

To request translation or disability-related accommodations, please contact us at:
email: wescustomerservice@clackamas.us phone: [503-742-4567](tel:503-742-4567)

Si quiere solicitar servicios de traducción o adaptaciones para la discapacidad,
contáctenos en/al
email: wescustomerservice@clackamas.us phone: [503-742-4567](tel:503-742-4567)

Чтобы запросить перевод или приспособления, связанные с инвалидностью,
пожалуйста, свяжитесь с нами по:
email: wescustomerservice@clackamas.us phone: [503-742-4567](tel:503-742-4567)

Щоб попросити переклад або спеціальні послуги для осіб з особливими
потребами, зверніться до нас, скориставшись такими контактними даними:
email: wescustomerservice@clackamas.us phone: [503-742-4567](tel:503-742-4567)

如需翻译服务或残障相关的协助，请与我们联系：
email: wescustomerservice@clackamas.us phone: [503-742-4567](tel:503-742-4567)

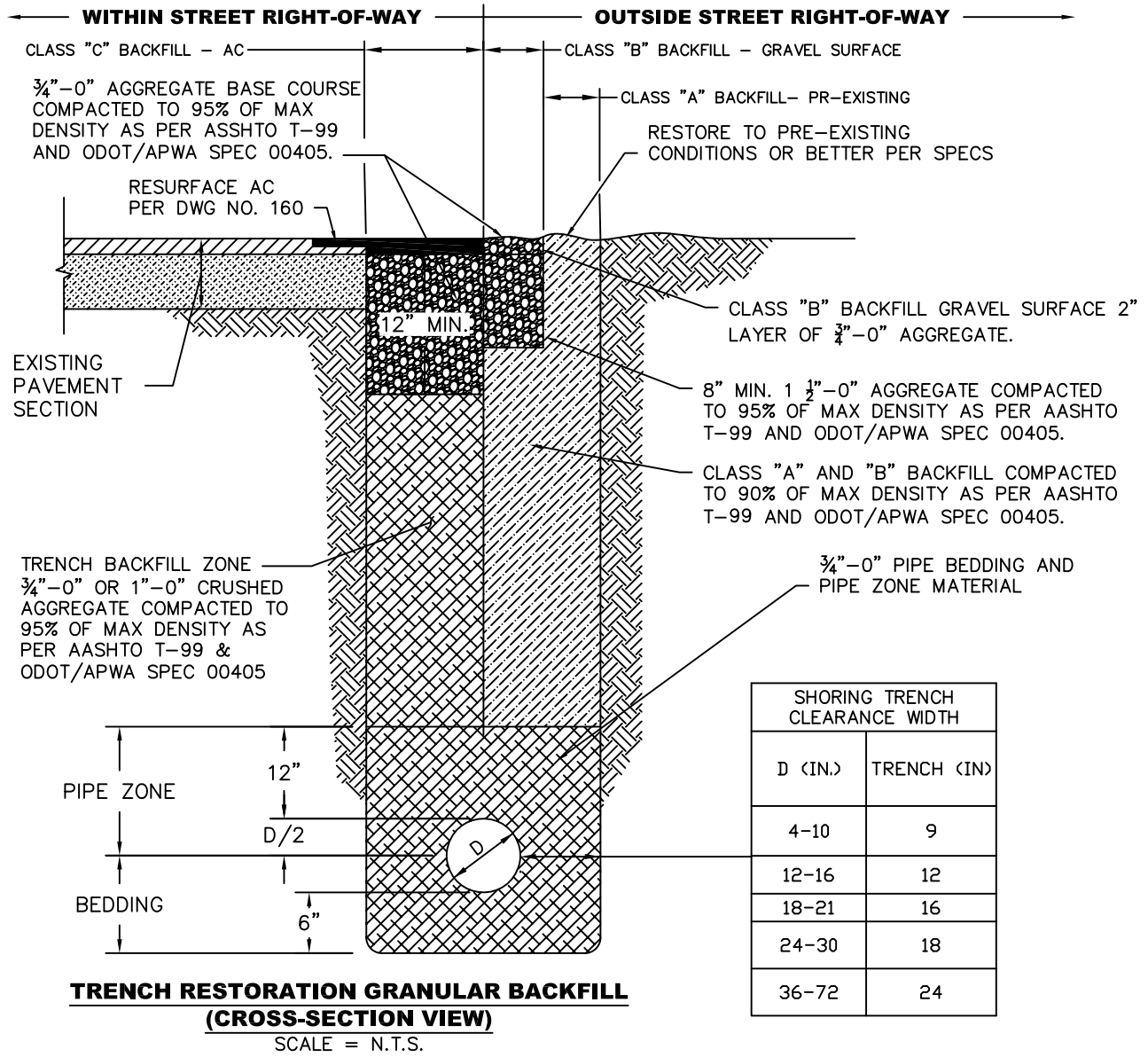
Để yêu cầu dịch vụ dịch thuật hoặc điều chỉnh liên quan đến tình trạng khuyết tật,
vui lòng liên hệ với chúng tôi qua
email: wescustomerservice@clackamas.us phone: [503-742-4567](tel:503-742-4567)



Table of Contents

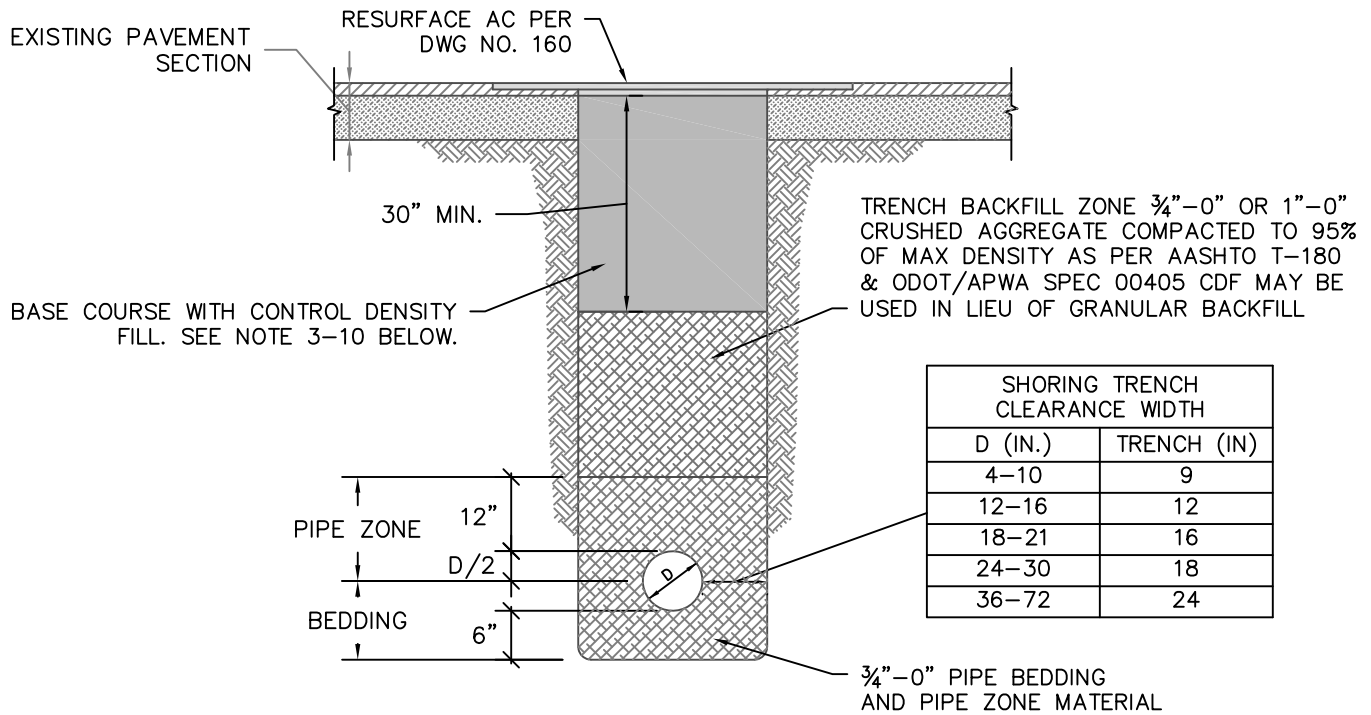
APPENDIX B – SANITARY STANDARD DETAIL DRAWINGS

<u>Drawing No.</u>	<u>Name</u>
SAN-001	TRENCH RESTORATION CLASS BACKFILL "A", "B" & "C"
SAN -002	TRENCH RESTORATION WITH CDF
SAN -003	MANHOLE - TYPICAL
SAN -004	MANHOLE – FLAT TOP
SAN -005	MANHOLE _ OUTSIDE DROP
SAN -006	MANHOLE - BASE
SAN -007	MANHOLE – CONNECTION FLEXIBLE
SAN -008	MANHOLE - STEP
SAN -009	MANHOLE – NEW OVER EXISTING PIPE
SAN -010	STANDARD FRAME & COVER
SAN -011	SURBURBAN FRAME & COVER
SAN -012	FRAME & COVER SECURE FOR TRAFFIC AREAS
SAN -013	FRAME & COVER WATERTIGHT FOR NON TRAFIC AREAS
SAN -014	CHANNEL – INTERSECTION
SAN -015	CHANNEL – 90 DEGREES
SAN -016	CHANNEL - SLIDE
SAN -017	ANCHOR WALL
SAN -018	CLEANOUT PAD
SAN -019	SANITARY CURB STAMP
SAN -020	SERVICE CONNECTION CLEANOUT
SAN -021	SERVICE CONNECTION
SAN -022	SERVICE CONNECTION INTO MANHOLE
SAN -023	CONCRETE CAP
SAN -024	CONCRETE ENCASEMENT / CLOSURE COLLAR
SAN -025	CONCRETE MANHOLE CLOSURE COLLAR
SAN -026	MANHOLE CHIMNEY SEAL
SAN -027	PRECAST RING EXTENSION
SAN -028	INSERTA TEE



NOTES:

1. PAVEMENT SHALL BE CUT PER STANDARD DRAWING 200.
2. PROVIDE COMPACT TEST RESULTS FOR TRENCH BACKFILL.

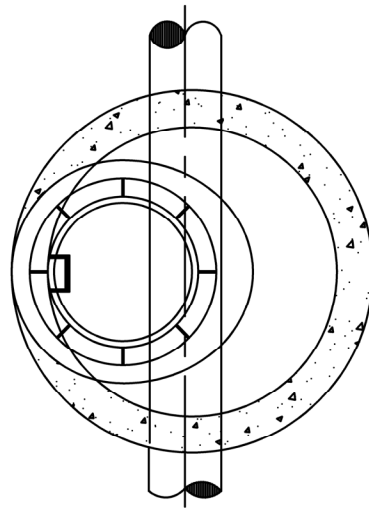


TRENCH RESTORATION W/ CDF

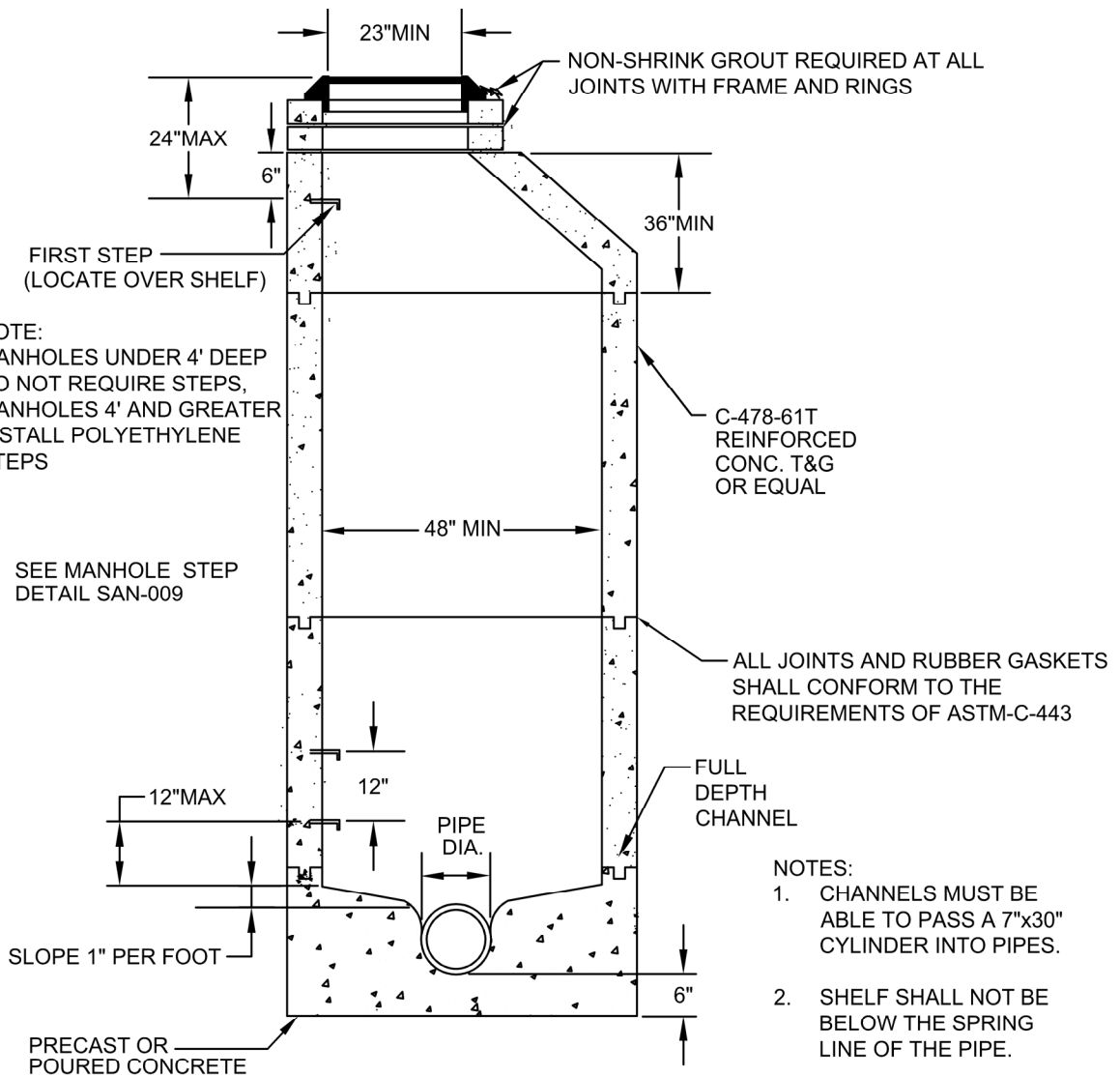
SCALE = N.T.S.

NOTES:

- SAWCUT EXISTING AC PAVEMENT ACCORDING TO CITY/COUNTY SPECIFICATIONS.
- CONTROL DENSITY FILL (CDF) CONSISTS OF A MIXTURE OF PORTLAND CEMENT, FLY ASH, AGGREGATES, WATER AND ADMIXTURES PROPORTIONED TO PROVIDE A NON-SEGREGATING, SELF-CONSOLIDATING, FREE-FLOWING MATERIAL WHICH WILL RESULT IN A HARDENED, DENSE, NON-SETTLING FILL PRODUCING UNCONFINED COMPRESSIVE 28 DAY STRENGTH FROM 100 PSI TO A MAXIMUM OF 200 PSI.
- CONTRACTOR WILL PROVIDE BATCH WEIGHTS SHOWING THE AMOUNTS OF ALL INGREDIENTS IN THE MIX, BATCH TIME, AND THE TOTAL AMOUNT OF THE BATCH.
- CDF SHALL BE PERFORMANCE BASED AND MEET THE FOLLOWING CRITERIA:
 - TYPE F FLY ASH: 200 LB MIN, TYPE I OR II CEMENT: 50 LB MIN
 - SETTLING SHALL BE LESS THAN 1/8" PER FT DEPTH
 - FINE AGGREGATE (LESS THAN 3/8") SHALL BE USED
 - CONCRETE UNIT WEIGHT SHALL BE 100 PCF MIN
- CDF SHALL NOT BE PLACED ON FROZEN GROUND. DURING PLACEMENT TEMPERATURE MUST BE AT LEAST **34 DEGREES F. AND RISING.** CDF PLACING SHALL STOP WHEN TEMPERATURE IS 38 DEGREES F OR LESS AND FALLING.
- TRENCH SECTIONS TO BE FILLED WITH CDF SHALL BE CONTAINED AT EITHER END OF THE TRENCH SECTION BY BULKHEADS OR EARTH FILL.
- DURING CDF CURE TIME (TYP. 48 HOURS) THE CONTRACTOR SHALL INSTALL STEEL SHEETS OR OTHER PROTECTIVE DEVICES TO ALLOW FOR THE PASSAGE AND SAFETY OF TRAFFIC AND SO NO LOAD IS TRANSFERRED TO THE CDF.
- CONTRACTOR SHALL ALLOW FOR A MINIMUM 48 HOUR CURE TIME FOR CDF PRIOR TO PLACING ASPHALT. STEEL PLATES ARE NOT ALLOWED IN THE ROADWAY JANUARY THRU MARCH, NOVEMBER AND DECEMBER WITHOUT PRIOR APPROVAL FROM THE CITY AND/OR COUNTY.
- 30 INCH DEPTH OF CDF MAY BE REDUCED IF CONFLICTING WITH PIPE ZONE BACKFILL.



NOTE:
MANHOLE LID TO
BE FLUSH WITH
ROADWAY OR
6" ABOVE FINISH
GRADE IN EASEMENTS

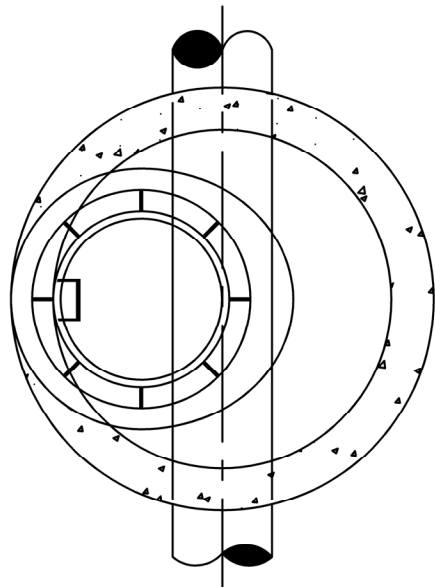


NOTE:
MANHOLES UNDER 4' DEEP
DO NOT REQUIRE STEPS,
MANHOLES 4' AND GREATER
INSTALL POLYETHYLENE
STEPS

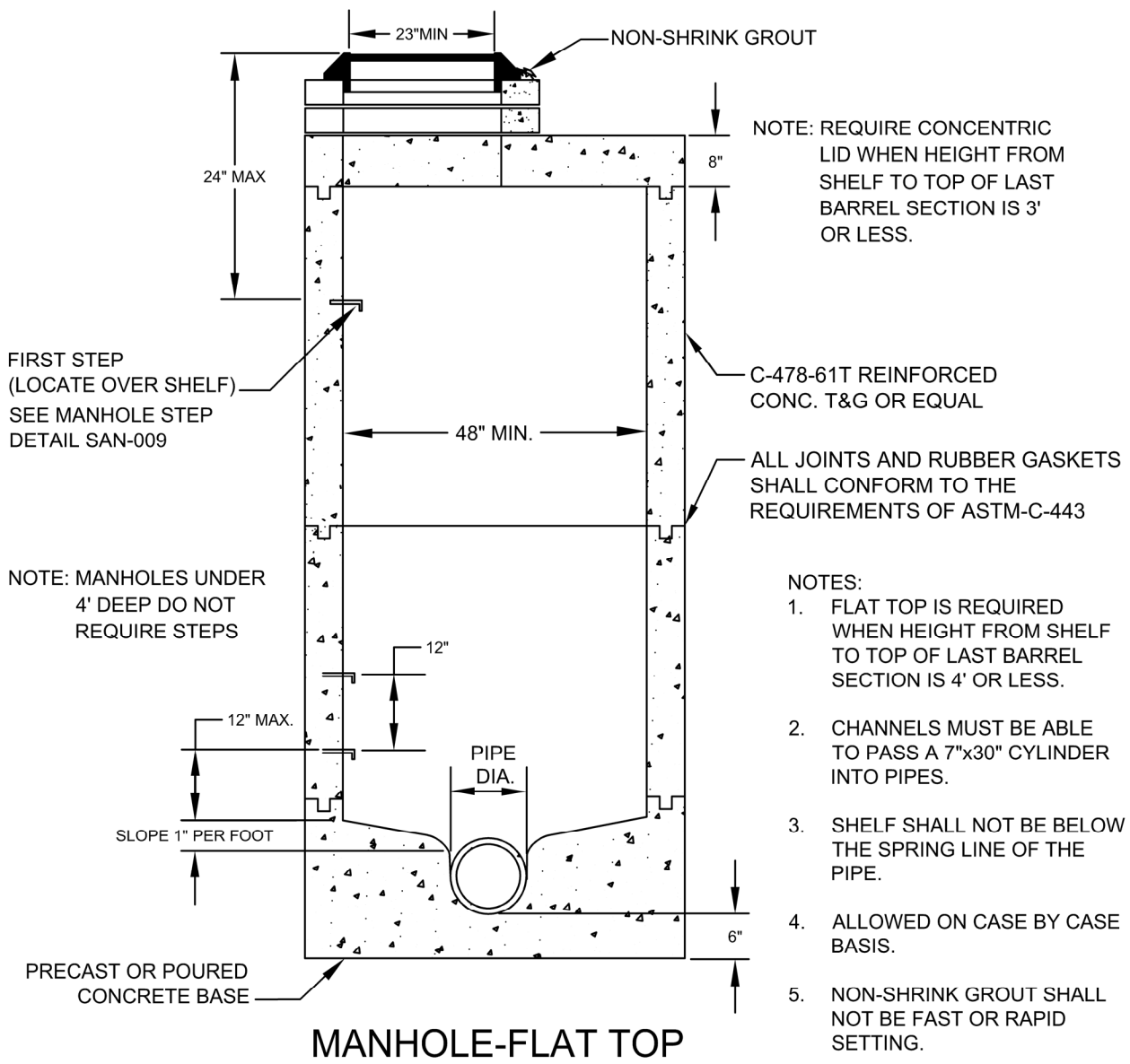
SEE MANHOLE STEP
DETAIL SAN-009

- NOTES:
1. CHANNELS MUST BE ABLE TO PASS A 7"x30" CYLINDER INTO PIPES.
 2. SHELF SHALL NOT BE BELOW THE SPRING LINE OF THE PIPE.
 3. NON-SHRINK GROUT SHALL NOT BE FAST OR RAPID SETTING.

MANHOLE-TYPICAL



NOTE: MANHOLE LID TO BE 6" ABOVE FINISH GRADE IN EASMENTS
BARREL SECTION IS 3'



CLACKAMAS
**WATER
ENVIRONMENT
SERVICES**

CLACKAMAS WES
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

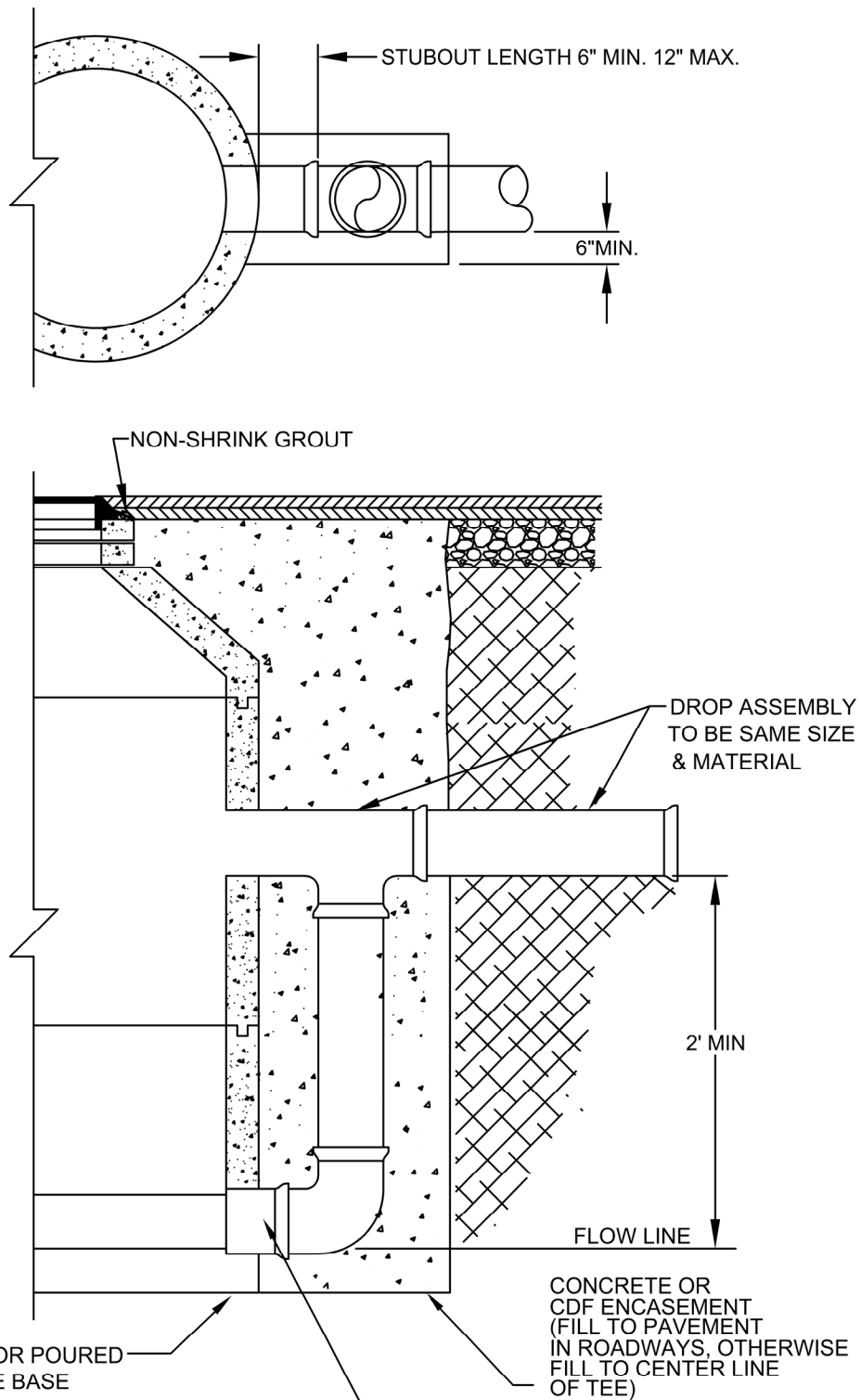
APPROVAL DATE: July, 2021

SCALE: N.T.S.

STANDARD
DRAWING

MANHOLE-FLAT TOP

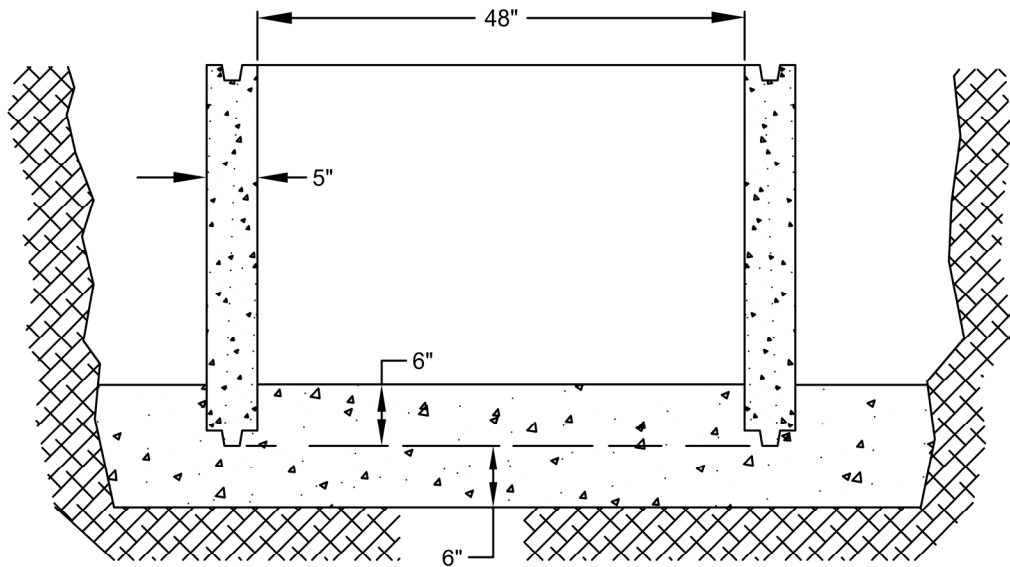
**SAN-
004**



NOTES:

1. SEE THE APPROVED PLANS FOR IE IN & IE OUT ELEVATIONS.
2. NON-SHRINK GROUT SHALL NOT BE FAST OR RAPID SETTING.

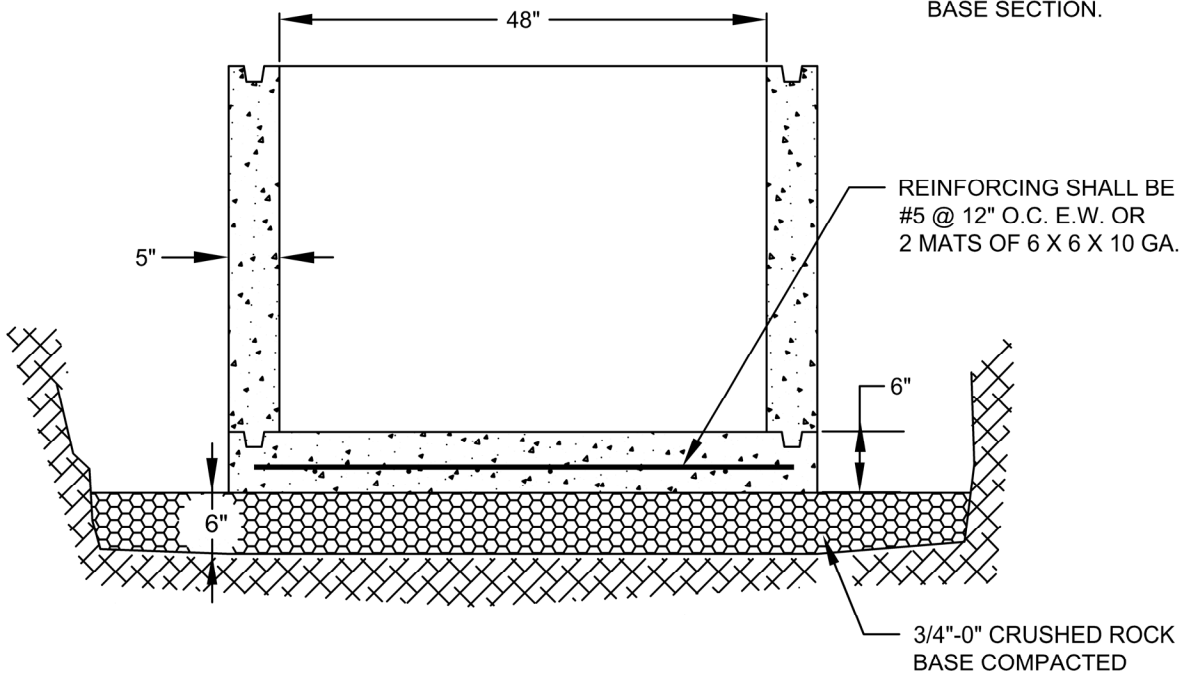
MANHOLE-OUTSIDE DROP



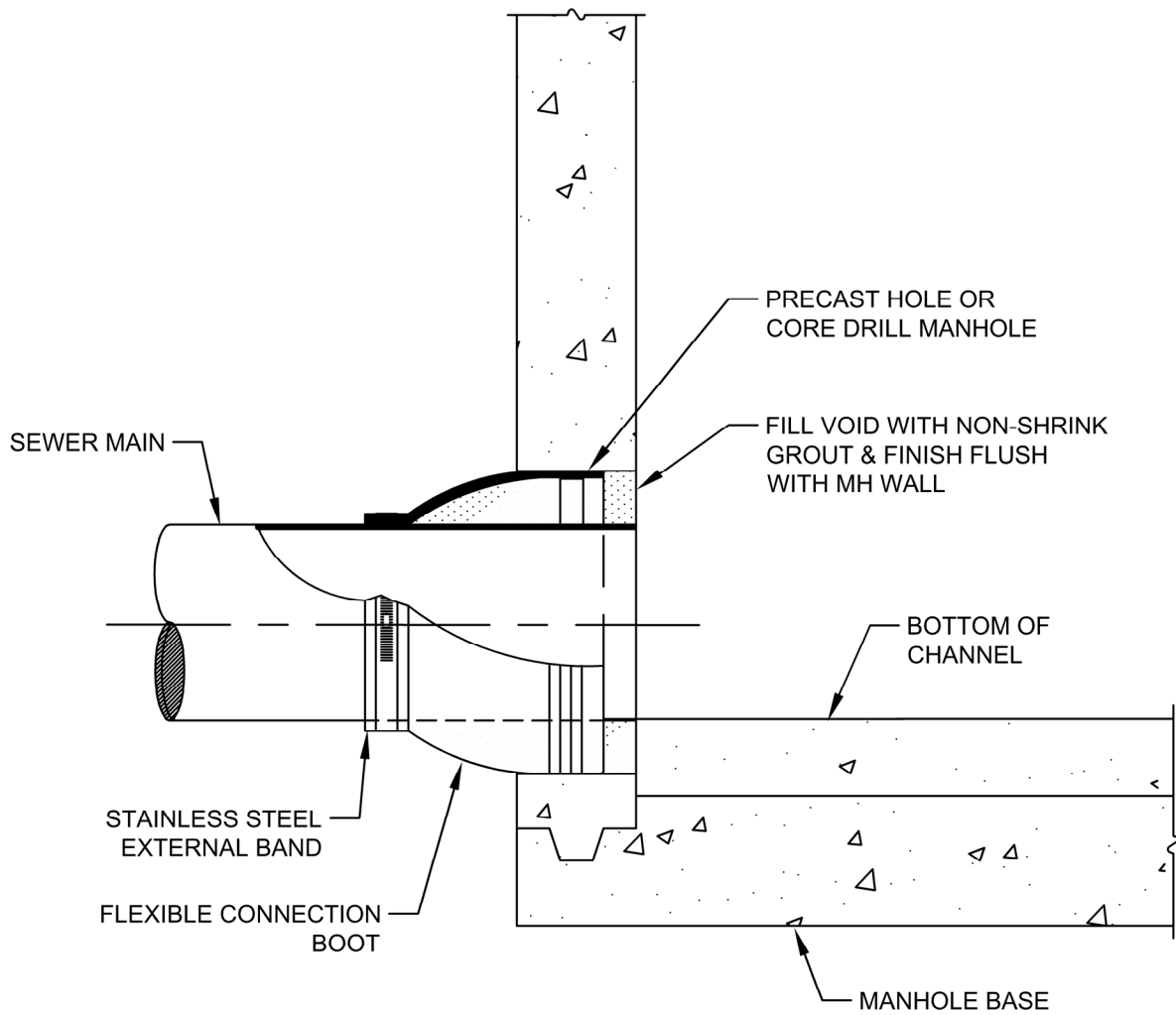
POURED IN PLACE MANHOLE-BASE

NOTE:

1. CONCRETE TO EXTEND 12" OUTSIDE OF MH WALL AND 6" ABOVE THE BOTTOM OF THE BASE SECTION.



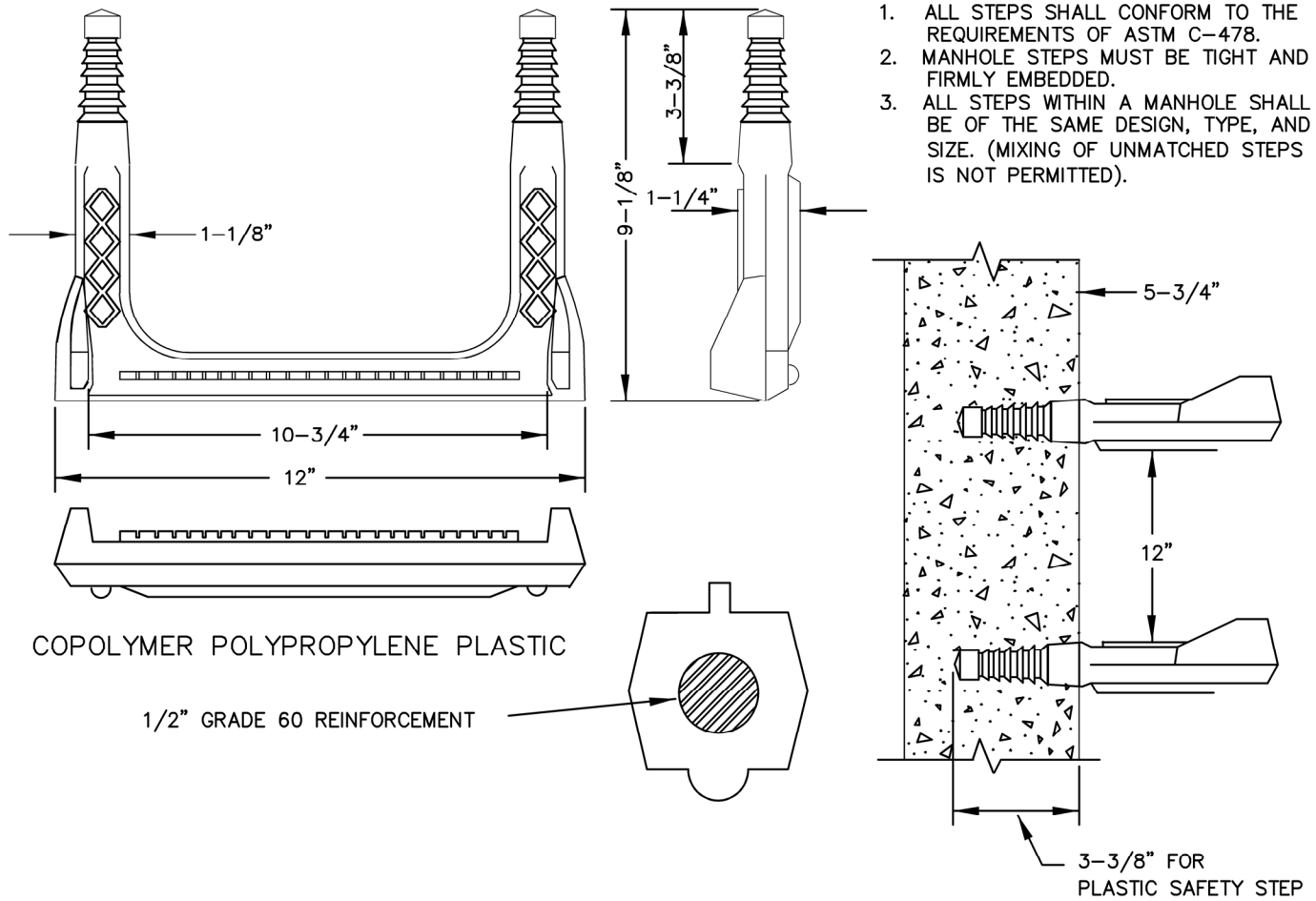
PRECAST MANHOLE-BASE



NOTE:

1. NON-SHRINK GROUT SHALL NOT BE FAST OR RAPID SETTING.

MANHOLE-CONNECTION FLEXIBLE
(KOR-N-SEAL OR EQUAL)



- NOTES:
1. ALL STEPS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
 2. MANHOLE STEPS MUST BE TIGHT AND FIRMLY EMBEDDED.
 3. ALL STEPS WITHIN A MANHOLE SHALL BE OF THE SAME DESIGN, TYPE, AND SIZE. (MIXING OF UNMATCHED STEPS IS NOT PERMITTED).

NOTES:

1. STEPS LOCATED AT 12" O.C. LOCATED ON VERTICAL SIDE OF MANHOLE.
2. STEPS A MAXIMUM OF 24" FROM RIM AND 6" FROM TOP OF CONE TO FIRST STEP.

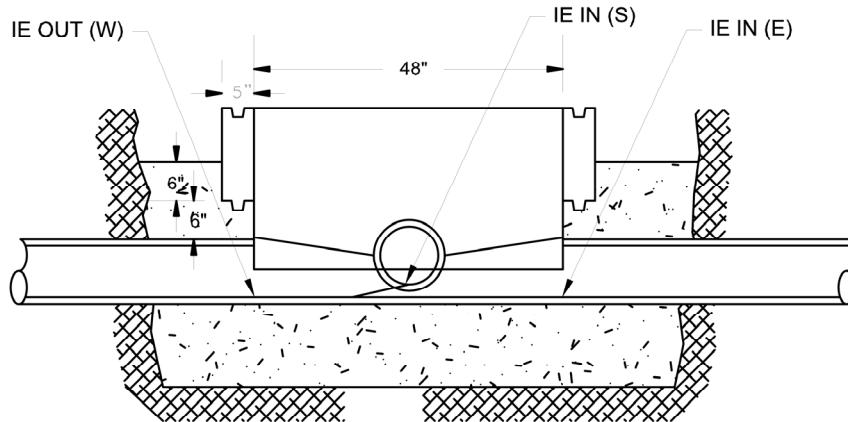
MATERIALS:

PLASTIC:

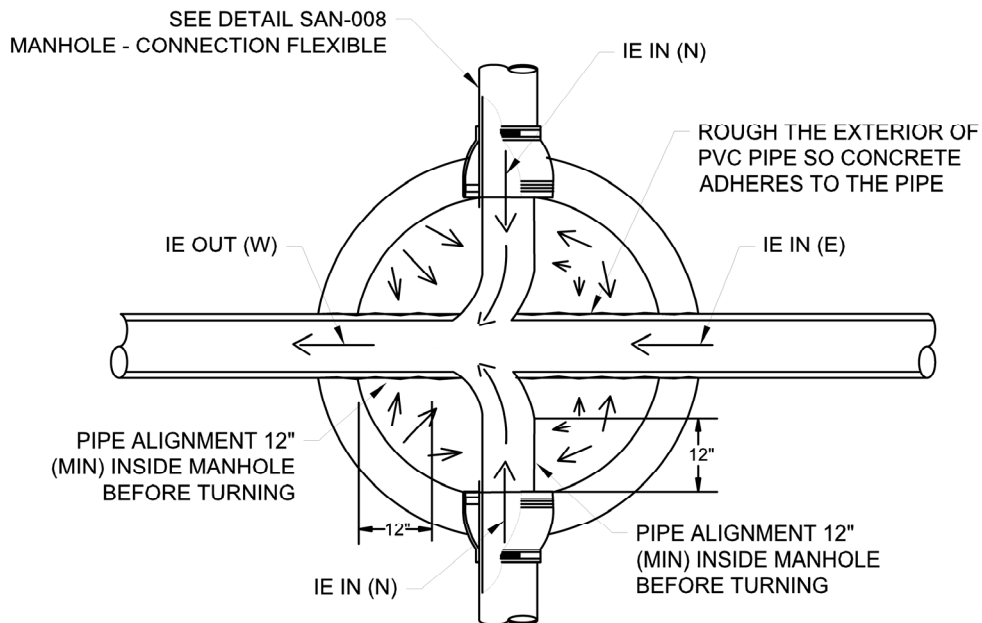
MUST CONFORM WITH ASTM C-478.
 STEEL REINFORCING BAR MINIMUM 1/2" GRADE 60.
 MEETING REQUIREMENTS OF ASTM A615 ENCAPSULATED
 WITH INJECTION MOLDED COPOLYMER POLYPROPYLENE
 WITH SERRATED SURFACES.

NOTES:

1. CONSTRUCT THE MANHOLE WITH THE IE INS AND OUTS PER THE APPROVED PLANS.
2. WES INSPECTION REQUIRED PRIOR TO BACKFILLING/COVERING THE EXISTING PIPES AND AROUND THE MANHOLE CONTACT OUR OFFICE AT 503-742-4567 AND ASK FOR DEVELOPMENT SERVICES, OR EMAIL WES-PERMIT SERVICES@CLACKAMAS.US TO SCHEDULE THE INSPECTION. INSPECTION RESPONSE TIMES CAN VARY, THEREFORE PLAN TO WORK ACCORDINGLY.
3. SET BARREL SECTION OVER EXISTING CONCRETE PIPE; POUR MANHOLE BASE AND NEW CHANNEL. CUT OUT PIPE AND CLEAN, GROUT AND SMOOTH CHANNEL.
4. CHANNELS MUST PASS A 7-INCHES DIA. BY 30-INCHES LONG CYLINDRICAL OBJECT FOR MAINTENANCE PURPOSES.
5. POURED CONCRETE BASSE TO EXTEND 12-INCHES OUTSIDE OF MANHOLE WALL AND 6-INCHES ABOVE AND BELOW THE BOTTOM OF THE BARRELL SECTION.

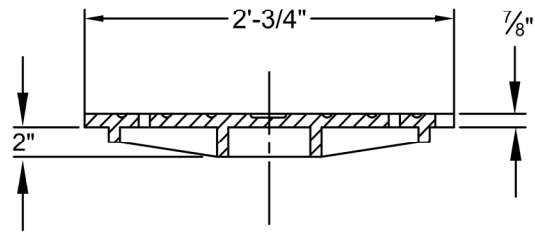
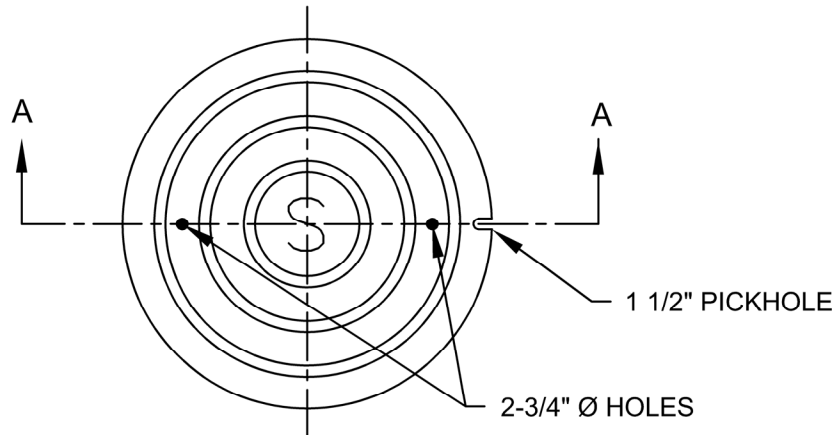


POURED IN PLACE MANHOLE BASE
(SEE DETAIL SAN-007)

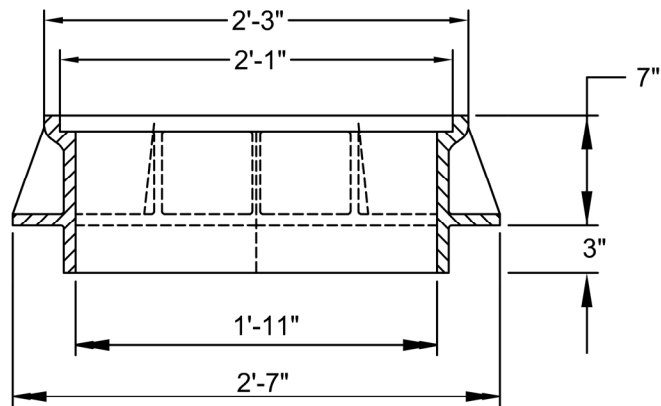


GENERAL PLAN ON
CHANNEL INTERSECTION

STANDARD



SECTION A-A

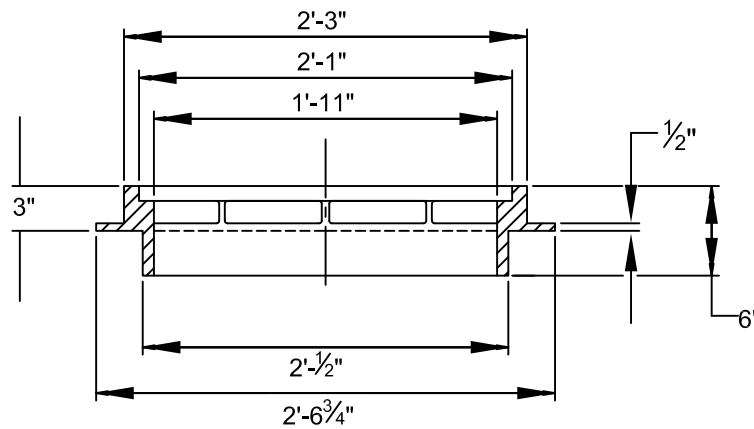
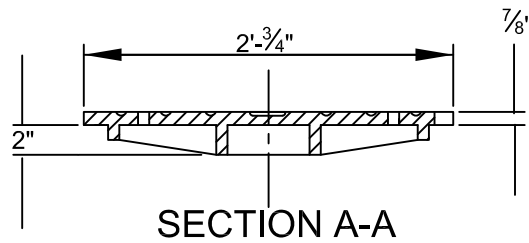
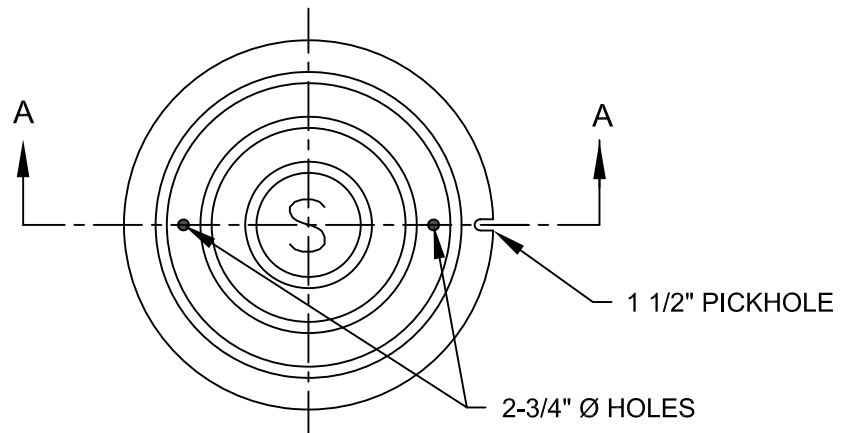


FRAME & COVER STANDARD

NOTES:

1. STANDARD FRAME AND COVER TO BE USED ON STREETS OR AS NOTED ON CONSTRUCTION PLANS.
2. SANITARY COVER WILL HAVE 2 - 3/4" Ø HOLES AND 1 - 1 1/2" PICKHOLE IN LID FOR LIFTING HOOK.

SUBURBAN



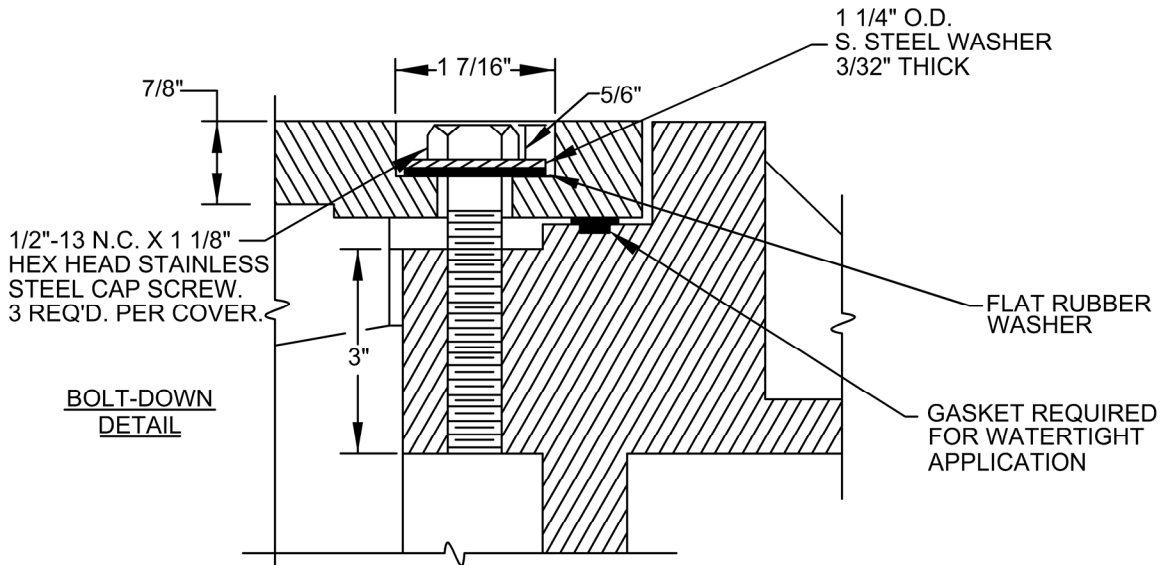
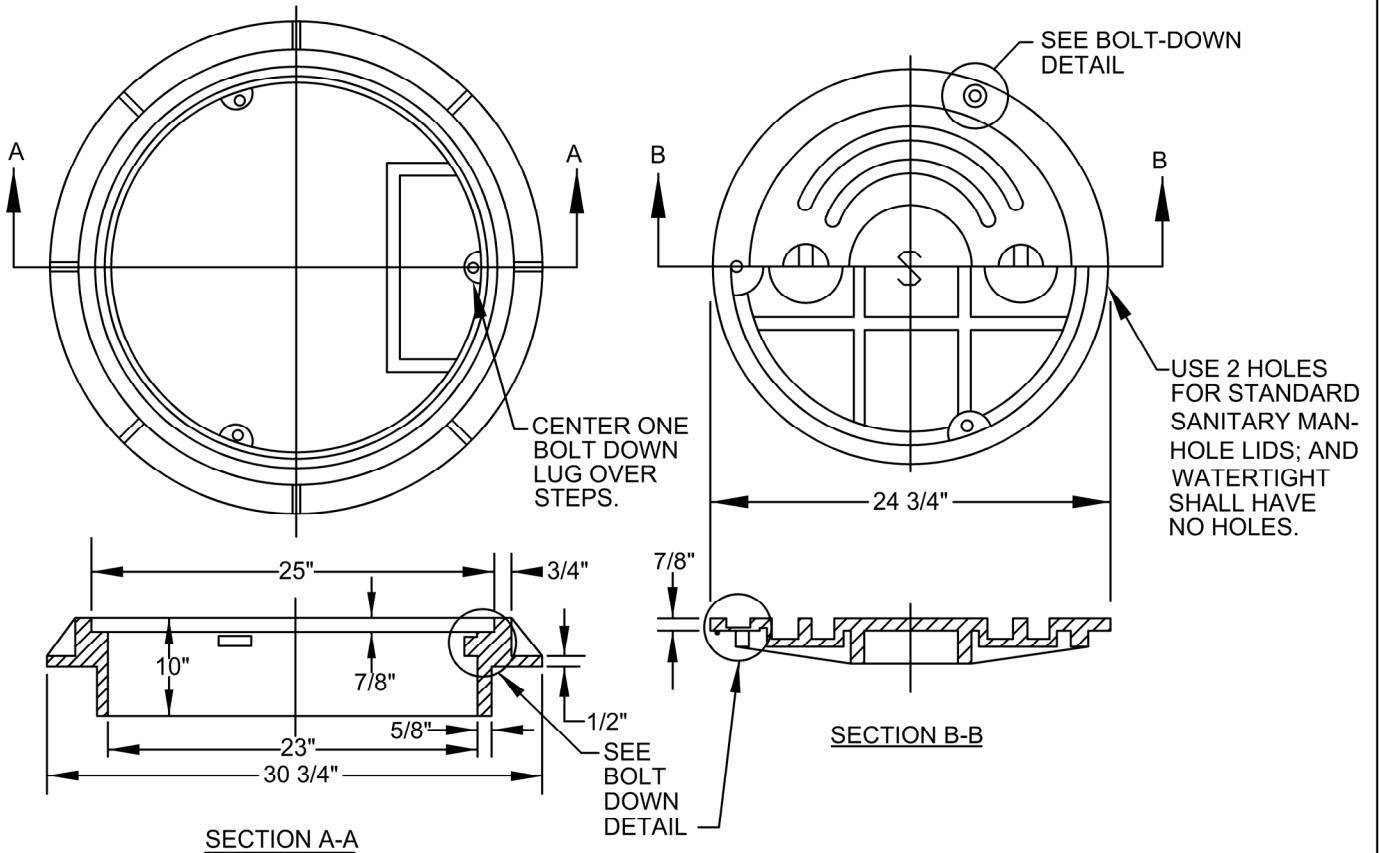
FRAME & COVER SUBURBAN

NOTES

1. SUBURBAN FRAME & COVER CAN BE USED IN EASEMENTS OR AS NOTED ON CONSTRUCTION PLANS.
2. SANITARY COVER WILL HAVE 2 -3/4" Ø HOLES AND 1 - 1 1/2" PICKHOLE IN LID FOR LIFTING HOOK.

TAMPERPROOF MANHOLE RING

3-BOLT DOWN COVER



**SECURE MANHOLE DETAIL
FOR USE IN TRAFFIC AREAS**

NOTE: COVER AND FRAME SHALL BE OF GRAY CAST IRON A.S.T.M. A-48 CLASS 30.

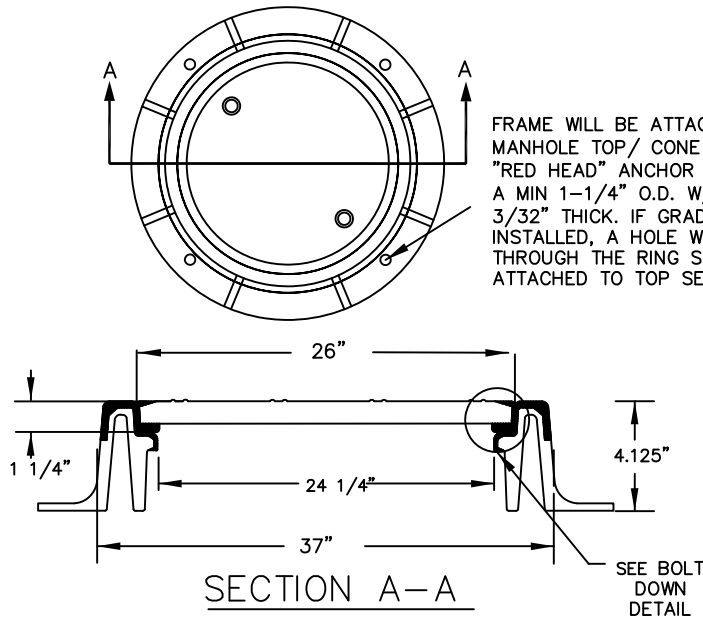


CLACKAMAS WES
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

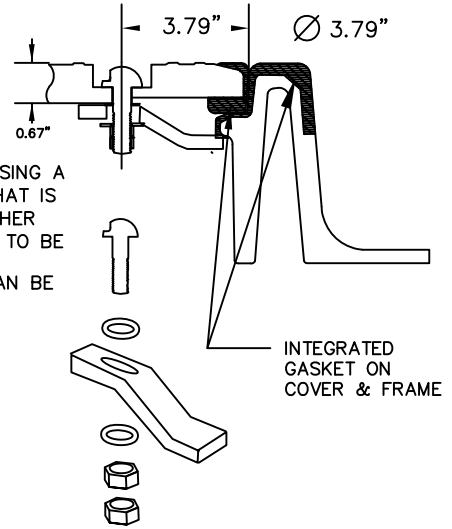
APPROVAL DATE: July, 2021 SCALE: N.T.S.
FRAME & COVER
SECURE
FOR TRAFFIC AREAS

STANDARD
DRAWING
SAN-012

WATERTIGHT MANHOLE RING



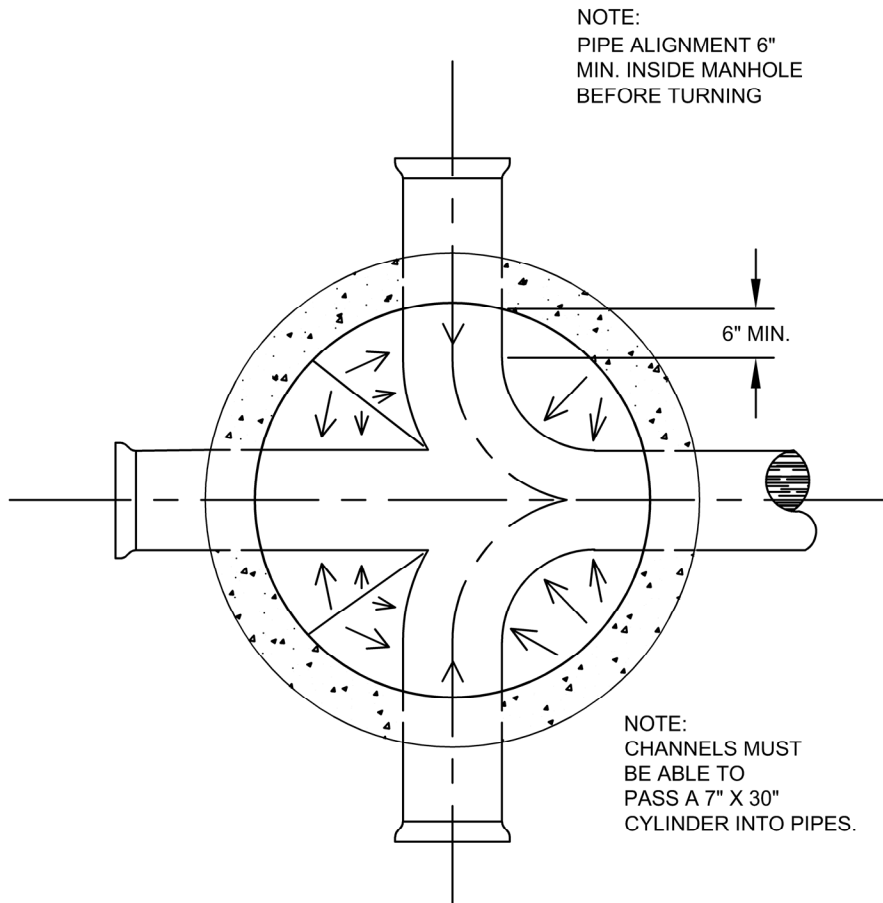
FRAME WILL BE ATTACHED TO THE MANHOLE TOP/ CONE SECTION BY USING A "RED HEAD" ANCHOR (OR EQUAL) THAT IS A MIN 1-1/4" O.D. W/S. STEEL WASHER 3/32" THICK. IF GRADE RINGS NEED TO BE INSTALLED, A HOLE WILL BE CORED THROUGH THE RING SO THE BOLT CAN BE ATTACHED TO TOP SECTION.



**BOLT-DOWN
DETAIL**

NOTES:

1. COMPOSITE WATERTIGHT/TAMPER PROOF MANHOLE FRAME AND COVER SHALL BE USED IN ALL EASEMENT AND OFF STREET OR BEHIND PROPERTY AREAS SUSCEPTIBLE TO FLOODING.
2. THE WATERTIGHT MANHOLE COVER FRAME SHALL BE GMI 2600 SERIES COMPOSITE FRAME AND COVER MANUFACTURED BY TITUS INDUSTRIAL GROUP, INC. OR ITS EQUAL.
3. THE LOCKING MECHANISM SHALL BE A TWISTLIFT® MANUFACTURED BY TITUS INDUSTRIAL GROUP, INC. OR ITS EQUAL.
4. THE TWISTLIFT® COMPOSITE ACCESS COVER LOCK IS DESIGNED AS A SECURITY BOLT REQUIRING A SPECIAL TOOL TO OPERATE THE QUARTER TURN BOLT AND LIFT THE COVER FROM THE FRAME. IT FUNCTIONS WITH EITHER THE STANDARD CAM LOCK QUARTER TURN PADDLE, OR THE EXTENDED 'SURCHARGE' PADDLE.
5. THE BOLT SHALL BE MACHINED FROM 316 STAINLESS STEEL.
6. THE BOLT FEATURES A DOMED HEAD WITH 3 EQUALLY SPACED 'J' SLOTS RUNNING HORIZONTALLY AROUND THE BOLT HEAD.
7. STANDARD BOLT SIZES ARE 14 MM COARSE THREAD WITH A FLAT MACHINED ON TWO SIDES TO ENGAGE PADDLE.
8. THE PADDLE IS DIE CAST FROM 304 STAINLESS STEEL AND ALSO AVAILABLE IN BOTH STANDARD CAM LOCK DESIGN, OR EXTENDED SURCHARGE CONFIGURATION.
9. THE BOLT AND PADDLE WILL BE ASSEMBLED USING TWO STAINLESS STEEL 14 MM NUT'S, THE BOTTOM NUT IS A STANDARD NUT THAT WILL BE TORQUE TO 35 FT. LBS. TO GIVE THE DESIRED TENSION ON THE BOLT. A SECOND NYLOCK™ LOCK NUT IS USED AS A JAM NUT, AND TORQUE TO 90 FT. LBS. STAINLESS STEEL WASHERS ARE USED TO PROVIDE CONSISTENT TURNING RESISTANCE.
10. A 5/16 STAINLESS STEEL SET SCREW, SET IN A THREADED HOLE IN THE COVER PROVIDES FOR A STOP AT ¼ TURN OF OPERATION.
11. THE BOLT WILL BE OPERATED BY MEANS OF A SPECIALLY MADE OPENING KEY CONSISTING OF A SPECIAL SOCKET ATTACHED TO A 'T' HANDLE USED TO BOTH TURN THE BOLT, AND LIFT OUT THE COVER.
12. ONE SET OF REPLACEMENT OPENING KEYS WILL BE PROVIDED TO WATER ENVIRONMENT SERVICES AT TIME OF INSTALLATION.
13. THE BOLT HEAD IS PROTECTED BY A WEATHER RESISTANT PLASTIC DEBRIS CAP. THE CAP IS INCLUDED WITH EACH LOCK.



CHANNEL-INTERSECTION



CLACKAMAS
**WATER
ENVIRONMENT
SERVICES**

CLACKAMAS WES
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

APPROVAL DATE: July, 2022 SCALE: N.T.S.

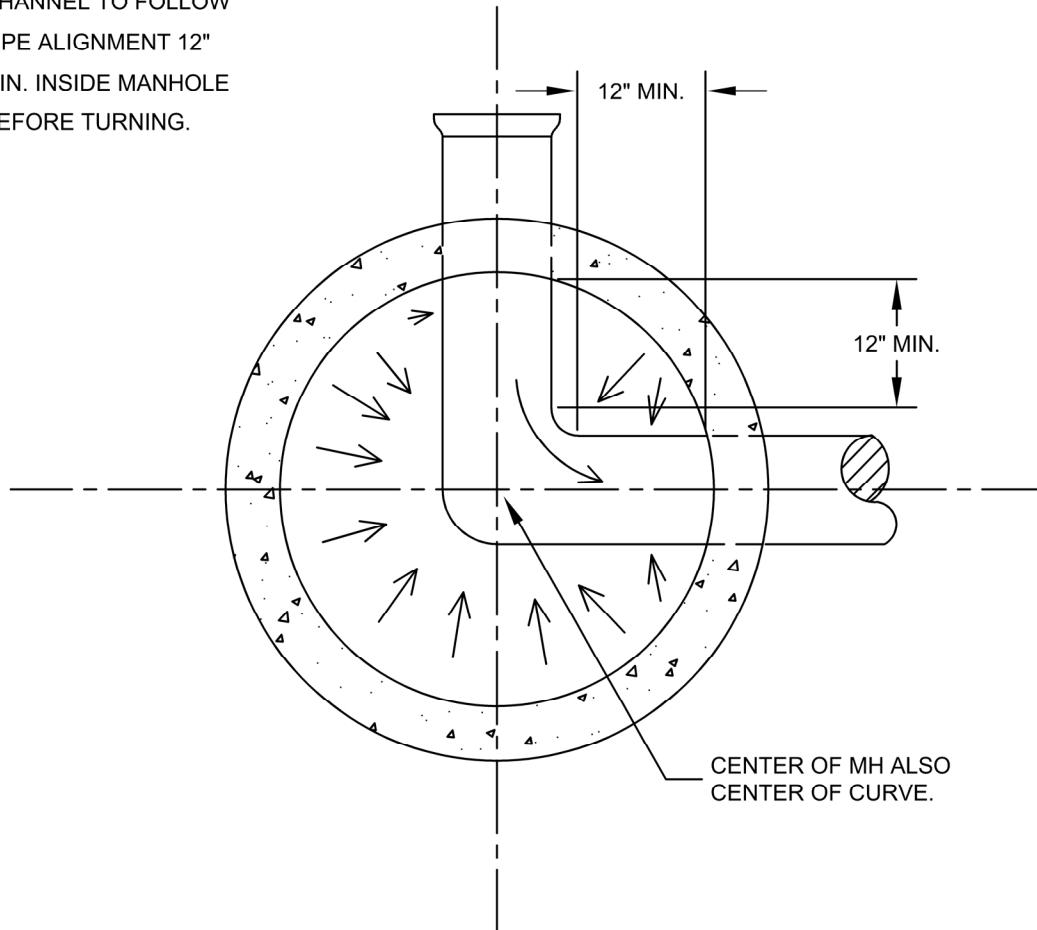
CHANNEL-INTERSECTION

STANDARD
DRAWING

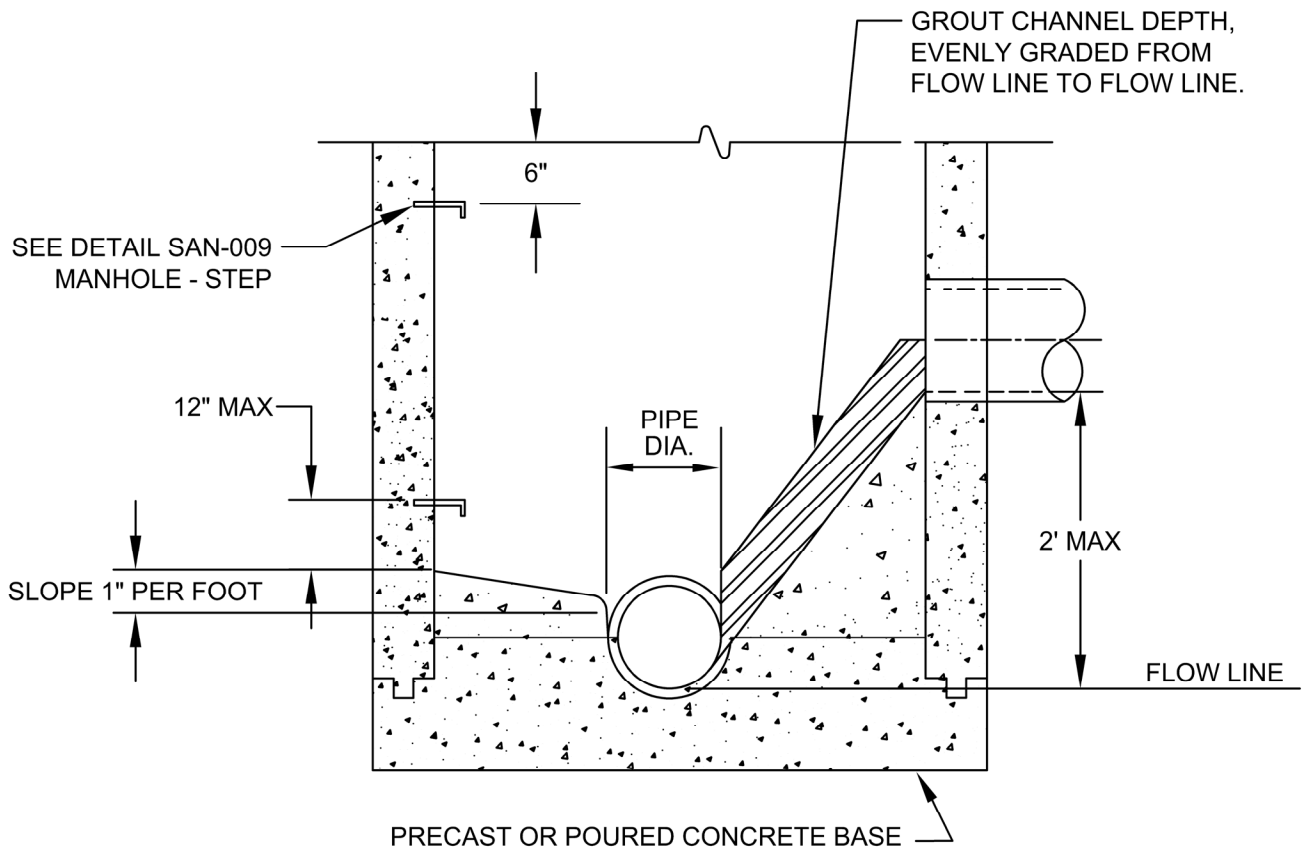
**SAN-
014**

NOTES:

1. CHANNELS MUST BE ABLE TO PASS A 7" X 30" CYLINDER INTO PIPES.
2. CHANNEL TO FOLLOW PIPE ALIGNMENT 12" MIN. INSIDE MANHOLE BEFORE TURNING.



CHANNEL-90 DEGREE MANHOLE

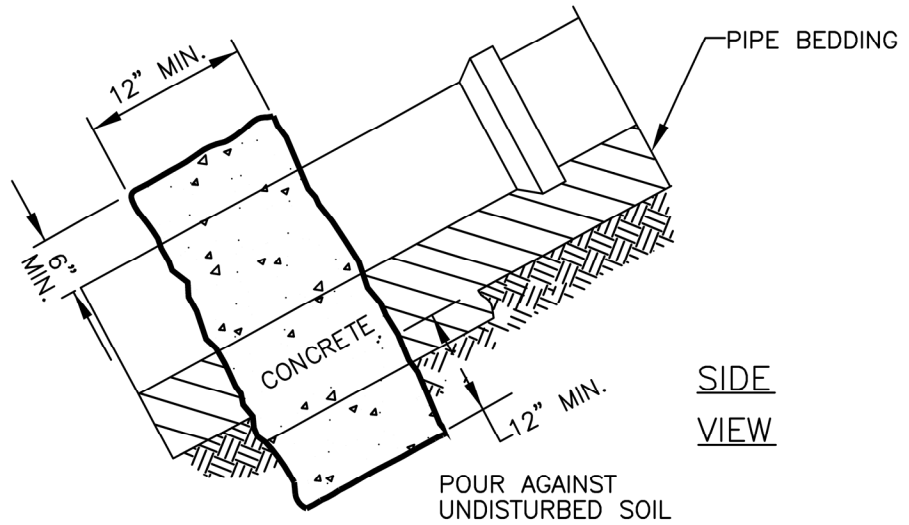


CHANNEL-SLIDE

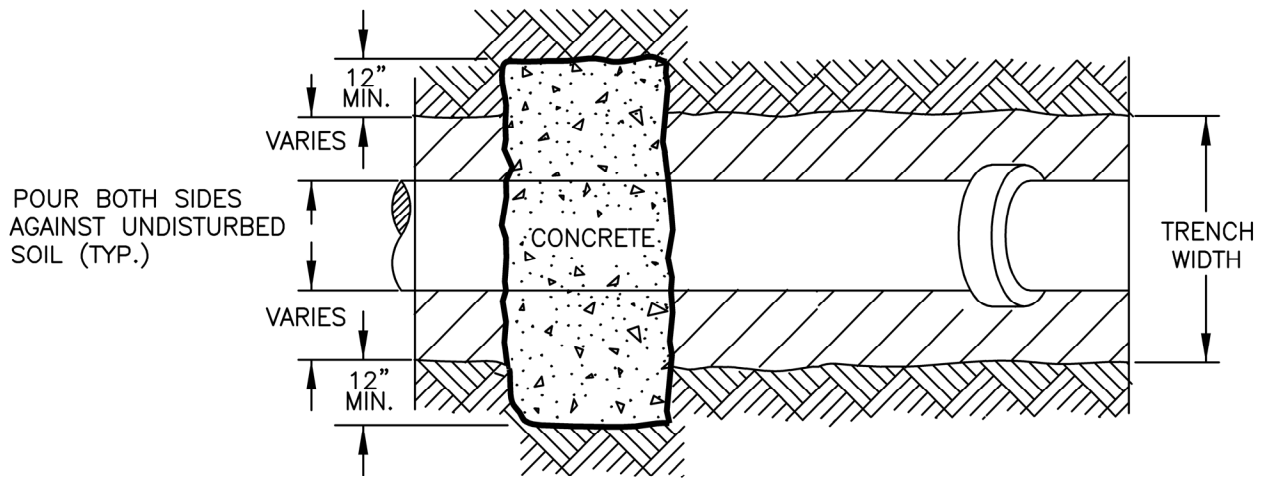
(BY DISTRICT PRE-APPROVAL ONLY)

NOTES:

1. CHANNELS MUST BE ABLE TO PASS A 7" X 30" CYLINDER INTO PIPES.
2. GROUT SHALL NOT BE FAST OR RAPID SETTING.



SIDE
VIEW



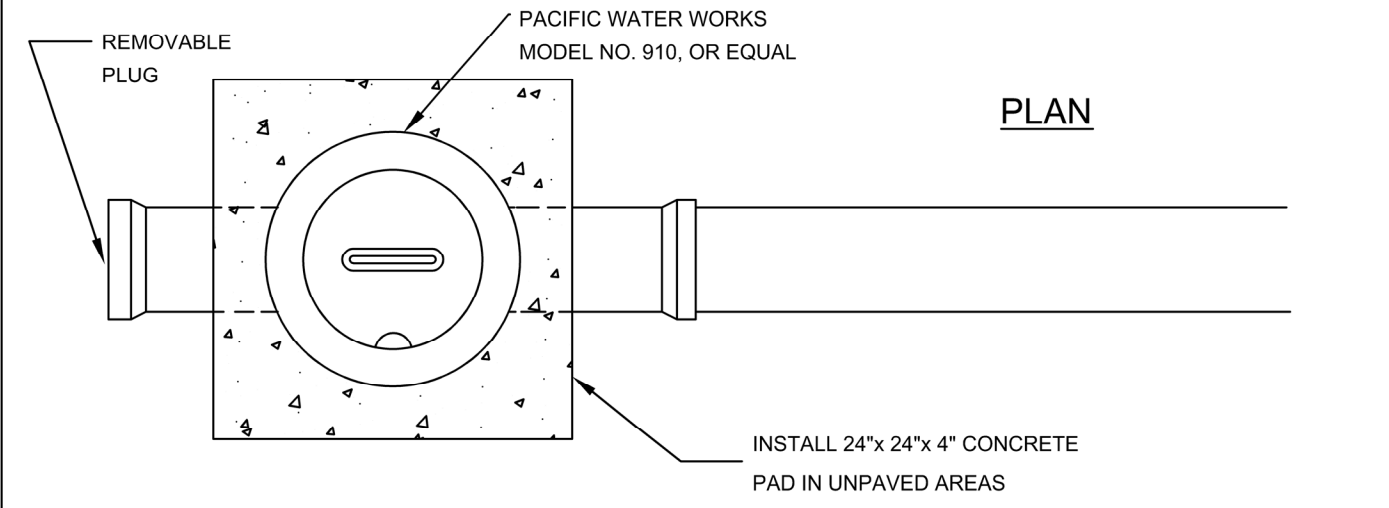
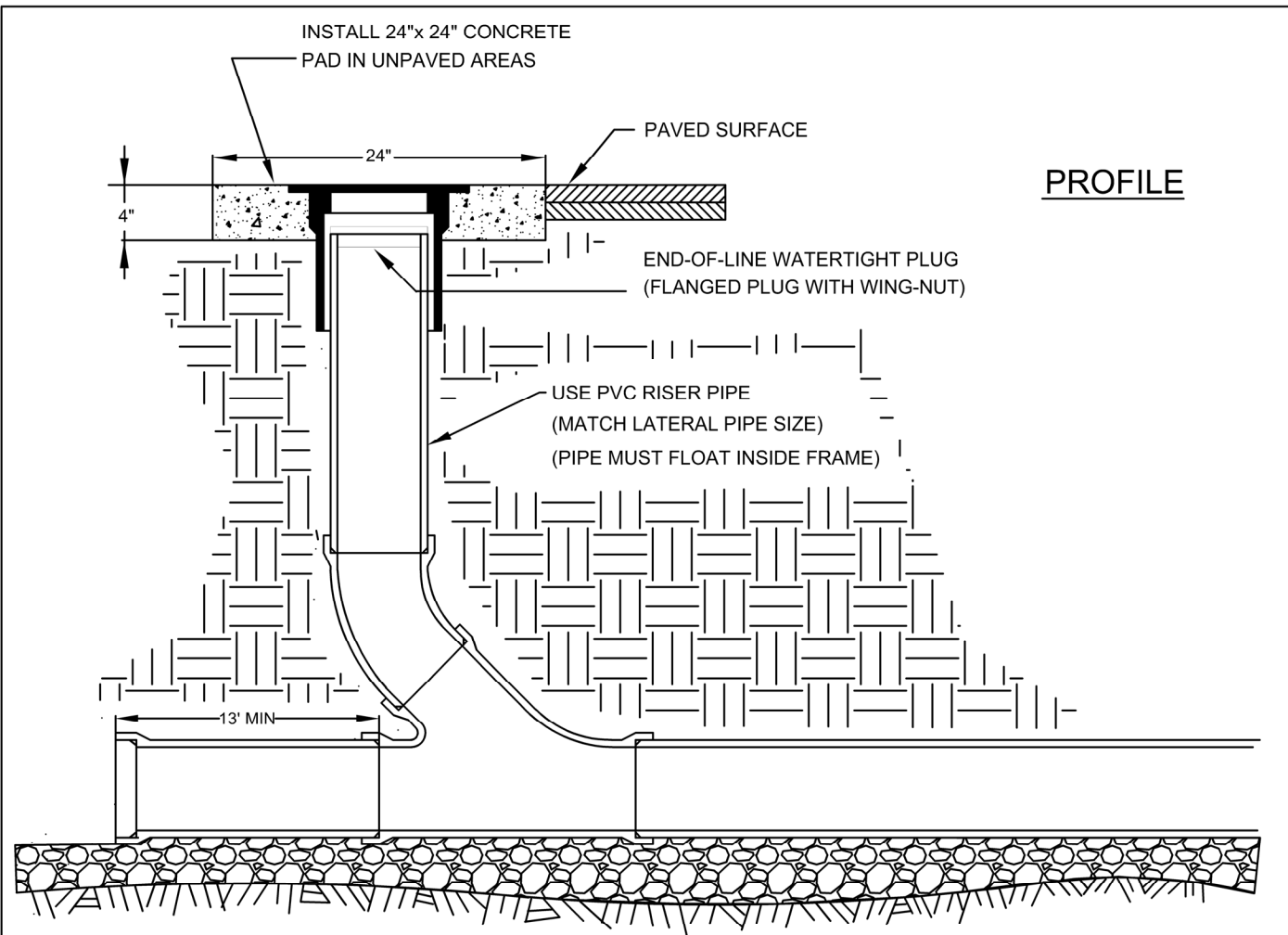
PLAN

SLOPE FT/FT	MIN. ANCHOR SPACING CENTER TO CENTER
0.20 - 0.34	35'
0.35 - 0.50	25'
0.51+	15' OR CONC. ENCASEMENT


NOTES:

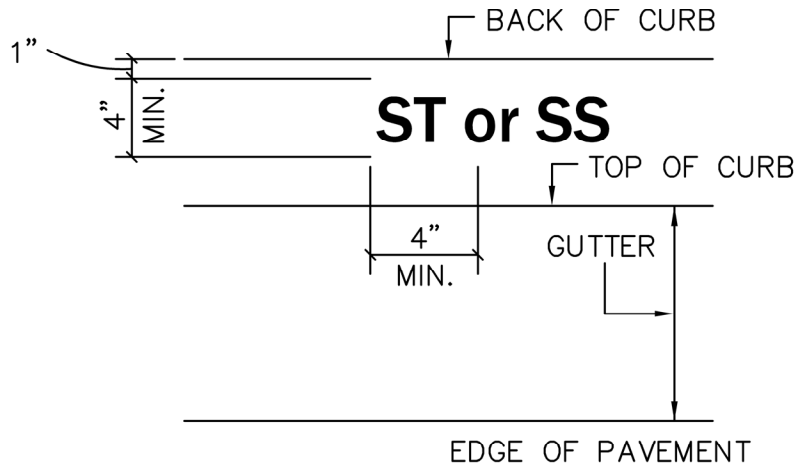
1. CONCRETE ANCHORS TO BE INSTALLED IMMEDIATELY DOWNHILL OF PIPEBELL.
2. CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 3000 PSI. AND 2" TO 4" SLUMP.
3. ODOT "METAL PIPE SLOPE ANCHORS" ARE AN ACCEPTABLE ALTERNATIVE.

ANCHOR WALL



CLEANOUT PAD

	CLACKAMAS WATER ENVIRONMENT SERVICES	CLACKAMAS WES 150 BEAVERCREEK ROAD OREGON CITY, OR 97045	APPROVAL DATE: July, 2022 SCALE: N.T.S.	STANDARD DRAWING SAN-018
	<h3 style="margin: 0;">CLEANOUT PAD</h3>			



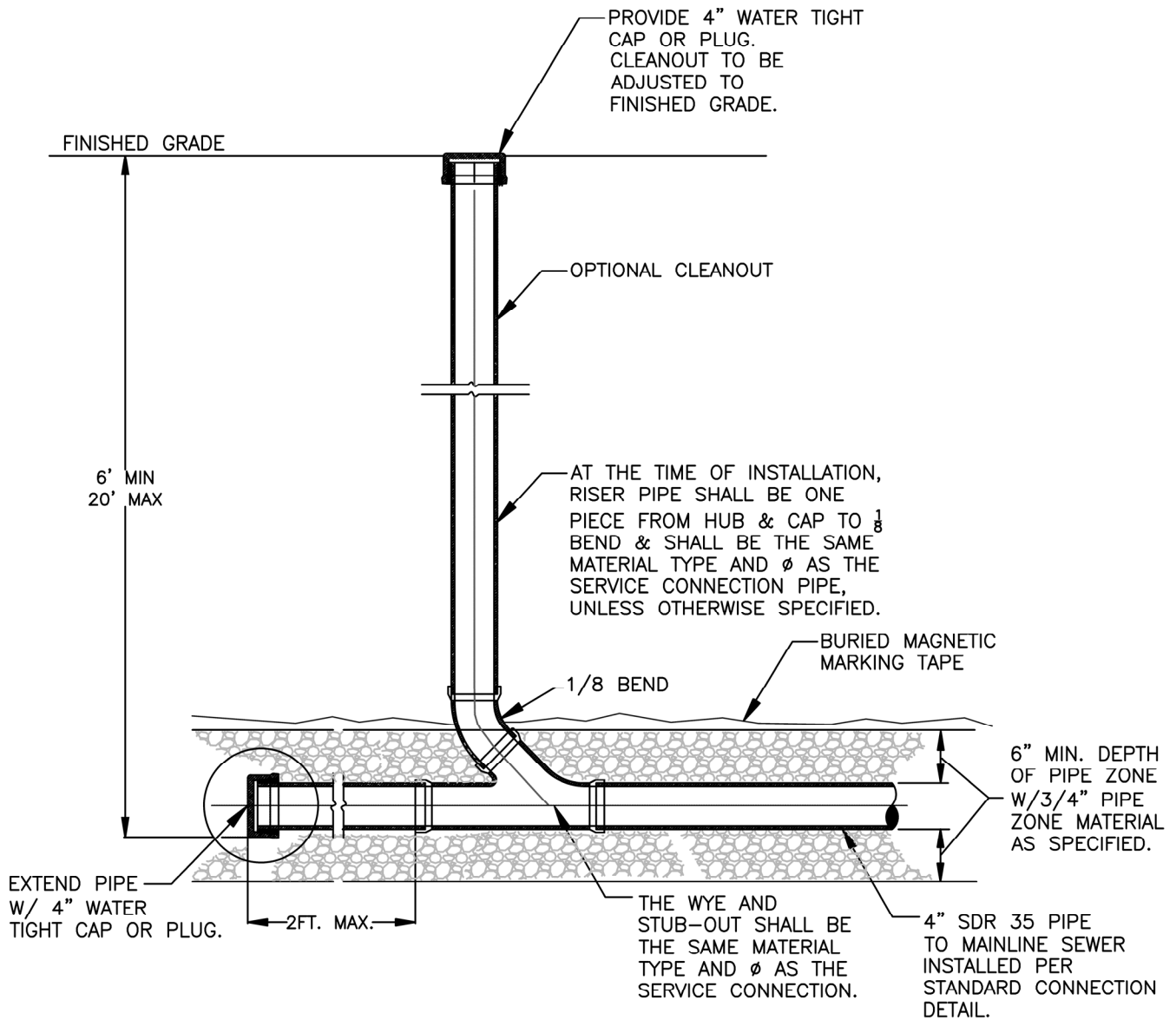
PLAN VIEW
(TYPICAL)

NOTES:

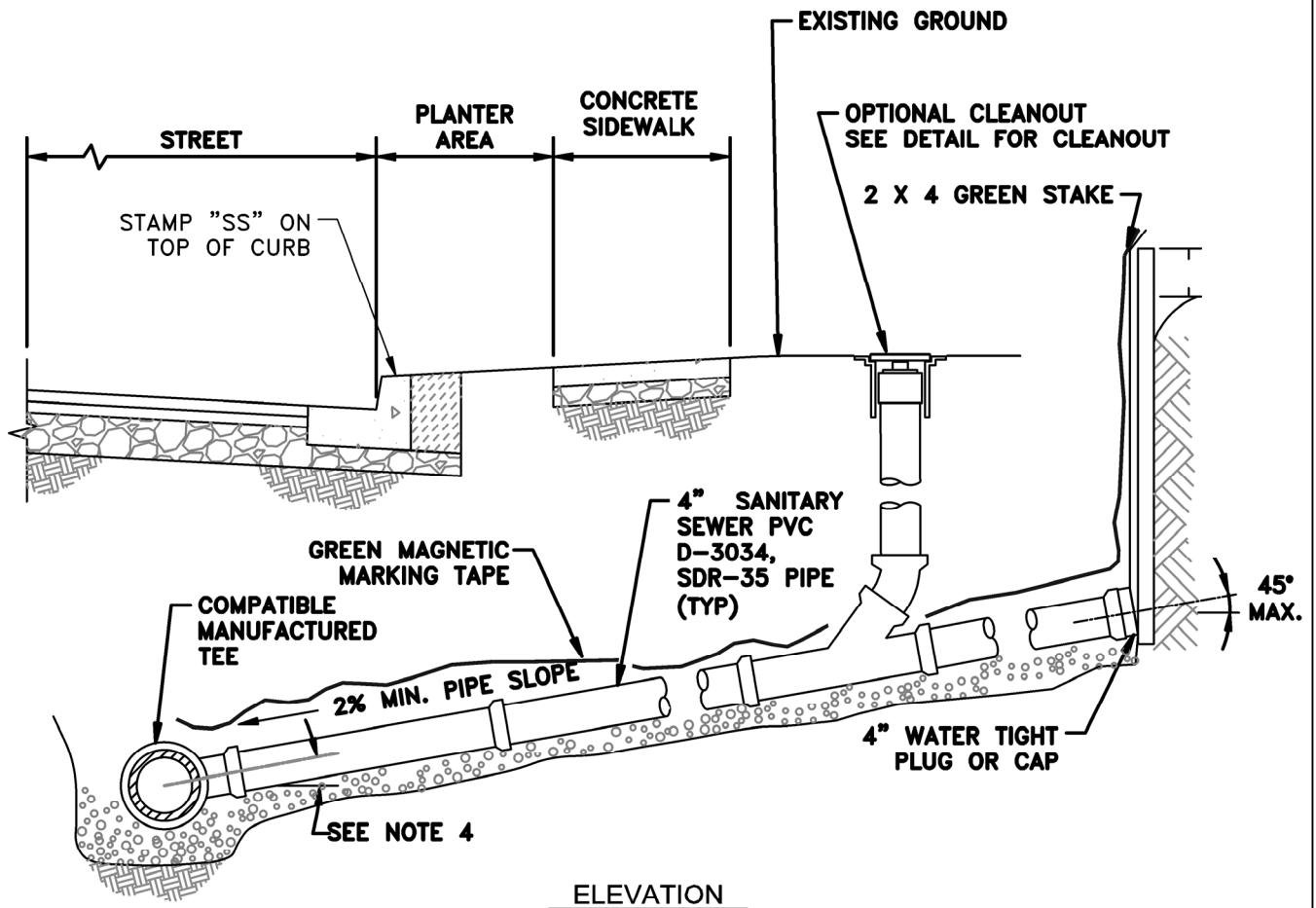
1. ALL STORM AND SANITARY SERVICE LATERALS SHALL BE MARKED APPROXIMATELY AS FOLLOWS:

STORM DRAIN LATERAL "ST" TOP OF CURB
 SANITARY SEWER LATERAL "SS" TOP OF CURB

2. LETTERS SHALL HAVE A 1/2" MAX. WIDTH.



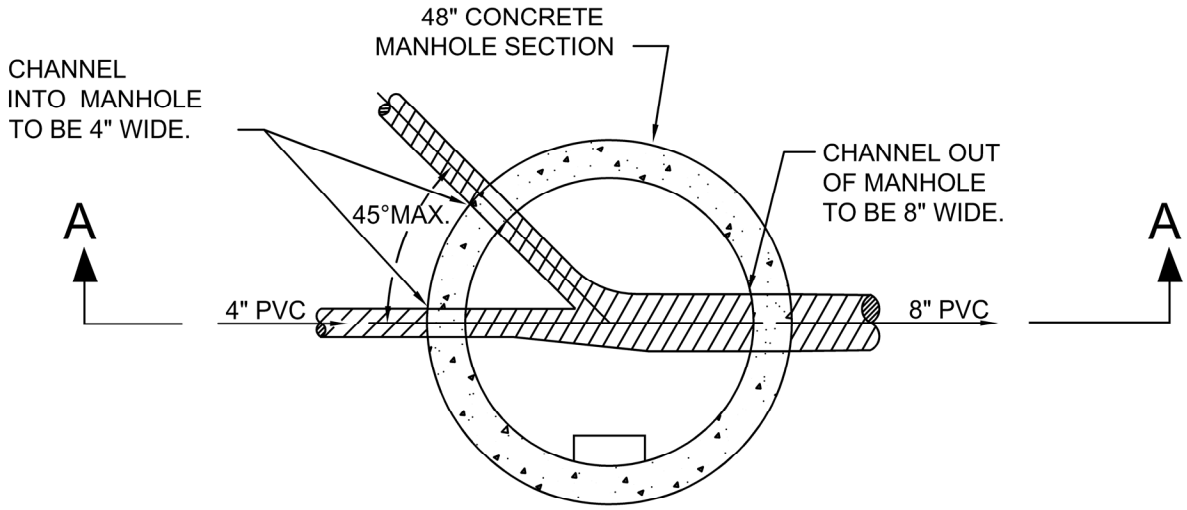
1. ALL PIPE AND FITTINGS SHALL BE ASTM D-3034, SDR 35.
2. ON LOTS WITH EXISTING HOMES, CONTRACTOR SHALL INSTALL APPROVED HUBS AND CAPS FLUSH WITH FINISHED GRADE.
3. CLEANOUTS SHALL NOT BE CONSTRUCTED SO THE CLEANOUTS CAP WILL END UP IN SIDEWALKS, STEPS OR DRIVEWAYS.



ELEVATION

NOTES:

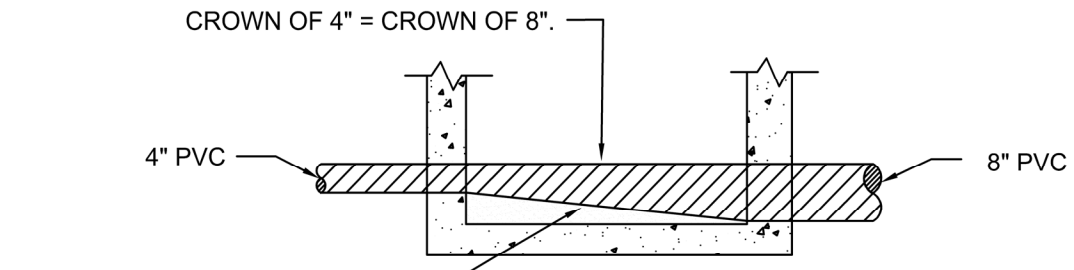
1. INSTALL OPTIONAL CLEANOUT PER STANDARD DRAWING.
2. VIDEO INSPECT SERVICE CONNECTION IN ACCORDANCE WITH STANDARDS.
3. 2" x 4" TREATED STAKE FROM INVERT TO 1' ABOVE FINISH GRADE. SERVICE CONNECTION MARKER SHALL BE CONTINUOUS AND REMAIN VERTICAL AFTER BACKFILLING. END SHALL BE PAINTED GREEN.
4. CENTERLINE OF SERVICE OUTLET ON TEE SHALL BE ABOVE SPRINGLINE.
5. SANITARY SEWER SERVICE CONNECTIONS SHALL BE A FACTORY TEE INSTALLED 90° PERPENDICULAR TO SANITARY SEWER MAIN.
6. EVERY PROPERTY SHALL HAVE A SEPARATE SERVICE CONNECTED DIRECTLY TO THE MAINLINE, UNLESS OTHERWISE APPROVED BY THE DISTRICT. SHARED SERVICE CONNECTIONS ARE NOT ALLOWED.
7. THE SERVICE CONNECTION LOCATION SHALL GENERALLY BE LOCATED TEN FEET (10') OFFSET FROM THE PROPERTY LINE ON THE LOW SIDE OF LOT.
8. TEES FOR SERVICE CONNECTIONS SHALL BE LOCATED NO CLOSER THAN FIVE FEET (5') TO MANHOLES. SEPARATION BETWEEN WATER LINE, SANITARY SERVICE CONNECTION AND STORM SERVICE CONNECTION SHALL GENERALLY BE TEN FEET (10') WITH A MINIMUM OF FIVE FEET (5').
9. ANY OTHER PROPOSED LOCATION SHALL BE AT THE DISCRETION OF THE DISTRICT ON CASE BY CASE BASIS.



PLAN

NOTE:

- 1. THIS TYPE OF CONNECTION IS ALLOWED ONLY ON END OF RUN MANHOLES WITH DISTRICT APPROVAL.
- 2. MAXIMUM NUMBER OF SERVICE CONNECTIONS INTO A MANHOLE IS TWO.

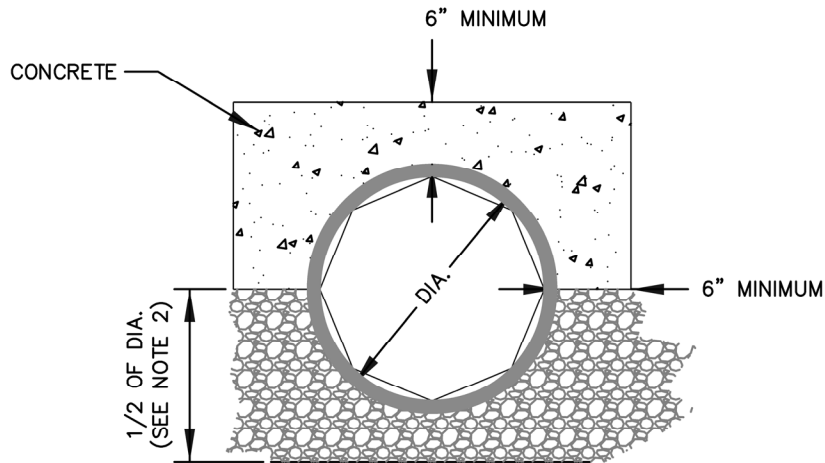


MAKE SMOOTH TRANSITION FROM 4" TO 8" CHANNEL.

SECTION A-A

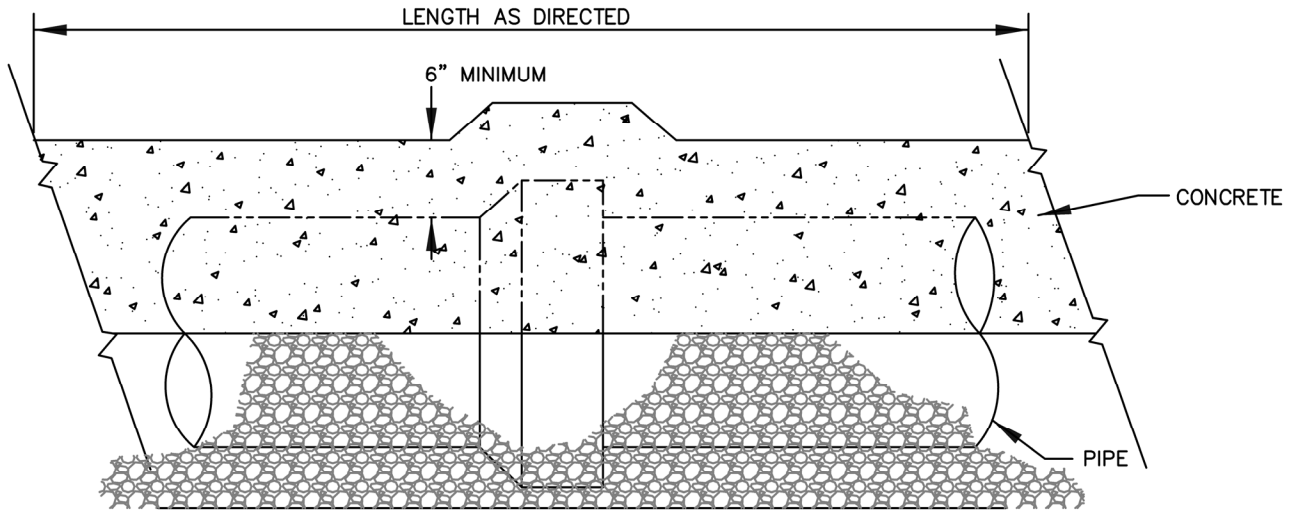
SERVICE CONNECTION INTO MANHOLE

SCALE: NTS

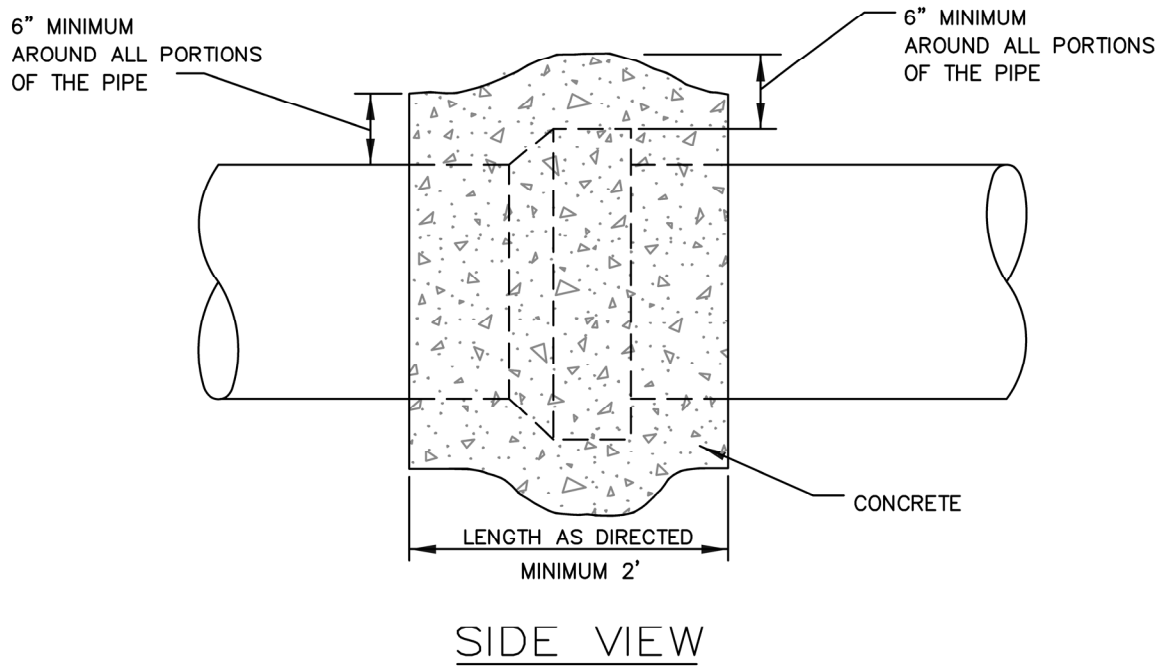
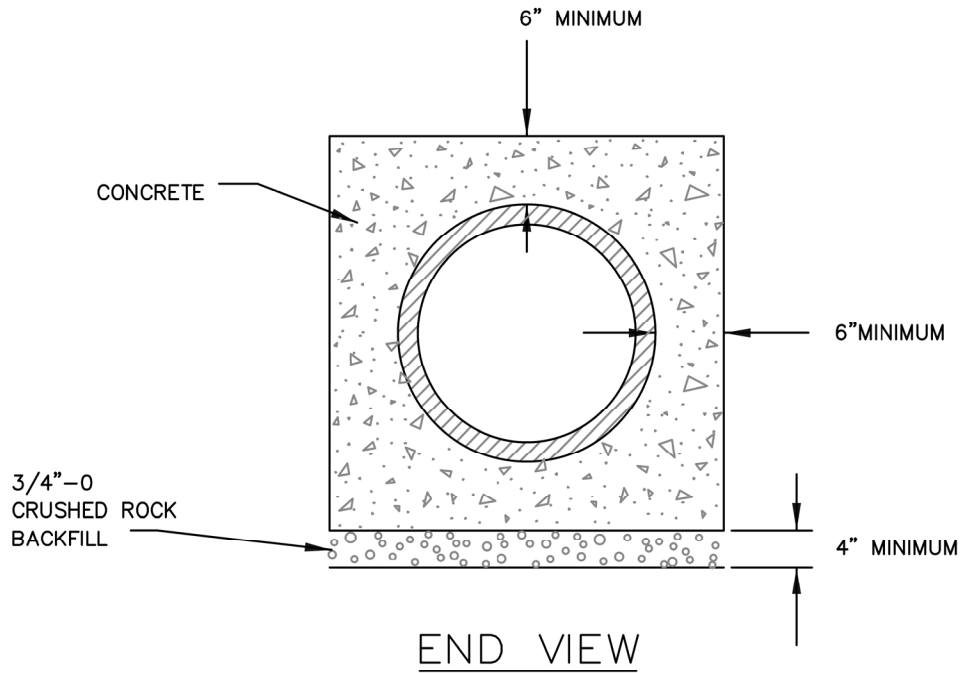


END VIEW

- NOTES:
1. CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 3000 PSI AND 2" TO 4" SLUMP.
 2. SEE APPLICABLE DETAIL FOR PIPE BEDDING INFORMATION.



SIDE VIEW

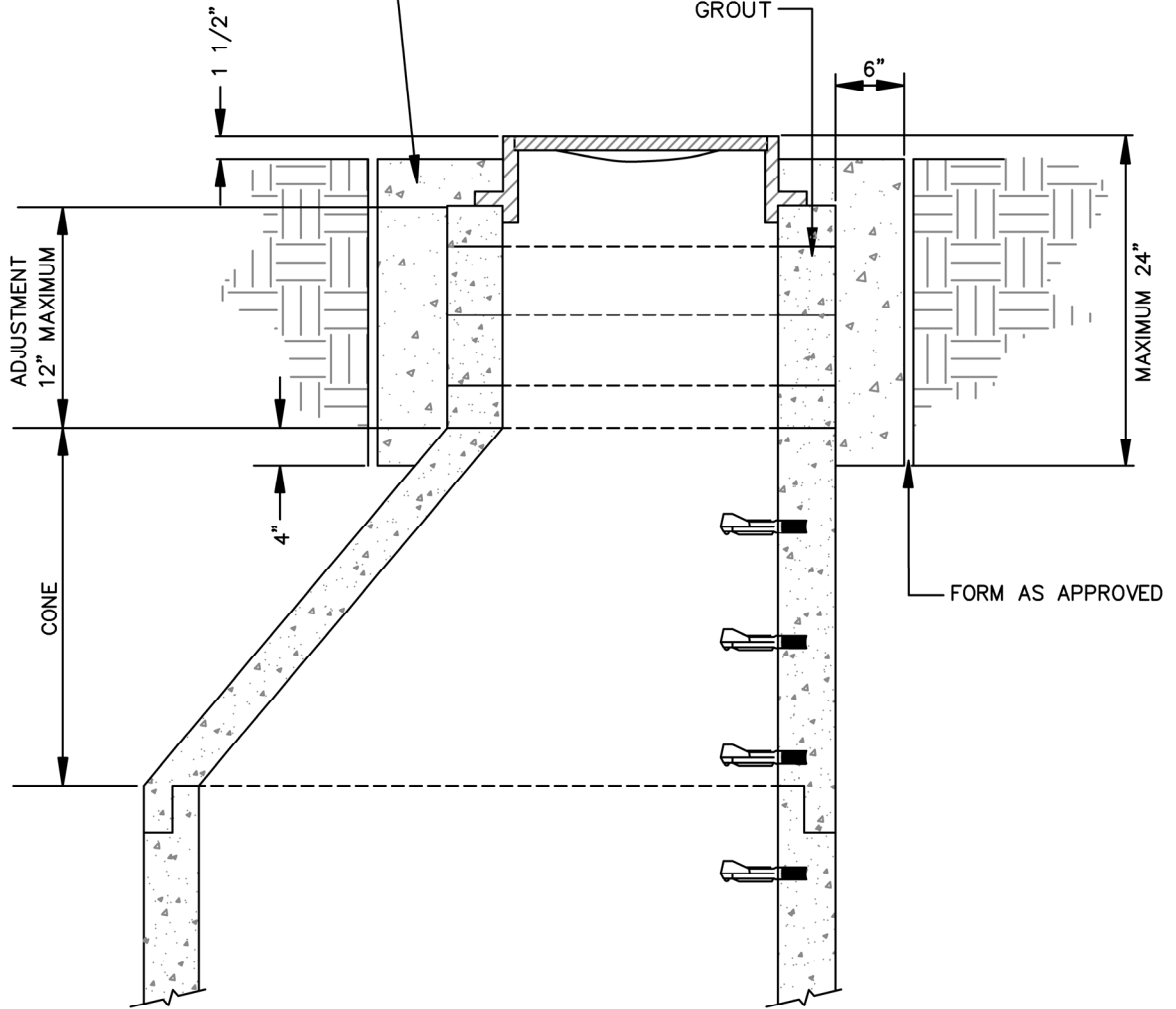


NOTES:

1. CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 3000 PSI AND, 2" TO 4" SLUMP.
2. PRIOR TO INSTALLING THE CONCRETE ENSURE THE JOINT IS SEAL IN A MANNER AS NOT TO ALLOW CONCRETE TO ENTER INTO THE INTERIOR OF PIPE.

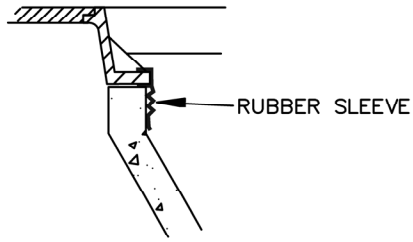
CONCRETE FOR CLOSURE COLLAR SHALL BE READY-MIXED CONFORMING WITH ASTM C94, ALTERNATE 2 AND SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI @28 DAYS.

ADJUSTMENT GRADE RINGS AND CASTING FRAME SET IN 1" OF NON-SHRINKING GROUT



NOTE:

1. NON-SHRINK GROUT SHALL NOT BE FAST OR RAPID SETTING.



NARROW EXTERNAL RUBBER SEAL

TO SPAN CHIMNEY HEIGHTS OF:

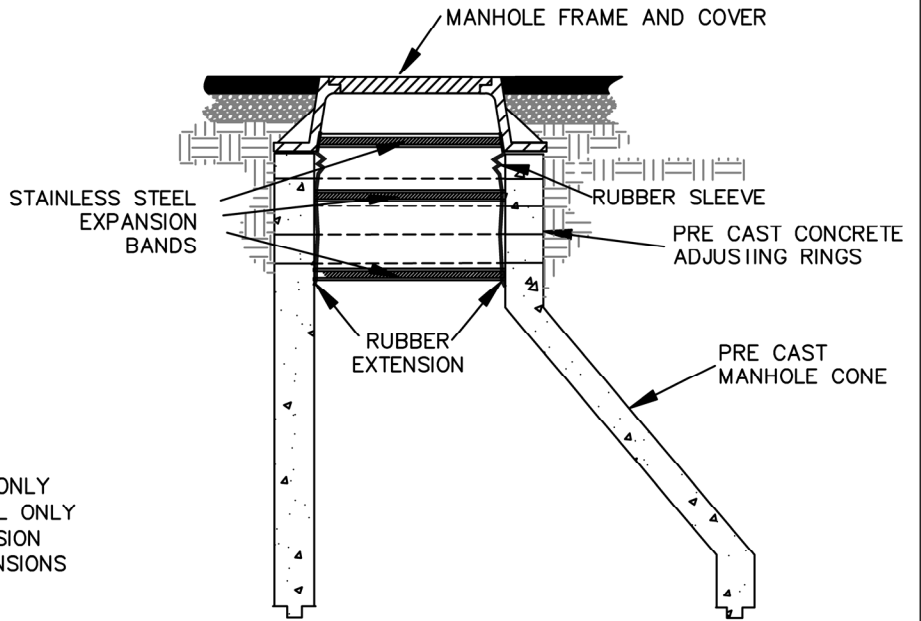
- 0-3" - NARROW (6") SEAL ONLY
- OVER 3" - 6 1/2" - STANDARD (9") SEAL ONLY
- OVER 6 1/2" - 12" - STD. SEAL + EXTENSION
- OVER 12" - SEAL + MULT. EXTENSIONS

NOTES:

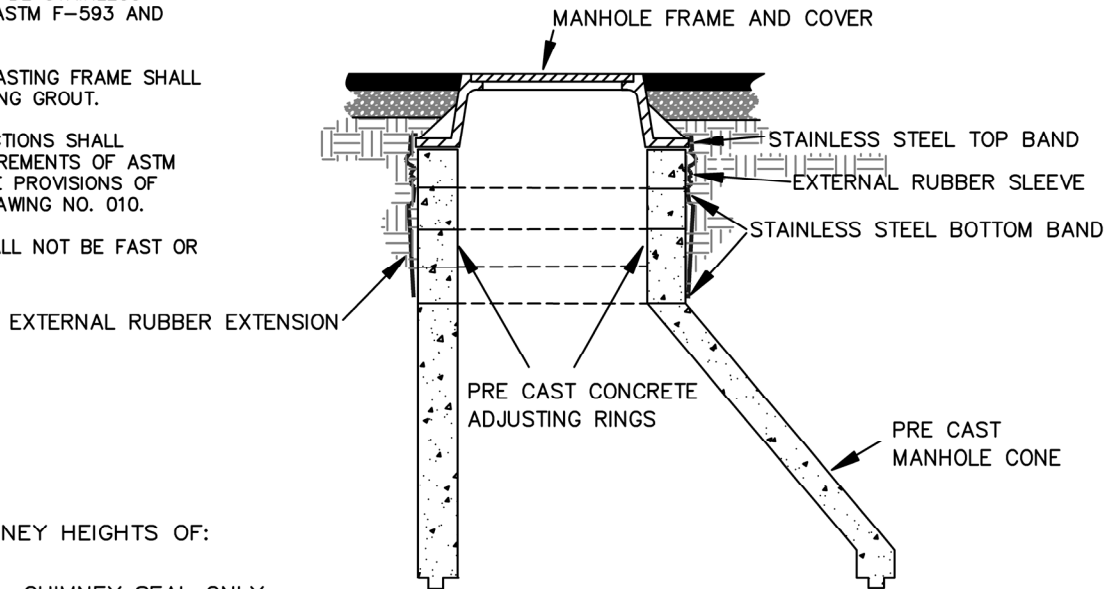
1. SLEEVES AND EXTENSIONS SHALL HAVE A MINIMUM OF $\frac{3}{16}$ " THICKNESS.
2. RUBBER SHALL BE EXTRUDED HIGH GRADE COMPOUND CONFORMING TO ASTM C-923.
3. BANDS SHALL BE FABRICATED FROM 16 GAUGE STAINLESS STEEL CONFORMING TO ASTM A-240, TYPE 304.
4. NUTS AND BOLTS SHALL BE STAINLESS STEEL CONFORMING TO ASTM F-593 AND 594, TYPE 304.
5. ALL GRADE RING AND CASTING FRAME SHALL BE SET IN NON-SHRINKING GROUT.
6. PRE CAST MANHOLE SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478, AND APPLICABLE PROVISIONS OF STANDARD MANHOLE DRAWING NO. 010.
7. NON-SHRINK GROUT SHALL NOT BE FAST OR RAPID SETTING.

TO SPAN CHIMNEY HEIGHTS OF:

- 0-4 1/2" - CHIMNEY SEAL ONLY
- OVER 4 1/2" - 9" - SEAL + 7" EXTENSION
- OVER 9" - 12" - SEAL + 10" EXTENSION
- OVER 12" - SEAL + MULT. EXTENSIONS



INTERNAL MANHOLE CHIMNEY SEAL



EXTERNAL MANHOLE CHIMNEY SEAL



CLACKAMAS
**WATER
ENVIRONMENT
SERVICES**

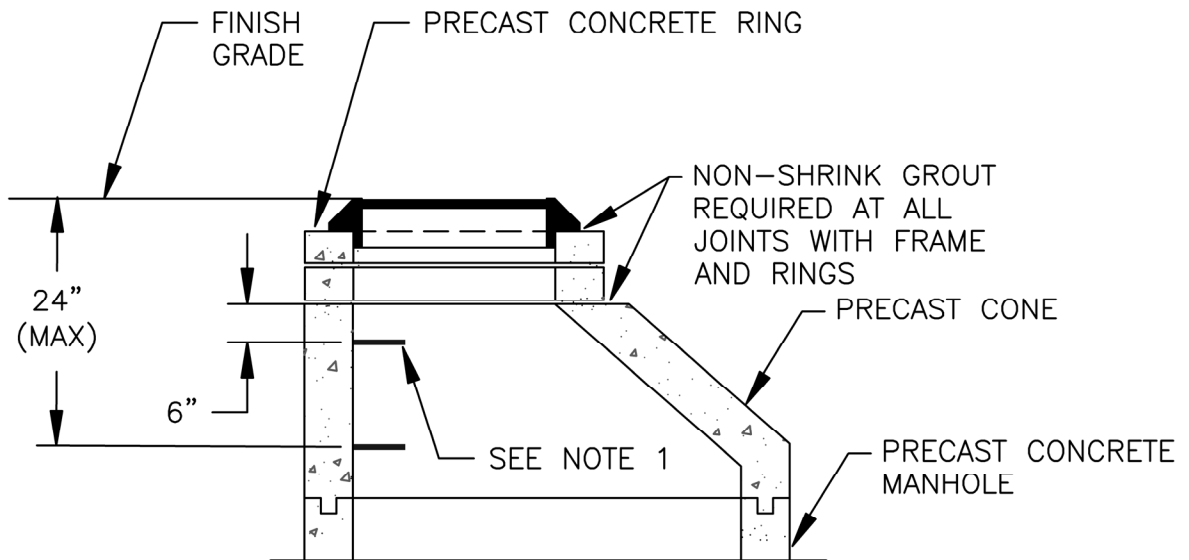
CLACKAMAS WES
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

APPROVAL DATE: July, 2021

SCALE: N.T.S.

MANHOLE CHIMNEY SEAL

STANDARD
DRAWING
**SAN-
026**



NOTES:

1. FIRST STEP SHALL BE 6" MINIMUM FROM RINGS TO MAXIMUM 24" FROM RIM.
2. NON-SHRINK GROUT SHALL NOT BE RAPID OR FAST SETTING.



CLACKAMAS
**WATER
 ENVIRONMENT
 SERVICES**

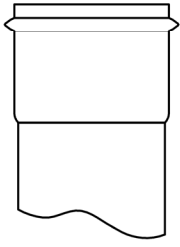
CLACKAMAS WES
 150 BEAVERCREEK ROAD
 OREGON CITY, OR 97045

APPROVAL DATE: July, 2021

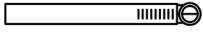
SCALE: N.T.S.

**PRECAST RING EXTENSION
 FOR TYPICAL MANHOLE**

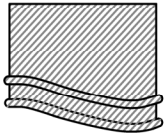
STANDARD
 DRAWING
**SAN-
 027**



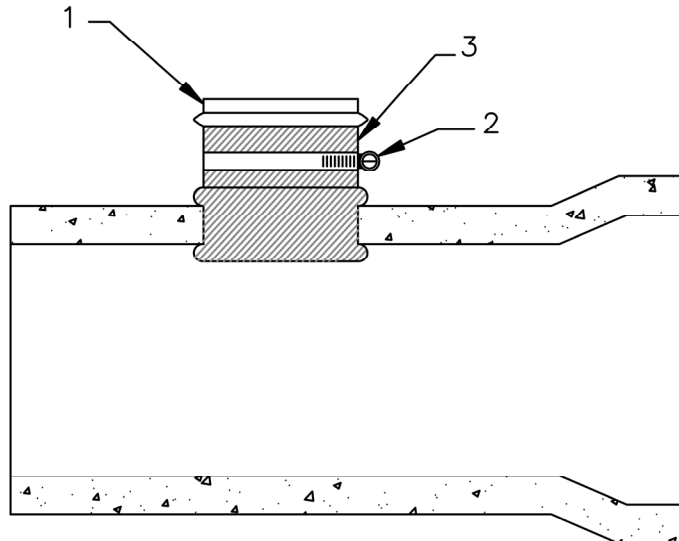
1. PVC HUB SHALL CONFORM TO ASTM 3034, SDR 35 DRIVE INTO CENTER OF RUBBER SLEEVE AFTER SLEEVE IS PLACED IN HOLE.



2. STAINLESS STEEL BAND SECURES UPPER HALF OF RUBBER SLEEVE TO THE PVC HUB. STAINLESS STEEL BAND SHALL BE 300 SERIES, $\frac{3}{16}$ " BAND WIDTH, CADMIUM PLATED CARBON STEEL, AND ATTACHED WITH HEX HEAD SLOTTED SCREW.



3. COMPLETE RUBBER SLEEVE INCLUDES A MOLDED SEGMENT THAT HOLDS IT IN PLACE.



NOTES:

1. ALL INSERTA-TEE HOLES SHALL BE MACHINE DRILLED AND CORED.
2. INSERTA-TEES ARE NOT ALLOWED IN NEWLY CONSTRUCTED SEWER MAINS.
3. SEWER MAIN SHALL BE TWO SIZES (NOMINAL I.D.) LARGER THAN THE INSERTA-TEE.



CLACKAMAS

**WATER
ENVIRONMENT
SERVICES**

CLACKAMAS WES
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

APPROVAL DATE: July, 2021

SCALE: N.T.S.

INSERTA TEE

STANDARD
DRAWING

**SAN-
028**