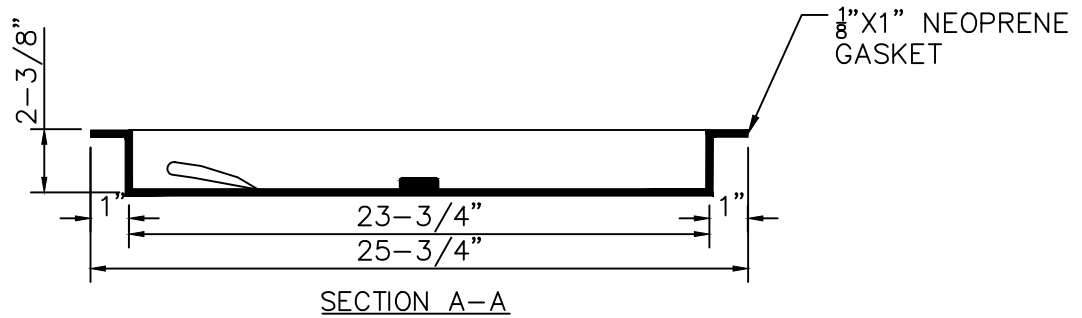
NOT TO SCALE



STANDARD PRECAST CONCRETE

PRECAST CONCRETE MANHOLE ADJUSTMENT

DRAWING NO. 208
SHEET 1 OF 1
DATE 7/2025



NOTES:

1. ACTUAL DIMENSIONS MUST BE COMPATIBLE WITH MANHOLE CASTING DIMENSIONS.
2. DUST COVER NOT REQUIRED WHEN USING MANHOLE INSERT.
3. GAS RELIEF VALVE SHALL BE CAPABLE OF RELEASING GAS AT A PRESSURE OF 0.5 TO 1.5 PSI AND HAVE A WATER LEAK DOWN RATE NO GREATER THAN 5 GALLONS/24 HOURS.
4. LOAD TEST STRENGTH MUST EXCEED 3,000 POUNDS.
5. HANDLE MUST BE CAPABLE OF WITHSTANDING A MINIMUM 500 POUND PULL FORCE.

NOT TO SCALE



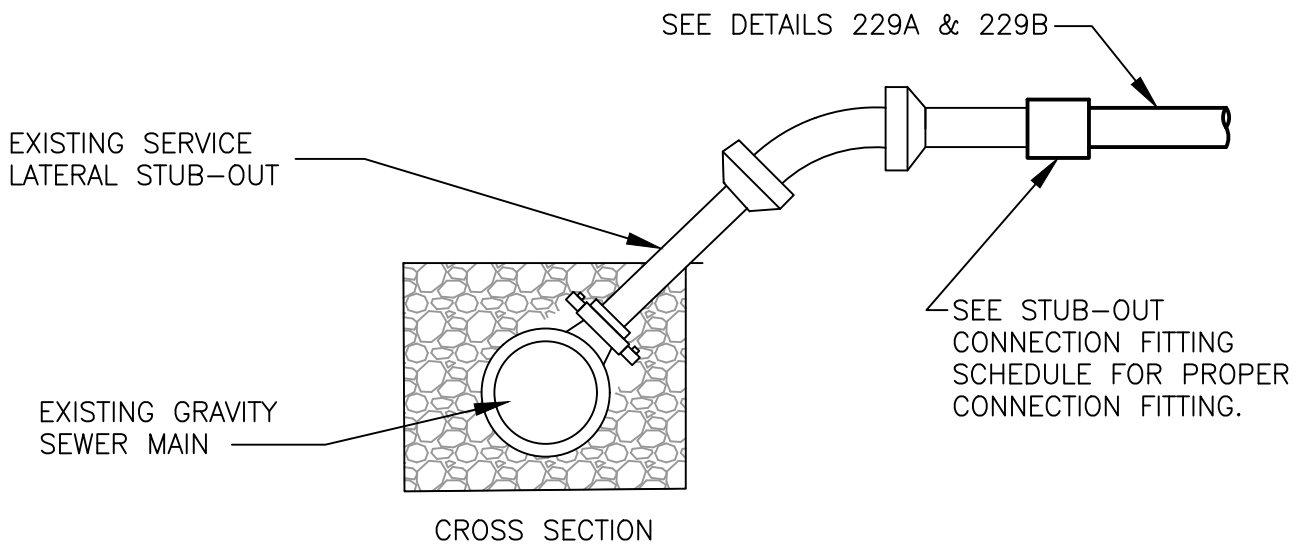
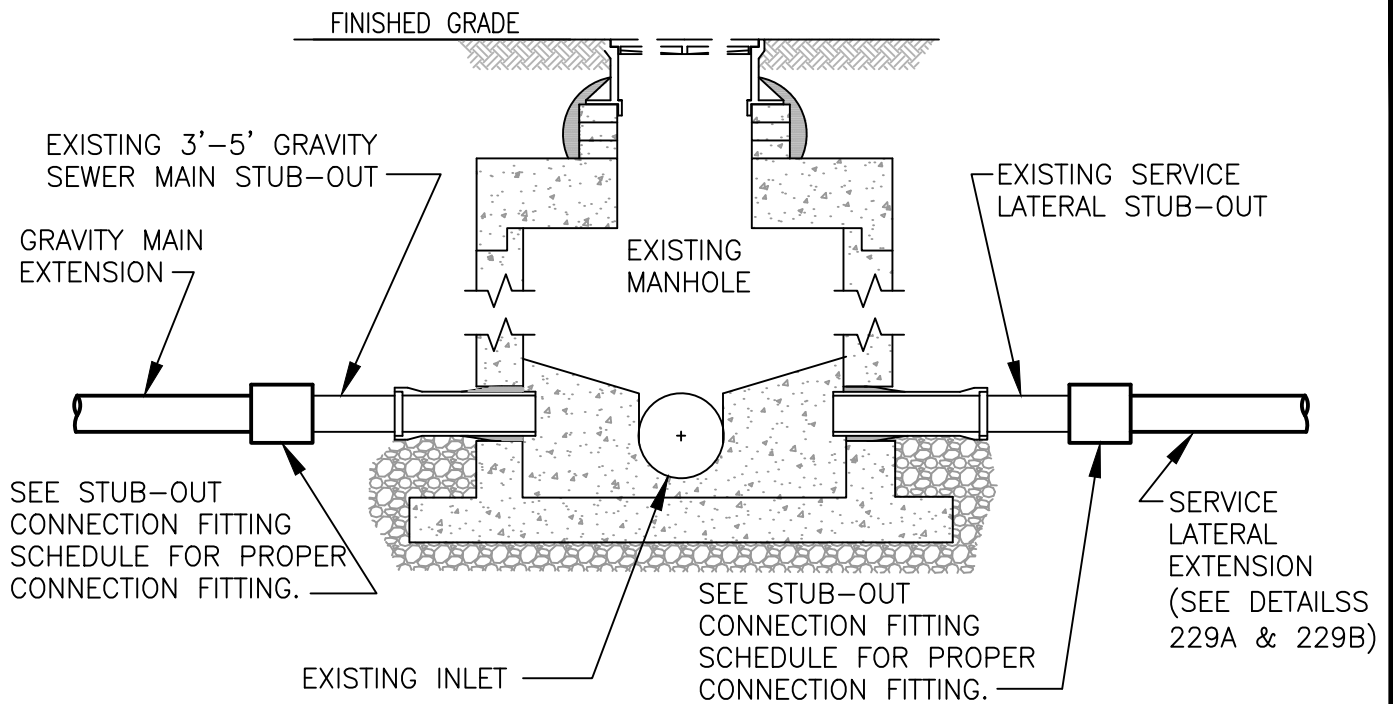
STANDARD DESIGN DETAIL

MANHOLE INSERT

DRAWING NO.
209

SHEET
1 OF 1

DATE
7/2025



STUB-OUT CONNECTION FITTING SCHEDULE	
STUB-OUT MATERIAL	FITTING
PVC	PVC COUPLING
DI/CI	JCM 201
VITRIFIED CLAY	FERNCO 102 SERIES

NOTE:

1. CONTRACTOR SHALL FIELD VERIFY ALL PIPE MATERIAL AND SIZES PRIOR TO PROCURING MATERIAL

NOT TO SCALE



STANDARD DESIGN DETAIL

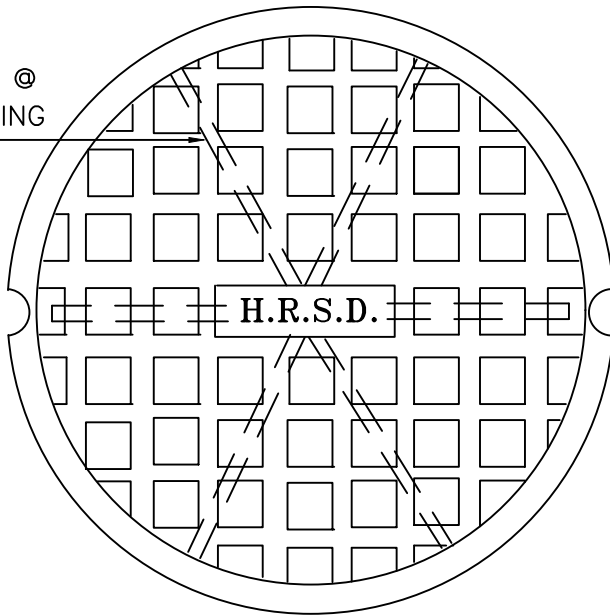
SERVICE LATERAL & GRAVITY MAIN
CONNECTION TO EXISTING STUB-OUT

DRAWING NO.
226

SHEET
1 OF 1

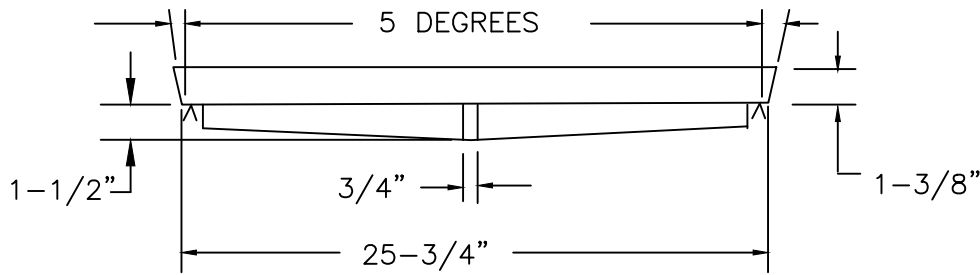
DATE
7/2025

6 WEBS @
60° SPACING

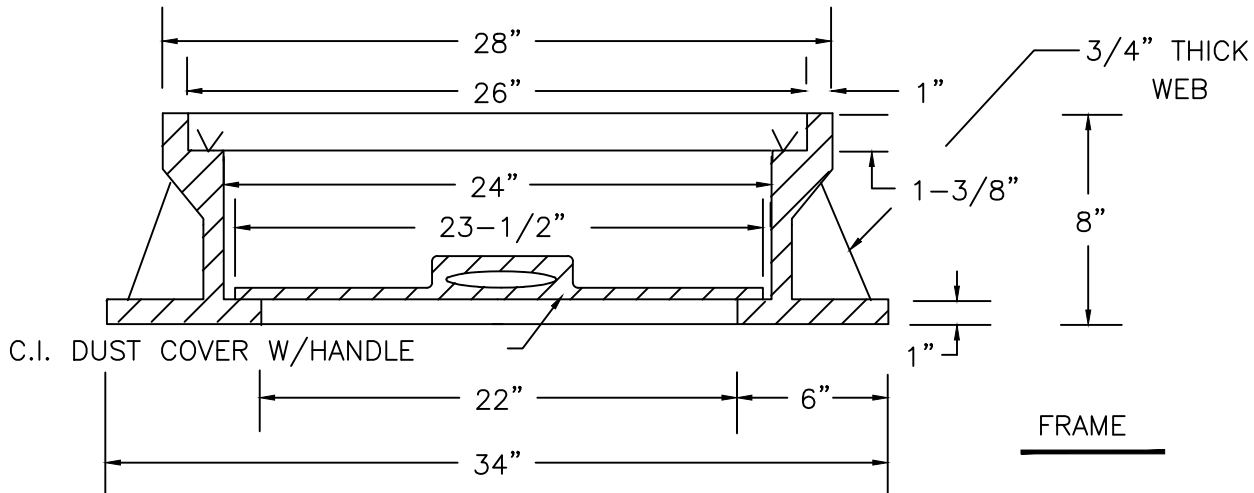


NOTES:

1. CASTINGS TO BE SHOT BLASTED
2. CASTING TO BE ASTM A-48 CLASS 30
3. TOLERANCE $\pm .125"$
4. MACHINE SEATING SURFACE ON BOTH FRAME & COVER
5. 0.375" MIN. THICKNESS OF DUST COVER
6. MINIMUM WEIGHTS:
COVER-165 LBS.
FRAME-303 LBS.
7. SEE MASTER SPEC SECTION 01340 FOR AMERICAN IRON AND STEEL REQUIREMENT.



COVER



* USE WHERE 24" WATERTIGHT M.H.
MAY NOT BE APPLICABLE.

NOT TO SCALE



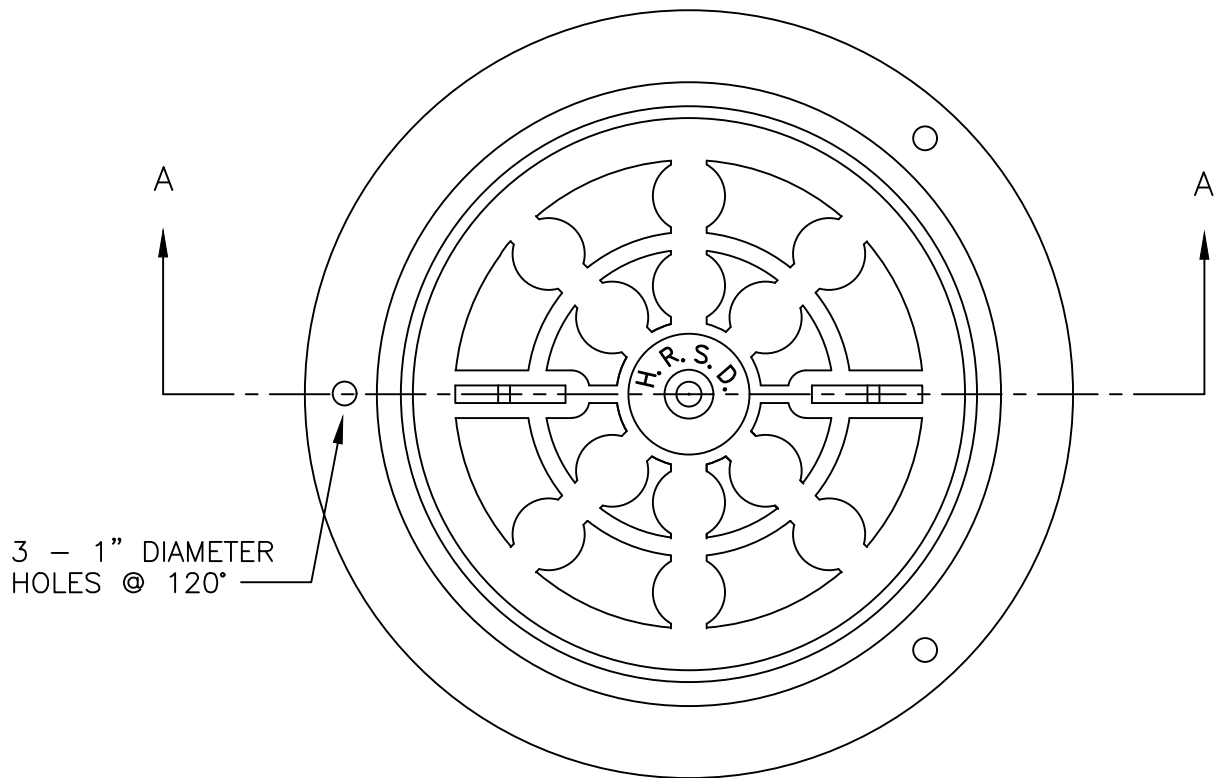
STANDARD DESIGN DETAIL

STANDARD MANHOLE FRAME AND COVER

DRAWING NO.
227

SHEET
1 OF 1

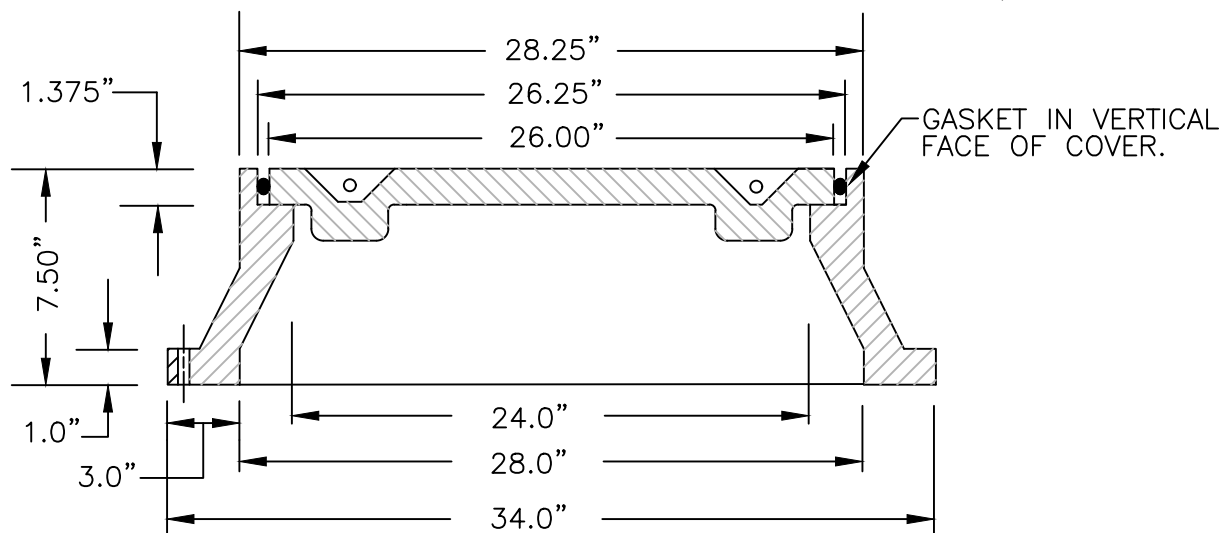
DATE
7/2025



PLAN

NOTES

1. CASTINGS TO BE SHOT BLASTED.
2. CASTINGS SHALL MEET OR EXCEED ASTM A-48-76 CLASS 30-B.
3. TOLERANCE $\pm 0.125"$.
4. MACHINE SEATING SURFACE ON BOTH FRAME & COVER.
5. FRAME & COVER TO BE DEWEY BROS. INC. MH-RCR-3000W (WATERTIGHT) OR EQUAL.
6. MINIMUM WEIGHTS:
COVER-170 LBS.
FRAME-262 LBS.
7. SEE MASTER SPEC SECTION 01340 FOR AMERICAN IRON AND STEEL REQUIREMENT.



SECTION A-A

NOT TO SCALE



STANDARD DESIGN DETAIL

WATERTIGHT MANHOLE FRAME AND COVER

DRAWING NO.
228

SHEET
1 OF 1

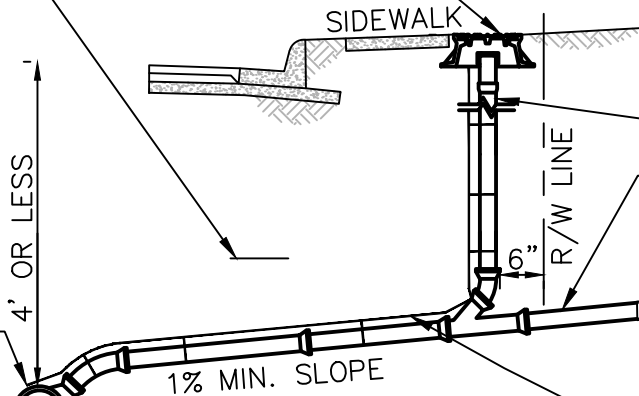
DATE
7/2025

DETECTABLE TAPE
(SEE NOTE 5)

SEE STANDARD
DETAIL #251, IF
APPLICABLE #252

INSTALL HEAT
SHRINK TUBING.
TUBING SHALL
OVERLAP END OF
TRACER WIRE A
MIN. OF 3" OF
POLYETHYLENE
INSULATION

SEE HRSD DETAIL
FOR CONNECTION
TO NEW OR
EXISTING MAIN



SINGLE PIPE NO JOINTS

PRIMARY CONNECTION
POINT. A MIN. OF 3' OF
STRAIGHT PIPE SHALL BE
INSTALLED WITH
PERMANENT CAP PLACED
ON END OF STRAIGHT
PIPE.

TRACER WIRE ATTACHED TO
CENTERLINE OF PIPE WITH
PLASTIC STRAPS (TYP)

SHALLOW DETAIL

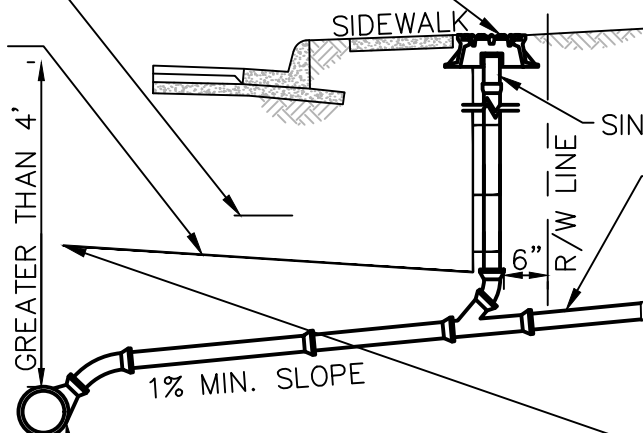
TO BE USED WHEN MAIN LINE
DEPTH IS LESS THAN OR
EQUAL TO 4'

DETECTABLE TAPE
(SEE NOTE 5)

SEE STANDARD
DETAIL #251, IF
APPLICABLE #252

TRACER WIRE BURIED
OVER CENTERLINE OF
PVC PIPE 3' BELOW
GRADE

SEE HRSD DETAIL FOR
CONNECTION TO NEW OR
EXISTING MAIN



SINGLE PIPE NO JOINTS

PRIMARY CONNECTION
POINT. A MIN. OF 3' OF
STRAIGHT PIPE SHALL BE
INSTALLED WITH
PERMANENT CAP PLACED
ON END OF STRAIGHT
PIPE.

INSTALL HEAT SHRINK
TUBING. TUBING SHALL
OVERLAP END OF
TRACER WIRE A MIN. OF
3" OF POLYETHYLENE
INSULATION

DEEP DETAIL

TO BE USED WHEN MAIN LINE
DEPTH IS GREATER THAN 4'

*SEE SHEET 2 FOR NOTES

NOT TO SCALE



STANDARD DESIGN DETAIL

SANITARY SERVICE LATERAL INSTALLATION

DRAWING NO.
229A

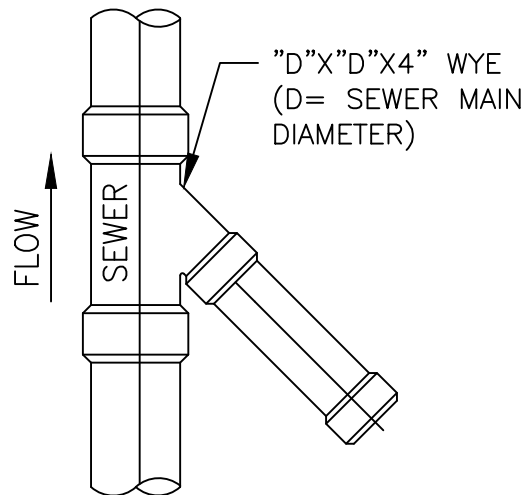
SHEET
1 OF 2

DATE
7/2025

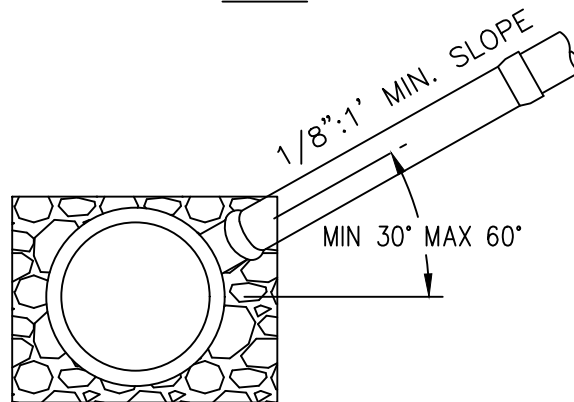
NOTES:

1. TYPICAL LATERAL LAYOUT:
 - 1.1. SHALL ONLY UTILIZE THE PRIMARY CONNECTION POINT WHEN TYING TO AN EXISTING LATERAL.
 - 1.2. THE CONNECTION POINT TO THE PRIVATE LATERAL AND TO THE SANITARY SERVICE LATERAL CLEANOUT SHALL BE MADE WITH SOLID SLEEVES.
 - 1.3. FERNCO COUPLINGS OR EQUIVALENTS ARE NOT PERMITTED ON THE LATERAL CONNECTION OR AT THE CONNECTION POINT TO THE PRIVATE LATERAL, UNLESS THE PRIVATE LATERAL IS VCP (VITRIFIED CLAY PIPE). CONNECTIONS WILL NOT BE ALLOWED IF THE PRIVATE LATERAL PIPE MATERIAL IS ORANGEBURG PIPE (BITUMINIZED FIBER SEWER PIPE).
 - 1.4. RC STRONG BACK FERNCO COUPLINGS SHALL BE ENCASED IN CONCRETE AND SHALL ONLY BE ALLOWED ON VITRIFIED CLAY PIPE (VCP). CONCRETE SHALL BE DIRT FORMED IN A 6" BOX TO ENCOMPASS THE ENTIRE FITTING.
 - 1.5. CLEANOUT RISER ASSEMBLY AND FITTING SHALL BE SAME MATERIAL AS THE SEWER LATERAL
2. CLEANOUT RISER ASSEMBLY, LATERAL CLEANOUT AND TRACER WIRE SHALL BE INSTALLED PRIOR TO FINAL INSPECTION/ACCEPTANCE. LOCATION OF WYE AND CLEANOUT MAY BE VARIED BY HRSD STAFF IF NECESSARY DUE TO UNUSUAL DEPTH OR CONDITIONS. MINIMUM COVER OF 3.0 FEET REQUIRED FOR SERVICE.
3. LATERAL MATERIAL SHALL BE POLYVINYLCHLORIDE (P.V.C.). ASTM D-3034 SDR 26, AWWA C900-CLASS 150 (DR-18) OR ASTM D-1785 SCHEDULE 40. FOR DEPTHS LESS THAN 2' OR GREATER THAN 10' CONTACT HRSD FOR PIPE MATERIAL.
4. TRACER WIRE SHALL BE AWG 10 SOLID COPPER WIRE WITH POLYETHYLENE INSULATION. THE TRACER WIRE SHALL BE ATTACHED TO THE LATERAL PIPE WHEN THE DEPTH IS NO GREATER THAN 4.0 FEET. THE WIRE SHALL BE BURIED OVER THE CENTERLINE OF THE LATERAL PIPE AT 3.0 FEET BELOW GRADE WHEN THE LATERAL DEPTH IS GREATER THAN 4.0 FEET.
5. INSTALL DETECTABLE WARNING TAPE CONTINUOUSLY FROM THE MAIN TO THE HRSD CLEANOUT 1' ABOVE TOP OF TRACER WIRE. TAPE SHALL BE GREEN IN COLOR AND STATE " CAUTION BURIED SEWER LINE BELOW"
6. CONTRACTOR SHALL UTILIZE NO MORE THAN FOUR (4) FITTINGS FROM THE HRSD CONNECTION POINT TO THE HRSD CLEANOUT.

	STANDARD DESIGN DETAIL	DRAWING NO. 229B
		SHEET 2 OF 2
	SANITARY SERVICE LATERAL INSTALLATION	DATE 7/2025



PLAN



SECTION VIEW

NOTES:

1. PROVIDE A CAPPED EXTENSION TO PROPERTY LINE PER HRSD REQUIREMENTS IF SEWER SERVICE WILL NOT BE ACTIVATED AT THE TIME OF CONSTRUCTION.
2. CLEAN OUT SHALL BE INSTALLED AT THE ROW OR HRSD EASEMENT/PROPERTY LINE, UNLESS OTHERWISE STATED.
3. CONTRACTOR SHALL USE NO MORE THAN FOUR (4) FITTINGS. BENDS SHALL HAVE A MAX ANGEL OF 60° AND A MINIMUM OF 30° ALL BENDS SHALL BE LONG RADIUS.
4. WYE CONNECTION SHALL BE PLACED BETWEEN THE 1:30-3 O'CLOCK OR 9 TO 10:30 O'CLOCK POSITION ON THE GRAVITY MAIN.
5. THIS DETAIL SHALL BE USED IN CONJUNCTION WITH STANDARD DETAILS 229A & 229B AND DETAILS 251 & 252.
6. PIPING BEDDING SHALL BE TYPE IV BEDDING REFERENCE HRPDC DETAIL EW_01.

NOT TO SCALE



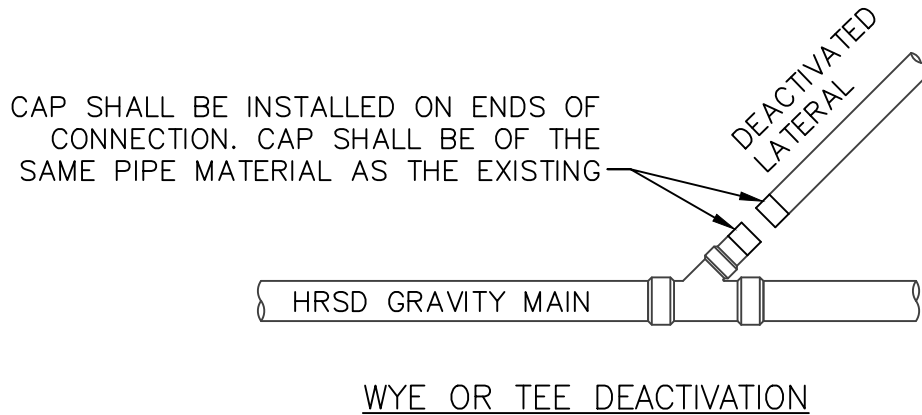
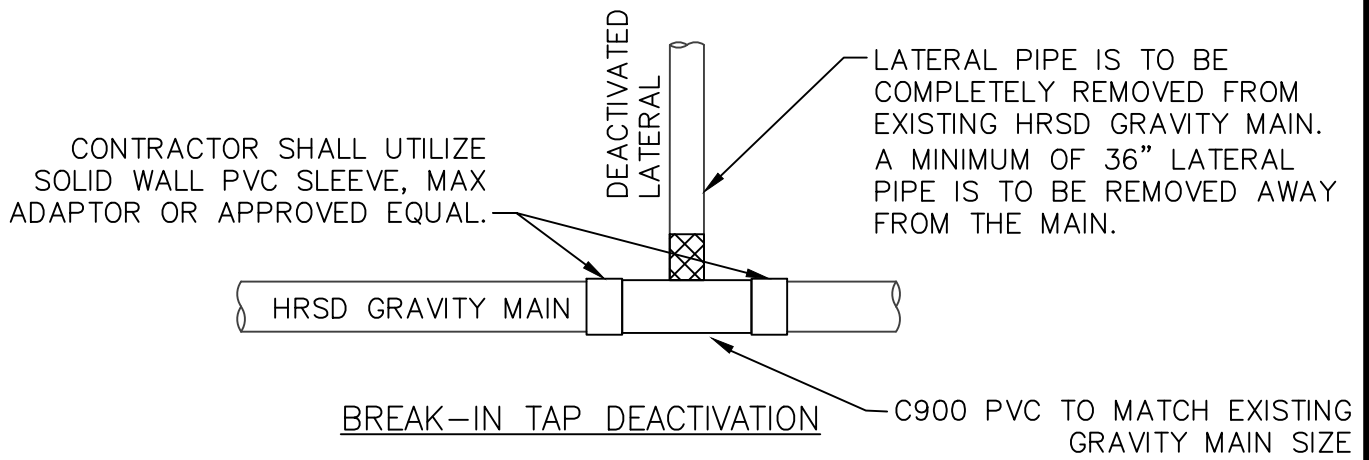
STANDARD DESIGN DETAIL

SANITARY SEWER SERVICE CONNECTION
FOR NEW OR EXISTING GRAVITY MAIN

DRAWING NO.
230

SHEET
1 OF 1

DATE
7/2025



NOTES:

1. DEACTIVATED LATERAL SHALL BE REMOVED TO THE GRAVITY MAIN AND CAPPED ON BOTH ENDS.

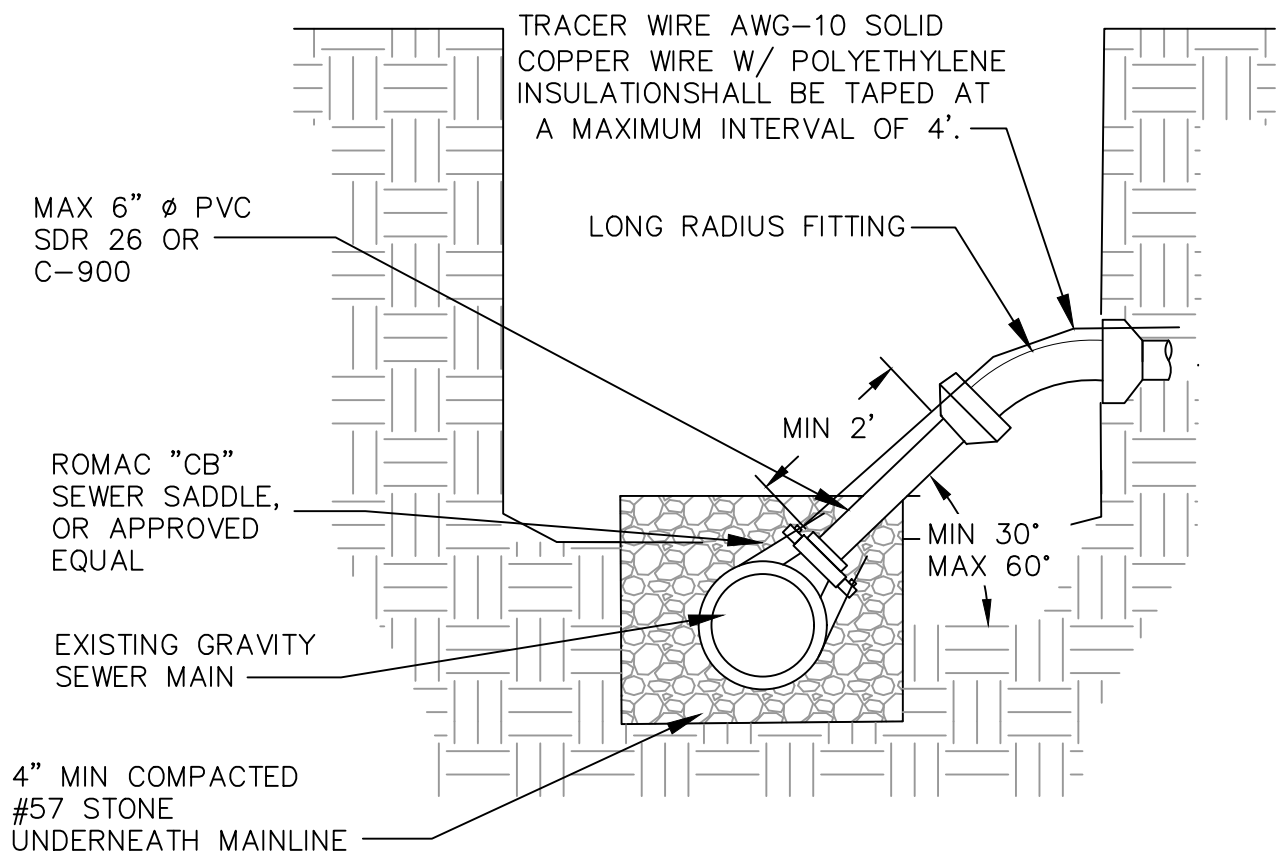
NOT TO SCALE



STANDARD DESIGN DETAIL

SANITARY SERVICE LATERAL DEACTIVATION

DRAWING NO. 231
SHEET 1 OF 1
DATE 7/2025



NOTES:

1. MIN OF 2' OF STRAIGHT PIPE FROM CONNECTION IS REQUIRED BEFORE INSTALLING ANY FITTING.
2. 4" SADDLE SHALL BE COMPLETELY ENCOMPASSED WITH COMPACTED #57 STONE.
3. TERMINATION OF TRACER WIRE SHALL BE AT THE BOLTS OF ROMAC FITTING. EXPOSED BARE COPPER SHALL BE WRAPPED AROUND THE BOLTS.
4. THIS DETAIL SHALL BE USED ON A CASE BY CASE BASIS, AND CONTINGENT UPON HRSD APPROVAL.

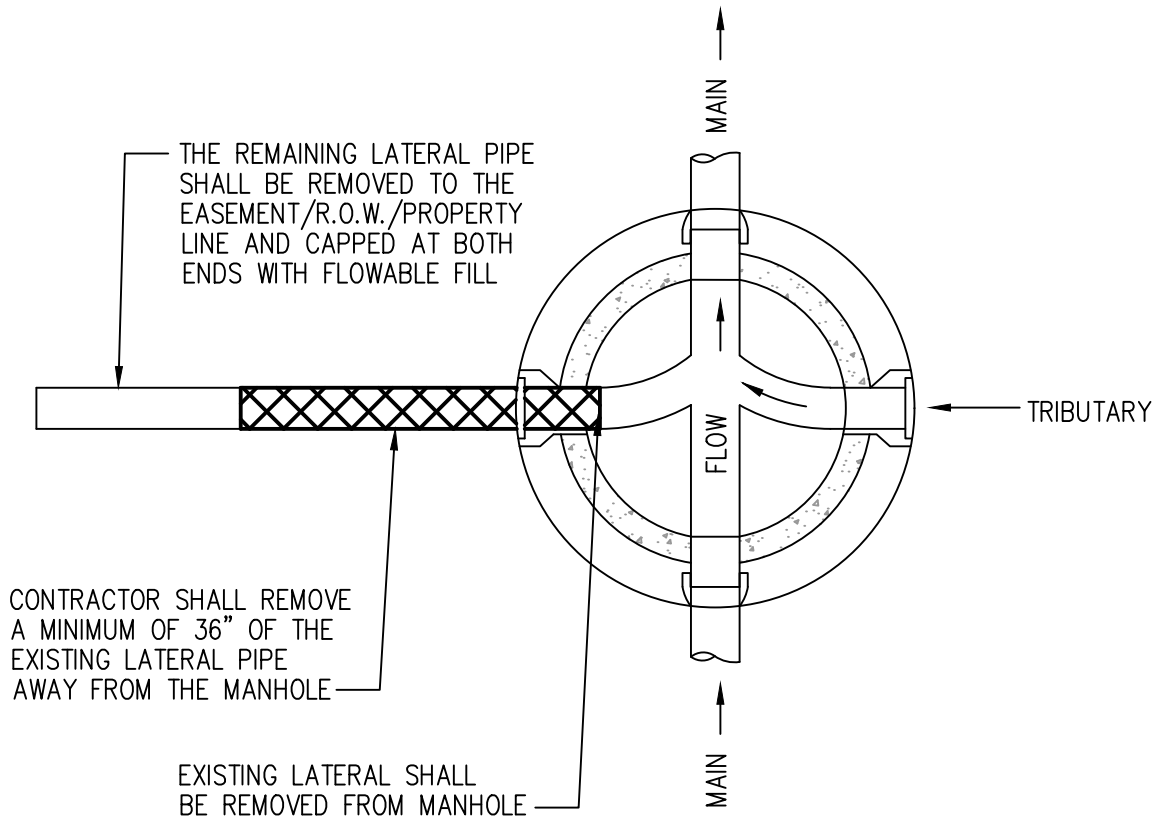
NOT TO SCALE



STANDARD DESIGN DETAIL

ALTERNATIVE SERVICE LATERAL CONNECTION
TO EXISTING GRAVITY SEWER MAIN

DRAWING NO.
232
SHEET
1 OF 1
DATE
7/2025



NOTES:

1. VOID (CREATED FROM THE REMOVED LATERAL) SHALL BE FILLED WITH CONCRETE THAT HAS CONSHIELD ADDITIVE.
2. THE EXTERIOR SURFACE SHALL BE PARGED WITH NON-SHRINK HIGH STRENGTH GROUT.

NOT TO SCALE



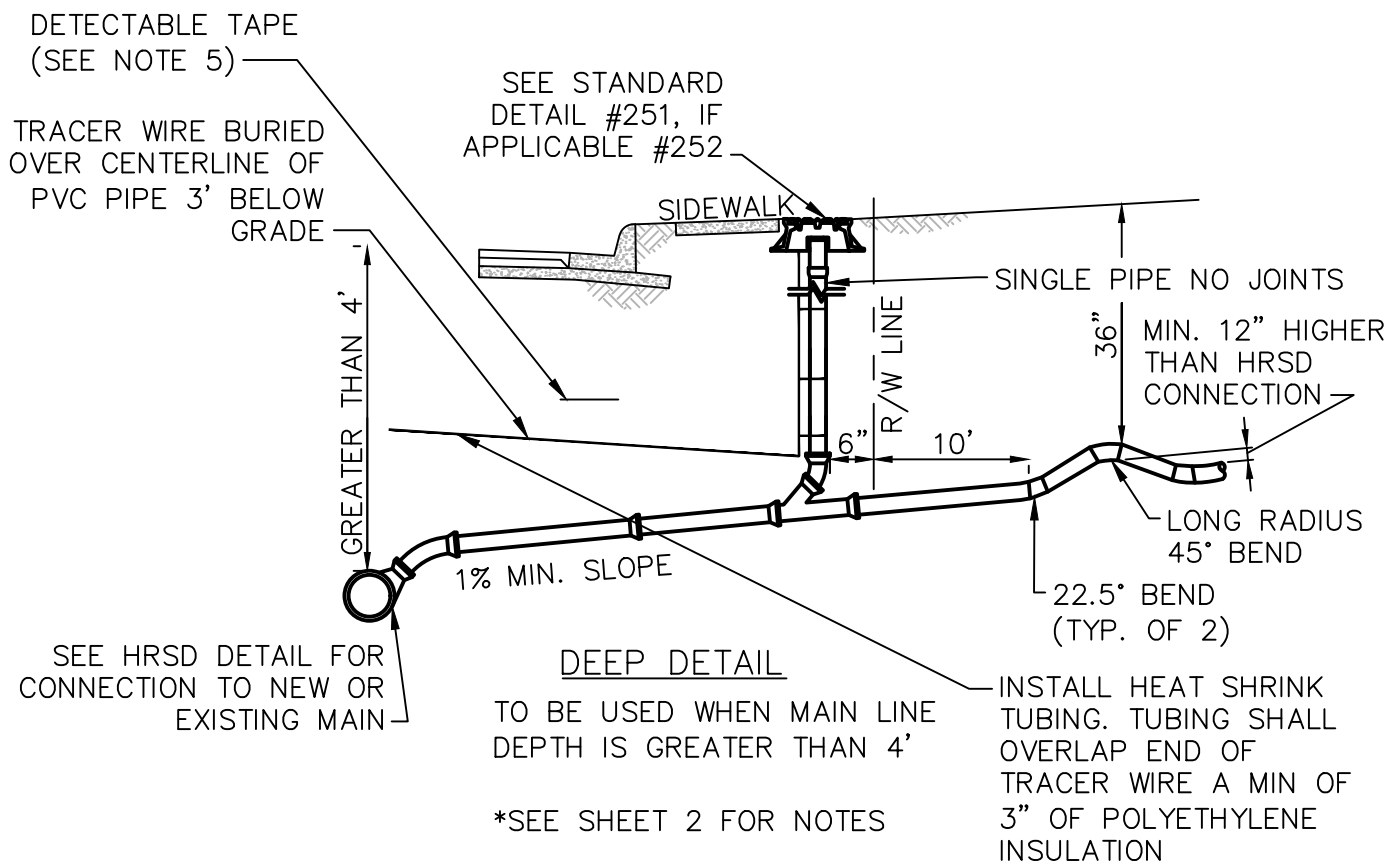
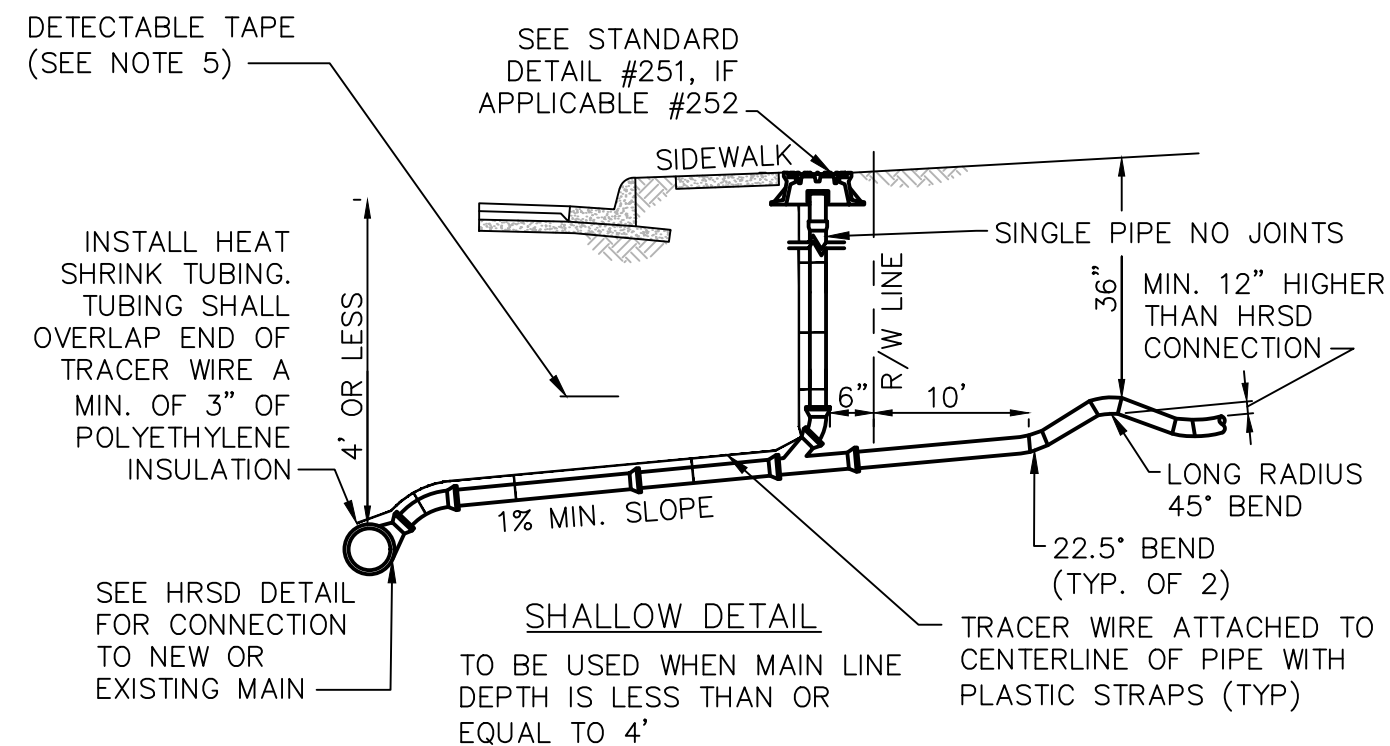
STANDARD DESIGN DETAIL

HRSD MANHOLE PERMANENT
SERVICE LATERAL DEACTIVATION

DRAWING NO.
233

SHEET
1 OF 1

DATE
7/2025



NOT TO SCALE



STANDARD DESIGN DETAIL

PRIVATE FORCE MAIN TO
HRSD GRAVITY MAIN CONNECTION

DRAWING NO.
234A

SHEET
1 OF 2

DATE	7/2025
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NOTES:

1. TYPICAL LATERAL LAYOUT:
 - 1.1. SHALL ONLY UTILIZE THE PRIMARY CONNECTION POINT WHEN TYING TO AN EXISTING LATERAL.
 - 1.2. THE CONNECTION POINT TO THE PRIVATE LATERAL AND TO THE SANITARY SERVICE LATERAL CLEANOUT SHALL BE MADE WITH SOLID SLEEVES.
 - 1.3. FERNCO COUPLINGS OR EQUIVALENTS ARE NOT PERMITTED ON THE LATERAL CONNECTION.
 - 1.4. CLEANOUT RISER ASSEMBLY AND FITTING SHALL BE SAME MATERIAL AS THE SEWER LATERAL.
2. CLEANOUT RISER ASSEMBLY, LATERAL CLEANOUT AND TRACER WIRE SHALL BE INSTALLED PRIOR TO FINAL INSPECTION/ACCEPTANCE. LOCATION OF WYE AND CLEANOUT MAY BE VARIED BY HRSD STAFF IF NECESSARY DUE TO UNUSUAL DEPTH OR CONDITIONS. MINIMUM COVER OF 3.0 FEET REQUIRED FOR SERVICE.
3. LATERAL MATERIAL SHALL BE POLYVINYLCHLORIDE (P.V.C.). ASTM D-3034 SDR 26, AWWA C900-CLASS 150 (DR-18) OR ASTM D-1785 SCHEDULE 40. FOR DEPTHS LESS THAN 2' OR GREATER THAN 10' CONTACT HRSD FOR PIPE MATERIAL.
4. TRACER WIRE SHALL BE AWG 10 SOLID COPPER WIRE WITH POLYETHYLENE INSULATION. THE TRACER WIRE SHALL BE ATTACHED TO THE LATERAL PIPE WHEN THE DEPTH IS NO GREATER THAN 4.0 FEET. THE WIRE SHALL BE BURIED OVER THE CENTERLINE OF THE LATERAL PIPE AT 3.0 FEET BELOW GRADE WHEN THE LATERAL DEPTH IS GREATER THAN 4.0 FEET.
5. INSTALL DETECTABLE WARNING TAPE CONTINUOUSLY FROM THE MAIN TO THE HRSD CLEANOUT 1' ABOVE TOP OF TRACER WIRE. TAPE SHALL BE GREEN IN COLOR AND STATE " CAUTION BURIED SEWER LINE BELOW"
6. CONTRACTOR SHALL UTILIZE NO MORE THAN FOUR (4) FITTINGS FROM THE HRSD CONNECTION POINT TO THE HRSD CLEANOUT.
7. SAXOPHONE CONNECTION TO PRIVATE FORCE MAIN SHALL OCCUR ON PRIVATE PROPERTY AT 10' FROM HRSD CONNECTION AND SHALL BE PART OF THE PRIVATE FORCE MAIN INSTALLATION.



STANDARD DESIGN DETAIL

PRIVATE FORCE MAIN TO
HRSD GRAVITY MAIN CONNECTION

DRAWING NO.

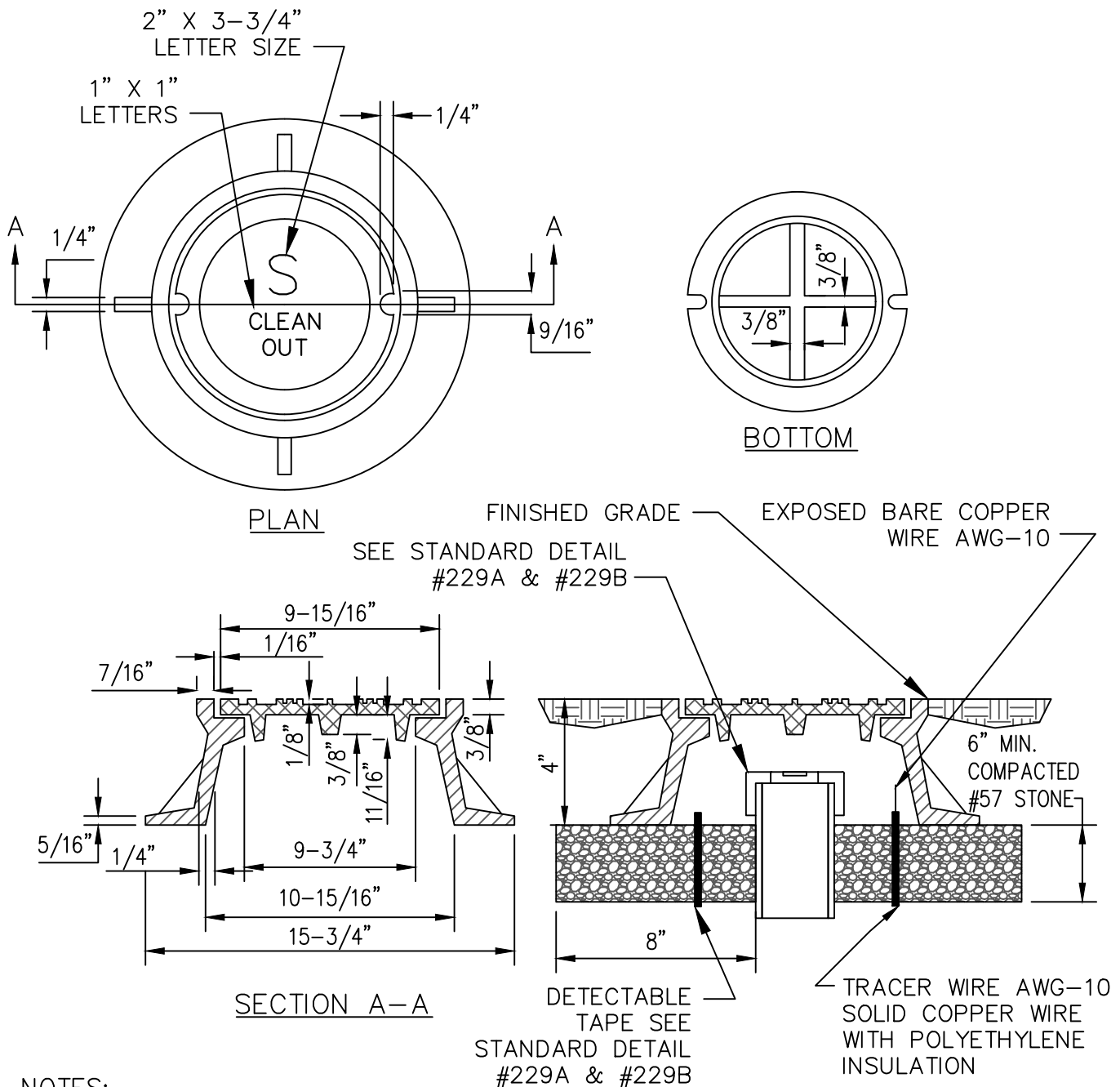
234B

SHEET

2 OF 2

DATE

7/2025



NOTES:

1. CLEAN OUT FRAME & COVER TO BE PART NUMBER NPN-CW-18 SUPPLIED BY CAPITAL FOUNDRY OF VIRGINIA, INC. OR APPROVED EQUAL.
2. ALL GRAY IRON CASTINGS SHALL CONFORM TO LATEST EDITION OF ASTM A-48, CLASS 30
3. AND SHALL BE OF UNIFORM QUALITY.
4. ALL CASTING DIMENSIONS SHALL HAVE A TOLERANCE OF 1/8"±
5. ALL CASTINGS SHALL BE CLEANED BY SHOT BLASTING AND HAND CHIPPING UTILIZING STANDARD
6. INDUSTRY PRACTICES PRIOR TO SHOP APPLICATION OF ASPHALTIC COATING, BY DIPPING.
7. THE TRACER WIRE POLYETHYLENE INSULATION SHALL ONLY FROM THE LAST INCH. TRACER WIRE SHALL HAVE A SURPLUS OF 2' OF WIRE CONNECTED INSIDE OF CASTING.
8. SEE MASTER SPEC SECTION 01340 FOR AMERICAN IRON AND STEEL REQUIREMENT.

NOT TO SCALE



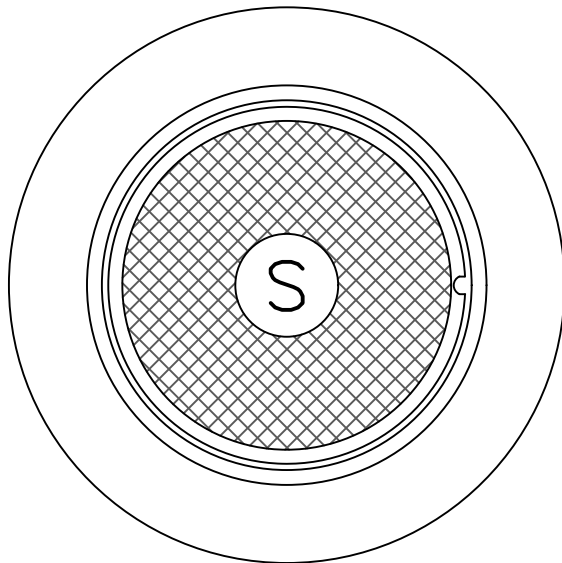
STANDARD DESIGN DETAIL

SANITARY SEWER SERVICE CLEAN
OUT FRAME AND COVER (NON-TRAFFIC RATED)

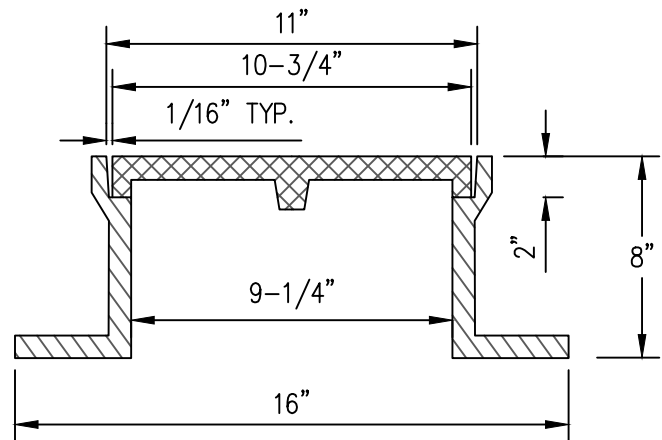
DRAWING NO.
251

SHEET
1 OF 1

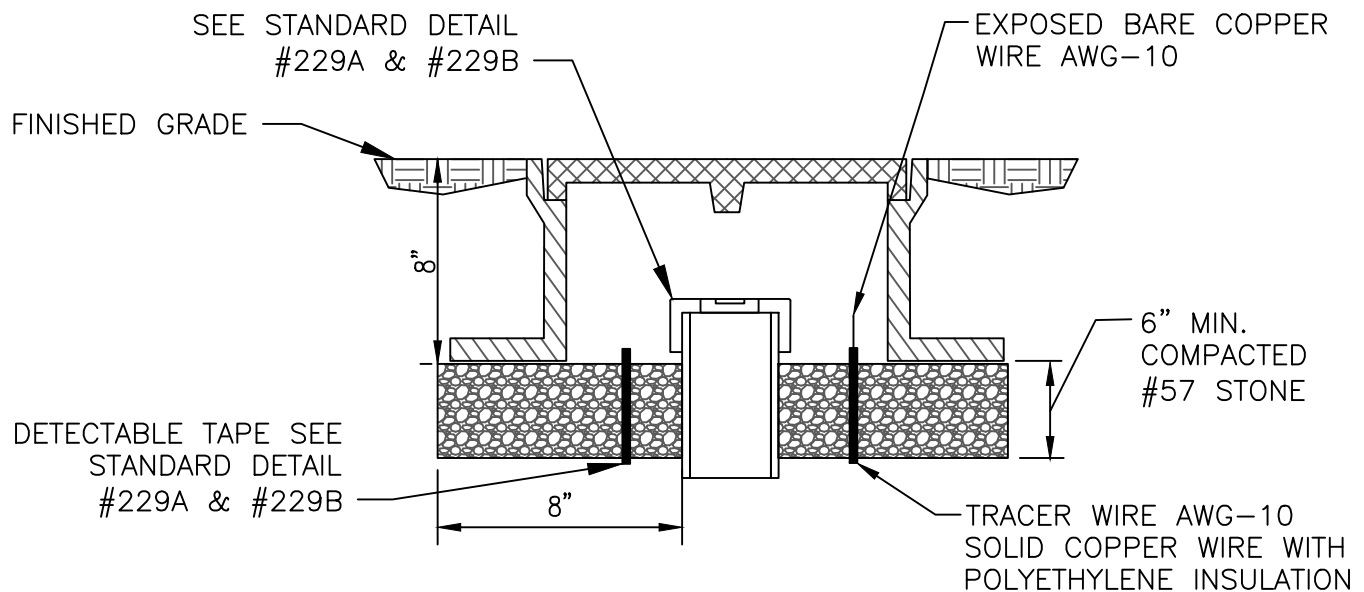
DATE
7/2025



PLAN



SECTION A-A



NOTES:

1. CLEAN OUT FRAME & COVER HIGHWAY LOAD RATED FOR USE IN DRIVEWAYS, PARKING LOTS, ETC.
2. CLEAN OUT FRAME & COVER TO BE PART NUMBER VB-9*S SUPPLIED BY CAPITAL FOUNDRY OF VIRGINIA, INC. OR APPROVED EQUAL.
3. ALL GRAY IRON CASTINGS SHALL CONFORM TO LATEST EDITION OF ASTM A-48, CLASS 30 AND SHALL BE OF UNIFORM QUALITY.
4. ALL CASTING DIMENSIONS SHALL HAVE A TOLERANCE OF $1/8"$ ±
5. ALL CASTINGS SHALL BE CLEANED BY SHOT BLASTING AND HAND CHIPPING UTILIZING STANDARD INDUSTRY PRACTICES PRIOR TO SHOP APPLICATION OF ASPHALTIC COATING, BY DIPPING.
6. SEE MASTER SPEC SECTION 01340 FOR AMERICAN IRON AND STEEL REQUIREMENT.

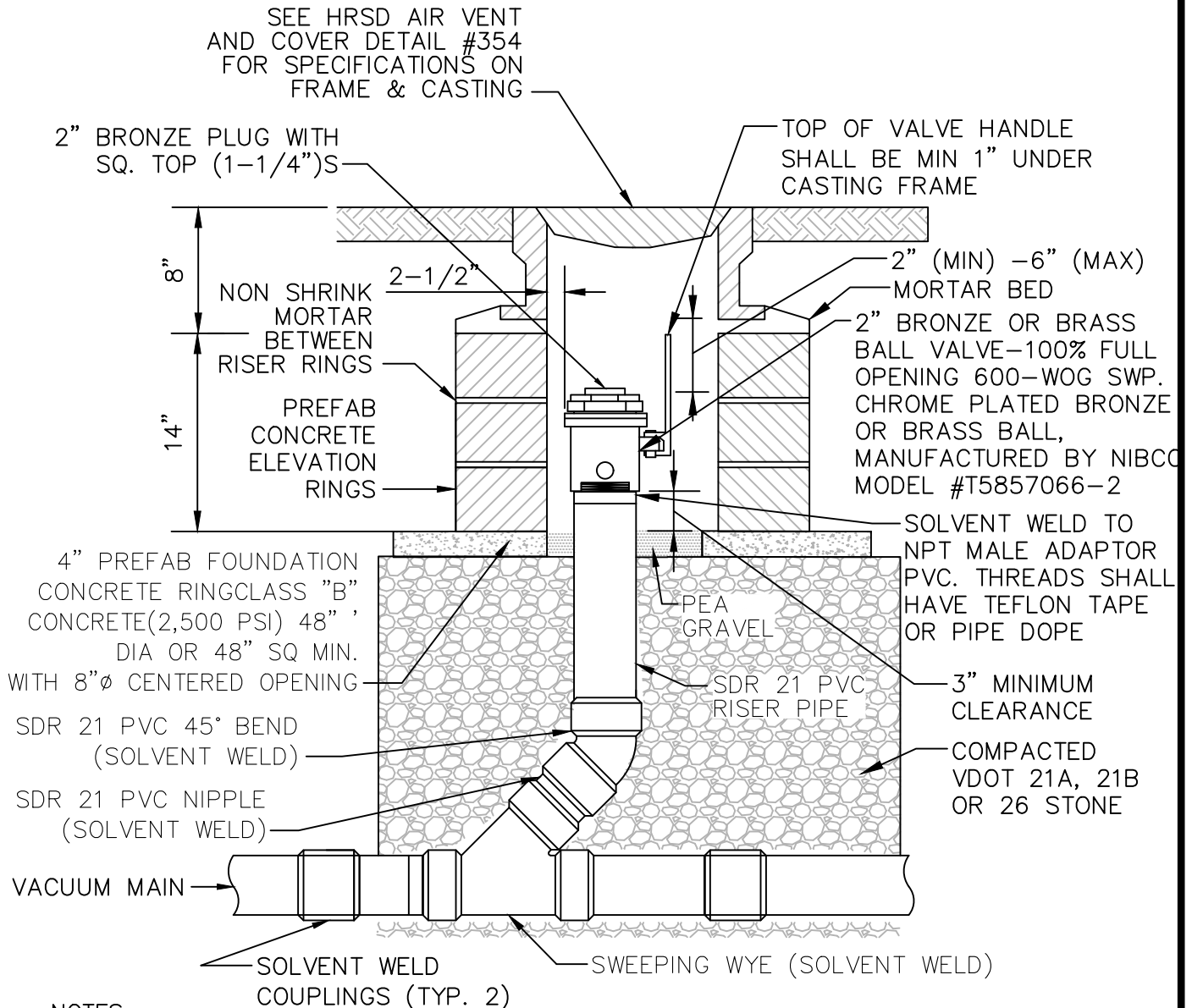
NOT TO SCALE



STANDARD DESIGN DETAIL
SANITARY SEWER SERVICE CLEAN
OUT FRAME AND COVER (TRAFFIC RATED)

DRAWING NO.
252
SHEET
1 OF 1
DATE
7/2025

NOTE: HANDLE AS SHOWN IS VALVE
INSTALLED IN OPEN POSITION



NOTES:

1. CONSTRUCT AIR INTAKE VALVE WITH CONCRETE ELEVATION RINGS AS MANUFACTURED BY NANSEMOND PRE-CAST CONCRETE CO, INC. MODEL AV-ER-CH AND AV-BS.
2. JACK UP RINGS BETWEEN THE FRAME AND COVER NOT ACCEPTABLE.
3. PARGE CONCRETE ELEVATION RINGS WITH GROUT INSIDE AND OUT, CONTINUE ONTO CASTING.
4. IF REDUCERS ARE REQUIRED THEY MUST BE INSTALLED ONTO SWEEPING WYE
5. SOLVENT WELD PVC COUPLING SHALL BE USED TO CONNECT SWEEPING WYE TO EXISTING VACUUM MAIN
6. ACCEPTED WYES ARE 6"X6"X4", 6"X6"X2", AND 4"X4"X2"
7. WYE SHALL MATCH VACUUM MAIN DIAMETER
6. TEES WITH THE FOLLOWING DIMENSIONS CAN BE USED 6"X6"X2", AND 4"X4"X2"

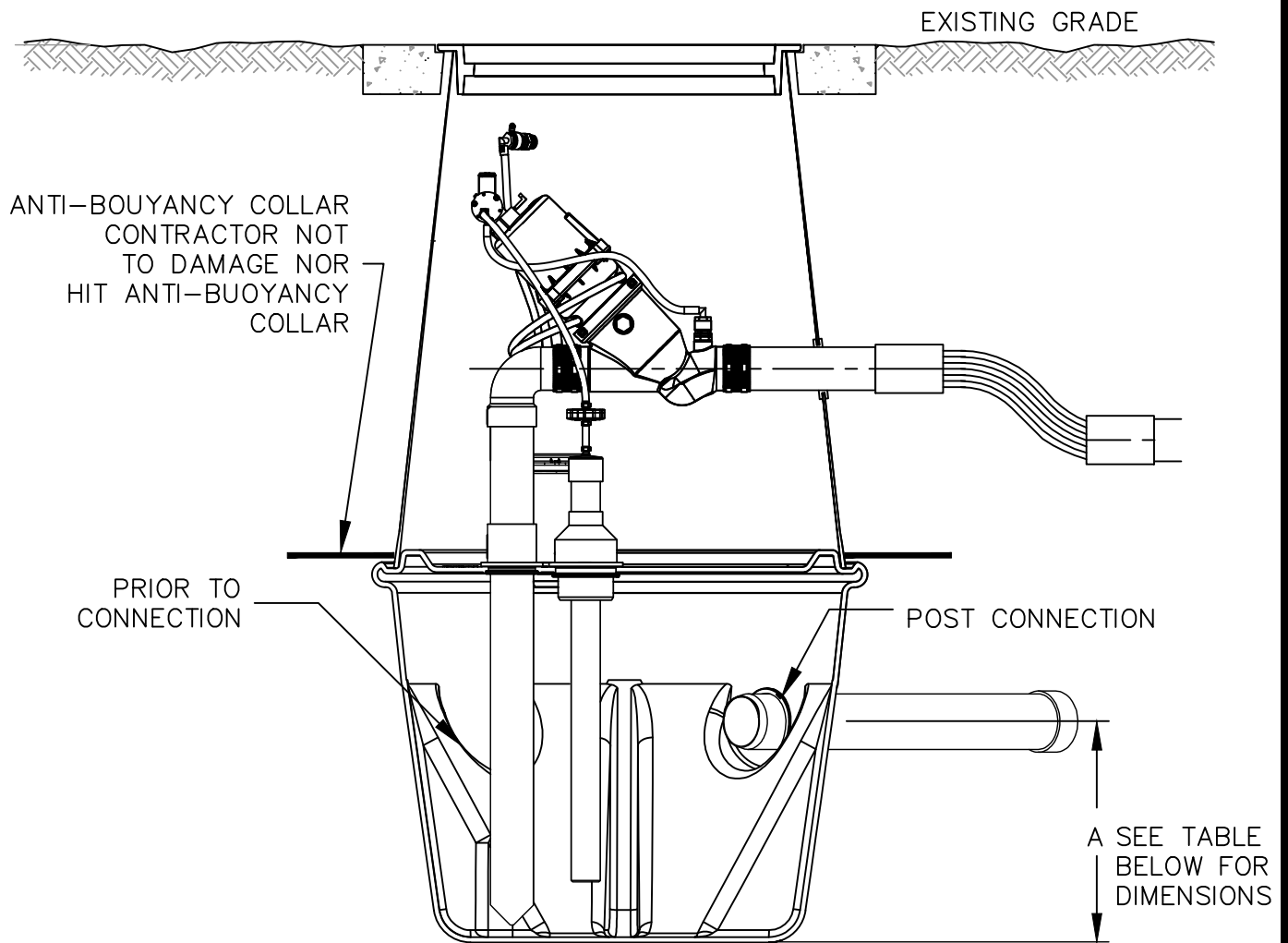
NOT TO SCALE



STANDARD DESIGN DETAIL

VACUUM AIR INTAKE VALVE

DRAWING NO.
276
SHEET
1 OF 1
DATE
7/2025



NOTES:

SEQUENCE FOR CONNECTION

- 1) CONTRACTOR WILL HAVE TO EXCAVATE TO THE BOTTOM THE EXISTING VALVE PIT
- 2) UTILIZING THE TABLE TO THE RIGHT MEASURE AND MARK THE CENTER OF A 5" CORE HOLE
- 3) CORE A 5" HOLE INTO THE SUMP AND INSTALL A 4" DOUBLE LIP SEAL RUBBER GROMMET WITH 4" SCH 40 PVC PIPE

*NOTE IF THE LATERAL IS 6" CORE WILL BE 7" AND CONTRACTOR WILL UTILIZE 6" DOUBLE LIP SEAL RUBBER GROMMET

	4" GRAVITY	6" GRAVITY
DIM "A"	1'-6"	1'-7"

NOT TO SCALE



STANDARD DESIGN DETAIL

LATERAL CONNECTION TO EXISTING
VACUUM VALVE PIT

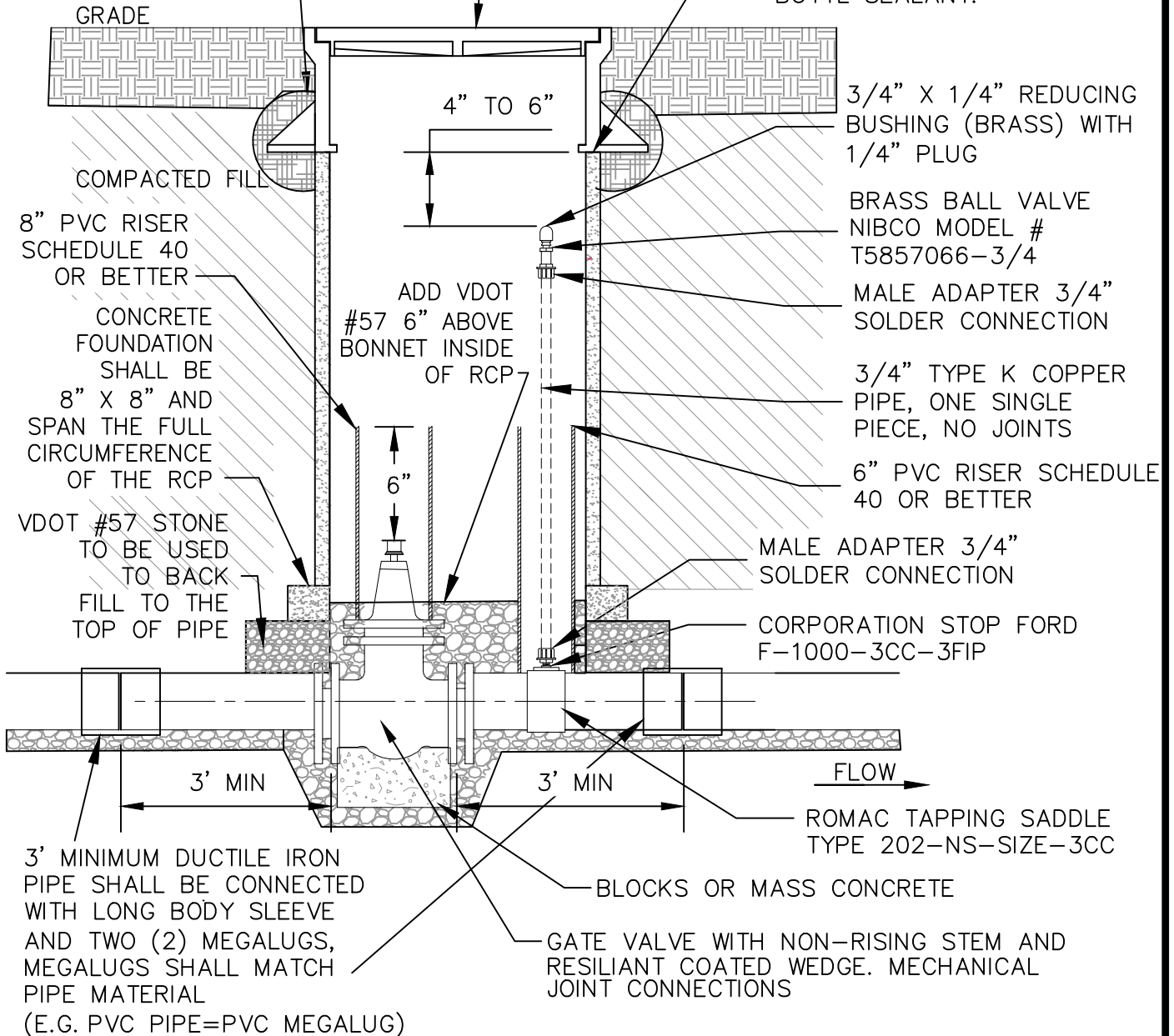
DRAWING NO.
277
SHEET
1 OF 1
DATE
7/2025

HRSD 24" MANHOLE FRAME
AND COVER (HRSD DETAIL
228, RUBBER GASKET NOT
REQUIRED)
MANHOLE FRAME SHALL BE
SET IN MORTAR BED
CENTERED OVER THE RC PIPE

DIVISION VALVE SUPPORT INFORMATION	
VALVE SIZE	SUPPORT SIZE
4"	6" THICK X 1.75' SQUARE
6"	6" THICK X 2.25' SQUARE
8"	6" THICK X 3.00' SQUARE
10"	6" THICK X 3.50' SQUARE

MORTAR BED
SHALL BE 8" X 8"
AND SPAN THE FULL
CIRCUMFERENCE OF
THE MANHOLE FRAME

MANHOLE FRAME AND RCP
TO BE JOINT SHALL HAVE
BUTYL SEALANT.



NOT TO SCALE



STANDARD DESIGN DETAIL

VACUUM SYSTEM DIVISION VALVE

DRAWING NO.
278

SHEET
1 OF 1

DATE
7/2025