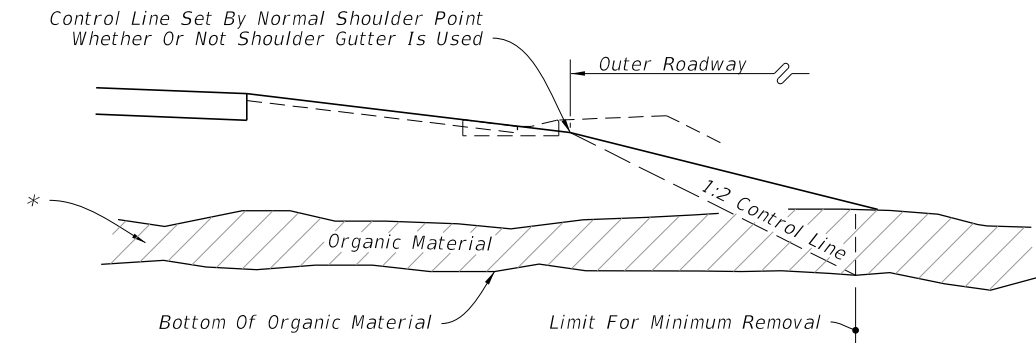
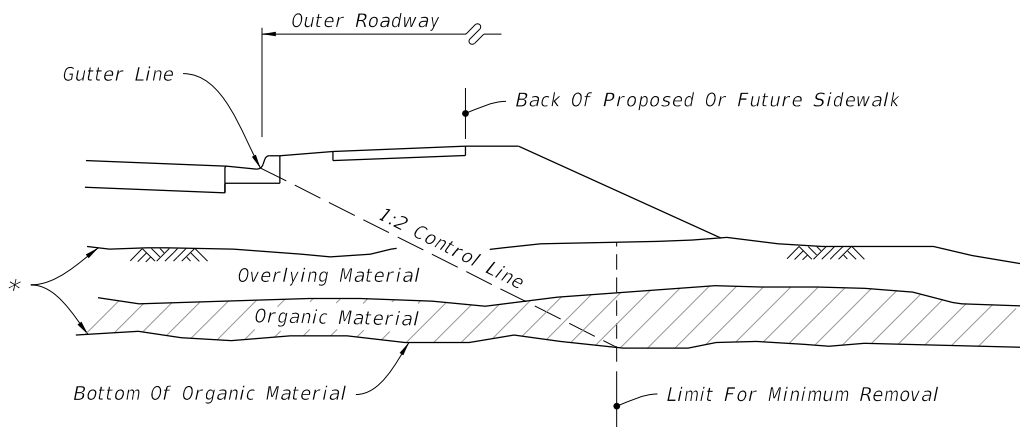


WITH OVERBURDEN - HALF SECTION

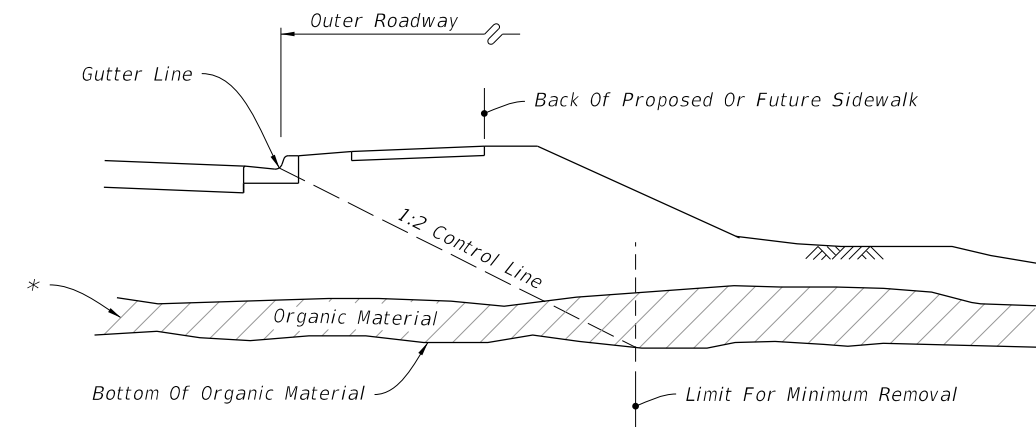


WITHOUT OVERBURDEN - HALF SECTION

CONSTRUCTION OF FLUSH SHOULDER ROADWAY



WITH OVERBURDEN - HALF SECTION



WITHOUT OVERBURDEN - HALF SECTION

CONSTRUCTION OF CURBED ROADWAY

\* Remove overlying material and organic material within the limits shown and backfill in accordance with Index 505, unless approved otherwise by the District Geotechnical Engineer; The limits include full median width when applied to divided facilities with median widths up to 64'; When median width is greater than 64' and for bifurcated roadways the organic material removal limits will be set by a 1:2 control line complimentary to the outer roadway that will accommodate one future median lane on each roadway unless specified otherwise by the plans.


GENERAL NOTES:

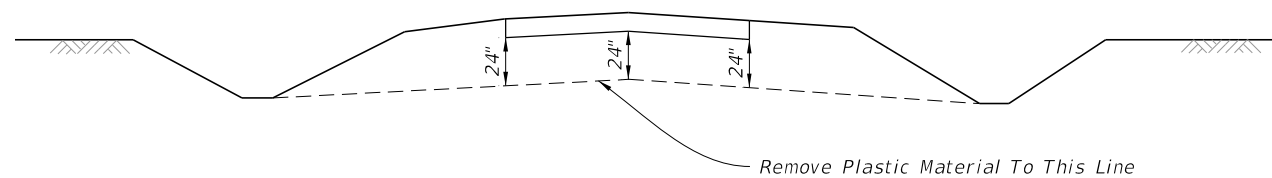
1. All details shown on this Index for removal of organic and plastic materials apply unless otherwise shown on the plans.
2. Utilize excavated materials in accordance with Index 505.
3. Where organic or plastic material is undercut, backfill with suitable material in accordance with Index 505, unless otherwise shown on the plans.
4. The term "Plastic Material" used in this Index in conjunction with removal of plastic soil is as defined under soil classifications for Plastic (P) and High Plastic (H) on Index 505.
5. See Index 506 for miscellaneous earthwork details.

6. The term "Organic Material" as used on this Index is defined as any soil which has an average organic content greater than five (5.0) percent, or an individual organic content test result which exceeds seven (7.0) percent. Remove organic material as shown on this Index and the plans unless directed otherwise by the District Geotechnical Engineer. Determine the average organic content from the test results from a minimum of three randomly selected samples from each stratum. Perform tests in accordance with AASHTO T267 on the portion of a sample passing the No. 4 sieve.
7. In areas of curbed roadway, where underdrain is to be constructed beneath the proposed pavement, the grade of the underdrain filter material will not extend above the bottom of the stabilized section of the subgrade. Gradation of the filter material must conform to Standard Specifications. The minimum grade of underdrain pipe is 0.02.

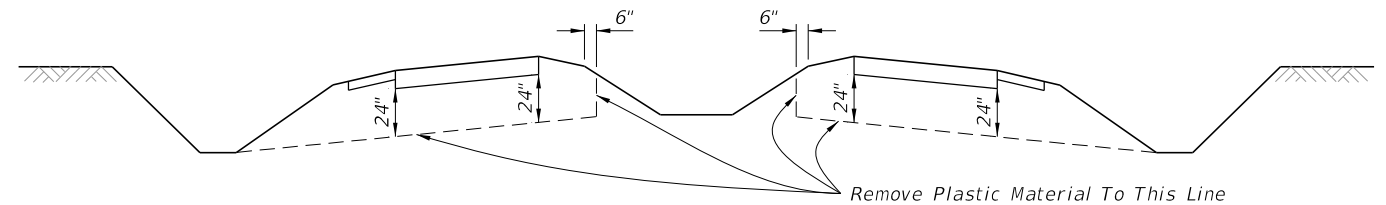
GENERAL NOTES AND REMOVAL OF ORGANIC MATERIAL

10/12/2016 10:29:22 AM

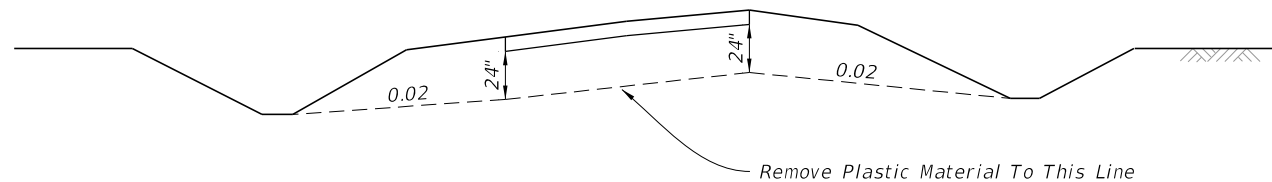
LAST REVISION 11/01/16	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	REMOVAL OF ORGANIC AND PLASTIC MATERIAL	INDEX NO. 500	SHEET NO. 1 of 2
---------------------------	--------------	--	---	------------------	---------------------



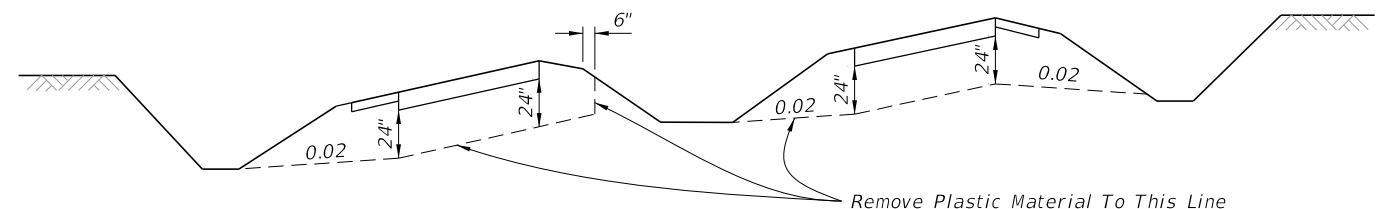
TYPICAL CUT SECTION ON TANGENT



TYPICAL CUT SECTION ON TANGENT



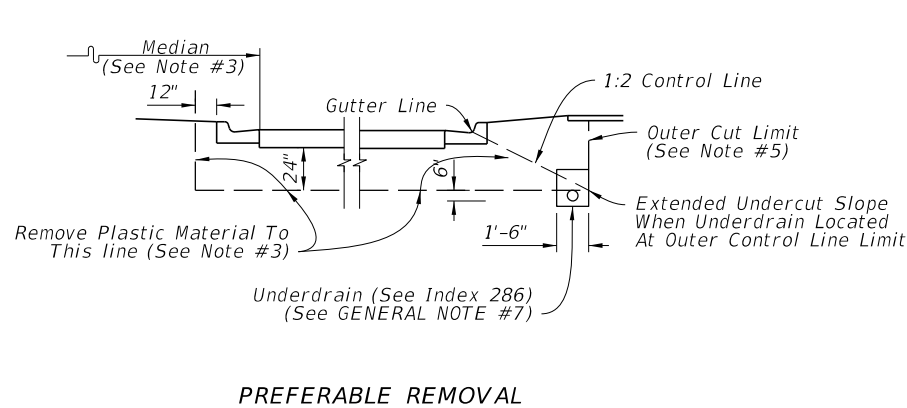
TYPICAL CUT SECTION ON SUPERELEVATION



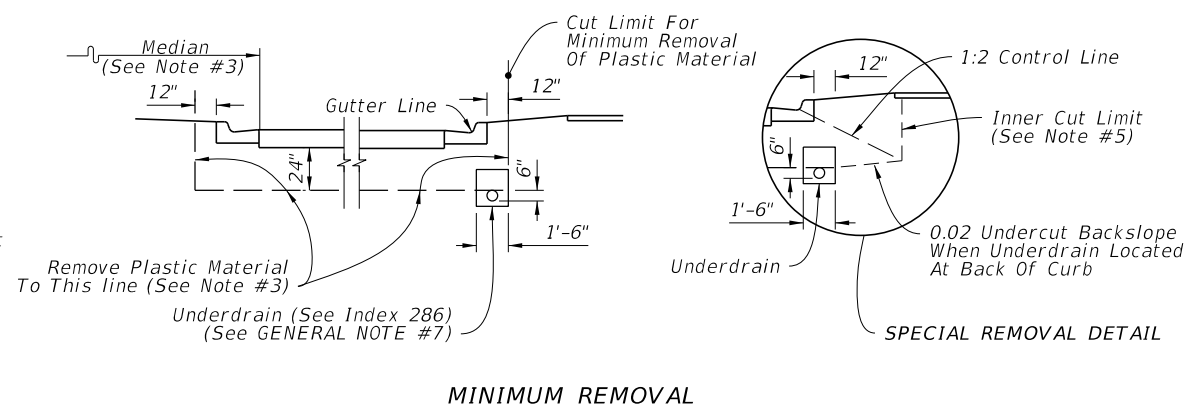
TYPICAL CUT SECTION ON SUPERELEVATION

=====**DIVIDED FREEWAYS, ARTERIALS, MAJOR COLLECTORS HAVING FLUSH MEDIAN, ON UNDIVIDED ARTERIALS AND MAJOR COLLECTORS**=====

=====**INTERSTATE FACILITIES, FREEWAYS, DIVIDED ARTERIALS AND MAJOR COLLECTORS HAVING DEPRESSED MEDIAN**=====



PREFERABLE REMOVAL



MINIMUM REMOVAL

**NOTES:**

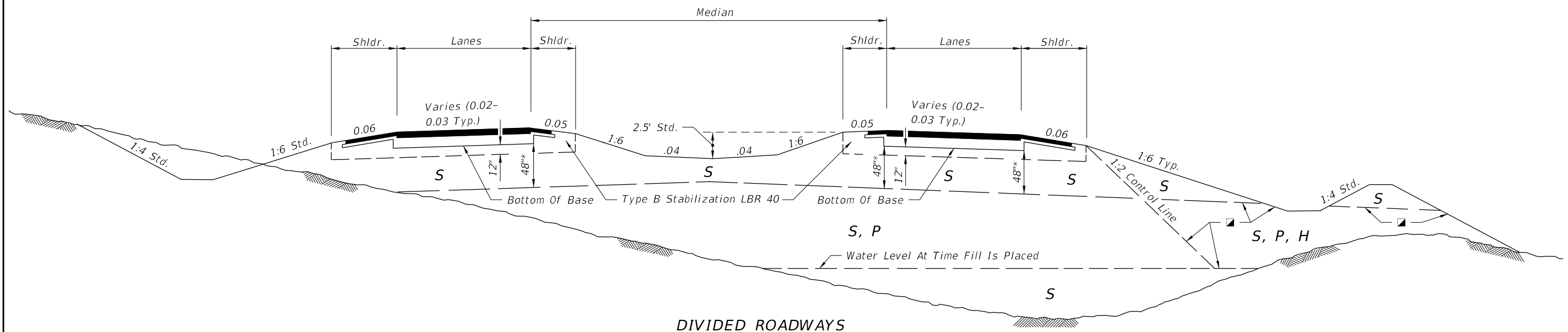
1. See Sheet 1 for the GENERAL NOTES.
2. When the typical cut details are applied to minor collectors and local facilities, the undercut may be reduced from 24" to 18".
3. Where frequency of median breaks indicates that it is impractical to leave plastic material in the median, the designer may elect to indicate total removal of this material. If during construction it becomes apparent, due to normal required construction procedures, that it is impractical to leave the plastic material in the median, total removal of this material shall be approved by the Engineer.
4. Refer to roadway cross sections to determine whether minimum or preferable removal is used.
5. Where the Preferable Removal method is shown in the plans and it is impossible to place the underdrain at the Outer Cut Limit due to conflict with storm drain trunk lines, remove to Inner Cut Limit and place underdrain at location shown for Minimum Removal. (See Special Removal Detail)
6. Cross slopes of 0.02 shown above are minimums. Follow the cross slope of the pavement to the extent possible.

=====**CONSTRUCTION AND LOCATION OF UNDERDRAIN IN CURBED ROADWAY**=====  
(See Note #4)

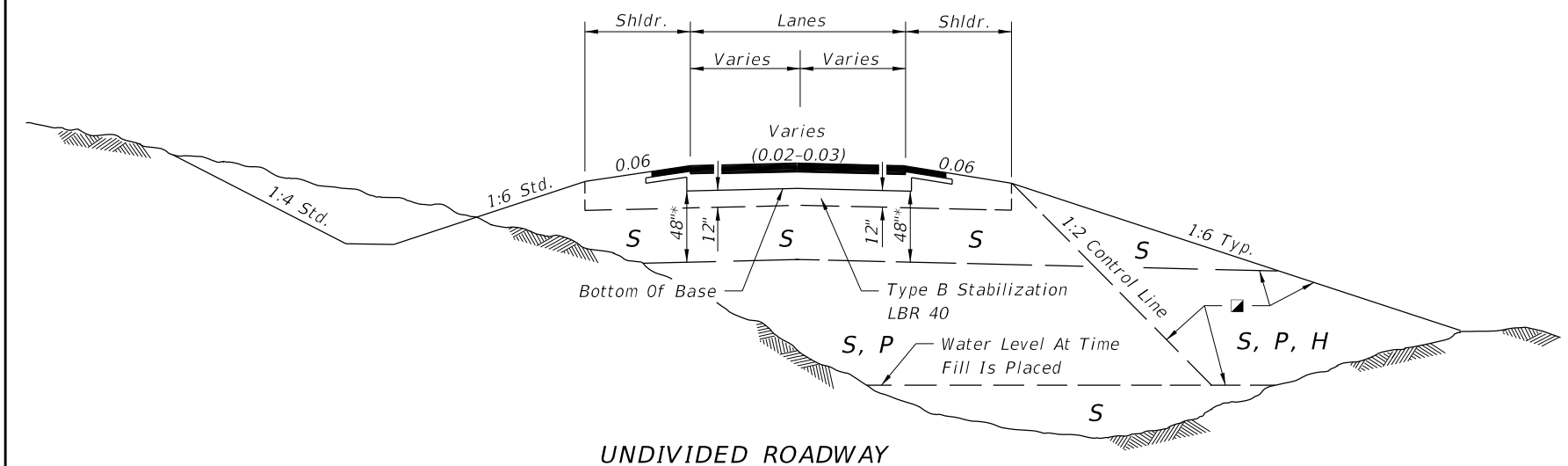
**REMOVAL OF PLASTIC MATERIAL**

10/12/2016 10:29:25 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:	 <b>FY 2017-18</b> <b>DESIGN STANDARDS</b>	<b>REMOVAL OF ORGANIC AND PLASTIC MATERIAL</b>	INDEX NO. <b>500</b>	SHEET NO. <b>2 of 2</b>
---------------------------	----------	--------------	--	--	-------------------------	----------------------------



**DIVIDED ROADWAYS**



**UNDIVIDED ROADWAY**

**GENERAL NOTES**

1. Roadway dimensions are representative. Subgrade dimensions and control lines are standard. The details shown on this Index do not supersede the details shown in the plans or on Index Nos. 500 or 506.
2. Plastic (P) soils may be placed above the existing water level (at the time of construction) to within 4 feet of the proposed base. It should be placed uniformly in the lower portion of the embankment for some distance along the project rather than full depth for short distances.
3. High Plastic (H) soils excavated within the project limits may be used in embankment construction as indicated on this index. High Plastic soils are not to be used for embankment construction when obtained from outside the project limits.
4. Select (S) soils having an average organic content of more than two and one-half (2.5) percent, or having an individual test value which exceeds four (4) percent, shall not be used in the subgrade portion of the roadbed. Select (S), Plastic (P), or High Plastic (H) soils having an average organic content of more than five (5) percent, or an organic content individual test result which exceeds seven (7) percent, shall not be used in the portion of embankment inside the control line, unless written authorization is provided by the District Geotechnical Engineer; these soils may be used for embankment construction outside the control line, unless restricted by the plans or otherwise specified in the plans, provided they can be compacted sufficiently to sustain a drivable surface for operational vehicles as approved by the Engineer. Average organic content shall be determined from the test results from a minimum of three randomly selected samples from each stratum or stockpile of a particular material. Tests shall be performed in accordance with AASHTO T 267 on the portion of a sample passing the No. 4 sieve.
5. Highly organic soils, composed primarily of partially decayed organic matter, often dark brown or black in color with an odor of decay, and sometimes fibrous, shall be designated as muck. Further, any stratum or stockpile of soil which contains pockets of highly organic material may be designated as Muck (M). Highly organic soils shall not be used within the subgrade or embankment portion of the roadbed, with the exception of muck used as a supplement to construct a finish soil layer as described in Section 162 of the FDOT Standard Specifications.

<u>SYMBOL</u>	<u>SOIL</u>	<u>CLASSIFICATION (AASHTO M 145)</u>
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL < 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL > 50)
M	Muck	A-8

Classification listed left to right in order of preference.  
 ■ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

\*\* Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be nonplastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

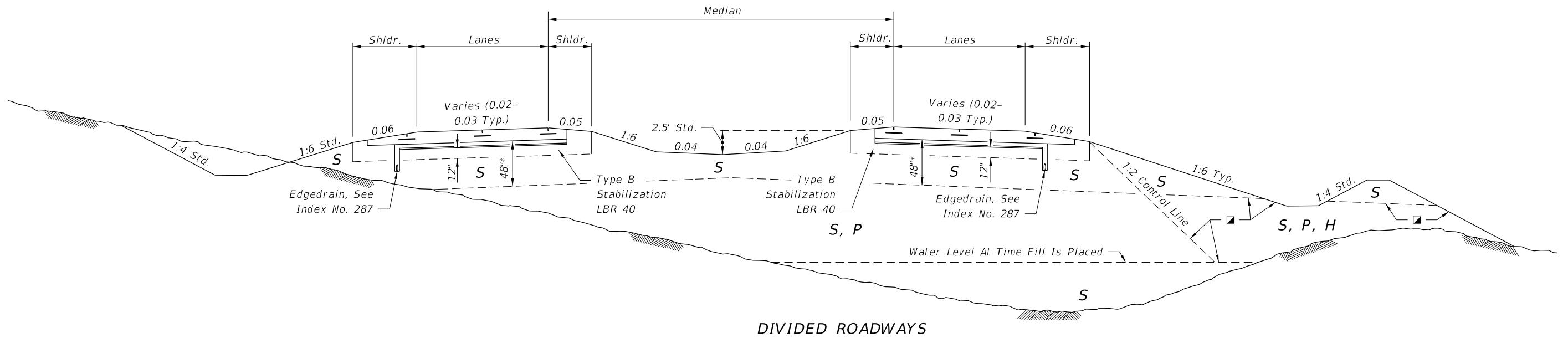
\* For cut sections this dimension may be reduced to 24"; see Index No. 500. For minor collectors and local facilities this dimension may be reduced to 18".

**FLEXIBLE PAVEMENT**

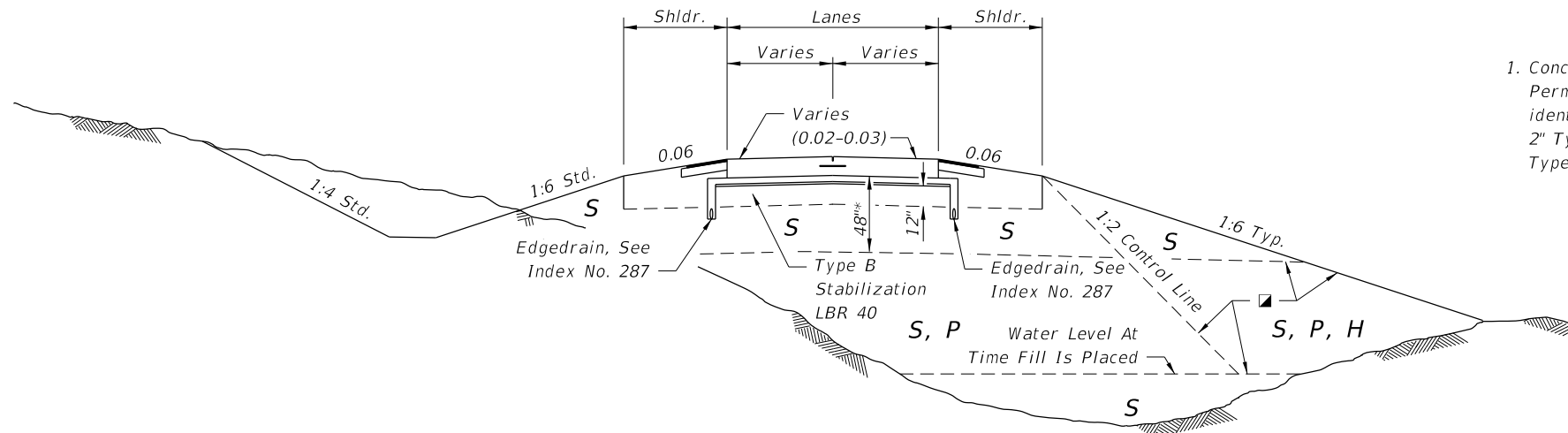
**DESIGN NOTES**

1. The designer shall take into consideration the expectancy of roadway widening to the outside, and where widening is anticipated, specify in the plans the location of the future widening control line for utilization of High Plastic (H) soils and/or soils classified as organic material in the embankment.
2. The designer shall take into consideration the position of the drainage swales in the portion of the embankment where Plastic (P) soils, High Plastic (H) soils, or soils classified as organic material would be allowed. The designer shall limit the use of Plastic (P) soils, High Plastic (H) soils, and/or soils classified as organic material to locations that will not inhibit the infiltration of stormwater from the swales.

10/12/2016 10:29:52 AM



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

**DESIGN NOTE**

1. Concrete pavement is to be placed over 4" of Asphalt Treated Permeable Base (ATPB) or Cement Treated Permeable Base (CTPB) as identified in the plans. This will be placed on a separator layer using 2" Type SP. This will be placed on a working platform using 12" of Type B Stabilization.

<u>SYMBOL</u>	<u>SOIL</u>	<u>CLASSIFICATION (AASHTO M 145)</u>
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL < 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL > 50)
M	Muck	A-8

Classification listed left to right in order of preference.


■ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

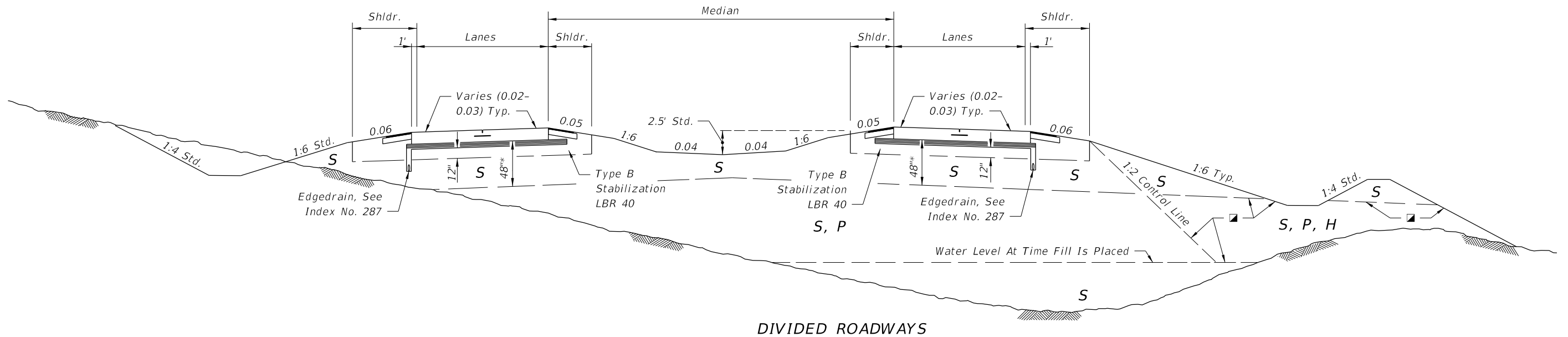
\*\* Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be nonplastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

\* For cut sections this dimension may be reduced to 24"; see Index No. 500. For minor collectors and local facilities this dimension may be reduced to 18".

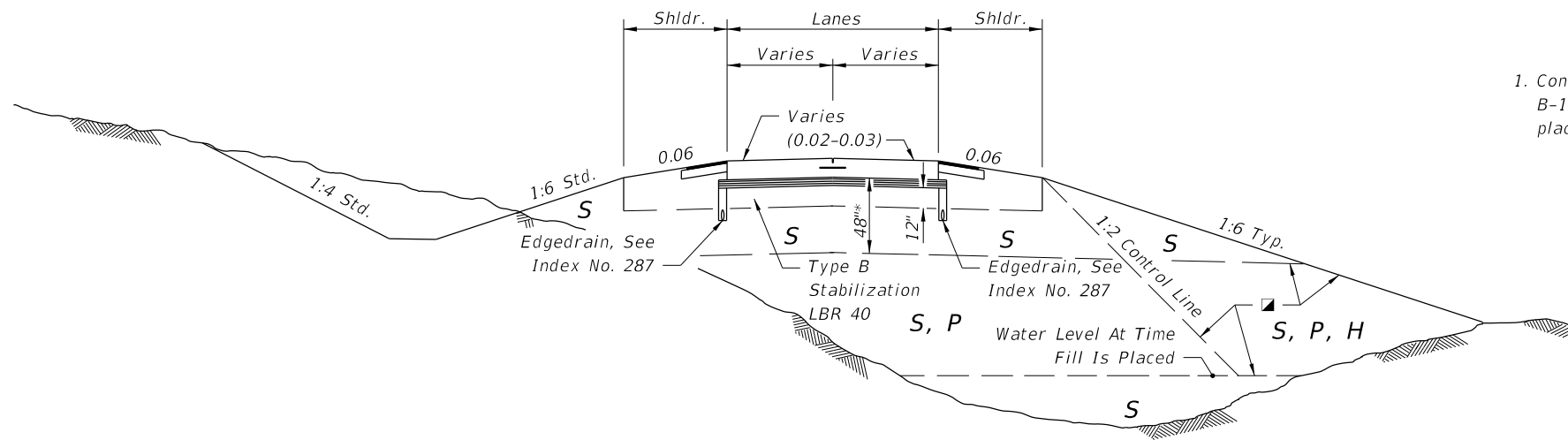
**RIGID PAVEMENT - TREATED PERMEABLE BASE OPTION**

10/12/2016 10:29:55 AM

LAST REVISION 07/01/09	REVISION	DESCRIPTION:	 <b>FY 2017-18</b> <b>DESIGN STANDARDS</b>	<b>EMBANKMENT UTILIZATION</b>	INDEX NO. <b>505</b>	SHEET NO. <b>2 of 4</b>
---------------------------	----------	--------------	---	-------------------------------	-------------------------	----------------------------



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

**DESIGN NOTE**

1. Concrete pavement is to be placed over Optional Base Group 1 Type B-12.5 only Asphalt Base as identified in the plans. This will be placed on a working platform using 12" of Type B Stabilization.

<u>SYMBOL</u>	<u>SOIL</u>	<u>CLASSIFICATION (AASHTO M 145)</u>
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL < 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL > 50)
M	Muck	A-8

Classification listed left to right in order of preference.


■ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

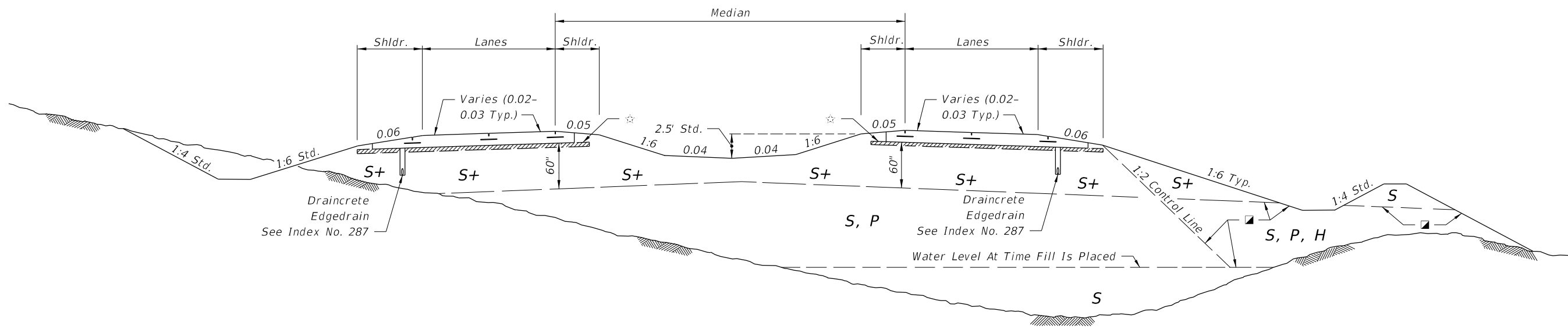
\*\* Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be nonplastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

\* For cut sections this dimension may be reduced to 24"; see Index No. 500. For minor collectors and local facilities this dimension may be reduced to 18".

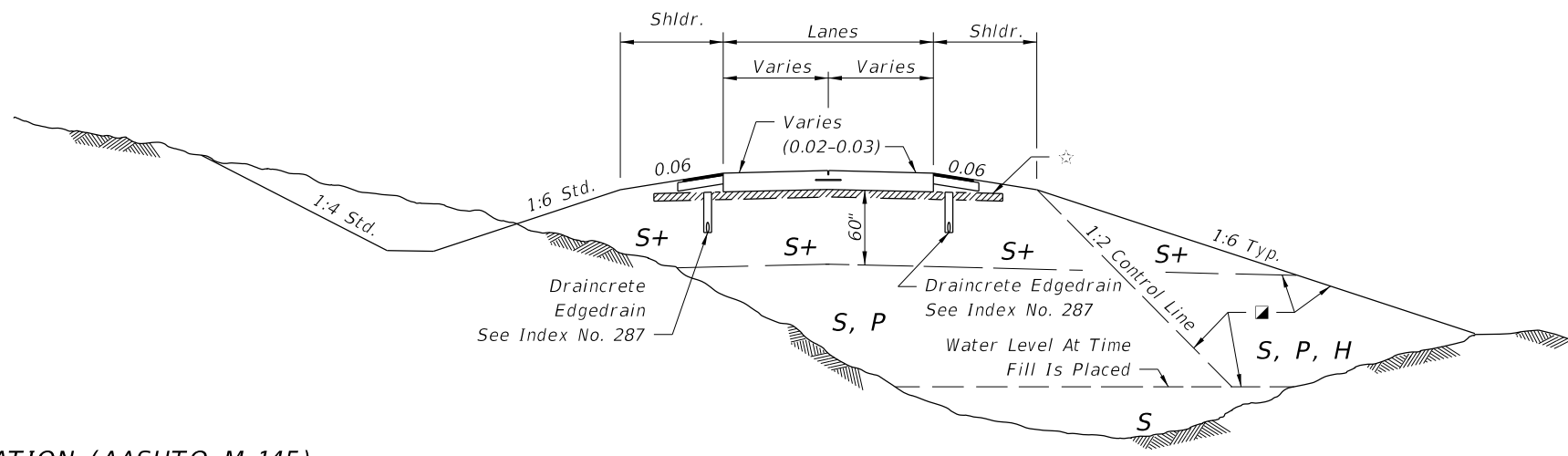
**RIGID PAVEMENT - ASPHALT BASE OPTION**

10/12/2016 10:29:59 AM

LAST REVISION 07/01/14	REVISION	DESCRIPTION:	 <b>FY 2017-18 DESIGN STANDARDS</b>	<b>EMBANKMENT UTILIZATION</b>	INDEX NO. <b>505</b>	SHEET NO. <b>3 of 4</b>
---------------------------	----------	--------------	---	-------------------------------	-------------------------	----------------------------



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
S+	Special Select	A-3 *** With Minimum Average Lab Permeability of $5 \times 10^{-5}$ cm/sec. (0.14 ft./day) as per AASHTO T 215
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL<50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL>50)
M	Muck	A-8

Classification listed left to right in order of preference.

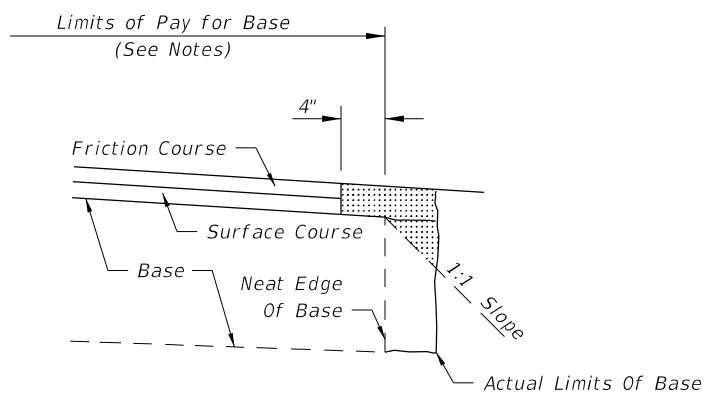
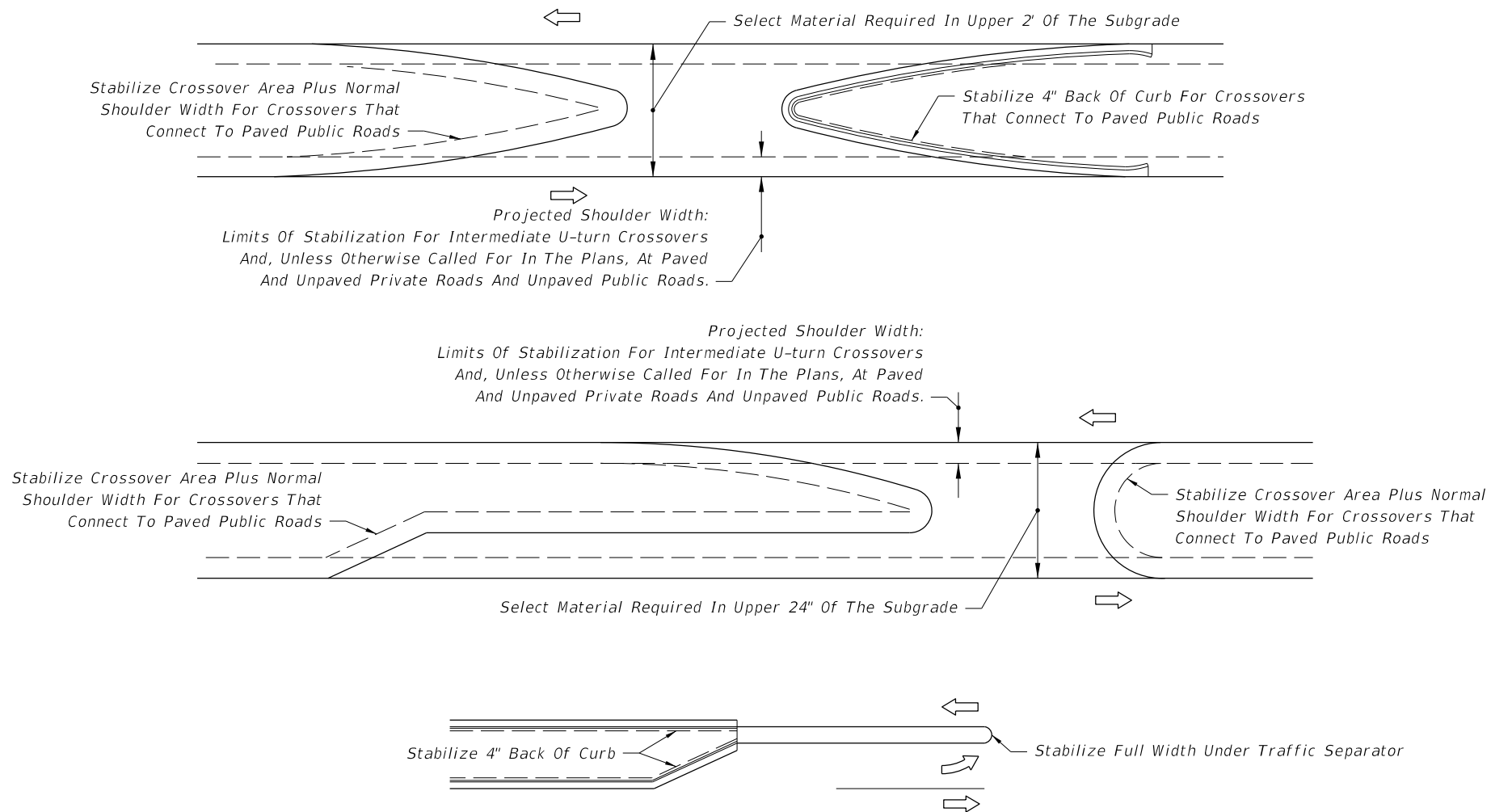
- ☑ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.
- \*\*\* When allowed by the plans, some types of A-2-4 material may be approved in writing by the District Materials Engineer. This material must meet the minimum lab permeability requirement, be nonplastic, and not exceed 12% passing the No. 200 U.S. Standard sieve.
- \*\* Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. A-2-4 material placed below the existing water level must be nonplastic and contain less than 15% passing the No. 200 U.S. Standard sieve.
- ☆ 3" of #57 or #89 Coarse Aggregate Mixed Into Top 6".

Note: SPECIAL SELECT SOIL OPTION may be used only when approved in writing by the District Materials Engineer and shown in the plans.

RIGID PAVEMENT - SPECIAL SELECT SOIL OPTION

10/12/2016 10:30:02 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	EMBANKMENT UTILIZATION	INDEX NO. 505	SHEET NO. 4 of 4
---------------------------	----------	--------------	------------------------------------	------------------------	------------------	---------------------



**NOTES**

1. All material in the shaded area is excess base to be removed.
2. The cost for removal of excess base material shall be included in the contract unit price for base.
3. Payment for base shall be calculated using normal width.


**REMOVAL OF EXCESS BASE MATERIAL**

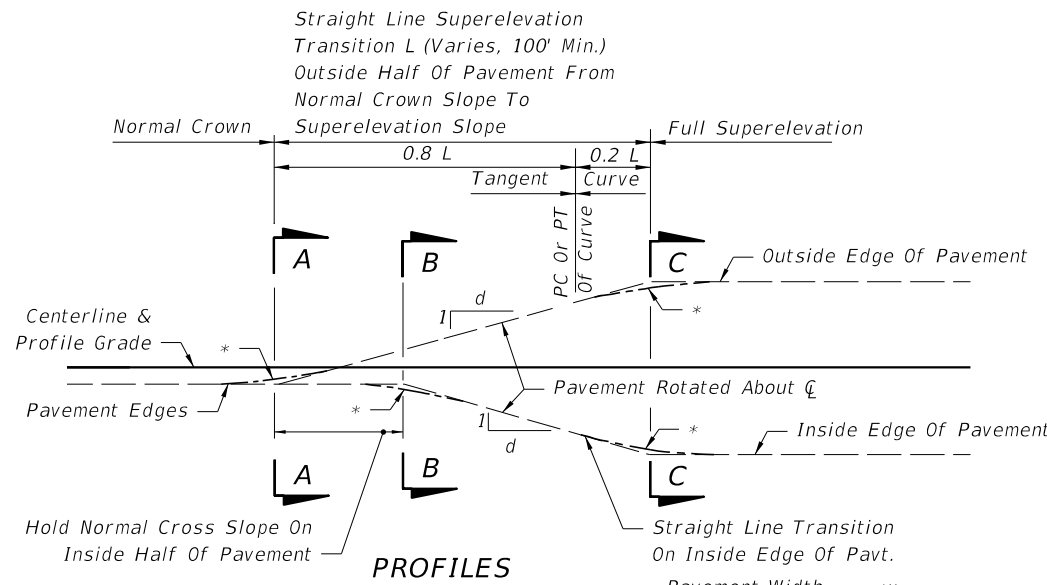
**NOTES**

1. When the median has curb or curb and gutter, stabilize 4" back of curb.
2. When the median has shoulder with no curb or curb and gutter, stabilize to normal shoulder width.
3. See the details above for stabilizing requirements at crossroads.
4. Stabilize entire area under all paved traffic islands.
5. Stabilize full width under all traffic separators.
6. Select material as defined on Index No. 505. For minor collectors and local facilities the depth of select material thickness may be reduced from 24" to 18".

**MEDIAN STABILIZING DETAILS**

10/12/2016 10:32:09 AM

LAST REVISION 07/01/00	REVISION	DESCRIPTION:	 <b>FY 2017-18 DESIGN STANDARDS</b>	<b>MISCELLANEOUS EARTHWORK DETAILS</b>	INDEX NO. <b>506</b>	SHEET NO. <b>1 of 1</b>
---------------------------	----------	--------------	--	--	-------------------------	----------------------------

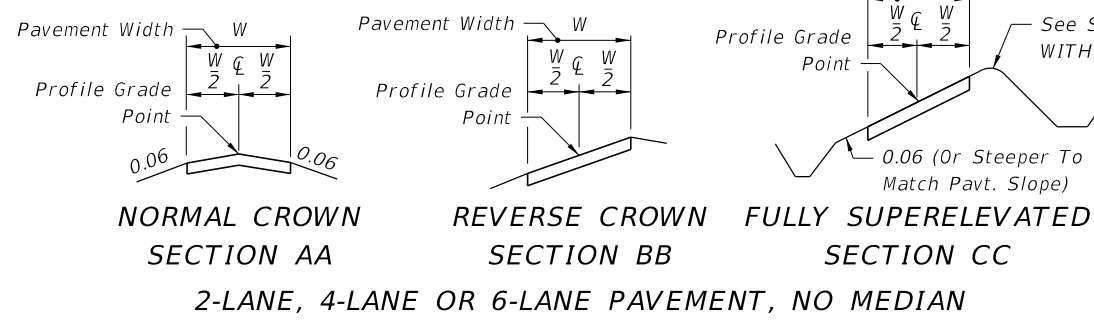
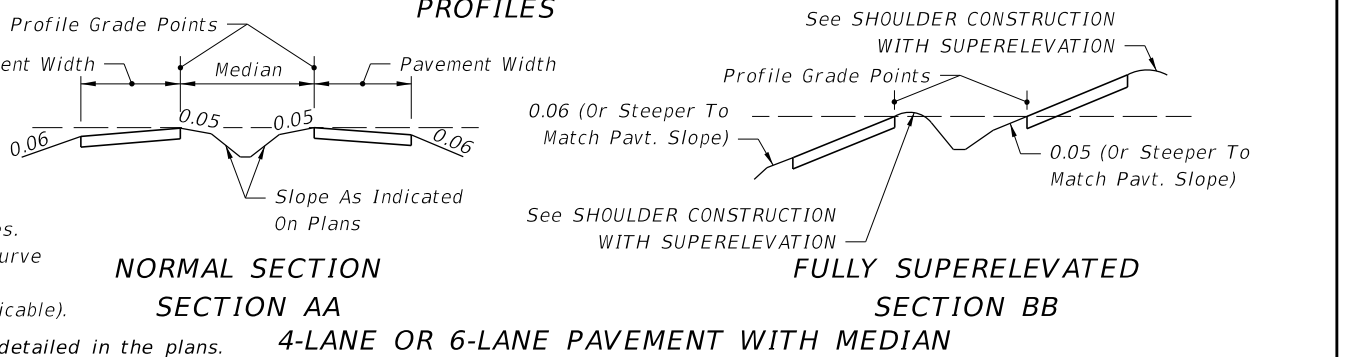
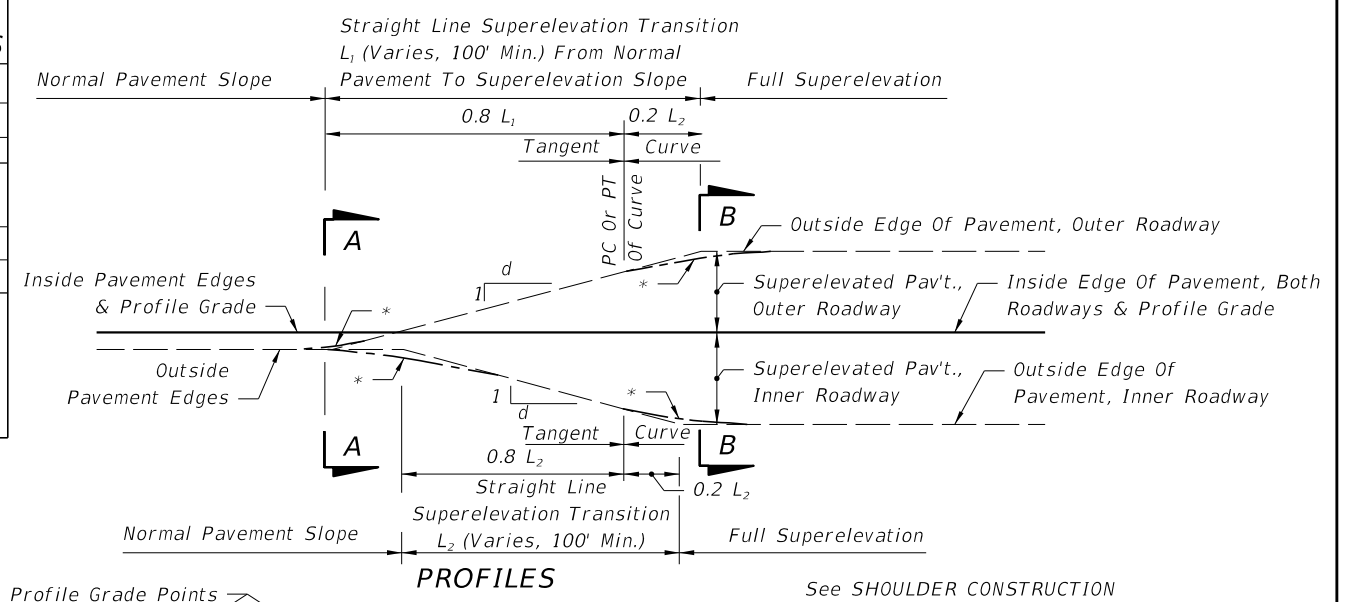


### SLOPE RATIOS FOR SUPERELEVATION TRANSITIONS

SECTION	DESIGN SPEED, MPH		
	45-50	55-60	65-70
2 Lane & 4 Lane	1:200	1:225	1:250
6 Lane	1:160	1:180	1:200
8 Lane	1:150	1:170	1:190

The length of superelevation transition is to be determined by the relative slope between the travel way edge of pavement and the profile grade, except that the minimum length of transition shall be 100 ft.

\* Short Vertical Curves Are To Be Used On Construction To Avoid Angular Breaks In Edge Profiles

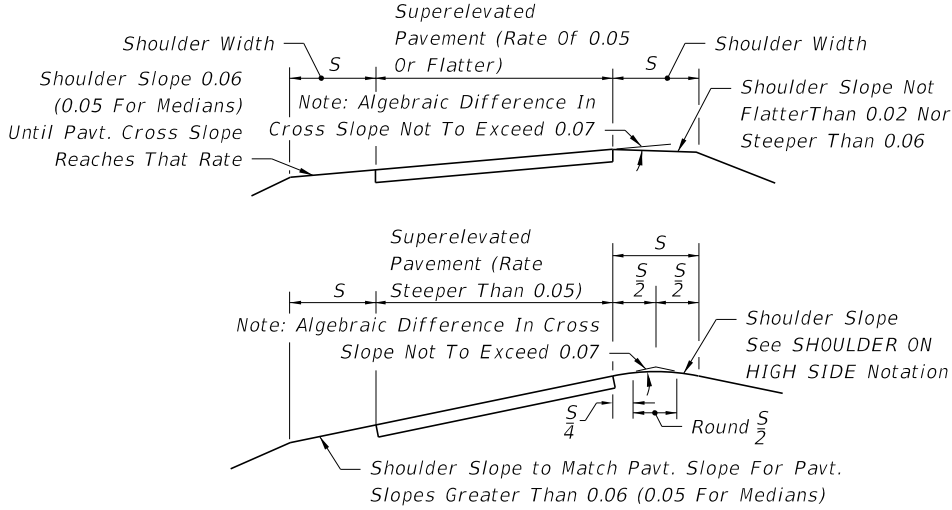


- THESE TRANSITION DETAILS ARE TO APPLY IN ALL CASES, EXCEPT UNDER THE FOLLOWING CONDITIONS:
1. Curves of insufficient length.
  2. Insufficient tangent length between curves.
  3. Deficient transition distance between a curve and other control point(s).
  4. At PCC's or PRC's (Runoff rates are applicable).

Transitions for these exceptions are to be as detailed in the plans. SUPERELEVATION TRANSITIONS

**SHOULDER ON HIGH SIDE:** A shoulder slope of 0.06 downward from the edge of travel way will be maintained until a 0.07 break in slope at the pavement edge is reached due to superelevation of the pavement. As the pavement superelevation increases, the 0.07 break in slope will be maintained and the shoulder flattened until the shoulder slope reaches the minimum of 0.02 downward from the edge of travel way. Any further increase in pavement superelevation will necessitate sloping the inside half of the shoulder toward the travel way and the outer half outward, both at 0.02 for superelevations 0.06-0.09 and both at 0.03 for superelevation 0.10. For shoulders with paved widths 5 feet or less see Special Shoulder Break Over Details on Sheet 2 of 2.

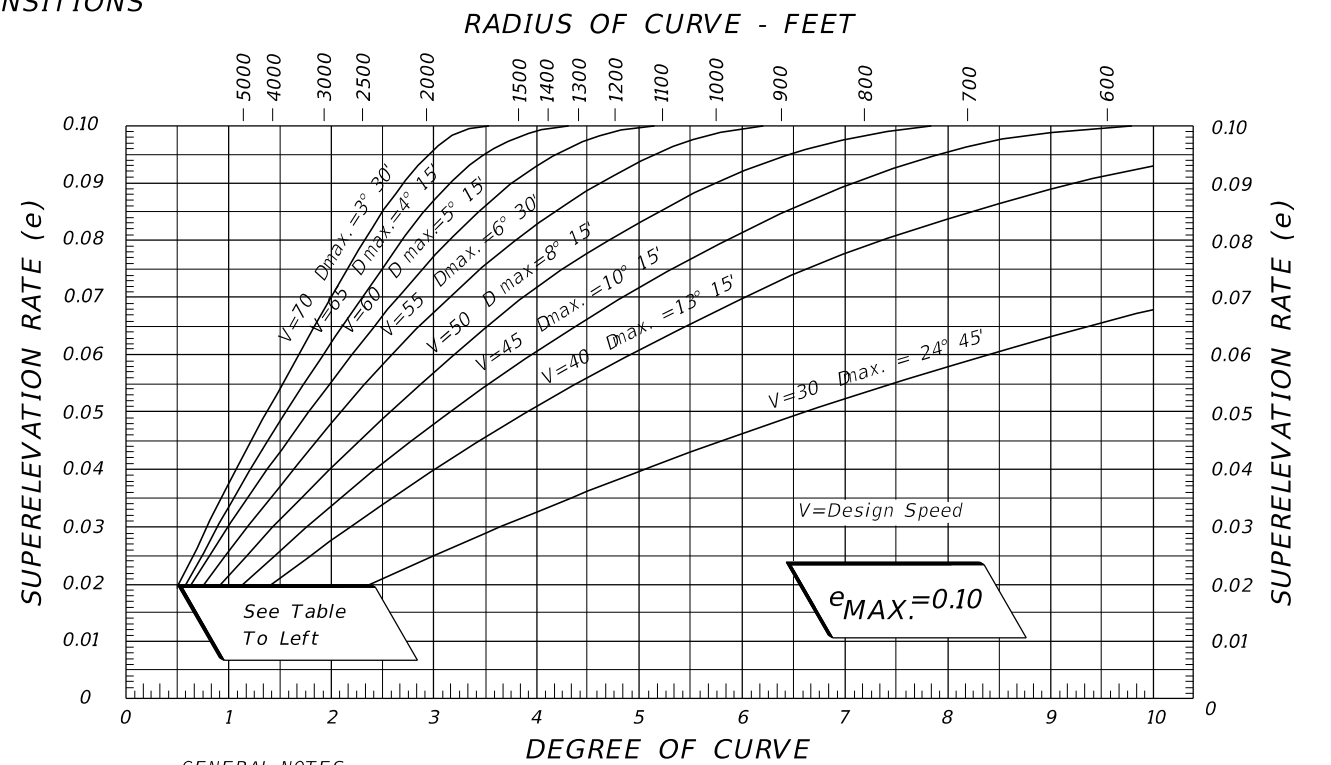
DEGREE OF CURVE (D)	DESIGN SPEED, V MPH						
	30	40	45/50	55	60	65	70
0°15'	NC	NC	NC	NC	NC	NC	NC
0°30'	NC	NC	NC	NC	RC	RC	RC
0°45'	NC	NC	RC	RC	0.023	0.025	0.028
1°00'	NC	NC	0.021	0.025	See Table To Right		
1°30'	NC	0.021					
2°00'	RC						



**SHOULDER ON LOW SIDE:** Maintain 0.06 drop across inside shoulder until pavement cross slope reaches 0.06. For pavement cross slopes greater than 0.06, shoulder to have same slope as pavement.

These slopes are the same as those shown pictorially on Sheet 2 of 2.

NOTE: These details apply to both paved and grassed shoulders. For median shoulders use 0.05 in lieu of 0.06.



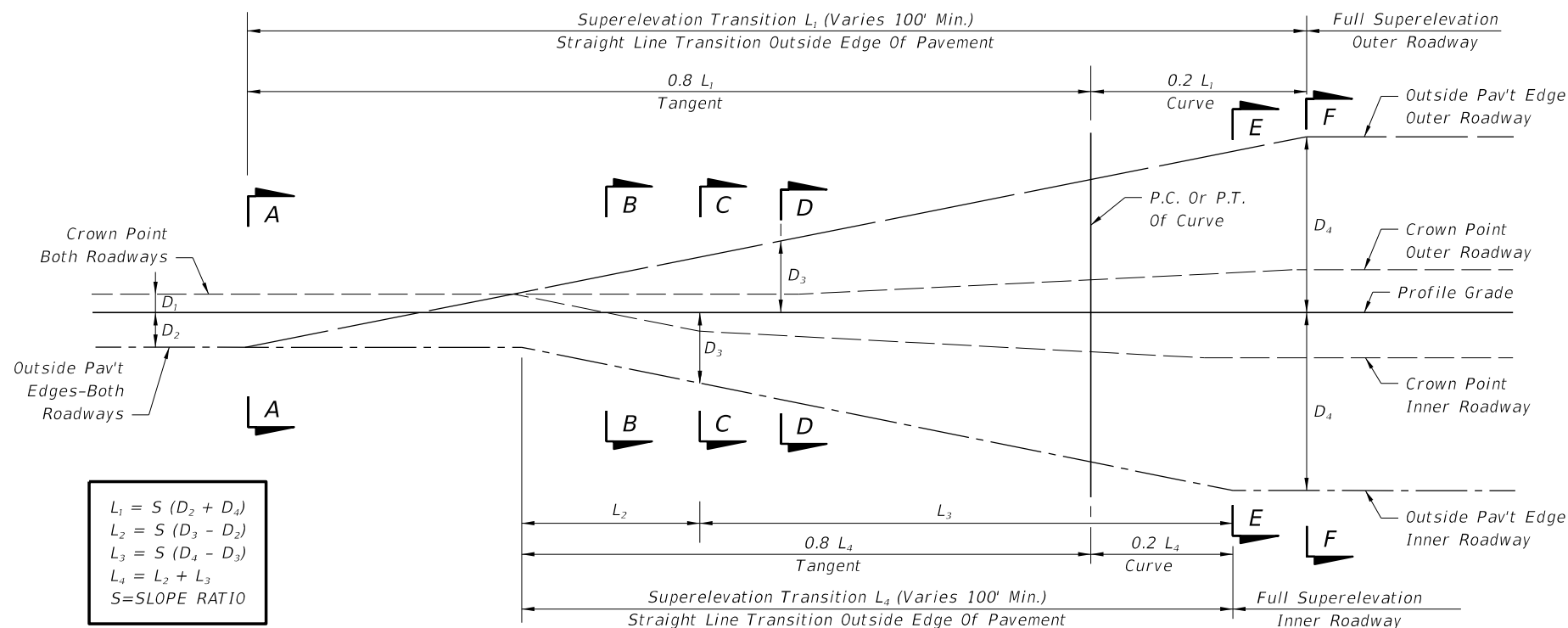
GENERAL NOTES:  
1. For curves in Urban Highways and high speed Urban Streets, see Index No. 511.

**SHOULDER CONSTRUCTION WITH SUPERELEVATION**

**DESIGN SUPERELEVATION RATES FOR RURAL HIGHWAYS, URBAN FREEWAYS AND HIGH SPEED URBAN HIGHWAYS**

10/12/2016 10:32:25 AM





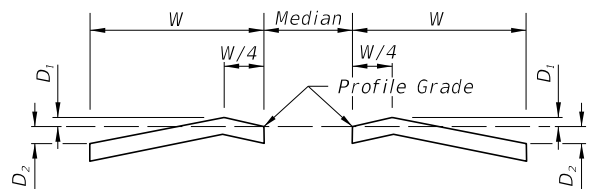
$$L_1 = S (D_2 + D_4)$$

$$L_2 = S (D_3 - D_2)$$

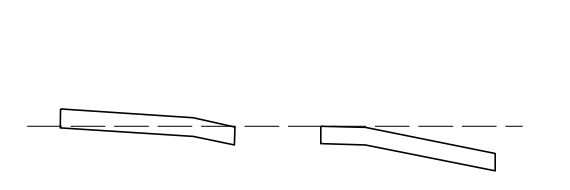
$$L_3 = S (D_4 - D_3)$$

$$L_4 = L_2 + L_3$$

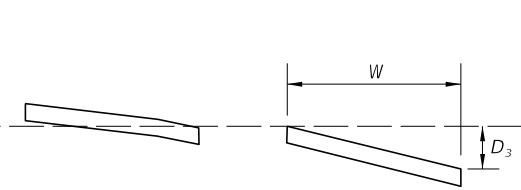
$$S = \text{SLOPE RATIO}$$



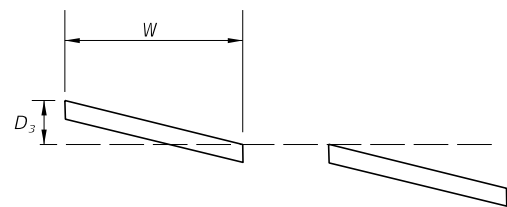
SECTION A-A  
NORMAL CROWNED SECTION



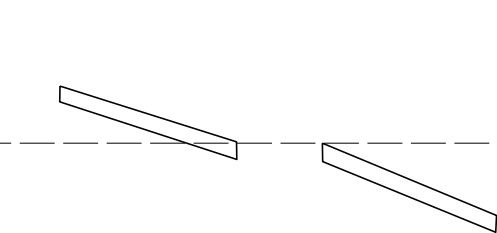
SECTION B-B  
SUPERELEVATION SECTION LT. & RT.



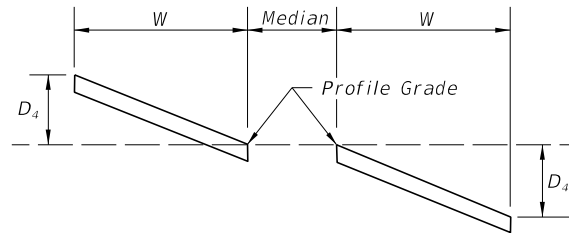
SECTION C-C  
SUPERELEVATION SECTION LT.  
PLANE INCLINED SECTION RT.



SECTION D-D  
PLANE INCLINED SECTION LT.  
SUPERELEVATION TRANSITION RT.

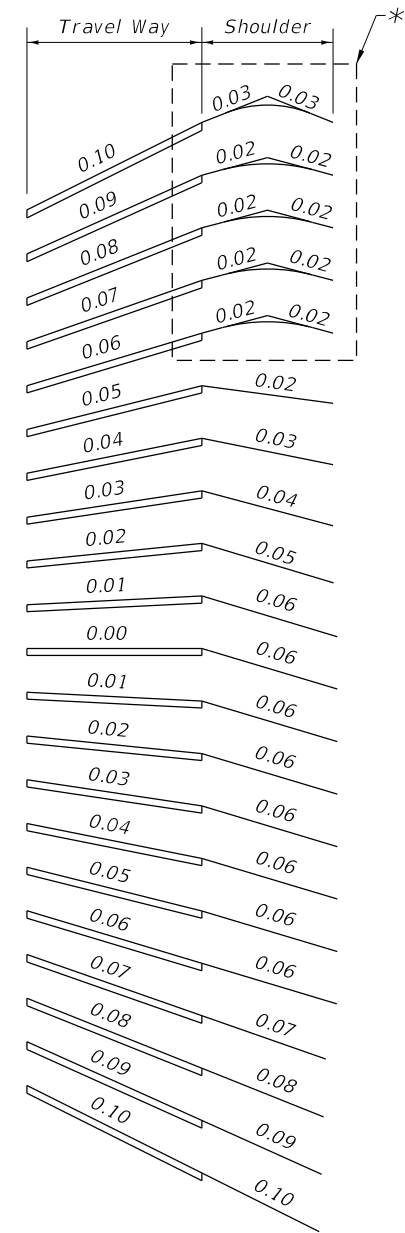


SECTION E-E  
SUPERELEVATION TRANSITION LT.  
FULL SUPERELEVATION RT.



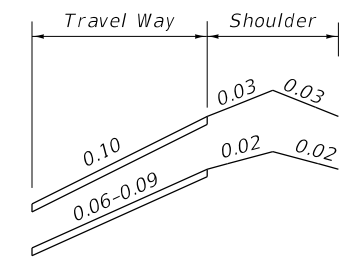
SECTION F-F  
FULL SUPERELEVATION LT. & RT.

8-LANE PAVEMENT WITH ONE LANE SLOPED TO MEDIAN



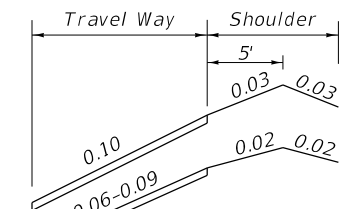
SLOPES OF TRAVELED WAY  
AND ABUTTING SHOULDERS  
**SHOULDER SLOPES ON  
SUPERELEVATION SECTIONS**

\* FOR SHOULDERS WITH PAVED WIDTHS  
5 FEET OR LESS SEE SPECIAL  
SHOULDER BREAK OVER DETAILS

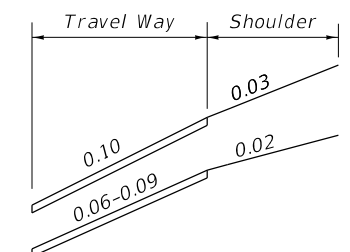


a) 12' AND 10' FULL WIDTH  
SHOULDERS WITH 5' OR  
LESS PAVED WIDTHS,

b) 8' FULL WIDTH SHOULDERS  
WITH 4' OR LESS PAVED  
WIDTHS,



8' FULL WIDTH SHOULDER  
WITH 5' PAVED WIDTH



6' FULL WIDTH SHOULDER  
WITH 5' OR LESS PAVED WIDTH

**SPECIAL SHOULDER  
BREAK OVER DETAILS**

10/12/2016 10:32:28 AM

LAST REVISION 07/01/14	DESCRIPTION:
---------------------------	--------------

**SUPERELEVATION RATES (e) FOR URBAN HIGHWAYS AND HIGH SPEED URBAN STREETS**

$e_{max.} = 0.05$

TABULATED VALUES			CHARTED VALUES				
Degree Of Curve (D)	Radius (R) (Ft.)	Design Speed (mph)					
		30	35	40	45	50	
2° 00'	2,865	NC	NC	NC	NC	NC	
2° 15'	2,546					RC	
2° 45'	2,083				NC		
3° 00'	1,910				RC		
3° 45'	1,528			NC			
4° 00'	1,432			RC			
4° 45'	1,206					RC	
5° 00'	1,146		NC			0.023	
5° 15'	1,091		RC			0.027	
5° 30'	1,042					0.030	
5° 45'	996					0.035	
6° 00'	955				RC	0.040	
6° 15'	917				0.022	0.045	
6° 30'	881				0.024	0.050	
6° 45'	849				0.027	$D_{max.} = 6° 30'$	
7° 00'	819	NC			0.030		
7° 15'	790	RC			0.033		
7° 30'	764				0.037		
7° 45'	739				0.041		
8° 00'	716			RC	0.045		
8° 15'	694			0.022	0.050		
8° 30'	674			0.025	$D_{max.} = 8° 15'$		
8° 45'	655			0.027			
9° 00'	637			0.030			
9° 30'	603			0.034			
10° 00'	573			0.040			
10° 30'	546		RC	0.047			
11° 00'	521		0.023	$D_{max.} = 10° 45'$			
11° 30'	498		0.026				
12° 00'	477		0.030				
13° 00'	441		0.036				
14° 00'	409	RC	0.045				
15° 00'	382	0.023	$D_{max.} = 14° 15'$				
16° 00'	358	0.027					
17° 00'	337	0.032					
18° 00'	318	0.038					
19° 00'	302	0.043					
20° 00'	286	0.050					
		$D_{max.} = 20° 00'$					

NC = Normal Crown

RC = Reverse Crown (+0.02 Superelevation)

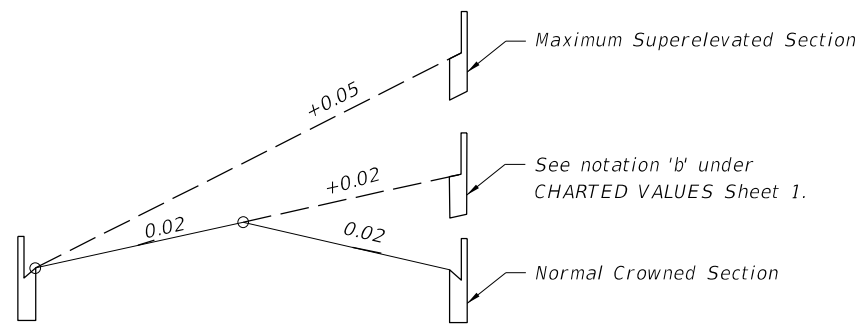
**GENERAL NOTES**

1. Maximum rate of superelevation for urban highways and high speed urban streets shall be 0.05.
2. Superelevation shall be obtained by rotating the plane successively about the break points of the section until the plane has attained a slope equal to that required by the chart. Should the rotation traverse the entire section and further superelevation be required, the remaining rotation of the plane shall be about the low edge of the inside travel lane. Crown is to be removed in the auxiliary lane to the outside of the curve only when the adjoining travel lanes require positive superelevation.
3. When positive superelevation is required, the slope of the gutter on the high side shall be a continuation of the slope of the superelevated pavement.
4. In construction, short vertical curves shall be placed at all angular profile breaks within the limits of the superelevation transition.
5. The variable superelevation transition length "L" shall have a minimum value of 50 feet for design speeds under 40 MPH and 75 feet for design speeds of 40 MPH or greater.
6. Roadway sections having lane arrangements different from those shown, but composed of a series of planes, shall be superelevated in a similar manner.
7. For superelevation of lower speed urban streets, see the FDOT 'Manual Of Uniform Minimum Standards For Design, Construction And Maintenance For Streets And Highways'. For superelevation of curves on rural highways, urban freeways and high speed urban highways, see Index No. 510.

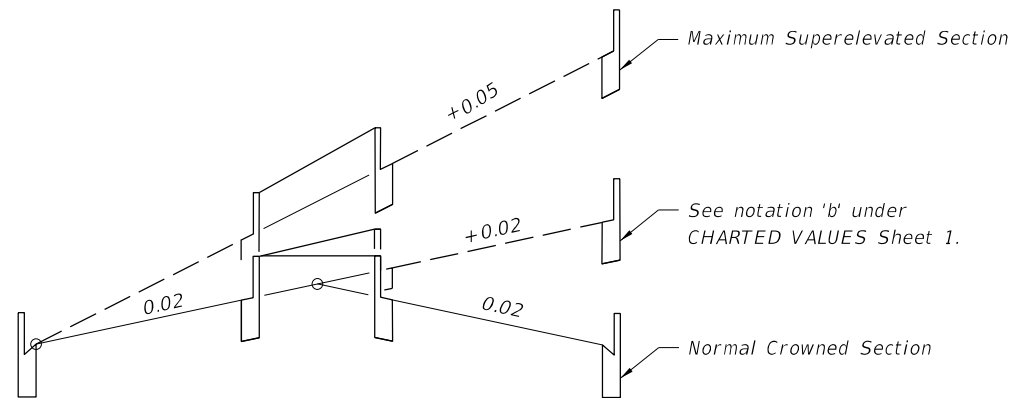
$e_{max.} = 0.05$

**SUPERELEVATION FOR URBAN HIGHWAYS AND HIGH SPEED URBAN STREETS**

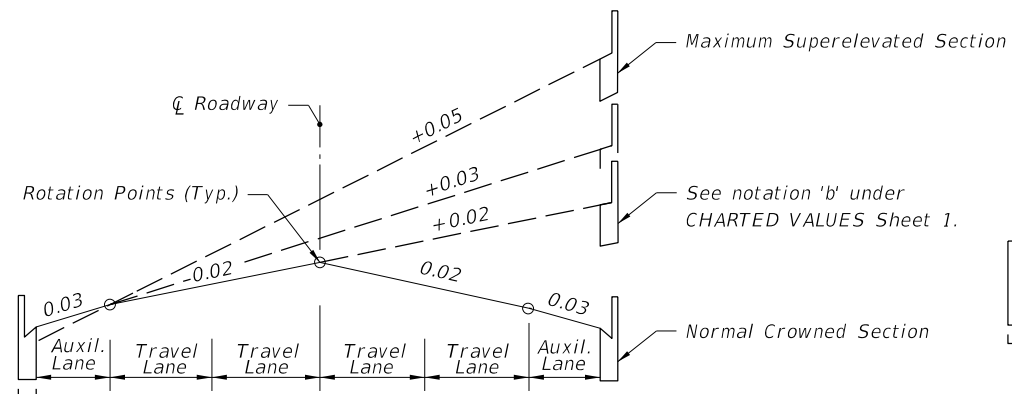
10/12/2016 10:32:54 AM



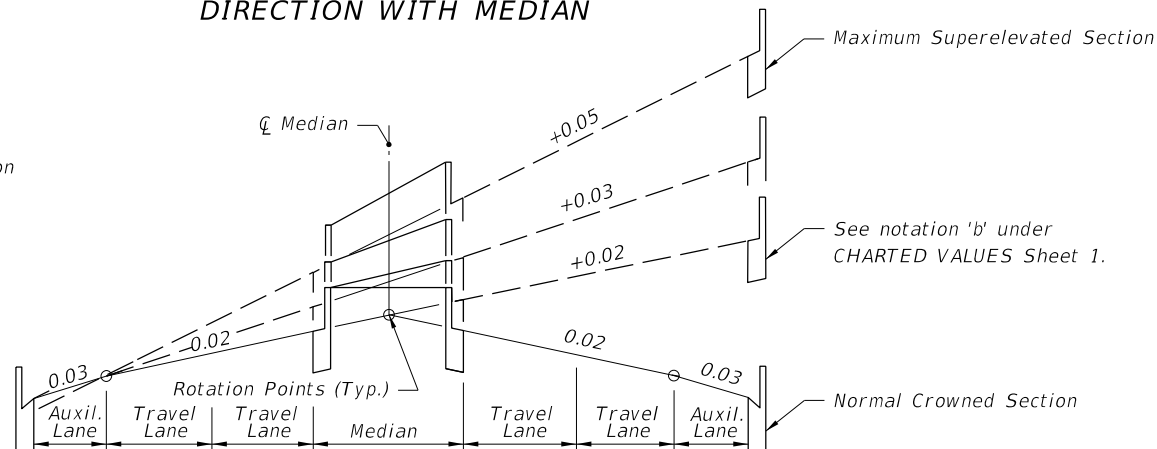
TWO TRAVEL LANES EACH DIRECTION



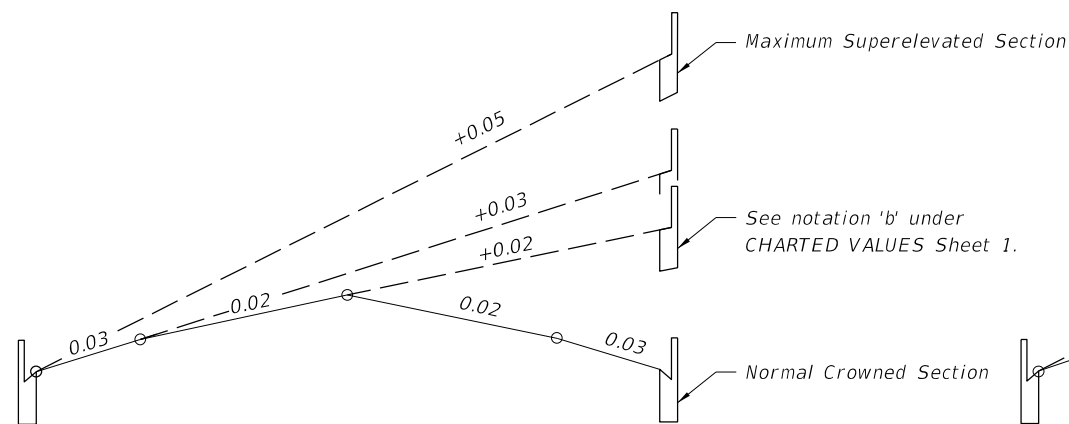
TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN



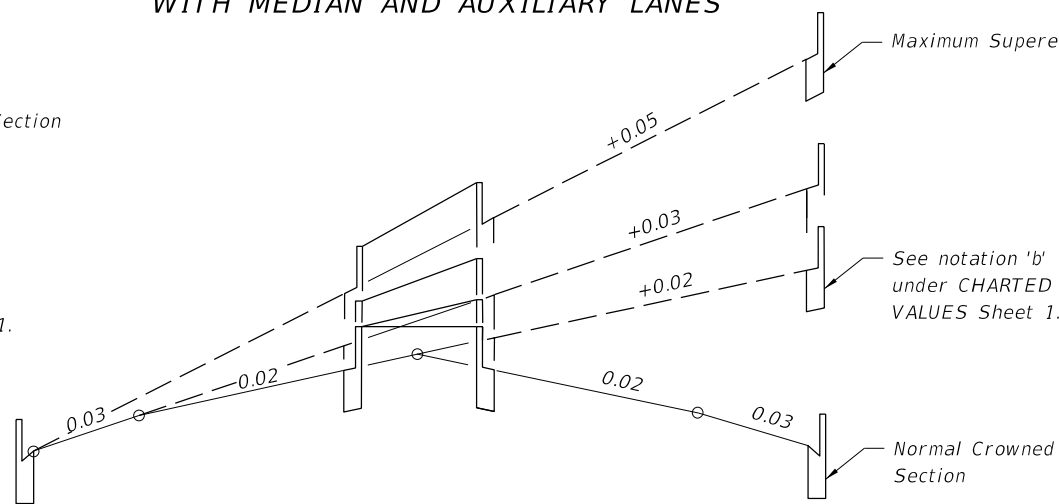
TWO TRAVEL LANES EACH DIRECTION WITH AUXILIARY LANES



TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANES

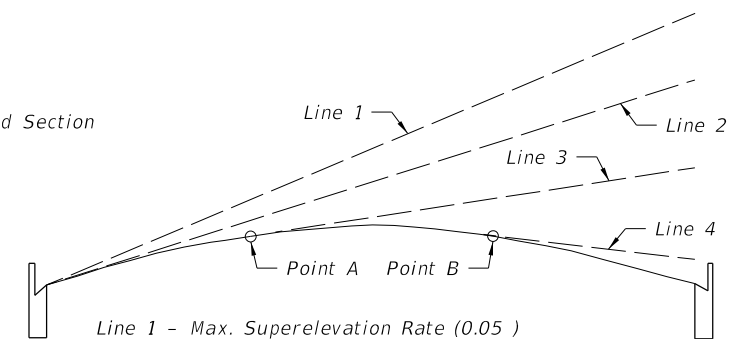


UNDIVIDED FACILITIES



DIVIDED FACILITIES

THREE TRAVEL LANES EACH DIRECTION WITH MEDIAN



- Line 1 - Max. Superelevation Rate (0.05 )
- Line 2 - Slope Of Parabola At Inside Edge Of Pavt.
- Line 3 - Positive Superelevation Rate Less Than Max. Slope Of Parabola.
- Line 4 - Adverse Superelevation.

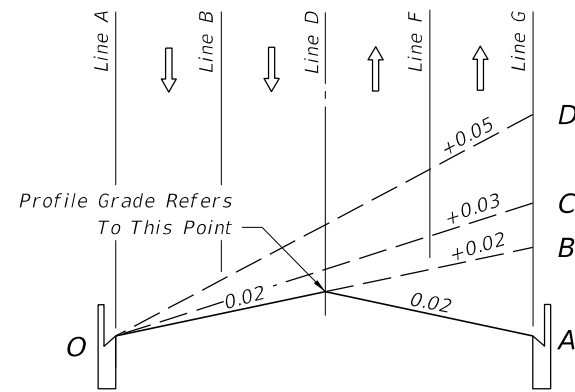
Superelevation rates obtained from the chart or table on Sheet 1 are also applicable to a parabolic crown section. When this section is used, superelevation is established by rotating a tangent about the arc of the parabolic crown until the desired slope is attained (points A & B on sketch). The normal parabolic crown will be maintained outside the limits of the plane thus formed.

PARABOLIC SECTION

SUPERELEVATION TRANSITION SECTIONS FOR URBAN HIGHWAYS AND HIGH SPEED URBAN STREETS

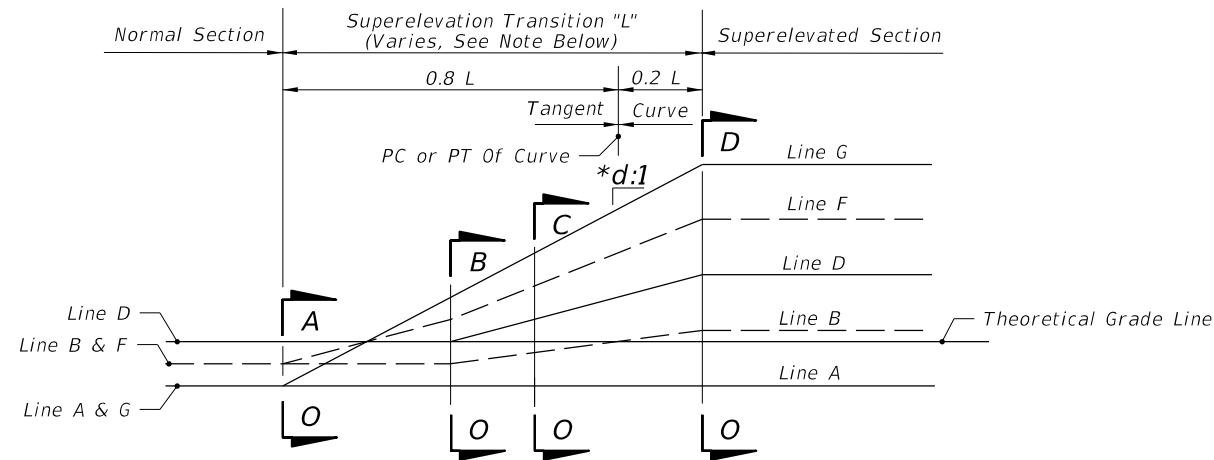
10/12/2016 10:32:57 AM

LAST REVISION 07/01/00	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	SUPERELEVATION URBAN HIGHWAYS AND STREETS	INDEX NO. <b>511</b>	SHEET NO. <b>2 of 3</b>
---------------------------	----------	--------------	------------------------------------	---	-------------------------	----------------------------



SECTION 0-A to 0-D

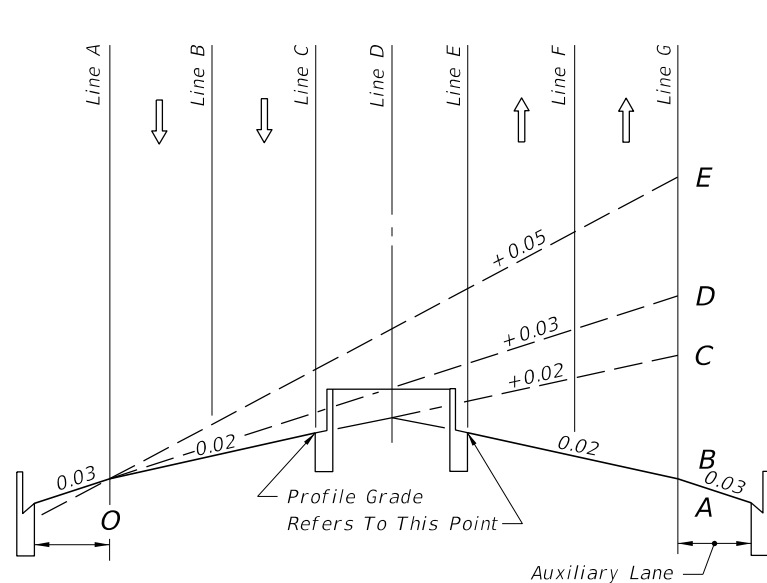
TWO LANES EACH DIRECTION



PROFILE

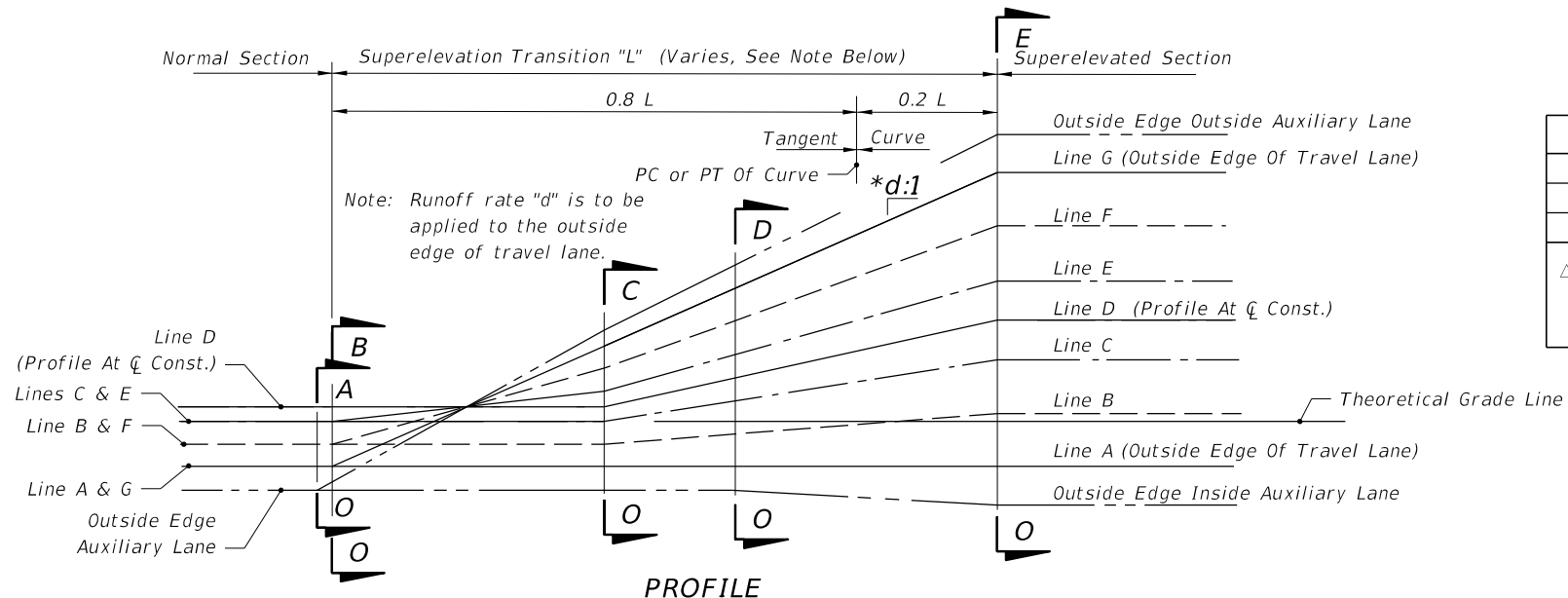
LINE	DESCRIPTION
A	Inside Travel Lane
B	Inside Lane Line
C	Inside Median Edge Pavement
D	℄ Construction
E	Outside Median Edge Pavement
F	Outside Lane Line
G	Outside Travel Lane

Inside And Outside Are Relative To Curve Center



SECTION 0-A to 0-E

TWO LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANE



PROFILE

*d (Slope Ratio)	
30 MPH	1: 100
40 MPH	1: 125
45-50 MPH Δ	1: 150

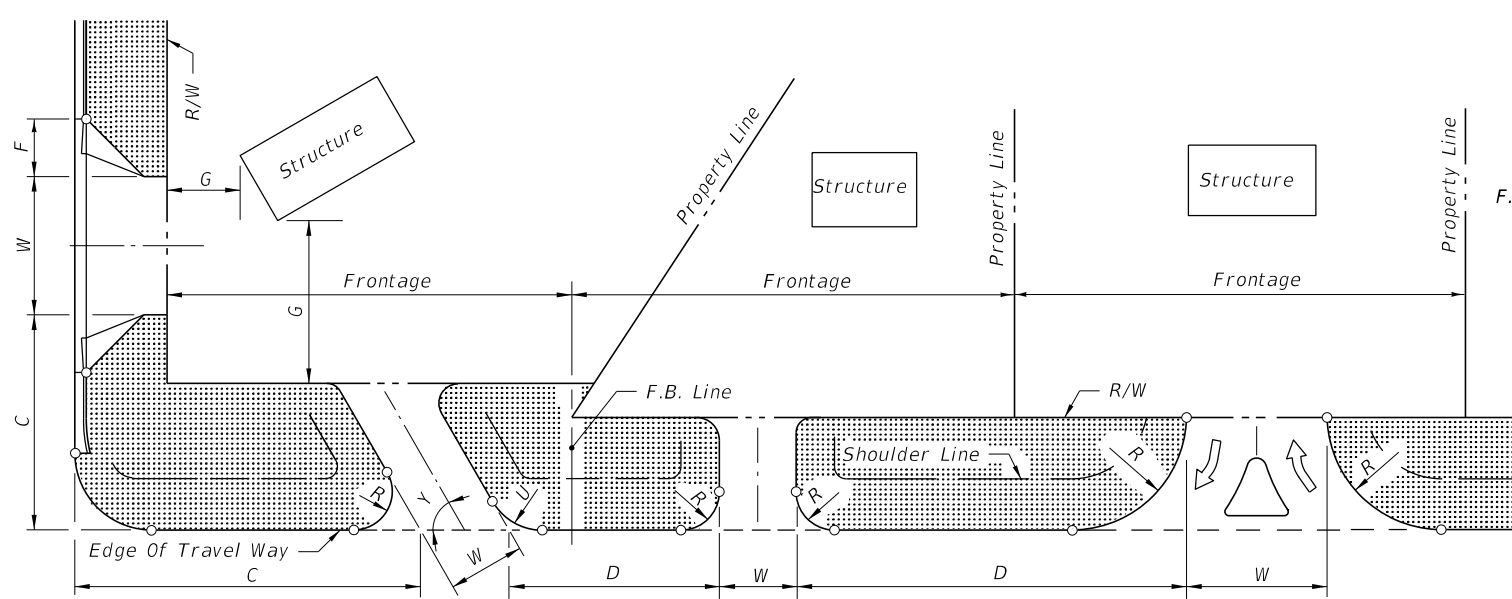
Δ 1: 125 May Be Used For 45 MPH Under Restricted Conditions.

Note:  
The sections and profiles shown are examples of superelevation transitions.  
Similar schemes should be used for roadways having other sections.

EXAMPLE SUPERELEVATION SECTIONS AND PROFILES  
FOR URBAN HIGHWAYS AND HIGH SPEED URBAN STREETS

10/12/2016 10:33:01 AM

LAST REVISION	DESCRIPTION:
07/01/00	



For Corner Clearance (C) Requirements see General Note 3.

For Additional Information Refer To FDOT Rules Chapters 14-96 And 14-97.

**SKETCH ILLUSTRATING DEFINITIONS**

**LEGEND**

- Return Radius Point Or Flare Point
- ▨ Buffer Areas
- F.B. Line Frontage Boundary Line
- W Driveway Width
- Y Driveway Angle
- C Corner Clearance
- G Setback
- R Outside Radius
- U Inside Radius
- D Distance Between Connections
- F Flare

**GENERAL NOTES**

1. For definitions and descriptions of access connection "Categories" and access "Classifications" of highway segments, and for other detailed information on access to the State Highway System, refer to FDOT Rule Chapter 14-96, "State Highway Connection Permits Administrative Process" and Rule Chapter 14-97, "State Highway System Access Management Classification System And Standards."
2. For this index the term 'turnout' applies to that portion of driveways or side roads adjoining the outer roadway. For this index the term 'connection' encompasses a driveway or side road and their appurtenant islands, separators, transition tapers, auxiliary lanes, travelway flares, drainage pipes and structures, crossovers, sidewalks, curb cut ramps, signing, pavement marking, required signalization, maintenance of traffic or other means of access to or from controlled access facilities. The turnout requirements set forth in this index do not provide complete intersection design, construction or maintenance requirements.
3. The location, positioning, orientation, spacing and number of connections and median openings shall be in conformance with FDOT Rule Chapter 14-97.
4. On Department construction projects all driveways not shown on the plans shall be reconstructed at their existing location in conformance to these standards, or, in conformance to permits issued during the construction project.
5. Driveways shall have sufficient length and size for all vehicular queueing, stacking, maneuvering, standing and parking to be carried out completely beyond the right of way line. Except for vehicles stopping to enter the highway, the turnout areas and drives within the right of way shall be used only for moving vehicles entering or leaving the highway.
6. Connections with expected daily traffic over 4000 vpd shall be constructed as intersecting side roads. The design requirement of this index and that of the local government will be used to select appropriate connection widths, radii and intersection design, subject to the approval of the Department. For connections with expected daily traffic less than 4000 vpd, the Department will determine if a drop curb or radius returns are required in accordance with existing or planned connections. Where radius returns apply, the design requirements of this index and that of the local government will be used to select appropriate connection widths, radii and intersection design, subject to the approval of the Department.  
  
For connections that are intended to daily accommodate either multi-unit vehicles or single unit vehicles exceeding 30' in length, returns with 50' radii shall be used, unless otherwise called for in the plans or otherwise stipulated by permit. Where large numbers of multi-unit vehicles will use the connection, the connection width and radii shall be increased and auxiliary lanes, tapers, lane flares, separators and/or islands constructed, as determined by the Department to be necessary for safe turning movements.
7. Any connection requiring or having a specified median opening with left turn storage and served directly by that opening shall have radial returns.
8. Where a connection is intended to align with a connection across the highway, the through lanes shall align directly with the corresponding through lanes.
9. For new connections and for connections on all new construction and reconstruction projects, pavement materials and thicknesses shall meet the requirements applicable to either that detailed for "Curbed Roadway-Flared Turnouts", or, that described in "Table 515-1" for connections with radial returns and/or auxiliary lanes.
10. The responsibility for the cost of construction or alteration to an access connection shall be in accordance with FDOT Rule Chapter 14-96.

**DESIGN NOTES**

1. Prior to the adoption of FDOT Rules Chapters 14-96 and 14-97, connections to the State Highway System were defined and permitted by Classes. Connections have been redefined by Categories under Rule 14-96; and, the term "Class" has been applied to highway segments of the State Highway System as defined under Rule 14-97.

ELEMENT DESCRIPTION	CURBED ROADWAYS			FLUSH SHOULDER ROADWAYS		
	1-20 Trips/Day or 1-5 Trips/Hour	21-600 Trips/Day or 6-60 Trips/Hour	601-4000 Trips/Day or 61-400 Trips/Hour	1-20 Trips/Day or 1-5 Trips/Hour	21-600 Trips/Day or 6-60 Trips/Hour	601-4000 Trips/Day or 61-400 Trips/Hour
		2-Way □	2-Way □		2-Way □	2-Way □
CONNECTION WIDTH W	12' Min. 24' Max.	24' Min. 36' Max. ☆	24' Min. 36' Max. ☆	12' Min. 24' Max.	24' Min. 36' Max. ☆	24' Min. 36' Max. ☆
FLARE (Drop Curb) F	10' Min.	10' Min.	N/A	N/A	N/A	N/A
RETURNS (Radius) R & U	N/A	△	25' Min. 50' Std. 75' Max.	15' Min. 25' Std. 50' Max.	25' Min. 50' Std. 75' Max.	25' Min. 50' Std. 75' Max. (Or 3-Centered Curves)
ANGLE OF DRIVE Y		60°-90°	60°-90°		60°-90°	60°-90°
DIVISIONAL ISLAND (Throat Median)		4'-22' Wide	4'-22' Wide		4'-22' Wide	4'-22' Wide
SETBACK G	12' Min., All categories. See General Note No. 5.					

■ Side road intersection design, with possible auxiliary lanes and channelization, may be necessary. Intersection design, with possible auxiliary lanes and channelization, should be considered for connections with more than 4000 trips/days.  
 □ "2-Way" refers to one "in" movement and one "out" movement i.e., not exclusive left or right turn lanes on the connection.  
 ☆ When more than 2 lanes in the turnout connection are required, the 36' max. width may be increased to relieve interference between entering and exiting traffic which adversely affects traffic flow. These cases require documented site specific study and design.  
 △ Small radii may be used in lieu of flares as approved by the Department.  
 DESIGN NOTE: 1-Way connections will be designed to effectively eliminate unpermitted movements.

**NOT INTENDED FOR FULL INTERSECTION DESIGN  
SUMMARY OF GEOMETRIC REQUIREMENTS FOR DRIVEWAY TURNOUTS**

10/12/2016 10:56:52 AM

Footnotes:

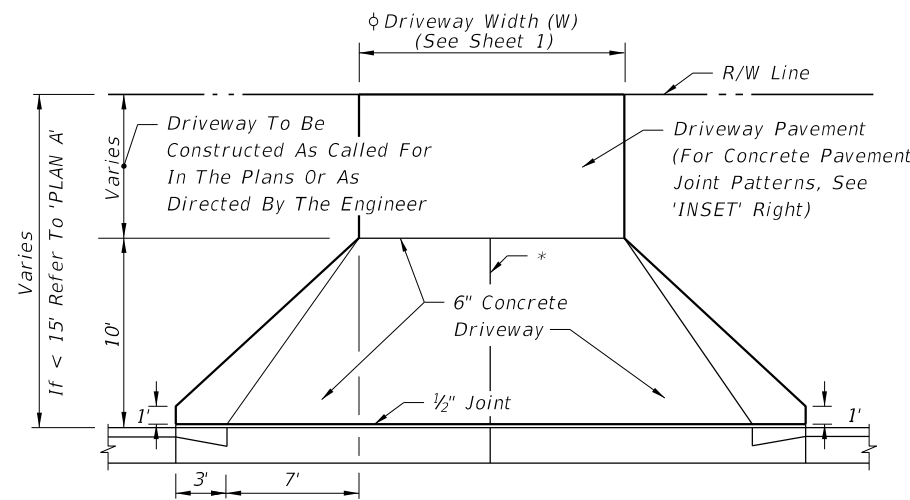
All 1/2" joints shall be constructed with preformed joint filler.

\* 1/8" Open joints placed at equal (20' max.) intervals for driveways over 20' wide. Joints in curb and gutter to match joints in driveways.

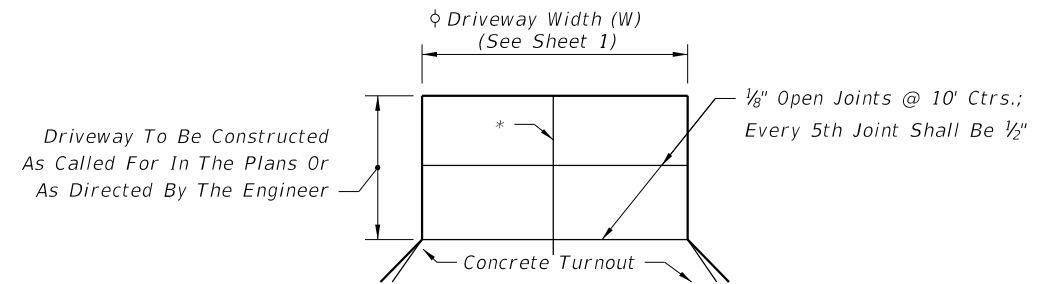
△ When connecting to side road curb and gutter sections, the no drop curb limits should extend back to the side road radius point. With or without curb and gutter, no driveway should encroach on the corner radius.

φ Driveways (6" concrete) shall be of a uniform width (W) to the right of way line.

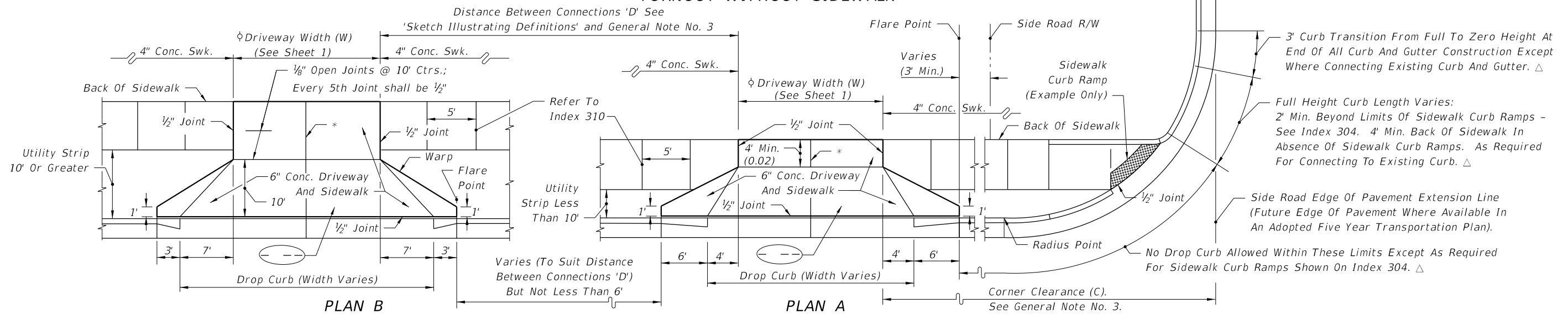
⊖ Alpha-numeric identification of a flared driveway type specifically called for in the plans, see sheets 3 and 4.



PLAN C  
TURNOUT WITHOUT SIDEWALK



JOINT PATTERN WHEN CONCRETE DRIVE CONSTRUCTED INSET



PLAN B  
TURNOUT WITH SIDEWALK AND UTILITY STRIP (10' OR GREATER)

PLAN A  
TURNOUT WITH SIDEWALK AND UTILITY STRIP (LESS THAN 10')

SPECIAL NOTES FOR CURBED ROADWAYS - FLARED TURNOUTS

DESIGN NOTES FOR CURBED ROADWAY - FLARED TURNOUTS


- Drop curb, concrete sidewalks (6" thick) and driveways (6" thick) shall meet Specification Sections 520 and 522. The driveway foundation shall meet the requirements of Subarticle 522-4.
- For details of drop curb and sidewalk curb ramps refer to Indexes 300 and 304 respectively.
- Where turnouts are constructed within existing curb and gutter, the existing curb and gutter shall be removed either to the nearest joint beyond the flare point or to the extent that no remaining section is less than 5' long; and, drop curb constructed in accordance with Notes Nos. 1 and 2.
- For turnouts with radial returns see the requirements under the "Summary Of Geometric Requirements For Turnouts", the "General Notes", the details of "Flush Shoulder Roadway-Turnout Construction" and the detail of "Limits Of Clearing & Grubbing, Stabilization And Base At Intersections".

- Maintenance of pavement shall extend out to the right of way or 2' beyond the back of sidewalk, whichever distance is less.
- The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.
- All pavement markings on the State highways, including acceleration and deceleration lane markings, and signing installed for the operation of the State highway shall be maintained by the Department.
- All signing and marking installed for the operation of the connection (such as stop bars and stop signs for the connection) shall be the responsibility of the permittee.
- All sidewalk surfaces crossing driveways with a cross slope shown in this Index to be 0.02 shall be 0.02 Maximum.

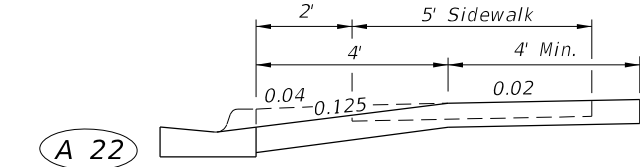
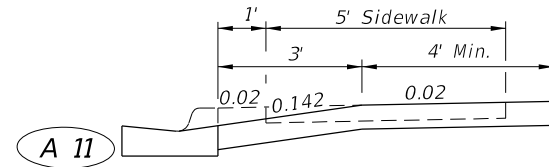
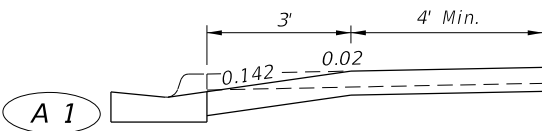
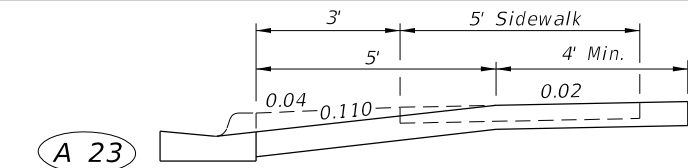
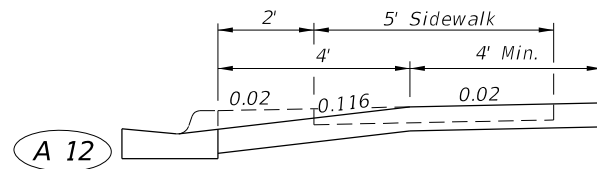
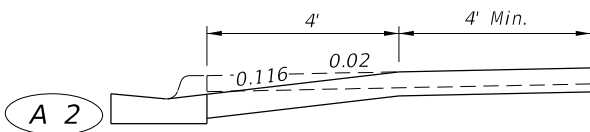
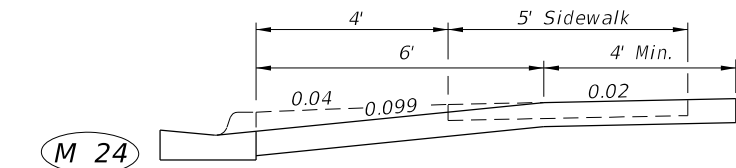
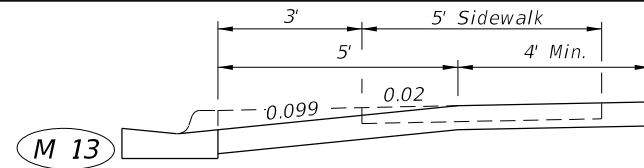
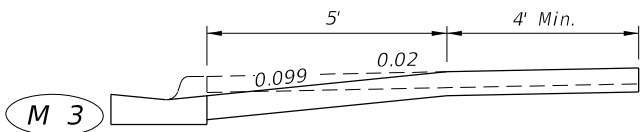
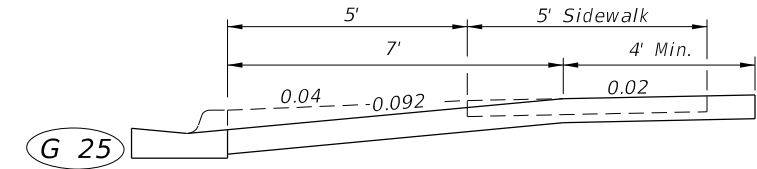
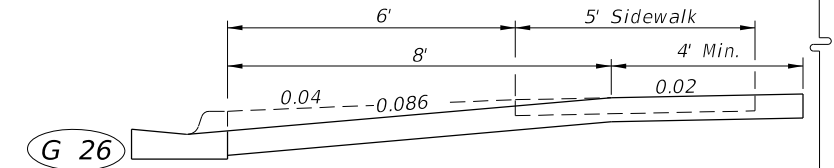
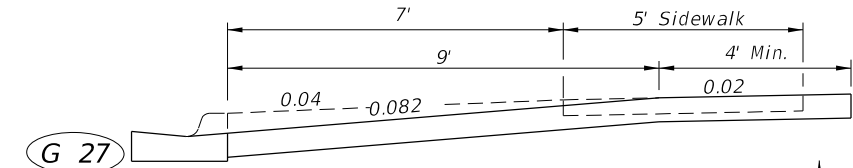
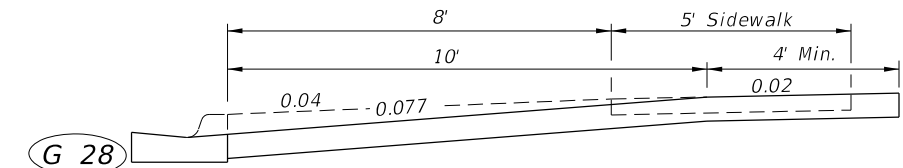
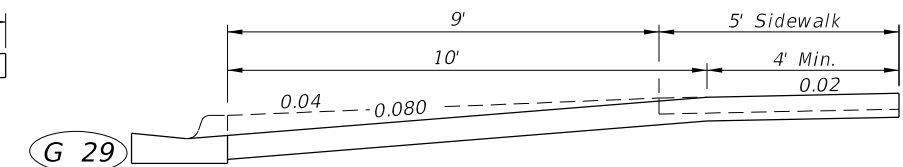
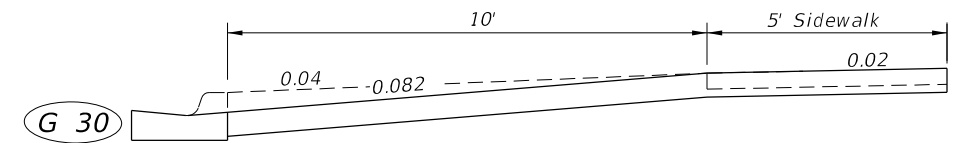
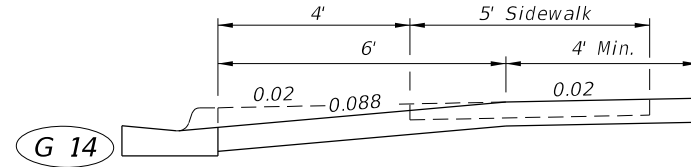
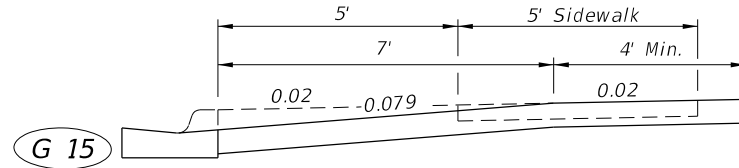
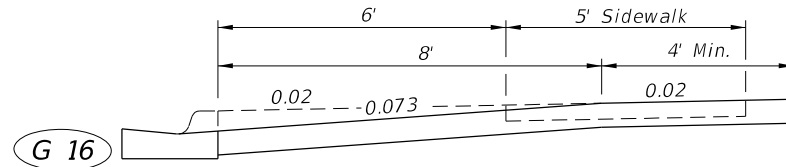
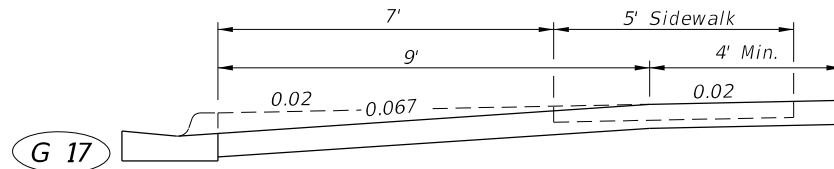
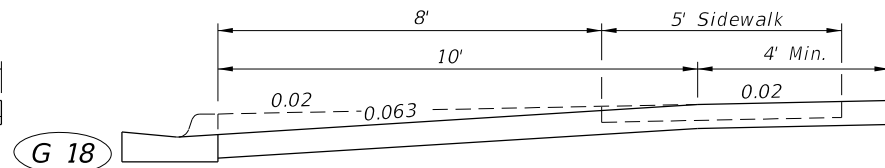
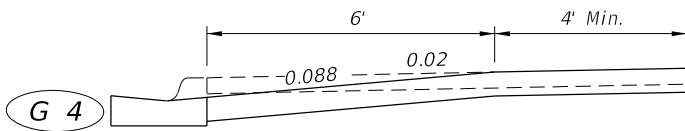
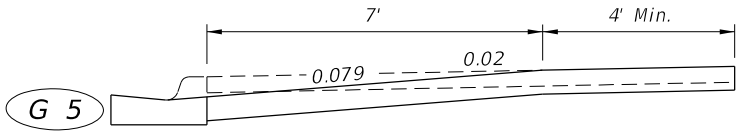
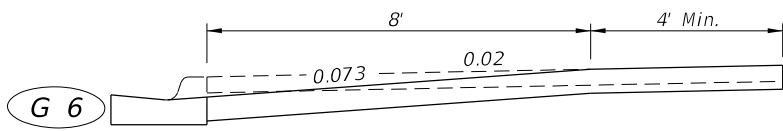
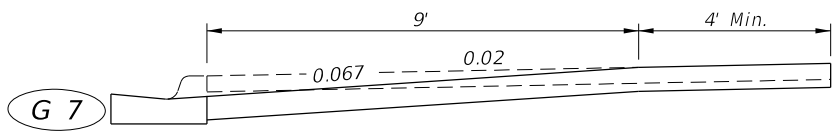
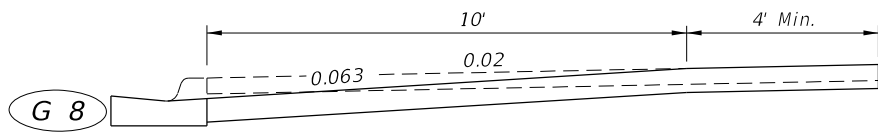
- Driveways indicated as 'Adverse Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions; or, those with slopes that can cause drivers who are leaving the roadway to slow or pause to the extent that traffic demand volumes will be impeded.  
  
Driveways indicated as 'Marginal Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions when the driveway is located on the low side of fully superelevated roadways.  
  
Driveways indicated as 'General Applications' are those with slopes that can readily accommodate representative standard passenger vehicles and those that can accommodate representative standard trucks, vans, buses and recreational vehicles operating under normal crown and superelevation conditions.
- The standard flared driveways on this index may not accommodate vehicles with low beds, low undercarriage or low appendage features. Where such vehicles are design vehicles, driveways shall have site specific flare designs or Category III designs.
- When specific flare type driveways shall be constructed, the type shall be designated in the plans using the assigned alpha-numeric designation.

CURBED ROADWAY - FLARED TURNOUTS

10/12/2016 10:56:54 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	TURNOUTS AND DRIVEWAYS	INDEX NO. 515	SHEET NO. 2 of 7
---------------------------	----------	--------------	--	------------------------	------------------	---------------------

\* See 'DESIGN NOTES FOR CURBED ROADWAY - FLARED TURNOUTS'



GENERAL\* APPLICATIONS

MARGINAL\* APPLICATIONS ON LOW SIDE OF FULLY SUPERELEVATED ROADWAY (REFER TO MODIFICATIONS ON SHEET 4)

ADVERSE\* APPLICATIONS (REFER TO MODIFICATIONS ON SHEET 4)

SIDEWALK ADJACENT TO CURB

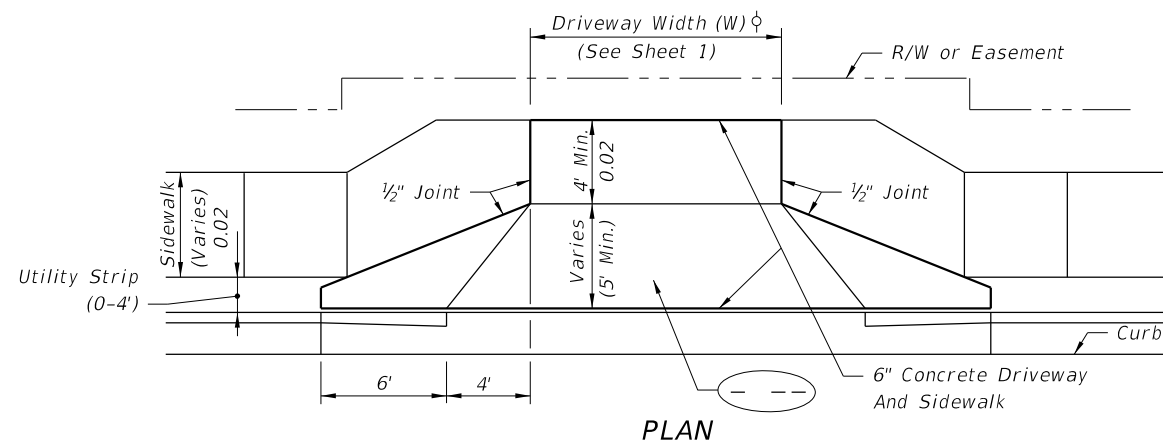
SIDEWALK WITH UTILITY STRIP ON 0.02 SLOPE

SIDEWALK WITH UTILITY STRIP ON 0.04 SLOPE

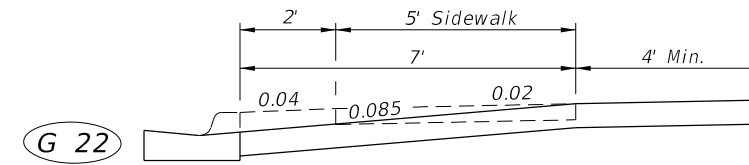
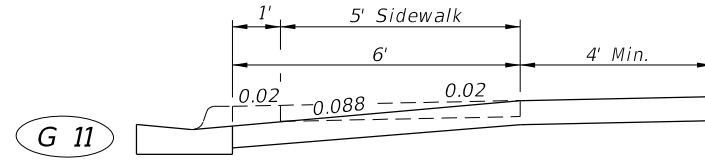
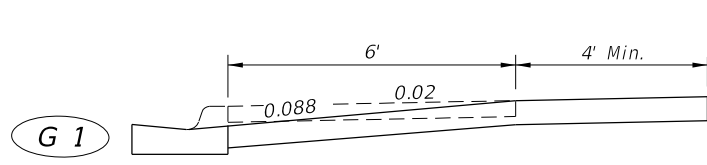
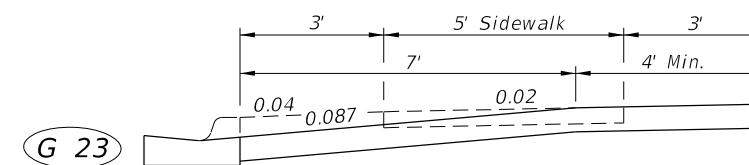
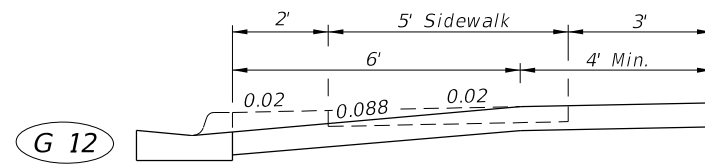
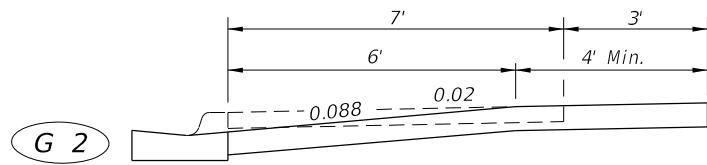
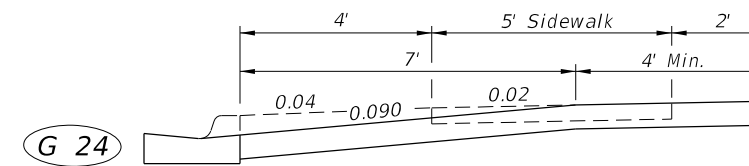
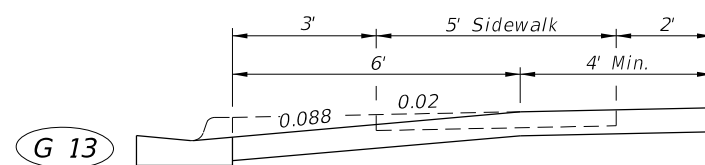
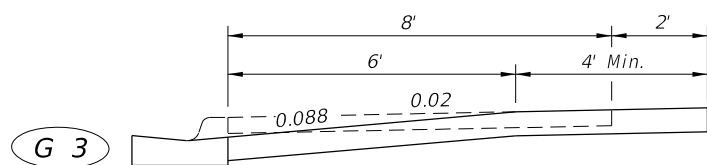
DRIVEWAY SECTIONS ON CURBED FACILITIES WITH SIDEWALKS

10/12/2016 10:56:57 AM

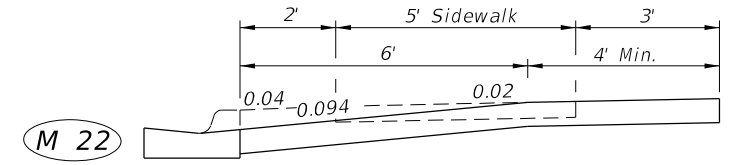
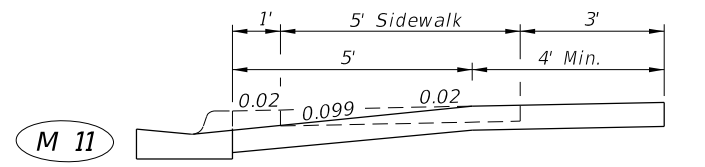
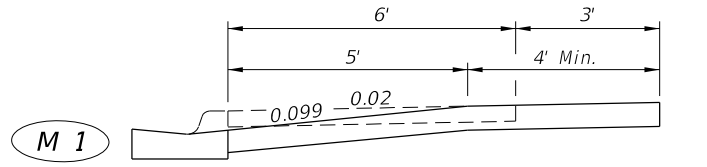
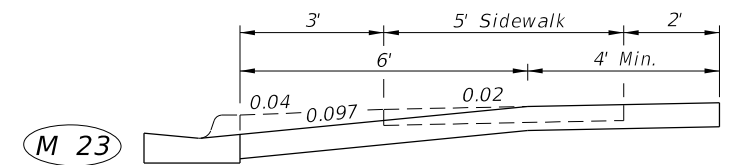
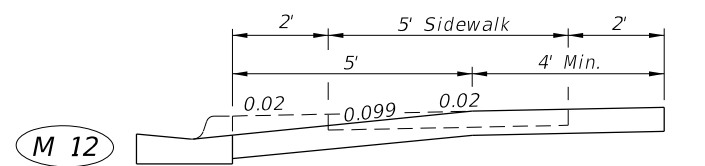
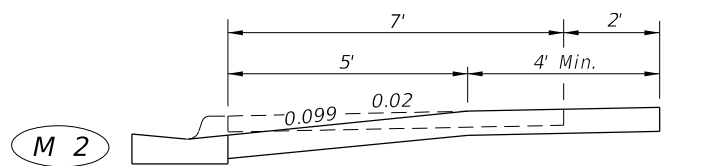
LAST REVISION 11/01/16	REVISION	DESCRIPTION:
---------------------------	----------	--------------



MODIFICATIONS OF 'ADVERSE' AND 'MARGINAL' APPLICATIONS



ADVERSE\* AND MARGINAL\* SECTIONS MODIFIED TO ACHIEVE GENERAL\* APPLICATION



ADVERSE\* SECTIONS MODIFIED TO ACHIEVE MARGINAL\* APPLICATION

SIDEWALK ADJACENT TO CURB

SIDEWALK WITH UTILITY STRIP ON 0.02 SLOPE

SIDEWALK WITH UTILITY STRIP ON 0.04 SLOPE

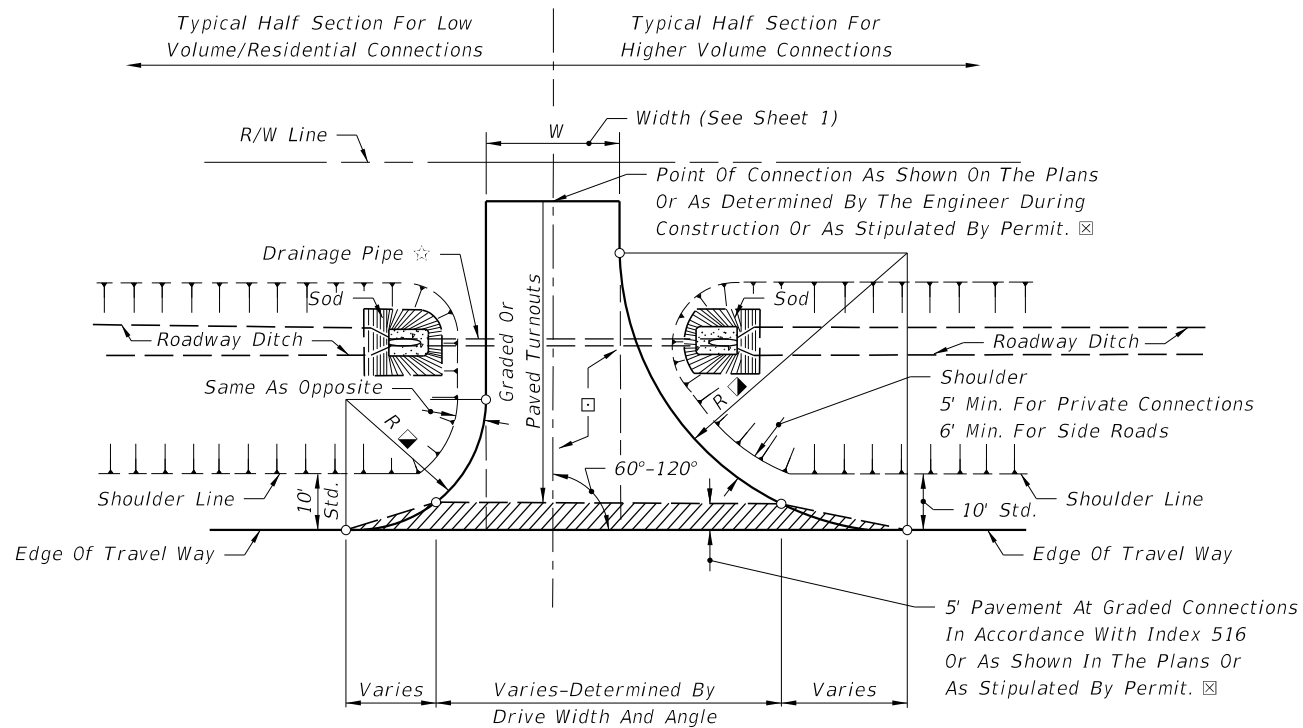
\* See 'DESIGN NOTES FOR CURBED ROADWAY - FLARED TURNOUTS'

MODIFICATIONS TO ADVERSE AND MARGINAL SECTIONS

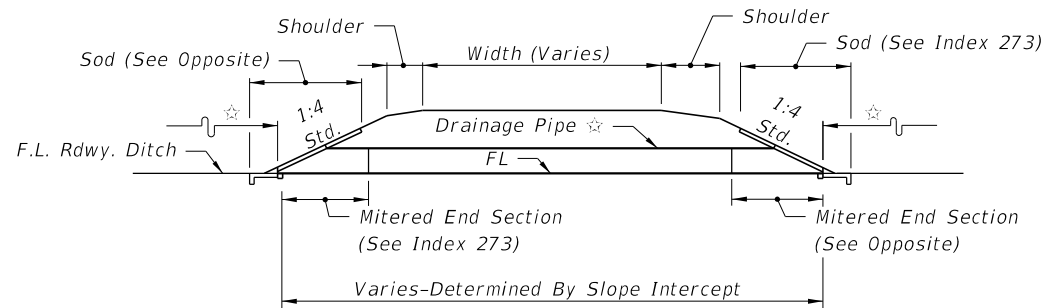
10:57:00 AM  
10/12/2016

LAST REVISION 11/01/16	DESCRIPTION:
---------------------------	--------------

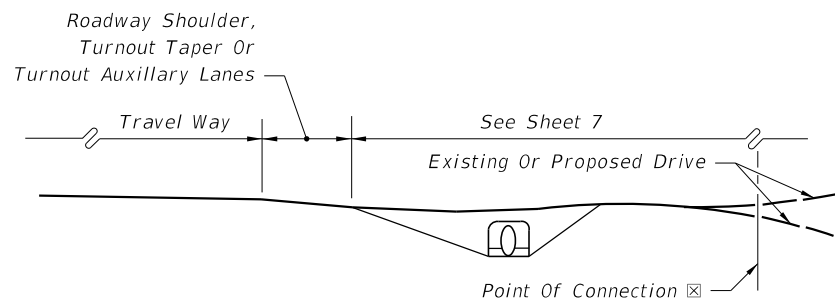




PLAN

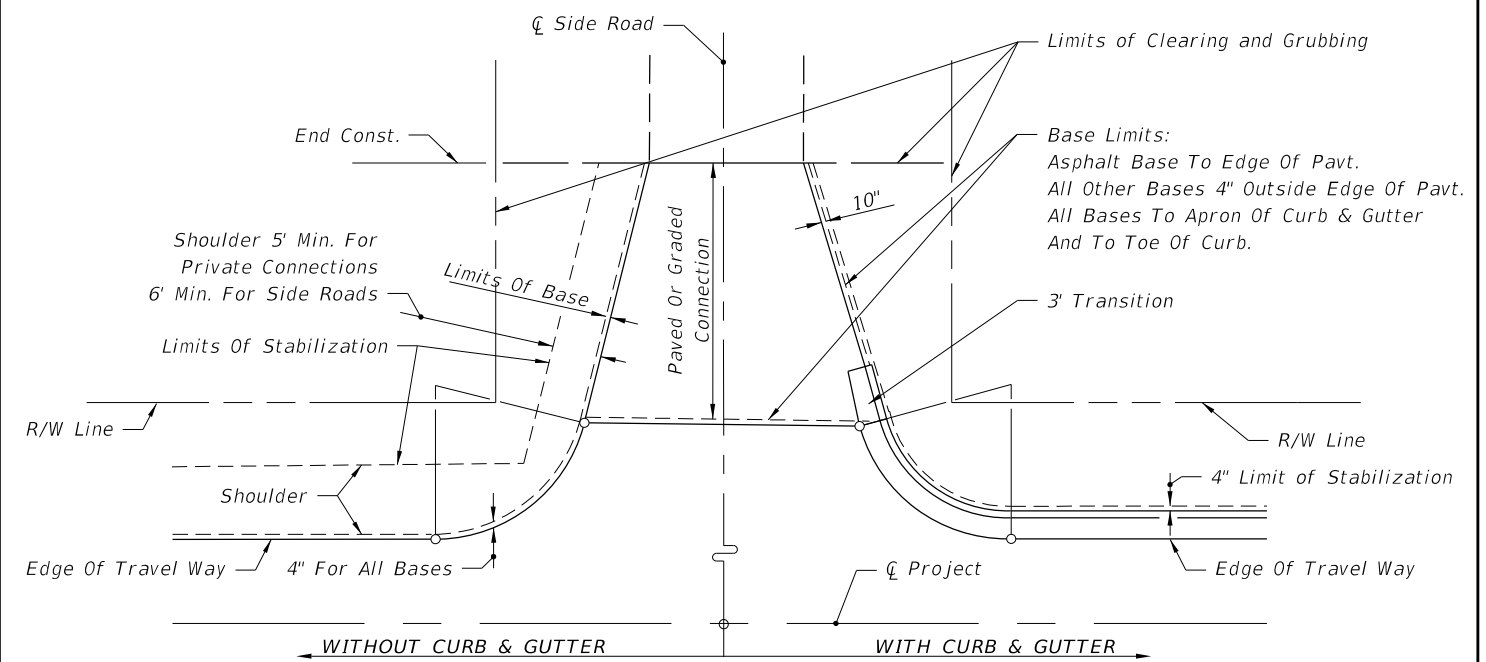


DRAINAGE SECTION



TURNOUT PROFILE AND END VIEW

**FLUSH SHOULDER ROADWAY - TURNOUT CONSTRUCTION**



PLAN

**LIMITS OF CLEARING & GRUBBING, STABILIZING AND BASE AT INTERSECTIONS**

**INTERSECTIONS NOTES:**

○ Return Radius Point or Transition Point.

**DRIVE ENTRANCES NOTES:**

☆ Drainage pipe size and length shall be that shown on the plans, or as stipulated by permit, or, as determined by the Engineer during construction. The size shall be at least that established by the FDOT District, but not less than 15" diameter or equivalent. For minimum cover over drainage pipe see Specification Section 125. Pipe arch or elliptical pipe may be required to obtain necessary cover. At minimal cover applications a modified pavement apron is permitted. See 'PERMISSIBLE PAVEMENT MODIFICATION' Index 273. For spacing between adjacent pipe end treatments see Index 273.

☐ Stable material may be required for graded turnouts to private property as directed by the Engineer in accordance with Section 102-8 of the Standard Specifications.

☒ The 5' pavement at graded connections is not required where there is paved shoulder 4' or more in width. The 5' pavement requirement may be waived for connections serving one or two homes or field entrances with less than 20 trips per day, or 5 trips per hour as approved by permit or by the Engineer, or when not itemized in the plans.

Paved turnouts shall be constructed for all paved connecting facilities. The connecting point will be determined by the Engineer.


Paved turnouts shall be constructed for all business, commercial, industrial or high volume residential graded connecting facilities. The connecting point shall be 30' from edge of travel way or at R/W line, whichever is less.

Paved turnouts shall be constructed for all connecting facilities over 4000 vehicles per day. The connecting point shall be at the R/W line.

■ See "Summary Of Geometric Requirements For Turnouts" chart for return radii lengths and supplemental information.

○ Return Radius Point or Flare Point.

10/12/2016 10:57:02 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:	 <b>FY 2017-18 DESIGN STANDARDS</b>	<b>TURNOUTS AND DRIVEWAYS</b>	INDEX NO. <b>515</b>	SHEET NO. <b>5 of 7</b>
---------------------------	----------	--------------	--	-------------------------------	-------------------------	----------------------------

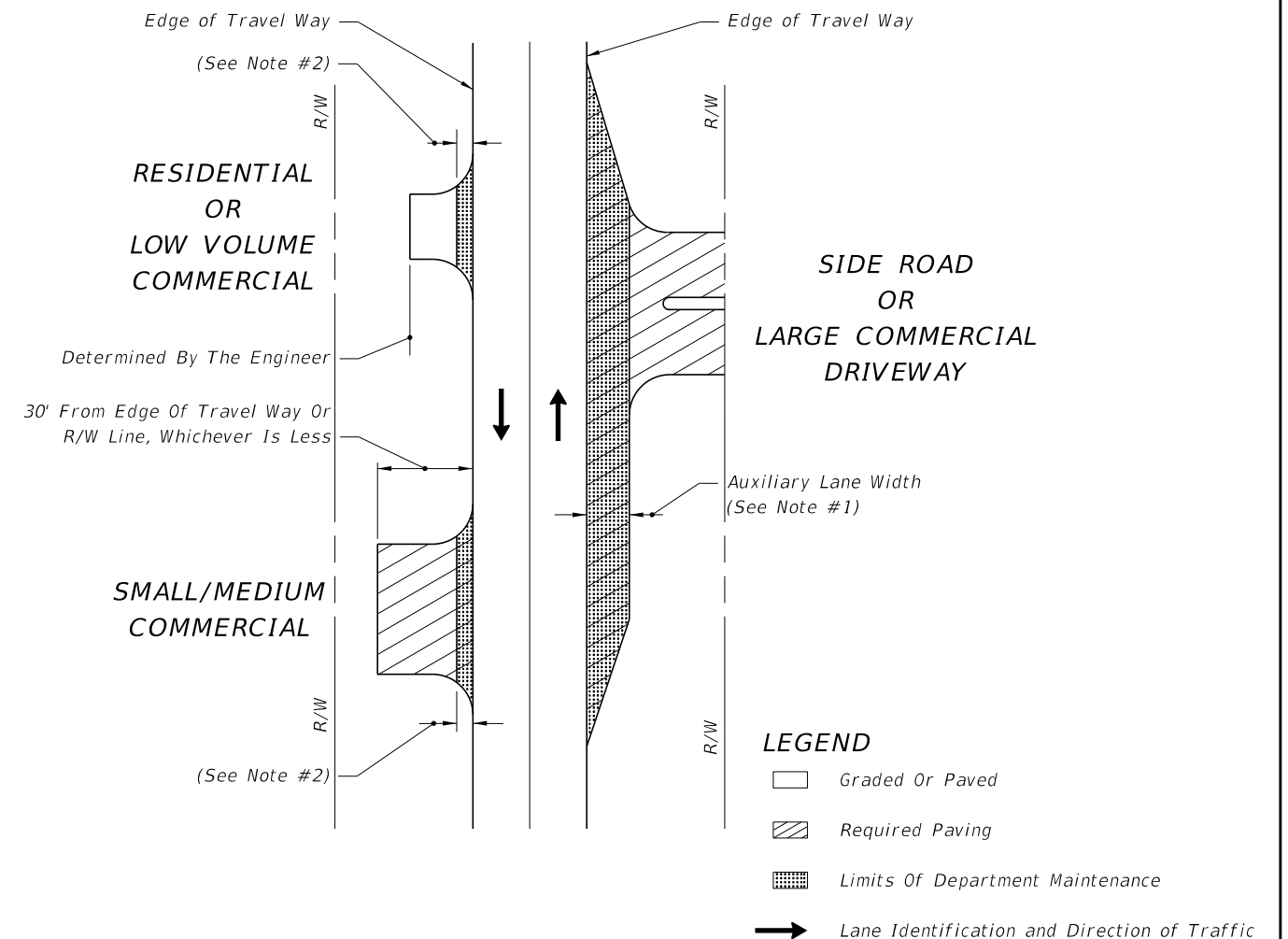
MATERIAL TYPES AND THICKNESSES IN DRIVING AREAS FOR ALL CONNECTIONS			
Course	Materials ②	Thickness (in.) ①	
		Connections ③	Roadway ④
Structural	Asphaltic Concrete	1"	1½"
Bases	Optional Base (See Spec. Section 285)	O.B.G. 1	O.B.G. 3

① Minimum thickness.  
 ② All materials shall be approved by the Department prior to being placed.  
 ③ Connection structure other than traffic lanes. See Notes 1 and 2 below.  
 ④ Travel way flares (bypass lanes), auxiliary lanes serving more than a single connection, and all median crossovers including their auxiliary lanes and/or transition tapers. See Notes 1 and 2 below.

**NOTES**

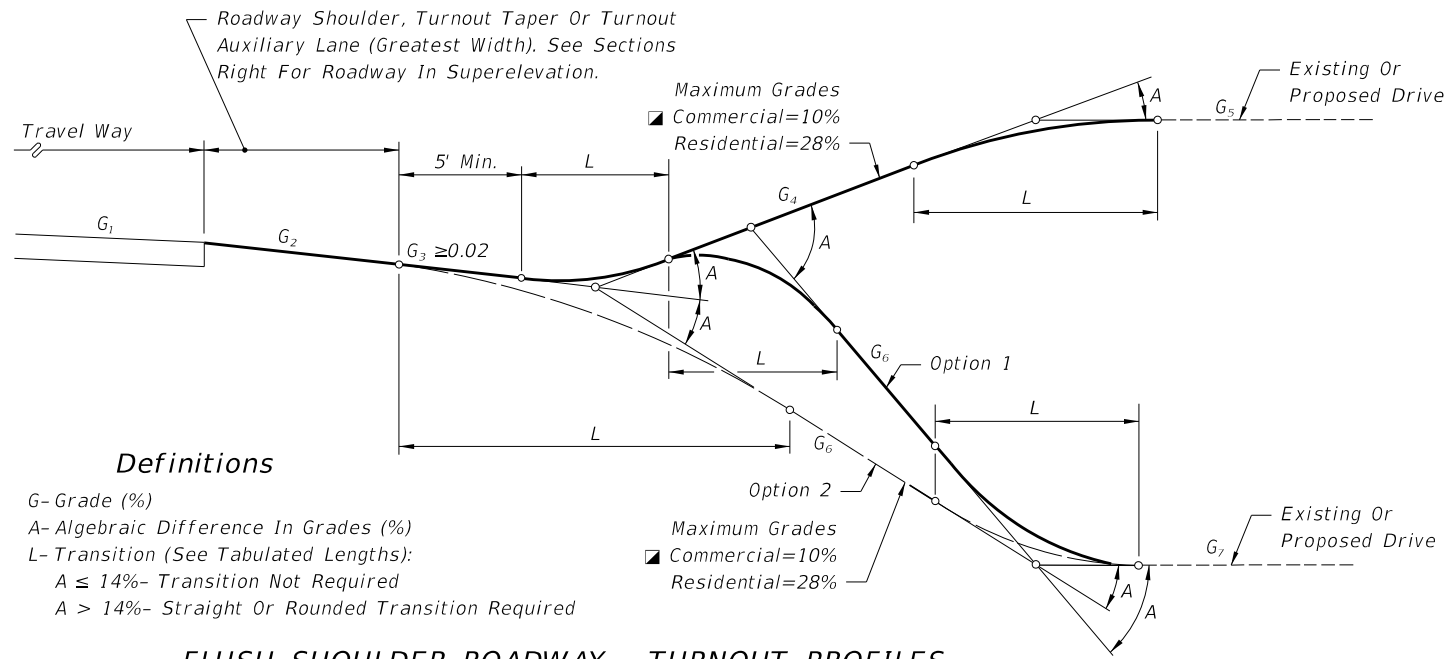
- The pavement should be structurally adequate to meet the expected traffic loads and should not be less than that shown above, except as approved by the Department for graded connections. Other Department-approved equivalent pavements may be used at the discretion of the Engineer.
- Auxiliary lanes and their transition tapers shall be the same structure as the abutting travel way pavement thickness or any of the roadway structures tabulated above, whichever is thicker.
- If an asphalt base course is used for a turnout, its thickness may be increased to match the edge of travel way pavement thickness in lieu of a separate structural course. 6" of Portland cement concrete will be acceptable in lieu of the asphalt base and structural courses. See Notes 4 and 5 below.
- A structural course is required for flexible pavements when they are used for auxiliary lanes serving more than a single connection.
- Connections paved with Portland cement concrete shall be Class NS concrete at least 6" thick. The Department may require greater thickness when called for in the plans or stipulated by permit. Materials and construction shall conform with FDOT Standard Specifications Sections 347, 350 and 522.
- The Department may require other pavement criteria where local conditions warrant.

**PAVEMENT STRUCTURE FOR TURNOUTS AND AUXILIARY LANES**  
**TABLE 515-1**



**LIMITS OF  
 CONSTRUCTION AND MAINTENANCE  
 FOR FLUSH SHOULDER ROADWAY CONNECTIONS**

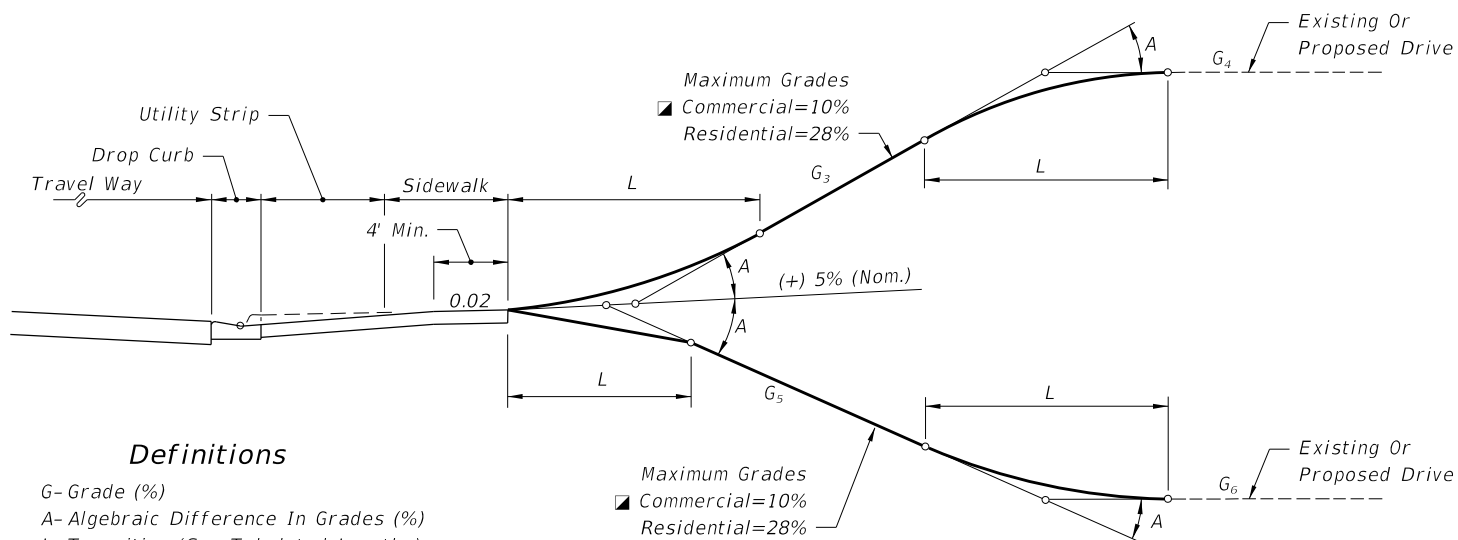
10/12/2016 10:57:04 AM



**Definitions**

G- Grade (%)  
 A- Algebraic Difference In Grades (%)  
 L- Transition (See Tabulated Lengths):  
 A  $\leq$  14%- Transition Not Required  
 A > 14%- Straight Or Rounded Transition Required

**FLUSH SHOULDER ROADWAY - TURNOUT PROFILES**



**Definitions**

G- Grade (%)  
 A- Algebraic Difference In Grades (%)  
 L- Transition (See Tabulated Lengths):  
 A  $\leq$  14%- Transition Not Required  
 A > 14%- Straight Or Rounded Transition Required

**CURBED ROADWAY - TURNOUT PROFILES**

When restoring or reconstructing existing commercial turnout connections on new construction and reconstruction projects, the maximum 10% commercial grade may be exceeded provided this does not create adverse roadway operational or safety impacts. This shall be approved by the District Design Engineer and supported by documented site specific findings.

A	LENGTHS (L) (FT.)							
	CRESTS				SAGS			
	STRAIGHT		ROUNDED		STRAIGHT		ROUNDED	
	Desirable	Minimum	Desirable	Minimum	Desirable	Minimum	Desirable	Minimum
6-13%	3	0	5	0	3	0	5	0
14%	3	0	10	0	3	0	10	0
15%	3	2.5	10	3	5	3	10	5
16%	5	3	10	4	6	4	10	6
17%	6	3.5	10	5	8	5	10	7
18%	6	4	10	6	9	6	10	8
19%	7	4.5	10	7	11	7	12	9
20%	8	5	11	8	12	8	13	10
21%	9	5.5	12	9	13	8.5	14	11
22%	10	6	13	10	14	9	16	12
23%	10	6.5	14	10.5	14	9.5	16	12.5
24%	11	7	15	11	15	10	17	13
25%	12	7.5	15	11.5	16	10.5	18	13.5
26%	12	8	16	12	17	11	18	14
27%	13	8.5	17	12.5	17	11.5	19	14.5
28%	14	9	17	13	18	12	20	15
29%	NA	NA	22	14	NA	NA	21	17
30-31%	NA	NA	23	15	NA	NA	22	18
32-33%	NA	NA	24	16	NA	NA	23	20
34-36%	NA	NA	26	17	NA	NA	25	21
37-38%	NA	NA	27	18	NA	NA	26	22
39-41%	NA	NA	29	19	NA	NA	28	24
42-43%	NA	NA	30	20	NA	NA	29	25
44-46%	NA	NA	32	21	NA	NA	31	26
47-48%	NA	NA	33	22	NA	NA	32	27
49-51%	NA	NA	34	23	NA	NA	34	28
52-54%	NA	NA	36	24	NA	NA	35	30
55-56%	NA	NA	37	25	NA	NA	36	31

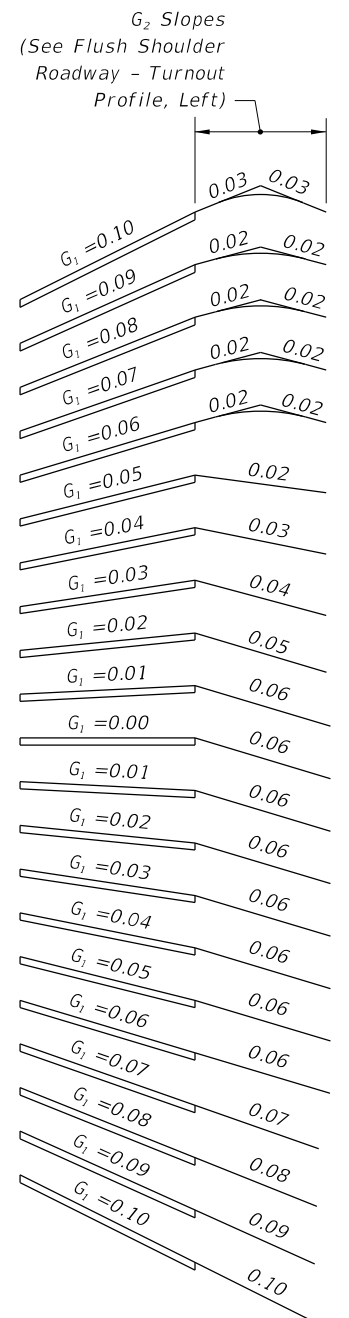
Rounded: Either circular, parabolic, or spline curvature. The plans or the Engineer may specify a particular type of curvature.  
 Desirable: Desirable minimum lengths {Greater lengths than minimum and desirable are recommended where practical for flatter and smoother profile.}  
 Minimum: Absolute minimum lengths

**RECOMMENDED TURNOUT PROFILE TRANSITION LENGTHS (L) (FT.)**

**STORMWATER RUNOFF AND PROFILE OPTION NOTES**

1. Turnouts shall neither cause water to flow on or across the roadway pavement, nor cause water ponding or erosion within the State right of way. On all Flush Shoulder Roadway turnouts the transition (L) nearest the roadway shall be sloped or crowned to direct stormwater runoff to the roadside ditch. Inlets, flumes or other appropriate runoff control devices shall be constructed when runoff volumes are sufficient to cause erosion of the shoulder. Similar runoff control devices shall be constructed as necessary to properly direct and control the stormwater runoff on Curbed Roadway turnouts.
2. The Option 1 profile is intended for locations where roadway, turnout taper and auxiliary lane stormwater runoff volumes are relatively large. The Option 2 profile is intended for locations where runoff volumes are relatively small and/or where there is no roadside ditch.

**TURNOUT PROFILES**

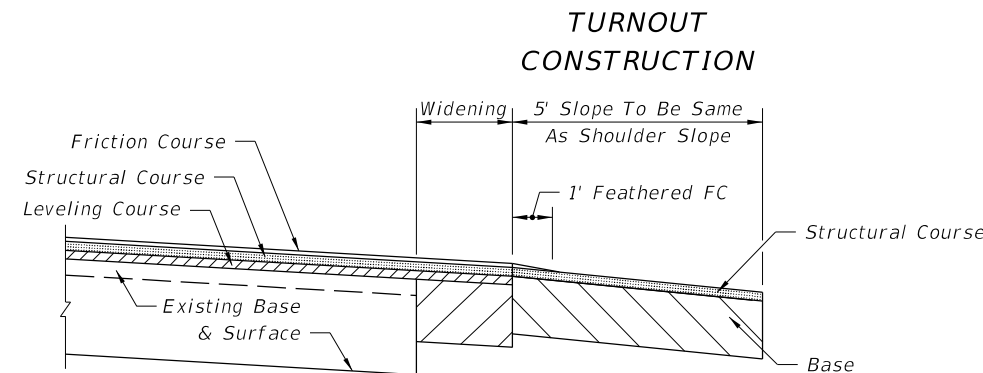
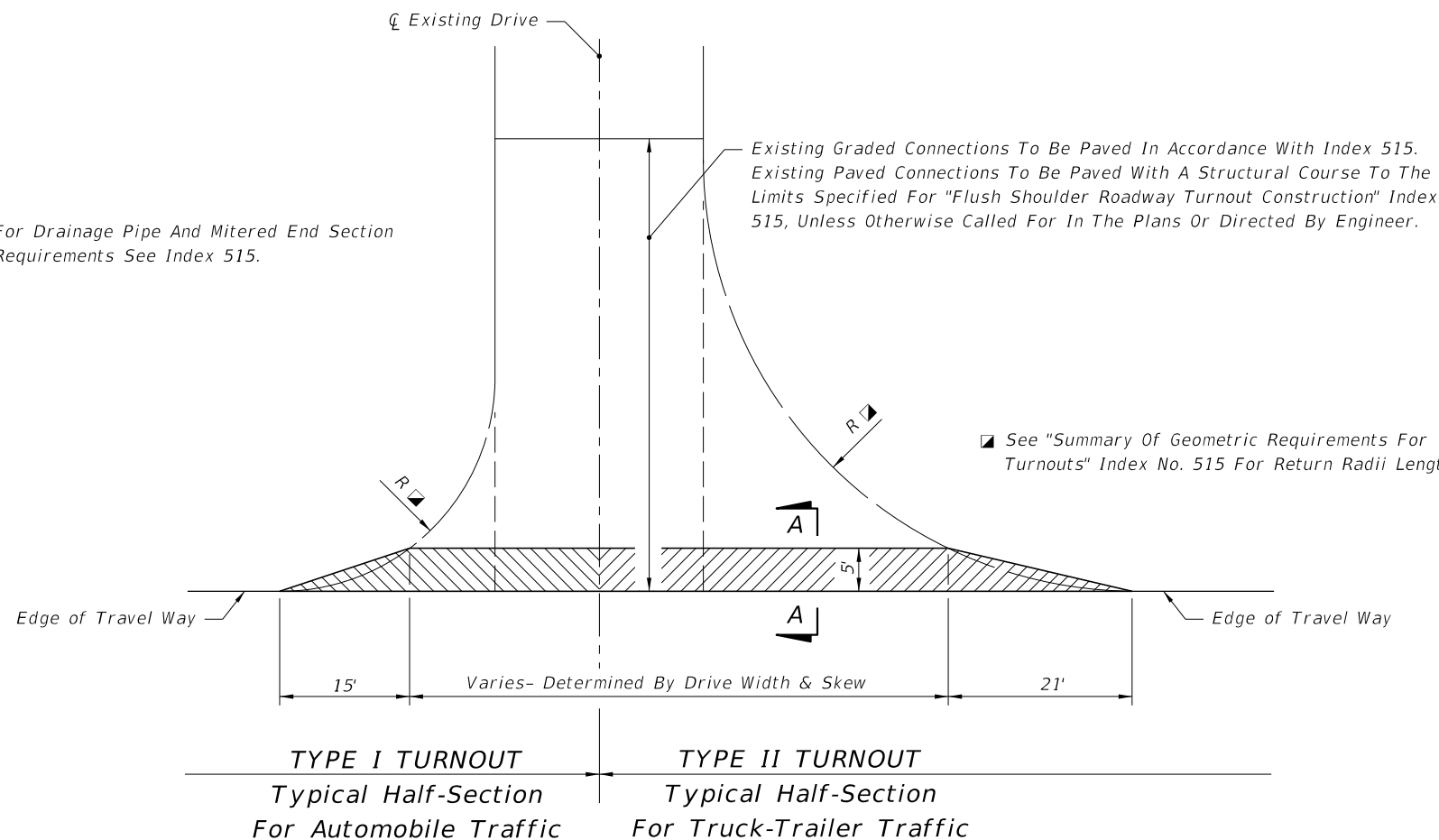


**ROADWAY PAVEMENT SLOPES AND SLOPES OF ABUTTING FLUSH SHOULDER ROADWAY TURNOUT SURFACES ( $G_2$ )**

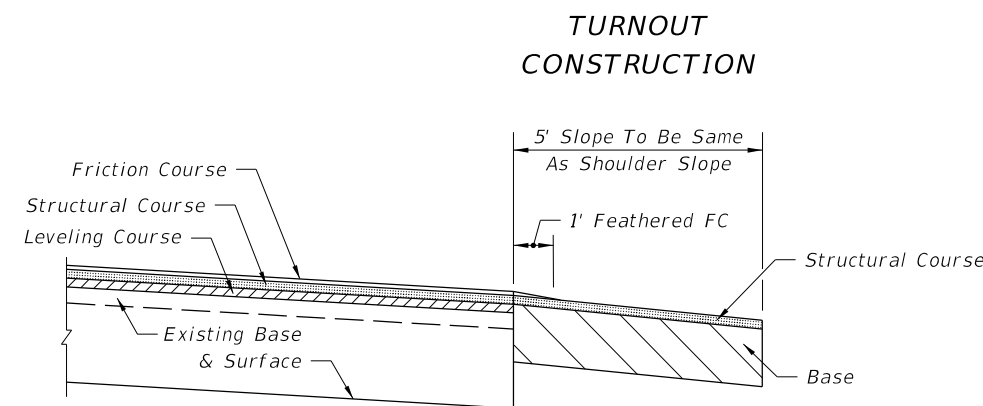
**SUPERELEVATION SECTIONS**

10-57:07 AM  
 10/12/2016

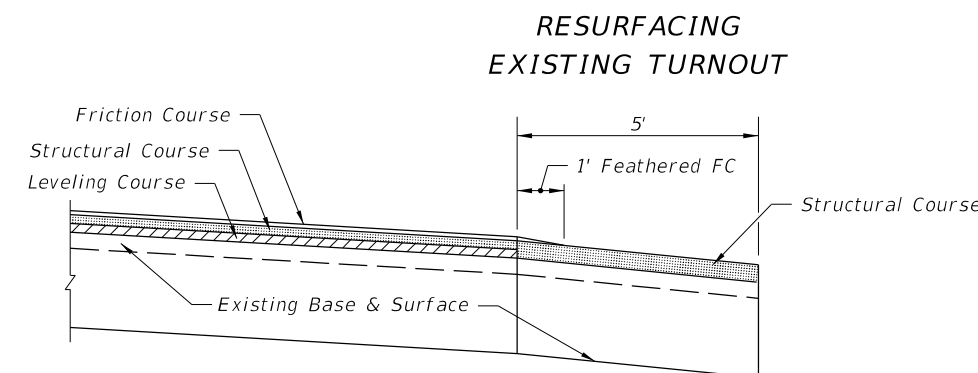
For Drainage Pipe And Mitered End Section Requirements See Index 515.



SECTION AA WITH WIDENING



SECTION AA



SECTION AA

**AREAS FOR ONE 5' DEEP TURNOUT (SY)**

Drive Width (Ft.)	Intersection			
	Normal		Skewed	
	Type I	Type II	Type I	Type II
12	26	51	31	60
14	27	52	33	61
16	28	53	34	63
18	29	54	35	64
20	31	55	37	65
22	32	56	38	67
24	33	57	39	68
26	34	58	40	69
28	35	59	42	70
30	36	61	43	72
32	37	62	44	73
34	38	63	46	74
36	39	64	47	76
38	41	65	48	77
40	42	66	49	78
42	43	67	51	79
44	44	68	52	81
46	45	69	53	82
48	46	71	55	83
50	47	72	56	85
52	48	73	57	86
54	49	74	58	87
56	51	75	60	88
58	52	76	61	90
60	53	77	62	91

**PAVEMENT STRUCTURE FOR 5' DEEP TURNOUTS**

Course	Material	Minimum Thickness
Structural	Asphaltic Concrete	1"
Base	Optional Base (See Spec. Section 285)	O.B.G. 1

Notes:

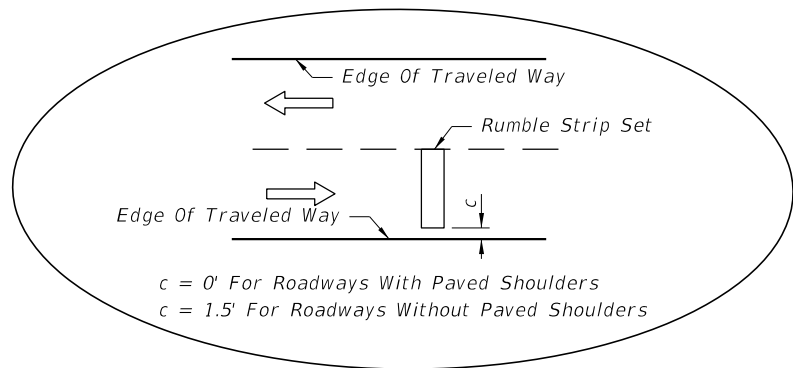
1. Turnout structural course to be the same material as roadway leveling or structure course. Structural course not required if asphalt base course and its thickness increased to match edge of roadway pavement.
2. Any Department-approved pavement structure equivalence may be used at the discretion of the Engineer.
3. Additional structural strength may be required if heavy truck loads are anticipated.

**GENERAL NOTES**

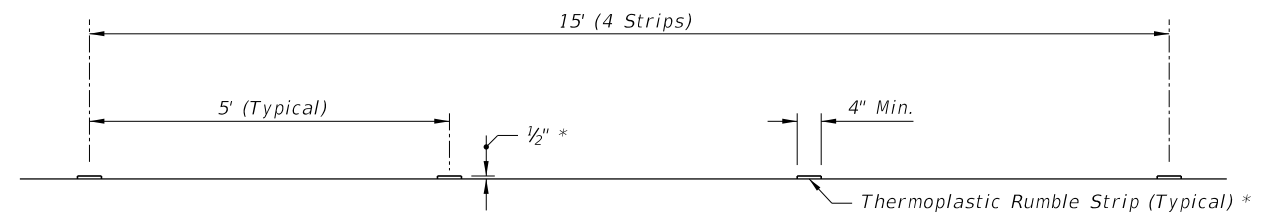
1. Turnouts are to be constructed or resurfaced for low volume (single family, duplex, farm, etc.) residential connections as directed by the Engineer.
2. Turnout construction is not required for low volume residential connections where roadway shoulders are paved.
3. Connections outside the 5' limit are to be constructed as directed by the Engineer.
4. The contract unit price for Turnout Construction includes the cost for excavation and base.
5. Payment for structural course is to be included in roadway resurfacing pay item.
6. Payment for feathering friction course is to be included in the unit price for Asphaltic Concrete Friction Course placed on the roadway. Feathered areas will not be included in measured quantities. Feathering is not required for FC-5 friction course.

10/12/2016 10:57:36 AM

LAST REVISION 11/01/16	DESCRIPTION:
---------------------------	--------------



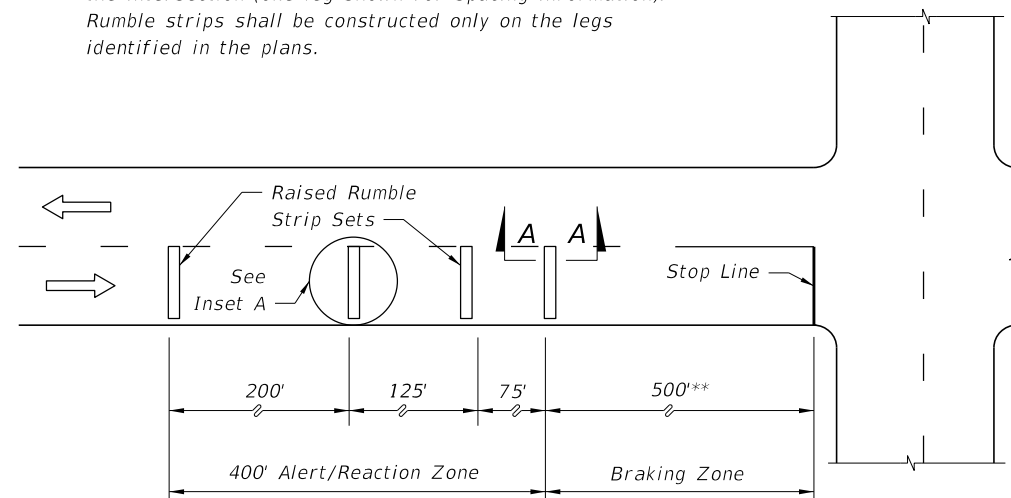
INSET A



\* Use multiple applications to achieve desired 1/2" thickness  
 Note: Intersection thermoplastic rumble strip sets shall be white.

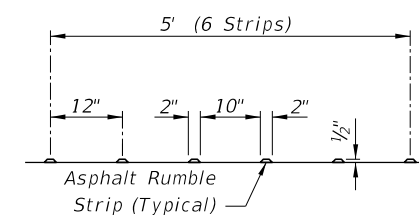
THERMOPLASTIC SET

Note: Rumble strips may be required for one or more legs of the intersection (one leg shown for spacing information). Rumble strips shall be constructed only on the legs identified in the plans.



\*\* May be decreased in urban areas with low operating speeds.

PLAN



ASPHALT SET


SECTION AA FOR THERMOPLASTIC AND ASPHALT RUMBLE STRIP SETS

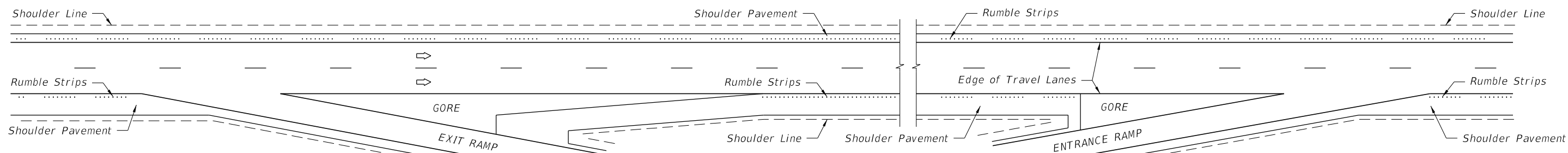
NOTE:

Raised rumble strips are to be constructed in accordance with Section 546 of the Specifications.

RAISED RUMBLE STRIPS AT INTERSECTIONS

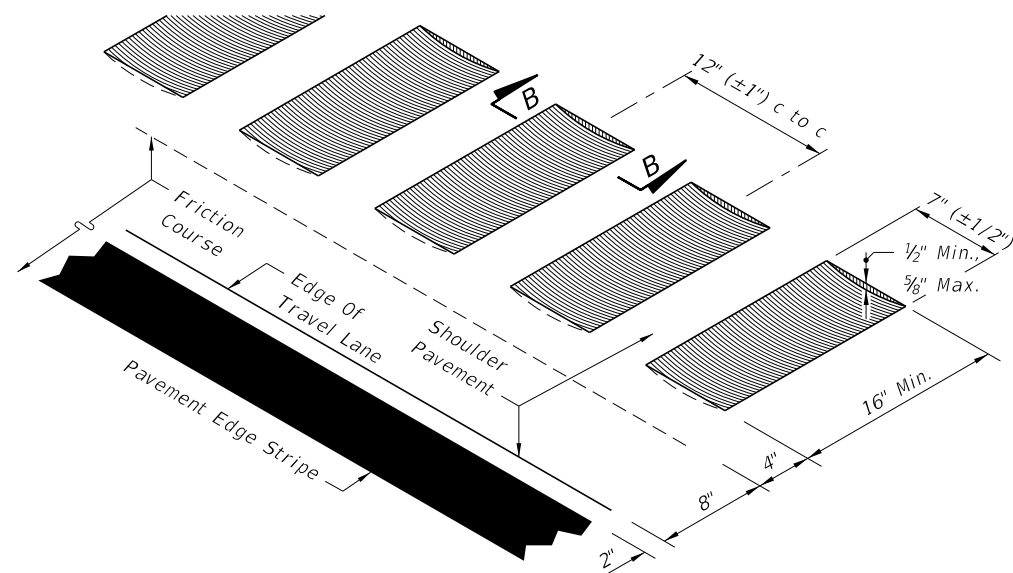
10/12/2016 10:58:11 AM

LAST REVISION 07/01/14	REVISION DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	RAISED RUMBLE STRIPS	INDEX NO. 517	SHEET NO. 1 of 1
---------------------------	-----------------------	--	----------------------	------------------	---------------------

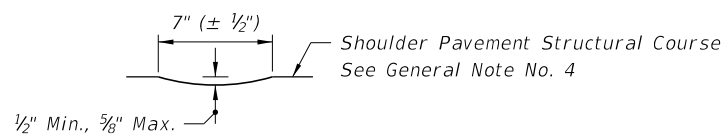


Note:  
 (⇒) Arrows indicate direction of travel  
 and not the number of lanes nor width  
 of median shoulder pavement.

HALF PLAN  
 LIMITED ACCESS FACILITIES  
 SHOULDER GROUND-IN RUMBLE STRIP PLACEMENT



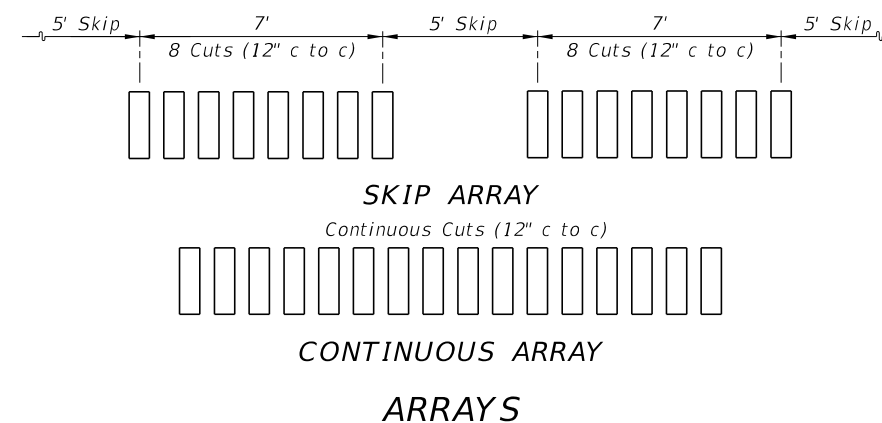
ISOMETRIC - LONGITUDINAL CUT



SECTION BB  
 LONGITUDINAL CUT

LOCATION ALONG SHOULDER (FLEXIBLE PAVEMENT)

SHOULDER GROUND-IN RUMBLE STRIPS

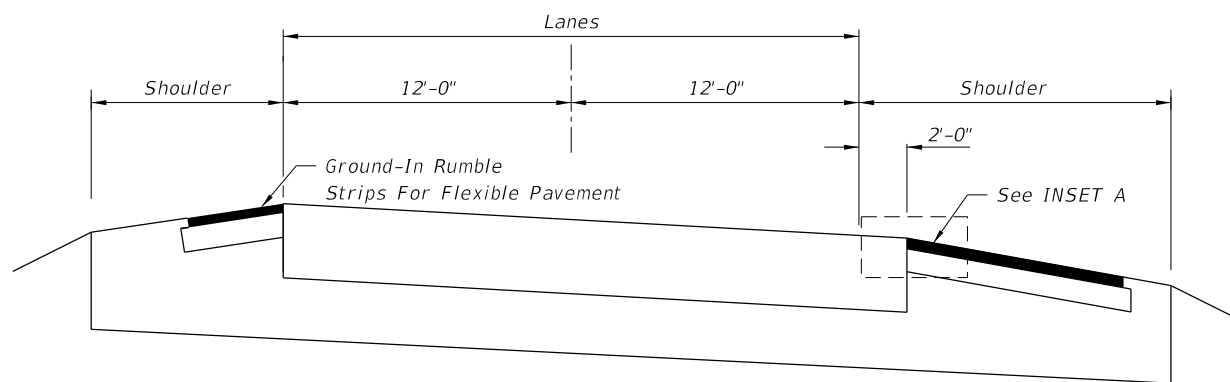


GENERAL NOTES FOR  
 SHOULDER GROUND-IN RUMBLE STRIPS

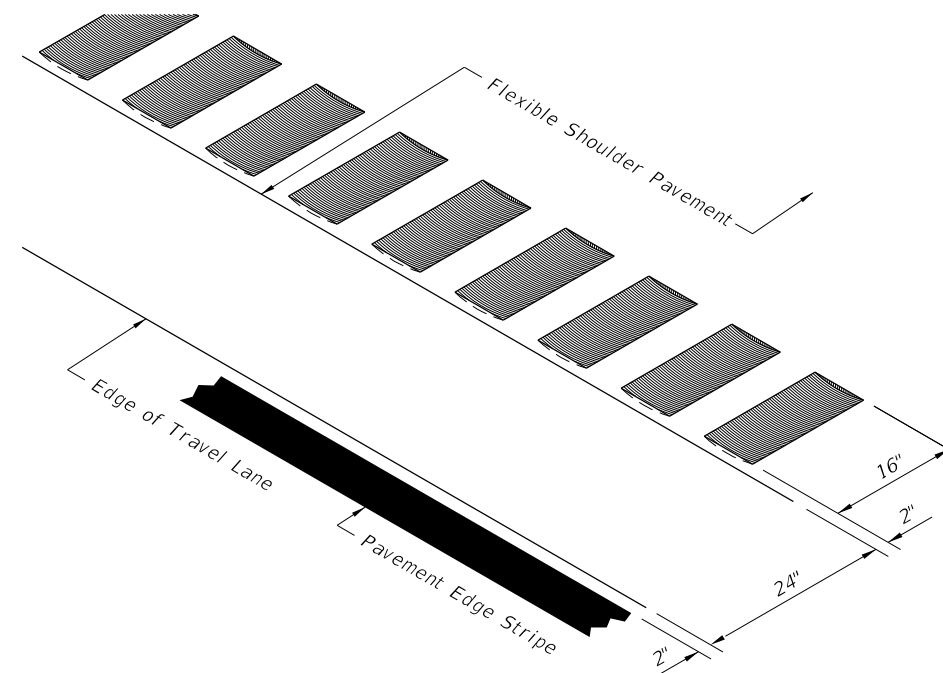
1. Shoulder ground-in rumble strips shall be constructed on limited access facilities.
2. The skip array is the standard array. The continuous array shall be constructed in advance of bridge ends for a distance of 1000', or back to the gore recovery area for mainline interchange bridges; and constructed at other specific locations as called for in the plans.
3. Ground-in rumble strips are to be constructed in accordance with Section 546 of the Specifications.
4. When friction course extends more than 8" beyond the edge of the travel lane, the extended friction course shall be bladed off back to the 8" line, prior to rumble strip grinding.

10/12/2016 10:58:29 AM

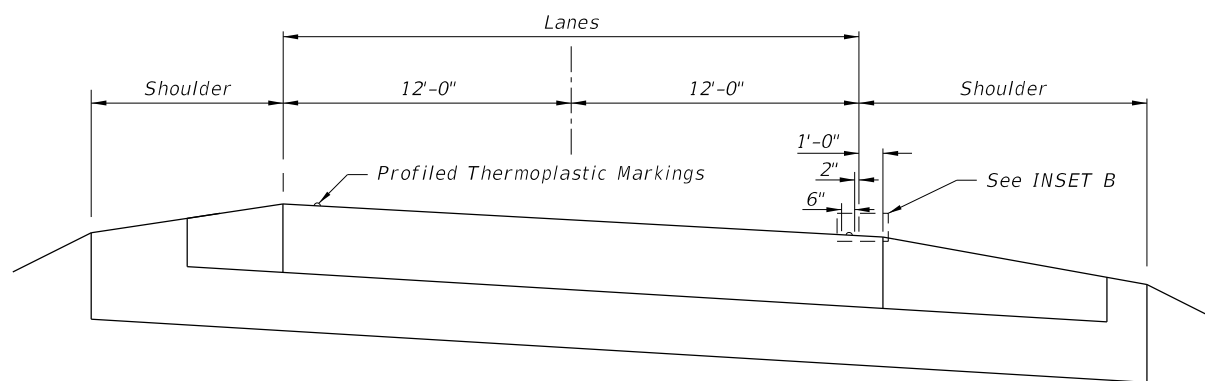
LAST REVISION 07/01/14	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	SHOULDER RUMBLE STRIPS	INDEX NO. 518	SHEET NO. 1 of 2
REVISION					



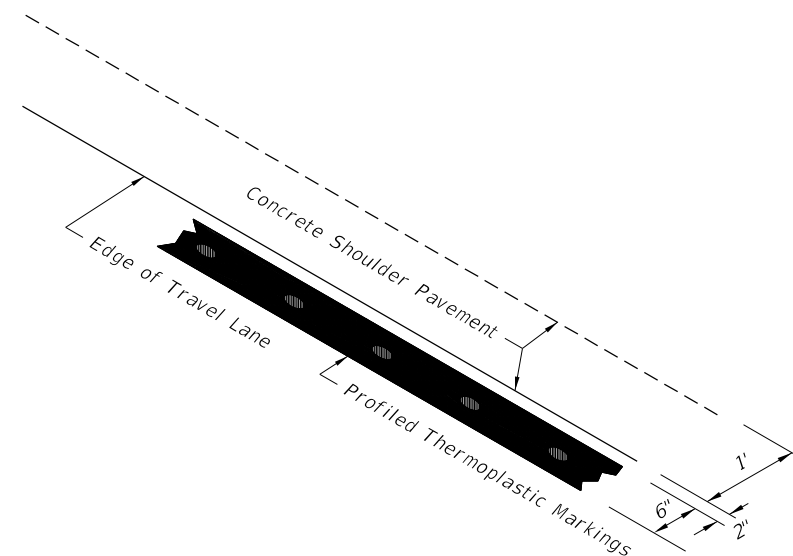
NTS  
RIGID PAVEMENT WITH FLEXIBLE PAVEMENT SHOULDER



ISOMETRIC - LONGITUDINAL CUT  
INSET A



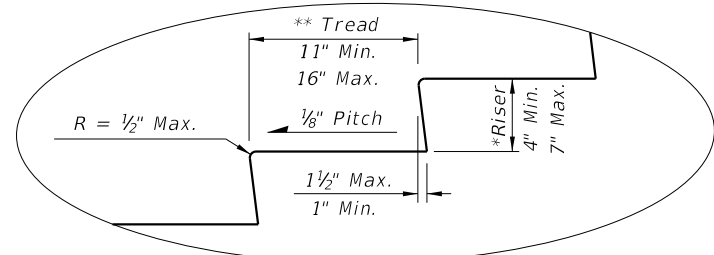
NTS  
RIGID PAVEMENT WITH RIGID PAVEMENT SHOULDER



ISOMETRIC - LONGITUDINAL CUT (RIGID PAVEMENT)  
INSET B

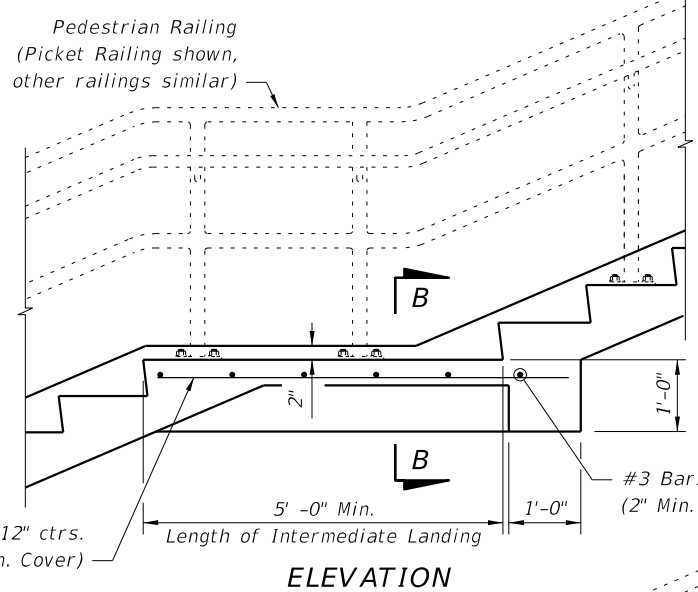
10/12/2016 10:58:32 AM

LAST REVISION 07/01/15	DESCRIPTION:
---------------------------	--------------

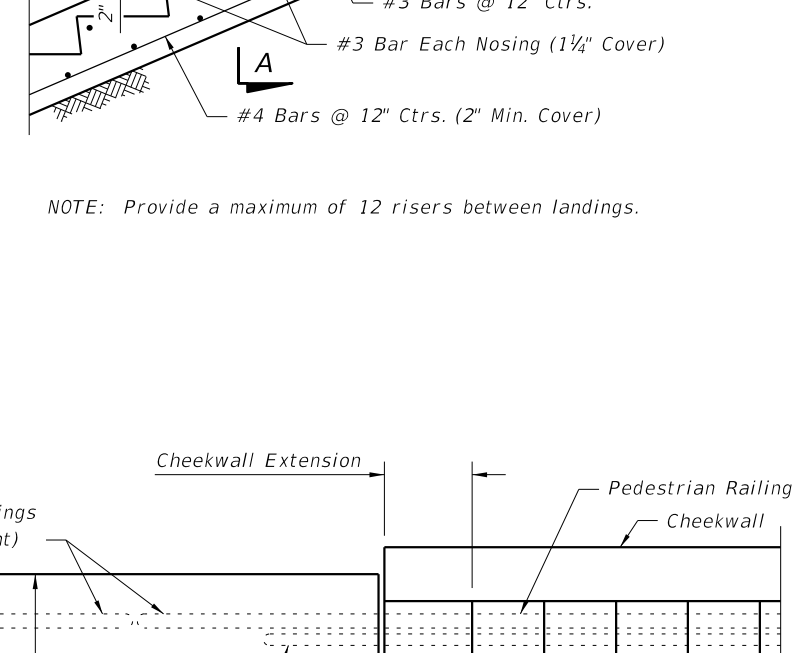
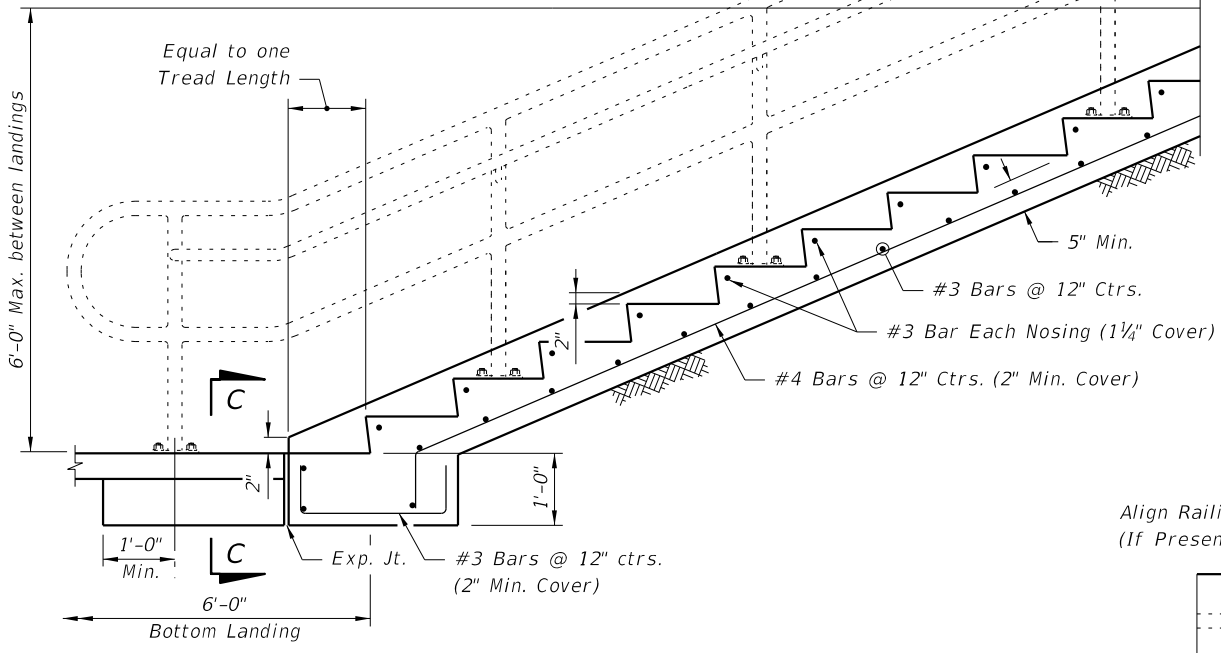
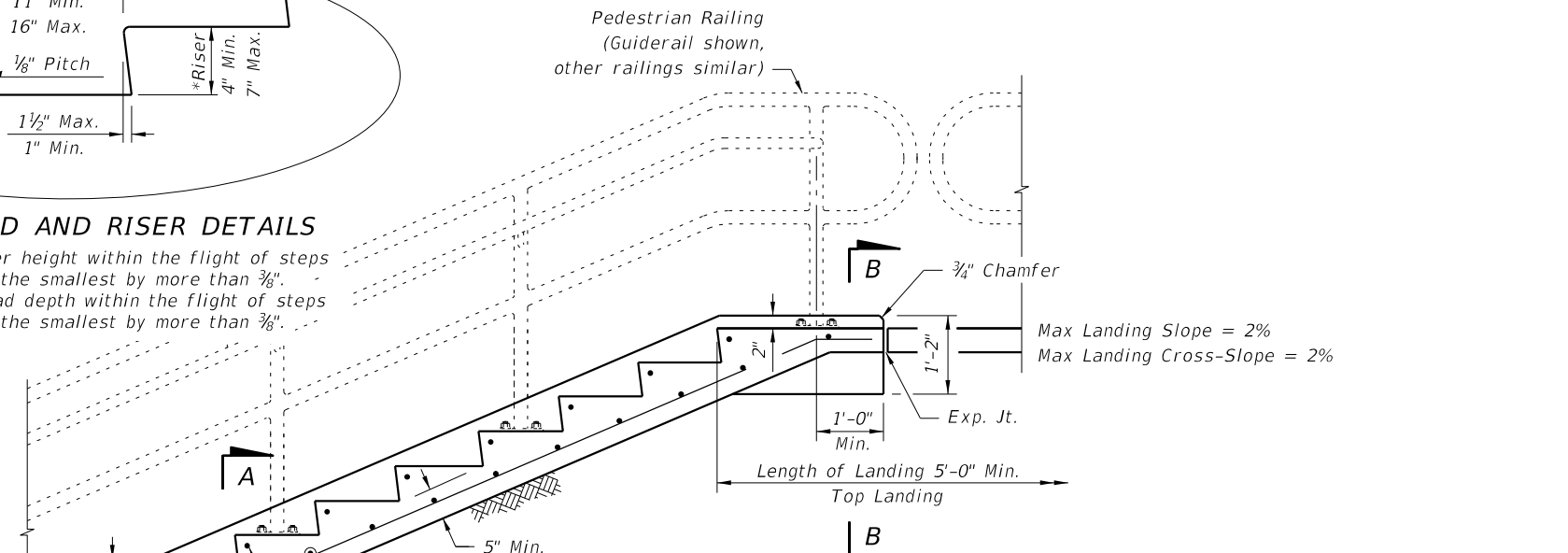


**STAIR TREAD AND RISER DETAILS**

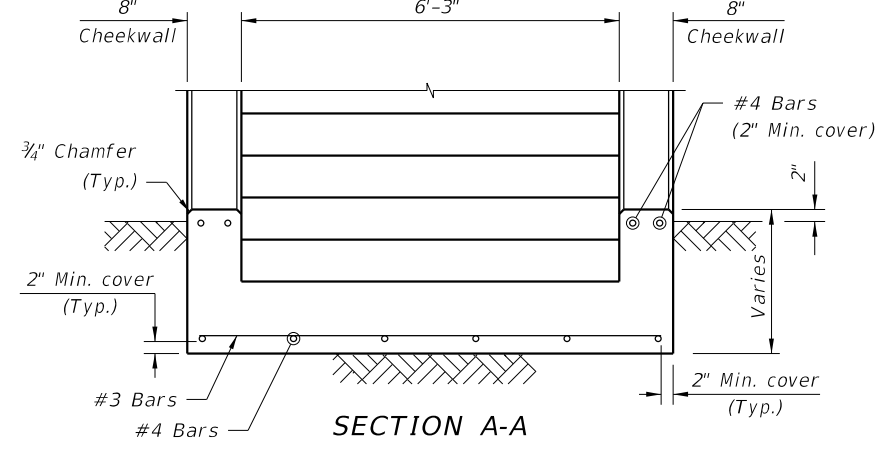
\* The greatest riser height within the flight of steps shall not exceed the smallest by more than 3/8".  
 \*\* The greatest tread depth within the flight of steps shall not exceed the smallest by more than 3/8".



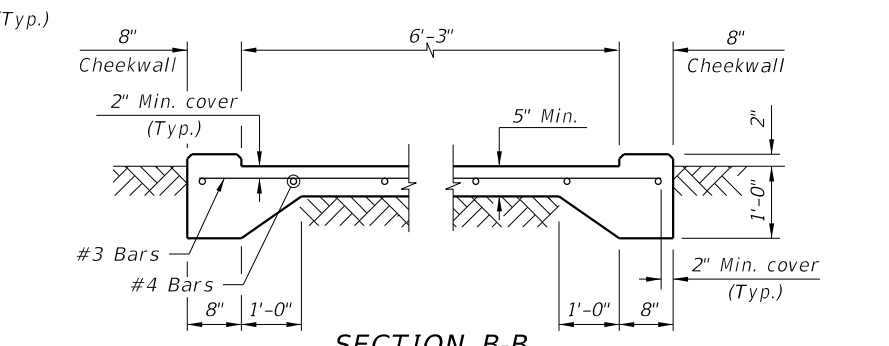
**ELEVATION**



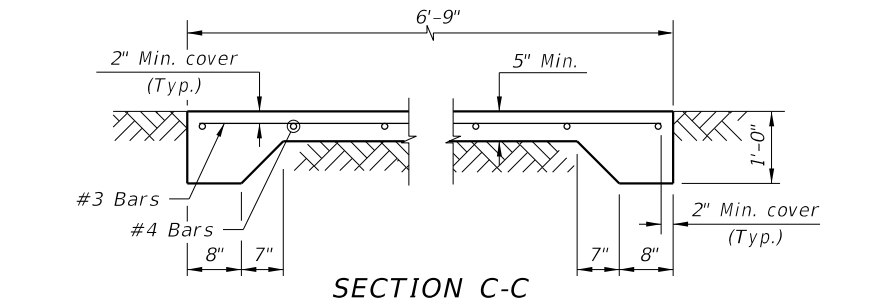
**PLAN AT JUNCTION OF STEPS & LANDING**  
(Bottom Landing shown, Top Landing similar)



**SECTION A-A**



**SECTION B-B**



**SECTION C-C**

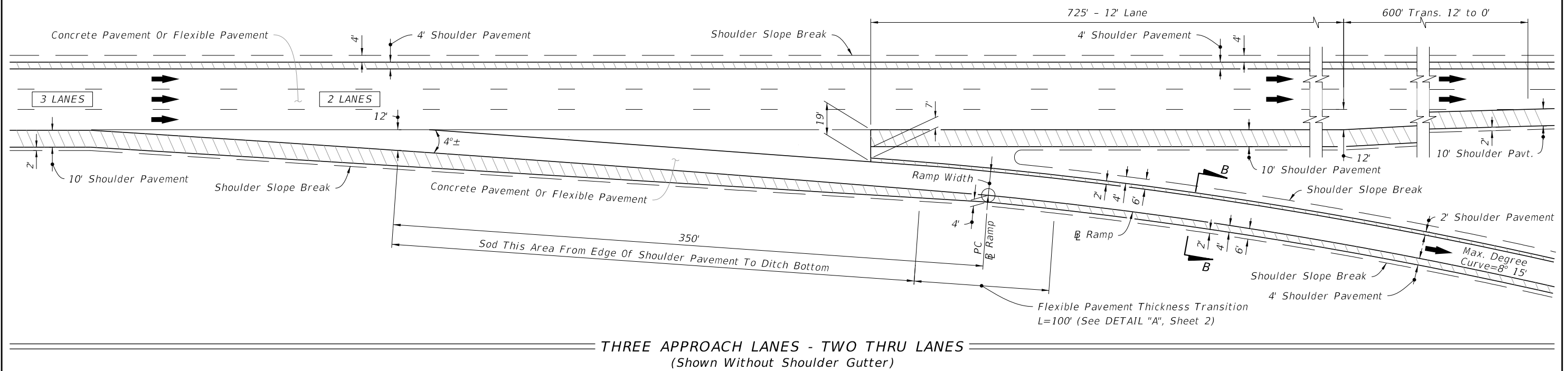
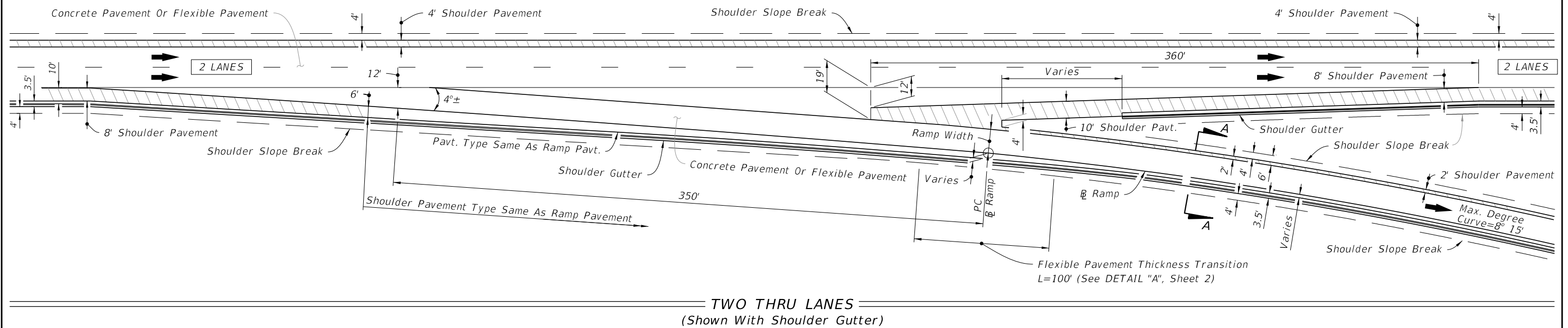
Max Landing Slope = 2%  
 Max Landing Cross-Slope = 2%

- NOTES:**
1. Do not use this Index for suspended (structural) steps or stairways.
  2. Construct steps in accordance with Section 522 of the FDOT Standard Specifications.
  3. Concrete: Class NS, Specification 347.
  4. Tread Finish: Broom finish parallel to steps unless otherwise shown in Plans.
  5. Pedestrian Railing: See Index Nos. 852, 862, 870, 880 or Project Specific Design.
  6. Cost of concrete steps, landings and cheekwalls shall be paid for under the contract unit price for Class NS Concrete (Concrete Steps), CY. Cost of reinforcing steel shall be paid for under the contract unit price for Reinforcing Steel (Miscellaneous), LB.

10/12/2016 10:59:25 AM

LAST REVISION 07/01/15	REVISION	DESCRIPTION:	 <b>FY 2017-18</b> <b>DESIGN STANDARDS</b>	<b>CONCRETE STEPS</b>	INDEX NO. <b>521</b>	SHEET NO. <b>1 of 1</b>
---------------------------	----------	--------------	--	-----------------------	-------------------------	----------------------------

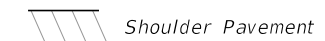




**GENERAL NOTES:**

1. Taper-Type exit and entrance terminals as detailed shall not be used on ramps for which a speed of 50 MPH or greater cannot be maintained. For such ramps, parallel deceleration and acceleration lanes shall be used in place of tapers with lengths set according to AASHTO.
2. Shoulder Pavement:
  - A. Concrete Pavement Projects: Where shoulder pavement adjacent to shoulder gutter is less than 6' wide, it shall be identical to the adjacent roadway pavement beginning with the transverse joint nearest the point of 6' width.
  - B. Flexible Pavement Projects: Where shoulder pavement used in conjunction with shoulder gutter is less than 6' uniform width, it shall be identical to the adjacent roadway pavement.
3. For concrete pavement joint details and layouts at entrance and exit ramp terminals, see Index 305.

**LEGEND:**



10/12/2016 10:59:49 AM

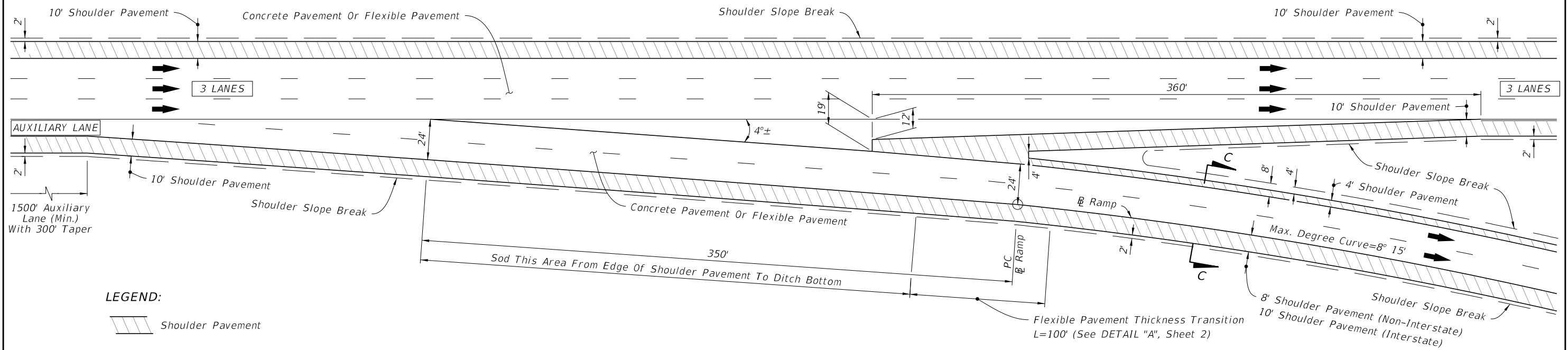
LAST REVISION	DESCRIPTION:
11/01/16	



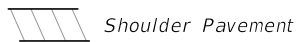
**RAMP TERMINALS**

INDEX NO.	SHEET NO.
525	1 of 5

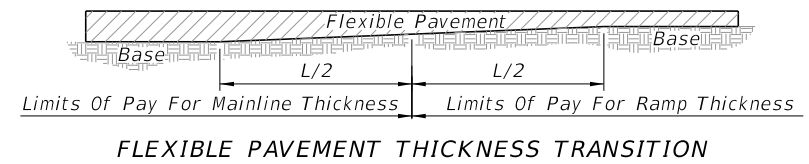
**SINGLE LANE RAMPS - EXIT TERMINALS**



LEGEND:

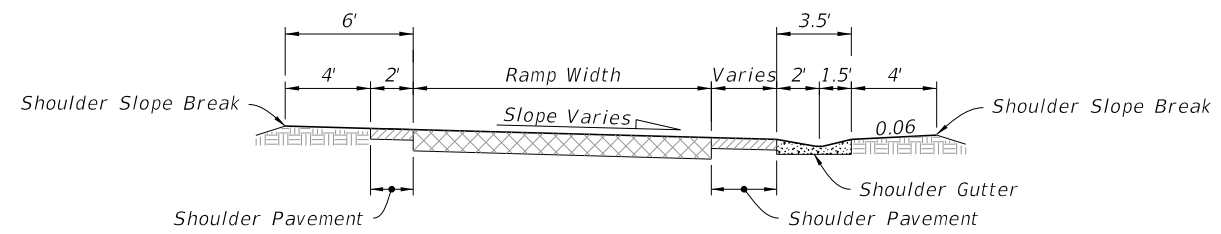


THREE THRU LANES - APPROACH AUXILIARY LANE  
(Shown Without Shoulder Gutter)

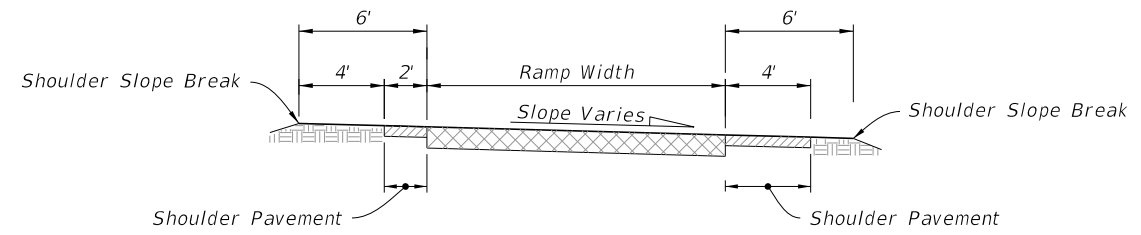


FLEXIBLE PAVEMENT THICKNESS TRANSITION

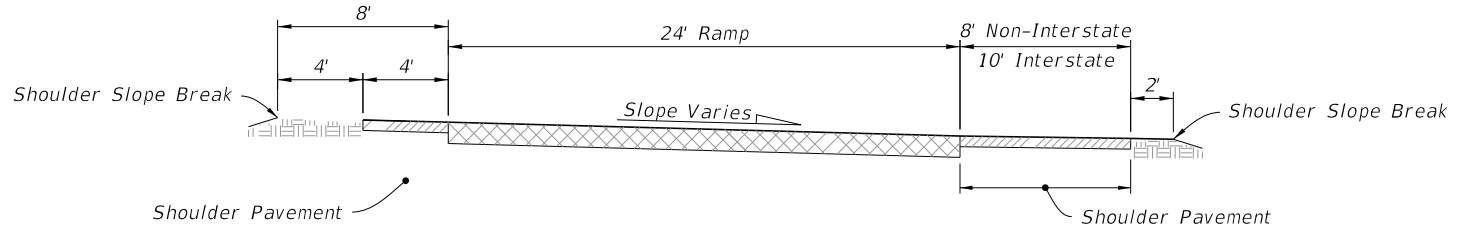
DETAIL "A"



SECTION A-A



SECTION B-B



SECTION C-C

TWO LANE RAMPS - EXIT TERMINALS

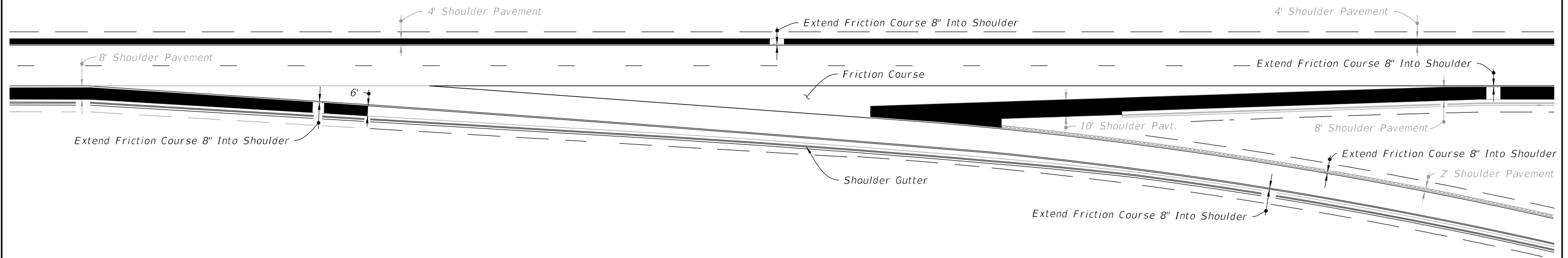
10/12/2016 10:59:52 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:
---------------------------	----------	--------------

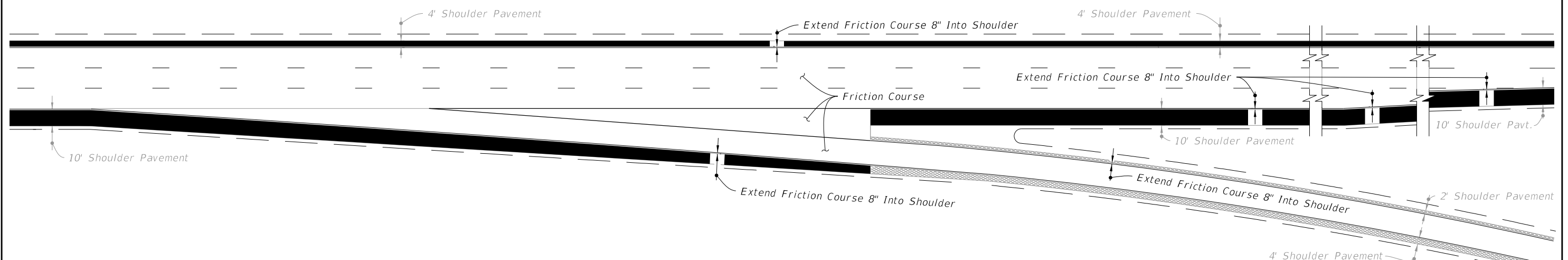
**FY 2017-18**  
**DESIGN STANDARDS**

RAMP TERMINALS

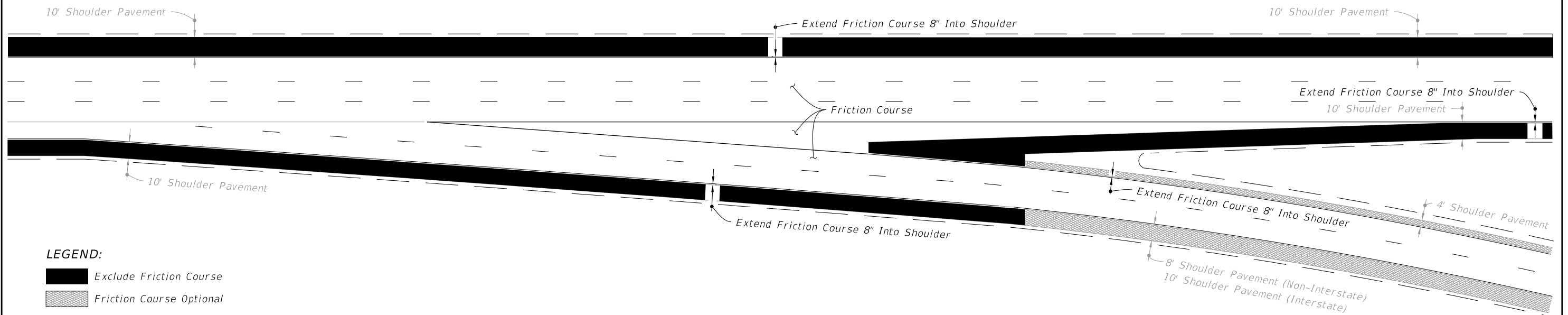
INDEX NO. 525	SHEET NO. 2 of 5
------------------	---------------------



**TWO THRU LANES**  
(Shown With Shoulder Gutter)



**THREE APPROACH LANES - TWO THRU LANES**  
(Shown Without Shoulder Gutter)



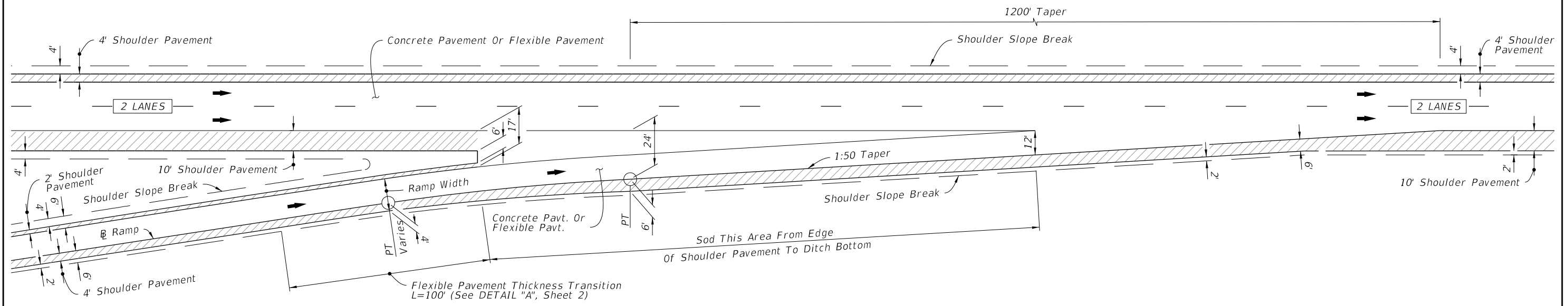
**THREE THRU LANES - APPROACH AUXILIARY LANE**  
(Shown Without Shoulder Gutter)

**EXIT TERMINALS - FRICTION COURSE LOCATION (FOR FLEXIBLE PAVEMENT)**

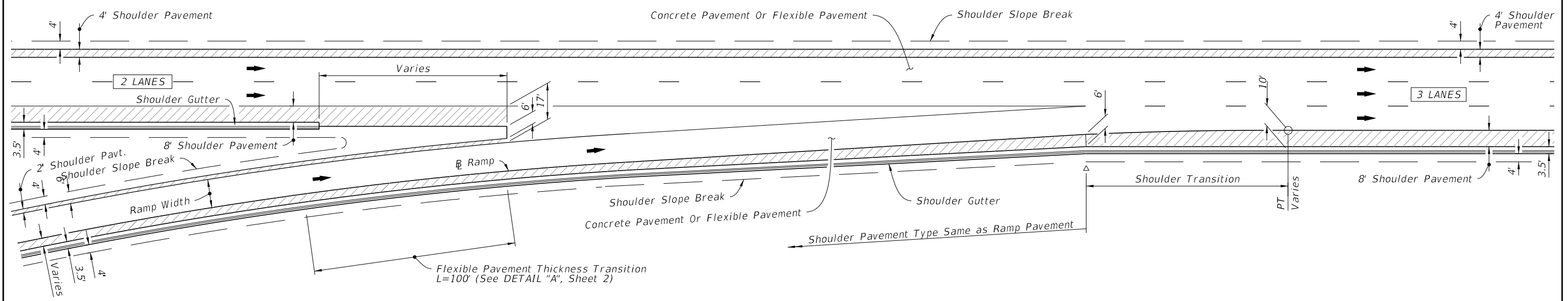
**LEGEND:**  
 Exclude Friction Course  
 Friction Course Optional

10/18/2016 7:42:12 AM


LAST REVISION 11/01/16	REVISION	DESCRIPTION:	<b>FY 2017-18 DESIGN STANDARDS</b>	<b>RAMP TERMINALS</b>	INDEX NO. 525	SHEET NO. 3 of 5
---------------------------	----------	--------------	--	-----------------------	------------------	---------------------



TAPER - TYPE ENTRANCE



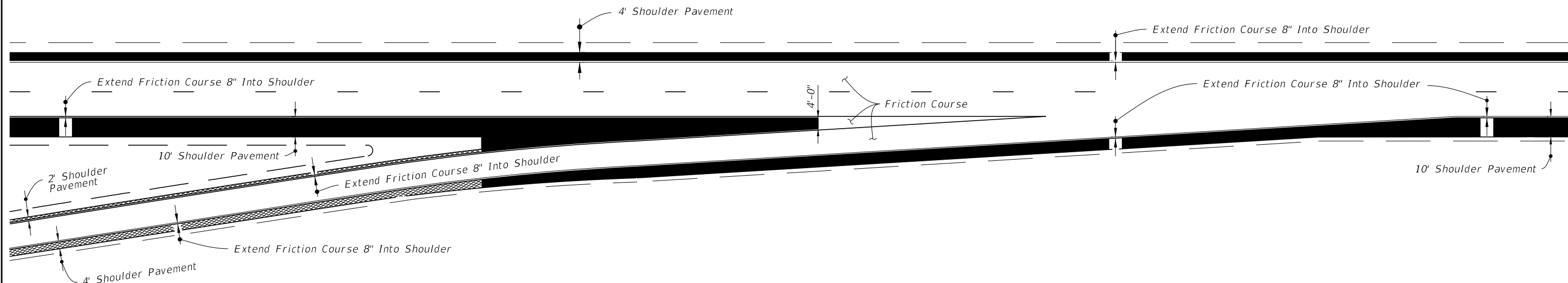
PARALLEL - TYPE ENTRANCE

LEGEND:  
 Shoulder Pavement

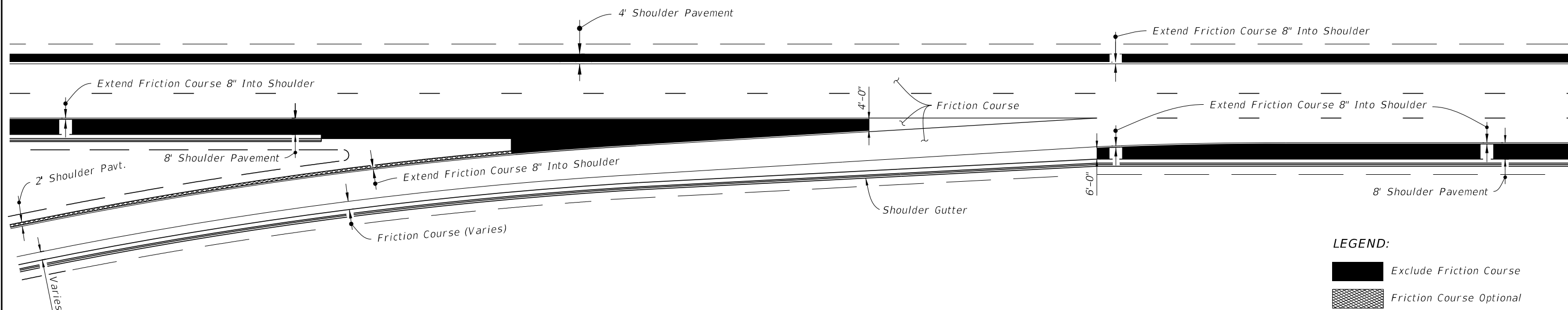
SINGLE LANE RAMPS - ENTRANCE TERMINALS

10/12/2016 10:59:58 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	RAMP TERMINALS	INDEX NO. 525	SHEET NO. 4 of 5
---------------------------	----------	--------------	---	----------------	------------------	---------------------



TAPER - TYPE ENTRANCE  
(Shown Without Shoulder Gutter)



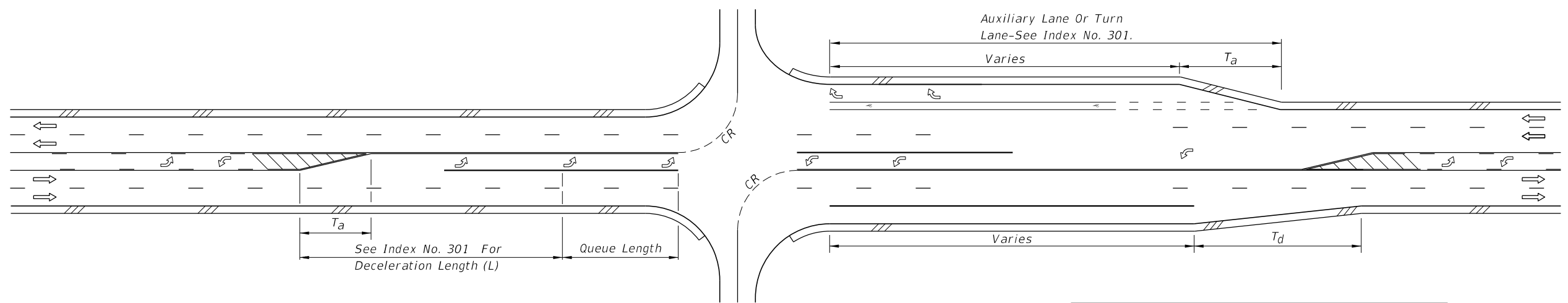
PARALLEL - TYPE ENTRANCE  
(Shown With Shoulder Gutter)

**LEGEND:**  
 [Solid Black Box] Exclude Friction Course  
 [Hatched Box] Friction Course Optional

ENTRANCE TERMINALS - FRICTION COURSE LOCATION (FOR FLEXIBLE PAVEMENT)

10/12/2016 11:00:02 AM

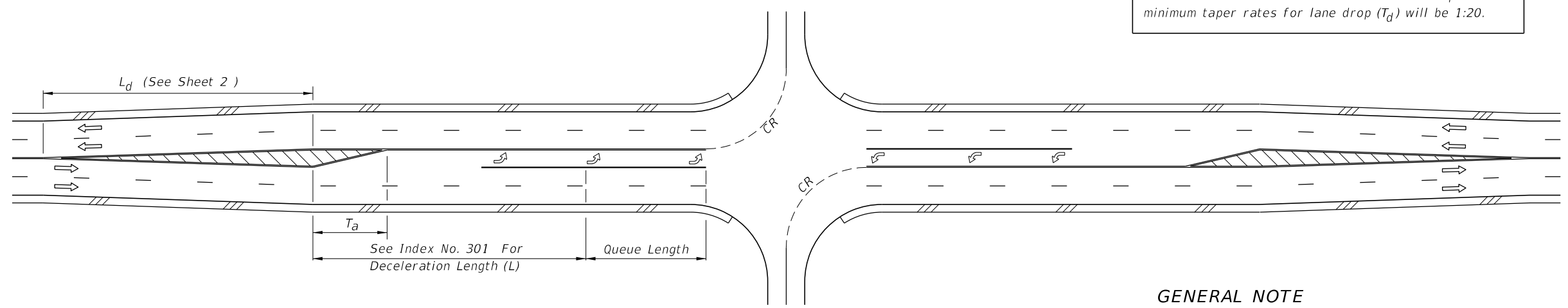
LAST REVISION 11/01/16	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	RAMP TERMINALS	INDEX NO. 525	SHEET NO. 5 of 5
---------------------------	----------	--------------	---	----------------	------------------	---------------------



4-LANE WITH TWO-WAY LEFT-TURN LANES

DESIGN SPEED (mph)	$T_a$ (FEET)	$T_d$
	ADD LANE	LANE DROP
<30	50' (± 1:4)	1:25
30-45		1:30
>45		1:40

Note: For locations with unrelocatable control points minimum taper rates for lane drop ( $T_d$ ) will be 1:20.

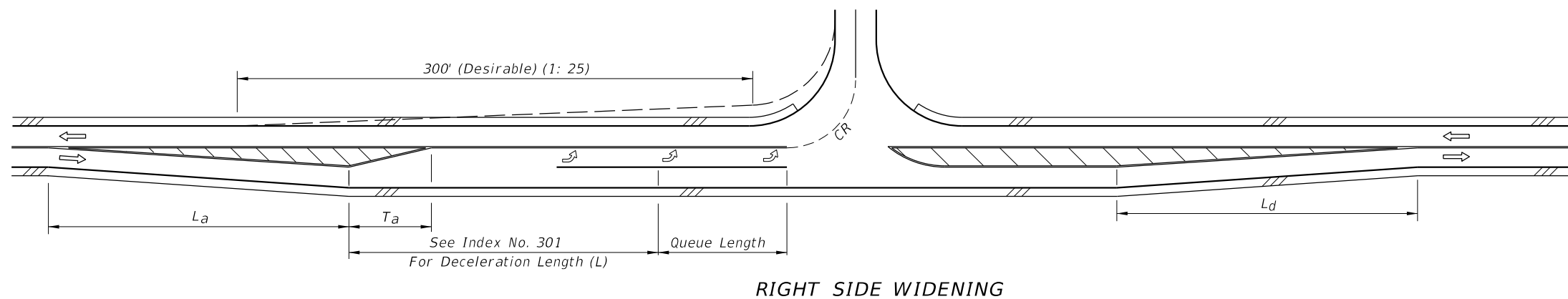
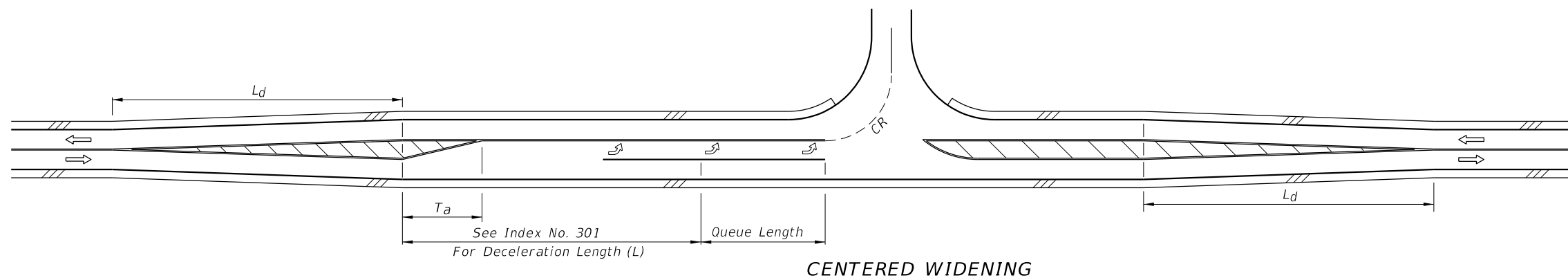
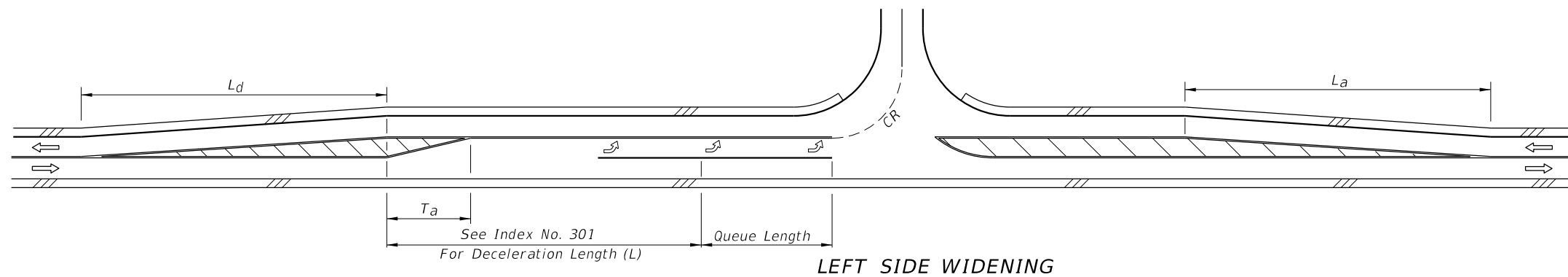


4-LANE UNDIVIDED FLARED - SYMMETRICAL

**GENERAL NOTE**  
 1. For pavement markings refer to Index No. 17346.

INTERSECTION TURNS AND STORAGE

10/12/2016 11:00:31 AM



**FLARED & PAINTED LEFT TURNS FOR 2-LANE 2-WAY ROADWAYS**

DESIGN SPEED (mph)	$L_a$ (Ft.)	
	STANDARD	MINIMUM UNDER CONSTRAINTS
30	180	120
40	320	150
50	500	180
60	720	240

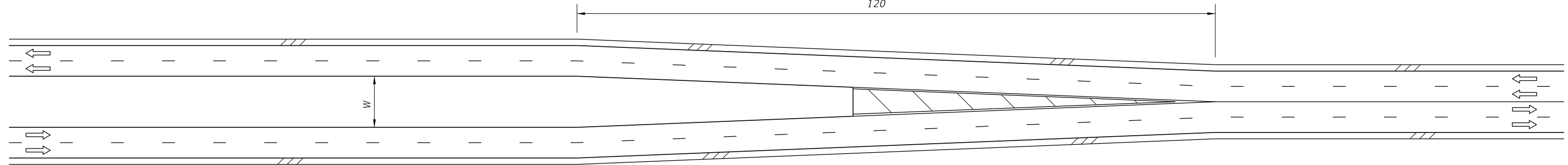
(mph)	$L_d$ (Ft.)	
30	180	120
40	240	150
50	360	180
60	480	240

10/12/2016 11:00:34 AM

LAST REVISION 07/01/15	REVISION	DESCRIPTION:
---------------------------	----------	--------------

$$L = \frac{WS}{2} \geq 45 \text{ mph}$$

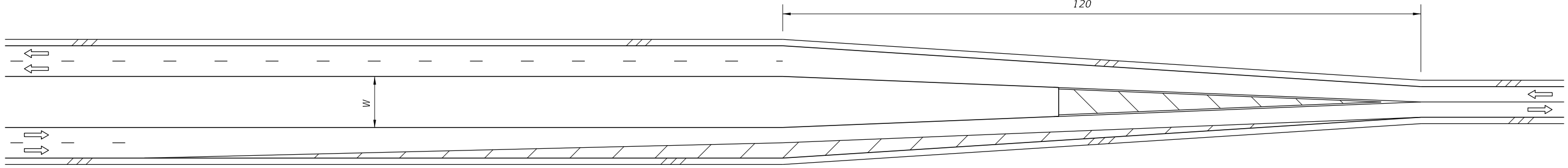
$$L = \frac{WS^2}{120} < 45 \text{ mph}$$



4-LANE DIVIDED TO 4-LANE UNDIVIDED

$$L = \frac{WS}{2} \geq 45 \text{ mph}$$

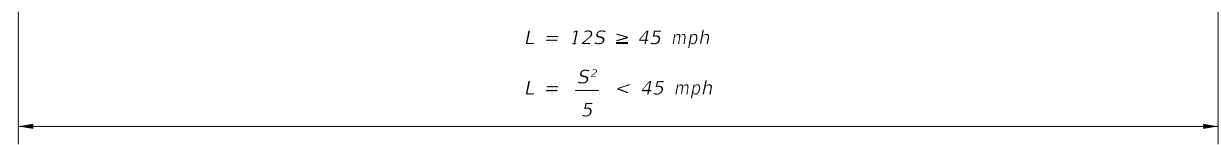
$$L = \frac{WS^2}{120} < 45 \text{ mph}$$



4-LANE DIVIDED TO 2-LANE UNDIVIDED

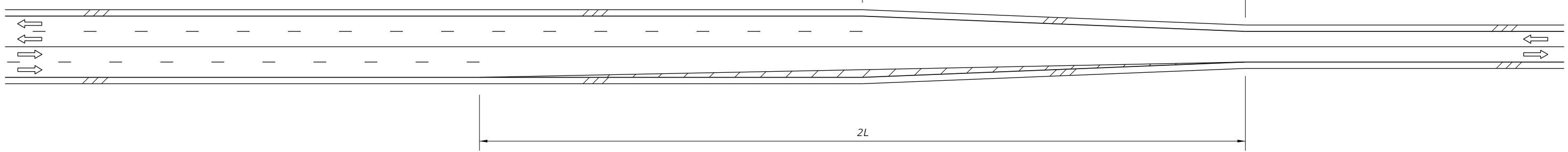
$$L = 12S \geq 45 \text{ mph}$$

$$L = \frac{S^2}{5} < 45 \text{ mph}$$



$$L = 12S \geq 45 \text{ mph}$$

$$L = \frac{S^2}{5} < 45 \text{ mph}$$



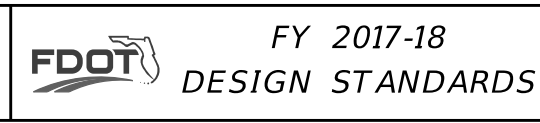
4-LANE UNDIVIDED TO 2-LANE UNDIVIDED

LANE DIVERGENCE AND CONVERGENCE FOR CENTERED ROADWAYS



10/12/2016 11:00:36 AM

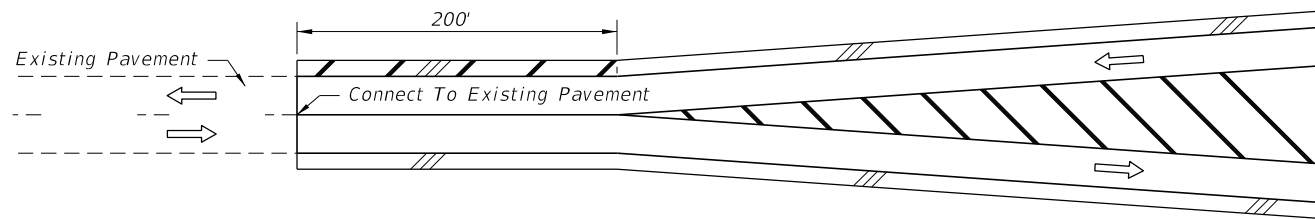
LAST REVISION	REVISION	DESCRIPTION:
07/01/00		



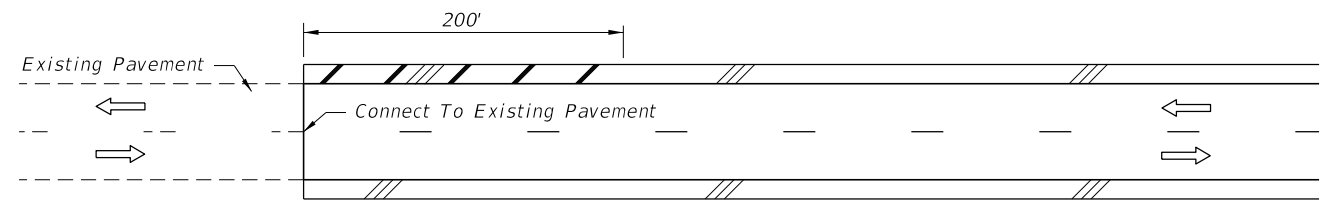
ROADWAY TRANSITIONS

INDEX NO.	SHEET NO.
526	3 of 8

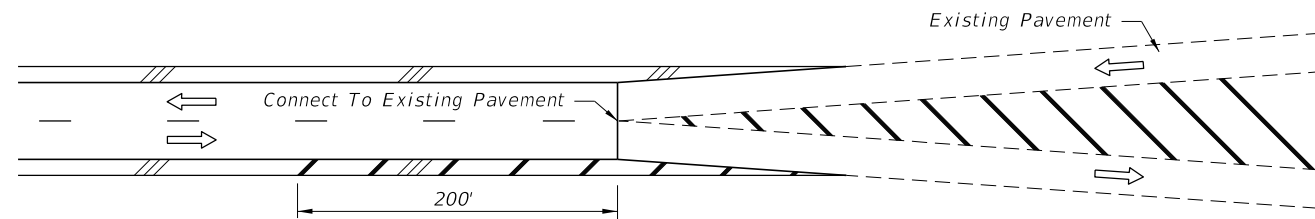




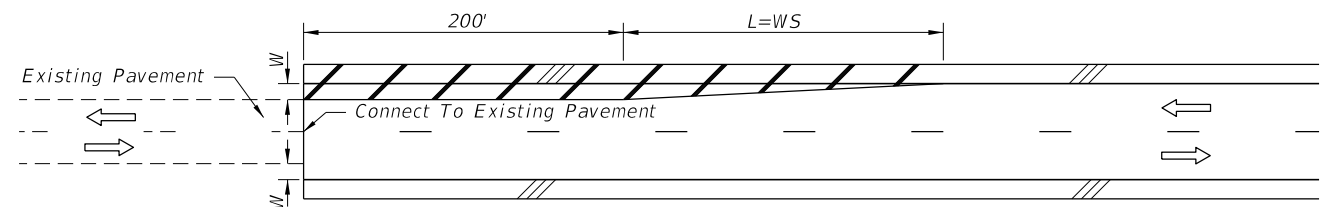
CONNECTING FLARE WITH PAVED SHOULDERS TO EXISTING ROADWAY WITHOUT PAVED SHOULDERS



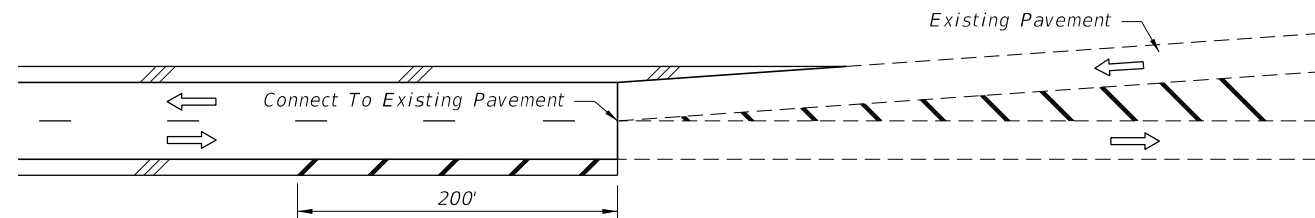
CONNECTING SIMILAR WIDTH PAVEMENTS



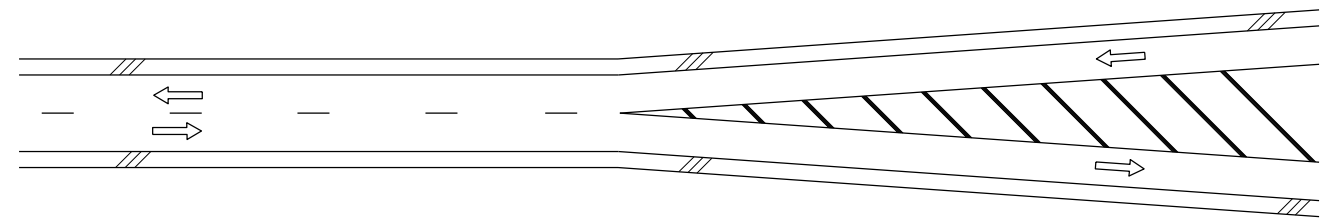
CONNECTING ROADWAY WITH PAVED SHOULDERS TO EXISTING SYMMETRICAL FLARE WITHOUT PAVED SHOULDERS



CONNECTING DIFFERENT WIDTH PAVEMENTS



CONNECTING ROADWAY WITH PAVED SHOULDERS TO EXISTING ASYMMETRICAL FLARE WITHOUT PAVED SHOULDERS




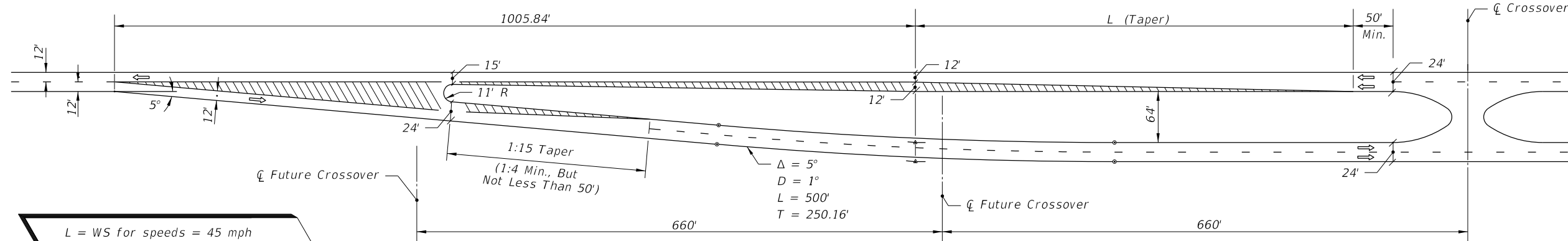
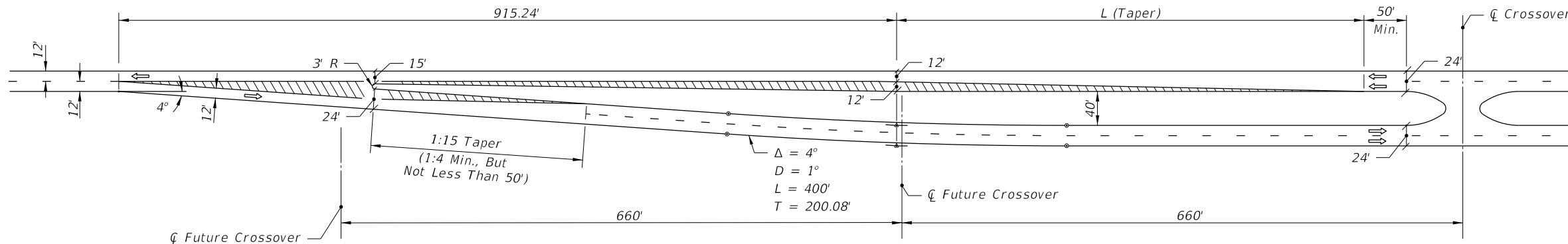
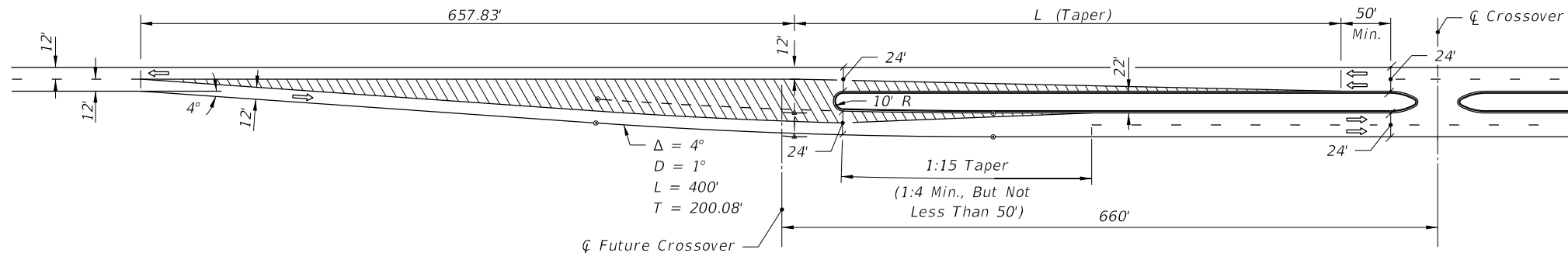
FLARED - PAVED SHOULDERS



PAVED SHOULDER TREATMENT AT TRANSITIONS AND CONNECTIONS

10/12/2016 11:00:39 AM

LAST REVISION 07/01/00	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	ROADWAY TRANSITIONS	INDEX NO. 526	SHEET NO. 4 of 8
---------------------------	----------	--------------	--	---------------------	------------------	---------------------



$L = WS$  for speeds = 45 mph  
 $L = \frac{WS^2}{60}$  for speeds  $\leq 40$  mph  
 Where:  
 $W$ =Width of lateral transition in feet.  
 $S$ =Design speed.

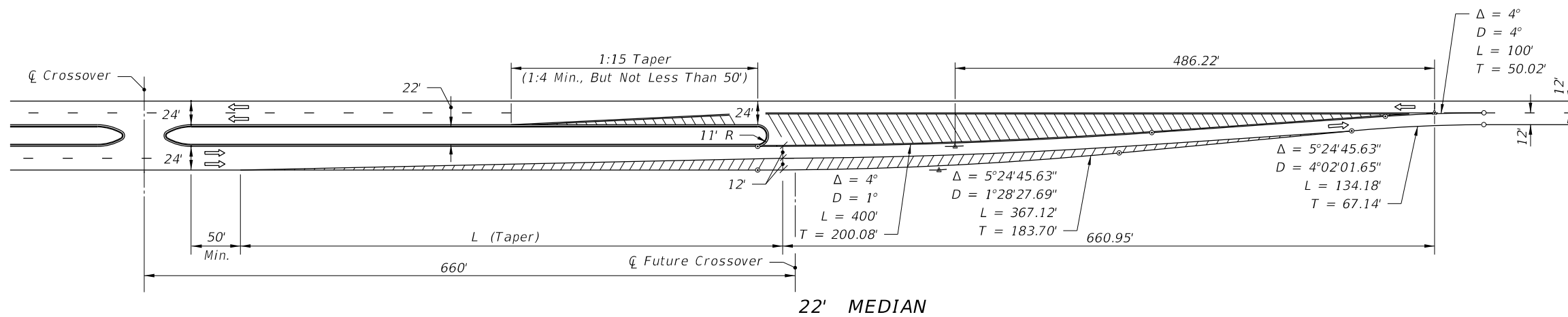
**NOTES FOR SHEETS 5 THRU 8**

- The transition details as represented on sheets 5 thru 8 are intended as guidelines only. The transition lengths, curve data, nose radii and offsets are valid only for tangent alignment, design speeds  $\leq 45$  mph, the median widths and lane widths shown.
- Approach lane departures ( $\Delta = 5^\circ$ ) are suitable for design speeds up to 60 mph. Interior curves ( $D = 1^\circ$ ) are suitable for normal crown for design speeds up to 50 mph. Merging curves ( $D \geq 5^\circ$ ) will require superelevation.
- The geometrics of these schemes are associated with the standard subsectional spacing for side roads, but in any case will require modification to accommodate side road location, multilane and/or divided side roads, oblique side roads, crossover widths, storage and speed change lane requirements, and, other related features.

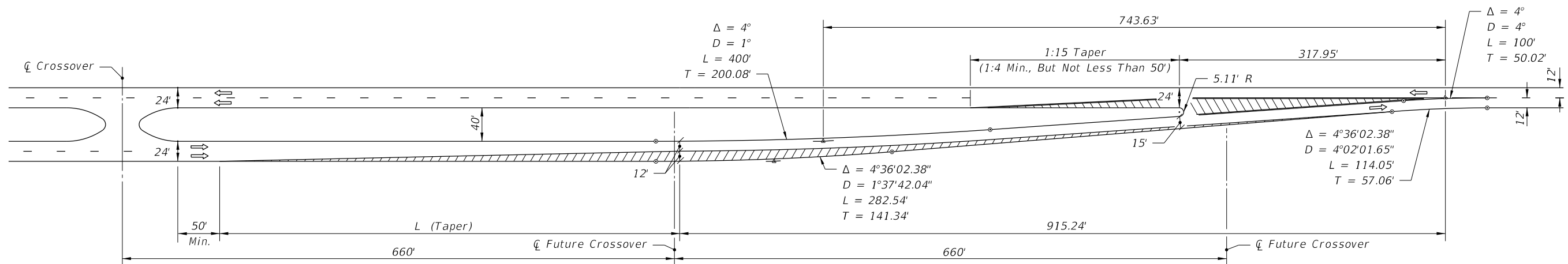
LEFT ROADWAY CENTERED ON APPROACH ROADWAY  
 TWO LANE TO FOUR LANE TRANSITION

10/12/2016 11:00:42 AM

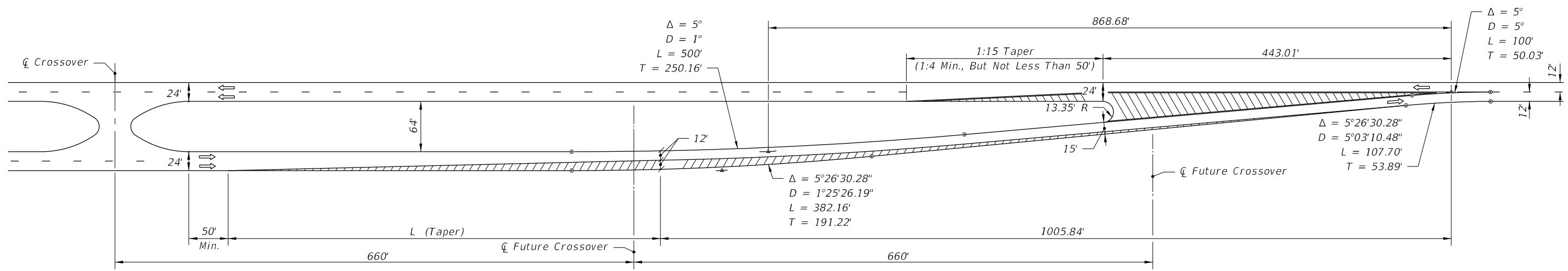
LAST REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	ROADWAY TRANSITIONS	INDEX NO. 526	SHEET NO. 5 of 8
07/01/00					



22' MEDIAN



40' MEDIAN



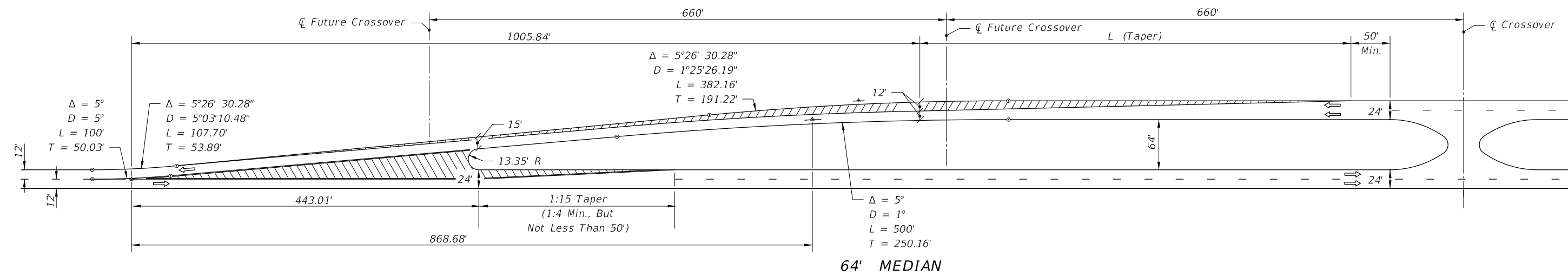
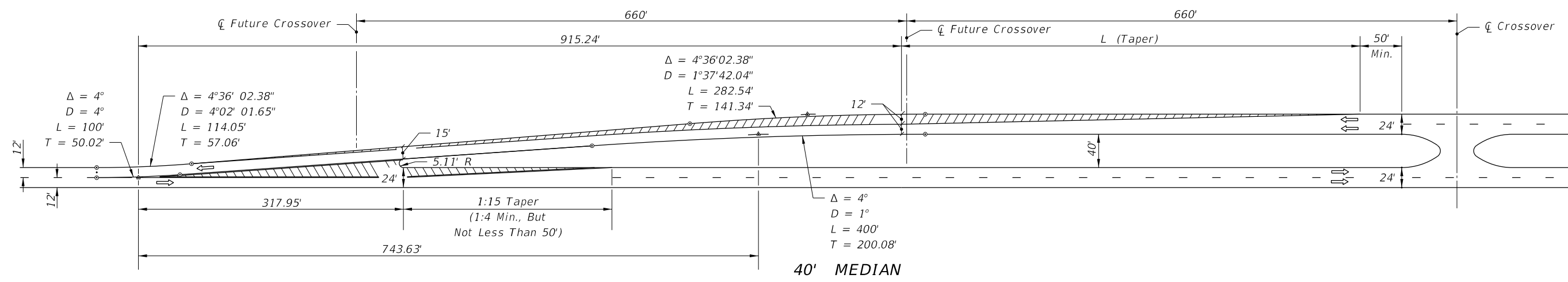
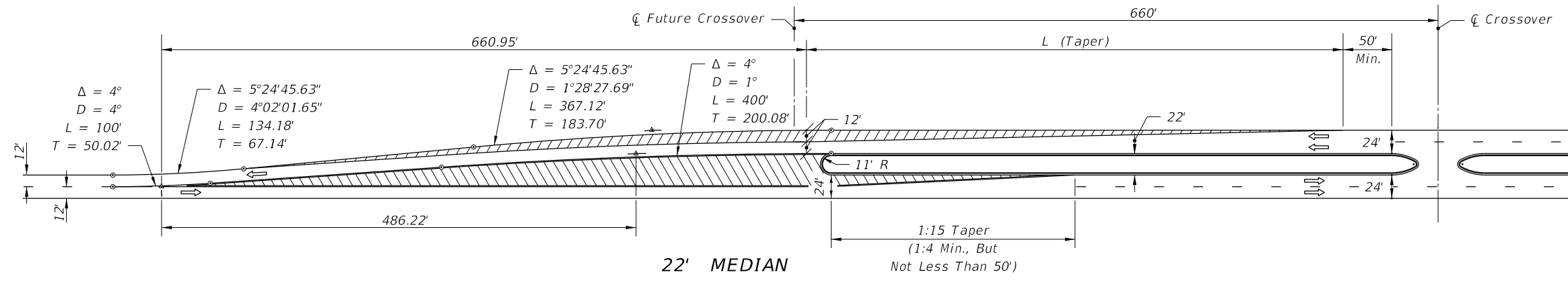
64' MEDIAN

LEFT ROADWAY CENTERED ON THRU ROADWAY  
FOUR LANE TO TWO LANE TRANSITION

$L = WS$  for speeds = 45 mph  
 $L = \frac{WS^2}{60}$  for speeds  $\leq 40$  mph  
 Where:  
 W = Width of lateral transition in feet.  
 S = Design speed.

10/12/2016 11:00:45 AM

LAST REVISION 07/01/00	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	ROADWAY TRANSITIONS	INDEX NO. 526	SHEET NO. 6 of 8
---------------------------	----------	--------------	---	---------------------	------------------	---------------------

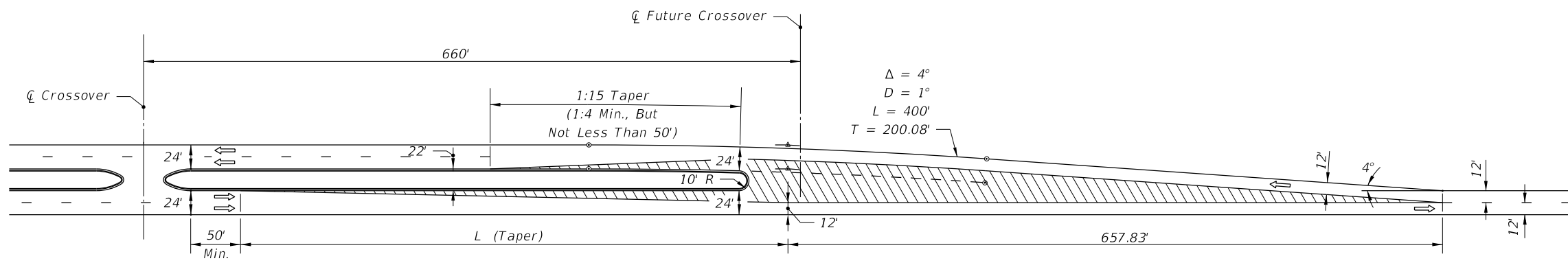


$L = WS$  for speeds = 45 mph  
 $L = \frac{WS^2}{60}$  for speeds  $\leq 40$  mph  
 Where:  
 W = Width of lateral transition in feet.  
 S = Design speed.

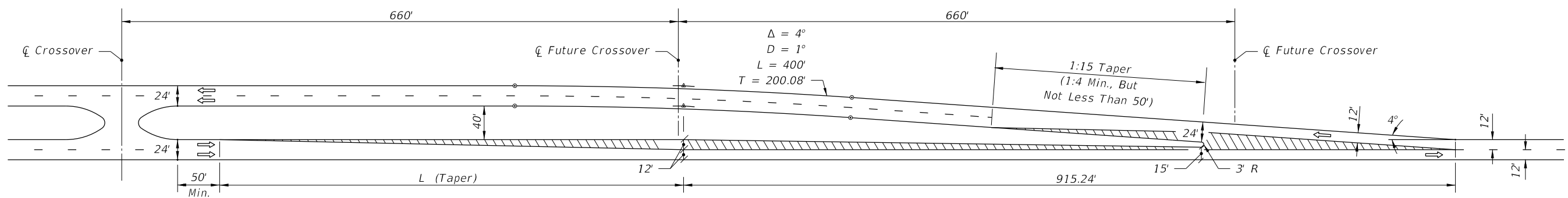
RIGHT ROADWAY CENTERED ON APPROACH ROADWAY  
 TWO LANE TO FOUR LANE TRANSITION

10/12/2016 11:00:49 AM

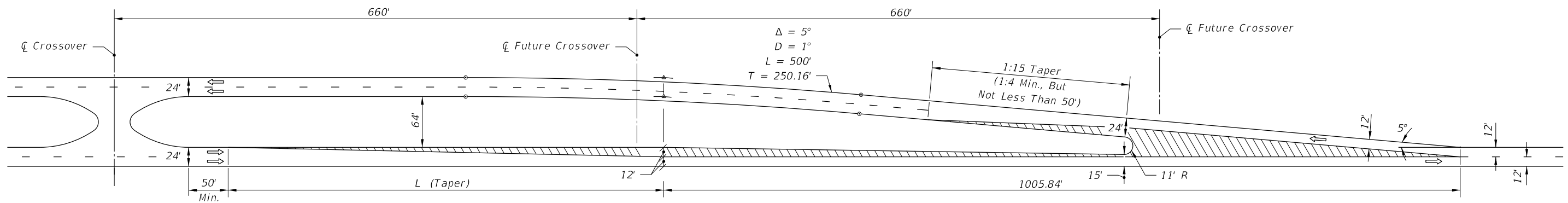
LAST REVISION	07/01/00	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	ROADWAY TRANSITIONS	INDEX NO. 526	SHEET NO. 7 of 8
---------------	----------	--------------	---	---------------------	------------------	---------------------



22' MEDIAN



40' MEDIAN



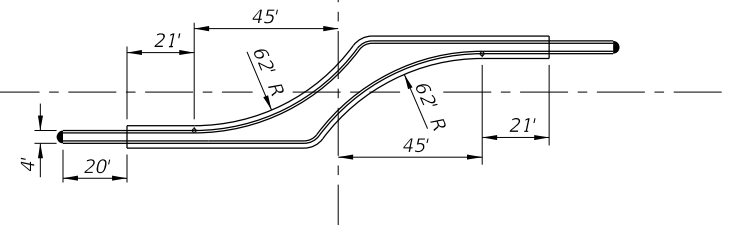
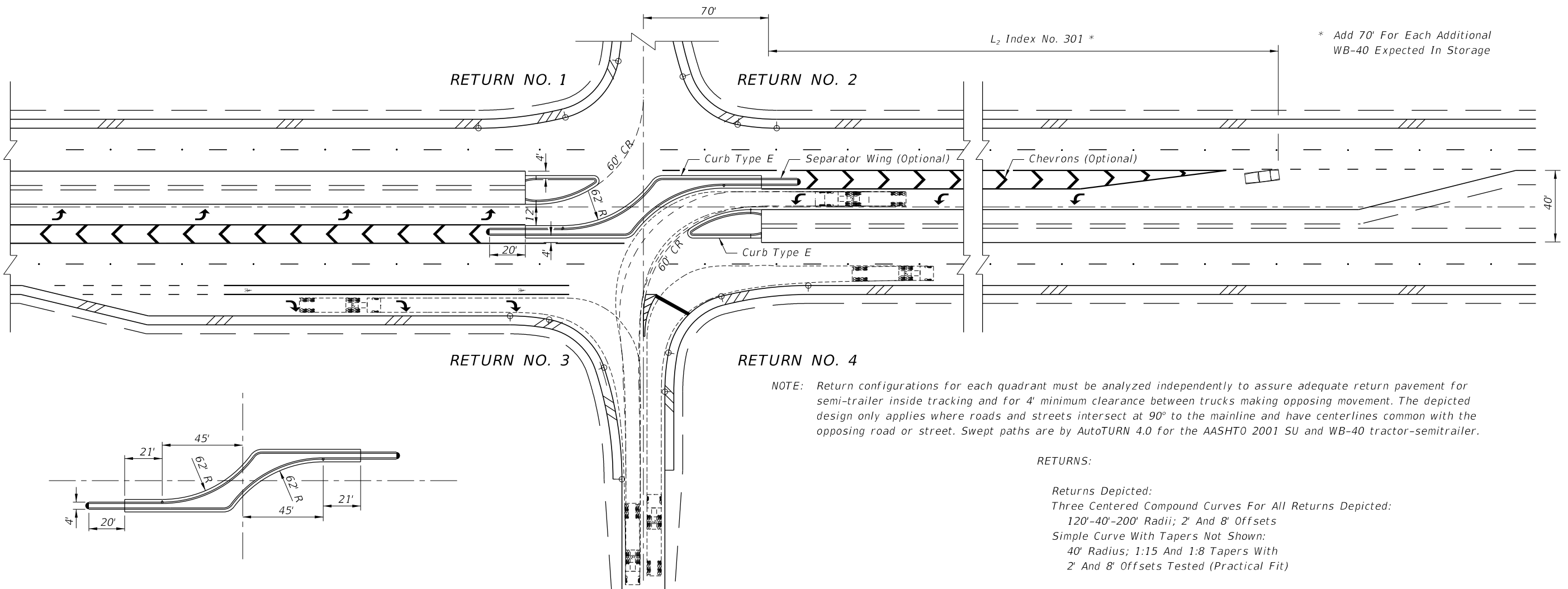
64' MEDIAN

$L = WS$  for speeds = 45 mph  
 $L = \frac{WS^2}{60}$  for speeds  $\leq 40$  mph  
 Where:  
 W = Width of lateral transition in feet.  
 S = Design speed.

RIGHT ROADWAY CENTERED ON THRU ROADWAY  
 FOUR LANE TO TWO LANE TRANSITION

10/12/2016 11:00:52 AM

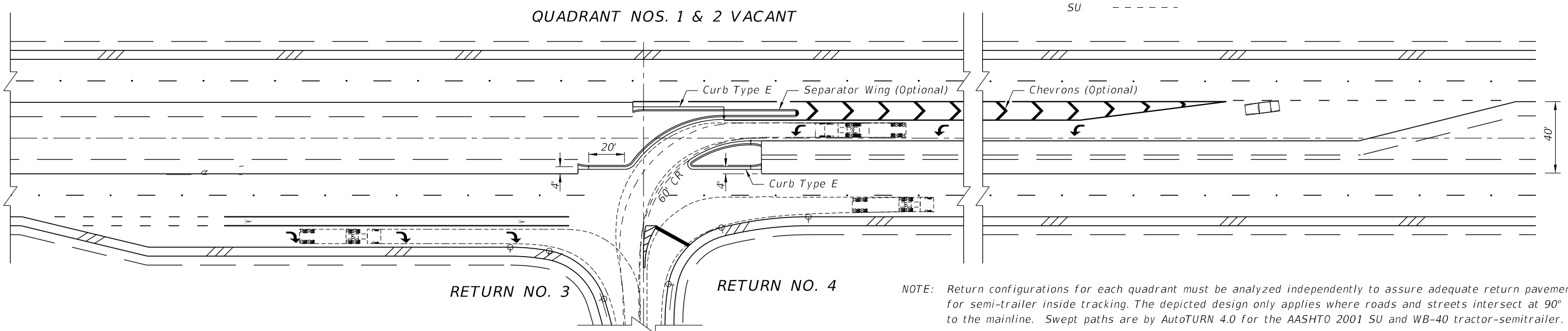
LAST REVISION 07/01/00	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	ROADWAY TRANSITIONS	INDEX NO. 526	SHEET NO. 8 of 8
---------------------------	----------	--------------	------------------------------------	---------------------	------------------	---------------------



NOTE: Return configurations for each quadrant must be analyzed independently to assure adequate return pavement for semi-trailer inside tracking and for 4' minimum clearance between trucks making opposing movement. The depicted design only applies where roads and streets intersect at 90° to the mainline and have centerlines common with the opposing road or street. Swept paths are by AutoTURN 4.0 for the AASHTO 2001 SU and WB-40 tractor-semi-trailer.

RETURNS:  
 Returns Depicted:  
 Three Centered Compound Curves For All Returns Depicted:  
 120'-40'-200' Radii; 2' And 8' Offsets  
 Simple Curve With Tapers Not Shown:  
 40' Radius; 1:15 And 1:8 Tapers With  
 2' And 8' Offsets Tested (Practical Fit)

SWEPT PATH LEGEND:  
 WB 40 -----  
 SU - - - - -

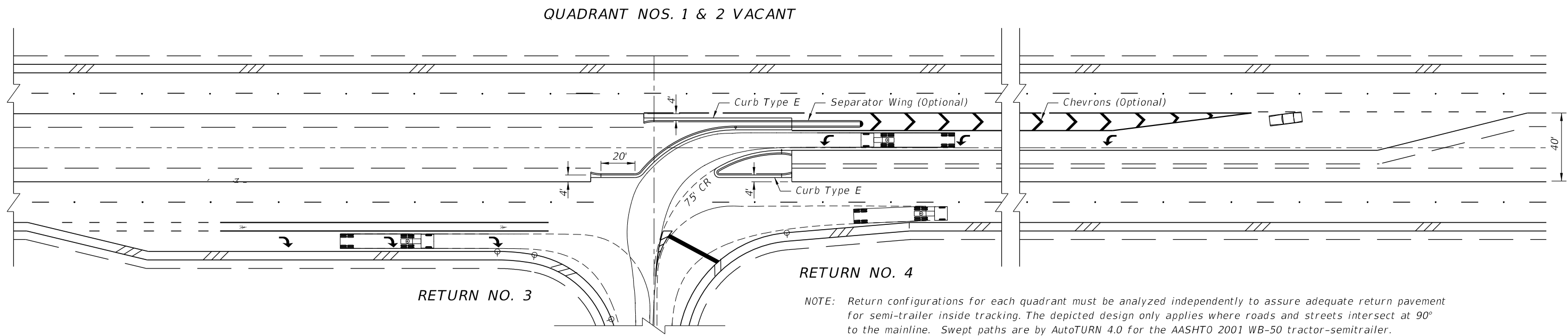
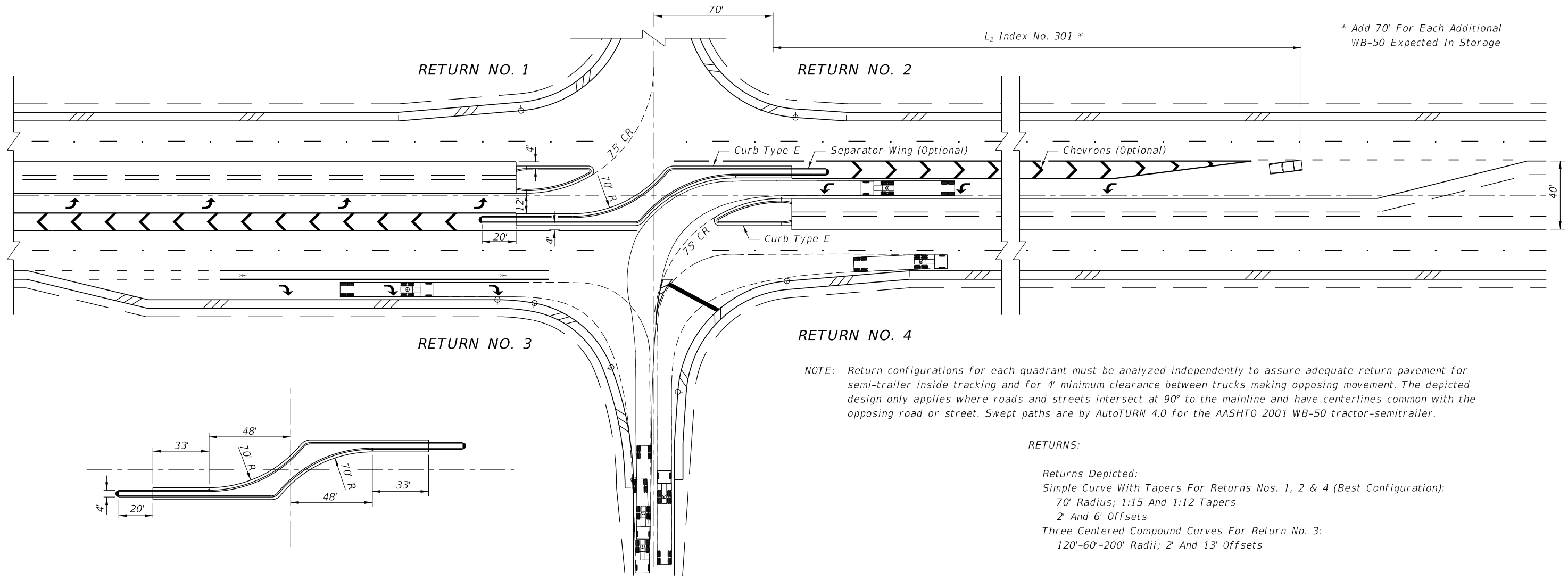


NOTE: Return configurations for each quadrant must be analyzed independently to assure adequate return pavement for semi-trailer inside tracking. The depicted design only applies where roads and streets intersect at 90° to the mainline. Swept paths are by AutoTURN 4.0 for the AASHTO 2001 SU and WB-40 tractor-semi-trailer.

40' MEDIAN • 4-LANE DIVIDED • PARALLEL TURN BAY • 2001 AASHTO SU & WB-40

10/12/2016 11:01:19 AM

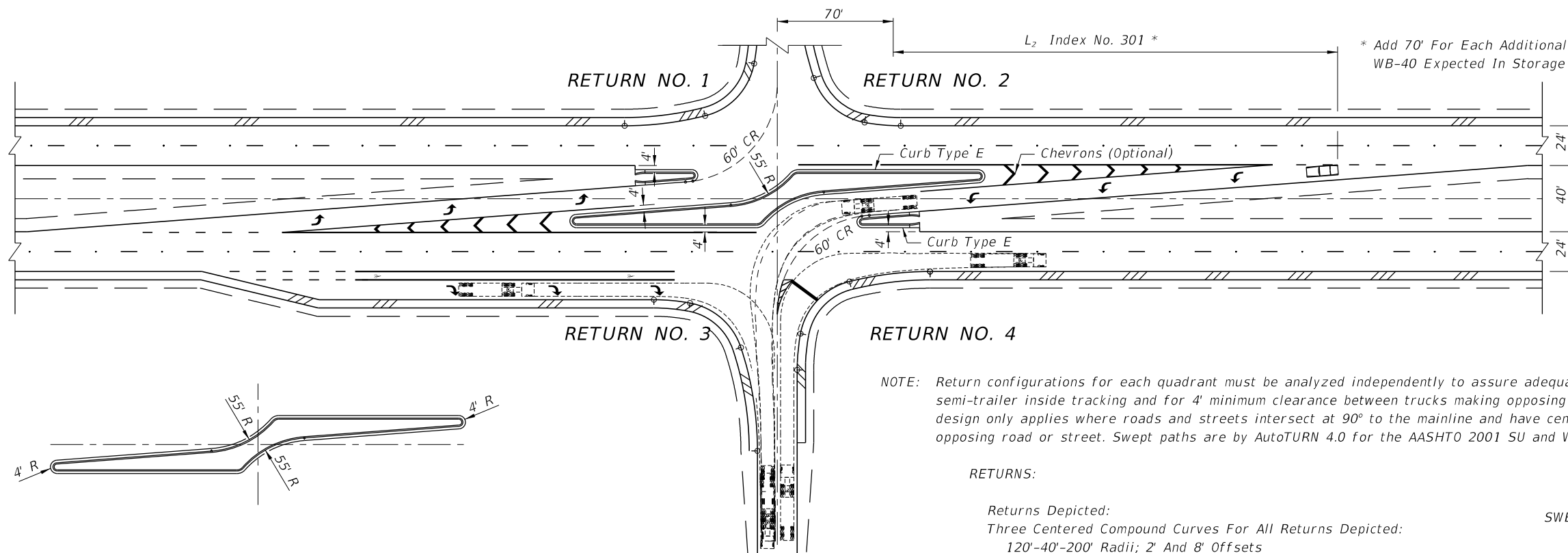
LAST REVISION 07/01/04	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	DIRECTIONAL MEDIAN OPENINGS	INDEX NO. 527	SHEET NO. 1 of 3
---------------------------	----------	--------------	------------------------------------	-----------------------------	------------------	---------------------



**40' MEDIAN 4-LANE DIVIDED • PARALLEL TURN BAY • 2001 AASHTO WB-50**

10/12/2016 11:01:22 AM

LAST REVISION 07/01/04	REVISION	DESCRIPTION:	FY 2017-18 DESIGN STANDARDS	DIRECTIONAL MEDIAN OPENINGS	INDEX NO. 527	SHEET NO. 2 of 3
---------------------------	----------	--------------	--------------------------------	-----------------------------	------------------	---------------------

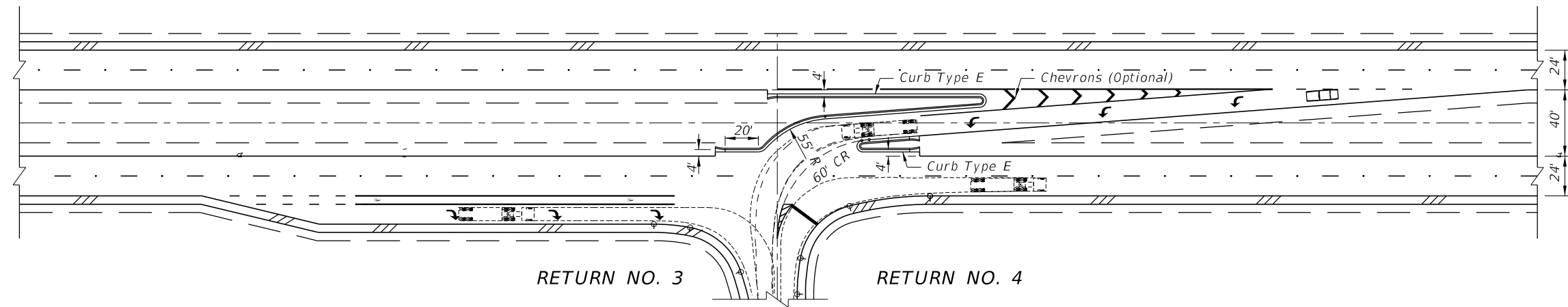


NOTE: Return configurations for each quadrant must be analyzed independently to assure adequate return pavement for semi-trailer inside tracking and for 4' minimum clearance between trucks making opposing movement. The depicted design only applies where roads and streets intersect at 90° to the mainline and have centerlines common with the opposing road or street. Swept paths are by AutoTURN 4.0 for the AASHTO 2001 SU and WB-40 tractor-semi-trailer.

RETURNS:  
 Returns Depicted:  
 Three Centered Compound Curves For All Returns Depicted:  
 120'-40'-200' Radii; 2' And 8' Offsets  
 Simple Curve With Tapers Not Shown:  
 40' Radius; 1:15 And 1:8 Tapers With  
 2' And 8' Offsets Tested (Practical Fit)

SWEPT PATH LEGEND:  
 WB 40 -----  
 SU - - - - -


QUADRANT NOS. 1 & 2 VACANT



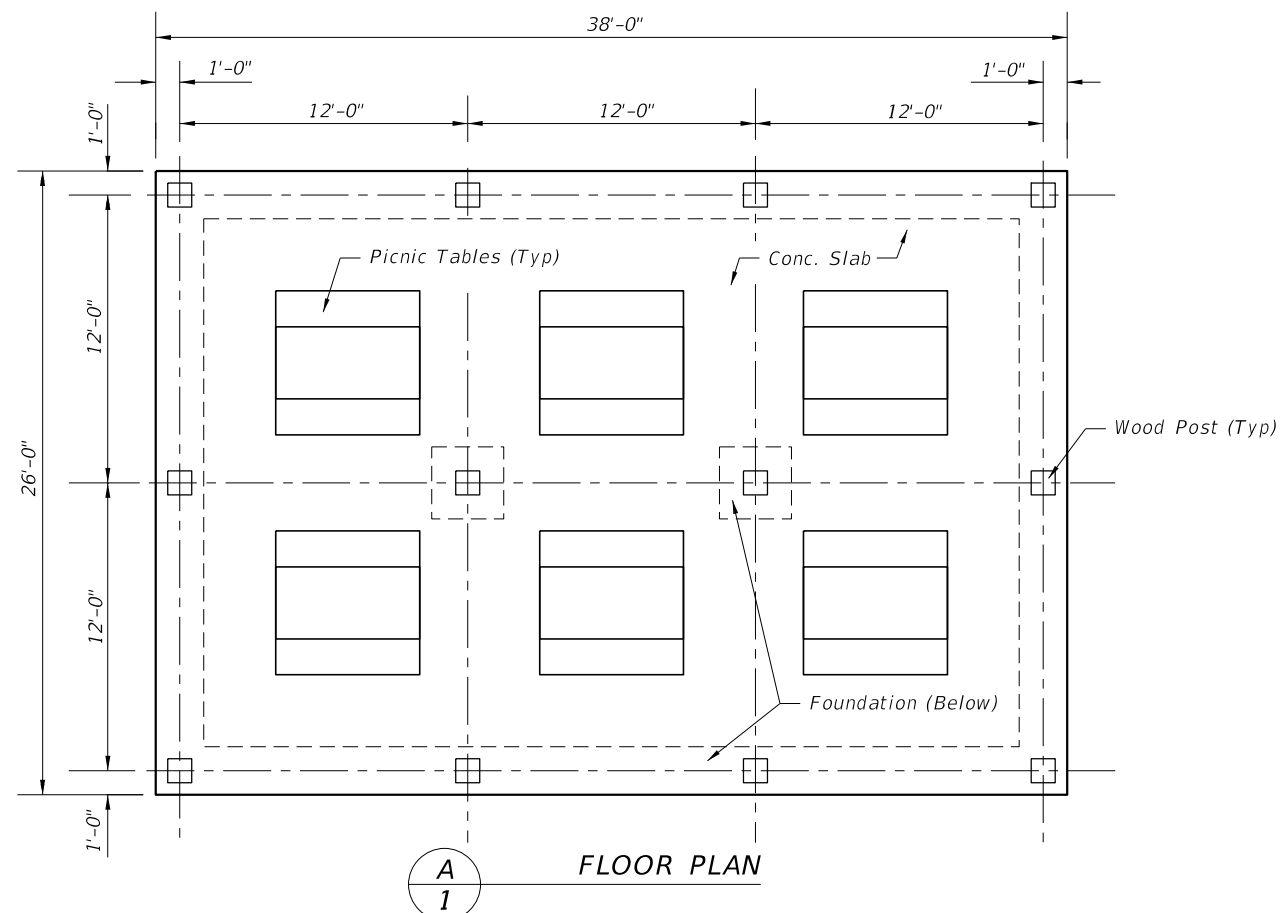
NOTE: Return configurations for each quadrant must be analyzed independently to assure adequate return pavement for semi-trailer inside tracking. The depicted design only applies where roads and streets intersect at 90° to the mainline. Swept paths are by AutoTURN 4.0 for the AASHTO 2001 SU and WB-40 tractor-semi-trailer.

40' MEDIAN • 4-LANE DIVIDED • TAPERED TURN BAY • 2001 AASHTO SU & WB-40

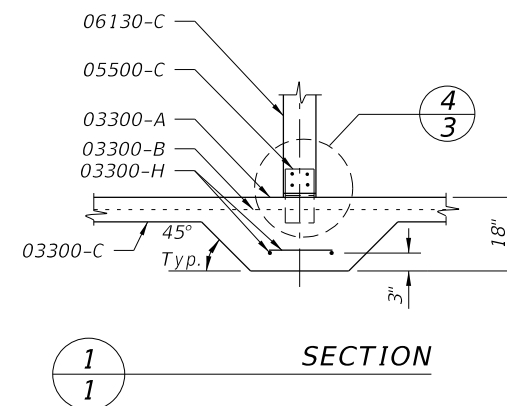
10/12/2016 11:01:25 AM

LAST REVISION 07/01/04	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	DIRECTIONAL MEDIAN OPENINGS	INDEX NO. 527	SHEET NO. 3 of 3
---------------------------	----------	--------------	--	-----------------------------	------------------	---------------------



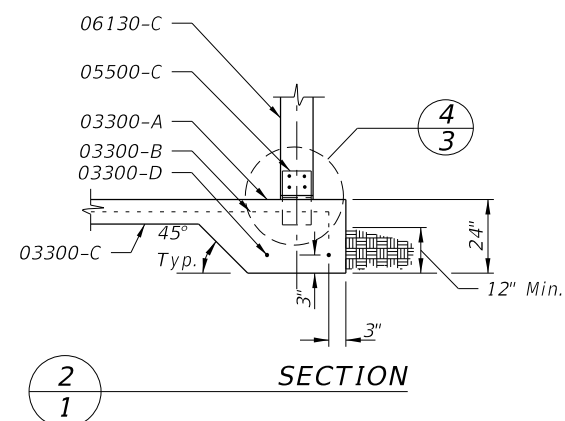


LARGE PAVILION



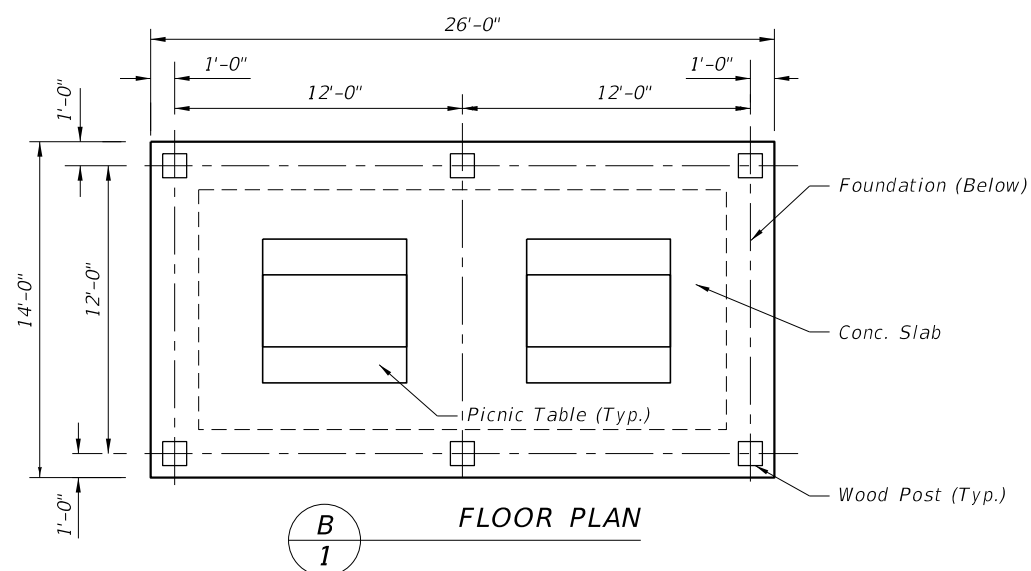
SECTION

1  
1

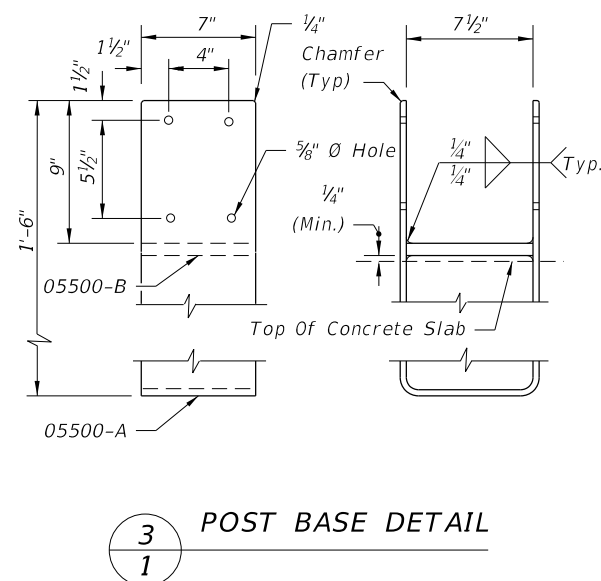


SECTION

2  
1



SMALL PAVILION



POST BASE DETAIL

3  
1

**NOTES**

Keynotes on sheet 2.

**FLOOR**

6" reinf. concrete slab  
w/ WWR 6x6-W1.4xW1.4

Drop footing at slab  
perimeter & interior posts see keynotes.

Harden & broom finish slab surface.

**STRUCTURE**

Posts: 8 x 8 PT

Beams: 4 x 6 PT

Framing: 4x PT as described.

Misc members: 1x and 2x as described.

**ROOF**

3"x6" T&G wood decking.

30# asphalt impregnated fiberglass felt  
underlayment.

Standing seam metal roof (24 GA Steel or  
0.032 Alum.) w/ Kynar 500 finish.

Structure, decking and roofing shall be  
designed to withstand 130 mph wind load.

**BUILDING CODE**

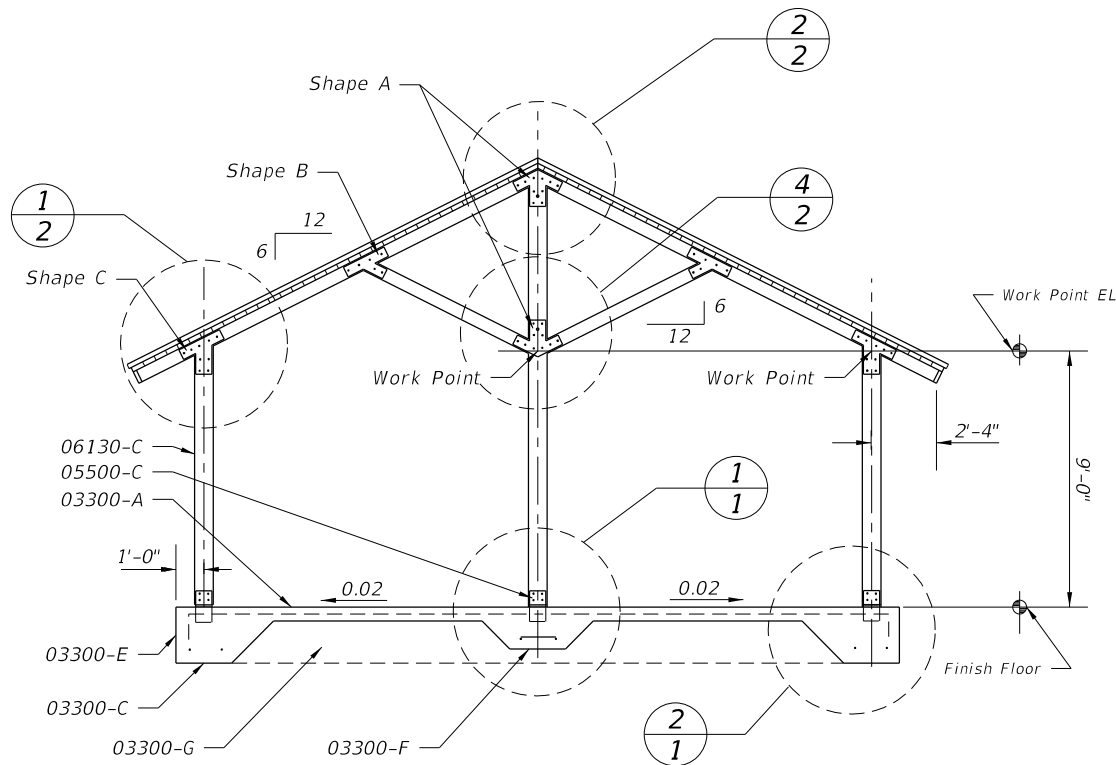
Picnic pavilions shall be constructed  
according to the requirements of the  
appropriate sections of the "Florida  
Building Code", current, adopted edition.

**PICNIC TABLES**

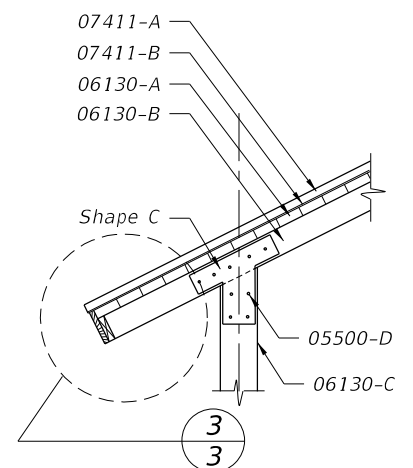
Picnic tables and benches shall be 6'x6'  
w/heavy galvanized pipe frames and  
recycled plastic wood seats and table tops.  
All tables shall be of walk thru design  
suitable for exterior locations. Pavilions  
shall meet the requirements of the  
Americans With Disabilities Act (ADA)  
accessibility guidelines. A minimum of 20%  
of picnic tables to meet ADA.

10/12/2016 11:02:48 AM

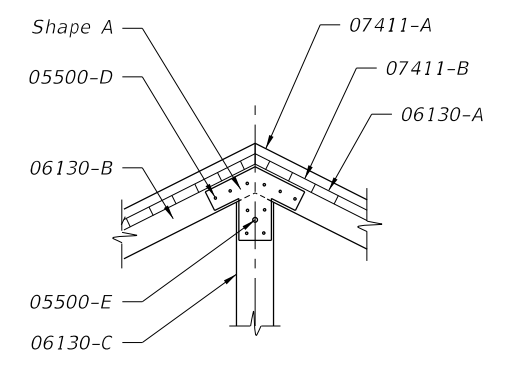
LAST REVISION 01/01/12	DESCRIPTION:
---------------------------	--------------



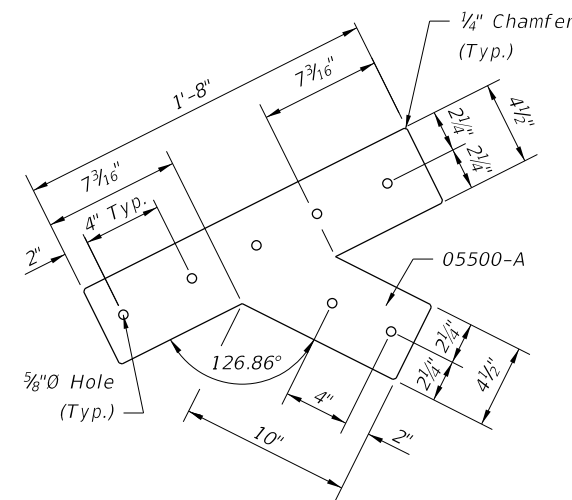
**A** LARGE PAVILION SECTION



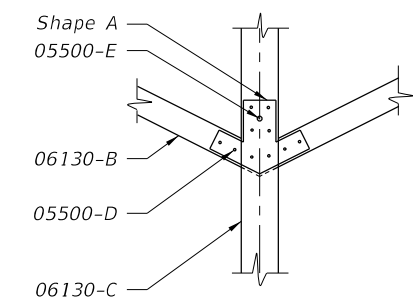
**1** SECTION



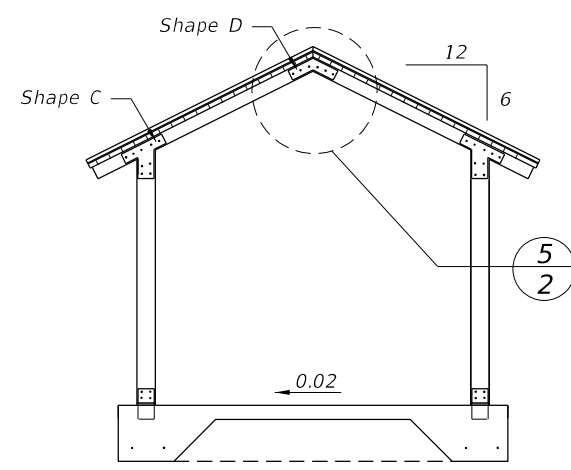
**2** SECTION



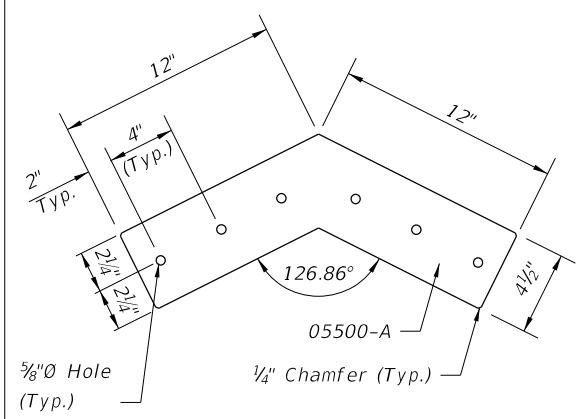
**3** SHAPE B DETAIL



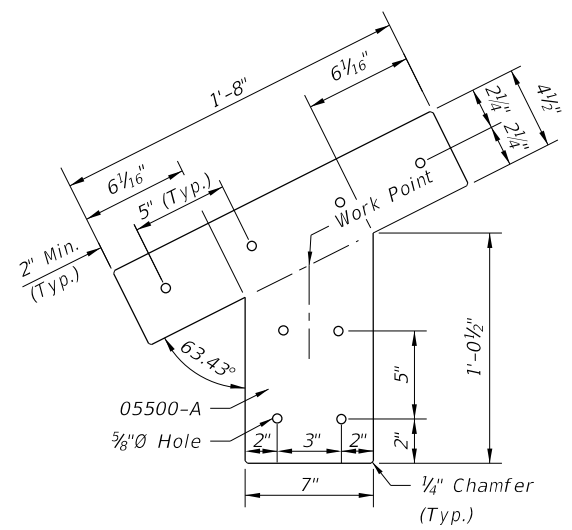
**4** SECTION



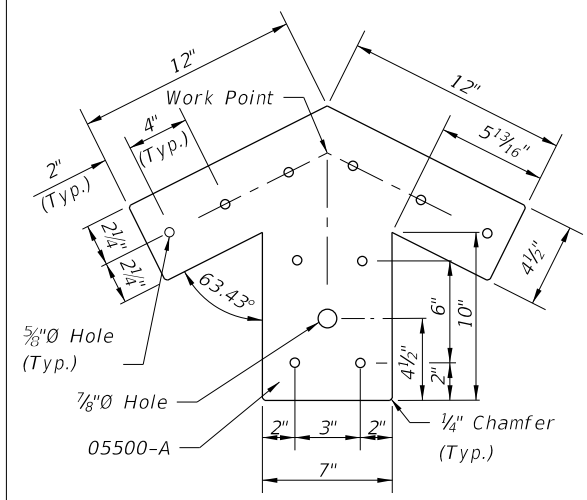
**B** SMALL PAVILION SECTION



**5** SHAPE D DETAIL



**6** SHAPE C DETAIL



**7** SHAPE A DETAIL

**KEYNOTES**

- 03300-A Class II 6" conc slab
- 03300-B 6"x6"-W1.4xW1.4 @  $\perp$  of slab
- 03300-C 6 mil vapor barrier
- 03300-D #5 rebar cont. (2 required)
- 03300-E 24" cont. drop footing
- 03300-F 18"x18" drop footing
- 03300-G 6" min comp sand fill
- 03300-H #5x18" rebar (4 required)

- 05500-A 3/8" galv. steel plate
- 05500-B 1/2" galv. steel plate
- 05500-C post base.
- 05500-D 1/2"  $\emptyset$  bolt, washer & nut (typ.)
- 05500-E 3/4"  $\emptyset$  eyebolt, washer & nut for cross brace bars
- 05500-F 1/2"  $\emptyset$  steel rod w/turnbuckle

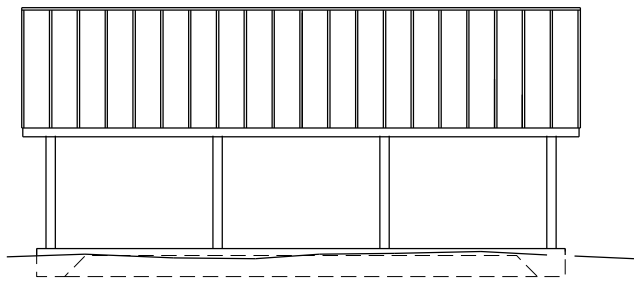
- 06130-A 3"x6" T&G wood decking
- 06130-B 4"x6" PT wood frame
- 06130-C 8"x8" PT wood post
- 06130-D 2"x6" PT wood sub fascia
- 06130-E 1"x10" PT wood fascia
- 06130-F 3/4"  $\pm$  wood shim

- 07411-A Standing seam metal roof
- 07411-B Felt underlayment

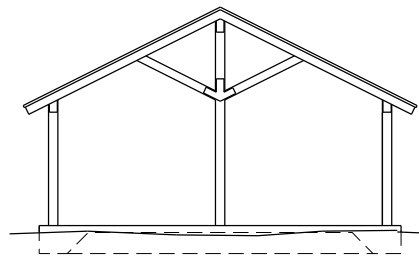
Alternate Material Note: These structures are shown with timber frames and decking. Alternate materials (i.e., aluminum, steel, etc.) may be used when submittals are signed and sealed by a specialty engineer as per Section 5 of the Standard Specifications and when approved by the Engineer.

10/12/2016 11:02:52 AM

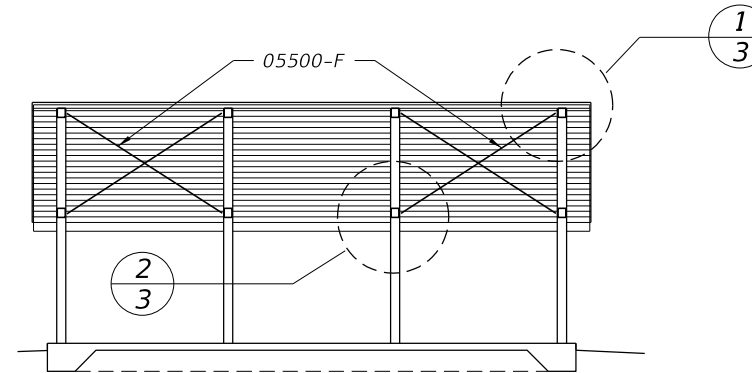
LAST REVISION 01/01/12	DESCRIPTION:
---------------------------	--------------



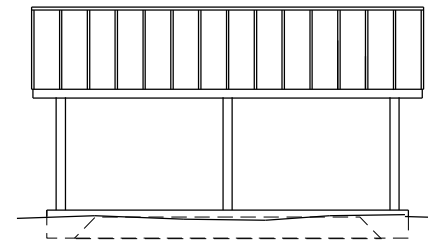
**A**  
3 SIDE ELEVATION



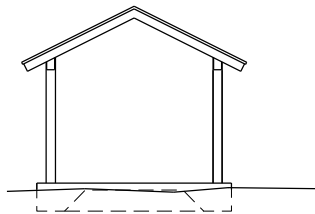
**B**  
3 END ELEVATION



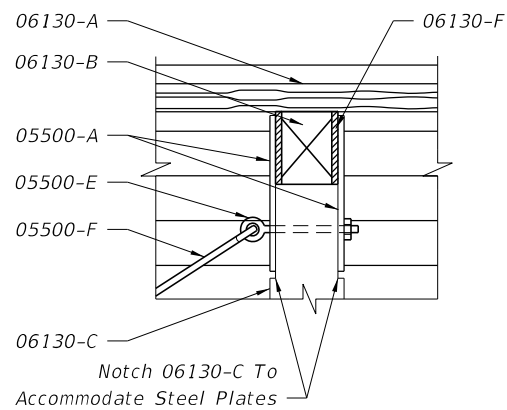
**C**  
3 SECTION



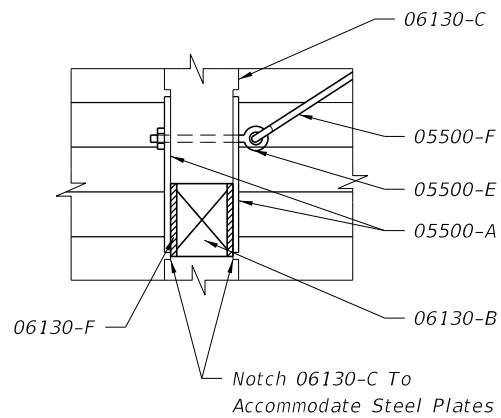
**D**  
3 SIDE ELEVATION



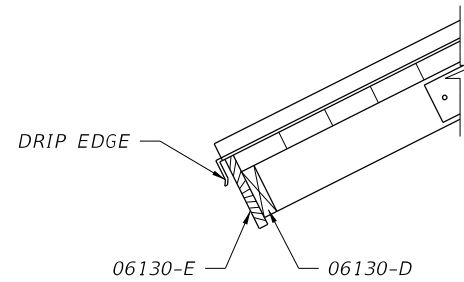
**E**  
3 END ELEVATION



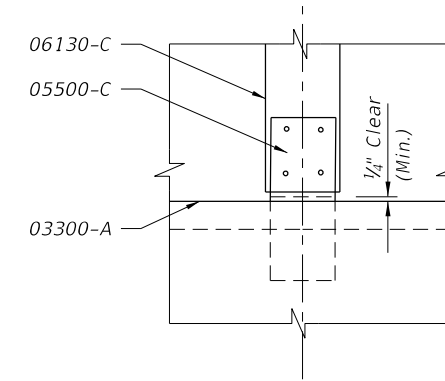
**1**  
3 DETAIL



**2**  
3 DETAIL



**3**  
3 DETAIL  
Similar At Roof Rake



**4**  
3 DETAIL

**SPECIFICATIONS**

Keynotes On Sheet 2.

**CONCRETE**

Concrete: FDOT Class II.

Reinforcing Bars: ASTM A615, Grade 60.

Welded Wire Fabric: ASTM A-185.

Vapor Barrier: Black 6-Mil Polyethylene.

**STEEL**

Galvanized Steel Plate: Steel Plate ASTM A36 or A709, in accordance with the requirements of ASTM A123.

Galvanized Fasteners: High-Strength bolts and nuts, in accordance with Specification Section 962.

Make field repairs to galvanizing in accordance with Specification 562.

**WOOD**

Comply with American Institute For Timber Construction AITC 108, "Standard For Heavy Timber Construction."

For solid wood decking, comply with AITC 112, "Standard For Tongue And Groove Heavy Timber Standard."

Species: Douglas Fir, Hem-fir, or Southern Pine, at fabricator's option.

Preservative Treatment: Pressure treat fabricated members with waterborne solution for above ground use, complying with AWWA U1, category UC3B above ground exposed.

Wood Decking: Pre-drill decking at 30" centers for lateral spiking to adjacent units. Spikes to be 8" spikes galvanized common.

10/12/2016 11:02:55 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:
---------------------------	----------	--------------

**GENERAL NOTES**

1. The location and construction of mailboxes shall conform to the rules and regulations of the United States Postal Service as modified by this design standard.
2. Mailboxes will not be permitted on Interstate highways, freeways, or other highways where prohibited by law or regulation.
3. The contractor shall give the Postmaster of the delivery route(s) written notice of project construction 7 days prior to the beginning of work, with Saturdays, Sundays and Holidays excluded.

The Contractor shall furnish and install one mailbox in accordance with this design standard at each mail patron delivery location and maintain the box throughout the contract period. The Contractor shall apply box numbers to each patron box in accordance with identification specifications of the Domestic Mail Manual of the U. S. Postal Service; where local street names and house numbers are authorized by the Postmaster as a postal address, the Contractor shall inscribe the house number on the box; if the box is located on a different street from the patrons residence, the Contractor shall inscribe the street name and house number on the box.

The Contractor shall coordinate removal of the patrons existing mailboxes. Immediately after installing the new mailboxes the Contractor must notify each "Mail Delivery Patron" by Certified Mail that removal of the existing mailboxes must be accomplished in 21 days after receipt of notices. Patrons shall have the option of removing their existing mailboxes or leaving the mailboxes in place for removal by the Contractor; removal by the Contractor shall be included in the contract unit price for Mailbox, Each. The Contractor shall dispose of mailboxes and supports in areas provided by him.

Reuse of existing mailboxes by the Contractor will not be a requirement under any construction project; however where an existing mailbox meets the design requirements of this standard and is structurally and functionally sound, the Contractor at his option may elect to reuse the existing mailbox in lieu of constructing a new mailbox. Any use of existing mailboxes must be approved by the Engineer.

4. Mailboxes shall be light sheet metal or plastic construction, in traditional style only, and only in Size 1 as prescribed by the Domestic Mail Manual of the U. S. Postal Service (DMM).

Mailbox production standards, lists of approved manufacturers and suppliers of mailboxes, design approval and guidance may be obtained by writing to the Rural Delivery Division, Delivery Service Department, Operations Group, USPS Headquarters, Washington, DC 20260.

5. Mailboxes shall be located on the right-hand side of the roadway in the direction of the delivery route, except on one-way roads and streets where they may be placed on the left-hand side.

Mailboxes on rural highways shall be set with the roadside face of the box offset from the edge of the traveled way a minimum distance of the greater of the following:

- a. Shoulder width plus 8" to 12".
- b. 10' for ADT over 10,000 vpd.  
8' for ADT 100 to 10,000 vpd.  
6' for ADT under 100 vpd  
2'-6" for low speed and ADT under 100 vpd.

When a mailbox is installed within the limits of guardrail it should be placed behind the guardrail whenever practical.

Mailboxes on curbed highways, roads, and streets shall be set with the face of the box between 6" and 12" behind the face of curb. If the sidewalk abuts the curb or if an unusual condition exists which makes it difficult or impractical to install or serve boxes at the curb, the Contractor, with concurrence of the local postal authority, may be permitted to install all mailboxes at the back edge of the sidewalk, where they can be served by the carrier from the sidewalk.

6. Mailboxes shall be set with the bottom of the box between 42" and 48" above the mail stop surface, unless the U.S. Postal Service establishes other height restrictions.

7. No more than two mailboxes may be mounted on a support structure unless the support structure and mailbox arrangements have been shown to be safe by crash testing in accordance with NCHRP Report 350.

Neighborhood Delivery and Collection Box Units (NDCBU) are a specialized multiple mailbox installation that must be located outside the highway and street clear zones. The location of NDCBUs is the sole responsibility of the Postmaster for the delivery route under consideration.

8. Lightweight newspaper receptacles may be mounted below the mailbox on the side of the support post in conformance with the USPS Domestic Mail Manual. The mail patron shall be responsible for newspaper receptacle installation and maintenance.

9. Wood and steel support posts for both single and double mailbox mountings shall be embedded no more than 24" into the ground.

Concrete, block, brick, stone or other rigid foundation structure or encasement, either above or below the shoulder groundline, will not be permitted for mailboxes on rural highways. On urban roads and streets where mailbox support posts are set within rigid pavement back of curb, the support posts shall be separated from the pavement by a minimum of 1" of expansion material.

Support posts shall not be fitted nor installed with surface mount base plates.

10. At driveway entrances mailboxes shall be placed on the far side of the driveway in the direction of the delivery route.

At intersecting roads mailboxes shall be located 100' or more from the centerline of the intersecting road on the far side in the direction of the delivery route, with the distance increased to 200' when the route volume exceeds 400 vehicles per day.

11. Wood support posts shall be in conformance with the material and dimensional requirements of Section 952 and the treatment requirements of Section 955 of the Standard Specifications.

Steel support posts shall have an external finish equal to or better than two coats of weather resistant, air dried or baked, paint or enamel. Surface(s) shall be cleaned of all loose scale prior to finishing. The Postal Service prefers that posts be painted white, but other colors may be used when approved by the Engineer. When galvanized posts are used painting is not required.

Mounting brackets, plates, platforms, shelves and accessory hardware surface finishes are to be suited to support post finish.


12. Mailboxes shall be paid for under the contract unit price for Mailboxes, Each. Payment shall be full compensation for boxes, posts and accessory items essential for installation in accordance with this standard; erection; adjustments to suit construction needs; and, for identification letters and numbers.

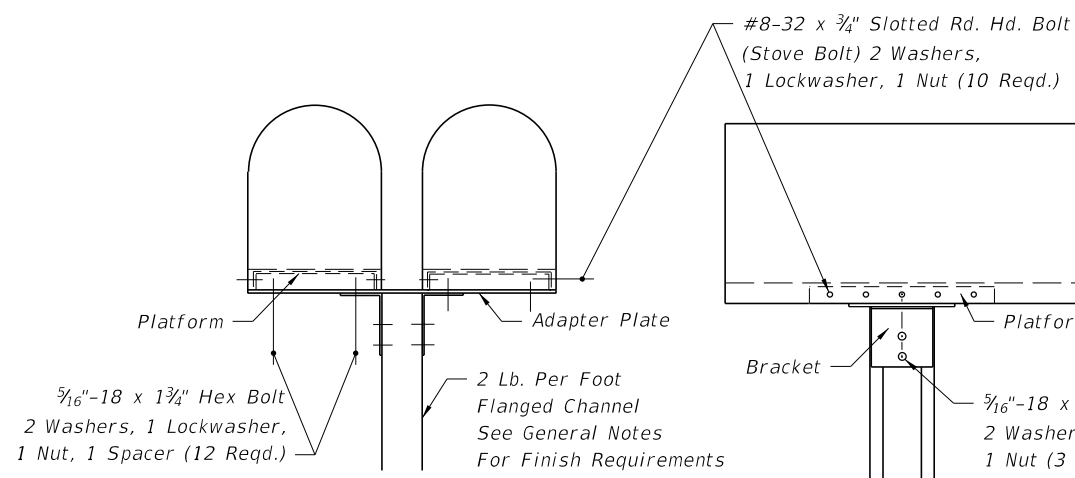
Payment shall be limited to one mailbox per patron address whether the mailbox is new, reused, salvaged, reset or relocated. Payment shall be per mailbox regardless of the number of mailboxes per support or grouping arrangement.

The above compensation shall include any work and cost incurred by the contractor for removal and disposal of existing mailboxes.

There shall be no payment participation for NDCBU furnishing, assembly, installation, resetting or relocation.

10/12/2016 11:03:26 AM

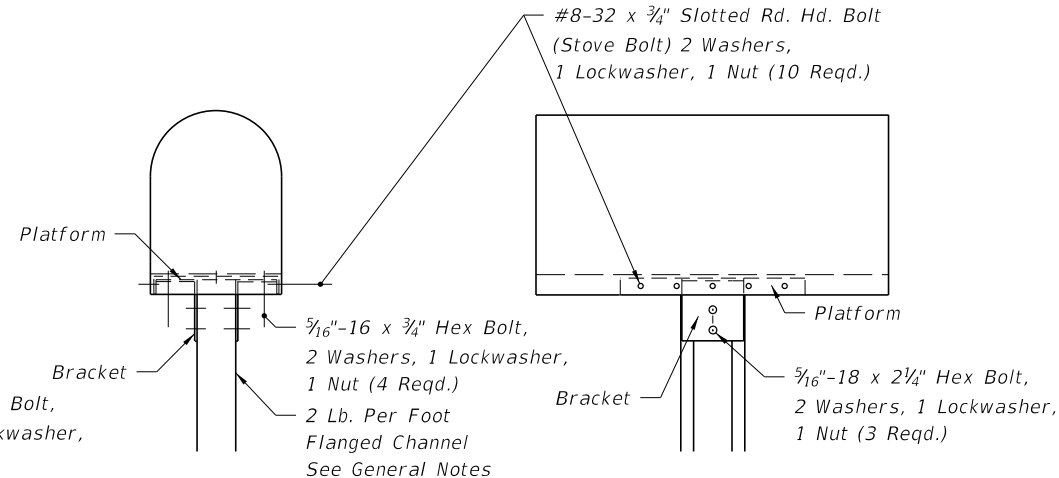
LAST REVISION <b>11/01/16</b>	REVISION	DESCRIPTION:	 <b>FY 2017-18 DESIGN STANDARDS</b>	<b>MAILBOXES</b>	INDEX NO. <b>532</b>	SHEET NO. <b>1 of 3</b>
----------------------------------	----------	--------------	--	------------------	-------------------------	----------------------------



FRONT VIEW

SIDE VIEW

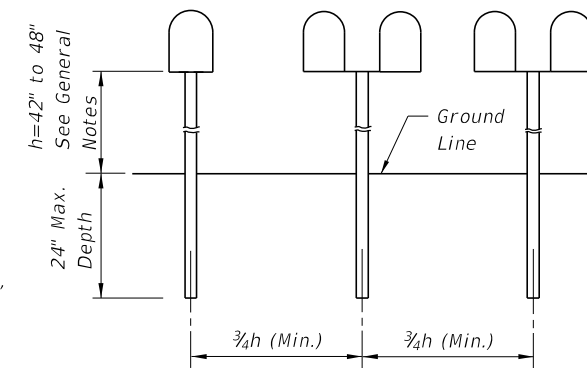
FLANGED CHANNEL



FRONT VIEW

SIDE VIEW

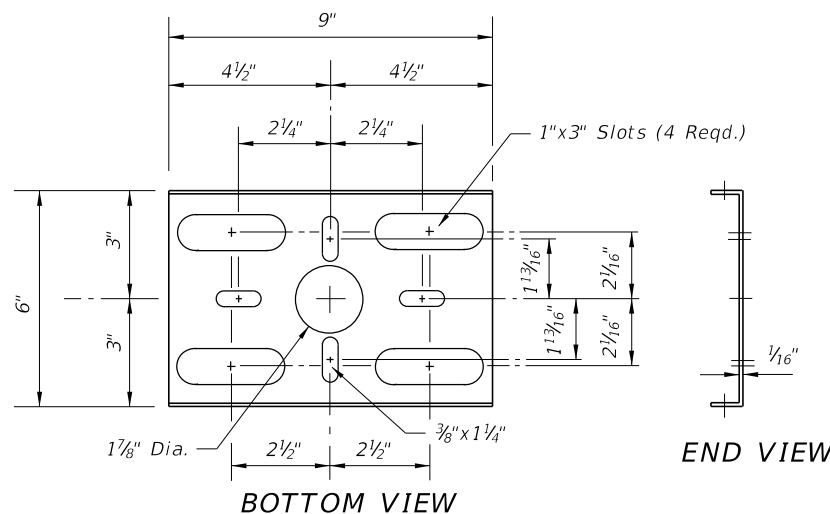
FLANGED CHANNEL



ELEVATION

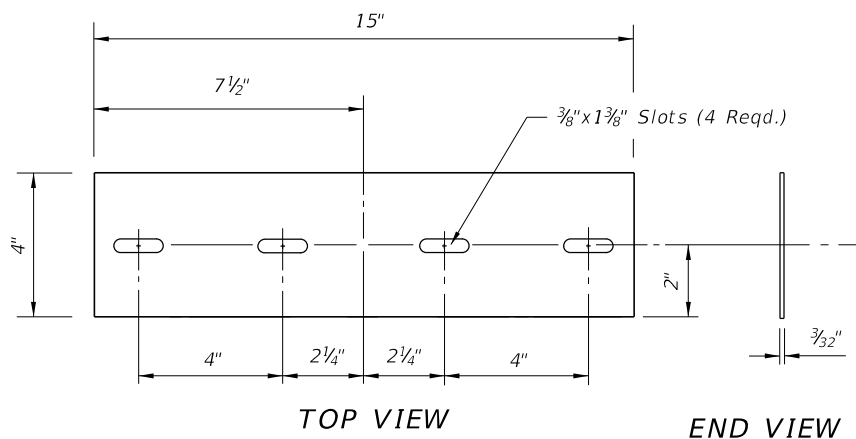
SINGLE OR COMBINED WOOD, FLANGED CHANNEL OR PIPE POST TYPES SHOWN ON THIS INDEX

POST SPACING



BOTTOM VIEW

END VIEW

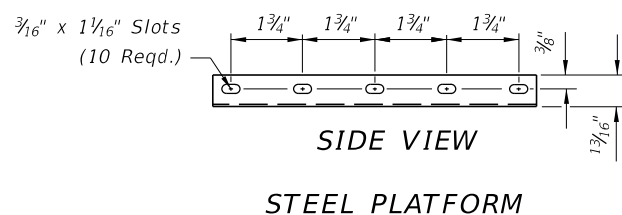


TOP VIEW

END VIEW

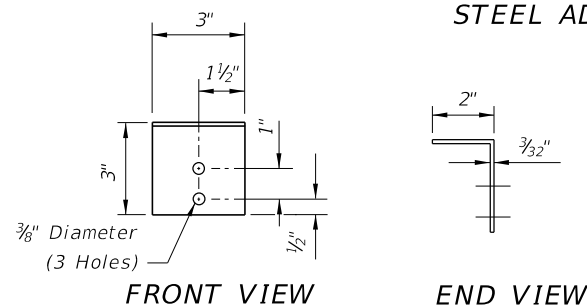
STEEL ADAPTER PLATE

Note: See General Notes for finish requirements.



SIDE VIEW

STEEL PLATFORM

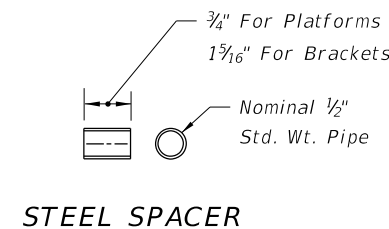


FRONT VIEW

END VIEW

TOP VIEW

STEEL BRACKET

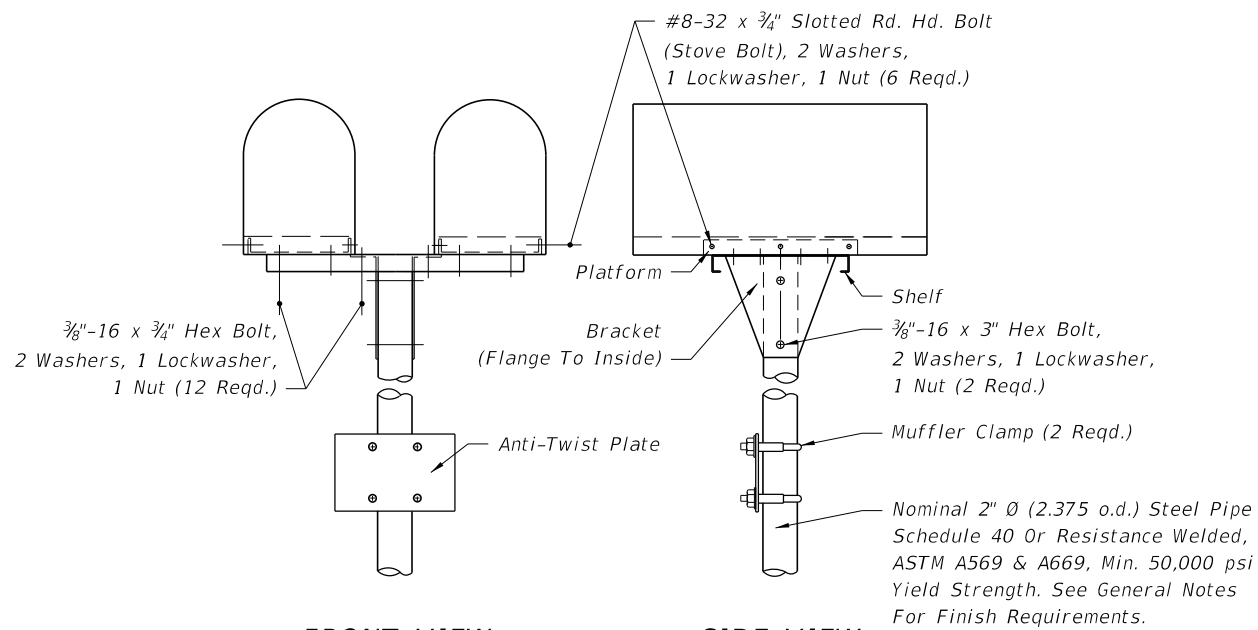


STEEL SPACER

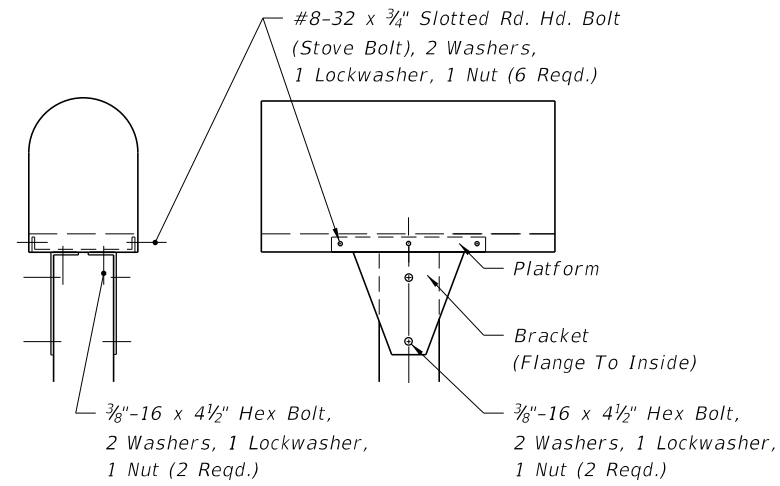
STEEL FLANGED CHANNEL SUPPORT POSTS

10/12/2016 11:03:28 AM

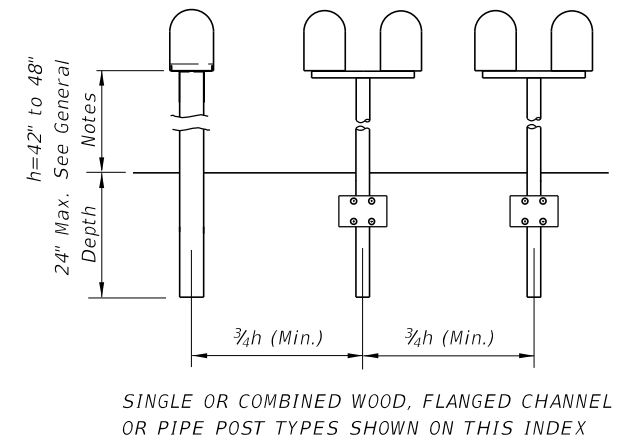
LAST REVISION 07/01/00	REVISION	DESCRIPTION:
---------------------------	----------	--------------



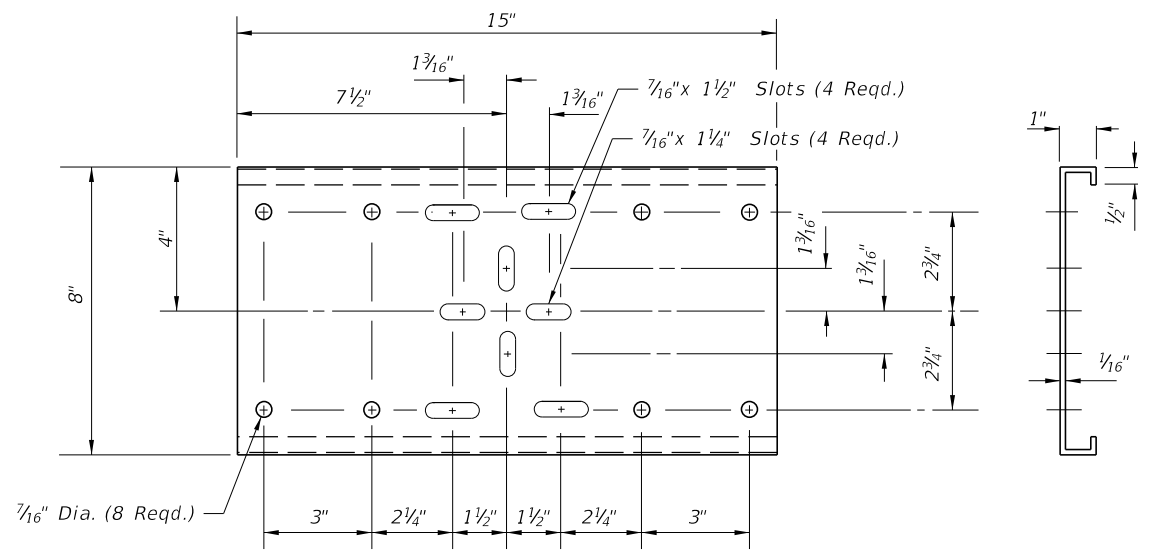
FRONT VIEW SIDE VIEW  
2" Ø PIPE POST



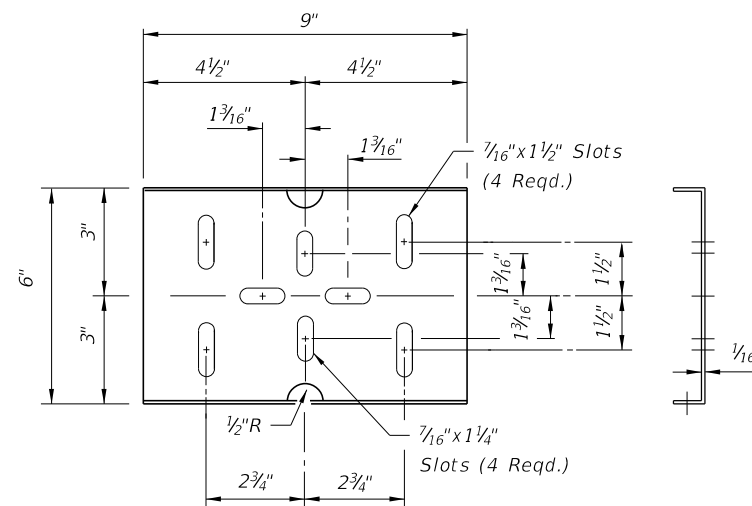
FRONT VIEW SIDE VIEW  
4" X 4" WOOD POST



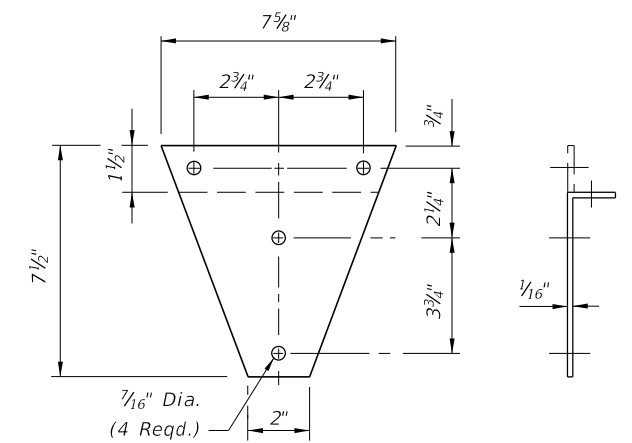
SINGLE OR COMBINED WOOD, FLANGED CHANNEL OR PIPE POST TYPES SHOWN ON THIS INDEX  
ELEVATION  
POST SPACING



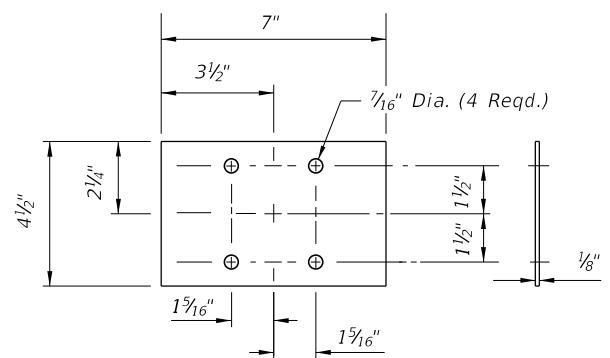
TOP VIEW END VIEW  
STEEL SHELF



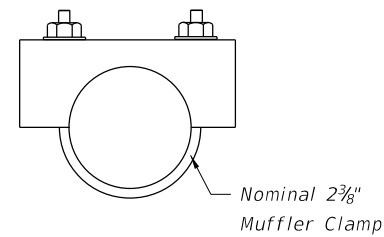
BOTTOM VIEW END VIEW  
STEEL PLATFORM



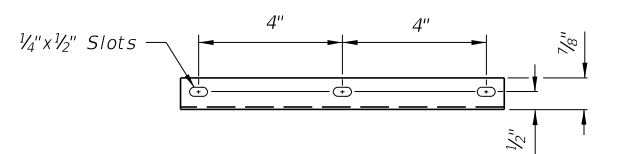
SIDE VIEW END VIEW  
STEEL BRACKET



FRONT VIEW END VIEW  
STEEL ANTI-TWIST PLATE



TOP VIEW  
STEEL CLAMP



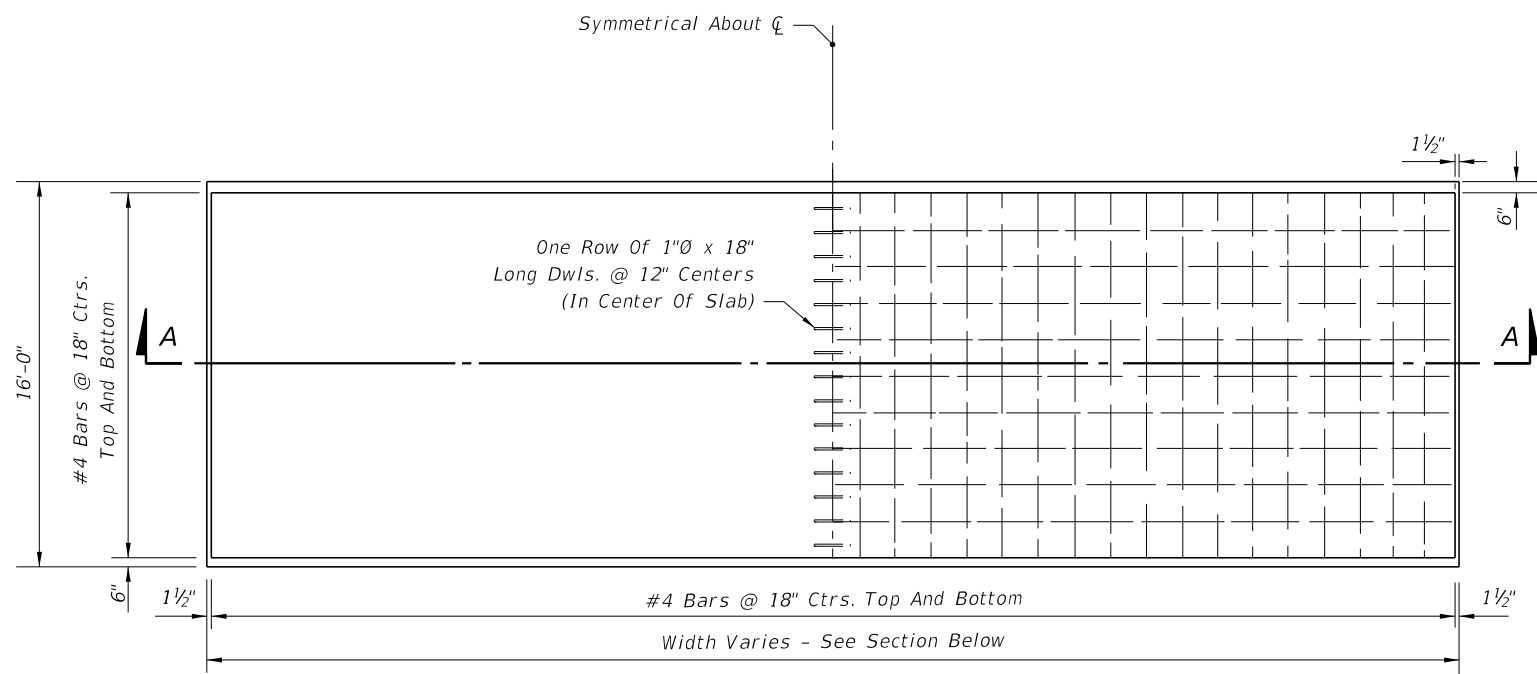
SIDE VIEW  
STEEL PLATFORM

STEEL PIPE AND WOOD SUPPORT POSTS

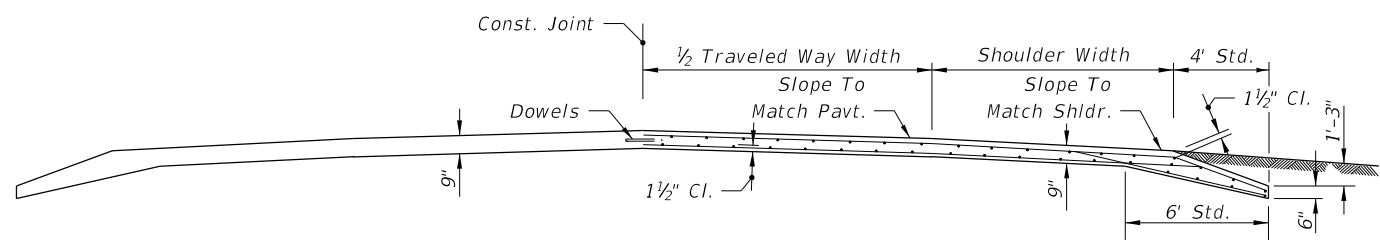
Note: See General Notes for finish requirements

10/12/2016 11:03:31 AM

LAST REVISION 07/01/00	REVISION	DESCRIPTION:	FDOT FY 2017-18 DESIGN STANDARDS	MAILBOXES	INDEX NO. 532	SHEET NO. 3 of 3
---------------------------	----------	--------------	--	-----------	------------------	---------------------



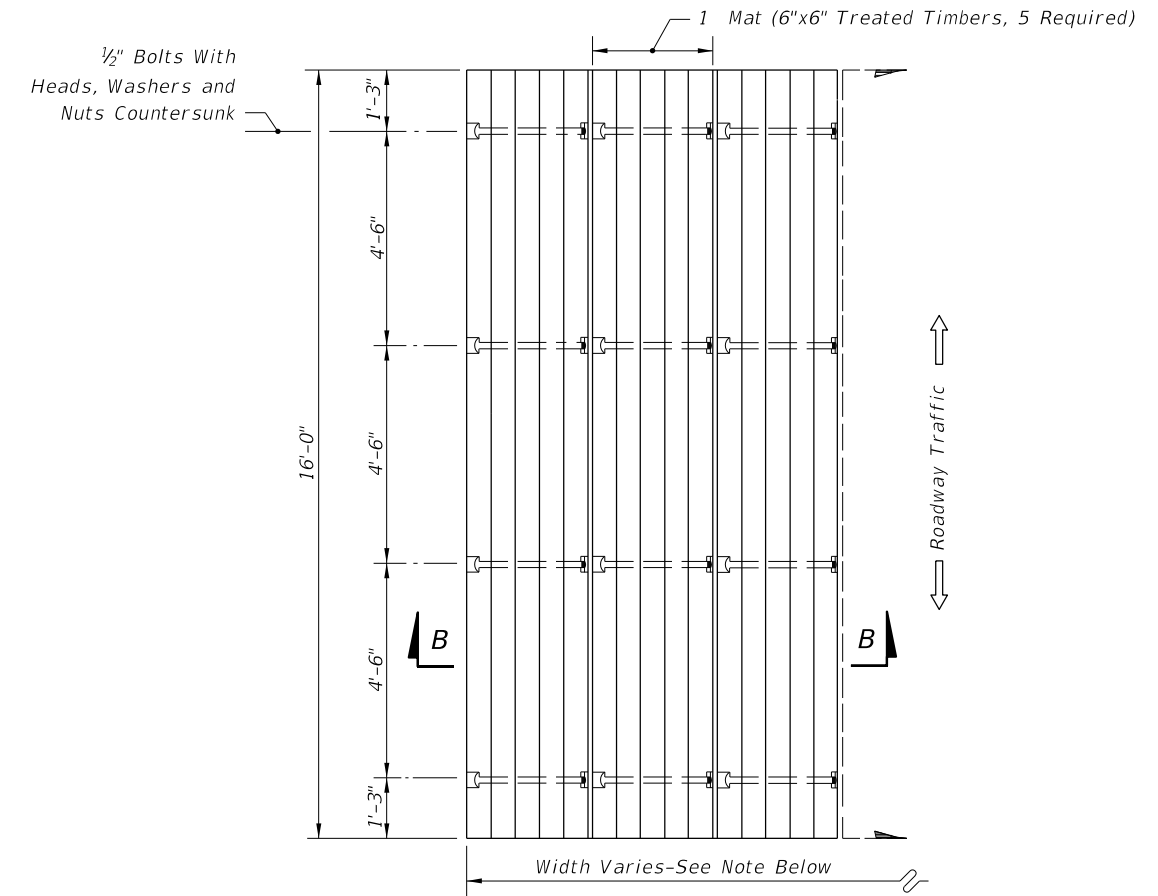
PLAN



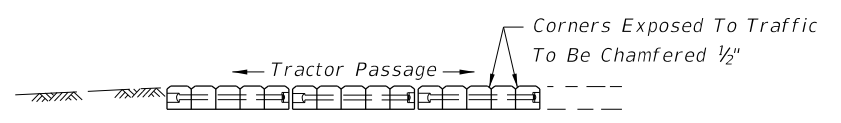
SECTION AA

Note: Class I concrete is to be used unless otherwise noted in plans or special provisions.

**REINFORCED CONCRETE  
TYPE A**



PLAN



SECTION BB

Note: Tractor crossing to be constructed to match pavement cross slope.

The number of mats required will vary with the pavement width. A sufficient number of mats will be used so that the tractor crossing will extend a minimum of four feet (4') beyond roadway shoulders.

**TREATED TIMBER  
TYPE B**

**GENERAL NOTES**

1. Tractor crossing shall be paid for under the contract unit price for Tractor Crossing, EA.

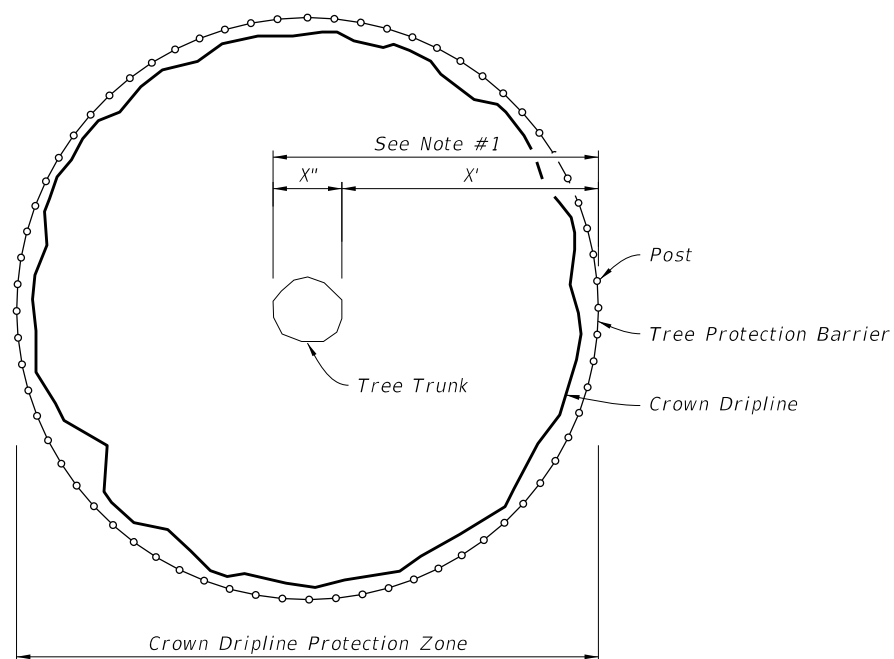
**TRACTOR CROSSINGS**

10/12/2016 11:03:52 AM

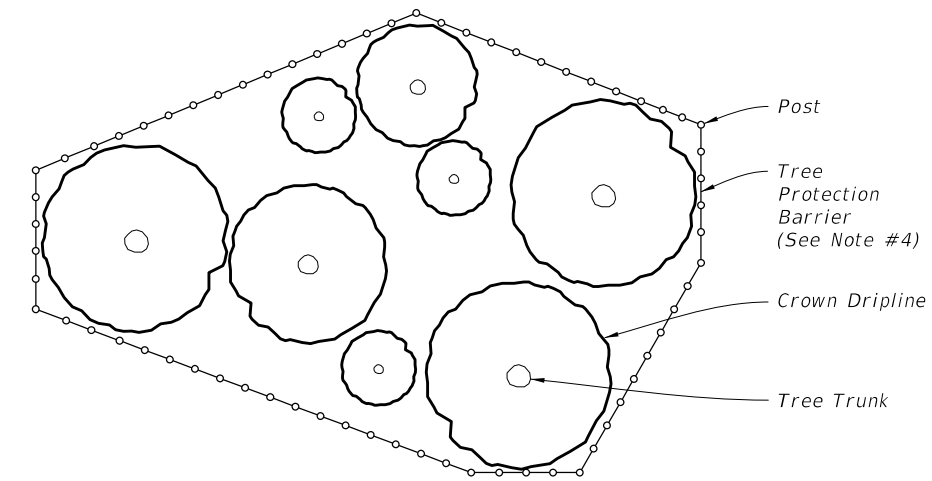
LAST REVISION 07/01/00	REVISION	DESCRIPTION:	 <b>FY 2017-18 DESIGN STANDARDS</b>	<b>TRACTOR CROSSINGS</b>	INDEX NO. <b>535</b>	SHEET NO. <b>1 of 1</b>
---------------------------	----------	--------------	---	--------------------------	-------------------------	----------------------------

**NOTES:**

1. Crown Dripline Protection Zone: Extends in all directions from trunk of tree to a distance equal to one foot per inch of trunk diameter at breast height.
2. Staging, storage, dumping, washing and operation of equipment is not permitted within the limits of the tree protection barrier, including during barrier installation.
3. Install all tree protection prior to commencement of construction and remove when directed by the engineer. Maintain protection at all times.
4. For closely spaced groups of trees, place the tree protection barrier around the entire group.
5. Inspect trunk protection and tree quarterly to prevent girdling. Adjust bands to allow tree growth as needed.
6. See plans for any additional requirements or modifications within the tree protection area.
7. Place weather resistant sign every 50' along the barrier, with 6" minimum text height and provide text in English and Spanish. Sign should read "Keep Out Tree Protection Area".
8. Alternate tree protection systems approved by the Engineer may be used in lieu of the tree protection barrier detailed on this Index.

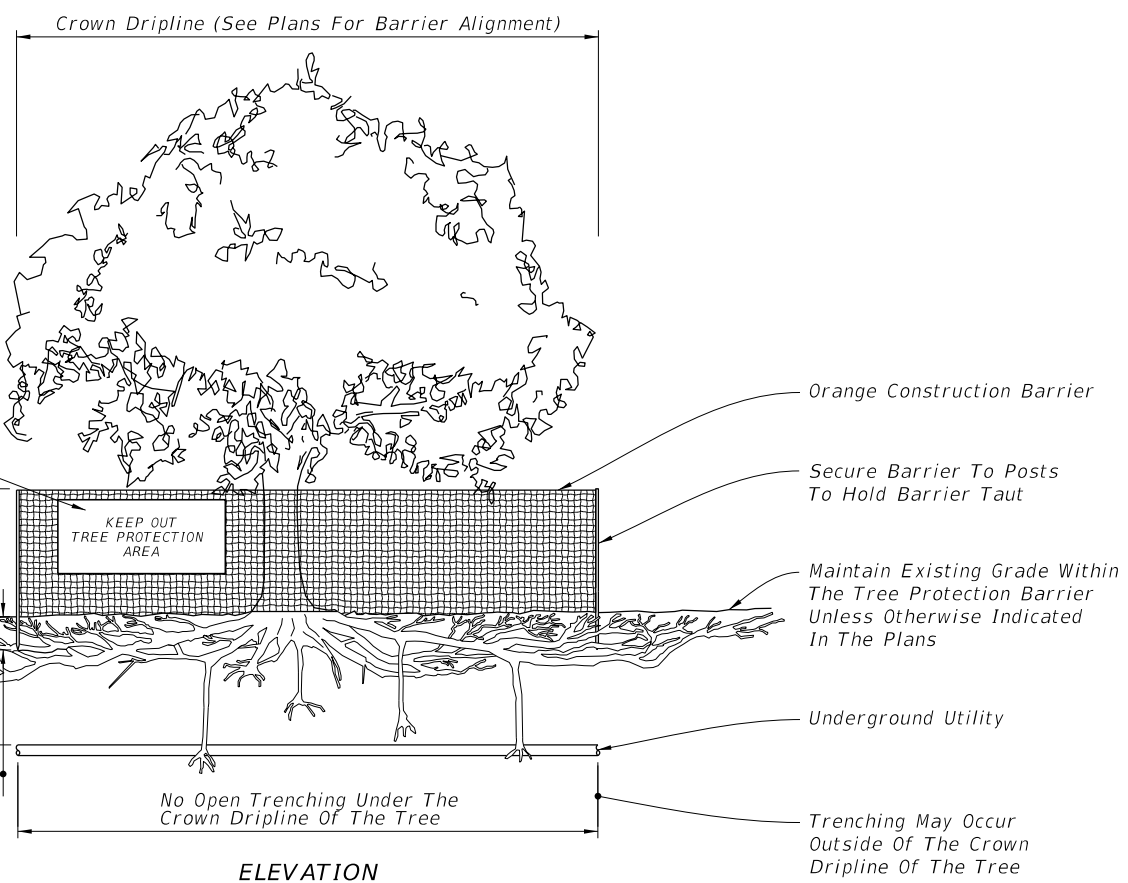


PLAN



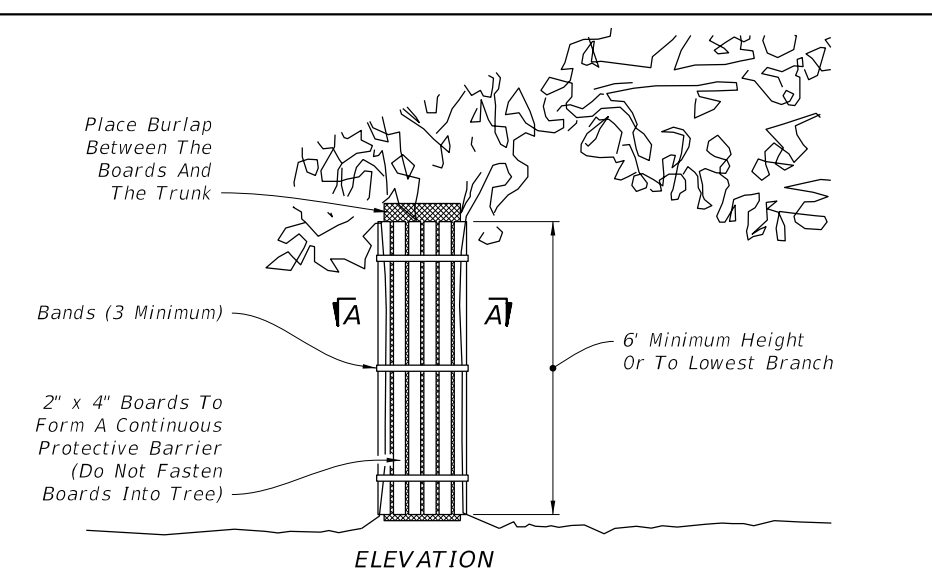
PLAN

PROTECTION BARRIER FOR TREE GROUPINGS

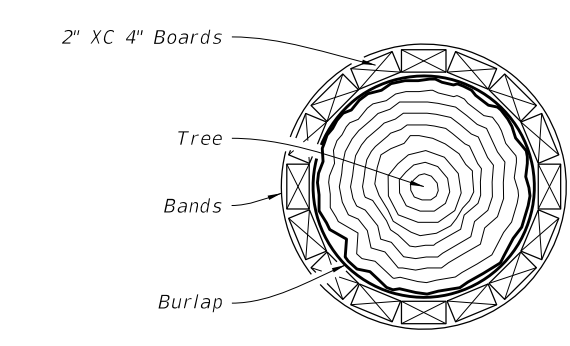


ELEVATION

TREE PROTECTION BARRIER



ELEVATION



SECTION A-A

**NOTES:**

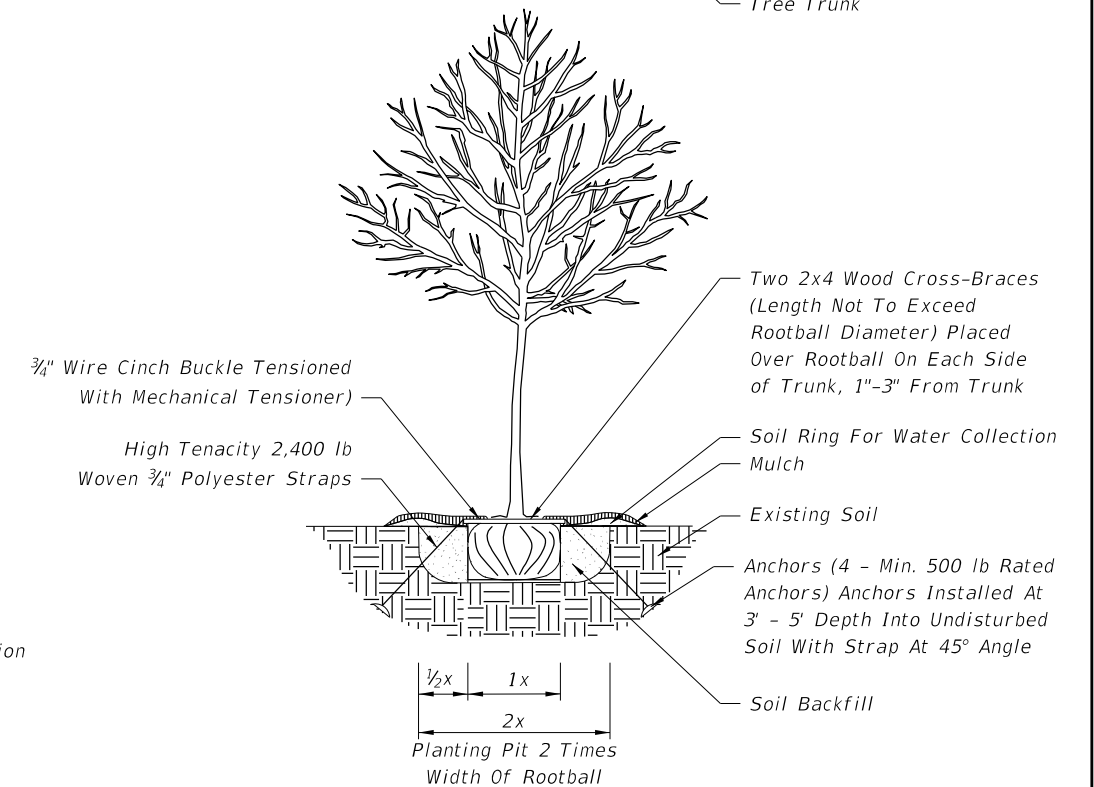
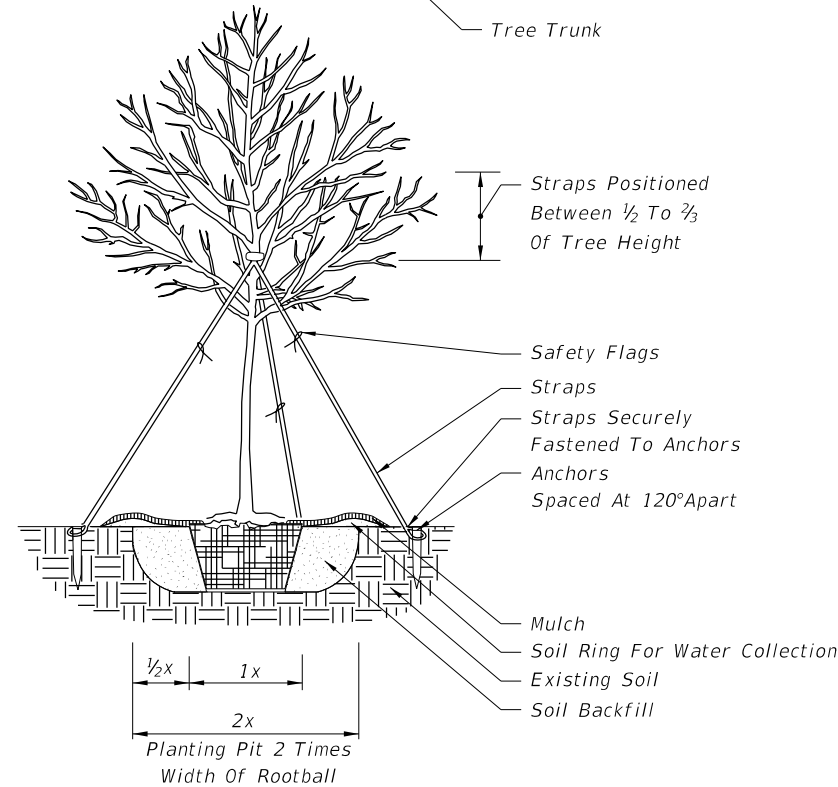
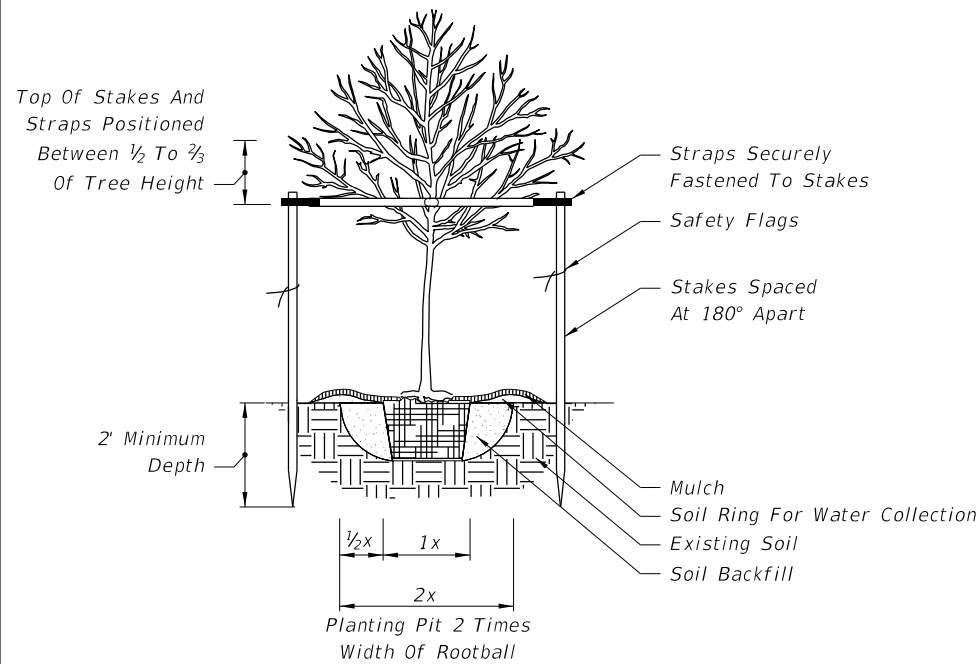
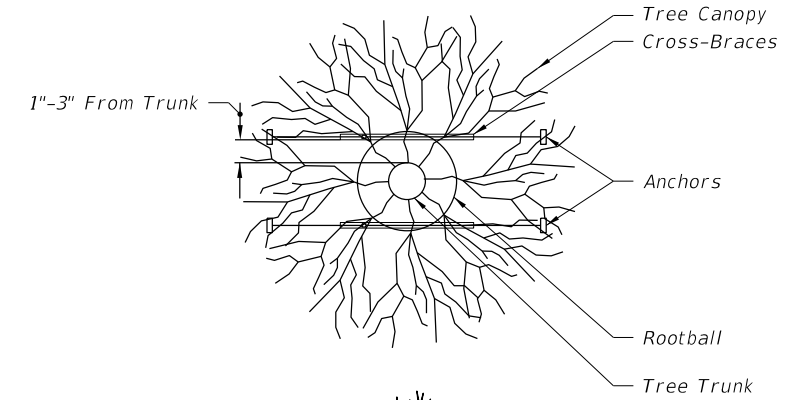
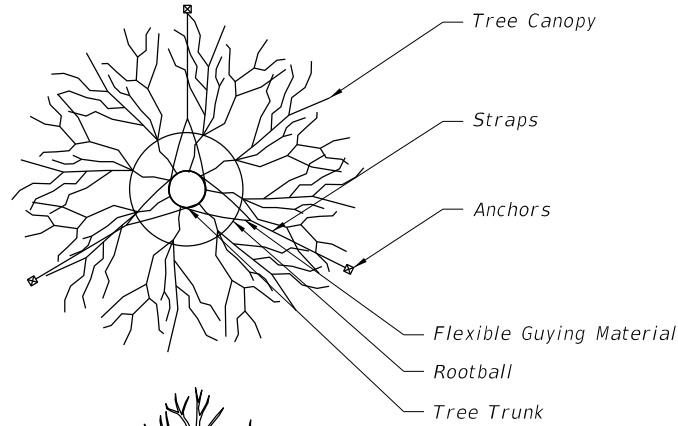
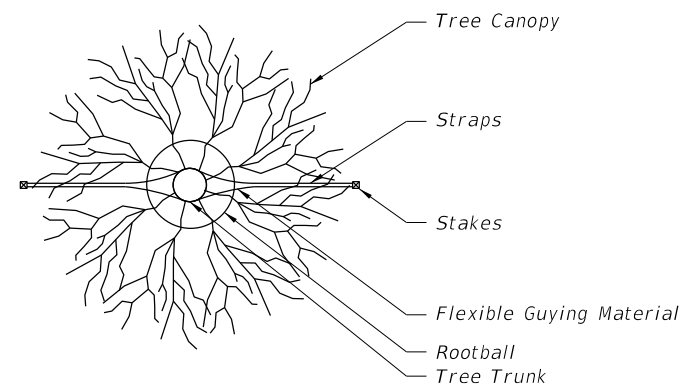
1. Install trunk protection when Tree Protection Barrier can not be reasonably erected.
2. See Selective Clearing and Grubbing Plan for location of trunk protection.
3. Adjust bands to allow tree growth (inspect quarterly to prevent girdling).

TRUNK PROTECTION

10/11/2016 9:24:43 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	TREE PROTECTION AND PRESERVATION	INDEX NO. 542	SHEET NO. 1 of 1
---------------------------	----------	--------------	------------------------------------	----------------------------------	------------------	---------------------





**UNDER 4" CALIPER TREE PLANTING**

**4" AND LARGER CALIPER TREE PLANTING**

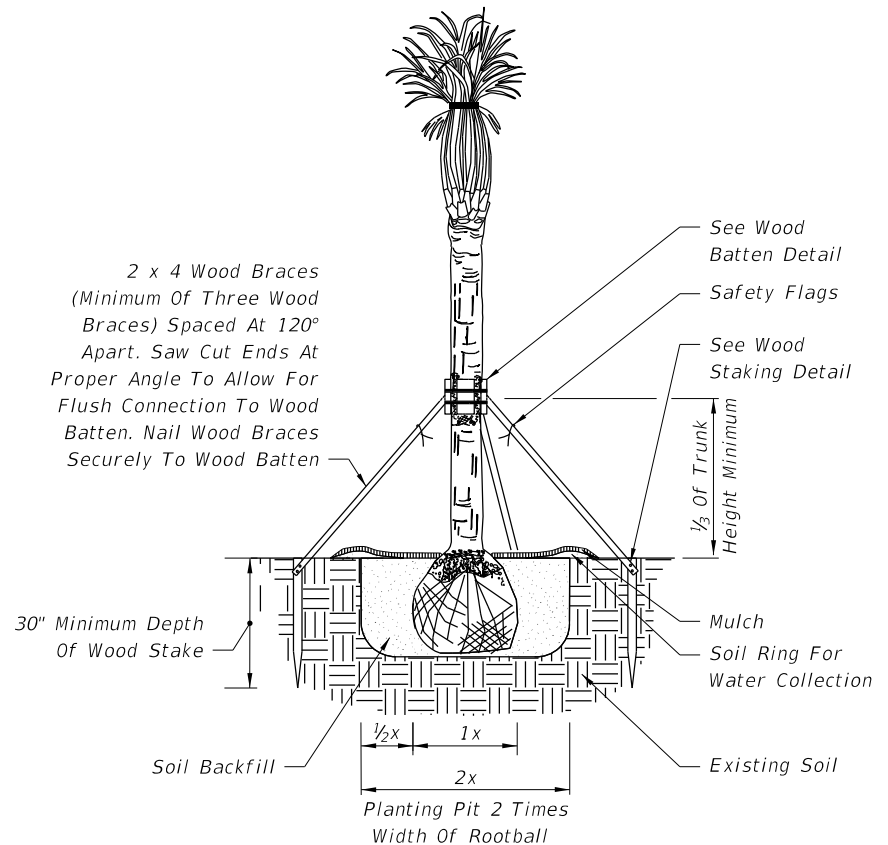
**UNDER 4" CALIPER TREE PLANTING WITH UNDERGROUND BRACING**

**GENERAL NOTES:**

- All dimensions 6" and less are exaggerated for illustrative purposes only.
- Plant containers shall be removed prior to planting. If plants are not container grown, remove a minimum of the top 1/3 of burlap, fabric, or wire mesh. Never lift or handle the tree by the trunk.
- The uppermost root on all trees shall be covered by less than 1" of soil. Use hand tools to carefully remove all excess soil. The top of root ball shall be set 1"-2" above finish grade after settling and set plumb to the horizon. If planting pit is too deep, remove the tree and firmly pack additional soil in the bottom of the planting pit to raise the rootball. After positioning the tree in the planting pit, slice through rootballs with 3 or 4 vertical slices (top to bottom) equally distributed around the tree.
- Backfill shall be loosened existing soil. Remove rocks, sticks, or other deleterious material greater than 1" in any direction prior to backfilling. Water and tamp to remove air pockets. If existing soils contain excessive sand, clay, or other material not conducive to proper plant growth, contact Engineer prior to planting.
- Soil rings shall be constructed of existing soil at the outer edge of the planting pit, with a height of 3" and gently sloping sides. Do not pile soil on top of rootball.
- Mulch shall be a 3" deep layer placed 2" off the edge of the trunk flare, around the base of shrub, or solidly around groundcover. Never pile mulch against the tree trunk.
- Straps shall be minimum 1" wide nylon or polypropylene. Check straps monthly and adjust as required to eliminate girdling of tree. All wood stakes or anchors shall be located beyond the edge of soil ring in undisturbed soil and located below finished grade, unless otherwise specified.
- Sabal Palms may be hurricane cut. All other palms must have fronds tied with biodegradable twine. Palm trunks shall have no burn marks, scars, or sanding.
- All dimensions provided for wood materials are nominal.
- When a permanent, subsurface, or drip irrigation system is provided, a soil ring is not required. Mulch to edge of planting pit.
- Alternate tree bracing and guying systems specified or approved by the Engineer may be used in lieu of the tree bracing and guying methods detailed on the Index.
- Remove above ground guying systems at the end of the establishment period.

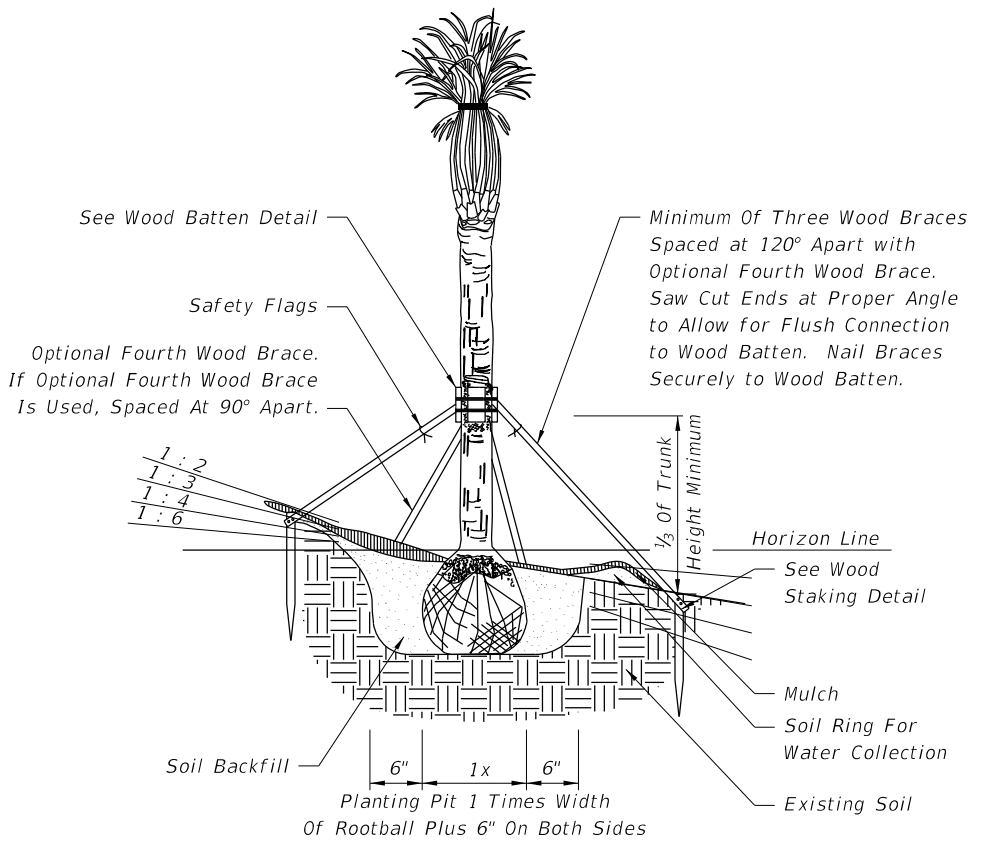
10/25/2016 8:27:41 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:	 <b>FY 2017-18</b> <b>DESIGN STANDARDS</b>	<b>LANDSCAPE INSTALLATION</b>	INDEX NO. <b>544</b>	SHEET NO. <b>1 of 2</b>
---------------------------	----------	--------------	--	-------------------------------	-------------------------	----------------------------



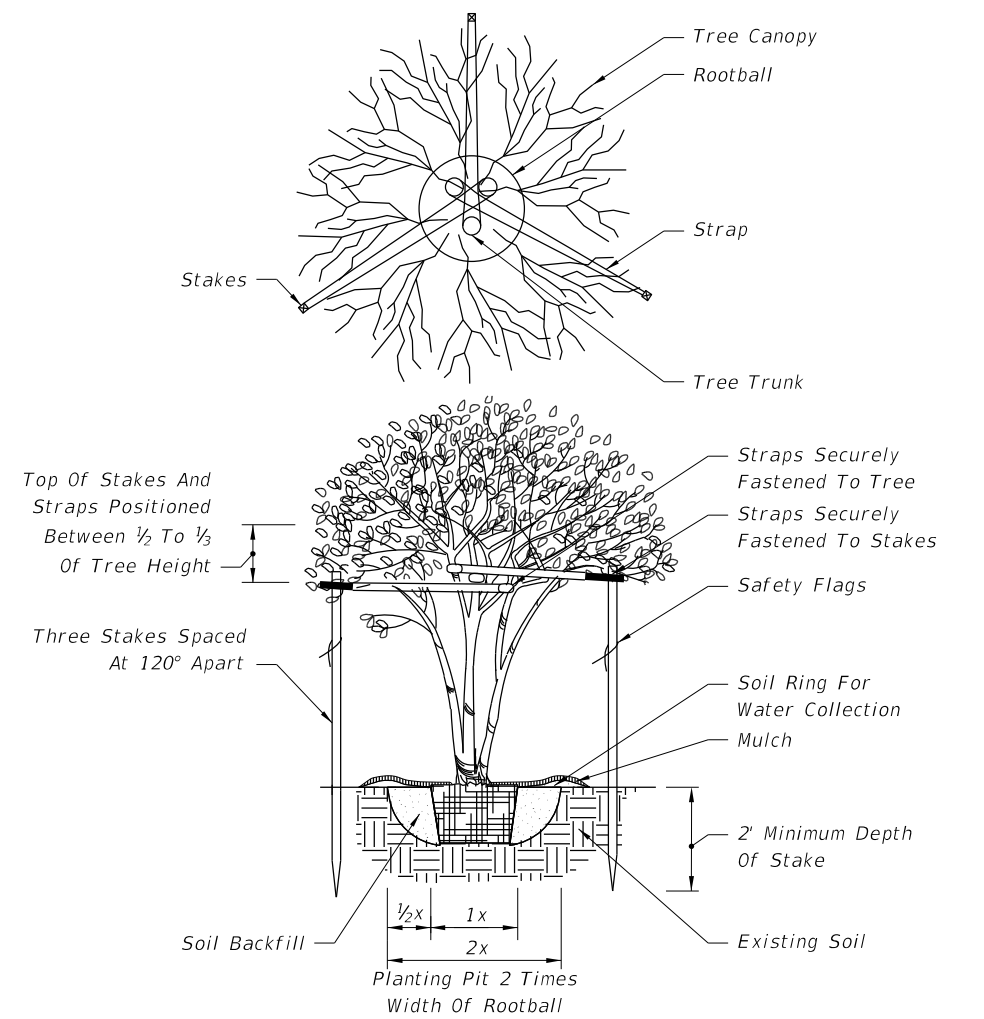
NOTE: For Palms Over 24' Clean Trunk, Use Detail Provided In Contract Plans.

**PALM PLANTING FOR UP TO 24' CLEAR TRUNK**

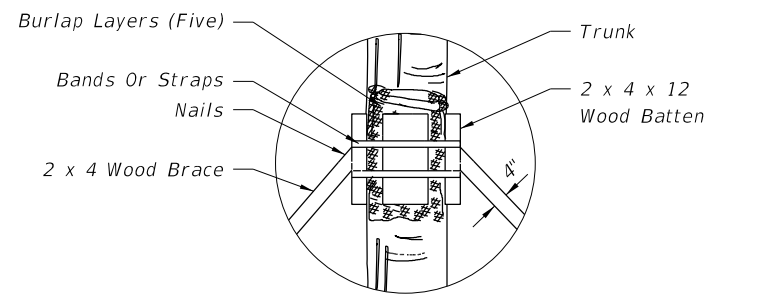


NOTES: Slope Provided As Rise:Run. For Palms Over 24' Clean Trunk, Use Detail Provided In Contract Plans.

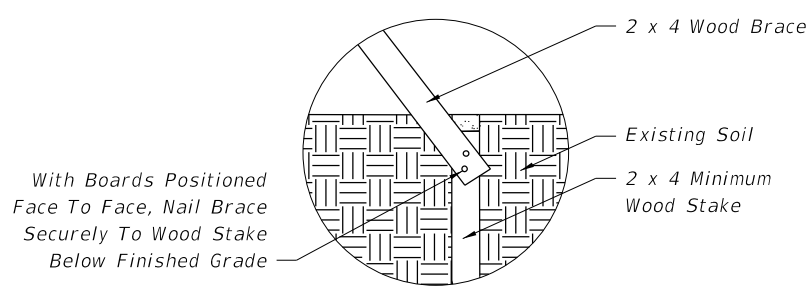
**PALM PLANTING ON SLOPE FOR UP TO 24' CLEAR TRUNK**



**MULTI-TRUNK TREE PLANTING**

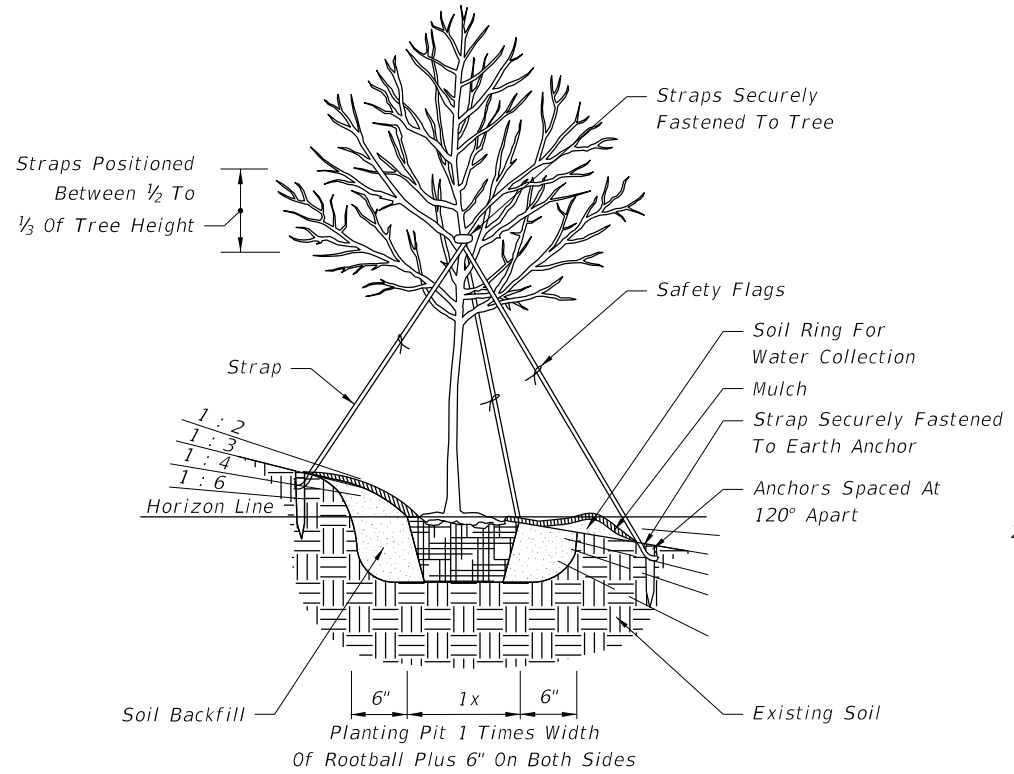


**WOOD BATTEN DETAIL**



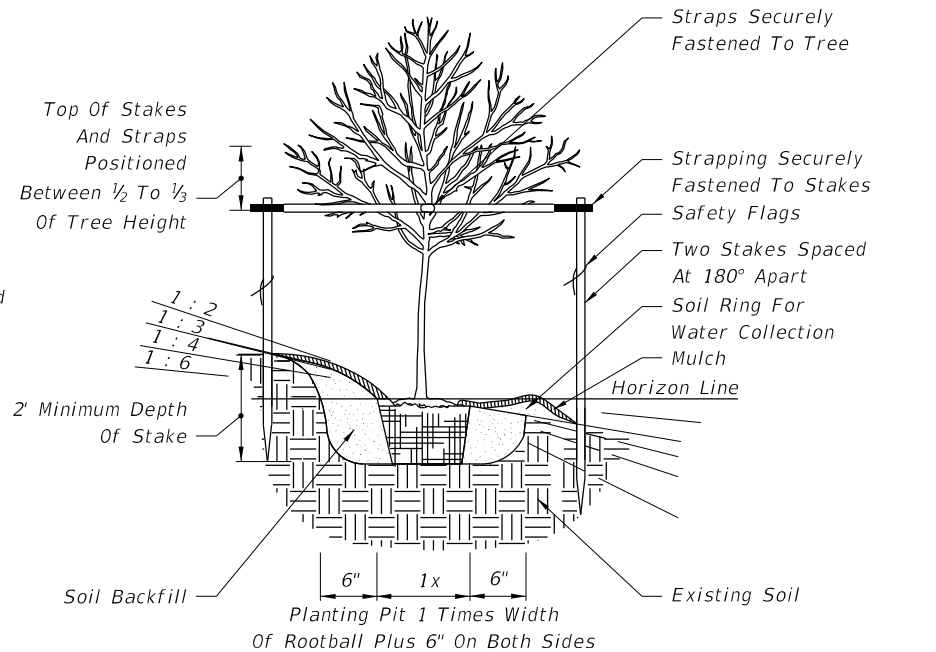
NOTE: Stake Into Firm, Existing Soil.

**WOOD STAKING DETAIL**



NOTE: Slope Provided As Rise:Run.

**4" AND LARGER CALIPER TREE PLANTING ON SLOPE**



NOTE: Slope Provided As Rise:Run.

**UP TO 4" CALIPER TREE PLANTING ON SLOPE**

10/11/2016 9:25:10 AM

LAST REVISION 11/01/16	REVISION	DESCRIPTION:	<b>FY 2017-18 DESIGN STANDARDS</b>	<b>LANDSCAPE INSTALLATION</b>	INDEX NO. <b>544</b>	SHEET NO. <b>2 of 2</b>
---------------------------	----------	--------------	--	-------------------------------	-------------------------	----------------------------

**DESIGN NOTES**

- The information shown on this index is intended solely for the purpose of clear sight development and maintenance at intersecting highways, roads, streets and driveways, and is not intended to be used to establish roadway and roadside safety except as related to clear sight corridors. An analysis of sight distance shall be documented for all intersections.
- For the purpose of this Index, Minor Road is defined as all intersecting highways, roads, streets and driveways.
- Details are based on the AASHTO 'A Policy On Geometric Design Of Highways And Streets, 2001', CHAPTER 9, INTERSECTION SIGHT DISTANCE, CASES B and F, and Department practices for channelized median openings (left turns from major road).
- The minimum driver eye setback of 14.5' from the edge of the traveled way may be adjusted on any intersection leg only when justified by a documented, site specific field study of vehicle stopping position and driver eye position.
- For SIGNALIZED INTERSECTIONS sight distances should be developed based on AASHTO 'Case D-Intersections With Traffic Signal Control'. 'At signalized intersections, the first vehicle stopped on one approach should be visible to the driver of the first vehicle stopped on each of the other approaches. Left turning vehicles should have sufficient sight distance to select gaps in oncoming traffic and complete left turns. Apart from these sight conditions, there are generally no other approach or departure sight triangles needed for signalized intersections. However, if the traffic signal is to be placed on two-way flashing operation (i.e. flashing yellow on the major road approaches and flashing red on the minor road approaches) under off peak or nighttime conditions, then the appropriate departure sight triangles for Case B, both to the left and to the right, should be provided for the minor road approaches. In addition, if right turns on a red signal are to be permitted from any approach, then the appropriate departure sight triangle to the left for Case B2 should be provided to accommodate right turns from that approach.'
- Where curvature, superelevation, adverse split profiles or other conditions preclude the use of standard tree sizes and spacing, proof of view and shadowing restraints must be documented and the size and location of trees in medians detailed in the plans.
- Intersection sight distance values are provided for Passenger Vehicles, SU Vehicles and Combination Vehicles. Intersection sight distance based on the Passenger Vehicle is suitable for most intersections. Where substantial volumes of heavy vehicles enter the major road, such as from ramp terminals with stop control or roadways serving truck terminals, the use of tabulated values for SU Vehicles or Combination Vehicles should be considered.

**TREE SPACING TABLE \*\***

Description  Diameter (Within Limits Of Sight Window)	Design Speed (mph)													
	30		35		40		45		50		55		60	
	(Inches)													
	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18
	(Feet)													
Minimum Spacing (c. to c. Of Trunk)	25	90	30	105	35	120	40	135	50	150	55	165	60	180

\*\* Sizes and spacings are based on the following conditions:

- A single line of trees in the median parallel to but not necessarily colinear with the centerline.
- A straight approaching mainline, within skew limits as described in No. 2 above.
1. Trees and palms ≤ 11" in diameter casting a vertical 6' wide shadow band on a vehicle entering at stop bar location when viewed by mainline driver beginning at distance 'd'; see SHADOW DIAGRAM, Sheet 2.  
2. Sabal palms with diameters > 11" ≤ 18" spaced at intervals providing a 2 second full view of entering vehicle at stop bar location when viewed by the mainline driver beginning at distance 'd'; see PERCEPTION DIAGRAM, Sheet 2.
- Trees with diameters ≤ 11" intermixed with trees with diameters > 11" ≤ 18" are to be spaced based on trees with diameters > 11" ≤ 18".

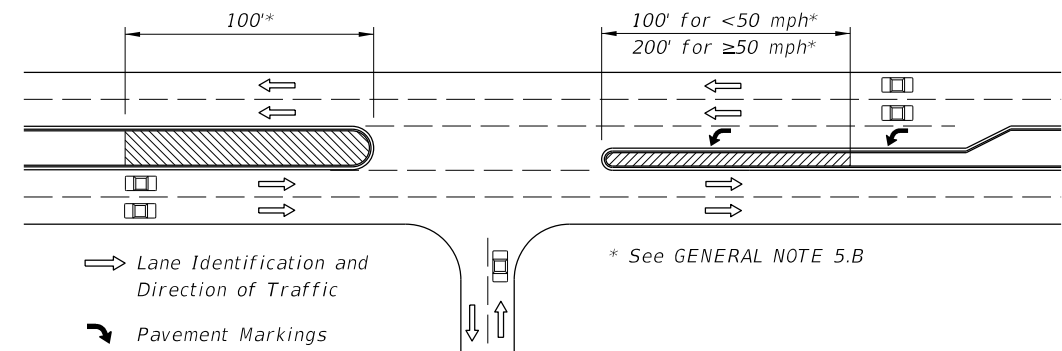
For any other conditions the tree sizes, spacings and locations shall be detailed in the plans; see Design Note 5.

**GENERAL NOTES**

- Details apply to both rural and urban intersections under stop sign control or flashing beacon control. For full signal controlled intersections see Design Note No 4. At intersections listed in the Department's High Crash Intersection Report, designers shall give attention to keeping to a minimum, objects that distract or affect sight distance.
- Sight distance 'd' applies to normal and skewed intersections (intersecting angles between 60° and 120°), and where vertical and/or horizontal curves are not present. Sight distance 'd' is measured along the major road from the center of the entrance lane of the minor road to the center of the near approach lane (right or left) of the major road. Distances 'd<sub>L</sub>' and 'd<sub>r</sub>' are measured from the centerline of the entrance lane of the minor road to a point on the edge of the near side outer traffic lane on the major road. Distance 'd<sub>m</sub>' is measured from the centerline of the entrance lane of the minor road to a point on the median clear zone limit or horizontal clearance limit for the far side road of the major road.
- A. The limits of clear sight define a corridor throughout which a clear sight window must be preserved. See WINDOW DETAIL, Sheet 2.  
B. Clear sight must be provided between vehicles at intersection stop locations, and vehicles on the major road within dimension 'd'.  
C. Since observations are made in both directions along the line of sight, the reference datum between roadways is 3'-6" above respective pavements.
- Barrier systems within intersection sight corridors, where penetration into the sight window might occur, shall be located to provide the least adverse affect practical.
- The corridor defined by the limits of clear sight is a restricted planting area. Drivers of vehicles on the intersecting road and vehicles on the major road must be able to see each other clearly throughout the limits of 'd' and 'd<sub>a</sub>'. If in the Engineers judgement, landscaping interferes with the line of sight corridor prescribed by these standards the Engineer may rearrange, relocate or eliminate plantings. Plants within the restricted areas are limited to selections as follows:

- (Cont.)  
Ground Cover & Trunked Plants (Separate or Combined):  
Ground Covers - Plant selection of low growing vegetation which at maturity does not attain a height greater than 18" below the sight line datum. For ground cover in combination with trees and palms; the following heights below the sight line datum will apply:  
24" for trees and palms = 11" dia.; and, 18" for sabal palms >11" but = 18" dia. (dia.-within Sight Window).  
Trunked Plants - Plant selection of a mature trunk diameter 4" or less measured at 6" above the ground. Canopy or high borne foliage shall never be lower than 5' above the sight line datum. These selections shall be spaced no closer than 20'.  
Trees - Trees can be installed with sod; pavers; gravel, mulch; ground covers or other Department-approved material. The clear sight window must be in conformance with the 'WINDOW DETAIL' modified to attain the height requirements listed in 'Ground Covers' above.  
A. Size and spacing shall conform to the Tree Spacing Table.  
B. Requirements for placement within medians at median openings and at unsignalized and signalized intersections:  
a. The lateral offset of the mature specimen must be maintained as specified in the PPM, Vol. 1, Chapter 4. Specimens whose mature trunk diameter is greater than 18" shall not be permitted,  
b. Where left turns from the major road are permitted, no trees shall be located within the distance 'd<sub>b</sub>', Sheet 2 of 6; and not less than the distances called for in (c) or (d), as applicable,  
c. For safety, these additional setbacks are required:

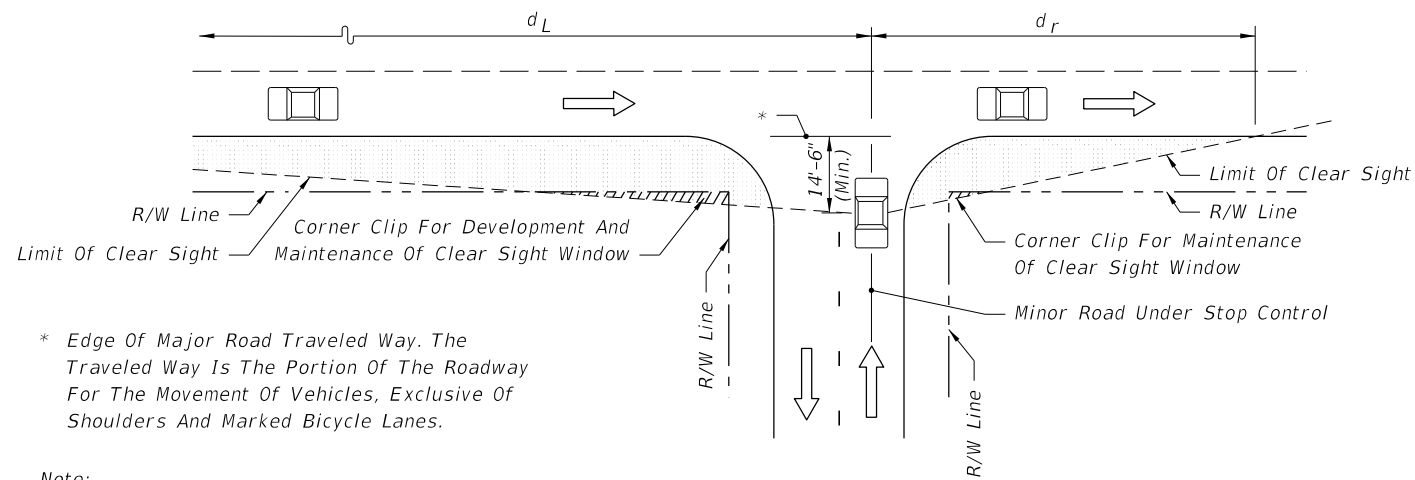
- Where no left turn lane is present, size and spacing shall conform to the Tree Spacing Table. No trees shall be permitted within 100' of the restricted median nose (measured from the edge of pavement),
- Where left turn lane(s) are present, the following requirements apply:
  - For low speed facilities (design speed less than 50 mph), size and spacing shall conform to the Tree Spacing Table. No trees shall be permitted within 100' of the restricted median nose (measured from the edge of pavement).
  - For high speed facilities (design speed 50 mph or greater), no trees shall be permitted within 200' of the restricted median nose. Beyond this limit, size and spacing shall conform to the Tree Spacing Table.



**PLAN**  
**Special Areas Limited to Ground Cover**

11/11/2016 10:59:23 AM

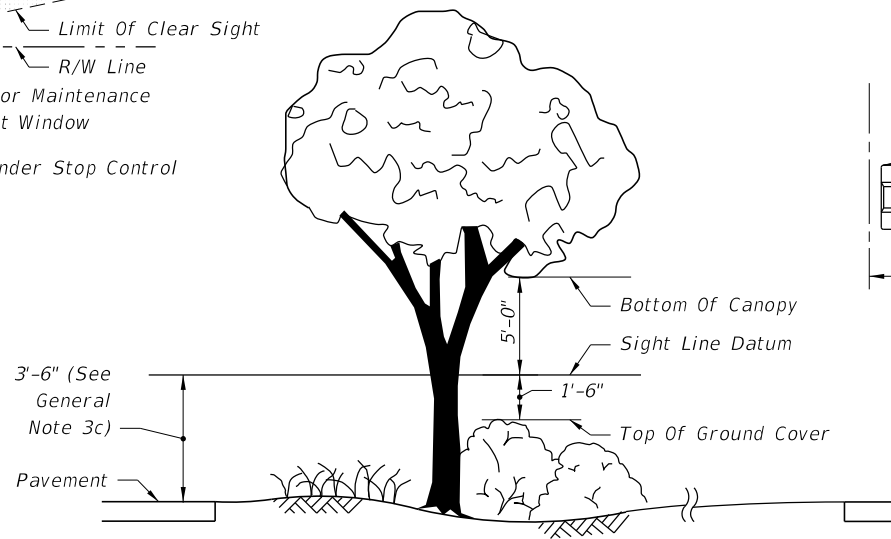
LAST REVISION 11/01/16	REVISION	DESCRIPTION:	<b>FY 2017-18 DESIGN STANDARDS</b>	<b>SIGHT DISTANCE AT INTERSECTIONS</b>	INDEX NO. <b>546</b>	SHEET NO. <b>1 of 6</b>
---------------------------	----------	--------------	--	--	-------------------------	----------------------------



\* Edge Of Major Road Traveled Way. The Traveled Way Is The Portion Of The Roadway For The Movement Of Vehicles, Exclusive Of Shoulders And Marked Bicycle Lanes.

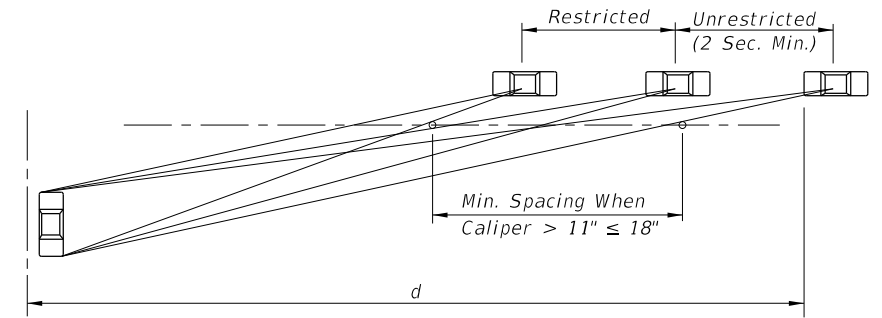
Note:  
Lines For 'Limit Of Clear Sight' Are Opposite Hand When Major Road Near Lane Traffic Moving Left (e.g., One-Way Left).

PICTORIAL  
ORIGIN OF CLEAR SIGHT LINE  
ON MINOR ROAD

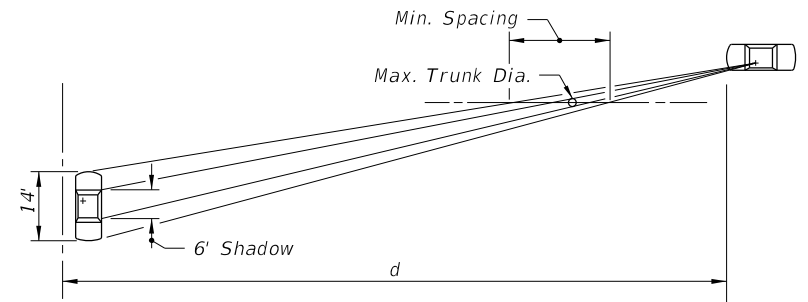


The Intent Of This Standard Is To Provide A Window With Vertical Limits Of Not Less Than 5' Above And 1'-6" Below The Sight Line Datum, And Horizontal Limits Defined By The Limits Of Clear Sight.

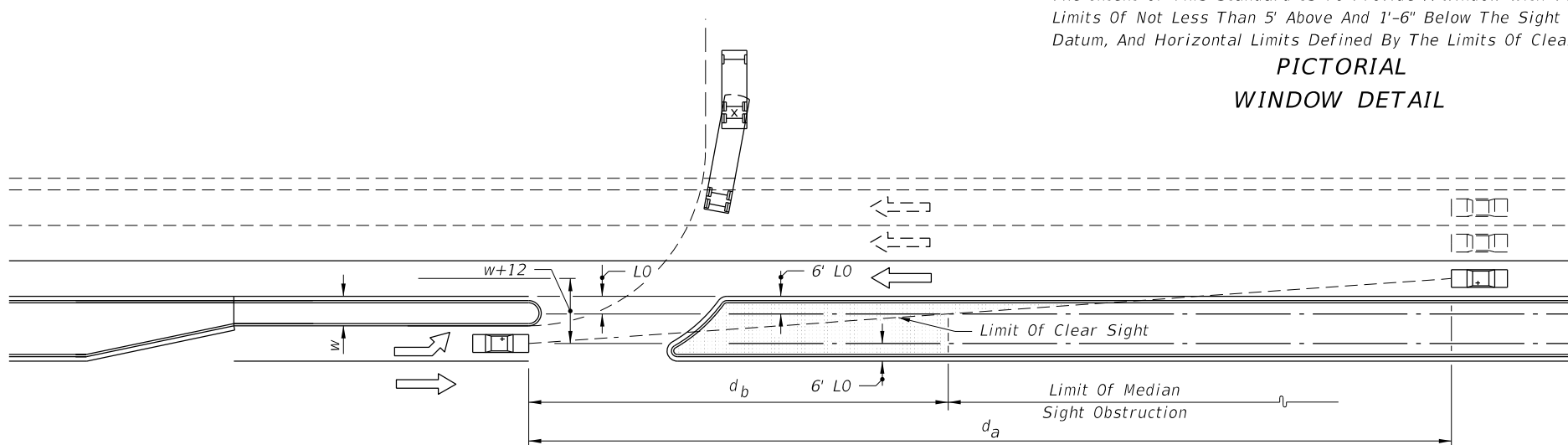
PICTORIAL  
WINDOW DETAIL



PERCEPTION DIAGRAM  
SETTING SABAL PALM (STATE TREE) SPACING



SHADOW DIAGRAM



PICTORIAL

Design Speed MPH	$d_a$ (Feet)								
	1 Lane Crossed			2 Lanes Crossed			3 Lanes Crossed		
	P	SU	Comb.	P	SU	Comb.	P	SU	Comb.
30	245	290	330	265	320	365	290	350	395
35	285	335	385	310	370	425	335	410	460
40	325	385	440	355	425	485	385	465	525
45	365	430	495	400	475	545	430	525	590

☆ See Note

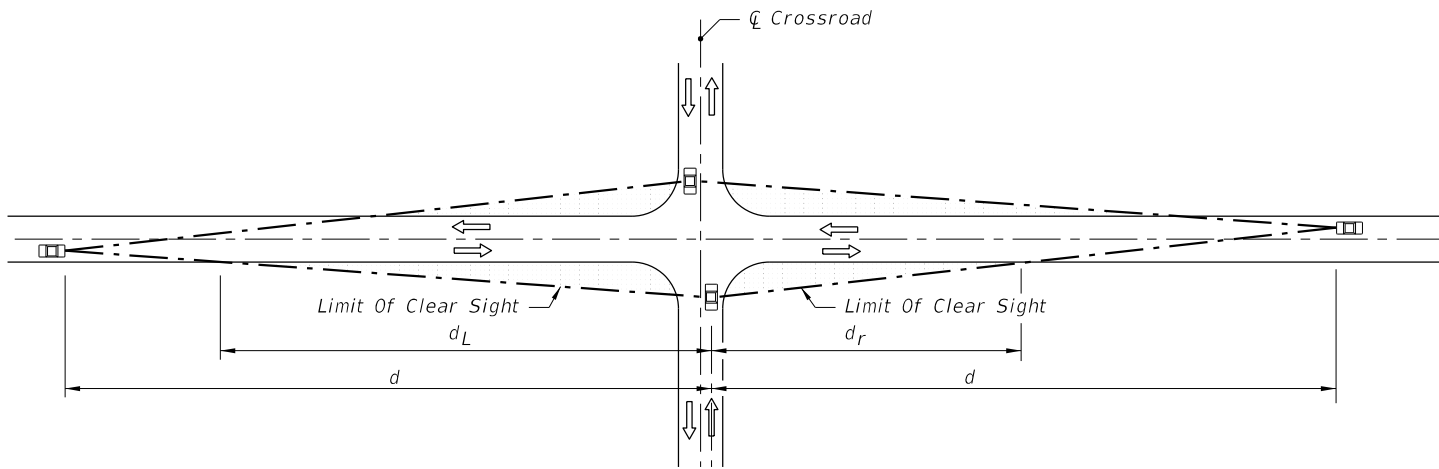
☆ The  $d_a$  values in this table were established by the method referenced in Design Note 3, and are applicable to urban, predominantly curbed roadways with design speeds of 45 mph or less. For lateral offset (LO) of 6', the values for  $d$  may be determined by the equation  $d_b = d_a (w/(w+12))$ . For all other roadways  $d_a$  and  $d_b$  should be based on the geometry for the left turn storage and on clear zone widths (See PPM, Vol. 1, Chapter 4).

For wide medians where the turning vehicle can approach the through lanes at or near 90°, use  $d$  values from tables on sheets 5 or 6. (The clear sight line origin is assumed to be 14'-6" from the edge of the near lane.)

LEGEND  
 Areas Free Of Sight Obstructions

CHANNELIZED DIRECTIONAL MEDIAN OPENINGS

11/11/2016 10:59:26 AM



Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	335	240	155
35	390	275	175
40	445	315	200
45	500	355	225
50	555	395	250
55	610	435	275
60	665	470	300
65	720	510	325

Passenger Vehicle

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	420	300	190
35	490	350	220
40	560	400	250
45	630	450	285
50	700	495	315
55	770	545	345
60	840	595	375
65	910	645	410

SU Vehicle

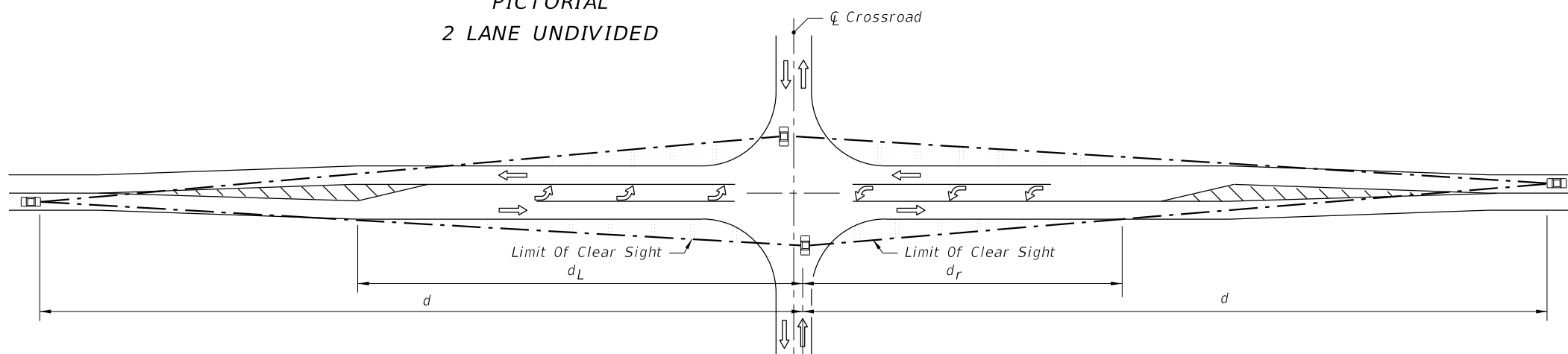
Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	510	365	230
35	595	420	265
40	680	480	305
45	765	545	345
50	845	600	380
55	930	660	415
60	1015	720	455
65	1100	780	495

Combination Vehicle

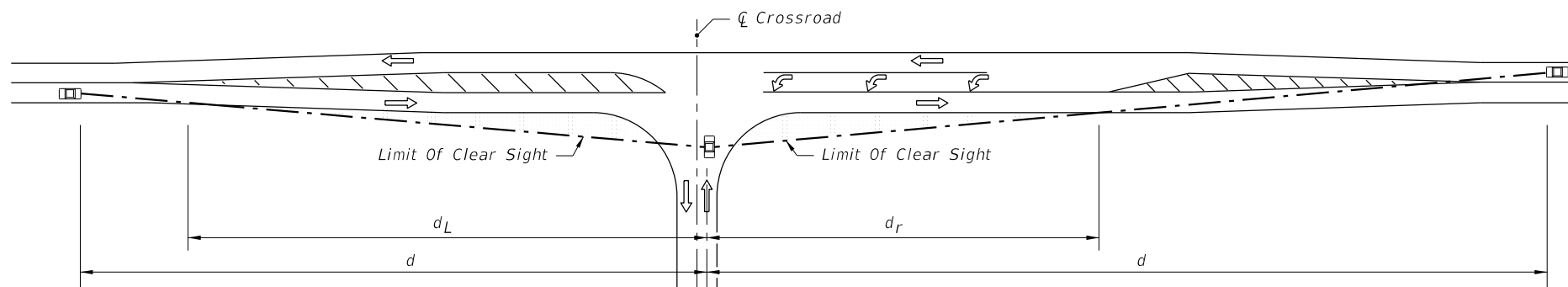
SIGHT DISTANCE (d) AND RELATED DISTANCES (d<sub>L</sub>, d<sub>r</sub>) (FEET)

2 LANE UNDIVIDED

PICTORIAL  
2 LANE UNDIVIDED



PICTORIAL  
2 LANE 2 WAY • FLARED FOR OPPOSING LEFT TURN CENTERED ON ALIGNMENT



PICTORIAL  
2 LANE 2 WAY • FLARED FOR SINGLE SIDE LEFT TURN CENTERED ON ALIGNMENT

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	355	195	135
35	415	230	160
40	475	260	180
45	530	290	200
50	590	325	225
55	650	355	245
60	710	390	270
65	765	420	290

Passenger Vehicle

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	450	250	170
35	525	290	200
40	600	330	230
45	675	370	255
50	750	410	285
55	825	455	315
60	900	495	340
65	975	535	370

SU Vehicle

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	540	295	205
35	630	345	240
40	720	395	275
45	810	445	305
50	900	495	340
55	990	545	375
60	1080	590	410
65	1170	640	440

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d<sub>L</sub>, d<sub>r</sub>) (FEET)

2 LANE 2 WAY • FLARED FOR LEFT TURNS

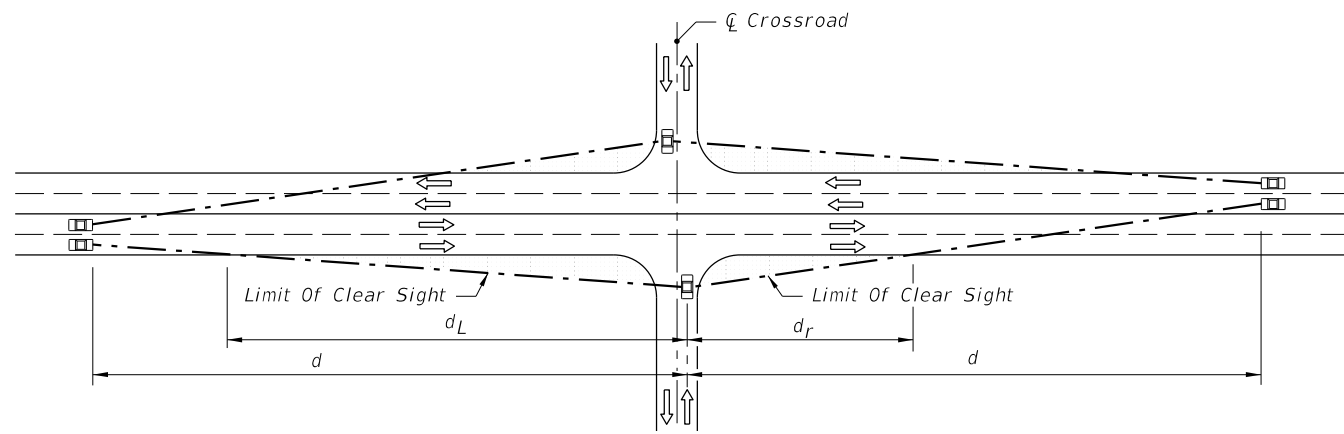
LEGEND

Areas Free Of Sight Obstructions

NOTE: See Sheet 2 for intersecting roadway origin of clear sight and quadrant corner clips.

11/1/2016 10:59:30 AM

LAST REVISION 07/01/14	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	SIGHT DISTANCE AT INTERSECTIONS	INDEX NO. <b>546</b>	SHEET NO. <b>3 of 6</b>
---------------------------	----------	--------------	------------------------------------	---------------------------------	-------------------------	----------------------------



PICTORIAL  
4 LANE UNDIVIDED

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	355	255	120
35	415	295	135
40	475	335	155
45	530	375	175
50	590	420	195
55	650	460	215
60	705	500	230
65	765	545	250

Passenger Vehicle

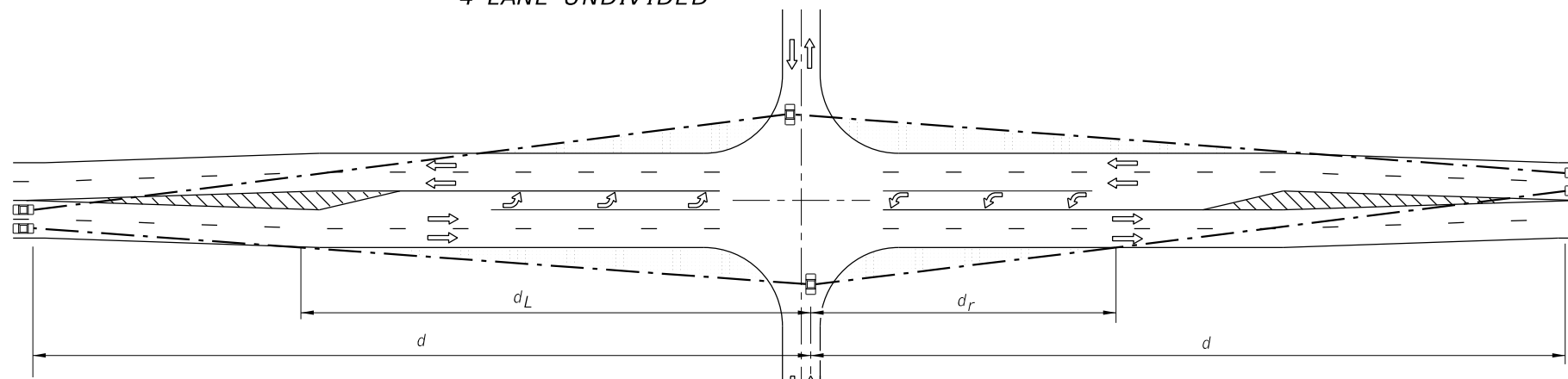
Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	450	320	150
35	525	375	175
40	600	425	200
45	675	480	220
50	750	530	245
55	825	585	270
60	900	640	295
65	975	690	320

SU Vehicle

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	540	385	180
35	630	450	205
40	720	510	235
45	810	575	265
50	900	640	295
55	990	700	325
60	1080	765	355
65	1170	830	385

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d<sub>L</sub>, d<sub>r</sub>) (FEET)  
4 LANE UNDIVIDED



PICTORIAL  
4 LANE UNDIVIDED FLARED - SYMMETRICAL

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	375	205	110
35	440	245	130
40	500	275	145
45	565	310	165
50	625	345	180
55	690	380	200
60	750	410	215
65	815	450	235

Passenger Vehicle

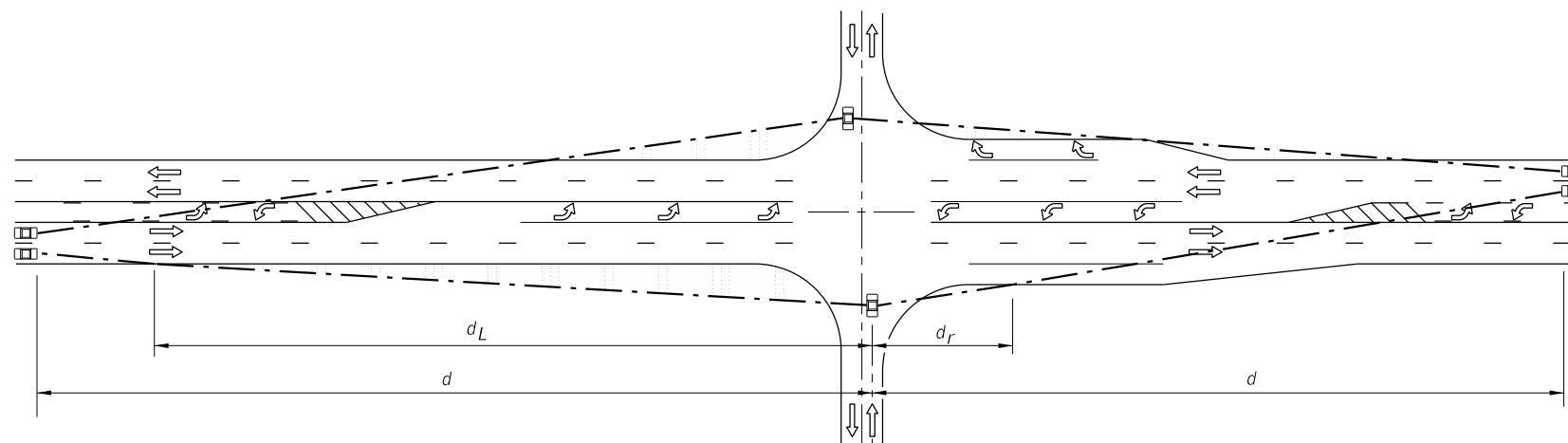
Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	480	265	140
35	560	310	165
40	640	350	185
45	720	395	210
50	800	440	230
55	880	485	255
60	960	525	280
65	1040	570	300

SU Vehicle

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	570	315	165
35	665	365	195
40	760	420	220
45	855	470	245
50	950	520	275
55	1045	575	300
60	1140	625	330
65	1235	675	355

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d<sub>L</sub>, d<sub>r</sub>) (FEET)  
4 LANE UNDIVIDED FLARED - SYMMETRICAL



PICTORIAL  
4 LANE UNDIVIDED WITH OPTIONAL LANE

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	375	265	80
35	440	315	95
40	500	355	110
45	565	400	120
50	625	445	135
55	690	490	150
60	750	530	160
65	815	580	175

Passenger Vehicle

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	480	340	105
35	560	400	120
40	640	455	135
45	720	510	155
50	800	570	170
55	880	625	190
60	960	680	205
65	1040	740	220

SU Vehicle

Design Speed	d	d <sub>L</sub>	d <sub>r</sub>
30	570	405	125
35	665	470	145
40	760	540	165
45	855	605	185
50	950	675	205
55	1045	740	225
60	1140	810	245
65	1235	875	265

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d<sub>L</sub>, d<sub>r</sub>) (FEET)  
4 LANE UNDIVIDED WITH OPTIONAL LANE

LEGEND

Areas Free Of Sight Obstructions

NOTE: See Sheet 2 for intersecting roadway origin of clear sight and quadrant corner clips.

11/1/2016 10:59:34 AM

MEDIAN 22' OR LESS				
Design Speed	d	d <sub>L</sub>	d <sub>r</sub>	d <sub>m</sub>
30	395	280	90	325
35	460	325	100	380
40	525	375	115	430
45	590	420	130	485
50	655	465	145	540
55	720	510	160	590
60	785	555	175	645
65	850	605	185	700

25'-64' MEDIAN				
Design Speed	d	d <sub>L</sub>	d <sub>v</sub>	d <sub>vL</sub>
30	355	255	330	240
35	415	295	390	280
40	470	335	445	320
45	530	375	500	360
50	590	420	550	400
55	650	460	610	440
60	705	500	665	480
65	765	545	720	520

**PASSENGER VEHICLE (P)**

MEDIAN 35' OR LESS				
Design Speed	d	d <sub>L</sub>	d <sub>r</sub>	d <sub>m</sub>
30	540	385	110	460
35	630	450	125	535
40	720	510	145	615
45	810	575	160	685
50	900	640	180	760
55	990	700	195	840
60	1080	765	215	915
65	1170	830	230	990

40'-64' MEDIAN				
Design Speed	d	d <sub>L</sub>	d <sub>v</sub>	d <sub>vL</sub>
30	450	320	420	330
35	525	375	490	385
40	600	425	560	440
45	675	480	630	490
50	750	530	700	545
55	825	585	770	600
60	900	640	840	655
65	975	690	910	710

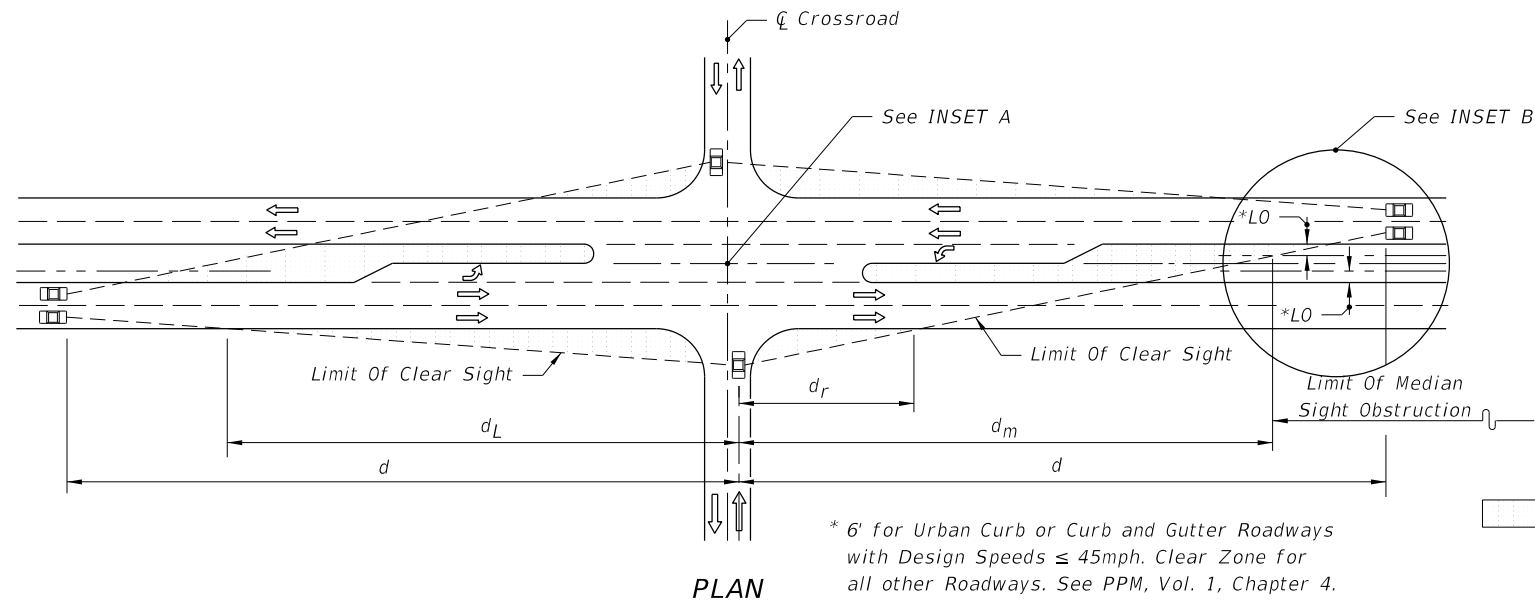
**SINGLE-UNIT TRUCK (SU)**

MEDIAN 30' OR LESS				
Design Speed	d	d <sub>L</sub>	d <sub>r</sub>	d <sub>m</sub>
30	615	435	120	520
35	720	510	140	605
40	820	580	160	690
45	925	655	180	780
50	1025	725	200	860
55	1130	800	220	950
60	1230	870	240	1035
65	1335	945	260	1120

35'-50' MEDIAN				
Design Speed	d	d <sub>L</sub>	d <sub>r</sub>	d <sub>m</sub>
30	670	475	105	585
35	780	555	120	680
40	890	630	140	780
45	1000	710	155	875
50	1110	790	170	970
55	1225	870	190	1070
60	1335	945	205	1165
65	1445	1025	225	1265

64' MEDIAN				
Design Speed	d	d <sub>L</sub>	d <sub>v</sub>	d <sub>vL</sub>
30	540	385	510	435
35	630	450	595	500
40	720	510	680	575
45	810	575	760	645
50	900	640	845	720
55	990	700	930	790
60	1080	765	1015	865
65	1165	825	1100	935

**INTERMEDIATE SEMI-TRAILERS (WB-40 & WB-50)**

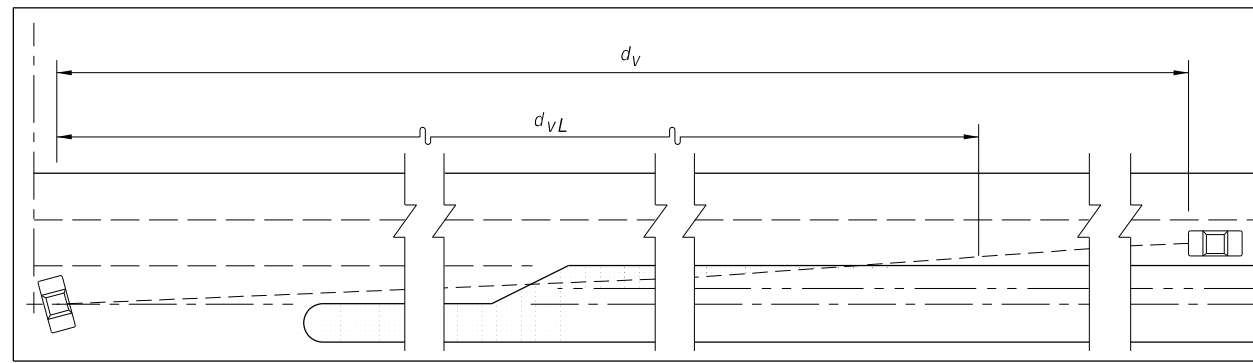


**PLAN**

**PICTORIAL**

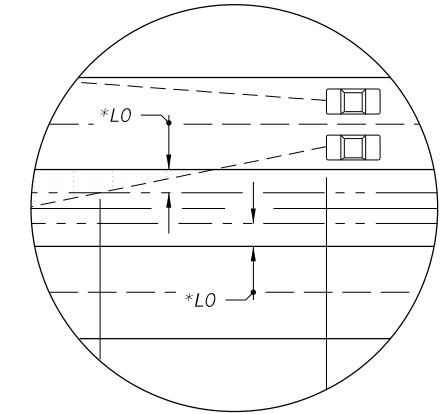
**LEGEND**

Areas Free Of Sight Obstructions



Where The Median Is Sufficiently Wide For The Design Vehicle To Pause In The Median (Vehicle Length Plus 6' Min.) The Clear Line Of Sight To The Right (d<sub>v</sub>) Is Measured From The Vehicle Pause Location, i.e., Not From The Cross Road Stop Position; Distances d<sub>r</sub> & d<sub>m</sub> Do Not Apply.

**INSET A**



**INSET B**

**NOTES FOR 4-LANE DIVIDED ROADWAY**

1. See Sheet 2 for origin of clear sight line on the minor road.
2. Values shown in the tables are the governing (controlling) sight distances calculated based on 'AASHTO Case B - Intersection with Stop Control on the Minor Road.'

Vehicle Type	Vehicle Length (Ft.)
Passenger (P)	19
Single Unit (SU)	30
Large School Bus	40
WB-40	45.5
WB-50	55

SIGHT DISTANCES (d) & (d<sub>v</sub>) AND RELATED DISTANCES (d<sub>L</sub>, d<sub>r</sub>, d<sub>m</sub> & d<sub>vL</sub>) (FEET)

**4 LANE DIVIDED ROADWAY**

11/11/2016 10:59:36 AM

MEDIAN 22' OR LESS				
Design Speed	$d_x$	$d_L$	$d_r$	$d_m$
30	415	295	80	355
35	485	345	90	415
40	555	395	105	470
45	625	445	115	530
50	690	490	130	585
55	760	540	140	645
60	830	590	155	705
65	900	640	170	765

25'-64' MEDIAN				
Design Speed	$d$	$d_L$	$d_v$	$d_{vL}$
30	375	265	330	240
35	440	315	385	280
40	500	355	445	320
45	565	400	500	360
50	625	445	555	400
55	690	490	610	440
60	750	530	665	480
65	815	580	720	520

**PASSENGER VEHICLE (P)**

MEDIAN 35' OR LESS				
Design Speed	$d_x$	$d_L$	$d_r$	$d_m$
30	570	405	90	495
35	665	470	105	580
40	760	540	120	660
45	855	605	135	745
50	955	675	155	830
55	1050	745	170	915
60	1145	810	185	995
65	1240	880	200	1080

40'-64' MEDIAN				
Design Speed	$d$	$d_L$	$d_v$	$d_{vL}$
30	480	340	420	330
35	560	400	490	385
40	640	455	560	440
45	720	510	630	490
50	805	570	700	545
55	885	625	770	600
60	965	685	840	665
65	1045	740	910	710

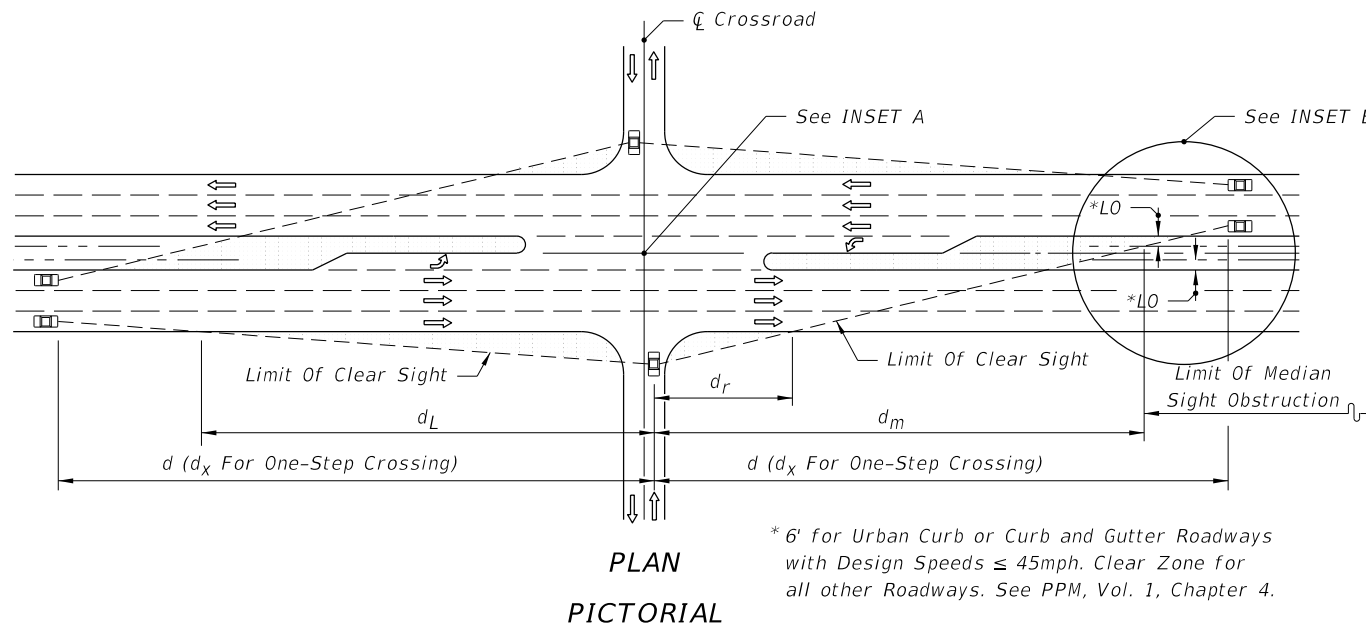
**SINGLE-UNIT TRUCK (SU)**

MEDIAN 30' OR LESS				
Design Speed	$d_x$	$d_L$	$d_r$	$d_m$
30	650	460	110	560
35	755	535	130	655
40	865	615	145	745
45	970	690	165	835
50	1080	765	185	930
55	1185	840	200	1025
60	1290	915	220	1115
65	1400	990	235	1210

35'-50' MEDIAN				
Design Speed	$d_x$	$d_L$	$d_r$	$d_m$
30	700	495	95	625
35	815	580	115	725
40	930	660	130	825
45	1045	740	145	930
50	1165	825	160	1035
55	1280	905	175	1140
60	1395	990	190	1240
65	1510	1070	210	1340

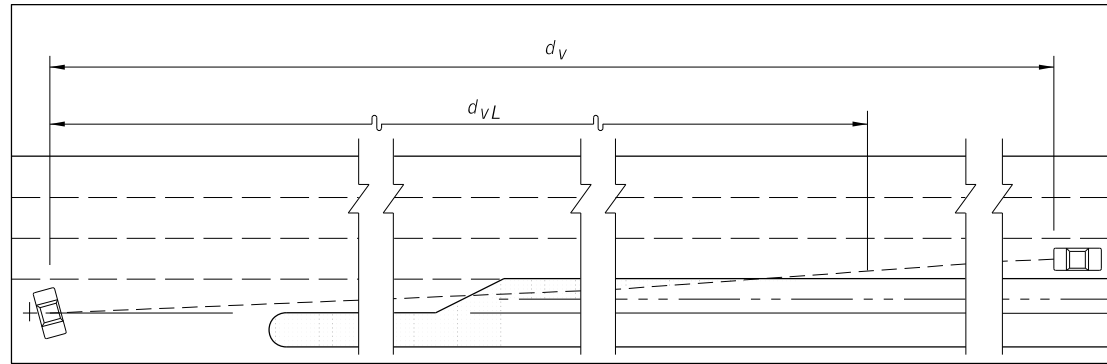
64' MEDIAN				
Design Speed	$d$	$d_L$	$d_v$	$d_{vL}$
30	570	405	510	435
35	665	470	590	500
40	760	540	680	575
45	855	605	760	645
50	950	675	845	720
55	1045	740	930	790
60	1140	805	1015	865
65	1235	875	1100	935

**INTERMEDIATE SEMI-TRAILERS (WB-40 & WB-50)**



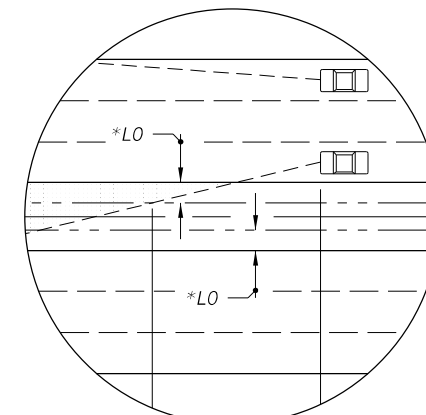
**PLAN  
PICTORIAL**

\* 6' for Urban Curb or Curb and Gutter Roadways with Design Speeds  $\leq$  45mph. Clear Zone for all other Roadways. See PPM, Vol. 1, Chapter 4.



Where The Median Is Sufficiently Wide For The Design Vehicle To Pause In The Median (Vehicle Length Plus 6' Min.) The Clear Line Of Sight To The Right ( $d_v$ ) Is Measured From The Vehicle Pause Location, i.e., Not From The Cross Road Stop Position; Distances  $d_r$  &  $d_m$  Do Not Apply.

**INSET A**



**INSET B**

**NOTES FOR 6-LANE DIVIDED ROADWAY**

1. See Sheet 2 for origin of clear sight line on the minor road.
2. Values shown in the tables are the governing (controlling) sight distances calculated based on 'AASHTO Case B - Intersection with Stop Control on the Minor Road.'

SIGHT DISTANCES ( $d$ ), ( $d_v$ ) & ( $d_x$ ) AND RELATED DISTANCES ( $d_L$ ,  $d_r$ ,  $d_m$  &  $d_{vL}$ ) (FEET)

**6 LANE DIVIDED**

11/11/2016 10:59:40 AM



**DESIGN NOTES**

- The information shown on this index is intended solely for the purpose of clear sight development and maintenance at intersecting highways, roads, streets and driveways, and is not intended to be used to establish roadway and roadside safety except as related to clear sight corridors. An analysis of sight distance shall be documented for all intersections.
- For the purpose of this Index, Minor Road is defined as all intersecting highways, roads, streets and driveways.
- Details are based on the AASHTO 'A Policy On Geometric Design Of Highways And Streets, 2001', CHAPTER 9, INTERSECTION SIGHT DISTANCE, CASES B and F, and Department practices for channelized median openings (left turns from major road).
- The minimum driver eye setback of 14.5' from the edge of the traveled way may be adjusted on any intersection leg only when justified by a documented, site specific field study of vehicle stopping position and driver eye position.
- For SIGNALIZED INTERSECTIONS sight distances should be developed based on AASHTO 'Case D-Intersections With Traffic Signal Control'. 'At signalized intersections, the first vehicle stopped on one approach should be visible to the driver of the first vehicle stopped on each of the other approaches. Left turning vehicles should have sufficient sight distance to select gaps in oncoming traffic and complete left turns. Apart from these sight conditions, there are generally no other approach or departure sight triangles needed for signalized intersections. However, if the traffic signal is to be placed on two-way flashing operation (i.e. flashing yellow on the major road approaches and flashing red on the minor road approaches) under off peak or nighttime conditions, then the appropriate departure sight triangles for Case B, both to the left and to the right, should be provided for the minor road approaches. In addition, if right turns on a red signal are to be permitted from any approach, then the appropriate departure sight triangle to the left for Case B2 should be provided to accommodate right turns from that approach.'
- Where curvature, superelevation, adverse split profiles or other conditions preclude the use of standard tree sizes and spacing, proof of view and shadowing restraints must be documented and the size and location of trees in medians detailed in the plans.
- Intersection sight distance values are provided for Passenger Vehicles, SU Vehicles and Combination Vehicles. Intersection sight distance based on the Passenger Vehicle is suitable for most intersections. Where substantial volumes of heavy vehicles enter the major road, such as from ramp terminals with stop control or roadways serving truck terminals, the use of tabulated values for SU Vehicles or Combination Vehicles should be considered.

**TREE SPACING TABLE \*\***

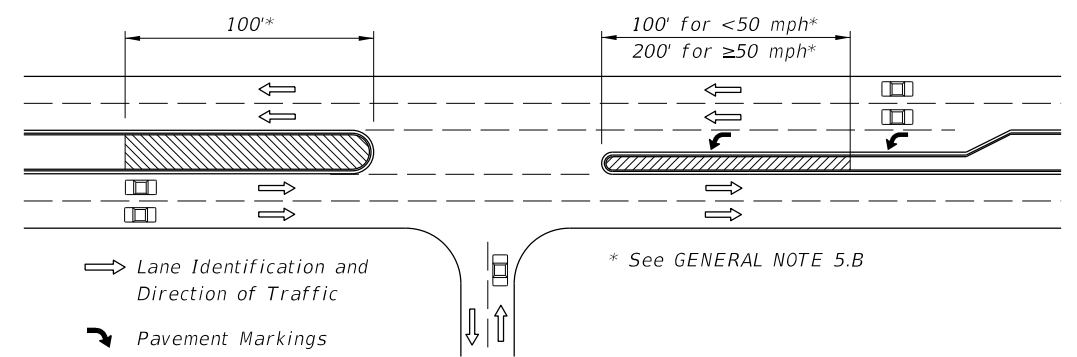
Description  Diameter (Within Limits Of Sight Window)	Design Speed (mph)													
	30		35		40		45		50		55		60	
	(Inches)													
	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18
	(Feet)													
Minimum Spacing (c. to c. Of Trunk)	25	90	30	105	35	120	40	135	50	150	55	165	60	180

- \*\* Sizes and spacings are based on the following conditions:
- A single line of trees in the median parallel to but not necessarily colinear with the centerline.
  - A straight approaching mainline, within skew limits as described in No. 2 above.
  1. Trees and palms ≤ 11" in diameter casting a vertical 6' wide shadow band on a vehicle entering at stop bar location when viewed by mainline driver beginning at distance 'd'; see SHADOW DIAGRAM, Sheet 2.  
2. Sabal palms with diameters > 11" ≤ 18" spaced at intervals providing a 2 second full view of entering vehicle at stop bar location when viewed by the mainline driver beginning at distance 'd'; see PERCEPTION DIAGRAM, Sheet 2.
  - Trees with diameters ≤ 11" intermixed with trees with diameters > 11" ≤ 18" are to be spaced based on trees with diameters > 11" ≤ 18".
- For any other conditions the tree sizes, spacings and locations shall be detailed in the plans; see Design Note 5.

**GENERAL NOTES**

- Details apply to both rural and urban intersections under stop sign control or flashing beacon control. For full signal controlled intersections see Design Note No 4. At intersections listed in the Department's High Crash Intersection Report, designers shall give attention to keeping to a minimum, objects that distract or affect sight distance.
- Sight distance 'd' applies to normal and skewed intersections (intersecting angles between 60° and 120°), and where vertical and/or horizontal curves are not present. Sight distance 'd' is measured along the major road from the center of the entrance lane of the minor road to the center of the near approach lane (right or left) of the major road. Distances 'd<sub>L</sub>' and 'd<sub>r</sub>' are measured from the centerline of the entrance lane of the minor road to a point on the edge of the near side outer traffic lane on the major road. Distance 'd<sub>m</sub>' is measured from the centerline of the entrance lane of the minor road to a point on the median clear zone limit or horizontal clearance limit for the far side road of the major road.
- A. The limits of clear sight define a corridor throughout which a clear sight window must be preserved. See WINDOW DETAIL, Sheet 2.  
B. Clear sight must be provided between vehicles at intersection stop locations, and vehicles on the major road within dimension 'd'.  
C. Since observations are made in both directions along the line of sight, the reference datum between roadways is 3'-6" above respective pavements.
- Barrier systems within intersection sight corridors, where penetration into the sight window might occur, shall be located to provide the least adverse affect practical.
- The corridor defined by the limits of clear sight is a restricted planting area. Drivers of vehicles on the intersecting road and vehicles on the major road must be able to see each other clearly throughout the limits of 'd' and 'd<sub>a</sub>'. If in the Engineers judgement, landscaping interferes with the line of sight corridor prescribed by these standards the Engineer may rearrange, relocate or eliminate plantings. Plants within the restricted areas are limited to selections as follows:

- (Cont.)  
Ground Cover & Trunked Plants (Separate or Combined):  
Ground Covers - Plant selection of low growing vegetation which at maturity does not attain a height greater than 18" below the sight line datum. For ground cover in combination with trees and palms; the following heights below the sight line datum will apply:  
24" for trees and palms ≤ 11" dia.; and, 18" for sabal palms >11" but ≤ 18" dia. (dia.-within Sight Window).  
Trunked Plants - Plant selection of a mature trunk diameter 4" or less measured at 6' above the ground. Canopy or high borne foliage shall never be lower than 5' above the sight line datum. These selections shall be spaced no closer than 20'.  
Trees - Trees can be installed with sod; pavers; gravel, mulch; ground covers or other Department-approved material. The clear sight window must be in conformance with the 'WINDOW DETAIL' modified to attain the height requirements listed in 'Ground Covers' above.  
A. Size and spacing shall conform to the Tree Spacing Table.  
B. Requirements for placement within medians at median openings and at unsignalized and signalized intersections:  
a. Horizontal clearance for the mature specimen shall be maintained as specified in Index 700. Specimens whose mature trunk diameter is greater than 18" shall not be permitted,  
b. Where left turns from the major road are permitted, no trees shall be located within the distance 'd<sub>b</sub>', Sheet 2 of 6; and not less than the distances called for in (c) or (d), as applicable,  
c. For safety, these additional setbacks are required:  
1. Where no left turn lane is present, size and spacing shall conform to the Tree Spacing Table. No trees shall be permitted within 100' of the restricted median nose (measured from the edge of pavement),  
2. Where left turn lane(s) are present, the following requirements apply:  
• For low speed facilities (design speed less than 50 mph), size and spacing shall conform to the Tree Spacing Table. No trees shall be permitted within 100' of the restricted median nose (measured from the edge of pavement).  
• For high speed facilities (design speed 50 mph or greater), no trees shall be permitted within 200' of the restricted median nose. Beyond this limit, size and spacing shall conform to the Tree Spacing Table.



**PLAN**  
Special Areas Limited to Ground Cover

10/12/2016 11:04:14 AM

CROSSING SURFACES	
Type	Definition
C	Concrete
R	Rubber
RA	Rubber/Asphalt
TA	Timber/Asphalt

STOP ZONE FOR RUBBER CROSSING	
Design Speed (mph)	Zone Length (Distance From Stop)
45 Or Less	250'
50 - 55	350'
60 - 65	500'
70	600'


Notes:

- Type R Crossings are NOT to be used for multiple track crossings within zones for an existing or scheduled future vehicular stop. Zone lengths are charted above.
- Single track Type R Crossings within the zones on the chart may be used unless engineering or safety considerations dictate otherwise.

GENERAL NOTES

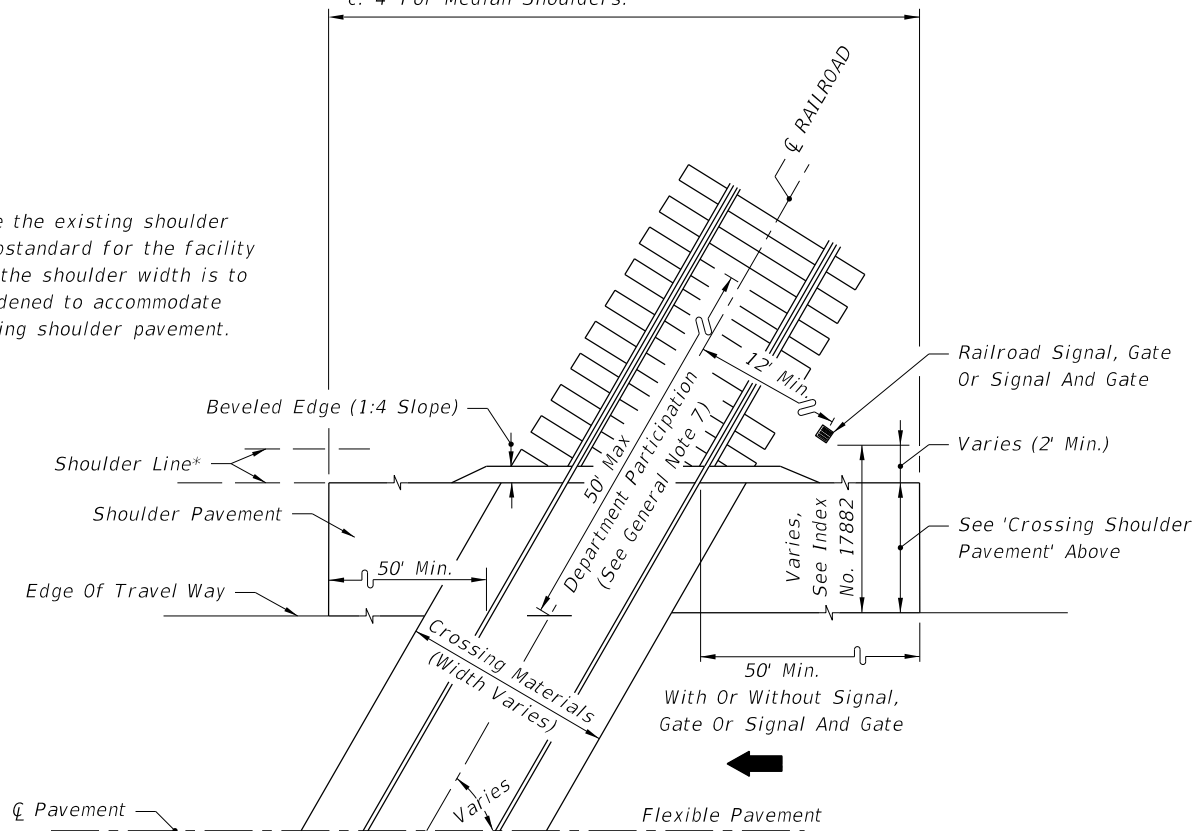
- The Railroad Company will furnish and install all track bed (ballast), crossties, rails, crossing surface panels and accessory components. All pavement material, including that through the crossing, will be furnished and installed by the Department or its Contractor, unless negotiated otherwise.
- When a railroad grade crossing is located within the limits of a highway construction project, a transition pavement will be maintained at the approaches of the crossing to reduce vehicular impacts to the crossing. The transition pavement will be maintained as appropriate to protect the crossing from low clearance vehicles and vehicular impacts until the construction project is completed and the final highway surface is constructed.
- The Central Rail Office will maintain a list of currently used Railroad Crossing Products and will periodically distribute the current list to the District Offices as the list is updated.
- The Railroad Company shall submit engineering drawings for the proposed crossing surface type to the Construction Project Engineer and/or the District Rail Office for concurrence along with the List of Railroad Crossing Products. The approved engineering drawings of the crossing surface type shall be made a part of the installation agreement.
- Sidewalks shall be constructed through the crossing between approach sidewalks of the crossing. Sidewalks shall be constructed with appropriate material to allow unobstructed travel through the crossing in accordance with ADA requirements.
- Install pavement in accordance with the Specifications.
- The Department will participate in crossing work, that requires adjustments to rail outside of the crossing, no more than 50 feet from the edge of the travel way.

10/18/2016 1:09:02 PM

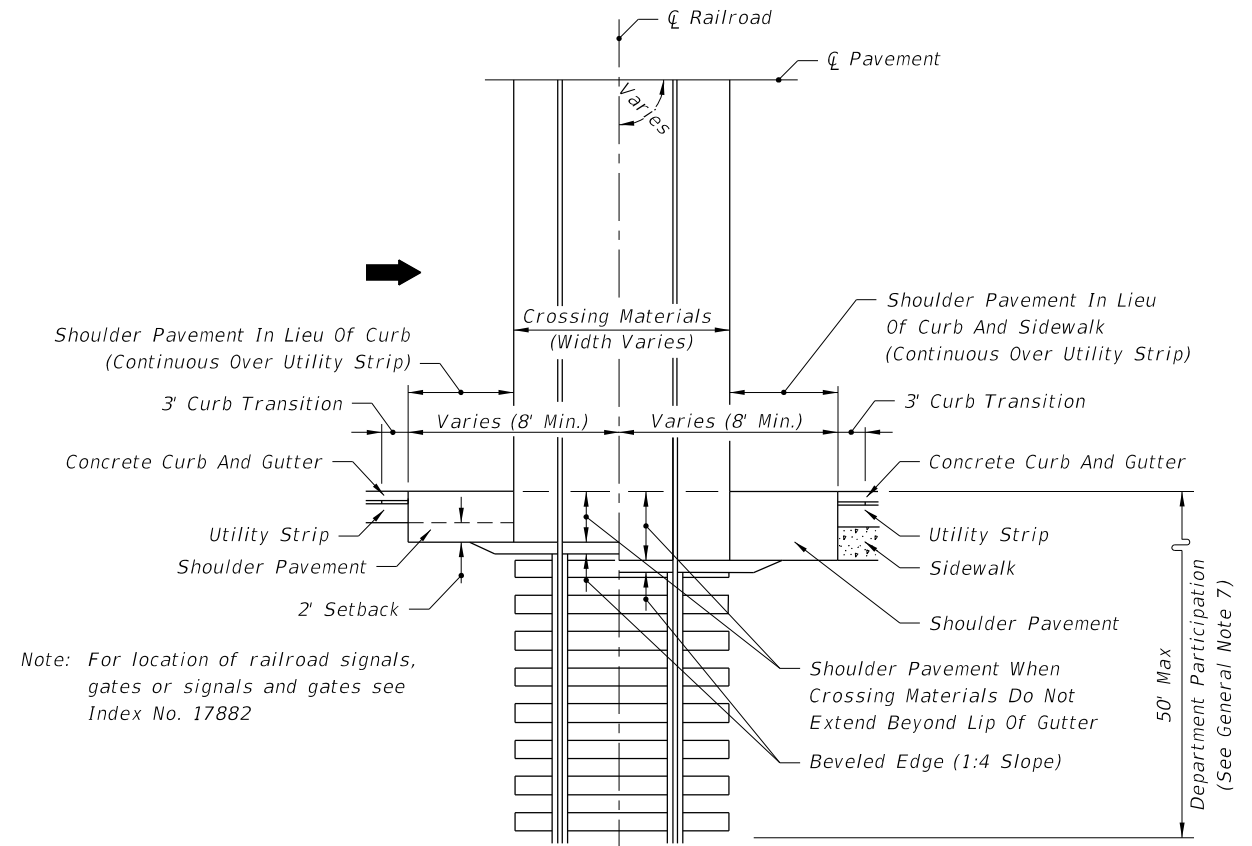
LAST REVISION 11/01/16	REVISION	DESCRIPTION:	 FY 2017-18 DESIGN STANDARDS	RAILROAD CROSSING	INDEX NO. 560	SHEET NO. 1 of 2
---------------------------	----------	--------------	--	-------------------	------------------	---------------------

Crossing Shoulder Pavement  
(Except Area Occupied By Crossing Surfacing Material):  
a. To Shoulder Line For Outside Shoulders Less Than 8' Wide.  
b. To 8' Maximum Width For Outside Shoulders 8' Or Wider  
(Regardless Of Approach Shoulder Pavement Width).  
c. 4' For Median Shoulders.

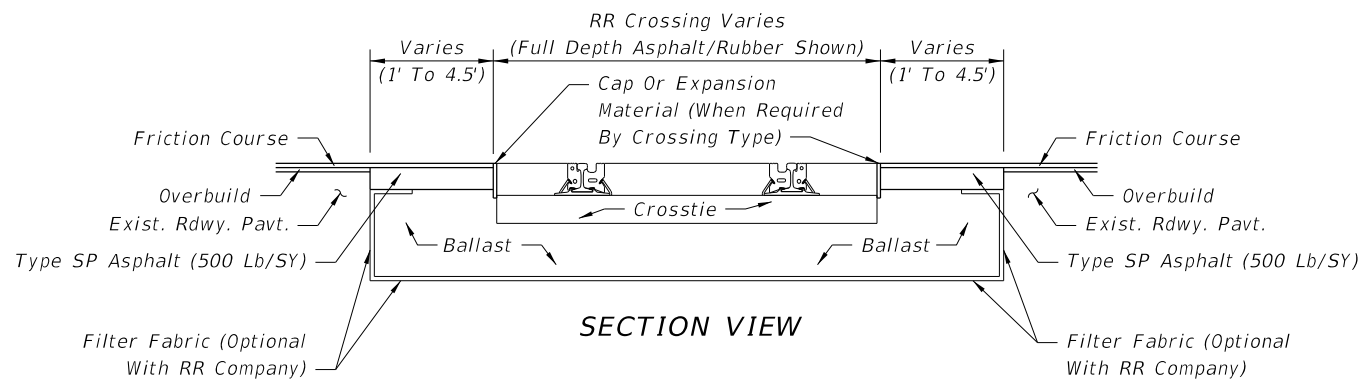
\* Where the existing shoulder is substandard for the facility type, the shoulder width is to be widened to accommodate crossing shoulder pavement.



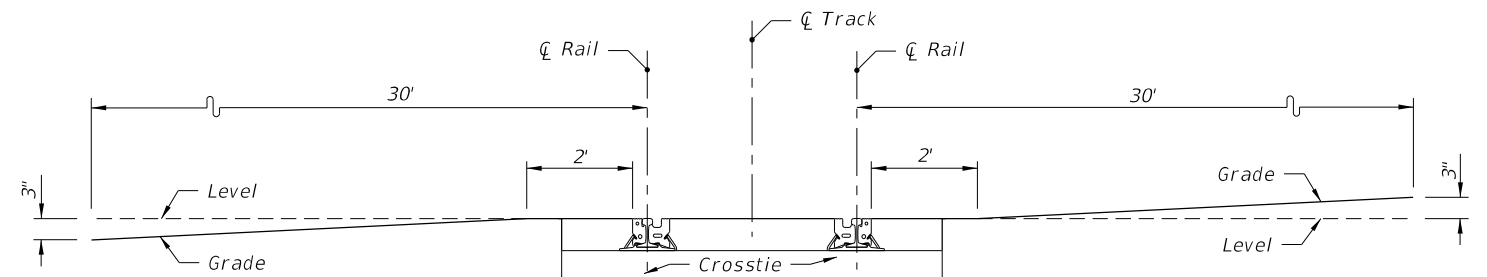
HALF PLAN  
ROADWAYS WITH FLUSH SHOULDERS



HALF PLAN  
CURBED ROADWAYS




TYPICAL CROSSING MATERIAL REPLACEMENT AT RR CROSSINGS



To prevent low-clearance vehicles from becoming caught on the tracks, the crossing surface should be at the same plane as the top of the rails for a distance of 2 feet outside the rails. The surface of the highway should also not be more than 3 inches higher or lower than the top of the nearest rail at a point 30 feet from the rail unless track superelevation makes a different level appropriate. Vertical curves should be used to traverse from the highway grade to a level plane at the elevation of the rails. Rails that are superelevated, or a roadway approach section that is not level, will necessitate a site specific analysis for rail clearances.

VERTICAL ROADWAY ALIGNMENT THROUGH A RAILROAD CROSSING

11:08:55 AM  
10/12/2016

LAST REVISION 01/01/10	DESCRIPTION:	 <b>FY 2017-18 DESIGN STANDARDS</b>	<b>RAILROAD CROSSING</b>	INDEX NO. 560	SHEET NO. 2 of 2
REVISION					