

SECTION 200

DRAINAGE DETAILS

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- 202 TYPE "B" DROP INLET
- 203 TYPE "C" DROP INLET
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- 205 CURB SUPPORT PLATE
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- 210 TERRACE DRAIN

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CITY OF SOLVANG - STANDARD DETAILS

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Matt van der Linden

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NOTES:

1. WHERE THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF EXISTING OR PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH SIDEWALK, THE TOP SLAB OF THE BASIN MAY BE POURED EITHER MONOLITHIC WITH THE SIDEWALK OR SEPARATELY, USING THE SAME CLASS OF CONCRETE AS IN THE BASIN. WHEN POURED MONOLITHICALLY, THE SIDEWALK SHALL BE PROVIDED WITH A WEAKENED PLANE OR A 1" DEEP SAWCUT CONTINUOUSLY AROUND THE EXTERNAL PERIMETER OF THE CATCH BASIN WALLS, INCLUDING ACROSS THE FULL WIDTH OF THE SIDEWALK. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH, AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.
2. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.
3. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1V:12H MINIMUM AND 1V:3H MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8%, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
4. DIMENSIONS:
 - B = 3'-2" UNLESS OTHERWISE NOTED.
 - V = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET. 4.5' UNLESS OTHERWISE NOTED).
 - V_U = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT AT THE U UPSTREAM END OF THE BASIN. IT SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 3, BUT SHALL NOT BE LESS THAN CURB FACE PLUS 12".
 - V_I = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE INLET, NOTED ON THE PLANS.
 - H = 2" UNLESS OTHERWISE NOTED.
 - W = NOTED ON THE PLANS.
 - A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.
5. PLACE CONNECTOR PIPES AS INDICATED ON THE PLANS. UNLESS OTHERWISE SPECIFIED, THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECESSARY TO ENSURE MINIMUM 3" PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL, AND RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS. A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70° OR GREATER THAN 110°, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.
6. DOWELS ARE REQUIRED AT EACH CORNER AND AT 7' ON CENTER (MAXIMUM) ALONG THE BACKWALL.

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TYPE A DROP INLET

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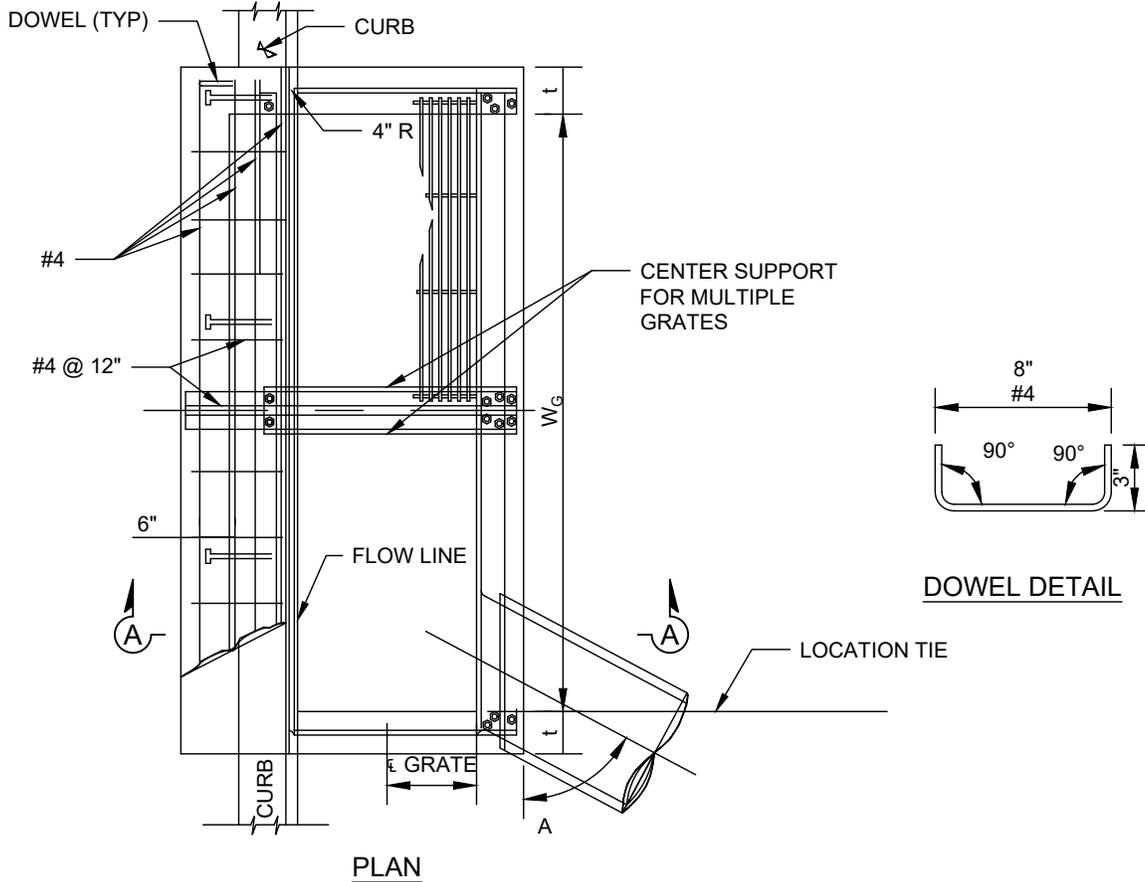
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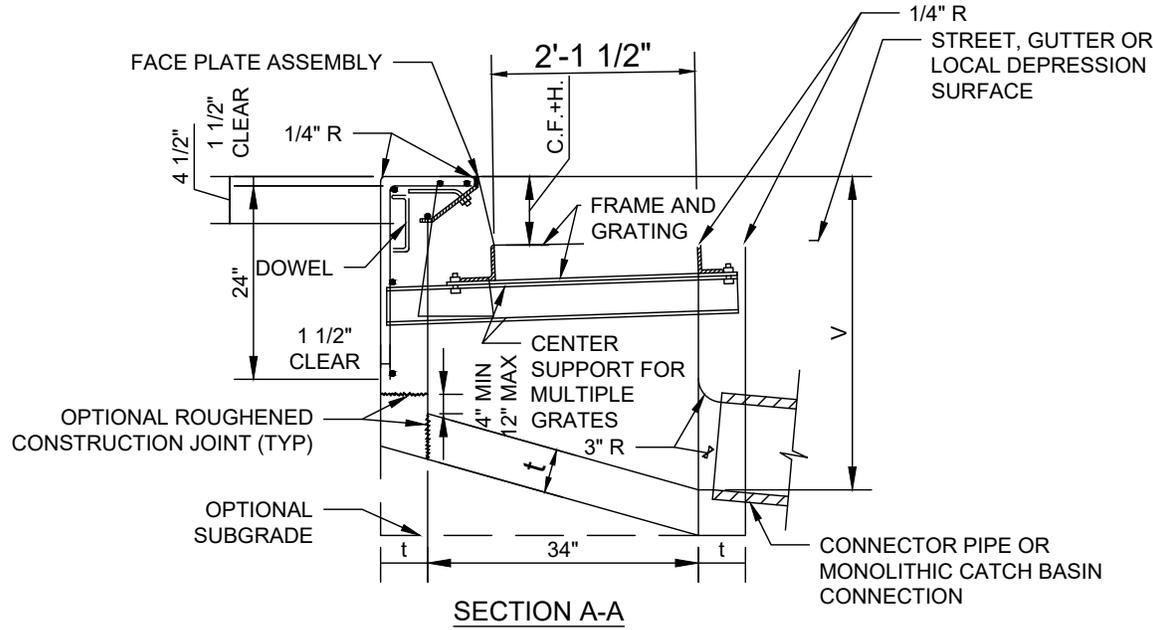
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DOWEL DETAIL



SECTION A-A



CITY OF SOLVANG - STANDARD DETAILS

TYPE B DROP INLET

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STRUCTURAL DATA			
WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS			
NO. OF GRATES	MAXIMUM V	t	REINFORCEMENT FOR WALLS AND SLABS
1-2	4'	6"	NOT REQUIRED
1-2	8'	8"	
1-2	10'	10"	
1-2	12'	10"	REQUIRED
3-4	4'	6"	NOT REQUIRED
3-4	7'	8"	
3-4	8'	8"	REQUIRED
3-4	12'	10"	
5-6	4'	6"	NOT REQUIRED
5-6	6'	8"	
5-6	8'	8"	REQUIRED
5-6	12'	10"	
> 6	4'	6"	
> 6	8'	8"	REQUIRED
> 6	12'	10"	

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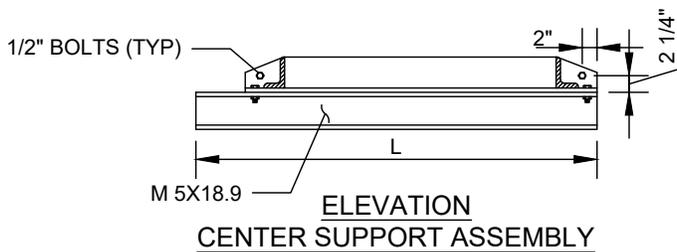
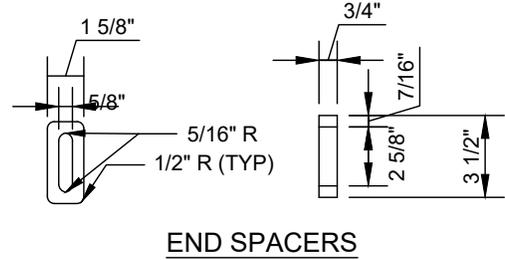
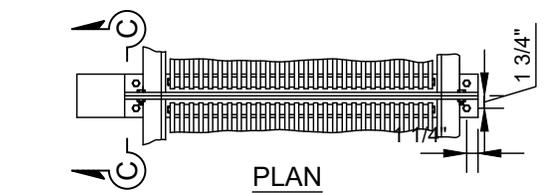
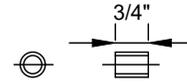
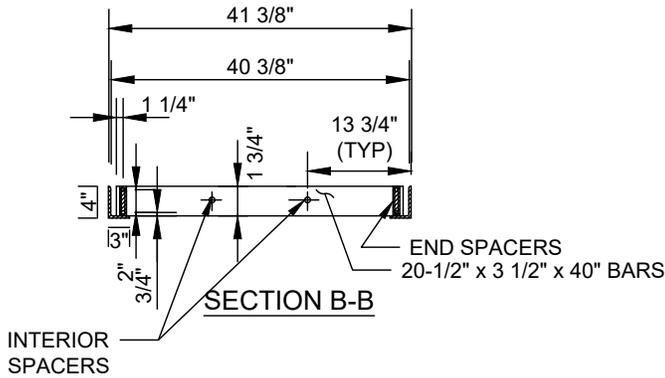
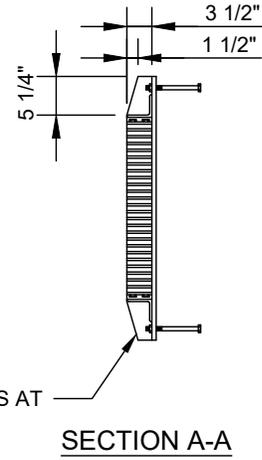
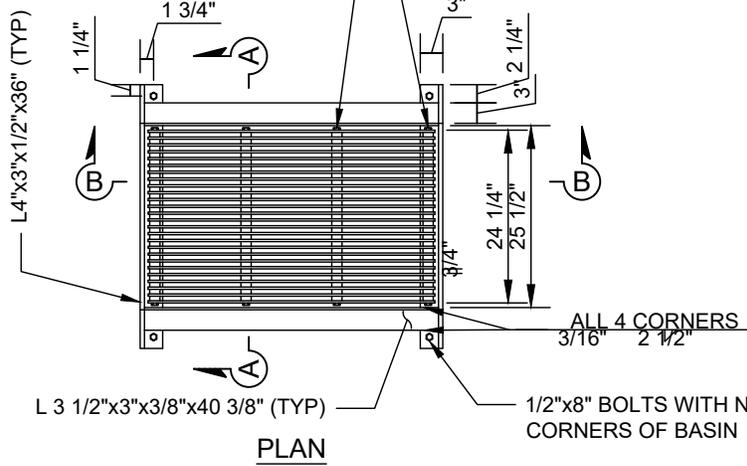
1. WHERE THE BASIN IS TO BE CONSTRUCTED WITHIN THE LIMITS OF EXISTING OR PROPOSED SIDEWALK OR IS CONTIGUOUS TO SUCH SIDEWALK, THE TOP SLAB OF THE BASIN MAY BE POURED EITHER MONOLITHIC WITH THE SIDEWALK OR SEPARATELY, USING THE SAME CLASS OF CONCRETE AS IN THE BASIN. WHEN POURED MONOLITHICALLY, THE SIDEWALK SHALL BE PROVIDED WITH A WEAKENED PLANE OR A 1" DEEP SAWCUT CONTINUOUSLY AROUND THE EXTERNAL PERIMETER OF THE CATCH BASIN WALLS, INCLUDING ACROSS THE FULL WIDTH OF THE SIDEWALK. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH, AND SCORING TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO THE BASIN.
2. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.
3. ONE GRATING IS REQUIRED UNLESS OTHERWISE SHOWN ON THE PROJECT PLAN.
4. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1V:12H MINIMUM AND 1V:3H MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8%, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
5. DIMENSIONS:
 - V = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET = 4.5'.
 - V_U = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT AT THE UPSTREAM END OF THE BASIN, AND SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 4, BUT SHALL NOT BE LESS THAN CURB FACE PLUS 12".
 - V_I = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE INLET, NOTED ON THE PLANS.
 - H = NOTED ON THE PROJECT PLANS.
 - W_G = 2'-11 3/8" FOR ONE GRATING; ADD 3'-5 3/8" FOR EACH ADDITIONAL GRATING.
 - A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.
6. PLACE CONNECTOR PIPES AS INDICATED ON THE PLANS. UNLESS OTHERWISE SPECIFIED, THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECESSARY TO ENSURE MINIMUM 3" PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3" RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS, A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70° OR GREATER THAN 110°, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.
7. STEPS SHALL BE LOCATED AS SHOWN. IF THE CONNECTOR PIPE INTERFERES WITH THE STEPS, THEY SHALL BE LOCATED ON THE FRONT WALL AT THE CENTERLINE OF THE DOWNSTREAM GRATING. STEPS SHALL BE SPACED APART. THE TOP STEP SHALL BE 7" BELOW THE TOP OF THE GRATING AND PROJECT 2 1/2". ALL OTHER STEPS SHALL PROJECT 5".
8. DOWELS ARE REQUIRED AT EACH CORNER AND AT 7' ON CENTER (MAXIMUM) ALONG THE BACKWALL.

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	TYPE B DROP INLET	REVISED: -
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6-1/2"x25 3/8" STEEL RODS, 1 NUT AND STANDARD WASHER ON EACH END SO THAT SPACES BETWEEN OUTSIDE BARS AND FRAME ARE EQUAL 5/8" EACH SIDE. AFTER ASSEMBLY, PEEN THREADS TO HOLD NUTS TIGHT



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TYPE B DROP INLET

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NOTES:

1. ALL PARTS SHALL BE STEEL, EXCEPT THAT END SPACERS MAY BE CAST IRON.
2. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION, EXCEPT THAT GRATINGS SHALL BE ASSEMBLED AFTER COMPONENT PARTS ARE GALVANIZED.
3. ALL DIMENSIONS ARE FINISHED DIMENSIONS AND INCLUDE GALVANIZING.
4. ALL BOLT HOLES SHALL BE 5/8" DIAMETER.
5. ALL THREADS SHALL BE NATIONAL COARSE SERIES (NC).
6. CENTER SUPPORT ASSEMBLY REQUIRED WHEN TWO OR MORE GRATINGS ARE SPECIFIED ON PLANS.
L = 64" FOR CURB OPENING CATCH BASIN WITH GRATING(S) AND DEBRIS SKIMMER (SPPWC 301).
L = 44" FOR CURB OPENING CATCH BASIN WITH GRATING(S) (SPPWC 320.)
L = 36" FOR CURBSIDE GRATING CATCH BASIN (SPPWC 303).
L = 36" FOR GRATING CATCH BASIN-ALLEY (LONGITUDINAL) (SPPWC 304).

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CITY OF SOLVANG - STANDARD DETAILS

TYPE B DROP INLET

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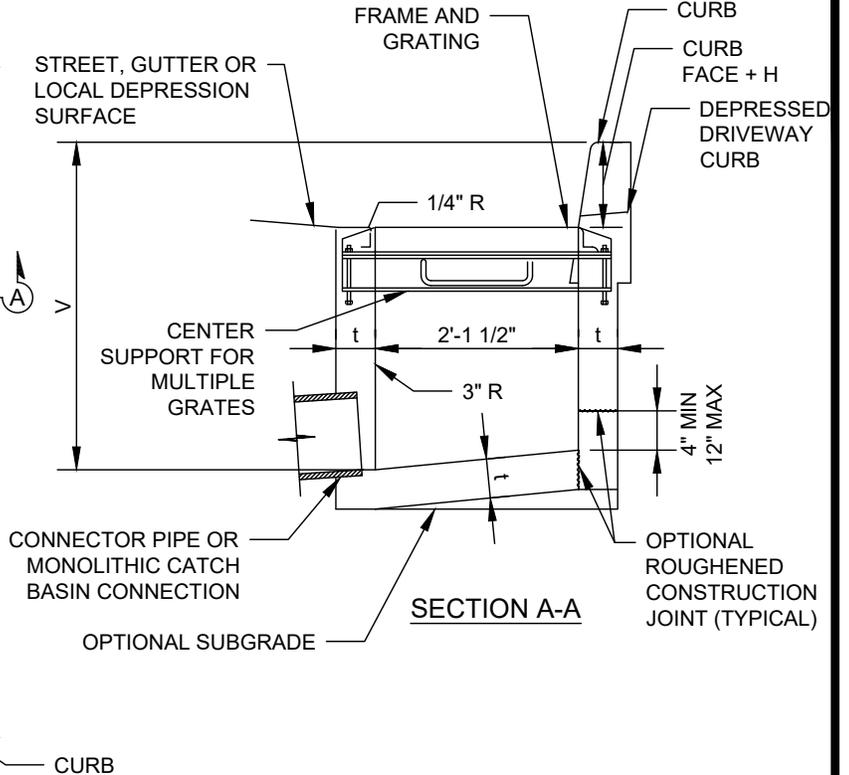
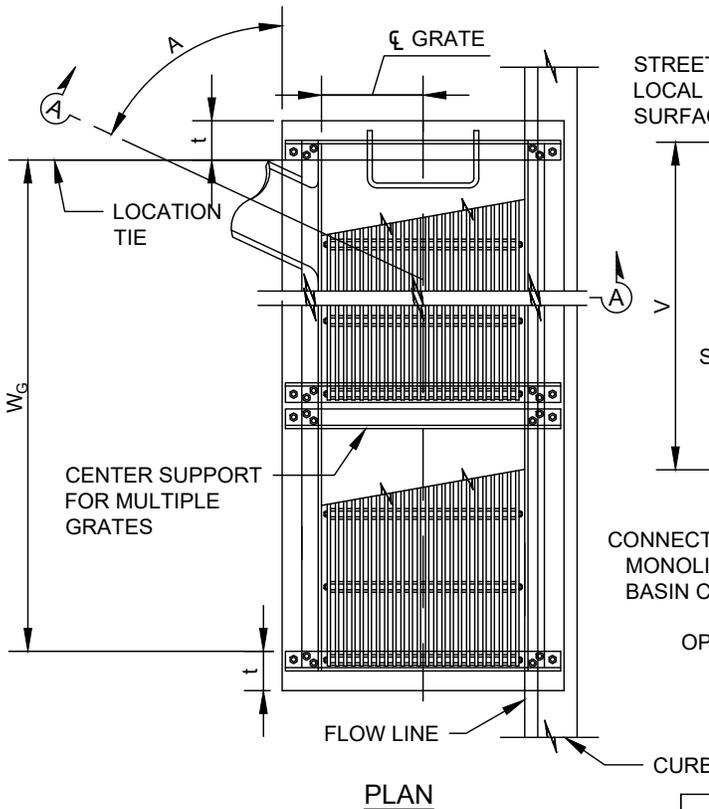
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STRUCTURAL DATA			
WALL AND SLAB DIMENSIONS AND REINFORCEMENT REQUIREMENTS			
NO. OF GRATES	MAXIMUM V	t	REINFORCEMENT FOR WALLS AND SLABS
1-2	4'	6"	NOT REQUIRED
1-2	8'	8"	
1-2	10'	10"	
1-2	12'	10"	REQUIRED
3-4	4'	6"	NOT REQUIRED
3-4	7'	8"	
3-4	8'	8"	
3-4	12'	10"	REQUIRED
5-6	4'	6"	NOT REQUIRED
5-6	6'	8"	
5-6	8'	8"	
5-6	12'	8"	REQUIRED
> 6	4'	6"	
> 6	8'	8"	
> 6	12'	10"	



CITY OF SOLVANG - STANDARD DETAILS

TYPE C DROP INLET

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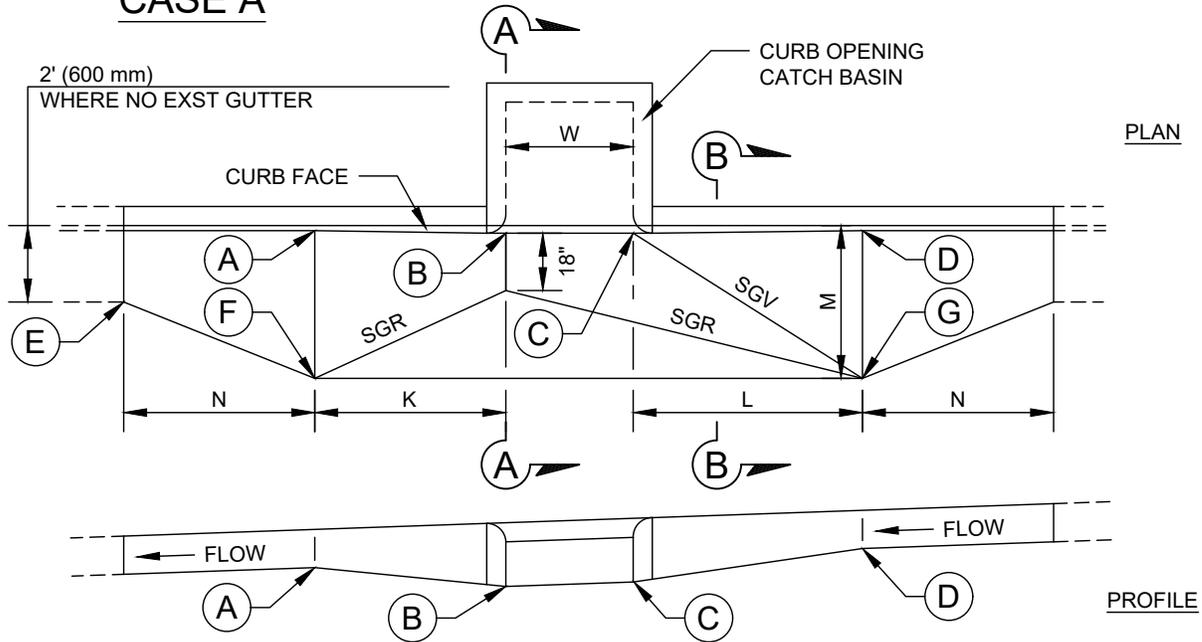
1. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE GRADE, COLOR, FINISH, AND SCORING TO THE EXISTING OR PROPOSED CURB ADJACENT TO THE BASIN.
2. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.
3. FLOOR OF BASIN SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 1V:12H MINIMUM AND 1V:3H MAXIMUM, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8%, IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
4. ONE GRATING IS REQUIRED UNLESS OTHERWISE SHOWN ON THE PLANS.
5. DIMENSIONS:
 - V = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT OF THE CATCH BASIN AT THE OUTLET = 4.5'.
 - V_U = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT AT U THE UPSTREAM END OF THE BASIN. IT SHALL BE DETERMINED BY THE REQUIREMENTS OF NOTE 3, BUT SHALL NOT BE LESS THAN CURB FACE PLUS 12".
 - V_I = THE DIFFERENCE IN ELEVATION BETWEEN THE TOP OF THE CURB AND THE INVERT AT I THE INLET. NOTED ON THE PLANS.
 - H = NOTED ON THE PLANS.
 - W_G = 2'-11 3/8" FOR ONE GRATING; ADD 3'-5 3/8" FOR EACH ADDITIONAL GRATING.
 - A = THE ANGLE, IN DEGREES, INTERCEPTED BY THE CENTERLINE OF THE CONNECTOR PIPE AND THE CATCH BASIN WALL TO WHICH THE CONNECTOR PIPE IS ATTACHED.
6. PLACE CONNECTOR PIPES AS INDICATED ON THE PLANS. UNLESS OTHERWISE SPECIFIED, THE CONNECTOR PIPE SHALL BE LOCATED AT THE DOWNSTREAM END OF THE BASIN. WHERE THE CONNECTOR PIPE IS SHOWN AT A CORNER, THE CENTERLINE OF THE PIPE SHALL INTERSECT THE INSIDE CORNER OF THE BASIN. THE PIPE MAY BE CUT AND TRIMMED AT A SKEW NECESSARY TO ENSURE MINIMUM 3" PIPE EMBEDMENT, ALL AROUND, WITHIN THE CATCH BASIN WALL, AND 3" RADIUS OF ROUNDING OF STRUCTURE CONCRETE, ALL AROUND, ADJACENT TO PIPE ENDS. A MONOLITHIC CATCH BASIN CONNECTION SHALL BE USED TO JOIN THE CONNECTOR PIPE TO THE CATCH BASIN WHENEVER ANGLE "A" IS LESS THAN 70° OR GREATER THAN 110°, OR WHENEVER THE CONNECTOR PIPE IS LOCATED IN A CORNER. THE OPTIONAL USE OF A MONOLITHIC CATCH BASIN CONNECTION IN ANY CASE IS PERMITTED. MONOLITHIC CATCH BASIN CONNECTIONS MAY BE CONSTRUCTED TO AVOID CUTTING STANDARD LENGTHS OF PIPE.

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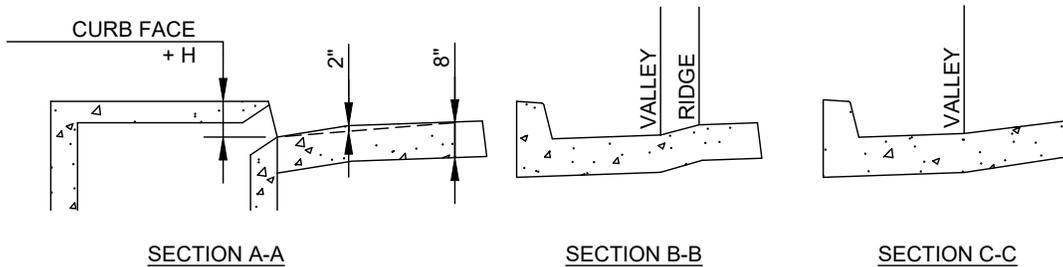
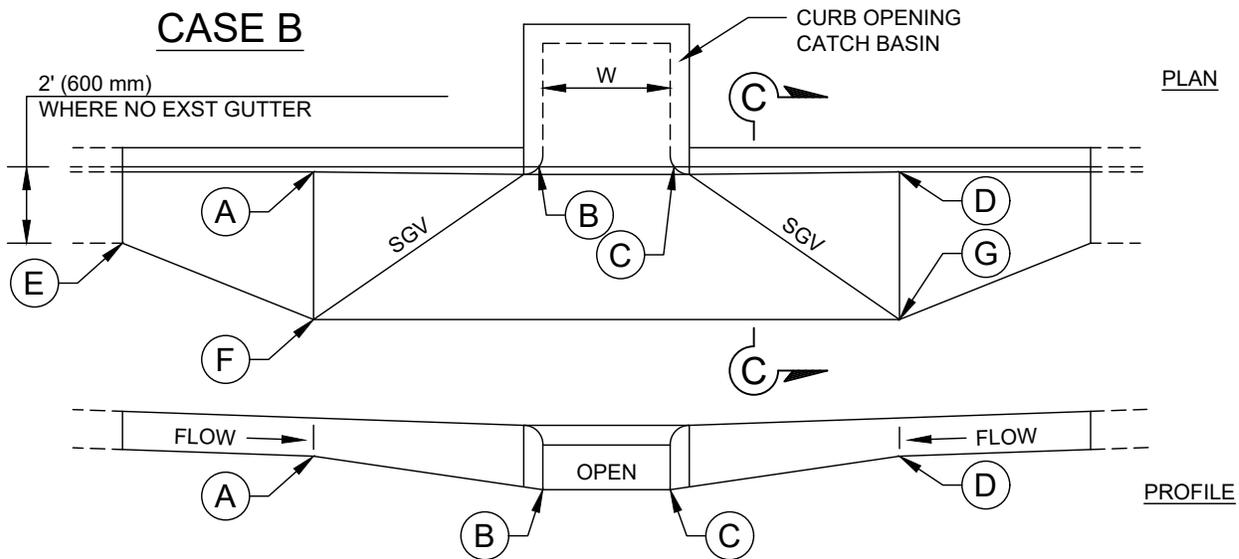
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	TYPE C DROP INLET	DRAWING NUMBER 203 2 OF 2
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CASE A



CASE B



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CITY OF SOLVANG - STANDARD DETAILS

LOCAL DEPRESSIONS

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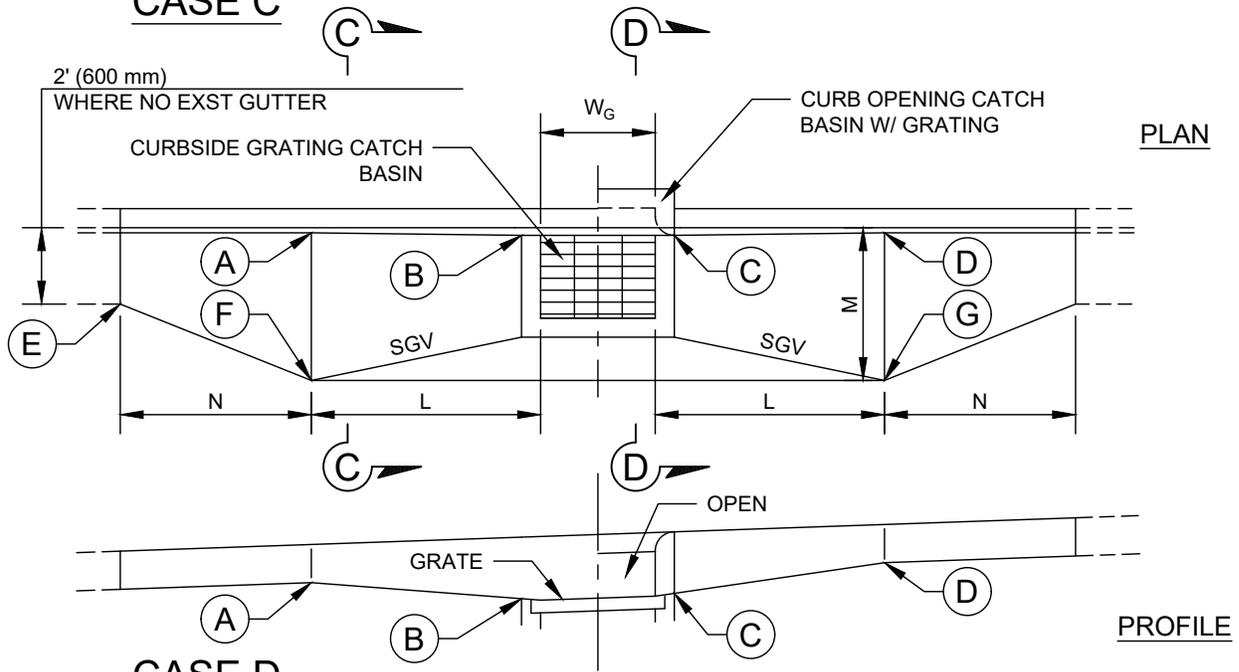
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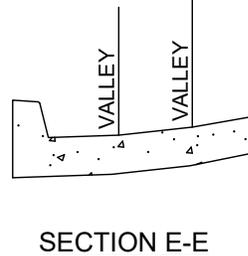
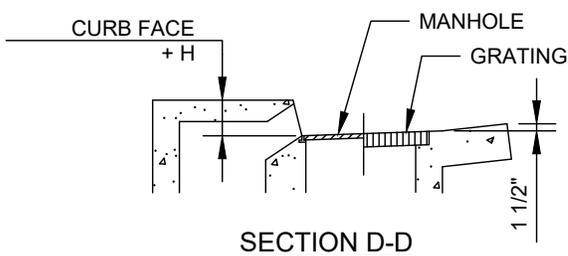
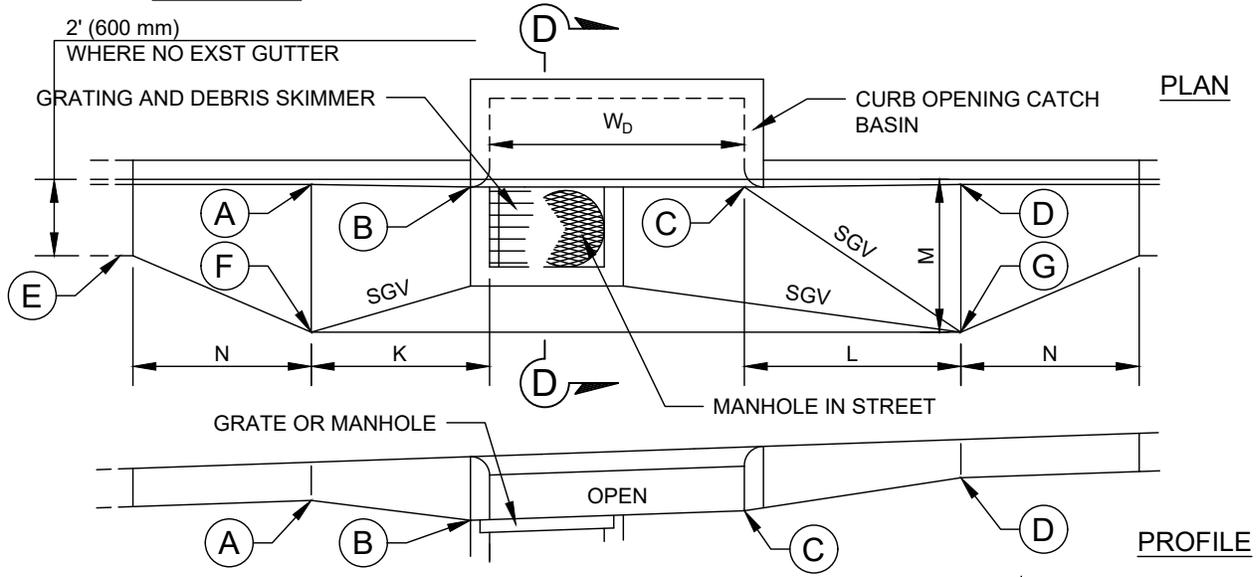
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CASE C



CASE D



SECTION D-D

SECTION E-E

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CITY OF SOLVANG - STANDARD DETAILS

LOCAL DEPRESSIONS

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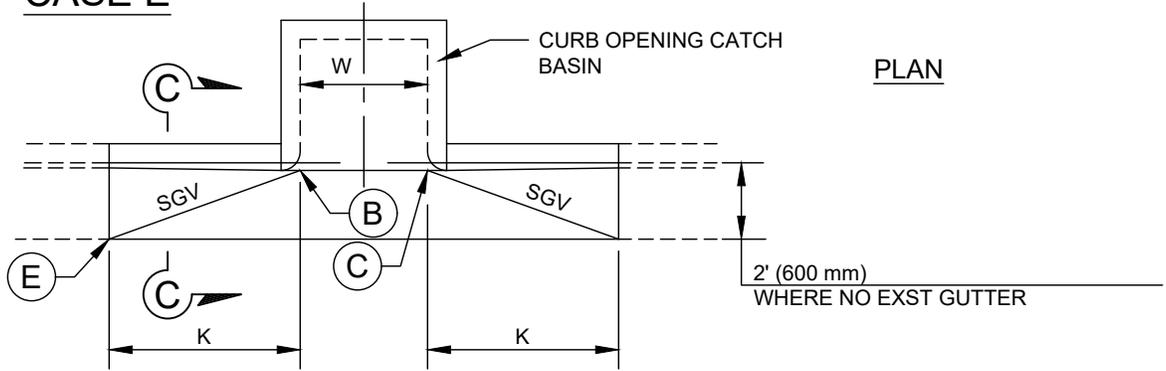
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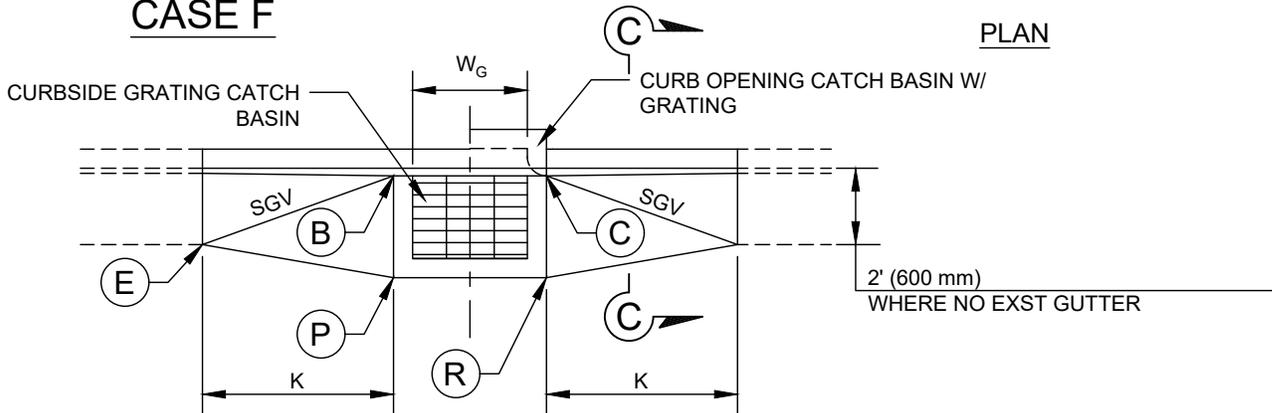
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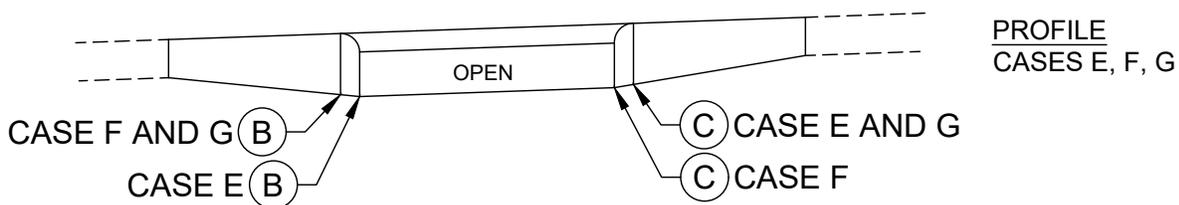
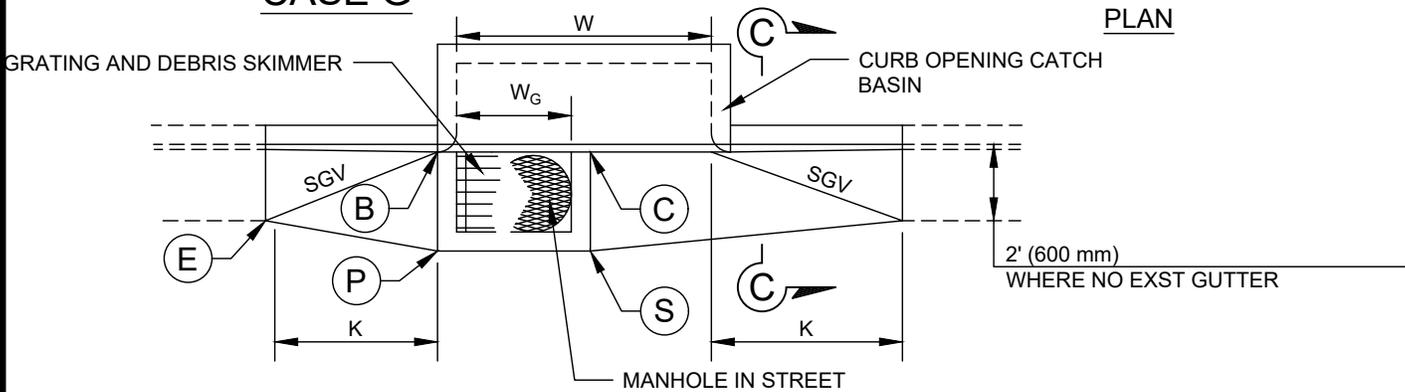
CASE E



CASE F



CASE G



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CITY OF SOLVANG - STANDARD DETAILS

LOCAL DEPRESSIONS

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NOTES:

1. ALL EXPOSED EDGES SHALL BE ROUNDED TO A 1/2" RADIUS.
2. THE CURB FACE AT POINTS A AND D SHALL BE THE NORMAL CURB FACE OF THE ADJACENT CURB AT THE ENDS OF THE LOCAL DEPRESSION. THE CURB FACE AT POINTS B AND C SHALL BE THE NORMAL CURB FACE OF THE ADJACENT CURB AT THE ENDS OF THE LOCAL DEPRESSION PLUS H (SEE APPLICABLE CATCH BASIN STANDARD PLAN).
3. IN EXISTING STREETS WHERE NO PAVEMENT RECONSTRUCTION IS SPECIFIED ON THE PLANS, THE ELEVATION OF THE OUTER EDGE OF THE LOCAL DEPRESSION SHALL MEET THE FINISHED STREET SURFACE.
4. IN NEW STREETS OR IN EXISTING STREETS WHERE PAVEMENT RECONSTRUCTION IS SPECIFIED ON THE PLANS:

THE ELEVATIONS OF POINTS F AND G SHALL BE SET H1 HIGHER THAN THE GUTTER FLOW LINE ELEVATIONS AT POINTS A AND D, RESPECTIVELY.

THE ELEVATIONS OF POINTS P AND R SHALL BE SET H2 HIGHER THAN THE GUTTER FLOW LINE ELEVATIONS AT POINTS B AND C, RESPECTIVELY.

THE ELEVATION OF POINT S SHALL BE SET H2 HIGHER THAN THE ELEVATION AT THE NEAREST GUTTER FLOW LINE.

WHERE THERE IS NO GUTTER ADJACENT TO THE LOCAL DEPRESSION, THE ELEVATION OF POINT E SHALL BE SET H3 HIGHER THAN THE ELEVATION AT THE NEAREST TOE OF CURB.

5. DIMENSIONS:

H, H1, H2, AND H3 SHALL BE AS NOTED ON THE PLANS

G = 24"

K = 5'-0"

L = 6'-0"

M = 4'-0"

N = 5'-0"

W = WIDTH OF CURB OPENING FOR CATCH BASIN

W_G = WIDTH OF GRATING(S) FOR CATCH BASIN

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CITY OF SOLVANG - STANDARD DETAILS

LOCAL DEPRESSIONS

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DO NOT SCALE
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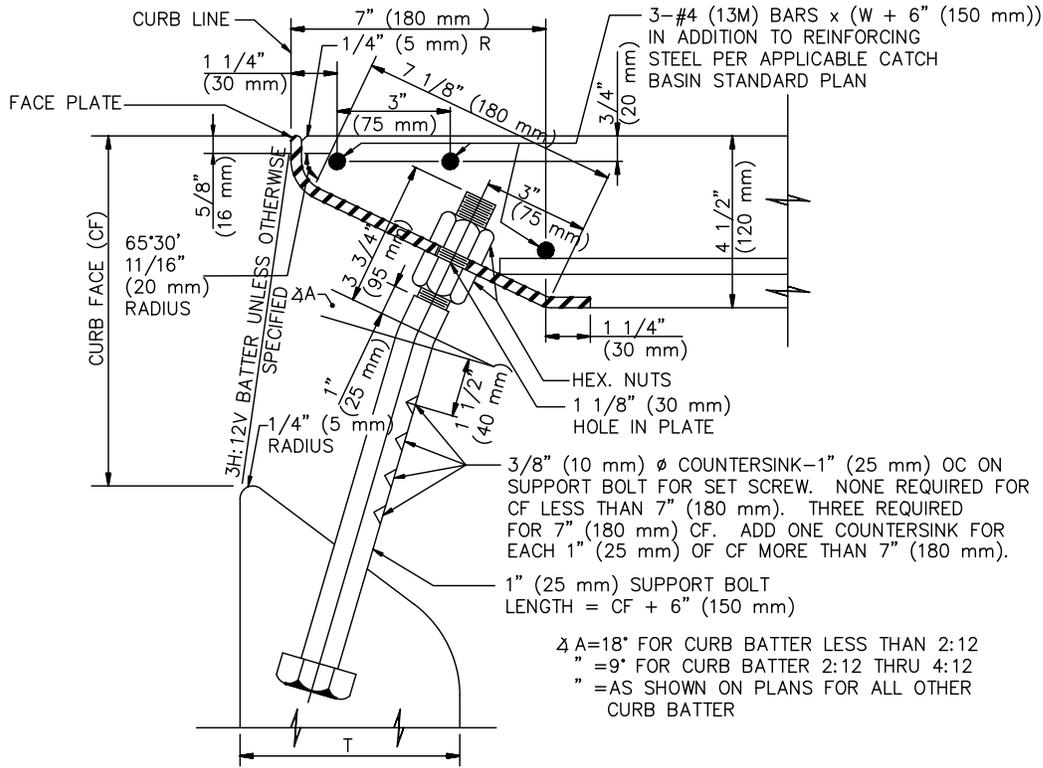
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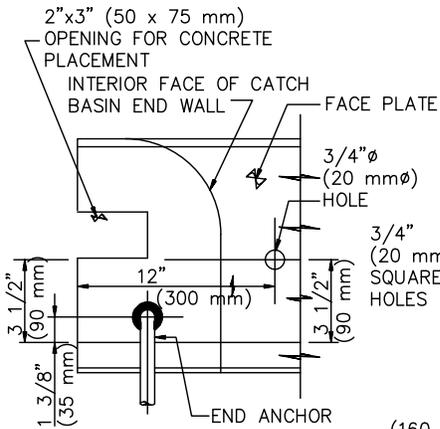
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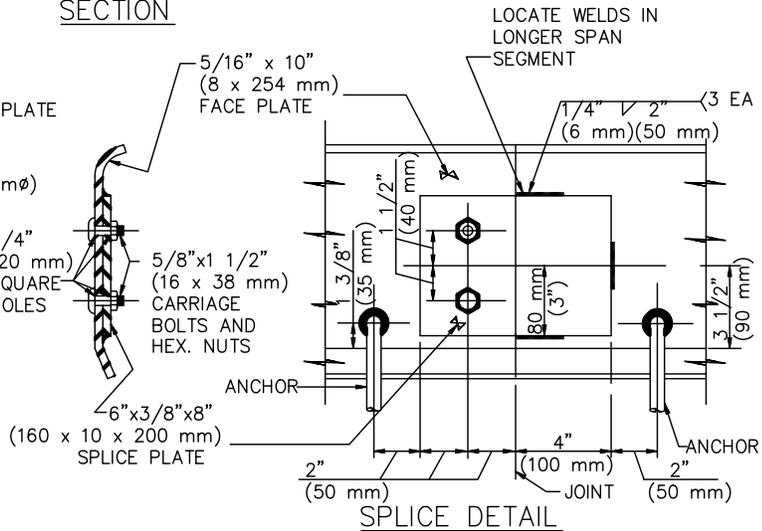
SUPPORT BOLT AND FACE PLATE 4 1/2" TOP SLAB



SECTION



END DETAIL



SPLICE DETAIL



CITY OF SOLVANG - STANDARD DETAILS

CURB SUPPORT PLATE

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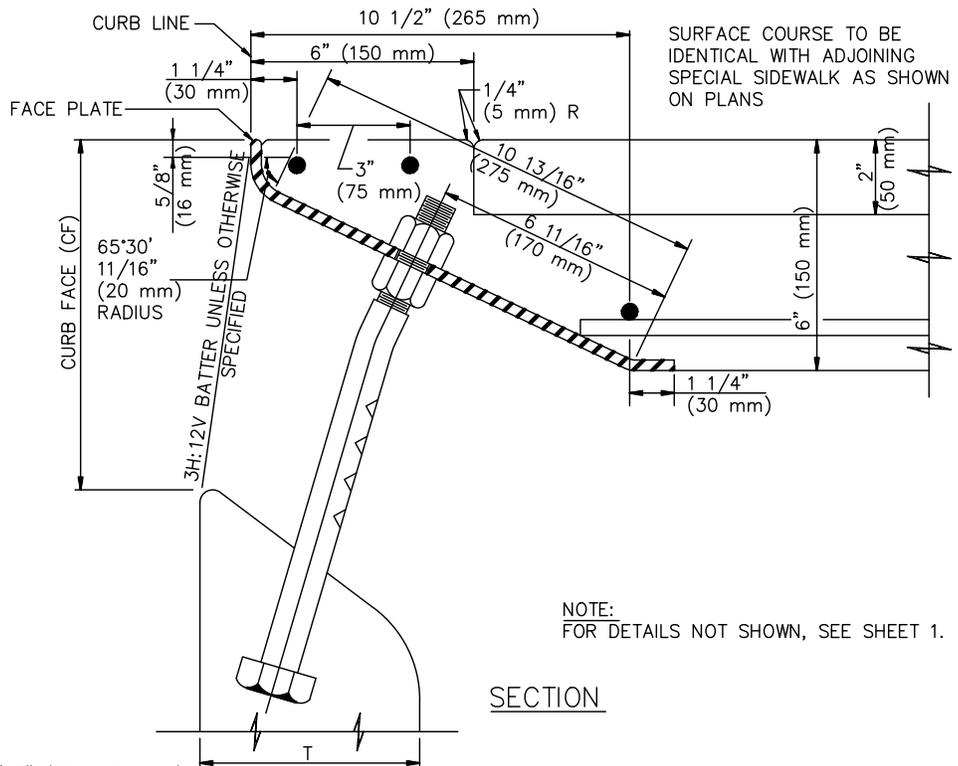
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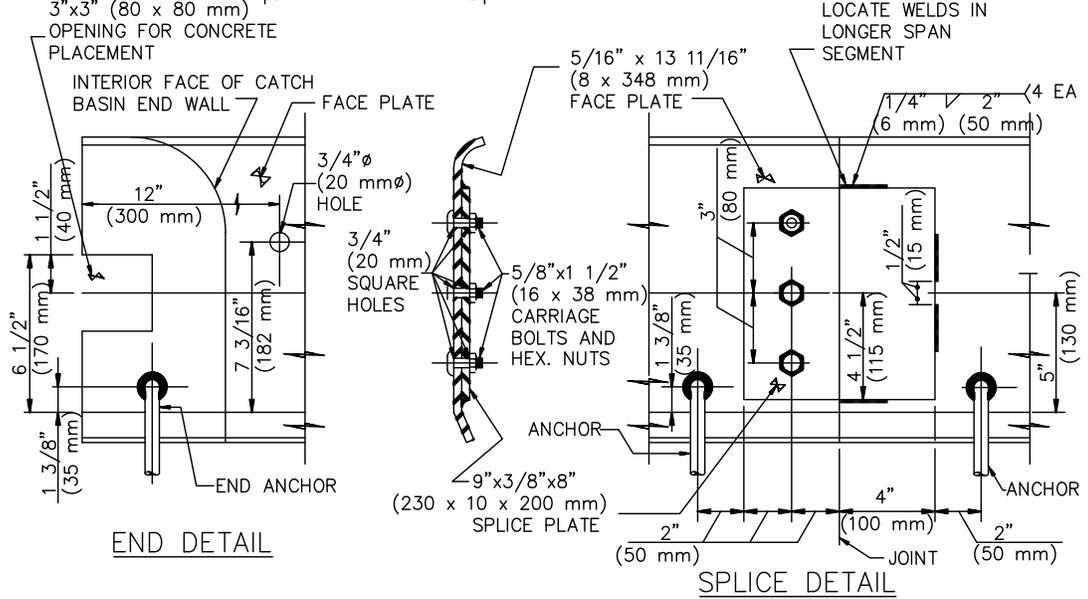
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1 OF 6

SUPPORT BOLT AND FACE PLATE 6" TOP SLAB



NOTE:
FOR DETAILS NOT SHOWN, SEE SHEET 1.



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CITY OF SOLVANG - STANDARD DETAILS

CURB SUPPORT PLATE

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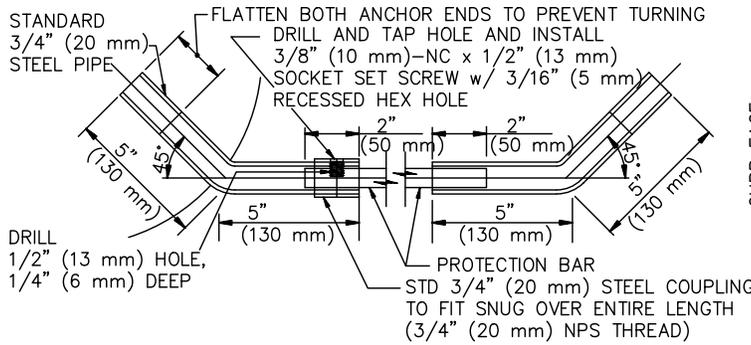
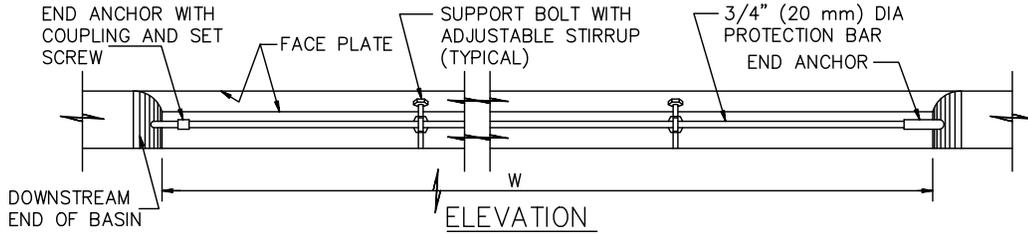
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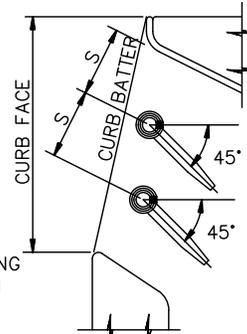
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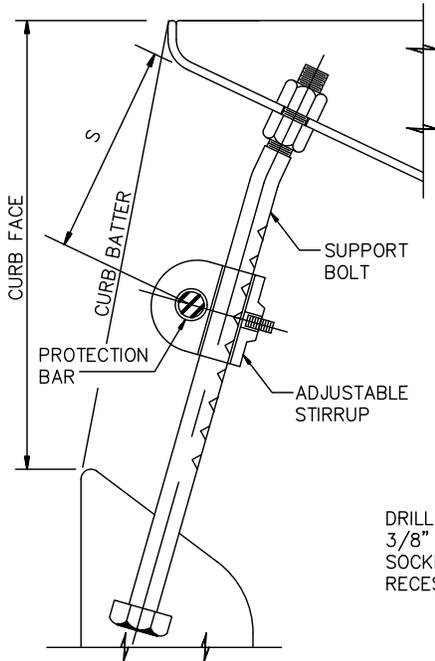
PROTECTION BAR AND SUPPORT BOLT(S) WITH ADJUSTABLE STIRRUP(S) – (TYPE A)



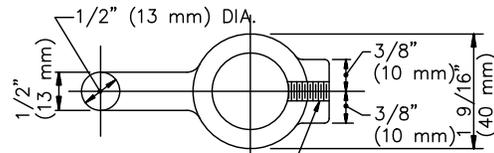
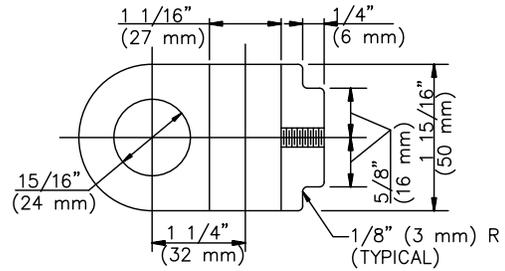
END ANCHOR DETAIL



DOUBLE PROTECTION BAR DETAIL



PROTECTION BAR & STIRRUP LOCATION



DRILL AND TAP HOLE AND INSTALL
3/8" (10 mm)-NC x 1/2" (13 mm)
SOCKET SET SCREW WITH 3/16" (5 mm)
RECESSED HEX HOLE

STIRRUP DETAIL

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CITY OF SOLVANG - STANDARD DETAILS

ISSUED: 7/7/2021

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CURB SUPPORT PLATE

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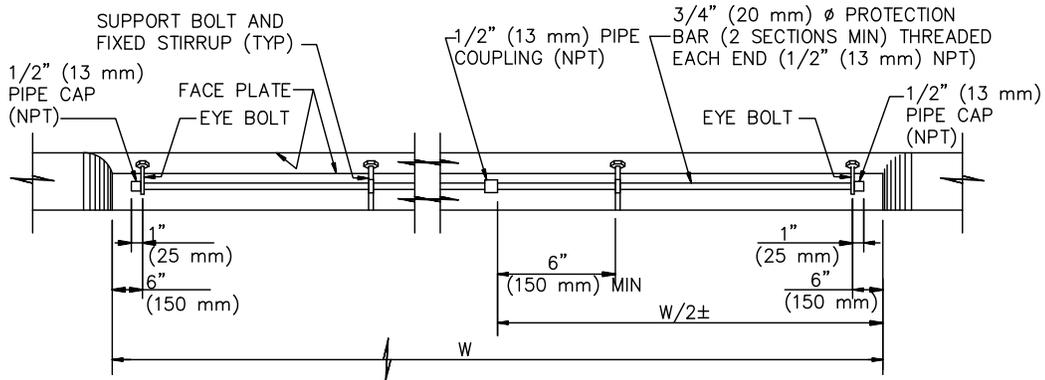
4 OF 6

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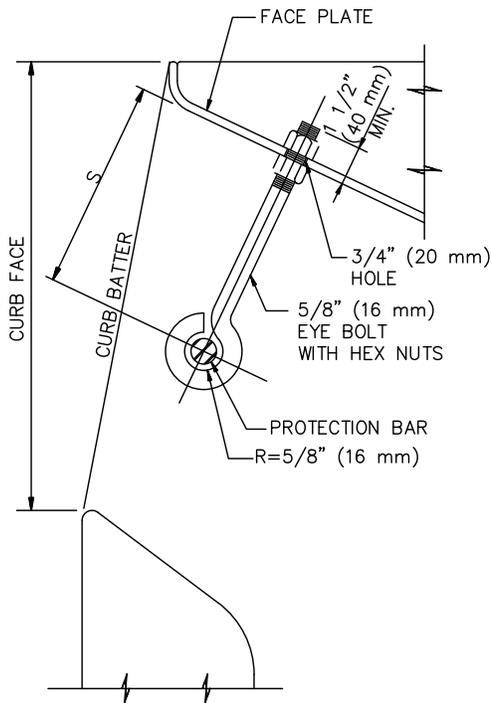
Matt van der Linden

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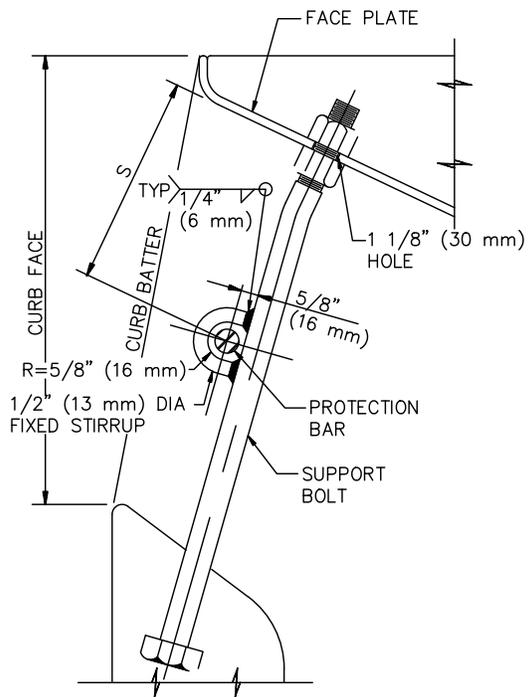
PROTECTION BAR AND SUPPORT BOLT(S) WITH FIXED STIRRUP(S) – (TYPE B)



ELEVATION



EYE BOLT DETAIL



STIRRUP DETAIL

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CITY OF SOLVANG - STANDARD DETAILS

CURB SUPPORT PLATE

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5 OF 6

NOTES:

GENERAL

1. ALL PARTS SHALL BE STEEL, EXCEPT SET SCREWS, WHICH SHALL BE STAINLESS STEEL OR BRASS.
2. EXCLUDING SET SCREWS, ALL EXPOSED METAL PARTS SHALL BE GALVANIZED AFTER FABRICATION.
3. CURB FACE SHALL BE AS NOTED ON THE PLANS.
4. CURB BATTER SHALL BE 3:12 UNLESS OTHERWISE SPECIFIED.

FACE PLATE

5. FACE PLATE LENGTHS SHALL BE CATCH BASIN W PLUS 12" EXCEPT AS MODIFIED FOR A "CURB OPENING CATCH BASIN AT DRIVEWAY".
6. WHEN THE LENGTH OF THE FACE PLATE IS BETWEEN 22' AND 43', TWO SECTIONS MAY BE USED. WHEN THE LENGTH EXCEEDS 43' (13 m), THREE SECTIONS MAY BE USED. SECTIONS SHALL BE SPLICED ACCORDING TO THE APPLICABLE SPLICE DETAIL. SPLICE SHALL BE PLACED 1' FROM A SUPPORT BOLT.
7. WHERE CATCH BASINS ARE TO BE CONSTRUCTED ON CURVES, THE MAXIMUM CHORD LENGTH FOR THE FACE PLATE SHALL BE SUCH THAT THE MAXIMUM PERPENDICULAR DISTANCE TO THE TRUE CURVE SHALL NOT EXCEED 1". WHERE MORE THAN ONE CHORD IS REQUIRED, CHORD LENGTHS SHALL BE EQUAL. CHORD SECTIONS SHALL BE SPLICED ACCORDING TO THE APPLICABLE SPLICE DETAIL (MODIFIED TO FIT THE CHORD DEFLECTION) AND A SUPPORT BOLT SHALL BE PLACED 1' FROM THE SPLICE.
8. ROUND HEAD ANCHORS FOR THE FACE PLATE SHALL BE NELSON H-4F SHEAR CONNECTOR, KSN WELDING SYSTEMS DIVISION SHEAR CONNECTOR OR EQUAL.

SUPPORT BOLT

9. SUPPORT BOLTS ARE REQUIRED WHEN THE LENGTH OF THE CATCH BASIN OPENING IS 7' OR GREATER, AND SHALL BE EVENLY SPACED ACROSS THE OPENING. SPACING SHALL NOT BE LESS THAN 3'-6" ON CENTER NOR GREATER THAN 5' ON CENTER.

STIRRUP

10. FOR TYPE A, MATERIAL SHALL BE CAST STEEL.

PROTECTION BAR

11. TYPE A SHALL BE USED UNLESS OTHERWISE SPECIFIED.
12. FOR TYPE A, THE BAR SHALL BE CUT TO FIT IN THE FIELD. WHEN "W" IS OVER 21', THE PROTECTION BAR SHALL CONSIST OF 2 OR MORE SECTIONS. A SPECIAL CONNECTOR BETWEEN THE PROTECTION BAR PIECES SHALL CONSIST OF A 5" LENGTH OF STANDARD 3/4" PIPE WITH STANDARD COUPLINGS FULLY THREADED ONTO EACH END DRILLED AND TAPPED FOR A SOCKET SET SCREW AS DETAILED FOR THE DOWNSTREAM END ANCHOR.
13. FOR TYPE B, THE BAR SHALL BE TWO PIECES. TWO EYE BOLTS AND A WELDED STIRRUP ON EACH SUPPORT BOLT ARE REQUIRED.
14. NUMBER OF PROTECTION BARS AND LOCATIONS ARE AS FOLLOWS:

		MAXIMUM CURB FACE, INCHES												S D I M E N S I O N
		6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	
C U R B B A T T E R	0:12	0	0	3.5"	3.5"	4.5"	4.5"	4.5"	5.5"	3.5"	3.5"	4.5"	4.5"	4.5"
	1:12	0	0	3.5"	3.5"	4.5"	4.5"	4.5"	5.5"	3.5"	3.5"	4.5"	4.5"	5.5"
	2:12	0	0	3.5"	3.5"	4.5"	4.5"	5.5"	3.5"	3.5"	4.5"	4.5"	5.5"	5.5"
	3:12	0	0	3.5"	3.5"	4.5"	4.5"	5.5"	3.5"	4.5"	4.5"	5.5"	5.5"	4.5"
	4:12	0	3.5"	3.5"	4.5"	4.5"	5.5"	3.5"	3.5"	4.5"	4.5"	5.5"	4.5"	4.5"
0		1					2*				3*			
		NUMBER OF PROTECTION BARS												

FOR OTHER CURB FACE OR BATTER SEE PLANS
 * TYPE A PROTECTION BAR ONLY

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CITY OF SOLVANG - STANDARD DETAILS

CURB SUPPORT PLATE

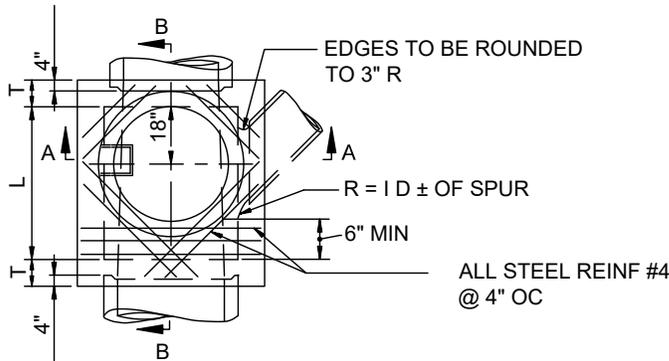
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 MATT VAN DER LINDEN, PE *Matt van der Linden*

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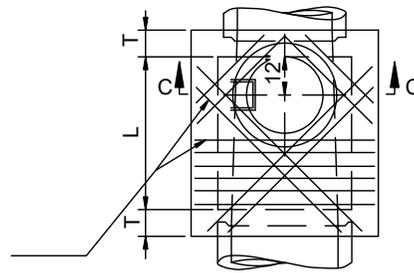
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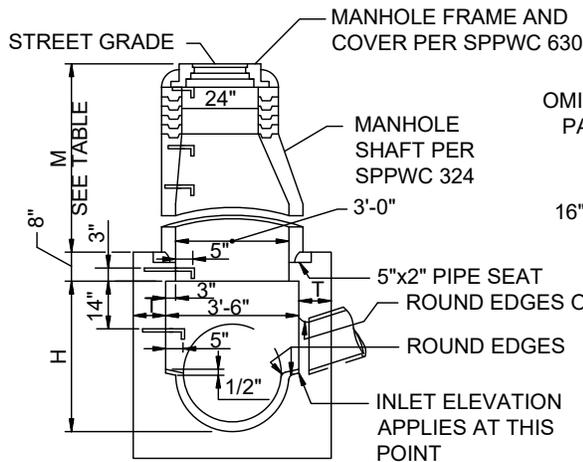
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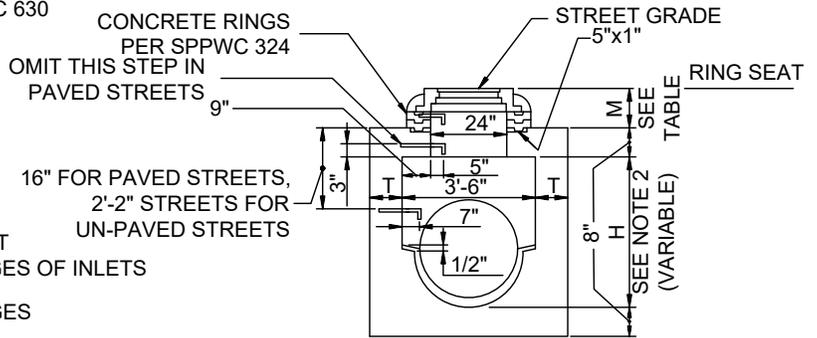
PLAN
(SHAFT NOT SHOWN)



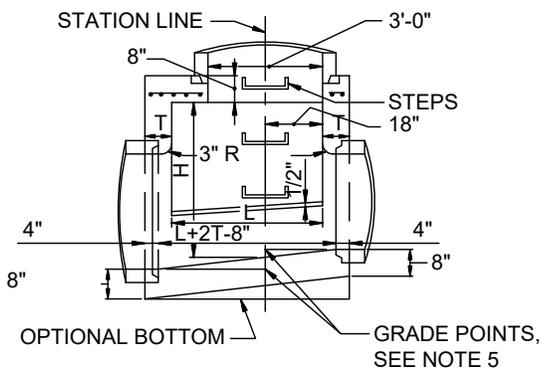
DETAIL "N" PLAN "
(RINGS AND COVER NOT SHOWN)
SEE NOTE 1



SECTION A-A



SECTION C-C



SECTION B-B

TABLE OF VALUES FOR M (SEE NOTE 1)				
SECTION	PAVED STREET		UNPAVED STREET	
	MAX	MIN	MAX	MIN
A-A		2'-10 1/2"	3'-6"	
C-C	11"	8 1/2"	16"	15"

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CITY OF SOLVANG - STANDARD DETAILS

**STORM DRAIN MANHOLE
33 INCH OR SMALLER**

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ISSUED: 7/7/2021
REVISED: -

DRAWING NUMBER

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1 OF 2

NOTES:

1. WHEN DEPTH M FROM STREET GRADE TO THE TOP OF THE BOX IS LESS THAN 2'-10 1/2" FOR PAVED STREETS OR 3'-6" FOR UNPAVED STREETS, CONSTRUCT SHAFT PER SECTION C-C AND DETAIL "N". DEPTH M MAY BE REDUCED TO AN ABSOLUTE LIMIT OF 6" WHEN LARGER VALUES OF M WOULD REDUCE H IN SECTION C-C TO 3'-6" OR LESS.
2. H (IN SECTION A-A AND B-B) SHALL NOT BE LESS THAN 4'-0", BUT MAY BE INCREASED PROVIDED THAT THE VALUE OF M SHALL NOT BE LESS THAN THE MINIMUM SPECIFIED AND THAT THE REDUCER SHALL BE USED. FOR H (IN SECTION C-C) SEE NOTE 1.
3. L SHALL BE 4'-0" UNLESS OTHERWISE SHOWN. L MAY BE INCREASED OR LOCATION OF MANHOLE SHIFTED TO MEET PIPE ENDS, BUT ANY CHANGE IN LOCATION OF THE SPUR MUST BE APPROVED BY THE ENGINEER.
4. T SHALL BE 8" FOR VALUES OF H UP TO AND INCLUDING 8'-0" AND 10" FOR VALUES OF H OVER 8'-0".
5. STATIONS OF MANHOLES SHOWN ON PLANS APPLY AT CENTERLINE OF SHAFT. ELEVATIONS ARE SHOWN AT CENTERLINE OF SHAFT AND REFER TO THE PROLONGED INVERT GRADE LINES. SEE NOTE 3.
6. REINFORCEMENT SHALL CONFORM TO ASTM A 615, GRADE 40 (ASTM A 615M, GRADE 300), AND SHALL TERMINATE 1 1/2" CLEAR OF CONCRETE SURFACES UNLESS OTHERWISE SHOWN.
7. FLOOR OF MANHOLE SHALL BE STEEL TROWELED TO SPRING LINE.
8. BODY OF MANHOLE SHALL BE POURED IN ONE CONTINUOUS OPERATION EXCEPT THAT A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY MAY BE PLACED AT SPRING LINE.
9. THICKNESS OF THE DECK SHALL VARY WHEN NECESSARY TO PROVIDE A LEVEL SEAT BUT SHALL NOT BE LESS THAN 8".
10. THE FOLLOWING CRITERIA SHALL BE USED FOR THIS MANHOLE:
 - A. MAIN LINE = 33" INSIDE DIAMETER OR LESS. (EXCEPTION IF THE MAIN LINE RCP DOWNSTREAM OF THE MANHOLE IS 36" TO 42" INSIDE DIAMETER AND THE MAIN LINE RCP UPSTREAM IS 33" OR LESS.) SPPWC 320 OR 322 IS NOT APPLICABLE WHERE THE MAIN LINE CONDUIT IS LESS THAN 36" IN DIAMETER.
 - B. SEE SECTION A - A. THE MAXIMUM SIZE LATERAL THAT MAY BE CONNECTED TO THIS MANHOLE IS SUCH THAT THE DISTANCE FROM THE OUTSIDE (TOP) OF THE LATERAL TO THE BOTTOM OF THE 8" THICK TOP OF THE MANHOLE CHAMBER, MEASURED VERTICALLY FROM THE END OF THE RCP, SHALL BE A MINIMUM OF 6".
 - C. IF THE SIZE OF THE LATERAL IS SUCH THAT THE ABOVE-SPECIFIED MINIMUM DISTANCES CANNOT BE MAINTAINED, THEN ONE OF THE FOLLOWING ALTERNATE SOLUTIONS MUST BE USED.
 1. PROVIDE A SPECIAL STRUCTURE.
 2. PROVIDE TWO STANDARD STRUCTURES, CONSISTING OF THIS MANHOLE PLACED UPSTREAM OR DOWNSTREAM FROM THE APPLICABLE JUNCTION STRUCTURE OR TRANSITION STRUCTURE.
11. MANHOLE FRAME AND COVER SHALL CONFORM TO SPPWC 630 UNLESS OTHERWISE SHOWN.
12. MANHOLE SHAFT SHALL CONFORM TO SPPWC 324 UNLESS OTHERWISE SHOWN.
13. WHERE A MANHOLE SHAFT - 36" WITHOUT REDUCER IS SPECIFIED REFER TO SPPWC 336.
14. WHERE A PRESSURE MANHOLE SHAFT - WITH ECCENTRIC REDUCER IS SPECIFIED REFER TO SPPWC 328.
15. WHERE A PRESSURE MANHOLE SHAFT - 36" WITHOUT REDUCER IS SPECIFIED REFER TO SPPWC 329.

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CITY OF SOLVANG - STANDARD DETAILS

**STORM DRAIN MANHOLE
33 INCH OR SMALLER**

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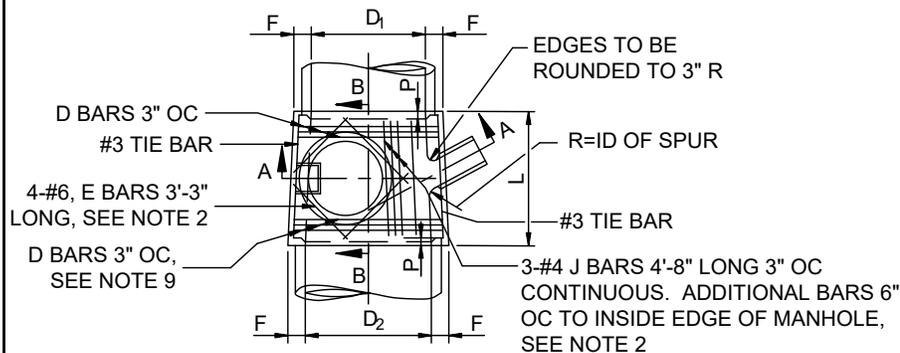
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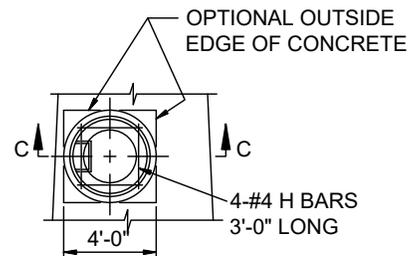
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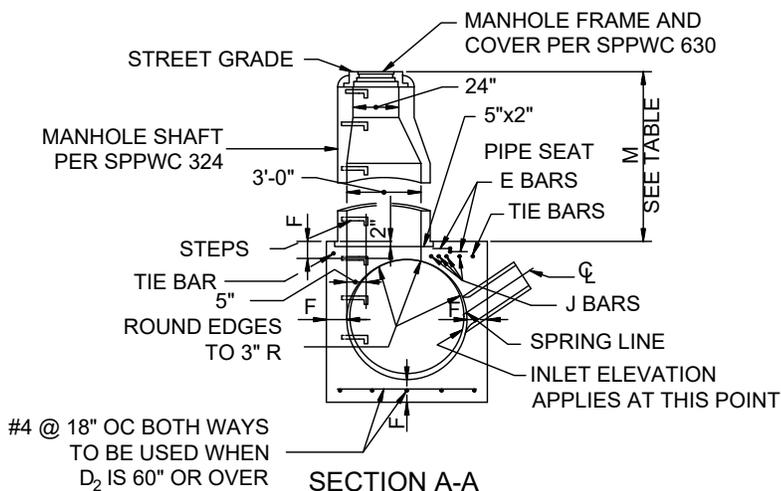
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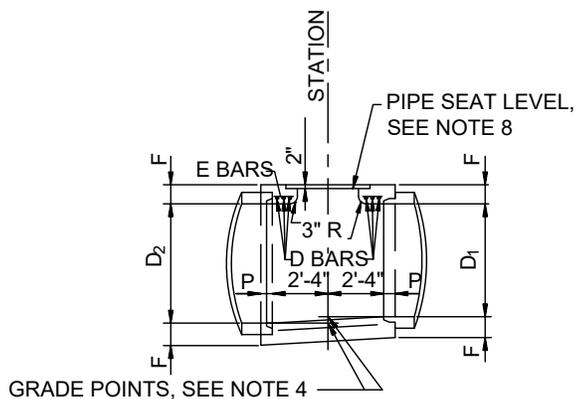
PLAN
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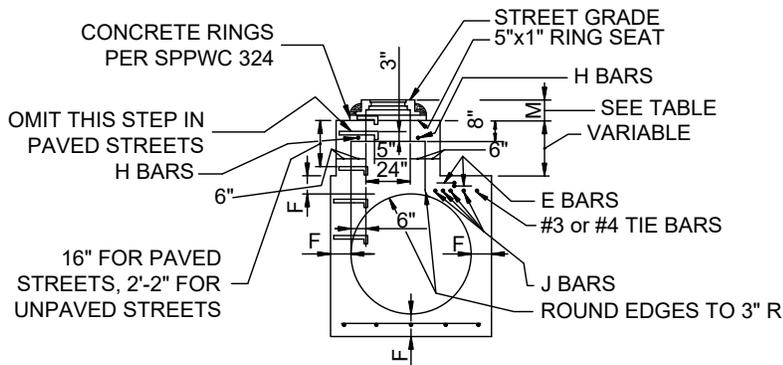
DETAIL "N"
(RINGS AND COVER NOT SHOWN)
(SEE NOTE 1)



SECTION A-A



SECTION B-B



SECTION C-C



CITY OF SOLVANG - STANDARD DETAILS

**STORM DRAIN MANHOLE
36 INCH OR LARGER**

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1 OF 3

TABLE OF VALUES FOR F	
D ₂	F
36"	6 1/2"
39"	7"
42"	7 1/2"
45"	7 3/4"
48"	8"
51"	8 1/2"
54"	9"
57"	9 1/4"
60"	9 1/2"
63"	10"
66"	10 1/4"
69"	10 3/4"
72"	11"
78"	11 3/4"
84"	12 1/2"
90"	13 1/4"
96"	14"
102"	15 1/2"
108"	16"
114"	16 1/2"
120"	17"
126"	17"
132"	17 1/2"
138"	17 1/2"
144"	18"

TABLE OF VALUES FOR M (SEE NOTE 1)				
SECTION	PAVED STREET		UNPAVED STREET	
	MAX	MIN	MAX	
A-A		2'-10 1/2"		3'-6"
C-C	11"	8 1/2"	16"	15"

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CITY OF SOLVANG - STANDARD DETAILS

STORM DRAIN MANHOLE 36 INCH OR LARGER

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ISSUED: 7/7/2021
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2 OF 3

NOTES:

1. WHEN DEPTH M FROM STREET GRADE TO THE TOP OF THE BOX IS LESS THAN 2'-10 1/2" FOR PAVED STREETS OR 3'-6" FOR UNPAVED STREETS, CONSTRUCT MONOLITHIC SHAFT PER SECTION C-C AND DETAIL "N". SHAFT FOR ANY DEPTH OF MANHOLE MAY BE CONSTRUCTED PER SECTION C-C. WHEN DIAMETER D₁ IS 48" OR LESS, CENTER OF SHAFT MAY BE LOCATED PER NOTE 2.
2. CENTER OF MANHOLE SHAFT SHALL BE LOCATED OVER CENTER LINE OF STORM DRAIN WHEN DIAMETER D₁ IS 48" OR LESS, IN WHICH CASE PLACE E BARS SYMMETRICALLY AROUND SHAFT AT 45° WITH CENTERLINE AND OMIT J BARS.
3. L AND P SHALL HAVE THE FOLLOWING VALUES UNLESS OTHERWISE SHOWN ON THE PROJECT DRAWINGS:
 - A. D₂ =96" OR LESS, L=5'-6", P=5"
 - B. D₂ OVER 96" , L=6'-0", P=8"
 L MAY BE INCREASED OR LOCATION OF MANHOLE SHIFTED TO MEET PIPE ENDS. WHEN L GREATER THAN THAT SHOWN ABOVE IS SPECIFIED, D BARS SHALL BE CONTINUED 6" OC.
4. STATIONS OF MANHOLES SHOWN ON PLANS APPLY AT CENTERLINE OF SHAFT. ELEVATIONS ARE SHOWN AT CENTERLINE OF SHAFT AND REFER TO THE PROLONGED INVERT GRADE LINES.
5. REINFORCEMENT SHALL CONFORM TO ASTM A 615M, GRADE 300 (ASTM A 615, GRADE 40), AND SHALL TERMINATE 1 1/2" CLEAR OF CONCRETE SURFACES UNLESS OTHERWISE SHOWN.
6. FLOOR OF MANHOLE SHALL BE STEEL TROWELED TO SPRING LINE.
7. BODY OF MANHOLE SHALL BE Poured IN ONE CONTINUOUS OPERATION EXCEPT THAT A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY MAY BE PLACED AT SPRING LINE.
8. THICKNESS OF THE DECK SHALL VARY WHEN NECESSARY TO PROVIDE A LEVEL SEAT BUT SHALL NOT BE LESS THAN THE TABULAR VALUES FOR F SHOWN ON SHEET 2.
9. D BARS SHALL BE #4 FOR D₂ =39" OR LESS, #5 FOR D₂ = 42" TO 84" INCLUSIVE AND #6 FOR D₂ = 90" OR OVER.
10. CENTERLINE OF INLET PIPE SHALL INTERSECT INSIDE FACE OF CONE AT SPRING LINE UNLESS OTHERWISE SHOWN.
11. THE FOLLOWING CRITERIA SHALL BE USED FOR THIS MANHOLE:
 - A. MAIN LINE = 36" INSIDE DIAMETER OR LARGER. EXCEPT IF THE MAIN LINE RCP DOWNSTREAM OF MANHOLE IS 36" TO 42" INSIDE DIAMETER AND THE MAIN LINE RCP UPSTREAM IS 33" OR LESS SPPWC 321 SHALL BE USED.
 - B. THE OUTSIDE DIAMETER OF THE LATERAL MUST BE LESS THAN OR EQUAL TO 1/2 THE INSIDE DIAMETER OF THE MAIN LINE. IF THE UPSTREAM AND DOWNSTREAM DIAMETERS OF THE MANHOLE ARE NOT THE SAME, THE GOVERNING INSIDE DIAMETER OF THE MAIN LINE SHALL BE CONSIDERED TO BE THAT WHERE THE EXTENDED CENTERLINE OF THE LATERAL ENTERS THE MANHOLE.
 - C. IN NO INSTANCE SHALL THE INSIDE DIAMETER OF THE LATERAL TO THE MANHOLE BE GREATER THAN 30".
12. MANHOLE FRAME AND COVER SHALL CONFORM TO SPPWC 630 UNLESS OTHERWISE SHOWN.
13. MANHOLE SHAFT SHALL CONFORM TO SPPWC 324 UNLESS OTHERWISE SHOWN.
14. WHERE A MANHOLE SHAFT - 36" WITHOUT REDUCER IS SPECIFIED REFER TO SPPWC 326.
15. WHERE A PRESSURE MANHOLE SHAFT - WITH ECCENTRIC REDUCER IS SPECIFIED REFER TO SPPWC 328.
16. WHERE A PRESSURE MANHOLE SHAFT - 6" WITHOUT REDUCER IS SPECIFIED REFER TO SPPWC 329.

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CITY OF SOLVANG - STANDARD DETAILS

**STORM DRAIN MANHOLE
36 INCH OR LARGER**

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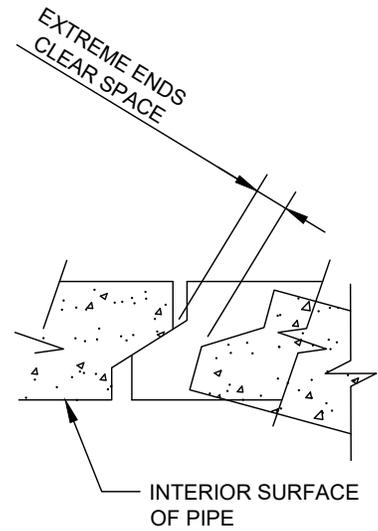
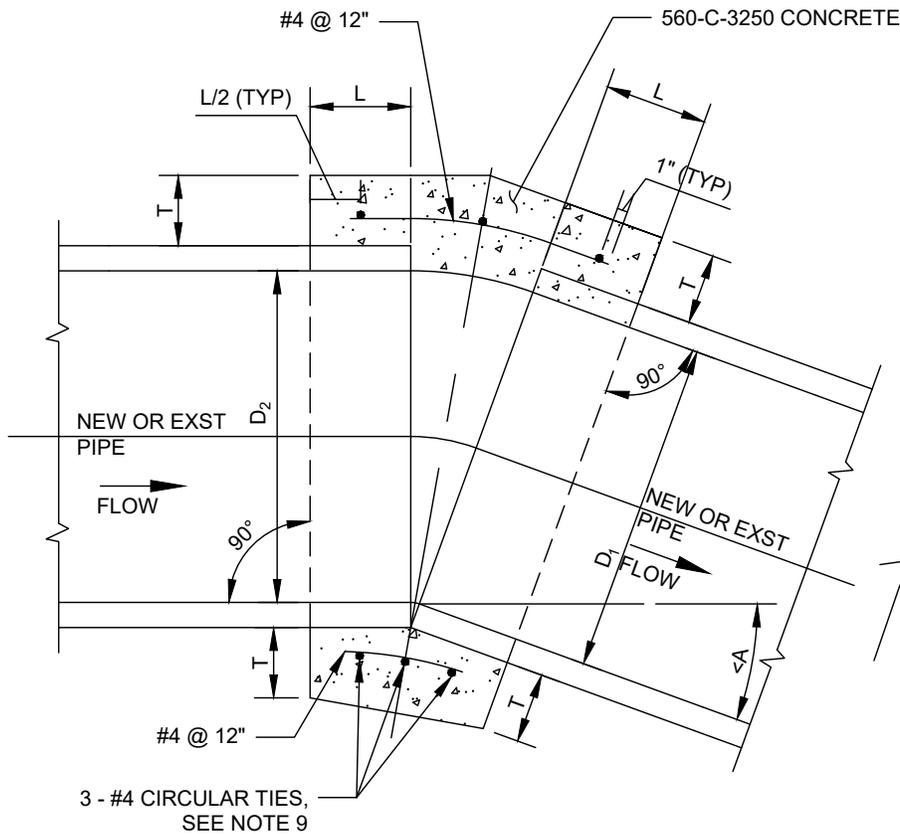
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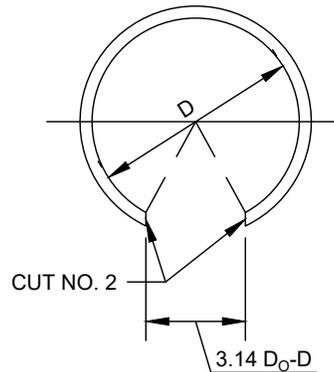
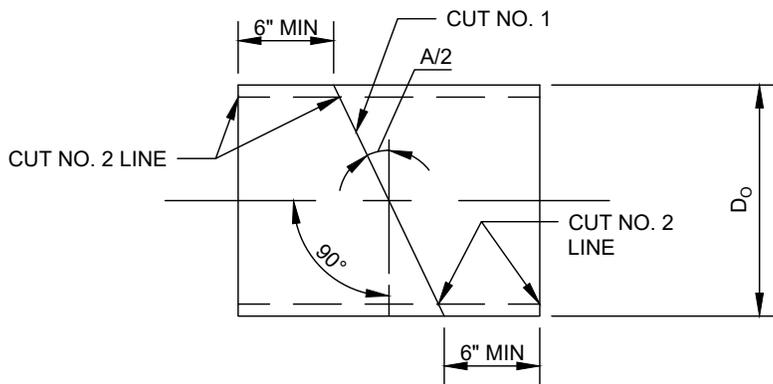
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DETAIL "B"
TYPICAL JOINT FOR
REINFORCED CONCRETE PIPE



DETAIL "A"
(SEE NOTE 10)
SONO-TUBE, OR EQUAL, INTERIOR FORM

CUT NO. 1: SAW THE TUBE AT AN ANGLE OF $A/2$ WITH THE TRANSVERSE PLANE. REVERSE ONE SECTION AND TAPE BOTH SECTIONS TOGETHER FORMING THE DEFLECTION ANGLE A.

CUT NO. 2: SAW THE TUBE LONGITUDINALLY REMOVING A STRIP $3.14 (D_0 - D)$ WIDE ON THE SIDE OPPOSITE THE OPEN JOINT. BEND THE ENDS OF THE CUT TOGETHER AND INSERT THE TUBE IN THE PIPE.



CITY OF SOLVANG - STANDARD DETAILS

CONCRETE COLLAR CONNECTION

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D	L	T
12"	12"	4"
18"	12"	5"
24"	12"	6"
30"	18"	7"
36"	18"	9"
42"	18"	9"
48"	18"	10"
57"	18"	10"
60"	21"	11"
66"	21"	11"
72"	24"	12"



CITY OF SOLVANG - STANDARD DETAILS

CONCRETE COLLAR CONNECTION

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NOTES:

1. A CONCRETE COLLAR IS REQUIRED WHERE THE CHANGE IN GRADE EXCEEDS 10%.
2. FOR CURVE JOINTS (SEE DETAIL B, SHEET 1) IF THE EXTREME ENDS OF THE PIPE LEAVE A CLEAR SPACE THAT IS GREATER THAN 1" , BUT IS LESS THAN 3" A CONCRETE COVER IS REQUIRED IN ACCORDANCE WITH SSPWC 306-7.3.2.1. IF THE EXTREME ENDS OF THE PIPE LEAVE A CLEAR SPACE THAT IS EQUAL TO OR GREATER THAN 3" , BUT LESS THAN 6" , A CONCRETE COLLAR IS REQUIRED. IF THE CLEAR SPACE IS 6" OR GREATER, A TRANSITION STRUCTURE IS REQUIRED.
3. CONCRETE COLLAR SHALL NOT BE USED FOR A SIZE CHANGE ON THE MAIN LINE.
4. CONNECTOR PIPES
 - A. WHERE PIPES OF DIFFERENT DIAMETERS ARE JOINED WITH A CONCRETE COLLAR, L AND T SHALL BE THOSE OF THE LARGER PIPE. $D=D_1$ OR D_2 , WHICHEVER IS GREATER.
 - B. WHEN D_1 IS EQUAL TO OR LESS THAN D_2 , JOIN INVERTS AND WHEN D_1 IS GREATER THAN D_2 , JOIN SOFFITS.
5. FOR PIPE LARGER THAN 72" SPECIAL COLLAR DETAILS ARE REQUIRED.
6. FOR PIPE SIZE NOT LISTED USE NEXT SIZE LARGER.
7. REINFORCEMENT SHALL CONFORM TO ASTM A 615 (A 615 M) GRADE 40 (300).
8. WHERE REINFORCING IS REQUIRED THE DIAMETER OF THE CIRCULAR TIES SHALL BE $D+(2X \text{ WALL THICKNESS}) + T$.
9. REINFORCING SHALL BE USED WHERE THE PIPE DIAMETER IS GREATER THAN 21" AND ON ALL PIPES WHERE THE SPACES BETWEEN THE EXTREME OUTER ENDS IS 3" (75 mm) OR LARGER.

CIRCULAR TIES:

WHERE THE SPACE BETWEEN PIPE ENDS EXCEEDS 3", THE NUMBER OF CIRCULAR TIES SHALL BE INCREASED TO MAINTAIN AN APPROXIMATE SPACING OF 6" O.C.

10. WHERE THE PIPE IS 21" OR LESS IN DIAMETER AN INTERIOR FORM OF UNSEALED SONO-TUBE OR EQUAL SHALL BE USED TO PROVIDE A SMOOTH INTERIOR JOINT. THE PAPER FORM MAY BE LEFT IN PLACE (SEE DETAIL A). WHEN THE PIPE IS 24" OR LARGER A REMOVABLE INTERIOR FORM SHALL BE USED OR THE INTERIOR JOINT SHALL BE COMPLETELY FILLED WITH MORTAR AND NEATLY POINTED.

PIPE DIAMETER	NO. OF CIRCULAR TIES
21" OR LESS	3
24" to 30"	3
33" to 57"	4
60" to 72"	5

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CITY OF SOLVANG - STANDARD DETAILS

CONCRETE COLLAR CONNECTION

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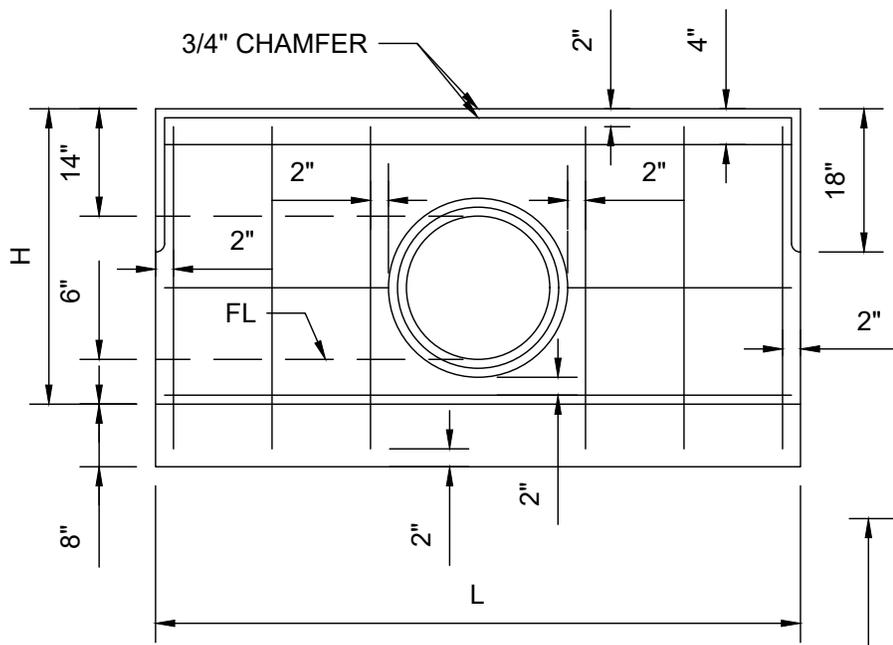
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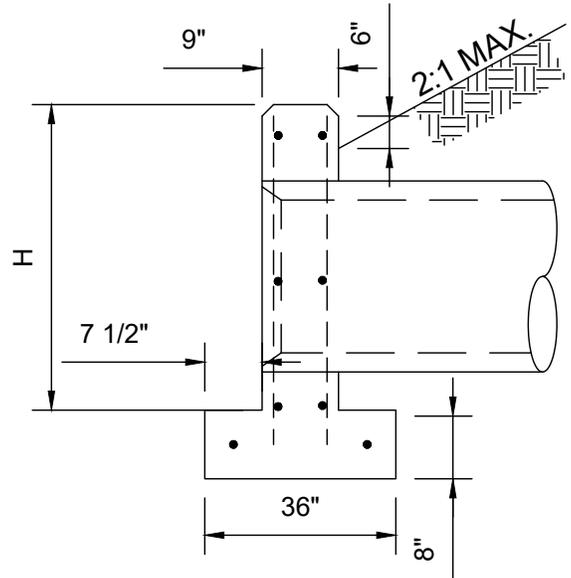
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PLAN



SECTION

D (IN.)	H (FT.)	SINGLE			DOUBLE		
		L (FT.)	STEEL (LBS.)	CONC (C.Y.)	L (FT.)	STEEL (LBS.)	CONC (C.Y.)
18	3.17	7.0	50	0.91	10.5	75	1.35
21	3.42	7.5	60	1.02	11.5	90	1.52
24	3.67	8.5	75	1.20	12.5	100	1.72
27	3.92	9.5	85	1.39	14.0	115	2.00
30	4.17	10.0	85	1.52	15.0	126	2.21
33	4.50	11.0	100	1.73	16.0	130	2.42
36	4.67	12.0	105	1.95	17.0	145	2.65
39	4.92	12.5	130	2.09	18.0	170	2.88
42	5.17	13.5	140	2.34	19.0	185	3.13
45	5.42	14.5	150	2.60	20.0	195	3.38
48	5.67	15.0	160	2.75	21.0	200	3.64

NOTES:

1. CONCRETE - CLASS 560-C-3250 PER STANDARDS SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION (GREEN BOOK).
2. REINFORCED STEEL - ALL HORIZONTAL AND VERTICAL BARS SHALL BE #4 AT MAXIMUM OF 18-INCH SPACING.
3. 3-INCH RADIUS AROUND EDGE AT PIPE INLET.
4. DOUBLE INLET WALL - SAME AS SINGLE D/2 OR 2-FOOT MINIMUM SPACING BETWEEN PIPE INSIDE DIAMETERS.



CITY OF SOLVANG - STANDARD DETAILS

HEADWALL

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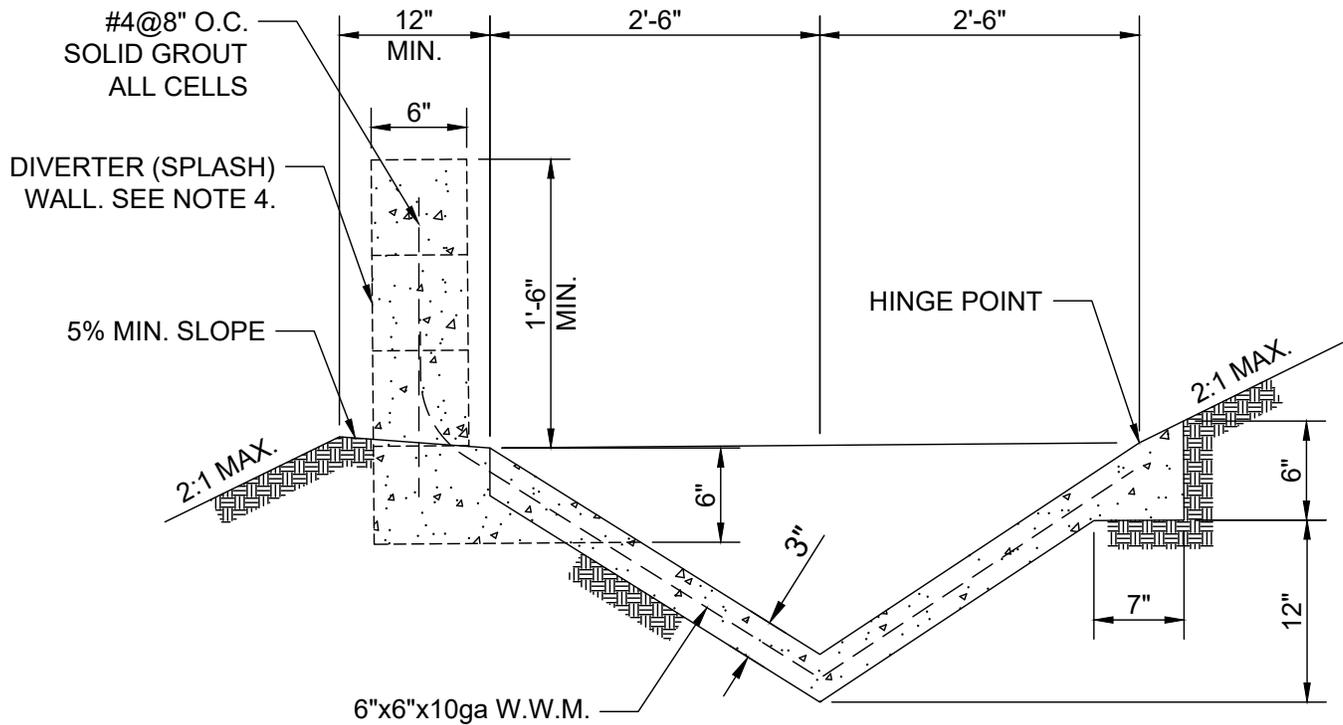
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NOTES:

1. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS OF 2500 PSI. CONCRETE MAY BE PNEUMATICALLY PLACED AND SHALL CONFORM TO SECTION 303-2 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREEN BOOK).
2. REINFORCING SHALL BE 6"x6"x10ga W.W.M. OR APPROVED EQUAL.
3. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE CITY GRADING INSPECTOR PRIOR TO PLACEMENT OF CONCRETE. CURING COMPOUND SHALL BE USED WHEN REQUIRED BY THE CITY GRADING INSPECTOR.
4. CONCRETE OR CONCRETE BLOCK DIVERTER (SPLASH) WALL TO BE CONSTRUCTED WHEN DOWN DRAIN TERMINATES AT TERRACE DRAIN. SEE PLAN FOR LOCATION AND DETAILS.



CITY OF SOLVANG - STANDARD DETAILS

TERRACE DRAIN

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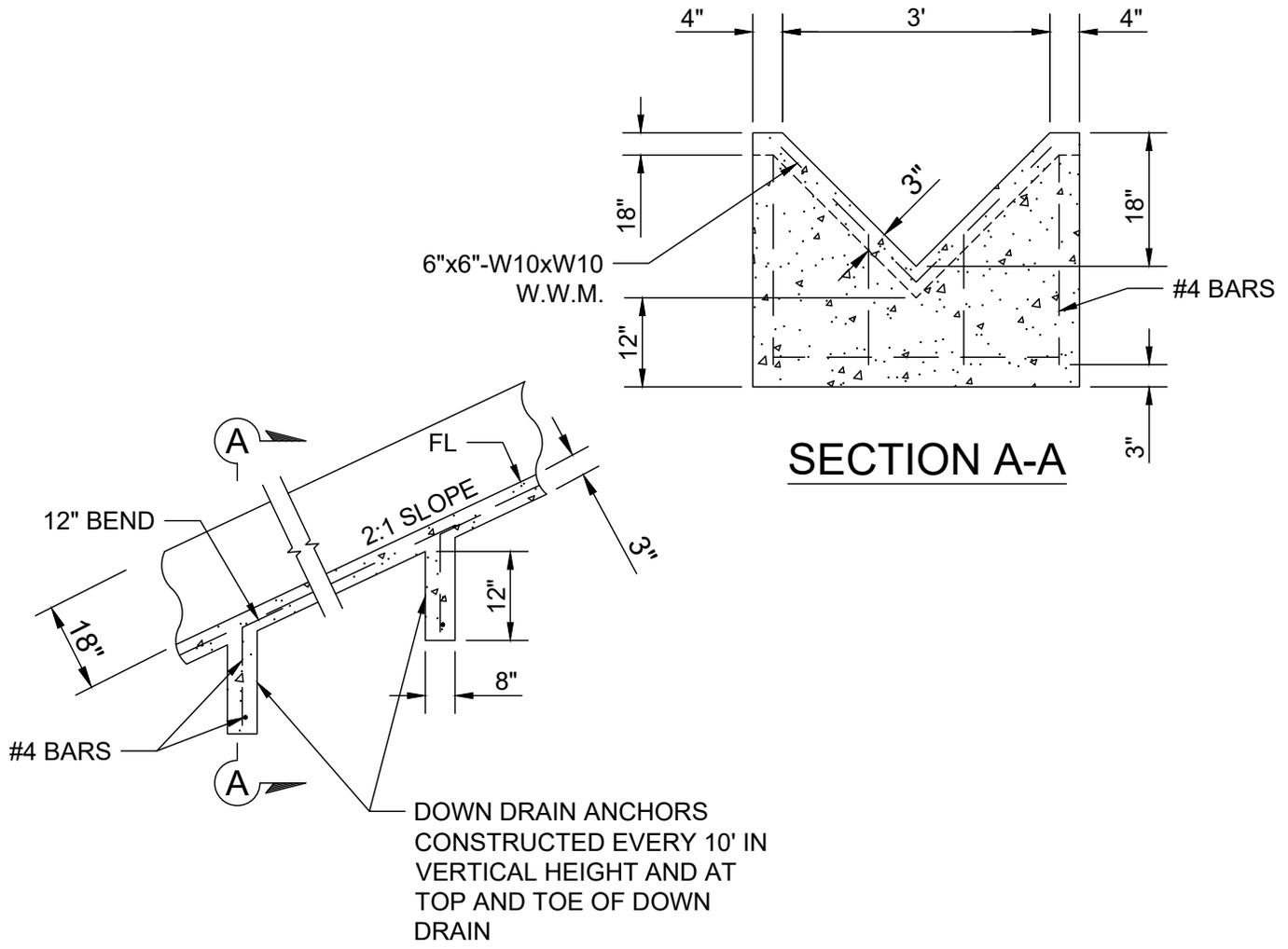
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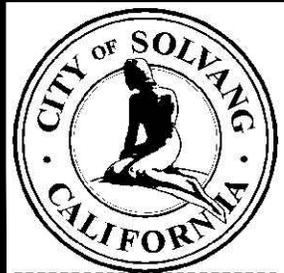
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DOWN DRAIN

NOTES:

1. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS OF 2500 PSI. CONCRETE MAY BE PNEUMATICALLY PLACED AND SHALL CONFORM TO SECTION 303-2 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREEN BOOK).
2. REINFORCING SHALL BE 6"x6"x10ga W.W.M. OR APPROVED EQUAL.
3. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE CITY GRADING INSPECTOR PRIOR TO PLACEMENT OF CONCRETE. CURING COMPOUND SHALL BE USED WHEN REQUIRED BY THE CITY GRADING INSPECTOR.



CITY OF SOLVANG - STANDARD DETAILS

DOWN DRAIN

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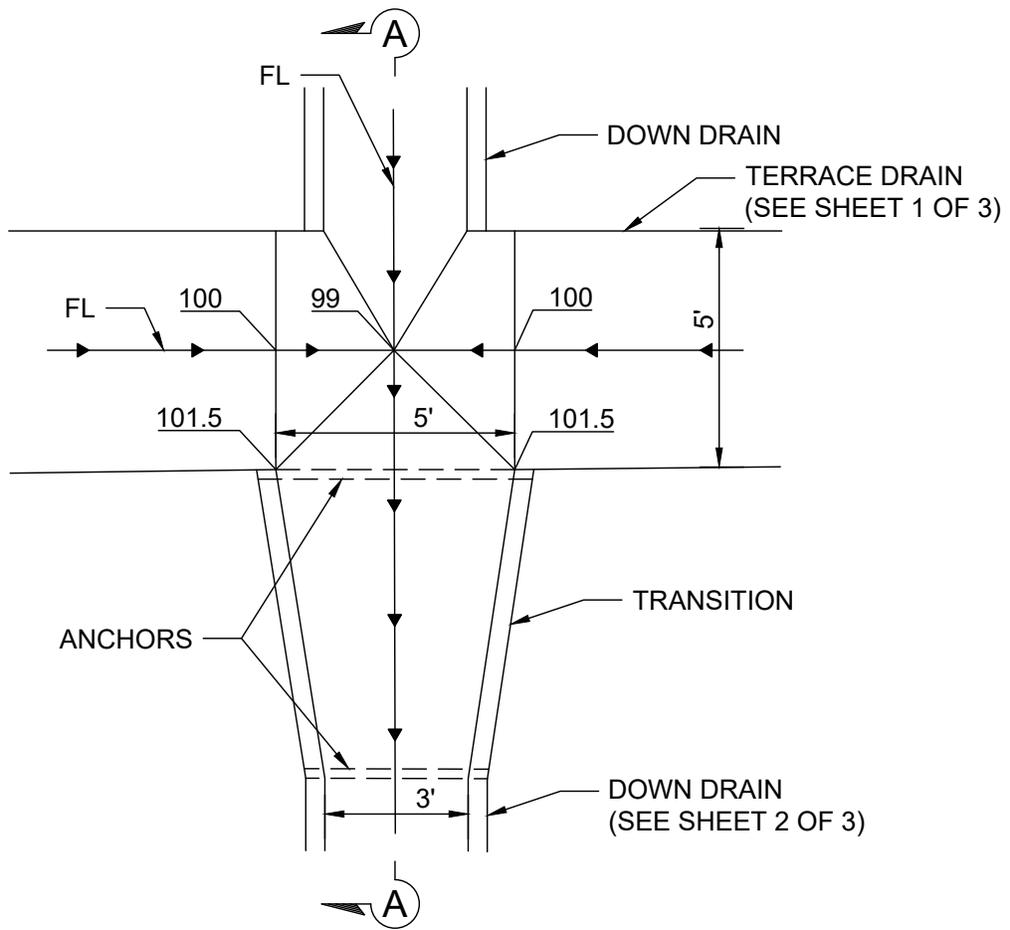
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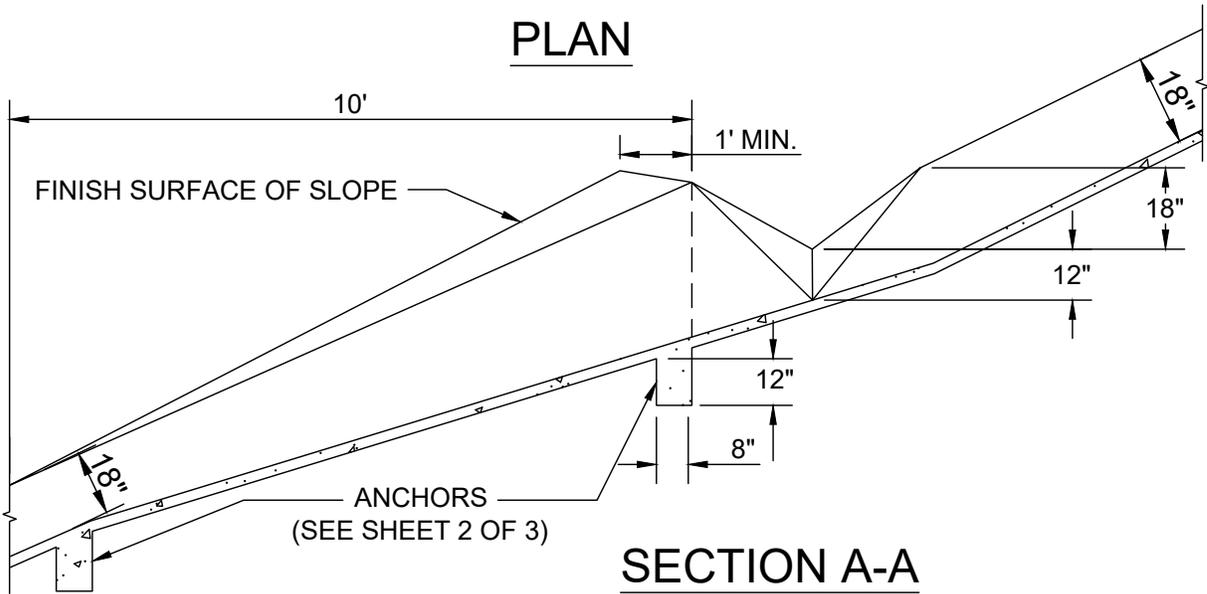
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PLAN



SECTION A-A



CITY OF SOLVANG - STANDARD DETAILS

TERRACE DRAIN AND DOWN DRAIN INTERSECTION

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