

***BACKFILL NOTE:**

FOR PVC PIPE PROVIDE SOIL AGGREGATE DESIGNATION 1-8. FOR DIP PROVIDE CLEAN BACKFILL MEETING CRITERIA FOR NJDOT I-13 WITH NO ROCKS LARGER THAN 2"Ø.

FOR HDPE PIPE PROVIDE NUMBER 10 SCREENINGS FOR PIPE DIAMETERS 4" AND UNDER; FOR ALL OTHER HDPE DIAMETERS PROVIDE 3/4" MODIFIED CRUSHED STONE (No. 57 MODIFIED). MINIMUM ONE FOOT OF COVER SHALL BE OVER THE PIPE BEFORE COMPACTION OF THE BACKFILL BY SELF POWERED COMPACTORS

**TYPICAL SEWER MAIN, FORCE MAIN
AND LATERAL TRENCH DETAIL**

DRAWN: JG

SCALE: NONE

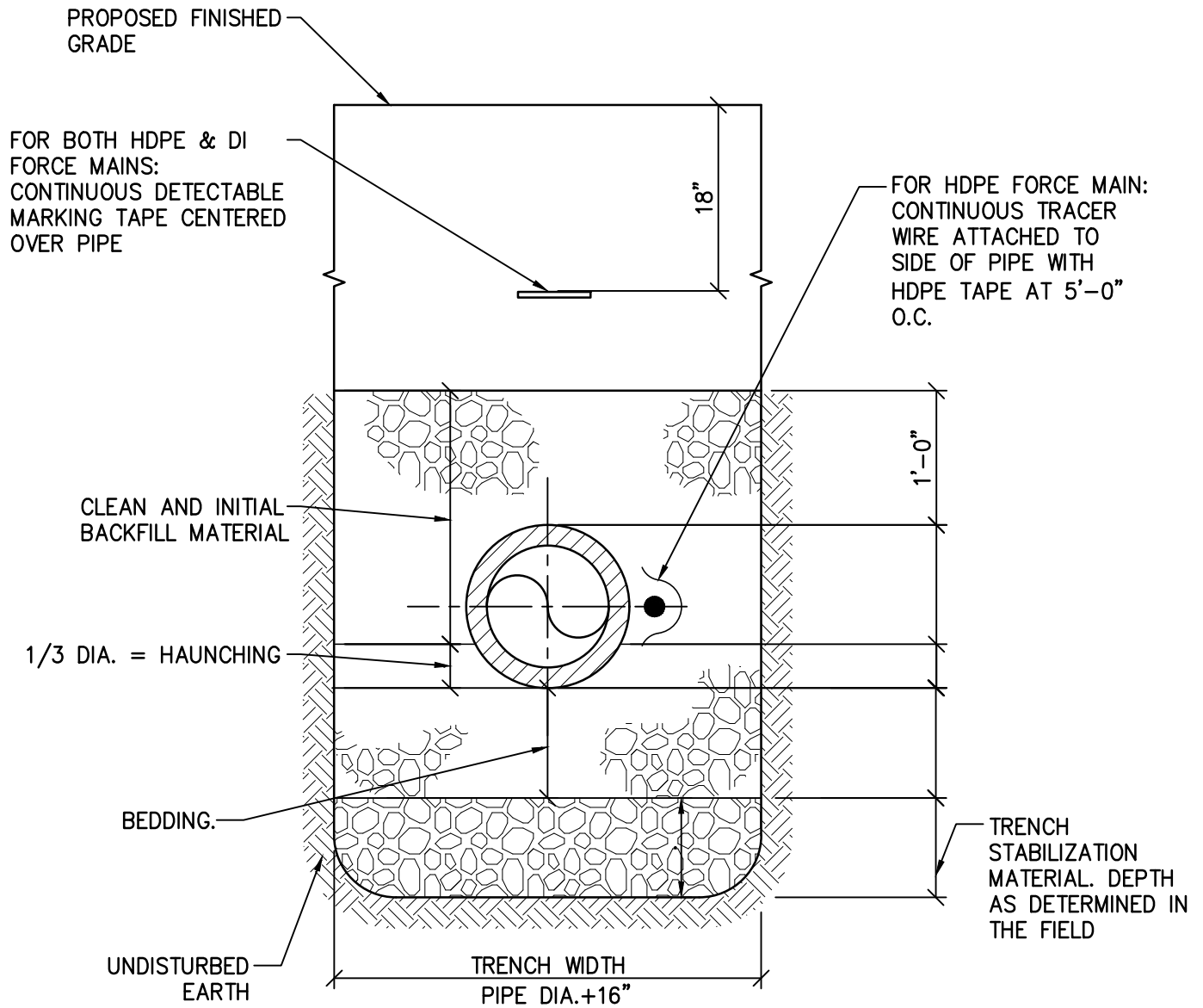
BSA DETAIL 1

RVE

REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

REVISIONS



NOTES:

1. TRACER WIRE IS BY COPPERHEAD INDUSTRIES;
 - FOR OPEN CUT: 1245 GREEN - EHS
 - FOR DIRECTIONAL DRILL: 1245 GREEN - EHS
2. DETECTABLE MARKING TAPE IS BY PRO-LINE SAFETY PRODUCTS. TAPE SHALL BE 3" WIDE POLYETHYLENE WITH DOUBLE SIDED GREEN DIAGONALLY STRIPED BACKGROUND WITH BLACK LETTERING "CAUTION: BURIED FORCE MAIN LINE BELOW". MINIMUM 0.35 MIL ALUMINUM FOIL CORE. MADE IN USA.
3. IF THE TRACER WIRE BECOMES BROKEN RECONNECT TO THE REMAINING TRACER WIRE BELOW GRADE WITH A COPPERHEAD INDUSTRIES SNAKE BITE LOCKING CONNECTOR.

**TYPICAL HDPE & DIP FORCE MAIN
TRENCH TRACER WIRE/MARKING TAPE DETAIL**

DRAWN: JG

SCALE: NONE

BSA DETAIL 2

RVE

REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300

REVISIONS

TWO TERMINAL SWITCHABLE ROADWAY ACCESS BOX AND LID; CONNECT TRACE WIRE AND GROUND WIRE TO DIFFERENT TERMINALS; COAT EXPOSED WIRE AT LID WITH DIELECTRIC GEL PROVIDED WITH ACCESS BOX; MANUFACTURE; COPPERHEAD INDUSTRIES MODEL #RB14G2T-SW

IN UNPAVED AREAS PROVIDE 18"x18", 6" THICK CONCRETE CROSS-SECTION WITH 1/2" EXPANSION JOINT COMPLETELY AROUND VALVE BOX.

CURBING OR EDGE OF PAVING

4' LONG STAINLESS STEEL UNISTRUT BANDED TO ACCESS BOX WITH STAINLESS STEEL WORM GEAR HOSE CLAMPS (MINIMUM 3 CLAMPS)

FOR BOTH WIRES, COIL ENOUGH WIRE TO EXTEND 18" ABOVE GROUND

20' LENGTH OF RED 12 AWG WIRE CONNECTED TO GROUND ROD; CUT AS REQUIRED AND REMOVE INSULATION AT END

GREEN HDPE PIPING TRACER WIRE; MINIMUM 3' OF COVER TO ACCESS BOX LOCATION; CUT AND REMOVE INSULATION AT END; SEE NOTE 3

1.5 POUND DRIVE IN MAGNESIUM GROUND ROD WITH WIRE BY COPPERHEAD INDUSTRIES; TO AVOID OTHER UTILITIES, INSTALL HORIZONTALLY IN-LINE WITH ACCESS BOX AND VERTICALLY AT THE SAME DEPTH AS THE PIPING SYSTEM.

2.0'

HDPE PIPE
MAINLINE TO SERVICE CONNECTION JUNCTION BOX

NOTES:

1. PROVIDE AT MAXIMUM 2,000 LF FOR CONTINUOUS LENGTH OF HDPE PIPING AND AT EACH TERMINAL END.
2. ACCESS BOX SHALL BE WITHIN THE RIGHT OF WAY BUT OUT OF PAVED AREAS, IN LOCATIONS AS APPROVED BY THE AUTHORITY'S ENGINEER.
3. DETAIL SHOWN IS FOR AN INTERMEDIATE ACCESS BOX. FOR INTERMEDIATE ACCESS BOXES PROVIDE A BELOW GRADE THREE WAY JUNCTION BOX TO FACILITATE THE SERVICE LINE TO THE ACCESS BOX. JUNCTION BOX SHALL BE MANUFACTURED BY COPPERHEAD INDUSTRIES (MAINLINE TO SERVICE CONNECTOR).

HDPE PIPING TRACER WIRE
ACCESS BOX DETAIL-SECTION VIEW

DRAWN: JG

SCALE: NONE

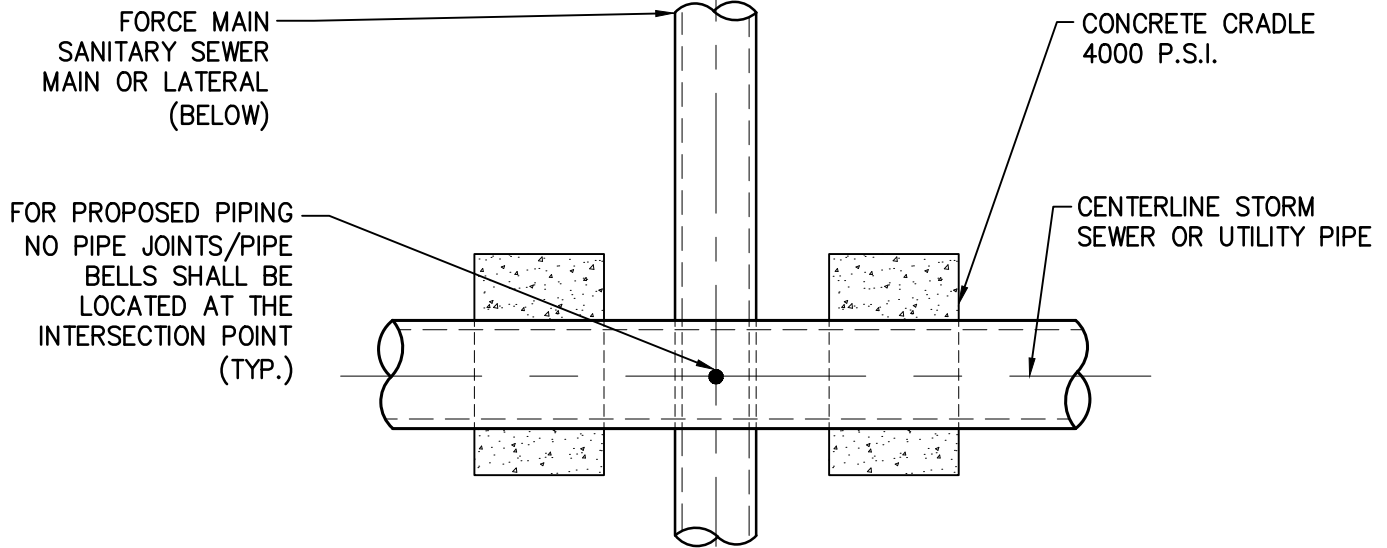
BSA DETAIL 3

RVE

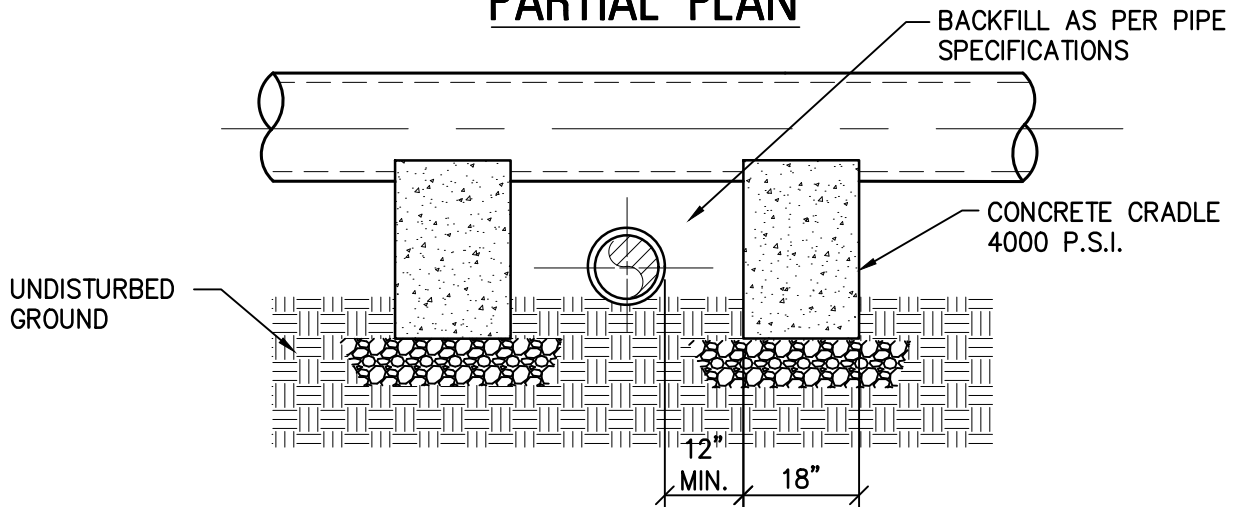
REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

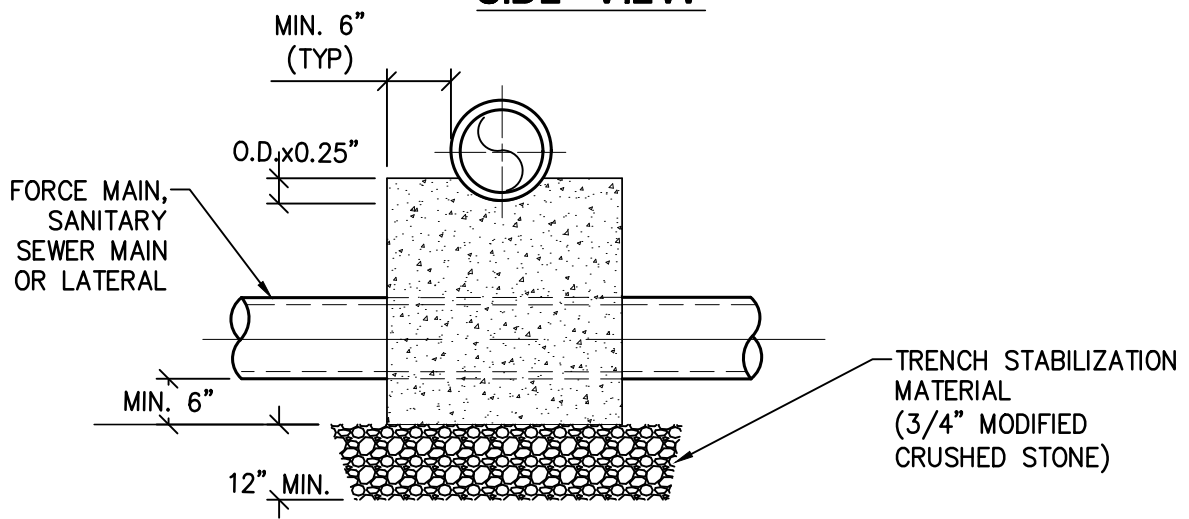
REVISIONS



PARTIAL PLAN



SIDE VIEW



SECTION

CONCRETE CRADLE DETAIL

(USE WHEN CLEARANCE TO STORM SEWER OR UTILITY PIPE ABOVE IS LESS THAN 12")

DRAWN: JG

SCALE: NONE

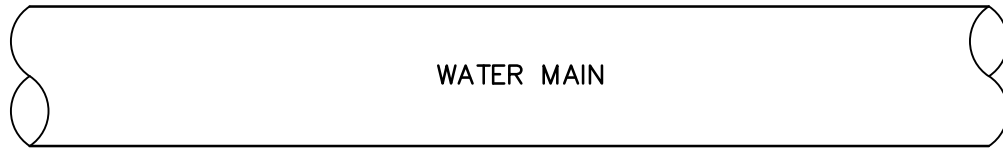
BSA DETAIL 4

RVE

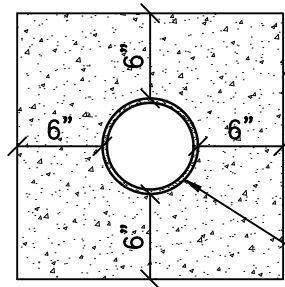
REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

REVISIONS



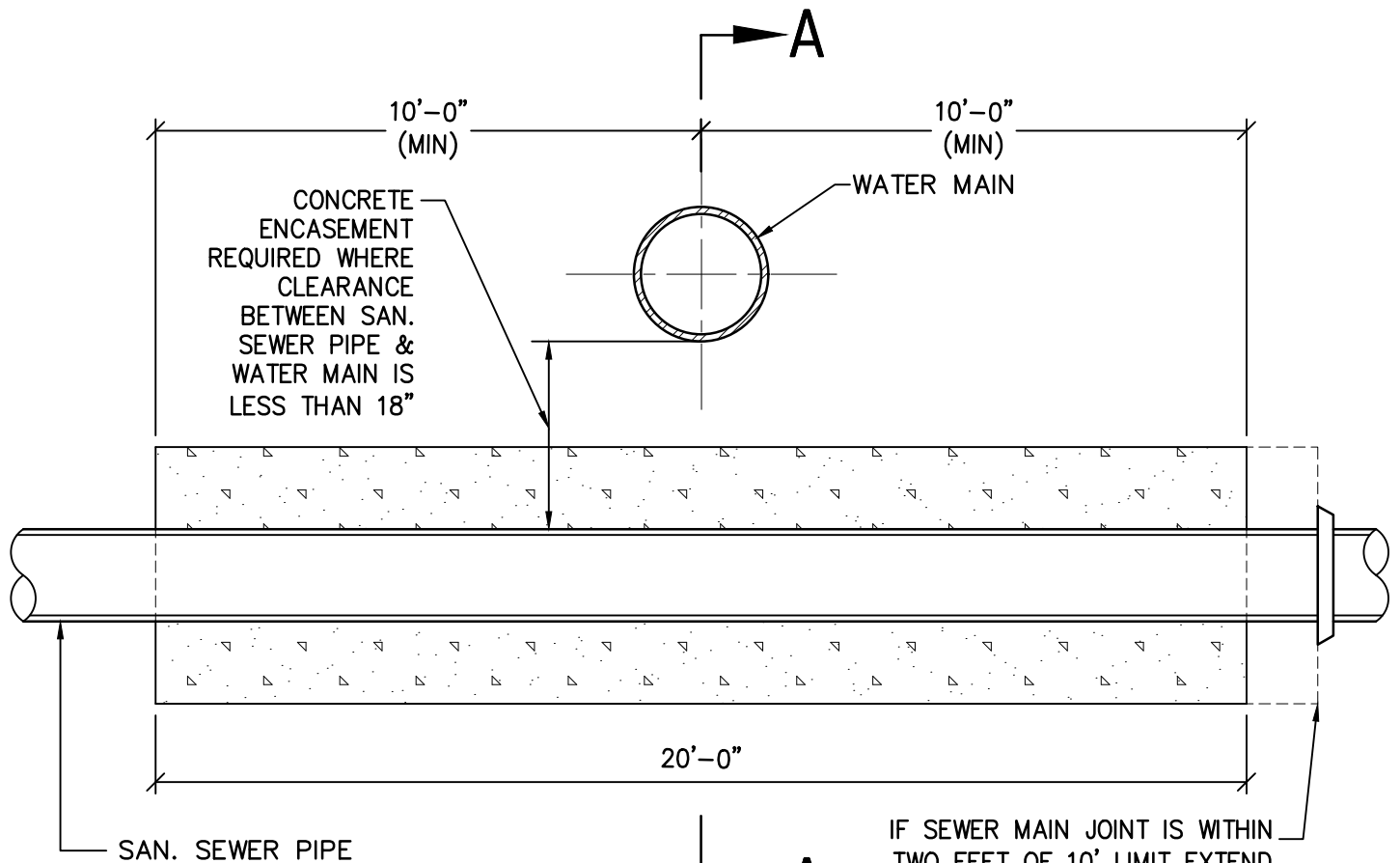
WATER MAIN



ENCASEMENT
MINIMUM 4,000
PSI CONCRETE

SAN. SEWER PIPE

SECTION A-A



CONCRETE
ENCASEMENT
REQUIRED WHERE
CLEARANCE
BETWEEN SAN.
SEWER PIPE &
WATER MAIN IS
LESS THAN 18"

IF SEWER MAIN JOINT IS WITHIN
TWO FEET OF 10' LIMIT EXTEND
ENCASEMENT TO JOINT (TYP)

SECTION VIEW A

SEWER MAIN CONCRETE ENCASEMENT DETAIL

(FOR NJAC 7:14A - 23.6 COMPLIANCE)

DRAWN: JG

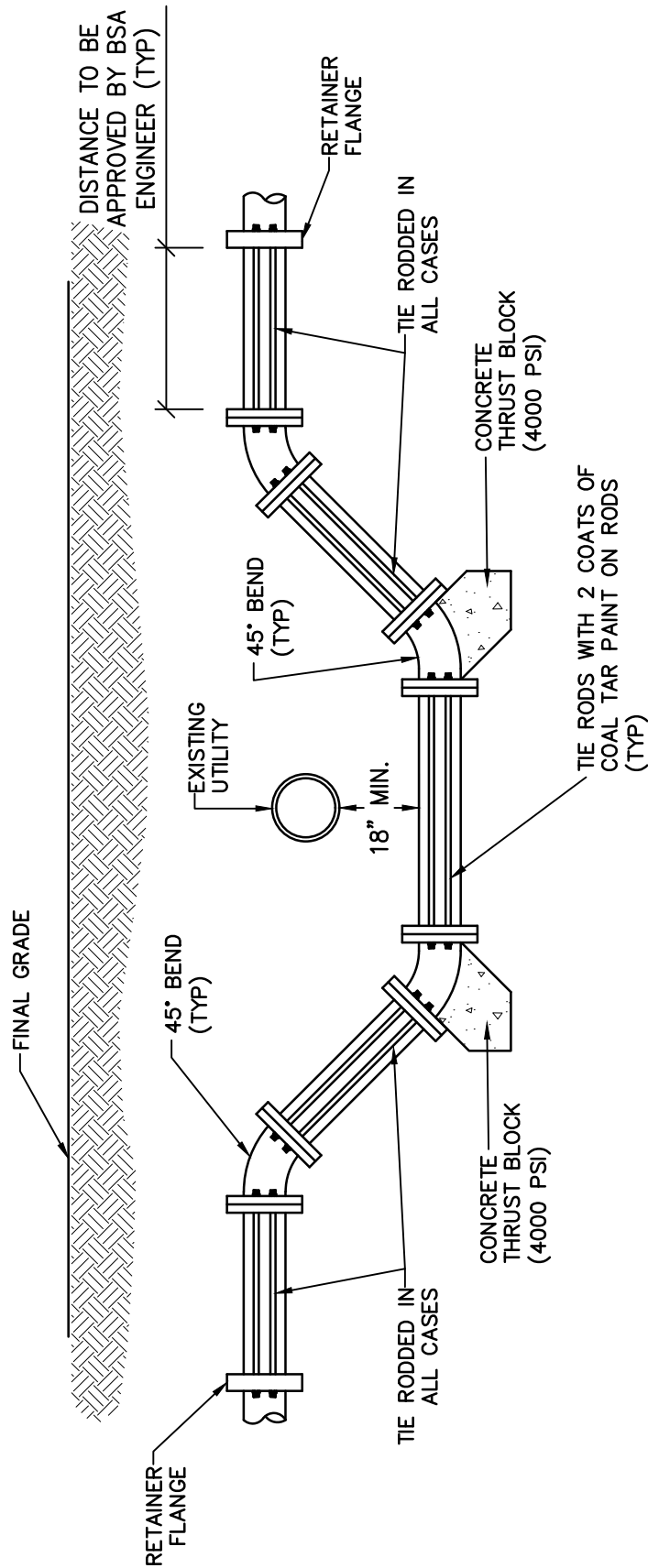
SCALE: NONE

BSA DETAIL 5



REMINGTON & VERNICK ENGINEERS
2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

REVISIONS



SECTION VIEW

NOTES:

1. NUMBER OF TIE ROD PAIRS AND ROD DIA. TO BE APPROVED BY BSA ENGINEER.
2. ALL PIPING/FITTINGS SHALL BE POLYETHYLENE ENCASED (MIN. 8 MILS)

DUCTILE IRON FORCE MAIN ROD RESTRAINING DETAIL

REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

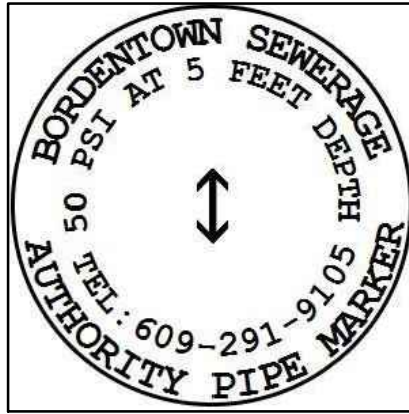
DRAWN: JG

SCALE: NONE

BSA DETAIL 6

REVISIONS

RVE

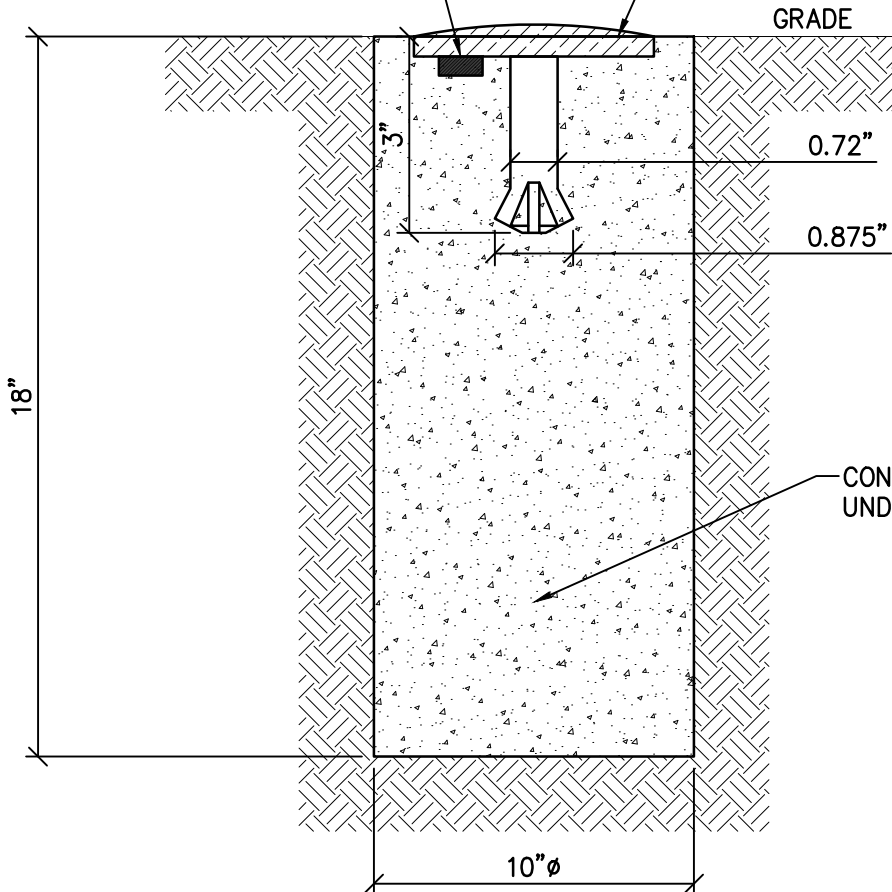


PLAN NOTES:
 ↔ MARKER TO BE ALIGNED PARALLEL TO PIPE ALONG PIPE CENTERLINE
 PSI/FEET; PIPE WORKING PSI AND DEPTH SHALL BE SPECIFIC TO APPLICATION.

PLAN

CAPMAG

FLUSH WITH GRADE 4" DIAMETER DOMED BRONZE CONCRETE MARKER WITH 3" ANCHOR AS MANUFACTURED BY BERNTSEN, MODEL C4DB, WITH STAMPING SHOWN PROVIDED. ATTACH ONE CAPMAG TO BOTTOM OF MARKER.



GRADE

0.72"

0.875"

18"

CONCRETE POURED AGAINST UNDISTURBED EARTH

10"φ

ELEVATION

PIPELINE MARKER DETAIL

DRAWN: JG

SCALE: NONE

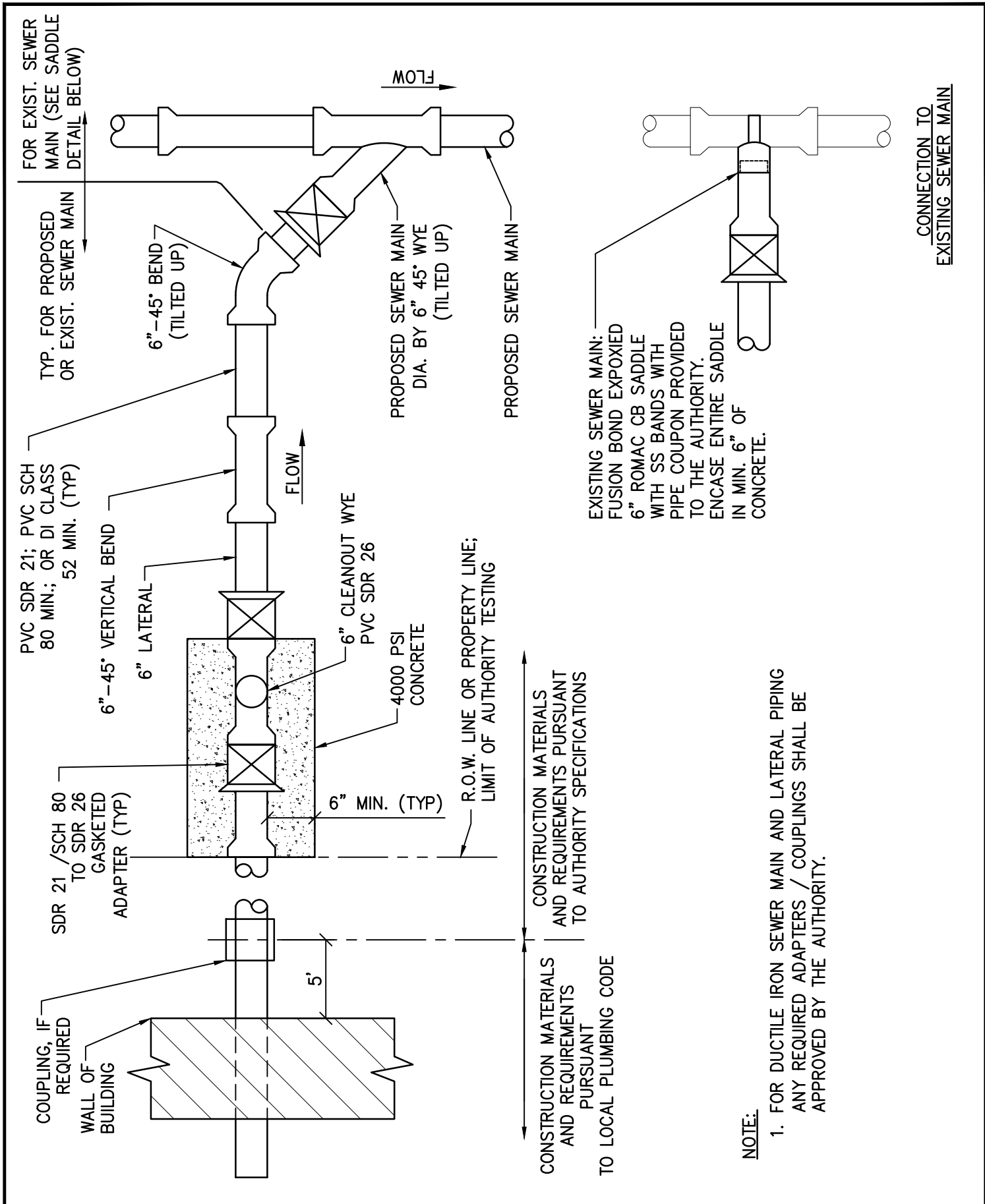
BSA DETAIL 7



REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300

REVISIONS

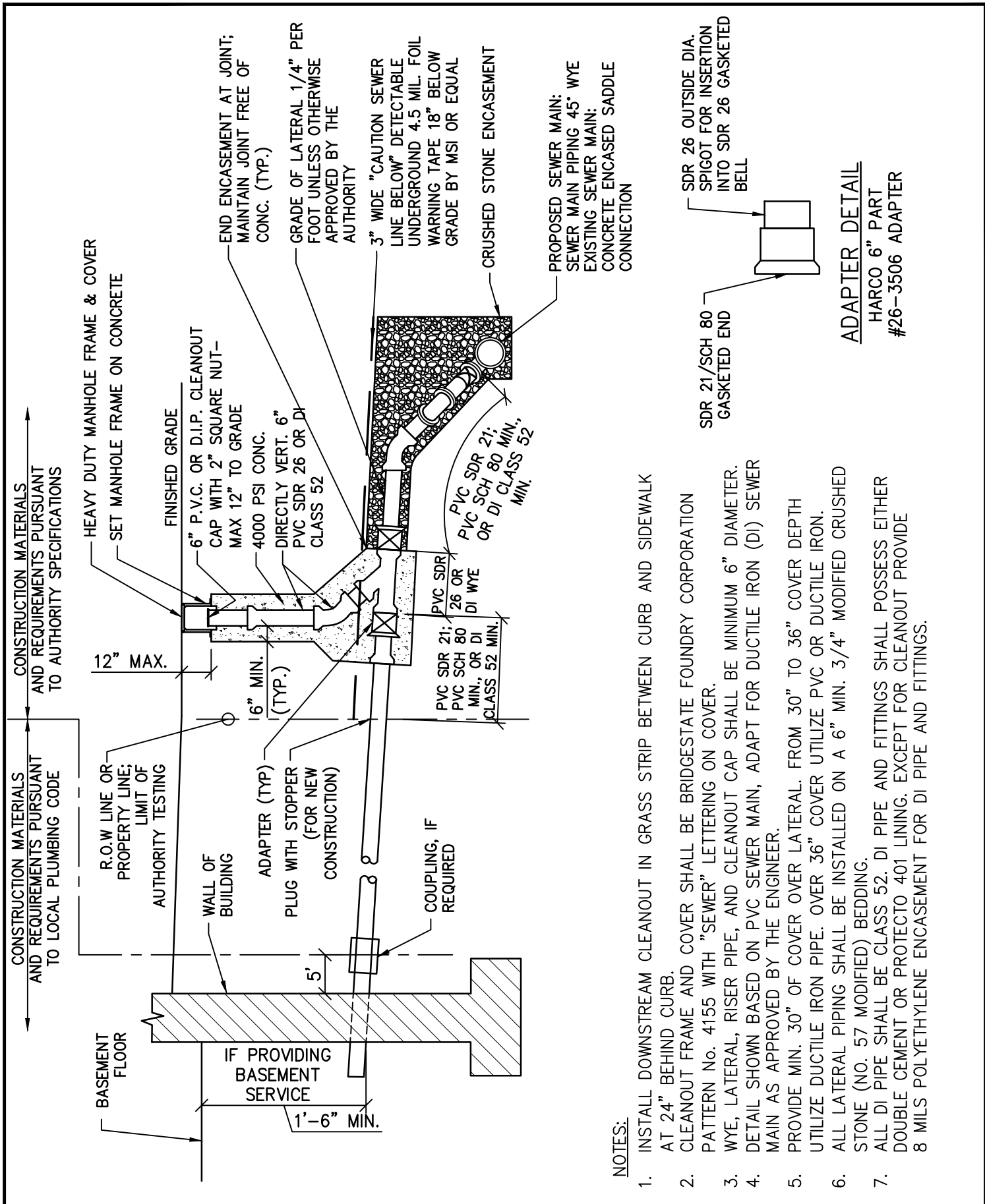


**TYPICAL LATERAL
BASEMENT CONNECTION – PLAN VIEW**

DRAWN:	JG
SCALE:	NONE
BSA DETAIL 10	

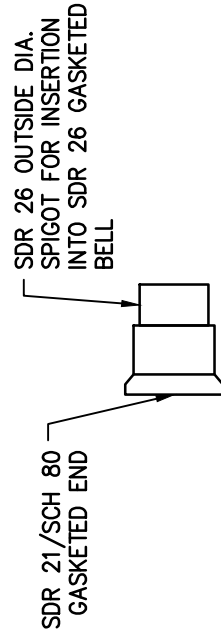
REVISIONS

REMINGTON & VERNICK ENGINEERS
 2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300



NOTES:

1. INSTALL DOWNSTREAM CLEANOUT IN GRASS STRIP BETWEEN CURB AND SIDEWALK AT 24" BEHIND CURB.
2. CLEANOUT FRAME AND COVER SHALL BE BRIDGESTATE FOUNDRY CORPORATION PATTERN No. 4155 WITH "SEWER" LETTERING ON COVER.
3. WYE, LATERAL, RISER PIPE, AND CLEANOUT CAP SHALL BE MINIMUM 6" DIAMETER.
4. DETAIL SHOWN BASED ON PVC SEWER MAIN, ADAPT FOR DUCTILE IRON (DI) SEWER MAIN AS APPROVED BY THE ENGINEER.
5. PROVIDE MIN. 30" OF COVER OVER LATERAL. FROM 30" TO 36" COVER DEPTH UTILIZE DUCTILE IRON PIPE. OVER 36" COVER UTILIZE PVC OR DUCTILE IRON.
6. ALL LATERAL PIPING SHALL BE INSTALLED ON A 6" MIN. 3/4" MODIFIED CRUSHED STONE (NO. 57 MODIFIED) BEDDING.
7. ALL DI PIPE SHALL BE CLASS 52. DI PIPE AND FITTINGS SHALL POSSESS EITHER DOUBLE CEMENT OR PROTECTO 401 LINING. EXCEPT FOR CLEANOUT PROVIDE 8 MILS POLYETHYLENE ENCASEMENT FOR DI PIPE AND FITTINGS.



ADAPTER DETAIL

HARCO 6" PART
#26-3506 ADAPTER

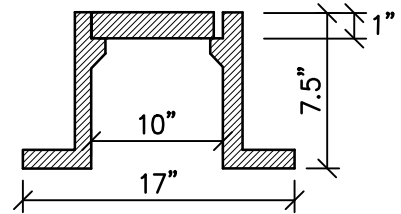
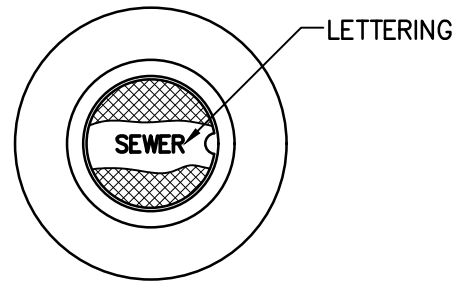
**TYPICAL LATERAL
BASEMENT CONNECTION - PROFILE**

REMINGTON & VERNICK ENGINEERS
2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

DRAWN: JG
SCALE: NONE
BSA DETAIL 11

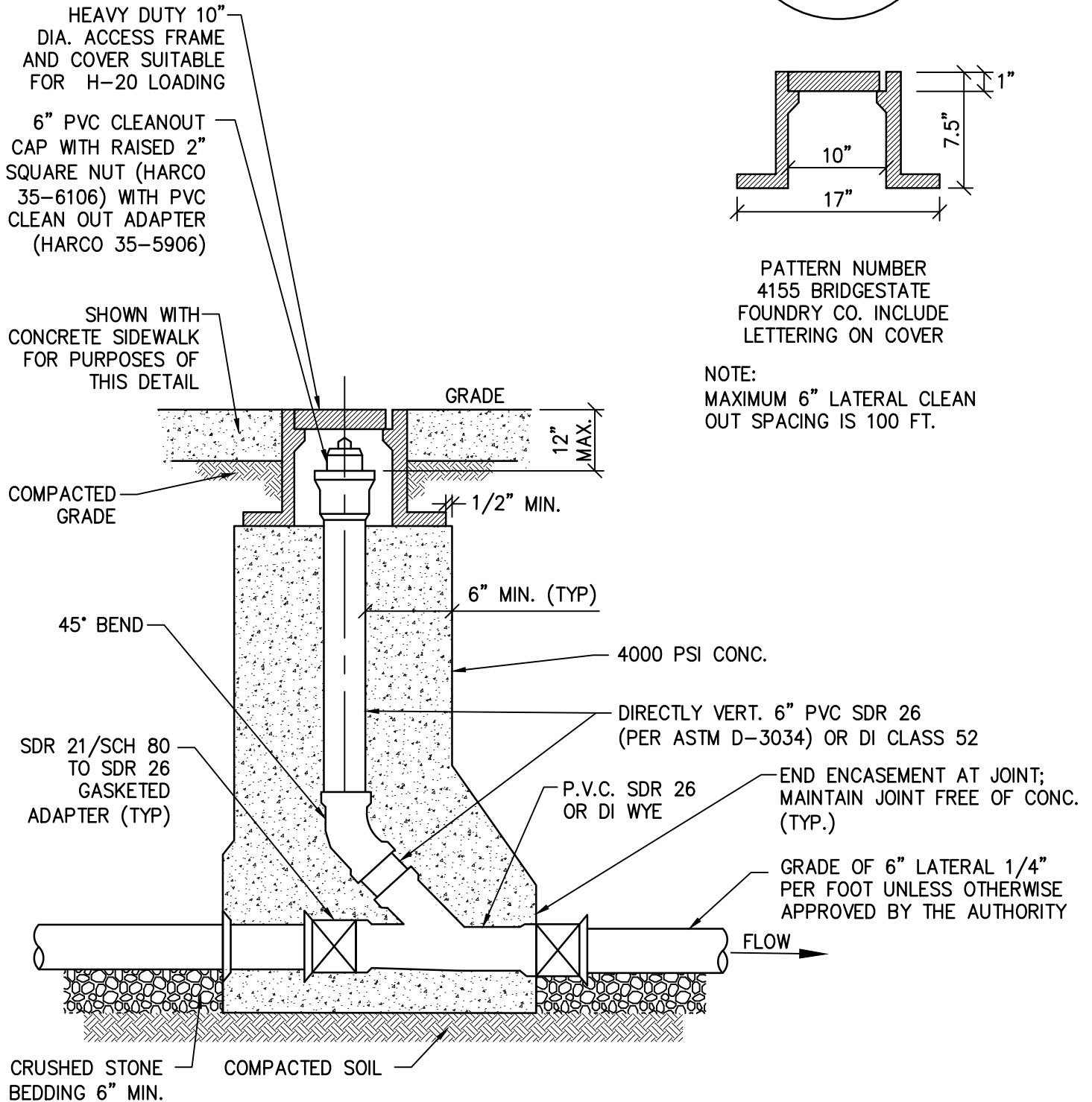
REVISIONS





PATTERN NUMBER
4155 BRIDGESTATE
FOUNDRY CO. INCLUDE
LETTERING ON COVER

NOTE:
MAXIMUM 6" LATERAL CLEAN
OUT SPACING IS 100 FT.



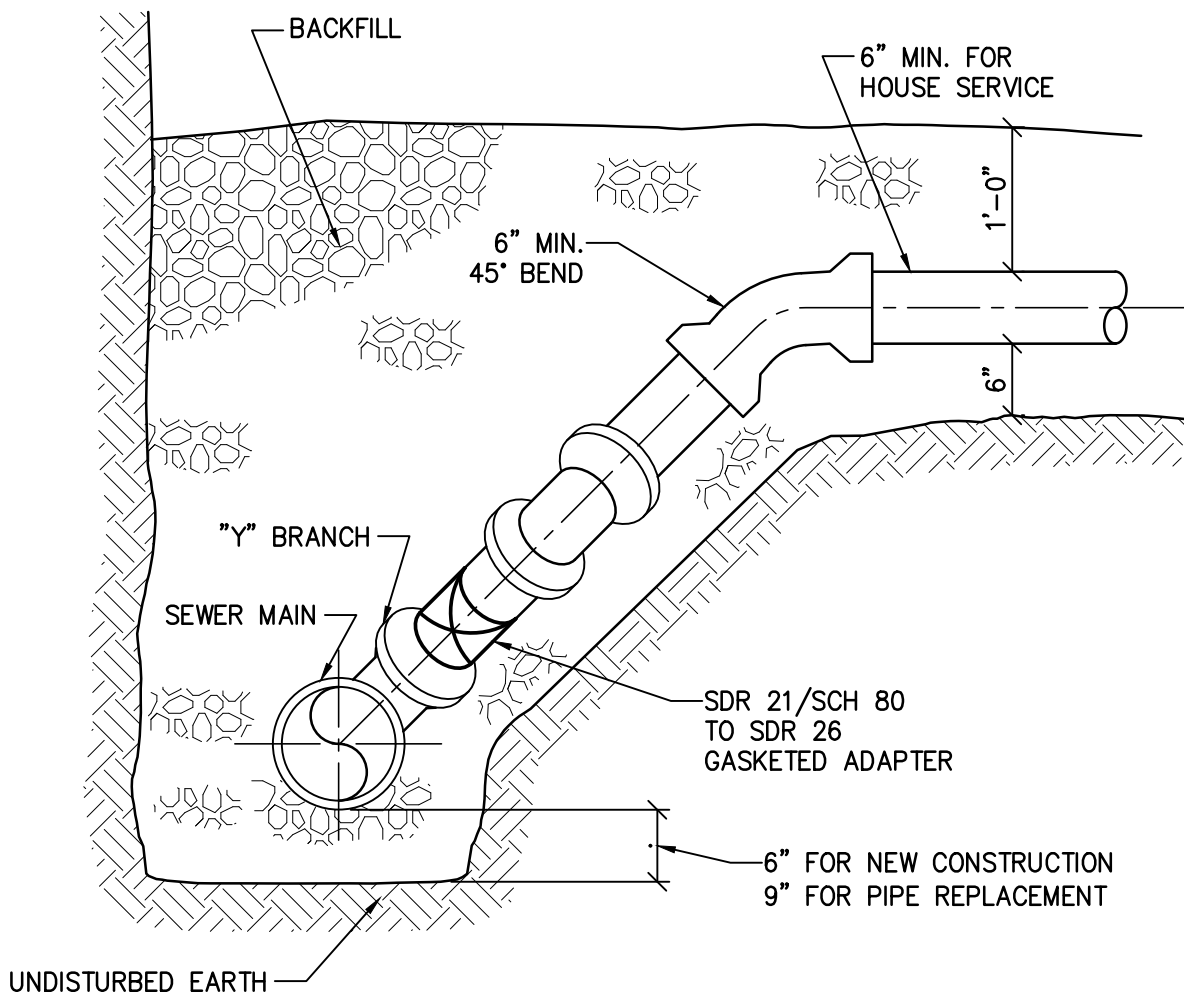
**SANITARY LATERAL CLEANOUT
DETAIL-SECTION VIEW**

DRAWN: JG
SCALE: NONE
BSA DETAIL 12



REMINGTON & VERNICK ENGINEERS
2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

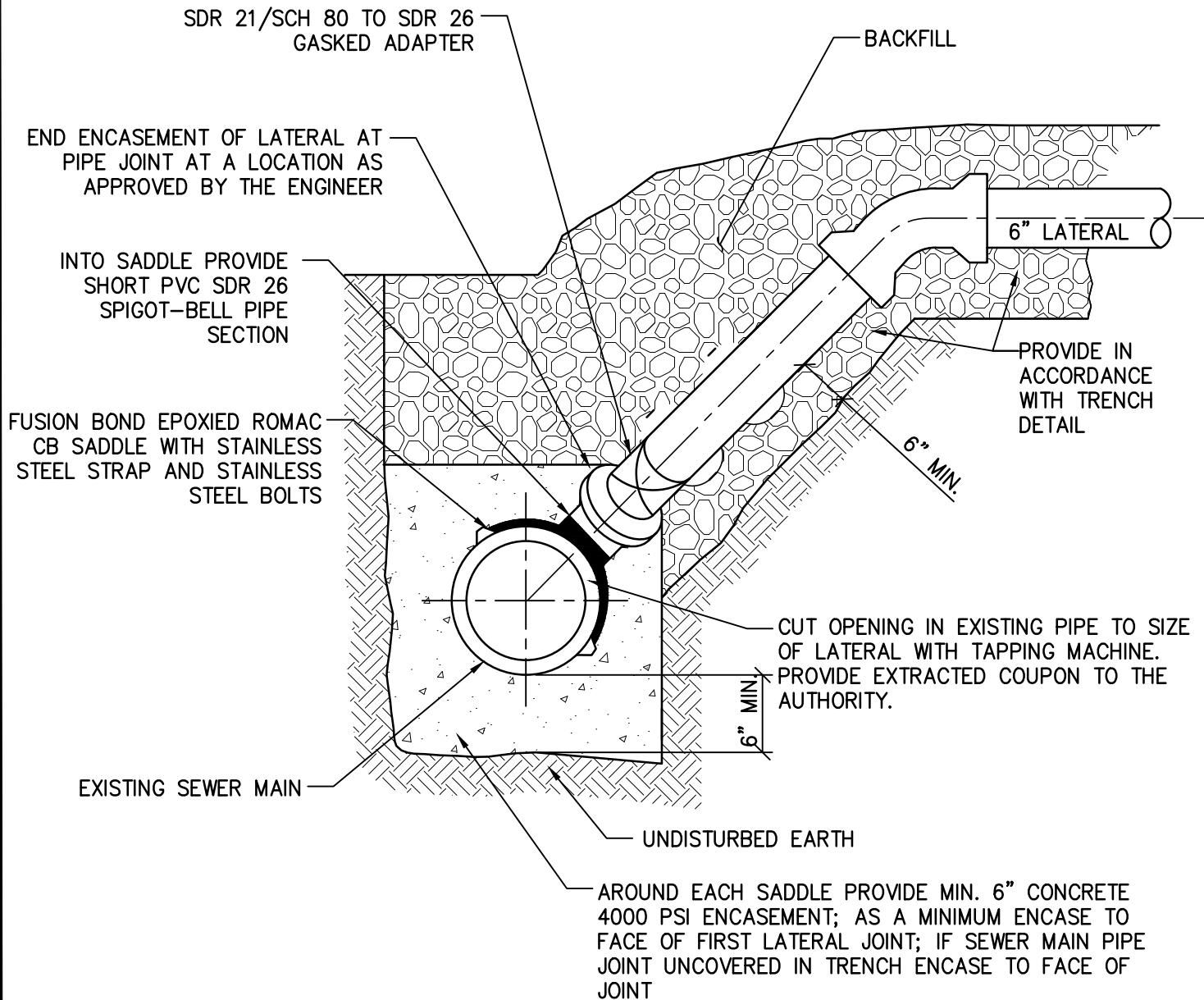
REVISIONS



NOTE:

1. MODIFY TO FIT JOB CONDITIONS.
2. FOR PIPE INSTALLATION BEDDING AND BACKFILL SEE TRENCH DETAIL.
3. FOR REMAINING DETAILS FOR LATERAL CONSTRUCTION SEE BASEMENT CONNECTION PLAN AND PROFILE DETAILS.
4. DETAIL SHOWN BASED ON PVC SDR 26 SEWER MAIN.

	"Y" BRANCH DETAIL-SECTION VIEW	DRAWN: JG
	REVISIONS	SCALE: NONE
	RVE	BSA DETAIL 13
	REMINGTON & VERNICK ENGINEERS <small>2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM Certificate of Authorization: 24 GA 28003300</small>	



NOTE: FOR REMAINING DETAILS FOR LATERAL CONSTRUCTION, SEE TYPICAL LATERAL BASEMENT CONNECTION PLAN AND PROFILE DETAILS.

SADDLE CONNECTION DETAIL-SECTION VIEW

DRAWN: JG

SCALE: NONE

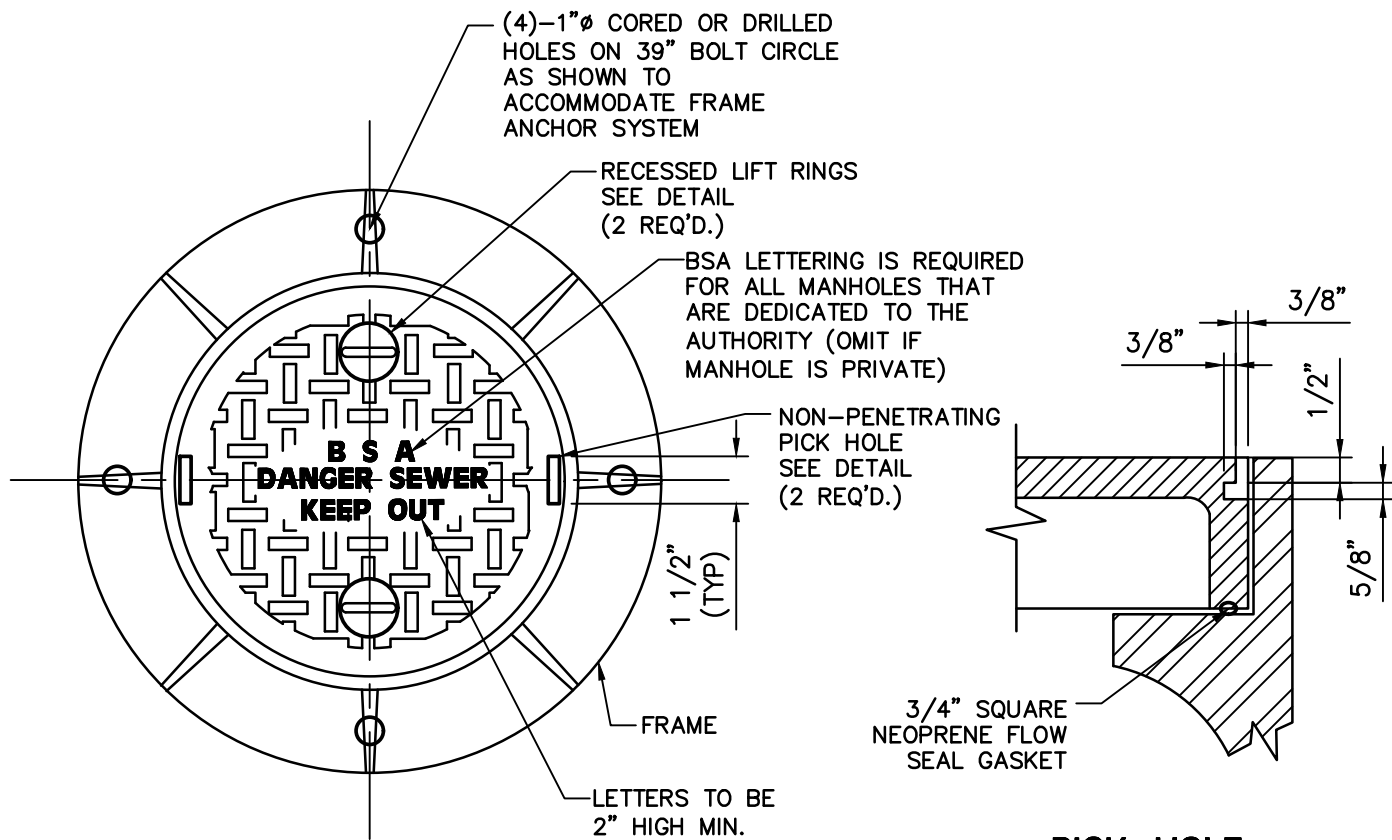
BSA DETAIL 14

REVISIONS



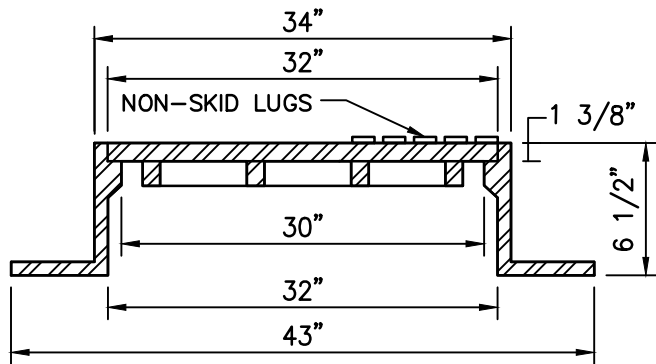
REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300

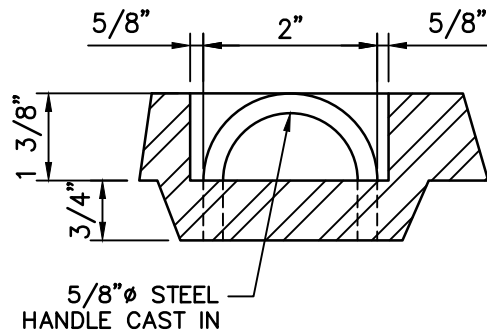


PLAN

**PICK HOLE
DETAIL**



SECTION



**RECESSED
LIFTING RING**

NOTES:

1. MADE IN USA
2. FRAME AND COVER ARE CAST IRON.
3. STANDARD FRAME AND COVER. MANUFACTURER: BRIDGESTATE FOUNDRY NO. 1012A WITH FLOW SEAL GASKET AND OTHER FEATURES SHOWN.
4. WATERTIGHT FRAME AND COVER MANUFACTURER: BRIDGESTATE FOUNDRY NO. 1012A WITH BOLTED COVER, FLOW SEAL GASKET AND OTHER FEATURES SHOWN.

**SEWER MAIN MANHOLE – STANDARD
AND WATERTIGHT 30" FRAME AND COVER**

DRAWN: MJC

SCALE: NONE

BSA DETAIL 20

RVE

REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

REVISIONS

MANHOLE FRAME AND COVER
NO CEMENT GROUT SHALL BE PROVIDED ON TOP OF FRAME. ANCHOR HARDWARE SHALL BE FREE OF CEMENT GROUT.

ADJUST TO GRADE WITH MAXIMUM 3 COURSES OF CONCRETE BRICK. SET BRICKS IN CEMENT GROUT ON ALL SIDES. ON MANHOLE INTERIOR SET BRICKS BACK 1/2 INCH AND PROVIDE SMOOTH LAYER OF CEMENT GROUT ACROSS THE ENTIRE FACE OF THE BRICKS. ON BRICK EXTERIOR FILL ALL VOIDS AND SEAL WITH CONTINUOUS MIN. 1/2" THICK LAYER OF CEMENT GROUT.

PRECAST REINFORCED CONC. MANHOLE ECCENTRIC CONE.

COAT OUTSIDE OF MANHOLE AND ADJUSTMENT COURSES WITH MIN. TWO COATS OF WATERPROOFING. FOR PRECAST SECTIONS APPLY AT MANUFACTURER'S YARD. MIN. DRY FILM THICKNESS=7 MILS. PER COAT

PRECAST REINFORCED CONCRETE MANHOLE RISERS IN 1, 2, 3, OR 4 FOOT LENGTHS, AS REQUIRED.

SEE NOTE 2

CAST IN PLACE CONCRETE CHANNEL PERFORMED AT MANUFACTURER'S FACILITY.

BASE EXTENSION DIMENSION AS REQUIRED TO COUNTERACT BUOYANCY. SEE NOTE 3.

12" THICK MIN. 3/4" MODIFIED STONE BASE TO EXTEND 12" BEYOND MANHOLE OUTSIDE WALL IN ALL DIRECTIONS (TYP.)

IN PERVIOUS AREAS SET FRAME 1" HIGHER THAN FINAL GRADE AND GRADUALLY SLOPE TOPSOIL MATERIAL AWAY FROM FRAME

SECURE FRAME TO MANHOLE WITH FOUR 3/4" ANCHORS @ 90° APART.

MANHOLE STEPS 12" O.C. MAX; RUNGS SHALL BE LOCATED OVER BENCH AREA, NOT OVER PIPE. SEE NOTE 4.

SEAL WITH CONTINUOUS STRAND OF BUTYL RUBBER (ASTM C-990) ON MANHOLE INTERIOR AND EXTERIOR TRIM ALL BUTYL RUBBER EXTENDING PAST FACE OF WALL. SEE PRECAST STRUCTURE JOINT DETAIL FOR TREATMENT OF JOINT EXTERIOR. (TYP.)

"A-LOK" GASKET, BY ATLANTIC CONCRETE PRODUCTS CAST AS AN INTEGRAL PART OF THE MANHOLE WALL BANDS. STRAPS OR BOLTS SHALL NOT BE UTILIZED. FILL RECESS IN MANHOLE ADJACENT TO A-LOK WITH CEMENT GROUT.

PRECAST REINFORCED CONCRETE BASE POURED MONOLITHICALLY WITH MINIMUM 3'-6" HIGH WALL

NOTES:

1. PRECAST MANHOLE AND REINFORCING IN ACCORDANCE WITH A.S.T.M. DESIGNATION C-478, WITH MINIMUM COMPRESSIVE STRENGTH 4000 P.S.I. (TYP.)
2. SMOOTH CONCRETE CHANNEL WITH DEPTH EQUAL TO 0.75 TIMES THE DIA. OF THE MAIN SEWER FOR SIZES 8" TO 15" AND 0.50 TIMES THE DIA. FOR SIZES 16" AND ABOVE. (USE MIN. 2500 PSI CONCRETE). SLOPE BENCH 1/4 INCH PER FOOT TOWARDS CHANNEL.
3. MANHOLE MANUFACTURER SHALL PROVIDE BUOYANCY CALCULATIONS SIGNED BY A PE IN THE STATE WHERE WORK IS BEING PERFORMED JUSTIFYING THE INCLUSION OR EXCLUSION OF A BASE EXTENSION. IF SEASONAL HIGH GROUNDWATER DATA IS NOT AVAILABLE ASSUME GROUNDWATER AT GRADE.
- 1: RUNGS: POLYPROPYLENE RUNGS, WITH GRADE 60 STEEL REINFORCEMENT AND TEETH AND SIDE CLEATS, AS MANUFACTURED BY MA INDUSTRIES TYPE PS48 OR ALUMINUM RUNGS. TOP RUNG TO BE WITHIN 16" OF TOP OF FRAME.
4. ALL LIFT HOLES SHALL BE SEALED WITH A COMBINATION OF RUBBER PLUGS AND CEMENT GROUT.
5. BUTYL RUBBER JOINT SEALANT SHALL BE SUITABLE FOR APPLICATION TEMPERATURE RANGE OF 10F TO 125F.
6. CEMENT GROUT SHALL POSSESS A HIGH SULFATE RESISTANCE WHEN TESTED PER ASTM C 1012 AND CONTAIN EITHER CALCIUM ALUMINATE CEMENT OR TYPE II CEMENT.

SECTION VIEW

STANDARD 4'-0" DIA. PRECAST REINFORCED CONCRETE MANHOLE
(FOR PIPES 24" Ø OR LESS AND DEPTHS GREATER THAN 6'-6")

DRAWN: JG

SCALE: NONE

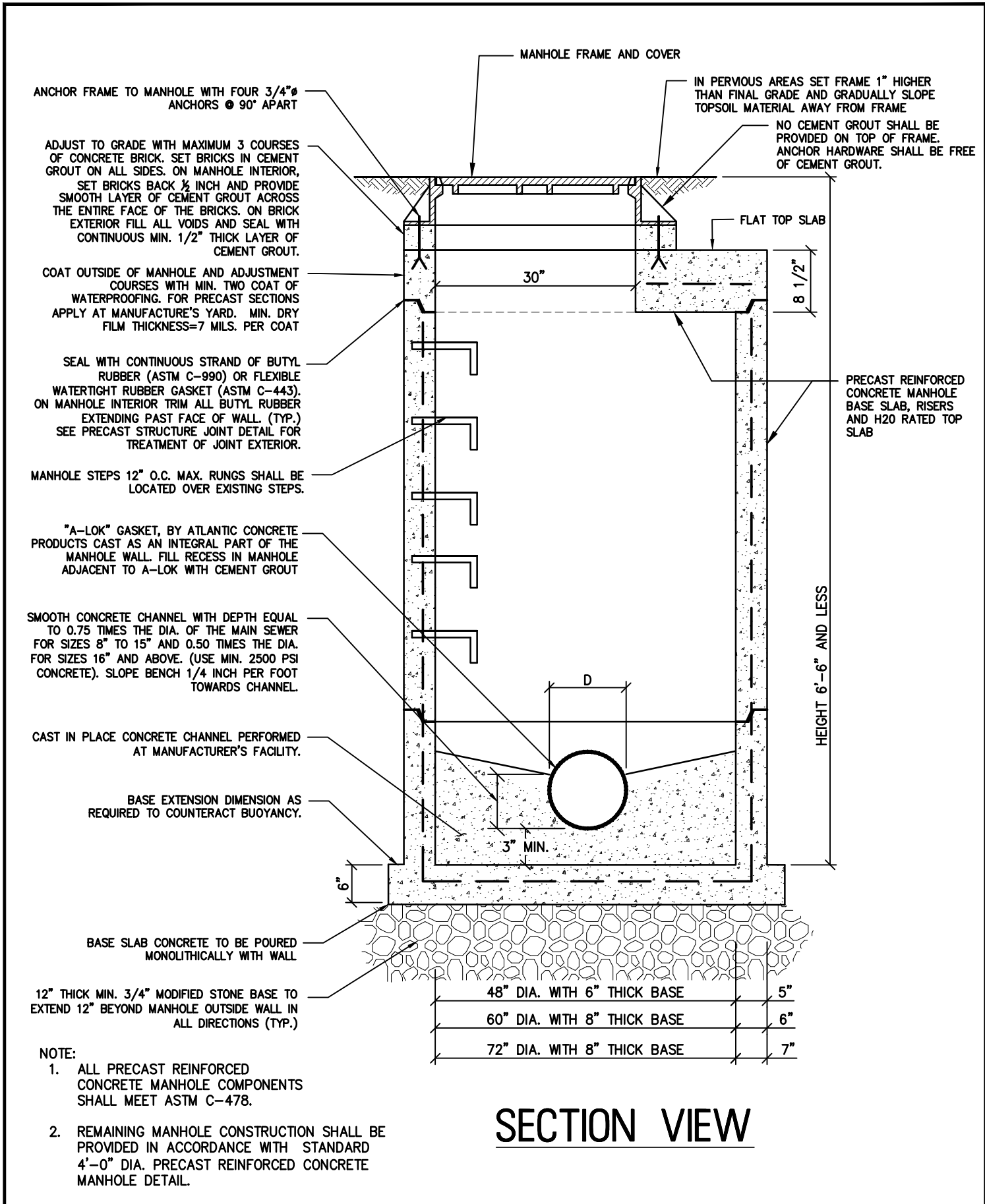
BSA DETAIL 21



REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

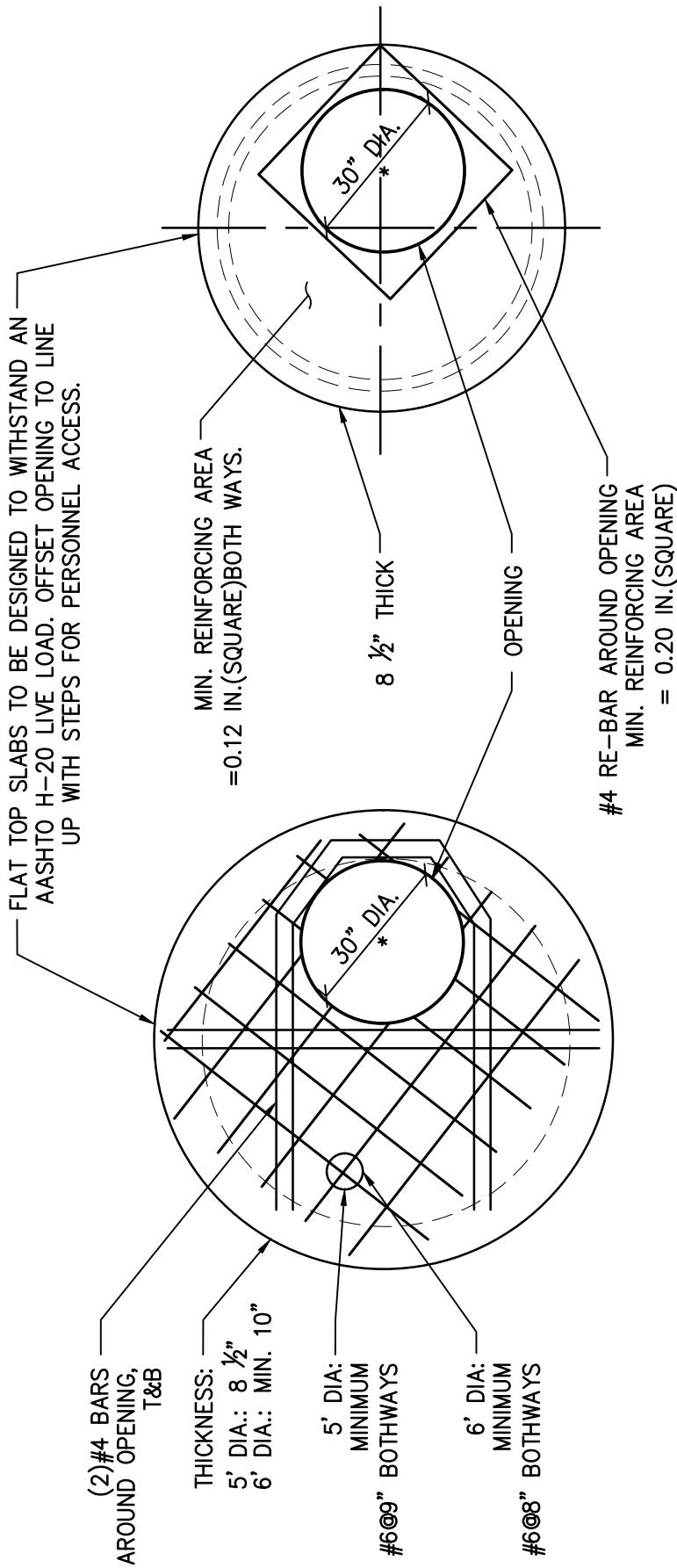
REVISIONS



- NOTE:
1. ALL PRECAST REINFORCED CONCRETE MANHOLE COMPONENTS SHALL MEET ASTM C-478.
 2. REMAINING MANHOLE CONSTRUCTION SHALL BE PROVIDED IN ACCORDANCE WITH STANDARD 4'-0" DIA. PRECAST REINFORCED CONCRETE MANHOLE DETAIL.

SECTION VIEW

	<p>PRECAST REINFORCED CONCRETE SHALLOW MANHOLE DETAIL</p>	DRAWN: JG
	<p>REVISIONS</p>	SCALE: NONE
	<p>RVE</p>	BSA DETAIL 22
	<p>REMINGTON & VERNICK ENGINEERS <small>2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM Certificate of Authorization: 24 GA 28003300</small></p>	



PLAN VIEW
4'-0" DIAMETER
MANHOLE

* 30" DIAMETER FOR MANHOLES RECEIVING NEW CASTINGS. FOR ALL OTHER MANHOLES, OPENING DIAMETER SHALL EQUATE TO INSIDE DIAMETER OF THE EXISTING CASTING.

PLAN VIEW
5'-0" & 6'-0" DIAMETER
MANHOLES

FLAT TOP SLAB DETAIL

DRAWN: JG

SCALE: NONE

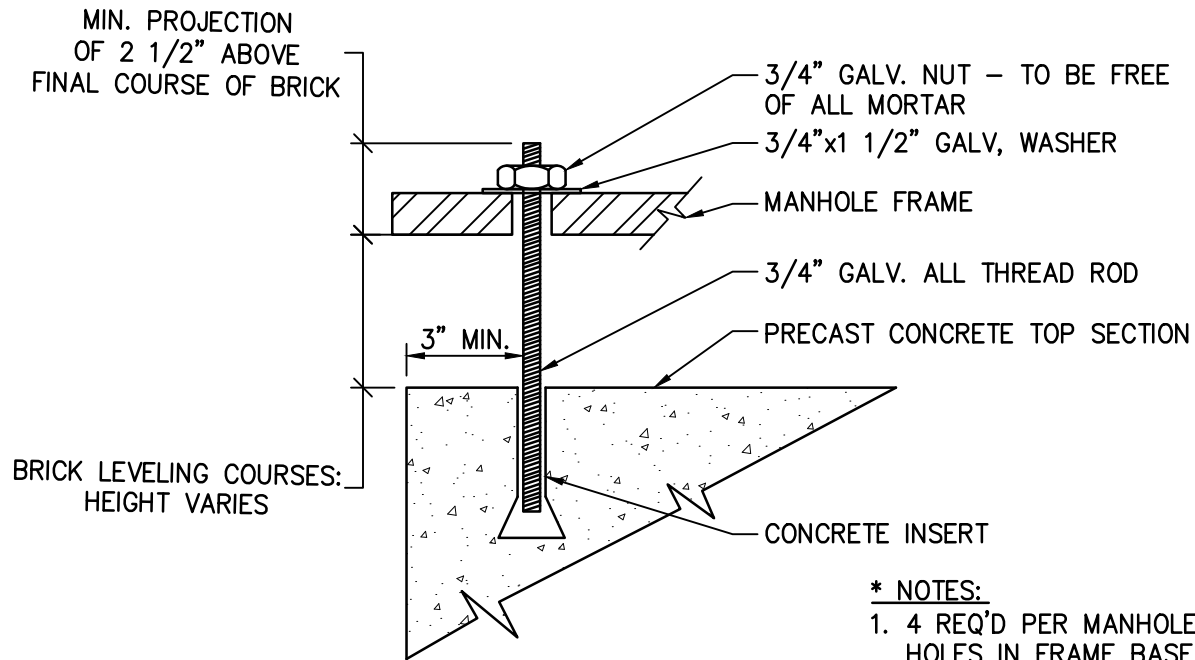
BSA DETAIL 23



REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

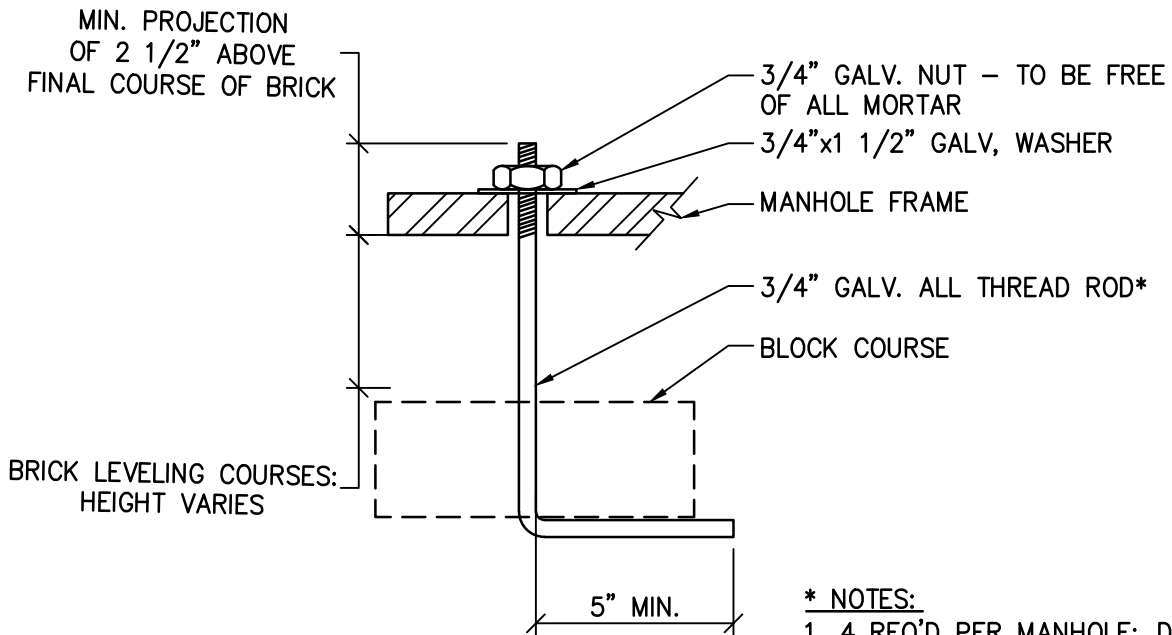
REVISIONS



*** NOTES:**

1. 4 REQ'D PER MANHOLE; DRILL HOLES IN FRAME BASE TO ACCOMMODATE RODS
2. AS A SUBSTITUTE FOR THE RODS PROVIDE HILTI-KWIK STAINLESS STEEL ANCHOR BOLT

PRE-CAST MANHOLE



*** NOTES:**

1. 4 REQ'D PER MANHOLE; DRILL HOLES IN FRAME BASE TO ACCOMMODATE RODS
2. AS A SUBSTITUTE FOR THE RODS PROVIDE HILTI-KWIK STAINLESS STEEL ANCHOR BOLT

BLOCK MANHOLE

MANHOLE FRAME ANCHOR BOLT DETAILS-SECTION VIEW

DRAWN: JG

SCALE: NONE

BSA DETAIL 24

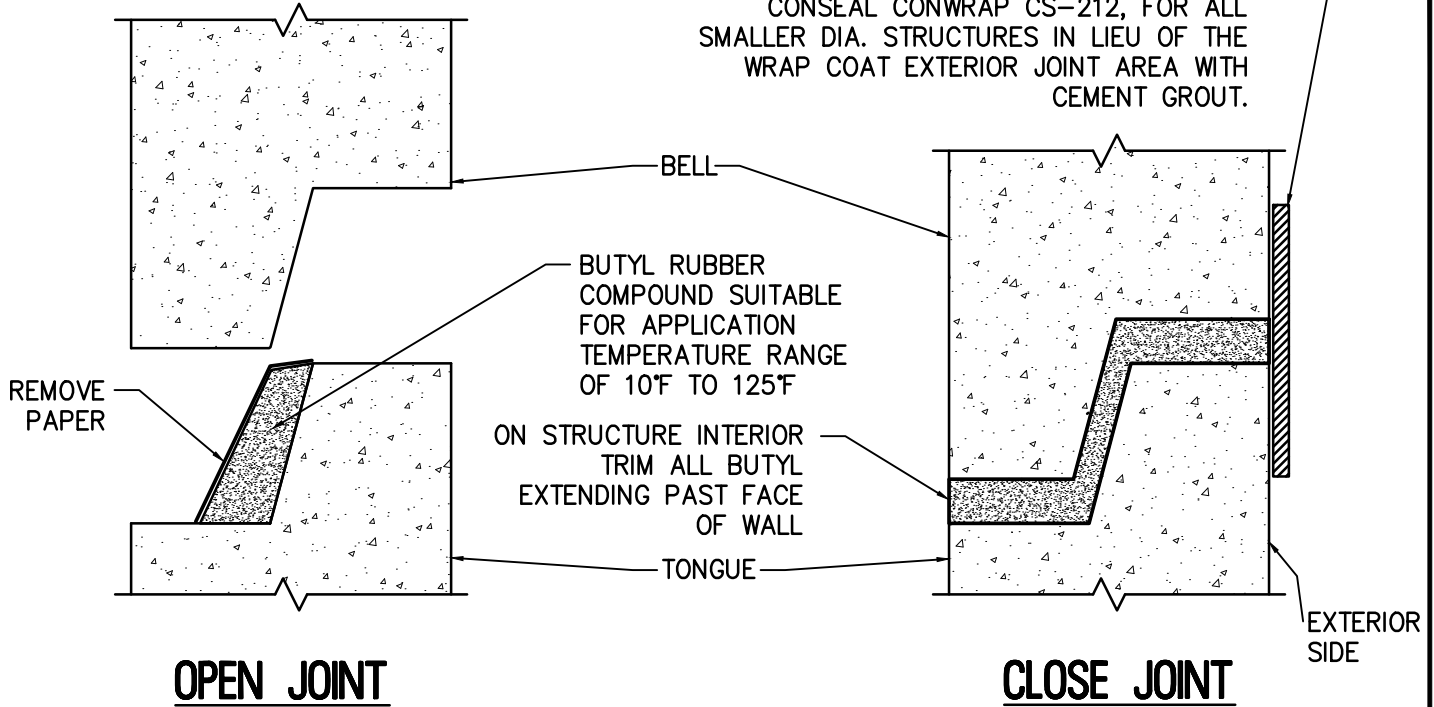
RVE

REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

REVISIONS

FOR 6'-0" DIA. AND GREATER
 MANHOLES/WET WELLS/VALVE CHAMBERS
 TRIM ALL BUTYL EXTENDING PAST FACE OF
 WALL AND WRAP ALL EXTERIOR JOINTS
 GREATER THAN 2'-0" BELOW GARDE WITH
 CONSEAL CONWRAP CS-212, FOR ALL
 SMALLER DIA. STRUCTURES IN LIEU OF THE
 WRAP COAT EXTERIOR JOINT AREA WITH
 CEMENT GROUT.



BUTYL COMPOUND RECOMMENDED SIZES	
ID OF STRUCTURE	SEALANT SIZE
48"	1"
54"	1"
60"	1-1/2"
72"	1-1/2"
84"	1-1/2"*
96"	1-1/2"*
120"	1-1/2"*
144"	1-1/2"*

* PROVIDE DOUBLE STRIPS AT
 EACH JOINT; POSITION ONE
 STRIP EACH ON THE
 HORIZONTAL SECTION OF THE
 JOINT.

**PRECAST STRUCTURE
 JOINT DETAILS-SECTION VIEW**

DRAWN: JG

SCALE: NONE

BSA DETAIL 25

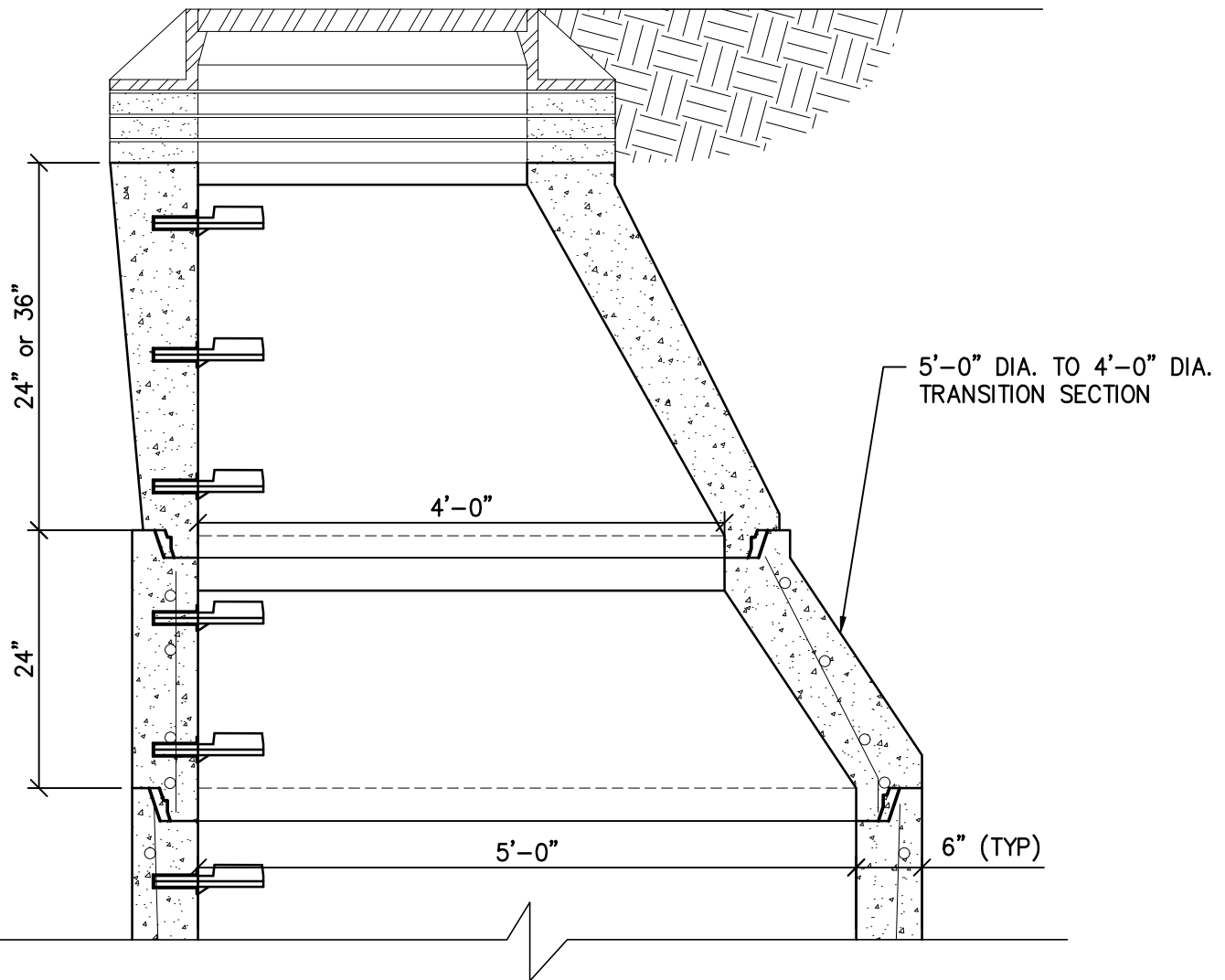
RVE

REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300

REVISIONS

FINISH GRADE



SPECIFICATIONS:

- THE CONCRETE IS DESIGNED TO OBTAIN A STRENGTH OF 4000 PSI IN 28 DAYS.
- THE REINFORCING STEEL HAS A YIELD STRENGTH OF 60,000 PSI.
- THE MANHOLE IS DESIGNED TO MEET THE REQUIREMENTS OF ASTM C-478, "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
- THE REINFORCED CONCRETE STRUCTURE IS DESIGNED TO WITHSTAND AASHTO HS-20 LIVE LOAD CONDITIONS.
- TRANSITION SECTION AND REMAINING MANHOLE CONSTRUCTION SHALL BE PROVIDED IN ACCORDANCE WITH STANDARD 4'-0" DIA. PRECAST REINFORCED CONCRETE MANHOLE DETAILS.

SECTION VIEW

**5'-0" DIA. PRECAST REINFORCED
CONCRETE MANHOLE TRANSITION DETAIL**

DRAWN: JG

SCALE: NONE

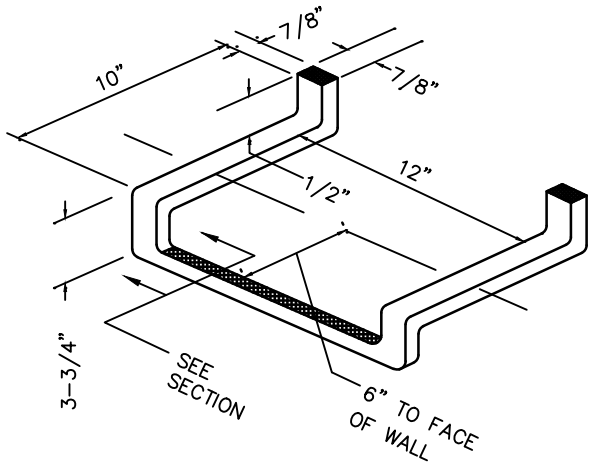
BSA DETAIL 26

RVE

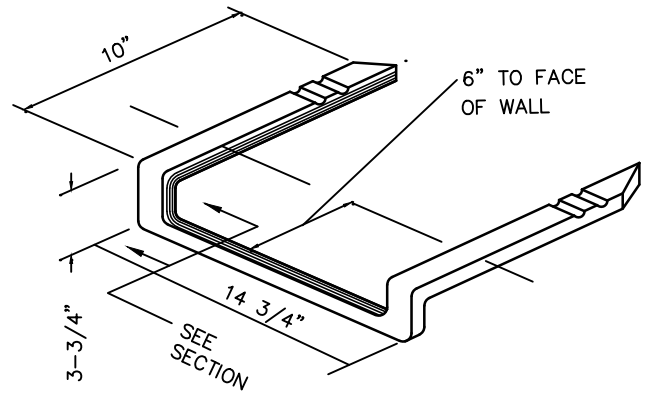
REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

REVISIONS



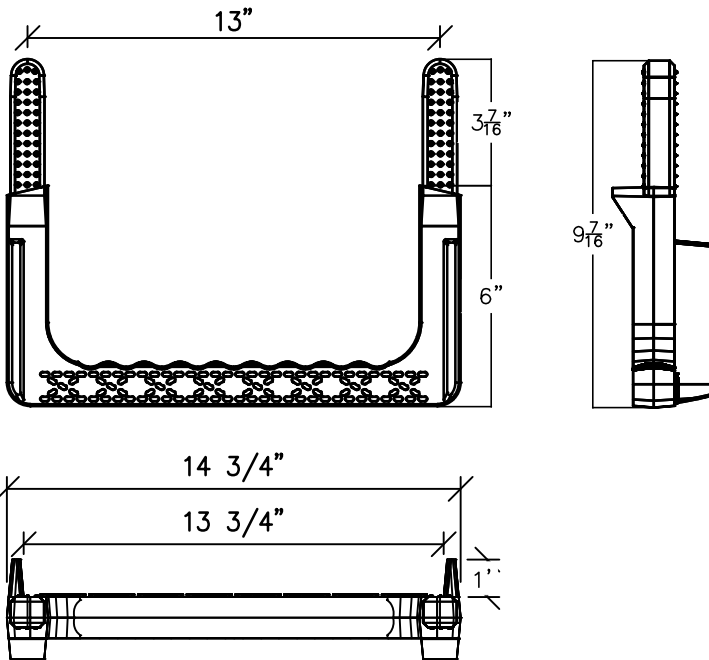
PORTION EMBEDDED IN MASONRY TO BE COATED WITH COAL TAR, PITCH, VARNISH OR OTHER SPECIFIED MATERIAL.



PORTION EMBEDDED IN MASONRY TO BE COATED WITH COAL TAR, PITCH, VARNISH OR OTHER SPECIFIED MATERIAL.

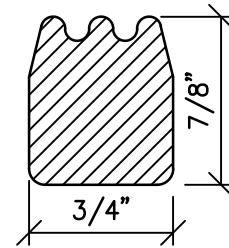
**CAST IN PLACE
ALUMINUM MANHOLE RUNG DETAIL**

**PRECAST
ALUMINUM MANHOLE RUNG DETAIL**



**POLYPROPYLENE
MANHOLE RUNG DETAIL**

AMERICAN STEP
TYPE I-13-NCR



**SECTION
ALUMINUM STEP CONTACT
SURFACE
NOT TO SCALE**

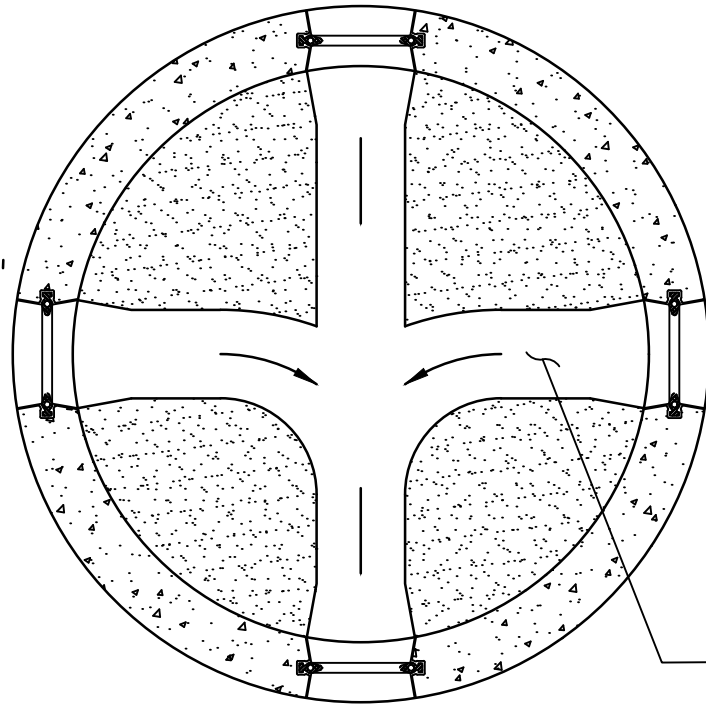
NOTES:

ATTACH INSERTS USING MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS.

DRIVE STEP INTO INSERTS UNTILL BOTH LEGS ARE COMPLETELY SEATED.

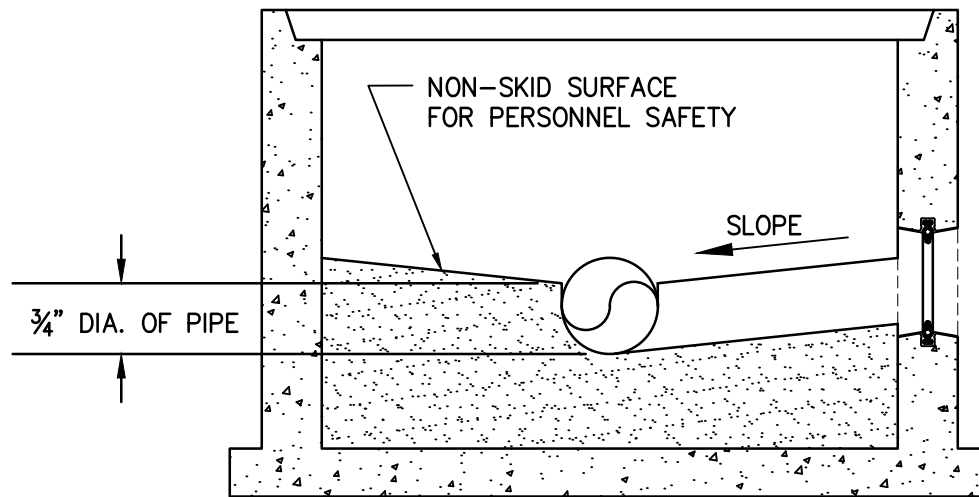
STEP SHALL MEET OR EXCEED ASTM C-478 AND OSHA STANDARDS WHEN PROPERLY INSTALLED.

REVISIONS	MANHOLE STEPS		DRAWN: JG
	REMINGTON & VERNICK ENGINEERS		SCALE: NONE
	<small>2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM Certificate of Authorization: 24 GA 28003300</small>		BSA DETAIL 28



SMOOTH SURFACE WITHIN CHANNELS

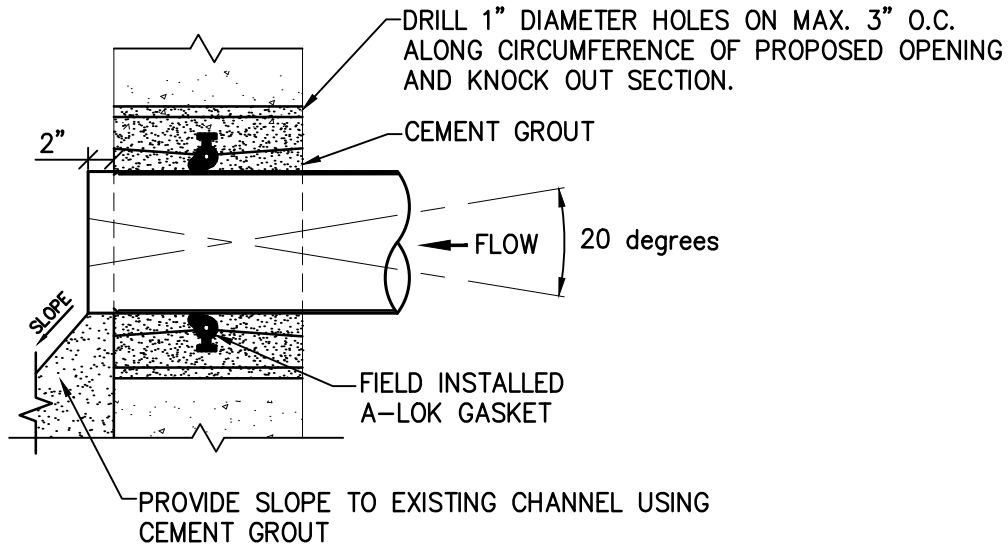
PLAN



TYPICAL CROSS SECTION

FOR NEW MANHOLES:
THE INVERT IS POURED AT THE PLANT USING PRECISION
FORMS TO CREATE A SMOOTH, ACCURATE CHANNEL THAT
MINIMIZES TURBULANCE AND RESULTS IN OPTIMUM FLOW.

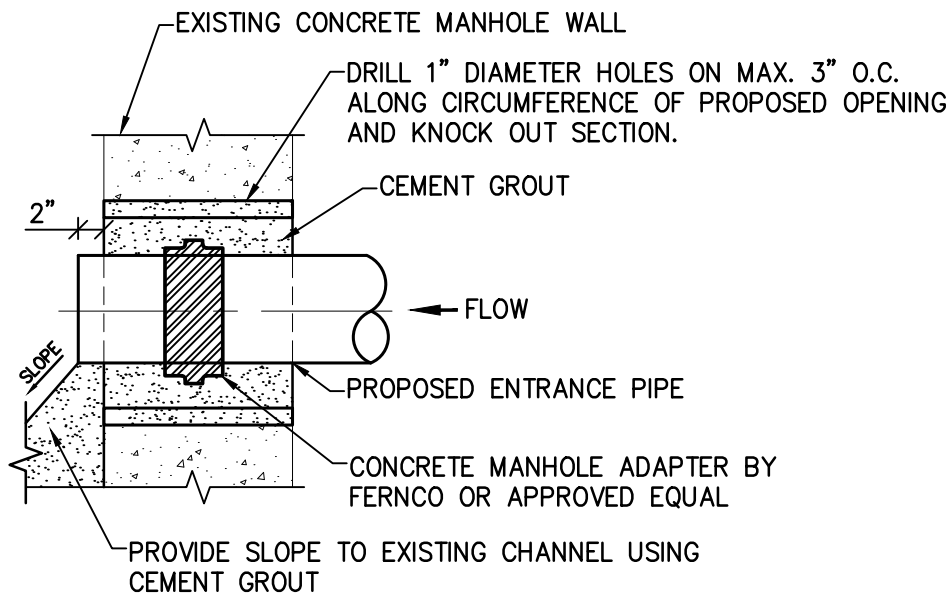
REVISIONS		POURED CONCRETE MANHOLE CHANNEL	DRAWN: JG
			SCALE: NONE
			BSA DETAIL 29
REMINGTON & VERNICK ENGINEERS <small>2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM Certificate of Authorization: 24 GA 28003300</small>			



TYPE A

TYPICAL A-LOK SECTION

FOR 2"-3" PIPE DIAMETERS UTILIZE A Z-LOK IN LIEU OF AN A-LOK; UTILIZE TYPE A CONNECTION UNLESS OTHERWISE APPROVED BY BSA.



TYPE B-SECTION

(FOR DI AND PVC PIPE)

NOTE:
CEMENT GROUT SHALL POSSESS A HIGH SULFATE RESISTANCE WHEN TESTED PER ASTM C1012 AND CONTAIN EITHER CALCIUM ALUMINATE CEMENT OR TYPE II CEMENT.

CONNECTION TO EXISTING MANHOLE DETAIL

DRAWN: JG

SCALE: NONE

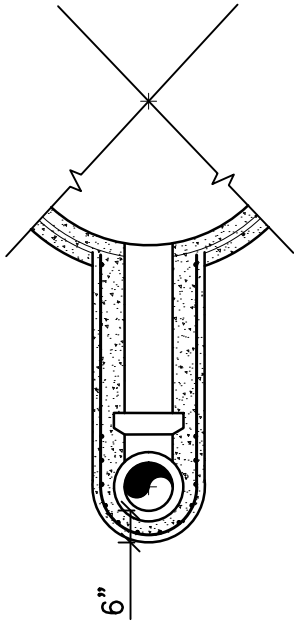
BSA DETAIL 30



REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

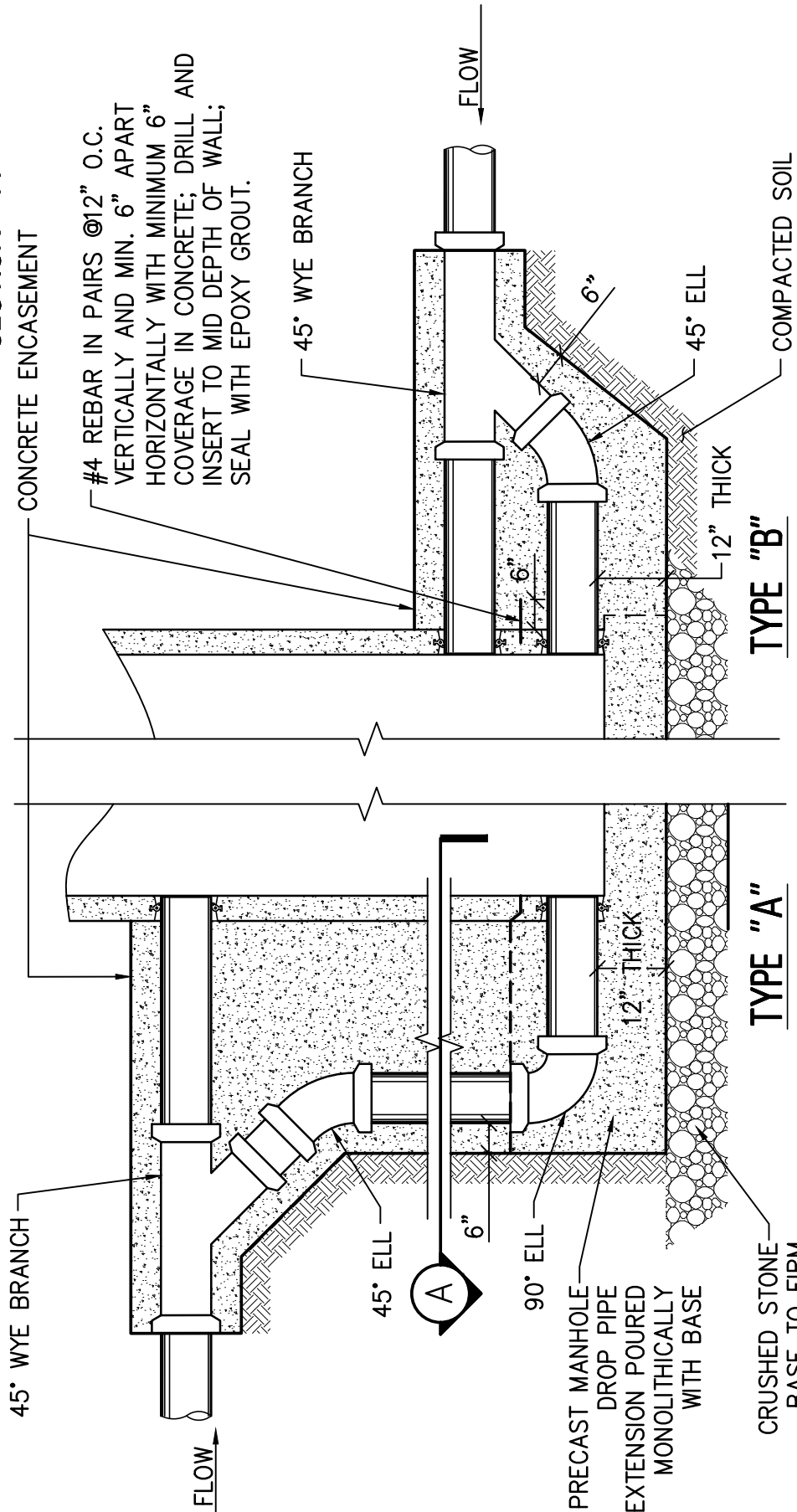
REVISIONS



NOTES:

1. ALL CAST-IN-PLACE CONCRETE SHALL BE MIN. 4000 PSI
2. REMAINING MANHOLE CONSTRUCTION SHALL CONFORM TO STANDARD 4'-0" DIA. PRECAST REINFORCED CONCRETE MANHOLE DETAIL.

SECTION "A"



TYPE "B"

TYPE "A"

UTILIZE TYPE "A" UNLESS OTHERWISE APPROVED BY THE BSA

DROP CONNECTION FOR PROPOSED MANHOLE-SECTION VIEW

DRAWN: JG

SCALE: NONE

BSA DETAIL 31

REVISIONS

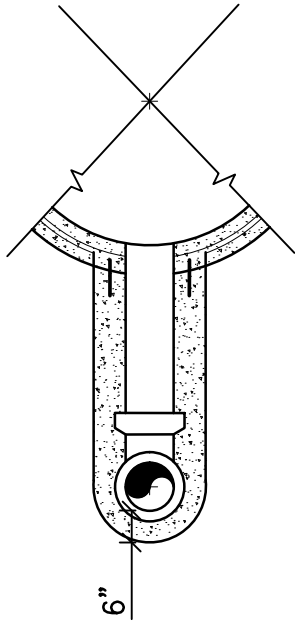


REMINGTON & VERNICK ENGINEERS

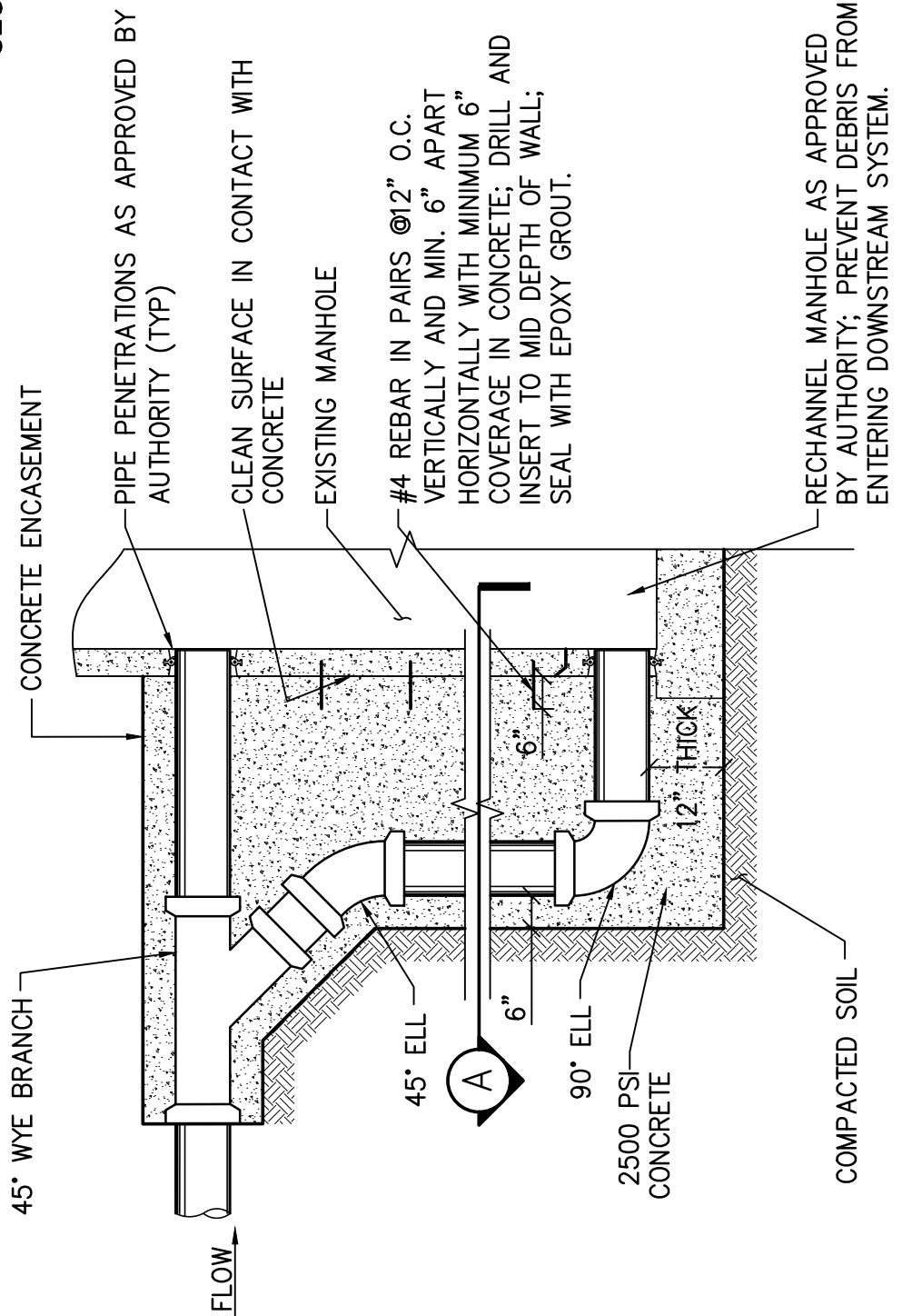
2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

NOTES:

1. ALL CAST-IN-PLACE CONCRETE SHALL BE MIN. 4000 PSI
2. REMAINING MANHOLE CONSTRUCTION SHALL CONFORM TO STANDARD 4'-0" DIA. PRECAST REINFORCED CONCRETE MANHOLE DETAIL.



SECTION "A"



**DROP CONNECTION FOR
EXISTING MANHOLE—SECTION VIEW**

DRAWN: JG

SCALE: NONE

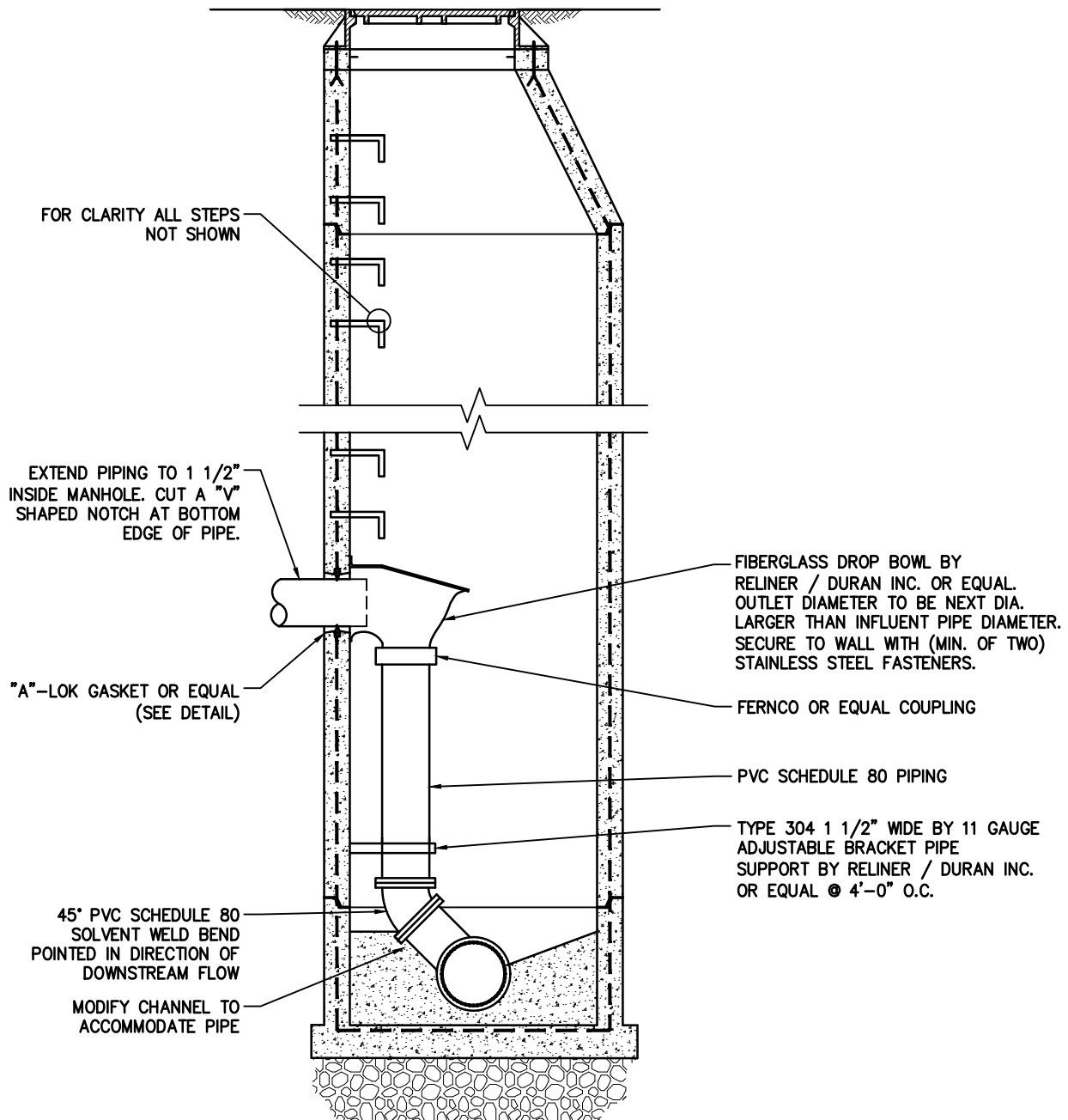
BSA DETAIL 32



REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

REVISIONS



SECTION VIEW

NOTES:

1. FOR DETAILS ON MANHOLE CONSTRUCTION SEE STANDARD 4'-0" DIAMETER PRECAST REINFORCED CONCRETE MANHOLE DETAIL.
2. SHOWN WITH INTERNAL DROP IN EXISTING MANHOLE.
3. MINIMUM PROPOSED MANHOLE DIAMETER INCORPORATING AN INSIDE DROP SHALL BE 5'-0" DIAMETER.

INTERNAL DROP SANITARY MANHOLE DETAIL

DRAWN: JG

SCALE: NONE

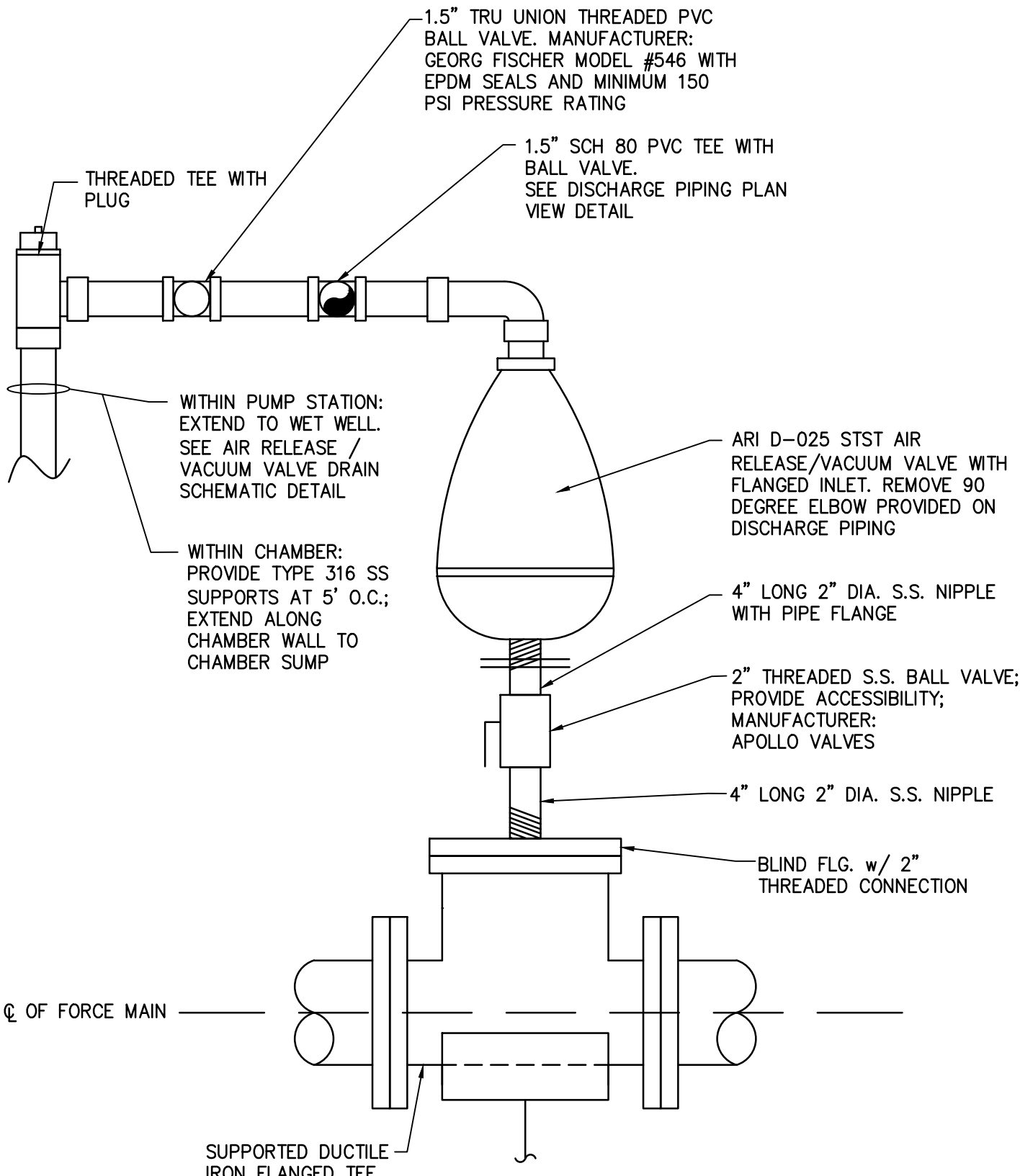
BSA DETAIL 33

RVE

REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300

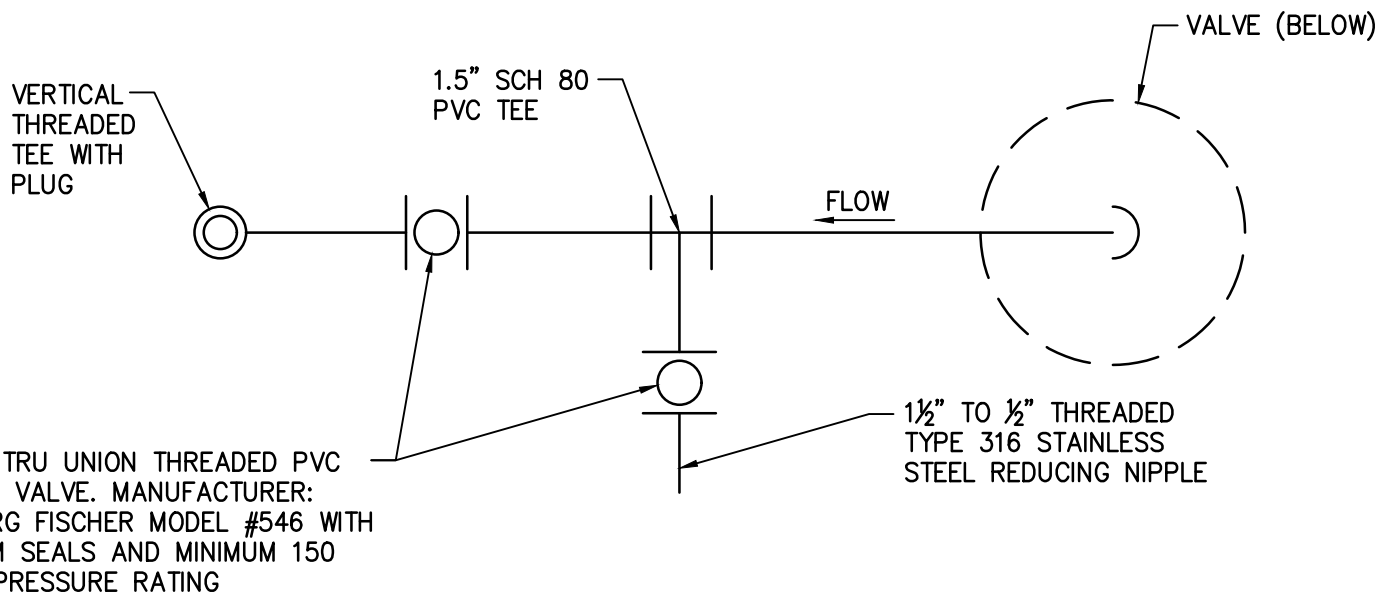
REVISIONS



SECTION VIEW

NOTE:
ALL S.S. IS TYPE 316

REVISIONS	FORCE MAIN AIR RELEASE/VACUUM VALVE MOUNTING DETAIL	DRAWN: JG
		SCALE: NONE
		BSA DETAIL 41
		REMINGTON & VERNICK ENGINEERS 2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM Certificate of Authorization: 24 GA 28003300



PLAN VIEW OF AIR RELEASE / VACUUM
VALVE DISCHARGE PIPING

DRAWN: JG

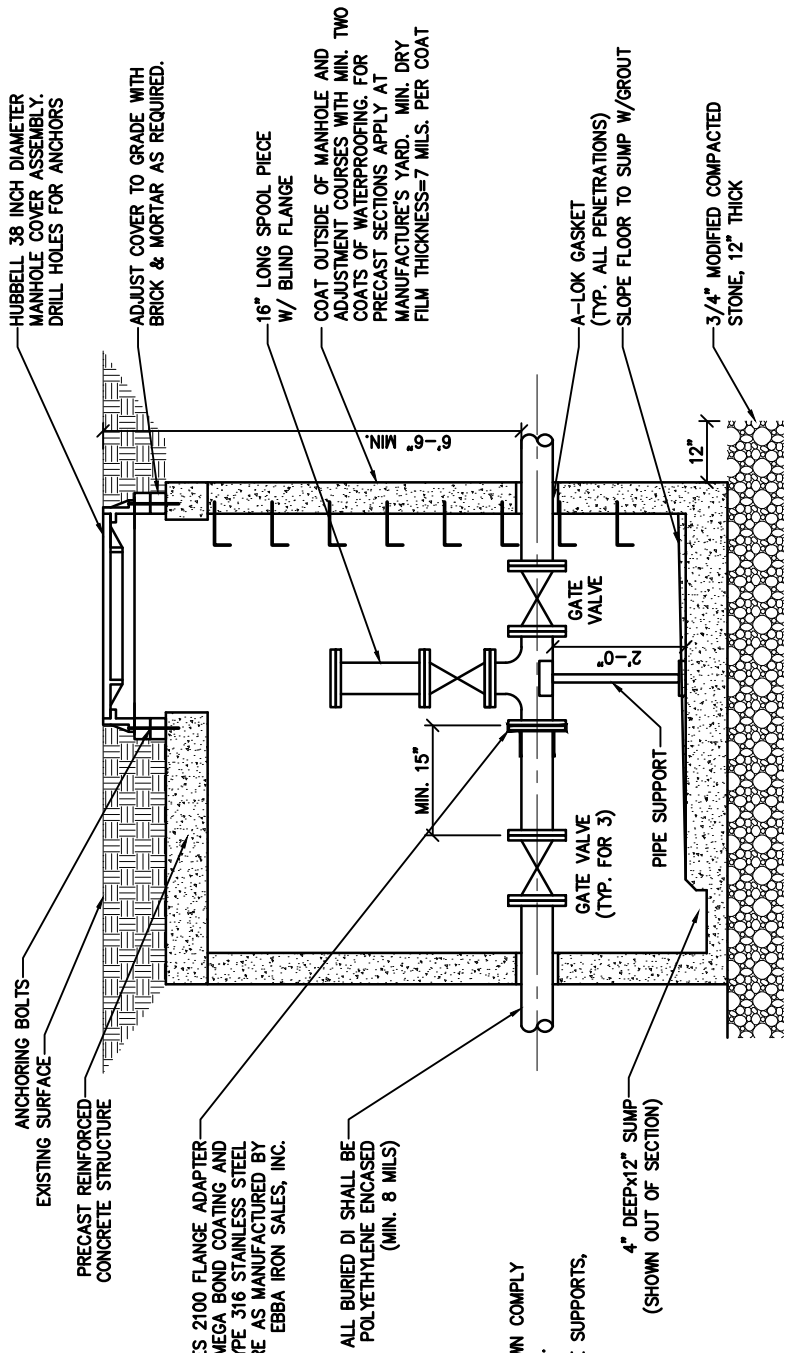
SCALE: NONE

BSA DETAIL: 42

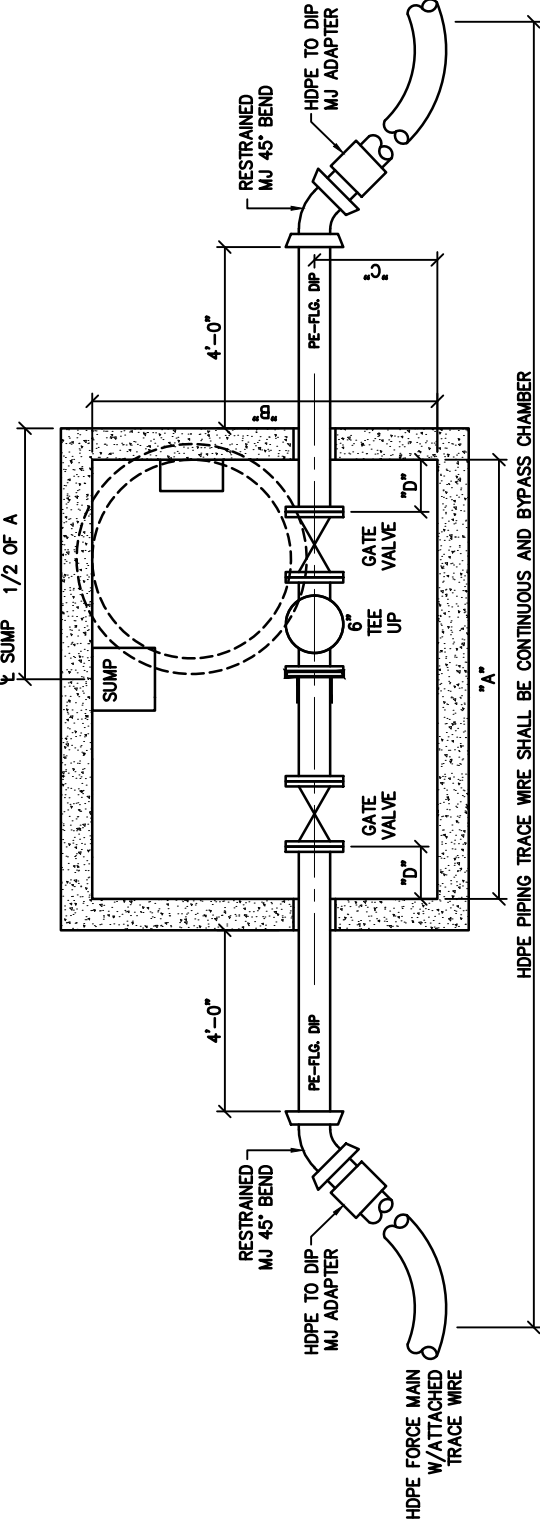
REVISIONS



REMINGTON & VERNICK ENGINEERS
2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300



SECTION - FORCE MAIN CLEANOUT CHAMBER



PLAN - FORCE MAIN CLEANOUT CHAMBER

(SHOWN WITH CONNECTION TO HDPE PIPING)

NOTES:

1. IN ADDITION TO REQUIREMENTS SHOWN COMPLY WITH 4'-0" DIAMETER MANHOLE DETAIL.
2. ALL STUDS, RODS, BOLTS, AND PIPE SUPPORTS, SHALL BE TYPE 316 STAINLESS.

DIMENSIONS:

PIPE DIAMETER INCHES	MINIMUM DIMENSIONS, INCHES			
	A	B	C	D
4	72	66	18	9
6	72	66	18	9
8	78	72	24	9
10	84	72	24	9
12	84	72	24	8

FORCE MAIN CLEANOUT CHAMBER DETAIL

DRAWN: JG

SCALE: NONE

BSA DETAIL 43



REMINGTON & VERNICK ENGINEERS

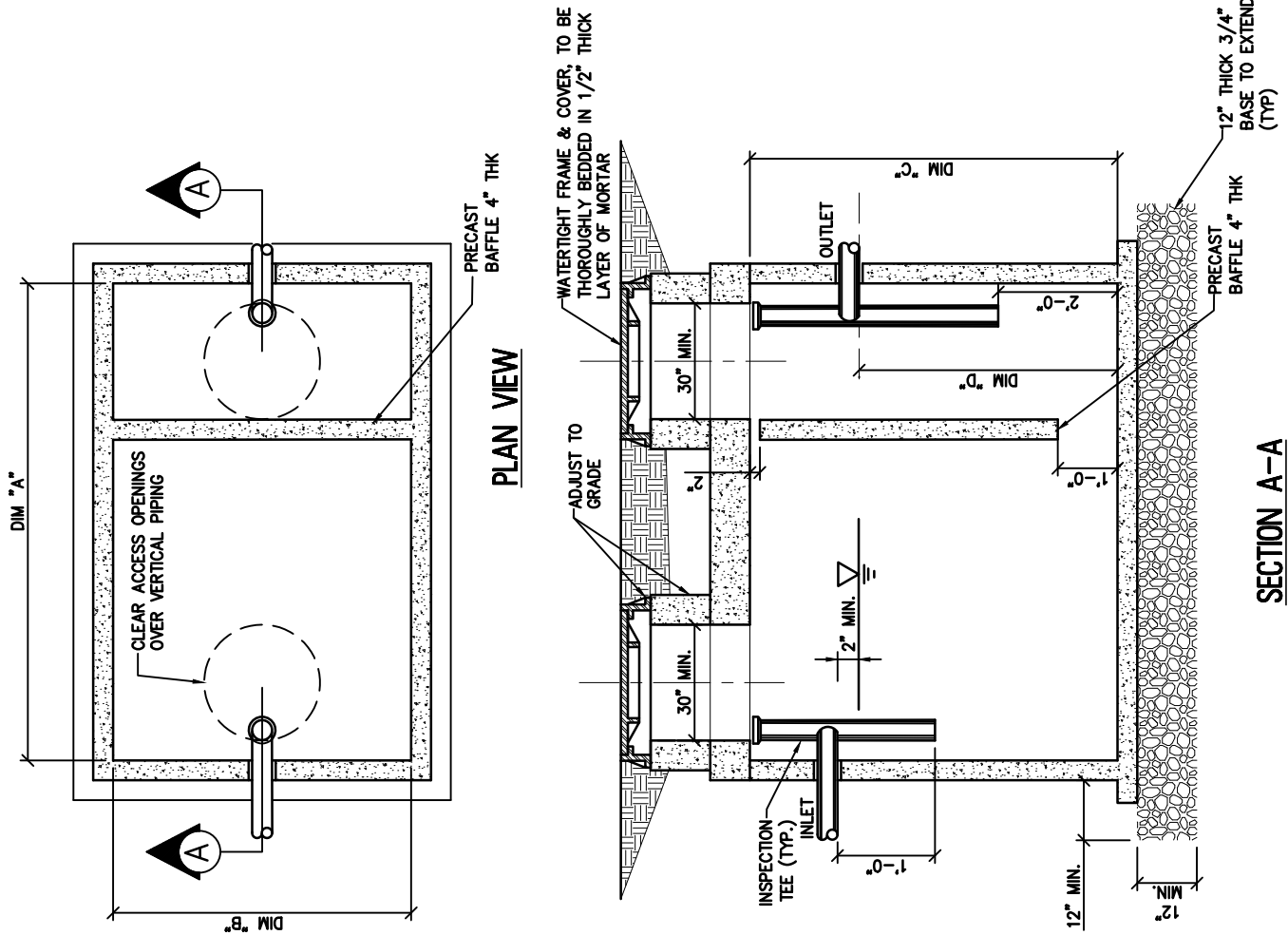
2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300

REVISIONS

GALLONS WET CAPACITY	DIM "A"	DIM "B"	DIM "C"	DIM "D"
600	7'-0"	4'-8"	7'-0"	3'-6"
750	7'-0"	4'-8"	7'-0"	4'-3"
1000	7'-0"	5'-0"	7'-2"	5'-8"
1250	9'-0"	5'-0"	7'-2"	5'-2"
1500	9'-0"	5'-8"	7'-2"	5'-4"
1750	11'-2"	5'-8"	7'-2"	4'-11"
2000	11'-2"	6'-8"	8'-0"	4'-7"
2500	12'-8"	6'-8"	8'-0"	5'-6"
3000	12'-8"	6'-8"	8'-0"	6'-0"

NOTES:

1. CONCRETE: 28 DAY $f_c = 4000$ PSI. STRUCTURE TO BE OF PRECAST CONSTRUCTION, AS MANUFACTURED BY ATLANTIC CONCRETE OR APPROVED EQUAL.
2. REBARS: ASTM A615 GRADE 60
3. MESH: ASTM A-185 GRADE 65
4. DESIGN STANDARDS: ACI 318 BUILDING CODE; ASTM C-913.
5. LOADS: AASHTO H-20 TRUCK WHEEL.
6. FILL W/CLEAN WATER PRIOR TO START UP OF SYSTEM.
7. COAT OUTSIDE WITH TWO COATS (MIN. DFT. = 25 MILS) OF BLACK BITUMASTIC WATER PROOFING SUPPLIED BY KOPPERS CO. INC. OR APPROVED EQUAL; INTERIOR TO BE COATED WITH ONE COAT WHITE EPOXY. APPLY PER MFR. INSTRUCTIONS.
8. SEPARATOR SHALL BE PLACED IN AN AREA WHERE THE COVERS WILL ALWAYS BE ACCESSIBLE.
9. EXTERIOR PENETRATIONS TO HAVE A-LOK GASKET, OR APPROVED EQUAL.
10. CAPACITY TABLE PROVIDES LENGTH BY WIDTH BY DEPTH RELATIONSHIPS; DIMENSIONAL CHANGES SHALL BE APPROVED BY THE BSA.



GREASE SEPARATOR DETAIL

DRAWN: JG

SCALE: NONE

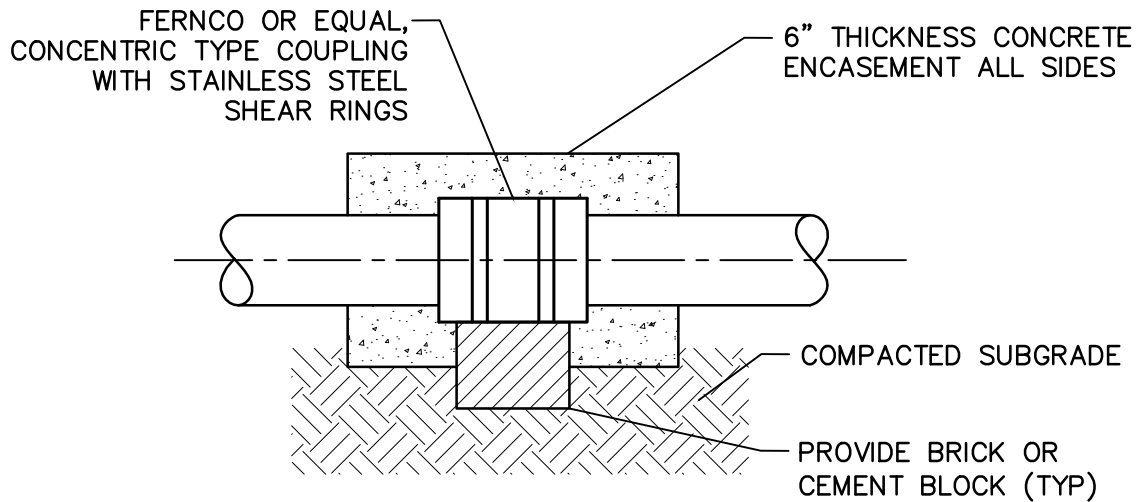
BSA DETAIL 44

RVE

REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300

REVISIONS



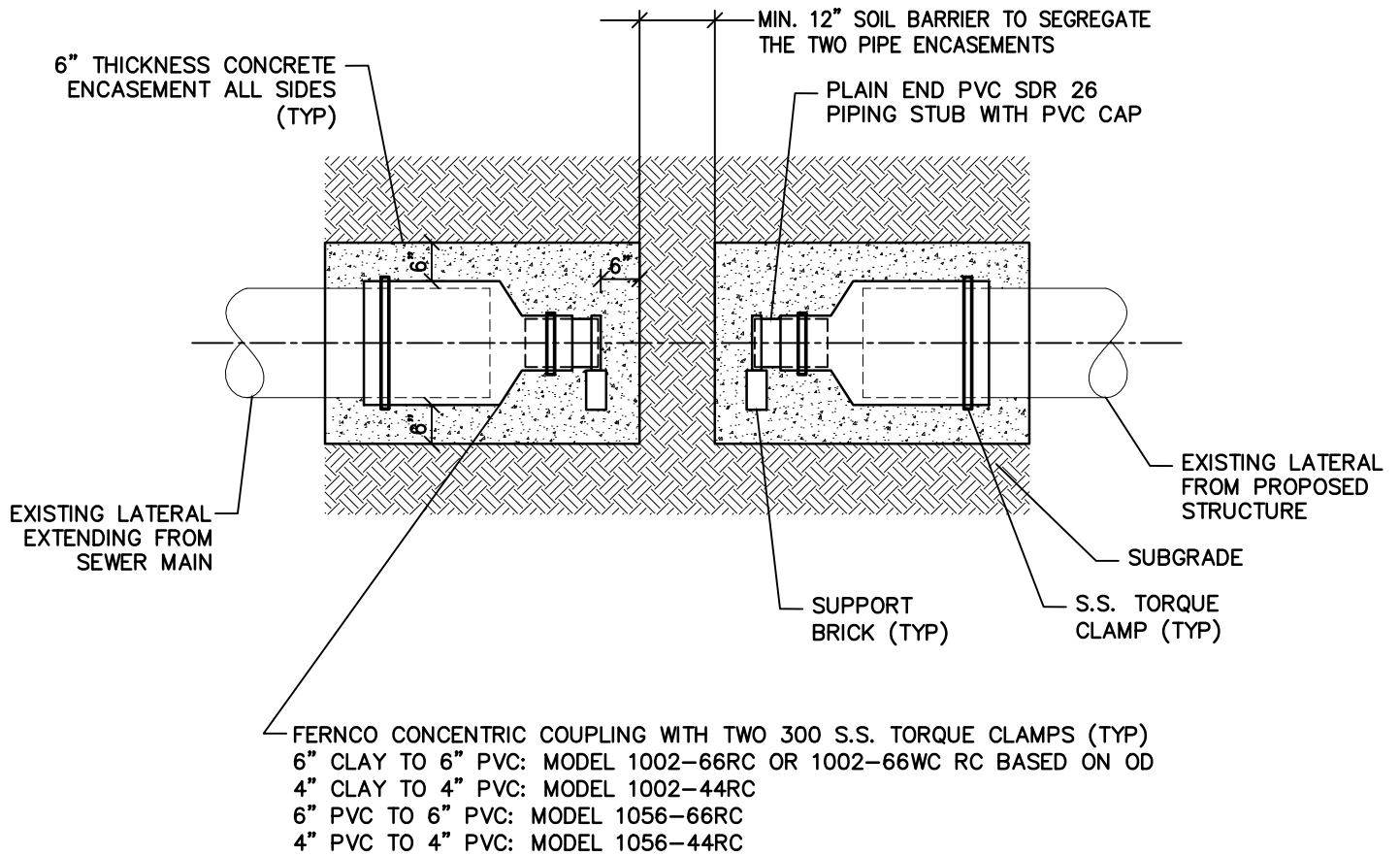
SECTION VIEW

N.T.S.

NOTES:

1. SHOWN FOR CONNECTING PVC PIPE TO PVC PIPE
2. FERNCO CONCENTRIC COUPLING WITH SS SHEAR RING MODEL NUMBERS:
 - * 6" DIA. PIPE: 1056-66RC
 - * 4" DIA. PIPE: 1056-44RC
3. FOR CLAY PIPE UPSTREAM TO PVC PIPE DOWNSTREAM CONDITION UTILIZE FERNCO ECCENTRIC COUPLING WITH MATCHING PIPE INVERTS AND SS SHEAR RINGS. FOR 6" DIA. PIPE FERNCO MODEL NUMBER IS 1002-66EBRC.

REVISIONS	PIPING COUPLING DETAIL	DRAWN: MJC
	 REMINGTON & VERNICK ENGINEERS <small>2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM Certificate of Authorization: 24 GA 28003300</small>	SCALE: NONE
		BSA DETAIL 50



NOTE:

1. ALL EXISTING PIPING SHALL BE CUT DIRECTLY VERTICAL WITH A POWER SAW.
2. REMOVE ALL STONE AND SOIL MIN. 6" ON ALL SIDES OF PIPE.

EXISTING SEWER MAIN / LATERAL CAPPING SECTION VIEW

DRAWN: JG

SCALE: NONE

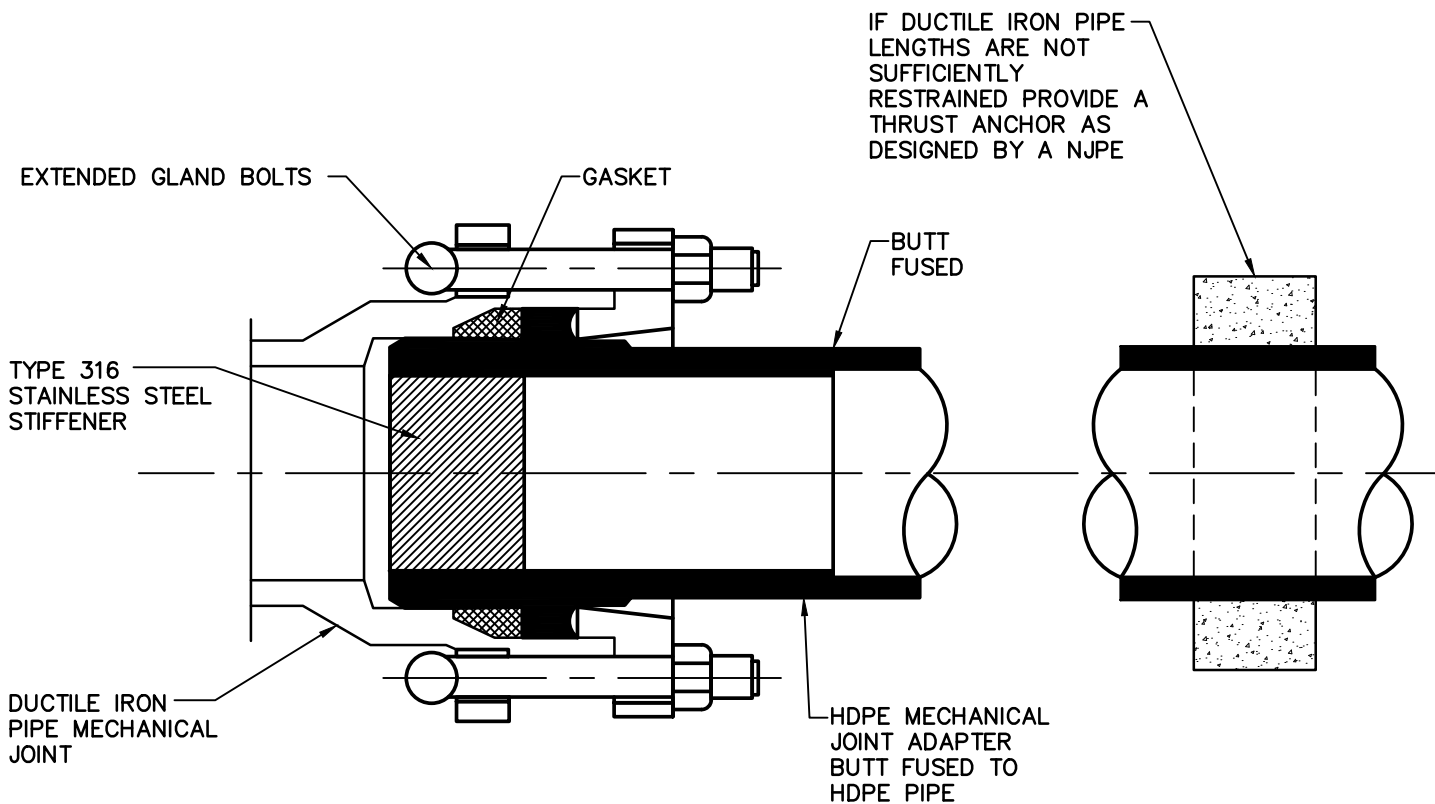
BSA DETAIL 51



REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300

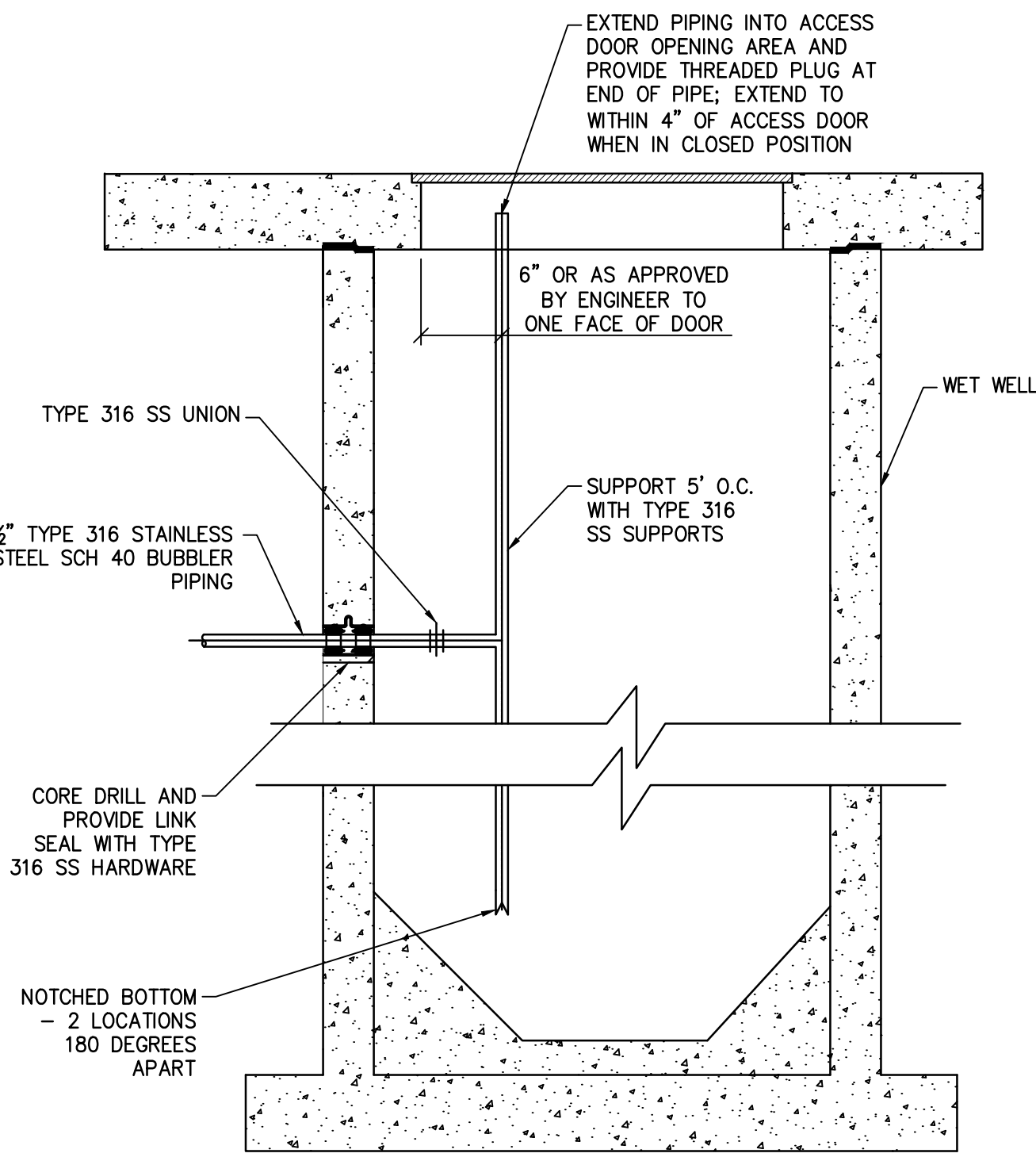
REVISIONS



NOTE:

1. ADAPTER TO BE SIZED PER MANUFACTURER'S SPECIFICATIONS.
2. ADAPTER TO BE MANUFACTURED BY PERFORMANCE PIPE OR APPROVED EQUAL.
3. ALTERNATIVE JOINT METHOD IS A EPOXY COATED ROMAC ALPHA COUPLING WITH TYPE 316 STAINLESS STEEL STIFFENER INSIDE THE HDPE PIPING. WITHIN THE COUPLING THE ENDS OF THE DUCTILE IRON AND HDPE PIPING TO TOUGH. PROVIDE 8 MIL POLYETHYLENE ENCASEMENT.

REVISIONS	HDPE TO DIP MJ ADAPTER DETAIL	DRAWN: JG
	 REMINGTON & VERNICK ENGINEERS <small>2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM Certificate of Authorization: 24 GA 28003300</small>	SCALE: NONE
		BSA DETAIL 52



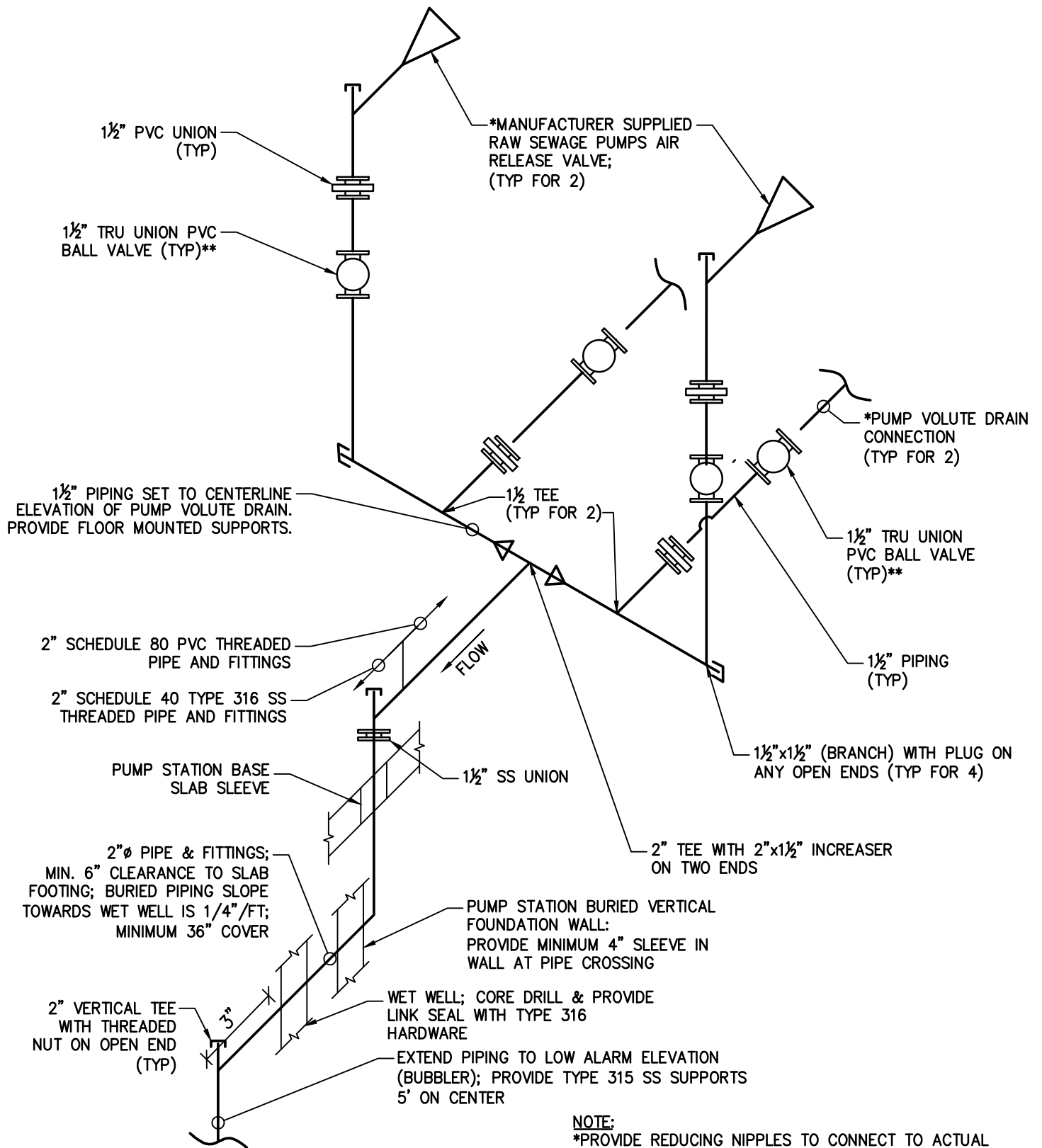
**PUMP STATION WET WELL BUBBLER
PIPING SECTION VIEW SCHEMATIC**

DRAWN: JG
SCALE: NONE
BSA DETAIL 60



REMINGTON & VERNICK ENGINEERS
2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

REVISIONS



NOTE:
 *PROVIDE REDUCING NIPPLES TO CONNECT TO ACTUAL DIAMETER PROVIDED BY PUMP MANUFACTURER
 ** TRU UNION BALL VALVE MANUFACTURER: GEORG FISCHER MODEL #546 WITH EPDM SEALS AND MINIMUM 150 PSI PRESSURE RATING

**SELF PRIMING RAW SEWAGE CENTRIFUGAL PUMPS
 VENT / DRAIN SYSTEM SCHEMATIC**

DRAWN: JG
 SCALE: NONE
 BSA DETAIL 61



REMINGTON & VERNICK ENGINEERS
 2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
 Certificate of Authorization: 24 GA 28003300

REVISIONS

1½" AIR RELEASE / VACUUM VALVE
DISCHARGE PIPING / FITTINGS:
FOR CONTINUATION SEE FORCE MAIN
AIR RELEASE / VACUUM VALVE
MOUNTING DETAIL

1½" PVC UNION (THREADED)

SCHEDULE 80 PVC THREADED PIPE
AND FITTINGS

SCHEDULE 40 TYPE 316 SS
THREADED PIPE AND FITTINGS

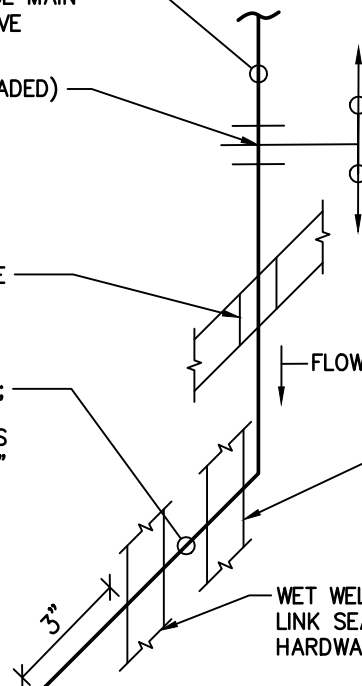
PUMP STATION BASE
SLAB SLEEVE

1½" Ø PIPE & FITTINGS;
BURIED PIPING SLOPE
TOWARDS WET WELL IS
1/4" / FT; MINIMUM 36"
COVER

PUMP STATION BURIED VERTICAL
FOUNDATION WALL:
PROVIDE MINIMUM 3.5" SLEEVE IN
WALL AT PIPE CROSSING

WET WELL; CORE DRILL & PROVIDE
LINK SEAL WITH TYPE 316 SS
HARDWARE

PLAIN END DISCHARGE
WITHIN WET WELL



NOTE:
CANNOT BE COMBINED WITH SELF PRIMING PUMP
PRIMING PIPING SYSTEM WITHOUT EITHER VACUUM
FUNCTION BEING DISABLED OR SWITCHING TO AN ARI
AIR RELEASE VALVE; MODIFY DETAIL ACCORDINGLY.

PUMP STATION AIR RELEASE / VACUUM VALVE DRAIN SCHEMATIC

DRAWN: JG

SCALE: NONE

BSA DETAIL 62

RVE

REMINGTON & VERNICK ENGINEERS

2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003
(856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM
Certificate of Authorization: 24 GA 28003300

REVISIONS

BORDENTOWN SEWERAGE AUTHORITY (BSA) DRAWING NOTES

1. All proposed sewerage system work shall be in accordance with the Bordentown Sewerage Authority Specifications and Details.
2. The Bordentown Sewerage Authority requires a minimum of 48 hours advance notice of any required inspection, including but not limited to demolition, manhole cover opening, saddle installation, system testing or sewer main video work.
3. No existing sanitary sewer manhole cover shall be removed without a Bordentown Sewerage Authority representative present to ensure the cover is reinstalled.
4. The Bordentown Sewerage Authority engineer shall approve shop drawings prior to the Contractor ordering materials in accordance with Section 01010, Introduction, of the Bordentown Sewerage Authority Specifications.
5. A minimum of seven (7) calendar days prior to the start of construction the Contractor shall arrange and hold a preconstruction meeting on a day/time agreed to by the Bordentown Sewerage Authority in accordance with Section 01010, Introduction, of the Bordentown Sewerage Authority Specifications.
6. For Work related to the installation of a pipe saddle all work shall be performed in the presence of a Bordentown Sewerage Authority representative as follows:
 - a. Contractor shall perform manhole to manhole pre-construction and post-construction cleaning and video televising of the existing sewer main pipe for the manhole section containing the proposed lateral saddle connection. Video work shall be based on NASSCO standards. Video subcontractor must provide the NASSCO certification for the individual performing the video work to the Bordentown Sewerage Authority and the video contractor must be pre-approved by the Authority. Provide pre-construction video with a detailed report to the Bordentown Sewerage Authority at least 72 hours prior to commencing saddle connection excavation. No connections are allowed into the sewer main in any area that may be cracked/fractured. Contractor is responsible for post construction pipe condition. Perform post construction cleaning and video work after the saddle is installed. Provide two thumb drive video copies to the Bordentown Sewerage Authority of all video events with their associated reports. Each report shall list any deficiencies along with the footage to the deficiency and a photo of the deficiency.
 - b. Provide removed sewer main saddle coupon to a Bordentown Sewerage Authority representative.
 - c. Any existing laterals found on the video to be extending towards the project lots shall be uncovered by the Contractor and capped. If any existing laterals are found Contractor to provide lateral capping application(s) to the BSA and once the application(s) are approved cap the existing lateral(s). Lateral capping work shall be as shown on detail provided by the Bordentown Sewerage Authority.
7. For projects with constructed facilities to be dedicated to the Authority, Contractor shall video all sewer mains and all facilities shall be as-built based on specification requirements provided to the Contractor by the Bordentown Sewerage Authority.
8. Bordentown Sewerage Authority representatives shall be present for all work on any Authority facility and for all wastewater conveyance acceptance testing

	STANDARD DRAWING NOTES	DRAWN: JG
	 REMINGTON & VERNICK ENGINEERS <small>2059 SPRINGDALE ROAD, CHERRY HILL, NJ 08003 (856) 795-9595, FAX (856) 795-1882, WEB SITE ADDRESS: WWW.RVE.COM Certificate of Authorization: 24 GA 28003300</small>	SCALE: NONE
REVISIONS		BSA DETAIL 70