

THE JOINT SHALL BE PREPARED BY SAWCUTTING THE EXISTING PIPE TO LEAVE A SMOOTH, STRAIGHT SURFACE

NEW SEWER PIPE  
SEE NOTE THIS SHEET

RUBBER SLEEVE COUPLING WITH STAINLESS STEEL COMPRESSION BANDS AND SHEAR RINGS AS MANUFACTURED BY MISSION PRODUCTS, FERNCO, OR APPROVED EQUAL, TYPICAL EACH END, COUPLING TO BE A MINIMUM 6 INCHES WIDE.

NOTE:  
NEW SEWER PIPE LENGTH & TYPE TO BE DEFINED BY ENGINEER.

TOWN OF APEX  
STANDARDS

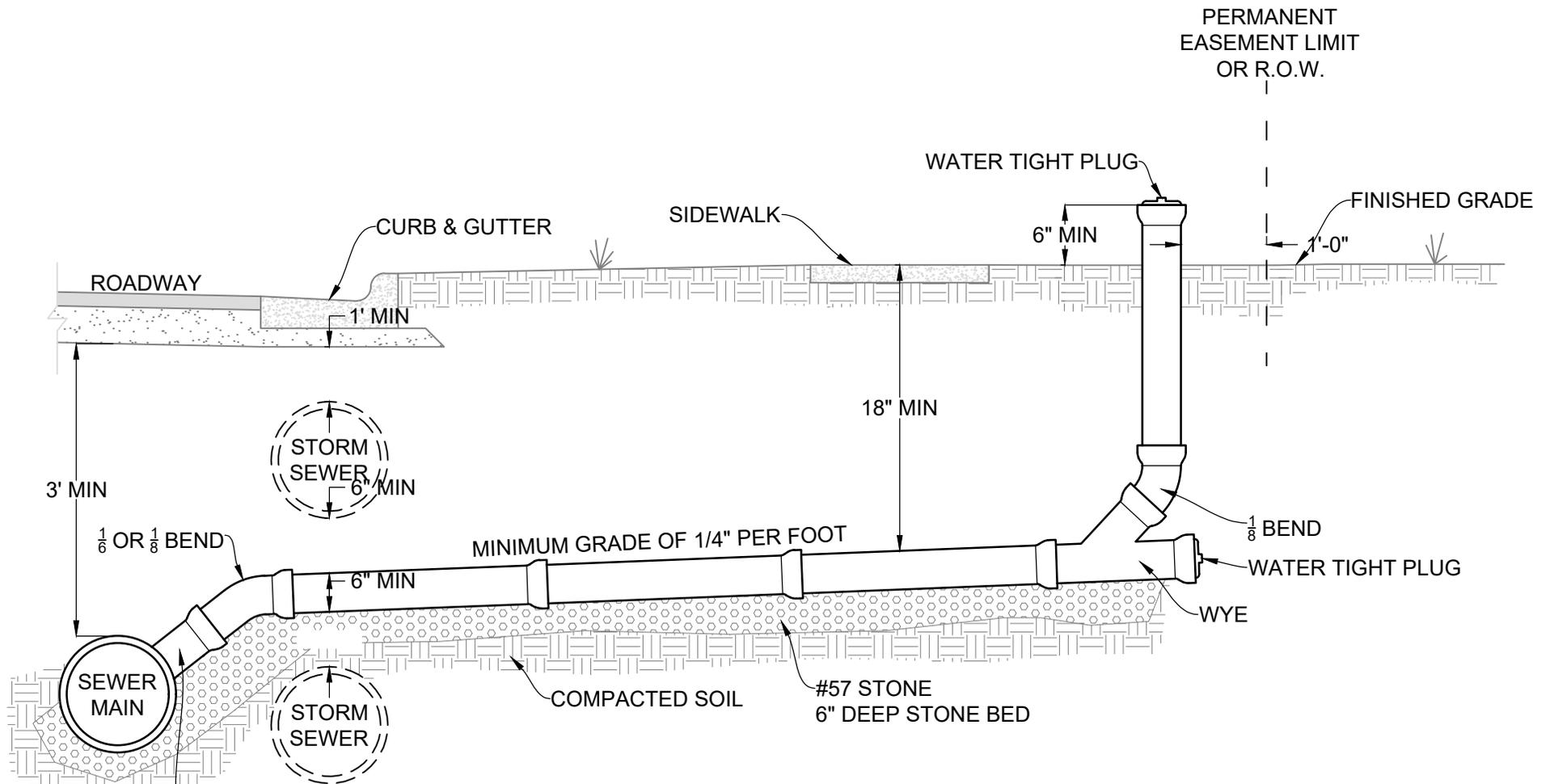
# STANDARD TYPICAL SEWER POINT REPAIR

STD. NO.

700.01

EFFECTIVE: MARCH 23, 2021

SHEET 1 OF 1



IN-LINE WYE FITTING OR APPROVED TAPPING SADDLE PROVIDED AT TOP QUARTER OF THE MAIN

IN-LINE WYE REQUIRED FOR SANITARY SEWER SERVICES INSTALLED WITH NEW CONSTRUCTION WHEN PARCEL AND SERVICE LOCATIONS ARE KNOWN AND IDENTIFIED ON APPROVED PLANS

**DEPTH ≤ 16 FEET - CLASS "A" BEDDING**

- UNDERCUT TRENCH BOTTOM 6 INCHES MINIMUM BELOW PIPE
- FILL PIPE TO SPRING LINE WITH NO. 57 OR 67 STONE

**DEPTH > 16 FEET - CLASS "B" BEDDING**

- UNDERCUT TRENCH BOTTOM 6 INCHES MINIMUM BELOW PIPE
- FILL TO 6 INCHES ABOVE PIPE WITH NO. 57 OR 67 STONE

INSTALLATIONS THAT EXCEED 20 FEET DEPTH SHALL BE DIP

TOWN OF APEX  
STANDARDS

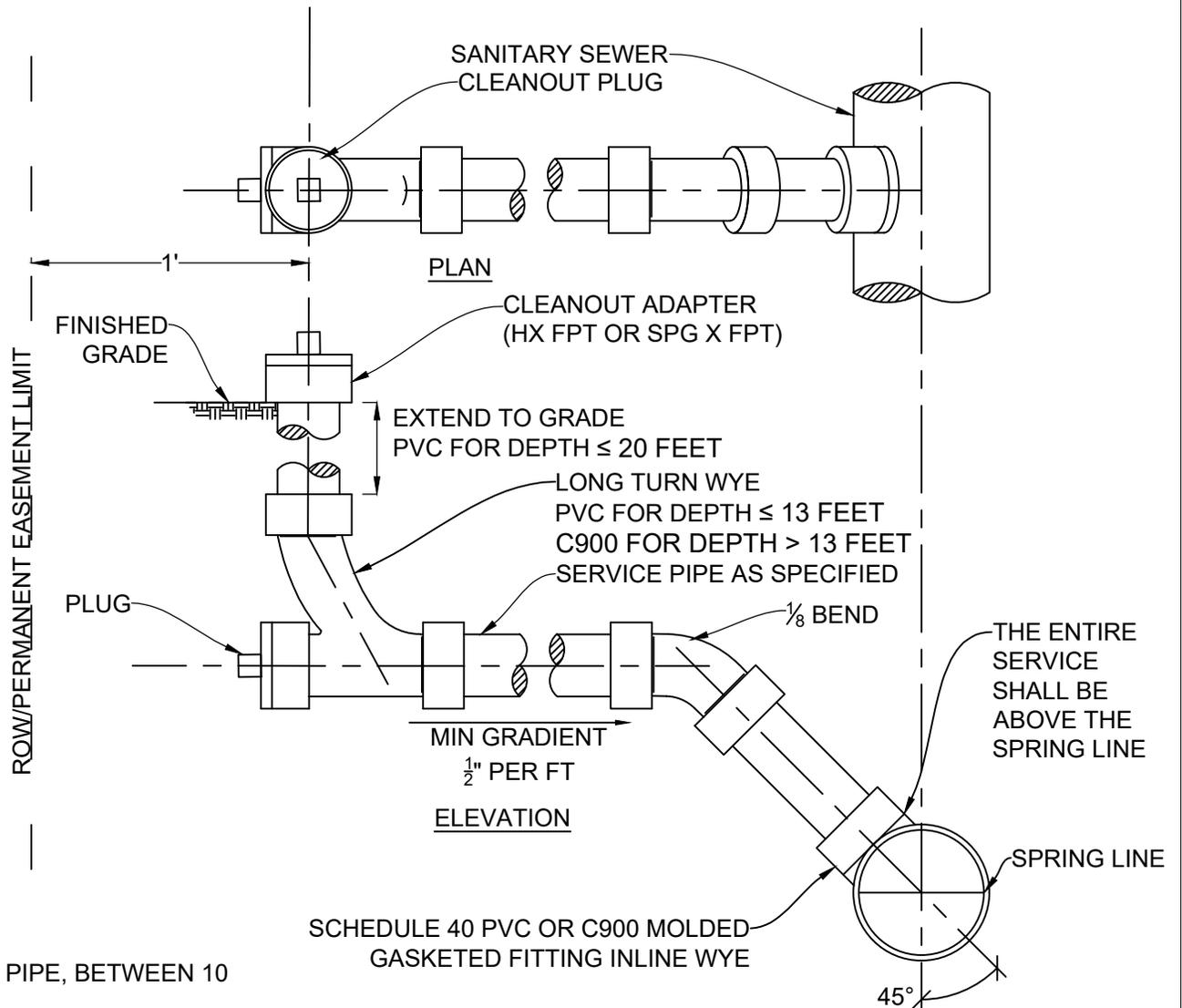
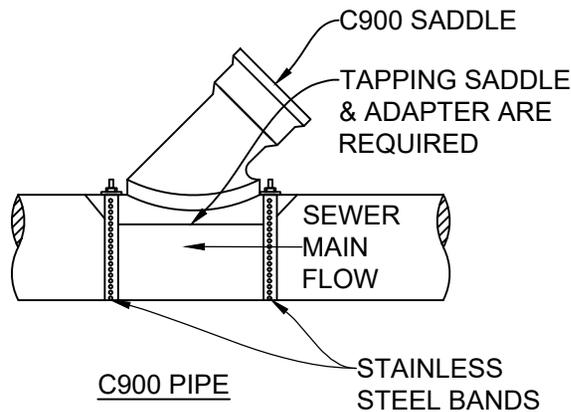
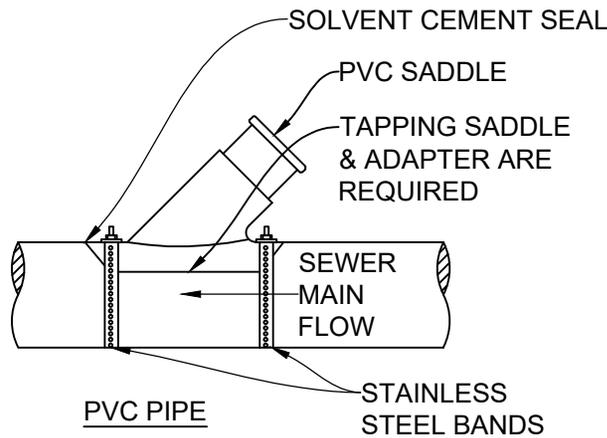
EFFECTIVE: APRIL 12, 2022

**SANITARY SEWER TAP & SERVICE**

STD. NO.

**700.02**

SHEET 1 OF 1



**NOTES:**

1. THE SERVICE SHALL BE IN THE TOP  $\frac{1}{4}$  OF THE PIPE, BETWEEN 10 O'CLOCK & 2 O'CLOCK.
2. ONE ADDITIONAL 22.5 DEGREE FITTING MAY BE UTILIZED TO INSTALL THE SERVICE PERPENDICULAR TO THE MAIN.

**TOWN OF APEX  
STANDARDS**

EFFECTIVE: MARCH 23, 2021

**SANITARY SEWER SERVICE CONNECTIONS**

STD. NO.

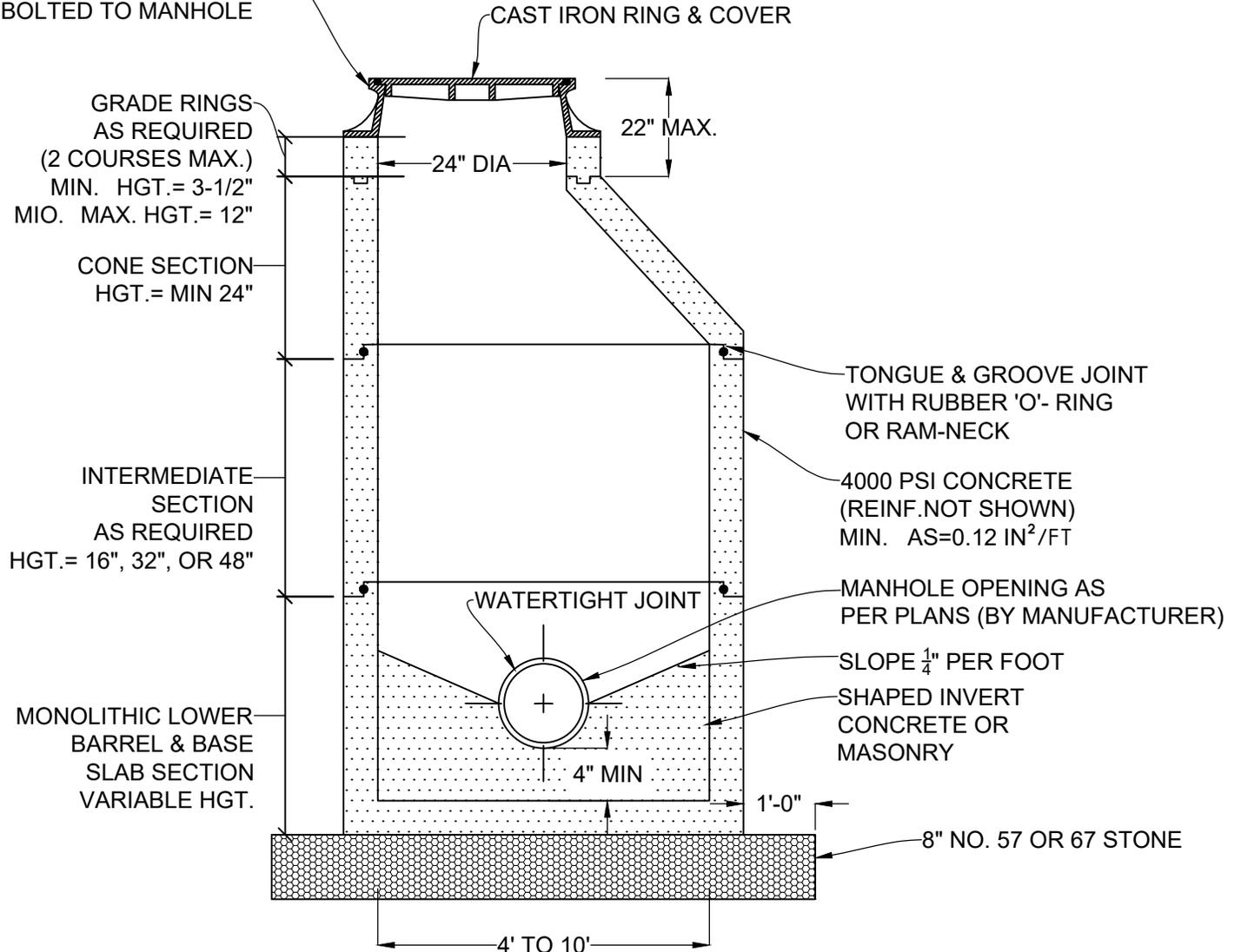
**700.03**

SHEET 1 OF 1

**NOTES:**

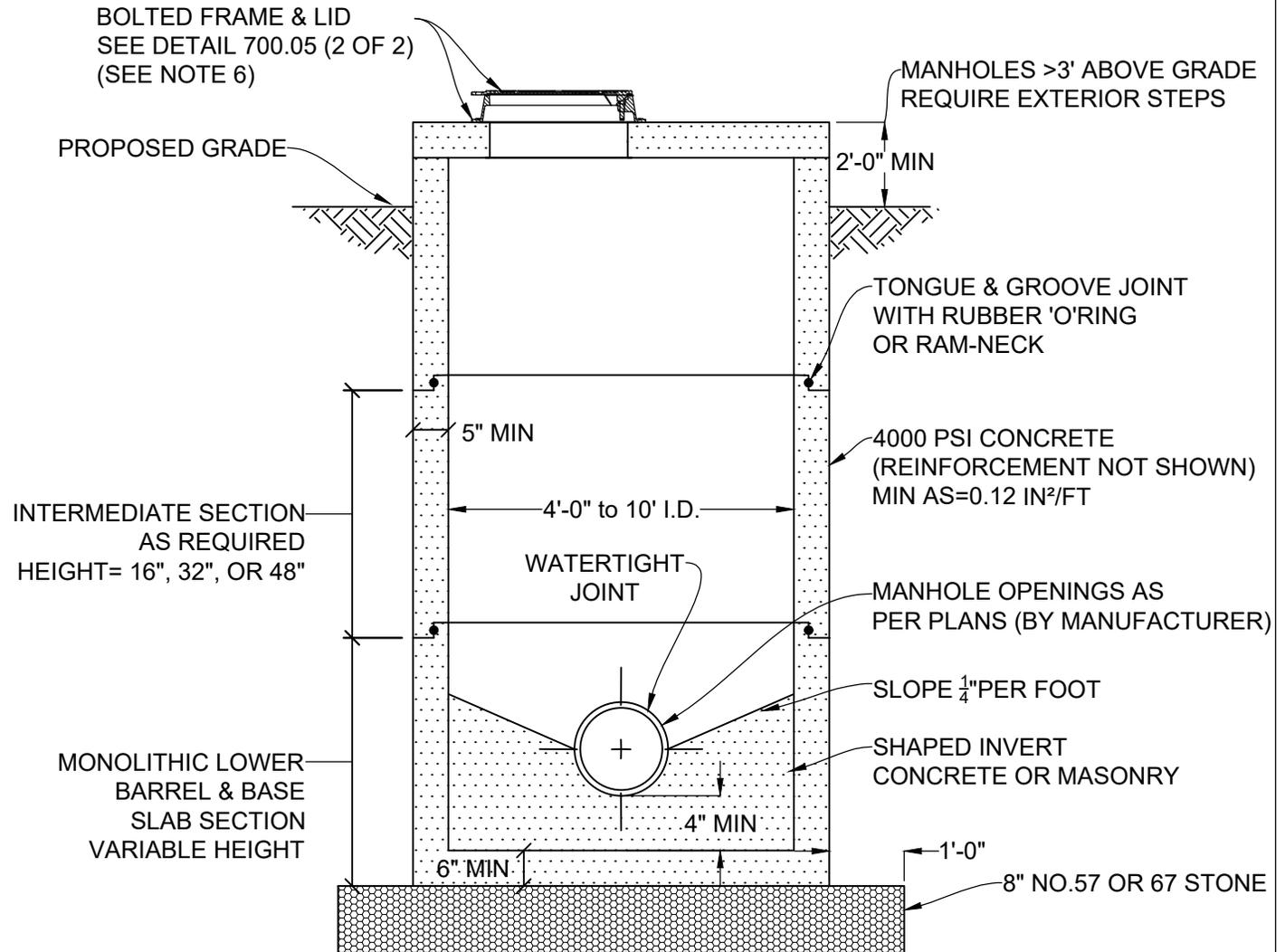
1. FOR DEAD-END MANHOLES, THE INVERT SHALL BE EXTENDED THROUGH THE MANHOLE.
2. ON THE INTERIOR OF THE MANHOLE, ALL JOINTS BETWEEN SECTIONS SHALL BE PARGED WITH NON-SHRINK GROUT.
3. ON THE INTERIOR OF ALL MANHOLES, ALL JOINTS BETWEEN SECTIONS SHALL BE PARGED WITH PRECO-PLUG QUICK SETTING GROUT.
4. ON THE EXTERIOR OF ALL MANHOLES, ALL JOINTS BETWEEN SECTIONS SHALL BE CONTINUOUSLY WRAPPED WITH 12" WIDE WATERPROOF BITUMINOUS TAPE.
5. SEWER MANHOLES WITHIN 1200 FEET OF FORCE MAIN CONNECTION SHALL HAVE INTERIOR EPOXY COATED.

FRAME SHALL BE SEALED WITH RUBBER "O" RING AND BOLTED TO MANHOLE



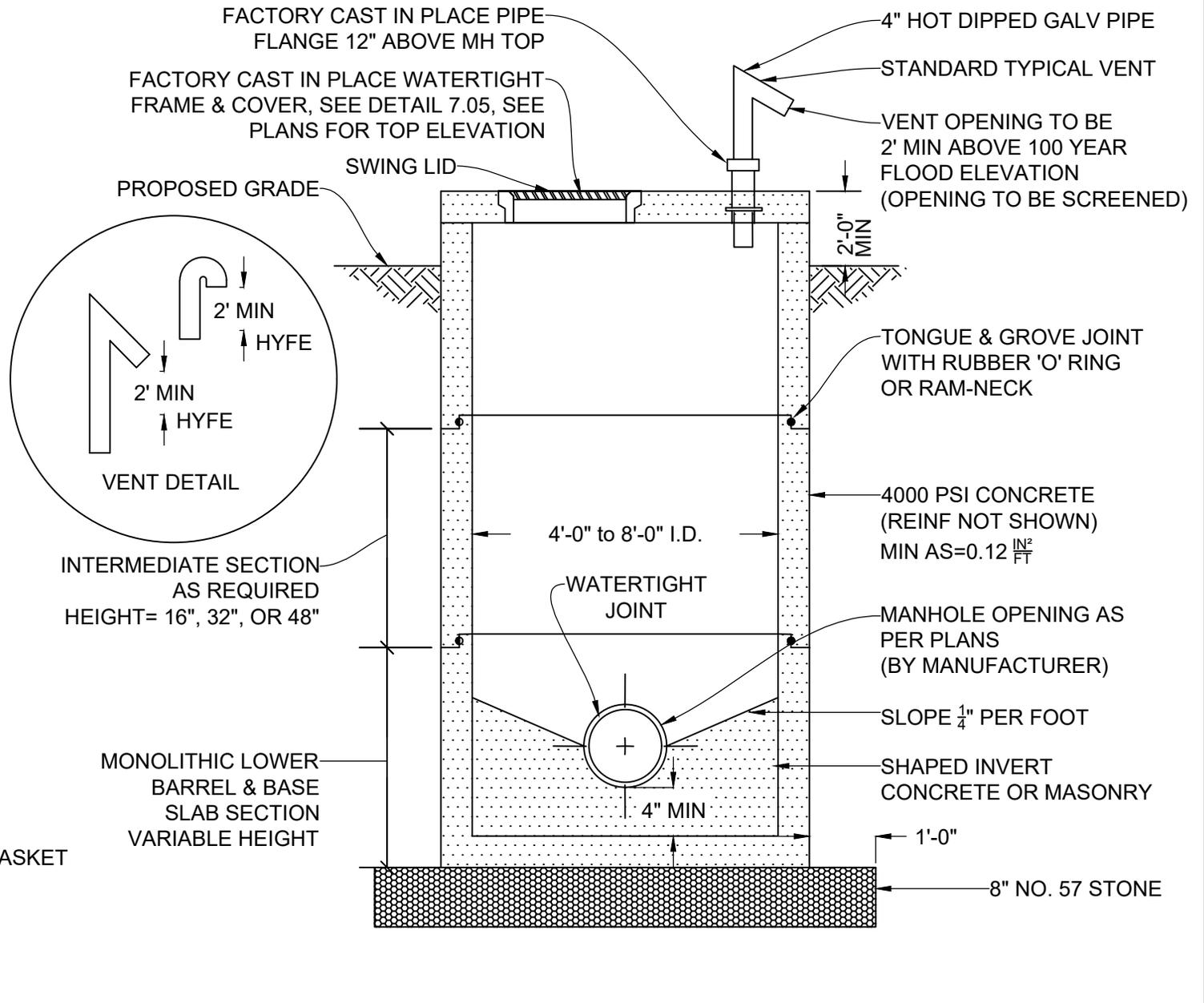
**NOTES:**

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5. SEWER MANHOLES WITHIN 1200 FEET OF FORCE MAIN CONNECTION SHALL HAVE INTERIOR EPOXY COATED.
6. SWING LIDS ONLY ALLOWED ON MANHOLES ELEVATED GREATER THAN 24" OR WATERTIGHT INSTALLATIONS.



**NOTES:**

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2. ON THE INTERIOR OF THE MANHOLE, ALL JOINTS BETWEEN SECTIONS SHALL BE PARGED WITH NON-SHRINK GROUT.
3. ON THE INTERIOR OF ALL OUTFALL MANHOLES, ALL JOINTS BETWEEN SECTIONS SHALL BE PARGED WITH PRECO-PLUG QUICK SETTING GROUT.
4. ON THE EXTERIOR OF ALL MANHOLES, ALL JOINTS BETWEEN SECTIONS SHALL BE CONTINUOUSLY WRAPPED WITH 12" WIDE WATERPROOF BITUMINOUS TAPE.
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**TOWN OF APEX  
STANDARDS**

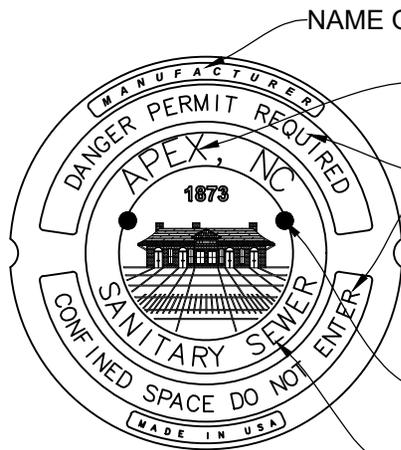
**PRECAST MANHOLE**

STD. NO.

**700.04**

EFFECTIVE: APRIL 12, 2022

SHEET 3 OF 3



NAME OF MANUFACTURER

1/4" LETTERING RECESSED

3/4" LETTERING RECESSED

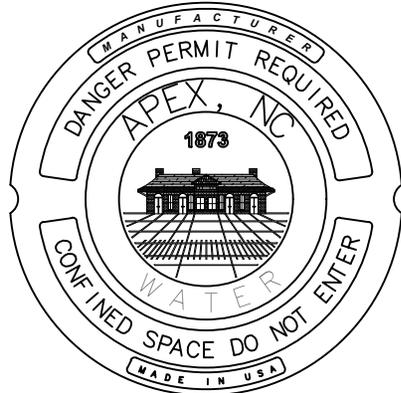
(2) OPEN PICKHOLES

(2) 1" DIA. VENT HOLES

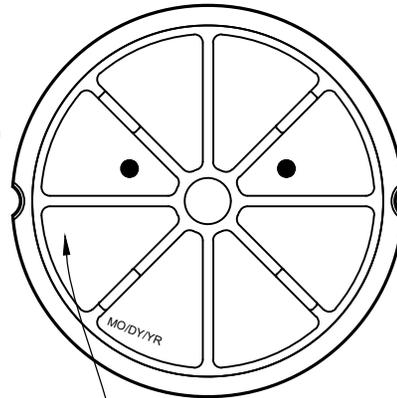
1" LETTERING RECESSED



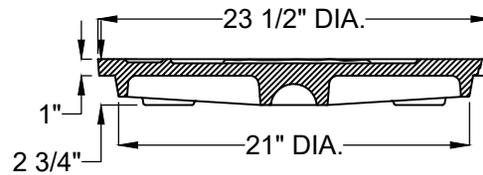
NAME OF MANUFACTURER



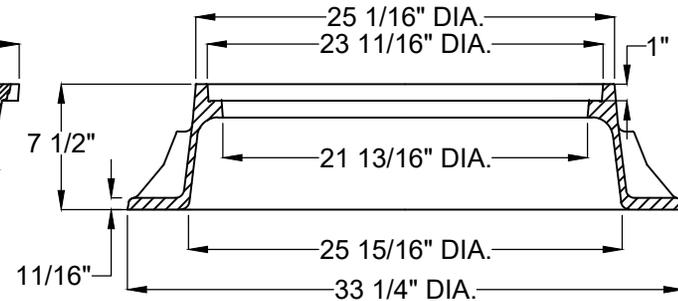
BOTTOM VIEW



COVER SECTION



FRAME SECTION



THE FOLLOWING MANHOLE COVERS **SHALL HAVE** VENT HOLES:

- SANITARY SEWER
- STORM SEWER

THE FOLLOWING MANHOLE COVERS **SHALL NOT HAVE** VENT HOLES:

- WATER VALVES
- WATER AIR-RELEASE VALVES
- FORCEMAIN AIR-RELEASE VALVES

MIN. AVG. WT.	
FRAME	150 LBS
COVER	130 LBS
TOTAL	280 LBS

TOWN OF APEX  
STANDARDS

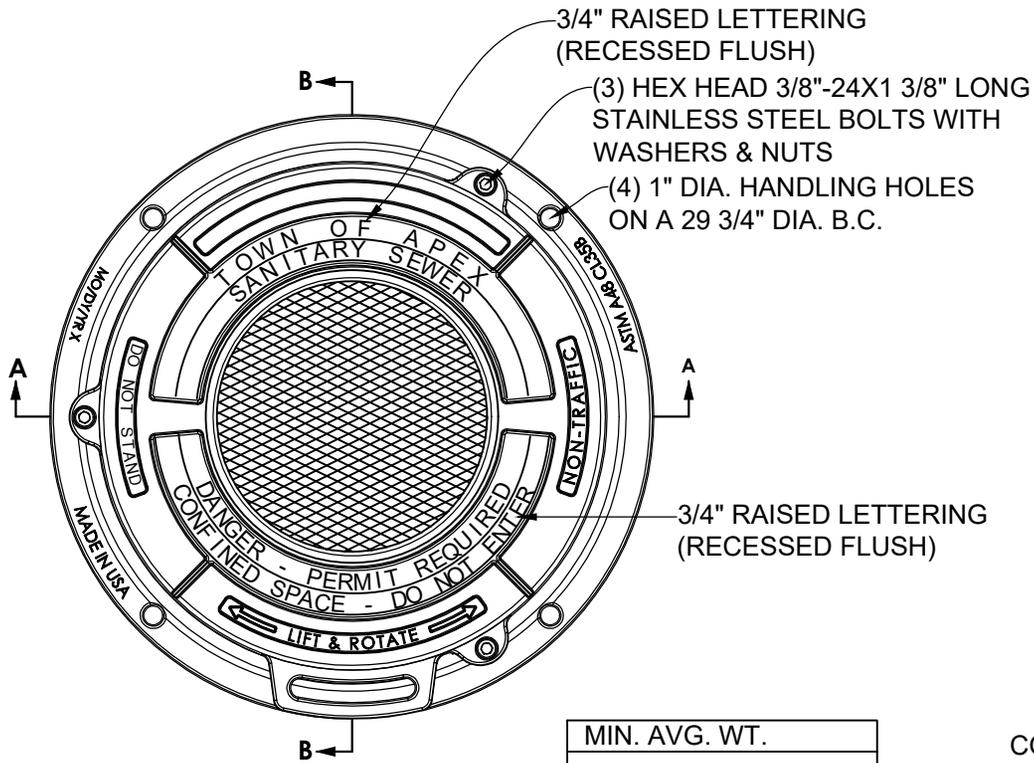
EFFECTIVE: MARCH 23, 2021

# MANHOLE RING & COVER (TYPE 1 - PAVED AREAS, H-20 RATED)

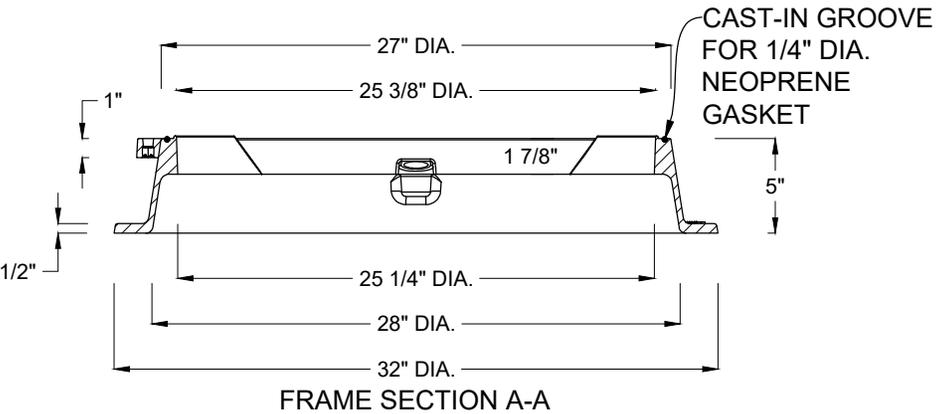
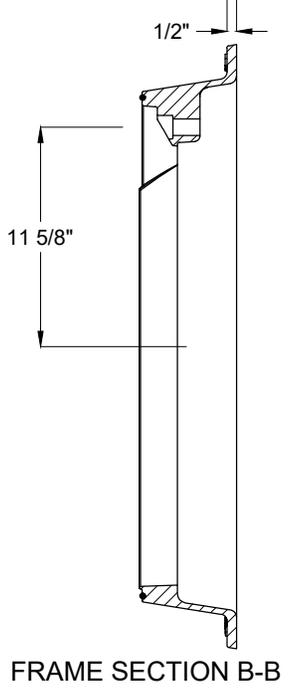
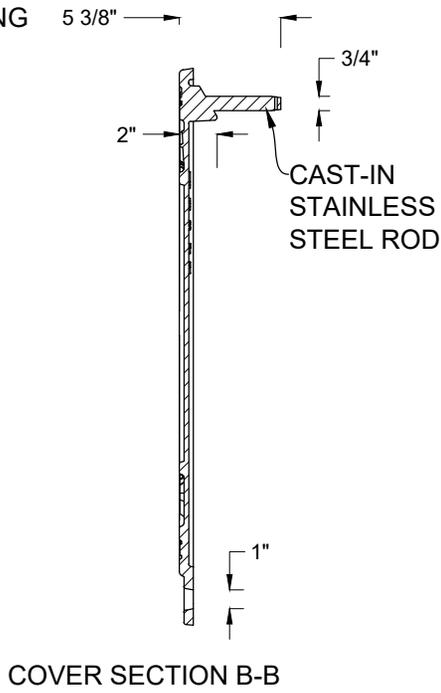
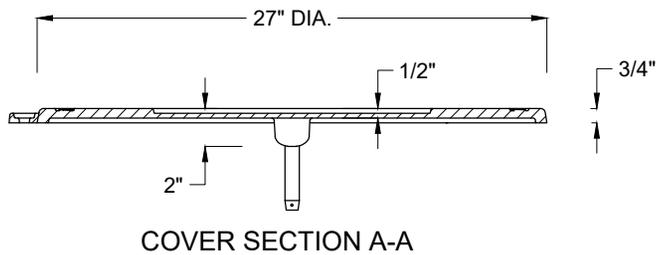
STD. NO.

700.05

SHEET 1 OF 2



MIN. AVG. WT.	
FRAME	85 LBS
COVER	65 LBS
TOTAL	150 LBS

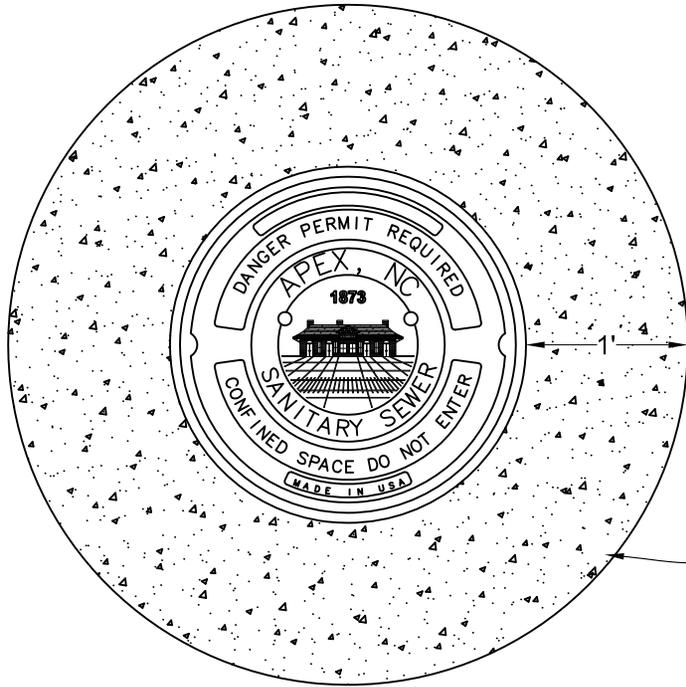


TOWN OF APEX  
STANDARDS  
EFFECTIVE: MARCH 23, 2021

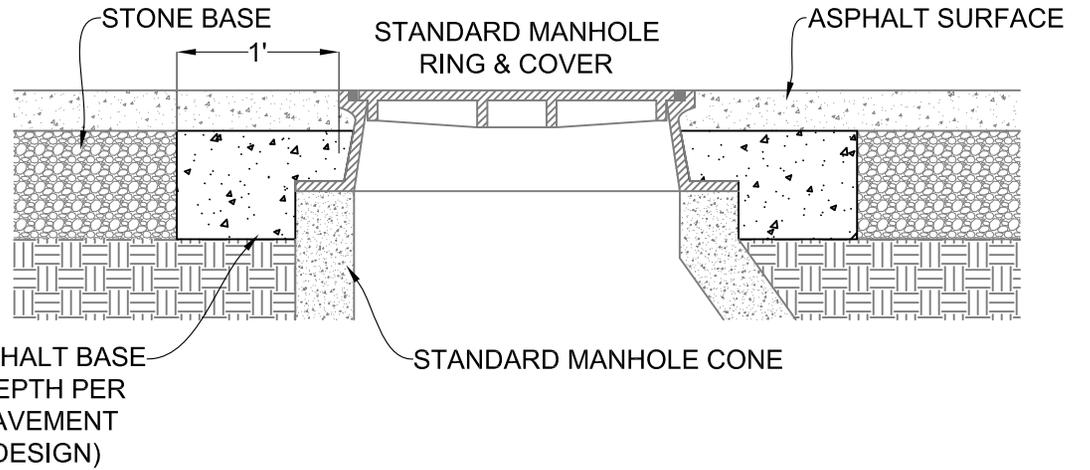
# MANHOLE RING & COVER

## (ROTATING WATERTIGHT - TYPE 2 - NON-TRAFFIC ONLY)

STD. NO.  
**700.05**  
SHEET 2 OF 2



PLAN



SECTION

FOR MANHOLES LOCATED WITHIN PAVED AREAS ONLY

TOWN OF APEX  
STANDARDS

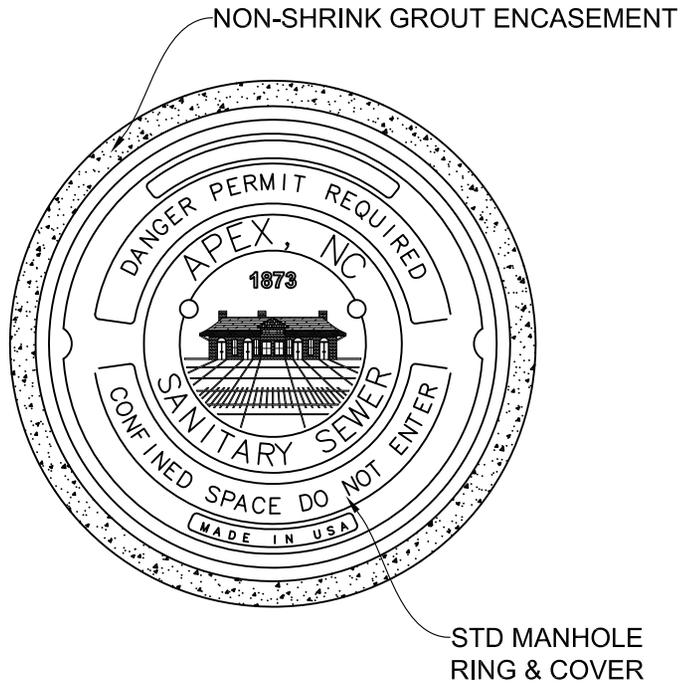
EFFECTIVE: JANUARY 22, 2014

# MANHOLE RING & COVER ENCASEMENT

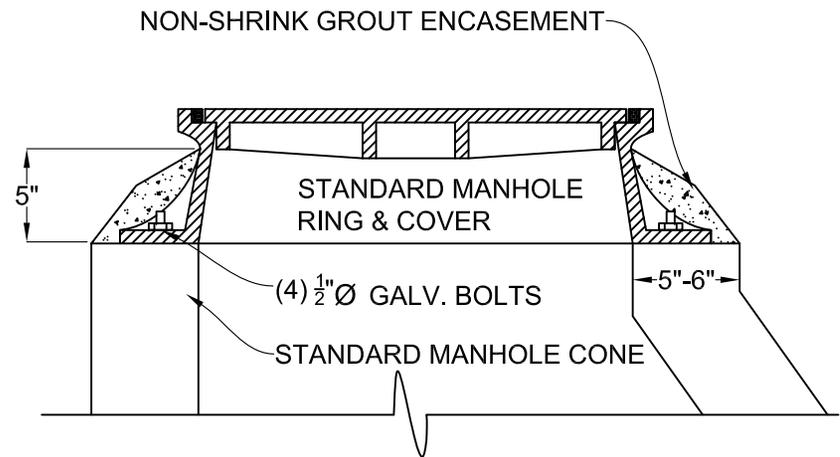
STD. NO.

700.06

SHEET 1 OF 2



PLAN



SECTION

FOR MANHOLES LOCATED OUTSIDE OF THE PAVEMENT ONLY

TOWN OF APEX  
STANDARDS

# MANHOLE RING & COVER ENCASEMENT

EFFECTIVE: NOVEMBER 20, 2007

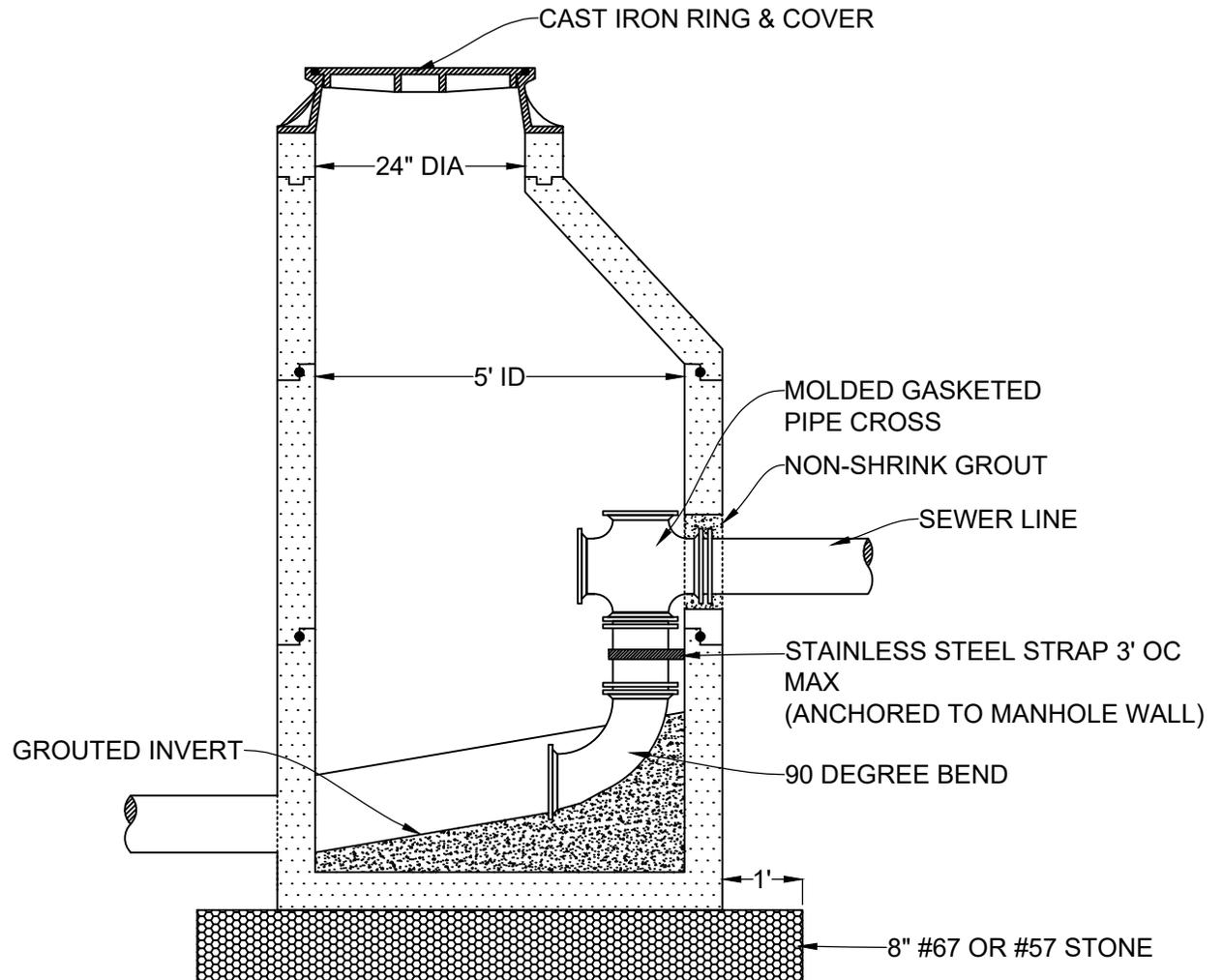
STD. NO.

700.06

SHEET 2 OF 2

NOTES:

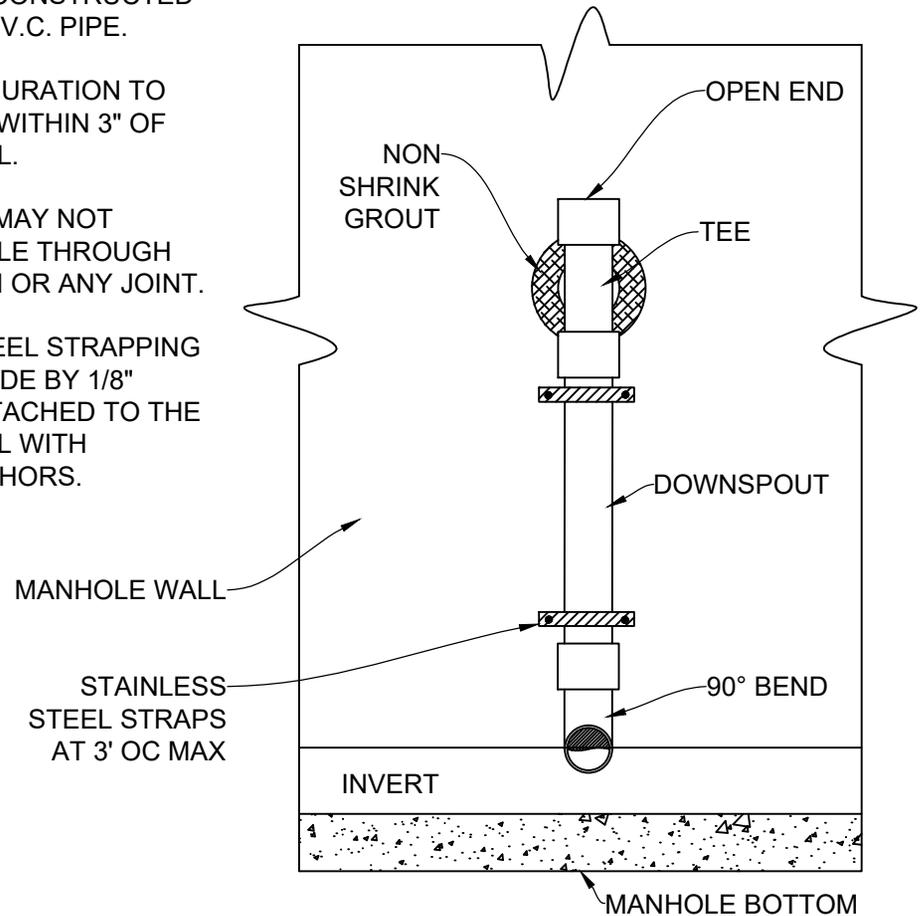
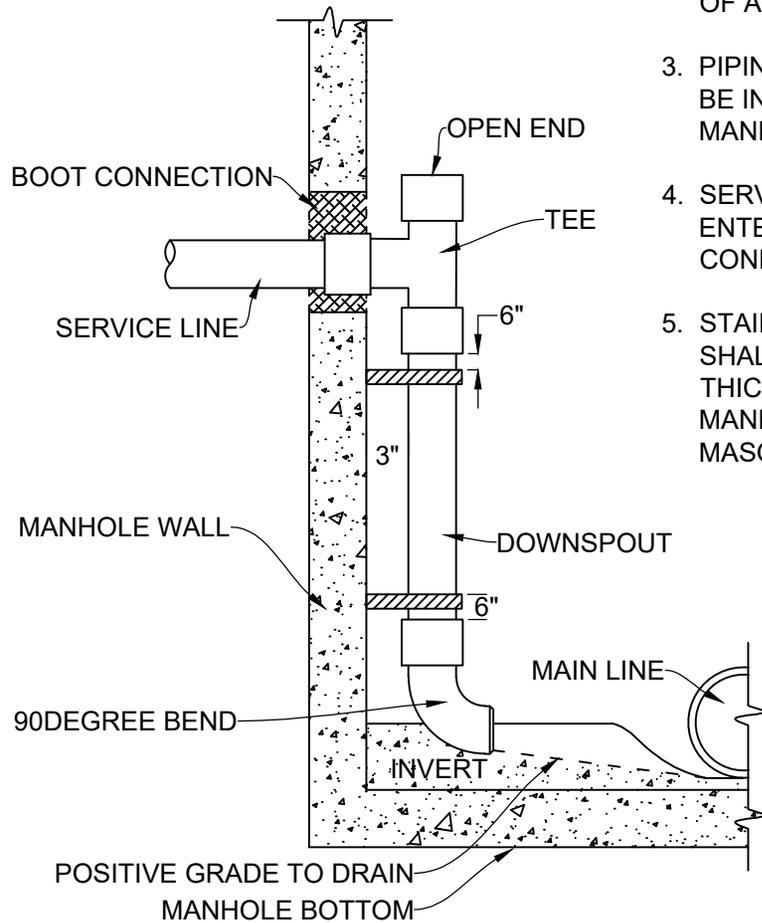
1. THE SEWER LINE ENTERING A DROP MANHOLE SHALL BE CONTINUOUS MATERIAL FROM THE UPSTREAM MANHOLE.
2. ONE INSIDE DROP PERMITTED WITHIN A 5' Ø MANHOLE. TWO INSIDE DROPS PERMITTED WITHIN A 6' Ø MANHOLE.
3. A DROP MANHOLE IS REQUIRED WHEN THE DIFFERENCE BETWEEN INVERTS EXCEEDS 24".
4. ALL JOINTS WITHIN THE MANHOLE SHALL BE OF THE MECHANICAL JOINT TYPE.
5. INSIDE DROP PIPE DIAMETER SHALL BE THE SAME AS THE INFLOW SEWER LINE DIAMETER.
6. STAINLESS STEEL STRAPPING SHALL BE 1" WIDE BY  $\frac{1}{8}$ " THICK AND ATTACHED TO THE MANHOLE WALL WITH MASONRY ANCHORS.
7. WHERE DROP EXCEEDS 24", A SERVICE DROP CONNECTION WITH CLEANOUT SHALL BE PROVIDED IN ACCORDANCE WITH THE STANDARD DETAIL.



ELEVATION

**NOTES:**

1. PIPING CONFIGURATION TO BE USED ON ALL DROPS EXCEEDING 24".
2. DROPS TO BE CONSTRUCTED OF A.B.S. OR P.V.C. PIPE.
3. PIPING CONFIGURATION TO BE INSTALLED WITHIN 3" OF MANHOLE WALL.
4. SERVICE LINE MAY NOT ENTER MANHOLE THROUGH CONE SECTION OR ANY JOINT.
5. STAINLESS STEEL STRAPPING SHALL BE 1" WIDE BY 1/8" THICK AND ATTACHED TO THE MANHOLE WALL WITH MASONRY ANCHORS.



**NOTES:**

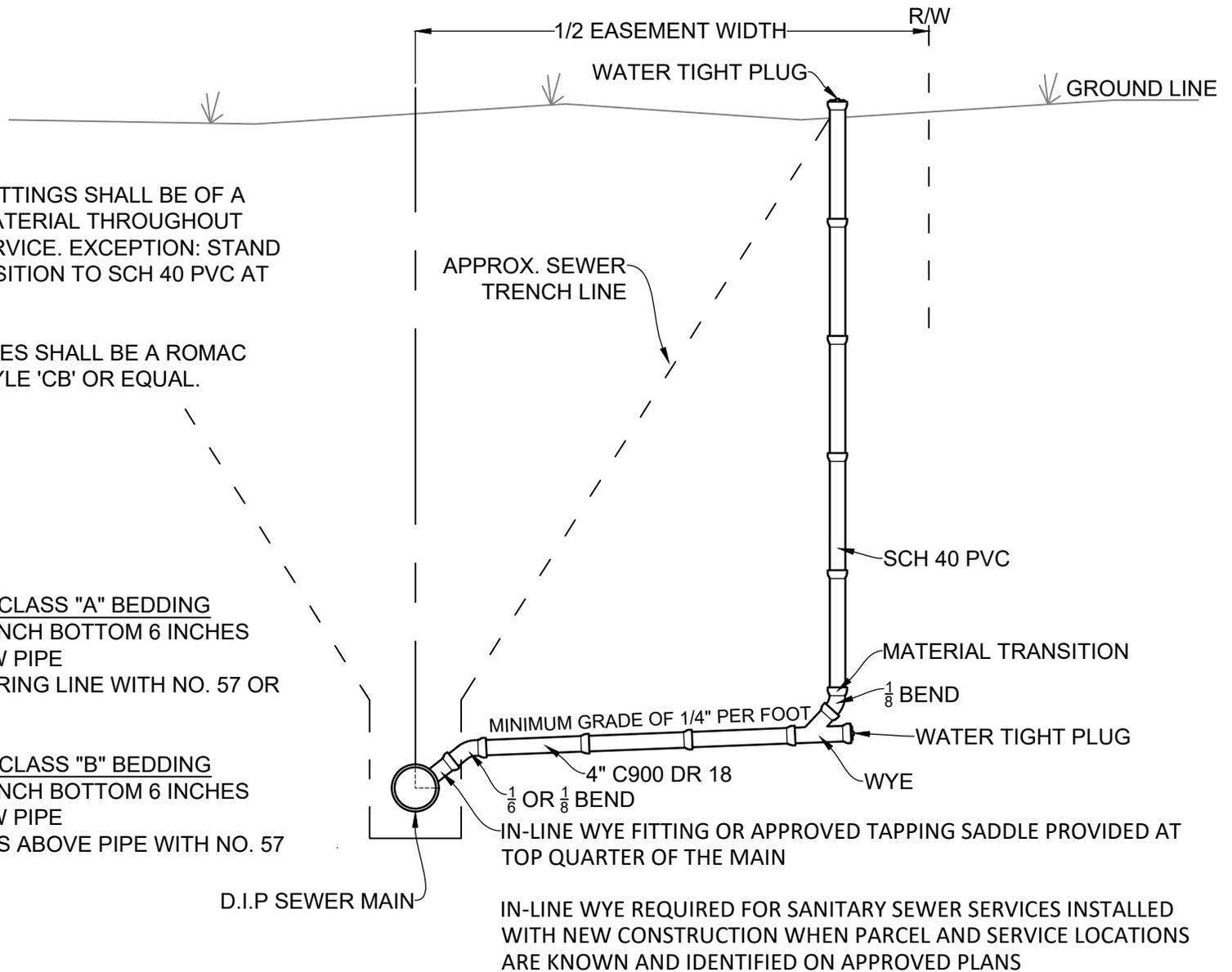
1. ALL PIPE AND FITTINGS SHALL BE OF A CONSISTENT MATERIAL THROUGHOUT THE ENTIRE SERVICE. EXCEPTION: STAND PIPE MAY TRANSITION TO SCH 40 PVC AT TOP OF WYE.
2. SERVICE SADDLES SHALL BE A ROMAC INDUSTRIES STYLE 'CB' OR EQUAL.

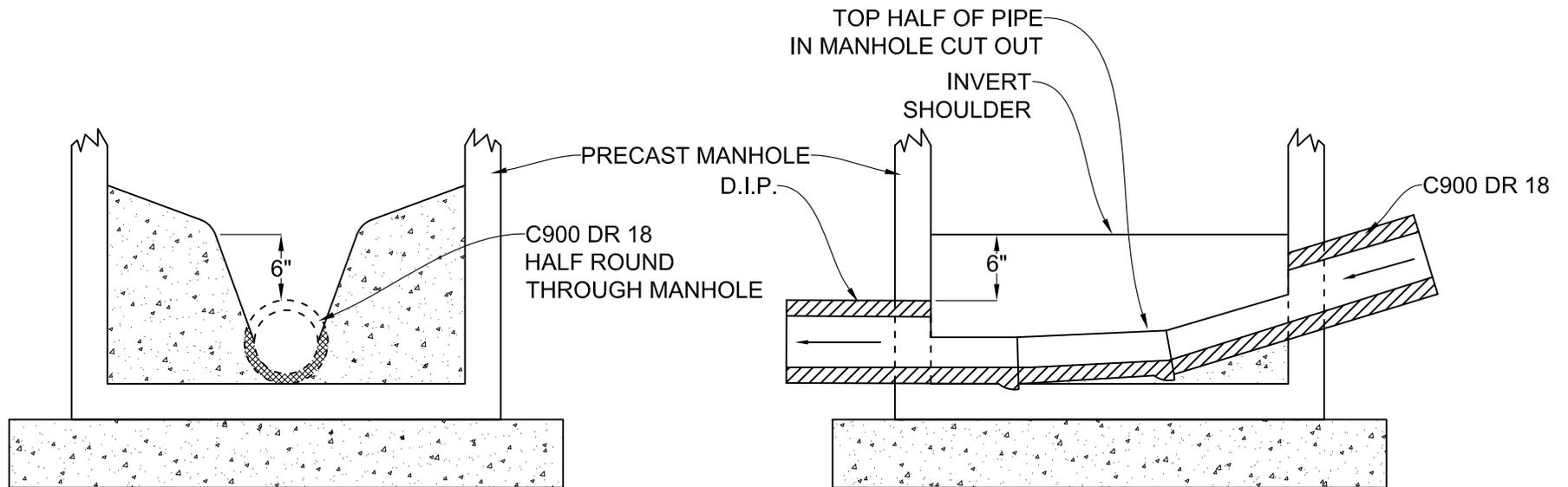
**DEPTH ≤ 16 FEET - CLASS "A" BEDDING**

- UNDERCUT TRENCH BOTTOM 6 INCHES MINIMUM BELOW PIPE
- FILL PIPE TO SPRING LINE WITH NO. 57 OR 67 STONE

**DEPTH > 16 FEET - CLASS "B" BEDDING**

- UNDERCUT TRENCH BOTTOM 6 INCHES MINIMUM BELOW PIPE
- FILL TO 6 INCHES ABOVE PIPE WITH NO. 57 OR 67 STONE





NOTES:

1. NO HORIZONTAL ALIGNMENT CHANGE CAN BE MADE WITHIN THIS MANHOLE TYPE. USE ON GRADES 10% OR GREATER.
2. EACH JOINT OF PIPE BETWEEN HIGH VELOCITY MANHOLE & MANHOLE UPGRADE SHALL HAVE A THRUST COLLAR. SEE STD.NO. 6.12.

TOWN OF APEX  
STANDARDS

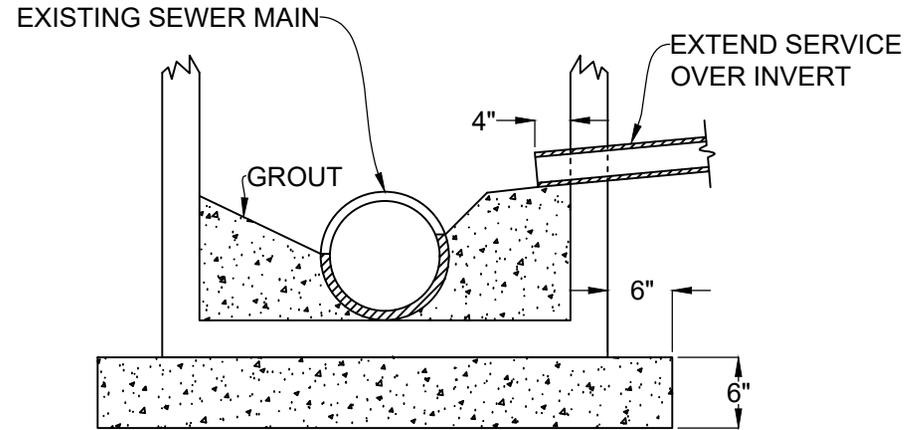
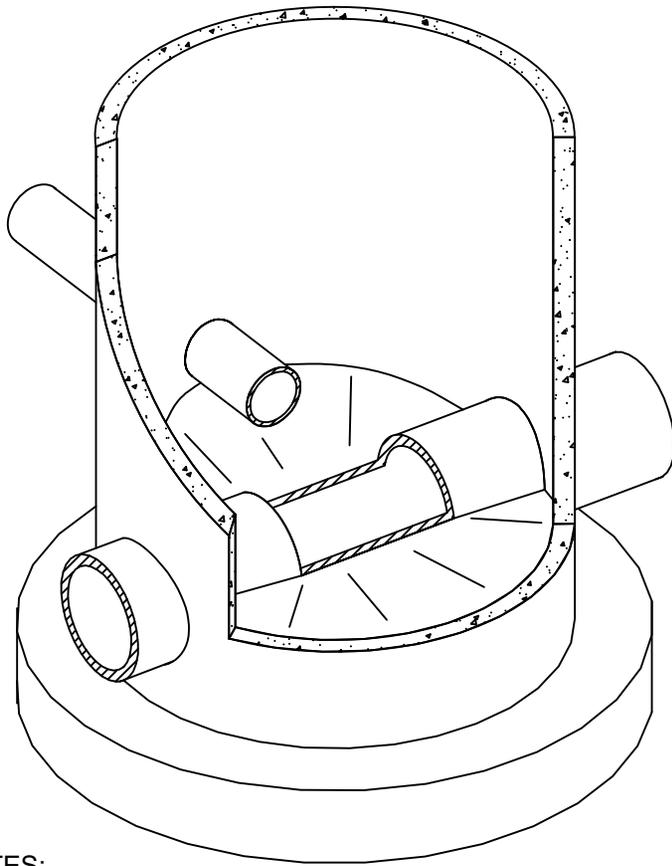
EFFECTIVE: JULY 21, 2015

# HIGH VELOCITY MANHOLE INVERT

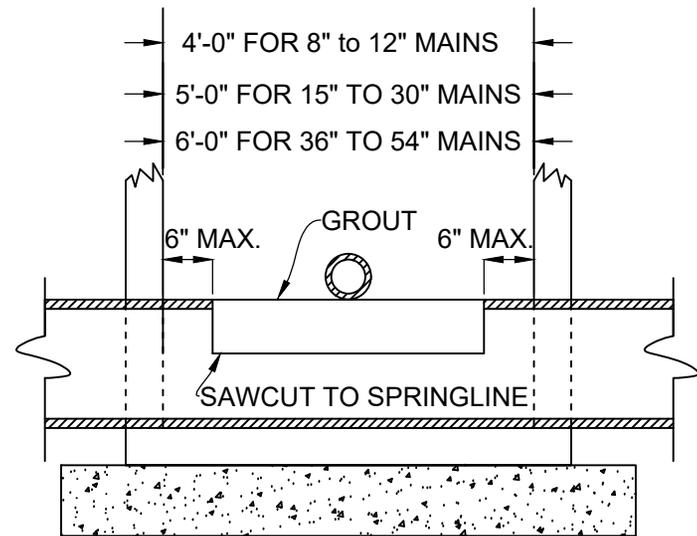
STD. NO.

**700.11**

SHEET 1 OF 1



CROSS SECTION AT EXISTING MAIN



SECTION ALONG CENTERLINE OF MAIN

NOTES:

1. FLOW SHALL BE MAINTAINED DURING CONSTRUCTION.
2. THIS DETAIL TO BE USED WHEN A 6" OR LARGER LATERAL NECESSITATES CONSTRUCTION OF A NEW MANHOLE.
3. MANHOLE PAD TO REST UPON A MINIMUM 6" COMPACTED #67 OR 57 STONE BASE.
4. DOGHOUSE MANHOLES SHALL BE USED WHERE REQUIREMENTS FOR TIE-INS TO EXISTING SEWERS.

TOWN OF APEX  
STANDARDS

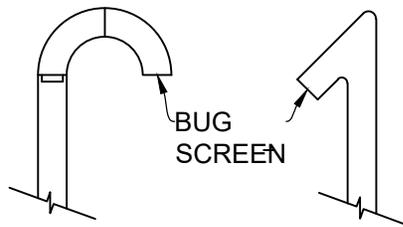
EFFECTIVE: MARCH 23, 2021

# DOGHOUSE MANHOLE INSTALLATION OVER EXISTING SEWER MAIN

STD. NO.

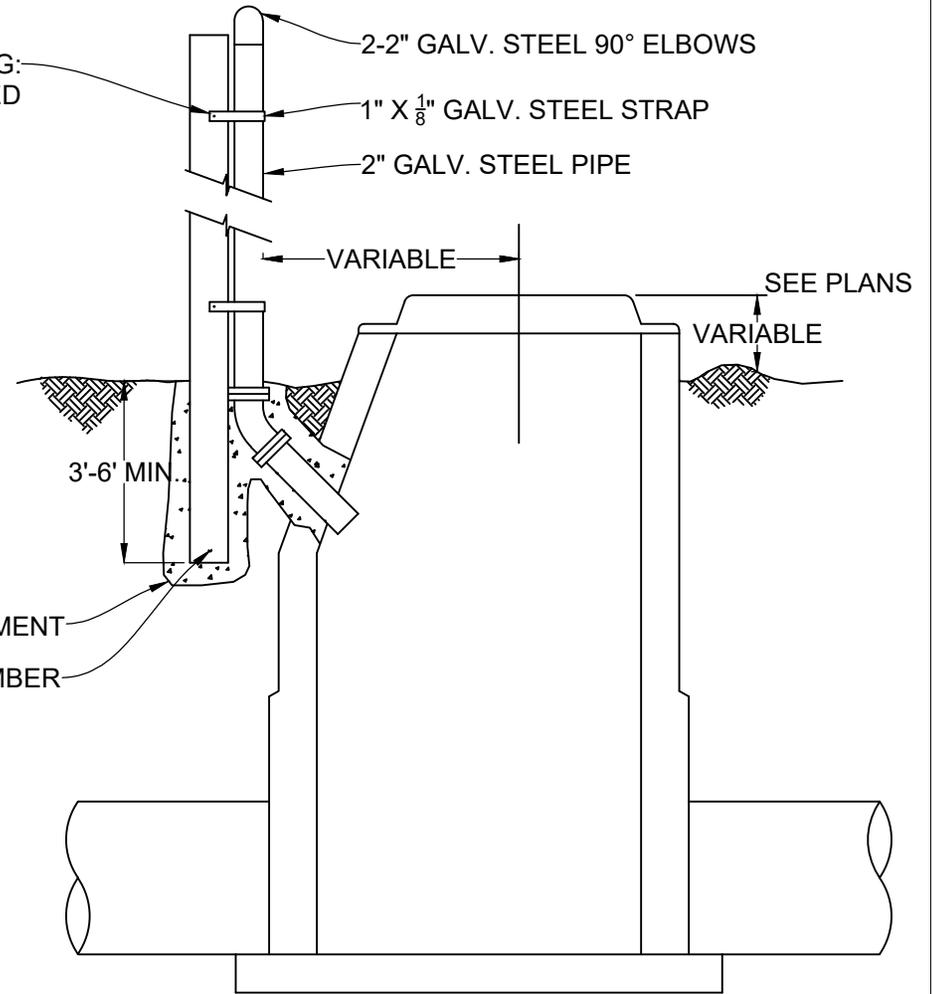
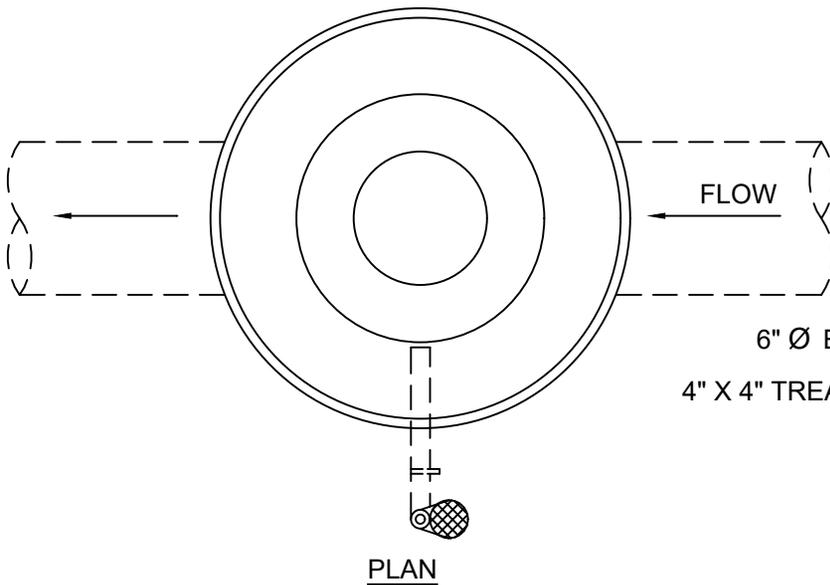
700.12

SHEET 1 OF 1



VENT

STRAP SPACING:  
1 EVERY 3' & MINIMUM OF 2 REQUIRED



NOTES:

1. LOCATION OF VENT PIPE SHALL BE AS DIRECTED BY THE CONSTRUCTION INSPECTOR.
2. WATERTIGHT RING AND COVER VENT TOP TO BE A MINIMUM OF 2FT. ABOVE 100 YEAR FLOOD PLAIN ELEVATION.

TOWN OF APEX  
STANDARDS

EFFECTIVE: MARCH 23, 2021

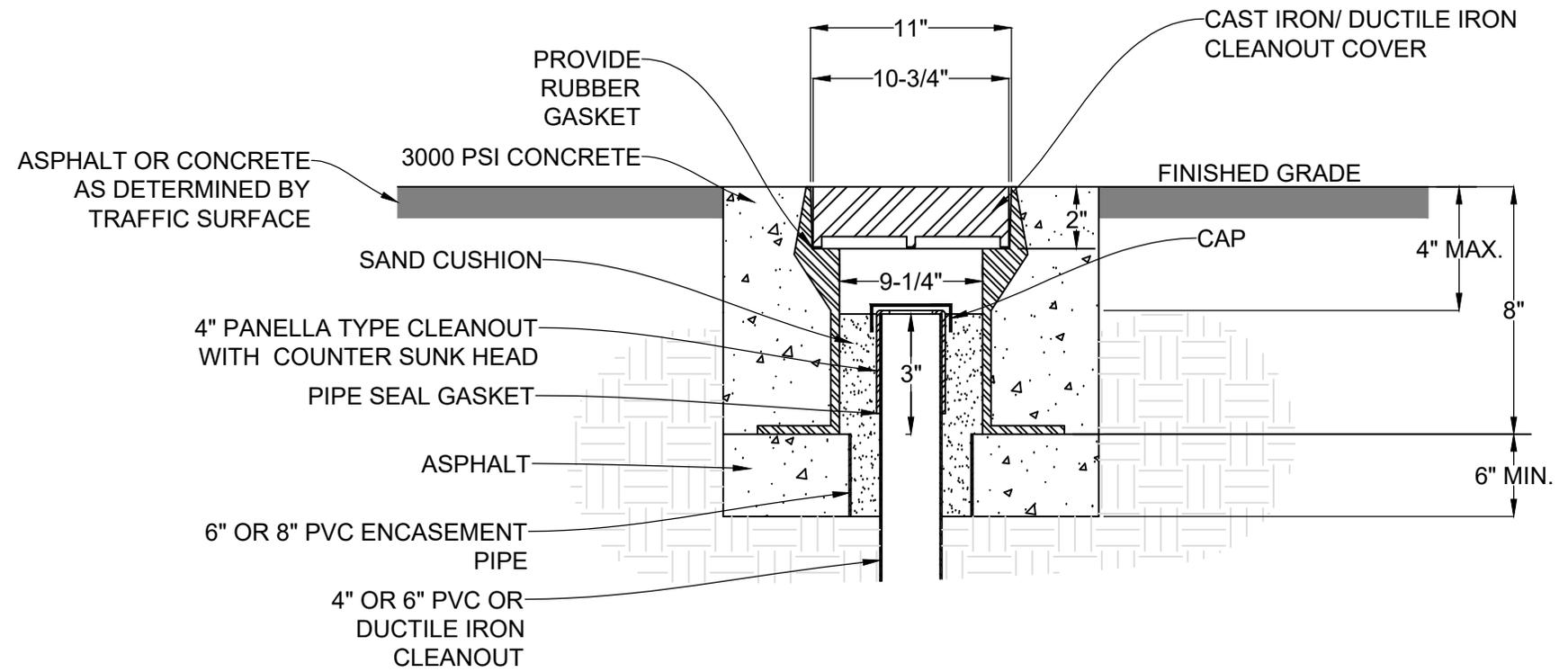
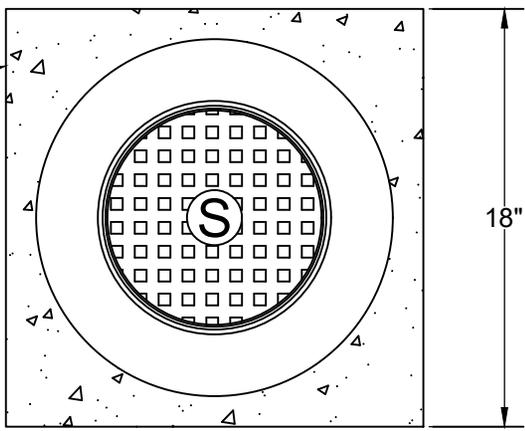
MANHOLE VENT

STD. NO.

700.13

SHEET 1 OF 1

18" SQUARE  
ASPHALT  
ENCASEMENT



TOWN OF APEX  
STANDARDS

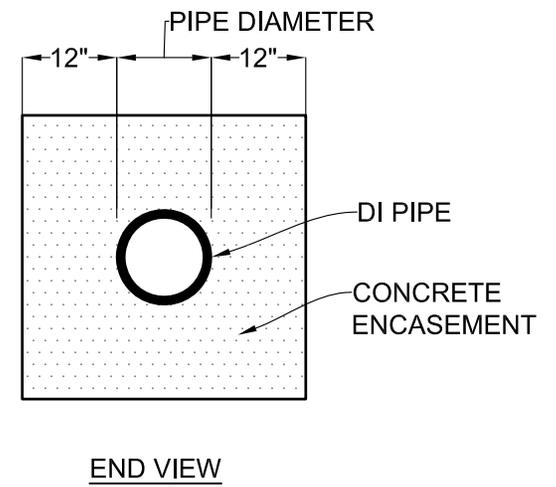
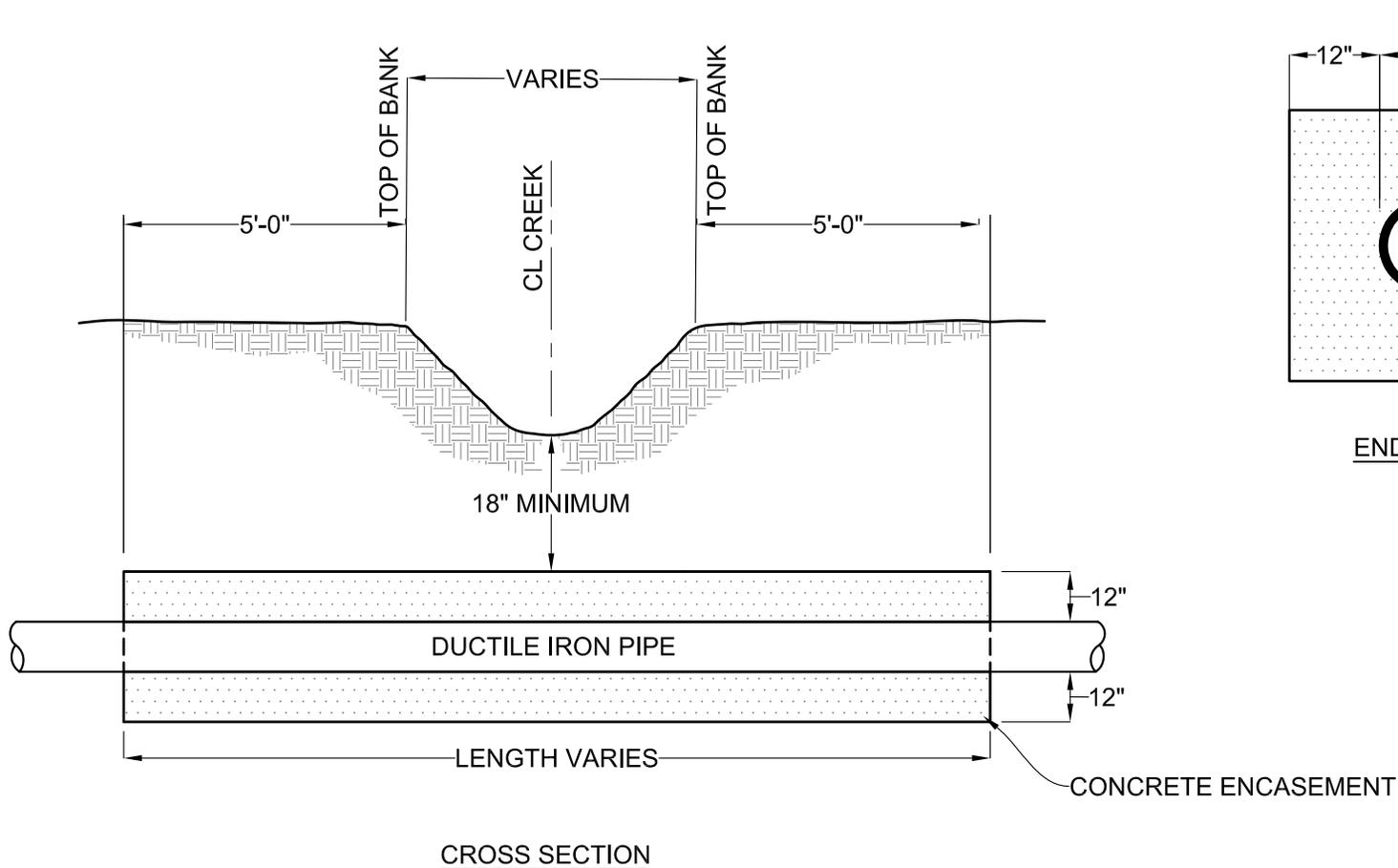
EFFECTIVE: MARCH 23, 2021

# CLEANOUT COVER FOR VEHICLE TRAFFIC AREAS

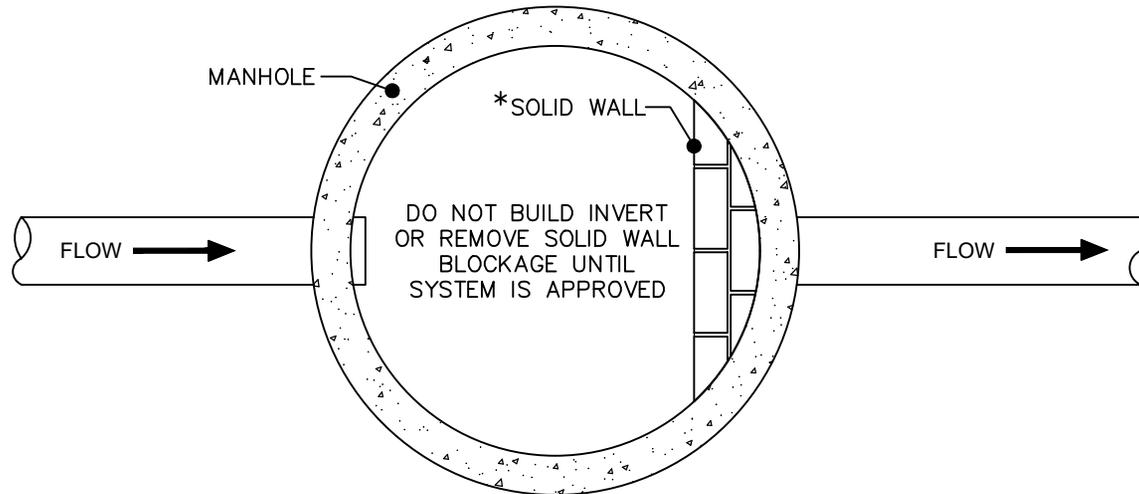
STD. NO.

700.14

SHEET 1 OF 1



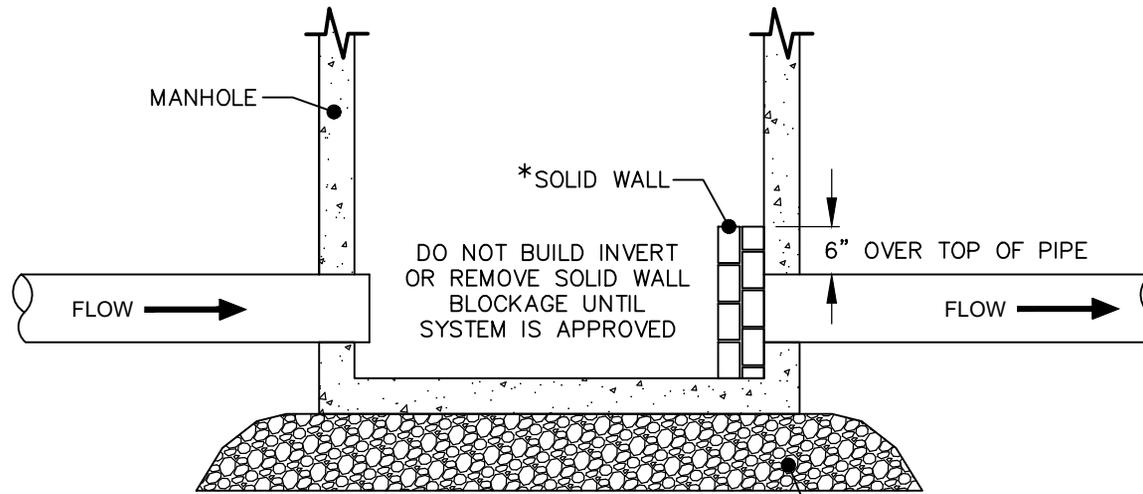
- NOTES:**
1. CONCRETE SHALL BE 3000 P.S.I.
  2. CONCRETE ENCASEMENT NOT REQUIRED WHEN PIPE IS AT LEAST 3 FEET UNDER CENTERLINE OF CREEK BOTTOM.



PLAN VIEW

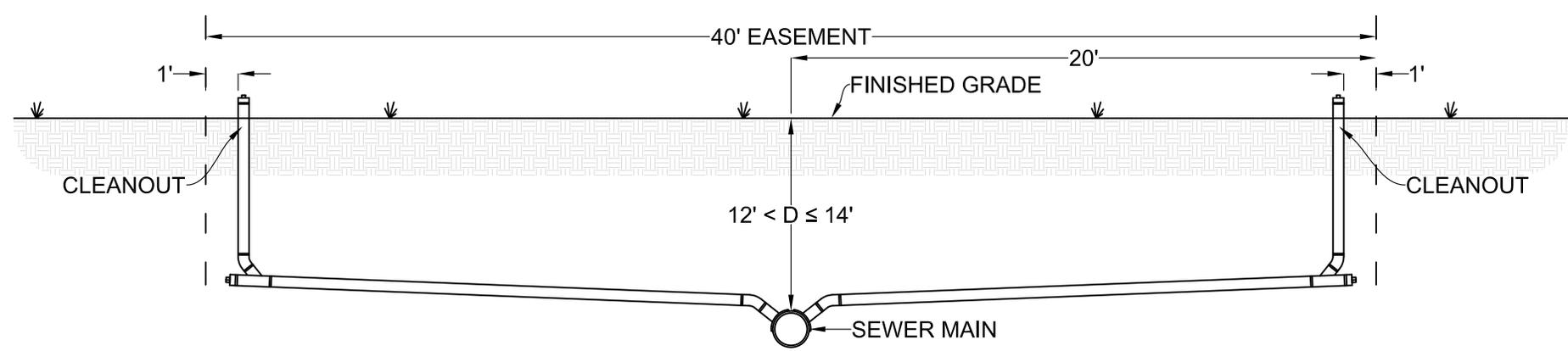
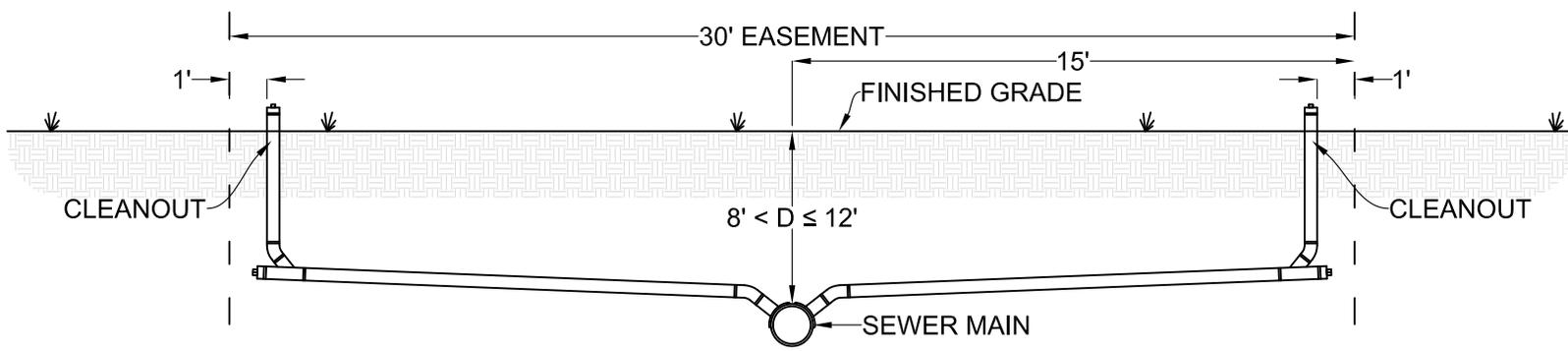
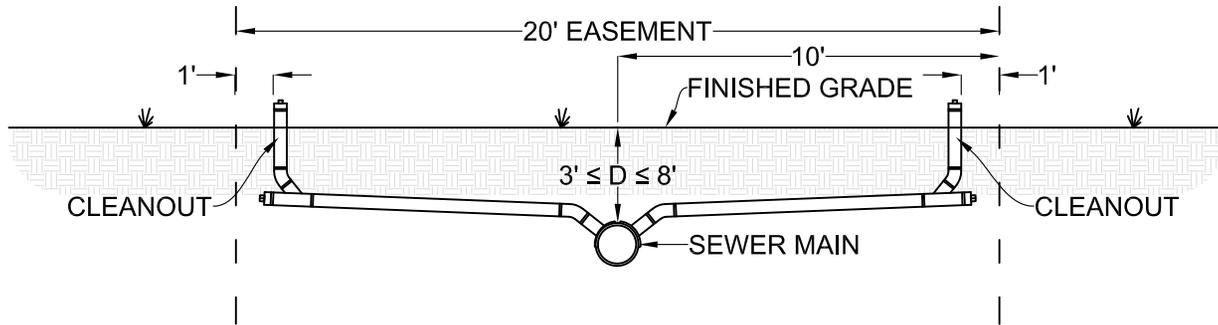
USE SOLID BRICK/BLOCK & MORTAR

PIPE DIAMETER	MINIMUM WALL THICKNESS
8" - 12"	4"
16" OR GREATER	8"



SECTION VIEW

\*LOCATED IN FIRST MANHOLE FROM TIE-IN. SOLID WALL MUST BE BUILT BEFORE LAYING NEXT RUN OF PIPE.



TOWN OF APEX  
STANDARDS

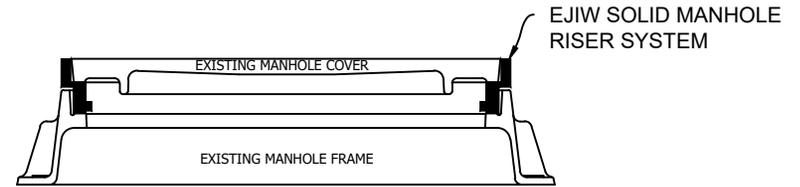
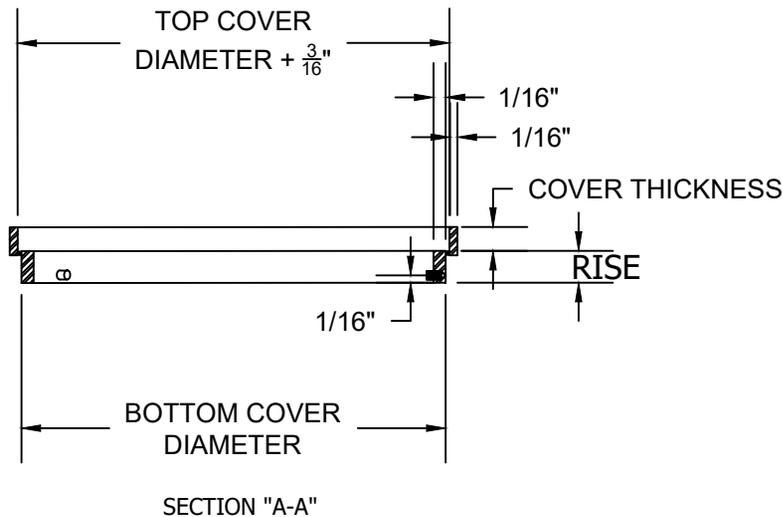
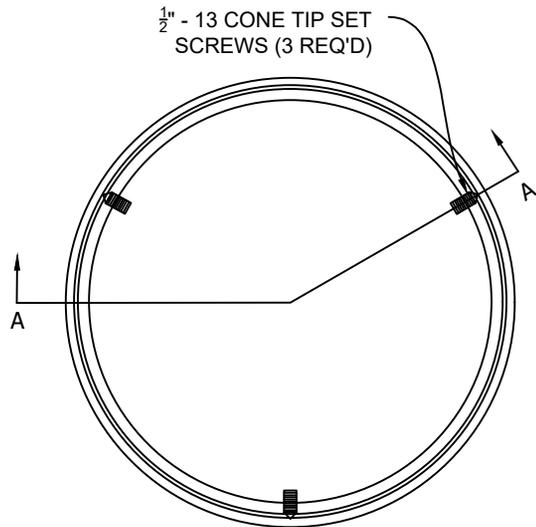
EFFECTIVE: DECEMBER 21, 2010

# SANITARY SEWER EASEMENT

STD. NO.

700.17

SHEET 1 OF 1



TYPICAL INSTALLATION  
SHOWING IN RAISED POSITION

1. MATERIAL SHALL MEET OR EXCEED MINIMUM REQUIREMENTS OF ASTM A36 CARBON STEEL.
2. TOP AND BOTTOM RINGS SHALL HAVE A CONTINUOUS WELD.
3. ALL STYLE RISERS SHALL HAVE A MINIMUM HEIGHT OF ADJUSTMENT EQUAL TO THE MANHOLE COVER THICKNESS PLUS  $\frac{1}{4}$ ".
4. EACH RISER IS CUSTOM FABRICATED FROM MEASUREMENTS PROVIDED WITH EACH OTHER. REQUIRED MEASUREMENTS INCLUDE THE FOLLOWING:
  - A. EXIST. MANHOLE COVER DIAMETER - TOP & BOTTOM
  - B. EXIST. MANHOLE COVER THICKNESS
  - C. REQUIRED HEIGHT OF ADJUSTMENT
5. MAXIMUM RECOMMENDED HEIGHT OF ADJUSTMENT FOR REPAVING PROJECTS IS 6".
6. HEIGHT ADJUSTMENTS ARE AVAILABLE IN  $\frac{1}{4}$ " INCREMENTS.
7. DURING INSTALLATION CHECK FOR FULL BEARING OF LOWER FRAME SECTION ON EXISTING CASTING.
8. DIMENSIONS MAY VARY TO MEET EXISTING FIELD CONDITIONS. ANY CHANGE IN DIMENSIONS SHALL BE APPROVED BY THE OWNER.
9. AFTER FABRICATION, RISERS ARE COATED WITH EITHER A WATER BASED BITUMINOUS ASPHALT EMULSION PAINT OR BASE F-COAT W/ CHARCOAL BLACK TOPCOAT.
10. AVAILABLE OPTIONS IN LIEU OF CONE POINT SET SCREWS INCLUDE "L" CLIPS WITH HEX HEAD BOLTS.
11. IT IS PREFERABLE THAT THESE RISERS ONLY BE USED AS A LAST RESORT WHEN THE MANHOLE CAN'T BE RAISED IN ITS ENTIRETY

TOWN OF APEX  
STANDARDS

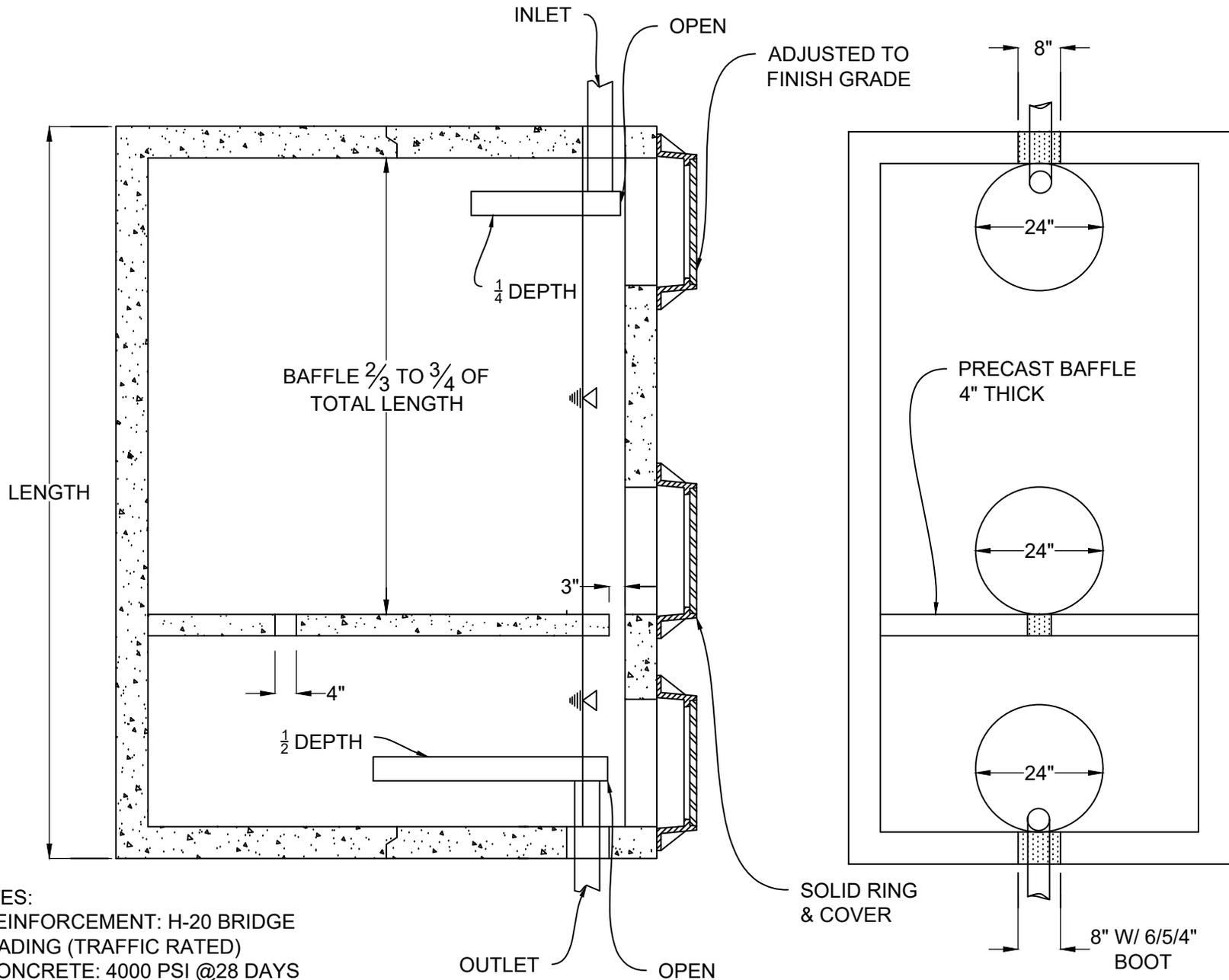
SOLID STEEL RISER ASSEMBLY

EFFECTIVE: MARCH 23, 2021

STD. NO.

700.18

SHEET 1 OF 1



- NOTES:
1. REINFORCEMENT: H-20 BRIDGE LOADING (TRAFFIC RATED)
  2. CONCRETE: 4000 PSI @28 DAYS
  3. EARTHCOVER: 0' TO 5' MAX.

TOWN OF APEX  
STANDARDS

EFFECTIVE: MARCH 23, 2021

# OIL & GREASE STRUCTURES

STD. NO.

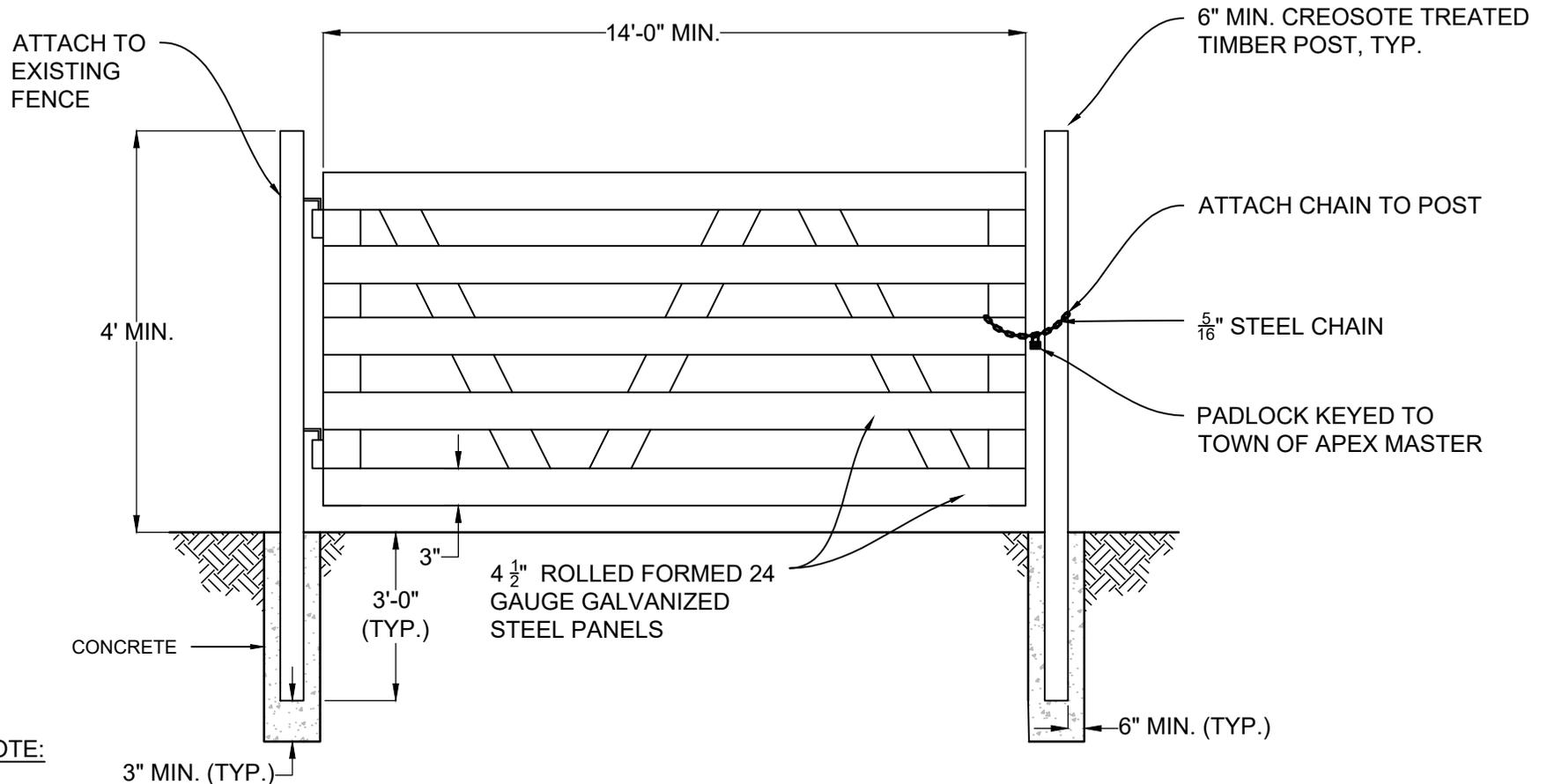
700.19

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NOTES:

1. BAFFLE WALL LOCATED AT A DISTANCE FROM INLET WALL  $\frac{2}{3}$  TO  $\frac{3}{4}$  OF THE TOTAL LENGTH OF THE INTERCEPTOR OR SEPARATOR AS SHOWN ON DETAIL S-40. BAFFLE WALLS LOCATED AT A DISTANCE APPROXIMATELY OF  $\frac{1}{3}$  OF THE TOTAL LENGTH OF THE SEPARATOR AS SHOWN ON DETAIL S-40.01.
2. EACH INTERCEPTOR OR SEPARATOR SHALL HAVE INLET AND OUTLET TEES. THE OUTLET TEE SHALL EXTEND 50% INTO THE LIQUID DEPTH. THE INLET TEE SHALL EXTEND 25% INTO THE LIQUID DEPTH. INLET AND OUTLET TEES MUST BE OPEN TO ALLOW THE COLLECTION OF F.O.G.
3. ACCESS OPENINGS OVER EACH COMPARTMENT WITHIN THE INTERCEPTOR OR SEPARATOR SHALL BE 24 INCHES IN DIAMETER AND CONTAIN PICK HOLES. ALL COVERS SHALL BE CONSTRUCTED OF CAST IRON OR EQUIVALENT TRAFFIC BEARING MATERIAL. MANHOLE COVERS MUST EXTEND TO FINISH GRADE AND BE INSTALLED TO EXCLUDE THE ENTRANCE OF STORMWATER INTO THE INTERCEPTOR OR SEPARATOR.
4. FULL SIZE DUAL SWEEP CLEANOUTS SHALL BE INSTALLED ON THE INLET AND OUTLET SIDES OF THE INTERCEPTOR OR SEPARATOR.
5. INTERCEPTORS AND SEPARATORS MUST BE VENTED IN ACCORDANCE WITH THE NC STATE PLUMBING CODE.
6. CONCRETE: 4000 PSI @ 28 DAYS
7. DESIGN: ACI 318 BUILDING CODE  
 ASTM C1613-06 FOR GREASE INTERCEPTORS  
 ASTM C913-02 FOR WATER AND WASTEWATER STRUCTURES  
 ASTM C890-06 FOR MINIMAL STRUCTURAL DESIGN LOADING
8. INTERCEPTORS AND SEPARATORS SHALL BE DESIGNED TO WITHSTAND AN H-20 WHEEL LOAD
9. INTERCEPTORS OR SEPARATORS MADE OF POLYETHYLENE OR FIBERGLASS SHALL INCLUDE A MINIMUM 12,000 PSI TENSILE STRENGTH, 19,000 PSI FLEXURAL STRENGTH, AND 800,000 PSI FLEXURAL MODULUS.
10. ALL INTERCEPTORS AND SEPARATORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.

LOCALLY AVAILABLE SIZES	
INTERCEPTOR CAPACITY (GAL.)	SEPARATOR CAPACITY (GAL.)
300	1000
550	1200
750	1600
1000	
1200	
1500	
2000	
2500	
3000	
4000	
5000	
6000	
8000	



**NOTE:**

1. A FENCE GATE IS REQUIRED AT THE LOCATION WHERE IT CROSSES THE SANITARY SEWER EASEMENT. GATE MUST BE CENTERED ON THE SEWER PIPE. OWNER MUST APPLY FOR ENCROACHMENT AGREEMENT PRIOR TO INSTALLATION.
2. IN RESIDENTIAL AREAS, ALTERNATE FENCE GATES MATCHING EXISTING FENCES MAY BE USED AS APPROVED BY THE WATER RESOURCES DIRECTOR.
3. GATES MAY BE SINGLE OR DOUBLE PANEL AS LONG AS CENTERED ON THE PIPE.
4. FOR COMMERCIAL SITES, THE GATE WIDTH MUST BE AT LEAST 20'-0".

**TOWN OF APEX  
STANDARDS**

EFFECTIVE: APRIL 12, 2022

**TYPICAL EASEMENT FENCE GATE**

STD. NO.

**700.20**

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