

STANDARD DETAILS



CITY OF SHELBY
ENGINEERING DEPARTMENT

ADOPTED NOVEMBER 1, 2021

RESOLUTION NO. 66-2021

A RESOLUTION ADOPTING THE CITY OF SHELBY STANDARD DETAILS

WHEREAS, the existing City of Shelby Standard Details were adopted by the City of Shelby in November 2009,

WHEREAS, the City of Shelby Engineering Department and the City Council of the City of Shelby desire to maintain an updated set of Standard Details to ensure quality and consistency in the construction of infrastructure improvements; and

WHEREAS, the City desires to replace the current City of Shelby Standard Details with an updated version of the City of Shelby Standard Details.

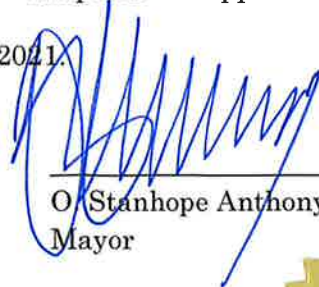
NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF SHELBY, NORTH CAROLINA:

Section 1. The “City of Shelby Standard Details” dated as November 1, 2021 and on file in the City Engineer’s Office are hereby adopted as the official Standard Details of the City of Shelby.

Section 2. The City Engineer shall periodically make recommendations to the City Manager regarding updates to the “City of Shelby Standard Details” in accord with modern technical applications and/or permitted changes based on industry standards. The City Manager shall bring substantial changes within these standard details to the attention of the City Council for consideration and action as he deems necessary.

Section 3. This resolution shall become effective upon adoption and approval.

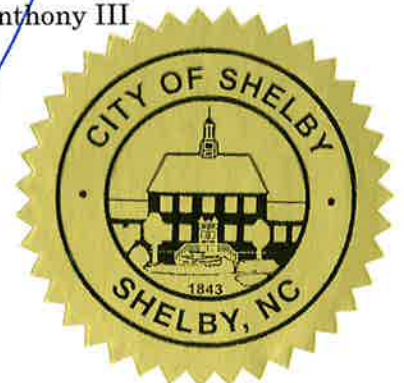
Adopted and approved this the 1st day of November 2021.



O Stanhope Anthony III
Mayor

ATTEST:


Bernadette A. Parduski, NC-CMC, IIMC-MMC
City Clerk



CITY OF SHELBY STANDARDS DETAILS - 2021

The following Standard Details are intended to be used in conjunction with NCDOT Roadway Standard Drawings and NCDOT Standard Specifications for Roads and Structures for all development within the City of Shelby and the City of Shelby ETJ unless otherwise directed or permitted by the City Engineer.

The purpose of these Standard Details is to provide guidance that results in a high level of quality and consistency of construction. Whereas it is the intent of these Standard Details to govern all new construction, City staff shall interpret and apply the Standards in a manner which achieves their intent, while encouraging and enabling the redevelopment of infill and vacant parcels. These Standards shall apply to, regulate, and guide the preparation of design plans for construction of streets, highways, alleys, drainage, utilities, site access, and other similar development within the City Limits and ETJ.

It is the responsibility of the user to ensure they are using the most recent revisions of these Standard Details or the appropriate NCDOT Standard Specification. It is also the user's responsibility to ensure all Federal, State and Local codes and standards are met. In the case of conflicting Standard Details and/or regulations, the standard that is more restrictive shall be utilized.

STANDARD DETAILS - 2021

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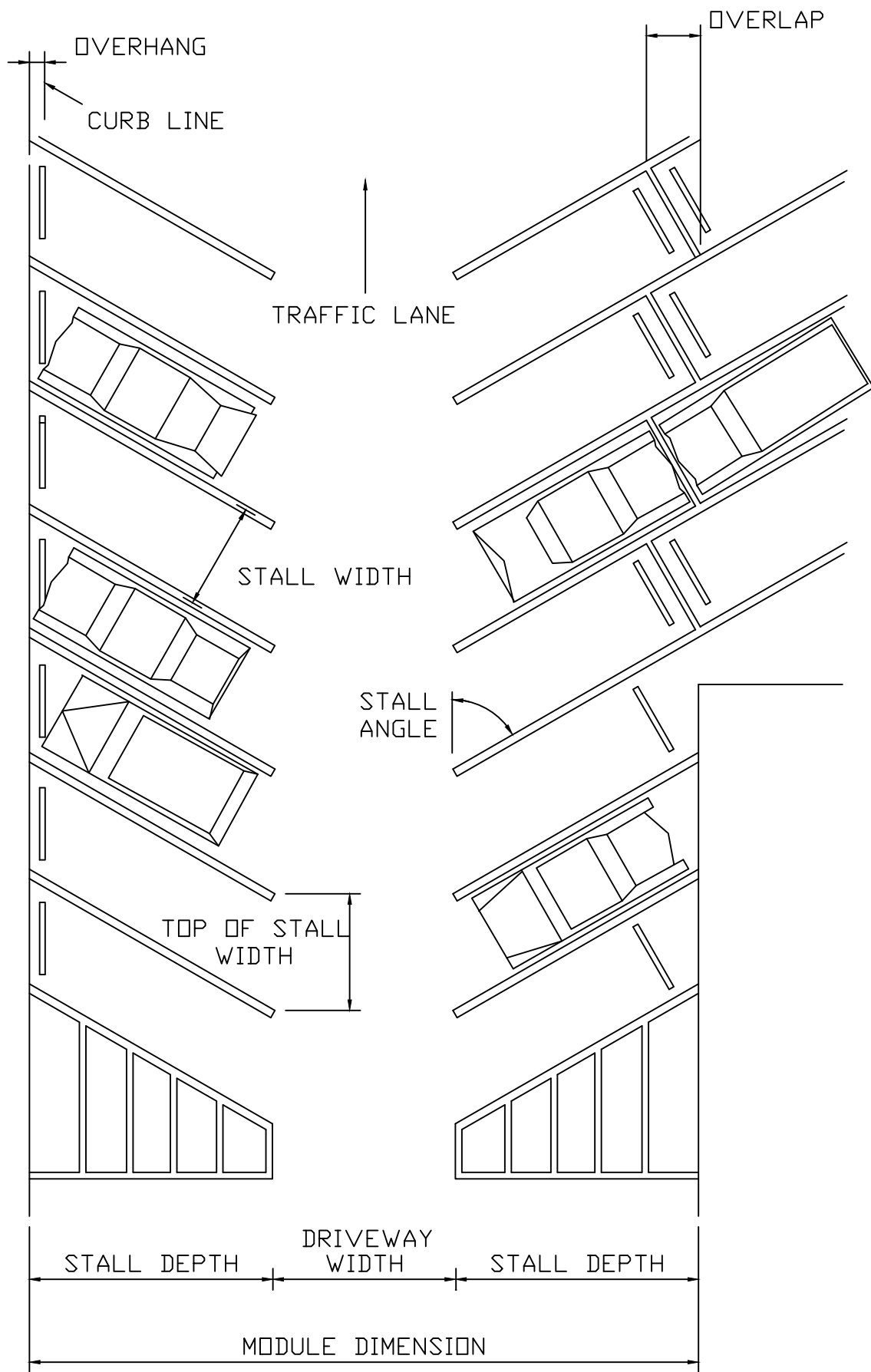
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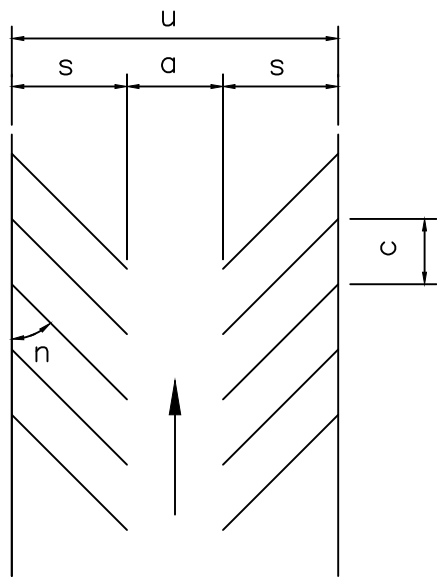


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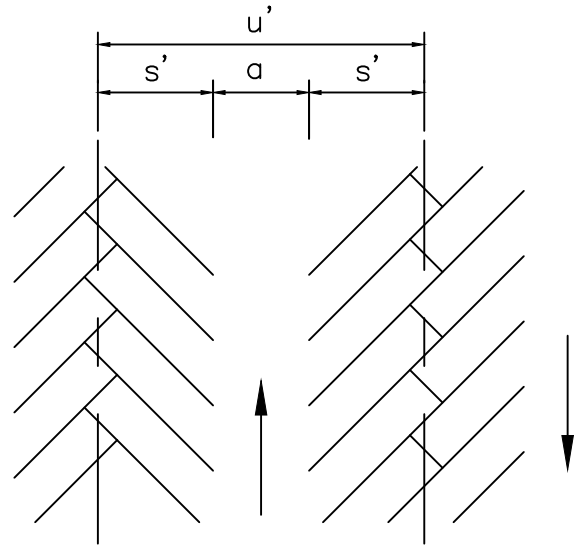
DATE	REVISIONS

PARKING LOT DEFINITIONS





SINGLE UNIT



OVERLAPPING UNITS

n	s	a	c	u	s'
90°	20'-0"	24'-0"	9'-0"	64'-0"	20'-0"
60°	21'-10"	18'-0"	10'-5"	61'-8"	19'-7"
45°	20'-6"	13'-0"	12'-9"	54'-0"	17'-3 1/2"

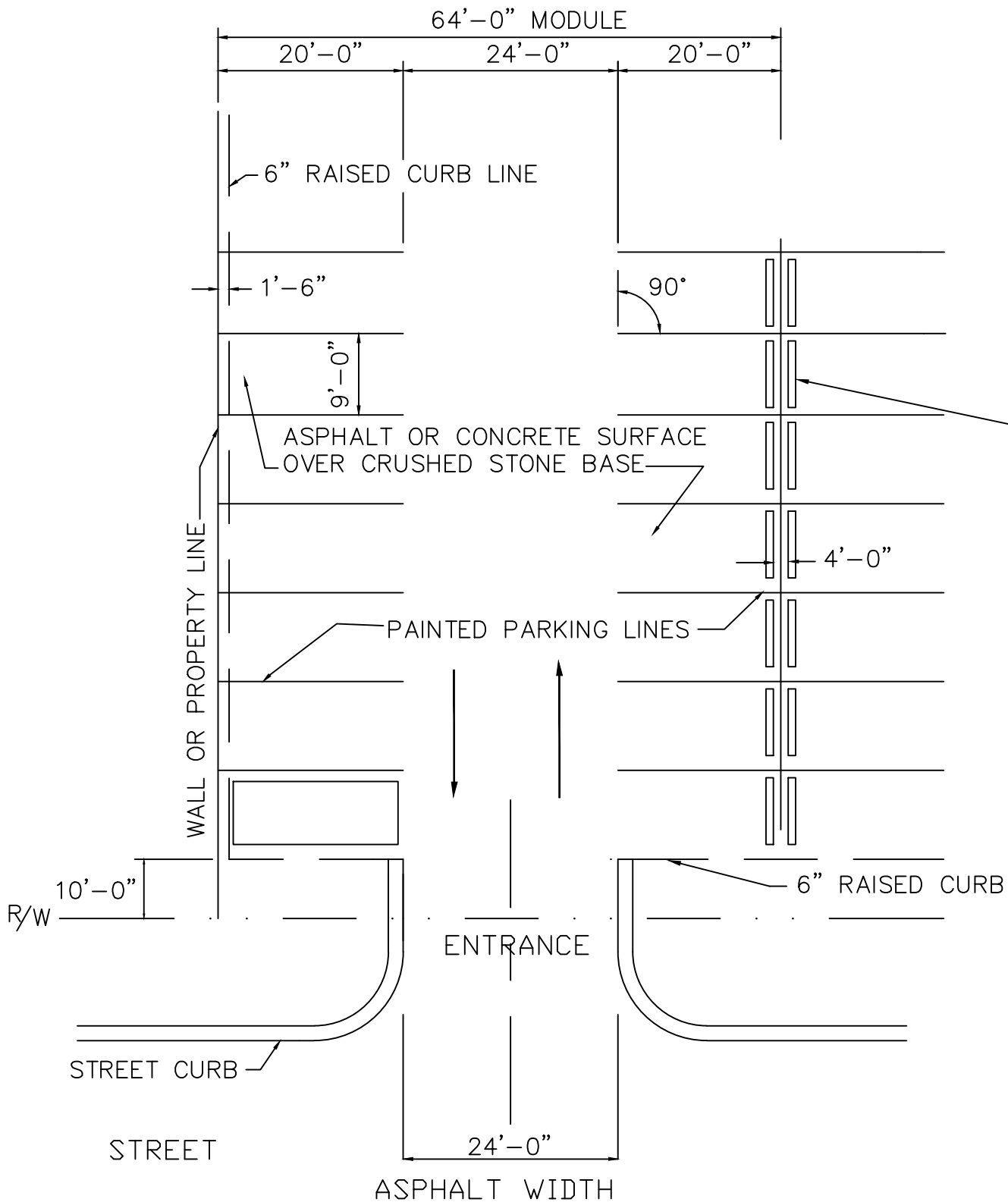
n	u'
90°	64'-0"
60°	57'-2"
45°	47'-7"

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PARKING LOT DIMENSIONS





- NOTES: 1. ALLOW 4'-0" FOR REAR OVERHANG
 2. ALL CONSTRUCTION SHALL MEET CURRENT ADA STANDARDS

SHELBY STANDARD DETAILS - 2021

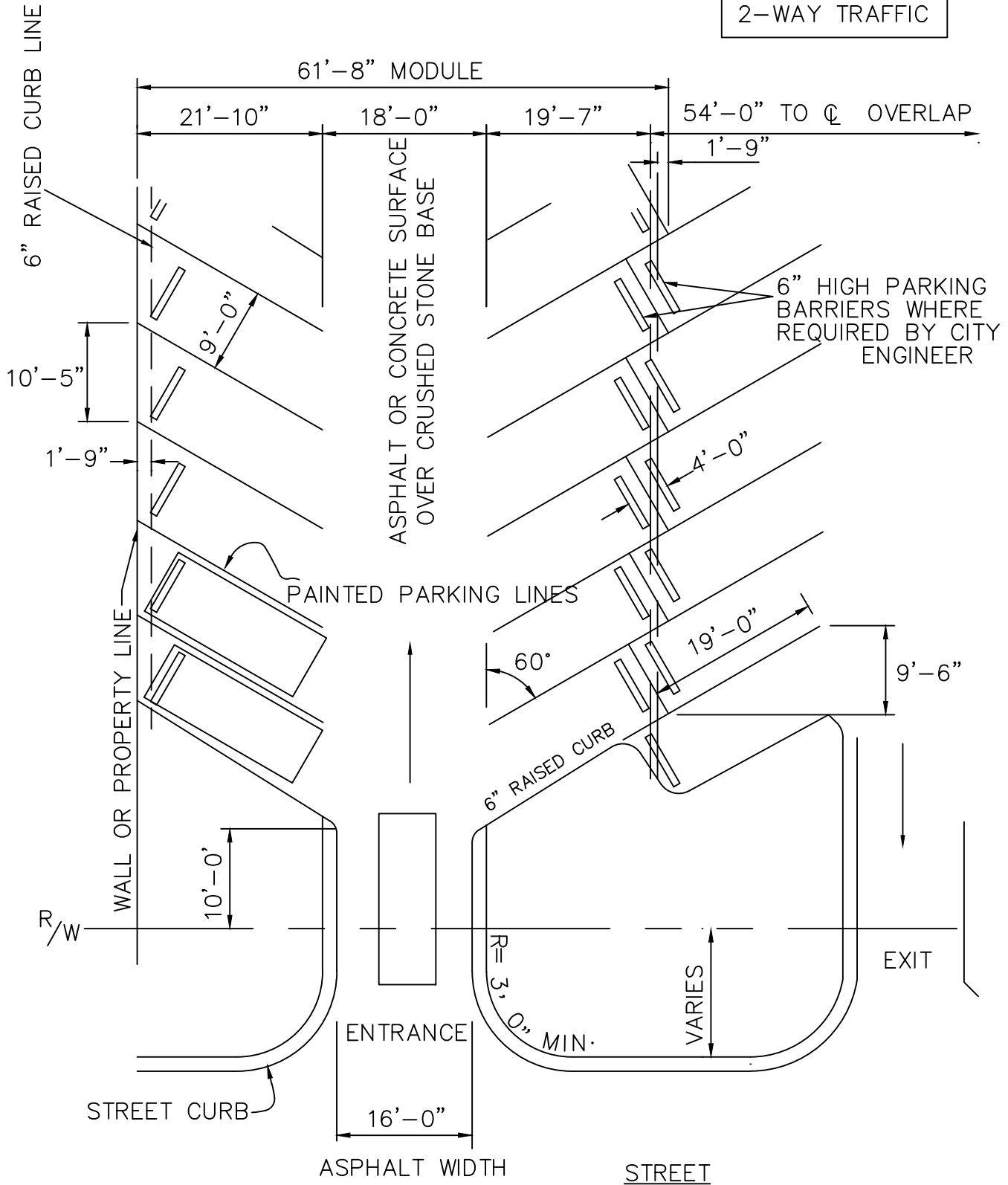
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PARKING PLAN - 90° PARKING



NOTE: 1. ALLOW 3'-9" FOR REAR OVERHANG
 2. ALL CONSTRUCTION SHALL MEET CURRENT ADA STANDARDS

NOTE:
 24' WIDE AISLES
 REQUIRED FOR
 2-WAY TRAFFIC



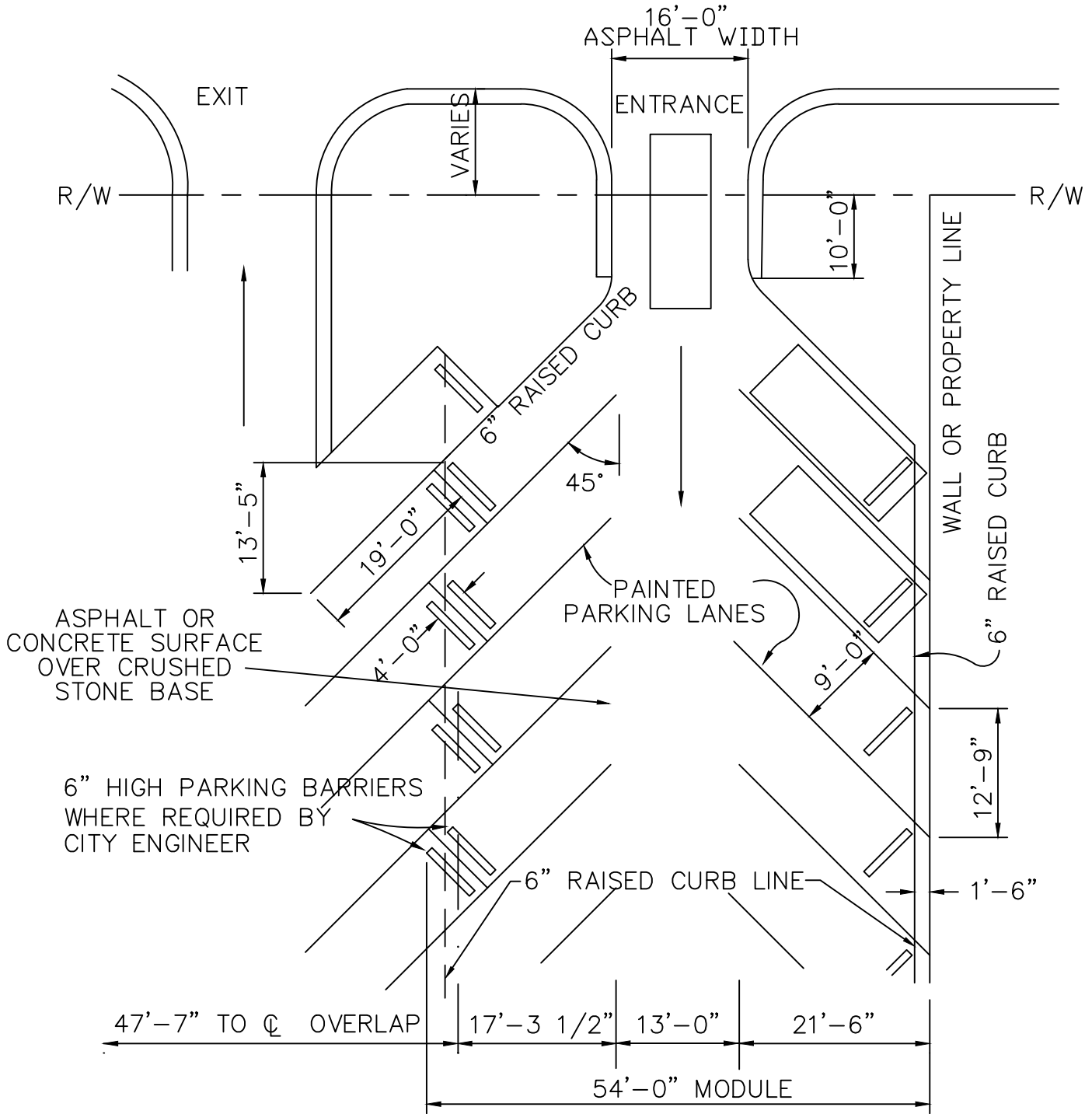
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PARKING PLAN - 60° PARKING
 ONE-WAY MOVEMENT



- NOTE: 1. ALLOW 3'-3" FOR REAR OVERHANG
 2. ALL CONSTRUCTION SHALL MEET CURRENT ADA STANDARDS

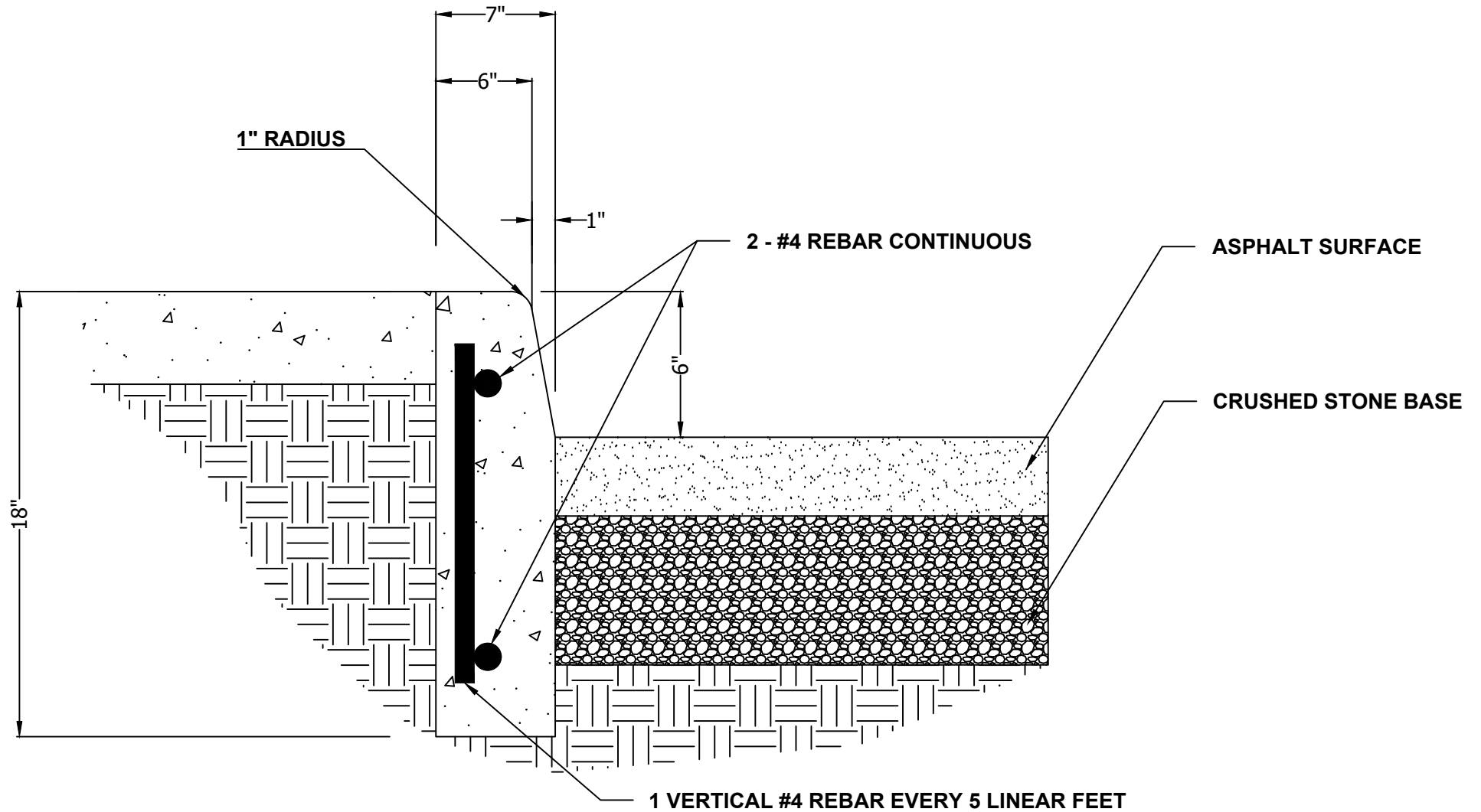
NOTE:
 24' WIDE AISLES
 REQUIRED FOR
 TWO-WAY TRAFFIC



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**PARKING PLAN - 45° PARKING
 ONE-WAY MOVEMENT**





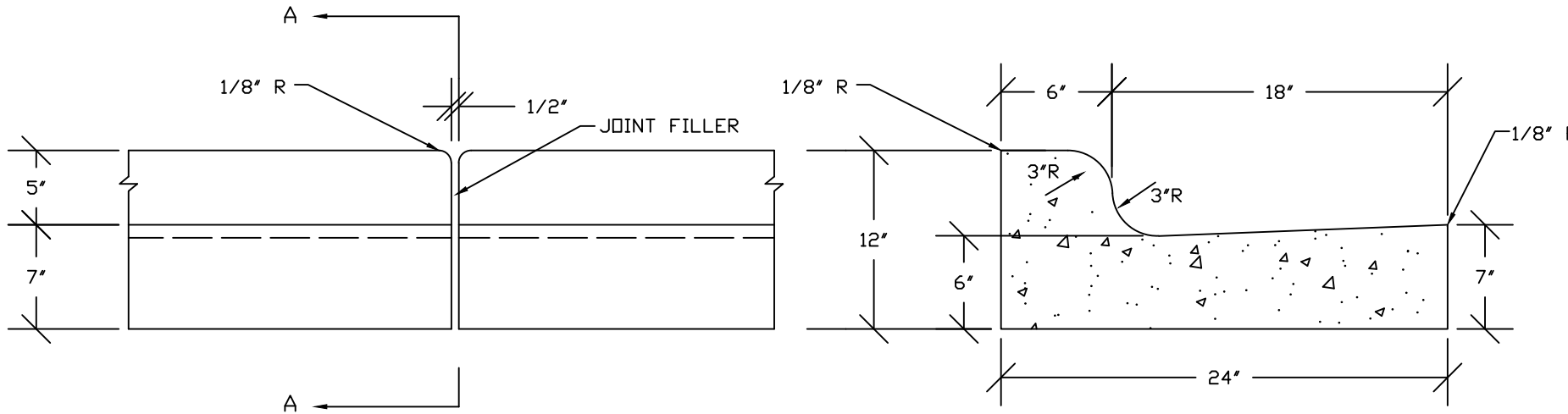
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TYPICAL VERTICAL CURB SECTION



2.01



FRONT ELEVATION
TRANVERSE EXPANSION JOINT

SECTION A-A
SIDE ELEVATION

COMBINATION CURB & GUTTER

NOTE:

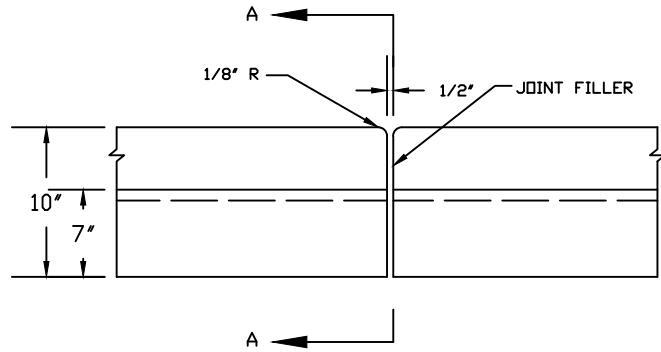
1. CONCRETE SHALL BE A MINIMUM OF 3000 PSI.
2. FOR HAND POURED CURBING, CONTRACTION JOINTS SHALL BE SPACED AT 10' INTERVALS & EXPANSION JOINTS SHALL BE PLACED AT 50' INTERVALS.
3. FOR EXTRUDED CURBING, CONTRACTION JOINTS SHALL BE SPACED AT 15' INTERVALS & EXPANSION JOINTS SHALL BE PLACED AT 90' INTERVALS.
4. FINISH ALL CONCRETE WITH CURING COMPOUND.
5. FOLLOW ALL APPLICABLE ACI REQUIREMENTS.
6. CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO NORTH CAROLINA DOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTION 846.

SHELBY STANDARD DETAILS - 2021

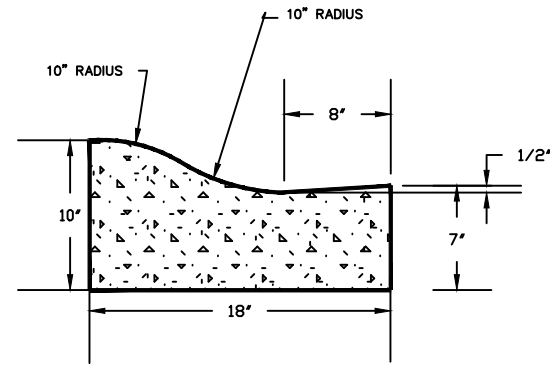
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STANDARD CONCRETE CURB AND GUTTER

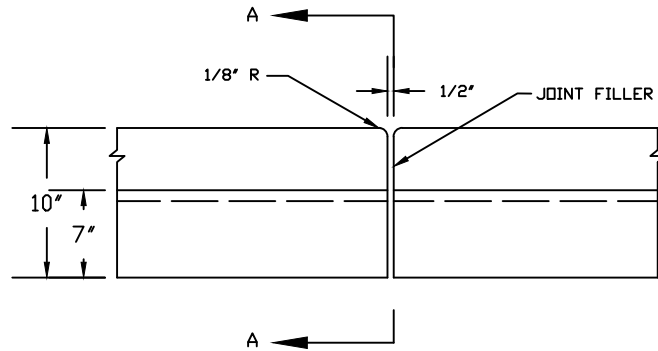




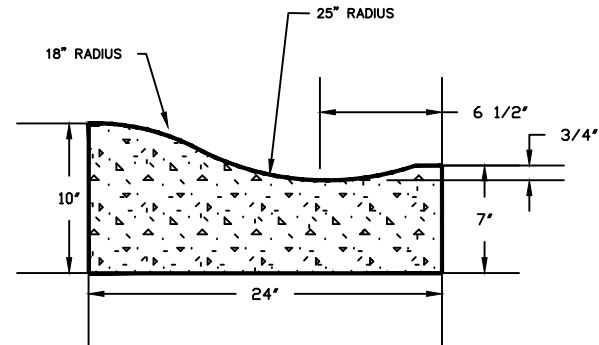
FRONT ELEVATION
TRANVERSE EXPANSION JOINT



SECTION A-A
SIDE ELEVATION



FRONT ELEVATION
TRANVERSE EXPANSION JOINT



SECTION A-A
SIDE ELEVATION

COMBINATION CURB & GUTTER

NOTE:

1. CONCRETE SHALL BE A MINIMUM OF 3000 PSI.
2. FOR HAND POURED CURBING, CONTRACTION JOINTS SHALL BE SPACED AT 10' INTERVALS & EXPANSION JOINTS SHALL BE PLACED AT 50' INTERVALS.
3. FOR EXTRUDED CURBING, CONTRACTION JOINTS SHALL BE SPACED AT 15' INTERVALS & EXPANSION JOINTS SHALL BE PLACED AT 90' INTERVALS.
4. FINISH ALL CONCRETE WITH CURING COMPOUND.
5. FOLLOW ALL APPLICABLE ACI REQUIREMENTS.
6. CURB SHALL BE DEPRESSED AT INTERSECTIONS TO PROVIDE FOR FUTURE ACCESSIBLE RAMPS.
7. CURB JOINTS SHALL LINE UP WITH THE JOINTS ON THE ABUTTING SIDEWALK.

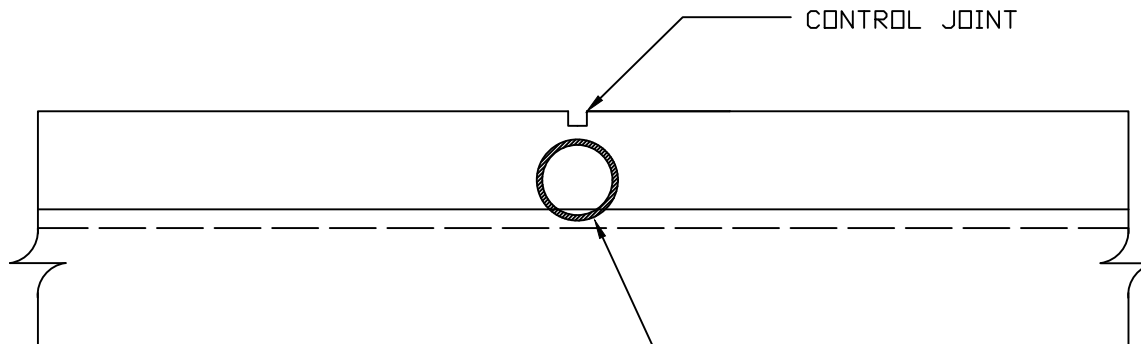
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**MOUNTABLE OR VALLEY
CURB AND GUTTER**

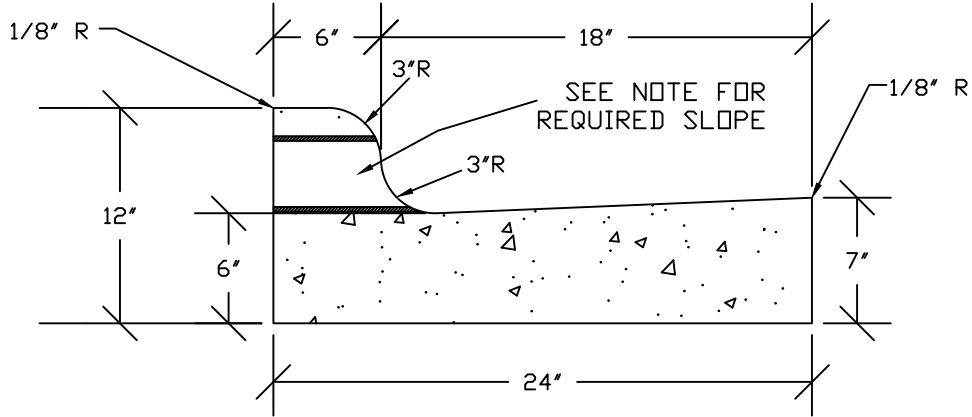


2.03



3" ϕ SOLID PVC PIPE THROUGH CURB. THE EDGES OF THE DRAIN HOLE MUST BE ROUNDED AND FINISHED SMOOTH AT THE FACE OF THE CURB.

- NOTES:
1. CURB DRAINS SHALL NOT BE CONSTRUCTED WITHIN 18" OF CONTRACTION OR EXPANSION JOINTS.
 2. OPENING GRADE MAY VARY BETWEEN A MAXIMUM SLOPE OF 1/2" PER FOOT AND A MINIMUM OF 1/4" PER FOOT.
 3. MORE THAN ONE HOLE MAY BE INSTALLED PROVIDED THE HOLES ARE LOCATED WITH 18" MINIMUM SPACING.



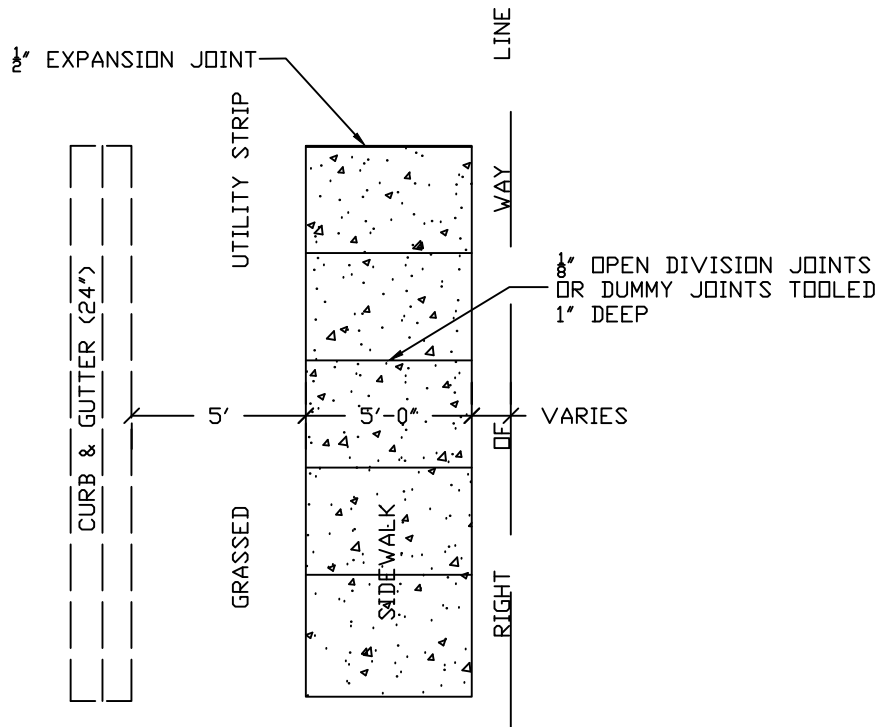
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STANDARD CURB DRAIN



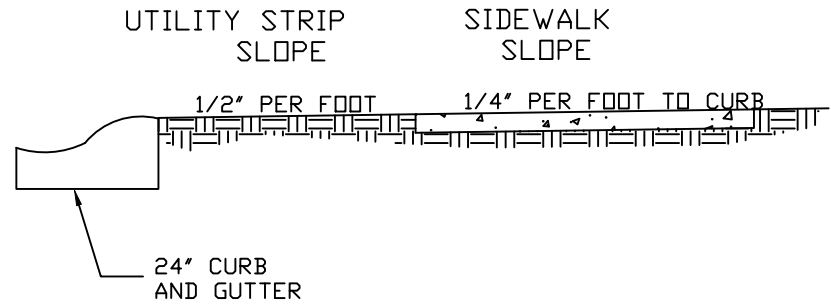
2.04



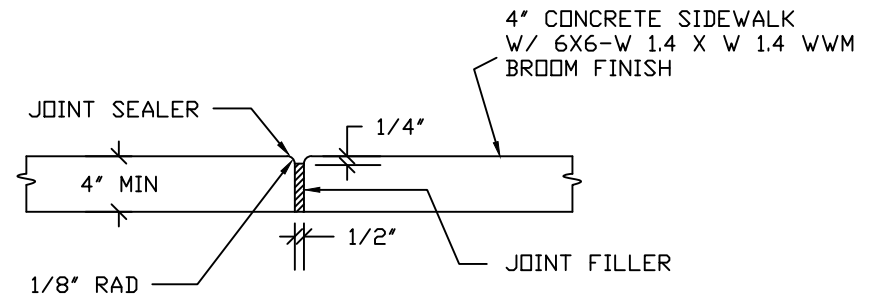
PLAN VIEW

JOINT NOTES:

1. $\frac{1}{8}$ " EXPANSION JOINTS TO BE LOCATED A MAX. DISTANCE OF 50' APART.
2. $\frac{1}{8}$ " OPEN DIVISION JOINTS OR DUMMY JOINTS TO BE LOCATED AT 5' INCREMENTS.



TYPICAL SECTION



TRANVERSE EXPANSION JOINT

NOTES:

1. CONCRETE SHALL BE A MINIMUM OF 3000 PSI.
2. TRANVERSE EXPANSION JOINTS TO BE A MAXIMUM OF 50'.
3. ALL CONCRETE TO BE FINISHED WITH CURING COMPOUND.
4. ALL CONCRETE SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS OF THE ACI.
5. SHALL MEET ADA REQUIREMENTS
6. WHEN FRONT EDGE OF WALK IS POURED ADJACENT TO CURB OR BACK OF WALK IS POURED ADJACENT TO A BUILDING OR EXISTING CONCRETE, A $\frac{1}{2}$ " EXPANSION JOINT SHALL BE PLACED BETWEEN THE NEW WALK AND EXISTING STRUCTURES.
7. WHERE A DRIVEWAY CROSSES A WALK, THE SIDEWALK SHALL HAVE A DEPTH OF 6" WITH $\frac{1}{2}$ " EXPANSION JOINT EACH SIDE OF WALK.
8. CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO NORTH CAROLINA DOT STANDARD SPECIFICATIONS FOR ROAD AND STRUCTURES

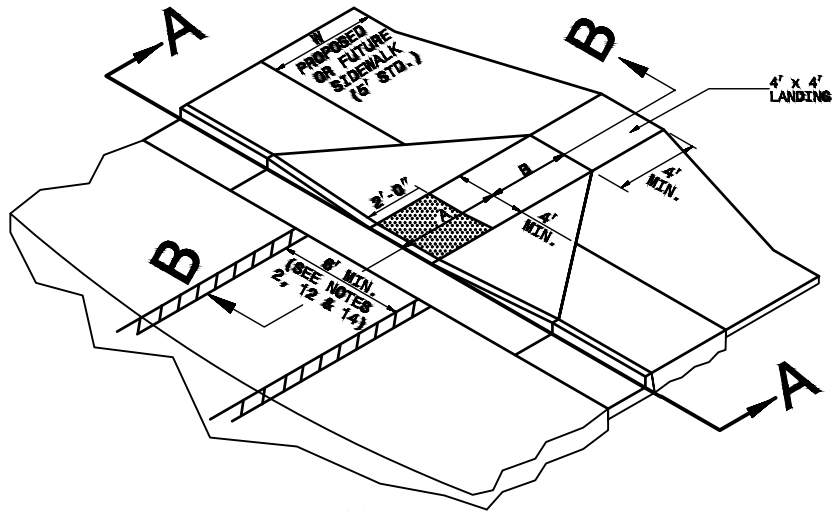
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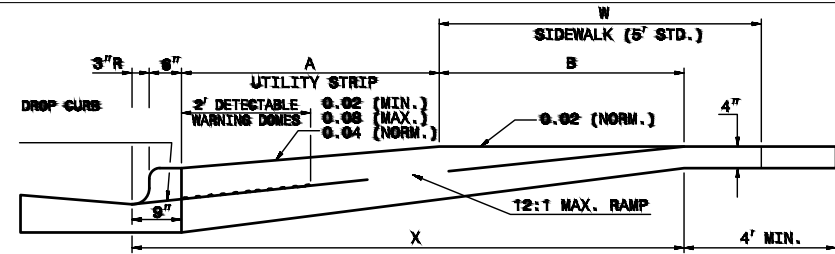
STANDARD CONCRETE SIDEWALK



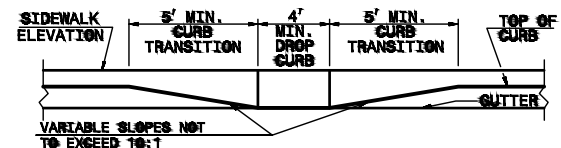
2.05



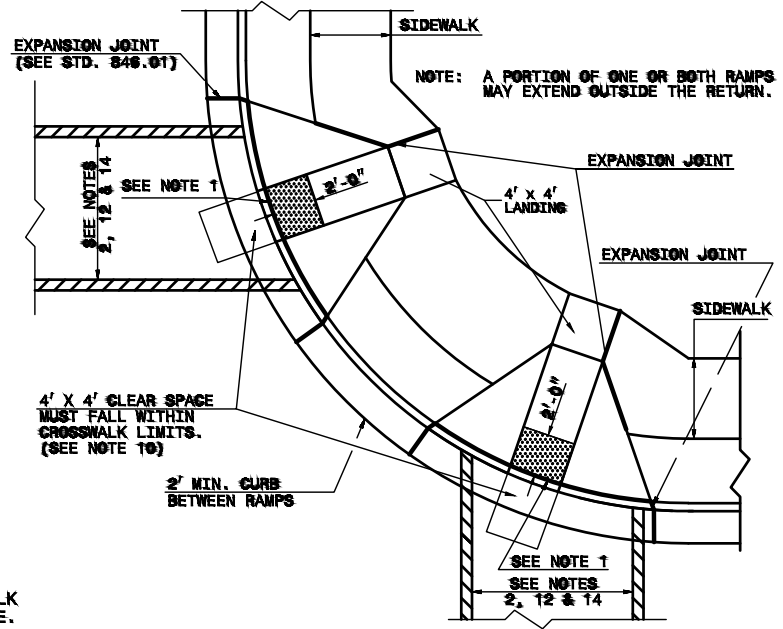
ISOMETRIC VIEW



SECTION B-B



SECTION A-A

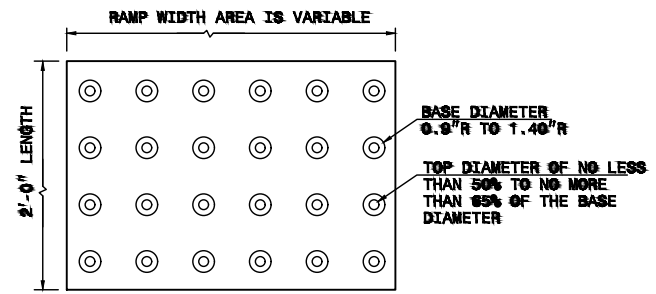


PLAN VIEW

DUAL RAMPs
ANY RADII
(4' MIN. FLOOR WIDTH)

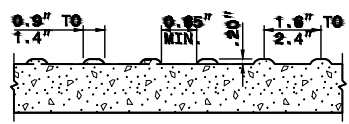
PAY LIMITS FOR CURB RAMP

- NOTES:**
1. DETECTABLE WARNING DOMES WILL COVER 2'-0" LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
 2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.



W	A	W+A+9"	X	B
5'	0.0'	5.8'	5.8'	5.0'*
6'	0.0'	6.8'	6.8'	6.0'**
7'	0.0'	7.8'	7.3'	6.5'**
8'	0.0'	8.8'	7.3'	6.5'**
5'	2.0'	7.8'	7.8'	5.0'
5'	2.5'	8.3'	8.1'	4.8'
5'	3.0'	8.8'	8.3'	4.4'
5'	3.5'	9.3'	8.4'	4.1'
5'	4.0'	9.8'	8.6'	3.8'
5'	4.5'	10.3'	8.7'	3.4'
5'	5.0'	10.8'	8.9'	3.1'

$B = X - (A + 9")$
 B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
 * BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
 ** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.



DETECTABLE WARNING DOMES

NOTE: ALL CONSTRUCTION SHALL MEET CURRENT ADA STANDARDS

SHELBY STANDARD DETAILS - 2021

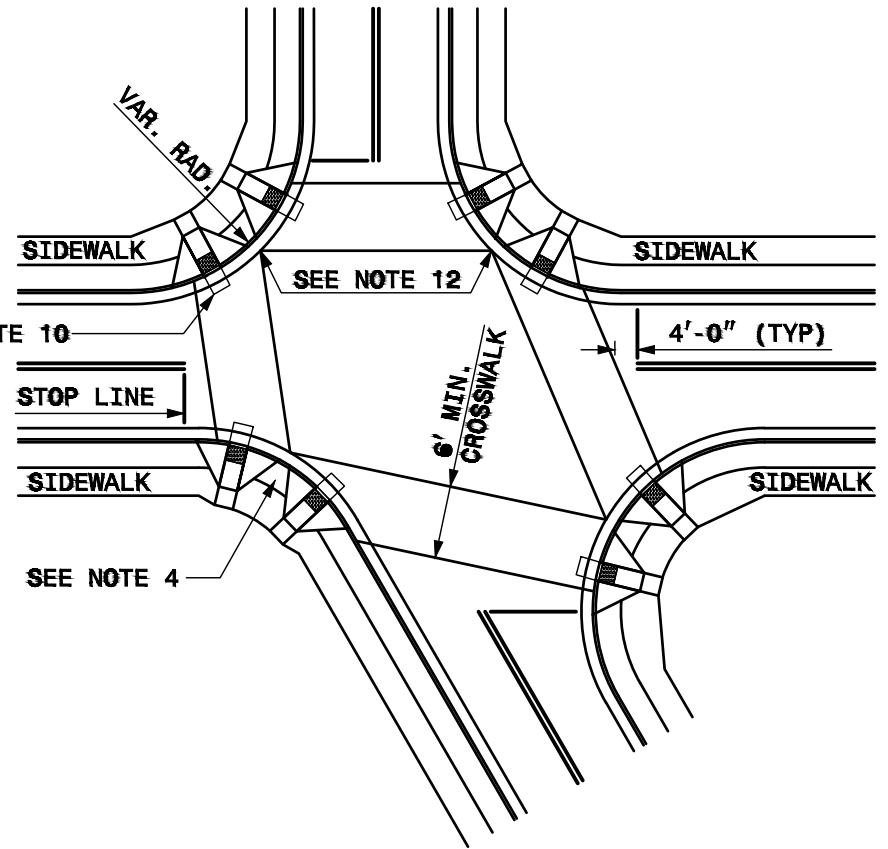
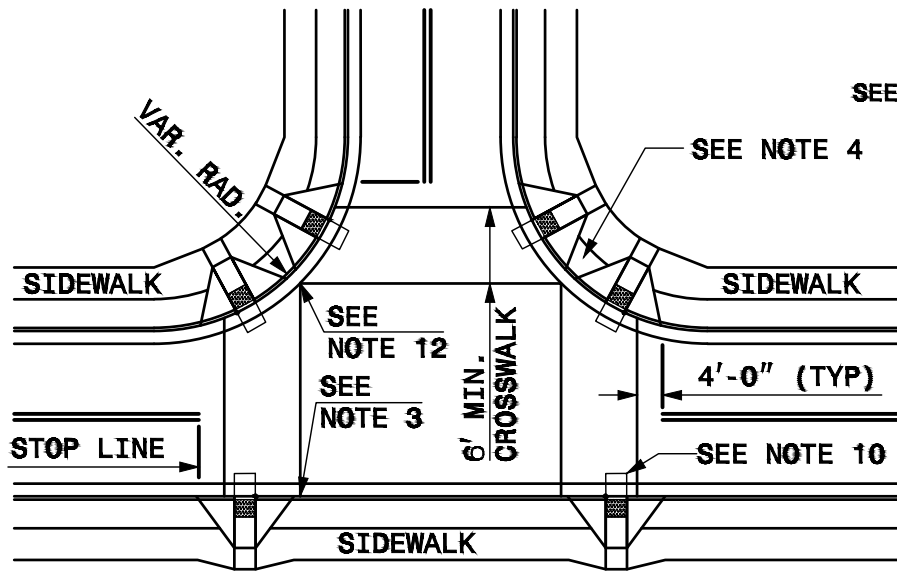
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**STANDARD WHEELCHAIR RAMP
(DETAIL 1 OF 3)**



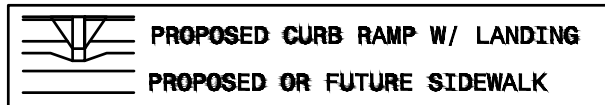
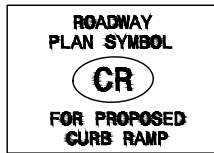
2.06A

SHEET 1 OF 3



DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS

DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES



ALLOWABLE LOCATIONS
DUAL RAMP RADII.....ANY

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**STANDARD WHEELCHAIR RAMP
(DETAIL 2 OF 3)**



2.06B

SHEET 2 OF 3

1. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
2. LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
3. COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
4. SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
5. REFER TO THE PAVEMENT MARKING STANDARDS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS.
6. TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
7. CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
8. CONSTRUCT THE RUNNING SLOPE OF THE RAMP 8.33% MAXIMUM.
9. ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
10. CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
11. CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
12. CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR MEDIAN ISLANDS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
13. TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGH THE ISLAND.
14. SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'x5' LANDING AT THE TOP OF A RAMPS, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
15. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
16. PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
17. PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
18. CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**STANDARD WHEELCHAIR RAMP
(DETAIL 3 OF 3)**

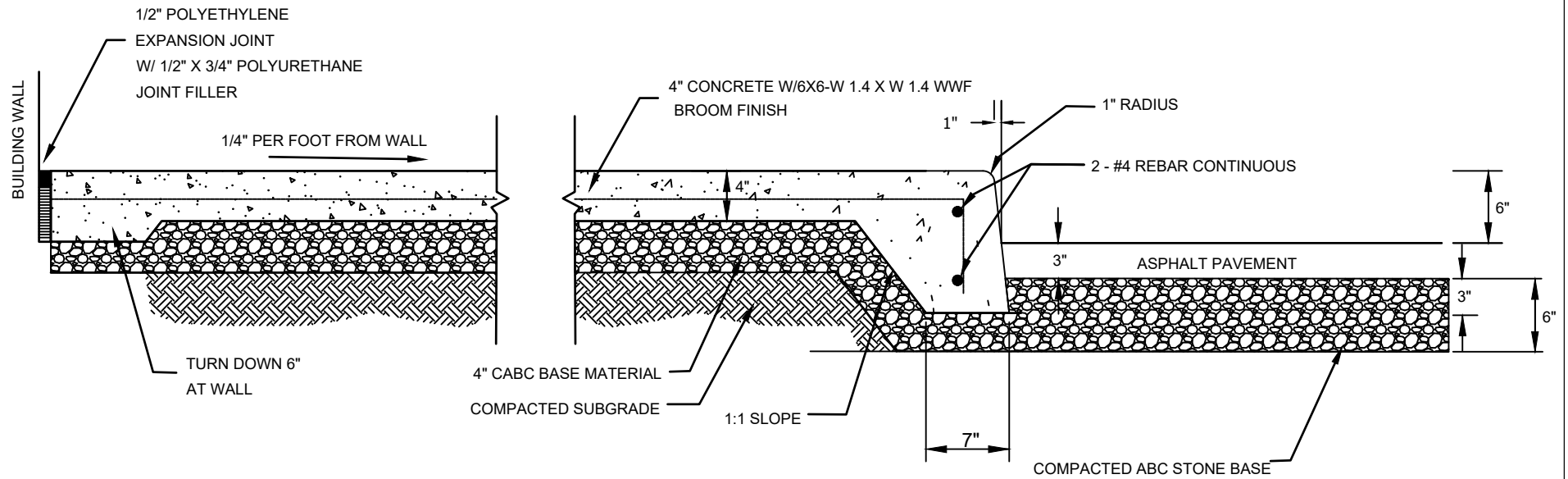


2.06C

SHEET 3 OF 3

NOTE:

1. TO BE USED WHERE MONOLITHIC SIDEWALK/CURB IS BEING INSTALLED/REPLACED.
2. $\frac{1}{2}$ " EXPANSION JOINT TO BE LOCATED A MAX DISTANCE OF 50' APART
3. CONCRETE SHALL BE A MINIMUM OF 3000 PSI.



SHELBY STANDARD DETAILS - 2021

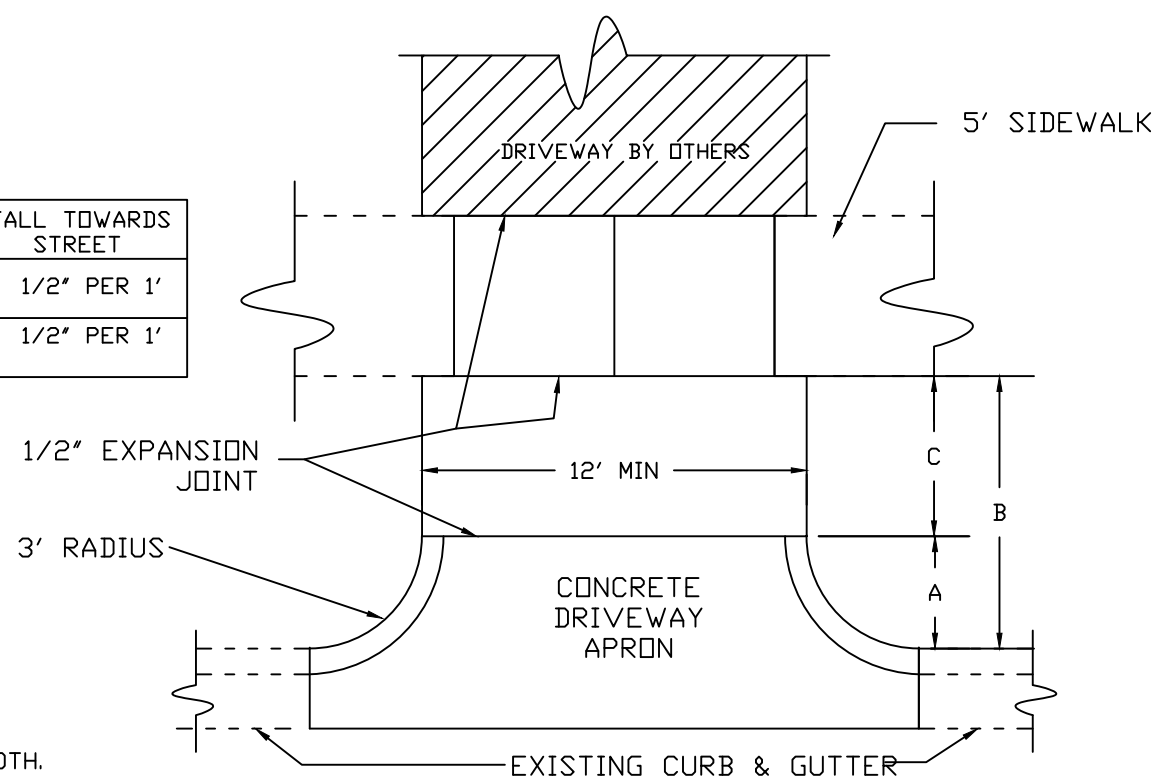
DATE	REVISIONS

**STANDARD TURNDOWN
SIDEWALK**

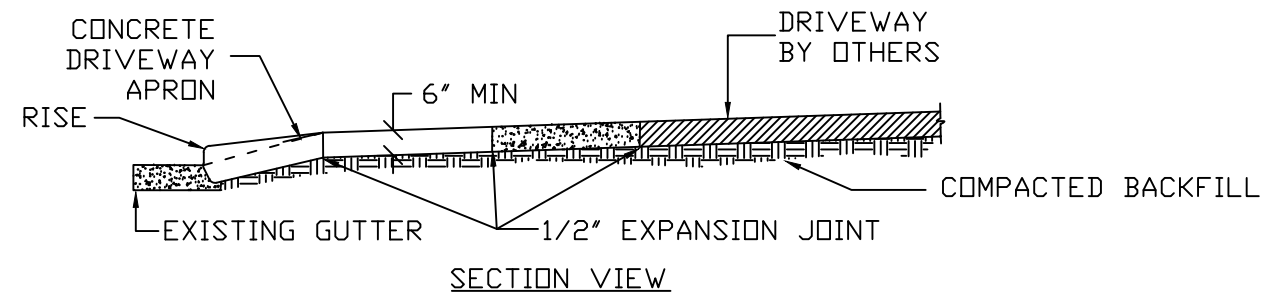


2.07

STREET WIDTH	A	B	C	FALL TOWARDS STREET
32' B-B	3'	5'	2'	1/2" PER 1'
28' B-B	3'	5'	2'	1/2" PER 1'

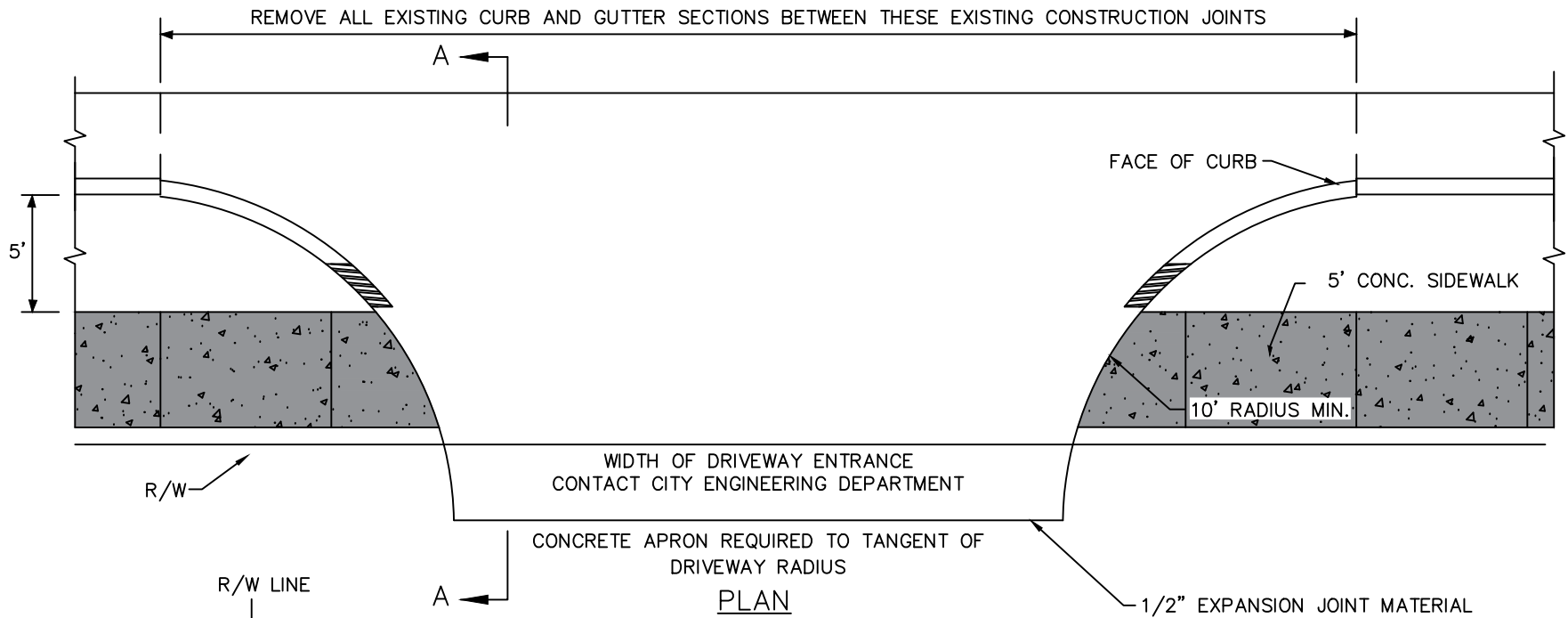


- NOTES TO CONTRACTOR:**
1. RESIDENTIAL DRIVEWAYS TO BE 12' TO 18' IN WIDTH.
 2. ALL CONCRETE SHALL BE 3000 PSI.
 3. IF CURB CUT IS WITHIN 5' FROM A JOINT, THEN THE CUT SHALL BE MADE AT THAT JOINT.
 4. ALL DRIVEWAYS SHALL BE INSTALLED WITH A SIDEWALK SECTION AND UTILITY STRIP AS SHOWN. SIDEWALK SECTIONS SHALL HAVE 1/4" PER FOOT FALL TOWARDS THE STREET. SIDEWALK SECTION SHALL BE 6" THICK WITH WELDED WIRE MESH PLACED IN THE CENTER.

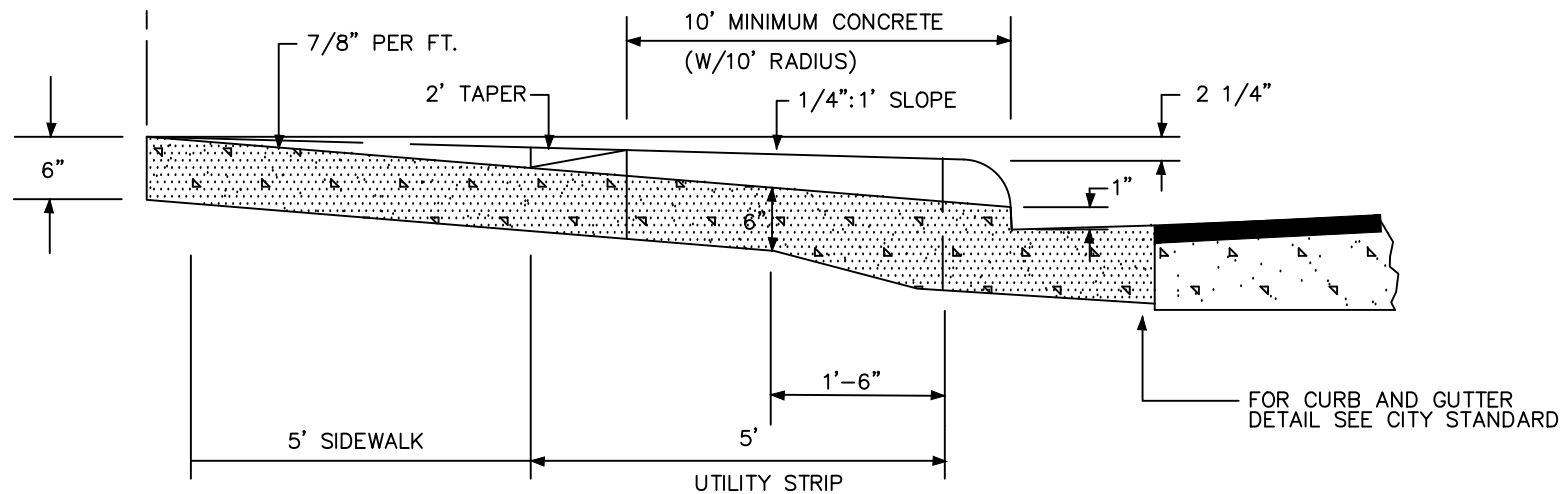


SHELBY STANDARD DETAILS - 2021	
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STANDARD RESIDENTIAL DRIVEWAY APRON



PLAN



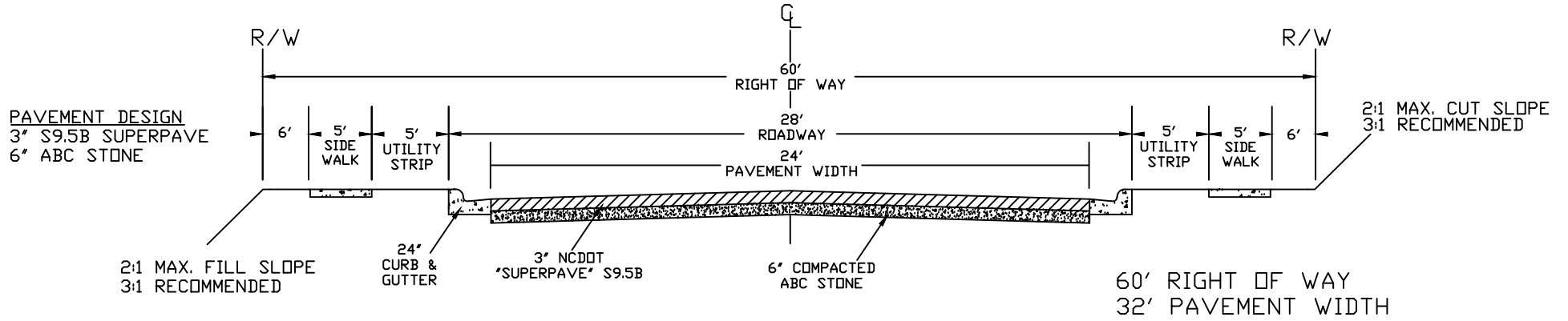
SECTION A-A

- NOTES:
 1. CONCRETE SHALL BE A MINIMUM OF 3000 PSI.

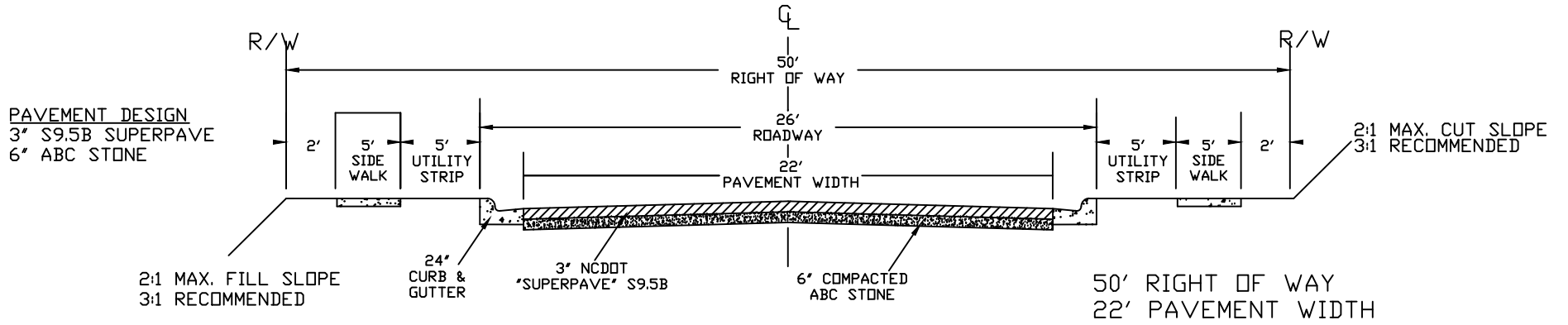
SHELBY STANDARD DETAILS - 2021	
DATE	REVISIONS

INDUSTRIAL OR COMMERCIAL CONCRETE DRIVEWAY ENTRANCE (10' RADIUS)





RESIDENTIAL SUBCOLLECTOR RD



LOCAL RESIDENTIAL RD

NOTE:

1. NORMAL CROWN OF 1/4" PER FOOT ON ROADWAY AND SHOULDER UNLESS OTHERWISE DIRECTED BY CITY ENGINEER.
2. SUBGRADE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
3. 3:1 SLOPE RECOMMENDED ON BOTH CUT AND FILL SLOPES.
4. UTILITY EASEMENTS MAY BE REQUIRED BY THE CITY OF SHELBY UTILITY DEPARTMENT AS DEEMED NECESSARY.

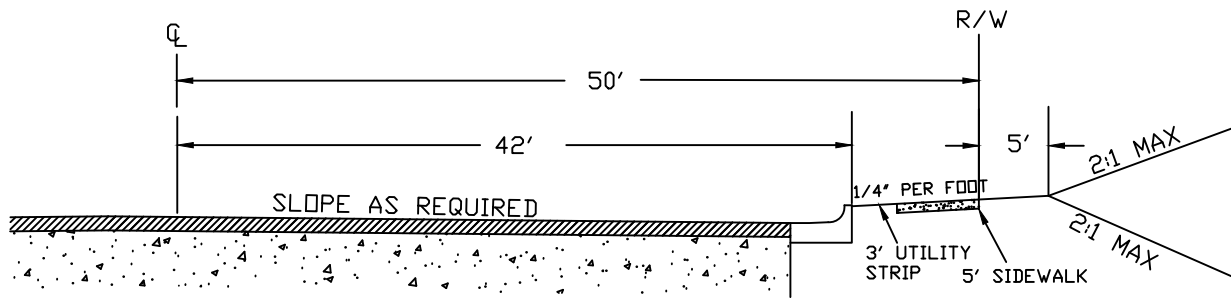
PAVEMENT DESIGN
3" NCDOT "SUPERPAVE" S9.5B
6" COMPACTED ABC STONE

SHELBY STANDARD DETAILS - 2021

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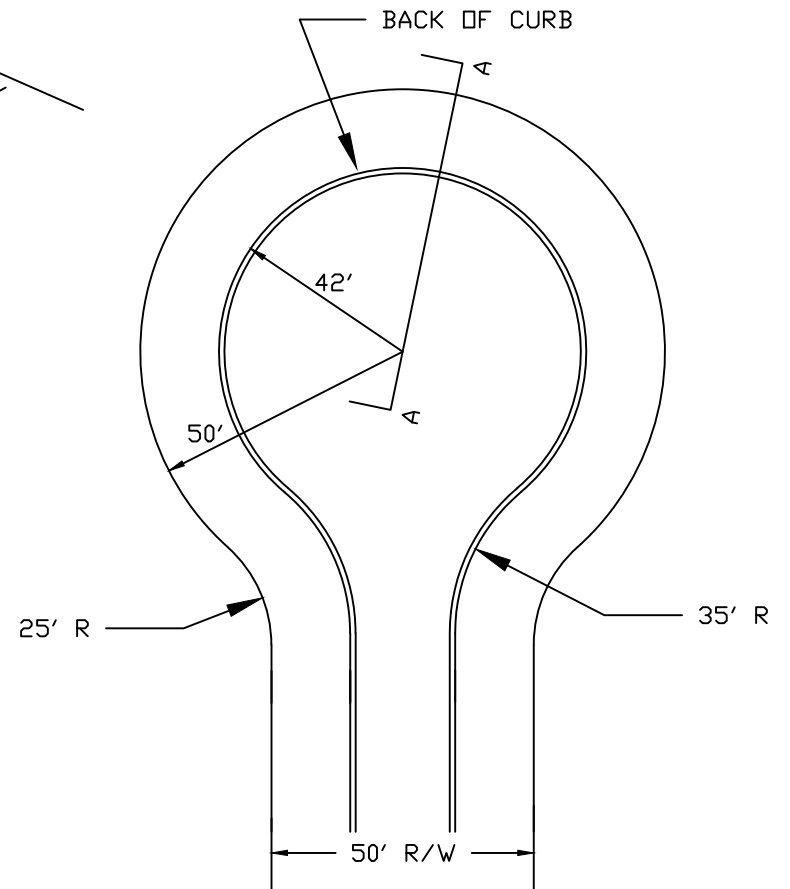
STANDARD STREET SECTION





SECTION "A-A"

PAVEMENT DESIGN
 3" SUPERPAVE S9.5B
 6" ABC STONE

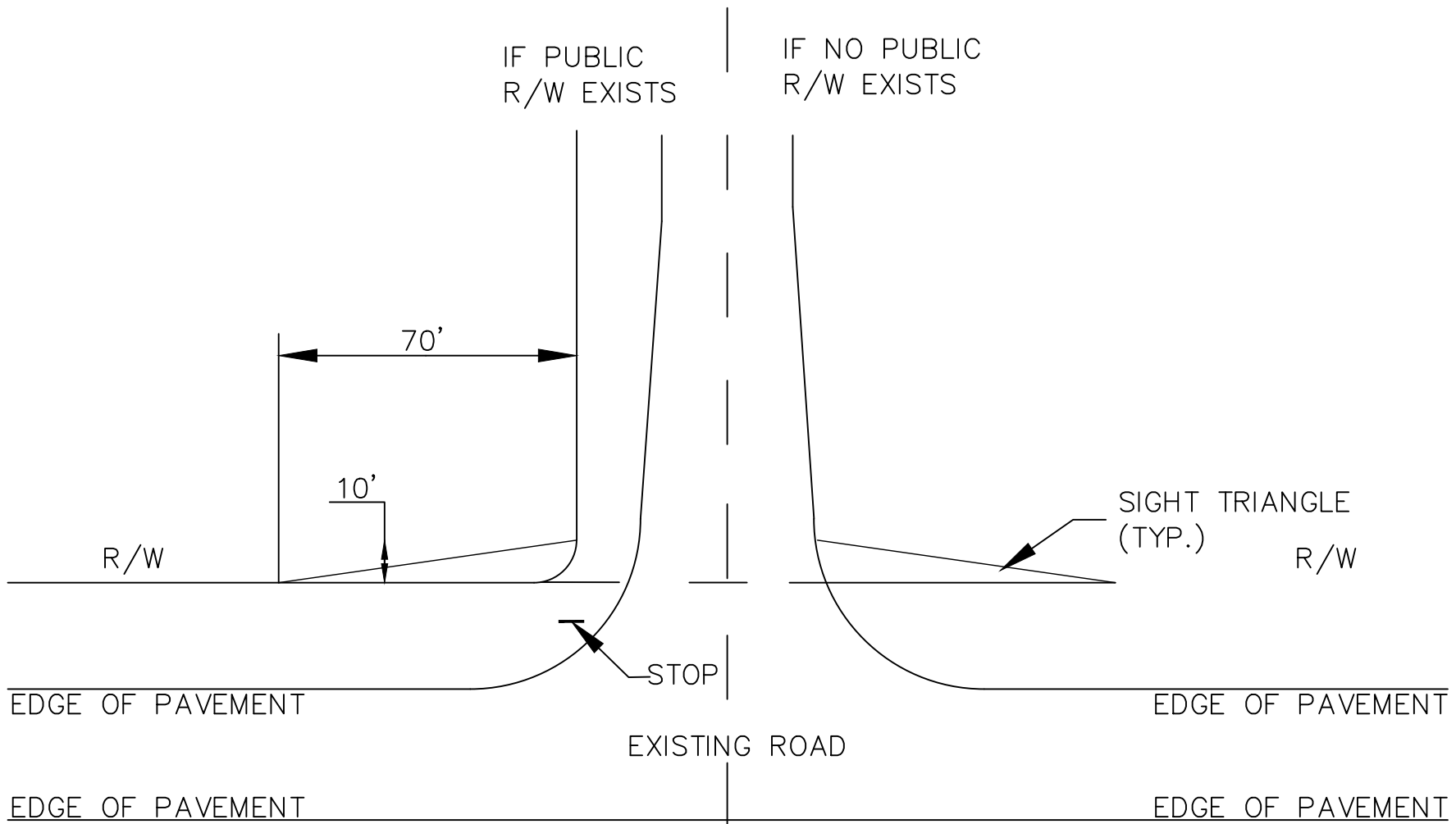


SHELBY STANDARD DETAILS - 2021

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LOCAL RESIDENTIAL
 CUL-DE-SAC: SYMETRICAL WITH
 CURB & GUTTER





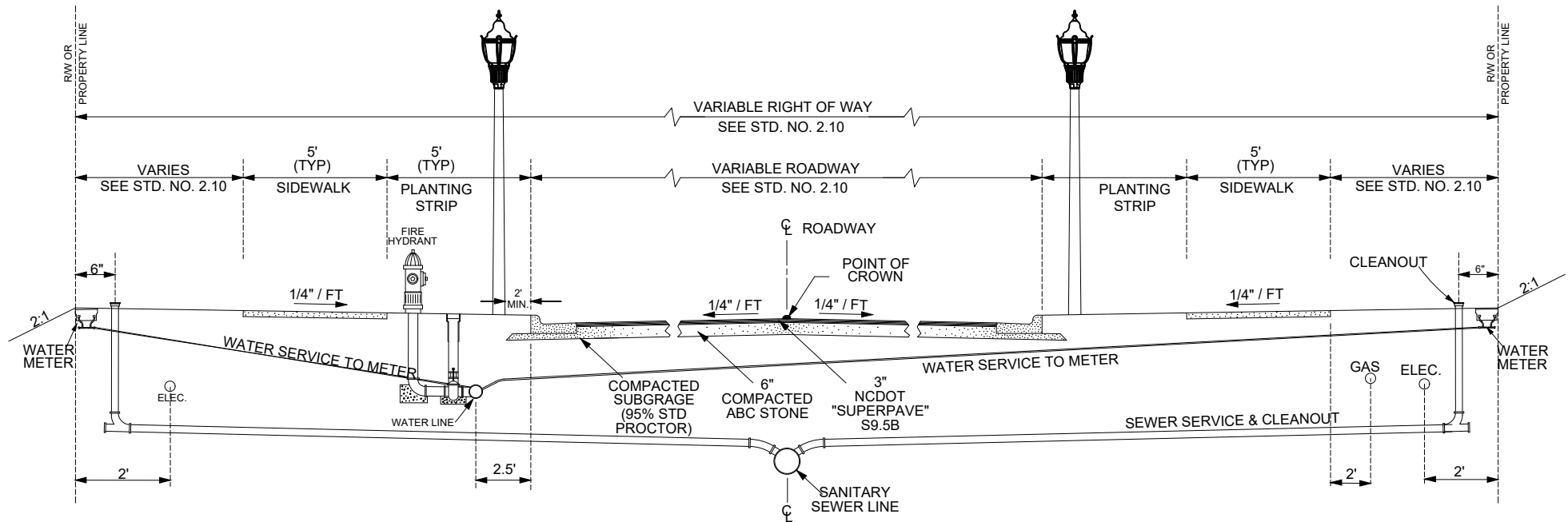
NOTE:
 NO OBSTRUCTIONS SHALL BE
 PLACED INSIDE THE SIGHT
 DISTANCE TRIANGLE

SHELBY STANDARD DETAILS - 2021

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SIGHT DISTANCE TRIANGLE





NOTES:

1. UTILITY EASEMENTS MAY BE REQUIRED BY THE CITY OF SHELBY UTILITY DEPARTMENT AS DEEMED NECESSARY.
2. MINIMUM HORIZONTAL DISTANCE BETWEEN ELECTRIC AND NATURAL GAS IS TWO (2) FEET.
3. ELECTRIC CONDUIT RAN PERPENDICULAR AND UNDERNEATH THE ROADWAY SHALL BE A MINIMUM THREE (3) FEET BELOW THE ASPHALT. WHERE SHOULDER DITCHES EXIST, THE CONDUIT SHALL BE A MINIMUM THREE (3) FEET BELOW THE BOTTOM OF THE DITCH.
4. ENDS OF ELECTRICAL CONDUIT RAN UNDERNEATH THE ROADWAY SHALL EXTEND A MINIMUM 12" BEYOND THE BACK OF CURB OR CENTERLINE OF SHOULDER DITCH. CONDUIT ENDS ARE TO BE MARKED WITH EITHER SCRAP SECTIONS OF CONDUIT, WOODEN STAKES, PAINT MARKINGS ON CURBS, OR CONDUIT STUBBED UP.
5. INSTALL PLASTIC PLUGS TO KEEP DIRT OUT OF CONDUIT WHEN CABLE IS NOT IN CONDUIT. REPLACE WITH CABLE PROTECTORS WHEN CABLE IS INSTALLED.
6. ELECTRICAL CONDUIT SHALL BE MINIMUM STRENGTH SCHEDULE 40 CONDUIT.
7. MECHANICAL TAMPING IS REQUIRED FOR ALL PAVED AREAS AND UNPAVED DRIVEWAY ACCESSSES.
8. WHERE MINIMUM DEPTH CANNOT BE ACHIEVED, ENCASE ELECTRICAL CONDUIT IN CONCRETE.
9. ONLY GRASS TO BE PLANTED IN PLANTING STRIP

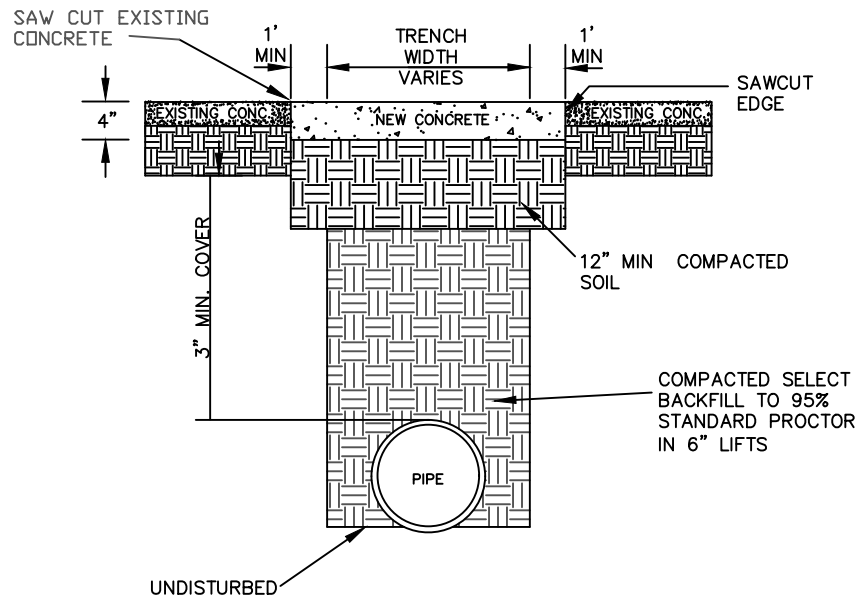
SHELBY STANDARD DETAILS - 2021

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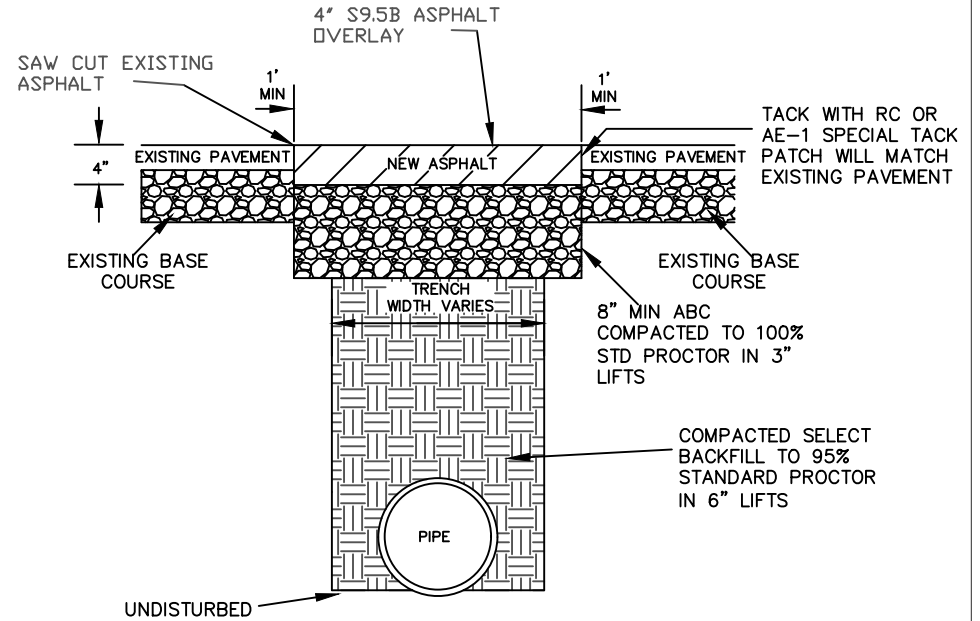
**STANDARD UTILITY
CORRIDOR**



2.13



CONCRETE PAVEMENT REPAIR
NTS



ASPHALT PAVEMENT REPAIR
NTS

ALL PAVEMENT CUTS SHALL BE REPAIRED WITHIN A MINIMUM OF SEVEN (7) DAYS FROM THE DATE THE CUT IS MADE. IF CONDITIONS DO NOT PERMIT A PERMANENT REPAIR WITHIN THE GIVEN TIME LIMIT, PERMISSION TO MAKE A TEMPORARY REPAIR MUST BE OBTAINED FROM THE CITY ENGINEER

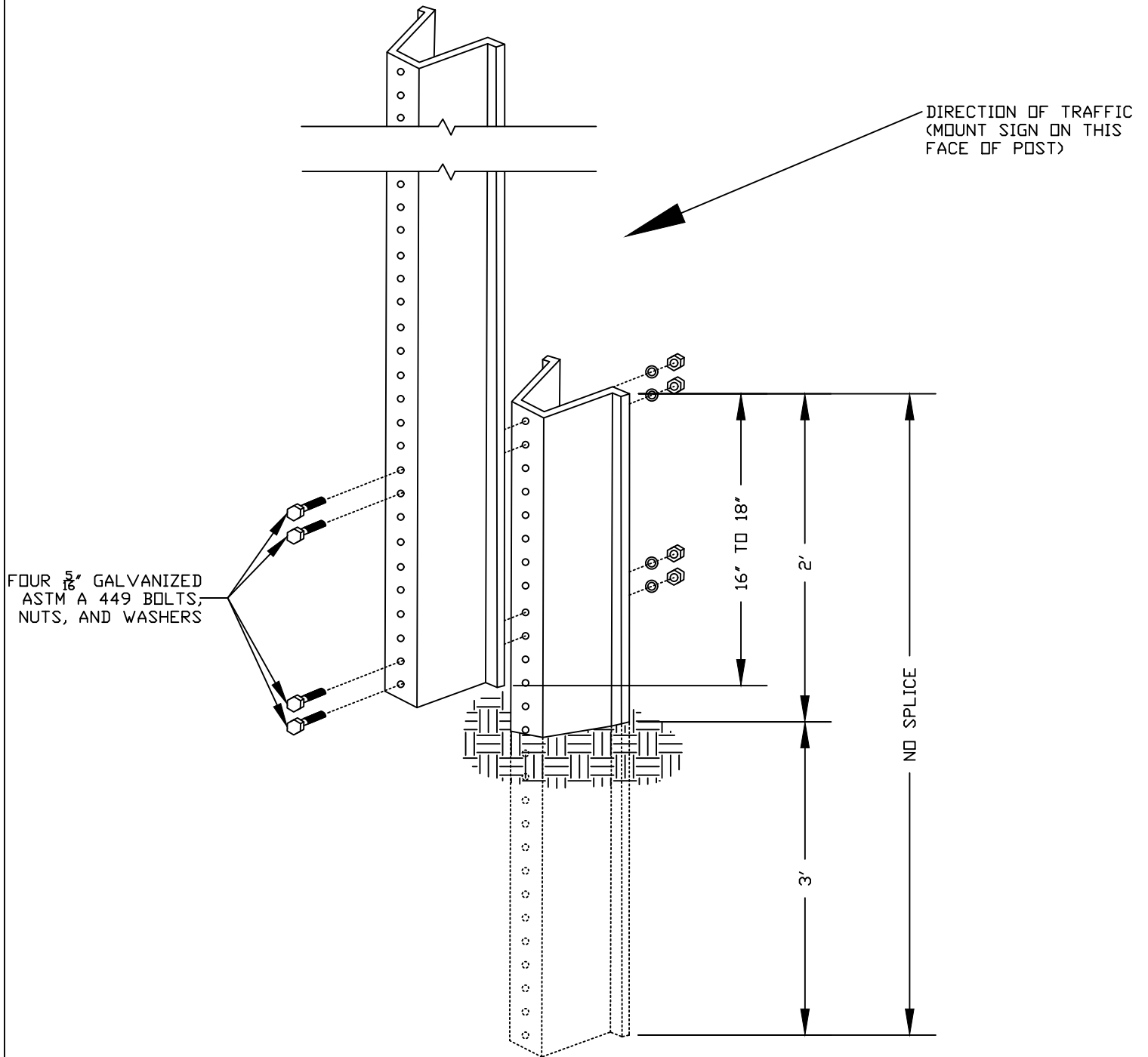
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

STANDARD TRENCH AND PAVEMENT REPAIR SECTIONS



NOTES:
 PER NCDOT STANDARD SPECIFICATIONS
 SECTION 903-3(D)(2), USE 3-LB GALVANIZED
 STEEL U-CHANNEL SUPPORTS FOR SIGN TYPES
 D, E, AND F. SQUARE GALVANIZED POSTS MAY
 BE USED WITH PRIOR APPROVAL



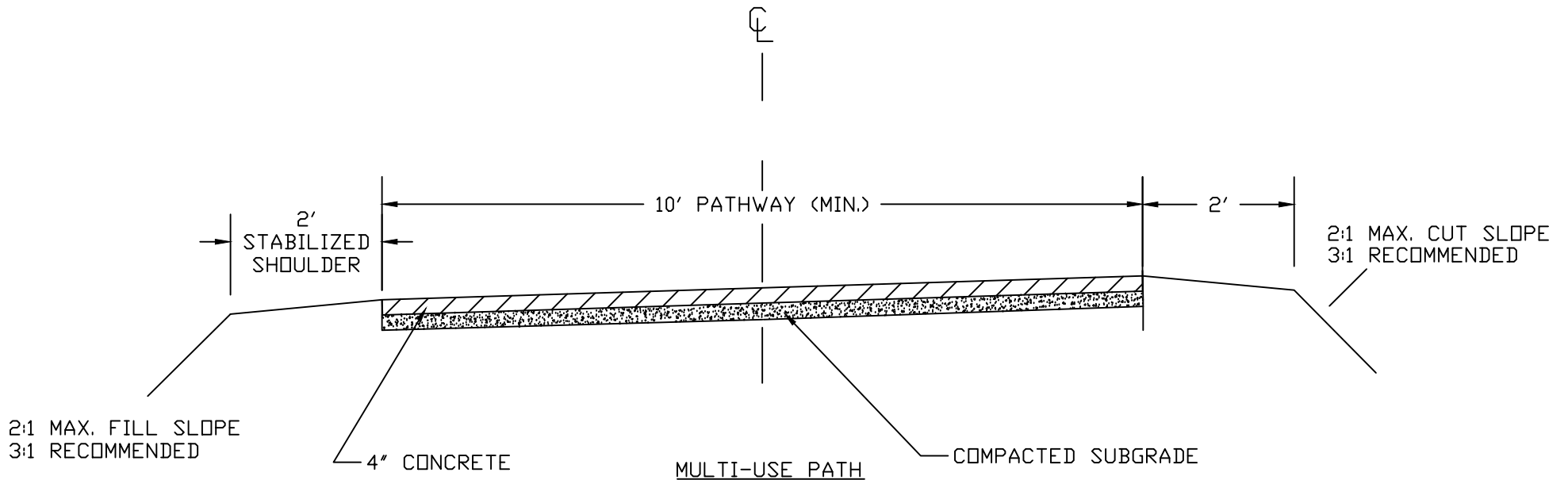
SHELBY STANDARD DETAILS - 2021

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SIGN POST INSTALLATION



3.02



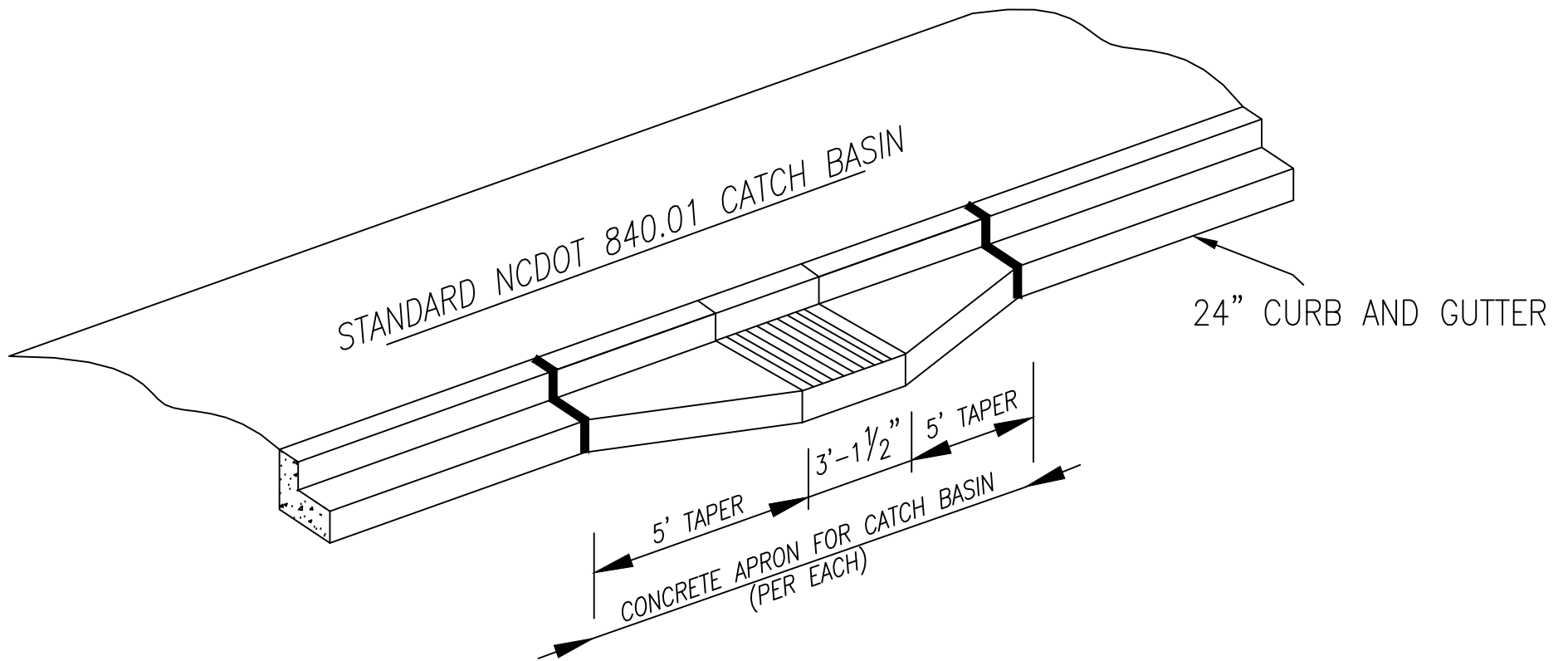
- NOTE:
1. 1/4" PER FOOT CROSS-SLOPE ON PATHWAY AND SHOULDER UNLESS OTHERWISE DIRECTED BY CITY ENGINEER .
 2. SUBGRADE SHALL BE COMPACTED.
 3. 3:1 SLOPE RECOMMENDED ON BOTH CUT AND FILL SLOPES.
 4. CRUSHED CONCRETE SPECIFICATIONS MUST BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVED PRIOR TO CONSTRUCTION.
 5. 2' SHOULDERS SHALL BE BACKFILLED ON EACH SIDE OF THE PATHWAY AND PROPERLY SEEDED AND MULCHED.
 6. 2' SHOULDERS SHALL BE CLEAR OF OBSTRUCTIONS

PATH MATERIAL TO BE DETERMINED BY CITY ENGINEERING DEPARTMENT
 POTENTIAL MATERIALS ARE ASPHALT, CONCRETE, AND CRUSH CONCRETE

SHELBY STANDARD DETAILS - 2021	
DATE	REVISIONS

MULTI-USE PATH





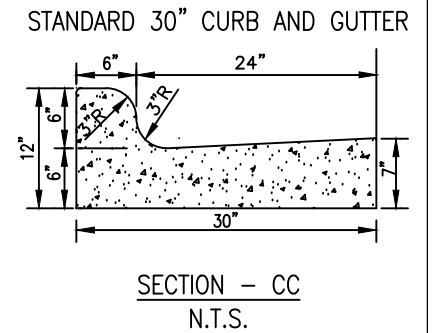
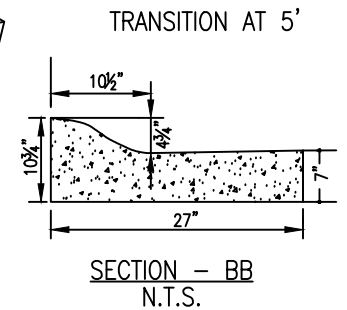
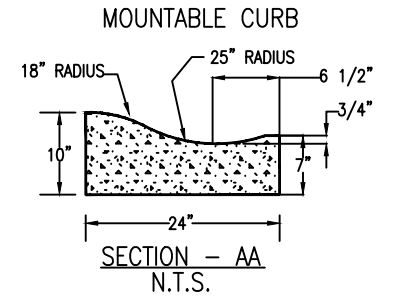
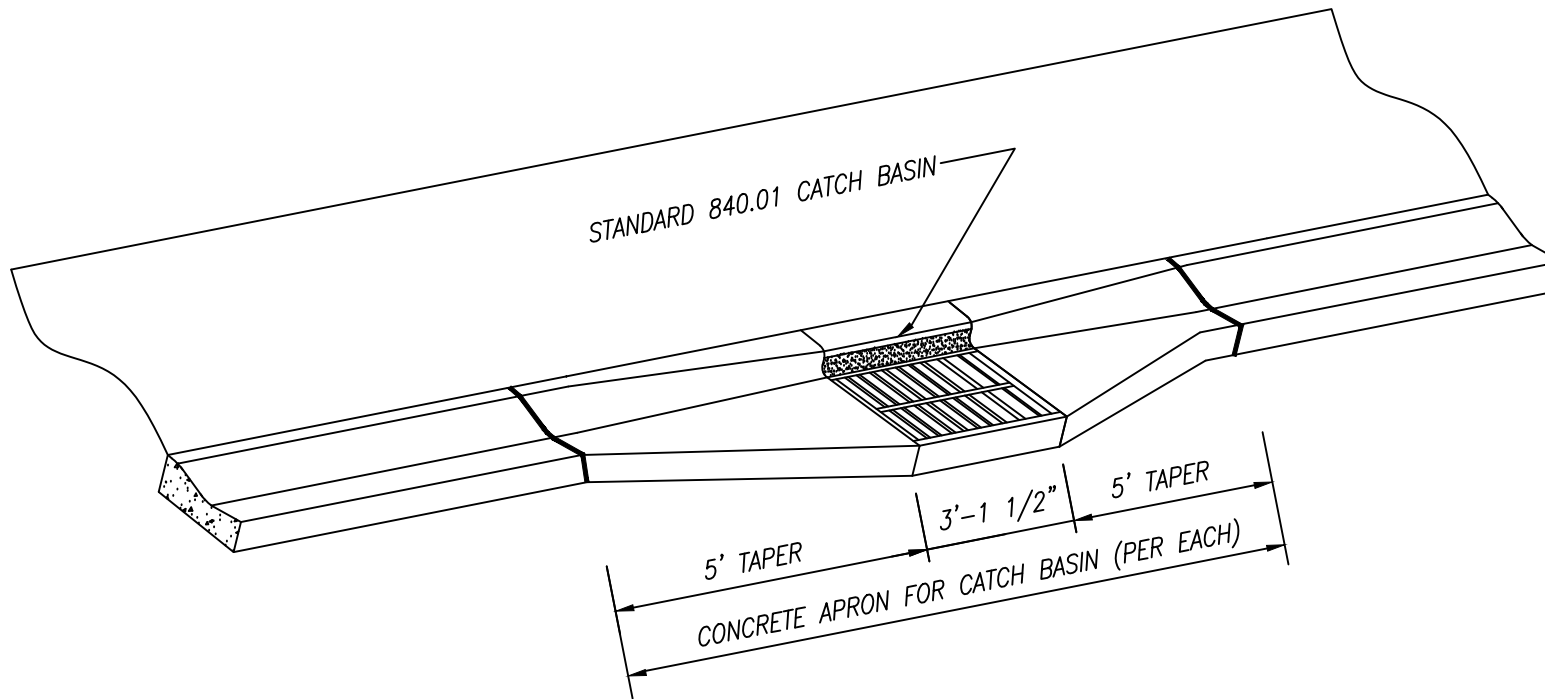
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**CURB AND GUTTER TRANSITION AT INLETS -
STANDARD CURB & GUTTER**



4.01



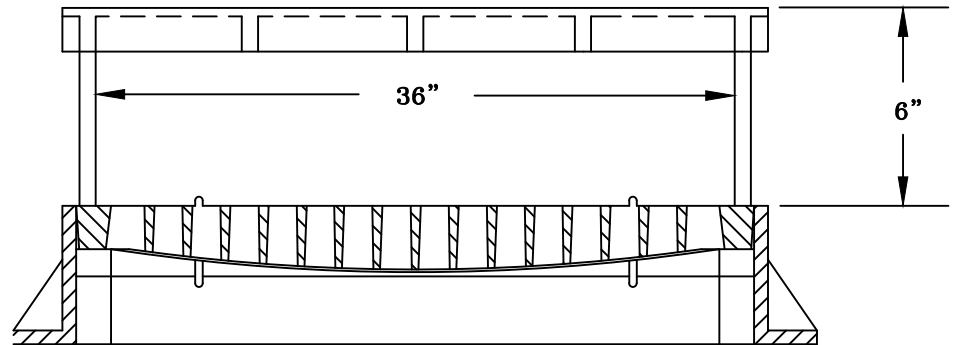
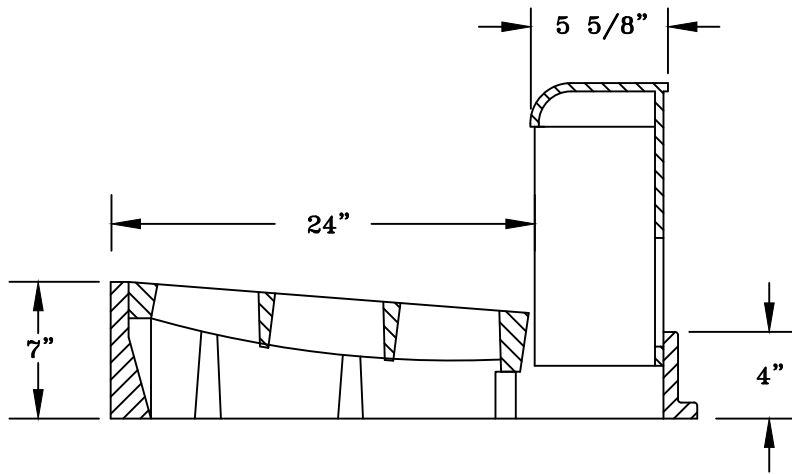
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**CURB AND GUTTER TRANSITION AT INLETS -
MOUNTABLE CURB & GUTTER**



4.02



NOTES:

1. GRATES, FRAMES, AND HOODS SHALL BE IN ACCORDANCE WITH NCDOT STANDARD 840.02 AND 840.03
2. EMBOSS WITH "DUMP NO WASTE ! DRAINS TO WATERWAYS."
3. USE DIRECTIONAL GRATES WHEN DIRECTED.
4. U.S FOUNDRY CURB HOOD, FRAME, AND GRATE #5181-6420, 6425, or 6430 or APPROVED EQUAL.

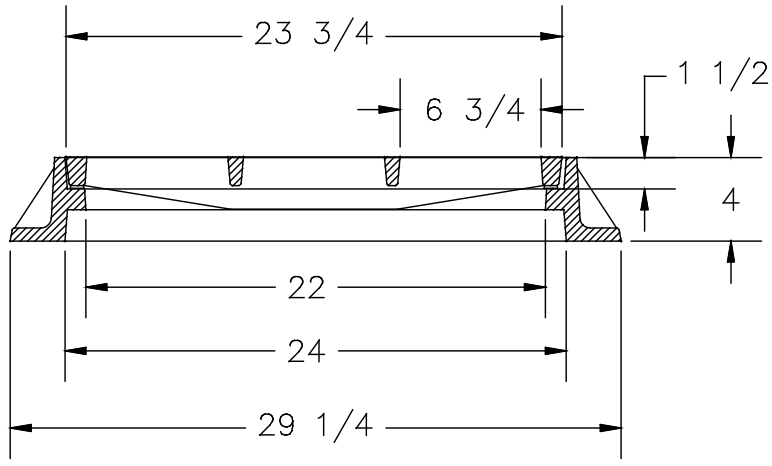
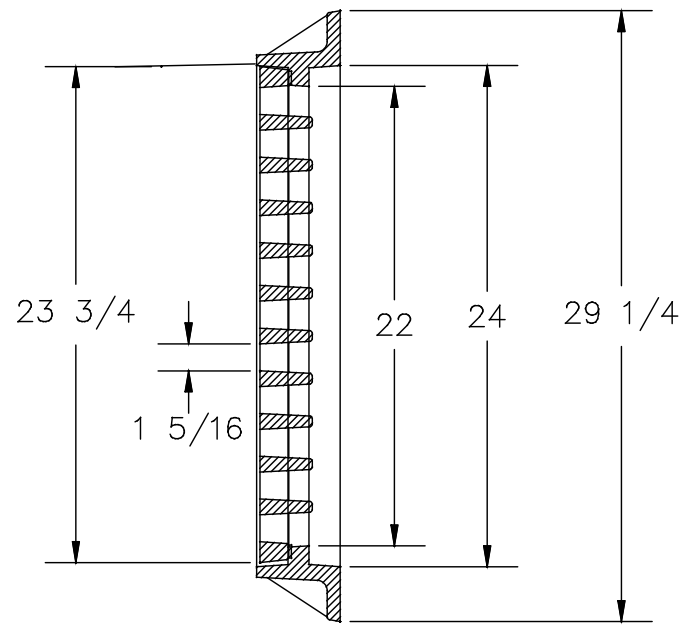
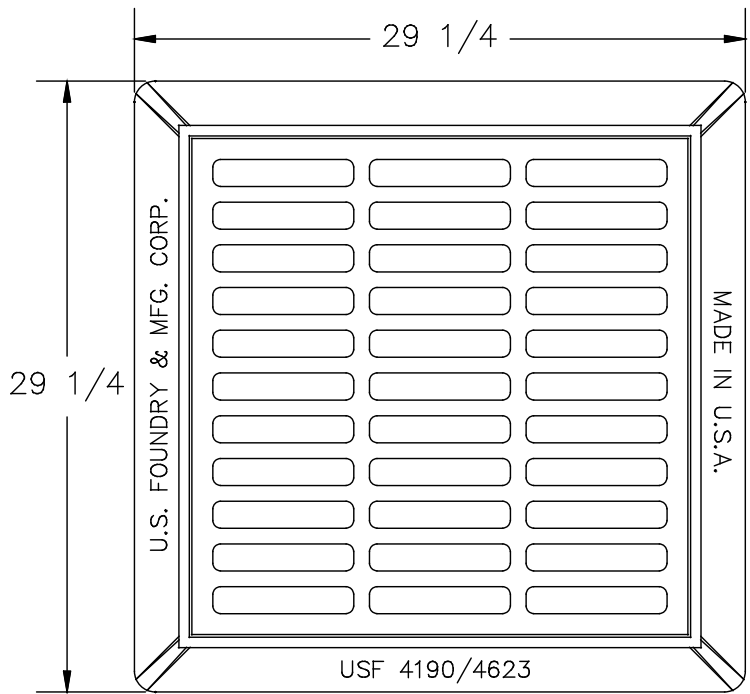
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

CURB INLET DETAIL



4.03



NOTES:

- 1- MATERIAL: ASTM-A48 CLASS 35B GRAY IRON.
- 2- FRAME WT: 125 LBS. APP.
- 3- GRATE WT: 115 LBS. APP.

USF 4190 FRAME & 6259 GRATE
OR APPROVED EQUAL

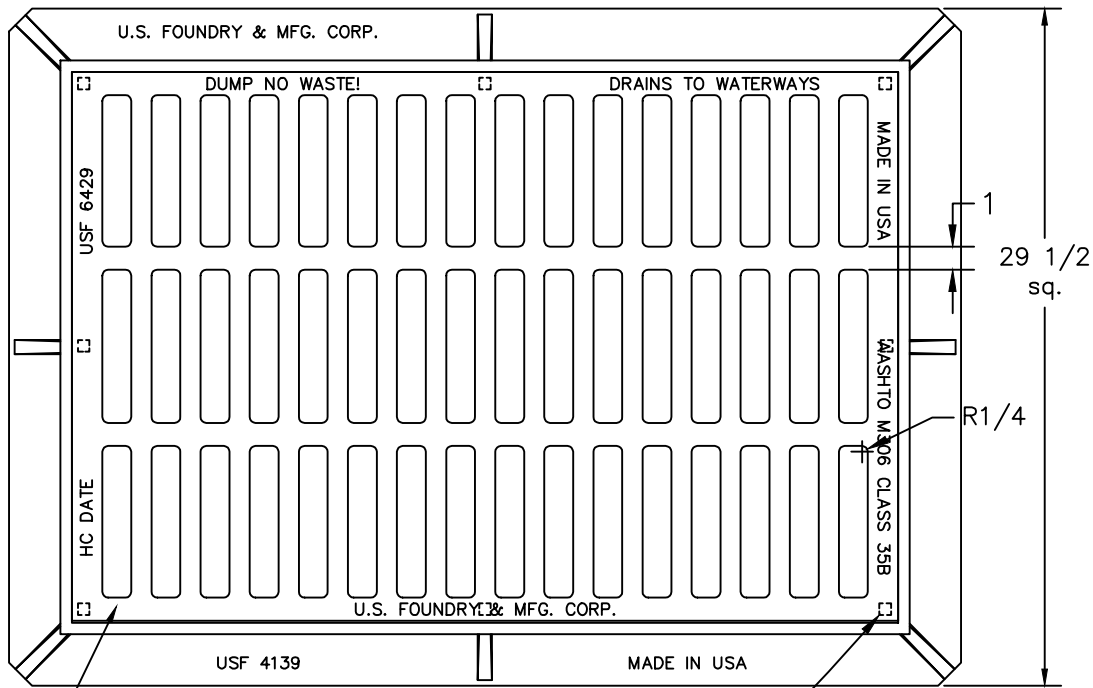
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**24" X 24" STANDARD DROP
INLET FRAME AND GRATE**

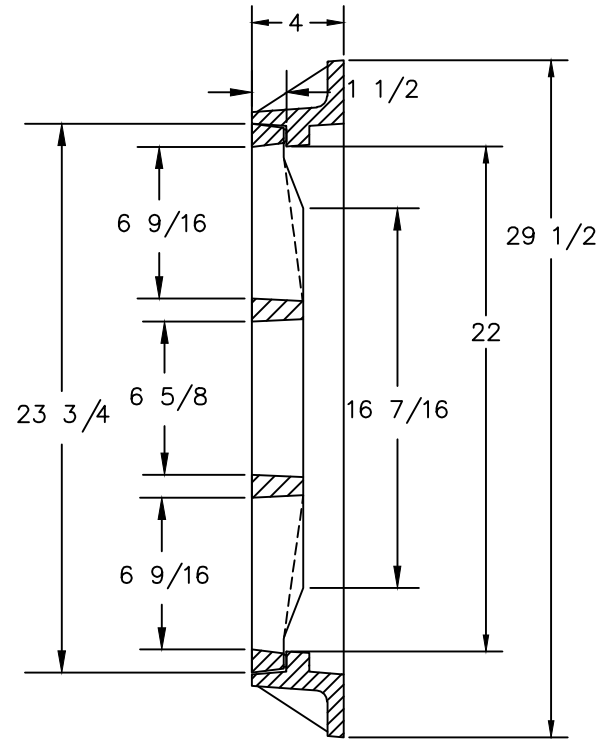


4.04



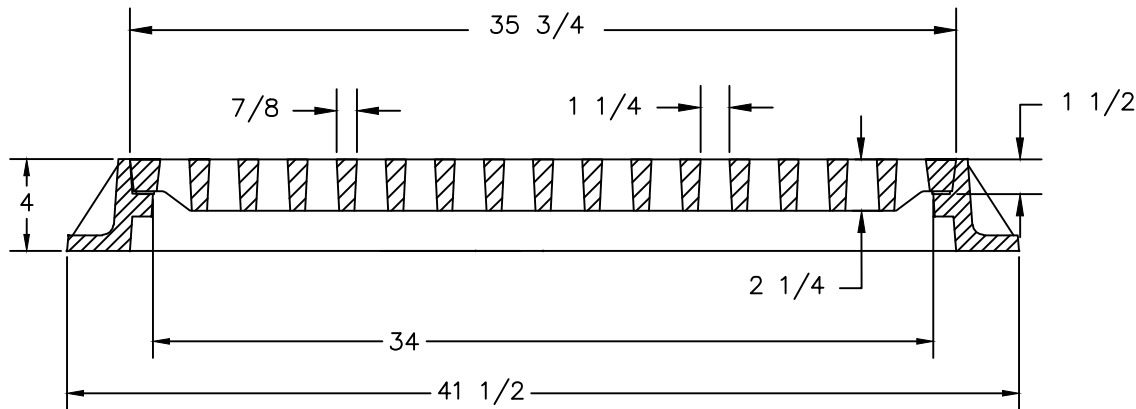
3/8 TEXT
RAISED 3/32 TYP.

(8) LEVELING PADS



NOTES:
FRAME IS REVERSIBLE.
CLASSIFICATION: HEAVY DUTY

USF 4139 FRAME & 6429 GRATE
OR APPROVED EQUAL



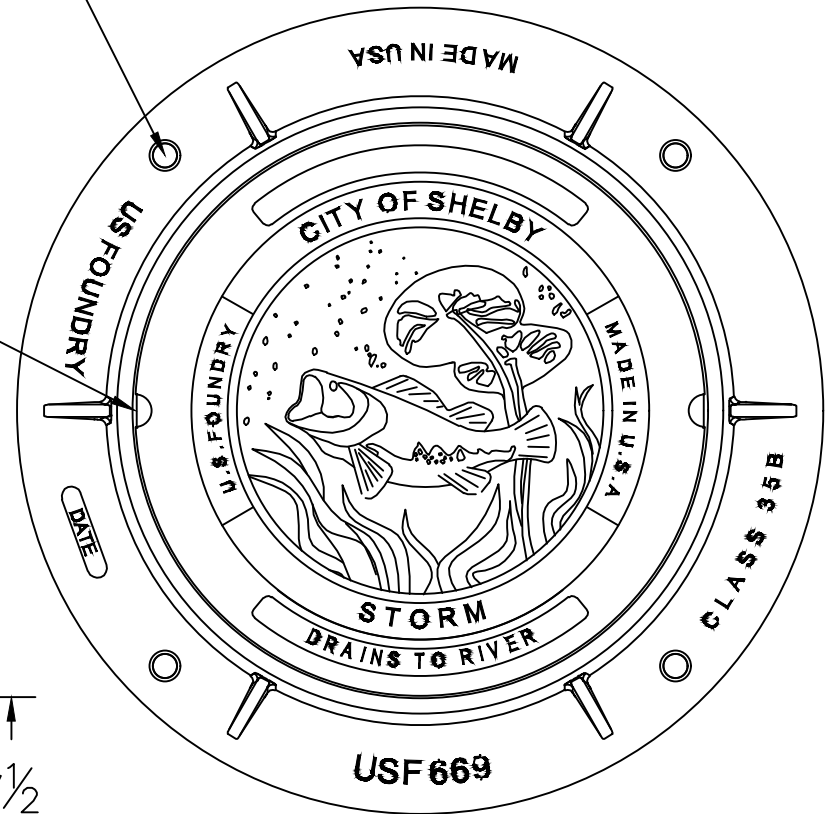
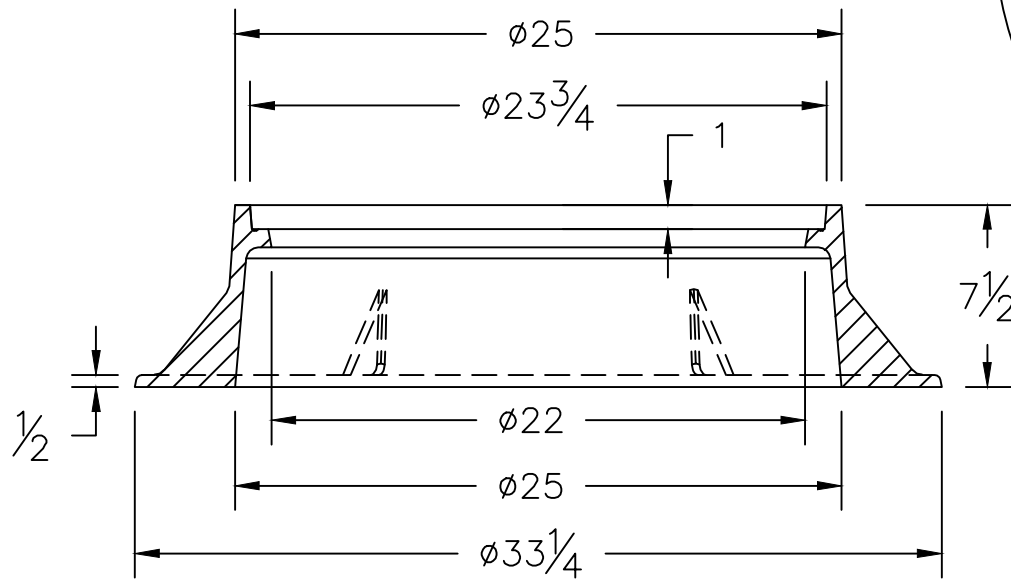
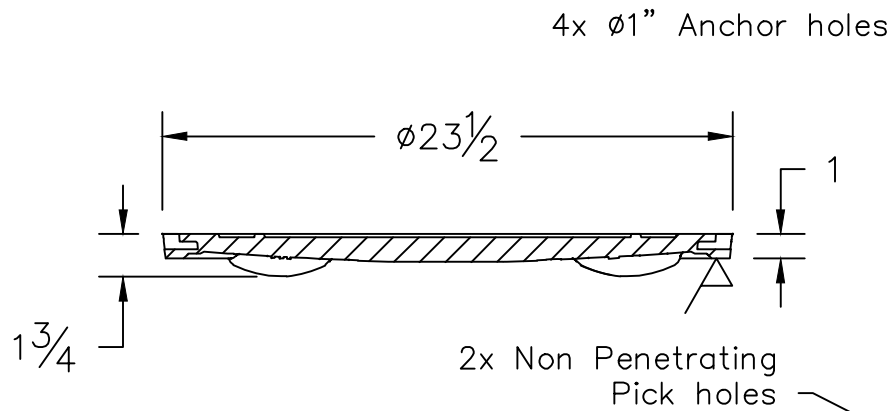
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**24" X 36" STANDARD DROP
INLET FRAME AND GRATE**



4.05



USF 669 & YF Cover

STANDARD MANHOLE RING AND COVER
ADOPTED FROM NCDOT
STANDARD NO. 840.54

DETAIL NOT TO SCALE

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

MANHOLE RING AND COVER
(FOR USE WITH PUBLIC STORM WATER SYSTEM)



4.06

NOTES:

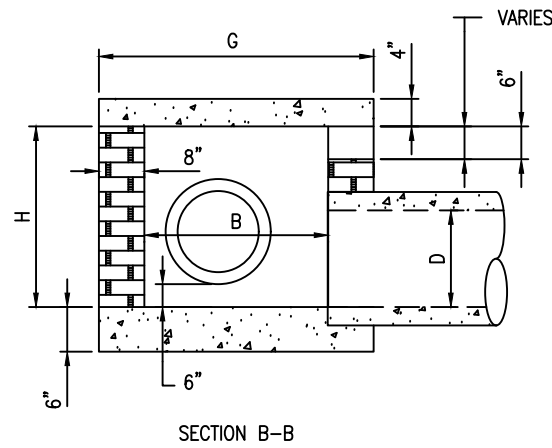
ALL BASINS OVER 3'-6" DEPTH SHALL BE PROVIDED WITH STEPS 12" O.C.

EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 1" MORTAR JOINTS SHALL BE 1/2" ± 1/8"

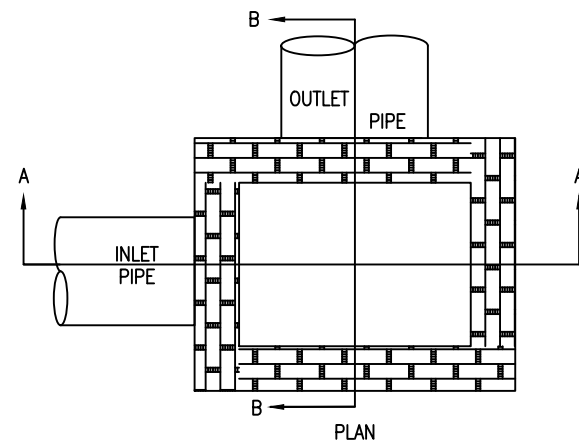
ALL EXPOSED JOINTS SHALL BE CONCAVE TOOLED

JUMBO BRICK, PRECAST CONCRETE, AND/OR PRECAST SEGMENTAL CONCRETE BLOCKS MAY BE USED TO CONSTRUCT BASIN, BASIN 8'-0" IN HEIGHT OR MORE SHALL HAVE A 12" WALL BEGINNING 6'-0" FROM TOP OF WALL AND 8" WALL FOR THE REMAINING 6'-0" TO TOP OF WALL

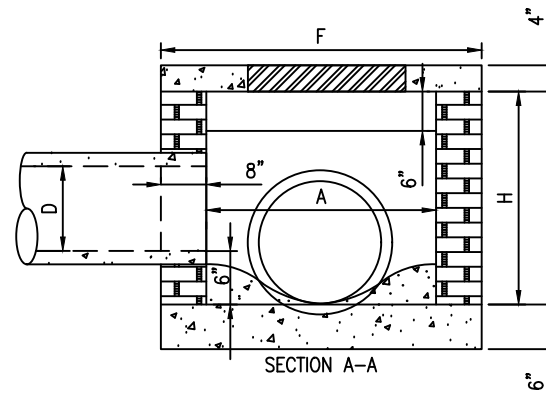
**NOTE:
FOR USE
IN NON-TRAFFIC
AREAS ONLY.**



SECTION B-B



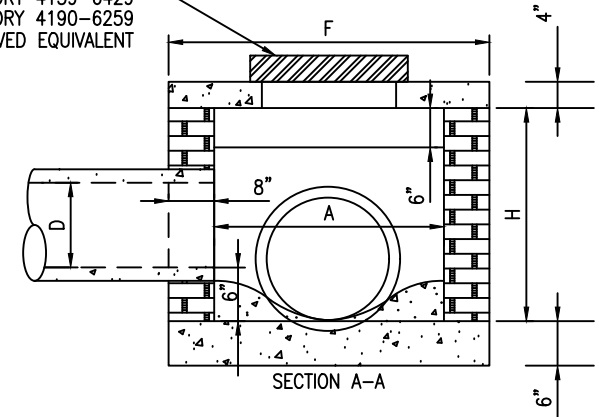
PLAN



SECTION A-A

**DROP INLET WITH GRATE
(FLUSH) ADOPTED FROM
NCDOT STANDARD
NO. 840.15 & 840.16**

FOR GRATE & FRAME
US FOUNDRY 4139-6429
OR US FOUNDRY 4190-6259
OR APPROVED EQUIVALENT



SECTION A-A

**DROP INLET WITH GRATE
(ON TOP) ADOPTED FROM
NCDOT STANDARD
NO. 840.15 & 840.16**

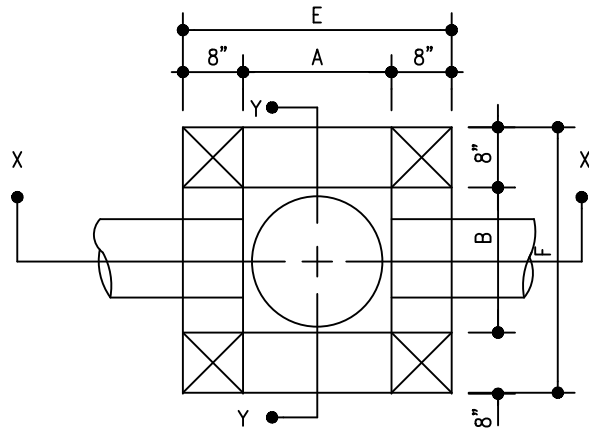
SHELBY STANDARD DETAILS - 2021

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STANDARD DROP INLET



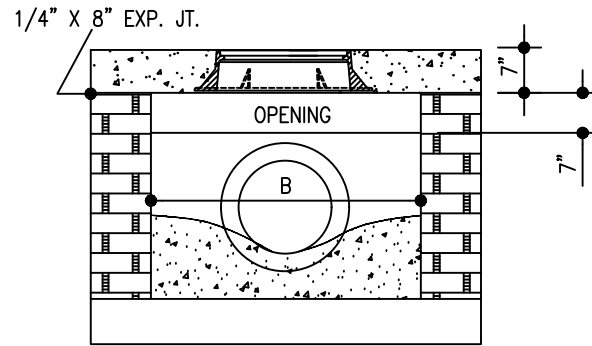
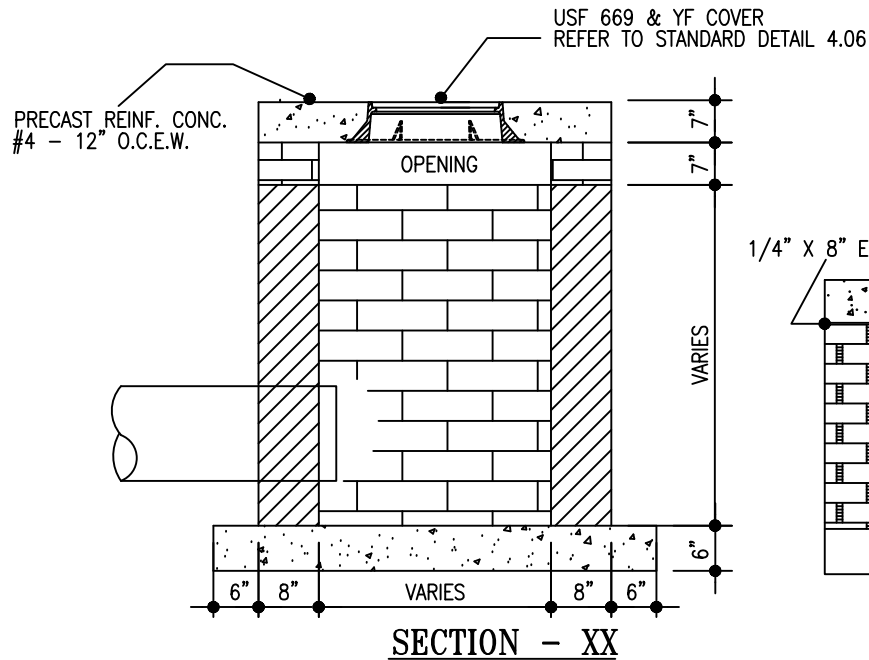
4.07



PLAN

GENERAL NOTES:

1. CONCRETE BASES TO BE MIN. CLASS "B" (2,500 P.S.I.) PLACED ON A FIRM FOUNDATION.
2. FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
3. ALL MORTAR JOINTS ARE TO BE $1/2" \pm 1/8"$.
4. ALL EXPOSED JOINTS SHALL BE CONCAVE TOOLED.
5. CEMENT MORTAR SHALL BE ASTM C-270, TYPE "M".
6. JUMBO BRICK WILL BE PERMITTED. CONCRETE BRICK OR 4" SOLID CONCRETE BLOCKS MAY BE USED IN LIEU OF CLAY BRICK.
7. FOR 8'-0" IN HEIGHT OR LESS USE 8" WALL; OVER 8'-0" IN HEIGHT USE 12" WALL TO 6'-0" FROM TOP OF WALL, AND 8" WALL FOR THE REMAINING 6'-0".
8. ALL JUNCTION BOXES OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 12" ON CENTERS.
9. INVERTS SHALL BE SHAPED TO FORM A SMOOTH, REGULAR SURFACE, SLOPED TO PREVENT SEDIMENTATION.
10. FOR MINIMUM DIMENSIONS REFER TO NCDOT 840.05



SECTION - YY

DETAIL NOT TO SCALE

SHELBY STANDARD DETAILS - 2021

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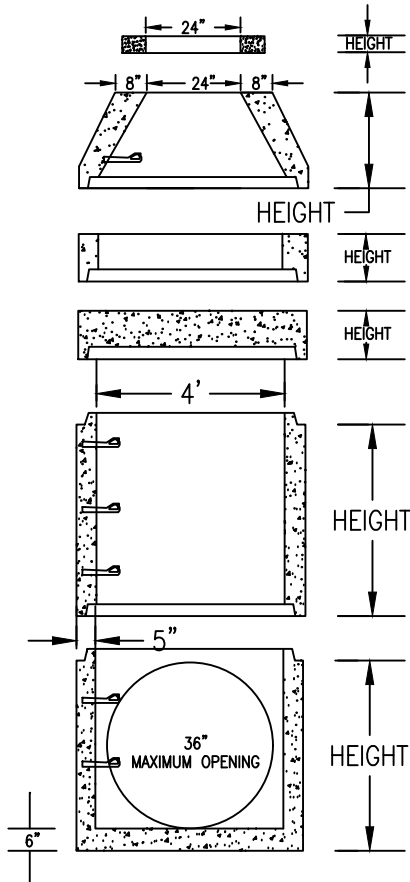
BRICK OPEN THROAT CATCH BASIN



4 FOOT DIAMETER

SPECIFICATIONS:
AASHTO M 199 - LATEST

WITH AASHTO M-198B PREFORMED PLASTIC
OR ASTM C-443 RUBBER GASKET JOINTS.
REINFORCED IN ACCORDANCE WITH APPLICABLE
SPECIFICATIONS.



REFER TO NCDOT ROADWAY
STANDARD DRAWING FOR DETAILED
INFORMATION ON PRECAST MANHOLES

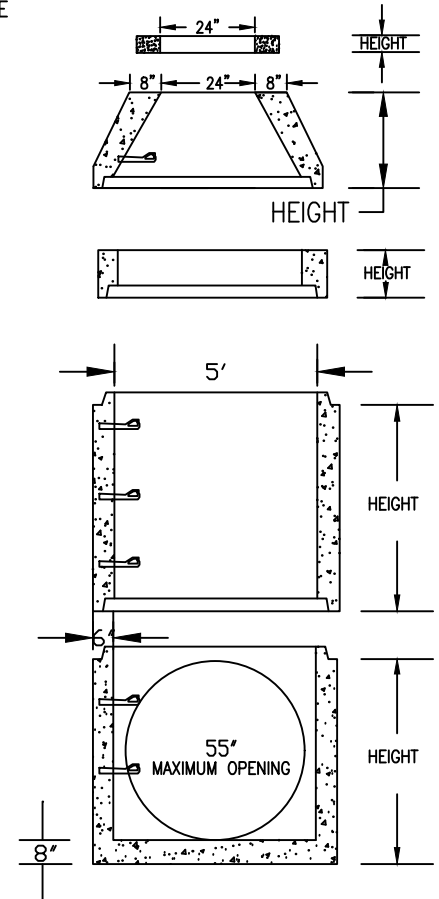
PRECAST REINFORCED
CONCRETE
MANHOLE SECTIONS

DETAIL NOT TO SCALE

5 FOOT DIAMETER

SPECIFICATIONS:
AASHTO M 199 - LATEST

WITH AASHTO M-198B PREFORMED PLASTIC
OR ASTM C-443 RUBBER GASKET JOINTS.
REINFORCED IN ACCORDANCE WITH APPLICABLE
SPECIFICATIONS.



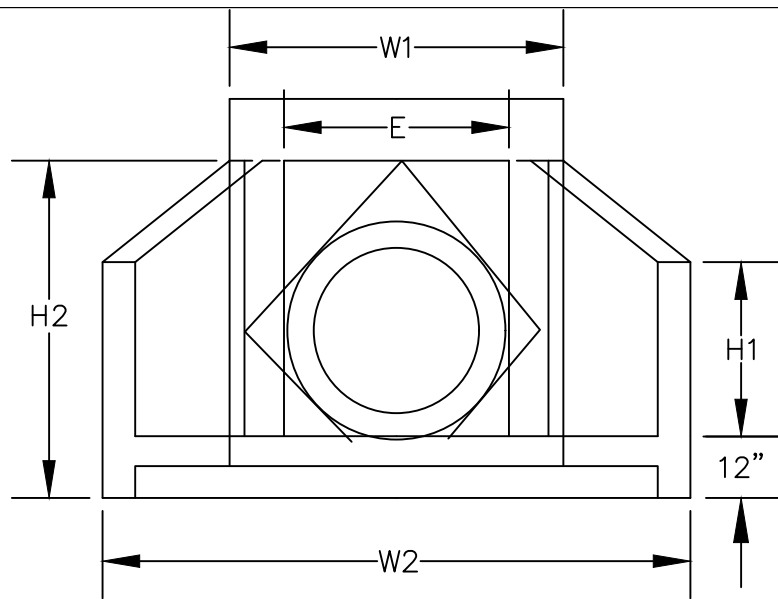
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

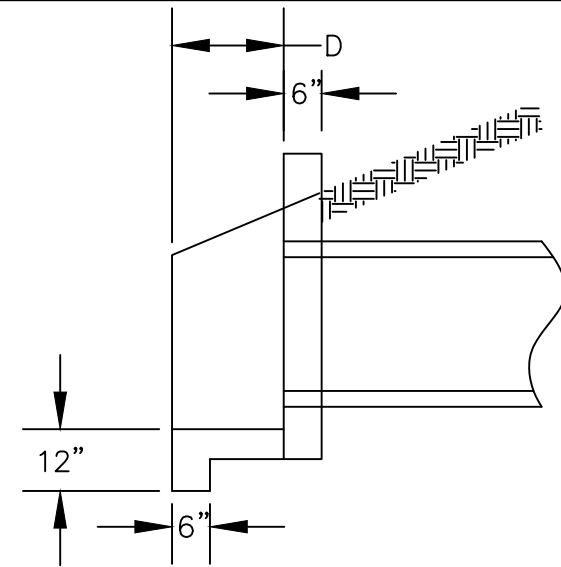
4' & 5' DIAMETER PRECAST MANHOLES



4.09



FRONT



SIDE

NOTES:

1. ALL CONCRETE SHALL BE 4000 PSI MINIMUM.
2. REINFORCEMENT STEEL SHALL MEET ASTM-A615 GRADE 60 WITH 2" MINIMUM CLEARANCE.

INSIDE PIPE DIAMETER	REINF.	LBS.	W1	W2	H1	H2	D	E
12", 15", 18"	#5 @ 8"	2060	44"	64"	23"	42 1/2"	18 1/2"	27"
21", 24"	#5 @ 8"	3100	50"	85"	31"	56"	24"	33"
27", 30", 36"	#5 @ 8"	5940	64"	108"	41"	72"	36"	49"
42", 48"	#5 @ 8"	8040	79"	150"	52"	79"	40"	64"
54", 60", 72"	#5 @ 8"	16000	105"	161"	60"	90"	48"	90"

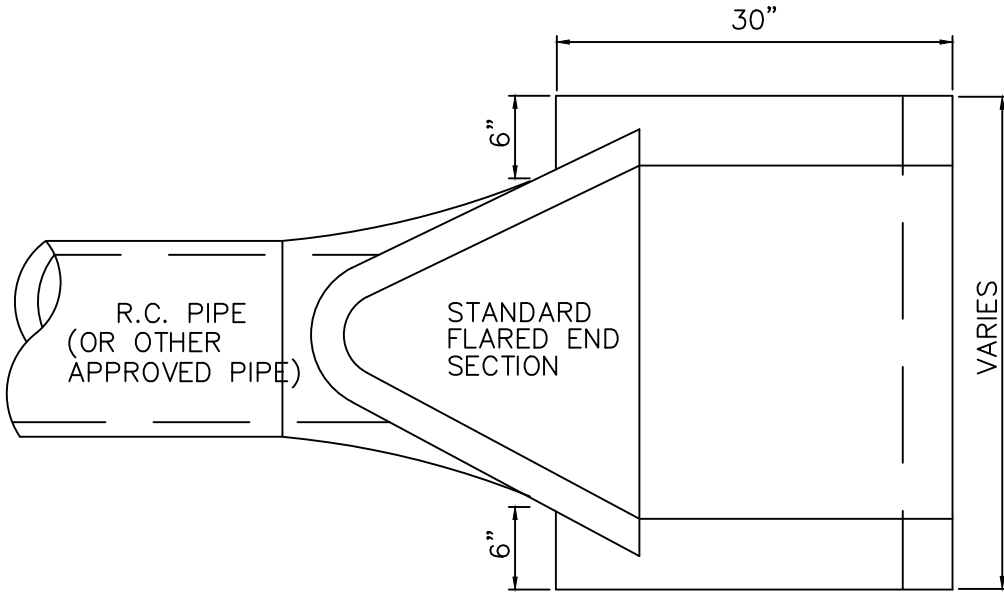
REINFORCED CONCRETE HEADWALL

SHELBY STANDARD DETAILS - 2021

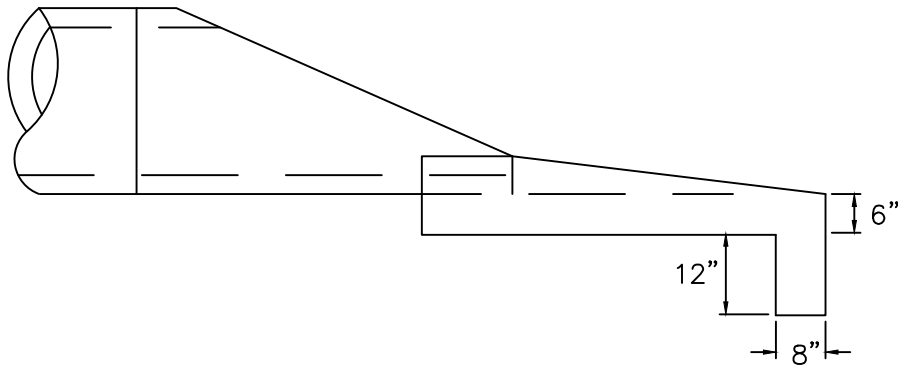
DATE	REVISIONS

**STANDARD REINFORCED CONCRETE
HEADWALL WITH WING WALLS**

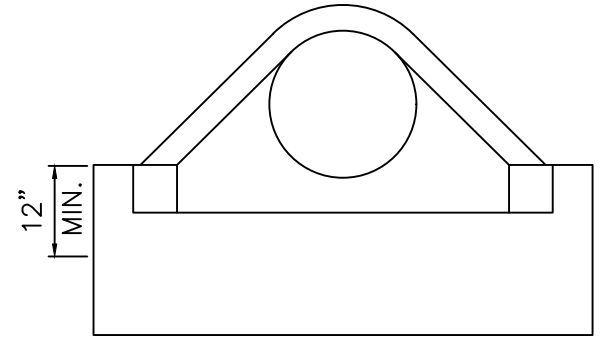




PLAN



SIDE VIEW



END VIEW

NOTE:
TO BE USED ONLY FOR
PIPES 36" OR LESS IN DIAMETER

SHELBY STANDARD DETAILS - 2021

DATE	REVISION

SPLASH PAD FOR FLARED END PIPE



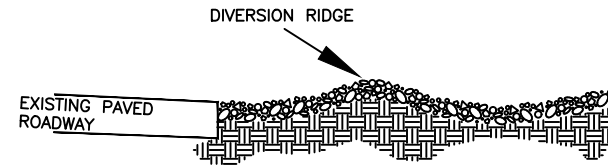
4.11

NOTES:

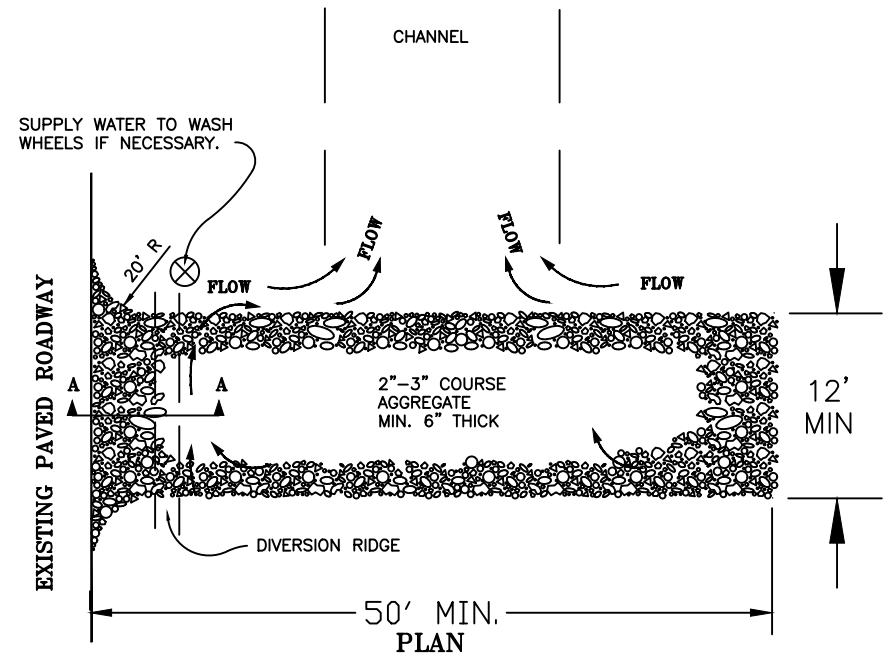
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. OTHER SURFACE MATERIAL THAT HAVE BEEN PERMITTED FROM NCDEQ MAY BE USED.

CONSTRUCTION SPECIFICATIONS

1. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade it.
2. Place the gravel to the specific grade and dimensions shown on the plans, and smooth it.
3. Provide drainage to carry water to the sediment trap.



SECTION A - A



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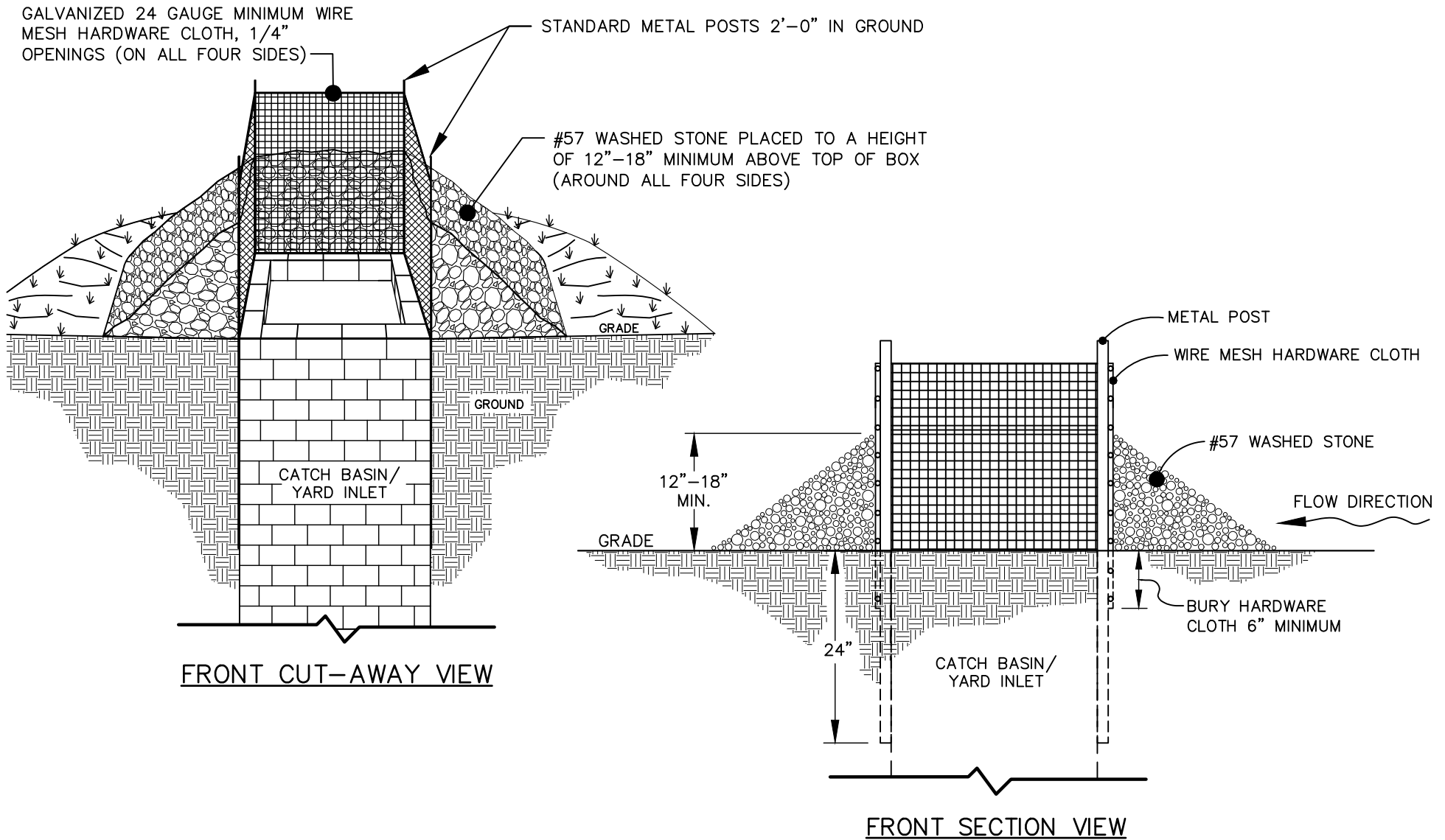
**TEMPORARY CONSTRUCTION
ENTRANCE**



5.01

NOTE:

1. INSPECT AND REPAIR FILTER AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.



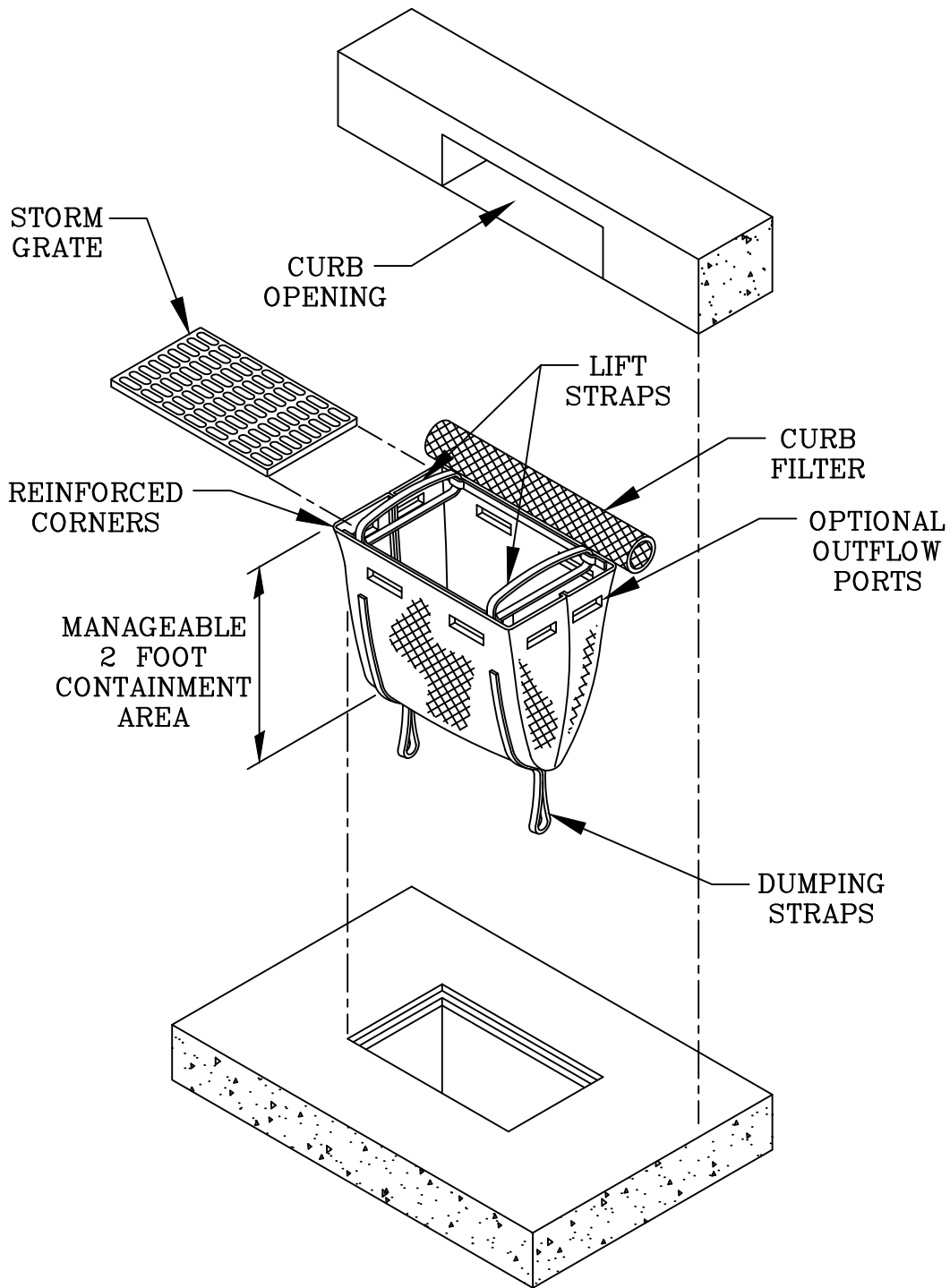
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

YARD INLET SEDIMENT FILTER



5.02



NOTE:
 1. INSPECT AND REPAIR FILTER AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.

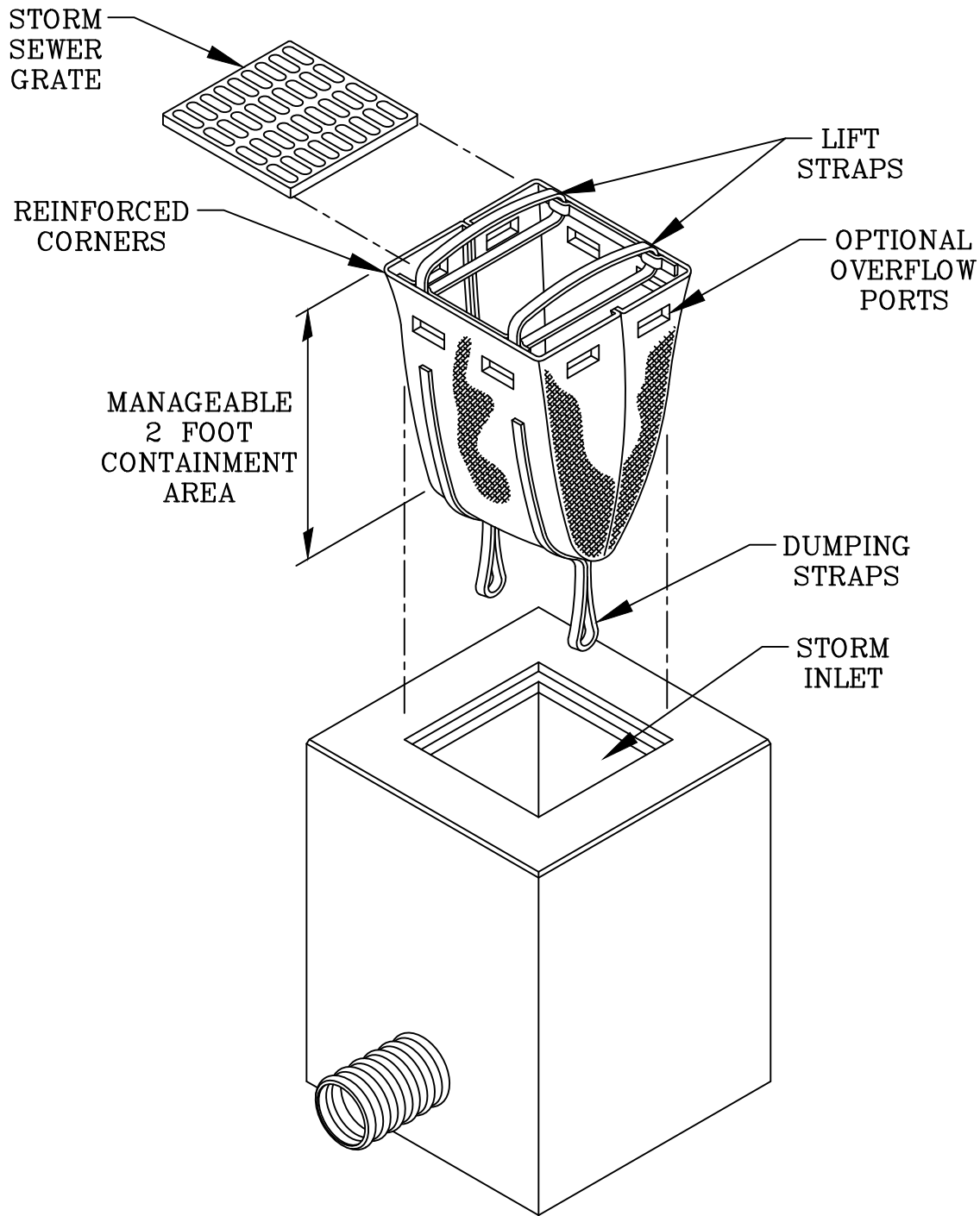
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**CURB DRAIN SEDIMENT
 FILTER BAG**



5.03



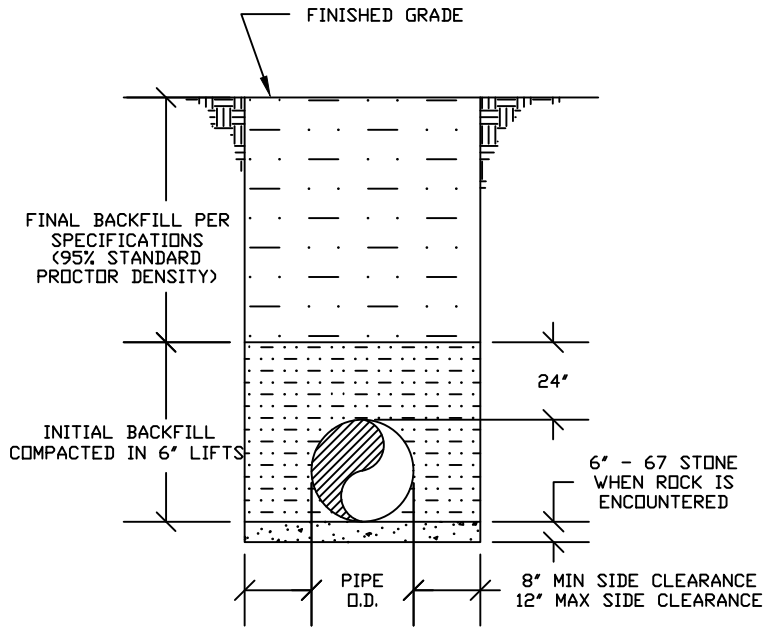
NOTE:
 1. INSPECT AND REPAIR FILTER AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.

SHELBY STANDARD DETAILS - 2021	
DATE	REVISIONS

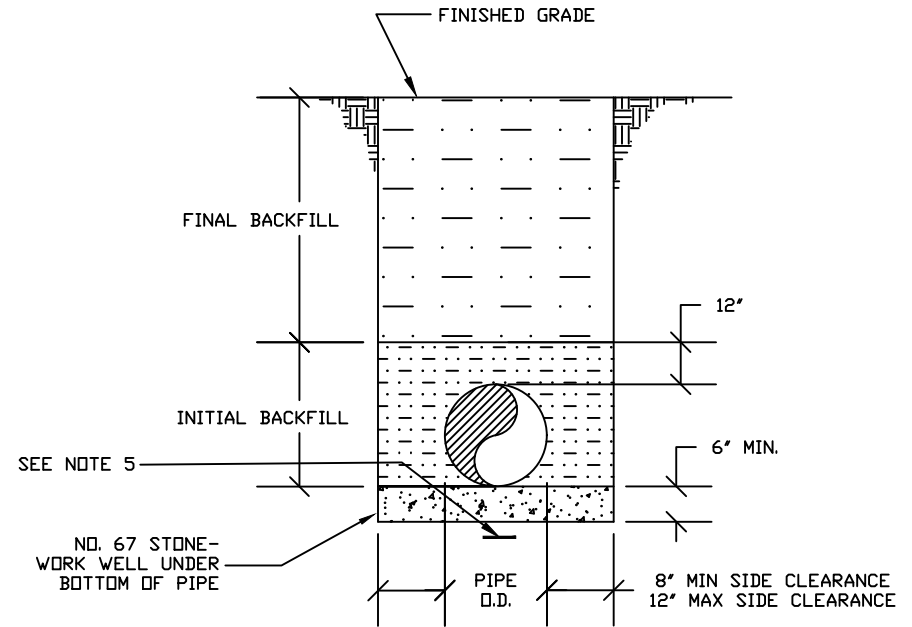
STORM DRAIN SEDIMENT FILTER BAG



5.04



CLASS 'D' BEDDING
 REQUIRED FOR DUCTILE IRON
 PIPES



CLASS 'C' BEDDING
 REQUIRED FOR C-900 PVC PIPE
 *IF PIPE IS PERMITTED ON PROJECT

NOTES:

1. NO ROCKS OR BOULDERS 4' OR LARGER TO BE USED IN BACKFILL.
2. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
3. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS AND 12" IN NON-TRAFFIC AREAS.
4. MUST ACHIEVE 95% COMPACTION IN NON-TRAFFIC AREAS AND 95% COMPACTION IN TRAFFIC AREAS.
5. #40 12 GAUGE (MIN) SOLID COPPER TRACER WIRE W/ THERMOPLASTIC INSULATION. WIRE CONNECTORS TO BE 3M DBR, OR APPROVED EQUAL, AND SHALL BE WATER TIGHT TO PROVIDE ELECTRICAL CONTINUITY. WIRE SHALL BE PLACED BELOW PIPE IN BEDDING TO ENSURE THAT THE WIRE IS NOT DAMAGED DURING FUTURE REPAIRS.
6. FOR TRENCHES REQUIRING SHORING & BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING & BRACING.
7. TENCATE MIRAFI® OR APPROVED SUBSTITUTE GEOTEXTILE MATTING MUST BE USED IF WASHED STONE COVERS PIPE.
8. REFER TO STANDARD DETAIL 3.01 FOR PAVEMENT REPAIR

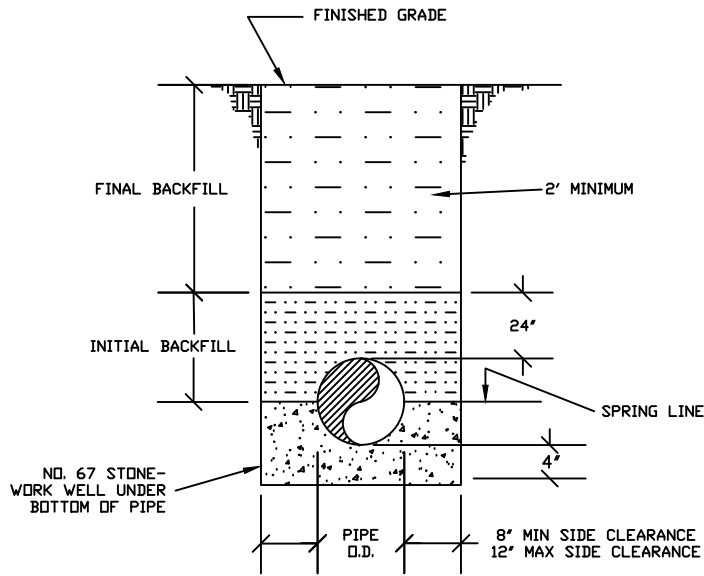
SHELBY STANDARD DETAILS - 2021

DATE	REVISED

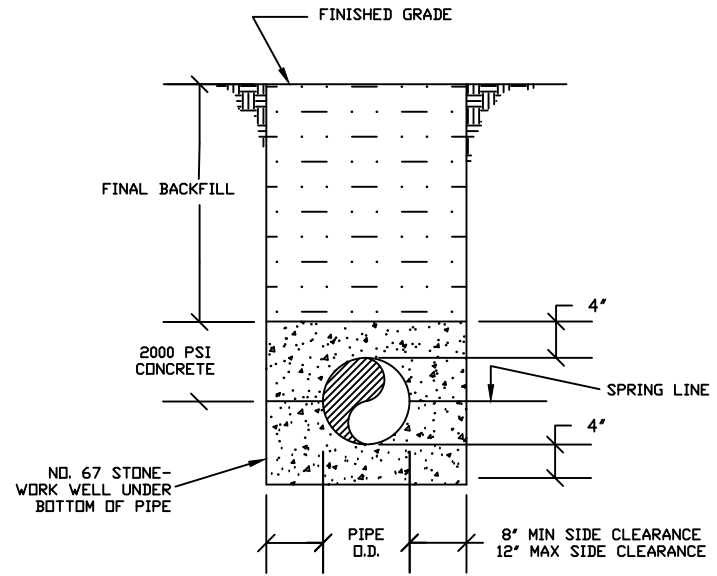
**PIPE BEDDING AND BACKFILLING -
 CLASS D&C**



6.01A



CLASS 'B' BEDDING
 REQUIRED FOR FOR PVC
 WATER PIPE, SDR-21



CLASS 'A' BEDDING

NOTES:

1. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN BACKFILL.
2. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
3. BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS AND 12" IN NON-TRAFFIC AREAS.
4. MUST ACHIEVE 95% COMPACTION IN NON-TRAFFIC AREAS AND 95% COMPACTION IN TRAFFIC AREAS.
5. #40 12 GAUGE (MIN) SOLID COPPER TRACER WIRE W/ THERMOPLASTIC INSULATION. WIRE CONNECTORS TO BE 3M DBR, OR APPROVED EQUAL, AND SHALL BE WATER TIGHT TO PROVIDE ELECTRICAL CONTINUITY. WIRE SHALL BE PLACED BELOW PIPE IN BEDDING TO ENSURE THAT THE WIRE IS NOT DAMAGED DURING FUTURE REPAIRS.
6. FOR TRENCHES REQUIRING SHORING & BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING & BRACING.
7. TENCATE MIRAFI® OR APPROVED SUBSTITUTE .GEOTEXTILE MATTING MUST BE USED IF WASHED STONE COVERS PIPE.
8. REFER TO STANDARD DETAILS 3.01 FOR PAVEMENT REPAIR

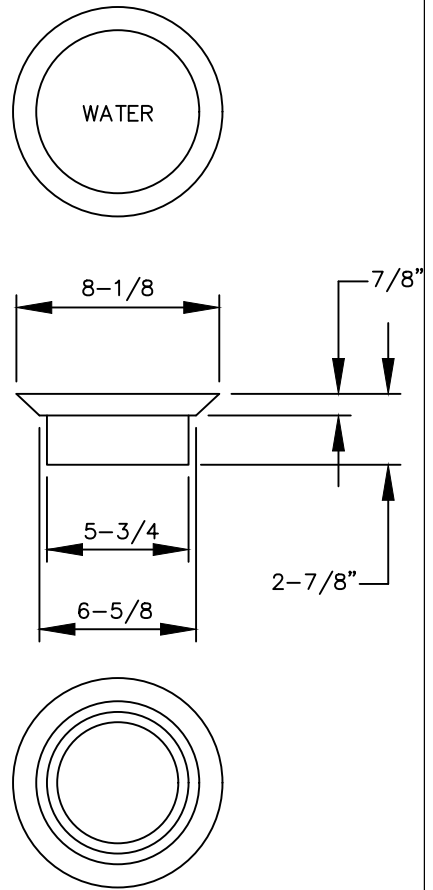
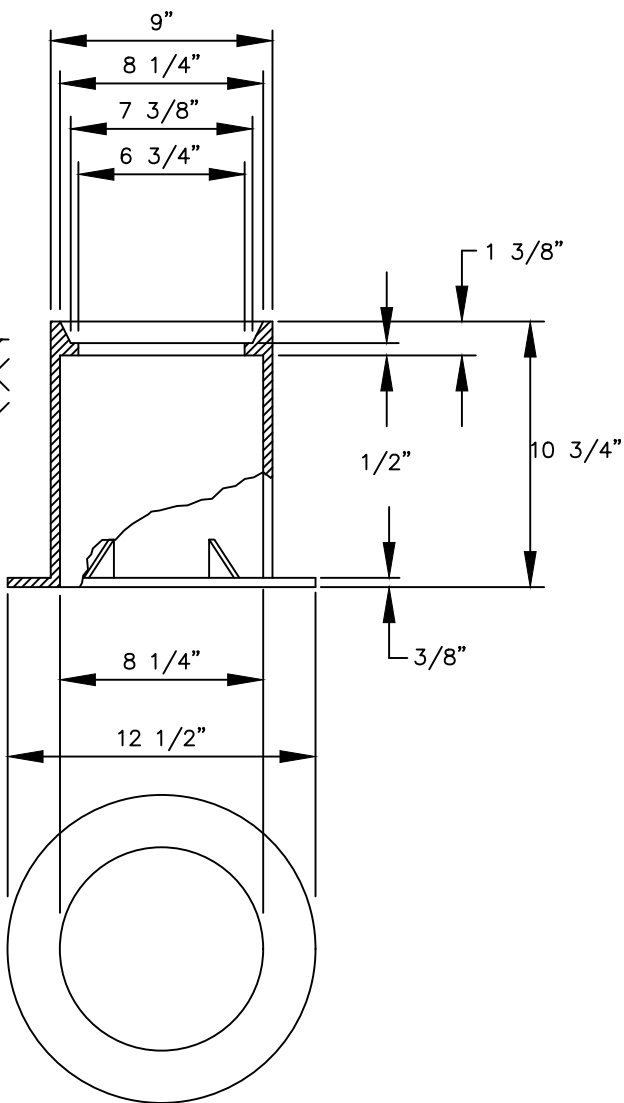
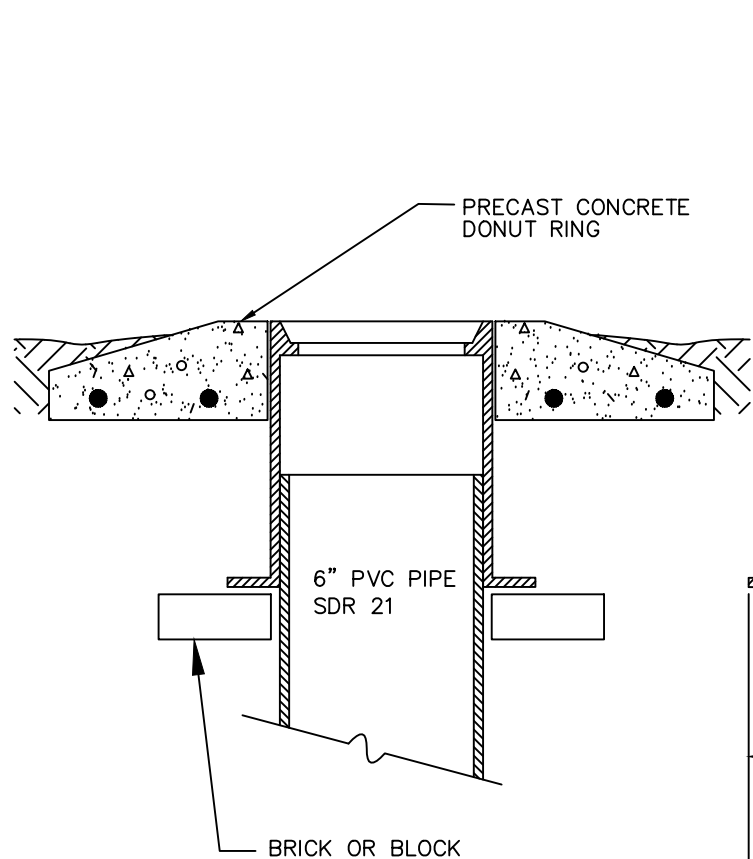
SHELBY STANDARD DETAILS - 2021

DATE	REVISED

**PIPE BEDDING AND BACKFILLING-
 CLASS B&A**



6.01B



- NOTES:
1. SUPPORT BOX SO THAT WEIGHT IS NOT TRANSFERRED TO PIPE.
 2. PVC PIPE TO BE EXTENDED ABOVE GRADE UNTIL FINAL GRADING IS COMPLETE. CUT OFF PVC PIPE PRIOR TO INSTALLING VALVE BOX.
 2. PVC PIPE TO BE EXTENDED ABOVE GRADE UNTIL FINAL GRADING IS COMPLETE. CUT OFF PVC PIPE PRIOR TO INSTALLING VALVE BOX.
 3. USE VALVE BOX P-107
 4. USE APPROPRIATE LIE (I.E. WATER, SEWER, ETC.)

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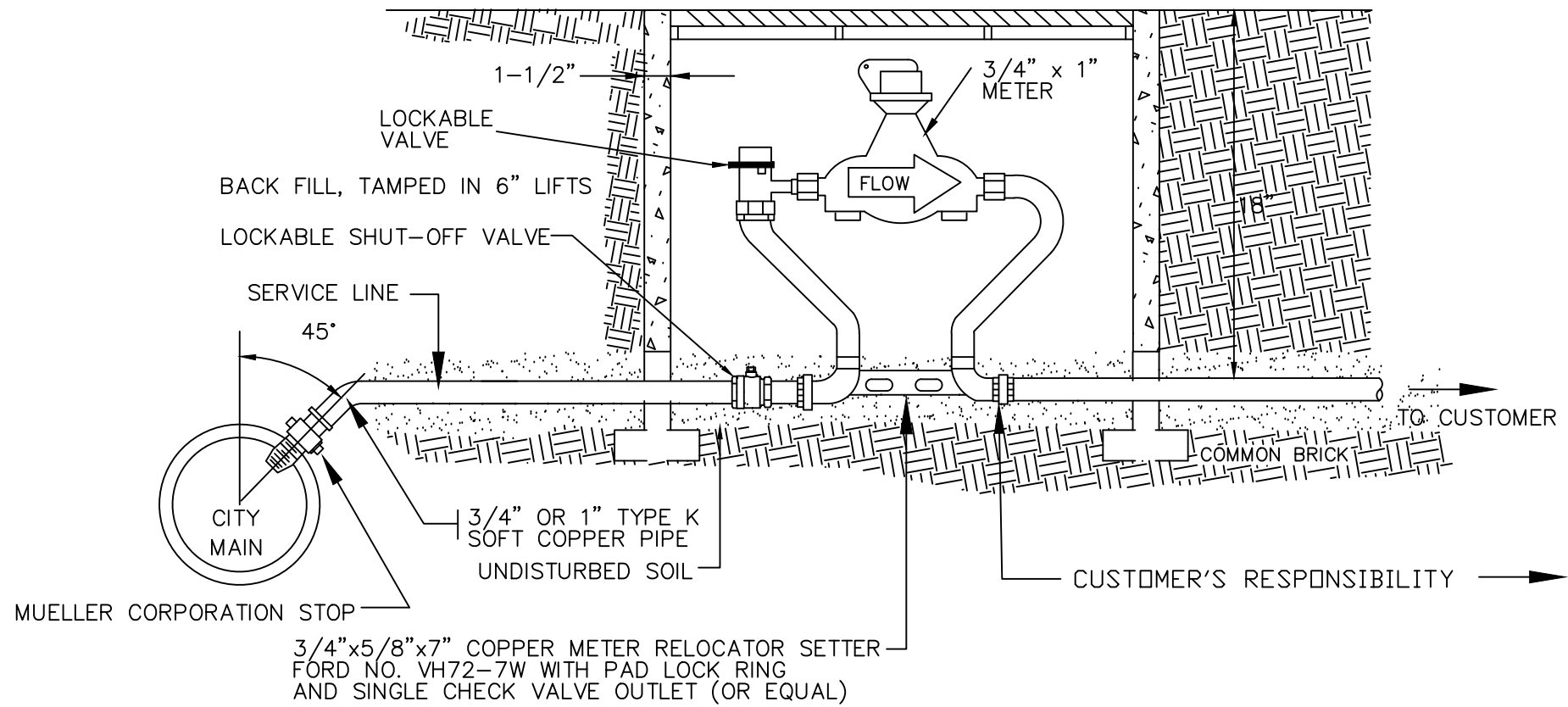
DATE	REVISIONS

STANDARD VALVE BOX



CITY STANDARD METER BOX
 W/ 11" x 15" IRONCRETE TOP
 NO. 1E (FORD METER CO.)
 OR CAST IRON BOX WITH
 FULL CAST IRON LID.

R/W
 |
 |
 |



- NOTES:
1. METER SHALL READ IN 1,000 GALS WITH AN ERT.
 2. BACKFILL OF SERVICE LINE SHALL BE TAMPED IN 6" LIFTS.
 3. BACKFLOW PREVENTION ON CUSTOMER SIDE REQUIRED FOR COMMERCIAL CUSTOMERS AND RESIDENTIAL CUSTOMERS WITH POOLS AND/OR IRRIGATION.
 4. METERS ARE NOT ALLOWED IN PLANTING STRIPS BETWEEN CURB AND SIDEWALK OR DRIVEWAYS UNLESS APPROVED BY THE CITY.
 5. METER BOX TO BE LOCATED IN RIGHT-OF-WAY ADJACENT TO THE PROPERTY.

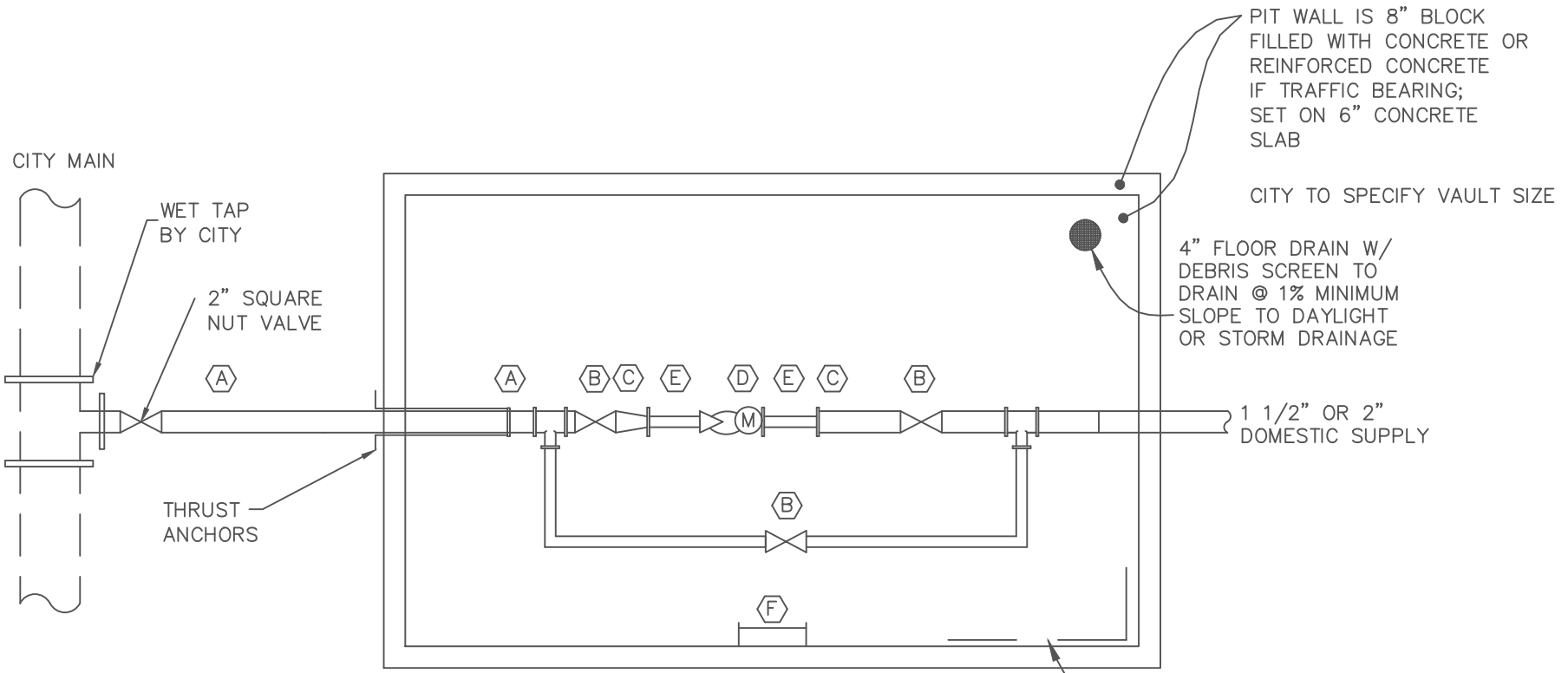
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

STANDARD $\frac{3}{4}$ " OR 1" METER ASSEMBLY



6.03



PIT WALL IS 8" BLOCK FILLED WITH CONCRETE OR REINFORCED CONCRETE IF TRAFFIC BEARING; SET ON 6" CONCRETE SLAB

CITY TO SPECIFY VAULT SIZE

4" FLOOR DRAIN W/ DEBRIS SCREEN TO DRAIN @ 1% MINIMUM SLOPE TO DAYLIGHT OR STORM DRAINAGE

1 1/2" OR 2" DOMESTIC SUPPLY

BILCO DOOR (ALUM.) - SIZE TO EXPOSE ENTIRE PIT (DOUBLE DOORS)

- (A) PIPE TO BE COPPER OR DUCTILE IRON
- (B) OS&Y VALVE
- (C) REDUCER
- (D) METER SIZED AND PURCHASED FROM CITY
- (E) 5 PIPE DIAMETERS OF STRAIGHT PIPE ON BOTH SIDES OF METER OR DISMANTLING JOINT; I.E., FOR 1-1/2" METER F=7.5", etc.
- (F) ACCESS LADDER-ALUMINUM

* Note:
ALL REQUIRED BACKFLOW MUST BE ABOVE GROUND IN APPROVED HDTBOX

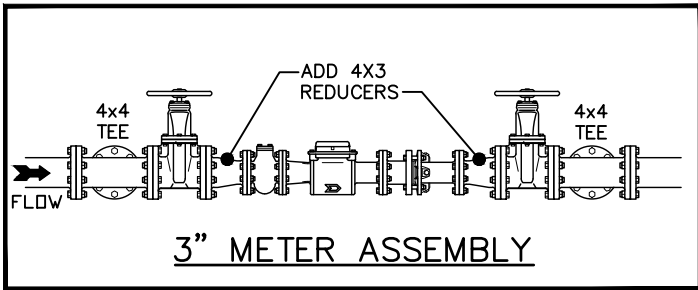
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

STANDARD 1 1/2" AND 2" METER INSTALLATION AND VAULT

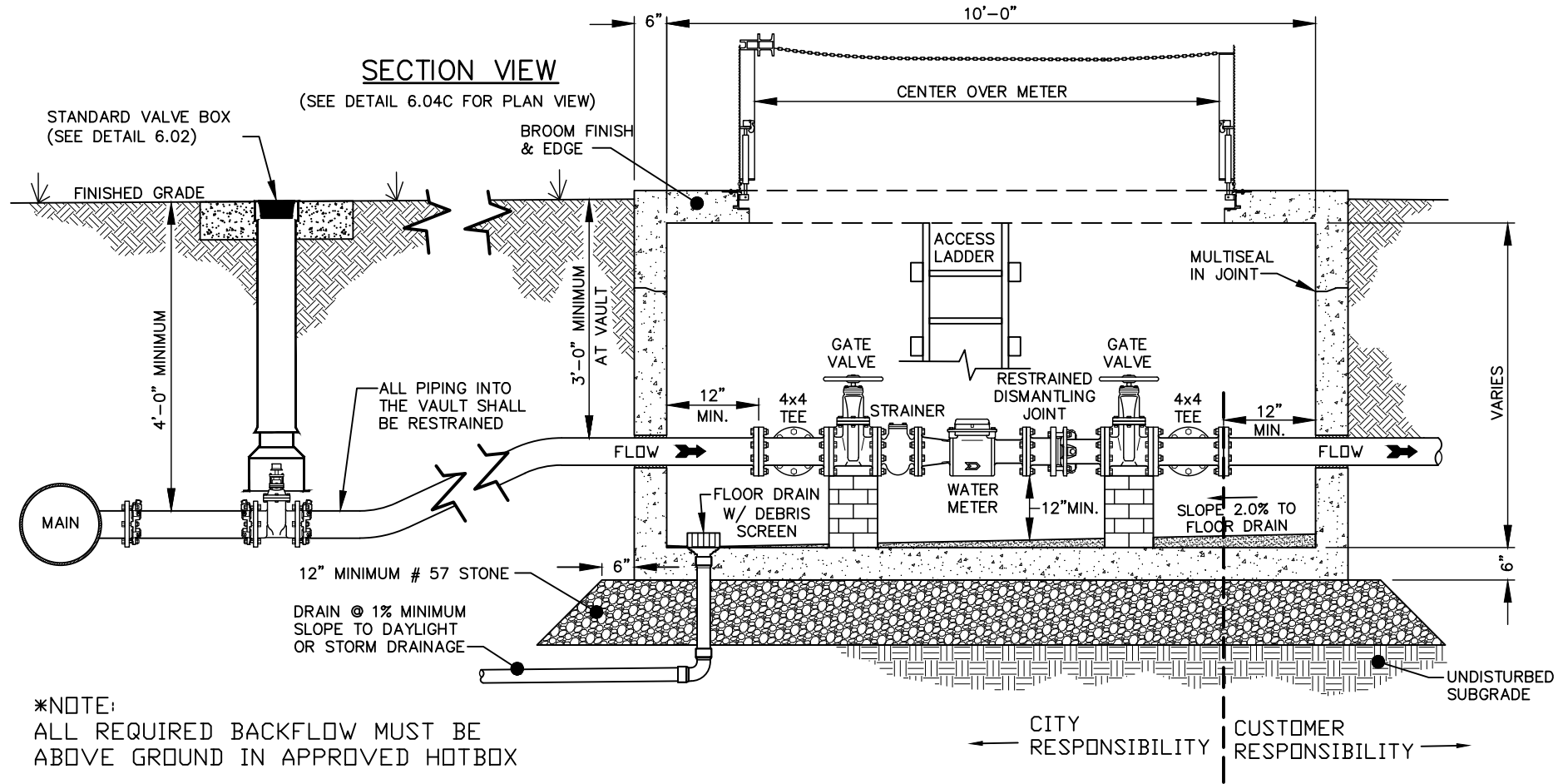


6.04A



GENERAL NOTES:

- 1) METER AND BYPASS ASSEMBLY PIPING TO BE DUCTILE IRON FLANGED PIPE INSIDE THE VAULT.
- 2) METER FACE TO BE A MAXIMUM OF 3 FEET BELOW FINISHED GRADE.
- 3) ACCESS DOOR SHALL BE H-20 RATED ALUMINUM DOUBLE DOOR SIZED TO EXPOSE THE ENTIRE VAULT..
- 4) VALVES SHALL BE IRON BODY TYPE, RESILIENT WEDGE GATE VALVES WITH NON-RISING STEM, HANDWHEEL OPERATORS AND FLANGE CONNECTIONS. SUPPORTS SHALL BE EITHER SOLID BRICK, SOLID BLOCK, OR CMU.
- 5) TO ENSURE POSITIVE DRAINAGE, THE VAULT SHALL BE TIED INTO THE EXISTING STORM DRAINAGE SYSTEM, IF POSITIVE DRAINAGE IS UNOBTAINABLE, A SUMP PUMP SHALL BE LOCATED AND OPERATED IN THE VAULT.
- 6) ALL COMMERCIAL OR OTHER NON-RESIDENTIAL APPLICATIONS REQUIRE AN ABOVE GROUND BACKFLOW PREVENTER.
- 7) DOUBLE DOORS SHALL BE LOCKABLE.
- 8) METERS SHALL READ IN 1,000 GALS WITH AN ERT.



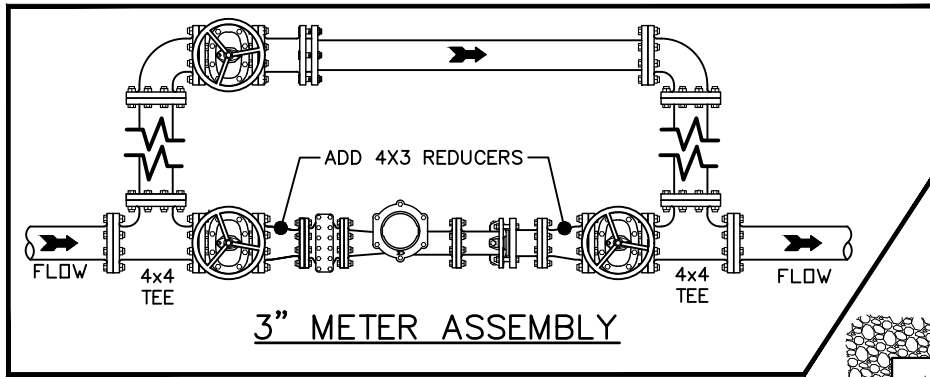
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**STANDARD 3" OR 4" METER
INSTALLATION & VAULT
(SECTION VIEW)**



6.04B

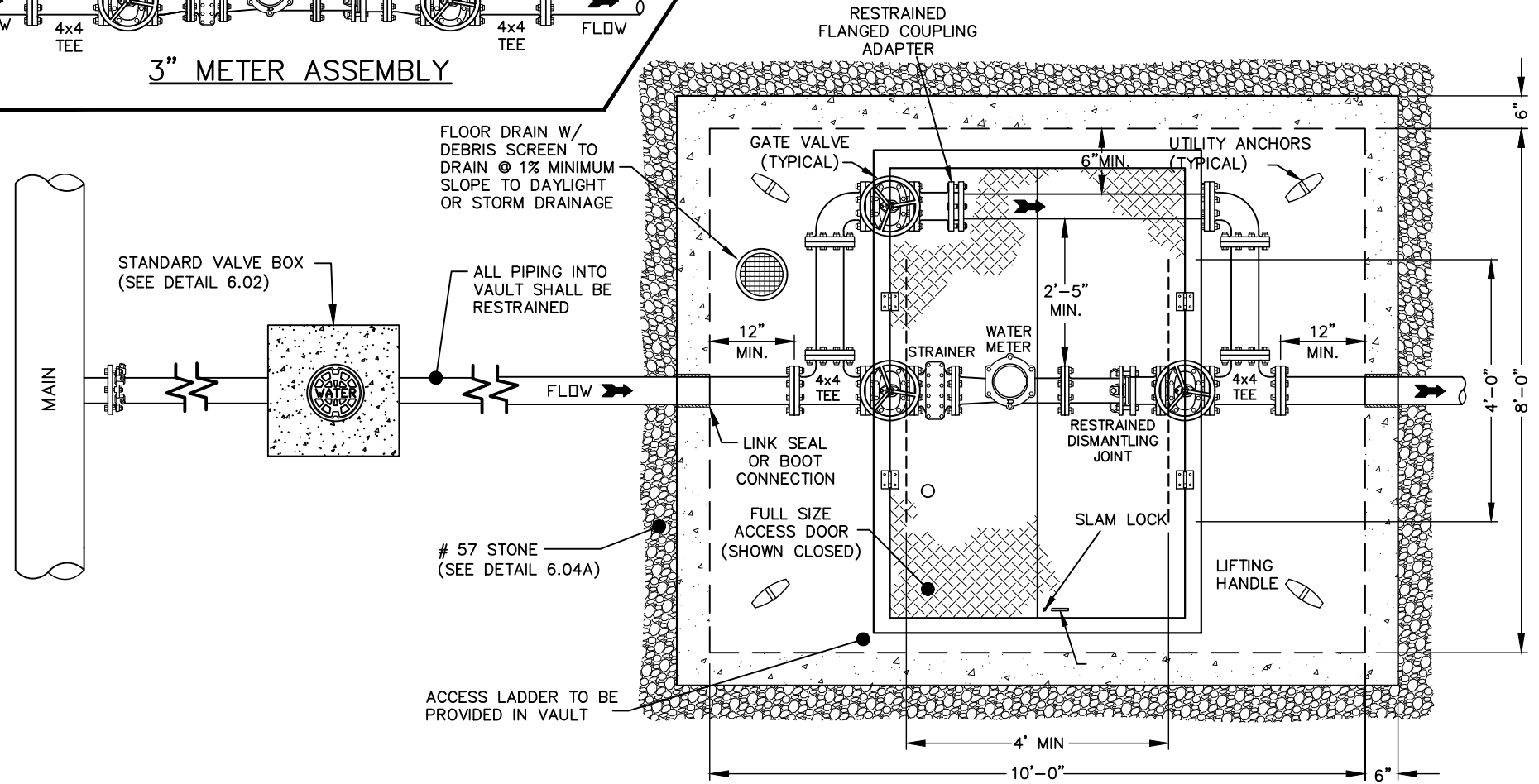


GENERAL NOTES:

- 1) METERS SHALL READ IN 1,000 GALS WITH AN ERT.
- 2) TO ENSURE POSITIVE DRAINAGE, THE VAULT SHALL BE TIED INTO THE EXISTING STORM DRAINAGE SYSTEM, IF POSITIVE DRAINAGE IS UNOBTAINABLE, A SUMP PUMP SHALL BE LOCATED AND OPERATED IN THE VAULT.

PLAN VIEW

(SEE DETAIL 6.04B FOR SECTION VIEW)



SHELBY STANDARD DETAILS - 2021	
DATE	REVISIONS

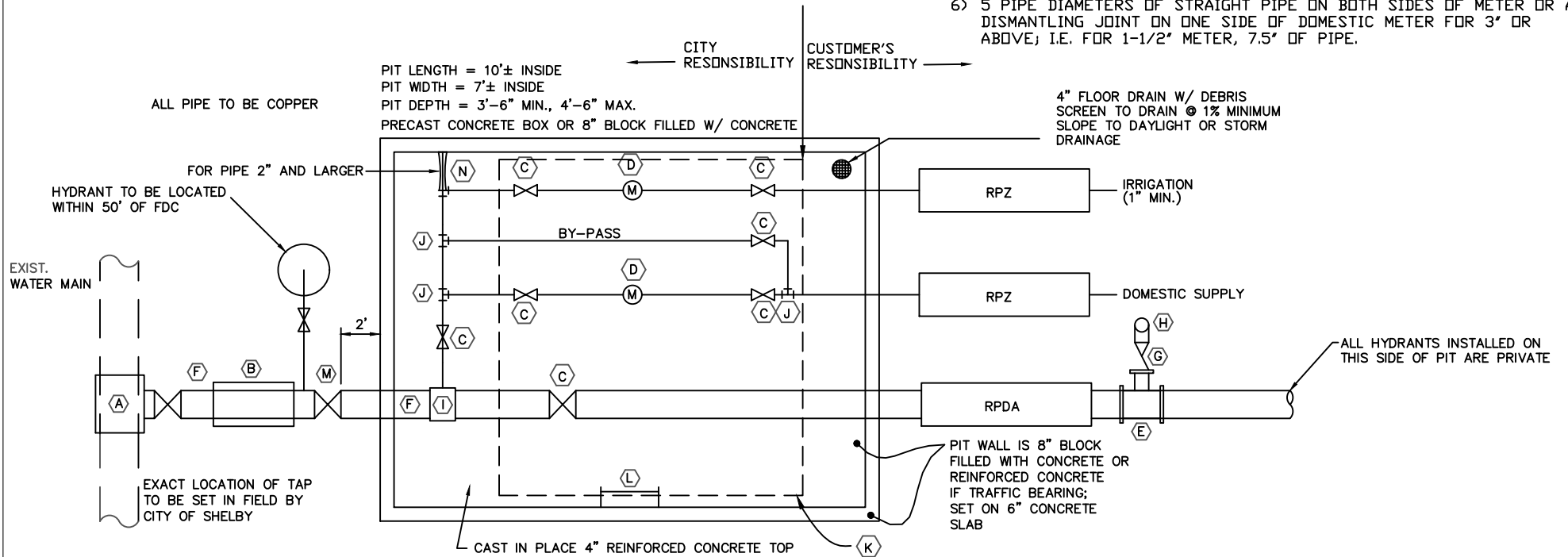
**STANDARD 3" OR 4" METER
INSTALLATION & VAULT
(PLAN VIEW)**



6.04C

NOTES:

- 1) METERS 2" OR LESS MUST BE PURCHASED FROM THE CITY. METERS 3" OR LARGER PROVIDED BY CONTRACTOR AND MUST BE APPROVED BY THE CITY.
- 2) BACKFLOW ASSEMBLIES PROVIDED BY CONTRACTOR
- 3) NO BACKFLOW IN VAULT, BACKFLOW TO BE ABOVEGROUND.
- 4) METER SHALL READ IN 1,000 GALS WITH AN ERT.
- 5) BACKFLOW TYPE TO BE DETERMINED BY THE CITY.
- 6) 5 PIPE DIAMETERS OF STRAIGHT PIPE ON BOTH SIDES OF METER OR A DISMANTLING JOINT ON ONE SIDE OF DOMESTIC METER FOR 3" OR ABOVE; I.E. FOR 1-1/2" METER, 7.5' OF PIPE.



- | | |
|--|--|
| (A) TAPPING SLEEVE AND VALVE-2" SQUARE OPERATING NUT W/VALVE BOX AND COVER | (J) TEE |
| (B) STEEL ENCASEMENT UNDER HIGHWAY | (K) BILCO, JD-3AL ACCESS DOOR, CENTER DOOR OVER METERS AND SIZE FOR PIT FOR FULL ACCESS TO PIT |
| (C) OS & Y VALVES | (L) ACCESS LADDER-ALUMINUM |
| (D) METER SIZED AND PURCHASE FROM CITY | (M) INSTALL VALVE IF SERVICE MAIN IS UNDER HIGHWAY |
| (E) 8"x4" OR 6"x4" TEE | (N) STEEL THRUST BLOCKING TO PIT WALL |
| (F) 10", 8" OR 6" - CL52 DIP | |
| (G) 4" CHECK VALVE | |
| (H) 5" STORZ FDC | |
| (I) SADDLE AND TAP | |

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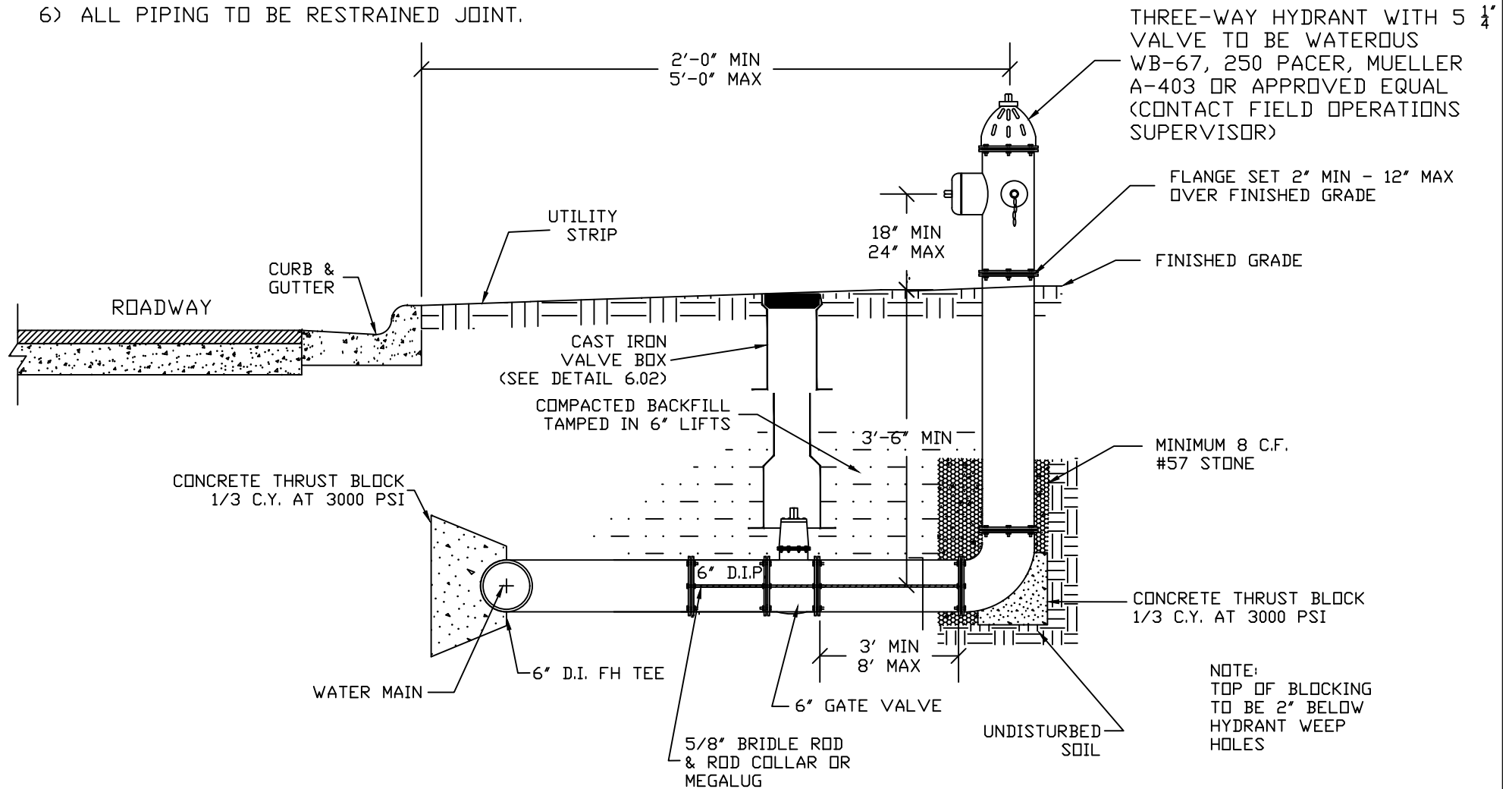
**COMMERCIAL METER VAULT
(2" OR LESS)**



6.05

NOTES:

- 1) HYDRANT TO BE PLACED WITH PUMPER NOZZLE FACING THE CLOSEST CURB.
- 2) HYDRANT TO BE PAINTED ONE COAT OF RED AFTER INSTALLATION.
- 3) ALL DUCTILE IRON CONSTRUCTION
- 4) IF A TAP IS REQUIRED WITH A TAP SLEEVE, IT MUST BE A FULL BODY MUELLER TAP SLEEVE AND VALVE.
- 5) A MINIMUM OF 3' OF CLEARANCE MUST BE PROVIDED IN ALL DIRECTIONS AROUND HYDRANT.
- 6) ALL PIPING TO BE RESTRAINED JOINT.



NOTE:
TOP OF BLOCKING
TO BE 2" BELOW
HYDRANT WEEP
HOLES

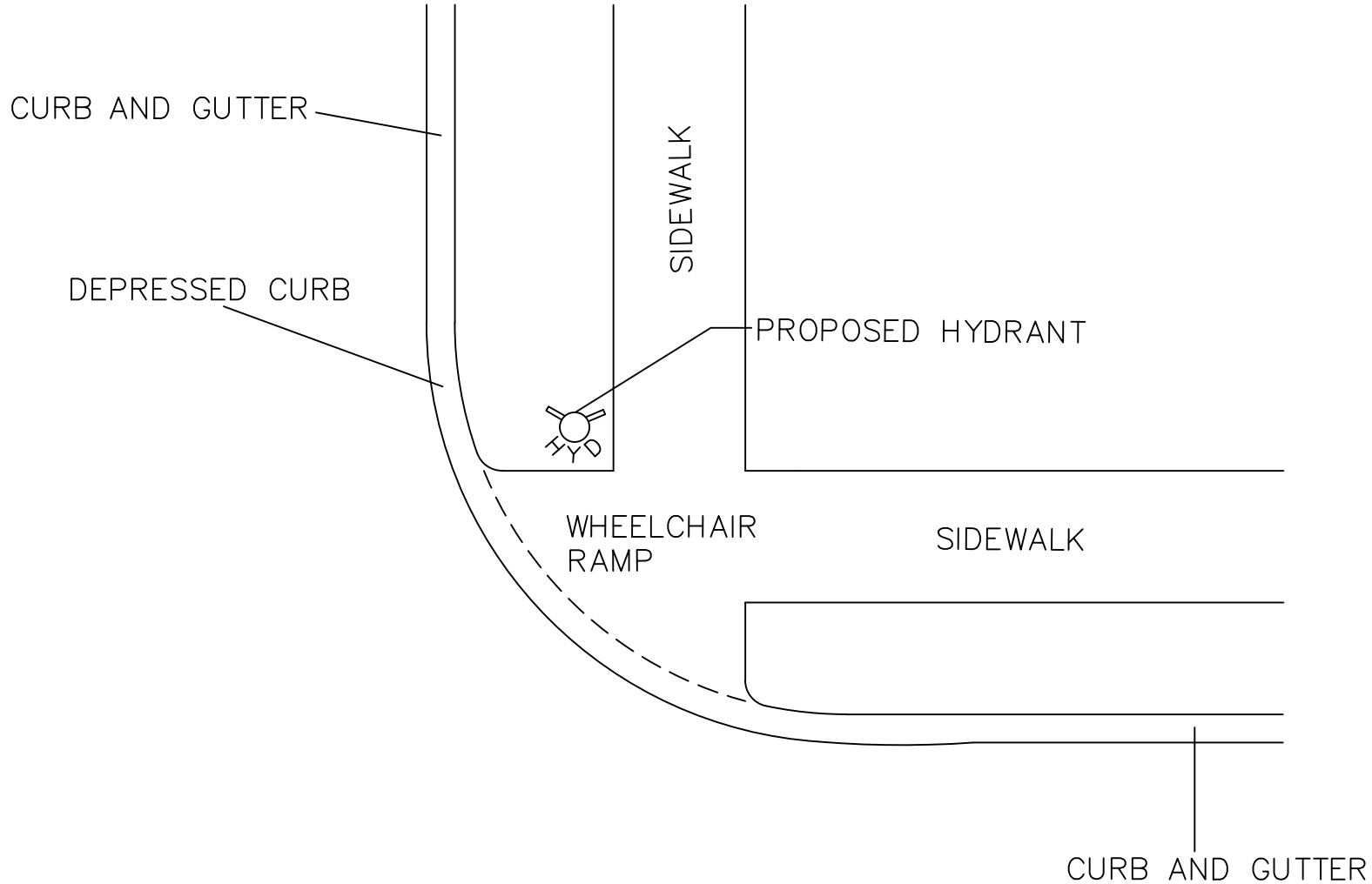
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**STANDARD HYDRANT
INSTALLATION**



6.06



NOTES:

- 1) A MINIMUM OF 3' OF CLEARANCE MUST BE PROVIDED IN ALL DIRECTIONS AROUND HYDRANT.
- 2) FINAL LOCATIONS TO BE DETERMINED BY CITY

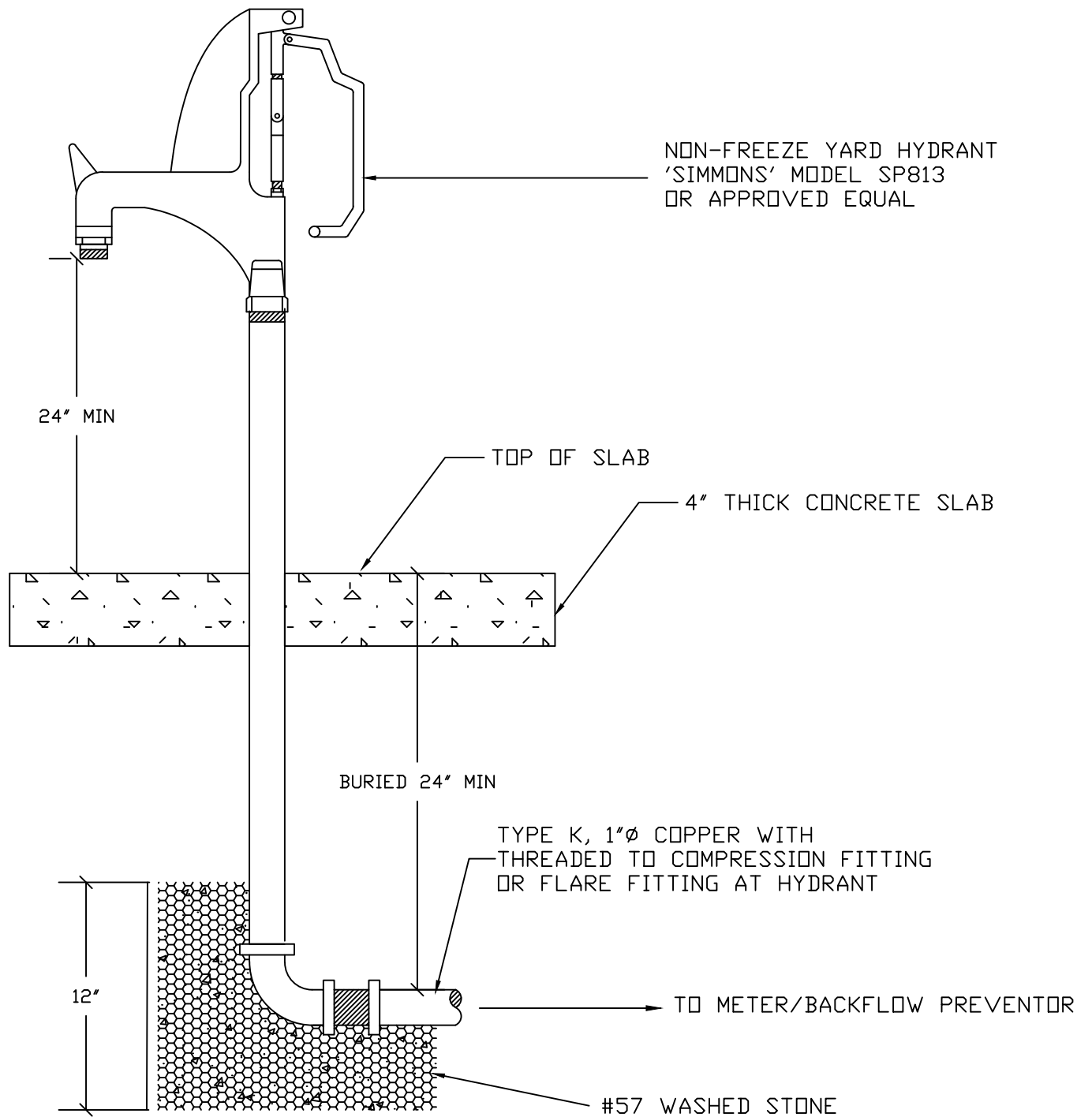
SHELBY STANDARD DETAILS - 2021

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STANDARD HYDRANT LOCATION



6.07



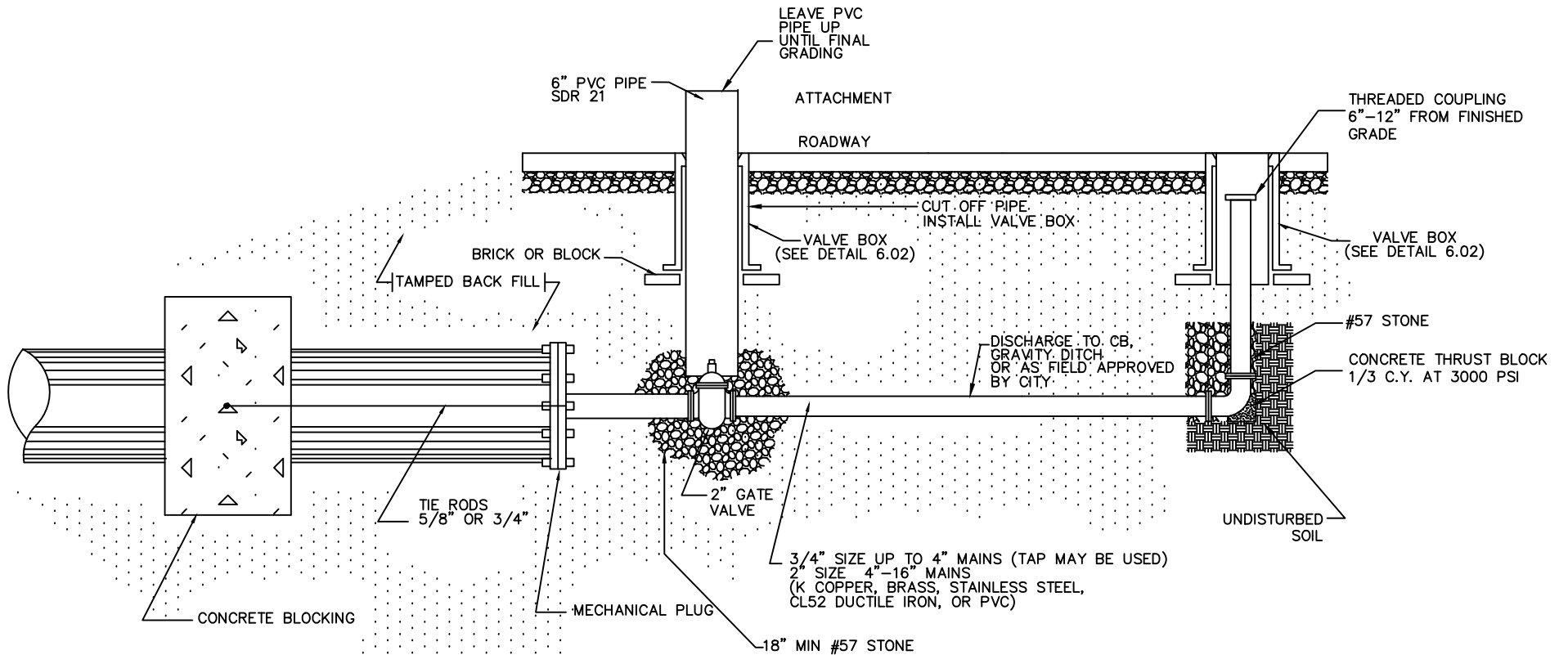
SHELBY STANDARD DETAILS - 2021

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YARD HYDRANT (NO- FREEZE)



6.08



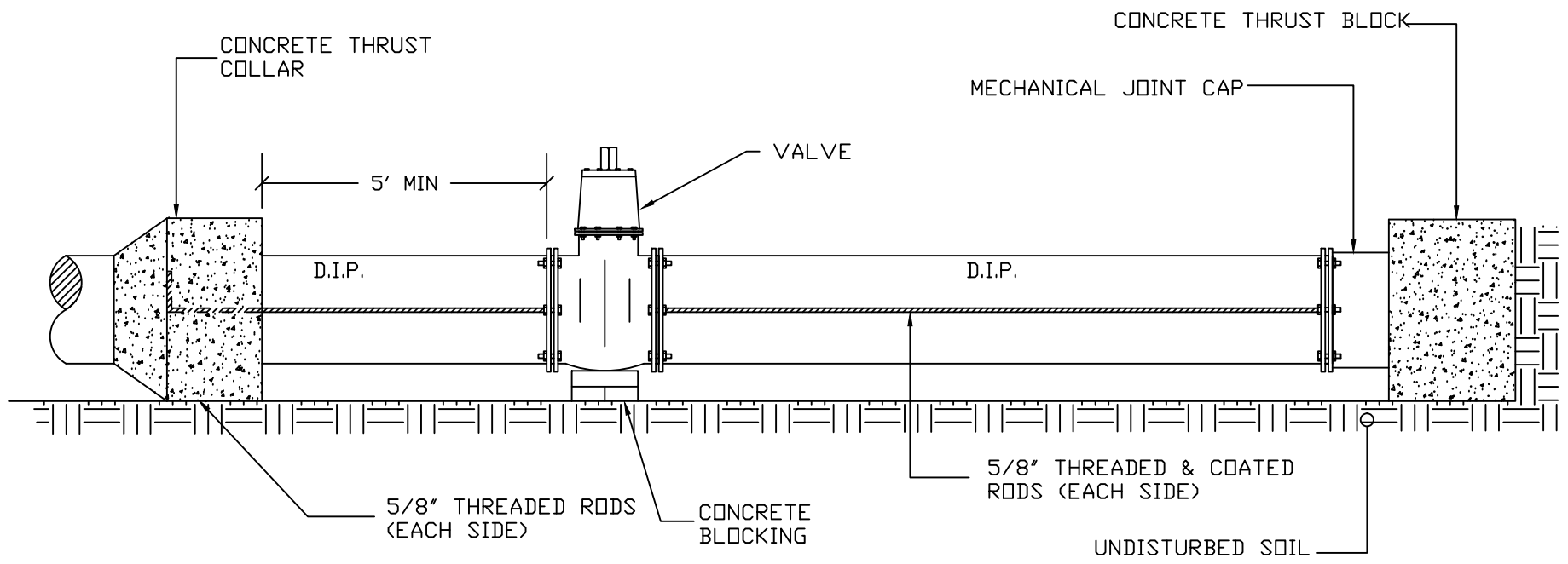
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BLOW OFF



6.09



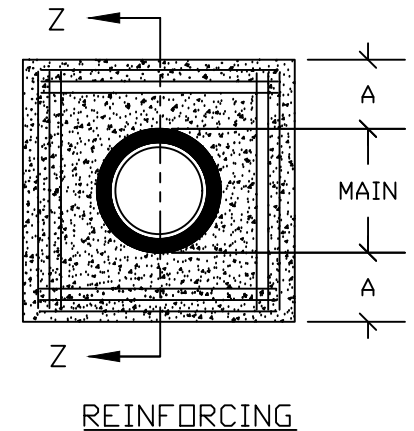
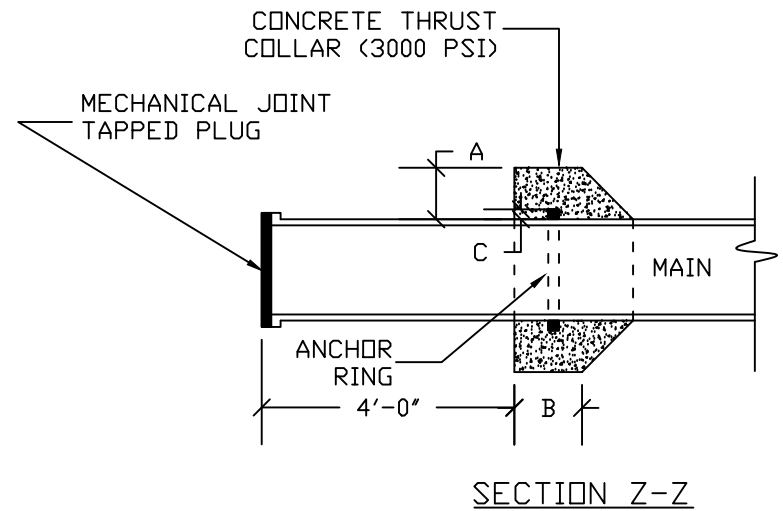
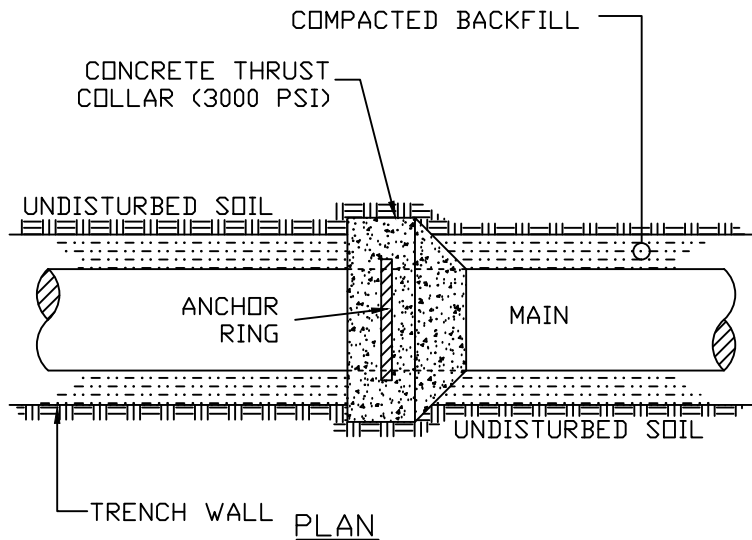
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STANDARD CAPPING DETAIL



6.10



NOTE:
 6" TO 16" MAINS--12-NO. 7 BARS
 20" TO 36" MAINS--12-NO. 8 BARS
 * BARS PLACED AS SHOWN

SCHEDULE

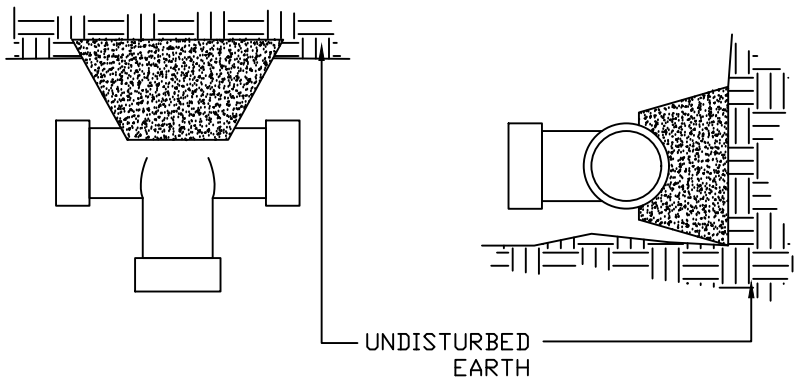
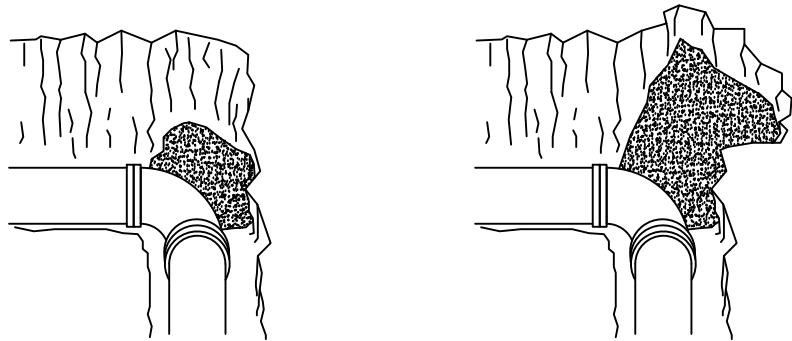
PIPE DIAMETER	CONCRETE THRUST COLLAR		ANCHOR RING	RINGS REQUIRED
	A	B	C	
6" 8" 12"	1'-0"	1'-0"	2"	ONE
16"	1'-4"	1'-0"	2"	ONE
20"	1'-4"	1'-0"	3"	ONE
24"	1'-4"	1'-0"	3"	TWO
30"	1'-4"	1'-2"	4"	TWO
36"	1'-4"	1'-4"	4"	TWO

SHELBY STANDARD DETAILS - 2021

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STANDARD THRUST COLLAR INSTALLATION





MINIMUM CONCRETE BLOCKING
(C.Y.)*

NOM. PIPE DIA. INCHES	TEES & DEAD ENDS	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND
4	0.1	0.1	0.1	0.1	0.1
6	0.2	0.2	0.1	0.1	0.1
8	0.2	0.3	0.2	0.1	0.1
10	0.3	0.5	0.3	0.2	0.2
12	0.4	0.6	0.5	0.3	0.3
14	0.7	0.9	0.6	0.5	0.5
16	0.7	0.9	0.6	0.5	0.5
18	0.9	1.2	0.7	0.6	0.6
20	1.1	1.6	1.1	0.7	0.7
24	1.7	2.3	1.6	0.9	0.9

* CONCRETE SHALL BE 3000 PSI

NOTE: WRAP FITTINGS IN 6 MIL PLASTIC BEFORE POURING CONCRETE

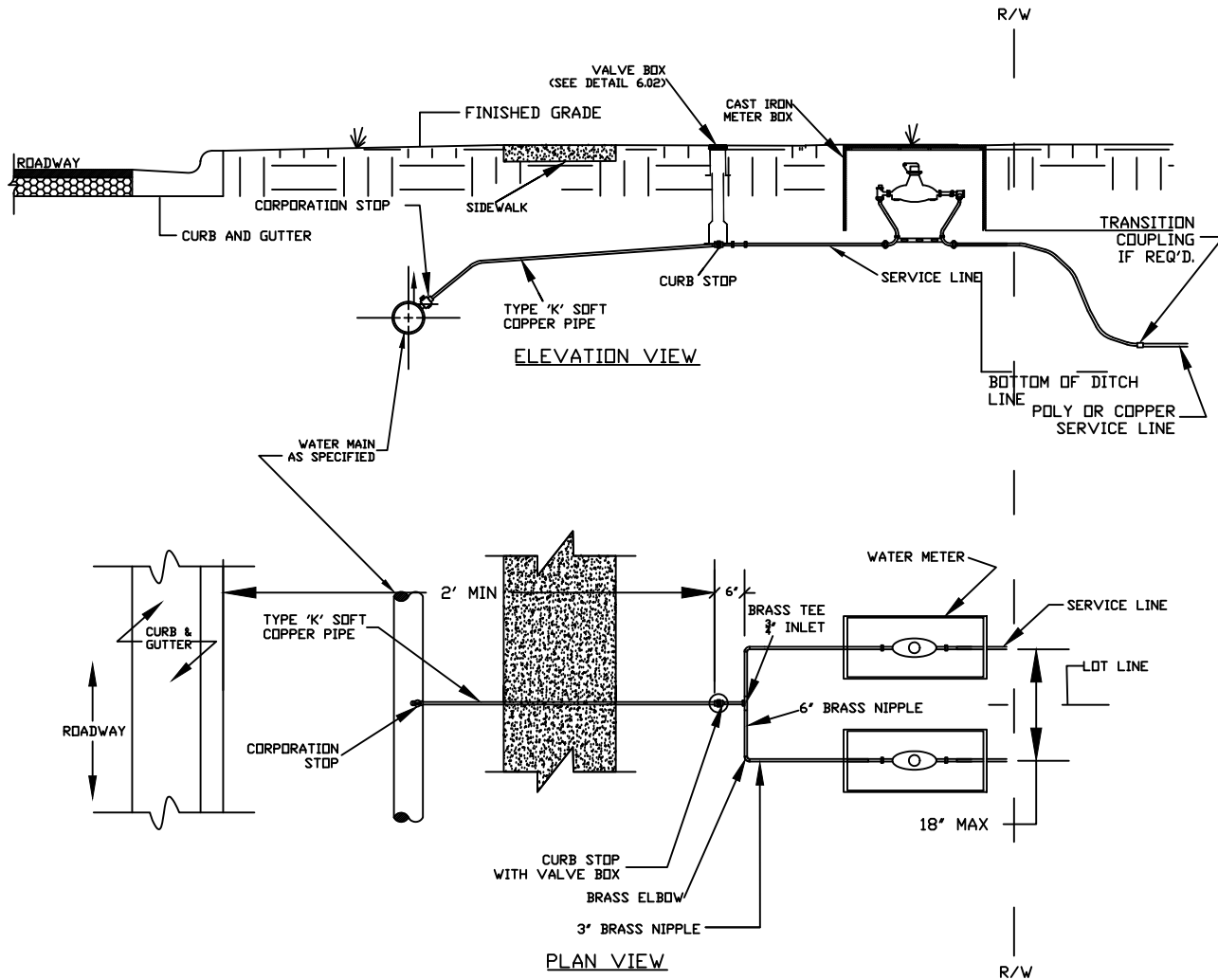
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DATE	REVISIONS

STANDARD REACTION BLOCKING



6.12



FOR MULTI-FAMILY PROJECTS ONLY

NOTES:

- 1) THERE SHALL BE NO MULTIPLE CONNECTIONS FOR SERVICES OTHER THAN 3/4".
- 2) CURB STOPS SHALL BE AS MANUFACTURED BY FORD OR APPROVED EQUAL.
- 3) METER BOXES SHALL BE AS DESCRIBED IN THE STANDARD SPECIFICATIONS UNDER WATER DISTRIBUTION; HOWEVER, THE INLET SHALL BE IRON PIPE THREADED INLETS.
- 4) CURB STOPS SHALL BE CENTERED ON MULTIPLE BRANCH SERVICE AND CONTAINED WITHIN A VALVE BOX.
- 5) ALL METERS SHALL READ IN 1,000 GAL'S WITH AN ERT.
- 6) METERS ARE NOT ALLOWED IN PLANTING STRIPS BETWEEN CURB AND SIDEWALK OR DRIVEWAYS UNLESS APPROVED BY THE CITY.

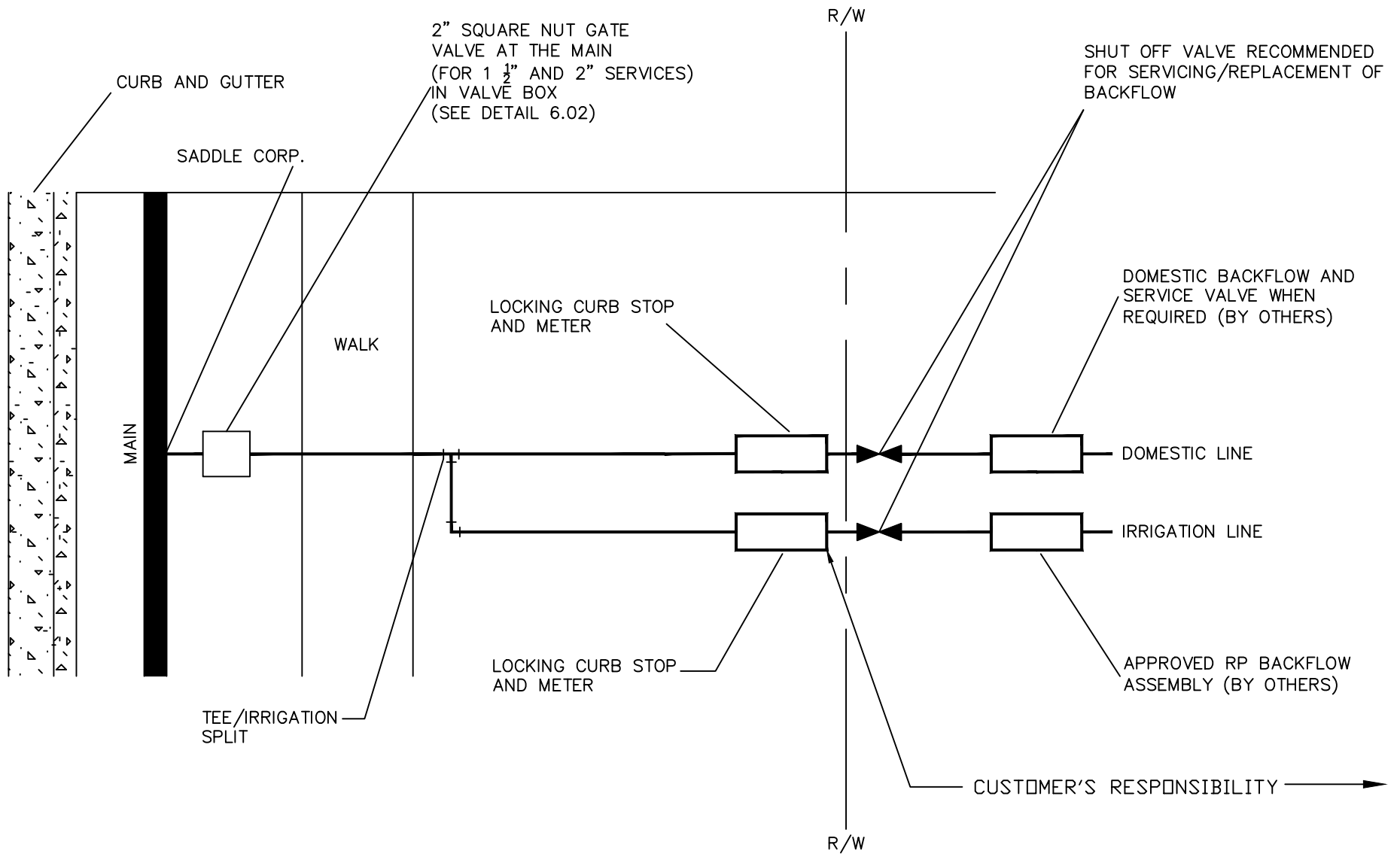
APPROVED MULTIPLE CONNECTIONS		
SIZE SVC. INCHES	SIZE INLET INCHES	NUMBER OF BRANCHES
3/4	1	2
3/4	1	3
3/4	1-1/4	4
3/4	1-1/2	5-8

SHELBY STANDARD DETAILS - 2021

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**STANDARD MULTIPLE
BRANCH SERVICE**





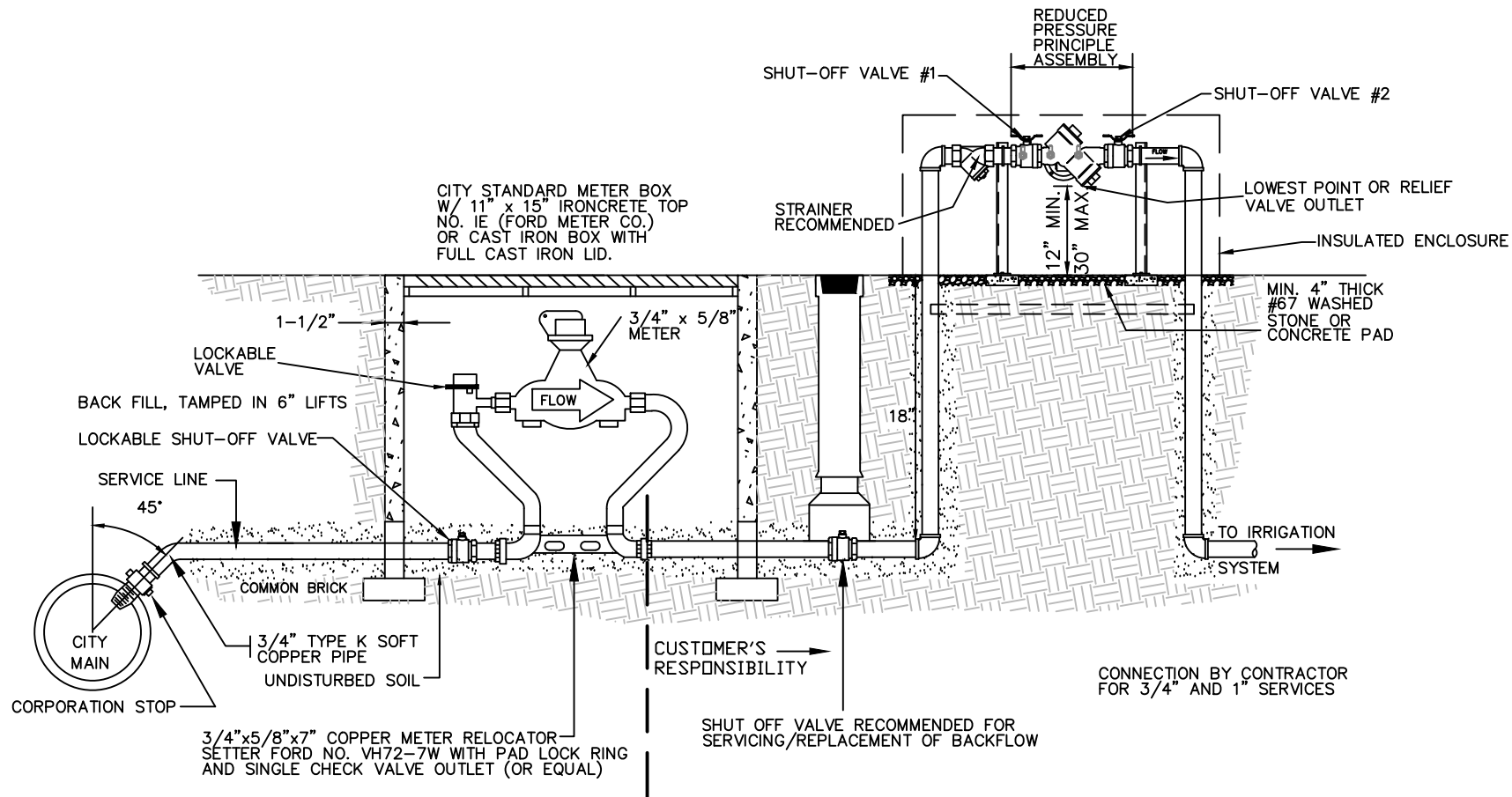
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

IRRIGATION TAP ON EXISTING SERVICE



6.14



NOTE:

1. CITY WATER DEPARTMENT TO SIZE METER AND APPROVE R.P.Z./BFP DEVICE.
2. CITY WILL INSTALL TAP, SERVICE LINE, METER, YOKE AND BOX.
3. METERS 2" OR LESS MUST BE PURCHASED FROM THE CITY. METERS 3" OR LARGER PROVIDED BY CONTRACTOR AND MUST BE APPROVED BY THE CITY.
4. CONTRACTOR SHALL SUBMIT PLANS AND INSTALL ALL FACILITIES; CITY WILL PERFORM TAPS ONLY.
5. TYPE K OR L COPPER TUBING PIPE. 1" MIN. GALVANIZED STEEL PIPE OR SCH. 40 PVC PIPE WITH SCH. 80 PVC FITTINGS. IF USING PVC PIPE/ FITTINGS, VERTICAL SUPPORT IS REQUIRED AND HORIZONTAL BRACING IS RECOMMENDED.
5. THERE SHALL BE NO TAPS, PIPING BRANCHES, UNAPPROVED BYPASS PIPING, HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER-USING APPURTENANCES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS WATER-REQUIRED BACKFLOW PREVENTER.
6. THE BACKFLOW DEVICE SHALL BE WITHIN 10' OF AND ON THE PROPERTY SIDE OF THE METER, UNLESS PRIOR APPROVAL IS GRANTED.
7. ALL REDUCED PRESSURE BACKFLOW DEVICES SHALL BE INSTALLED ABOVE GROUND, IN A HORIZONTAL POSITION.
8. PROPER DRAINAGE IS REQUIRED IF BACKFLOW IS INSTALLED INSIDE OF A BUILDING.
9. AN INSULATED ENCLOSURE MUST BE IN PLACE. A HEAT SOURCE IS RECOMMENDED. NO INSULATION SHALL BE WRAPPED AROUND DEVICE.
10. METER SHALL READ IN 1,000 GALS AND HAVE ERT.
11. ALL INSTALLATION MUST MEET ALL NC PLUMBING CODE REQUIREMENTS.

SHELBY STANDARD DETAILS - 2021

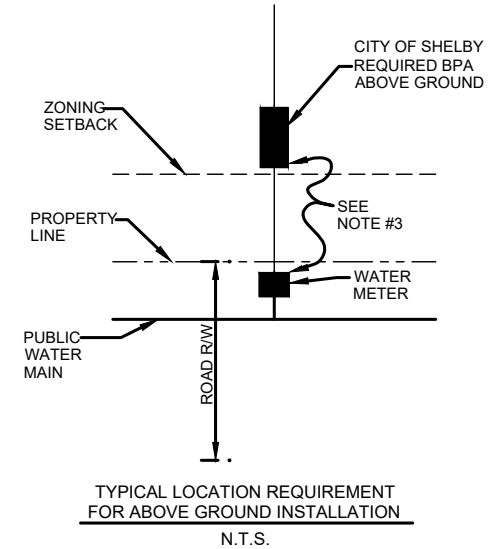
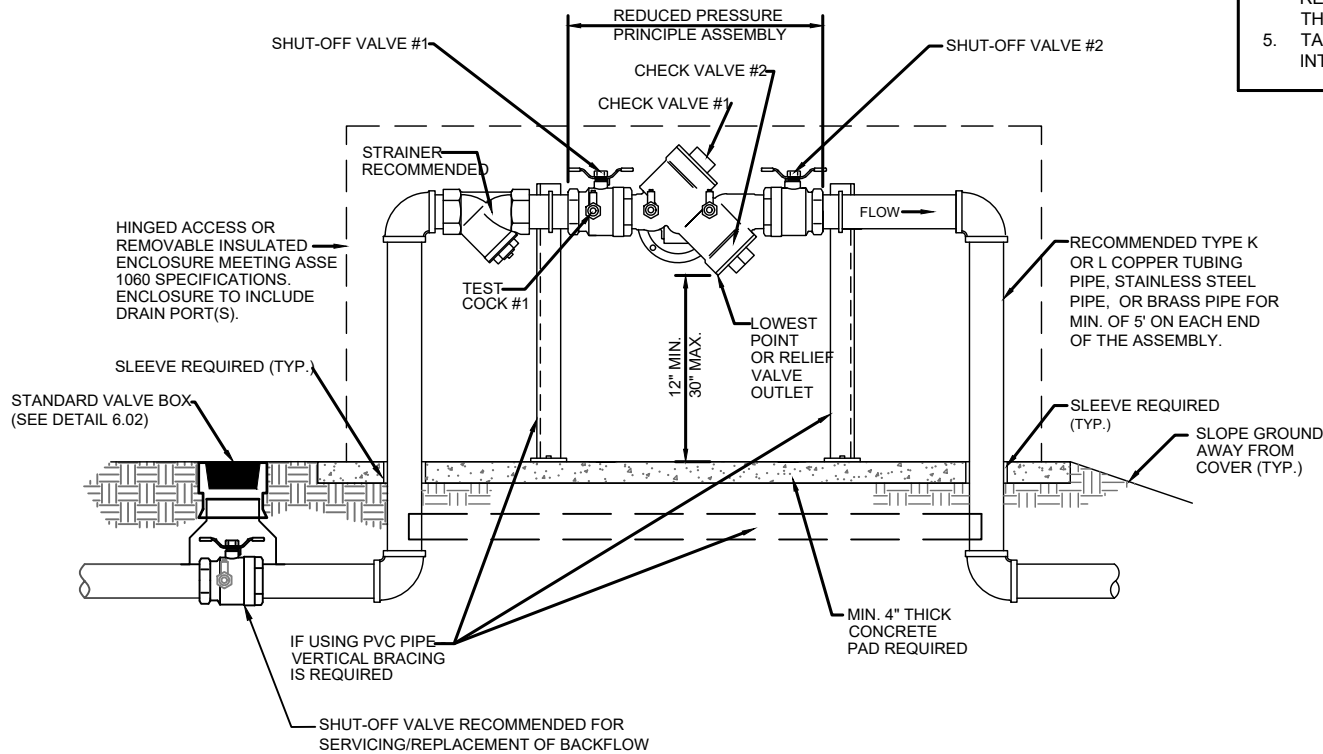
DATE	REVISIONS

**TYPICAL IRRIGATION
SYSTEM CONNECTIONS**



NOTES:

1. INSULATED ENCLOSURE SHALL BE REQUIRED. NO INSULATION SHALL BE WRAPPED AROUND THE BPA.
2. THE BACKFLOW DEVICE SHALL BE WITHIN 10' OF AND ON THE PROPERTY SIDE OF THE METER, UNLESS PRIOR APPROVAL IS GRANTED.
3. THERE SHALL BE NO TAPS, PIPING BRANCHES, UNAPPROVED BYPASS PIPING, HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER - USING APPURTENANCES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS CITY OF SHELBY - REQUIRED BACKFLOW PREVENTER.
4. SUPPORT OF ASSEMBLY SHALL BE DESIGNED BY OWNER AND REQUIRED FOR DEVICES 4" OR LARGER. SUPPORT SHALL NOT BLOCK THE RELIEF VALVE.
5. TANDEM BACKFLOWS ARE REQUIRED IF SERVICE CANNOT BE INTERRUPTED.

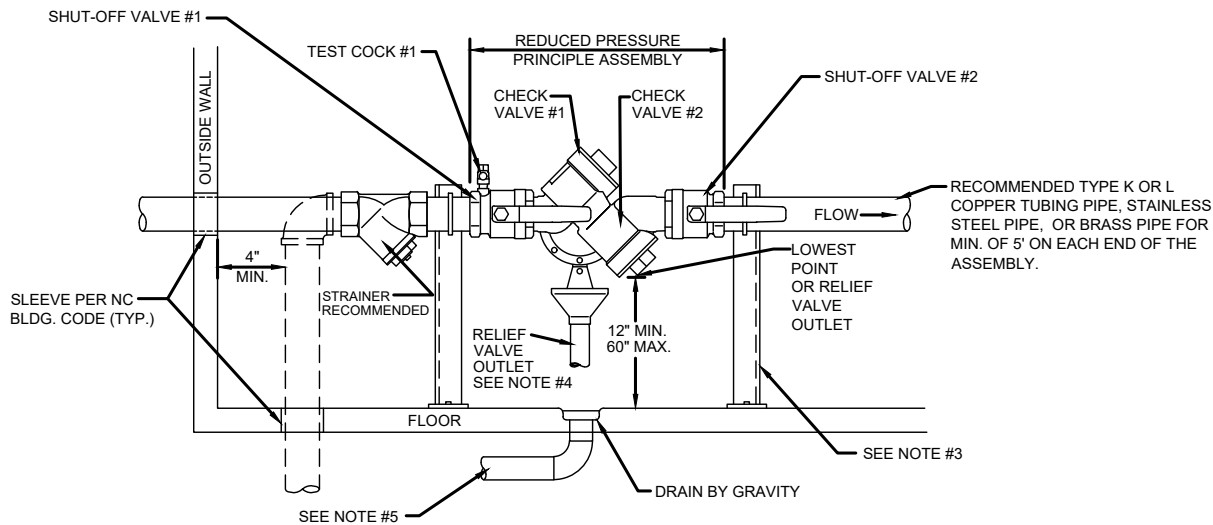


SHELBY STANDARD DETAILS - 2021

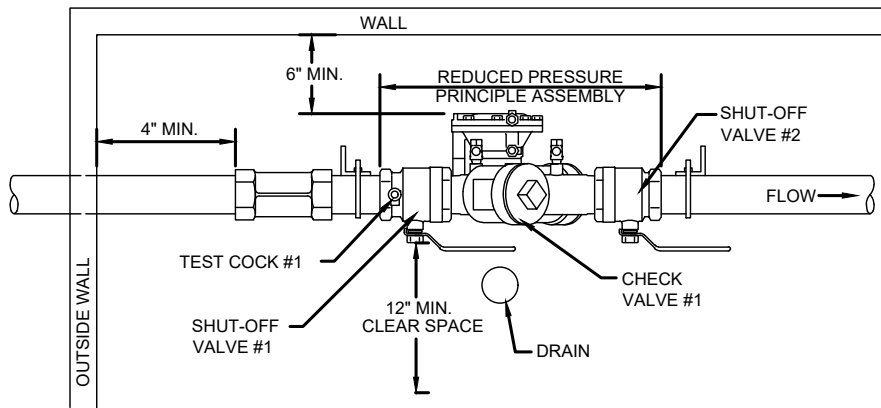
DATE	REVISIONS

REDUCED PRESSURE ZONE
BACKFLOW PREVENTER
(OUTDOOR)



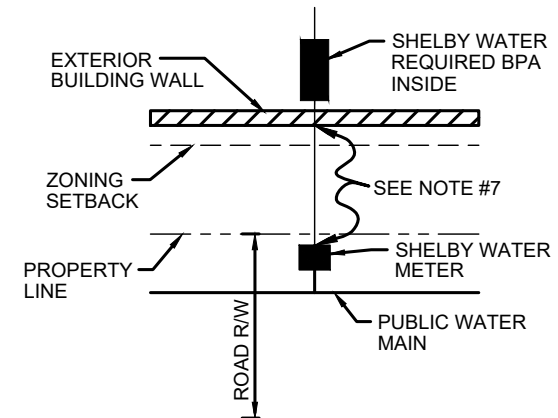


ELEVATION VIEW



PLAN VIEW

- NOTES:
1. ASSEMBLIES SHALL BE INSTALLED ABOVEGROUND AND IN THE HORIZONTAL POSITION.
 2. PIPE MATERIAL AND FITTINGS SHALL BE AS SPECIFIED IN SHELBY WATER STANDARDS & SPECIFICATIONS.
 3. SUPPORT OF ASSEMBLY SHALL BE DESIGNED BY OWNER AND REQUIRED FOR DEVICES 4" OR LARGER. SUPPORT SHALL NOT BLOCK THE RELIEF VALVE.
 4. AN AIR GAP DRAIN IS REQUIRED TO REDUCE SPLASHING OF MINOR DISCHARGES FROM THE RELIEF VALVE DRAIN PORT.
 5. INDOOR INSTALLATION OF RP'S SHOULD PROVIDE FOR DRAINAGE CAPABLE OF HANDLING IN EXCESS OF THE MAXIMUM DISCHARGE RATE EXPECTED BY THE BACKFLOW ASSEMBLY MANUFACTURER.
 6. THE BACKFLOW DEVICE SHALL BE WITHIN 10' OF AND ON THE PROPERTY SIDE OF THE METER, UNLESS PRIOR APPROVAL IS GRANTED FOR INDOOR USE.
 7. THERE SHALL BE NO TAPS, PIPING BRANCHES, UNAPPROVED BYPASS PIPING, HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER - USING APPURTENANCES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS CITY OF SHELBY - REQUIRED BACKFLOW PREVENTER.
 8. TANDEM BACKFLOWS ARE REQUIRED IF SERVICE CANNOT BE INTERRUPTED.



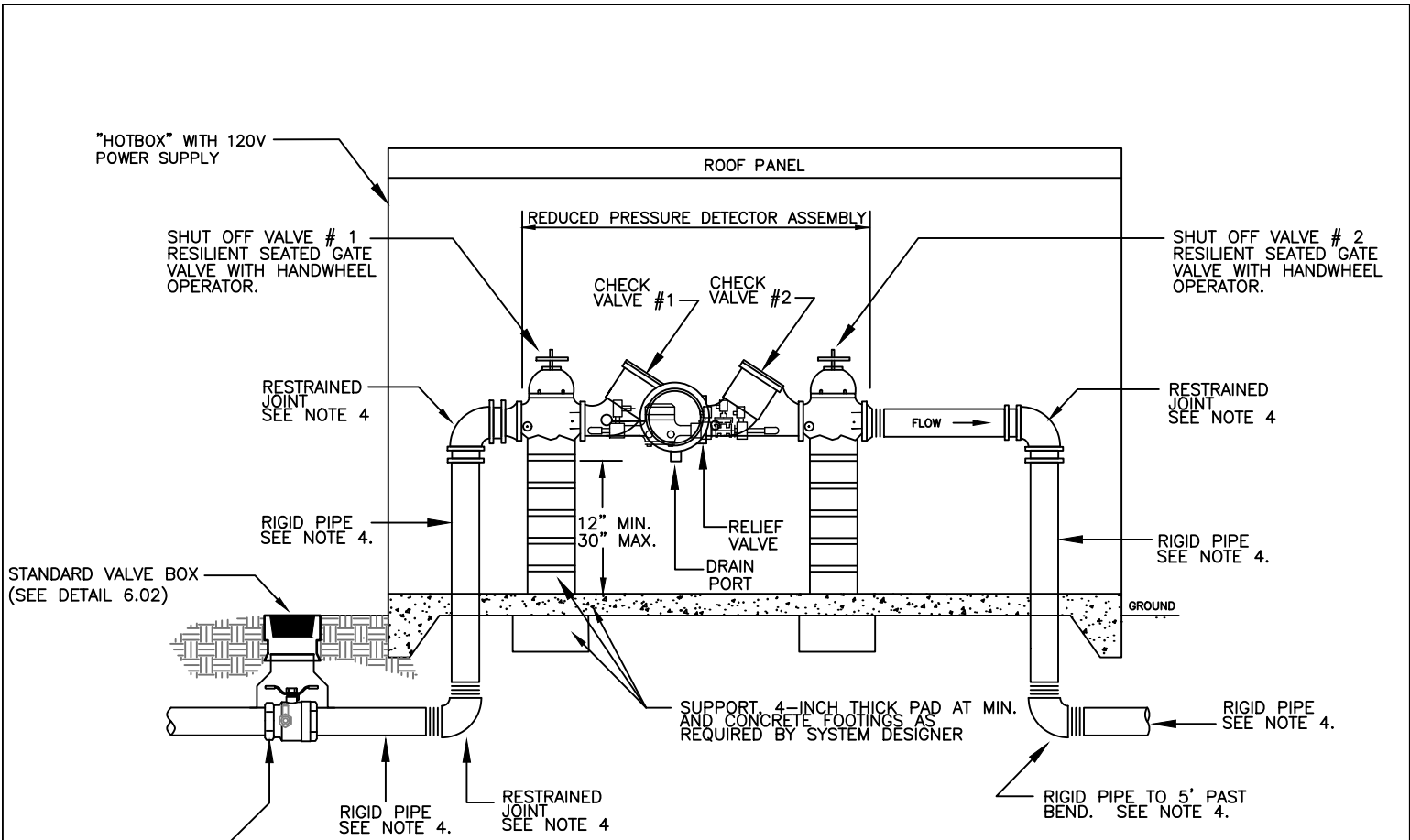
TYPICAL LOCATION REQUIREMENT FOR INSIDE INSTALLATION
N.T.S.

SHELBY STANDARD DETAILS - 2021

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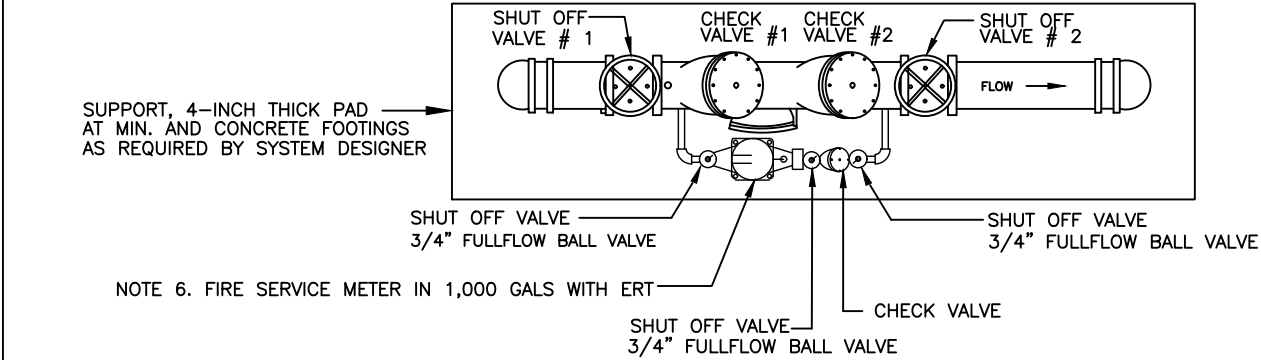
REDUCED PRESSURE ZONE
BACKFLOW PREVENTER
(INDOOR)



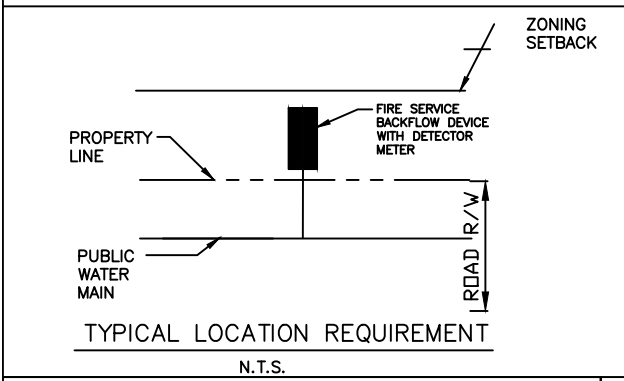


ELEVATION
N.T.S.

SHUT-OFF VALVE RECOMMENDED FOR SERVICING/REPLACEMENT OF BACKFLOW



PLAN
N.T.S.



TYPICAL LOCATION REQUIREMENT
N.T.S.

- NOTES:**
1. ABOVE GROUND REDUCED PRESSURE DETECTOR ASSEMBLIES (RPDA) MUST CONFORM TO CITY OF SHELBY SPECIFICATIONS.
 2. 4" - 10" RPDA SHALL BE SUPPORTED WITH ADEQUATE SUPPORT PEDESTAL(S). SUPPORT PEDESTAL(S) SHALL NOT BLOCK RELIEF VALVE OR DRAIN PORT.
 3. OUTDOOR INSTALLATION SHALL HAVE A PROTECTIVE, WATER SAFE, ENCLOSURE HEATED ENCLOSURES ARE REQUIRED FOR THE ABOVE GROUND BACKFLOW ASSEMBLY.
 4. ALL PIPE IS TO BE DIP CL52. RESTRAINED JOINTS SHALL BE WITH MEGA LUG RESTRAINTS OR APPROVED EQUAL.
 5. THE CITY OF SHELBY APPROVED 2 1/2" - 10" RPDA INCLUDES SHUT OFF VALVES #1 AND #2. AS PART OF THE ASSEMBLY. NO SUBSTITUTIONS SHALL BE PERMITTED.
 6. FIRE SERVICE BACKFLOW ASSEMBLIES MUST BE A CITY OF SHELBY APPROVED MODEL AND MANUFACTURER WITH A CITY OF SHELBY APPROVED DETECTOR METER.
 7. FDC TO BE 5" STORZ

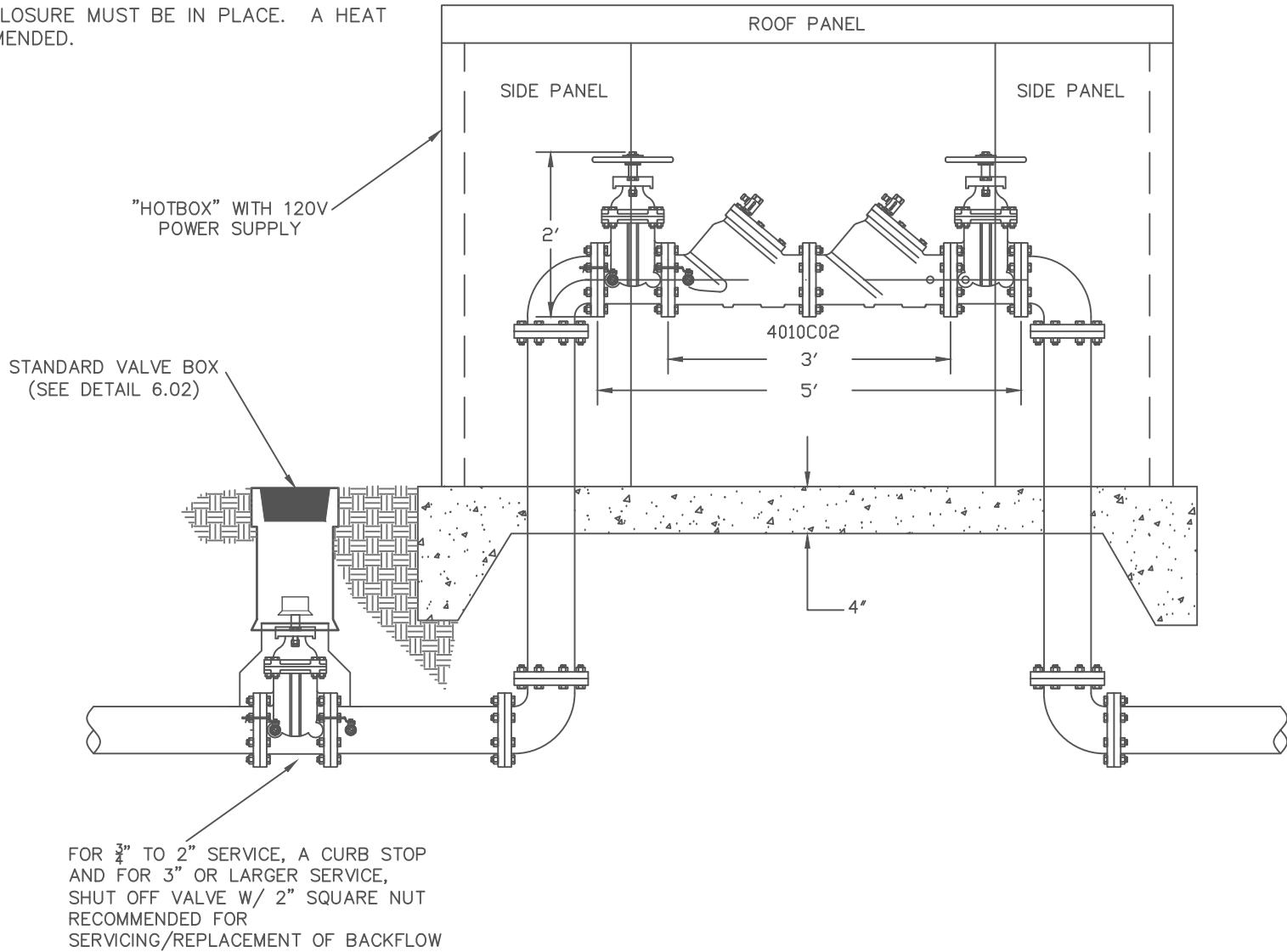
SHELBY STANDARD DETAILS - 2021	
DATE	REVISIONS

RPDA BACKFLOW PREVENTION



NOTES:

- 1) $\frac{3}{4}$ " TO 2" PIPE SHALL BE BRASS, COPPER, OR STAINLESS STEEL. PIPE 3" OR LARGER SHALL BE DIP CL52.
- 2) THE DOUBLE CHECK VALVE SHALL BE 12" MINIMUM TO 30" MAXIMUM ABOVE THE CONCRETE PAD.
- 3) AN INSULATED ENCLOSURE MUST BE IN PLACE. A HEAT SOURCE IS RECOMMENDED.



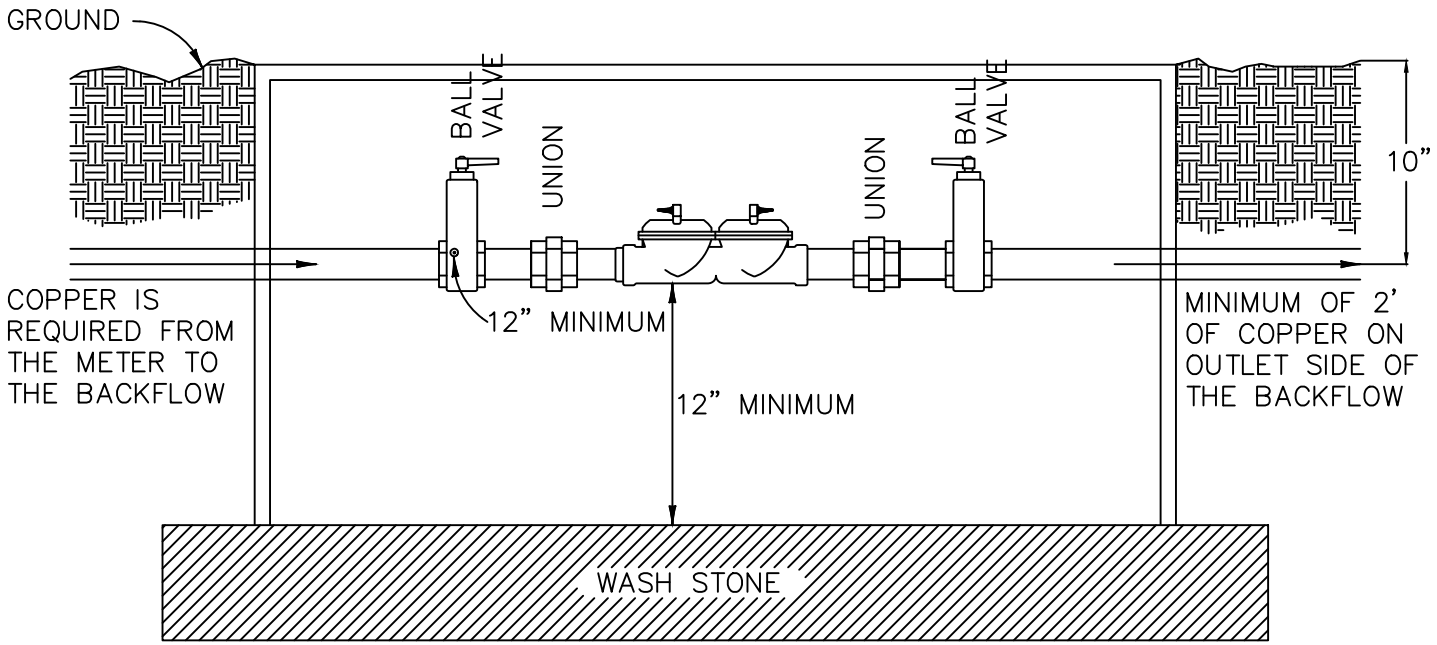
FOR $\frac{3}{4}$ " TO 2" SERVICE, A CURB STOP AND FOR 3" OR LARGER SERVICE, SHUT OFF VALVE W/ 2" SQUARE NUT RECOMMENDED FOR SERVICING/REPLACEMENT OF BACKFLOW

SHELBY STANDARD DETAILS - 2021

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DOUBLE-CHECK VALVE
BACKFLOW PREVENTER IN
HOT BOX W/O FDC





NOTES:

1. THE BACKFLOW DEVICE MUST BE WITHIN 10' OF AND ON THE PROPERTY SIDE OF THE METER.
2. THE UNIT SHALL BE PURCHASED AS AN ASSEMBLY INCLUDING 4 TEST COCKS WITH ONE ON THE CITY SIDE OF THE INLET BALL VALVE.
3. ALL DOUBLE CHECK VALVES MUST BE INSTALLED IN A HORIZONTAL POSITION.
4. SHUT OFF VALVES SHALL BE FULL PORT, LINE SIZE, LEVER TYPE, AND $\frac{1}{4}$ TURN BRONZE BALL VALVES.
5. BACKFLOW DEVICES SHALL HAVE TWO RESILIENT SEAT BRONZE UNIONS BETWEEN THE SHUT OFF VALVES FOR REMOVAL OF THE DEVICE, EXCEPT $\frac{3}{4}$ " - 2" WILKINS #350 SERIES.
6. AN INSULATED ENCLOSURE MUST BE IN PLACE. A HEAT SOURCE IS RECOMMENDED.
7. A DRAIN IS REQUIRED IF INSTALLED IN A PAVED AREA OR INSIDE OF A BUILDING.
8. TANDEM BACKFLOWS REQUIRED IF SERVING MULTIPLE USERS OR IF SERVICE CANNOT BE INTERRUPTED.
9. THE DITCH MUST REMAIN OPEN UNTIL BACKFLOW IS INSPECTED BY CITY PERSONNEL.
10. AN ABOVEGROUND ENCLOSURE CAN BE USED, AS PER CITY SPECIFICATIONS.
11. THE FOUNDATION OF THE ENCLOSURE SHALL BE 4" OF CONCRETE OR 6" OF WASHED STONE.
12. ALL LARGE ($>2 \frac{1}{2}$ ") ASSEMBLIES MUST BE SUPPORTED BY CRADLE.

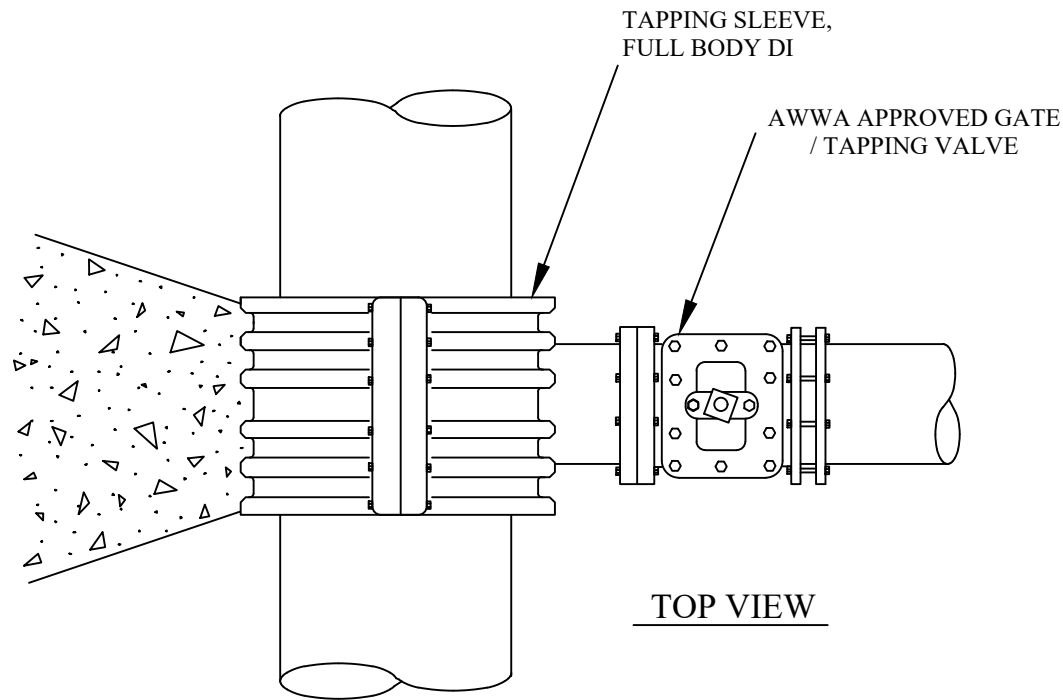
SHELBY STANDARD DETAILS - 2021

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**DOUBLE CHECK VALVE
BACKFLOW PREVENTER
(BELOW GROUND)**



6.20

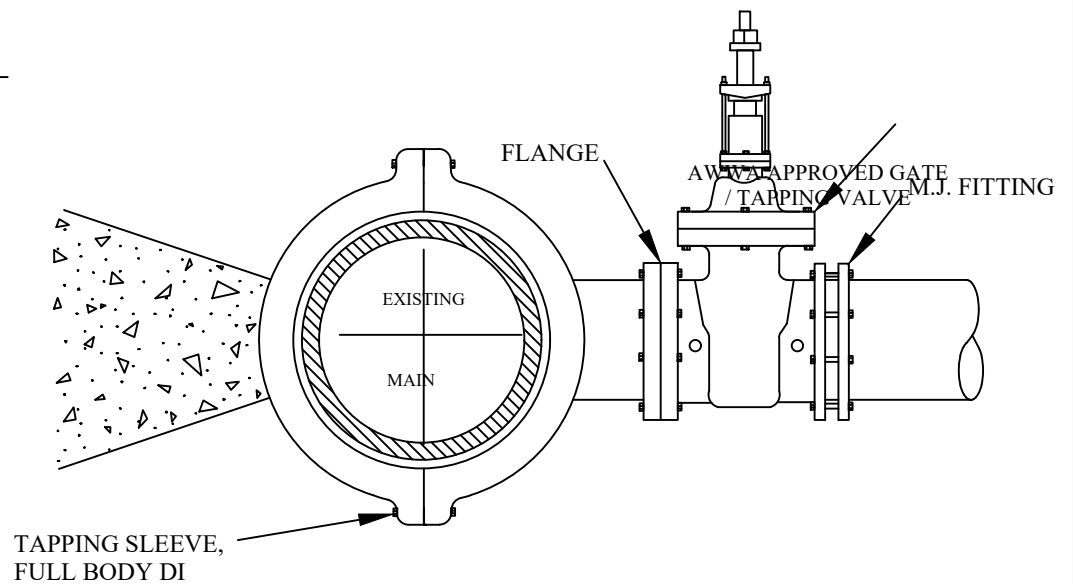


TOP VIEW

3000 PSI SOLID CONCRETE SHALL BE USED AS FOOTING FOR DUCTILE IRON PIPE.

NOTES:

1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. SEE STANDARD REACTION BLOCK DETAIL 6.12 FOR AREA OF CONCRETE REQUIRED.



SIDE VIEW

SHELBY STANDARD DETAILS - 2021

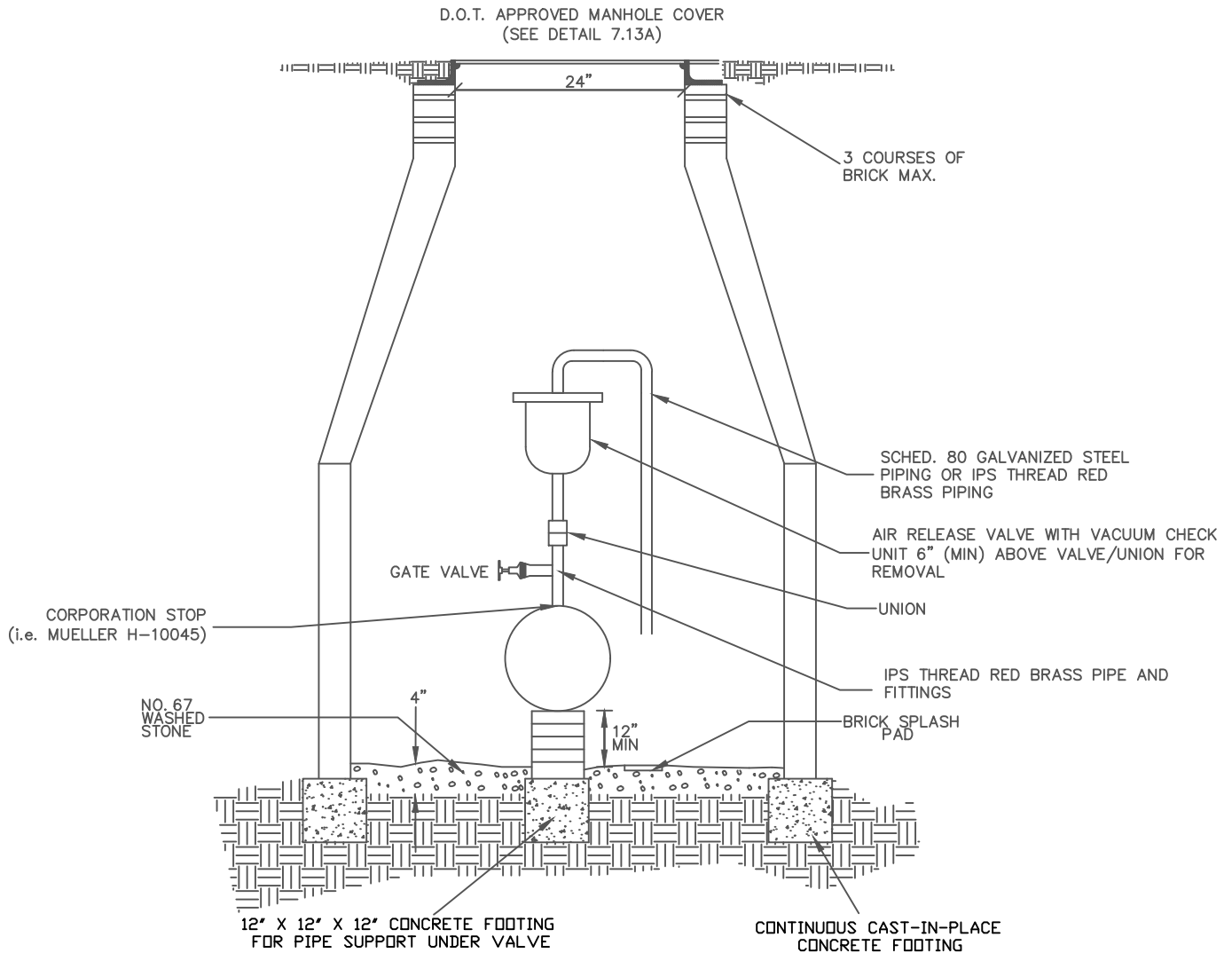
DATE	REVISIONS

4" - 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY



1" A.R.V. SHALL BE MODEL P-10 WITH VACUUM CHECK BY CRISPIN OR APPROVED EQUAL


2" A.R.V. SHALL BE MODEL P-20 WITH VACUUM CHECK BY CRISPIN OR APPROVED EQUAL



- NOTES:
1. ALL CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH.
 2. FRAME TO BE FLUSH WITH GROUND IN ROAD R/W.
 3. CONCRETE FOOTINGS MAY BE PLACED AGAINST SHAPED BANKS IN LIEU OF FORMS.
 4. FOOTING DIMENSIONS TO BE AS SHOWN OR AS DIRECTED BY THE ENGINEER.
 5. MANHOLE SHALL CONFORM TO SPECIFICATIONS.
 6. MANHOLE FRAME & COVER TO BE ANCHORED TO MANHOLE WITH RED JACKET MASONRY ANCHORS OR EQUAL AND THOROUGHLY SEALED TO CONCRETE WITH TAR SEALANT PUTTY.
 7. CORPORATION STOP, PIPING AND FITTINGS, GATE VALVE, AND AIR RELEASE VALVE SHALL BE 1" FOR WATER LINES 12" AND SMALLER AND SHALL BE 2" FOR ALL WATER LINES LARGER THAN 12".

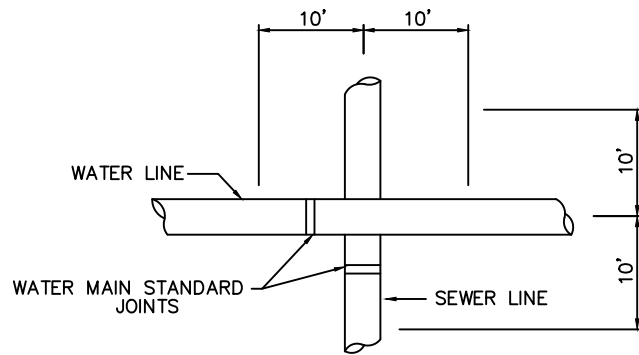
SHELBY STANDARD DETAILS - 2021	
DATE	REVISIONS

STANDARD AIR RELEASE MANHOLE FOR WATER LINES

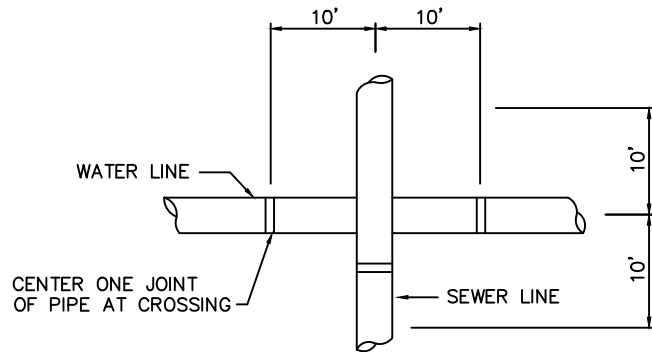


Shelby
NORTH CAROLINA

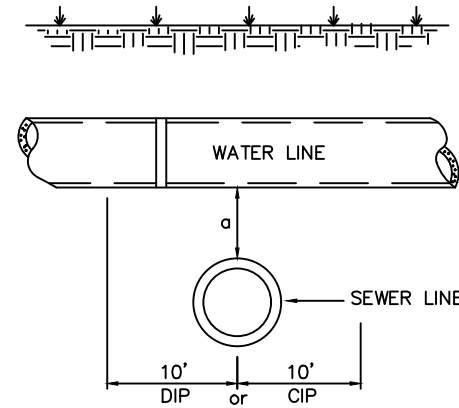
6.22



PLAN VIEW FOR WATER LINE OVER SEWER LINE W/LESS THAN 18" CLEARANCE

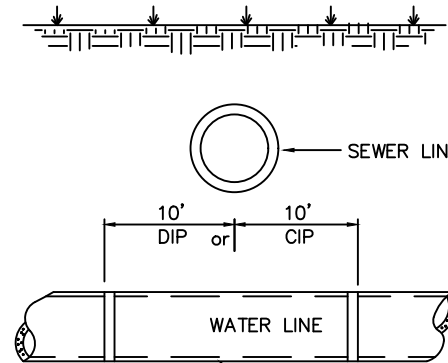


PLAN VIEW FOR WATER LINE UNDER SEWER LINE



a = LESS THAN 18" BOTH WATER AND SEWER LINE SHALL BE WATER MAIN STANDARDS (JOINT) FERROUS METAL PIPE (DIP), FOR 10' EACH SIDE OF CROSSING

a = OVER 18" SDR 21 PVC SHALL APPLY



CENTER ONE JOINT OF PIPE AT CROSSING

WATER AND SEWER LINE SHALL BE WATER MAIN STANDARD (JOINTS) FERROUS METAL PIPE (DIP), FOR 10' EACH SIDE OF CROSSING. ONE JOINT OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.

SHELBY STANDARD DETAILS - 2021

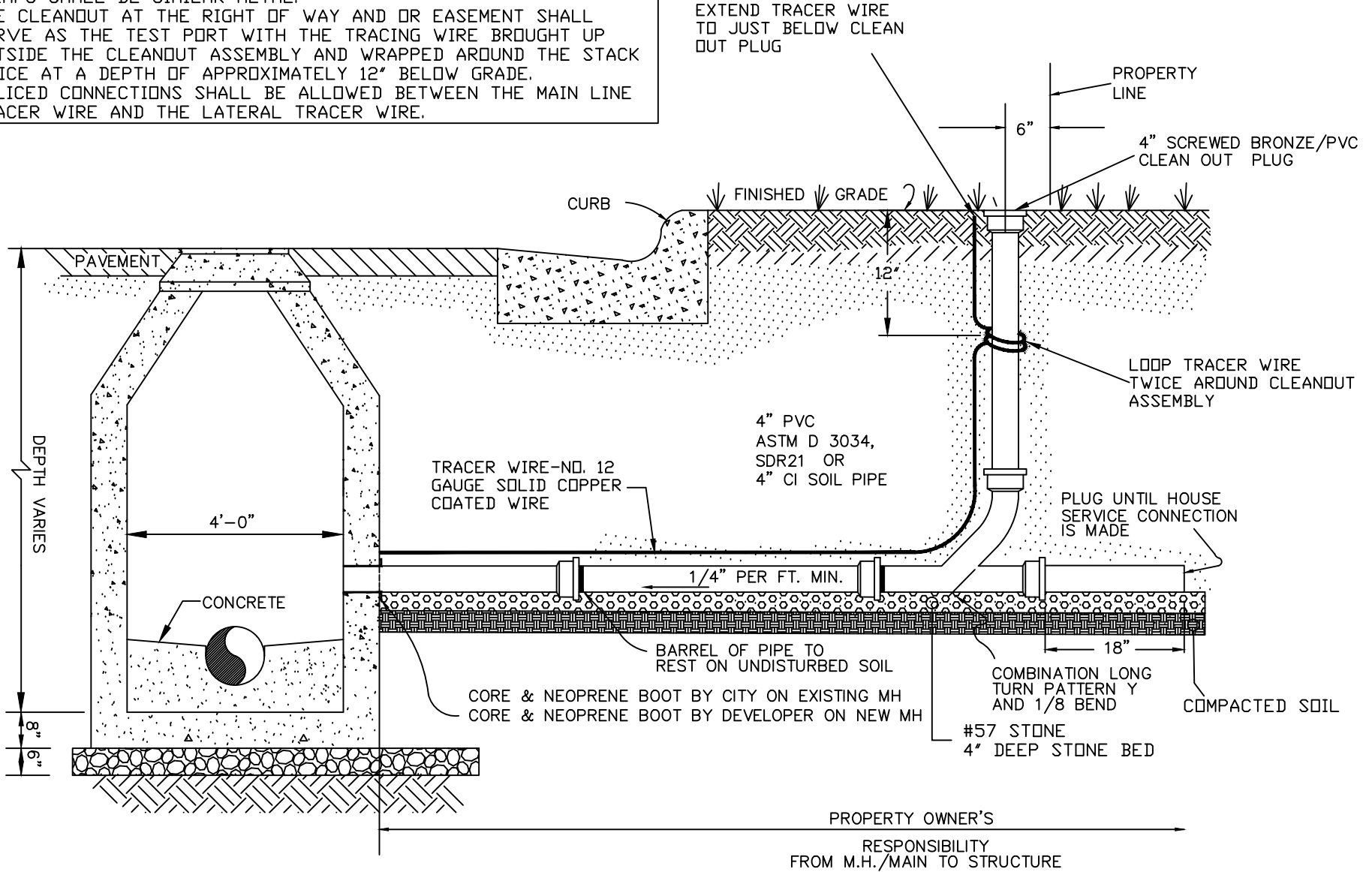
DATE	REVISIONS

FERROUS MATERIALS AND JOINT REQUIREMENTS FOR WATER LINE AND SEWER LINE CROSSINGS



NOTES:

1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. WHERE JOINTS ARE NECESSITATED IN THE WIRE, THE JOINTS SHALL BE SECURELY BONDED TOGETHER WITH AN APPROVED INDUSTRIAL CRIMP CONNECTOR TO PROVIDE ELECTRICAL CONTINUITY. CRIMPS SHALL BE SIMILAR METAL.
2. THE CLEANOUT AT THE RIGHT OF WAY AND OR EASEMENT SHALL SERVE AS THE TEST PORT WITH THE TRACING WIRE BROUGHT UP OUTSIDE THE CLEANOUT ASSEMBLY AND WRAPPED AROUND THE STACK TWICE AT A DEPTH OF APPROXIMATELY 12" BELOW GRADE.
3. SPLICED CONNECTIONS SHALL BE ALLOWED BETWEEN THE MAIN LINE TRACER WIRE AND THE LATERAL TRACER WIRE.



SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

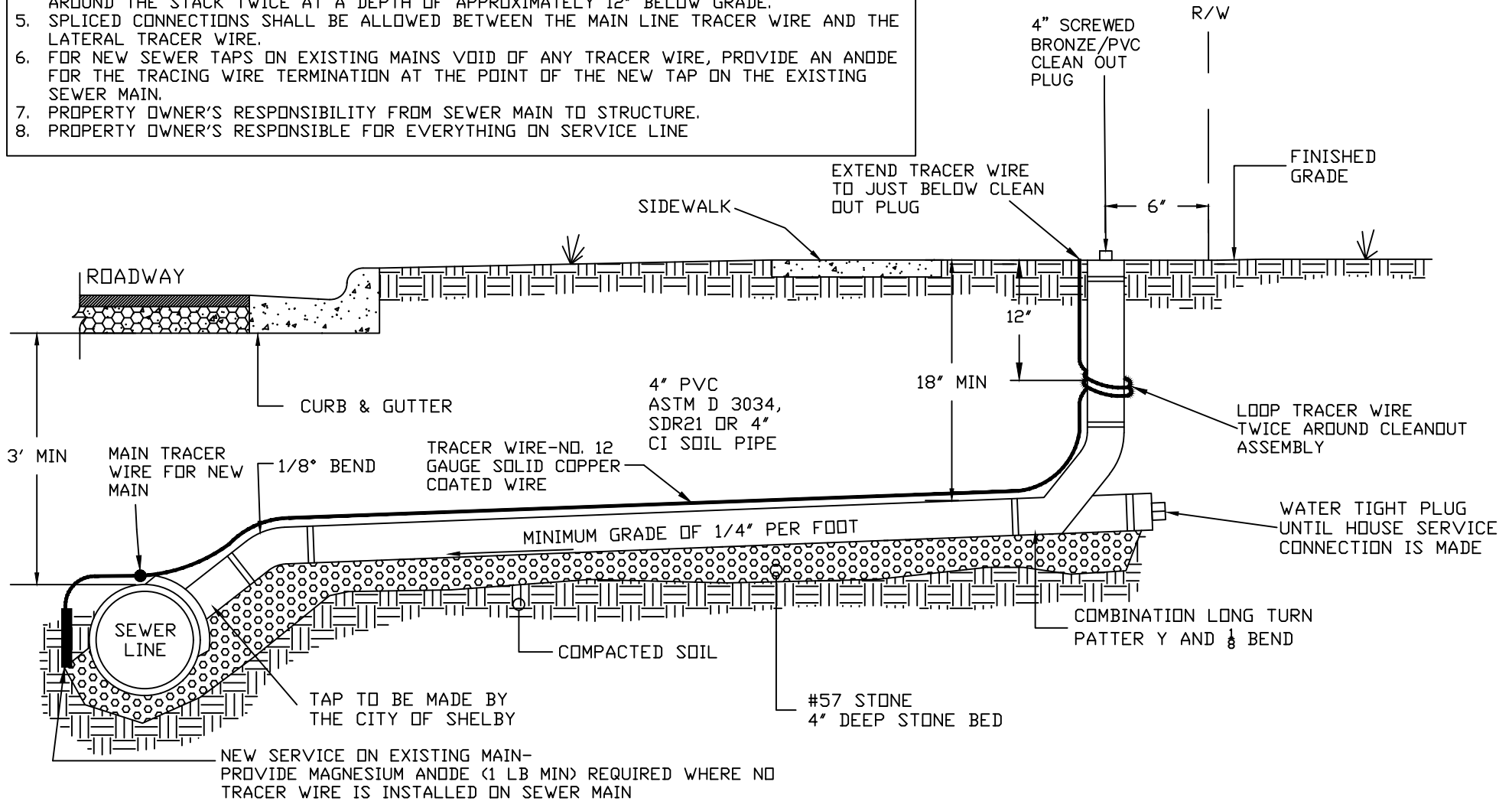
**STANDARD SANITARY SEWER TAP
AND SERVICE TO EXISTING MANHOLE**



7.01A

NOTES:

1. WHEN A SADDLE IS USED, THE HOLE SHALL BE INSTALLED BY CORING.
2. THE FULL LENGTH OF THE SERVICE DITCH SHALL BE COMPACTED IN 6" LIFTS WITH MECHANICAL TAMP. GUARD STAKE REQUIRED AT CLEAN OUT LOCATION UNTIL LANDSCAPING IS COMPLETED.
3. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. WHERE JOINTS ARE NECESSITATED IN THE WIRE, THE JOINTS SHALL BE SECURELY BONDED TOGETHER WITH AN APPROVED INDUSTRIAL CRIMP CONNECTOR TO PROVIDE ELECTRICAL CONTINUITY. CRIMPS SHALL BE SIMILAR METAL.
4. THE CLEANOUT AT THE RIGHT OF WAY AND OR EASEMENT SHALL SERVE AS THE TEST PORT WITH THE TRACING WIRE BROUGHT UP OUTSIDE THE CLEANOUT ASSEMBLY AND WRAPPED AROUND THE STACK TWICE AT A DEPTH OF APPROXIMATELY 12" BELOW GRADE.
5. SPLICED CONNECTIONS SHALL BE ALLOWED BETWEEN THE MAIN LINE TRACER WIRE AND THE LATERAL TRACER WIRE.
6. FOR NEW SEWER TAPS ON EXISTING MAINS VOID OF ANY TRACER WIRE, PROVIDE AN ANODE FOR THE TRACING WIRE TERMINATION AT THE POINT OF THE NEW TAP ON THE EXISTING SEWER MAIN.
7. PROPERTY OWNER'S RESPONSIBILITY FROM SEWER MAIN TO STRUCTURE.
8. PROPERTY OWNER'S RESPONSIBLE FOR EVERYTHING ON SERVICE LINE



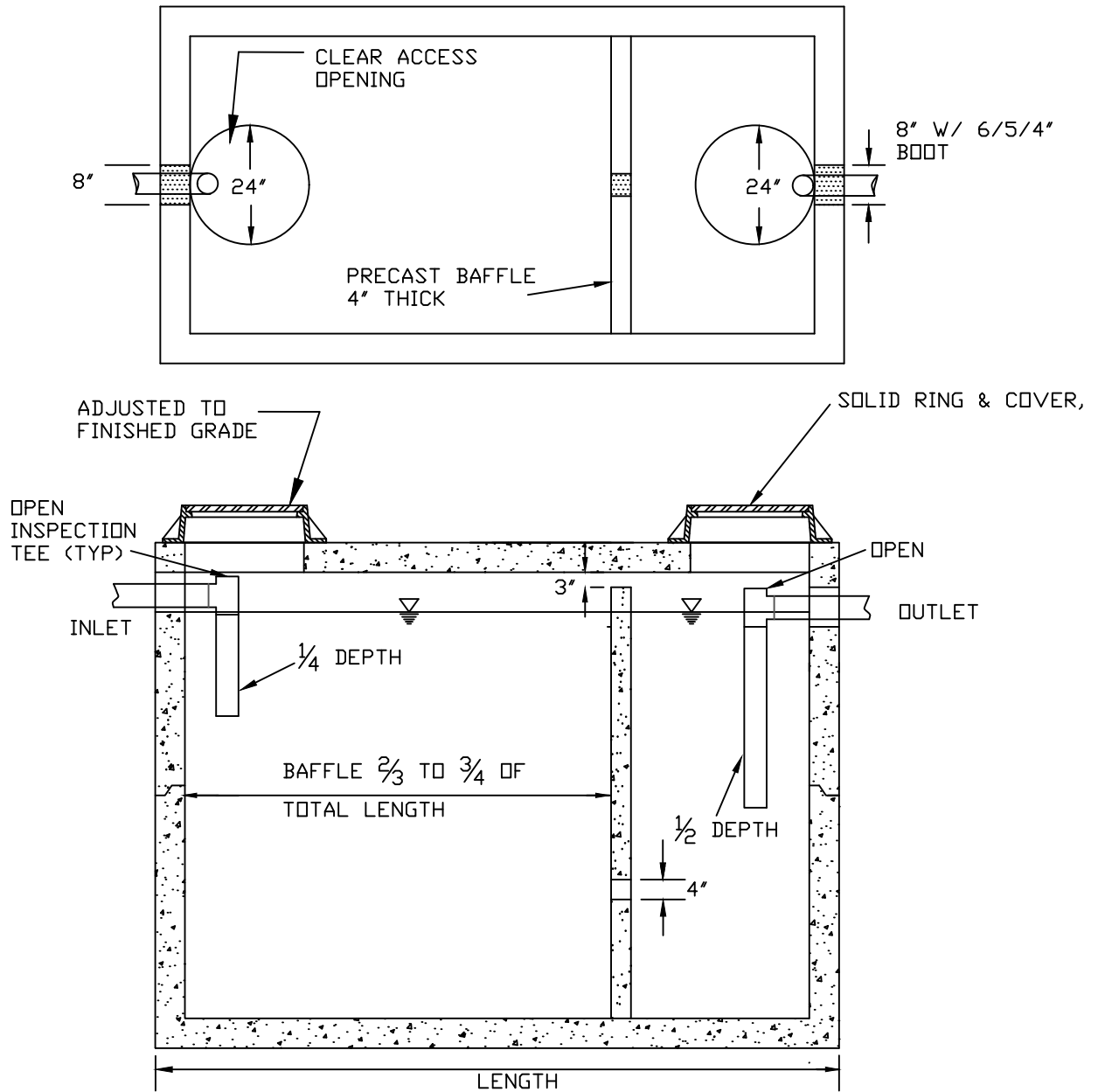
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**STANDARD SANITARY SEWER TAP
AND SERVICE TO EXISTING MAIN**



7.01B



NOTES:

1. ALL GREASE INTERCEPTORS SHALL CONFORM TO CHAPTER 10, SECTION 1003 OF THE NC PLUMBING CODE.
2. SIZING OF GREASE INTERCEPTORS TO BE DETERMINED BY CITY OF SHELBY CODE OF ORDINANCES: FATS, OILS, AND GREASE CONTROL.
3. ANY VARIANCE FROM THIS DETAIL MUST HAVE PRIOR APPROVAL FROM THE CITY OF SHELBY.
4. GREASE INTERCEPTOR SHALL BE LOCATED AS TO BE ACCESSIBLE FOR CLEANING AND MAINTENANCE.
5. TRAFFIC-RATED INTERCEPTORS ARE REQUIRED WHEN LOCATED IN TRAFFIC AREAS.
6. CONCRETE SHALL BE 4000 PSI @28 DAYS.
7. EARTHCOVER SHALL BE 0' TO 5' MAX.

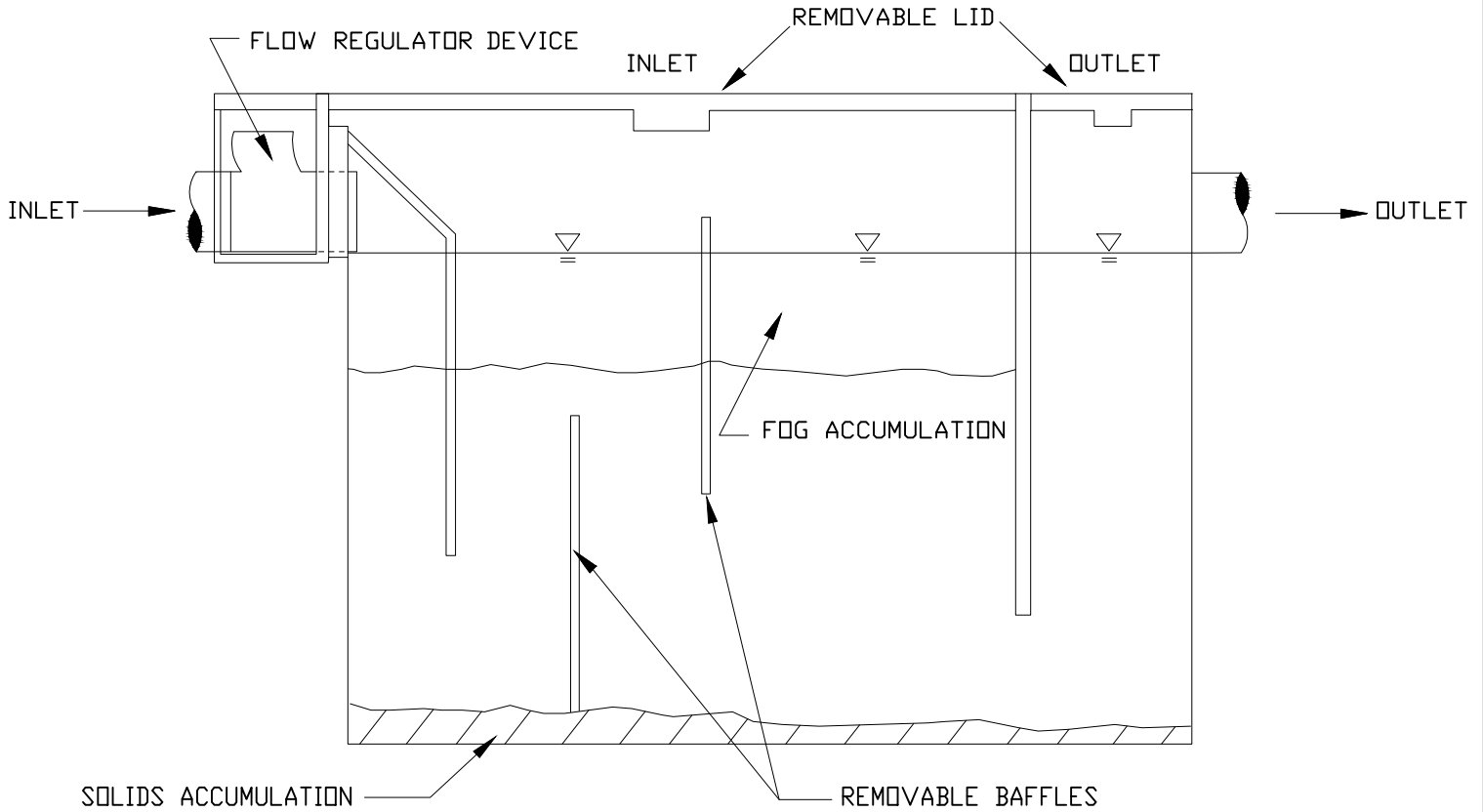
SHELBY STANDARD DETAILS - 2021	
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**GREASE INTERCEPTOR DETAILS
AND SPECIFICATIONS -
OUTSIDE INSTALLATION**



7.02A

TYPICAL GREASE TRAP DESIGN (DESIGN WILL VARY BY MANUFACTURER)



NOTES:

1. ALL GREASE TRAPS SHALL CONFORM TO CHAPTER 10, SECTION 1003 OF THE NC PLUMBING CODE.
2. SIZING OF GREASE TRAPS TO BE DETERMINED BY CITY OF SHELBY CODE OF ORDINANCES: FATS, OILS, AND GREASE CONTROL.
3. ANY VARIANCE FROM THIS DETAIL MUST HAVE PRIOR APPROVAL FROM THE CITY OF SHELBY.
4. GREASE TRAP SHALL BE LOCATED AS TO BE ACCESSIBLE FOR CLEANING AND MAINTENANCE.

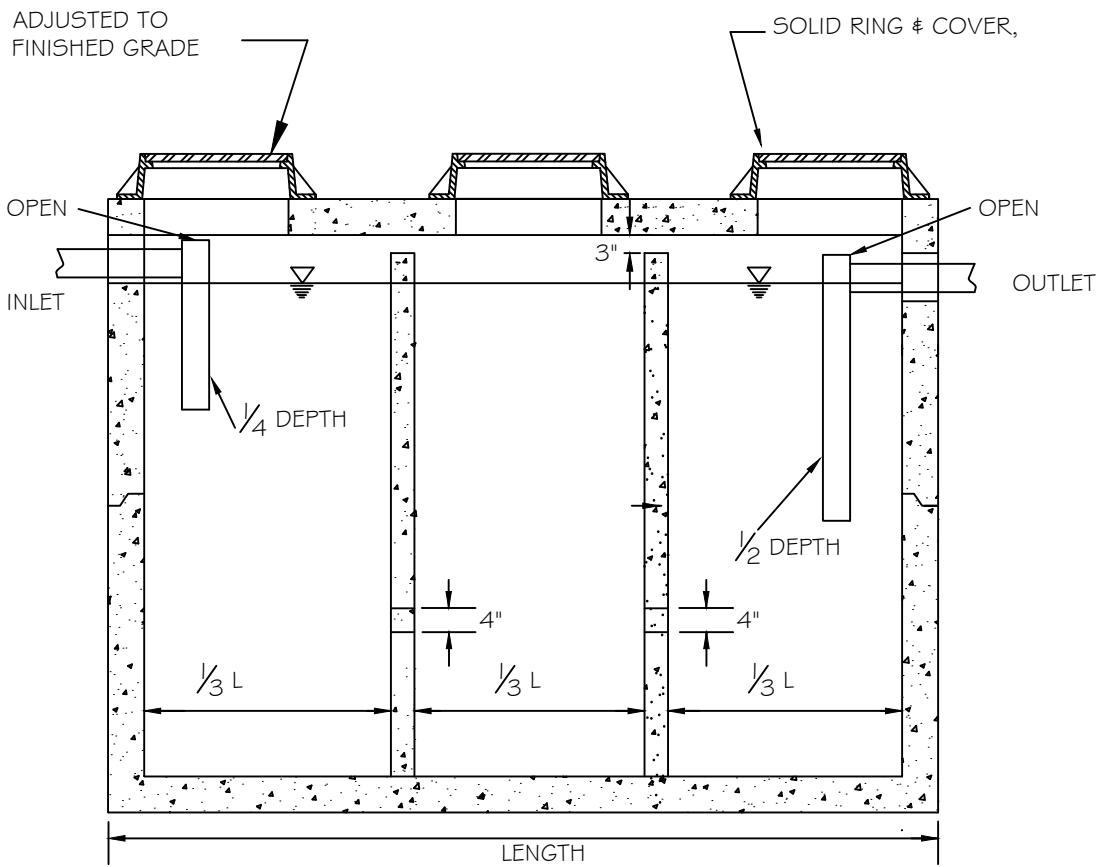
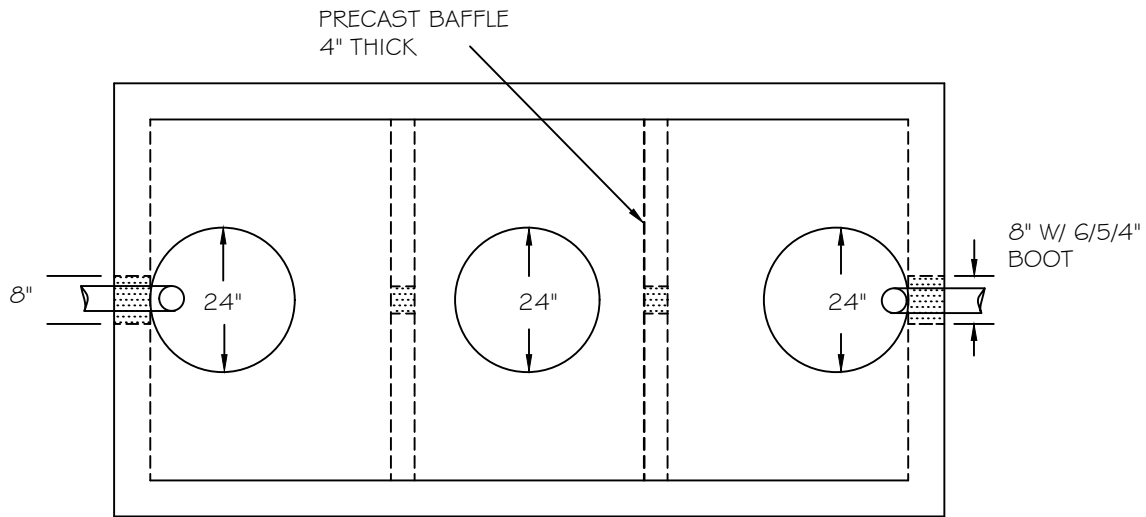
SHELBY STANDARD DETAILS - 2021

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GREASE TRAP DETAILS AND SPECIFICATION - INTERIOR INSTALLATION



7.02B



NOTES:

1. REINFORCEMENT: H-20 BRIDGE LOADING (TRAFFIC RATED)
2. CONCRETE: 4000 PSI @28 DAYS
3. SHALL BE LOCATED AS TO BE ACCESSIBLE FOR CLEANING AND MAINTENANCE

SHELBY STANDARD DETAILS - 2021	
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OIL-WATER-SAND
SEPARATOR

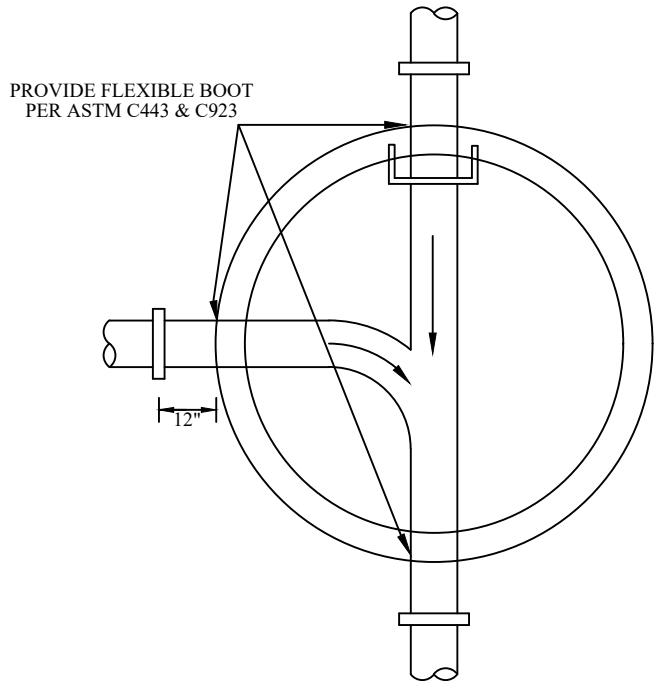


7.02C

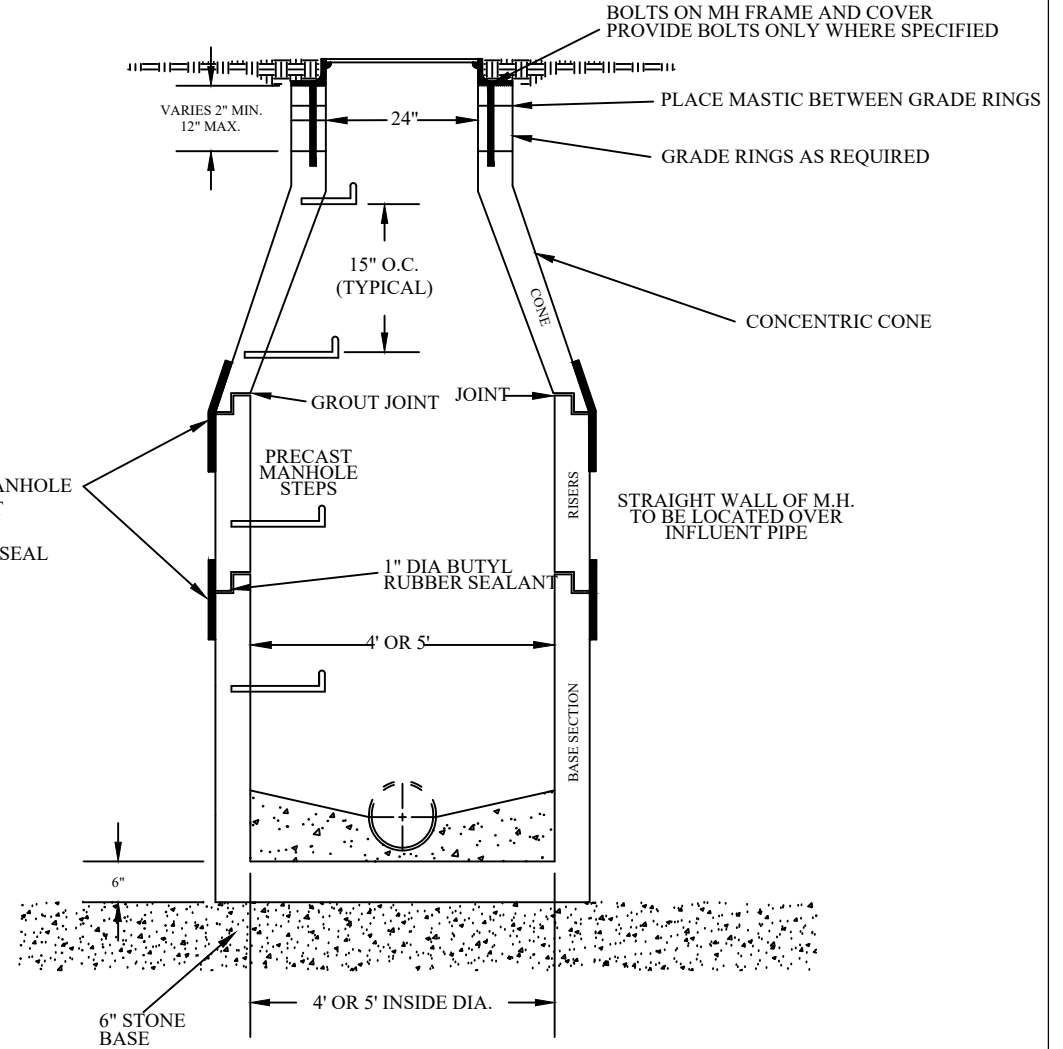
NOTES:

1. MANHOLE RISERS AND CONE SECTIONS SHALL CONFORM TO ASTM C-478, LATEST REVISION.
2. TRANSITION RINGS SHALL HAVE A MINIMUM CLEARANCE OF 2'-0" ABOVE THE EFFLUENT OVERT ELEVATION.
3. FLEXIBLE WATERTIGHT, SYNTHETIC RUBBER SLEEVES, WITH STAINLESS STEEL CLAMP: DRAW BOLT AND NUT; OR CAST-IN SLEEVE; OR "A" LOCK CONNECTION SHALL BE FURNISHED FOR EACH PIPE TO MANHOLE CONNECTION.
4. CONE SECTION TYPE TO BE DETERMINED BY CITY BASED ON INDIVIDUAL PROJECT NEEDS.
5. ALL MANHOLE SHALL INCLUDE A MINIMUM OF 6" THICK CONCRETE GRADE RING BETWEEN THE CONCENTRIC CONE AND MANHOLE FRAME
6. EXISTING SEWER AT MANHOLE SHALL BE REPLACED APPROXIMATELY 5' EACH SIDE

STANDARD MH RINGS AND COVERS: VULCAN FOUNDRY, INC., "V-B1384", NEENAH "R-1550", U.S. FOUNDRY "USF-669 VENTED", OR EQUAL.
 WATERTIGHT MH RINGS AND COVERS: VULCAN FOUNDRY, INC., "V-2328", NEENAH "R-1915H", U.S. FOUNDRY "USF-669 BWT", OR EQUAL.



NOTE: WRAP ALL MANHOLE JOINTS WITH A HEAT SHRINKABLE SHEET SIMILAR TO WRAPIDSEAL



SHELBY STANDARD DETAILS - 2021

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4' DIAMETER PRECAST MANHOLE

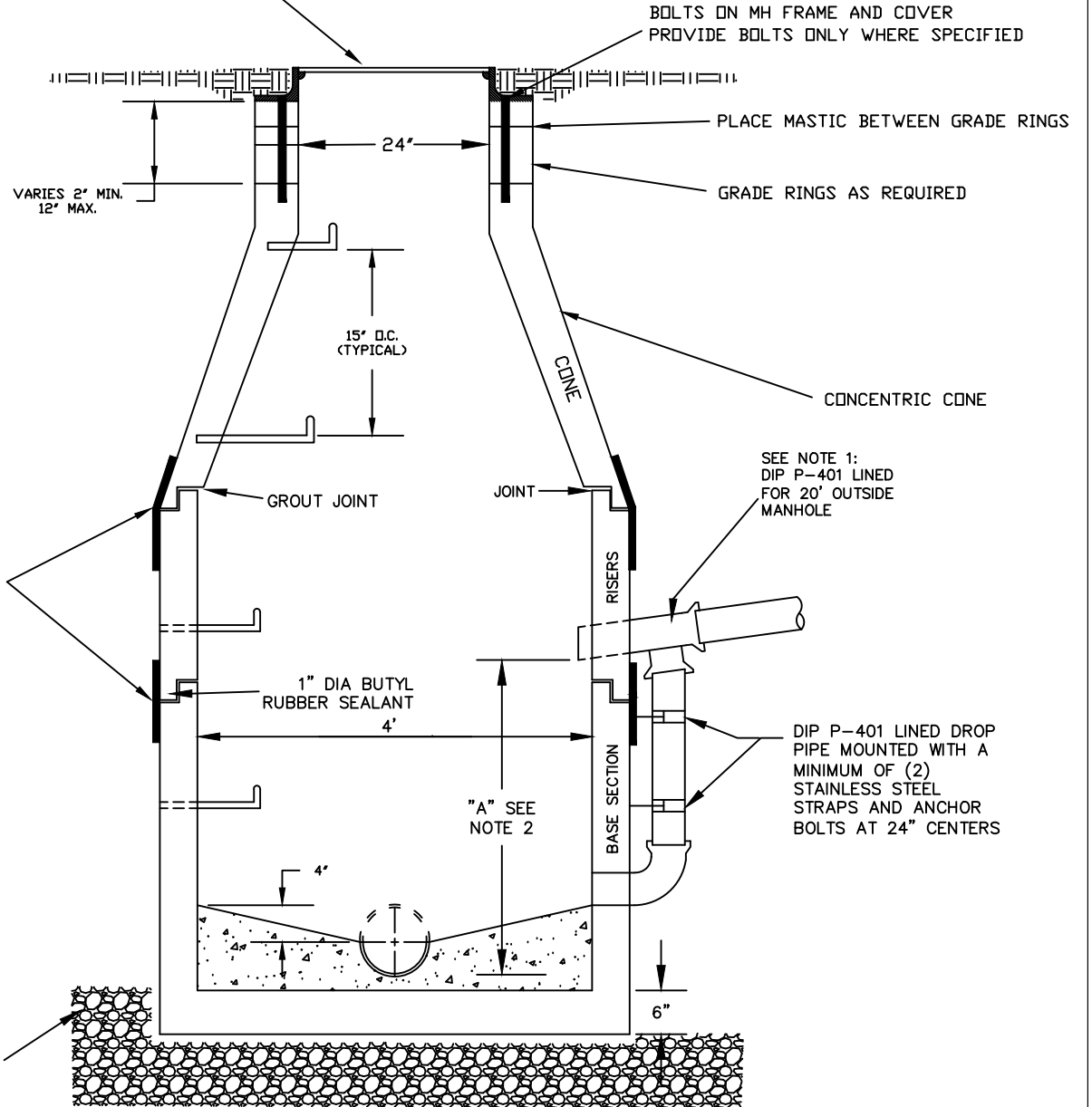


NOTES:

1. THE SEWER LINE ENTERING A DROP MANHOLE SHALL BE A MINIMUM OF 20' CONTINUOUS DIP P-401 LINED FROM THE UPSTREAM MANHOLE.
2. A DROP MANHOLE IS REQUIRED WHEN THE DIFFERENCE BETWEEN INVERTS IS 24" OR GREATER.
3. ALL JOINTS WITHIN THE MANHOLE SHALL BE OF THE RESTRAINED MECHANICAL JOINT TYPE.
4. INSIDE DROP PIPE DIAMETER SHALL BE THE SAME AS THE INFLOW SEWER LINE DIAMETER.
5. STAINLESS STEEL STRAPPING SHALL BE 2" WIDE BY 1/8" THICK AND ATTACHED TO THE MANHOLE WALL WITH 316 STAINLESS STEEL MASONRY ANCHORS.

SEE MANHOLE STD. NO. 7.03

NOTE: WRAP ALL MANHOLE JOINTS WITH A HEAT SHRINKABLE SHEET SIMILAR TO WRAPIDSEAL



SHELBY STANDARD DETAILS - 2021

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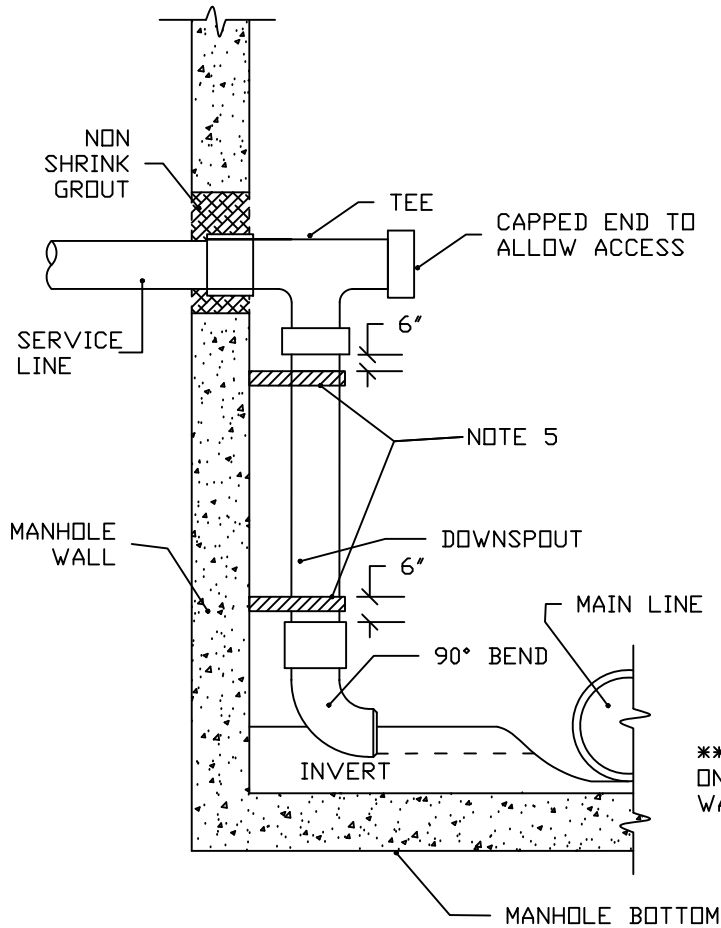
STANDARD DROP MANHOLE



7.04

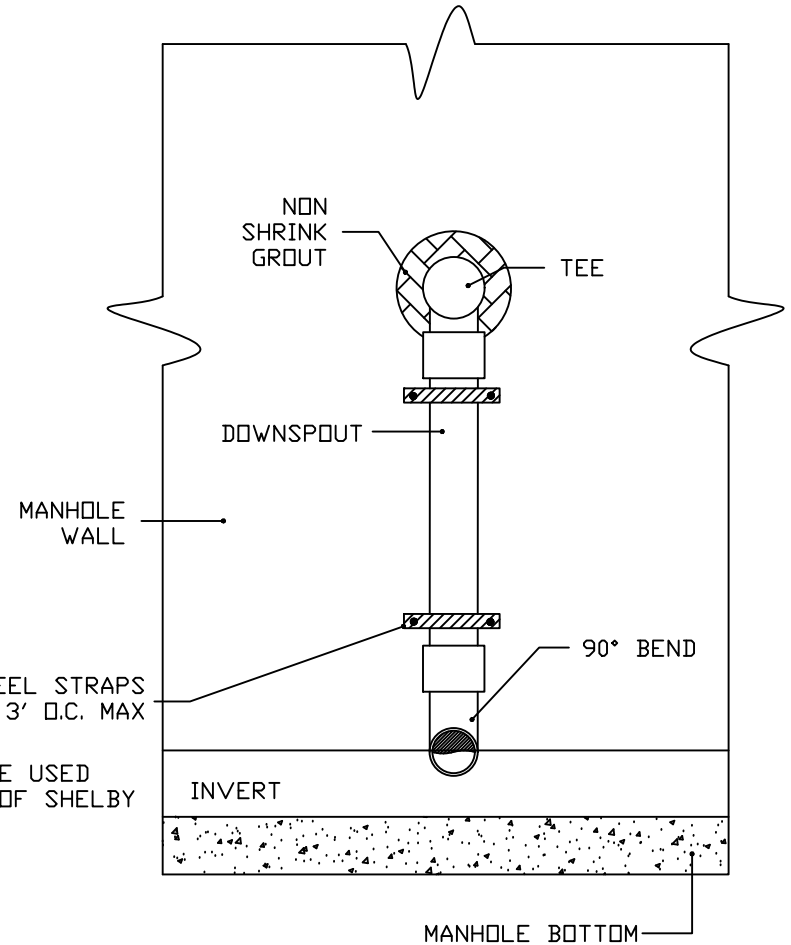
NOTES:

1. PIPING CONFIGURATION TO BE USED ON ALL DROPS OVER 24".
2. DROPS TO BE CONSTRUCTED OF SCHEDULE 40 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 2" WIDE BY 1/8" THICK AND ATTACHED TO THE MANHOLE WALL WITH 316 STAINLESS MASONRY ANCHORS.
6. 5' DIAMETER MANHOLE REQUIRED FOR SEWER LINES 12" AND LARGER.



**USE OF THIS DETAIL SHALL BE USED ONLY WHEN APPROVED BY CITY OF SHELBY WATER RESOURCES DEPARTMENT

STAINLESS STEEL STRAPS AT 3' O.C. MAX



SHELBY STANDARD DETAILS - 2021

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**STANDARD DROP MANHOLE
FOR SEWER SERVICE 4" OR LESS**

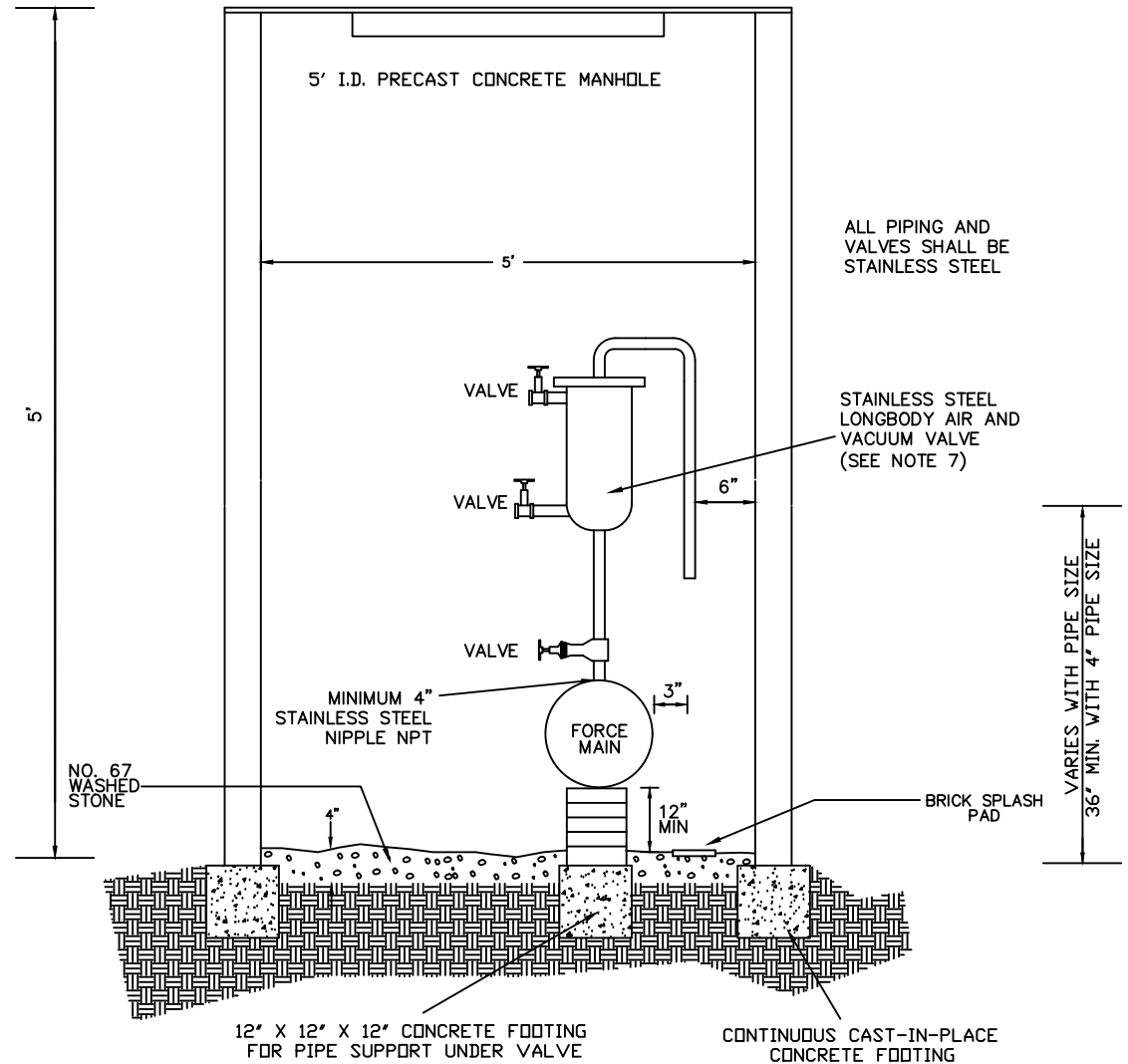


7.05

5' PRECAST TOP WITH 48"X48" BILCO DOOR CAST IN-PLACE. DOOR TO HAVE STAINLESS STEEL HINGES WITH TAMPER PROOF FASTENERS AND MUST LOCK IN THE OPEN POSITION. COVER MUST BE ANCHORED. STANDARD MANHOLE RING AND COVER TO BE USED ONLY IF IN PAVED ROADWAY.

NOTES:

1. ALL CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH.
2. ALL VALVES SHALL OPEN COUNTER CLOCKWISE.
3. FRAME TO BE FLUSH WITH GROUND IN ROAD R/W & 2' ABOVE GROUND IN SEWER R/W.
4. CONCRETE FOOTINGS MAY BE PLACED AGAINST SHAPED BANKS IN LIEU OF FORMS.
5. FOOTING DIMENSIONS TO BE AS SHOWN OR AS DIRECTED BY THE ENGINEER.
6. MANHOLE SHALL CONFORM TO SPECIFICATIONS.
7. AIR & VACUUM VALVE TO BE LONG BODY TYPE FURNISHED WITH BACK FLUSHING ATTACHMENTS (USE MANUFACTURER'S RECOMMENDATIONS BASED ON DESIGN REQUIREMENTS). PREFERRED ARV IS A A.R.I MODEL D26 (2" MINIMUM), SIZE MAY VARY FOR EACH APPLICATION (SEE NOTE 10), WITH STAINLESS STEEL BASE AND NYLON TOP.
8. SADDLE SHALL BE 2" NPT WITH STAINLESS STEEL BANDS
9. MANHOLE FRAME & COVER TO BE ANCHORED TO MANHOLE WITH RED JACKET MASONRY ANCHORS OR EQUAL AND THOROUGHLY SEALED TO CONCRETE WITH TAR SEALANT PUTTY.
10. CONTACT CITY OF SHELBY FOR ASSISTANCE IN SIZING AND MODELS.
11. PIPING OF SADDLE SIZE SHOULD MATCH ARV SIZE (3"ARV = 3"SADDLE X PIPE DIAMETER)



SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

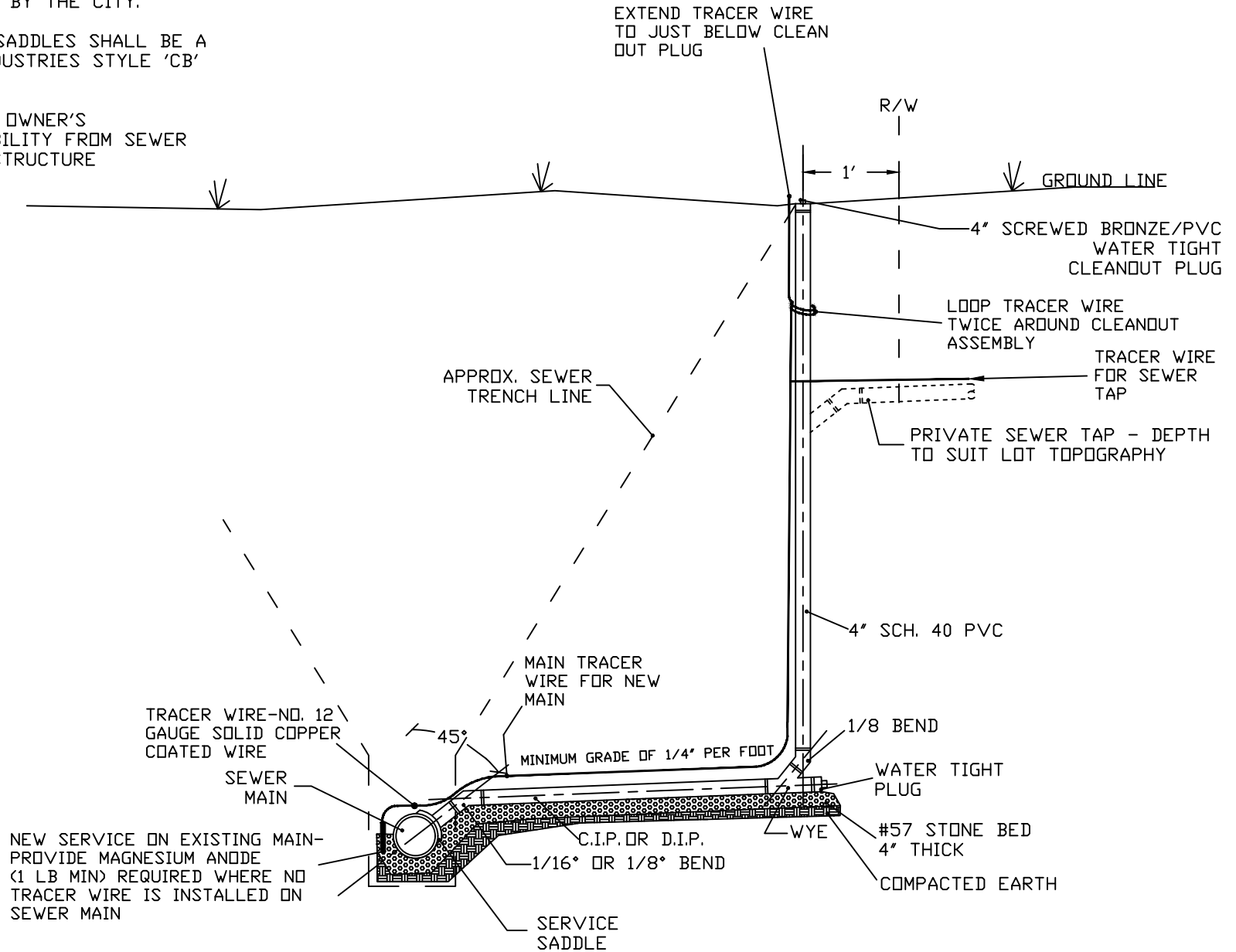
STANDARD AIR RELEASE MANHOLE FOR
SANITARY SEWER FORCE MAINS



7.06

NOTES:

1. CONNECTIONS TO MAIN MUST BE APPROVED BY THE CITY.
2. SERVICE SADDLES SHALL BE A ROMAC INDUSTRIES STYLE 'CB' OR EQUAL.
3. PROPERTY OWNER'S RESPONSIBILITY FROM SEWER MAIN TO STRUCTURE



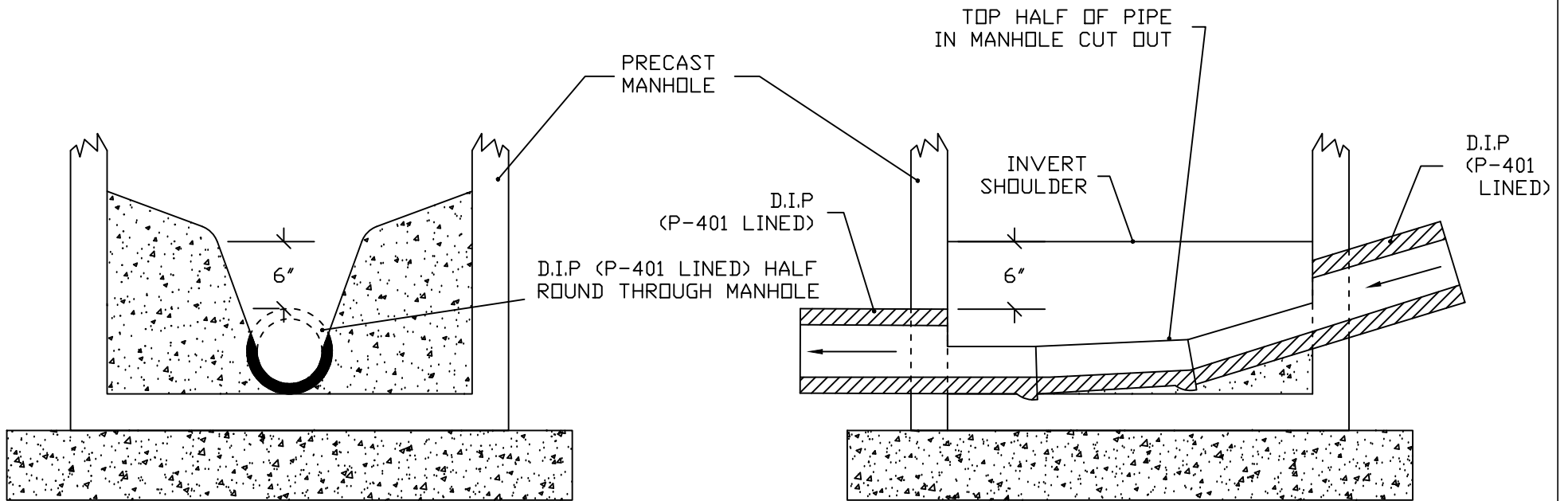
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

STANDARD 4" SANITARY SEWER TAP AND SERVICE FOR SEWER MAINS OVER 14' DEEP



7.07



NOTE:
 NO HORIZONTAL ALIGNMENT CHANGE CAN BE MADE WITHIN
 THIS MANHOLE TYPE. USE ON GRADES 10% OR GREATER.

EACH JOINT OF PIPE BETWEEN HIGH VELOCITY MANHOLE &
 MANHOLE UPGRADE SHALL HAVE A THRUST COLLAR. SEE
 STD. NO. 6.12.

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

HIGH VELOCITY MANHOLE INVERT



7.08

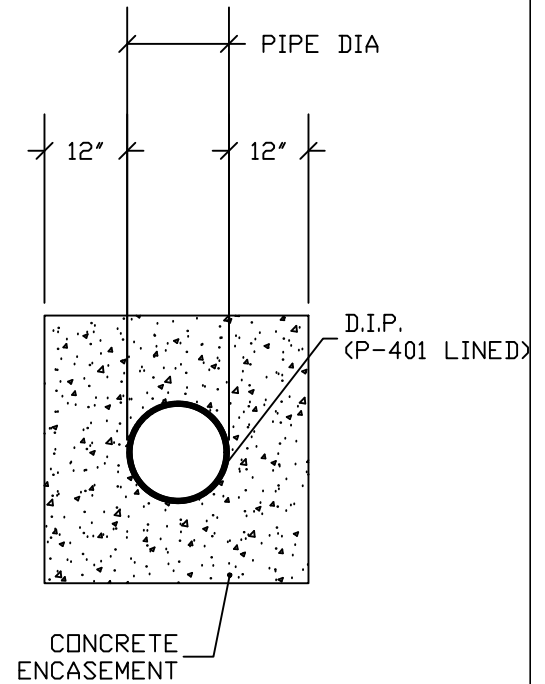
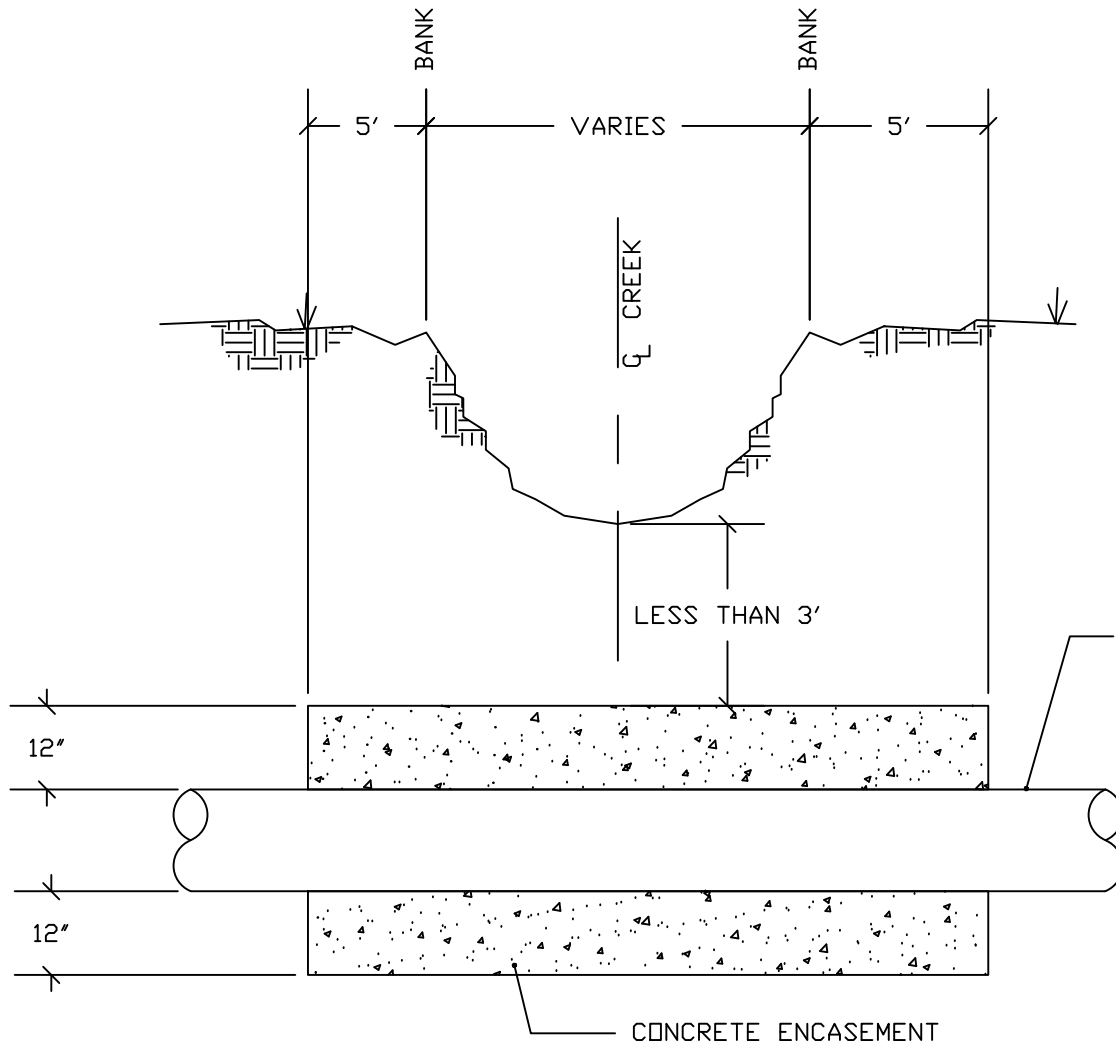
NOTE:
CONCRETE SHALL BE 3000 PSI.

CONCRETE ENCASEMENT NOT REQUIRED WHEN PIPE IS AT LEAST THREE (3) FEET UNDER THE CENTERLINE OF CREEK BOTTOM.

SEWER SERVICES SHALL BE CONSTRUCTED OF C.I.S.P.

ANY PIPE RUN REQUIRING A CREEK CROSSING SHALL BE CONSTRUCTED OF A CONSISTENT MATERIAL. TRANSITIONS AND FERNCO COUPLINGS SHALL NOT BE PERMITTED.

CREEK CROSSINGS GREATER THAN 3' DEEP MAY BE CONSTRUCTED OF PVC PIPE.



APPLICABLE TO WATER LINES, SEWER LINES, SEWER SERVICES, AND FORCE MAINS.

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

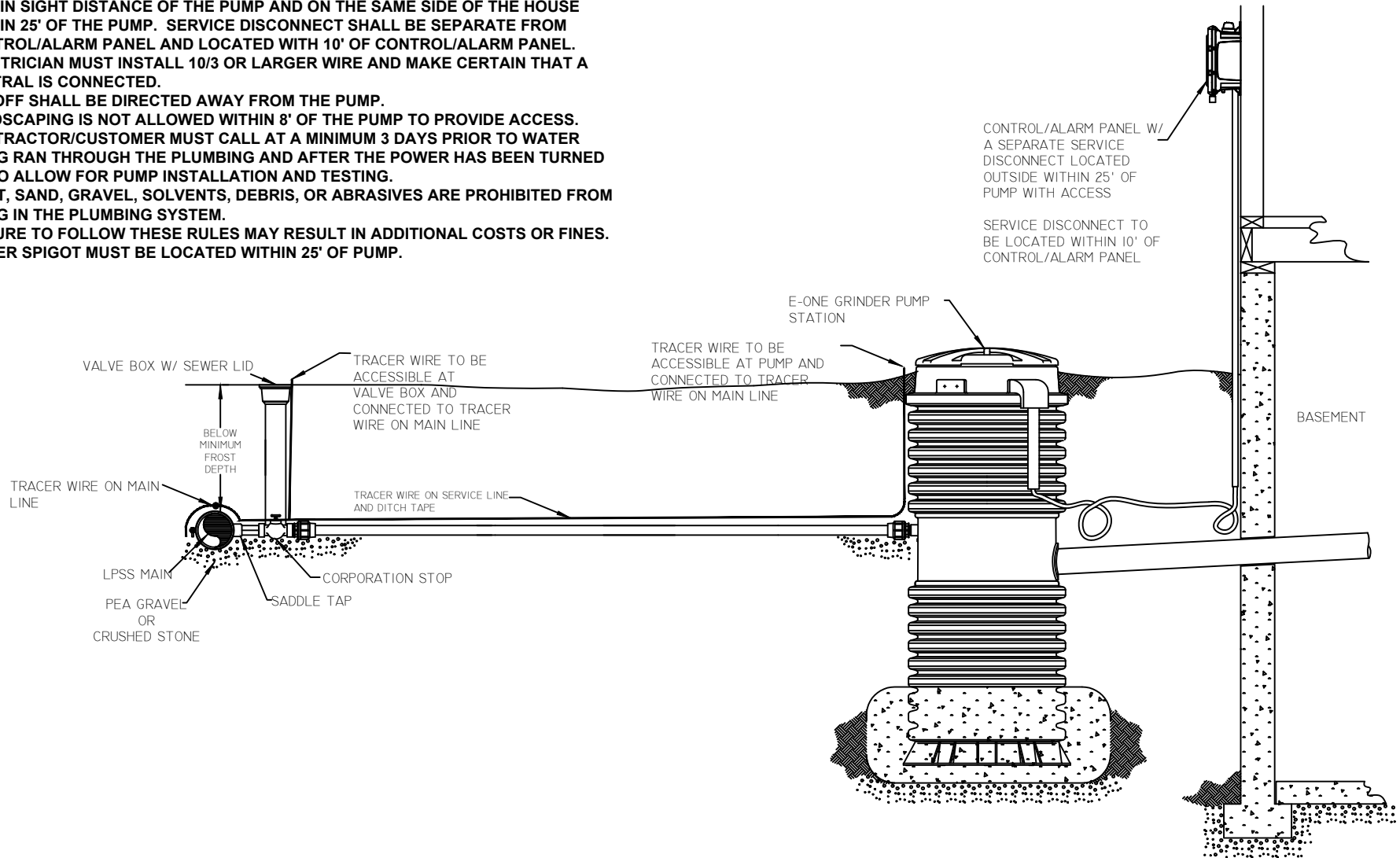
**CONCRETE ENCASEMENT
FOR STREAM CROSSING**



7.09

NOTES:

1. CONTRACTOR/CUSTOMER WILL BE RESPONSIBLE FOR ENSURING THAT ALL GUIDELINES FOR INSTALLATION ARE FOLLOWED.
2. CONTRACTOR/CUSTOMER IS REQUIRED TO STAKE FINAL GRADE TO ENSURE THAT THE PUMP INSTALLATION WILL NOT BE TOO HIGH/LOW WHEN INSTALLED.
3. SERVICE DISCONNECT AND CONTROL/ALARM PANEL MUST BE INSTALLED OUTSIDE WITHIN SIGHT DISTANCE OF THE PUMP AND ON THE SAME SIDE OF THE HOUSE WITHIN 25' OF THE PUMP. SERVICE DISCONNECT SHALL BE SEPARATE FROM CONTROL/ALARM PANEL AND LOCATED WITH 10' OF CONTROL/ALARM PANEL.
4. ELECTRICIAN MUST INSTALL 10/3 OR LARGER WIRE AND MAKE CERTAIN THAT A NEUTRAL IS CONNECTED.
5. RUNOFF SHALL BE DIRECTED AWAY FROM THE PUMP.
6. LANDSCAPING IS NOT ALLOWED WITHIN 8' OF THE PUMP TO PROVIDE ACCESS.
7. CONTRACTOR/CUSTOMER MUST CALL AT A MINIMUM 3 DAYS PRIOR TO WATER BEING RAN THROUGH THE PLUMBING AND AFTER THE POWER HAS BEEN TURNED ON TO ALLOW FOR PUMP INSTALLATION AND TESTING.
8. PAINT, SAND, GRAVEL, SOLVENTS, DEBRIS, OR ABRASIVES ARE PROHIBITED FROM BEING IN THE PLUMBING SYSTEM.
9. FAILURE TO FOLLOW THESE RULES MAY RESULT IN ADDITIONAL COSTS OR FINES.
10. WATER SPIGOT MUST BE LOCATED WITHIN 25' OF PUMP.



SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**TYPICAL LATERAL
INSTALLATION WITH PUMP**



7.10



NOTE:

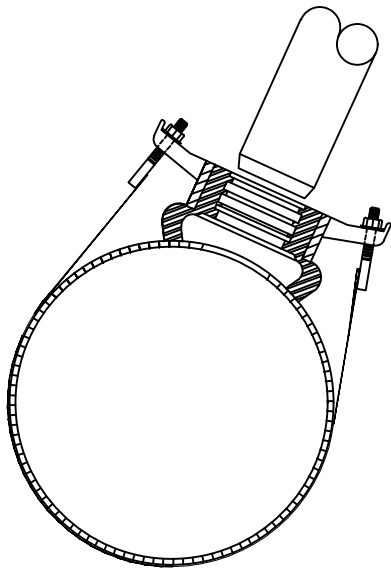
BOLTS, NUTS AND WASHERS, 1/2" UNC
ROLL THREAD TEFLON COATED.

3 1/2" WIDE BAND FOR SPREADING OUT
CLAMP FORCE ON PIPE.

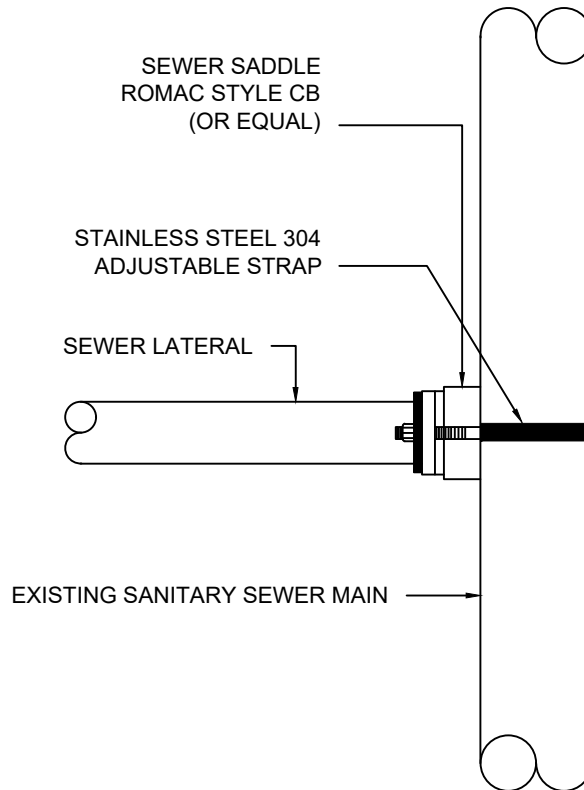
THE STAINLESS WELDS ARE FULLY
PASSIVATED.

EXCESS STRAP GOES BETWEEN PIPE
AND BAND

**STAINLESS STEEL 304
ADJUSTABLE STRAP**



**SANITARY SEWER SADDLE
CONFORMING TO PIPE**



NOTE:

- 1) PIPE TO BE TAPPED USING A HOLE SAW OR APPROVED EQUAL
- 2) ROMAC 4" (CB-4.80UN) AND 6" (CB-6.66UN) SEWER SADDLES OR APPROVED EQUAL REQUIRED

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

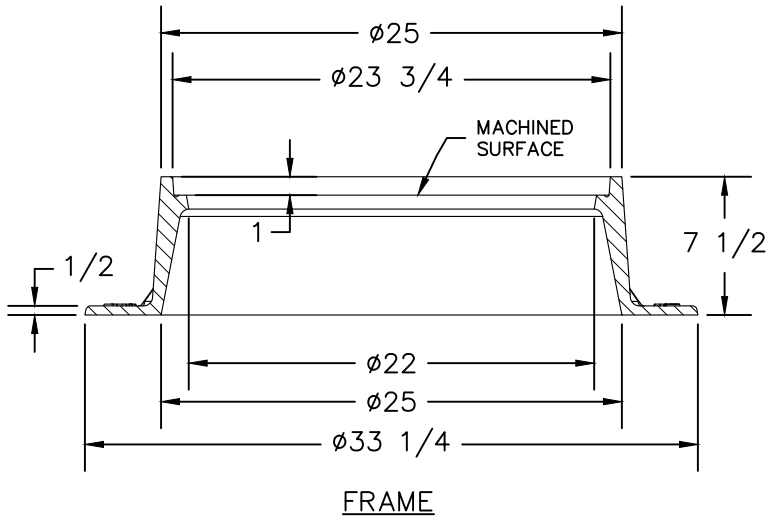
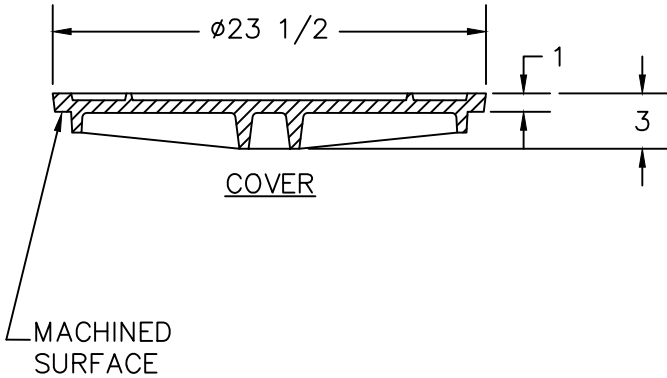
SANITARY SEWER TAP



7.11

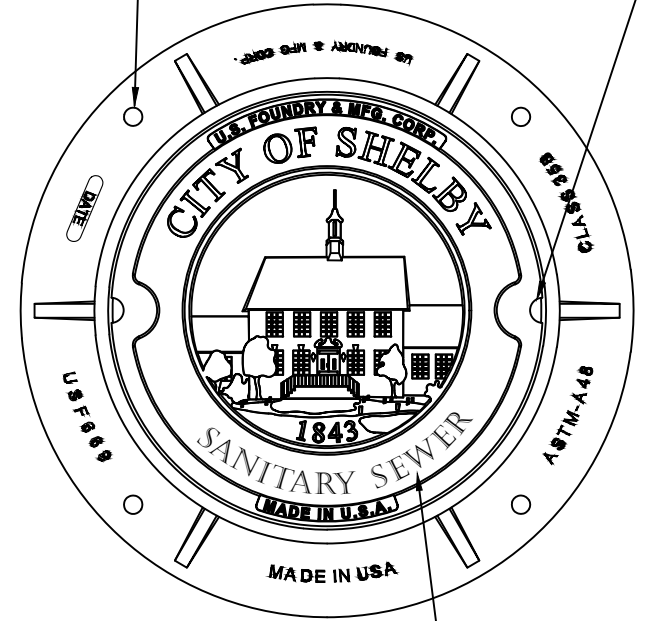
ESTIMATED WEIGHT			
VULCAN TYPE V-1384		U.S. FOUNDRY 669 RING & KU COVER	
LOAD RATING - HEAVY DUTY		LOAD RATING - HEAVY DUTY	
FRAME	240 LBS.	FRAME	190 LBS.
COVER	145 LBS.	COVER	125 LBS.
TOTAL	385 LBS.	TOTAL	315 LBS.

NOTE:
MANHOLE COVERS IN ROADS TO BE
SOLID AND LABELED PER UTILITY
(I.E. WATER/SEWER) WITH CITY LOGO

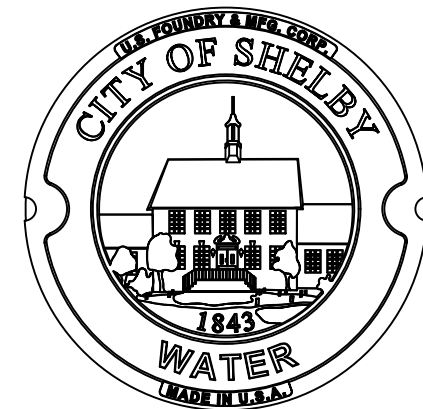


4-1" DIA. ANCHOR HOLES
@ 90° O.C.

(2)- NON PENETRATING
PICKHOLES.



LABEL ACCORDING TO UTILITY
(I.E. WATER, SEWER, ETC.)



SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

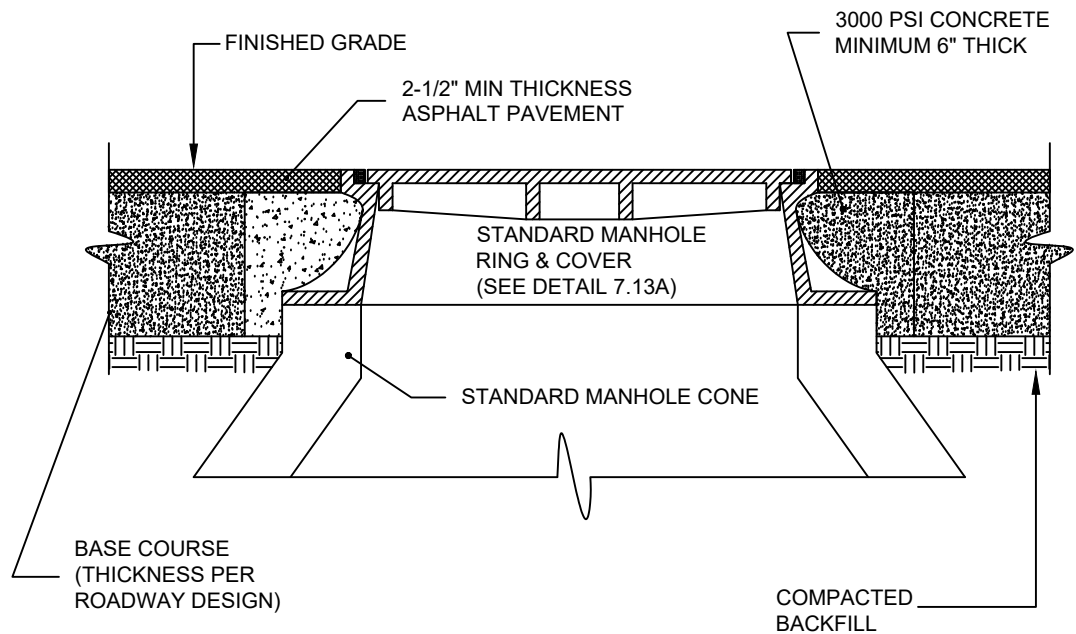
STANDARD MANHOLE RINGS AND COVER
FOR MANHOLES IN PAVED AREAS



7.12A



PLAN



SECTION

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

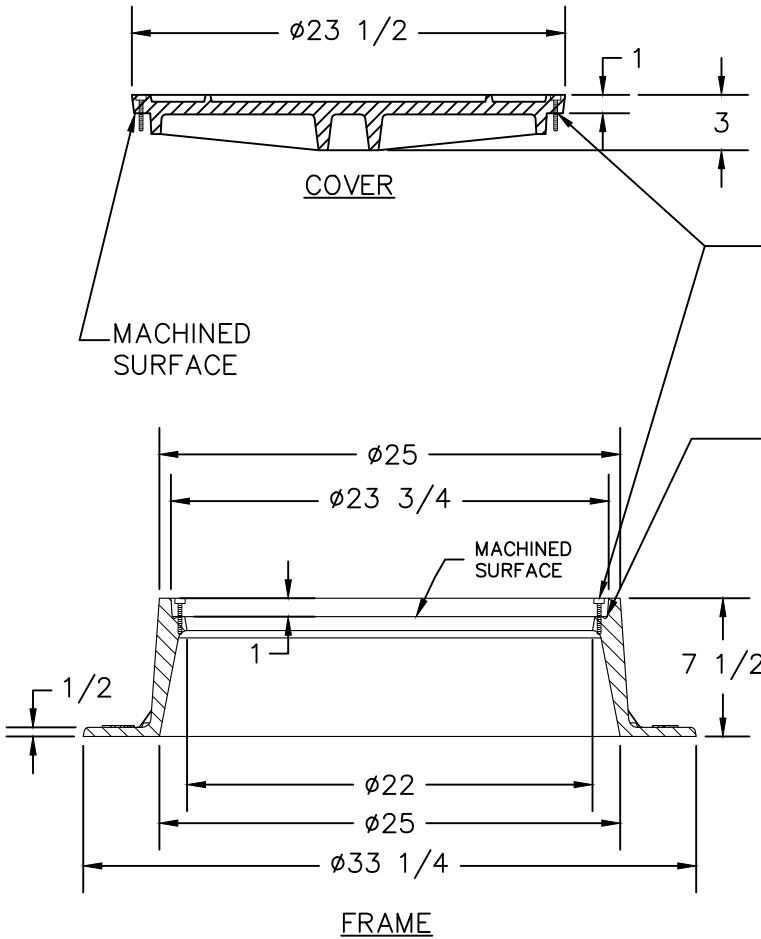
**STANDARD MANHOLE RING
AND COVER ENCASEMENT**



7.12B

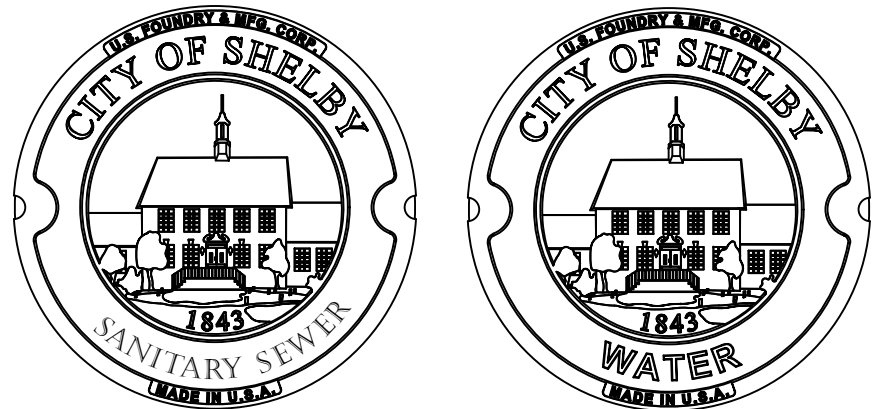
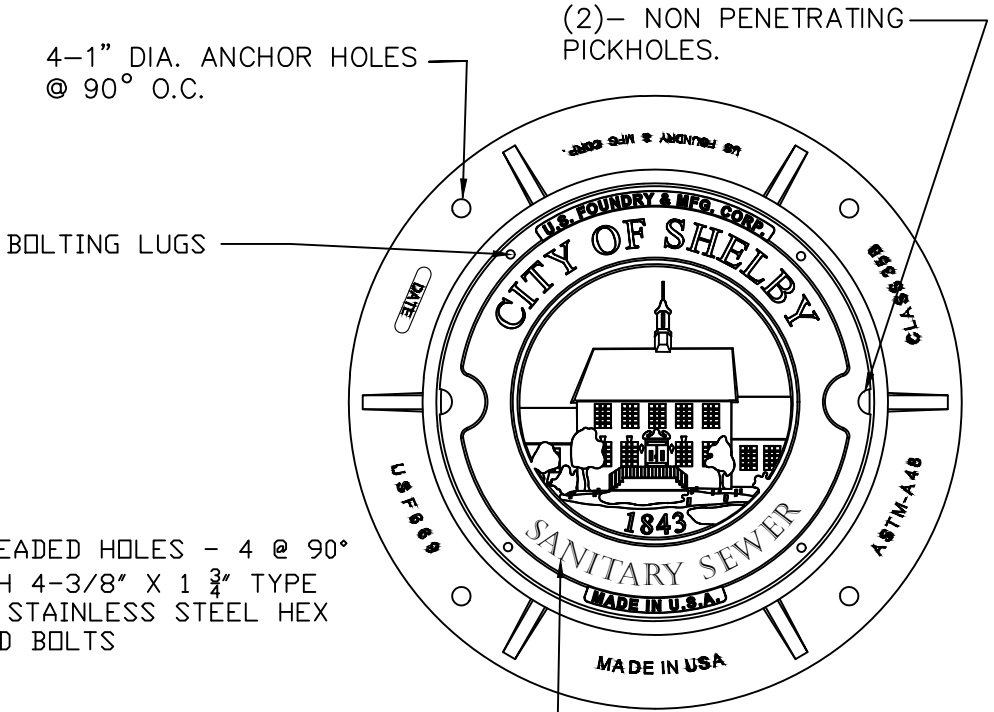
ESTIMATED WEIGHT			
VULCAN TYPE V-1384		U.S. FOUNDRY 669 RING & KU COVER	
LOAD RATING - HEAVY DUTY		LOAD RATING - HEAVY DUTY	
FRAME	240 LBS.	FRAME	190 LBS.
COVER	145 LBS.	COVER	125 LBS.
TOTAL	385 LBS.	TOTAL	315 LBS.

- NOTE:
- 1) CITY TO DETERMINE WHEN BOLTED MANHOLE COVERS ARE REQUIRED
 - 2) MANHOLE COVERS SHALL BE LABELED PER UTILITY (I.E. WATER/SEWER) WITH CITY LOGO
 - 3) ALL BOLTS SHALL BE 316 STAINLESS STEEL



THREADED HOLES - 4 @ 90° WITH 4-3/8" X 1 3/4" TYPE 316 STAINLESS STEEL HEX HEAD BOLTS

FOR WATERTIGHT MANHOLE ADD CONTINUOUS POLYVINYL GASKET BETWEEN COVER AND FRAME SET



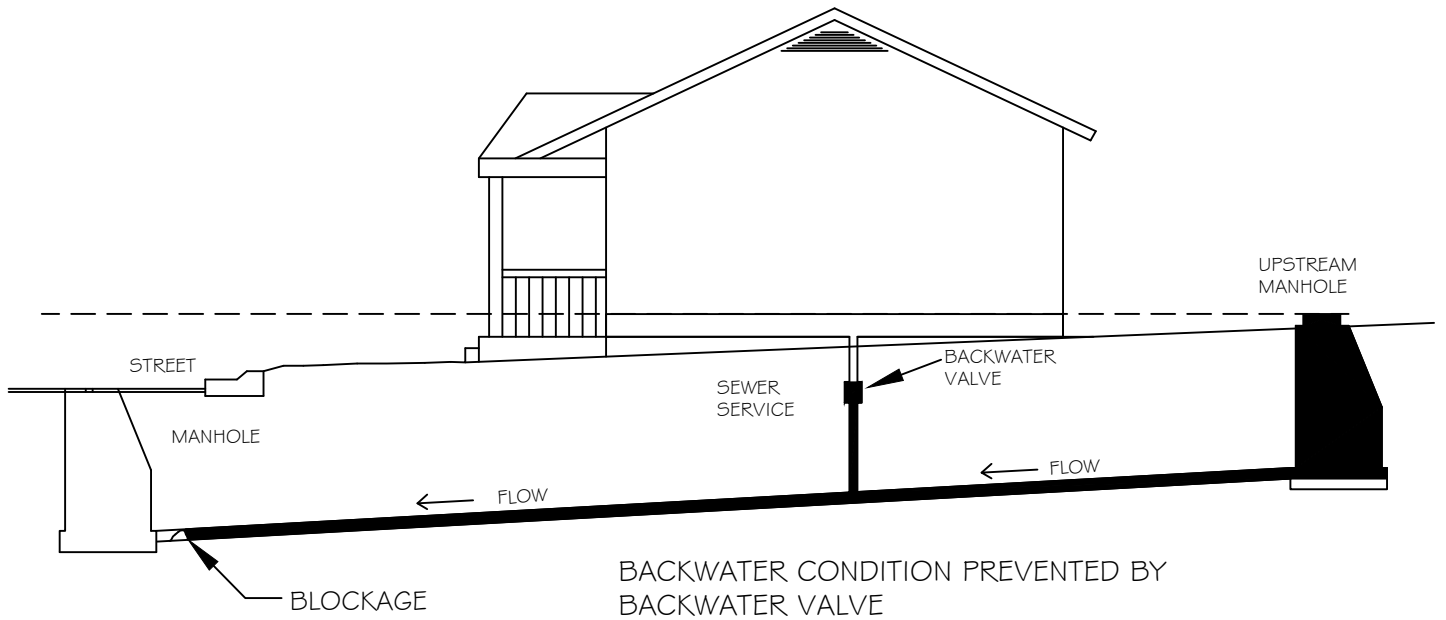
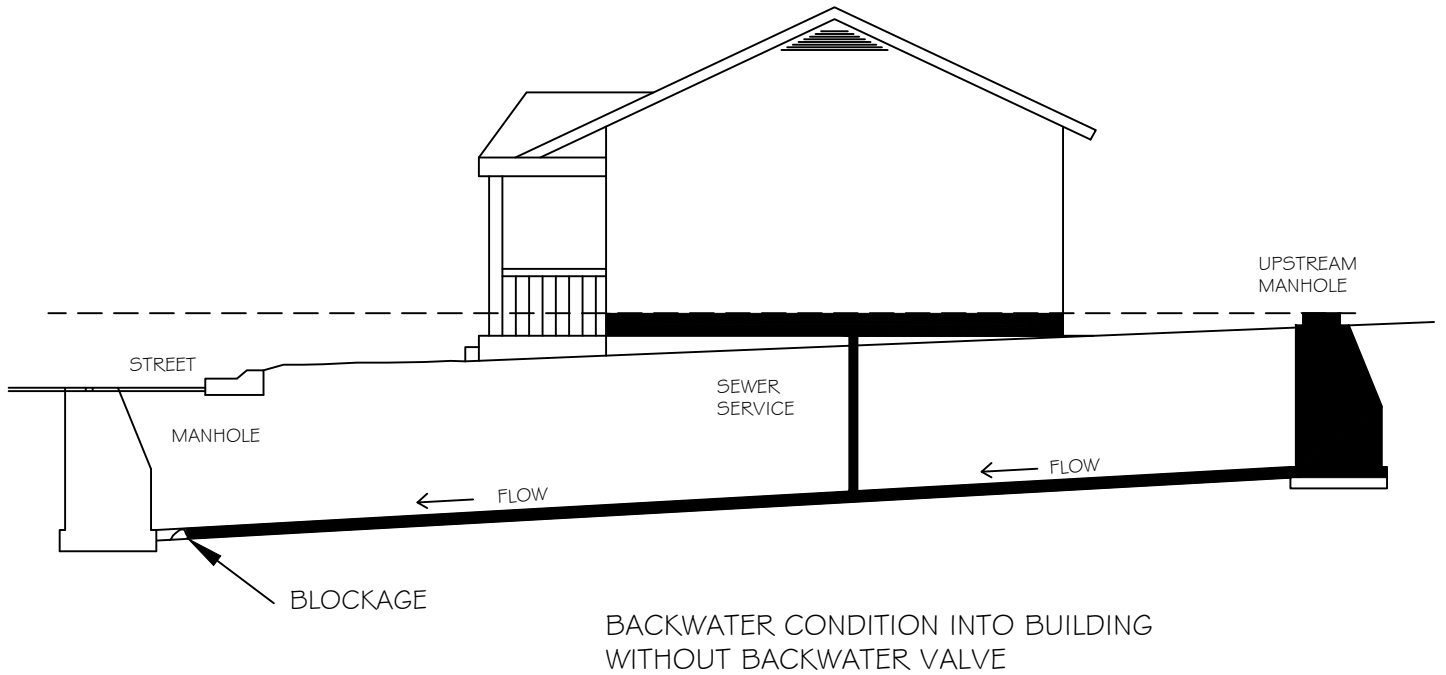
SHELBY STANDARD DETAILS - 2021	
DATE	REVISIONS

STANDARD MANHOLE RING AND COVER FOR WATERTIGHT MANHOLES



7.12C

BUILDING WITH NEXT UPSTREAM MANHOLE HIGHER THAN
THE LOWEST DRAIN AND BLOCKAGE IN SEWER MAIN



SHELBY STANDARD DETAILS - 2021

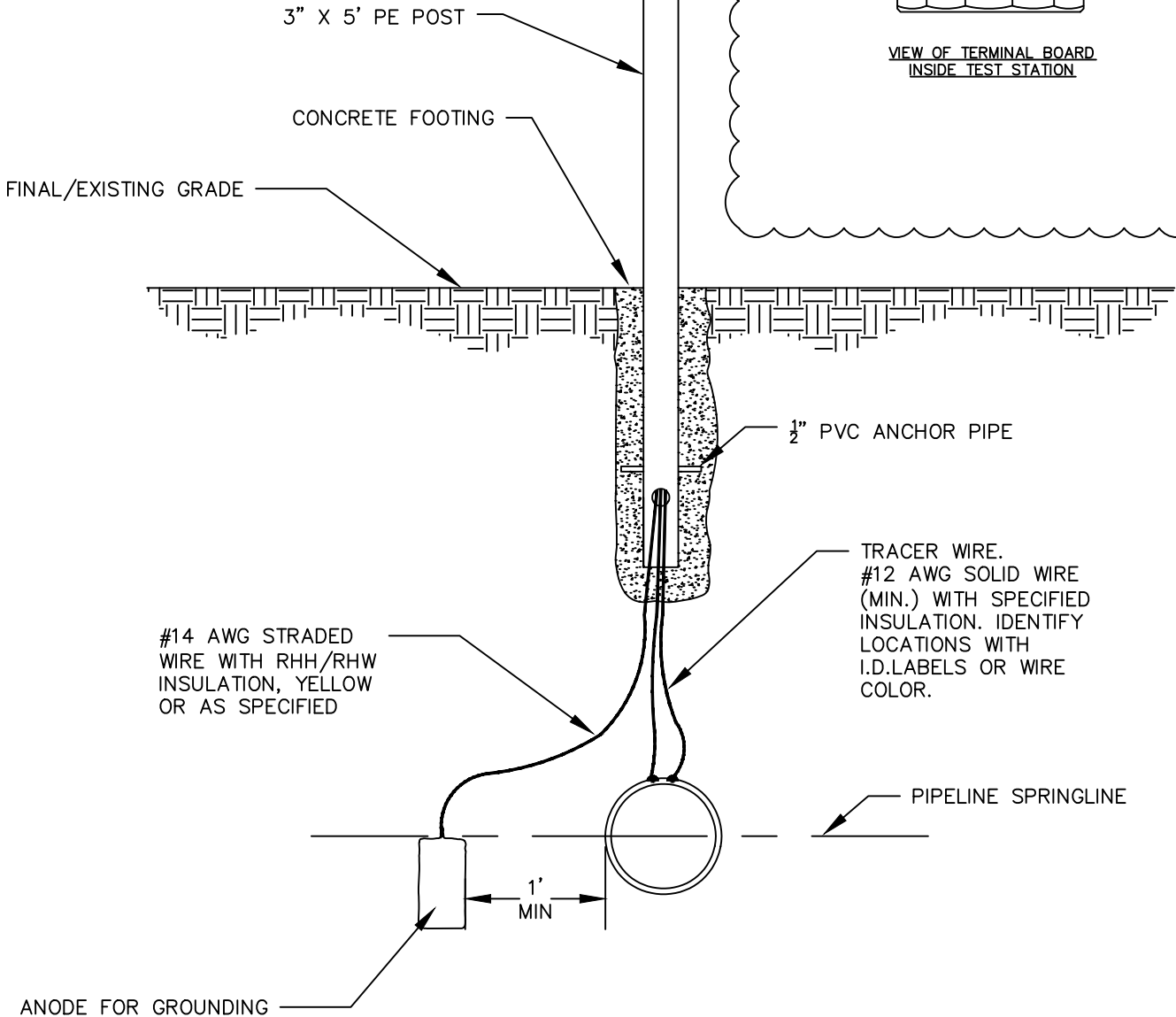
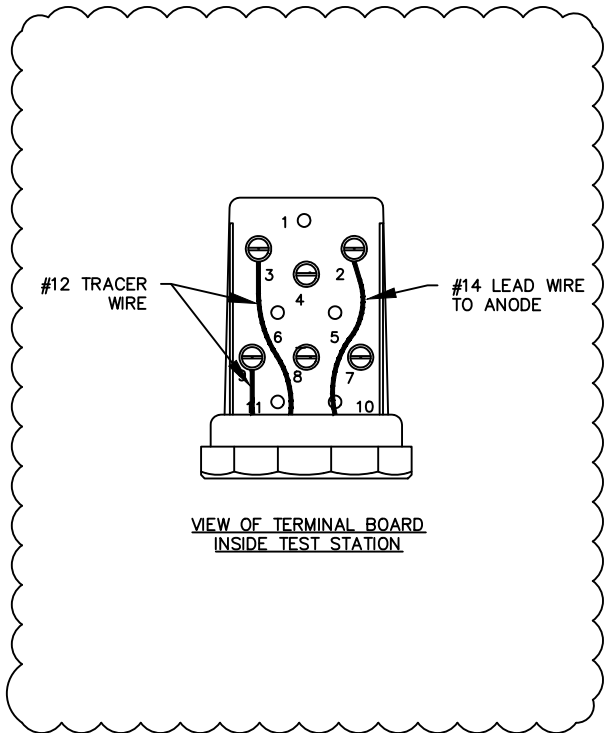
DATE	REVISIONS

**TYPICAL SEWER SERVICE
REQUIRING BACKWATER
VALVE**



7.13

TEST STATION, LITTLE FINK OR EQUAL
 COLOR:
 WATER - BLUE
 SEWER - GREEN



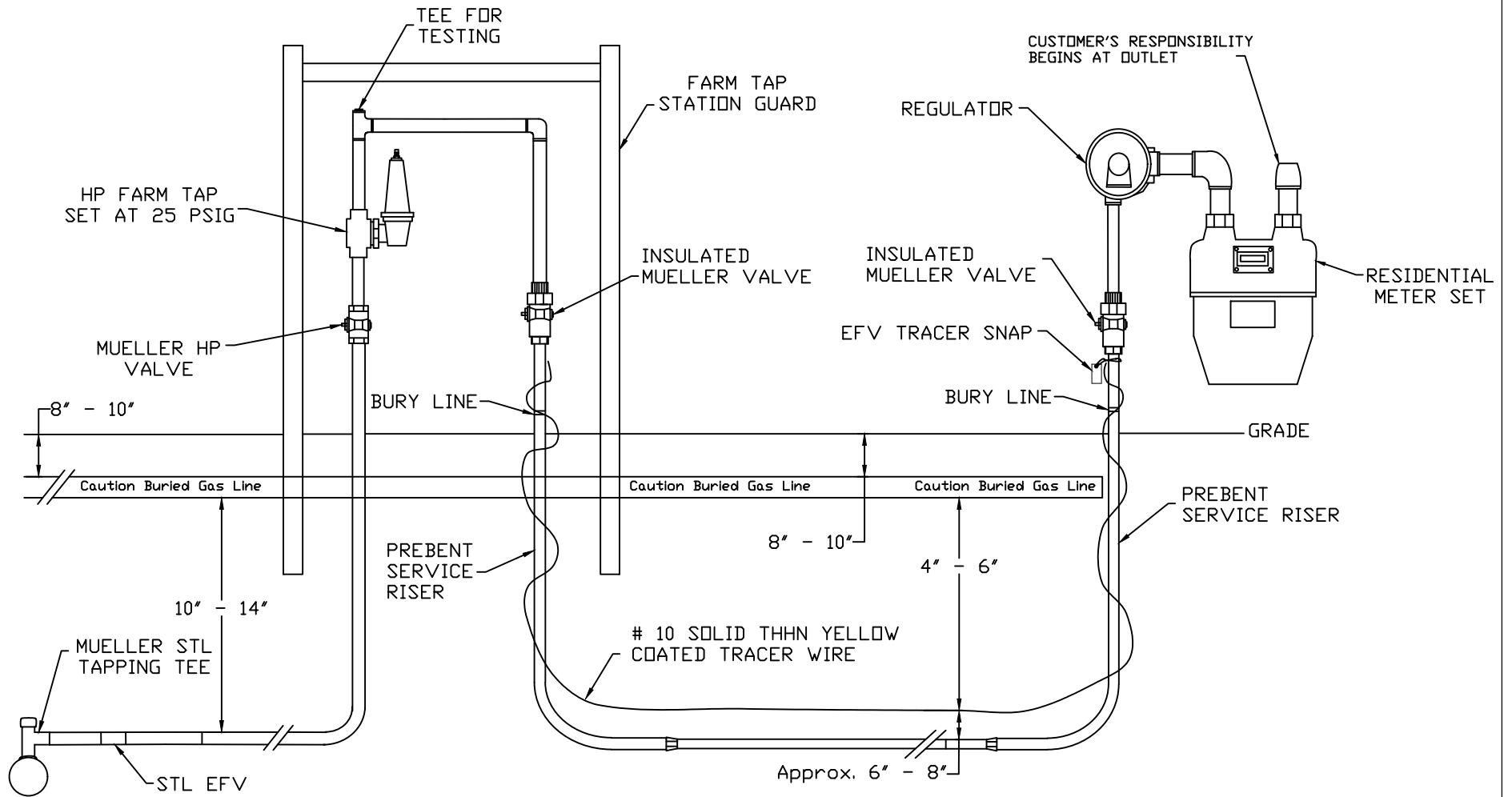
TRACER WIRE.
 #12 AWG SOLID WIRE
 (MIN.) WITH SPECIFIED
 INSULATION. IDENTIFY
 LOCATIONS WITH
 I.D. LABELS OR WIRE
 COLOR.

#14 AWG STRADED
 WIRE WITH RHH/RHW
 INSULATION, YELLOW
 OR AS SPECIFIED

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**TYPICAL LOCATE MARKING
 POST FOR WATER AND
 SEWER FORCEMAINS**



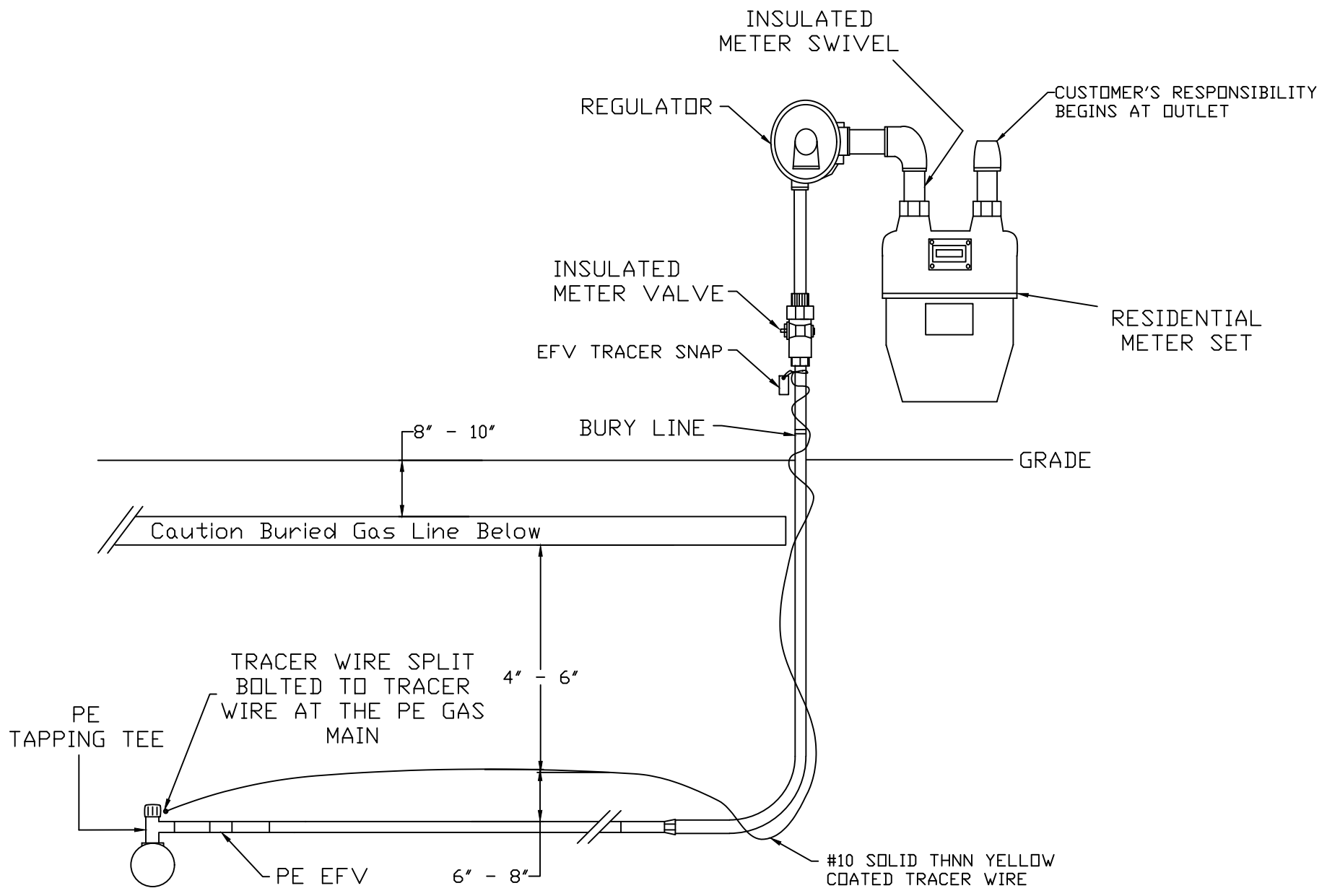
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

FARM TAP INSTALLATION



8.01



SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

NATURAL GAS PLASTIC SERVICE LINE



8.02

3" "Big Fink" to be installed
 5 Connections with two #10
 Solid wires on gas main and
 two #10 Solid wires on Casing.

3 lb. Anode connected in test box
 to be used for grounding purposes.

2" Vent Pipes to have screen
 installed to prevent insects from entering.

Link Seals and End Seals to be installed on
 both ends of the casing.

Anode is not to be connected to
 pipe or casing.

For Highway Crossings (Dual and
 Single lane)

"A" = 4 feet minimum

"B" = 4 feet minimum

"C" = As directed by Engineer

"D" = to Right-of-way line

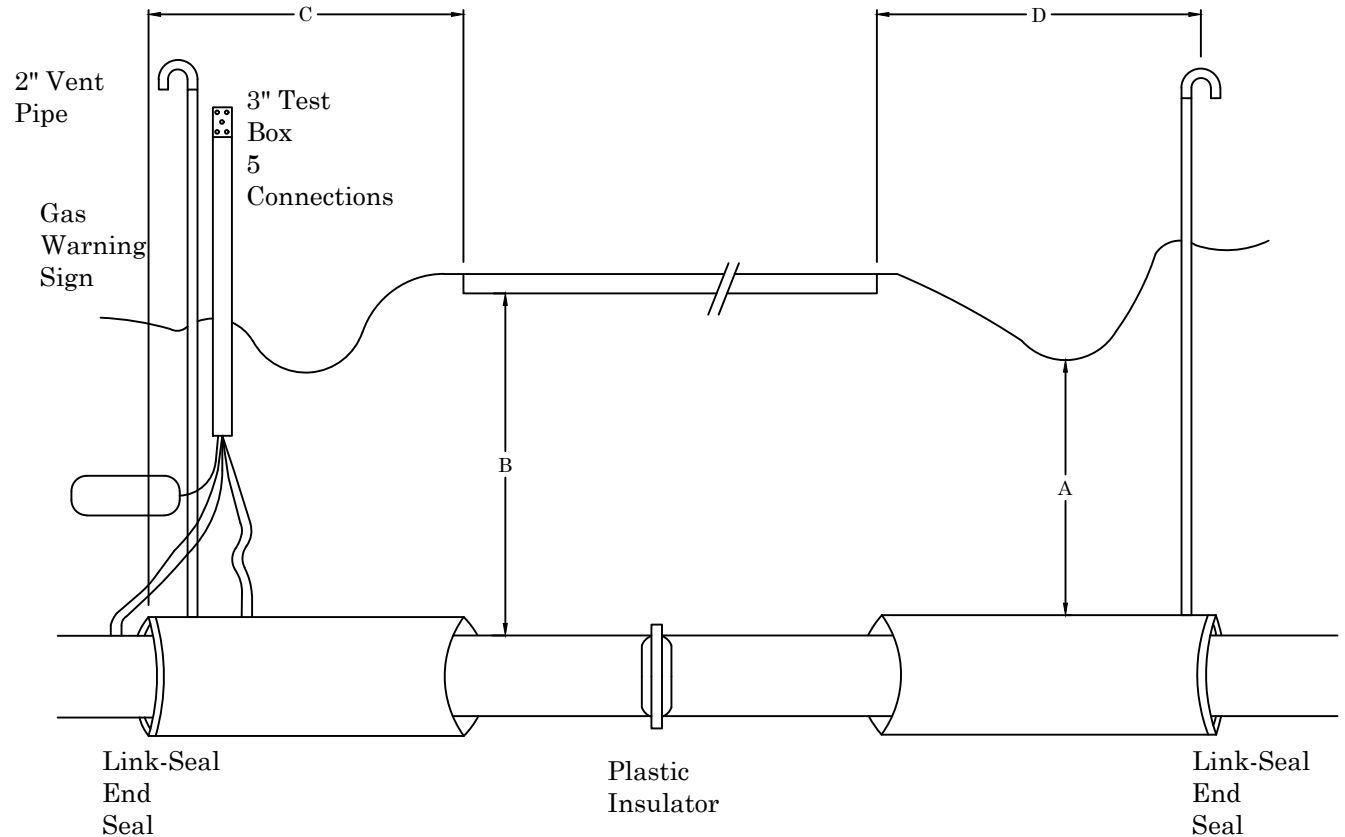
For Railroad Crossings (Single or
 Multiple Tracks)

"A" = 4 feet minimum

"B" = 6 feet minimum

"C" = 25' min; 3' beyond ditch line

"D" = 45' min; from centerline of nearest
 track



Casing for all such crossings shall be
 welded into one continuous length.

All vent connections to be welded and
 no couplings used.

Insulators are to be placed a
 maximum of 5' from each end of the
 casing and 10' on center for the
 remaining length of the casing.

SHELBY STANDARD DETAILS - 2021

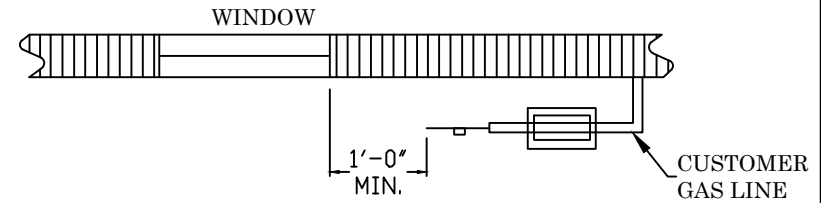
DATE	REVISIONS

**CASING & VENT PIPE
 DETAILS**

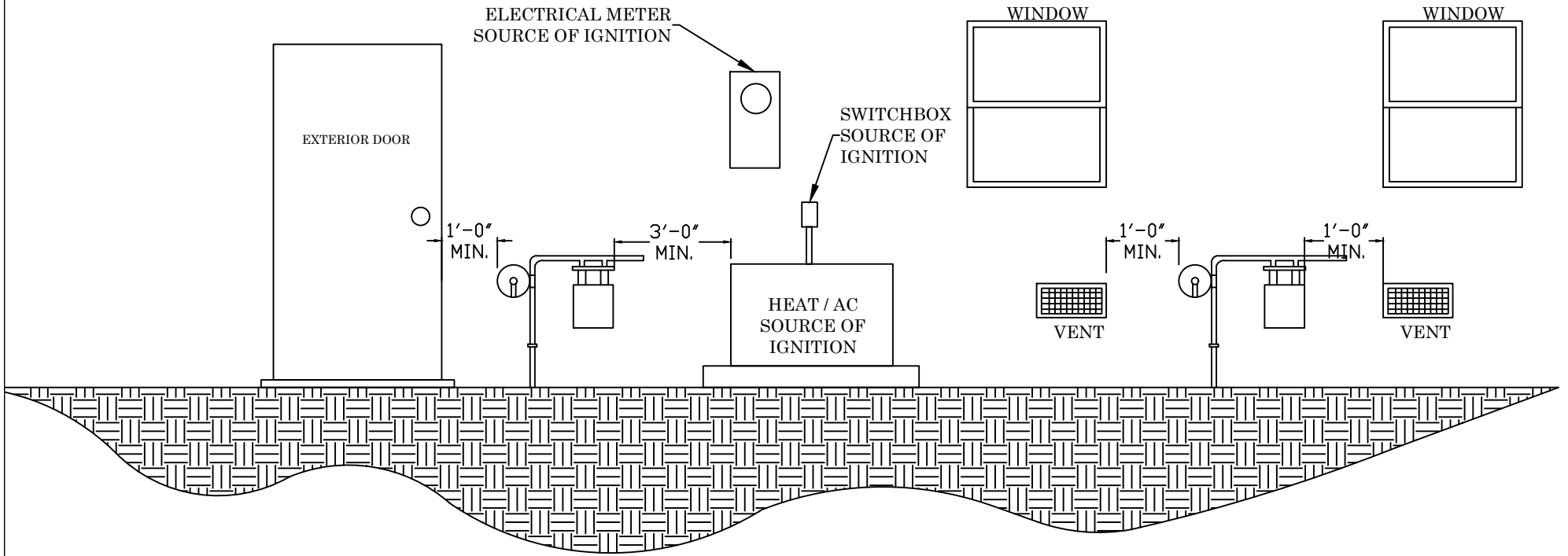


8.03

GAS METER / REGULATOR SHALL BE LOCATED AT LEAST 3'-0" FROM SOURCES OF IGNITION.
 THERE SHALL BE A MINIMUM OF 1'-0" BETWEEN A VENT OR CRAWL SPACE AND GAS REGULATOR.
 IF METER / REGULATOR IS LOCATED CLOSER THAN 1'-0" TO A VENT, VENT MUST BE PERMANENTLY SEALED OFF.
 GAS METER / REGULATOR SHALL NOT BE LOCATED UNDER A WINDOW, UNLESS WINDOW IS SEALED CLOSED (NO EGRESS).



PLAN



ELEVATION

SHELBY STANDARD DETAILS - 2021

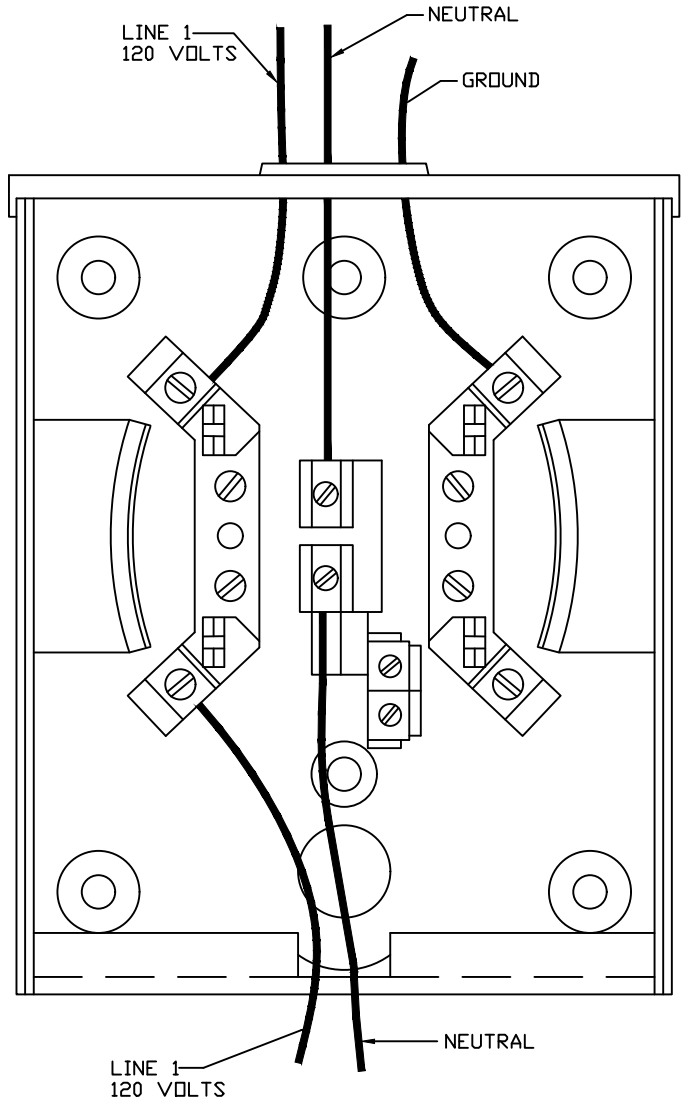
DATE	REVISIONS

**NATURAL GAS METER
 LOCATION REQUIREMENTS**



8.04

2 WIRE 120 VOLT SOURCE



REQUIRES FORM 1S METER

NOTES:

1. WHERE THE CUSTOMER'S METER BASE IS NOT WIRED AS SHOWN ON THIS DRAWING, AN ELECTRICAL CONTRACTOR SHOULD REWIRE THE BASE AND THE CITY WILL INSTALL THE APPLICABLE METER.
2. CHECK LOCAL AND STATE REGULATIONS AND REQUIREMENTS
3. ALL CONDUIT SIZES ARE TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**METERING, SINGLE-PHASE,
120 VOLTS, 2 WIRE**



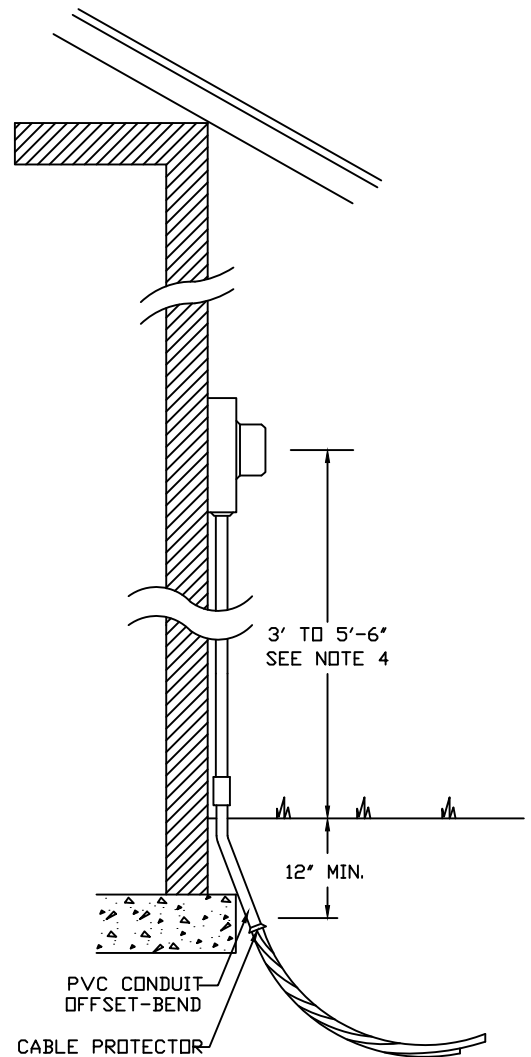
9.01

CUSTOMER OWNED
METER SOCKET

SEE NOTE 3

CUSTOMER'S FACILITIES
(ALTERNATE LOCATIONS-
RIGHT SIDE OR BACK)

MUNICIPALITY
SERVICE RISER



NOTES:

1. BOTTOM OF TRENCH MUST BE FIRMLY TAMPED NEAR BUILDING. CABLE MUST BE POSITIONED FIRMLY AGAINST BOTTOM OF TRENCH DURING BACKFILLING.
2. WIRE BRUSH CONDUCTORS AND APPLY INHIBITOR TO ALUMINUM CONDUCTORS.
3. WHERE STEEL SERVICE RISER MAY BE REQUIRED, USE GROUNDING BUSHING, WASHER, AND #6BC GROUNDING JUMPER.
4. A SPECIAL LOCATION OR MOUNTING HEIGHT MAY BE APPROVED BY ENGINEER WHERE A METER AT STANDARD HEIGHT WOULD CONFLICT WITH SIDEWALK OR DRIVEWAY TRAFFIC.
5. METERS MUST NOT BE LOCATED IN CARPORTS OR AREAS PLANNED FOR FUTURE EXPANSION.
6. POINT OF DELIVERY IS WHERE MUNICIPALITY RISER CONDUCTORS CONNECT TO THE LINE SIDE LUGS OF THE CUSTOMER OWNED METER BASE.
7. FOR EASE OF INSTALLATION AND REMOVAL OF WATTHOUR METERS, A LIGHT COAT OF LUBRICANT CAN BE APPLIED TO THE MALE TERMINALS OF THE WATTHOUR METERS. DO NOT USE INHIBITOR.
8. CHECK ALL LOCAL AND STATE REGULATIONS AND REQUIREMENTS
9. ALL CONDUIT SIZE TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

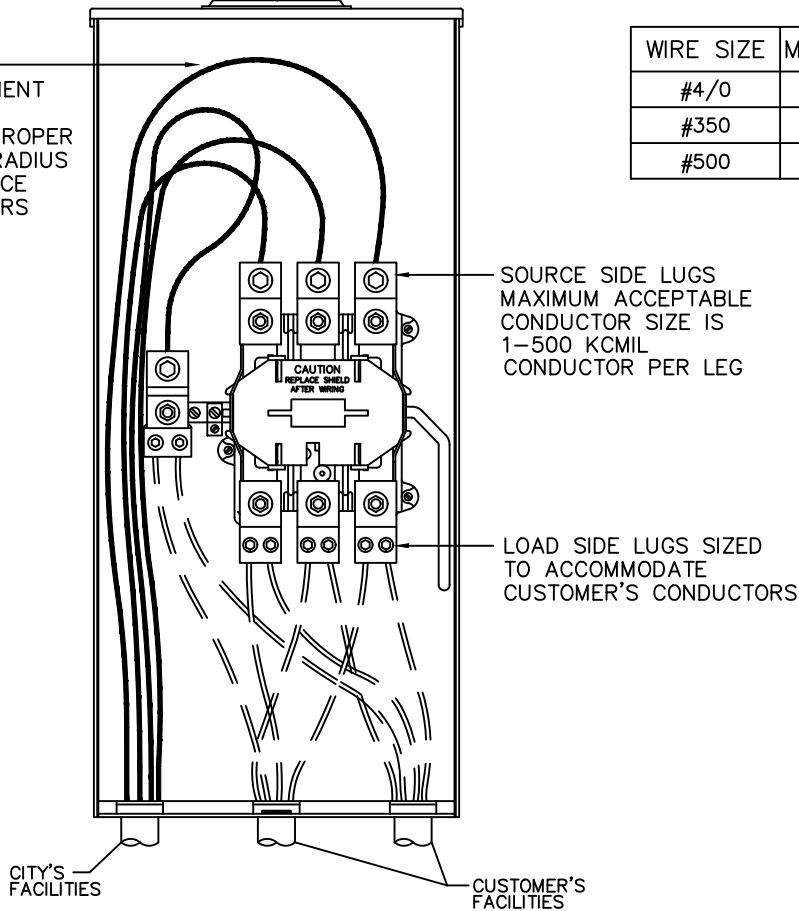
**TYPICAL UNDERGROUND
SINGLE-PHASE SERVICE
(CUSTOMER OWNED METER BASE)**



9.02

NOTE: OVERHEAD SERVICE SOURCE CONDUCTORS WILL ENTER AT TOP OF BASE.

USE TOP COMPARTMENT SPACE TO ACHIEVE PROPER BENDING RADIUS FOR SERVICE CONDUCTORS



WIRE SIZE	MINIMUM BENDING RADIUS
#4/0	3-1/2"
#350	4-1/2"
#500	5-1/2"

SOURCE SIDE LUGS
MAXIMUM ACCEPTABLE
CONDUCTOR SIZE IS
1-500 KCMIL
CONDUCTOR PER LEG

LOAD SIDE LUGS SIZED
TO ACCOMMODATE
CUSTOMER'S CONDUCTORS

CITY'S
FACILITIES

CUSTOMER'S
FACILITIES

THREE-PHASE
120/240 VOLTS
120/208 VOLTS

NOTES:

1. MINIMUM METER BASE DIMENSIONS: (WIDTH 13" X HEIGHT 31" X DEPTH 5")
2. METER BASE CAN BE USED FOR OVERHEAD OR UNDERGROUND SERVICES.
3. METER BASE TO BE USED ON SERVICES WITH TWO BREAKER PANELS WHEN THE COMBINED BREAKER RATINGS DO NOT EXCEED 400 AMPERES. METER BASE IS ALSO TO BE USED ON SERVICES WITH ONE BREAKER PANEL WHEN THE MAIN BREAKER IS RATED 400 TO 225 AMPS, AS LONG AS THE CONTINUOUS LOAD IS 320 AMPS OR LESS.
4. METER BASE SHALL BE UL APPROVED AND HAVE A LEVER-OPERATED BYPASS/JAW-TENSION RELEASE DEVICE.
5. BYPASS HANDLE MUST NEVER BE CUT OFF.
6. METER BASE BYPASS HANDLE MUST BE IN "UP" POSITION TO SET AND REMOVE METERS. THE BYPASS DEVICE IS NOT A DISCONNECT.
7. THE "TOP" LUGS ARE SOURCE SIDE.
8. THE "BOTTOM" LUGS ARE LOAD SIDE.
9. THE METER BASE SHALL BE MOUNTED SO THAT THE METER POSITION WILL BE BETWEEN 3' TO 5'-6" ABOVE FINAL GRADE.
10. CHECK ALL LOCAL AND STATE REGULATIONS AND REQUIREMENTS
11. ALL CONDUIT SIZES TO BE DETERMINED BY THE CITY

SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

SELF-CONTAINED
320 AMPERE METER BASE
(3-PHASE)

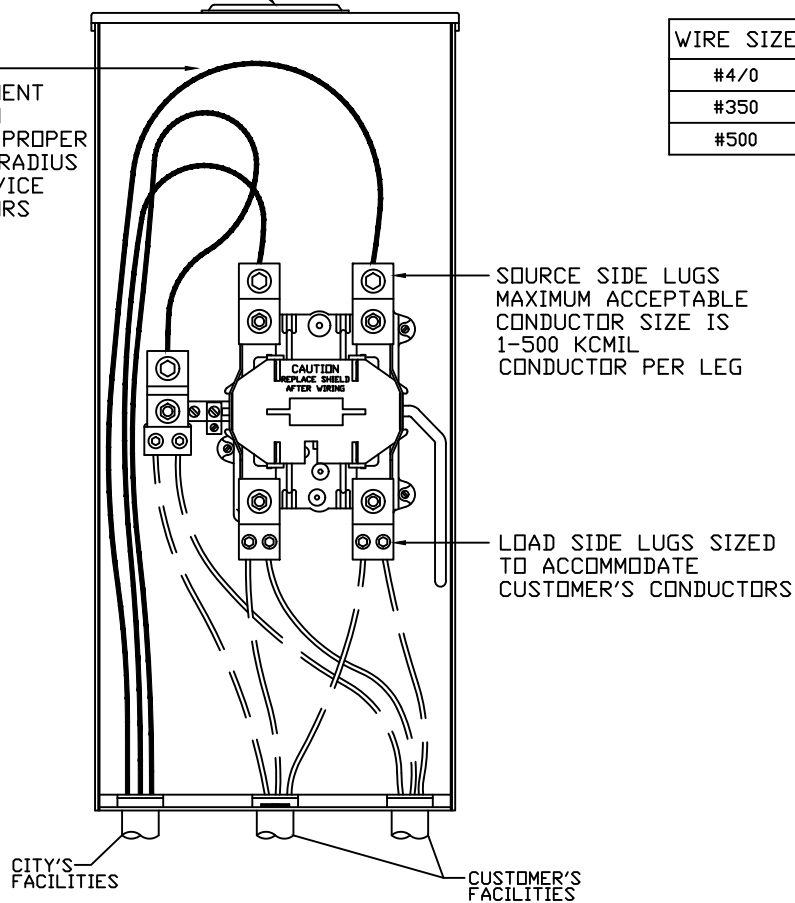


9.03

NOTE: OVERHEAD SERVICE SOURCE CONDUCTORS WILL ENTER AT TOP OF BASE.

USE TOP COMPARTMENT SPACE TO ACHIEVE PROPER BENDING RADIUS FOR SERVICE CONDUCTORS

WIRE SIZE	MINIMUM BENDING RADIUS
#4/0	3-1/2'
#350	4-1/2'
#500	5-1/2'



SINGLE-PHASE
120/240 VOLTS
120/208 VOLTS

NOTES:

1. MINIMUM METER BASE DIMENSIONS: (WIDTH 13" X HEIGHT 31" X DEPTH 5")
2. METER BASE CAN BE USED FOR OVERHEAD OR UNDERGROUND SERVICES.
3. METER BASE TO BE USED ON SERVICES WITH TWO BREAKER PANELS WHEN THE COMBINED BREAKER RATINGS DO NOT EXCEED 400 AMPERES. METER BASE IS ALSO TO BE USED ON SERVICES WITH ONE BREAKER PANEL WHEN THE MAIN BREAKER IS RATED 400 TO 225 AMPS, AS LONG AS THE CONTINUOUS LOAD IS 320 AMPS OR LESS.
4. METER BASE SHALL BE UL APPROVED AND HAVE A LEVER-OPERATED BYPASS/JAW-TENSION RELEASE DEVICE.
5. BYPASS HANDLE MUST NEVER BE CUT OFF.
6. METER BASE BYPASS HANDLE MUST BE IN "UP" POSITION TO SET AND REMOVE METERS. THE BYPASS DEVICE IS NOT A DISCONNECT.
7. THE "TOP" LUGS ARE SOURCE SIDE.
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9. THE METER BASE SHALL BE MOUNTED SO THAT THE METER POSITION WILL BE BETWEEN 3' TO 5'-6" ABOVE FINAL GRADE.
10. CHECK ALL LOCAL AND STATE REGULATIONS AND REQUIREMENTS
11. ALL CONDUIT SIZES TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

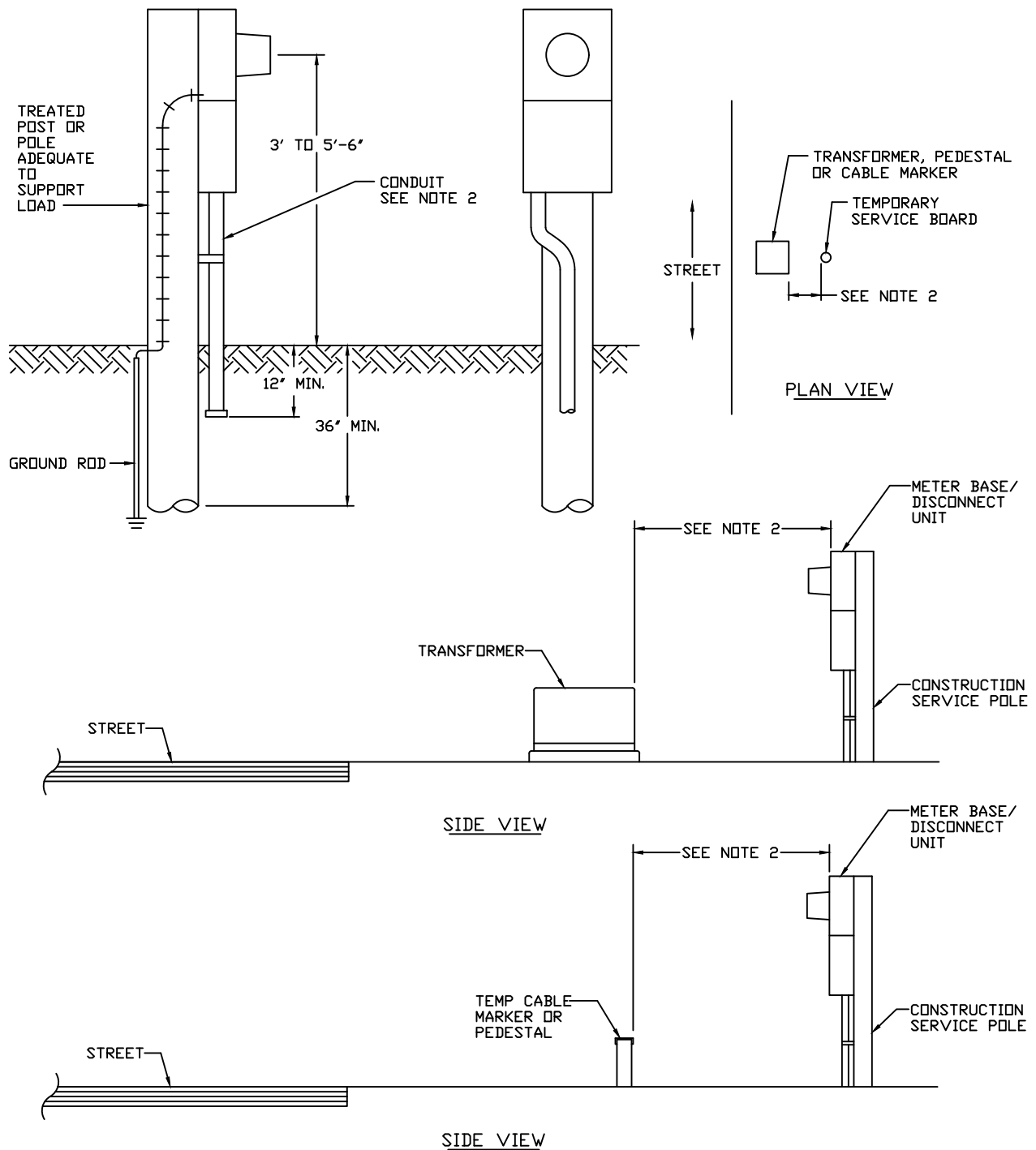
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

SELF-CONTAINED 320 AMPERE METER BASE (SINGLE-PHASE)



9.04



NOTES:

1. CUSTOMER FURNISHES ALL ITEMS EXCEPT METER. INSTALLATION IS TO BE MADE BY ELECTRICIAN TO MEET N.E.C. AND LOCAL ORDINANCES.
2. DISTANCE OF TEMPORARY SERVICE BOARD FROM TRANSFORMER, PEDESTAL OR CABLE MARKER TO BE 10 FT. MAXIMUM.
3. CHECK ALL LOCAL AND STATE REGULATIONS AND REQUIREMENTS
4. ALL CONDUIT SIZES TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

SHELBY STANDARD DETAILS - 2021	
DATE	REVISIONS

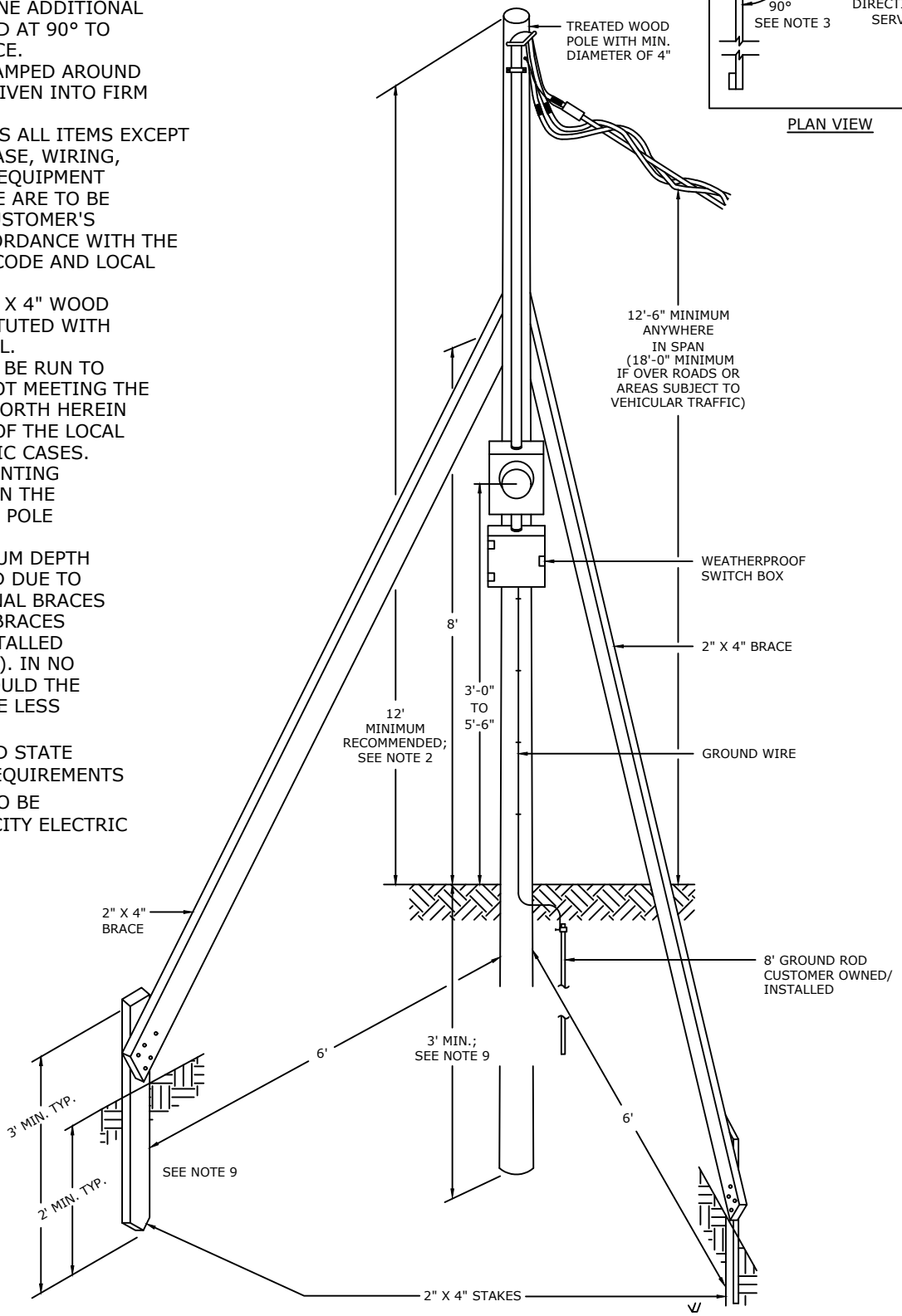
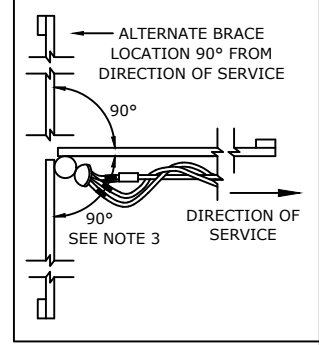
**CONSTRUCTION/TEMPORARY
SERVICE POLE FOR
UNDERGROUND SERVICE AREAS**



9.05

NOTES:

1. ALL DIMENSIONS SHOWN ARE MINIMUM.
2. ADDITIONAL HEIGHT MAY BE NECESSARY TO PROVIDE PROPER SERVICE DROP CLEARANCE.
3. ONE BRACE TO BE IN DIRECTION OF SERVICE. AT LEAST ONE ADDITIONAL BRACE TO BE LOCATED AT 90° TO DIRECTION OF SERVICE.
4. SOIL TO BE FIRMLY TAMPED AROUND POLE AND STAKES DRIVEN INTO FIRM EARTH.
5. CUSTOMER FURNISHES ALL ITEMS EXCEPT METER. THE METER BASE, WIRING, EQUIPMENT SERVICE EQUIPMENT GROUND ON THE POLE ARE TO BE INSTALLED BY THE CUSTOMER'S ELECTRICIAN IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND LOCAL ORDINANCES.
6. SOLID, ONE PIECE, 4" X 4" WOOD POST MAY BE SUBSTITUTED WITH ENGINEER'S APPROVAL.
7. SERVICES SHALL NOT BE RUN TO TEMPORARY POLES NOT MEETING THE REQUIREMENTS SET FORTH HEREIN WITHOUT APPROVAL OF THE LOCAL ENGINEER ON SPECIFIC CASES.
8. HOUSE BRACKET MOUNTING LOCATION SHALL BE IN THE SIDE OF THE SERVICE POLE NOT IN THE TOP.
9. IF THE 3 FOOT MINIMUM DEPTH CANNOT BE OBTAINED DUE TO ROCK, TWO ADDITIONAL BRACES 90 DEGREES TO THE BRACES SHOWN MUST BE INSTALLED (FOUR BRACES TOTAL). IN NO CIRCUMSTANCES SHOULD THE EMBEDMENT DEPTH BE LESS THAN 2 FEET.
10. CHECK ALL LOCAL AND STATE REGULATIONS AND REQUIREMENTS
11. ALL CONDUIT SIZES TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT.

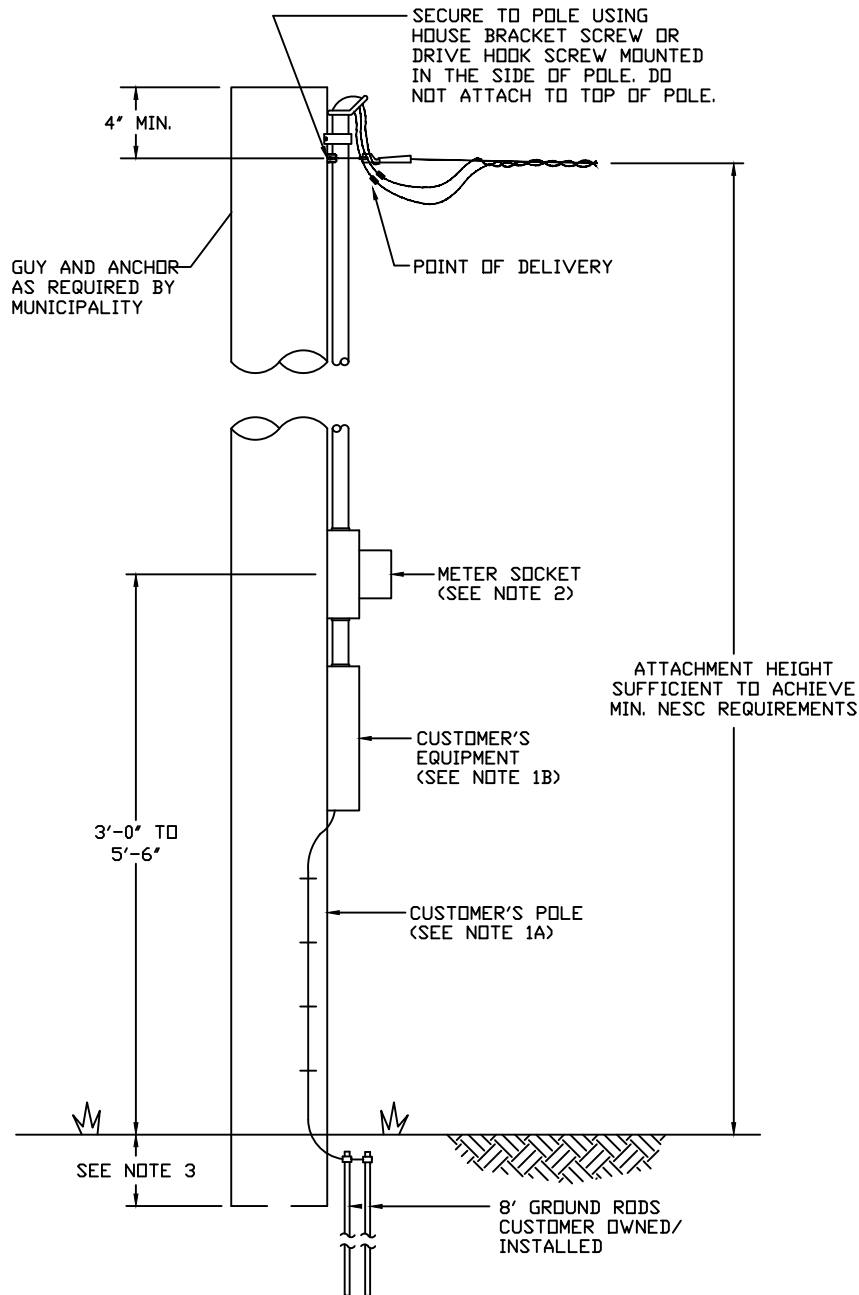


SHELBY STANDARD DETAILS - 2021	
DATE	REVISIONS

OVERHEAD TEMPORARY SERVICE POLE



9.06



NOTES:

1. OWNER PROVIDE AND INSTALL

- A. A 20' CLASS 9 SOUTHERN YELLOW PINE (SYP) POLE OR A 6' X 6' SYP POST THAT IS PROPERLY TREATED WITH A WOOD PRESERVATIVE FOR EARTH CONTACT.
- B. SERVICE ENTRANCE, ALL SERVICE EQUIPMENT BEYOND METER, SERVICE EQUIPMENT GROUND IN ACCORDANCE WITH NEC.

2. OWNER WILL INSTALL

- A. METER SOCKET IN ACCORDANCE WITH NEC.
- 3. MINIMUM SETTING DEPTHS OF 4'-0" UNLESS DICTATED BY MUNICIPALITY.
- 4. THIS DRAWING MAY BE USED FOR VARIOUS TYPES OF OVERHEAD SERVICES:
 - A. OVERHEAD MOBILE HOME SERVICES
 - B. NON-RESIDENTIAL SERVICES

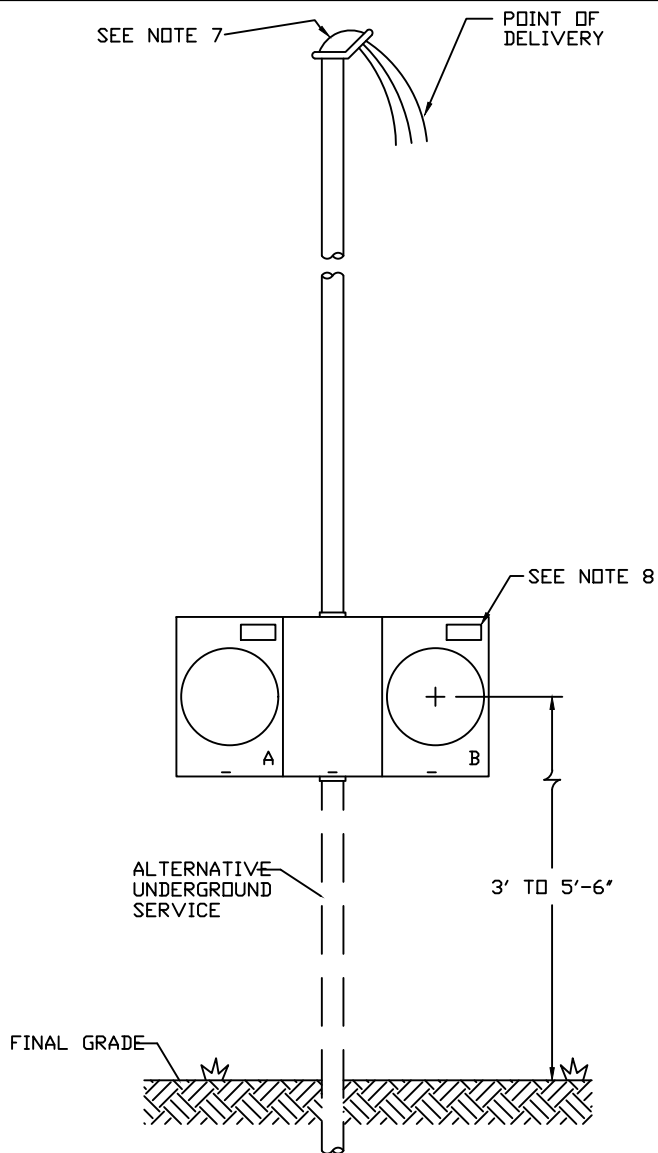
- 5. CHECK LOCAL AND STATE REGULATIONS AND REQUIREMENTS
- 6. ALL CONDUIT SIZES ARE TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT:

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**CUSTOMER OWNED
OVERHEAD SERVICE POLE**



9.07



NOTES:

1. COMPLETE INSTALLATION TO BE SIZED AND INSTALLED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND LOCAL ORDINANCES.
2. SERVICE ENTRANCE CONDUCTORS AND CONDUIT ARE PROPERTY OF BUILDING OWNER AND ARE TO BE FURNISHED AND INSTALLED AT HIS EXPENSE. U.L. APPROVED GANGED METER SOCKETS TO BE FURNISHED AND OWNED BY CUSTOMER. OWNER TO INSTALL ON OUTSIDE OF BUILDING WALL AND BOND TO NEUTRAL.
3. CONDUITS AND CONDUCTORS LEAVING SOCKETS ARE PROPERTY OF BUILDING OWNER AND ARE TO BE FURNISHED AND INSTALLED AT THEIR EXPENSE.
4. IF ANY OF THE INDIVIDUAL SERVICES REQUIRE A METER SOCKET GREATER THAN 200 AMP CAPACITY, THEN A PANEL OF GREATER CAPACITY MUST BE USED.
5. TERMINAL LUG SIZES AND GANGED METER SOCKET DIMENSIONS ARE SHOWN IN MATERIAL STANDARDS CATALOG.
6. POINT OF DELIVERY IS WHERE CUSTOMER'S CONDUCTORS ATTACH TO CITY'S CONDUCTORS AT CONDUIT WEATHERHEAD.
7. WEATHERHEAD ON BUILDINGS TO EXTEND ABOVE CITY DESIGNATED POINT OF ATTACHMENT OF SERVICE DROP.
8. LABELING OF EACH METER ENCLOSURE SHALL BE REQUIRED. LABEL INSIDE AND OUTSIDE METER BASE WITH ADDRESS OR APARTMENT NUMBER.
9. CHECK LOCAL AND STATE REGULATIONS AND REQUIREMENTS
10. ALL CONDUIT SIZES ARE TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

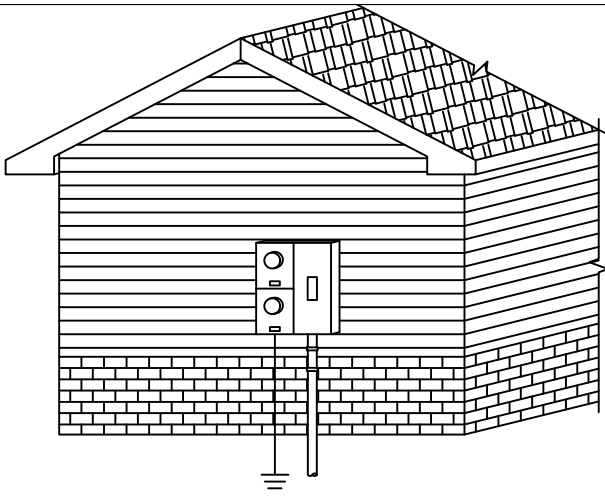
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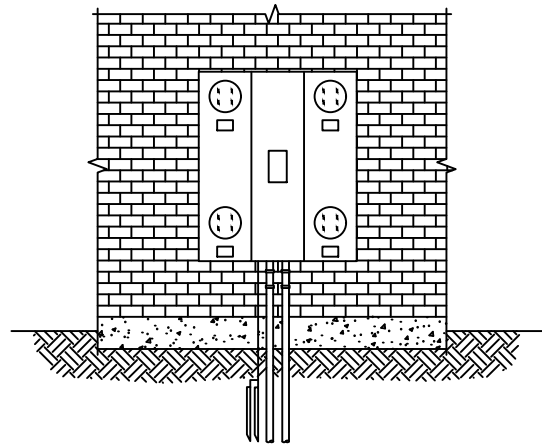
**GROUP METERING
INSTALLATION
(2 GANG HORIZONTAL TYPE)**



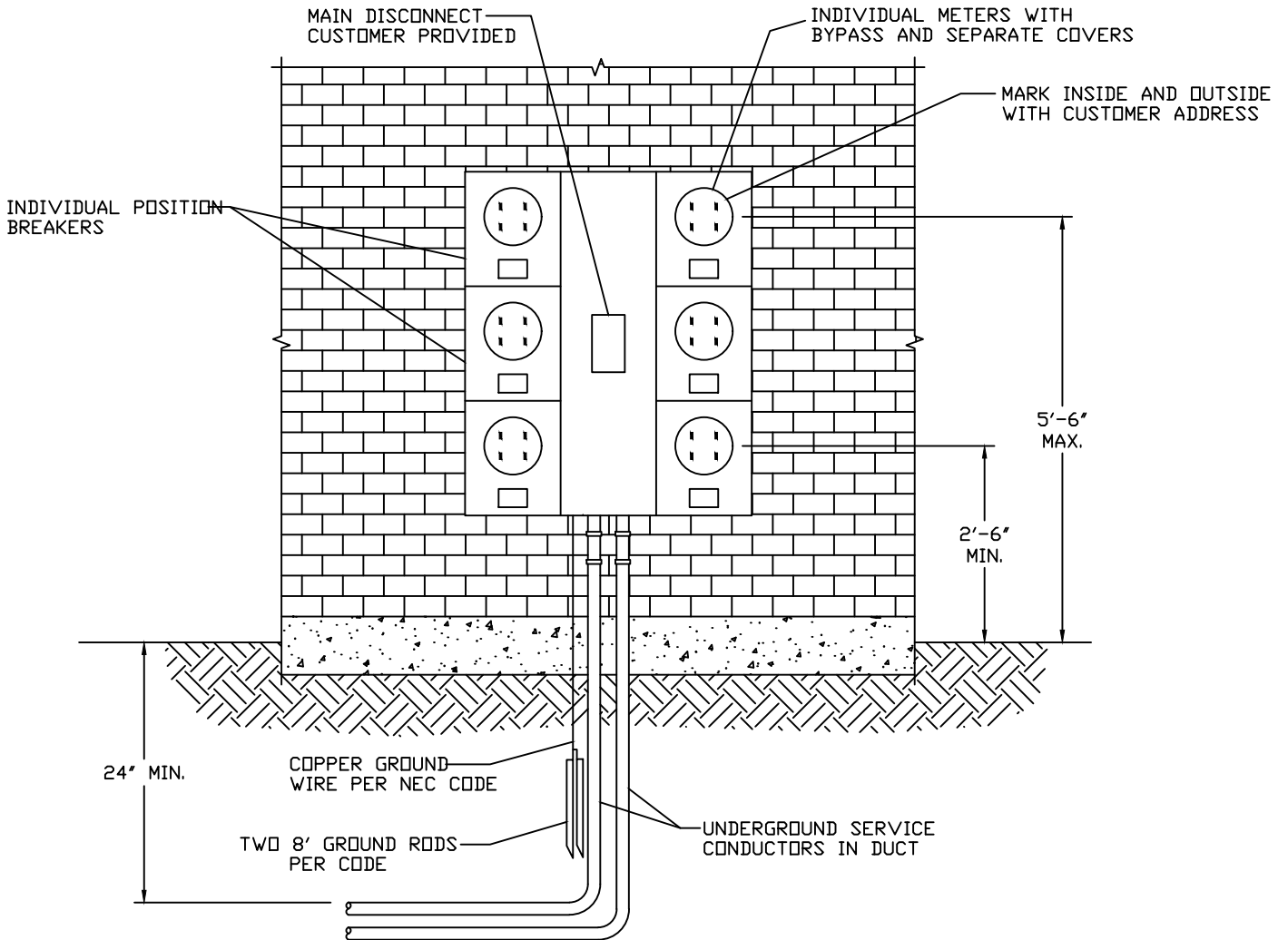
9.08



TWO GANG



FOUR GANG



SIX GANG

NOTES:

1. INDIVIDUAL METERS CAN BE LOCATED ON EITHER SIDE OF MAIN BREAKER
2. EACH METER COVER SHALL BE LABELED INSIDE AND OUTSIDE WITH ADDRESS/ UNIT NUMBERS
3. CHECK LOCAL AND STATE REGULATIONS AND REQUIREMENTS
4. ALL CONDUIT SIZES WILL BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

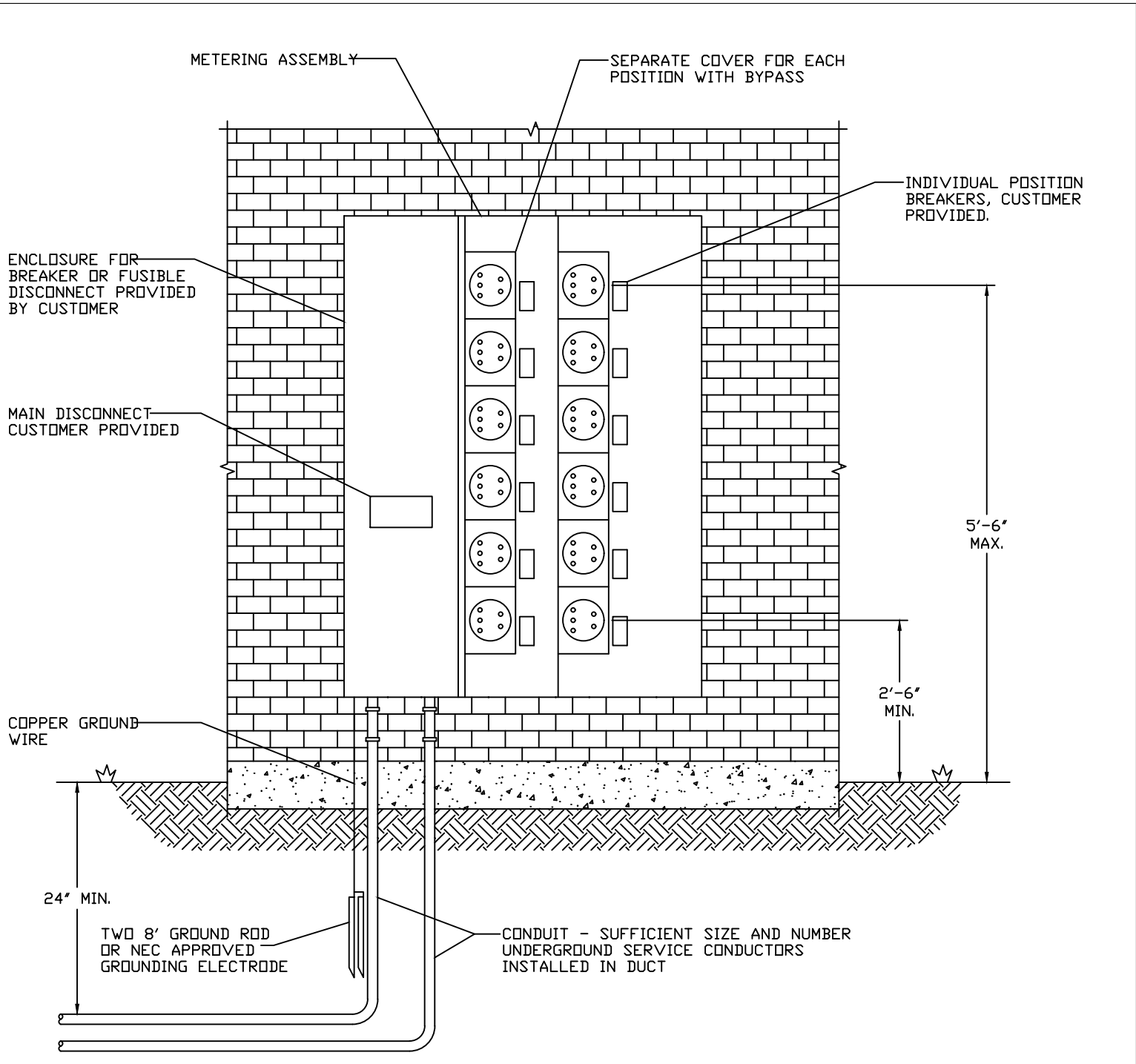
SHELBY STANDARD DETAILS - 2021

DATE	REVISIONS

**2, 4, AND 6 PRE-ASSEMBLED
MODULAR METERING
INSTALLATION**



9.09



NOTES:

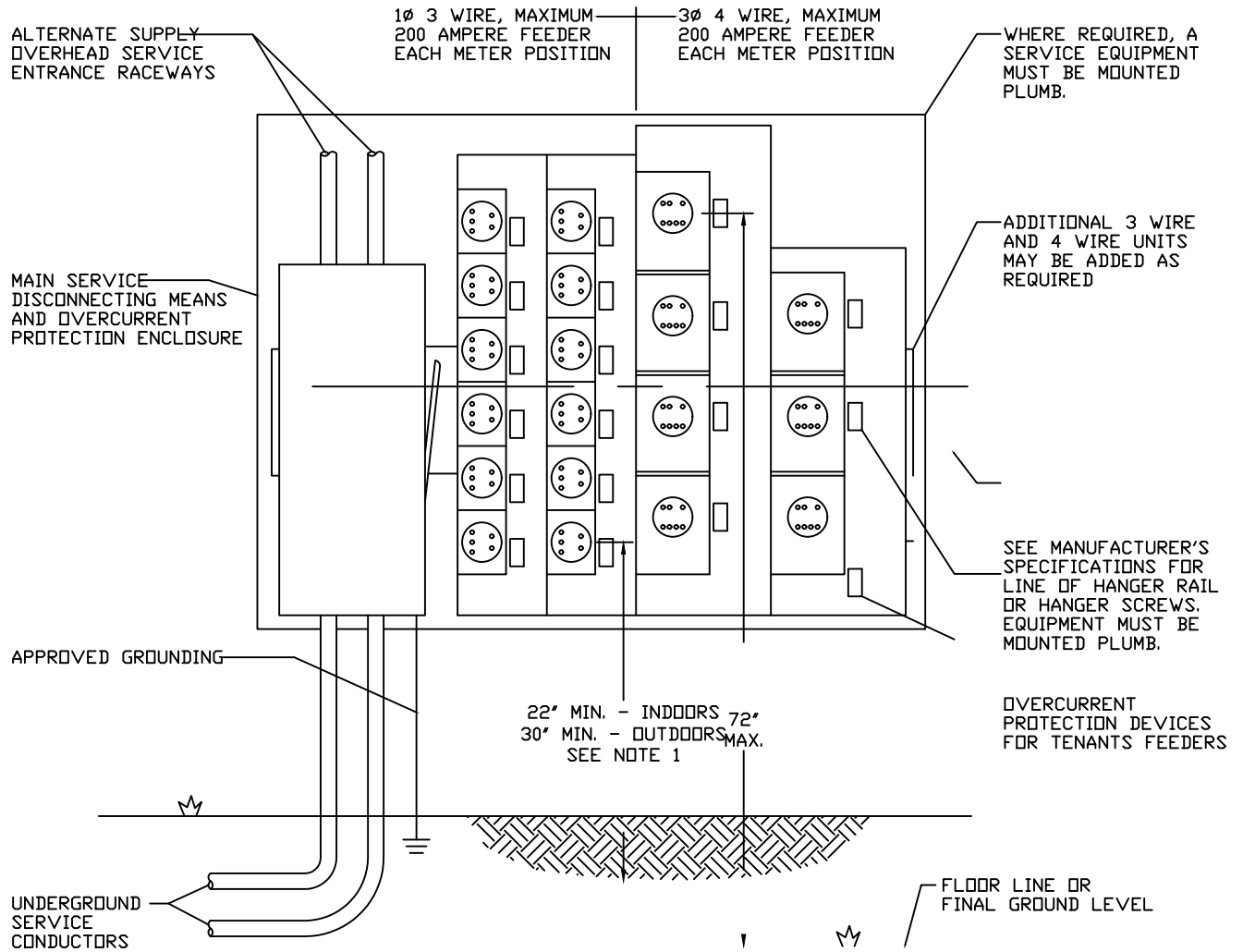
1. INDIVIDUAL METERS CAN BE LOCATED ON EITHER SIDE OF MAIN BREAKER.
2. EACH METER COVER SHALL BE LABELED INSIDE AND OUTSIDE WITH ADDRESS/UNIT NUMBER.
3. CHECK LOCAL AND STATE REGULATIONS AND REQUIREMENTS
4. ALL CONDUIT SIZES ARE TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

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**LARGE, SINGLE-PHASE,
PRE-ASSEMBLED MODULAR
METERING INSTALLATION**



9.10



NOTES:

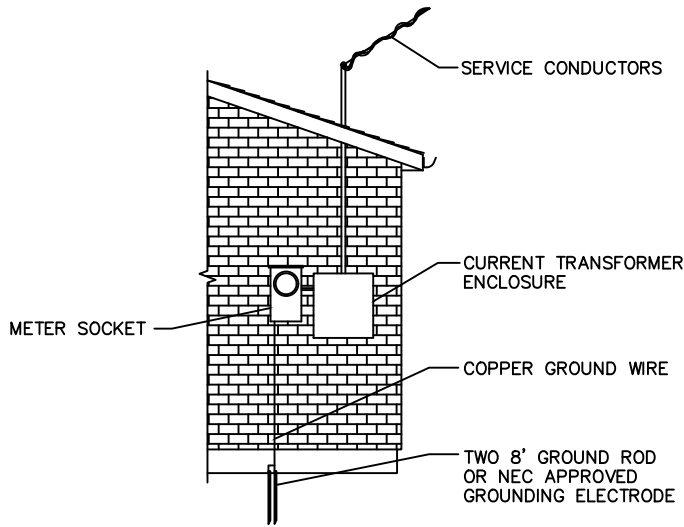
1. MOUNTING HEIGHT MINIMUM THIS MINIMUM DIMENSION IS ACCEPTABLE WHEN THE MODULAR UNITS ARE MOUNTED OUTDOORS IN A BOXED-IN, VENTED ENCLOSURE.
2. ALL METER COVERS SHALL BE CLEARLY MARKED INSIDE AND OUTSIDE WITH ADDRESS, APARTMENT NUMBER, ETC.
3. CHECK LOCAL AND STATE REGULATIONS AND REQUIREMENTS
4. ALL CONDUIT SIZES ARE TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT
5. ALL EQUIPMENT AND DEVICES SHOULD BE INSTALLED WITH MANUFACTURES INSTRUCTIONS

SHELBY STANDARD DETAILS - 2021	
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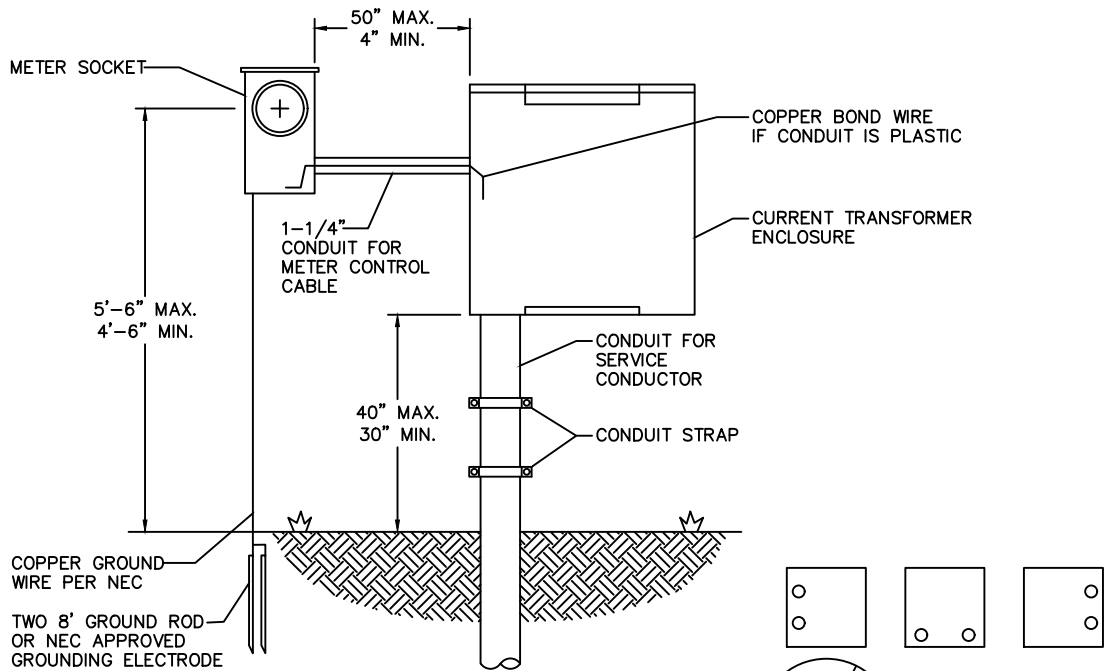
**FOUR WIRE, PRE-ASSEMBLED,
MODULAR METERING
INSTALLATION**



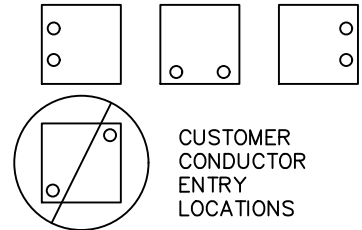
9.11



OVERHEAD INSTALLATION



UNDERGROUND INSTALLATION



CUSTOMER CONDUCTOR ENTRY LOCATIONS

NOTES:

1. NO EQUIPMENT SHOULD BE MOUNTED WITHIN 18" EITHER SIDE OF CURRENT TRANSFORMER CABINET.
2. BONDING LUGS SHOULD BE MOUNTED INSIDE BOTTOM SO AS NOT TO INTERFERE WITH CONDUIT RISER.
3. CUSTOMER LOAD SIDE CONDUCTORS SHOULD ENTER AS PICTURED.
4. ALL NEC REQUIRED BONDING WILL BE COMPLETED BY CONTRACTOR BEFORE SERVICE WILL BE ENERGIZED.
5. SEE STD. NO. 9.14 FOR MINIMUM METERING CABINET SIZE.
6. CHECK LOCAL AND STATE REGULATIONS AND REQUIREMENTS
7. ALL CONDUIT SIZES ARE TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

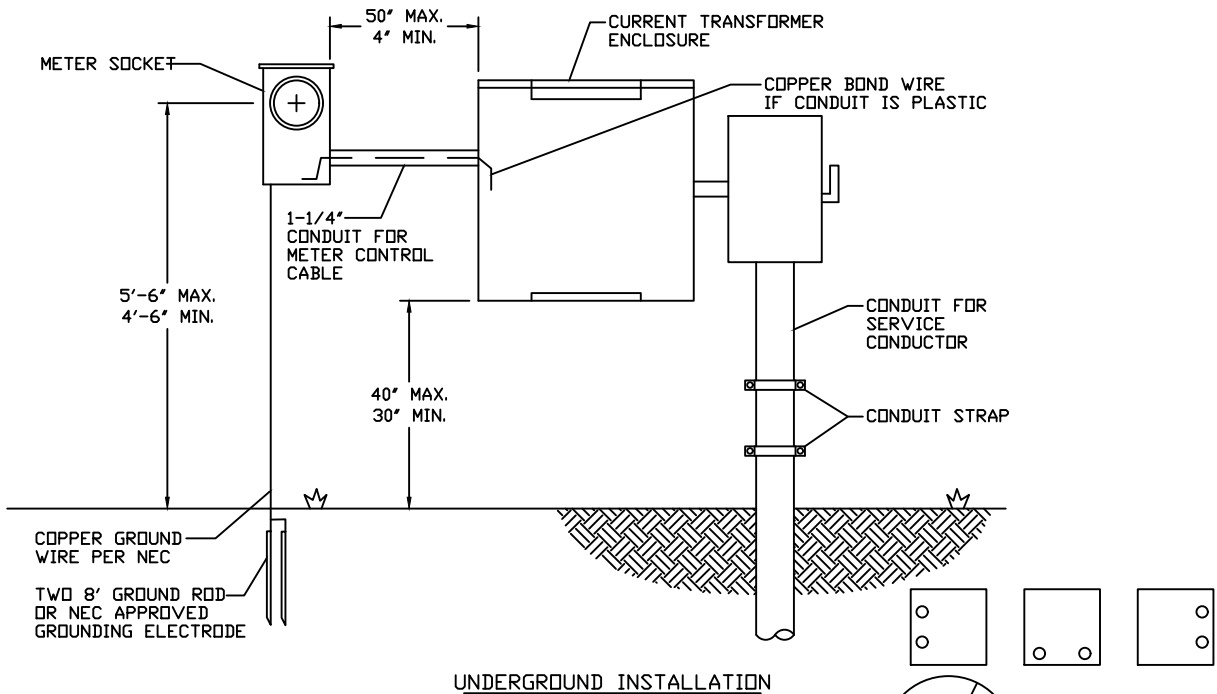
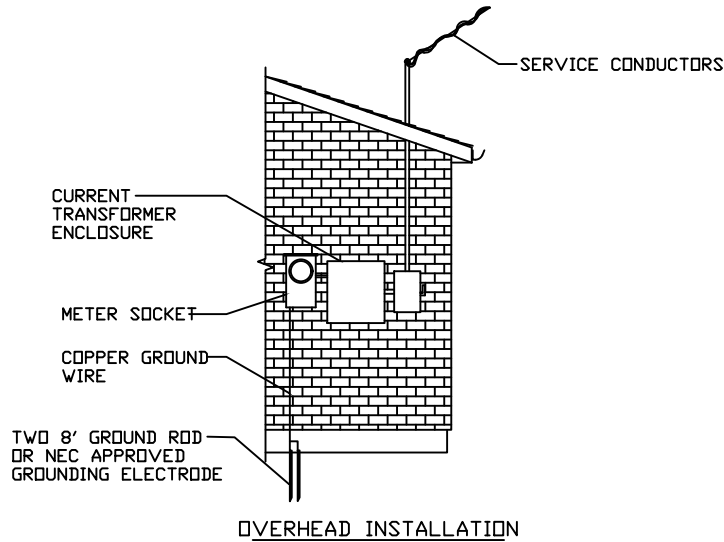
SHELBY STANDARD DETAILS - 2021

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CURRENT TRANSFORMER CABINET LOCATION



9.12



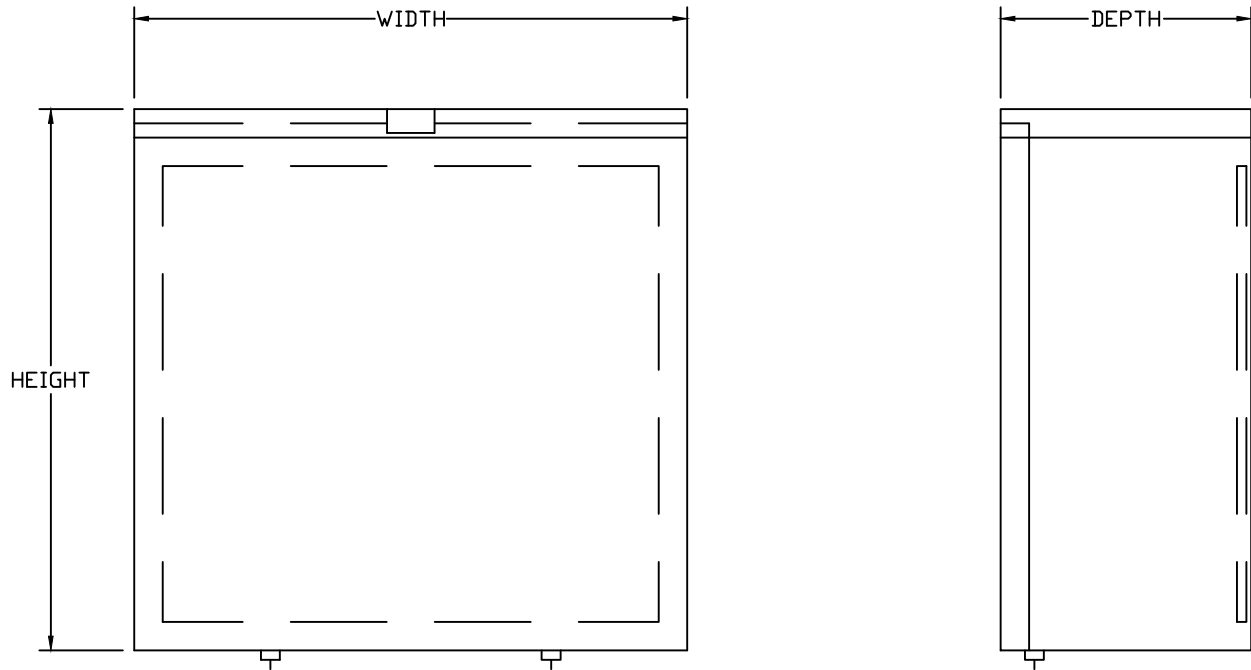
NOTES:

1. NO EQUIPMENT SHOULD BE MOUNTED WITHIN 18" EITHER SIDE OF CURRENT TRANSFORMER CABINET.
2. BONDING LUGS SHOULD BE MOUNTED INSIDE BOTTOM SO AS NOT TO INTERFERE WITH CONDUIT RISER.
3. CUSTOMER LOAD SIDE CONDUCTORS SHOULD ENTER AS PICTURED.
4. ALL NEC REQUIRED BONDING WILL BE COMPLETED BY CONTRACTOR BEFORE SERVICE WILL BE ENERGIZED.
5. CHECK LOCAL AND STATE REGULATIONS AND REQUIREMENTS.
6. ALL CONDUIT SIZES ARE TO BE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

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CURRENT TRANSFORMER CABINET LOCATION DISCONNECT BEFORE CABINET

9.13



DEPTH	WIDTH	HEIGHT	BOARD SIZE
12"	36"	36"	33" X 33"

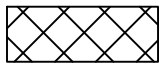
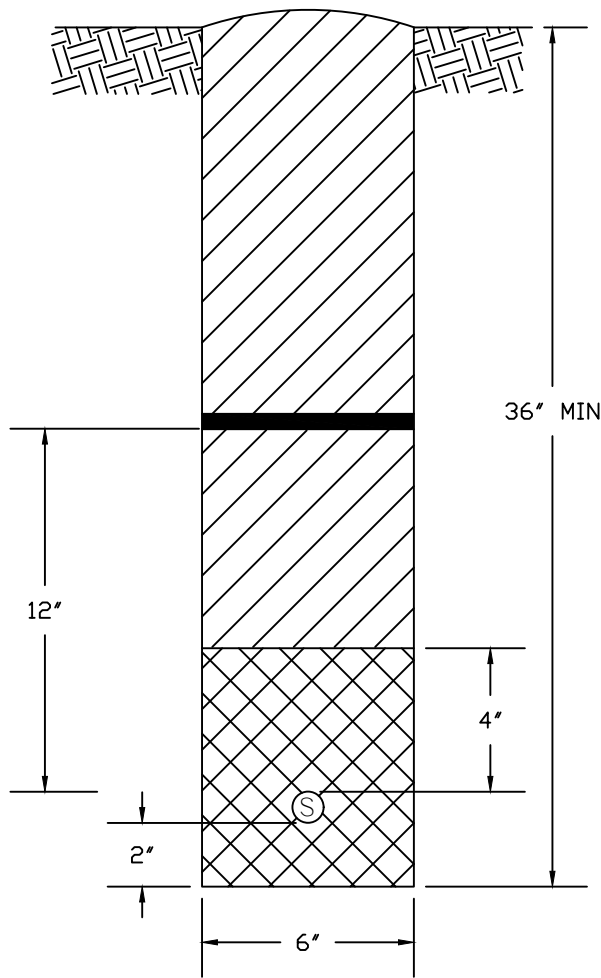
NOTES:

1. MOUNTING BOARD SHALL BE 3/4" EXTERIOR GRADE PLYWOOD (TREATED) TO BE USED WITH OR WITHOUT H-BAR MOUNTING RAILS, AS SPECIFIED BY THE CITY.
2. COVER SHALL BE REMOVABLE AND HAVE PROVISIONS FOR SEALING AND PADLOCKING.
3. CABINET SHALL BE FURNISHED WITH AL-CU GROUND LUG THAT WILL ACCOMMODATE 2-#12 CONDUCTORS ON BOTTOM OF CABINET.
4. CABINET SHALL BE CONSTRUCTED TO NEMA 3R OR GREATER SPECIFICATIONS.
5. CHECK LOCAL AND STATE REGULATIONS AND REQUIREMENTS
6. ALL CONDUIT SIZES ARE DETERMINED BY THE CITY ELECTRIC DEPARTMENT

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**CURRENT TRANSFORMER
ENCLOSURE SPECIFICATION**

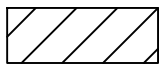




ROCK DUST



MARKER TAPE



COMPACTED BACKFILL
UNLESS OTHERWISE
SPECIFIED



UNDISTURBED EARTH

NOTES:

1. DEPTHS SPECIFIED ARE TO FINISHED GRADE.
2. OVER-EXCAVATE TRENCHES AS NECESSARY TO ALLOW FOR (a) ROCK DUST BEDDING OR (b) LOOSE SANDY SOILS OR (c) WHERE MORE THAN ONE CABLE WILL BE INSTALLED IN TRENCH AND LAYING FIRST CABLE MAY CAUSE TRENCH DAMAGE AND REDUCTION IN DEPTH.
3. BACK FILLING IS PART OF THESE UNITS AND SHALL BE INCLUDED IN ALL TRENCH UNITS.
4. MARKER TAPE SHALL BE INSTALLED IN ALL TRENCHES 12" ABOVE CONDUCTOR.
5. ROCK DUST IS REQUIRED IF TRENCHING IN ROCKY AREAS & DIRECTED BY CITY OF SHELBY ELECTRIC DEPARTMENT

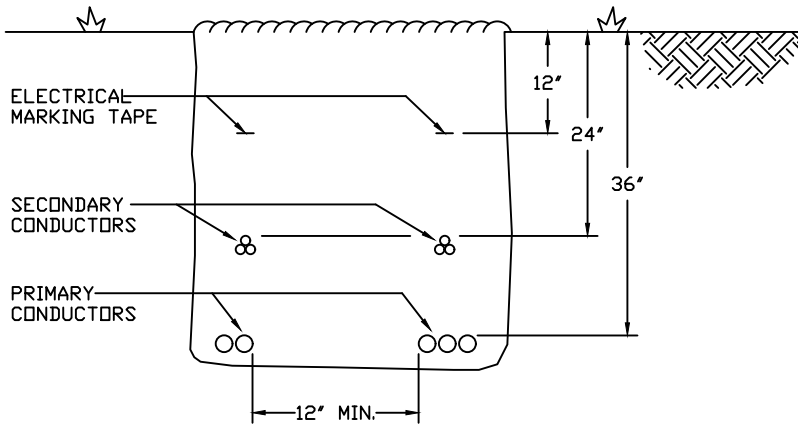
SHELBY STANDARD DETAILS - 2021

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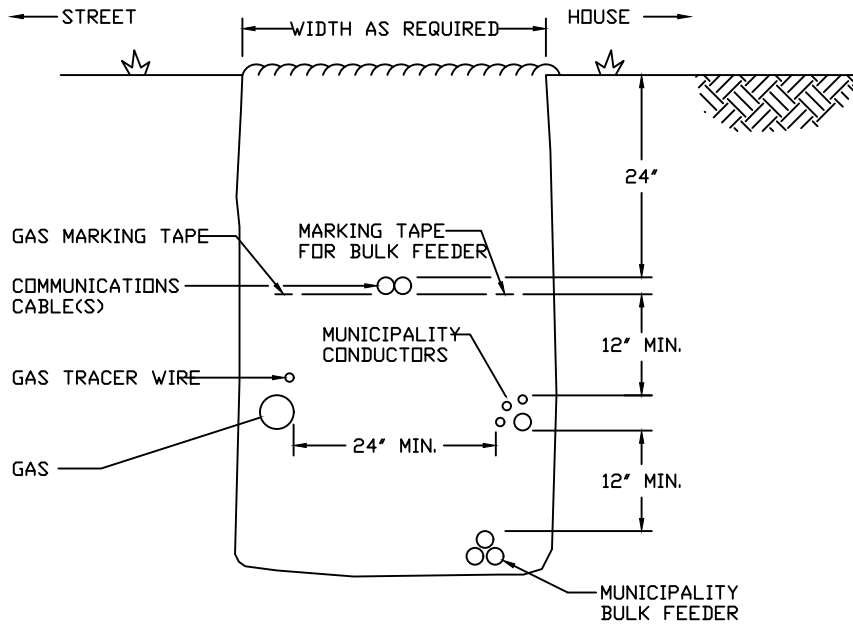
**TRENCHING UNIT
(ONE SECONDARY CABLE OR
CONDUIT ASSEMBLY)**



9.15



ELECTRIC TRENCH FOR PRIMARY,
SECONDARIES AND SERVICES



JOINT TRENCH DETAILS

NOTES:

1. RIGHTS OF WAY AND STREETS SHALL BE CLEARED AND WITHIN 6" OF FINAL GRADE BEFORE TRENCHING.
2. MUNICIPALITY UNDERGROUND CABLE WITHIN DOT SHOULD BE INSTALLED WITH 36" COVER. SHALLOWER COVER REQUIREMENTS MAY BE ALLOWED BY THE GOVERNING AUTHORITY. SUPPLEMENTAL MAY BE USED SUCH AS STEEL CONDUIT OR CONCRETE ENCASED CONDUIT. A VARIANCE APPROVAL IS REQUIRED ON DEDICATED STREET RIGHTS OF WAY. AN **ENCROACHMENT AGREEMENT IS REQUIRED ON RIGHTS OF WAY.**
3. SEPARATE TRENCHES FOR PRIMARY AND SECONDARY CONDUCTORS.
4. SEPARATE TRENCHES FOR GAS AND COMMUNICATION LINES.

SHELBY STANDARD DETAILS - 2021

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ELECTRIC TRENCH DETAILS



PRIMARY OR SECONDARY CABLES - DIRECT BURY OR IN CONDUIT			
PARALLELED WITH	PRIMARY HORIZONTAL (INCHES)	PARALLELED WITH	MINIMUM VERTICAL (INCHES)
COMMUNICATION LINES	12	COMMUNICATION LINES	12
WATER LINES	*36	WATER LINES	12
SEWER LINES	36	SEWER LINES	12
FUEL LINES	36	FUEL LINES	12
STEAM LINES	60	STEAM LINES	36
CUSTOMER OWNED CABLES	36	CUSTOMER OWNED CABLES	12

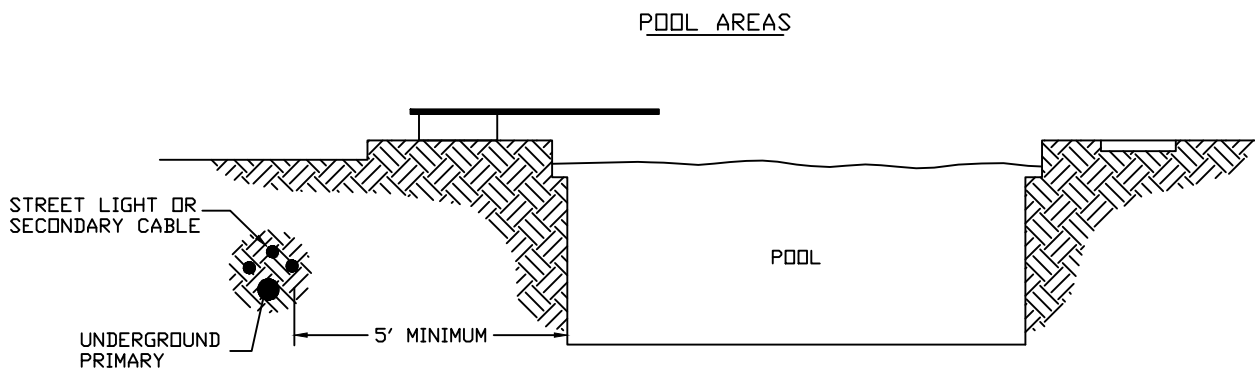
PRIMARY OR SECONDARY CABLES - IN CONDUIT			
PARALLELED WITH	PRIMARY HORIZONTAL (INCHES)	PARALLELED WITH	MINIMUM VERTICAL (INCHES)
COMMUNICATION LINES	3-CONCRETE	COMMUNICATION LINES	12
IN CONDUIT	4-MASONRY 12-TAMPED EARTH	IN CONDUIT	-
WATER LINES	36	WATER LINES	12
SEWER LINES	36	SEWER LINES	12
FUEL LINES	36	FUEL LINES	12
STEAM LINES	60	STEAM LINES	36
CUSTOMER OWNED CABLES	36	CUSTOMER OWNED CABLES	12

*IF CONDITIONS REQUIRE SYSTEMS TO BE INSTALLED IN PARALLEL WHERE CLEARANCE WILL BE LESS THAN MINIMUM, BOTH PARTIES SHALL AGREE TO THE METHOD AND THAT CLEARANCE IS SUFFICIENT TO PERMIT MAINTENANCE OF BOTH SYSTEMS.

PRIMARY CABLES AND COMMUNICATIONS CABLES SHALL ALWAYS HAVE A MINIMUM OF 12" SEPARATION AS SHOWN ABOVE (NO RANDOM-LAY SHOULD BE USED). SECONDARY SERVICE CABLES AND COMMUNICATIONS CABLES MAY HAVE A RANDOM-LAY (NO VERTICAL OR HORIZONTAL CLEARANCES) IF BOTH PARTIES ARE IN AGREEMENT. OTHER CLEARANCES LESS THAN ABOVE SHALL HAVE THE APPROVAL OF THE MUNICIPALITY.

WHERE A CABLE CROSSES UNDER ANOTHER UNDERGROUND STRUCTURE, THE STRUCTURE SHALL BE SUITABLY SUPPORTED TO PREVENT TRANSFER OF A HARMFUL LOAD ONTO THE CABLE SYSTEM.

PRIMARY AND SECONDARY CABLES SHOULD NOT BE INSTALLED WITHIN 10' OF A SWIMMING POOL OR ITS AUXILIARY EQUIPMENT. CONDUCTOR SHALL BE PLACED IN APPROVED CONDUIT.

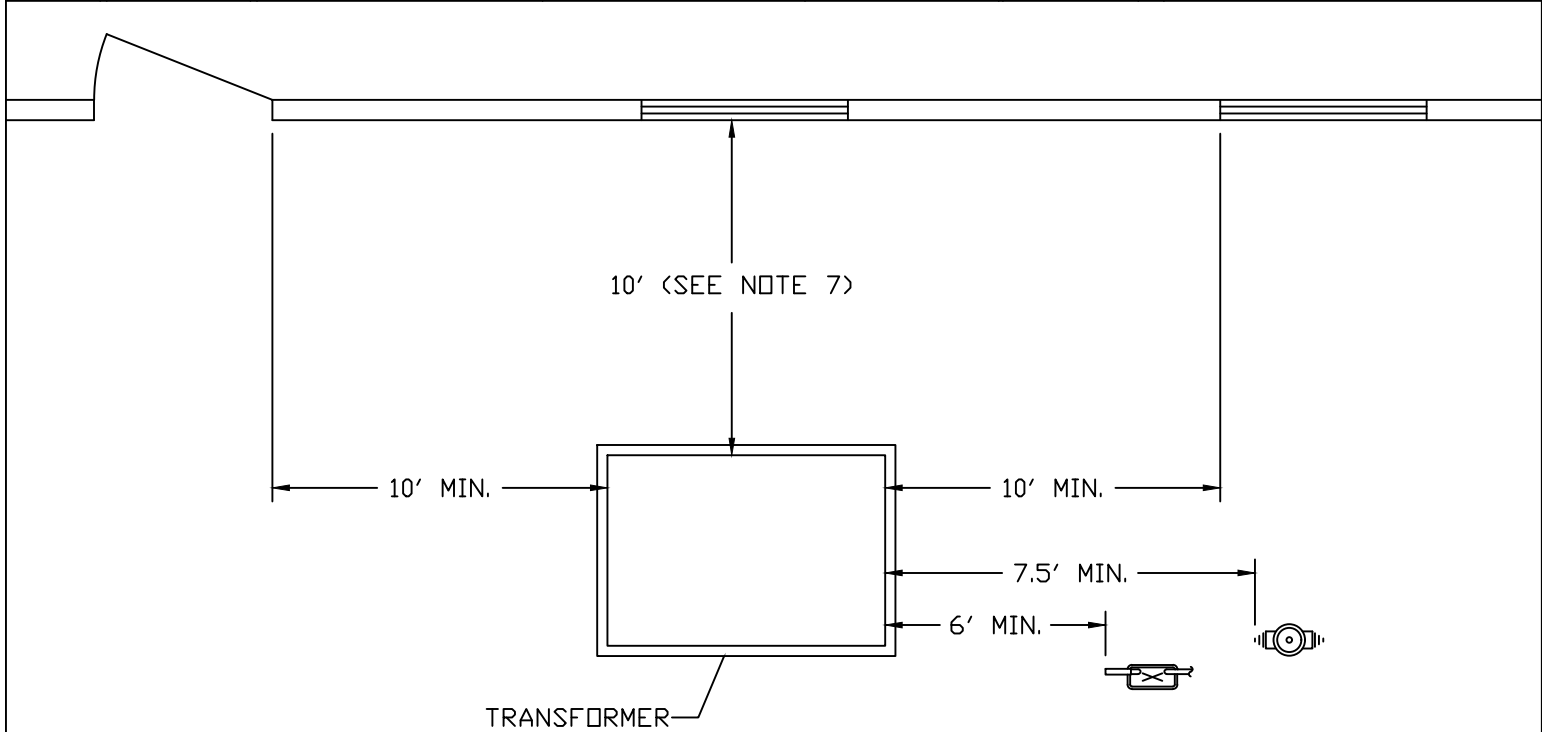
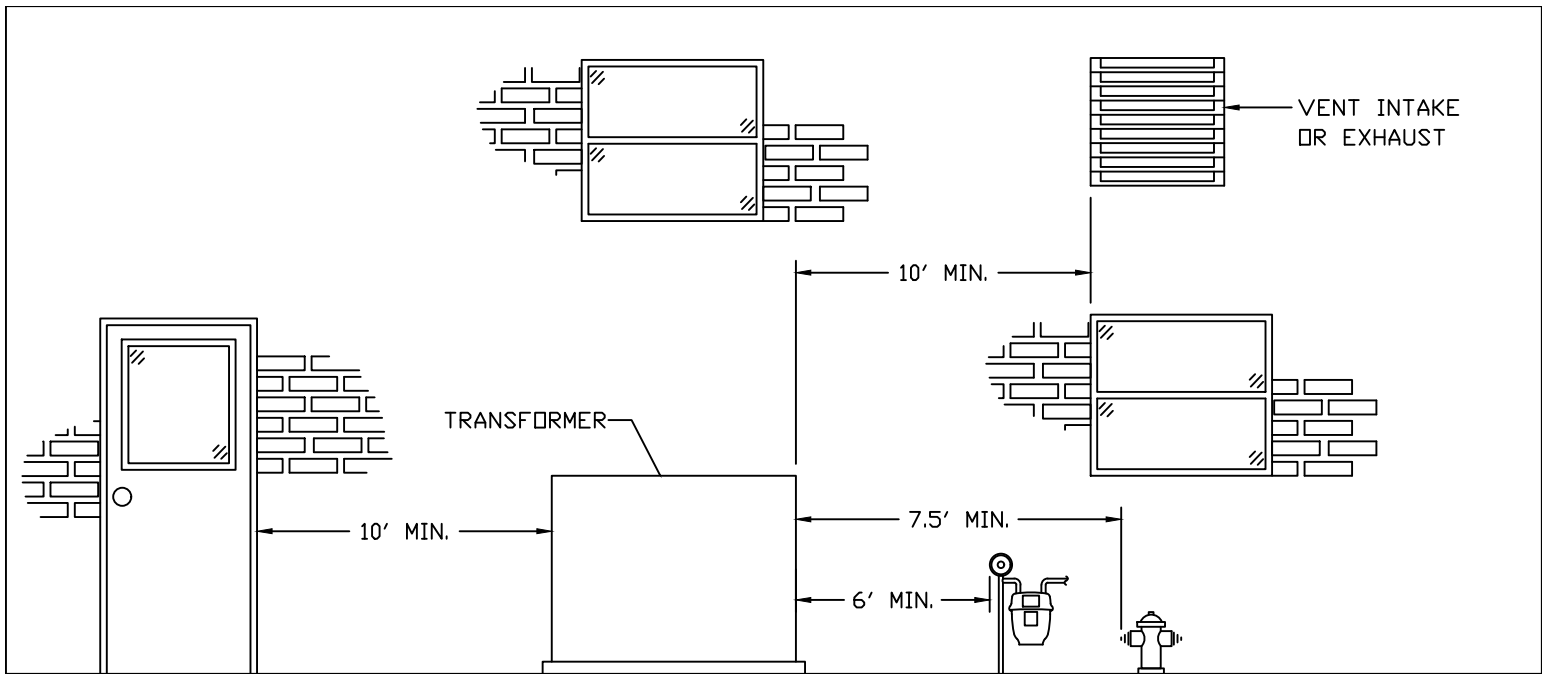


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UNDERGROUND CLEARANCES FOR OTHER UTILITIES



9.17



NOTES:

1. THE TRANSFORMER SHALL BE INSTALLED SO THAT THE FRONT OF THE UNIT DOES NOT FACE THE BUILDING.
2. ADEQUATE PASSAGEWAYS TO ACCOMMODATE LINE TRUCKS OR OTHER NECESSARY LIFTING AND HAULING EQUIPMENT SHALL BE PROVIDED TO ALLOW FOR MAINTENANCE, OPERATION OR REPLACEMENT. NO PORTION OF THE BUILDING SHALL EXTEND OVER THE TRANSFORMER.
3. 20' MINIMUM DIMENSION REQUIRED FOR FIRE ESCAPES. 10' MINIMUM DIMENSION REQUIRED FOR OPEN STAIRWAYS.
4. THERE SHALL BE NO ABOVE GROUND OBSTRUCTIONS WITHIN 10' OF THE FRONT OF THE TRANSFORMER OR WITHIN 3' OF THE SIDES AND 3' OF THE BACK.
5. IT SHALL BE THE CUSTOMER'S RESPONSIBILITY TO COMPLY WITH ANY INSURANCE REGULATIONS, BUILDING CODES, AND LOCAL ORDINANCES AFFECTING THE INSTALLATION.
6. 10' MINIMUM SEPARATION REQUIRED FOR GENERATORS AND GENERATOR FUEL TANKS.
7. DISTANCE FROM TRANSFORMER TO WALL MAY BE REDUCED TO 3' FOR STEEL OR MASONRY WALLS IF NO WINDOW IS LESS THAN 10' FROM TRANSFORMER.

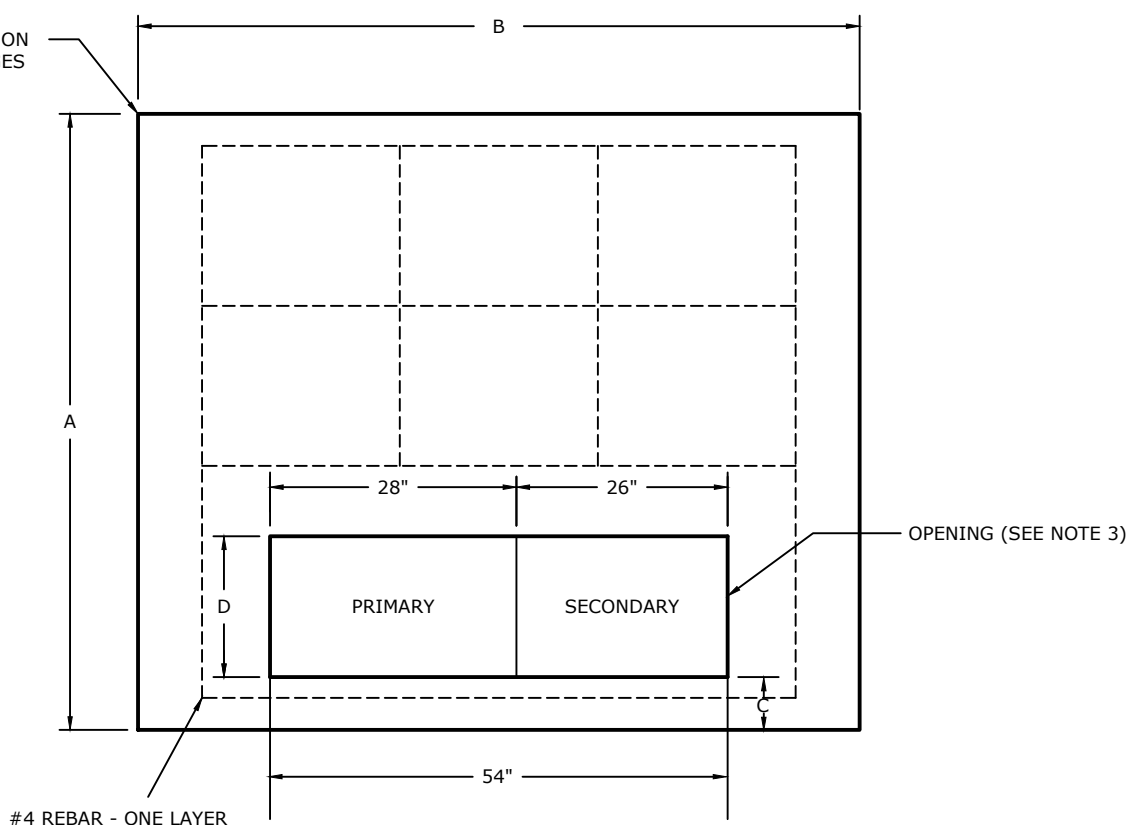
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LOCATION OF PAD-MOUNTED TRANSFORMERS

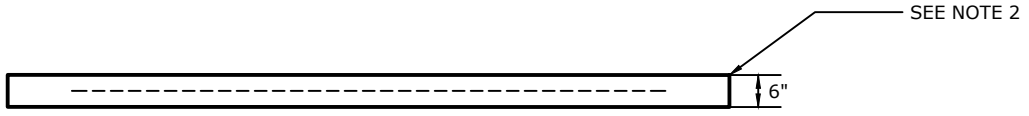


9.18

1" CHAMFER ON ALL TOP EDGES



TOP VIEW OF TRANSFORMER PAD



FRONT VIEW

PAD DIMENSIONS			
TRANSFORMER SIZE	A	B	C
< 300KVA	54"	78"	6"
300 - 1500KVA	96"	94"	6"
1500 - 2500KVA	103"	100"	9"

INSIDE DIMENSION	
RATING	D (MINIMUM)
95 KV BIL (12 KV)	15"

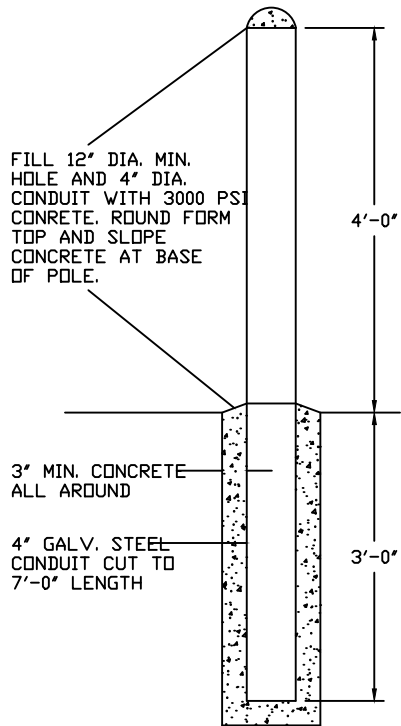
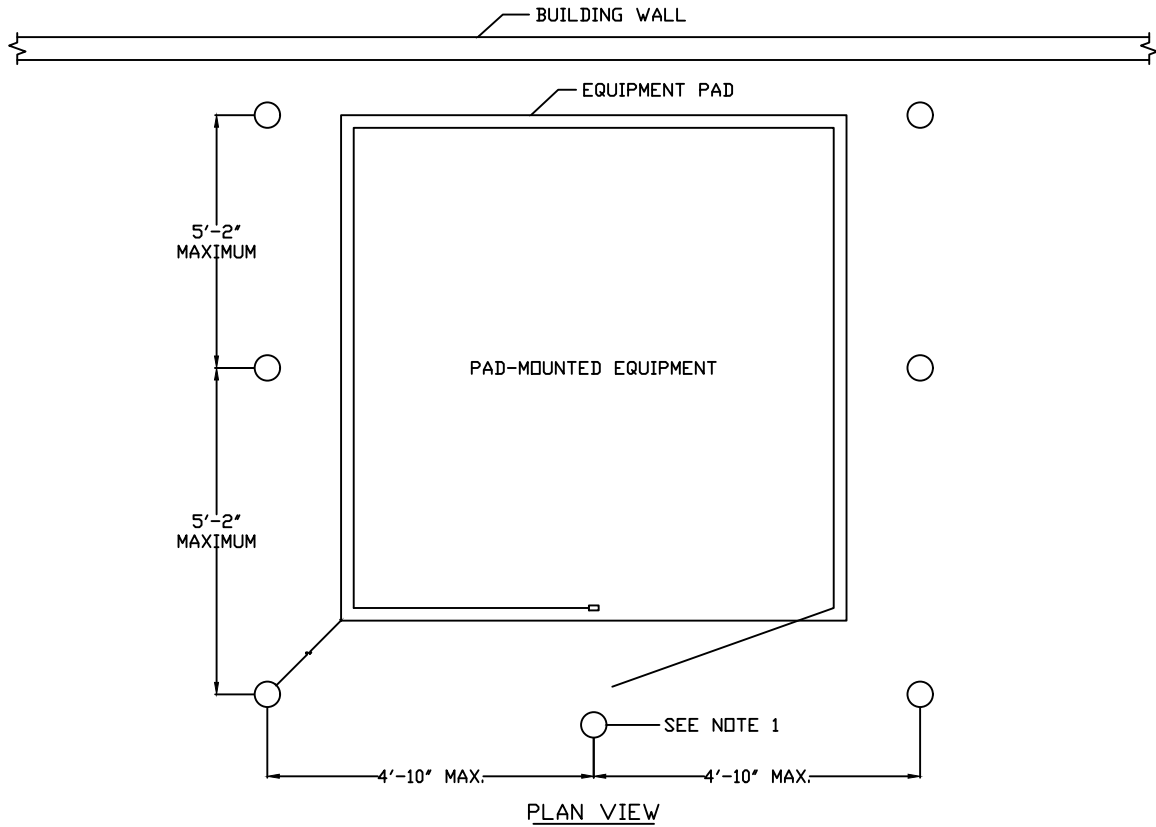
NOTES:

1. TOP OF PAD TO BE 4" ABOVE FINISH GRADE.
2. PAD TO BE A MINIMUM OF 6" THICK CONSISTING OF 3000 PSI AT 21 DAYS CONCRETE WITH WIRE MESH REINFORCEMENT.
3. OPENING TO BE CENTERED IN TRANSFORMER PAD.

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**CONCRETE PAD SPECIFICATIONS
FOR 3-PHASE PAD-MOUNTED
TRANSFORMERS**

9.19

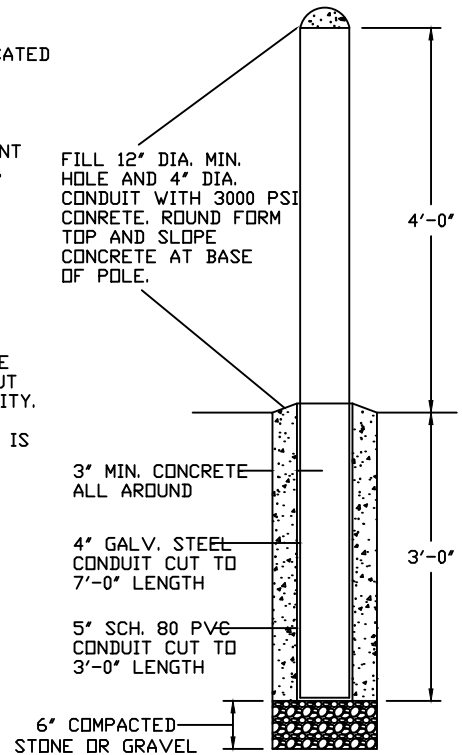


STANDARD POLE

NOTES:

1. THIS POLE SHOULD BE CENTRALLY LOCATED 2'-0" IN FRONT OF THE EQUIPMENT BETWEEN THE DOORS TO ACCOMMODATE THE DOOR SWING AND SHOULD BE REMOVABLE. THE POLE SHOULD BE LOCATED APPROXIMATELY 3'-6" IN FRONT OF THE EQUIPMENT (NO LESS THAN 3').
2. EQUIPMENT PROTECTION POLES SHOULD BE INSTALLED ON ALL SIDES OF THE EQUIPMENT WHICH ARE SUBJECT TO VEHICULAR TRAFFIC OR EQUIPMENT.
3. POLES SHOULD BE PAINTED YELLOW.
4. CUSTOMER MAY PROVIDE AN ALTERNATE DESIGN FOR A REMOVABLE BARRIER, BUT MUST BE APPROVED BY THE MUNICIPALITY.

REMOVE ALL PROTECTIVE CAP WHEN POLE IS



REMOVABLE POLE

SHELBY STANDARD DETAILS - 2021

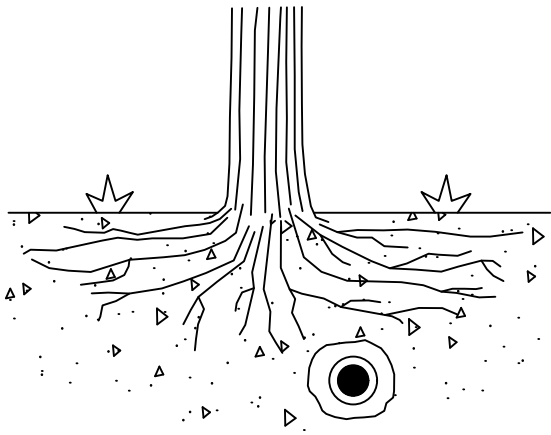
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**PROTECTIVE POLES FOR
PAD-MOUNTED EQUIPMENT**

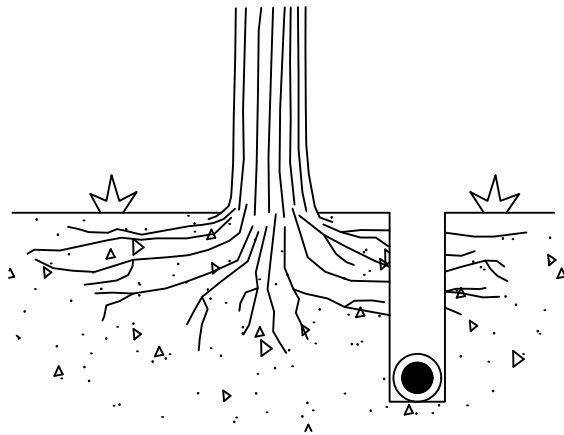


9.20

TO MINIMIZE TREE ROOT DAMAGE DURING UNDERGROUND LINE INSTALLATION AND MAINTENANCE, THE FOLLOWING GUIDELINES SHOULD BE USED FOR TRENCHING OR TUNNELING.



TUNNELING 24" MINIMUM DEPTH
CAUSES MINIMAL ROOT KILL



TRENCHING LOCATED TOO CLOSE TO
TREE CAUSING 40% ROOT KILL

WHEN TRENCHING, USE THE FOLLOWING CHART TO DETERMINE WHAT DISTANCE THE TRENCH SHOULD BE FROM THE TREE TRUNK TO MINIMIZE ROOT DAMAGE.

IF THE TRENCH IS TO BE LOCATED CLOSER TO THE TREE TRUNK THAN THE MINIMUM DISTANCE FROM THE TRUNK INDICATED IN THE TABLE BELOW, TUNNELING MAY BE REQUIRED BY CITY.

TREE DIAMETER @ 4-1/2' ABOVE GROUND	MINIMUM DISTANCE FROM TRUNK
0'-5'	5'
6'-10'	8'
11'-15'	10'
16'-20'	12'
OVER 20'	15'

MINIMUM TUNNEL DEPTH SHALL BE 24". DO NOT DIG TUNNELING PITS WITHIN THE DISTANCE SPECIFIED IN THE ABOVE CHART. EXCAVATED SOIL FROM TRENCHES SHOULD BE PILED ON THE OPPOSITE SIDE OF THE TRENCH FROM THE TREE TO AVOID FURTHER DAMAGE TO ROOTS.

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**TRENCHING/TUNNELING
NEAR TREES**



9.21