

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

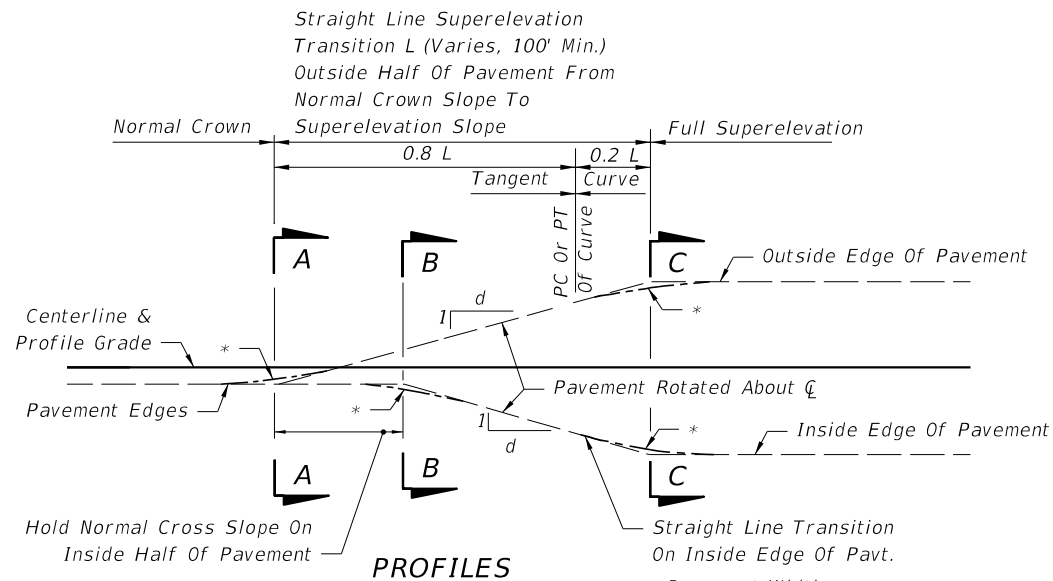
NOTES

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 120-001. For minor collectors and local facilities the depth of select material thickness may be reduced from 24" to 18".

MEDIAN STABILIZING DETAILS

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LAST REVISION 11/01/17	REVISION	DESCRIPTION:	 FY 2018-19 STANDARD PLANS	MISCELLANEOUS EARTHWORK DETAILS	INDEX 000-506	SHEET 1 of 1
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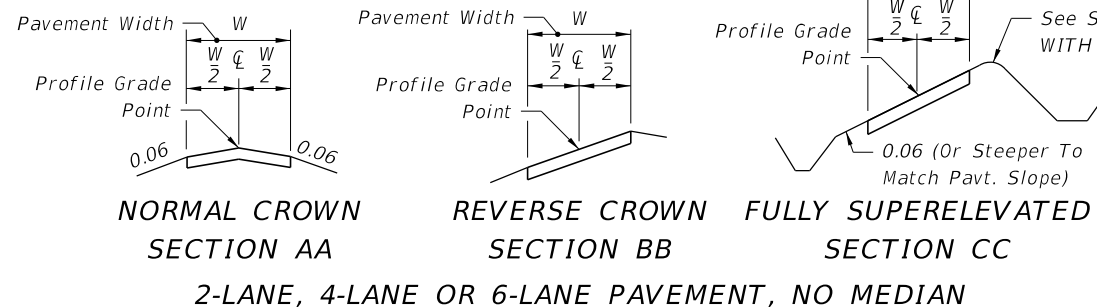


SLOPE RATIOS FOR SUPERELEVATION TRANSITIONS

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.

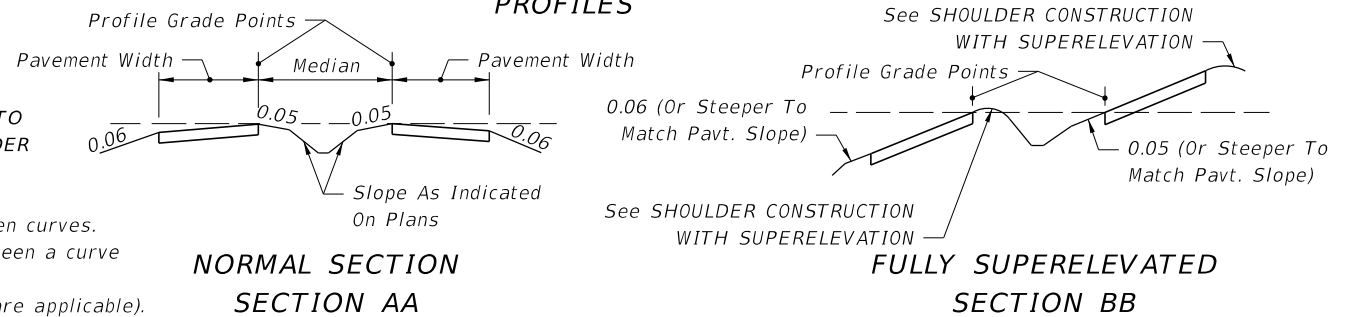
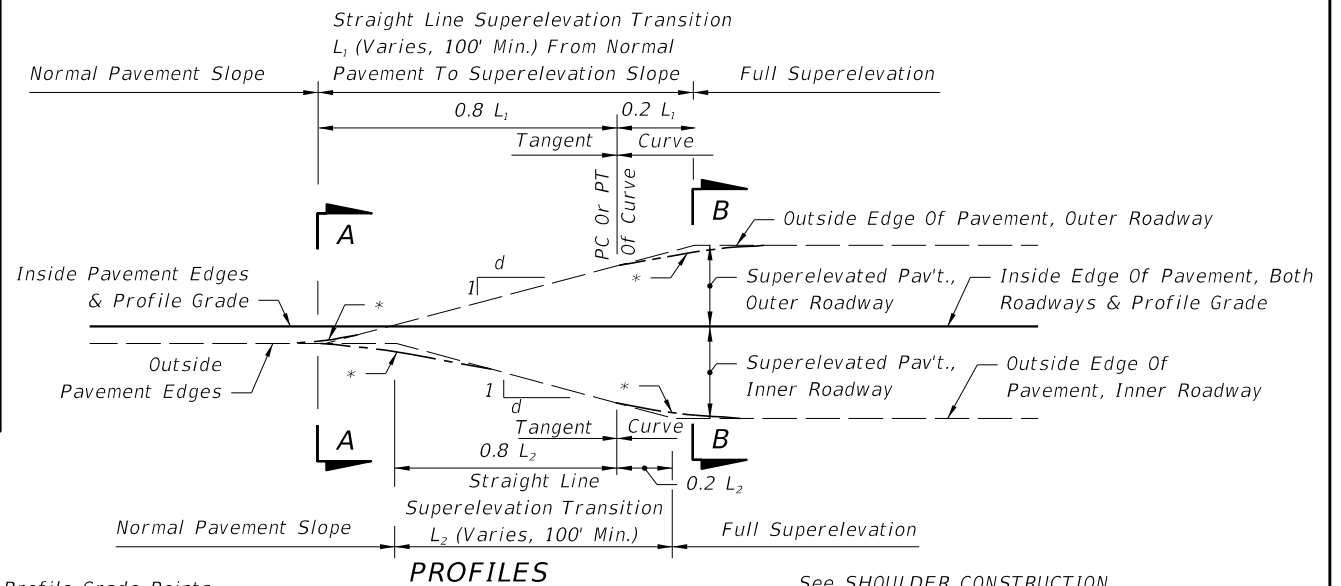
* Short Vertical Curves Are To Be Used On Construction To Avoid Angular Breaks In Edge Profiles



- 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



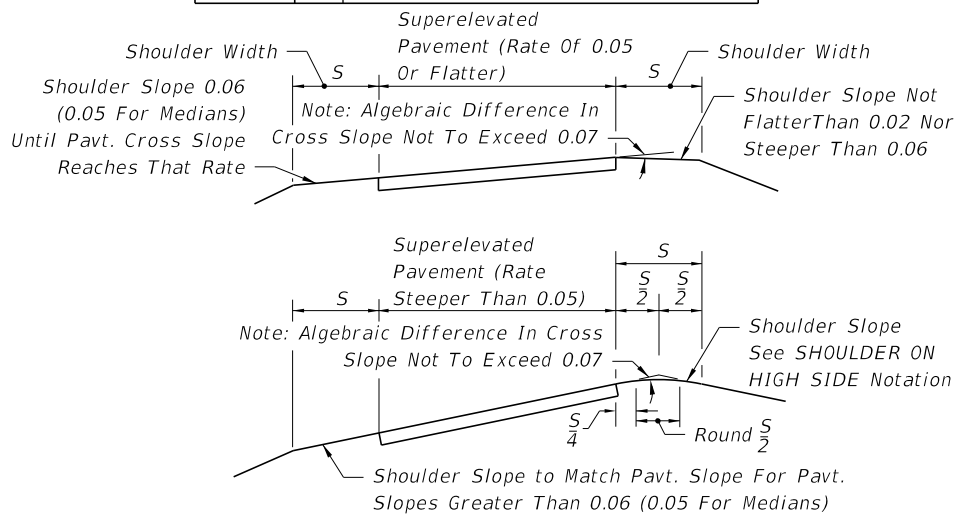
SHOULDER ON HIGH SIDE: A shoulder slope of 0.06 downward from the edge of travel way will be maintained until a 0.07 break in slope at the pavement edge is reached due to superlevation of the pavement. As the pavement superlevation increases, the 0.07 break in slope will be maintained and the shoulder flattened until the shoulder slope reaches the minimum of 0.02 downward from the edge of travel way. Any further increase in pavement superlevation 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 superlevation 0.10. For shoulders with paved widths 5 feet or less see Special Shoulder Break Over Details on Sheet 2 of 2.

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.

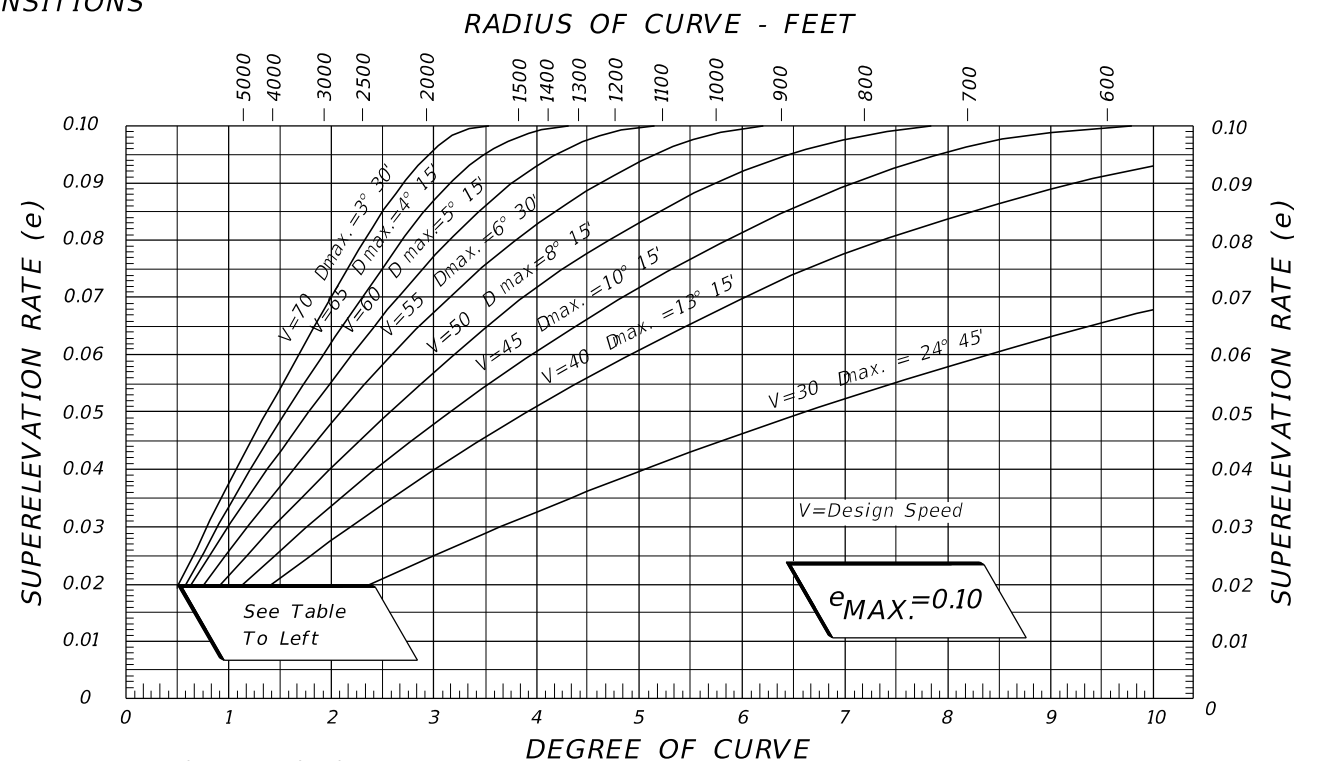
NOTE: These details apply to both paved and grassed shoulders. For median shoulders use 0.05 in lieu of 0.06.

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 CONSTRUCTION WITH SUPERELEVATION

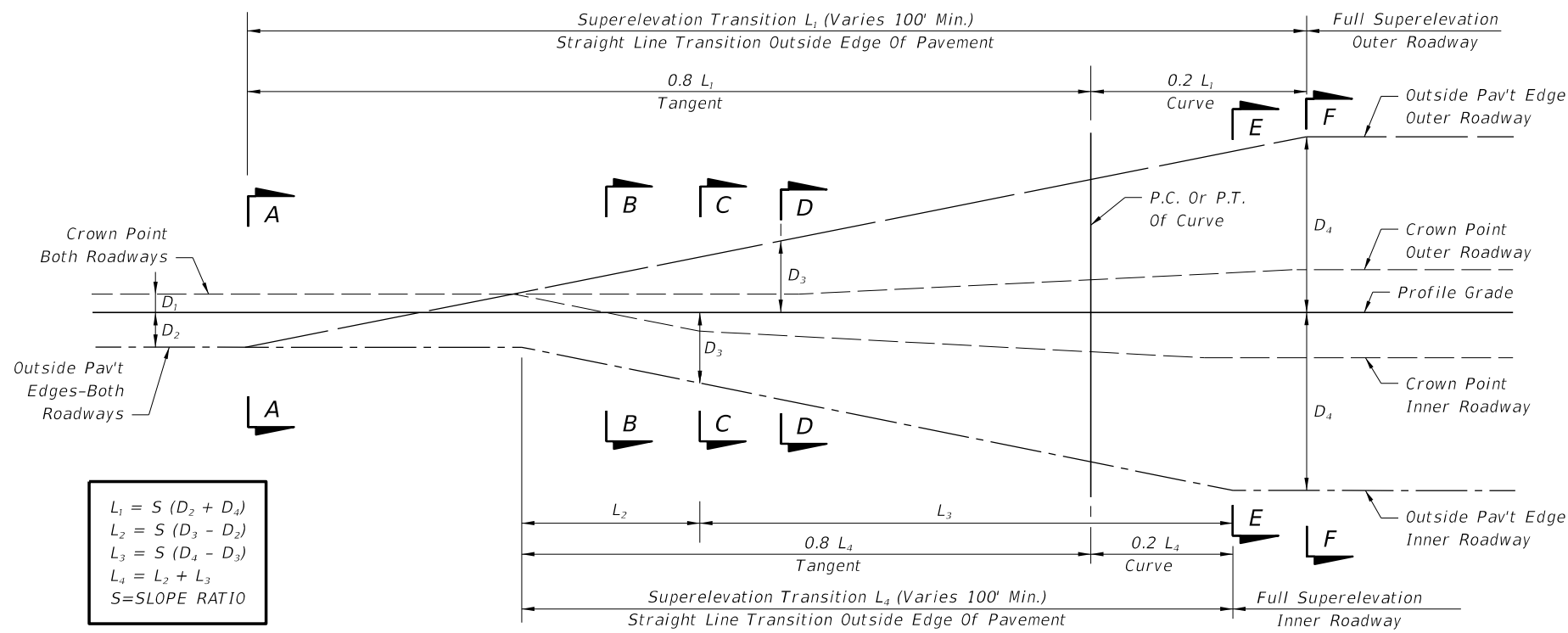
DESIGN SUPERELEVATION RATES FOR RURAL HIGHWAYS, URBAN FREEWAYS AND HIGH SPEED URBAN HIGHWAYS



GENERAL NOTES:

1. For curves in Urban Highways and high speed Urban Streets, see Index 000-511.

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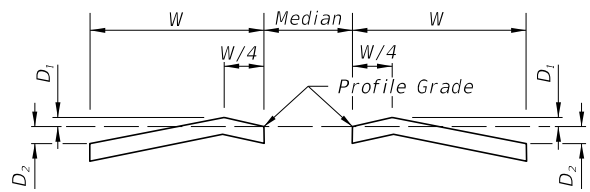
$$L_1 = S (D_2 + D_4)$$

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

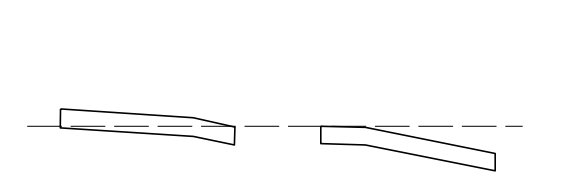
$$L_3 = S (D_4 - D_3)$$

$$L_4 = L_2 + L_3$$

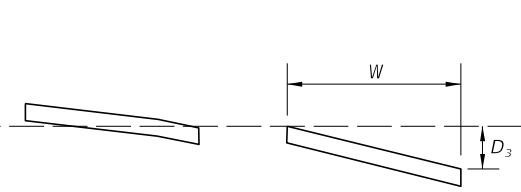
$$S = \text{SLOPE RATIO}$$



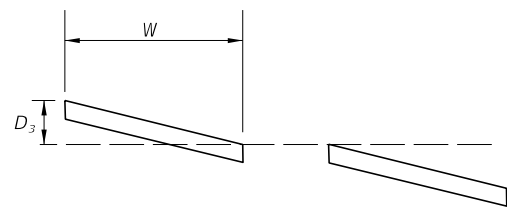
SECTION A-A
NORMAL CROWNED SECTION



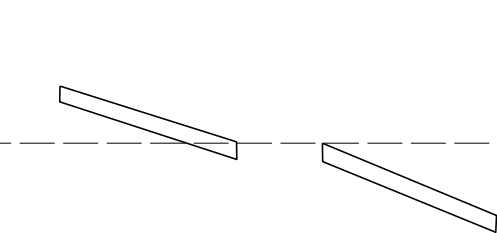
SECTION B-B
SUPERELEVATION SECTION LT. & RT.



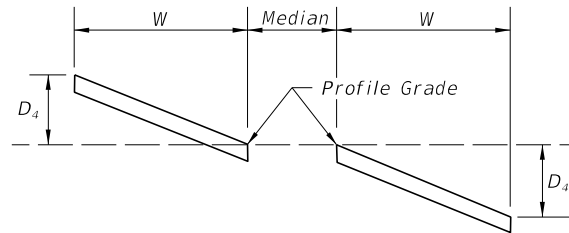
SECTION C-C
SUPERELEVATION SECTION LT.
PLANE INCLINED SECTION RT.



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

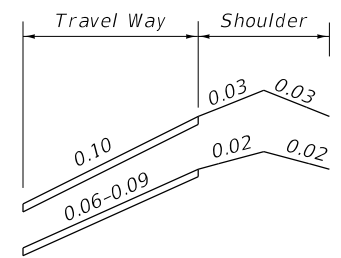
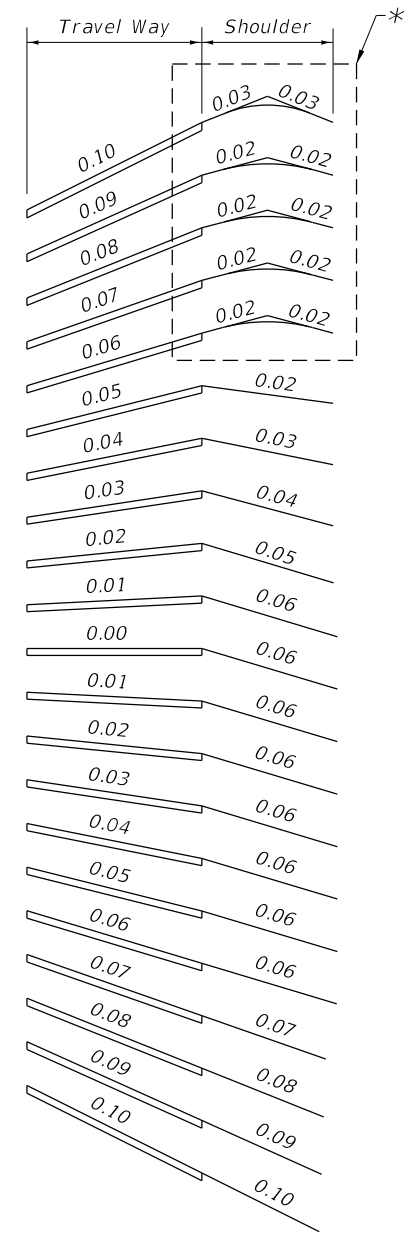


SECTION E-E
SUPERELEVATION TRANSITION LT.
FULL SUPERELEVATION RT.



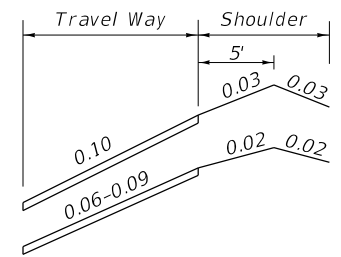
SECTION F-F
FULL SUPERELEVATION LT. & RT.

8-LANE PAVEMENT WITH ONE LANE SLOPED TO MEDIAN

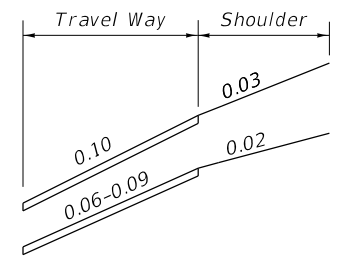


a) 12' AND 10' FULL WIDTH SHOULDERS WITH 5' OR LESS PAVED WIDTHS,

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

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

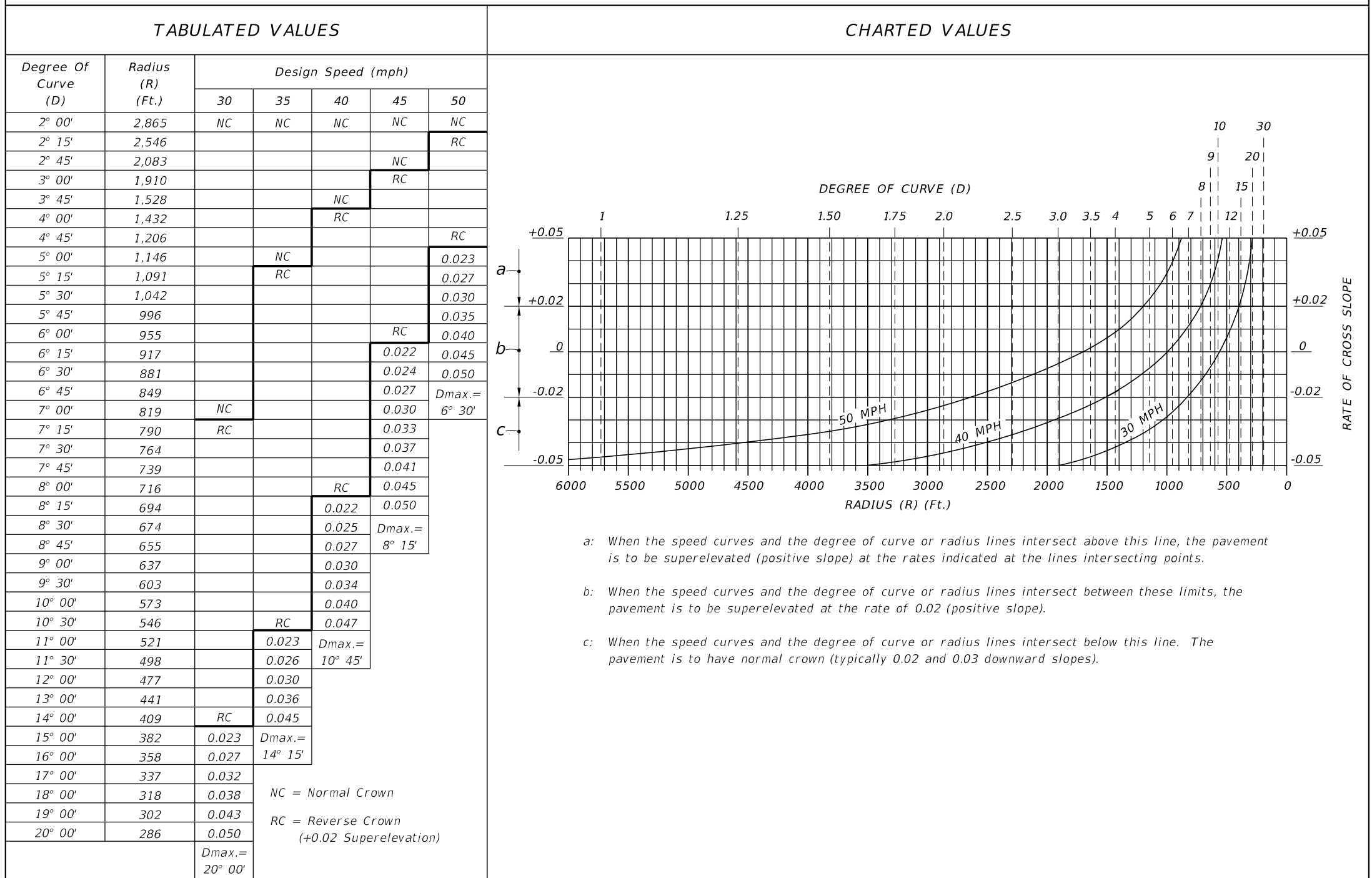
* FOR SHOULDERS WITH PAVED WIDTHS 5 FEET OR LESS SEE SPECIAL SHOULDER BREAK OVER DETAILS

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

$e_{max.} = 0.05$



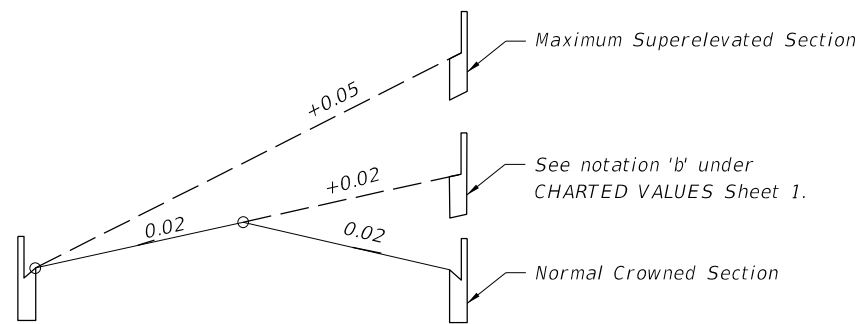
GENERAL NOTES

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 000-510.

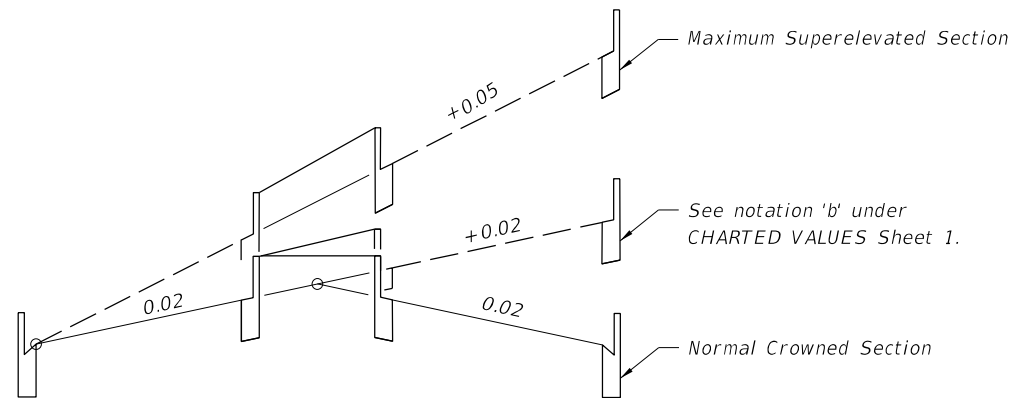
$e_{max.} = 0.05$

SUPERELEVATION FOR URBAN HIGHWAYS AND HIGH SPEED URBAN STREETS

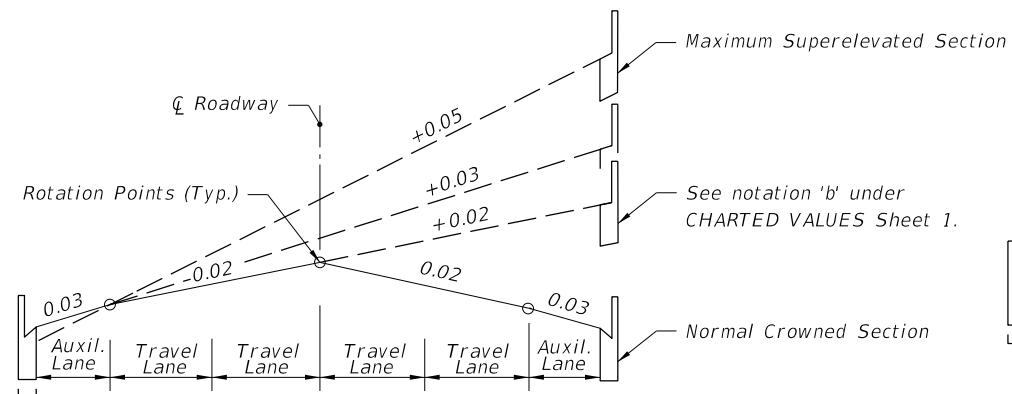
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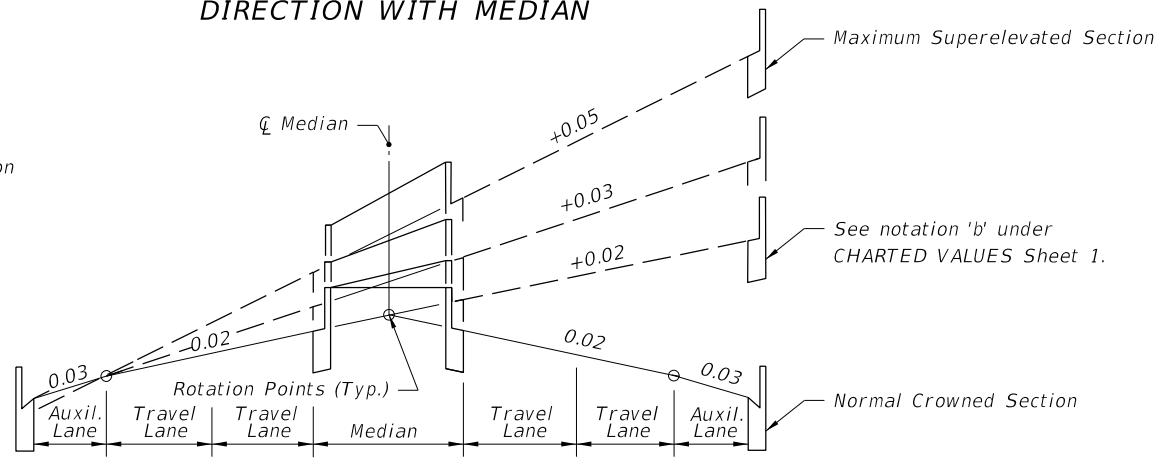
TWO TRAVEL LANES EACH DIRECTION



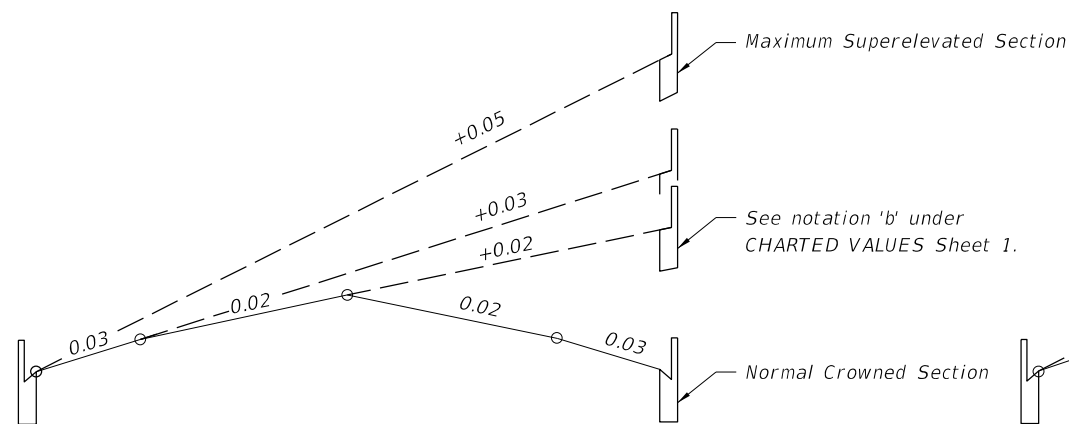
TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN



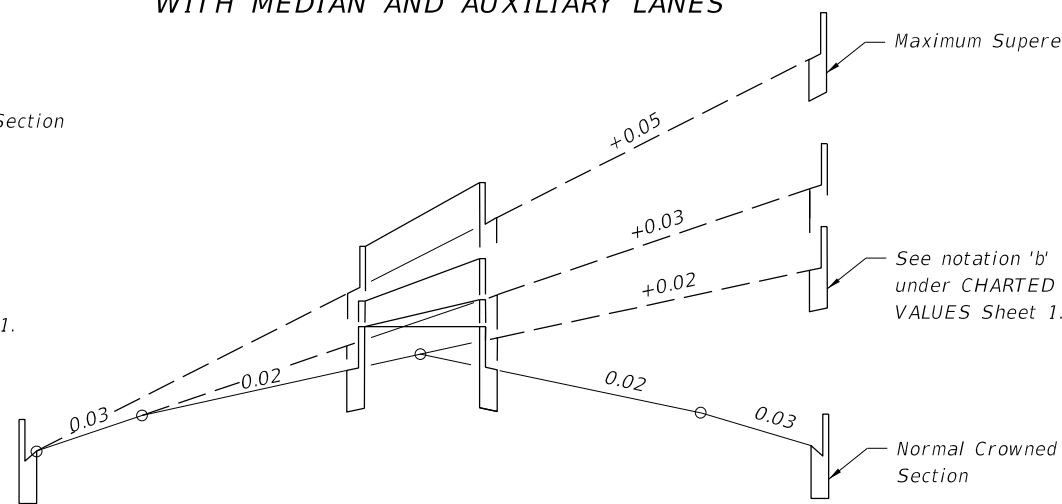
TWO TRAVEL LANES EACH DIRECTION WITH AUXILIARY LANES



TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANES

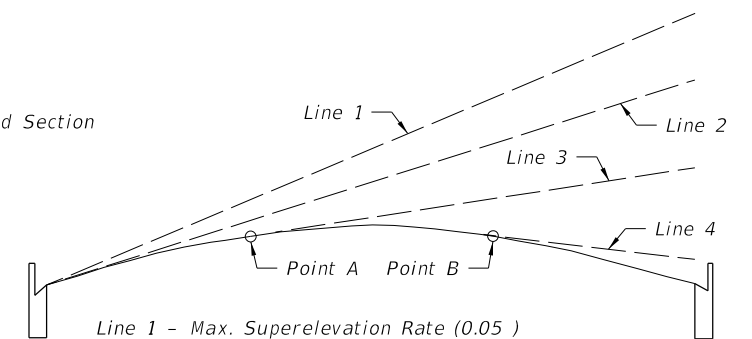


UNDIVIDED FACILITIES



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.

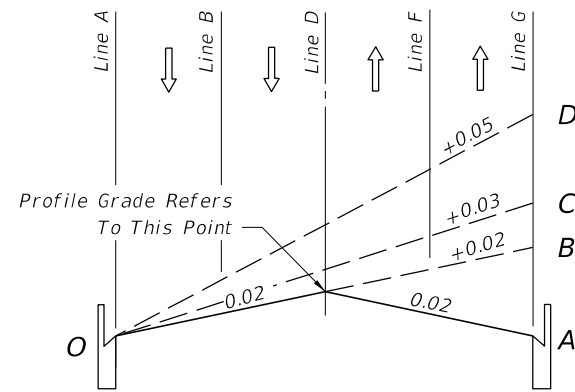
Superelevation rates obtained from the chart or table on Sheet 1 are also applicable to a parabolic crown section. When this section is used, superelevation is established by rotating a tangent about the arc of the parabolic crown until the desired slope is attained (points A & B on sketch). The normal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

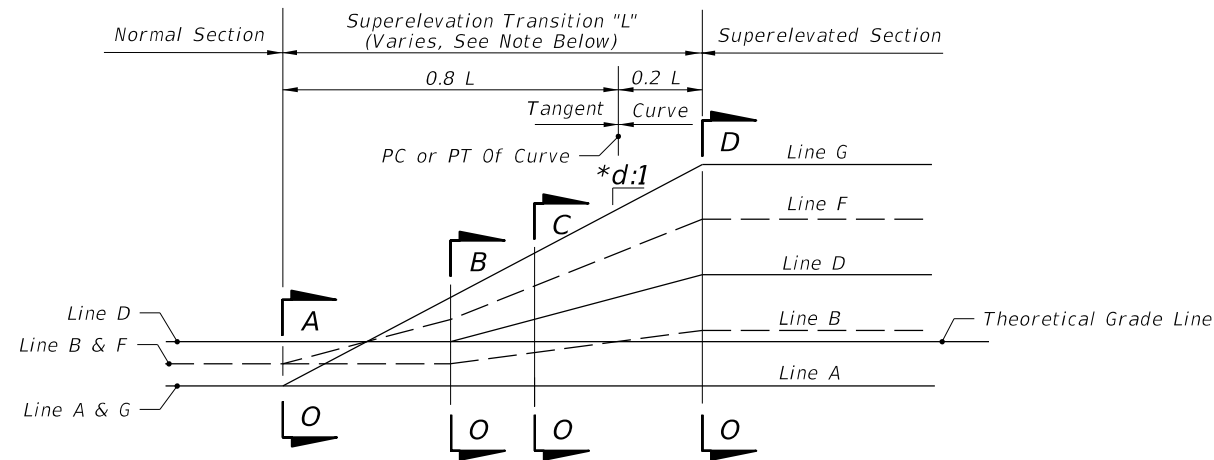
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LAST REVISION 11/01/17	REVISION	DESCRIPTION:		FY 2018-19 STANDARD PLANS	SUPERELEVATION - LOW SPEED HIGHWAYS	INDEX 000-511	SHEET 2 of 3
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SECTION 0-A to 0-D

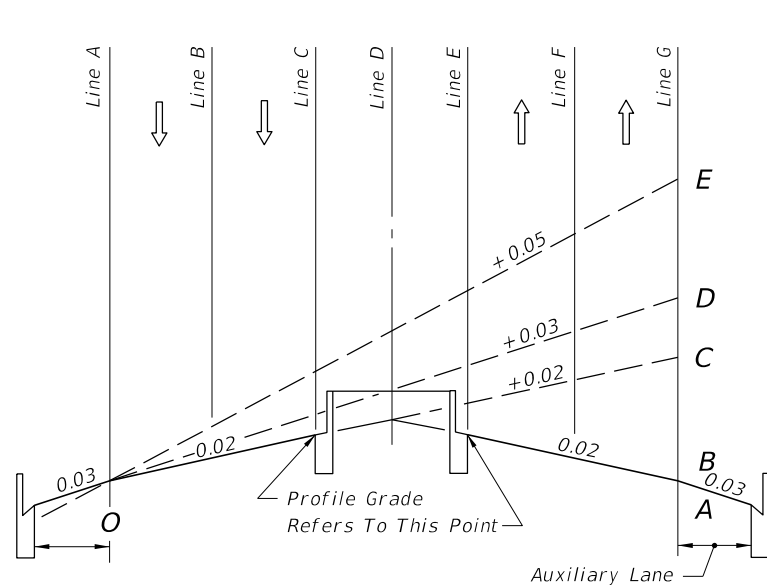
TWO LANES EACH DIRECTION



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

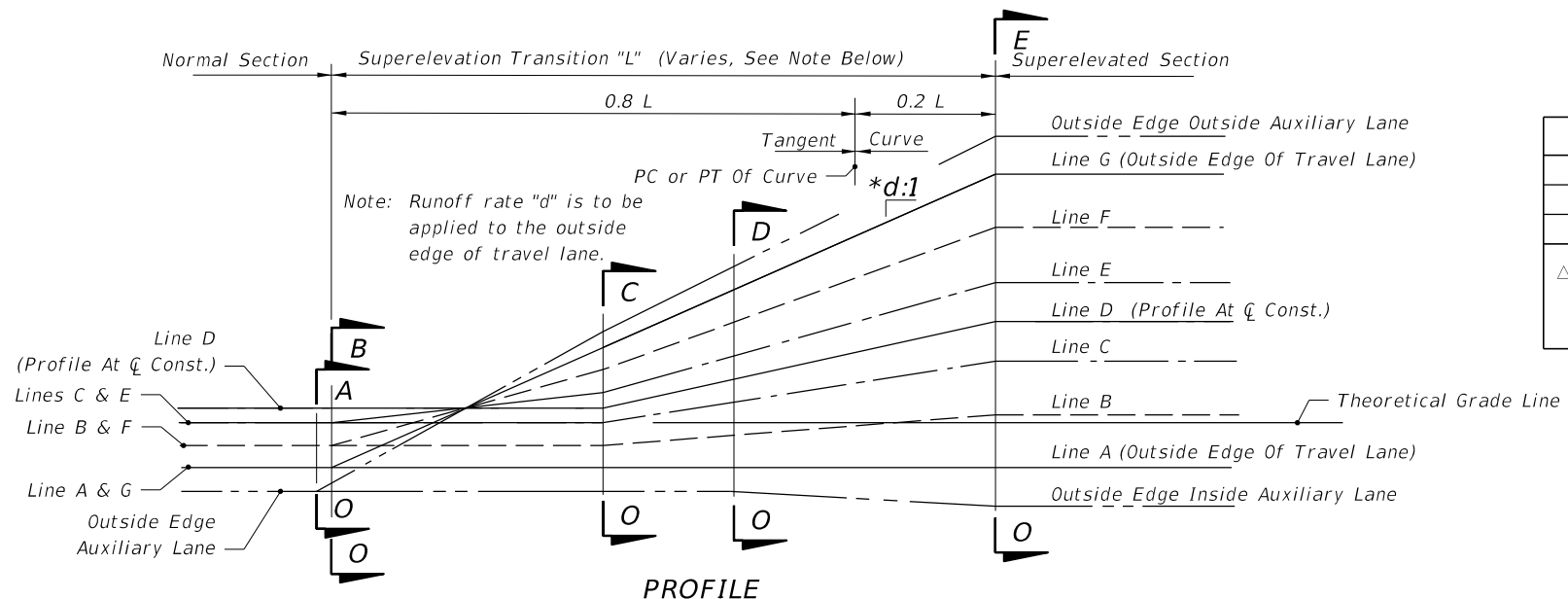
Inside And Outside Are Relative To Curve Center



SECTION 0-A to 0-E

TWO LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANE

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



PROFILE

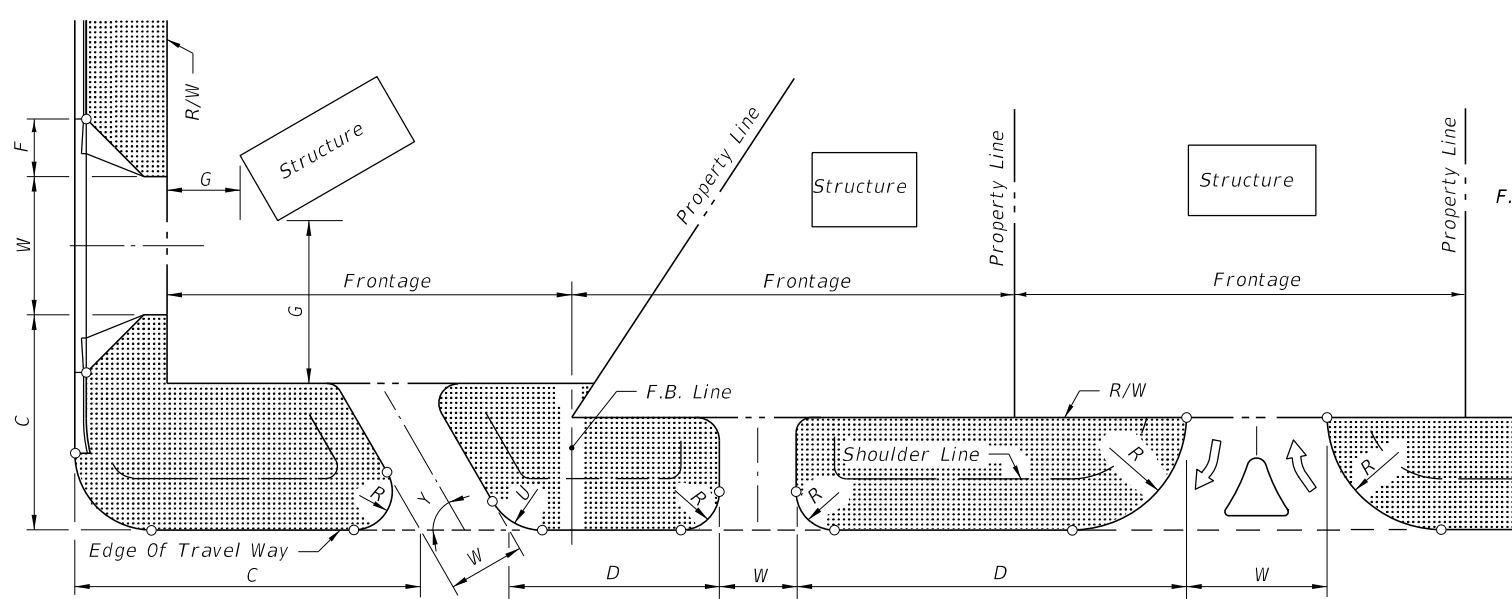
*d (Slope Ratio)	
30 MPH	1: 100
40 MPH	1: 125
45-50 MPH Δ	1: 150

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

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

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11/01/17	



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. (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**

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Footnotes:

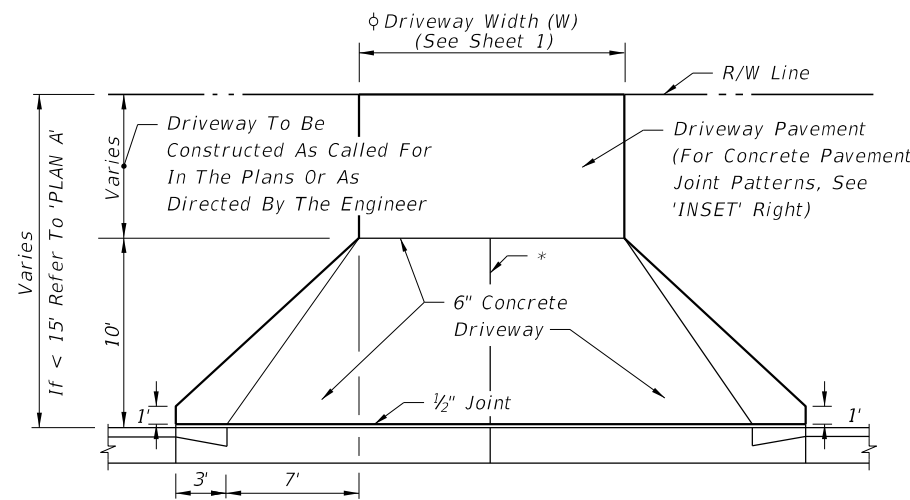
All 1/2" joints shall be constructed with preformed joint filler.

* 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.

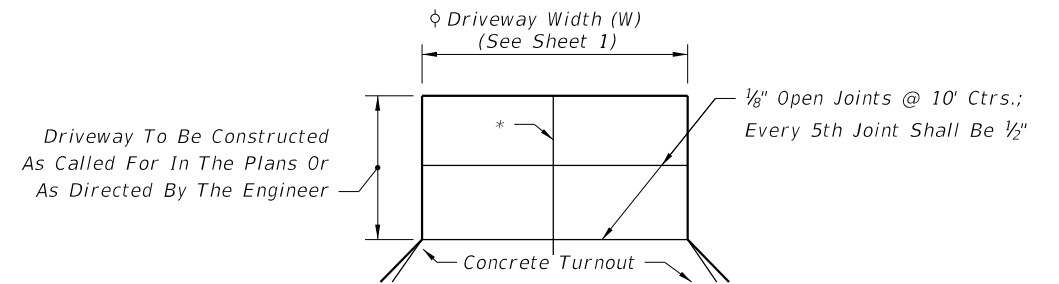
△ When connecting to side road curb and gutter sections, the no drop curb limits should extend back to the side road radius point. With or without curb and gutter, no driveway should encroach on the corner radius.

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

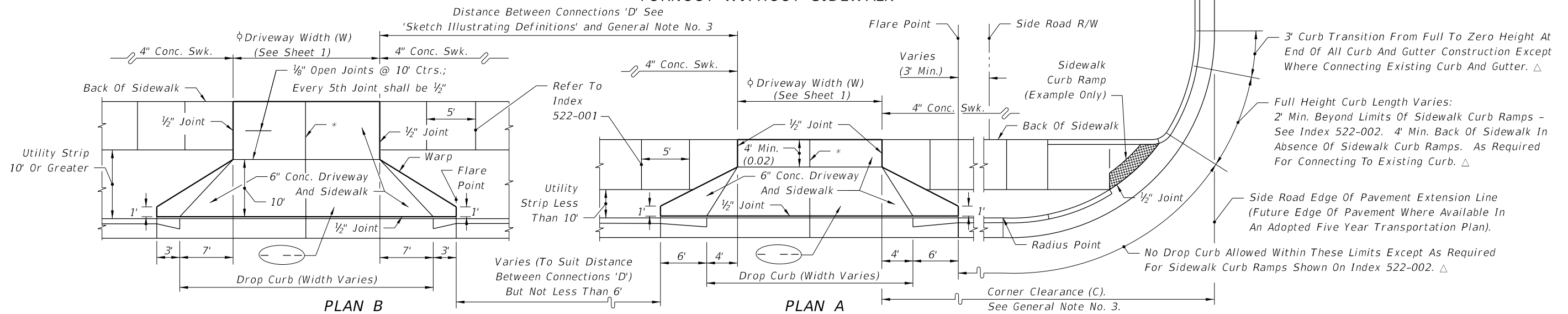
⊖ Alpha-numeric identification of a flared driveway type specifically called for in the plans, see sheets 3 and 4.



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

- 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 520-001 and 522-002 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.

DESIGN NOTES FOR CURBED ROADWAY - FLARED TURNOUTS


- 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.

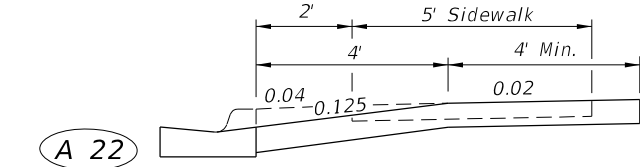
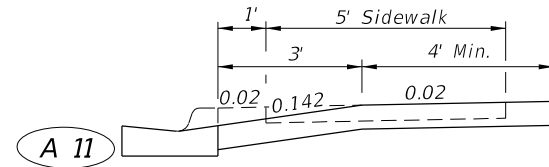
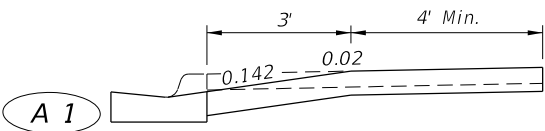
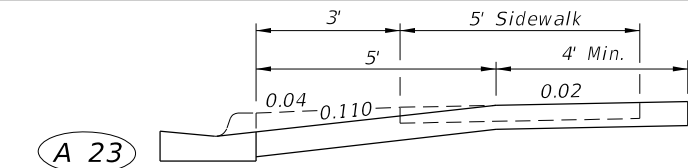
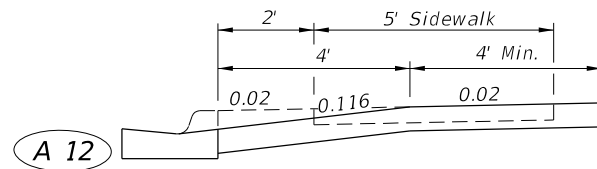
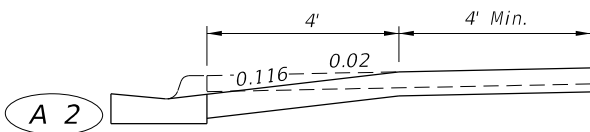
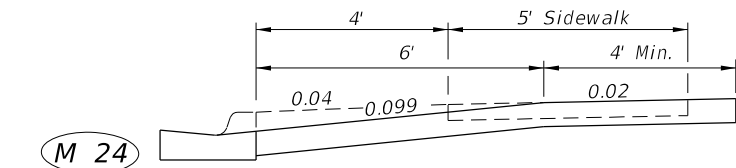
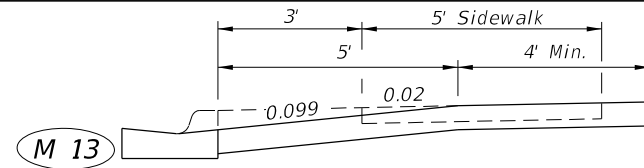
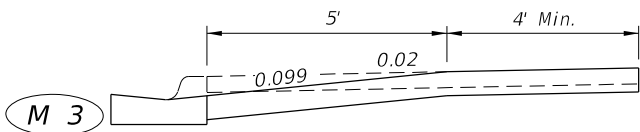
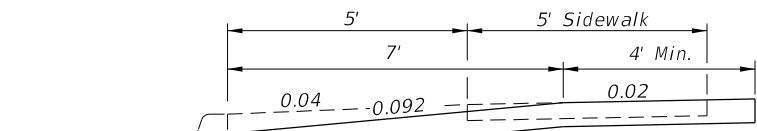
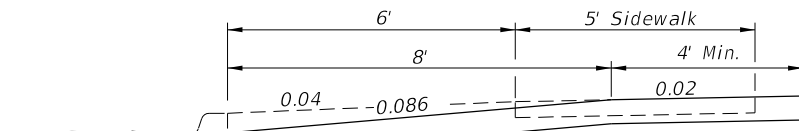
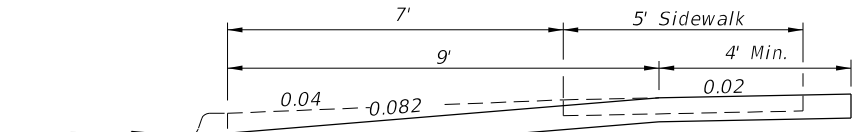
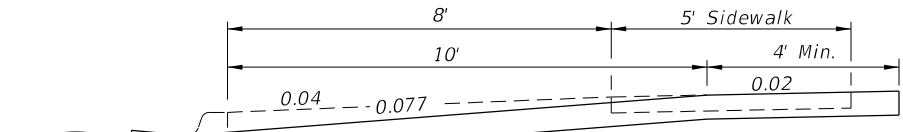
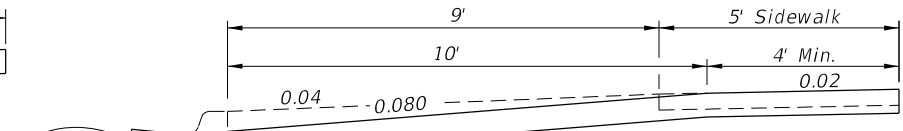
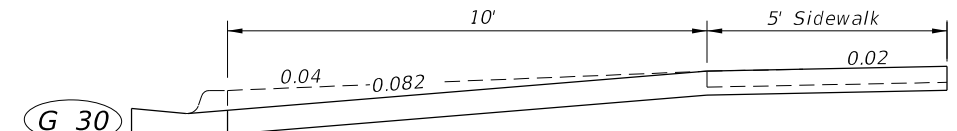
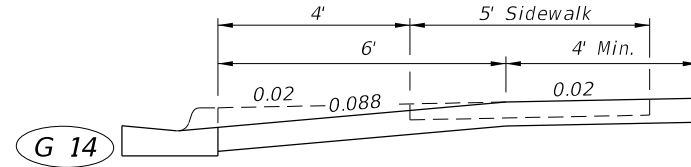
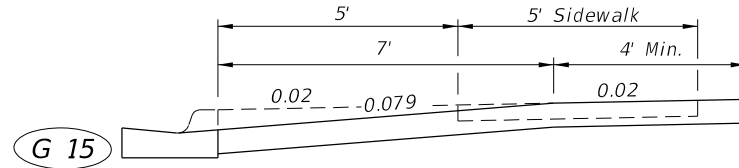
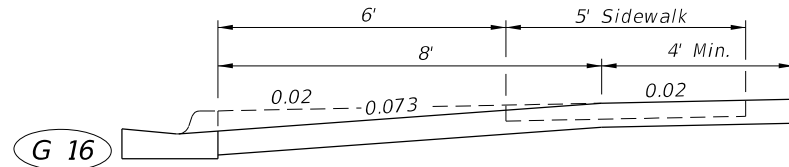
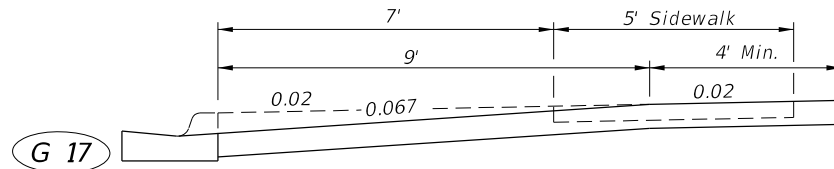
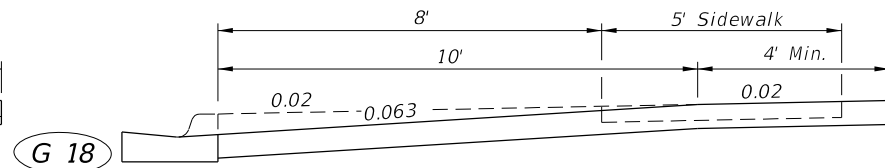
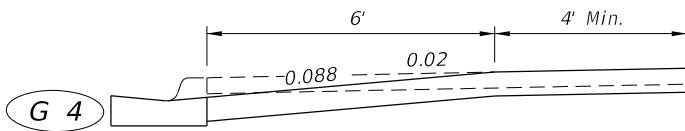
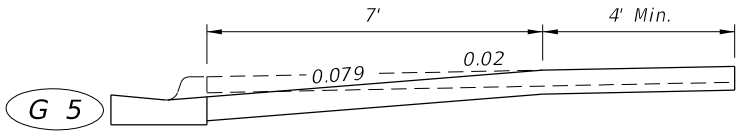
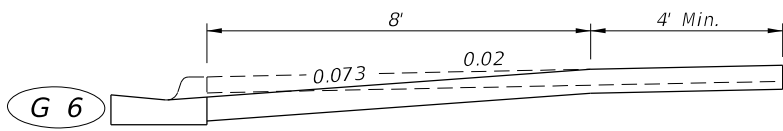
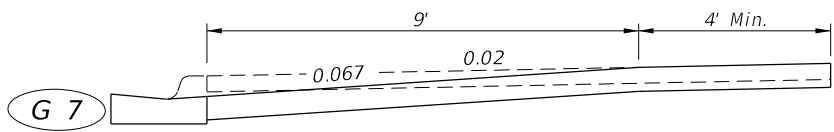
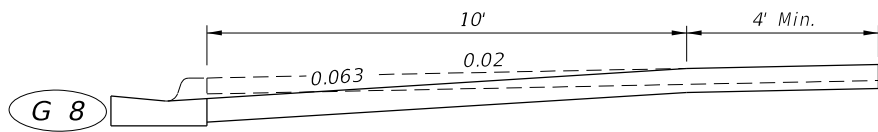
Driveways indicated as 'General Applications' are those with slopes that can readily accommodate representative standard passenger vehicles and those that can accommodate representative standard trucks, vans, buses and recreational vehicles operating under normal crown and superelevation conditions.
- 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

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LAST REVISION 11/01/17	DESCRIPTION:	 FY 2018-19 STANDARD PLANS	TURNOUTS AND DRIVEWAYS	INDEX 000-515	SHEET 2 of 7
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* 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

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LAST REVISION 11/01/17	DESCRIPTION:
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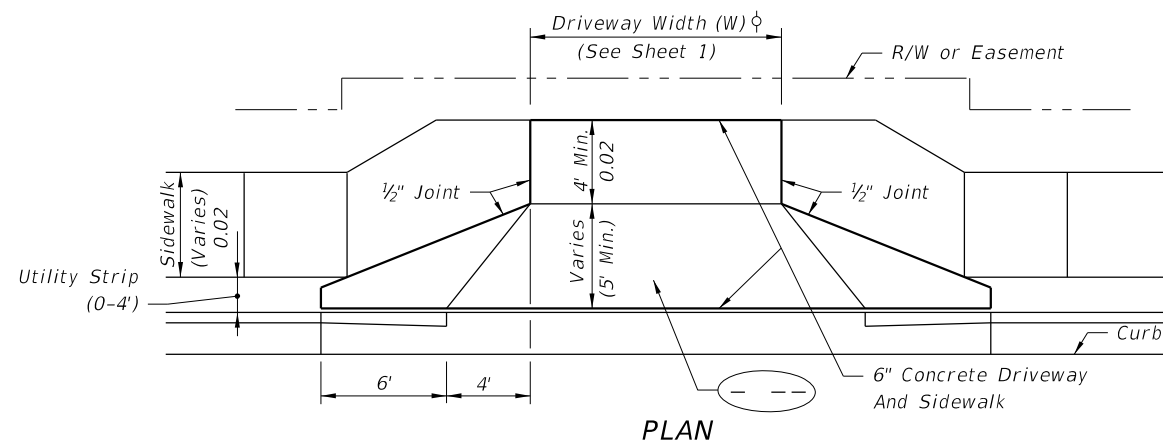


FY 2018-19
STANDARD PLANS

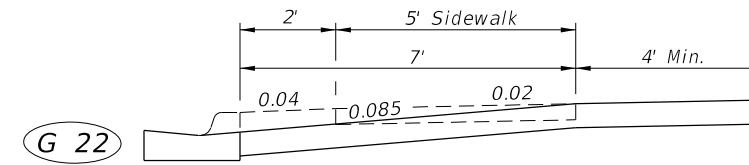
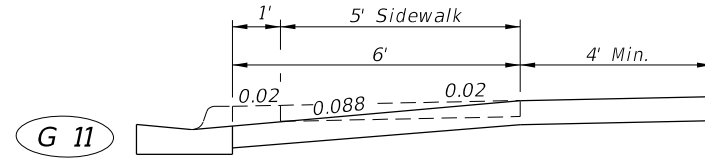
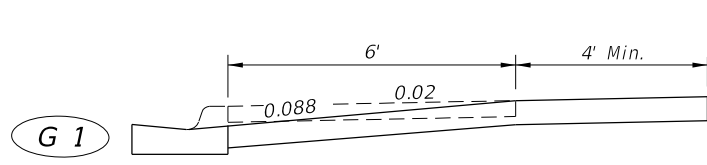
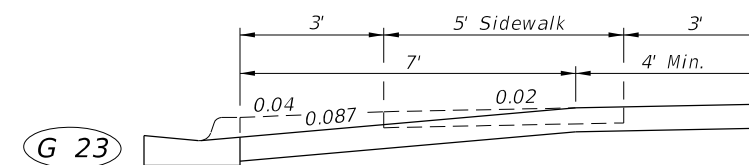
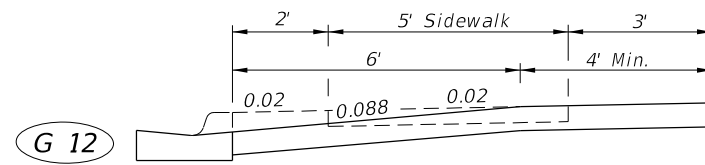
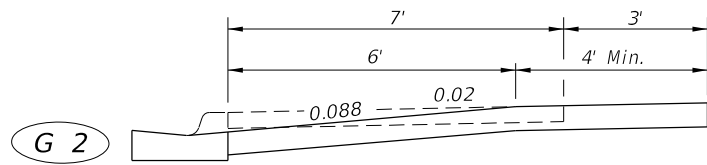
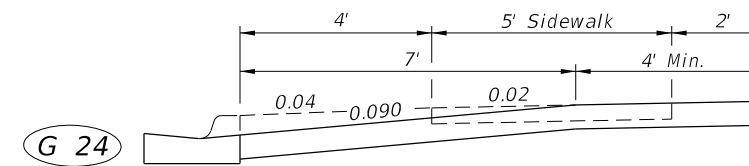
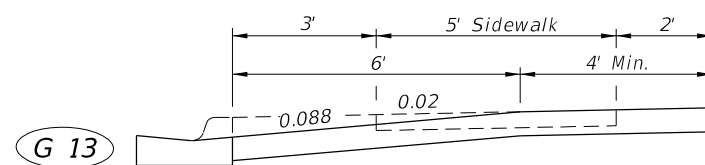
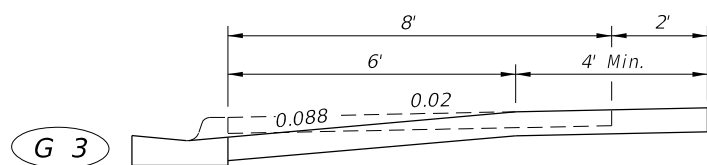
TURNOUTS AND DRIVEWAYS

INDEX
000-515

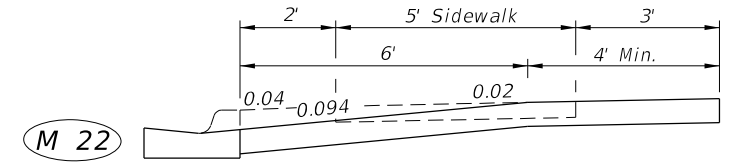
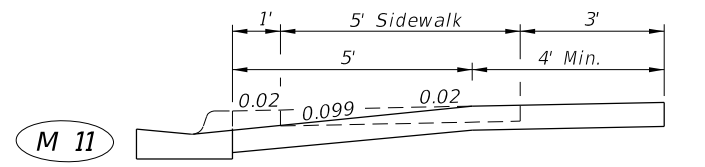
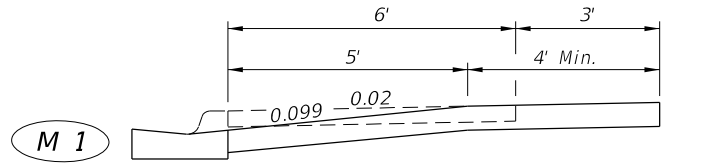
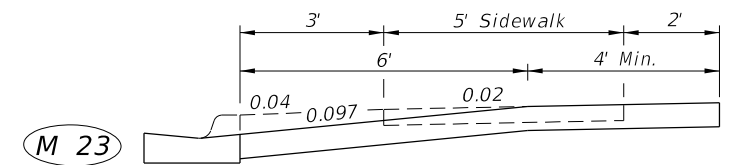
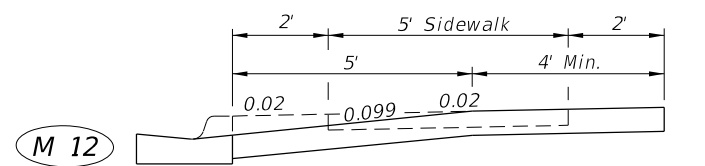
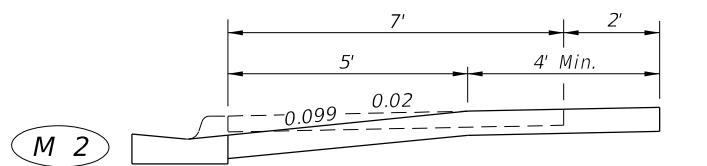
SHEET
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MODIFICATIONS OF 'ADVERSE' AND 'MARGINAL' APPLICATIONS



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



ADVERSE* SECTIONS MODIFIED TO ACHIEVE MARGINAL* APPLICATION

SIDEWALK WITH UTILITY STRIP ON 0.04 SLOPE

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

SIDEWALK ADJACENT TO CURB

SIDEWALK WITH UTILITY STRIP ON 0.02 SLOPE

MODIFICATIONS TO ADVERSE AND MARGINAL SECTIONS

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LAST REVISION 11/01/17	DESCRIPTION:
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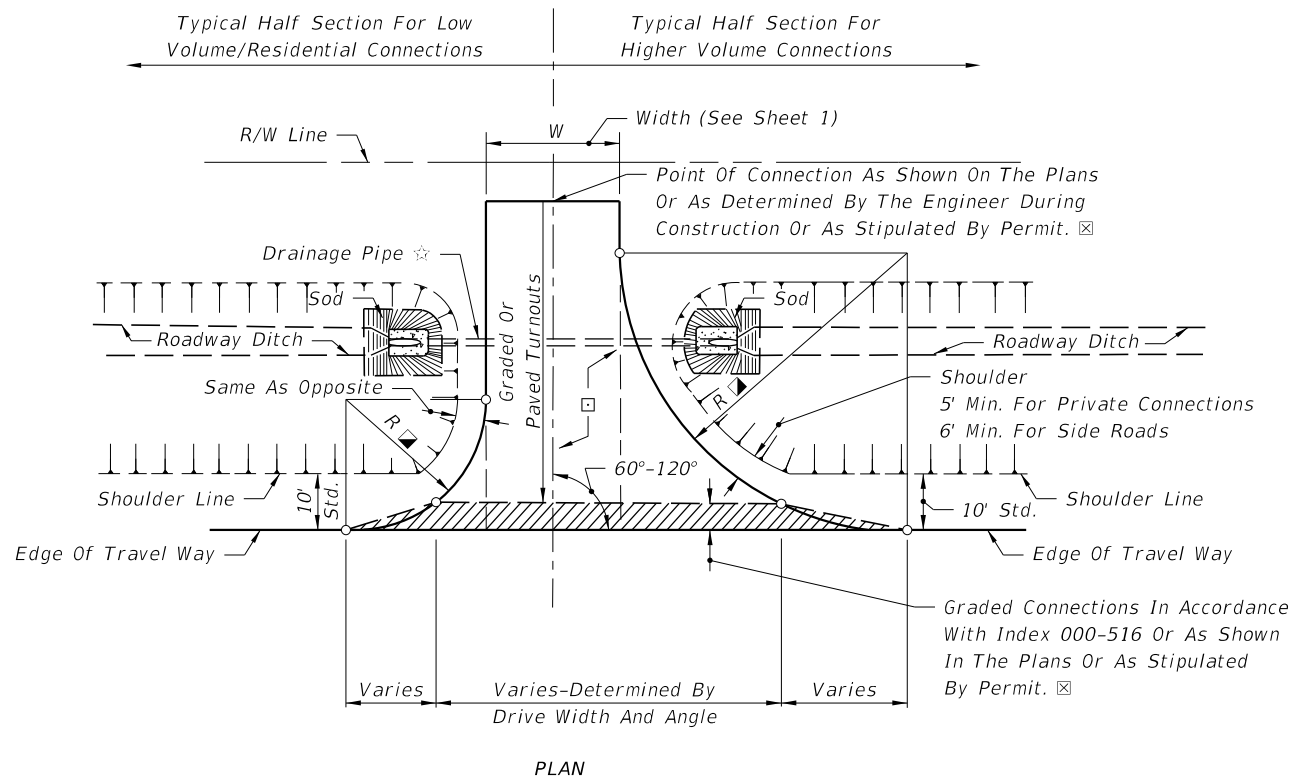


FY 2018-19
STANDARD PLANS

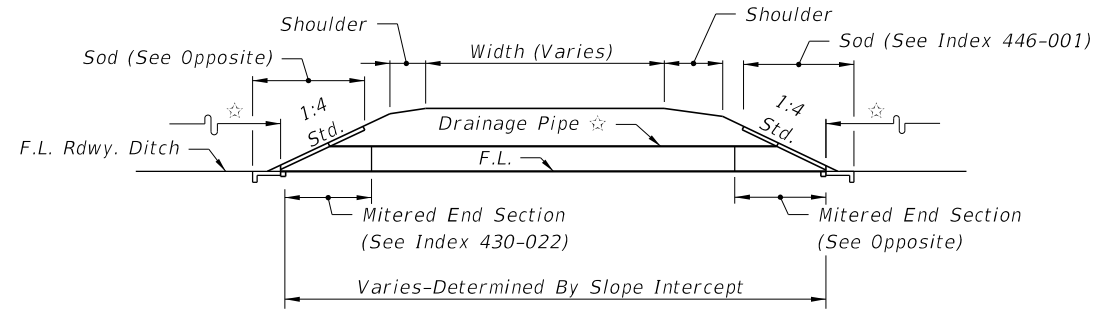
TURNOUTS AND DRIVEWAYS

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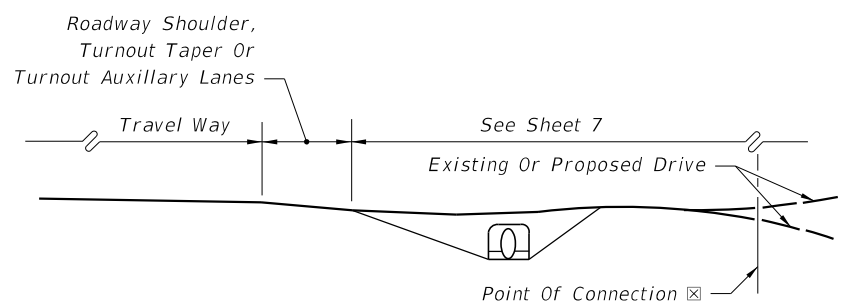
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PLAN

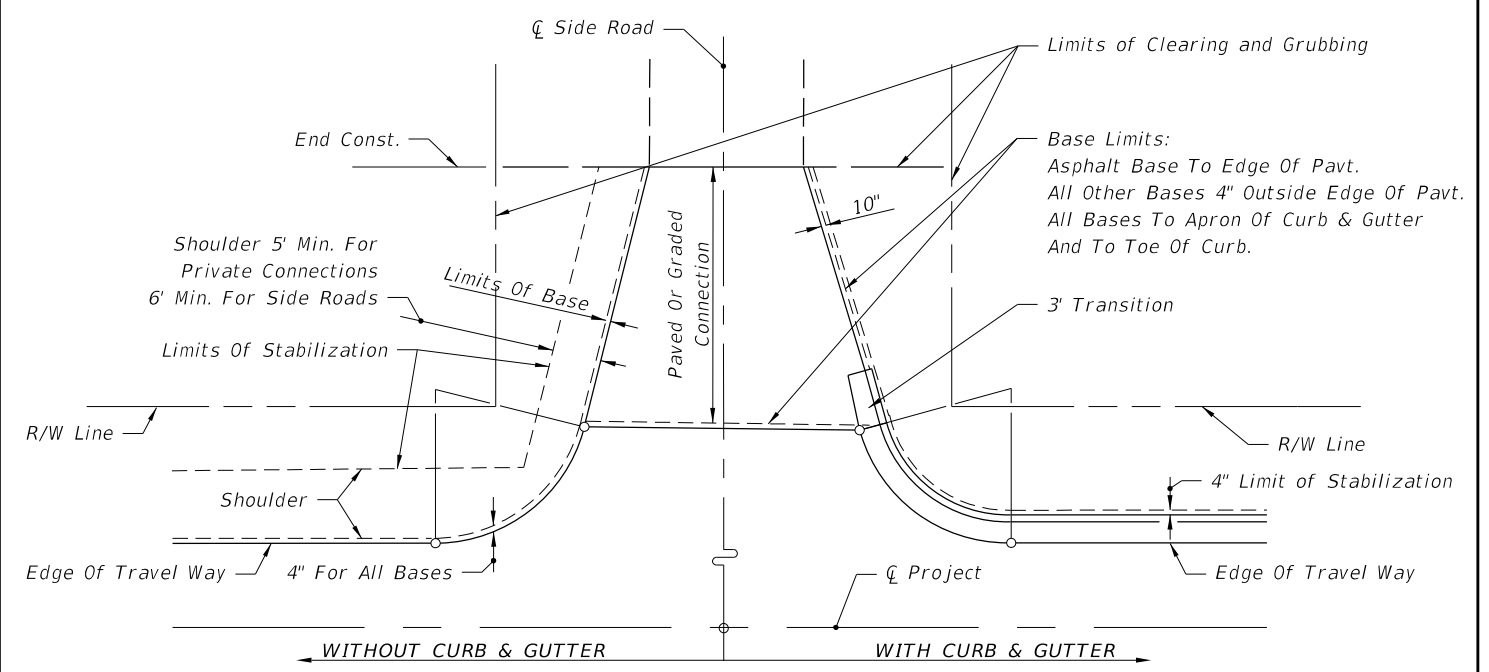


DRAINAGE SECTION



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 430-022. For spacing between adjacent pipe end treatments see Index 430-022.

☐ 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 turnout pavement requirement at graded connections 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.

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LAST REVISION 11/01/17	REVISION	DESCRIPTION:		FY 2018-19 STANDARD PLANS	TURNOUTS AND DRIVEWAYS	INDEX 000-515	SHEET 5 of 7
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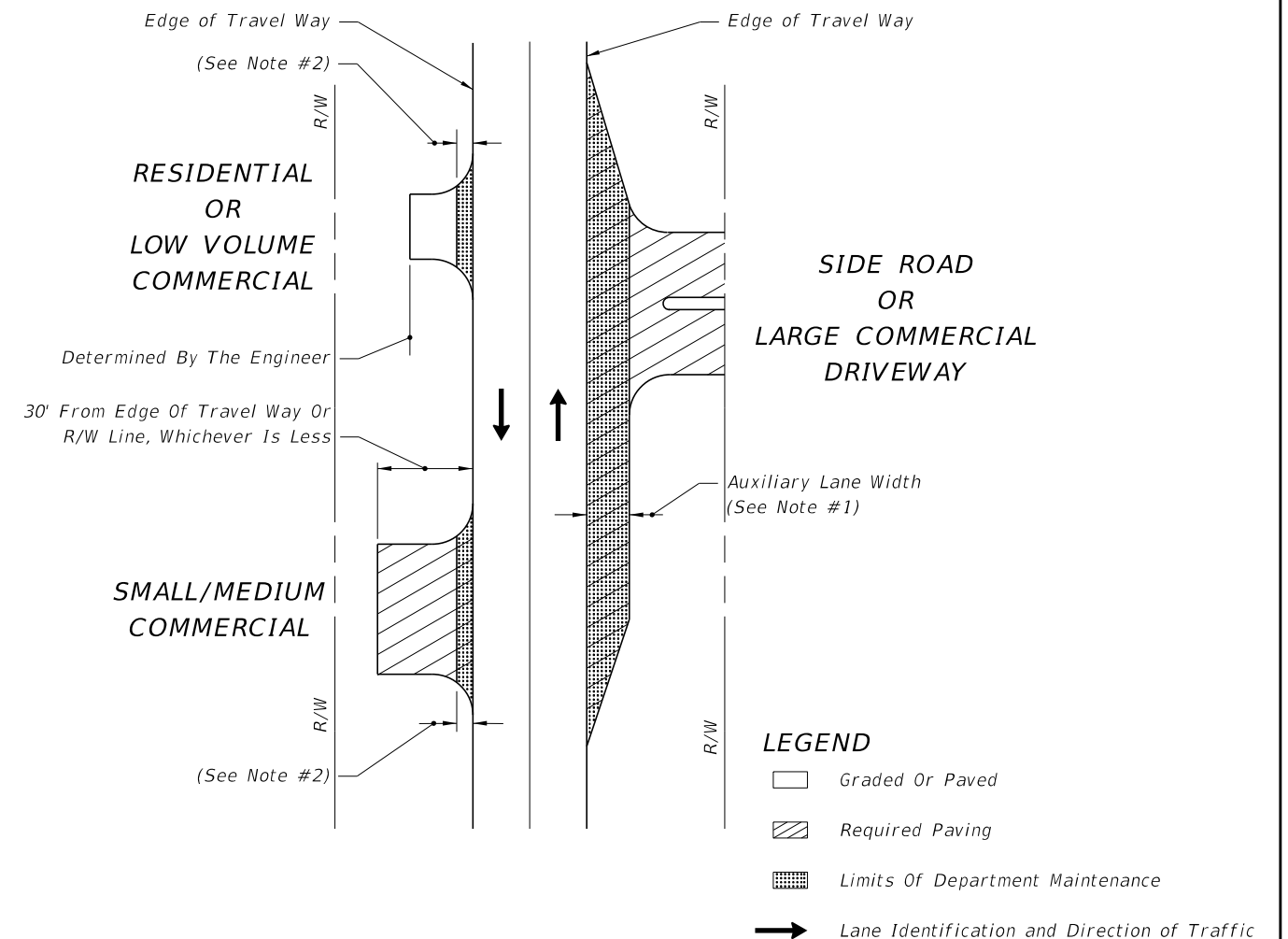
MATERIAL TYPES AND THICKNESSES IN DRIVING AREAS FOR ALL CONNECTIONS			
Course	Materials ②	Thickness (in.) ①	
		Connections ③	Roadway ④
Structural	Asphaltic Concrete	1"	1½"
Bases	Optional Base (See Spec. Section 285)	O.B.G. 1	O.B.G. 3

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.

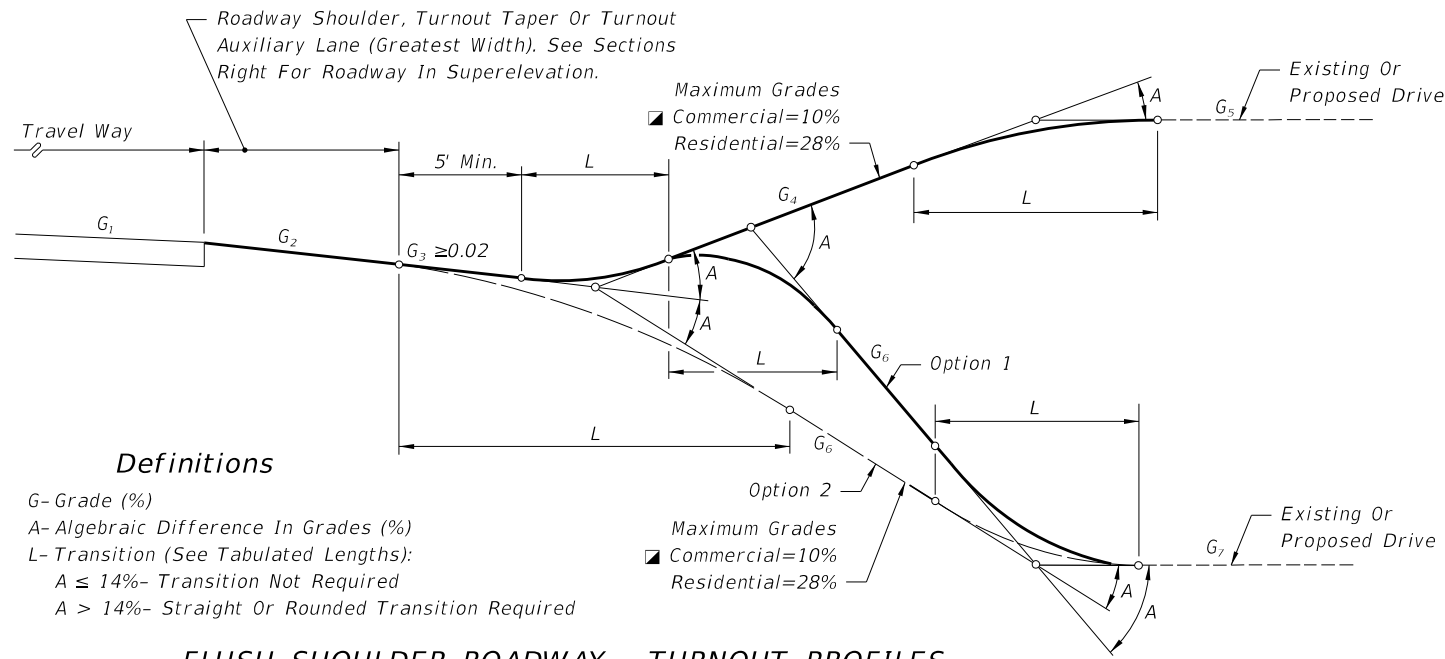
PAVEMENT STRUCTURE FOR TURNOUTS AND AUXILIARY LANES
TABLE 515-1



- NOTES**
- Auxiliary lane pavements and crossover pavements shall be maintained by the Department.
 - Department maintenance of turnout pavement extends 5' from edge of the travel way or to the edge of paved shoulder, whichever is greater. The remainder of any turnout paved area on the right of way shall be maintained by the owner or his authorized agent. As a function of routinely reworking shoulders, the Department may grade and shape existing material on nonpaved areas beyond the maintained pavement.
 - Control and maintenance of drainage facilities within the right of way shall be solely the responsibility of the Department, unless specified differently by Department permit.
 - 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.

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

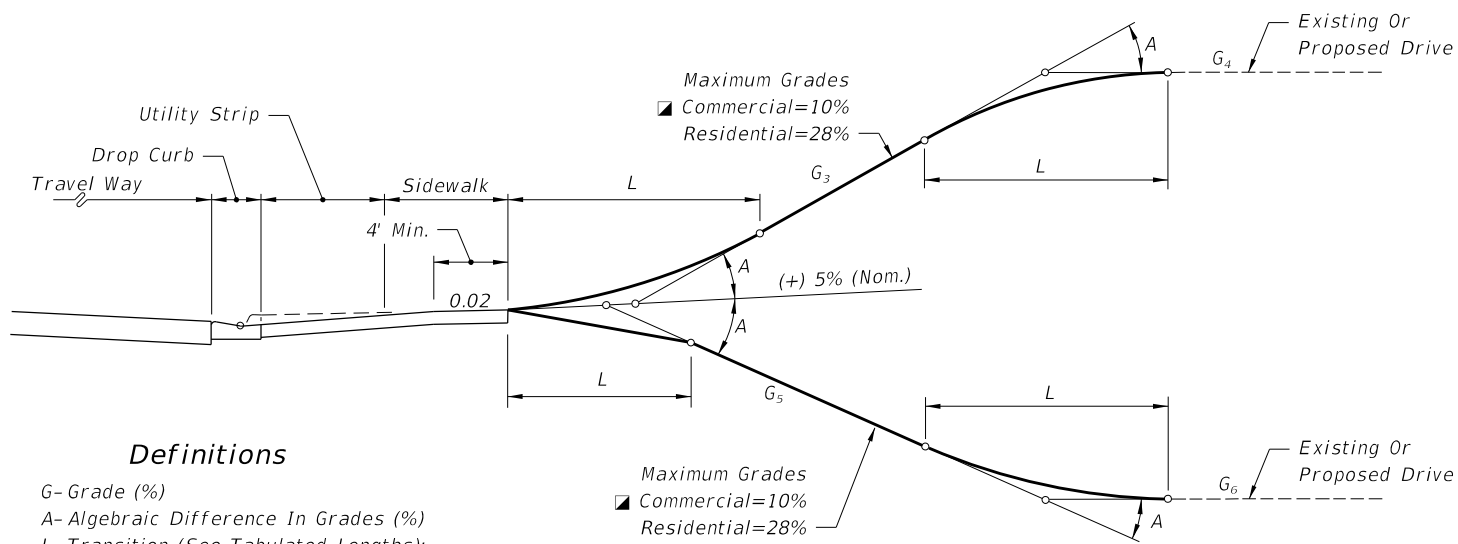
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Definitions

G- Grade (%)
 A- Algebraic Difference In Grades (%)
 L- Transition (See Tabulated Lengths):
 A ≤ 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 ≤ 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			
	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.

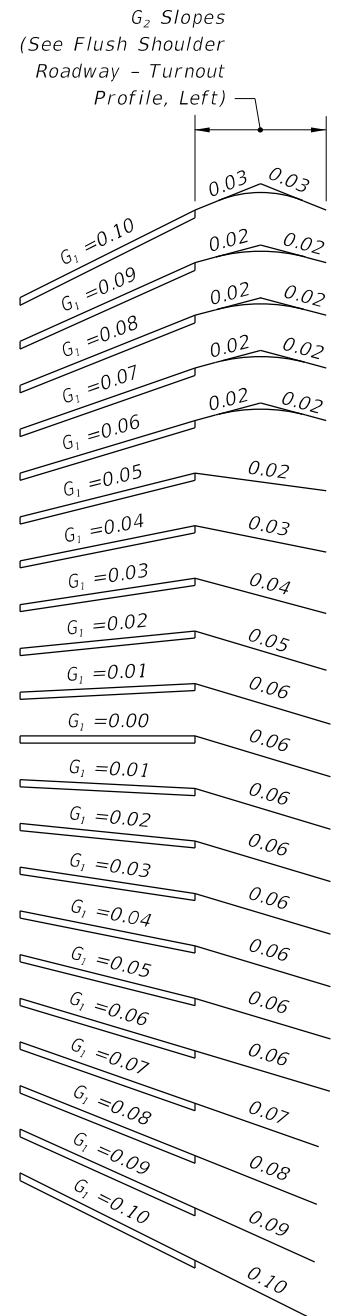
Desirable: Desirable minimum lengths {Greater lengths than minimum and desirable are recommended where practical for flatter and smoother profile.}
 Minimum: Absolute minimum lengths

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.

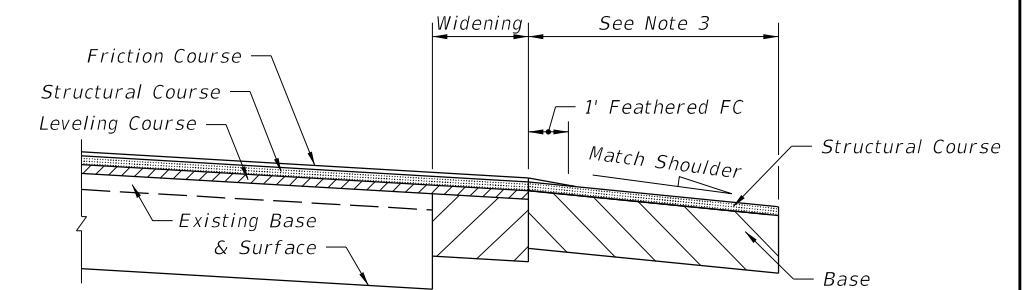
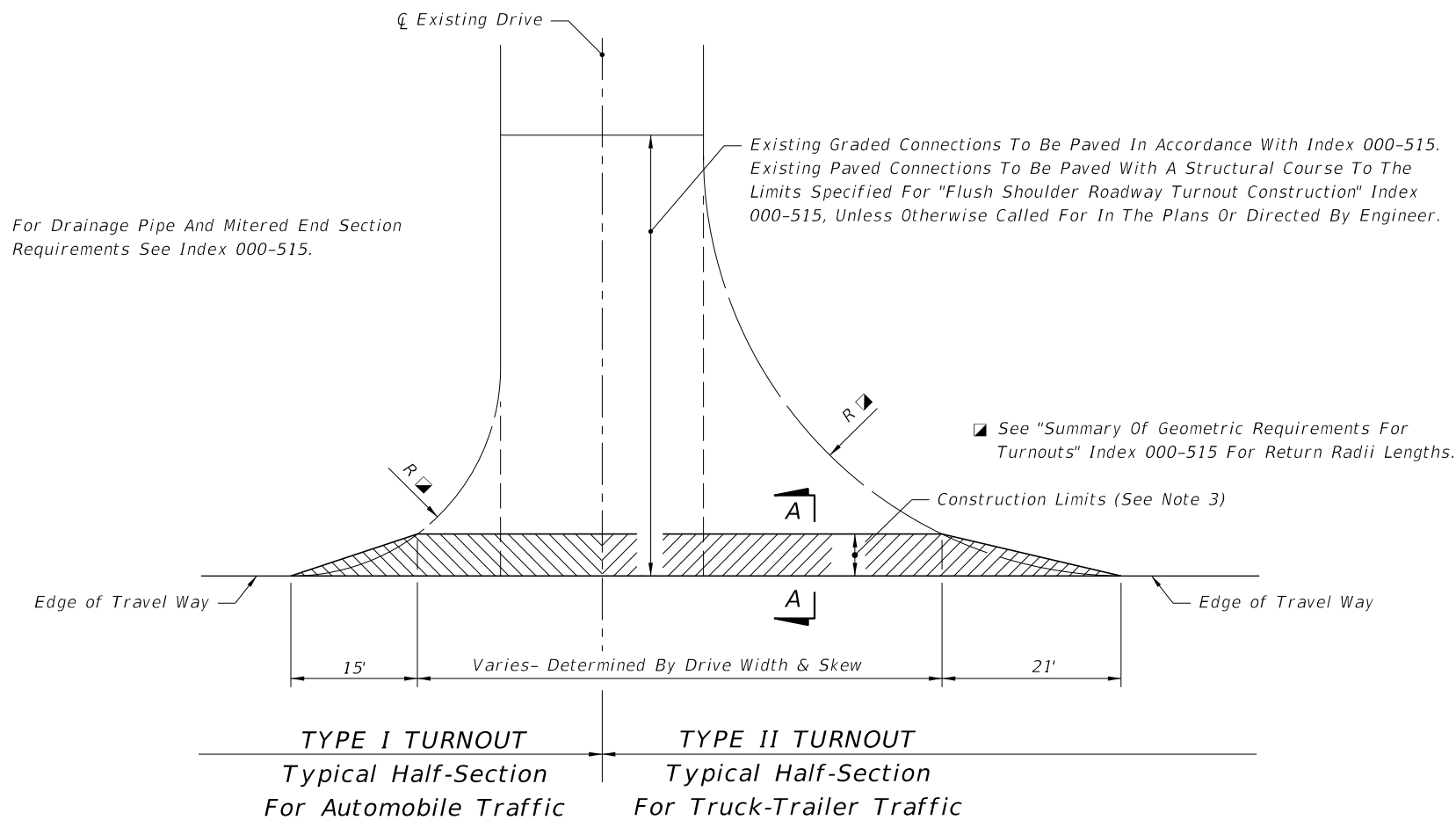
TURNOUT PROFILES



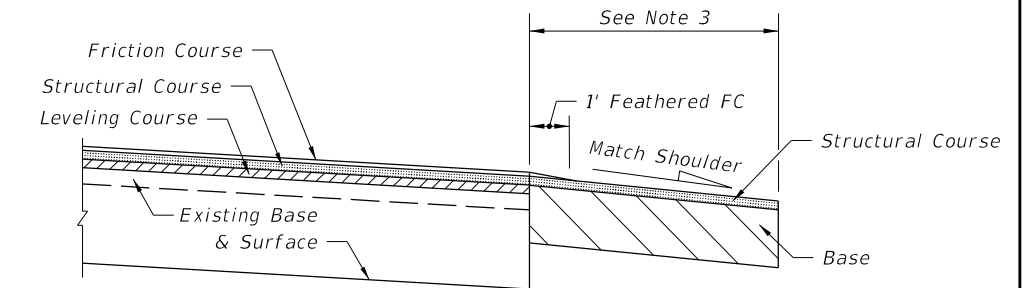
ROADWAY PAVEMENT SLOPES AND SLOPES OF ABUTTING FLUSH SHOULDER ROADWAY TURNOUT SURFACES (G₂)

SUPERELEVATION SECTIONS

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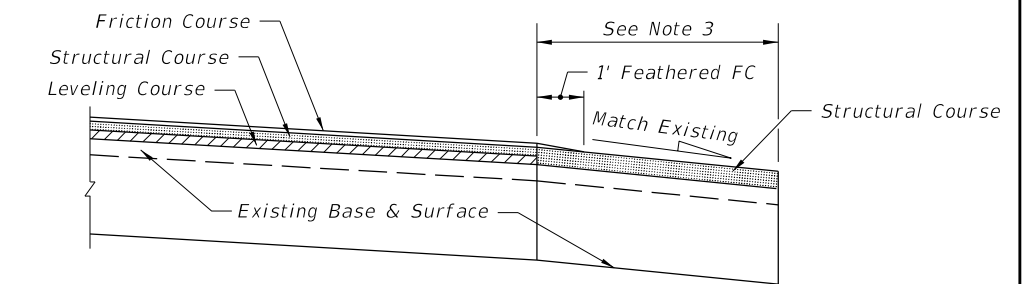


SECTION AA - WITH WIDENING



SECTION AA - WITHOUT WIDENING

TURNOUT CONSTRUCTION



SECTION AA

RESURFACING EXISTING TURNOUT

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

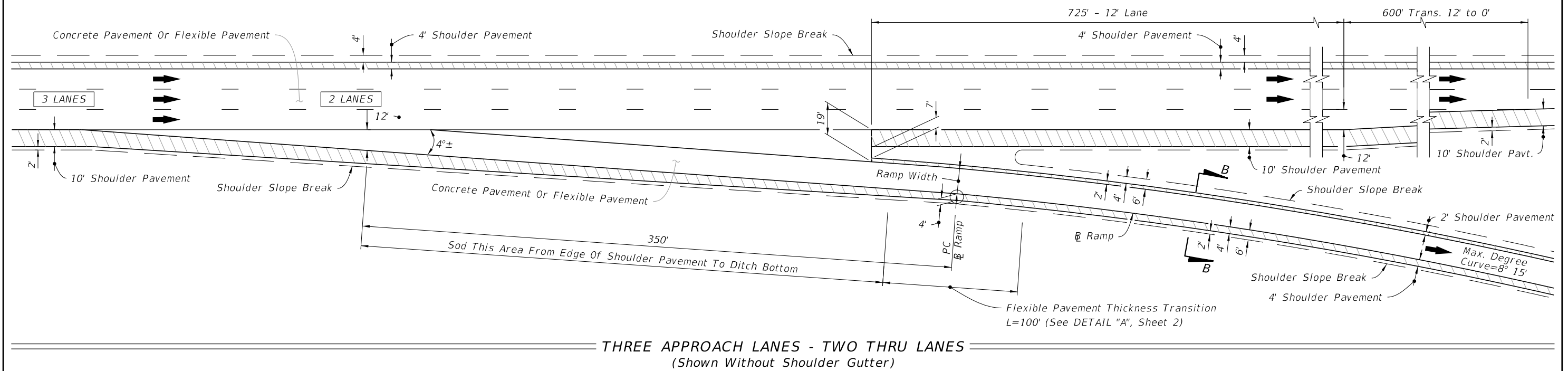
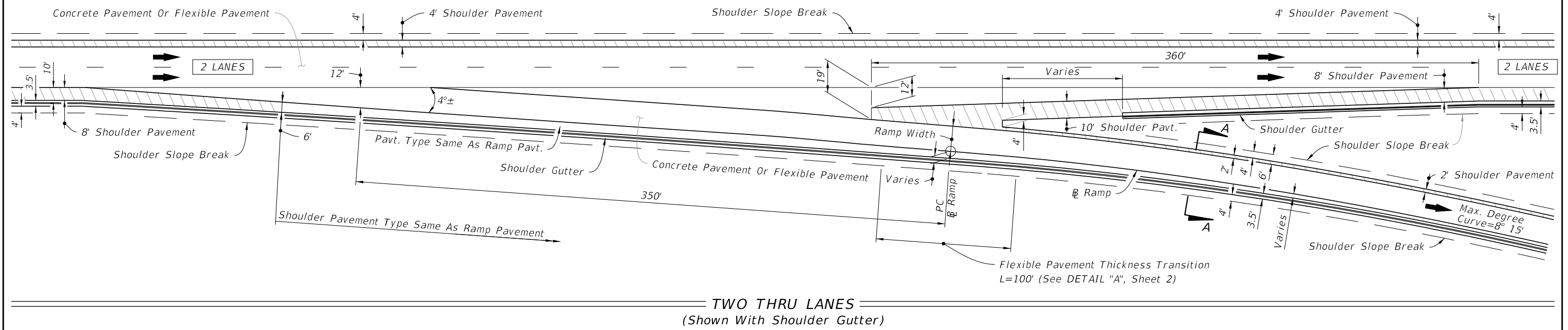
- Notes:
1. Turnout structural course to be the same material as roadway leveling or structure course. Structural course not required if asphalt base course and its thickness increased to match edge of roadway pavement.
 2. Any Department-approved pavement structure equivalence may be used at the discretion 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. Match existing paved shoulder widths $\geq 4'$. For all other shoulders conditions, construct at 5' wide.
4. Connections beyond the shoulder width are to be constructed as directed by the Engineer.
5. The contract unit price for Turnout Construction includes the cost for excavation and base.
6. Payment for structural course is to be included in roadway resurfacing pay item.
7. 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.

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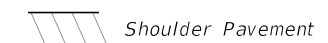
LAST REVISION 11/01/17	REVISION	DESCRIPTION:
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GENERAL NOTES:

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 350-001.

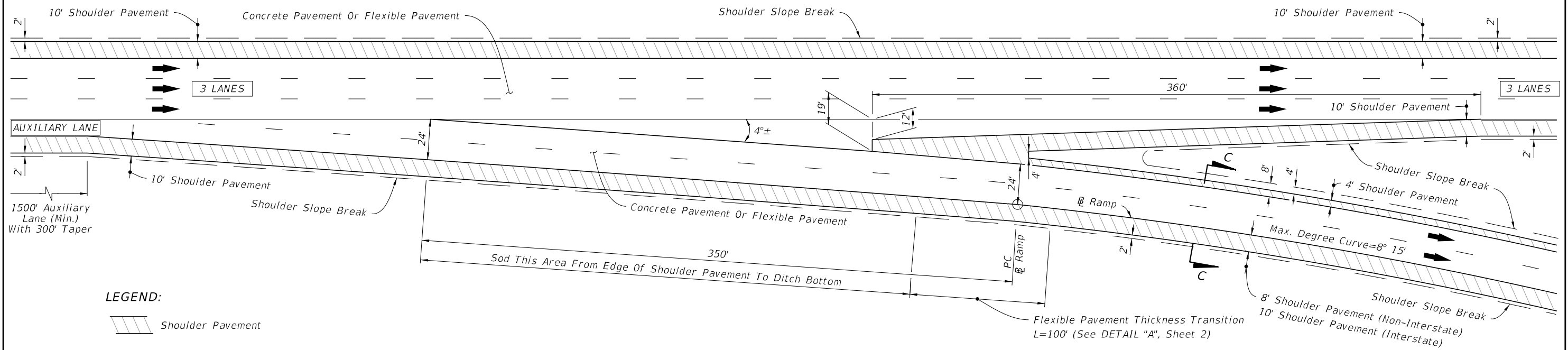
LEGEND:



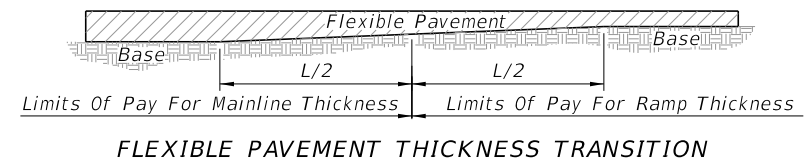
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SINGLE LANE RAMPS - EXIT TERMINALS

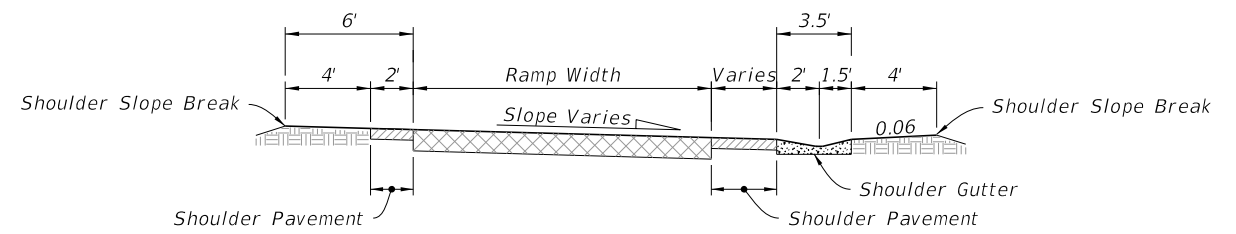


THREE THRU LANES - APPROACH AUXILIARY LANE
(Shown Without Shoulder Gutter)

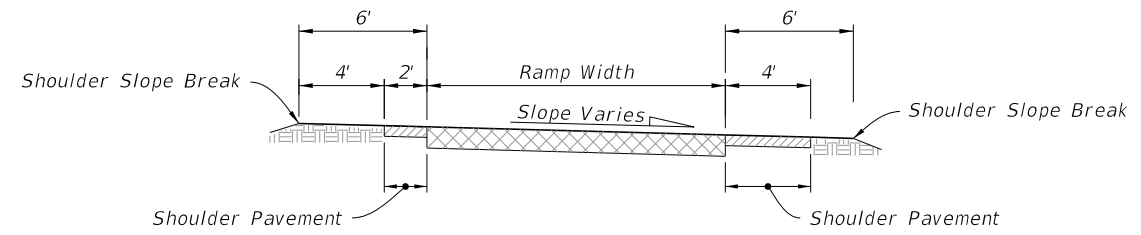


FLEXIBLE PAVEMENT THICKNESS TRANSITION

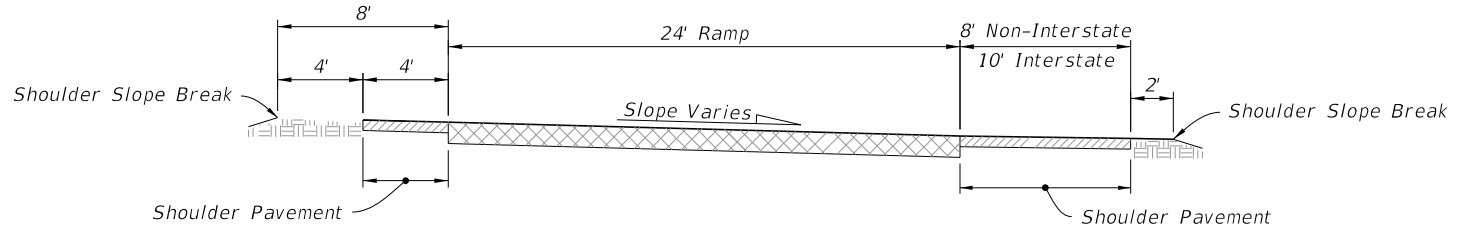
DETAIL "A"



SECTION A-A



SECTION B-B



SECTION C-C

TWO LANE RAMPS - EXIT TERMINALS

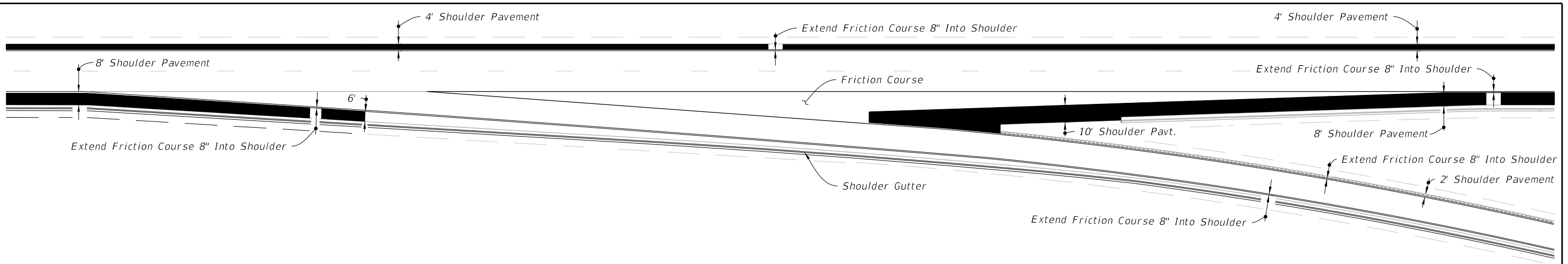
LAST REVISION 11/01/17	REVISION	DESCRIPTION:
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FY 2018-19
STANDARD PLANS

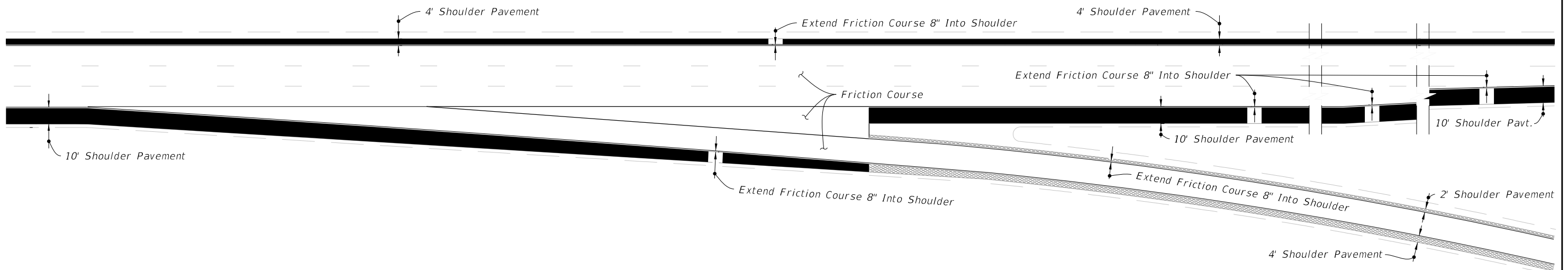
RAMP TERMINALS

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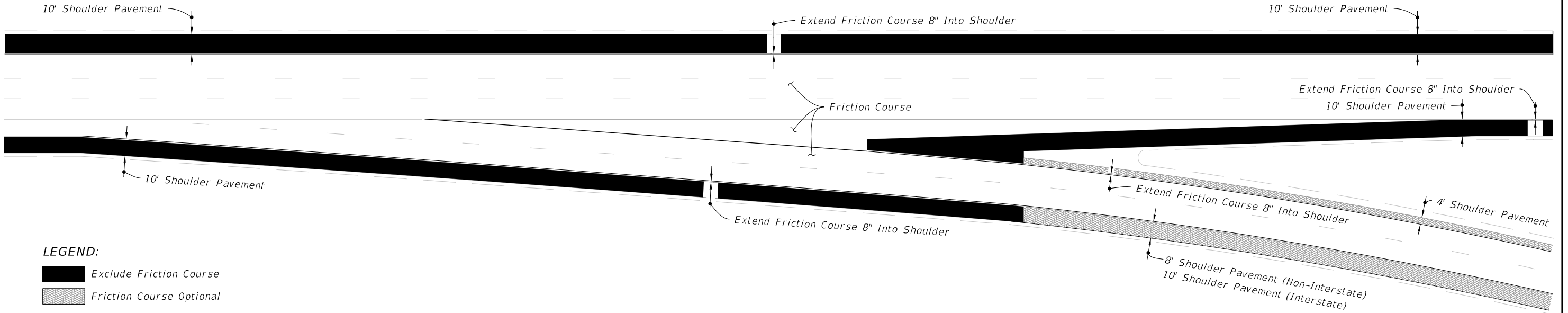
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TWO THRU LANES
(Shown With Shoulder Gutter)



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




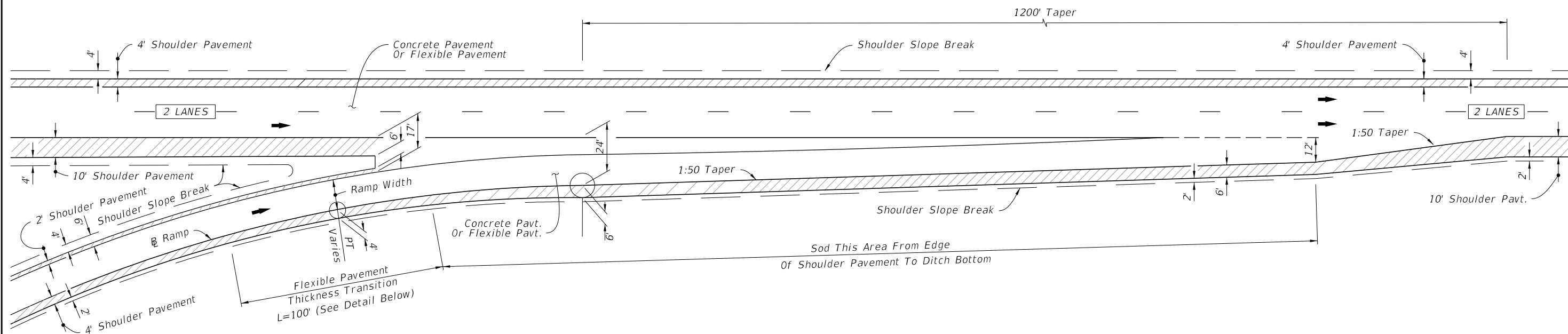
THREE THRU LANES - APPROACH AUXILIARY LANE
(Shown Without Shoulder Gutter)

EXIT TERMINALS - FRICTION COURSE LOCATION (FOR FLEXIBLE PAVEMENT)

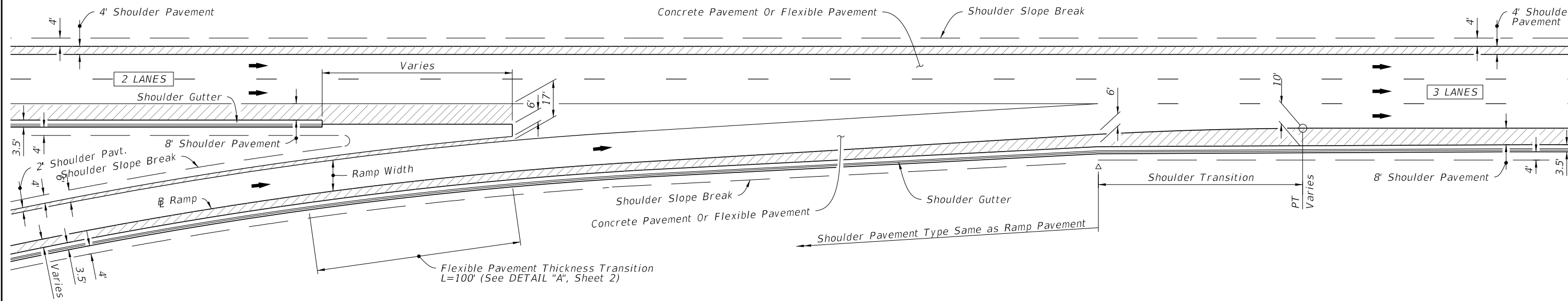
LEGEND:
 ■ Exclude Friction Course
 ▨ Friction Course Optional

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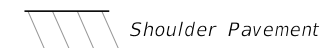


TAPER - TYPE ENTRANCE



PARALLEL - TYPE ENTRANCE

LEGEND:



SINGLE LANE RAMPS - ENTRANCE TERMINALS

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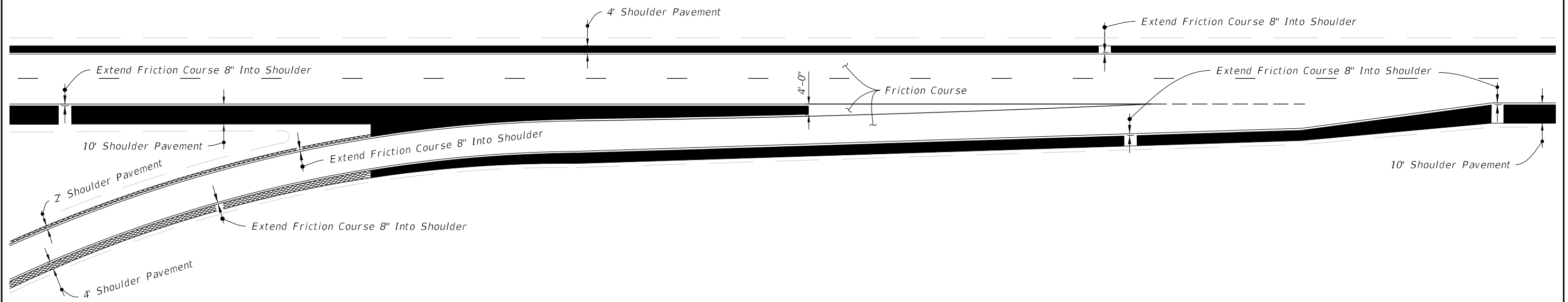


FY 2018-19
STANDARD PLANS

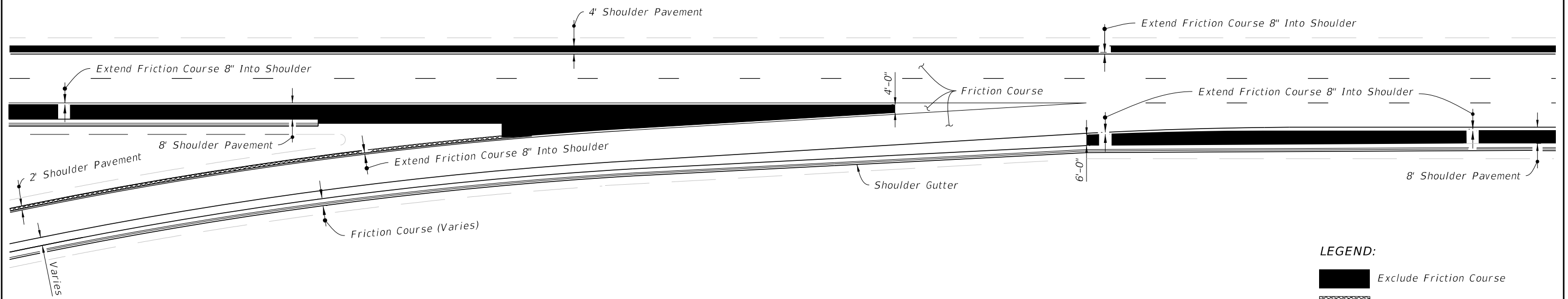
RAMP TERMINALS

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SHEET
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TAPER - TYPE ENTRANCE
(Shown Without Shoulder Gutter)



PARALLEL - TYPE ENTRANCE
(Shown With Shoulder Gutter)

ENTRANCE TERMINALS - FRICTION COURSE LOCATION (FOR FLEXIBLE PAVEMENT)

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