

DIVISION IV

STANDARDS

STANDARD DRAWINGS

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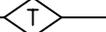
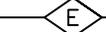
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LEGEND OF SYMBOLS

POWER POLE	
TELEPHONE POLE	
GUY ANCHOR	
GUY POLE	
STREET LIGHT POLE	
CABLE TELEVISION	— C — or — UGC —
TELEPHONE	— T — or — UGT —
ELECTRIC	— E — or — UGE —
TELEPHONE OR ELECTRIC MANHOLE	 or 
FIBER OPTIC	— FO — or — UFO —
WATER MAIN	— W — W —
GAS MAIN	— G — G —
WATER METER	
GAS METER	
GAS OR WATER VALVE	— G —  or WATER
FIRE HYDRANT	 F.H.
SANITARY SEWER	— SAN — SAN —
SANITARY SEWER LATERAL	-----
SANITARY MANHOLE	 M.H.
SANITARY CLEANOUT	 C.O.
SANITARY LATERAL CLEANOUT	 C.O.
STORM SEWER	— STM — STM —
TREE	
TREE REMOVAL	
STUMP	
SIGN	
MAIL BOX	
FENCE	— X — X —
PROPERTY IRON	 or 
BENCHMARK	B.M.
MoDOT R/W MARKER	
TRAVERSE POINT	 T.P.
PROPERTY LINE	— P —
LOT LINE	-----
EXISTING RIGHT OF WAY LINE	----- R.O.W. -----
EXISTING EASEMENT	-----
PROPOSED RIGHT OF WAY LINE	----- R.O.W. -----
PROPOSED PERMANENT DRAINAGE ESMT	----- PDE -----
TEMPORARY CONSTRUCTION EASEMENT	----- TCE -----
GRADING LIMIT	
EXISTING EASEMENT	

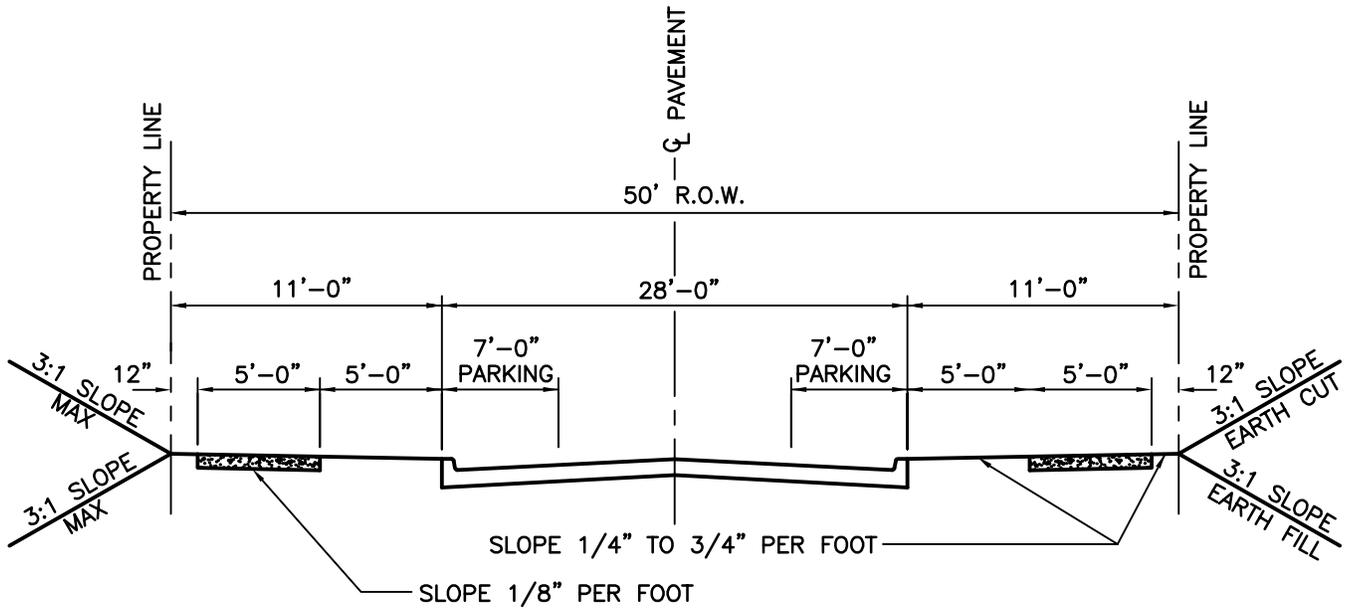
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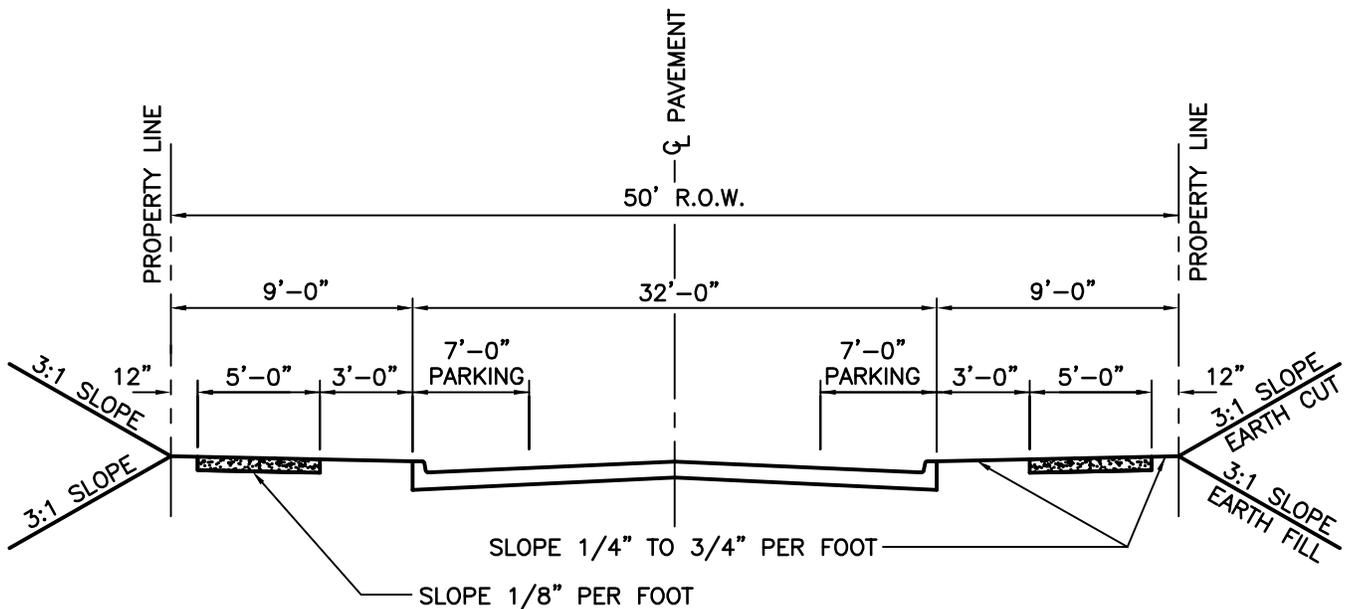


SYMBOLS

100.01



28 FT. PAVEMENT
(Standard Residential Street)



32 FT. PAVEMENT
(Residential Feeder)

NOTE:

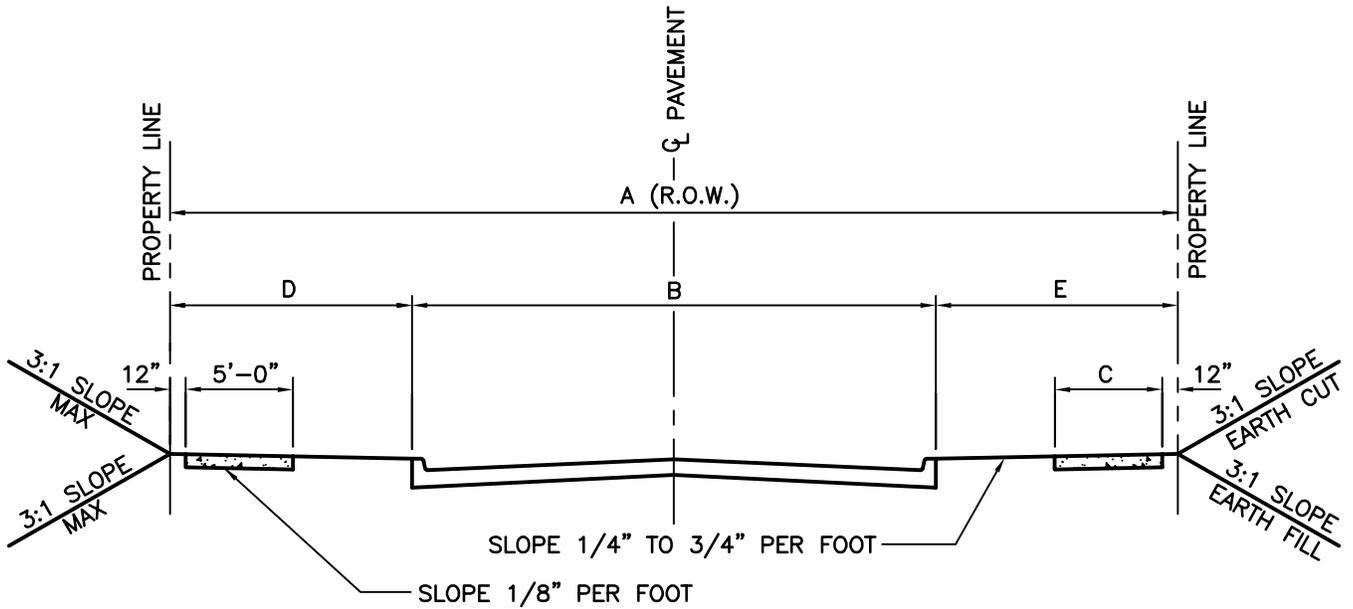
SEE CROSS SECTION SHEETS FOR VARIATIONS DUE TO ROCK EXCAVATION. EXISTING LAWN GRADES, ETC. SEE PLAN SHEETS FOR LOCATION OF PAVEMENT AND SIDEWALKS WITHIN RIGHT-OF-WAY. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.00%.

<i>JLB</i>	1/1/12
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**RESIDENTIAL STREET
TYPICAL CROSS SECTIONS**

110.01



NOTE:

SEE CROSS SECTION SHEETS FOR VARIATIONS DUE TO ROCK EXCAVATION.
 EXISTING LAWN GRADES, ETC. SEE PLAN SHEETS FOR LOCATION OF
 PAVEMENT AND SIDEWALKS WITHIN RIGHT-OF-WAY.
 SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.00%.

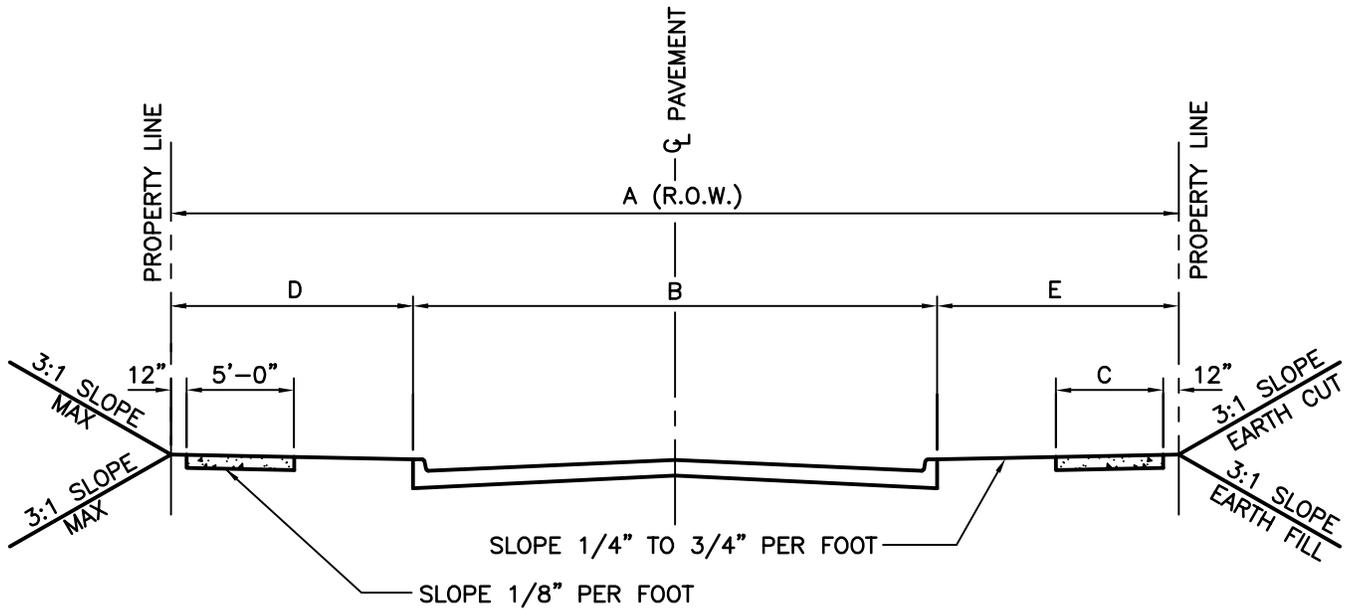
ITEM	A	B	C	D	E
NEIGHBORHOOD COLLECTOR OPTION A	60'	34'	5'	13'	13'
NEIGHBORHOOD COLLECTOR OPTION B	60'	30'	5'	15'	15'
MAJOR COLLECTOR	66'	36'	5'	15'	15'
MAJOR COLLECTOR OPTION A	66'	32'	8'	16'	18'
MAJOR COLLECTOR OPTION B	76'	44'	8'	15'	17'

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COLLECTOR STREET
 TYPICAL CROSS SECTION

110.02



NOTE:

SEE CROSS SECTION SHEETS FOR VARIATIONS DUE TO ROCK EXCAVATION.
 EXISTING LAWN GRADES, ETC. SEE PLAN SHEETS FOR LOCATION OF
 PAVEMENT AND SIDEWALKS WITHIN RIGHT-OF-WAY.
 SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.00%.

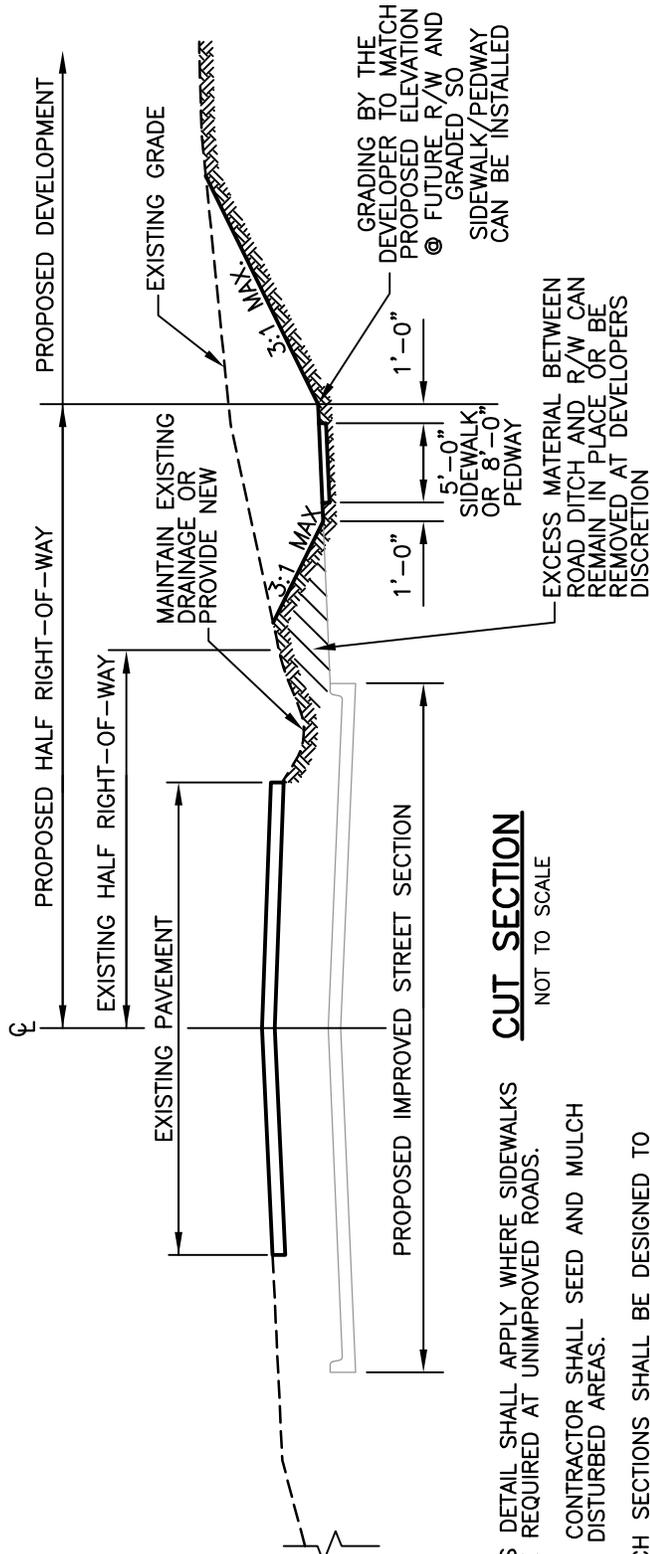
ITEM	A	B	C	D	E
NON-RESIDENTIAL STREET	66'	36'	5'	15'	15'
NON-RESIDENTIAL STREET OPTION A	60'	30'	5'	15'	15'
NON-RESIDENTIAL STREET OPTION B	60'	30'	5'	15'	15'
NON-RESIDENTIAL STREET OPTION C	66'	38'	5'	14'	14'

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LOCAL NON-RESIDENTIAL STREET
 TYPICAL CROSS SECTION

110.03

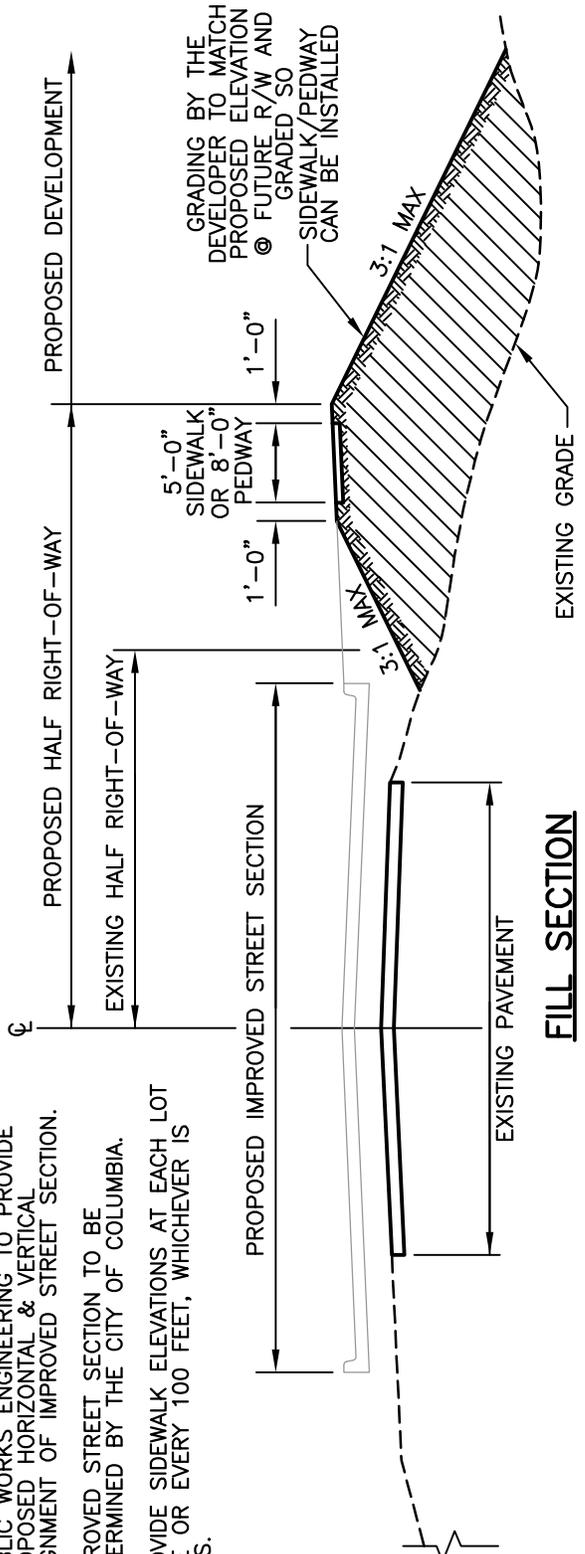


CUT SECTION

NOT TO SCALE

NOTES:

1. THIS DETAIL SHALL APPLY WHERE SIDEWALKS ARE REQUIRED AT UNIMPROVED ROADS.
2. THE CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS.
3. DITCH SECTIONS SHALL BE DESIGNED TO CARRY THE APPROPRIATE DESIGN FLOW. DEVELOPER IS RESPONSIBLE TO MAINTAIN DRAINAGE.
4. PUBLIC WORKS ENGINEERING TO PROVIDE PROPOSED HORIZONTAL & VERTICAL ALIGNMENT OF IMPROVED STREET SECTION.
5. IMPROVED STREET SECTION TO BE DETERMINED BY THE CITY OF COLUMBIA.
6. PROVIDE SIDEWALK ELEVATIONS AT EACH LOT LINE OR EVERY 100 FEET, WHICHEVER IS LESS.



FILL SECTION

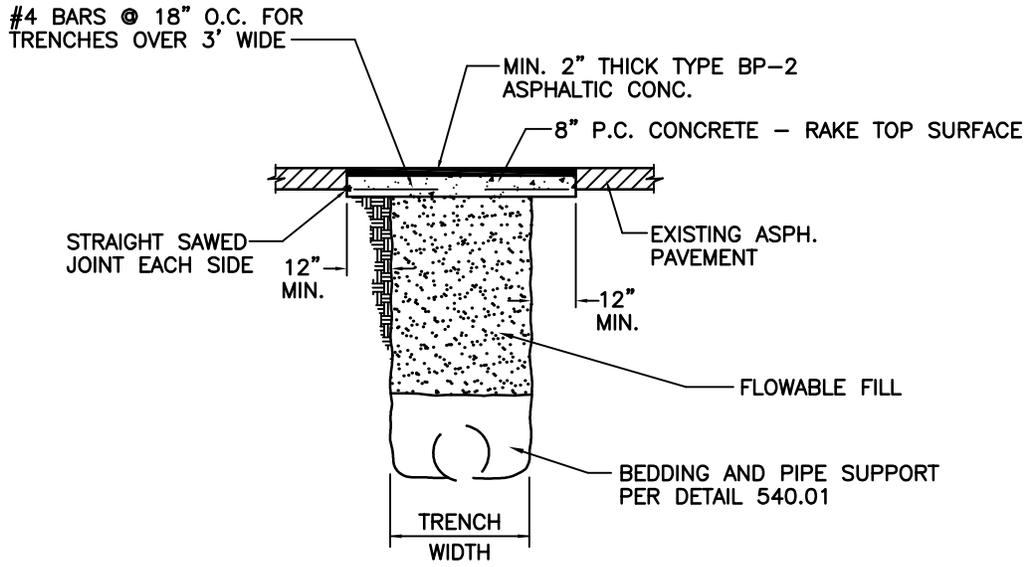
NOT TO SCALE

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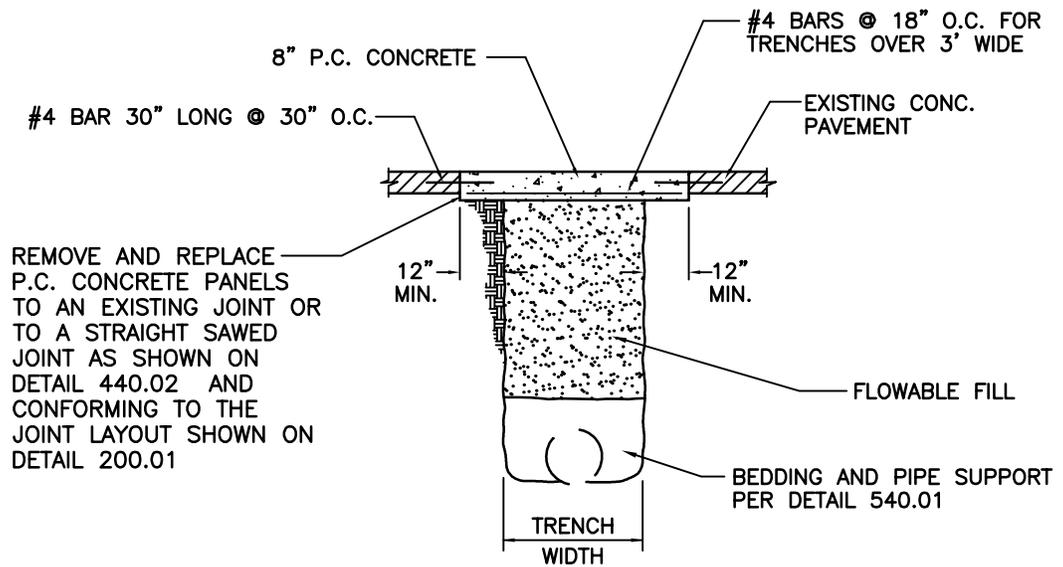


SIDEWALK AT UNIMPROVED ROADWAY

110.04



EXISTING ASPHALTIC PAVEMENT



EXISTING CONCRETE PAVEMENT

NOTES: CONCRETE SHALL BE CLASS AA
 REINFORCING STEEL SHALL BE GRADE 60

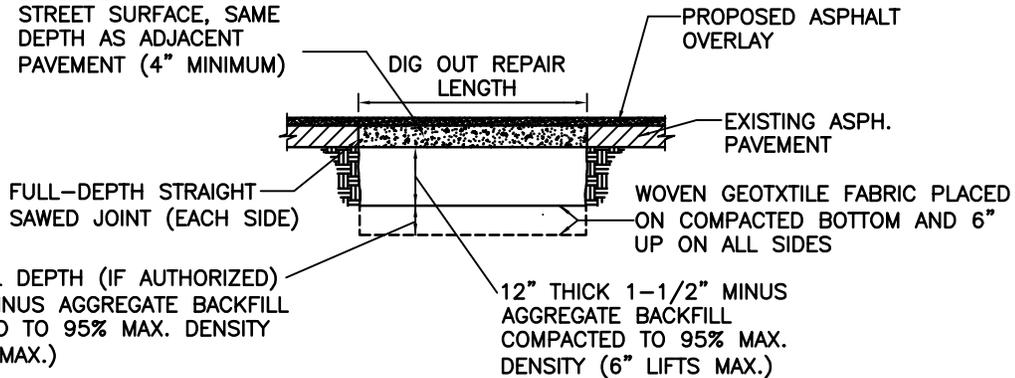
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PATCHING
 Paved Streets

120.01

PLANT MIX BITUMINOUS
BASE FLUSH WITH EX.
STREET SURFACE, SAME
DEPTH AS ADJACENT
PAVEMENT (4" MINIMUM)



NOTES:

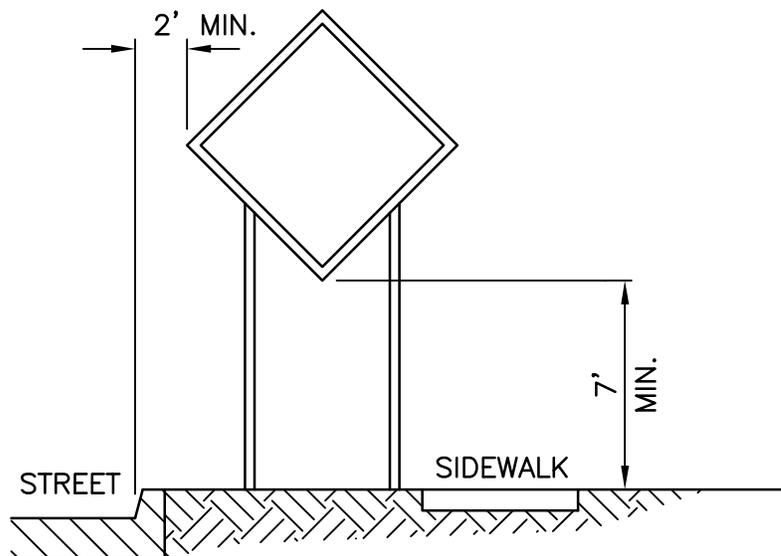
1. SAW CUT AREA DESIGNATED PUBLIC WORKS.
2. EXCAVATE TO A DEPTH OF 12" MINIMUM BELOW BOTTOM OF EXISTING STREET ELEVATION. IF ADDITIONAL DEPTH DIG OUT IS REQUIRED AND AUTHORIZED, PROCEED WITH STEPS BELOW AND ADD STEP 4A.
3. BASE MUST BE APPROVED BY ENGINEER BEFORE PLACEMENT OF FABRIC AND ROCK.
4. COMPACT BOTTOM AND PLACE WOVEN FABRIC (MIRAFI 600X OR APPROVED EQUAL).
- 4A. PLACE TYPE 2, 1-1/2" MINUS AGGREGATE COMPACTED IN 6" MAXIMUM LIFTS TO REACH THE NORMAL DIG OUT REPAIR DEPTH OF 16" BELOW EXISTING STREET ELEVATION. ADDITIONAL DEPTH SHALL BE PAID BY THE CUBIC YARD PER THE BID FORM.
5. PLACE TWO (2) 6" LIFTS OF TYPE 2, 1-1/2" MINUS COMPACTED AGGREGATE.
6. PLACE 4" MINIMUM LIFT OF COMPACTED PLANT MIX BITUMINOUS BASE ON PRIMED BASE ROCK. FINISH SHALL BE FLUSH WITH EXISTING ROAD SURFACE AND HAVE A SMOOTH RIDE.
7. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL MATERIALS EXCAVATED FROM THE REPAIR AREA.

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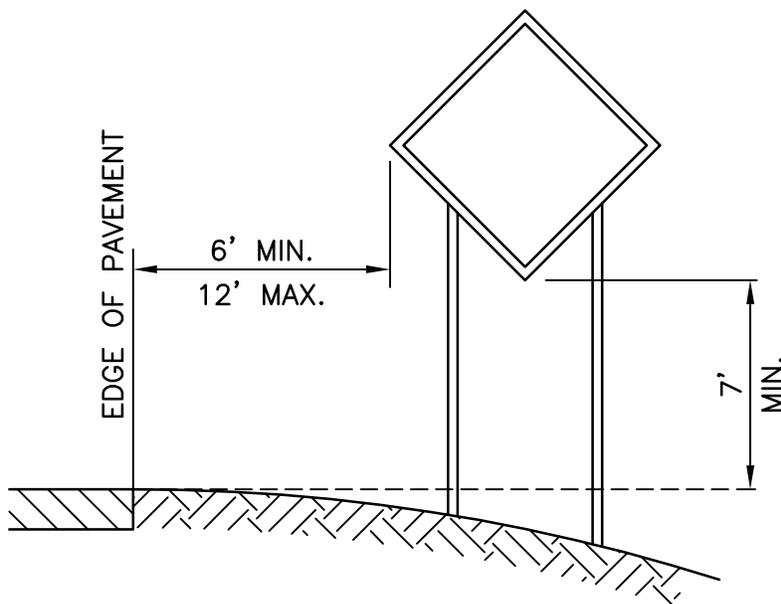


DIG OUT REPAIR

120.02



CURB & GUTTER MOUNTING



NON-CURB & GUTTER MOUNTING

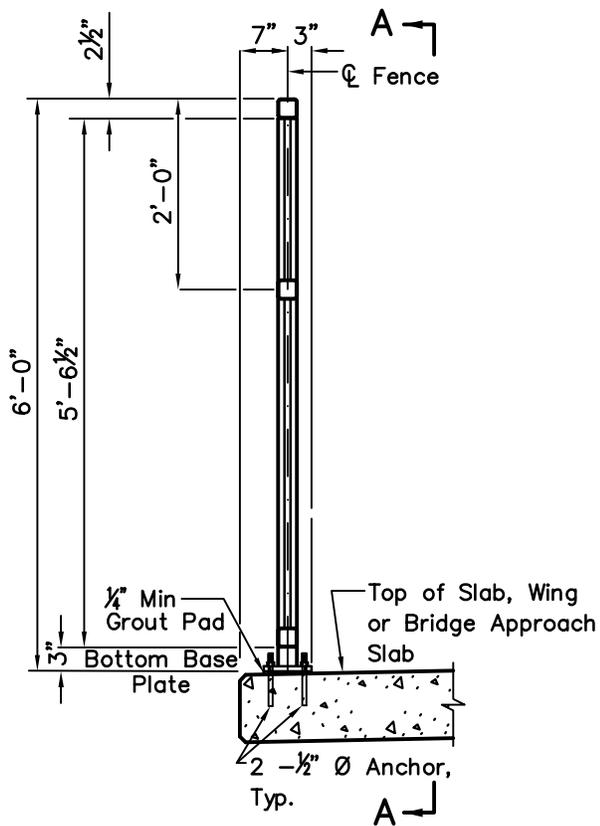
NOTE: SUPPORT POSTS SHALL NOT EXTEND ABOVE SIGN UNLESS DISTANCE PLAQUE OR WARNING LIGHTS ARE SPECIFIED.

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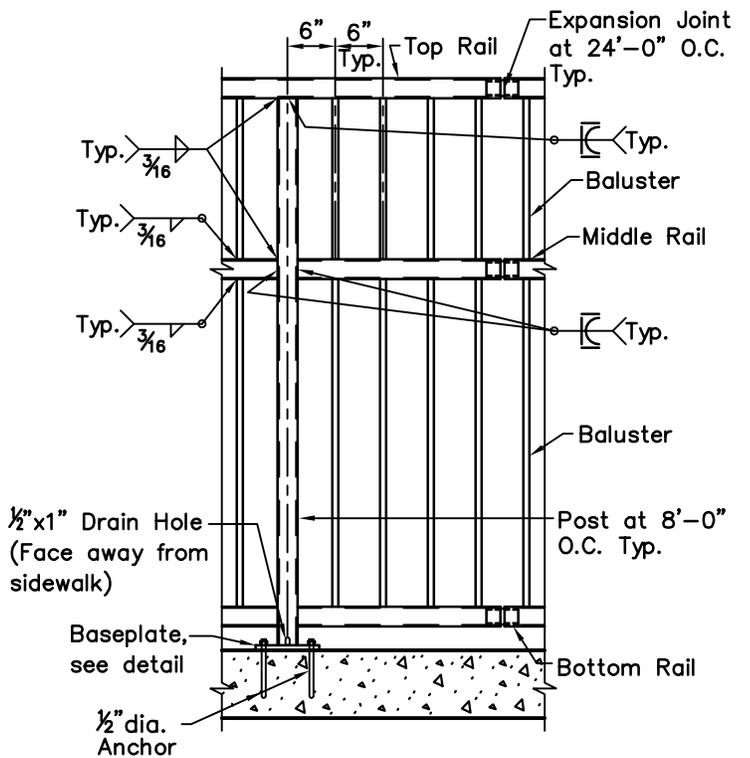


SIGN MOUNTING

130.01



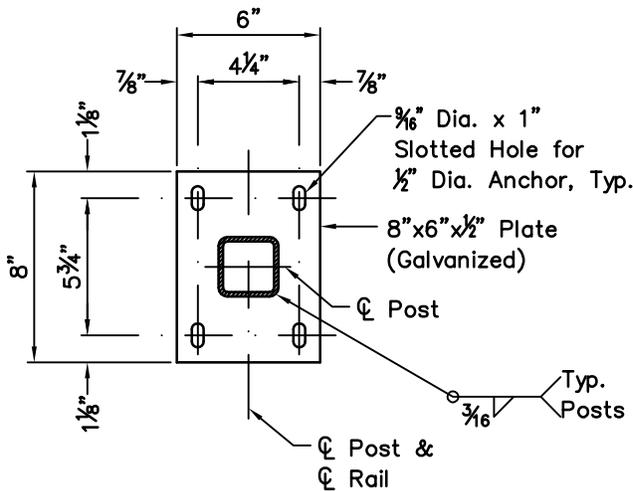
TYPICAL SECTION



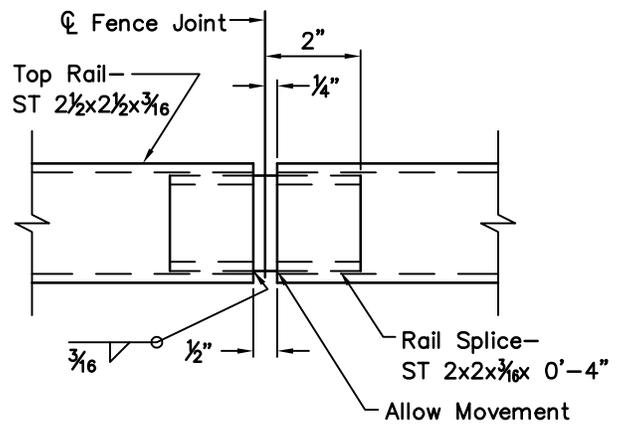
SECTION A-A

NOTE:

Anchors shall be drilled in place. Exposed portion of anchors, nuts and washers shall be field painted after installation.



BASE PLATE DETAIL



EXPANSION JOINT DETAIL

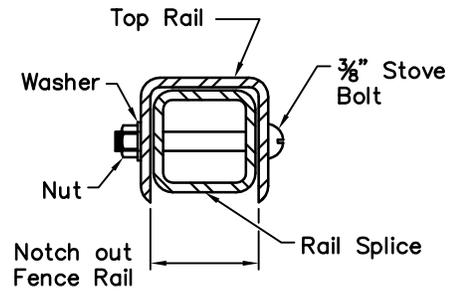
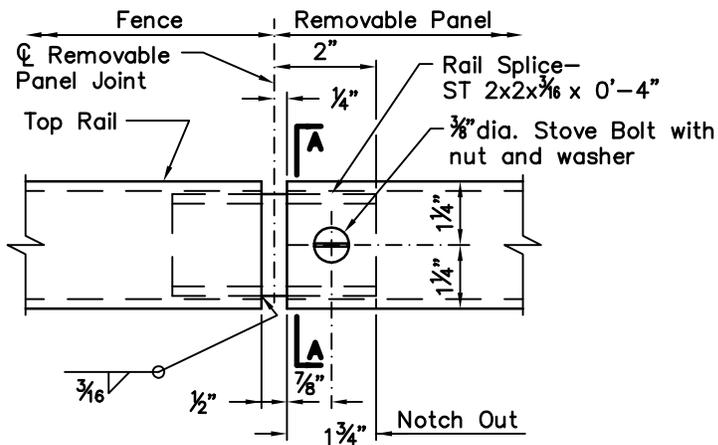
Shown at Top Rail.
Middle and Bottom Rail similar.

<i>J.L.B.</i>	1/1/12
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STEEL PEDESTRIAN FENCE

140.01A



SECTION A-A

REMOVEABLE PANEL JOINT DETAIL

Shown at Top Rail.
Middle and Bottom Rail similar.

GENERAL NOTES:

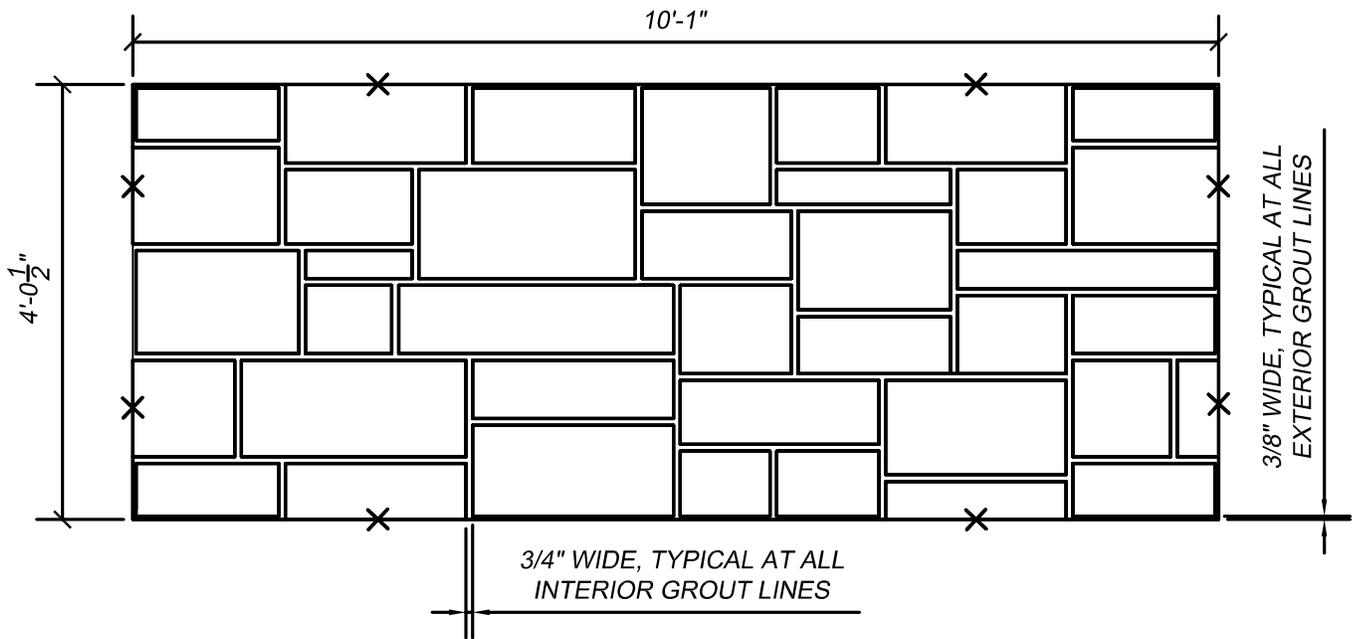
1. All rails and posts shall be 2 1/2" x 2 1/2" x 3/16" structural tubing. Tubing for all rails and posts shall conform to ASTM A500, Grade B. Balusters shall be 3/4" x 3/4" steel bar. Balusters and base plates shall conform to ASTM A709, Grade 36.
2. Galvanize and paint all rails, posts, balusters and base plates after fabrication. Galvanization shall be in accordance with ASTM A123 and Missouri Standard Specification for Highway Construction Sec. 1081. Fence shall be painted with System G (Black) in accordance with Sec 1081. Black color shall be federal color number 17038.
3. Rails and base plates shall be set parallel to top of slab. All posts and balusters shall be set vertical. Grout shall be used between concrete and base plate of post.
4. All rail-to-post welded connections shall be ground smooth. No field welding will be permitted. The Contractor shall submit shop drawings to the Engineer for approval prior to fabrication of the fence.
5. Use E70 XX electrodes for all welding.
6. All material, labor, splices, grout, and installation shall be paid for under the bid item "Pedestrian Fence" per linear foot.
7. A grouted leveling pad shall be used to erect the posts vertical. The leveling pads shall be a non-shrink grout as approved by the Engineer. The grout shall be mixed, applied and cured according to the manufacturer's recommendations.
8. Concrete anchors, nuts and washers shall be galvanized in accordance with ASTM A153 and Sec.1081.
9. Nuts shall conform to ASTM A307. Nuts shall be regular hexagon type. Washers shall be of standard commercial quality.
10. The concrete anchors shall have a minimum ultimate pullout strength of 7900 lbs. based on the concrete. The length of embedment into concrete shall conform to manufacturer's recommendations.

<i>J.L.B.</i>	1/1/12
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STEEL PEDESTRIAN FENCE

140.01B



TYPICAL ASHLAR CUT STONE PATTERN

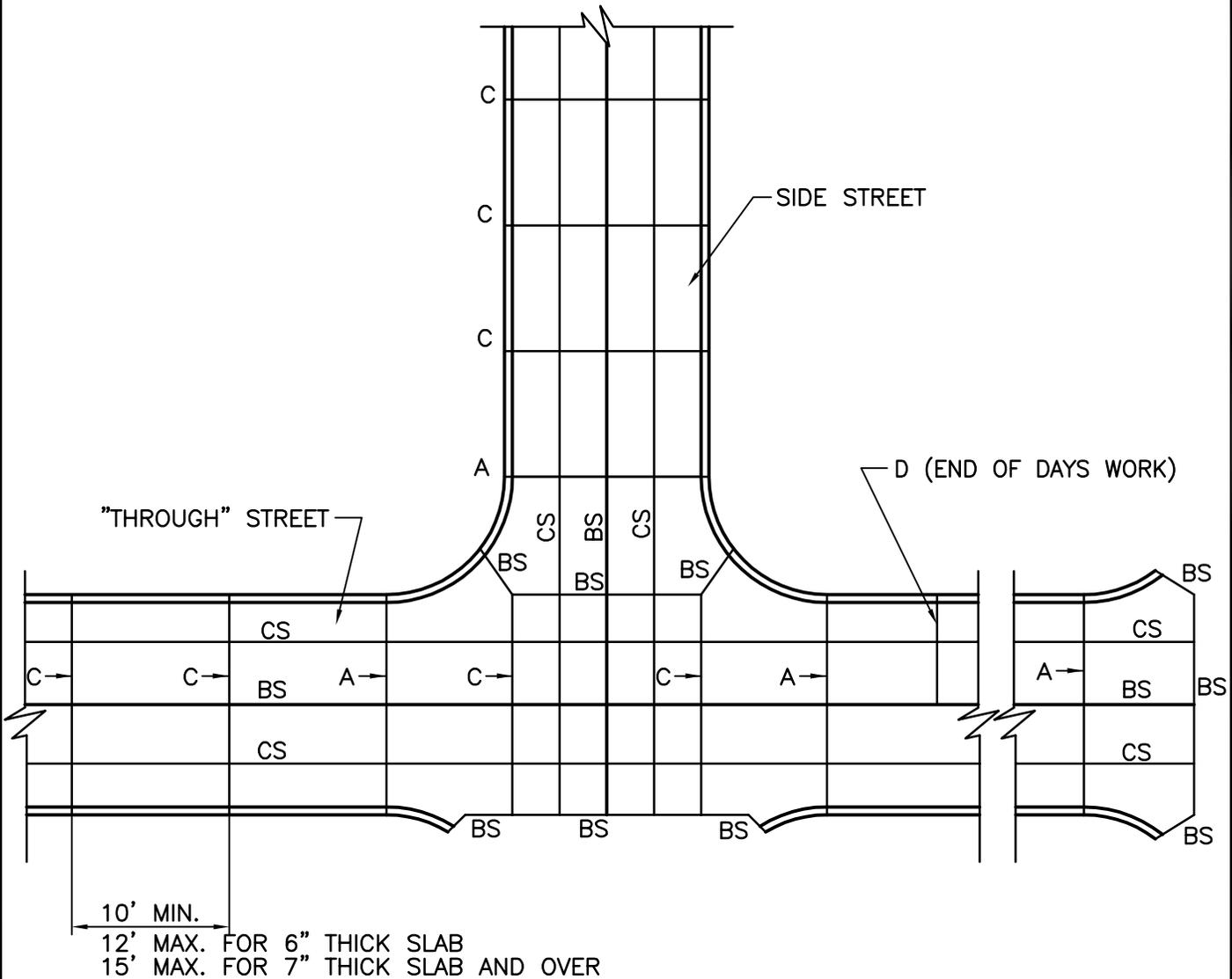
NOT TO SCALE

GENERAL NOTES

1. STONE HEIGHTS: 3½" TO 13"
2. STONE WIDTHS: 9½" TO 30½"
3. MAXIMUM PATTERN DEPTH: 1½"
4. PERIMETER ½" GROUT LINE WITH PATTERN MATCHING – (8) PARTIAL STONES (X's)
5. PROFILE ALLOWS PATTERN MATCHING WITH 180 DEGREE ROTATION OF ADJOINING SHEET

NOTE: ASHLAR CUT STONE PATTERN SHALL BE GREENSTREAK GSK460 OR APPROVED EQUAL. CONTRACTOR SHALL SUBMIT ASHLAR CUT STONE PATTERN FORM LINER SYSTEM SPECIFICATIONS AND DRAWING OF THE ASHLAR STONE FORM PATTERN FOR THE APPROVAL OF THE CITY.

<p><i>J.P.L.</i> Approved _____ Date 1/1/12</p> <p>Revisions</p>	 <p>City of Columbia Public Works Department</p>	<p>ASHLAR CUT STONE PATTERN</p>	<p>150.01</p>
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JOINT LOCATION PLAN

NOTE:

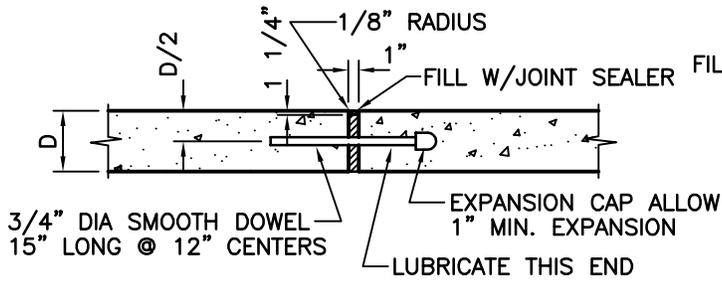
1. TRANSVERSE TYPE C JOINTS SHALL BE SAWED AS SOON AS CONCRETE CAN WITHSTAND RAVELING, JOINTS SHALL BE CLEANED AND FILLED WITH BITUMINOUS COMPOUND IMMEDIATELY FOLLOWING SAWING.
2. INSTALL TYPE A EXPANSION JOINTS AT INTERSECTIONS, AND AT STRUCTURES.
3. INSTALL TYPE A EXPANSION JOINTS AT PC & PT OF CURVES. WITH DEFLECTION ANGLE OF GREATER THAN 30°.
4. INSTALL TYPE A EXPANSION JOINT AT BULB OF CUL-DE-SAC.
5. INSTALL TYPE A EXPANSION JOINT AT 150' SPACING MAXIMUM.
6. USE TYPE D JOINT AT END OF DAYS WORK.

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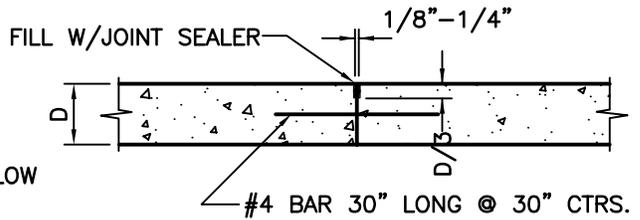


JOINT DETAILS (P.C. Concrete Pavement)

200.01A

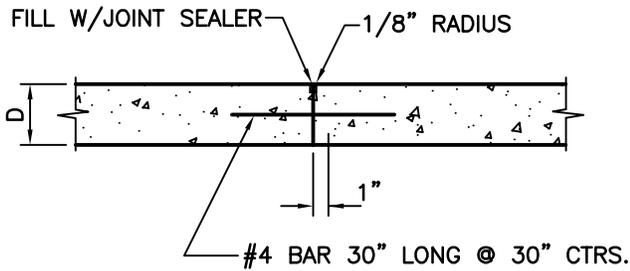


TYPE A
EXPANSION JOINT

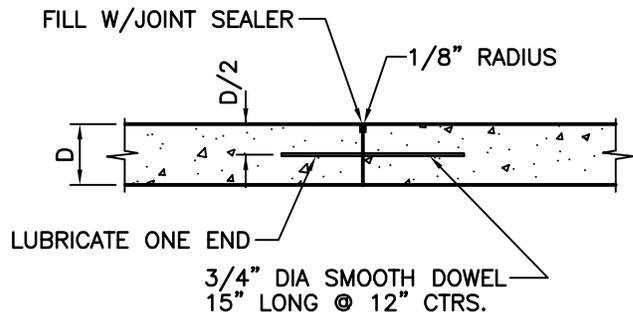


TYPE © - CONSTRUCTED WITHOUT TIE BAR
TYPE ©S - REQUIRES TIE BAR

TYPE C & CS
SAWED



TYPE BS
KEYED CONSTRUCTION JOINT
(With Steel)



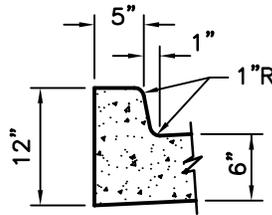
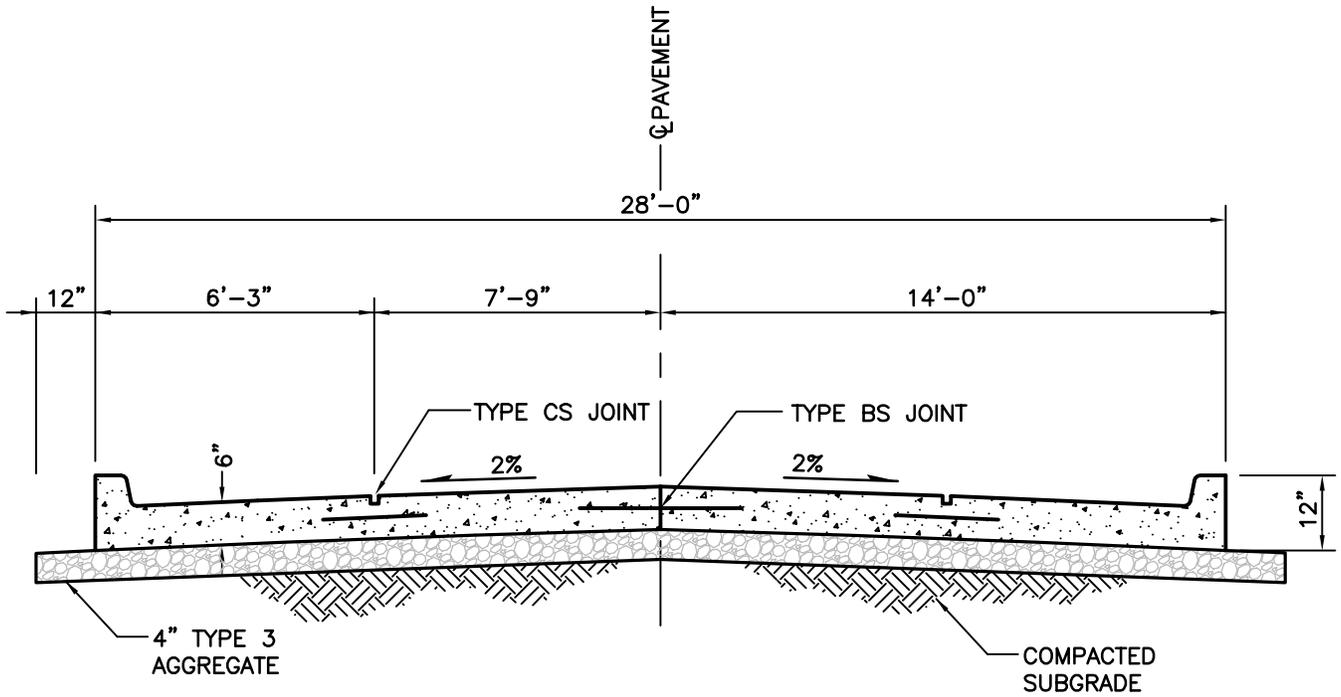
TYPE D
TRANSVERSE CONSTRUCTION JOINT

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JOINT DETAILS
(P.C. Concrete Pavement)

200.01B



INTEGRAL CURB SECTION

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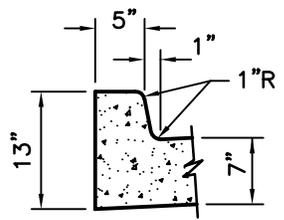
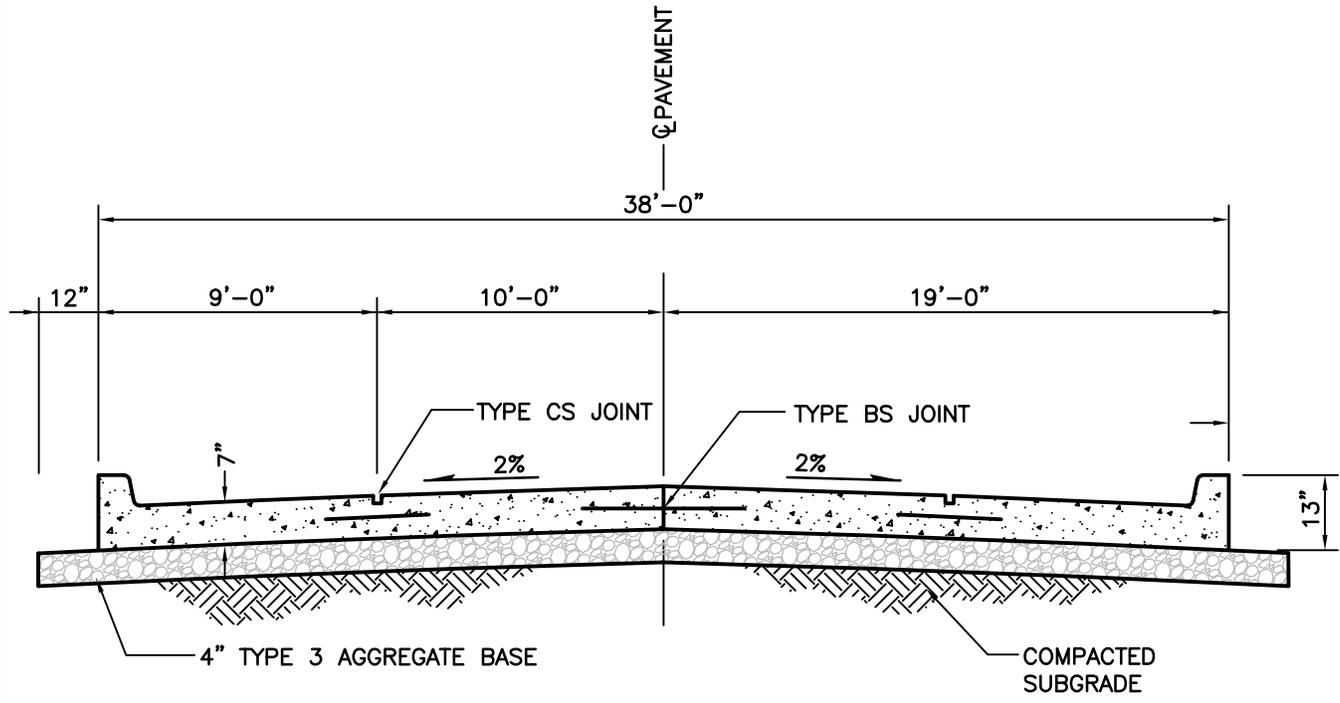
1. ALL P.C. CONCRETE SHALL BE CLASS A.
2. SEE DETAIL 200.01 FOR JOINT DETAILS.

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**RESIDENTIAL STREET
(Concrete Pavement)**

210.01



INTEGRAL CURB SECTION

NOTES:

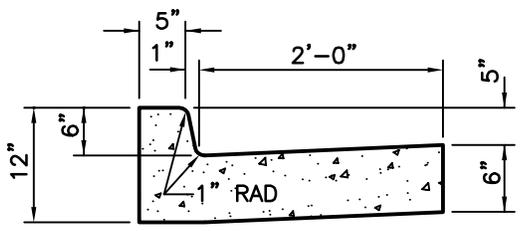
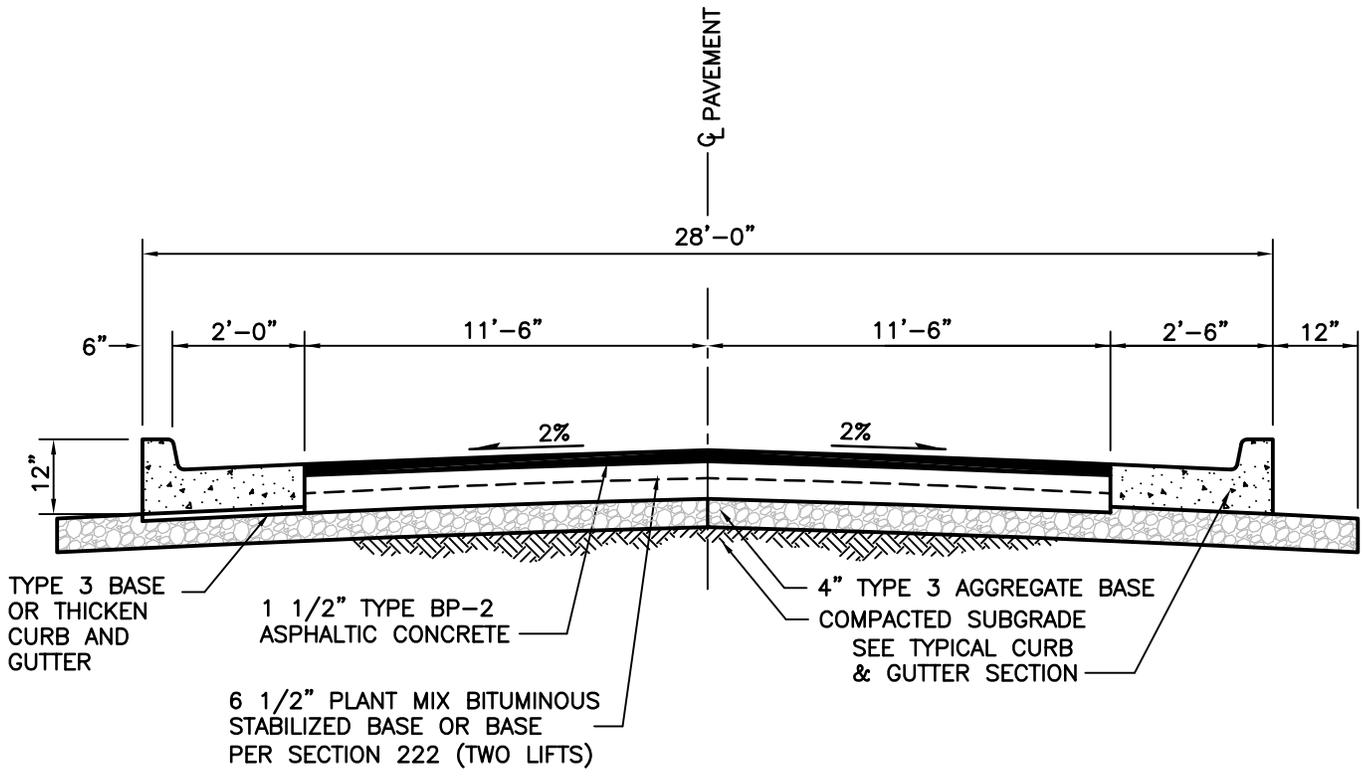
1. ALL P.C. CONCRETE SHALL BE CLASS A.
2. SEE DETAIL 200.01 FOR JOINT DETAILS.

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**COLLECTOR STREET
(Concrete Pavement)**

220.01



TYPICAL CURB AND GUTTER SECTION

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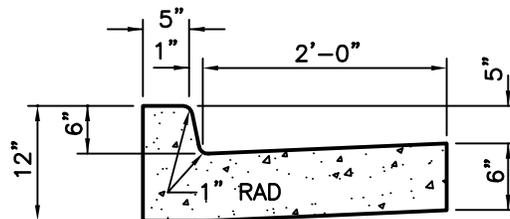
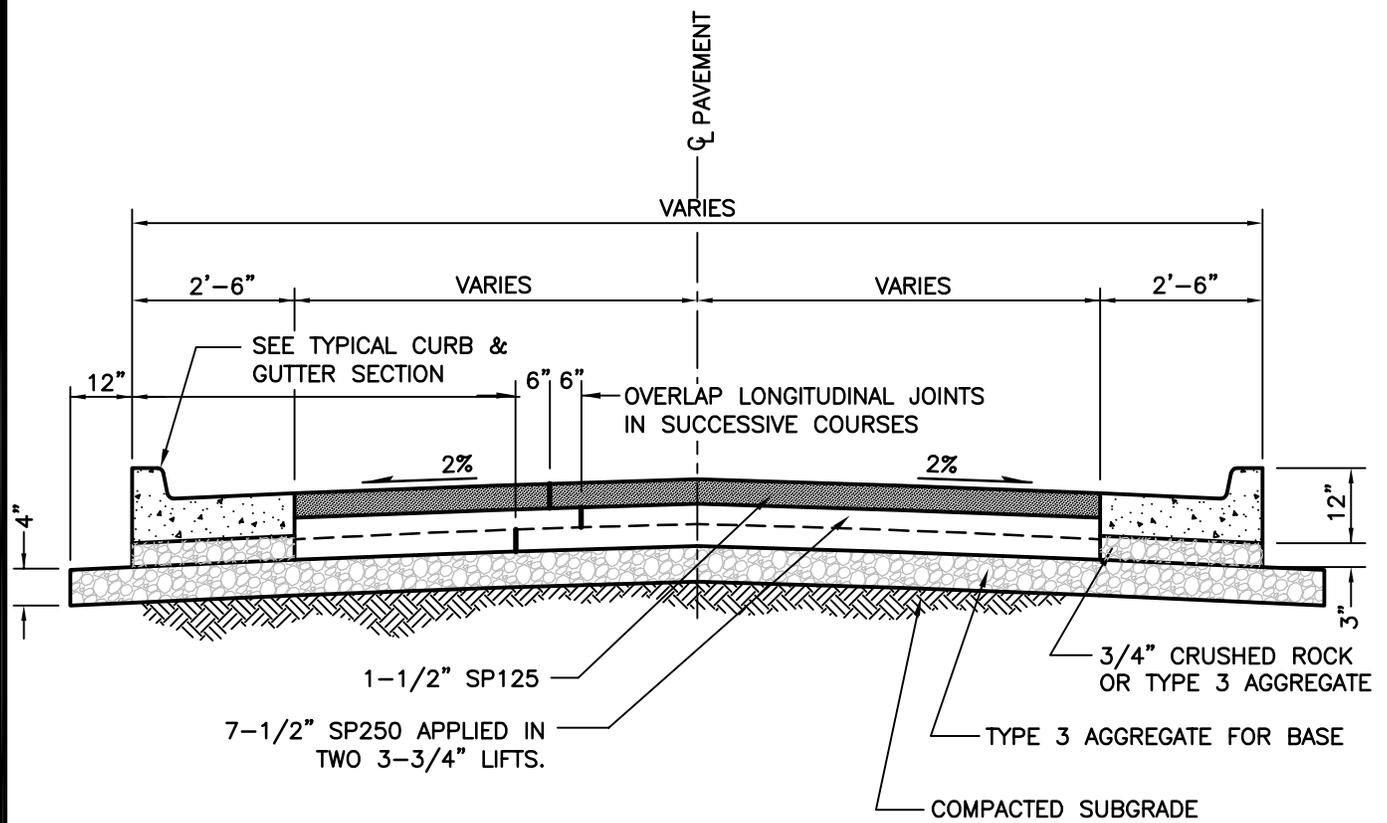
1. ALL P.C. CONCRETE SHALL BE CLASS A.
2. INSTALL 1/2" EXPANSION JOINTS IN CURB AND GUTTER SECTION AT P.C. AND P.T. OF CURB RADIUS OF INTERSECTIONS AND EVERY 150'.
3. INSTALL SAW JOINTS IN CURB AND GUTTER SECTION AT 10 FT. MAXIMUM SPACING, SEAL WITH BITUMASTIC JOINT SEALANT.
4. 4% PARABOLIC CROWN IS ACCEPTABLE IN LIEU OF 2% NORMAL CROWN.

<i>J.P.L.</i>	1/1/12
Approved	Date
Revisions	



RESIDENTIAL STREET
(Asphaltic Pavement)

310.01



TYPICAL CURB AND GUTTER SECTION

NOTES:

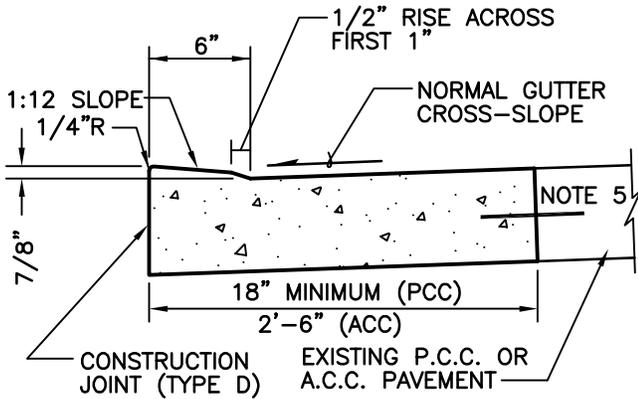
1. ALL P.C. CONCRETE SHALL BE CLASS A.
2. INSTALL 1/2" EXPANSION JOINTS IN CURB AND GUTTER SECTION AT P.C. AND P.T. OF CURB RADIUS OF INTERSECTIONS AND EVERY 150'.
3. INSTALL SAW JOINTS IN CURB AND GUTTER SECTION AT 10 FT. MAXIMUM SPACING, SEAL WITH BITUMASTIC JOINT SEALANT.
4. 4% PARABOLIC CROWN IS ACCEPTABLE IN LIEU OF 2% NORMAL CROWN.

<i>J.P.L.</i>	1/1/12
Approved	Date
Revisions	

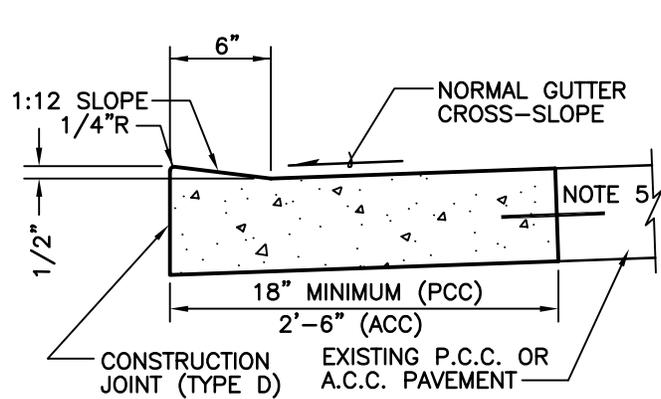


COLLECTOR STREET
(Asphaltic Pavement)

320.01



SIDEWALK RAMP CURB
(Alternate)



SIDEWALK RAMP CURB

PCC PAVEMENT NOTES:

1. CONCRETE SHALL BE CLASS A.
2. PAVEMENT THICKNESS SHALL MATCH EXISTING. BASE SHALL MATCH EXISTING
3. EXPANSION JOINTS AND CONTRACTION JOINTS SHALL BE PLACED AT LOCATIONS SIMILAR TO THE PAVEMENT WHICH WAS REMOVED.
4. CURB EDGE SHALL BE TOOLED WITH 1/4" RADIUS
5. WHERE EXISTING PAVEMENT IS P.C.C., LOW CURB REPLACEMENT SHALL BE DOWELLED INTO EXISTING. 12" LONG #4 BARS AT 24" CTR.

ACC PAVEMENT NOTES:

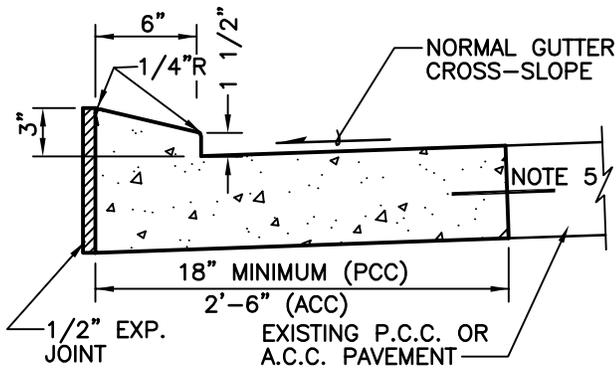
1. CONCRETE SHALL BE CLASS A.
2. GUTTER THICKNESS SHALL MATCH EXISTING, BASE SHALL MATCH EXISTING
3. EXPANSION JOINTS AND CONTRACTION JOINTS SHALL BE PLACED AT LOCATIONS SIMILAR TO THE CURB AND GUTTER WHICH WAS REMOVED.
4. CURB EDGE SHALL BE TOOLED WITH 1/4" RADIUS

<i>JLB</i>	1/1/12
Approved	Date
Revisions	

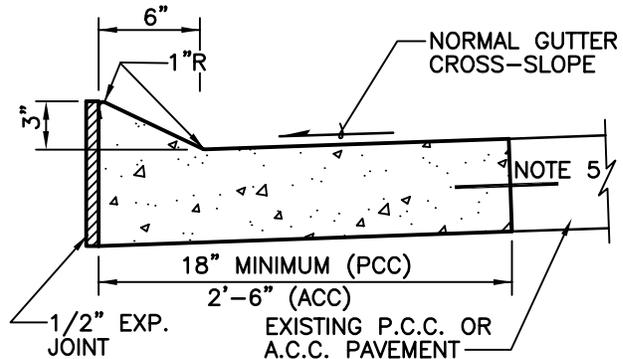


CURB DETAILS
(Sidewalk Ramp)

400.01



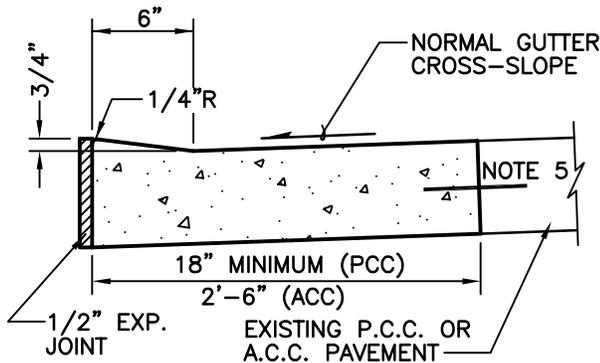
RESIDENTIAL DRIVEWAY CURB
MAXIMUM RISE (PREFERED)



RESIDENTIAL DRIVEWAY CURB
MAXIMUM RISE (ALTERNATE)

GENERAL NOTES:

1. ELEVATION OF DRIVEWAY AT R.O.W. LINE REQUIRED TO BE A MINIMUM OF 6" ABOVE GUTTER ELEVATION. VERIFY R.O.W. WIDTH AND ALLOWABLE DRIVEWAY SLOPES PRIOR TO CONSTRUCTING MINIMUM RISE DRIVEWAY CURB.
2. ALTERNATE CURB PROFILES WHICH FALL WITHIN THE MINIMUM RISE AND MAXIMUM RISE CURBS SHOWN WILL BE APPROVED. SLOPE ACROSS RESIDENTIAL DRIVEWAY CURB TOP MUST BE AT LEAST 1/2" IN 6" TOWARD THE STREET.
3. HORIZONTAL SAWING OF CURB IS ALLOWED AS AN ALTERNATIVE TO REMOVING AND REPLACING STANDARD CURB. HORIZONTAL SAWING MACHINE AND METHOD REQUIRES PRIOR APPROVAL. HORIZONTAL SAWING IS NOT ALLOWED ON CITY BID PROJECTS.



RESIDENTIAL DRIVEWAY CURB
MINIMUM RISE

PCC PAVEMENT NOTES:

1. CONCRETE SHALL BE CLASS A.
2. PAVEMENT THICKNESS SHALL MATCH EXISTING. BASE SHALL MATCH EXISTING
3. EXPANSION JOINTS AND CONTRACTION JOINTS SHALL BE PLACED AT LOCATIONS SIMILAR TO THE PAVEMENT WHICH WAS REMOVED.
4. CURB EDGE SHALL BE TOOLED WITH 1/4" RADIUS
5. WHERE EXISTING PAVEMENT IS P.C.C., LOW CURB REPLACEMENT SHALL BE DOWELLED INTO EXISTING. 12" LONG #4 BARS AT 24" CTR.

ACC PAVEMENT NOTES:

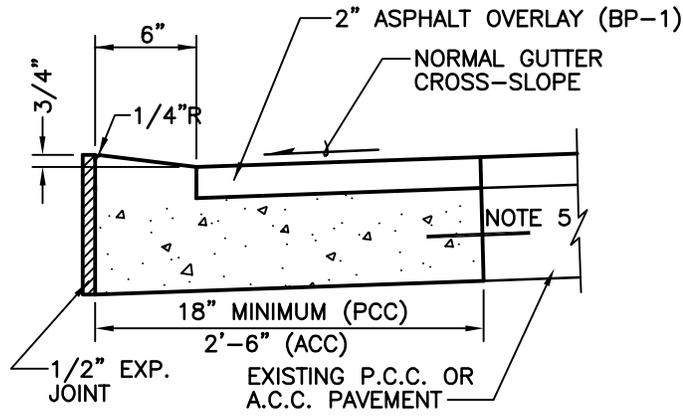
1. CONCRETE SHALL BE CLASS A.
2. GUTTER THICKNESS SHALL MATCH EXISTING, BASE SHALL MATCH EXISTING
3. EXPANSION JOINTS AND CONTRACTION JOINTS SHALL BE PLACED AT LOCATIONS SIMILAR TO THE CURB AND GUTTER WHICH WAS REMOVED.
4. CURB EDGE SHALL BE TOOLED WITH 1/4" RADIUS

<i>J.P.L.</i>	1/1/12
Approved	Date
Revisions	

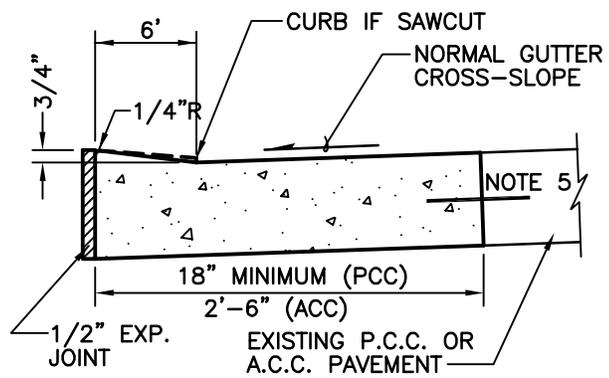


CURB DETAILS
(Residential Driveway)

400.02



COMMERCIAL DRIVEWAY CURB AT ASPHALT OVERLAID STREET



COMMERCIAL DRIVEWAY CURB

HORIZONTAL SAWING OF CURB IS ALLOWED AS AN ALTERNATIVE TO REMOVING AND REPLACING STANDARD CURB. HORIZONTAL SAWING MACHINE AND METHOD REQUIRES PRIOR APPROVAL. HORIZONTAL SAWING IS NOT ALLOWED ON CITY BID PROJECTS.

PCC PAVEMENT NOTES:

1. CONCRETE SHALL BE CLASS A.
2. PAVEMENT THICKNESS SHALL MATCH EXISTING. BASE SHALL MATCH EXISTING
3. EXPANSION JOINTS AND CONTRACTION JOINTS SHALL BE PLACED AT LOCATIONS SIMILAR TO THE PAVEMENT WHICH WAS REMOVED.
4. CURB EDGE SHALL BE TOOLED WITH 1/4" RADIUS
5. WHERE EXISTING PAVEMENT IS P.C.C., LOW CURB REPLACEMENT SHALL BE DOWELLED INTO EXISTING. 12" LONG #4 BARS AT 24" CTR.

ACC PAVEMENT NOTES:

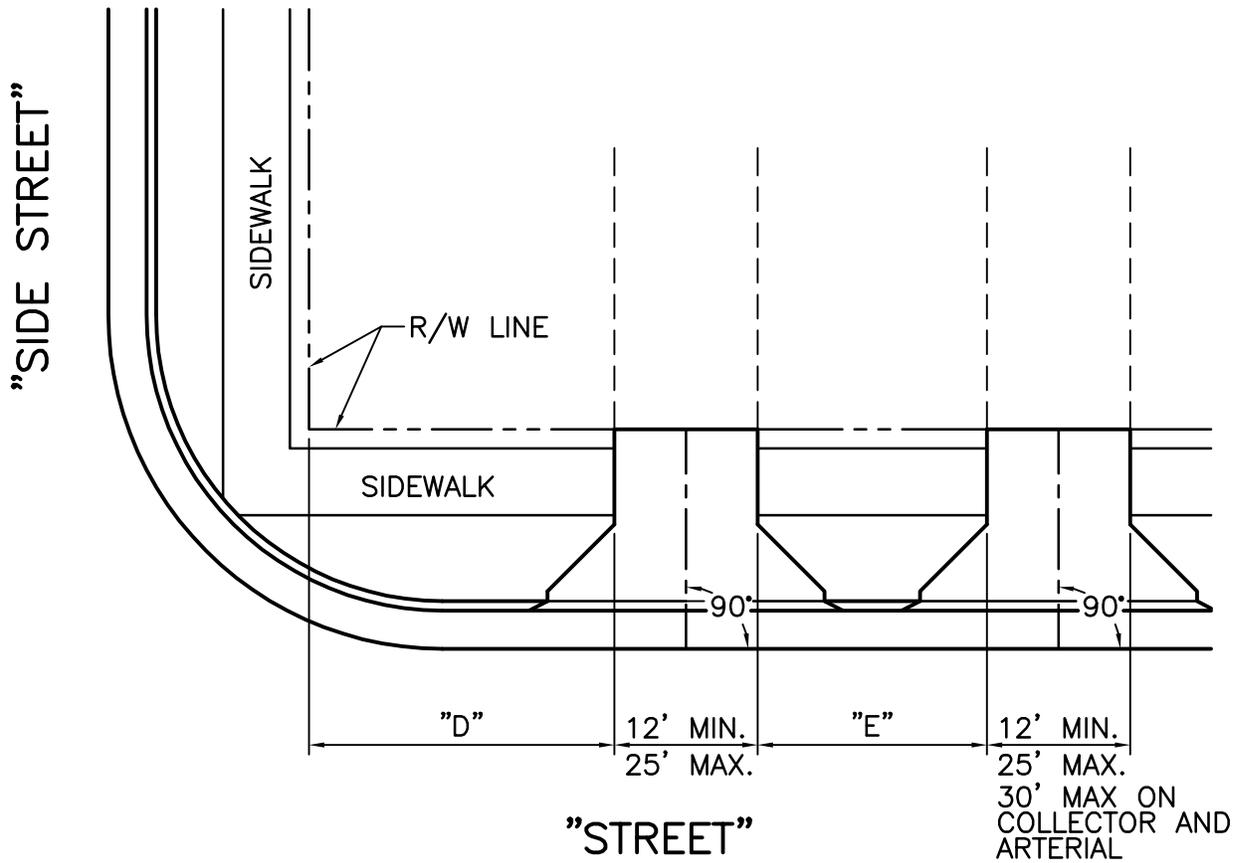
1. CONCRETE SHALL BE CLASS A.
2. GUTTER THICKNESS SHALL MATCH EXISTING, BASE SHALL MATCH EXISTING
3. EXPANSION JOINTS AND CONTRACTION JOINTS SHALL BE PLACED AT LOCATIONS SIMILAR TO THE CURB AND GUTTER WHICH WAS REMOVED.
4. CURB EDGE SHALL BE TOOLED WITH 1/4" RADIUS

 Approved <u>1/1/12</u> Date
Revisions



CURB DETAILS
(Commercial Driveway)

400.03



TYPE OF STREET	MINIMUM DISTANCES	
	"D"	"E"
LOCAL RESIDENTIAL	20'	—
LOCAL NON-RESIDENTIAL	20'	20'
COLLECTOR	30'	30'
ARTERIAL	50'	75'

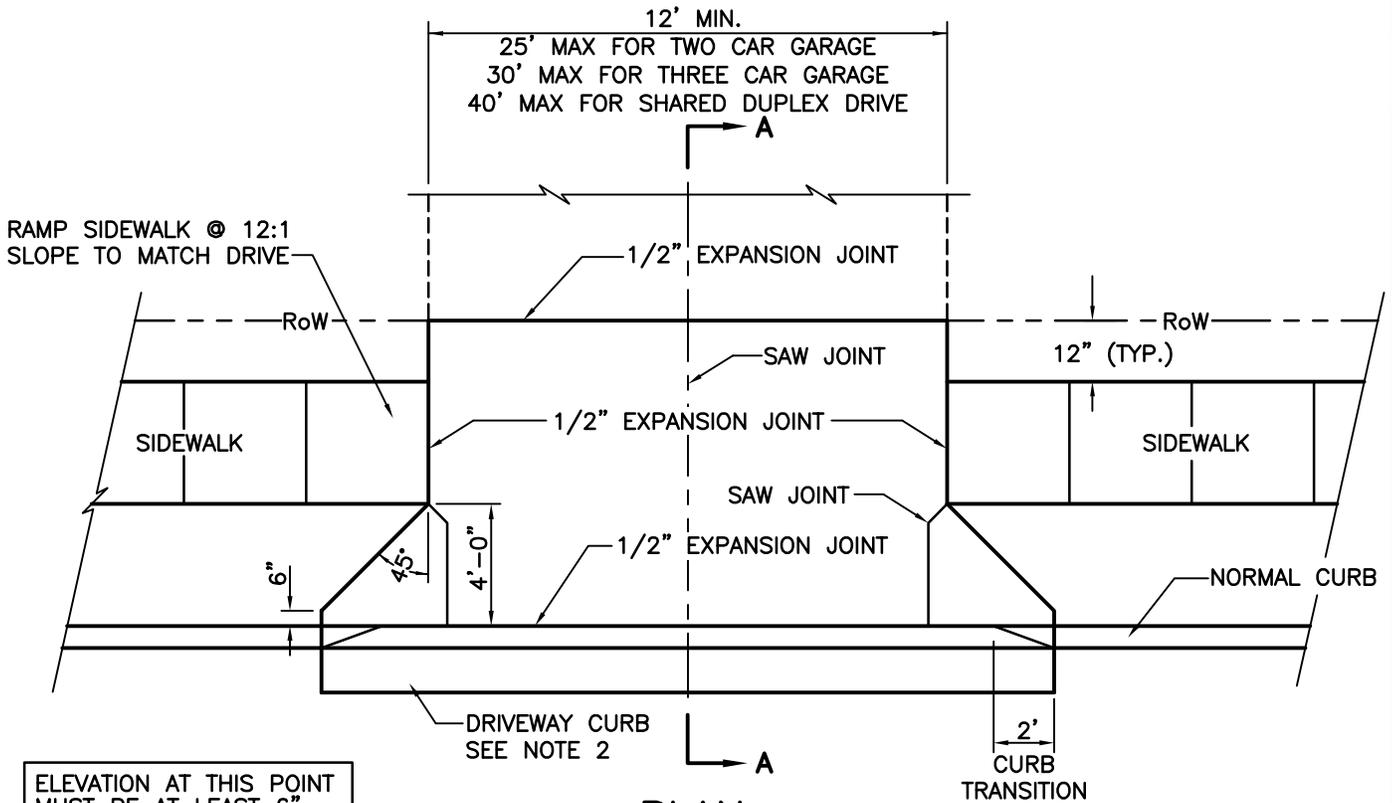
J.P.E.
Approved
1/1/12
Date

Revisions



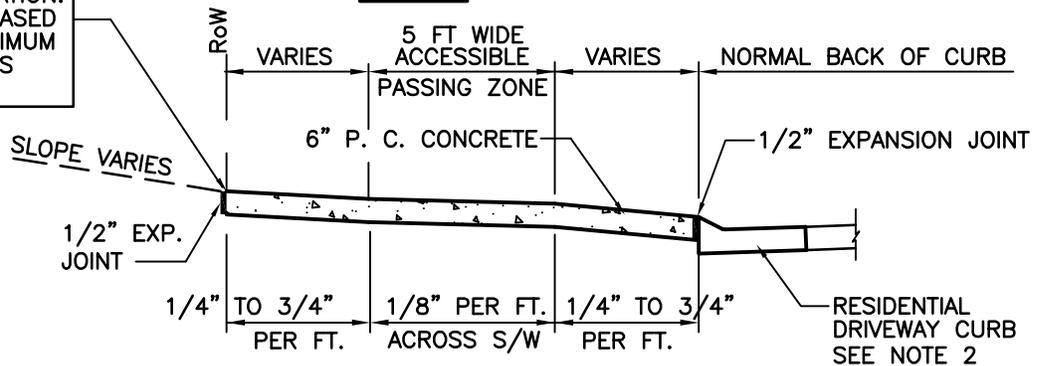
DRIVEWAY LOCATIONS

410.01



PLAN

ELEVATION AT THIS POINT MUST BE AT LEAST 6" ABOVE GUTTER ELEVATION. MAXIMUM ELEV. IS BASED ON RoW WIDTH. MAXIMUM SLOPE WITHIN RoW IS 3/4" PER FT.



SECTION A-A

NOTES:

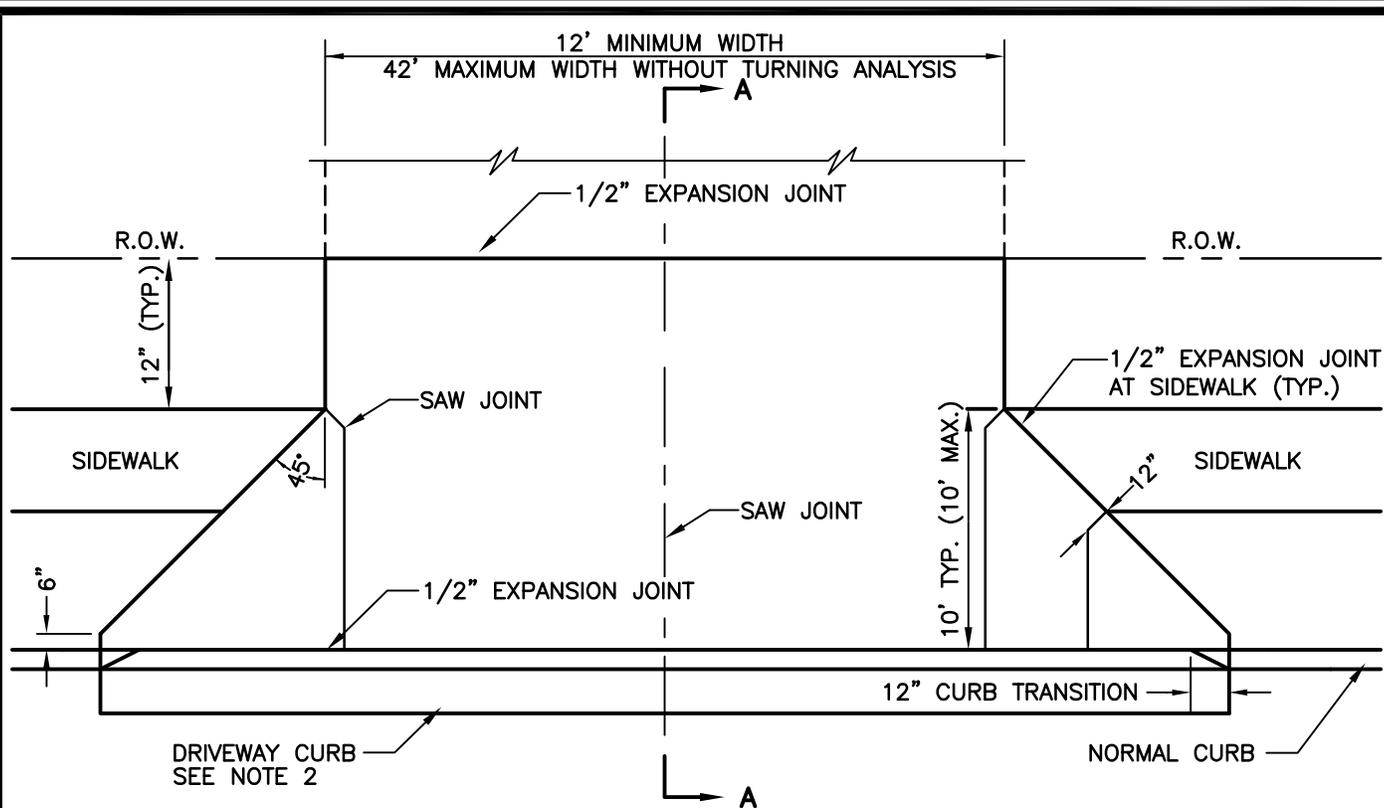
1. DRIVEWAY APPROACH SHALL BE 6" THICK CLASS A CONCRETE ON COMPACTED SUBGRADE.
2. REPLACE STANDARD CURB & GUTTER SECTION WITH DRIVEWAY CURB SECTION. SEE DETAIL 400.02.
3. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
4. ALL DRIVEWAY APPROACHES SHALL SLOPE TOWARD THE STREET.
5. ALL DRIVEWAY APPROACHES SHALL BE CONSTRUCTED TO ACCOMODATE SIDEWALKS. (EXISTING AND FUTURE) STANDARD SIDEWALK LOCATION IS 1 FT OFF OF RoW LINE
6. DRIVEWAY APPROACH SHALL PROVIDE A MINIMUM 5' WIDE ACCESSIBLE SIDEWALK PASSING ZONE.
7. DRIVEWAY SLOPE ACROSS ACCESSIBLE SIDEWALK PASSING ZONE IS 1/8" PER FT. CROSS SLOPE SHALL NOT EXCEED 2.00%.
8. MINIMIZE SIDEWALK WARPING ADJACENT TO DRIVEWAY APPROACH.
9. DRIVEWAY SLOPE WITHIN RIGHT OF WAY SHALL NOT EXCEED 3/4" PER FOOT.
10. DRIVEWAY MAY BE REINFORCED AT OWNER'S OPTION. ON CITY BID PROJECTS DO NOT REINFORCE.

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



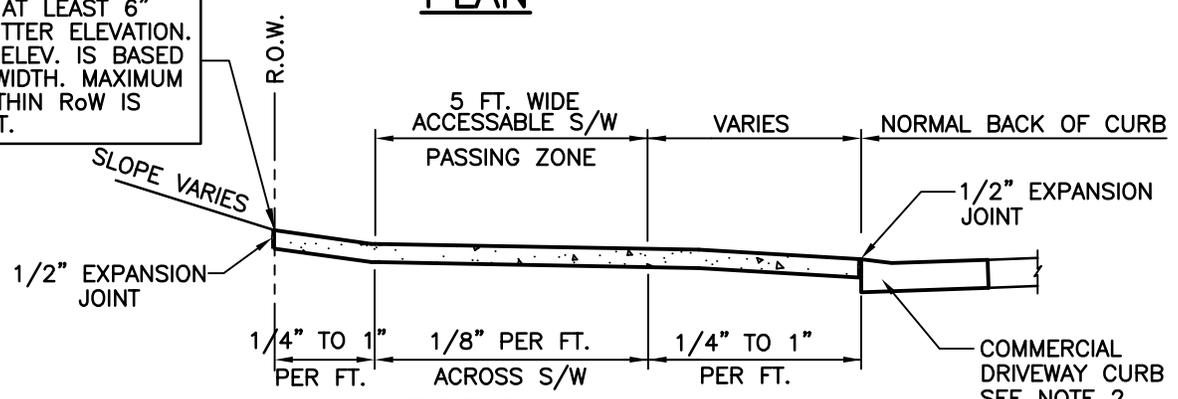
**DRIVEWAY
(Residential)**

410.02



PLAN

ELEVATION AT THIS POINT MUST BE AT LEAST 6" ABOVE GUTTER ELEVATION. MAXIMUM ELEV. IS BASED ON RoW WIDTH. MAXIMUM SLOPE WITHIN RoW IS 1" PER FT.



SECTION A-A

NOTES:

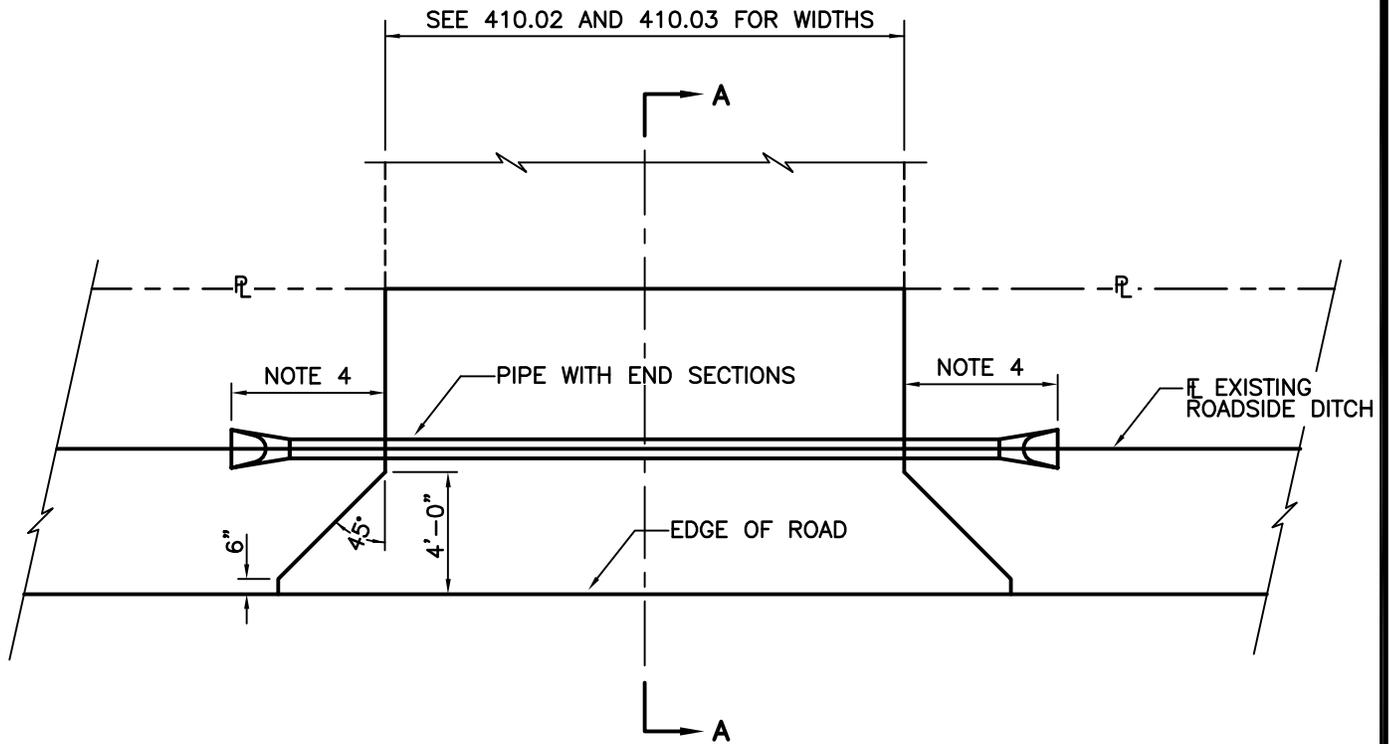
1. DRIVEWAY APPROACH SHALL BE 7" THICK CLASS A CONCRETE.
2. REPLACE STANDARD CURB & GUTTER SECTION WITH DRIVEWAY CURB SECTION. SEE DETAIL 400.03.
3. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
4. ALL DRIVEWAY APPROACHES SHALL SLOPE TOWARD THE STREET.
5. ALL DRIVEWAY APPROACHES SHALL BE CONSTRUCTED TO ACCOMODATE SIDEWALKS. (EXISTING AND FUTURE) STANDARD SIDEWALK LOCATION IS 1 FOOT OFF OF RIGHT OF WAY LINE.
6. DRIVEWAY APPROACH SHALL PROVIDE A MINIMUM 5' WIDE ACCESSIBLE SIDEWALK PASSING ZONE.
7. DRIVEWAY SLOPE ACROSS ACCESSIBLE SIDEWALK PASSING ZONE IS 1/8" PER FT. CROSS SLOPE SHALL NOT EXCEED 2.00%.
8. MINIMIZE SIDEWALK WARPING ADJACENT TO DRIVEWAY APPROACH.
9. DRIVEWAY SLOPE WITHIN RIGHT OF WAY SHALL NOT EXCEED 3/4" PER FOOT.
10. DRIVEWAY MAY BE REINFORCED AT OWNER'S OPTION. ON CITY BID PROJECTS DO NOT REINFORCE.

<i>J.P.B.</i>	1/1/12
Approved	Date
Revisions	

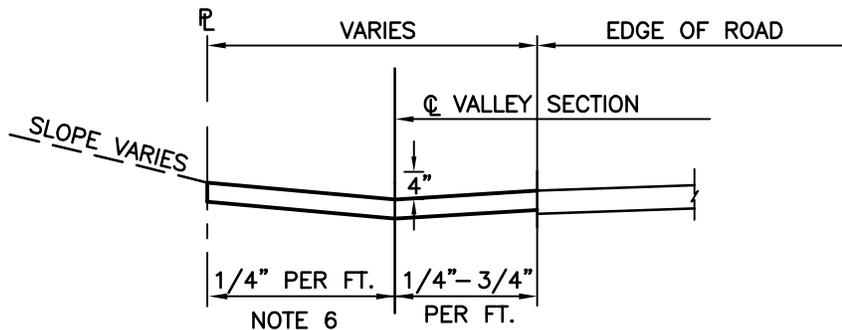


**DRIVEWAY
(Commercial)**

410.03



PLAN



SECTION A-A

NOTE:

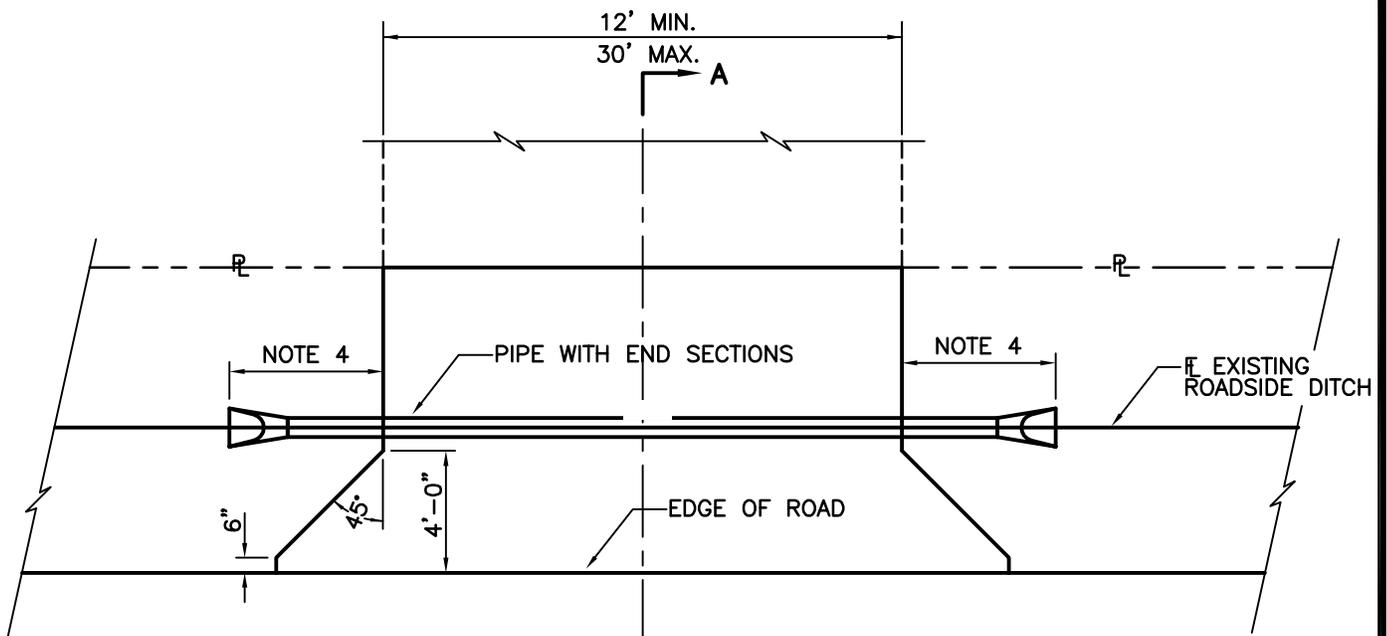
1. DRIVEWAY APPROACH SHALL BE 6" FULL DEPTH ASPHALTIC CEMENT CONCRETE OR P.C.C.
2. VALLEY SECTION REQUIRED, VALLEY SHALL BE 4" BELOW EDGE OF ROAD
3. PIPE UNDER DRIVEWAY SHALL BE SIZED TO CARRY 10 YR STORM, MINIMUM 12" DIAMETER.
4. PIPE LENGTH BASED ON 3:1 FILL SLOPE, USE FLARED END SECTION OR BEVEL END OF PIPE TO MATCH 3:1 SLOPE. HEADWALLS NOT ALLOWED.
5. WHERE THE ROADSIDE DITCH AT A DRIVEWAY DRAINS LESS THAN 10,000 SQ. FT. THE PIPE CAN BE OMITTED, INCREASE VALLEY SECTION DEPTH TO 6".
6. DRIVEWAYS SHALL PROVIDE FOR FUTURE SIDEWALKS AND ROAD IMPROVEMENTS, DRIVEWAY SLOPE BETWEEN VALLEY AND R.O.W. LINE SHALL NOT EXCEED 1/4" PER FOOT.

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



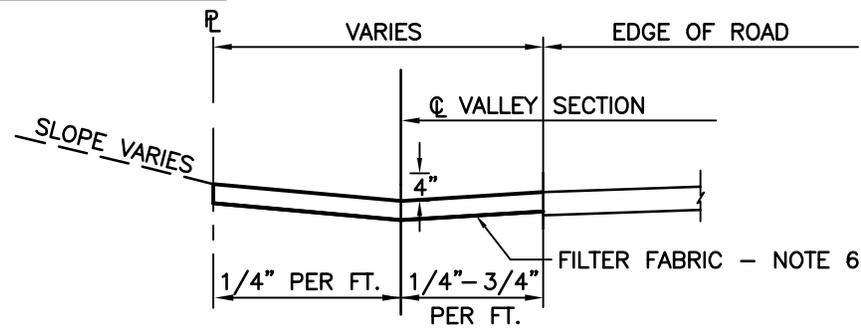
DRIVEWAY
(Unimproved Street)

410.04



THIS DETAIL APPLIES ONLY TO DRIVE APPROACHES ABUTTING GRAVEL ROADS.

PLAN



SECTION A-A

NOTE:

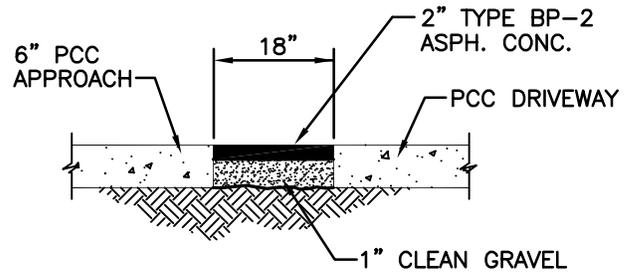
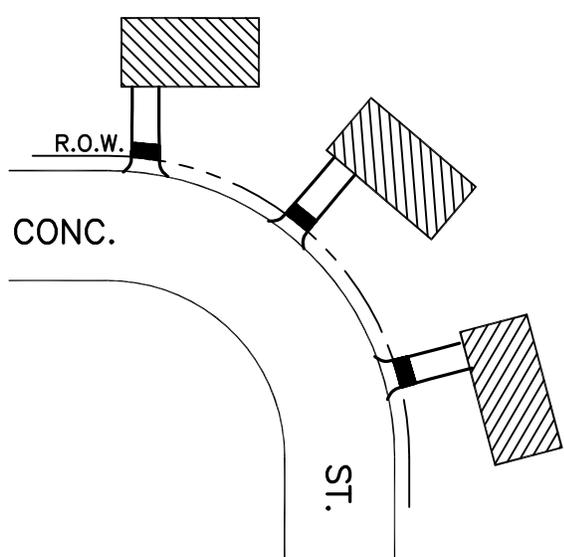
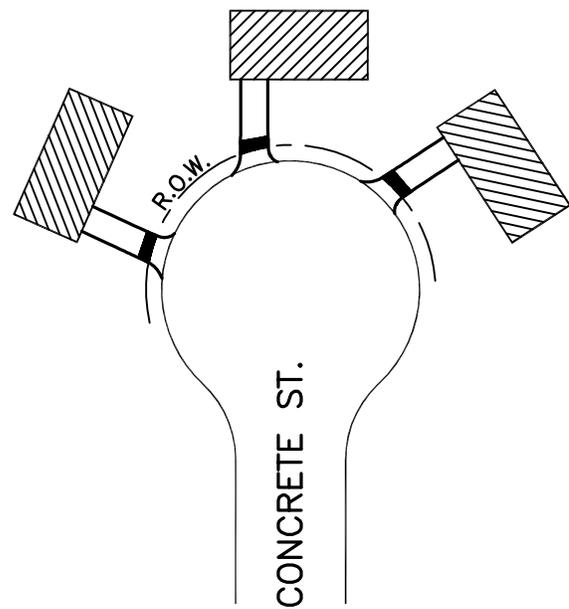
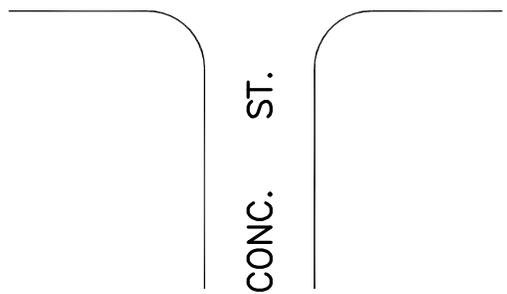
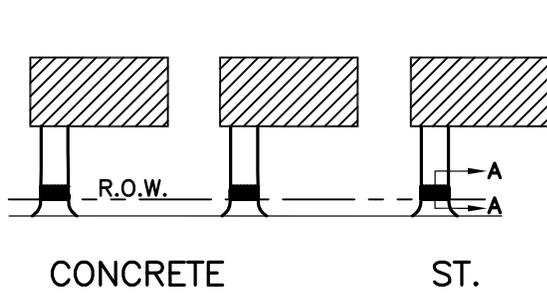
1. DRIVEWAY APPROACH SHALL BE A MINIMUM OF 8" OF 2 1/2" MINUS ROCK OR SHALL BE A MINIMUM OF 5" OF HOT MIX ASPHALT OR 6" OF PORTLAND CEMENT CONCRETE. IN THE CASE OF A HARD SURFACED APPROACH, THE APPROACH SHALL BE SET BACK A MINIMUM OF 12" BEYOND EDGE OF ROAD.
2. VALLEY SECTION REQUIRED, VALLEY SHALL BE 4" BELOW EDGE OF ROAD
3. PIPE UNDER DRIVEWAY SHALL BE SIZED TO CARRY 10 YR STORM, MINIMUM 12" DIAMETER.
4. PIPE LENGTH BASED ON 3:1 FILL SLOPE, USE FLARED END SECTION OR BEVEL END OF PIPE TO MATCH 3:1 SLOPE. HEADWALLS NOT ALLOWED.
5. WHERE THE ROADSIDE DITCH AT A DRIVEWAY DRAINS LESS THAN 10,000 SQ. FT. THE PIPE CAN BE OMITTED, INCREASE VALLEY SECTION DEPTH TO 6".
6. INSTALL HEAVY GAUGE FILTER FABRIC (MIRAFI 180N OR EQUAL) UNDER ENTIRE DRIVE APPROACH.

<i>JLB</i>	1/1/12
Approved	Date
Revisions	

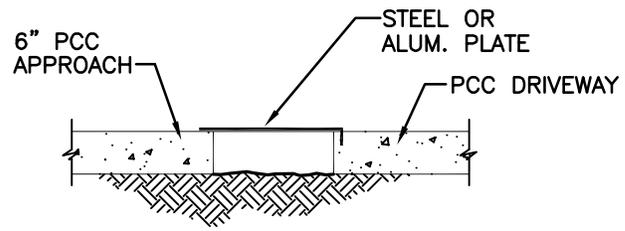


**DRIVEWAY
(Gravel Roadways)**

410.05



SECTION A-A



alt. SECTION A-A

THE MOVEMENT OVER TIME OF CONCRETE STREETS DUE PRIMARILY TO THE THERMAL EXPANSION AND CONTRACTION PROPERTIES OF CONCRETE HAS CAUSED DAMAGE TO PRIVATE RESIDENCES IN SOME NEW SUB-DIVISIONS IN COLUMBIA WHERE CONCRETE STREETS ARE USED.

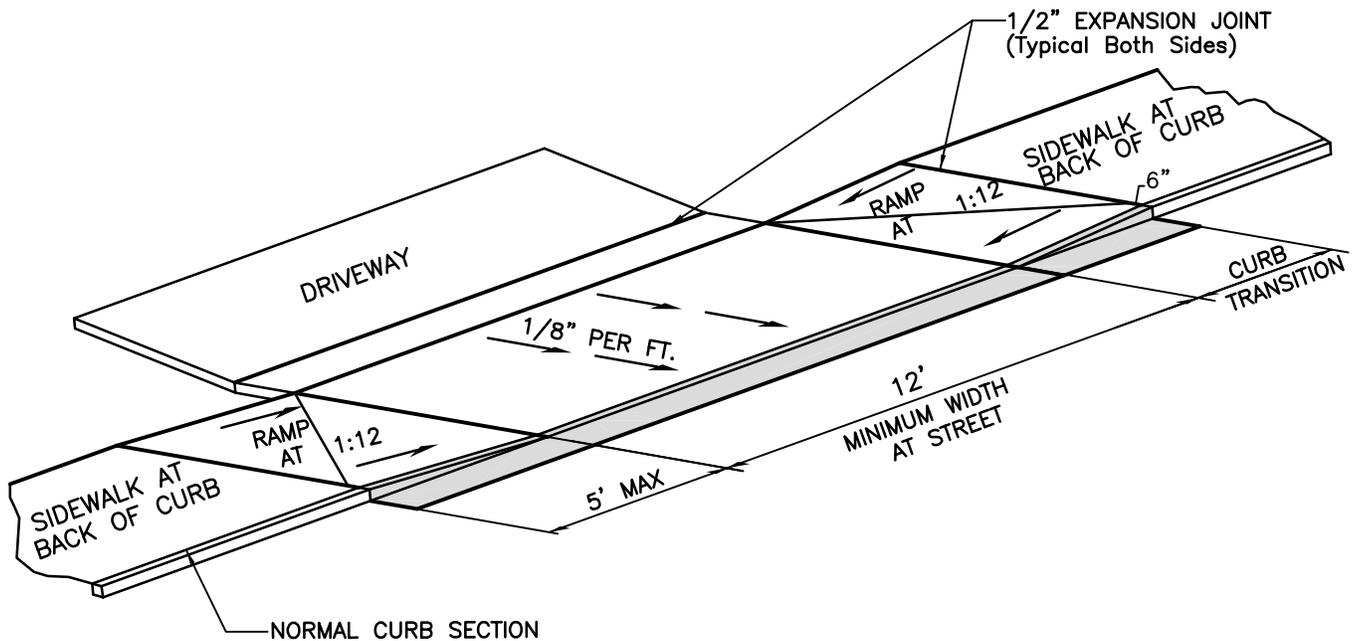
IN ORDER TO CONTROL SUCH DAMAGE, THE CITY IS RECOMMENDING THE USE OF ONE OF THE JOINT DETAILS ABOVE WHEN THE DRIVEWAY IS LOCATED AS DEPICTED ON THIS DRAWING.

<i>J&B</i>	1/1/12
Approved	Date
Revisions	



ALTERNATE EXPANSION JOINTS FOR
DRIVEWAYS ON P.C.C. STREETS

410.06



NOTE:

1. RAMP SHALL BE 6" THICK CLASS A CONCRETE.
2. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
3. DRIVEWAY CROSS SLOPE SHALL NOT EXCEED 2.00%.
4. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
5. REPLACE STANDARD CURB SECTION DRIVEWAY CURB SECTION - DETAIL 400.02 OR 400.03
6. RAMP LENGTH IS DEPENDENT UPON 1:12 MAX. SLOPE AT 5' MAXIMUM TRANSITION AREA. USE FLATTER WHEN POSSIBLE.
7. LANDING AREA SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%.
8. DRIVEWAY MAY BE REINFORCED AT OWNERS OPTION. ON CITY BID PROJECTS DO NOT REINFORCE.

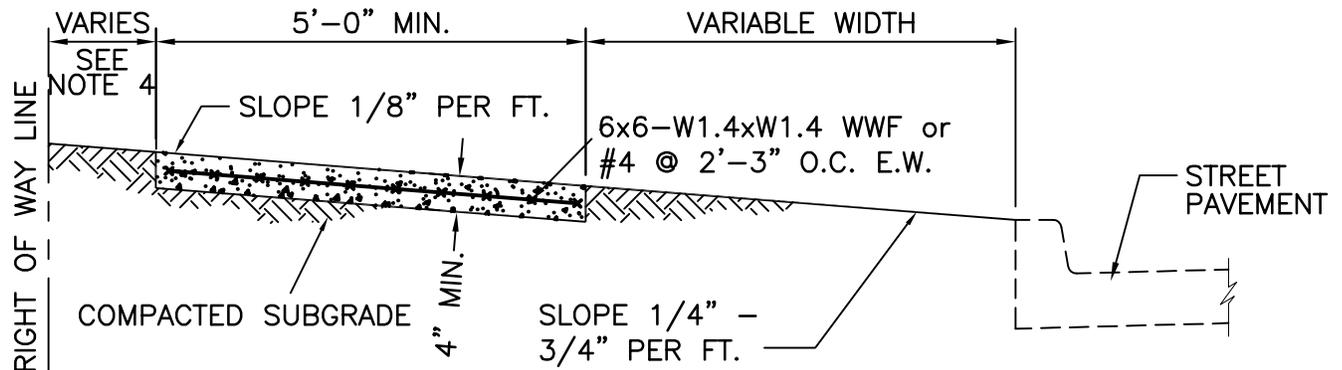
 Approved _____ Date <u>1/1/12</u>
Revisions



SIDEWALK DRIVEWAY DETAIL

Sidewalk at Back of Curb

410.07



SIDEWALK WITH GRASS PARKWAY

NOTE:

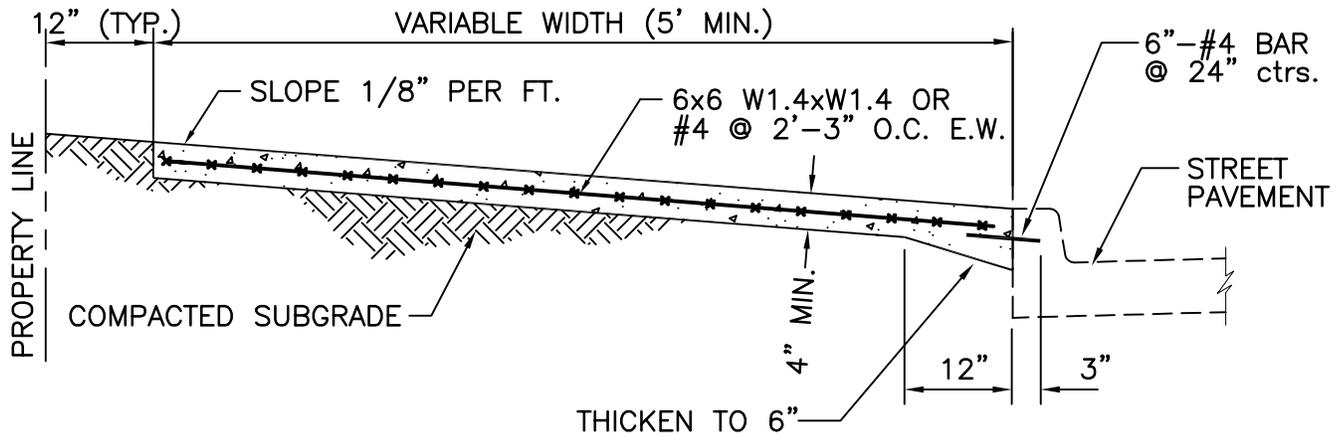
1. SIDEWALK SHALL BE 4" THICK CLASS A CONCRETE.
2. INSTALL 1/2" EXPANSION JOINTS AT INTERSECTIONS, RAMPS, STRUCTURES, DRIVEWAY APPROACHES, OR EVERY 150'.
3. INSTALL TRANSVERSE SAW JOINTS AT SPACING EQUAL TO SIDEWALK WIDTH.
4. STANDARD SIDEWALK PLACEMENT IS 12" FROM RIGHT OF WAY LINE.
5. NO STEEL TO BE PLACED THROUGH EXPANSION JOINT.
6. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.00%.

 Approved	1/1/12 Date
Revisions	



SIDEWALK

420.01



NOTE:

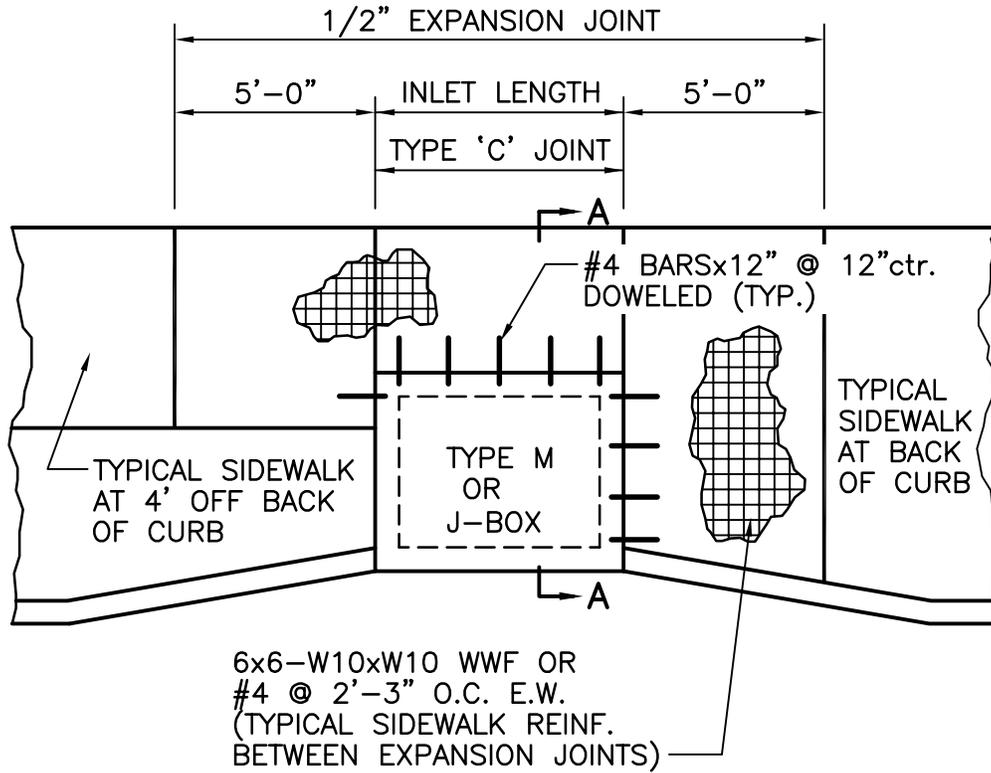
1. SIDEWALK SHALL BE 4" THICK CLASS A CONCRETE.
2. INSTALL 1/2" TRANSVERSE EXPANSION JOINTS TO MATCH STREET OR CURB AND GUTTER EXPANSION JOINTS AND AT ALL DRIVEWAY APPROACHES, AND SIDEWALK RAMPS.
3. INSTALL TRANSVERSE SAW JOINTS AT SPACING EQUAL TO SIDEWALK WIDTH.
4. FOR DOWNTOWN SIDEWALK DETAIL SEE SECTION 1000.
5. NO STEEL TO BE PLACED THROUGH EXPANSION JOINT
6. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.00%.

<i>JLB</i>	1/1/12
Approved	Date
Revisions	

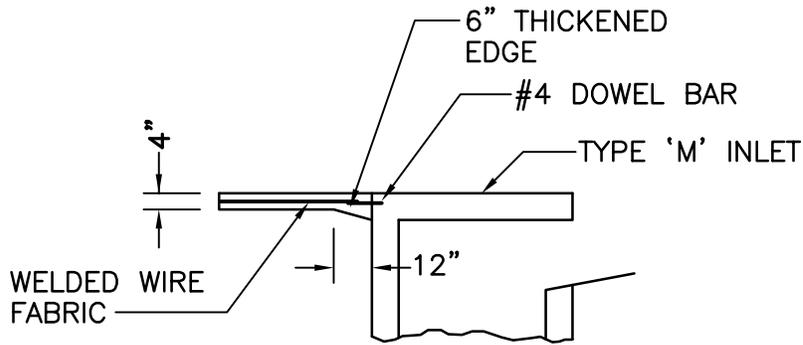


SIDEWALK AT BACK OF CURB

420.02



PLAN VIEW



SECTION A-A

NOTES:

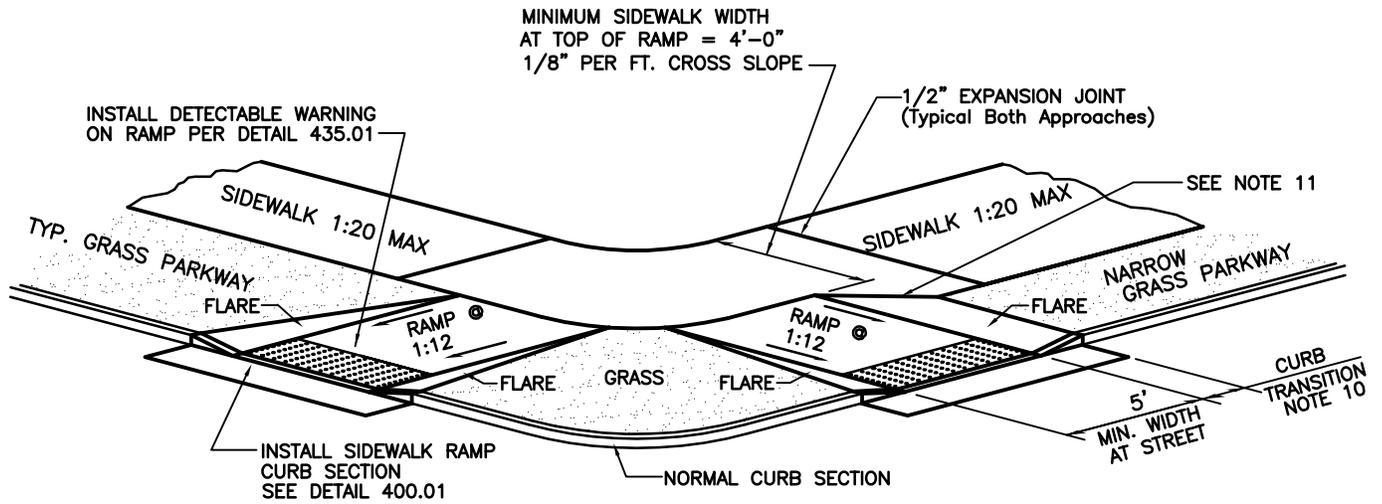
1. SIDEWALK SHALL BE 4" THICK CLASS A CONCRETE
2. REINFORCING STEEL SHALL BE GRADE 60

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



**SIDEWALK REINFORCEMENT
AT DRAINAGE STRUCTURE**

420.03



NOTE:

1. RAMP SHALL BE 6" THICK CLASS A CONCRETE WITH #4 BARS @ 12" O.C. E.W.
2. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
3. MAXIMUM RAMP CROSS SLOPE IS 2.00%.
4. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
5. REPLACE STANDARD CURB SECTION WITH SIDEWALK RAMP CURB SECTION - DETAIL 400.01
6. RAMP LENGTH IS DEPENDENT ON 1:12 MAX. SLOPE. USE FLATTER WHEN POSSIBLE.
7. LANDING AREA AT TOP OF RAMP SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%, INCREASE SIDEWALK RADIUS TO OBTAIN MINIMUM 4'-0" LANDING.
8. TYPE "A" RAMP NOT APPLICABLE IF SIDEWALK AND PARKWAY WIDTH DOES NOT PROVIDE 4'-0" LANDING AT TOP OF RAMP.
9. FLARES ARE REQUIRED AT RAMPS TO KEEP GRASS PARKWAY SLOPES IN CONFORMANCE WITH THE TYPICAL CROSS SECTION.
10. CURB TRANSITION LENGTH IS DEPENDENT ON FLARE SLOPE
11. IF RAMP EXTENDS INTO NORMAL SIDEWALK, FLARE SLOPE MUST NOT EXCEED 1:10. A LANDING IS REQUIRED, SEE NOTE 7.

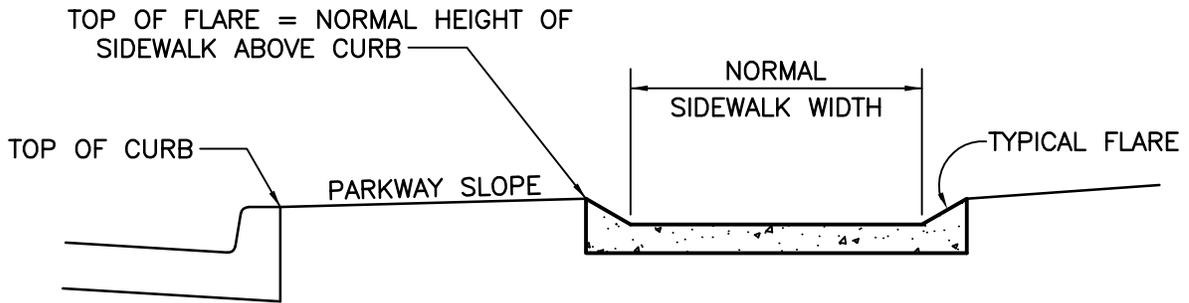
<i>JLB</i>	1/1/12
Approved	Date
Revisions	



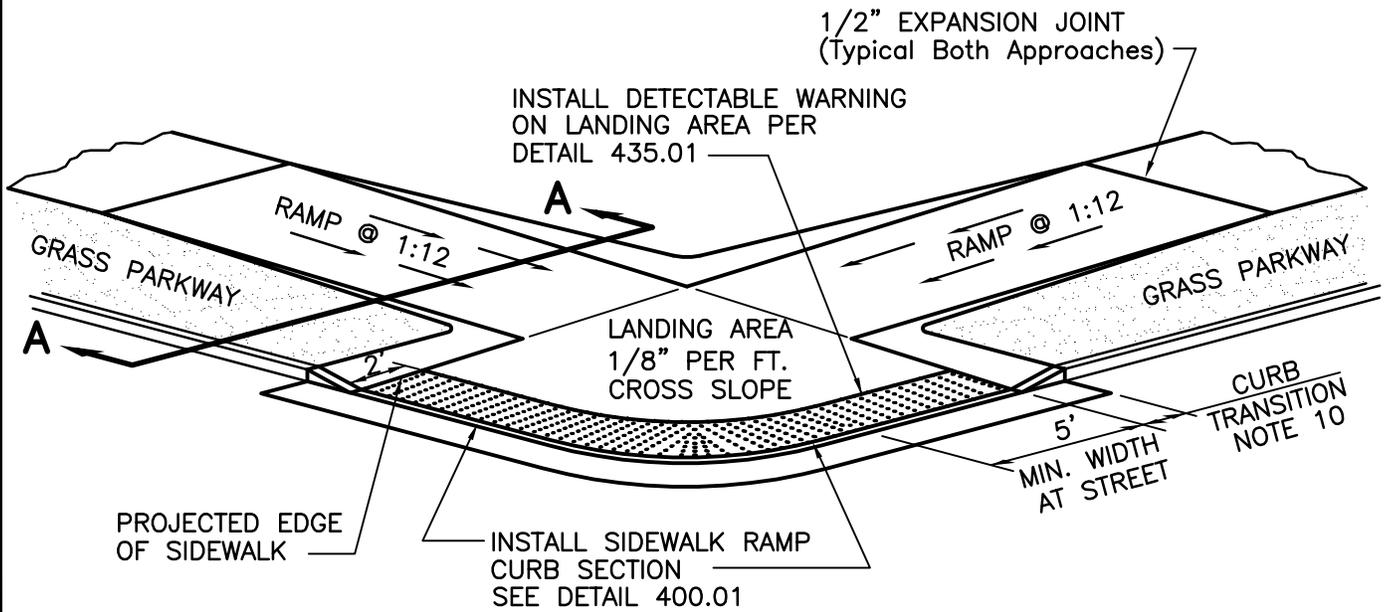
SIDEWALK RAMP

Sidewalk with Grass Parkway (Type A)

430.01



SECTION A-A



NOTE:

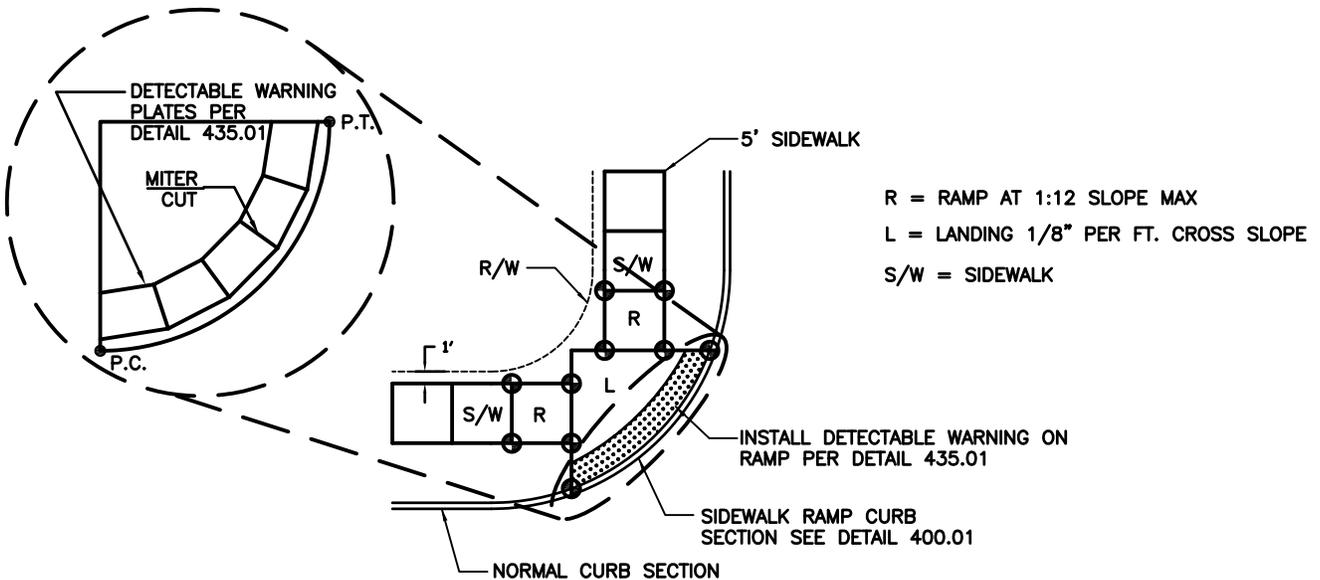
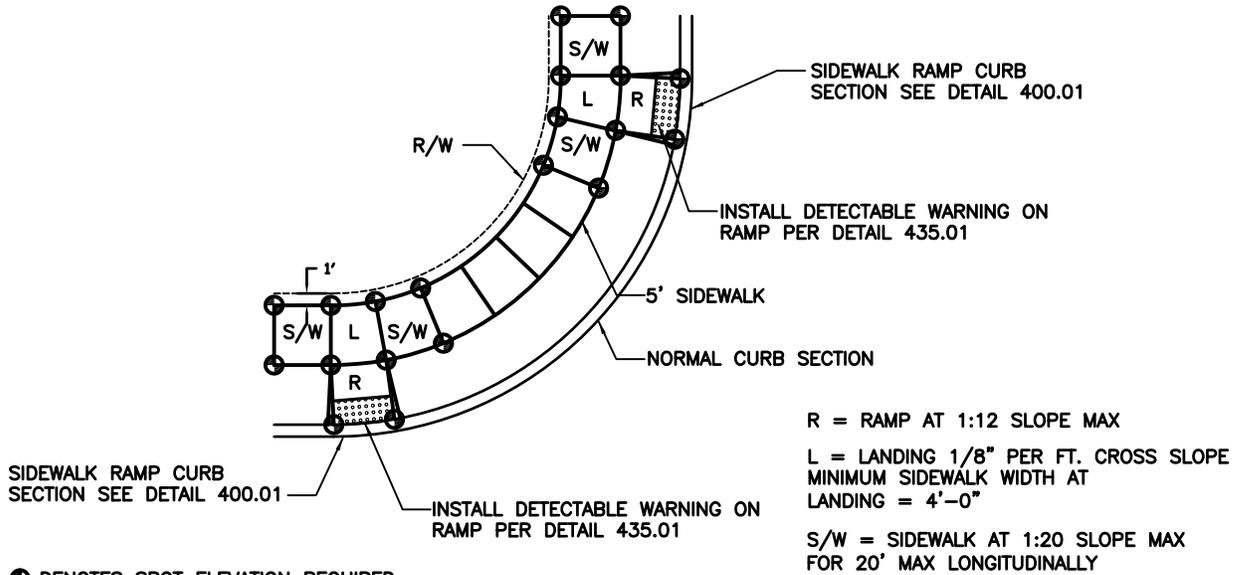
1. RAMP AND LANDING SHALL BE 6" THICK CLASS A CONCRETE WITH #4 BARS AT 12" O.C. E.W.
2. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
3. MAXIMUM RAMP CROSS SLOPE IS 2.00%.
4. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
5. REPLACE STANDARD CURB SECTION WITH SIDEWALK RAMP CURB SECTION - DETAIL 400.01
6. RAMP LENGTH IS DEPENDENT ON 1:12 MAX. SLOPE. USE FLATTER WHEN POSSIBLE.
7. LANDING AREA SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%.
8. USE TYPE "B" RAMP ONLY IF TYPE "A" IS NOT FEASIBLE.
9. FLARES ARE REQUIRED AT RAMPS TO KEEP GRASS PARKWAY SLOPES IN CONFORMANCE WITH THE TYPICAL CROSS SECTION. (SEE SECTION A-A)
10. CURB TRANSITION LENGTH IS DEPENDENT ON FLARE SLOPE

<i>J.P.L.</i>	1/1/12
Approved	Date
Revisions	



SIDEWALK RAMP
 Sidewalk with Grass Parkway
 (Type B)

430.02



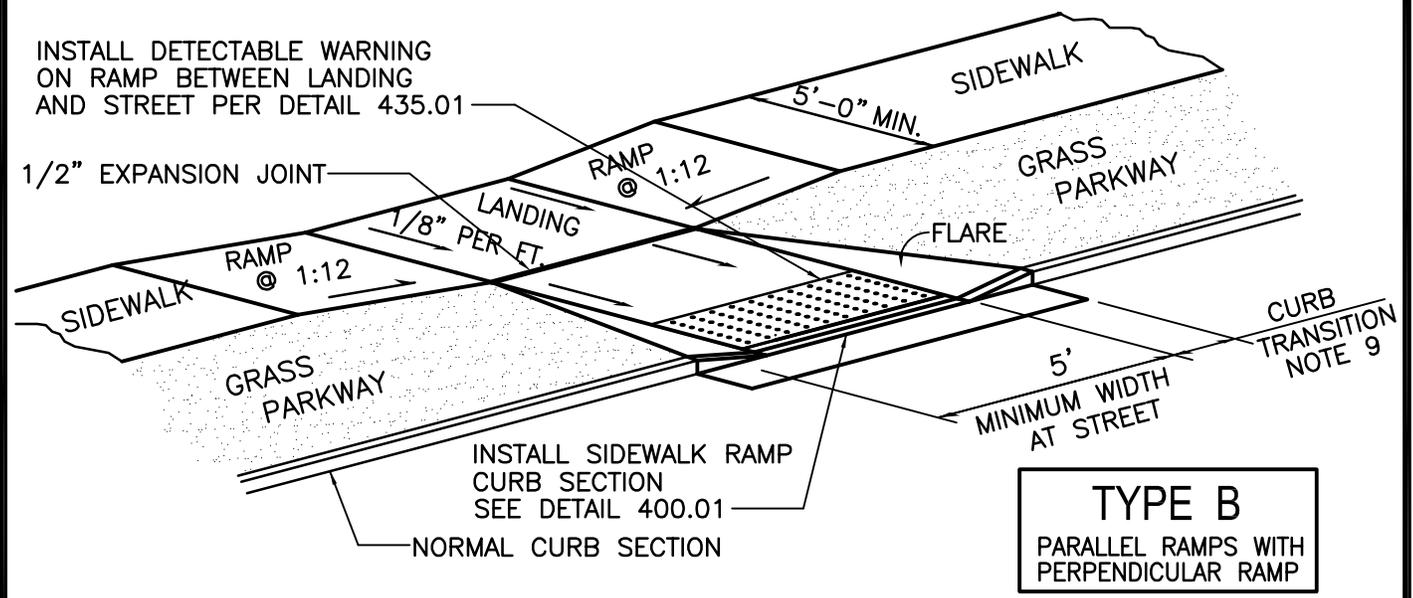
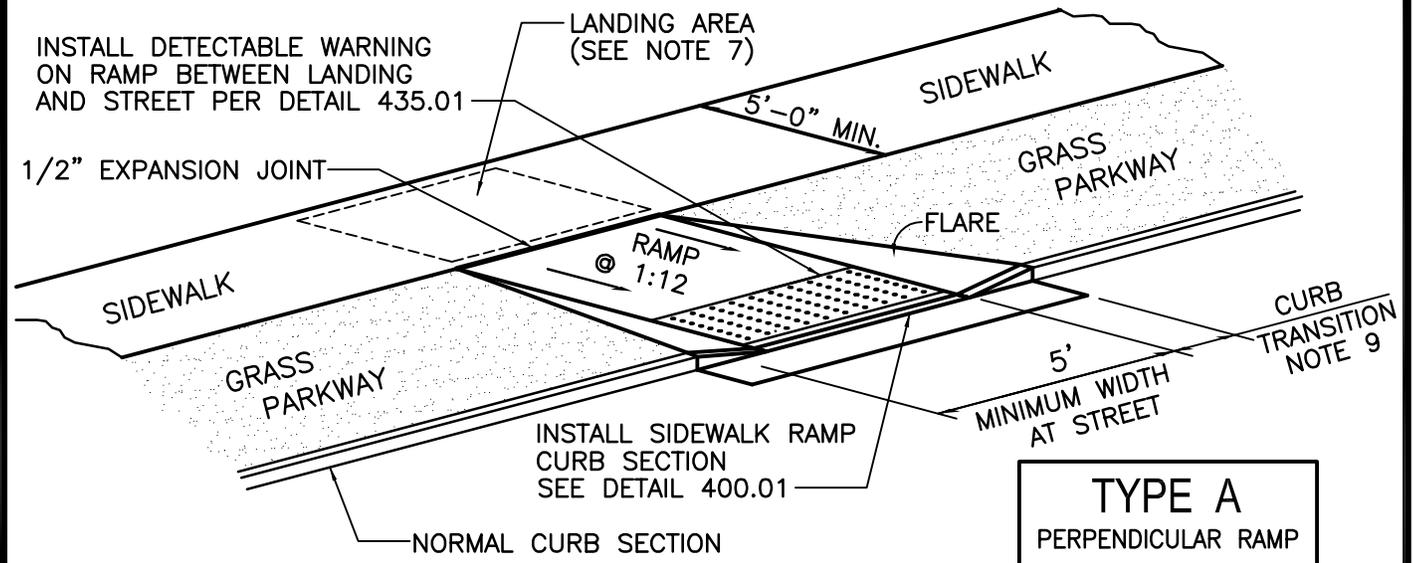
NOTE:
 1. LANDING CROSS SLOPE SHALL NOT EXCEED 2.00%.

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



SIDEWALK RAMP PLAN VIEW
 Sidewalk with Grass Parkway
 (Type A & B)

430.03



NOTE:

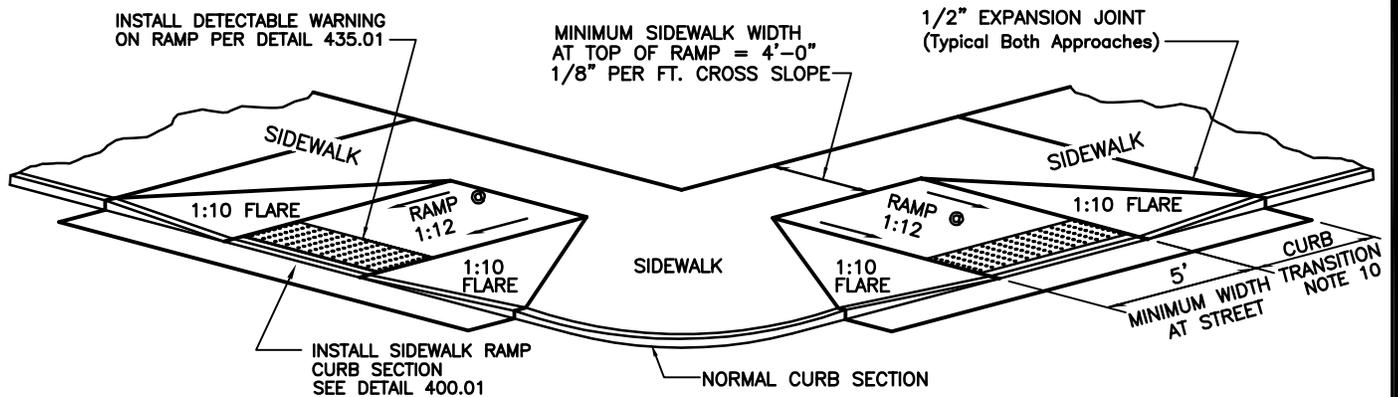
1. RAMP SHALL BE 6" THICK CLASS A CONCRETE WITH #4 BARS AT 12" O.C. E.W.
2. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
3. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
4. REPLACE STANDARD CURB SECTION WITH SIDEWALK RAMP CURB SECTION - DETAIL 400.01
5. RAMP LENGTH IS DEPENDENT ON 1:12 MAX. SLOPE. USE FLATTER WHEN POSSIBLE.
6. LANDING AREA AT TOP OF RAMP SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%.
7. TYPE "A" RAMP NOT APPLICABLE IF PARKWAY WIDTH DOES NOT PROVIDE ENOUGH LENGTH FOR PERPENDICULAR RAMP AT 1:12 SLOPE.
8. FLARES ARE REQUIRED AT RAMPS TO KEEP GRASS PARKWAY SLOPES IN CONFORMANCE WITH THE TYPICAL CROSS SECTION.
9. CURB TRANSITION LENGTH IS DEPENDENT ON FLARE SLOPE.

	<p>1/1/12 Date</p>
<p>Approved</p>	<p>Date</p>
<p>Revisions</p>	



MIDBLOCK SIDEWALK RAMP Sidewalk with Grass Parkway

431.01



NOTE:

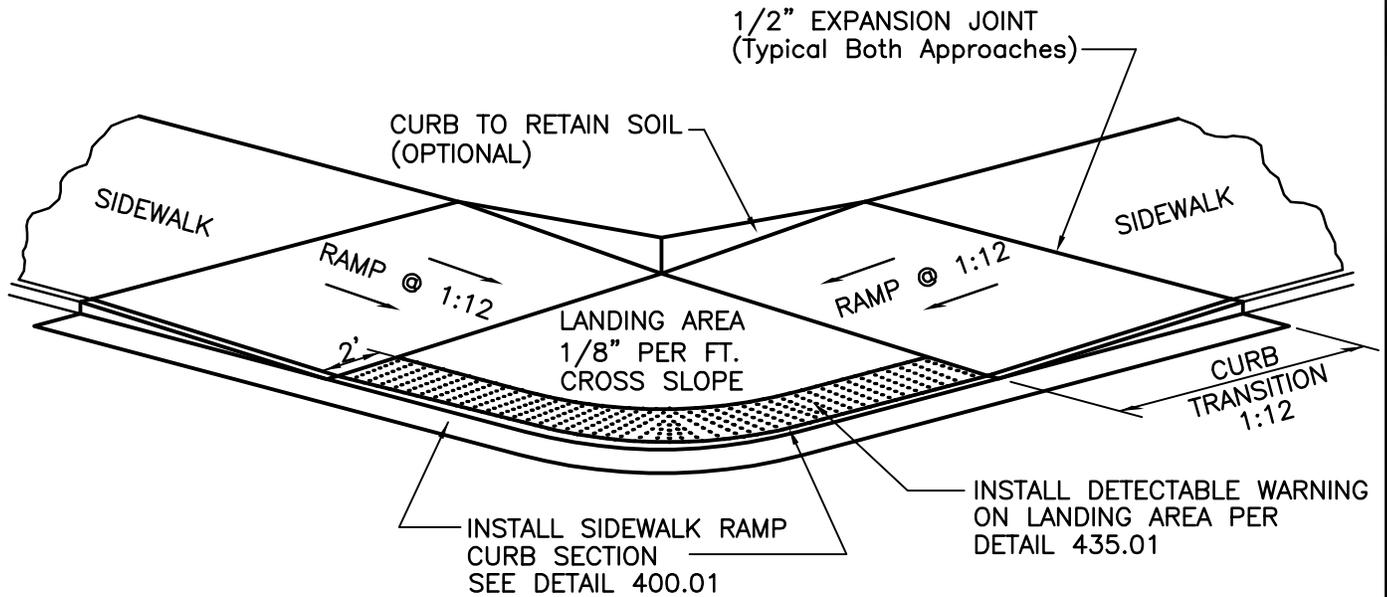
1. RAMP SHALL BE 6" THICK CLASS A CONCRETE WITH #4 BARS AT 12" O.C. E.W.
2. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
3. MAXIMUM RAMP CROSS SLOPE IS 2.00%.
4. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
5. REPLACE STANDARD CURB SECTION WITH SIDEWALK RAMP CURB SECTION – DETAIL 400.01
6. RAMP LENGTH IS DEPENDENT ON 1:12 MAX. SLOPE. USE FLATTER WHEN POSSIBLE.
7. LANDING AREA AT TOP OF RAMP SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%.
8. TYPE "A" RAMP NOT APPLICABLE IF SIDEWALK WIDTH DOES NOT PROVIDE 4'-0" LANDING AT THE TOP OF RAMP. USE TYPE "B" RAMP.
9. RAMP EXTENDS INTO SIDEWALK, FLARE SLOPE MUST NOT EXCEED 1:10.
10. CURB TRANSITION LENGTH IS DEPENDENT ON 1:10 FLARE SLOPE

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



SIDEWALK RAMP Sidewalk at Back of Curb (Type A)

432.01



NOTE:

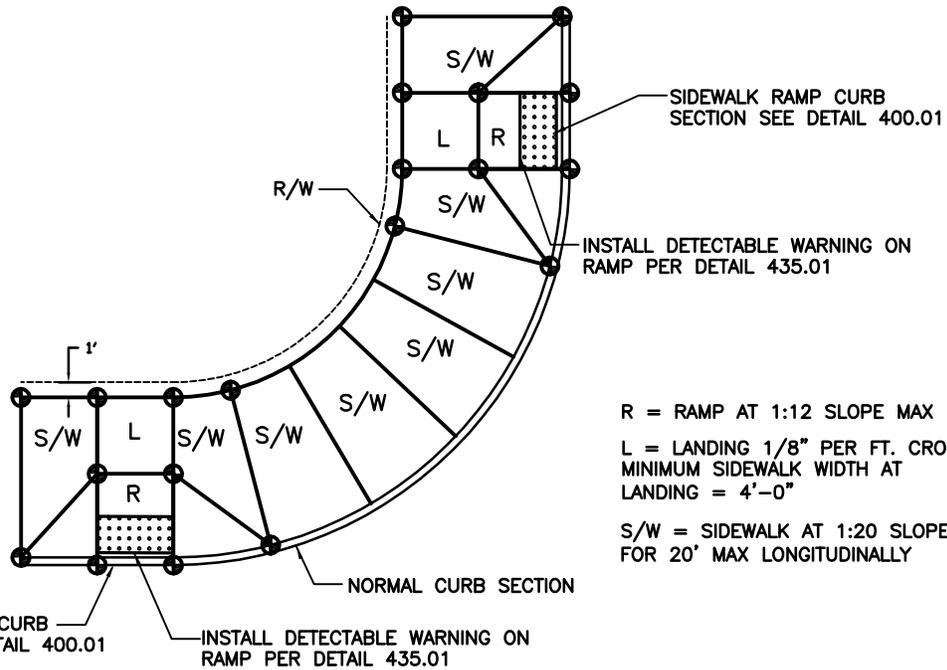
1. RAMP AND LANDING SHALL BE 6" THICK CLASS A REINFORCED CONCRETE W/#4 BARS @ 12" O.C.
2. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
3. MAXIMUM RAMP CROSS SLOPE IS 2.00%.
4. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
5. REPLACE STANDARD CURB SECTION WITH SIDEWALK RAMP CURB SECTION - DETAIL 400.01
6. RAMP LENGTH IS DEPENDENT ON 1:12 MAX. SLOPE. USE FLATTER WHEN POSSIBLE.
7. LANDING AREA SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%.
8. USE TYPE "B" RAMP ONLY IF TYPE "A" IS NOT FEASIBLE.

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



SIDEWALK RAMP
Sidewalk at Back of Curb
(Type B)

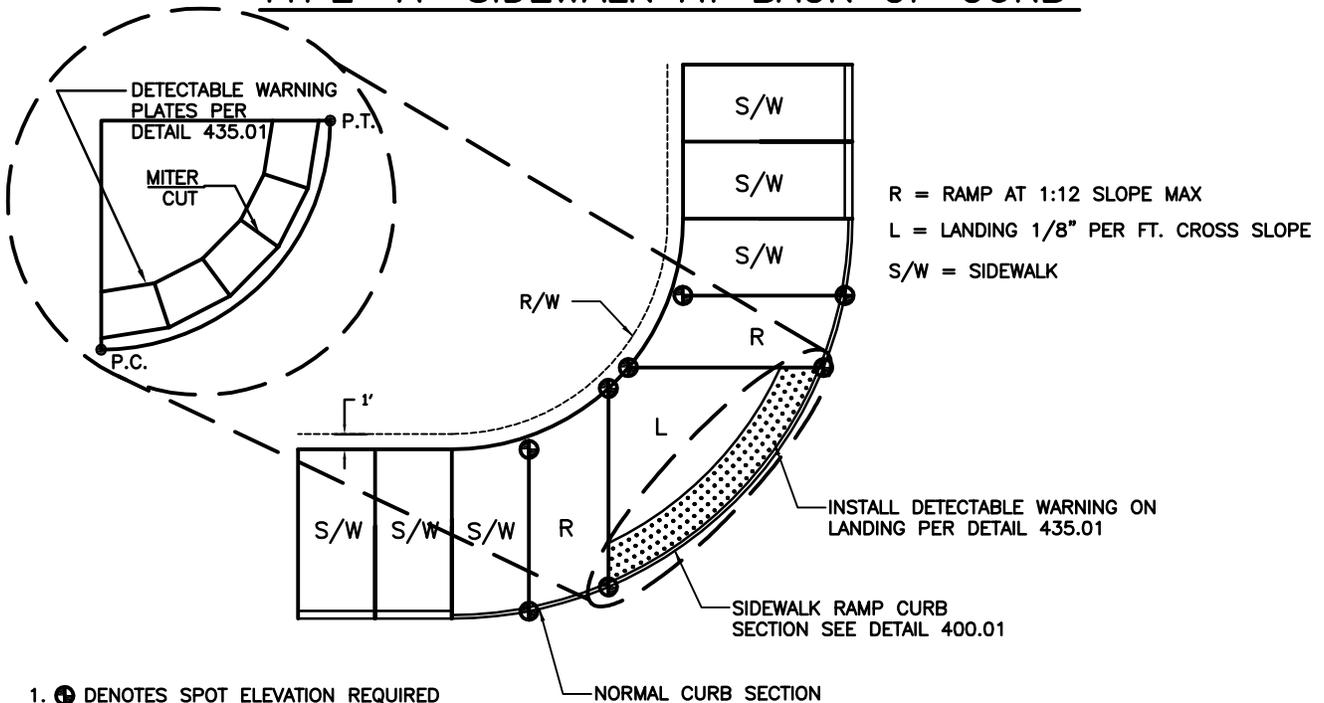
432.02



R = RAMP AT 1:12 SLOPE MAX
 L = LANDING 1/8" PER FT. CROSS SLOPE
 MINIMUM SIDEWALK WIDTH AT
 LANDING = 4'-0"
 S/W = SIDEWALK AT 1:20 SLOPE MAX
 FOR 20' MAX LONGITUDINALLY

1. ⊕ DENOTES SPOT ELEVATION REQUIRED

TYPE "A" SIDEWALK AT BACK OF CURB



R = RAMP AT 1:12 SLOPE MAX
 L = LANDING 1/8" PER FT. CROSS SLOPE
 S/W = SIDEWALK

1. ⊕ DENOTES SPOT ELEVATION REQUIRED

2. DETECTABLE WARNING PLATES ARE TO BE
 MITERED EQUALLY ON BOTH SIDES TO BE FLUSH.

TYPE "B" SIDEWALK AT BACK OF CURB

NOTE:
 1. LANDING CROSS SLOPE SHALL NOT EXCEED 2.00%.

<i>JLB</i>	1/1/12
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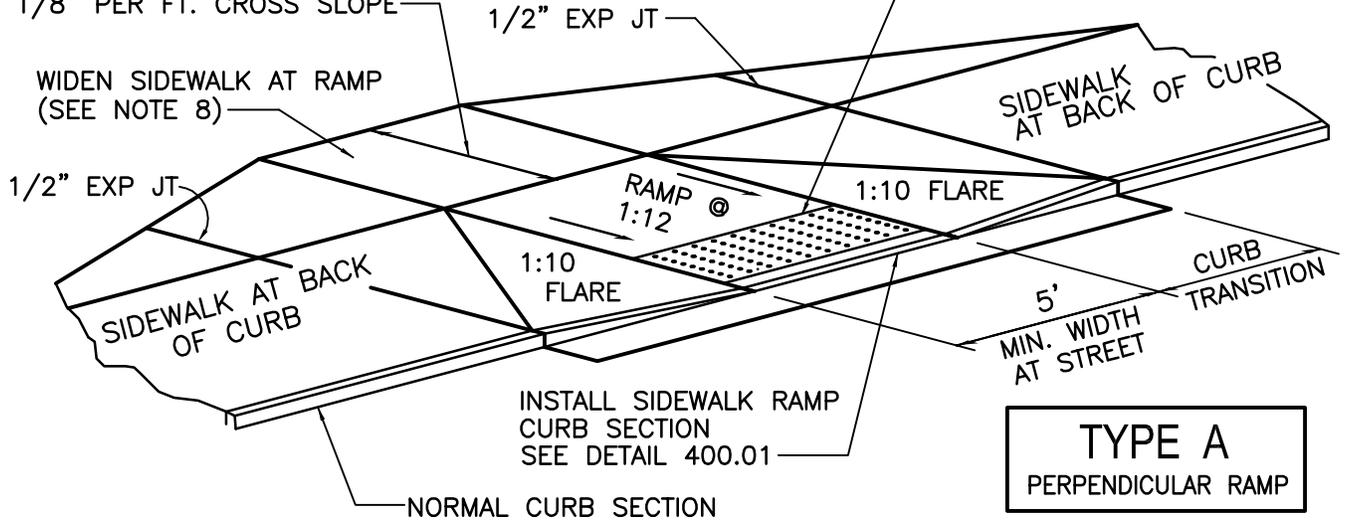


SIDEWALK RAMP PLAN VIEW
 Sidewalk at Back of Curb
 (Type A & B)

432.03

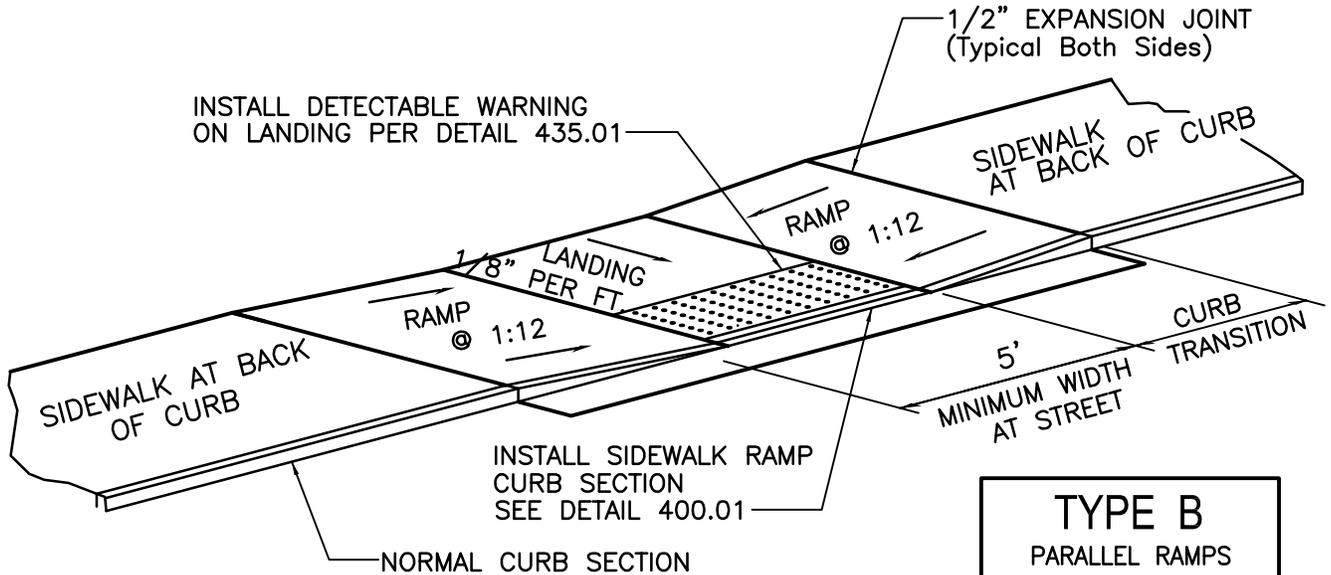
MINIMUM SIDEWALK WIDTH
AT TOP OF RAMP = 4'-0"
1/8" PER FT. CROSS SLOPE

INSTALL DETECTABLE WARNING
ON RAMP PER DETAIL 435.01



INSTALL DETECTABLE WARNING
ON LANDING PER DETAIL 435.01

1/2" EXPANSION JOINT
(Typical Both Sides)



NOTE:

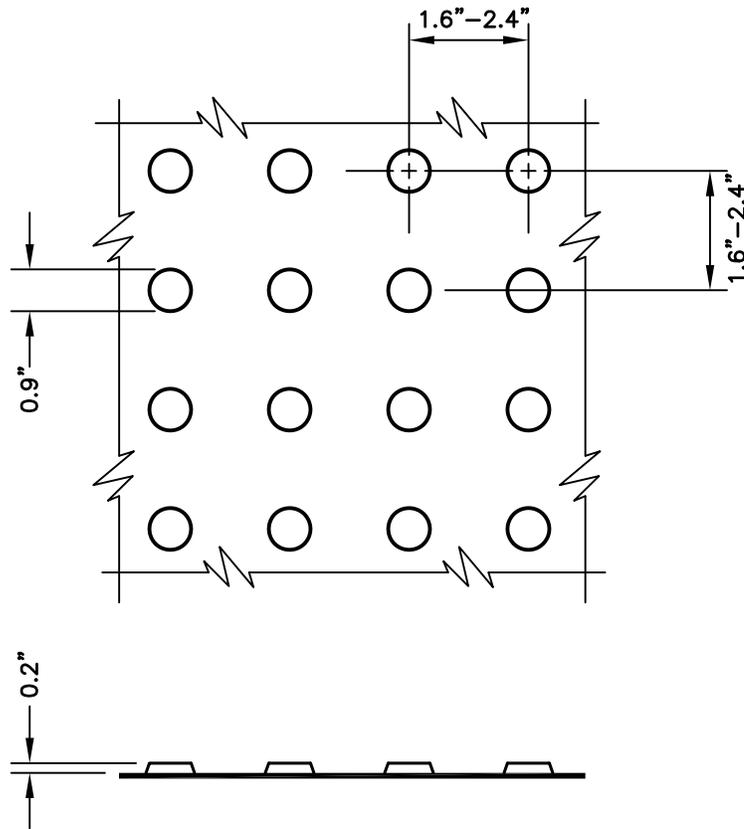
1. RAMP SHALL BE 4" THICK CLASS A CONCRETE REINFORCED SAME AS SIDEWALK.
2. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
3. MAXIMUM RAMP CROSS SLOPE IS 2.00%.
4. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
5. REPLACE STANDARD CURB SECTION WITH SIDEWALK RAMP CURB SECTION - DETAIL 400.01
6. RAMP LENGTH IS DEPENDENT ON 1:12 MAX. SLOPE. USE FLATTER WHEN POSSIBLE.
7. LANDING AREA SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%.
8. TYPE "A" RAMP NOT APPLICABLE WHEN NORMAL SIDEWALK WIDTH DOES NOT PROVIDE 4'-0" LANDING AT THE TOP OF RAMP, WIDEN SIDEWALK OR USE TYPE "B" RAMP.
9. 1:10 FLARES ARE REQUIRED ON TYPE "A" RAMPS.

	<p>1/1/12 Date</p>
<p>Approved</p>	
<p>Revisions</p>	



MIDBLOCK SIDEWALK RAMP Sidewalk at Back of Curb

433.01



NOTE:

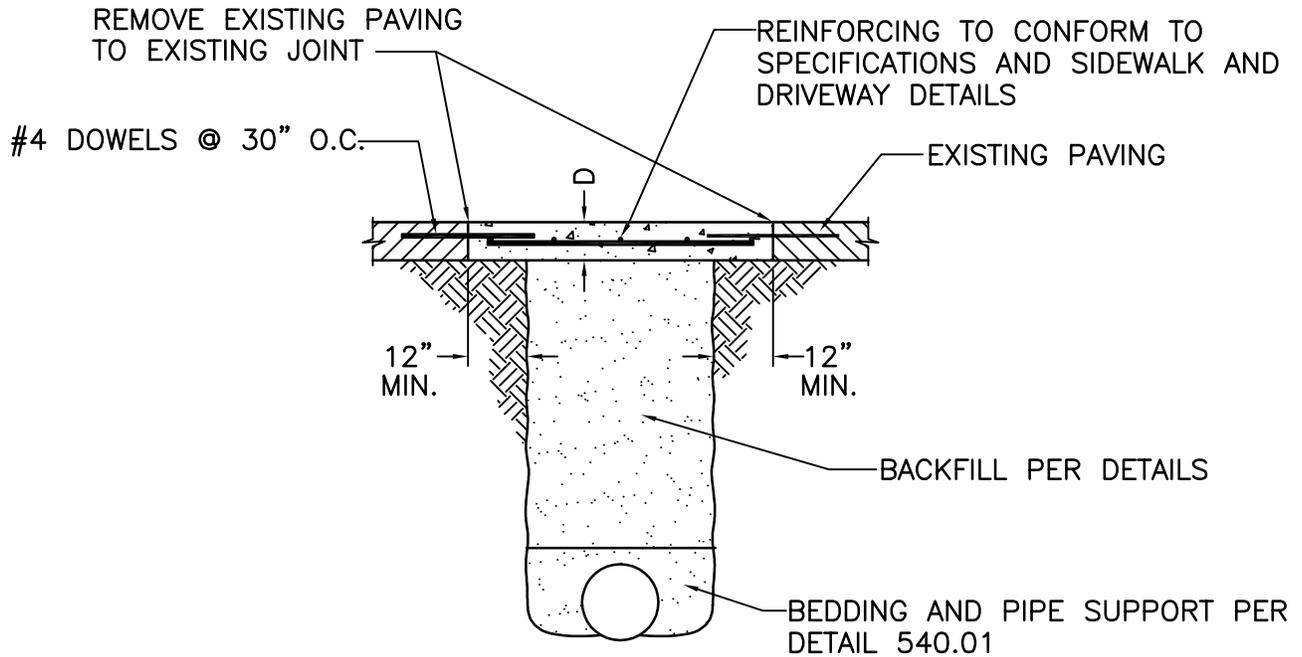
1. DETECTABLE WARNING SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF 0.9", A HEIGHT OF NOMINAL 0.2", AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35", AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, ACHIEVED BY THE INSTALLATION OF ADA SOLUTIONS 2436 REPBR, 2448 REPBR, OR 2460 REPBR (OR APPROVED EQUAL) AND SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.
2. ADA SOLUTIONS 24RADREPBR OR APPROVED EQUAL TO BE USED WITH DETAIL 430.02, 432.02, AND 1000.08.
3. STAMPED CONCRETE IS NOT AN APPROVED EQUAL.
4. DOWNTOWN DETECTABLE WARNINGS MAY BE ADA 2004 COMPLIANT DETECTABLE WARNING PAVERS.
5. DETECTABLE WARNING PLATS ARE TO BE COLONIAL OR BRICK RED IN COLOR OR APPROVED EQUAL.
6. DETECTABLE WARNING SURFACES SHALL BE 24" WIDE AND EXTEND THE FULL LENGTH OF THE PUBLIC USE AREA.

<i>J.P.B.</i>	1/1/12
Approved	Date
Revisions	



DETECTABLE WARNING

435.01



NOTE:

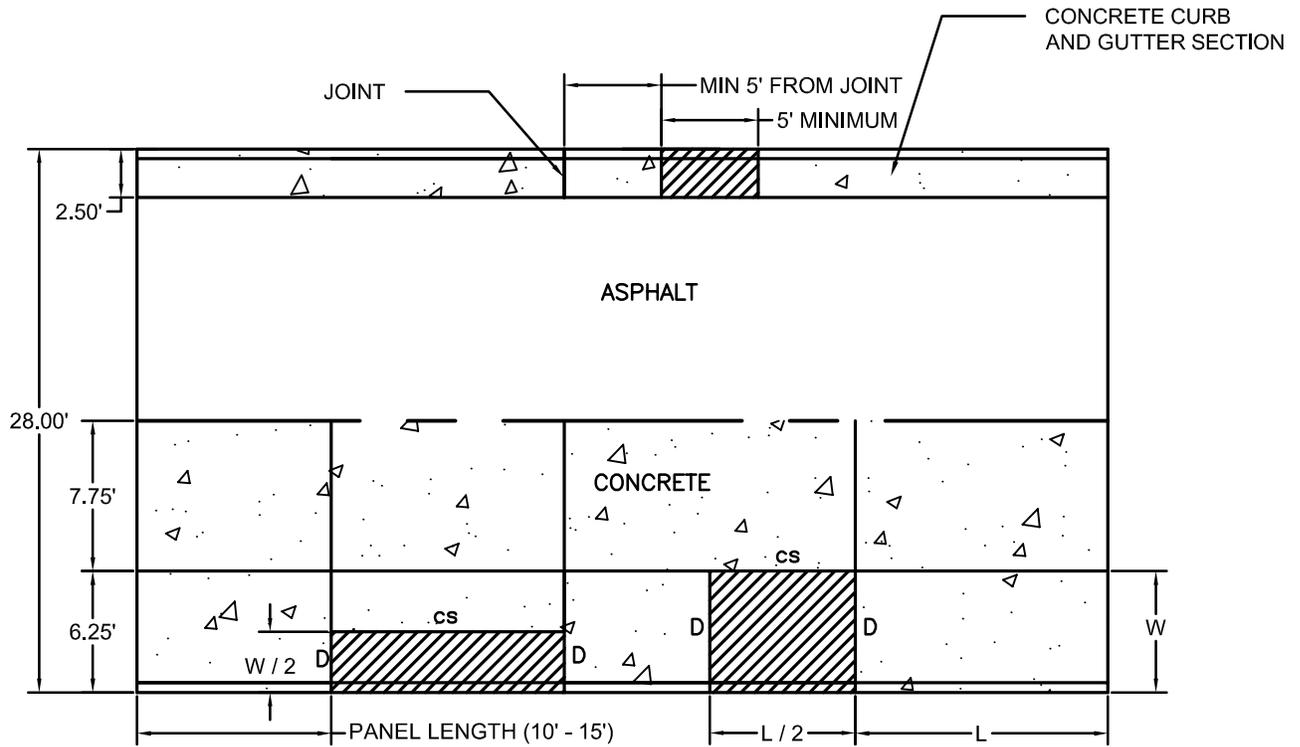
- D = 4" PORTLAND CEMENT CONCRETE FOR SIDEWALKS
- D = 6" PORTLAND CEMENT CONCRETE FOR RESIDENTIAL DRIVEWAYS
- D = 7" PORTLAND CEMENT CONCRETE FOR COMMERCIAL DRIVEWAYS

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



PATCHING & BACKFILLING (Driveways / Sidewalks)

440.01



 PANEL OR CURB BEING REPLACED

NOTE:

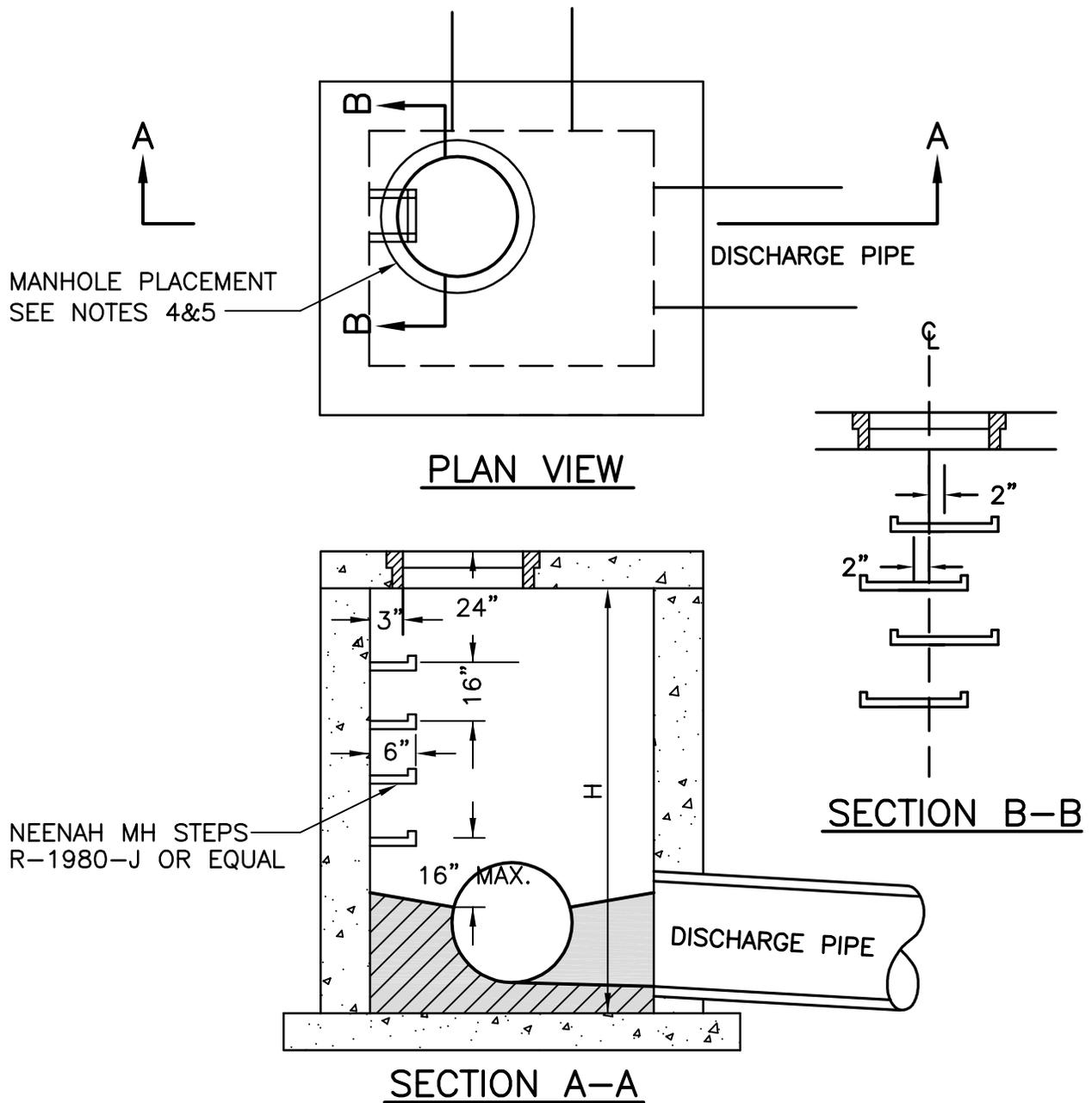
1. HALF PANELS MAY BE REPLACED PER THIS DETAIL. WHERE A REPAIR DOES NOT FALL IN THE HALF PANEL, REPLACE FULL PANEL.
2. A MINIMUM OF 5' OF CURB AND GUTTER SHALL BE REPLACED. WHERE THE REPAIR WILL BE WITHIN 5' OF A JOINT, REPLACE CURB AND GUTTER TO THE JOINT. NO SECTION OR CURB AND GUTTER SHALL BE LESS THAN 5' LONG.
3. ALL SAWING OF STREETS SHALL BE FULL DEPTH AND DONE IN A NEAT AND WORKMANLIKE MANNER.
4. DOWEL CURB AND GUTTER AND PANELS PER STANDARD DETAILS.
5. L = PANEL LENGTH
6. W = PANEL WIDTH

<i>JLB</i>	1/1/12
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PANEL AND CURB REPLACEMENT

440.02



NOTES:

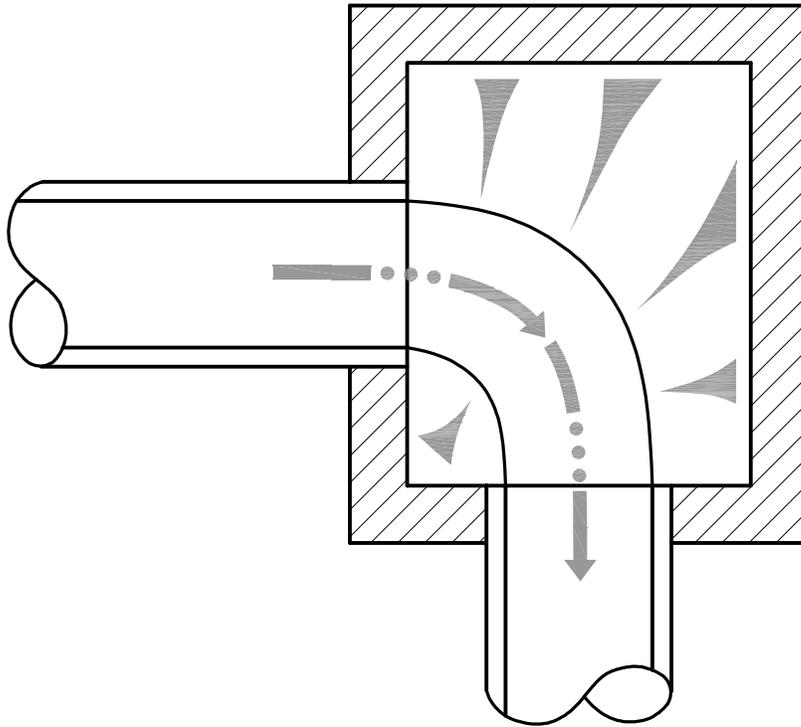
1. STEPS NOT REQUIRED WHERE H IS LESS THAN 4'.
2. CAST IRON STEPS SHALL BE NEENAH R-1980-J OR EQUAL
3. STEPS SHALL BE PLACED ON VACANT WALL WHEN POSSIBLE
4. MANHOLE RING SHALL BE OFFSET TOWARD WALL WITH STEPS.
5. MANHOLE RING SHALL BE CENTERED ON CENTERLINE OF STEPS
6. STAGGER STEPS 2" EACH WAY FROM CENTERLINE OF MANHOLE RING.
7. TOP STEP 24" BELOW TOP OF SLAB
8. STEP SPACING TO BE 16", BOTTOM STEP TO BE NO HIGHER THAN 16" FROM INVERT.

<i>JLB</i>	1/1/12
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Revisions	

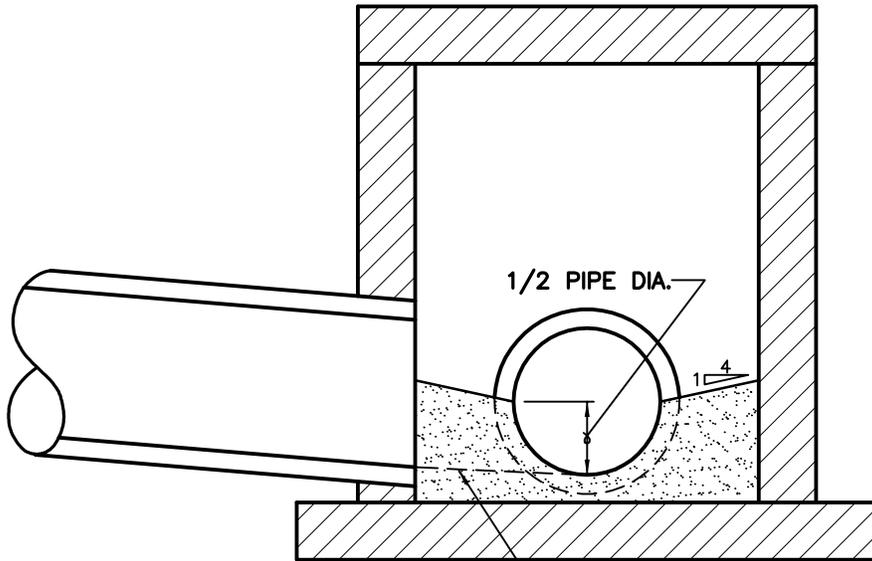


DRAINAGE STRUCTURE STEPS

500.01



PLAN



INVERT ∇ MIN. 2% SLOPE

SECTION

NOTES:

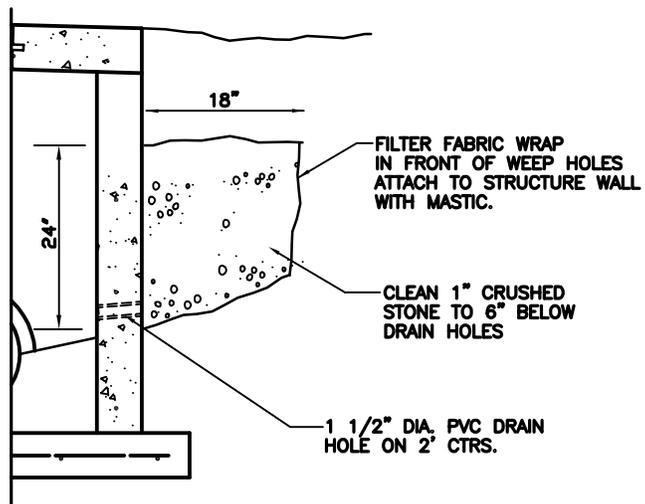
1. FORM ALL INVERTS FOR SMOOTH FLOW THRU STRUCTURE.
2. INVERT SHALL BE FORMED UP TO 1/2 THE PIPE DIAMETER.
3. INVERT SHALL BE CLASS E CONCRETE.

<i>JLB</i>	1/1/12
Approved	Date
Revisions	

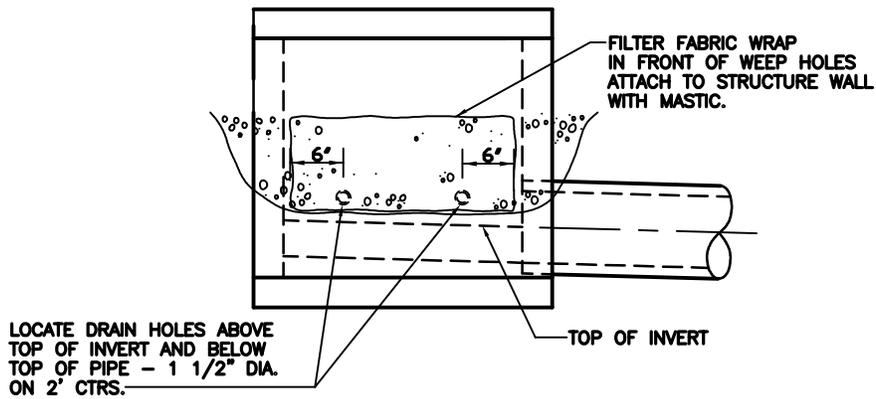


**DRAINAGE STRUCTURE
INVERT**

500.02



PARTIAL SECTION



FRONT ELEVATION

NOTE:

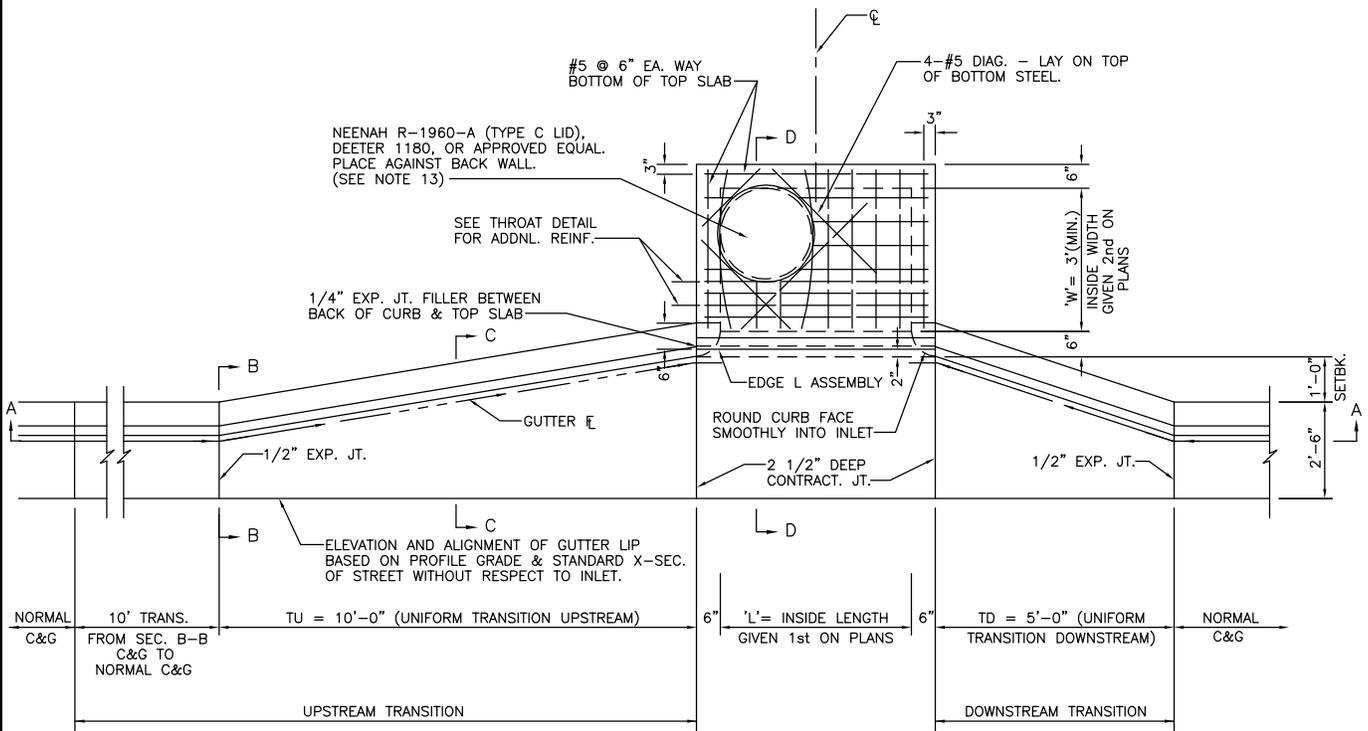
1. PLACE WEEP HOLES ON UPSTREAM FACE OF ALL STRUCTURES AND ALSO ON ROADWAY FACE OF CURB INLET STRUCTURES.
2. WEEP HOLE FILTER FABRIC SHALL CONSIST OF A NON-WOVEN, POLYPROPYLENE TYPE FABRIC SUCH AS: AMOCO 4553 NON-WOVEN GEOTEXTILE FABRIC OR APPROVED EQUAL.

<i>J.P.L.</i>	1/1/12
Approved	Date
Revisions	

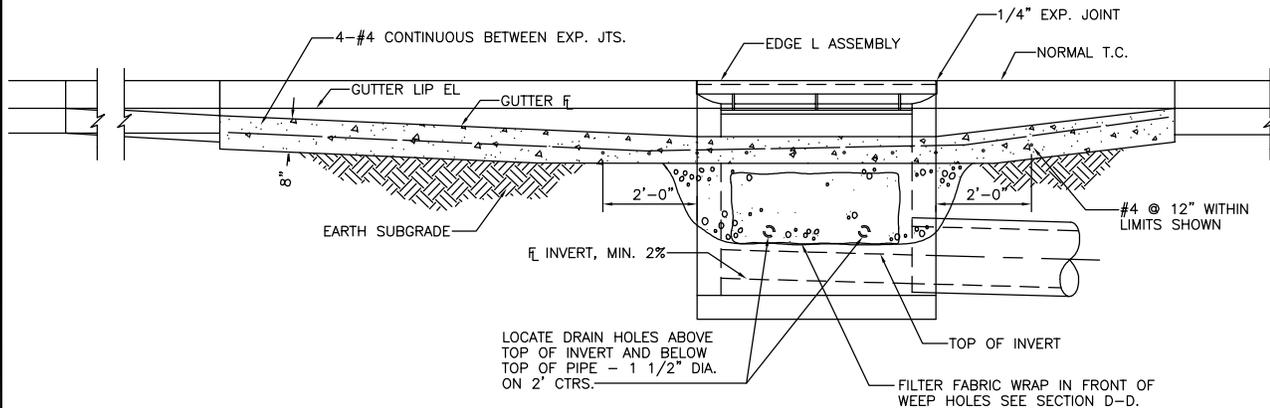


**DRAINAGE STRUCTURE
WEEP HOLES**

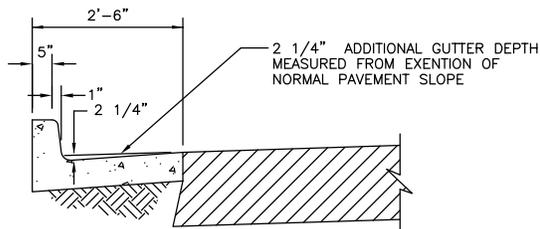
500.04



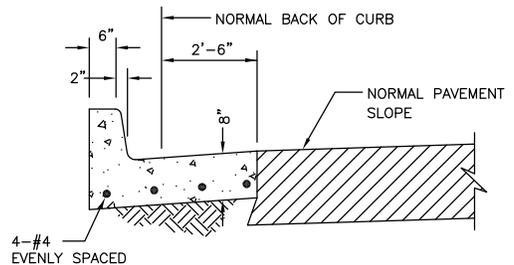
PLAN



SECTION A-A



SECTION B-B



SECTION C-C

	1/1/12
	Date
Revisions	



TYPE M INLET
(Plan & Sections)

505.01A

TYPE M INLET NOTES

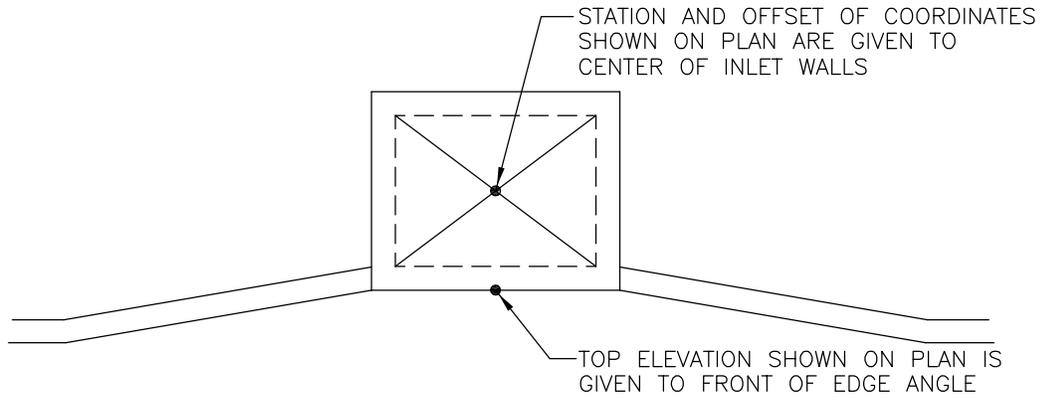
1. CONCRETE SHALL BE: CLASS E FOR BASE, CLASS D FOR WALLS AND TOP.
2. REINFORCING STEEL SHALL BE GRADE 60
3. THIS DESIGN IS FOR L = 4'-0", 6'-0", 8'-0", OR 10'-0".
4. INLET WILL BE CALLED OUT ON PLANS AS 'L'x'W' STD. CURB INLET, OR 'L'x'W' DEFLECTOR CURB INLET. DIMENSIONS 'L' & 'W' GIVEN ON PLANS AS 'L'x'W'.
5. STA AND OFFSET OR COORDINATES SHOWN ON PLAN ARE GIVEN TO CENTER OF INLET WALLS.
6. THE ELEVATION OF THE TOP OF INLET GIVEN ON THE PLAN SHEET IS AT THE CENTER OF THE FRONT EDGE OF THE EDGE ANGLE ASSEMBLY. SLOPE THE TOP TO MATCH STREET GRADE, AND CROSS SLOPE OF RIGHT OF WAY.
7. DIMENSIONS TU AND TD AS SHOWN EXCEPT WHERE NOTED OTHERWISE IN PLANS.
8. TRANSITIONS ALONG LENGTH TU & TD MUST BE UNIFORM BETWEEN STANDARD CURB & GUTTER CROSS SECTION & THAT SHOWN AT INLET. FORM CURB FACE WITH FLEXIBLE FORM.
9. REINFORCEMENT:
 - (A) BEND AROUND MH RING WHEREVER FEASIBLE. (SEE PLAN)
 - (B) MINIMUM 2" COVER REQUIRED UNLESS NOTED OTHERWISE.
10. BROOM FINISH TOP SLAB.
11. HORIZONTAL PROJECTION OF PIPE CENTERLINE SHALL INTERSECT AT THE CENTER OF INLET, UNLESS OTHERWISE SHOWN.
12. TRIM PIPE FLUSH WITH INSIDE WALLS.
13. CAST IRON STEPS, FRAME, AND LID:
 STEPS NOT REQUIRED WHERE H IS LESS THAN 4'.
 CAST IRON STEPS SHALL BE NEENAH R-1980-J OR EQUAL
 STEPS SHALL BE PLACED ON VACANT WALL WHEN POSSIBLE
 MANHOLE RING SHALL BE OFFSET TOWARD WALL WITH STEPS.
 MANHOLE RING SHALL BE CENTERED ON CENTERLINE OF STEPS
 STAGGER STEPS 2" EACH WAY FROM CENTERLINE OF MANHOLE RING.
 TOP STEP 24" BELOW TOP OF SLAB
 STEP SPACING TO BE 16", BOTTOM STEP TO BE NO HIGHER THAN 16" FROM INVERT.
14. CLASS E CONCRETE INVERT SHALL BE FORMED UP TO 1/2 THE PIPE DIAMETER.
15. WEEP HOLE FILTER FABRIC SHALL CONSIST OF A NON-WOVEN, POLYPROPYLENE TYPE FABRIC SUCH AS AMOCO 4553 NON-WOVEN GEOTEXTILE FABRIC OR APPROVED EQUAL.
16. DRIVEWAYS ARE TO BE AT LEAST 5' FROM END OF CURB TRANSITION (TU AND TD).

<i>JDB</i>	1/1/12
Approved	Date
Revisions	

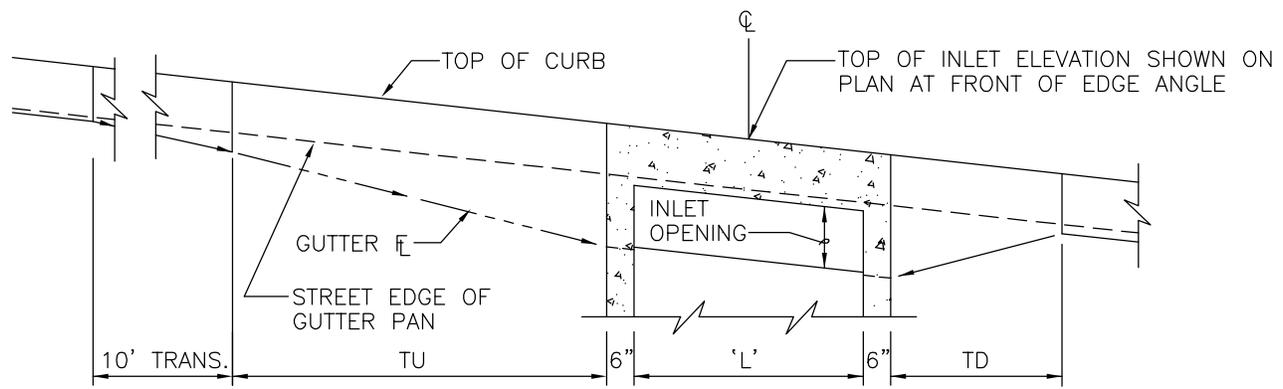


**TYPE M INLET
NOTES**

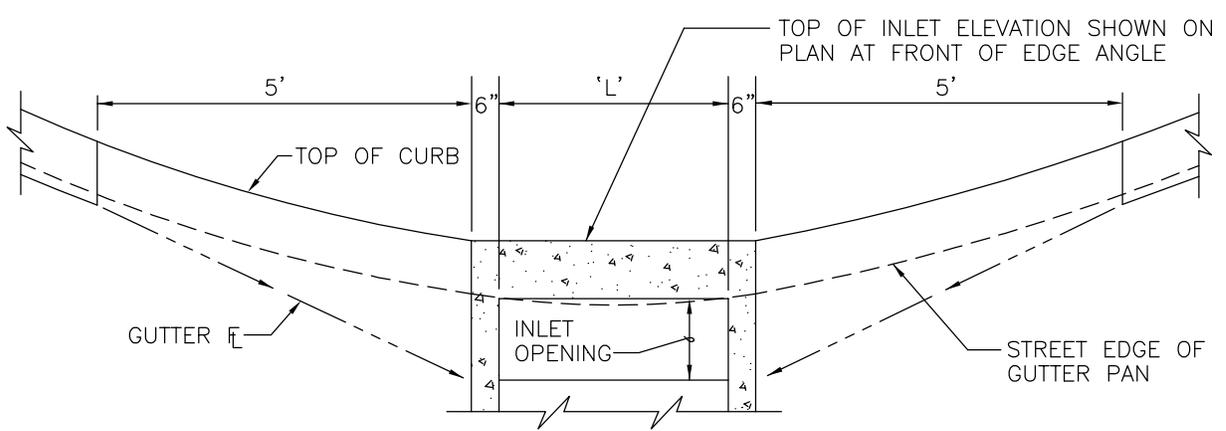
505.01B



INLET PLAN INFORMATION



ON SLOPE



AT LOW POINT

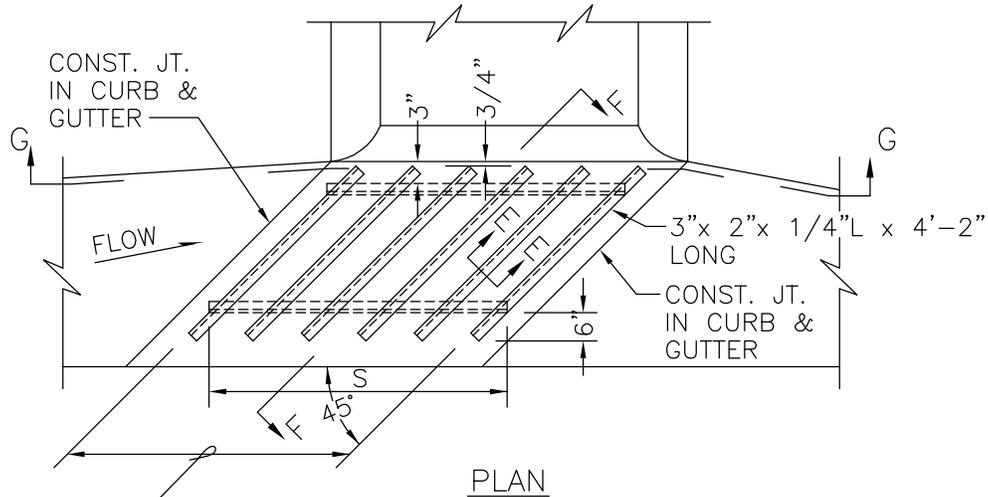
INLET SETTING DIAGRAMS

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



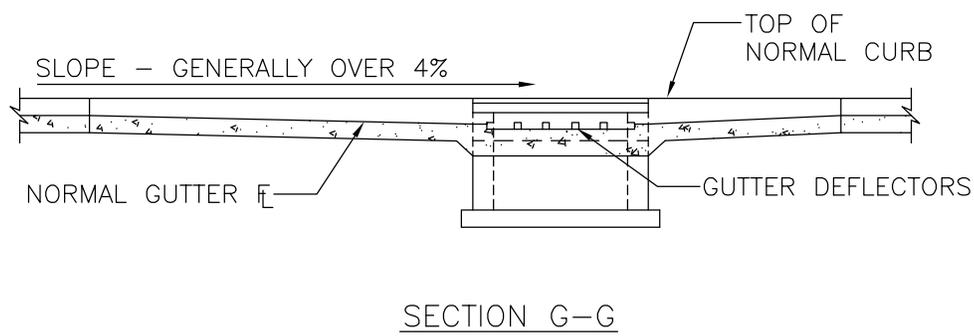
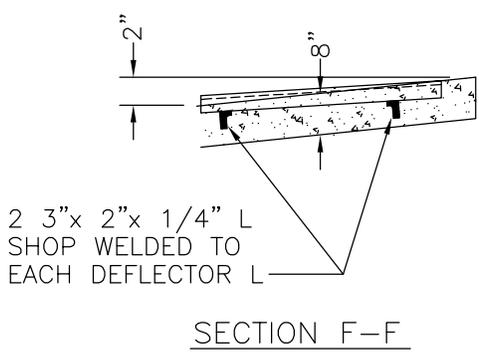
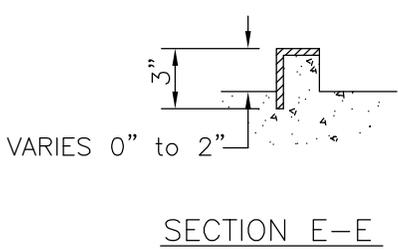
**TYPE M INLET
SETTING DIAGRAM**

505.01D



DEFLECTORS TO BE EQUALLY SPACED

{	FOR L=4'; 6 DEFLECTORS-S=4'-6"
	FOR L=6'; 8 DEFLECTORS-S=6'-6"
	FOR L=8'; 11 DEFLECTORS-S=8'-6"
	FOR L=10'; 13 DEFLECTORS-S=10'-6"



GUTTER DEFLECTOR NOTES:

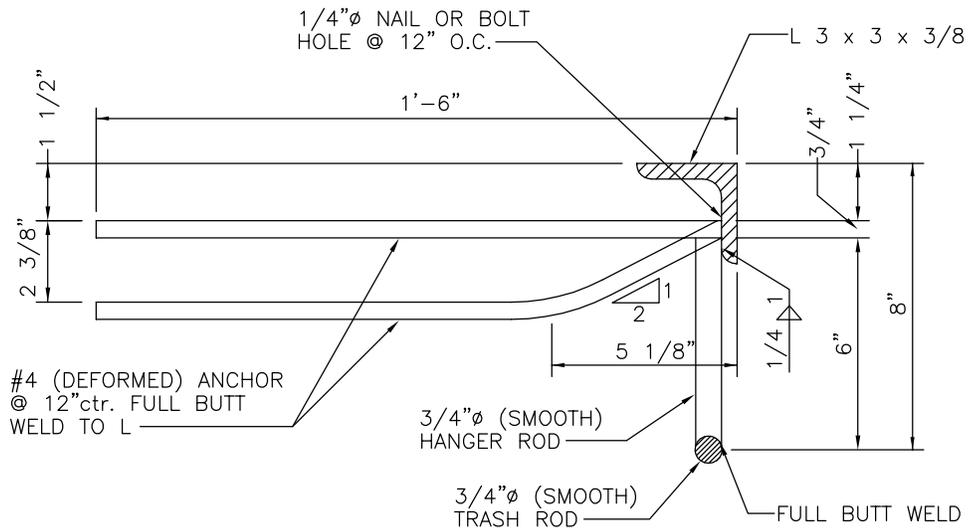
1. ASSEMBLY TO BE HOT DIP GALVANIZED.
2. TO BE USED WHERE DEFLECTOR CURB INLET IS SPECIFIED
3. BEFORE PLACING CONCRETE; SUPPORT UNIT SECURELY IN FINAL POSITION BY ATTACHING TO METAL RODS DRIVEN INTO SUBGRADE

<i>JLB</i>	1/1/12
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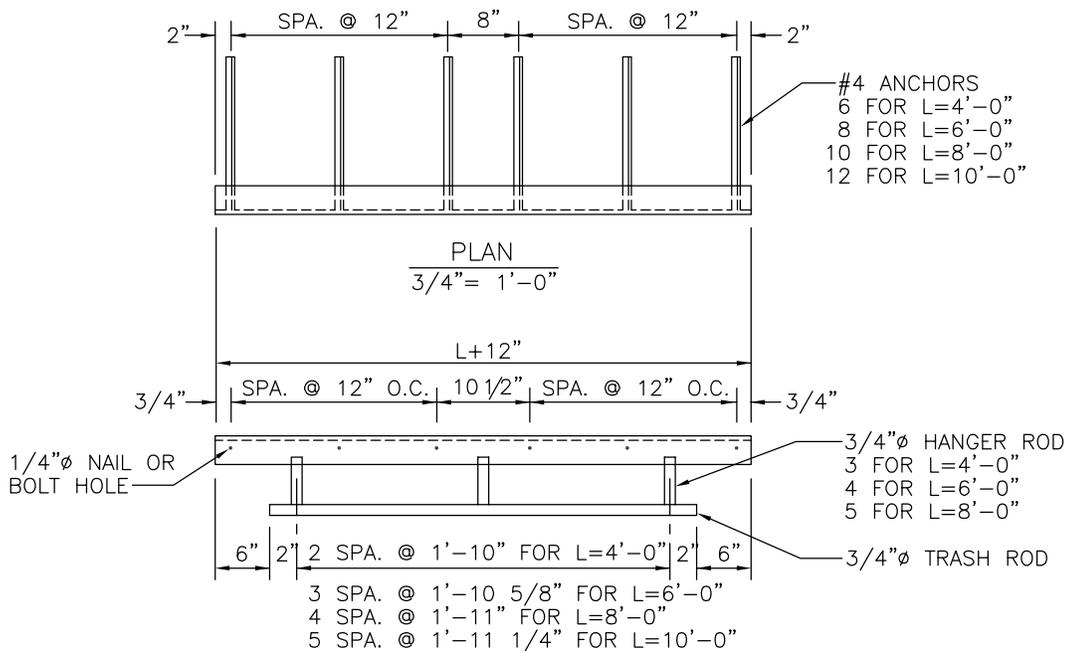


**TYPE M INLET
DEFLECTOR DETAIL**

505.01E



SECTION



FRONT ELEV.

NOTES:

1. STRUCTURAL STEEL SHALL BE GRADE A-36
2. EXPOSED STEEL SURFACES TO BE FINISHED SMOOTH.
3. HOT DIP GALVANIZE ASSEMBLY, EXCEPT THAT GALV. NOT REQUIRED ON DEFORMED ANCHORS. CHIPPING NOT REQUIRED ON ANCHOR WELDS.
4. NAILS OR BOLTS USED TO ANCHOR ANGLE ASSEMBLY TO FORM SHALL BE REMOVED OR CUT OFF FLUSH WITH SURFACE OF ANGLE.
5. DIMENSION "L" REPRESENTS THE INSIDE INLET DIMENSION.

<i>JLB</i>	1/1/12
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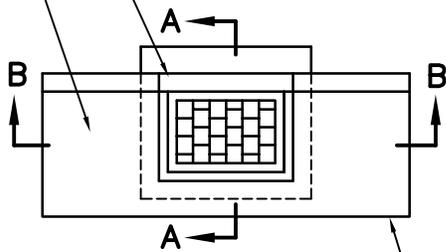


TYPE M INLET
EDGE ANGLE ASSEMBLY

505.01F

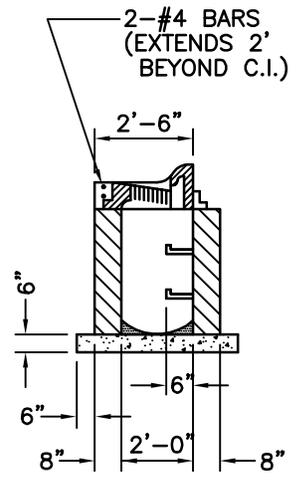
DEPRESSED GUTTER SECTION,
TRANSITION 5 FT FROM INLET

C.I. FRAME & GRATE NEENAH R-3246 OR
R-3246-AL WITH TYPE L GRATE OR APPROVED EQUAL

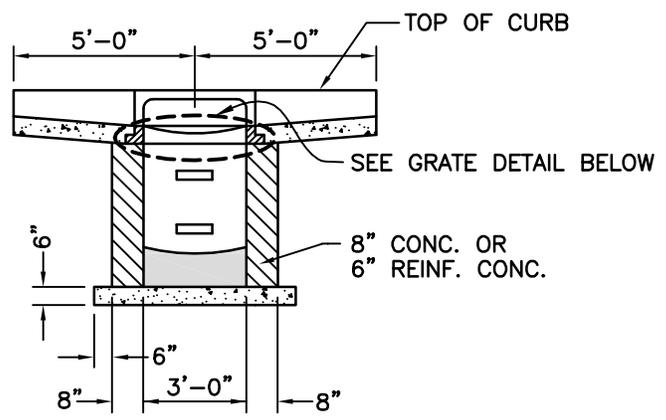


USE TYPE 'A' EXPANSION
JOINT IF PAVEMENT IS P.C.C.

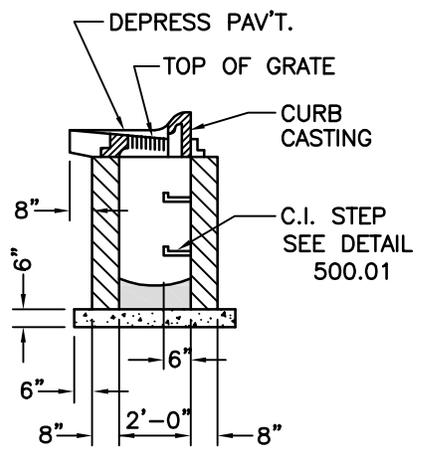
PLAN - SINGLE



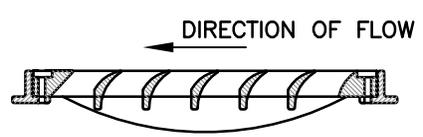
**SECTION A-A
ALTERNATE**



SECTION B-B



SECTION A-A



GRATE DETAIL

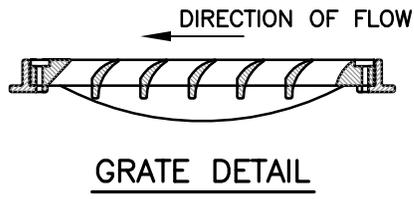
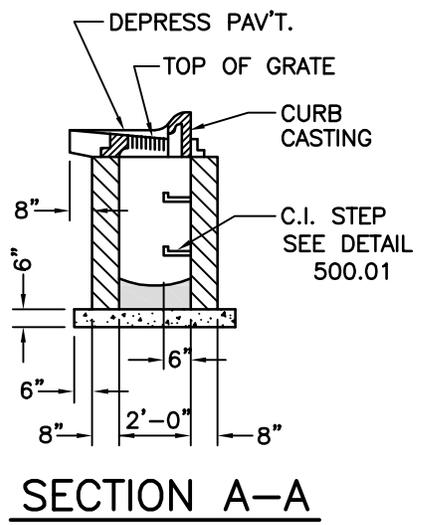
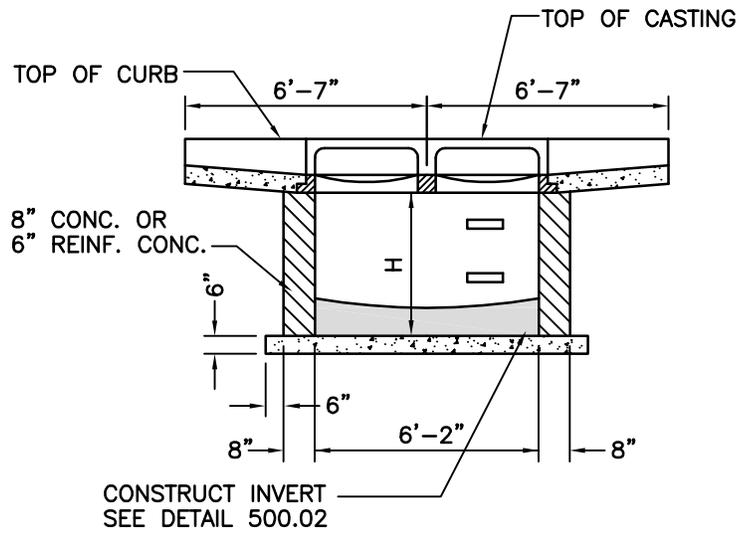
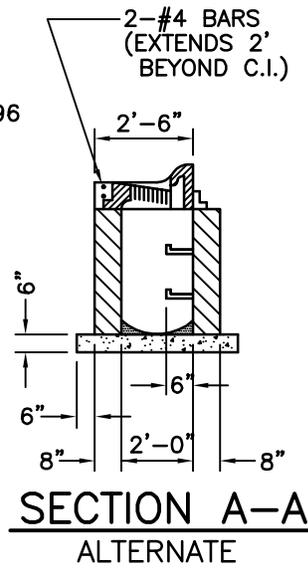
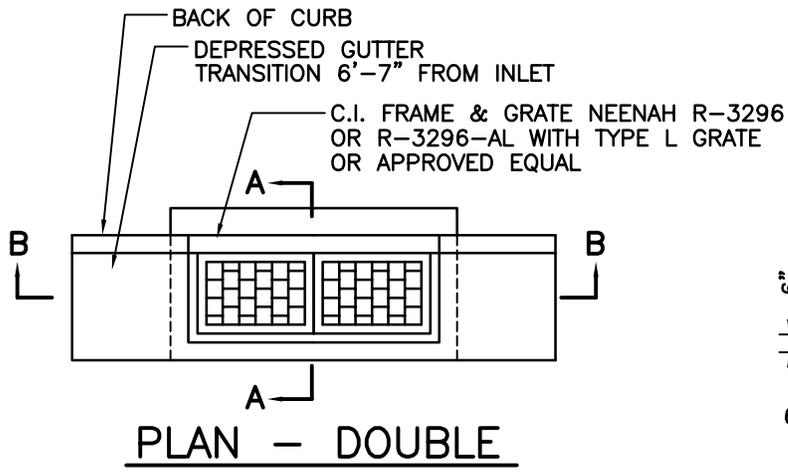
- NOTES:
1. CONCRETE SHALL BE CLASS E FOR BASES AND D FOR WALLS AND TOP.
 2. REINFORCING STEEL SHALL BE GRADE 60
 3. INSTALL WEEP HOLES AS PER DETAIL 500.04
 4. STRUCTURES WHERE H>8' SHALL BE REINFORCED CONCRETE
(#4 BARS AT 12" CTRS, BOTH WAYS AND #4 BARS DIAGONAL AT PIPE OPENINGS)

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



SINGLE TYPE "A" INLET

505.02A



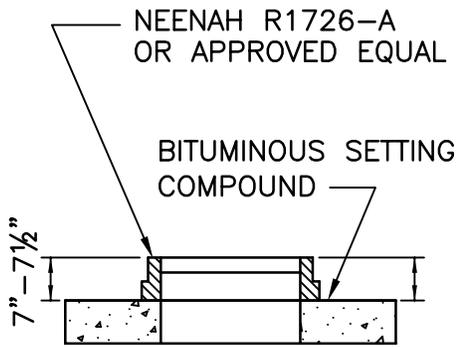
- NOTES:
1. CONCRETE SHALL BE CLASS E FOR BASES AND D FOR WALLS AND TOP.
 2. REINFORCING STEEL SHALL BE GRADE 60
 3. INSTALL WEEP HOLES AS PER DETAIL 500.04
 4. STRUCTURES WHERE H>8' SHALL BE REINFORCED CONCRETE (#4 BARS AT 12" CTRS, BOTH WAYS AND #4 BARS DIAGONAL AT PIPE OPENINGS)

<i>JLB</i>	1/1/12
Approved	Date
Revisions	



DOUBLE TYPE "A" INLET

505.02B



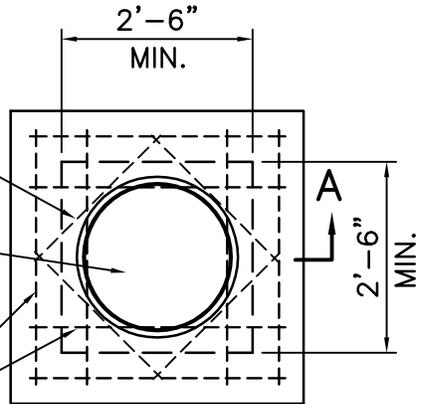
ALTERNATE TOP

(MUST BE USED UNDER PAVEMENTS ONLY)

#4 BARS DIAG.

MANHOLE FRAME AND LID PER NOTE 5.

#4 BARS @ 8" O.C. BOTH WAYS



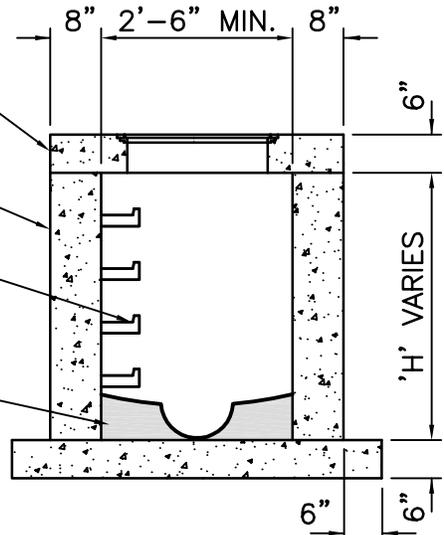
PLAN VIEW

REINF. CONCRETE TOP

6" REINF. CONC. OR 8" CONC. WALL

CAST IRON STEPS SEE DETAIL 500.01

CONSTRUCT INVERT SEE DETAIL 500.02



SECTION A-A

(Showing Standard Flush Top)

NOTES:

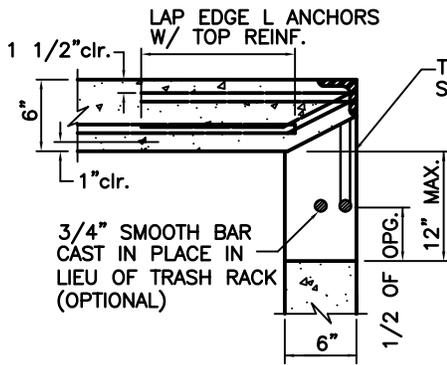
1. CONCRETE SHALL BE CLASS E FOR BASES AND D FOR WALLS AND TOP.
2. REINFORCING STEEL SHALL BE GRADE 60
3. INSTALL WEEP HOLES AS PER DETAIL 500.04
4. STRUCTURES WHERE H>8' SHALL BE REINFORCED CONCRETE (#4 BARS AT 12" CTRS, BOTH WAYS AND #4 BARS DIAGONAL AT PIPE OPENINGS)
5. FRAME AND LID SHALL BE NEENAH R-1960-A (TYPE C LID) OR APPROVED EQUAL. SEE DETAIL 500.01 FOR PLACEMENT.

<i>J.P.L.</i>	1/1/12
Approved	Date
Revisions	



JUNCTION BOX

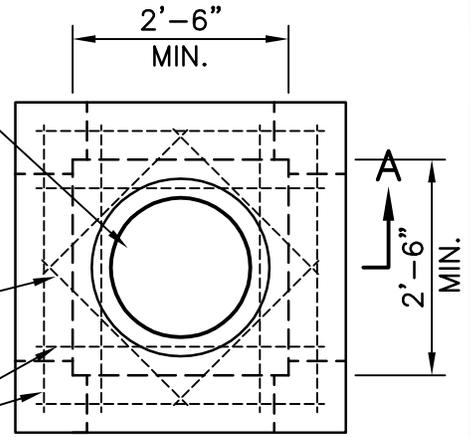
510.01



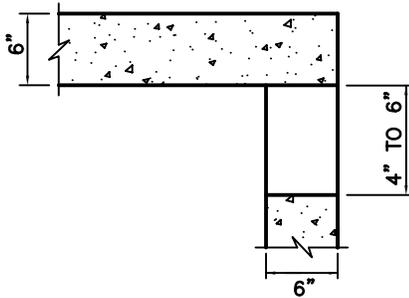
OPENINGS OVER 6"

TRASH RACK
SEE DETAIL 500.03

MANHOLE FRAME
AND LID PER
NOTE 5.



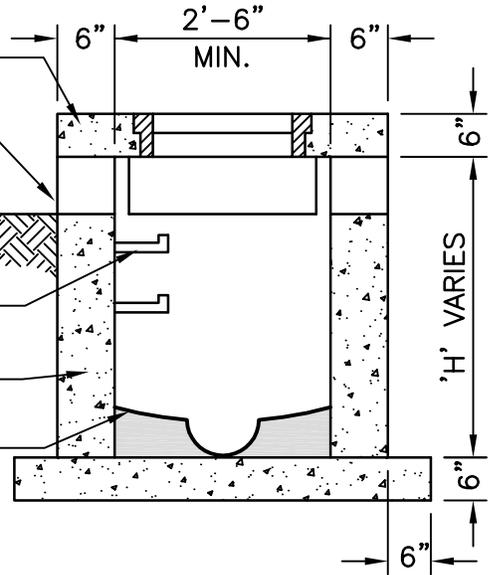
PLAN VIEW



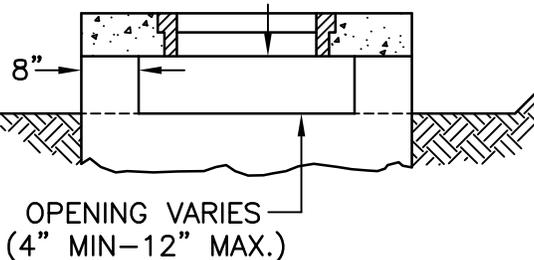
OPENINGS 4" TO 6"

REINF. CONC. TOP
SIDE OPENING
(SEE DETAIL)

CAST IRON STEPS
SEE DETAIL 500.01
6" REINF. CONC.
OR 8" CONC. WALL
CONSTRUCT INVERT
SEE DETAIL 500.02



SECTION A-A



OPENING VARIES
(4" MIN-12" MAX.)

SIDE OPENING DETAIL

NOTES:

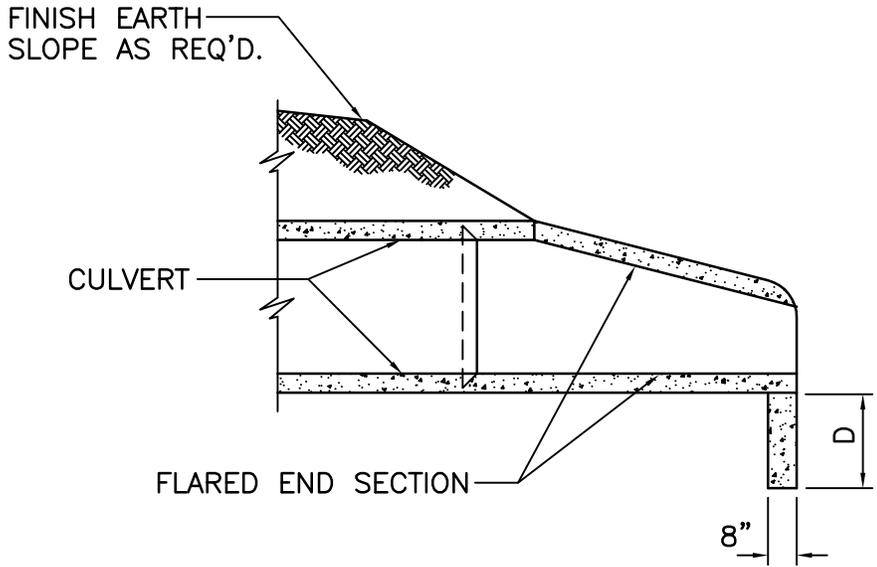
1. CONCRETE SHALL BE CLASS E FOR BASES AND D FOR WALLS AND TOP.
2. REINFORCING STEEL SHALL BE GRADE 60
3. INSTALL WEEP HOLES AS PER DETAIL 500.04
4. STRUCTURES WHERE H>8' SHALL BE REINFORCED CONCRETE
(#4 BARS AT 12" CTRS, BOTH WAYS AND #4 BARS DIAGONAL AT PIPE OPENINGS)
5. FRAME AND LID SHALL BE NEENAH R-1960-A (TYPE C LID), DEETER 1180, OR APPROVED EQUAL. SEE DETAIL 500.01 FOR PLACEMENT.
6. SIDE OPENINGS TO BE ON ALL FOUR SIDES UNLESS NOTED OTHERWISE
7. INSTALL TRASH RACK ON OPENINGS OVER 6" SEE DETAIL 500.03

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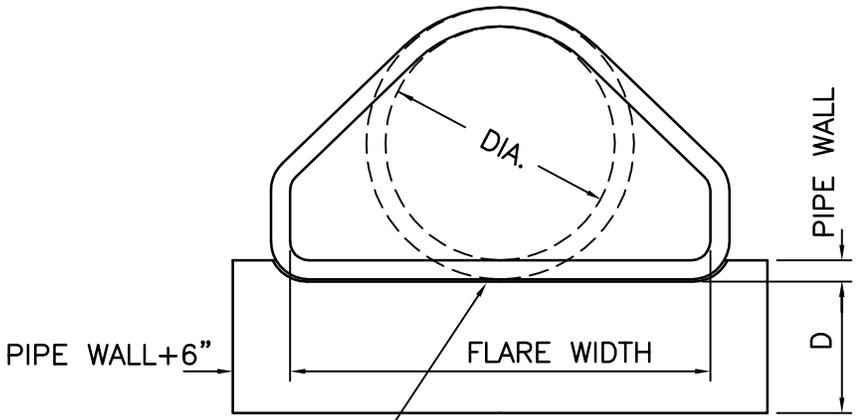


SIDE OPENING INLET

510.02



SECTION VIEW



LAYER OF GROUT BETWEEN
END SECTION AND TOE WALL

END VIEW

NOTE:

1. CONCRETE FOR TOE WALL SHALL BE CLASS E
2. D=18" FOR PIPES WITH INSIDE DIAMETER 21" OR LESS.
3. D=24" FOR PIPES WITH INSIDE DIAMETER FROM 24" TO 48".
4. D=36" FOR PIPES WITH INSIDE DIAMETER 54" OR MORE.

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TOEWALL & END SECTION
FOR RCP

525.01A

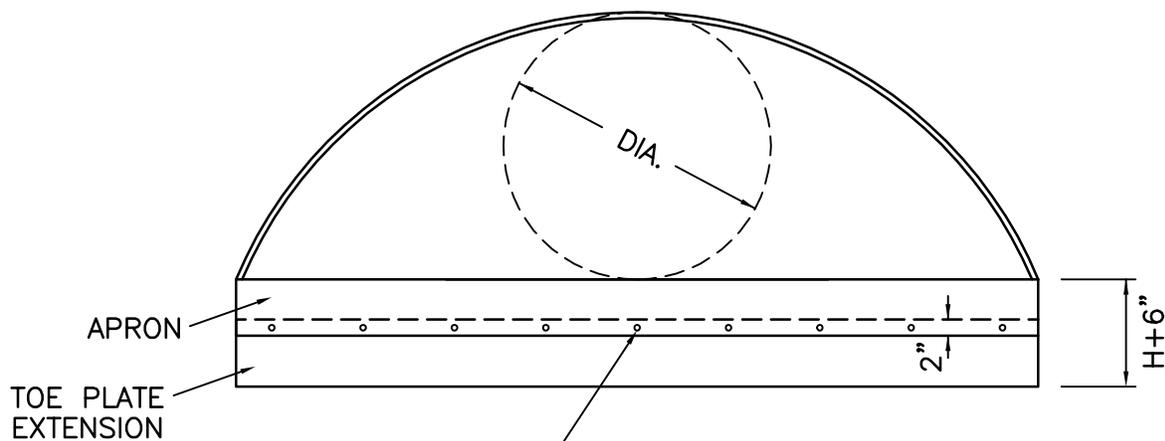
FINISH EARTH
SLOPE AS REQ'D.

CULVERT

FLARED END SECTION

H+6"

SECTION VIEW



FASTEN AT 12" O.C. MIN.

END VIEW

NOTE:

1. H=6" FOR PIPES WITH INSIDE DIAMETER 24" OR LESS.
2. H=12" FOR PIPES WITH INSIDE DIAMETER 27" OR MORE.
3. EXTENSION PLATE SHALL BE SAME MATERIAL AS PIPE. THICKNESS SHALL BE EQUAL TO EQUIVALENT DIAMETER CMP GAUGE.
4. APRON AND TOE PLATE SHALL BE SECURELY FASTENED WITH SPOT WELDS, BOLTS, OR RIVETS.

JLB

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1/1/12

Date

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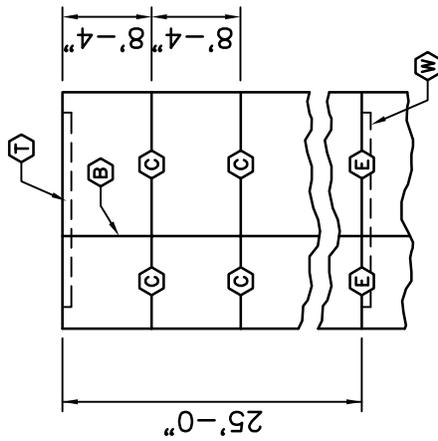
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Public Works Department

END SECTION
FOR HDPE AND CMP

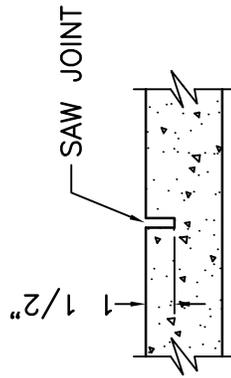
525.01B

LEGEND

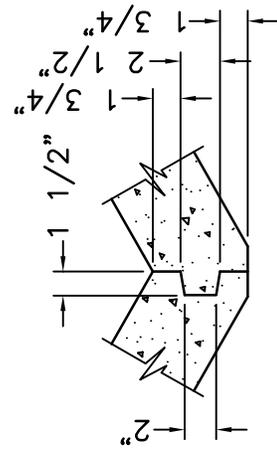
- (C) SAW JOINT, FILL WITH BITUMASTIC JOINT SEALANT - SEE DETAIL.
- (E) 1/2" EXPANSION JOINT AT 50' INTERVALS.
- (T) TOE WALL TO BE CONSTRUCTED AT INLET & OUTLET END OF PAVED DITCHES.
- (B) KEY JOINT (SEE DETAIL)
- (W) CUT-OFF WALL @ 25'-0" SPA.



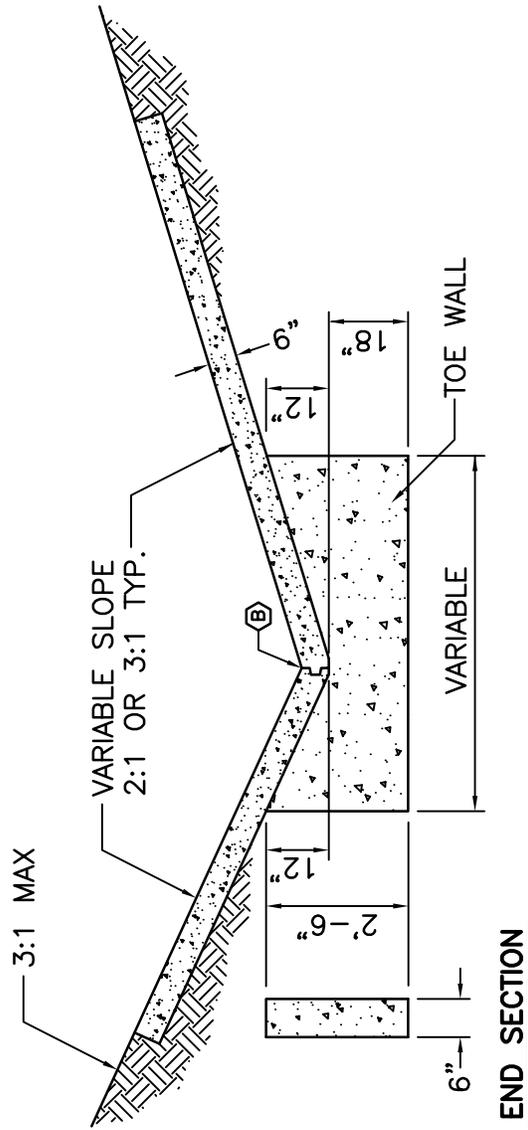
PLAN VIEW



C JOINT DETAIL



B JOINT DETAIL



END SECTION

SECTION THROUGH SWALE
SHOWING TOE WALL OR CUT-OFF WALL

NOTE:
CONCRETE SHALL BE CLASS E

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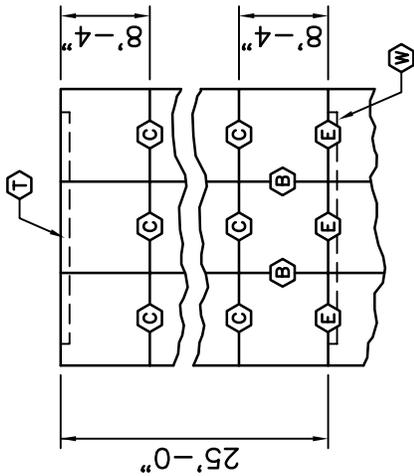


CONCRETE SWALE
(V-Type)

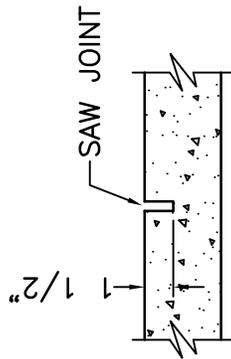
530.01

LEGEND

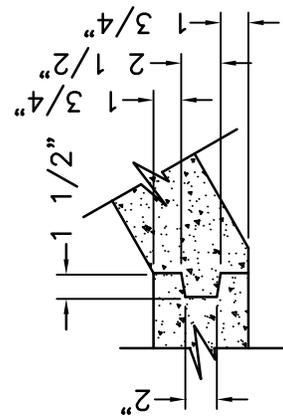
- (C) SAW JOINT, FILL WITH BITUMASTIC JOINT SEALANT -- SEE DETAIL.
- (E) 1/2" EXPANSION JOINT AT 50' INTERVALS
- (B) KEY JOINT (SEE DETAIL)
- (T) TOE WALL TO BE CONSTRUCTED AT INLET & OUTLET END OF PAVED DITCHES.
- (W) CUT-OFF WALL @ 25'-0" SPA.



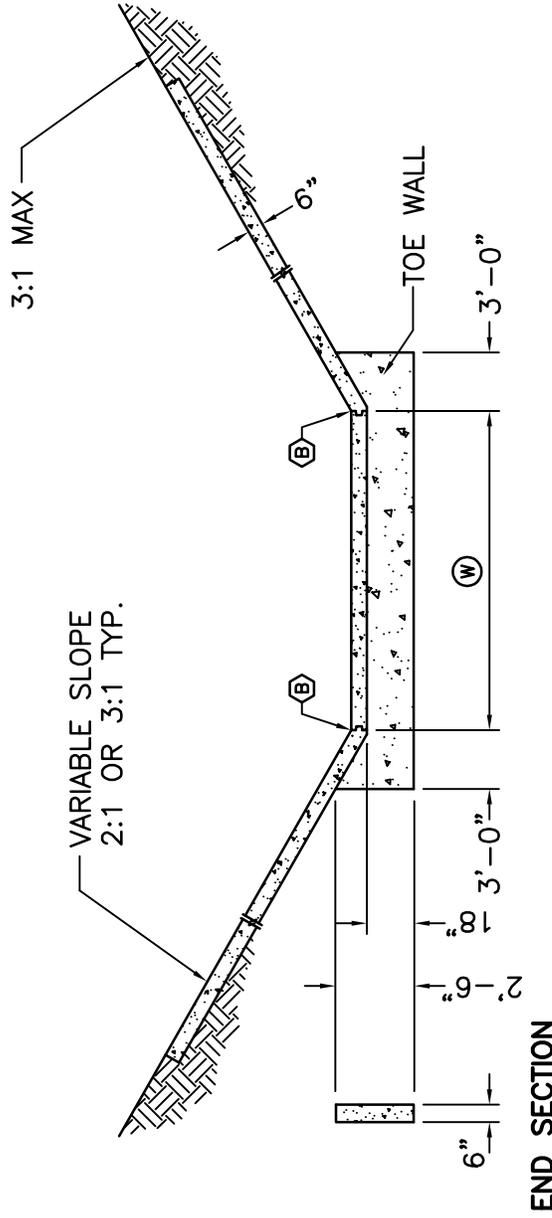
PLAN VIEW



JOINT DETAIL



B JOINT DETAIL



END SECTION

**SECTION THROUGH SWALE
SHOWING TOE WALL OR CUT-OFF WALL**

NOTE:
CONCRETE SHALL BE CLASS E

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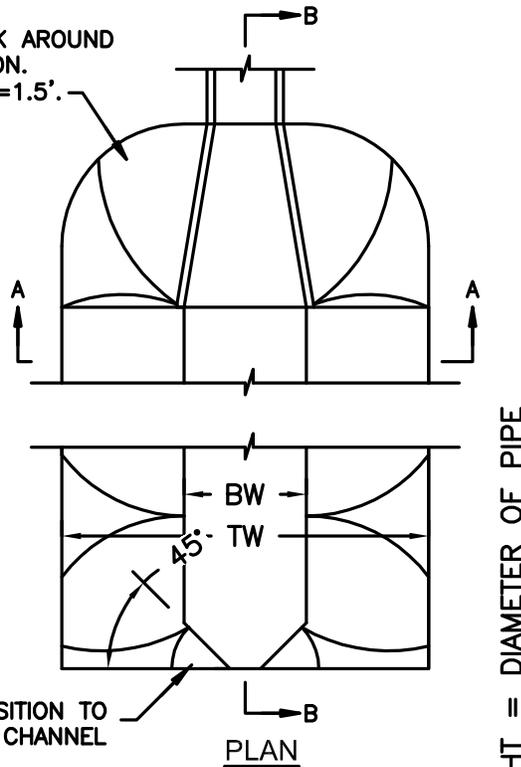


**CONCRETE SWALE
(Flat-Bottom Type)**

530.02

Pipe Size (in)	Maximum Pipe Slope (%)	Length L (ft)	Bottom Width BW Minimum (ft)	Top Width TW Minimum (ft)	Thickness T Minimum (ft)
12	3.50	12	4	8	2
15	2.60	15	4	9	2
18	2.00	16	4	10	2
24	1.70	20	4	12	2
30	1.40	24	6	16	2
36	1.00	28	6	18	2
42	0.80	32	6	20	3
48	0.65	36	6	22	3
54	0.55	40	8	26	3
60	0.45	44	8	28	3
72	0.40	48	8	32	3

WRAP ROCK AROUND END SECTION. THICKNESS=1.5'.

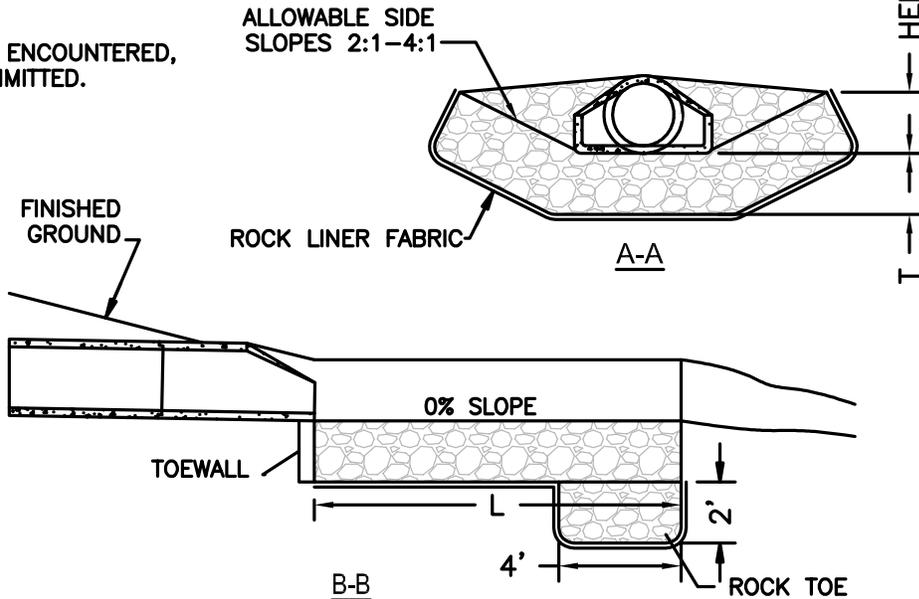


RIP RAP TO BE TYPE 1: ROCK MUST BE ANGULAR, HARD AND DURABLE.

ROCK LINER FABRIC SHALL BE PROPEX GEOTEX 801 OR APPROVED EQUAL. ALTERNATIVELY, AN 8 INCH BED OF WELL GRADED SAND AND GRAVEL WITH GRAVEL UP TO 3" IS ACCEPTABLE.

WHERE BEDROCK IS ENCOUNTERED, RIP RAP MAY BE OMITTED.

ALLOWABLE SIDE SLOPES 2:1-4:1

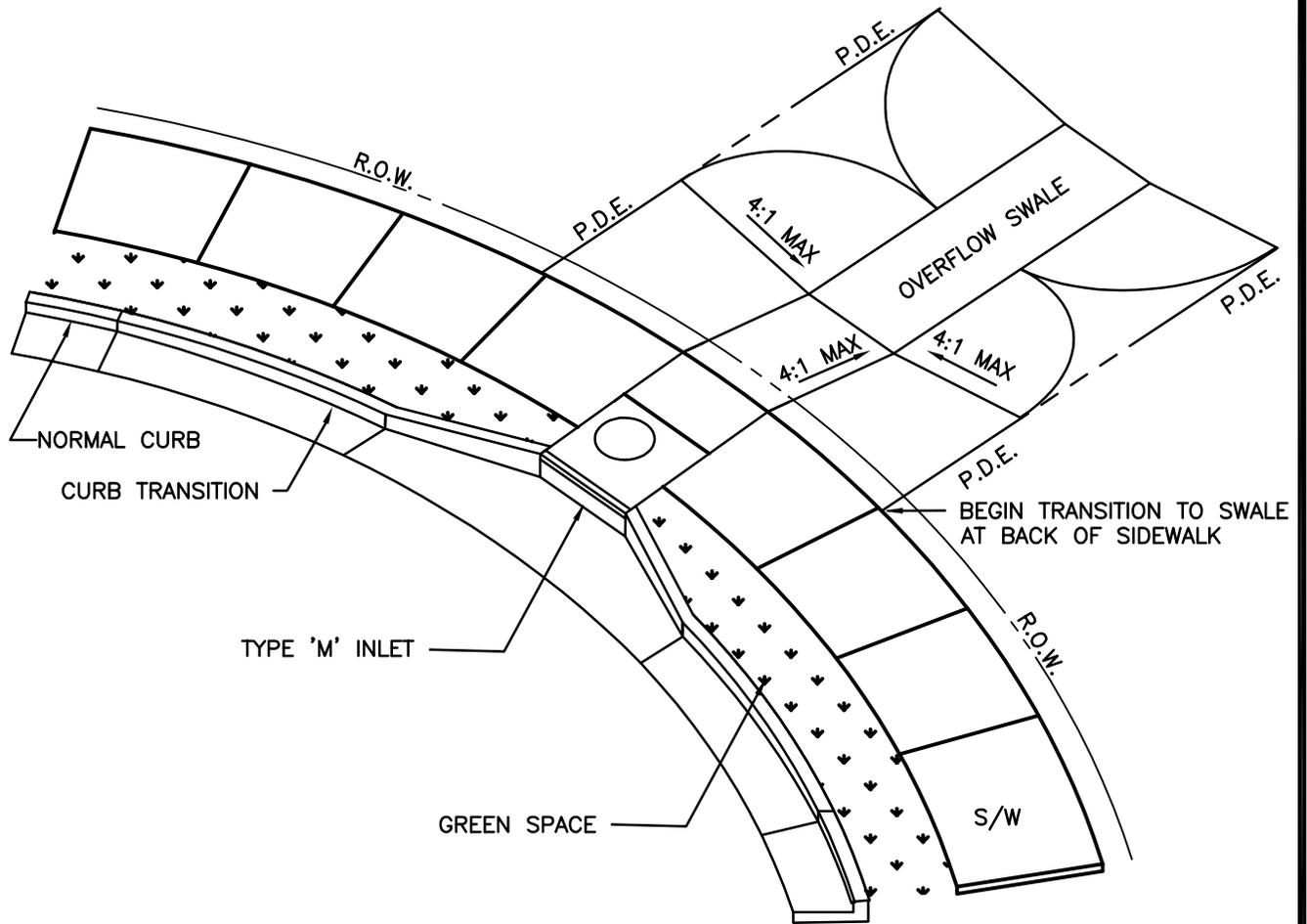


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RIP RAP WITH FILTER FABRIC

530.03

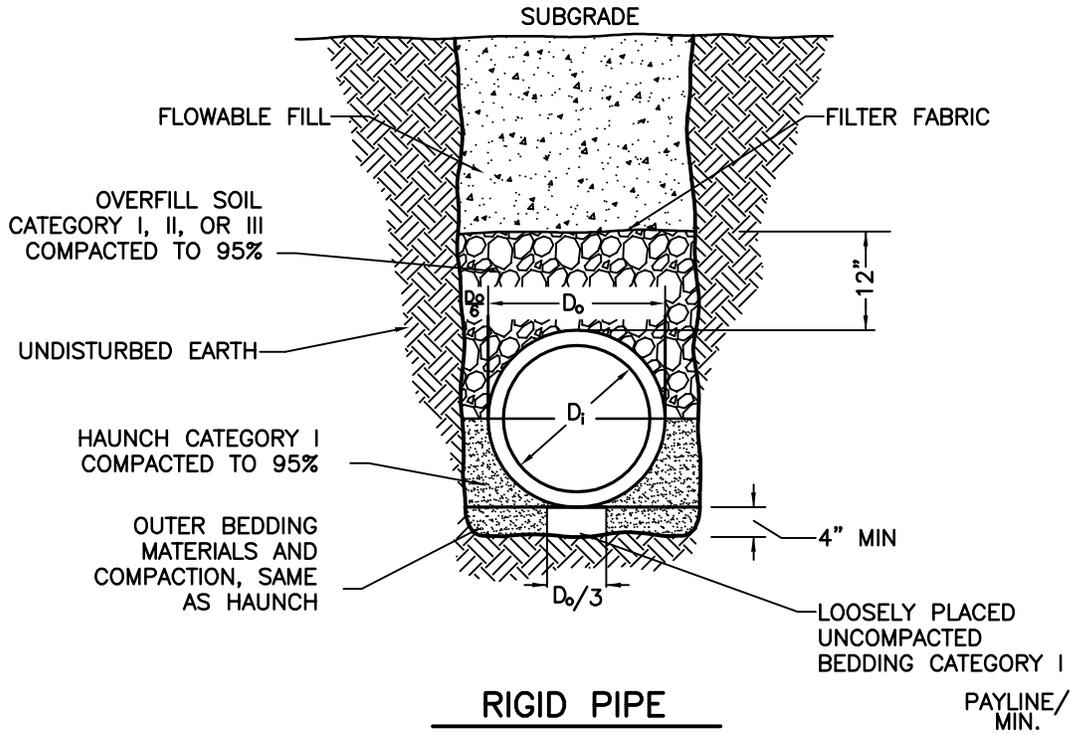


<i>JLB</i>	1/1/12
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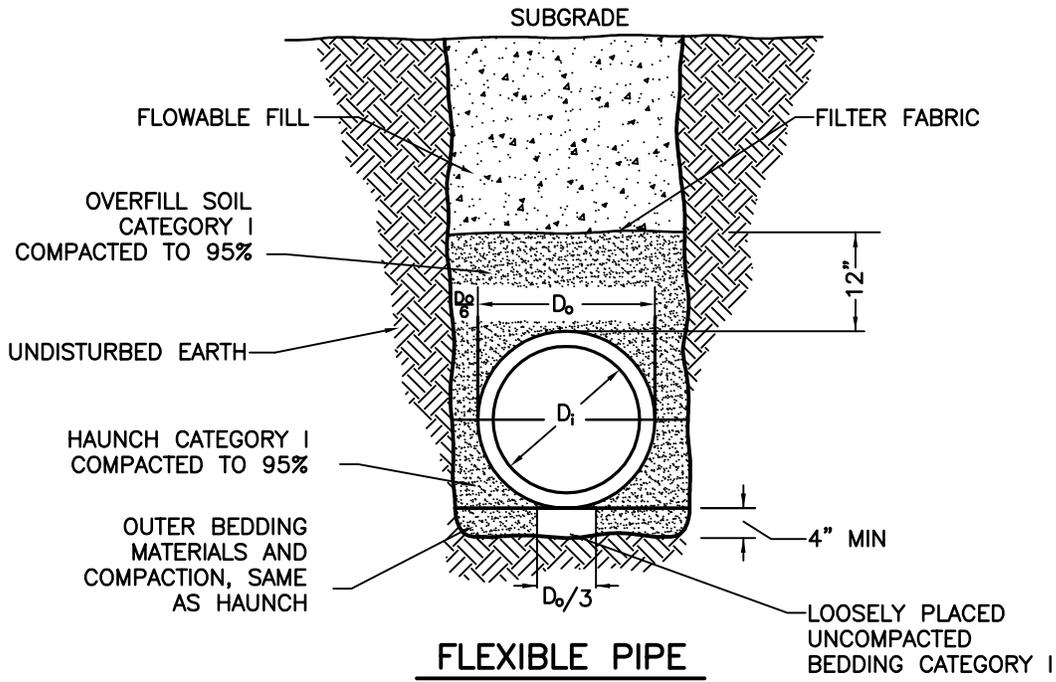


OVERFLOW SWALE AT CUL-DE-SAC

530.04



PIPE DIAMETER	PAYLINE/ MIN. TRENCH WIDTH	MAX. TRENCH WIDTH
12"–36"	$D_o + 12"$	$D_o + 24"$
42"–72"	$D_o + (D_o/3)$	$D_o + 30"$
72"+	$D_o + (D_o/3)$	$D_o + 48"$



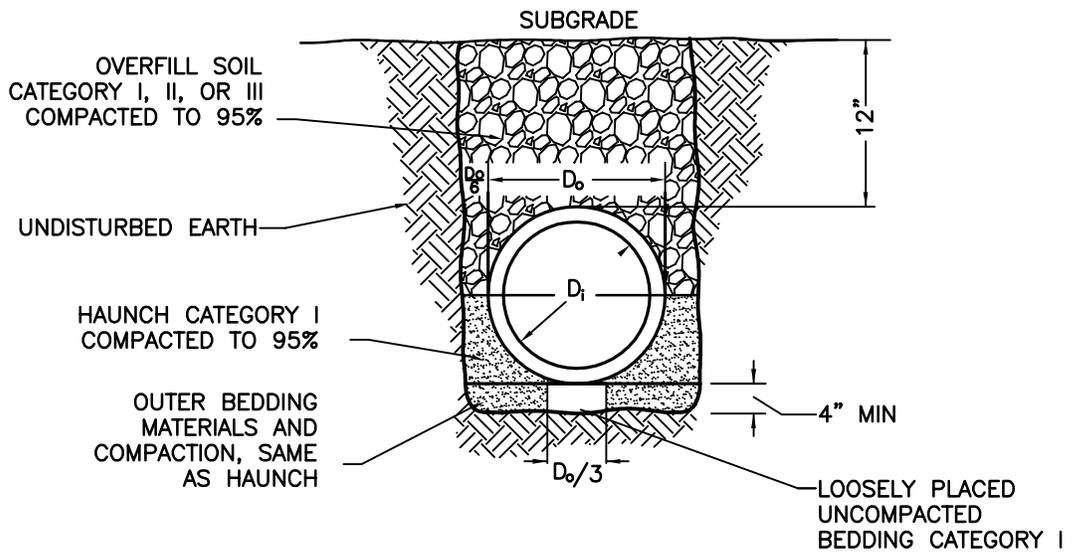
JLB
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Public Works Department

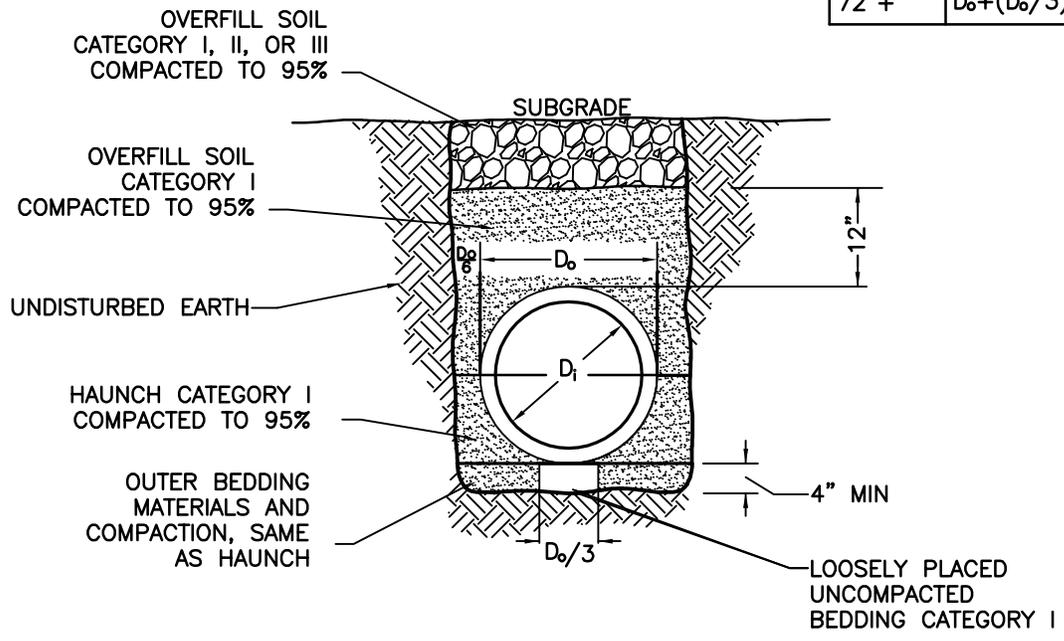
PIPE EMBEDMENT (In the Right of Way)

540.01



RIGID PIPE

PIPE DIAMETER	PAYLINE/ MIN. TRENCH WIDTH	MAX. TRENCH WIDTH
12"–36"	$D_o + 12"$	$D_o + 24"$
42"–72"	$D_o + (D_o/3)$	$D_o + 30"$
72"+	$D_o + (D_o/3)$	$D_o + 48"$



FLEXIBLE PIPE

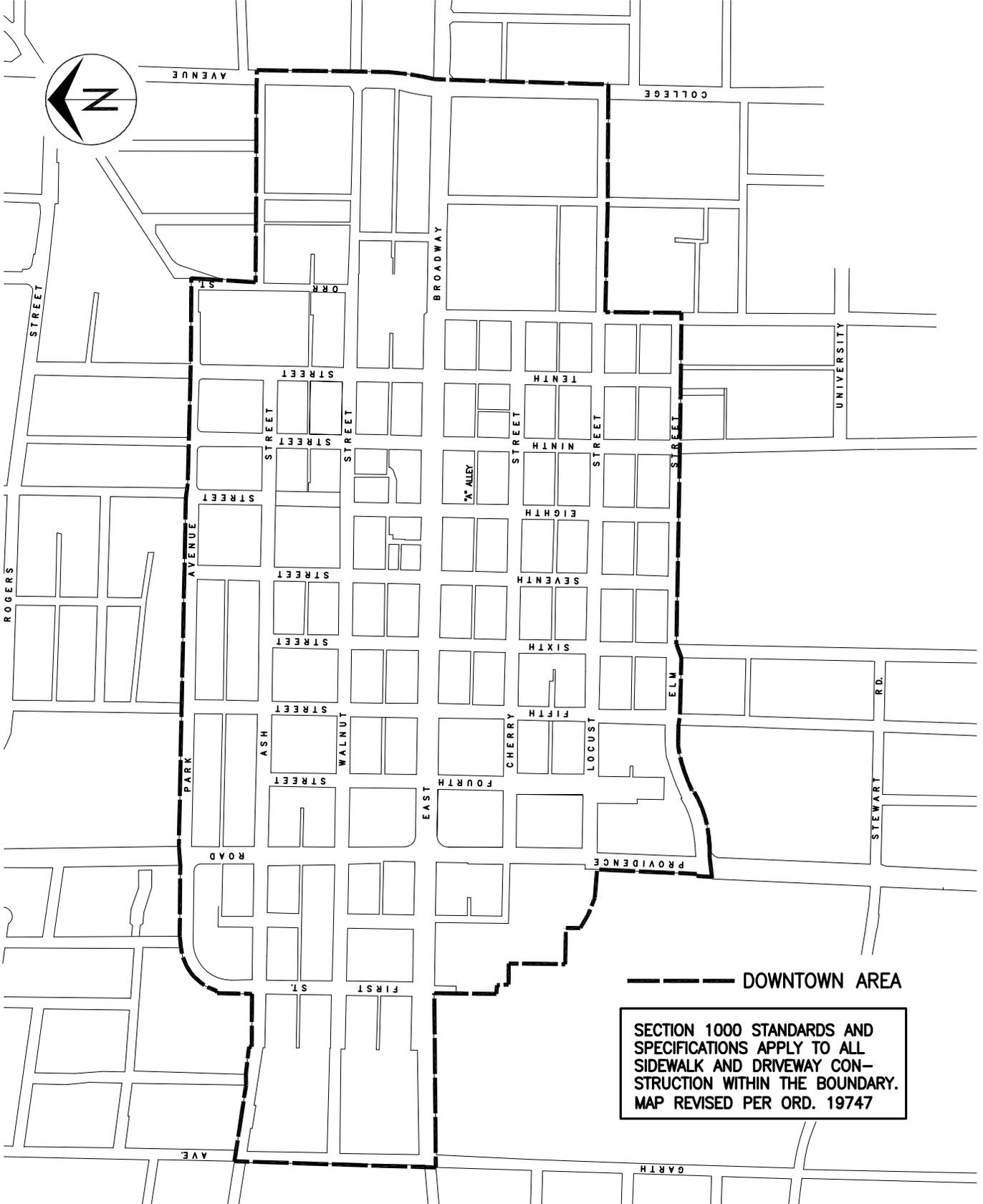
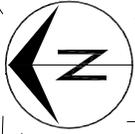
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**PIPE EMBEDMENT
(Out of the Right of Way)**

540.02



SECTION 1000 STANDARDS AND SPECIFICATIONS APPLY TO ALL SIDEWALK AND DRIVEWAY CONSTRUCTION WITHIN THE BOUNDARY. MAP REVISED PER ORD. 19747

----- DOWNTOWN AREA

<i>JLB</i>	1/1/12
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DOWNTOWN AREA MAP

1000.01A

DOWNTOWN SIDEWALK SPECIFICATIONS

SCOPE

The following Downtown Specifications and Standards are to be used for sidewalk, driveway and curb construction or replacement in the Downtown Area as outlined on drawing 1000.01A. All work within the Right of Way shall be in conformance with the City of Columbia Street and Storm Sewer Specifications and Standards, and these Downtown Sidewalk Specifications and Standards. If a conflict occurs the Downtown Sidewalk Specifications and Standards will govern.

CURBS

The curbs will be placed monolithically with the sidewalk and a saw joint will be provided 6-inches behind the face of the curb for the length of the curb. The curb shall extend a minimum of 6-inches above the existing pavement and 12-inches below the surface of the pavement. Drawing 1000.02 shows curb and sidewalk. Any variations from this standard must have the prior approval of the Director of Public Works.

CONCRETE

All concrete shall be Class A.

SIDEWALK REMOVAL AND REPLACEMENT

Whenever sidewalk is removed and replaced, removals must be made along existing saw joints. Diagonal saw cuts and partial panel replacements are not allowed.

TEXTURE

The sidewalk surface texture required shall be that achieved by brooming with a stiff or medium-stiff broom. The direction of brooming shall be transverse to the long axis of the sidewalk. All edges except sawed construction joints shall be worked with an edging tool to a 1/4-inch radius.

FINISHING OPERATIONS

Concrete finishing operations on downtown sidewalks is extremely critical. The contractor must assume the highest level of diligence in performing finishing operations to produce a high quality, durable surface.

Once the concrete has been placed, it shall be immediately struck off using a uniform strike off device free from any defects. During the strike off operation, a minimum of one inch surcharge must be maintained in front of the strike off screed. The strike off screed operations should, in most instances, seal the surface. Immediately following the strike off operation, a magnesium or aluminum bull float should be used to complete the sealing and consolidation of the surface.

 Approved	<u>1/1/12</u> Date
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DOWNTOWN SIDEWALKS Specifications

1000.01B

This bull floating must be done prior to bleed water coming to the surface. If needed, in the Engineer's judgement, the Engineer will require a ten foot straight edge to be used immediately following the bull floating operation.

Following the evaporation of the bleed water and when the fresh concrete will support normal foot pressure with a maximum 1/8 inch indentation, the wood floating operations should be commenced, followed by the magnesium float, and brooming with a medium bristle, high quality concrete finishing broom.

The acceptable tolerance for the surface of the sidewalk area is 1/8 inch in ten feet as determined by a ten foot straight edge checking the concrete sidewalk or other area in any direction.

CONTROL JOINTS

Control joints are to be sawed to a minimum depth of 1-inch. Joints shall be sawed as soon as the concrete can withstand raveling. Joints shall be cleaned and sealed immediately following sawing. Proper care must be taken to ensure that these saw joints are uniform and straight. The following guidelines will control the size of the sidewalk pads to govern the sawing:

From 0 to 6 feet wide -
no longitudinal joint is required and the traverse joint will be at even intervals equal to the width of the sidewalk.

From 6'1" to 10'4" -
a centerline longitudinal joint is required. A transverse saw joint is required at the same distance as one-half the width of the sidewalk.

From 10'5" and up -
the longitudinal joints will be sawed to provide a minimum of 42-inches and a maximum of 5-feet between longitudinal saw joints. The transverse saw joint will be provided to form square sidewalk pads. In addition, whenever poles, fire hydrants, meters, tree grates or other obstacles are encountered, the sawing may need to be altered to control cracking at these obstacles.

EXPANSION JOINT

Expansion joint shall be 1/2-inch premolded fiber conforming to ASTM D2628 or D1751 of the perforated type so that the upper 1/2-inch can be removed and joint sealant can be placed over the expansion joint for a uniform seal. Expansion joints shall be installed along buildings, at driveways, at ramps, at structures and at intervals not to exceed 75 feet.

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DOWNTOWN SIDEWALKS
Specifications

1000.01C

JOINT SEALANT

Joint sealant is required in all control, expansion and construction joints. Joint sealant shall be light gray in color. Joint sealant shall be a one or two component polysulfide polymer sealant or a one or two component polyurethane prepolymer sealant, Horn Daraseal-V or Vulkem Sealant or approved equal. Joint sealant shall be installed in accordance with manufacturer's specifications. A resilient closed cell foam backing rod, Etha Foam or approved equal, shall be used in all saw joints and placed to a depth equal to the width of the joint.

SIDEWALK ACCESSIBILITY

Accessible Sidewalk Ramps shall be provided at all intersections. Cross slopes of sidewalks shall not exceed 1:50. The preferred minimum downtown sidewalk width is 10 ft.

BLOCK OUT FOR TREES

Block outs for tree grates shall be provided in conformance with the approved downtown plan. The configuration of the block out is shown on drawing 1000.09. Tree grate and soil backfill will be provided by the City.

TREES

Tree selection shall be in accordance with City Staff recommendations which are based on proven desirable growth characteristics for urban use areas. All tree selections must be approved by the City prior to installation .

VAULTS

When a sidewalk is constructed over a basement vault. The structural stability of the vault and sidewalk shall be analyzed by an Engineer or Architect.

AUTHORITY

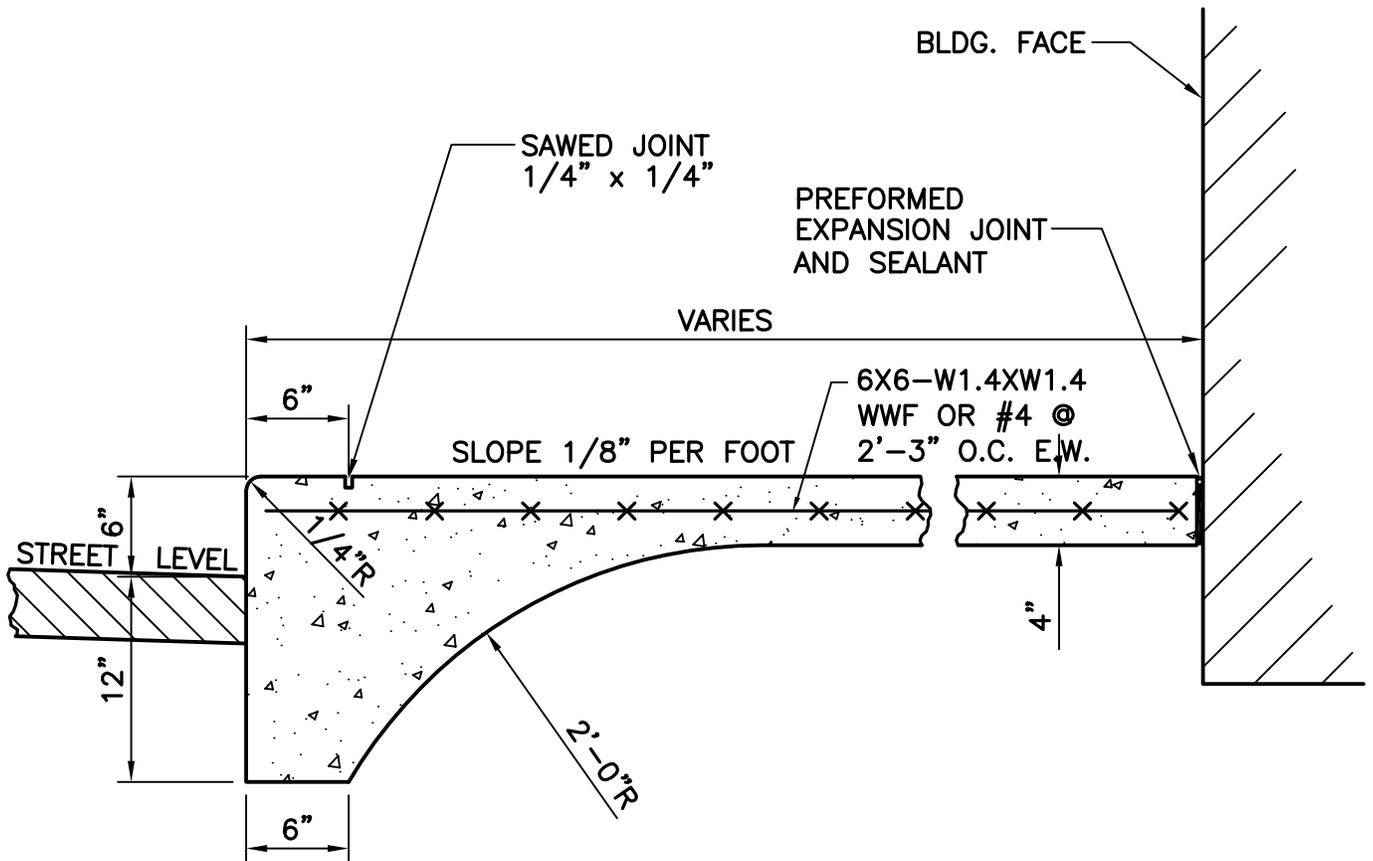
The Director of Public Works shall have the authority in the interest of safety and maintenance to make technical refinements and modifications to these construction standards and methods during the time these standards are in effect.

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DOWNTOWN SIDEWALKS
Specifications and Standards

1000.01D



NOTES:

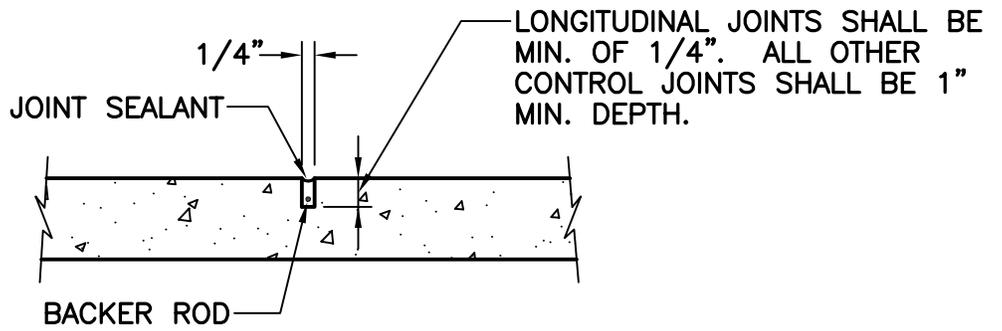
1. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.00%.
2. SAW AND PATCH STREET PAVEMENT AS NECESSARY FOR CONSTRUCTION OF NEW CURB.
3. SEE JOINT DETAILS – 1000.03.
4. SEE SPECIFICATIONS – 1000.01B THRU 1000.01D.
5. NO STEEL TO BE PLACED THROUGH EXPANSION JOINT

<i>JLB</i>	1/1/12
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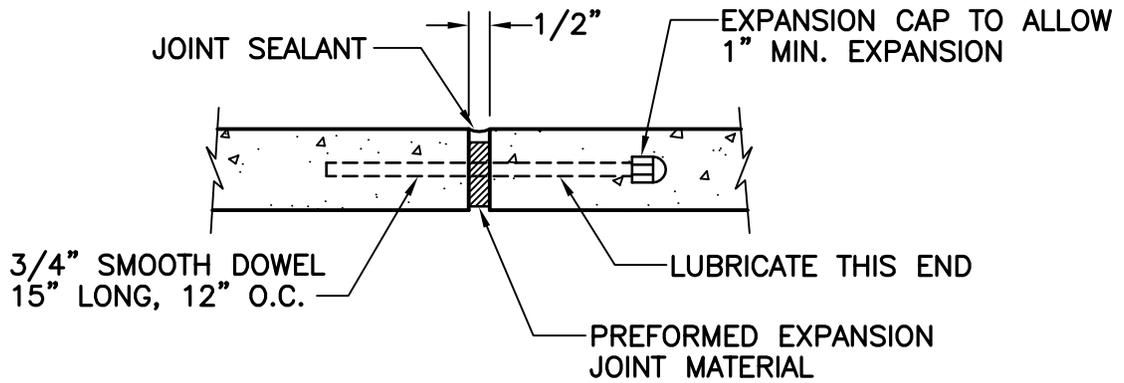


DOWNTOWN SIDEWALK

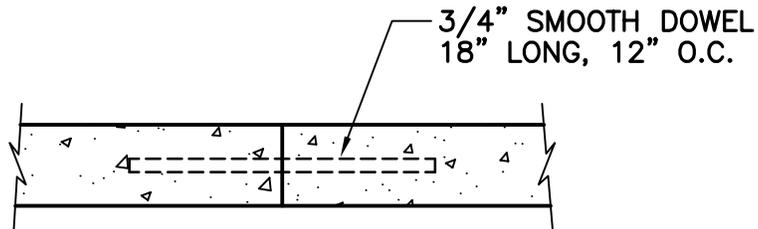
1000.02



CONTROL JOINT



EXPANSION JOINT



TRANSVERSE CONSTRUCTION JOINT

NOTE:

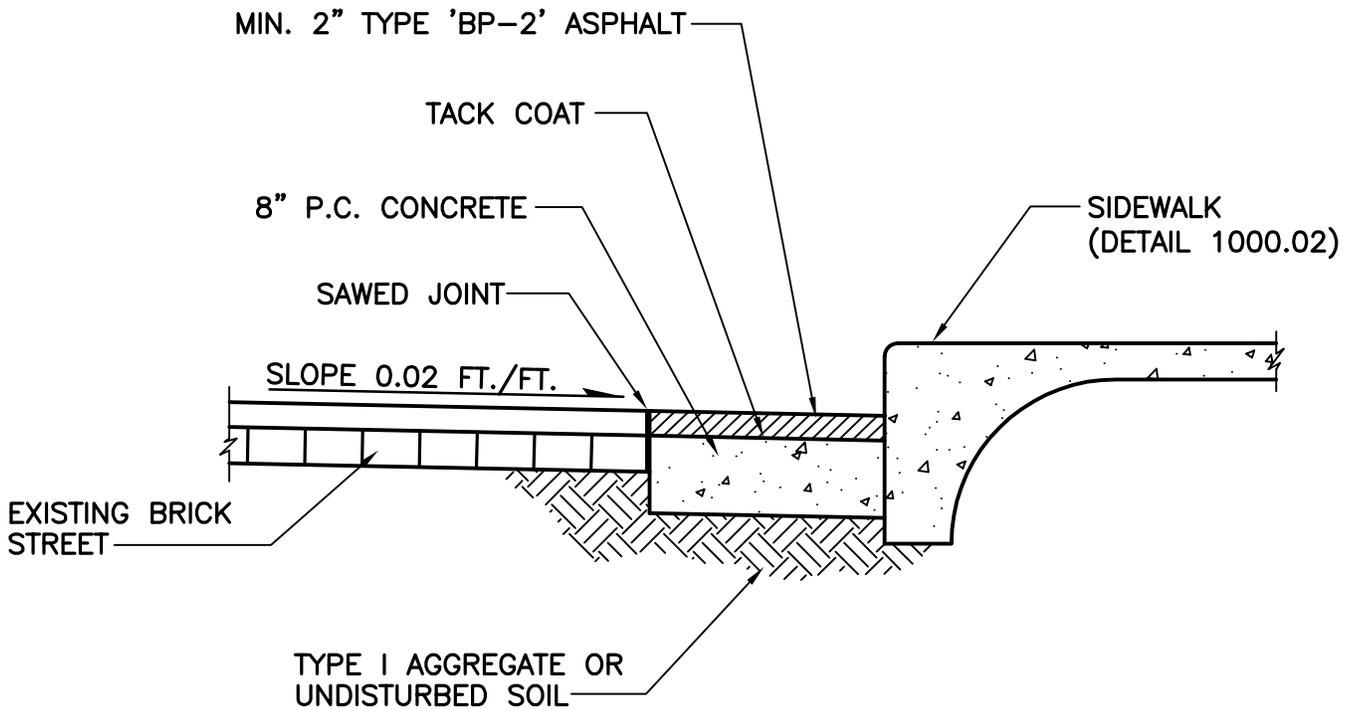
SEE SPECIFICATIONS - 1000.01B THRU 1000.01D.

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SIDEWALK JOINT DETAILS

1000.03



NOTE:

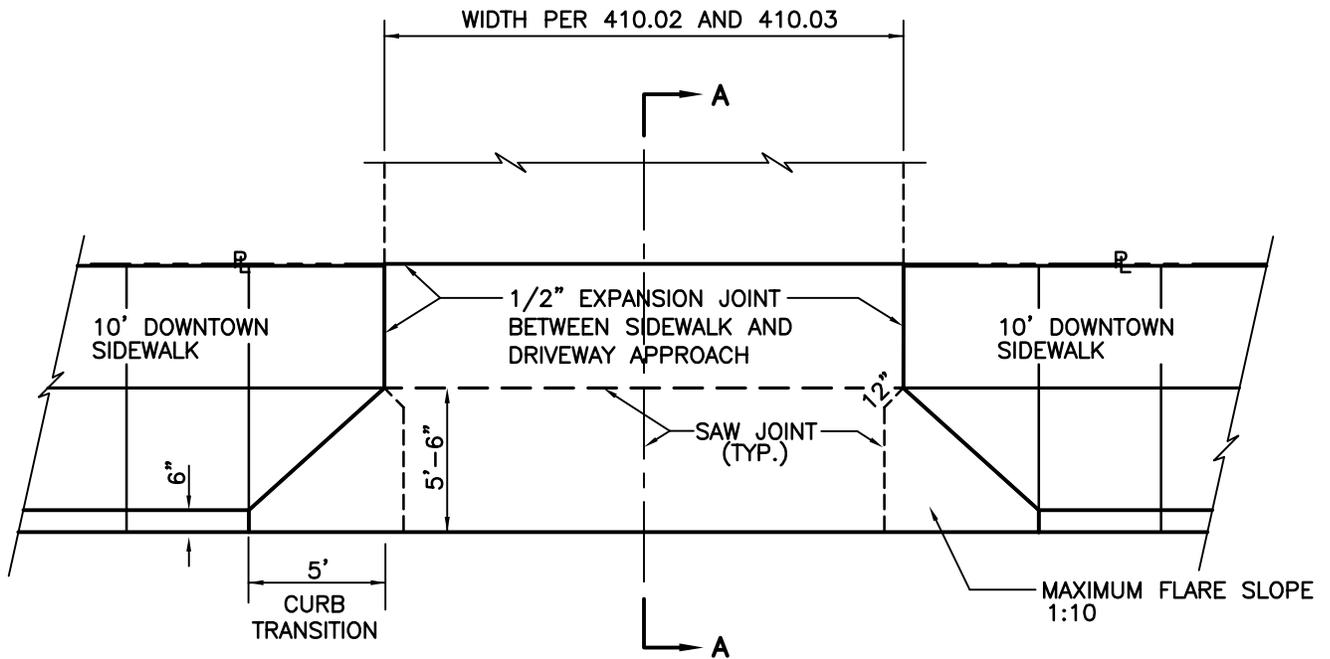
AREAS TO BE OVERLAID SHALL HAVE A TACK COAT OF SS-1 WATER BASED EMULSION APPLIED AT A RATE OF 0.2 GALLONS PER SQUARE YARD. THIS IS TO BE INCLUDED IN THE PRICE BID FOR "PATCHING AND LANE WIDENING" AND/OR "FULL DEPTH STREET PATCH FOR CONDUIT".

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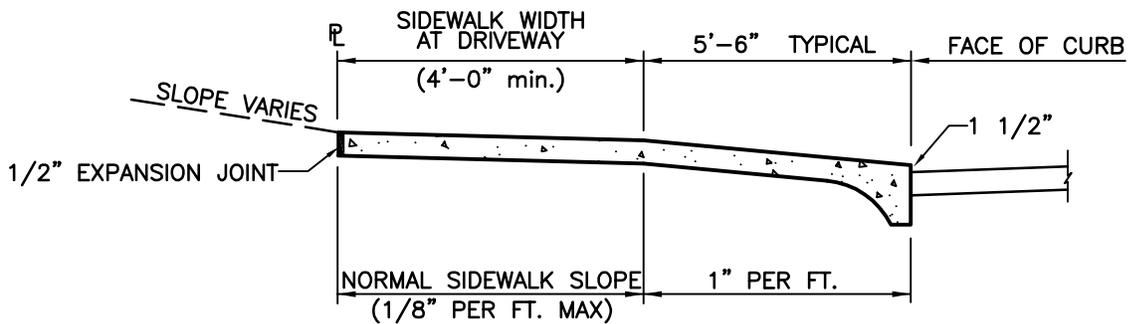


PAVEMENT PATCHING &
LANE WIDENING

1000.04



PLAN



SECTION A-A

NOTES:

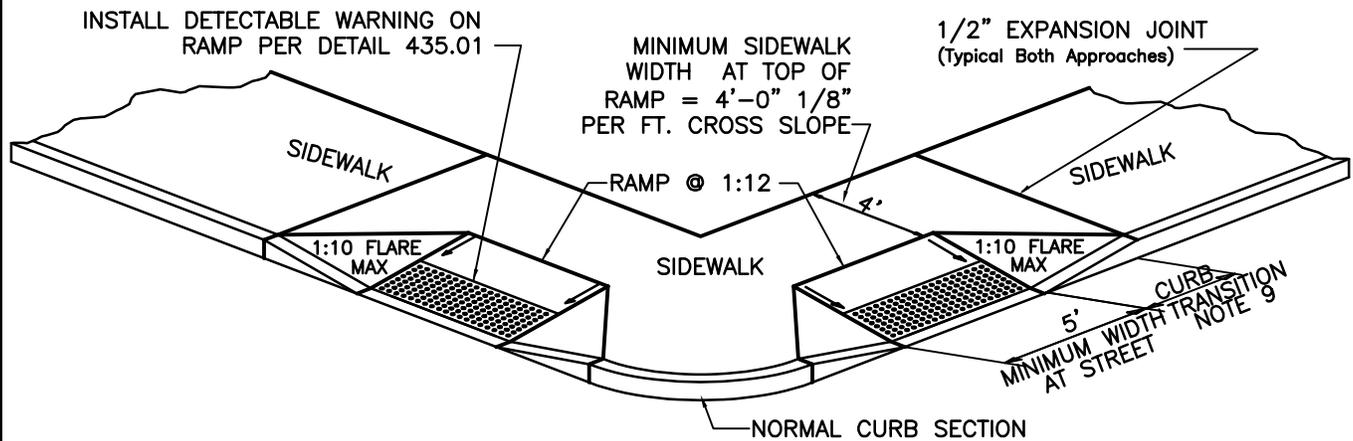
1. DRIVEWAY APPROACH SHALL BE 7" THICK CLASS A CONCRETE.
2. SEE JOINT DETAILS - 1000.03.
3. ALL DRIVEWAY APPROACHES SHALL SLOPE TOWARD THE STREET.
4. ALL DRIVEWAY APPROACHES SHALL BE CONSTRUCTED TO ACCOMODATE SIDEWALKS. (EXISTING AND FUTURE)
5. OMIT 1 1/2" EDGE AT GUTTER IF DRIVE APPROACH ALSO SERVES AS ACCESSIBLE SIDEWALK RAMP.
6. DRIVEWAY MAY BE REINFORCED AT OWNERS OPTION. DO NOT REINFORCE ON CITY BID PROJECTS.
7. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2.00%.

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DRIVEWAY AND ALLEY
(Downtown)

1000.05



NOTE:

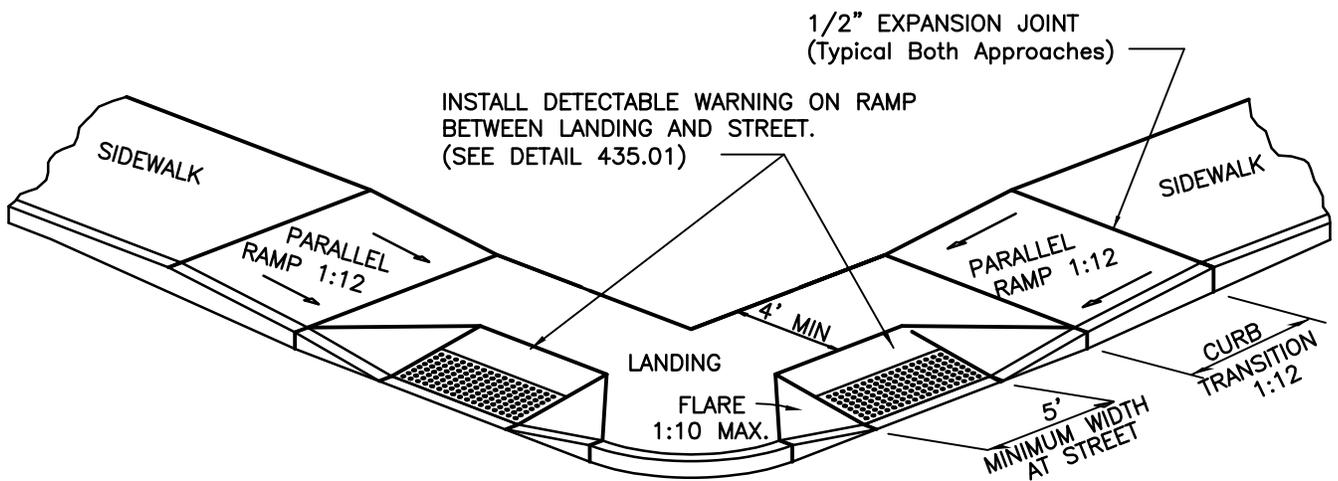
1. RAMP, LANDING AND AREA BETWEEN RAMPS SHALL BE 6" THICK REINFORCED W/ #4 @ 12" O.C. CLASS A CONCRETE.
2. SEE DETAIL 1000.03 FOR JOINT DETAILS.
3. MAXIMUM RAMP CROSS SLOPE IS 2.00%.
4. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
5. RAMP LENGTH IS DEPENDENT ON 1:12 MAX. SLOPE. USE FLATTER WHEN POSSIBLE.
6. LANDING AREA AT TOP OF RAMP SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%.
7. TYPE "A" RAMP NOT APPLICABLE IF SIDEWALK WIDTH DOES NOT PROVIDE 4'-0" LANDING AT THE TOP OF RAMP. USE TYPE "B" RAMP.
8. RAMP EXTENDS INTO SIDEWALK, FLARE SLOPE MUST NOT EXCEED 1:10.
9. CURB TRANSITION LENGTH IS DEPENDENT ON 1:10 FLARE SLOPE

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SIDEWALK RAMP
Sidewalk at Back of Curb
(Type A)

1000.06



NOTE:

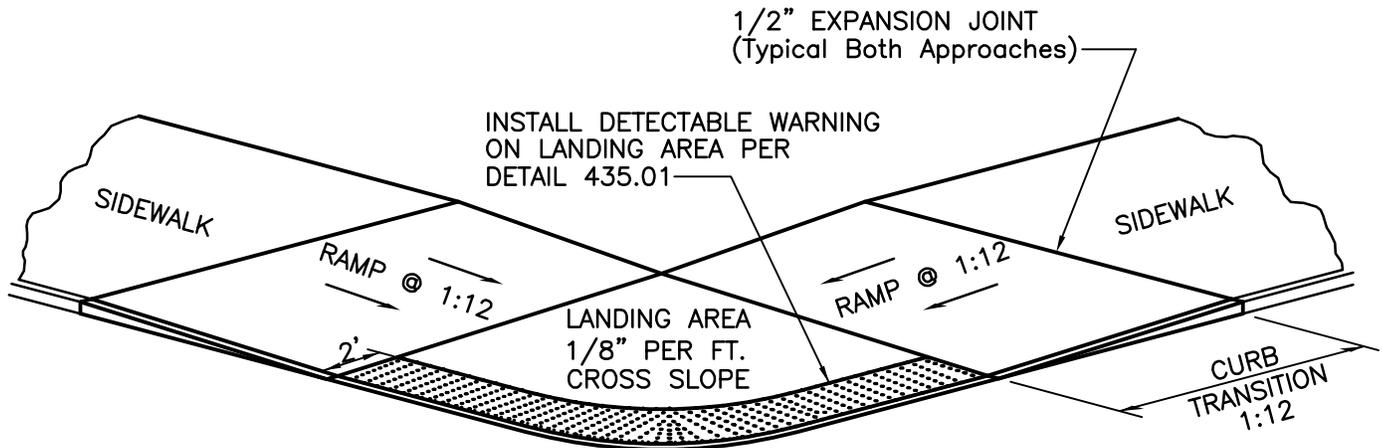
1. RAMP, LANDING AND AREA IN BETWEEN SHALL BE 6" THICK REINFORCED W/#4@12" O.C. CLASS A CONCRETE.
2. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
3. MAXIMUM RAMP CROSS SLOPE IS 2.00%.
4. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
5. RAMP SLOPE 1:12 MAX. USE FLATTER WHEN POSSIBLE.
6. LANDING AREA SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%.
7. TYPE "B" RAMP PROVIDES PARALLEL RAMPS TO REDUCE THE PERPENDICULAR RAMP LENGTH AND PROVIDE ADEQUATE LANDING.
8. RAMP EXTENDS INTO SIDEWALK, FLARE SLOPE MUST NOT EXCEED 1:10.

<i>JLB</i>	1/1/12
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SIDEWALK RAMP
Sidewalk at Back of Curb
(Type B)

1000.07



NOTE:

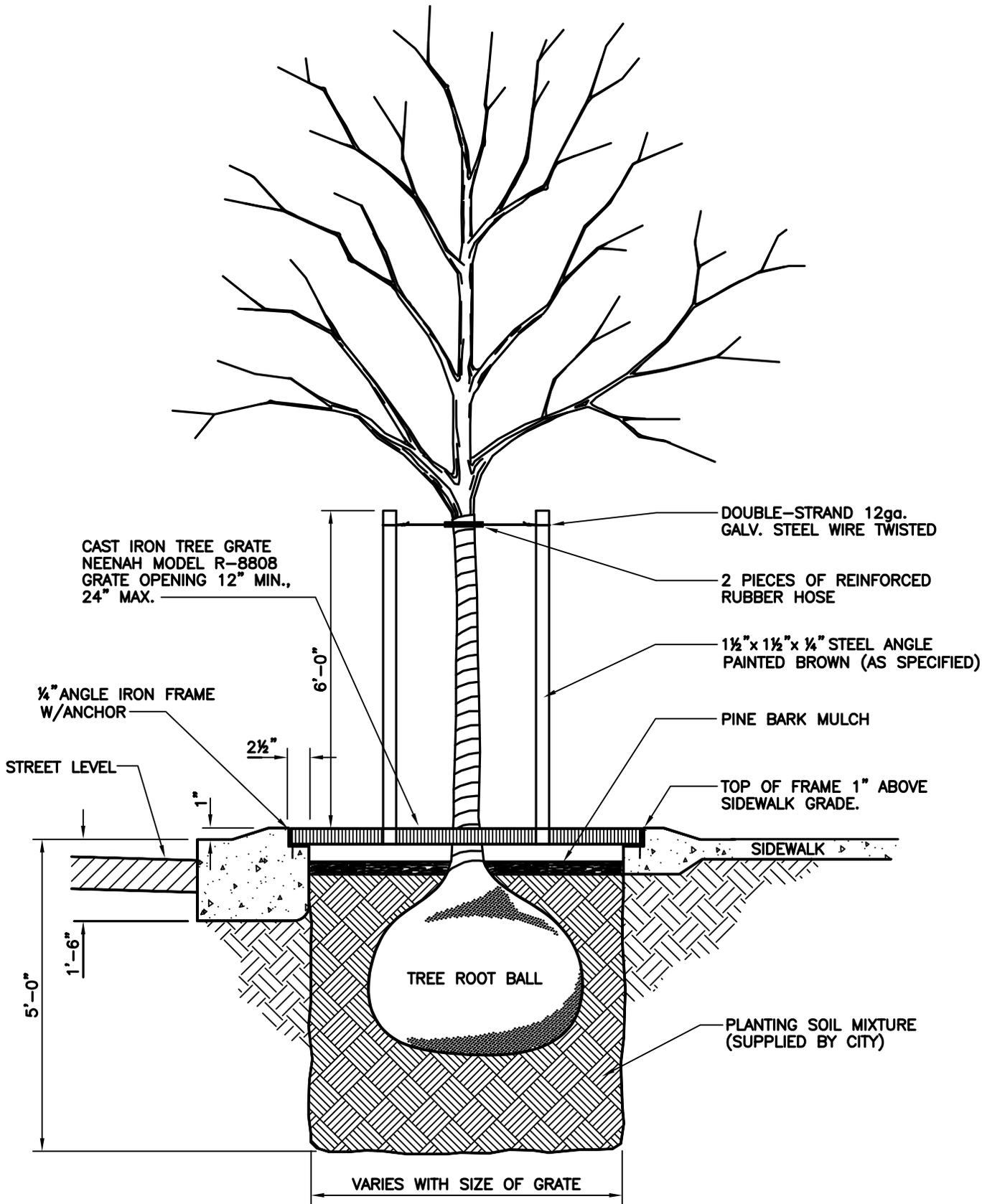
1. RAMP AND LANDING SHALL BE 6" THICK REINFORCED W/#4@12" O.C. CLASS A CONCRETE.
2. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
3. MAXIMUM RAMP CROSS SLOPE IS 2.00%.
4. ALL SLOPES ARE MEASURED FROM THE HORIZONTAL.
5. RAMP LENGTH IS DEPENDENT ON 1:12 MAX. SLOPE. USE FLATTER WHEN POSSIBLE.
6. LANDING AREA SHALL BE 4'-0" MIN WIDTH, CROSS SLOPE OF LANDING SHALL NOT EXCEED 2.00%.
7. USE TYPE "C" RAMP ONLY IF TYPE "A" & "B" ARE NOT FEASIBLE.

<i>JLB</i>	1/1/12
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SIDEWALK RAMP
Sidewalk at Back of Curb
(Type C)

1000.08

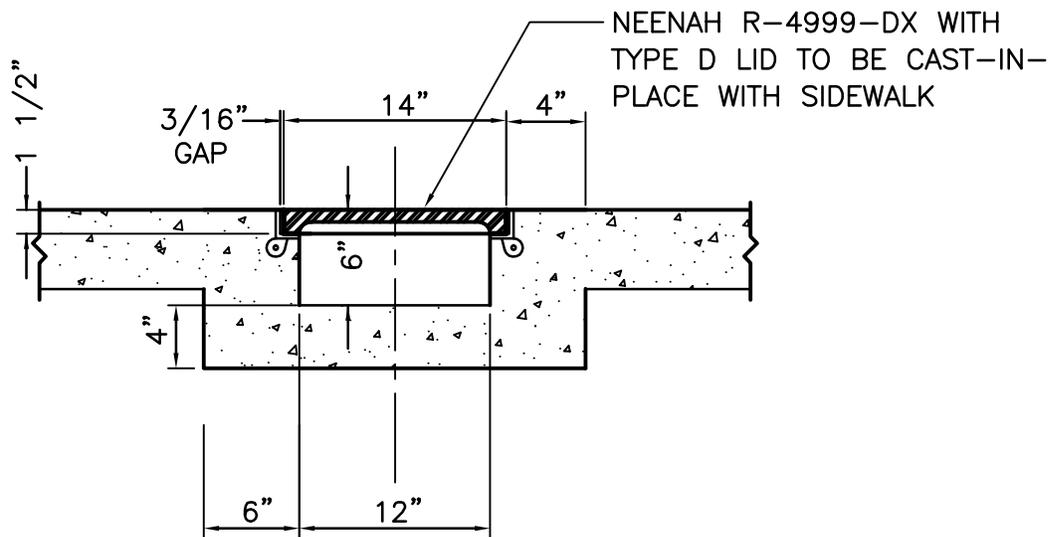


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TYPICAL DOWNTOWN TREE PLANTING DETAIL

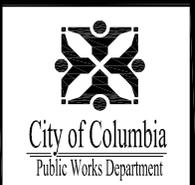
1000.09



NOTE:

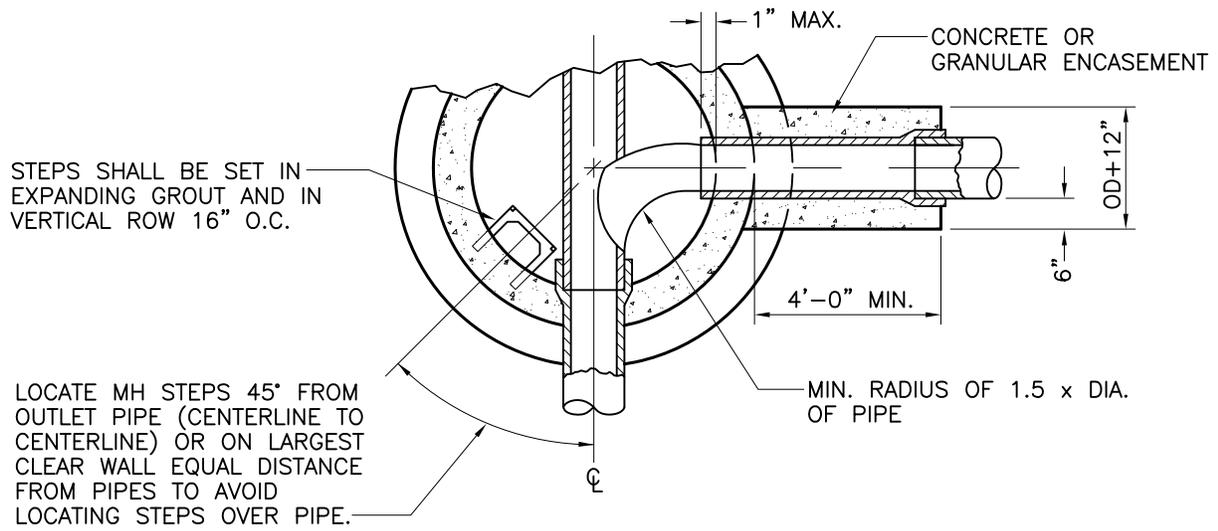
1. TRENCH GRATE CUT (IF NEEDED) SHALL BE LOCATED AT PROPERTY LINE.

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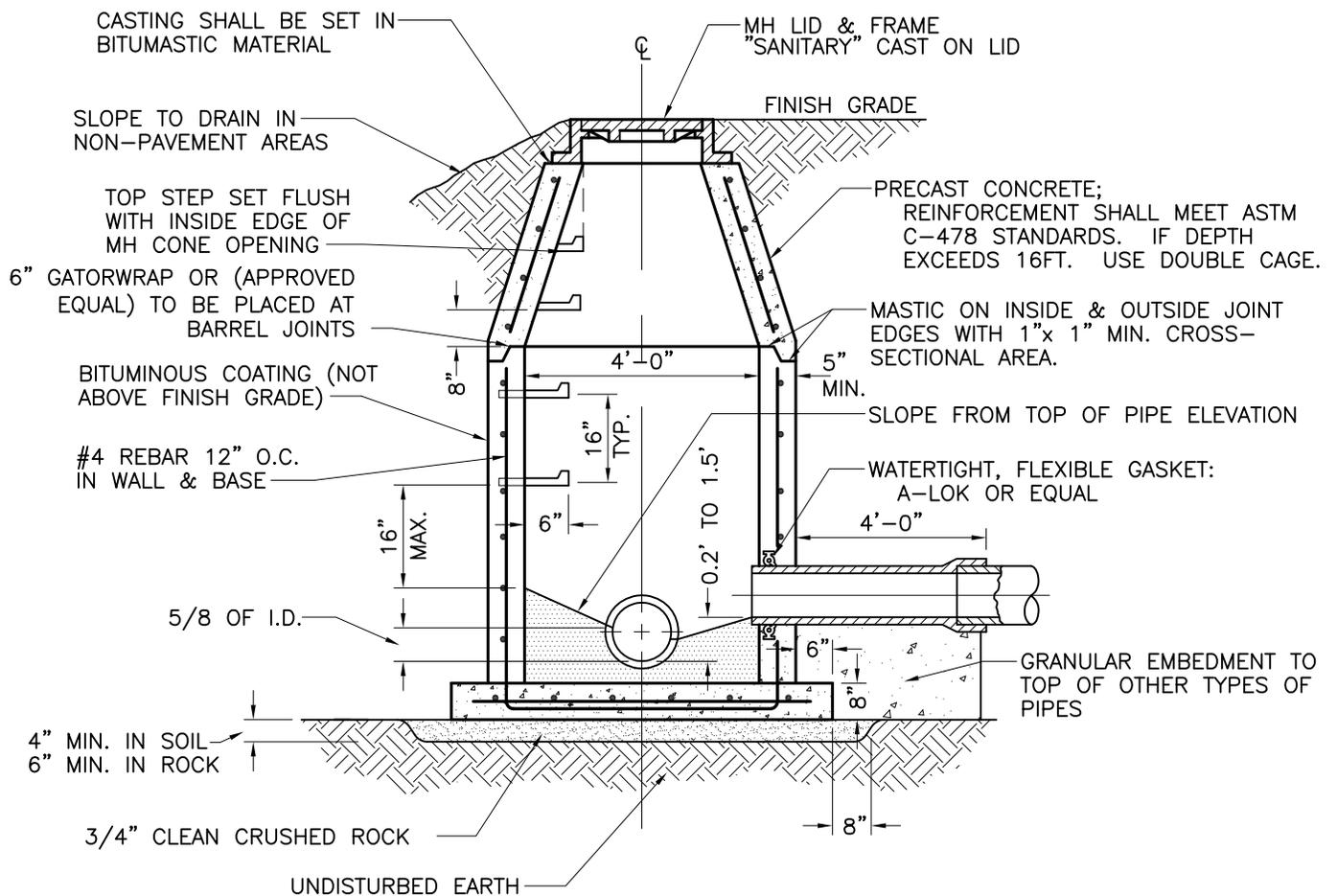


TRENCH GRATE

1000.16



HORIZONTAL SECTION



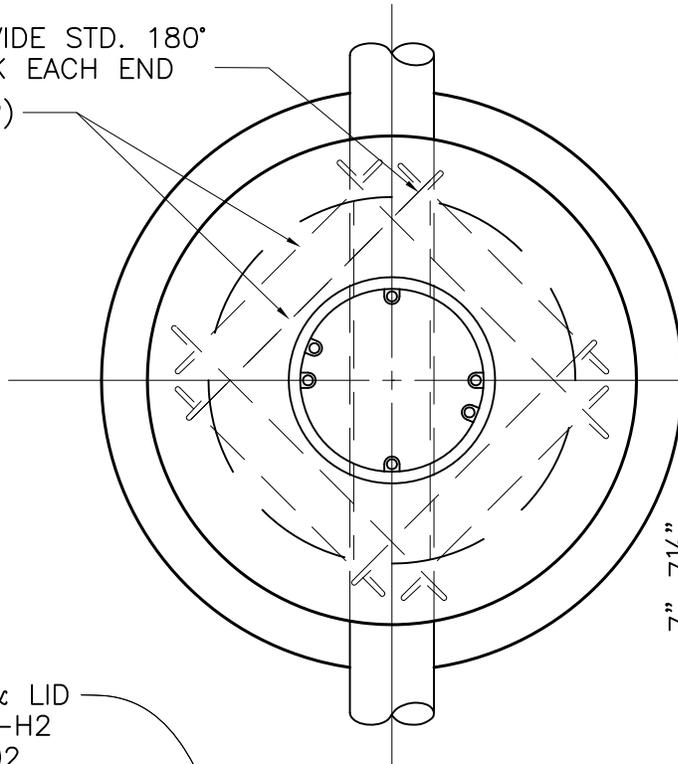
VERTICAL SECTION

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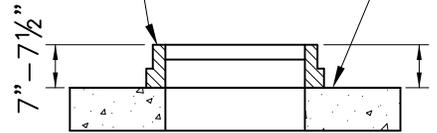
STANDARD MANHOLE

PROVIDE STD. 180°
HOOK EACH END
#6 REBAR (TYP)



NEENAH R1726-A
OR APPROVED EQUAL

BITUMINOUS SETTING
COMPOUND



MANHOLE FRAME & LID
NEENAH PR-1915-H2
CLAY & BAILY 2002
OR AN APPROVED EQUAL

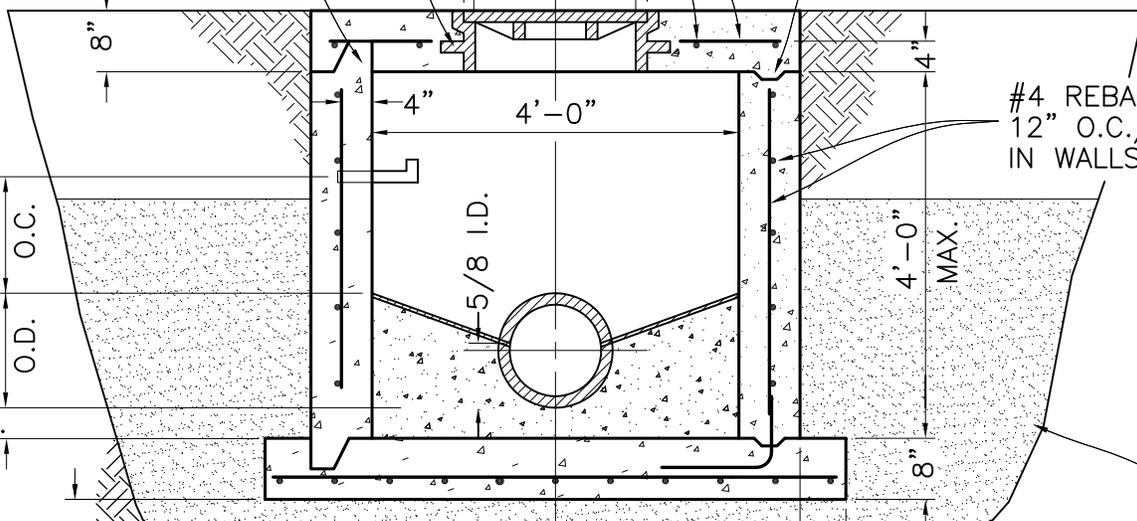
ALTERNATE TOP
(TO BE USED UNDER
PAVEMENTS ONLY)

5" PRECAST OR
8" REINFORCED
CONCRETE

2'-0"
1'-10"

#6 REBAR

2" KEYWAY
(TOP & BOTTOM)



#4 REBAR
12" O.C./E.W.
IN WALLS & BASE

4'-0"
MAX.

4" MIN. IN SOIL
6" MIN. IN ROCK

UNDISTURBED
EARTH

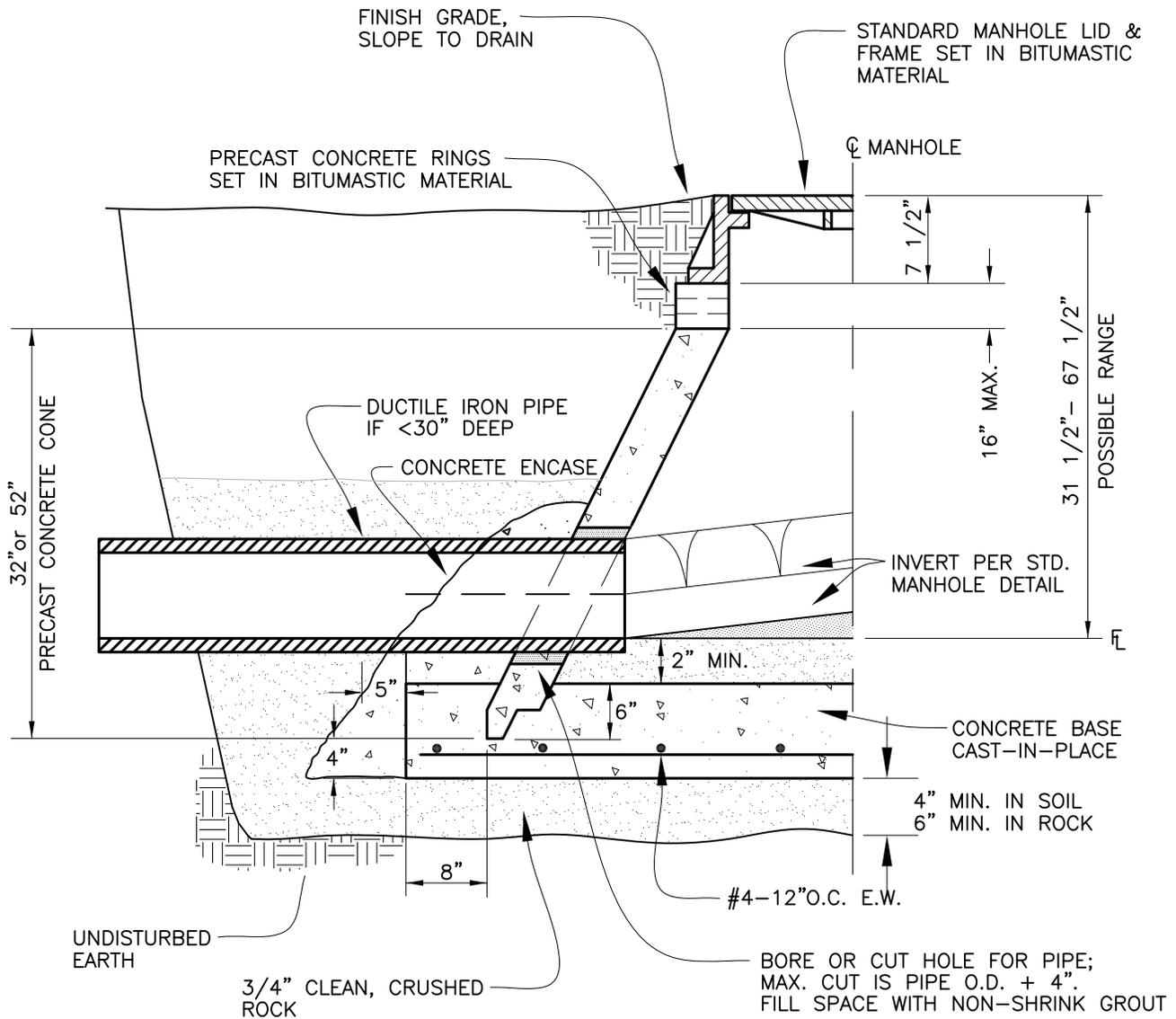
3/4" CLEAN CRUSHED
ROCK

VERTICAL SECTION

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**FLAT TOP
SHALLOW MANHOLE**

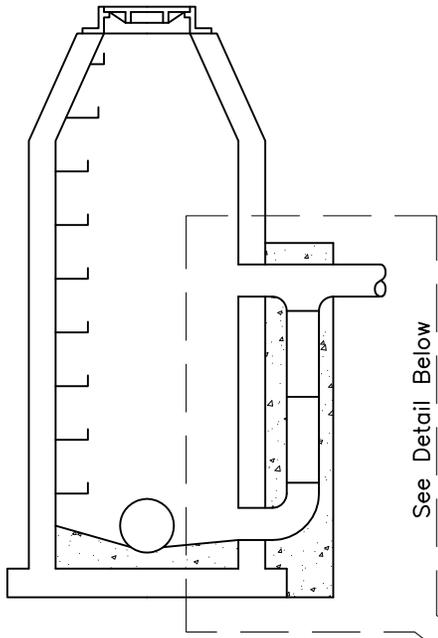


VERTICAL HALF-SECTION

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STANDARD SHALLOW
MANHOLE



See Detail Below

WATERTIGHT, FLEXIBLE GASKET: A-LOCK OR APPROVED EQUAL

CONCRETE ENCASEMENT SHALL EXTEND A MIN. OF 6" ABOVE TEE.

STANDARD TEE FITTING

CONCRETE ENCASEMENT SHALL EXTEND TO THE BELL OF THE TEE FITTING

GRANULAR BACKFILL 3/4" CLEAN CRUSHED ROCK, TO UNDISTURBED EARTH

LONG ELBOW

UNDISTURBED EARTH

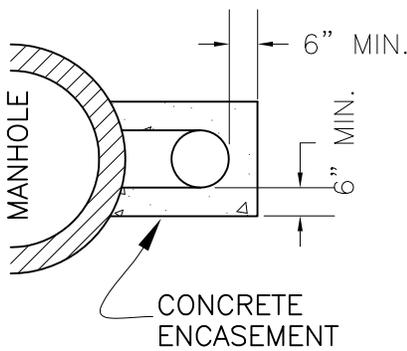
MANHOLE BASE

1'-6" MIN.
10'-0" MAX.

8"

4" MIN. IN SOIL
6" MIN. IN ROCK

WATERTIGHT, FLEXIBLE GASKET: A-LOCK OR APPROVED EQUAL



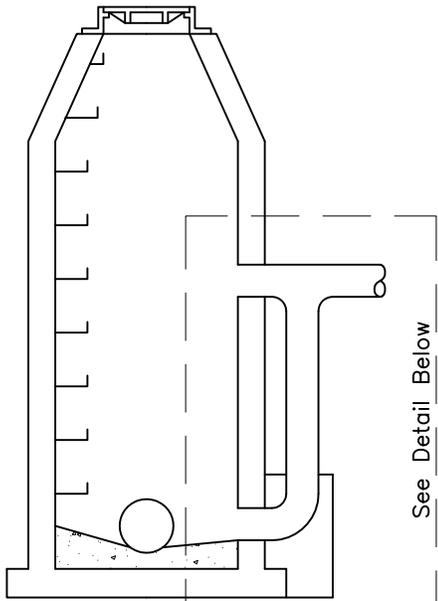
NOTES:

1. DROP INLET PIPE TO BE SAME SIZE AND MATERIAL AS SEWER MAIN.
2. ALIGNMENT OF TEE: DROP INLET PIPE AND LONG ELBOW MAY BE ADJUSTED TO MAXIMUM OF 5% DEFLECTION TO COMPENSATE FOR SLOPE OF SEWER LINE.

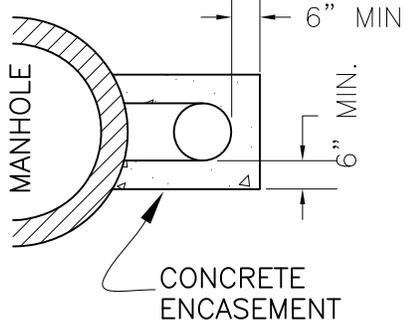
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STANDARD DROP MANHOLE



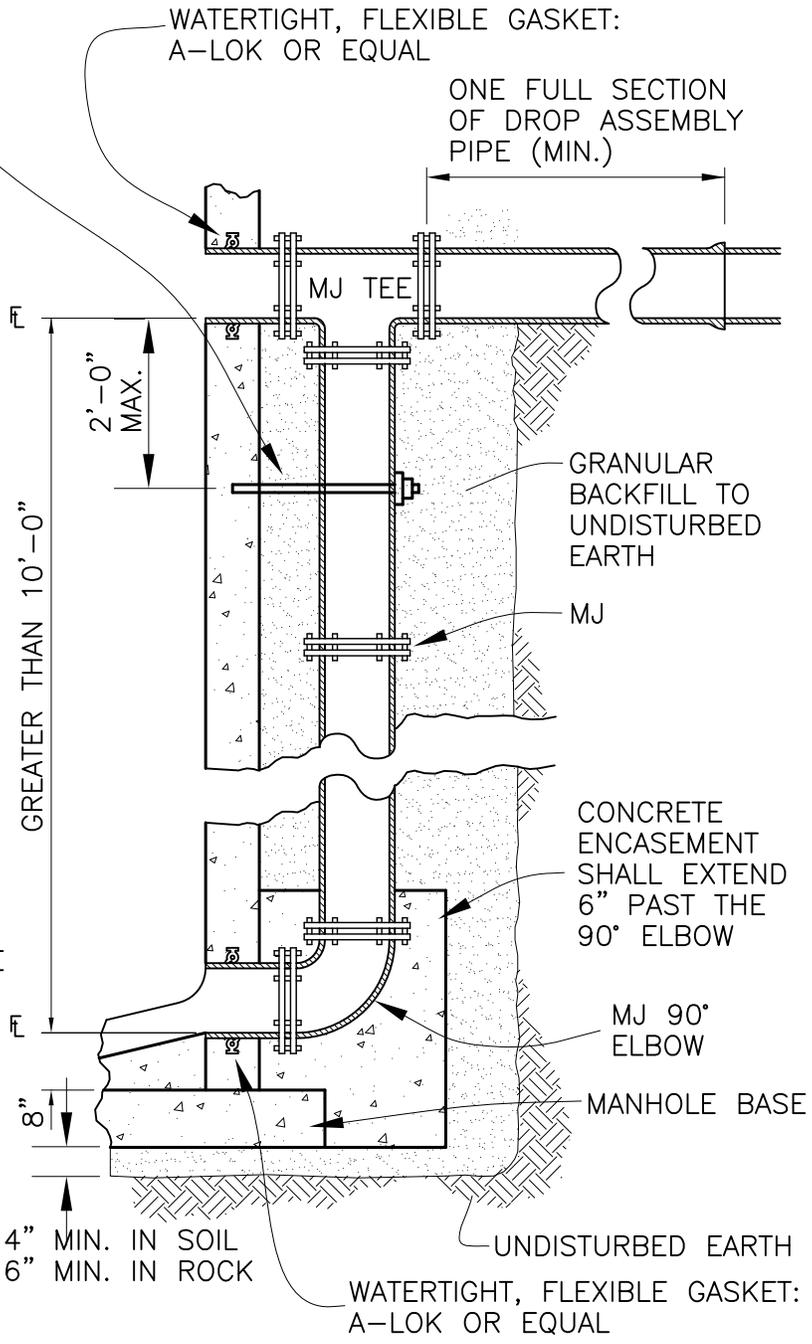
See Detail Below



STAINLESS STEEL HALF CLAMP ATTACHED WITH 2-3/4" STAINLESS STEEL ANCHORS, MAX. 6' VERTICAL SPACING.

WATERTIGHT, FLEXIBLE GASKET: A-LOK OR EQUAL

ONE FULL SECTION OF DROP ASSEMBLY PIPE (MIN.)



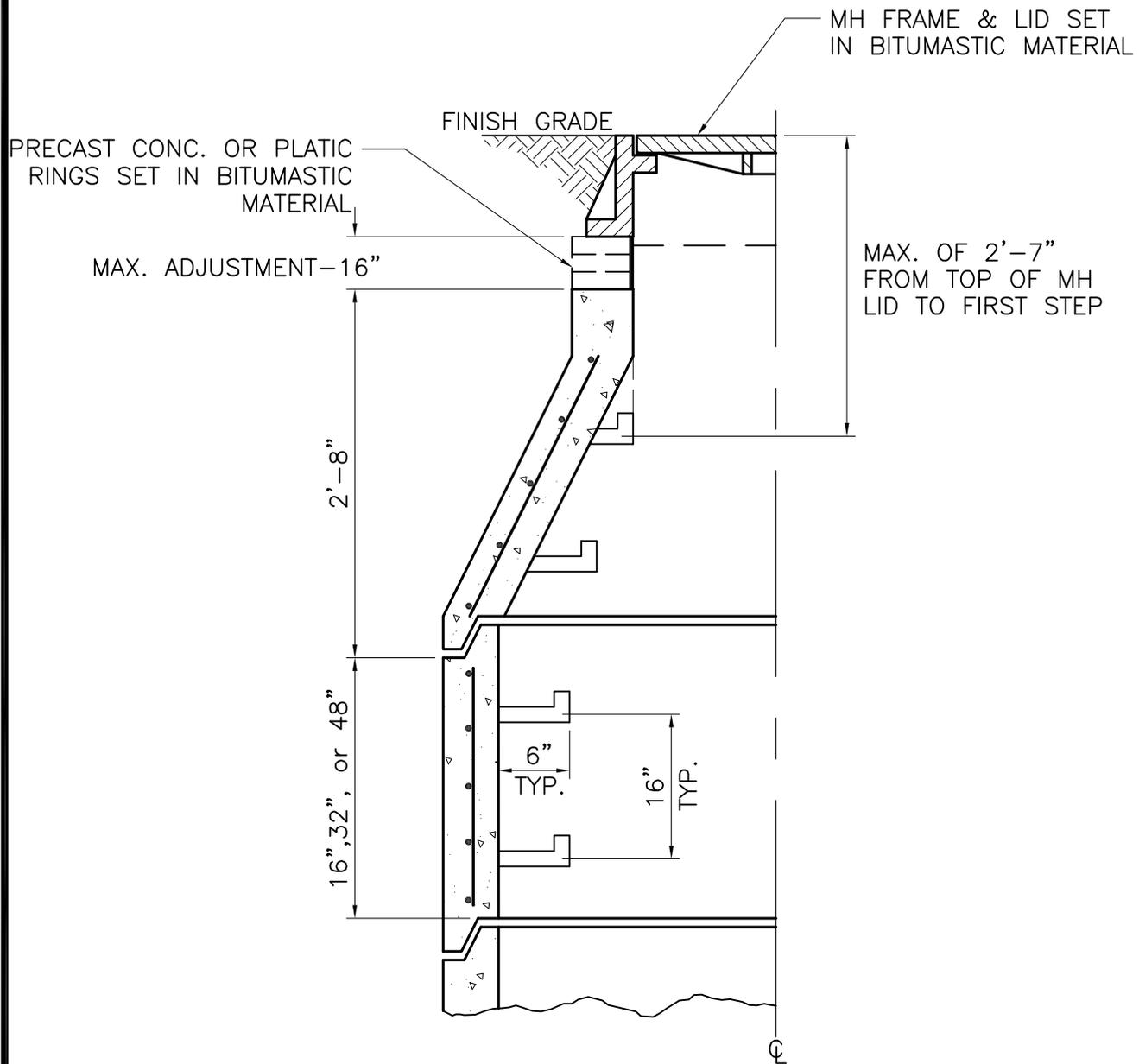
NOTES:

1. DROP INLET PIPE TO BE SAME SIZE AND MATERIAL AS SEWER MAIN.
2. ALIGNMENT OF TEE: DROP INLET PIPE AND LONG ELBOW MAY BE ADJUSTED TO MAXIMUM OF 5% DEFLECTION TO COMPENSATE FOR SLOPE OF SEWER LINE.
3. PIPE MATERIAL IN THE DROP ASSEMBLY SHALL CONFORM TO SECTION 505.2.b OF THE STANDARD SPECIFICATIONS.
4. DROP ASSEMBLY SHALL UTILIZE MECHANICAL COUPLINGS. THE COUPLINGS SHALL BE A MEGALUG MECHANICAL JOINT RESTRAINT, OR APPROVED EQUAL.

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DEEP DROP MANHOLE



BARREL SECTION

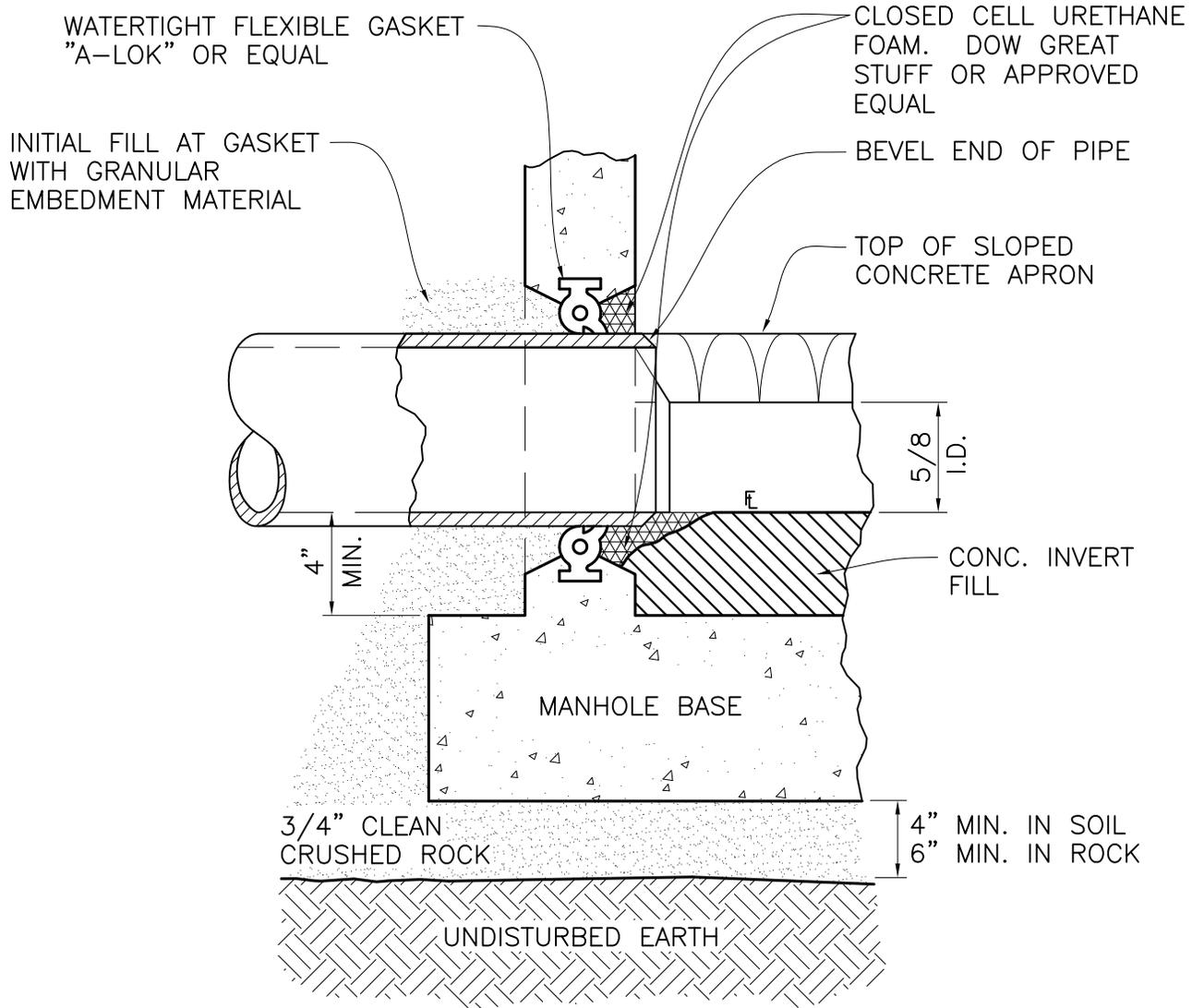
NOTE:

IF MORE THEN 16" OF ADJUSTMENT IS NEEDED, REMOVE CONE SECTION AND ADD OR REMOVE BARREL SECTIONS AS NECESSARY.

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MANHOLE ADJUSTMENT



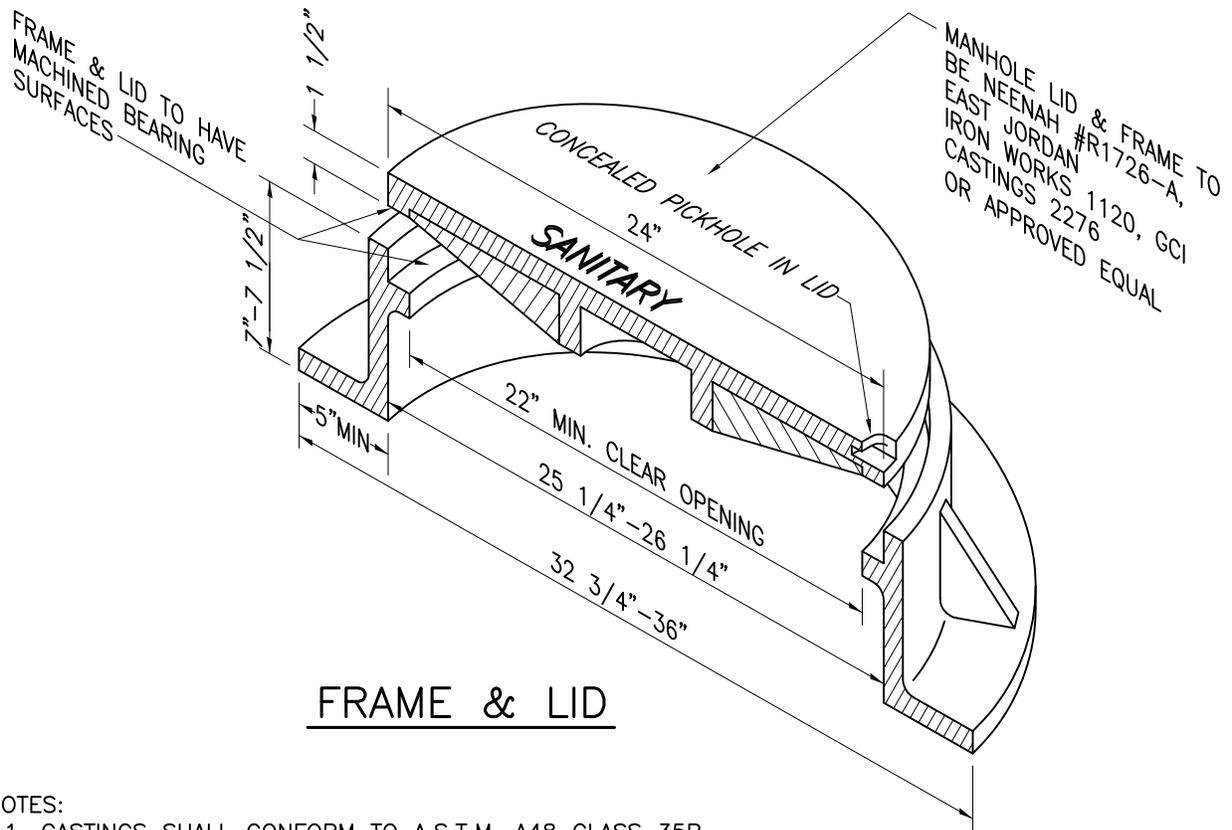
NOTE:

1. BITUMINOUS COATING ON EXTERIOR SURFACE OF MANHOLE SHALL NOT COME IN CONTACT WITH PIPE GASKET.
2. FOR CAST-IN-PLACE CONCRETE MANHOLES OR PRE-CAST WITH BOX-OUTS, THE PIPE GASKET SHALL BE A RUBBER LABYRINTH WATERSTOP WITH STAINLESS STEEL CLAMPING BANDS LOCATED AT CENTER OF WALL AND THE SPACE BETWEEN PIPE & WALL COMPLETELY GROUTED WITH NONSHRINKING MORTAR.
3. PIPE MAY PROJECT 1" MAXIMUM PAST INSIDE WALL OF MANHOLE. NO CONTACT BETWEEN PIPE & INVERT MAY OCCUR.

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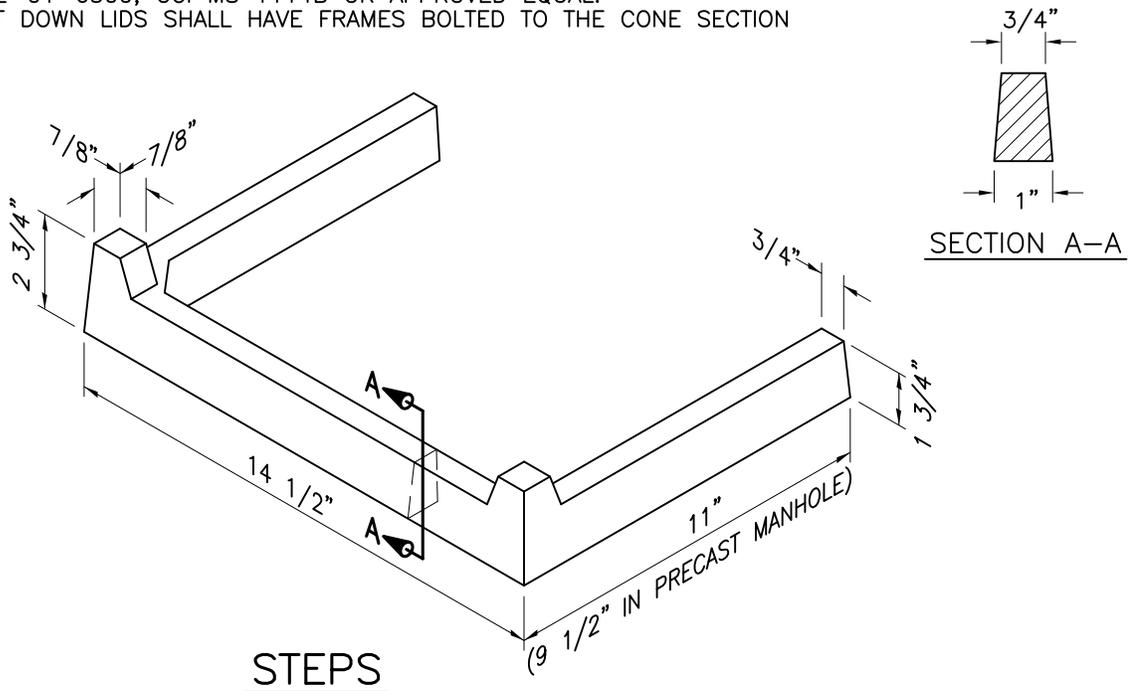
MANHOLE GASKET (Pipe Gasket Detail)



FRAME & LID

NOTES:

1. CASTINGS SHALL CONFORM TO A.S.T.M. A48 CLASS 35B.
2. LIDWEIGHT 135 lbs. MINIMUM. TOTAL MINIMUM WEIGHT OF 350 lbs.
3. WATERTIGHT LID AND FRAME TO BE NEENAH #R-1916-F, OR APPROVED EQUAL
4. MANHOLE STEP NEENAH R-1980-J, CLAY & BAILEY 2102-01-6200 & 2102-01-6300, GCI MS 1114B OR APPROVED EQUAL.
5. BOLT DOWN LIDS SHALL HAVE FRAMES BOLTED TO THE CONE SECTION

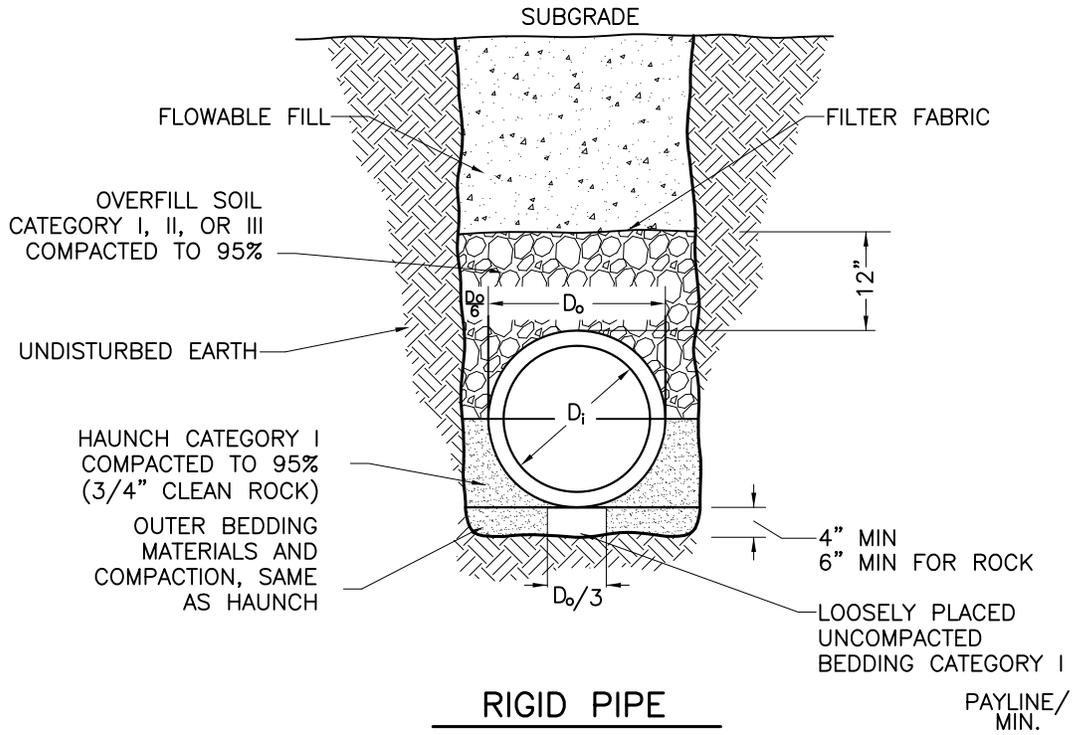


STEPS

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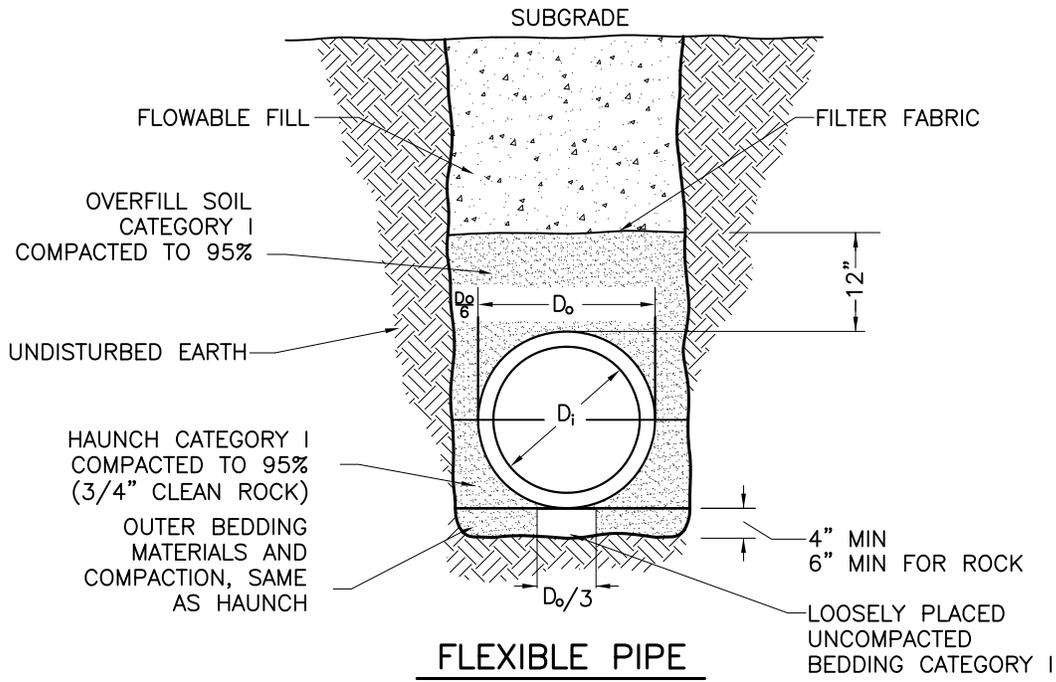


**MANHOLE CASTINGS
(Frame, Lid & Steps)**



RIGID PIPE

PIPE DIAMETER	PAYLINE/ MIN. TRENCH WIDTH	MAX. TRENCH WIDTH
8"–36"	$D_o + 12"$	$D_o + 24"$
42"–72"	$D_o + (D_o/3)$	$D_o + 30"$
72"+	$D_o + (D_o/3)$	$D_o + 48"$



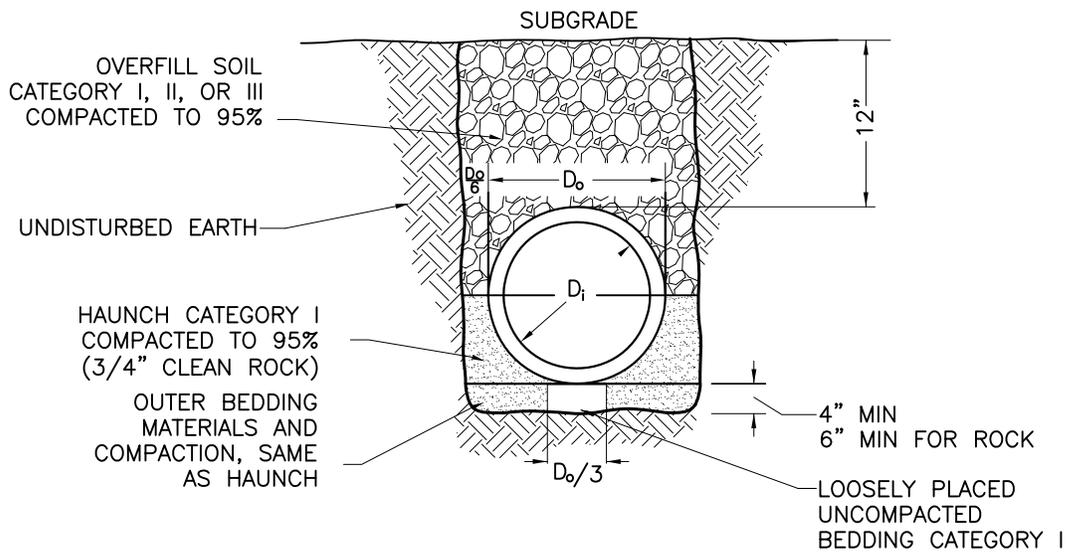
FLEXIBLE PIPE

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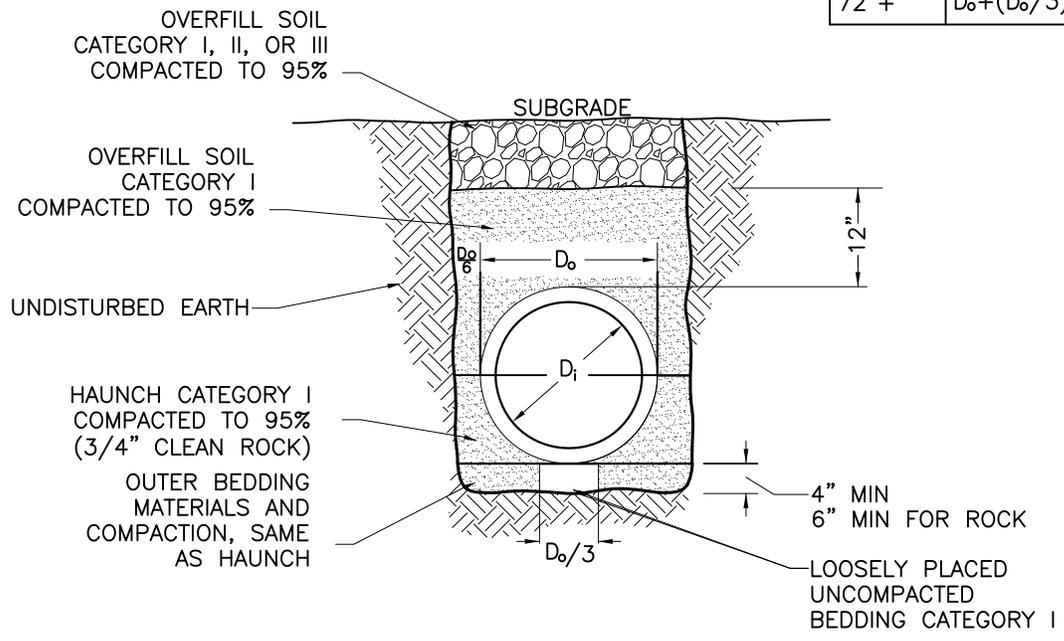
**PIPE EMBEDMENT
(In the Right of Way)**

9A



RIGID PIPE

PIPE DIAMETER	PAYLINE/ MIN. TRENCH WIDTH	MAX. TRENCH WIDTH
8"–36"	$D_o + 12"$	$D_o + 24"$
42"–72"	$D_o + (D_o/3)$	$D_o + 30"$
72"+	$D_o + (D_o/3)$	$D_o + 48"$



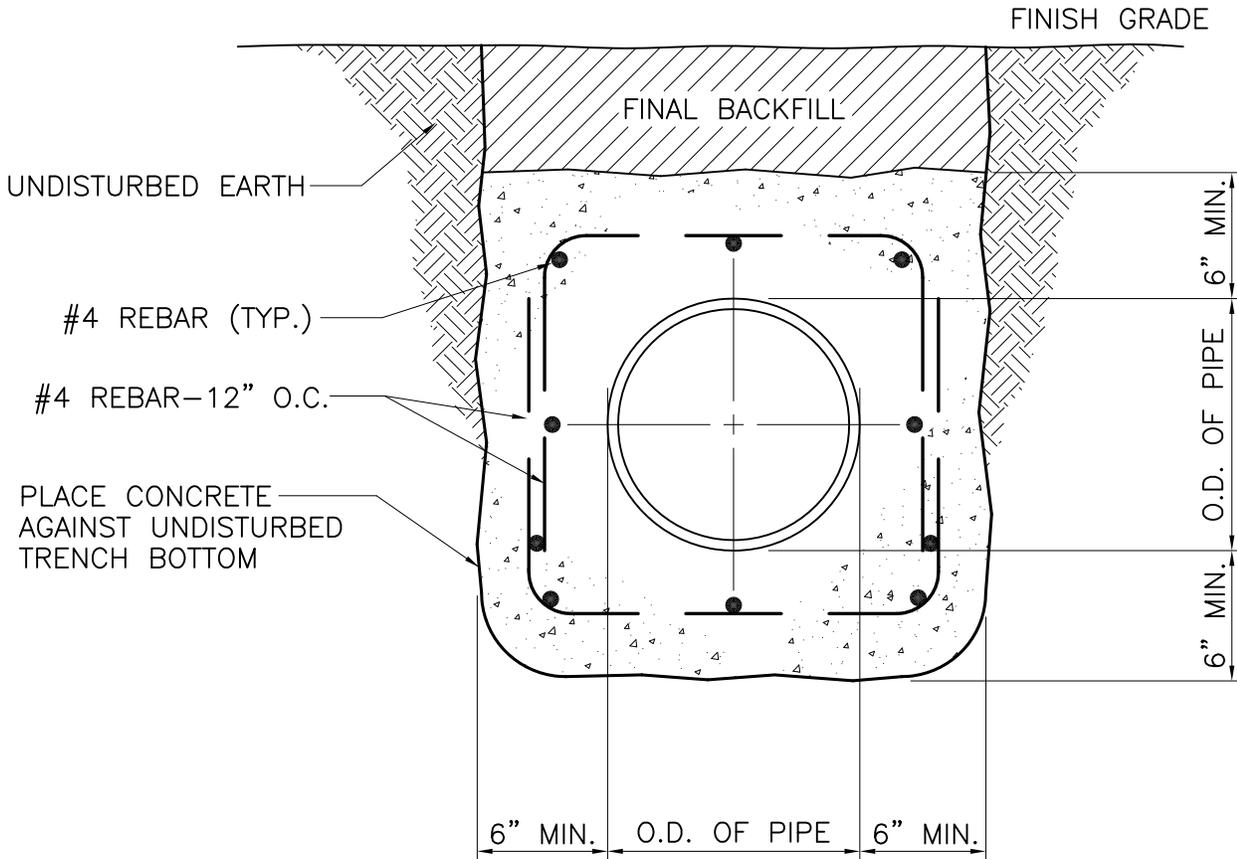
FLEXIBLE PIPE

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**PIPE EMBEDMENT
(Out of the Right of Way)**

9B



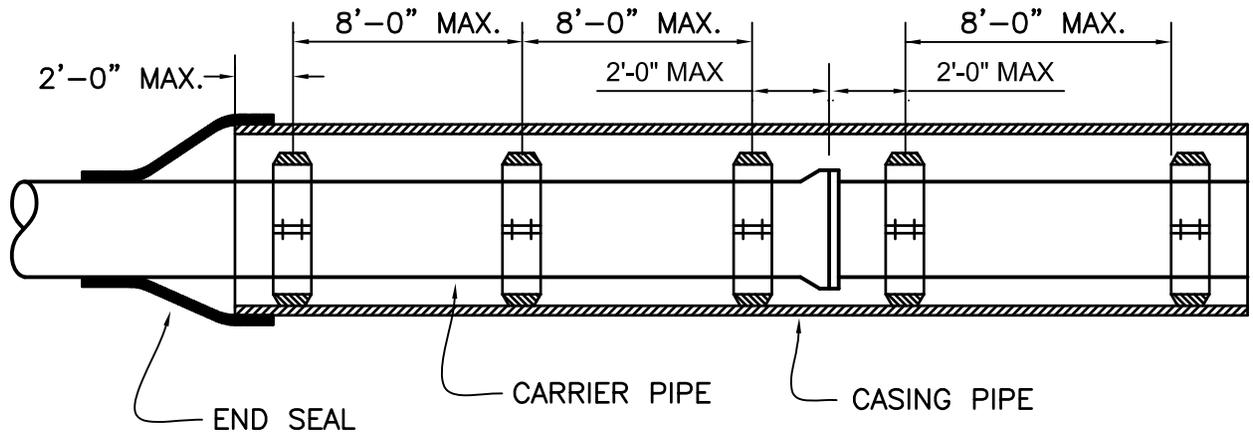
NOTES:

1. FOR PIPE LARGER THAN 12" DIAMETER THE MINIMUM CONCRETE COVER SHALL BE 8" WITH # 5 REBAR @ 12" O.C. EACH WAY.
2. BRACE OR TIE PIPE TO PREVENT FLOTATION OR DEFLECTION, DURING CONCRETE PLACEMENT.
3. VERTICAL CLEARANCE BETWEEN SEWER AND WATER MAINS SHALL BE A MINIMUM OF 2 FEET.

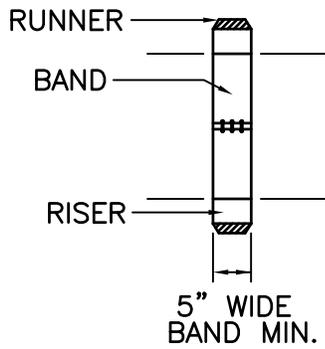
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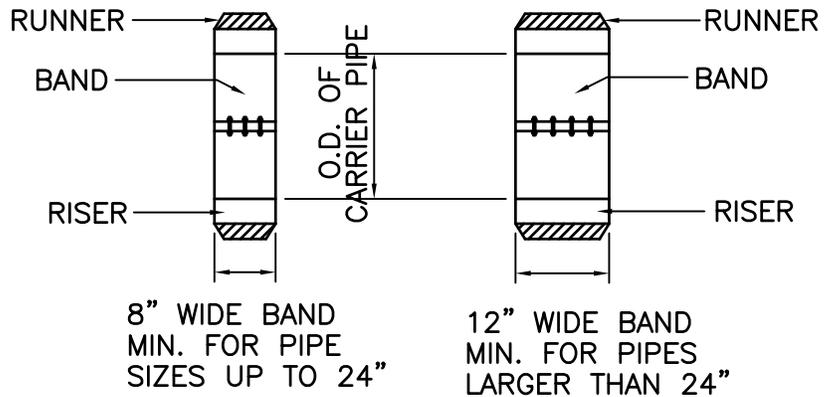
PIPE ENCASEMENT (Concrete)



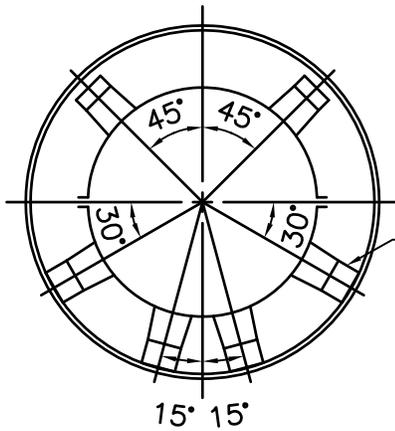
TYPE I SPACERS



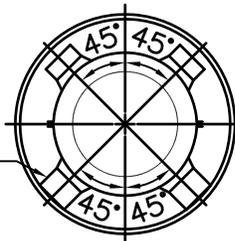
TYPE II SPACERS



SIZES 14" THRU 36"



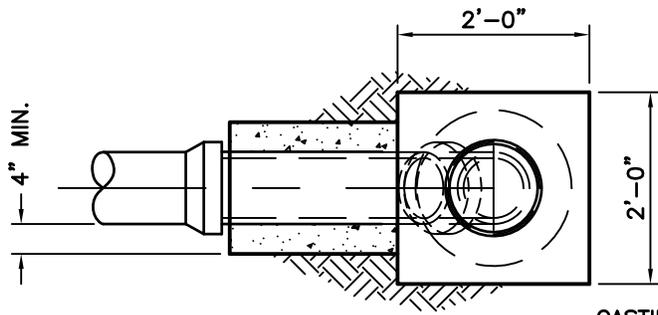
SIZES 4" THRU 12"



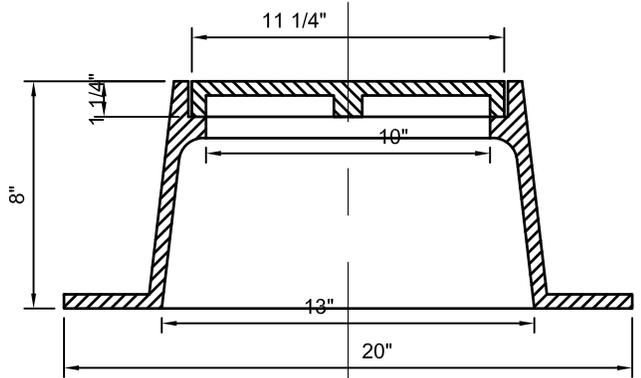
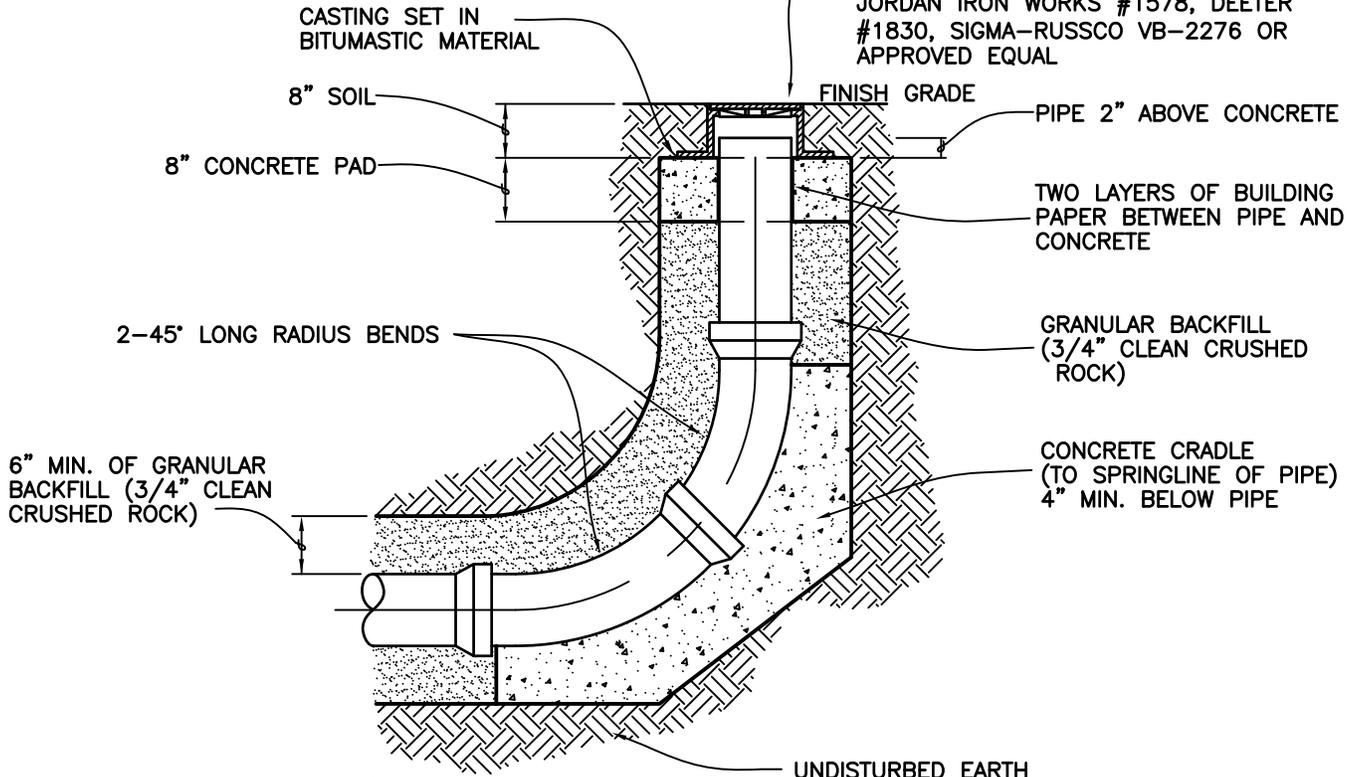
<i>J.P.L.</i>	1/1/12
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PIPE ENCASEMENT
(Steel)



CASTING MINIMUM WEIGHT 90 lbs. (NO VENT HOLES OR OPEN PICK HOLES) NEENAH #R-1976, GCI CASTINGS #G1000, EAST JORDAN IRON WORKS #1578, DEETER #1830, SIGMA-RUSSCO VB-2276 OR APPROVED EQUAL



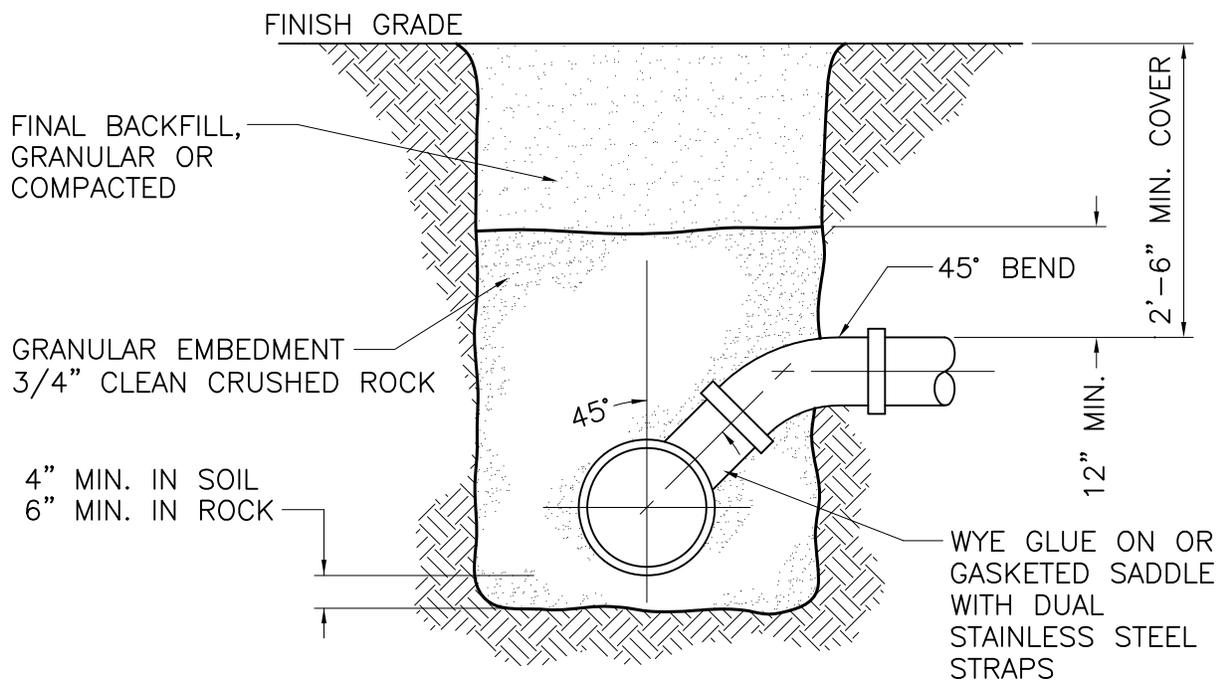
FRAME & LID

NOTE:
DISTANCE FROM CENTER OF DOWNSTREAM MANHOLE TO CENTER OF CLEANOUT SHALL BE 150 FEET OR LESS.

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STANDARD CLEANOUT



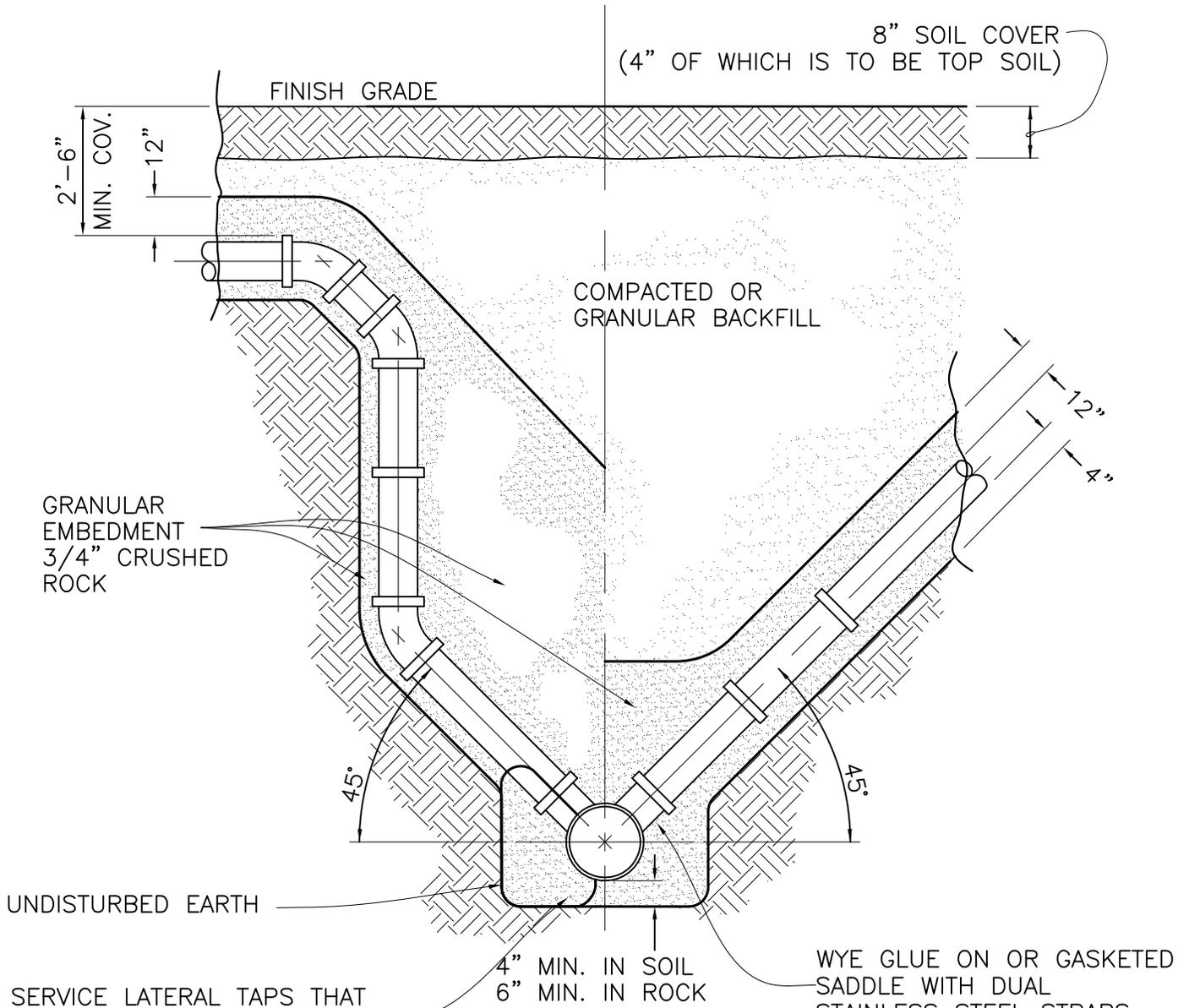
NOTES:

1. VCP PIPES SHALL NOT BE TAPPED. REPLACE SECTION OF VCP WITH PVC AND FITTING.

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STANDARD SERVICE CONNECTION



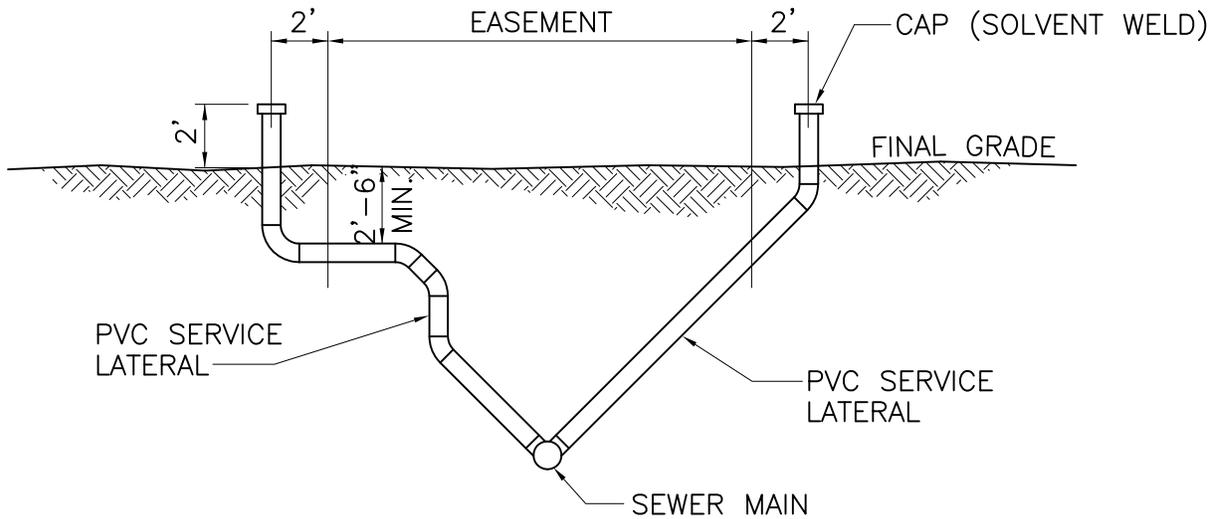
SERVICE LATERAL TAPS THAT ARE 15 FEET DEEP OR DEEPER MUST HAVE A CONCRETE CRADLE FROM VIRGIN SOIL TO THE SPRINGLINE SEWERS DEEPER THAN 20 FEET SHALL NOT BE TAPPED. (PUBLIC OR PRIVATE)

WYE GLUE ON OR GASKETED SADDLE WITH DUAL STAINLESS STEEL STRAPS. VCP SHALL NOT BE TAPPED. REPLACE SECTION OF VCP WITH PVC AND FITTING.

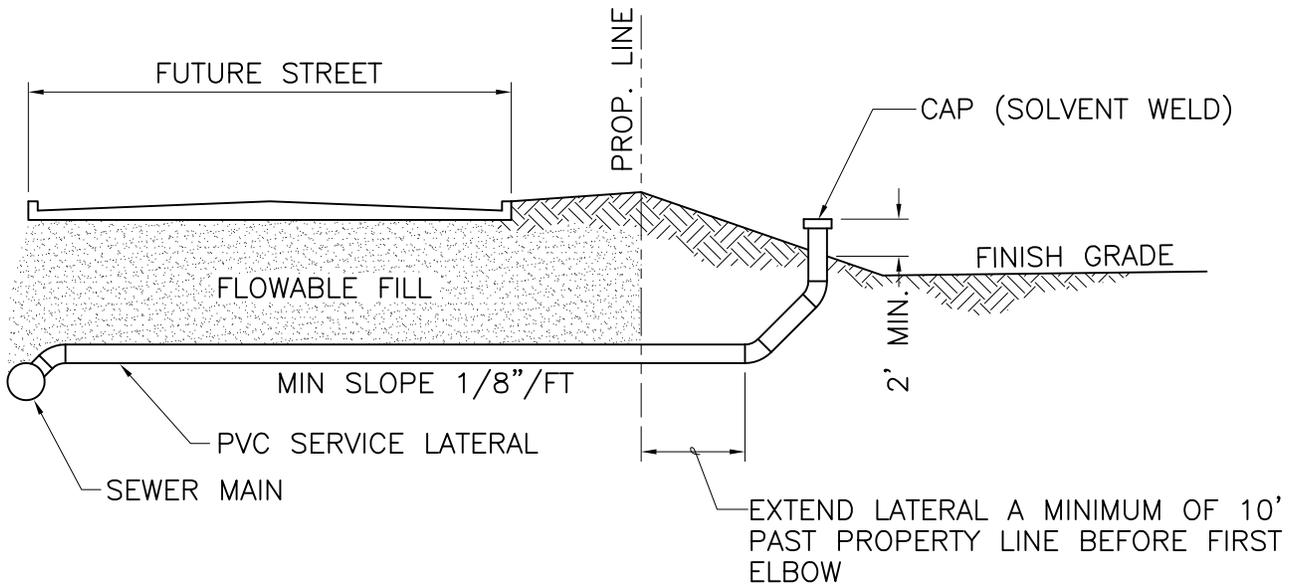
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DEEP SERVICE CONNECTION



SERVICE LATERAL EXTENSION FROM DEEP SEWER



SERVICE LATERAL EXTENSION UNDER FUTURE STREETS

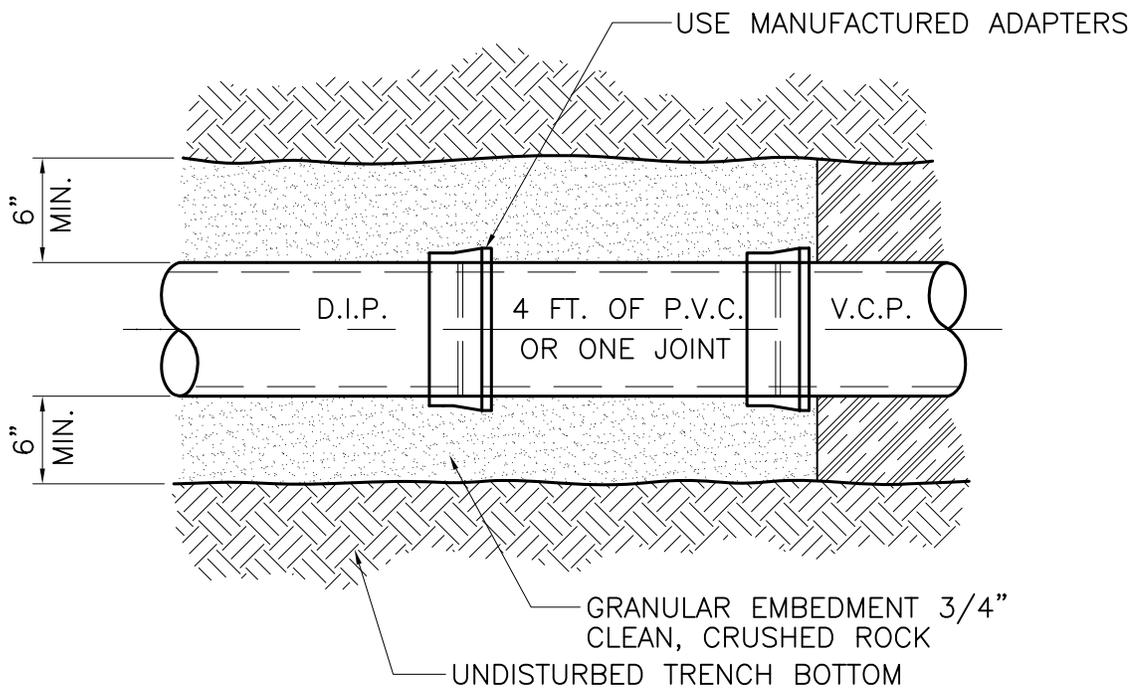
NOTE:

THIS DETAIL IS FOR USE WHENEVER LATERALS ARE EXTENDED FROM THE SEWER MAIN DURING NEW CONSTRUCTION. IN ALL CASES WHEN SERVICE LATERALS ARE EXTENDED THE PIPE SHALL EXTEND A MINIMUM OF TWO (2) FEET ABOVE THE PROPOSED FINAL GRADE AND SHALL BE FITTED WITH A CAP THAT IS SOLVENT WELDED IN PLACE.

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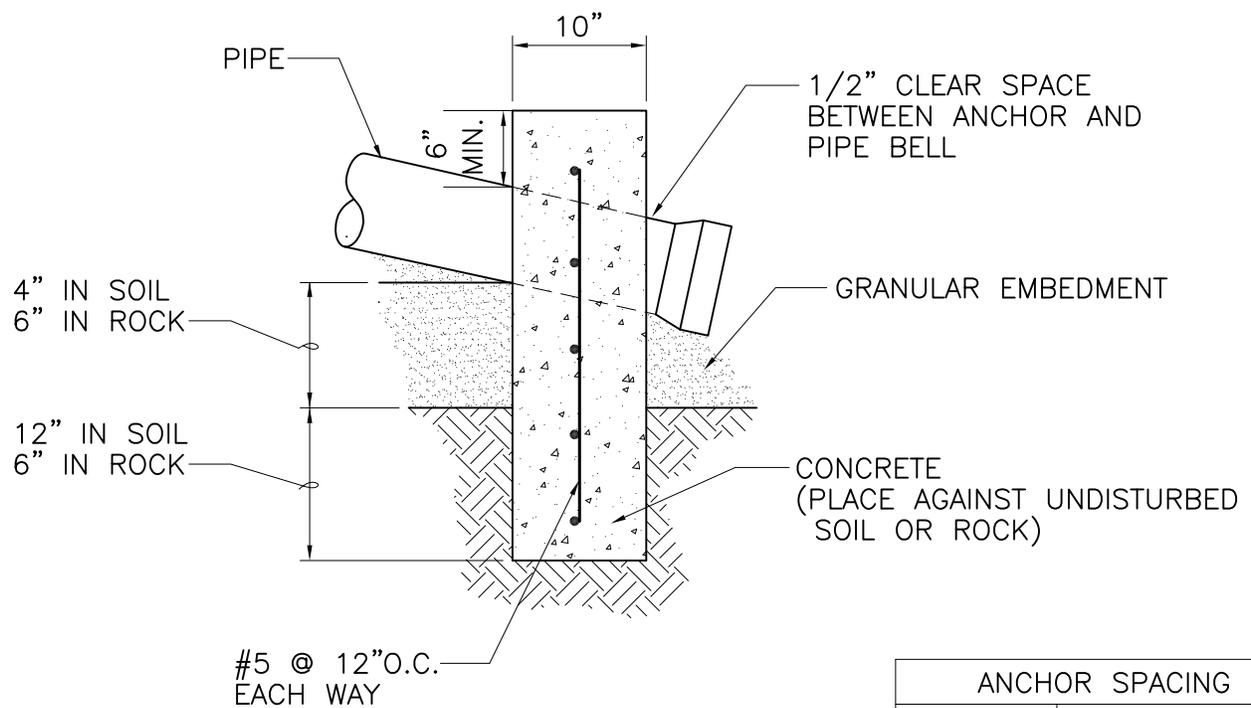
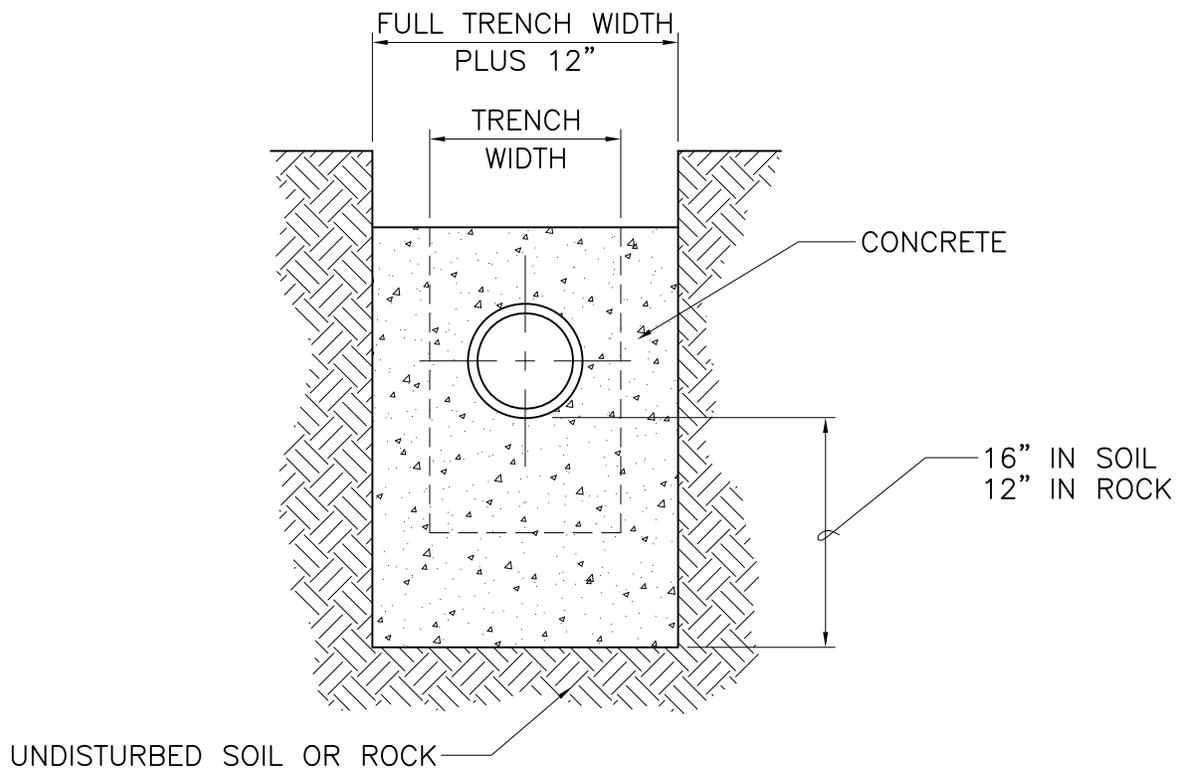
LATERAL EXTENSION FOR
NEW CONSTRUCTION



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V.C.P. / D.I.P. CONNECTION



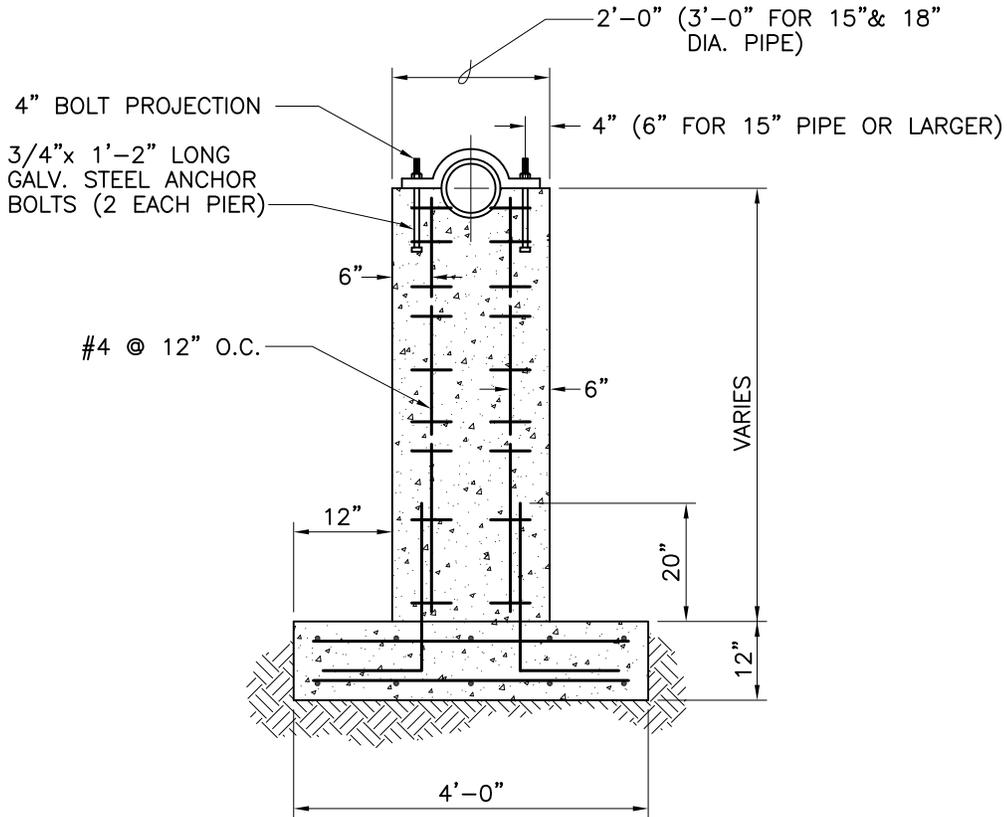
SIDE ELEVATION

ANCHOR SPACING	
SLOPE	MAX. DISTANCE
20%–35%	36'
35%–50%	24'
>50%	12' OR ONE PER JOINT OF PIPE

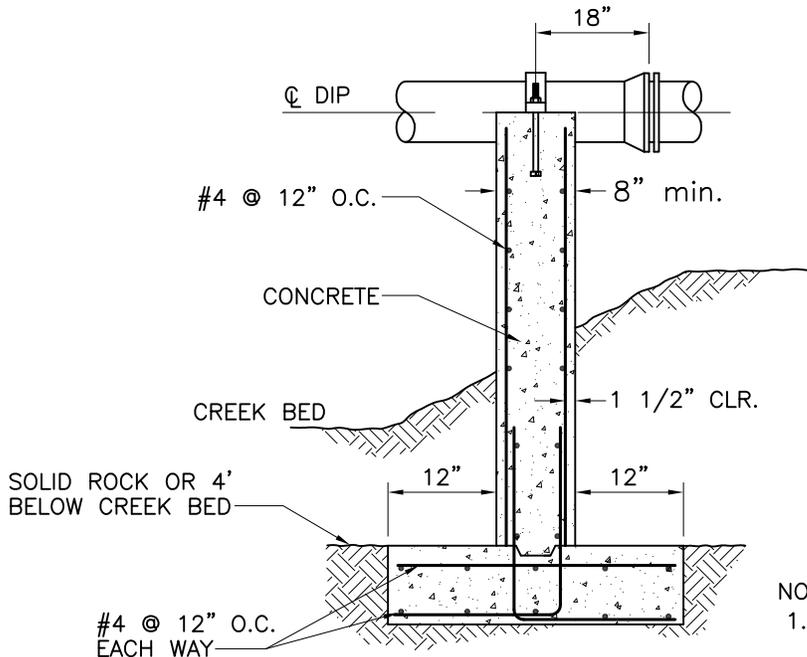
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ANCHOR DETAIL



FRONT ELEVATION



SIDE ELEVATION

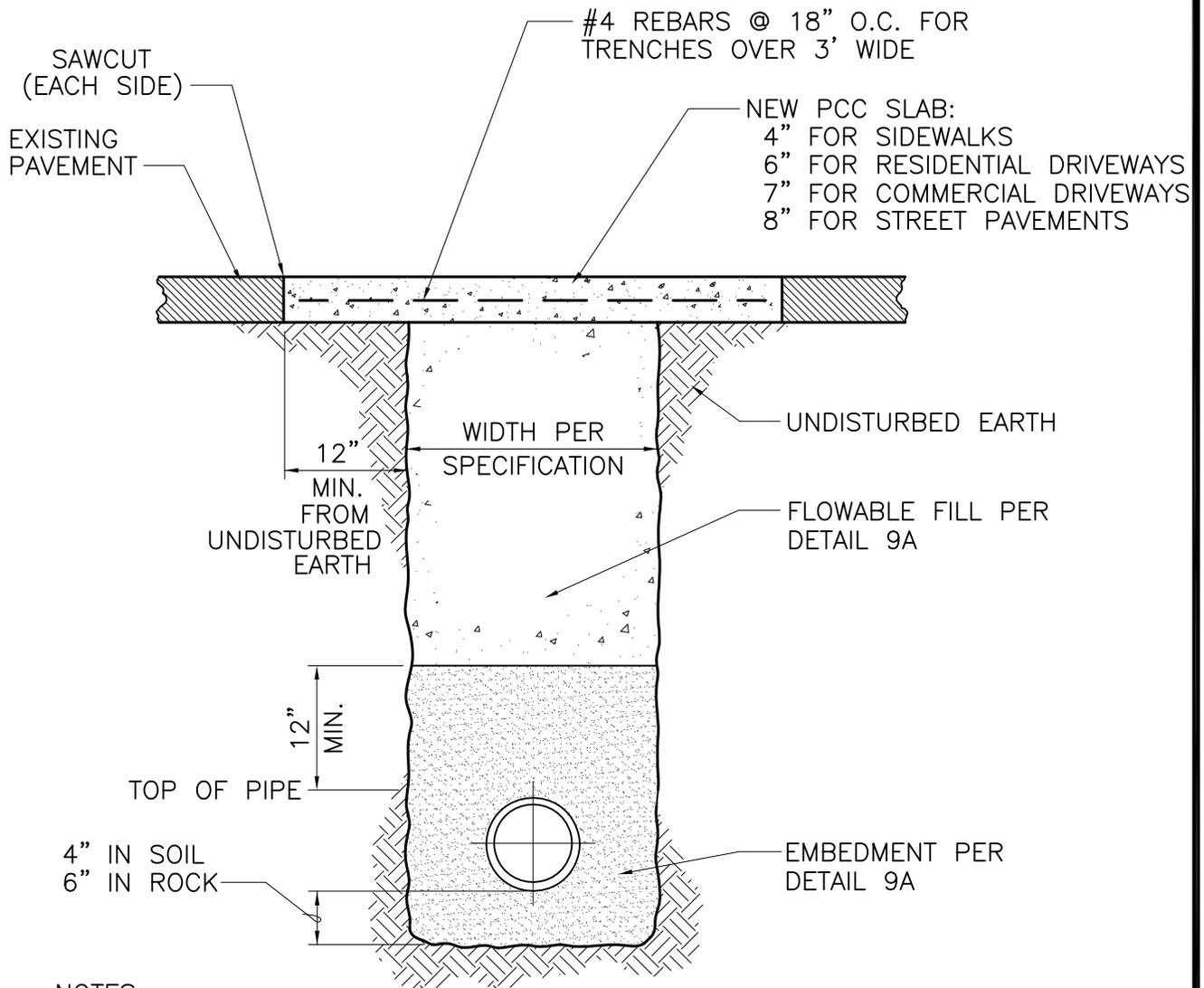
- NOTE:
1. PIERS SHALL BE LOCATED AS NEAR TO THE BANK AS POSSIBLE.
 2. TOP OF FOOTING AT SOLID ROCK OR 4 FT. BELOW CREEK BED.

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PIER DETAIL

18



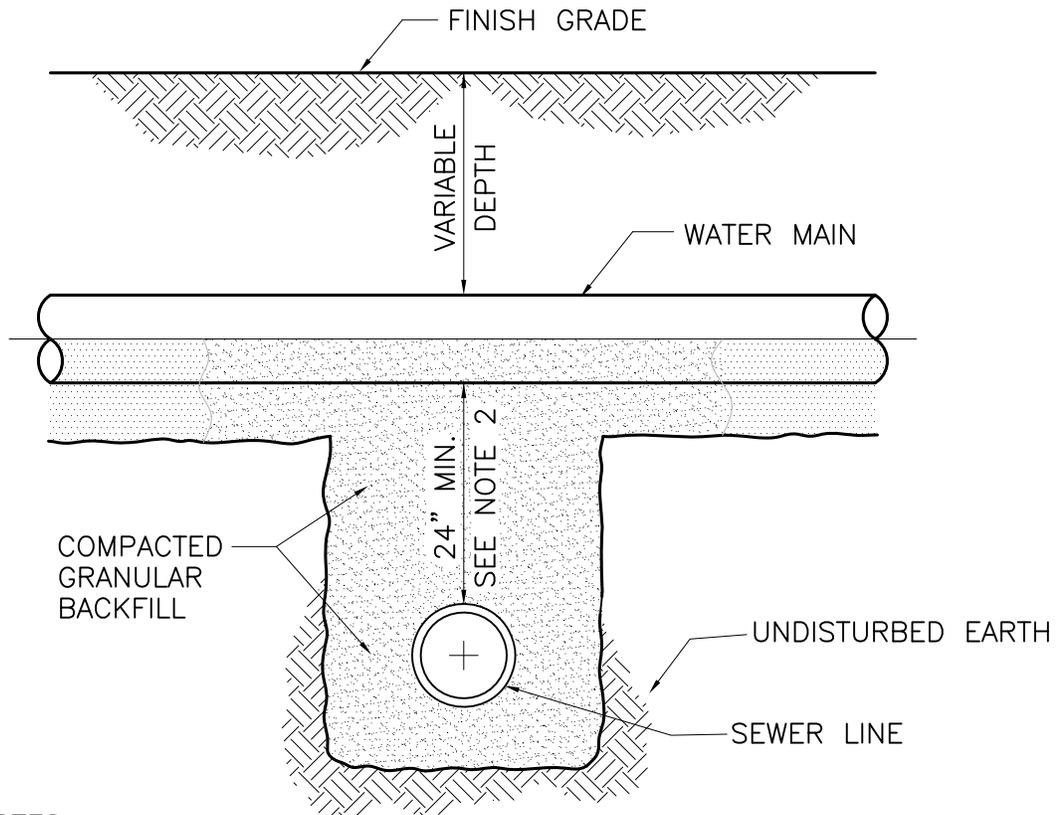
NOTES:

1. FOR ASPHALT PAVEMENT USE 8" PCC SLAB OVERLAID BY A MINIMUM OF 2" ASPHALTIC CONCRETE TO MATCH EXISTING GRADE.
2. FOR BRICK STREETS W/ASHPALTIC OVERLAY THE TOP OF 8" P.C.C. SLAB SHALL MATCH THE TOP OF BRICKS AND THE NEW ASPHALT THICKNESS SHALL MATCH EXSTING ASPHALT THICKNESS.
3. FOR BRICK STREETS THE TOP OF 8" P.C.C. SLAB SHALL MATCH TOP OF SUBGRADE.
4. REMOVE P.C.C. TO NEAREST JOINT AS SHOWN STREET AND STORM SEWER SPECIFICATIONS AND STANDARDS DETAIL 120.01 AND 440.02
5. CONCRETE SHALL BE CLASS AA, STEEL GRADE 60 AS PER DETAIL 120.01

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PAVEMENT REPLACEMENT



NOTES:

1. SEWERS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A VERTICAL SEPARATION THAT IS NO LESS THAN 24 INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER MAIN.
2. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER LINE CROSSES BELOW THE WATER LINE. CROSSINGS IN WHICH THE SEWER LINE IS ABOVE THE WATER LINE WILL ONLY BE APPROVED ON A CASE BY CASE BASIS.
3. THE CROSSING SHALL BE ARRANGED SO THAT THE ENDS OF A FULL JOINT OF PIPE WILL BE EQUIDISTANT FROM THE WATER MAIN AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
4. IF THE VERTICAL SEPARATION BETWEEN THE WATER MAIN AND SEWER MAIN IS LESS THAN 18 INCHES, THE SEWER MAIN SHALL BE D.I.P. OR PRESSURE RATED PVC PIPE WITH A PRESSURE RATING THAT IS EQUAL TO OR GREATER THAN THE WATER MAIN. THE D.I.P. OR PRESSURE RATED P.V.C. MUST BE EXTENDED A DISTANCE 10 FEET ON BOTH SIDES OF THE WATER MAIN. THE TRANSITION BETWEEN PIPE MATERIALS SHALL BE ACCOMPLISHED WITH A RESTRAINED MECHANICAL TYPE JOINT OR FITTING. FLEXIBLE TYPE (FERNCO) FITTINGS ARE NOT ACCEPTABLE.
5. PRESSURE SEWER LINE AND WATER LINE CROSSINGS SHALL BE REVIEWED ON A CASE BY CASE BASIS.

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GRAVITY SEWER AND WATER LINE CROSSING

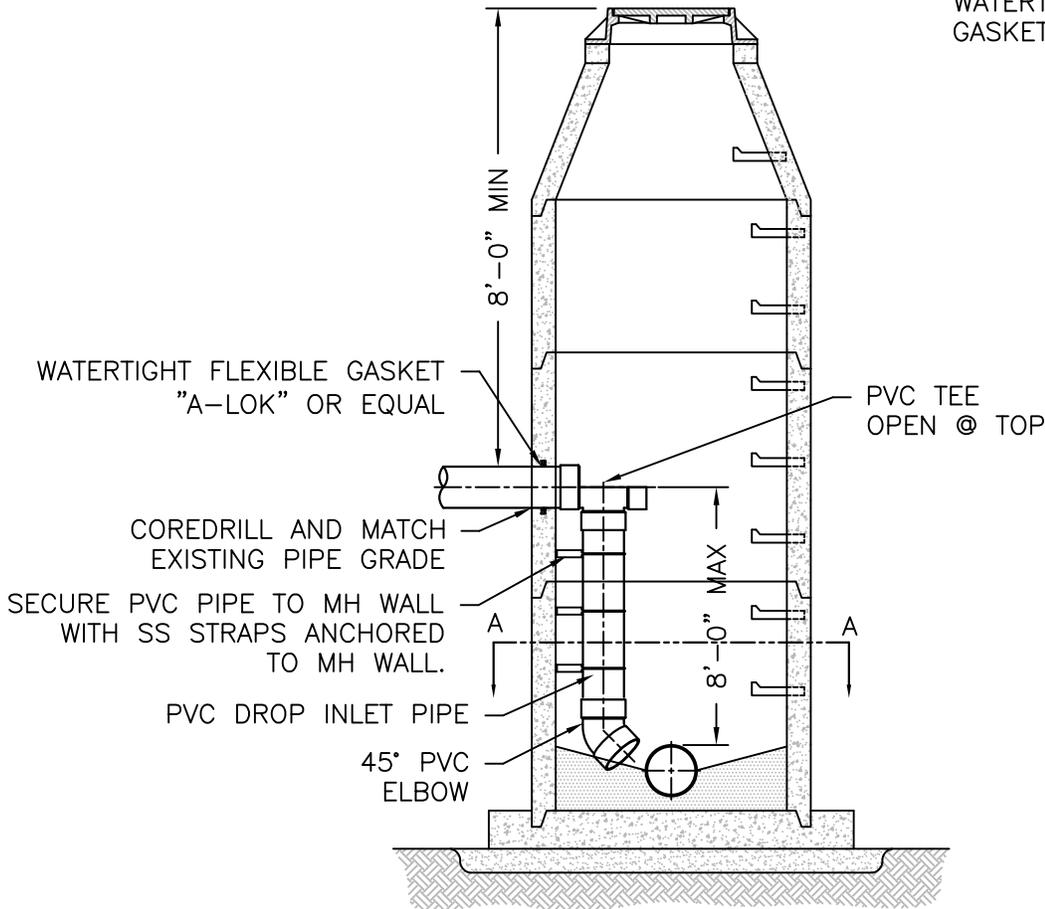
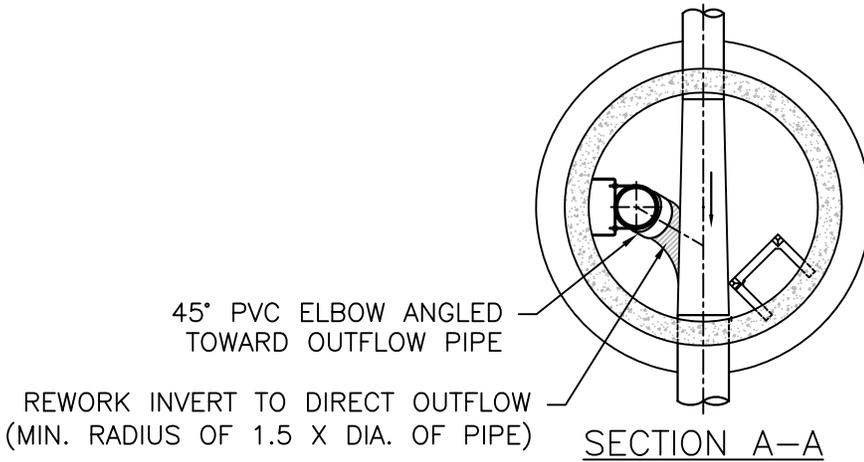
NOTES:

1. INSIDE DROP CONNECTION ONLY ALLOWED WITH PUBLIC WORKS DEPT. APPROVAL, WHEN PW DEPT. DEEMS UNFEASIBLE, UNPRACTICAL OR DANGEROUS TO PROVIDE OUTSIDE DROP.

2. DROP INLET PIPE TO BE SAME SIZE AND MATERIAL AS SEWER LINE.

3. ALIGNMENT OF TEE: DROP INLET PIPE MAY BE ADJUSTED TO A MAXIMUM OF 5% DEFLECTION.

4. ANNULAR SPACE AROUND NEW PIPE TO BE SEALED WITH NON-SHRINK GROUT, LINK SEAL, OR WATERTIGHT AND FLEXIBLE GASKET.

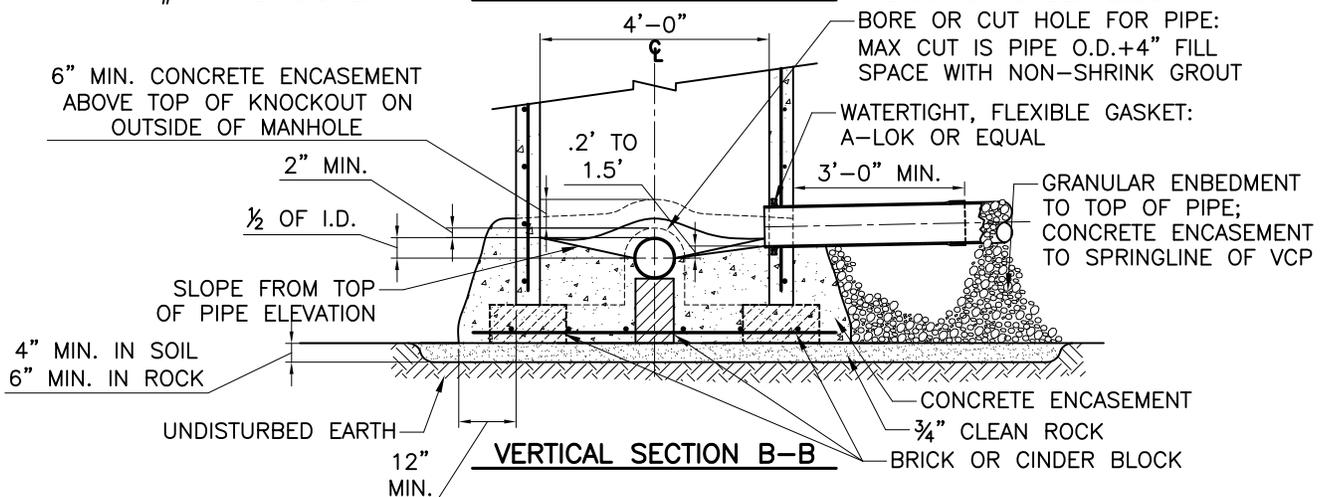
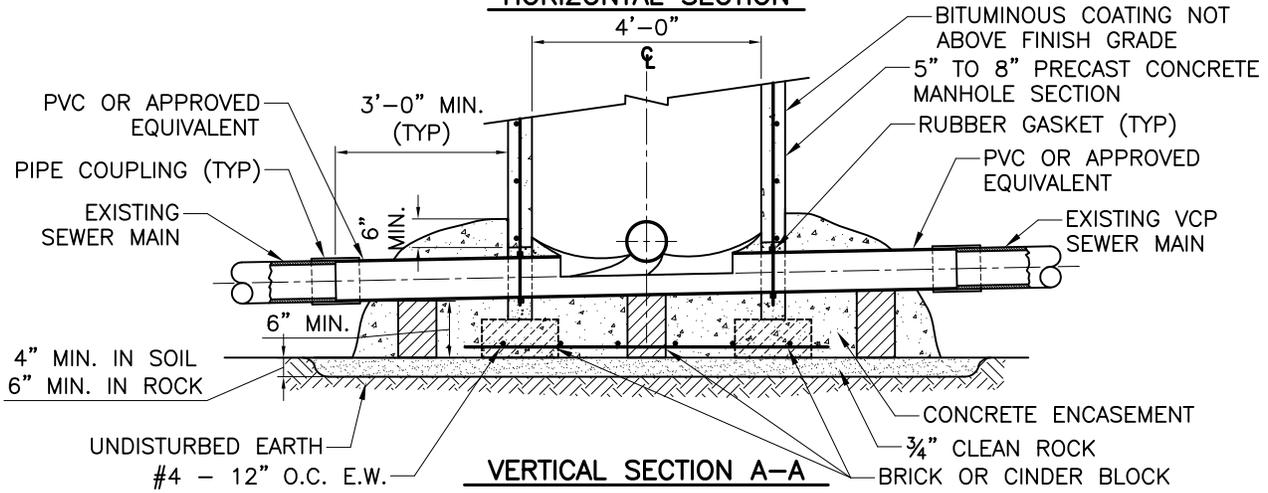
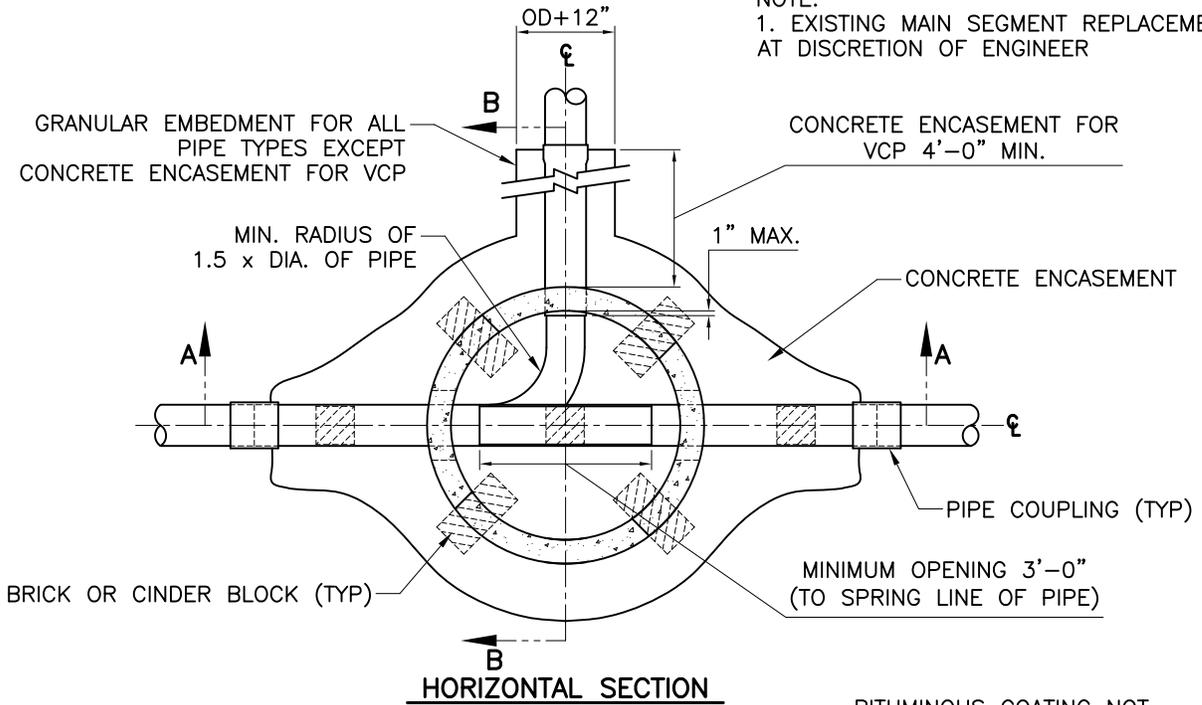


<i>J.S.L.</i>	1/1/12
Approved	Date
Revisions	



INSIDE DROP MANHOLE CONNECTION

NOTE:
1. EXISTING MAIN SEGMENT REPLACEMENT
AT DISCRETION OF ENGINEER



<i>J.S.B.</i>	1/1/12
Approved	Date
Revisions	



DOGHOUSE MANHOLE