

ABBREVIATIONS:

WPJ WEAKENED PLANE JOINT BCR BEGINNING OF CURB RETURN
 EXP JT EXPANSION JOINT ECR END OF CURB RETURN

NOTES:

1. WEAKENED PLANE JOINTS SHALL BE USED FOR ALL JOINTS, EXCEPT THAT EXPANSION JOINTS SHALL BE PLACED AT THE BCR AND ECR IN CURB, GUTTER AND SIDEWALK, AND AROUND UTILITY POLES LOCATED IN SIDEWALK AREAS.
2. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT REGULAR INTERVALS NOT EXCEEDING 10' (3000 mm) IN WALKS AND 20' (6000 mm) IN GUTTERS. JOINTS IN CURB AND WALK SHALL BE ALIGNED.
3. CURB AND GUTTER SHALL BE CONSTRUCTED SEPARATELY FROM SIDEWALK.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE
 PUBLIC WORKS STANDARDS INC.
 GREENBOOK COMMITTEE
 1984
 REV. 1996, 2009

CURB AND SIDEWALK JOINTS

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

112-2

SHEET 1 OF 1

SEE OCPW STANDARD PLAN 112-2-OC FOR CONDITIONS

The following Standard Plans for Public Works Construction, 2009 Edition, of the Public Works Standards, Inc. have been adopted by OCPW with conditions which shall apply to OCPW use. The conditions are listed below.

SPPWC # OCPW # Name and Conditions

112-2

112-2-0C

Curb and Sidewalk Joints

1. Weakened plane joints (WPJ) shall be constructed in curb and gutter not exceed 10 feet.
2. WPJ shall be a depth of $\frac{1}{4}$ to $\frac{1}{3}$ of the concrete thickness.
3. Expansion joint (Exp JT) shall be full depth.
4. a. Sidewalk:
WPJ shall be quickjoints and finished with a butterfly tool (R= $\frac{1}{8}$ inch).
- b. Formed Curb and Gutter:
Exp JT shall be $\frac{1}{4}$ inch thick premolded filler (asphalt saturated fiber) in the top of curb, face of curb and across the gutter, as required by the Engineer.
- c. Extruded Curb and Gutter:
Exp JT shall be cut (hand tooled) in the top of curb, face of curb, and across the gutter or sawcut (within 24 hours).
- d. Gutter Transition:
Exp JT shall be $\frac{1}{4}$ inch thick premolded filler, as required by the Engineer.
5. Meter boxes and vaults shall have WPJ similar to tree well detail.
6. Premolded Filler ($\frac{1}{4}$ inch thick asphalt saturated fiber) shall be placed between sidewalk return and curb.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved



Ignacio G. Ochoa, Chief Engineer

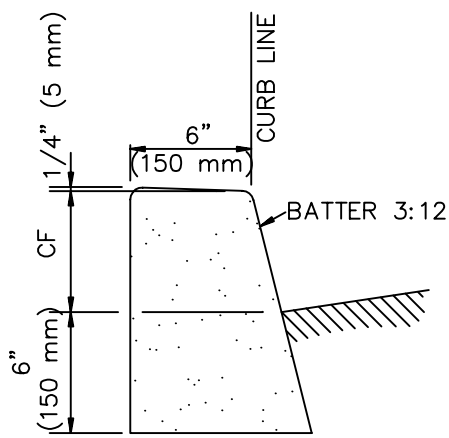
Revision: April 2013

STD. PLAN

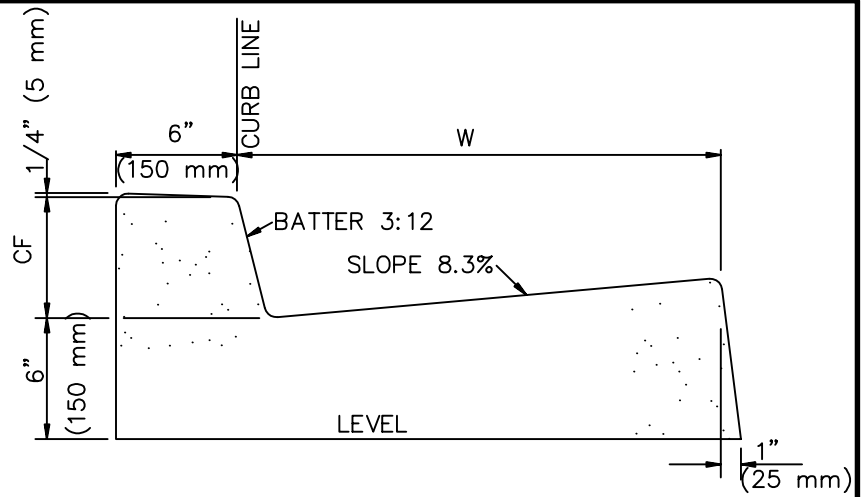
112-2-0C

SPPWC STANDARD PLANS - CURB & SIDEWALK JOINTS

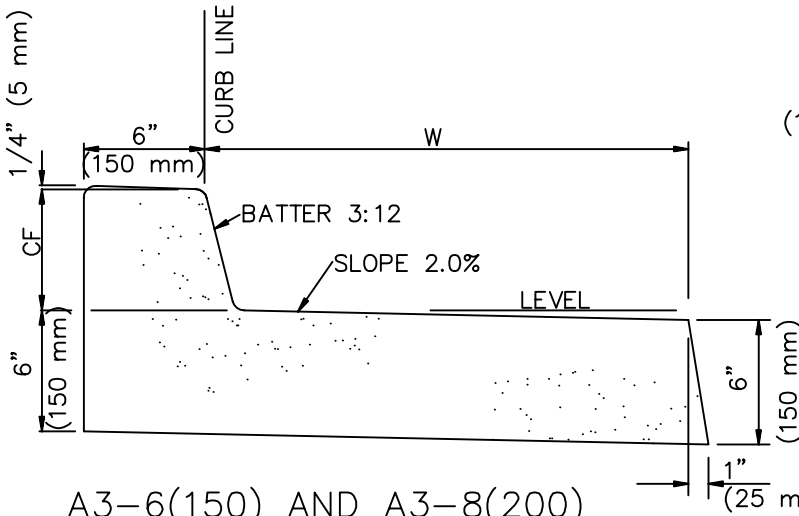
SHT. 1 OF 1



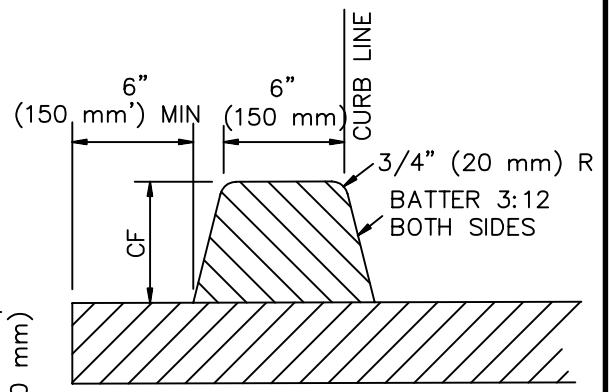
A1-6(150) AND
A1-8(200)



A2-6(150) AND A2-8(200)



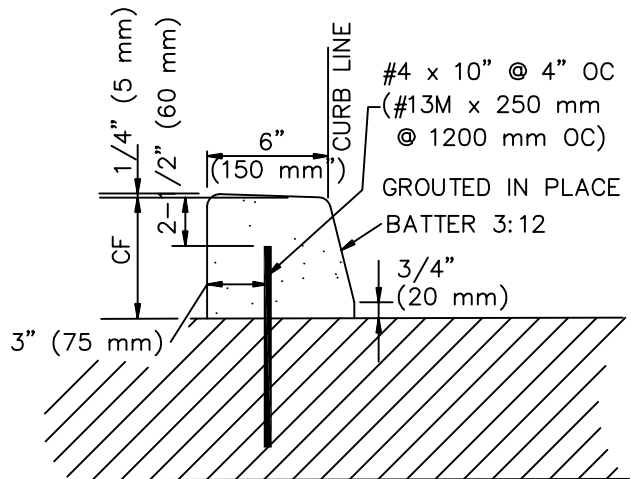
A3-6(150) AND A3-8(200)



D1-6(150) AND
D1-8(200)

NOTES:

1. THE LAST NUMBER IN THE DESIGNATION IS THE CURB FACE (CF) HEIGHT, INCHES (mm).
2. GUTTER WIDTH, W, IS 24" (600 mm) UNLESS OTHERWISE SPECIFIED.
3. TYPES A1, A2, A3 AND C1 SHALL BE CONSTRUCTED FROM PCC.
4. TYPE D1 CURB SHALL BE CONSTRUCTED FROM ASPHALT CONCRETE.
5. TYPE C1 CURB SHALL BE ANCHORED WITH STEEL DOWELS AS SHOWN OR WITH AN EPOXY APPROVED BY THE ENGINEER.
6. ALL EXPOSED CORNERS ON PCC CURBS AND GUTTERS SHALL BE ROUNDED WITH A 1/2" (15 mm) RADIUS.



C1-6(150) AND C1-8(200)

STANDARD PLAN FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE
PUBLIC WORKS STANDARDS INC.
GREENBOOK COMMITTEE
1984
REV. 1996, 2009

CURB AND GUTTER - BARRIER

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

120-2

SHEET 1 OF 1

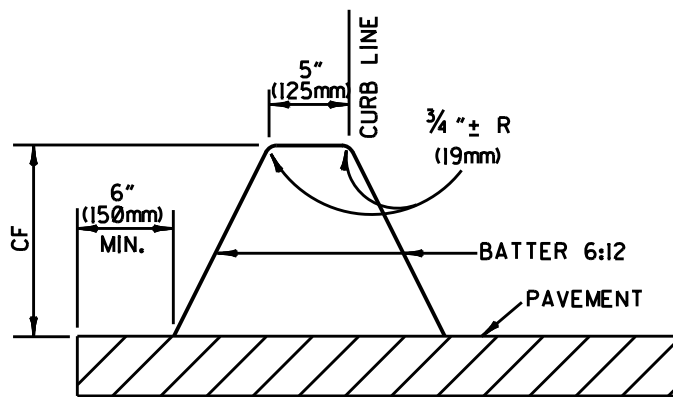
SEE OCPW STANDARD PLAN 120-2-OC FOR CONDITIONS

The following Standard Plans for Public Works Construction, 2009 Edition, of the Public Works Standards, Inc. have been adopted by OCPW with conditions which shall apply to OCPW use. The conditions are listed below.

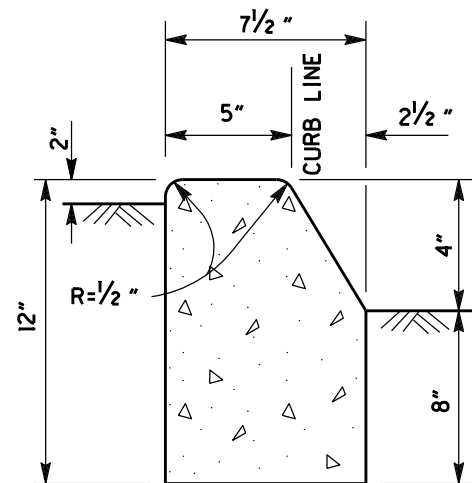
SPPWC # OCPW # Name and Conditions
 120-2 120-2-OC Curb and Gutter-Barrier

1. Type A-2. Place asphalt concrete surfacing $\frac{3}{8}$ inch above edge of PCC gutter, except in the case of curb ramps where the asphalt concrete surfacing shall be flush with the PCC gutter.
2. Type D-1. Tack AC pavement with emulsified asphalt at rate of 0.05 gallons per square yard prior to placing AC curb. Alternate DI curb may be constructed using a batter of 6:12 and 5 inches top width as shown per Detail "A" below.
3. For the Type A2-6(150) curb, the "W" dimension shall be 1 foot-6 inches, unless otherwise indicated on the Plans.
4. Curb type shall be selected according to the following table:

	< 45 mph	\geq 45 mph
Median	A1-6(150)	See detail "B" below
Adjacent to sidewalk	A2-6(150)	A2-6(150)



ALTERNATE DI-6(150)
DETAIL "A"



DETAIL "B"

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved


 Ignacio G. Ochoa, Chief Engineer

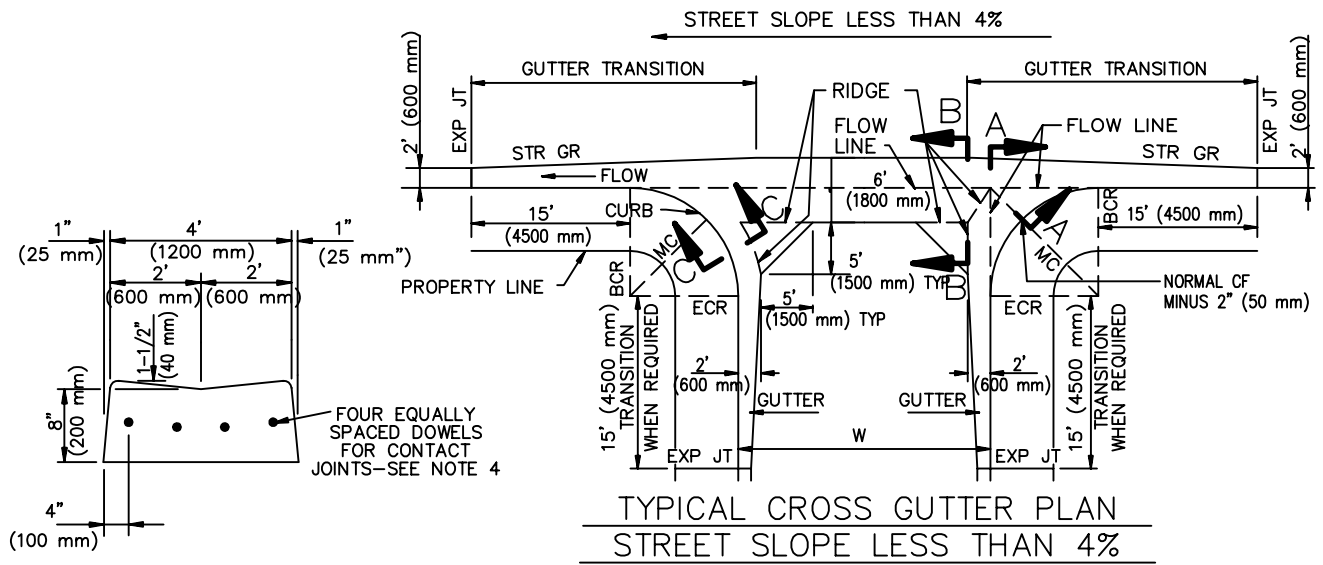
Revision: April 2013

STD. PLAN

120-2-OC

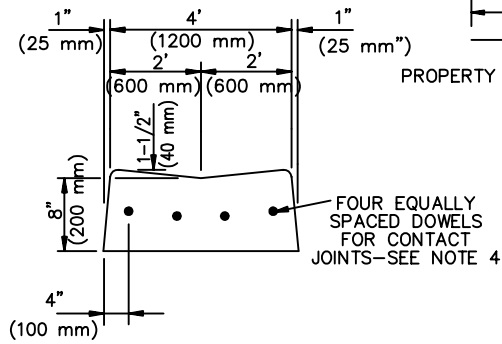
SPPWC STANDARD PLAN - CURB AND GUTTER-BARRIER

SHT. 1 OF 1

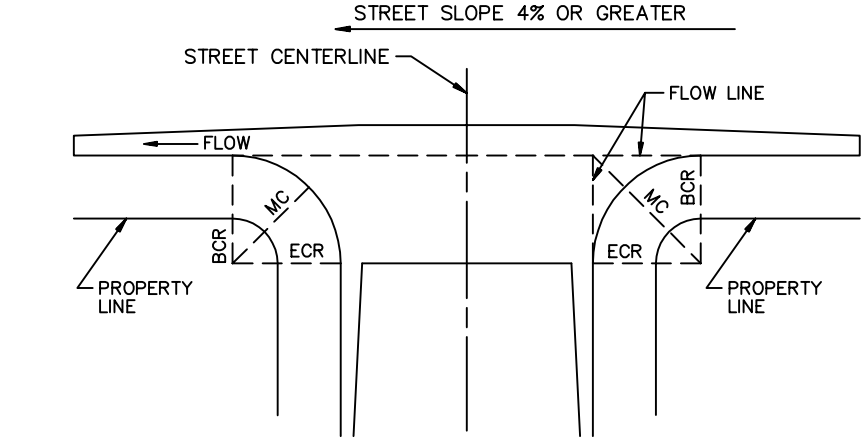


TYPICAL CROSS GUTTER PLAN
STREET SLOPE LESS THAN 4%

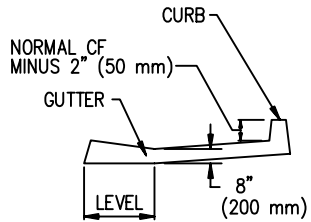
LONGITUDINAL
GUTTER



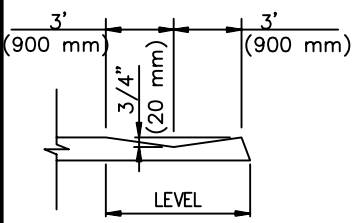
FOUR EQUALLY SPACED DOWELS FOR CONTACT JOINTS—SEE NOTE 4



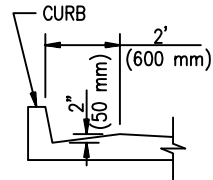
TYPICAL CROSS GUTTER PLAN
STREET SLOPE MORE THAN 4%



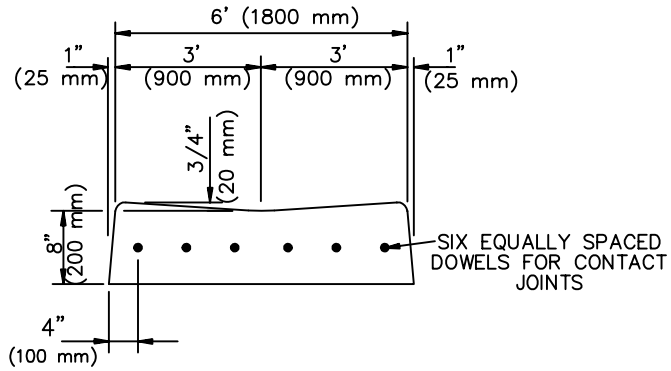
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE
PUBLIC WORKS STANDARDS INC.
GREENBOOK COMMITTEE
1984
REV. 1996, 2009

CROSS AND LONGITUDINAL GUTTERS

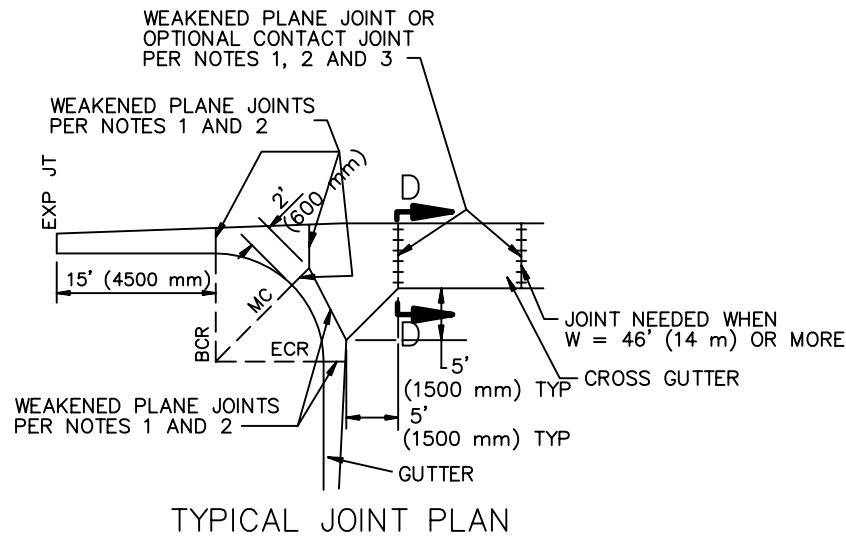
USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

122-2

SHEET 1 OF 2

SEE OCPW STANDARD PLAN 122-2-OC FOR CONDITIONS



NOTES:

1. WEAKENED PLANE AND/OR CONTACT JOINTS SHALL BE PLACED IN CURB AND GUTTER AT LOCATIONS SHOWN ON THE TYPICAL JOINT PLAN HEREON.
2. WEAKENED PLANE JOINTS SHALL BE PLASTIC CONTROL JOINTS OR 1-1/2" (40 mm) DEEP SAW CUTS. CONCRETE SAWING SHALL TAKE PLACE WITHIN 24 HOURS AFTER CONCRETE IS PLACED.
3. DOWELS FOR CONTACT JOINTS SHALL BE #4 BARS 18" LONG (#13M BARS 450 mm LONG).
4. PLACE A WEAKENED PLANE OR CONTACT JOINT WHERE LONGITUDINAL ALLEY GUTTER JOINS CONCRETE ALLEY INTERSECTION.
5. ALL EXPOSED CORNERS ON PCC GUTTERS SHALL BE ROUNDED WITH 1/2" (15 mm) RADIUS.
6. CONCRETE SHALL BE INTEGRAL WITH CURB UNLESS OTHERWISE SPECIFIED.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

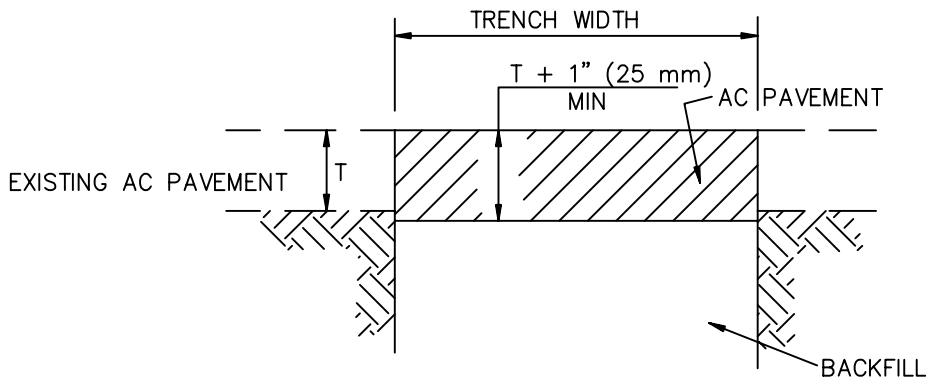
STANDARD PLAN

CROSS AND LONGITUDINAL GUTTERS

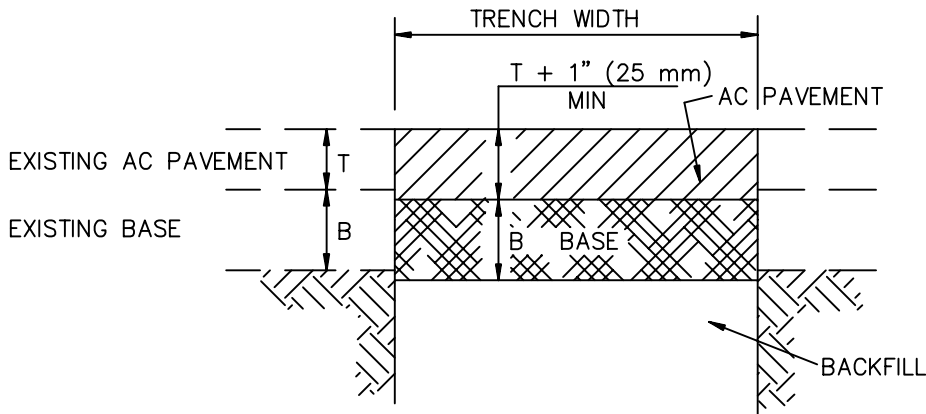
122-2

SHEET 2 OF 2

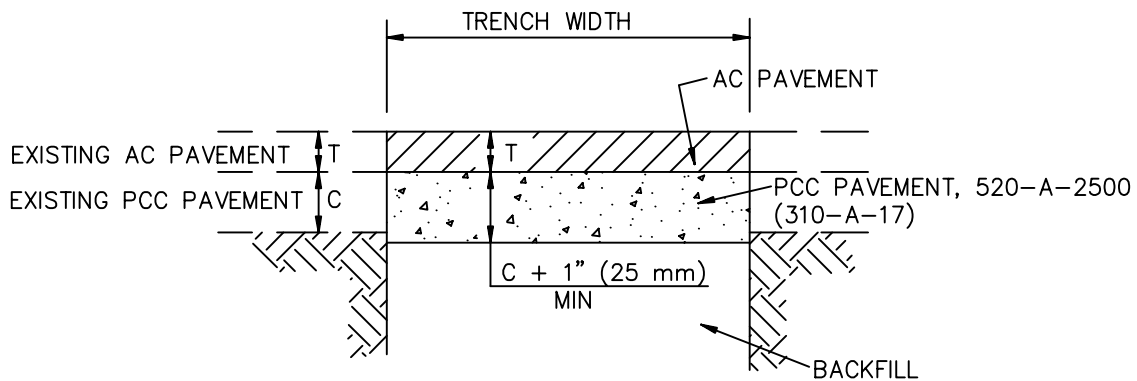
SEE OCPW STANDARD PLAN 122-2-OC FOR CONDITIONS



CASE I – WITHOUT BASE



CASE II – WITH BASE



CASE III – AC PVMT ON PCC PVMT

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE
PUBLIC WORKS STANDARDS INC.
GREENBOOK COMMITTEE
1993
REV. 2005, 2009

**ASPHALT CONCRETE PAVEMENT
REPLACEMENT**

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

133-3

SHEET 1 OF 2

SEE OCPW STANDARD PLAN 133-3-OC FOR CONDITIONS

NOTES:

1. BACKFILL AND DENSIFICATION SHALL CONFORM TO SSPWC 306-1.3.
3. TEMPORARY RESURFACING SHALL BE PLACED PER SSPWC 306-1.5.1.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

**ASPHALT CONCRETE PAVEMENT
REPLACEMENT**

STANDARD PLAN

133-3

SHEET 2 OF 2

SEE OCPW STANDARD PLAN 133-3-OC FOR CONDITIONS

The following Standard Plans for Public Works Construction, 2009 Edition, of the Public Works Standards, Inc. have been adopted by OCPW with conditions which shall apply to OCPW use. The conditions are listed below.

SPPWC # OCPW # Name and Conditions

133-3 133-3-0C Asphalt Concrete Pavement Replacement

1. Delete Notes 1 and 3 of SPPWC Standard Plan 133-3.
2. Pavement replacement shall be "T-cut" to extend 12 inches beyond each side of trench width. Pavement removal in the area of additional width shall be by cold plane or other method approved by the Engineer. Depth of removal shall be at least 0.15 feet on arterial highways and at least 0.12 feet elsewhere.
3. Full travel lane replacement or grinding with at least 0.15 feet cap is required on all arterial highways in accordance with Section 6-3-60 (d) of the Orange County Codified Ordinance.
4. Full travel lane replacement or grinding with at least 0.12 feet cap is required on any street if the existing surface course has been in place for less than 2 years.
5. Surface course and base course asphalt concrete pavement shall be of the same mix as the existing asphalt concrete pavement(s) unless otherwise approved by the Engineer.
6. All pavement removals shall be made on straight line saw cuts a minimum of 1½ inches deep. If cut line is less than 36 inches from a cut line, expansion joint or edge, the existing pavement shall be removed to cut lines, expansion joint or edge or as directed by the Engineer.
7. During excavation and subgrade preparation, the contractor shall take all necessary steps to ensure the protection of all improvements, whether public or private, including utilities and their services, from any damage that could occur due to Contractor's operation.
8. Backfill and densification shall be done in conformance with Section 306-1.3, "Backfill and Densification," of the Greenbook, except as follows:

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved


 Ignacio G. Ochoa, Chief Engineer

Revision: April 2013

STD. PLAN

133-3-0C

SPPWC STANDARD PLAN - ASPHALT CONCRETE PAVEMENT REPLACEMENT

SHT. 1 OF 2

The following Standard Plans for Public Works Construction, 2009 Edition, of the Public Works Standards, Inc. have been adopted by OCPW with conditions which shall apply to OCPW use. The conditions are listed below.

SPPWC # OCPW # Name and Conditions

133-3 133-3-0C Asphalt Concrete Pavement Replacement

- a) Trench backfill shall be densified to a minimum of 90 percent relative compaction.
 - b) When pavement is to be placed directly on subgrade material, the top 6 inches of subgrade material shall be compacted to a relative compaction of 95 percent.
9. Temporary pavement replacement shall be placed at the Contractor's expense, unless otherwise specified by the Engineer. It shall be placed level with the existing pavement on compacted trench backfill and shall be a minimum of 2 inches thick.
10. Permanent pavement resurfacing shall be done within two (2) weeks after backfilling of trenches has been completed, and only after settlement has taken place and the fill surface has sufficiently dried. All cuts shall be clean and straight.
11. Contact surfaces of existing pavement, manhole frames and shafts and concrete surfaces shall be given a tack coat before permanent asphalt trench resurfacing is placed.
12. Unless permanent pavement is placed immediately, temporary bituminous resurfacing 2 inches thick shall be placed and maintained at locations determined by the Engineer wherever excavation is made through pavement, sidewalk or driveways. In sidewalk areas, the temporary bituminous resurfacing shall be at least 1 inch thick; in all other areas it shall be at least 2 inches thick. At major intersections and other critical locations, a greater thickness may be ordered. Temporary resurfacing shall be placed as soon as the condition of the backfill is suitable to receive it and shall remain in place until the condition of the backfill is suitable for permanent resurfacing.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved


Ignacio G. Ochoa, Chief Engineer

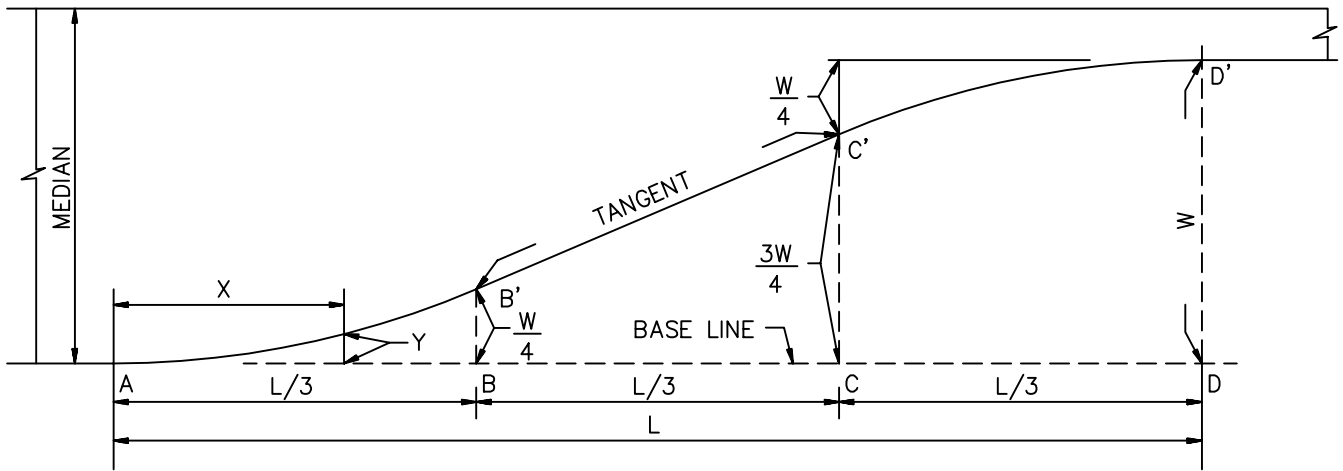
Revision: April 2013

STD. PLAN

133-3-0C

SPPWC STANDARD PLAN - ASPHALT CONCRETE PAVEMENT REPLACEMENT

SHT. 2 OF 2



$$Y = 2.25W \left(\frac{X}{L} \right)^2$$

L=LENGTH OF TAPER
W=MAXIMUM OFFSET DISTANCE
X=DISTANCE ALONG BASE LINE
Y=OFFSET FROM BASE LINE

L, ft (m)	DISTANCE X, L/12 INCREMENTS, ft (m)											
60' (18.00)	5' (1.50)	10' (3.00)	15' (4.50)	20' (6.00)	25' (7.50)	30' (9.00)	35' (10.50)	40' (12.00)	45' (13.50)	50' (15.00)	55' (16.50)	60' (18.00)
72' (21.60)	6' (1.80)	12' (3.60)	18' (5.40)	24' (7.20)	30' (9.00)	36' (10.80)	42' (12.60)	48' (14.40)	54' (16.20)	60' (18.00)	66' (19.80)	72' (21.60)
90' (27.00)	7.5' (2.25)	15' (4.50)	22.5' (6.75)	30' (9.00)	37.5' (11.25)	45' (13.50)	52.5' (15.75)	60' (18.00)	67.5' (20.25)	75' (22.50)	82.5' (24.75)	90' (27.00)
120' (36.00)	10' (3.00)	20' (6.00)	30' (9.00)	40' (12.00)	50' (15.00)	60' (18.00)	70' (21.00)	80' (24.00)	90' (27.00)	100' (30.00)	110' (33.00)	120' (36.00)
150' (45.00)	12.5' (3.75)	25' (7.50)	37.5' (11.25)	50' (15.00)	62.5' (18.75)	75' (22.50)	87.5' (26.25)	100' (30.00)	112.5' (33.75)	125' (37.50)	137.5' (41.25)	150' (45.00)
W, ft(mm)	OFFSET Y, ft (mm)											
10' (3000)	0.16' (47)	0.62' (188)	1.41' (422)	2.50' (750)	3.75' (1125)	5.00' (1500)	6.25' (1875)	7.50' (2250)	8.59' (2578)	9.38' (2812)	9.84' (2953)	10.00' (3000)
11' (3300)	0.17' (51)	0.69' (206)	1.55' (464)	2.75' (825)	4.13' (1238)	5.50' (1650)	6.88' (2063)	8.25' (2475)	9.45' (2836)	10.31' (3094)	10.83' (3249)	11.00' (3300)
12' (3600)	0.19' (56)	0.75' (225)	1.69' (506)	3.00' (900)	4.50' (1350)	6.00' (1800)	7.50' (2250)	9.00' (2700)	10.31' (3094)	11.25' (3375)	11.81' (3544)	12.00' (3600)
19' (5700)	0.30' (89)	1.19' (356)	2.67' (802)	4.75' (1425)	7.13' (2138)	9.50' (2850)	11.88' (3562)	14.25' (4275)	16.33' (4898)	17.81' (5344)	18.70' (5611)	19.00' (5700)
20' (6000)	0.31' (94)	1.25' (375)	2.81' (844)	5.00' (1500)	7.50' (2250)	10.00' (3000)	12.50' (3750)	15.00' (4500)	17.19' (5156)	18.75' (5625)	19.69' (5906)	20.00' (6000)
21' (6300)	0.33' (98)	1.31' (394)	2.95' (886)	5.25' (1575)	7.88' (2363)	10.50' (3150)	13.13' (3937)	15.75' (4725)	18.05' (5414)	19.69' (5906)	20.67' (6202)	21.00' (6300)
22' (6600)	0.34' (103)	1.38' (412)	3.09' (928)	5.50' (1650)	8.25' (2475)	11.00' (3300)	13.75' (4125)	16.50' (4950)	18.91' (5672)	20.62' (6188)	21.66' (6497)	22.00' (6600)

NOTE:

TO DETERMINE OFFSET DISTANCE FOR ANY LENGTH OF TAPER USE THE FORMULA $Y = 2.25W \left(\frac{X}{L} \right)^2$ FOR THE PORTIONS AB' AND C'D' WHICH ARE PARABOLIC CURVES. THE PORTION B'C' IS A TANGENT. WHEN THE BASE LINE IS CURVED, THE OFFSETS ARE APPLIED TO THE CURVED BASE LINE, AND B'C' IS NO LONGER A TANGENT.

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE
PUBLIC WORKS STANDARDS INC.
GREENBOOK COMMITTEE
1984
REV. 1992, 1996, 2009

MEDIAN TAPER

STANDARD PLAN

140-3

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

SHEET 1 OF 1

SEE OCPW STANDARD PLAN 140-3-OC FOR CONDITIONS

The following Standard Plans for Public Works Construction, 2009 Edition, of the Public Works Standards, Inc. have been adopted by OCPW with conditions which shall apply to OCPW use. The conditions are listed below.

SPPWC # OCPW # Name and Conditions
 140-3 140-3-0C Median Taper

- i. 90 feet (27.00m) for single left turn pocket and 150 feet (45.00m) for a dual left turn pocket. For L=150 feet, W=20 feet

DISTANCE X (m)	10' (3.00)	20' (6.00)	30' (9.00)	40' (12.00)	50' (15.00)	60' (18.00)	70' (21.00)	80' (24.00)	90' (27.00)	100' (30.00)	110' (33.00)	120' (36.00)	130' (39.00)	140' (42.00)	150' (45.00)
OFFSET Y (mm)	0.20' (60)	0.80' (240)	1.80' (540)	3.20' (960)	5.00' (1500)	7.00' (2100)	9.00' (2700)	11.00' (3300)	13.00' (3900)	15.00' (4500)	16.80' (5040)	18.20' (5460)	19.20' (5760)	19.80' (5940)	20.00' (6000)

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved


 Ignacio G. Ochoa, Chief Engineer

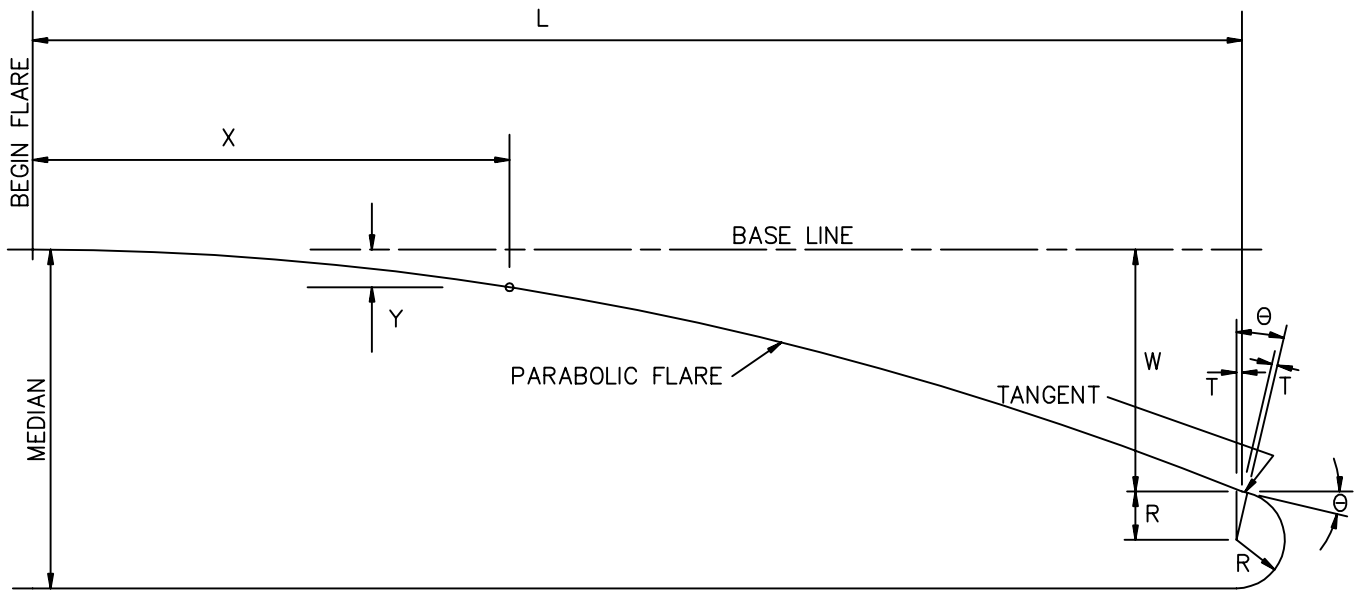
Revision: April 2013

STD. PLAN

140-3-0C

SPPWC STANDARD PLAN - MEDIAN TAPER

SHT. 1 OF 1



- L = LENGTH OF FLARE
- W = MAXIMUM OFFSET DISTANCE
- X = DISTANCE ALONG BASE LINE
- Y = OFFSET FROM BASE LINE
- T = TANGENT LENGTH
- R = RADIUS OF NOSE
- θ = MAXIMUM FLARE DEFLECTION ANGLE

$$Y = W \left(\frac{X}{L} \right)^2$$

$$\tan \theta = \frac{2W}{L}$$

$$T = R \tan \frac{\theta}{2}$$

IF STATION OF RADIUS POINT IS NOT GIVEN ON PLAN, TANGENT DISTANCE T MAY BE IGNORED

OFFSET Y, ft (mm)

L, ft (m)	W, ft (mm)	X, ft (m)													
		10' (3.0)	15' (4.5)	20' (6.0)	25' (7.5)	30' (9.0)	40' (12.0)	45' (13.5)	50' (15.0)	60' (18.0)	70' (21.0)	75' (22.5)	80' (24.0)	90' (27.0)	100' (30.0)
W/L = 1:5															
25' (7.5)	5' (1500)	0.80' (240)	1.80' (540)	3.20' (960)	5.00' (1500)										
50' (15.0)	10' (3000)	0.40' (120)	0.90' (270)	1.60' (480)	2.50' (750)	3.60' (1080)	6.40' (1920)	8.10' (2430)	10.00' (3000)						
W/L = 1:10															
50' (15.0)	5' (1500)	0.20' (60)	0.45' (135)	0.80' (240)	1.25' (375)	1.80' (540)	3.20' (960)	4.05' (1215)	5.00' (1500)						
100' (30.0)	10' (3000)	0.10' (30)	0.23' (68)	0.40' (120)	0.63' (188)	0.90' (270)	1.60' (480)	2.03' (608)	2.50' (750)	3.60' (1080)	4.90' (1470)	5.63' (1688)	6.40' (1920)	8.10' (2430)	10.00' (3000)
W/L = 1:15															
45' (13.5)	3' (900)	0.15' (44)	0.33' (100)	0.59' (178)	0.93' (278)	1.33' (400)	2.37' (711)	3.00' (900)							
75' (22.5)	5' (1500)	0.09' (27)	0.20' (60)	0.36' (107)	0.56' (167)	0.80' (240)	1.42' (427)	1.80' (540)	2.22' (667)	3.20' (960)	4.36' (1307)	5.00' (1500)			
90' (27.0)	6' (1800)	0.07' (22)	0.17' (50)	0.30' (89)	0.46' (139)	0.67' (200)	1.19' (356)	1.50' (450)	1.85' (555)	2.67' (800)	3.63' (1089)	4.17' (1250)	4.74' (1422)	6.00' (1800)	

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

PROMULGATED BY THE
PUBLIC WORKS STANDARDS INC.
GREENBOOK COMMITTEE
1984
REV. 1996, 2009

MEDIAN FLARE

USE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

STANDARD PLAN

141-2

SHEET 1 OF 1

SEE OCPW STANDARD PLAN 141-2-OC FOR CONDITIONS

The following Standard Plans for Public Works Construction, 2009 Edition, of the Public Works Standards, Inc. have been adopted by OCPW with conditions which shall apply to OCPW use. The conditions are listed below.

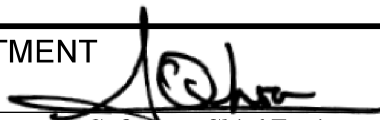
SPPWC # OCPW # Name and Conditions
 141-2 141-2-0C Median Flare

- i. 60 feet (18.00m) flare for a 14 feet (4.20m) median width, use R=4 feet (1.20m) 100 feet (30.00m) flare for a 24 feet (7.20m) median width, use R=7 feet (2.10m) for W/L = 1:10

DISTANCE X (m)	10' (3.00)	15' (4.50)	20' (6.00)	25' (7.50)	30' (9.00)	40' (12.00)	45' (13.50)	50' (15.00)	60' (18.00)
OFFSET Y (mm)	0.17' (50)	0.38' (112)	0.67' (200)	1.04' (312)	1.50' (450)	2.67' (800)	3.38' (1012)	4.17' (1250)	6.00' (1800)

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved


 Ignacio G. Ochoa, Chief Engineer

Revision: April 2013

STD. PLAN

141-2-0C

SPPWC STANDARD PLAN - MEDIAN FLARE

SHT. 1 OF 1