



SECTION III

**SEWER
DETAILS**

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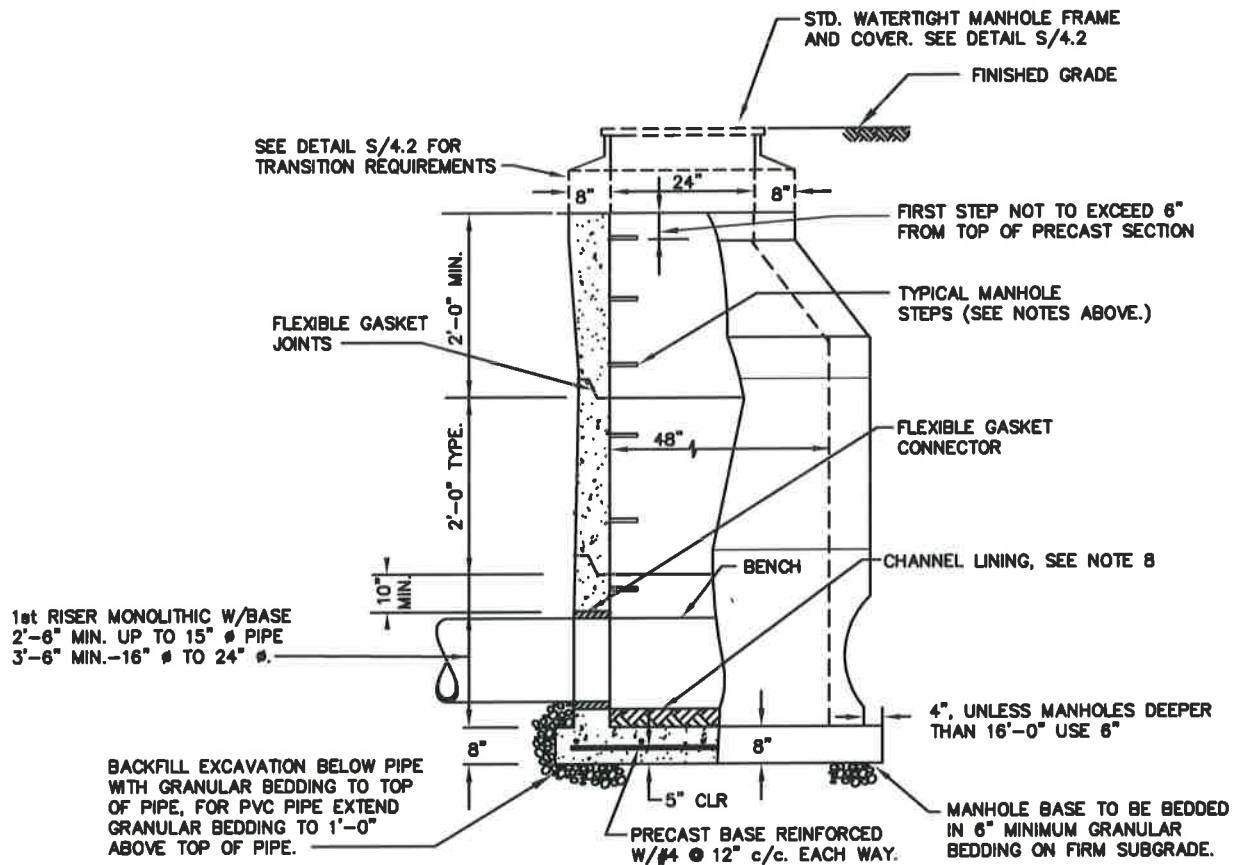



NOTES: TYPICAL MANHOLE STEPS

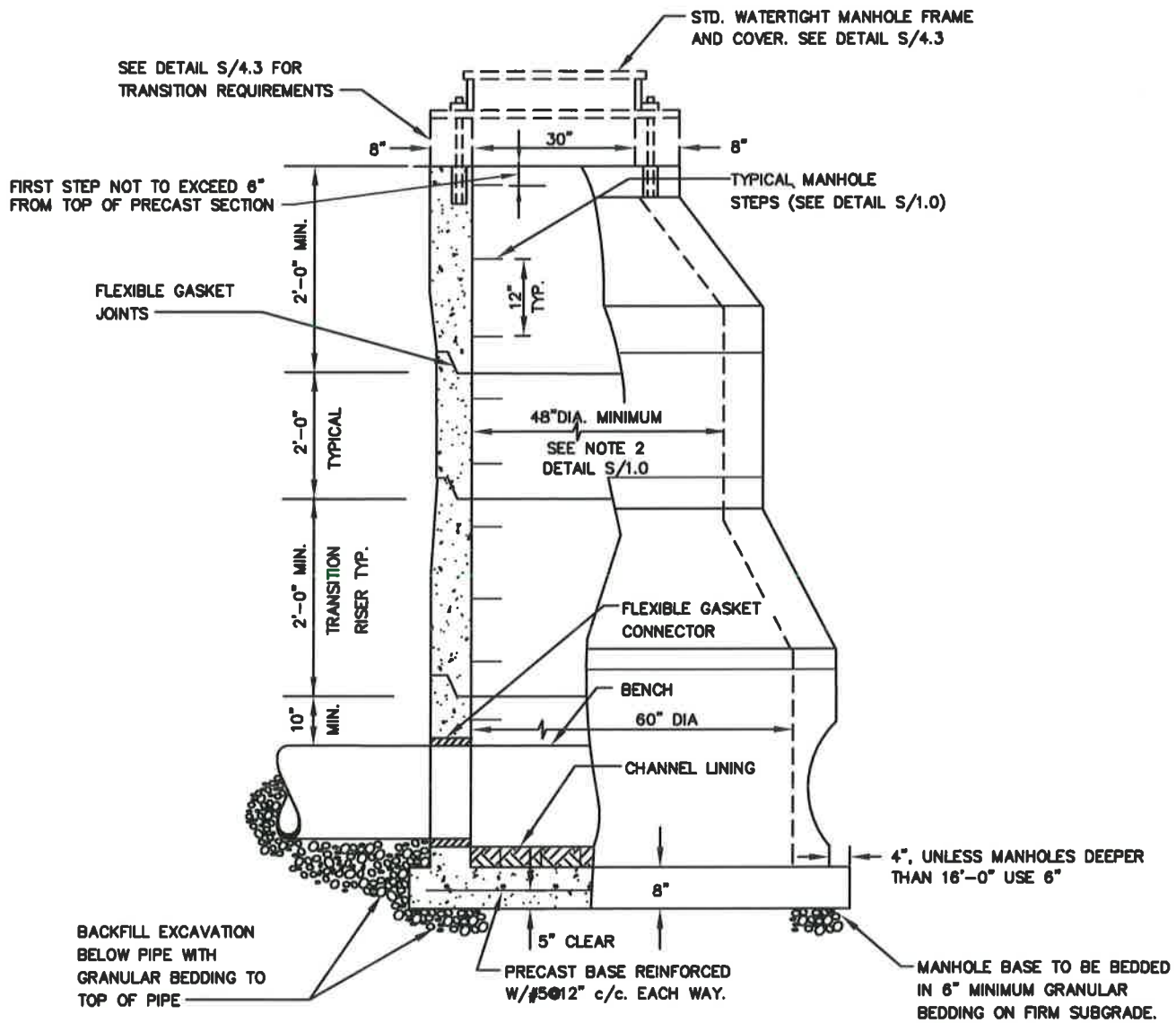
- A. MANHOLE STEPS SHALL BE MINIMUM 12" WIDE AND SPACED 12" WITH ± 1" TOLERANCE, CENTER TO CENTER, IN VERTICAL ALIGNMENT AND ALIGNED WITH BENCH.
- B. EMBED STEPS MINIMUM 3" WITH A MINIMUM PROJECTION OF 5".
- C. INSTALL BOTTOM STEP MINIMUM 5" AND MAXIMUM 16-1/2" ABOVE BENCH.

NOTES: MANHOLES

- 1. PROVIDE LIFTING HOLES OR DEVICES FOR ALL PRECAST SECTIONS. HOLES COMPLETELY THRU WALLS SHALL BE PLUGGED W/NEOPRENE OR RUBBER PLUG INSERTS, MORTARED FLUSH ON EACH SIDE OF WALL WITH NON-SHRINK GROUT. HOLES NOT COMPLETELY THRU WALL SHALL BE FILLED FLUSH WITH WALL WITH NON-SHRINK GROUT.
- 2. MAXIMUM DEPTH OF 4'-0" DIA. MANHOLE IS LESS THAN 20'-0" IF GREATER PROVIDE 5'-0" MANHOLE WITH ALUMINUM LADDER WITH FALL PREVENTION SYSTEM, SEE DETAIL S/1.4.
- 3. PROVIDE FLEXIBLE GASKET CONNECTOR BETWEEN PIPE AND MANHOLE.
- 4. MINIMUM HEIGHT OF RISERS SHALL BE 1'-0". NO MORE THAN ONE 1'-0" RISER IS PERMITTED ON EACH MANHOLE.
- 5. WHEN MANHOLE DEPTH IS 16'-0" AND GREATER, SEE DETAIL S/3.02 FOR PIPE TO MANHOLE CONNECTION.
- 6. WHEN PIPE GRADE IS 10% OR GREATER, SEE DETAIL S/3.03 FOR PIPE TO MANHOLE CONNECTION.
- 7. SEE DETAIL S/3.7 FOR 15" AND LARGER SEWER PIPE TO MANHOLE CONNECTION.
- 8. CHANNEL LINING MINIMUM 4" FOR BRICK CHANNELS AND MINIMUM 2" FOR PRECAST CONCRETE CHANNELS.
- 9. MINIMUM SPACING BETWEEN O.D. OF ADJACENT PIPE SHALL BE 9". SEE DETAILS S/6.4. WHEN PIPE DIAMETER OF SMALLER ADJACENT PIPE IS 12" OR GREATER CONTACT MANHOLE MANUFACTURER.




WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>9/29/16</u>  Chief Engineer	STANDARD DETAIL 48-INCH DIAMETER PRECAST CONCRETE MANHOLE	<table border="1"> <tr> <td style="text-align: center;">S</td> </tr> <tr> <td style="text-align: center;">1.0</td> </tr> </table>	S	1.0
S					
1.0					



NOTES:

1. NOTES (1) THRU (9) ON DETAIL S/1.0 APPLY TO THIS DETAIL.
2. FOR SEWERS 36" AND LARGER, SEE DETAIL S/3.4.

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STANDARD DETAIL
**60-INCH DIAMETER
PRECAST CONCRETE
MANHOLE**

S
1.1

NOTES: MANHOLE

1. SHALLOW MANHOLE IS WITHOUT 48" RISER. TOPSLAB TO BE SAME AS MIDDLE SLAB EXCEPT FOR 36" OPENING.
2. FOR ADDITIONAL INFORMATION, SEE DETAIL S/1.0 NOTES 1 THRU 9.
3. SLAB ON 48" DIAMETER RISER TO HAVE 36" OPENING AND SLAB THICKNESS TO BE 9". REINFORCING TO BE SAME AS MIDDLE SLAB.
4. FOR SEWERS 36" AND LARGER, SEE DETAIL S/3.4.
5. WHEN THE DIMENSION FROM THE INVERT OF MANHOLE TO FRAME AND COVER IS 20'-0" OR GREATER, USE SAME SIZE DIA. MANHOLE AS MANHOLE BASE SECTION. PROVIDE ALUMINUM LADDER, SEE DETAILS M/16.0 AND M/16.1 AND FALL PREVENTION SYSTEM, SEE SPECIFICATIONS AND DETAIL S/1.4

STD. WATERTIGHT MANHOLE FRAME AND COVER. SEE DETAIL S/4.3

SEE DETAIL S/4.3 FOR TRANSITION REQUIREMENTS

FIRST STEP NOT TO EXCEED 6" FROM TOP OF PRECAST SECTION

FLEXIBLE GASKET JOINTS

MIDDLE SLAB, SEE PLAN ABOVE FOR DESIGN.

2'-0" MINIMUM UNLESS NOTED OTHERWISE
10" MINIMUM

BACKFILL EXCAVATION BELOW PIPE WITH GRANULAR BEDDING TO TOP OF PIPE.

PRECAST BASE REINFORCED W/#8 @12" c/c. EACH WAY.

CONE TRANSITION MAY BE USED IN LIEU OF 12" SLAB.

TYPICAL MANHOLE STEPS. SEE DETAIL S/1.0 AND NOTE 5.

72", 84" OR 96" DIA. PRECAST BASE SECTIONS

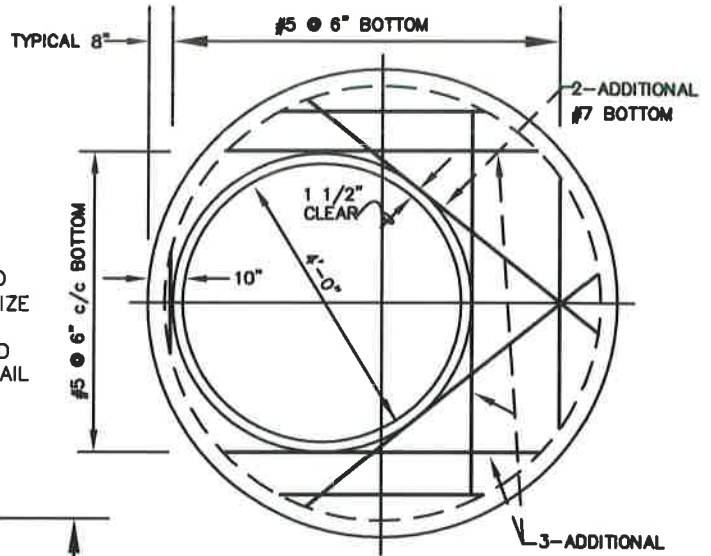
FLEXIBLE GASKET CONNECTOR

BENCH

CHANNEL LINING

4", UNLESS MANHOLES DEEPER THAN 16'-0" USE 6"

MANHOLE BASE TO BE BEDDED IN 6" MINIMUM GRANULAR BEDDING ON FIRM SUBGRADE.



PLAN VIEW - MIDDLE SLAB

NOTES: MIDDLE SLAB

- A. SLAB THICKNESS 12".
- B. REINFORCING STEEL SHALL HAVE MINIMUM 1-1/2" COVER.
- *C. WHEN DEPTH OF 48" RISER EXCEEDS 10'-0", DO NOT USE MIDDLE SLAB AND 48" RISER. USE SAME SIZE RISER AS BASE SECTION.

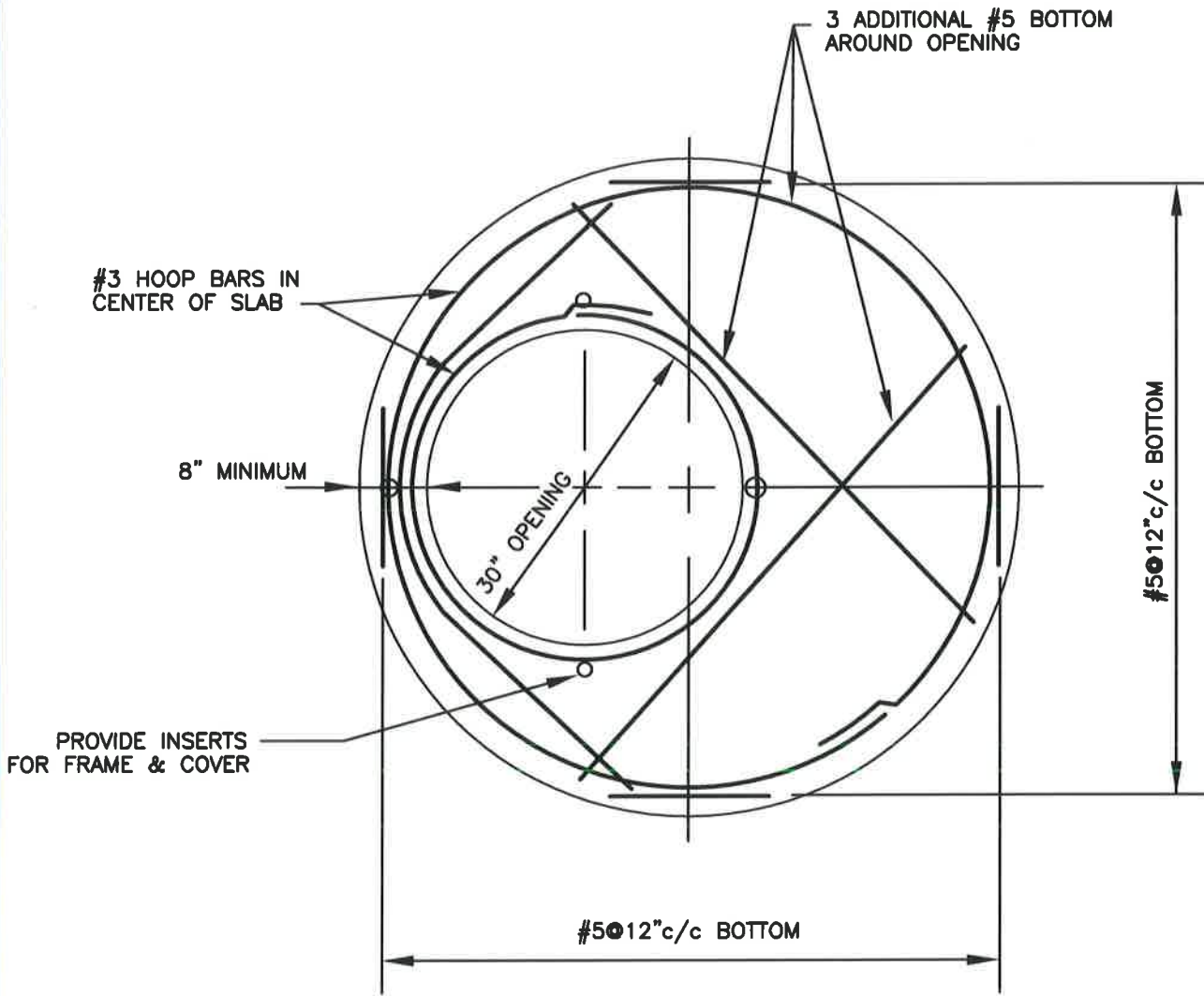
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STANDARD DETAIL
72-INCH, 84-INCH AND
96-INCH DIAMETER
PRECAST CONCRETE
MANHOLE


S
1.2



NOTES:

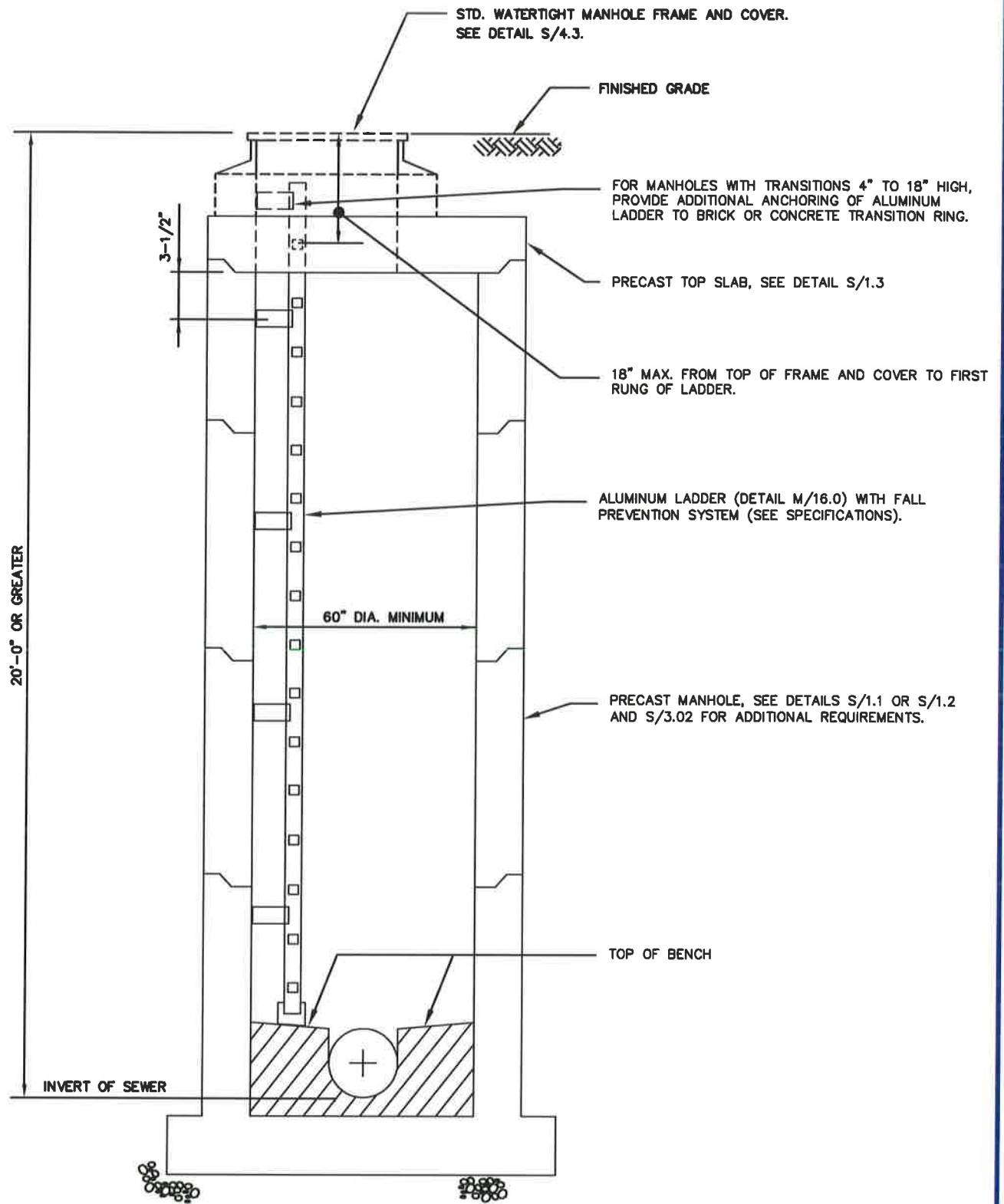
1. SLAB THICKNESS 8".
2. REINFORCING STEEL SHALL HAVE MINIMUM 1-1/2" COVER.

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STANDARD DETAIL
 PRECAST TOP SLAB
 FOR 48-INCH AND
 60-INCH DIAMETER
 PRECAST CONCRETE MANHOLES

S
1.3



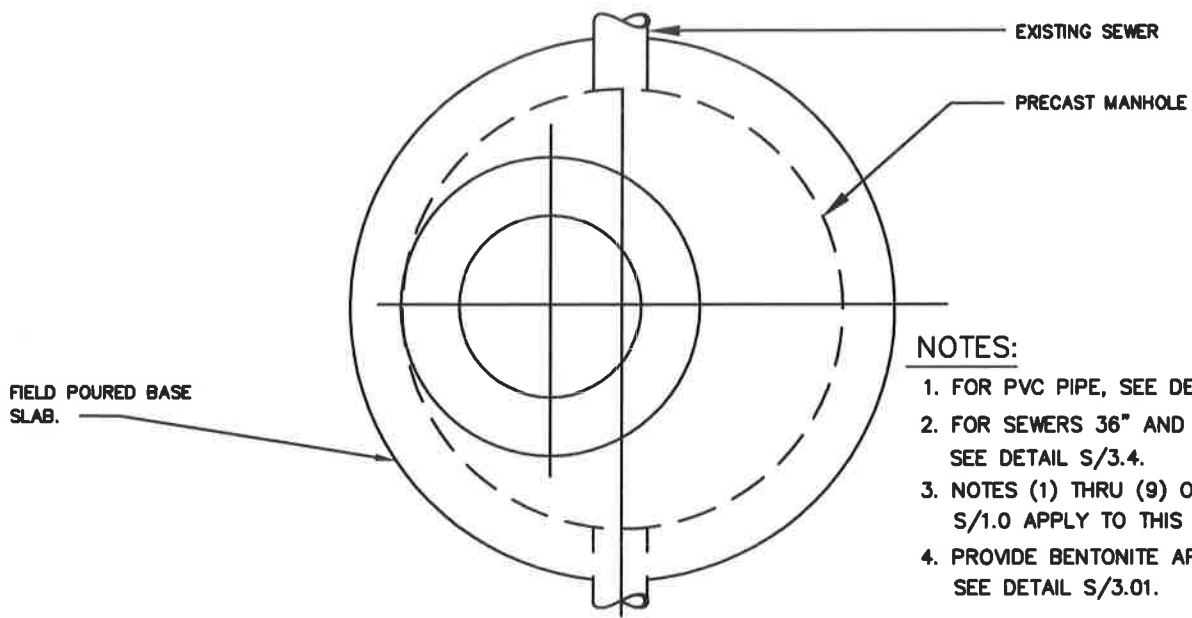
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STANDARD DETAIL
 PRECAST CONCRETE
 MANHOLE WITH
 FALL PREVENTION SYSTEM

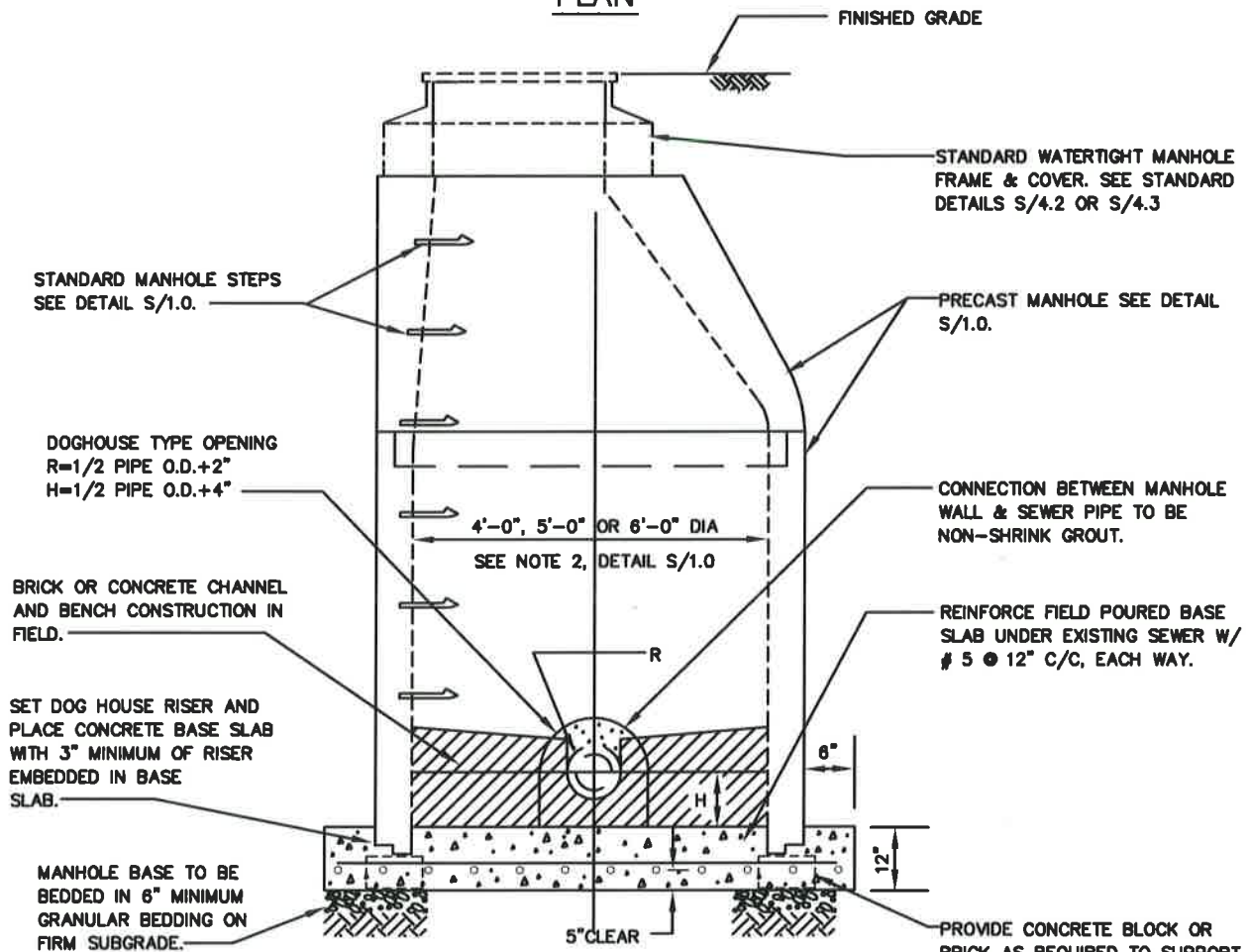
S
 1.4



NOTES:

1. FOR PVC PIPE, SEE DETAIL S/2.2.
2. FOR SEWERS 36" AND LARGER, SEE DETAIL S/3.4.
3. NOTES (1) THRU (9) ON DETAIL S/1.0 APPLY TO THIS DETAIL.
4. PROVIDE BENTONITE APPLICATION, SEE DETAIL S/3.01.

PLAN



ELEVATION

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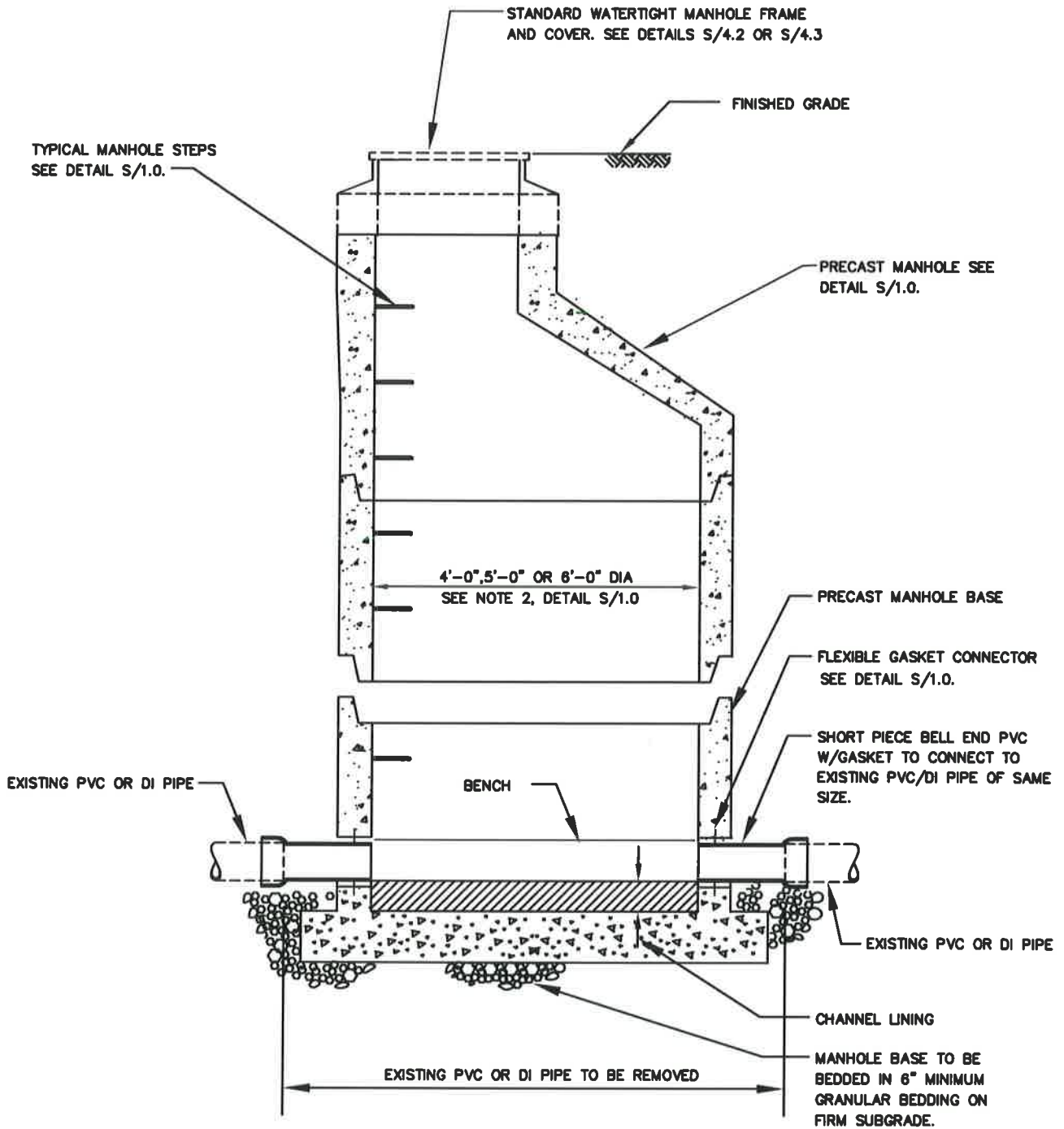
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STANDARD DETAIL
 PRECAST CONCRETE
 MANHOLE BUILT OVER
 EXISTING SEWER
 TYPE II


S
 2.1

NOTE:

1. NOTES (1) THRU (9) ON DETAIL S/1.0 APPLY TO THIS DETAIL.



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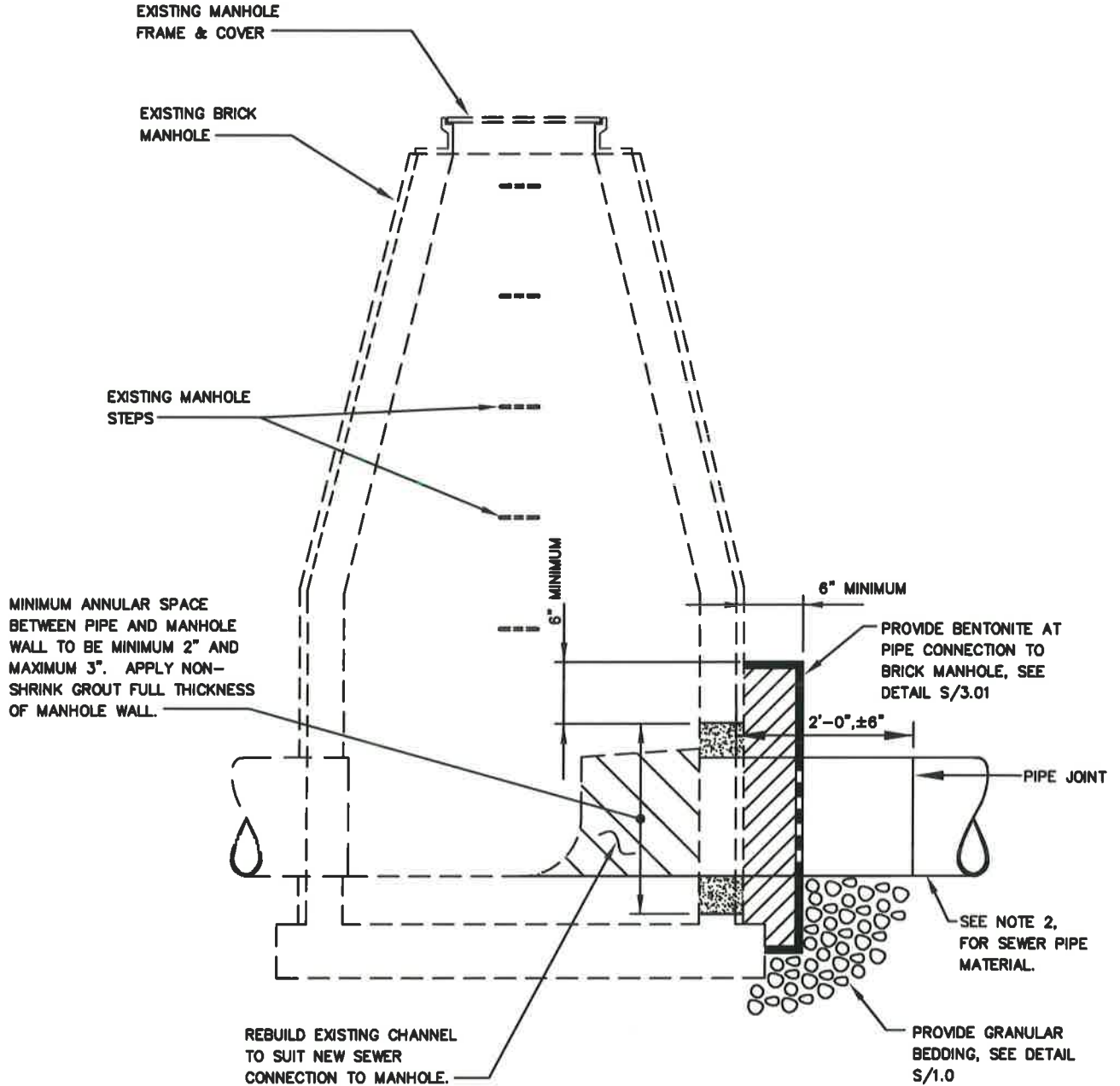
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STANDARD DETAIL
**PRECAST MANHOLE
BUILT ON EXISTING
PVC OR DI PIPE**

S
2.2


NOTE FOR PIPE CONNECTION TO BRICK MANHOLE

1. DO NOT PROVIDE FLEXIBLE GASKET CONNECTORS.
2. USE ONLY DUCTILE IRON PIPE WITH SPECIAL INTERIOR LINING, SEE SPECIFICATIONS, REINFORCED CONCRETE PIPE OR AWWA C900/905 PVC. FOR REQUIREMENTS OF AWWA C900/905 PVC SEE SPECIFICATIONS.



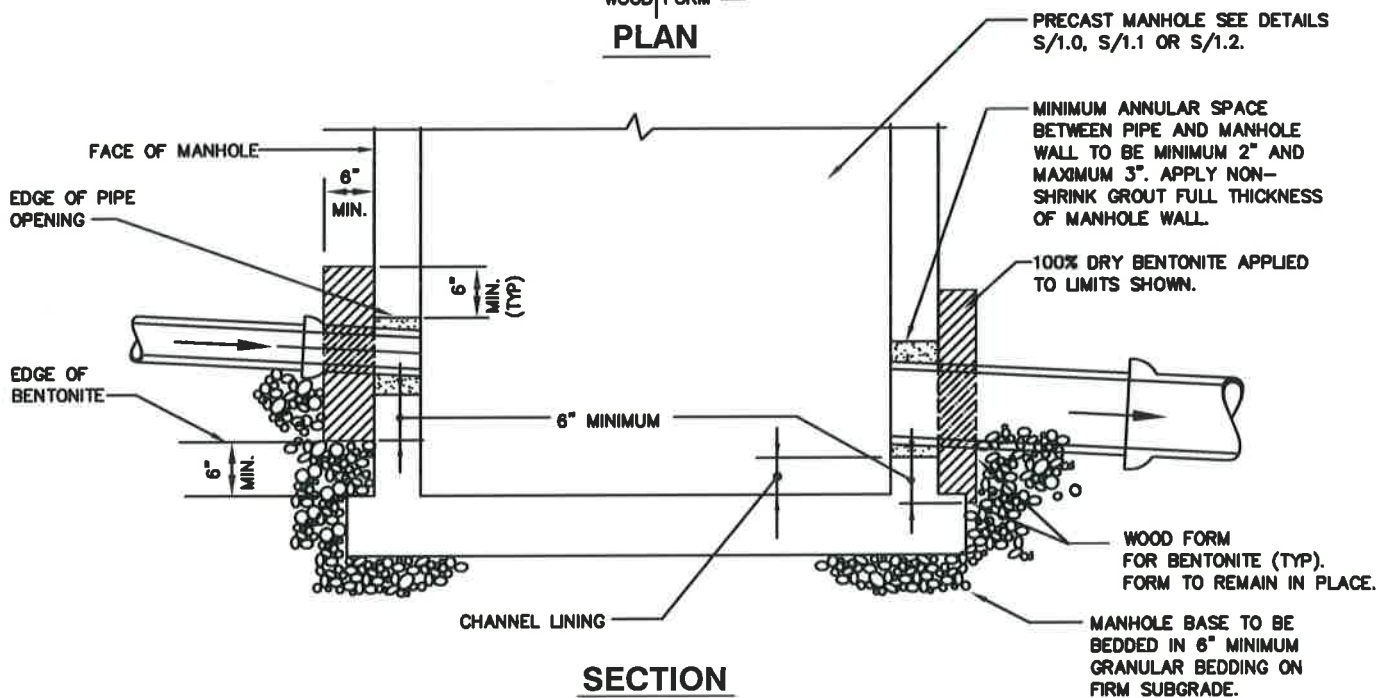
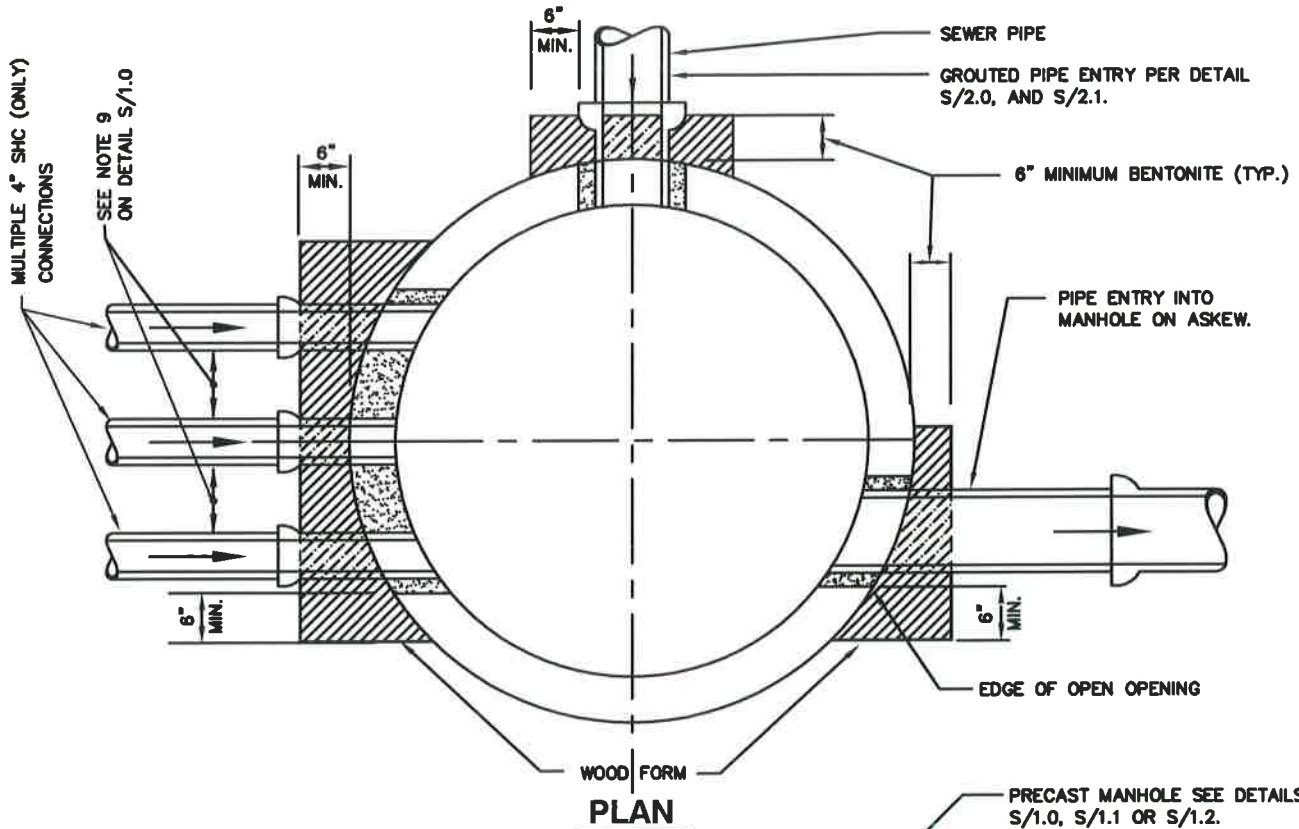
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STANDARD DETAIL
PIPE TO EXISTING BRICK
MANHOLE CONNECTION FOR
USING DIP, RCP OR
AWWA C900/905 PVC ONLY

S
3.0



NOTES:

1. USE ONLY DIP WITH SPECIAL INTERIOR LINING PER SPECIFICATIONS OR AWWA C900/905. FOR GROUTING PVC AWWA C900/905 SEE SPECIFICATIONS.
2. FOR SEWERS 10" AND SMALLER, PROVIDE THE FOLLOWING:
OUTGOING SEWERS, PROVIDE 2'-0" LENGTH OF SPIGOT BY SPIGOT PIPE.
INCOMING SEWERS, PROVIDE BELL BY SPIGOT PIPE WITH BELL EXTENDING 12" BEYOND THE MANHOLE.
3. SEE NOTES 1 THRU 9 ON DETAIL S/1.0

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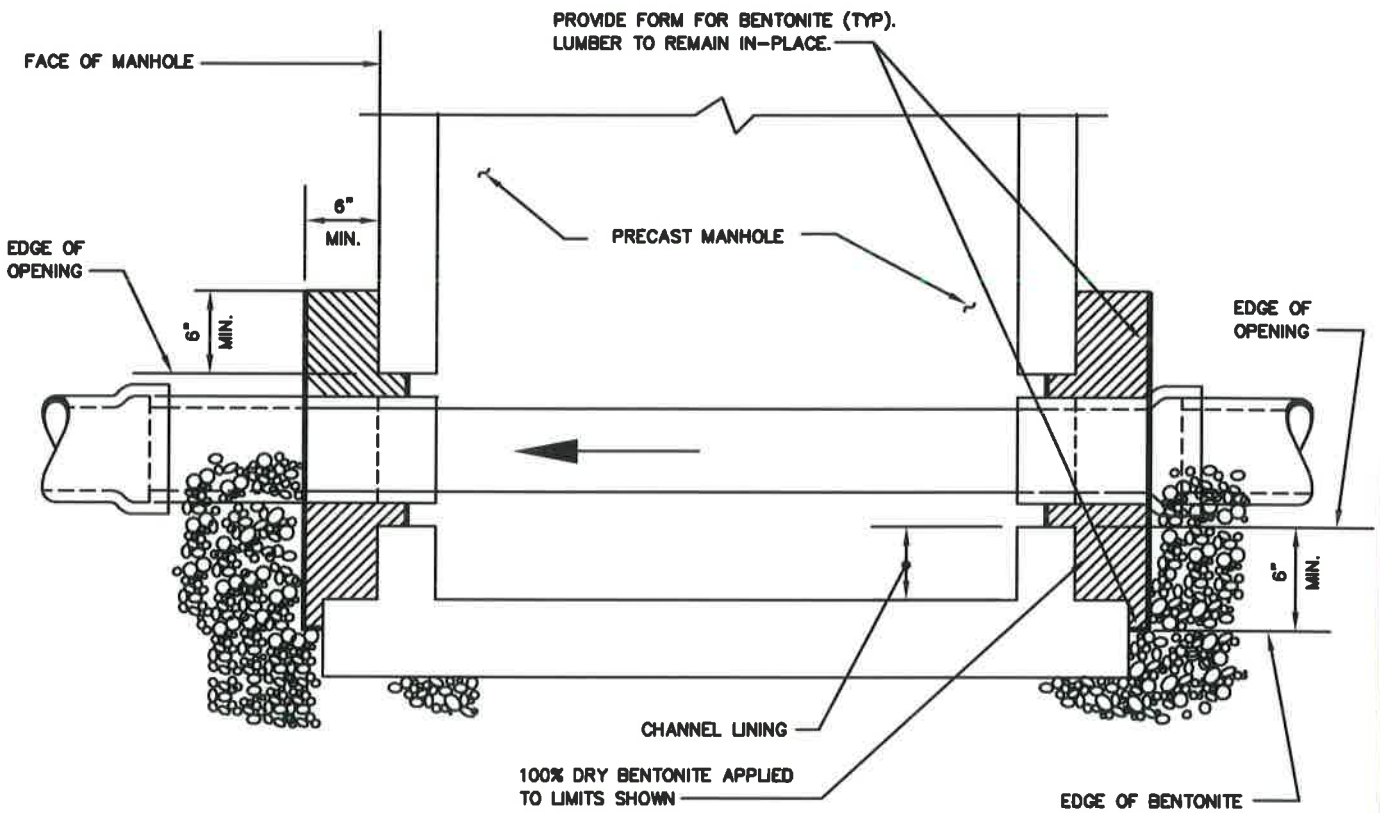
STANDARD DETAIL

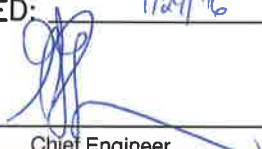
BENTONITE APPLICATION
FOR GROUTED PIPE
TO MANHOLE CONNECTION

S
3.01

NOTES:

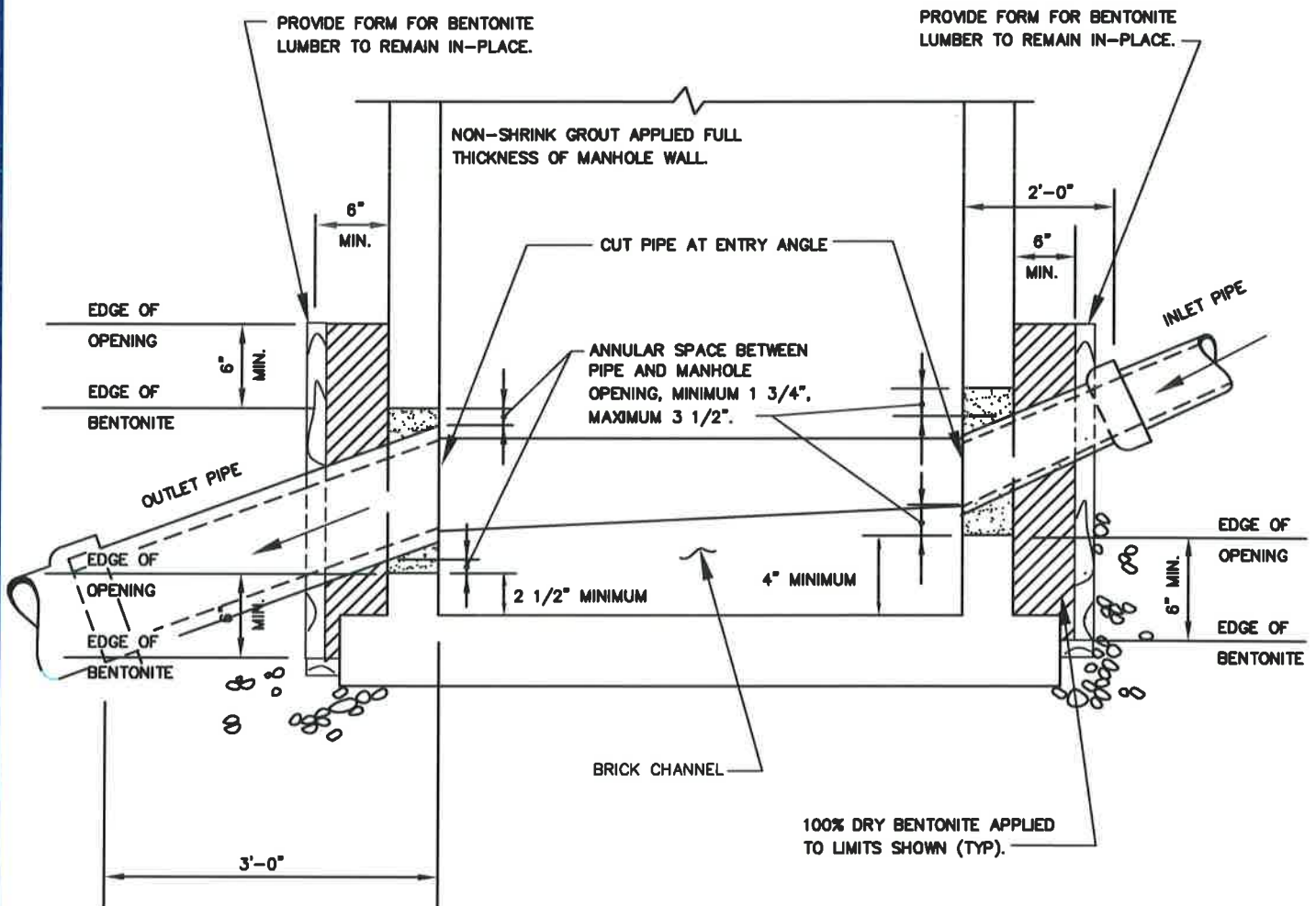
USE THIS DETAIL FOR SEWER PIPE TO MANHOLE CONNECTION WHEN DEPTH IS DEEPER THAN 16'-0"
FROM FRAME AND COVER TO INVERT OF SEWER.



WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>9/29/16</u>  Chief Engineer	STANDARD DETAIL PIPE TO MANHOLE CONNECTION FOR DEEP MANHOLE	S 3.02
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NOTES:

1. USE THIS DETAIL FOR 12" AND SMALLER SEWER PIPE CONNECTIONS TO MANHOLES WHEN SLOPE OF PIPE IS GREATER THAN 10% BUT NOT GREATER THAN 60%. FOR SLOPES LESS THAN 10%, SEE DETAIL S/1.0, S/1.1 OR S/1.2.
2. OPENINGS IN MANHOLE SHALL BE IN ACCORDANCE WITH MANHOLE MANUFACTURERS PRE-APPROVED SUBMITTALS AND SIZED TO ACCOMMODATE SEWER PIPE AND ANNULAR SPACE. ENLARGEMENT OF THE HOLE IN THE FIELD WILL BE PERMITTED BY THE MANHOLE MANUFACTURER ONLY.
3. FOR CONDITIONS NOT COVERED IN NOTE 1, SIZE OF OPENING IN MANHOLE AND ANY NECESSARY MODIFICATIONS TO THIS DETAIL SHALL BE INDICATED ON THE DRAWINGS.
4. DO NOT PROVIDE FLEXIBLE GASKET CONNECTOR.
5. USE ONLY DUCTILE IRON PIPE WITH SPECIAL INTERIOR LINING, SEE SPECIFICATIONS, OR PVC AWWA C900, SEE SPECIFICATIONS FOR GROUTED PVC PIPE CONNECTION AT CONNECTION.
6. PIPE INVERT ELEVATIONS AT THE THE MANHOLES ARE SHOWN ON THE DRAWINGS.



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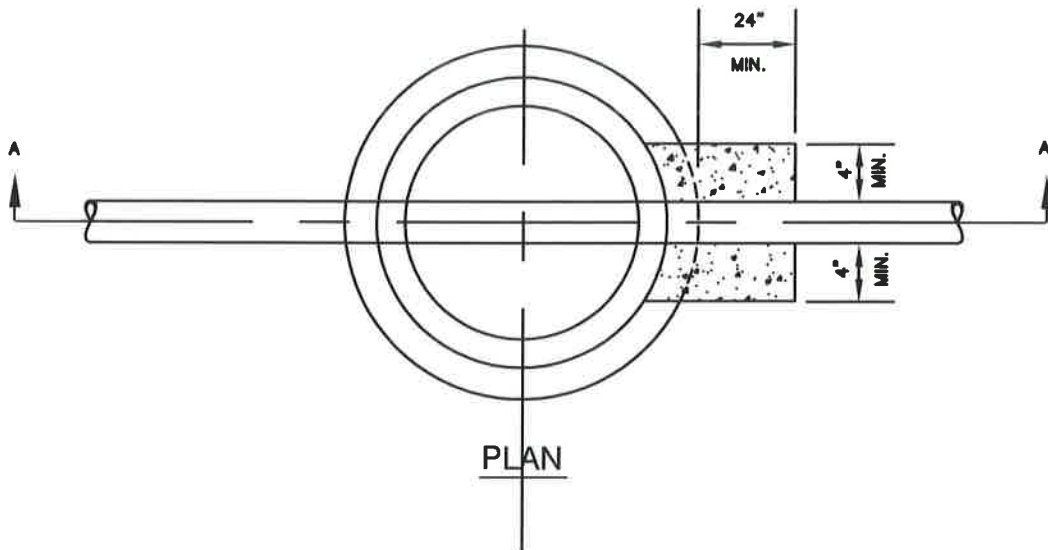
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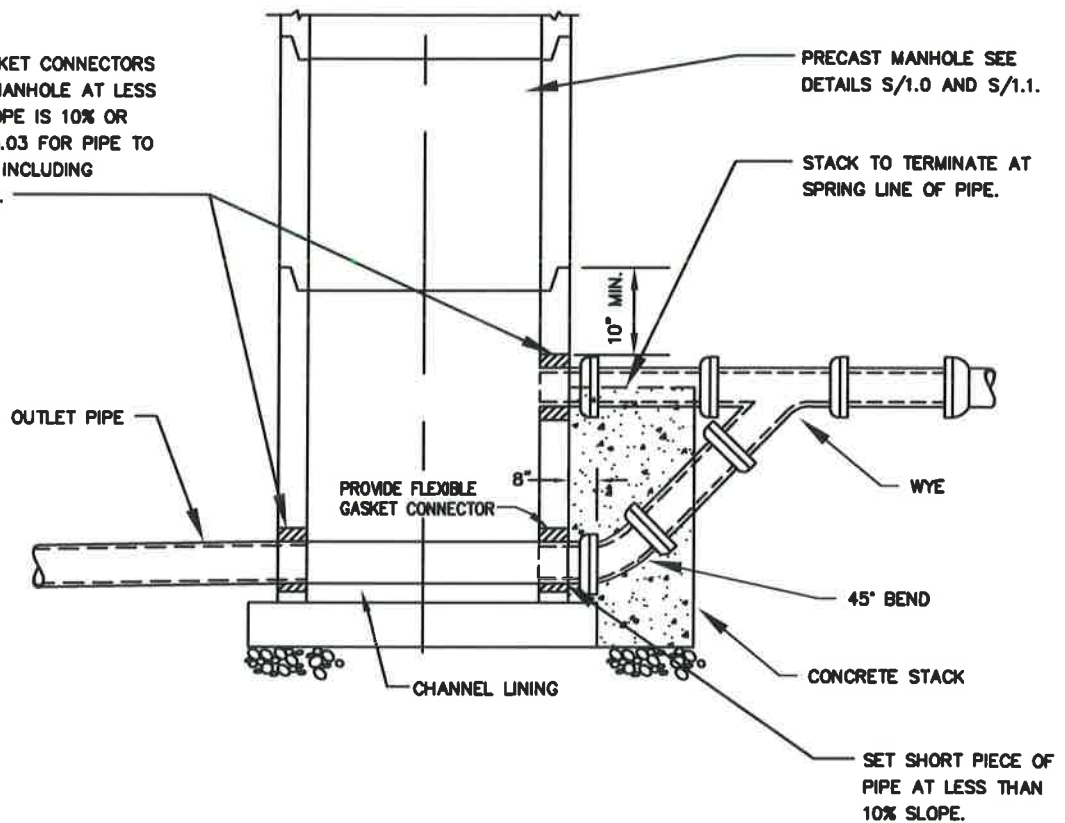
STANDARD DETAIL
PIPE TO MANHOLE
CONNECTION FOR
12-INCH AND SMALLER PIPES
ON STEEP GRADES

S
3.03



PLAN


PROVIDE FLEXIBLE GASKET CONNECTORS FOR PIPES ENTERING MANHOLE AT LESS THAN 10% IF PIPE SLOPE IS 10% OR MORE, SEE DETAIL S/3.03 FOR PIPE TO MANHOLE CONNECTION INCLUDING GROUT AND BENTONITE.



SECTION "A-A"

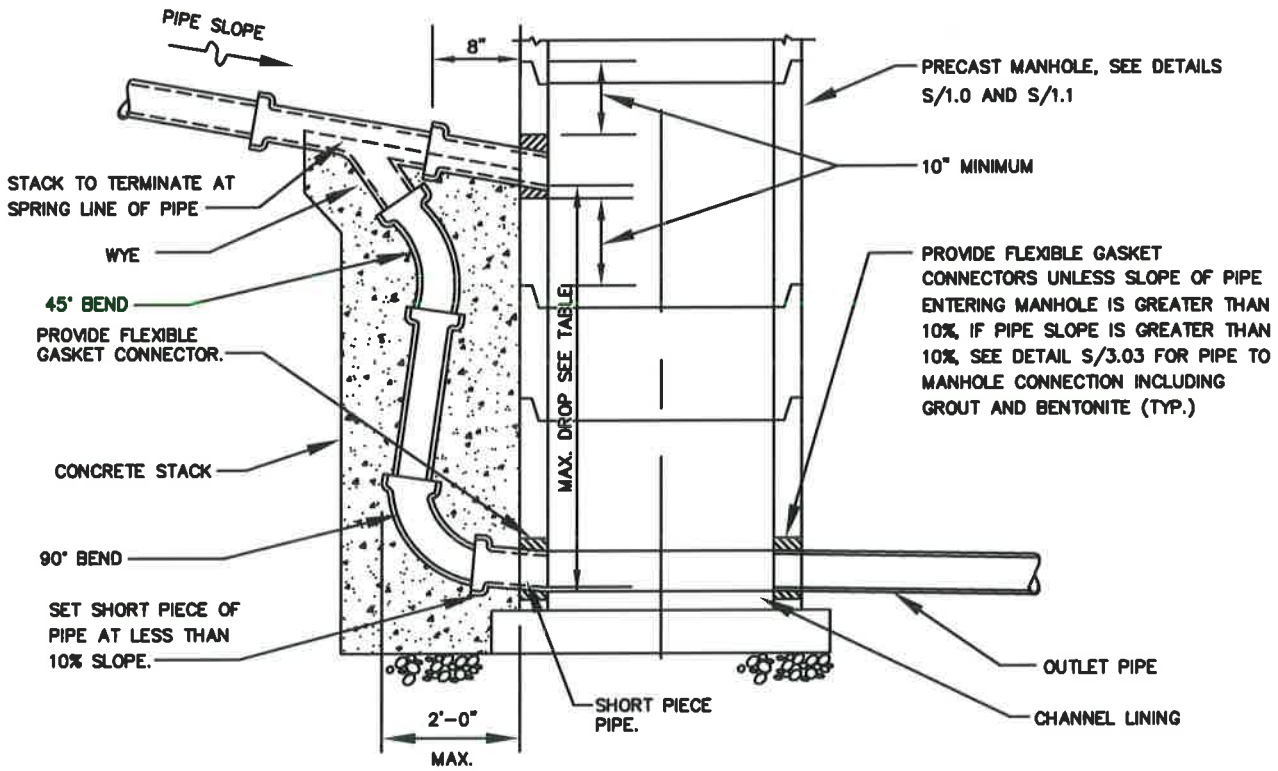
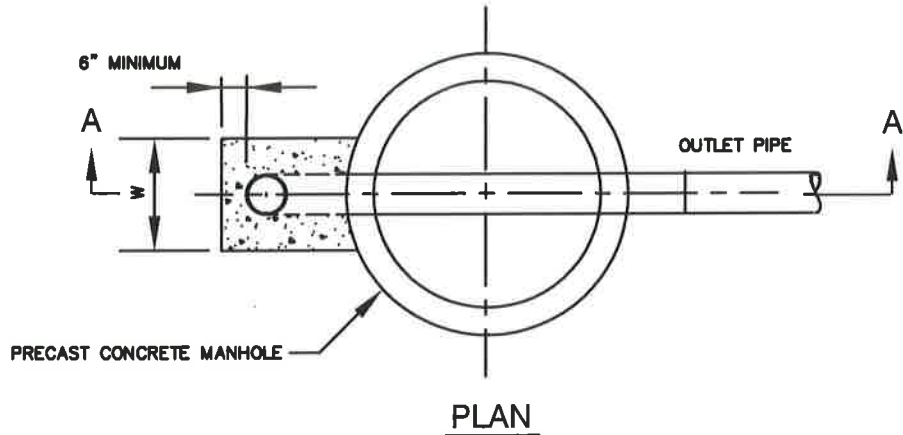
NOTES:

1. USE THIS DETAIL WHEN VERTICAL DROP BETWEEN INVERTS OF PIPE AND MANHOLE ARE BETWEEN 2'-2" AND 3'-9". FOR DROP GREATER THAN 3'-9" SEE DETAIL S/3.1a.

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>9/29/16</u>  Chief Engineer	STANDARD DETAIL DROP MANHOLE TYPE "A" DROP FOR PIPES 12-INCH AND SMALLER	$\frac{S}{3.1}$
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DROP SIZE	DIMENSION
	W
8"	20"
10"	24"
12"	28"

MAX. PIPE SLOPE	MAX. DROP
OVER 15% TO 20%	5'-0"
15% TO 5%	7'-0"
5% OR LESS	12'-0"



NOTES:

1. USE THIS DETAIL WHEN INVERTS OF PIPE AND MANHOLE ARE GREATER THAN 3'-9". SEE DETAIL S/3.1 FOR VERTICAL DROPS LESS THAN 3'-9".
2. TABLE FOR MAXIMUM PIPE SLOPE AND DROP IS APPLICABLE FOR 12" AND SMALLER DIAMETER PIPE. PIPE LARGER THAN 12" DIAMETER AND/OR GREATER SLOPE THAN SHOWN REQUIRE SPECIAL DESIGN.
3. IN LIEU OF CAST-IN-PLACE CONCRETE OR BRICK STACK, PRECAST STACK MAY BE USED IN ACCORDANCE WITH MANHOLE MANUFACTURER'S PRE-APPROVED DRAWINGS BUT ONLY WITHIN THE SLOPE, DIAMETER, AND HEIGHT LIMITATIONS INDICATED IN PRE-APPROVED DRAWINGS.
4. SEE NOTES (1) THRU (9) ON DETAIL S/1.0.

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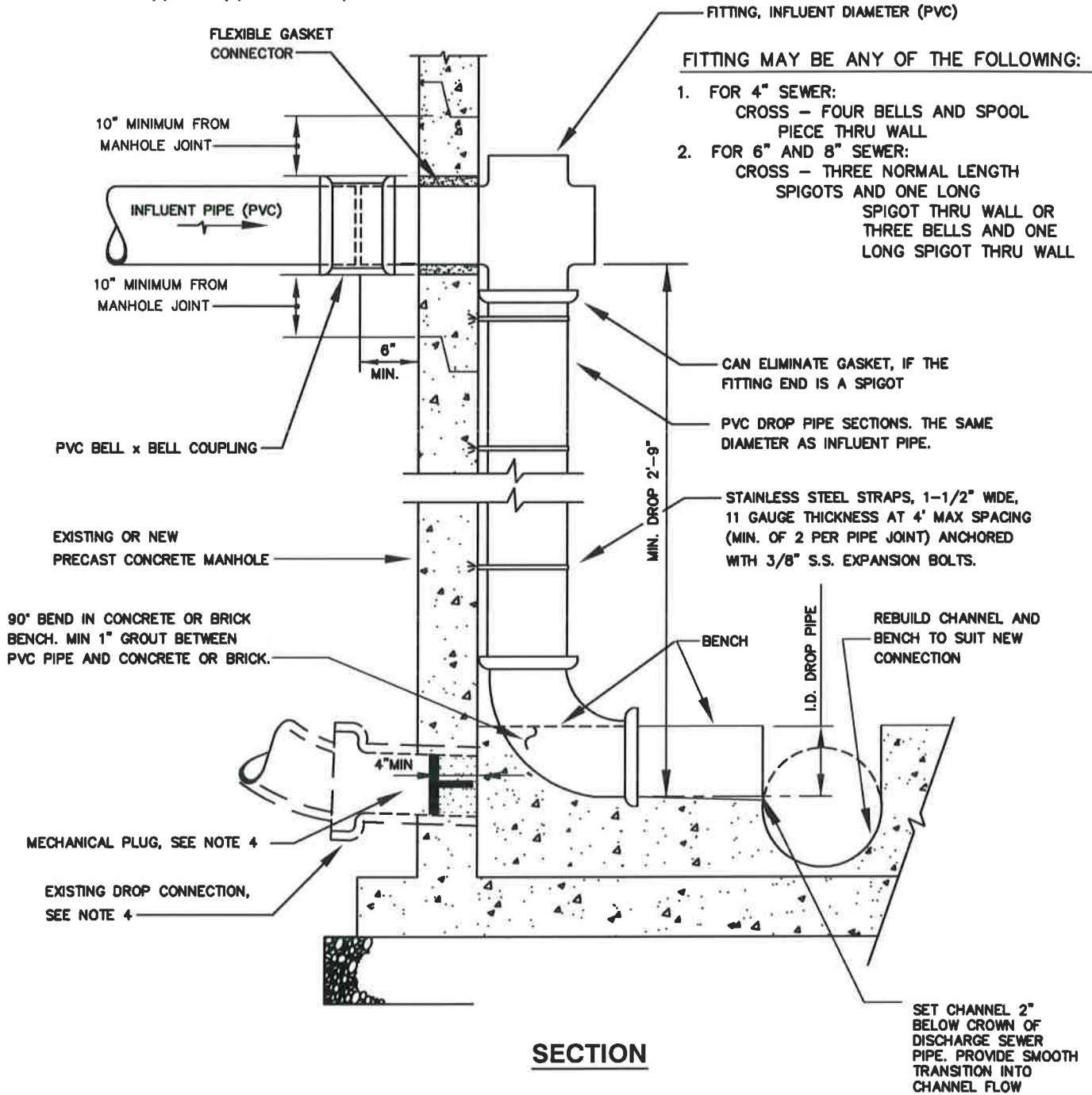
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STANDARD DETAIL
**DROP MANHOLE
TYPE "B" DROP
PIPES 12-INCH AND SMALLER**

S
3.1a

NOTES:

1. THIS DETAIL MAY BE USED IN LIEU OF DETAIL S/3.1a ONLY FOR CONNECTIONS TO PRECAST MANHOLES.
2. ONLY ONE INSIDE DROP CONNECTION PER MANHOLE WILL BE ALLOWED, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
3. THE DROP FITTING SHALL NOT EXTEND INTO THE AREA THAT IS DEFINED BY THE PROJECTION OF THE MANHOLE ENTRANCE VERTICALLY DOWN TO THE MANHOLE BOTTOM. IF NECESSARY, MANHOLE FRAME, COVER, CONE SECTION, AND STEPS SHALL BE REMOVED AND PLACED TO ALLOW FOR UNOBSTRUCTED ENTRY AND EXIT.
4. WHEN INSIDE DROP CONNECTION REPLACES EXISTING OUTSIDE DROP, PROVIDE MECHANICAL PLUG AND FILL ANNULAR SPACE WITH NON-SHRINK GROUT SIMILAR TO DETAIL S/3.5.
5. INFLUENT PIPE SLOPE SHALL NOT EXCEED 5%.
6. MAXIMUM SIZE OF INFLUENT PIPE IS 8".
7. SEE NOTES (1) THRU (9) ON DETAIL S/1.0



FITTING MAY BE ANY OF THE FOLLOWING:

1. FOR 4" SEWER:
CROSS - FOUR BELLS AND SPOOL
PIECE THRU WALL
2. FOR 6" AND 8" SEWER:
CROSS - THREE NORMAL LENGTH
SPIGOTS AND ONE LONG
SPIGOT THRU WALL OR
THREE BELLS AND ONE
LONG SPIGOT THRU WALL

CAN ELIMINATE GASKET, IF THE FITTING END IS A SPIGOT

PVC DROP PIPE SECTIONS. THE SAME DIAMETER AS INFLUENT PIPE.

STAINLESS STEEL STRAPS, 1-1/2" WIDE, 11 GAUGE THICKNESS AT 4' MAX SPACING (MIN. OF 2 PER PIPE JOINT) ANCHORED WITH 3/8" S.S. EXPANSION BOLTS.

REBUILD CHANNEL AND BENCH TO SUIT NEW CONNECTION

SET CHANNEL 2" BELOW CROWN OF DISCHARGE SEWER PIPE. PROVIDE SMOOTH TRANSITION INTO CHANNEL FLOW

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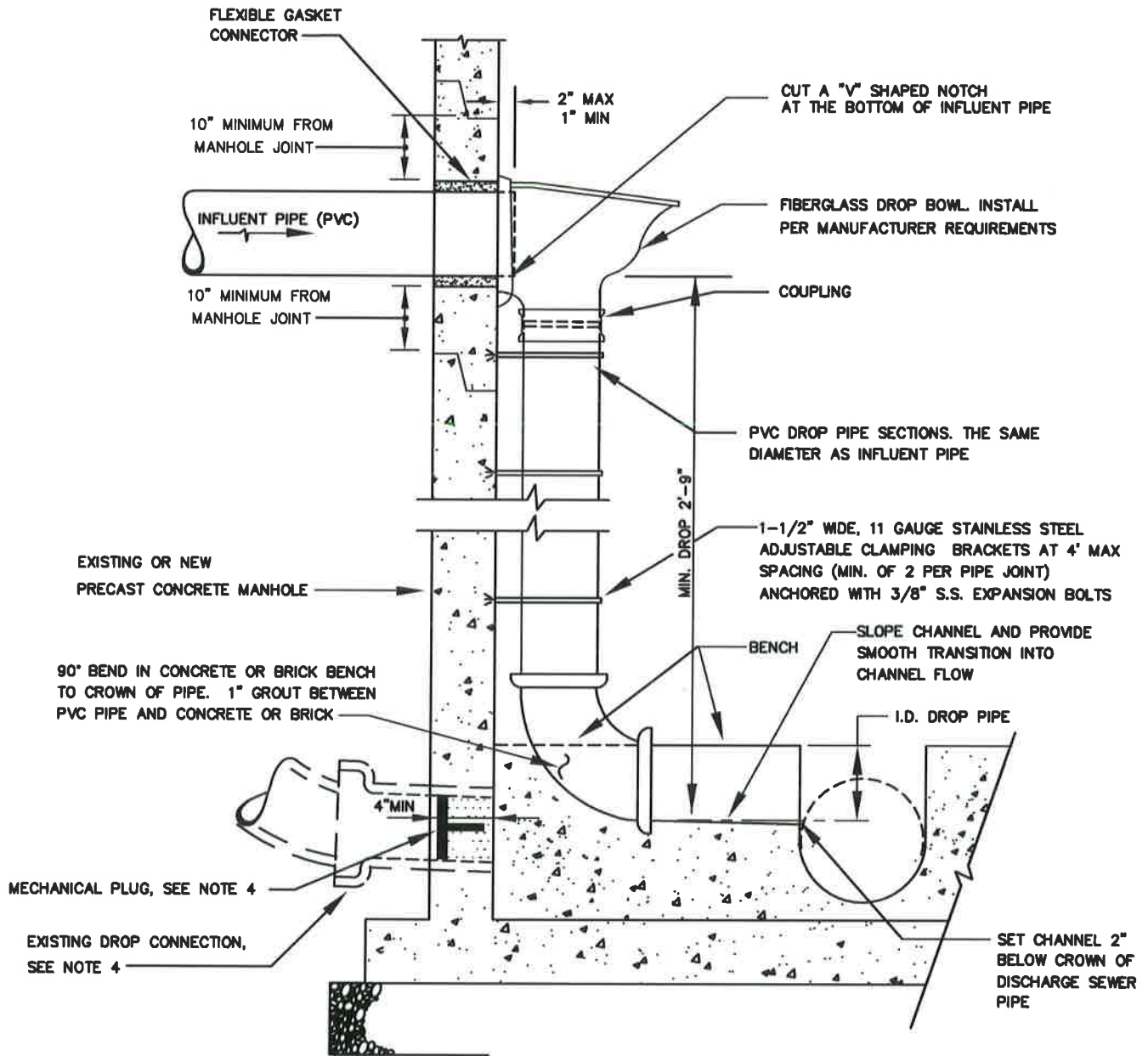
STANDARD DETAIL

INSIDE DROP CONNECTION FOR
PRECAST CONCRETE MANHOLES


S
3.1b

NOTES:

1. THIS DETAIL MAY BE USED IN LIEU OF DETAIL S/3.1a ONLY FOR CONNECTIONS TO PRECAST MANHOLES.
2. ONLY ONE INSIDE DROP CONNECTION PER MANHOLE WILL BE ALLOWED, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
3. THE DROP BOWL SHALL NOT EXTEND INTO THE AREA THAT IS DEFINED BY THE PROJECTION OF THE MANHOLE ENTRANCE VERTICALLY DOWN TO THE MANHOLE BOTTOM. IF NECESSARY, MANHOLE FRAME, COVER, CONE SECTION, AND STEPS SHALL BE REMOVED AND PLACED TO ALLOW FOR UNOBSTRUCTED ENTRY AND EXIT.
4. WHEN INSIDE DROP CONNECTION REPLACES EXISTING OUTSIDE DROP, PROVIDE MECHANICAL PLUG AND FILL ANNULAR SPACE WITH NON-SHRINK GROUT SIMILAR TO DETAIL S/3.5.
5. INFLUENT PIPE SLOPE SHALL NOT EXCEED 10%.
6. MAXIMUM SIZE OF INFLUENT PIPE IS 8".
7. SEE NOTES (1) THRU (9) ON DETAIL S/1.0

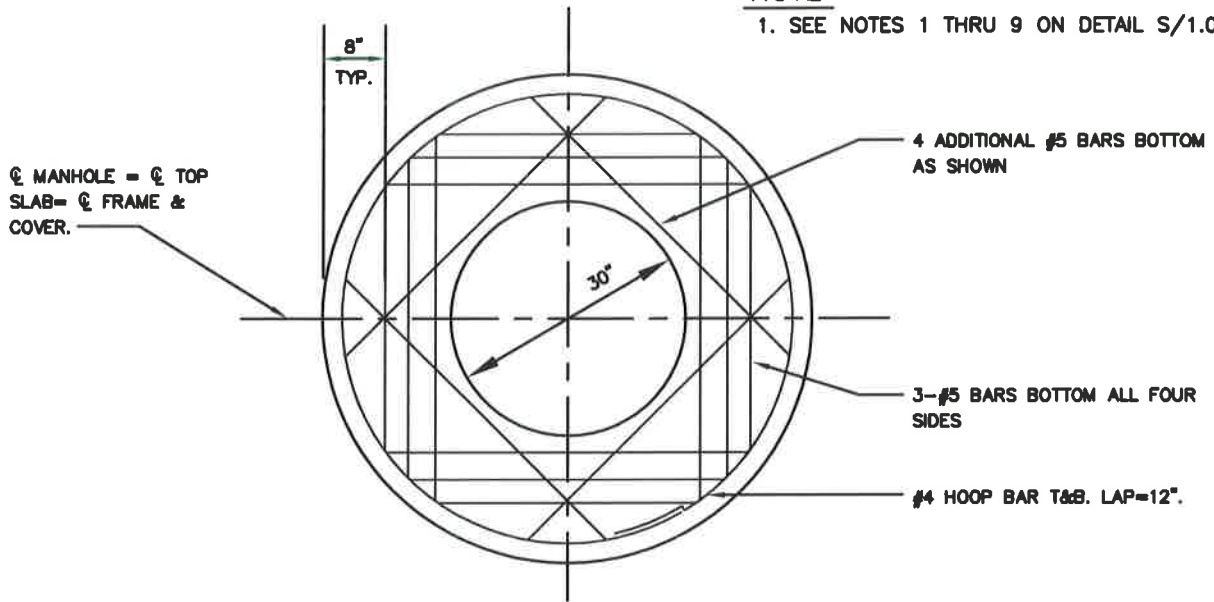


SECTION

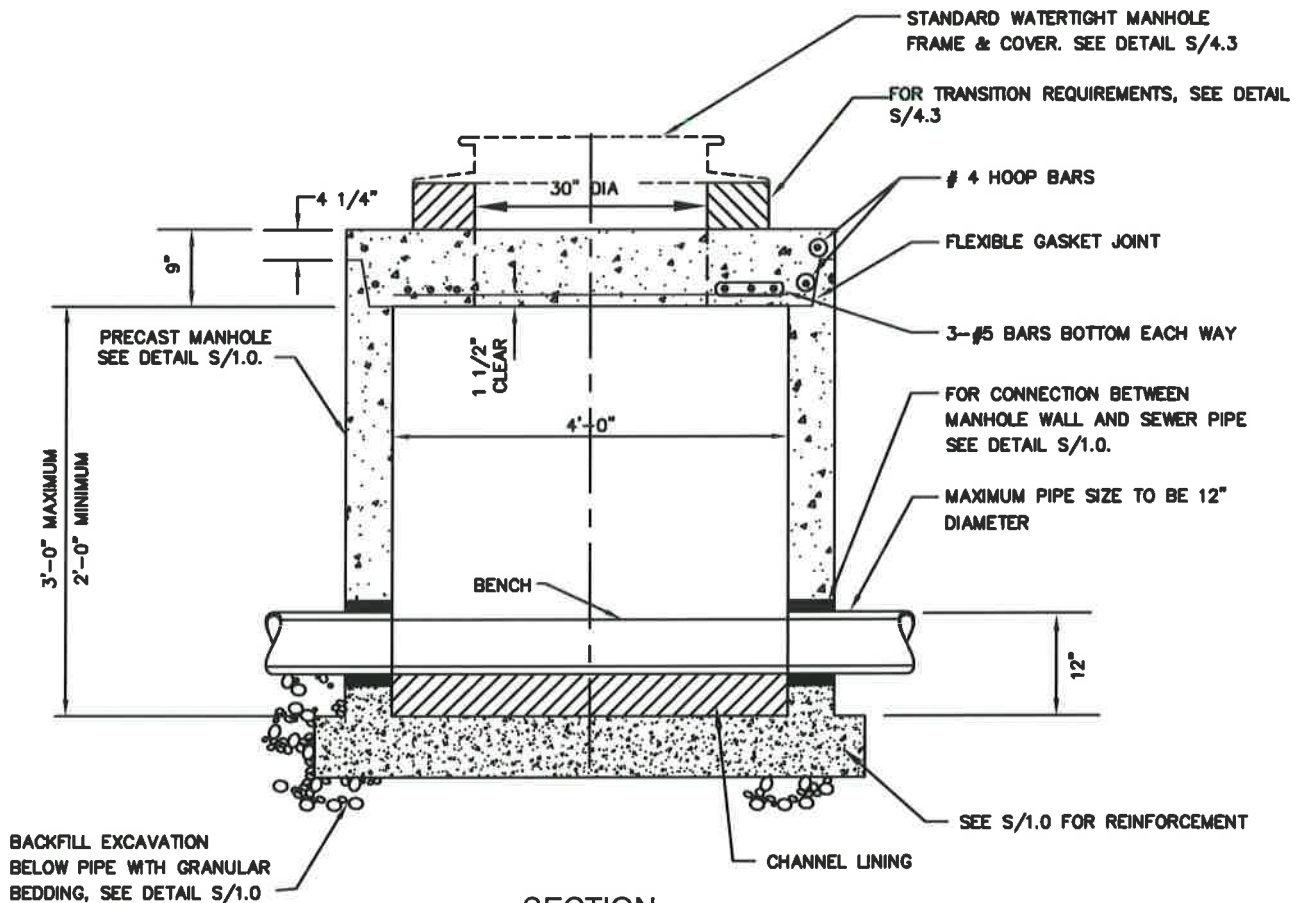
<p>WASHINGTON SUBURBAN SANITARY COMMISSION</p>	<p>APPROVED: <u>9/27/16</u>  Chief Engineer</p>	<p>STANDARD DETAIL</p> <p>INSIDE DROP CONNECTION FOR PRECAST CONCRETE MANHOLES (FIBERGLASS DROP BOWL)</p>	<p>S 3.1c</p>
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NOTE

1. SEE NOTES 1 THRU 9 ON DETAIL S/1.0



PLAN VIEW - PRECAST TOP SLAB



SECTION

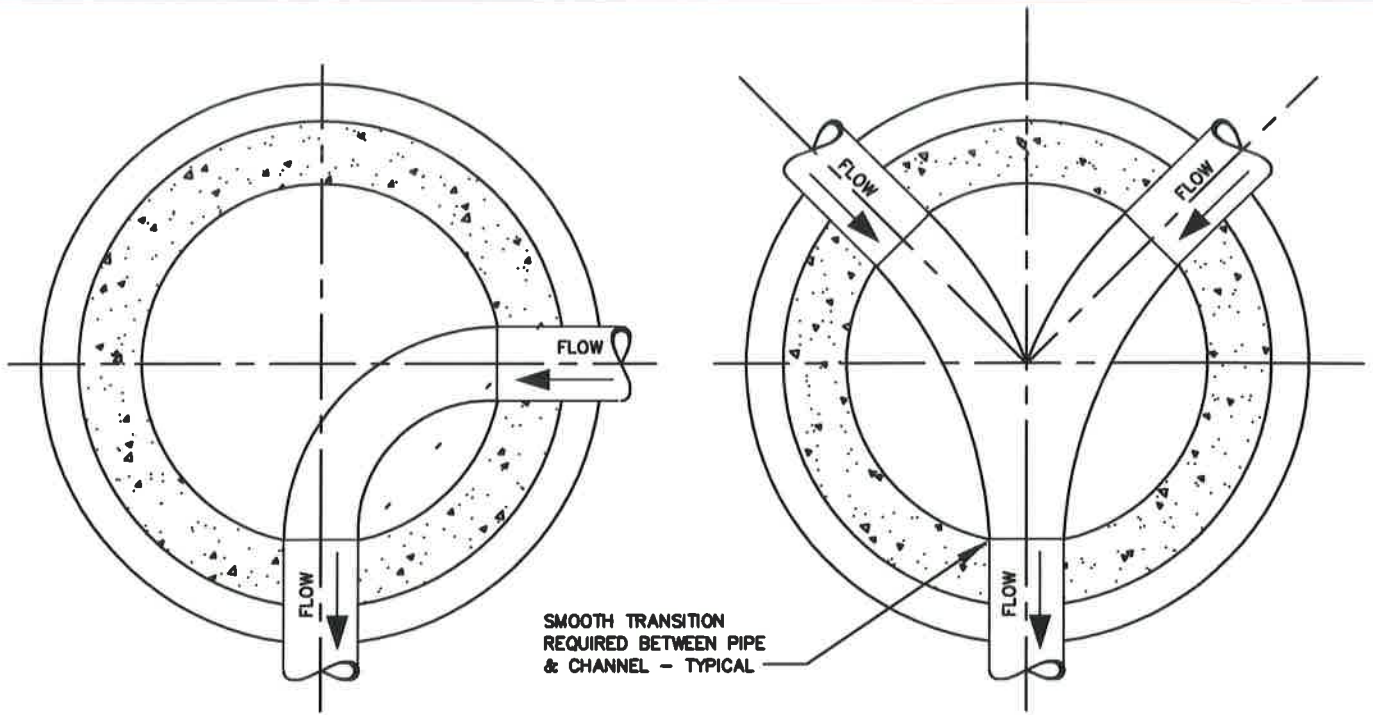
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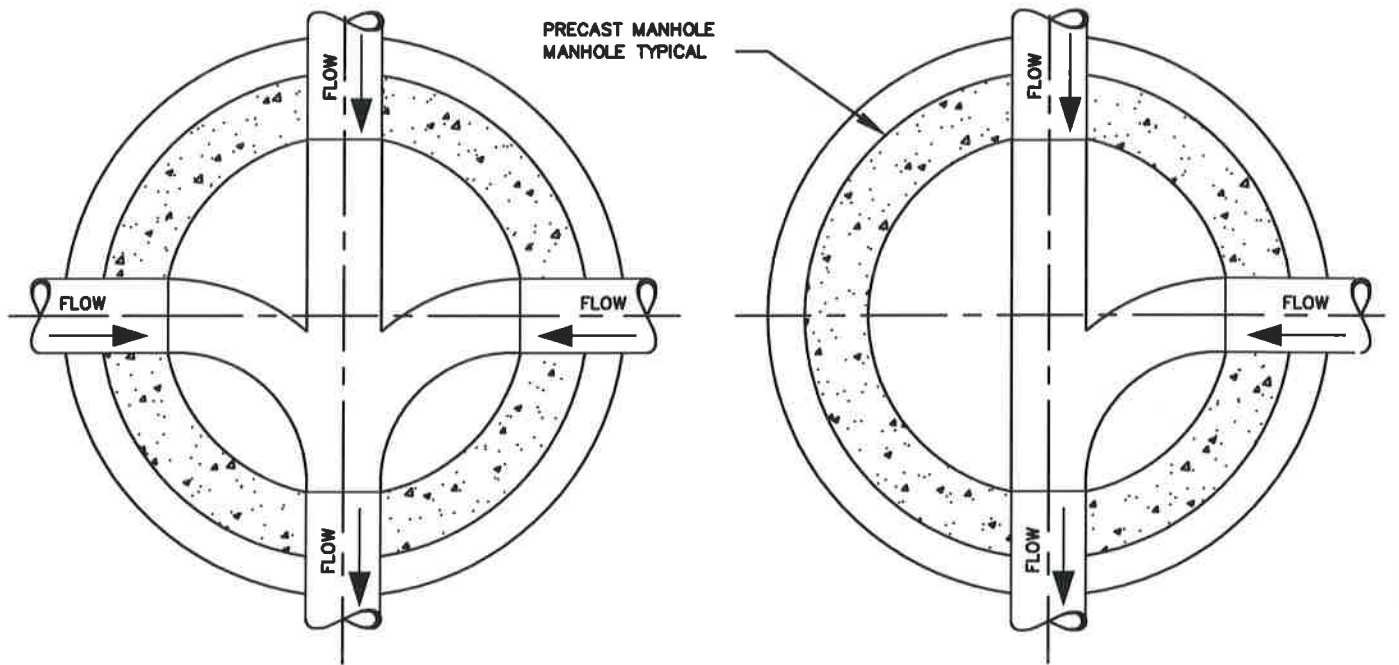
STANDARD DETAIL
**SHALLOW MANHOLE
PRECAST CONCRETE**

S
3.2




CHANNEL LINING NOTES:

1. CHANNEL LINING SHALL BE EITHER BRICK OR PRECAST CONCRETE, SEE NOTE 8 ON DETAIL S/1.0.
2. WIDTH OF CHANNEL SHALL MATCH INSIDE DIAMETER OF INCOMING AND OUTGOING PIPES. BLEND CHANNEL LINING FOR SMOOTH CONTOUR BETWEEN PIPES.
3. ALL INVERT ELEVATIONS SHALL BE AS SHOWN ON THE DRAWINGS.



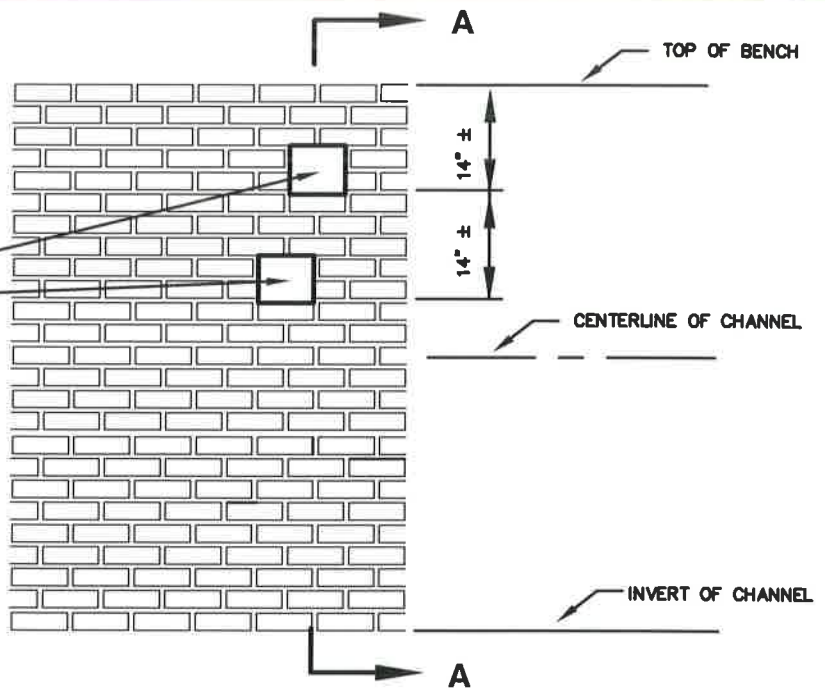
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APPROVED: 9/29/16

Chief Engineer

STANDARD DETAIL
PLAN OF TYPICAL
CHANNELIZATION OF
MAINLINE SEWER
MANHOLES

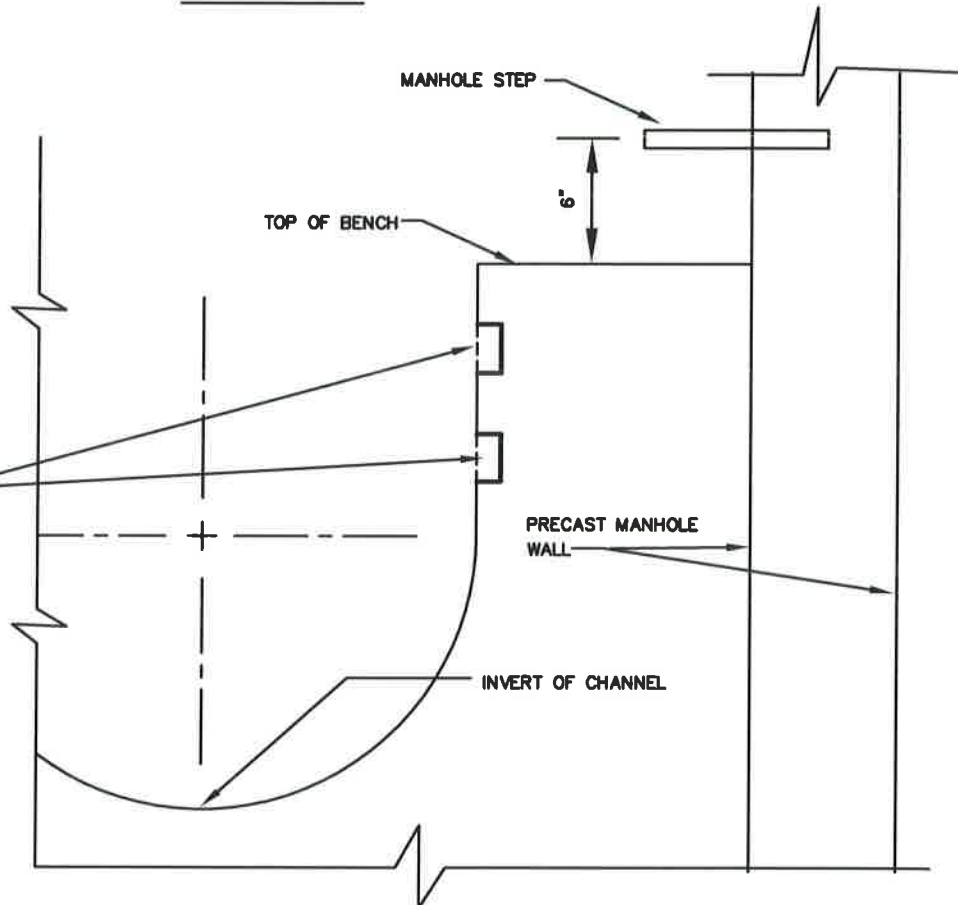
S
3.3

PROVIDE STEP BY LEAVING
BRICK OUT OF CHANNEL AS
SHOWN. STEP TO BE 4"
MINIMUM DEPTH



ELEVATION

PROVIDE STEP BY LEAVING
BRICK OUT OF CHANNEL AS
SHOWN. STEP TO BE 4"
MINIMUM DEPTH



SECTION

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STANDARD DETAIL

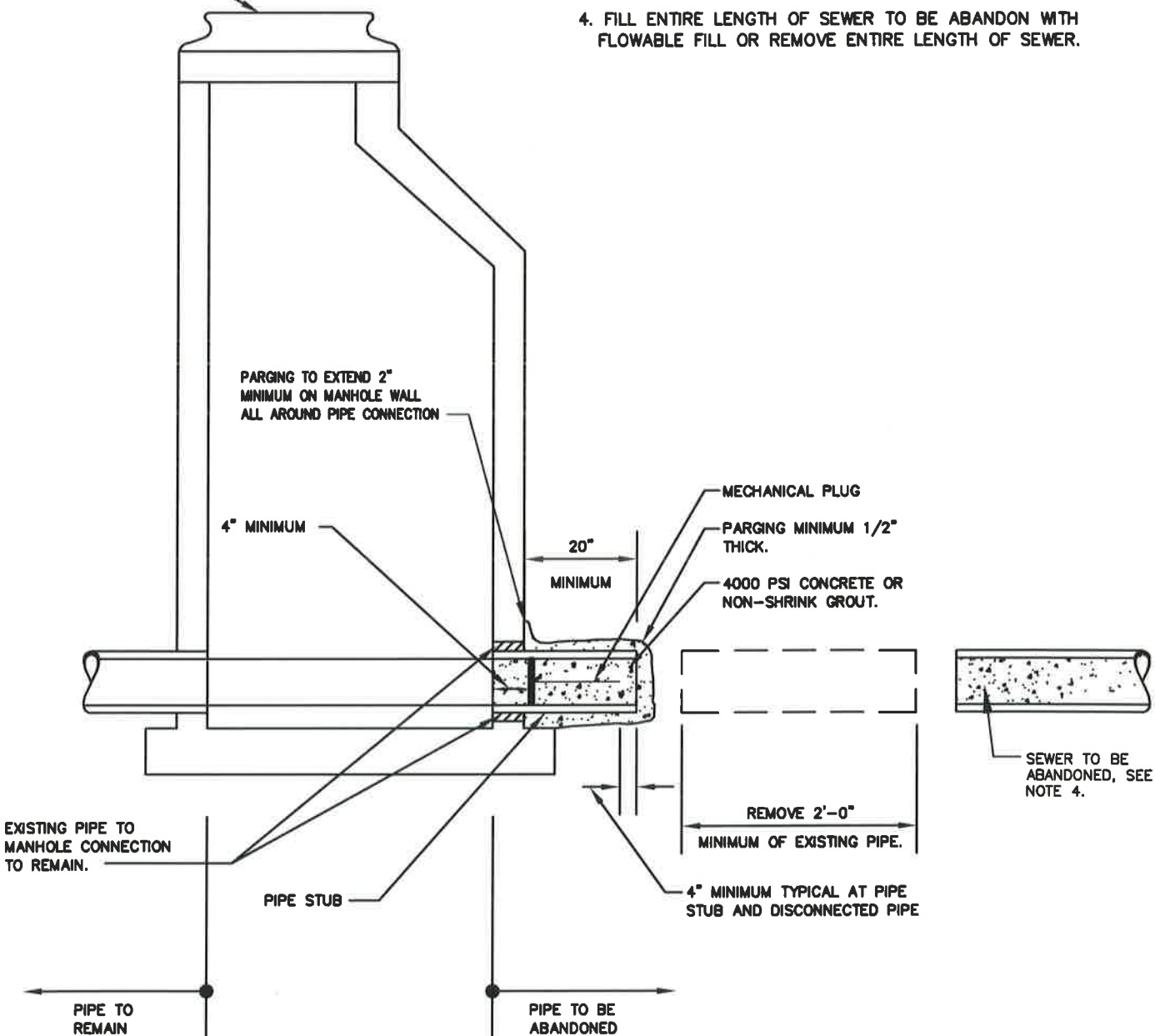
MANHOLE STEPS
IN CHANNELS FOR
SEWERS 36-INCH AND LARGER

S
3.4

NOTES:

1. FOR SEWERS SMALLER THAN 18" DIAMETER, DISCONNECT SEWER AS SHOWN, INSERT MECHANICAL PLUGS, PLACE CONCRETE, PARGING AND COAT WITH TWO COATS OF ASPHALT-BASED COATING.
2. FOR SEWER 18" AND LARGER DIAMETER SAME AS 15" AND SMALLER EXCEPT MASONRY BULKHEAD MAY BE SUBSTITUTED FOR MECHANICAL PLUG.
3. RESHAPE AND FILL EXISTING CHANNEL AS NECESSARY TO PROVIDE SMOOTH CONTOUR BETWEEN INCOMING AND OUTGOING PIPES.
4. FILL ENTIRE LENGTH OF SEWER TO BE ABANDON WITH FLOWABLE FILL OR REMOVE ENTIRE LENGTH OF SEWER.

EXISTING MANHOLE TO REMAIN.



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STANDARD DETAIL

ABANDONMENT OF PIPE
AT MANHOLE

S
3.5

REMOVE MANHOLE FRAME AND COVER AND RETURN TO COMMISSION WAREHOUSE.

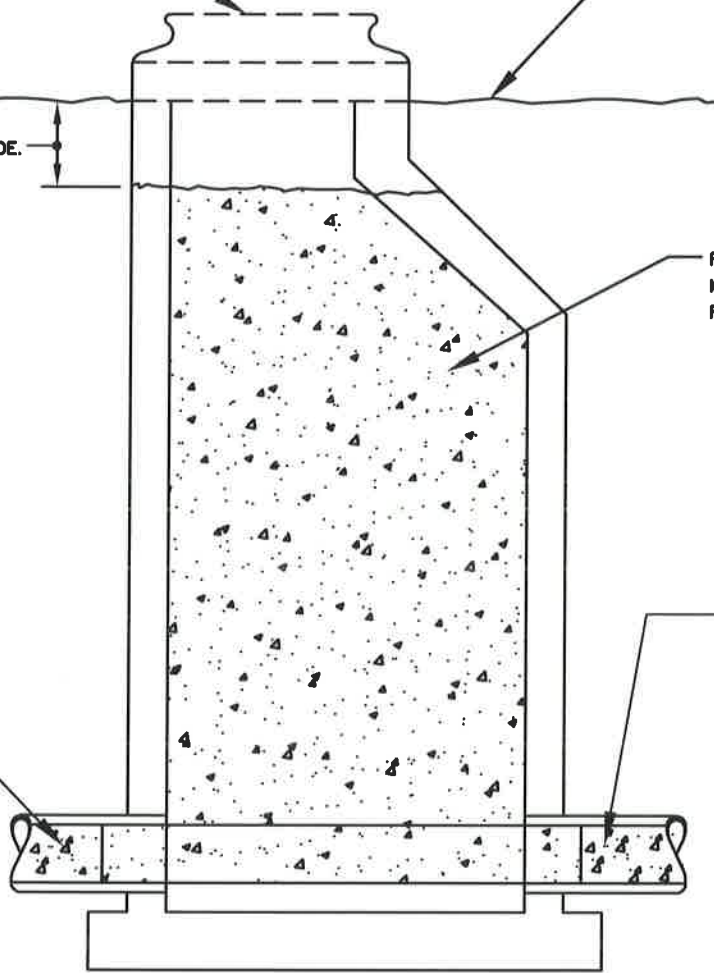
EXISTING FINISHED GRADE

REMOVE MANHOLE TO 1'-0" MINIMUM BELOW FINISH GRADE.

FILL MANHOLE SOLID W/LEAN MIX CONCRETE OR FLOWABLE FILL.

FILL ENTIRE LENGTH BETWEEN MANHOLES WITH FLOWABLE FILL. SEE NOTE 1.


FILL ENTIRE LENGTH BETWEEN MANHOLES WITH FLOWABLE FILL. SEE NOTE 1.



NOTE:

1. IF EXISTING SEWER IS REMOVE FROM MANHOLE TO MANHOLE, SEE DETAIL S/3.5

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STANDARD DETAIL
MANHOLE AND SEWER
ABANDONMENT

S
3.6

PRECAST CONCRETE
MANHOLE

IF FACE OF MANHOLE PROJECTS BEYOND FACE
OF FLEXIBLE CONNECTOR, PROVIDE BENTONITE
6" BEYOND FACE OF MANHOLE. IF FACE OF
FLEXIBLE CONNECTOR EXTENDS BEYOND FACE
OF MANHOLE, PROVIDE BENTONITE 6" BEYOND
FACE OF FLEXIBLE CONNECTOR AS SHOWN.

6"
MIN.

PROVIDE FORM FOR BENTONITE (TYP).
WOOD FORM TO REMAIN IN PLACE.

6"
MIN.

15" AND LARGER DIAMETER SEWER PIPE.


FLEXIBLE GASKET
CONNECTOR

GRANULAR BEDDING

6"
MIN.

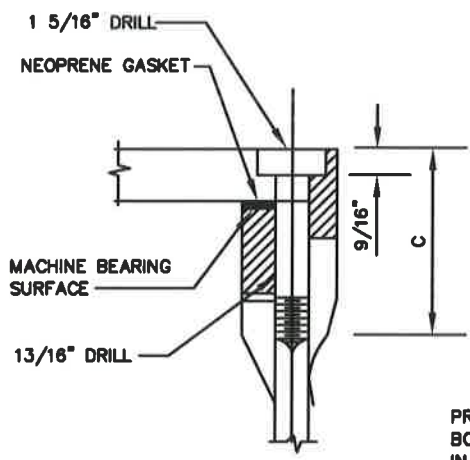
PROVIDE 100% DRY BENTONITE BACKFILL 6"
MINIMUM BEYOND LIMITS OF FLEXIBLE
GASKET CONNECTION AS SHOWN.

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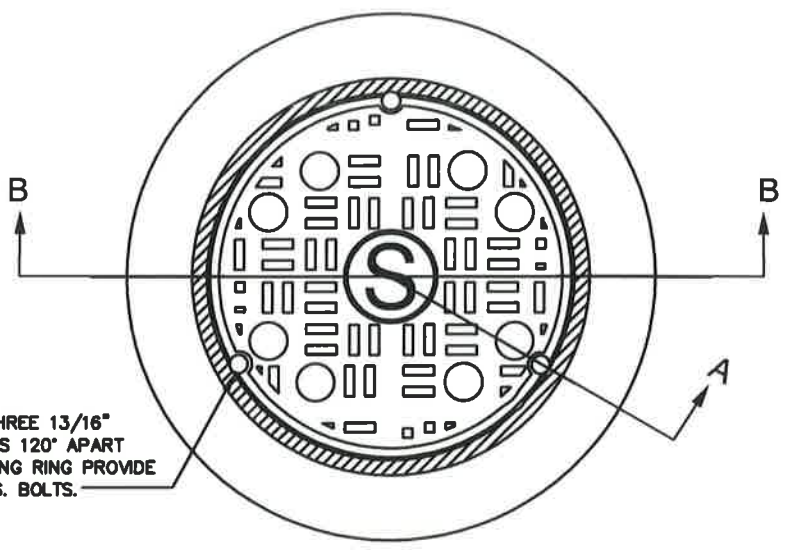
APPROVED: 9/29/16

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STANDARD DETAIL
15-INCHES AND LARGER SEWER
PIPE TO MANHOLE
CONNECTION

S
3.7

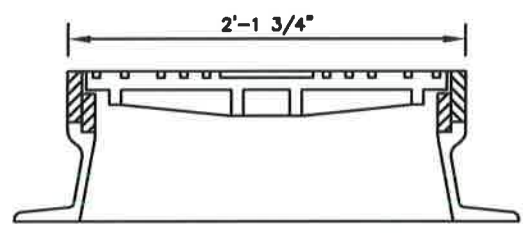


SECTION A

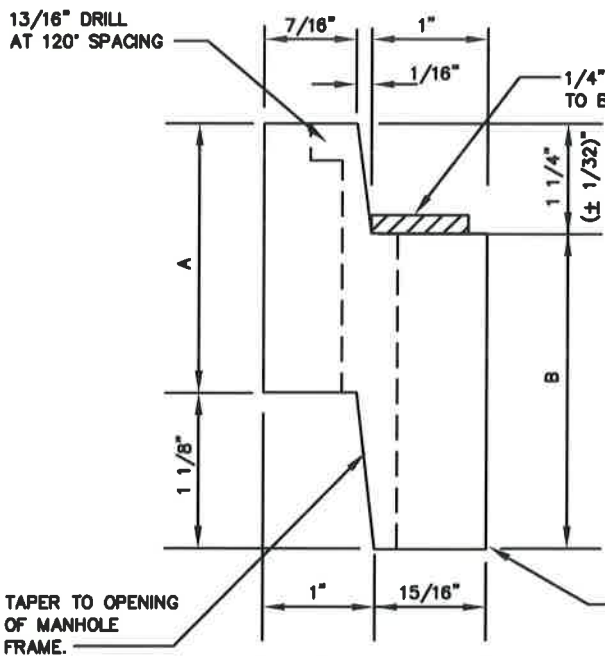


PROVIDE THREE 13/16" BOLT HOLES 120° APART IN ADJUSTING RING PROVIDE 5/8" # S.S. BOLTS.

PLAN



SECTION B-B



1/4" THICK x 3/4" WIDE NEOPRENE GASKET CEMENTED TO BEARING SURFACE OF ADJUSTING RING TO FORM A WATERTIGHT SEAL.

NOMINAL RISE	A	B	C*
2"	2"	1 7/8"	4"
3"	3"	2 7/8"	5"

* BOLT LENGTH (7/8" THREAD).

SECTION THROUGH ADJUSTING RING

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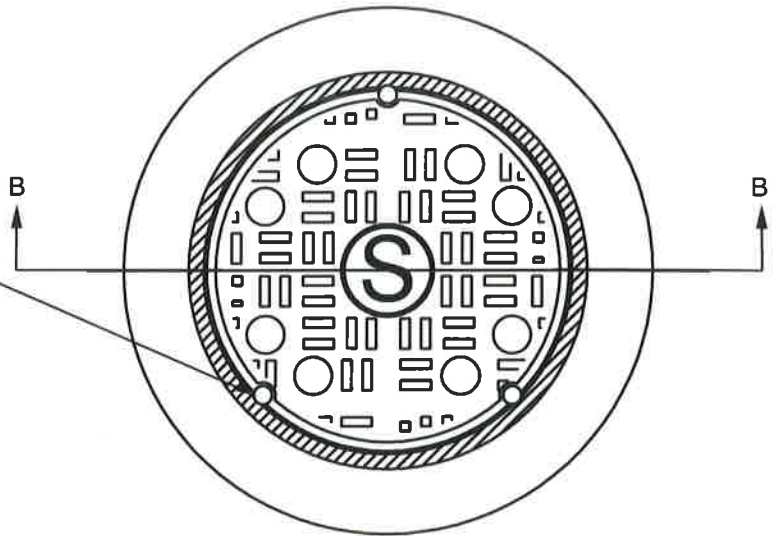
Chief Engineer

STANDARD DETAIL
ADJUSTING RINGS
FOR 22-INCH OPENING
WATERTIGHT MANHOLE
FRAME & COVER

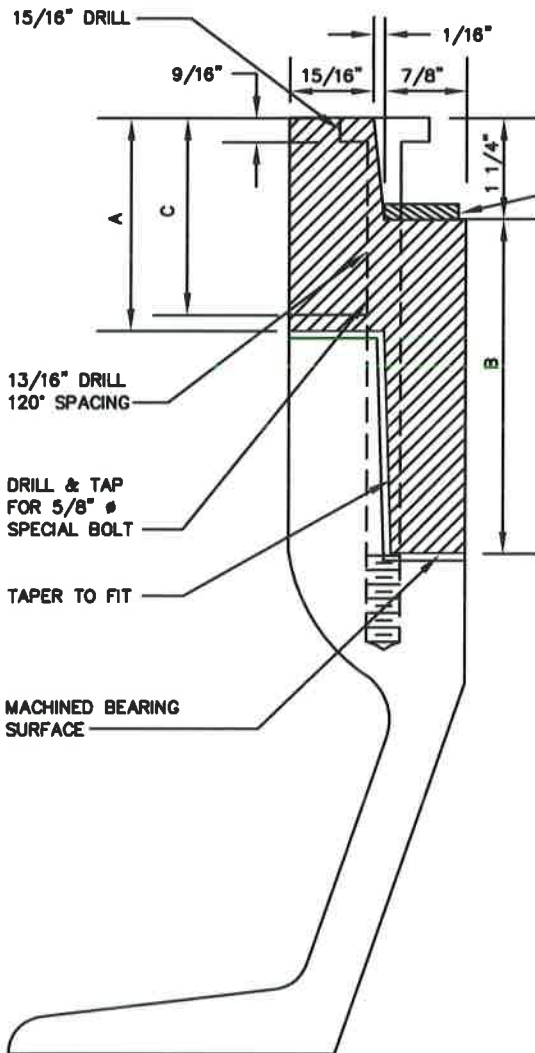
S
4.0

PROVIDE PICKHOLES IN COVER

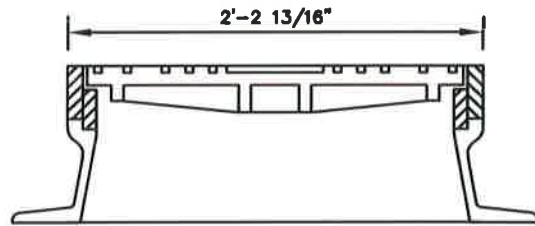
PROVIDE THREE 13/16" BOLT HOLES 120° APART IN ADJUSTING RING. PROVIDE 3-5/8" # STAINLESS STEEL BOLTS.



PLAN



1/4" THICK x 3/4" WIDE NEOPRENE GASKET CEMENTED TO BEARING SURFACE OF ADJUSTING RING TO FORM A WATERTIGHT SEAL



SECTION B-B

NOMINAL RISE	A	B	C*
2"	2"	3 1/4"	1 7/8"
3"	3"	4 1/4"	2 7/8"

* BOLT LENGTH (7/8" THREAD).

PRIOR TO SETTING ADJUSTING RING APPLY MASTIC WATERPROOFING MATERIAL TO EXISTING TOP BEARING SURFACE.

SECTION THROUGH ADJUSTING RING

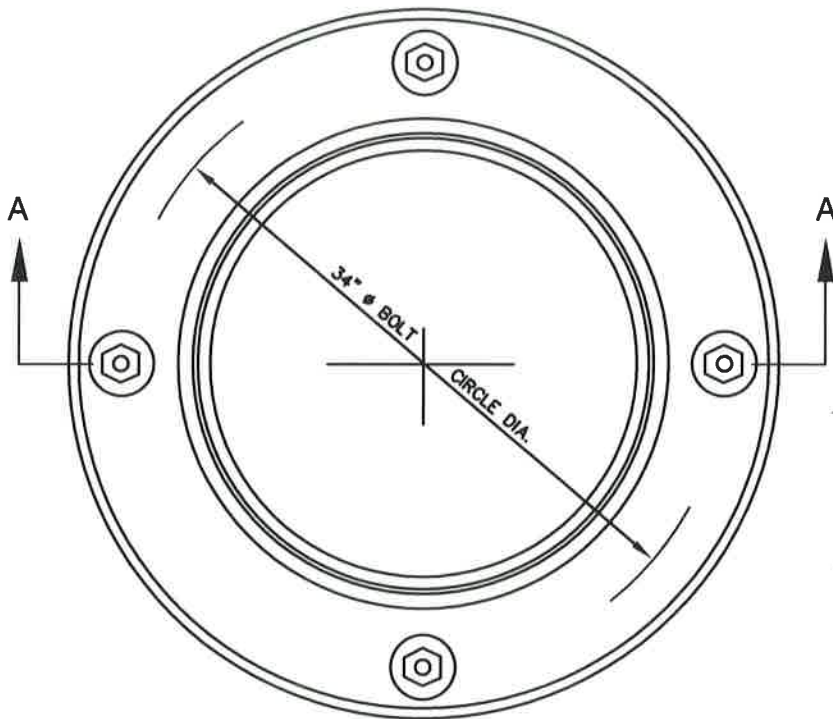
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STANDARD DETAIL
ADJUSTING RINGS
FOR 22-INCH OPENING
STANDARD MANHOLE
FRAME AND COVER

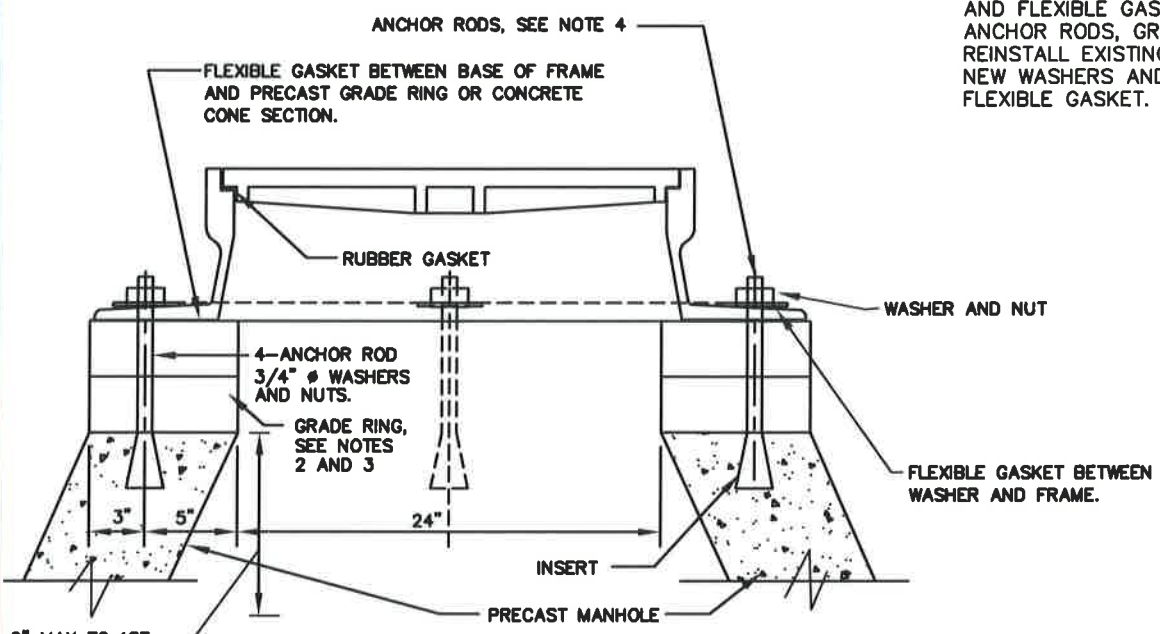
S
4.1




PLAN

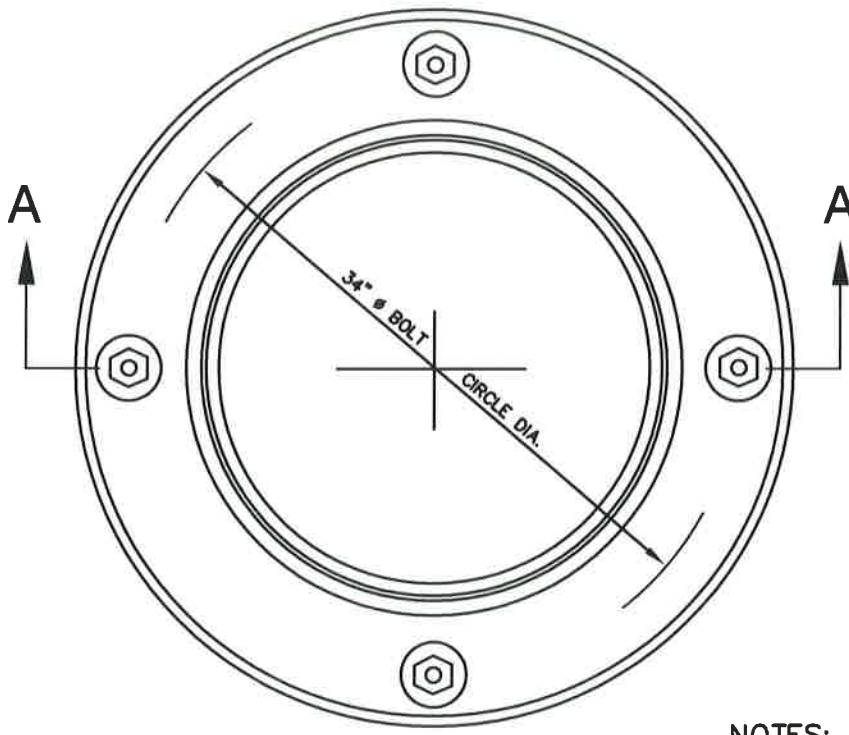
MANHOLE FRAME AND COVER NOTES:

1. ADJUST MANHOLE FRAME AND COVER WITH A TOLERANCE OF 1/8" TO THE PROPER GRADE, CROSS-SLOPE, AND ELEVATION AS NOTED ON THE DRAWINGS.
2. WHEN MANHOLE FRAME AND COVER ARE DESIGNATED TO BE BUILT ABOVE EXISTING GRADE, GRADE RINGS ARE NOT REQUIRED.
3. HEIGHT FOR TRANSITION RINGS MINIMUM 4" TO MAXIMUM 18". SEE DETAIL S/4.2 & S/4.22
4. FIELD CUT ENDS OF ANCHOR ROD TO MAXIMUM 1" ABOVE TOP OF NUT. ROUGH EDGES SHALL BE GROUND SMOOTH.
5. TO BRING AN INTERNAL SETTING TO FINAL GRADE: REMOVE EXISTING ANCHOR RODS, WASHERS, NUT, FRAME AND COVER AND FLEXIBLE GASKET. INSTALL NEW ANCHOR RODS, GRADE RINGS AND REINSTALL EXISTING FRAME AND COVER, NEW WASHERS AND NUTS. USE NEW FLEXIBLE GASKET.



SECTION A-A

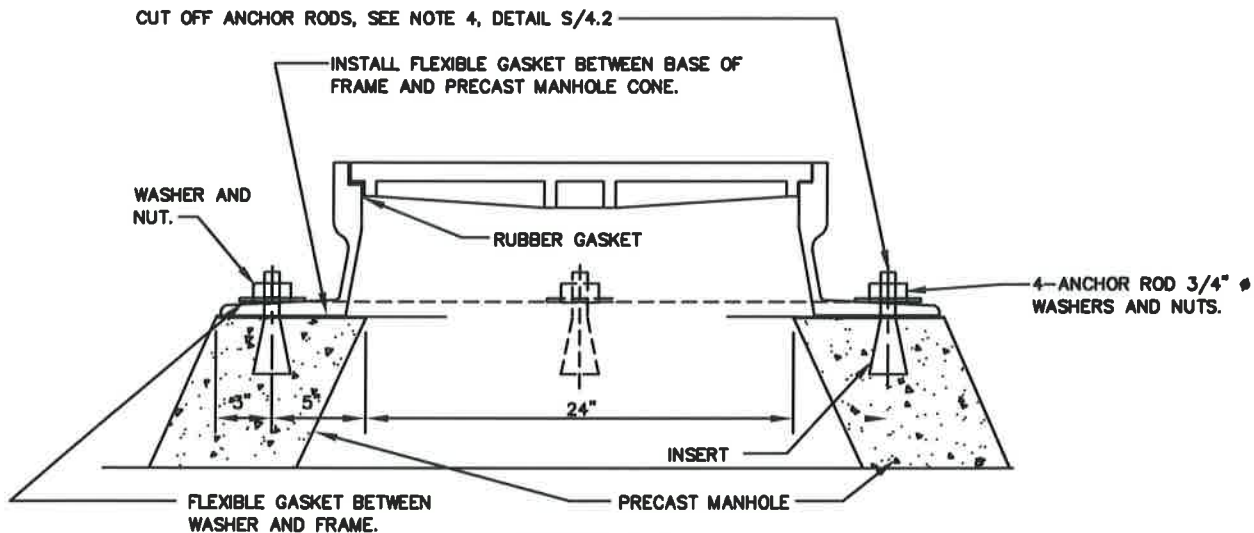
WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>9/29/16</u>  Chief Engineer	STANDARD DETAIL FINAL SETTING ANCHORING 24-INCH WATERTIGHT FRAME AND COVER TO MANHOLE WALL	$\frac{S}{4.2}$
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PLAN


NOTES:

1. MOUNT FRAME/COVER ON MANHOLE CONE WITHOUT GRADE RING TRANSITION, AS SHOWN. TOP OF FRAME AND COVER SHALL BE SET 12" BELOW FINAL RIM ELEVATION SHOWN ON THE DRAWINGS.
2. IF SLOTTED INSERTS ARE USED DO NOT FILL WITH MORTAR.



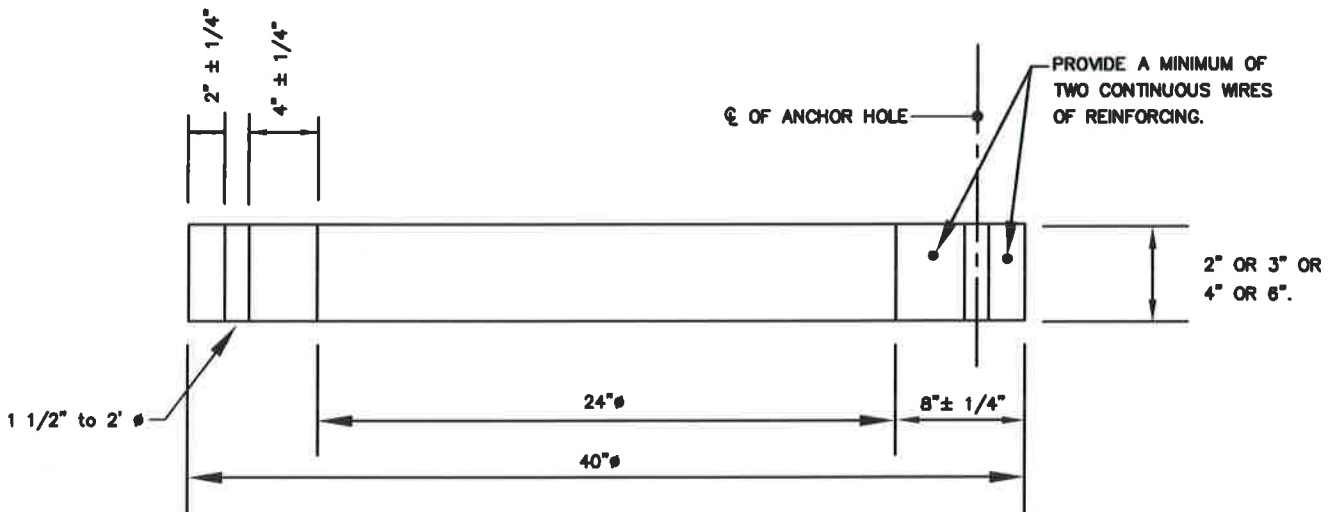
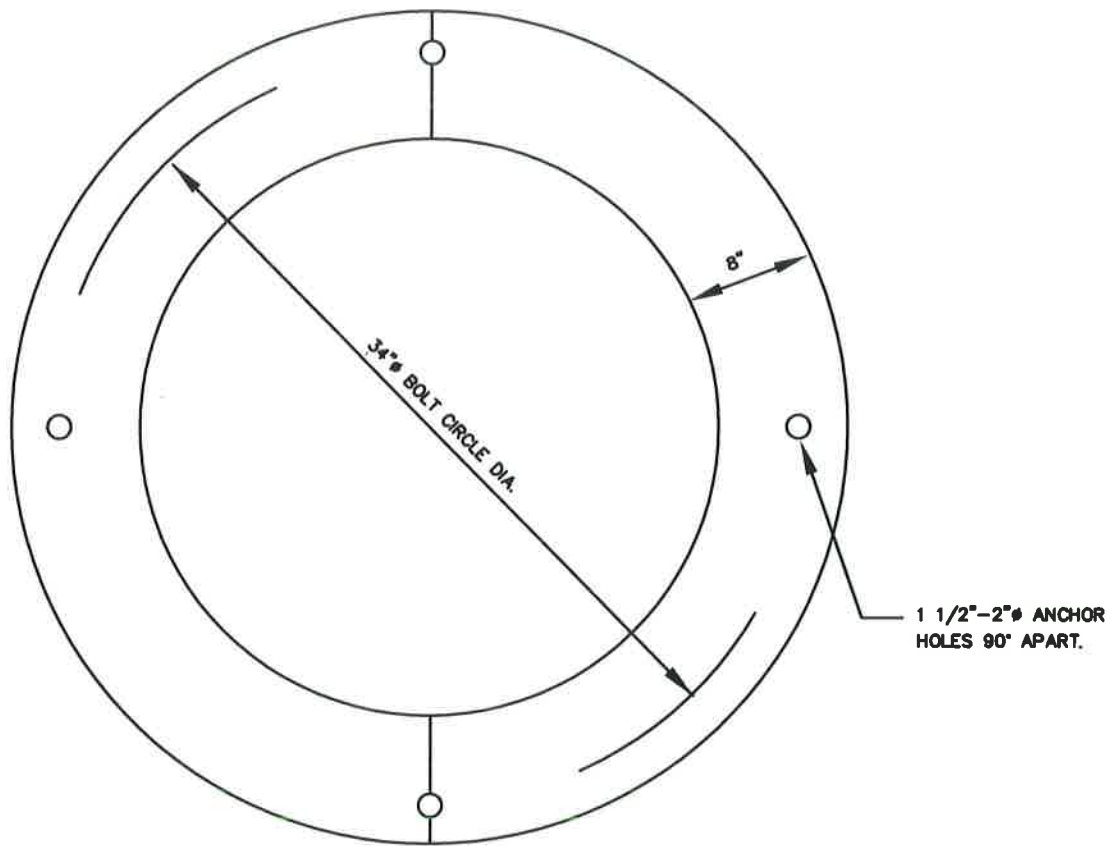
SECTION A-A

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Chief Engineer

STANDARD DETAIL
INTERIM SETTING ANCHORING
24-INCH WATERTIGHT FRAME
& COVER TO MH CONE


S
4.2a



NOTES:

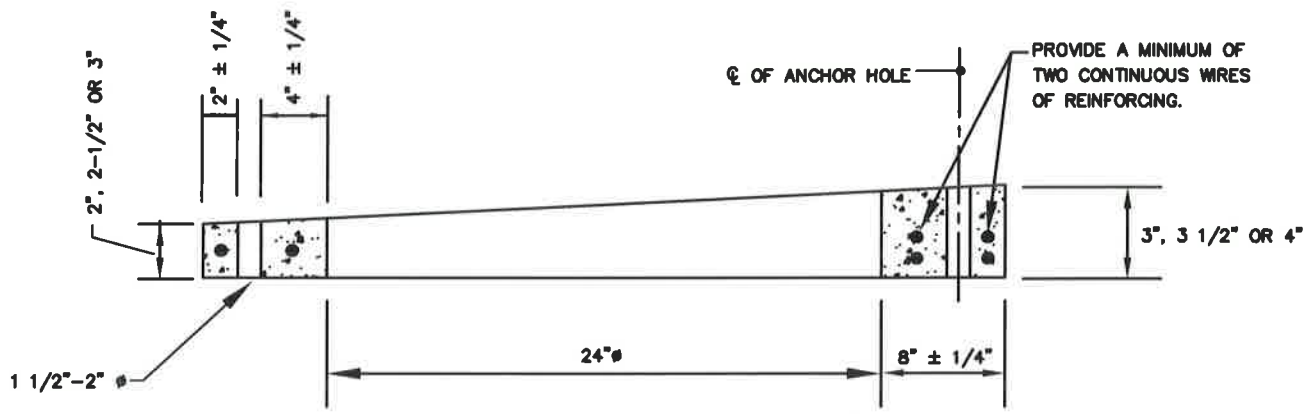
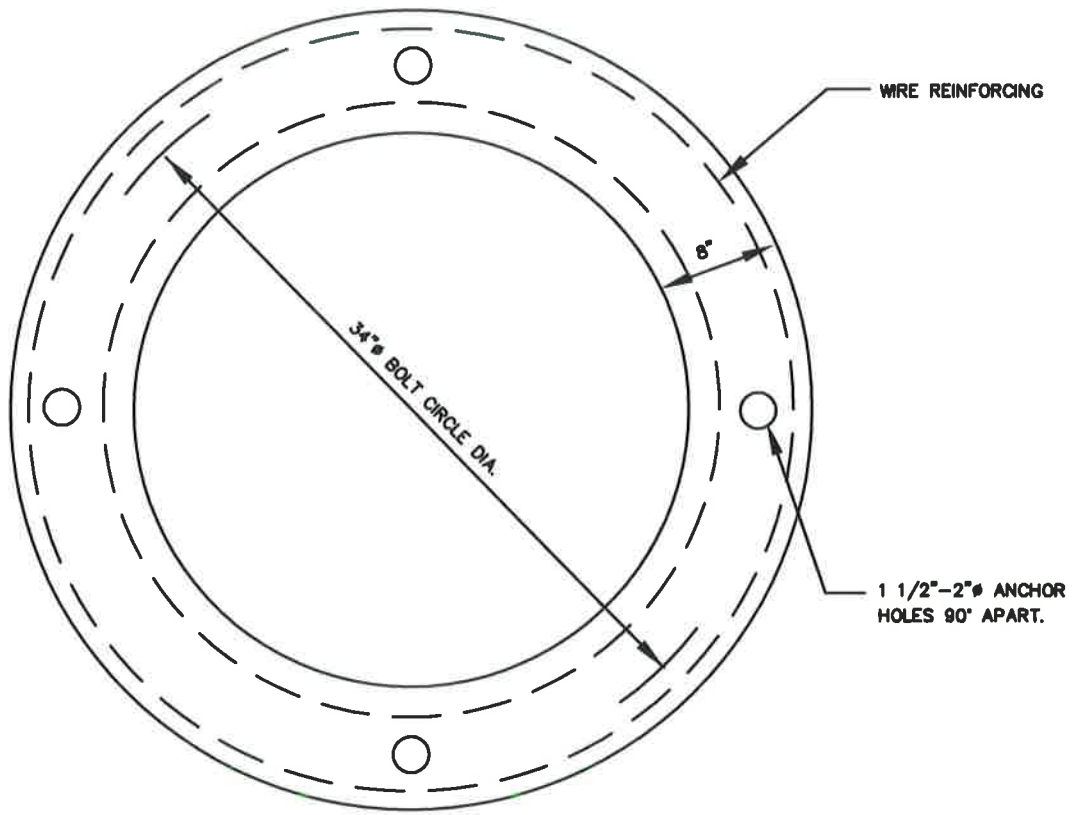
1. PRECAST CONCRETE $f'_c=5000$ PSI @ 28 DAYS.
2. REINFORCEMENT SHALL CONFORM TO ASTM C-478.
3. CAST LIFT LUGS ARE REQUIRED FOR 4" AND 6" RINGS.

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STANDARD DETAIL
24-INCH PRECAST CONCRETE
MANHOLE TRANSITION RING

S
4.21

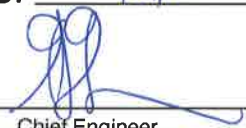


NOTES:

1. PRECAST CONCRETE $f'_c=5000$ PSI @ 28 DAYS.
2. REINFORCEMENT SHALL CONFORM TO ASTM C-478.

ADJUSTING GRADE RING SIZE
2" X 3"
2" 1/2" X 3 1/2"
3" X 4"

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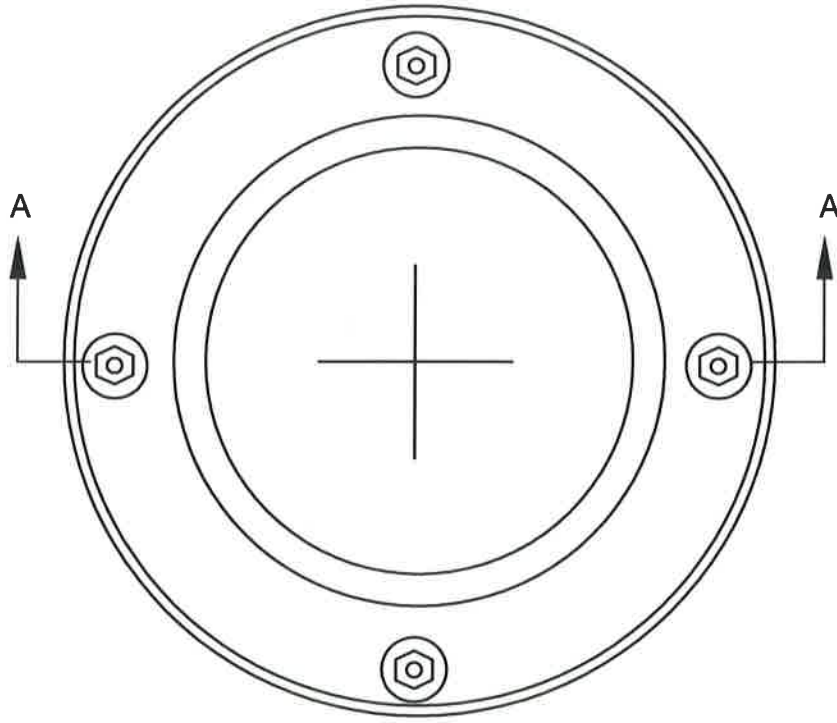
APPROVED: 9/29/16

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STANDARD DETAIL
24-INCH PRECAST CONCRETE
MANHOLE SLOPED
TRANSITION RING

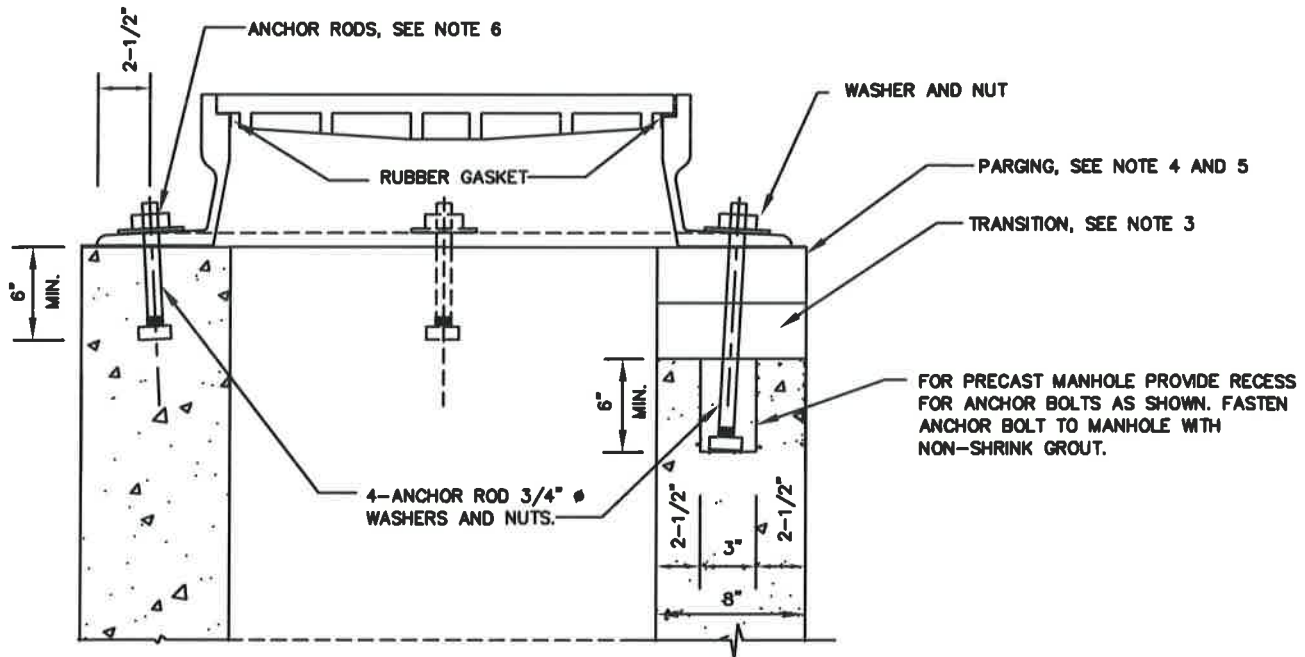
S
4.22

MANHOLE FRAME AND COVER NOTES:

1. ADJUST MANHOLE FRAME AND COVER WITH A TOLERANCE OF 1/8" TO THE PROPER GRADE, CROSS-SLOPE, AND ELEVATION AS NOTED ON THE DRAWINGS.
2. WHEN MANHOLE FRAME AND COVER ARE DESIGNATED TO BE BUILT ABOVE EXISTING GRADE, GRADE RINGS ARE NOT REQUIRED.
3. HEIGHT FOR BRICK TRANSITION MINIMUM 4" TO MAXIMUM 18".
4. PARGE TOP AND EXTERIOR OF BRICK TRANSITION. EXTEND PARGING 6" ON PRECAST SECTION OF MANHOLE.
5. AFTER SETTING MANHOLE FRAME AND COVER, APPLY TWO COATS OF ASPHALT BASED WATER PROOFING FROM FRAME AND COVER TO 2" BEYOND PARGING ON PRECAST SECTION OF MANHOLE.
6. FIELD CUT ENDS OF ANCHOR ROD TO MAXIMUM 1" ABOVE TOP OF NUT. ROUGH EDGES SHALL BE GROUND SMOOTH.

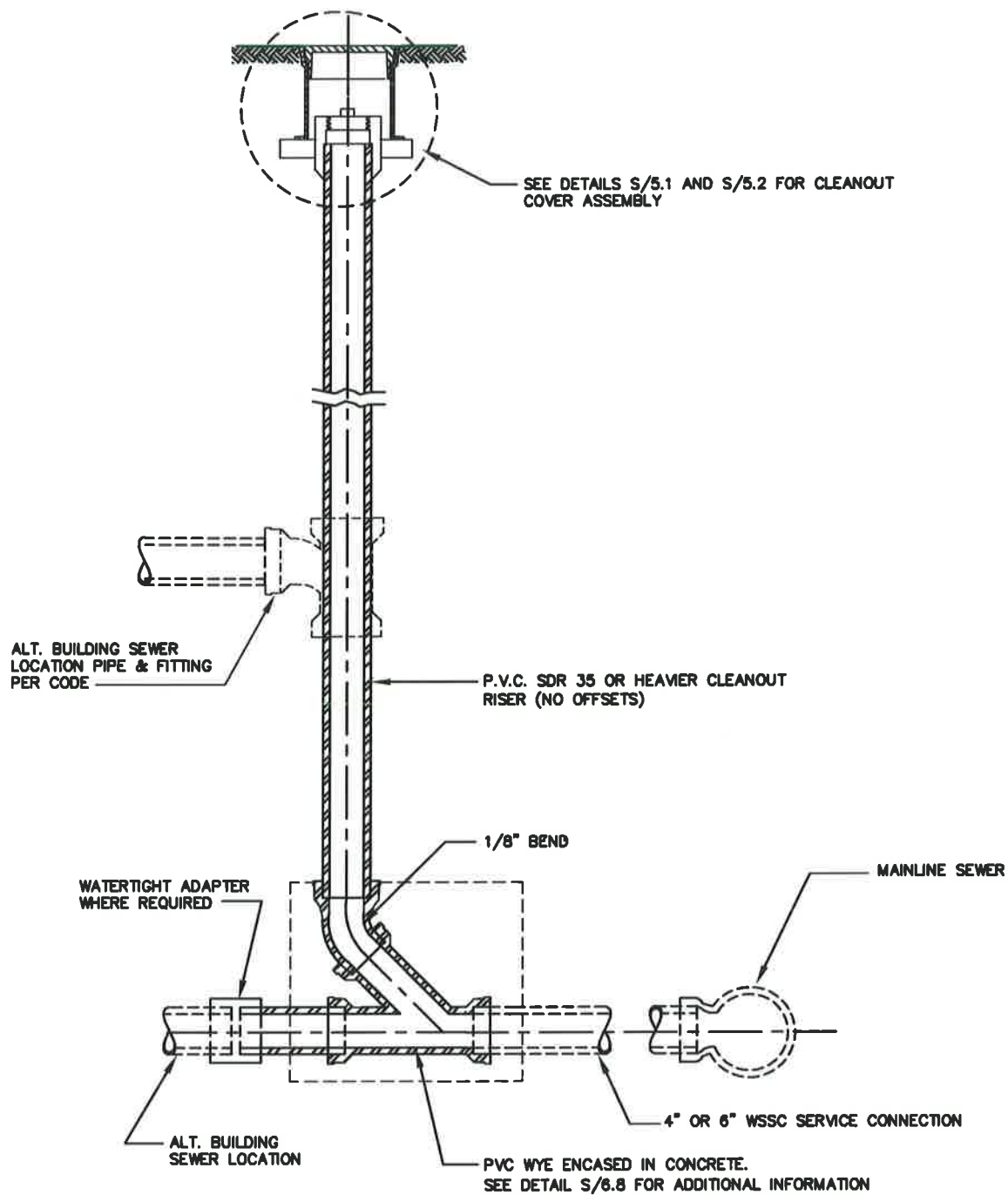


PLAN




SECTION A-A

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>9/29/16</u> Chief Engineer	STANDARD DETAIL ANCHORING 30-INCH AND 36-INCH MANHOLE FRAME AND COVER TO MANHOLE WALL	S <hr style="width: 50%; margin: 0 auto;"/> 4.3
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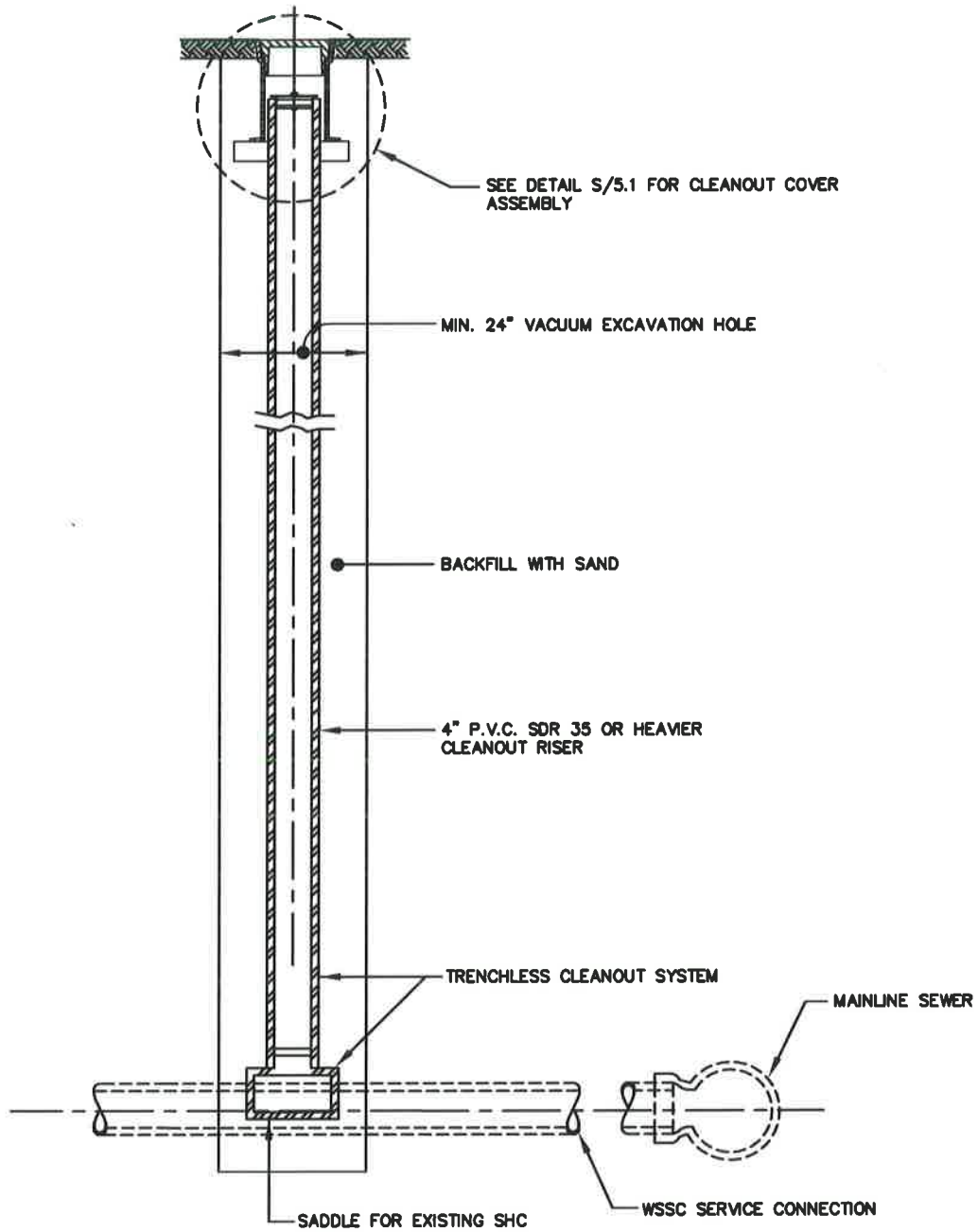
ELEVATION

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STANDARD DETAIL
STANDARD CLEANOUT
INSTALLATION
FOR 4-INCH AND 6-INCH
SEWER HOUSE CONNECTIONS

S
5.0



ELEVATION

NOTE:

INSTALL TRENCHLESS CLEANOUT SYSTEM IN ACCORDANCE TO MANUFACTURE RECOMMENDATION.

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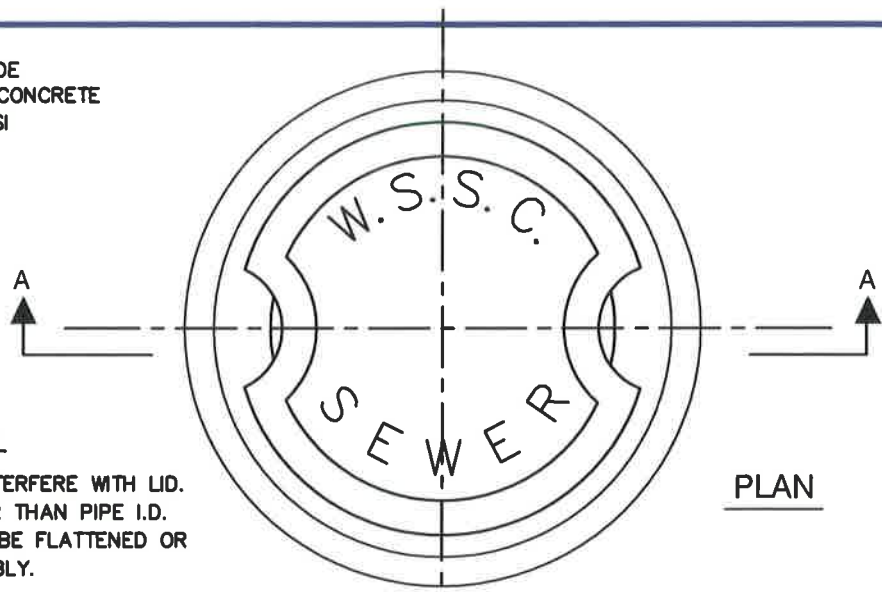
9/29/16

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STANDARD DETAIL
TRENCHLESS CLEANOUT SYSTEM
FOR INSTALLATION ON EXISTING
4-INCH AND 6-INCH
SEWER HOUSE CONNECTIONS

S
5.0a

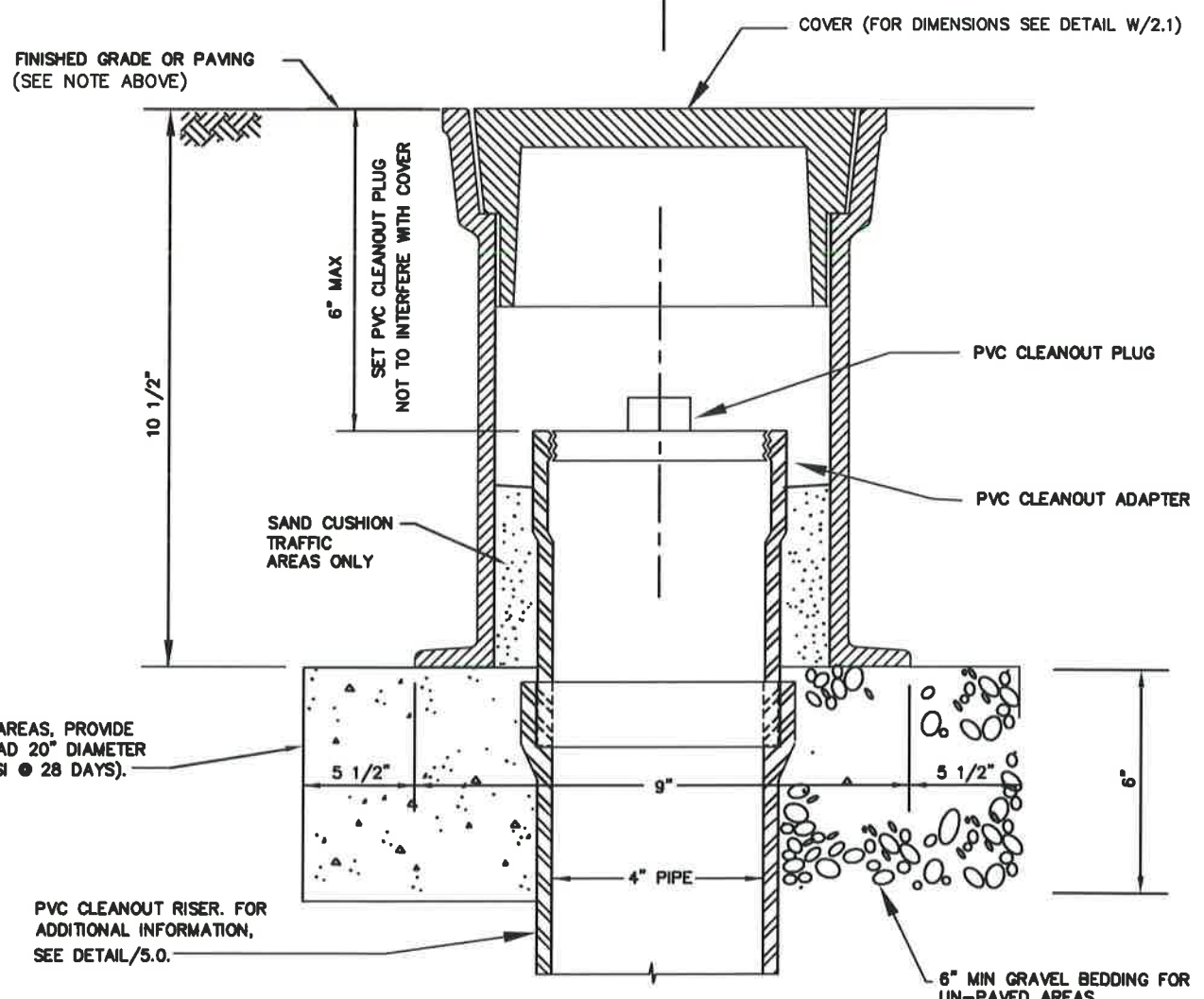
NOTE: IN VEHICULAR TRAFFIC AREAS NOT PAVED, PROVIDE 2'x2'x10 1/2"(H) SQUARE CONCRETE ENCASEMENT ($f'_c=3000$ PSI @ 28 DAYS) AROUND THE FRAME.




PLAN

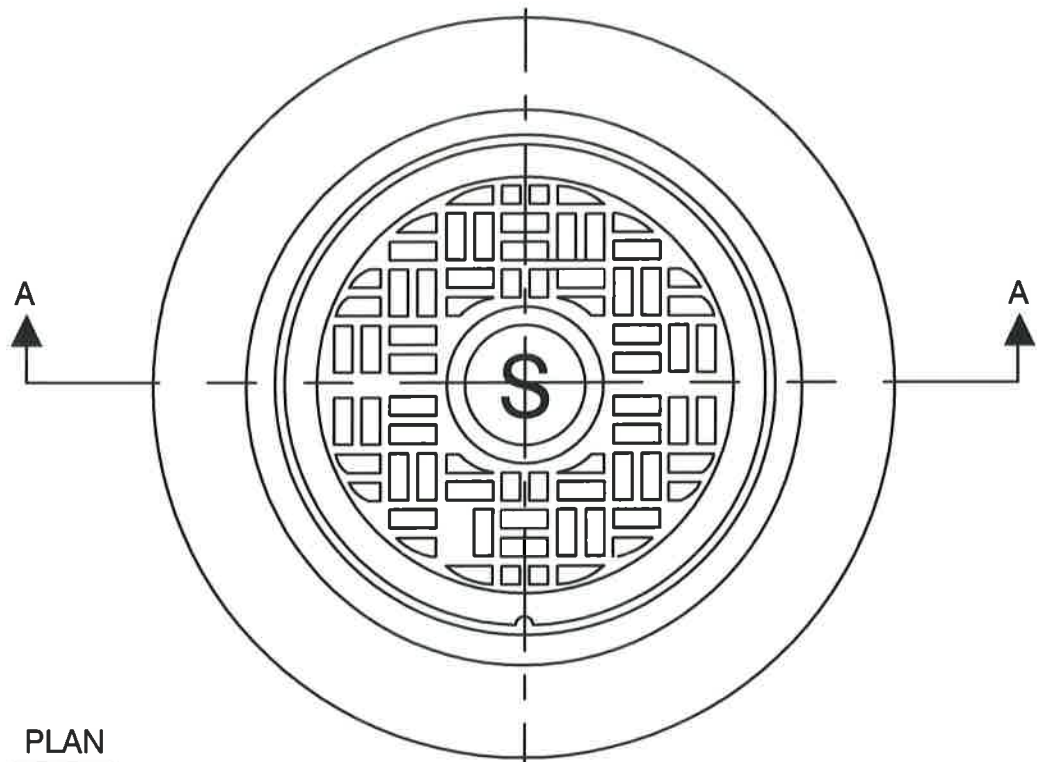
EXPANSION PLUG NOTES:

1. EXPANSION PLUG SHALL NOT INTERFERE WITH LID.
2. PLUG FLANGE SHALL BE LARGER THAN PIPE I.D.
3. THREADED COMPONENTS SHALL BE FLATTENED OR STAKED TO PREVENT DISASSEMBLY.

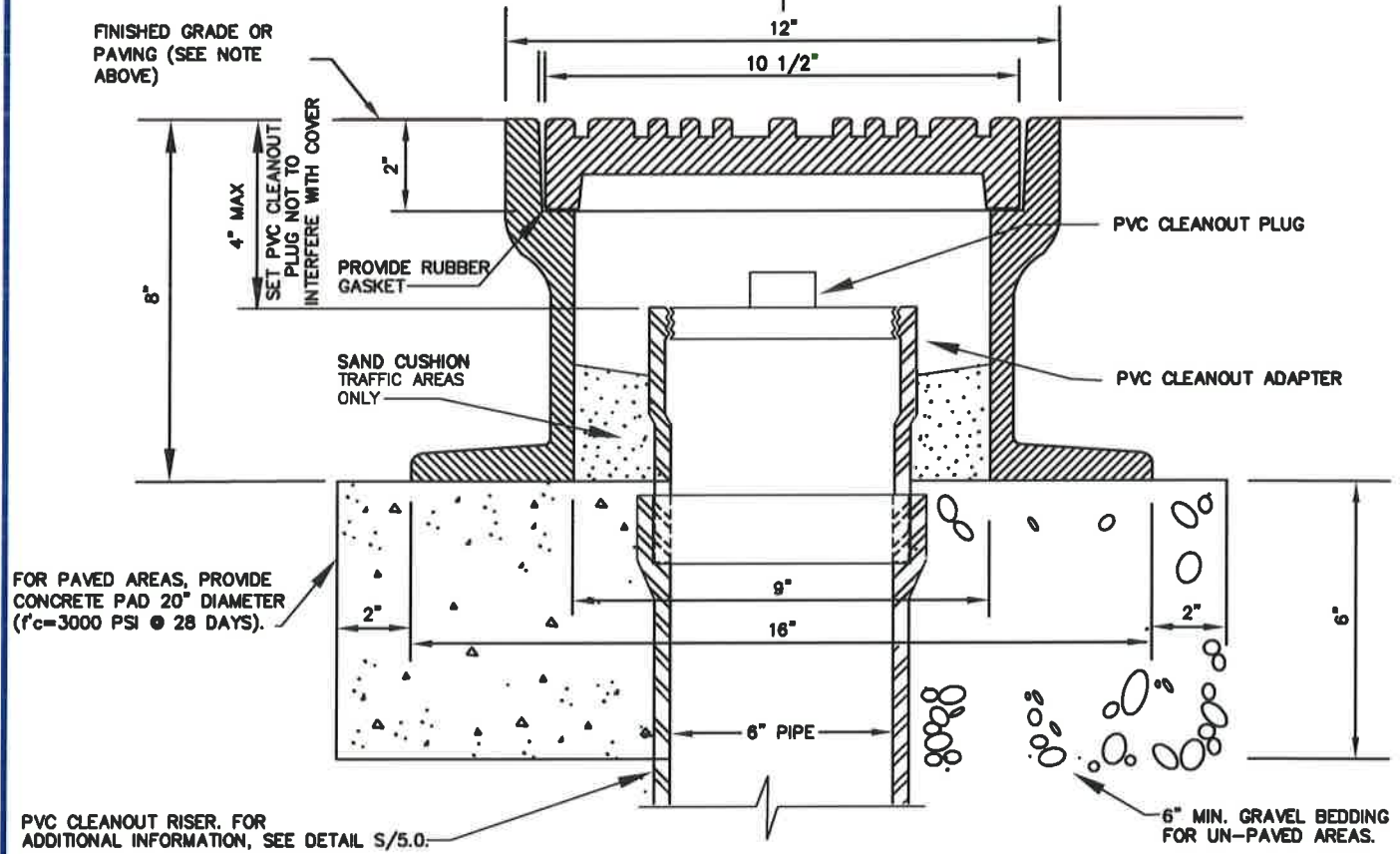


SECTION A-A


WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>9/27/16</u>  Chief Engineer	STANDARD DETAIL CLEANOUT COVER ASSEMBLY FOR 4-INCH CLEANOUTS	<table style="margin: auto;"> <tr><td style="text-align: center;">S</td></tr> <tr><td style="text-align: center;">5.1</td></tr> </table>	S	5.1
S					
5.1					

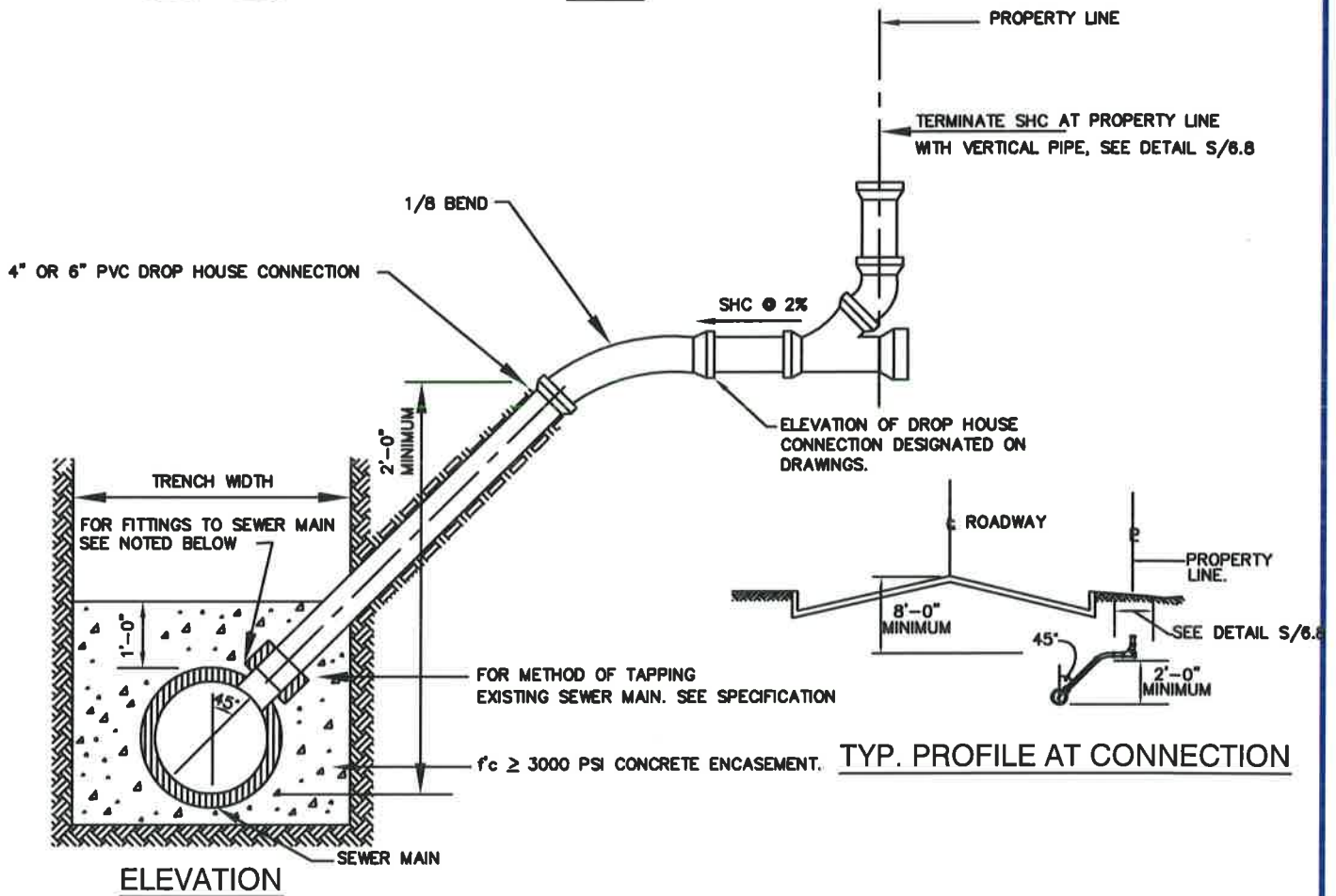
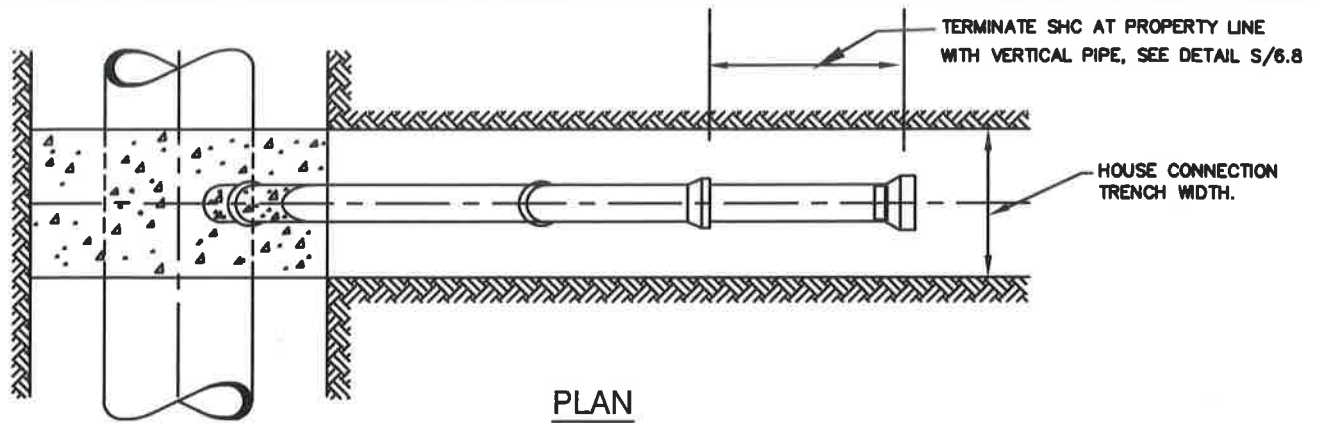


PLAN



SECTION A-A

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>9/29/16</u>  Chief Engineer	STANDARD DETAIL CLEANOUT (LAMP HOLE) COVER ASSEMBLY FOR 6-INCH CLEANOUTS	S 5.2
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CONNECTION TO SEWER MAIN NOTES:

1. FOR SEWERS LARGER THAN 15" CONNECT TO A MANHOLE.
2. TO PROPOSED SEWERS 15" AND SMALLER, USE A TEE.
3. TO EXISTING PVC 4" THRU 15" PVC SEWERS MAINS, USE SADDLE.
4. TO EXISTING DIP 12" AND SMALLER SEWER MAINS, USE SADDLE.
5. TO EXISTING SEWER MAINS OTHER THAN PVC OR DIP:
 - (A). SHC TO 4" SEWER MAINS USE TEE OR SADDLE.
 - (B). SHC 6" THRU 12" SEWER MAINS USE SADDLE.
 - (C). SHC TO 15" SEWER MAINS USE THIMBLE AND EPOXY TO MAIN LINE.

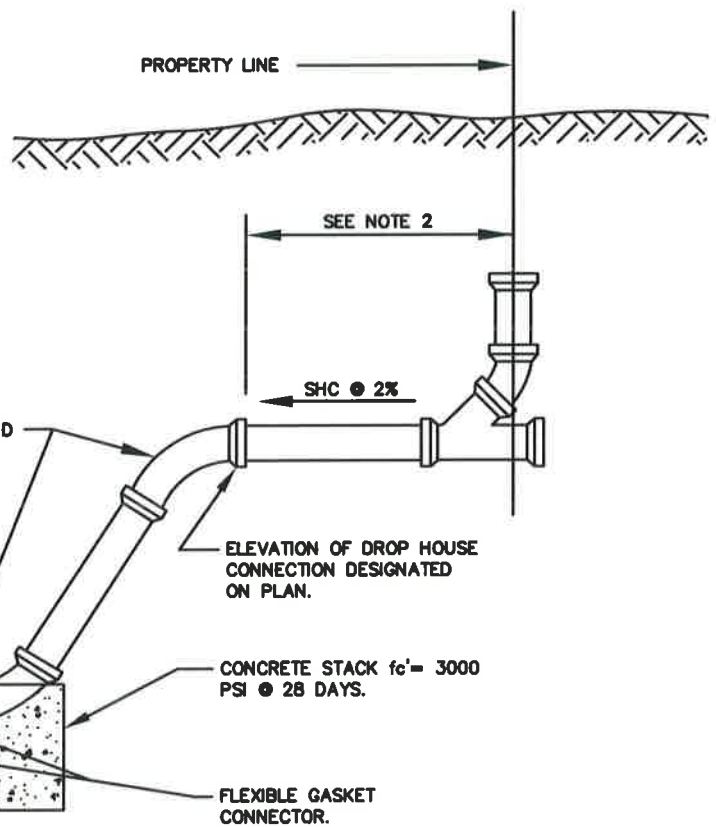
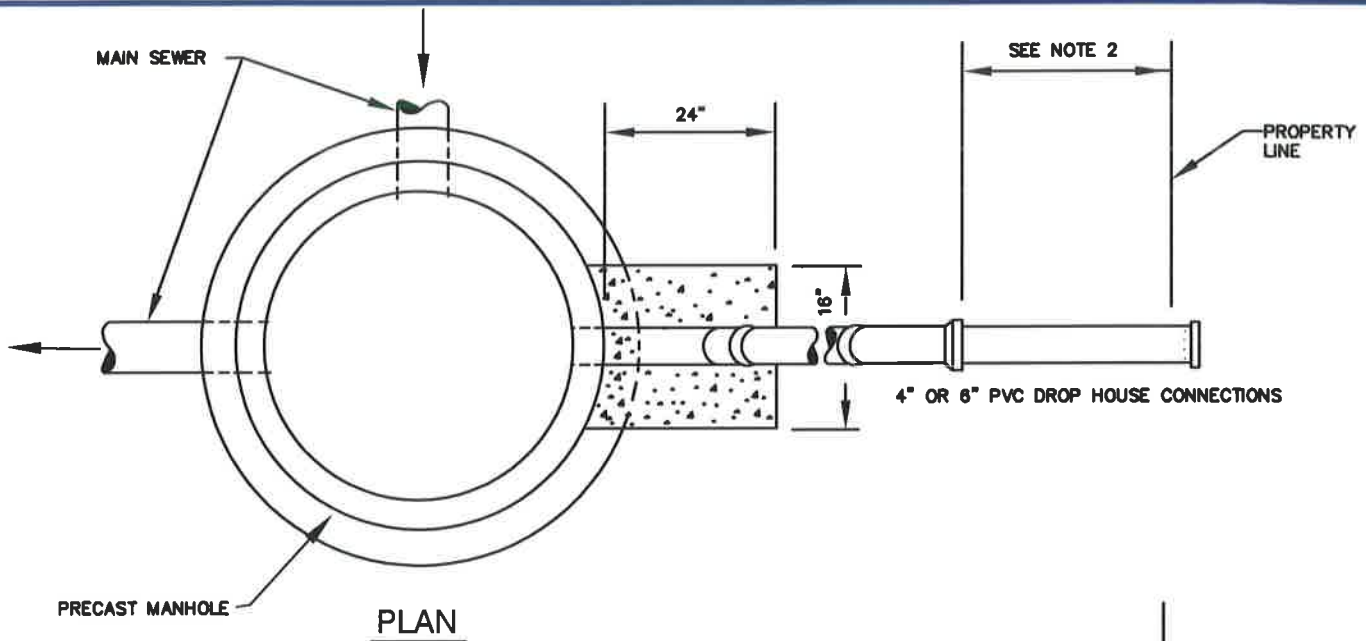
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Chief Engineer

STANDARD DETAIL
4-INCH AND 6-INCH DROP
HOUSE CONNECTIONS
TO SEWER MAIN

S
6.0




ELEVATION

NOTE:

1. TOP OF 4" OR 6" SHC TO BE SAME AS TOP OF MANHOLE BENCH.
2. SHC AT PROPERTY LINE SHALL TERMINATE IN ACCORDANCE WITH DETAIL S/6.8.

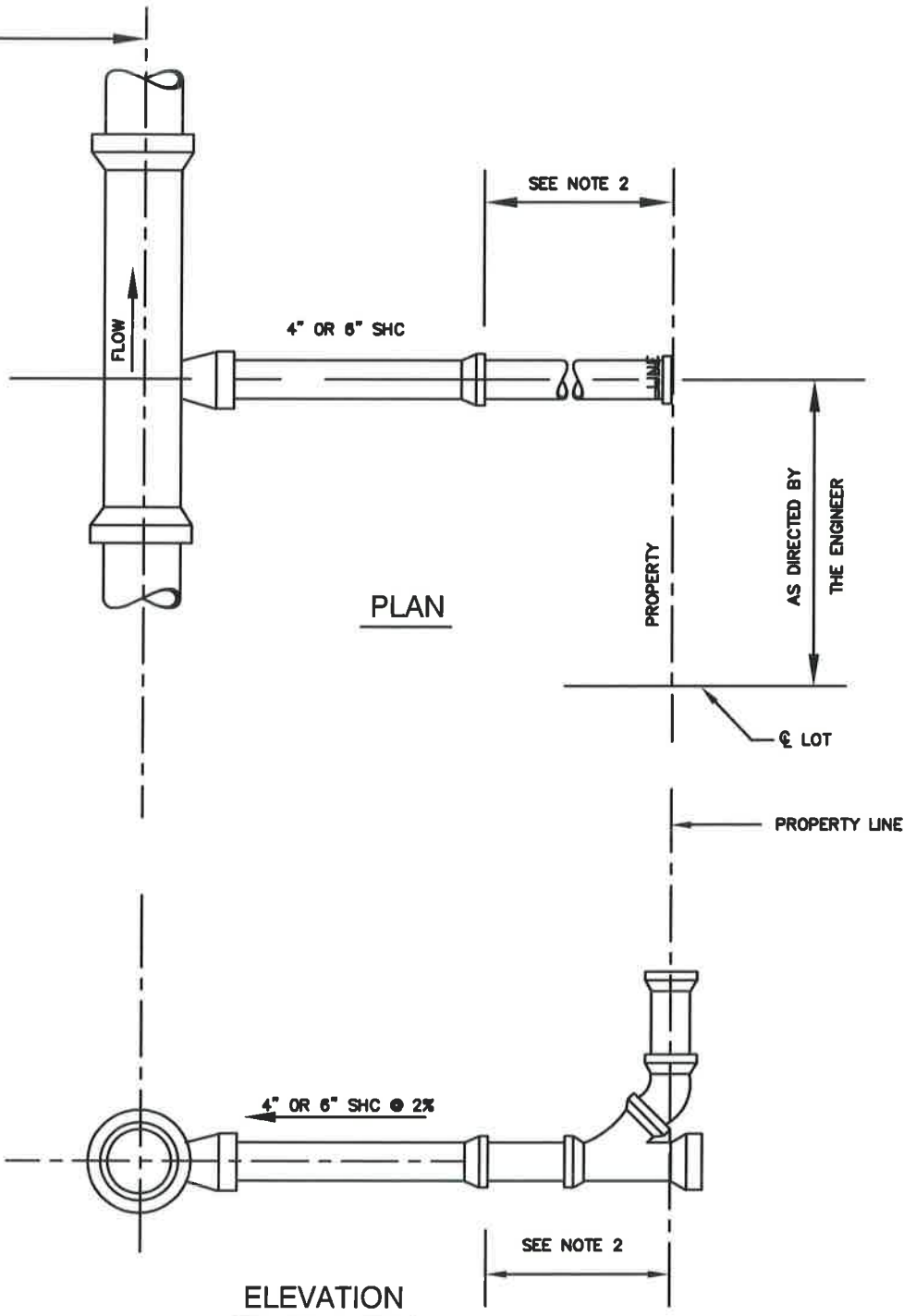
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STANDARD DETAIL
4-INCH AND 6-INCH DROP
HOUSE CONNECTIONS
TO MANHOLE

S
6.1

PROPOSED
MAIN



NOTES:

- 1. FOR CONNECTIONS TO SEWER MAINS, SEE NOTES ON DETAILS S/6.0.
- 2. SHC AT PROPERTY LINE SHALL TERMINATE IN ACCORDANCE WITH DETAIL S/6.8.
- 3. FOR CONNECTIONS OF PVC TO PVC MAIN, SEE DETAIL S/6.3.
- 4. FOR DIP OR PVC AWWA C900 SHC, SEE DETAIL S/6.3a.

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APPROVED:

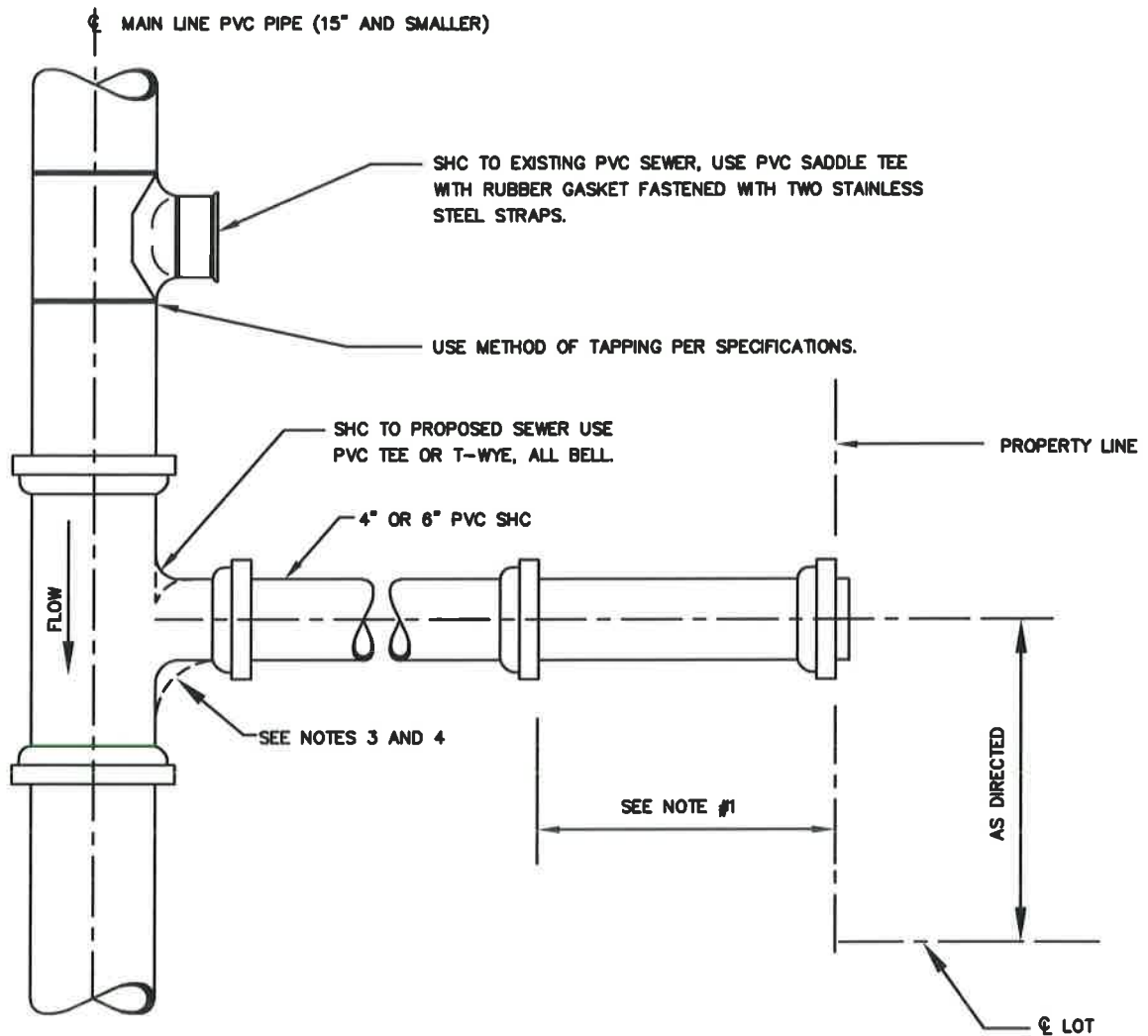
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STANDARD DETAIL

4-INCH AND 6-INCH
SEWER HOUSE CONNECTIONS

S
6.2

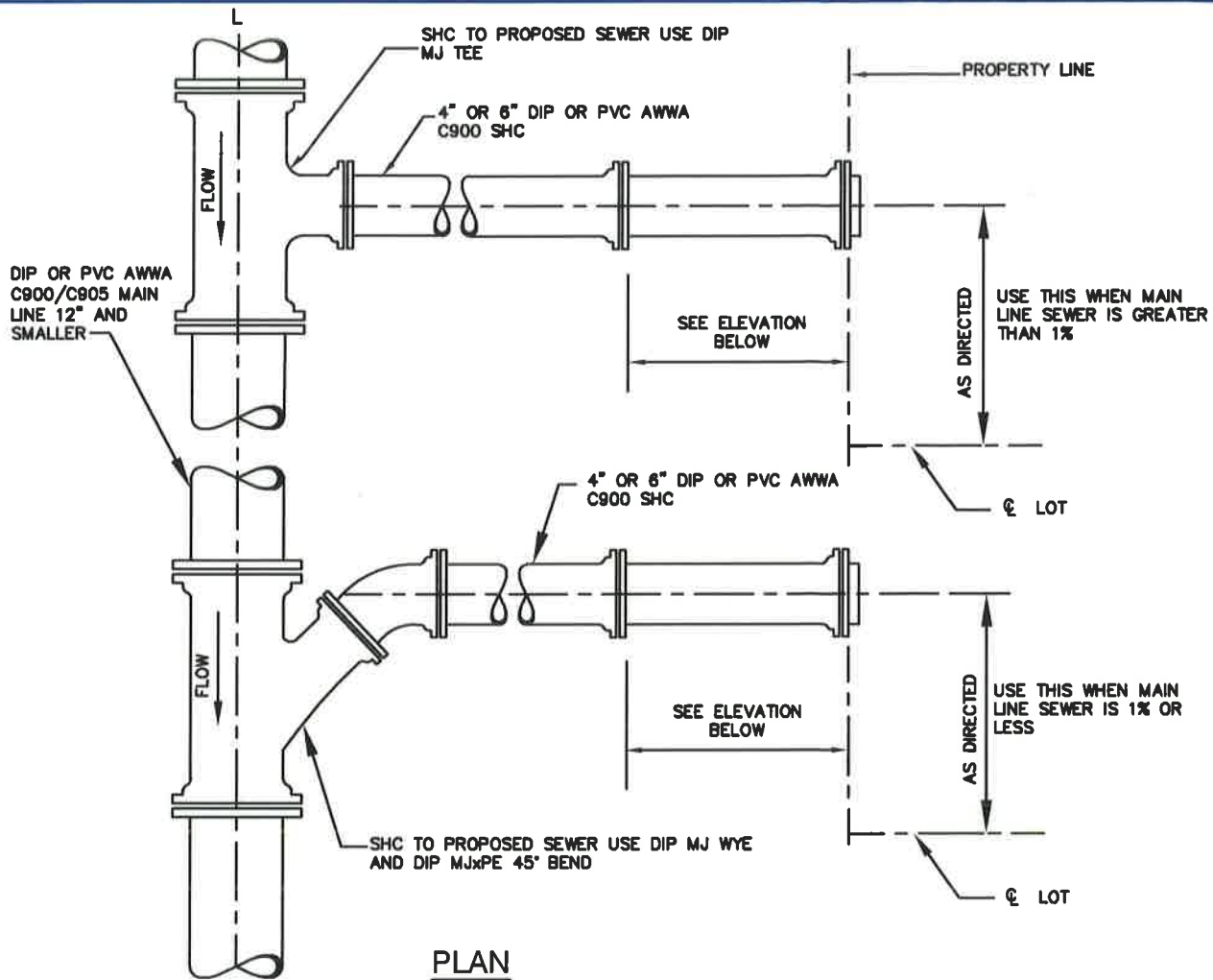


PLAN

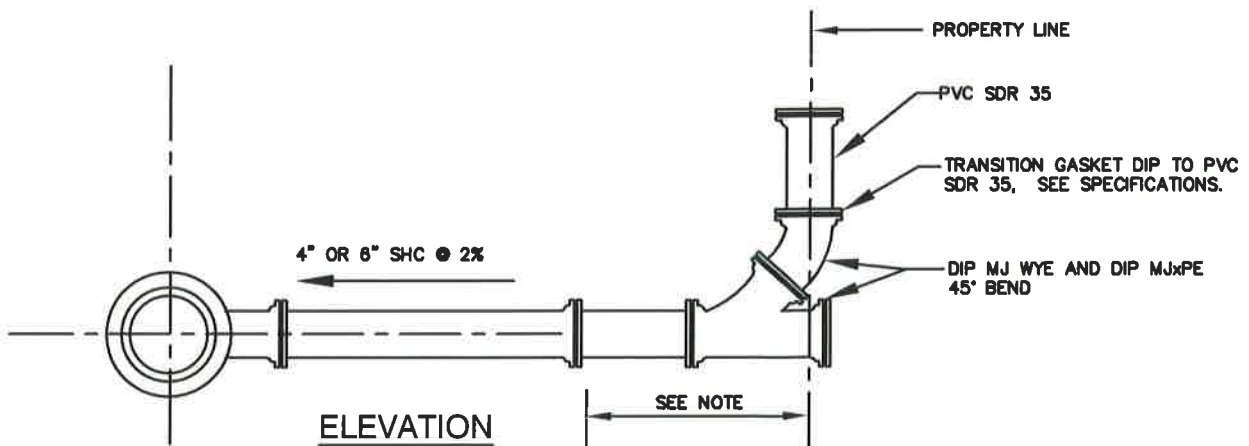
NOTES:

1. SHC AT PROPERTY SHALL TERMINATE IN ACCORDANCE WITH DETAIL S/6.8.
2. SEE CONNECTION TO SEWER MAIN NOTES, DETAIL S/6.0.
3. USE T-WYE FOR ALL PROPOSED SHC WHEN MAIN LINE SEWER IS 1.0% OR LESS.
4. ORIENT T-WYE AS SHOWN WITH RESPECT TO FLOW.
5. FOR ELEVATION, SEE DETAIL S/6.2 AND S/6.3a.

<p>WASHINGTON SUBURBAN SANITARY COMMISSION</p>	<p>APPROVED: <u>9/27/16</u>  Chief Engineer</p>	<p>STANDARD DETAIL 4-INCH AND 6-INCH PVC HOUSE CONNECTIONS AND FITTINGS</p>	<p><u>S</u> 6.3</p>
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PLAN



ELEVATION

NOTES:

1. SHC AT PROPERTY SHALL TERMINATE IN ACCORDANCE WITH DETAIL S/6.8.
2. CONCRETE ENCASUREMENT NOT REQUIRED FOR DUCTILE IRON WYE ON BEND. SEE NOTE AND DETAIL S/6.8
3. SEE CONNECTION TO SEWER MAIN NOTES, DETAIL S/6.0.
4. ORIENT T-WYE AS SHOWN WITH RESPECT TO FLOW.
5. ALL DIP SHALL BE MIN. CL.54
6. ALL DIP SHALL HAVE SPECIAL INTERIOR COATING, SEE SPECIFICATIONS.

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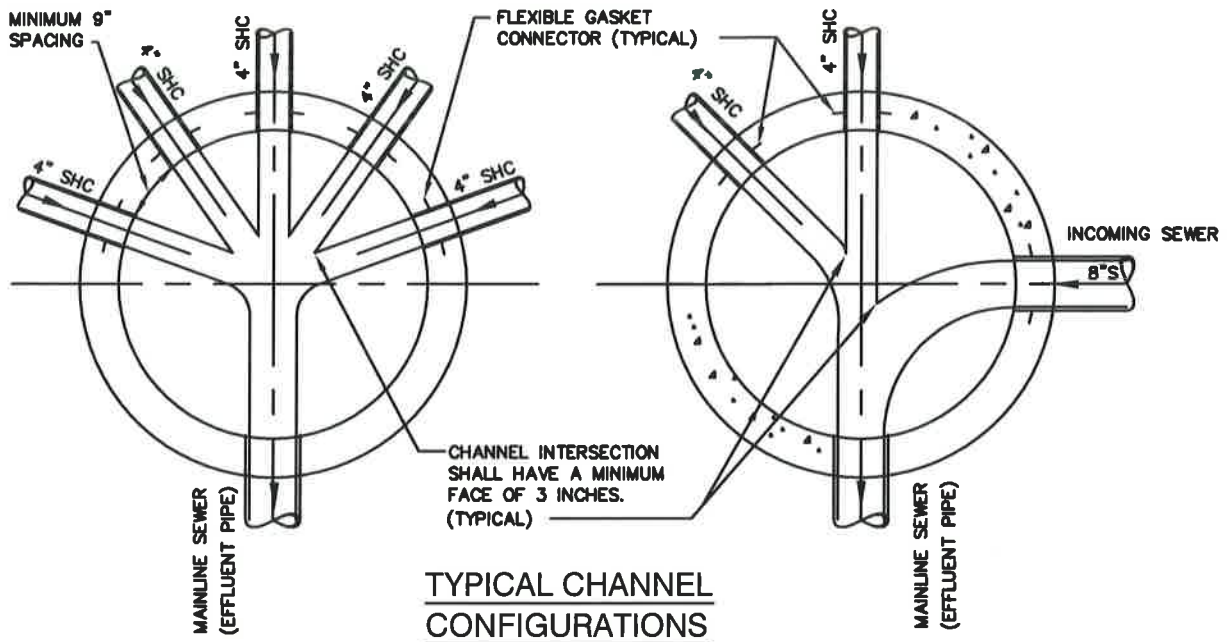
APPROVED:

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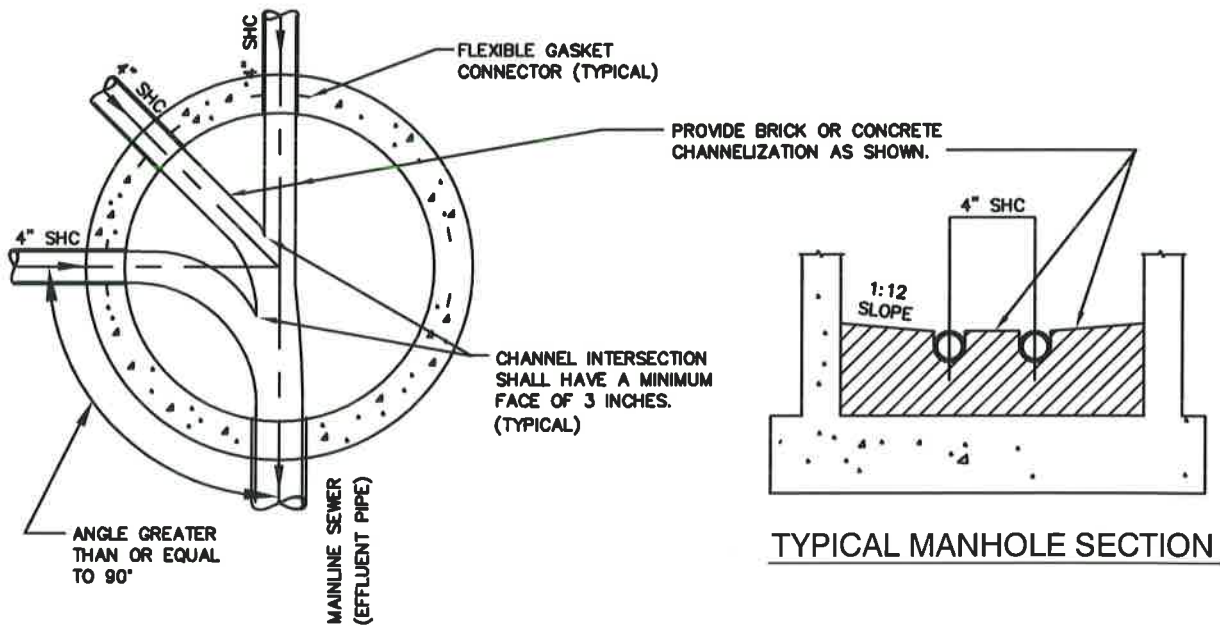
Chief Engineer

STANDARD DETAIL
4-INCH AND 6-INCH
DIP OR PVC AWWA C900
HOUSE CONNECTIONS
AND FITTINGS

S
6.3a



TYPICAL CHANNEL CONFIGURATIONS



TYPICAL MANHOLE SECTION

NOTES:

1. CHANNEL LININGS SHALL BE IN ACCORDANCE WITH NOTES ON DETAIL S/3.3.
2. THE MINIMUM AND MAXIMUM DIAMETER OF MANHOLES SHALL BE 48" AND 60".
3. THE MINIMUM SPACING BETWEEN CONNECTIONS SHALL BE 9".
4. SHC'S SHALL NOT ENTER A MANHOLE AT AN ANGLE LESS THAN 90° TO THE EFFLUENT PIPE.
5. SHC'S AT PROPERTY LINE SHALL TERMINATE IN ACCORDANCE WITH DETAIL S/6.8.
6. EACH CHANNEL SHALL MAINTAIN A MINIMUM SLOPE OF TWO PERCENT THROUGH THE MANHOLE.

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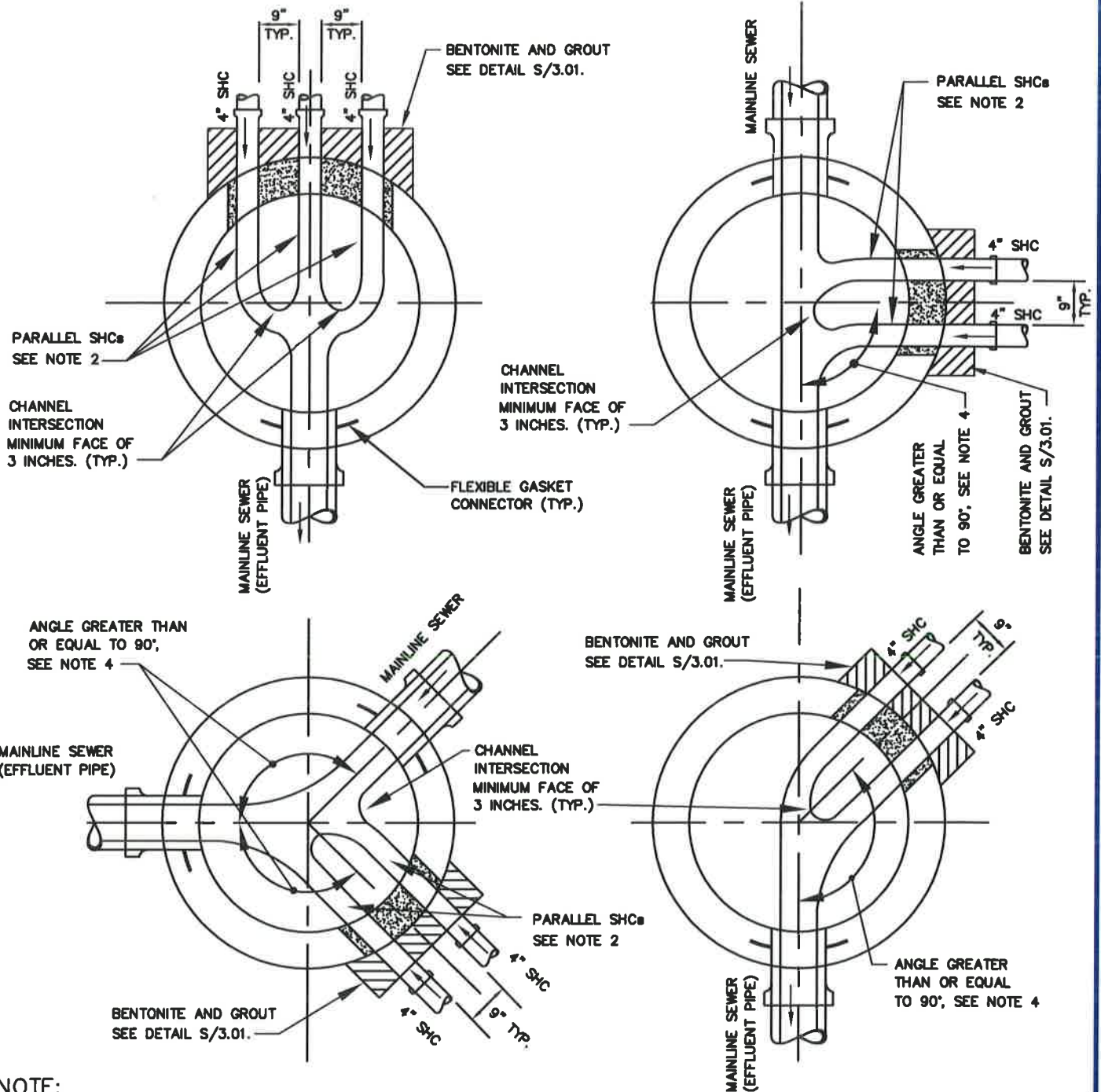
APPROVED:

9/29/16

Chief Engineer

STANDARD DETAIL
4-INCH RADIAL MULTIPLE SEWER
HOUSE CONNECTIONS
INSTALLATION AND
CHANNELIZATION

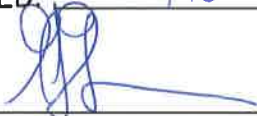
S
6.4



NOTE:

1. FOR ALL PARALLEL MULTIPLE SEWER HOUSE CONNECTION, USE ONLY DIP WITH SPECIAL LININGS OR PVC AWWA C900. FOR GROUTING PVC AWWA C900, SEE SPECIFICATIONS. PROVIDE BENTONITE AND GROUT APPLICATION, SEE DETAIL S/3.01.
2. NO MORE THAN THREE (3) SEWER HOUSE CONNECTIONS MAY BE CONNECTED PARALLEL TO EACH OTHER INTO A 4'-0" DIA. MANHOLE. WHEN MORE PARALLEL SEWER HOUSE CONNECTIONS ARE CONNECTED, SPECIAL DESIGN IS REQUIRED USING A LARGER MANHOLE, AS NECESSARY.
3. CHANNEL LININGS SHALL BE IN ACCORDANCE WITH BOTH NOTES ON DETAIL S/3.3.
4. THE MINIMUM SPACING BETWEEN CONNECTION SHALL BE 9".
5. SEWER HOUSE CONNECTIONS SHALL NOT ENTER A MANHOLE AT AN ANGLE LESS THAN 90° TO THE EFFLUENT PIPE.
6. SEWER HOUSE CONNECTIONS AT PROPERTY LINE SHALL TERMINATE IN ACCORDANCE WITH DETAILS S/6.8.

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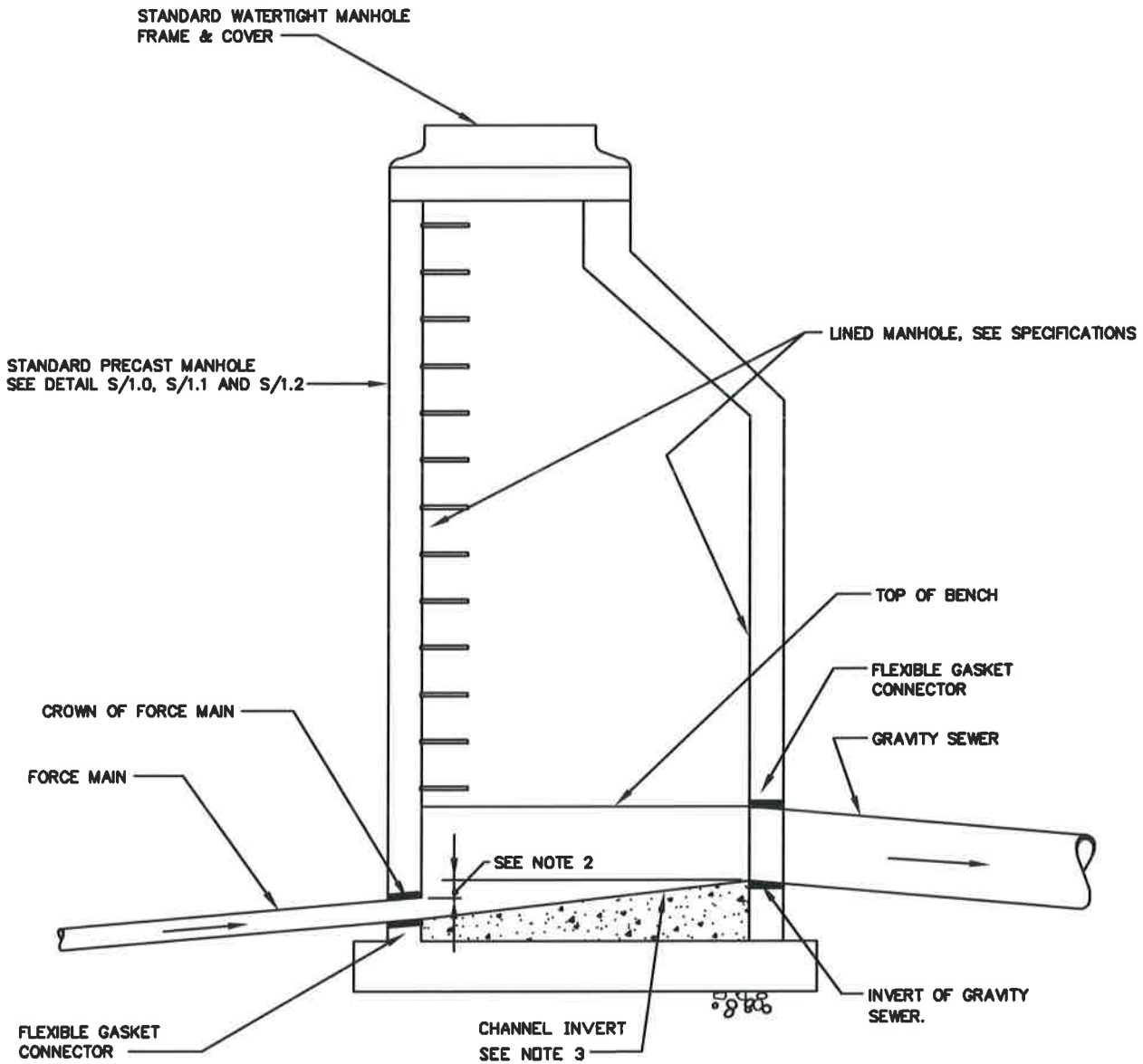
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Chief Engineer


STANDARD DETAIL
**PARALLEL MULTIPLE
4-INCH SEWER HOUSE
CONNECTION INSTALLATION**

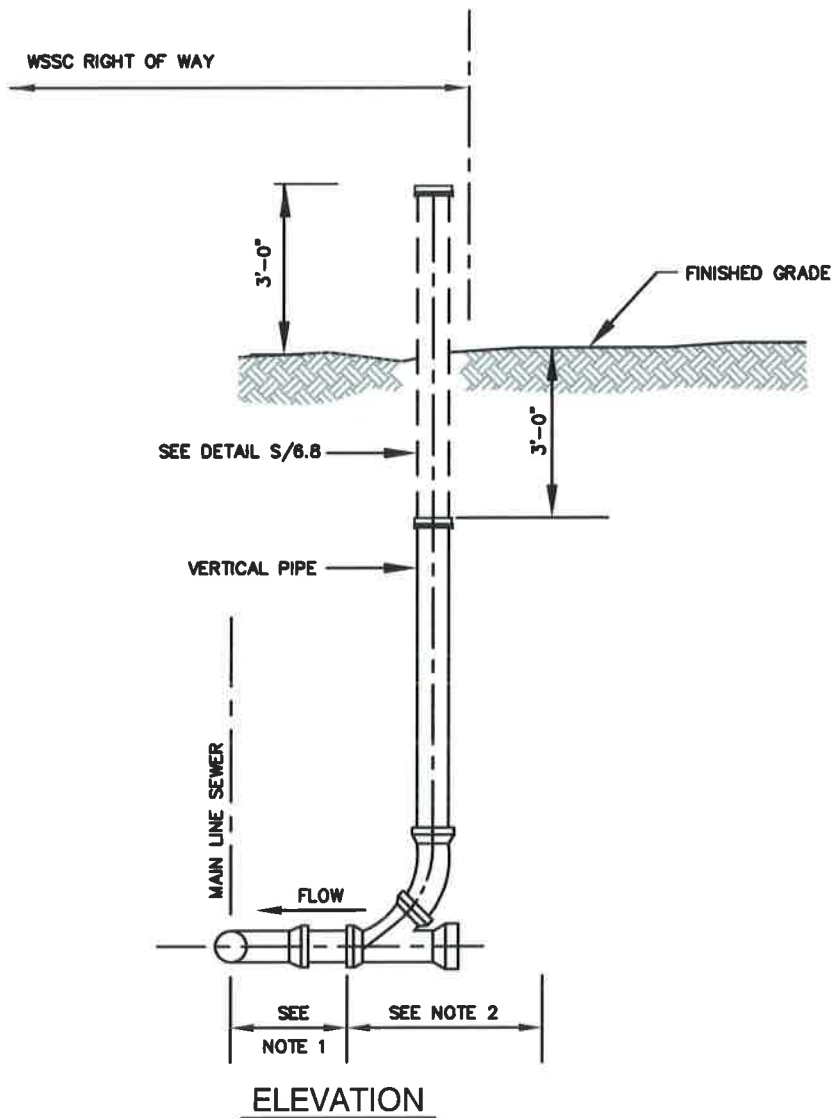
S
6.5

NOTES:

1. COAT INTERIOR OF DIP OR RCP GRAVITY SEWERS AND DIP FORCE MAINS, SEE SPECIFICATIONS.
2. ELEVATION OF GRAVITY SEWER INVERT SHALL BE MINIMUM 1" ABOVE ELEVATION OF FORCE MAIN CROWN.
3. PROVIDE SMOOTH UPWARD SLOPING CHANNEL FROM FORCE MAIN TO GRAVITY SEWER.
4. FOR TRANSITION MANHOLE DETAILS FOR A GRINDER PUMP/PRESSURE SEWER SYSTEM, SEE PS/4.0 AND PS/4.1.



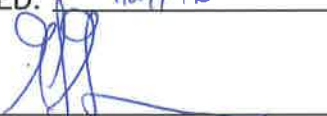
WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>9/29/16</u>  Chief Engineer	STANDARD DETAIL TRANSITION MANHOLE FORCE MAIN TO GRAVITY SEWER	$\frac{S}{6.6}$
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NOTES:

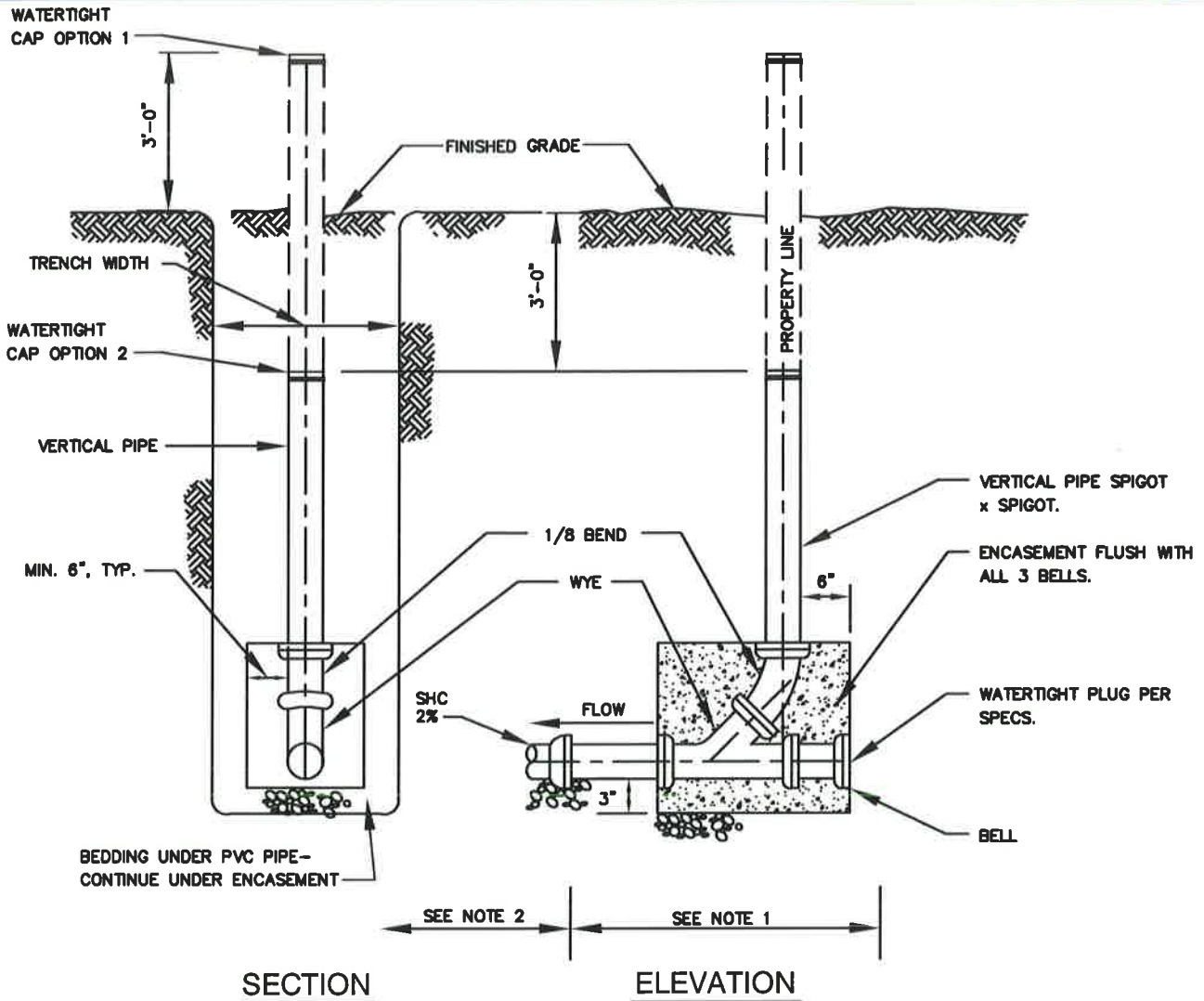
1. SEE DETAILS S/6.2, S/6.3, S/6.3a, OR AS DETAILED ON DRAWINGS.
2. SHC IN RIGHT OF WAY SHALL TERMINATE IN ACCORDANCE WITH DETAIL S/6.8. TERMINATION SHALL BE EXTENDED TO THE RIGHT OF WAY LINE OR PROPERTY LINE WHICHEVER IS CLOSEST TO THE MAIN OR AS INDICATED ON DRAWINGS.

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STANDARD DETAIL
4-INCH AND 6-INCH SEWER
HOUSE CONNECTION WITHIN
WSSC RIGHT OF WAY

S
6.7



NOTES:

1. PROVIDE THIS CONNECTION ON ALL SHC'S. UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. FOR CONTINUATION, SEE DETAILS, S/6.0, S/6.1 S/6.2, S/6.3, S/6.3a, S/6.4, S/6.5 AND S/6.7.
3. VERTICAL RISER AND 1/8 BEND SHALL BE SAME DIAMETER AS HORIZONTAL SHC PIPE.
4. CONCRETE ENCASEMENT NOT REQUIRED FOR DUCTILE IRON WYE AND BEND.
5. CONCRETE ENCASEMENT SHALL BE PRECAST WITH MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
 - A) JOB SITE PRECAST SHALL BE CURED AT LEAST 7 DAYS BEFORE INSTALLATION.
 - B) APPROVED MANUFACTURER'S PRECAST SHALL BE CURED AT LEAST 80% OF REQUIRED STRENGTH BEFORE DELIVERY.
6. FOR OPTION 2 INSTALLATION PROVIDE 2"x4" SHC MARKER BOARD PER SPECIFICATIONS. SOIL FROM CAP TO 12" ABOVE CAP SHALL BE HAND TAMPERED ONLY.
7. ALL HOUSE CONNECTION RENEWALS WILL BE TERMINATED IN ACCORDANCE WITH DETAIL S/5.0.

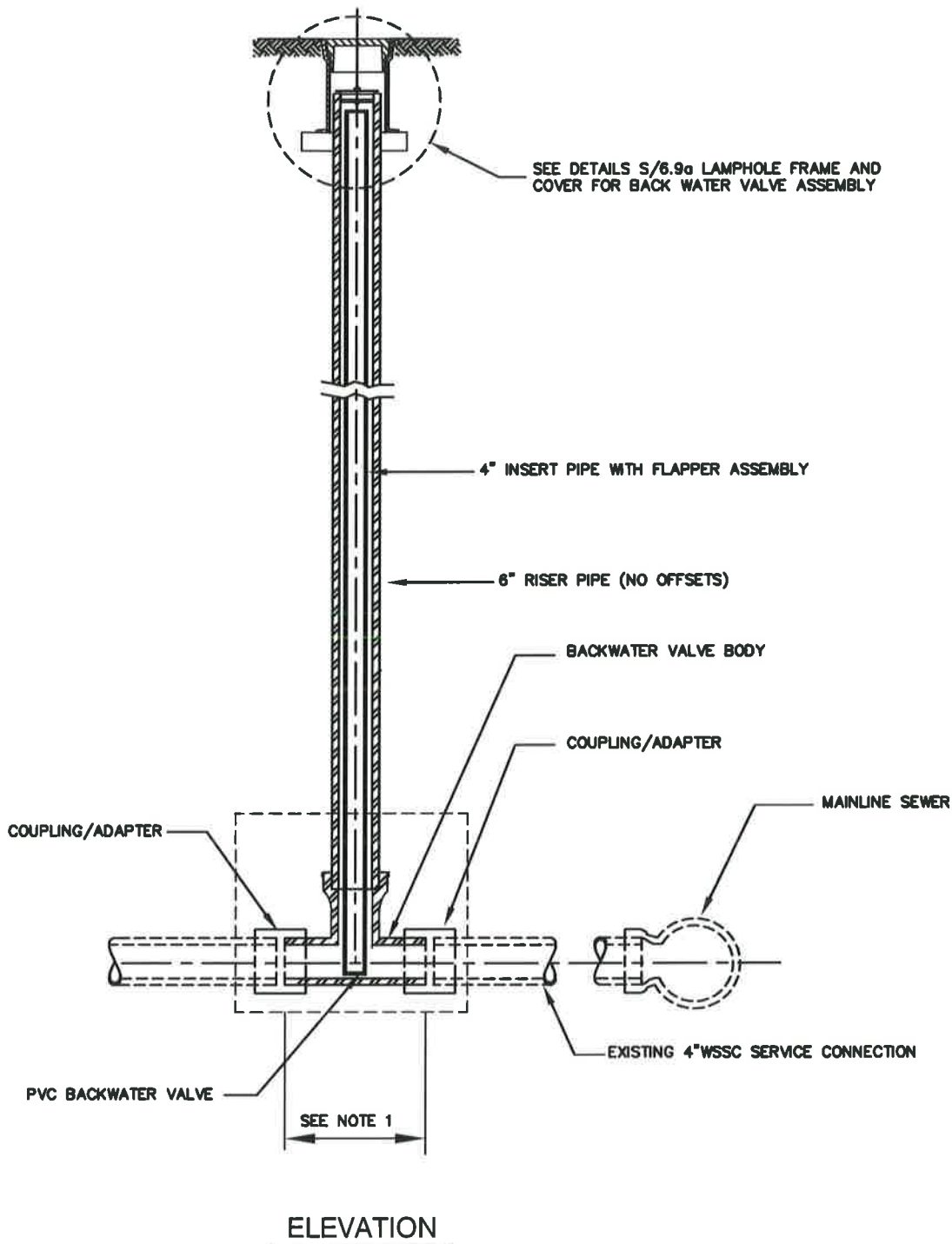
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STANDARD DETAIL
4-INCH AND 6-INCH SEWER
HOUSE CONNECTIONS
TERMINATING AT THE
PROPERTY LINE

S
6.8



NOTE:

1. INSTALL BACKWATER VALVE ASSEMBLY IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

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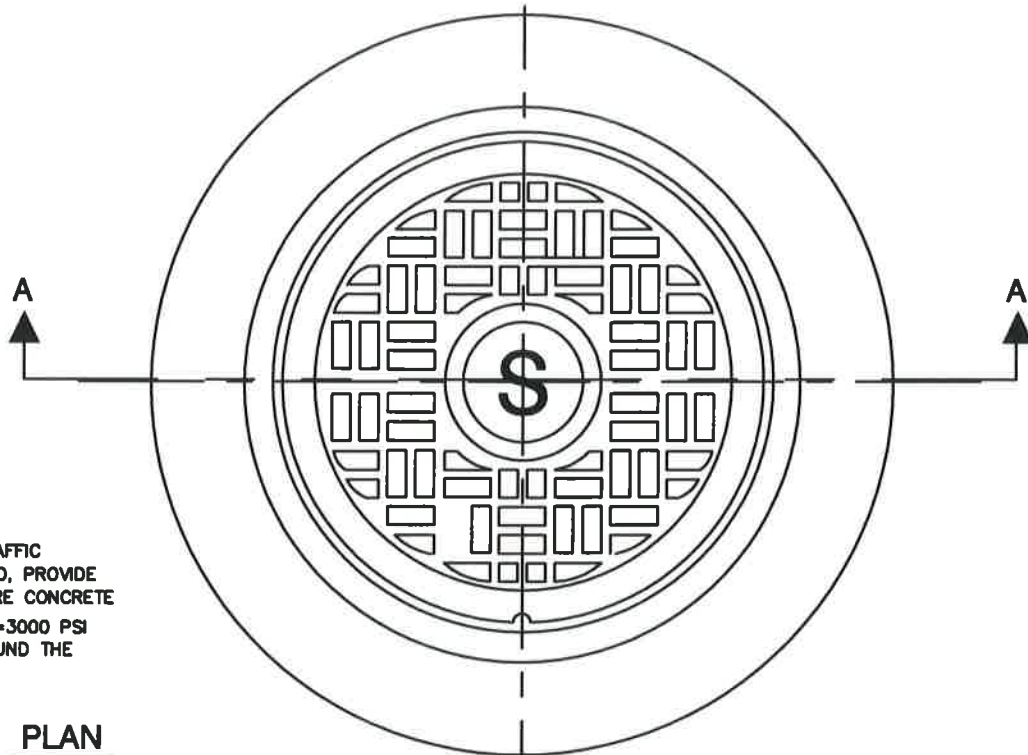
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STANDARD DETAIL

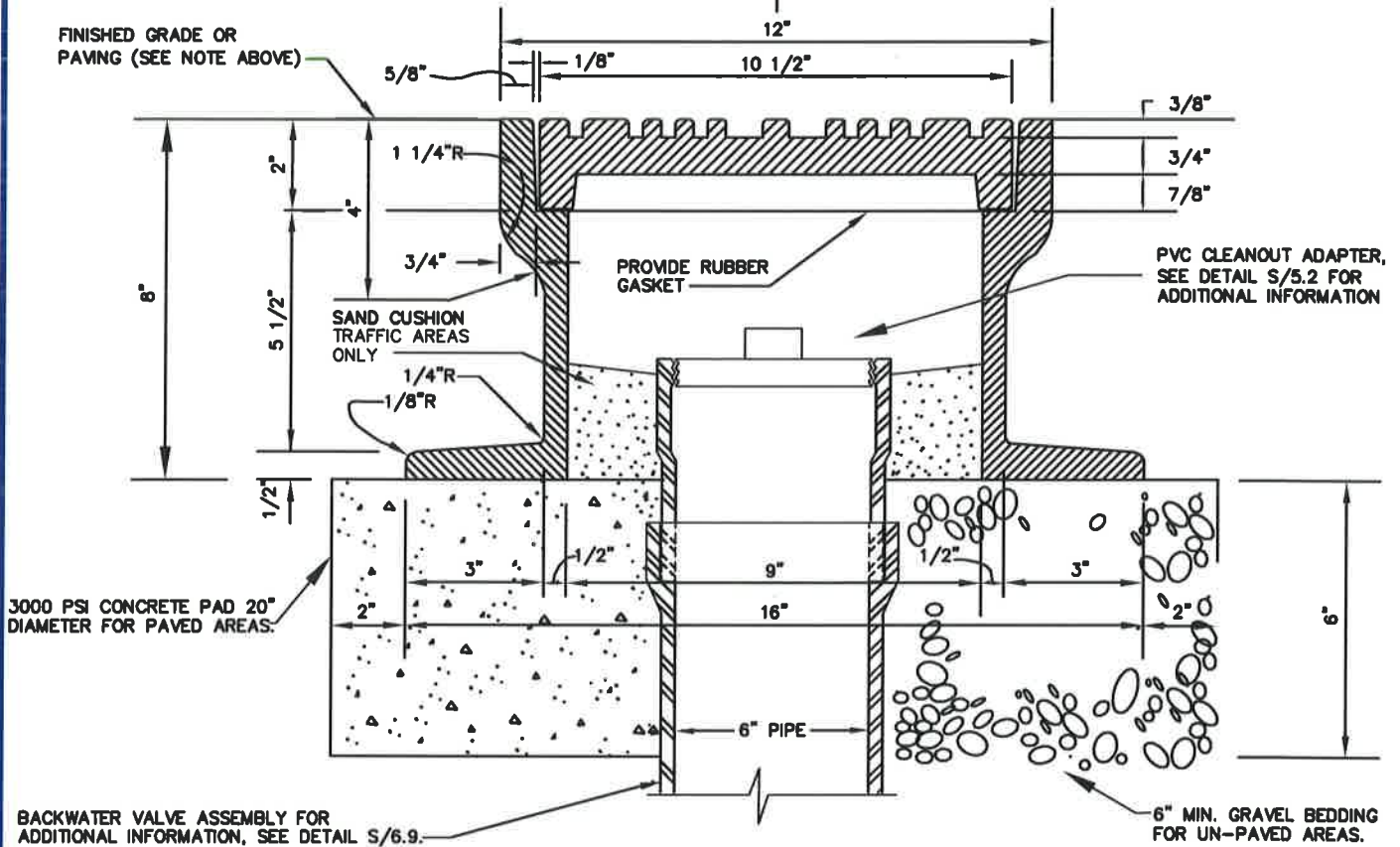
BACKWATER VALVE ASSEMBLY
FOR 4-INCH EXISTING
SEWER HOUSE CONNECTIONS

S
6.9




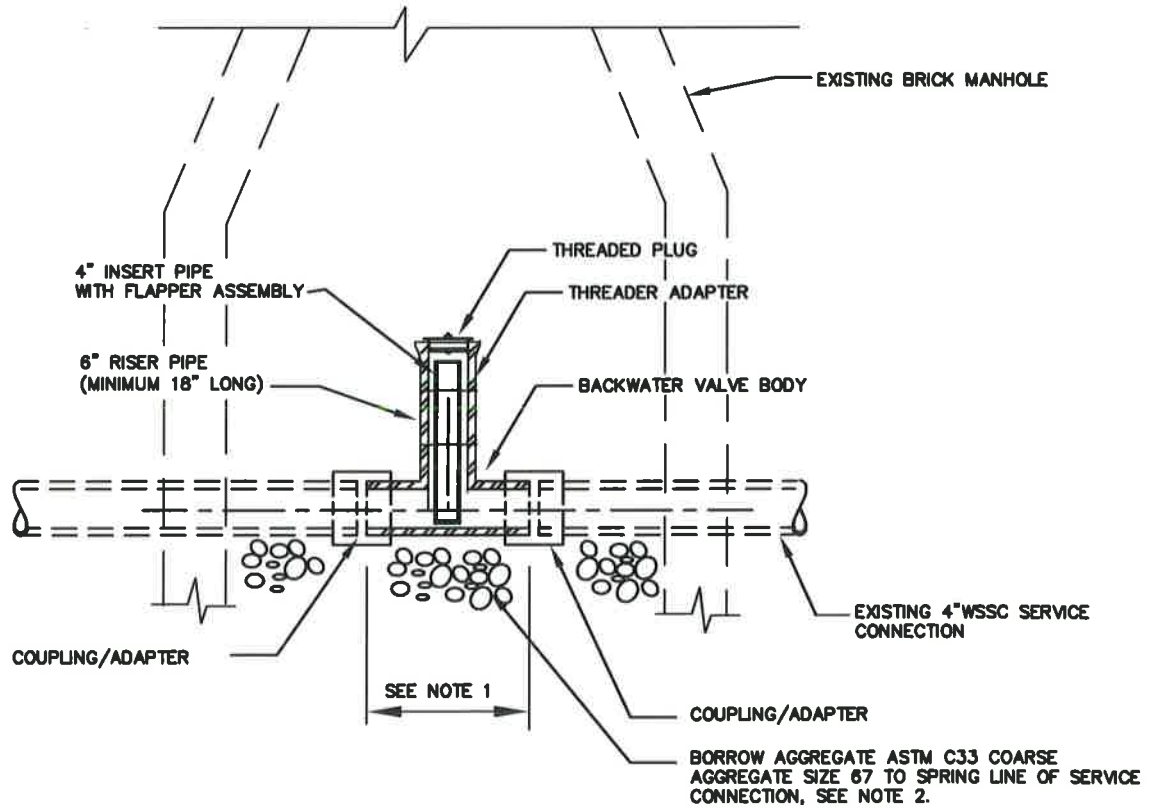
NOTE: IN VEHICULAR TRAFFIC AREAS NOT PAVED, PROVIDE 2'x2'x8"(H) SQUARE CONCRETE ENCASMENT ($f_c=3000$ PSI @ 28 DAYS) AROUND THE FRAME.

PLAN



SECTION A-A

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <i>9/29/16</i>  Chief Engineer	STANDARD DETAIL BACKWATER VALVE (LAMPHOLE) COVER ASSEMBLY	S 6.9a
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ELEVATION

NOTES:

1. REMOVE EXISTING BACKWATER ASSEMBLY AND INSTALL BACKWATER VALVE ASSEMBLY IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. FILL TO SPRINGLINE OF BACKWATER VALVE ASSEMBLY AND EXISTING SERVICE CONNECTION WITH BORROW AGGREGATE AS SHOWN.

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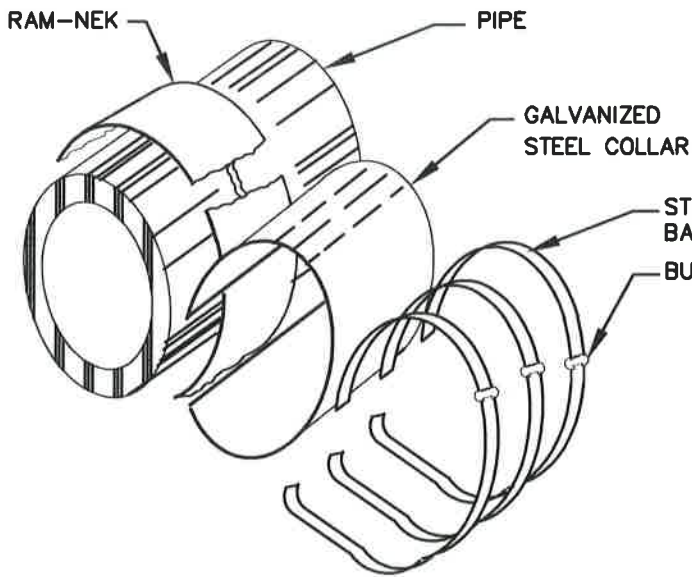
9/29/16

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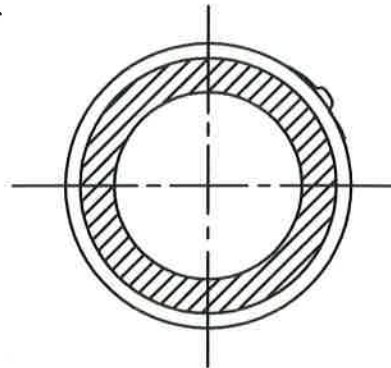
STANDARD DETAIL

REPLACEMENT OF EXISTING
BACKWATER VALVE ASSEMBLY
IN EXISTING BRICK MANHOLE

S
6.9b



PIPE SIZE	NUMBER OF STRIPS OF RAM-NEK	WIDTH OF GALVANIZED STEEL COLLAR	NUMBER OF STAINLESS STEEL BANDS
6"	3	9"	3
8"	3	9"	3
10"	5	12"	5
12"	5	12"	5



- SEWER REPAIR CLAMP TO BE USED ON PIPE NOT GREATER THAN 12" IN DIAMETER.
- SEWER REPAIR CLAMP NOT TO BE USED ON GAPS GREATER THAN 1/2".
- PIPE SHALL BE CLEANED OF DIRT, GREASE, ETC., WITH SCRUB-BRUSH AND CLEAN WATER AND ALLOWED TO DRY BEFORE APPLYING CLAMP. THE CRACKED PIPE SHALL BE REALIGNED TO THE SLOPE OF ADJACENT PIPE BEFORE INSTALLING THE CLAMP.
- THE AREA ON THE PIPE WHICH THE CLAMP IS TO BE APPLIED SHALL BE GIVEN A THIN COAT ROOFING CEMENT.
- STRIPS OF "RAM-NEK" ARE TO BE APPLIED TO THE PIPE SUCH THAT NO STRIP STRETCHES MORE THAN 1". ADJACENT STRIPS OF "RAM-NEK" SHALL ABUT EACH OTHER BUT NOT OVERLAP. THE "RAM-NEK" SHALL COMPLETELY SURROUND THE PIPE WITH ONE TURN OF "RAM-NEK" CENTERED OVER THE CRACK. THE "RAM-NEK" SHALL BE APPLIED TO THE PIPE ONE LAYER THICK. AN EQUAL NUMBER OF STRIPS OF "RAM-NEK" SHALL BE PLACED ON ALTERNATE SIDES OF THE STRIP WHICH LIES OVER THE CRACK. HOWEVER, IN THE CASE OF CORRUGATED CONCRETE PIPE, SEVERAL LAYERS OF "RAM-NEK" SHALL BE APPLIED IN THE DEPRESSIONS SO AS TO PRESENT AN EVEN SURFACE, AFTER WHICH THE SPECIFIED NUMBER OF STRIPS OF "RAM-NEK" SHALL BE APPLIED. THE "RAM-NEK" USED UNDER THE CLAMP SHALL BE APPROXIMATELY 29" LONG, 2" WIDE, AND 1/4" THICK. THE "RAM-NEK" SHALL BE KEPT AT ROOM TEMPERATURE UNTIL JUST BEFORE APPLYING TO PIPE.
- A GALVANIZED STEEL COLLAR SHALL BE WRAPPED TIGHTLY AROUND THE "RAM-NEK" AND THE TWO ENDS OF THE GALVANIZED STEEL COLLAR SHALL OVERLAP NOT MORE THAN 4" NOR LESS THAN 3". THE GALVANIZED STEEL COLLAR SHALL BE CENTERED OVER THE CRACK.
- THE FIRST STAINLESS STEEL BAND SHALL BE PLACED SUCH THAT IT RESTS ON THE GALVANIZED STEEL COLLAR AND ABOVE THE CRACK. SUBSEQUENT BANDS SHALL BE PLACED ALTERNATELY, ON SIDE OF THE MIDDLE BAND AND THEN ON THE OTHER SIDE. THE BUCKLES FOR THE STAINLESS STEEL BAND SHALL BE PLACED SO THAT THEY REST ON THE AREA OF OVERLAP OF THE TWO ENDS OF THE GALVANIZED STEEL COLLAR. ADJACENT BUCKLES SHALL BE STAGGERED. NO STAINLESS STEEL BANDS SHALL BE PLACED OVER THE GALVANIZED COLLAR WHERE SAID COLLAR EXTENDS PAST THE "RAM-NEK". THE STAINLESS STEEL BANDS SHALL BE TIGHTENED WITH THE APPROPRIATE BANDING TOOL SUCH THAT THE "RAM-NEK" YIELDS SLIGHTLY.
- IN CASES WHERE THE CRACK IN THE PIPE IS NOT PERPENDICULAR TO THE AXIS OF THE PIPE, THE "RAM-NEK" SHALL EXTEND A DISTANCE OF 3"(6" & 8") OR 5"(10" & 12") PIPE, ALONG THE AXIS OF THE PIPE FROM ANY POINT OF THE CRACK. FOR THESE CASES, THE GALVANIZED STEEL COLLAR SHALL EXTEND A DISTANCE OF 2" BEYOND EACH END OF THE "RAM-NEK" ALONG THE PIPE AXIS. THE NUMBER OF STAINLESS STEEL BANDS TO BE USED IN THESE CASES SHALL CONFORM TO THE INCLUDED CHART FOR THE GIVEN PIPE SIZE, OR AS DIRECTED BY THE ENGINEER.

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STANDARD DETAIL
METHOD OF REPAIRING
CRACKED CONCRETE
OR VITRIFIED CLAY
SEWER PIPE

S
7.2

9. A BURLAP DIAPER SHALL BE PUT AROUND THE CLAMP SO THAT IT EXTENDS 2 1/2" PAST EACH END OF GALVANIZED STEEL COLLAR ALONG THE PIPE AXIS. THE DIAPER SHALL THEN BE FILLED WITH A SAND-CEMENT MORTAR IN A RATIO OF 2 TO 1 TO A MINIMUM THICKNESS OF 1 1/2" THE MORTAR SHALL COMPLETELY FILL THE VOID BETWEEN THE PIPE AND THE GALVANIZED STEEL COLLAR WHERE SAID COLLAR EXTENDS PAST THE "RAM-NECK". THE MORTAR SHALL BE OF A POURABLE CONSISTENCY.
10. THE GALVANIZED STEEL COLLAR SHALL BE OF 20 TO 24 GAGE SHEET METAL.
11. THE STAINLESS STEEL BANDS SHALL BE 3/4" CORROSION RESISTANT BAND-IT BAND, OR EQUAL.
12. THE STAINLESS STEEL BUCKLES SHALL BE 3/4" CORROSION RESISTANT BAND-IT BUCKLES, OR EQUAL.
13. THE STAINLESS STEEL BANDS AND BUCKLES SHALL BE APPLIED TO THE CLAMP USING A BAND-IT TOOL BANDING MACHINE, OR EQUAL.

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STANDARD DETAIL
 METHOD OF REPAIRING
 CRACKED CONCRETE
 OR VITRIFIED CLAY
 SEWER PIPE

S
7.2a

CRITERIA


DEAD LOAD BASED ON MARSTON FORMULA WITH SATURATED CLAY. W=120 P.C.F., H=20 L.L.
 +AASHTO IMPACT. GRANULAR CRADLE-BEDDING FACTOR=1.50. SAFETY FACTOR 1.0 @ 0.01" CRACK.

R.C.P. PIPE DIA.	CLASS (ASTM C-76)	MAX. DEPTH OF COVER IN FT.
12"	III	5
12"	IV	8
12"	V	14
15"	III	6
15"	IV	9
15"	V	17
18"	III	6
18"	IV	11
18"	V	18
21"	III	7
21"	IV	12
21"	V	19
24"	III	7
24"	IV	11
24"	V	18
27"	III	7
27"	IV	11
27"	V	19
30"	III	7
30"	IV	12
30"	V	20
33"	III	7
33"	IV	11
33"	V	19

R.C.P. PIPE DIA.	CLASS (ASTM C-76)	MAX. DEPTH OF COVER IN FT.
36	III	8
36	IV	12
36	V	20
42	III	8
42	IV	13
42	V	21
48	III	8
48	IV	13
48	V	21
54	III	9
54	IV	13
54	V	22
60	III	9
60	IV	14
60	V	22
66	III	9
66	IV	14
66	V	23
72	III	10
72	IV	15
72	V	23

NOTES:

1. THIS DETAIL APPLIES TO PIPE PLACED IN A TRENCH CONDITION ONLY.
2. WIDTH OF TRENCH FROM 6" ABOVE TOP OF PIPE TO BOTTOM OF THE TRENCH SHOULD NOT EXCEED THE MAX. CLEAR TRENCH WIDTH SHOWN IN DETAIL M/8.0 PLUS 1 FT.
3. WHEN ADDITIONAL FILL IS ADDED OVER A TRENCH INSTALLATION, OR AN EXISTING PIPE, OR IF THE PIPE IS INSTALLED IN AN EMBANKMENT CONDITION, THIS DETAIL DOES NOT APPLY. SPECIAL ANALYSIS IS REQUIRED IN SUCH CASES.

WASHINGTON SUBURBAN SANITARY COMMISSION	APPROVED: <u>9/29/16</u>  Chief Engineer	STANDARD DETAIL LOAD SCHEDULE FOR R. C. PIPES	$\frac{S}{8.0}$
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PVC GRAVITY SEWER

MAXIMUM COVER OVER PIPE
USING BORROW AGGREGATE MATERIAL

22'

NOTE:

1. FOR ADDITIONAL INFORMATION, SEE DETAIL M/8.1c AND SPECIFICATIONS.
2. FOR PVC AWWA C900/905, SEE DETAIL W/6.1.

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STANDARD DETAIL

POLYVINYL CHLORIDE (PVC)
GRAVITY SEWER PIPE
LOAD CHART

$\frac{S}{8.1}$