

# STANDARD DETAILS



## For Public Works Construction 2017 Edition

Adopted February 14, 2017  
Resolution No. 2017-

**CITY OF BELMONT**  
Public Works Department, One Twin Pines Lane, Suite 385, Belmont, CA 94002 • (650) 595-7425 •  
pworks@belmont.gov



## INTRODUCTION

The City of Belmont Standard Details have been prepared and adopted to assist all persons engaged in the design or construction of public works improvements, and are generally applicable to all construction within the City. These drawings must be followed in any work which, upon completion, will be accepted by the City.

These details shall be used in conjunction with the latest City adopted editions of the Standard Specifications for Public Works Construction "The GREENBOOK" and/or the State of California Department of Transportation Standard Specifications "Caltrans Standard Specifications".

The City of Belmont Standard Details is periodically updated as needed. However, updates approved for use are posted on the City Website as they become available.

The electronic copy of the Standard Details is available for download from the City's website: <http://www.belmont.gov/city-hall/public-works/news-resources/standard-details>

If you have any comments, corrections or additions you would like considered for inclusion in future updates, please call (650) 595-7425, or email: [pworks@belmont.gov](mailto:pworks@belmont.gov)

These drawings are not to scale and may have not been checked for conformance with governing California construction codes; applicable codes and regulations; the latest California Building Code; and other safety and environmental statutes. Therefore, they must be used with care and judgment.

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# INDEX

## Sidewalk, Curb, Gutter, Driveway Approach

<b>Detail Number</b>	<b>Description</b>
SI-100 1of2	Type A&E curb and gutter
SI-100 2of 2	Ralston curb & gutter
SI-101 1fo2	Type A&E curb and gutter curb drain
SI-101 2of2	Curb drain in sidewalk and curb
SI-103	Curb & gutter at driveway
SI-104	vert to rolled transition
SI-105	curb and gutter with sidewalk
SI-106	curb and gutter with planter strip & sidewalk
SI-107 1of3	Driveway approach type 1&2
SI-107 2of3	Driveway approach type 3&4
SI-107 3of3	Driveway approach sections
SI-108 1of3	Steep driveway for type 1,2, &4 approach
SI-108 2of3	Steep driveway for type 3 approach
SI-108 3of3	Steep driveway for curb cut only
SI-109	Trench details
SI-110	Rockwheel trench
SI-111	Backfill & AC Replacement for Utility Potholes

## Sanitary Sewer

<b>Detail Number</b>	<b>Description</b>
SS-200	Standard 4" Sewer Lateral Cleanout 5' or less
SS-201	Standard 4" Sewer Lateral Cleanout 5' or greater
SS-202	Sanitary Sewer Lateral (New Pipe)
SS-203	Sewer Lateral Connection to Existing
SS-204	Sewer Lateral Connection to Existing CIPP
SS-205	Precast MH
SS-206 SD-310	Joint sealant
SS-207 SD-311	24" conc rings
SS-208	24" Sewer Manhole Cover and Frame
SS-209	36" Sewer Manhole Cover and Frame
SS-210 1of2	4" Backwater device
SS-210 2of2	4" Backwater device
SS-212 1of 2	Drop MH
SS-212 2of2	Drop MH
SS-213 SD-305 1of2	36" MH Risers
SS-213 SD-305 2of2	48" MH Risers
SS-214	Lamphole
SS-215 SD-309	Concrete MH Collar
SS-216 SD-312 1of2	48" Dia Concentric MH Cone for 24" Cover
SS-216 SD-312 2of2	48" Dia Concentric MH Cone for 36" Cover
SS-217	Precast MH base for 8" SDR
SS-218 SD-313	Pour in place MH base
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# INDEX

## Storm Drain

SD-300 1of2	Type GO curb inlet
SD-300 2of2	Type GO curb inlet precast
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SD-302 1of2	Grate Details
SD-302 2of2	Grate Details
SD-303	Type GO inlet apron
SD-304	Type GOL inlet apron
SD-305 SS-213 1of2	36" MH Risers
SD-305 SS-213 2of2	48" MH Risers
SD-306	24" SD manhole cover
SD-307	36" SD manhole cover
SD-308 1of2	Drywell
SD-308 2of2	Downspout Drainage
SD-309 SS-215	Concrete MH Collar
SD-310 SS-206	Joint sealant
SD-311 SS-207	24" conc rings
SD-312 SS-216 1of2	48" Dia Concentric MH Cone for 24" Cover
SD-312 SS-216 2of2	48" Dia Concentric MH Cone for 36" Cover
SD-313 SS-218	Pour in place MH base
SD-314 SS-219	Abandonment of a manhole

## Street Tree

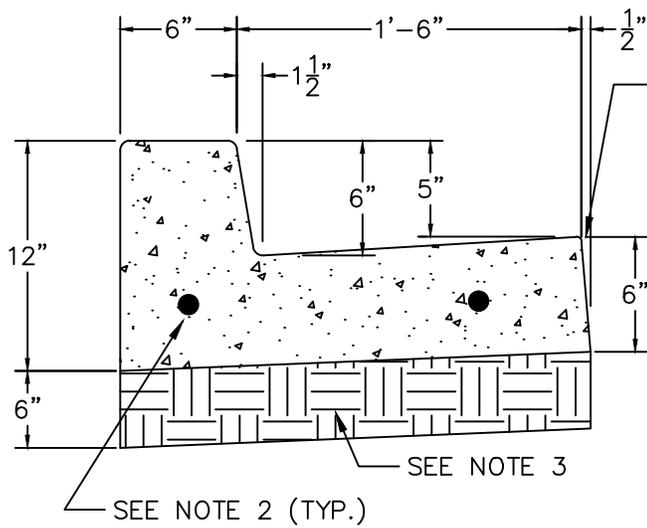
ST-500 1of2	Landscape clearance with sidewalk
ST-500 2of2	Landscape clearance no sidewalk
ST-502	Tree root barrier
ST-503	Tree protection

## Street Light

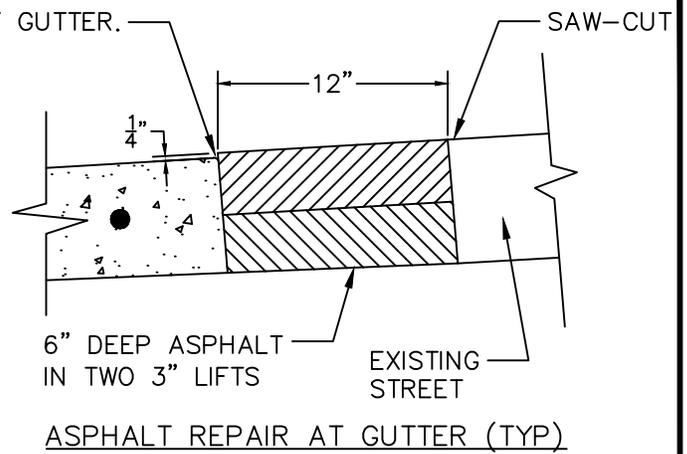
SL-400	Standard pull box
SL-401	Street light foundation (Updated 10/2017)

## Pavement Marking

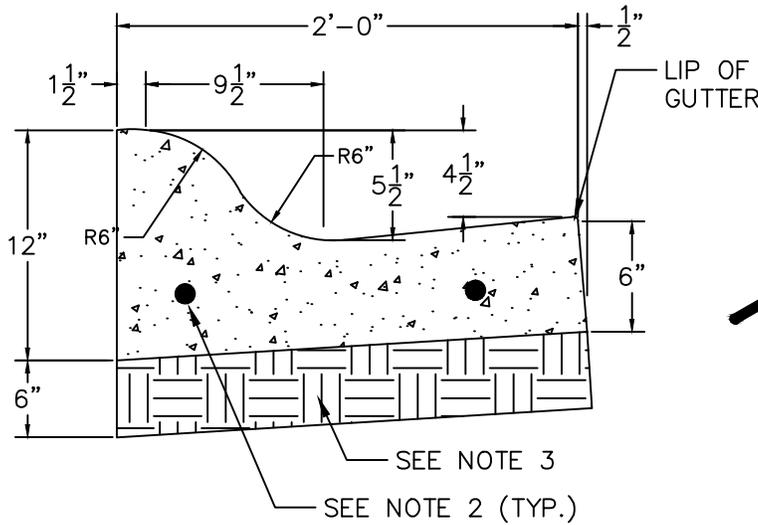
PM-100	Ladder Crosswalk (Updated 12/2017)
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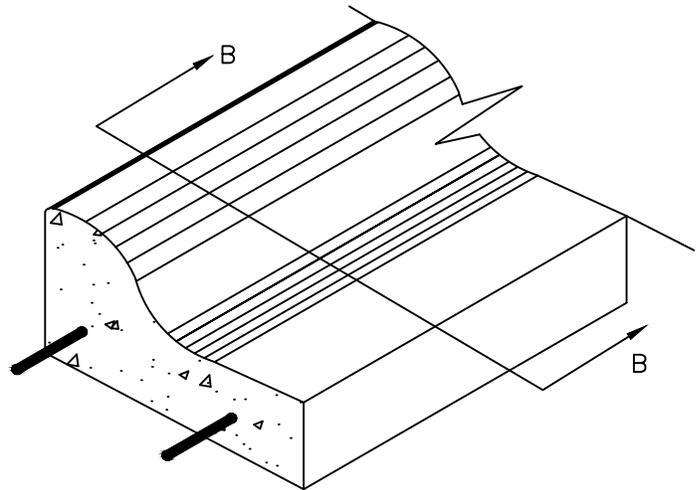
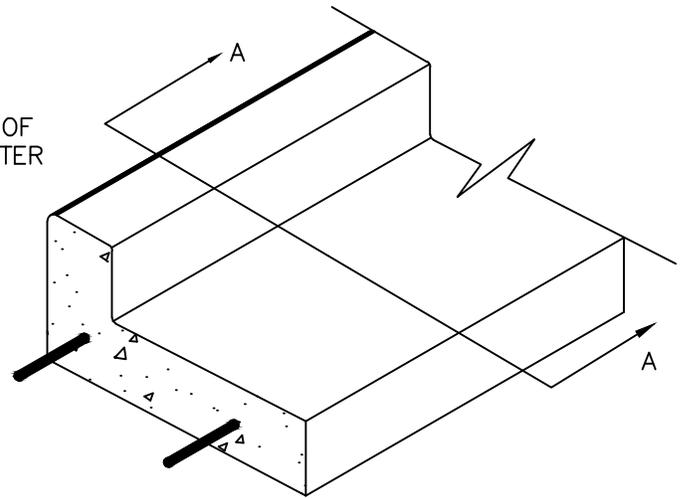
TYPE A CURB  
SECTION A-A



ASPHALT REPAIR AT GUTTER (TYP)



TYPE E CURB  
SECTION B-B



**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. 12" #4 REBAR DOWELS, 6" MINIMUM DEPTH INTO EXISTING SIDEWALK, CURB & GUTTER. DO NOT DOWEL PRIVATE IMPROVEMENTS INTO PUBLIC IMPROVEMENTS.
3. 6" MINIMUM CLASS 2 A.B. COMPACTED TO 90%.
4. 1/2" DEEP CONTRACTION JOINTS AT 20', 1/4" DEEP CONTRACTION JOINTS AT 10'.
5. ALL CONCRETE SHALL BE 6 SACK 3/4" WITH ONE POUND LAMP BLACK PER CUBIC YARD. FINISH TO BE UNIFORM FINE BROOMED TEXTURE.
6. ASPHALT TO BE HOT MIX ASPHALT 1/2" FINE.



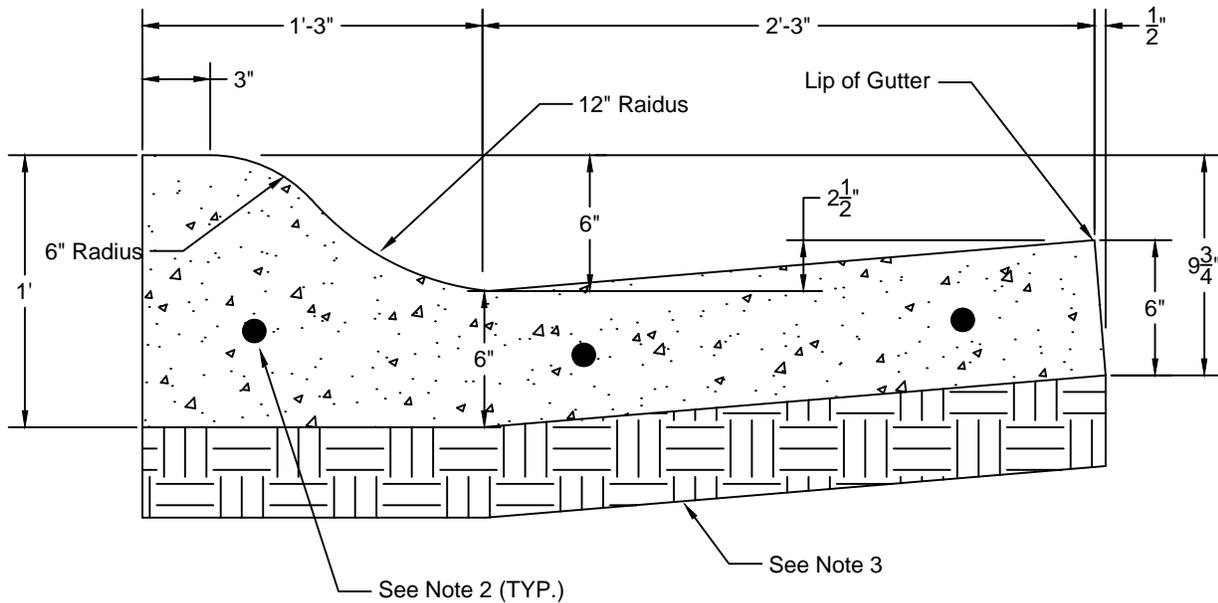
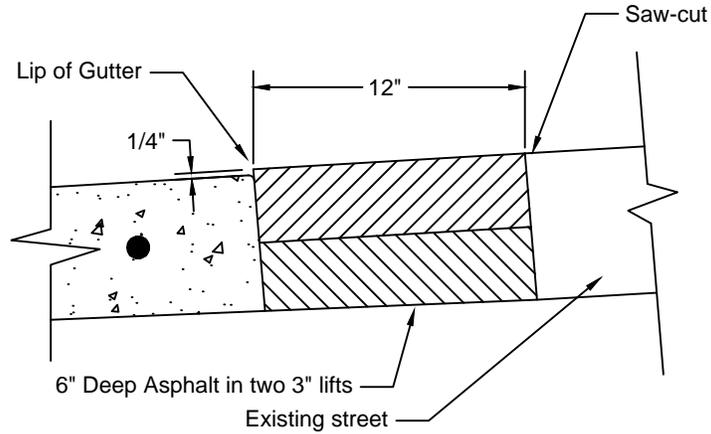
TYPE A & E CONCRETE  
CURB AND GUTTER

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SI-100  
N.T.S.

SHEET: 1 OF 2



**NOTES:**

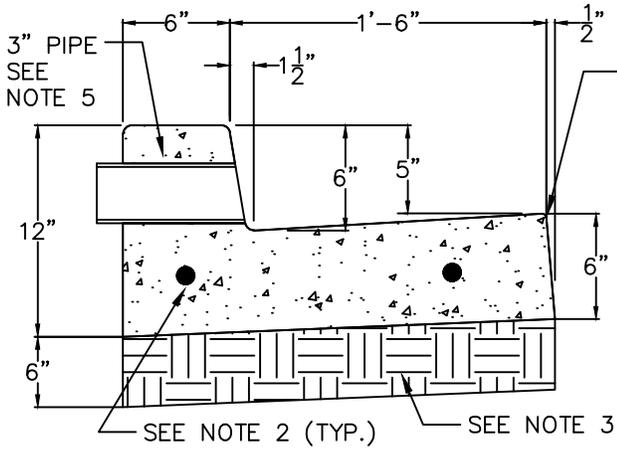
1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. 12" #4 REBAR DOWELS, 6" MINIMUM DEPTH INTO EXISTING SIDEWALK, CURB & GUTTER. DO NOT DOWEL PRIVATE IMPROVEMENTS INTO PUBLIC IMPROVEMENTS.
3. 6" MINIMUM CLASS 2 A.B. COMPACTED TO 90%.
4. 1/2" DEEP CONTRACTION JOINTS AT 20', 1/4" DEEP CONTRACTION JOINTS AT 10'.
5. ALL CONCRETE SHALL BE 6 SACK 3/4" WITH ONE POUND LAMP BLACK PER CUBIC YARD. FINISH TO BE UNIFORM FINE BROOMED TEXTURE.
6. ASPHALT TO BE HOT MIX ASPHALT 1/2" FINE.



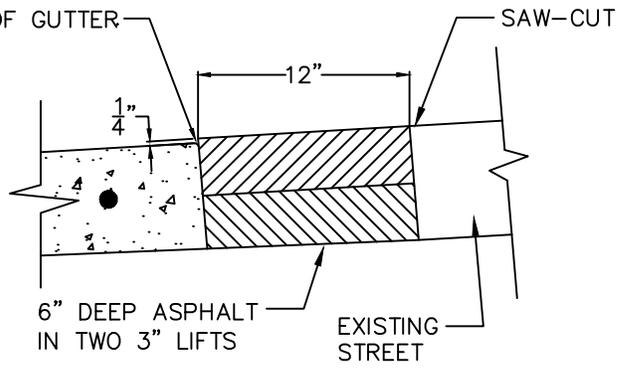
TYPE A & E CONCRETE  
CURB AND GUTTER

APPROVED BY: L. ALVAREZ      DATE: NOVEMBER 2016

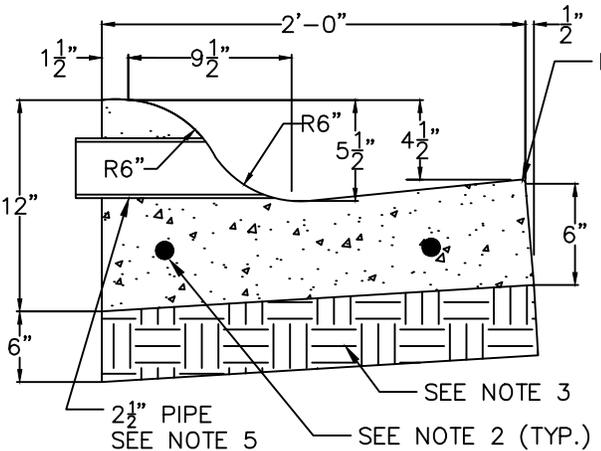
SI-100  
N.T.S.  
SHEET: 2 OF 2



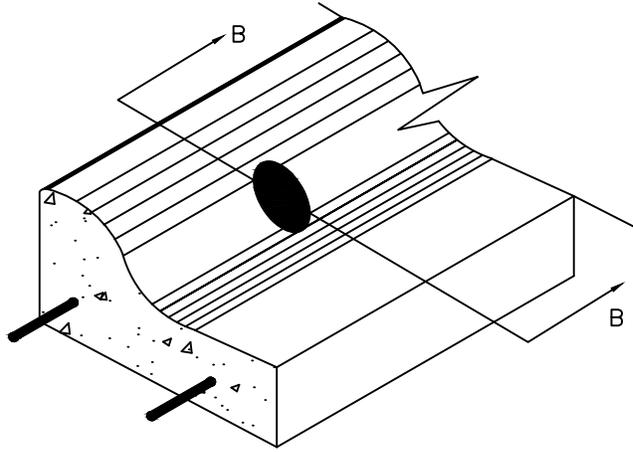
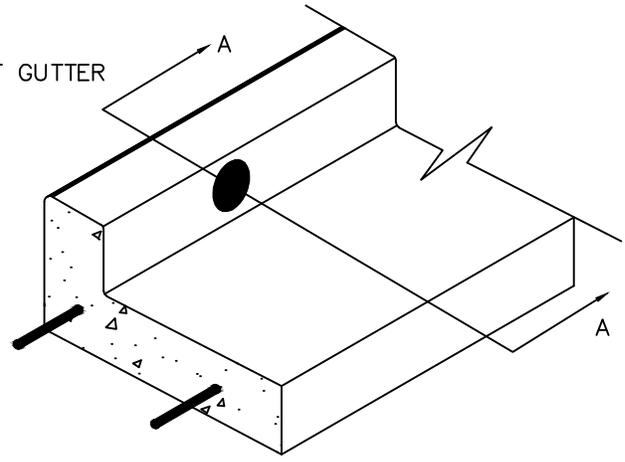
**TYPE A CURB  
SECTION A-A**



**ASPHALT REPAIR AT GUTTER (TYP)**



**TYPE E CURB  
SECTION B-B**



**NOTES:**

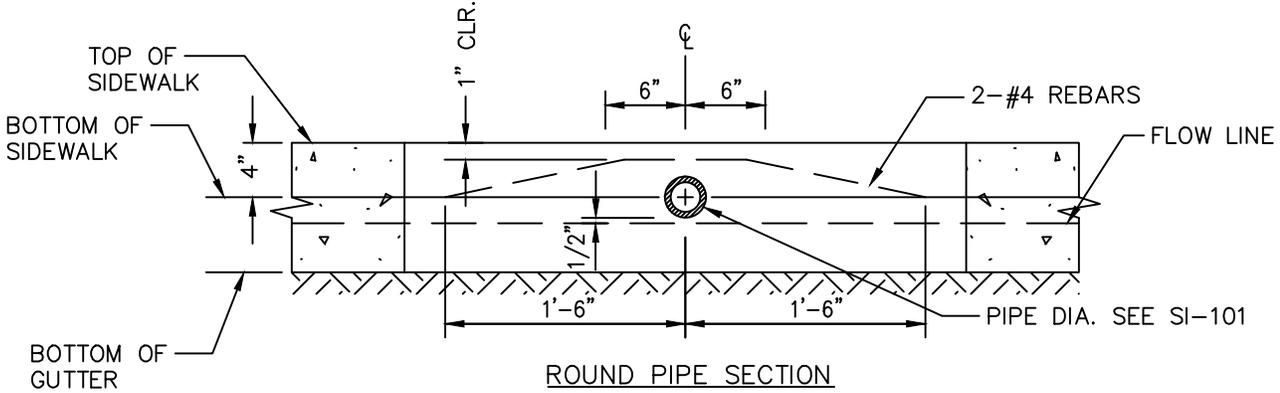
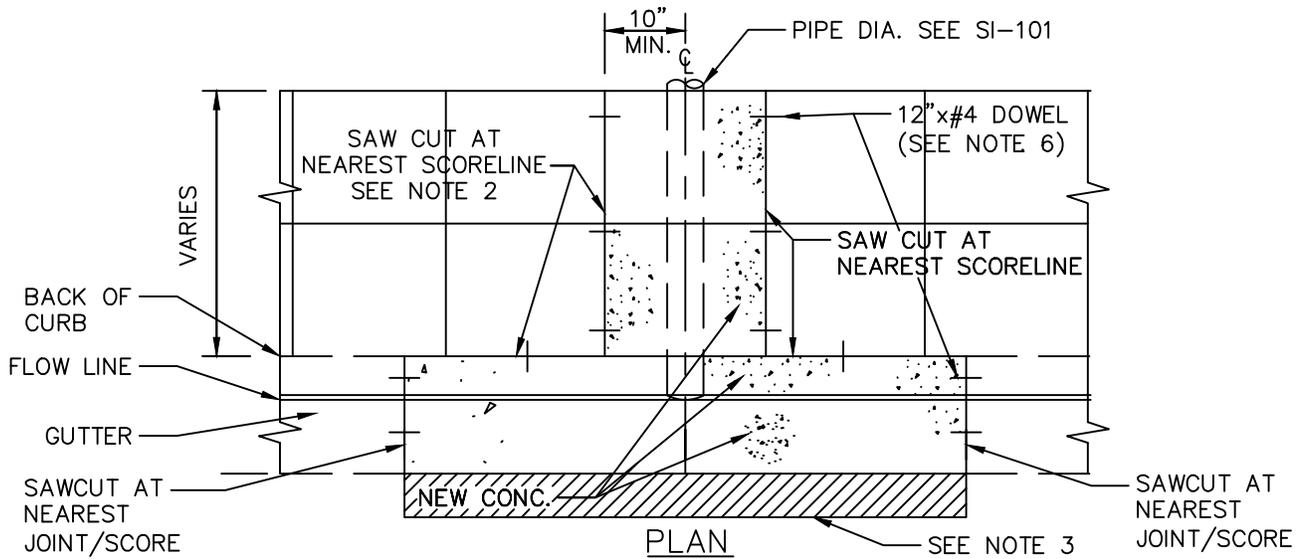
1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. 12" #4 REBAR DOWELS, 6" MINIMUM DEPTH INTO EXISTING SIDEWALK, CURB & GUTTER. DO NOT DOWEL PRIVATE IMPROVEMENTS INTO PUBLIC IMPROVEMENTS.
3. 6" MINIMUM CLASS 2 A.B. COMPACTED TO 90%.
4. 1/2" DEEP CONTRACTION JOINTS AT 20', 1/4" DEEP CONTRACTION JOINTS AT 10'.
5. PIPE TO BE EITHER SCH 40 PVC OR CAST IRON.
6. ALL CONCRETE SHALL BE 6 SACK 3/4" WITH ONE POUND LAMP BLACK PER CUBIC YARD. FINISH TO BE UNIFORM FINE BROOMED TEXTURE.
7. IF TYPE A CURB & GUTTER IS IN GOOD CONDITION, CONTRACTOR MAY CORE DRILL WITH ENGINEER APPROVAL.
8. ASPHALT TO BE HOT MIX ASPHALT 1/2" FINE.
9. UNLESS OTHERWISE NOTED, ALL RADII TO BE 1/2".



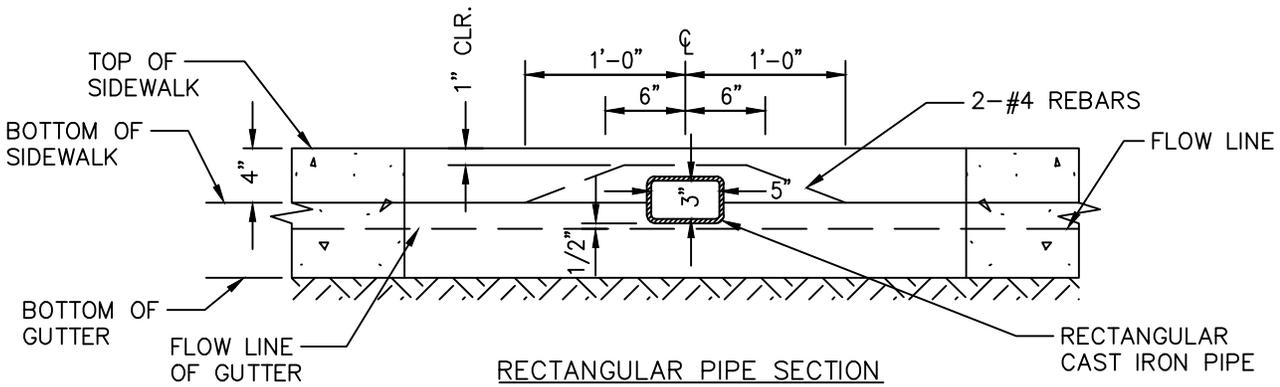
TYPE A & E CONCRETE  
THRU CURB DRAIN

APPROVED BY: L. ALVAREZ      DATE: NOVEMBER 2016

SI-101  
N.T.S.  
SHEET: 1 OF 2



**ROUND PIPE SECTION**  
 MAXIMUM CAPACITY = 0.15 CUBIC FOOT PER SECOND



**RECTANGULAR PIPE SECTION**  
 MAXIMUM CAPACITY = 0.24 CUBIC FOOT PER SECOND

**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. THE NUMBER OF OUTLET PIPES IS SUBJECT TO REVIEW BY THE CITY ENGINEER.
3. REFER TO SI-101 FOR CURB & GUTTER DETAILS.
4. CONCRETE 6 SACK 3/4" WITH ONE POUND LAMP BLACK PER CUBIC YARD.
5. MINIMUM SLOPE OF DRAIN PIPE TO BE 1%.
6. 12" #4 REBAR DOWLS, 6" MINIMUM DEPTH INTO EXISTING SIDEWALK, CURB & GUTTER. DO NOT DOWEL PRIVATE IMPROVEMENTS INTO PUBLIC IMPROVEMENTS.



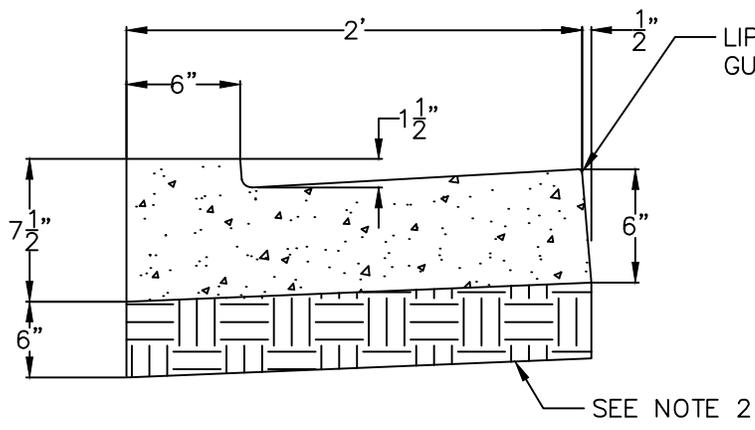
CURB DRAIN IN EXISTING  
 CURB AND SIDEWALK

APPROVED BY: L. ALVAREZ

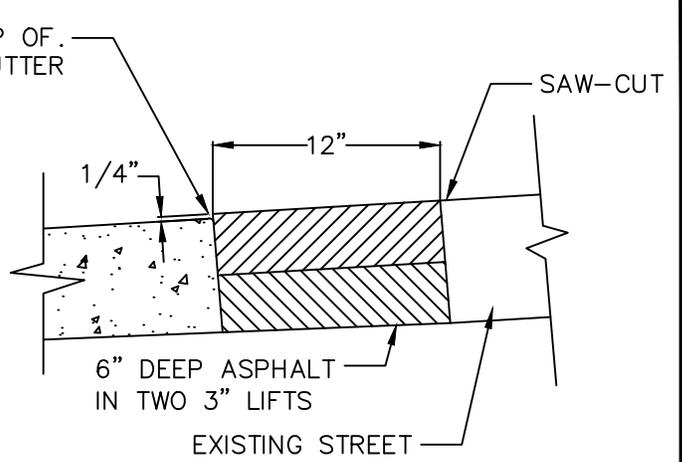
DATE: NOVEMBER 2016

SI-101  
 N.T.S.

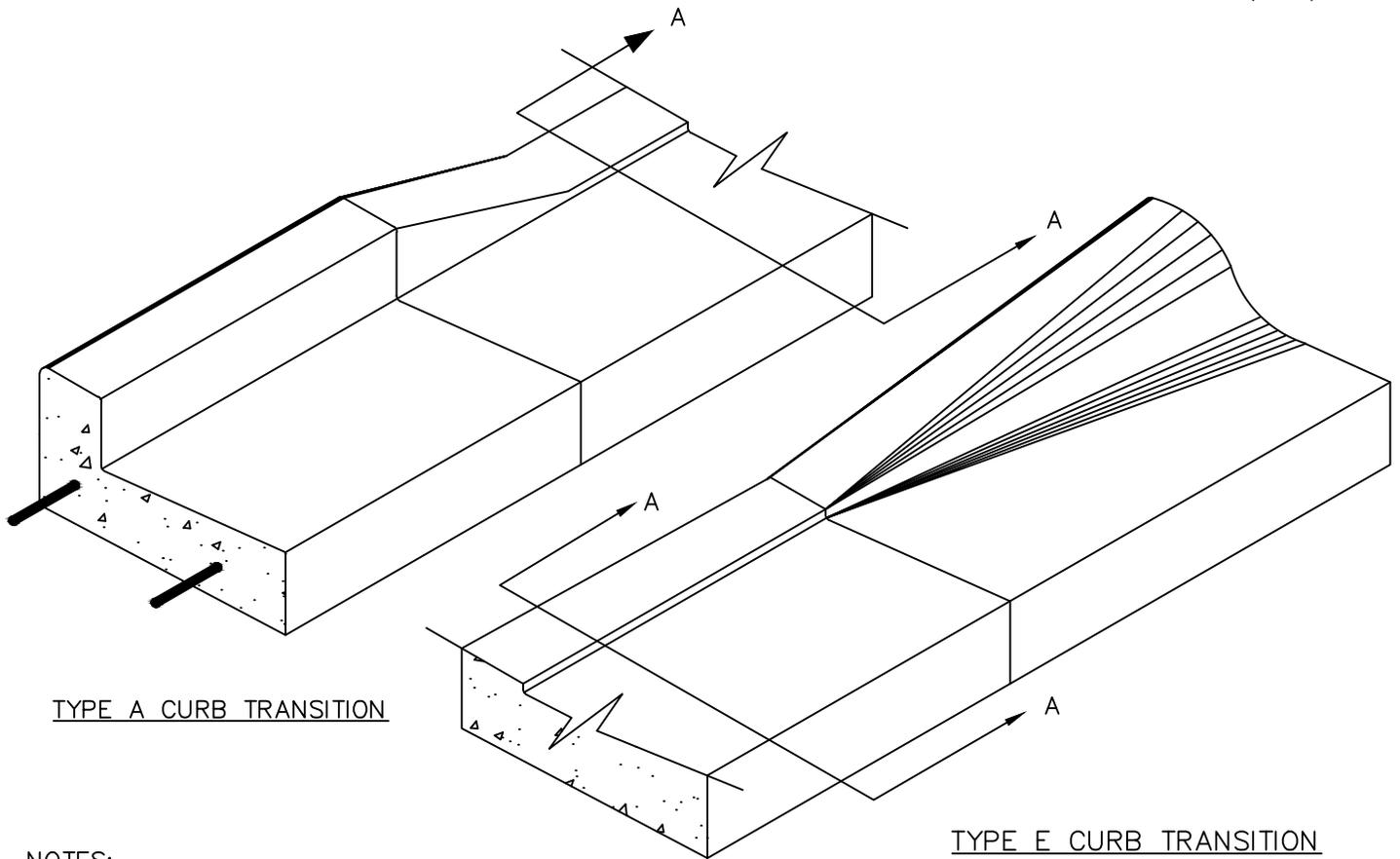
SHEET: 2 OF 2



SECTION A-A



ASPHALT REPAIR AT GUTTER (TYP)

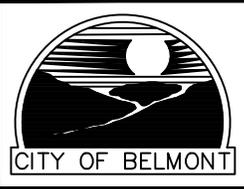


TYPE A CURB TRANSITION

TYPE E CURB TRANSITION

**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. 6" MINIMUM CLASS 2 A.B. COMPACTED TO 90%.
3. ALL CONCRETE SHALL BE 6 SACK 3/4" WITH ONE POUND OF LAMP BLACK PER CUBIC YARD. FINISH TO BE UNIFORM FINE BROOMED TEXTURE.
4. ASPHALT TO BE HOT MIX ASPHALT 1/2" FINE.
5. 12" #4 REBAR DOWLS, 6" MINIMUM DEPTH INTO EXISTING SIDEWALK, CURB & GUTTER. DO NOT DOWEL PRIVATE IMPROVEMENTS INTO PUBLIC IMPROVEMENTS.
6. SEE SI-107 FOR DRIVEWAY APPROACH
7. SEE SI-100 FOR CURB AND GUTTER



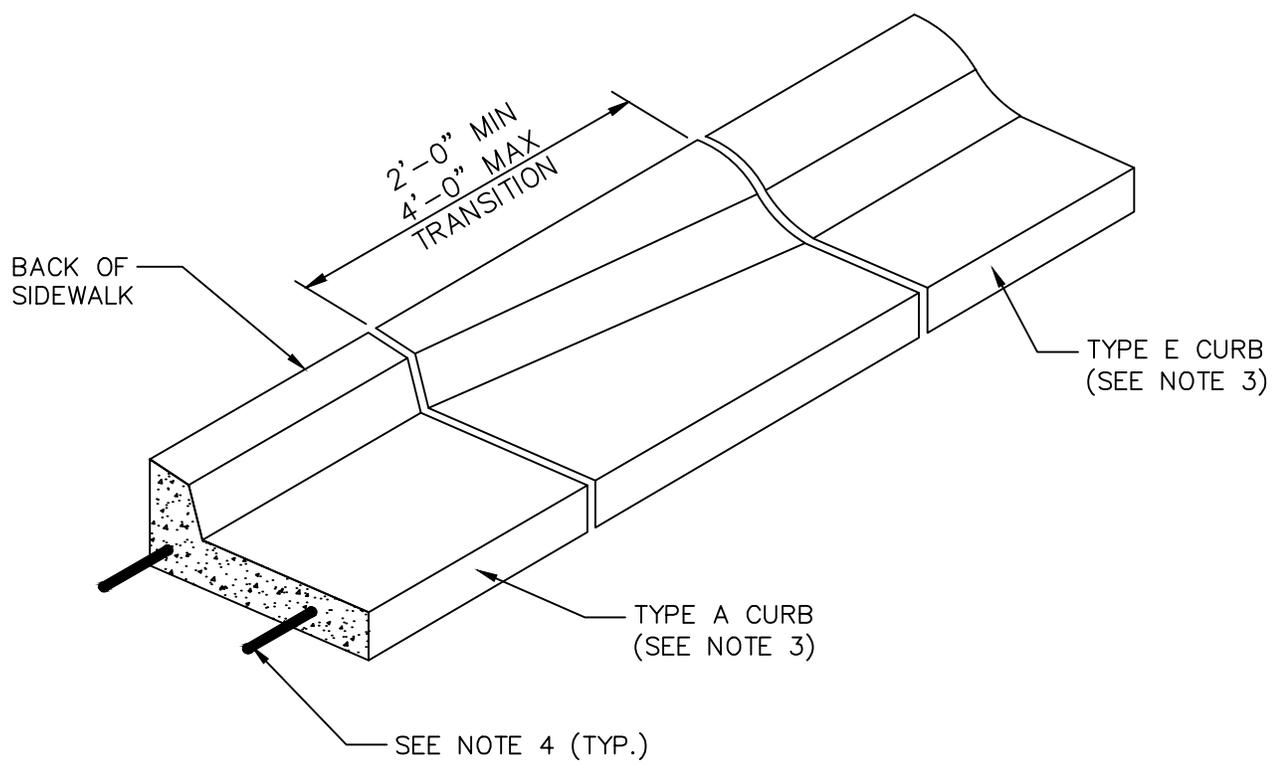
CONCRETE CURB & GUTTER  
AT DRIVEWAY APPROACH

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SI-103  
N.T.S.

SHEET: 1 OF 1



NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. ALIGN BACK OF TYPE A, TRANSITION, AND TYPE E CURB PARALLEL TO FRONT OF SIDEWALK.
3. REFER TO STANDARD DETAILS SI-100 FOR CURB INFORMATION.
4. 12" #4 REBAR DOWELS, 6" MINIMUM DEPTH INTO EXISTING CURB & GUTTER. DO NOT DOWEL PRIVATE IMPROVEMENTS INTO PUBLIC IMPROVEMENTS.



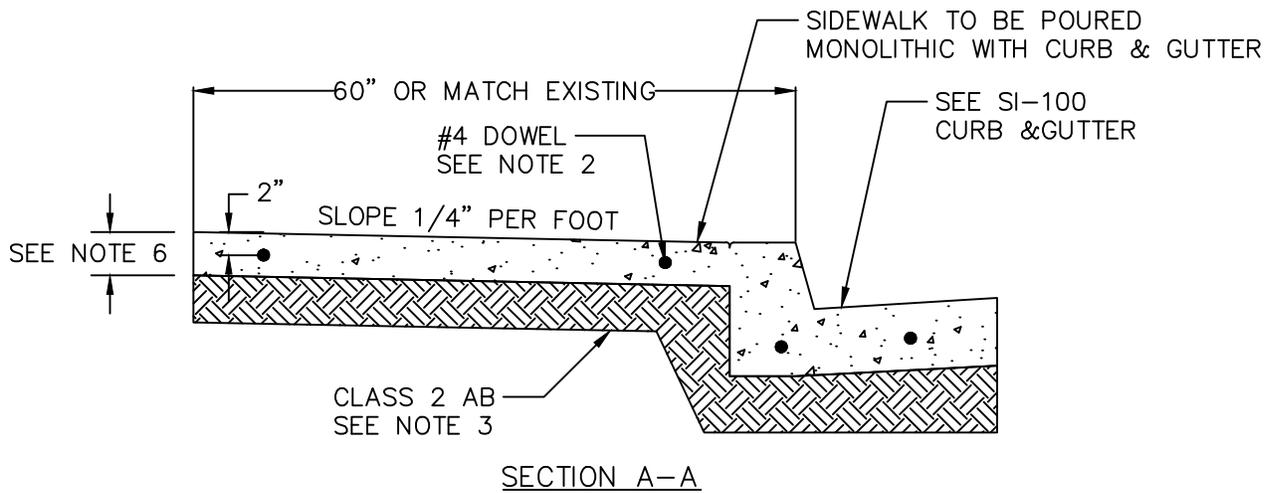
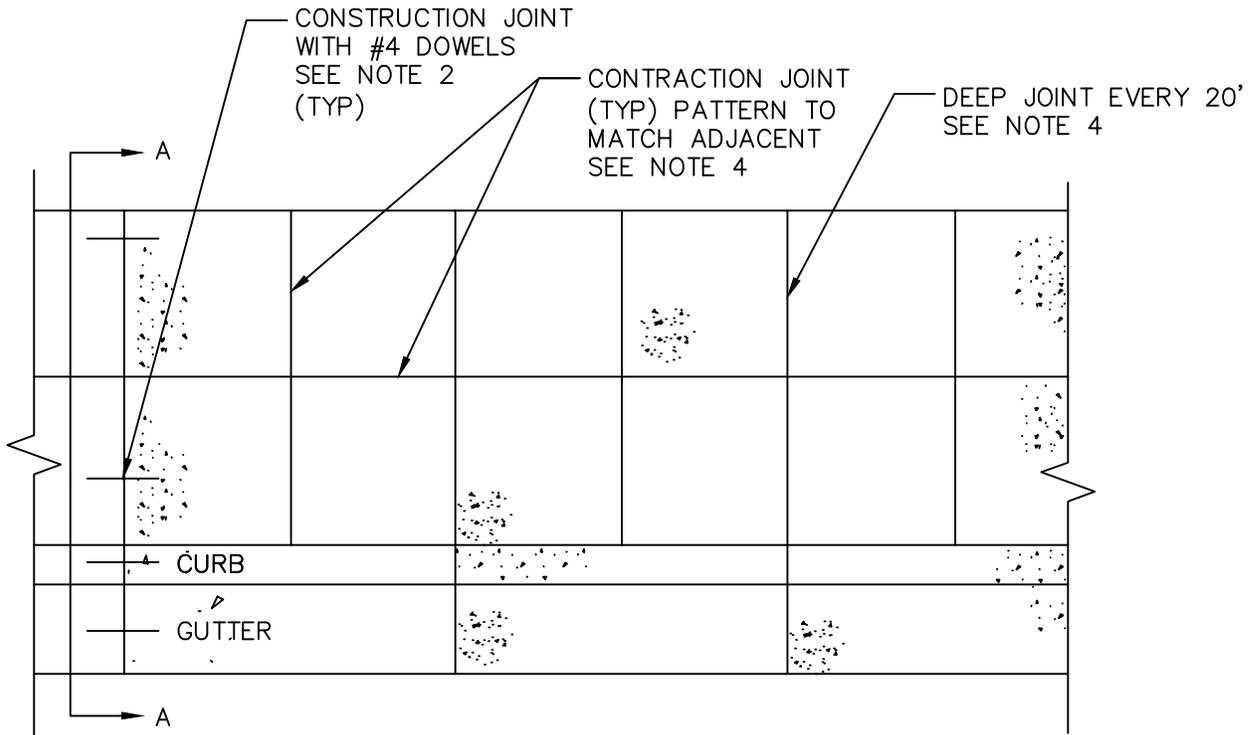
VERTICAL TO ROLLED CURB TRANSITION

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SI-104  
N.T.S.

SHEET: 1 OF 1



**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. 12" #4 REBAR DOWELS, 6" MINIMUM DEPTH INTO EXISTING OR NEW SIDEWALK. DO NOT DOWEL PRIVATE IMPROVEMENTS INTO PUBLIC IMPROVEMENTS.
3. 6" MINIMUM CLASS 2 A.B. COMPACTED TO 90%.
4. 1/2" DEEP CONTRACTION JOINTS AT 20', 1/4" DEEP CONTRACTION JOINTS AT 10' SIDEWALK SHALL BE SCORED TO MATCH CONTIGUOUS EXISTING SIDEWALK.
5. ALL CONCRETE SHALL BE 6 SACK 3/4" WITH ONE POUND OF LAMP BLACK PER CUBIC YARD.
6. 4" THICK SIDEWALK FOR VERTICAL CURB, 6" THICK SIDEWALK FOR ROLLED CURB.



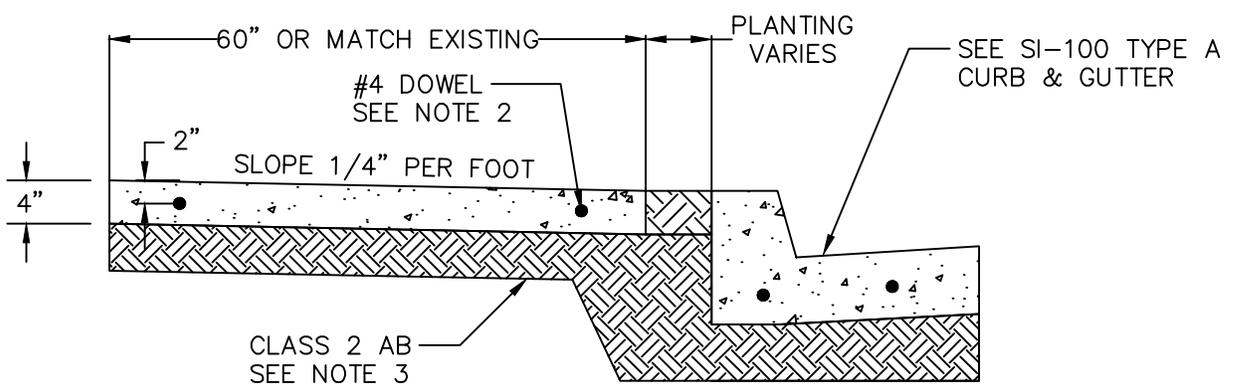
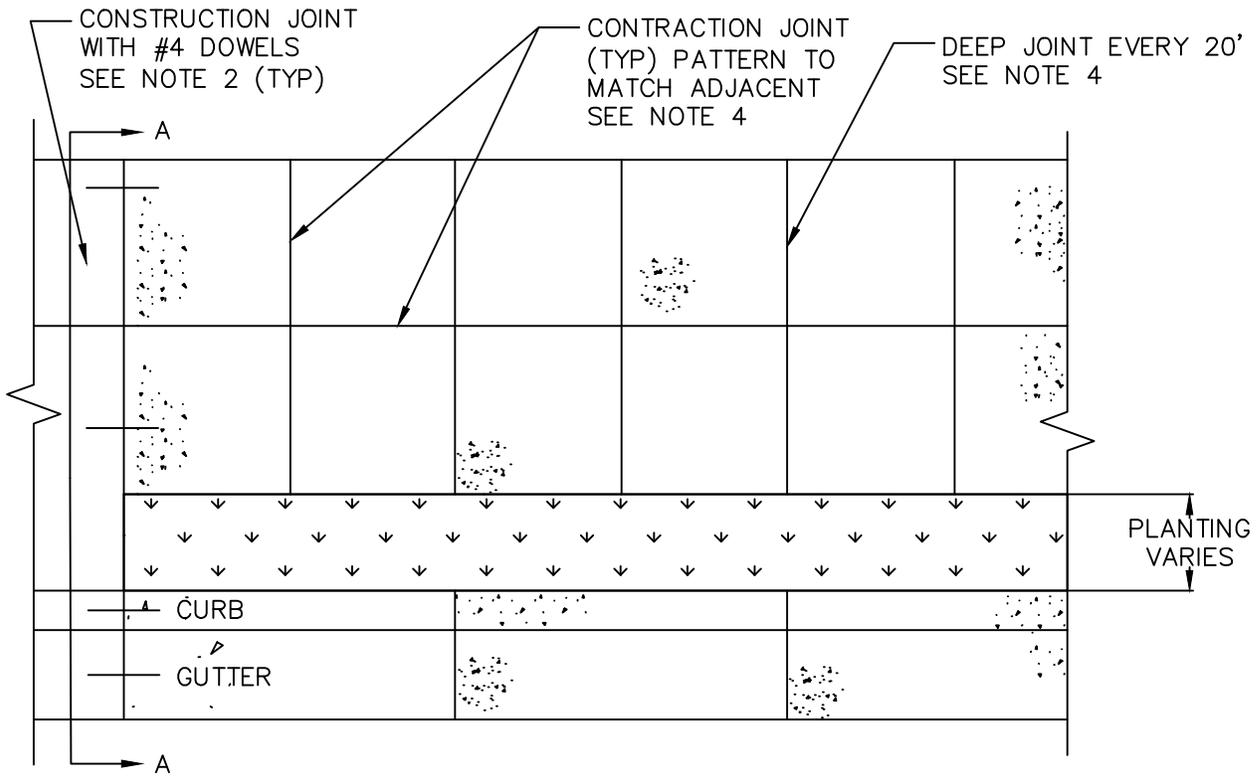
VERTICAL CURB AND GUTTER WITH SIDEWALK

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SI-105  
N.T.S.

SHEET: 1 OF 1



SECTION A-A

**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. 12" #4 REBAR DOWELS, 6" MINIMUM DEPTH INTO EXISTING OR NEW SIDEWALK. DO NOT DOWEL PRIVATE IMPROVEMENTS INTO PUBLIC IMPROVEMENTS.
3. 6" MINIMUM CLASS 2 A.B. COMPACTED TO 90%.
4. 1/2" DEEP CONTRACTION JOINTS AT 20', 1/4" DEEP CONTRACTION JOINTS AT 10' SIDEWALK SHALL BE SCORED TO MATCH CONTIGUOUS EXISTING SIDEWALK.
5. ALL CONCRETE SHALL BE 6 SACK 3/4" WITH ONE POUND OF LAMP BLACK PER CUBIC YARD.



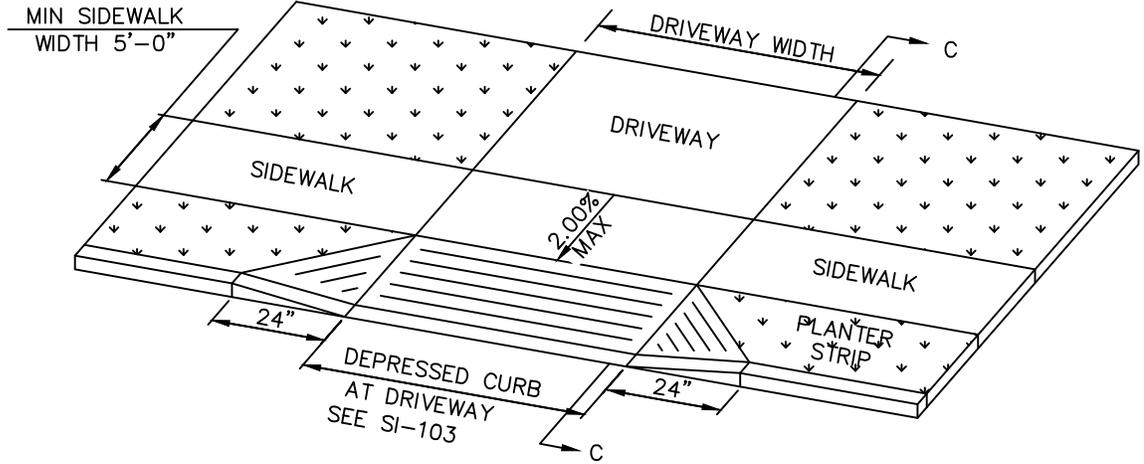
VERTICAL CURB AND GUTTER  
PLANTER AND SIDEWALK

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

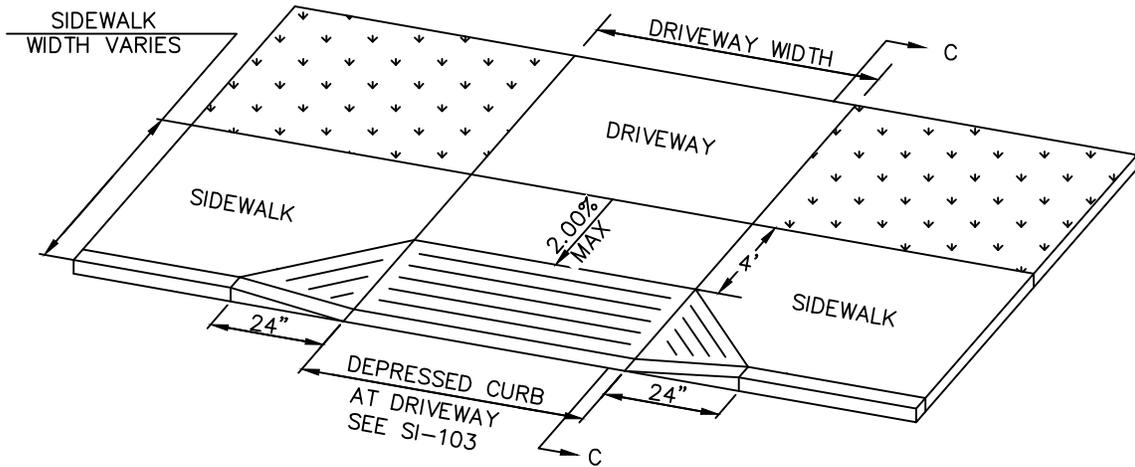
SI-106  
N.T.S.

SHEET: 1 OF 1



TYPE 1  
DRIVEWAY APRON

GUTTER NOT SHOWN  
FOR CLARITY



TYPE 2  
DRIVEWAY APRON

NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. CONCRETE TO BE 6 INCHES THICK.



DRIVEWAY APPROACH

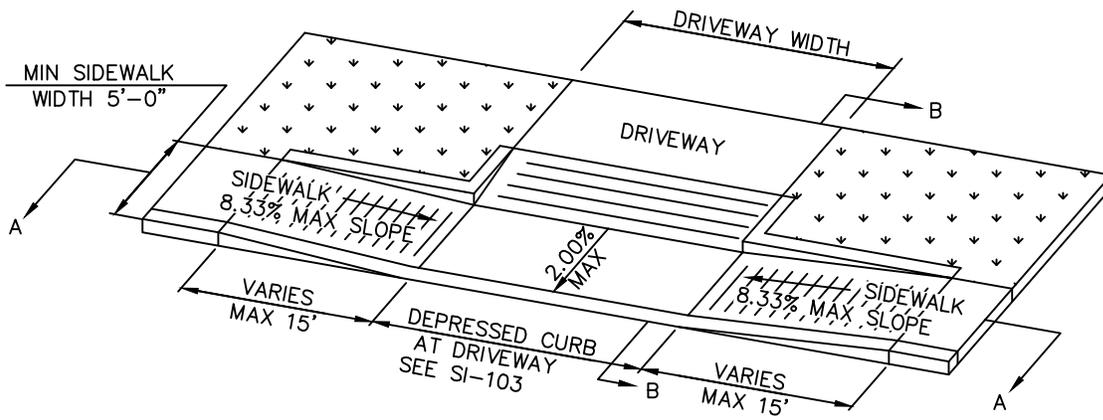
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SI-107

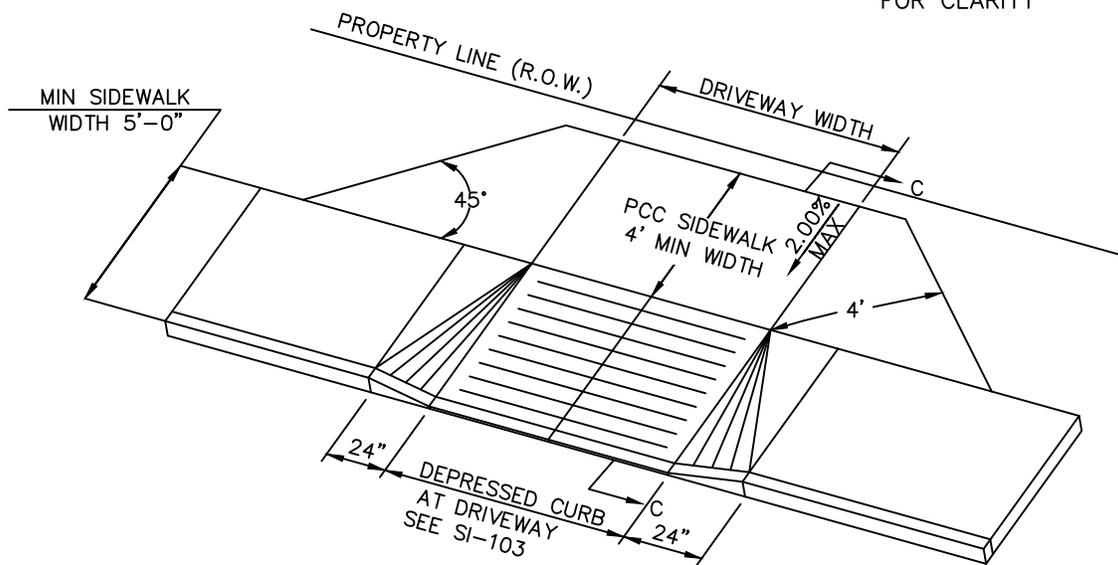
N.T.S.

SHEET: 1 OF 3



TYPE 3  
DRIVEWAY APRON

GUTTER NOT SHOWN FOR CLARITY



TYPE 4  
DRIVEWAY APRON

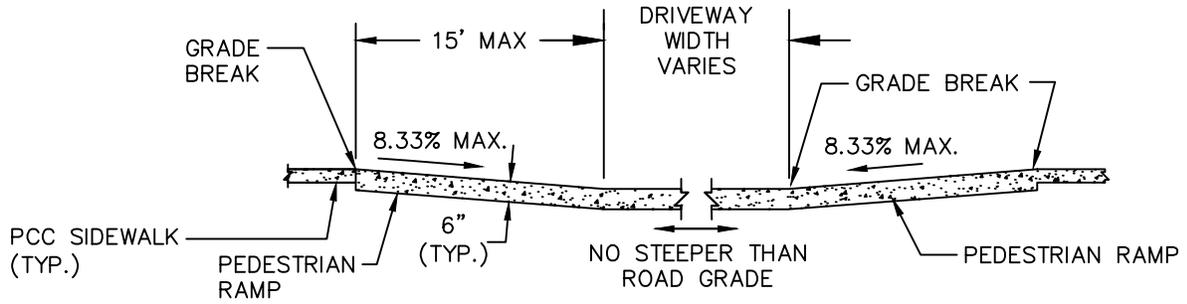


DRIVEWAY APPROACH

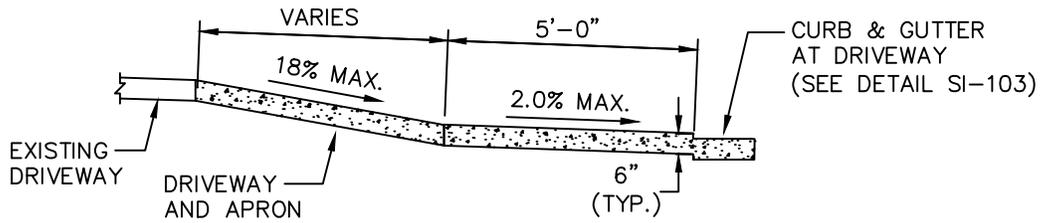
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

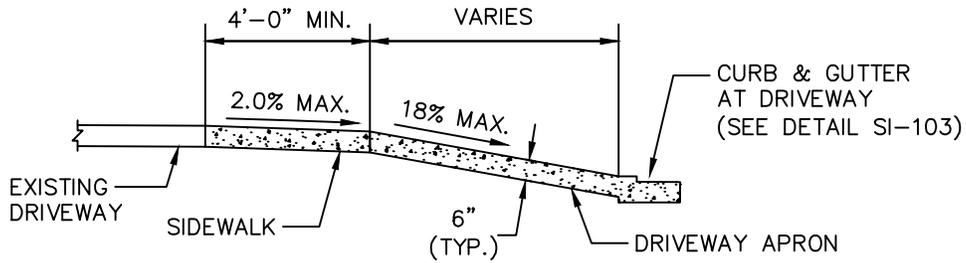
SI-107  
N.T.S.  
SHEET: 2 OF 3



SECTION A-A



SECTION B-B



SECTION C-C



DRIVEWAY APPROACH SECTIONS

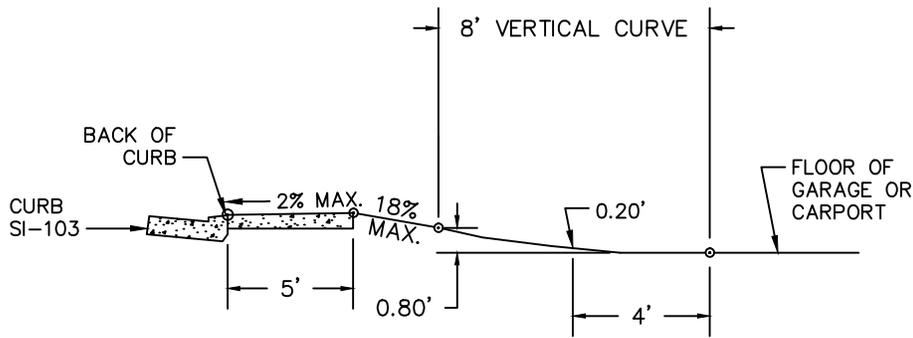
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

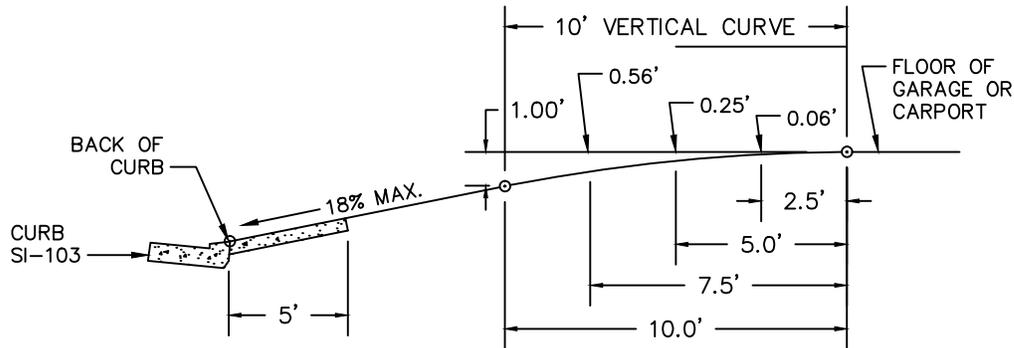
SI-107

N.T.S.

SHEET: 3 OF 3



DOWNWARD DRIVEWAY



UPWARD DRIVEWAY

**NOTES:**

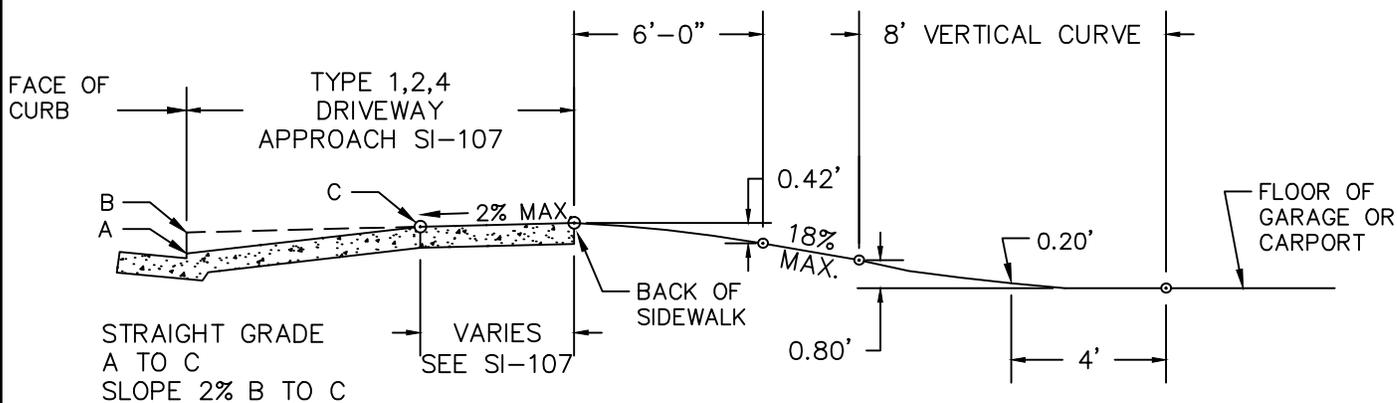
1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. EIGHTEEN PERCENT (18%) MAXIMUM SLOPE FOR RESIDENTIAL USES. DEVIATION ALLOWED WITH SPECIAL CONSTRUCTION TECHNIQUES IF APPROVED BY THE CITY ENGINEER.
3. MAXIMUM RISE AND DESCENT, AND THE RUN, SHALL BE MEASURED FOR THE WORST CONDITION BETWEEN THE BACK OF THE SIDEWALK EXTENSION AND THE FINISHED FLOOR AT THE GARAGE OR CARPORT ENTRANCE.
4. FIRST 5' FROM BACK OF CURB TO BE 6" THICK CONCRETE.



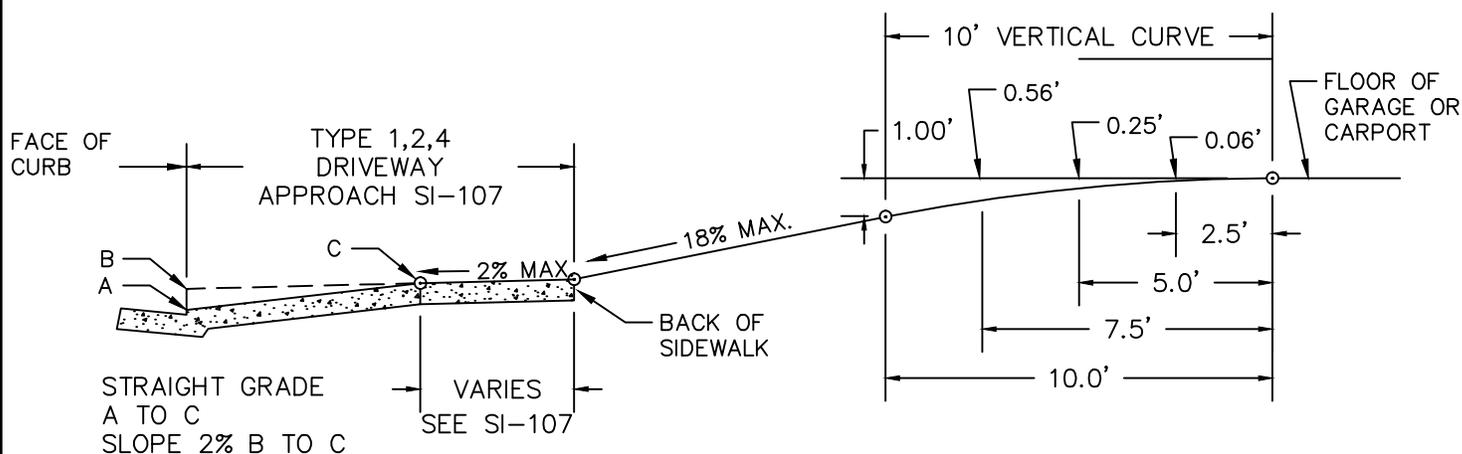
STEEP DRIVEWAY APPROACH  
UPWARD & DOWNWARD  
SI-103 CURB

APPROVED BY: L. ALVAREZ      DATE: NOVEMBER 2016

SI-108  
N.T.S.  
SHEET: 3 OF 3



DOWNWARD DRIVEWAY



UPWARD DRIVEWAY

**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. EIGHTEEN PERCENT (18%) MAXIMUM SLOPE FOR RESIDENTIAL USES. DEVIATION ALLOWED WITH SPECIAL CONSTRUCTION TECHNIQUES IF APPROVED BY THE CITY ENGINEER.
3. MAXIMUM RISE AND DESCENT, AND THE RUN, SHALL BE MEASURED FOR THE WORST CONDITION BETWEEN THE BACK OF THE SIDEWALK AND THE FINISHED FLOOR AT THE GARAGE OR CARPORT ENTRANCE.
4. SIDEWALK EXTENSION CROSS-SLOPE MAY NOT EXCEED TWO PERCENT (2%) AND MUST SLOPE TOWARD THE STREET.



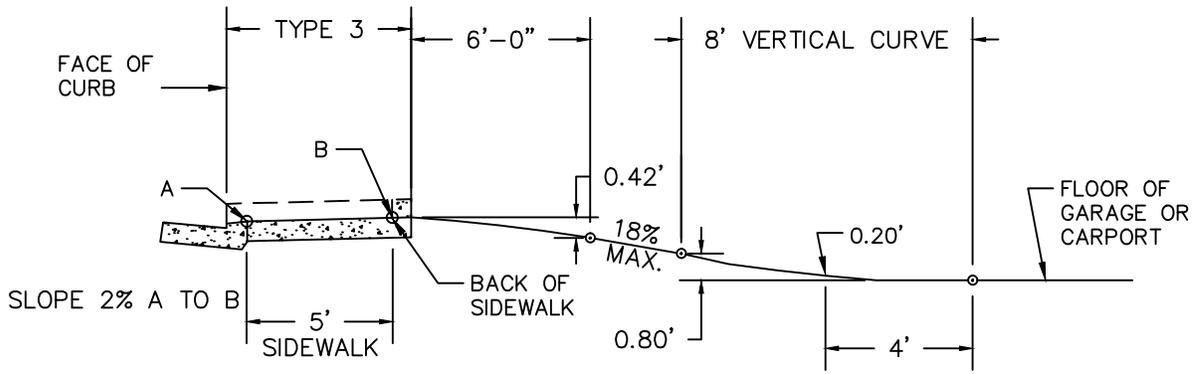
STEEP DRIVEWAY APPROACH  
UPWARD & DOWNWARD  
TYPE 1, 2 & 4 APPROACH

APPROVED BY: L. ALVAREZ

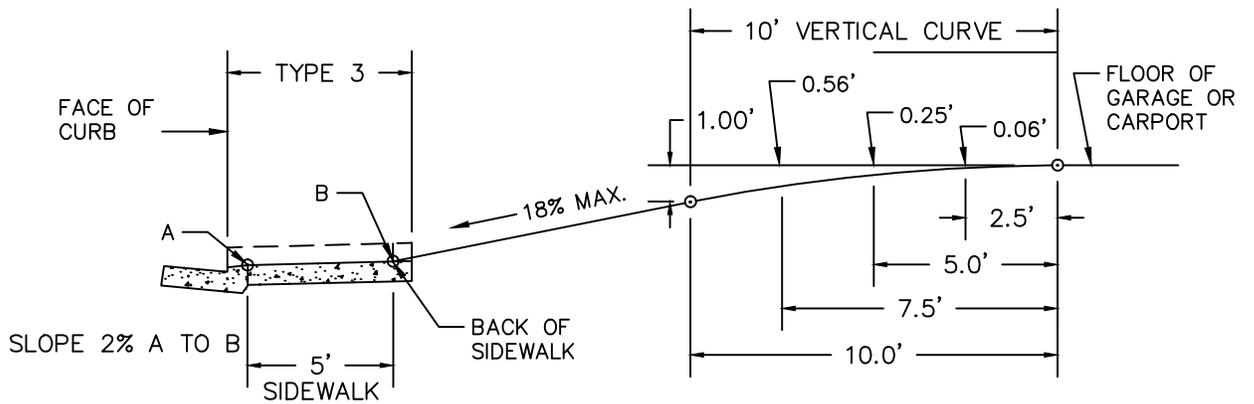
DATE: NOVEMBER 2016

SI-108  
N.T.S.

SHEET: 1 OF 3



DOWNWARD DRIVEWAY



UPWARD DRIVEWAY

NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. EIGHTEEN PERCENT (18%) MAXIMUM SLOPE FOR RESIDENTIAL USES. DEVIATION ALLOWED WITH SPECIAL CONSTRUCTION TECHNIQUES IF APPROVED BY THE CITY ENGINEER.
3. MAXIMUM RISE AND DESCENT, AND THE RUN, SHALL BE MEASURED FOR THE WORST CONDITION BETWEEN THE BACK OF THE SIDEWALK EXTENSION AND THE FINISHED FLOOR AT THE GARAGE OR CARPORT ENTRANCE.
4. SIDEWALK EXTENSION CROSS-SLOPE MAY NOT EXCEED TWO PERCENT (2%) AND MUST SLOPE TOWARD THE STREET.

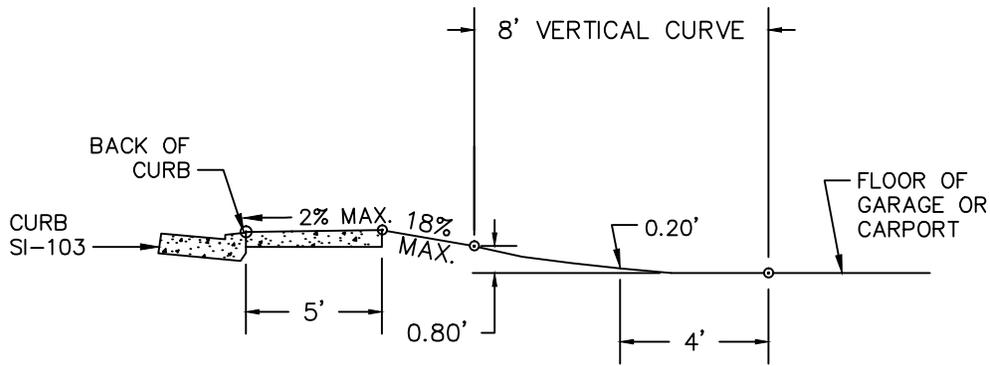


STEEP DRIVEWAY APPROACH  
UPWARD & DOWNWARD  
TYPE 3 APPROACH

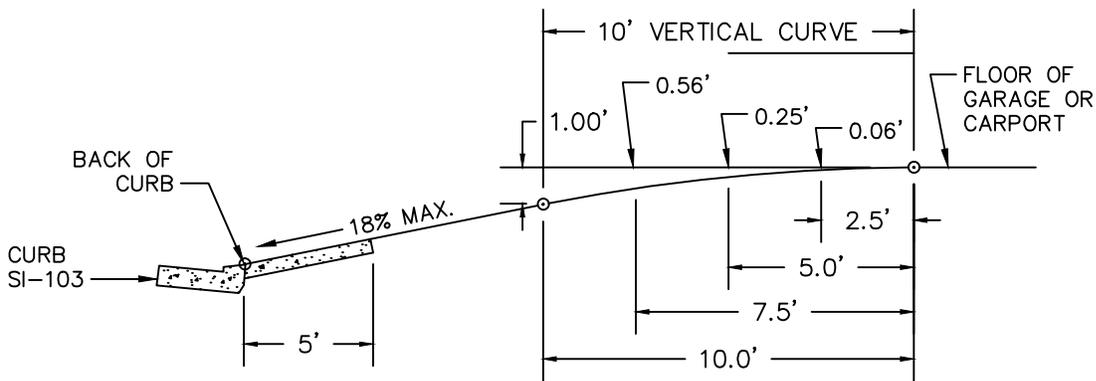
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SI-108  
N.T.S.  
SHEET: 2 OF 3



DOWNWARD DRIVEWAY



UPWARD DRIVEWAY

NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. EIGHTEEN PERCENT (18%) MAXIMUM SLOPE FOR RESIDENTIAL USES. DEVIATION ALLOWED WITH SPECIAL CONSTRUCTION TECHNIQUES IF APPROVED BY THE CITY ENGINEER.
3. MAXIMUM RISE AND DESCENT, AND THE RUN, SHALL BE MEASURED FOR THE WORST CONDITION BETWEEN THE BACK OF THE SIDEWALK EXTENSION AND THE FINISHED FLOOR AT THE GARAGE OR CARPORT ENTRANCE.
4. FIRST 5' FROM BACK OF CURB TO BE 6" THICK CONCRETE.

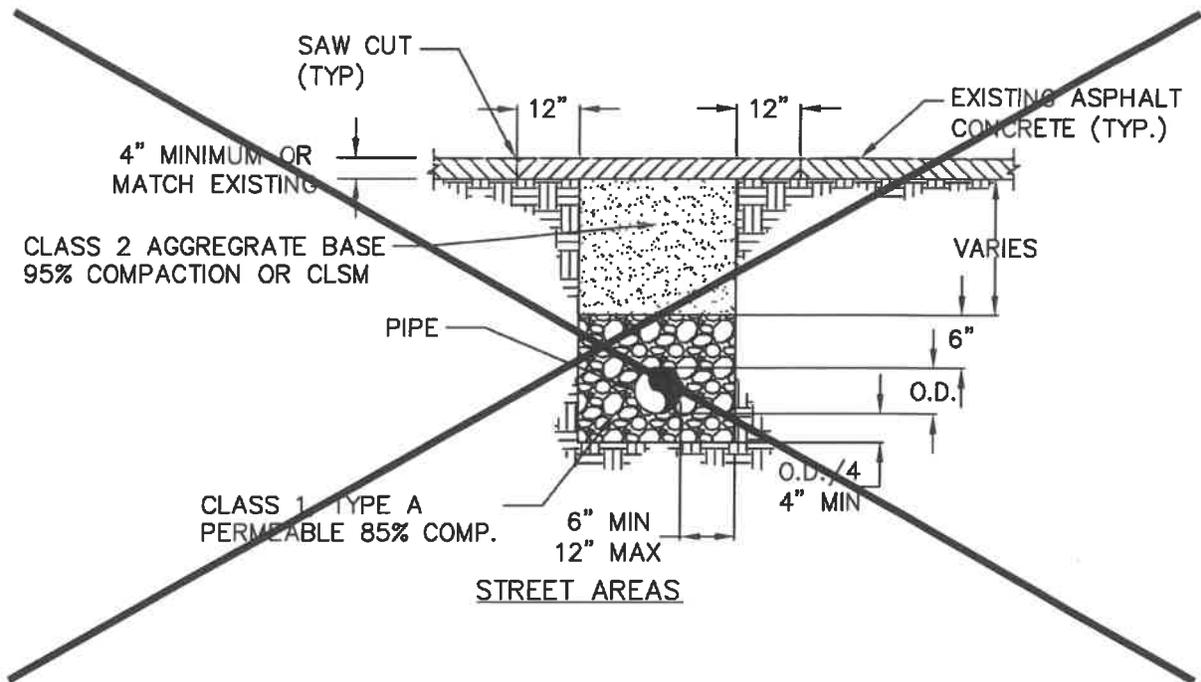


STEEP DRIVEWAY APPROACH  
UPWARD & DOWNWARD  
SI-103 CURB

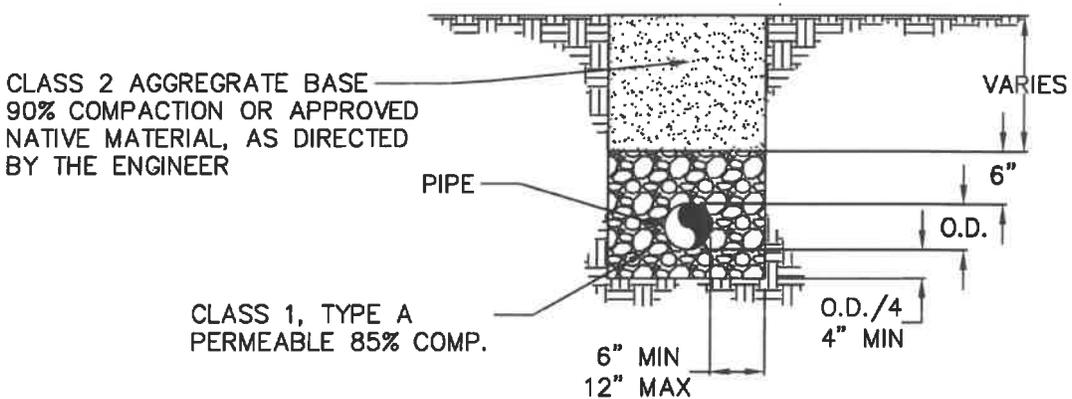
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SI-108  
N.T.S.  
SHEET: 3 OF 3



STREET AREAS



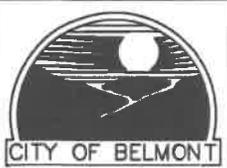
UNIMPROVED AREAS

NOTE: FOR ROADWAY SHOULDERS OR GRAVEL ROADS  
BRING TRENCH BACKFILL UP TO ADJACENT GRADES.

NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT IS REQUIRED FOR WORK WITHIN A PUBLIC EASEMENT OR STREET/ RIGHT-OF-WAY
2. CONFORM WITH ALL FEDERAL OR STATE SAFETY REGULATIONS AND RECOMMENDATIONS INCLUDING TRENCH SHORING (LABOR CODE SECTION 6705) AND TRAFFIC CONTROL.
3. CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH COMPRESSIVE STRENGTH OF 100 PSI MAY BE USED WITH ENGINEER APPROVAL.

TRENCH DETAILS



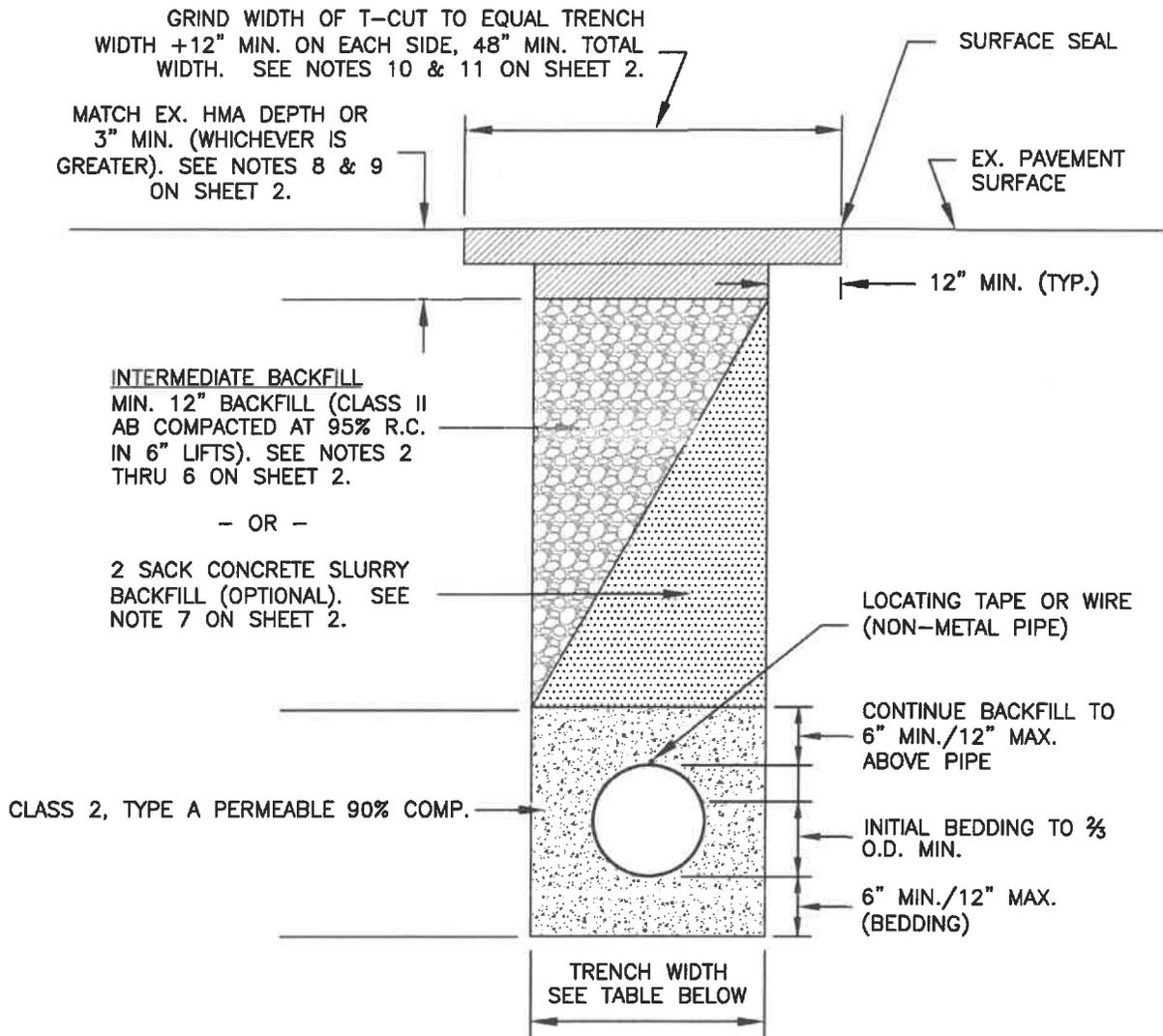
APPROVED BY: L. ALVAREZ

DATE: JANUARY 2020

SI-109

N.T.S.

SHEET: 1 OF 1



**NOTE:** THE SURFACE COURSE OF TRENCH RESTORATION SHALL EXTEND TO THE LIP OF GUTTER IF THE EDGE OF T-CUT IS WITHIN 4' OF LIP OF GUTTER, AND TO THE EDGE OF PAVEMENT IF THE EDGE OF T-CUT IS WITHIN 4' OF AN UNPAVED SHOULDER.

CONDUIT SIZE	LESS THAN 6"	6" TO 24"	OVER 24" TO 60"	OVER 60"
TRENCH WIDTH	O.D. + 12"	O.D. + 24"	O.D. + 24"	O.D. + 24"



RESTORATION STANDARDS

APPROVED BY: L. ALVAREZ

TRENCH BACKFILL STD. DWG. NO. 1

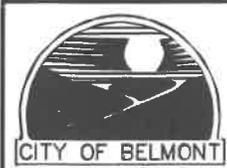
DATE: JANUARY 2020

SI-109A  
N.T.S.

SHEET: 1 OF 3

MATERIAL, COMPACTION & LIMITS REQUIREMENTS FOR TRENCH BACKFILL

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT IS REQUIRED FOR WORK WITHIN A PUBLIC EASEMENT OR STREET/RIGHT OF WAY. WORK MUST CONFORM WITH ALL FEDERAL OR STATE SAFETY REGULATIONS AND RECOMMENDATIONS INCLUDING TRENCH SHORING (LABOR CODE SECTION 6705) AND TRAFFIC CONTROL
2. CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH COMPRESSIVE STRENGTH OF 100 PSI MAY BE USED WITH ENGINEER APPROVAL.
3. CLASS II AGGREGATE BASE SHALL CONFORM TO SECTION 26-1 OF THE 2015 CALTRANS STANDARD SPECIFICATIONS. AGGREGATE BASE MATERIAL SHALL EXTEND TO MATCH THE TOP OF THE EXISTING AGGREGATE BASE LAYER. AGGREGATE BASE SHALL BE PLACED AND COMPACTED IN 6" MAX. LIFTS.
4. THE USE OF PEA GRAVEL (OR SIMILAR ROUND AGGREGATE) FOR BACKFILL MATERIAL IS NOT PERMITTED.
5. "JETTING" OF BACKFILL MATERIAL IS NOT PERMITTED.
6. TESTING OF MATERIALS AND PERFORMANCE SHALL BE IN CONFORMANCE WITH METHODS STATED IN THE APPLICABLE SECTIONS OF THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS (2015 EDITION), EXCEPT THAT RELATIVE COMPACTION MAY BE TESTED BY AASHTO METHOD T180, ASTM D-1557, OR TEST METHOD CALIF. 231 (NUCLEAR DENSOMETER). ALL MATERIALS TESTING SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
7. THE USE OF 2 SACK SLURRY BACKFILL MAY BE USED AS AN ALTERNATE INTERMEDIATE BACKFILL MATERIAL IF APPROVED BY THE CITY PRIOR TO PLACEMENT. SLURRY BACKFILL SHALL CONFORM WITH SECTION 19-3 OF THE 2015 CALTRANS STANDARD SPECIFICATIONS.
8. HMA SHALL BE 1/2" HMA TYPE A PG 64-10 PER SECTION 39 OF THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS 2010 (UNREVISED EDITION). TARGET AIR VOIDS AT 4.0%.
9. PLACE HMA IN 2" MIN., 3" MAX. LIFTS, EXCEPT FINAL LIFT SHALL BE 2" MAX., MATCHING FLUSH TO THE SURROUNDING PAVEMENT SURFACE. ADDITIONAL THICKNESS AND/OR LIFTS OF HOT MIX ASPHALT MAY BE REQUIRED TO MATCH EXISTING STRUCTURAL SECTION ON MAJOR ROADS.
10. TRENCH EDGES SHALL BE TRIMMED TO A NEAT LINE AS REQUIRED BY THE CITY. TRIMMING SHALL BE BY SAWCUT OR ROTARY GRINDER. ANY BROKEN OR DAMAGED EDGES SHALL BE RE-SAWCUT TO PROVIDE A CLEAN, STRAIGHT LINE.
11. THE SURFACE COURSE OF TRENCH RESTORATION SHALL EXTEND TO THE LIP OF GUTTER IF THE EDGE OF THE T-CUT IS WITHIN 4' OF THE LIP OF GUTTER, AND TO THE EDGE OF PAVEMENT IF THE EDGE OF T-CUT IS WITHIN 4' OF AN UNPAVED SHOULDER.
12. CONTRACTOR SHALL SHORE ALL TRENCHES IN CONFORMANCE WITH OSHA AND STATE SAFETY STANDARDS.

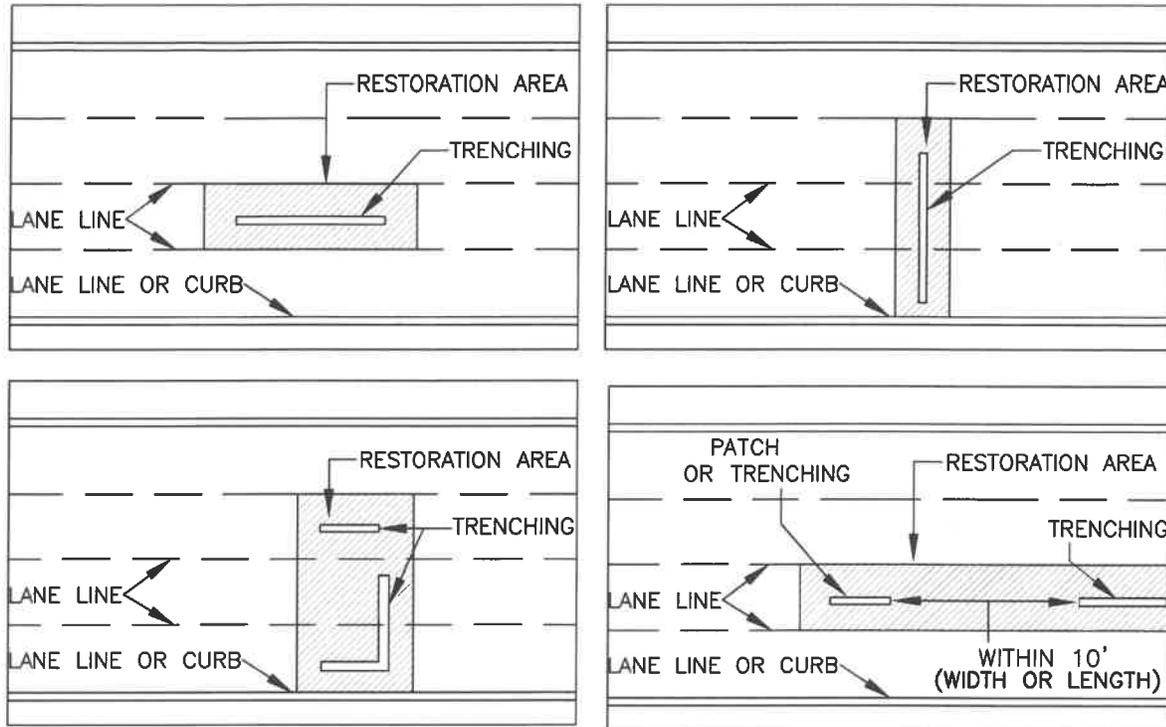


RESTORATION  
STANDARDS  
APPROVED BY: L. ALVAREZ

TRENCH BACKFILL  
STD. DWG. NO. 1  
DATE: JANUARY 2020

SI-109A  
N.T.S.  
SHEET: 2 OF 3

## FOR WORK ON STREETS UNDER 70 PCI



**RESTORATION AREA SHALL EXTEND MINIMUM 2' BEYOND TRENCH PARALLEL TO STREET.**

1. SAW CUT LINES SHALL BE PARALLEL OR PERPENDICULAR TO THE TRAVEL LANE AND NO IRREGULAR CUT WILL BE PERMITTED. THE RESTORATION SHALL BE EXTENDED TO CLOSEST LANE LINE, BIKE LANE, CENTER LINE, LIP OF GUTTER, EDGE OF PAVEMENT OR MEDIAN ISLAND.
2. FOR MULTIPLE CUTS THAT ARE CLOSER THAN 10' TO EACH OTHER, THE RESTORATION SHALL BE EXTENDED BETWEEN THE CUTS AND TO CLOSEST LANE LINE, BIKE LANE, CENTER LINE, LIP OF GUTTER, EDGE OF PAVEMENT OR MEDIAN ISLAND.
3. IF THE PROPOSED TRENCH IS WITHIN 10' OF AN EXISTING OR PROPOSED PATCH, THE RESTORATION SHALL BE EXTENDED TO THE EDGE OF THE ADJACENT PATCH.
4. IF PAVEMENT IS DAMAGED DURING CONSTRUCTION, THE RESTORATION SHALL BE EXTENDED TO INCLUDE THE REMOVAL OF THE FAILED SECTION / AREA TO SOUND PAVEMENT.



**RESTORATION  
STANDARDS**

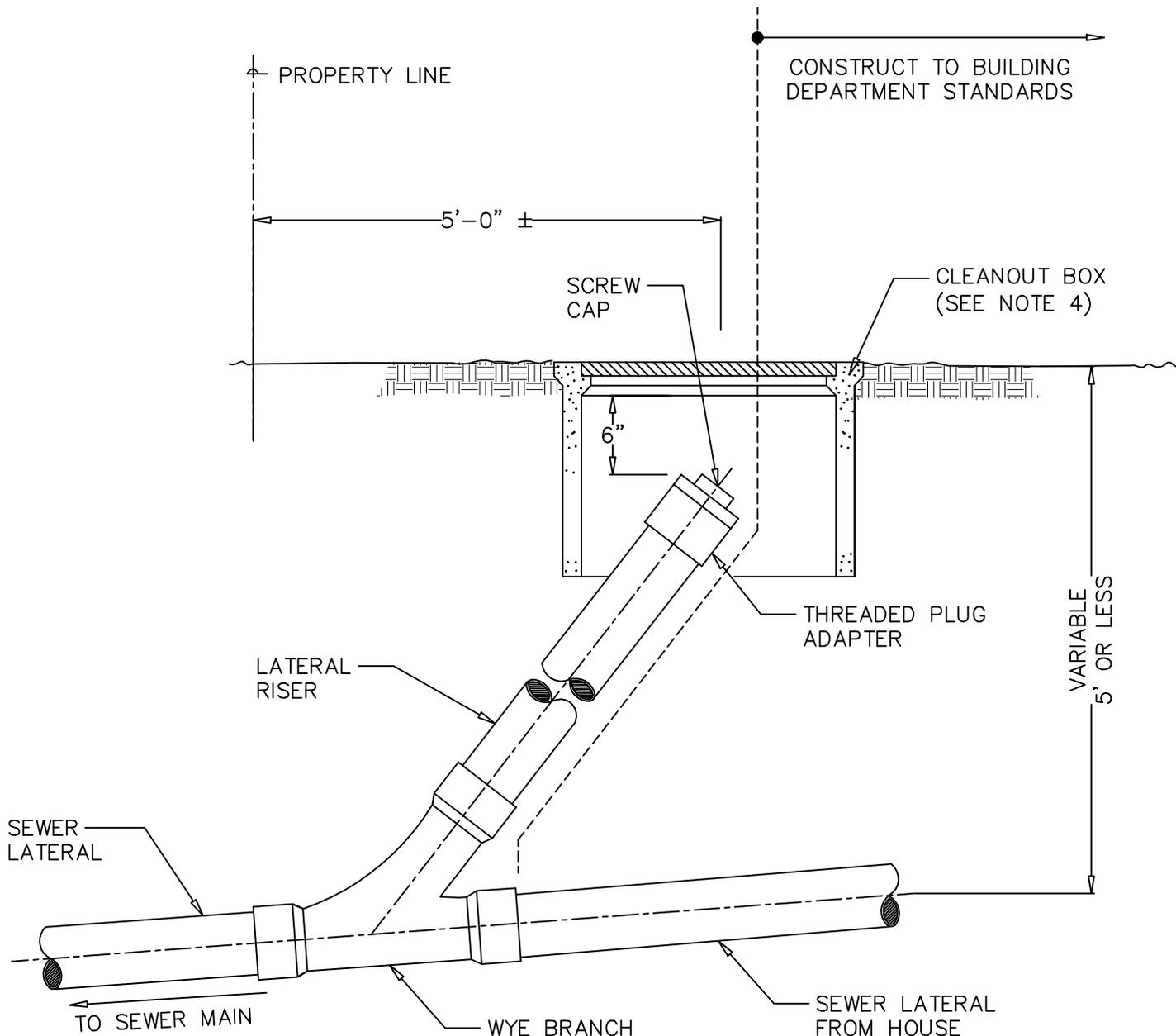
APPROVED BY: L. ALVAREZ

**TRENCH BACKFILL  
STD. DWG. NO. 1**

DATE: JANUARY 2020

SI-109A  
N.T.S.

SHEET: 3 OF 3



**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. THE CITY SHALL NOT BE RESPONSIBLE FOR FLUSHING PRIVATE LATERALS. OWNER IS RESPONSIBLE FOR LATERAL TO THE MAIN, INCLUDING THE CONNECTION TO THE MAIN.
3. SEWER LATERAL FROM THE CLEANOUT TO MAIN SHALL BE MADE OF PVC SDR 26/35 WITH A MINIMUM OF 4" DIAMETER FOR A SINGLE FAMILY HOME.
4. IN DRIVEWAY AREA, USE B03 BOX. LID SHALL CONTAIN THE LETTERS "SEWER".
5. WHEN INSTALLED IN PLANTED AREAS, CLEANOUT BOX SHALL BE SET A MINIMUM OF 4" ABOVE GRADE. IN LAWNS, THE BOX MAY BE LOWER TO ALLOW MOWING.
6. STAINLESS STEEL SHIELDED ADJUSTABLE REPAIR COUPLES TO BE USED WHEN CONNECTION FROM EXISTING TO NEW CONSTRUCTION.



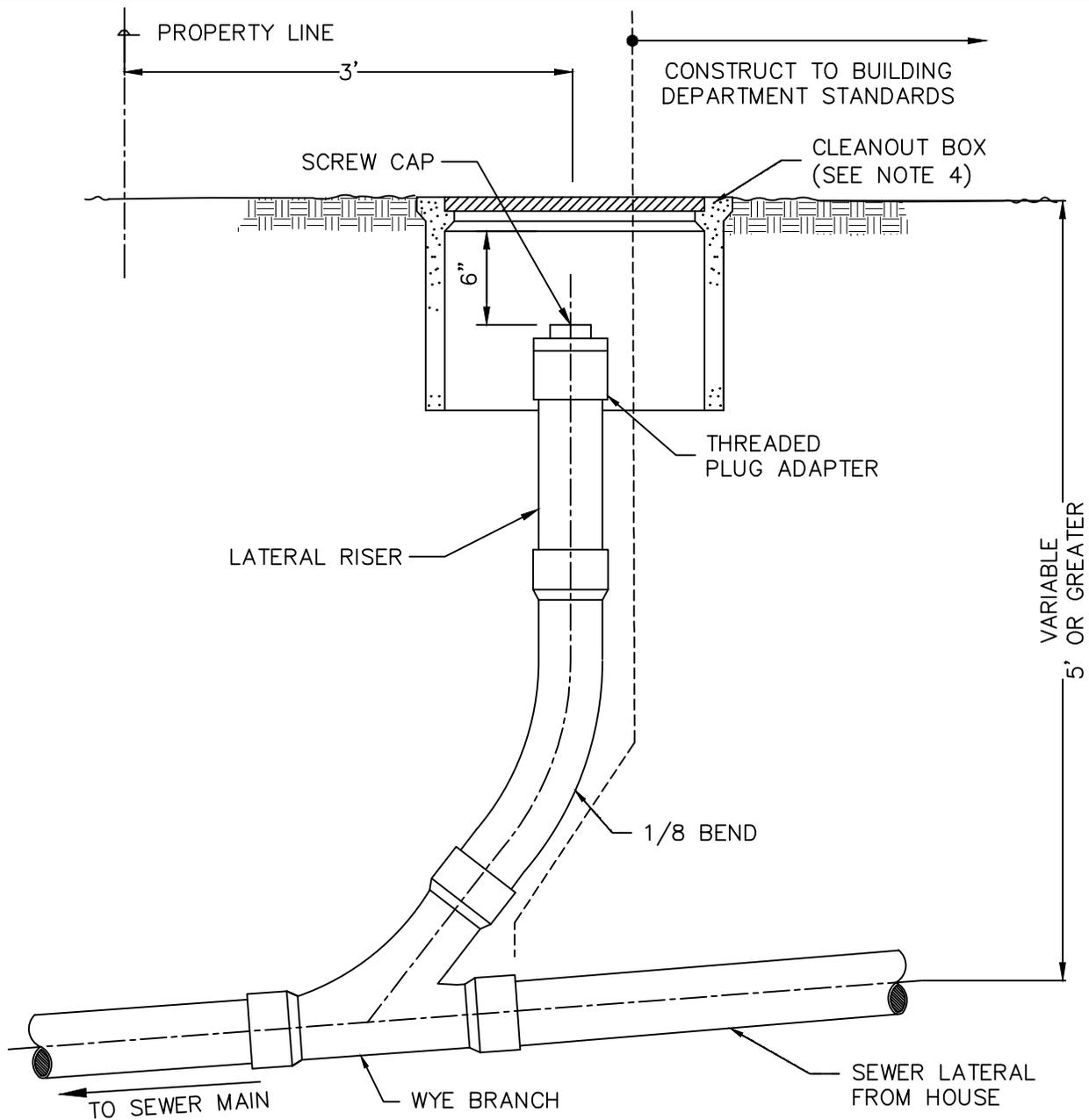
STANDARD 4" SEWER  
LATERAL CLEANOUT

APPROVED BY: L. ALVAREZ

DATE: SEPT 2016

SS-200  
N.T.S.

SHEET: 1 OF 1



**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. THE CITY SHALL NOT BE RESPONSIBLE FOR FLUSHING PRIVATE LATERALS. OWNER IS RESPONSIBLE FOR LATERAL TO THE MAIN, INCLUDING THE CONNECTION TO THE MAIN.
3. SEWER LATERAL FROM THE CLEANOUT TO MAIN SHALL BE MADE OF FUSIBLE HDPE OR PVC SDR 26/35 WITH A MINIMUM 4" DIAMETER FOR A SINGLE FAMILY HOME.
4. IN DRIVEWAY AREA, USE B03 BOX, OR G05 BOX. LID SHALL CONTAIN THE LETTERS "SEWER".
5. WHEN INSTALLED IN PLANTED AREAS, CLEANOUT BOX SHALL BE SET A MINIMUM OF 4" ABOVE GRADE. IN LAWNS, THE BOX MAY BE LOWER TO ALLOW MOWING.
6. STAINLESS STEEL SHIELDED ADJUSTABLE REPAIR COUPLINGS TO BE USED WHEN CONNECTION FROM EXISTING TO NEW CONSTRUCTION.



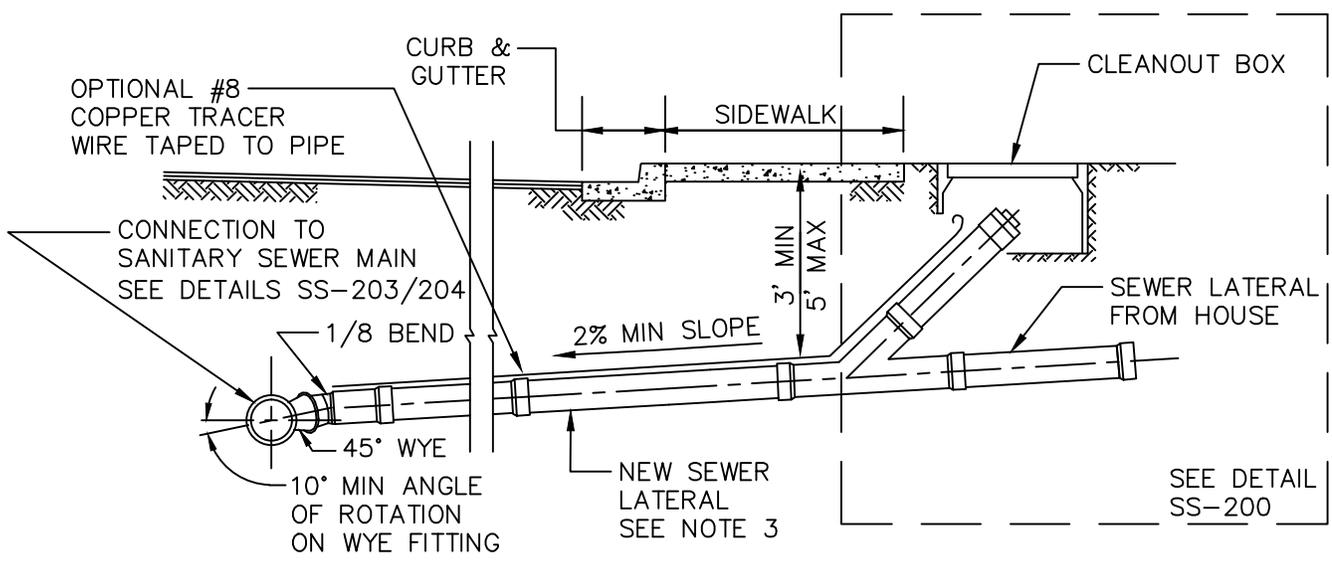
**4" SEWER  
DEEP LATERAL CLEANOUT**

APPROVED BY: L. ALVAREZ

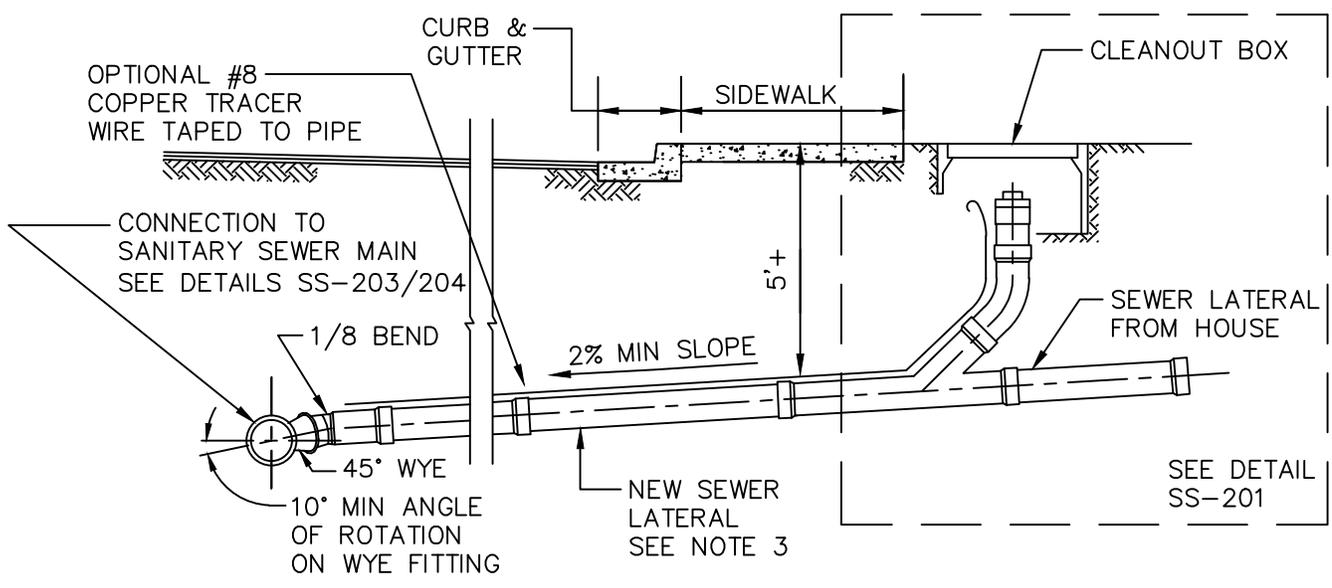
DATE: SEPT 2016

SS-201  
N.T.S.

SHEET: 1 OF 1



PROFILE (STANDARD)

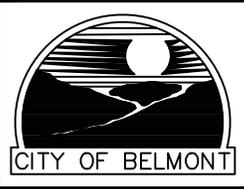


PROFILE (DEEP LATERAL)

FOR USE WHEN CONNECTING TO A DEEP (5'+)  
SEWER LATERAL, WITH APPROVAL OF ENGINEER.

NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. TO CONNECT NEW LATERAL TO EXISTING LATERAL, USE ARC COUPLING.
3. SEWER LATERAL FROM THE CLEANOUT SHALL BE MADE OF FUSIBLE HDPE OR PVC SDR 35/26.



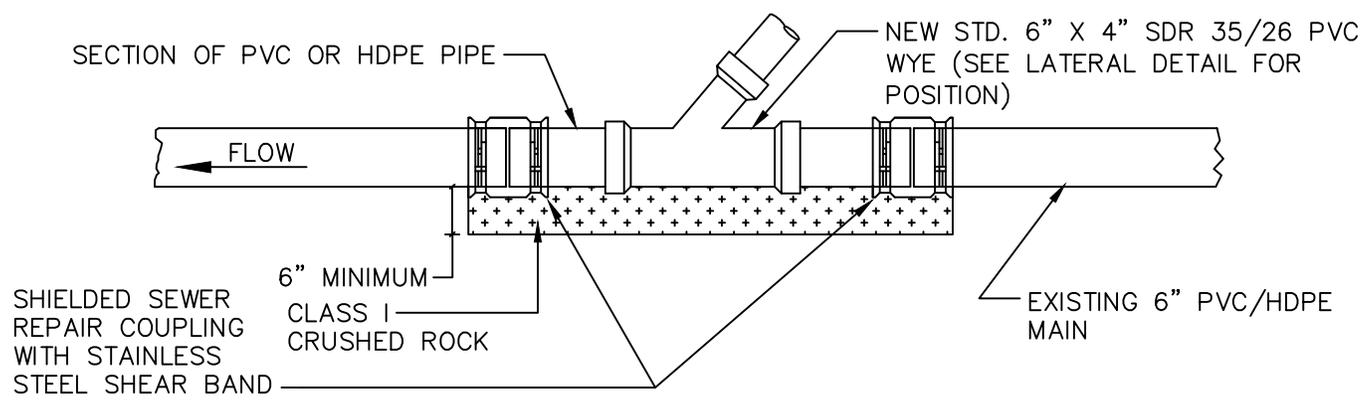
SANITARY SEWER LATERAL  
(NEW PIPE)

APPROVED BY: L. ALVAREZ

DATE: SEPT 2016

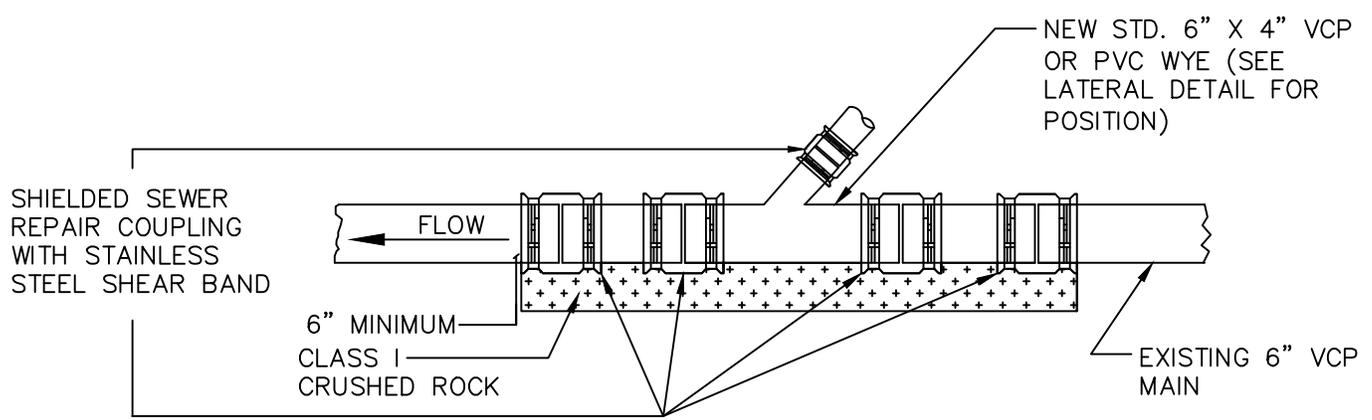
SS-202  
N.T.S.

SHEET: 1 OF 1



NOTE: ALL PVC AND HDPE, PIPE AND FITTINGS SHALL BE SDR 26 OR 35 RESPECTIVELY AND HDPE PIPE FITTINGS SHALL BE BUTT FUSED OR USE ELECTROFUSION COUPLINGS. SOLVENT WELDED JOINTS SHALL NOT BE ALLOWED.

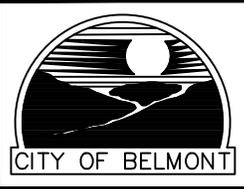
POLYVINYL CHLORIDE PIPE (PVC)  
OR HIGH-DENSITY POLYETHYLENE (HDPE)



VITRIFIED CLAY (VCP)

NOTES:

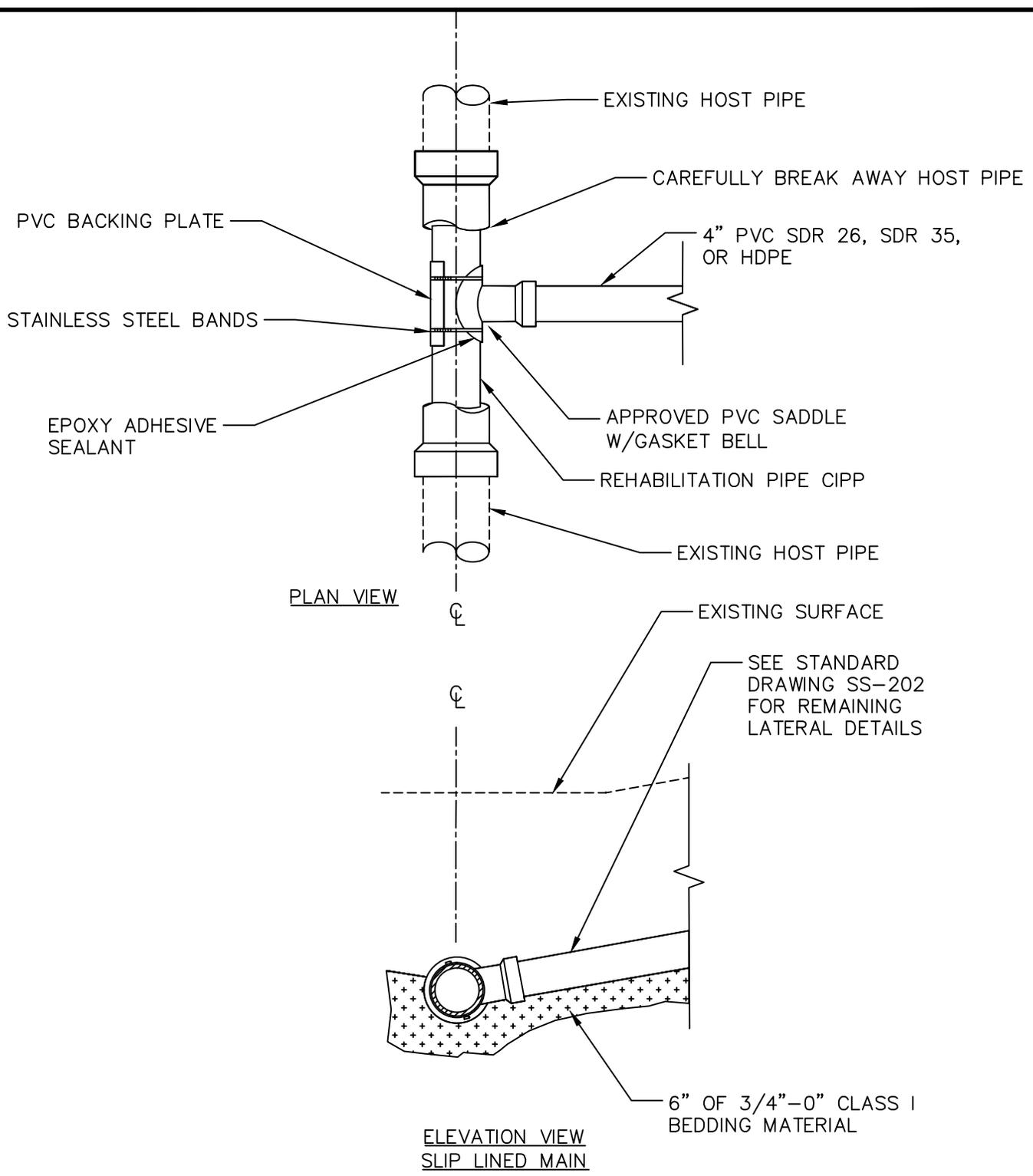
1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. LATERAL CONNECTION ON SEWER MAINS GREATER THEN 6" SHALL BE INSTALLED PER PLANS APPROVED BY THE CITY ENGINEER.
3. SEE SI-109 FOR TRENCH DETAIL.



SEWER LATERAL  
CONNECTION TO EXISTING

APPROVED BY: L. ALVAREZ      DATE: SEPT 2016

SS-203  
N.T.S.  
SHEET: 1 OF 1



NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. SEE SI-109 FOR TRENCH DETAIL.



TYPICAL SERVICE LATERAL CONNECTION  
(INTERNALLY REHABILITATED MAINLINES)

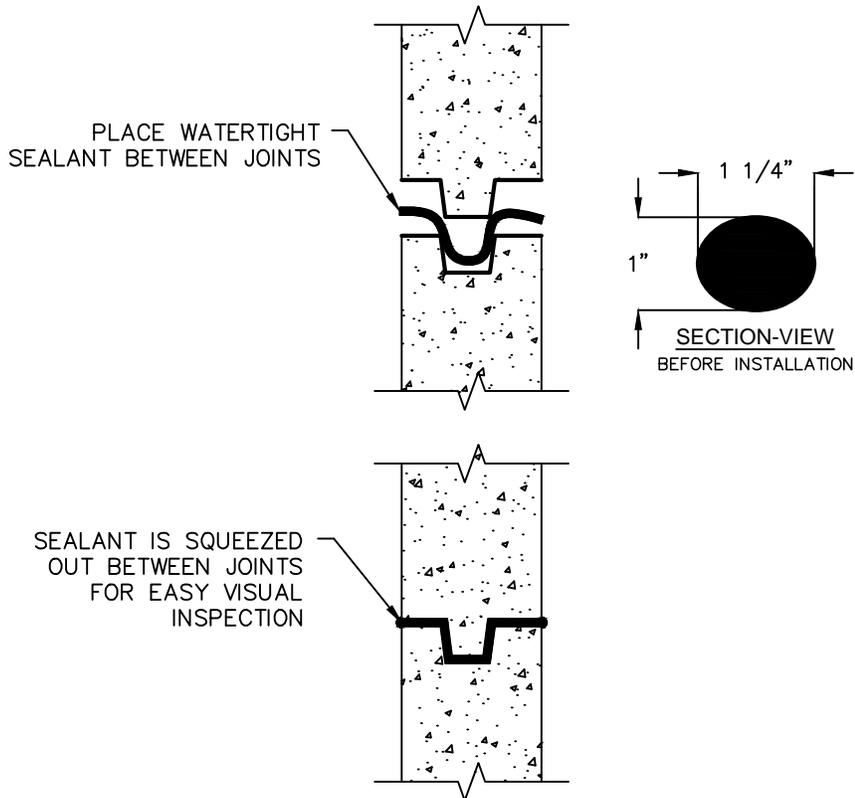
APPROVED BY: L. ALVAREZ

DATE: SEPT 2016

SS-204

N.T.S.

SHEET: 1 OF 1



NOTES:

1. MEETS AASHTO M-198 75 I, TYPE B AND ASTM C990-91.
2. FOR SEALING PRECAST SEWER AND CULVERT MANHOLES, BOX CULVERTS, UTILITY AND BURIAL VAULTS, SEPTIC TANKS, WET WELLS, AND ANY OTHER APPLICATIONS WHERE A FLEXIBLE WATERTIGHT JOINT IS NEEDED.



CITY OF BELMONT

MANHOLE AND CULVERT SEALANT

APPROVED BY: L. ALVAREZ

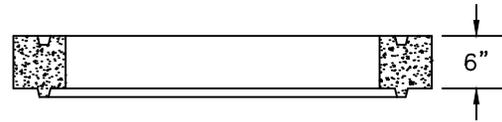
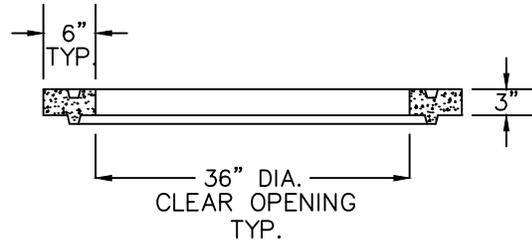
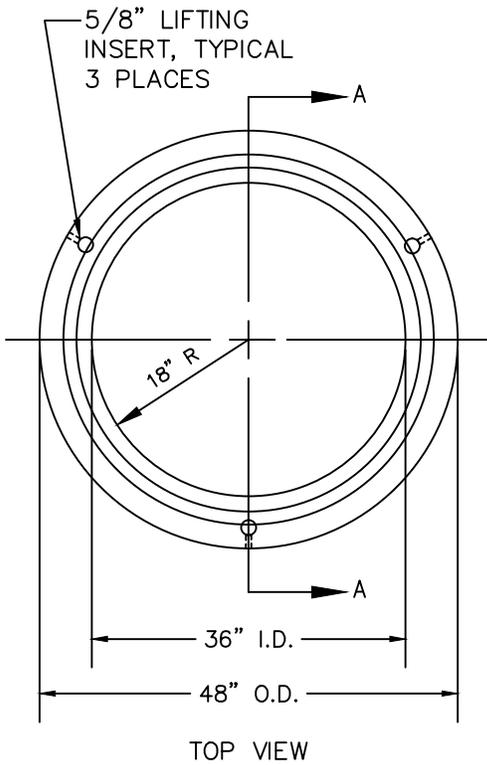
DATE: SEPT 2016

SS-206  
SD-310

N.T.S.

SHEET: 1 OF 1

GRADE RINGS/RISERS  
36" I.D. 6" WALL



SECTION A-A

DESCRIPTION	APPROX. WEIGHT
3" GRADE RING	170 LBS.
6" GRADE RING	415 LBS.
12" GRADE RING	830 LBS.

NOTES:

1. CONFORMS TO CURRENT SPECIFICATIONS: ASTM C-478 AND AASHTO NO. M-199-811.
2. MANUFACTURED WITH 3 - 5/8" LIFTING INSERTS.
3. SEE DETAIL SS-206/SD-310 FOR JOINT SEALANT.



APPROVED BY: L. ALVAREZ

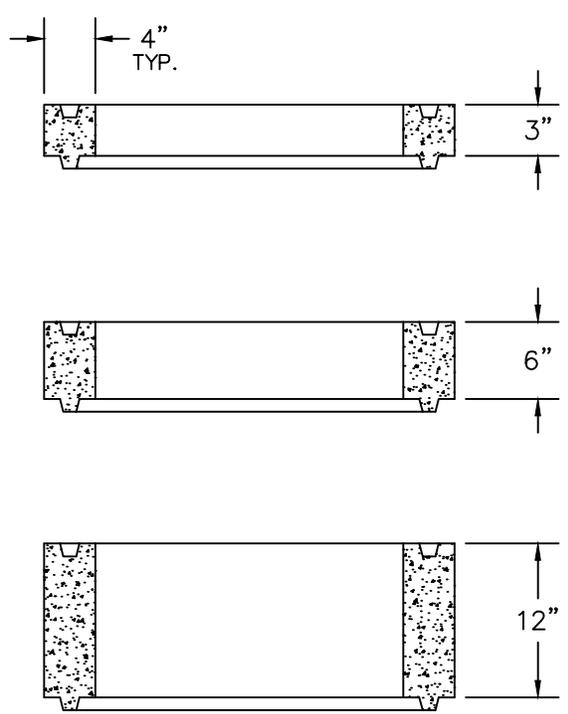
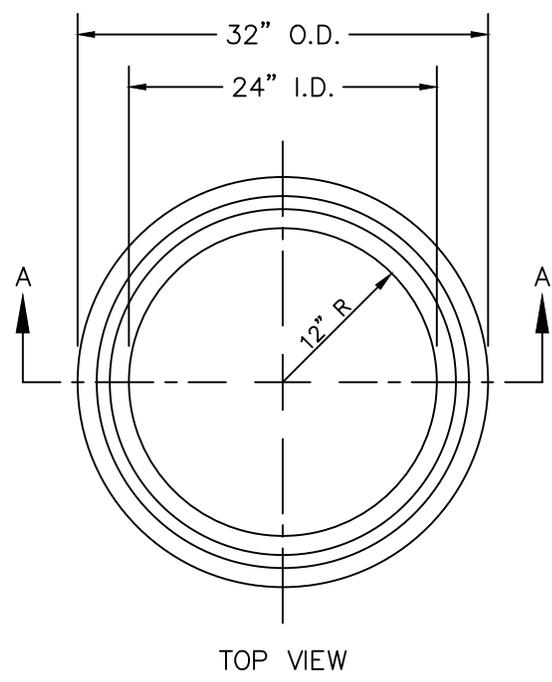
DATE: NOVEMBER 2016

24" CONCRETE  
GRADE RINGS/RISERS

SS-207  
SD-311  
N.T.S.

SHEET: 1 OF 1

GRADE RINGS/RISERS  
24" I.D., 4" WALL



DESCRIPTION	APPROX. WEIGHT
3 INCH GRADE RING	92 LBS.
6 INCH GRADE RING	183 LBS.
12 INCH GRADE RING	366 LBS.

SECTION A-A

NOTES:

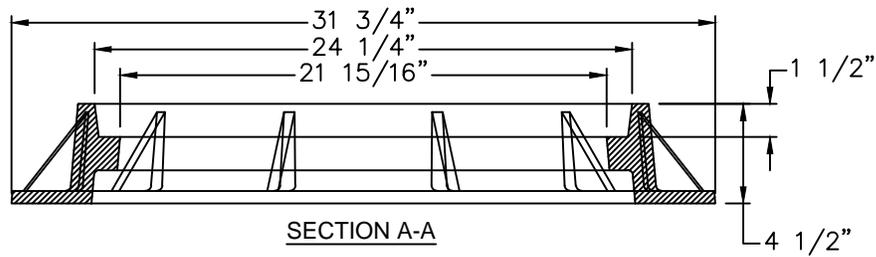
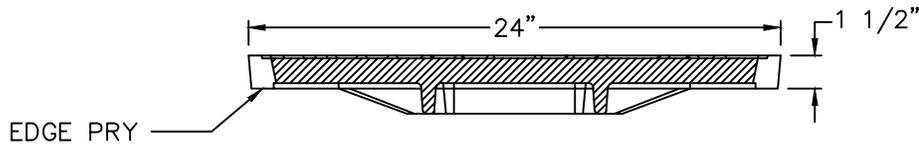
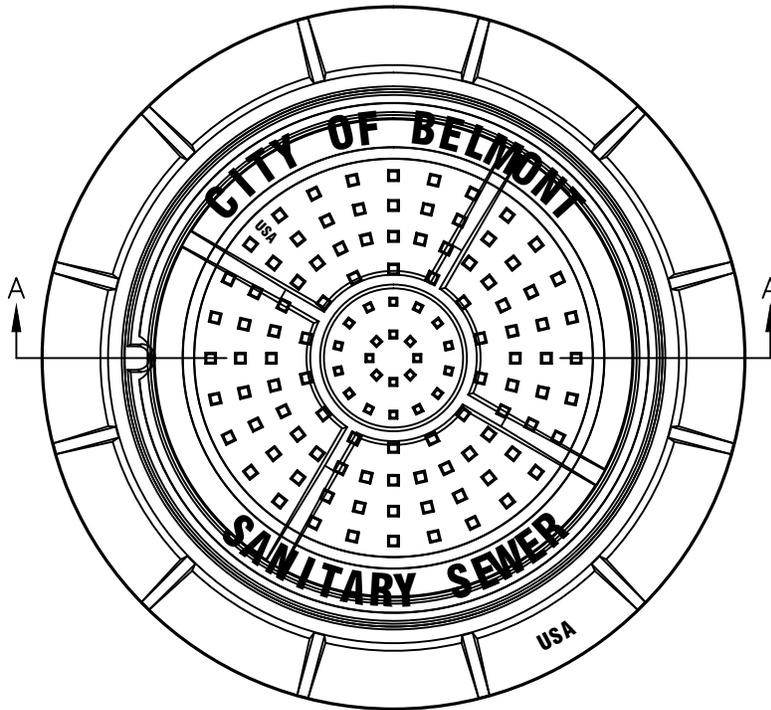
1. CONFORMS TO CURRENT SPECIFICATIONS: ASTM C-478 AND AASHTO M-199.
2. SEE SS-206/SD-310 MANHOLE/RISER JOINT SEALANT
3. SEE SS-208/SD-308 MANHOLE COVER AND FRAME



**24" CONCRETE  
GRADE RINGS/RISERS**

APPROVED BY: L. ALVAREZ      DATE: SEPT 2016

SS-207  
SD-307  
N.T.S.  
SHEET: 1 OF 1



NOTES:

1. COVERS IN EASEMENTS SHALL BE FIBER REINFORCED POLYMER



24" SANITARY SEWER  
MANHOLE COVER

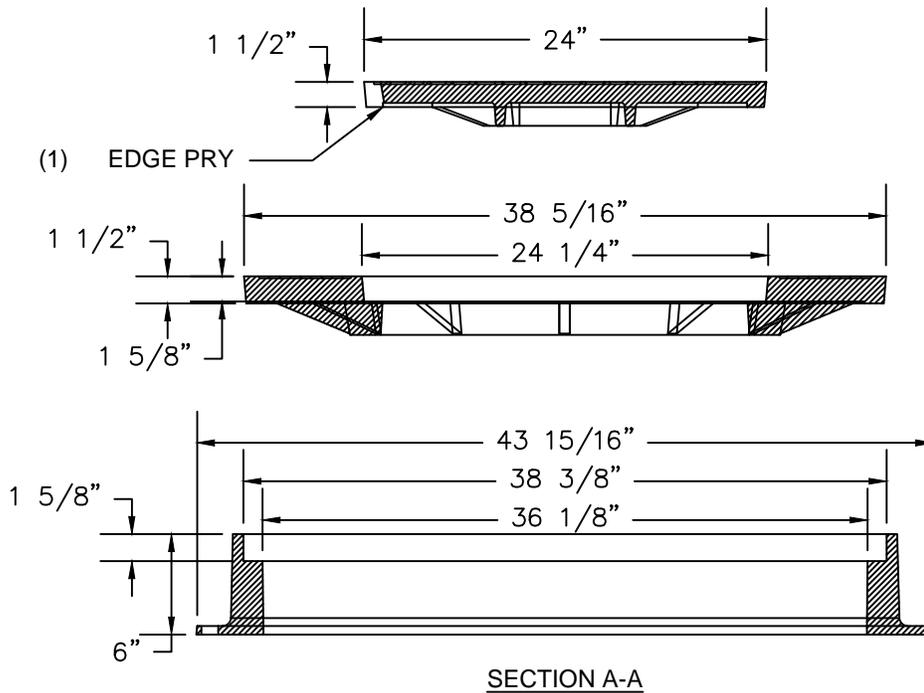
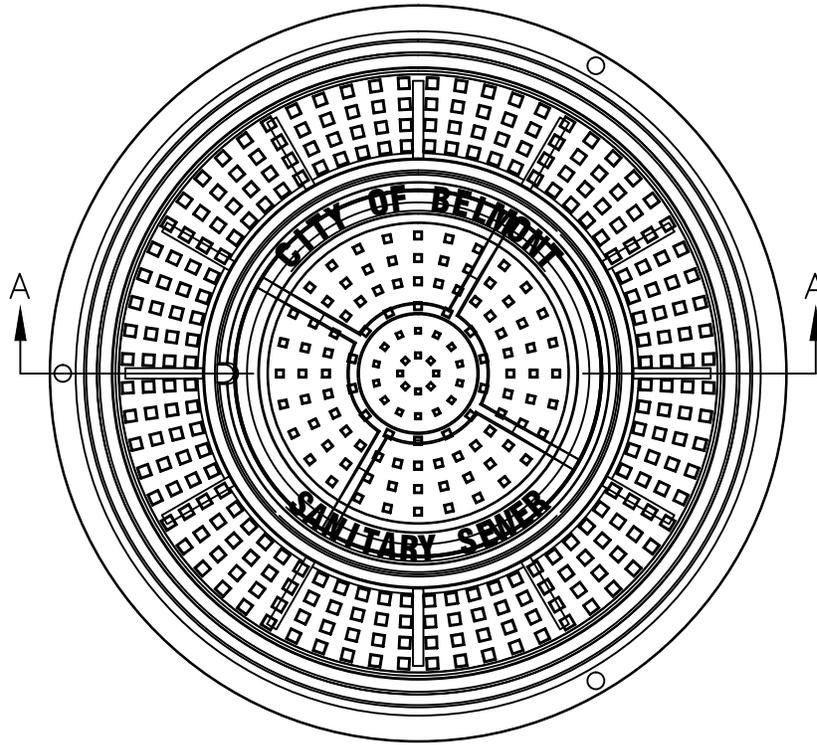
APPROVED BY: L. ALVAREZ

DATE: SEPT 2016

SS-208

N.T.S.

SHEET: 1 OF 1

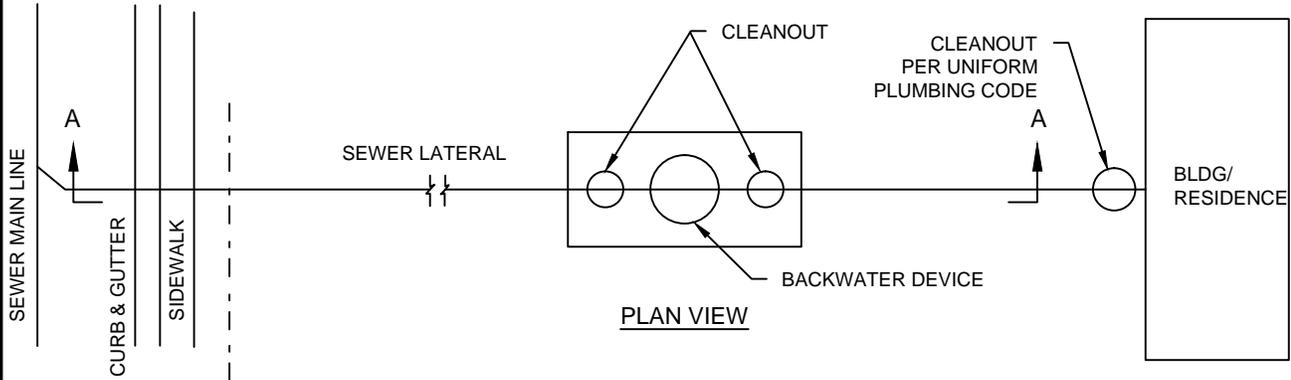


36" SANITARY SEWER  
MANHOLE COVER

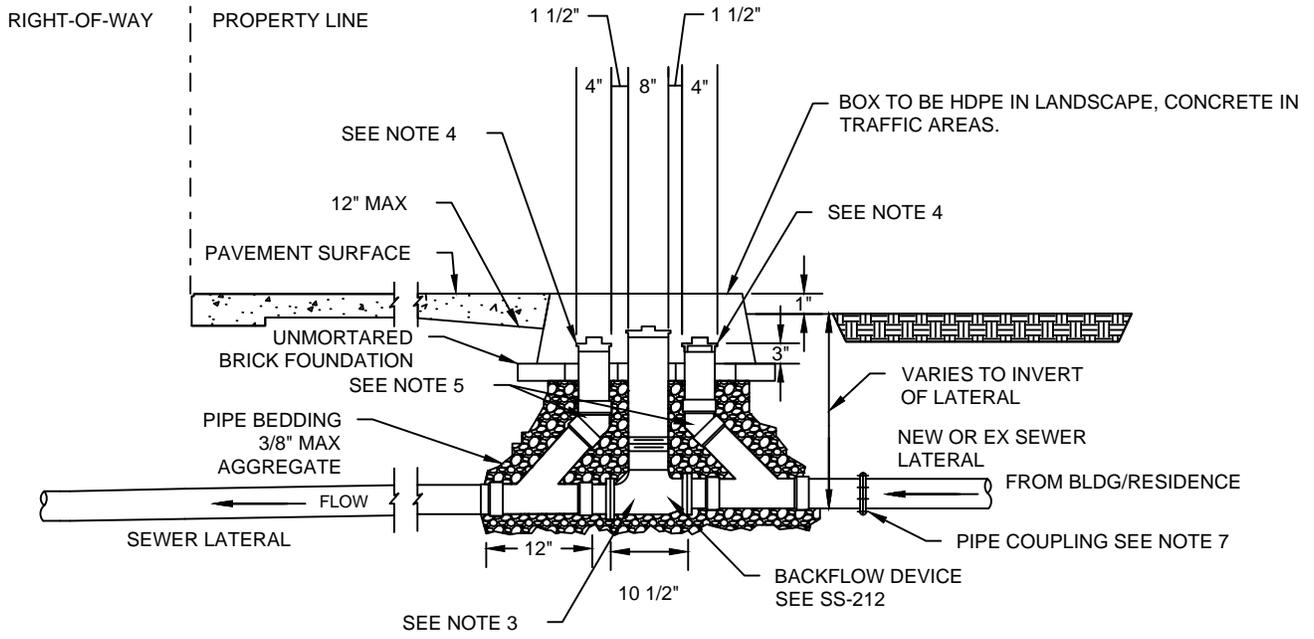
APPROVED BY: L. ALVAREZ

DATE: SEPT. 2016

SS-209  
N.T.S.  
SHEET: 1 OF 1



PLAN VIEW



SECTION A-A

NOTES:

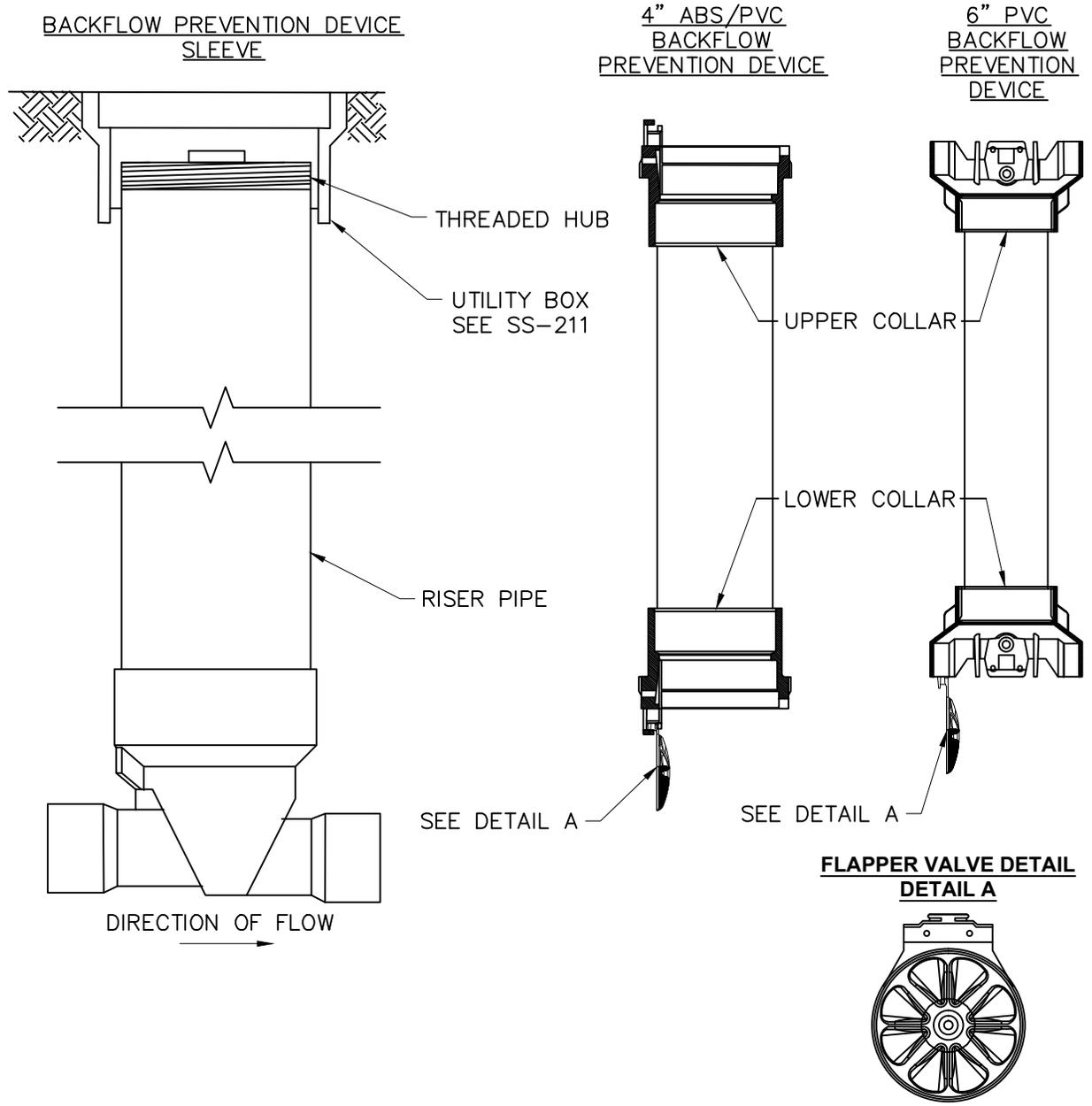
1. PRIOR TO BEGINNING ANY WORK, PERMITS SHALL BE OBTAINED.
2. INSTALL BOX SO THAT IT IS FLUSH WITH PAVEMENT SURFACE OR 1" ABOVE FINISH GRADE (SOIL SURFACE).
3. PVC/ABS BACKWATER DEVICE AND ATTACHED PARTS SHALL BE PER THE CALIFORNIA PLUMBING CODE (CPC).
4. CLEANOUT PLUG - THREADED.
5. SEE STANDARD DETAIL SS-201
6. THE BACKWATER DEVICE SHALL BE LOCATED AS CLOSE TO THE STRUCTURE AS REASONABLY POSSIBLE TO MINIMIZE THE DEPTH OF THE BACKWATER DEVICE.
7. STAINLESS STEEL SHIELDED ADJUSTABLE REPAIR COUPLINGS TO BE USED WHEN CONNECTING FROM EXISTING TO NEW CONSTRUCTION.



4" BACKWATER DEVICE

APPROVED BY: L. ALVAREZ      DATE: NOVEMBER 2016

SS-210  
N.T.S.  
SHEET: 1 OF 2



**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, PERMITS SHALL BE OBTAINED.
2. SEWER BACKFLOW PREVENTION PER SECTION 7-18 OF CITY CODE WHICH STATES: WHEN SANITARY SEWER LATERALS, PIPES, OR PIPING SERVES FIXTURES WITHIN A BUILDING AND ANY FLOOR ON WHICH FIXTURES ARE LOCATED IS BELOW THE LEVEL OF THE BUILDING AND ANY FLOOR ON WHICH FIXTURES ARE LOCATED IS BELOW THE LEVEL OF THE TOP OF THE NEAREST UPGRADE OR UPSTREAM MANHOLE OF THE SEWER MAIN, THEY SHALL BE PROTECTED FROM THE BACKFLOW OF SEWAGE BY THE INSTALLATION OF AN APPROVED TYPE BACKWATER VALVE. THE BACKWATER VALVES SHALL BE ACCESSIBLE FOR INSPECTION AND REPAIRS.



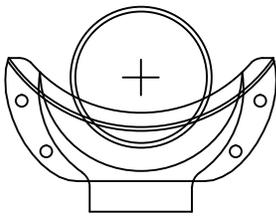
OVERFLOW AND  
BACKWATER DEVICES

APPROVED BY: L. ALVAREZ

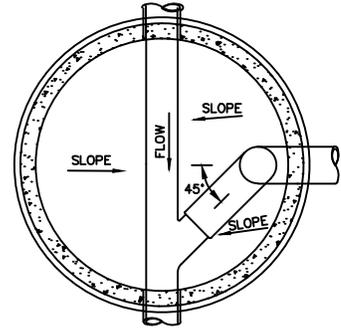
DATE: NOVEMBER 2016

SS-210  
N.T.S.

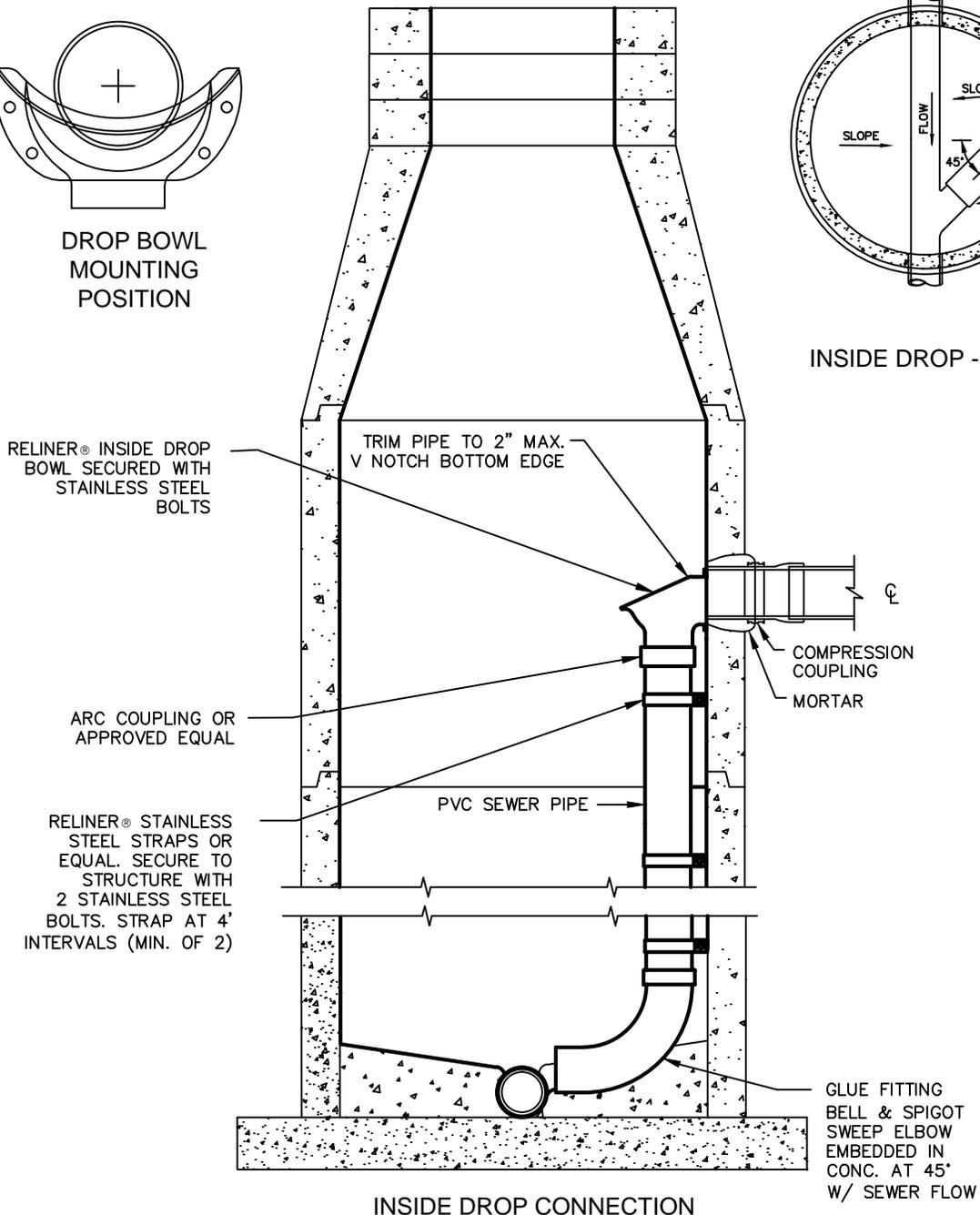
SHEET: 2 OF 2



DROP BOWL  
MOUNTING  
POSITION



INSIDE DROP - PLAN



INSIDE DROP CONNECTION

**NOTES:**

1. ALL INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWERS SHALL USE THE DROP BOWL AS PRODUCED BY: RELINER-DURAN, INC. OR APPROVED EQUAL
2. SECURE DROP PIPE TO MANHOLE WALL WITH STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS.



SANITARY SEWER DROP MANHOLE CONNECTION

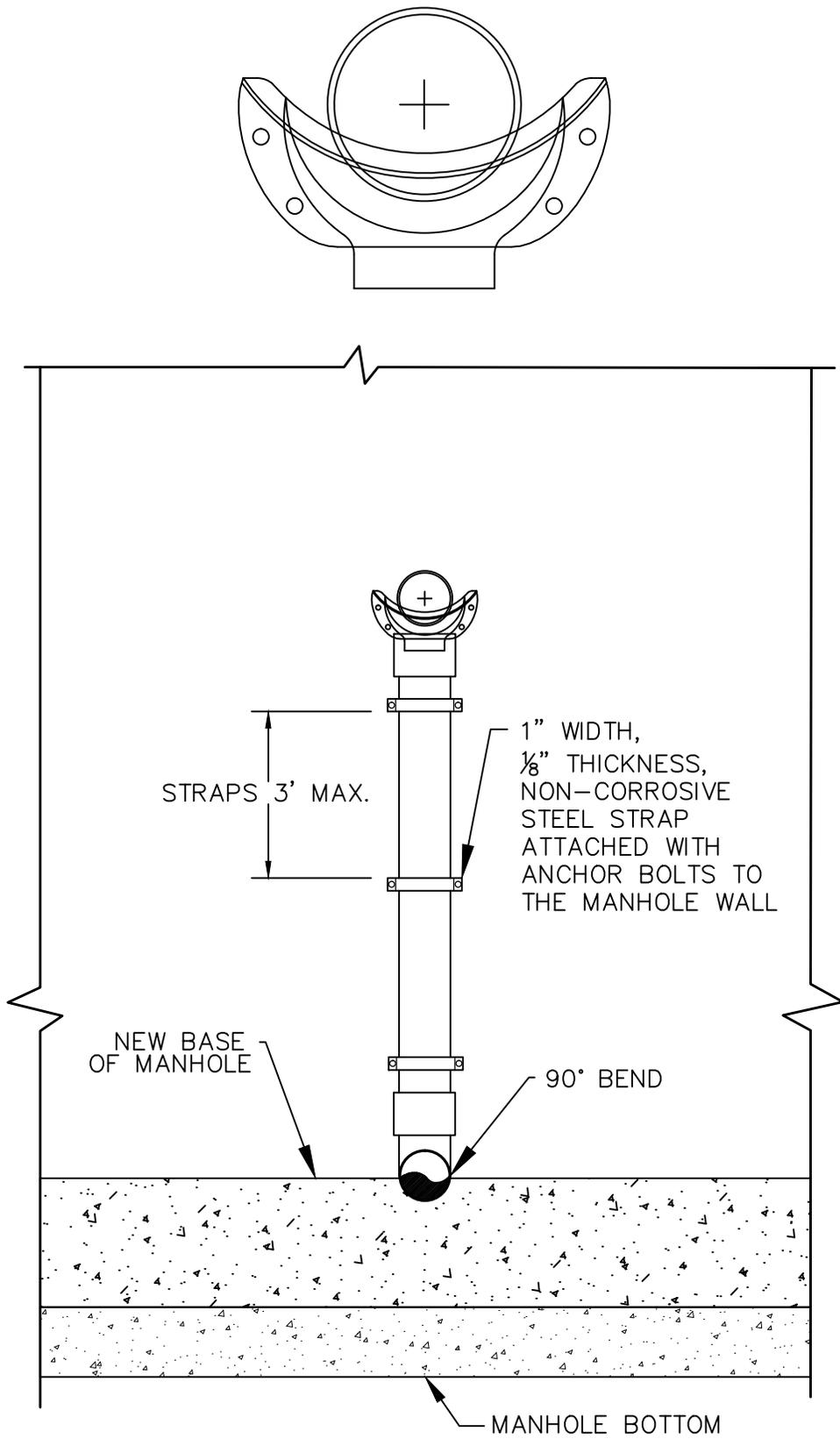
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SS-212

N.T.S.

SHEET: 1 OF 2



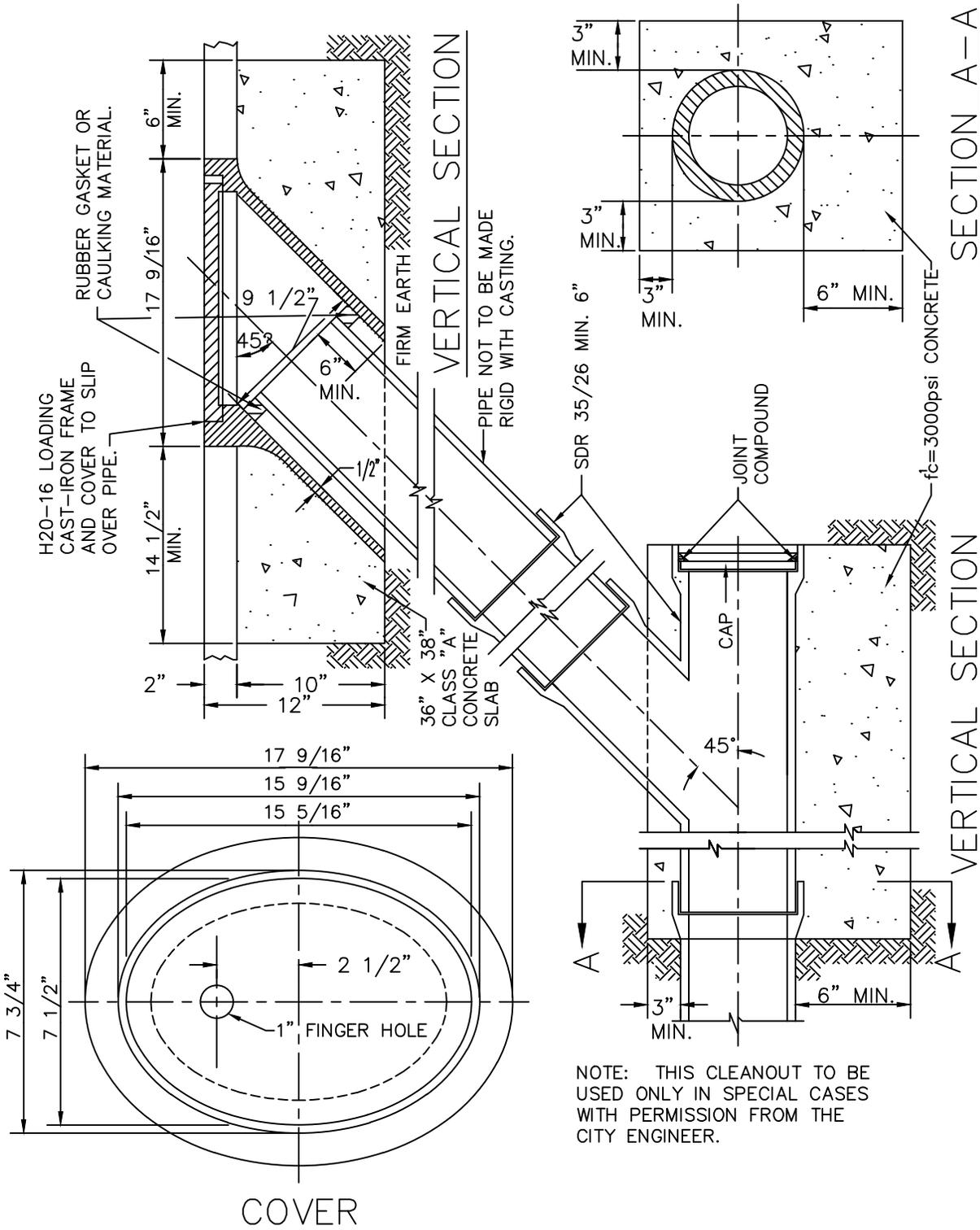
SANITARY SEWER DROP MANHOLE CONNECTION

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SS-212  
N.T.S.

SHEET: 2 OF 2

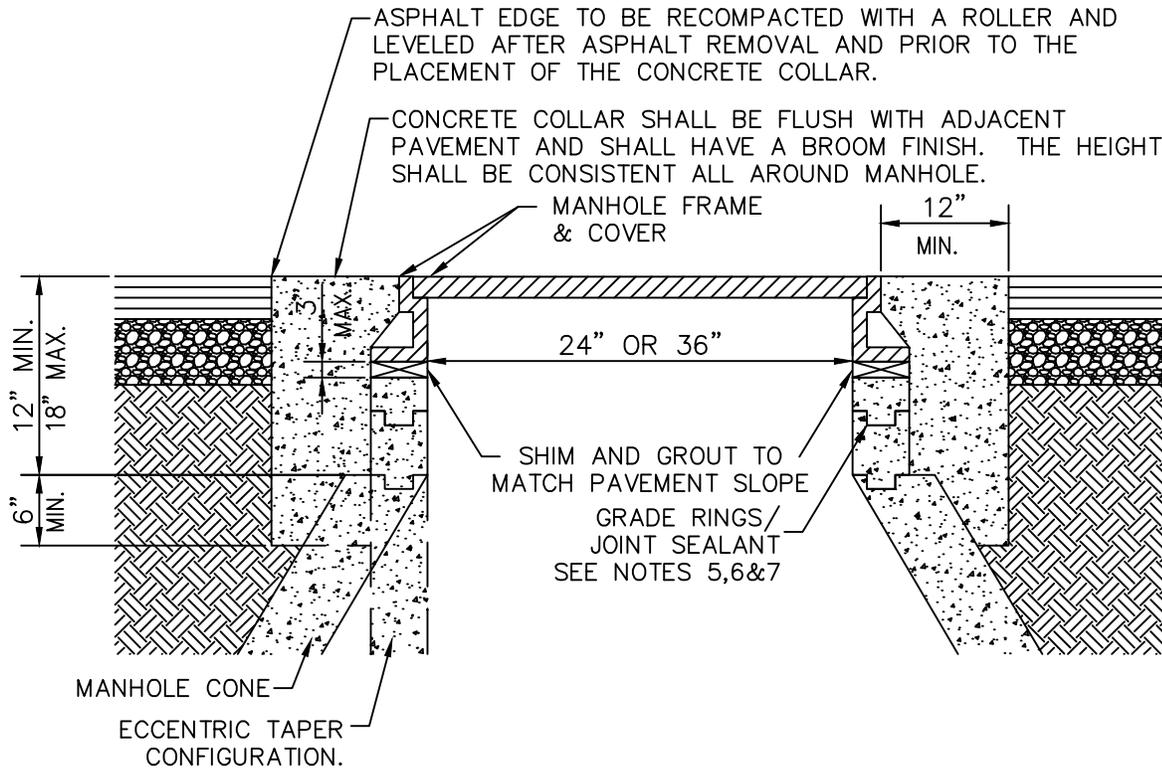


NOTE: THIS CLEANOUT TO BE USED ONLY IN SPECIAL CASES WITH PERMISSION FROM THE CITY ENGINEER.



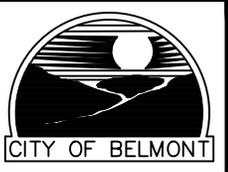
LAMPHOLE  
 APPROVED BY: L. ALVAREZ  
 DATE: NOVEMBER 2016

SS-214  
 N.T.S.  
 SHEET: 1 OF 1



**NOTES:**

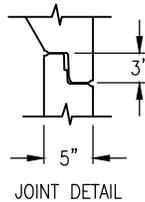
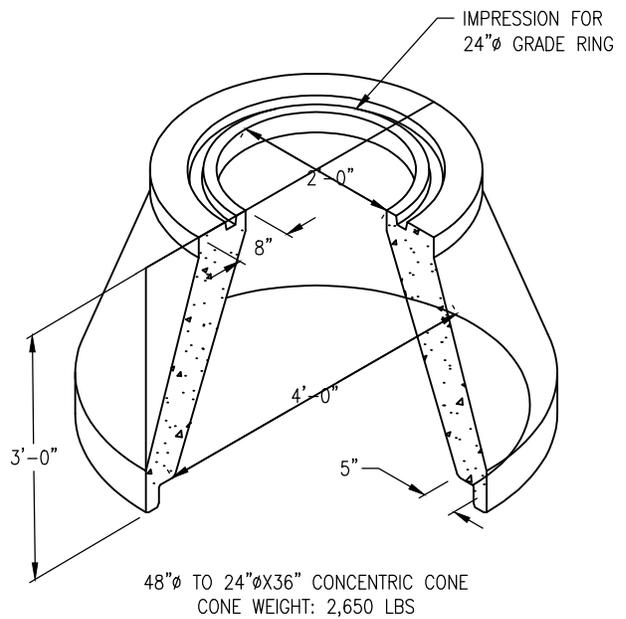
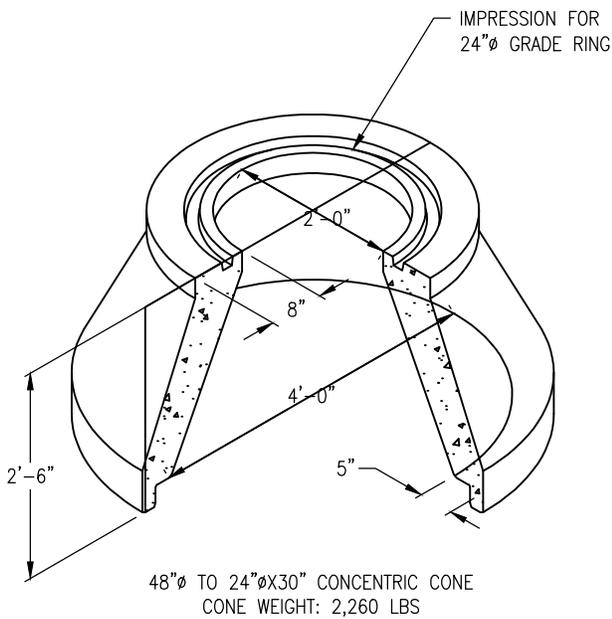
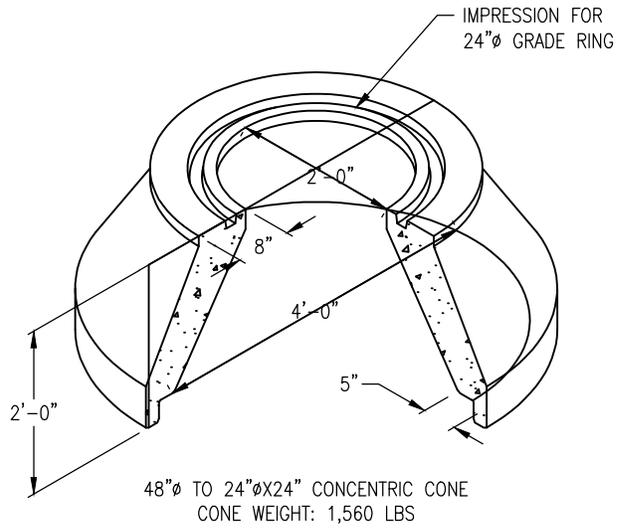
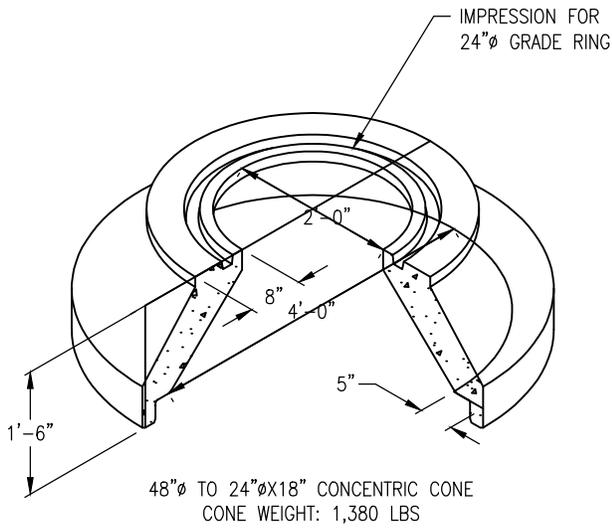
1. FIBER-REINFORCED PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS, MIN. 6 SACKS OF CEMENT PER CUBIC YARD WITH MAX. WATER-CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5%, SLUMP AT 1 TO 4 INCHES. MIX DESIGN SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. CEMENT SHALL BE TYPE II. ALL CEMENT CONCRETE SHALL HAVE A COARSE AGGREGATE GRADATION CONFORMING TO SIZE No. 67. POLYPROPYLENE OR CELLULOSE FIBERS SHALL BE ADDED TO THE P.C.C. AT 1.5 LBS. PER CUBIC YARD.
2. CIRCUMSTANCES MAY REQUIRE THE NEED FOR SPECIAL TYPES OF TOP OF MANHOLE CONFIGURATIONS SUCH AS FLAT TOP, ABOVE GROUND, ETC. AS DIRECTED BY THE CITY. DETAILED PLANS OF ANY SPECIAL TOP OF MANHOLE CONFIGURATIONS AND ASSOCIATED COLLARS MUST BE APPROVED BY THE ENGINEER.
3. IN UNPAVED AREAS, IT SHALL BE NECESSARY TO SET THE MANHOLE RIM APPROXIMATELY 6 INCHES ABOVE THE SURROUNDING AREA. INSTALL A 6 INCH THICK RING OF CONCRETE, TAPERED AT A 3:1 SLOPE, FROM THE TOP, OUTSIDE EDGE OF THE COLLAR TO THE EXISTING GROUND SURFACE.
4. EXISTING SANITARY SEWER MANHOLE LIDS LOCATED IN GUTTER PANS, SHALL HAVE NEW WATER TIGHT FRAMES AND COVERS.
5. ALL GRADE RING JOINTS ARE TO BE SEALED PER SS-206/SD-310.
6. ALL GRADE RINGS SHALL BE PER SD-311/SS-207 FOR 24" OR SD-305/SS-213 FOR 36".
7. PVC GRADE RINGS MUST BE APPROVED BY THE ENGINEER.



CONCRETE MANHOLE COLLAR

APPROVED BY: L. ALVAREZ      DATE: NOVEMBER 2016

SD-309  
SS-215  
N.T.S.  
SHEET: 1 OF 1



NOTES:  
SEE DETAIL SS-206/SD-310 FOR JOINT SEALANT

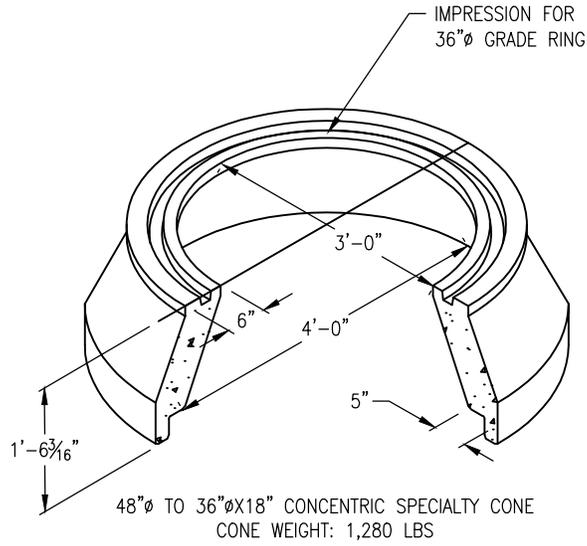


48" DIA CONCENTRIC MH CONE  
FOR 24" MH LID & FRAME

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SS-216  
SD-312  
N.T.S.  
SHEET: 1 OF 2



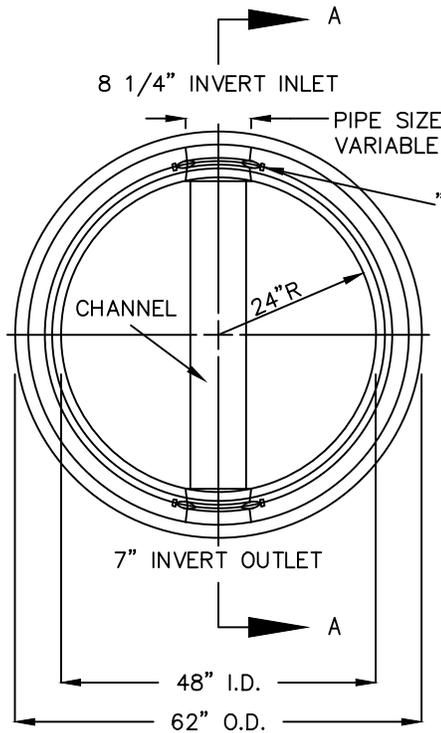
48" DIA CONCENTRIC MH CONE  
FOR 36" MH LID & FRAME

APPROVED BY: L. ALVAREZ

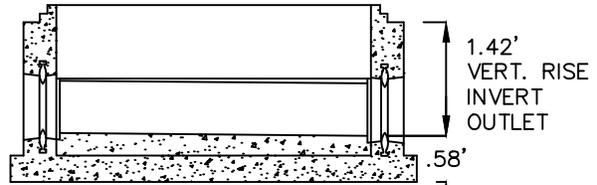
DATE: NOVEMBER 2016

SS-216  
SD-312  
N.T.S.

SHEET: 2 OF 2



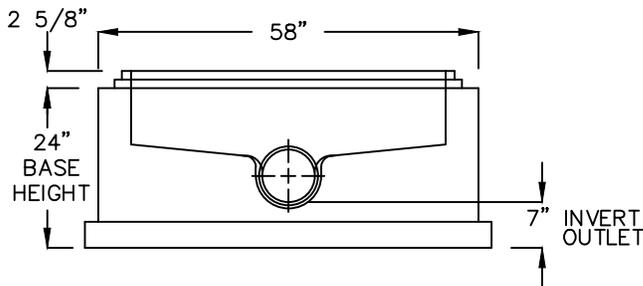
TOP VIEW



SECTION A-A

NOTES:  
 48"Ø 2 WAY 180°, 8" MANHOLE BASE  
 IS USED WITH 8" I.D. SDR 35 PVC  
 OR OTHER PIPES WITH 8.50 O.D. ±1/4".

CONFORMS TO CURRENT  
 SPECIFICATION ASTM C-478  
 AND AASHTO NO. M199.



SIDE VIEW

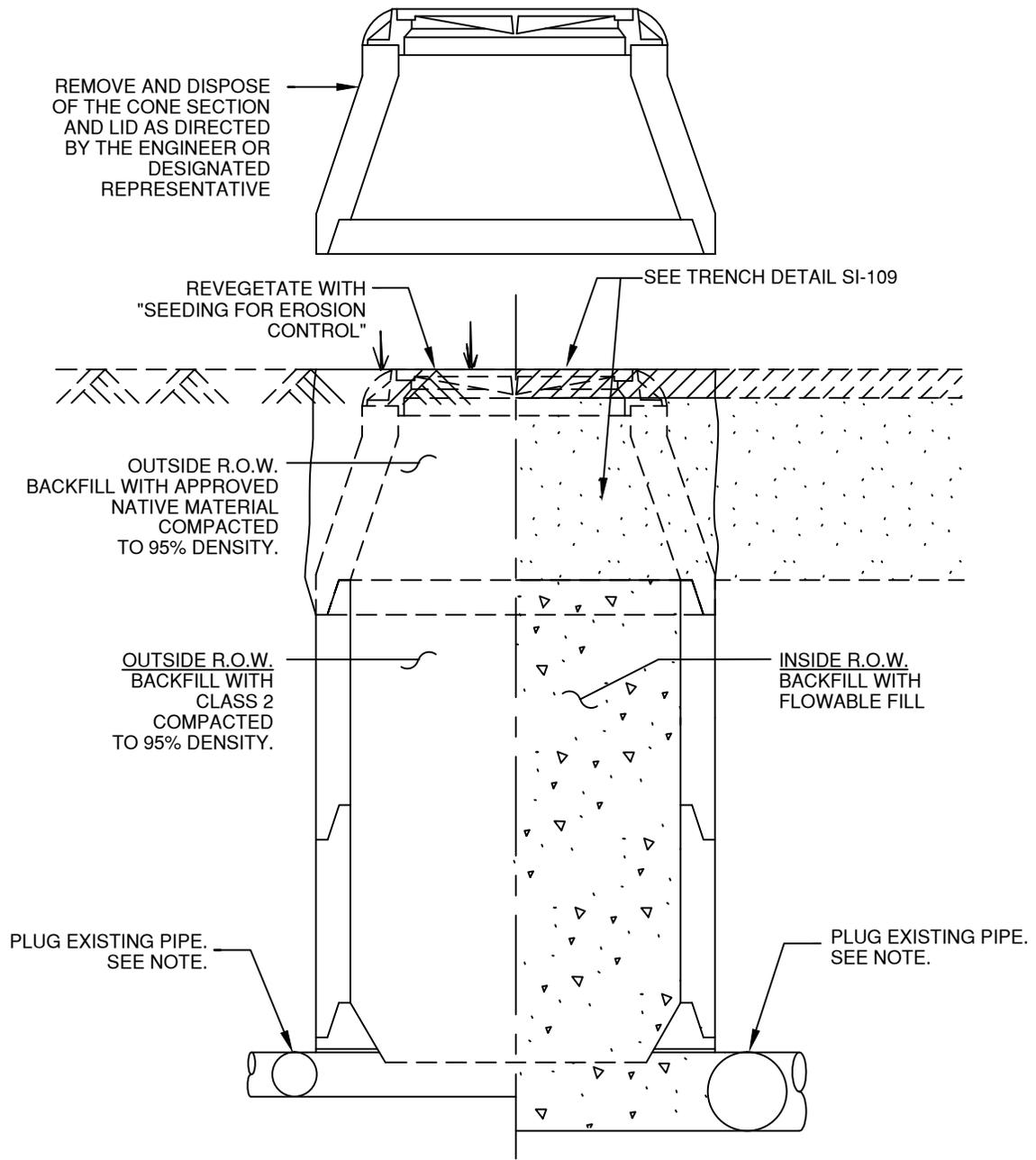
- NOTES:
1. SEE SS-206/SD-310 FOR JOINT SEALANT
  2. USE OF OTHER PIPES TO BE APPROVED BY ENGINEER



PRECAST 48" 2 WAY 180° MH BASE  
 FOR USE WITH 8" I.D. SDR 35 PIPE

APPROVED BY: L. ALVAREZ      DATE: NOVEMBER 2016

SS-217  
 N.T.S.  
 SHEET: 1 OF 1



NOTE:  
THE PLUG SHOULD BE COMPOSED OF A MATERIAL APPROVED BY THE ENGINEER

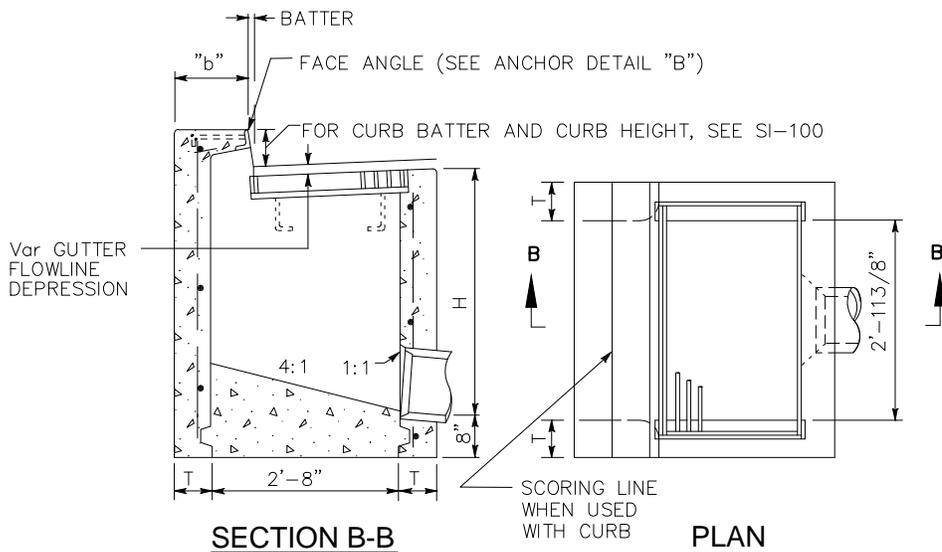


ABANDONMENT OF A MANHOLE

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

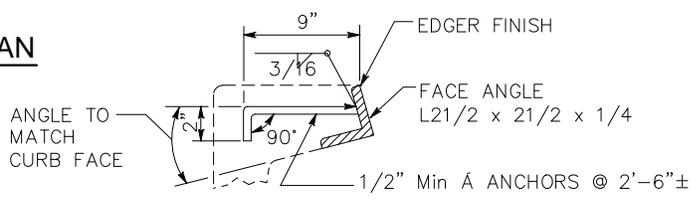
SS-219  
SD-313  
N.T.S.  
SHEET: 1 OF 1



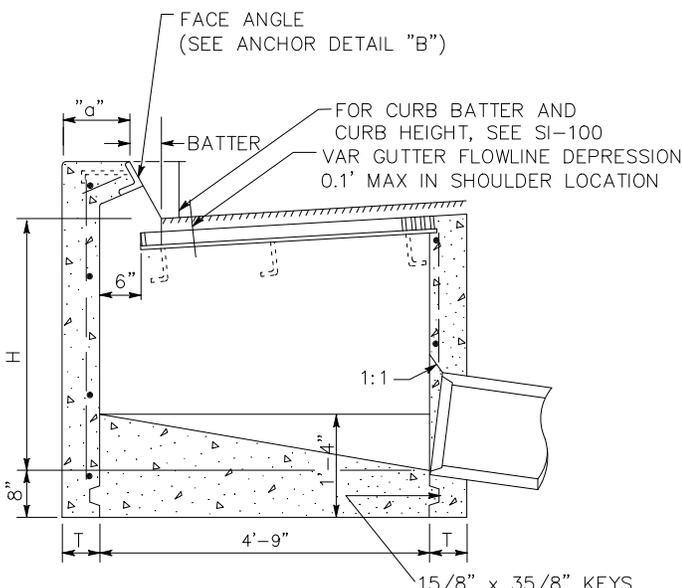
**SECTION B-B**

**PLAN**

**TYPE GO**



**FACE ANGLE ANCHOR DETAIL "B"**



**SECTION A-A**

**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. "H" IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTLET PIPE FLOW LINE AND THE NORMAL GUTTER GRADE LINE UNDEPRESSED.
3. FOR "T" WALL THICKNESS, SEE TABLE A BELOW.
4. WALL REINFORCING NOT REQUIRED WHEN "H" IS 8'-0" OR LESS AND THE UNSUPPORTED WIDTH OR LENGTH IS 7'-0" OR LESS. WALLS EXCEEDING THESE LIMITS SHALL BE REINFORCED WITH #4 @ 1'-6"± CENTERS PLACED 11/2" CLEAR TO INSIDE OF BOX UNLESS OTHERWISE SHOWN.
5. WHEN SHOWN ON THE PROJECT PLANS, PLACE A 3/4" PLAIN ROUND PROTECTION BAR HORIZONTALLY ACROSS THE LENGTH OF THE OPENING AND BEND BACK 4" INTO THE INLET WALL ON EACH SIDE.
6. PIPE(S) CAN BE PLACED IN ANY WALL.
7. CURB SECTION SHALL MATCH ADJACENT CURB.
8. BASIN FLOORS SHALL HAVE WOOD TROWEL FINISH AND SHALL SLOPE TOWARD THE OUTLET PIPE AS SHOWN.
9. SEE DETAIL SD-302 FOR 24-12X/24-10S GRATE AND FRAME DETAILS AND WEIGHTS OF MISCELLANEOUS IRON AND STEEL.
10. SEE DETAIL SD-303 FOR GUTTER DEPRESSION DETAILS.
11. COMPLETE JOINT PENETRATION BUTT WELDS MAY BE SUBSTITUTED FOR THE FILLET WELDS ON ALL ANCHORS.
12. STANDARD SQUARE, HEXAGON, ROUND OR EQUIVALENT HEADED ANCHORS MAY BE SUBSTITUTED FOR THE RIGHT ANGLE HOOKS ON THE ANCHORS SHOWN ON THIS PLAN.
13. CAST-IN-PLACE INLETS TO BE FORMED AROUND ALL PIPES/STUBS INTERSECTING THE INLET AND CONCRETE POURED IN ONE CONTINUOUS OPERATION.

**TABLE A**

CONCRETE QUANTITIES				
TYPE	H=3'-0" TO 8'-0" (T=6")		H=8'-1" TO 20'-0" (T=8")	
	H=3'-0" (CY)	ADDITIONAL PCC PER FOOT (CY)	H=8'-1" (CY)	ADDITIONAL PCC PER FOOT (CY)
GO	1.24	0.245	3.39	0.346

**TABLE B**

CURB TYPE	NORMAL CURB HEIGHT	CURB BATTER	"A" DIMENSION	"B" DIMENSION
A1-6	6"	11/2"	T+71/2"	T+61/2"

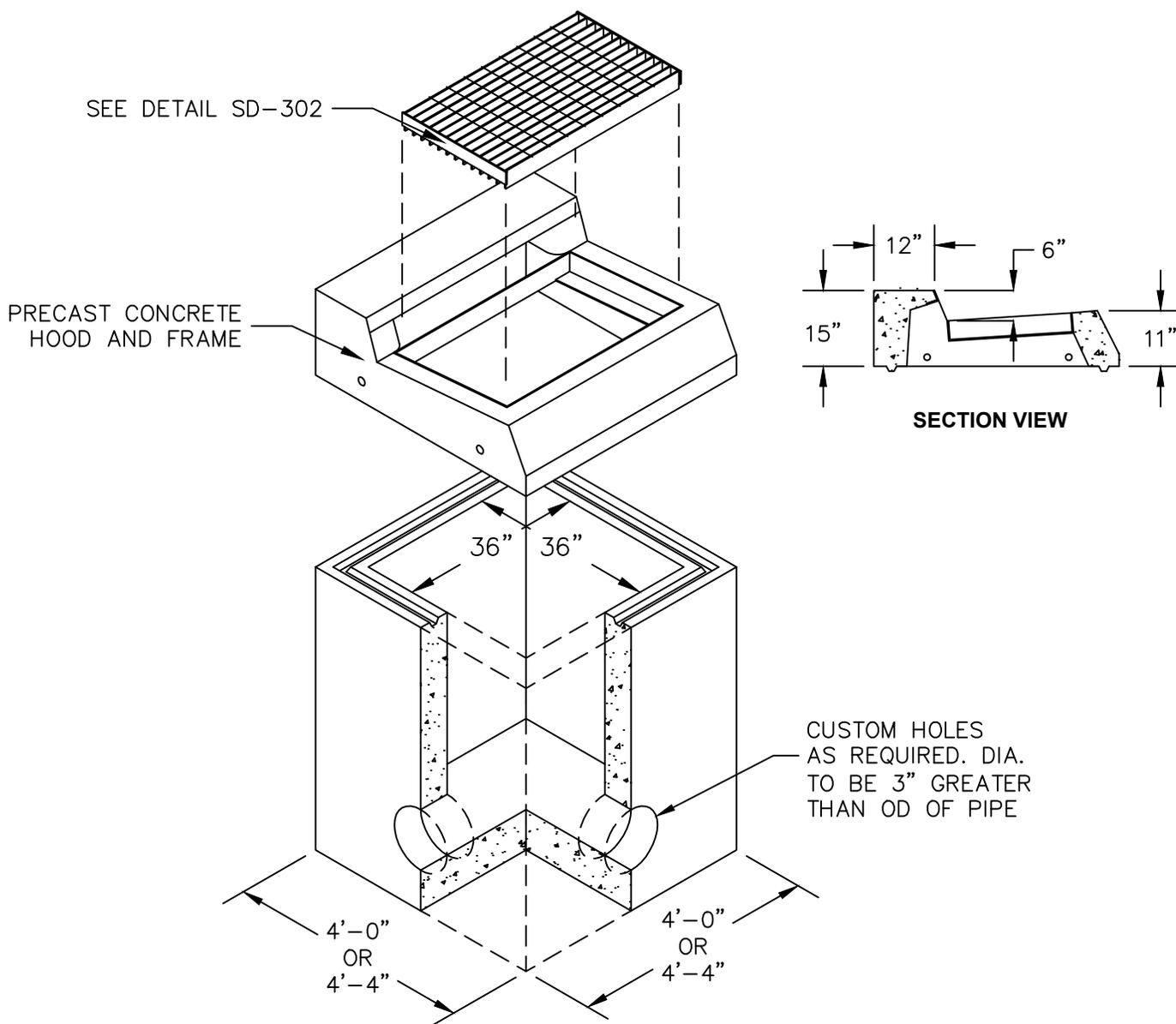


**TYPE GO CURB INLET**

APPROVED BY: L. ALVAREZ

DATE: OCTOBER 2016

SD-300  
N.T.S.  
SHEET: 1 OF 2



NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. FOR BOX HEIGHT 8'-3" OR LESS WALL THICKNESS IS 6"
3. FOR HEIGHTS GREATER THAN 8'-3" WALL THICKNESS IS 8"
4. 8" BASE THICKNESS
5. DESIGN LOAD: H-20 TRAFFIC



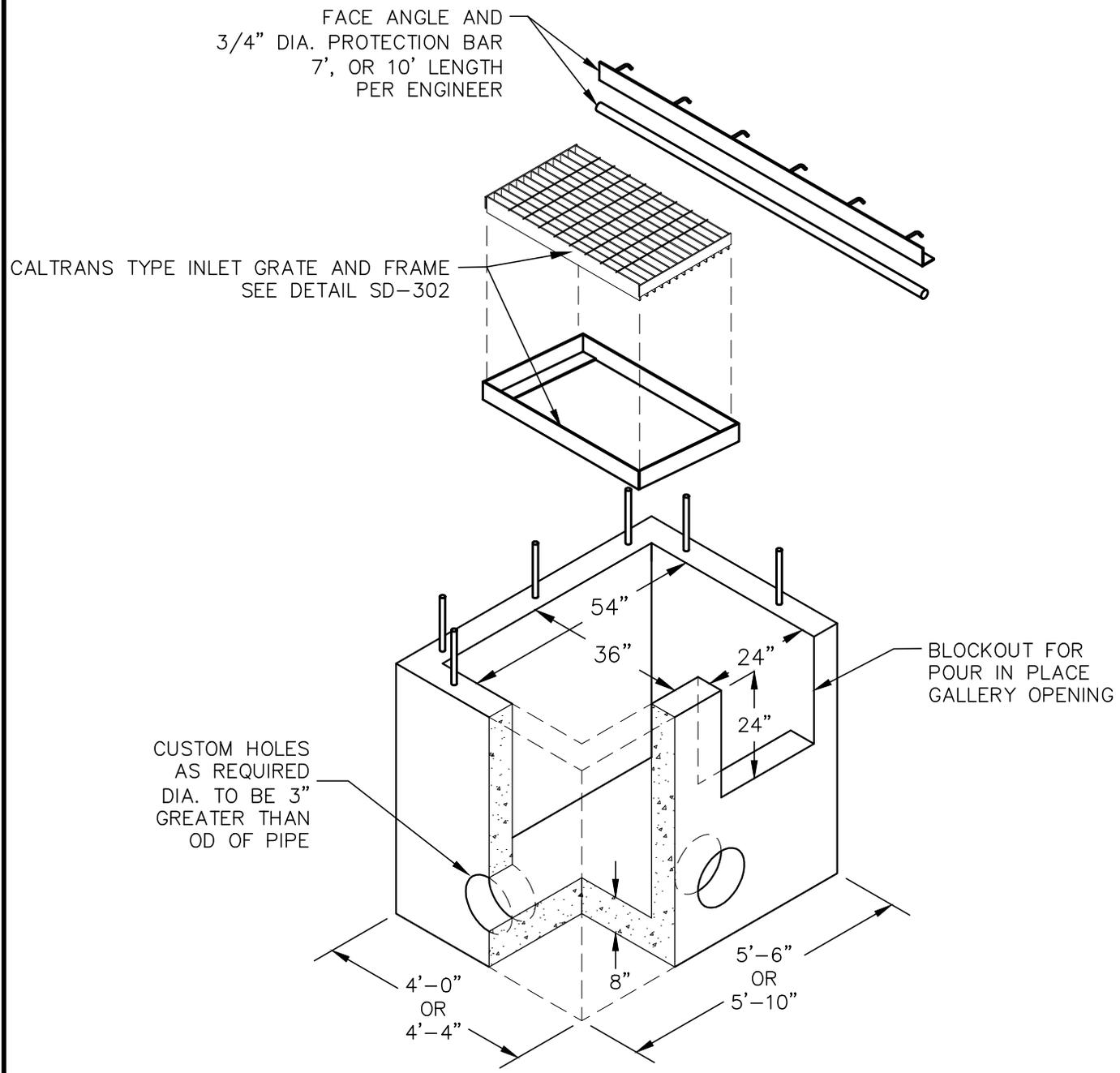
TYPE GO CURB INLET  
FOR 6" CURB

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SD-300  
N.T.S.

SHEET: 2 OF 2



NOTES:

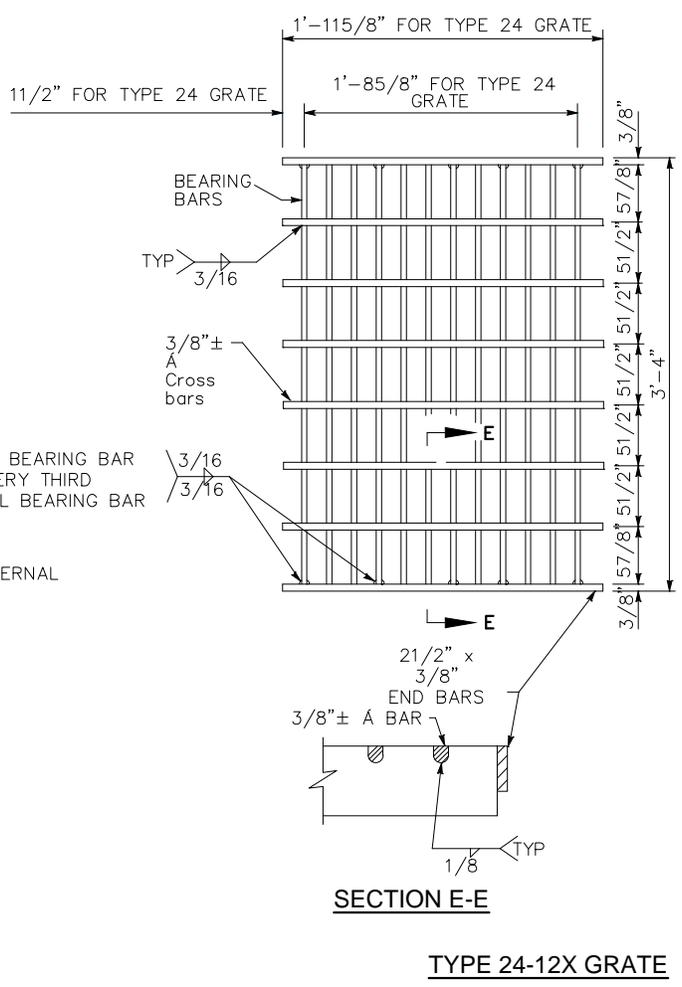
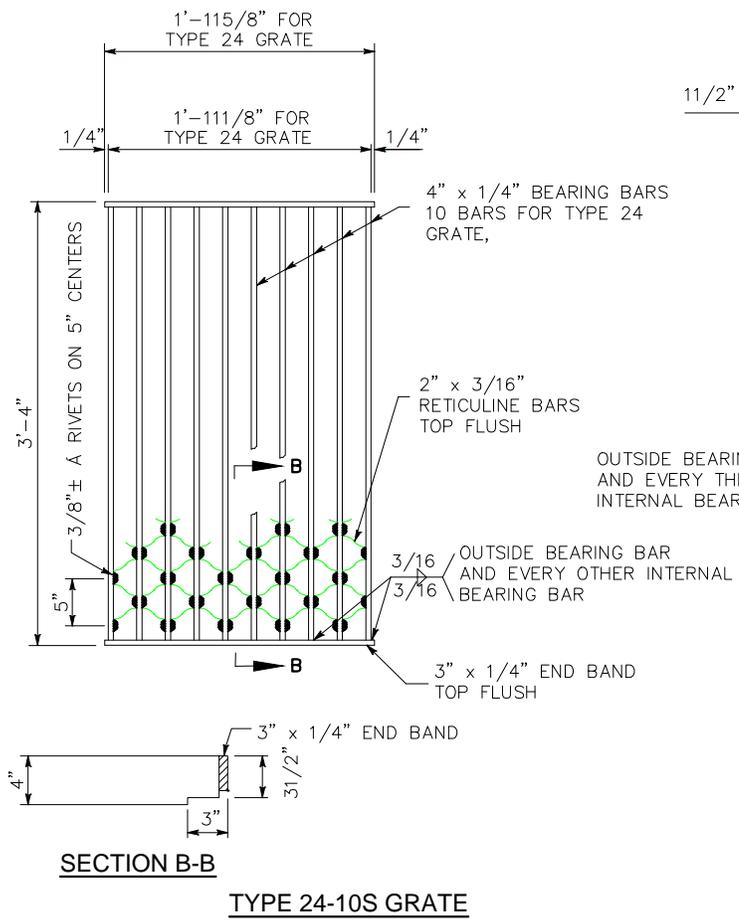
1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. FOR BOX HEIGHT 8'-3" OR LESS WALL THICKNESS IS 6"
3. FOR HEIGHTS GREATER THAN 8'-3" WALL THICKNESS IS 8"
4. 8" BASE THICKNESS
5. DESIGN LOAD: H-20 TRAFFIC



FIELD POURED  
TYPE GOL CURB INLET

APPROVED BY: L. ALVAREZ      DATE: NOVEMBER 2016

SD-301  
N.T.S.  
SHEET: 1 OF 1



**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. WHEN ALTERNATIVE GRATES ARE ALLOWED – FINAL PAY BASED ON ALTERNATIVE WITH THE LESSER WEIGHT.
3. USE FRAME SHOWN ON STANDARD DETAILS SD-300/301 AS APPROPRIATE.
4. WHEN TYPE 24-10S OR 24-12X GRATES ARE USED WITH GDO INLETS, A 1/4" X 31/2" X 3'-47/8" STEEL BAR SHALL BE WELDED ACROSS THE CENTER OF INLET FRAME TO SEPARATE THE INDIVIDUAL GRATES.
5. BEARING BARS TO BE 31/2" X 3/8" BARS ON 17/8" CENTERS.
6. 12 BARS FOR TYPE 24 GRATE
7. WEIGHT OF TYPE 24 GRATE = 192 LBS.
8. 3/8" ± A CROSS BARS MAY BE FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS.
9. WEIGHT OF TYPE 24 GRATE = 182 LBS.



**GRATE DETAILS**

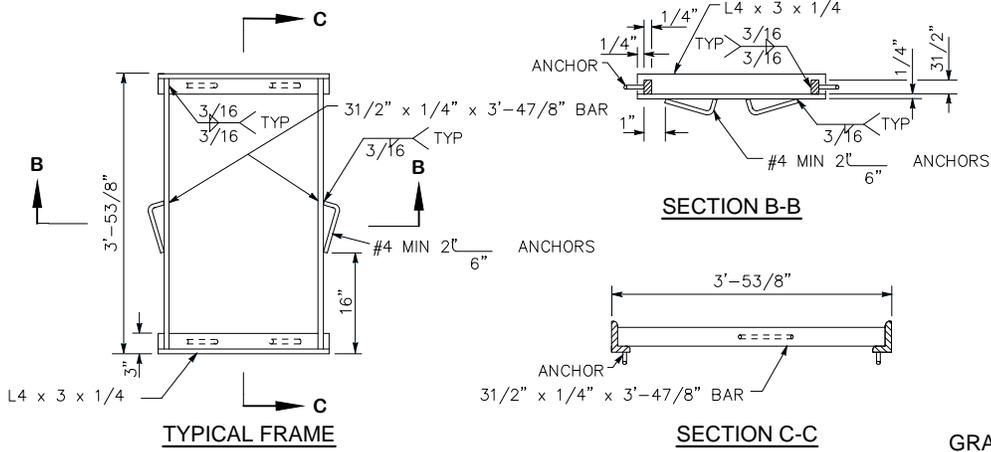
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SD-302

N.T.S.

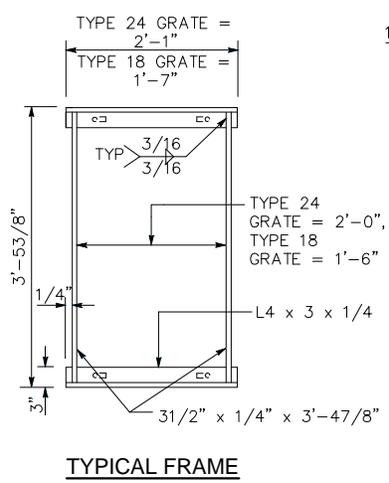
SHEET: 1 OF 2



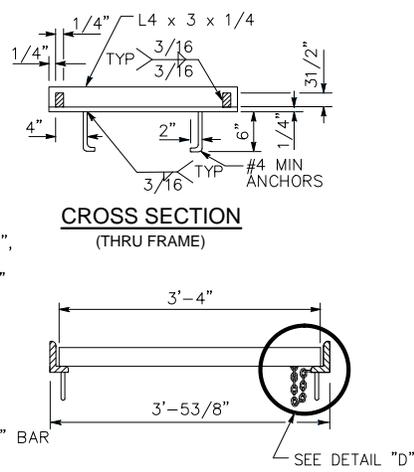
**ALTERNATIVE ANCHOR FOR RECTANGULAR FRAME**  
(FOR DETAILS NOT SHOWN, SEE RECTANGULAR FRAME DETAILS)

**GRATE BAR SPACING TABLE**

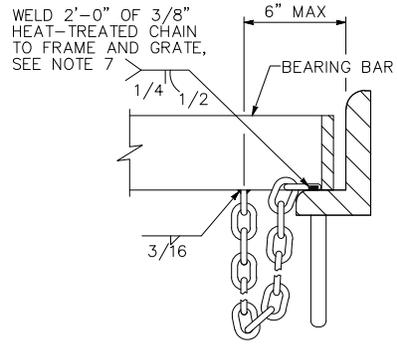
TYPE	No. OF BARS	CLEAR BAR SPACING	X
24-12	12	13/8"	11/4"



**RECTANGULAR FRAME DETAILS**  
(FOR ALL RECTANGULAR GRATES)



**CROSS SECTION (THRU FRAME)**  
**LONGITUDINAL SECTION (THRU FRAME AND GRATE)**



**DETAIL "D"**  
(STEEL GRATES ONLY)

**NOTES:**

1. GRATE TYPE NUMBERS REFER TO APPROXIMATE WIDTH OF GRATE IN INCHES AND NUMBERS OF BARS, RESPECTIVELY.
2. ROUNDED TOP OF BARS OPTIONAL ON ALL GRATES.
3. PIPE INLETS WITH A GRATE SHALL BE PLACED SO THAT BARS PARALLEL DIRECTION OF PRINCIPLE SURFACE FLOW.
4. COMPLETE JOINT PENETRATION BUTT WELDS MAY BE SUBSTITUTED FOR THE FILLET WELDS ON ALL ANCHORS.
5. STANDARD SQUARE, HEXAGON, ROUND OR EQUIVALENT HEADED ANCHORS MAY BE SUBSTITUTED FOR THE RIGHT ANGLE HOOKS ON THE ANCHORS SHOWN ON THIS PLAN.
6. GRATE AND FRAME WEIGHTS ARE BASED ON WELDS GRATES (WEIGHTS OF FACE ANGLES, STEPS, PROTECTION BARS, ETC. ARE NOT INCLUDED).
7. CONNECT CHANGE TO GRATE AND FRAME ONLY AT LOCATIONS SHOWN ON THE PLANS. WHEN CHAIN IS REQUIRED DO NOT USE CAST DUCTILE IRON GRATES.



**GRATE DETAILS**

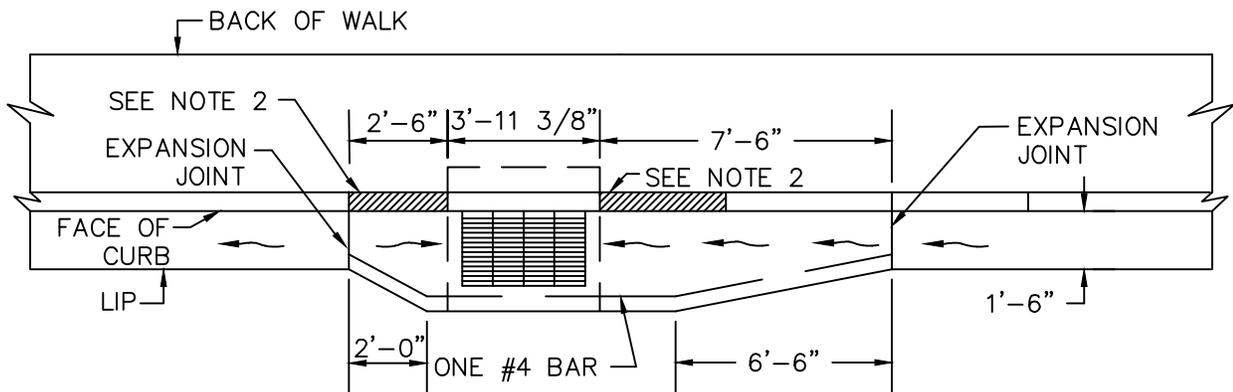
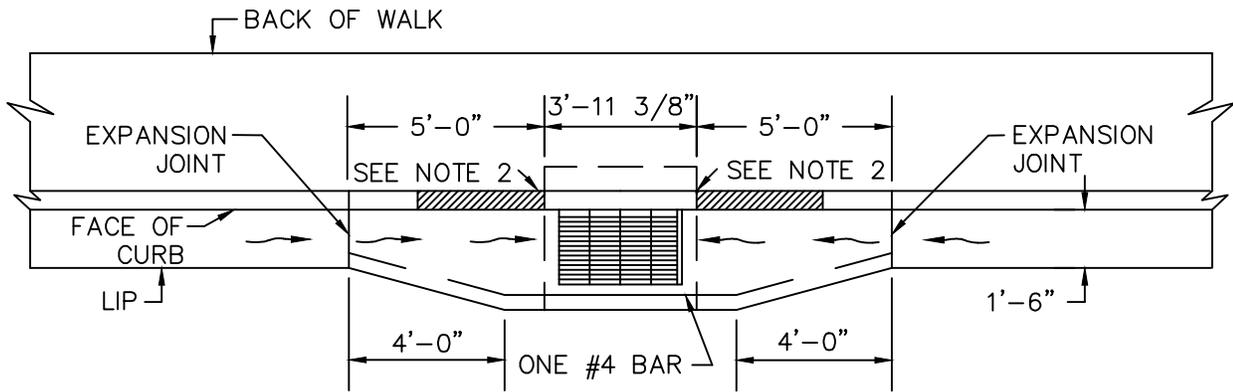
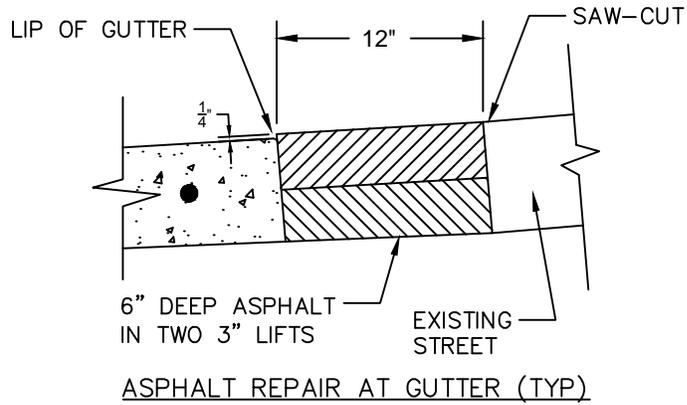
APPROVED BY: L. ALVAREZ

DATE: SEPT 2016

SD-302

N.T.S.

SHEET: 2 OF 2



**NOTES:**

1. PRECAST CONCRETE STRUCTURES ARE ACCEPTABLE. US CONCRETE OR APPROVED EQUAL.
2. TRANSITION FROM CURB & GUTTER TO ROLLED CURB WITHIN A MINIMUM OF 30"

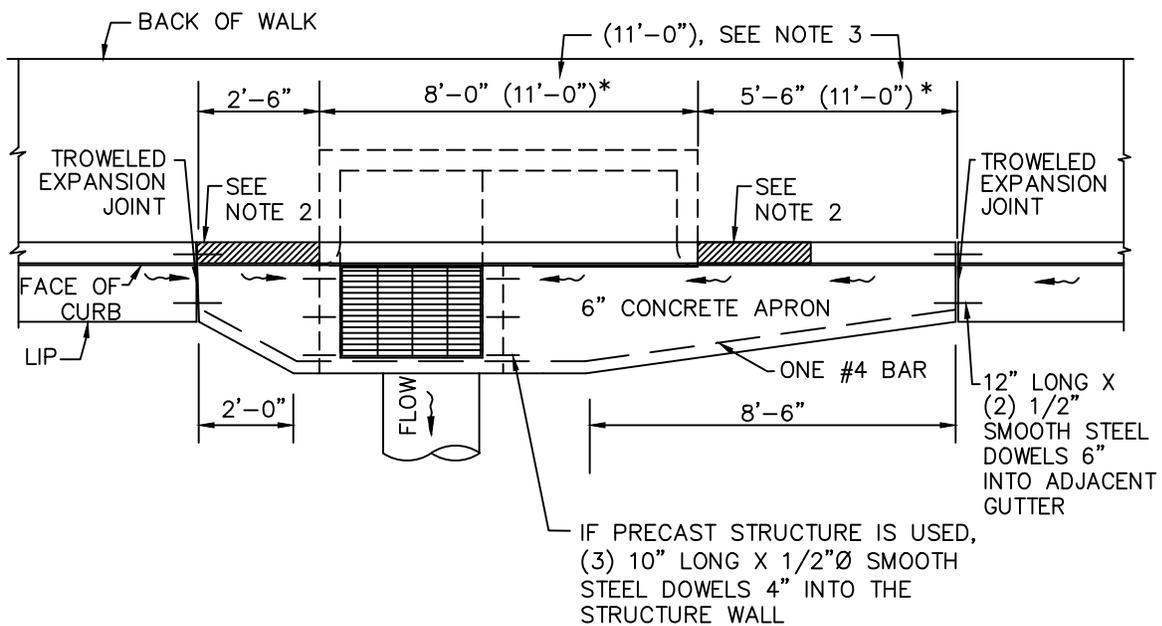
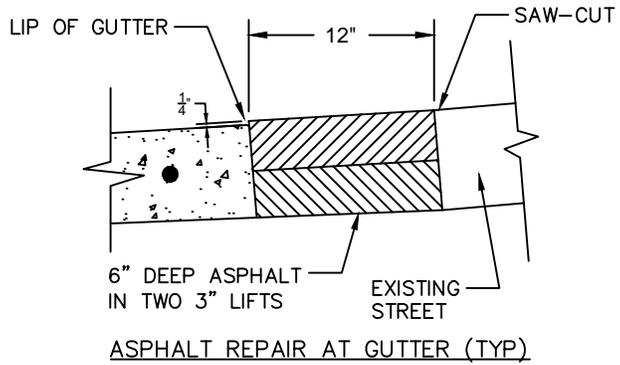


TYPE GO INLET APRON

APPROVED BY: L. ALVAREZ

DATE: OCTOBER 2016

SD-303  
N.T.S.  
SHEET: 1 OF 1



**NOTES:**

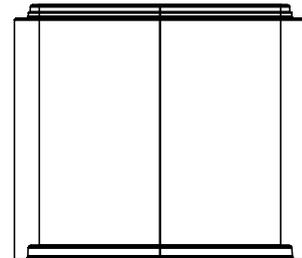
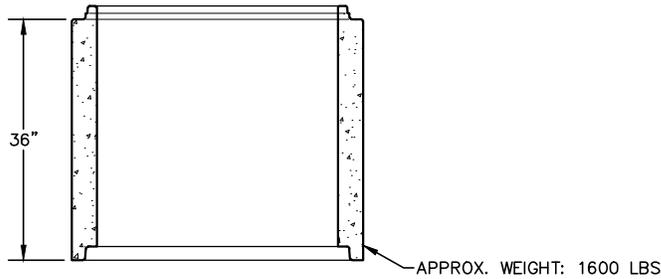
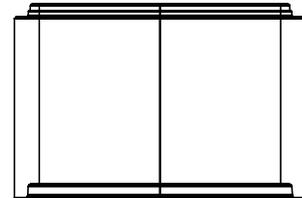
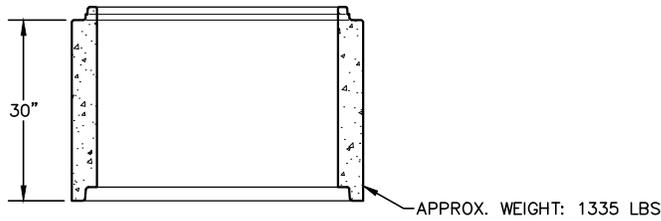
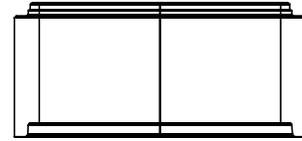
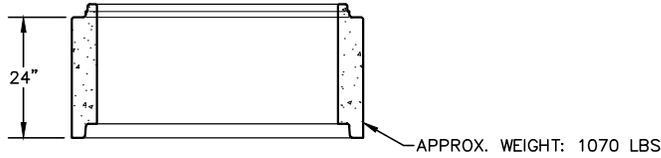
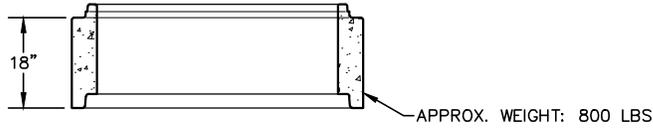
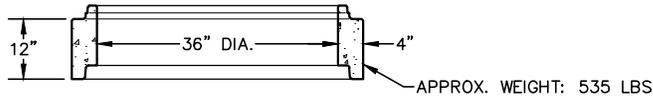
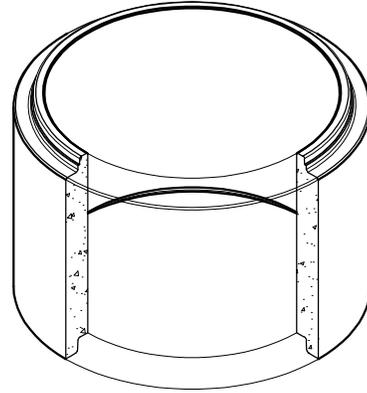
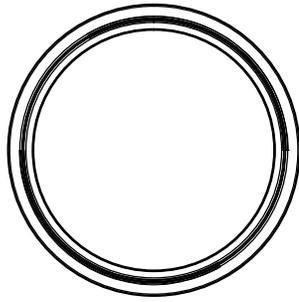
1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. TRANSITION FROM CURB & GUTTER TO ROLLED CURB. SEE DETAIL SI-104
3. ADDITIONAL WIDTH SHALL BE PER THE DIRECTION OF THE CITY ENGINEER.



TYPE GOL INLET APRON

APPROVED BY: L. ALVAREZ      DATE: SEPT 2016

SD-304  
N.T.S.  
SHEET: 1 OF 1



NOTES:

1. MANHOLE COMPONENTS TO CONFORM TO CURRENT SPECIFICATIONS, ASTM C-478 AND AASHTO M199
2. SEE SS-206/SD-310 FOR JOINT SEALANT

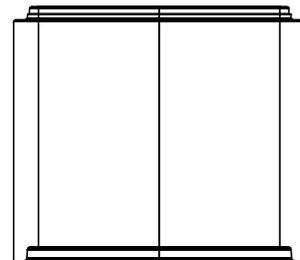
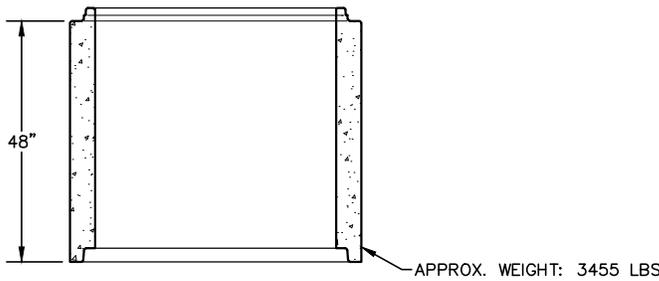
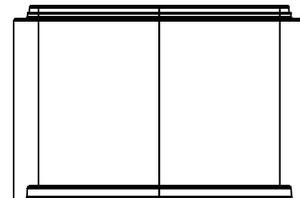
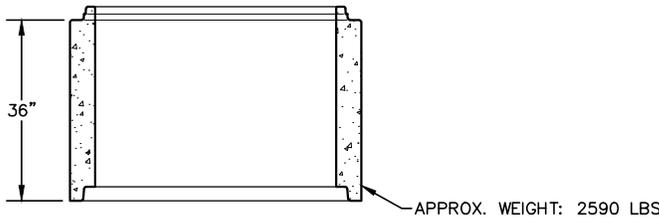
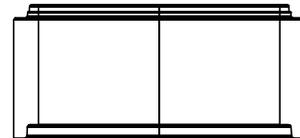
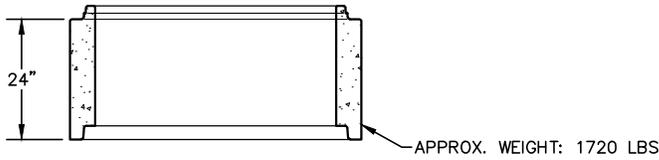
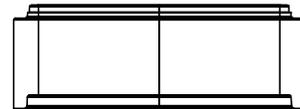
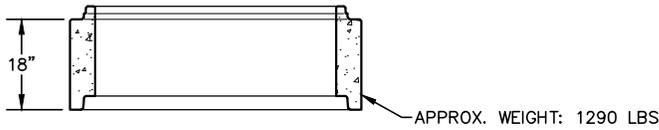
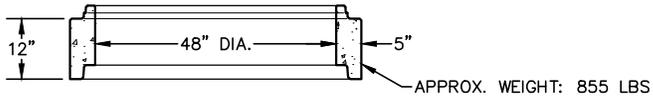
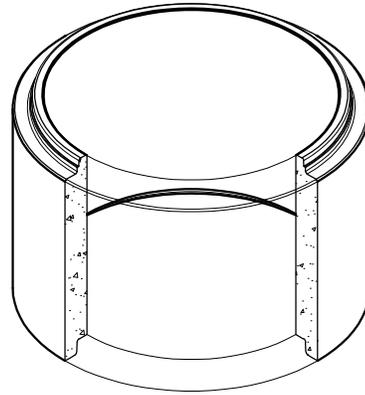
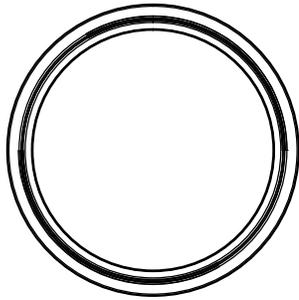


36" MANHOLE RISER RINGS

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SD-305  
SS-213  
N.T.S.  
SHEET: 1 OF 2



NOTES:

1. MANHOLE COMPONENTS TO CONFORM TO CURRENT SPECIFICATIONS, ASTM C-478 AND AASHTO M199
2. SEE SS-206/SD-310 FOR JOINT SEALANT

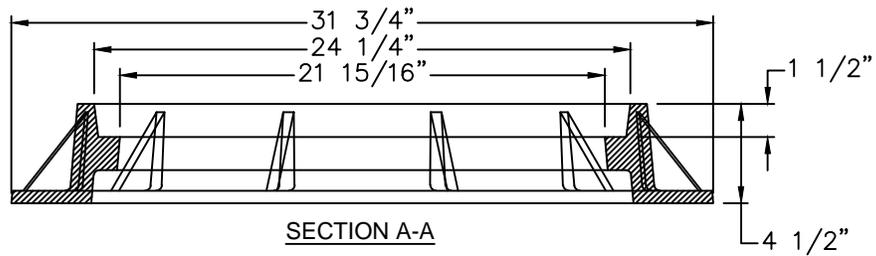
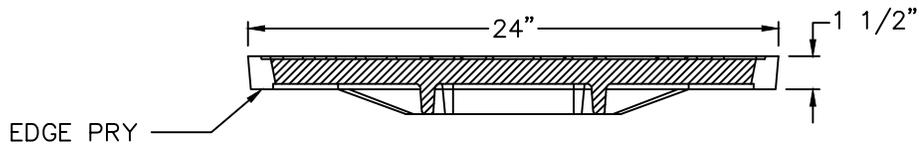
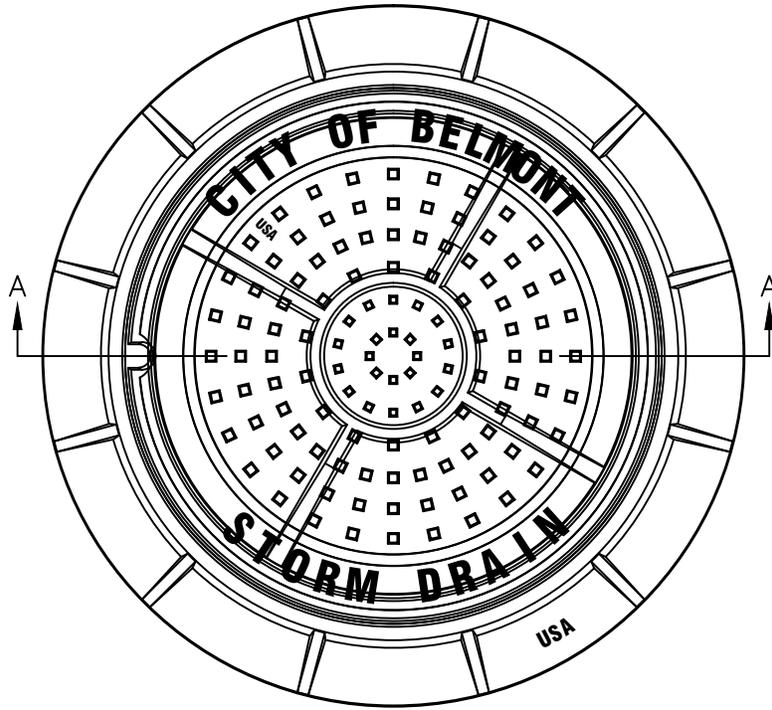


48" MANHOLE RISER RINGS

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SD-305  
SS-213  
N.T.S.  
SHEET: 2 OF 2



24" STORM DRAIN  
MANHOLE COVER

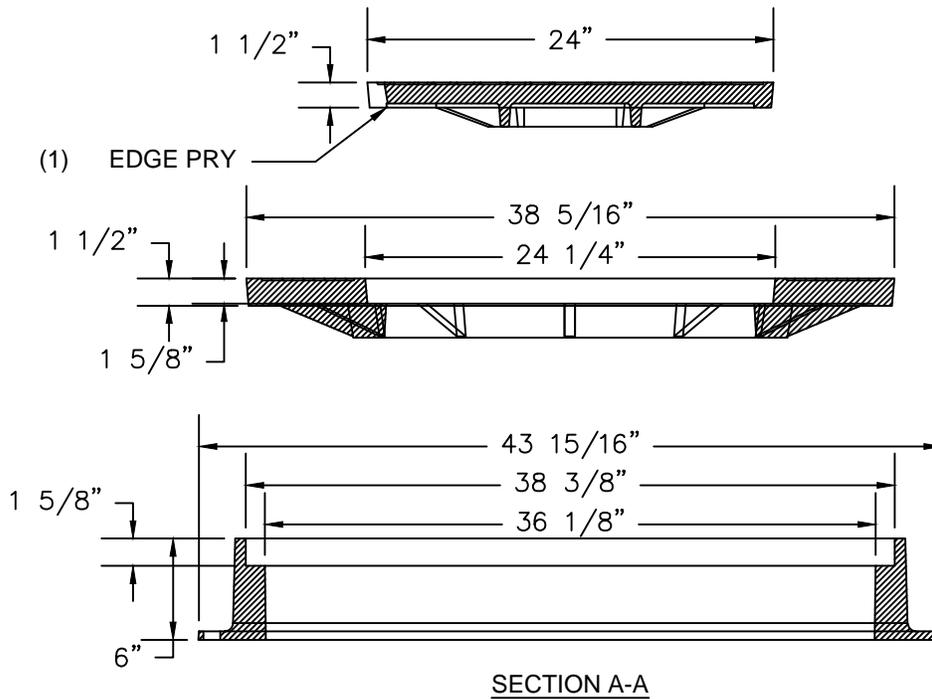
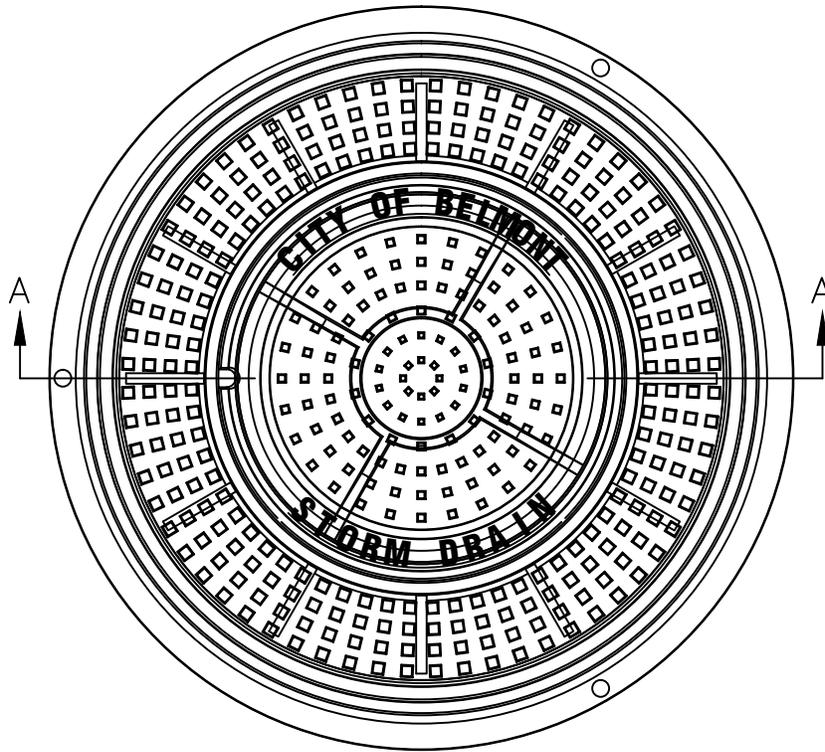
APPROVED BY: L. ALVAREZ

DATE: SEPT 2016

SD-306

N.T.S.

SHEET: 1 OF 1



36" STORM DRAIN  
MANHOLE COVER

APPROVED BY: L. ALVAREZ

DATE: SEPT. 2016

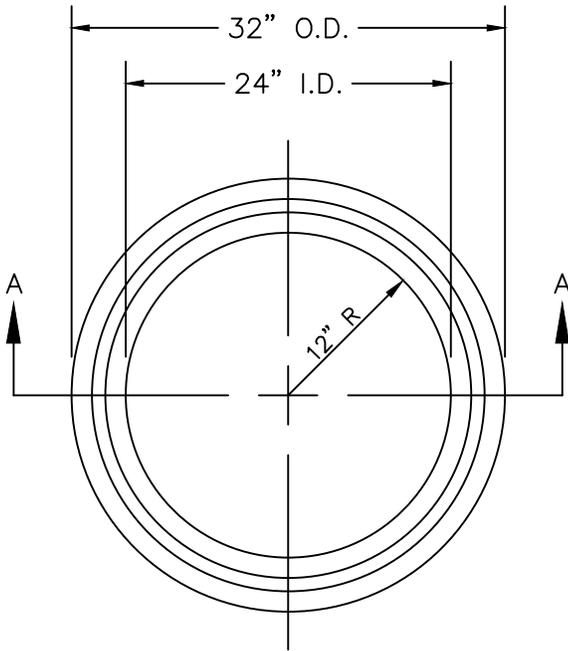
SD-307

N.T.S.

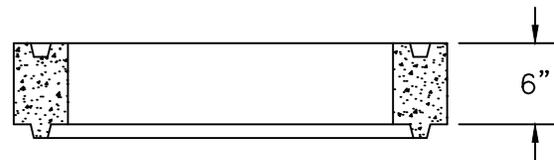
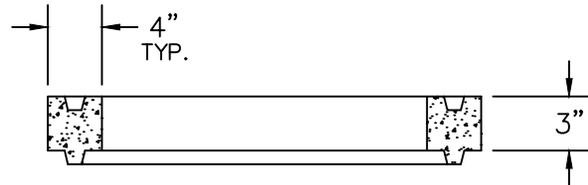
SHEET: 1 OF 1

GRADE RINGS/RISERS

MODEL 2432  
24" I.D., 4" WALL



TOP VIEW



SECTION A-A

DESCRIPTION	APPROX. WEIGHT
2432 GR-03 GRADE RING	92 LBS.
2432 GR-06 GRADE RING	183 LBS.
2432 GR-12 GRADE RING	366 LBS.

NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. CONFORMS TO CURRENT SPECIFICATIONS: ASTM C-478 AND AASHTO M-199.



GRADE RINGS/RISERS

APPROVED BY: L. ALVAREZ

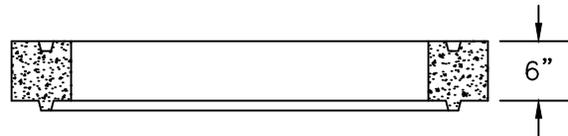
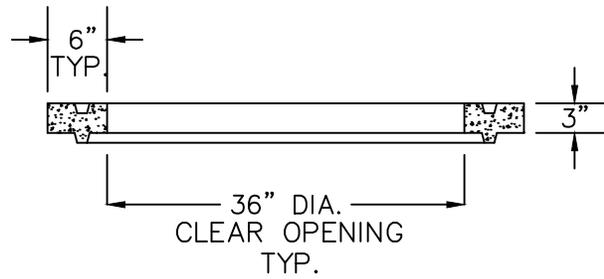
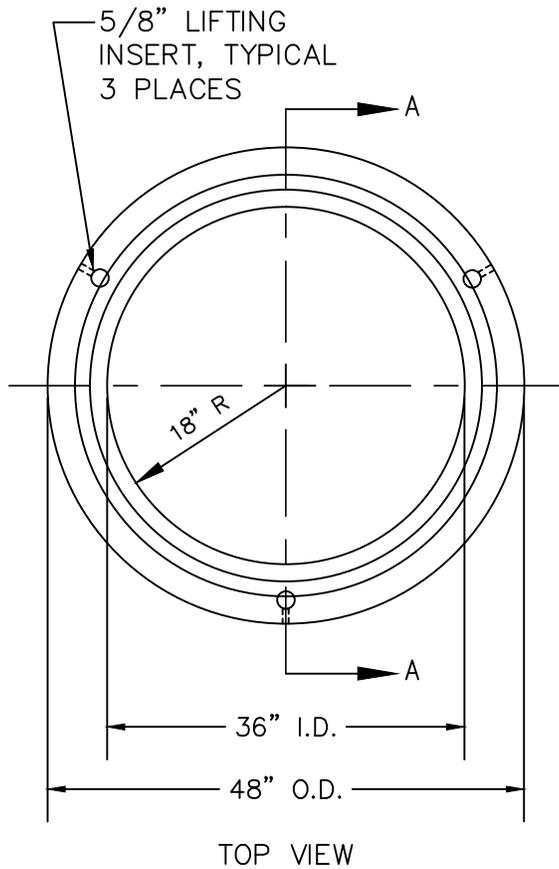
DATE: NOVEMBER 2016

SD-307

N.T.S.

SHEET: 1 OF 2

GRADE RINGS/RISERS  
 MODEL 3648 36" I.D.  
 6" WALL



SECTION A-A

DESCRIPTION	APPROX. WEIGHT
3648 GR-03 GRADE RING	170 LBS.
*3648 GR-06 GRADE RING	415 LBS.
*3648 GR-12 GRADE RING	830 LBS.

NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. CONFORMS TO CURRENT SPECIFICATIONS: ASTM C-478 AND AASHTO NO. M-199-811.
3. MANUFACTURED WITH 3 - 5/8" LIFTING INSERTS.



GRADE RINGS/RISERS

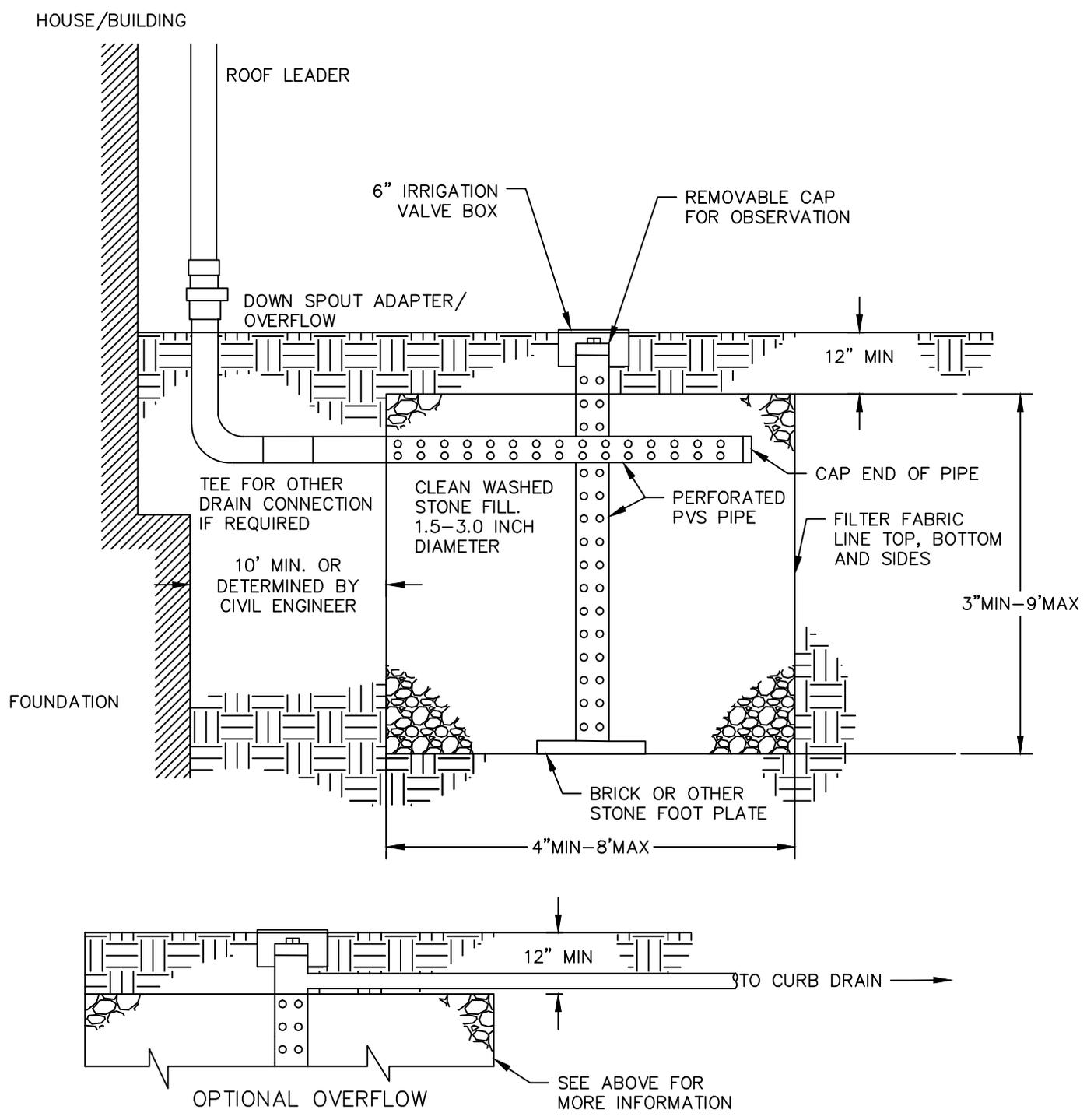
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

SD-307

N.T.S.

SHEET: 2 OF 2



**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, PERMITS MAY BE REQUIRED. CHECK WITH ENG. & BUILDING
2. DRY WELLS SHALL NOT BE USED OR INSTALLED WHEN IT WOULD CREATE A SIGNIFICANT RISK FOR BASEMENT SEEPAGE OR SLOPE STABILITY.
3. MANUFACTURED DRY WELL KITS MAY BE USED.
4. CHECK WITH ENGINEERING IF SOILS ANALYSIS IS REQUIRED.



DRY WELL

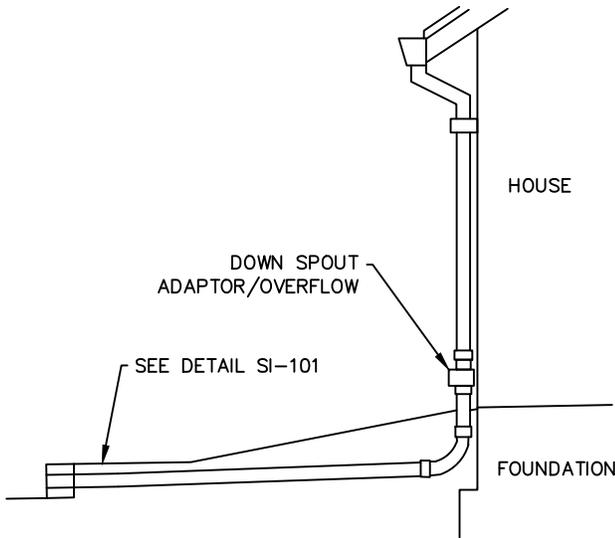
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

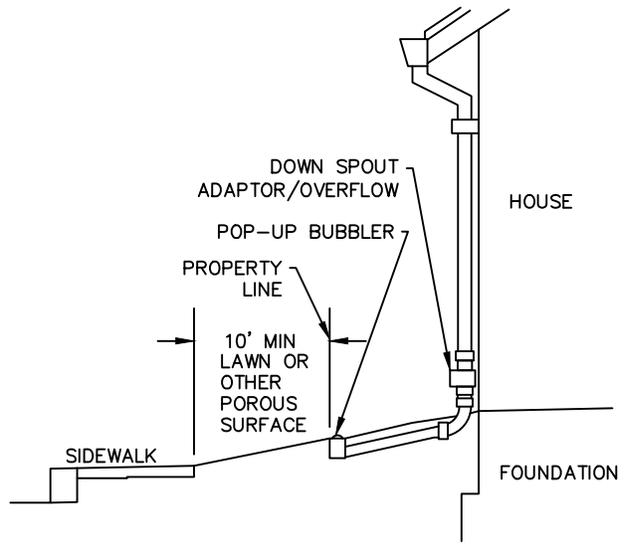
SD-308

N.T.S.

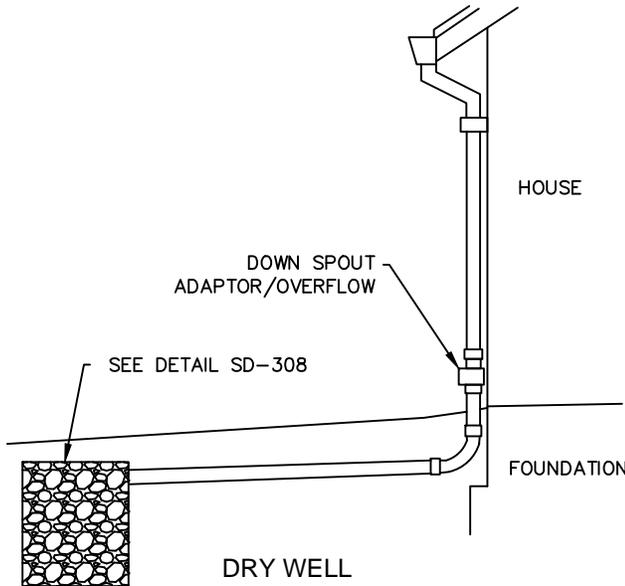
SHEET: 1 OF 2



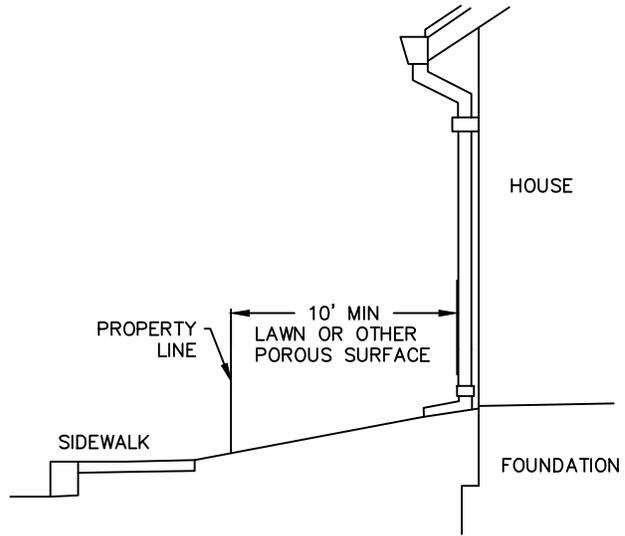
UNDERSIDEWALK CURB DRAIN



IN LAWN POP-UP BUBBLER



DRY WELL



DRAIN TO LANDSCAPE

**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, PERMITS MAY BE REQUIRED. CHECK WITH ENG. & BUILDING
2. ALL ROOFS, PAVED AREAS, YARDS, COURTS, AND SUBSOIL DRAINS SHALL BE DRAINED TO PLACE OF DISPOSAL SATISFACTORY TO THE DIRECTOR OF PUBLIC WORKS.
3. IN THE CASE OF ONE AND TWO-FAMILY DWELLINGS, STORM WATER MAY BE DISCHARGED USING ONE OF THE ABOVE EXAMPLES.
4. ALL STORM WATER SHALL FLOW AWAY FROM THE BUILDING AND AWAY FROM ADJOINING PROPERTY, AND SHALL NOT CREATE A NUISANCE. UNDER NO CIRCUMSTANCES SHALL STORM WATER BE DRAINED INTO SEWERS INTENDED FOR SANITARY DRAINAGE ONLY.



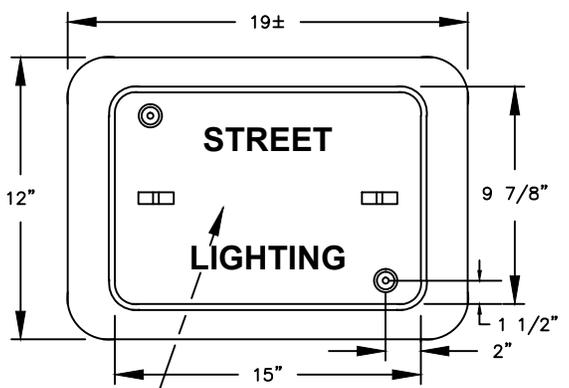
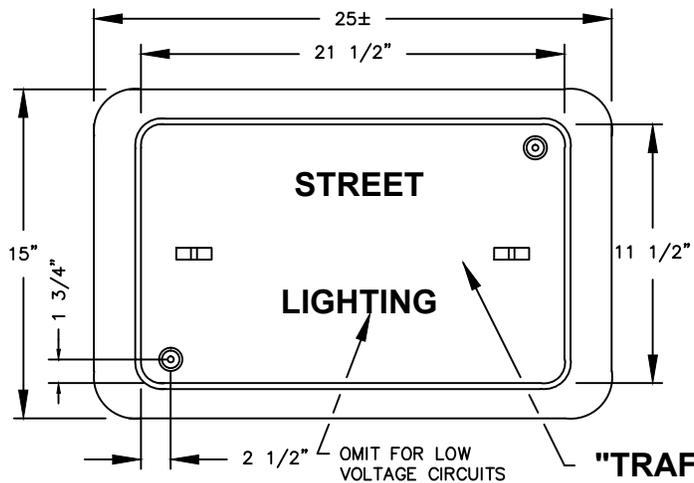
DOWNSPOUT DRAINAGE

APPROVED BY: L. ALVAREZ

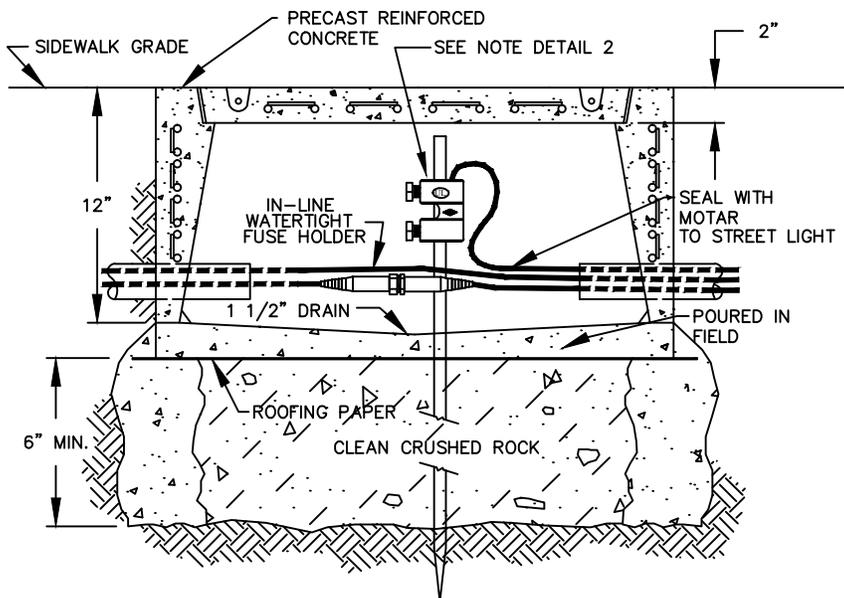
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SD-308  
N.T.S.

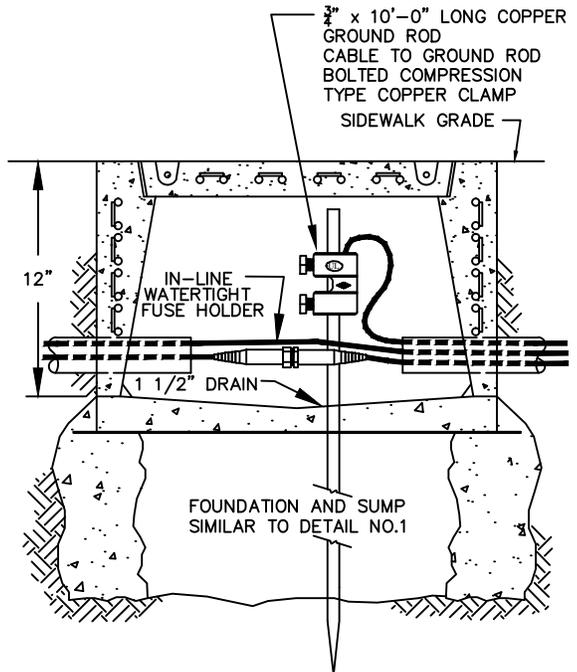
SHEET: 2 OF 2



INSCRIBE  
**"TRAFFIC SIGNAL"**  
 WHEN CONTAINING SIGNAL CABLE



**DETAIL NO.1**  
**NO. 5 PULL BOX**



**DETAIL NO.2**  
**NO. 3 1/2**  
**PULL BOX**

**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.



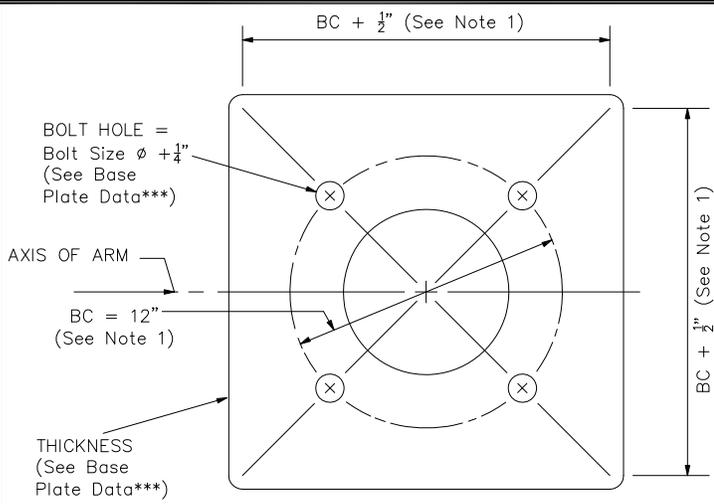
STANDARD PULL BOX  
 INSTALLATION

APPROVED BY: L. ALVAREZ

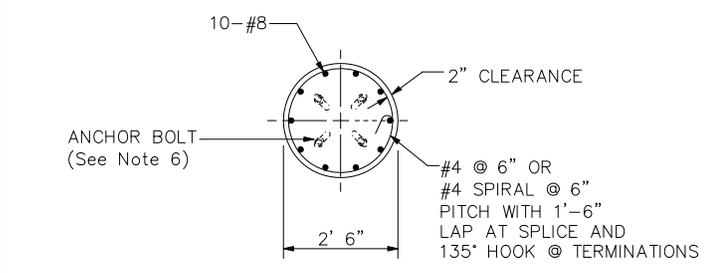
DATE: NOVEMBER 2016

SL-400  
 N.T.S.

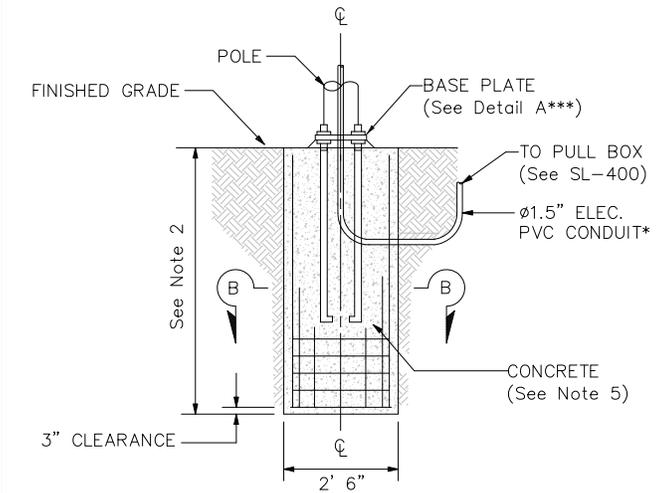
SHEET: 1 OF 1



DETAIL A\*\*\*



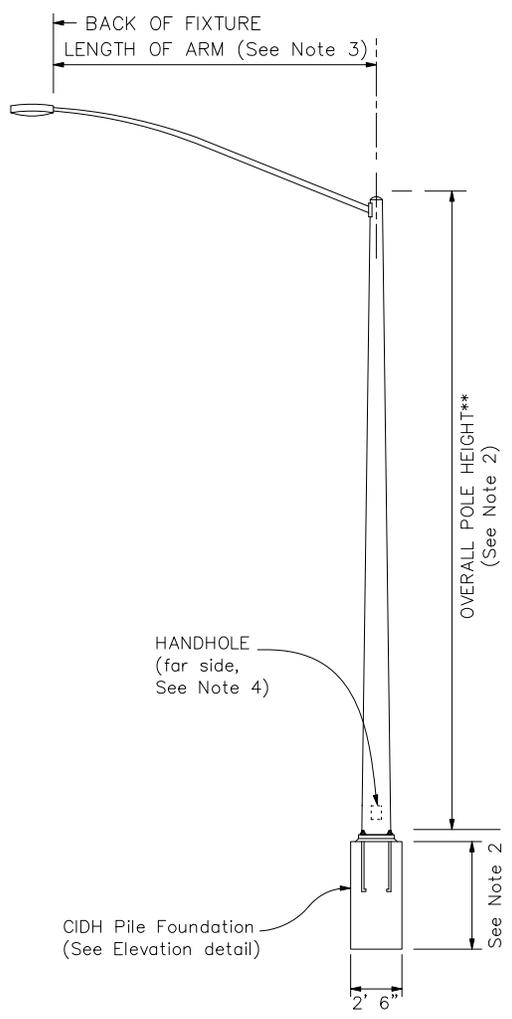
SECTION B-B



ELEVATION

CAST-IN-DRILLED-HOLE  
PILE FOUNDATION,  
REINFORCED PILE

\* Or Approved Equal or Approved Substitute  
 \*\* Overall Pole Height excludes the height of the arm  
 \*\*\* Detail A and Base Plate Data only applies to poles that are NOT specified as Dorchester or Aluminium. Dorchester and Aluminium poles are to use City approved base plate details from supplier.



STREET LIGHT POLE

NOTES:

- BC = Bolt Circle to suit (match intended pole).
- Depth of foundation is dependent on height of pole. Refer to Pole Data Table.
- Length of arm is dependent on the height and type of the pole. Pole supplier shall submit details for the arms for City approval. See Note 7 for references.
- Handhole shall be located on the downstream side of traffic.
- Materials (Reinforced concrete):  
 $f'_c = 4,000$  psi (6 sack concrete),  $f_y = 60,000$  psi  
 See Note 7 for references.
- Anchor bolts to be used on base plate should be 90° F1554 Grade 36 Anchor bolts\* set at 3" above grade for leveling the pole. Refer to Base Plate Data\*\*\*.
- Referenced from Caltrans 2010 Revised Standard Plan Sheets RSP ES-6A, RSP ES-7M, RSP ES-7N

POLE DATA TABLE				BASE PLATE DATA***	
Overall Pole Height**	Depth of Foundation	Pole Type	Wall Thickness	Thickness	Bolt Size
14'-0"	5'-0"	Dorchester*	0.1880"	1"	3/4" ø x 36" *
22'-6"	5'-0"	Aluminum*	0.1560"		
25'-0"	5'-0"	Dorchester*	0.2500"		
27'-6"	5'-6"	Aluminum*	0.1560"	1 1/2"	1" ø x 36" *
30'-0"	6'-0"	Type 15*	0.1196"		
35'-0"	7'-0"	Type 21*	0.1793"		



STREET LIGHT FOUNDATION

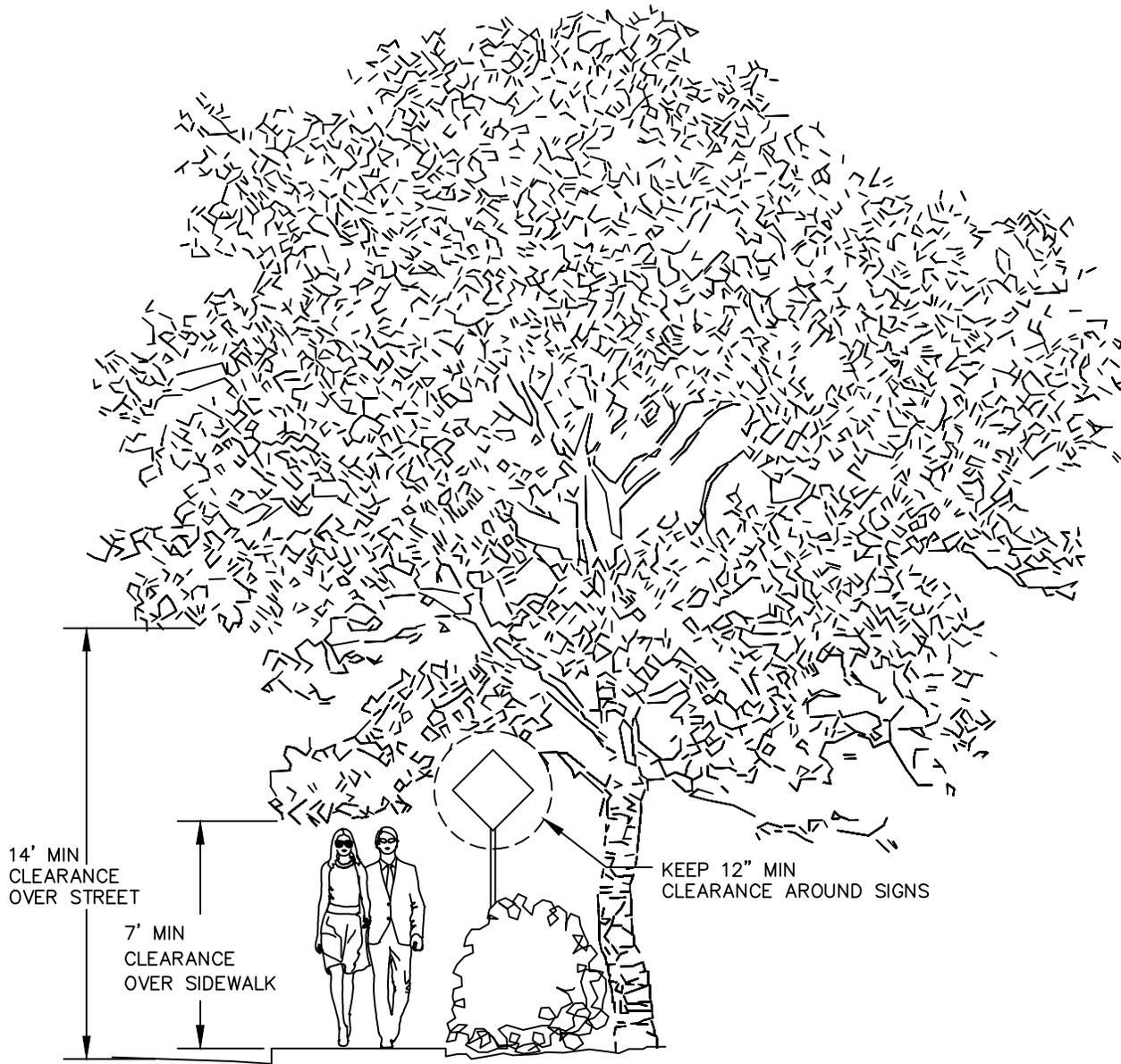
APPROVED BY: L. ALVAREZ

DATE: OCTOBER 2017

SL-401

N.T.S.

SHEET: 1 OF 1



NOTES:

1. KEEP ALL TREES AND SHRUBS CLEAR OF SIGNS, SIDEWALKS AND OUT OF TRAVEL WAY



CITY OF BELMONT

LANDSCAPE CLEARANCES  
WITH SIDEWALK

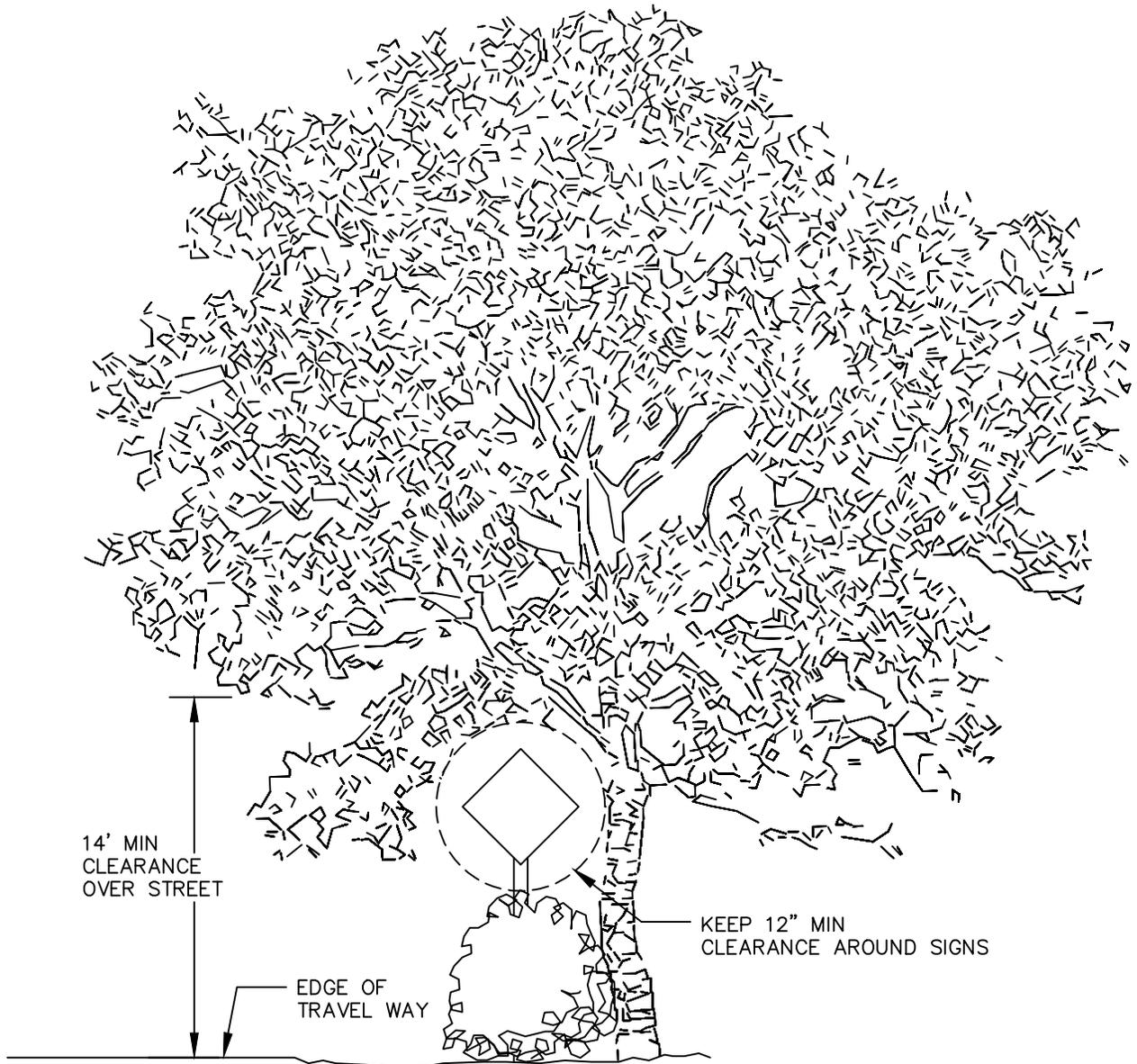
APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

ST-500

N.T.S.

SHEET: 2 OF 2



NOTES:

1. KEEP ALL TREES AND SHRUBS CLEAR OF SIGNS AND OUT OF TRAVEL WAY



LANDSCAPE CLEARANCES  
WITHOUT SIDEWALK

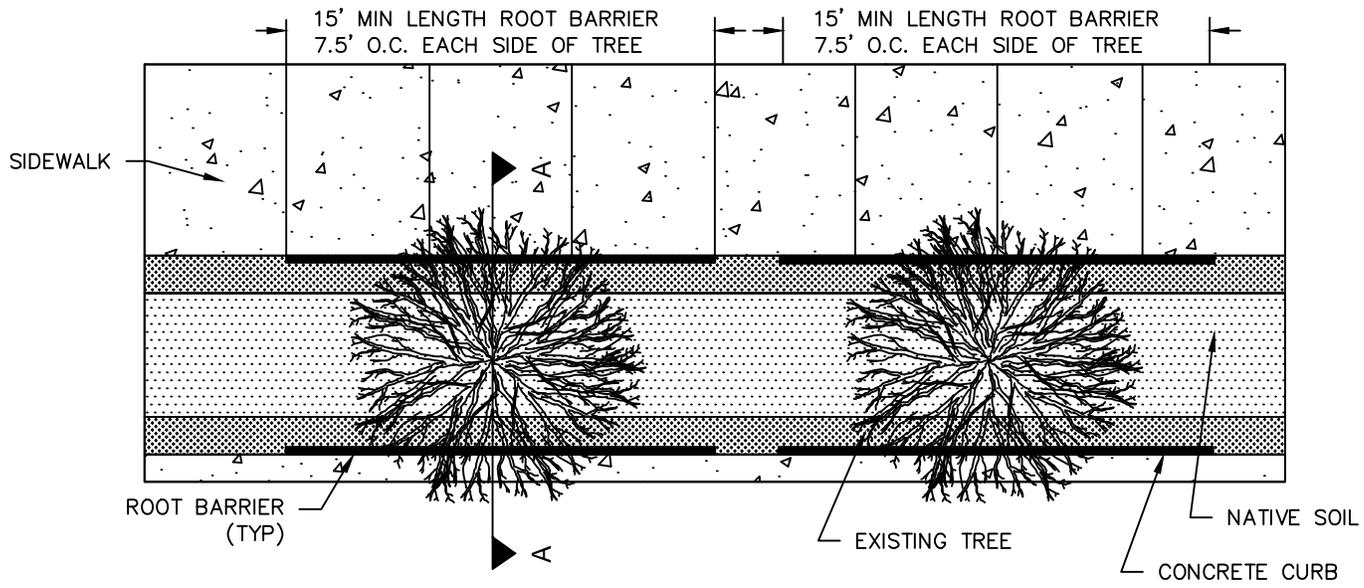
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DATE: NOVEMBER 2016

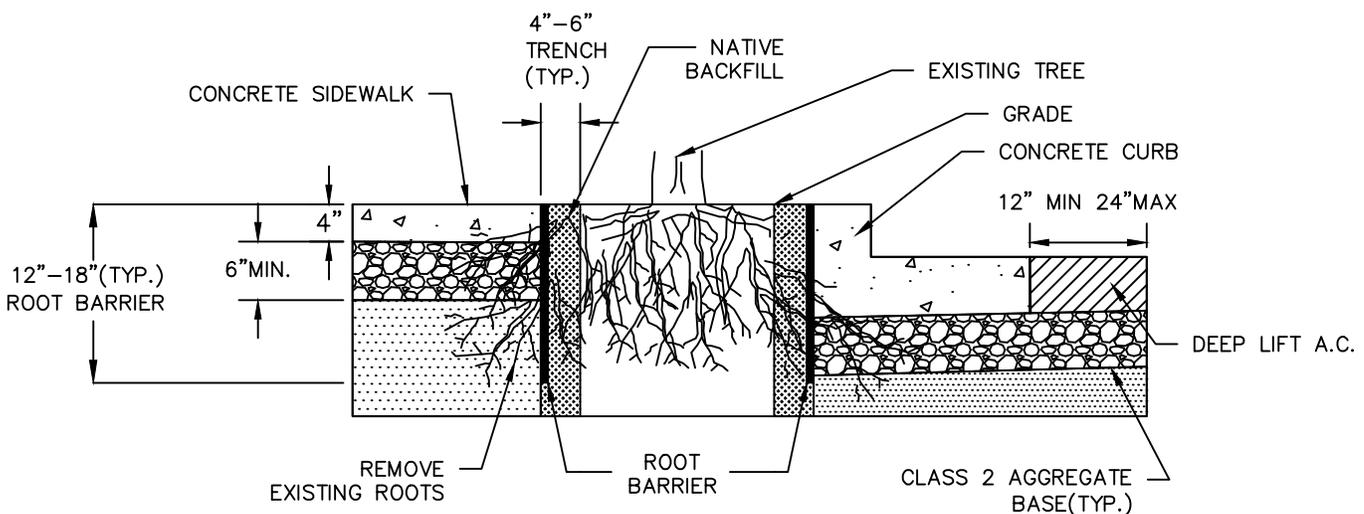
ST-500

N.T.S.

SHEET: 1 OF 2



**PLAN VIEW**



**SECTION A**

**NOTES:**

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED IF SIDEWALK OR CURB & GUTTER IS TO BE REMOVED.
2. ROOT BARRIER SHALL BE BLACK, INJECTION MOLDED PANELS OR LINEAR ROLL WITH 90 DEGREE DEFLECTING RIBS.
3. ROOT BARRIER SHALL BE MANUFACTURED WITH 50% POST CONSUMER POLYPROPYLENE PLASTIC WITH ADDED ULTRAVIOLET INHIBITORS; RECYCLABLE.
4. INSTALL MINIMUM 12" TO MAXIMUM 18" HIGH ROOT BARRIER.
5. ROOT BARRIER SHALL HAVE A MINIMUM WALL THICKNESS OF 0.06" (60MIL) & RIB THICKNESS OF 0.08" (80MIL). THE VERTICAL ROOT DEFLECTING RIBS SHALL BE FACING INWARDS TO THE ROOT BALL.
6. ROOT BARRIER SHALL BE 15' LONG 7.5' O.C. FROM TREE UNLESS APPROVED OTHERWISE BY ENGINEER.
7. ROOT BARRIER TRENCH SHALL BE 4" WIDE TO 6" WIDE.
8. ROOT BARRIER SHALL BE INSTALLED VERTICAL IN TRENCH ADJACENT TO SIDEWALK AND CURB AT GRADE.
9. THE CITY ARBORIST SHALL BE NOTIFIED BEFORE EXTENSIVE CUTTING OF ROOTS.

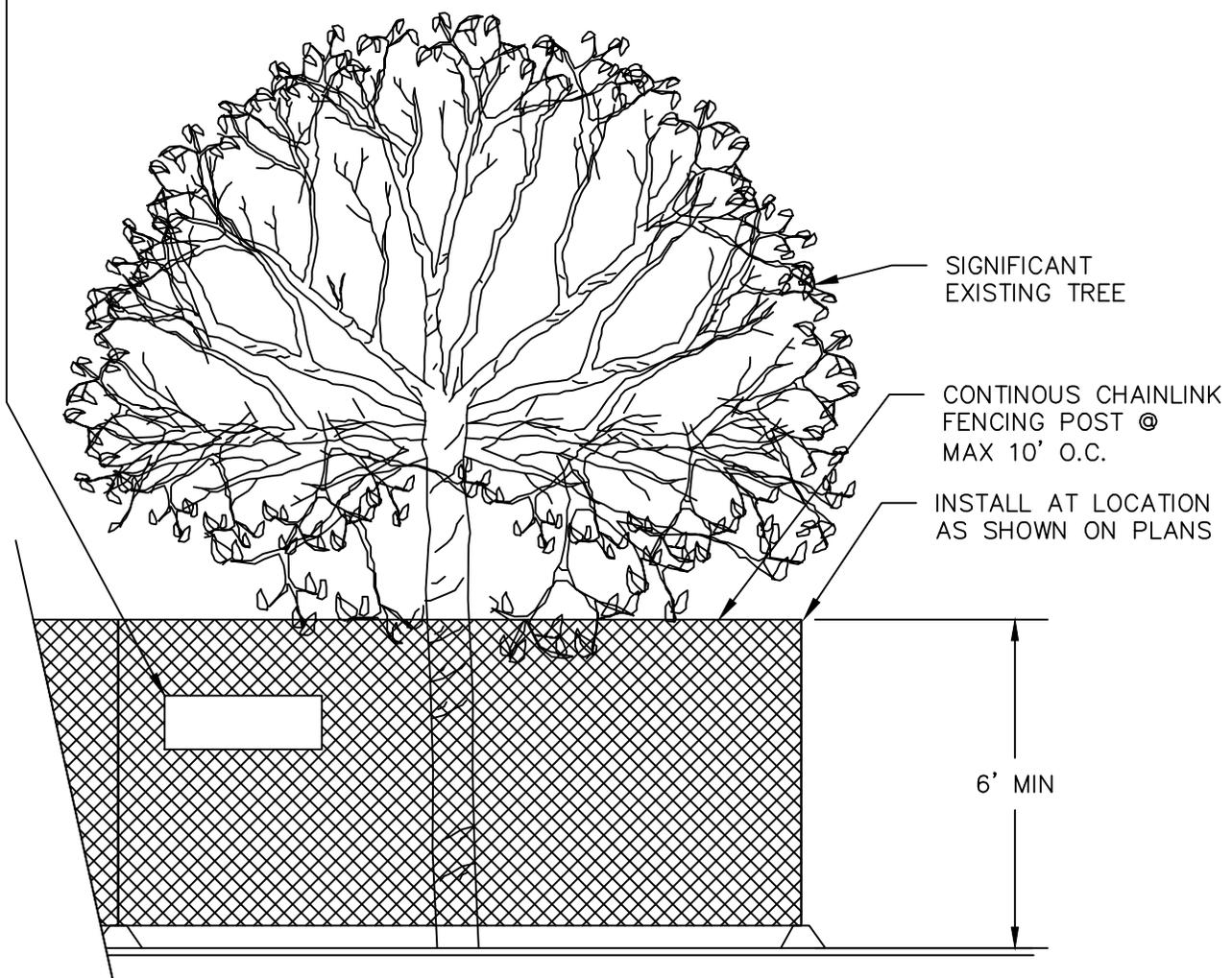


TREE ROOT BARRIER

APPROVED BY: L. ALVAREZ      DATE: NOVEMBER 2016

ST-502  
N.T.S.  
SHEET: 1 OF 1

TREE PROTECTION AREA, ENTRANCE PROHIBITED  
TO REPORT VIOLATIONS CONTACT  
CITY CODE ENFORCEMENT  
AT:



NOTES:

1. PRIOR TO BEGINNING ANY WORK, AN ENCROACHMENT PERMIT SHALL BE OBTAINED.
2. MINIMUM SIX(6) FOOT HIGH TEMPORARY CHAINLINK FENCE SHALL BE PLACED THE CRITICAL ROOT ZONE OR DESIGNATED LIMIT OF DISTANCE OF THE TREE TO BE SAVED. FENCE SHALL COMPLETELY ENCIRCLE TREE(S). INSTALL FENCE POSTS USING PIER BLOCK ONLY. AVOID POST OR STAKES INTO MAJOR ROOTS. MODIFICATIONS TO FENCING MATERIAL AND LOCATION MUST BE APPROVED BY PLANNING OFFICIAL.
3. TREATMENT OF ROOTS EXPOSED DURING CONSTRUCTION FOR ROOTSOVER ONE (1) INCH DIAMETER DAMAGED DURING CONSTRUCTION, MAKE A CLEAN STRAIGHT CUT TO REMOVE DAMAGED PORTION ROOT. ALL EXPOSED ROOTS SHALL BE TEMPORARILY COVERED WITH DAMP BURLAP TO PREVENT DRYING AND COVERED WITH SOIL AS SOON AS POSSIBLE.
4. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE LIMIT OF THE FENCING. FENCING SHALL NOT BE MOVED OR REMOVED UNLESS APPROVED BY THE CITY PLANNING OFFICIAL. WORK WITHIN PROTECTION FENCE SHALL BE DONE MANUALLY UNDER THE SUPERVISION OF THE ON-SITE ARBORIST AND WITH PRIOR APPROVAL BY THE CITY PLANNING OFFICIAL.
5. FENCING SIGNAGE AS DETAILED ABOVE MUST BE POSTED EVERY FIFTEEN (15) FEET ALONG THE FENCE.



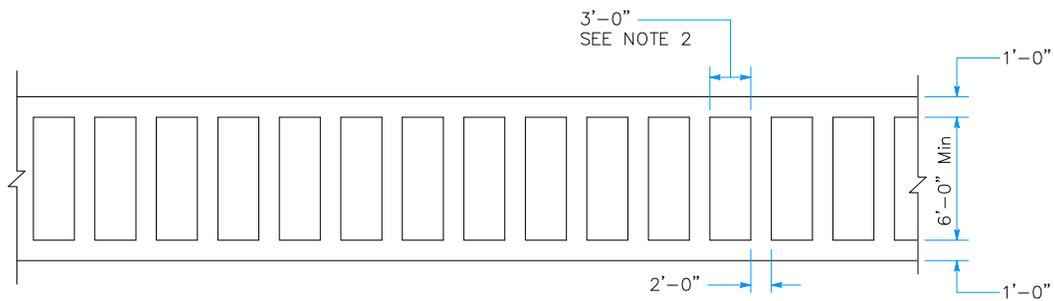
TREE PROTECTION FENCING

APPROVED BY: L. ALVAREZ

DATE: NOVEMBER 2016

ST-503  
N.T.S.

SHEET: 1 OF 1



LADDER  
\*High visibility Crosswalk Marking

NOTES:

1. Spaces between markings must be placed in wheel tracks of each lane.
2. Spacing not to exceed 2.5 times width of longitudinal line.
3. Marking should be used at locations where substantial numbers of pedestrians cross without any other traffic control device, at locations where physical conditions are such that added visibility of the crosswalk is desired, or at places where a pedestrian might not be expected.
4. High visibility crosswalks are required where the speed limit exceeds 40 mph and either:
  - The roadway has 4 or more lanes without a raised median or pedestrian refuge island and an average daily traffic (ADT) of 12,000 vehicles per day or greater.
  - The roadway has 4 or more lanes with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.
5. All crosswalk marking must be white except those near schools must be yellow.
6. Referenced from Caltrans 2015 Standard Plan A24F and 2014 CA MUTCD



PAVEMENT MARKING – LADDER CROSSWALK

APPROVED BY: L. ALVAREZ

DATE: DECEMBER 2017

PM-100  
N.T.S.  
SHEET: 1 OF 1