

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)

6' MAX. (PER RISER) SEE CHART 1

8" SEE CHART 1

SEE CHART 1

12" DIA. VARIES

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.

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.

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

SEE DRAWING #200B FOR NOTES.

NOT TO SCALE



STANDARD PRECAST CONCRETE

MANHOLE W/EXTENDED MONOLITHIC BASE


DRAWING NO.	200A
SHEET	1 OF 2
DATE	9/2018

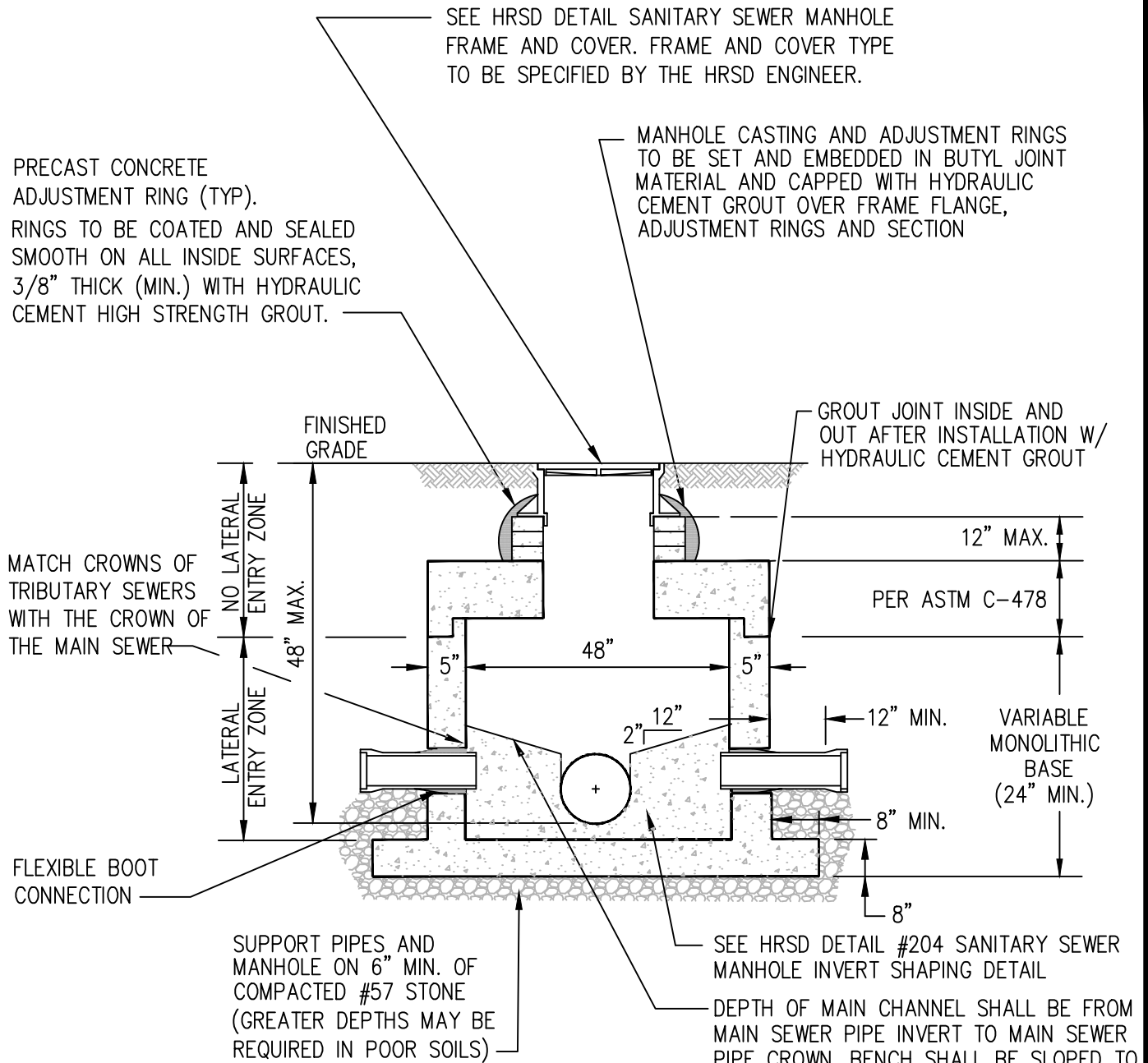
CHART 1

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	DRAWING NO. 200B
		SHEET 2 OF 2
	MANHOLE W/EXTENDED MONOLITHIC BASE	DATE 9/2018



NOTES:

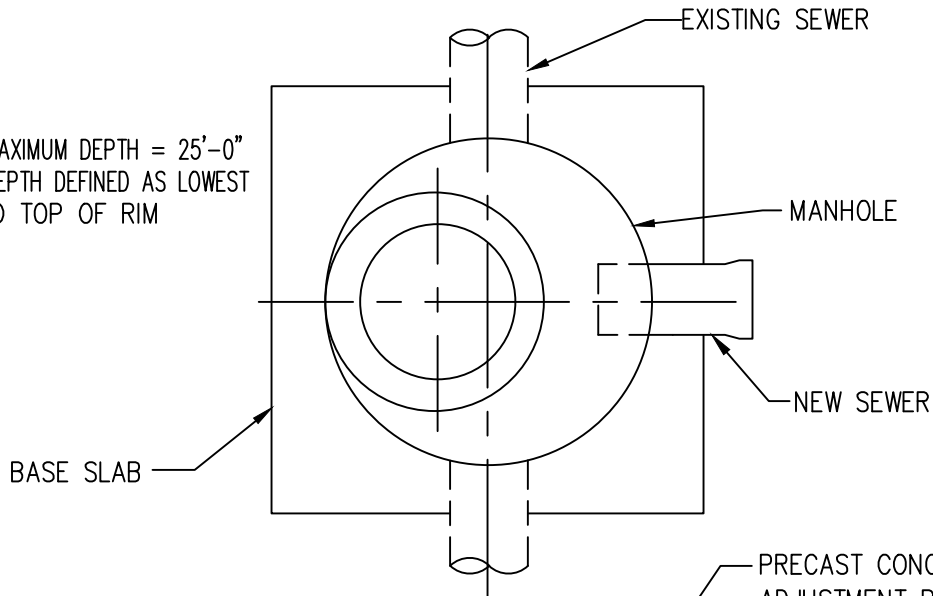
1. FLAT TOP CAN BE REPLACED W/ 1'-4" ECCENTRIC SHALLOW CONE IF APPROVED BY HRSD.
2. PRECAST MANHOLE TO BE IN COMPLIANCE WITH ASTM C-478.
3. PROVIDE A MAXIMUM OF TWO LIFT HOLES PER SECTION. PLUG LIFT HOLES WATERTIGHT WITH RUBBER PLUGS AND GROUT AFTER INSTALLATION.
4. ALL MANHOLES SHALL RECEIVE CONSHIELD ADDITIVE OR APPROVED EQUAL DURING CASTING.
5. CONCRETE USED TO FORM THE BENCH SHALL RECEIVE THE CONSHIELD ADDITIVE, OR APPROVED EQUAL.
6. COAT EXTERIOR OF MANHOLE IN ACCORDANCE WITH THE HRSD COATINGS MANUAL, CURRENT REVISION, COATING SYSTEM E-2-C. COATING SHALL BE FIELD APPLIED.

NOT TO SCALE

	STANDARD DESIGN DETAIL – PRECAST	DRAWING NO. 201
	CONCRETE SHALLOW MANHOLE WITH EXTENDED BASE	SHEET 1 OF 1
		DATE 9/2018

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.

FINISHED GRADE

12" MAX.

DOGHOUSE TYPE OPENING
 RADIUS=1/2 PIPE O.D. + 2"
 TOTAL HEIGHT=PIPE O.D. + 4"

CONSTRUCT CONCRETE CHANNEL
 AND BENCH IN FIELD, SEE SANITARY
 MANHOLE INVERT SHAPING
 DETAIL #204

4" MIN. EMBEDMENT

FIELD POUR BASE SLAB
 UNDER EXISTING SEWER.
 REINFORCE W/ #5 REBAR @
 12" O.C. EACH WAY. ALL
 REBAR TO HAVE 1-1/2"
 MIN. COVER. CONCRETE TO
 BE CLASS A-3.

12"

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

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

PRECAST CONCRETE
 MANHOLE SECTIONS

MATCH CROWN OF NEW SEWER
 WITH CROWN OF EXISTING SEWER

12" MIN.

FLEXIBLE BOOT
 CONNECTION

APPLY WATERSTOP
 GROUTING BETWEEN
 MANHOLE WALL AND PIPE

8" MIN.

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

PLAN

SEE CHART 1

12"
 2"

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
 9/2018

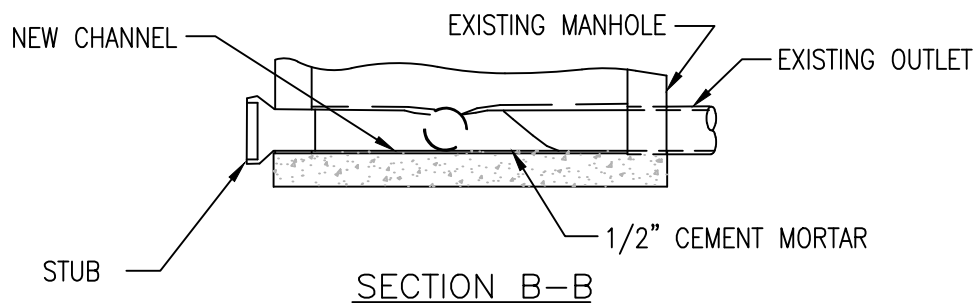
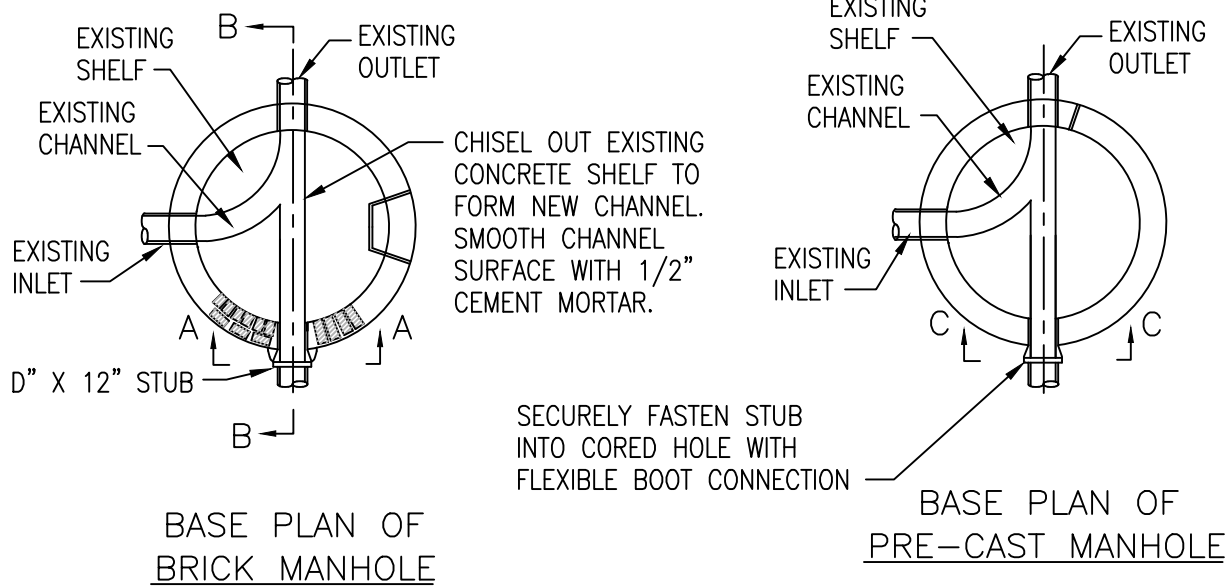
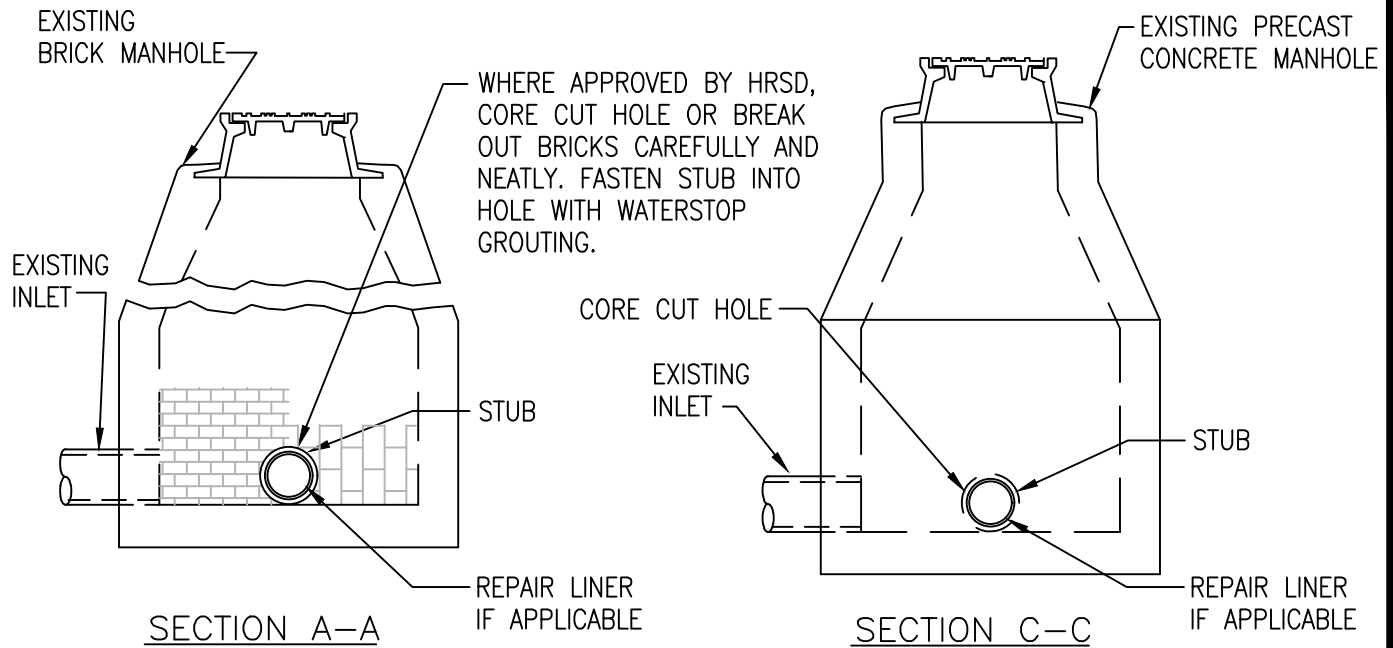
CHART 1

PIPE SIZE	MANHOLE DIAMETER	BASE UNIT HEIGHT	WALL THICKNESS—MIN.
< OR = 24"	48"	24"—48"	5"
27"—36"	60"	60" (MIN.)	6"
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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	DRAWING NO. 202B
		SHEET 2 OF 2
	SANITARY SEWER STRADDLE MANHOLE	DATE 9/2018



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

NOT TO SCALE



STANDARD DESIGN DETAIL

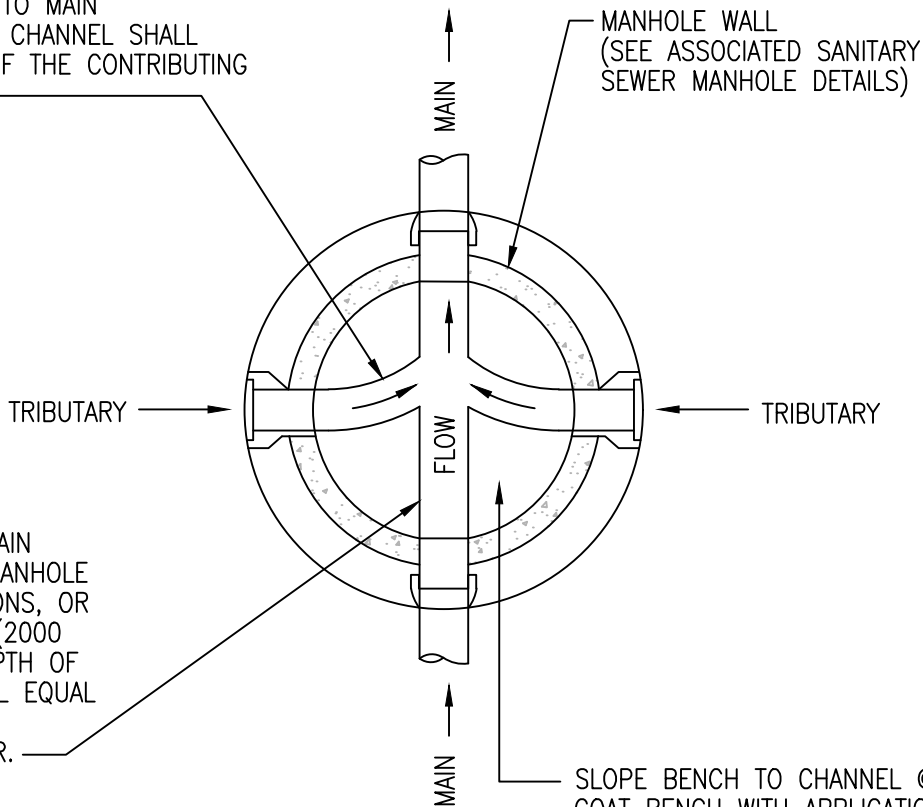
CONNECTION INTO EXISTING MANHOLES

DRAWING NO.
203

SHEET
1 OF 1

DATE
9/2018

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.

SLOPE BENCH TO CHANNEL @ 2":12". COAT BENCH WITH APPLICATION OF AN APPROVED COATING, IF SPECIFIED.

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

MANHOLE INVERT SHAPING

DRAWING NO. 204
SHEET 1 OF 1
DATE 9/2018

INSIDE DROP
BOWL
(RELINER INC.)
OR APPROVED
EQUAL

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

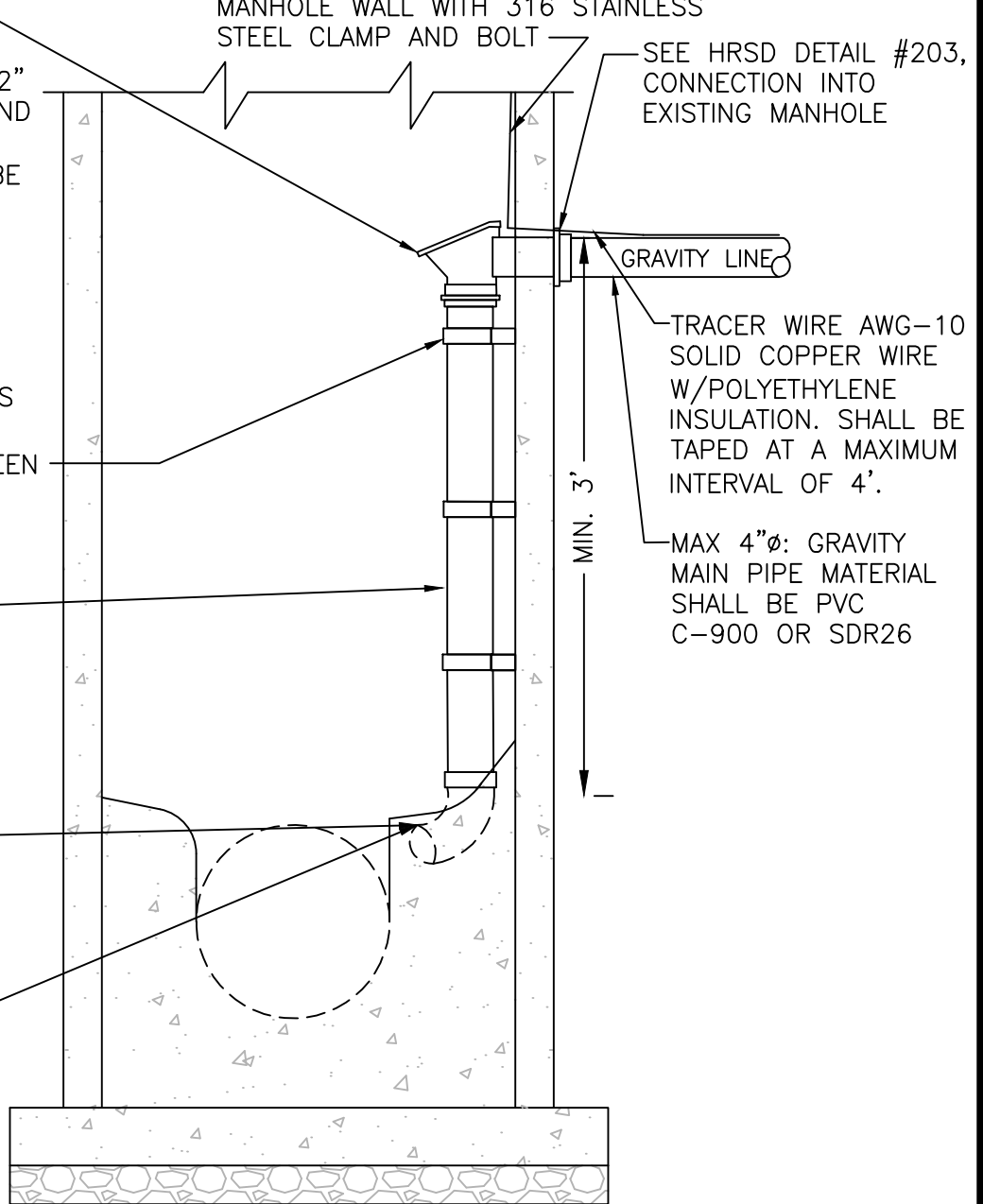
SEE HRSD DETAIL #203,
CONNECTION INTO
EXISTING MANHOLE

STRAP - 3/8" X 1-1/2"
FLAT BAR FABRICATED AND
INSTALLED TO SUPPORT
PIPE (MATERIAL SHALL BE
316 STAINLESS STEEL)
ATTACHED TO MANHOLE
WITH (2) 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



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.

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

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

NOT TO SCALE



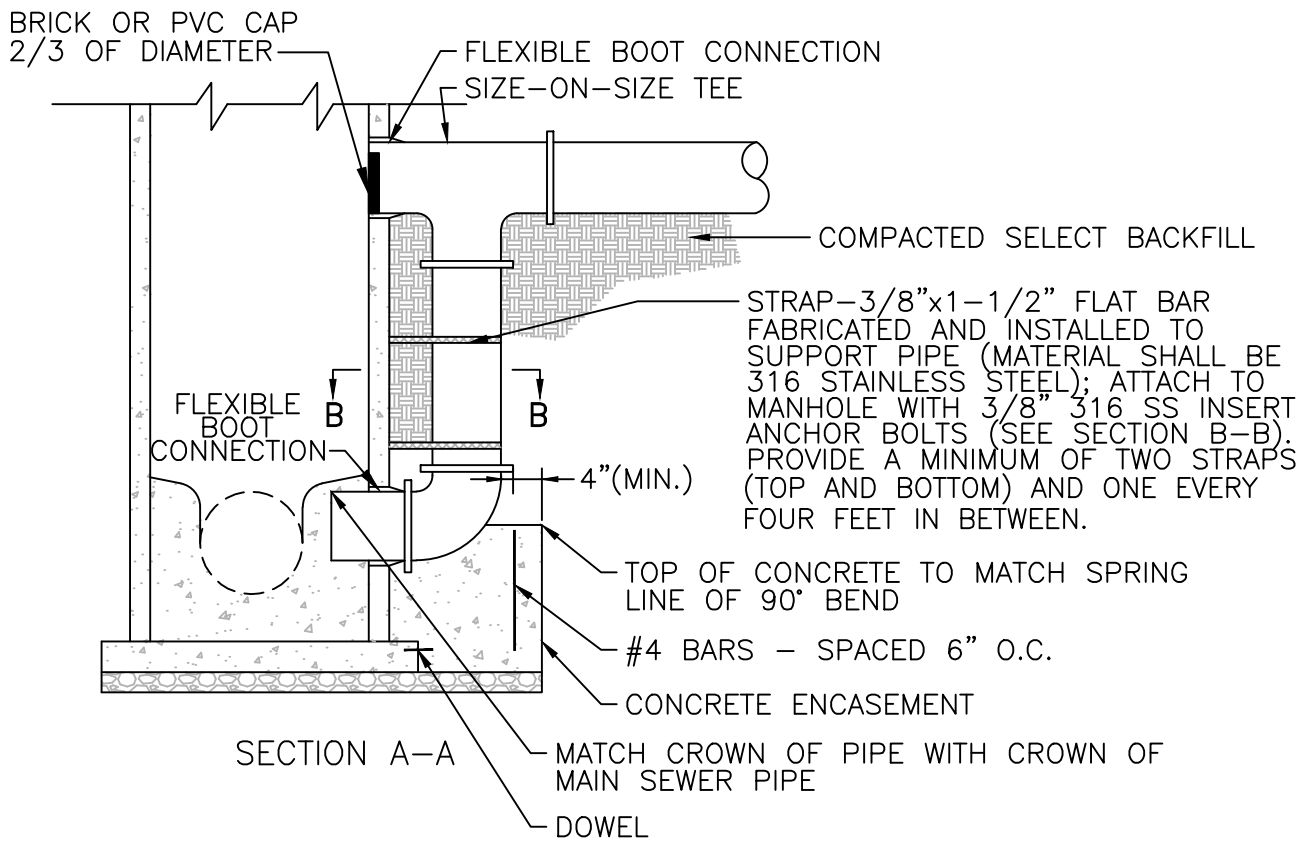
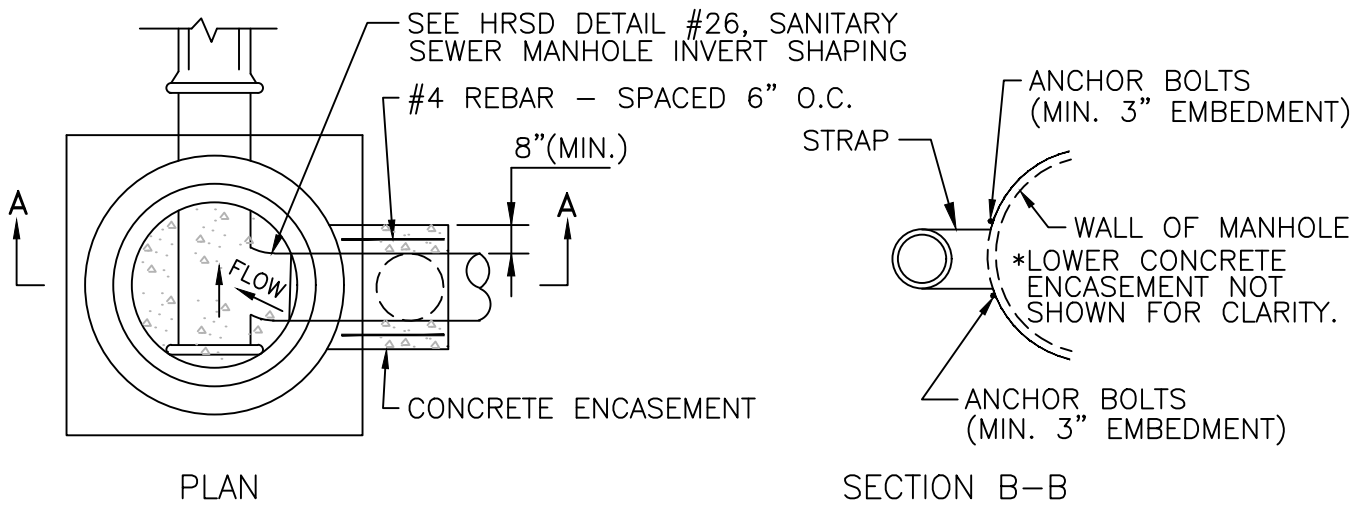
STANDARD PRECAST CONCRETE OR BRICK MANHOLE

INSIDE GRAVITY DROP CONNECTION
TO EXISTING MANHOLE

DRAWING NO.
205

SHEET
1 OF 1

DATE
9/2018



NOT TO SCALE



STANDARD PRECAST CONCRETE

OUTSIDE DROP MANHOLE

DRAWING NO.
206

SHEET
1 OF 1

DATE
9/2018

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

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

MAX 4"Ø: FORCE MAIN PIPE MATERIAL SHALL BE HDPE MINIMUM DR-26

MIN. 3'

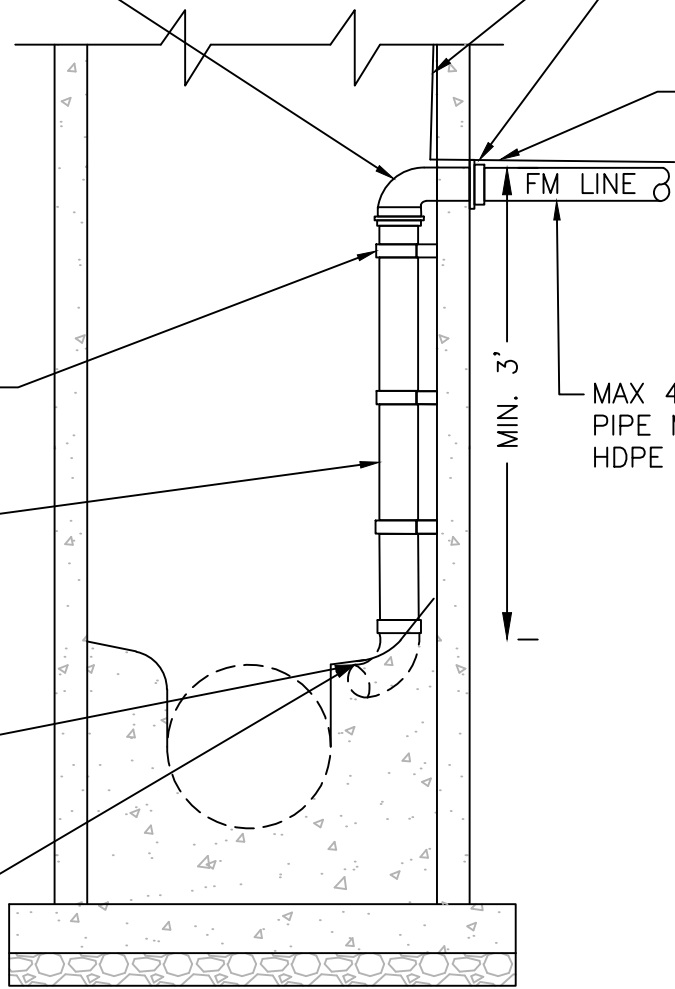
LONG RADIUS 90° BEND

STRAP - 3/8" X 1-1/2" FLAT BAR FABRICATED AND INSTALLED TO SUPPORT PIPE (MATERIAL SHALL BE 316 STAINLESS STEEL) ATTACHED TO MANHOLE WITH (2) 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 FORCE MAIN 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



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.

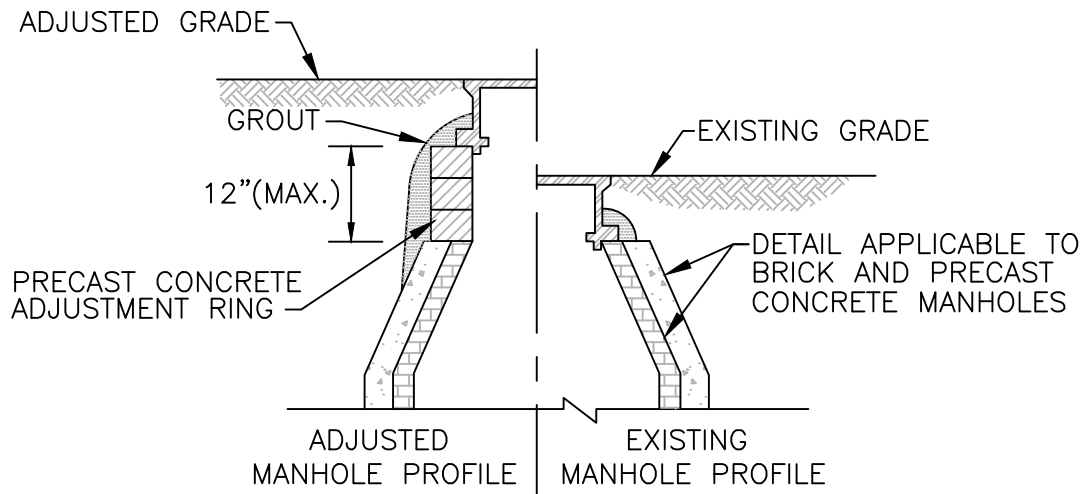
NOT TO SCALE



STANDARD PRECAST CONCRETE OR BRICK MANHOLE

INSIDE FORCE MAIN DROP CONNECTIONS TO EXISTING MANHOLE


DRAWING NO.	207
SHEET	1 OF 1
DATE	9/2018

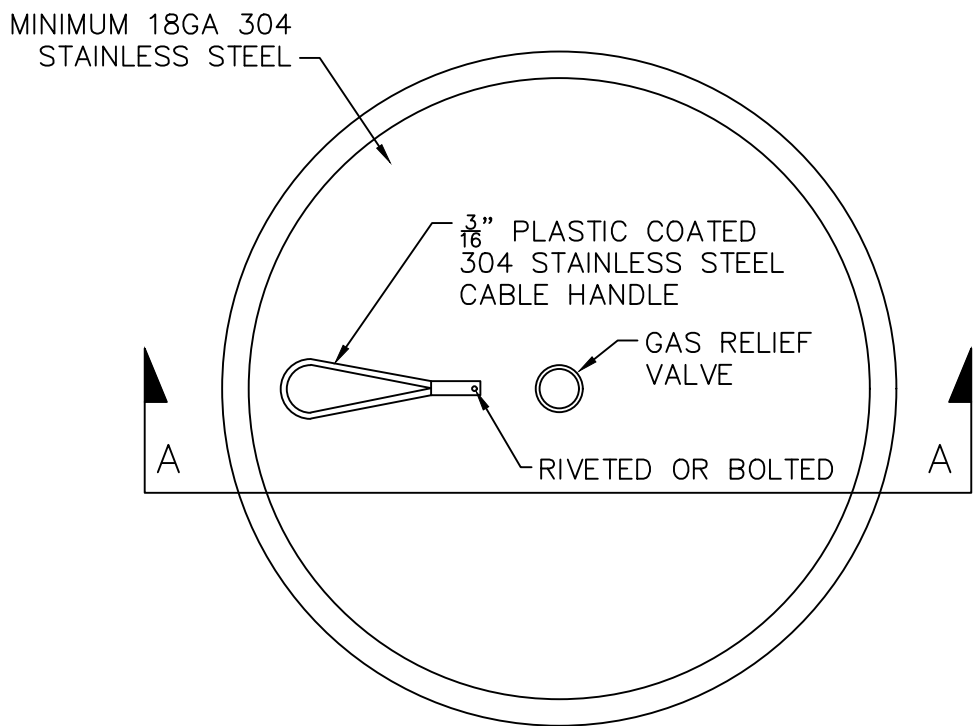
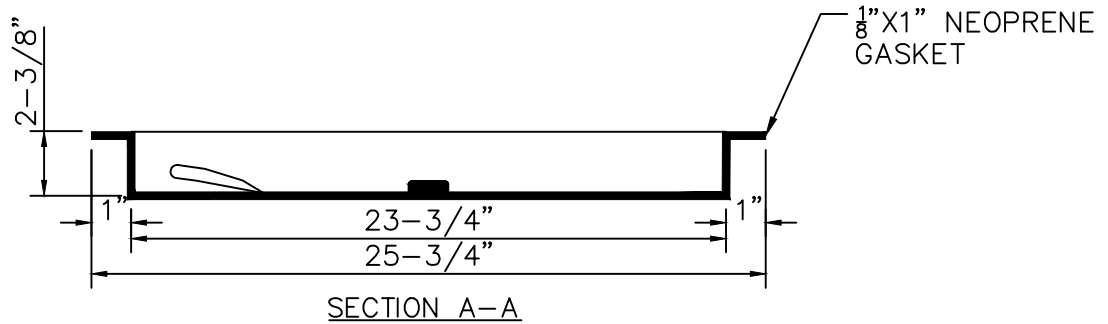


NOTES:

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	DRAWING NO. 208
	SANITARY SEWER MANHOLE ADJUSTMENT	SHEET 1 OF 1
		DATE 9/2018

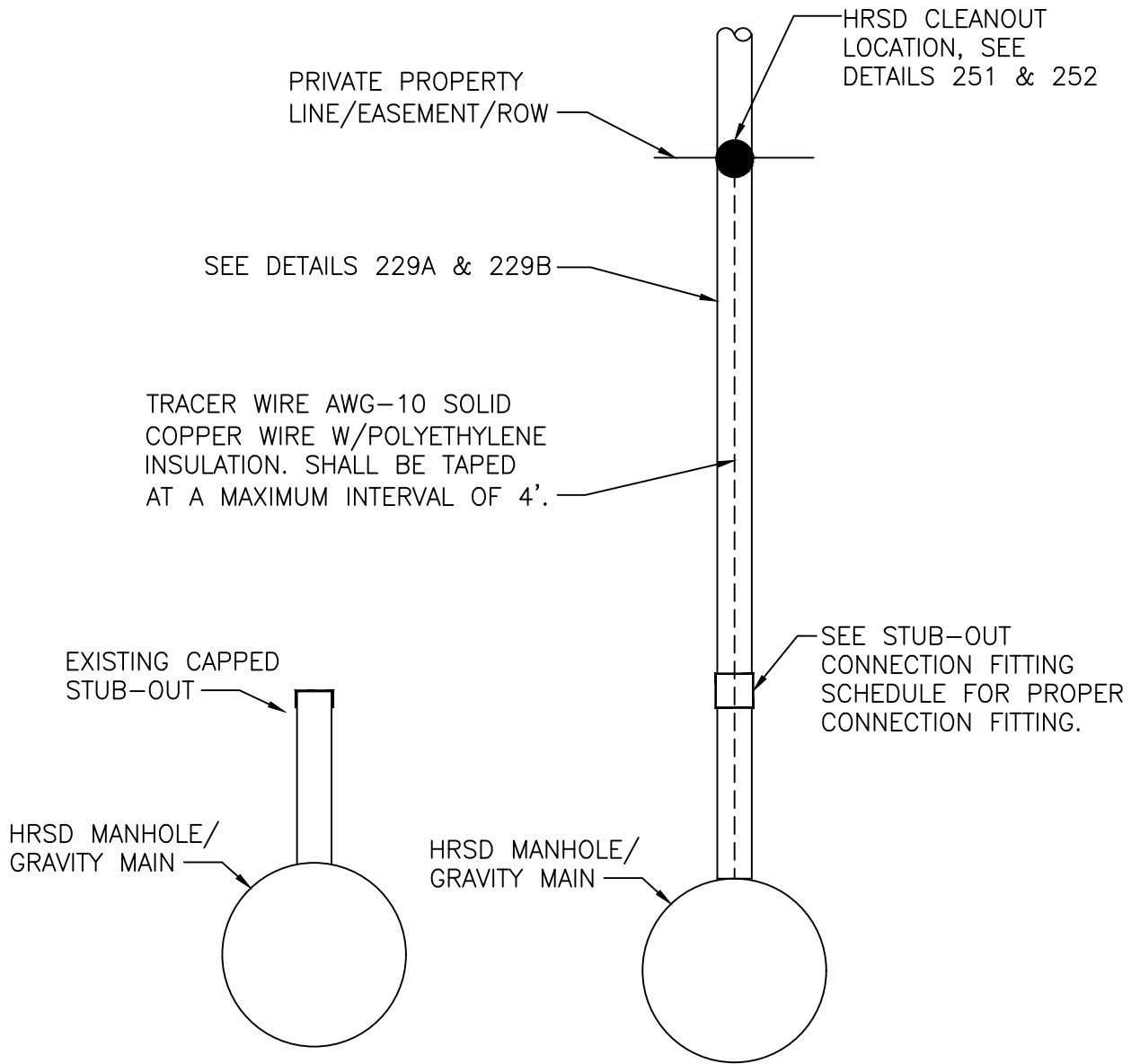


NOTES:

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	DRAWING NO. 209
	MANHOLE INSERT	SHEET 1 OF 1
		DATE 9/2018




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

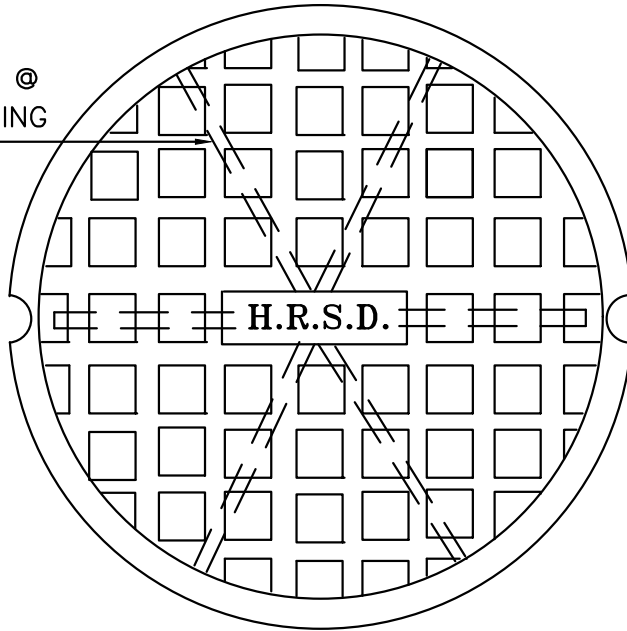
NOTE:

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

NOT TO SCALE

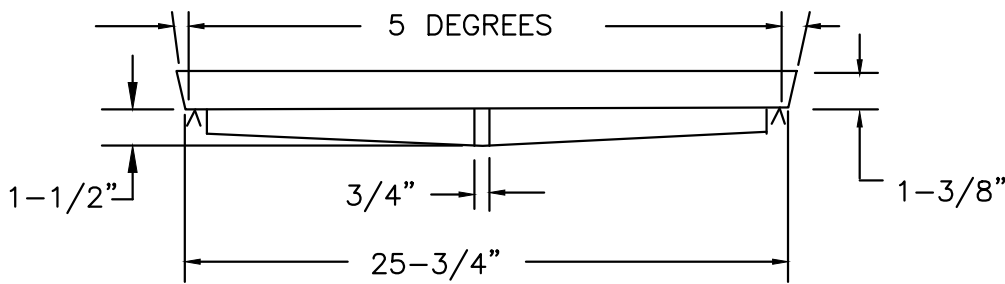
	STANDARD DESIGN DETAIL	DRAWING NO. 226
	STUB-OUT CONNECTION FOR EXISTING MANHOLES	SHEET 1 OF 1
		DATE 9/2018

6 WEBS @
60° SPACING

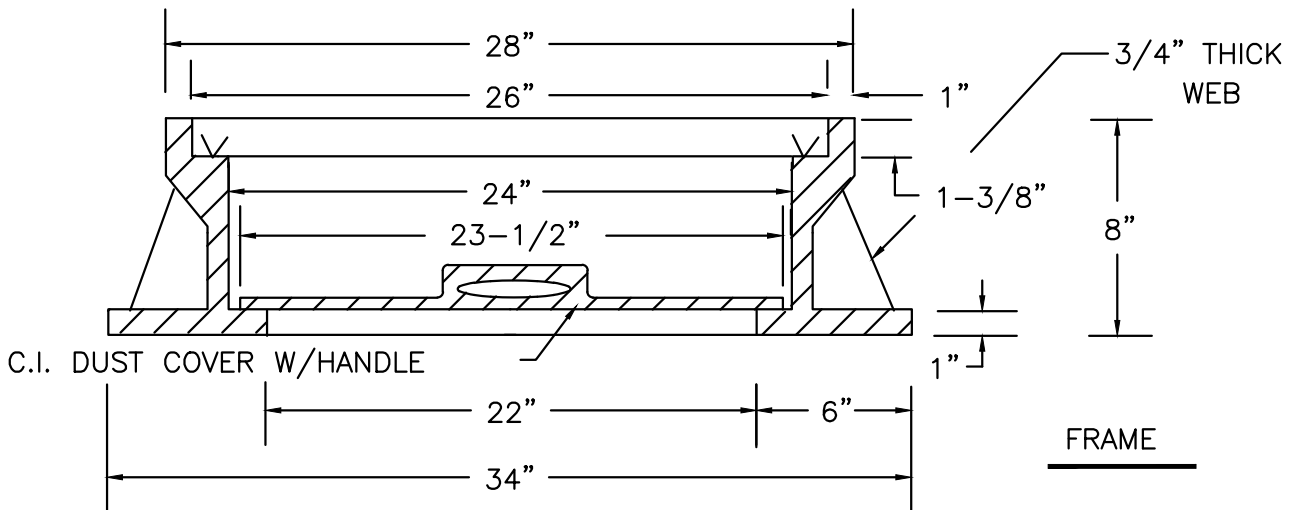


NOTES:

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.



COVER



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

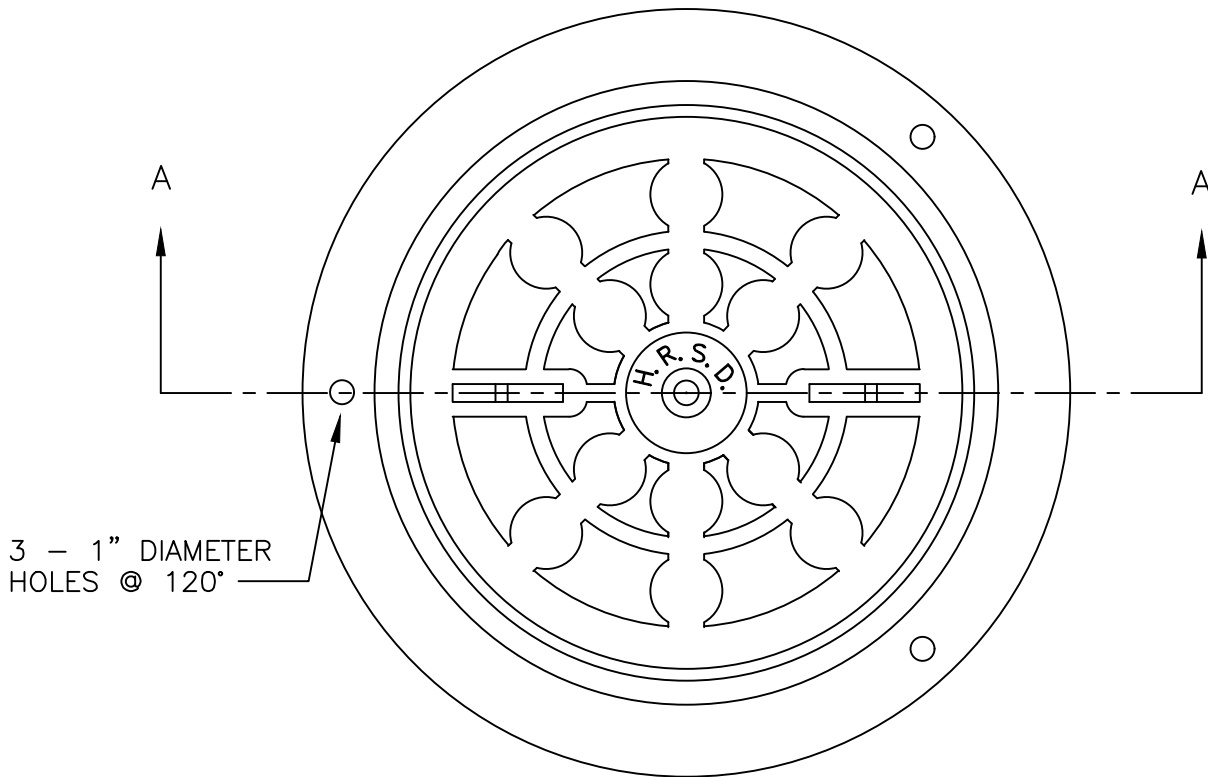
NOT TO SCALE



STANDARD DESIGN DETAIL

STANDARD MANHOLE FRAME AND COVER

DRAWING NO.	227
SHEET	1 OF 1
DATE	9/2018

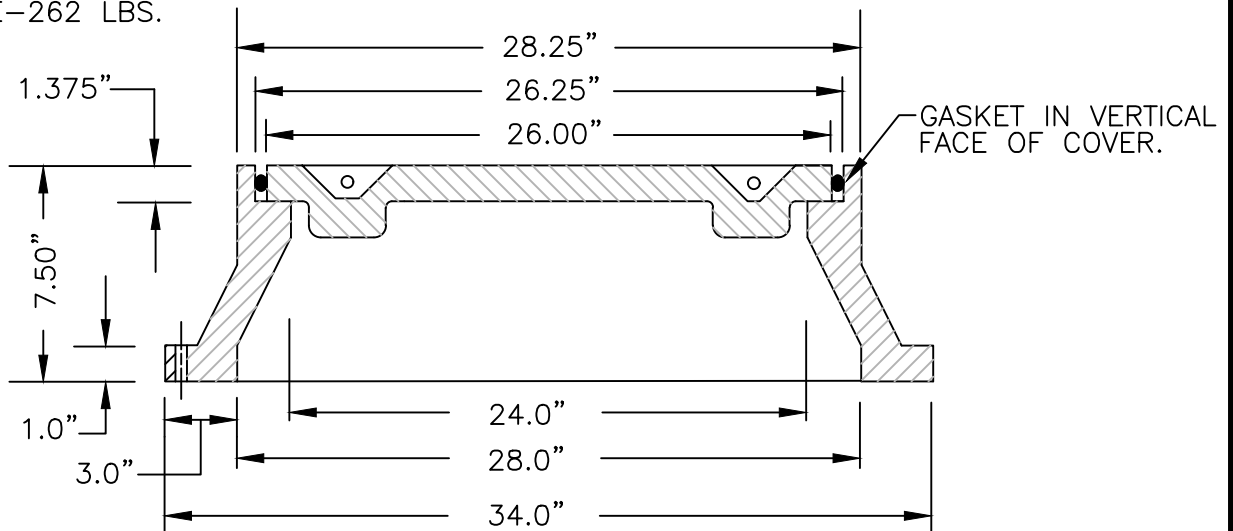


3 - 1" DIAMETER
HOLES @ 120°

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.



SECTION A-A

NOT TO SCALE



STANDARD DESIGN DETAIL

MANHOLE FRAME AND COVER-WATERTIGHT

DRAWING NO.

228

SHEET

1 OF 1

DATE

9/2018

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

4' OR LESS

1% MIN. SLOPE

SIDEWALK

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)

6"
R/W LINE

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

GREATER THAN 4'

1% MIN. SLOPE

SIDEWALK

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

6"
R/W LINE

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

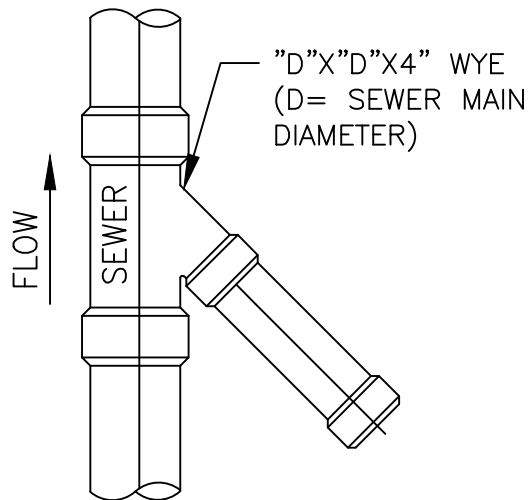
SHEET
1 OF 2

DATE
9/2018

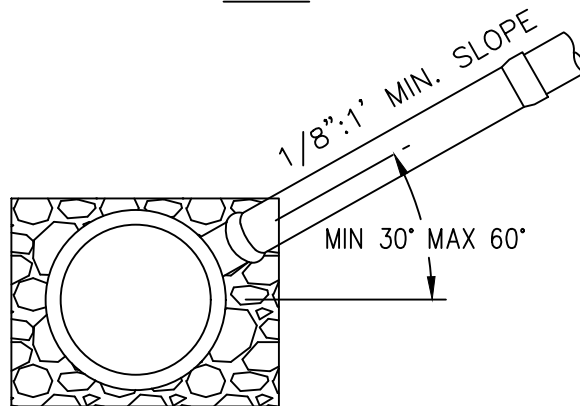
NOTES:

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 9/2018



PLAN



SECTION VIEW

NOTES:

1. PROVIDE A CAPPED EXTENSION TO PROPERTY LINE PER HRSD REQUIREMENTS
2. CLEAN OUT SHALL BE INSTALLED AT THE ROW OR HRSD EASEMENT/PROPERTY LINE, UNLESS OTHERWISE STATED.
3. THIS IS FOR NEW SANITARY SEWER INSTALLATIONS ONLY. FOR SERVICE CONNECTIONS TO EXISTING GRAVITY MAIN, SEE HRSD DETAILS 229A & 229B
4. TAPS ARE NOT PERMITTED FOR NEW DEVELOPMENTS
5. 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.
6. WYE CONNECTION SHALL BE PLACED BETWEEN THE 1:30-3 O'CLOCK OR 9 TO 10:30 O'CLOCK POSITION ON THE GRAVITY MAIN
7. THIS DETAIL SHALL BE USED IN CONJUNCTION WITH STANDARD DETAILS 229A & 229B AND DETAILS 251 & 252
8. PIPING BEDDING SHALL BE TYPE IV BEDDING REFERANCE HRPDC DETAIL EW_01

NOT TO SCALE



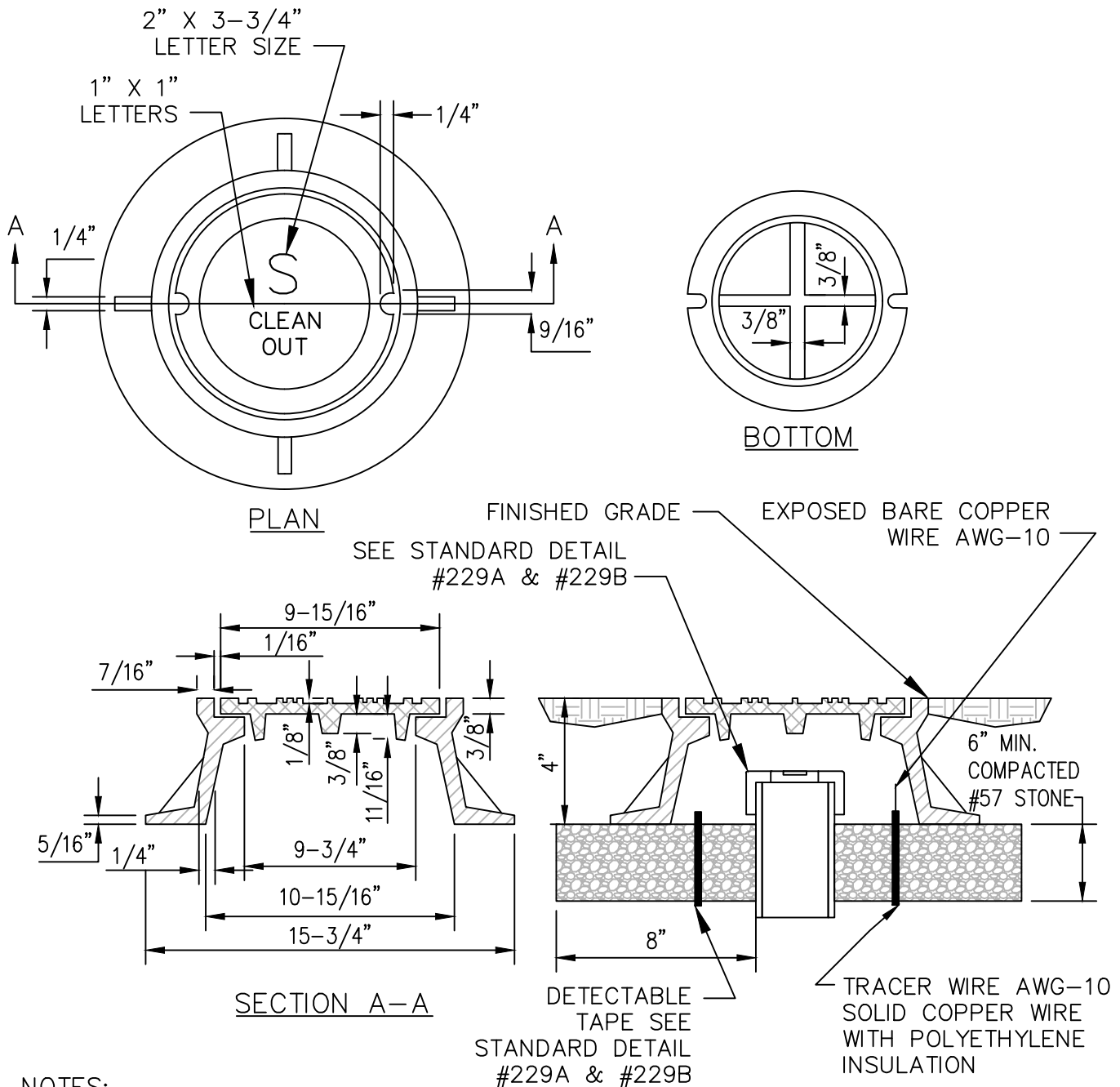
STANDARD DESIGN DETAIL

SANITARY SEWER SERVICE
CONNECTION FOR NEW DEVELOPMENTS

DRAWING NO.
230

SHEET
1 OF 1

DATE
9/2018

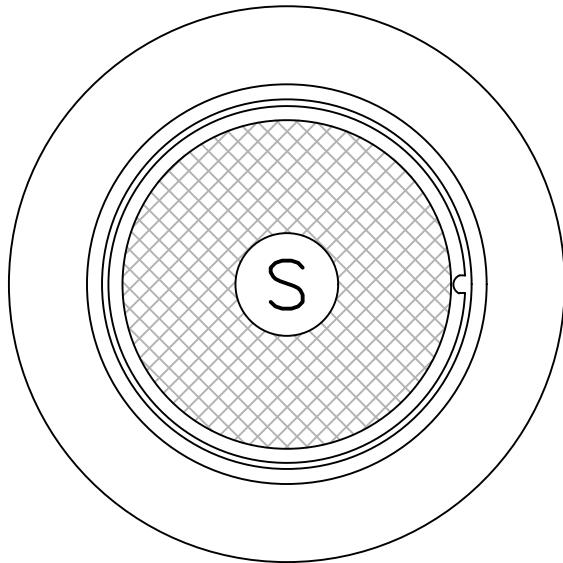


NOTES:

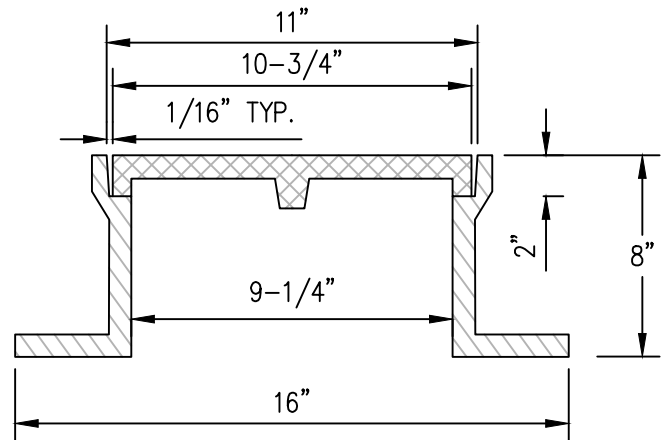
1. CLEAN OUT FRAME & COVER TO BE PART NUMBER NPN-CW-18 SUPPLIED BY CAPITAL FOUNDRY OF VIRGINIA, INC. OR APPROVED EQUAL.
2. ALL GRAY IRON CASTINGS SHALL CONFORM TO LATEST EDITION OF ASTM A-48, CLASS 30 AND SHALL BE OF UNIFORM QUALITY.
3. ALL CASTING DIMENSIONS SHALL HAVE A TOLERANCE OF 1/8"±
4. ALL CASTINGS SHALL BE CLEANED BY SHOT BLASTING AND HAND CHIPPING UTILIZING STANDARD
5. INDUSTRY PRACTICES PRIOR TO SHOP APPLICATION OF ASPHALTIC COATING, BY DIPPING.
6. 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.

NOT TO SCALE

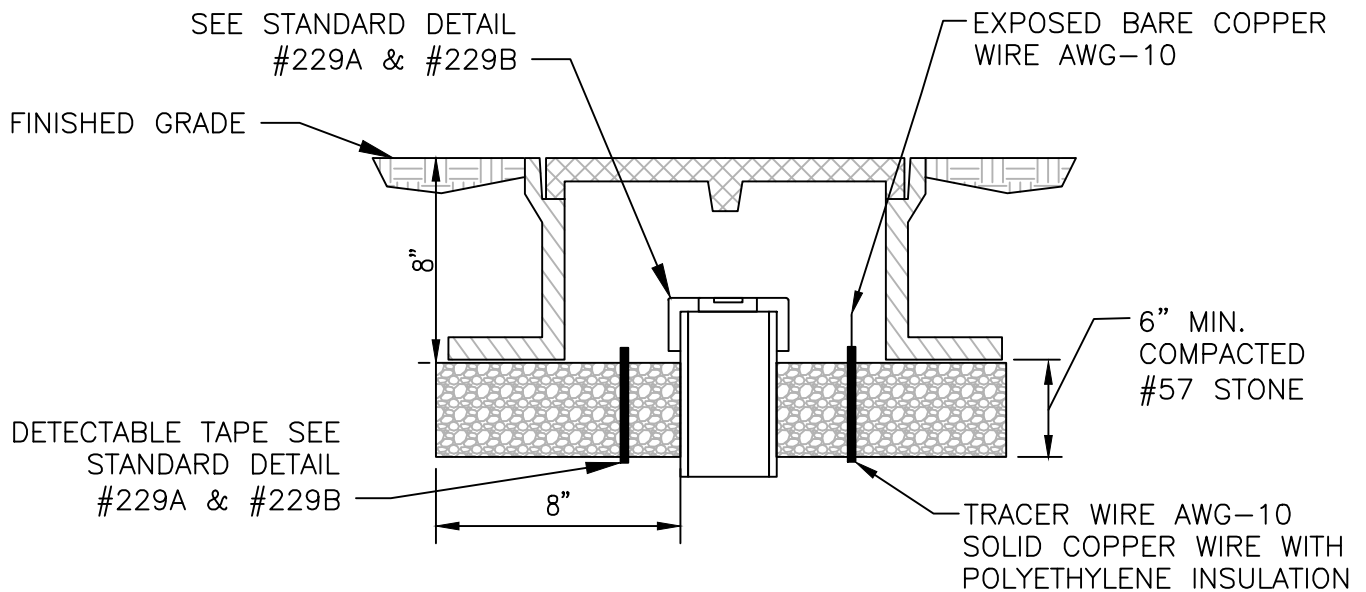
	STANDARD DESIGN DETAIL	DRAWING NO. 251
	SANITARY SEWER SERVICE CLEAN	SHEET 1 OF 1
	OUT FRAME AND COVER (NON-TRAFFIC RATED)	DATE 9/2018



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.

NOT TO SCALE

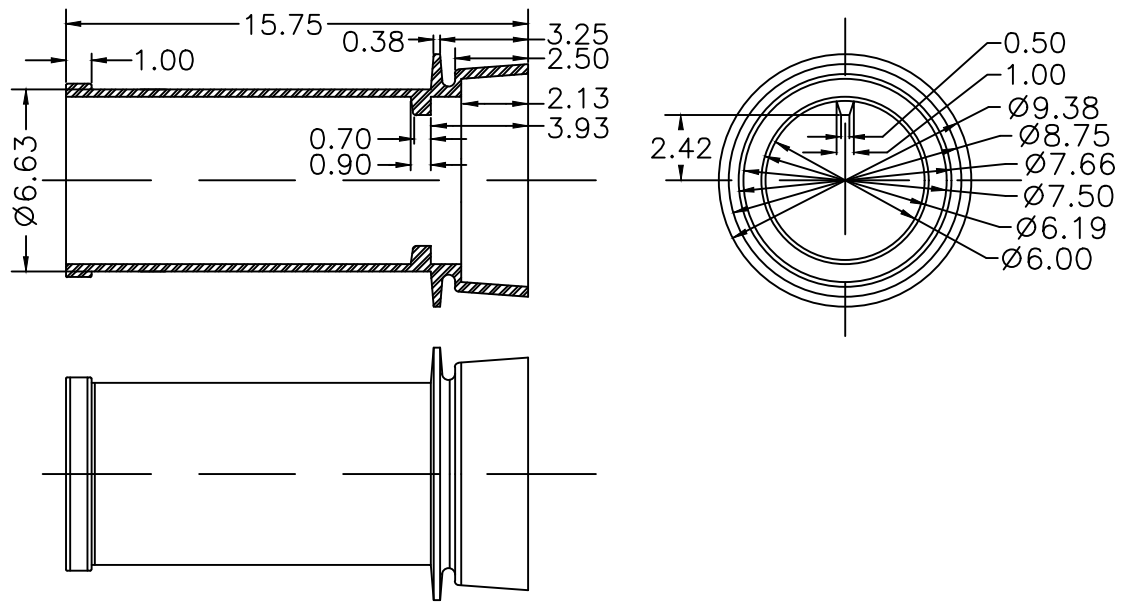


STANDARD DESIGN DETAIL
 SANITARY SEWER SERVICE CLEAN
 OUT FRAME AND COVER (TRAFFIC RATED)

DRAWING NO.
252

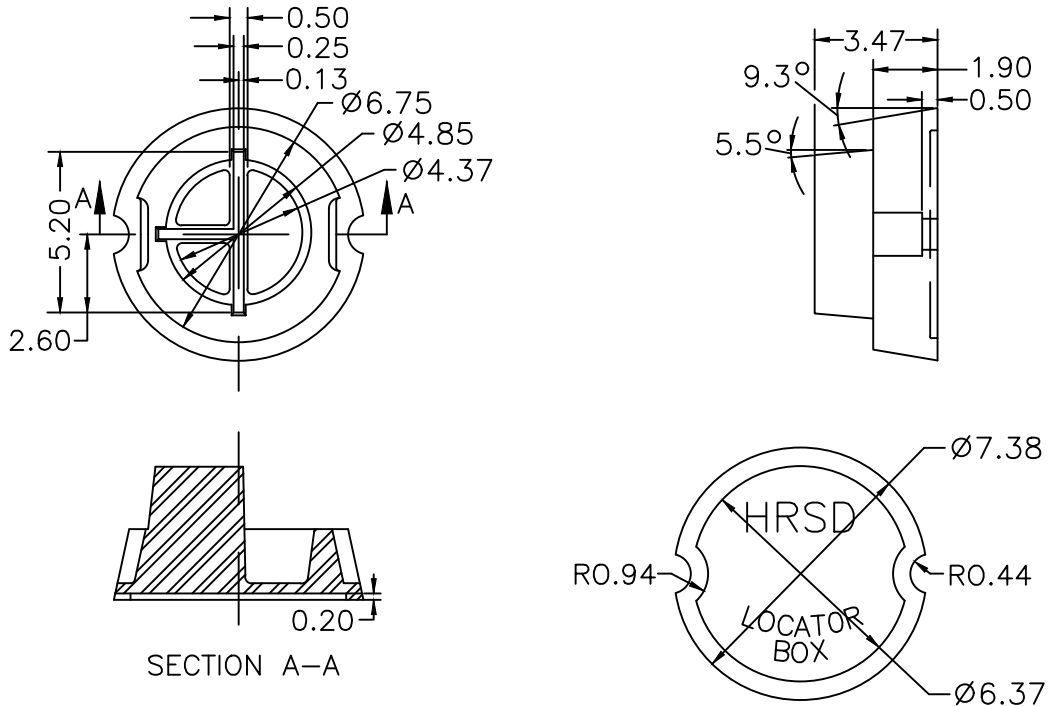
SHEET
1 OF 1

DATE
9/2018



NOTES:

1. MATERIAL, CAST IRON, GRADE TO BE SPECIFIED ON PURCHASE ORDER.
2. ALL RADII SHALL BE $\frac{1}{16}$ " MINIMUM.
3. ESTIMATED WEIGHT 37#.



NOTES:

1. ALL INTERNAL EDGES SHALL HAVE A $\frac{1}{16}$ " RADIUS.
2. ALL EXTERNAL RADII $\frac{1}{16}$ " TO $\frac{1}{8}$ " AS NEEDED FOR CASTING RELIEF.
3. MATERIAL, CAST IRON, GRADE TO BE SPECIFIED ON PURCHASE ORDER.
4. ESTIMATED WEIGHT 12#.
5. RISER TO BE FILLED WITH PEA GRAVEL.

NOT TO SCALE



STANDARD DESIGN DETAIL

TRACER WIRE LOCATOR BOX

DRAWING NO.

253

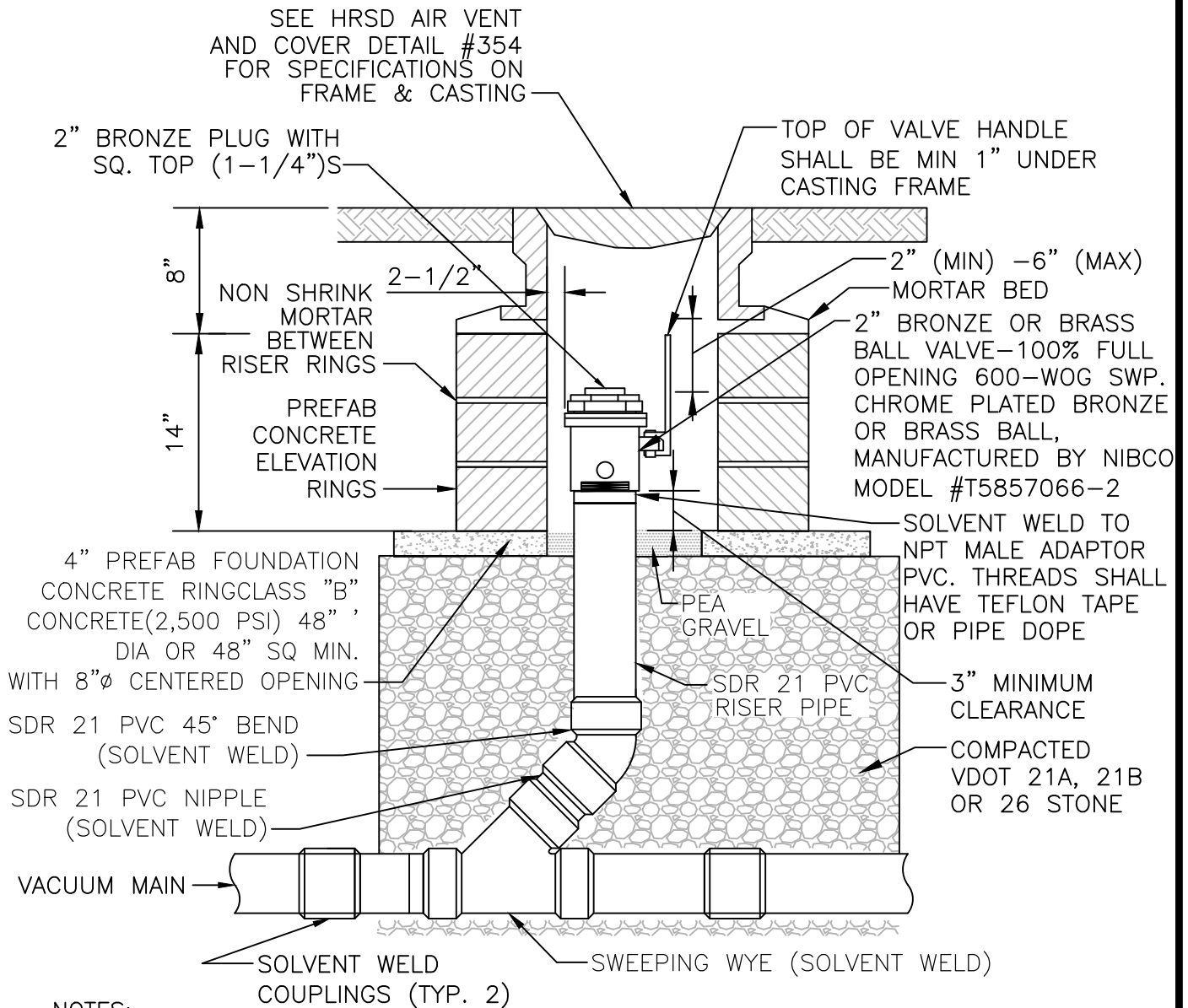
SHEET

1 OF 1

DATE

9/2018

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

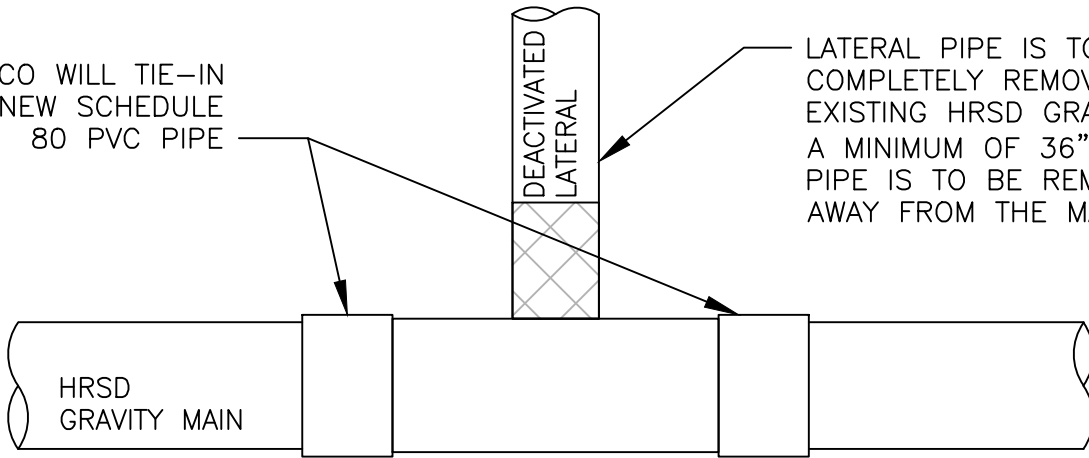
SHEET

1 OF 1

DATE

9/2018

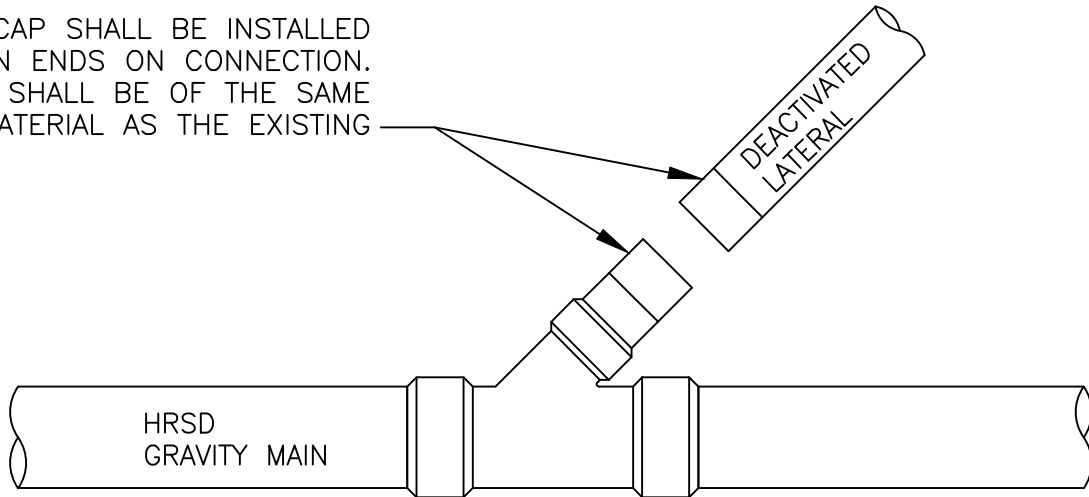
FERNCO WILL TIE-IN THE NEW SCHEDULE 80 PVC PIPE



LATERAL PIPE IS TO BE COMPLETELY REMOVED FROM EXISTING HRSD GRAVITY MAIN. A MINIMUM OF 36" LATERAL PIPE IS TO BE REMOVED AWAY FROM THE MAIN.

BREAK-IN TAP DEACTIVATION DETAIL

CAP SHALL BE INSTALLED ON ENDS ON CONNECTION. CAP SHALL BE OF THE SAME PIPE MATERIAL AS THE EXISTING



WYE OR TEE DEACTIVATION DETAIL

NOTES:

- 1) ALL PIPE DEACTIVATION SHALL BE ENCASED IN CONCRETE AT THE HRSD GRAVITY MAIN. CONCRETE SHALL SPAN 6" PAST THE FERNCO, WYE, OR TEE FITTING.
- 2) DEACTIVATED LATERAL SHALL BE REMOVED TO THE EASEMENT/ROW/PROPERTY LINE OR CAPPED AND FLOWABLE FILLED.

NOT TO SCALE

	STANDARD DESIGN DETAIL	DRAWING NO. 277
	DEACTIVATION AT HRSD GRAVITY MAIN	SHEET 1 OF 1
		DATE 9/2018