

CITY OF MISSION VIEJO



STANDARD PLANS

ADOPTED MARCH 14, 1994
RESOLUTION NO. 94-34
REVISED SEPTEMBER 23, 2003

MISSION VIEJO STANDARD PLANS

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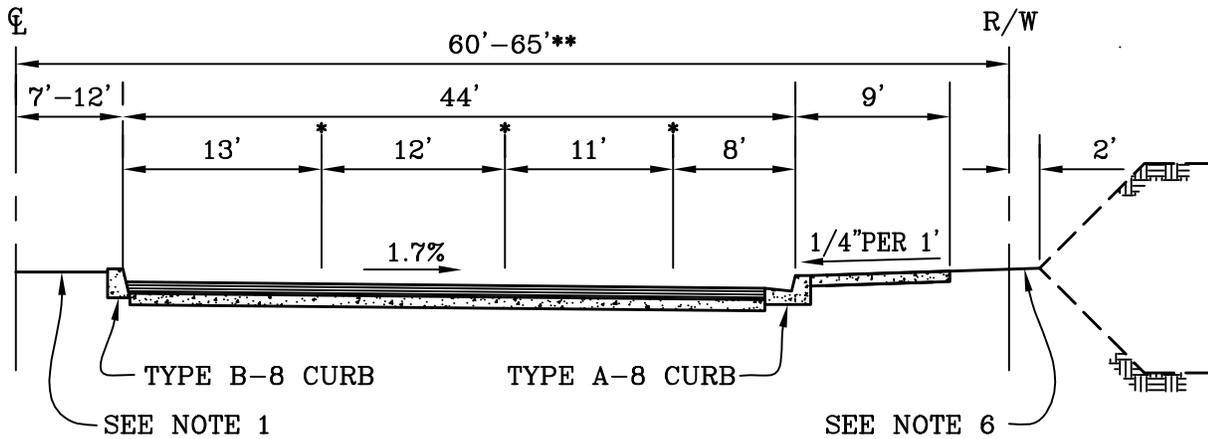
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DATE

STANDARD
PLAN NO.

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SECTION
 SYMMETRICAL
 ABOUT CL

- * LONGITUDINAL JOINT FOR FINISH A.C.
- ** ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED FOR DUAL LEFT TURN LANES, RIGHT TURN LANES, AND WHEN ARTERIAL HIGHWAY COINCIDES WITH AN ADOPTED ROUTE FOR AN ADDITIONAL PUBLIC FACILITY (I.E., PEDESTRIAN, TRANSIT, BICYCLE, OR EQUESTRIAN TRAIL) OR FOR A SCENIC HIGHWAY.

NOTES:

1. SEE LANDSCAPE GUIDELINES FOR MEDIAN DETAILS.
2. SEE STANDARD PLAN 316 FOR CURB DETAILS.
3. DESIGN SPEED SHALL BE A MINIMUM OF 60 MILES PER HOUR.
4. THICKNESS OF PAVEMENT TO BE APPROVED BY THE CITY ENGINEER.
5. SEE STANDARD PLAN 321 FOR SIDEWALK DETAILS.
6. DISTANCE SHOWN IS MINIMUM FROM RIGHT-OF-WAY TO HINGE POINT.
7. MINIMUM STREET FLOW LINE GRADE SHALL BE 0.5% REVERSE GRADE VERTICAL CURVES EXCEPTED.
8. CHECK HORIZONTAL AND VERTICAL SIGHT DISTANCE FOR INTERSECTING STREETS PER DESIGN SPEED AND STANDARD PLAN 315.
9. PARKING RESTRICTIONS ASSUMED ON BOTH SIDES OF ARTERIALS PER CITY GENERAL PLAN, SIGNING WILL BE REQUIRED PER CITY DIRECTION AND STANDARD PLANS 325 & 328 FOR SIGN INSTALLATION DETAILS.

CITY OF MISSION VIEJO



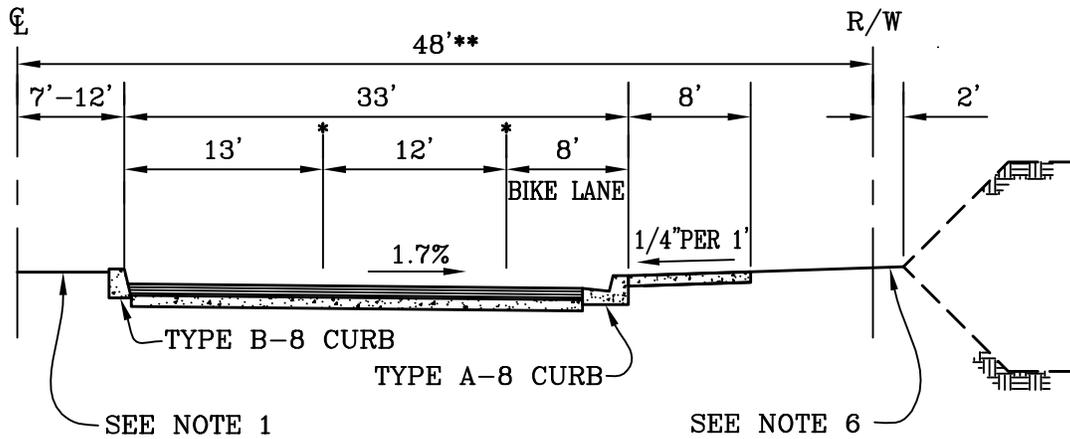
MAJOR HIGHWAY

STANDARD
 PLAN NO.

301

Robert Anderson 9-23-03
 APPROVED RCE 30190 DATE

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SECTION
 SYMMETRICAL
 ABOUT CL

- * LONGITUDINAL JOINT FOR FINISH COURSE S.C. TO ALIGN WITH LANE STRIPING.
- ** ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED FOR DUAL LEFT TURN LANES, RIGHT TURN LANES, AND WHEN ARTERIAL HIGHWAY COINCIDES WITH AN ADOPTED ROUTE FOR AN ADDITIONAL PUBLIC FACILITY (I.E., PEDESTRIAN, BICYCLE, TRANSIT OR EQUESTRIAN TRAIL), OR FOR A SCENIC HIGHWAY.

NOTES:

1. SEE LANDSCAPE GUIDELINES FOR MEDIAN DETAILS.
2. SEE STANDARD PLAN 316 FOR CURB DETAILS.
3. DESIGN SPEED SHALL BE A MINIMUM OF 55 MILES PER HOUR.
4. THICKNESS OF PAVEMENT TO BE APPROVED BY THE CITY ENGINEER.
5. SEE STANDARD PLAN 321 FOR SIDEWALK DETAILS.
6. DISTANCE SHOWN IS MINIMUM FROM RIGHT-OF-WAY TO HINGE POINT.
7. MINIMUM STREET FLOW LINE GRADE SHALL BE 0.5% REVERSE GRADE VERTICAL CURBS EXCEPTED.
8. CHECK HORIZONTAL AND VERTICAL SIGHT DISTANCE FOR INTERSECTING STREETS PER DESIGN SPEED AND STANDARD PLAN 315.
9. PARKING RESTRICTIONS ASSUMED ON BOTH SIDES OF ARTERIALS PER CITY GENERAL PLAN, SIGNING WILL BE REQUIRED PER CITY DIRECTION AND STANDARD PLANS 325 & 328 FOR SIGN INSTALLATION DETAILS.

CITY OF MISSION VIEJO



PRIMARY HIGHWAY

STANDARD
 PLAN NO.

302

Robert Anderson

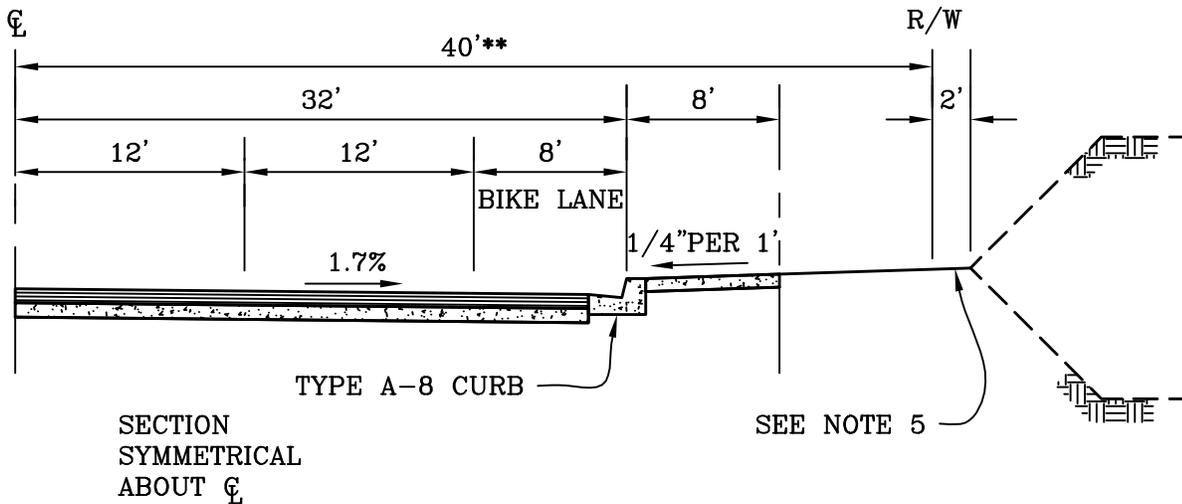
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** ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED WHEN AN ARTERIAL HIGHWAY COINCIDES WITH AN ADOPTED ROUTE FOR AN ADDITIONAL PUBLIC FACILITY (I.E., PEDESTRIAN, BICYCLE, OR EQUESTRIAN TRAIL), OR FOR A SCENIC HIGHWAY.

NOTES:

1. DESIGN SPEED SHALL BE A MINIMUM OF 50 MILES PER HOUR.
2. THICKNESS OF PAVEMENT TO BE APPROVED BY THE CITY ENGINEER.
3. SEE STD. PLAN 316 FOR TYPE A CURB.
4. SEE STD. PLAN 321 FOR SIDEWALK DETAILS.
5. DISTANCE SHOWN IS MINIMUM FROM R/W TO HINGE POINT.
6. MINIMUM STREET FLOW LINE GRADE SHALL BE 0.5%, REVERSE GRADE VERTICAL CURVES EXCEPTED.
7. CHECK HORIZONTAL AND VERTICAL SIGHT DISTANCE OF ALL INTERSECTING STREETS PER DESIGN SPEED AND STD. PLAN 315.
8. PARKING RESTRICTIONS ASSUMED ON BOTH SIDES OF ARTERIALS PER CITY GENERAL PLAN, SIGNING WILL BE REQUIRED PER CITY DIRECTION AND STANDARD PLANS 325 AND 328 FOR SIGN INSTALLATION DETAILS.

CITY OF MISSION VIEJO



SECONDARY HIGHWAY

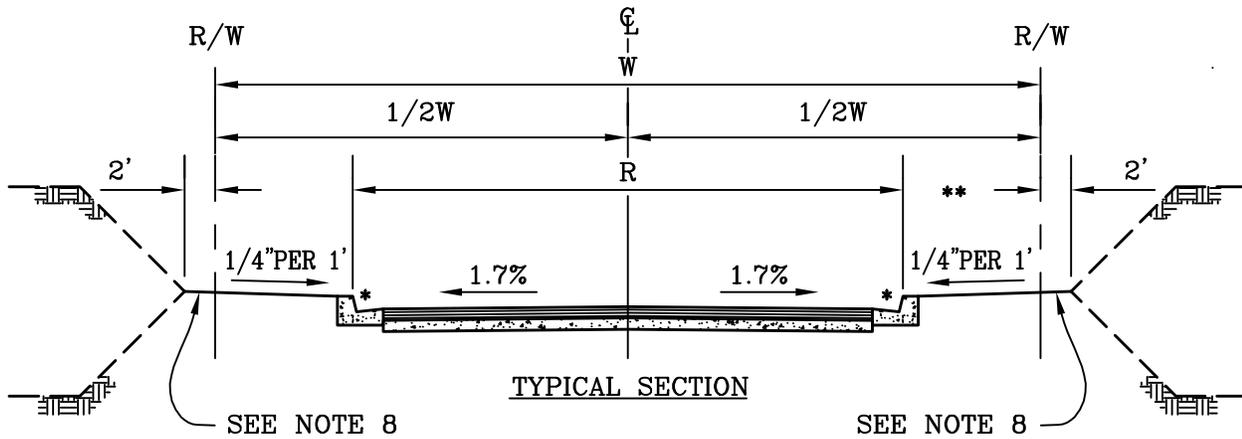
STANDARD
PLAN NO.

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LEGEND

W = WIDTH OF RIGHT-OF-WAY
R = WIDTH OF ROADWAY IN FEET
P = WIDTH OF PARKWAY IN FEET

CLASSIFICATION	TYPICAL ACCESS BY:	PARKING ALLOWED	MIN. DESIGN SPEED	W	R	SIDEWALK
INDUSTRIAL COLLECTOR	INDUSTRIAL LOCAL STREET DRIVEWAY BOTH SIDES	BOTH SIDES	35	74	64	BOTH SIDES
INDUSTRIAL LOCAL-a	INDUSTRIAL LOCAL STREET DRIVEWAY BOTH SIDES	BOTH SIDES	25	54	44	BOTH SIDES
COMMUTER	LOCAL STREETS	BOTH SIDES	35-45	56	40	BOTH SIDES
COLLECTOR	LOCAL STREETS	BOTH SIDES	35	56	40	BOTH SIDES
LOCAL	LOCAL STREETS DRIVEWAY ONE SIDE	BOTH SIDES	25	52	36	BOTH SIDES
LOCAL	LOCAL STREETS DRIVEWAY BOTH SIDES	BOTH SIDES	25	56	40	BOTH SIDES
LOCAL	DRIVEWAY BOTH SIDES	BOTH SIDES	25	52	36	BOTH SIDES
LOCAL-b	DRIVEWAY ONE SIDE	ONE SIDE	25	38.5	30	ONE SIDE
LOCAL-b	DRIVEWAY ONE SIDE	NONE	25	36.5	28	ONE SIDE

* INDUSTRIAL COLLECTOR CURBS SHALL BE TYPE "A-8", SPECIAL CONDITIONS MAY REQUIRE OTHER TYPES.

** ON SIDE WITH NO SIDEWALK, R/W IS AT BACK OF CURB.

SEE SHT. 2 FOR NOTES

CITY OF MISSION VIEJO

COLLECTOR, COMMUTER AND LOCAL STREETS

STANDARD
PLAN NO.

304



Robert Anderson

9-23-03

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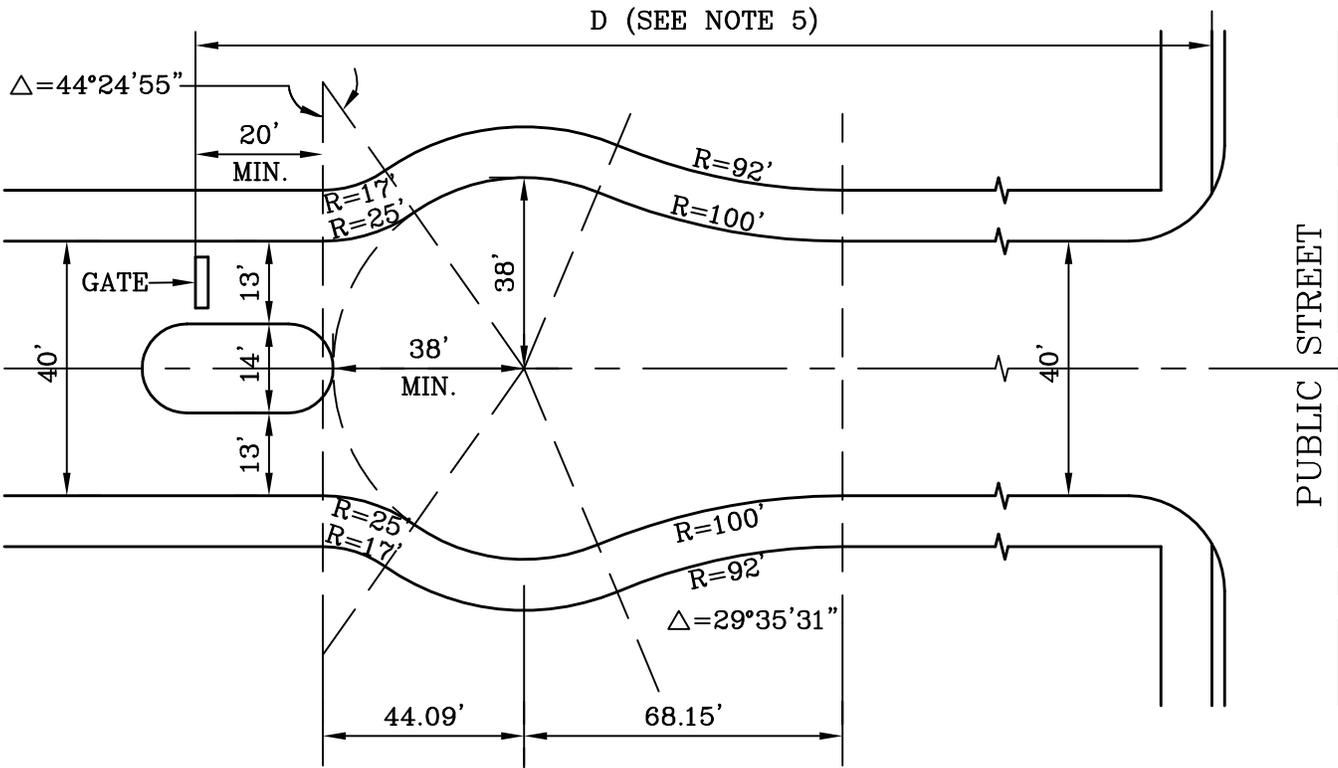
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DATE

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NOTES:

1. PRIVATE STREET WIDTHS AND GEOMETRICS SHALL BE DESIGNED TO PUBLIC STREET STANDARDS.
2. SIDEWALKS SHALL BE PROVIDED ON ALL PRIVATE STREETS IN CONFORMANCE WITH STD. PLAN 321 UNLESS ALTERNATE PEDESTRIAN CIRCULATION SYSTEM IS PROVIDED MEETING THE APPROVAL OF THE CITY ENGINEER.
3. REQUIRED PAVEMENT STRUCTURAL SECTION SHALL BE DETERMINED BY THE SOILS ENGINEER AND APPROVED BY THE CITY ENGINEER.
4. ENTRYWAYS TO PRIVATE TRACTS SHALL BY DESIGNED TO EMPHASIZE THEIR PRIVATE STATUS. TEXTURED CONCRETE, ARCHES, GUARD GATES OR OTHER ACCESS CONTROL SHALL BE REQUIRED AT TRANSITION FROM PUBLIC TO PRIVATE STREET. ENTRY GATES SHALL BE SET BACK FROM STORAGE FOR ENTERING VEHICLES TO ALLOW STACKING WITHOUT INTERFERING WITH THROUGH TRAFFIC. MINIMUM DESIGN CRITERIA AND REQUIRED FEATURES FOR GUARD GATES ARE SHOWN BELOW.
5. $D=1'$ PER DWELLING UNIT SERVED, 100' MINIMUM (MULTIPLE LANES MAY BE USED TO SATISFY STORAGE DISTANCE REQUIREMENTS.)



CITY OF MISSION VIEJO



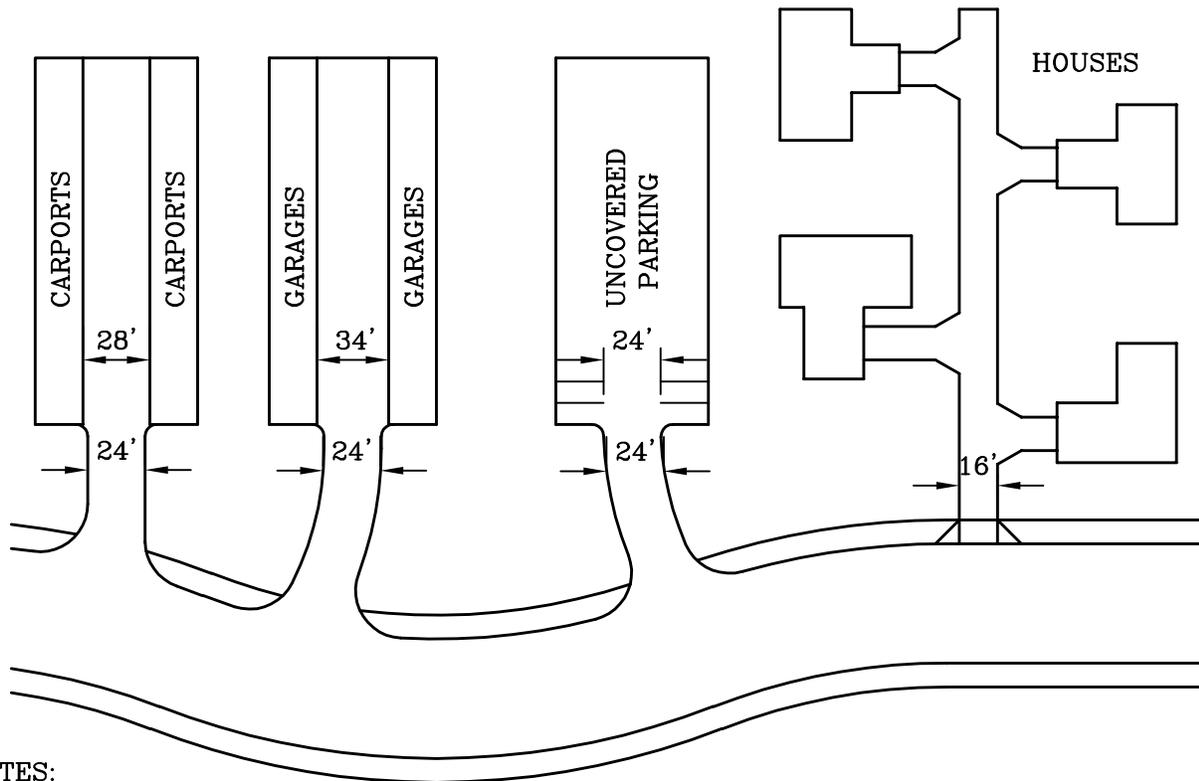
PRIVATE STREETS

STANDARD
PLAN NO.

304

Robert Anderson 9-23-03
 APPROVED RCE 30190 DATE

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NOTES:

1. THE NUMBER AND SIZE OF PARKING SPACES PROVIDED FOR ANY DEVELOPMENT SHALL CONFORM WITH THE CITY OF MISSION VIEJO DEVELOPMENT CODE.
2. PARKING, OTHER THAN PARALLEL ON-STREET, SHALL BE PROVIDED WITHIN PARKING LOTS AND PARKING BAYS. DIAGONAL AND PERPENDICULAR PARKING ARE NOT ALLOWED IN STREETS UNLESS APPROVED BY THE CITY ENGINEER.
3. ACCESS DRIVES AND DRIVEWAYS SERVING PARKING LOTS SHALL PROVIDE A MINIMUM 24' TRAVEL WAY. MORE WIDTH SHALL BE REQUIRED IF PARALLEL PARKING IS PROPOSED ON THE DRIVEWAY.
4. AISLES BETWEEN ROWS OF BACK-OUT PERPENDICULAR PARKING SHALL PROVIDE A MINIMUM 24' TRAVEL WAY. AISLES BETWEEN ROWS OF COVERED BACK-OUT PARKING SHALL PROVIDE A MINIMUM 28'-WIDE TRAVEL WAY. AISLES BETWEEN ROWS OF GARAGES SHALL PROVIDE A MINIMUM 34' BETWEEN FACING GARAGES. IF ROLL UP DOORS ARE USED THE SPACING MAY BE REDUCED TO 30'.
5. JOINTLY-USED PRIVATE DRIVEWAYS SERVING FOUR (4) OF LESS RESIDENTIAL DWELLING UNITS SHALL BE PAVED TO A MINIMUM WIDTH OF 16'. IF MORE THAN FOUR (4) RESIDENTIAL UNITS ARE ULTIMATELY TO BE SERVED BY A PRIVATE DRIVEWAY AND NO OTHER ACCESS IS PROVIDED, THE DRIVEWAY SHALL BE PAVED WITH A MINIMUM WIDTH OF 24'.
6. MINIMUM PRIVATE DRIVEWAY GRADES SHALL BE 0.5%, REVERSE GRADE VERTICAL CURVES EXCEPTED.

CITY OF MISSION VIEJO

PARKING AISLES AND DRIVEWAYS

STANDARD
PLAN NO.

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Robert Anderson

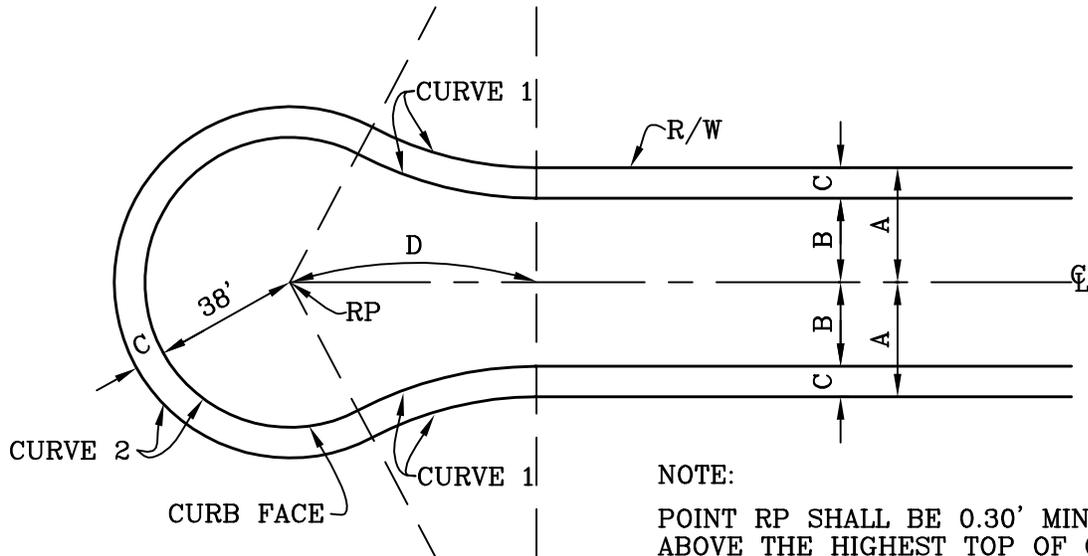
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NOTE:
 POINT RP SHALL BE 0.30' MIN.
 ABOVE THE HIGHEST TOP OF CURB
 ELEVATION WITHIN CUL-DE-SAC.

NOTE: (APPLIES TO ALL SHEETS)

MINIMUM STREET FLOW LINE GRADE SHALL BE 0.5% MIN., REVERSE GRADE VERTICAL CURVES EXCEPTED.

CURVE 1											
R/W	A	B	C	D	Δ	CURB			PROPERTY LINE		
						R	L	T	R	L	T
80'	40'	32'	8'	40.25'	16°57'27"	100'	29.60'	14.91'	92'	27.23'	13.71'
60'	30'	22'	8'	64.50'	27°51'51"	100'	48.63'	24.81'	92'	44.74'	22.82'
56'	28'	20'	8'	68.15'	29°35'31"	100'	51.65'	26.41'	92'	47.52'	24.30'
52'	26'	18'	8'	71.55'	31°13'56"	100'	54.51'	27.95'	92'	50.15'	25.71'

CURVE 2									
R/W	A	B	C	D	Δ	CURB		PROPERTY LINE	
						R	L	R	L
80'	40'	32'	8'	40.25'	213°47'53"	38'	141.87'	46'	171.74'
60'	30'	22'	8'	64.50'	235°43'42"	38'	156.34'	46'	189.25'
56'	28'	20'	8'	68.15'	239°11'01"	38'	158.63'	46'	192.03'
52'	26'	18'	8'	71.55'	242°27'52"	38'	160.81'	46'	194.66'

CITY OF MISSION VIEJO



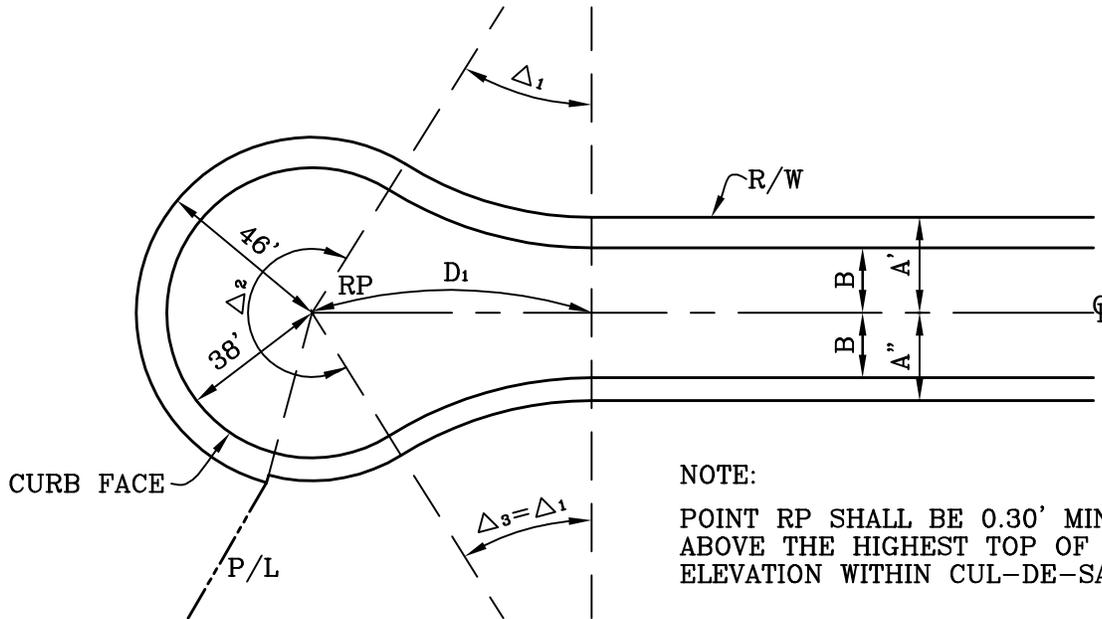
STANDARD CUL-DE-SAC (SYMMETRICAL PARKWAY)

Robert Anderson 9-23-03
 APPROVED RCE 30190 DATE

STANDARD
 PLAN NO.

305

SHT 1 OF 4



NOTE:
POINT RP SHALL BE 0.30' MIN.
ABOVE THE HIGHEST TOP OF CURB
ELEVATION WITHIN CUL-DE-SAC.

NOTE: REDUCTION IN PARKWAY WIDTH SHALL OCCUR AT THE PROPERTY
LINE OF THE LAST LOT TAKING ACCESS FROM THE CUL-DE-SAC.

CURB CURVE DATA											
R/W	A'	A''	B	D ₁	Δ ₁	R ₁	L ₁	T ₁	Δ ₂	R ₂	L ₂
48'	25'	23'	17'	73.18'	32°01'26"	100'	55.89'	28.70'	244°02'53"	38'	161.86'
44'	23'	21'	15'	76.28'	33°33'26"	100'	58.57'	30.15'	247°06'53"	38'	163.89'
40'	22'	18'	14'	77.77'	34°18'04"	100'	59.87'	30.86'	248°36'08"	38'	164.88'

PROPERTY LINE CURVE DATA											
R/W	A'	A''	B	D ₁	Δ ₁	R ₁	L ₁	T ₁	R ₃	L ₃	T ₃
48'	25'	23'	17'	73.18'	32°01'26"	92'	51.42'	26.40'	94'	52.54'	26.98'
44'	23'	21'	15'	76.28'	33°33'26"	92'	53.88'	27.74'	94'	55.04'	28.34'
40'	22'	18'	14'	77.77'	34°18'04"	92'	55.08'	28.39'	96'	57.47'	29.63'

CITY OF MISSION VIEJO

STANDARD CUL-DE-SAC (UNSYMMETRICAL PARKWAY)

STANDARD
PLAN NO.

305



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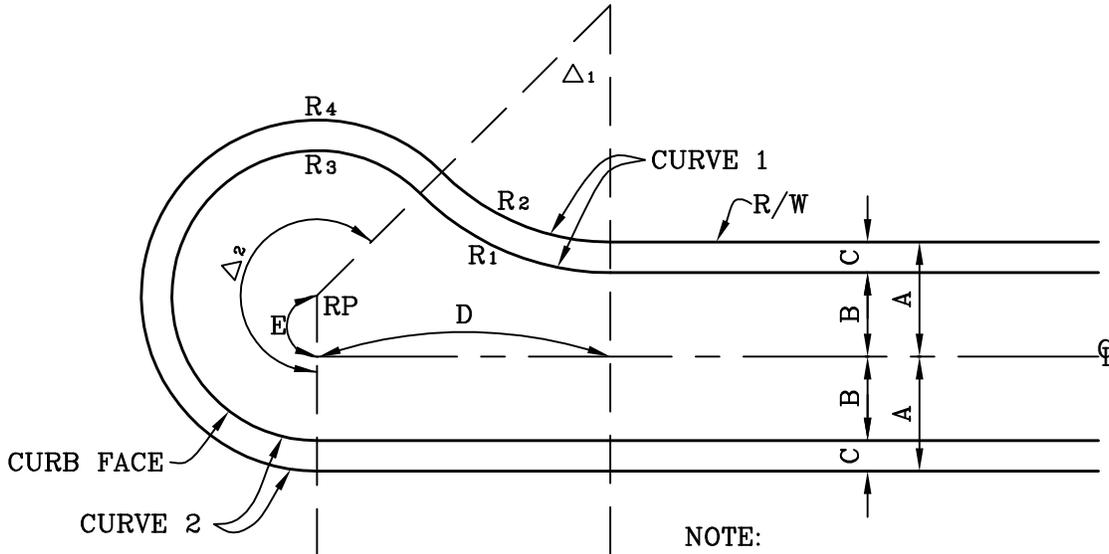
Robert Anderson

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9-23-03

DATE

SHT 2 OF 4



NOTE:

POINT RP SHALL BE 0.30' MIN.
 ABOVE THE HIGHEST TOP OF CURB
 ELEVATION WITHIN CUL-DE-SAC.

CURVE 1												
R/W	A	B	C	D	E	Δ ₁	CURB			PROPERTY LINE		
							R ₁	L	T	R ₂	L	T
80'	40'	32'	8'	49.48'	6'	27°15'58"	70'	33.31'	16.98'	62'	29.50'	15.04'
60'	30'	22'	8'	76.73'	16'	45°16'30"	70'	55.31'	29.19'	62'	48.99'	25.86'
56'	28'	20'	8'	80.50'	18'	48°11'23"	70'	58.87'	31.30'	62'	52.15'	27.73'
52'	26'	18'	8'	83.90'	20'	50°58'38"	70'	62.28'	33.37'	62'	55.16'	29.56'

CURVE 2											
R/W	A	B	C	D	E	Δ ₂	CURB		PROPERTY LINE		
							R ₃	L	R ₄	L	
80'	40'	32'	8'	49.48'	6'	207°15'58"	38'	137.46'	46'	166.40'	
60'	30'	22'	8'	76.73'	16'	225°16'30"	38'	149.41'	46'	180.86'	
56'	28'	20'	8'	80.50'	18'	228°11'23"	38'	151.34'	46'	183.20'	
52'	26'	18'	8'	83.90'	20'	230°58'38"	38'	153.19'	46'	185.44'	

NOTES:

1. RADIAL POINT MAY BE OFFSET EITHER RIGHT OR LEFT OF CENTERLINE.
2. SEE SHEET 4 FOR UNSYMMETRICAL PARKWAY DETAILS.

CITY OF MISSION VIEJO

OFFSET CUL-DE-SAC (SYMMETRICAL PARKWAY)



Robert Anderson

9-23-03

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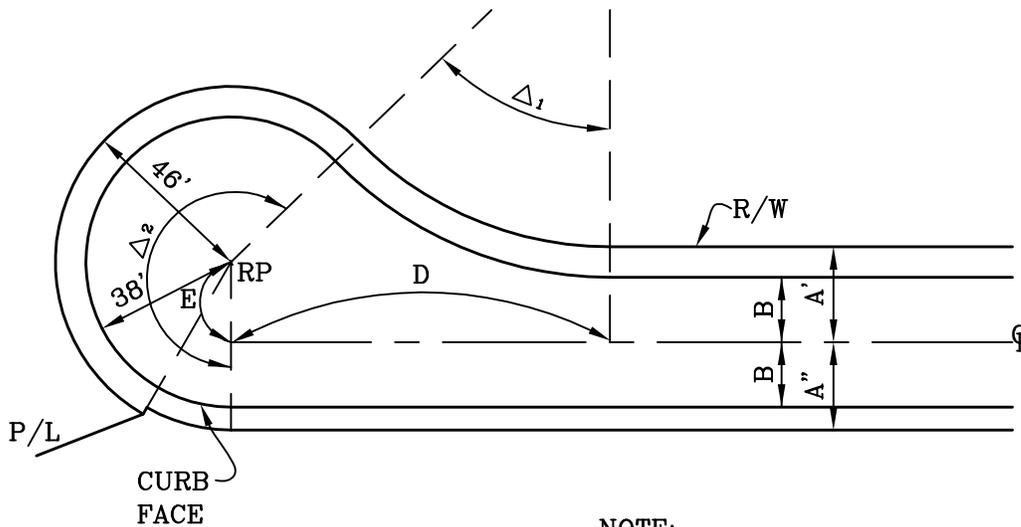
RCE 30190

DATE

STANDARD
 PLAN NO.

305

SHT 3 OF 4



NOTE:

POINT RP SHALL BE 0.30' MIN. ABOVE THE HIGHEST TOP OF CURB ELEVATION WITHIN CUL-DE-SAC.

CURB CURVE DATA											
R/W	A'	A''	B	D	Δ ₁	R ₁	L ₁	T ₁	Δ ₂	R ₂	L ₂
48'	25'	23'	17'	99.14'	45°55'15"	100'	80.15'	42.37'	225°55'15"	38'	149.84'
44'	23'	21'	15'	102.86'	48°11'23"	100'	84.11'	44.72'	228°11'23"	38'	151.34'
40'	22'	18'	14'	104.61'	49°71'39"	100'	86.03'	45.88'	229°17'39"	38'	152.07'

PROPERTY LINE CURVE DATA									
R/W	A'	A''	B	D	E	Δ ₁	R ₁	L ₁	T ₁
48'	25'	23'	17'	99.14'	21'	45°55'15"	92'	73.74'	38.98'
44'	23'	21'	15'	102.86'	23'	48°11'23"	92'	77.38'	41.14'
40'	22'	18'	14'	104.61'	24'	49°71'39"	92'	79.15'	42.21'

NOTE: REDUCTION OF PARKWAY WIDTH SHALL OCCUR AT THE PROPERTY LINE OF THE LAST LOT TAKING ACCESS FROM THE CUL-DE-SAC.

CITY OF MISSION VIEJO

OFFSET CUL-DE-SAC
(UNSYMMETRICAL PARKWAY)

STANDARD
PLAN NO.

305



Robert Anderson

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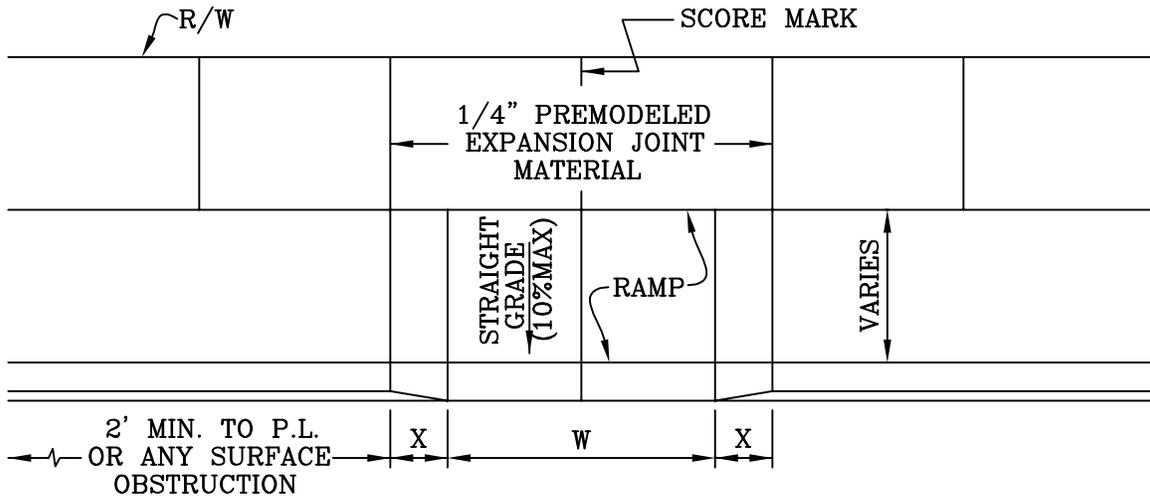
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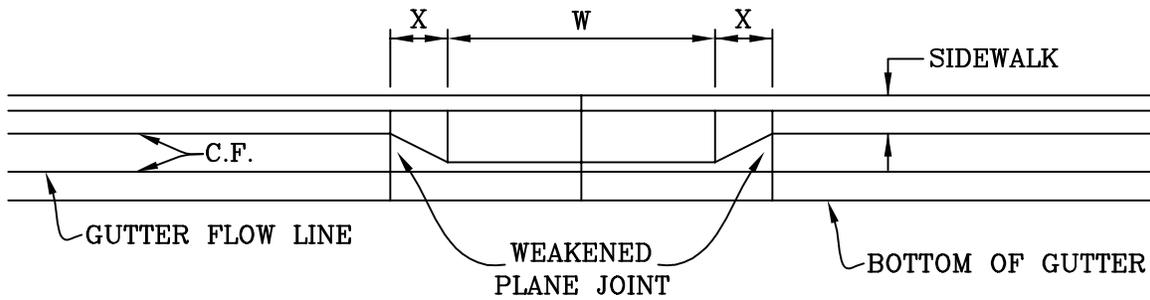
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PLAN



ELEVATION



VALUES OF "W"	MIN.
RESIDENTIAL	12'
* COMM. & IND. ONE-WAY	14'
TWO-WAY	28'

* USE OF STANDARD PLAN 306 IN COMMERCIAL AND INDUSTRIAL AREAS REQUIRES APPROVAL OF THE CITY ENGINEER.

CITY OF MISSION VIEJO



DRIVEWAY APPROACH

Rich Schloinger

08/01/05

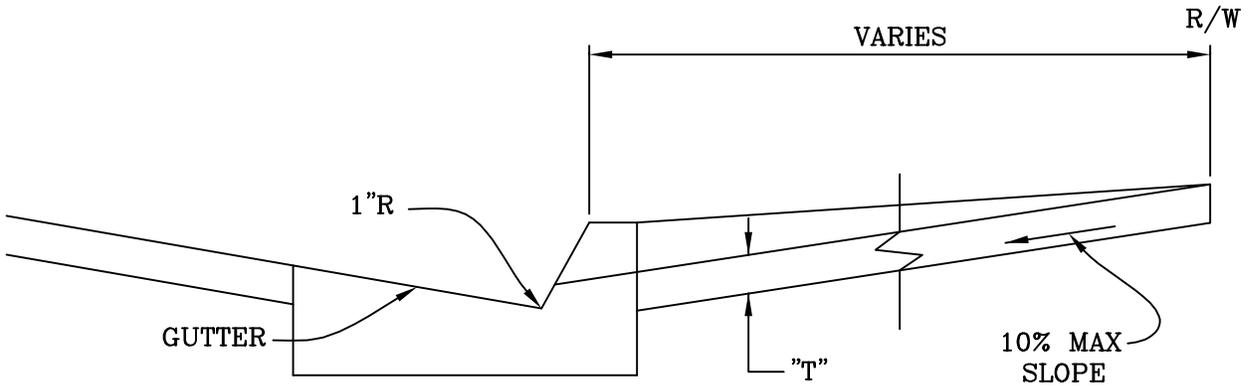
APPROVED BY: CITY ENGINEER RCE 51160

DATE

306

SHT 1 OF 2

CROSS SECTION



NOTES:

1. UNDER NO CIRCUMSTANCES WILL SAW CUTTING IN THE GUTTER FLOW LINE BE ALLOWED TO REMOVE CURB.
2. COMMERCIAL, INDUSTRIAL, AND RESIDENTIAL DRIVEWAYS SERVING 5 OR MORE DWELLING UNITS SHALL HAVE 6" OF BASE MATERIAL UNDER GUTTER, CURB RAMP AND SIDEWALK FROM TOP OF "X" TO TOP OF "X".
3. GUTTER, RAMP, AND SIDEWALK THICKNESS "T" SHALL BE 6" (RESIDENTIAL) OR 8" (COMMERCIAL / INDUSTRIAL) FROM TOP OF "X" TO TOP OF "X".
4. WEAKENED PLANE JOINTS SHALL BE 1 1/2" DEEP WITH 1/8" RADIUS EDGES.
5. COMMERCIAL AND INDUSTRIAL DRIVEWAY APPROACHES SHALL USE STANDARD No. 307 UNLESS THE CITY ENGINEER APPROVES THE USE OF STANDARD PLAN 306.
6. DRIVEWAY APRON SHALL BE PORTLAND CEMENT CONCRETE.
7. "X" SHALL BE 3' FOR 6" CURB, 4' FOR 8" CURB.
8. DRIVEWAYS WITH "W" LESS THAN 20' SHALL HAVE ONE (1) SCORE MARK AT 1/2 "W". DRIVEWAYS WITH "W" OVER 20' SHALL HAVE SCORE MARKS NOT TO EXCEED 10' ON CENTER.
9. FOR NEW DRIVEWAY CONSTRUCTION ON EXISTING STREETS, 12" OF ASPHALT FROM THE EDGE OF THE GUTTER SHALL BE SAWCUT AND REMOVED.

CITY OF MISSION VIEJO



DRIVEWAY APPROACH

306

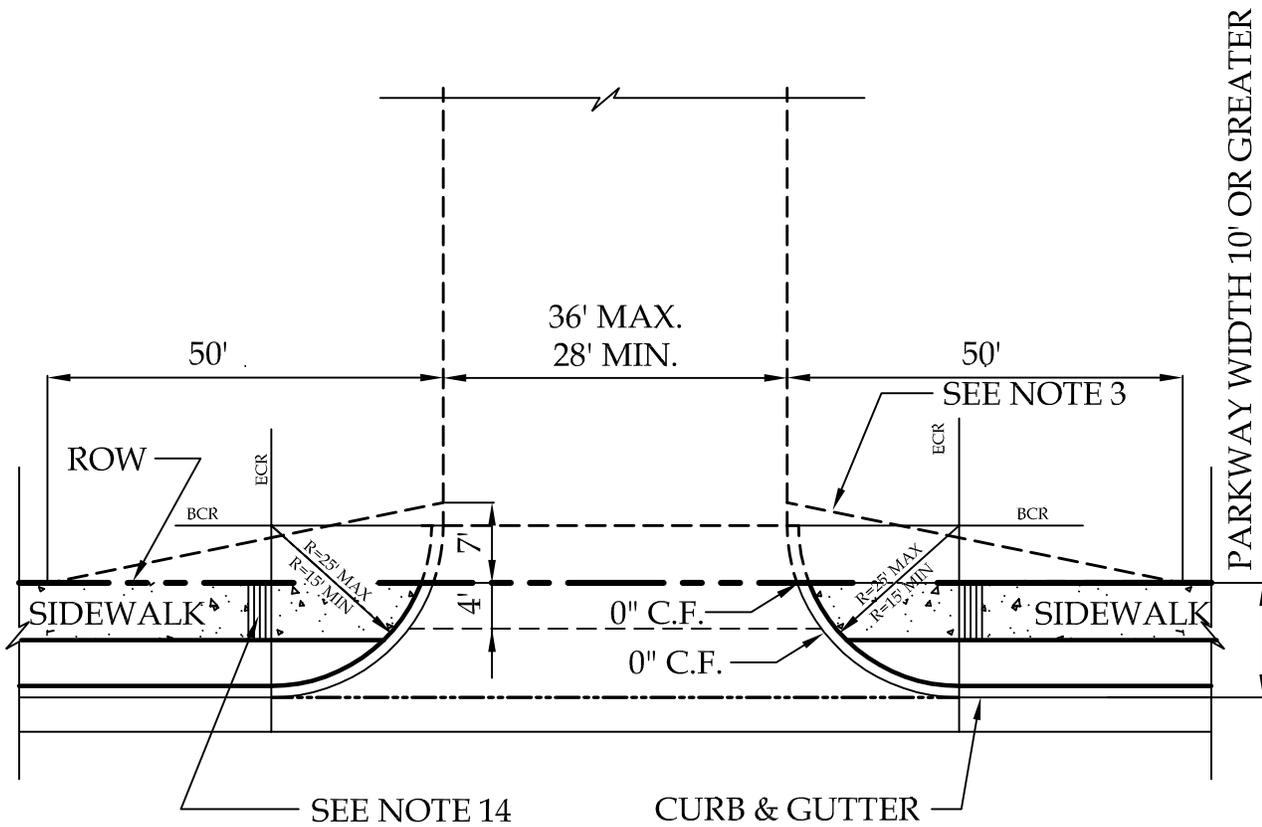
Rich Schloinger

08/01/05

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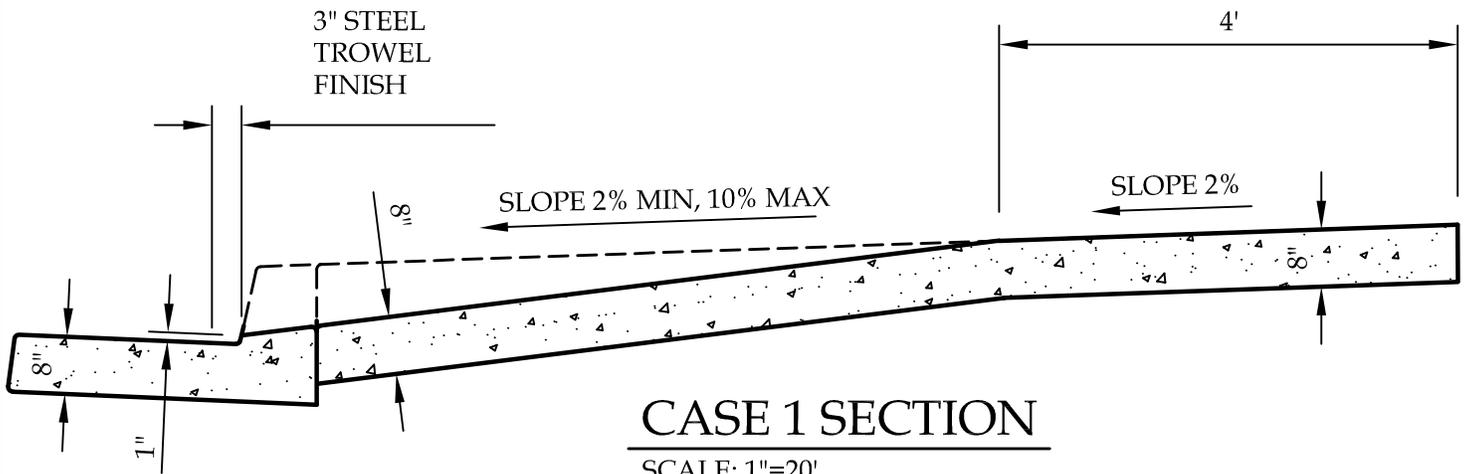
DATE

SHT 2 OF 2



CASE 1 PLAN

N.T.S.



CASE 1 SECTION

SCALE: 1"=20'

CITY OF MISSION VIEJO

ARTERIAL HIGHWAY AND
COMMERCIAL DRIVEWAY APPROACH

307



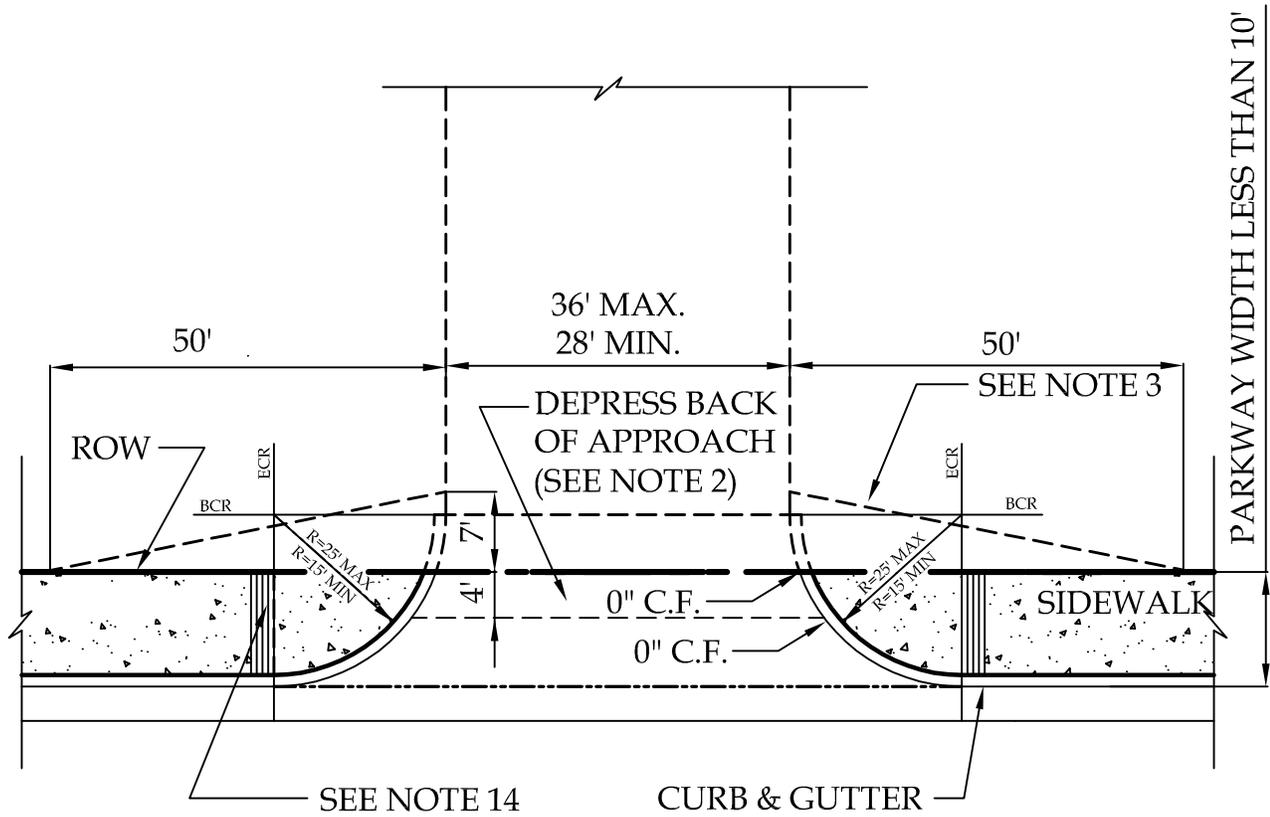
Rich Schloinger

08/01/05

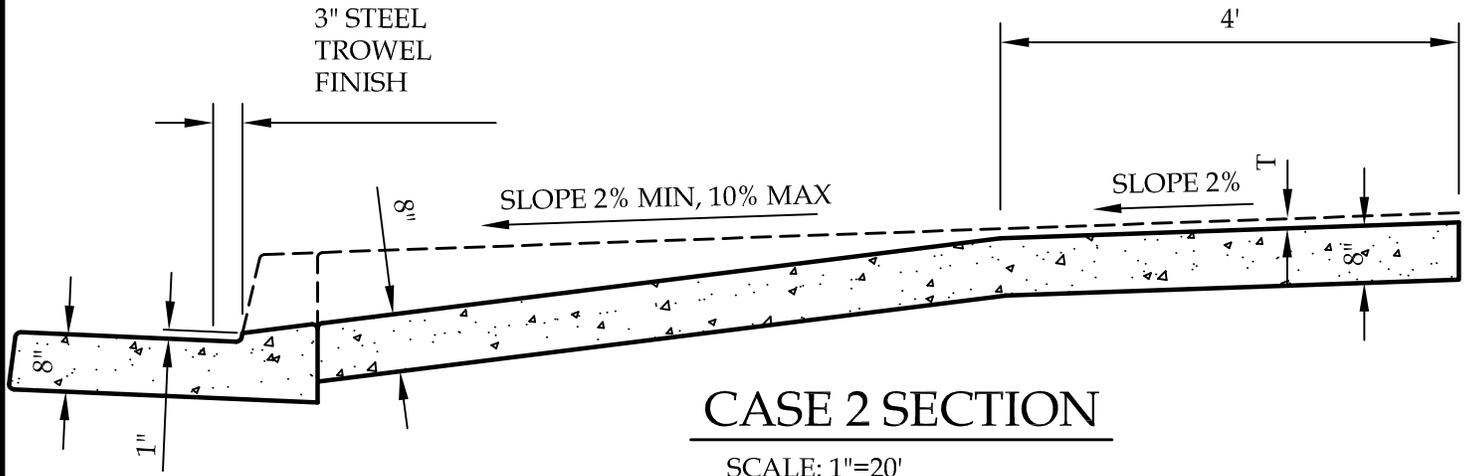
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DATE

SHT 1 OF 3



CASE 2 PLAN
N.T.S.



CASE 2 SECTION
SCALE: 1"=20'

CITY OF MISSION VIEJO



ARTERIAL HIGHWAY AND
COMMERCIAL DRIVEWAY APPROACH

Rich Schloinger

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08/01/05

DATE

307

SHT 2 OF 3

NOTES:

1. "R" LESS THAN 25' WILL REQUIRE APPROVAL OF THE CITY ENGINEER.
2. FOR PARKWAY WIDTH LESS THAN 10' BUT GREATER THAN OR EQUAL TO 9' (T) = 1". FOR PARKWAY WIDTH LESS THAN 9' BUT GREATER THAN OR EQUAL TO 8' (T) = 2". FOR PARKWAY WIDTH LESS THAN 8' SPECIAL DESIGN AND APPROVAL BY CITY ENGINEER IS REQUIRED.
3. SIGHT DISTANCE AREA TO BE CLEAR OF ANY VISUAL OBSTRUCTION ABOVE 12" HEIGHT.
4. WEAKENED-PLAN JOINTS SHALL BE INSTALLED AT BOTH SIDES OF THE DRIVEWAY AND AT APPROXIMATELY 10' INTERVALS, AND AT THE R/W.
5. CONCRETE SHALL BE CLASS 520-C-2500 WITH MAXIMUM SLUMP OF 4".
6. UNDER NO CIRCUMSTANCES WILL SAW CUTTING IN THE GUTTER FLOW LINE TO REMOVE THE CURB BE ALLOWED.
7. 6 INCHES OF BASE MATERIAL IS REQUIRED UNDER ALL CONCRETE.
8. WEAKENED PLANE JOINTS SHALL BE 1 ½ INCHES DEEP WITH ⅛ INCH RADIUS EDGES.
9. FOR NEW DRIVEWAY CONSTRUCTION ON EXISTING ROADWAYS, 12 INCHES OF ASPHALT FROM THE EDGE OF THE GUTTER SHALL BE REMOVED.
10. ACCESS RAMPS SHALL COMPLY WITH TITLE 24 AND ADA REQUIREMENTS.
11. CURB & GUTTER AND RAMP/ APPROACH SHALL NOT BE MONOLITHIC.
12. IF SIDEWALK IS LOCATED OUTSIDE OF THE PUBLIC RIGHT OF WAY A SIDEWALK EASEMENT SHALL BE DEDICATED TO THE CITY OF MISSION VIEJO.
13. RADIUS OF CURB RETURNS SHALL BE SYMMETRICAL.
14. INSTALL BORDER PER STANDARD PLAN 322.
15. EXPANSION JOINT SHALL BE INSTALLED AT PUBLIC ROW LINE (IF NECESSARY).

CITY OF MISSION VIEJO



ARTERIAL HIGHWAY AND
COMMERCIAL DRIVEWAY APPROACH

307

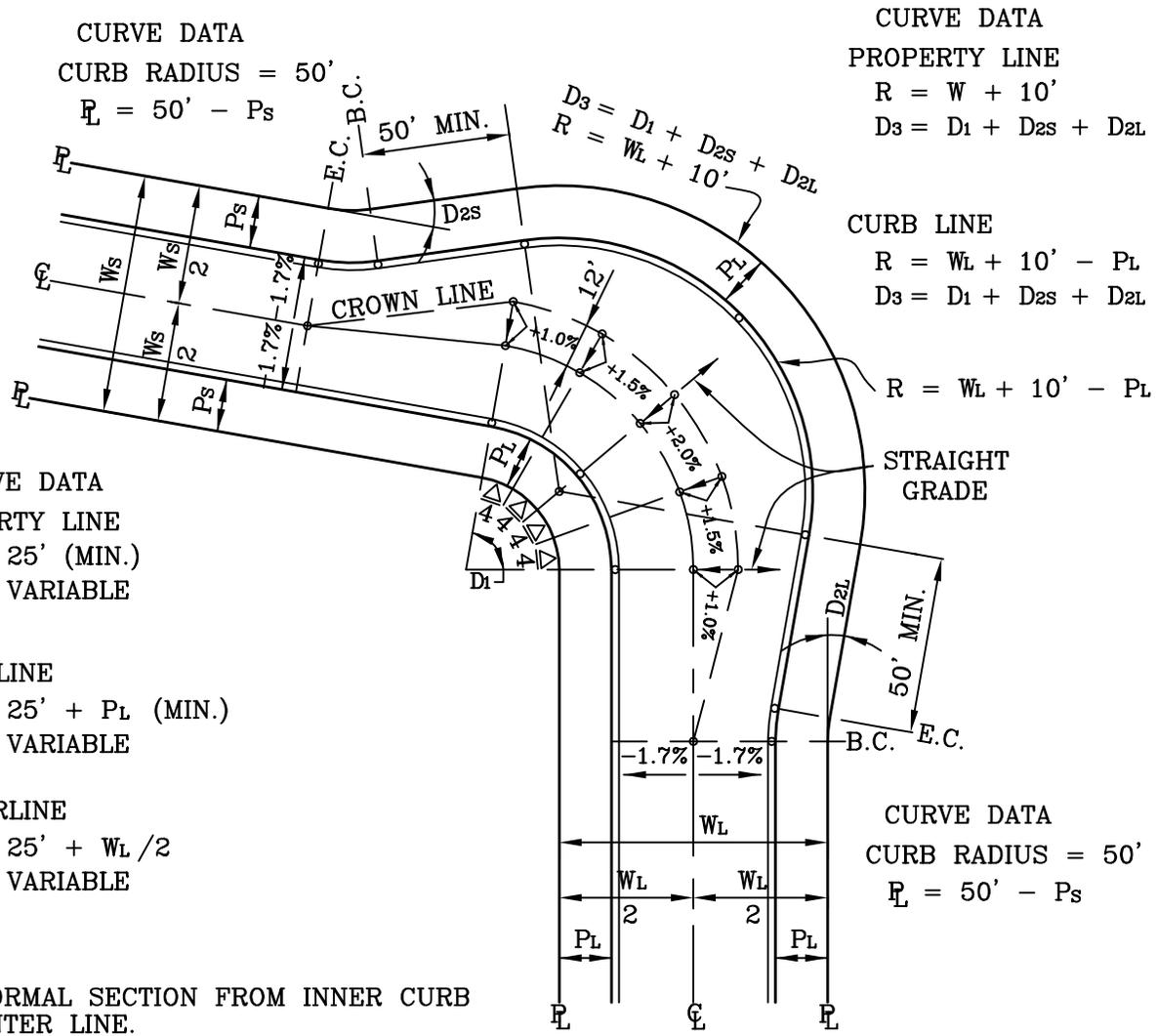
Rich Schloinger

08/01/05

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DATE

SHT 3 OF 3



CURVE DATA
 CURB RADIUS = 50'
 $R_L = 50' - P_s$

CURVE DATA
 PROPERTY LINE
 $R = W + 10'$
 $D_3 = D_1 + D_2S + D_2L$

CURVE DATA
 PROPERTY LINE
 $R_1 = 25'$ (MIN.)
 $D_1 = \text{VARIABLE}$

CURB LINE
 $R_1 = 25' + P_L$ (MIN.)
 $D_1 = \text{VARIABLE}$

CENTERLINE
 $R = 25' + W_L / 2$
 $D = \text{VARIABLE}$

CURB LINE
 $R = W_L + 10' - P_L$
 $D_3 = D_1 + D_2S + D_2L$

STRAIGHT GRADE

CURVE DATA
 CURB RADIUS = 50'
 $R_L = 50' - P_s$

NOTES:

1. USE NORMAL SECTION FROM INNER CURB TO CENTER LINE.
2. FROM CROWN LINE TO OUTER CURB, THE MAX. SLOPE IS 1" PER FOOT. (8.33%).
3. SUBSCRIPTS "S" AND "L" DENOTE SMALLER AND LARGER STREETS RESPECTIVELY.
4. SUPERELEVATION PERCENTAGES SHOWN ARE A STRAIGHT GRADE FROM CENTERLINE TO CROWN LINE.
5. ELEVATIONS REQUIRED ON PLAN WHERE CIRCLED (o).
6. WHEN STREETS HAVE TILT - TYPE SECTIONS, THE CROWN LINE WILL NOT NECESSARILY TERMINATE IN CENTER LINE AT ANGLE POINT OF CURB.
7. MINIMUM STREET FLOW LINE GRADE SHALL BE 0.5% MINIMUM, REVERSE GRADE VERTICAL CURVES EXCEPTED.

CITY OF MISSION VIEJO



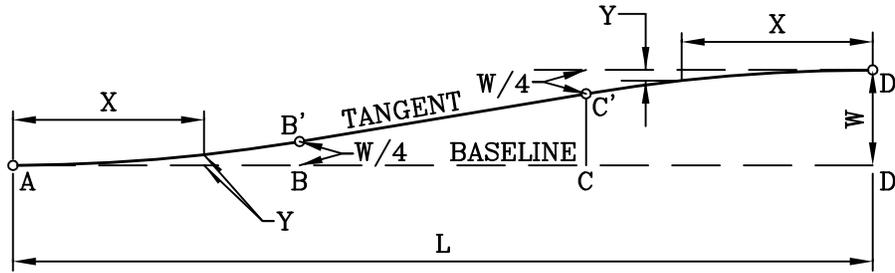
STANDARD KNUCKLE

STANDARD PLAN NO.

Robert Anderson 9-23-03
 APPROVED RCE 30190 DATE

309

SHT 1 OF 1



W = WIDTH OF LEFT TURN POCKET
 L = LENGTH OF TAPER
 X = DISTANCE FROM POINT "A" ALONG BASELINE
 Y = OFFSET FROM BASELINE
 AB = BC = CD = L/3
 AB' AND C'D' ARE PARABOLIC CURVES EXCEPT ON CURVED ALIGNMENTS

SINGLE LEFT TURN POCKET

L=90' W=10'

X	0'	10'	20'	30'	40'	50'	60'	70'	80'	90'
Y	0.00'	0.28'	1.11'	2.50'	4.17'	5.83'	7.50'	8.89'	9.72'	10.00'

DOUBLE LEFT TURN POCKET

L=150' W=20'

X	0'	10'	20'	30'	40'	50'	60'	70'
Y	0.00'	0.20'	0.80'	1.80'	3.20'	5.00'	7.00'	9.00'

80'	90'	100'	110'	120'	130'	140'	150'
11.00'	13.00'	15.00'	16.80'	18.20'	19.20'	19.80'	20.00'

NOTE:

IN THE CASE WHEN THE BASELINE IS CURVED, THE OFFSETS ARE CALCULATED BY ASSUMING THE BASELINE TO BE A TANGENT, THEN THEY ARE APPLIED TO THE CURVED BASELINE. AB' AND C'D' ARE NO LONGER PARABOLIC AND B'C' IS NO LONGER TANGENT.

CITY OF MISSION VIEJO

PARABOLIC CURB TRANSITION

STANDARD
PLAN NO.

310



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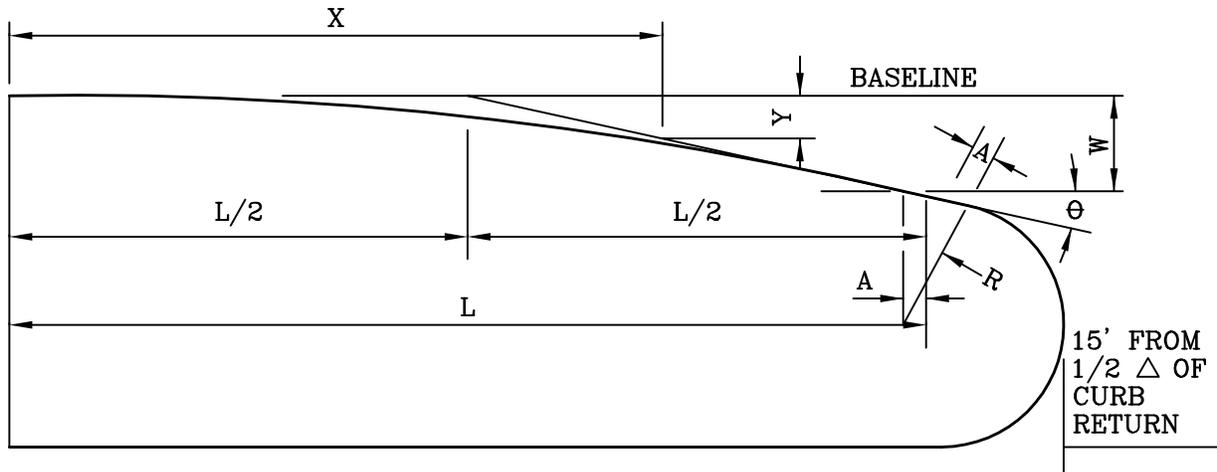
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SHT 1 OF 1



$$Y = W(X^2/L) \quad \tan \theta = 2W/L \quad A = R(\tan \theta / 2)$$

L = LENGTH OF FLARE IN FEET

A = TANGENT

W = MAXIMUM OFFSET DISTANCE IN FEET

R = RADIUS OF NOSE IN FEET

X = DISTANCE ALONG BASE LINE IN FEET

Y = OFFSET FROM BASE LINE IN FEET

OFFSET "Y" (IN FEET)

FOR W/L = 1:10

L \ X	10	20	30	40	50	60	70	80	90	100
60	.17	.67	1.50	2.67	4.17	6.00	---	---	---	---
100	.10	.40	.90	1.60	2.50	3.60	4.90	6.40	8.10	10.00

NOTES:

- FOR 60' FLARE, USE R=4' (14' MEDIAN)
FOR 100' FLARE, USE R=7' (24' MEDIAN)
- IF STATION OF RADIUS POINT IS NOT GIVEN ON PLAN, TANGENT "A" MAY BE IGNORED.

CITY OF MISSION VIEJO



PARABOLIC MEDIAN CURB FLARE

STANDARD
PLAN NO.

311

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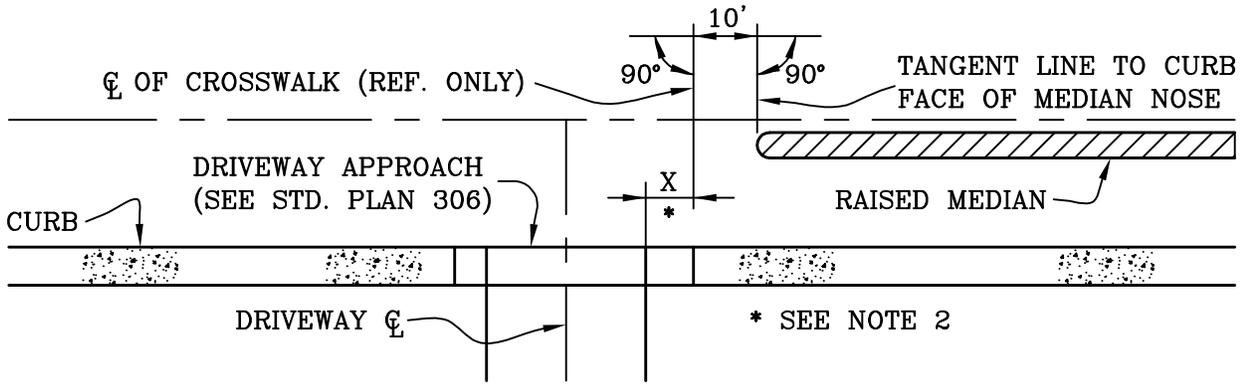
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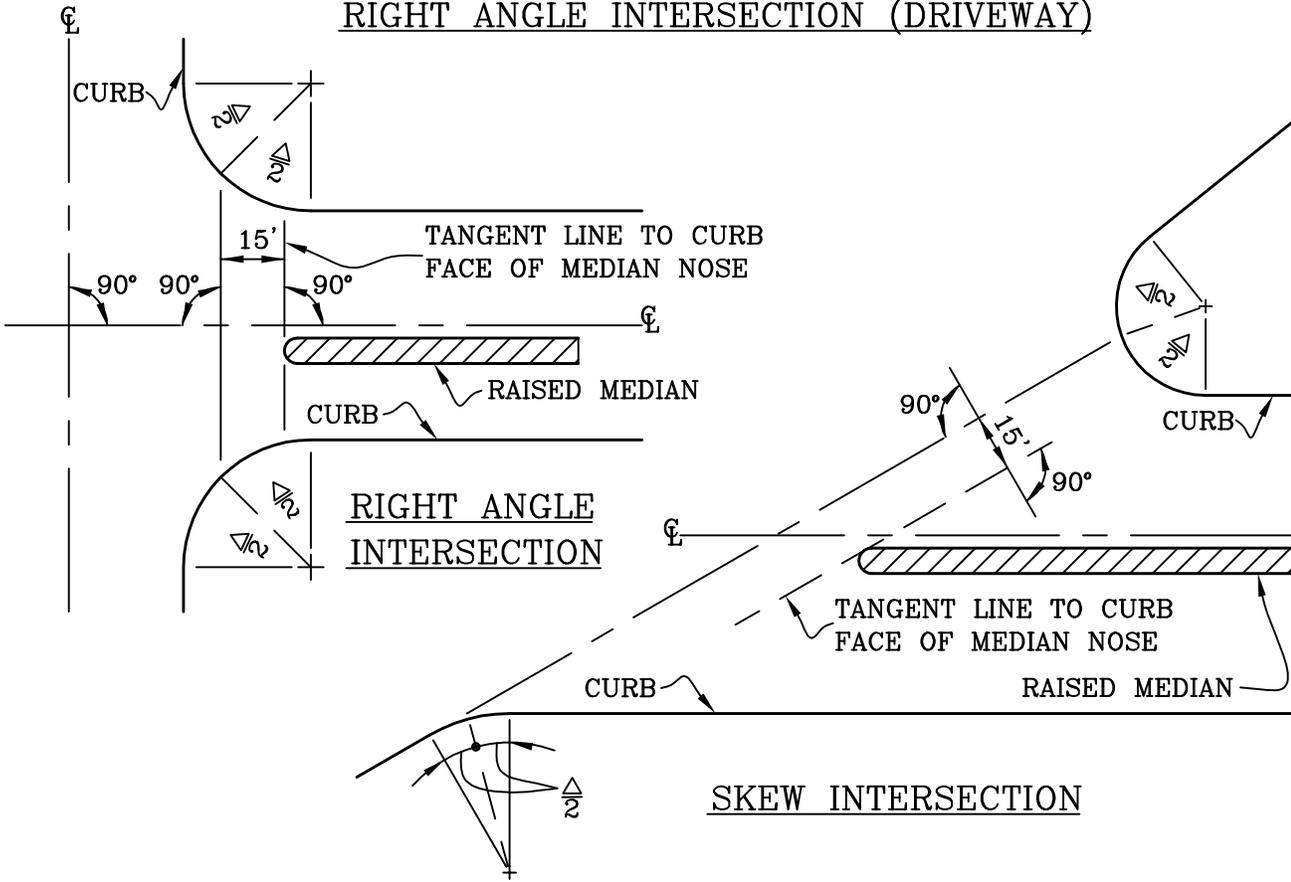
SHT 1 OF 1

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RIGHT ANGLE INTERSECTION (DRIVEWAY)



NOTES:

1. EXTEND DOUBLE YELLOW STRIPING FROM MEDIAN NOSE TO CROSSWALK OR TO $\Delta/2$ IF THERE IS NO CROSSWALK.
2. FOR "X" DISTANCE SEE STD. PLAN 306.

CITY OF MISSION VIEJO



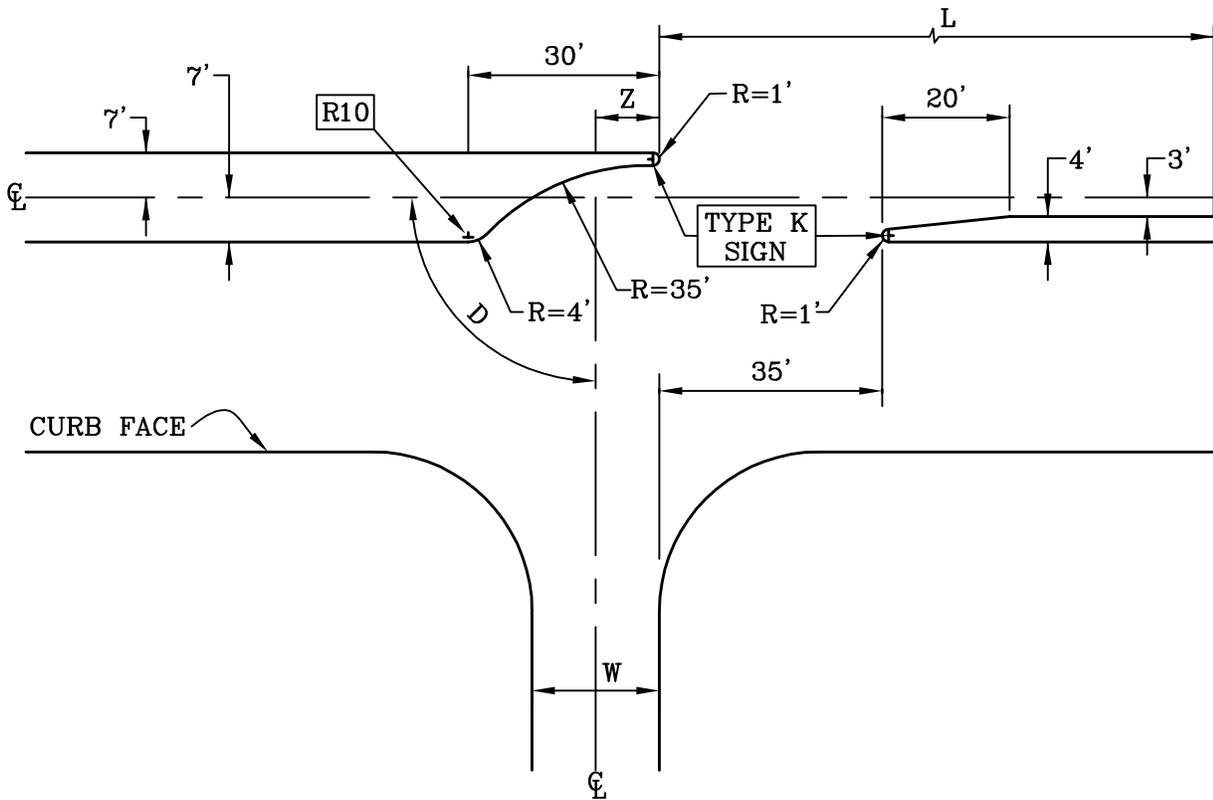
RAISED MEDIAN NOSE LOCATION

STANDARD PLAN NO.

312

Robert Anderson 9-23-03
 APPROVED RCE 30190 DATE

SHT 1 OF 1



NOTES:

$Z = W/2$

W = INTERSECTING STREET OR DRIVEWAY WIDTH (CURB TO CURB)

D = ANGLE OF INTERSECTION

L = POCKET LENGTH AS SHOWN PER PLANS

R = CURB RETURN RADIUS

† = TRAFFIC SIGN INSTALLED ON RAISED MEDIAN

CITY OF MISSION VIEJO



LEFT-TURN-IN-ONLY MEDIAN OPENING

STANDARD PLAN NO.

313

Robert Anderson

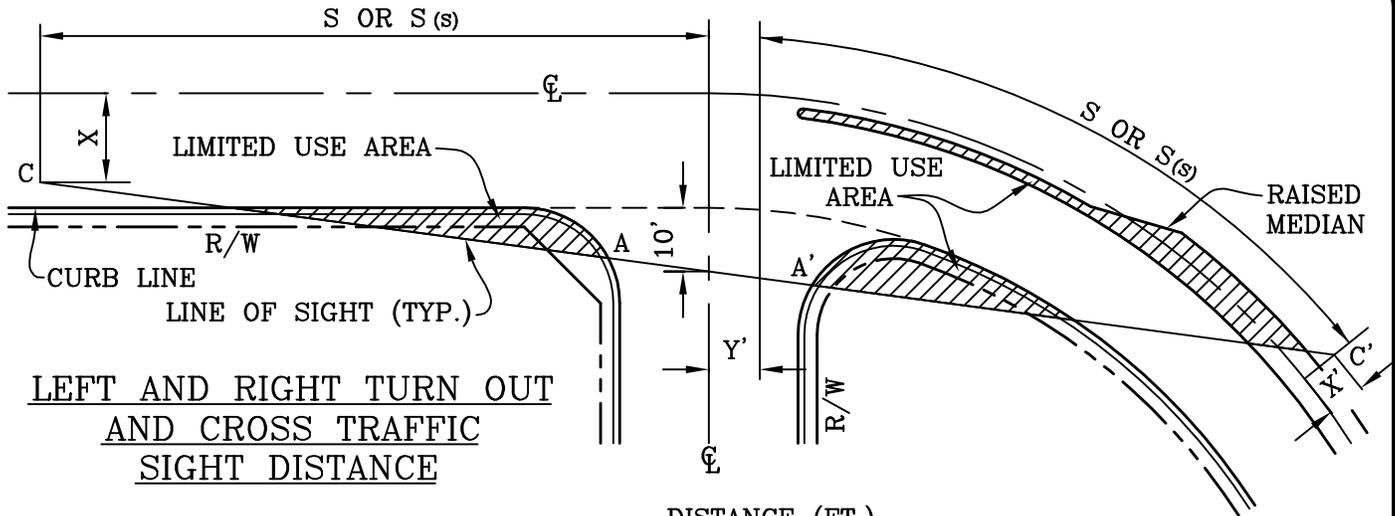
9-23-03

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DATE

SHT 1 OF 1



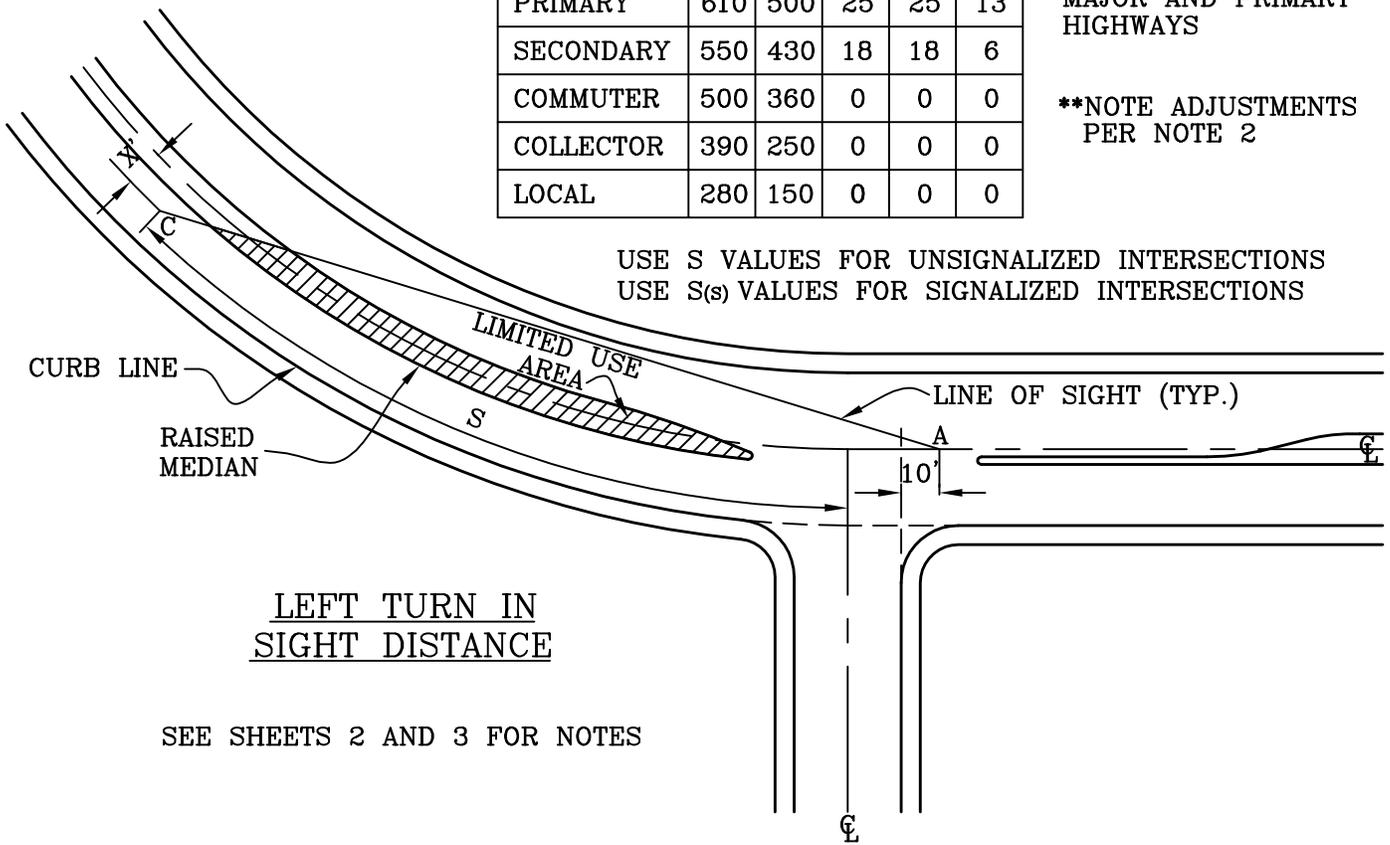
DISTANCE (FT.)

	S **	S(s) **	Y'	X*	X'*
MAJOR	660	580	37	37	13
PRIMARY	610	500	25	25	13
SECONDARY	550	430	18	18	6
COMMUTER	500	360	0	0	0
COLLECTOR	390	250	0	0	0
LOCAL	280	150	0	0	0

*X AND X' ARE BASED UPON A STANDARD 14' MEDIAN FOR MAJOR AND PRIMARY HIGHWAYS

**NOTE ADJUSTMENTS PER NOTE 2

USE S VALUES FOR UNSIGNALIZED INTERSECTIONS
USE S(s) VALUES FOR SIGNALIZED INTERSECTIONS



CITY OF MISSION VIEJO



INTERSECTION SIGHT DISTANCE

STANDARD
PLAN NO.

315

APPROVED

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SHT 1 OF 3

NOTES:

1. THE DISTANCE S REPRESENTS THE CORNER SIGHT DISTANCE MEASURED ALONG THE CENTERLINE OF THE ROAD. THE CORNER SIGHT DISTANCE IS THE DISTANCE REQUIRED TO ALLOW 7 1/2 SECONDS FOR THE DRIVER ON THE CROSS ROAD (OR LEFT TURN POCKET) TO SAFELY CROSS THE MAIN ROADWAY OR TURN LEFT WHILE THE APPROACH VEHICLE TRAVELS AT THE ASSUMED DESIGN SPEED OF THE MAIN ROADWAY.
2. THE DISTANCE S SHOULD BE INCREASED BY 20% FROM THE AMOUNT SHOWN ON THE TABLE ON SUSTAINED DOWNGRADES STEEPER THAN 3% AND LONGER THAN ONE MILE.
3. POINTS A AND A' ARE THE LOCATIONS OF A DRIVERS LINE OF SIGHT (3.5 FOOT EYE HEIGHT) TO ONCOMING VEHICLES (4.25 FOOT OBJECT HEIGHT) LOCATED AT POINTS C AND C' WHILE IN A VEHICLE AT AN INTERSECTION 10 FEET BACK FROM THE PROJECTION OF THE CURB LINE. IN NO CASE SHALL POINTS A OR A' BE LESS THAN 15 FEET FROM THE EDGE OF THE TRAVELED WAY.
4. THE DISTANCE Y' IS THE DISTANCE MEASURED FROM THE CENTERLINE OF THE MAIN ROAD TO THE FAR RIGHT THROUGH TRAVEL LANE. THE DISTANCE Y' IS EQUAL TO ZERO FOR T-INTERSECTIONS. THE DISTANCE X IS THE CENTER OF THE FAR RIGHT THROUGH TRAVEL LANE. THE DISTANCE X' IS THE DISTANCE MEASURED FROM THE CENTERLINE OF THE MAIN ROAD TO THE CENTER OF THE TRAVEL LANE NEAREST THE CENTERLINE OF THE ROAD.
5. THE LIMITED USE AREA IS DETERMINED BY THE GEOGRAPHICAL METHOD USING THE APPROPRIATE DISTANCES GIVEN IN THE IN THE TABLE. IT SHALL BE USED FOR THE PURPOSE OF PROHIBITING OR CLEARING OBSTRUCTIONS IN ORDER TO MAINTAIN ADEQUATE SIGHT DISTANCE AT INTERSECTIONS.
6. THE LINE OF SIGHT LINE SHALL BE SHOWN AT INTERSECTIONS ON ALL LANDSCAPING PLANS, GRADING PLANS AND TENTATIVE TRACT PLANS WHERE SAFE SIGHT DISTANCE IS QUESTIONABLE. IN CASES WHERE AN INTERSECTION IS LOCATED ON A VERTICAL CURVE, A PROFILE OF THE LINE OF SIGHT MAY BE REQUIRED.
7. OBSTRUCTIONS SUCH AS BUS SHELTERS, WALLS OR LANDSCAPING WITHIN THE LIMITED USE AREA WHICH COULD RESTRICT THE LINE OF SIGHT SHALL NOT BE PERMITTED.
 - a. PLANTS AND SHRUBS WITHIN THE LIMITED USE AREA SHALL BE OF THE TYPE THAT WILL GROW NO HIGHER THAN 12 INCHES ABOVE THE GROUND AND SHALL BE MAINTAINED AT A MAXIMUM HEIGHT OF 12 INCHES ABOVE THE GROUND. MAINTENANCE AT A LOWER HEIGHT MAY BE REQUIRED ON CREST VERTICAL CURVES PER NOTE 6 ABOVE.
 - b. A PROFILE OF THE LINE OF SIGHT MAY BE REQUIRED TO VERIFY 12" MINIMUM VERTICAL CLEARANCE ABOVE VARIABLE HEIGHT OBSTRUCTIONS SUCH AS SLOPE LANDSCAPING, PLANTS AND SHRUBS.

CITY OF MISSION VIEJO



INTERSECTION SIGHT DISTANCE

STANDARD PLAN NO.

315

Robert Anderson 9-23-03

APPROVED RCE 30190 DATE

SHT 2 OF 3

NOTES CONTINUED:

- c. THE TOE OF THE SLOPE MAY ENCROACH INTO THE LIMITED USE AREA PROVIDED THAT THE REQUIREMENTS OF (b) ABOVE ARE SATISFIED.
 - d. IN LIEU OF PROVIDING A PROFILE OF THE LINE OF SIGHT, THE TOE OF SLOPE SHALL NOT ENCROACH INTO THE LIMITED USE AREA, AND THE LIMITED USE AREA SHALL SLOPE AT 2% MAXIMUM TO THE ROADWAY.
8. TREES SHALL NOT BE PERMITTED WITHIN ANY PORTION OF THE LIMITED USE AREA.
9. RESIDENTIAL DRIVEWAYS SERVING FOUR OR MORE UNITS AND COMMERCIAL DRIVEWAYS SHALL BE TREATED AS A LOCAL STREET INTERSECTION.

CITY OF MISSION VIEJO



INTERSECTION SIGHT DISTANCE

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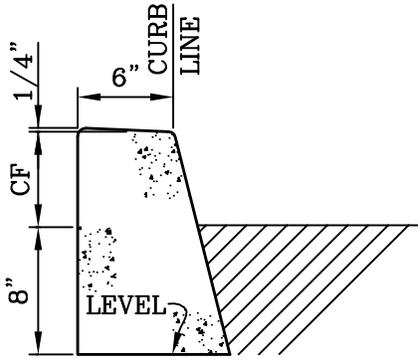
9-23-03

DATE

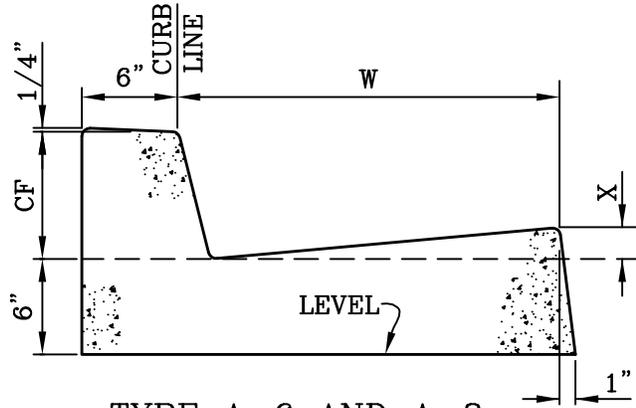
STANDARD
PLAN NO.

315

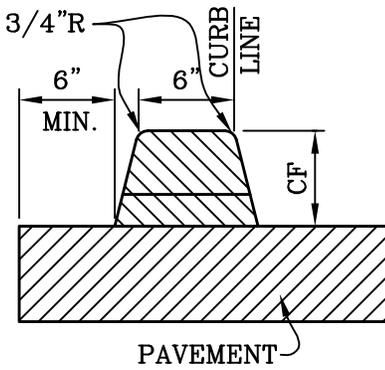
SHT 3 OF 3



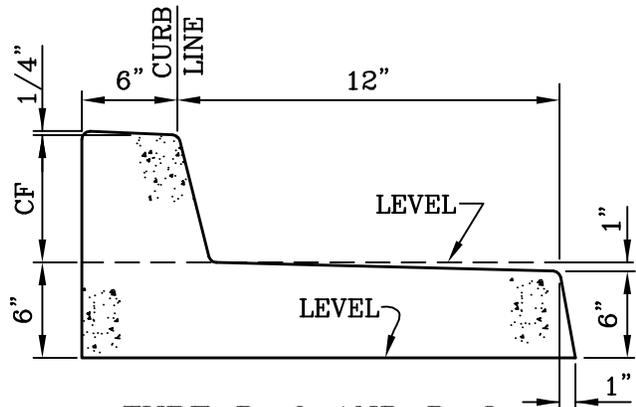
TYPE B-6 AND B-8



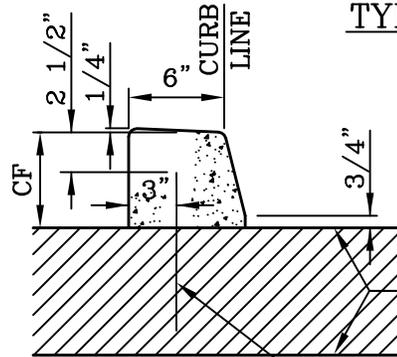
TYPE A-6 AND A-8
 W=18" X=1 1/2" FOR 6" CF
 W=24" X=2" FOR 8" CF



TYPE E-6 AND E-8



TYPE D-6 AND D-8



TYPE C-6 AND C-8

SEE SHT. 2 FOR NOTES

#4 DOWEL AT 4' OC
 10" MIN. LENGTH,
 GROUTED IN PLACE.

CITY OF MISSION VIEJO



CURBS AND GUTTERS

STANDARD
 PLAN NO.

316

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SHT 1 OF 2

NOTES:

1. ALL DIMENSIONS ARE MEASURED IN INCHES.
2. CURB FACE BATTER TO BE 3:12 FOR ALL CURBS.
3. ALL CURBS AND GUTTERS ARE CONSTRUCTED OF PORTLAND CEMENT CONCRETE TYPE V. EXCEPT TYPE E WHICH IS ASPHALT CONCRETE.
4. TYPE C CURB SHALL BE ANCHORED WITH DOWELS AS SHOWN OR WITH AN EPOXY APPROVED BY THE CITY ENGINEER.
5. GRADE SHALL BE MEASURED AT CURB LINE AT TOP OF CURB.
6. ALL EXPOSED CORNERS ON P.C.C. CURBS AND GUTTERS TO BE ROUNDED WITH A 1/2" RADIUS.
7. "CF" IS CURB HEIGHT. IT IS THE LAST NUMBER IN THE DESIGNATION.
8. WEAKENED PLANE JOINTS REQUIRED AT 10' INTERVALS.

CITY OF MISSION VIEJO



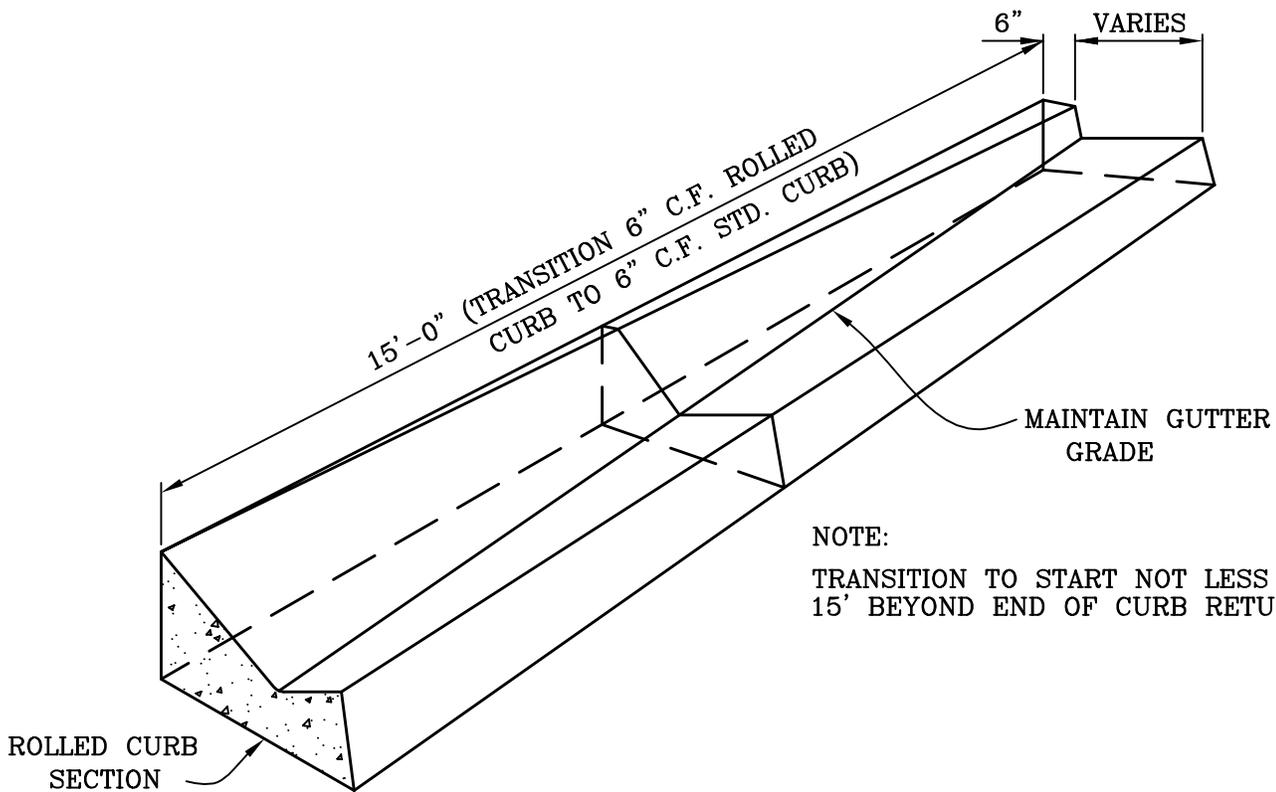
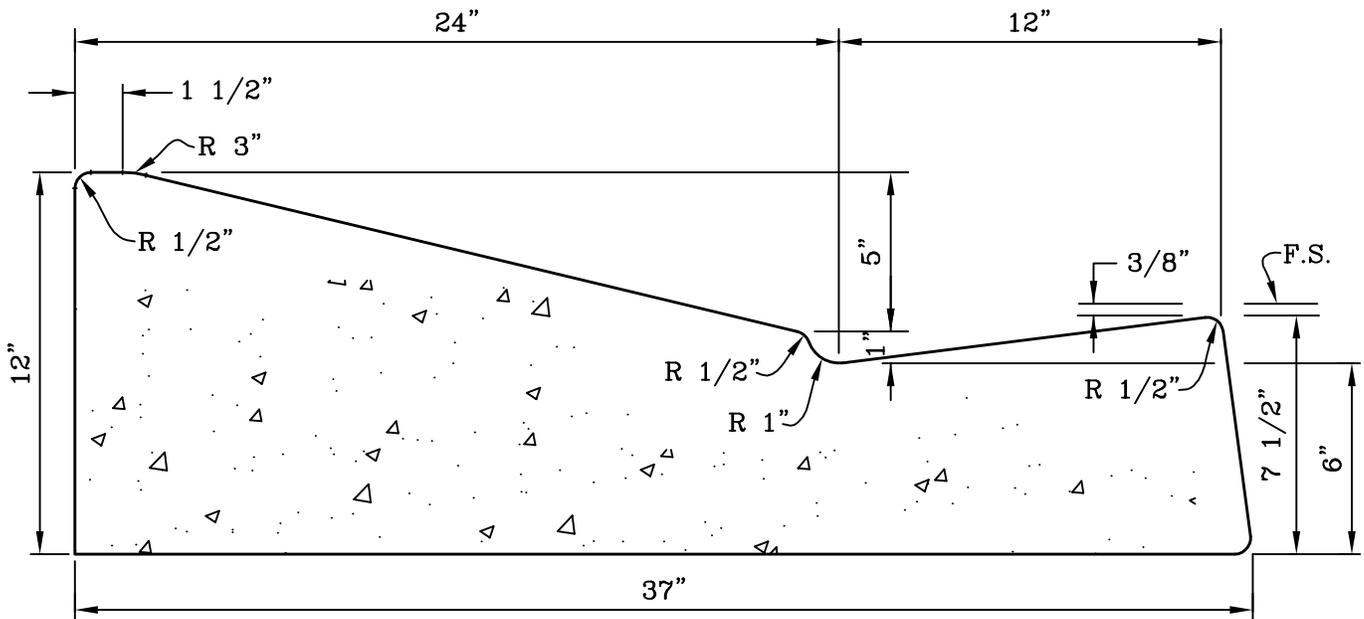
CURBS AND GUTTERS
NOTES

STANDARD
PLAN NO.

316

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 2 OF 2



NOTE:
 TRANSITION TO START NOT LESS THAN
 15' BEYOND END OF CURB RETURN

CITY OF MISSION VIEJO

CONCRETE ROLLED CURB
 (PRIVATE STREET)

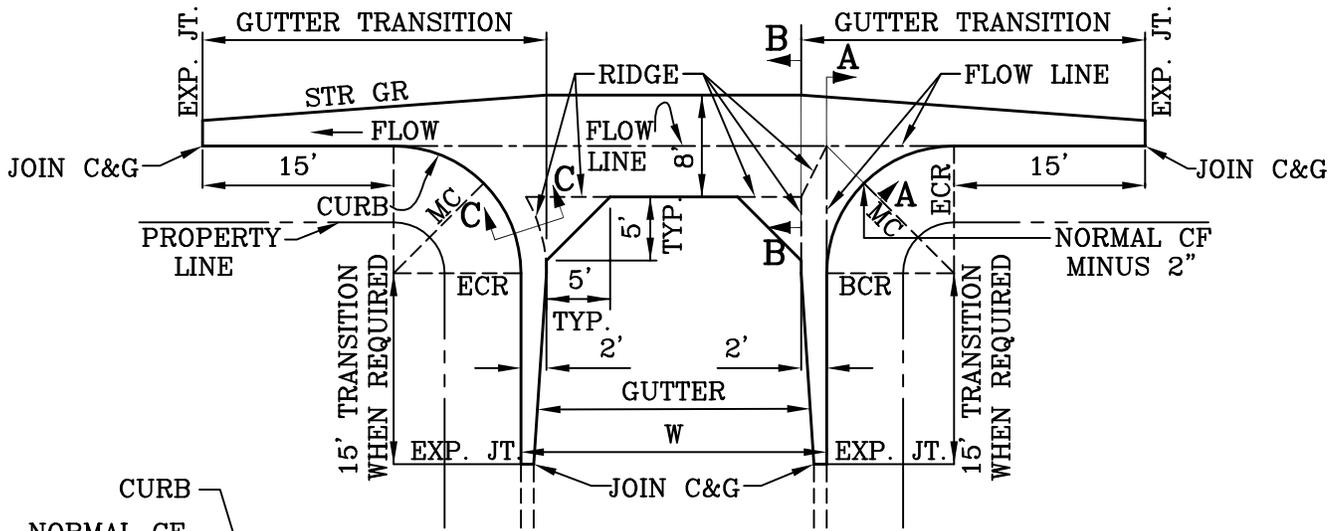
STANDARD
 PLAN NO.

317

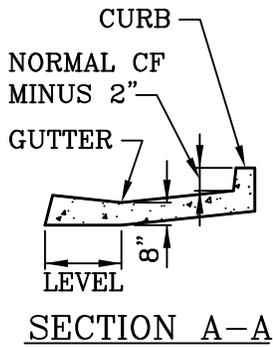


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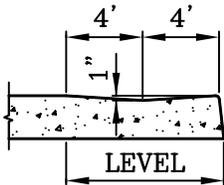
SHT 1 OF 1



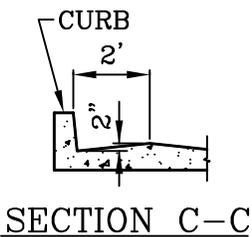
TYPICAL CROSS GUTTER PLAN



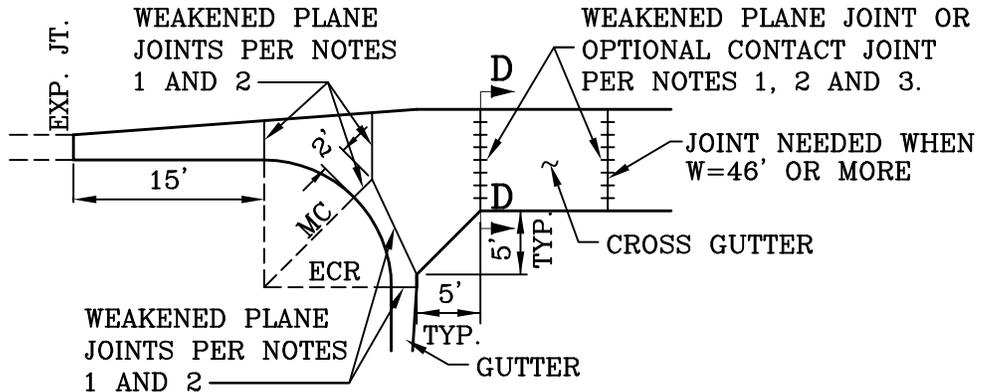
SECTION A-A



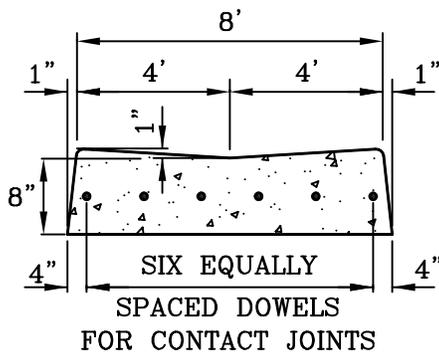
SECTION B-B



SECTION C-C



TYPICAL JOINT PLAN



SECTION D-D

SEE NOTES ON PAGE 2

CITY OF MISSION VIEJO



CROSS GUTTER

STANDARD PLAN NO.

319

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9-23-03

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DATE

SHT 1 OF 2

NOTES:

1. WEAKENED-PLANE AND/OR CONTACT JOINTS SHALL BE PLACED IN CURB AND GUTTER AT LOCATIONS SHOWN ON THE TYPICAL JOINT PLAN SHEET 1.
2. WEAKENED-PLANE JOINTS SHALL BE PLASTIC CONTROL JOINTS OR 1-1/2" DEEP SAW CUTS. CONCRETE SAWING SHALL TAKE PLACE WITHIN 24 HOURS AFTER CONCRETE IS PLACED.
3. DOWELS FOR CONTACT JOINTS SHALL BE NO. 4 BARS 18 INCHES LONG.
4. PLACE A WEAKENED-PLANE OR CONTACT JOINT WHERE LONGITUDINAL ALLEY GUTTER JOINS CONCRETE ALLEY INTERSECTION.
5. ALL EXPOSED CORNERS ON P.C.C. GUTTERS TO BE ROUNDED WITH 1/2" RADIUS.
6. CONCRETE SHALL BE INTEGRAL WITH CURB UNLESS OTHERWISE SPECIFIED.
7. PLACE 6" MIN. THICK A.B. UNDER CROSS GUTTER AND SPANDRELS.

CITY OF MISSION VIEJO



CROSS GUTTER

STANDARD
PLAN NO.

319

Robert Anderson

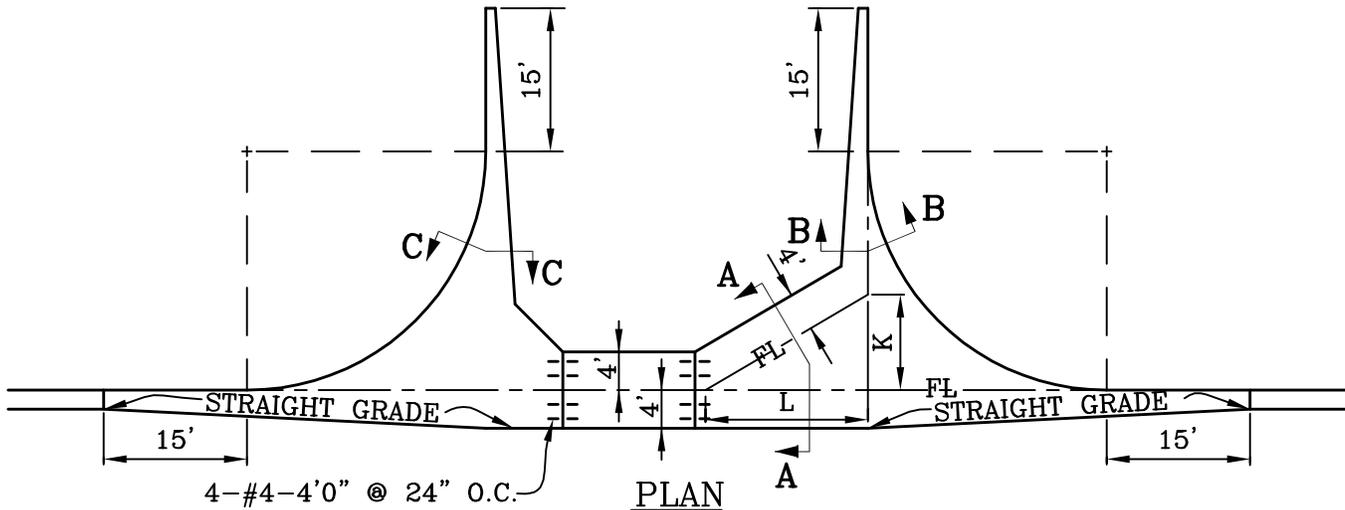
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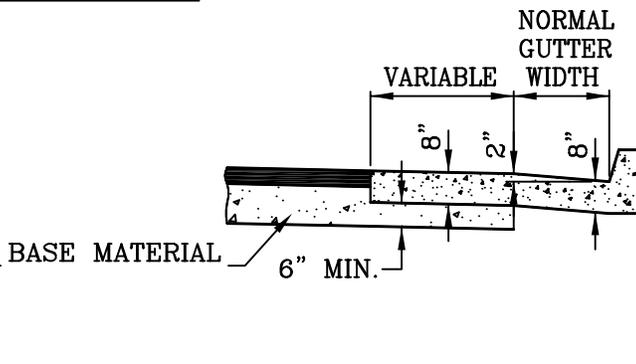
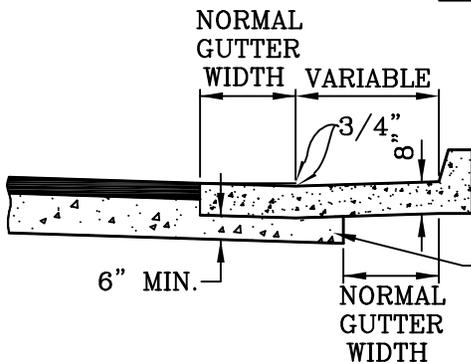
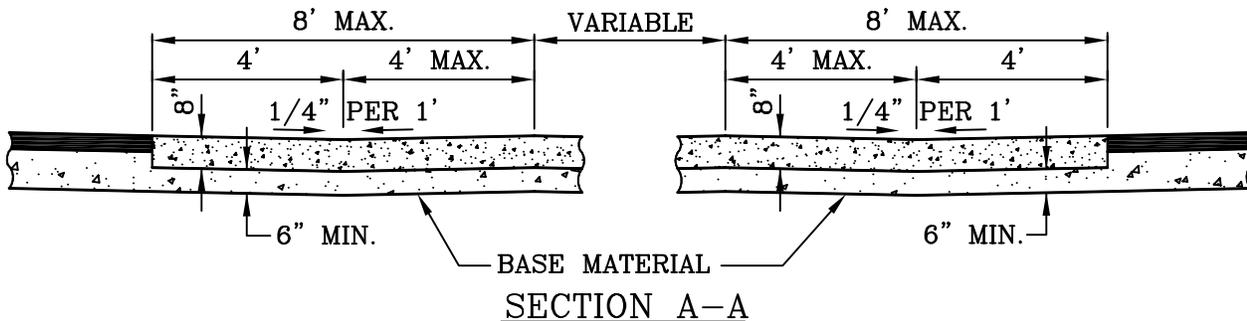
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DATE

SHT 2 OF 2



NOTE: SEE STD. PLAN 319 FOR JOINT DETAILS



NOTES:

1. CURBS AND SPANDRELS ARE MONOLITHIC.
2. FOR ACCESS RAMP DEPRESSIONS SEE STD. PLAN 322.
3. CROSS GUTTER SHALL BE PORTLAND CEMENT CONCRETE TYPE V.

CITY OF MISSION VIEJO

SPECIAL CROSS GUTTER
(STEEP GRADES)

STANDARD
PLAN NO.

320



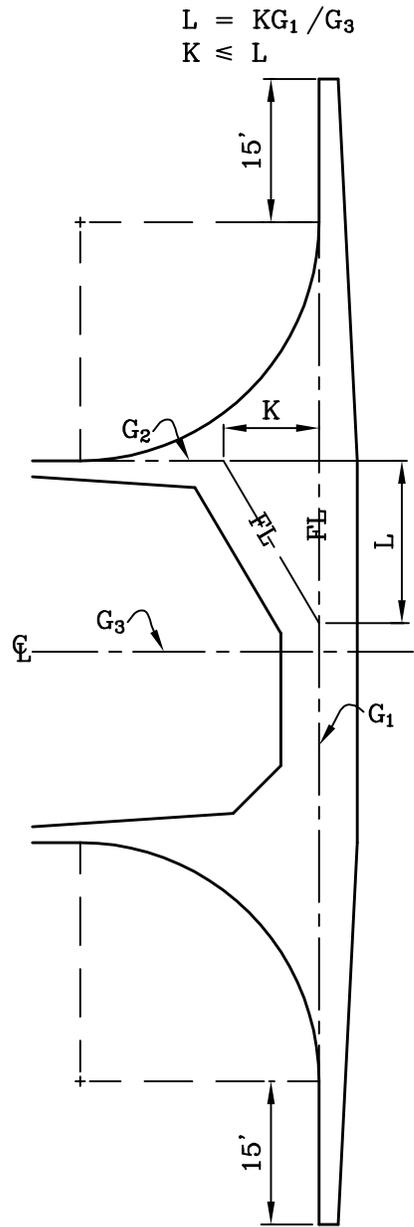
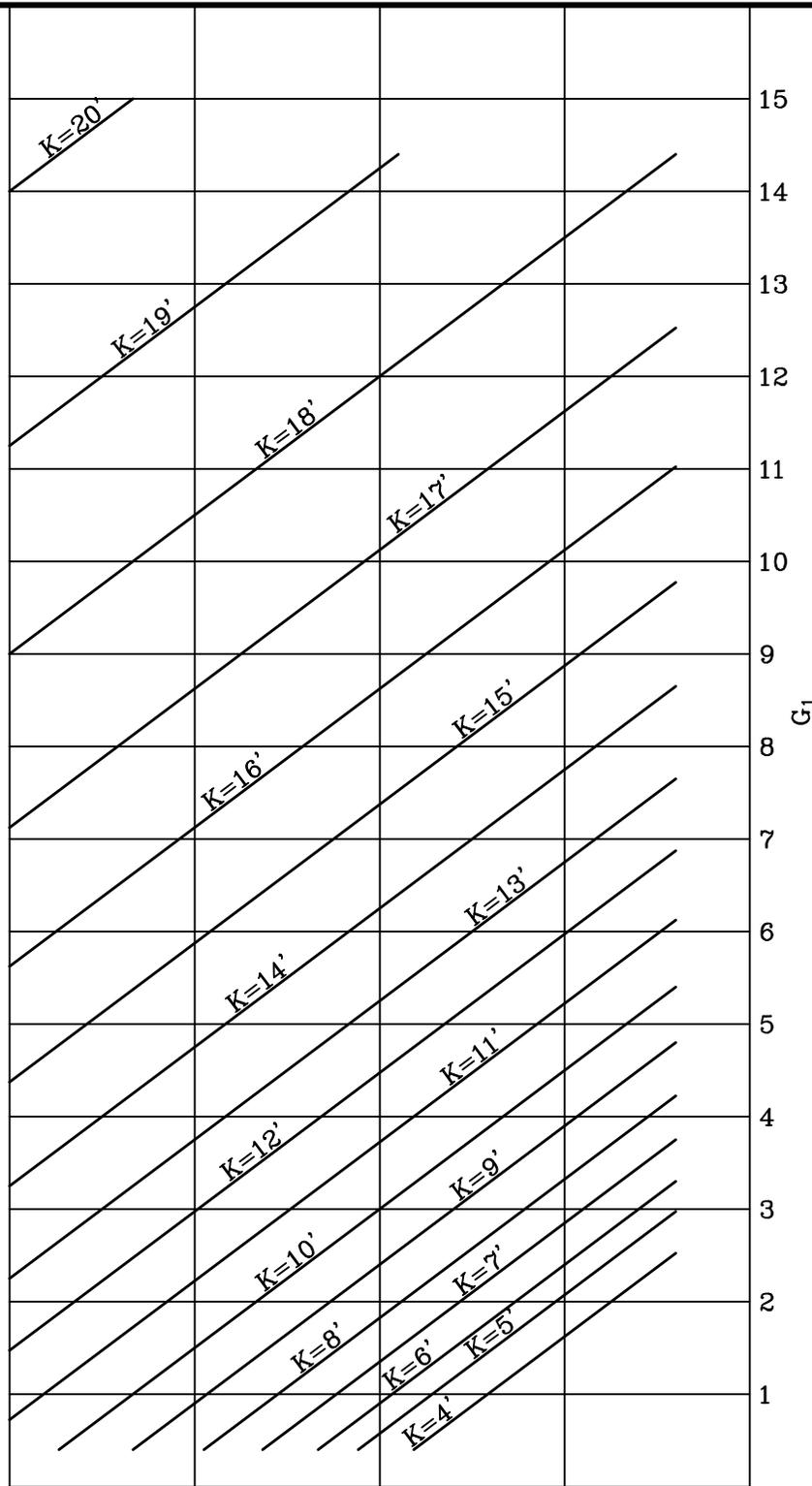
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SHT 1 OF 2



TO BE USED WITH SHEET 1

CITY OF MISSION VIEJO

SPECIAL CROSS GUTTER
(STEEP GRADES)

STANDARD
PLAN NO.

320



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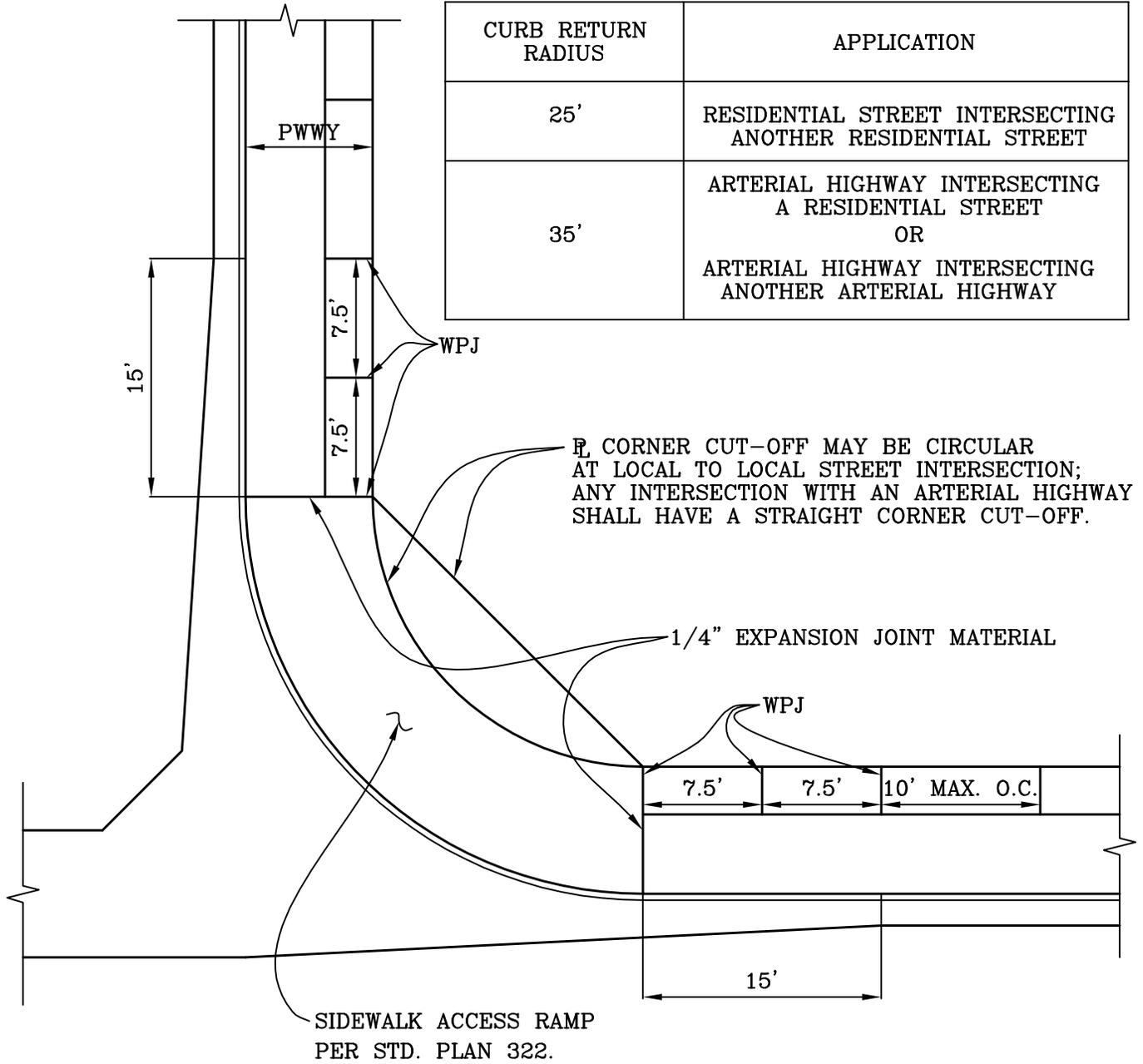
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DATE

SHT 2 OF 2

CURB RETURN RADIUS	APPLICATION
25'	RESIDENTIAL STREET INTERSECTING ANOTHER RESIDENTIAL STREET
35'	ARTERIAL HIGHWAY INTERSECTING A RESIDENTIAL STREET OR ARTERIAL HIGHWAY INTERSECTING ANOTHER ARTERIAL HIGHWAY



R CORNER CUT-OFF MAY BE CIRCULAR AT LOCAL TO LOCAL STREET INTERSECTION; ANY INTERSECTION WITH AN ARTERIAL HIGHWAY SHALL HAVE A STRAIGHT CORNER CUT-OFF.

1/4" EXPANSION JOINT MATERIAL

SIDEWALK ACCESS RAMP PER STD. PLAN 322.

NOTE:
ELEVATION DIFFERENCE BETWEEN B.C.R. AND E.C.R. SHALL NOT EXCEED 4'.

CITY OF MISSION VIEJO



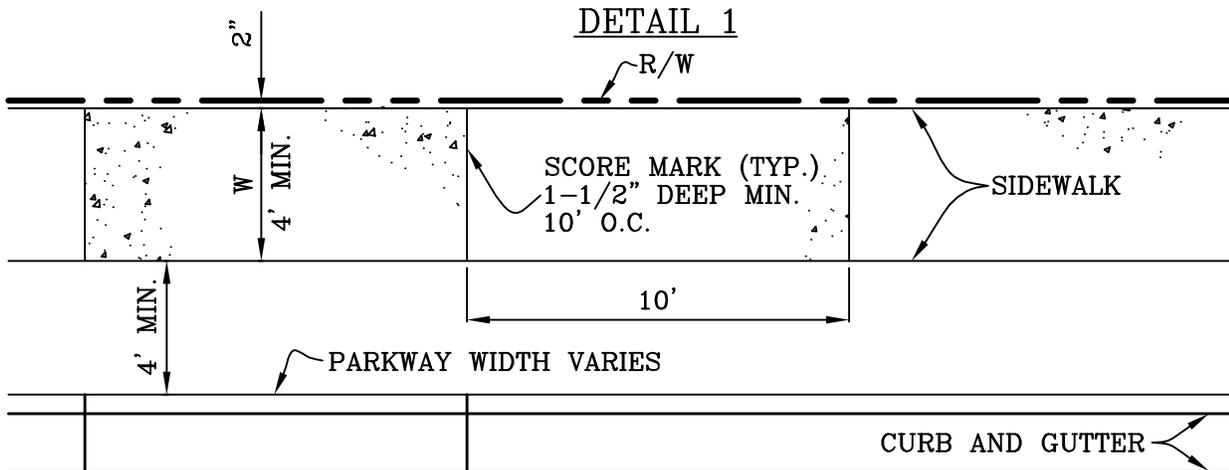
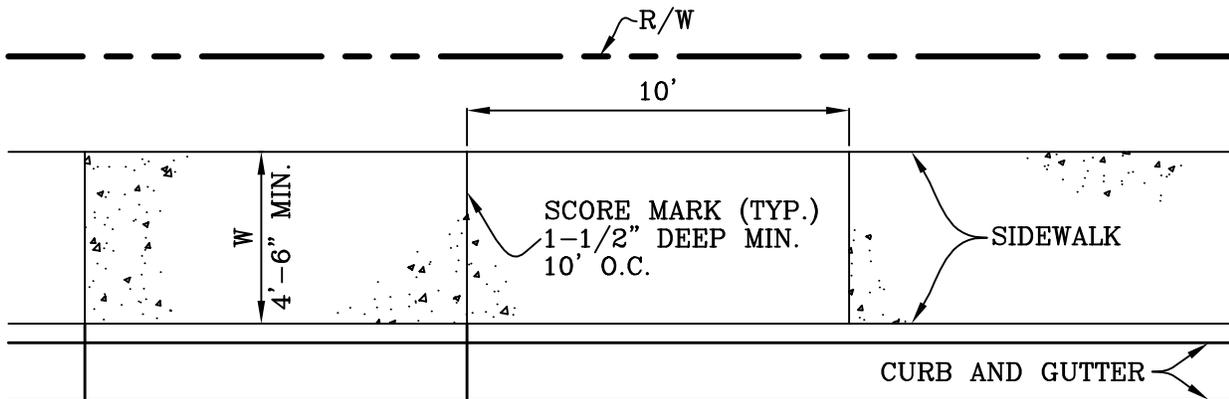
SIDEWALK RETURNS AND CURB RADIUS

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

STANDARD PLAN NO.

321

SHT 1 OF 3



DETAIL 2

NOTES:

1. THICKNESS OF SIDEWALK SHALL BE 4" EXCEPT IN DRIVEWAY APRONS. (STD. 306).
2. CURB AND GUTTER SHALL HAVE 1/4" PREMOLDED EXPANSION JOINTS AT THE ENDS OF CURB RETURNS AND 1-1/2" DEEP WEAKENED PLANE JOINTS AT INTERVALS SHOWN HEREON. JOINTS SHALL HAVE EDGES WITH 1/8" RADII.
3. SEE SHEET 1 OF 3 FOR ADDITIONAL EXPANSION JOINT REQUIREMENTS.
4. SIDEWALK SHALL BE PORTLAND CEMENT CONCRETE TYPE V.
5. ALL SOILS SHALL BE BROUGHT TO MAXIMUM SATURATION AS REQUIRED IN THE APPROVED SOILS REPORT. THE SOILS ENGINEER SHALL PROVIDE CERTIFICATION ON THE FORM PROVIDED BY THE CITY STATING THE MOISTURE CONTENT HAS BEEN MAINTAINED AS REQUIRED PRIOR TO AND DURING THE PLACEMENT OF CONCRETE. IN HILLSIDE AREAS, SOIL SHALL BE SATURATED AS RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE CITY ENGINEER.
6. SIDEWALKS ARE REQUIRED ON THE SIDE OF STREETS WHERE PARKING IS ALLOWED (I.E. PARKING ONE SIDE, SIDEWALK ON THAT SIDE. PARKING BOTH SIDES, SIDEWALK ON BOTH SIDES.) WHERE NO PARKING IS ALLOWED, PEDESTRIAN CIRCULATION MUST BE PROVIDED EITHER WITH A SIDEWALK OR A GREENBELT PATHWAY.
7. PRE-EMERGENT WEED KILLERS MUST BE APPROVED PRIOR TO CONSTRUCTION OF SIDEWALK.

CITY OF MISSION VIEJO



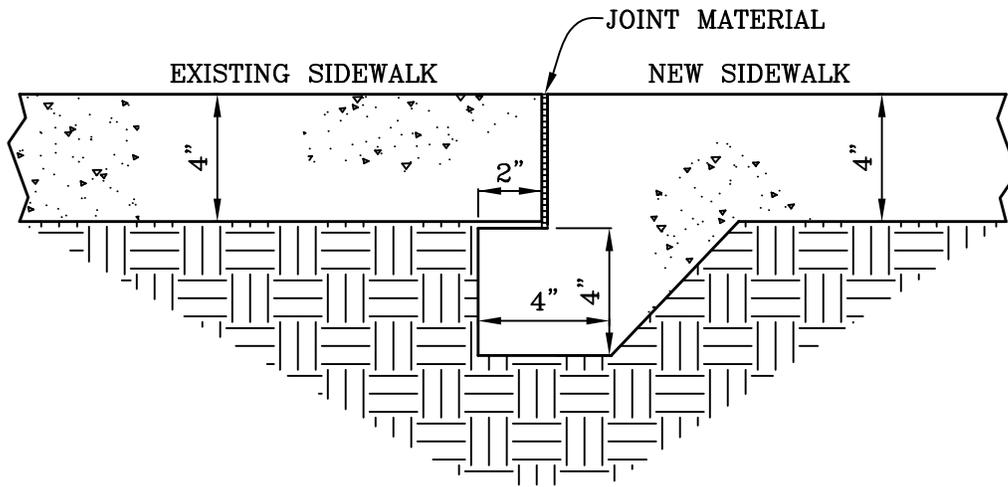
SIDEWALK DETAILS

STANDARD
PLAN NO.

321

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 2 OF 3



NOTES:

1. ALL APPLICABLE NOTES FROM SHEET 2 SHALL APPLY.
2. KEY NEW SIDEWALK SECTION UNDER EXISTING SIDEWALK.
3. PRESATURATION OF SOIL SHALL BE APPROVED BY INSPECTOR.

CITY OF MISSION VIEJO



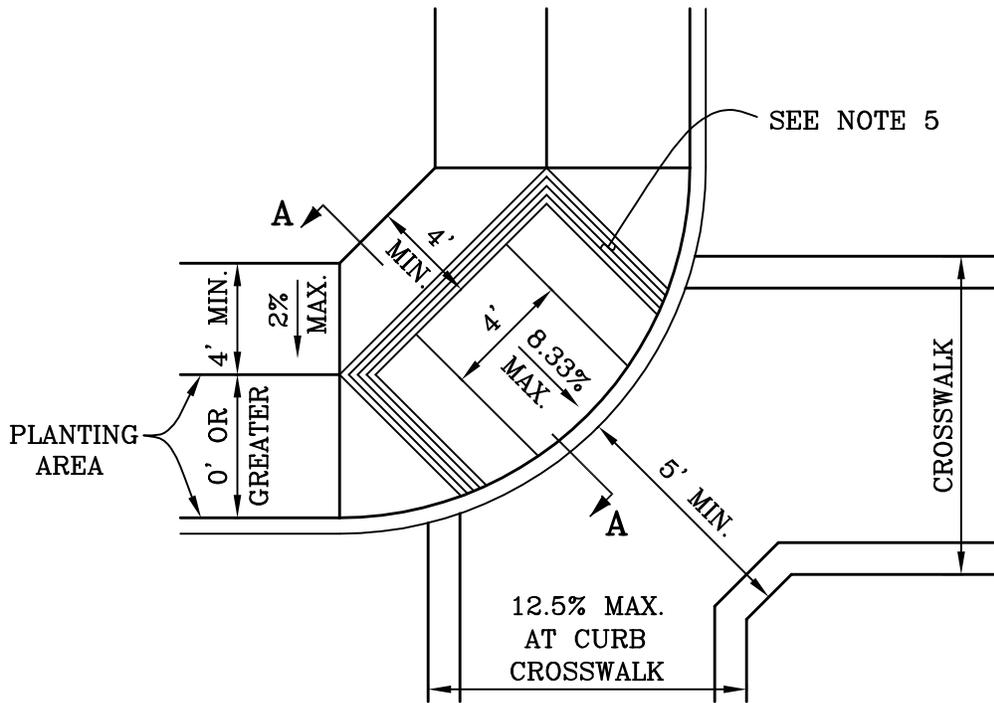
SIDEWALK DETAILS

STANDARD
PLAN NO.

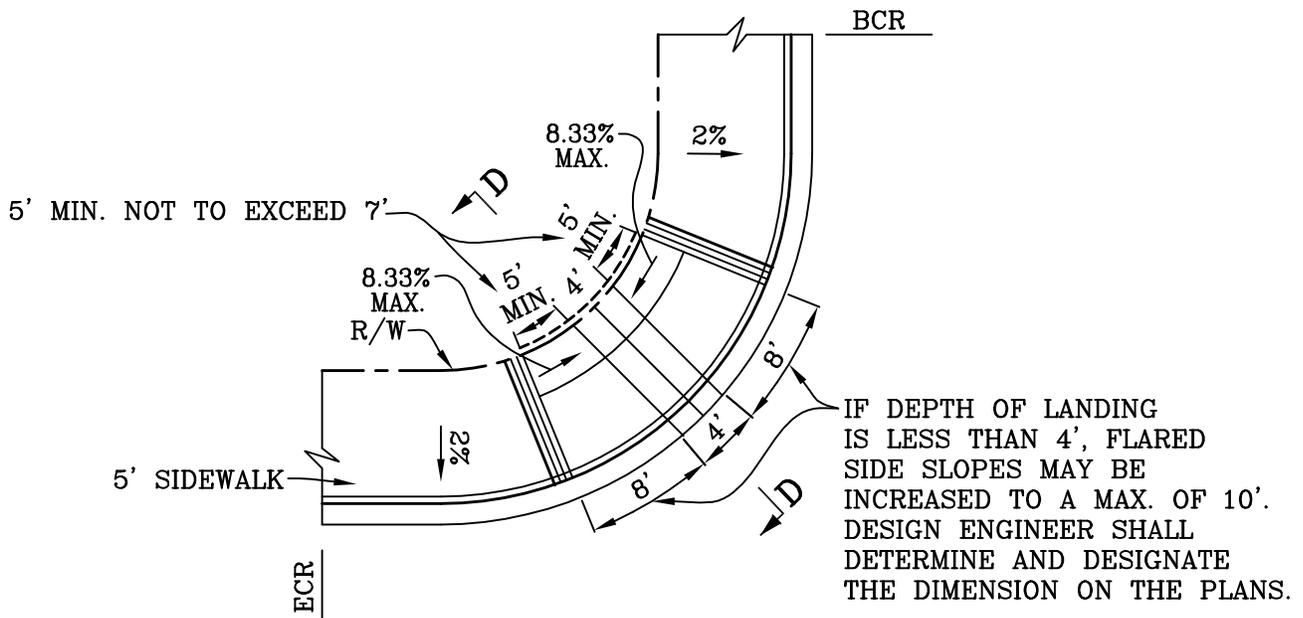
321

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SHT 3 OF 3



TYPE 1



TYPE 2

CITY OF MISSION VIEJO

ACCESS RAMPS
(TYPES 1 & 2)

STANDARD
PLAN NO.

322



Robert Anderson

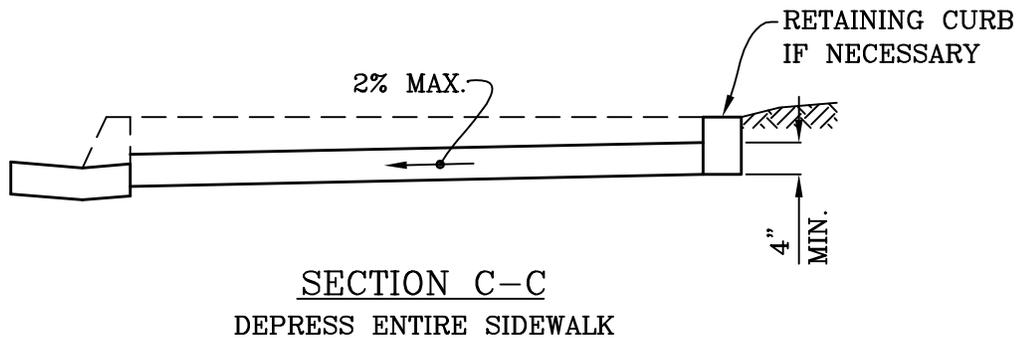
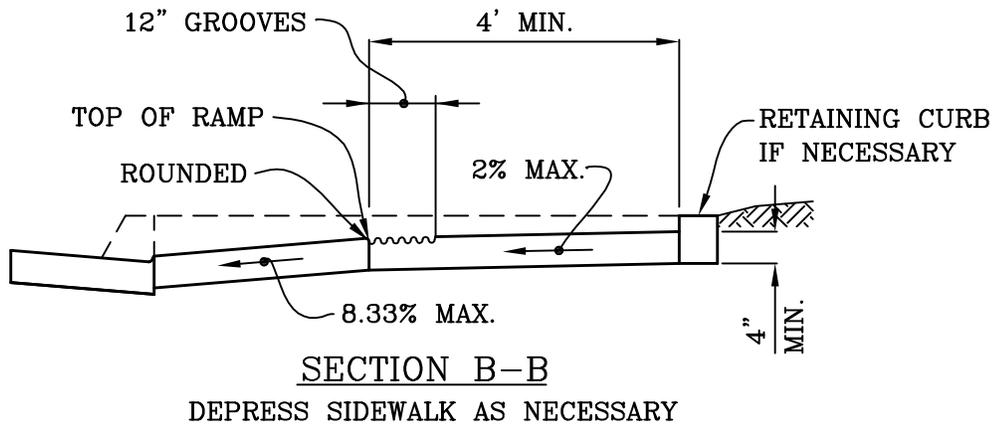
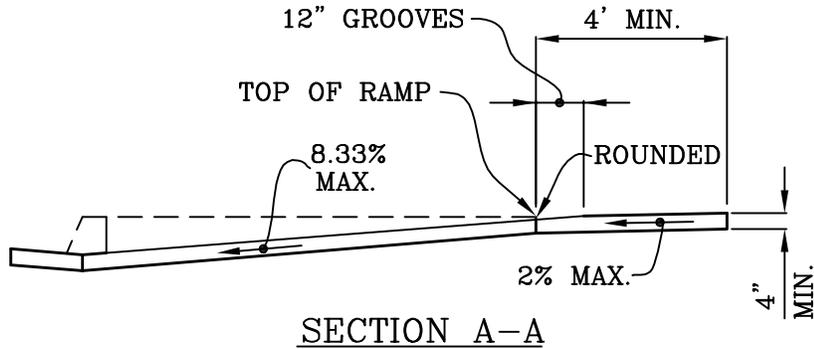
9-23-03

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RCE 30190

DATE

SHT 1 OF 4



CITY OF MISSION VIEJO

ACCESS RAMPS
(SECTIONS)

STANDARD
PLAN NO.

322



Robert Anderson

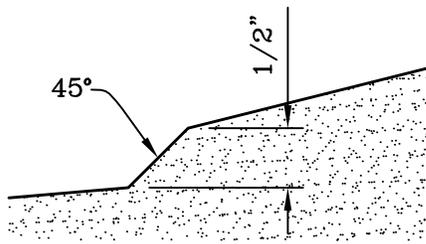
9-23-03

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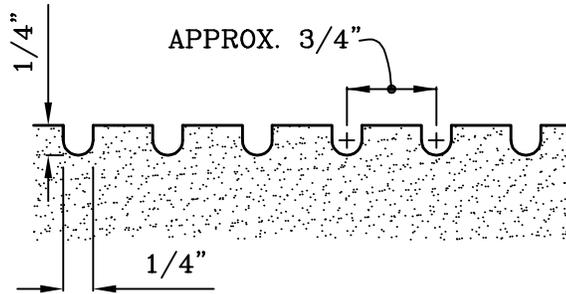
RCE 30190

DATE

SHT 3 OF 4



LIP DETAIL
SEE NOTE 4



GROOVING DETAIL
SEE NOTE 5

NOTES:

1. IF DISTANCE FROM CURB TO BACK OF SIDEWALK IS TOO SHORT TO ACCOMMODATE RAMP AND 4' LANDING, THE SIDEWALK MAY BE DEPRESSED LONGITUDINALLY AS IN TYPE 2 OR 3 OR MAY BE WIDENED AS IN TYPE 4.
2. IF SIDEWALK IS LESS THAN 5' WIDE, THE FULL WIDTH OF THE SIDEWALK SHALL BE DEPRESSED AS SHOWN IN TYPE 3.
3. IF LOCATED ON A CURVE, THE SIDES OF THE RAMP NEED NOT BE PARALLEL, BUT THE MINIMUM WIDTH OF RAMP SHALL BE 4'.
4. THE BOTTOM OF THE RAMP SHALL HAVE A 1/2" LIP AT 45 DEGREES.
5. THE RAMP SHALL HAVE A 12" WIDE BORDER WITH A 1/4" GROOVE APPROXIMATELY 3/4" O.C. (SEE GROOVING DETAIL). THE SURFACE OF THE RAMP SHALL HAVE A TRANSVERSE BROOMED SURFACE TEXTURE ROUGHER THAN THE SURROUNDING SIDEWALK.
6. RAMP SIDE SLOPE VARIES UNIFORMLY FROM A MAXIMUM OF 12.5% AT CURB TO CONFORM WITH LONGITUDINAL SIDEWALK SLOPE ADJACENT TO TOP OF THE RAMP, EXCEPT IN TYPE 3.

CITY OF MISSION VIEJO

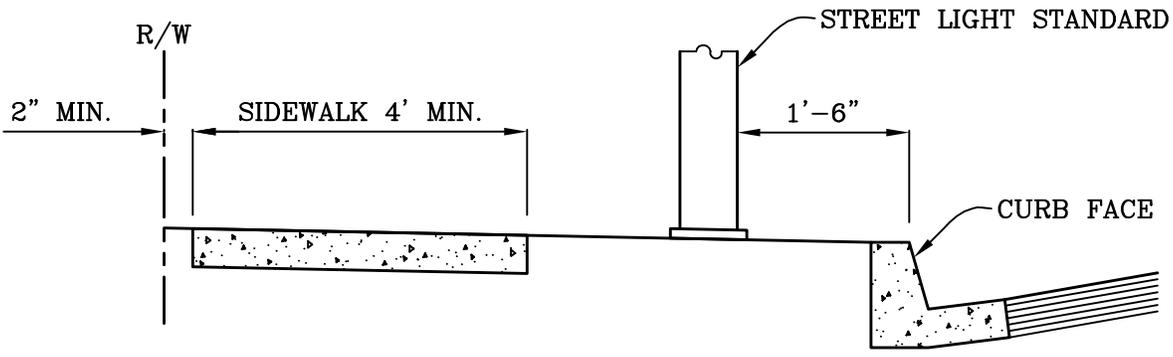


ACCESS RAMPS
(DETAILS AND NOTES)

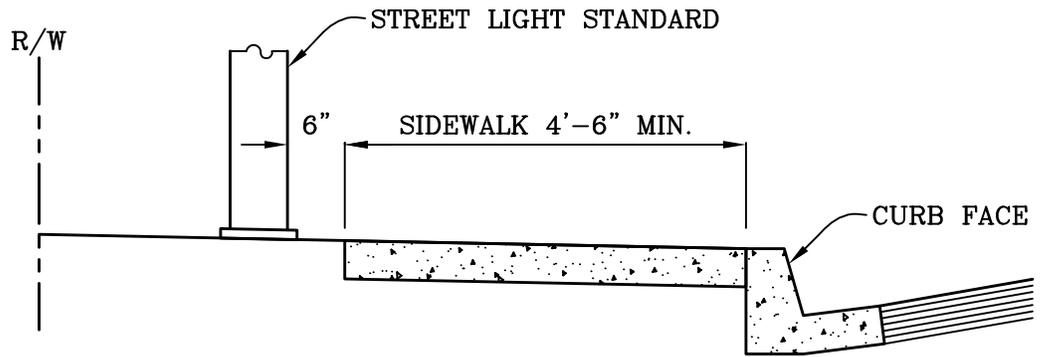
STANDARD
PLAN NO.

322

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE



CASE 1



CASE 2

NOTE:
SEE STD. PLAN 329 FOR STREET LIGHTING DESIGN INFORMATION.

CITY OF MISSION VIEJO



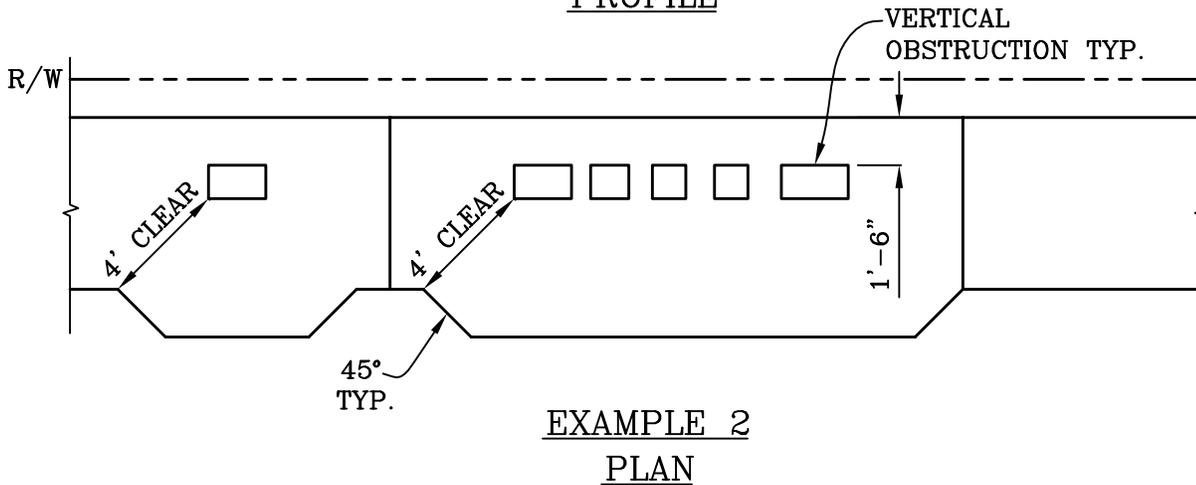
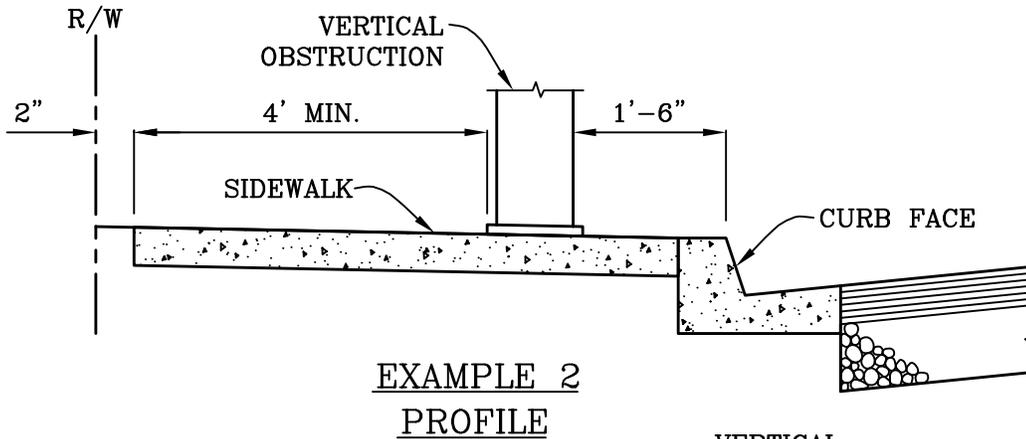
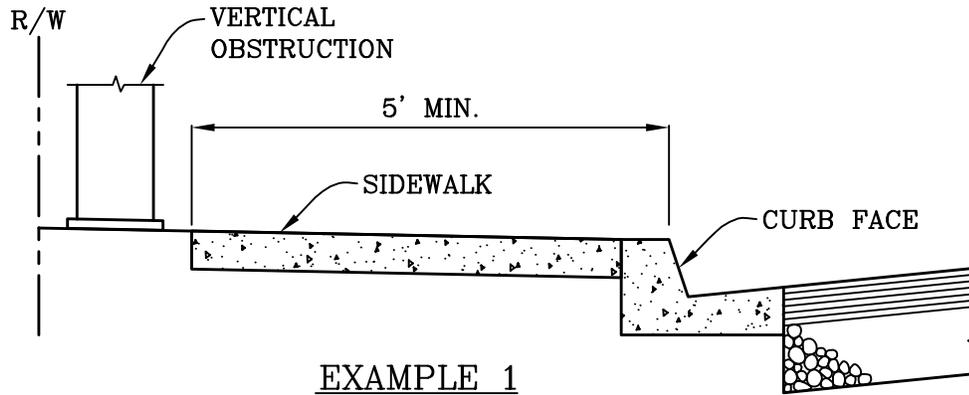
STREET LIGHTS
(PARKWAY LOCATION)

STANDARD
PLAN NO.

323

Robert Anderson 9-23-03

APPROVED RCE 30190 DATE



SEE NOTES ON SHEET 2

CITY OF MISSION VIEJO



PARKWAY OBSTRUCTIONS

STANDARD
PLAN NO.

324

APPROVED

RCE 30190

DATE

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9-23-03

SHT 1 OF 2

NOTES:

1. THE DISTANCE FROM THE CURB TO ANY PART OF A FIRE HYDRANT SHALL BE NOT LESS THAN TWO (2) FEET NOR GREATER THAN SEVEN (7) FEET.
2. FOR ANY VERTICAL OBSTRUCTION, THE MINIMUM CLEARANCE FROM THE CURB SHALL BE 1'-6".
3. THE MINIMUM WIDTH OF CLEAR SIDEWALK AREA SHALL BE FOUR (4) FEET FROM ANY VERTICAL OBSTRUCTION.
4. ANY UTILITY VAULT WITHIN THE SIDEWALK AREA SHALL HAVE A BOLT DOWN COVER WITH A SLIP RESISTANT FINISH.
5. ANY PARKWAY OBSTRUCTION SHALL BE SURROUNDED BY A CONCRETE PAD.
6. REFER TO STD. PLAN 321 FOR SIDEWALK CONSTRUCTION.

CITY OF MISSION VIEJO



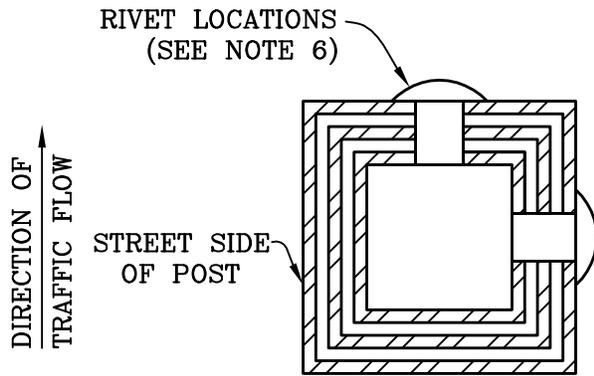
PARKWAY OBSTRUCTIONS

STANDARD
PLAN NO.

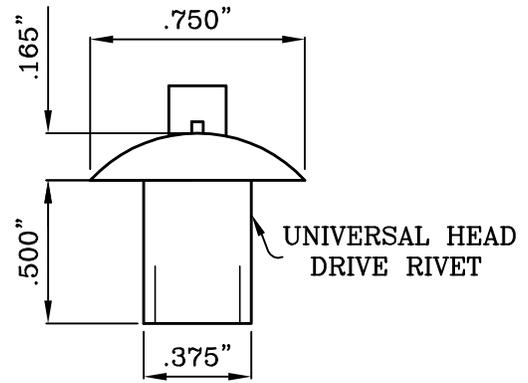
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APPROVED RCE 30190 DATE

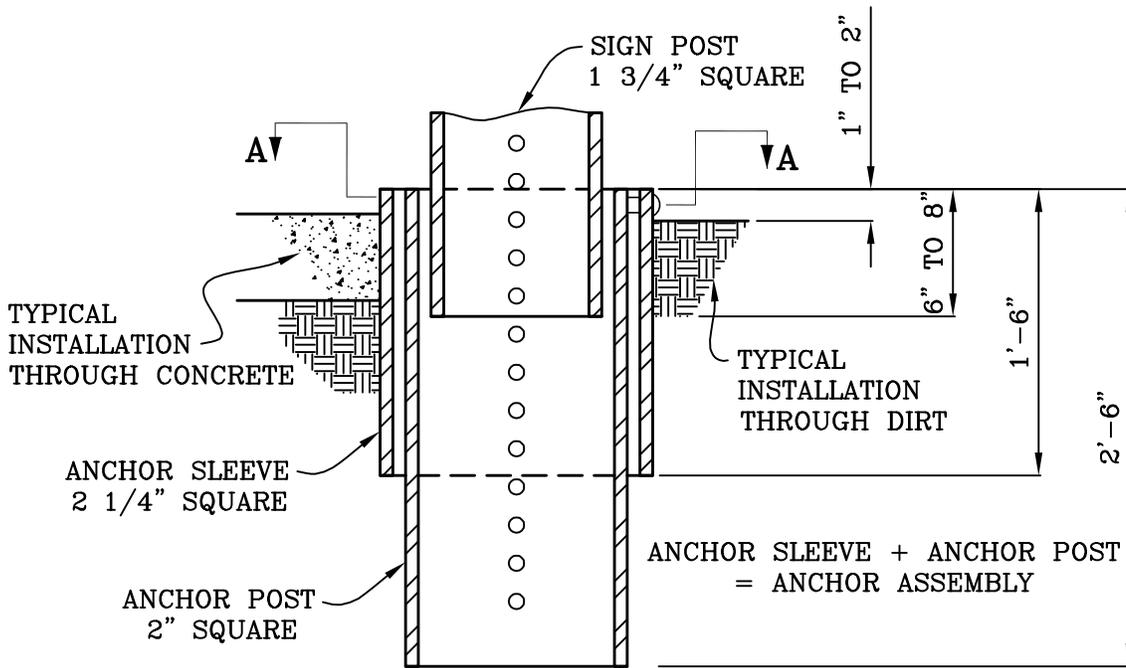
SHT 2 OF 2



SECTION A-A



RIVET DETAIL



TYPICAL SECTION

SEE SHEET 2 FOR NOTES

CITY OF MISSION VIEJO



SIGN POST INSTALLATION

STANDARD
PLAN NO.

325

Robert Anderson

9-23-03

APPROVED

RCE 30190

DATE

SHT 1 OF 2

NOTES:

1. SQUARE PERFORATED STEEL TUBE WITH BREAK-AWAY BASE, "TELESPAR" OR EQUAL, SHALL BE USED FOR ALL TRAFFIC CONTROL AND INFORMATIONAL SIGNS.
2. THE NUMBER OF POSTS REQUIRED FOR SIGN INSTALLATION SHALL BE DETERMINED BY THE AREA OF THE SIGN OR COMBINATION OF SIGNS TO BE INSTALLED. A SINGLE POST SHALL BE USED WHERE BOTH THE LENGTH AND WIDTH ARE LESS THAN 48", WITH THE EXCEPTION OF A 48" x 48" STOP SIGN. DOUBLE POSTS SHALL BE USED WHERE EITHER THE LENGTH OR THE WIDTH EXCEEDS 48".
3. THE ANCHOR ASSEMBLY SHALL CONSIST OF A 2" SQUARE BY 2'-6" ANCHOR POST AND A 2 1/4" SQUARE BY 1'-6" ANCHOR SLEEVE.
4. THE ANCHOR ASSEMBLY, CONSISTING OF THE ANCHOR POST AND ANCHOR SLEEVE, SHALL BE DRIVEN SIMULTANEOUSLY UNTIL ONLY 1" TO 2" REMAINS ABOVE GROUND LEVEL. THE TOPS OF BOTH PIECES SHALL BE FLUSH.
5. ALL DIRT SHALL BE REMOVED FROM THE INSIDE TOP 8" OF THE ANCHOR ASSEMBLY TO ALLOW FOR INSTALLATION OF THE SIGN POST.
6. INSTALL THE 1 3/4" SQUARE SIGN POST 6" TO 8" INTO THE ANCHOR ASSEMBLY AND SECURE IN PLACE WITH TWO 5/16" UNIVERSAL HEAD DRIVE RIVETS AS SHOWN. THE RIVETS SHALL BE INSTALLED ON THE SIDE OPPOSITE TRAFFIC FLOW AND THE SIDE AWAY FROM TRAFFIC AS SHOWN IN ORDER TO ACHIEVE THE MAXIMUM BREAK-AWAY EFFECT.
7. INSTALLATION ACCORDING TO THESE REQUIREMENTS IS ESSENTIAL TO MAINTAIN THE BREAK-AWAY CHARACTERISTICS OF THE POST SYSTEM. UNDER NO CIRCUMSTANCES SHALL THE ANCHOR ASSEMBLY BE SECURED IN CONCRETE FOOTING.
8. LOCATION AND HEIGHT OF SIGN SHALL CONFORM TO STANDARD PLANS 324, 328, AND CALTRANS SIGN REQUIREMENTS.

CITY OF MISSION VIEJO



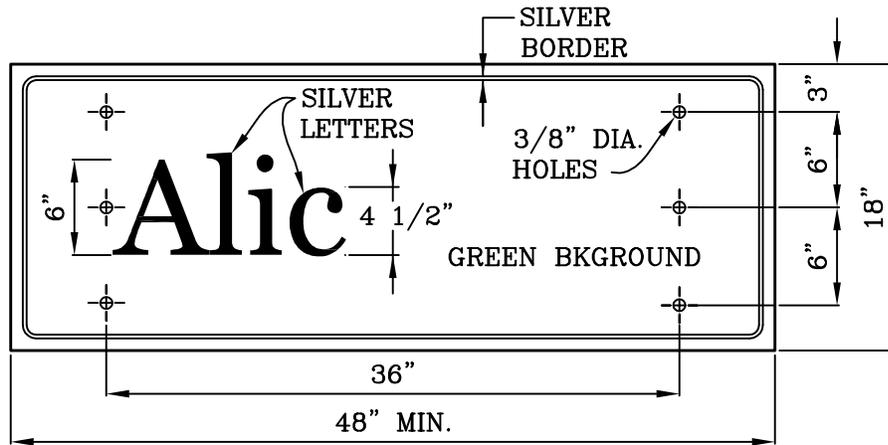
SIGN POST INSTALLATION

STANDARD
PLAN NO.

325

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 2 OF 2



NOTES:

SIZE - MINIMUM LENGTH OF SIGN SHALL BE 48", WIDTH SHALL BE 18", THICKNESS SHALL BE 0.080" OR 0.063" WITH BACK FRAME.

MATERIAL:

SIGN SHALL BE 6061T6 OR 5155H36 ANODIZED ALUMINUM ALLOY EXTRUSION.

FINISH:

SIGN FACE SHALL BE OF WIDE ANGLE, SMOOTH SURFACE REFLECTIVE SHEETING, CONFORMING TO FEDERAL SPECIFICATION L-S-300A CLASSIFICATION 1.2 TYPE I (CLASS 1 OR 2) TABLE II REFLECTIVITY 1. LEGEND SHALL BE SILVER WITH REVERSE SCREEN GREEN BACKGROUND. SHEETING SHALL BE BONDED TO REFLECTIVE ALUMINUM ALLOY SIGN BLANKS AND BE OF THE SAME SHAPE AND SIZE.

LETTERING:

1. THE STREET NAMES SHALL BE COMBINATIONS OF 6" CAPITAL LETTERS AND 4 1/2" LOWER CASE LETTERS. ABBREVIATED SUFFIXES (I.E. BLVD, AVE, PKWY) SHALL BE SHOWN. THE STREET NAME SHALL BE CENTERED ON THE SIGN FACE. THE SIZE, STYLE, AND SPACING, OF THE LETTERS SHALL CONFORM TO THE CALIFORNIA DEPARTMENT OF TRANSPORTATION TRAFFIC MANUAL, CHAPTER 4, FOR A "G-7" ADVANCE STREET NAME SIGN.
2. 8" CAPITAL LETTERS AND 6" LOWER CASE LETTERS SHALL BE USED ON LARGER SIGNS IN CONFORMANCE WITH CALTRANS TRAFFIC MANUAL FOR RURAL ROADS WITH HIGH SPEED TRAFFIC. USE OF THIS SIGN SHALL BE AS DIRECTED BY THE CITY ENGINEER.
3. SPACING OF THE LETTERS SHALL BE AS FOLLOWS:
 - a. THE END SPACING, SPACING BETWEEN WORDS OR NAMES WITH TWO OR MORE WORDS, AND SPACING BETWEEN STREET NAME AND SUFFIX SHALL NOT BE LESS THAN THE HEIGHT OF THE UPPER CASE LETTERING BEING USED.
 - b. THE SPACING BETWEEN LETTERS SHALL BE 1 TO 1 1/2 TIMES THE STROKE WIDTH (WIDTH OF LETTERING MATERIAL), DEPENDENT ON COMBINATION OF LETTERS.

LOCATION

ADVANCE STREET NAME SIGNS PLACED IN MEDIANS SHALL BE 2' FROM THE EDGE OF THE TRAVELED WAY, AND BE LOCATED APPROXIMATELY 300' FROM THE INTERSECTION OR 100' FROM THE BEGINNING OF A LEFT TURN POCKET. SIGN MOUNTING HEIGHT SHALL BE 5' FROM ABOVE MEDIAN SURFACE AS DIRECTED BY ENGINEER. POSTS FOR ADVANCED STREET NAME SIGNS SHALL BE SQUARE PERFORATED STEEL TUBING 4" X 4" REDWOOD.

INSTALLATION:

SEE STD. PLAN 327 FOR PLACEMENT AND INSTALLATION.

CITY OF MISSION VIEJO



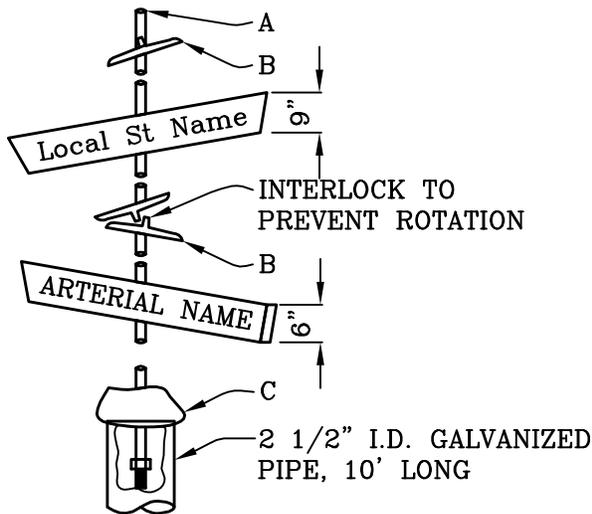
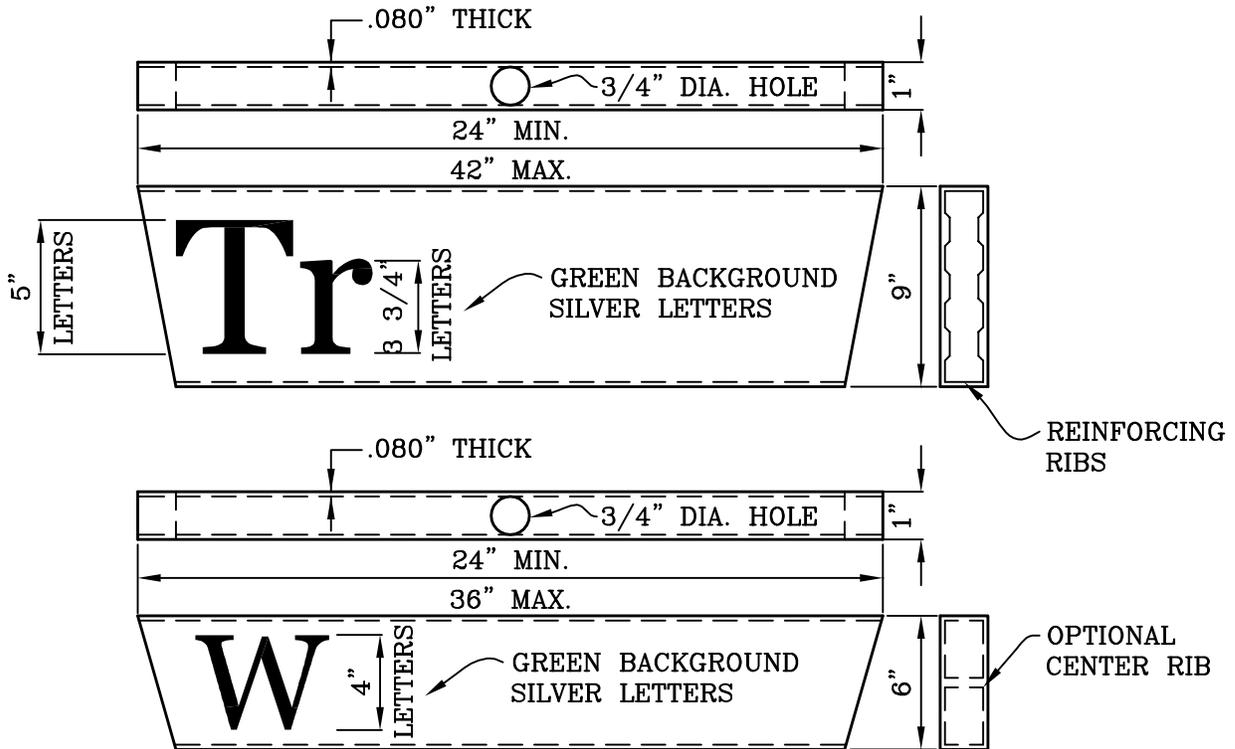
ADVANCE STREET NAME SIGNS

STANDARD
PLAN NO.

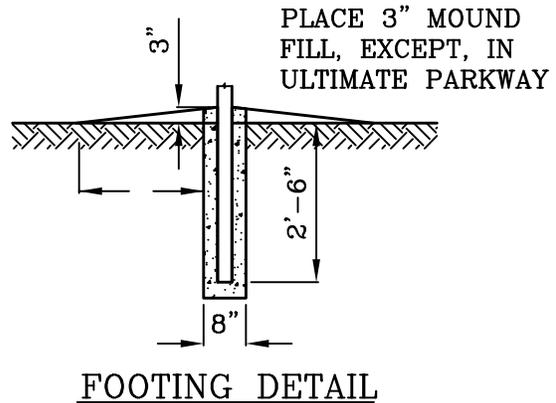
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APPROVED RCE 30190 DATE

SHT 1 OF 1



MOUNTING DETAIL



SEE SHT. 2 AND 3 FOR NOTES

CITY OF MISSION VIEJO

STREET NAME SIGNS

STANDARD
PLAN NO.

327



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SHT 1 OF 4

NOTES:

1. EXACT LOCATIONS OF STREET NAME SIGNS ARE TO BE SHOWN ON STREET IMPROVEMENT PLANS. SEE SHEET 3 FOR PLACEMENT CRITERIA. SEE SHEET 3 FOR STREET NAME SIGN NOTES.
2. ALUMINUM ALLOY FOR ALL COMPONENTS SHALL CONFORM TO SPECIFICATIONS PUBLISHED BY THE ALUMINUM ASSOCIATION.
3. THE 9" SIGN SHALL FACE ARTERIAL TRAFFIC; THE 6" SIGN SHALL FACE LOCAL STREET TRAFFIC.
 - A. USE A 5/8" x 18" CARRIAGE BOLT FOR 6" AND 9" SIGN COMBINATION. USE A 5/8" x 21" CARRIAGE BOLT FOR 9" AND 9" SIGN COMBINATION. CARRIAGE BOLT SHALL BE GALVANIZED MILD STEEL.
 - B. ORNAMENTAL TOP AND CENTER ACROSS SADDLE SHALL BE ANODIZED AND CAST FORM ALUMINUM CASTING ALLOY 319.
 - C. ANODIZED 2 1/2" POST CAP, CAST FROM ALUMINUM CASTING ALLOY 391, WITH THREE 3/8" STAINLESS STEEL SET SCREWS AND ONE 1/4" x 3/4" STEEL ROLL PIN.

SIZE:

THE SIGNS SHALL BE IN TWO SIZES:

1. FOR TRAFFIC ON LOCAL STREETS, THE LENGTH OF THE SIGN FACE SHALL BE IN SIX-INCH MULTIPLES FROM 24 TO 36 INCHES.
2. FOR TRAFFIC ON ARTERIAL STREETS, THE LENGTH OF THE SIGN FACE SHALL BE IN SIX-INCH MULTIPLES FROM 24 TO 42 INCHES. THE SIGN SHALL HAVE REINFORCING RIBS OR CROSS MEMBERS TO RETAIN THE RIGIDITY OF THE PIECES.

FINISH:

SIGN FACE SHALL BE OF WIDE ANGLE, SMOOTH SURFACE REFLECTIVE SHEETING, CONFORMING TO FEDERAL SPECIFICATION L-S-300A CLASSIFICATION 1.2 TYPE I (CLASS 1 OR 2) TABLE II REFLECTIVITY 1. LEGEND SHALL BE SILVER WITH REVERSE SCREEN GREEN BACKGROUND. SHEETING SHALL BE BOUNDED TO REFLECTIVE ALUMINUM ALLOY SIGN BLANKS AND BE OF THE SAME SHAPE AND SIZE.

CITY OF MISSION VIEJO



SPECIAL PROVISIONS
STREET NAME SIGNS

STANDARD
PLAN NO.

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SHT 2 OF 4

LETTERING:

1. THE 6-INCH WIDTH SIGN SHALL HAVE 4-INCH CAPITAL LETTERS.
2. THE 9-INCH WIDTH SIGN SHALL HAVE 5-INCH CAPITAL LETTERS AND 3 3/4 INCH LOWER CASE LETTERS.
3. THE STREET NAME SHALL BE CENTERED ON THE SIGN FACE.
4. STREET NAME PREFIXES (SUCH AS CALLE, CAMINO) SHALL BE SHOWN IN 2-INCH CAPITAL LETTERS; STREET NAME SUFFIXES (SUCH AS DRIVE, STREET, ROAD), AND BLOCK NUMBERS SHALL NOT BE SHOWN.
5. SPACING OF THE LETTERS TO BE AS FOLLOWS:
 - a. THE END SPACE SHALL NOT BE LESS THAN 1/3 THE HEIGHT OF THE UPPER CASE LETTER BEING USED.
 - b. THE SPACING BETWEEN WORDS ON NAMES WITH TWO OR MORE WORDS SHALL NOT BE LESS THAN 2/3 THE HEIGHT OF THE UPPER CASE LETTER BEING USED.
 - c. THE SPACING BETWEEN LETTERS SHALL BE 1 TO 1.5 TIMES THE STROKE WIDTH (WIDTH OF LETTERING MATERIAL), DEPENDENT UPON COMBINATION OF LETTERS.

CITY OF MISSION VIEJO



SPECIAL PROVISIONS
STREET NAME SIGNS

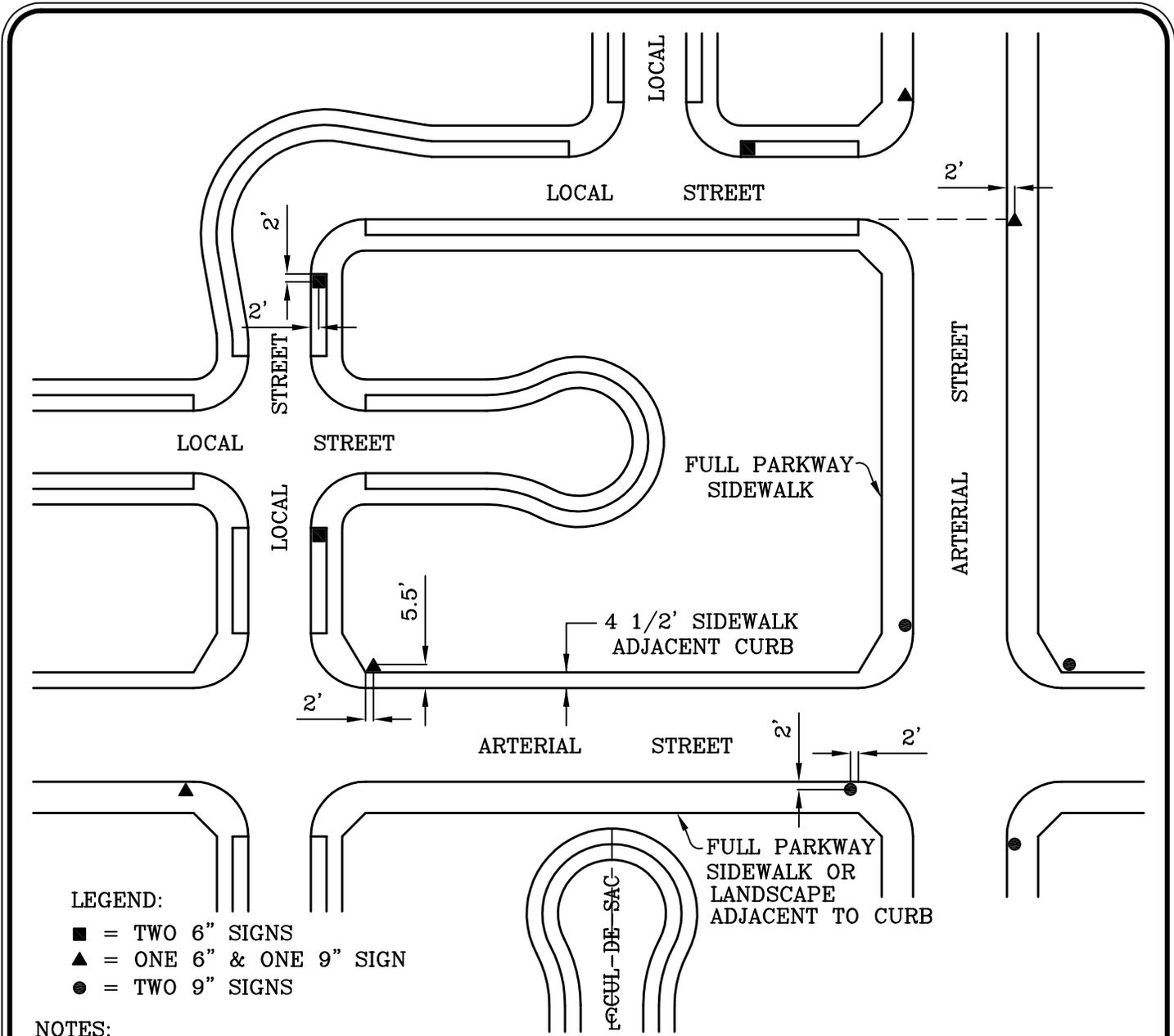
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SHT 3 OF 4



LEGEND:

- = TWO 6" SIGNS
- ▲ = ONE 6" & ONE 9" SIGN
- = TWO 9" SIGNS

NOTES:

1. SEE SHTS. 1 & 2 FOR STREET NAME SIGN DETAILS AND NOTES.
2. THE 9" SIGN SHALL FACE ARTERIAL TRAFFIC; THE 6" SHALL FACE LOCAL STREET TRAFFIC.
3. STREET NAME SIGNS SHALL BE PLACED AT THE NEAR RIGHT APPROACH OF MAJOR TRAFFIC FLOW.
4. ONE SIGN SHALL BE PLACED AT THE INTERSECTION OF TWO LOCAL STREETS.
5. TWO SIGNS SHALL BE PLACED AT THE INTERSECTION OF AN ARTERIAL STREET WITH A LOCAL STREET.
6. FOUR SIGNS SHALL BE PLACED AT THE INTERSECTION OF TWO ARTERIAL STREETS.
7. STREET NAME SIGNS SHALL BE OMITTED AT SIGNALIZED INTERSECTIONS.

CITY OF MISSION VIEJO



STREET NAME SIGN LOCATION

STANDARD
PLAN NO.

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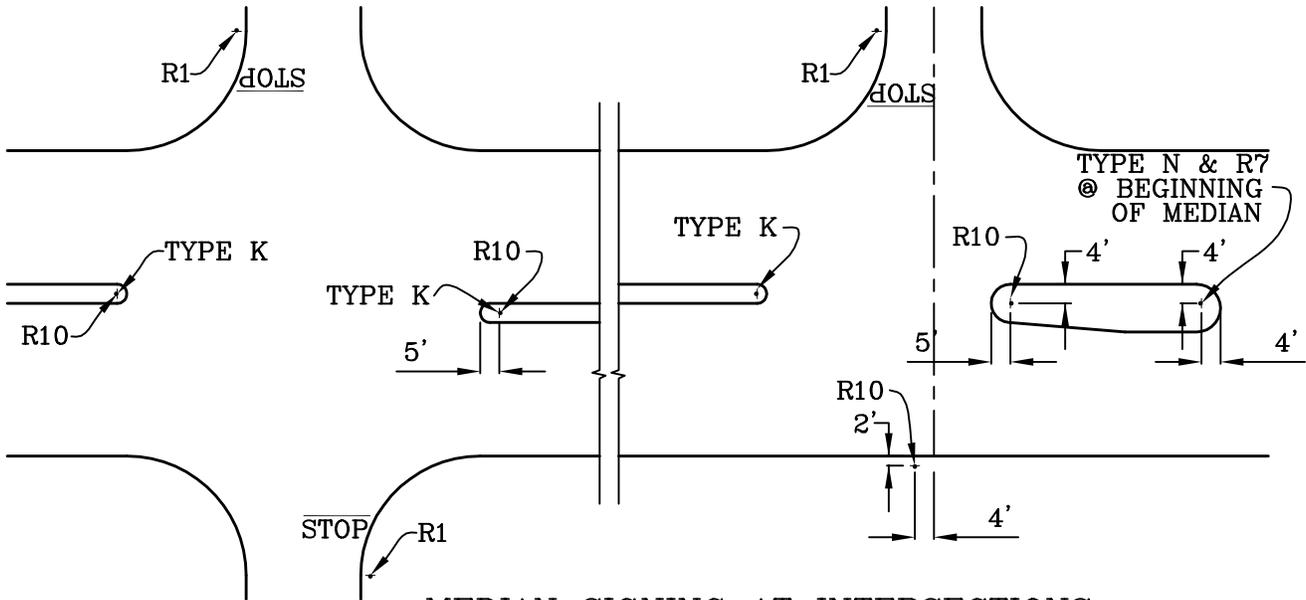
Robert Anderson 9-23-03

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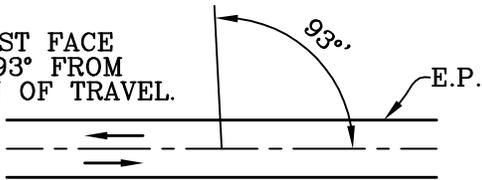
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SHT 4 OF 4

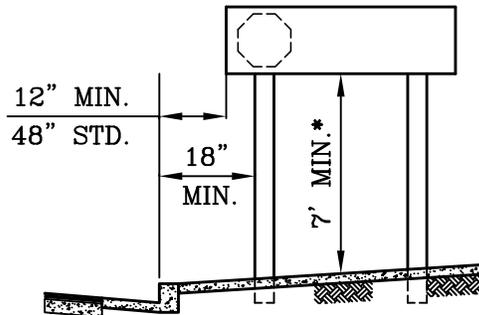


MEDIAN SIGNING AT INTERSECTIONS

SIGNS MUST FACE APPROX. 93° FROM DIRECTION OF TRAVEL.



PLAN VIEW



PARKWAY LOCATIONS

* 8' MIN. IF DESIGNATED BIKE TRAIL

SEE SHEET 2 FOR NOTES

CITY OF MISSION VIEJO



TRAFFIC SIGN PLACEMENT

APPROVED *Robert Anderson* 9-23-03
 RCE 30190 DATE

STANDARD PLAN NO.

328

SHT 1 OF 2

NOTES:

1. SEE PARKWAY LOCATION DETAIL FOR STANDARD MOUNTING HEIGHT. EXCEPTIONS SHOULD BE MADE TO AVOID SIGHT RESTRICTIONS OR UNDESIRABLE CONDITIONS.
2. SEE THE LATEST STATE OF CALIFORNIA TRAFFIC MANUAL FOR R1, R7, R10, TYPE K, AND TYPE N DETAILS. SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE NOTED. R1 AND TYPE N SIGNS SHALL BE FACED WITH HIGH INTENSITY, SUPER ENGINEERING, OR EQUIVALENT GRADE REFLECTIVE MATERIAL, MEETING STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS SECTION 718, REFLECTIVE SHEETING.
3. PARKWAY SIGNS HAVING A HORIZONTAL WIDTH OF 48" OR GREATER SHALL BE DUAL-POST MOUNTED. SIGNS LESS THAN 48" IN WIDTH SHALL BE MOUNTED ON A SINGLE POST. POST(S) SHALL BE SQUARE PERFORATED STEEL TUBING WITH BREAKAWAY BASE EXCEPT WHEN MOUNTED ON SAME POST AS STREET NAME SIGN. SEE PLAN VIEW FOR ANGULAR PLACEMENT OF SIGNS. SEE PLAN 325 FOR SQUARE PERFORATED STEEL TUBING DETAIL.
4. SIZING OF R1 ("STOP") SIGNS:
30" -STANDARD SIZE INCLUDING RESIDENTIAL.
36" -WHERE THE APPROACH WIDTH IS GREATER THAN 30' DUAL SIGNS SHALL BE USED WHERE THERE IS A RAISED MEDIAN AND APPROACH WIDTH IS GREATER THAN 30'.
5. BOTTOM OF R10 SIGNS SHALL BE 18" ABOVE E.P.

CITY OF MISSION VIEJO



TRAFFIC SIGN PLACEMENT (NOTES)

STANDARD
PLAN NO.

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9-23-03

APPROVED

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DATE

SHT 2 OF 2

STREET LIGHTING STANDARDS:

1. GENERAL:

SAFETY LIGHTING SHALL BE PROVIDED IN ACCORDANCE WITH THIS STD. PLAN AT INTERSECTIONS AND ALL OTHER LOCATIONS WHERE ILLUMINATION IS JUSTIFIED BY THE NEED FOR SIGHT DISTANCE, AS DETERMINED BY THE CITY ENGINEER.

ALL STREET LIGHT LAYOUTS AND LIGHTING DESIGNS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.

FOR THE PURPOSES OF THIS PLAN, A COMMUTER STREET SHALL BY CONSIDERED TO BE A LOCAL STREET.

2. ELECTROLIERS:

ELECTROLIERS SHALL BE MARBELITE POLES UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

ELECTROLIERS SHALL BE PLACED AT LOT LINES WHENEVER PRACTICAL.

AT INTERSECTIONS, ELECTROLIERS SHALL BE PLACED NEAR THE END OF THE CURB RETURN ON THE FAR RIGHT SIDE OF THE INTERSECTION. AT A "T" INTERSECTION, AN ELECTROLIER SHALL BE PLACED AT THE HEAD OF THE INTERSECTION OR LOCATED NEAR THE END OF CURB RETURN ON THE FAR RIGHT SIDE OF INTERSECTION.

ELECTROLIERS IN MEDIAN ISLANDS SHALL NOT BE PLACED CLOSER THAN 100 FEET FROM AN ARTERIAL HIGHWAY OR COLLECTOR STREET INTERSECTION. ELECTROLIERS SHALL NOT BE PLACED IN MEDIAN ISLANDS LESS THAN (6) FEET IN WIDTH.

ELECTROLIERS SHALL BE PLACED ALTERNATELY ON EACH SIDE OF THE ROADWAY WHEN INSTALLED ALONG THE SIDES OF A ROADWAY.

ELECTROLIERS SHALL BE SPACED IN ACCORDANCE WITH THE FOLLOWING:

LOCATION	MINIMUM HPSV LAMP SIZE (LUMENS)	ELECTROLIERS	SPACING (FEET)
A. INTERSECTION OF TWO LOCAL STREETS	5,800	1	N/A
B. T INTERSECTION OF LOCAL STREET WITH ARTERIAL HIGHWAY	22,000	1	N/A
C. FULL INTERSECTION OF LOCAL STREET WITH ARTERIAL	22,000	2	N/A
D. INTERSECTION OF TWO ARTERIAL HIGHWAYS	30,000	4	N/A

CITY OF MISSION VIEJO



STREET LIGHTING

STANDARD
PLAN NO.

329

Robert Anderson

9-23-03

APPROVED

RCE 30190

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LOCATION	MIN. HPSV LAMP SIZE	ELEC.	MIN. SPACING (FEET)
E. LOCAL STREETS	5,800	1	180
F. LOCAL STREET CUL-DE-SAC	5,800	1	N/A
G. SECONDARY HIGHWAY	16,000	1	180
H. PRIMARY HIGHWAY (WITH RAISED MEDIAN)	9,500 (DBL)	1	180
(WITHOUT RAISED MEDIAN)	16,000	1	180
I. MAJOR HIGHWAY (WITH RAISED MEDIAN)	9,500 (DBL)	1	180
(WITHOUT RAISED MEDIAN)	16,000	1	180

3. LUMINAIRES AND MAST ARMS:

MISSION BELL HEADS WITH SCROLLS AND BONNETS ARE REQUIRED.

LUMINAIRES AT SIGNALIZED INTERSECTIONS SHALL BE EQUIPPED WITH GLARE SHIELDS OR HAVE INTEGRAL CUTOFF FEATURES.

MOUNTING HEIGHT OF LUMINAIRES SHALL CONFORM TO THE FOLLOWING:

- A. 30-FOOT MINIMUM FOR GREATER THAN 9,500 LUMENS.
- B. 25-FOOT MINIMUM FOR 9,500 LUMENS OR LESS.

MINIMUM LENGTH OF MAST ARMS SHALL CONFORM TO THE FOLLOWING:

- A. 6-FOOT MINIMUM.

4. LAMPS:

LAMPS SHALL BE HIGH PRESSURE SODIUM VAPOR (HPSV).

5. MISCELLANEOUS MATERIALS AND WORKMANSHIP:

MATERIALS AND WORK SHALL CONFORM TO OR EXCEED THE APPLICABLE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE, THE ELECTRICAL SAFETY ORDERS OF THE DEPARTMENT OF INDUSTRIAL SAFETY, STATE OF CALIFORNIA, AND THE AMERICAN SOCIETY FOR TESTING MATERIALS.

IN ADDITION TO THE ABOVE, NON-UTILITY-OWNED STREET LIGHTING INSTALLATIONS SHALL CONFORM TO THE LATEST PUBLICATION OF SECTION 307 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ("GREEN BOOK") AND THIS STANDARD PLAN.

CITY OF MISSION VIEJO



STREET LIGHTING

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PLAN NO.

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THE CONSTRUCTION PRACTICES AND MATERIALS USED FOR STREET LIGHTS OWNED BY UTILITIES SUBJECT TO THE REGULATION OF THE CALIFORNIA PUBLIC UTILITIES COMMISSION ARE SPECIFIED EXCLUSIVELY BY THE ORDERS OF THE COMMISSION. ALL STREET LIGHTS OWNED BY REGULATED UTILITIES SHALL CONFORM TO OR EXCEED THE REQUIREMENTS OF GENERAL ORDERS 95 AND 128.

6. SERVICE AND MAINTENANCE

SERVICES AND MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE LIGHTING FACILITY.

DESIGN CRITERIA ILLUMINATION LEVEL

1. GENERAL:

REQUIRED SPACING AND LUMEN LEVELS MAY BE MODIFIED ON AN EXCEPTIONAL BASIS FOR PURPOSES OF CRIME PREVENTION OR ENERGY SAVINGS. ALL MODIFICATIONS SHALL MEET THE LIGHTING LEVELS SPECIFIED BELOW AND SHALL BE SUPPORTED BY ADEQUATE CALCULATIONS APPROVED BY THE CITY ENGINEER. CONSISTENCY OF ELECTROLIER SPACING AND LAMP LUMEN LEVELS SHALL BE MAINTAINED ALONG ALL HIGHWAYS WHENEVER POSSIBLE.

LIGHTING LEVELS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

2. ARTERIAL HIGHWAYS:

DESCRIPTION	AVERAGE HORIZONTAL FOOTCANDLES
ARTERIAL HIGHWAYS	0.40
SIDEWALKS (ROADSIDE)	0.25
ON-ROAD BIKEWAYS (MARKED)	0.25
OFF-ROAD WALKWAYS AND BIKE PATHS	0.25
PEDESTRIAN TUNNELS	4.0
PEDESTRIAN OVERPASS	0.3
PEDESTRIAN STAIRWAYS	0.6

3. LOCAL STREETS:

ELECTROLIERS SHALL BE SPACED ACCORDING TO THE CRITERIA SPECIFIED IN "ELECTROLIER" SECTION. THE SPACING MAY BE MODIFIED ON AN EXCEPTIONAL BASIS FOR PURPOSES IF CRIME PREVENTION, BUT THE AVERAGE LIGHTING LEVEL SHALL NOT EXCEED 0.25 HORIZONTAL FOOTCANDLES.

4. UNIFORMITY:

THE ILLUMINATION LEVELS IN THE ABOVE TABLE ARE MINIMUMS AND PROVIDE EFFECTIVE VISIBILITY ONLY WHEN COMBINED WITH UNIFORMITY OF ILLUMINATION. UNIFORMITY MAY BE EXPRESSED IN SEVERAL WAYS. THE AVERAGE LEVEL-TO-MINIMUM POINT METHOD USES THE AVERAGE ILLUMINATION OF THE ROADWAY DESIGN AREA BETWEEN TWO ADJACENT LUMINAIRES DIVIDED BY THE LOWEST VALUE AT ANY POINT IN THE AREA EXCEPT ON LOCAL STREETS. UNDER THIS METHOD, THE AVERAGE-TO-MINIMUM RATIO SHALL NOT EXCEED 6 TO 1.

CITY OF MISSION VIEJO



STREET LIGHTING

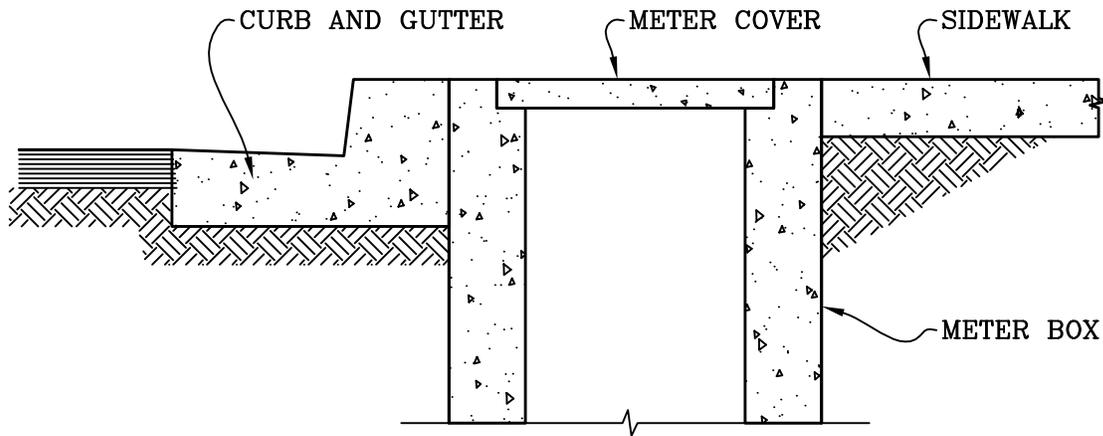
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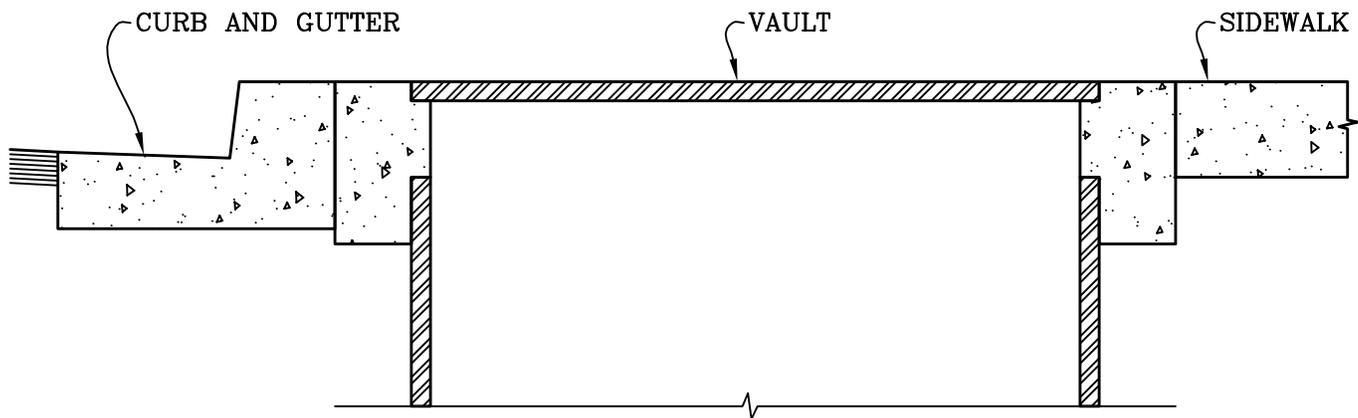
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METER BOX DETAIL



VAULT DETAIL

NOTES:

1. METER BOXES AND UTILITY VAULTS IN SIDEWALKS SHALL BE PERPENDICULAR TO AND ADJACENT WITH THE BACK OF CURB, AND SHALL BE FLUSH WITH TOP OF SIDEWALK.
2. WITHIN THE SIDEWALK AREA, METER BOXES SHALL HAVE A BOLT DOWN CONCRETE COVER AND UTILITY VAULTS SHALL HAVE A BOLT DOWN DIAMOND PLATE COVER. COVER SHALL BE BOLTED DOWN WITH 5 SIDED BOLTS. TOP OF BOLTS SHALL BE FLUSH WITH TOP OF COVER.

CITY OF MISSION VIEJO



METER & VAULT COVER DETAIL

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PLAN NO.

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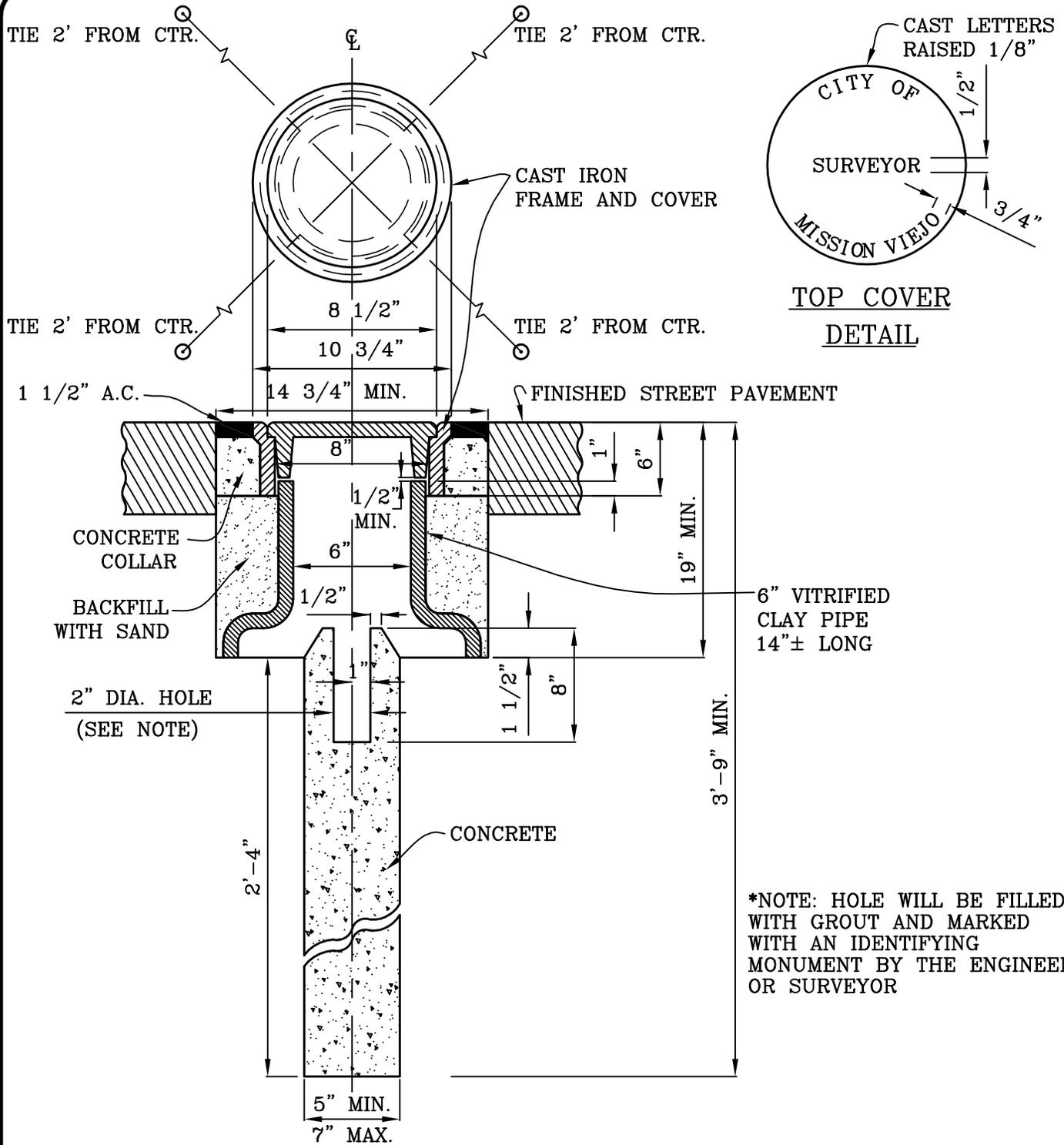
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CITY OF MISSION VIEJO

SURVEY MONUMENT (TYPE A)

STANDARD PLAN NO.

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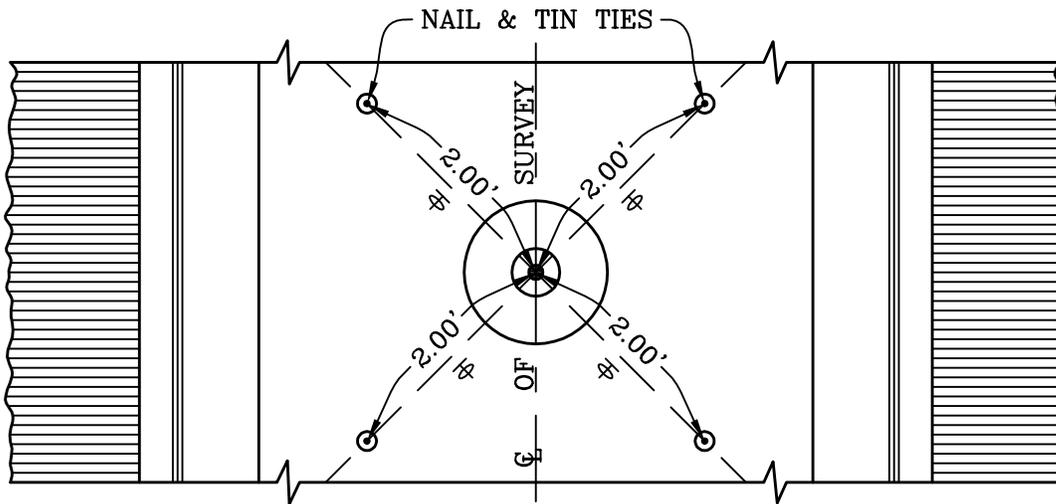
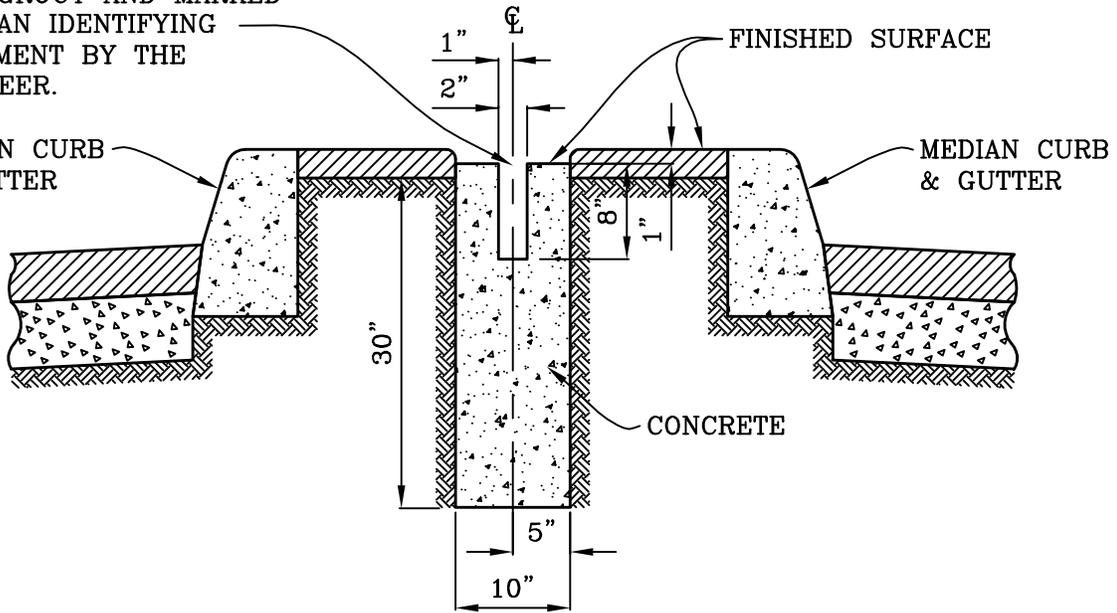
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HOLE WILL BE FILLED WITH GROUT AND MARKED WITH AN IDENTIFYING MONUMENT BY THE ENGINEER.

MEDIAN CURB & GUTTER



THIS TYPE OF MARKER TO BE INSTALLED ONLY IN SITUATIONS WHERE NO VEHICULAR TRAFFIC IS ANTICIPATED.

CITY OF MISSION VIEJO

SURVEY MONUMENT (TYPE B)



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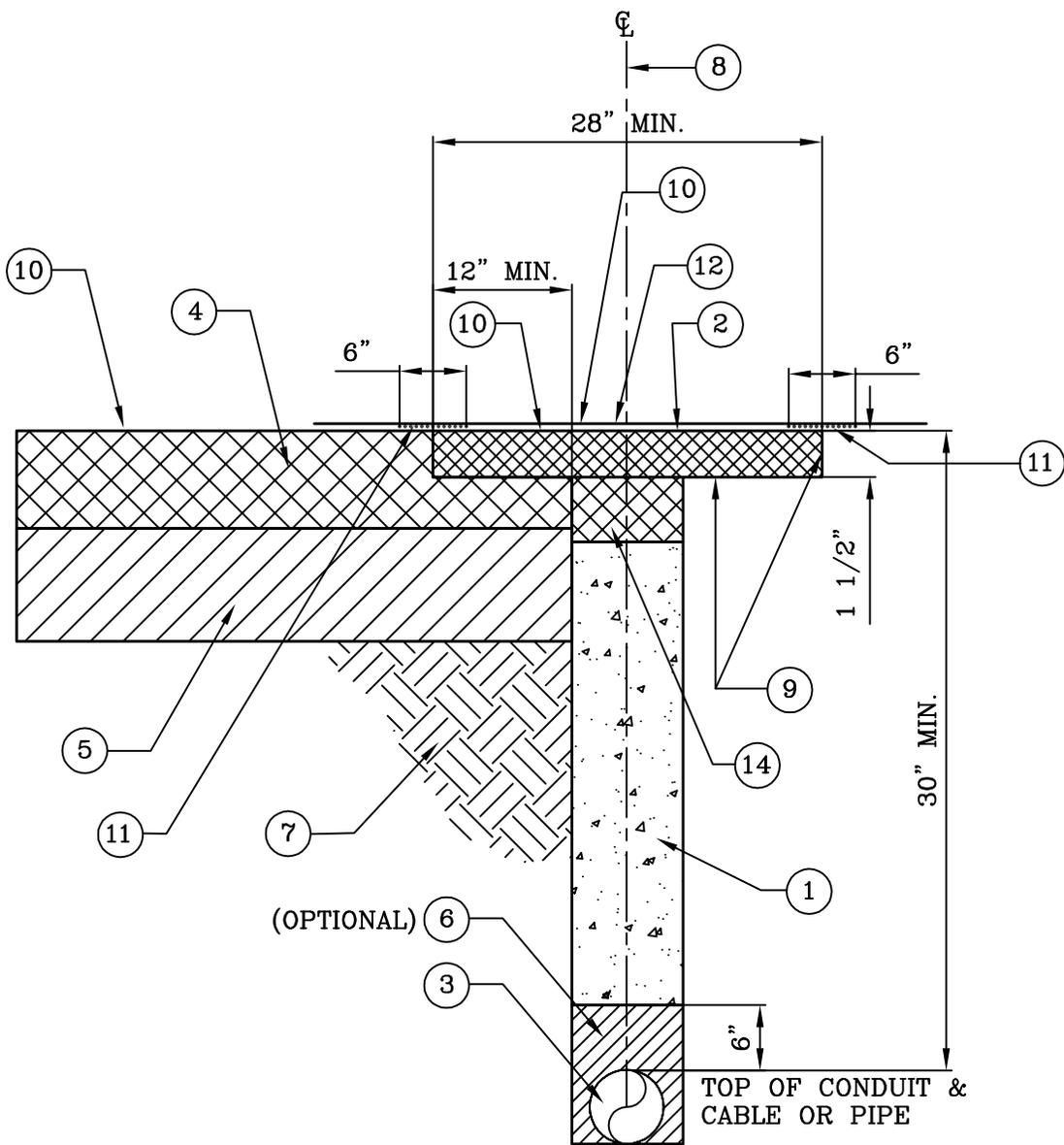
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SECTION
N.T.S.

CITY OF MISSION VIEJO

TRENCH T-CAP



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- ① TWO SACK SLURRY BACKFILL FOLLOW WITH 28" MIN. WIDE BY 2" MIN. DEEP GRIND AND RESURFACING. ALLOW MIN. 24 HOURS CURE BEFORE GRINDING.
- ② D2-AR-4000 ASPHALT CONCRETE, OR APPROVED EQUAL.
- ③ ALL CONDUIT, CABLE, PIPE, ETC.
- ④ EXISTING A.C. PAVEMENT.
- ⑤ EXISTING BASE MATERIAL.
- ⑥ MORTAR SAND COMPACTED TO 95% RELATIVE DENSITY. (OPTIONAL)
- ⑦ UNDISTURBED SOIL.
- ⑧ SYMMETRICAL ABOUT CENTERLINE OF TRENCH.
- ⑨ GRADE SS-1h EMULSIFIED ASPHALT APPLIED AT 0.15 GALLON PER SQUARE YARD.
- ⑩ EXISTING ASPHALT PAVEMENT FINISHED GRADE. SMOOTHNESS & COMPACTION OF RESURFACING SHALL MEET THE REQUIREMENTS OF SEC 302-5.6.2 SSPWC EXCEPT THAT THE SMOOTHNESS SHALL BE DETERMINED OVER THE LENGTH & WIDTH OF PAVEMENT AREAS DISTURBED BY THE CONTRACTOR'S/PERMITEE'S OPERATION.
- ⑪ RESPRAY GRADE SS-1h EMULSIFIED ASPHALT AT 0.15 GALLON PER SQUARE YARD 6" WIDE. CENTERED ON EDGE LINE OF GRIND AFTER PLACING A.C. & BEFORE SURFACE TREATMENT.
- ⑫ SURFACE TREATMENT/ASPHALT TO MATCH EXISTING PAVEMENT (E.G. SLURRY SEAL, RUBBERIZED ASPHALT, ETC.)
- ⑬ WHEN THE EDGE OF THE GRIND LINE IS WITHIN 12" OF EDGE OF PAVEMENT, ANY STRUCTURE, AN ADJACENT TRENCH PATCH, OR ANY OTHER PAVING JOIN LINE, THE 1 1/2" DEEP GRIND SHALL BE EXTENDED TO THE EXISTING STRUCTURE OR JOIN LINE.
- ⑭ ARTERIALS AND COLLECTOR STREETS: LEAVE SLURRY 6" BELLOW STREET SURFACE, AND PAVE UPPER 6" WITH A.C. BEFORE GRADING. RESIDENTIAL STREETS: SLURRY BACKFILL TO STREET SURFACE BEFORE GRADING. WHEN NATIVE BACKFILL APPROVED FOR USE, ASPHALT THICKNESS IN TRENCH SHALL BE 1" GRATER THAN EXISTING ASPHALT PAVEMENT.

CITY OF MISSION VIEJO

TRENCH BACKFILL & ASPHALT CONCRETE RESURFACING

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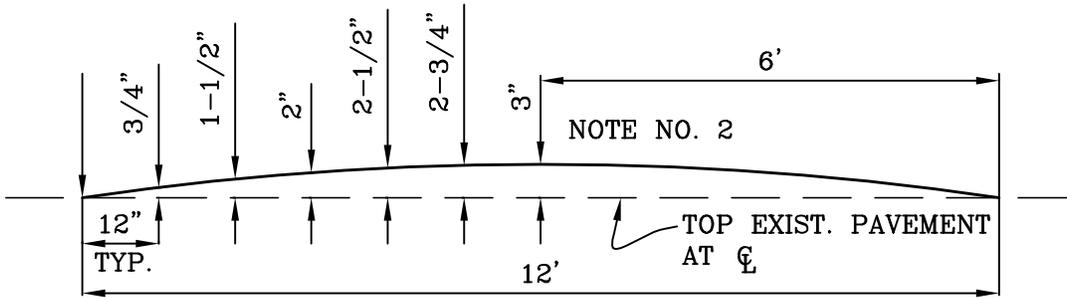
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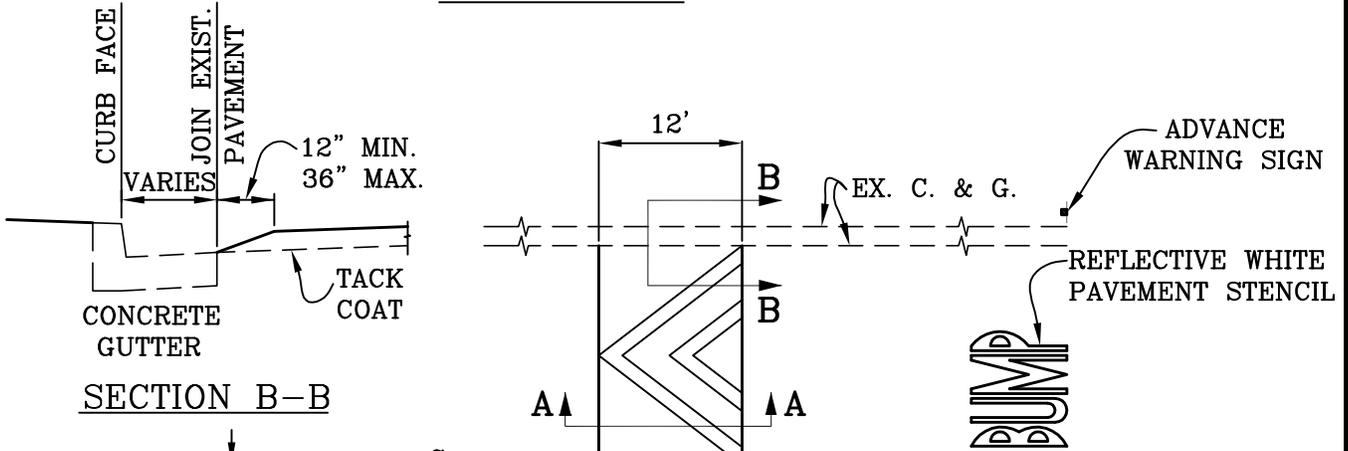
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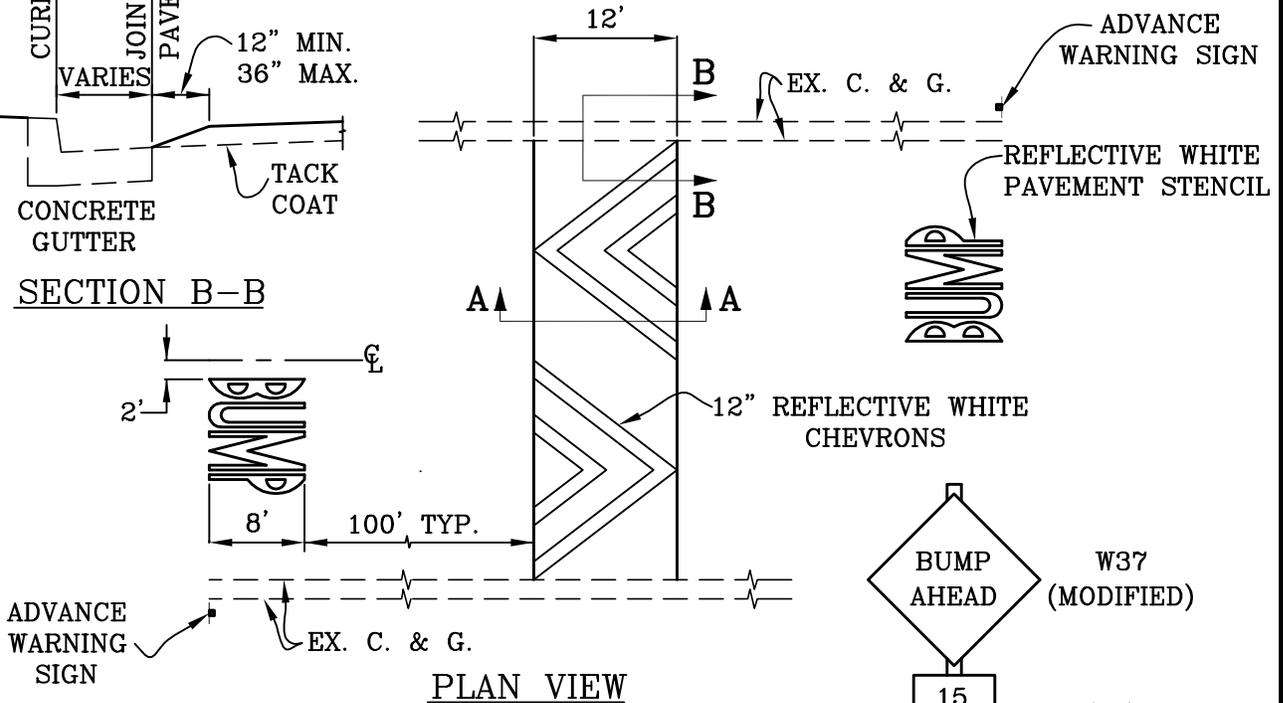
SHT 2 OF 2



SECTION A-A



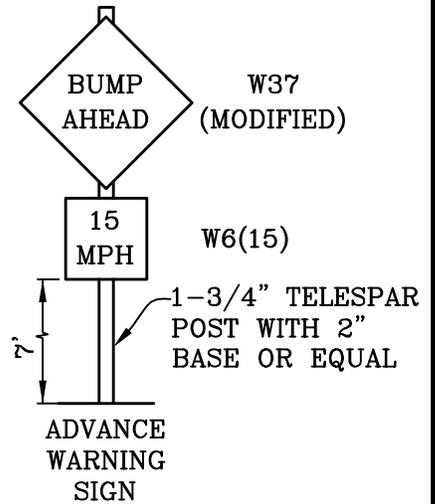
SECTION B-B



PLAN VIEW

NOTES:

1. SPEED HUMPS SHALL BE LOCATED BY THE ENGINEER, AND/OR AS SHOWN ON PLAN.
2. SPEED HUMP SHALL BE CONSTRUCTED TO A HEIGHT OF 3" PLUS OR MINUS 1/4" AT THE MIDPOINT. THE CORRESPONDING SHAPE SHALL FOLLOW A CIRCULAR ARC (SEE SECTION A-A).
3. ASPHALT SHALL BE PLACED IN 2 LIFTS. 1" MINIMUM AT HIGHEST POINT.
4. ASPHALT SHALL BE TYPE III-C3-AR4000 (1/2") WITH 6% ASPHALT BINDER OR AS DIRECTED BY THE ENGINEER.



CITY OF MISSION VIEJO

SPEED HUMP

STANDARD
PLAN NO.

345



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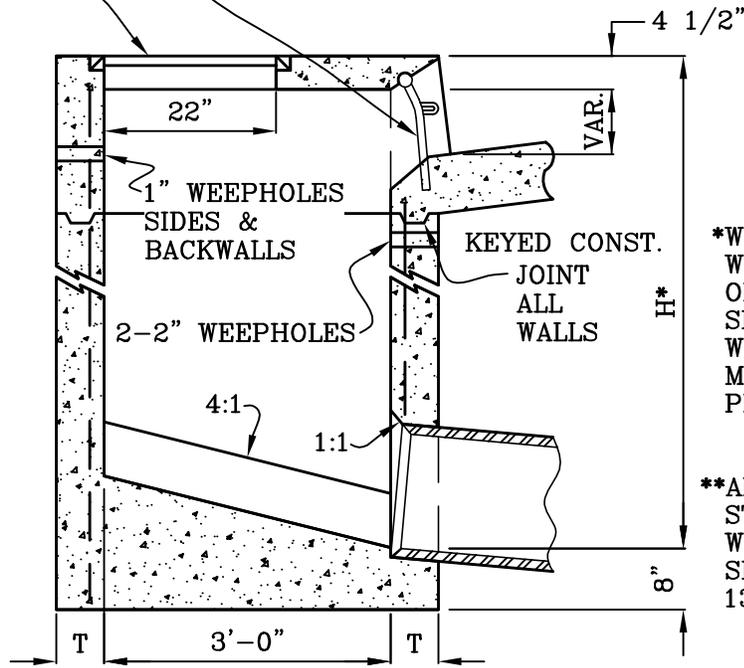
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** SEE STD. PLAN 404 FOR CURB SUPPORT DETAILS.

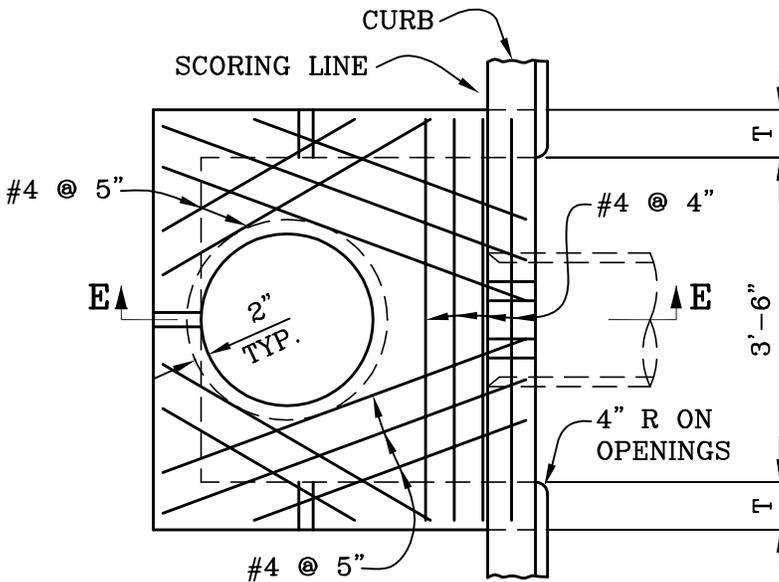
H	T
8'-0" OR LESS	6"
8'-1" TO 20'-0"	8"



SECTION E-E

*WHEN OUTLET PIPE IS CONSTRUCTED WITHIN ROADWAY, A MINIMUM OF 30" OR THE ROADWAY STRUCTURAL SECTION THICKNESS PLUS 6", WHICHEVER IS GREATER, SHALL BE MAINTAINED BETWEEN THE TOP OF PIPE AND THE ROADWAY SURFACE.

**ALHAMBRA FOUNDRY A-1531-B, APEX STEEL CORPORATION X100B OR EQUAL WITH APPROVED LOCKING DEVICES. SHIPPING WEIGHT (FRAME & COVER) = 130 LBS.



PLAN

NOTES:

1. CURB OPENING SHALL CONFORM TO CURB ALIGNMENT.
2. SEE STD. PLAN 404 FOR DETAILS AND NOTES.
3. SEE STD. PLAN 406 FOR LOCAL DEPRESSION DETAILS.

CITY OF MISSION VIEJO



INLET TYPE I

STANDARD
PLAN NO.

401

Robert Anderson

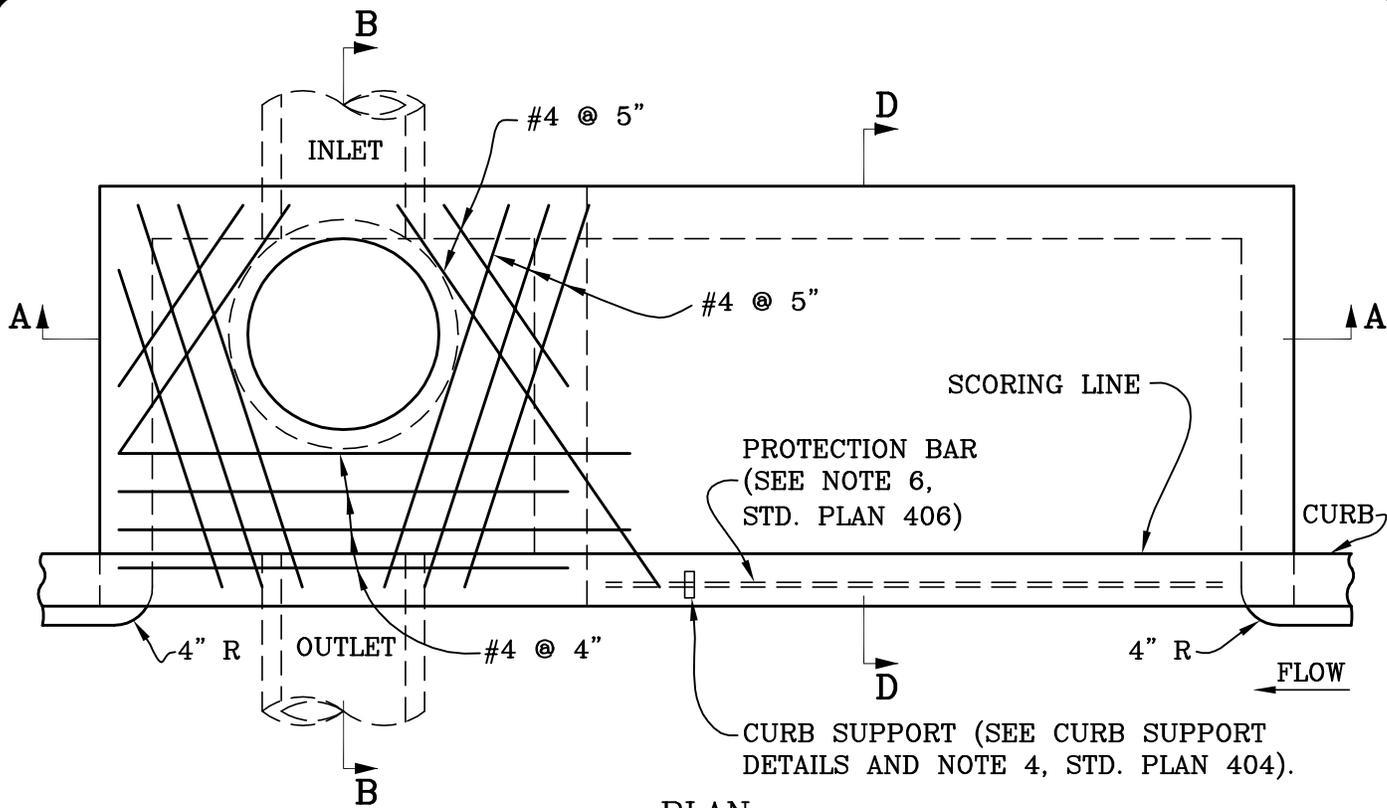
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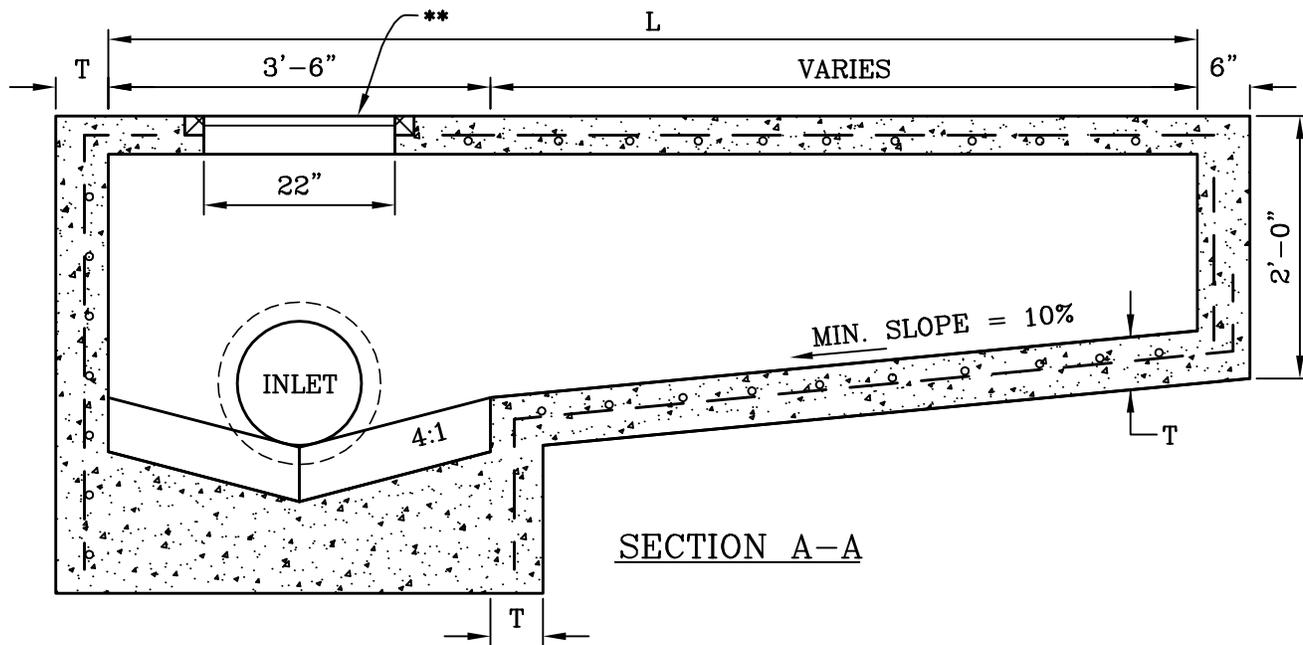
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PLAN



SECTION A-A

CITY OF MISSION VIEJO



INLET TYPE II

STANDARD
PLAN NO.

402

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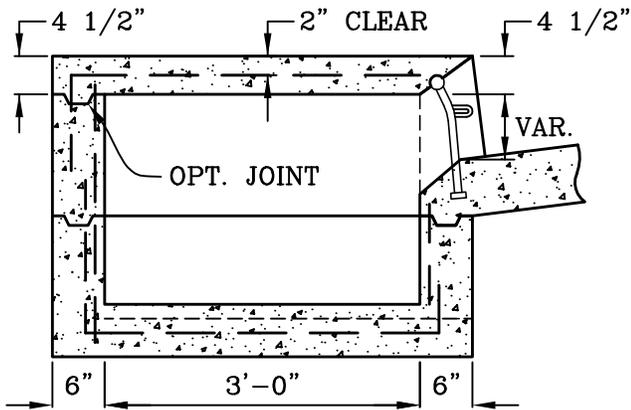
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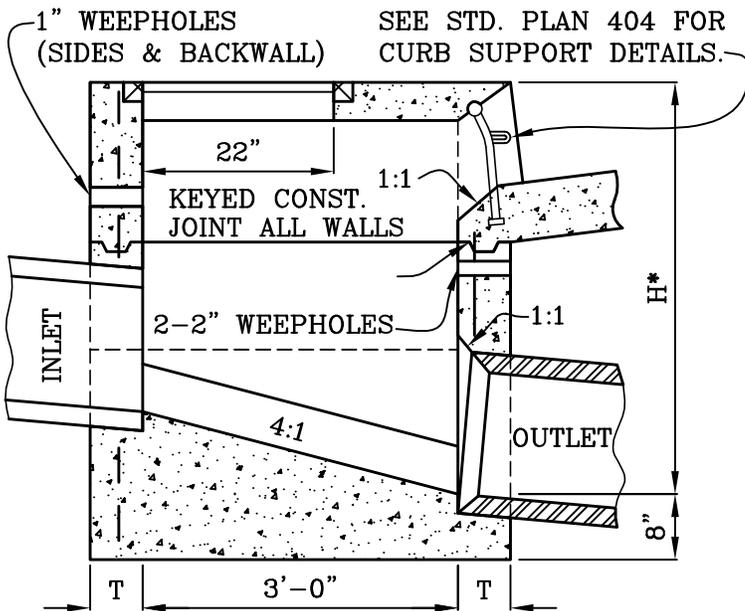
SHT 1 OF 2



SECTION D-D

NOTES:

1. STANDARD OPENING LENGTHS "L" ARE 7', 10', 14', AND 21'. OTHER LENGTHS MAY BE USED, BUT NOT TO EXCEED 21'.
2. ALL REINFORCEMENT IS #4 @ 12" O.C. UNLESS OTHERWISE SPECIFIED.
3. CURB OPENING SHALL CONFORM TO CURB ALIGNMENT.
4. SEE STD. PLAN 404 FOR DETAILS AND NOTES.
5. SEE STD. PLAN 406 FOR LOCAL DEPRESSION DETAILS.



SECTION B-B

H	T	L	MIN. H
8'-0" OR LESS	6"	7'	3.54'
8'-0" TO 20'-0"	8"	10'	3.84'
		14'	4.24'
		21'	4.94'

**ALHAMBRA FOUNDRY A-1531-B, APEX STEEL CORPORATION X110B OR EQUAL WITH APPROVED LOCKING DEVICES. SHIPPING WEIGHT (FRAME & COVER) = 130 LBS.

*WHEN OUTLET PIPE IS CONSTRUCTED WITHIN ROADWAY, A MINIMUM OF 30" OR THE ROADWAY STRUCTURAL SECTION THICKNESS PLUS 6", WHICHEVER IS GREATER, SHALL BE MAINTAINED BETWEEN THE TOP OF PIPE AND THE ROADWAY SURFACE.

CITY OF MISSION VIEJO

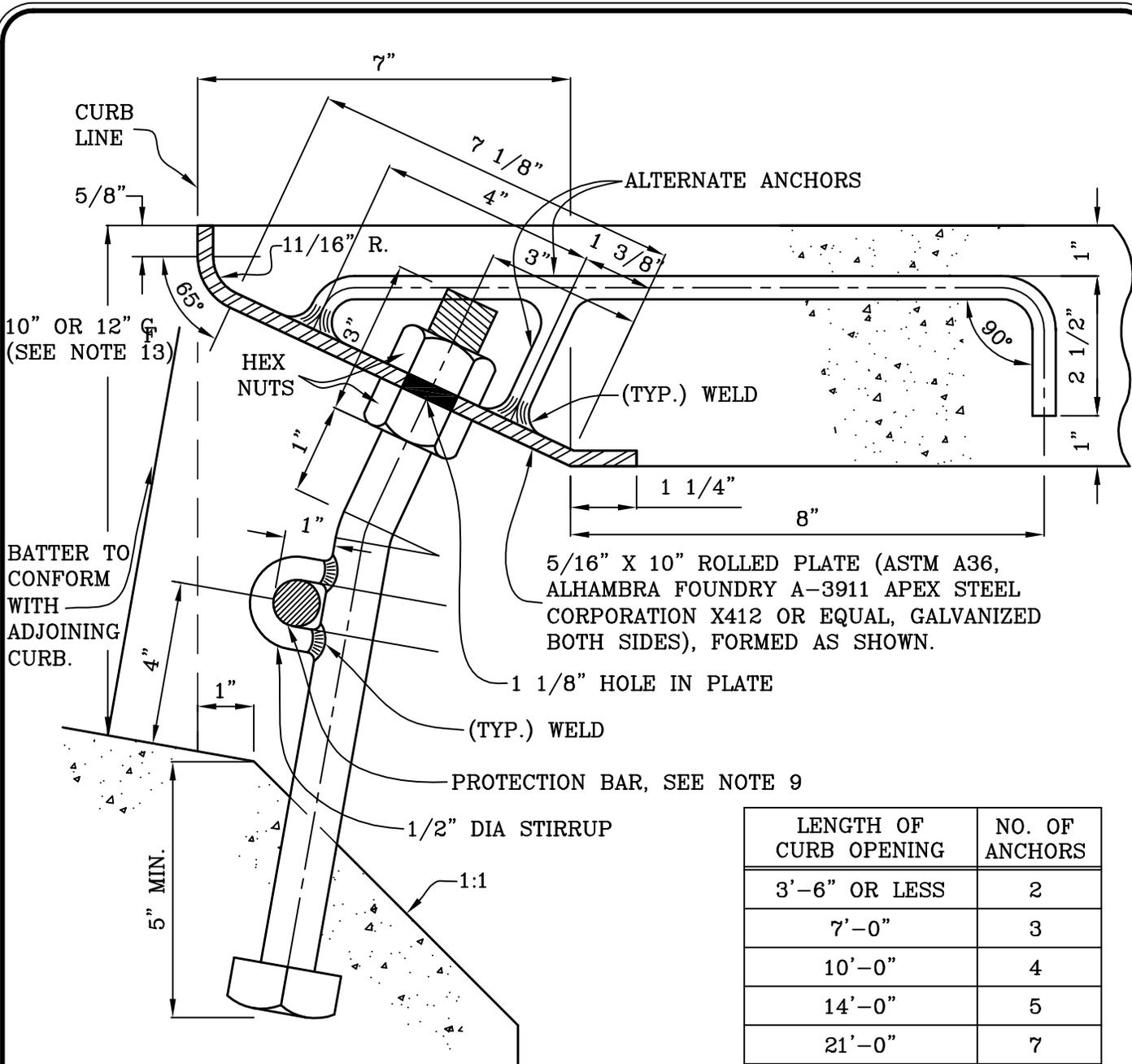
INLET TYPE II

STANDARD PLAN NO.

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FACE PLATE ANCHORAGE
AND CURB SUPPORT DETAIL

(SEE SHEET 5 FOR NOTES)

CITY OF MISSION VIEJO

MISCELLANEOUS CURB INLET
DETAILS AND NOTES

STANDARD
PLAN NO.

404



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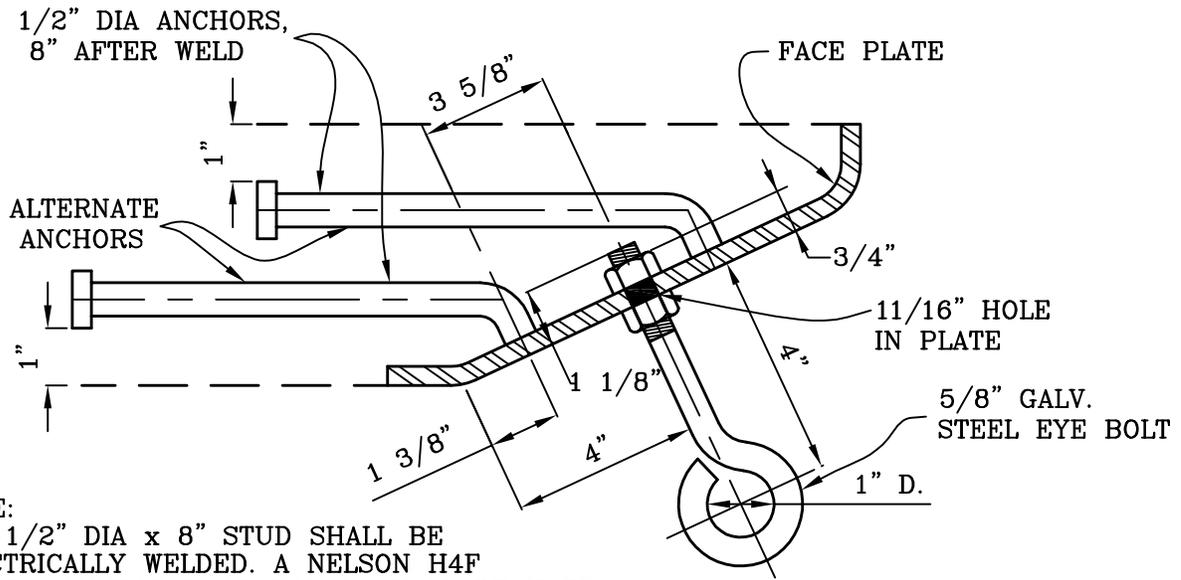
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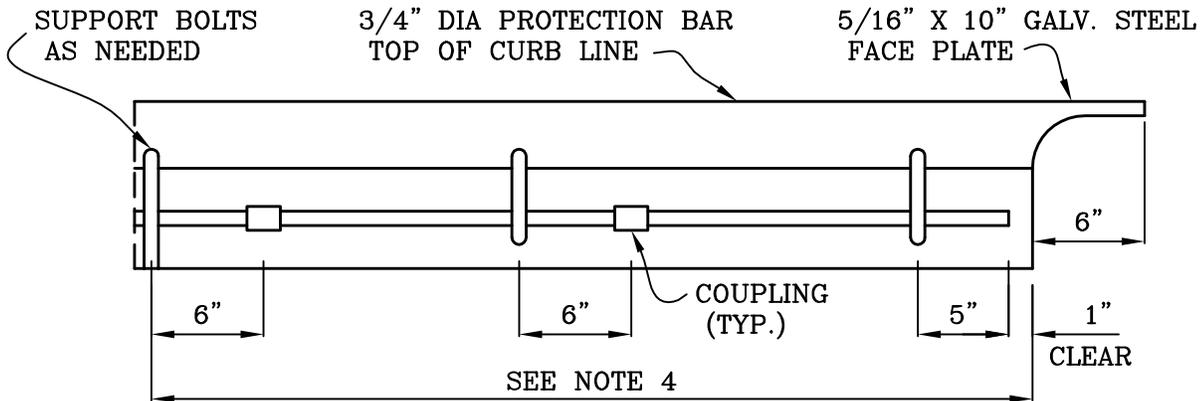
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NOTE:
 THE 1/2" DIA x 8" STUD SHALL BE
 ELECTRICALLY WELDED. A NELSON H4F
 SHEAR CONNECTOR OR EQUAL SHALL BE USED.

EYE BOLT AND ALTERNATE
 ANCHOR DETAIL FOR FACE PLATE



PROTECTION BAR DETAIL

(SEE SHEET 5 FOR NOTES)

CITY OF MISSION VIEJO

MISCELLANEOUS CURB INLET
 DETAILS AND NOTES

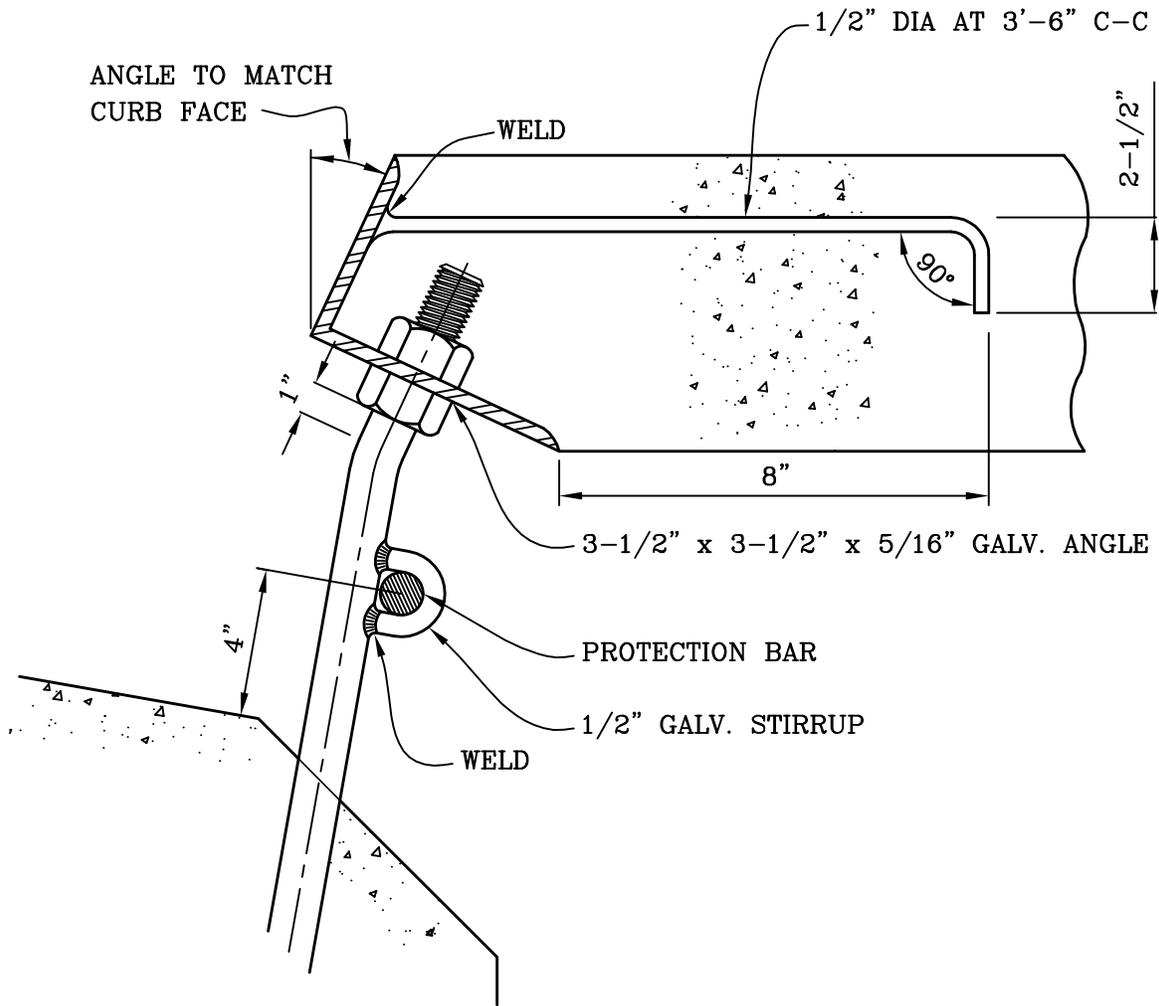
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DETAIL A

(SEE SHEET 5 FOR NOTES)

CITY OF MISSION VIEJO

MISCELLANEOUS CURB INLET
DETAILS AND NOTES

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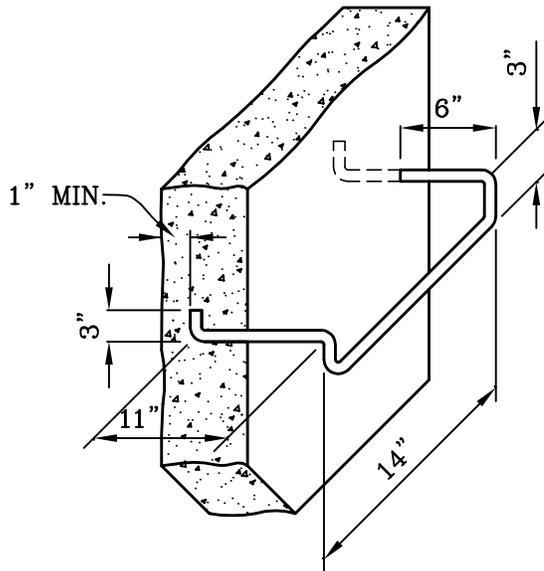
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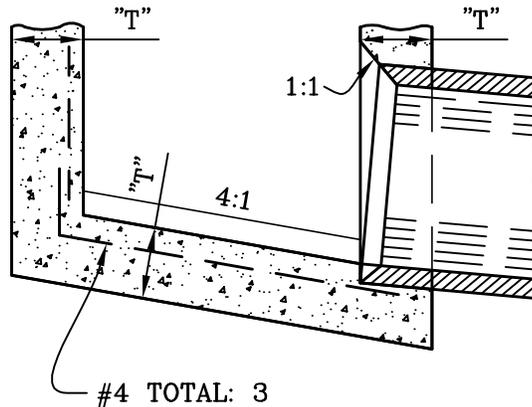
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3/4" GALV. STEEL STEP
(SEE NOTE 17 ON SHEET 5)

STEP DETAIL



ALTERNATE
REINFORCED FLOOR

SEE NOTE 20 ON SHEET 5

CITY OF MISSION VIEJO

MISCELLANEOUS CURB INLET
DETAILS AND NOTES

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NOTES:

1. ONE EYE BOLT SHALL BE PLACED 12" FROM EACH END OF FACE PLATE.
2. EYE BOLTS SHALL BE SYMMETRICALLY SPACED IN THE CURB OPENING SO THAT THE UNSUPPORTED SPAN IS NOT MORE THAN 4'. SUPPORT BOLTS, WHEN USED, SHOULD BE CONSIDERED AS EYE BOLTS IN THE SPACING.
3. ONE COUPLING SHALL BE PLACED 6" TO THE RIGHT OR LEFT OF EACH EYE BOLT WITH THE EXCEPTION OF THE LAST EYE BOLT. COUPLINGS SHALL BE THREADED TO FACILITATE REMOVAL OF PROTECTION BAR.
4. GALVANIZED STEEL SUPPORT BOLTS SHALL BE INSTALLED WHEN LENGTH OF CURB OPENING EXCEEDS 7'-0" AND SHALL BE SPACED AT NOT MORE THAN 7'-0" O.C. AND NOT LESS THAN 5'-0" O.C.
5. FACE PLATE ANCHORS SHALL BE UNIFORMLY SPACED NOT TO EXCEED 4' BETWEEN CENTERS AND SHALL BE PLACED 4 1/2" FROM EACH END OF FACE PLATE.
6. A COUPLING MAY BE OMITTED PROVIDED THE PROTECTION BAR IS REMOVABLE AFTER INSTALLATION.
7. ALL METAL SHALL BE GALVANIZED AFTER FABRICATION.
8. SUPPORT BOLTS, EYE BOLTS, AND ANCHORS MAY BE ATTACHED BY A FULL PENETRATION BUTT WELD AS AN ALTERNATE.
9. PLACE A 3/4" PROTECTION BAR HORIZONTALLY ACROSS THE ENTIRE LENGTH OF THE CURB OPENING.
10. CURB SECTION SHALL MATCH ADJACENT CURB TYPE.
11. HEIGHT OF CURB OPENING WILL VARY WITH THE TYPE OF CURB AND THE DEPTH OF THE LOCAL DEPRESSION (STD. PLAN 406).
12. USE OF ANGLE FACE PLATE AS SHOWN ON SHEET 3 SHALL BE ALLOWED ONLY WHEN ON APPROVED PLANS.
13. FOR "T" WALL THICKNESS SEE TABLE ON INLET STD. PLAN.
14. REINFORCING STEEL SHALL BE #4 BARS AT 12" = CENTERS PLACED 1 1/2" CLEAR TO INSIDE OF BOX UNLESS OTHERWISE SHOWN.
15. STEPS - NONE REQUIRED WHEN "H" IS 3'-6" OR LESS. INSTALL ONE STEP 16" ABOVE FLOOR WHEN "H" IS MORE THAN 3'-6" AND LESS THAN 5'-0". WHERE "H" IS MORE THAN 5'-0", STEPS SHALL BE EVENLY SPACED AT 16" INTERVALS FROM 16" ABOVE FLOOR TO WITHIN 12" OF THE TOP OF THE BOX. PLACE STEPS IN WALL WITHOUT PIPE OPENINGS.
16. PIPE(S) CAN BE PLACED IN ANY WALL.
17. EXCEPT FOR INLETS USED AS JUNCTION BOXES, BASIN FLOORS SHALL HAVE A MINIMUM SLOPE OF 4:1 FROM ALL DIRECTION TOWARD OUTLET PIPE AND SHALL HAVE A WOOD TROWEL FINISH.
18. ALTERNATIVE REINFORCED FLOOR AT THE OPTION OF THE CONTRACTOR.

CITY OF MISSION VIEJO

MISCELLANEOUS CURB INLET
DETAILS AND NOTES

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PLAN NO.

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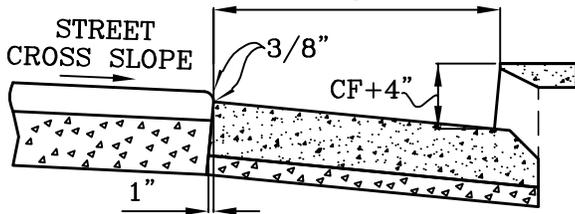
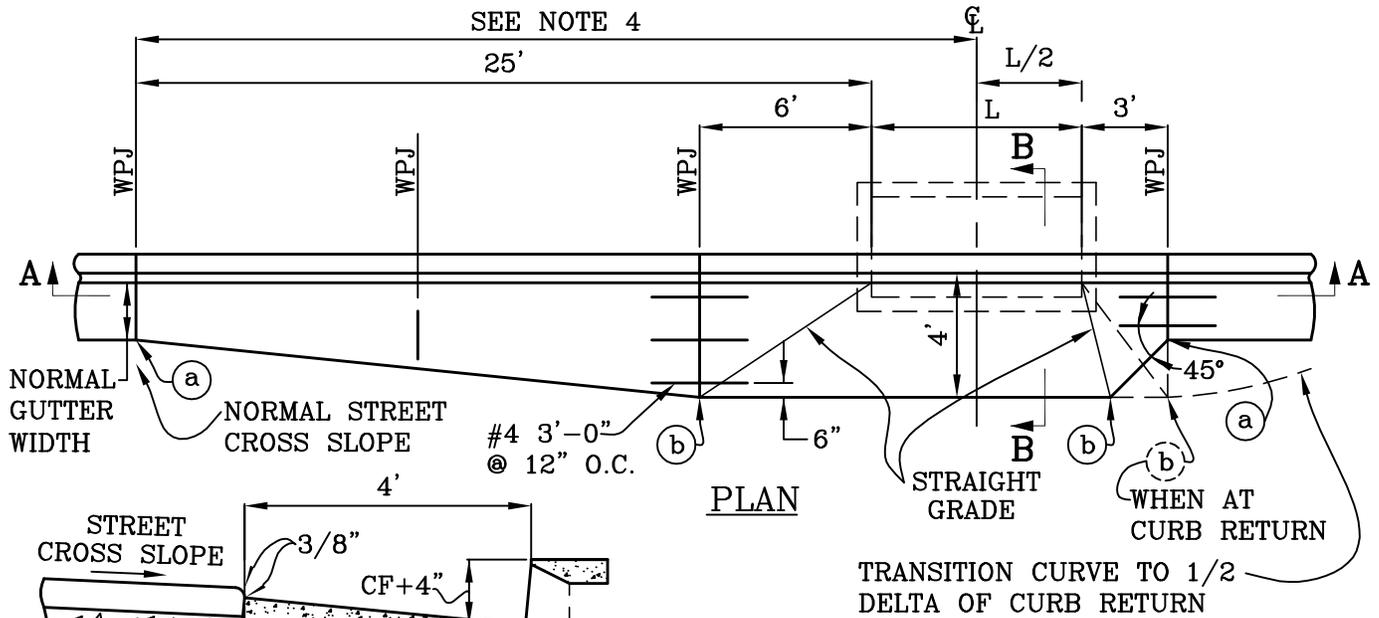
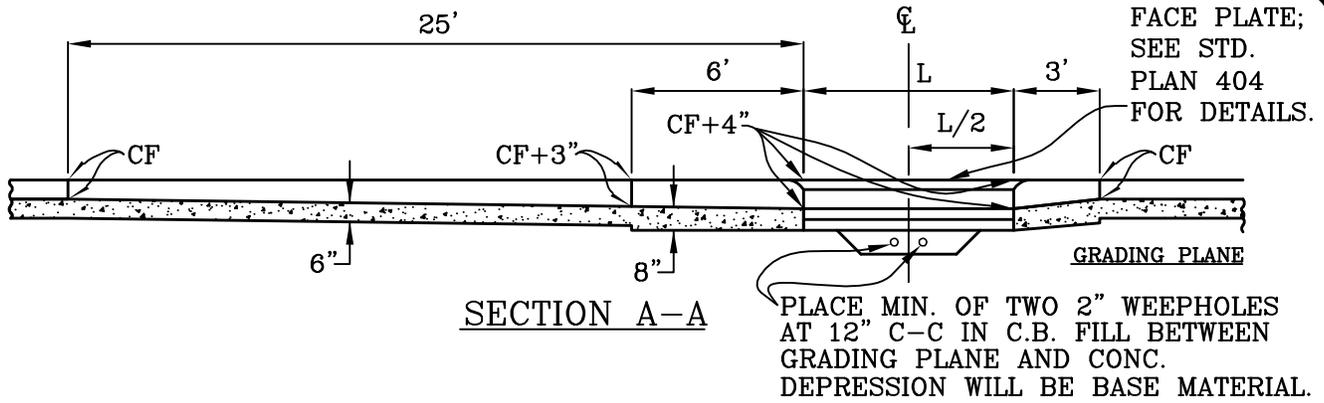
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POINT	6" TO 10" CF TRANS. DISTANCE BELOW T.C.	8" TO 12" CF TRANS. DISTANCE BELOW T.C.
a	.38'	.50'
b	.34'	.47'

BASED ON 1.7% STREET CROSSFALL.

NOTES:

1. LOCAL DEPRESSION SHALL NOT BE CONSTRUCTED UNTIL CONNECTING CURB AND GUTTER HAS BEEN COMPLETED OR SHALL BE CONSTRUCTED MONOLITHICALLY WITH CONNECTING CURB AND GUTTER, UNLESS OTHERWISE APPROVED BY CITY ENGINEER.
2. LENGTH OF OPENING "L" SHALL BE SPECIFIED ON PLANS.
3. BOTH ENDS OF DEPRESSION SHALL BE SYMMETRICAL ABOUT CL OF OPENING IN SUMP CONDITION.
4. SEE STD. PLAN 404 FOR CURB OPENING DETAIL.
5. SEE STD. PLAN 321 FOR JOINT DETAILS.

CITY OF MISSION VIEJO



LOCAL DEPRESSION

STANDARD PLAN NO.

406

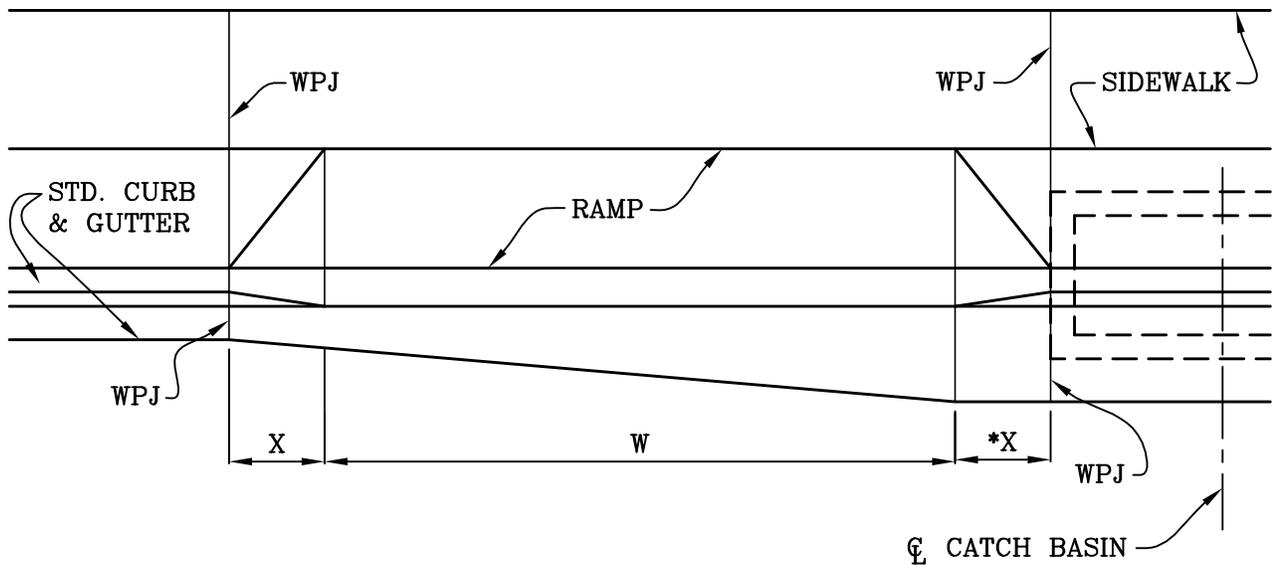
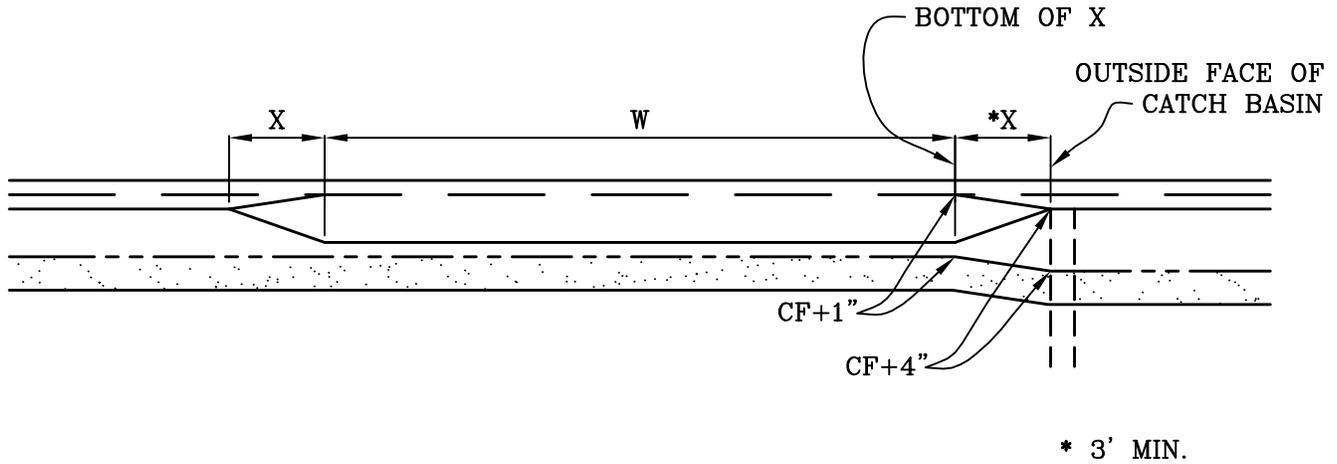
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NOTES:

1. TYPE A LOCAL DEPRESSION SHALL BE USED ADJACENT TO DRIVEWAY DEPRESSIONS ONLY.
2. USE OF TYPE A LOCAL DEPRESSION MAY REQUIRE LENGTHENING OF INLET TO PROVIDE ADEQUATE HYDRAULIC CAPACITY.

CITY OF MISSION VIEJO

LOCAL DEPRESSION (TYPE A)

STANDARD
PLAN NO.

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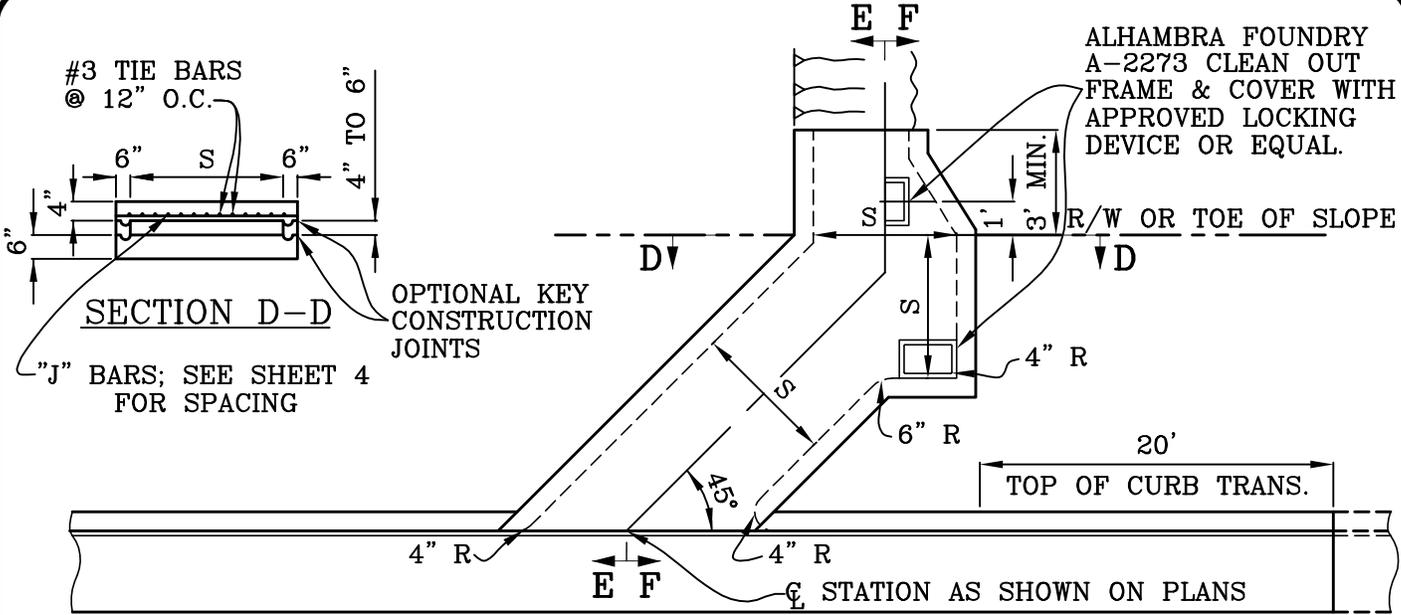
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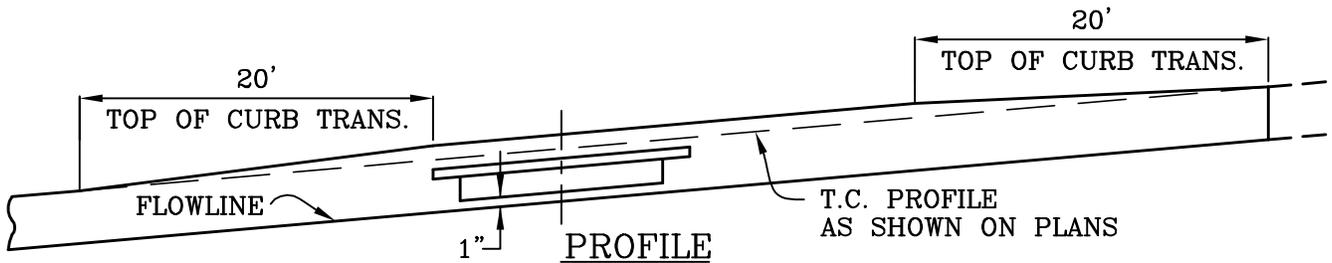
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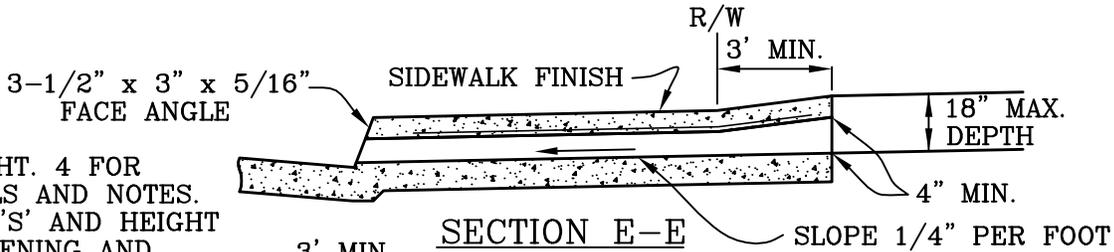
ALHAMBRA FOUNDRY
A-2273 CLEAN OUT
FRAME & COVER WITH
APPROVED LOCKING
DEVICE OR EQUAL.



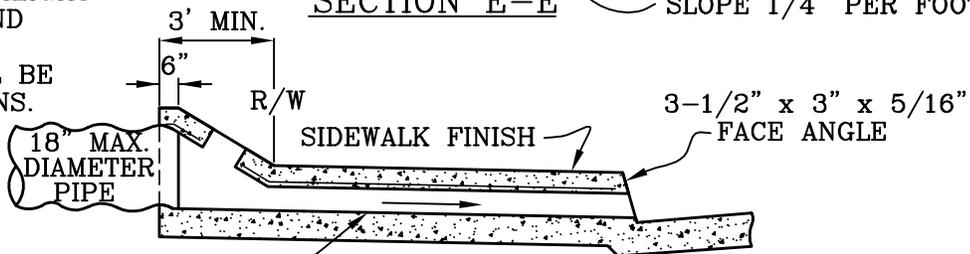
PLAN



PROFILE



SECTION E-E



SECTION F-F

- NOTES:
1. SEE SHT. 4 FOR DETAILS AND NOTES.
 2. SPAN 'S' AND HEIGHT OF OPENING AND CURB FACE AT CULVERT SHALL BE NOTED ON PLANS.

CITY OF MISSION VIEJO

PARKWAY CULVERT (TYPE A)

STANDARD
PLAN NO.

407



APPROVED

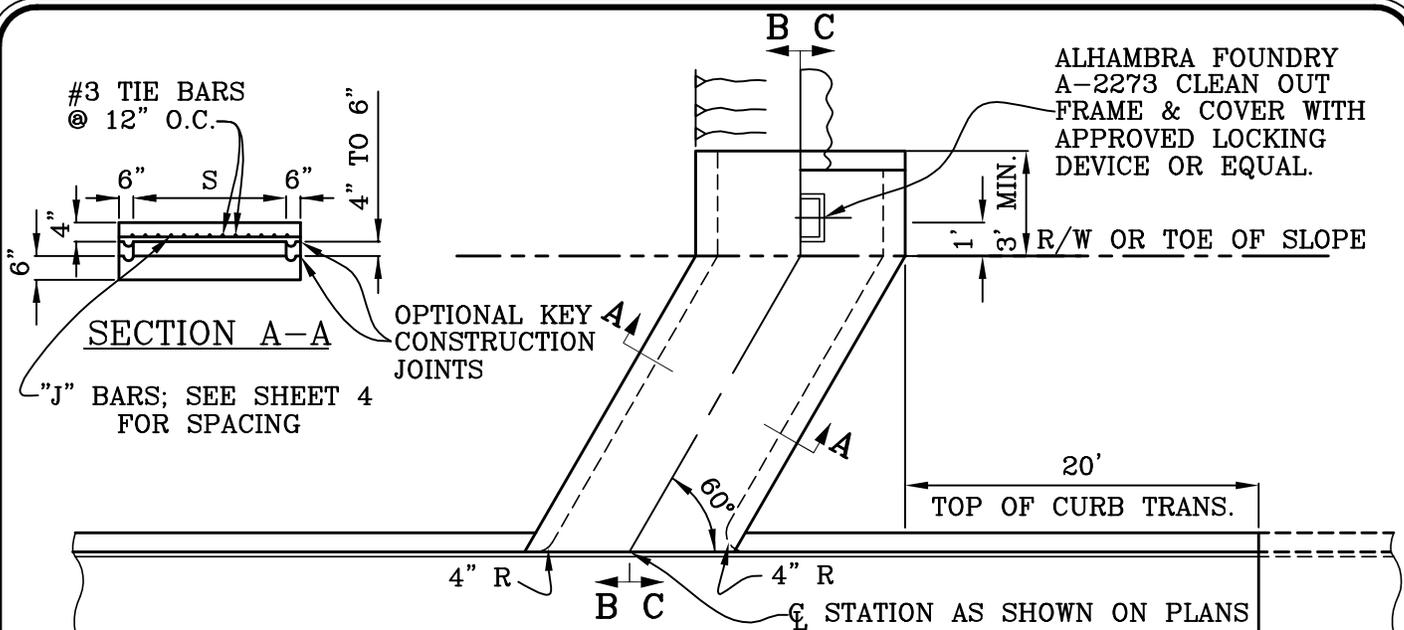
RCE 30190

DATE

SHT 1 OF 4

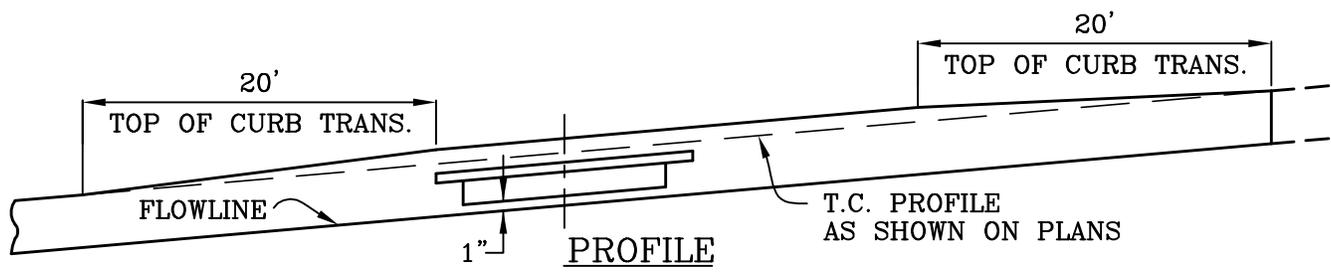
Robert Anderson

9-23-03

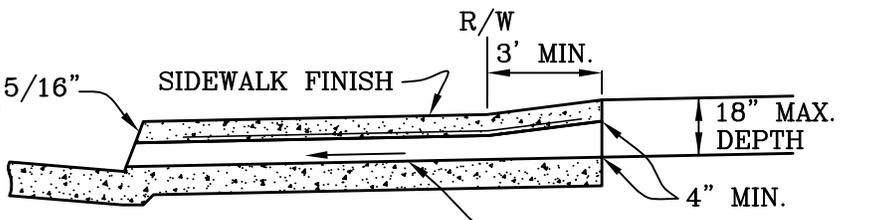


ALHAMBRA FOUNDRY
A-2273 CLEAN OUT
FRAME & COVER WITH
APPROVED LOCKING
DEVICE OR EQUAL.

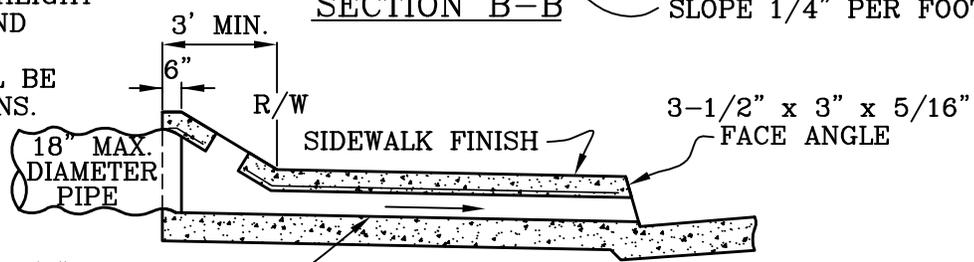
PLAN



PROFILE



SECTION B-B



SECTION C-C

- NOTES:
1. SEE SHT. 4 FOR DETAILS AND NOTES.
2. SPAN 'S' AND HEIGHT OF OPENING AND CURB FACE AT CULVERT SHALL BE NOTED ON PLANS.

CITY OF MISSION VIEJO

PARKWAY CULVERT (TYPE B)



Robert Anderson 9-23-03

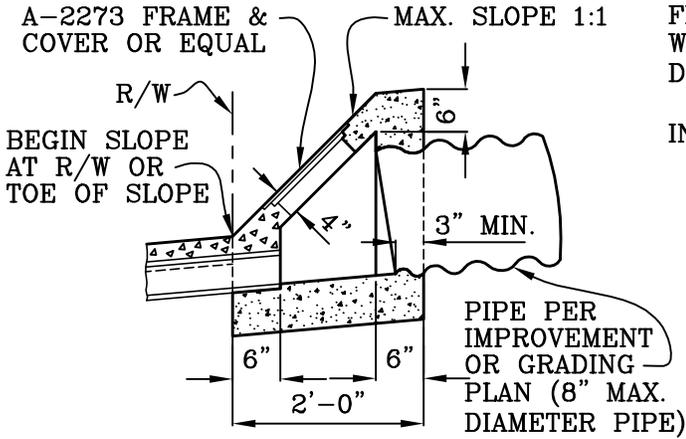
APPROVED RCE 30190 DATE

STANDARD PLAN NO.

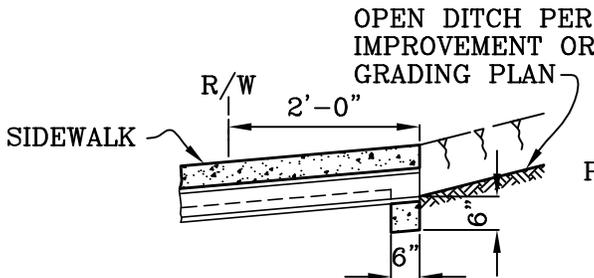
407

SHT 2 OF 4

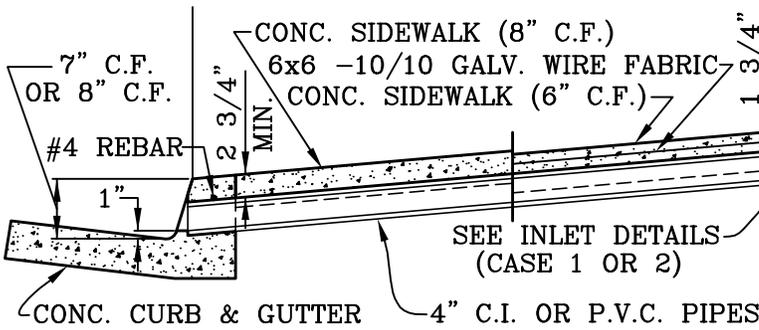
ALHAMBRA FOUNDRY
A-2273 FRAME &
COVER OR EQUAL



CASE 1 INLET
TRANSITION STRUCTURE SECTION



CASE 2 INLET

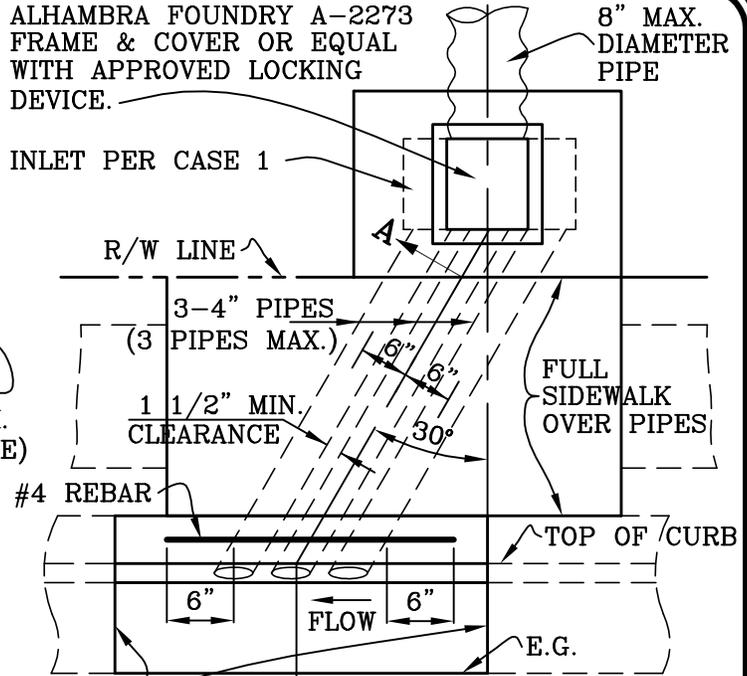


SECTION A-A

NOTES:

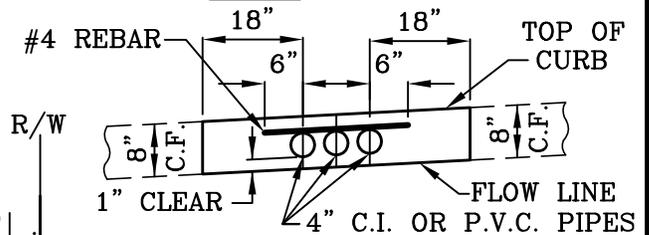
1. SEE SHEET 4 FOR DETAILS AND NOTES.
2. ALHAMBRA FOUNDRY A-470 RECTANGULAR CAST IRON PIPE MAY BE SUBSTITUTED AT THE CONTRACTOR'S OPTION OR AS SPECIFIED ON THE PLANS.
3. CAST IRON FACILITIES SHALL HAVE A BITUMINOUS COATING CONFORMING TO AASHO DESIGNATION:M190.

ALHAMBRA FOUNDRY A-2273
FRAME & COVER OR EQUAL
WITH APPROVED LOCKING
DEVICE.

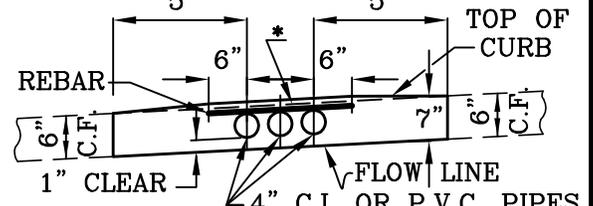


SEE CURB
PROFILES BELOW

PLAN



CURB PROFILE
8" NORMAL CURB FACE



CURB PROFILE
6" NORMAL CURB FACE

*NORMAL T.C. GRADE LINE AS SHOWN ON PROFILE

CITY OF MISSION VIEJO

PARKWAY CULVERT (TYPE C)

STANDARD
PLAN NO.

407



Robert Anderson

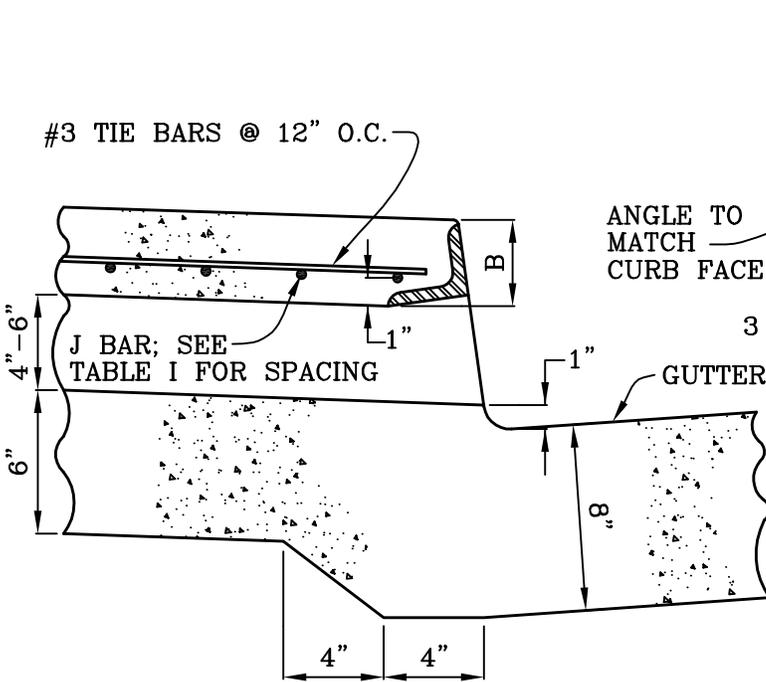
9-23-03

APPROVED

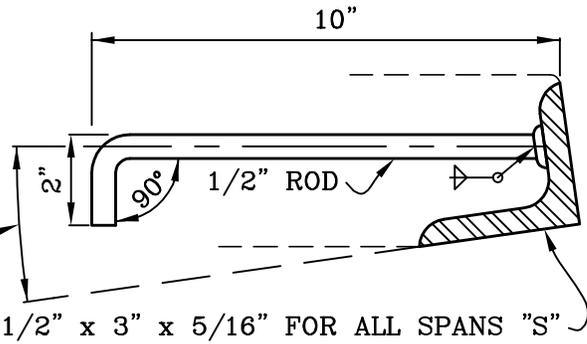
RCE 30190

DATE

SHT 3 OF 4



OUTLET DETAIL



FACE ANGLE ANCHOR DETAIL

LENGTH OF CURB OPENING	NO. OF ANCHORS
3' OR LESS	2
3'-6" TO 6'-0"	3

NOTES:

1. USE PARKWAY CULVERT TYPE "A" WHEN INLET VELOCITIES WILL BE 10 FEET PER SECOND OR GREATER.
2. USE PARKWAY CULVERT TYPE "B" WHEN INLET VELOCITIES WILL BE LESS THAN 10 FEET PER SECOND.
3. USE PARKWAY CULVERT TYPE "C" WHEN INLET VELOCITIES ARE LESS THAN 5 FEET PER SECOND.
4. FLOOR OF PARKWAY CULVERT SHALL HAVE A STEEL TROWEL FINISH.
5. ALL EXPOSED METAL SHALL BE GALVANIZED AFTER FABRICATION.
6. HEIGHT OF CURB OPENING FOR TYPES "A" & "B" PARKWAY CULVERTS WILL VARY WITH TYPE OF CURB.
7. SPAN "S" AND HEIGHT OF CURB OPENING WILL BE DETERMINED FROM THE REQUIRED HYDRAULIC CAPACITY AND LIMITED TO THE DIMENSION IN TABLE I.
8. REINFORCING STEEL SHALL BE 1" CLEAR TO INSIDE OF CULVERT UNLESS OTHERWISE SHOWN.

SPAN S	B	STEEL SCHEDULE J - BARS		
		SIZE	SPACING C-C	LENGTH
2'-0"	3"	#3	7"	2'-9"
2'-6"	"	"	"	3'-3"
3'-0"	"	"	"	3'-9"
3'-6"	"	"	6"	4'-3"
4'-0"	"	"	5"	4'-9"
4'-6"	4"	"	6 1/2"	5'-3"
5'-0"	"	"	5"	5'-9"
5'-6"	"	"	4"	6'-3"
6'-0"	"	"	3 1/2"	6'-9"

TABLE I

CITY OF MISSION VIEJO



PARKWAY CULVERT (DETAILS & NOTES)

STANDARD
PLAN NO.

407

Robert Anderson

9-23-03

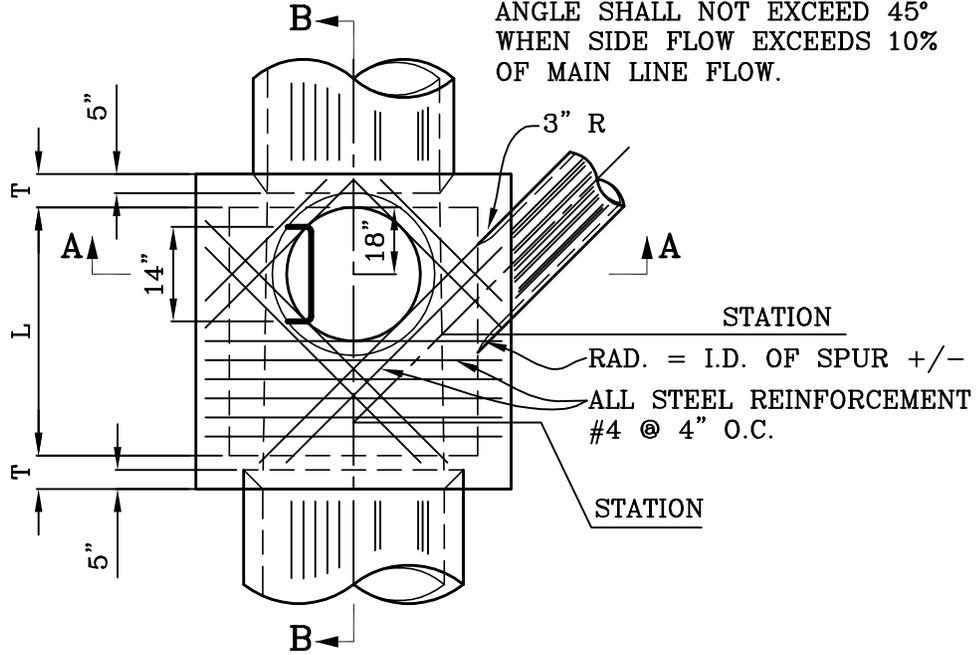
APPROVED

RCE 30190

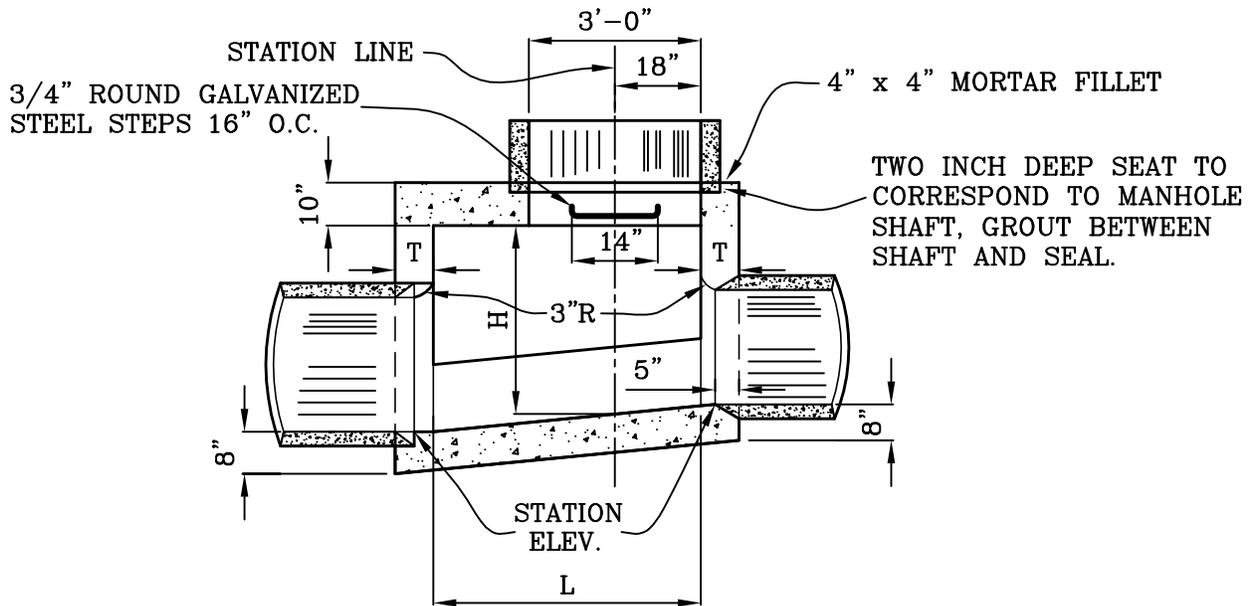
DATE

SHT 4 OF 4

ANGLE SHALL NOT EXCEED 45°
WHEN SIDE FLOW EXCEEDS 10%
OF MAIN LINE FLOW.



PLAN
(SHAFT NOT SHOWN)



SECTION B-B
(SEE NOTES ON SHEET 4)

CITY OF MISSION VIEJO

JUNCTION STRUCTURE
TYPE I

STANDARD
PLAN NO.

408



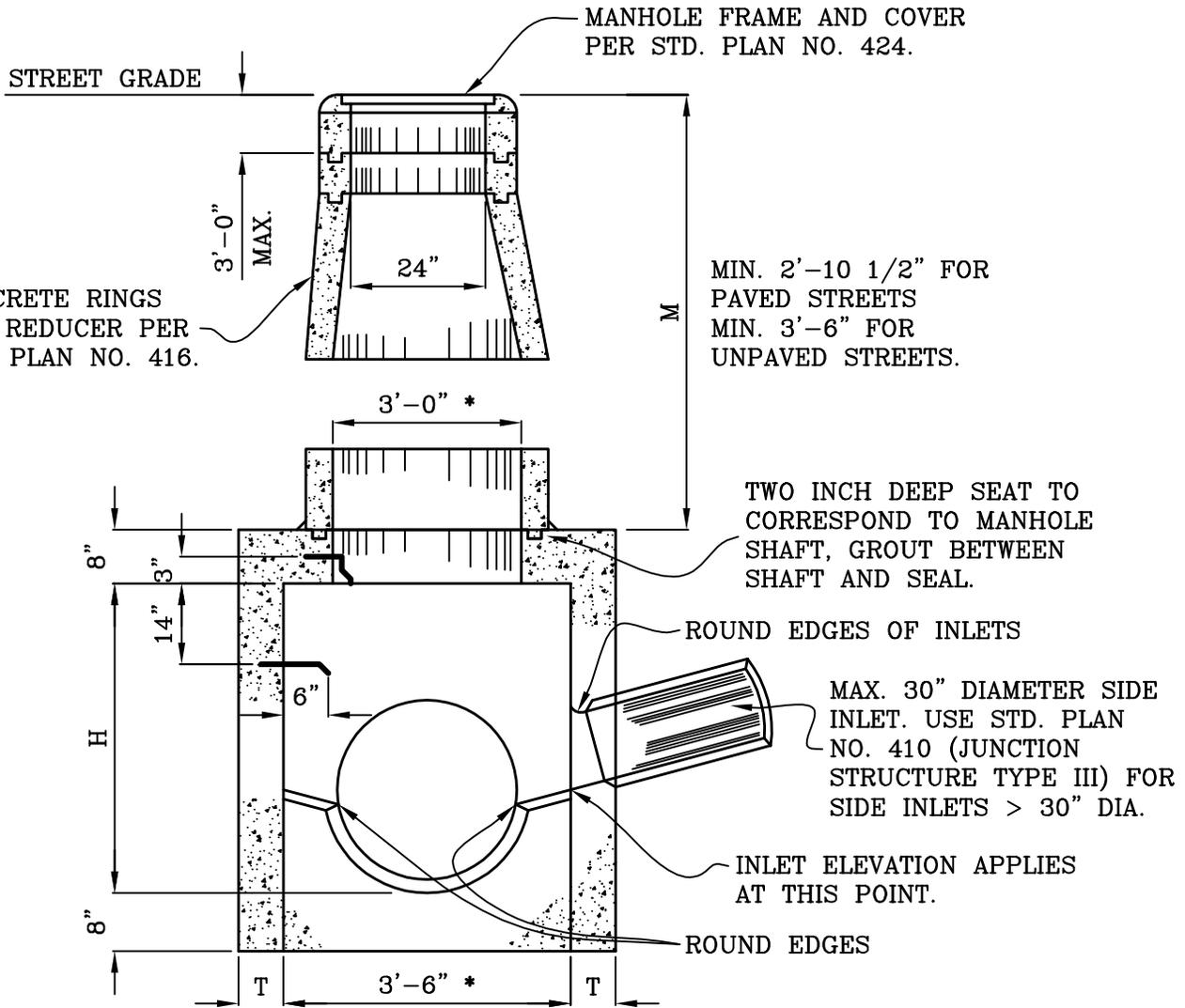
Robert Anderson 9-23-03

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DATE

SHT 1 OF 4



SECTION A-A

*MANHOLE SHAFT SHALL BE 4'-0" AND JUNCTION STRUCTURE BOTTOM WIDTH SHALL BE INCREASED TO 4'-0" MINIMUM WHEN M>15'. USE STD. PLAN NO. 419 WITH 6" RINGS WHEN M>15'.

(SEE NOTES ON SHEET 4)

CITY OF MISSION VIEJO

JUNCTION STRUCTURE
TYPE I

STANDARD
PLAN NO.

408



Robert Anderson

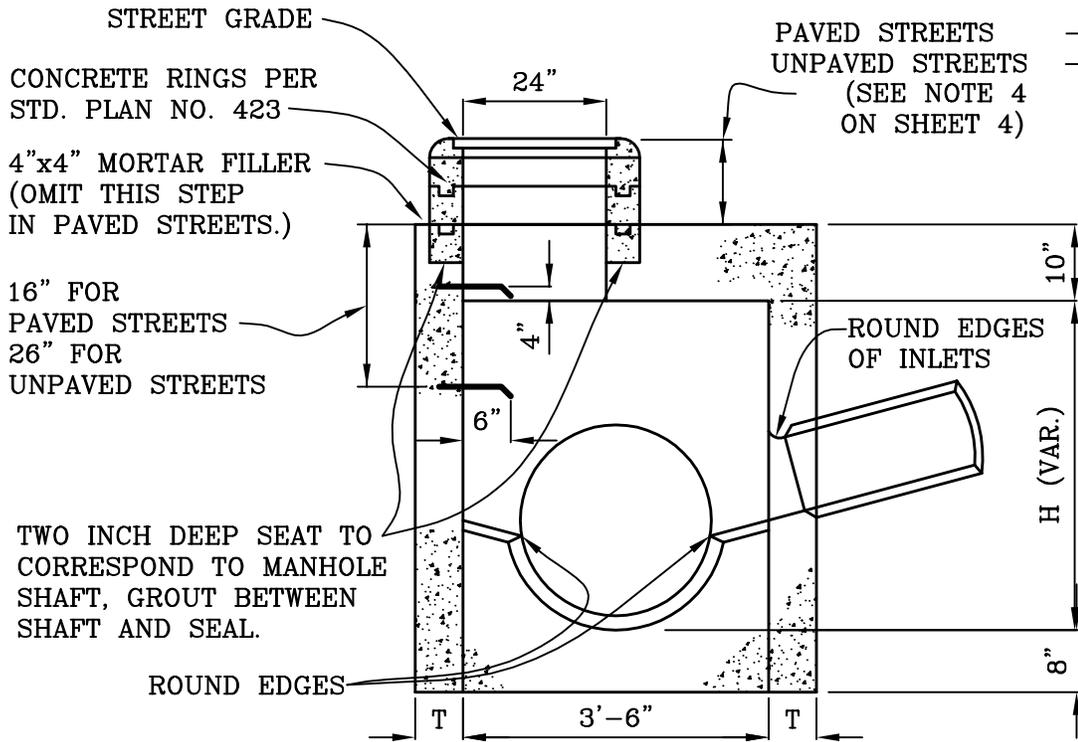
9-23-03

APPROVED

RCE 30190

DATE

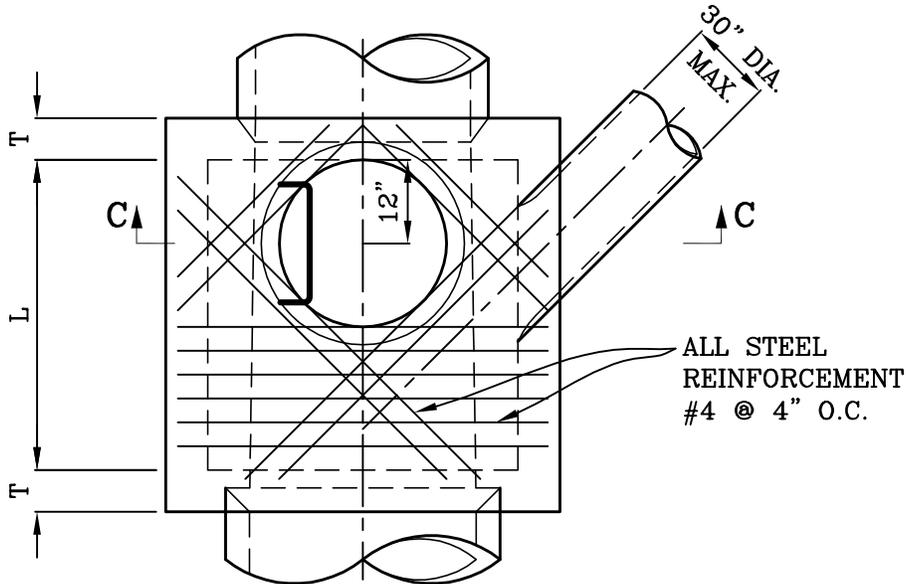
SHT 2 OF 4



	MAX.	MIN.
PAVED STREETS	11"	8 1/2"
UNPAVED STREETS	16"	15"

(SEE NOTE 4 ON SHEET 4)

SECTION C-C



DETAIL N

SHAFT NOT SHOWN
(SEE NOTE 3 ON SHEET 4)

CITY OF MISSION VIEJO

JUNCTION STRUCTURE
TYPE I

STANDARD
PLAN NO.

408



Robert Anderson

9-23-03

APPROVED

RCE 30190

DATE

SHT 3 OF 4

NOTES:

1. HEIGHT H IN SEC. A-A AND SEC. B-B SHALL NOT BE LESS THAN 4'-0", BUT MAY BE INCREASED AT THE OPTION OF THE ENGINEER. PROVIDED THAT THE VALUE OF M SHALL NOT BE LESS THAN THE MINIMUM SPECIFIED AND THAT THE REDUCER SHALL BE USED FOR H IN SEC. C-C (SEE NOTE 4).
2. LENGTH L SHALL BE 4'-0" FOR INLETS OF 20" OR LESS AND 5'-0" FOR INLETS GREATER THAN 20" UNLESS OTHERWISE SHOW ON THE IMPROVEMENT PLAN. MAY BE INCREASED A MAXIMUM OF (1) FOOT AT EACH END TO MEET PIPE ENDS. CONTINUE #4 AT 4" O.C.
3. SHAFT SHALL BE CONSTRUCTED AS PER SEC. C-C AND DETAIL N WHEN DEPTH M FROM STREET GRADE TO TOP OF BOX IS LESS THAN 2'-10 1/2" FOR PAVED STREETS OR 3'-6" FOR UNPAVED STREETS.
4. DEPTH M MAY BE REDUCED TO AN ABSOLUTE LIMIT OF 6" WHEN LARGER VALUES OF M WOULD REDUCE H IN SEC. C-C TO 3'-6" OR LESS.
5. T SHALL BE 8" FOR VALUES OF H UP TO AND INCLUDING 8'. T SHALL BE 10" FOR VALUES OF H OVER 8'.
6. STEPS SHALL BE 3/4" ROUND GALVANIZED STEEL AND ANCHORED NOT LESS THAN 5" IN THE WALLS OF THE STRUCTURE AND SHALL PROJECT A MIN. OF 6" FROM POINT OF EMBEDMENT. UNLESS OTHERWISE SHOWN, STEPS SHALL BE PLACED 16" O.C. THE LOWEST STEP SHALL NOT BE MORE THAN 24" ABOVE THE LEDGE AT THE SIDE OF MANHOLE FLOOR.
7. REINFORCING STEEL SHALL BE #4 BARS, DEFORMED, STRAIGHT BARS 1 1/2" CLEAR FROM FACE OF CONCRETE.
8. STATIONS OF MANHOLES SHOWN ON IMPROVEMENT PLAN APPLY AT CENTERLINE OF SHAFT.
9. FLOOR OF MANHOLE SHALL BE STEEL-TROWELED.
10. RINGS, REDUCER, AND PIPE FOR ACCESS SHAFT SHALL BE SEATED IN 1:2 MORTAR AND NEATLY POINTED OR WIPED INSIDE SHAFT.
11. LEDGE SHALL BE SLOPED AT 2" PER FOOT.
12. USE JUNCTION STRUCTURE TYPE I FOR OUTLET PIPE DIAMETERS OF 42" OR LESS AND INLET DIAMETERS OF 30" OR LESS.

CITY OF MISSION VIEJO

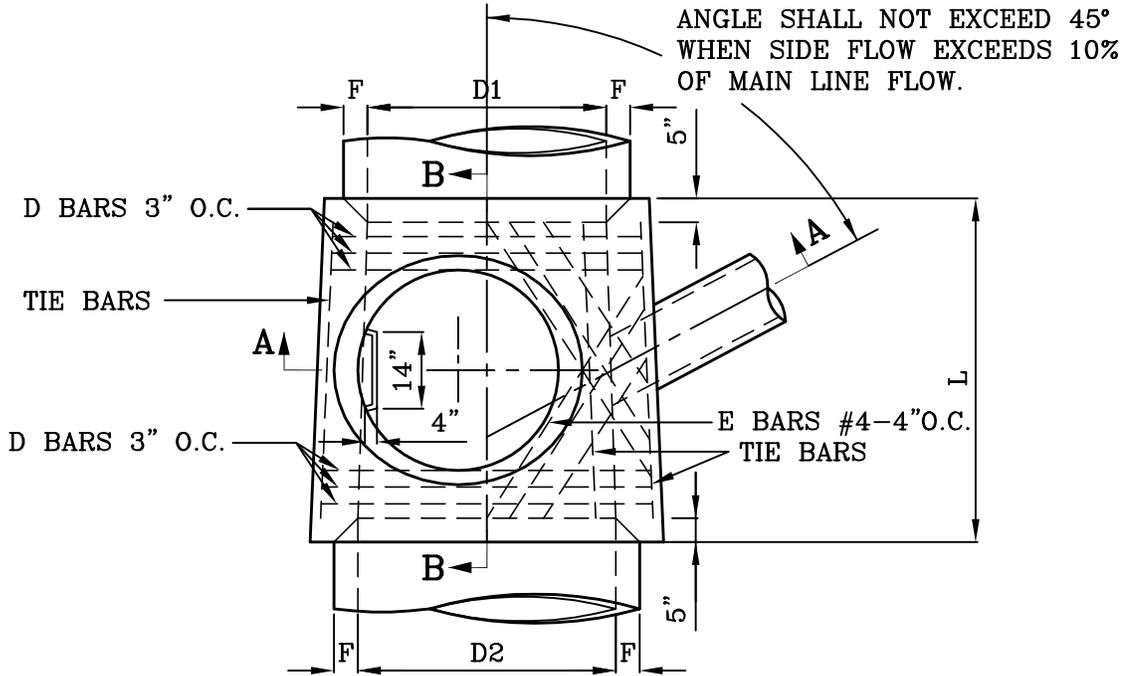


JUNCTION STRUCTURE
TYPE I

STANDARD
PLAN NO.

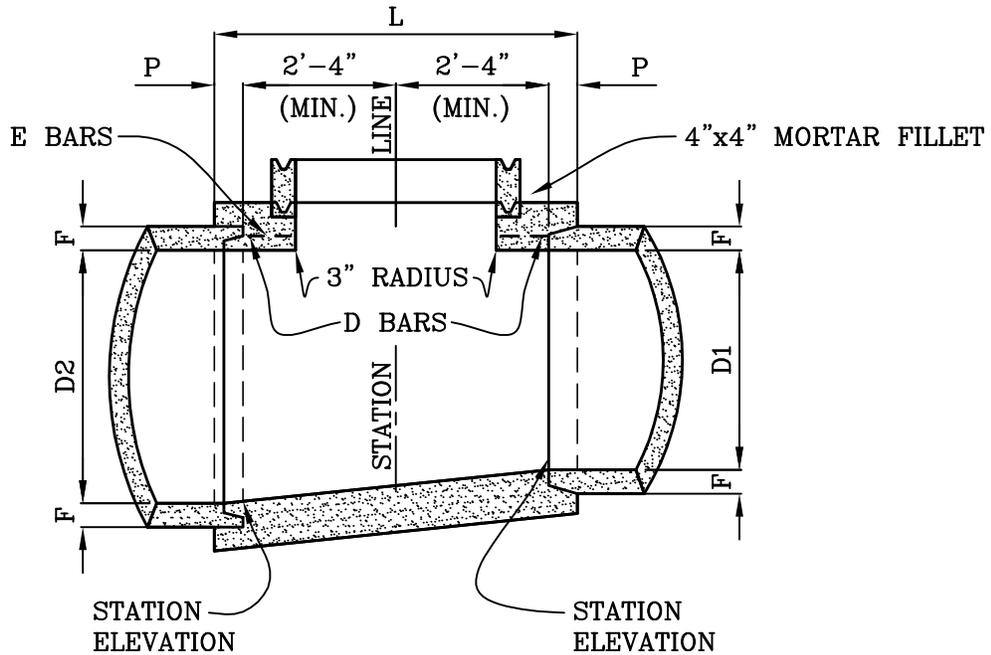
408

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 APPROVED RCE 30190 DATE



PLAN

(SHAFT NOT SHOWN)



SECTION B-B

CITY OF MISSION VIEJO

**JUNCTION STRUCTURE
TYPE II**

STANDARD
PLAN NO.

409



Robert Anderson

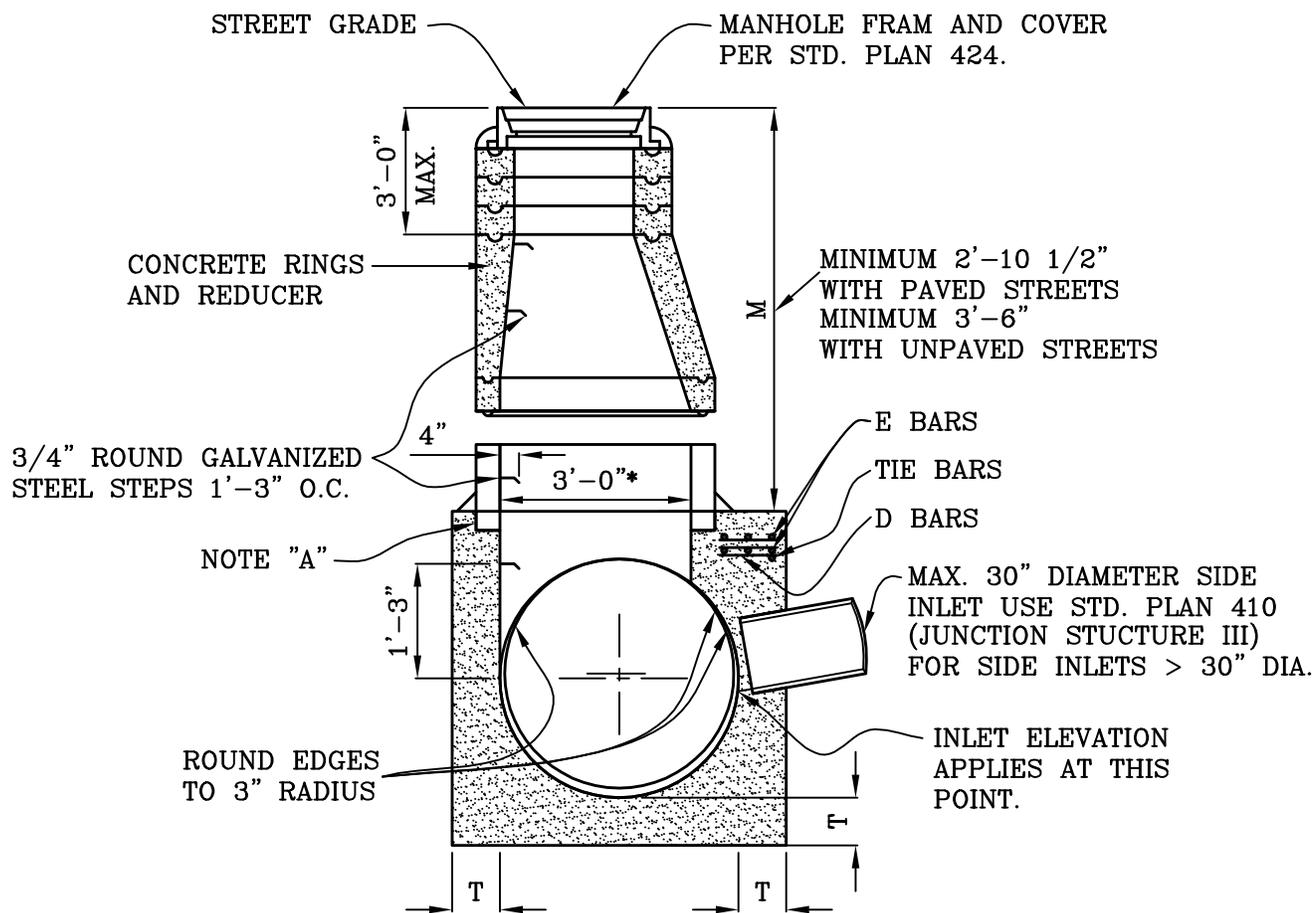
9-23-03

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RCE 30190

DATE

SHT 1 OF 5



SECTION A-A

NOTE "A"
 TWO (2) INCH DEEP SEAT TO CORRESPOND TO MANHOLE
 SHAFT, GROUT BETWEEN SHAFT AND SEAL.

CITY OF MISSION VIEJO

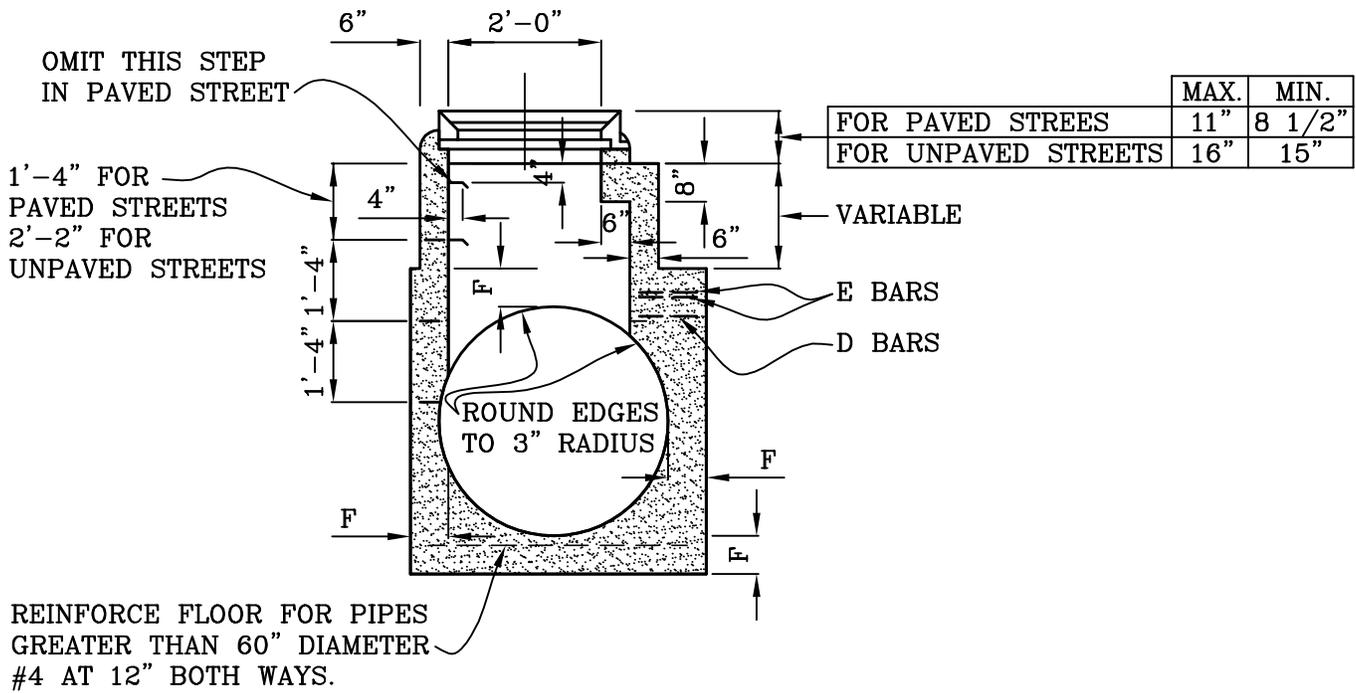
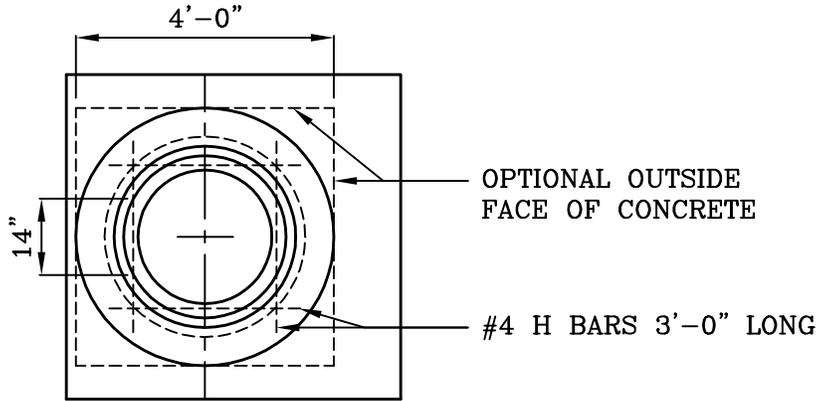
JUNCTION STRUCTURE
 TYPE II

STANDARD
 PLAN NO.

409



Robert Anderson 9-23-03
 APPROVED RCE 30190 DATE



DETAIL M

CITY OF MISSION VIEJO

JUNCTION STRUCTURE
TYPE II

STANDARD
PLAN NO.

409



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APPROVED RCE 30190 DATE

STEEL TABLE FOR JUNCTION STRUCTURE-TYPE II						
D BARS				E BARS		
DIAM. D2	MINIMUM NO. REQ'D	SIZE	LENGTH	MINIMUM NO. REQ'D	SIZE	LENGTH
42" *	6	#5	4'-6"	4	#4	3'-2"
45" *	6	#5	4'-10"	4	#4	3'-5"
48"	6	#5	5'-1"	4	#4	3'-7"
51"	6	#5	5'-5"	6	#4	4'-9"
54"	6	#5	5'-9"	6	#4	5'-1"
57"	6	#5	6'-1"	6	#4	5'-6"
60"	6	#5	6'-4"	6	#4	5'-11"
63"	6	#5	6'-8"	6	#4	6'-3"
66"	6	#5	7'-0"	8	#4	6'-8"
69"	6	#5	7'-4"	8	#4	6'-8"
72"	6	#5	7'-7"	8	#4	6'-8"
78"	6	#5	8'-3"	8	#4	6'-8"
84"	6	#5	8'-10"	10	#4	6'-8"
90"	6	#6	9'-6"	10	#4	6'-8"
96"	6	#6	10'-1"	10	#4	6'-8"
102"	6	#6	10'-10"	11	#4	6'-8"
108"	6	#6	11'-5"	11	#4	6'-8"
114"	6	#6	12'-0"	12	#4	6'-8"
120"	6	#6	12'-7"	12	#4	6'-8"
126"	6	#6	13'-1"	13	#4	6'-8"
132"	6	#6	13'-8"	13	#4	6'-8"
138"	6	#6	14'-2"	14	#4	6'-8"
144"	6	#6	14'-7"	14	#4	6'-8"

TABLE OF VALUES FOR T	
D2	T
42"	8"
45"	8"
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"

*MANHOLE SHAFT SHALL BE 4'-0" AND JUNCTION STRUCTURE BOTTOM WIDTH SHALL BE INCREASED TO 4'0 MINIMUM WHEN M > 15. USE STD. PLAN 419 WITH 6" THICK RINGS WHEN M > 15.

CITY OF MISSION VIEJO



JUNCTION STRUCTURE TYPE II

STANDARD
PLAN NO.

409

Robert Anderson 9-23-03
 APPROVED RCE 30190 DATE

SHT 4 OF 5

NOTES:

1. CENTER OF MANHOLE SHAFT SHALL BE LOCATED OVER CENTERLINE OF STORM DRAIN WHEN DIAMETER OF D1 IS 48" OR LESS, IN WHICH CASE PLACE E BAR SYMMETRICALLY AROUND SHAFT AT 45 DEGREES WITH CENTERLINE.
2. LENGTH L MAY BE INCREASED ONE (1) FOOT MAX. AT EACH END TO MEET PIPE ENDS. CONTINUE D BARS AT 3" O.C.
3. DETAIL M: WHEN DEPTH OF MANHOLE FROM STREET GRADE TO TOP OF BOX IS LESS THAN 2'-10 1/2" FOR PAVED STREETS OR 3'-6" FOR UNPAVED STREETS, CONSTRUCT MONOLITHIC SHAFT AS PER DETAIL M. WHEN DIAMETER D IS 48" OR LESS, CENTER OF SHAFT SHALL BE LOCATED AS PER NOTE 2.
4. THICKNESS OF DECK SHALL VARY WHEN NECESSARY TO PROVIDE LEVEL PIPE SEAT, BUT SHALL NOT BE LESS THAN TABULAR VALUES FOR T, AS SHOWN ON SHEET 4 OF 5.
5. REINFORCING STEEL SHALL BE ROUND, DEFORMED BARS, 1 1/2" CLEAR FROM FACE TO CONCRETE UNLESS OTHERWISE SHOWN. SIZES AND LENGTHS ARE SHOWN IN TABLE ON SHEET 4 OF 5.
6. STEPS SHALL BE 3/4" ROUND, GALVANIZED STEEL AND ANCHORED NOT LESS THAN 6" IN THE WALLS OF THE STRUCTURE AND SHALL PROJECT A MIN. OF 4 INCHES FROM POINT OF EMBEDMENT.
7. RINGS, REDUCER, AND PIPE FOR ACCESS SHAFT SHALL BE SEATED IN 1:2 MORTAR AND NEATLY POINTED OR WIPED INSIDE THE SHAFT.
8. STATIONS OF MANHOLE SHOWN ON IMPROVEMENT PLAN APPLY AT CENTER OF SHAFT.
9. FLOOR OF MANHOLE SHALL BE STEEL-TROWELED TO SPRINGLINE.
10. BODY OF MANHOLE SHALL BE CONSTRUCTED IN ONE CONTINUOUS OPERATION, EXCEPT THAT THE CONTRACTOR SHALL HAVE THE OPTION OF PLACING A CONSTRUCTION JOINT WITH A LONGITUDINAL KEYWAY AT THE SPRINGLINE.
11. FOR PIPE SIZES NOT SHOWN, USE TABLED VALUES FOR NEXT LARGER PIPE.
12. D BARS SHALL BE PLACED 3" O.C. E BARS SHALL BE PLACED 4" O.C. TIE BARS SHALL BE #4 SPACED 18" O.C. OR CLOSER.
WHEN L IS GREATER THAN 5'-6" AS SPECIFIED ON IMPROVEMENT PLAN, CONTINUE D BARS AT 6" O.C.
LENGTHS SHOWN IN TABLE ARE FOR LONGEST BARS. WHERE SHORTER BARS ARE REQUIRED, BEND OR CUT TO MEET FIELD REQUIREMENTS.
13. USE JUNCTION TYPE II FOR D2 PIPE DIAMETERS OF 42" OR GREATER AND INLET PIPE DIAMETERS FOR 30" OR LESS.

CITY OF MISSION VIEJO



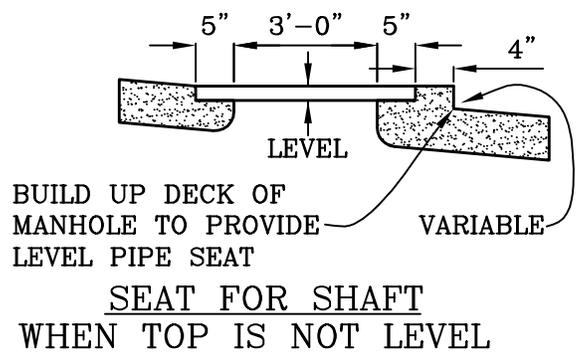
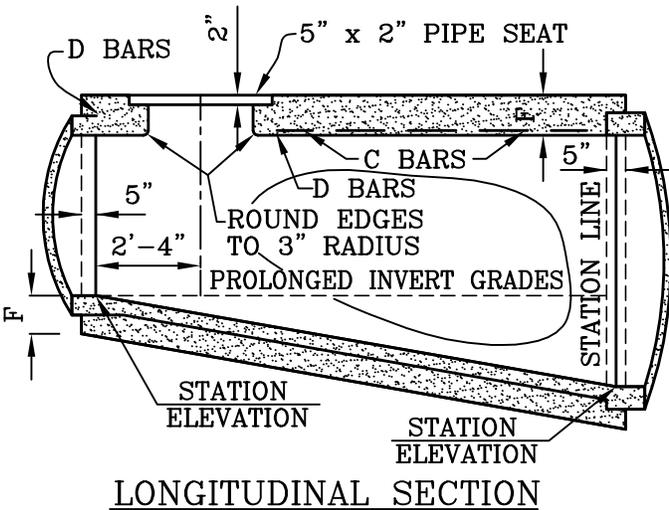
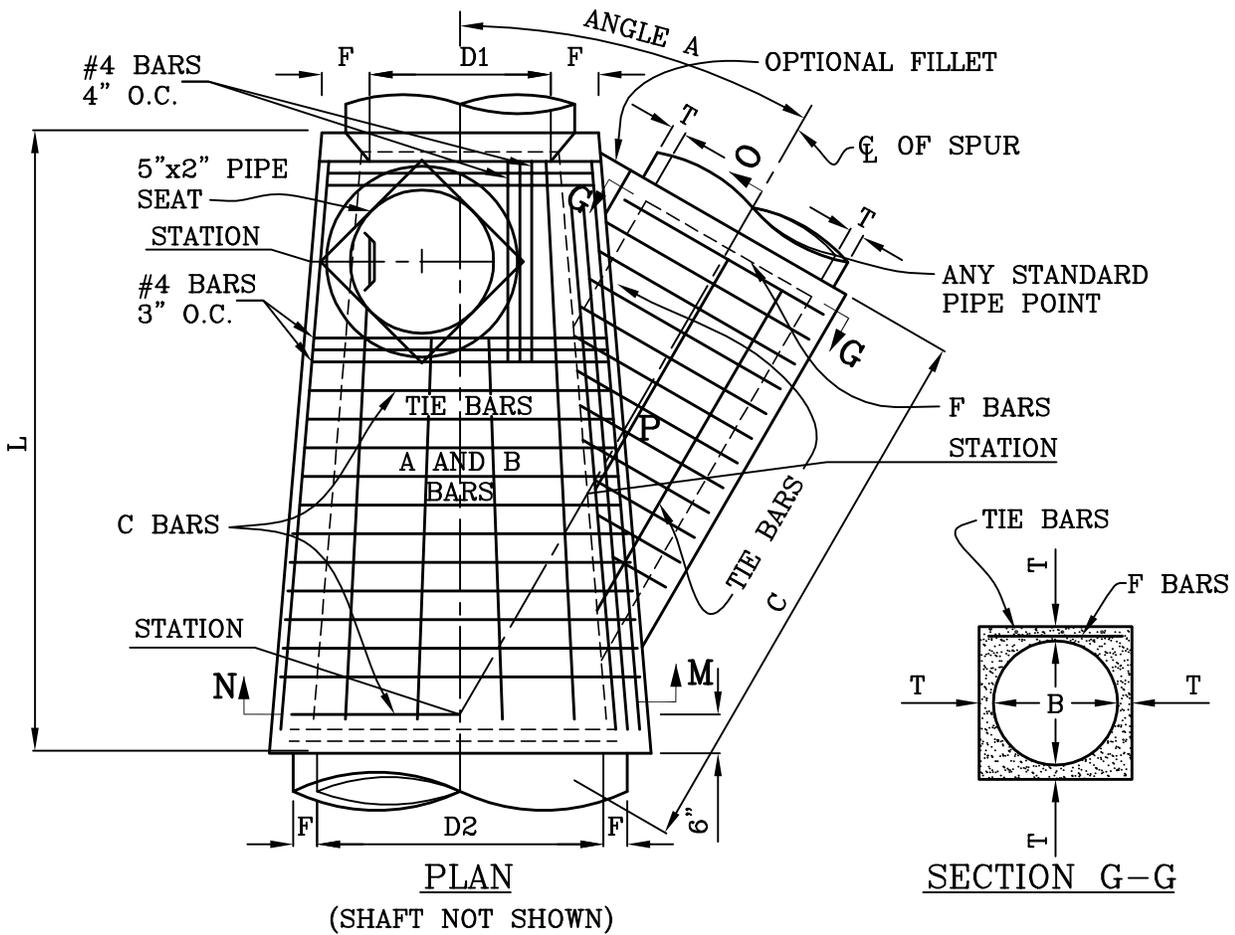
JUNCTION STRUCTURE
TYPE II

STANDARD
PLAN NO.

409

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 5 OF 5



CITY OF MISSION VIEJO

JUNCTION STRUCTURE
TYPE III

STANDARD
PLAN NO.

410



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DATE

SHT 1 OF 4

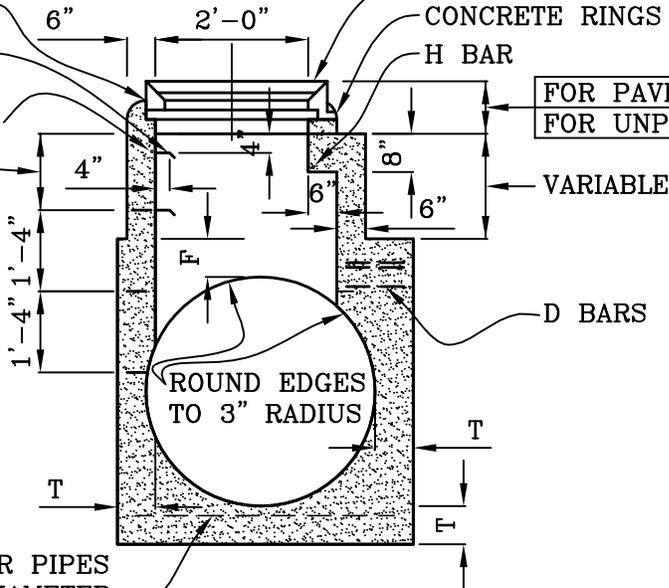
MANHOLE FRAME AND COVER
PER STD. PLAN 424.

OMIT THIS STEP
IN PAVED STREET

1'-4" FOR
PAVED STREETS
2'-2" FOR
UNPAVED STREETS

STREET GRADE
CONCRETE RINGS
H BAR

	MAX.	MIN.
FOR PAVED STREETS	11"	8 1/2"
FOR UNPAVED STREETS	16"	15"



REINFORCE FLOOR FOR PIPES
GREATER THAN 60" DIAMETER

DETAIL M

(NOTE: "A & B" BARS NOT SHOWN FOR CLARITY)

STREET GRADE

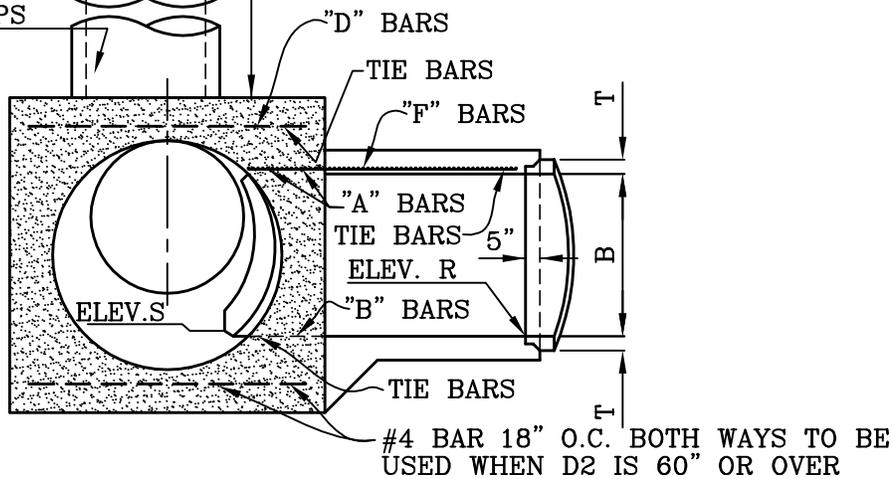
MANHOLE FRAME AND COVER
PER STD. PLAN 424.

3'-0"
MAX.

CONCRETE RING AND REDUCER
PER STD. PLAN 423.

1/4" ROUND
GALVANIZED
STEEL STEPS

MIN. 2'-10 1/2" WITH PAVED STREETS
MIN. 3'-8" WITH UNPAVED STREETS



SECTION N-M-P-O

CITY OF MISSION VIEJO



**JUNCTION STRUCTURE
TYPE III**

STANDARD
PLAN NO.

410

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RCE 30190

DATE

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9-23-03

SHT 2 OF 4

TABLE OF VALUES
FOR F AND T

D2	F	B	T
36"	8"	18"	4 1/2"
39"	8"	21"	5"
42"	8"	24"	5 1/4"
45"	8"	27"	5 1/2"
48"	8"	30"	6"
51"	8 1/2"	33"	6 1/4"
54"	9"	36"	6 1/2"
57"	9 1/4"	39"	7"
60"	9 1/2"	42"	7 1/2"
63"	10"	45"	7 3/4"
66"	10 1/4"	48"	8"
69"	10 3/4"	51"	8 1/2"
72"	11"	54"	9"
78"	11 3/4"	57"	9 1/4"
84"	12 1/2"	60"	9 1/2"
90"	13 1/4"	63"	10"
96"	14"	66"	10 1/2"
102"	15 1/2"	69"	10 3/4"
108"	16"	72"	11"
114"	16 1/2"	78"	11 3/4"
120"	17"	84"	12 1/2"
126"	17"	90"	13 1/4"
132"	17 1/2"	96"	14"
138"	17 1/2"	102"	15 1/2"
144"	18"	108"	16"
		114"	16 1/2"
		120"	17"
		126"	17"
		132"	17 1/2"
		138"	17 1/2"
		144"	18"

TABLE OF BAR SIZES
PROJECTED ON R.P.O.

D2 OR B	A & B BARS	D OR F BARS
24"-39"	#5 @ 3"	#4 @ 6"
42"-84"	#6 @ 3"	#5 @ 6"
90"-96"	#7 @ 3"	#6 @ 6"

* FOR STRUCTURE WITHOUT MANHOLE
REVISE D2 OR B TO READ 12"-39"

CITY OF MISSION VIEJO



JUNCTION STRUCTURE
TYPE III

STANDARD
PLAN NO.

410

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

NOTES:

1. VALUES FOR A, B, C, D1, D2 AND L ELEVATION R AND ELEVATION S ARE SHOWN ON PLAN. TABLE OF VALUES FOR F AND T ARE SHOWN ON SHEET 3.
2. IF LATERALS ENTER BOTH SIDES OF JUNCTION STRUCTURE, ACCESS SHAFT SHALL BE LOCATED ON SIDE RECEIVING THE SMALLER LATERAL.
3. CENTER OF MANHOLE SHAFT SHALL BE LOCATED OVER CENTERLINE OF STORM DRAIN WHEN D1 IS 48" OR LESS. IN THIS CASE, PLACE 4-E BARS SYMMETRICALLY AROUND SHAFT 45 DEGREES WITH CENTERLINE.
4. LENGTH OF JUNCTION STRUCTURE MAY BE INCREASED AT OPTION TO MEET PIPE ENDS, BUT ANY CHANGE IN LOCATION OF SPUR MUST BE APPROVED BY THE CITY ENGINEER.
5. DETAIL M. WHEN DEPTH OF MANHOLE FROM STREET TO TOP OF JUNCTION STRUCTURE IS LESS THAN 2'-10 1/2" FROM PAVED STREETS OR 3'-6" FOR UNPAVED STREETS, CONSTRUCT MONOLITHIC SHAFT PER DETAIL M. CONSTRUCTION OF SHAFT AS PER DETAIL M FOR ANY DEPTH OF MANHOLE IS OPTIONAL. WHEN D1 IS 48" OR LESS, CENTER OF SHAFT SHALL BE LOCATED AS PER NOTE 3.
6. REINFORCING STEEL. STRAIGHT BARS, 1 1/2" CLEAR OF FACE OF CONCRETE UNLESS SHOWN OTHERWISE. TIE BARS SHALL BE #4 SPACED 18" ON CENTERS OR CLOSER. STEEL SCHEDULE DETAILED ON PLAN.
7. EMBEDMENT "P" SHALL BE 5" FOR D2=96" OR LESS AND 8" FOR D2 OVER 96".
8. STEPS SHALL BE 3/4" ROUND GALVANIZED STEEL AND ANCHORED NOT LESS THAN 6" IN THE WALLS OF THE STRUCTURE AND SHALL PROJECT A MINIMUM OF 4 INCHES FROM POINT OF EMBEDMENT. UNLESS OTHERWISE SHOWN, THE SPACING SHALL BE 16" OR 17" ON CENTER. THE LOWEST STEP SHALL NOT BE MORE THAN 2 FEET ABOVE THE INVERT.
9. RINGS, REDUCER, AND PIPE FOR ACCESS SHAFT SHALL BE SEATED IN 1:2 MIX MORTAR AND NEATLY PAINTED OR WIPED INSIDE SHAFT.
10. FLOOR OF JUNCTION STRUCTURE SHALL BE STEEL TROWELED TO SPRINGLINE.
11. BODY OF JUNCTION STRUCTURE, INCLUDING SPUR, SHALL BE CONSTRUCTED IN ONE CONTINUOUS OPERATION, EXCEPT THAT A CONSTRUCTION JOINT AT THE SPRINGLINE, WITH LONGITUDINAL KEYWAY, IS PERMITTED.
12. ELEVATIONS APPLIES AT CENTER OF MAIN LINE ON PROLONGATION OF INVERT SPUR.
13. MANHOLES SHALL BE CONSTRUCTED UNLESS SPECIFIED OTHERWISE ON THE PROJECT PLANS. JUNCTION STRUCTURE TYPE III MAY BE USED WITHOUT MANHOLE WHEN ENGINEER DETERMINES SUFFICIENT MEANS OF ACCESS IS AVAILABLE FOR STORM DRAIN MAINTENANCE.
14. WHEN MANHOLE IS OMITTED FROM JUNCTION STRUCTURE TYPE III THE FOLLOWING NOTES SHALL APPLY:
 - A. FOR D2 OR B FROM 12" THROUGH 33", F & T SHALL BE 8".
 - B. FOR D2 OR B GREATER THAN 33" USE TABLE VALUES HEREON.
 - C. OMIT "E", "J", & "H" BARS.
 - D. OMIT "D" BARS SPACED AT 3" AND USE SPACING INDICATED ON TABLE.
 - E. OMIT "A", "B", & "F" BARS FOR STRUCTURE WITHOUT SIDE INLETS.

CITY OF MISSION VIEJO



JUNCTION STRUCTURE
TYPE III

STANDARD
PLAN NO.

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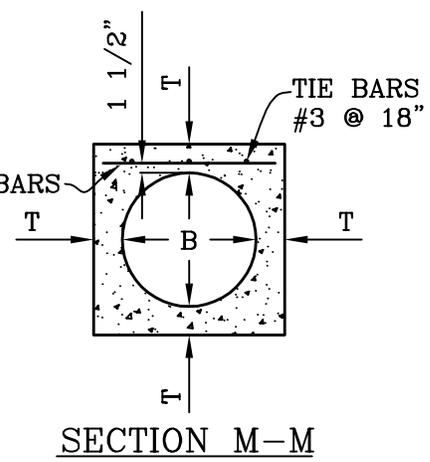
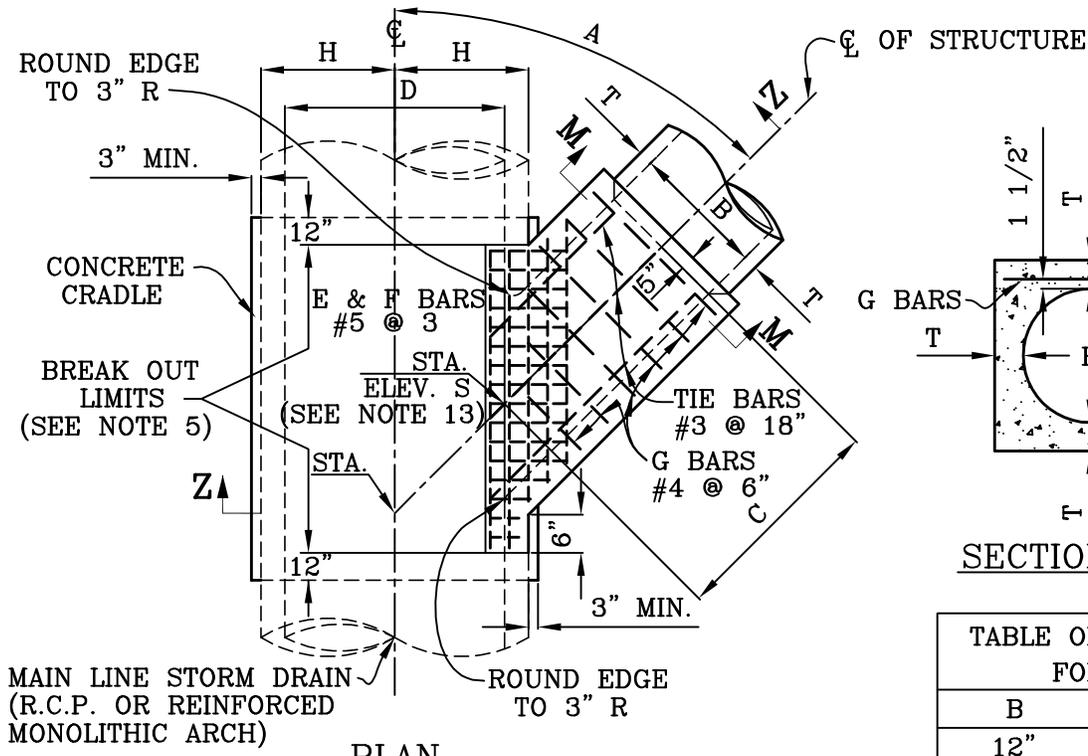
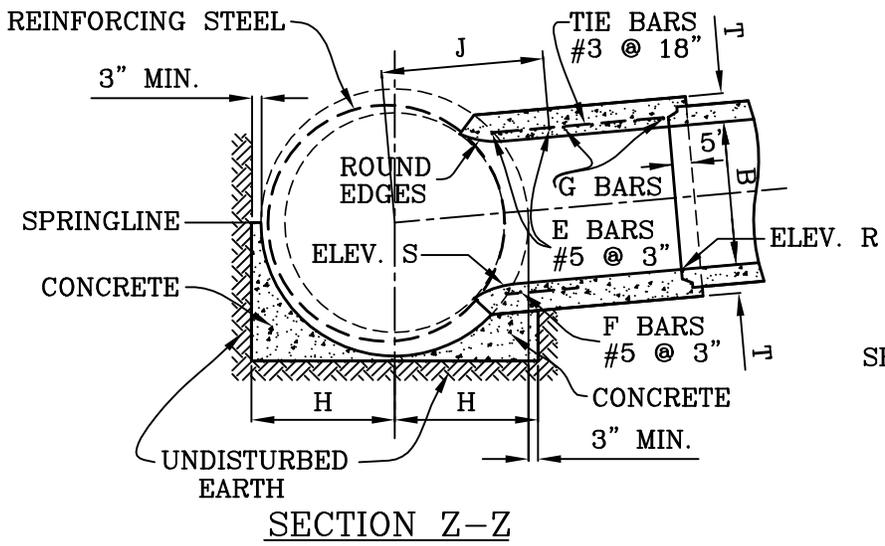


TABLE OF VALUES FOR T

B	T
12"	6"
15"	6"
18"	6"
21"	6"
24"	7"
27"	7"
30"	7"
33"	7"
36"	7"
39"	7"



SEE NOTES ON SHEETS 2 AND 3

CITY OF MISSION VIEJO

JUNCTION STRUCTURE
TYPE IV

STANDARD
PLAN NO.

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SHT 1 OF 3

NOTES:

1. JUNCTION STRUCTURE TYPE IV SHALL BE USED ONLY WHEN SUFFICIENT MEANS OF ACCESS IS AVAILABLE FOR STORM DRAIN MAINTENANCE.
2. JUNCTION STRUCTURE TYPE IV IS TO BE USED WHEN OD OF B IS GREATER THAN 1/2 THE ID OF D OR B IS LARGER THAN 24". B SHALL NOT EXCEED 3/4 OF D OR 39". WHERE B IS LESS THAN 24" USE TYPE IV OR TYPE VI. WHERE B EXCEEDS 3/4 D OR 39", USE JUNCTION STRUCTURE TYPE III WITHOUT MANHOLE.
3. VALUES OF A, B, C, AND D ARE SHOWN ON PROJECT DRAWINGS. ELEVATION "R" AND ELEVATION "S" ARE SHOWN WHEN REQUIRED PER NOTE 12.
4. ELEVATION "S" APPLIES AT INSIDE WALL OF STRUCTURE.
5. BREAKOUT LIMITS SHALL BE DETERMINED AS FOLLOW:
 UPSTREAM LIMIT—THE INTERSECTION OF THE OUTSIDE OF THE SPUR WALL WITH THE MAIN LINE PIPE WALL.
 DOWNSTREAM LIMIT—6" DOWNSTREAM OF THE INTERSECTION OF THE OUTSIDE OF THE SPUR WALL WITH THE MAIN LINE PIPE WALL.
 THE OPENING SHALL BE RECTANGULAR AND CUT NORMAL TO THE PIPE SURFACE WITHOUT DAMAGING REINFORCING STEEL. PROVIDE A CONCRETE ENCASEMENT 1' ABOVE THE TOP OF THE MAIN LINE PIPE TO THE LIMITS OF THE CONCRETE CRADLE IF A JOINT IN THE MAIN LINE PIPE FALLS WITHIN THE LIMIT OF THE CRADLE.
6. THE TRANSVERSE REINFORCEMENT IN PIPE SHALL BE CUT AT CENTER OF OPENING AND BENT INTO TOP AND BOTTOM SLABS OF SPUR.
7. THE MAIN LINE PIPE SHALL BE CRADLED AND ENCASED IN 1:3:5 MIX OF CONCRETE, EXTENDING LONGITUDINALLY 12" BEYOND THE LIMITS OF BREAKOUT (SEE NOTE 5); AND TRANSVERSELY A DISTANCE OF H ON EACH SIDE OF THE CENTERLINE OF PIPE. $H = 1/2 \text{ O.D. OF PIPE} + 3" \text{ MIN.}$ CRADLE MAY BE OMITTED ON SIDE OPPOSITE LATERAL INLET WHEN CONSTRUCTED IN CONNECTION WITH EXISTING STORM DRAIN.
8. REINFORCING STEEL SHALL BE PLACED 1 1/2" CLEAR FROM FACE OF CONCRETE, UNLESS OTHERWISE SHOWN.
9. E AND F BARS SHALL BE CARRIED TO A POINT NOT LESS THAN J DISTANCE FROM CENTERLINE. $J = 7/12D + 6"$.
10. FLOOR OF STRUCTURE SHALL BE STEEL TROWELED TO SPRINGLINE.
11. WHEN JUNCTION STRUCTURE TYPE IV IS SPECIFIED WITH REINFORCED MONOLITHIC ARCH STORM DRAIN, VALUE D SHALL REFER TO THE CLEAR SPAN OF THE ARCH. REINFORCING STEEL SHALL BE CUT AND BENT INTO JUNCTION STRUCTURE IN THE SAME MANNER AS FOR PIPE. CONCRETE CRADLE UNDER REINFORCED MONOLITHIC ARCH IS NOT REQUIRED.
12. SIDE INLET PIPE SHALL ENTER MAIN LINE RADIALLY WHEN ELEVATIONS "R" AND "S" ARE NOT SHOWN ON PROJECT DRAWINGS. WHEN SIDE INLET PIPE ENTERS MAIN LINE OTHER THAN RADIALLY, ELEVATION "S" SHALL BE SHOWN ON PROJECT DRAWINGS AND SIDE INLET PIPE SHALL BE LAID ON A STRAIGHT GRADE FROM ELEVATION "S" TO CATCH BASIN OR GRADE BREAK IN LINE. ELEVATION "R" SHALL BE SHOWN ON PROJECT DRAWINGS ONLY WHEN STUB IS TO BE PROVIDED IN MAIN LINE FOR FUTURE SIDE INLET PIPE.

(NOTES CONTINUED ON SHEET 3)

CITY OF MISSION VIEJO



JUNCTION STRUCTURE
TYPE IV

STANDARD
PLAN NO.

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NOTES:

13. STATIONS SPECIFIED ON DRAWINGS APPLY AT THE INTERSECTION OF CENTERLINES OF MAIN LINE AND LATERALS, EXCEPT THAT STATIONS FOR CATCH BASIN CONNECTOR PIPE APPLY AT INSIDE OF STRUCTURE.

CITY OF MISSION VIEJO



JUNCTION STRUCTURE
TYPE IV

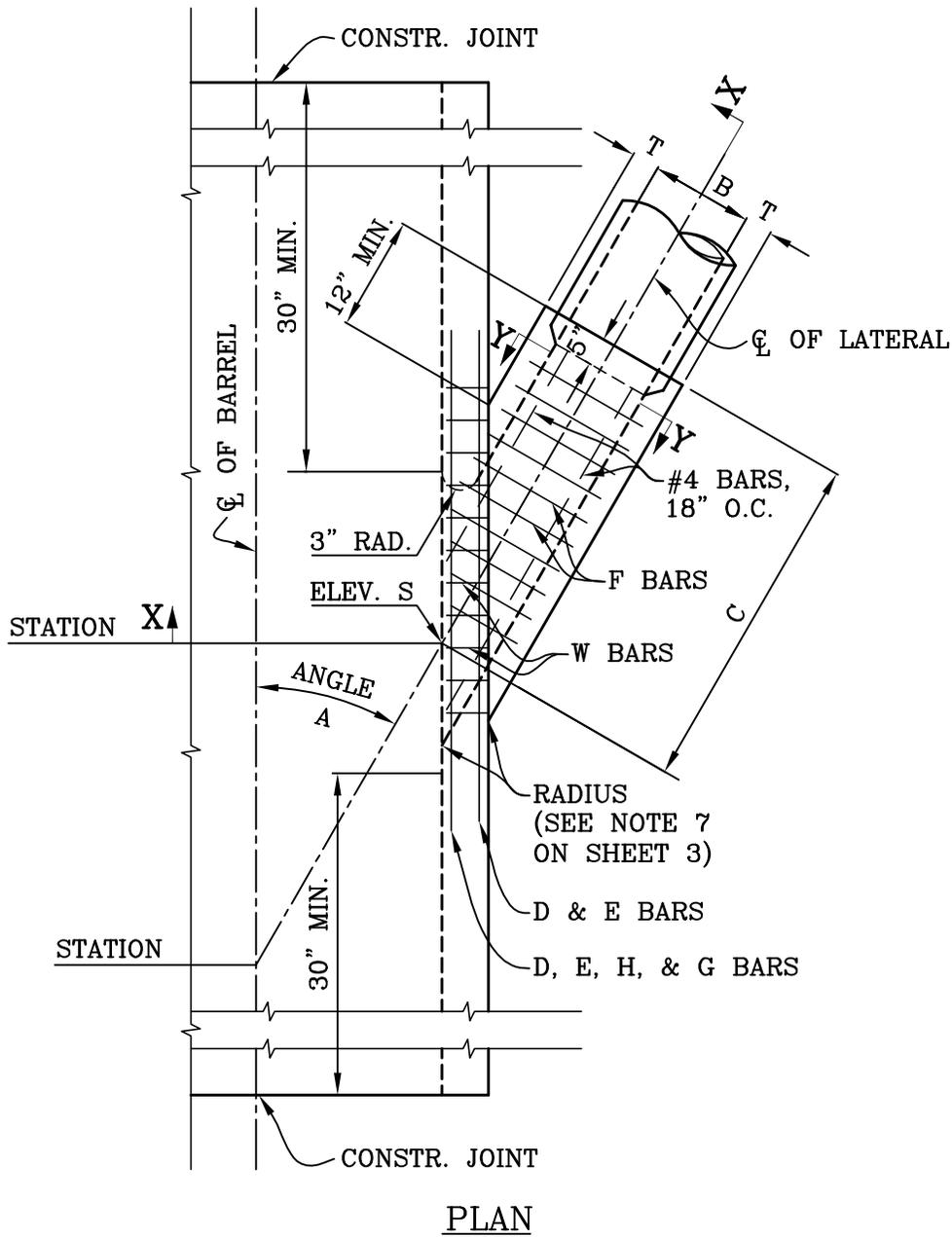
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PLAN NO.

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SEE NOTES ON SHEET 3

CITY OF MISSION VIEJO

JUNCTION STRUCTURE-RCB
TYPE V

STANDARD
PLAN NO.

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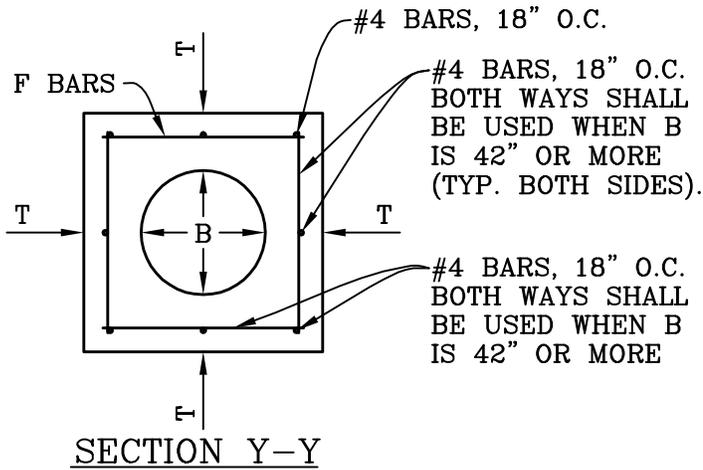
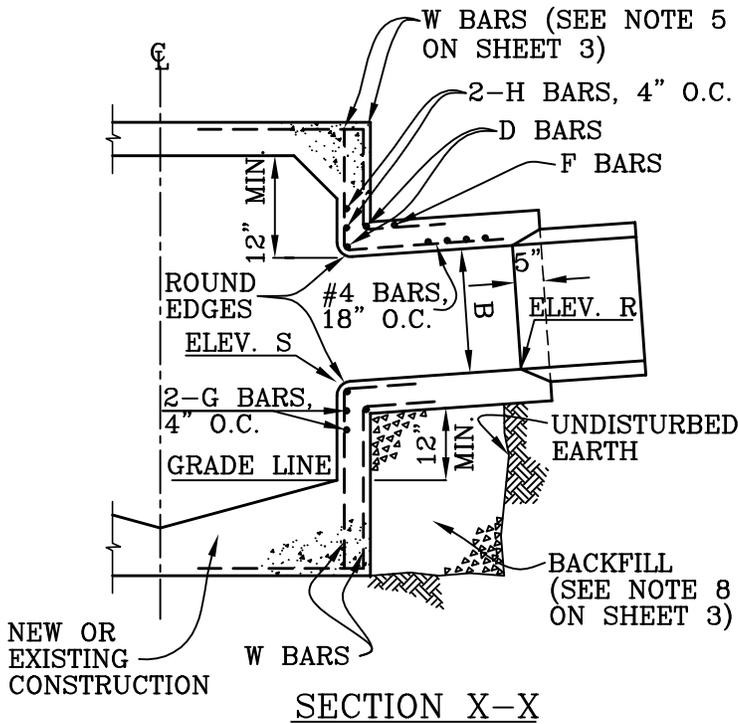


TABLE
FOR DIMENSIONS AND BAR SIZES

B (INCHES)	T (INCHES)	D.E.H. & G BARS	F BARS
12	4	# 5	# 4 @ 6" O.C.
15	6		
18	6		
21	6		
24	6		
27	6		
30	6		
33	8	# 6	# 5 @ 6" O.C.
36	8		
39	8		
42	8		
45	8		
48	8		
51	10		
54	10		
57	10		
60	10		
63	10		
66	12	# 7	# 6 @ 6" O.C.
69	12		
72	12		
78	12		
84	14		
90	14		



SEE SHEET 3 FOR NOTES

CITY OF MISSION VIEJO

JUNCTION STRUCTURE
TYPE V

STANDARD
PLAN NO.

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Robert Anderson 9-23-03

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NOTES:

1. JUNCTION STRUCTURE TYPE V MAY BE USED WHEN B=96" OR LESS, ANGLE A=30 DEGREES OR MORE, BARREL WIDTH OF THE R.C.B. IS 20 FT. OR LESS, AND COVER OVER R.C.B. IS 10 FT. OR LESS.
2. VALUES OF B, C, ANGLE A, ELEVATIONS R AND S, AND STATION POINTS ARE AS SHOWN ON THE PLANS.
3. ALL STEEL REINFORCEMENT SHALL BE 1-1/2" CLEAR UNLESS OTHERWISE NOTED.
4. FOR PIPE SIZES NOT SHOWN, USE TABLED VALUES FOR NEXT LARGER PIPE.
5. W BARS ARE OF SIZE AND SPACING SPECIFIED FOR WALL STEEL ON PLAN, AND SHALL BE CUT IN CENTER OF OPENING AND BENT INTO TOP AND BOTTOM OF JUNCTION STRUCTURE.
6. FLOOR OF JUNCTION STRUCTURE SHALL BE STEEL TROWELED TO SPRINGLINE.
7. RADIUS VARIES FROM 3" AT ANGLE = 90 DEGREES TO RADIUS = B (36" MAX.) WHEN ANGLE A = 45 DEGREES OR LESS.
8. BACKFILL UNDER STRUCTURE WITH SLURRY CONTAINING 1-1/2 SACKS P.C.C./C.Y. BACKFILL MAY BE OMITTED IF STRUCTURE IS LAID ON UNDISTURBED EARTH TO STORM DRAIN WALL.
9. STORM DRAIN CONNECTOR PIPES SHALL BE 18" MINIMUM DIAMETER.
10. THE FLOWLINE OF ALL ENTRIES SHALL BE MADE IN THE LOWER 1/3 OF THE STRUCTURE.

CITY OF MISSION VIEJO



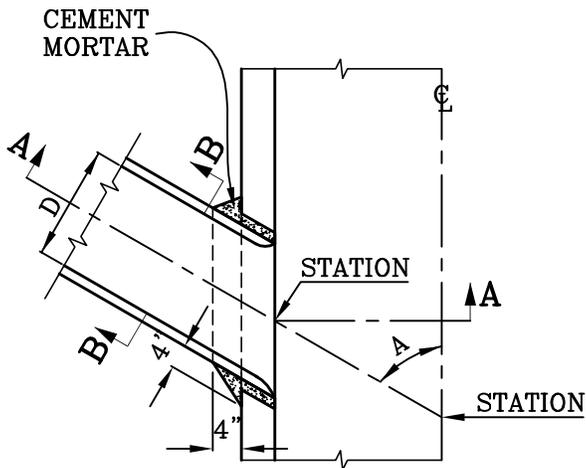
JUNCTION STRUCTURE
TYPE V

STANDARD
PLAN NO.

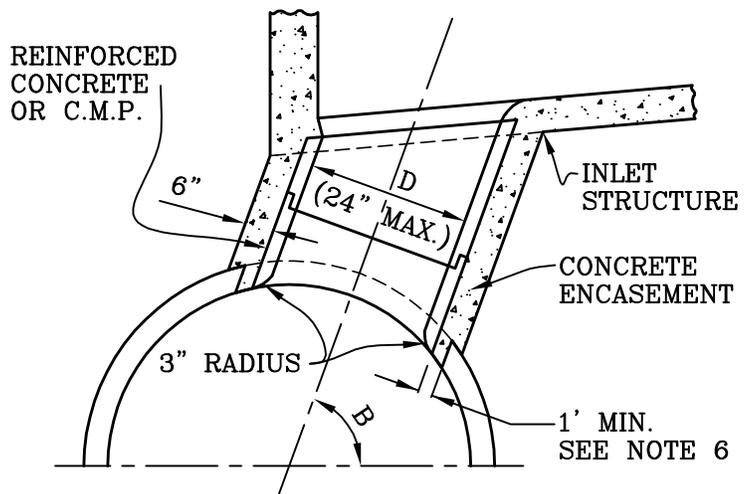
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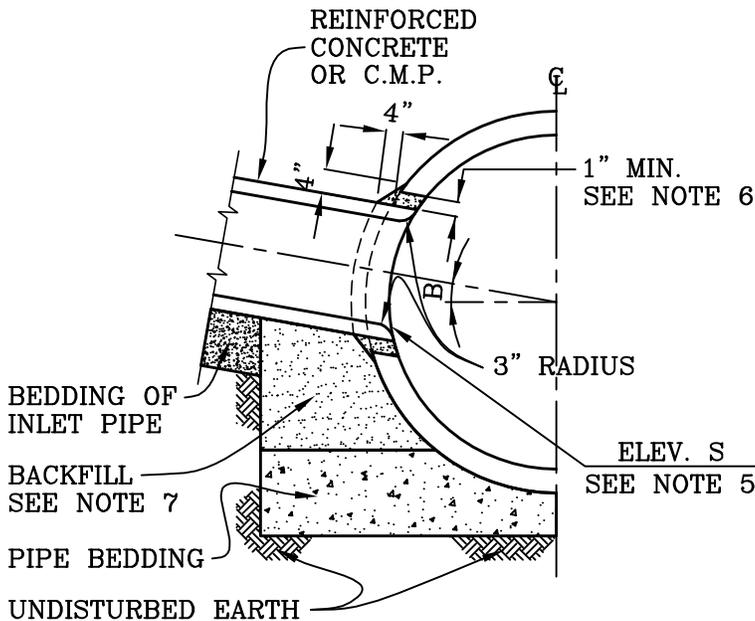
SHT 3 OF 3



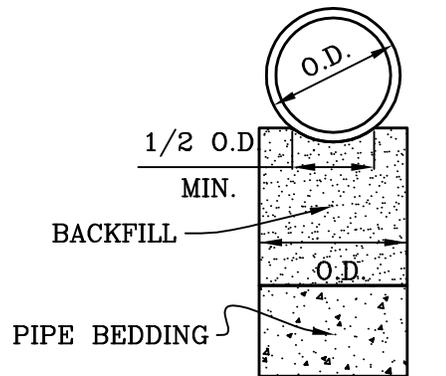
PLAN
CASE 1



CASE 2



SECTION A-A



SECTION B-B

SEE NOTES ON SHEET 2

CITY OF MISSION VIEJO

JUNCTION STRUCTURE
TYPE VI

STANDARD
PLAN NO.

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DATE

SHT 1 OF 2

NOTES:

1. ALL CORRUGATED METAL PIPE AND FITTINGS SHALL BE GALVANIZED.
2. ANGLE A SHALL BE SHOWN ON PLANS AND SHALL BE BETWEEN 45 DEGREES AND 90 DEGREES AND D SHALL BE 24" OR LESS.
3. IN NO CASE SHALL THE OUTSIDE DIAMETER OF THE SIDE INLET PIPE EXCEED ONE-HALF THE INSIDE DIAMETER OF THE MAIN STORM DRAIN.
4. IF ANGLE B IS 45 DEGREES OR LESS, USE CASE 1. IF ANGLE B IS GREATER THAN 45 DEGREES, USE CASE 2.
5. CENTERLINE OF SIDE INLET SHALL BE ON RADIUS OF MAIN STORM DRAIN EXCEPT WHERE ELEVATION S IS SHOWN ON PROJECT DRAWINGS.
6. THE OPENING INTO THE MAIN STORM DRAIN SHALL BE THE OUTSIDE DIAMETER OF THE INLET PIPE PLUS 1" MINIMUM OR 3" MAXIMUM.
7. BACKFILL WITH SLURRY CONTAINING MINIMUM 1-1/2 SACKS P.C.C./C.Y.

CITY OF MISSION VIEJO



JUNCTION STRUCTURE
TYPE VI

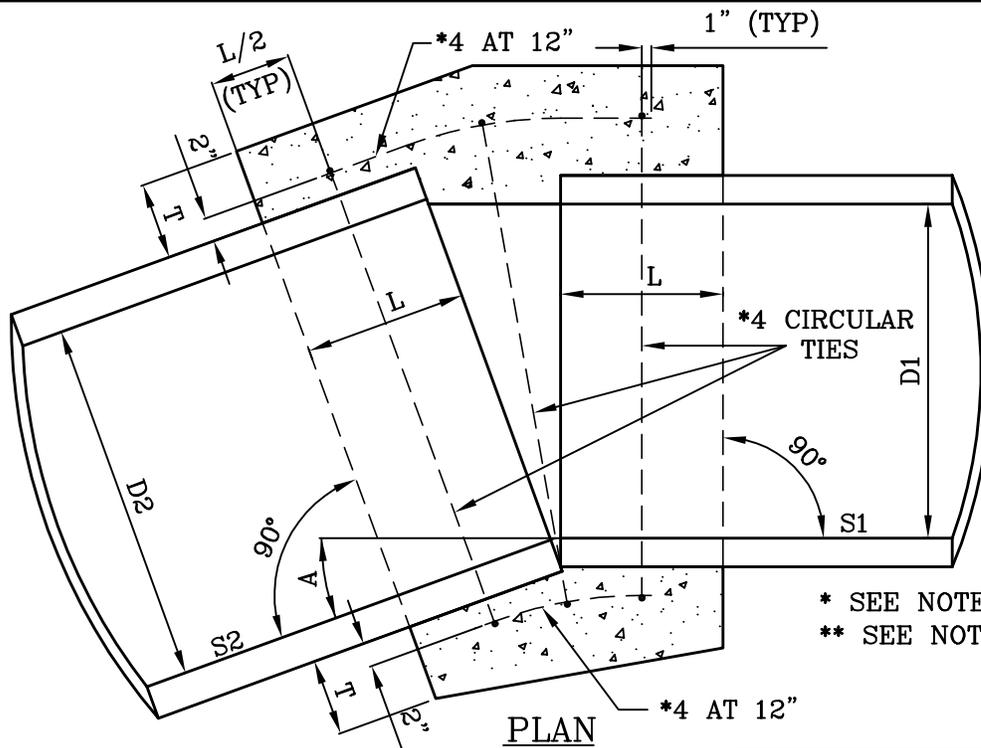
STANDARD
PLAN NO.

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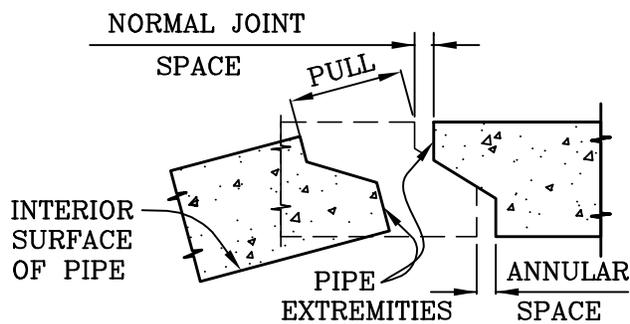
Robert Anderson 9-23-03

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SHT 2 OF 2

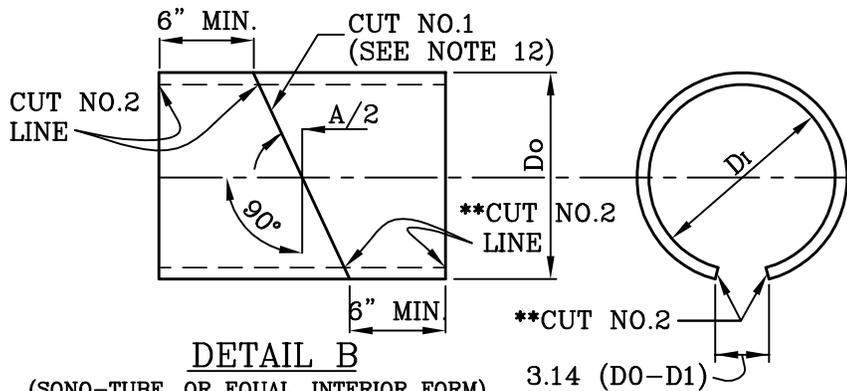


* SEE NOTE 4 ON SHT.2
 ** SEE NOTE 13 ON SHT. 2



DETAIL A

TYPICAL JOINT FOR REINFORCED CONCRETE PIPE



DETAIL B

(SONO-TUBE, OR EQUAL, INTERIOR FORM)

3.14 (D₀-D₁)

D(IN.)	L(IN.)	T(IN.)	PERMITTED DEFLECTION ANGLE
12	12	4	2° 14'
15	12	4	1° 55'
18	12	5	1° 40'
21	12	5	1° 29'
24	12	6	1° 20'
27	12	7	1° 13'
30	12	7	1° 07'
33	18	8	1° 01'
36	18	9	1° 01'
39	18	9	1° 09'
42	18	9	1° 05'
45	18	10	1° 01'
48	18	10	0° 58'
51	18	10	0° 55'
54	18	10	0° 52'
57	18	10	0° 49'
60	21	11	0° 45'
66	21	11	0° 43'

CITY OF MISSION VIEJO



CONCRETE COLLAR

STANDARD PLAN NO.

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Robert Anderson

9-23-03

APPROVED

RCE 30190

DATE

SHT 1 OF 2

NOTES:

1. A CONCRETE COLLAR IS REQUIRED WHENEVER D1 IS UNEQUAL TO D2 OR THE PERMITTED DEFLECTION AT A PIPE JOINT IS EXCEEDED; THAT IS WHEN ANGLE "A" IS GREATER THAN THE PERMITTED DEFLECTION ANGLE (SEE TABLE ON SHEET 1).
2. CONCRETE COLLAR SHALL NOT BE CONSTRUCTED ON MAIN LINE STORM DRAINS UNLESS SHOWN ON THE PLANS OR OTHERWISE REQUIRED BY THE CITY ENGINEER.
3. REINFORCING SHALL BE USED WHERE THE PIPE DIAMETER IS GREATER THAN 21 INCHES AND ON ALL PIPES WHERE THE PULL BETWEEN THE EXTREMITIES (SEE DETAIL ON SHEET 1) IS 2 1/2 INCHES OR LARGER.
4. CIRCULAR TIES:

PIPE DIAMETER	SPACE BETWEEN PIPE EXTREMITIES	NO. OF CIRCULAR TIES
21" OR LESS	2-1/2"	3
24" TO 30"	2-1/2" OR LESS	3
33" TO 57"	2-1/2" OR LESS	4
60" TO 66"	2-1/2" OR LESS	5

WHERE THE SPACE BETWEEN THE PIPE EXTREMITIES EXCEEDS 2 1/2 INCHES, THE NUMBER OF CIRCULAR TIES SHALL BE INCREASED TO MAINTAIN A MAXIMUM SPACING OF 6 INCHES CENTER TO CENTER. CIRCULAR TIES SHALL HAVE A DIAMETER 5 INCHES GREATER THAN THE OUTSIDE DIAMETER OF THE LARGER PIPE.

5. FOR PIPES LARGER THAN 66 INCHES IN DIAMETER, A SPECIAL COLLAR DETAIL SHALL BE DELINEATED ON THE PROJECT PLANS.
6. WHERE THE PIPE IS 21 INCHES OR LESS IN DIAMETER, AN INTERIOR FORM OF UNSEALED SONO-TUBE, OR EQUAL (SEE DETAIL B ON SHEET 1), SHALL BE USED TO PROVIDE A SMOOTH INTERIOR JOINT. THE PAPER FORM MAY BE LEFT IN PLACE. WHEN THE PIPE IS INCHES OR LARGER, A REMOVABLE INTERIOR FORM SHALL BE USED OR THE INTERIOR JOINT SHALL BE COMPLETELY FILLED WITH MORTAR AND NEATLY POINTED.
7. WHERE PIPES OF DIFFERENT DIAMETERS ARE JOINED WITH A CONCRETE COLLAR, L SHALL BE THAT OF THE LARGER PIPE AND THE EXTERNAL DIAMETER OF THE COLLAR SHALL BE EQUAL TO THE OUTSIDE DIAMETER OF LARGER PIPE PLUS 2T FOR THE LARGER PIPE. A CONCRETE COLLAR SHALL NOT BE CONSTRUCTED CONNECTING A LARGER DIAMETER PIPE DOWN STREAM UNLESS SHOWN ON THE IMPROVEMENT PLANS OR REQUIRED BY THE CITY ENGINEER.
8. THE VALUE OF ANGLE "A" SHALL BE SHOWN ON THE IMPROVEMENT PLANS.
9. WHERE THE SLOPE OF THE UPSTREAM PIPE IS GREATER THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN SOFFITS. WHERE THE SLOPE OF THE UPSTREAM PIPE IS LESS THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN INVERTS.
10. BEVELED PIPE MAY BE USED IN LIEU OF A CONCRETE COLLAR IF APPROVED BY THE CITY ENGINEER.
11. FOR PIPE SIZES NOT LISTED IN THE TABLE, USE VALUES L, T, & A FOR THE NEXT LARGER SIZE LISTED.
12. CUT NO. 1: SAW THE TUBE AT AN ANGLE OF A/2 WITH THE TRAVERSE PLANE. REVERSE ONE SECTION AND TAPE BOTH SECTIONS TOGETHER, FORMING THE DEFLECTION ANGLE "A".
13. CUT NO. 2: SAW THE TUBE LONGITUDINALLY, REMOVING A STRIP 3.14 (Do-Di) INCHES WIDE ON THE SIDE OPPOSITE THE OPEN JOINT. BEND THE ENDS OF THE CUT TOGETHER AND INSERT THE TUBE IN THE PIPE.

CITY OF MISSION VIEJO



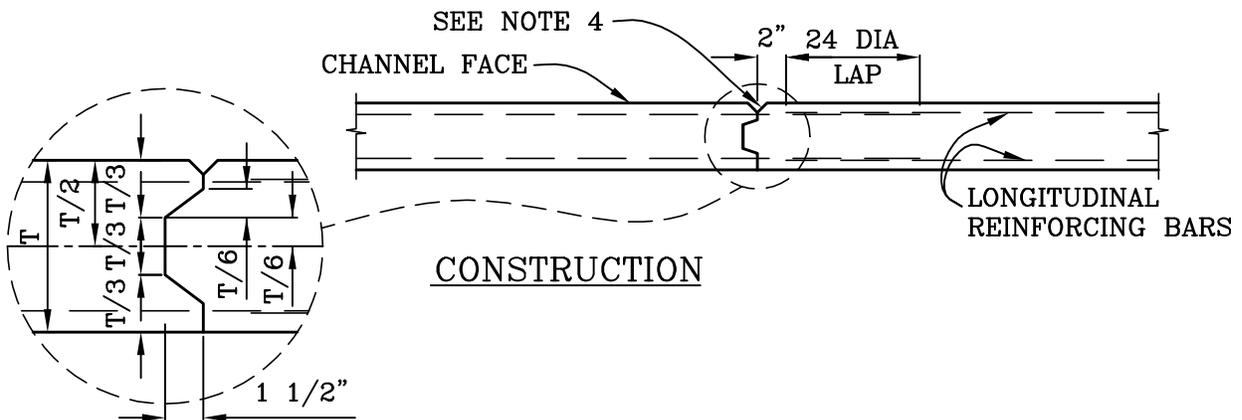
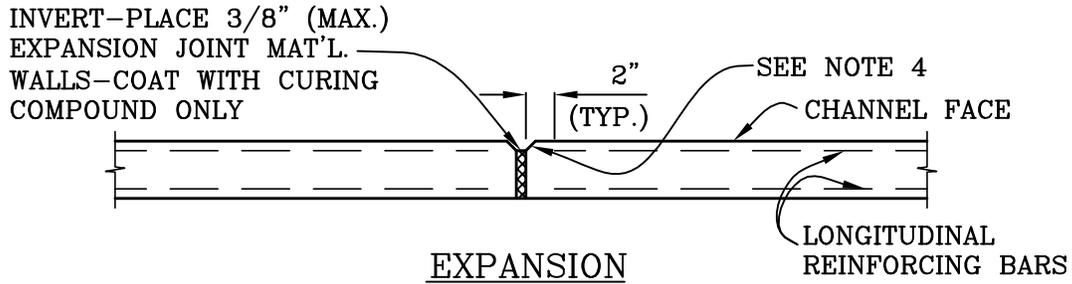
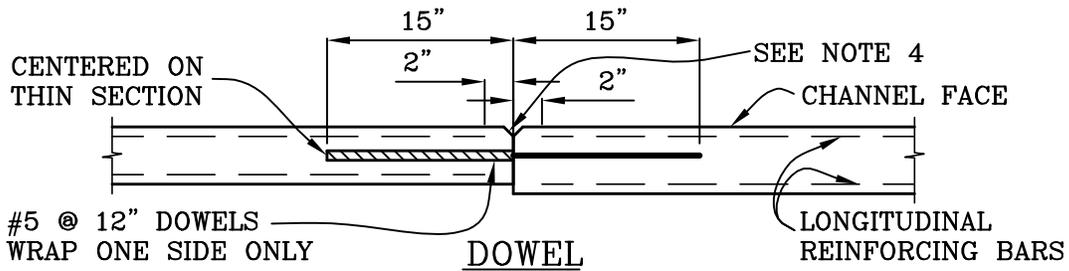
CONCRETE COLLAR

STANDARD PLAN NO.

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Robert Anderson 9-23-03
 APPROVED RCE 30190 DATE

SHT 2 OF 2



NOTES:

1. EXPANSION JOINT SHALL BE USED FOR R.C. CHANNEL AT INTERVALS NOT LESS THAN 10' OR MORE THAN 50' UNLESS OTHERWISE NOTED.
2. ALL JOINTS SHALL BE IN THE SAME PLANE FOR THE ENTIRE STRUCTURE AND ON THE RADIAL FOR CURVED SECTIONS. NO STAGGERING OF JOINTS IS PERMITTED.
3. CONSTRUCTION JOINTS SHALL BE USED FOR R.C. BOX CULVERTS AT INTERVALS NOT LESS THAN 10' OR MORE THAN 50'.
4. JOINT FINISH FOR CHANNEL FACE SHALL BE CHAMFERED 1/2" ON WALLS AND DECKS AND ROUNDED WITH EDGER TOOL ON INVERT.
5. DOWEL JOINTS SHALL BE LOCATED AS SHOWN ON PLANS.

CITY OF MISSION VIEJO

TRANSVERSE JOINT DETAILS

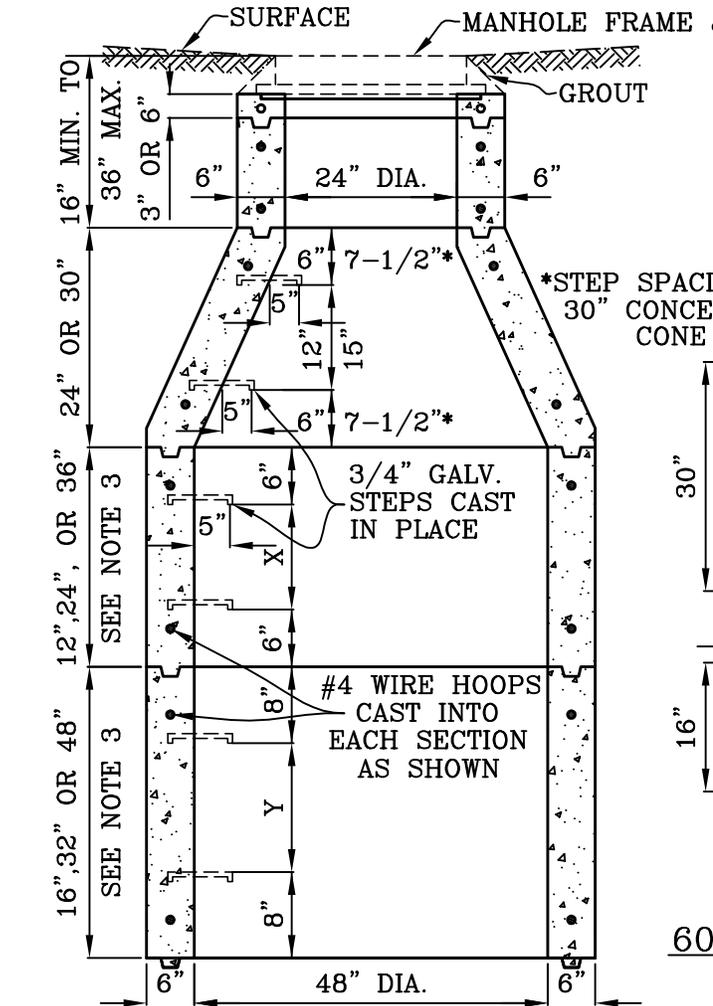


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 PLAN NO.

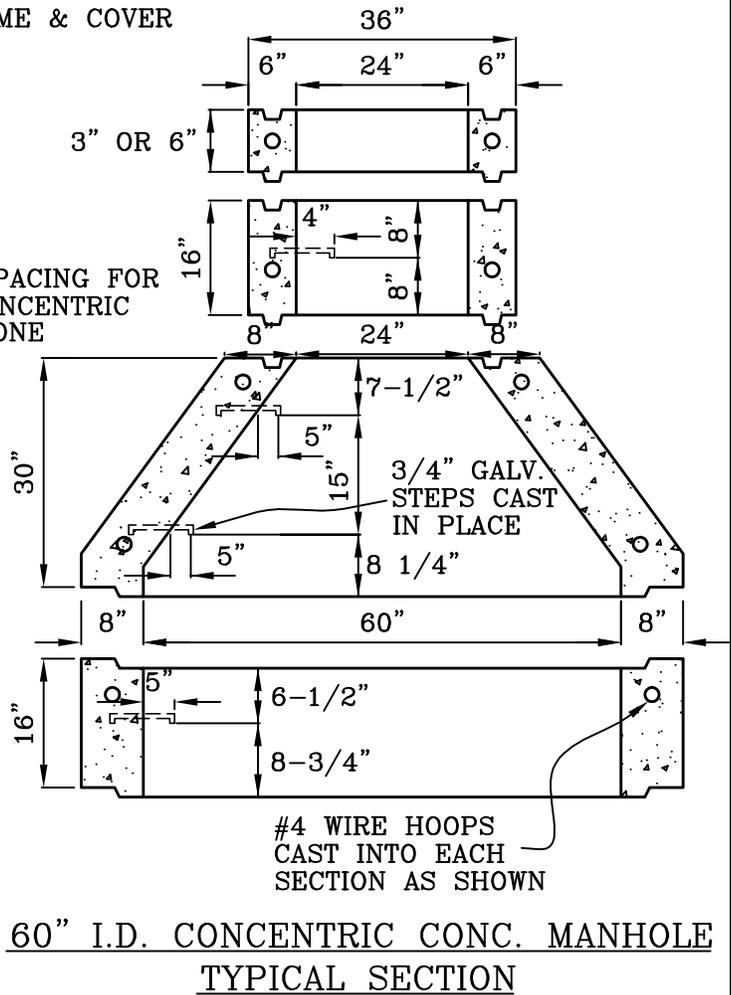
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48" I.D. CONCENTRIC CONC. MANHOLE
TYPICAL SECTION

X=12" INTERVALS IF MORE THAN ONE STEP
Y=16" INTERVALS IF MORE THAN ONE STEP



60" I.D. CONCENTRIC CONC. MANHOLE
TYPICAL SECTION

CITY OF MISSION VIEJO

NON-REINFORCED CONCRETE
CONCENTRIC CONE MANHOLE

STANDARD
PLAN NO.

416



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SHT 1 OF 2

NOTES:

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. SEE STD. PLAN 422 FOR MANHOLE STEP DETAILS. MAXIMUM SPACING = 17".
3. THE MANHOLE PIPES AND GRADE RINGS SHALL BE ARRANGED IN ORDER OF LONGER TO SHORTER LENGTHS FROM BOTTOM TO TOP.
4. MANHOLE DETAILS SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.
5. PAVEMENT SURFACE SHALL BE FINISHED A MINIMUM OF 1/8" ABOVE MANHOLE FRAME.
6. TOP OF CONE SHALL BE PLACED A MINIMUM OF 6" BELOW BOTTOM OF ROADWAY STRUCTURAL SECTION OR A MINIMUM OF 16" BELOW FINISH GRADE, WHICHEVER IS GREATEST.
7. SEE STD. PLAN 424 FOR MANHOLE FRAME AND COVER.

CITY OF MISSION VIEJO



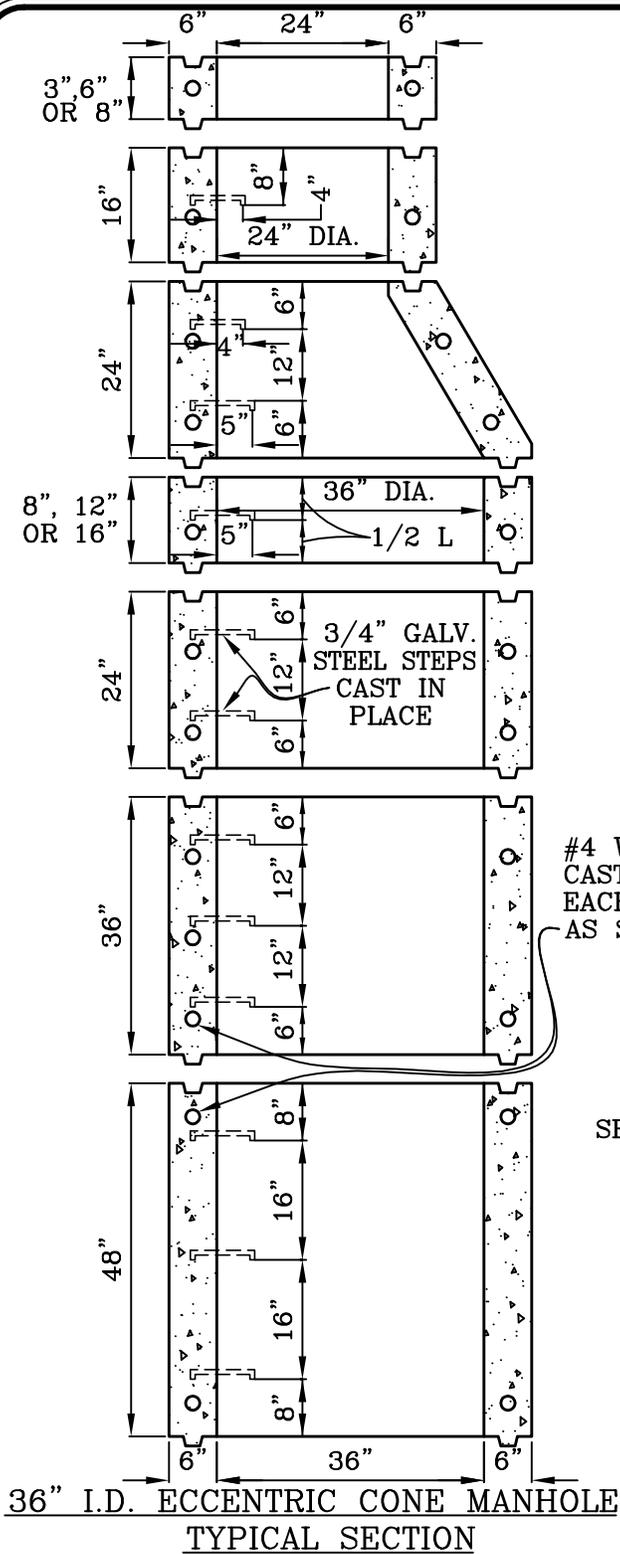
NON-REINFORCED CONCRETE
CONCENTRIC CONE MANHOLE

STANDARD
PLAN NO.

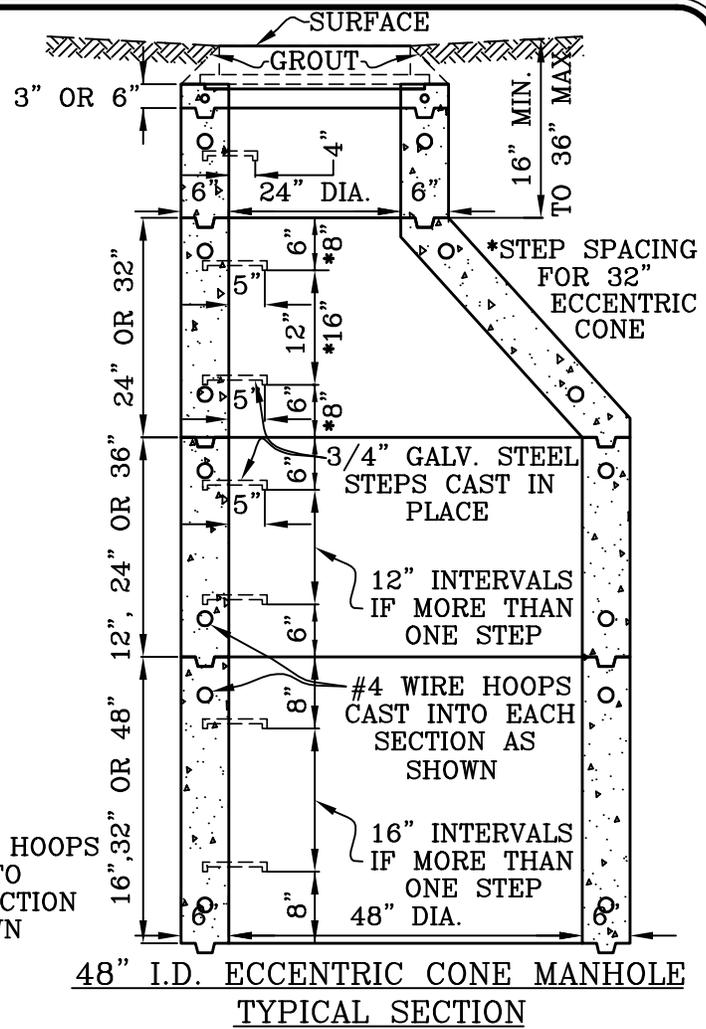
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SHT 2 OF 2



36" I.D. ECCENTRIC CONE MANHOLE
TYPICAL SECTION



48" I.D. ECCENTRIC CONE MANHOLE
TYPICAL SECTION

SEE SHEET 2 OF 2 OF STD. PLAN 416 FOR NOTES.

CITY OF MISSION VIEJO

NON-REINFORCED CONCRETE
ECCENTRIC CONE MANHOLE

STANDARD
PLAN NO.

417



Robert Anderson

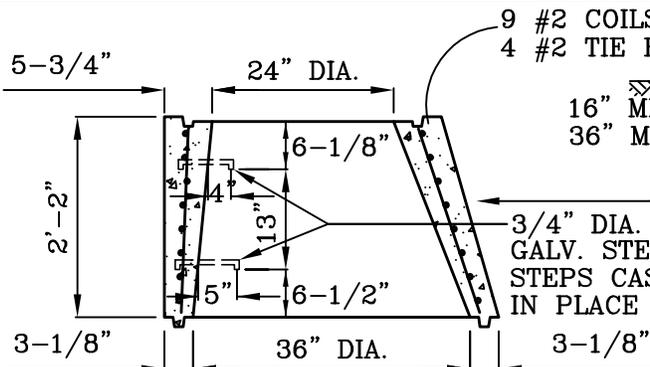
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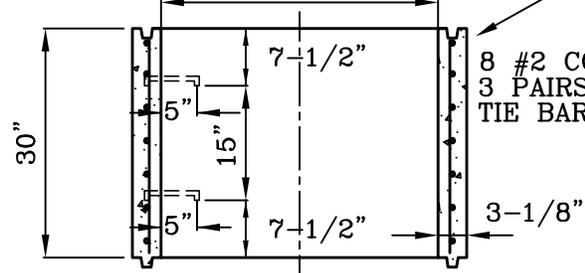
RCE 30190

DATE

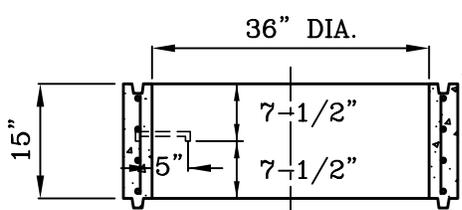
SHT 1 OF 1



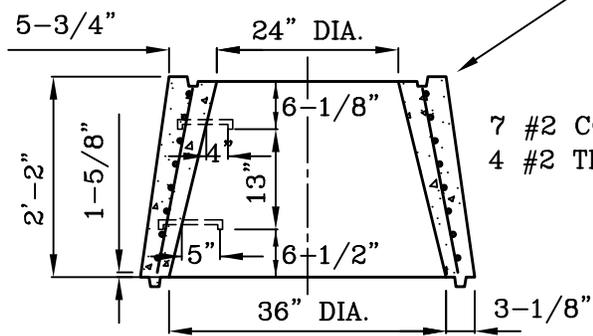
36" x 24" ECCENTRIC CONE



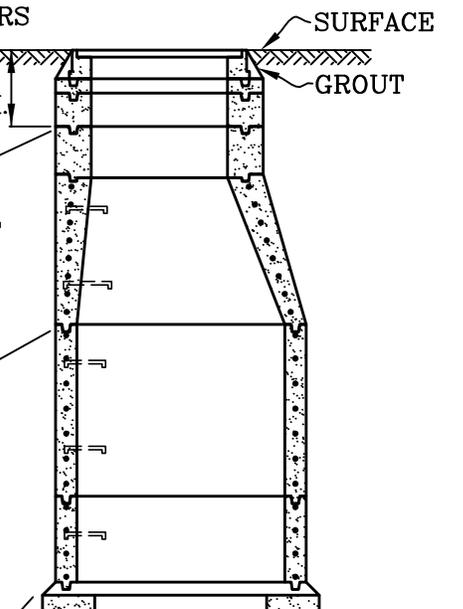
36" x 30" MANHOLE PIPE



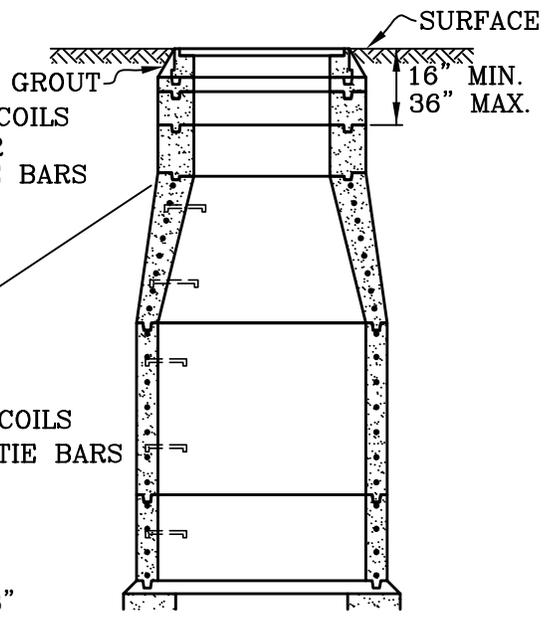
36" x 15" MANHOLE PIPE



36" x 24" CONCENTRIC CONE



36" I.D. ECCENTRIC CONE MANHOLE TYPICAL SECTION



36" I.D. CONCENTRIC CONE MANHOLE TYPICAL SECTION

SEE SHEET 2 OF 2 OF STD. PLAN 426 FOR NOTES.

CITY OF MISSION VIEJO

36" REINFORCED CONCRETE MANHOLE



Robert Anderson

9-23-03

APPROVED RCE 30190 DATE

STANDARD PLAN NO.

418

SHT 1 OF 2

NOTES:

1. SEE STD. PLAN 424 FOR MANHOLE FRAME AND COVER DETAILS.
2. SEE STD. PLAN 422 FOR MANHOLE STEP DETAILS. MAX. SPACING = 17".
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
4. THE MANHOLE PIPES AND GRADE RINGS SHALL BE ARRANGED IN ORDER OF LONGER TO SHORTER LENGTHS FROM BOTTOM TO TOP.
5. MANHOLE DETAILS SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.
6. PAVEMENT SHALL BE FINISHED A MINIMUM OF 1/8" ABOVE THE MANHOLE FRAME.
7. TOP OF CONE SHALL BE PLACED A MINIMUM OF 6" BELOW BOTTOM OF ROADWAY STRUCTURAL SECTION OR A MINIMUM OF 16" BELOW FINISH GRADE, WHICHEVER IS GREATER.

CITY OF MISSION VIEJO



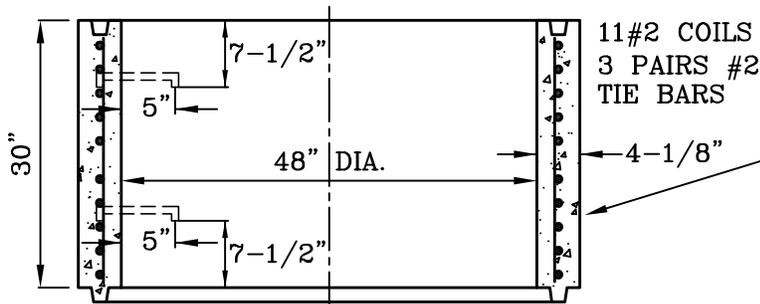
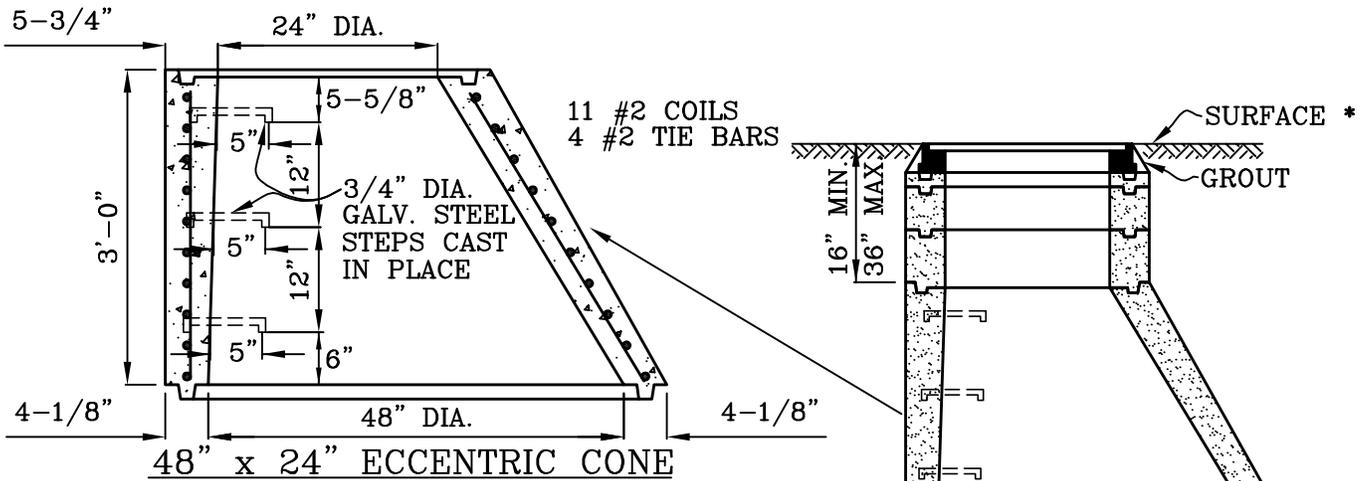
36" REINFORCED CONCRETE
MANHOLE

STANDARD
PLAN NO.

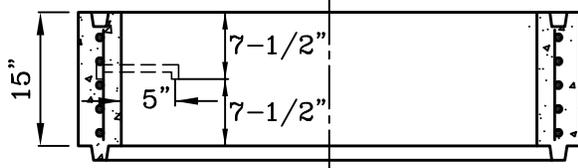
418

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APPROVED RCE 30190 DATE

SHT 2 OF 2



48" x 30" MANHOLE PIPE



48" x 30" MANHOLE PIPE

TYPICAL SECTION 48" I.D. ECCENTRIC CONE MANHOLE

* PAVEMENT SHALL BE FINISHED MINIMUM 1/8" ABOVE MANHOLE FRAME.

SEE SHEET 2 OF 2 OF STD. PLAN 426 FOR NOTES.

CITY OF MISSION VIEJO

48" REINFORCED CONCRETE
MANHOLE

STANDARD
PLAN NO.

419



Robert Anderson

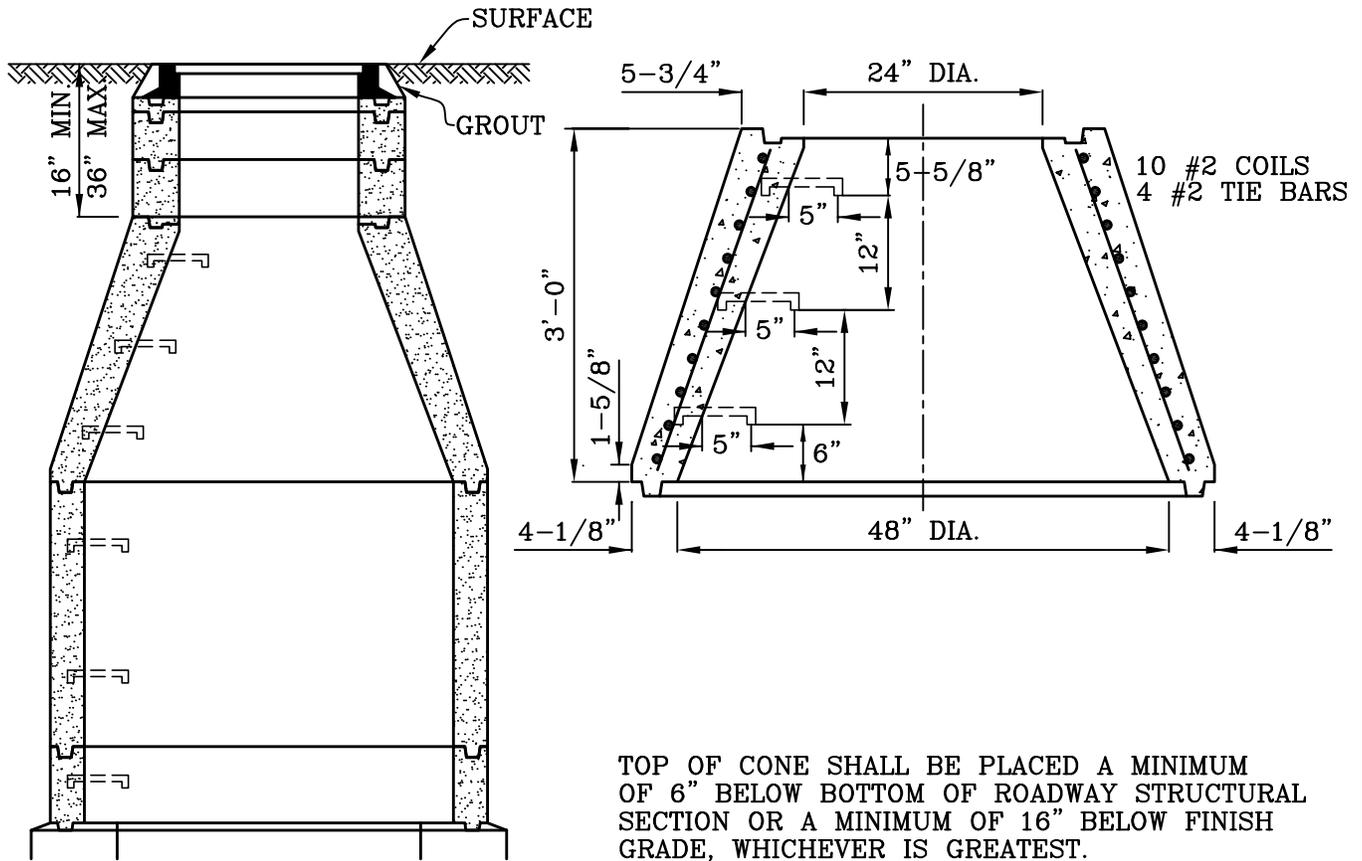
9-23-03

APPROVED

RCE 30190

DATE

SHT 1 OF 2



SEE SHEET 2 OF 2 OF STD. PLAN 426 FOR NOTES.

CITY OF MISSION VIEJO

48" REINFORCED CONCRETE
MANHOLE

STANDARD
PLAN NO.

419



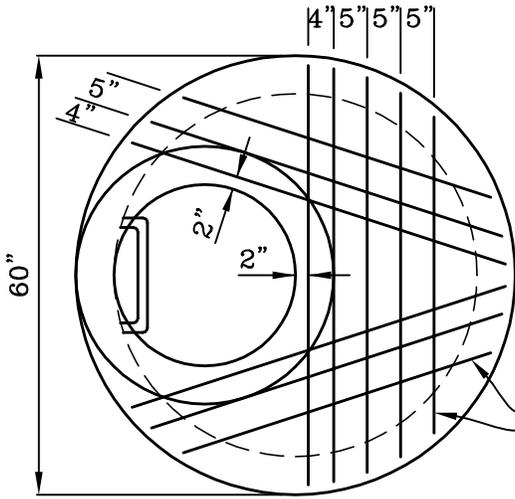
Robert Anderson 9-23-03

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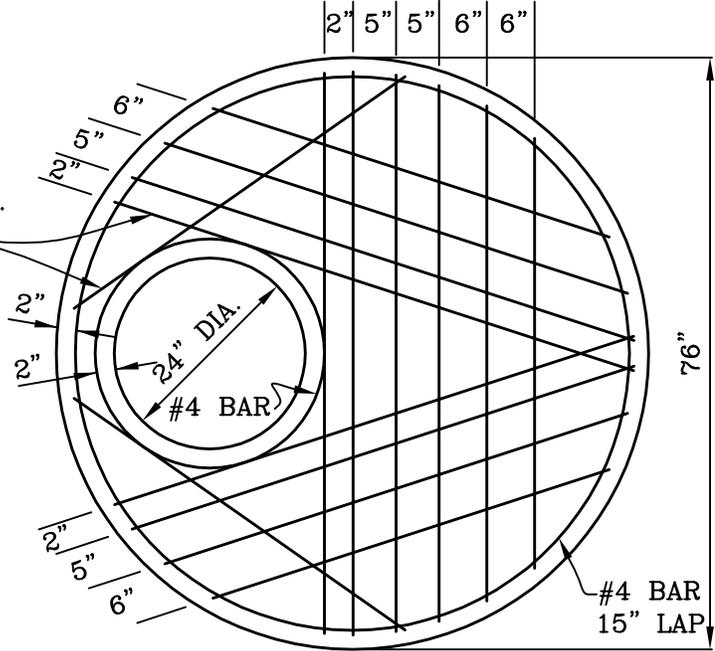
DATE

SHT 2 OF 2



#5 BARS HOOKED AT EACH END.
(TYPICAL) TOTAL: 11

#4 BARS HOOKED AT EACH END.
(TYPICAL) TOTAL: 16



PLAN OF 60" COVER WITH
24" ACCESS

NOTES:

1. SEE STD. PLAN 424 FOR MANHOLE FRAME AND COVER.
2. SEE STD. PLAN 422 FOR MANHOLE STEPS. MAX. SPACING = 17".
3. SEE STD. PLAN 416 FOR RING AND MANHOLE PIPE.
4. CONSTRUCTION SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.

CITY OF MISSION VIEJO



FLAT TOP MANHOLE COVERS

Robert Anderson

9-23-03

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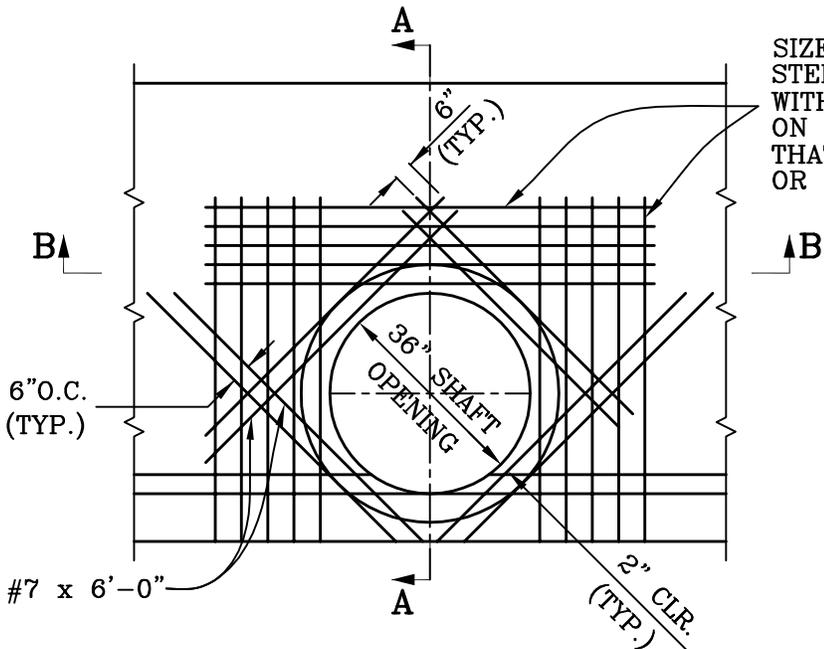
DATE

STANDARD
PLAN NO.

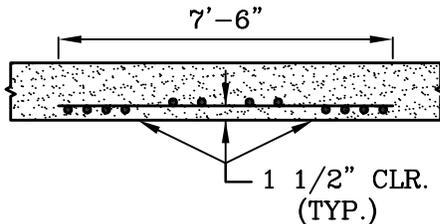
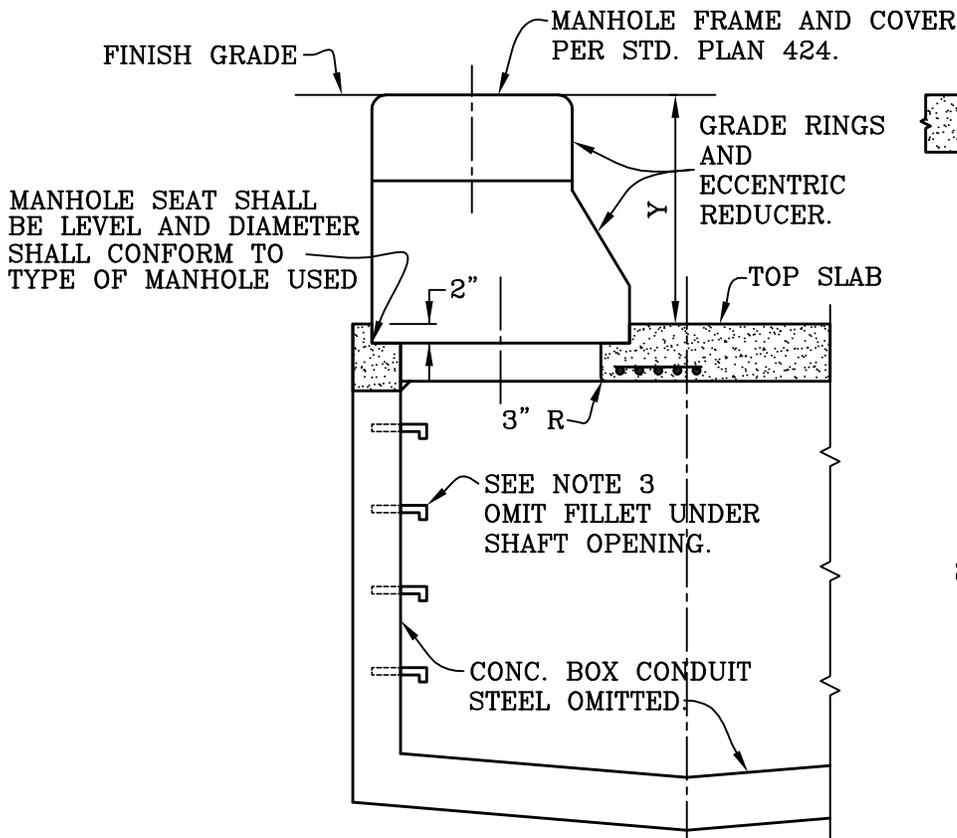
420

SHT 2 OF 2

SIZE AND SPACING OF REINFORCING STEEL SHALL BE AS SHOWN ON PLANS WITH THE ADDITION OF FOUR (4) BARS ON EACH SIDE OF MANHOLE SHAFT THAT SHALL BE #7 MINIMUM 6" O.C. OR EQUIVALENT.



PLAN



SECTION B-B
(TOP SLAB ONLY)

SEE SHEET 2 FOR NOTES

SECTION A-A

CITY OF MISSION VIEJO



R.C. BOX MANHOLE

STANDARD
PLAN NO.

421

Robert Anderson

9-23-03

APPROVED

RCE 30190

DATE

SHT 1 OF 2

NOTES:

1. MANHOLE SHAFT CENTERLINES ARE SHOWN ON PLANS.
2. ALL REINFORCING STEEL SHALL BE PLACED IN BOTTOM FACE ONLY.
3. SEE STD. PLANS 416, 417, AND 422 FOR STEP PLACEMENT AND EMBEDMENT DETAILS.
4. STEEL REINFORCEMENT SHALL BE ONE AND ONE-HALF (1-1/2") INCH CLEAR. UNLESS OTHERWISE NOTED.
5. WHEN DEPTH Y FROM STREET GRADE TO TOP OF MANHOLE SEAT IS LESS THAN 2' 10-1/2" IN PAVED STREETS OR 3'-6" IN UNPAVED STREETS, CONSTRUCT 2' DIAMETER SHAFT USING CONCRETE RINGS AS PER STD. PLAN 417, OTHERWISE CONSTRUCT 3' DIAMETER SHAFT AS SHOWN ON THIS PLAN.

CITY OF MISSION VIEJO



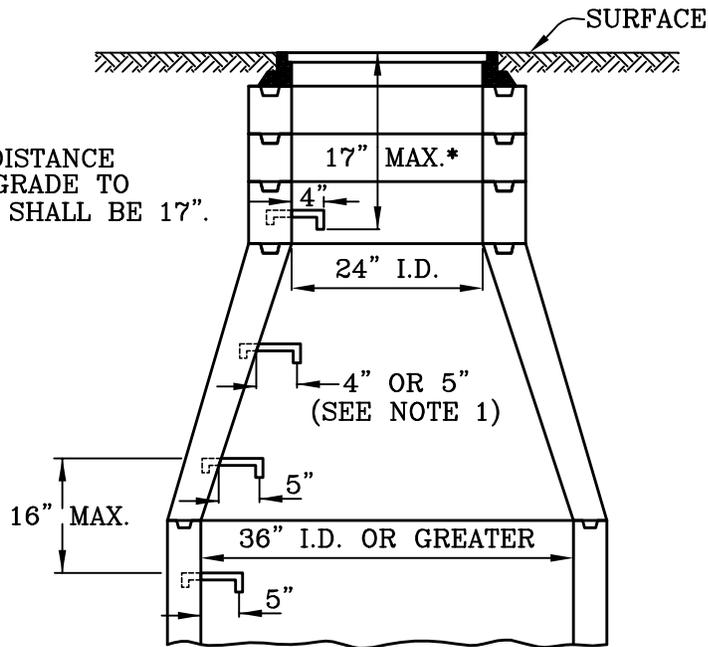
R.C. BOX MANHOLE

STANDARD
PLAN NO.

421

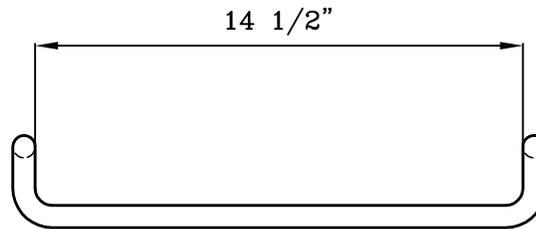
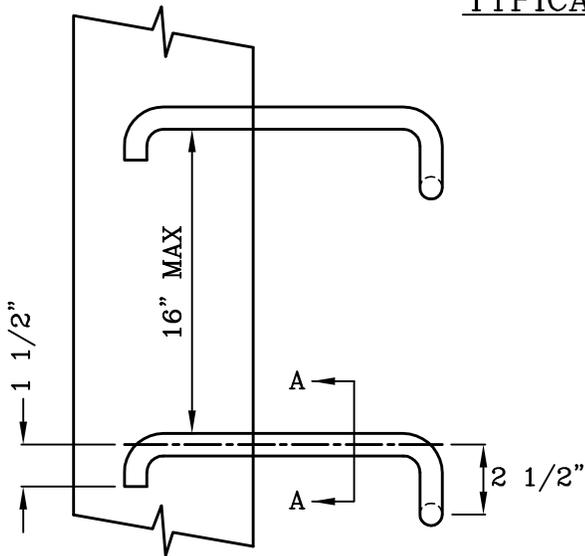
Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 2 OF 2



*THE MAXIMUM DISTANCE FROM SURFACE GRADE TO THE FIRST STEP SHALL BE 17".

TYPICAL MANHOLE



SECTION A-A

NOTES:

1. SEE STD. PLANS 416 AND 417 FOR MANHOLE STEP SPACING AND PLACEMENT.
2. MATERIAL SHALL BE 3/4" OF STEEL CONFORMING TO A.S.T.M. A575, A576, OR A615, GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH A.S.T.M. A123.
3. STEPS SHALL HAVE A MINIMUM 3 INCH OF EMBEDMENT. PROJECTION FROM POINT OF POINT OF EMBEDMENT AS SHOWN ON STD PLAN 416, 417, 418 AND 419.

CITY OF MISSION VIEJO



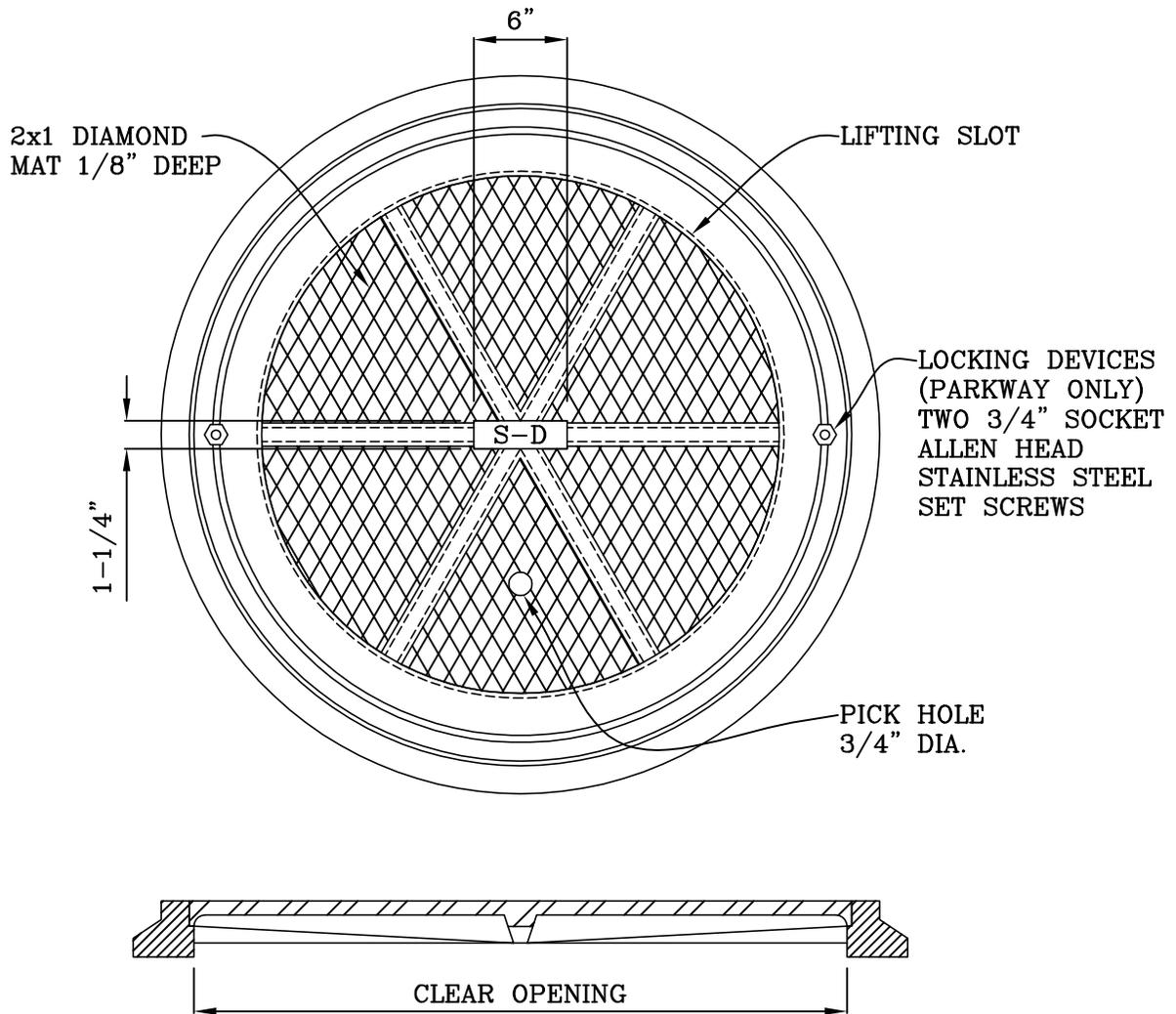
MANHOLE STEPS

STANDARD
PLAN NO.

422

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 1 OF 1



NOTES:

1. FOR 22" PARKWAY MANHOLE OPENING USE ALHAMBRA FOUNDRY A-1531 (GALVANIZED) OR APPROVED EQUAL WITH LOCKING DEVICE. APPROXIMATE SHIPPING WEIGHT = 130 LBS.
2. FOR 36" PARKWAY MANHOLE OPENING USE ALHAMBRA FOUNDRY A-1261-4 (GALVANIZED) OR APPROVED EQUAL WITH LOCKING DEVICE. APPROXIMATE SHIPPING WEIGHT = 575 LBS.
3. FOR 24" TRAFFIC MANHOLE OPENING USE ALHAMBRA FOUNDRY 1-1254 OR APPROVED EQUAL. APPROXIMATE SHIPPING WEIGHT = 315 LBS.
4. FOR TRAFFIC MANHOLE OPENING USE ALHAMBRA FOUNDRY A-1251-4 OR APPROVED EQUAL. APPROXIMATE SHIPPING WEIGHT = 575 LBS.

CITY OF MISSION VIEJO

MANHOLE FRAME AND COVER

STANDARD
PLAN NO.

423



Robert Anderson

9-23-03

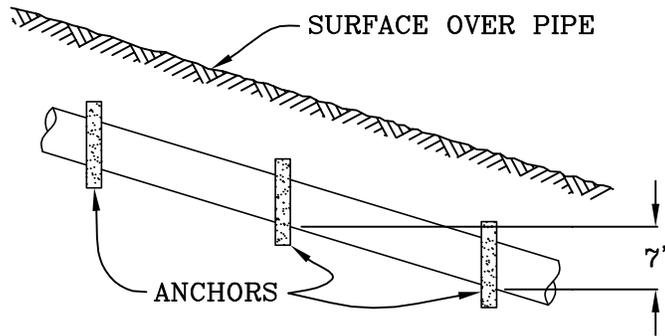
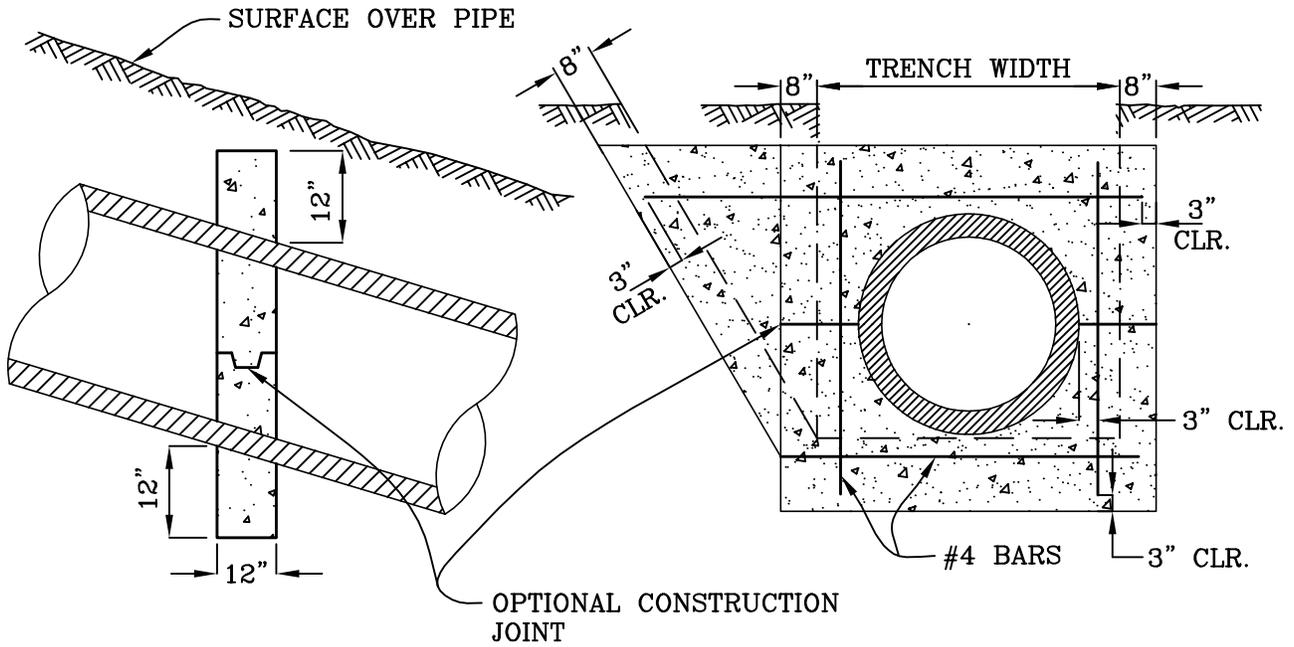
APPROVED

RCE 30190

DATE

SHT 1 OF 1

CONSTRUCTION OF ANCHOR FOR
TRENCH E/SLOPING SIDE WALLS



NOTES:

1. PIPE ANCHORS SHALL BE CONSTRUCTED AT 7' VERTICAL INTERVALS ON ALL SLOPES OF 5:1 OR STEEPER.
2. ALL REINFORCING STEEL SHALL BE #4 BARS.
3. CONCRETE SHALL BE CLASS 500-C-2500 CONCRETE.

CITY OF MISSION VIEJO

CONCRETE PIPE SLOPE ANCHOR

STANDARD
PLAN NO.

424



Robert Anderson

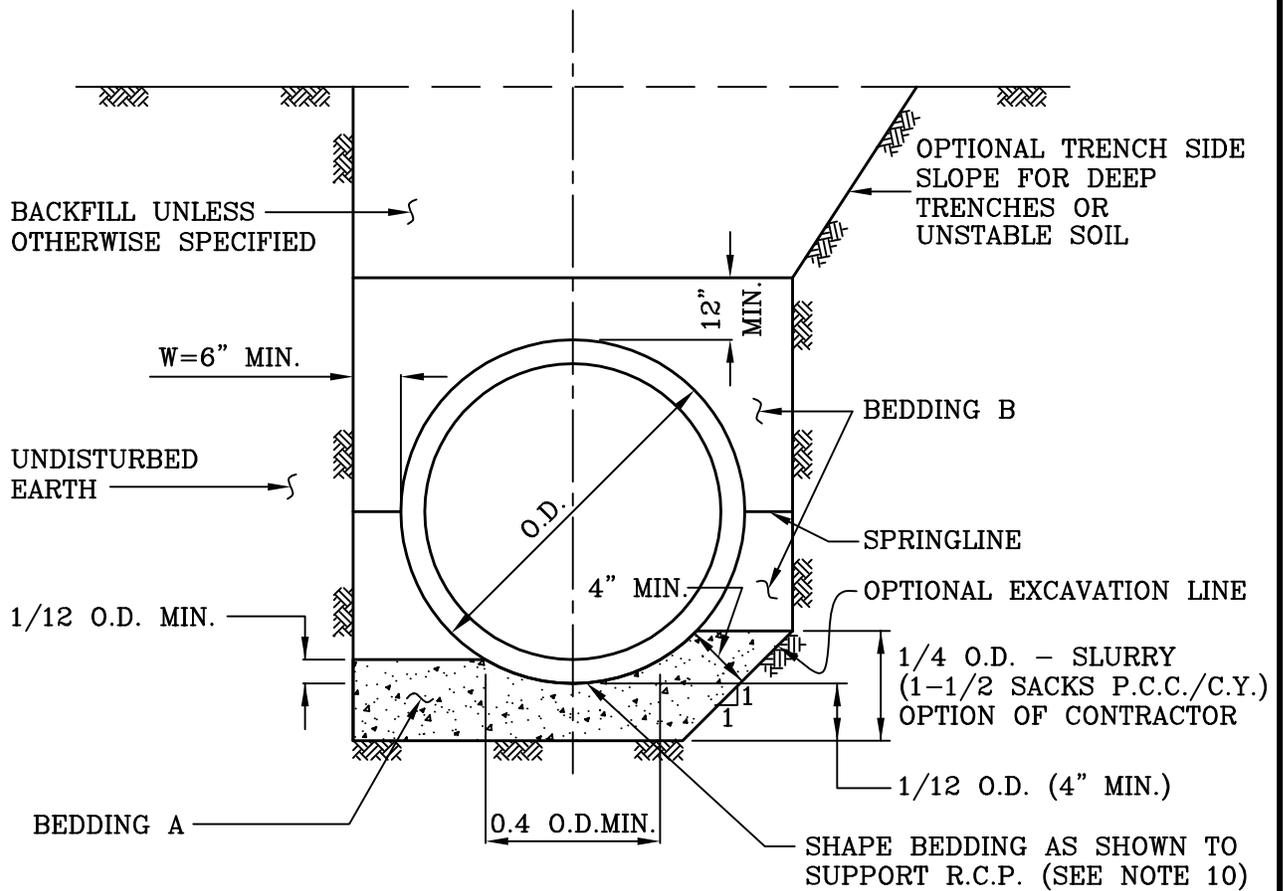
9-23-03

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RCE 30190

DATE

SHT 1 OF 1



SEE SHEET 2 FOR NOTES

CITY OF MISSION VIEJO



BEDDING DETAIL

STANDARD PLAN NO.

430

Robert Anderson

9-23-03

APPROVED

RCE 30190

DATE

SHT 1 OF 2

NOTES:

1. BEDDING "A" SHALL BE COMPOSED OF SAND WITH A MINIMUM SAND EQUIVALENT OF 30, NO.3 OR NO.4 CRUSHED ROCK OR GRAVEL PER STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OR OTHER GRANULAR MATERIAL AS MAY BE SPECIFIED OR APPROVED BY THE CITY ENGINEER.
2. BEDDING "B" SHALL BE COMPOSED OF SAND WITH A MINIMUM SAND EQUIVALENT OF 30, AS MAY BE APPROVED BY THE CITY ENGINEER AND SHALL CONFORM TO SECTION 306-1.2.1 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
3. BEDDING "B" SHALL BE COMPACTED TO A RELATIVE COMPACTION OF NOT LESS THAN 90% UNLESS OTHERWISE SPECIFIED.
4. BEDDING "B" SHALL BE PLACED IN TWO OR MORE LIFTS FOR O.D. GREATER THAN 60 INCHES.
5. BACKFILL SHALL BE PER SECTION 306-1.3 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OR 2- SACK CEMENT SLURRY.
6. "W" SHALL INCLUDE THE THICKNESS OF ANY SHORING.
7. SHORING SHALL BE A MINIMUM OF 6 INCHES FROM THE PIPE AT SPRINGLINE.
8. AN IMPROVED BEDDING METHOD SHALL BE SUBMITTED TO THE CITY ENGINEER FOR ANY "W" OTHER THAN THAT PERMITTED IN NOTE 6.
9. THE TRENCH BOTTOM SHALL BE SHAPED AS SHOWN, OR THE CONTRACTOR, AT HIS OPTION MAY CHOOSE NOT TO SCREED BEDDING "A" IN WHICH CASE, THE PIPE SHALL BE BACKFILLED TO A DEPTH OF 1/4 O.D. WITH TRENCH BACKFILL SLURRY AT HIS EXPENSE.

CITY OF MISSION VIEJO



BEDDING DETAIL

STANDARD
PLAN NO.

430

Robert Anderson

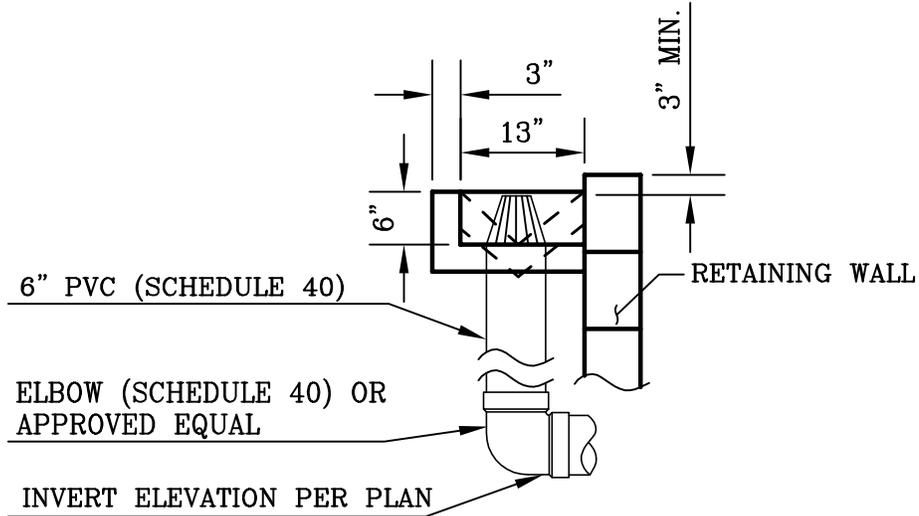
9-23-03

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RCE 30190

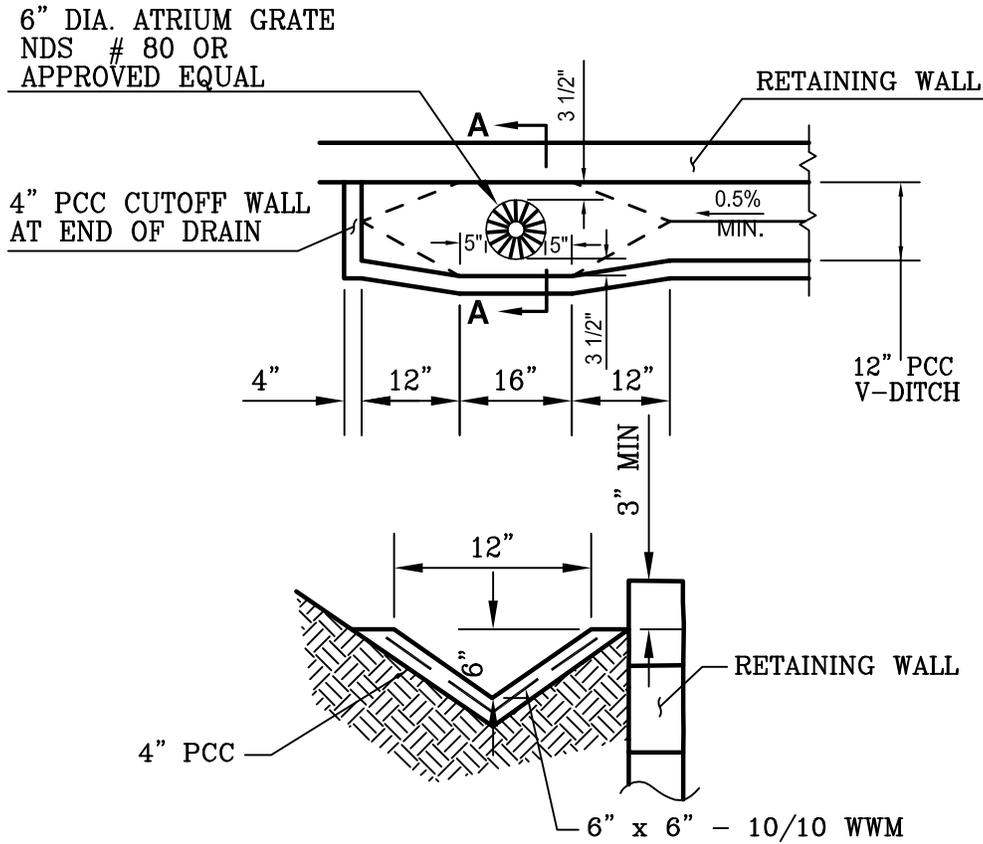
DATE

SHT 2 OF 2



SECTION A-A

N.T.S.



CITY OF MISSION VIEJO

RETAINING WALL V-DITCH



Rich Schlemmer

08/01/05

APPROVED BY: CITY ENGINEER RCE 51160

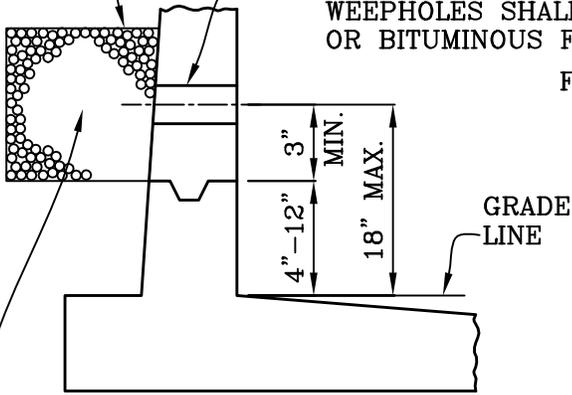
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431

SHT 1 OF 1

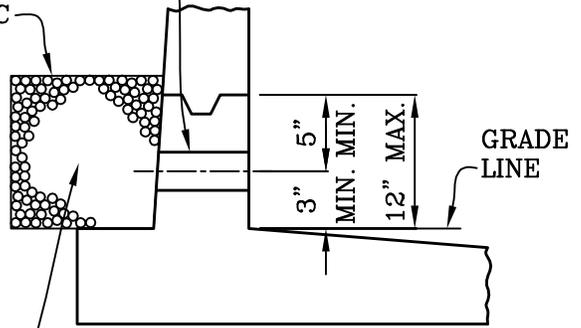
3" DIA. WEEPHOLE AT 10' O.C.
 PLACE 12"x12" (NO.4 SCREEN, 23 GA.)
 GALV. WIRE MESH CENTERED ON
 EACH WEEPHOLE. PIPES FOR
 WEEPHOLES SHALL BE V.C.P., P.V.C.,
 OR BITUMINOUS FIBER PIPE.

FILTER
 FABRIC



ALTERNATE A

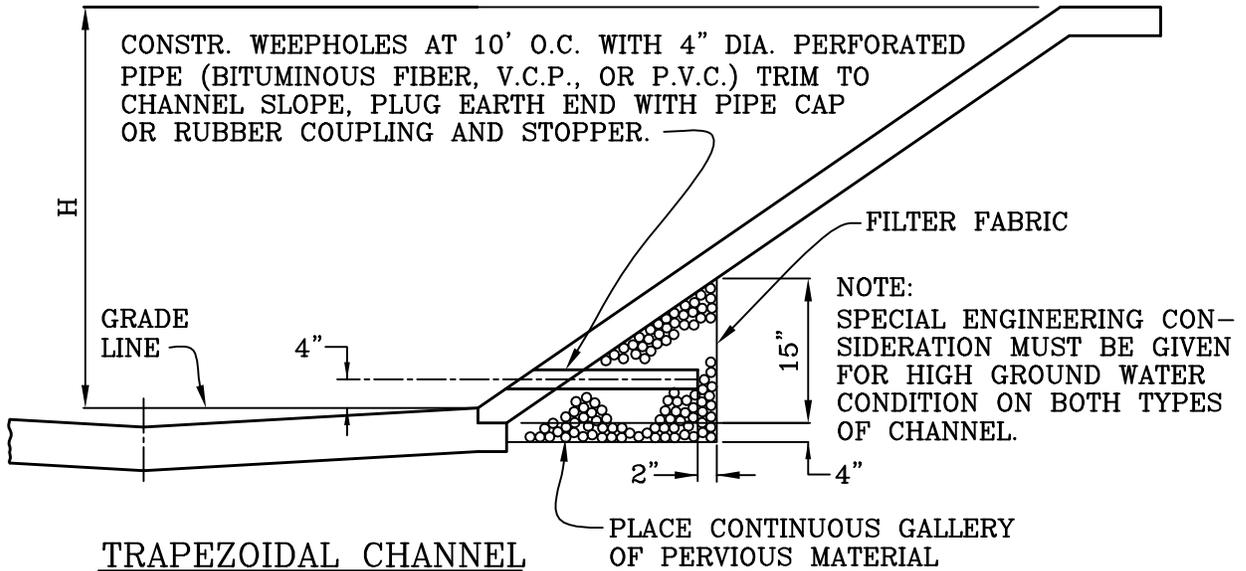
FILTER FABRIC



ALTERNATE B

12"x12"x12" PERVIOUS MATERIAL, WRAPPED
 WITH FILTER FABRIC, CENTERED ON WEEPHOLE

VERTICAL WALL CHANNEL



TRAPEZOIDAL CHANNEL

PLACE CONTINUOUS GALLERY
 OF PERVIOUS MATERIAL

CITY OF MISSION VIEJO

CHANNEL WEEPHOLES

STANDARD
 PLAN NO.

432



Robert Anderson

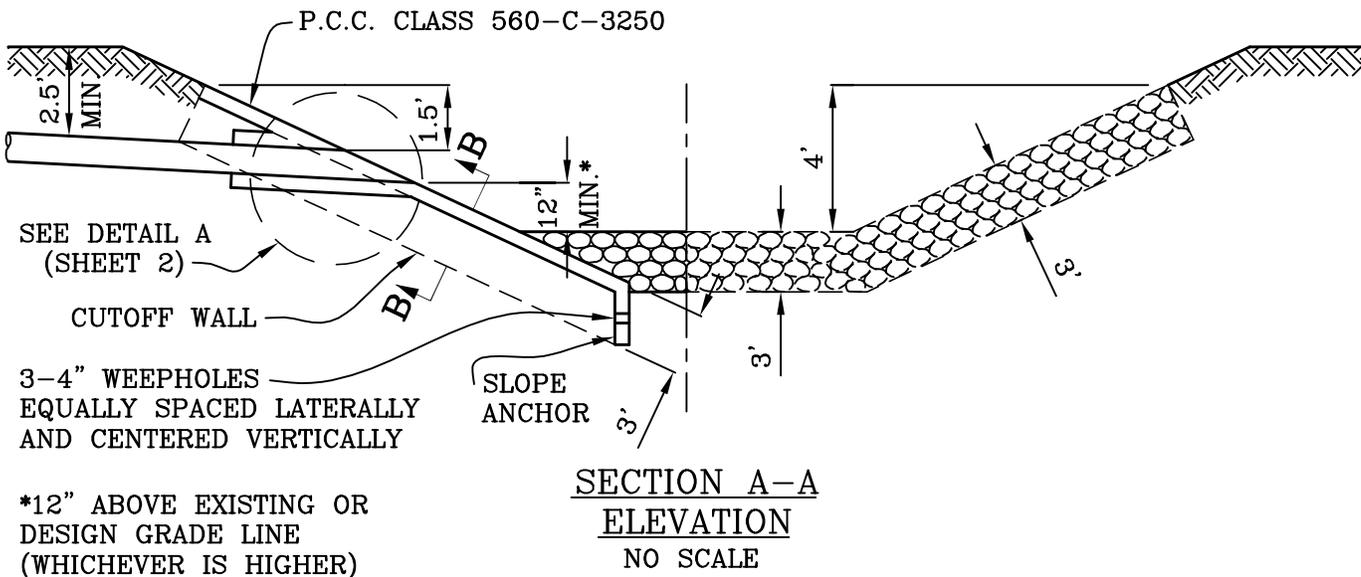
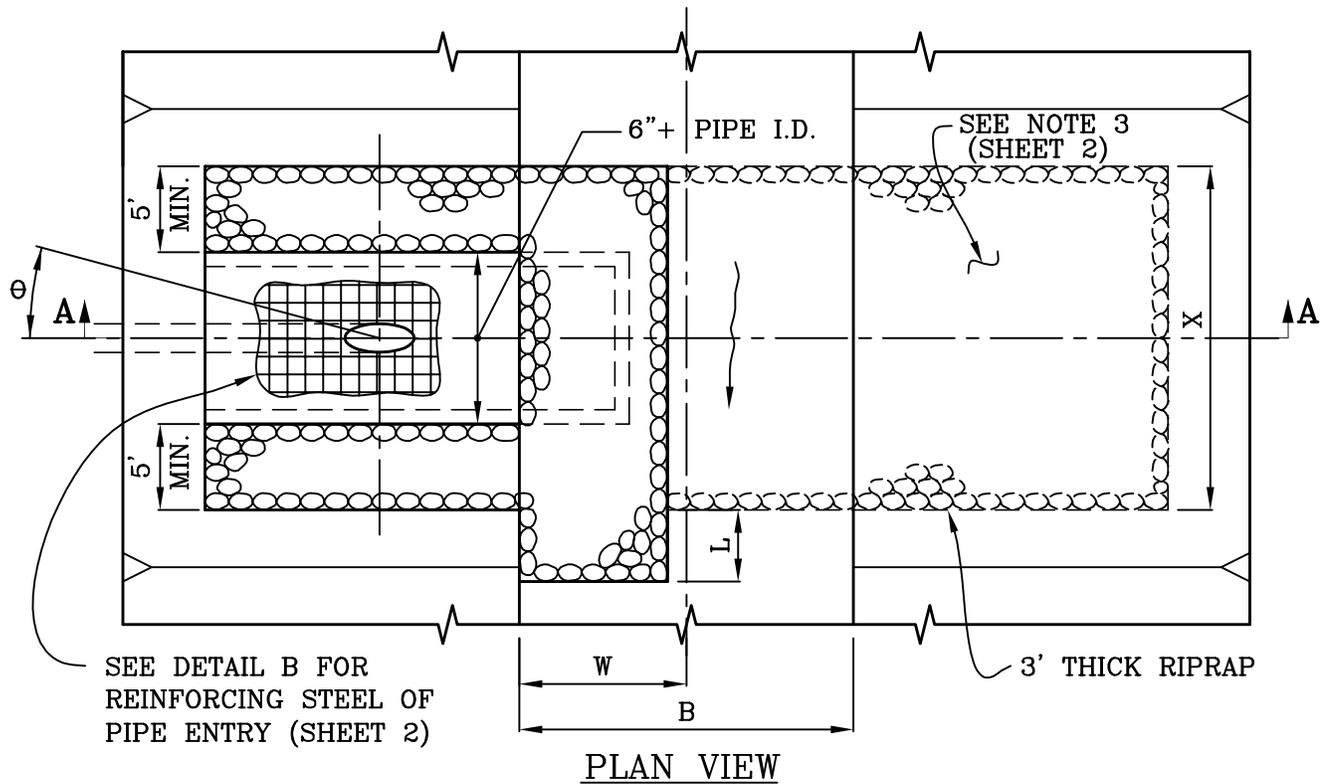
9-23-03

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RCE 30190

DATE

SHT 1 OF 1



CITY OF MISSION VIEJO

PIPE ENTRANCE TO
EARTH CHANNEL

STANDARD
PLAN NO.

433



APPROVED

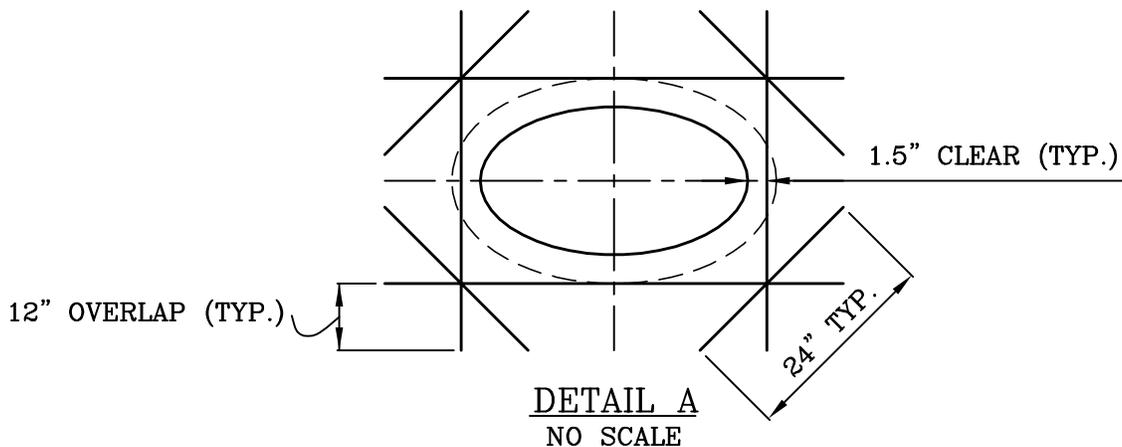
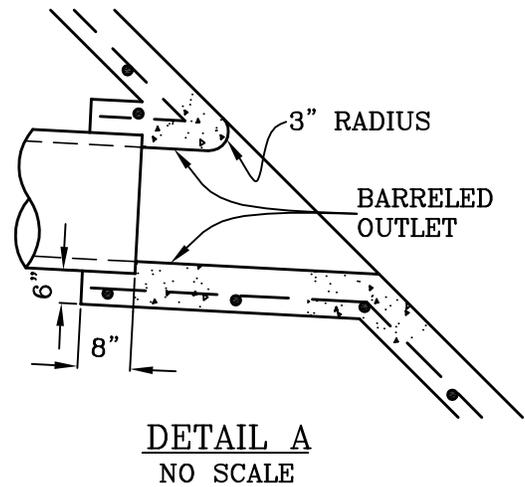
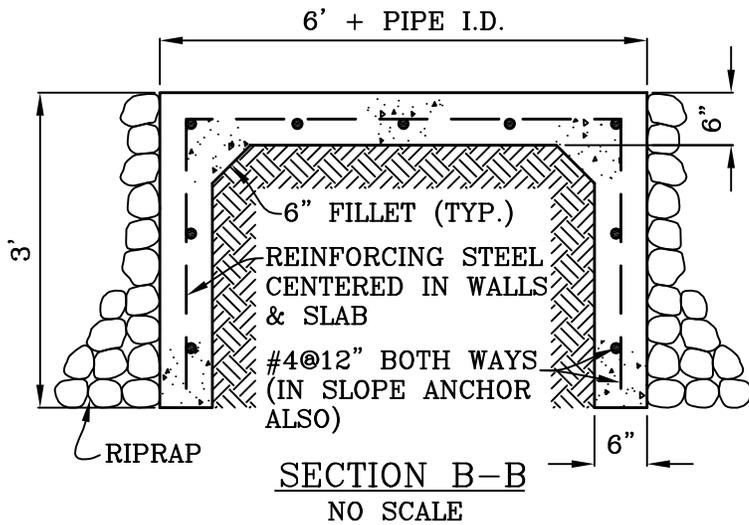
RCE 30190

DATE

SHT 1 OF 2

Robert Anderson

9-23-03



NOTES:

1. IF LATERAL FLOW EXCEEDS 10% OF THE UPSTREAM FLOW, ANGLE θ SHALL BE DETERMINED BY THE HYDRAULICS OF THE CONFLUENCE.
2. MAXIMUM SIDE SLOPE GRADIENT EQUALS 1.5 TO 1.0.
3. TERMINATE TRANSVERSE DIMENSION OF RIPRAP 10 FEET FROM TOE OF SLOPE. IF 10 FEET EXCEEDS 50% OF CHANNEL BASE WIDTH, OR CHANNEL VELOCITY EXCEEDS 10 FPS, RIPRAP "X" FEET WIDE SHALL EXTEND ACROSS INVERT AND 4 FEET UP OPPOSITE SLOPE, PER SECTION A-A.
4. INCREASE DOWNSTREAM LIMIT OF INVERT RIPRAP BLANKET BY "L" FEET IF LATERAL PIPE'S HORIZONTAL ENTRY ANGLE IS DEFLECTED FROM NORMAL. $L=2 \sin \theta$ (PIPE DIAMETER). IF "W" EXCEEDS 50% OF CHANNEL BASE WIDTH, OR CHANNEL VELOCITY EXCEEDS 10 FPS RIPRAP SHALL EXTEND ACROSS ENTIRE INVERT. (MIN. W=10 FT.)
5. PROVIDE 1.5" STEEL COVER.
6. LATERALS OF 24" OR LESS MAY BE BEVELED PIPE, 27" OR LARGER SHALL BE BARRELED.

CITY OF MISSION VIEJO

PIPE ENTRANCE TO
EARTH CHANNEL

STANDARD
PLAN NO.

433



APPROVED

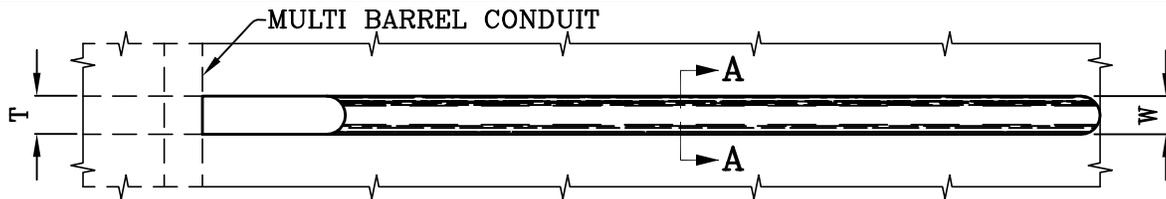
RCE 30190

DATE

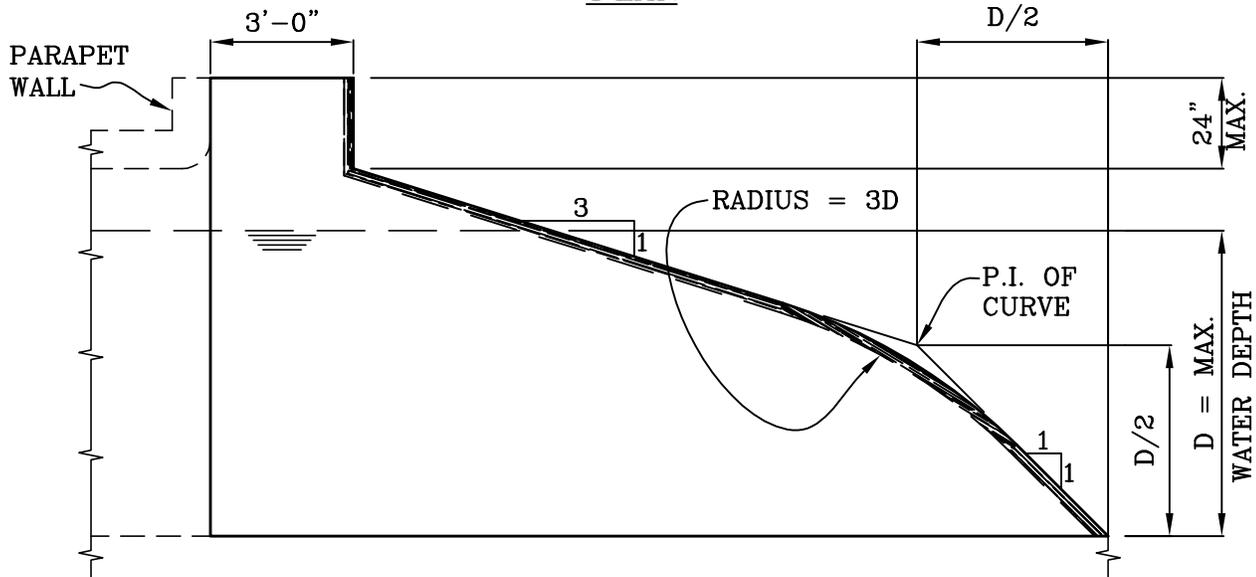
Robert Anderson

9-23-03

SHT 2 OF 2



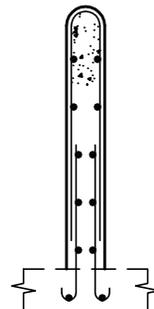
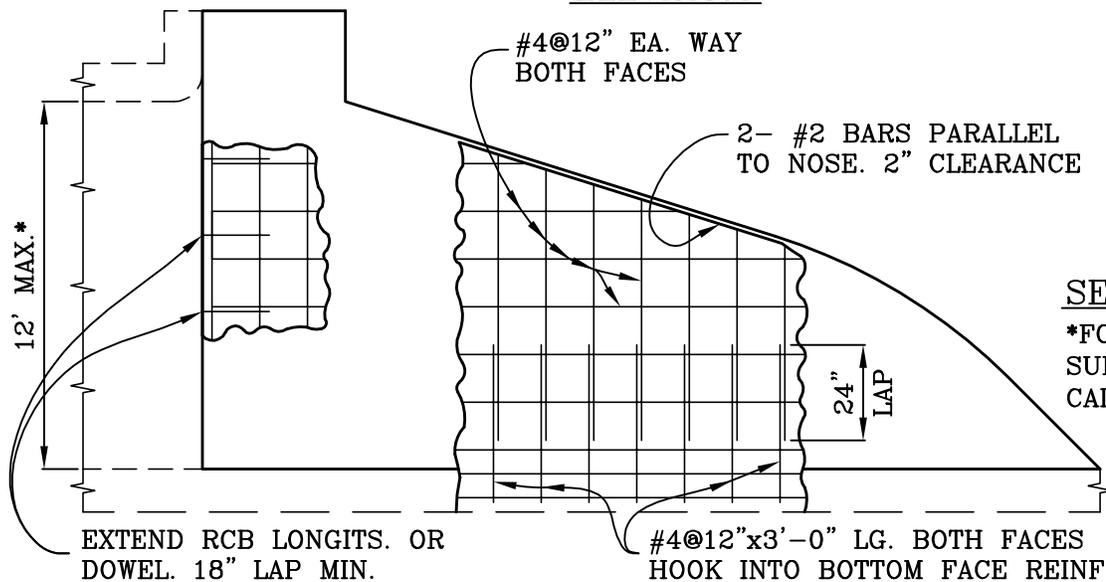
PLAN



T = WALL THICKNESS
W = DEBRIS WALL THICKNESS

W = T
W = 12" IF T > 12"

ELEVATION



SECTION A-A

*FOR HEIGHTS > 12'
SUBMIT REINFORCING
CALCULATIONS.

CITY OF MISSION VIEJO



CULVERT DEBRIS WALL

STANDARD
PLAN NO.

434

Robert Anderson

9-23-03

APPROVED

RCE 30190

DATE

SHT 1 OF 1

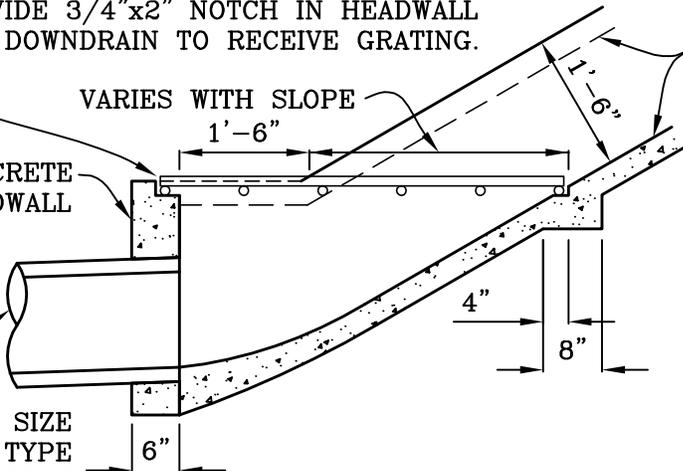
PROVIDE 3/4"x2" NOTCH IN HEADWALL AND DOWNDRAIN TO RECEIVE GRATING.

DOWNDRAIN (SEE STD. 439)

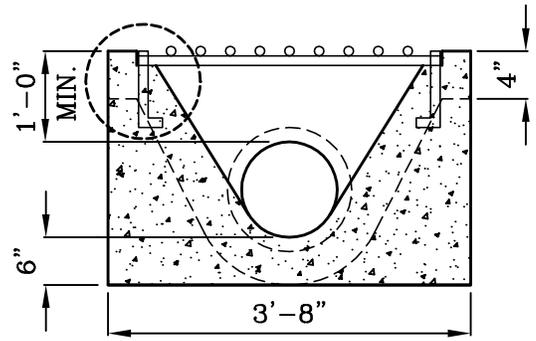
VARIES WITH SLOPE

CONCRETE HEADWALL

PIPE SIZE AND TYPE PER PLAN



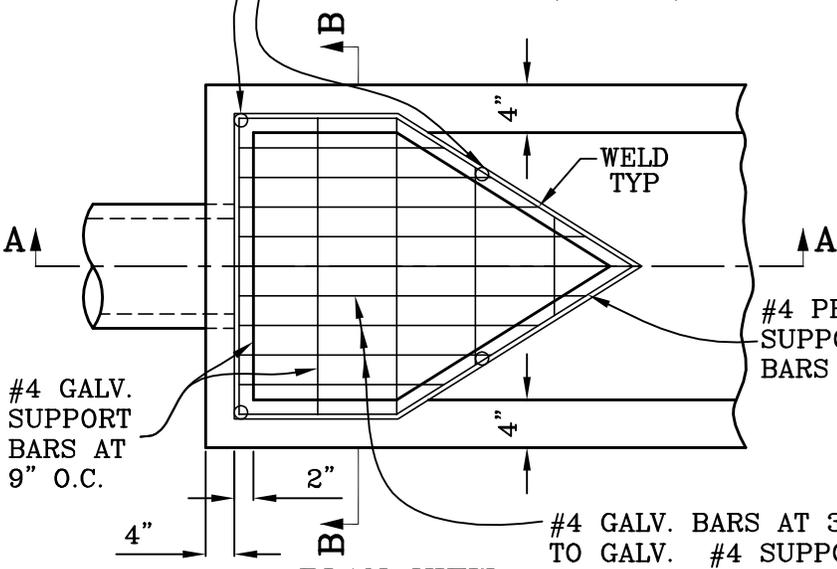
SECTION A-A



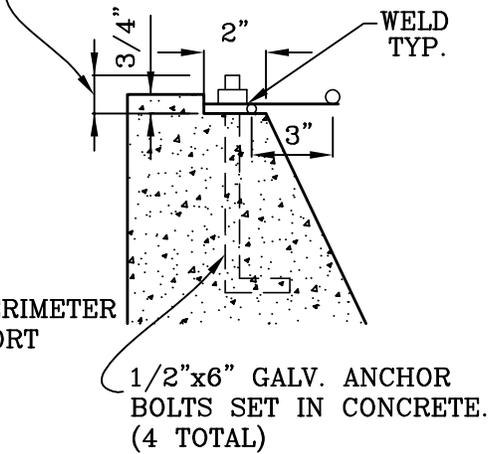
SECTION B-B

WELD WASHERS TO REMOVABLE GRATE (4 TOTAL)

EXPOSE 1-1/4" PORTION OF THREADED ANCHOR BOLT



PLAN VIEW



NOTES:

1. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO THE PLACEMENT OF CONCRETE.
2. MATERIAL FOR CONSTRUCTION OF DOWNDRAIN SHALL BE CONCRETE REINFORCED WITH 6" X 6"-W1.4 X W1.4 WELDED WIRE FABRIC.
3. DOWNDRAIN TO PIPE TRANSITION SHALL NOT BE USED WITHIN PUBLIC ROAD RIGHT-OF-WAY.
4. GRATE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.

CITY OF MISSION VIEJO

DOWN DRAIN TO PIPE TRANSITION

STANDARD PLAN NO.

436



Robert Anderson

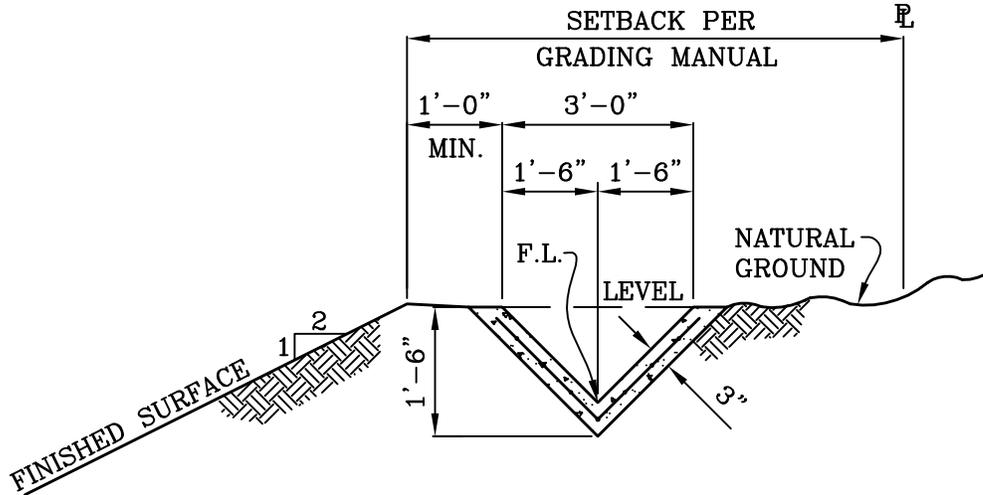
9-23-03

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RCE 30190

DATE

SHT 1 OF 1



NOTES:

1. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS OF 2500 P.S.I. CONCRETE MAY BE PNEUMATICALLY PLACED AND SHALL CONFORM TO SECTION 2621 OF THE UNIFORM BUILDING CODE.
2. REINFORCING SHALL BE 6" x 6" - W1.4 x W1.4 WELDED WIRE MESH OR APPROVED EQUAL.
3. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO PLACEMENT OF CONCRETE. CURING COMPOUND SHALL BE USED WHEN REQUIRED BY THE CITY ENGINEER.
4. ANCHORS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD PLAN 439 SHEET 2 OF 3 WHEN SLOPE EQUALS OR EXCEEDS 2:1.

CITY OF MISSION VIEJO

INTERCEPTOR DRAIN

STANDARD
PLAN NO.

437



Robert Anderson

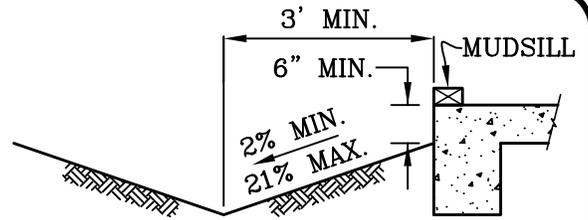
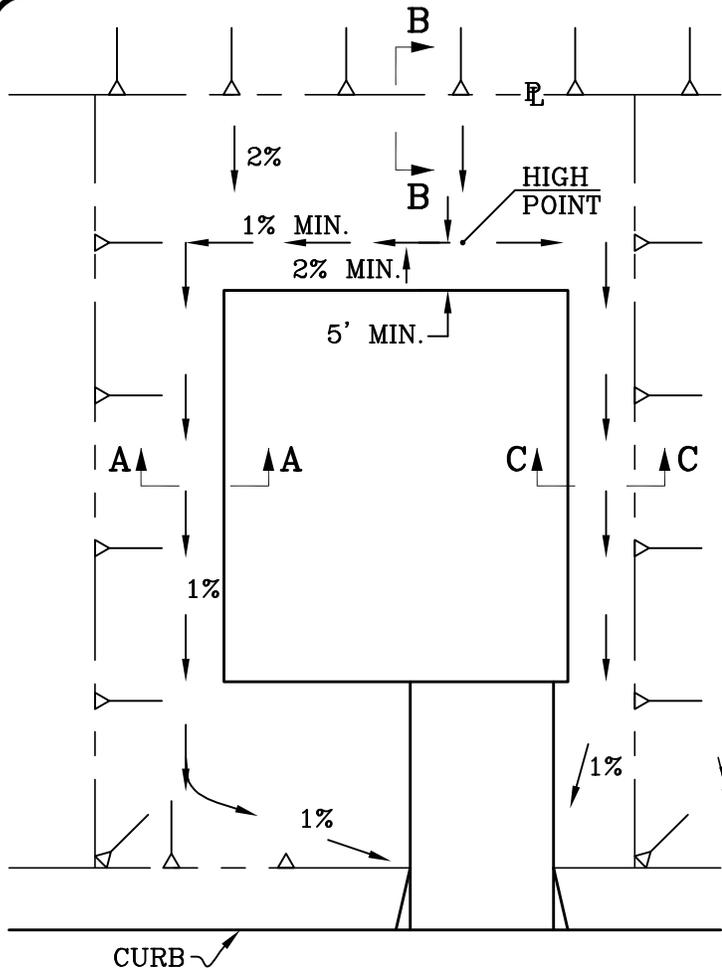
9-23-03

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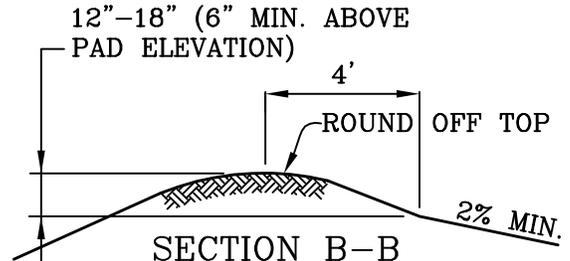
RCE 30190

DATE

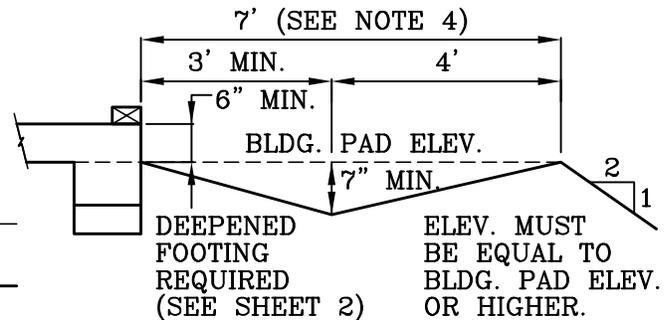
SHT 1 OF 1



SECTION A-A



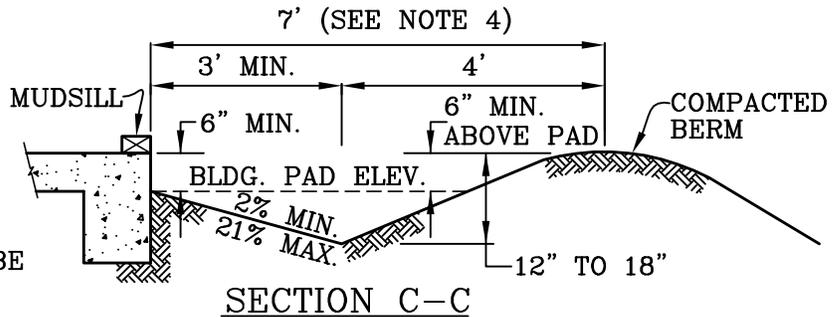
SECTION B-B
TYPICAL BERM DETAIL



SECTION C-C
ALTERNATE

NOTES:

1. SWALES TO BE CUT IN AT 1% AT ROUGH GRADING BUILDING CONSTRUCTION.
2. A PAVED DRAINAGE SWALE, A CATCH BASIN AND PIPE, OR OTHER SIMILAR DRAINAGE DEVICE IS REQUIRED WHEN A STOOP, FIRE PLACE, OR PORTION OF THE BUILDING EXTENDS WITHIN THE MINIMUM ESTABLISHED DRAINAGE SETBACKS.
3. A COMMON DRAINAGE SWALE MAY BE USED ALONG SIDEYARD PROPERTY LINES AS SHOWN ON SHEET 2.
4. THIS DIMENSION MAY BE REDUCED TO THE REQUIRED MINIMUM SETBACK IN THE GRADING & EXCAVATION CODE IF AN IMPROVED DRAINAGE DEVICE IS USED.
5. ALL BUILDING SETBACKS FROM SLOPE SHALL BE IN ACCORDANCE WITH THE MISSION VIEJO GRADING & EXCAVATION CODE.



SECTION C-C

CITY OF MISSION VIEJO



LOT DRAINAGE
(HILLSIDE)

STANDARD
PLAN NO.

438

Robert Anderson

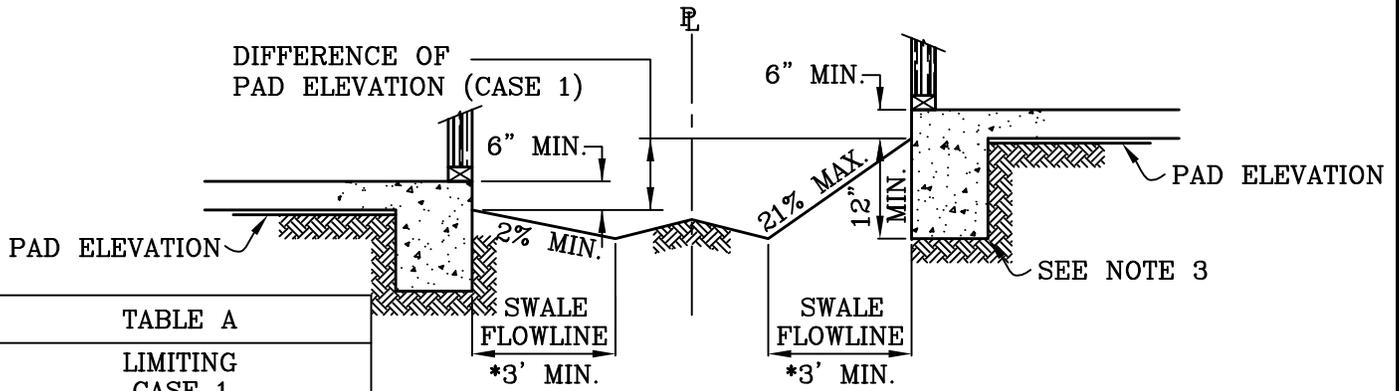
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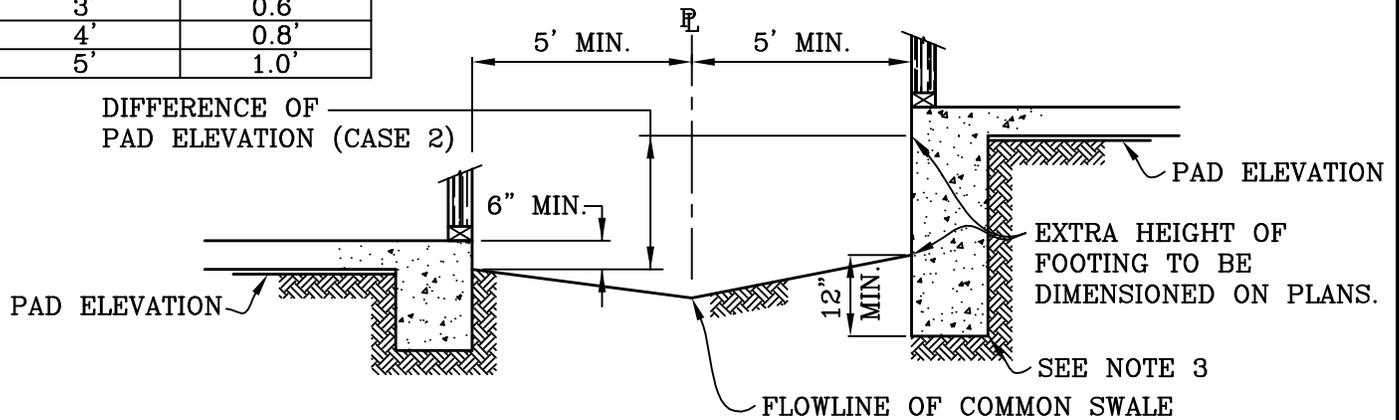
SHT 1 OF 2



CASE 1

*CONCRETE SWALE REQUIRED WHEN FLOWLINE IS 3' FROM FOOTING.

TABLE A	
LIMITING CASE 1 CONDITIONS	
DRAINAGE SETBACK	MAXIMUM DIFF. IN PAD ELEVATIONS
3'	0.6'
4'	0.8'
5'	1.0'



CASE 2

NOTES:

1. CASE 1 APPLIES WHEN THE DRAINAGE SETBACK AND DIFFERENCE IN PAD ELEVATIONS ALLOWS A COMMON, OR "W", DRAINAGE SWALE TO BE CONSTRUCTED IN ACCORDANCE WITH TABLE A.
2. CASE 2 MAY BE USED WITH A COMMON, OR "W", DRAINAGE SWALE WHEN THE DIFFERENCE OF PAD ELEVATIONS EXCEEDS THE LIMITING CONDITIONS OF TABLE A AND THE EXTRA HEIGHT FOOTING IS SHOWN ON THE GRADING AND STRUCTURAL PLANS.
3. IN NO CASE SHALL THE SWALE FLOWLINE BE LOWER THAN THE BOTTOM OF THE FOOTING WITHIN 5' OF THE FOOTING.
4. FIREPLACES MAY ENCROACH 2' INTO THE 5' MINIMUM SETBACK AREA IF THE DRAINAGE SWALE IS PAVED.

CITY OF MISSION VIEJO

LOT DRAINAGE

STANDARD PLAN NO.

438



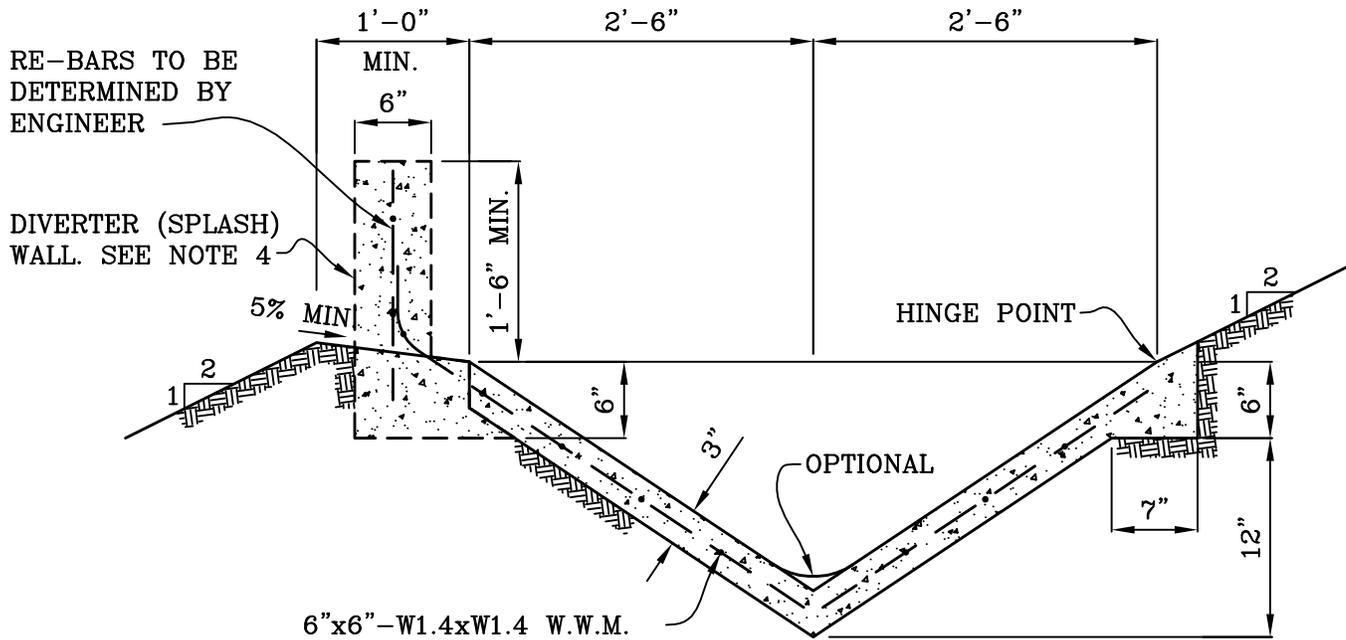
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SHT 2 OF 2



NOTES:

1. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS 2500 P.S.I. CONCRETE MAY BE PNEUMATICALLY PLACED AND SHALL CONFORM TO SECTION 2621 OF THE UNIFORM BUILDING CODE.
2. REINFORCING SHALL BE 6"x6"-W1.4xW1.4 WELDED WIRE MESH OR APPROVED EQUAL.
3. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE INSPECTOR PRIOR TO PLACEMENT OF CONCRETE. MOISTURE LOSS RETARDENT SHALL BE USED WHEN REQUIRED BY THE INSPECTOR.
4. CONCRETE OR CONCRETE BLOCK DIVERTER (SPLASH) WALL TO BE CONSTRUCTED WHEN DOWNDRAIN TERMINATES AT TERRACE DRAIN. SEE PLAN FOR LOCATION DETAILS.

CITY OF MISSION VIEJO

TERRACE AND DOWN DRAINS

STANDARD
PLAN NO.

439



Robert Anderson

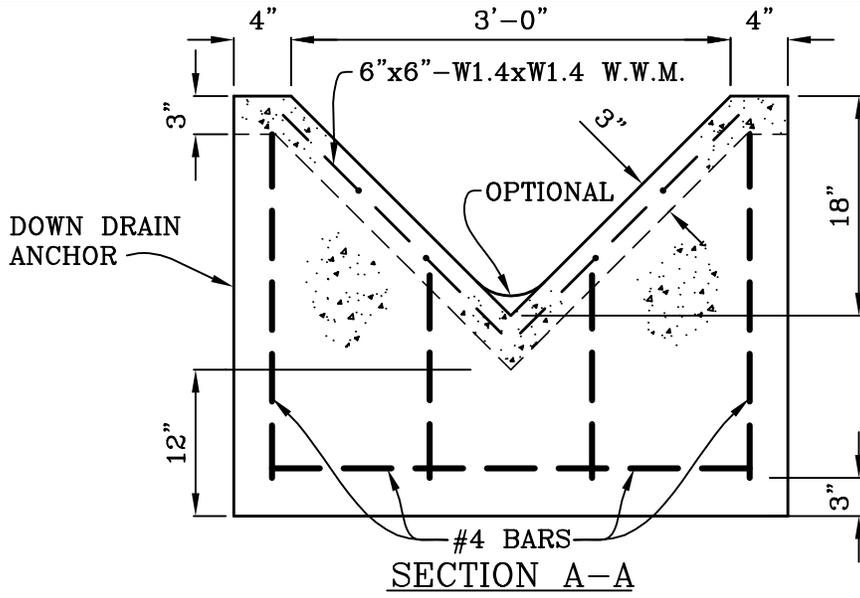
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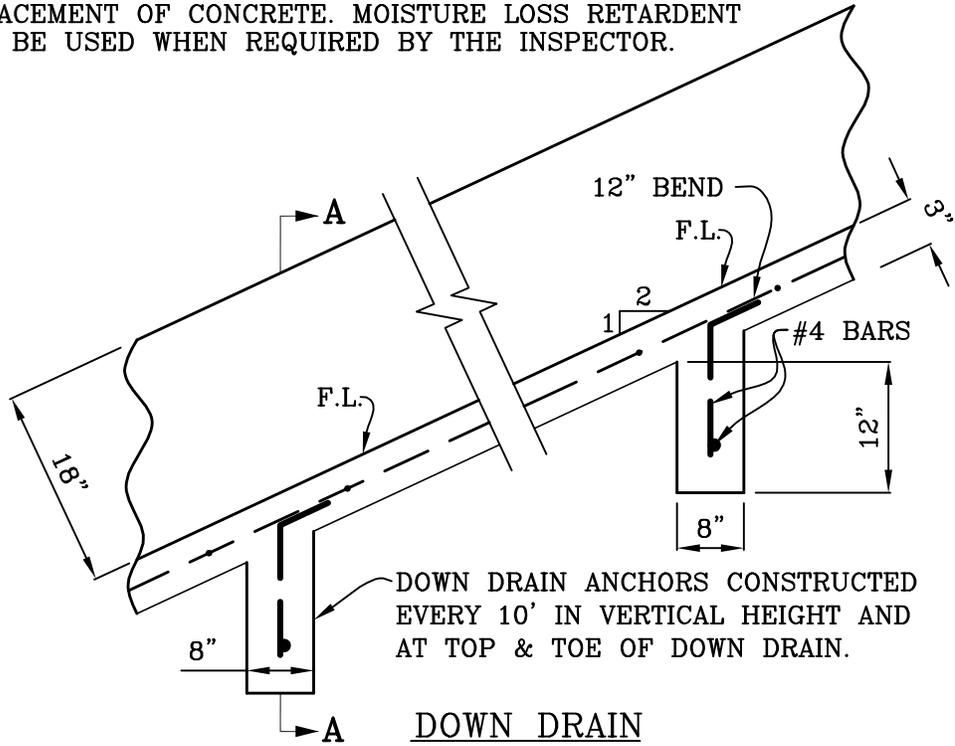
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SHT 1 OF 3



NOTES:

1. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS OF 2500 P.S.I. CONCRETE MAY BE PNEUMATICALLY PLACED AND SHALL CONFORM TO SECTION 2621 OF THE UNIFORM BUILDING CODE.
2. REINFORCING SHALL BE 6"x6"-W1.4xW1.4 WELDED WIRE MESH OR APPROVED EQUAL.
3. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE INSPECTOR PRIOR TO PLACEMENT OF CONCRETE. MOISTURE LOSS RETARDENT SHALL BE USED WHEN REQUIRED BY THE INSPECTOR.



CITY OF MISSION VIEJO

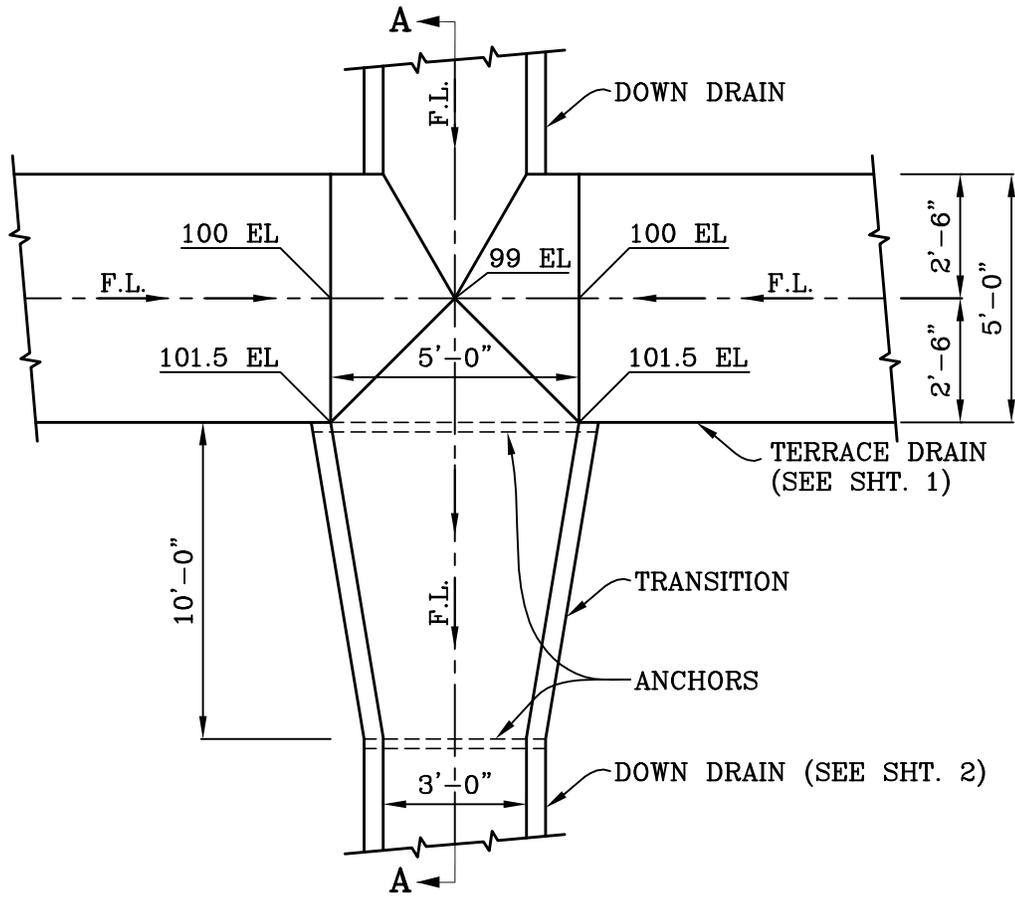


TERRACE AND DOWN DRAIN

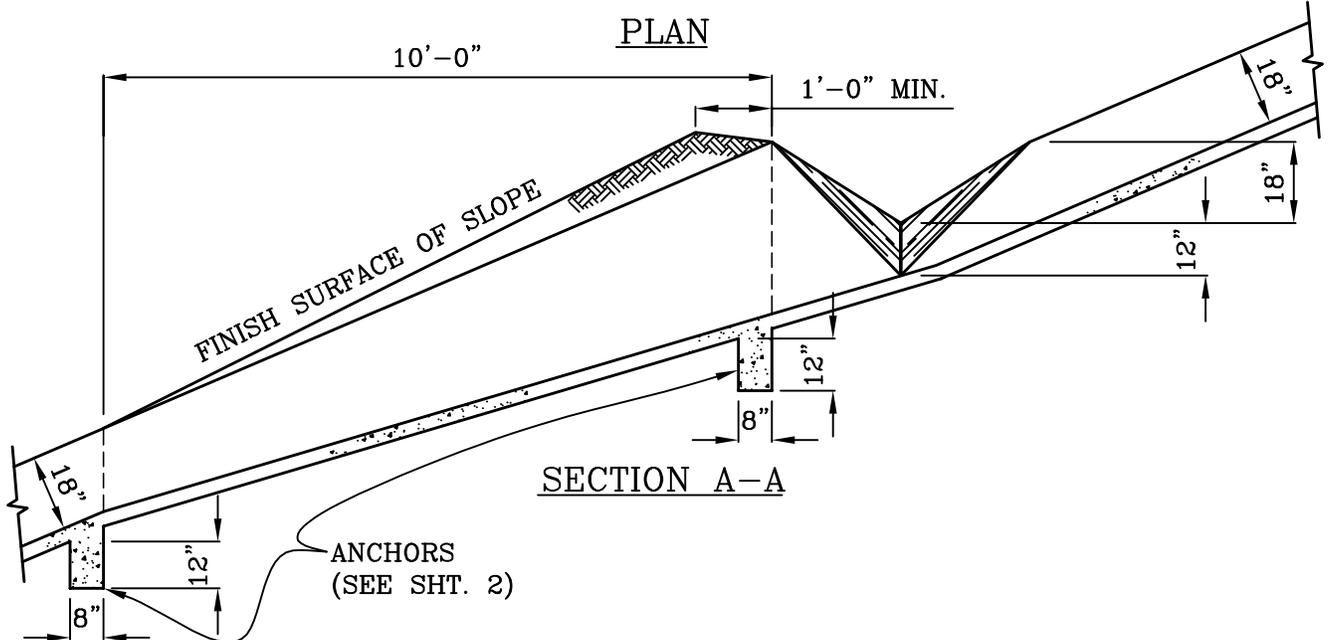
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PLAN



SECTION A-A

CITY OF MISSION VIEJO

TERRACE DRAIN & DOWN DRAIN INTERSECTION

STANDARD PLAN NO.

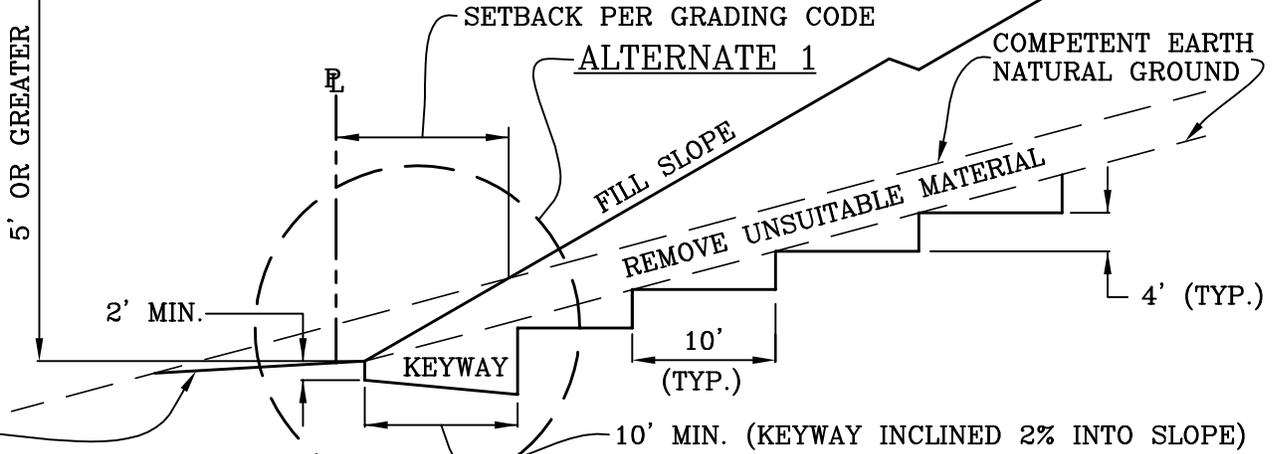
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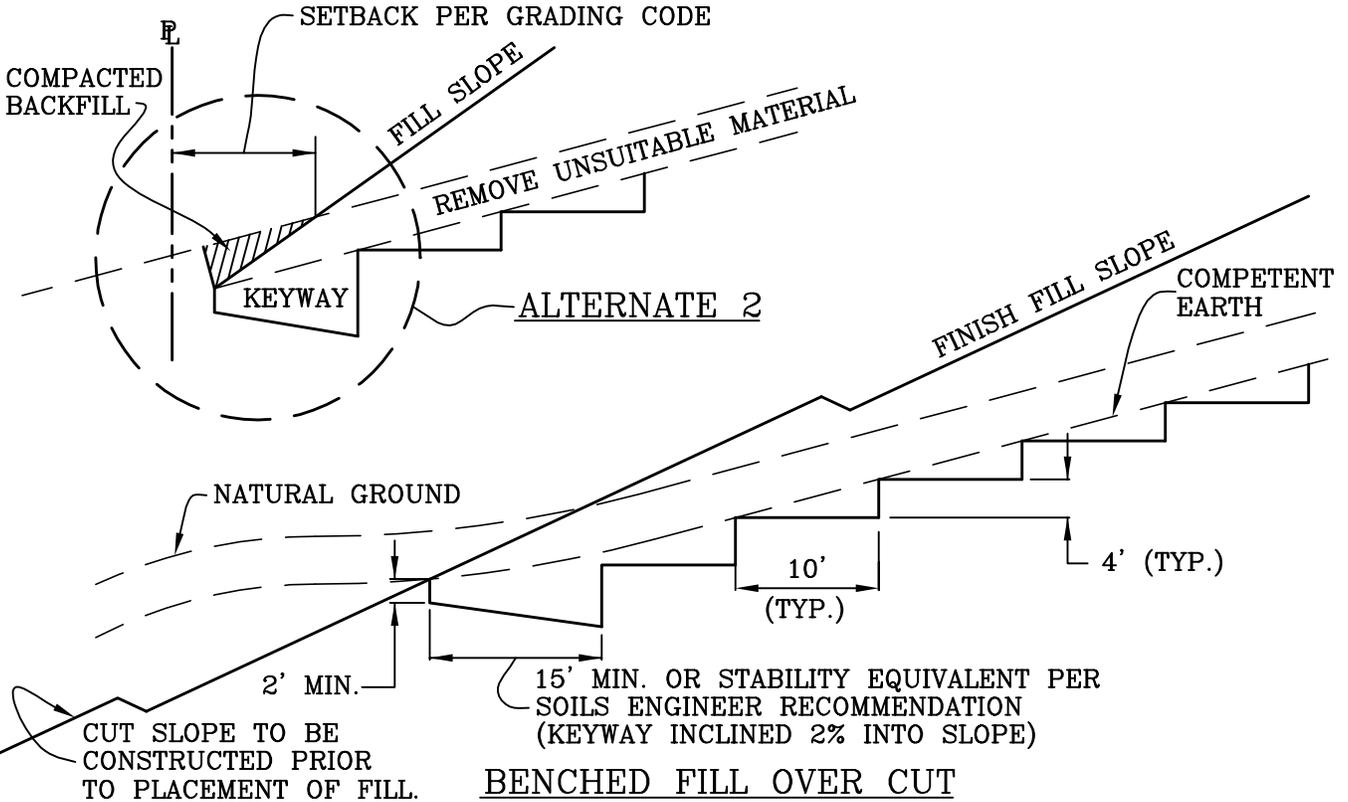
SHT 3 OF 3

*BENCHING SHALL BE REQUIRED WHEN NATURAL SLOPES ARE EQUAL TO OR EXCEED 5:1 OR WHEN RECOMMENDED BY THE SOILS ENGINEER.



GRADE FOR SHEET FLOW OR PROVIDE PAVED DRAIN. WRITTEN PERMISSION MUST BE OBTAINED FOR ANY GRADING ON ADJACENT PROPERTY.

BENCHED FILL OVER NATURAL GROUND*



BENCHED FILL OVER CUT

CITY OF MISSION VIEJO



BENCHING FOR COMPACTED FILL

STANDARD PLAN NO.

440

Robert Anderson

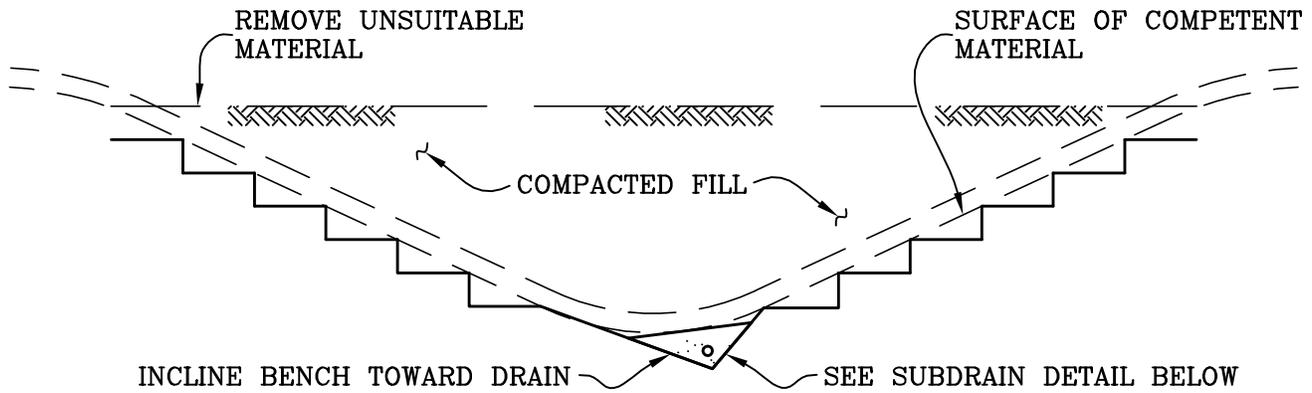
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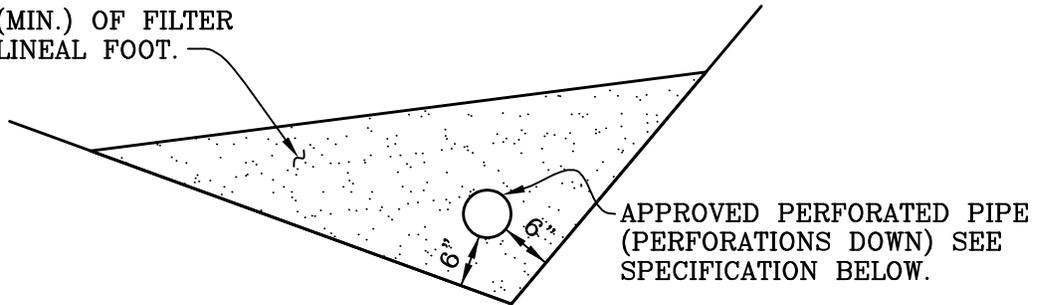
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SHT 1 OF 1



9 CUBIC FEET (MIN.) OF FILTER MATERIAL PER LINEAL FOOT.



SUBDRAIN DETAIL

NOTES:

1. PIPE SPECIFICATIONS: DRAIN PIPE SHALL BE A MINIMUM OF 4" DIAMETER (6" MIN. FOR RUNS OF 500' OR GREATER AS RECOMMENDED BY THE SOILS ENGINEER). PIPE SPECIFICATIONS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OR AS RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE CITY ENGINEER.
2. FILER MATERIAL SHALL MEET THE FOLLOWING SPECIFICATIONS OR AS RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE CITY ENGINEER.

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

CITY OF MISSION VIEJO



CANYON SUBDRAIN

STANDARD
PLAN NO.

441

9-23-03

 APPROVED RCE 30190 DATE

MINIMUM DESILTING BASIN STANDARD
GENERAL NOTES

A. PURPOSE OF A DESILTING BASIN.

DESILTING BASINS ARE USED TO PROTECT DOWNSTREAM AREAS FROM SEDIMENT DAMAGE BY TRAPPING SEDIMENT-LADEN RUNOFF FROM UPSTREAM AREAS AND SETTLING OUT DAMAGING AMOUNTS OF SEDIMENT. DESILTING BASINS SHOULD BE LOCATED SO THAT FAILURE OF THE BASIN STRUCTURE WILL NOT PRESENT A DANGER TO LIFE OR PROPERTY.

B. HOW A DESILTING BASIN OPERATES.

DESILTING BASINS OPERATE BY INTERCEPTING SEDIMENT-LADEN RUNOFF AND RETAINING IT LONG ENOUGH FOR MOST OF THE DAMAGE-CAUSING SEDIMENT TO SETTLE OUT. THE RETENTION TIME REQUIRED IS PROPORTIONAL TO VELOCITY AND TURBULENCE IN THE BASIN AND INVERSELY PROPORTIONAL TO PARTICLE SIZE.

C. DESIGN CONSIDERATIONS.

1. MINIMAL EROSION PROBLEMS MAY BE HANDLED BY THE USE OF SANDBAG DIKE CONSTRUCTION, SILT FENCES OR STRAWBALE BARRIERS IF APPROVED BY THE CITY ENGINEER.
2. SIZING OF BASIN SHALL BE BASED ON THE TOTAL DRAINAGE AREA TRIBUTARY TO THE BASIN. THE METHOD OUTLINED ON SHEET 5 MAY BE USED TO ESTIMATE VOLUME. IF THIS METHOD IS NOT USED, THE PROJECT ENGINEER SHALL JUSTIFY HIS DESIGN WITH ADEQUATE CALCULATIONS.
3. THE COMBINED PIPE AND SPILLWAY OUTFLOW SHALL NOT EXCEED THE DOWNSTREAM CAPACITY NOR INCREASE THE DOWNSTREAM SEDIMENT LOADS.
4. BASIN MUST BE ACCESSIBLE FOR CLEANOUT DURING SATURATED GROUND CONDITIONS.
5. TO REDUCE TURBULENCE IN THE BASIN, THE BASIN SHALL HAVE AN ENERGY DISSIPATER AT ITS UPSTREAM END AS APPROVED BY THE CITY ENGINEER.
6. THE BASIN SHALL BE LOCATED FOR EFFECTIVELY ACCOMPLISHING ITS PURPOSE, IN ACCORDANCE WITH ENGINEERED PLANS MEETING THE APPROVAL OF THE CITY ENGINEER.
7. BEYOND CERTAIN LIMITATIONS OF EMBANKMENT HEIGHT AND STORAGE CAPACITY, THE DESIGN OF THE BASIN WILL COME UNDER THE JURISDICTION OF, AND REQUIRE THE APPROVAL OF, THE CALIFORNIA DEPARTMENT OF WATER RESOURCES, DIVISION OF SAFETY OF DAMS, 1416 NINTH STREET, P.O. BOX 388, SACRAMENTO, CA 95802, 916-445-7606 (SEE EXHIBIT 1 ON SHEET 2.)
8. INLET TRASH RACKS SHALL BE USED WHERE APPROPRIATE TO REDUCE INTAKE OF LARGE DEBRIS.

CITY OF MISSION VIEJO



DESILTING BASIN

STANDARD
PLAN NO.

450

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SHT 1 OF 8

JURISDICTIONAL DAM SIZE

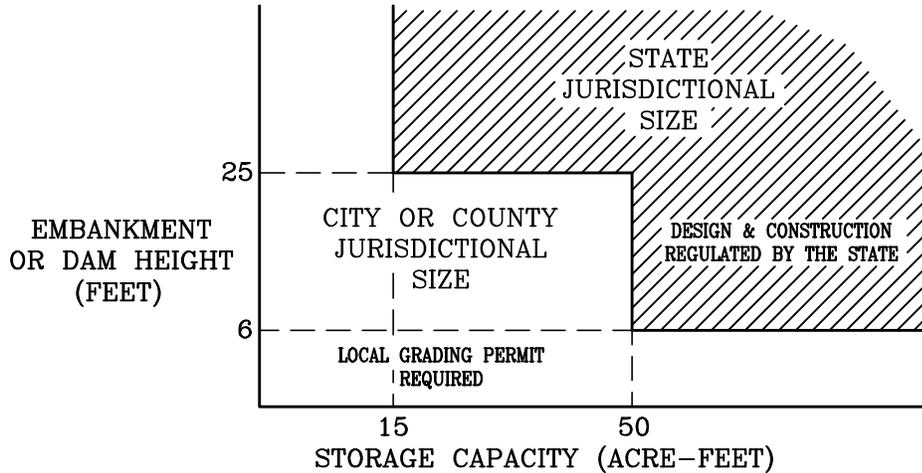


EXHIBIT 1

D. STORAGE

1. STORAGE CAPACITY SHALL BE THE VOLUME BELOW THE TOP OF THE PIPE RISER, AND SHALL BE BASED ON THE AVERAGE SITE SLOPE AND LENGTH OF THE LONGEST FLOW PATH IN THE AREA TRIBUTARY TO THE BASIN. SEE GRAPH ON SHEET 5 FOR DETAILS.
2. THE DESIGN SHALL PROVIDE OPPORTUNITY FOR PERIODIC CLEANOUT IN ORDER TO MAINTAIN BASIN CAPACITY REQUIREMENTS. THE MAXIMUM ALLOWABLE DEPOSITED SEDIMENT BEFORE CLEANOUT SHALL BE 1/2 FULL OR AS DETERMINED BY THE CITY ENGINEER AND PAINTED ON THE PIPE RISER.
3. SEDIMENT FROM BASIN CLEANOUT OPERATIONS MUST BE DISPOSED OF IN SUCH A MANNER AS TO PREVENT ITS RETURN INTO THE DESILTING BASIN OR ITS MOVEMENT INTO DOWNSTREAM AREAS DURING SUBSEQUENT RUNOFFS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.

E. DRAIN PIPE AND RISER

1. THE MINIMUM PIPE RISER SHALL BE A 30" CORRUGATED STEEL PIPE (C.S.P.) 14 GA., OR AN ALTERNATE APPROVED BY THE CITY ENGINEER. RISER TO HAVE A CROSS-SECTIONAL AREA AT LEAST 1.5 TIMES THE CROSS-SECTIONAL AREA OF THE HORIZONTAL DRAIN PIPE.
2. THE MINIMUM DRAIN PIPE SHALL BE A 12" C.S.P., 14" GA., OR AN ALTERNATE APPROVED BY THE CITY ENGINEER.

CITY OF MISSION VIEJO



DESILTING BASIN

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3. THE UPPERMOST ELEVATION OF THE RISER SHALL BE SUCH THAT FULL FLOW WILL BE GENERATED BEFORE THERE IS DISCHARGE OVER THE EMERGENCY SPILLWAY AND AT LEAST ONE FOOT BELOW THE TOP OF THE EMERGENCY SPILLWAY.
4. THE RISER SHALL BE PERFORATED WITH 1/2" x 12" (MAX.) SLOTS OR 1/2" TO 1-1/2" DIAMETER HOLES, 10 TO 12 INCHES ON CENTER AND STAGGERED. HOLES CUT WITH A WELDING TORCH ARE ACCEPTABLE. THE SMALL HOLES SHALL BE USED ON THE LOWER PORTIONS OF THE RISER.
5. THE DRAIN PIPE SHALL BE PLACED ON A FIRM FOUNDATION.
6. THE RISER SHALL HAVE A BASE ATTACHED WITH A WATERTIGHT CONNECTION AND SHALL HAVE SUFFICIENT WEIGHT TO PREVENT FLOTATION OF THE RISER. TWO RECOMMENDED METHODS ARE:
 - a. A SQUARE CONCRETE BASE 18 INCHES THICK WITH THE RISER EMBEDDED SIX INCHES INTO THE BASE. EACH SIDE OF THE BASE WILL BE ONE DIAMETER OF THE RISER PLUS 24 INCHES.
 - b. A 1/4 INCH MINIMUM THICKNESS STEEL PLATE WELDED ALL AROUND THE BASE OF THE RISER TO FORM A WATERTIGHT CONNECTION. THE PLATE SHALL BE SQUARE WITH EACH SIDE EQUAL TO TWO TIMES THE RISER DIAMETER. THE PLATE SHALL HAVE TWO FEET OF STONE, GRAVEL, OR TAMPED EARTH PLACED ON IT TO PREVENT FLOTATION.
7. A GRATE CONSISTING OF #4 REBAR, 6 INCHES ON CENTER SHALL BE WELDED TO THE TOP OF THE RISER.
8. ANTI-SEEP COLLARS ARE REQUIRED AT 10' INTERVALS FOR PIPE UNDER THE EMBANKMENT (SEE SHEET 8). THE COLLARS SHALL BE WELDED TO THE PIPE.
9. DISCHARGE SHALL BE TO A PAVED STREET, CHANNEL, OR APPROVED DRAINAGE.

F. EMERGENCY SPILLWAY

1. THE SPILLWAY SHALL BE LINED WITH 3-INCH THICK GUNITE, 4-INCH THICK CONCRETE, (EACH REINFORCED WITH 6"x6"-W1.4xW1.4 WELDED WIRE MESH) OR MATERIAL SUCH AS PLASTIC DESIGNED TO FIT THE SITE CONDITION BY THE PROJECT ENGINEER AND APPROVED BY THE CITY ENGINEER EXTENDING A MINIMUM OF 3 FEET DOWN THE UPSTREAM FACE OF THE EMBANKMENT. SPILLWAY WILL BE A MINIMUM OF 18 INCHES DEEP; WITH 1-1/2:1 SIDE SLOPES.
2. THE SPILLWAY SHALL BE DESIGNED TO PROVIDE ONE SQUARE FOOT OF CROSS-SECTIONAL AREA FOR EACH GROSS ACRE TRIBUTARY DRAINAGE AREA.
3. THE MAXIMUM HEIGHT OF THE EARTH DIKE SHALL BE 6' FROM THE TOE OF THE UPSTREAM SLOPE TO THE SPILLWAY CREST.

CITY OF MISSION VIEJO



DESILTING BASIN

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G. FREEBOARD

1. FREEBOARD IS THE VERTICAL DISTANCE BETWEEN THE ELEVATION OF THE WATER SURFACE IN THE POND WHEN SPILLWAY IS DISCHARGING AT DESIGNED DEPTH AND THE ELEVATION OF THE TOP OF THE EMBANKMENT AFTER ALL SETTLEMENT HAS TAKEN PLACE.
2. MINIMUM FREEBOARD SHALL BE 1.0 FOOT FOR BASINS WHERE THE MAXIMUM LENGTH OF THE POND IS LESS THAN 660 FEET. FOR MAXIMUM POND LENGTHS OF 660 FEET OR MORE, THE MINIMUM FREEBOARD SHALL BE DETERMINED BY THE CITY ENGINEER.

H. EMBANKMENT

1. THE EMBANKMENT MATERIAL SHALL BE TAKEN FROM BORROW AREAS AS STATED ON THE PLANS. ALL BORROW AREAS OUTSIDE THE POOL SHALL BE GRADED, SEEDED AND LEFT IN SUCH A MANNER THAT THEY ARE WELL-DRAINED AND PROTECTED FROM EROSION.
2. THE MATERIAL SHALL BE FREE OF ALL SOD, ROOTS, WOODY VEGETATION, LARGE ROCK (EXCEEDING 12 INCHES IN DIAMETER), AND OTHER DEBRIS.
3. THE EMBANKMENT SHALL BE CONSTRUCTED TO AN ELEVATION WHICH PROVIDES FOR ANTICIPATED SETTLEMENT TO DESIGN ELEVATION (ALLOW 10% FOR SETTLEMENT).
4. THE FOUNDATION FOR THE EMBANKMENT SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL.
5. PLACEMENT OF FILL MATERIAL SHALL BE STARTED AT THE LOWEST POINT OF THE FOUNDATION AND SHALL BE PLACED IN 6-INCH MAXIMUM LIFTS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL AND APPROXIMATELY HORIZONTAL. EMBANKMENT SHALL HAVE A RELATIVE COMPACTION OF AT LEAST 90%.
6. EMBANKMENT SIDE SLOPES SHALL BE NO STEEPER THAN 2:1.

I. SITE PREPARATION

1. THE EMBANKMENT FOUNDATION AREA AND RESERVOIR AREA SHALL BE CLEARED OF ALL TREES, STUMPS, ROOTS, BRUSH, BOULDERS, SOD, AND DEBRIS.
2. ALL TOPSOIL CONTAINING EXCESSIVE AMOUNTS OF ORGANIC MATTER SHALL BE REMOVED

J. EROSION CONTROL PLAN

A SILTATION CONTROL PROGRAM AND PLAN FOR ANY PROPOSED DEVELOPMENT SHALL BE SUBMITTED FOR REVIEW AND APPROVED BY THE CITY ENGINEER PRIOR COMMENCEMENT OF GRADING.

CITY OF MISSION VIEJO



DESILTING BASIN

STANDARD
PLAN NO.

450

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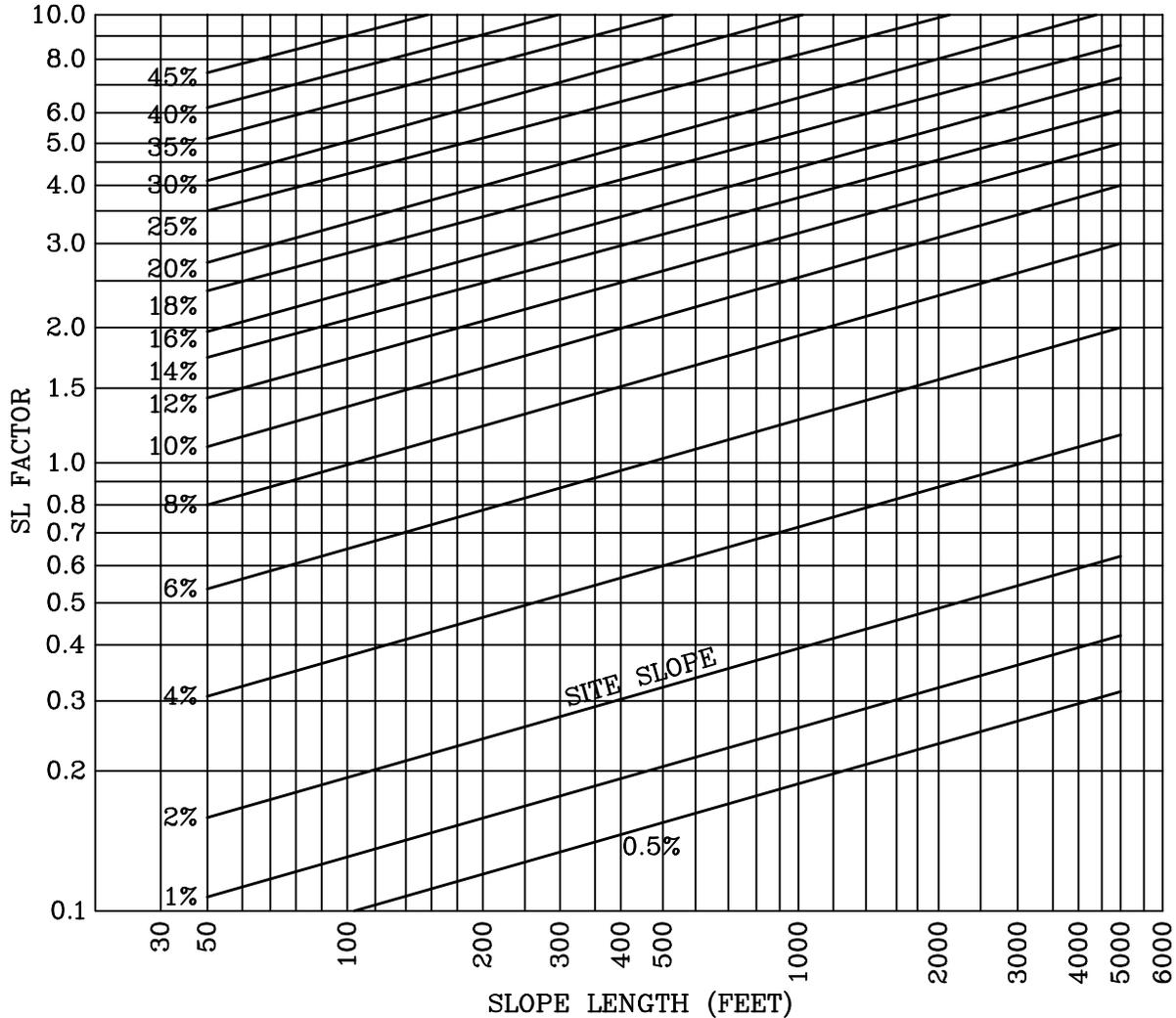
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SL FACTORS FOR SEDIMENT YIELD EQUATION



SEDIMENT YIELD = 16.4 SL*

EXAMPLE: SLOPE LENGTH = 1000 FEET
 SITE SLOPE = 8%
 GRADED AREA = 56 ACRES

FROM GRAPH IT CAN BE DETERMINED THAT SL = 1.8
 SEDIMENT YIELD = 16.4 x 1.8 = 30 C.Y./ACRE
 TOTAL SEDIMENT = 30 x 56 = 1680 C.Y.
 BASIN SIZE = 1700 C.Y.

* BASED ON UNIVERSAL SOIL LOSS EQUATION FOR ORANGE COUNTY FIELD CONDITIONS.

CITY OF MISSION VIEJO



DESILTING BASIN

STANDARD
PLAN NO.

450

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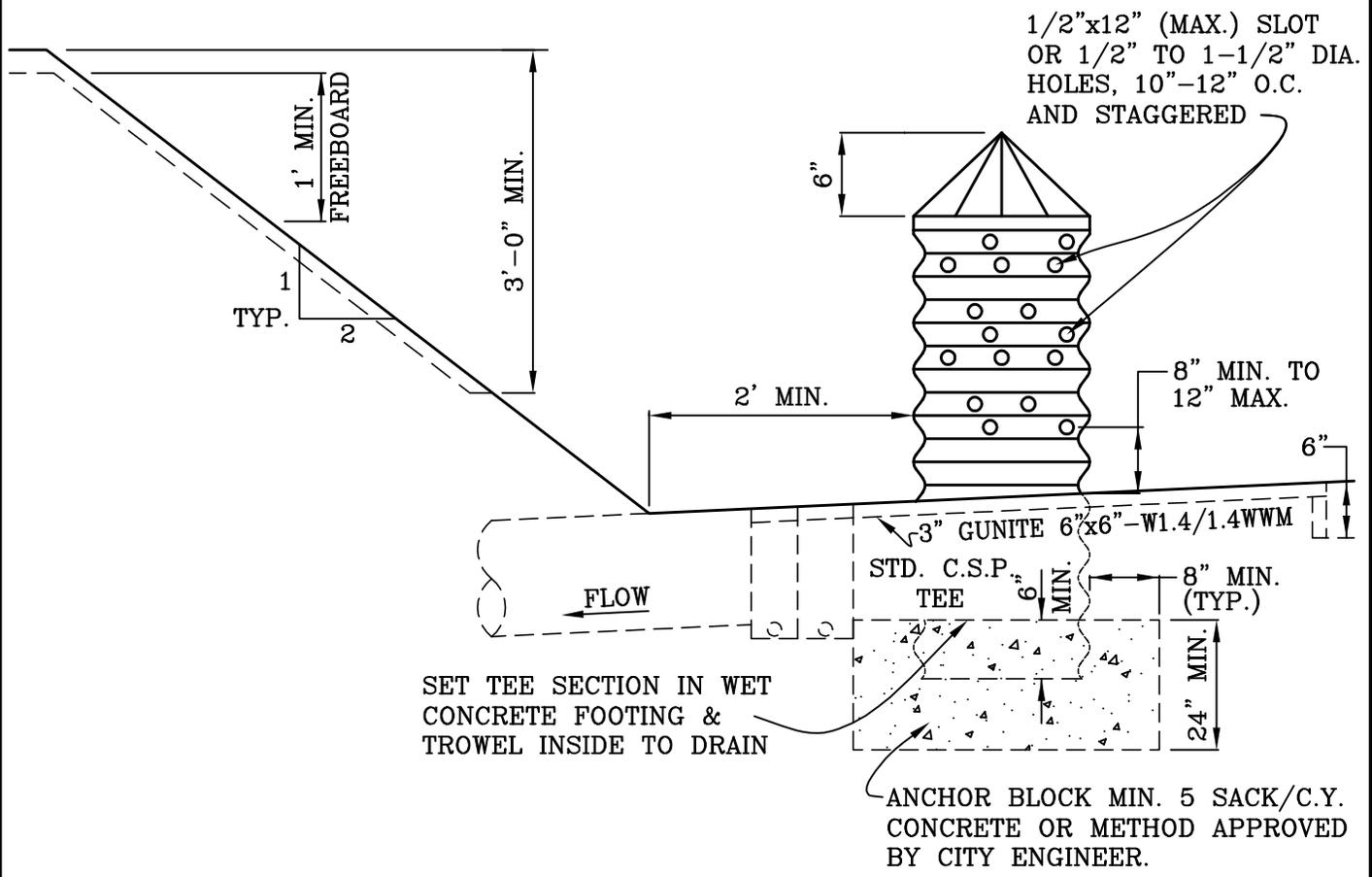
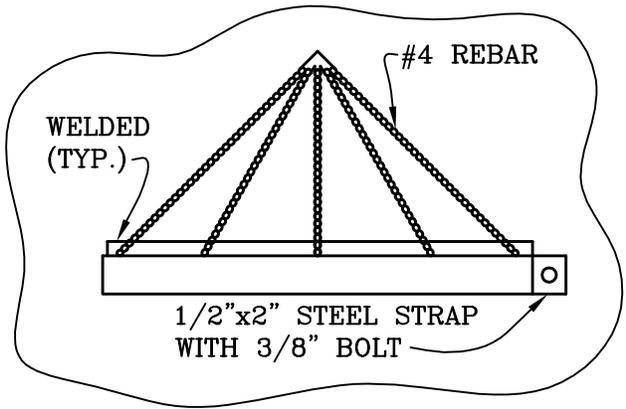
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DRAIN PIPE AND RISER
NO SCALE

CITY OF MISSION VIEJO



DESILTING BASIN

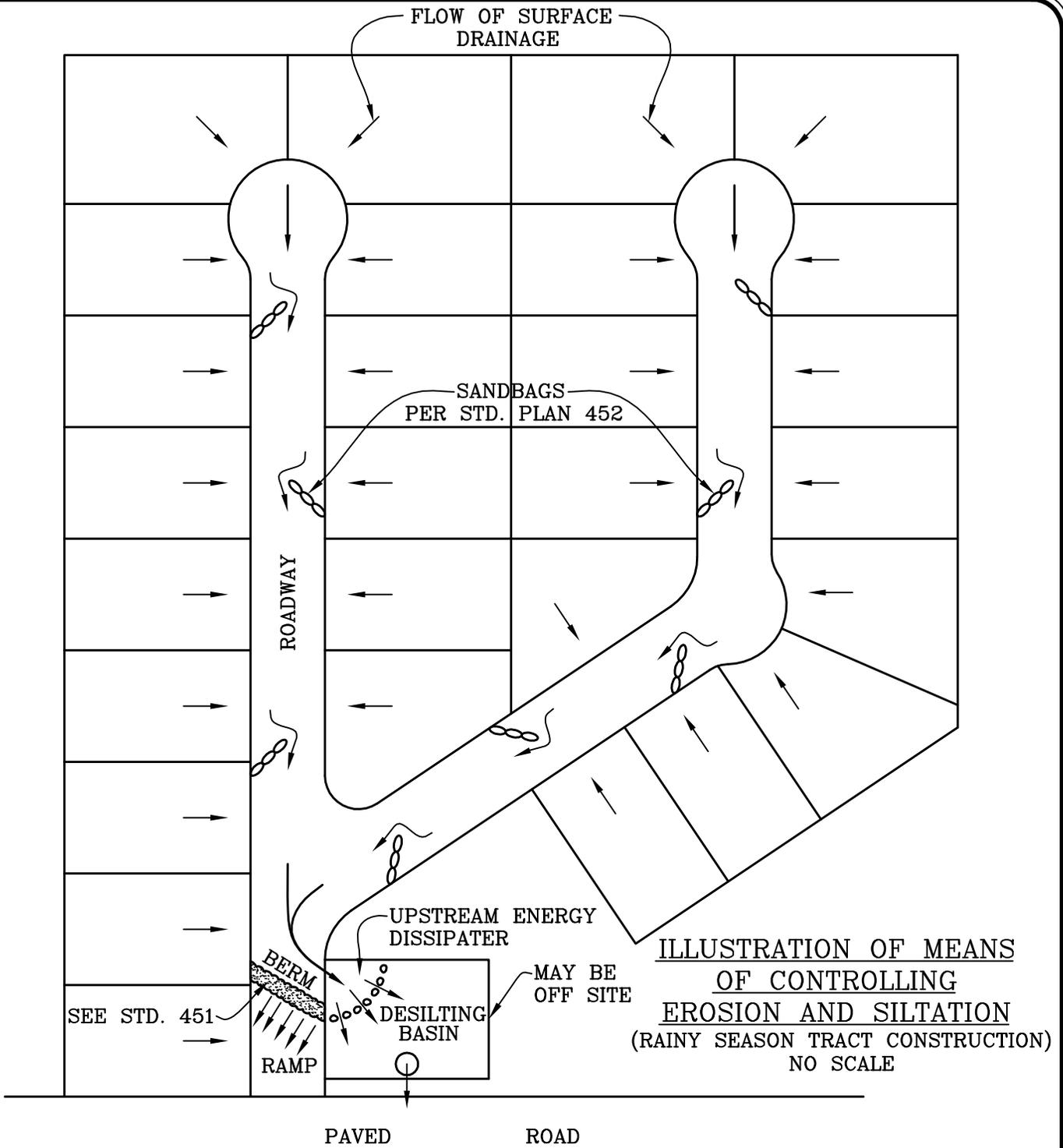
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PLAN NO.

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APPROVED RCE 30190 DATE

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CITY OF MISSION VIEJO



DESILTING BASIN

STANDARD PLAN NO.

450

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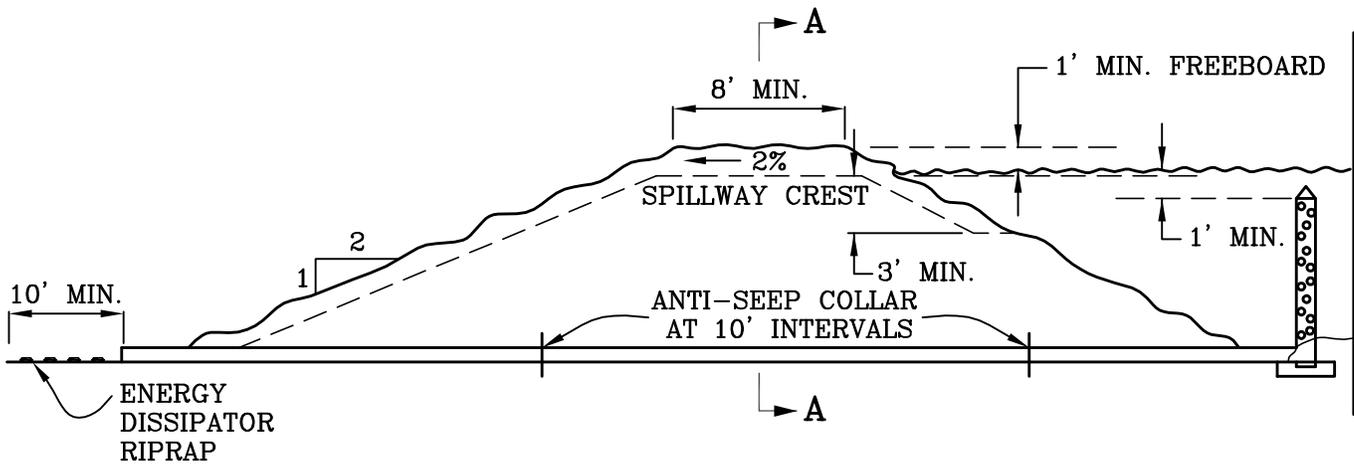
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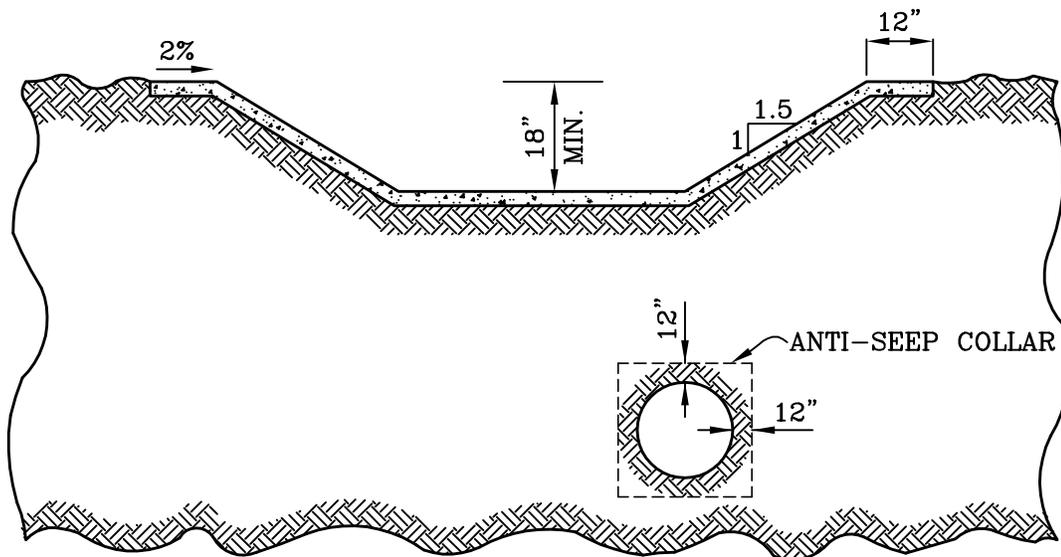
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DATE

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SECTION THROUGH EMBANKMENT
NO SCALE



SECTION A-A

CITY OF MISSION VIEJO



DESILTING BASIN

STANDARD
PLAN NO.

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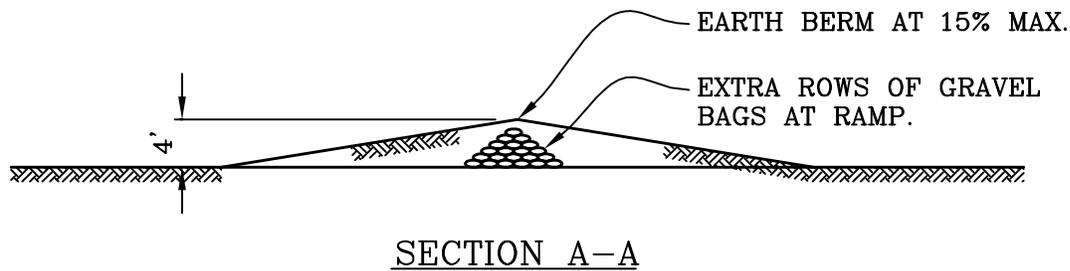
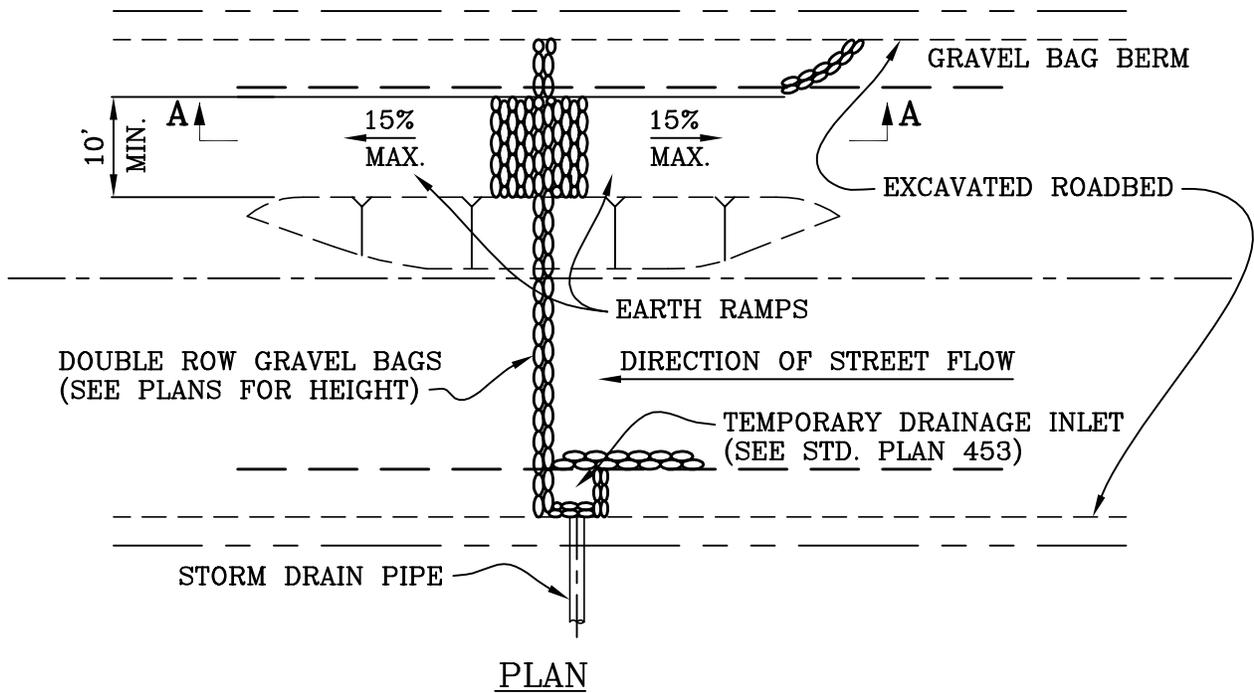
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SHT 8 OF 8



NOTES:

1. THE STORAGE CAPACITY SHALL BE IN ACCORDANCE WITH STD. PLAN 450 & THE DIMENSIONS OF THE STORAGE AREA SHALL BE SHOWN ON THE EROSION CONTROL PLAN.
2. GRAVEL BAGS ARE ENCOURAGED OVER SANDBAGS AND MAY BE REQUIRED IN AREAS WHICH ARE PARTICULARLY SENSITIVE TO SEDIMENT DEPOSITION.
3. THIS STANDARD DETAIL SHALL BE USED AS SHOWN ON THE APPROVED EROSION CONTROL PLAN.

CITY OF MISSION VIEJO

STREET DESILTING BASIN
VEHICLE ACCESS RAMP

STANDARD
PLAN NO.

451



Robert Anderson

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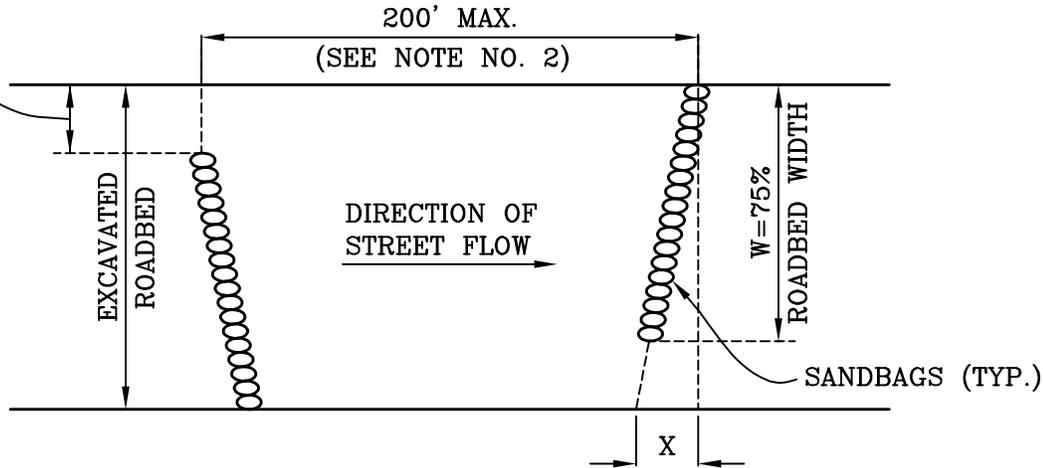
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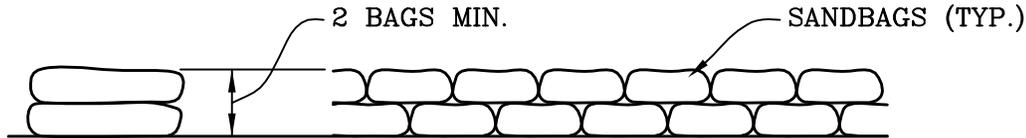
SHT 1 OF 1

8' MIN. SPACING
FOR VEHICLE ACCESS



PLAN

W	X
20'-30'	5'
31'-40'	7'
41'-50'	9'
51'-60'	10.5'
61'-70'	12'



TYPICAL SECTION

TYPICAL ELEVATION

NOTES:

1. GRAVEL BAGS ARE ENCOURAGED OVER THE USE OF SANDBAGS AND MAY BE REQUIRED IN AREAS WHICH ARE PARTICULARLY SENSITIVE TO SEDIMENT DEPOSITION.
2. REQUIREMENTS FOR AND SPACING OF VELOCITY REDUCERS FOR STREETS WITH GRADES OF LESS THAN 4% SHALL BE AS SHOWN ON THE APPROVED EROSION CONTROL PLAN.
3. THIS STANDARD DETAIL SHALL BE USED AS SHOWN ON THE APPROVED EROSION CONTROL PLAN.

CITY OF MISSION VIEJO

STREET CHEVRON
VELOCITY REDUCER

STANDARD
PLAN NO.

452



Robert Anderson

9-23-03

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SHT 1 OF 1

6" x 6" - W1.4 x W1.4 W.W.M. OR APPROVED
ALT. SCREEN AS SAFETY BARRIER.

STORM DRAIN PIPE.
SEE PLAN FOR TYPE
AND LOCATION.

BASE COURSE SANDBAGS
ON EDGE.

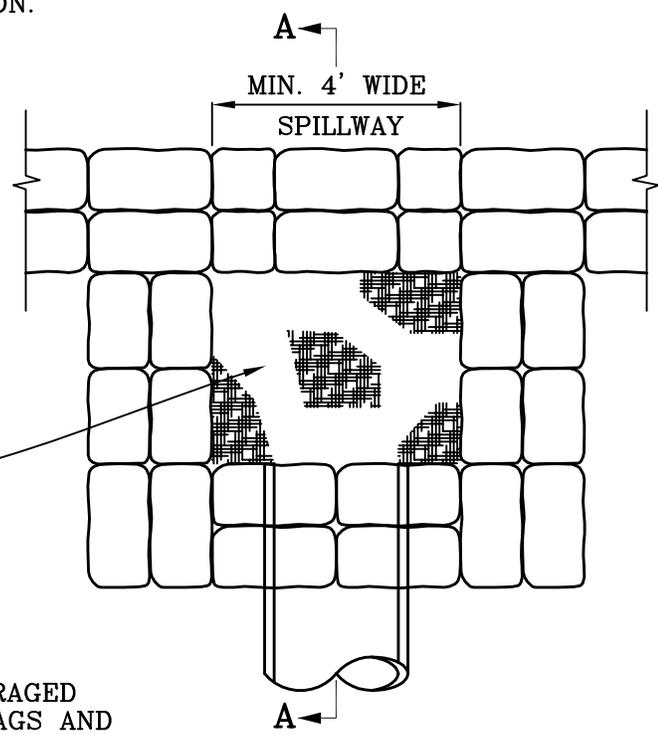
2' MAX. HEIGHT OF
BAGS AT SPILLWAY

STREET
SUB-GRADE

DOUBLE ROW
SANDBAGS

2%
SLOPE

SECTION A-A



PLAN

NOTES:

1. GRAVEL BAGS ARE ENCOURAGED OVER THE USE OF SANDBAGS AND MAY BE REQUIRED IN AREAS WHICH ARE PARTICULARLY SENSITIVE TO SEDIMENT DEPOSITION.
2. A PORTION OF CATCH BASIN MAY BE CONSTRUCTED IN PLACE OF SANDBAGS.
3. THIS STANDARD SHALL BE USED AS SHOWN ON THE APPROVED EROSION CONTROL PLAN.

CITY OF MISSION VIEJO



TEMPORARY DRAINAGE INLET

STANDARD
PLAN NO.

453

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SHT 1 OF 1

1/2" DIA. STEEL BARS, WELD TO PROTECTION BAR AT 6" O.C. AND TO BAND AT 120° (3 LOCATIONS). BEND STEEL PLATE AND WELD.

1/4" x 3" STEEL BAND. BEND 2" FLANGE AT ENDS.

1/2" DIA. STEEL PROTECTION BAR

D2	C.S.P. GAUGE
18" - 27"	16
30" - 39"	14
42" - 48"	12
51" - 66"	10

5/8" DIA. x 6" GALV. MACHINE BOLT

1/4" x 6" DIA. STEEL PLATE

PROTECTION BAR

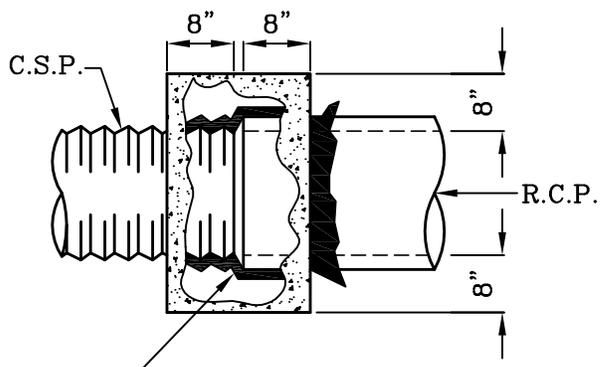
4-1/4" CLEAR

SEE NOTE 6
STANDARD C.S.P. TEE SECTION

4" P.C.C. SLAB SLOPE TO DRAIN

INVERT ELEV. A

CONNECT TO R.C.P. WITH P.C.C. COLLAR, IN ACCORDANCE WITH DETAIL AT RIGHT.



WRAP WITH ONE THICKNESS OF 15 POUND FELT PAPER, SHAPE OPENING FOR SMOOTH JOINT.

NOTES:

1. V, D1, D2, AND ELEVATION A SHALL BE SHOWN ON THE CONSTRUCTION PLANS.
2. GRATE ASSEMBLY SHALL BE FABRICATED TO FIT C.S.P. OF SIZE D2.
3. GRATE ASSEMBLY SHALL BE GALVANIZED AFTER FABRICATION.
4. R.C.P. SHALL BE SIZED TO FIT FUTURE CATCH BASIN DESIGN.
5. GRATE ASSEMBLY SHALL BE FABRICATED TO FIT THE OUTSIDE DIAMETER OF STANDARD JUNCTION STRUCTURE SHAFT IF INDICATED ON CONSTRUCTION PLANS.
6. 1/2" WIDE SHOTS OR 1/2" TO 1" ROUND HOLES.
7. D1 GAUGE SHALL BE EQUAL TO THAT OF D2.

CITY OF MISSION VIEJO



C.S.P. DROP INLET

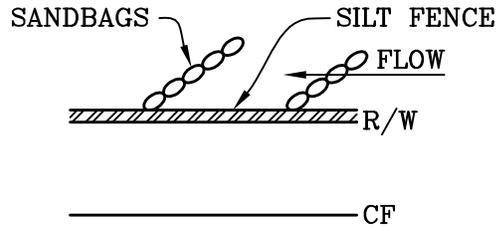
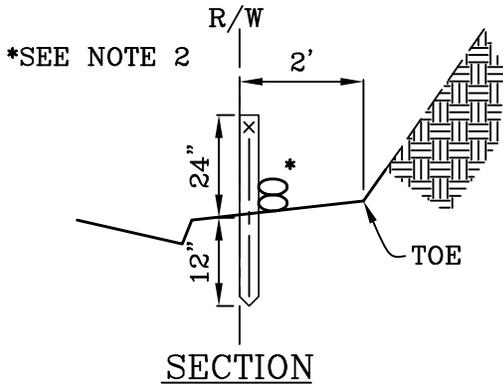
STANDARD PLAN NO.

454

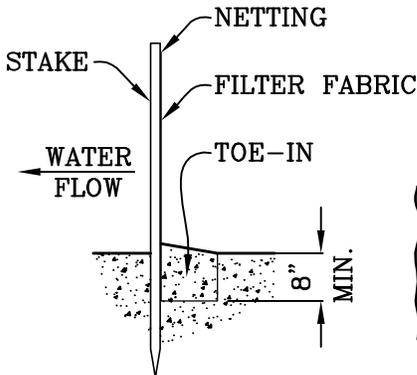
Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 1 OF 1

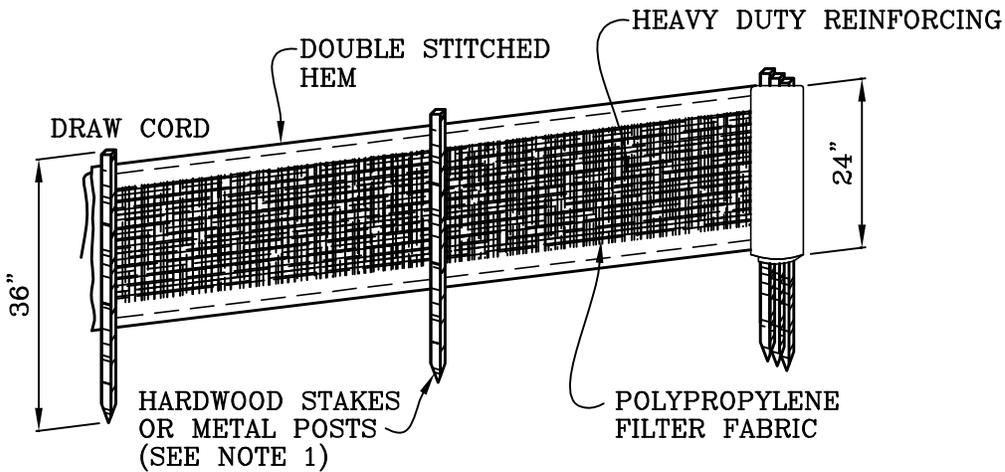
SLOPED STREET DETAILS



PLAN



JOINING FENCES
 OFFSET FENCES AS SHOWN
 AND TIE END STAKES
 TOGETHER WITH DRAW CORD.



NOTES:

1. IF METAL POSTS ARE USED INSTEAD OF HARDWOOD STAKES, PROTECTIVE COVERS SHALL BE PLACED ON TOP OF POSTS.
2. GRAVEL BAGS MAY BE PLACED BEHIND SILT FENCE IF STREET IS SLOPING TO ASSIST IN RETENTION OF SILT.
3. SILT FENCES MUST BE FIELD CHECKED AND CLEANED AS REQUIRED AFTER EVERY STORM.

CITY OF MISSION VIEJO



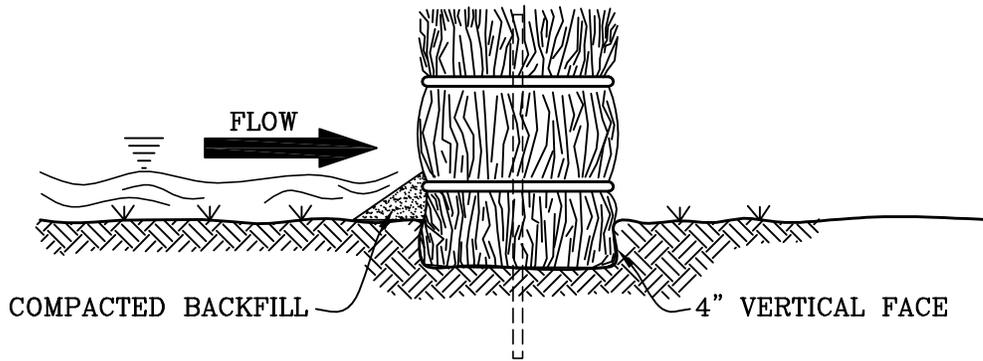
SILT FENCE

STANDARD
 PLAN NO.

455

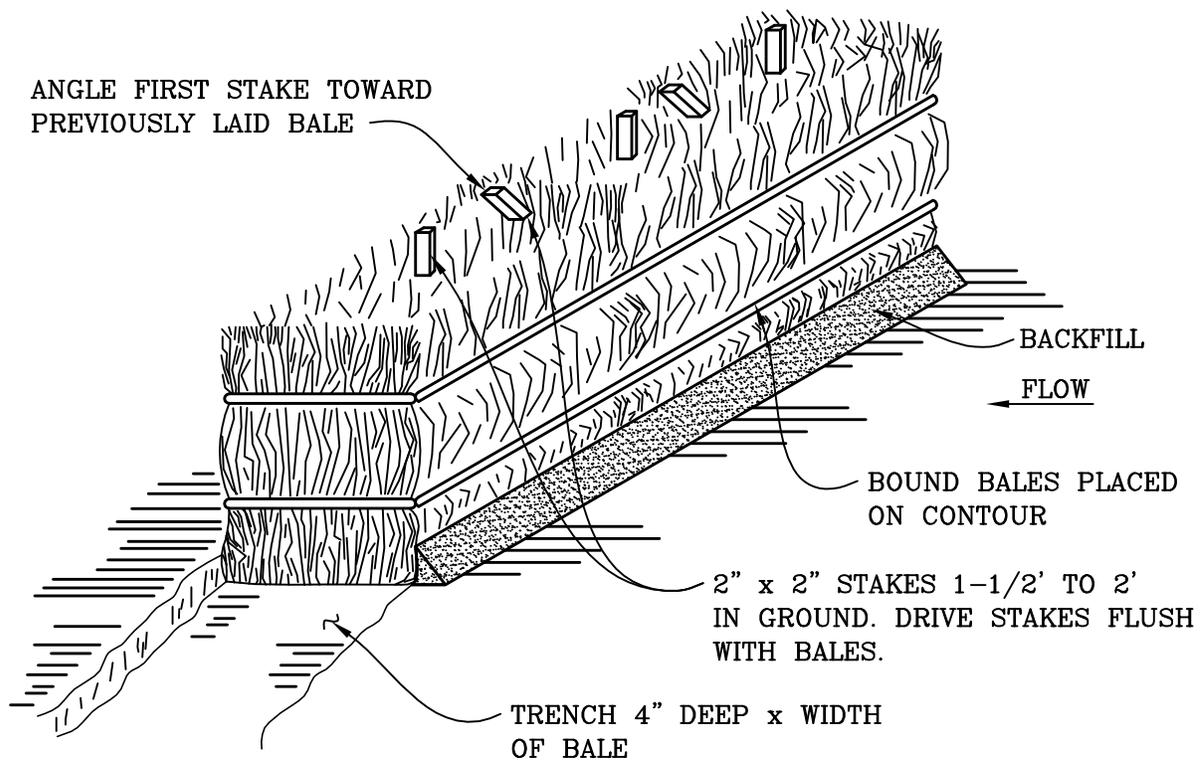
Robert Anderson 9-23-03

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* PROMOTES ON SITE SEDIMENTATION
BY CREATING A TEMPORARY POND.

BEDDING DETAIL



ANCHORING DETAIL

NOTES:
SUBSTITUTION OF STEEL BARS FOR WOODEN STAKES IS NOT RECOMMENDED
DUE TO POTENTIAL FOR DAMAGING CONSTRUCTION EQUIPMENT.

CITY OF MISSION VIEJO



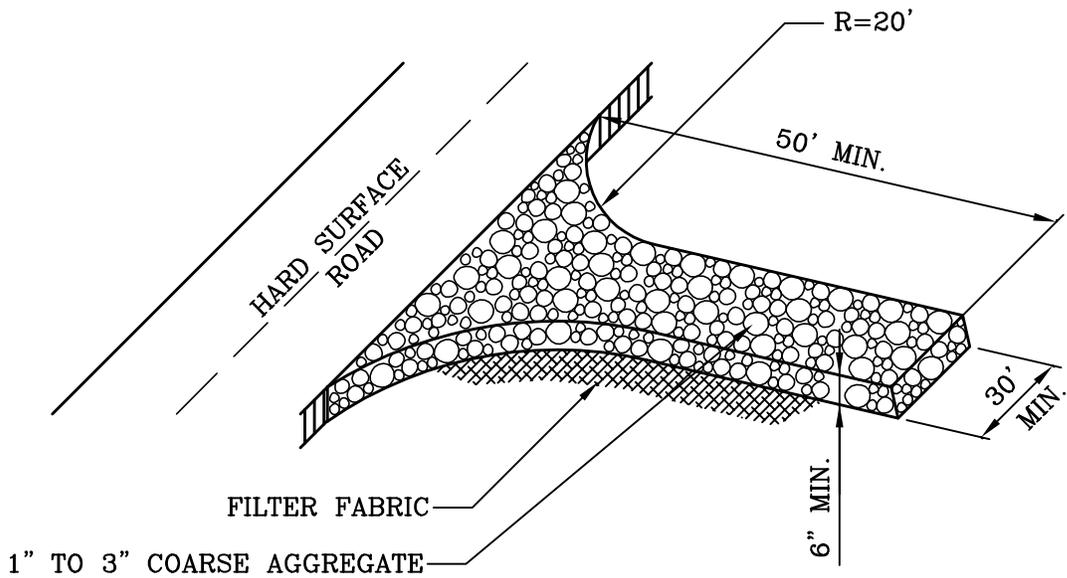
STRAW BALE BARRIERS

STANDARD
PLAN NO.

456

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 1 OF 1



NOTES:

1. PROVIDE AMPLE TURNING RADII AS PART OF ENTRANCE.
2. ENTRANCE WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL AGGREGATE.
3. AT THE OPTION OF THE CITY ENGINEER, A MINIMUM 12' LENGTH OF "TRACKCLEAN", OR EQUAL TIRE CLEANING RACKS MAY BE REQUIRED TO BE PLACED WITH THE GRAVEL AREA.

CITY OF MISSION VIEJO



STABILIZED CONSTRUCTION ENTRANCE

STANDARD
PLAN NO.

457

Robert Anderson

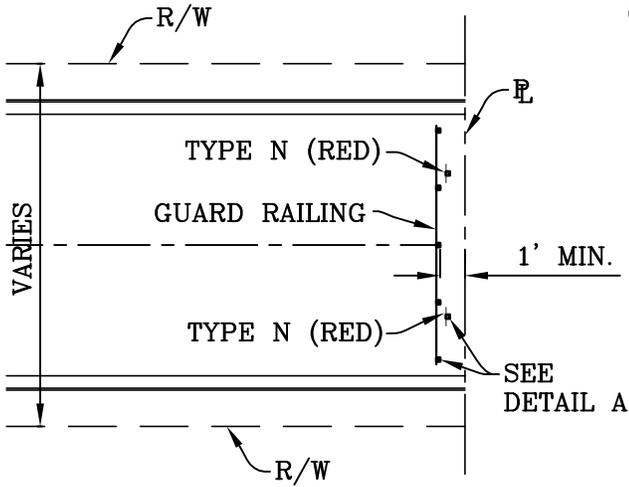
9-23-03

APPROVED

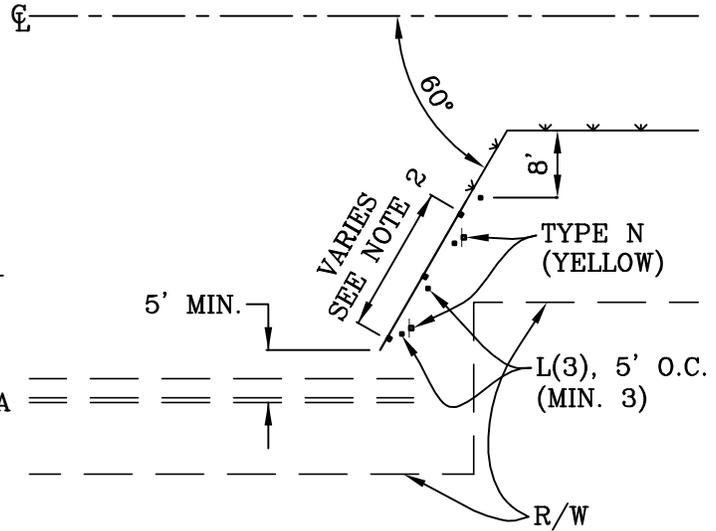
RCE 30190

DATE

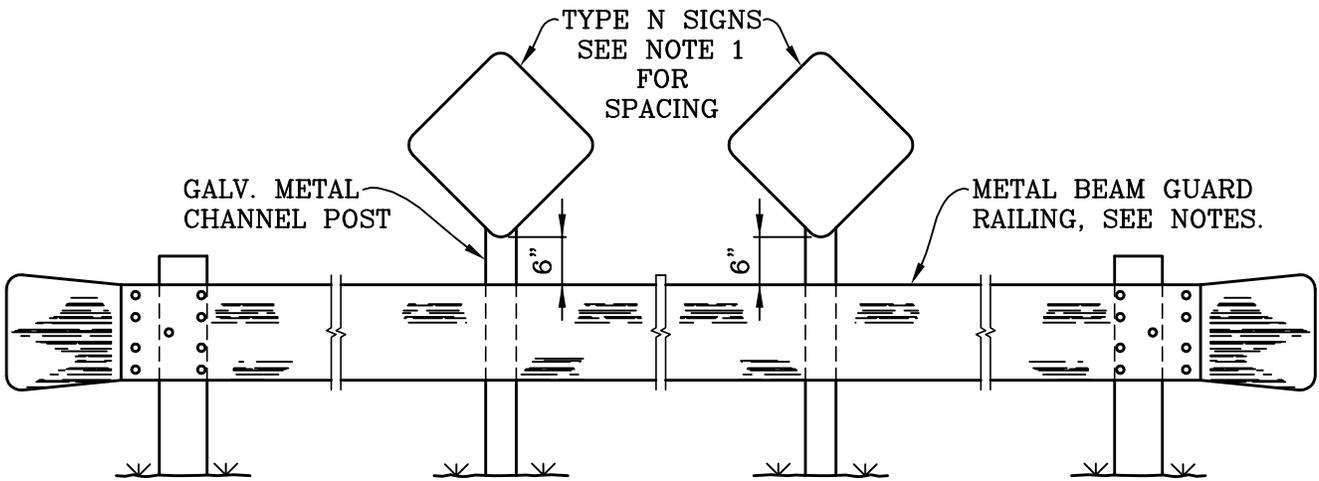
SHT 1 OF 1



TYPICAL DEAD END
WITH GUARD RAILING



TYPICAL WIDENED SECTION
WITH GUARD RAILING



DETAIL A

NOTES:

1. ONE TYPE N SHALL BE PLACED IN THE CENTER OF EACH TRAVEL LANE IN A DEAD END SITUATION.
2. TYPE N SIGNS OR L-(3) MARKERS SHALL BE PLACED AS SHOWN AT ALL LOCATIONS. METAL BEAM GUARD RAILING SHALL BE ADDED AT LOCATIONS WHERE GREATER DAMAGE WOULD BE INFLICTED ON A VEHICLE LEAVING THE ROAD THAN STRIKING THE RAILING, OR WHERE ESSENTIAL TO PROTECT EXISTING FACILITIES FROM THE INTRUSION OF A VEHICLE.
3. LENGTH OF THE METAL BEAM GUARD RAILING SHALL BE IN MULTIPLES OF 12'-6", PLUS 1-9" FOR EACH END PIECE.
4. SEE STD. PLAN 502 FOR METAL BEAM GUARD RAILING DETAILS.

CITY OF MISSION VIEJO



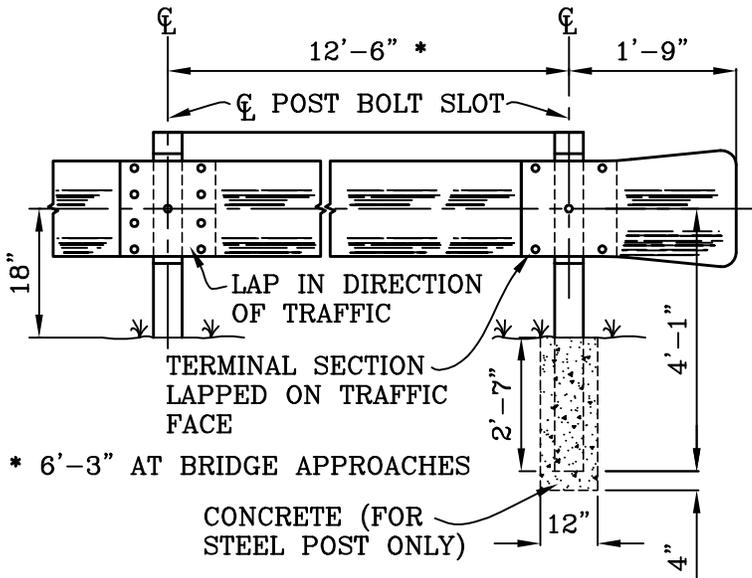
DEAD END & WIDENED
SECTION SIGNING

STANDARD
PLAN NO.

501

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 1 OF 1



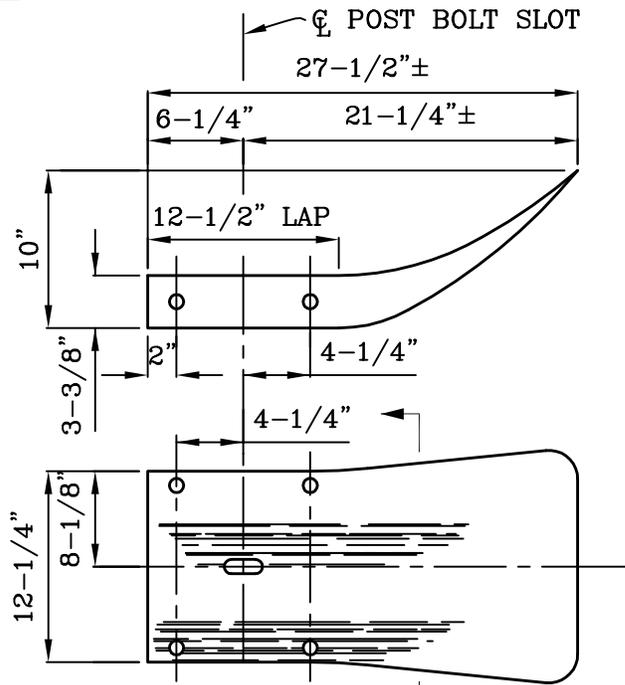
* 6'-3" AT BRIDGE APPROACHES

CONCRETE (FOR STEEL POST ONLY)

INSTALLATION

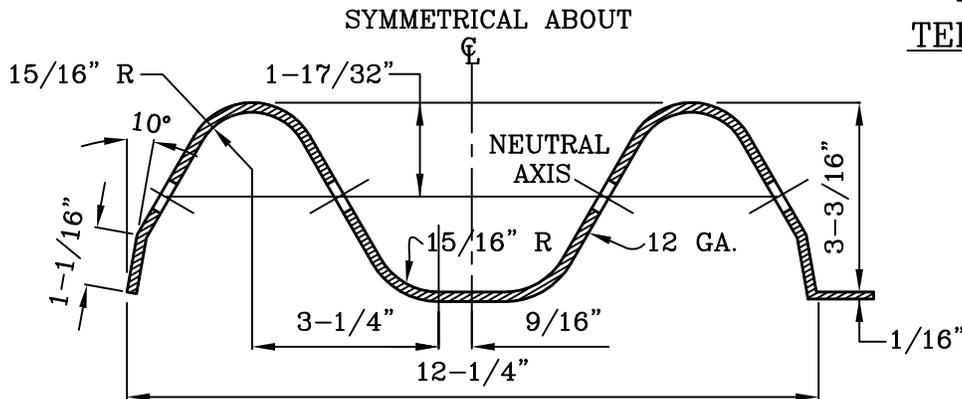
NOTES:

1. GUARD RAILING FLARES AT BRIDGE APPROACHES SHALL HAVE A MINIMUM RADIUS OF 150 FT.
2. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.



SAME AS SECTION THROUGH RAIL ELEMENT

TERMINAL SECTION



SECTION THROUGH RAIL ELEMENT

CITY OF MISSION VIEJO

METAL BEAM GUARD RAILING



APPROVED

RCE 30190

DATE

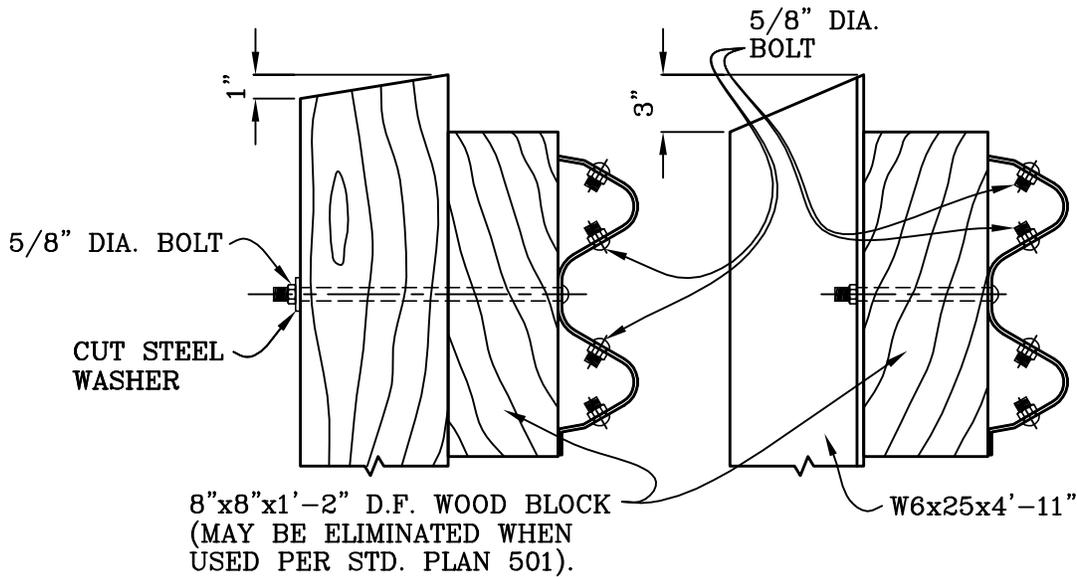
STANDARD PLAN NO.

502

Robert Anderson

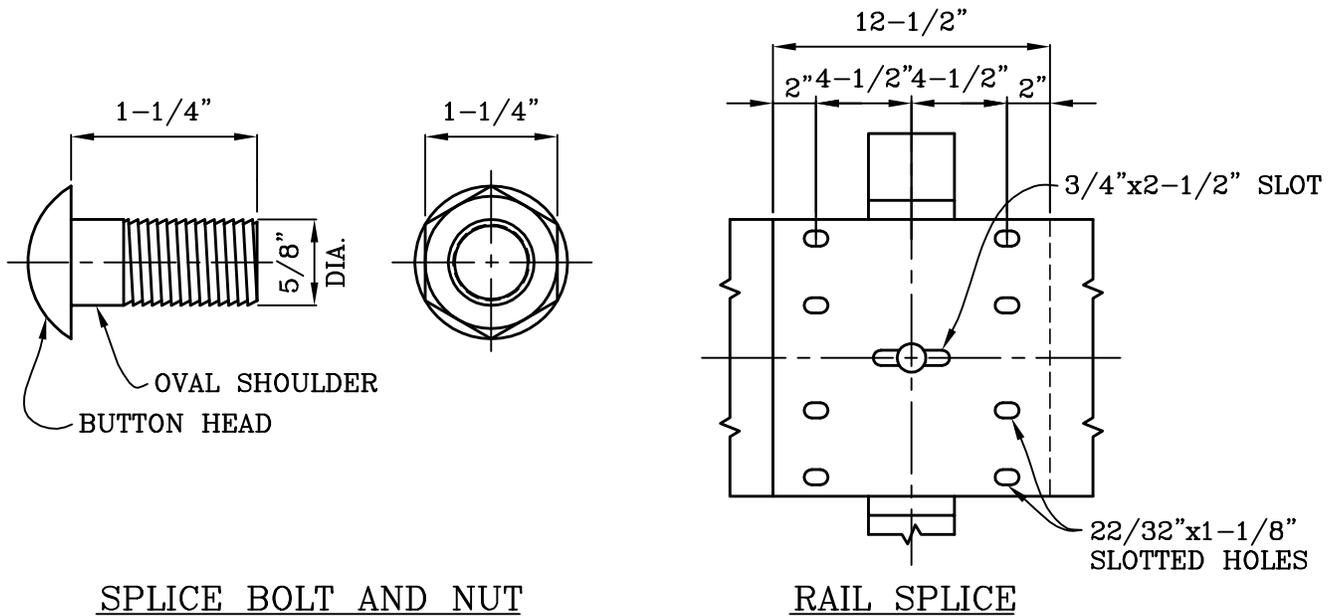
9-23-03

SHT 1 OF 2



NOTE: SET STEEL RAIL POST IN 9" DIA. HOLE & FILL WITH CONCRETE.

ARRANGEMENT OF BOLTS



CITY OF MISSION VIEJO

METAL BEAM GUARD RAILING

STANDARD
PLAN NO.

502



Robert Anderson

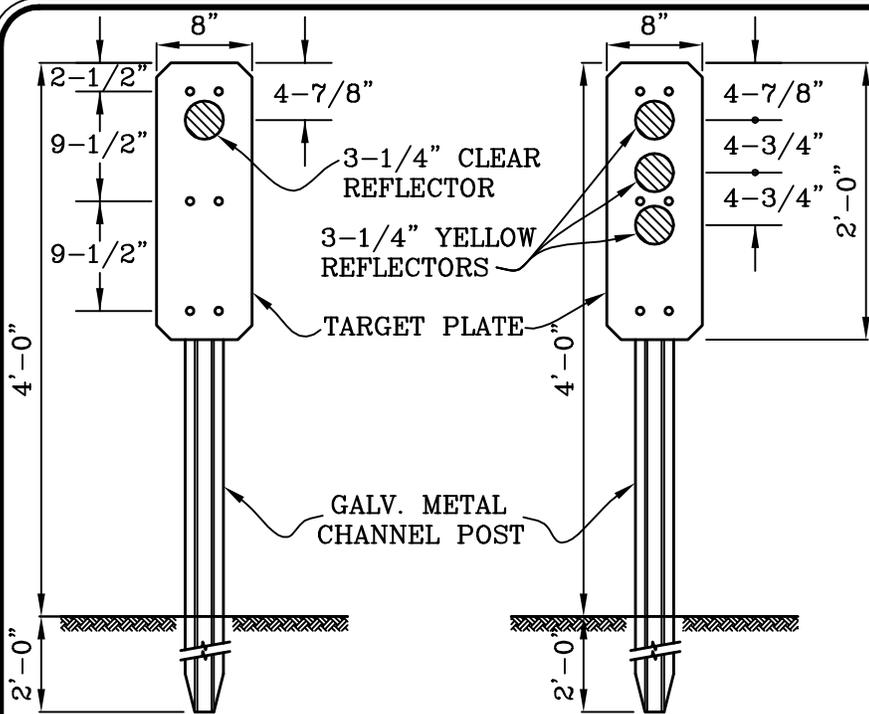
9-23-03

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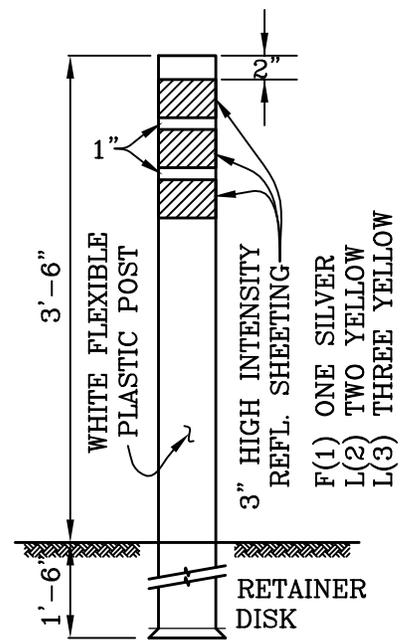
DATE

SHT 2 OF 2



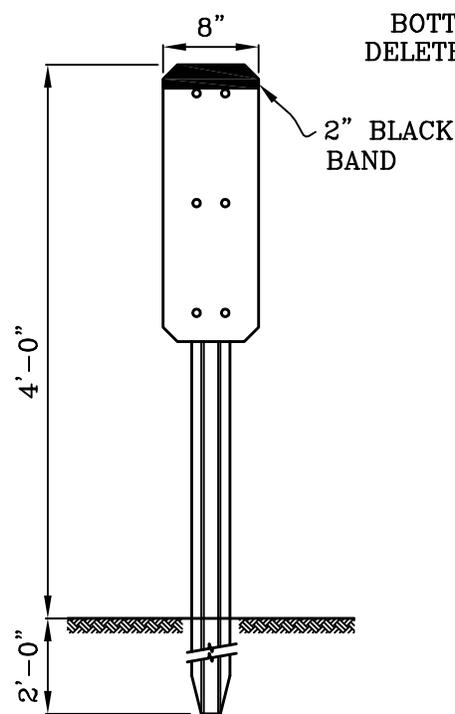
GUIDE MARKER
TYPE F (1)

CLEARANCE MARKER
TYPE L(2) AND L(3)

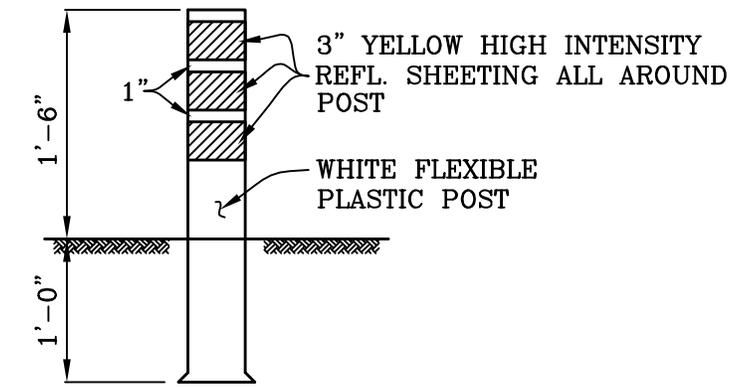


ALTERNATE* PLASTIC MARKER
"AUTOPOST" OR EQUAL AS
APPROVED BY ENGINEER

*ALTERNATE PLASTIC MARKERS
SHALL BE USED WHERE SPECIFIED
OR WHERE PROBABILITY OF
VEHICLE IMPACT IS HIGH.



CULVERT MARKER



ISLAND NOSE MARKER
"AUTOPOST" OR EQUAL AS
APPROVED BY ENGINEER

SEE SHEETS 2 AND 3 FOR PLACEMENT AND NOTES

CITY OF MISSION VIEJO



MARKERS

STANDARD
PLAN NO.

503

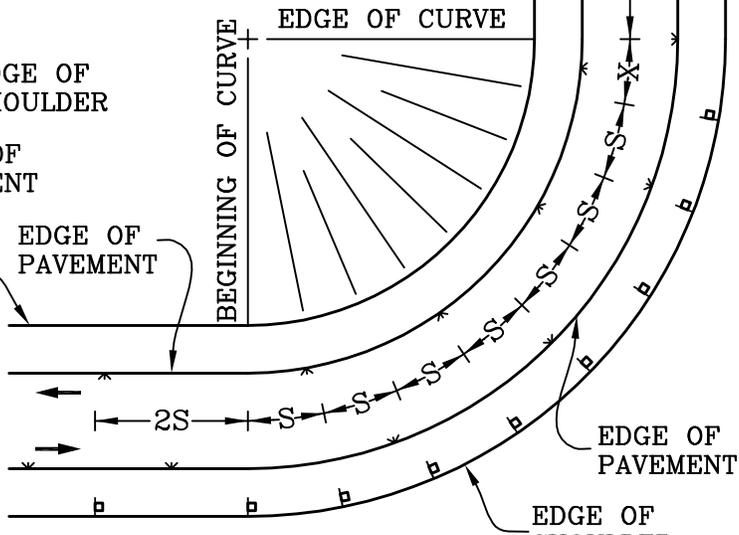
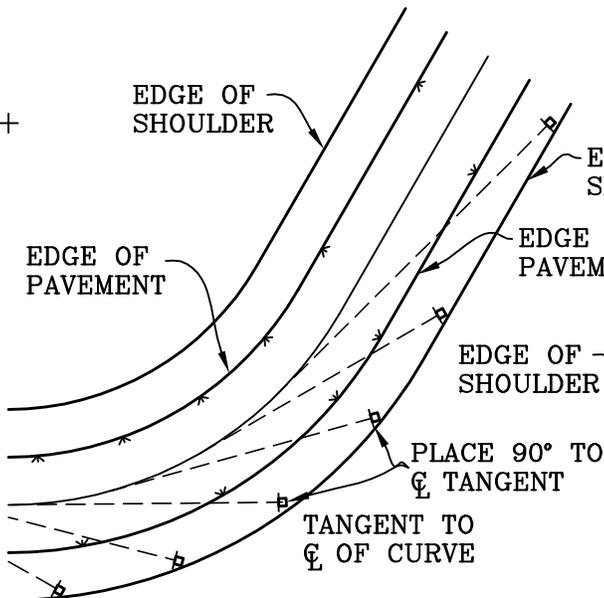
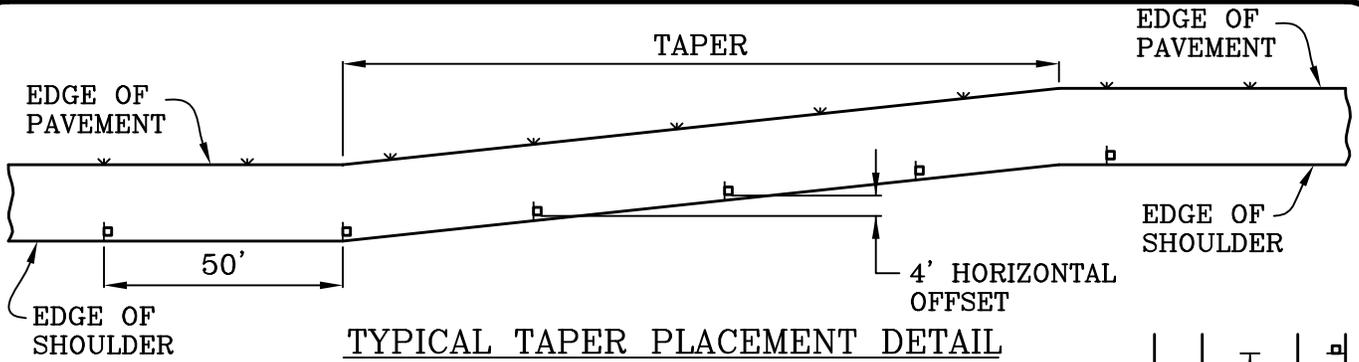
Robert Anderson 9-23-03

APPROVED

RCE 30190

DATE

SHT 1 OF 3



CURVE PLACEMENT DETAIL

SPACING DETAIL

TABLE 1

R(FT.)	S(FT.)	R(FT.)	S(FT.)
50	20	700	75
75	20	800	80
100	25	900	85
150	30	1000	90
200	35	1200	100
300	50	1400	110
400	55	1600	115
500	65	1800	125
600	70	2000	130

- NOTES:**
1. MAX. SPACING BETWEEN GUIDE MARKERS = 300'. MIN. SPACING = 20'.
 2. GUIDE MARKER SPACING ON CURVES LESS THAN 2000' RADIUS SHALL CONFORM TO THAT SPACING INDICATED IN TABLE 1.
 3. PRORATE DISTANCE X AMONG ALL SPACINGS WITHIN CURVE SO LAST GUIDE MARKER FALLS AT END OF CURVE.

LEGEND:
 S = GUIDE MARKER SPACING IN FEET.
 $S = 3\sqrt{R-50}$
 R = CENTERLINE CURVE RADIUS IN FEET.
 p = GUIDE MARKER
 X = DISTANCE REMAINING WITHIN CURVE FROM LAST CALCULATED GUIDE MARKER TO END OF CURVE.

CITY OF MISSION VIEJO

MARKERS



APPROVED *Robert Anderson* 9-23-03 DATE

STANDARD PLAN NO.

503

SHT 2 OF 3

NOTES:

USE OF GUIDE MARKERS AND CLEARANCE MARKERS ON CITY ROADS SHALL CONFORM TO THE FOLLOWING.

1. GUIDE MARKER F(1)
 - a. ON ROADWAY CURVES OF LESS THAN 2000 FT. RADIUS, PLACE AS PER CHART ON SHEET 2.
 - b. ON SHOULDERS ON TANGENTS WHERE THE FILL HEIGHT EXCEEDS 6 FT., PLACE AT 300 FT. INTERVALS.
 - c. ON PAVEMENT OR ROADWAY TAPERS, PLACE FOR 4 FT. HORIZONTAL OFFSET.
2. CLEARANCE MARKERS L(2)
 - a. USED ON SHARP OR SUBSTANDARD CURVES.
 - b. ON THE APPROACH SIDE OF RURAL INTERSECTIONS.
 - c. ON DETOURS.
 - d. FOR OTHER SPECIAL DELINEATION.
3. CLEARANCE MARKER L(3)
 - a. ALONG PEDESTRIAN PATHS OR BIKE WAYS FOR SEPARATION FROM VEHICULAR TRAFFIC.
 - b. FOR OBSTRUCTION LESS THAN 8 FT. FROM THE EDGE OF PAVEMENT, INCLUDING BRIDGE ABUTMENTS.
 - c. FOR WIDENED SECTIONS, PER STD. PLAN 501.
4. ISLAND NOSE MARKER
 - a. IN THE FAR NOSE OF MEDIAN ISLANDS AT OPENINGS AND INTERSECTIONS.
 - b. FACING APPROACHING TRAFFIC AT THE POINTS OF ISLANDS FORMING RIGHT TURN LANES.
 - c. WHERE TRAFFIC DIVIDES AND MAY PROPERLY GO TO EITHER SIDE OF ISLAND.
5. CULVERT MARKER
 - a. LOCATE AT EDGE OF SHOULDER OPPOSITE THE END OF CULVERT.

CITY OF MISSION VIEJO



MARKERS

STANDARD
PLAN NO.

503

APPROVED

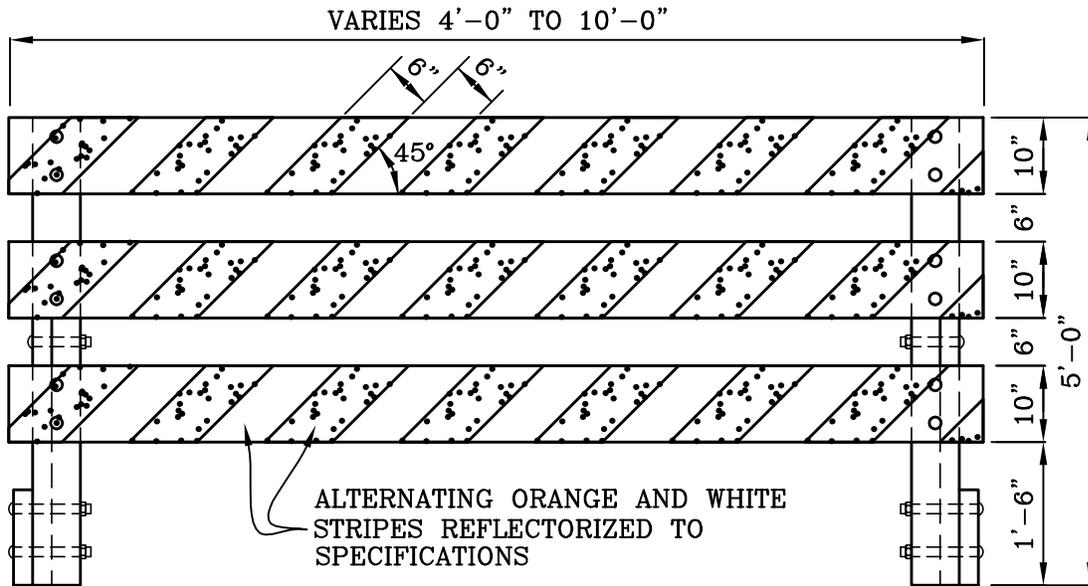
Robert Anderson

RCE 30190

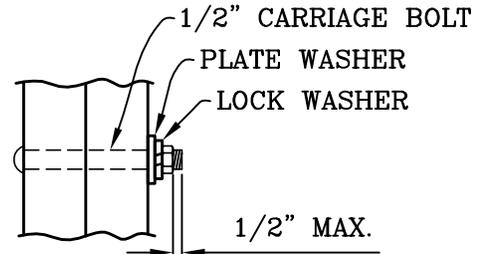
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9-23-03

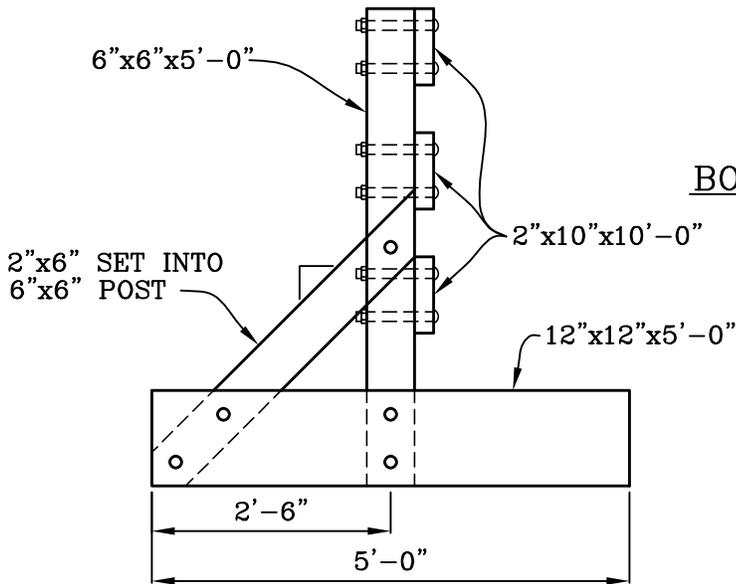
SHT 3 OF 3



FRONT VIEW



BOLT CONNECTION
DETAIL



END VIEW

CITY OF MISSION VIEJO



TIMBER BARRICADE (TYPE III)

STANDARD
PLAN NO.

504

Robert Anderson

9-23-03

APPROVED

RCE 30190

DATE

SHT 1 OF 2

TYPE III BARRICADES SHALL BE USED AS DIRECTED BY THE CITY ENGINEER FOR SPECIAL TRAFFIC CONTROL APPLICATIONS. BARRICADES SHALL BE SECURED WITH CHAINS AS DIRECTED BY THE CITY ENGINEER.

LUMBER:

ALL LUMBER SHALL BE KILN DRIED DOUGLAS FIR, CONSTRUCTION GRADE OR BETTER. S4S.

CONNECTIONS:

ALL CONNECTIONS SHALL BE BOLTED AS SHOWN ON PLAN AND BOLT CONNECTION DETAIL. ALL BOLTS, WASHERS AND NUTS SHALL BE HOT DIPPED GALVANIZED.

PAINTING:

ALL WOOD SURFACES SHALL BE PAINTED WITH ONE COAT OF WOOD PRIMER. WOOD PRIMER SHALL COMPLY IN ALL RESPECTS WITH FEDERAL SPECIFICATIONS TT-P-0025D, EXCEPT THAT IT SHALL DRY HARD IN NOT MORE THAN 12 HOURS. SUBSEQUENT TO APPLICATION OF WOOD PRIMER, ALL WOOD SURFACES, EXCEPT RAIL SURFACES TO BE REFLECTORIZED, WILL BE PAINTED WITH ONE COAT OF LATEX-BASE WHITE PAINT. PAINT SHALL COMPLY IN ALL RESPECTS WITH FEDERAL SPECIFICATION TT-P-0096B.

REFLECTORIZED RAILS:

THE ENTIRE FRONT FACE OF ALL 2"x10"x10'-0" (3 EA.) RAILS SHALL BE COVERED WITH A REFLECTORIZED SHEETING MATERIAL HAVING ALTERNATING 6" WIDE ORANGE AND WHITE STRIPES SLOPING DOWNWARD TO THE LEFT AT 45°. REFLECTIVE SHEETING SHALL BE APPLIED TO THE WOOD RAIL SURFACE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, AND SHALL NOT CHIP, PEEL, OR CRACK, AND SHALL MAINTAIN THE SPECIFIED MINIMUM REFLECTANCE VALUES WHEN EXPOSED TO EXTERNAL USE FOR A PERIOD OF 3 YEARS. REFLECTIVE SHEETING SHALL MEET THE FOLLOWING MINIMUM DRY REFLECTANCE VALUES AT 0.2 AND 0.5 DEGREE DIVERGENCE EXPRESSED IN UNITS OF CANDLEPOWER PER FOOT CANDLE PER SQUARE FOOT, AS MEASURED AT A DISTANCE OF 50 FEET FROM THE LIGHT SOURCE. THE WET REFLECTANCE VALUES SHALL BE A MINIMUM OF 90 PERCENT OF THE DRY VALUES.

DRY REFLECTIVE VALUES

DIVERGENCE ANGLE (DEGREE)	INCIDENCE ANGLE (DEGREE)	WHITE	ORANGE
0.2	-4	50.0	13.0
0.2	30	12.0	4.0
0.5	-4	15.0	6.5
0.5	30	6.0	2.5

CERTIFICATES OF COMPLIANCE:

SUPPLIER SHALL FURNISH CERTIFICATES OF COMPLIANCE SPECIFICATIONS FOR LUMBER, PAINT, AND REFLECTIVE SHEETING AS REQUIRED BY THE CITY ENGINEER.

CITY OF MISSION VIEJO



TIMBER BARRICADE (TYPE III)

Robert Anderson

9-23-03

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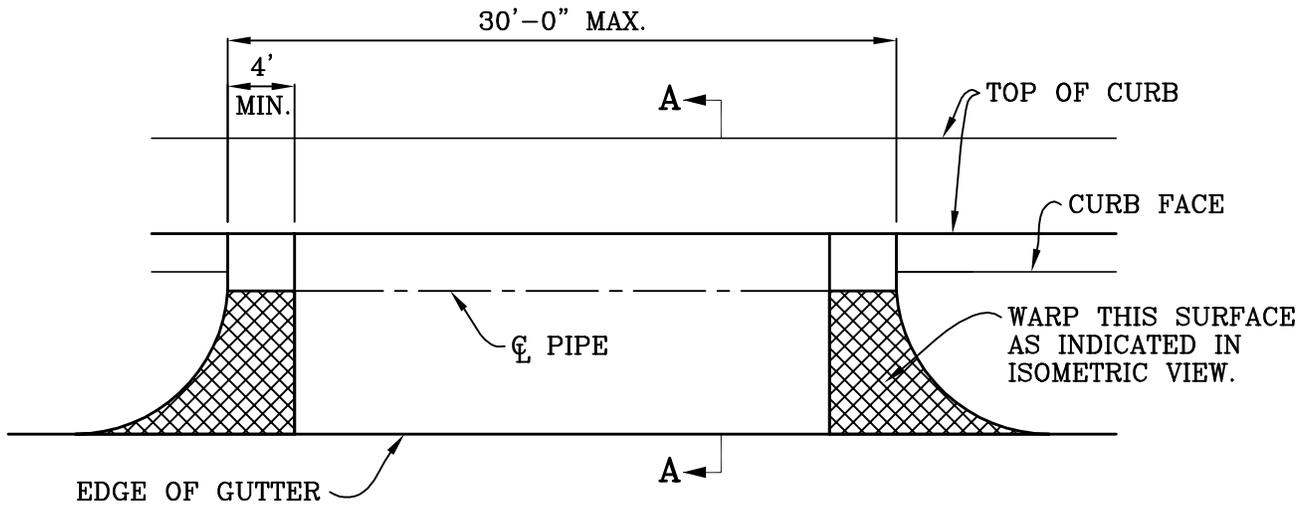
RCE 30190

DATE

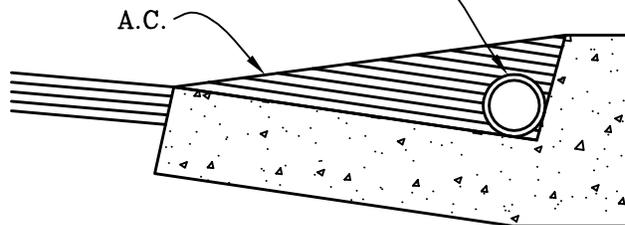
STANDARD
PLAN NO.

504

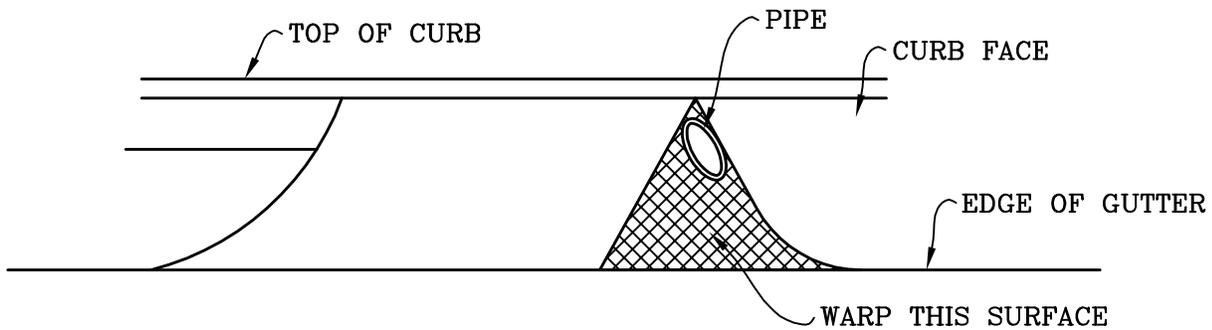
SHT 2 OF 2



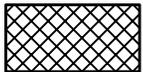
4" DIA. CAST IRON PIPE (MINIMUM)



SECTION A-A



ISOMETRIC VIEW



PAINTE AND MAINTAIN SURFACE WITH WHITE REFLECTIVE PAINT (CODIT OR EQUAL)

CITY OF MISSION VIEJO

TEMPORARY CONSTRUCTION ACCESS RAMP

STANDARD
PLAN NO.

505



APPROVED

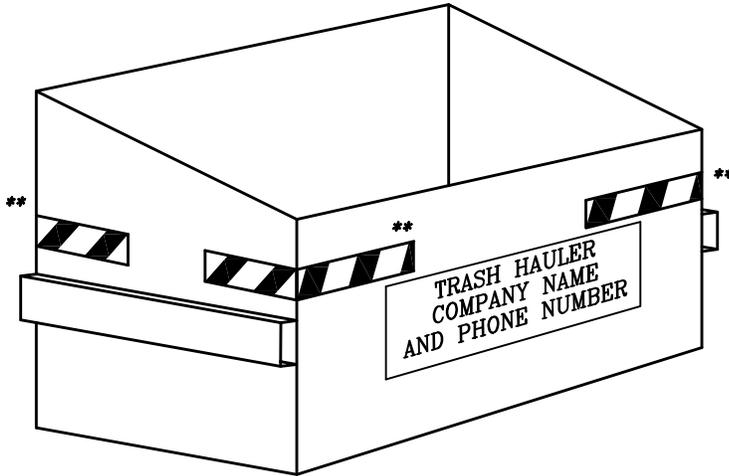
RCE 30190

DATE

Robert Anderson

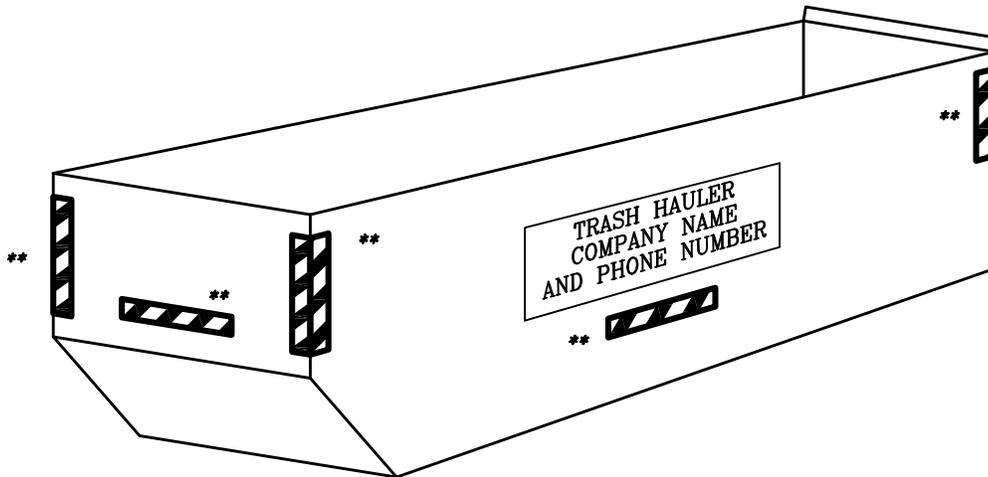
9-23-03

SHT 1 OF 1



CASE 1

** REFLECTIVE SHEETING
MATERIAL PER NOTES
ON SHEET 2



CASE 2

CITY OF MISSION VIEJO

RUBBISH / CONSTRUCTION BIN
REFLECTORIZAZION

STANDARD
PLAN NO.

506



Robert Anderson

9-23-03

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RCE 30190

DATE

SHT 1 OF 2

NOTES:

CASE 1 - BINS WITH A CAPACITY OF 6 CY AND LESS

SHEETING MATERIAL (IN CONFORMANCE WITH THE SPECIFICATION BELOW) PLACED AT EACH CORNER EXTENDING EACH DIRECTION A DISTANCE OF NOT LESS THAN 12 INCHES.

STRIPS TO BE LOCATED BETWEEN SIDE CHANNELS AND THE TOP OF BIN.

CASE 2- BIN LARGER THAN 6 CY CAPACITY

SHEETING MATERIAL (IN CONFORMANCE WITH THE SPECIFICATION BELOW) PLACED AS FOLLOWS:

VERTICAL MARKINGS AT EACH CORNER IN TWO 4 INCH STRIPS-ONE EACH SIDE OF CORNER. LOCATED MID-HEIGHT AT A MINIMUM LENGTH OF 24 INCHES.

HORIZONTAL MARKINGS CENTERED ON EACH SIDE, MINIMUM LENGTH OF 24 INCHES.

REFLECTORIZED SHEETING MATERIAL SPECIFICATION

REFLECTORIZED SHEETING MATERIAL SHALL BE "SAFETY-LITE" CODE NO. 73-62 SERIES OF APPROVED EQUAL "ENGINEER GRADE" WITH A REFLECTANCE 200 TIMES BRIGHTER THAN A WHITE PAINTED SURFACE WHEN A LIGHT SHINED ON IT AND SHALL MAINTAIN THAT LEVEL OF REFLECTANCE FOR A MINIMUM PERIOD OF 3 YEARS. MARKINGS SHALL BE 4 INCHES WIDE HAVING ALTERNATING STRIPES SLOPING DOWNWARD TO THE LEFT AT 45 DEGREES. STRIPING COLORS SHALL BE YELLOW AND BLACK OR OTHER COMBINATION APPROVED BY THE CITY ENGINEER. REFLECTIVE SHEETING SHALL BE APPLIED TO BIN SURFACE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

CITY OF MISSION VIEJO



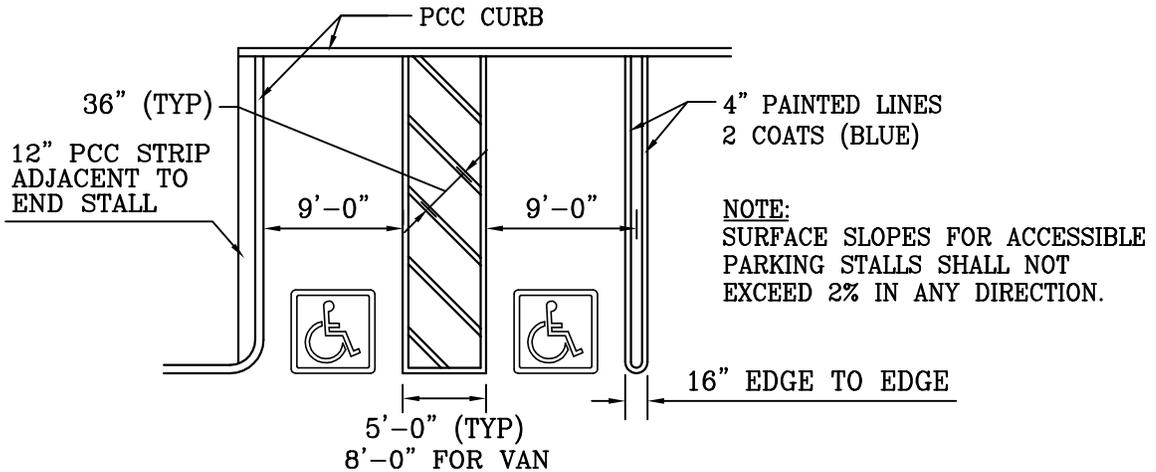
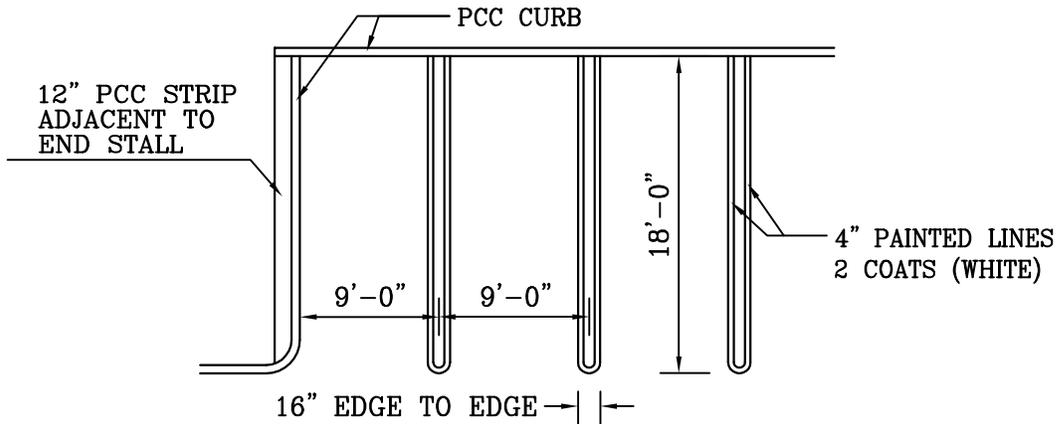
RUBBISH / CONSTRUCTION BIN
REFLECTORIZATION

STANDARD
PLAN NO.

506

Robert Anderson 9-23-03
APPROVED RCE 30190 DATE

SHT 2 OF 2



NOTES:

1. ALL STRIPING TO BE 4" WIDE
2. SYMBOL SHALL HAVE BLUE BACKGROUND WITH WHITE FIGURE
3. PROVIDE TWO COATS OF PAINT
4. SYMBOL SHALL BE CENTERED IN OPENING OF STALL
5. ONE SYMBOL PER HANDICAP PARKING STALL

CITY OF MISSION VIEJO

PARKING STALL STRIPING

STANDARD
PLAN NO.

507



Robert Anderson

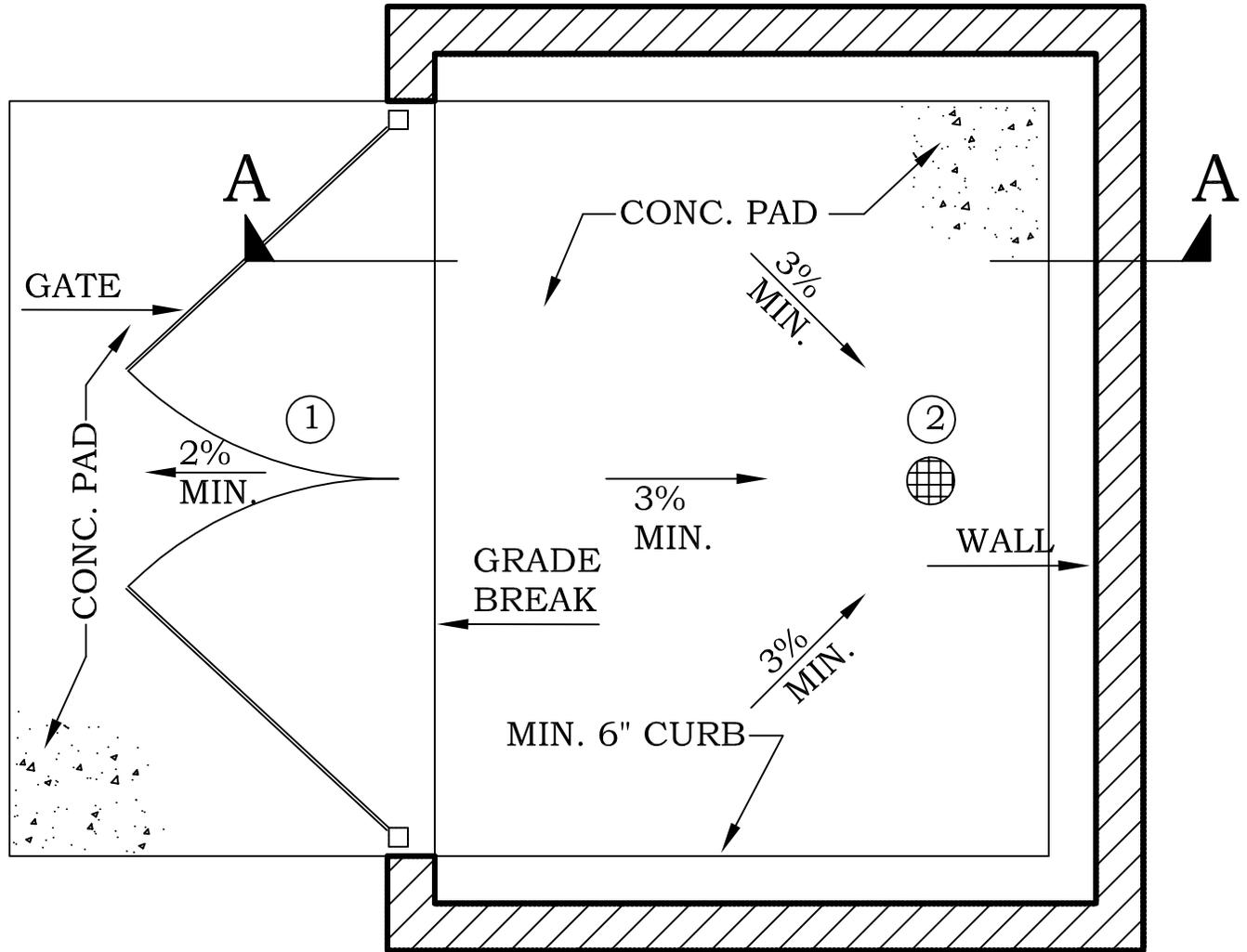
9-23-03

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RCE 30190

DATE

SHT 1 OF 1



NOTES:

- ① CONSTRUCT GATE AT GRADE BREAK.
- ② CONNECT DRAIN TO SANITARY SEWER WITH APPROVAL OF WATER DISTRICT.

CITY OF MISSION VIEJO

TRASH ENCLOSURE

PLAN VIEW

STANDARD
PLAN NO.

508



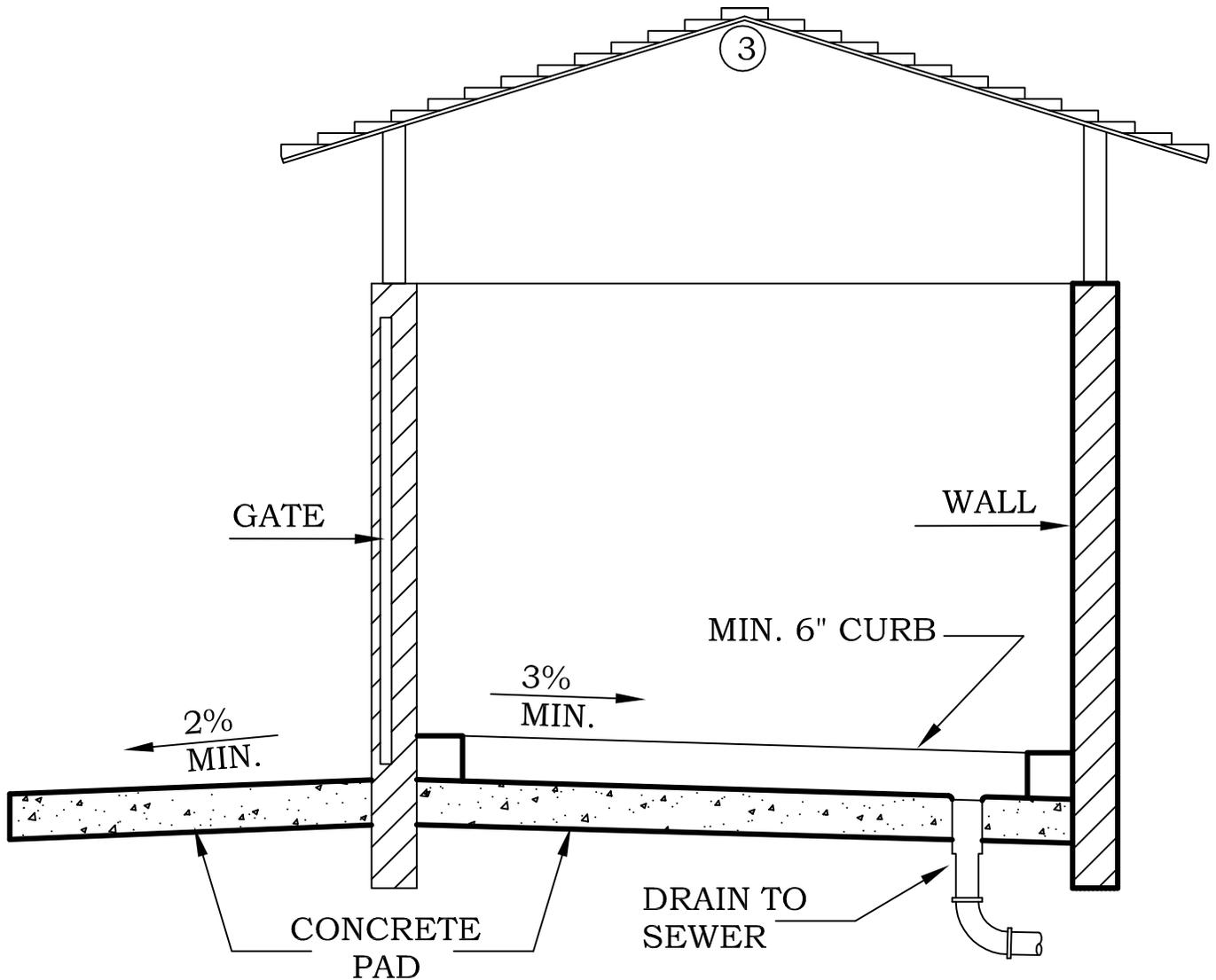
Rich Schlegler

08/01/05

APPROVED BY: CITY ENGINEER RCE 51160

DATE

SHT 1 OF 3



NOTE:

③ ROOF DESIGN PER CITY BUILDING DEPARTMENT

NOTE:

TRASH ENCLOSURE STRUCTURE PER SEPARATE CITY BUILDING DEPARTMENT PERMIT.

CITY OF MISSION VIEJO

TRASH ENCLOSURE
SECTION A-A

STANDARD
PLAN NO.

508



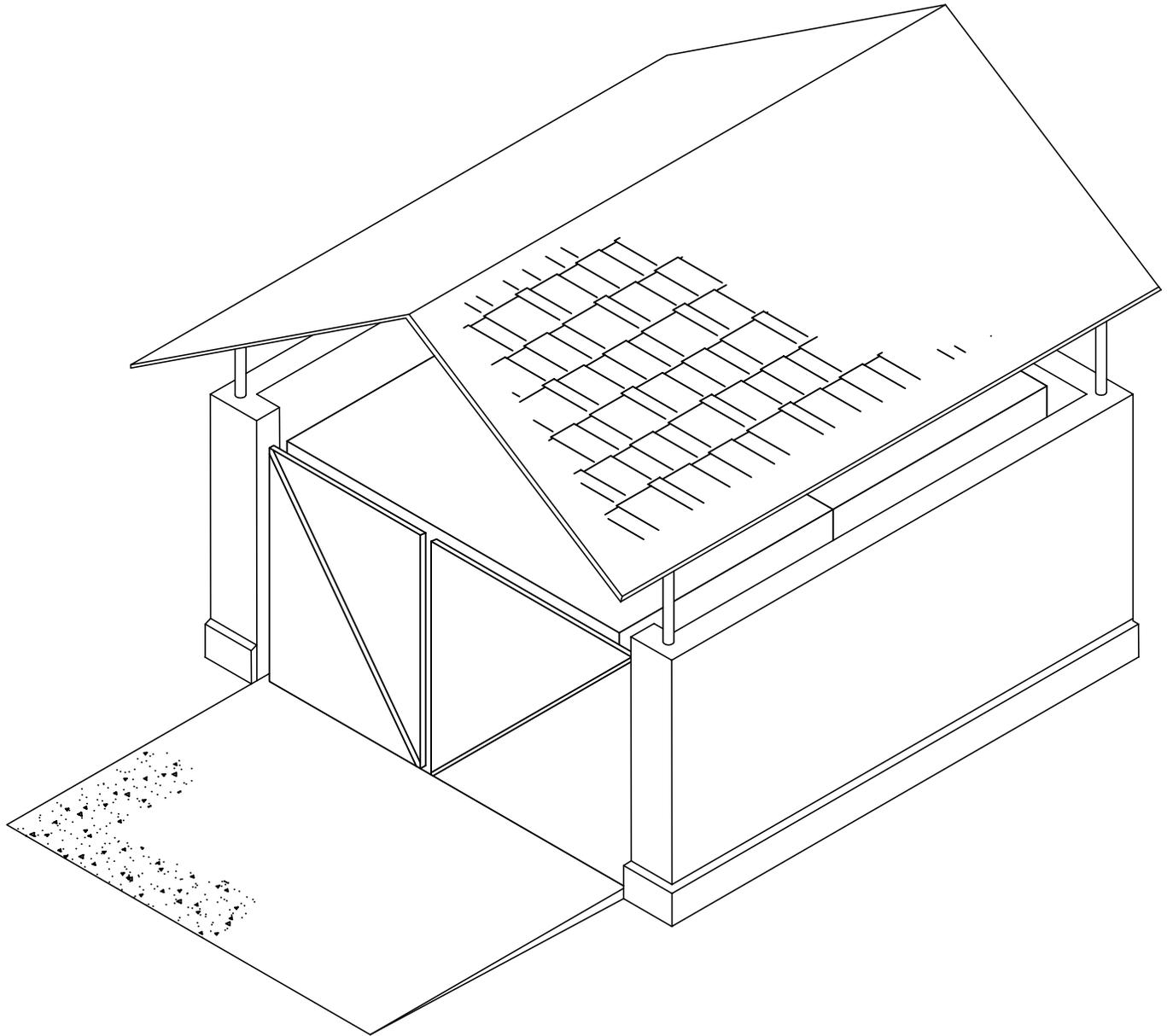
Rich Schlegler

08/01/05

APPROVED BY: CITY ENGINEER RCE 51160

DATE

SHT 2 OF 3



CITY OF MISSION VIEJO

TRASH ENCLOSURE
OVERALL VIEW

STANDARD
PLAN NO.

508



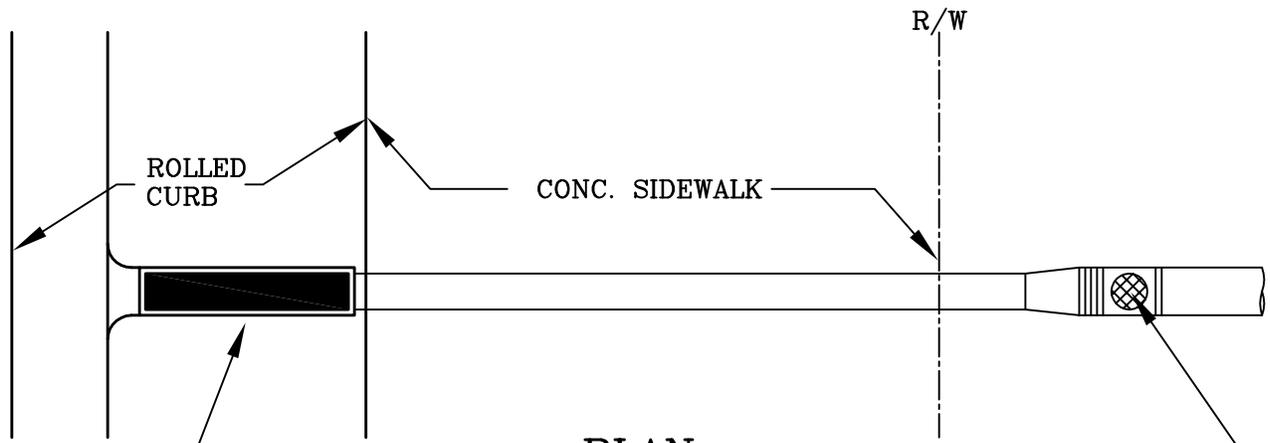
Rich Schloinger

08/01/05

APPROVED BY: CITY ENGINEER RCE 51160

DATE

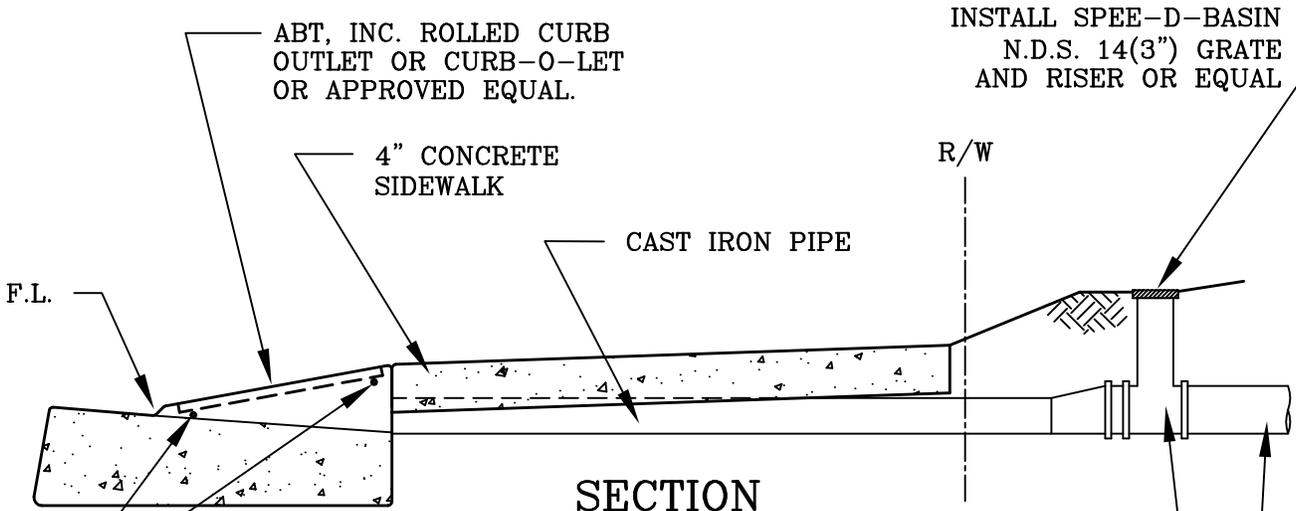
SHT 3 OF 3



PLAN

ABT, INC. ROLLED CURB
OUTLET OR CURB-O-LET
OR APPROVED EQUAL.

INSTALL SPEE-D-BASIN
N.D.S. 14(3") GRATE
AND RISER OR EQUAL



SECTION

ABT, INC. ROLLED CURB
OUTLET OR CURB-O-LET
OR APPROVED EQUAL.

INSTALL SPEE-D-BASIN
N.D.S. 14(3") GRATE
AND RISER OR EQUAL

INSTALL THE ROLLED CURB
DRAINAGE OUTLET ACCORDING TO
MANUFACTURE'S RECOMMENDATIONS.

3" OR 4" TEE (VERTICLE)

3" OR 4" P.V.C.
© 0.5%

CITY OF MISSION VIEJO



ROLLED CURB DRAIN OUTLET DETAIL

509

Rich Schloinger

08/01/05

APPROVED BY: CITY ENGINEER RCE 51160

DATE

SHT 1 OF 1