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.

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
# Chart 1

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Manhole Diameter</th>
<th>Base Unit Height</th>
<th>Wall Thickness - Min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; OR = 24&quot;</td>
<td>48&quot;</td>
<td>24&quot; - 48&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>27&quot; - 36&quot;</td>
<td>60&quot;</td>
<td>60&quot; (MIN.)</td>
<td>6&quot;</td>
</tr>
<tr>
<td>42&quot;</td>
<td>72&quot;</td>
<td>72&quot; (MIN.)</td>
<td>7&quot;</td>
</tr>
<tr>
<td>48&quot;</td>
<td>72&quot;</td>
<td>48&quot; (MIN.)</td>
<td>7&quot;</td>
</tr>
</tbody>
</table>

**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 ConsiHeld additive or approved equal during casting.
6. Concrete used to form the bench shall receive the ConsiHeld 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**
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.

MATCH CROWNS OF TRIBUTARY SEwers
WITH THE CROWN OF THE MAIN SEwer

FLEXIBLE BOOT CONNECTION

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

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
CONCRETE SHALLOW MANHOLE WITH EXTENDED BASE

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

MANHOLE CASTING AND ADJUSTMENT RINGS TO BE SET AND 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

12" MAX.

PER ASTM C-478

12" MIN.

VARIABLE MONOLITHIC BASE
(24" MIN.)

8" MIN.

8"
**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.**

**PLAN**

**DOGGHOSE 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.

**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.**

**NOT TO SCALE**

**STANDARD DESIGN DETAIL**

SANITARY SEWER STRADDALE MANHOLE

**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**

**MATCH CROWN OF NEW SEWER WITH CROWN OF EXISTING SEWER**

**FLEXIBLE BOOT CONNECTION**

**APPLY WATERSTOP**

**CROUTING BETWEEN MANHOLE WALL AND PIPE**

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

**SEE DETAIL #202B, SHEET 2 OF 2 FOR NOTES.**
## Chart 1

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Manhole Diameter</th>
<th>Base Unit Height</th>
<th>Wall Thickness Min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; OR = 24”</td>
<td>48”</td>
<td>24”–48”</td>
<td>5”</td>
</tr>
<tr>
<td>27”–36”</td>
<td>60”</td>
<td>60” (Min.)</td>
<td>6”</td>
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<tr>
<td>42”</td>
<td>72”</td>
<td>72” (Min.)</td>
<td>7”</td>
</tr>
<tr>
<td>48”</td>
<td>72”</td>
<td>48” (Min.)</td>
<td>7”</td>
</tr>
</tbody>
</table>

## 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 ConsShield 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 ConsShield additive, or approved equal.
EXISTING BRICK MANHOLE

WHERE APPROVED BY HRSD, CORE CUT HOLE OR BREAK OUT BRICKS CAREFULLY AND NEATLY. FASTEN STUB INTO HOLE WITH WATERSTOP GROUTING.

SECTION A-A

REPAIR LINER IF APPLICABLE

EXISTING PRECAST CONCRETE MANHOLE

SECTION C-C

REPAIR LINER IF APPLICABLE

EXISTING SHELF

EXISTING OUTLET

CHISEL OUT EXISTING CONCRETE SHELF TO FORM NEW CHANNEL
SMOOTH CHANNEL SURFACE WITH 1/2" CEMENT MORTAR

SECURELY FASTEN STUB INTO CORED HOLE WITH FLEXIBLE BOOT CONNECTION

BASE PLAN OF PRE-CAST MANHOLE

BASE PLAN OF BRICK MANHOLE

EXISTING SHELF

EXISTING OUTLET

EXISTING INLET

D" X 12" STUB

1/2" CEMENT MORTAR

NOT TO SCALE

NEW CHANNEL

EXISTING MANHOLE

EXISTING OUTLET

STUB

SECTION B-B

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

STANDARD DESIGN DETAIL

HRSD

CONNECTION INTO EXISTING MANHOLES

DRAWING NO. 203

SHEET 1 OF 1

DATE 1/7/2020
FORM TRIBUTARY CHANNELS OF
CONCRETE (2000 P.S.I.)
(CROWEL FINISH) ON A
CONTINUOUS CURVE TO MAIN
CHANNEL. DEPTH OF CHANNEL SHALL
EQUAL THE DEPTH OF THE CONTRIBUTING
SEWER.

MANHOLE WALL
(SEE ASSOCIATED SANITARY
SEWER MANHOLE DETAILS)

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
INSIDE DROP BOWL (RELINER INC.) OR APPROVED EQUAL

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

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: GRAVITY MAIN PIPE MATERIAL SHALL BE PVC C-900 OR SDR26

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
See HRSD detail #26, sanitary sewer manhole invert shaping.

#4 rebar - spaced 6" o.c.

8" (min.) strap

Concrete encasement

Anchor bolts (min. 3" embedment)

Wall of manhole lower concrete encasement not shown for clarity.

Anchor bolts (min. 3" embedment)

Brick or PVC cap 2/3 of diameter

Flexible boot connection size-on-size tee

Compacted select backfill

 Strap - 3/8" x 1 - 1/2" flat bar fabricated and installed to support pipe (material shall be 316 stainless steel). Attach to manhole with 3/8" 316 ss insert anchor bolts (see section B-B). Provide a minimum of two straps (top and bottom) and one every four feet in between.

Top of concrete to match spring line of 90° bend

#4 bars - spaced 6" o.c.

Concrete encasement

Match crown of pipe with crown of main sewer pipe

Dowel

Not to scale

Standard precast concrete

Outside drop manhole
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.

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

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

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.

STANDARD PRECAST CONCRETE OR BRICK MANHOLE

INSIDE FORCE MAIN DROP CONNECTIONS TO EXISTING MANHOLE
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 RADIALY 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).


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.
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
**STANDARD DESIGN DETAIL**

**SERVICE LATERAL & GRAVITY MAIN CONNECTION TO EXISTING STUB-OUT**

**STUB-OUT CONNECTION FITTING SCHEDULE**

<table>
<thead>
<tr>
<th>STUB-OUT MATERIAL</th>
<th>FITTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC</td>
<td>PVC COUPLING</td>
</tr>
<tr>
<td>DI/CI</td>
<td>JCM 201</td>
</tr>
<tr>
<td>VITRIFIED CLAY</td>
<td>FERNCO 102 SERIES</td>
</tr>
</tbody>
</table>

**NOTE:**
1. CONTRACTOR SHALL FIELD VERIFY ALL PIPE MATERIAL AND SIZES PRIOR TO PROCURING MATERIAL.
NOTES:
1. CASTINGS TO BE SHOT BLASTED
2. CASTING TO BE ASTM A-48 CLASS 30
3. TOLERANCE ±.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.

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

NOT TO SCALE

STANDARD DESIGN DETAIL

STANDARD MANHOLE FRAME AND COVER
NOTES
1. CASTINGS TO BE SHOT BLASTED.
2. CASTINGS SHALL MEET OR EXCEED ASTM A-48-76 CLASS 30-B.
3. TOLERANCE ± 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
Primary Connection Point. A min of 3' of straight pipe shall remain with a permanent cap placed on the end of straight pipe unless activated at the time of construction.

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.

Fernco will tie-in the new schedule 80 PVC pipe.

Break-in tap deactivation.

Cap shall be installed on ends of connection. Cap shall be of the same pipe material as the existing.

Wye or tee deactivation.

*See Sheet 2 for notes

Not to Scale

Standard Design Detail

Sanitary Service Lateral Installation/Deactivation

HRSD

Drawing No.
229A

Sheet
1 of 2

Date
1/2020
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 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 IN 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. ALL PIPE DEACTIVATION SHALL BE ENCASED IN CONCRETE AT THE HRSD GRAVITY MAIN. CONCRETE SHALL SPAN 6” PAST THE FERNCO, WYE, TEE, OR FITTING.

8. DEACTIVATED LATERAL SHALL BE REMOVED TO THE EASEMENT/ROW/PROPERTY LINE OR CAPPED AND FLOWABLE FILLED.
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 REFERANCE HRPDC DETAIL EW_01.
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

HRSD GRAVITY MAIN

DEACTIVATED LATERAL

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

DEACTIVATION AT HRSD GRAVITY MAIN
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, AD CONTINGENT UPON HRSD APPROVAL.

NOT TO SCALE

STANDARD DESIGN DETAIL

ALTERNATIVE SERVICE LATERAL CONNECTION TO EXISTING GRAVITY SEWER MAIN
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

PERMANENT SERVICE LATERAL DEACTIVATION AT HRSD MANHOLE
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 INDUSTRY PRACTICES PRIOR TO SHOP APPLICATION OF ASPHALTIC COATING, BY DIPPING.
5. 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
SANITARY SEWER SERVICE CLEAN OUT FRAME AND COVER (NON-TRAFFIC RATED)
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.
NOTES:
1. MATERIAL, CAST IRON, GRADE TO BE SPECIFIED ON PURCHASE ORDER.
2. ALL RADIIS SHALL BE \( \frac{1}{6} \) MINIMUM.
3. ESTIMATED WEIGHT 37#.

NOTES:
1. ALL INTERNAL EDGES SHALL HAVE A \( \frac{1}{16} \) RADIUS.
2. ALL EXTERNAL RADIUS \( \frac{1}{8} \) TO \( \frac{1}{4} \) 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.

STANDARD DESIGN DETAIL

TRACER WIRE LOCATOR BOX

DRAWING NO. 253

SHEET 1 OF 1

DATE 1/2020
SEE HRSD AIR VENT AND COVER DETAIL #354 FOR SPECIFICATIONS ON FRAME & CASTING

NOTE: HANDLE AS SHOWN IS VALVE INSTALLED IN OPEN POSITION

TOP OF VALVE HANDLE SHALL BE MIN 1" UNDER CASTING FRAME

2" (MIN) - 6" (MAX) MORTAR BED

2" BRONZE OR BRASS BALL VALVE—100% FULL OPENING 600-WOG SWP. CHROME PLATED BRONZE OR BRASS BALL, MANUFACTURED BY NIBCO MODEL #T5857066-2

SOLVENT WELD TO NPT MALE ADAPTOR PVC. THREADS SHALL HAVE TEFLOM TAPE OR PIPE DOPE

COMPACTED VDOT 21A, 21B OR 26 STONE

3" MINIMUM CLEARANCE

PEA GRAVEL

SDR 21 PVC RISER PIPE

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
8. 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
ANTI-BOUYANCY COLLAR CONTRACTOR NOT TO DAMAGE NOR HIT ANTI-BOUYANCY COLLAR

PRIOR TO CONNECTION

POST CONNECTION

EXISTING GRADE

A SEE TABLE BELOW FOR DIMENSIONS

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 1/2020
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

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

GRADE

COMPACTED FILL

8" PVC RISER SCHEDULE 40 OR BETTER

CONCRETE FOUNDATION SHALL BE 8" X 8" AND SPAN THE FULL CIRCUMFERENCE OF THE RCP

VDOT #57 STONE TO BE USED TO BACK FILL TO THE TOP OF PIPE

3' MINIMUM DUCTILE IRON PIPE SHALL BE CONNECTED WITH LONG BODY SLEEVE AND TWO (2) MEGALUGS, MEGALUGS SHALL MATCH PIPE MATERIAL (E.G. PVC PIPE=PVC MEGALUG)

3/4" X 1/4" REDUCING BUSHING (BRASS) WITH 1/4" PLUG

BRASS BALL VALVE NIBCO MODEL # T5857066-3/4

MALE ADAPTER 3/4" SOLDER CONNECTION

3/4" TYPE K COPPER PIPE, ONE SINGLE PIECE, NO JOINTS

6" PVC RISER SCHEDULE 40 OR BETTER

MALE ADAPTER 3/4" SOLDER CONNECTION

CORPORATION STOP FORD F-1000-3CC-3FIP

ROMAC TAPPING SADDLE TYPE 202-NS-SIZE-3CC

GATE VALVE WITH NON-RISING STEM AND RESILIENT COATED WEDGE, MECHANICAL JOINT CONNECTIONS

NOT TO SCALE

STANDARD DESIGN DETAIL

VACUUM SYSTEM DIVISION VALVE

DIVISION VALVE SUPPORT INFORMATION

<table>
<thead>
<tr>
<th>VALVE SIZE</th>
<th>SUPPORT SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>6&quot; THICK X 1.75' SQUARE</td>
</tr>
<tr>
<td>6&quot;</td>
<td>6&quot; THICK X 2.25' SQUARE</td>
</tr>
<tr>
<td>8&quot;</td>
<td>6&quot; THICK X 3.00' SQUARE</td>
</tr>
<tr>
<td>10&quot;</td>
<td>6&quot; THICK X 3.50' SQUARE</td>
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