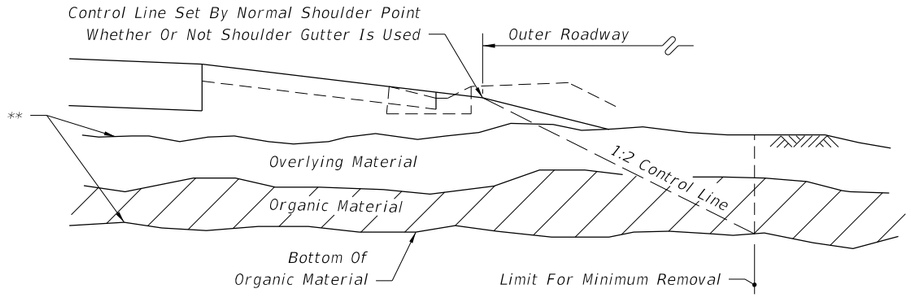
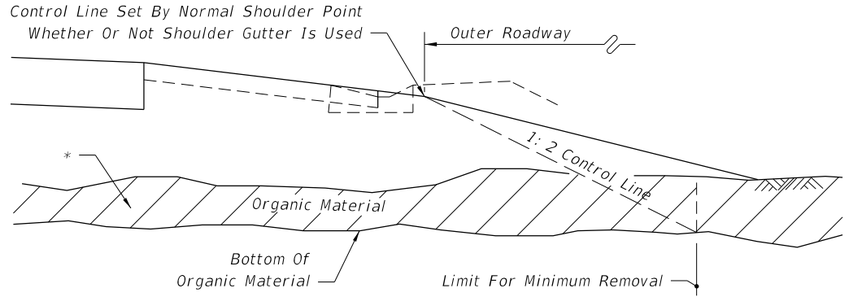
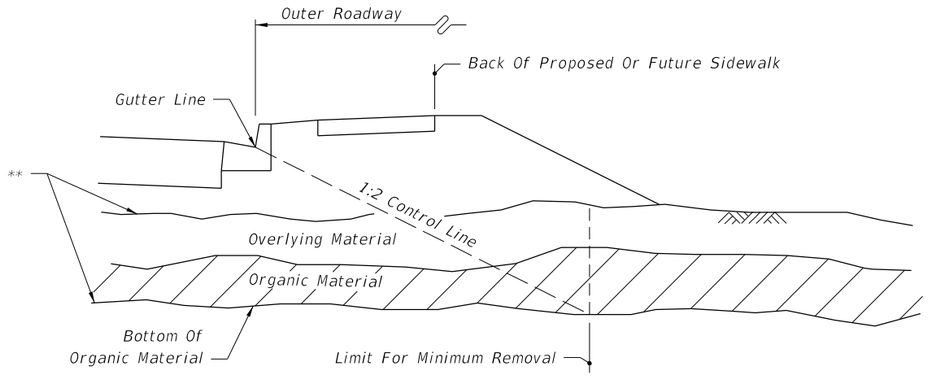



WITH OVERBURDEN - HALF SECTION

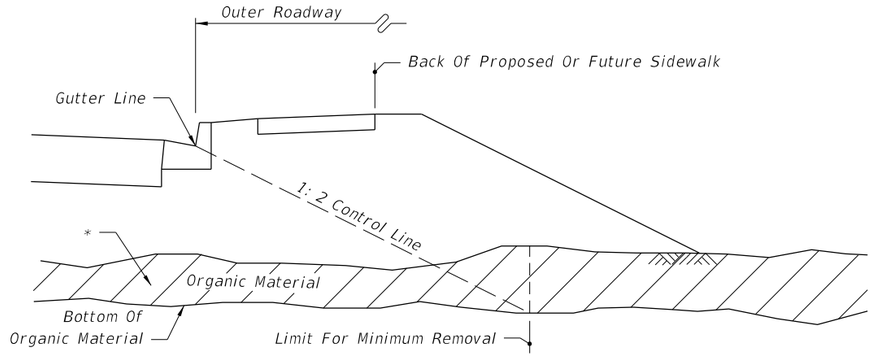



WITHOUT OVERBURDEN - HALF SECTION

IN RURAL CONSTRUCTION




WITH OVERBURDEN - HALF SECTION




WITHOUT OVERBURDEN - HALF SECTION

** Remove overlying material and organic material within the limits shown and backfill in accordance with Index no. 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.

IN URBAN CONSTRUCTION

* Remove organic material within the limits shown and backfill in accordance with Index no. 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.

# REMOVAL OF ORGANIC MATERIAL

## GENERAL NOTES

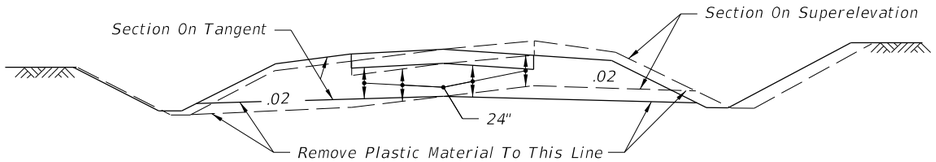
1. All details shown on this index for removal of organic and plastic materials apply unless otherwise shown on the plans.
2. Utilization of excavated materials shall be in accordance with Index No. 505.
3. Where organic or plastic material is undercut, backfill shall be made of suitable material in accordance with Index No. 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 No. 505.
5. 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. Organic material shall be removed as shown on this index and the plans unless directed otherwise by the District Geotechnical Engineer. Average organic content shall be determined from the test results from a minimum of three randomly selected samples from each stratum. Tests shall be performed in accordance with AASHTO T 267 on the portion of a sample passing the No. 4 sieve.
6. The normal depth of side ditches shall be 3.5' below the shoulder point except in special cases.
7. In municipal areas, 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 shall conform to FDOT specifications. Minimum grade on underdrain pipe shall be 0.2%.
8. See Index No. 506 for miscellaneous earthwork details.

## DESIGN NOTES

1. At locations where organic material or other soft soil deposits persists to such depth that removal is impractical, the construction of a geosynthetic foundation over those soils should be considered. The Engineer of Record should request guidance from the District Geotechnical Engineer and make a geosynthetic foundation design in accordance with Index No. 501 when pursuing geosynthetic alternates.
2. The designer shall take into consideration the expectancy of roadway widening to the outside, and where widening is anticipated specify in the plans the limits of removal of organic and plastic materials necessary to accommodate anticipated widening.

12/3/2015 11:36:15 AM

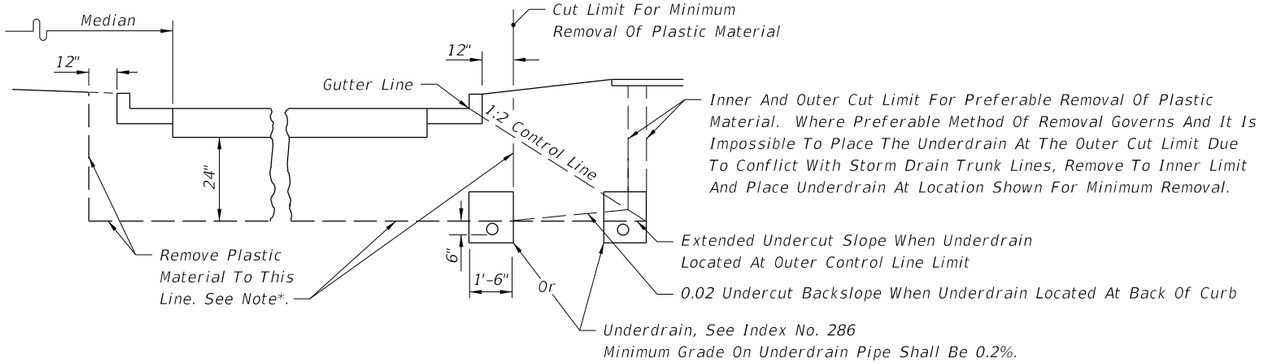
| LAST REVISION | REVISION | DESCRIPTION: | | | | |
|---|---|---|---|---|---|---|
| 07/01/15 | | | FDOT FY 2016-17 DESIGN STANDARDS | REMOVAL OF ORGANIC AND PLASTIC MATERIAL | INDEX NO. 500 | SHEET NO. 1 of 2 |




TYPICAL CUT SECTION

Note: When this detail is applied to minor collectors and local facilities, the undercut may be reduced to 18".

REMOVAL OF PLASTIC MATERIAL ON DIVIDED FREEWAYS, ARTERIALS AND MAJOR COLLECTORS HAVING FLUSH MEDIANS, AND ON UNDIVIDED ARTERIALS AND MAJOR COLLECTORS



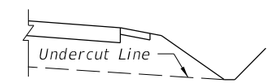

HALF SECTION

NOTES:

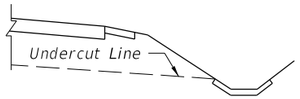
Refer to roadway cross sections to determine whether minimum or preferable removal is used.

* 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.

REMOVAL OF PLASTIC MATERIAL AND LOCATION OF UNDERDRAIN IN URBAN CONSTRUCTION

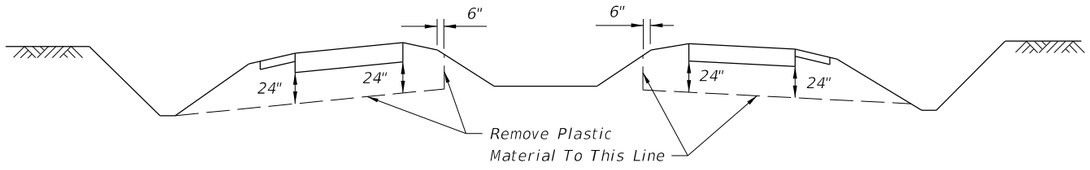



At locations where plastic material is being removed, the side ditches must be at least as deep as the undercut plane.

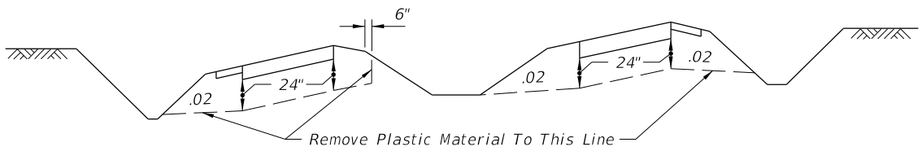



Where paved side ditches are used in areas of removal of plastic material, the top of the ditch pavement must be no higher than the undercut plane.

MISCELLANEOUS DETAILS




TYPICAL CUT SECTION ON TANGENT




TYPICAL CUT SECTION ON SUPERELEVATION

REMOVAL OF PLASTIC MATERIAL ON INTERSTATE FACILITIES, FREEWAYS, DIVIDED ARTERIALS AND MAJOR COLLECTORS HAVING DEPRESSED MEDIANS

# REMOVAL OF PLASTIC MATERIAL

Note: For GENERAL NOTES see Sheet 1.

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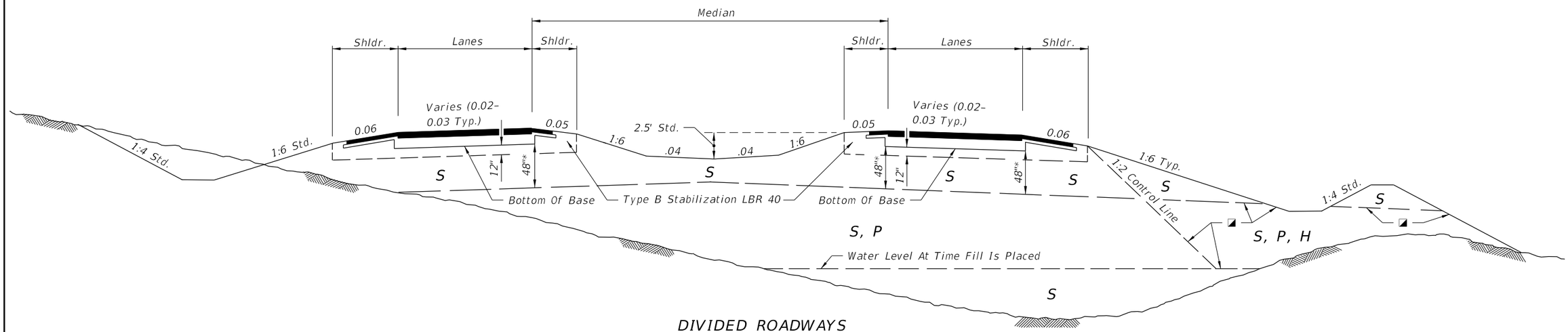
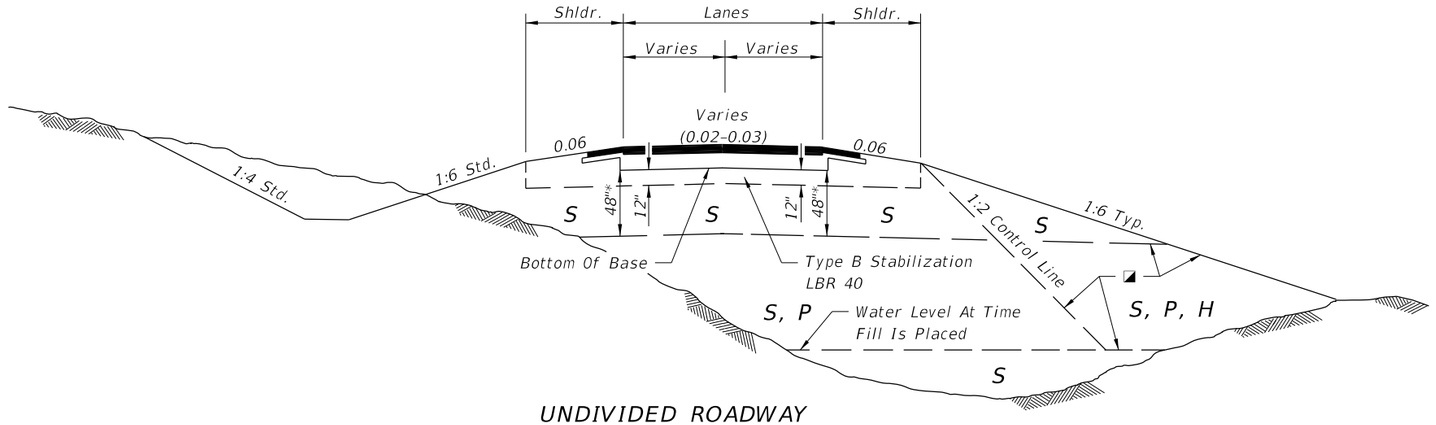
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | REMOVAL OF ORGANIC AND PLASTIC MATERIAL | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/09 | | | | | 500 | 2 of 2 |




DIVIDED ROADWAYS




UNDIVIDED ROADWAY

| SYMBOL | SOIL | CLASSIFICATION (AASHTO M 145) |
|---|---|---|
| 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

## 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.

## 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.

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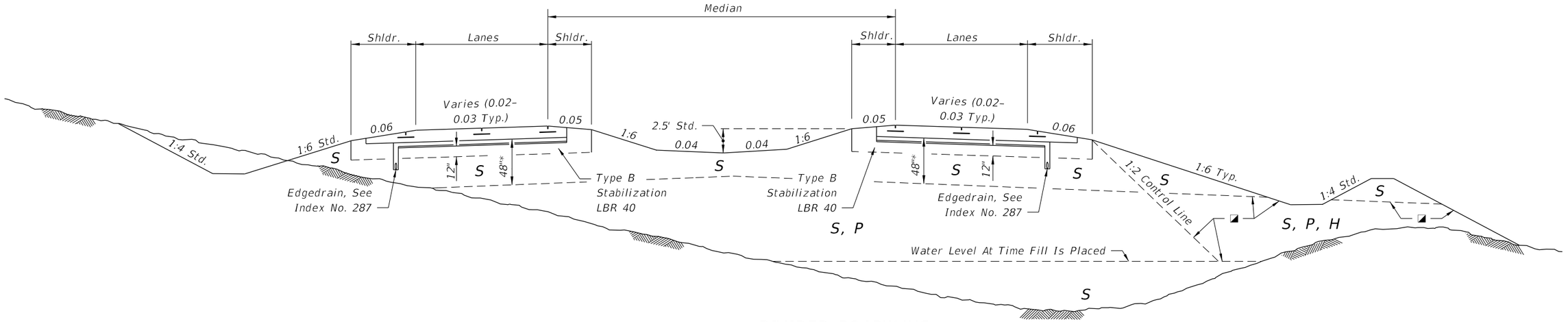
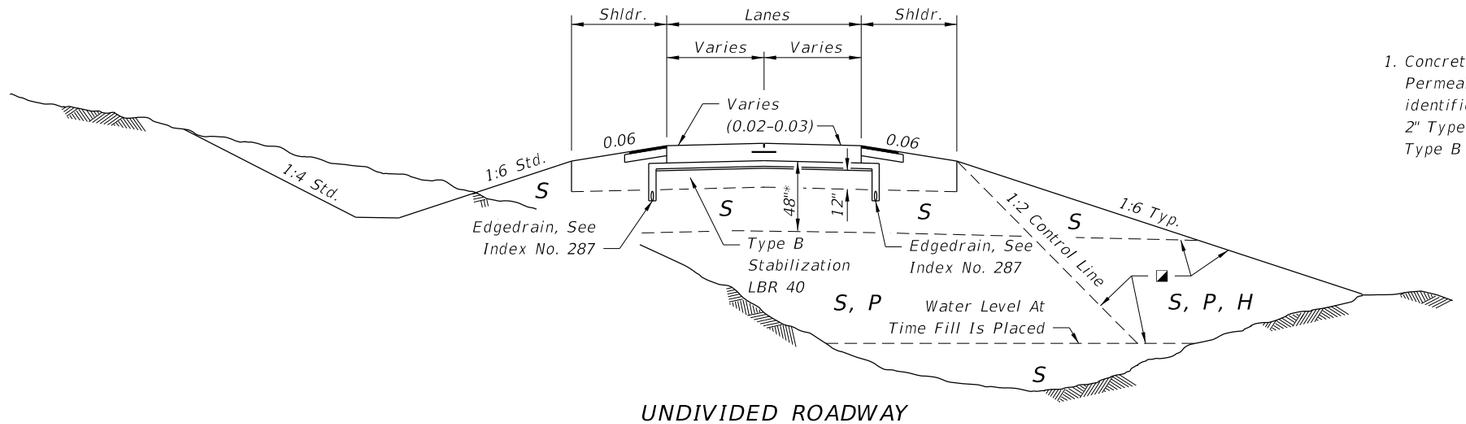
| LAST REVISION | REVISION | DESCRIPTION: | FY 2016-17 DESIGN STANDARDS | EMBANKMENT UTILIZATION | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/07 | | | | | 505 | 1 of 4 |




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.

| SYMBOL | SOIL | CLASSIFICATION (AASHTO M 145) |
|---|---|---|
| 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.

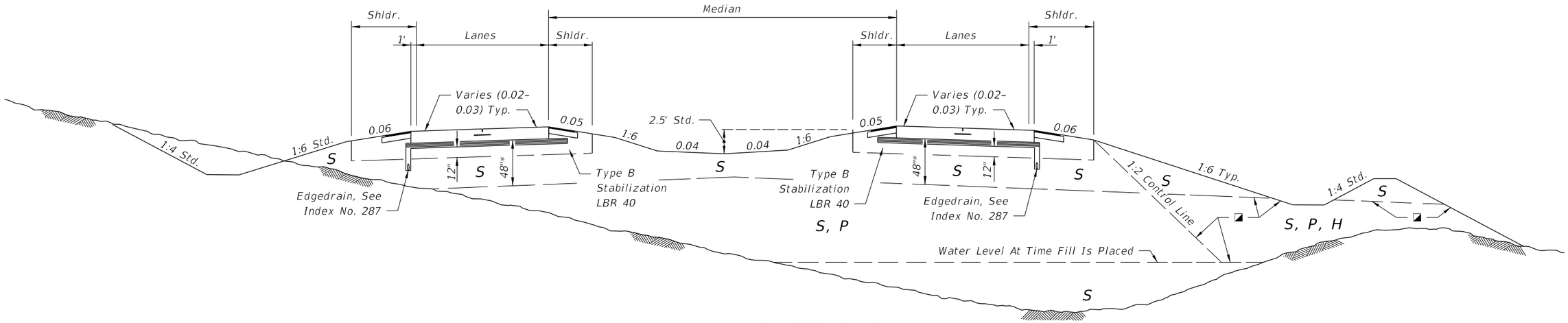
** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials 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".

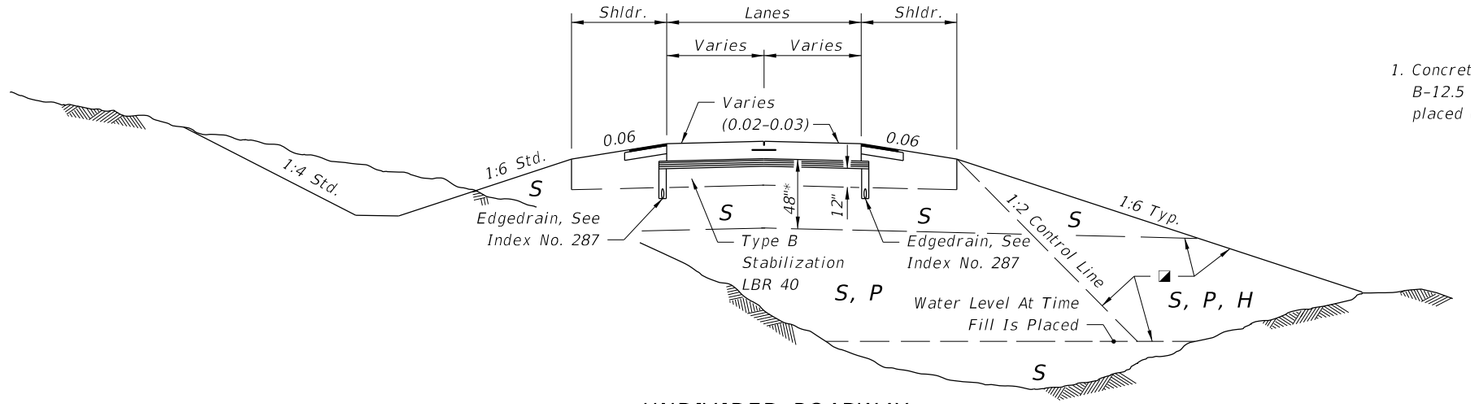
# RIGID PAVEMENT - TREATED PERMEABLE BASE OPTION

12/3/2015 11:36:18 AM

| LAST REVISION | REVISION | DESCRIPTION: | FDOT | FY 2016-17 DESIGN STANDARDS | EMBANKMENT UTILIZATION | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|---|
| 07/01/09 | | | | | | 505 | 2 of 4 |




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.

| SYMBOL | SOIL | CLASSIFICATION (AASHTO M 145) |
|---|---|---|
| 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.

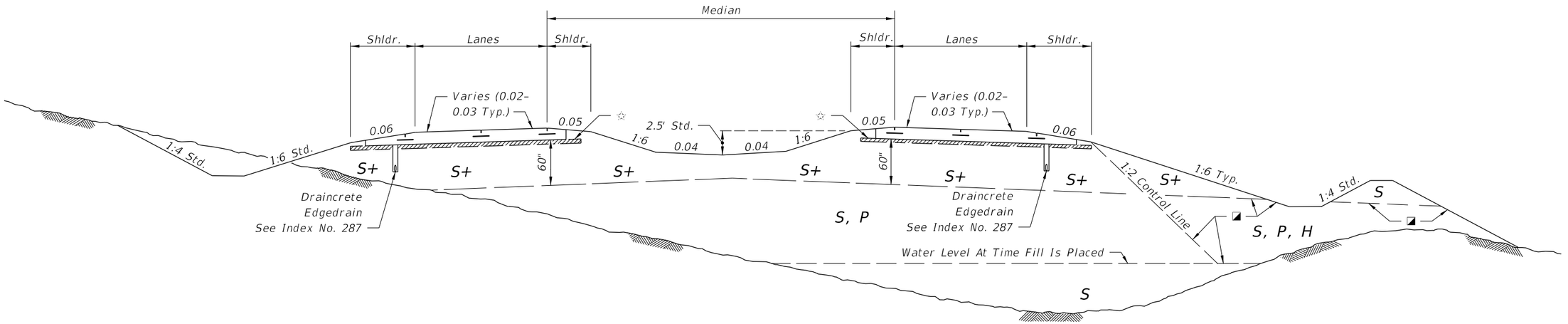
** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials 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".

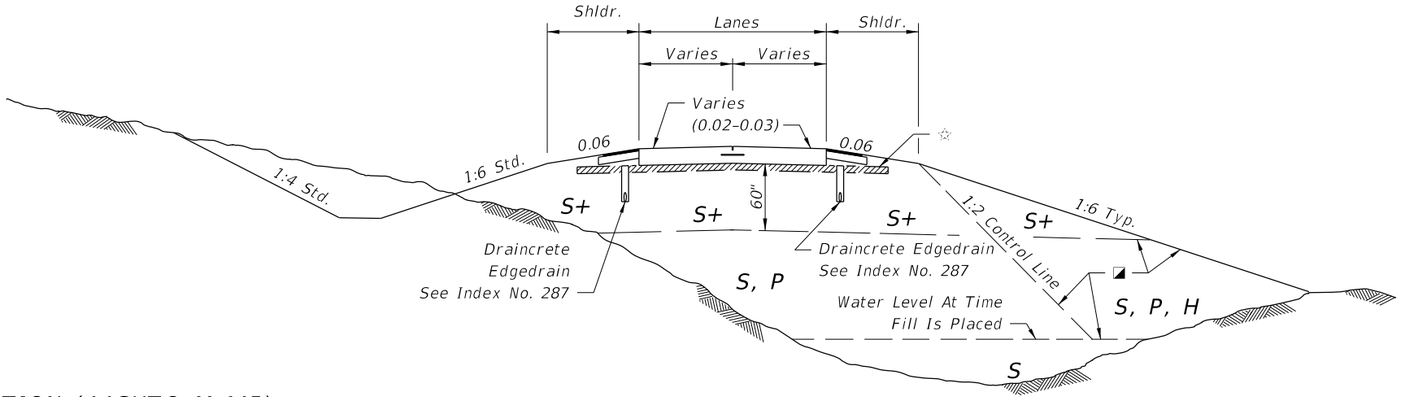
# RIGID PAVEMENT - ASPHALT BASE OPTION

12/3/2015 11:36:19 AM

| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | EMBANKMENT UTILIZATION | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | | | 505 | 3 of 4 |




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 $5x10^{-5}$ cm/sec. (0.14 ft./day) as per FM 1–T215 |
| 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

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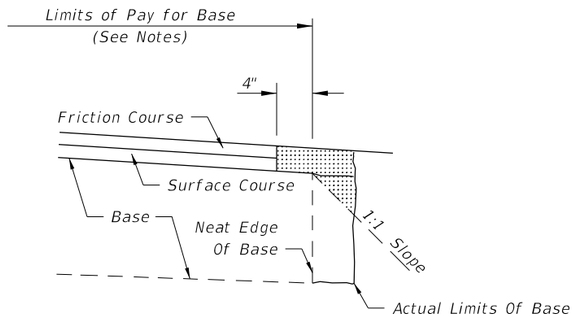
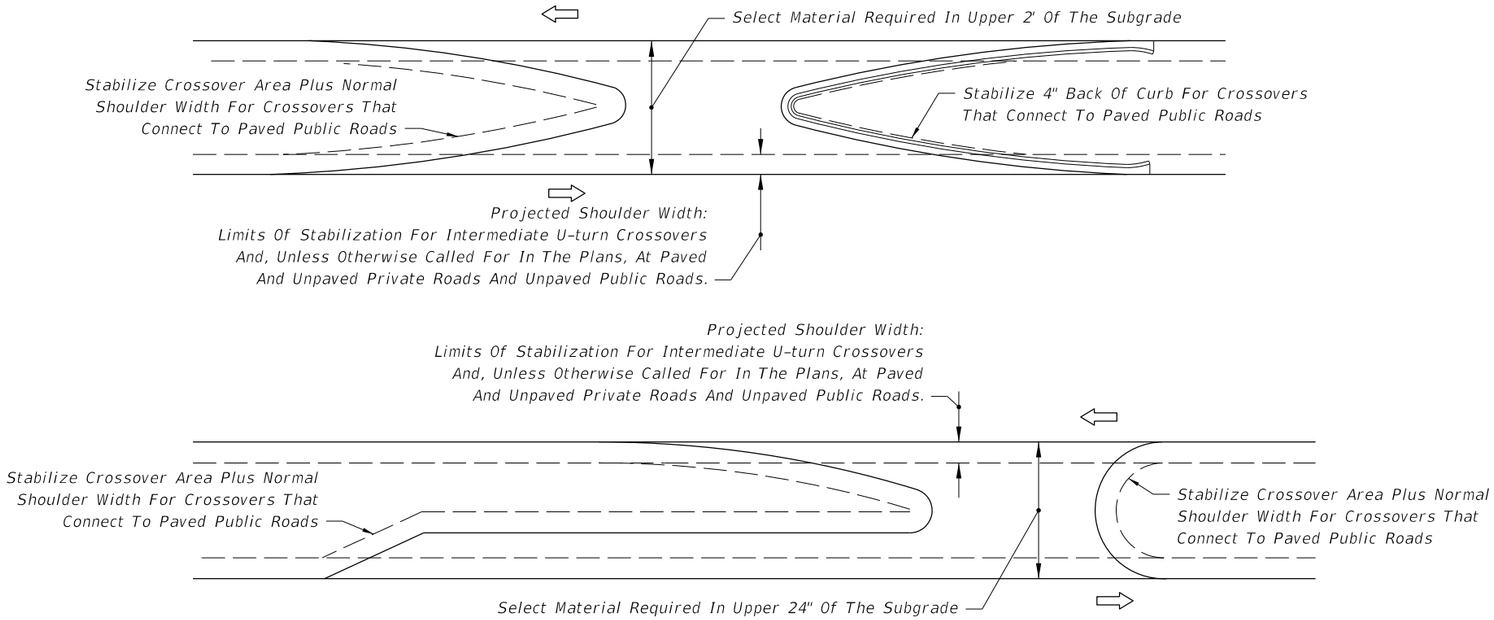
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | EMBANKMENT UTILIZATION | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/07 | | | | | 505 | 4 of 4 |




## 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



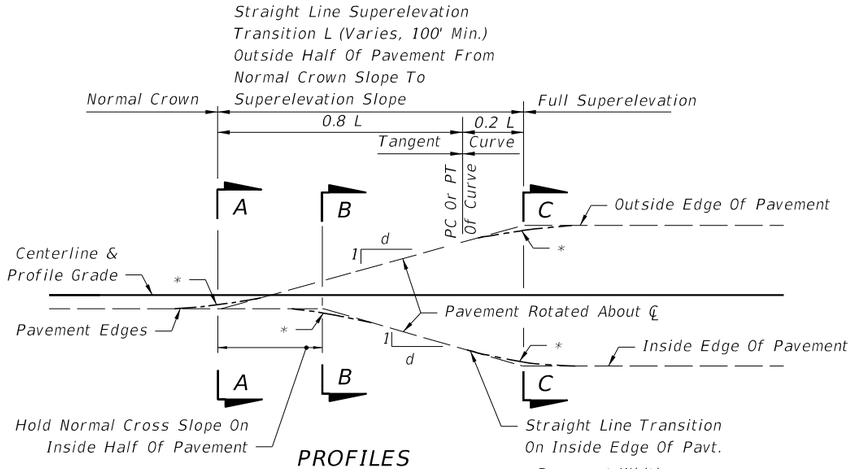

## NOTES

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

12/3/2015 11:36:20 AM

| LAST REVISION | REVISION | DESCRIPTION: | FDOT | FY 2016-17 DESIGN STANDARDS | MISCELLANEOUS EARTHWORK DETAILS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|---|
| 07/01/00 | | | | | | 506 | 1 of 1 |

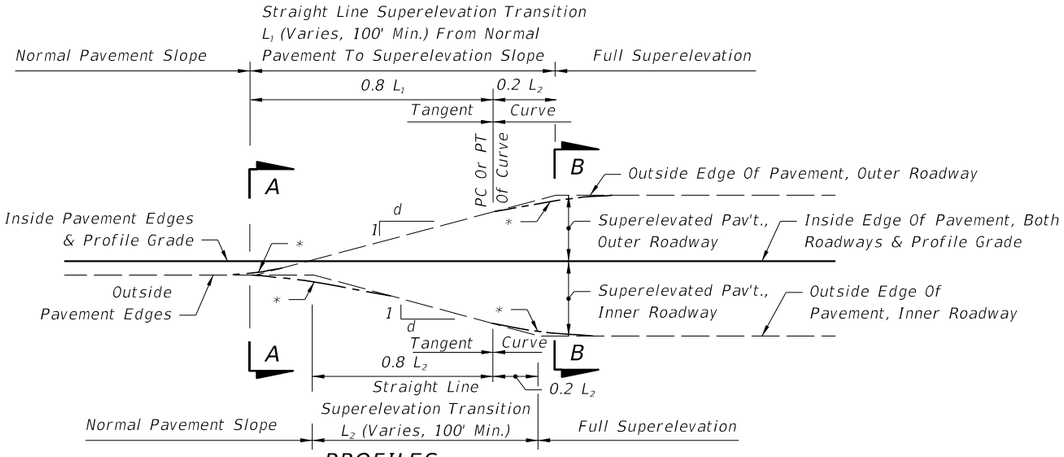



PROFILES

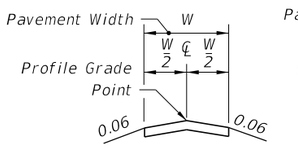
| SLOPE RATIOS FOR SUPERELEVATION TRANSITIONS | | | |
|---|---|---|---|
| SECTION | DESIGN SPEED, MPH | | |
| | 45-50 | 55-60 | 65-70 |
| | 1 : d | | |
| 2 Lane & 4 Lane | 1:200 | 1:225 | 1:250 |
| 6 Lane | 1:160 | 1:180 | 1:200 |
| 8 Lane | 1:150 | 1:170 | 1:190 |

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.

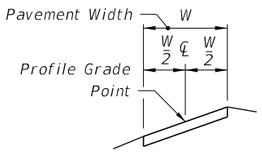
* Short Vertical Curves Are To Be Used On Construction To Avoid Angular Breaks In Edge Profiles



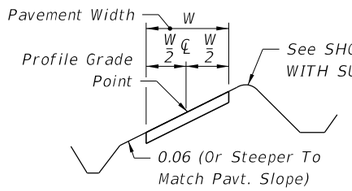

PROFILES




NORMAL CROWN SECTION AA




REVERSE CROWN SECTION BB




FULLY SUPERELEVATED SECTION CC

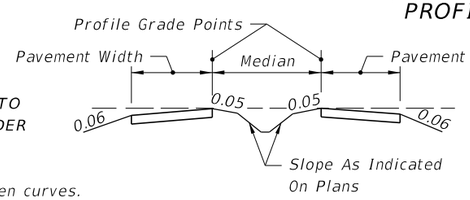
2-LANE, 4-LANE OR 6-LANE PAVEMENT, NO MEDIAN

*THESE TRANSITION DETAILS ARE TO APPLY IN ALL CASES, EXCEPT UNDER THE FOLLOWING CONDITIONS:*

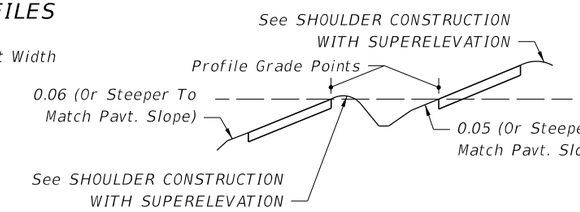
1. Curves of insufficient length.
2. Insufficient tangent length between curves.
3. Deficient transition distance between a curve and other control point(s).
4. At PCC's or PRC's (Runoff rates are applicable).

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

SUPERELEVATION TRANSITIONS




NORMAL SECTION SECTION AA




FULLY SUPERELEVATED SECTION BB

4-LANE OR 6-LANE PAVEMENT WITH MEDIAN

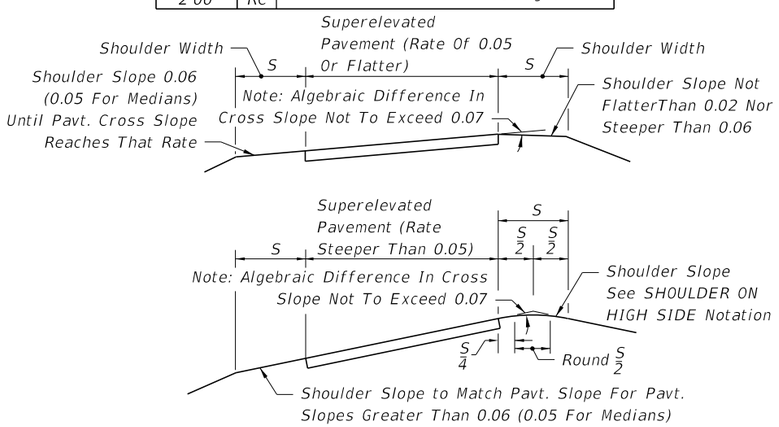
*SHOULDER ON HIGH SIDE: A shoulder slope of 0.06 downward from the edge of travel way will be maintained until a 0.07 break in slope at the pavement edge is reached due to superelevation of the pavement. As the pavement superelevation increases, the 0.07 break in slope will be maintained and the shoulder 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 o 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.*

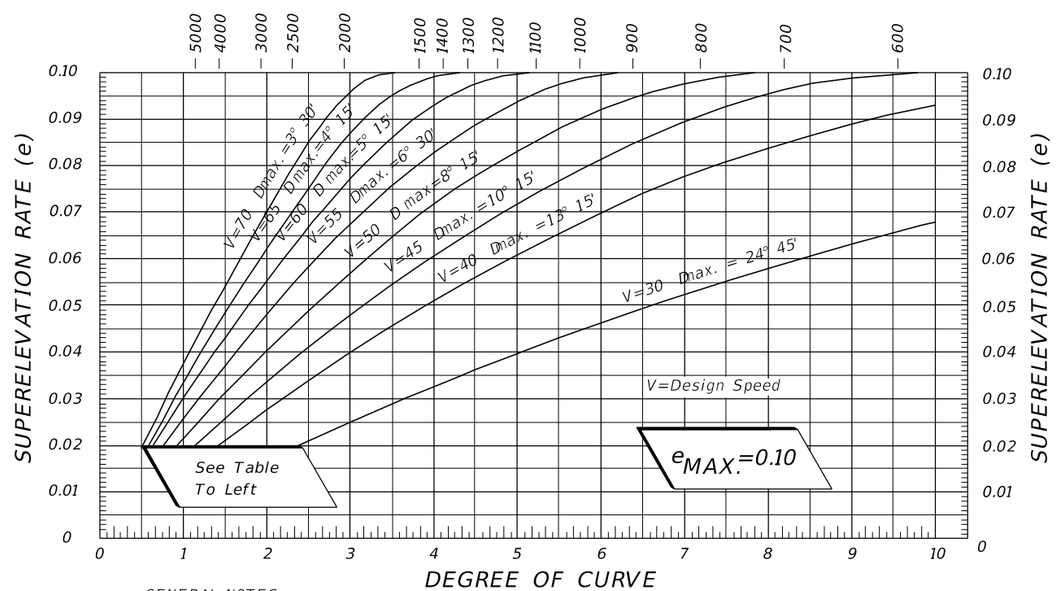
*These slopes are the same as those shown pictorially on Sheet 2 of 2.*

*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




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

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

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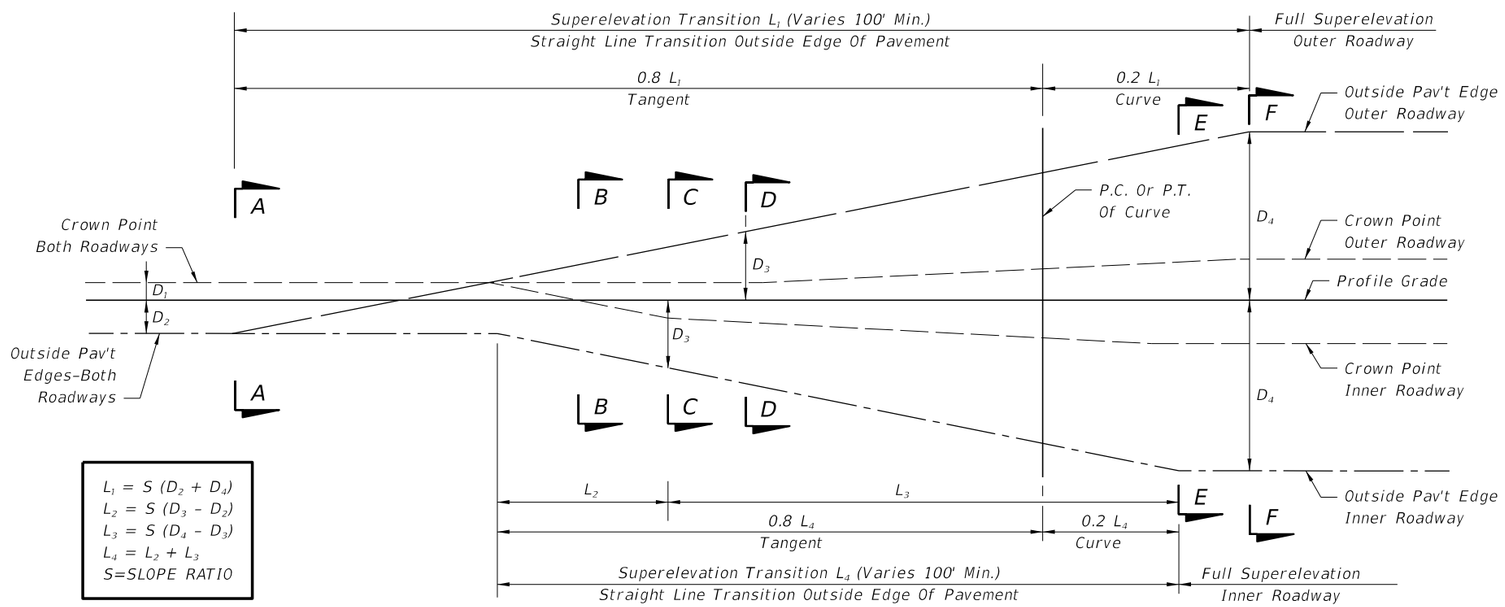
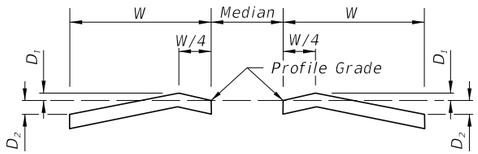
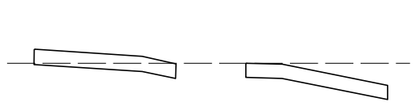
| LAST REVISION | REVISION | DESCRIPTION: | | | | |
|---|---|---|---|---|---|---|
| 07/01/14 | | | FDOT FY 2016-17 DESIGN STANDARDS | SUPERELEVATION RURAL HIGHWAYS, URBAN FREEWAYS AND HIGH SPEED URBAN HIGHWAYS | INDEX NO. 510 | SHEET NO. 1 of 2 |

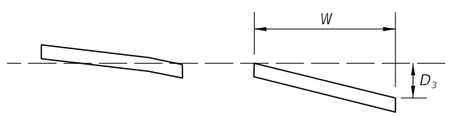


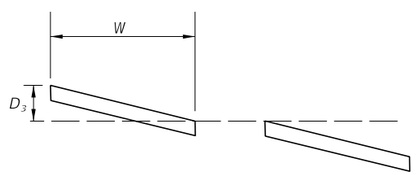

SECTION A-A
NORMAL CROWNED SECTION



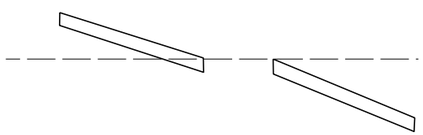
SECTION B-B
SUPERELEVATION SECTION LT. & RT.



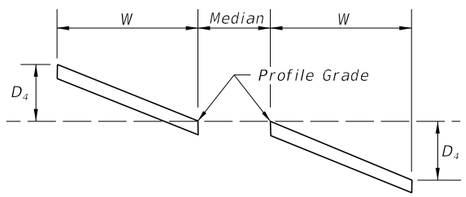

SECTION C-C
SUPERELEVATION SECTION LT.
PLANE INCLINED SECTION RT.




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

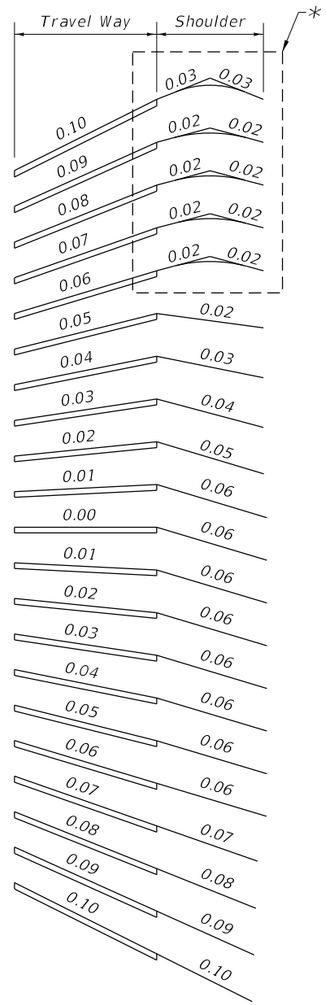


SECTION E-E
SUPERELEVATION TRANSITION LT.
FULL SUPERLEVATION RT.




SECTION F-F
FULL SUPERELEVATION LT. & RT.

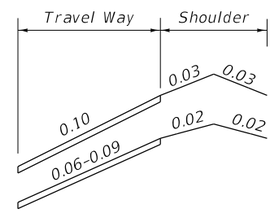
## 8-LANE PAVEMENT WITH ONE LANE SLOPED TO MEDIAN




SLOPES OF TRAVELED WAY
AND ABUTTING SHOULDERS

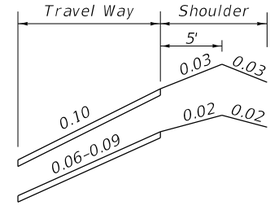
## SHOULDER SLOPES ON SUPERELEVATION SECTIONS

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

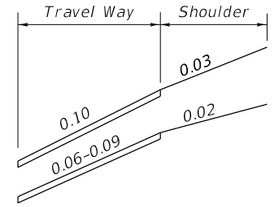



a) 12' AND 10' FULL WIDTH SHOULDERS WITH 5' OR LESS PAVED WIDTHS,

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

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| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
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| 07/01/14 | | | FDOT FY 2016-17 DESIGN STANDARDS | SUPERELEVATION RURAL HIGHWAYS, URBAN FREEWAYS AND HIGH SPEED URBAN HIGHWAYS | 510 | 2 of 2 |

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

$e_{max.} = 0.05$

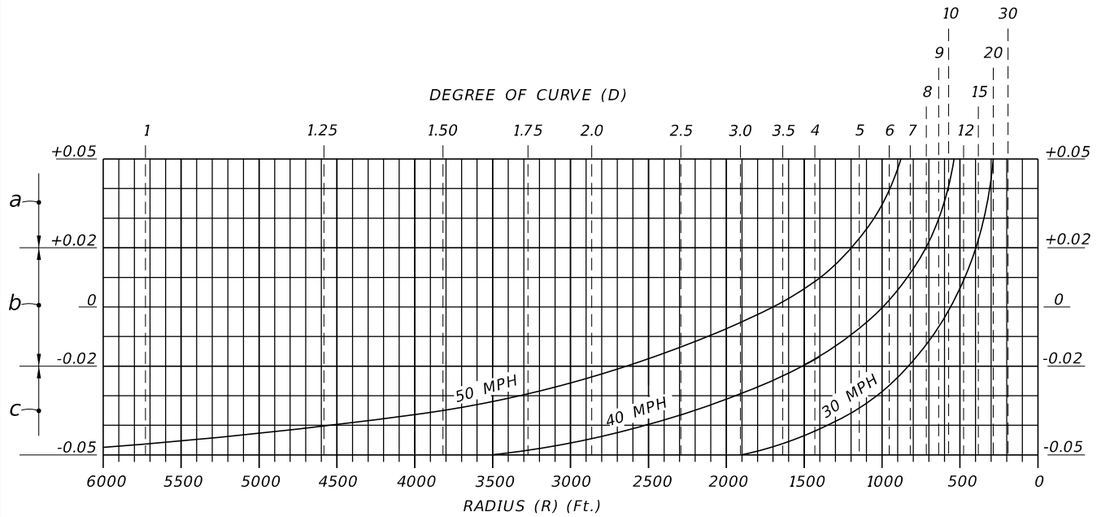
## TABULATED VALUES

| 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 | Dmax.= 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 | Dmax.= 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 | Dmax.= 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 | Dmax.= 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 | | | | |
| | | Dmax.= 20° 00' | | | | |

NC = Normal Crown

RC = Reverse Crown (+0.02 Superelevation)

## CHARTED VALUES




a: When the speed curves and the degree of curve or radius lines intersect above this line, the pavement is to be superelevated (positive slope) at the rates indicated at the lines intersecting points.

b: When the speed curves and the degree of curve or radius lines intersect between these limits, the pavement is to be superelevated at the rate of 0.02 (positive slope).

c: When the speed curves and the degree of curve or radius lines intersect below this line. The pavement is to have normal crown (typically 0.02 and 0.03 downward slopes).

## 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 URBAN HIGHWAYS AND STREETS

SUPERELEVATION FOR URBAN HIGHWAYS AND HIGH SPEED URBAN STREETS

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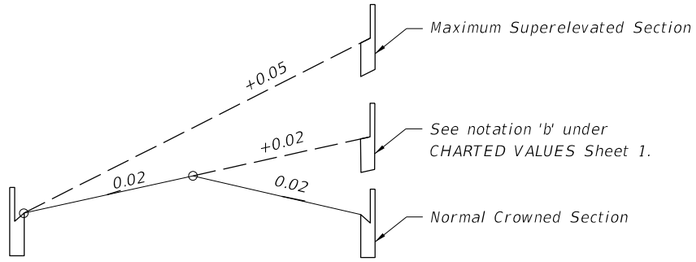
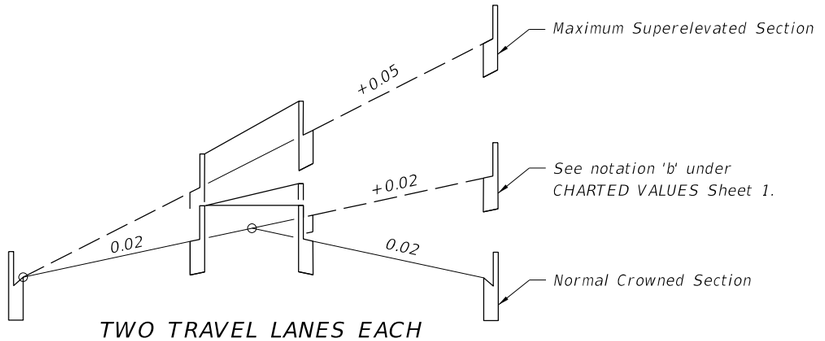
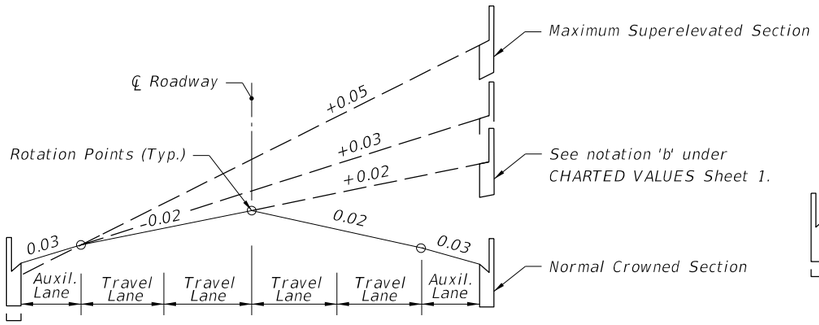
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | SUPERELEVATION URBAN HIGHWAYS AND STREETS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/00 | | | | | 511 | 1 of 3 |



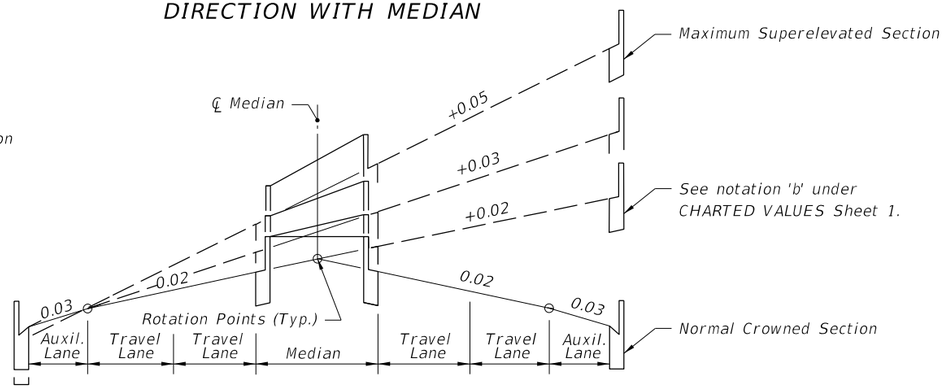

TWO TRAVEL LANES EACH DIRECTION



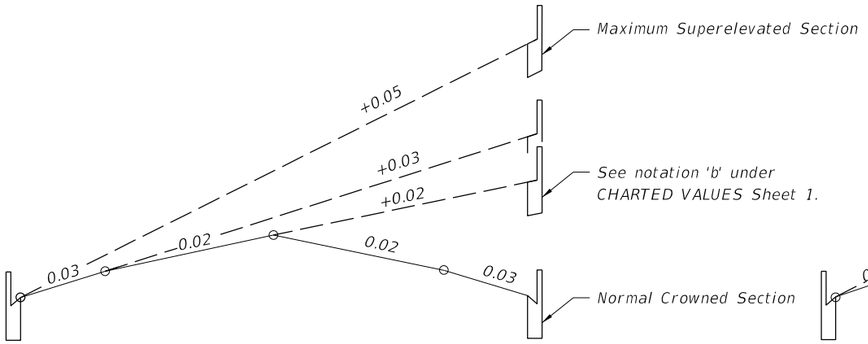

TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN



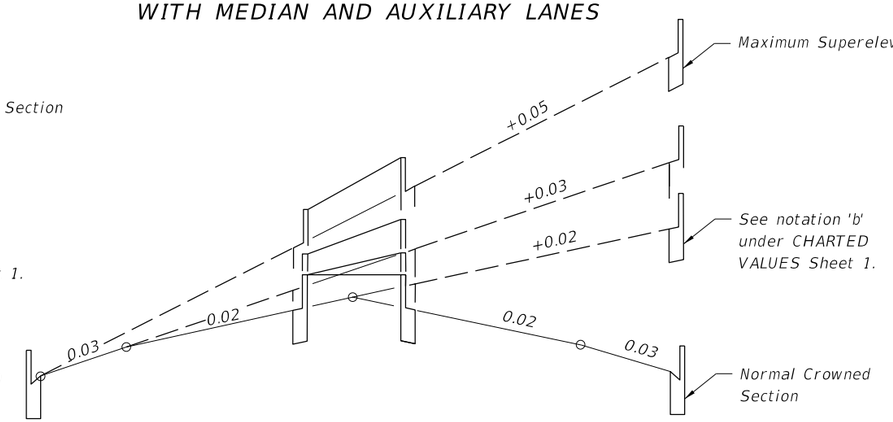

TWO TRAVEL LANES EACH DIRECTION WITH AUXILIARY LANES




TWO TRAVEL LANES EACH DIRECTION WITH MEDIAN AND AUXILIARY LANES

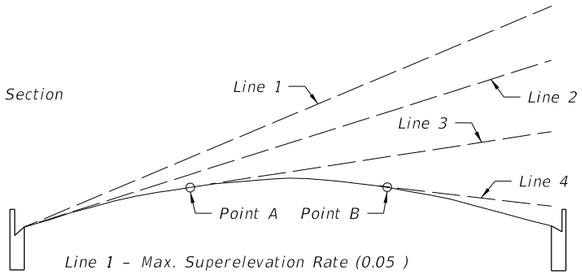



UNDIVIDED FACILITIES




THREE TRAVEL LANES EACH DIRECTION WITH MEDIAN

DIVIDED FACILITIES




*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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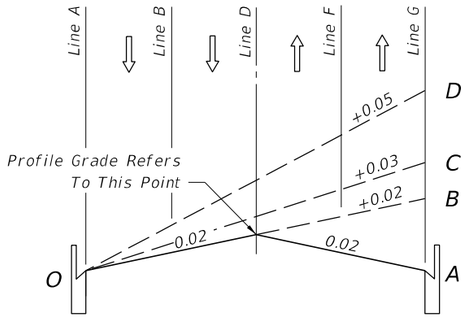
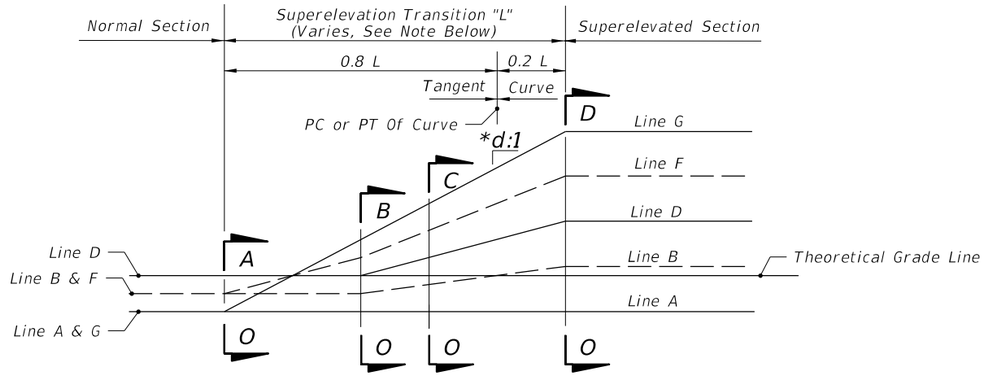
| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/00 | | | FDOT FY 2016-17 DESIGN STANDARDS | SUPERELEVATION URBAN HIGHWAYS AND STREETS | 511 | 2 of 3 |




SECTION 0-A to 0-D

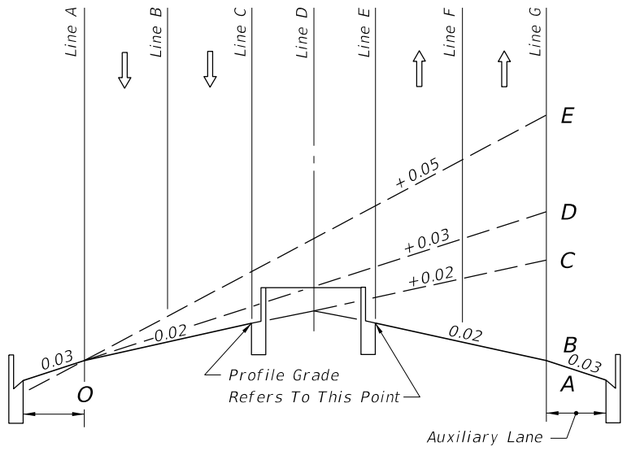



PROFILE

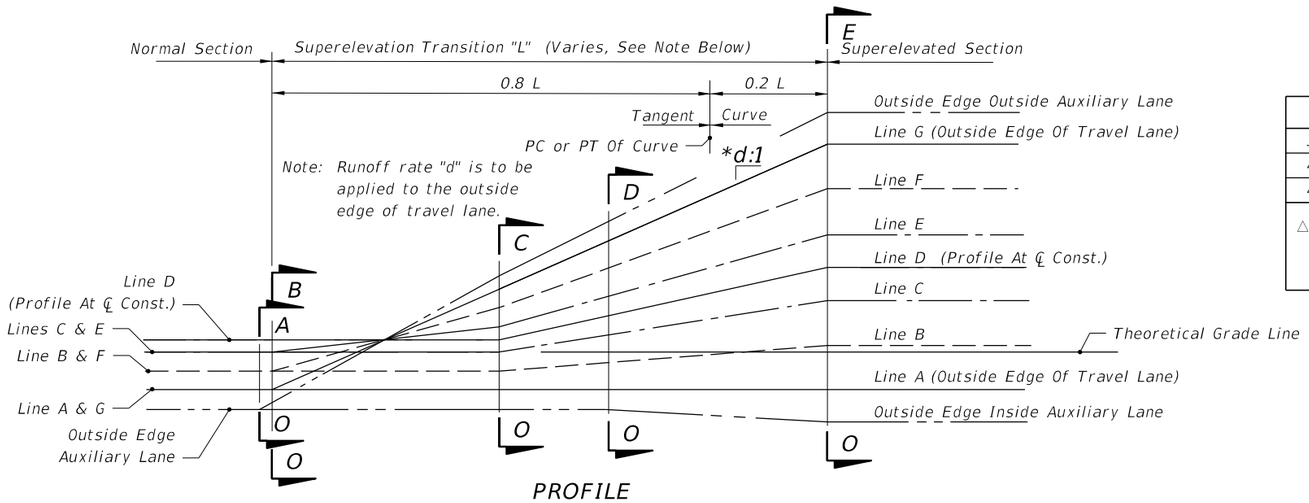
| LINE | DESCRIPTION |
|---|---|
| A | Inside Travel Lane |
| B | Inside Lane Line |
| C | Inside Median Edge Pavement |
| D | ℄ Construction |
| E | Outside Median Edge Pavement |
| F | Outside Lane Line |
| G | Outside Travel Lane |

Inside And Outside Are Relative To Curve Center

TWO LANES EACH DIRECTION




SECTION 0-A to 0-E




PROFILE

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

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

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.

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

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| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/00 | | | FDOT | FY 2016-17 DESIGN STANDARDS | 511 | 3 of 3 |

SUPERELEVATION URBAN HIGHWAYS AND STREETS

## BASE THICKNESS AND OPTION CODES

| Base Group | Structural Range | Base Group Pay Item Number | Base Options | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Limerock, LBR 100 | Cemented Coquina, LBR 100 | Shell Rock, LBR 100 | Bank Run Shell, LBR 100 | Recycled Concrete Aggregate, LBR 150 ** | Graded Aggregate Base, LBR 100 | Type B-12.5 | B-12.5 And 4" Granular Subbase, LBR 100 * | RAP Base |
| | | | Structural Number (Per. in.) | | | | | | | | |
| | | | (0.18) | (0.18) | (0.18) | (0.18) | (0.18) | (0.15) | (0.30) | (0.30 & 0.15) | (NA) |
| 1 | 0.65–0.75 | 701 | 4" | 4" | 4" | 4" | 4" | 4½" | △ 4" | | □ 5" |
| 2 | 0.80–0.90 | 702 | 5" | 5" | 5" | 5" | 5" | 5½" | △ 4" | | |
| 3 | 0.95–1.05 | 703 | 5½" | 5½" | 5½" | 5½" | 5½" | 6½" | △ 4" | | |
| 4 | 1.05–1.15 | 704 | 6" | 6" | 6" | 6" | 6" | 7½" | △ 4" | | |
| 5 | 1.25–1.35 | 705 | 7" | 7" | 7" | 7" | 7" | 8½" | 4½" | | |
| 6 | 1.35–1.50 | 706 | 8" | 8" | 8" | 8" | 8" | 9" | 5" | | |
| 7 | 1.50–1.65 | 707 | 8½" | 8½" | 8½" | 8½" | 8½" | 10" | 5½" | | |
| 8 | 1.65–1.75 | 708 | 9½" | 9½" | 9½" | 9½" | 9½" | 11" | 5½" | | |
| 9 | 1.75–1.85 | 709 | 10" | 10" | 10" | 10" | 10" | 12" | 6" | 4" | |
| 10 | 1.90–2.00 | 710 | 11" | 11" | 11" | 11" | 11" | Ø 13" | 6½" | 4½" | |
| 11 | 2.05–2.15 | 711 | 12" | 12" | 12" | 12" | 12" | Ø 14" | 7" | 5" | |
| 12 | 2.20–2.30 | 712 | 12½" | 12½" | 12½" | 12½" | 12½" | | 7½" | 5½" | |
| 13 | 2.35–2.45 | 713 | Ø 13½" | Ø 13½" | Ø 13½" | Ø 13½" | Ø 13½" | | 8" | 6" | |
| 14 | 2.45–2.55 | 714 | Ø 14" | Ø 14" | Ø 14" | Ø 14" | Ø 14" | | 8½" | 6½" | |
| 15 | 2.60–2.70 | 715 | | | | | | | 9" | 7" | |

## GENERAL NOTES

1. Where base options are specified in the plans, only those options may be bid and used.
2. In situations where the designer requires the use of a single base option, as shown in the plans, bid and use as optional base.

* For granular subbase, the construction of both the subbase and Type B-12.5 will be bid and used as Optional Base. Granular subbases include Limerock, Cemented Coquina, Shell Rock, Bank Run Shell, Recycled Concrete Aggregate and Graded Aggregate Base. The base thickness shown is Type B-12.5. All subbase thicknesses are 4" minimum.

** For restrictions on the use of Recycled Concrete Aggregate – see Specifications Section 911.

Ø To be used for widening, three feet or less.

△ Based on minimum practical thicknesses.

□ For restrictions on the use of RAP Base – see Standard Specifications.

# GENERAL USE OPTIONAL BASE GROUPS AND STRUCTURAL NUMBERS

12/3/2015 11:36:24 AM

## BASE THICKNESS AND OPTION CODES

| Base Group | Structural Range | Base Group Pay Item Number | Base Options | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Limerock Stabilized LBR 70 | Shell LBR 70 | Shell Stabilized LBR 70 | Sand-Clay LBR 75 | Soil Cement (300 psi) (Plant Mixed) | Soil Cement (300 psi) (Road Mixed) | Soil Cement (500 psi) (Plant Mixed) |
| | | | Structural Number (Per. in.) | | | | | | |
| | | | (0.12) | (0.12) | (0.10) | (0.12) | (0.15) | (0.15) | (0.20) |
| 1 | 0.60–0.75 | 701 | 5" | 5" | 7" | 5" | 5" | 5" | 4"△ |
| 2 | 0.75–0.90 | 702 | 6½" | 6½" | 8½" | 6½" | 5½" | 5½" | 4" |
| 3 | 0.95–1.05 | 703 | 8" | 8" | 9½" | 8" | 6½" | 6½" | 5" |
| 4 | 1.05–1.15 | 704 | 9" | 9" | 10½" | 9" | 7½" | 7½" | 5½" |
| 5 | 1.20–1.35 | 705 | 10" | 10" | 12" | 10" | 8½" | 8½" | 6" |
| 6 | 1.30–1.45 | 706 | 11" | 11" | | 11" | 9" | | 7" |
| 7 | 1.45–1.60 | 707 | 12½" | 12½" | | 12½" | 10" | | 7½" |
| 8 | 1.65–1.75 | 708 | | | | | 11" | | 8½" |

Not Recommended For 20 Year Design
Accumulated 18 kip Equivalent Single
Axle Loads (ESAL) Greater
Than 1,000,000

Note:
These base materials may be used on FDOT projects when approved in writing by the District Materials Engineer and shown in the plans.

△ Based on minimum practical thicknesses.

## LIMITED USE OPTIONAL BASE GROUPS AND STRUCTURAL NUMBERS

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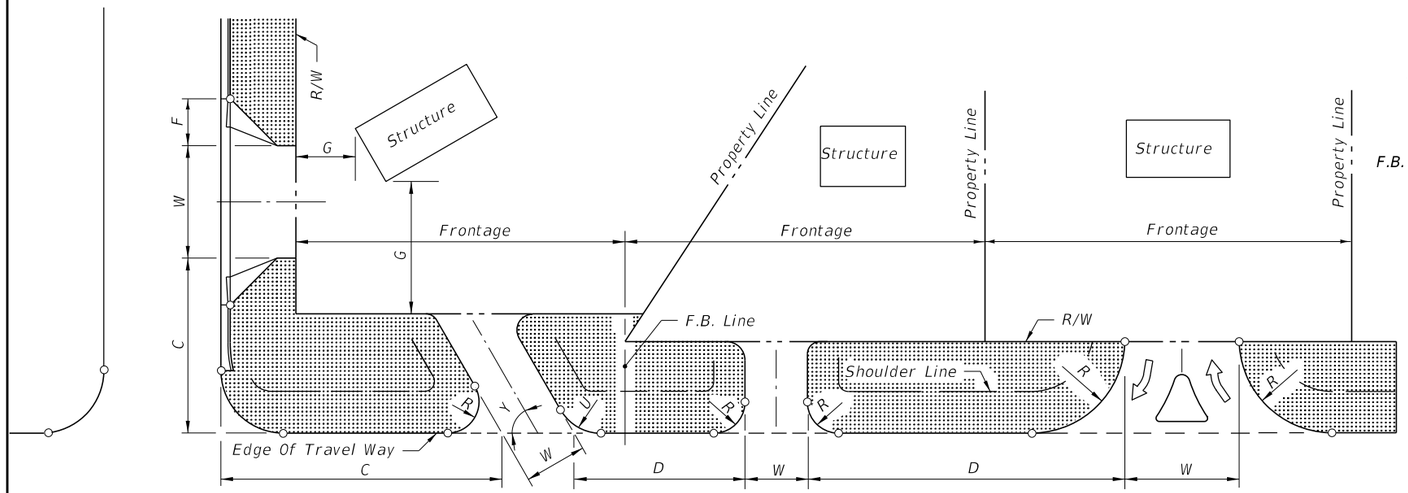



## LEGEND

| | |
|---|---|
| ⊸ | 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 |

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

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

## SKETCH ILLUSTRATING DEFINITIONS

| ELEMENT DESCRIPTION | URBAN (CURB & GUTTER) | | | RURAL | | |
|---|---|---|---|---|---|---|
| | 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 TURNOUTS

## 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 "Urban 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 redfined 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.

Footnotes:

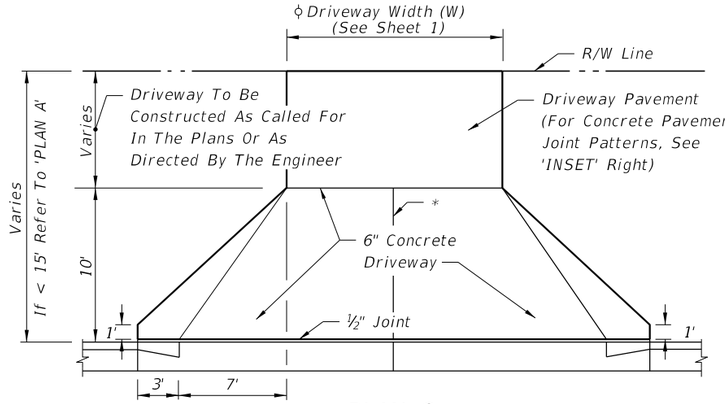
All ½" joints shall be constructed with preformed joint filler.

* ⅛" 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.

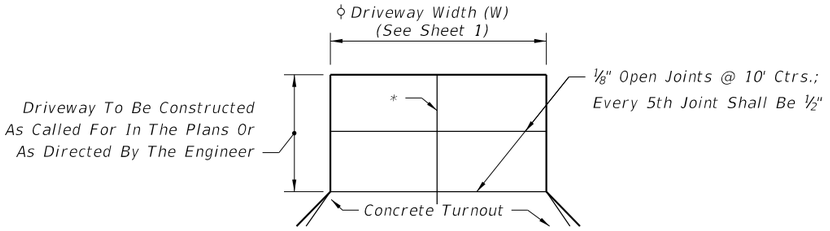
ϕ Driveways (6" concrete) shall be of a uniform width (W) to the right of way line.

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

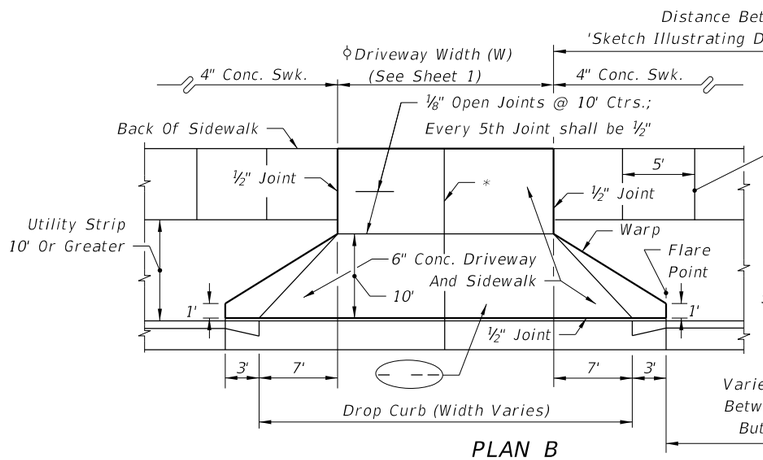



PLAN C

TURNOUT WITHOUT SIDEWALK

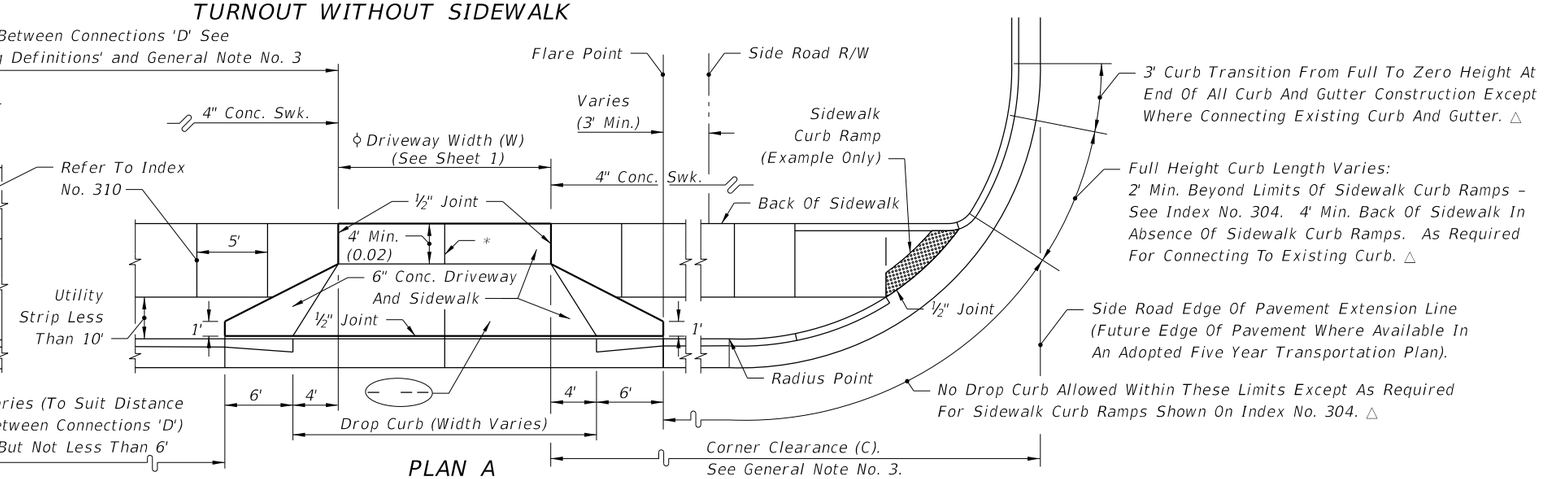



JOINT PATTERN WHEN CONCRETE DRIVE CONSTRUCTED INSET




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 URBAN FLARED TURNOUTS

1. 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.
2. For details of drop curb and sidewalk curb ramps refer to Indexes Nos. 300 and 304 respectively.
3. 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.
4. For turnouts with radial returns see the requirements under the "Summary Of Geometric Requirements For Turnouts", the "General Notes", the details of "Rural Turnout Construction" and the detail of "Limits Of Clearing & Grubbing, Stabilization And Base At Intersections".
5. Maintenance of pavement shall extend out to the right of way or 2' beyond the back of sidewalk, whichever distance is less.
6. The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.
7. 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.
8. 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.
9. 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 URBAN FLARED TURNOUTS

1. 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.
2. 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.
3. When specific flare type driveways shall be constructed, the type shall be designated in the plans using the assigned alpha-numeric designation.

## URBAN FLARED TURNOUTS

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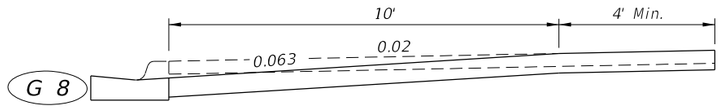
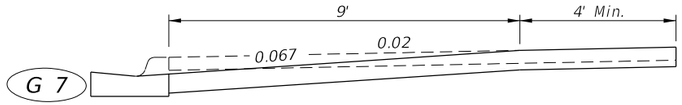
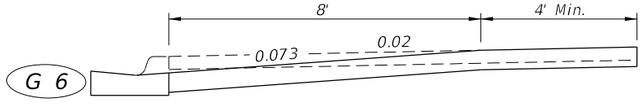
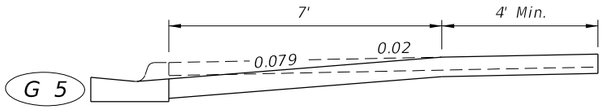
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | TURNOUTS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/13 | | | | | 515 | 2 of 7 |

* See 'DESIGN NOTES FOR URBAN FLARED TURNOUTS'.



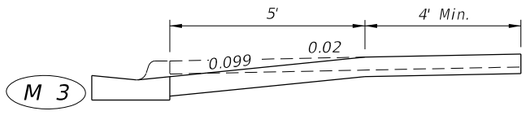



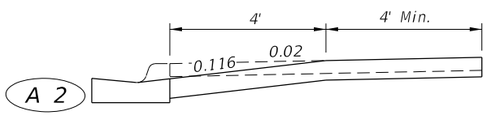



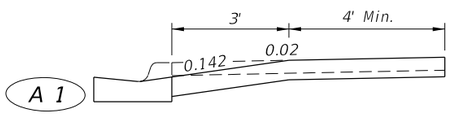





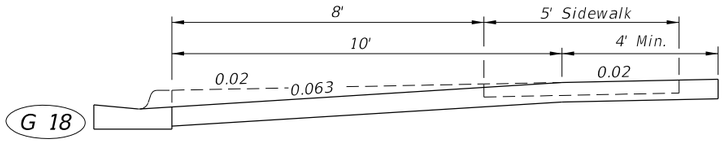


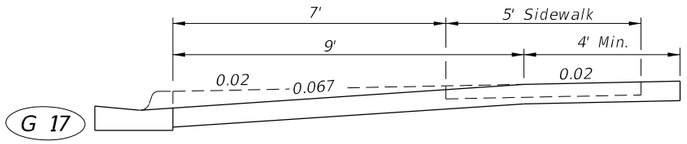


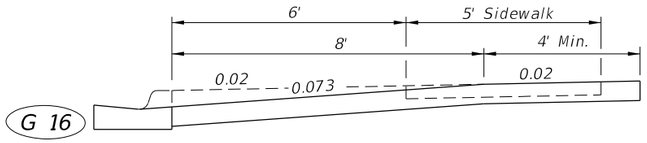



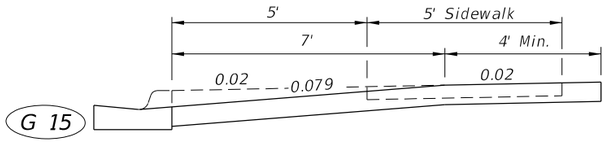



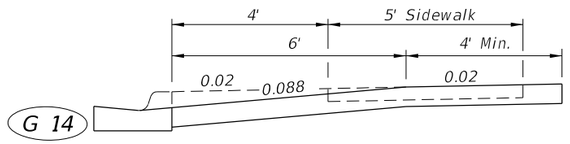

SIDEWALK ADJACENT TO CURB

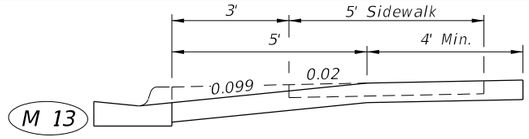


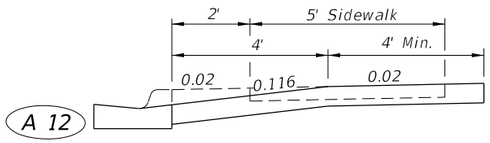



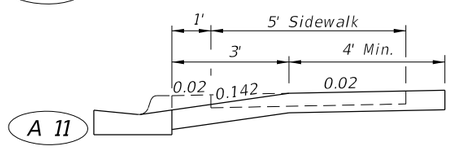



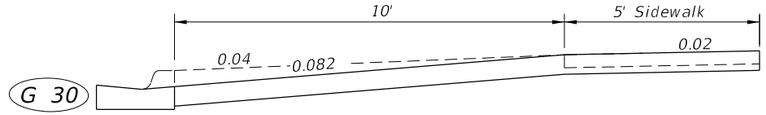



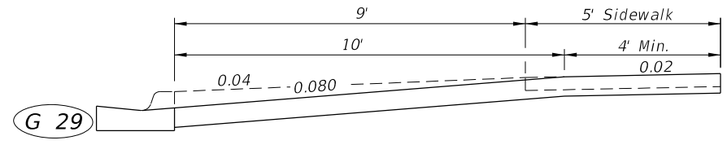



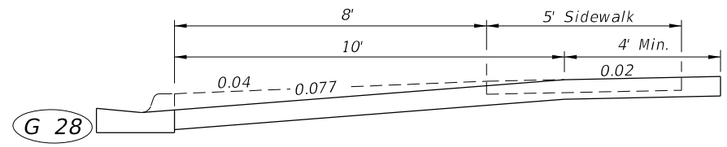



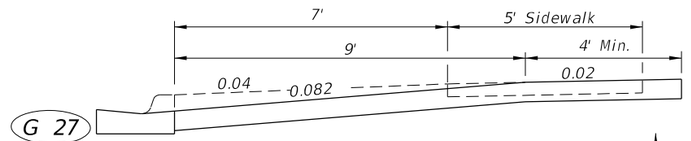



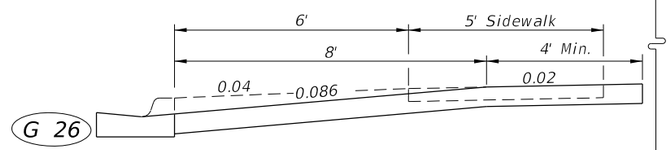

SIDEWALK WITH UTILITY STRIP ON 0.02 SLOPE



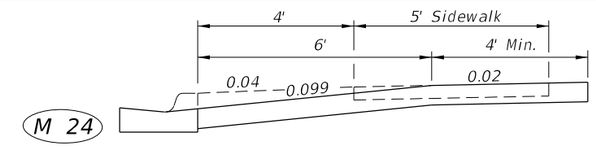



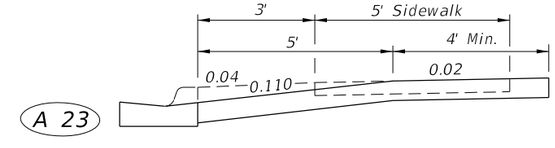


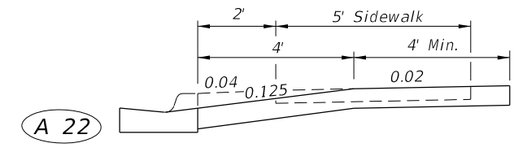


GENERAL*
APPLICATIONS




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




ADVERSE*
APPLICATIONS (REFER TO MODIFICATIONS ON SHEET 4)

SIDEWALK WITH UTILITY STRIP ON 0.04 SLOPE

## DRIVEWAY SECTIONS ON CURBED FACILITIES WITH SIDEWALKS

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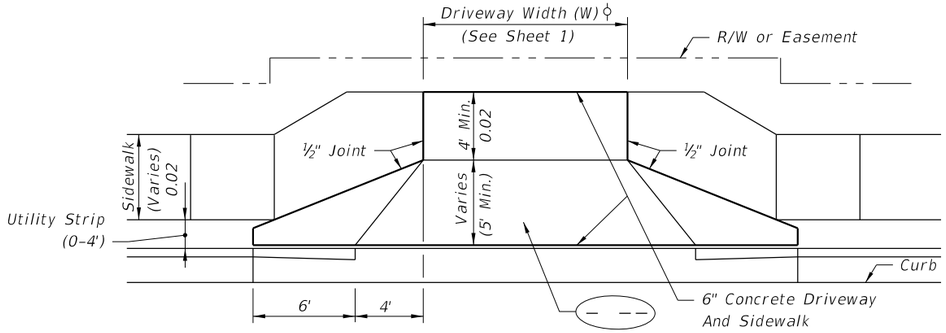
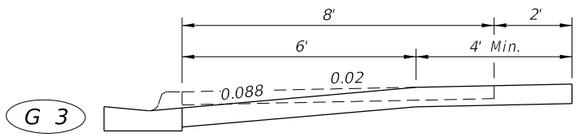
12/3/2015

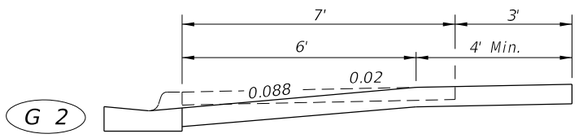
| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/13 | | | FDOT FY 2016-17 DESIGN STANDARDS | TURNOUTS | 515 | 3 of 7 |

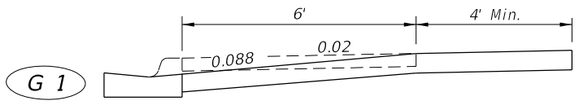


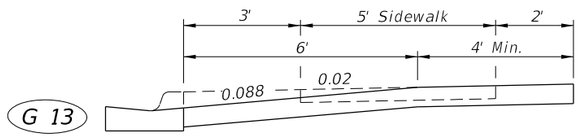

PLAN

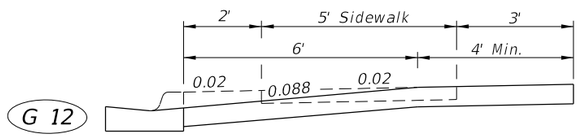
## MODIFICATIONS OF 'ADVERSE' AND 'MARGINAL' APPLICATIONS

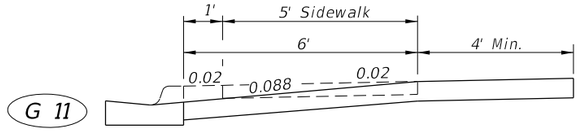


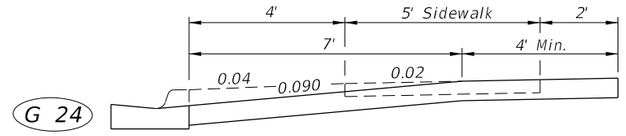



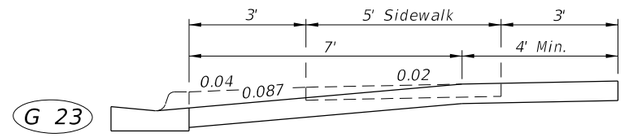



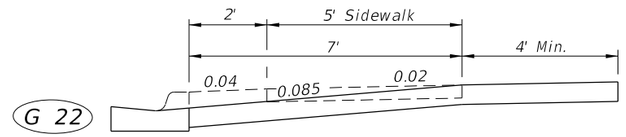



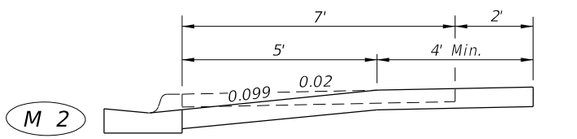



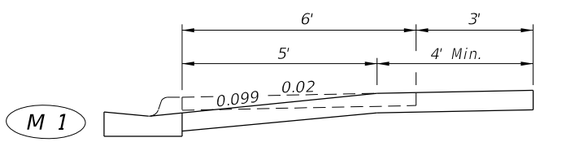



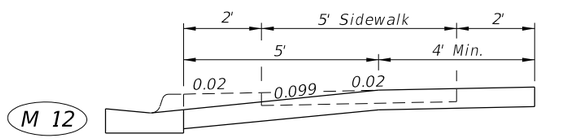



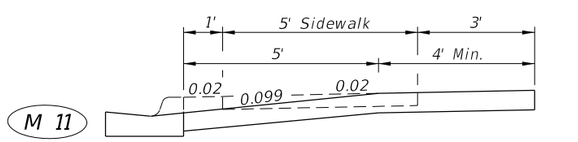

ADVERSE* AND MARGINAL* SECTIONS MODIFIED TO ACHIEVE GENERAL* APPLICATION



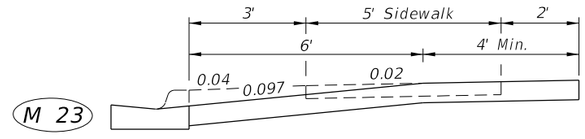



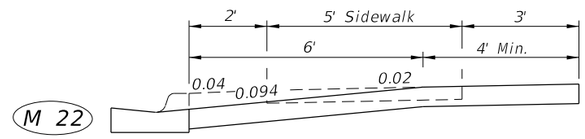

SIDEWALK ADJACENT TO CURB




SIDEWALK WITH UTILITY STRIP ON 0.02 SLOPE




ADVERSE* SECTIONS MODIFIED TO ACHIEVE MARGINAL* APPLICATION

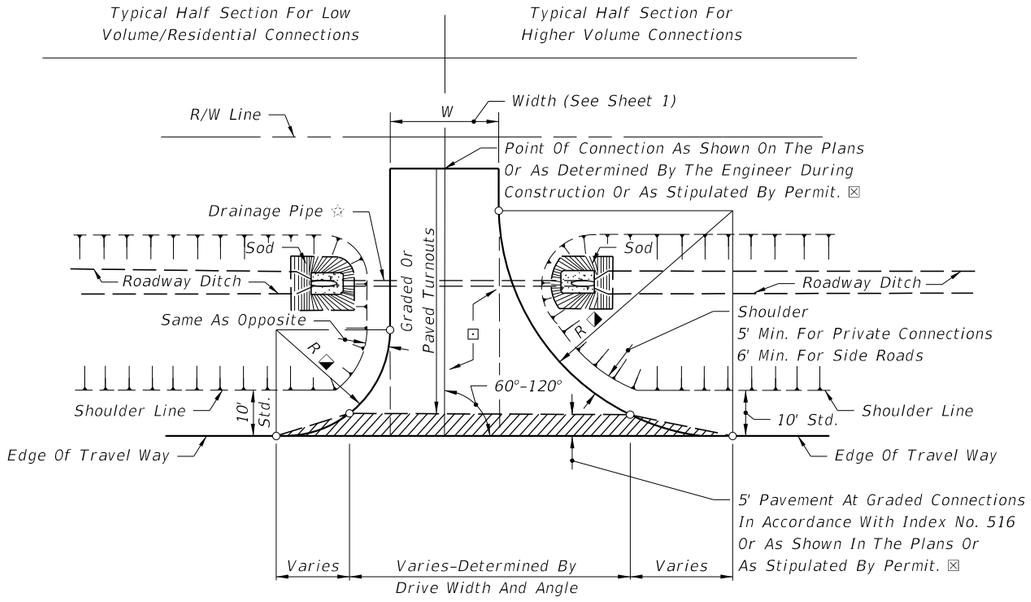
SIDEWALK WITH UTILITY STRIP ON 0.04 SLOPE

* See 'DESIGN NOTES FOR URBAN FLARED TURNOUTS'.

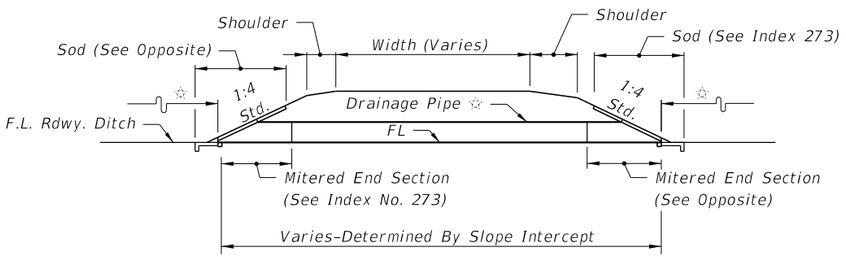
# MODIFICATIONS TO ADVERSE AND MARGINAL SECTIONS

11:36:28 AM
12/3/2015

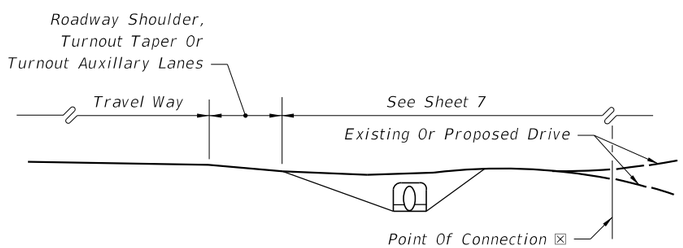
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | TURNOUTS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/13 | | | | | 515 | 4 of 7 |




PLAN

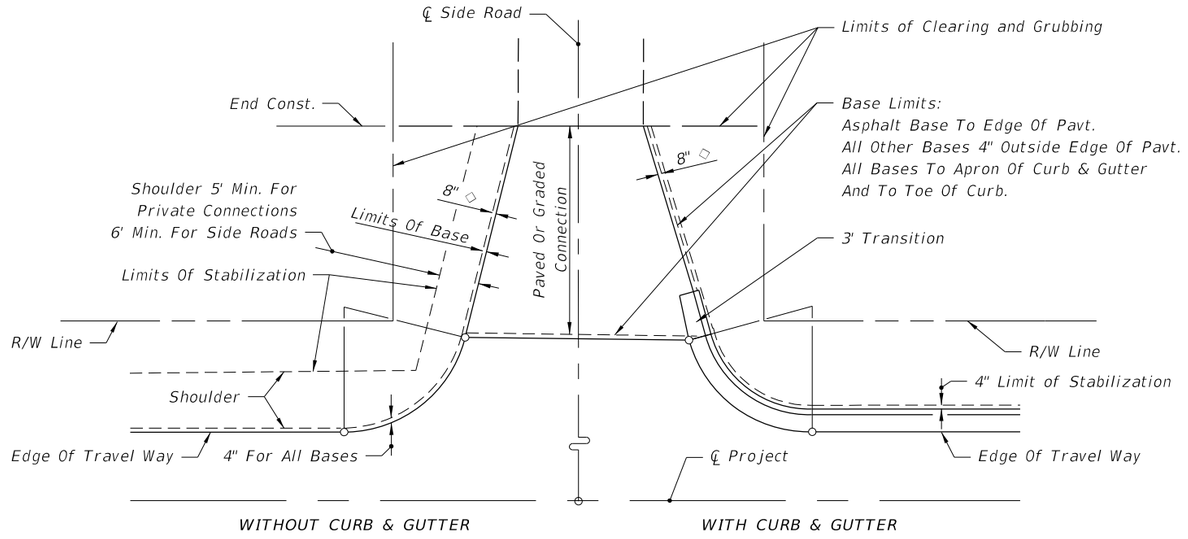



DRAINAGE SECTION




TURNOUT PROFILE AND END VIEW

## RURAL TURNOUT CONSTRUCTION




PLAN

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

### INTERSECTIONS NOTES:

○ Return Radius Point or Transition Point.

◇ 8" Or Match Exist. Stabilization Limits (8" Min.).

### 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 Index No. 205. 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 No. 273. For spacing between adjacent pipe end treatments see Index No. 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.

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| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | TURNOUTS | INDEX NO. | SHEET NO. |
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| 07/01/12 | | | | | 515 | 5 of 7 |

## MATERIAL TYPES AND THICKNESSES IN DRIVING AREAS FOR RURAL AND URBAN CONNECTIONS

| Course | Materials ② | Thickness (in.) ① | |
|---|---|---|---|
| | | Connections ③ | Roadway ④ |
| Structural | Asphaltic Concrete | 1" | 1½" |
| Bases | Optional Base (See Index No. 514) | 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

1. 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. For additional information see Index No. 514.

2. 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.

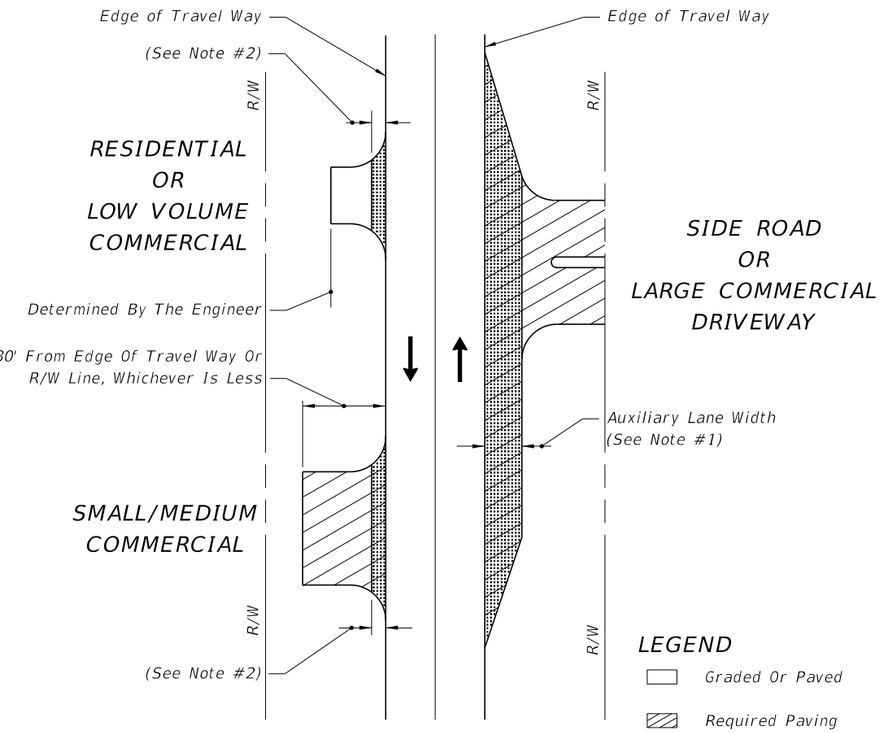
3. If an asphalt base course is used for a turnout, its thickness may be increased to match the edge of travel way pavement thickness in lieu of a separate structural course. 6" of Portland cement concrete will be acceptable in lieu of the asphalt base and structural courses. See Notes 4 and 5 below.

4. A structural course is required for flexible pavements when they are used for auxiliary lanes serving more than a single connection.

5. 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.

6. The Department may require other pavement criteria where local conditions warrant.

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




### NOTES

1. Auxiliary lane pavements and crossover pavements shall be maintained by the Department.

2. 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.

3. 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.

4. The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.

5. 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.

6. 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 RURAL CONNECTIONS

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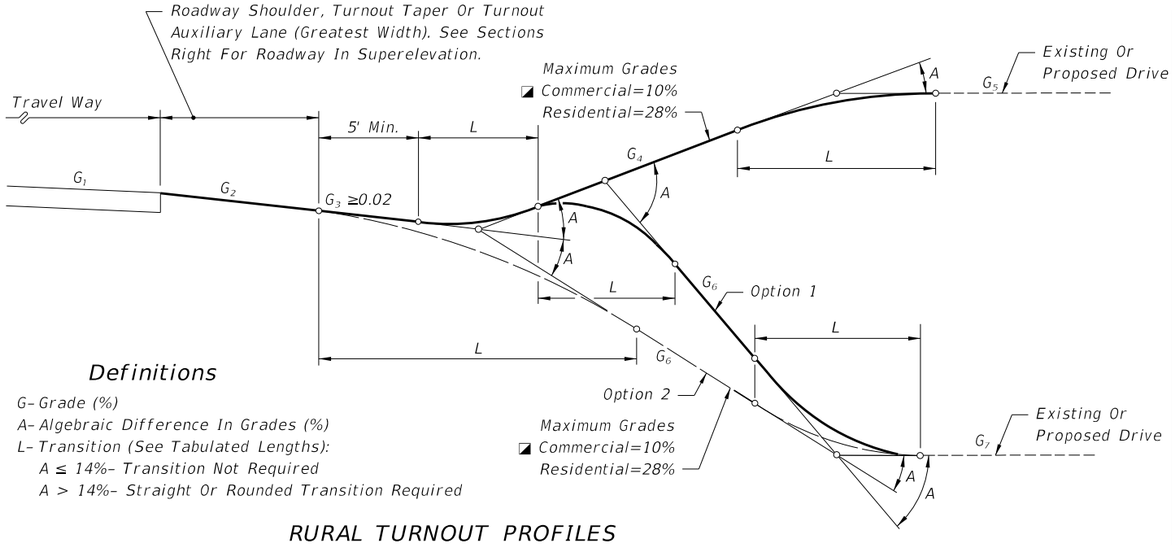
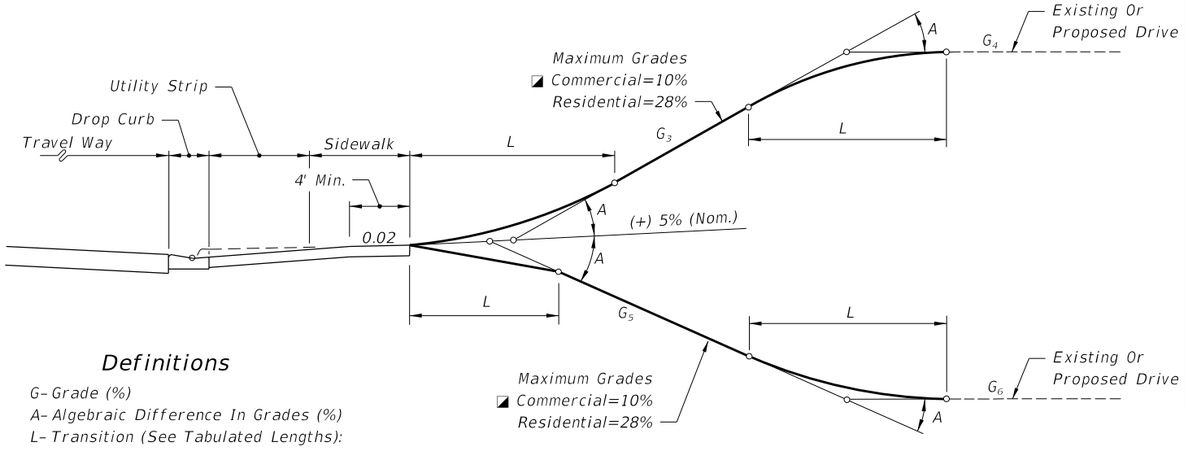
| LAST REVISION | REVISION | DESCRIPTION: | | | |
|---|---|---|---|---|---|
| 07/01/15 | | | FY 2016-17 DESIGN STANDARDS | TURNOUTS | INDEX NO. 515 / SHEET NO. 6 of 7 |




### 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

## RURAL 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

## URBAN 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.

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

| 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.

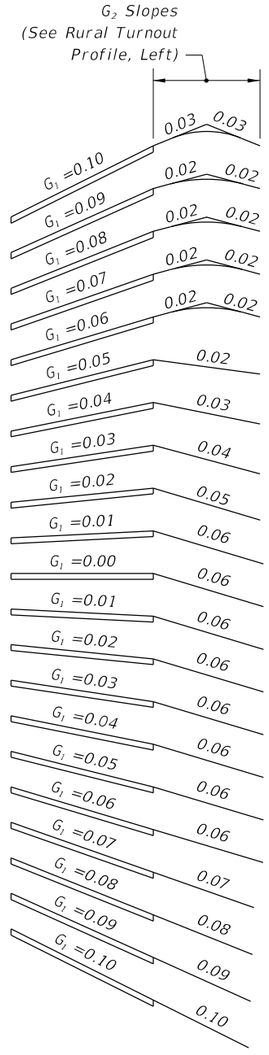
Desirable: Desirable minimum lengths
Minimum: Absolute minimum lengths

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

## 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 rural 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 urban turnouts.

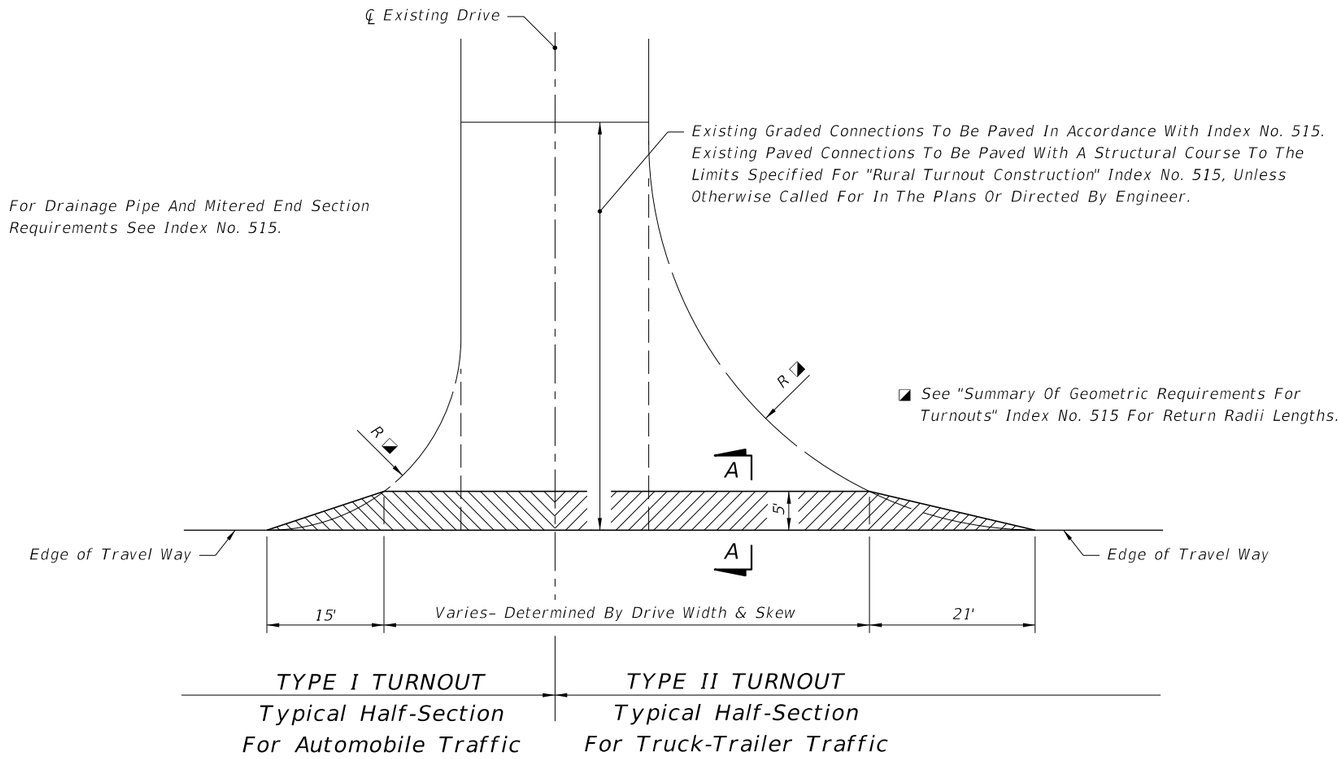
2. The Option 1 profile is intended for locations where roadway, turnout taper and auxiliary lane stormwater runoff volumes are relatively large. The Option 2 profile is intended for locations where runoff volumes are relatively small and/or where there is no roadside ditch.




## ROADWAY PAVEMENT SLOPES AND SLOPES OF ABUTTING RURAL TURNOUT SURFACES ($G_2$)

## SUPERELEVATION SECTIONS

# TURNOUT PROFILES




TYPE I TURNOUT
Typical Half-Section
For Automobile Traffic

TYPE II TURNOUT
Typical Half-Section
For Truck-Trailer Traffic

## 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 |

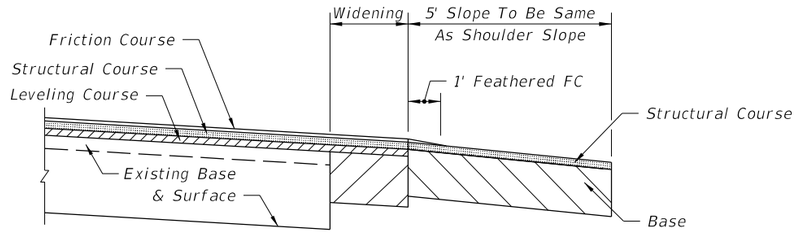
## PAVEMENT STRUCTURE FOR 5' DEEP TURNOUTS

| Course | Material | Minimum Thickness |
|---|---|---|
| Structural | Asphaltic Concrete | 1" |
| Base | Optional Base (See Index No. 514) | O.B.G. 1 |

Notes:

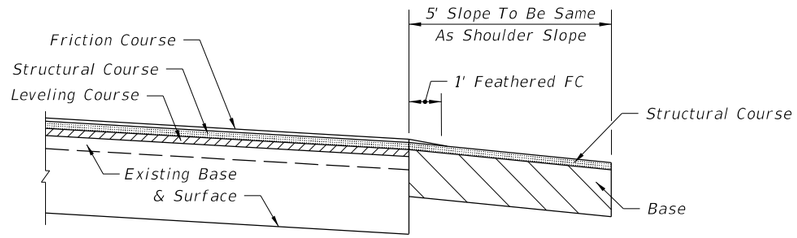
1. Turnout structural course to be the same material as roadway leveling or structure course. Structural course not required if asphalt base course and its thickness increased to match edge of roadway pavement.
2. Any Department-approved pavement structure equivalence may be used at the discretion of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

## TURNOUT CONSTRUCTION



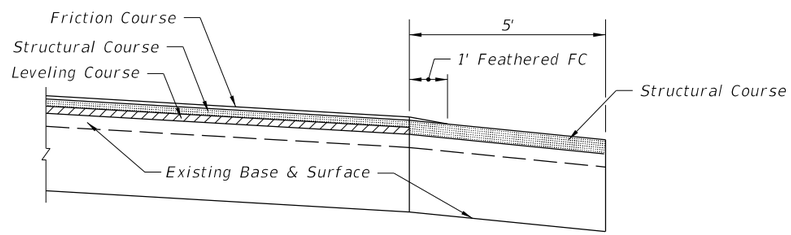

SECTION AA WITH WIDENING

## TURNOUT CONSTRUCTION




SECTION AA

## RESURFACING EXISTING TURNOUT




SECTION AA

## 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.

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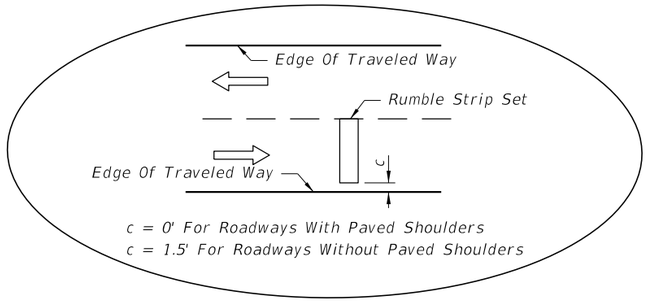
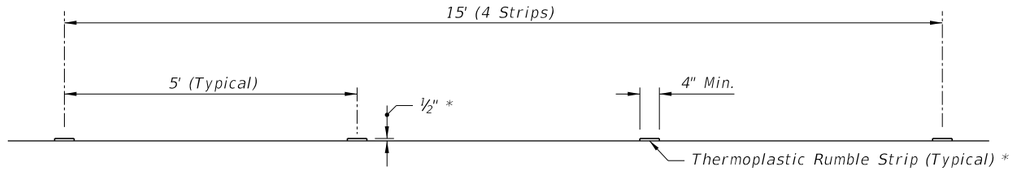
|---|---|---|---|---|---|---|
| 07/01/12 | | | | | 516 | 1 of 1 |




INSET A

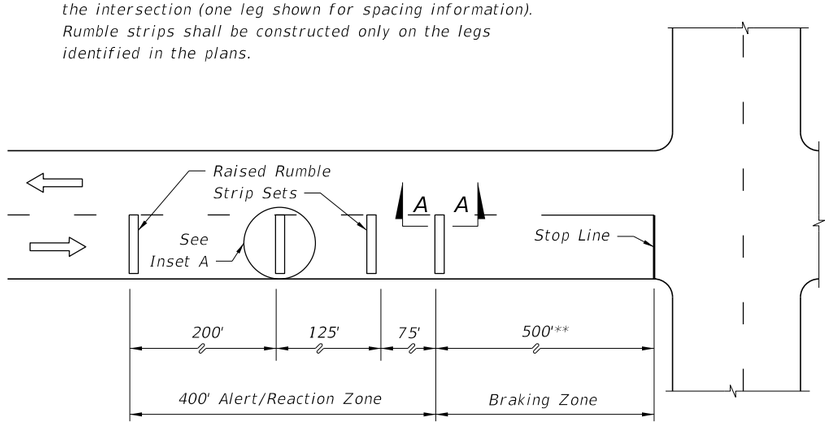



* Use multiple applications to achieve desired ½" thickness

Note: Intersection thermoplastic rumble strip sets shall be white.

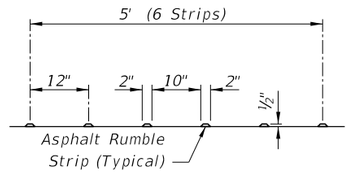
THERMOPLASTIC SET

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

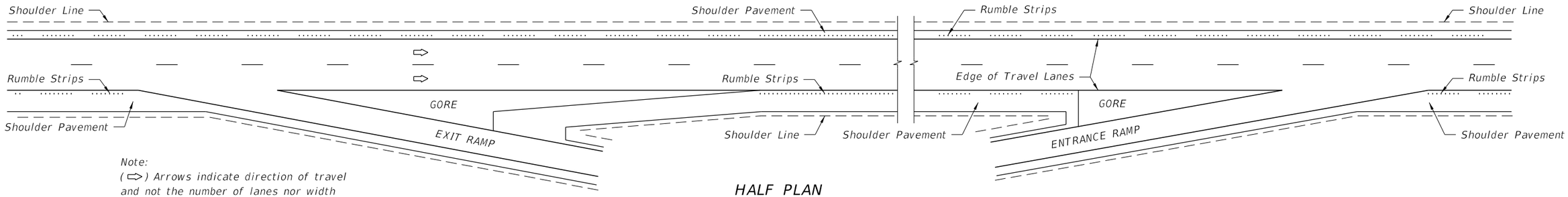
NOTE:

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

# RAISED RUMBLE STRIPS AT INTERSECTIONS

12/3/2015 11:36:33 AM

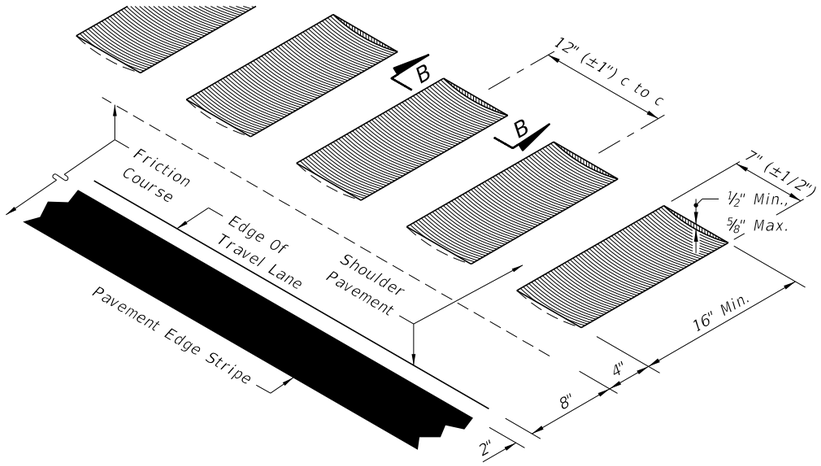
| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | FDOT FY 2016-17 DESIGN STANDARDS | RAISED RUMBLE STRIPS | 517 | 1 of 1 |



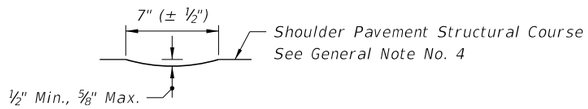

Note:
(⇨) Arrows indicate direction of travel and not the number of lanes nor width of median shoulder pavement.

HALF PLAN
LIMITED ACCESS FACILITIES

## SHOULDER GROUND-IN RUMBLE STRIP PLACEMENT



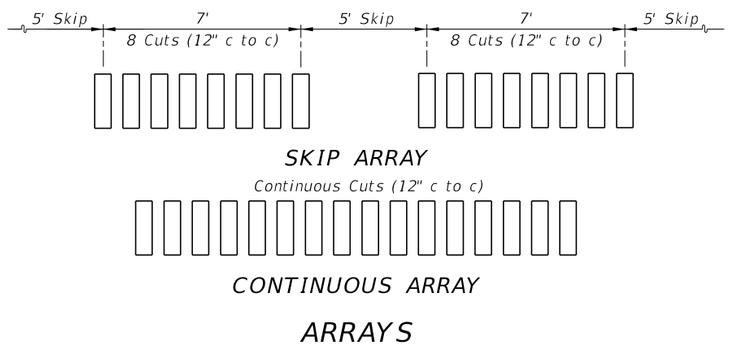

ISOMETRIC - LONGITUDINAL CUT




SECTION BB
LONGITUDINAL CUT

LOCATION ALONG SHOULDER (FLEXIBLE PAVEMENT)

## SHOULDER GROUND-IN RUMBLE STRIPS




SKIP ARRAY

Continuous Cuts (12" c to c)

CONTINUOUS ARRAY

ARRAYS

### 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.

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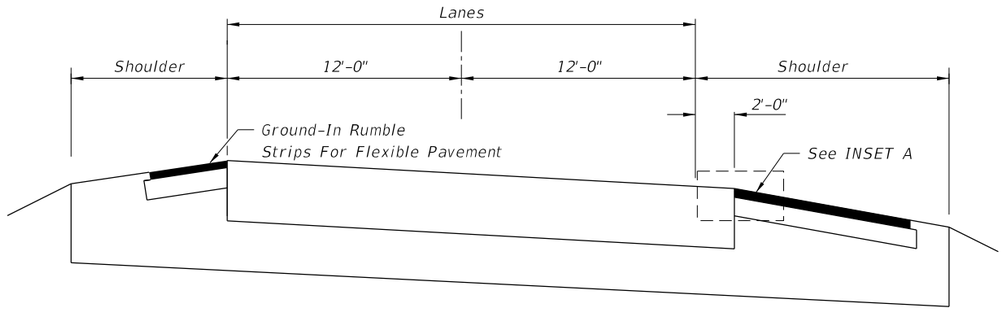
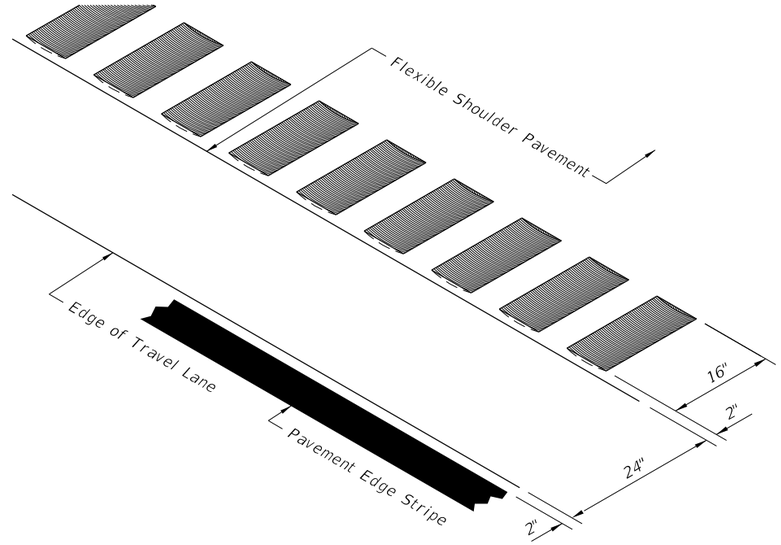
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | SHOULDER RUMBLE STRIPS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | | | 518 | 1 of 2 |

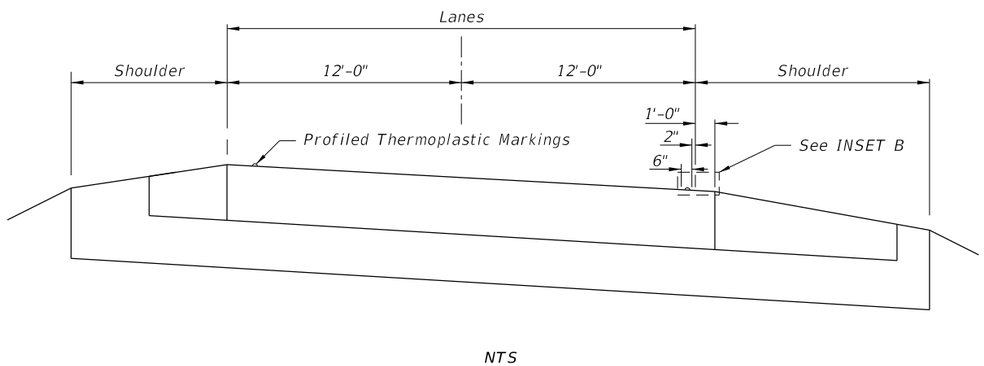



NTS

RIGID PAVEMENT WITH FLEXIBLE PAVEMENT SHOULDER

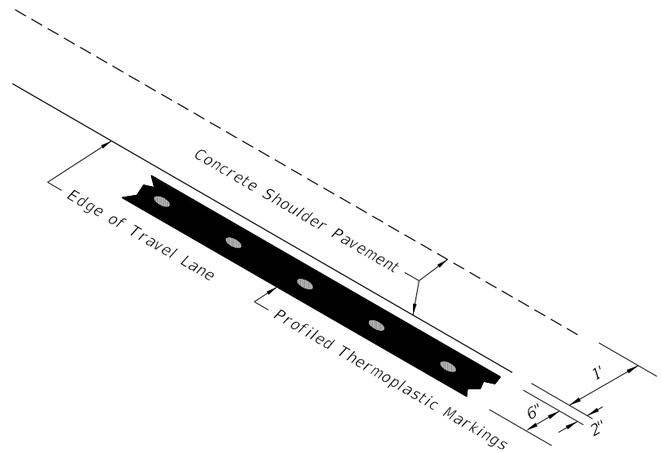



ISOMETRIC - LONGITUDINAL CUT
INSET A




NTS

RIGID PAVEMENT WITH RIGID PAVEMENT SHOULDER




ISOMETRIC - LONGITUDINAL CUT (RIGID PAVEMENT)
INSET B

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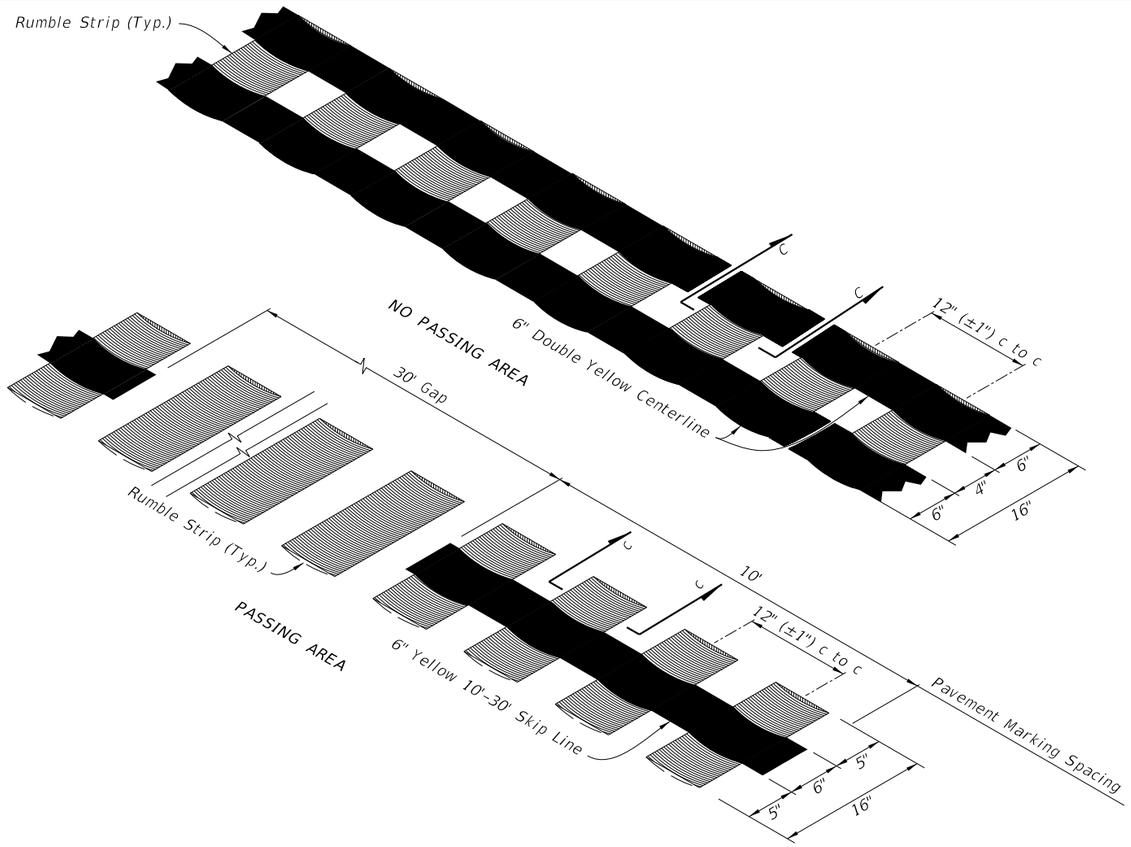
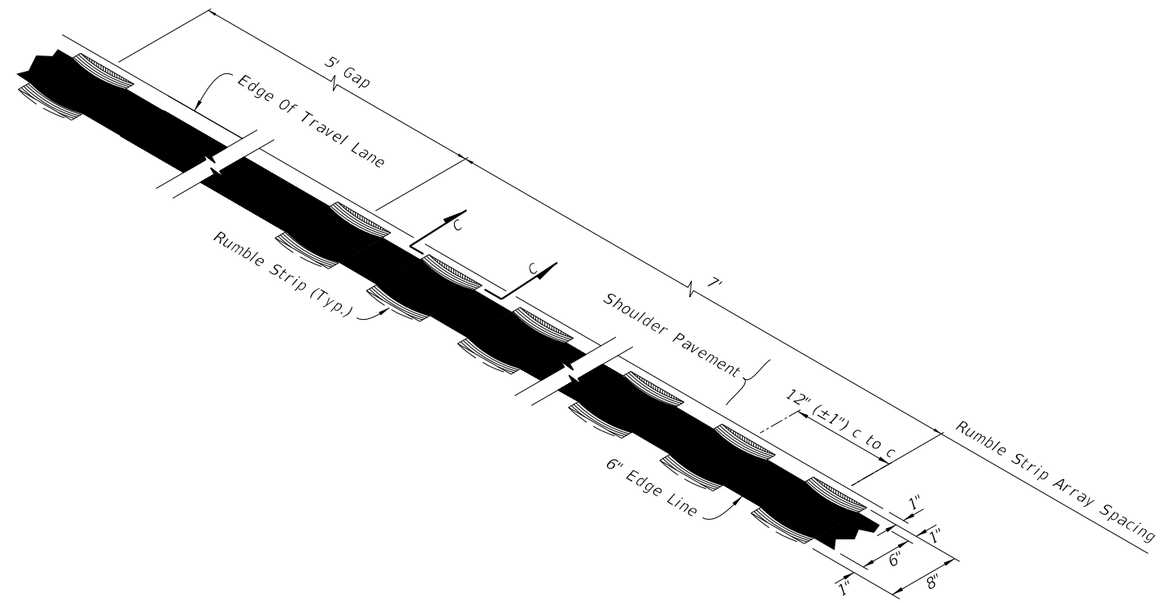
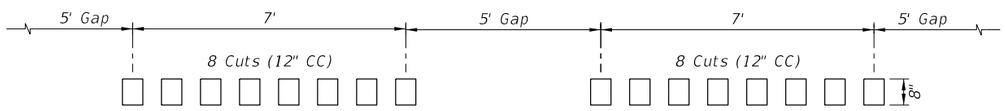
| LAST REVISION | REVISION | DESCRIPTION: | FDOT | FY 2016-17 DESIGN STANDARDS | SHOULDER RUMBLE STRIPS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|---|
| 07/01/15 | | | | | | 518 | 2 of 2 |



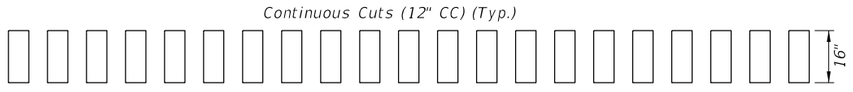

## CENTER LINE RUMBLE STRIPING
ISOMETRIC - LONGITUDINAL CUT



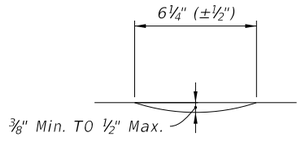

## EDGE LINE RUMBLE STRIPING
ISOMETRIC - LONGITUDINAL CUT




## SKIP ARRAY RUMBLE STRIP
(For All Edge Lines)




## CONTINUOUS ARRAY RUMBLE STRIP
(For All Centerlines)




## SECTION C-C
## RUMBLE STRIP DEPTH

### GENERAL NOTES:

1. Construct ground-in rumble strips centered on the proposed centerline or edge line markings in accordance with Specification Section 546.
2. The rumble strip depth detailed on this sheet is for use on dense-graded flexible pavement only.
3. Use the Skip Array Rumble Strip for edge line rumble striping and use the Continuous Array Rumble Strip for center line rumble striping.

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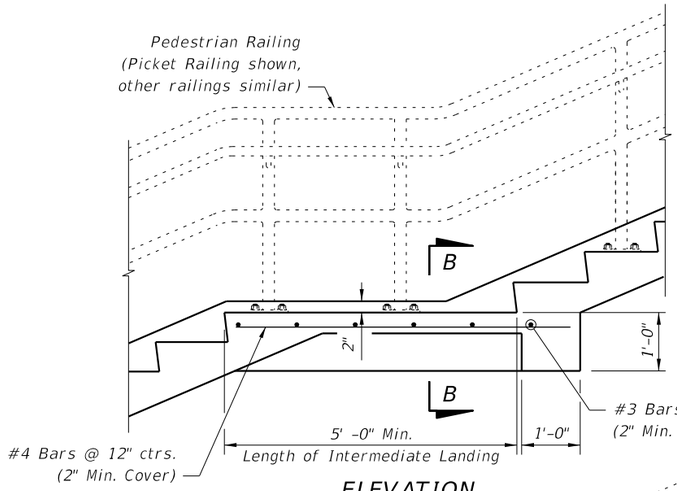
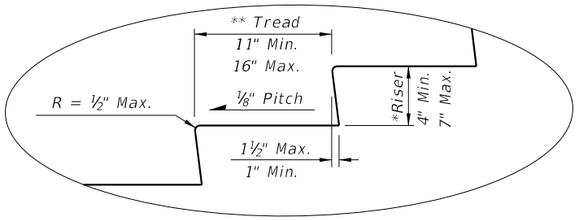
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | RUMBLE STRIPING | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/15 | | | | | 519 | 1 of 1 |

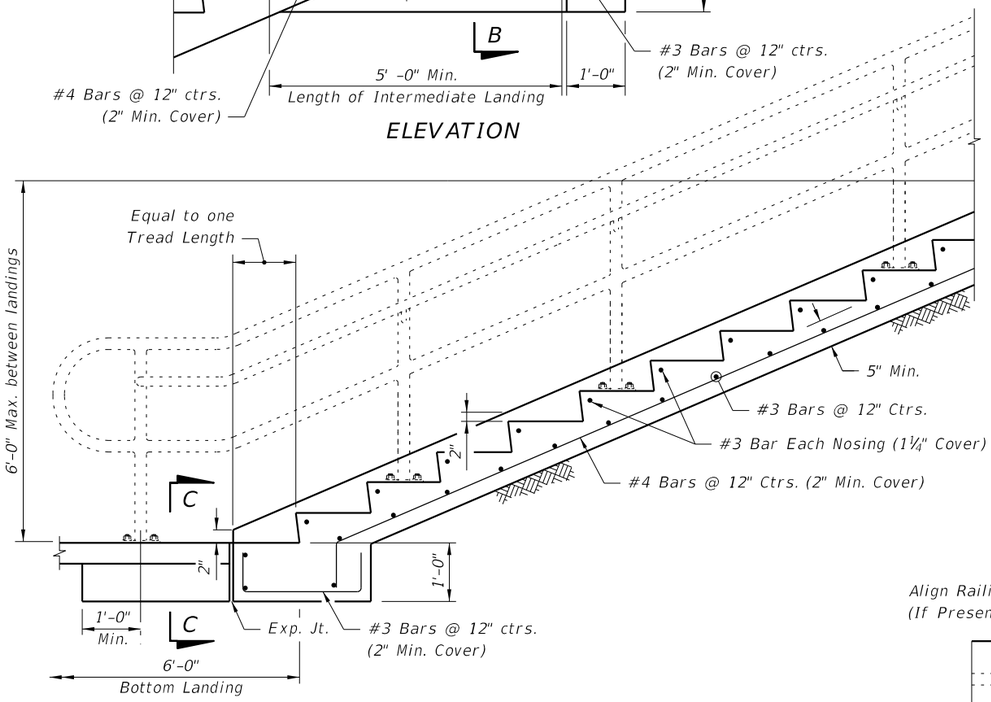



ELEVATION

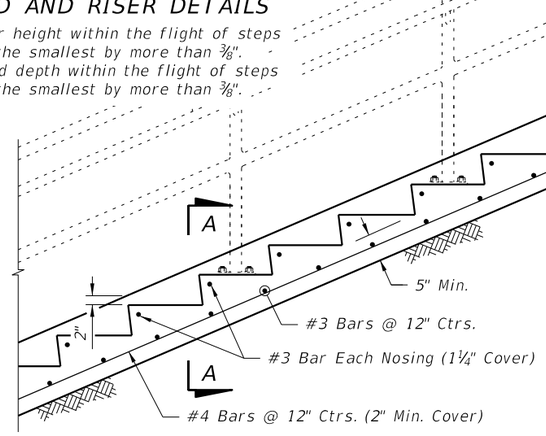



STAIR TREAD AND RISER DETAILS

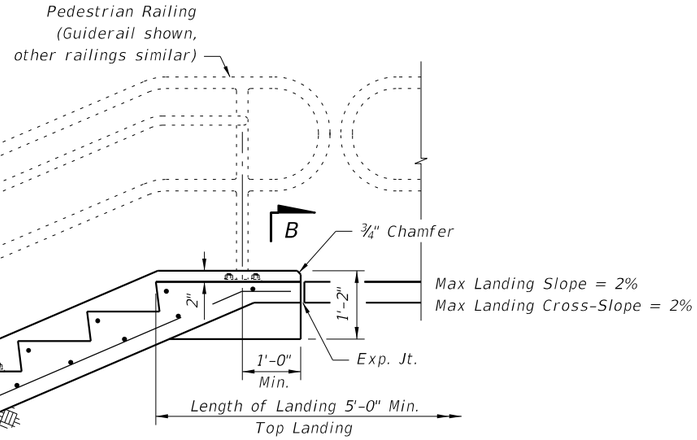
* The greatest riser height within the flight of steps shall not exceed the smallest by more than 3/8".
** The greatest tread depth within the flight of steps shall not exceed the smallest by more than 3/8".

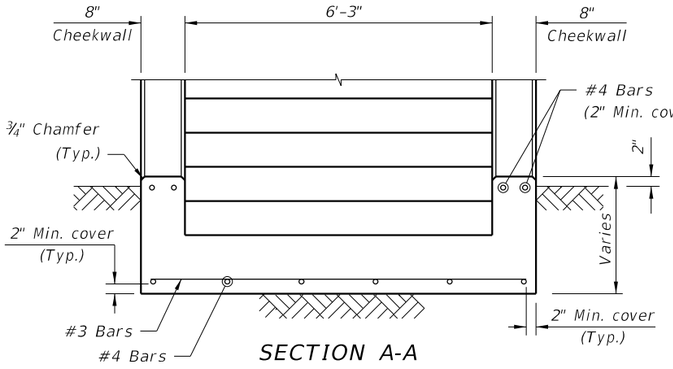



Max Landing Slope = 2%
Max Landing Cross-Slope = 2%

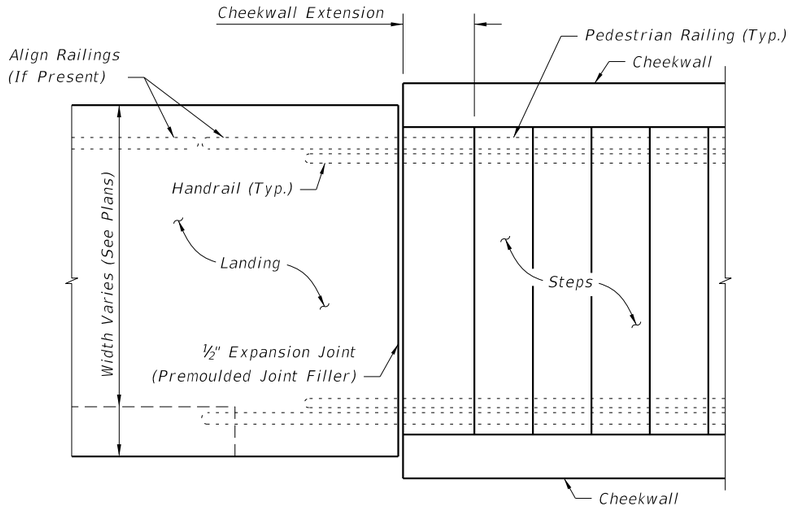



NOTE: Provide a maximum of 12 risers between landings.

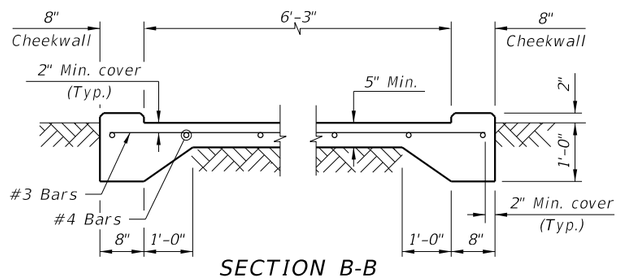


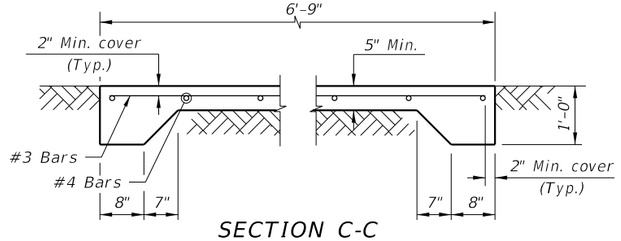

SECTION A-A




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




SECTION B-B




SECTION C-C

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.

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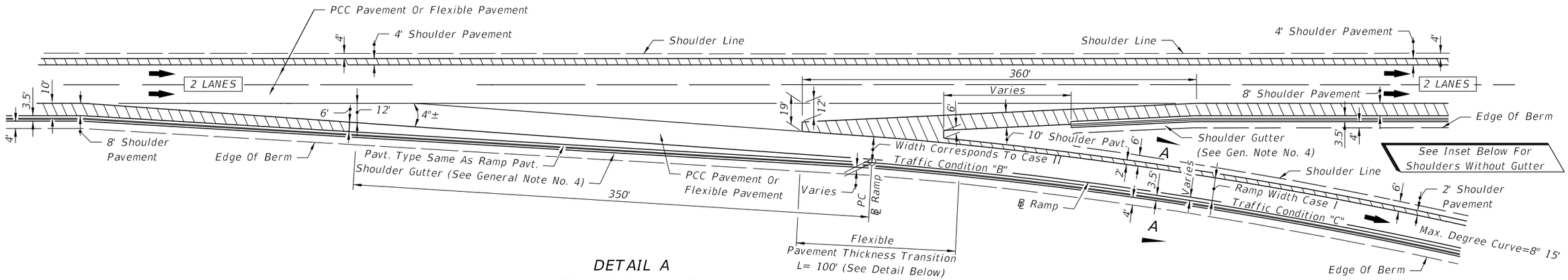
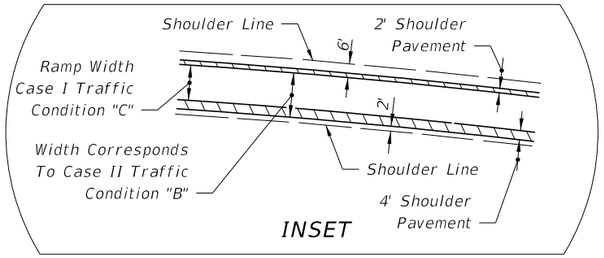
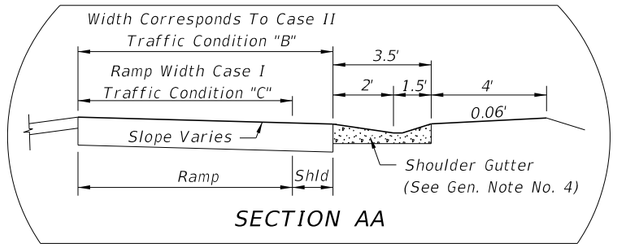
| LAST REVISION | REVISION | DESCRIPTION: | FDOT | FY 2016-17 DESIGN STANDARDS | CONCRETE STEPS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|---|
| 07/01/15 | | | | | | 521 | 1 of 1 |



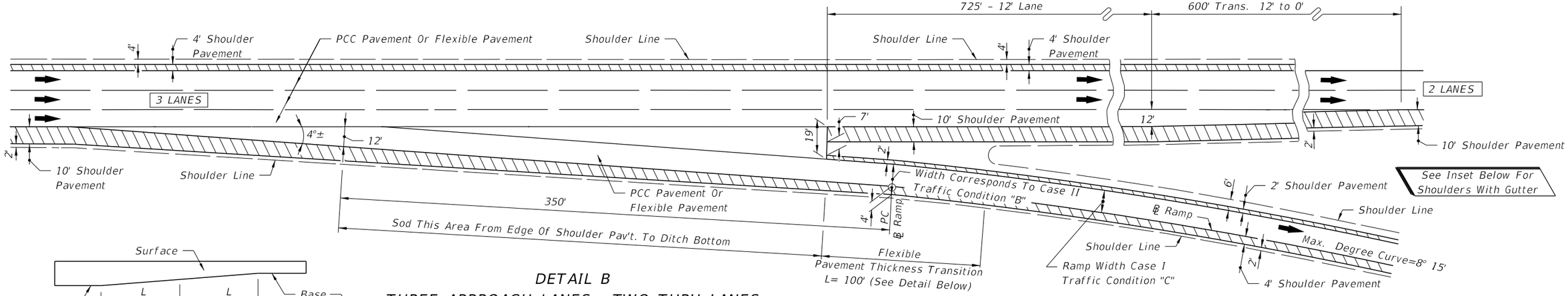

DETAIL A
TWO THRU LANES



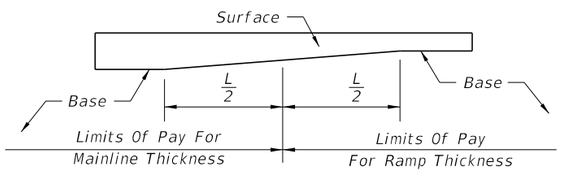

INSET




SECTION AA

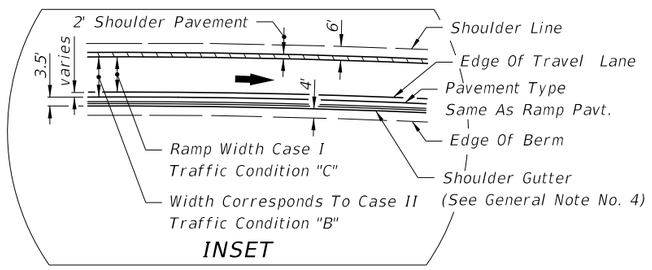



DETAIL B
THREE APPROACH LANES - TWO THRU LANES




FLEXIBLE PAVEMENT THICKNESS TRANSITION

NOTE: For General Notes See Sheet No. 2




INSET

EXIT TERMINALS

SINGLE - LANE RAMPS

| LAST REVISION 07/01/04 | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | RAMP TERMINALS | INDEX NO. 525 | SHEET NO. 1 of 5 |
|---|---|---|---|---|---|---|

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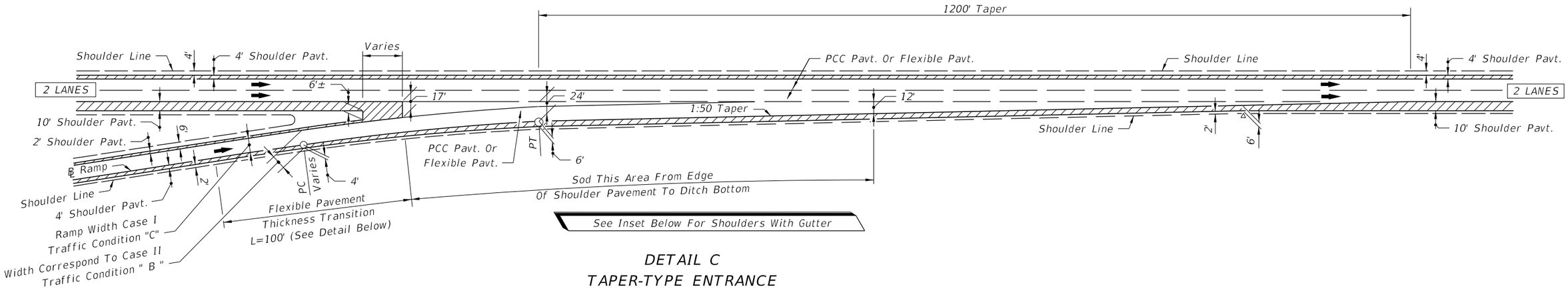
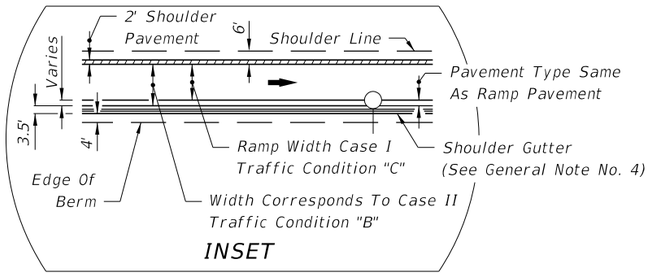
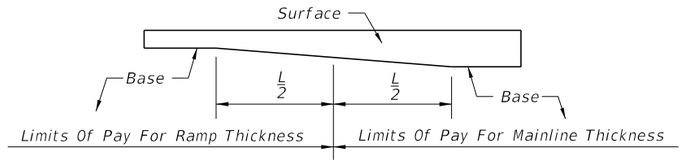


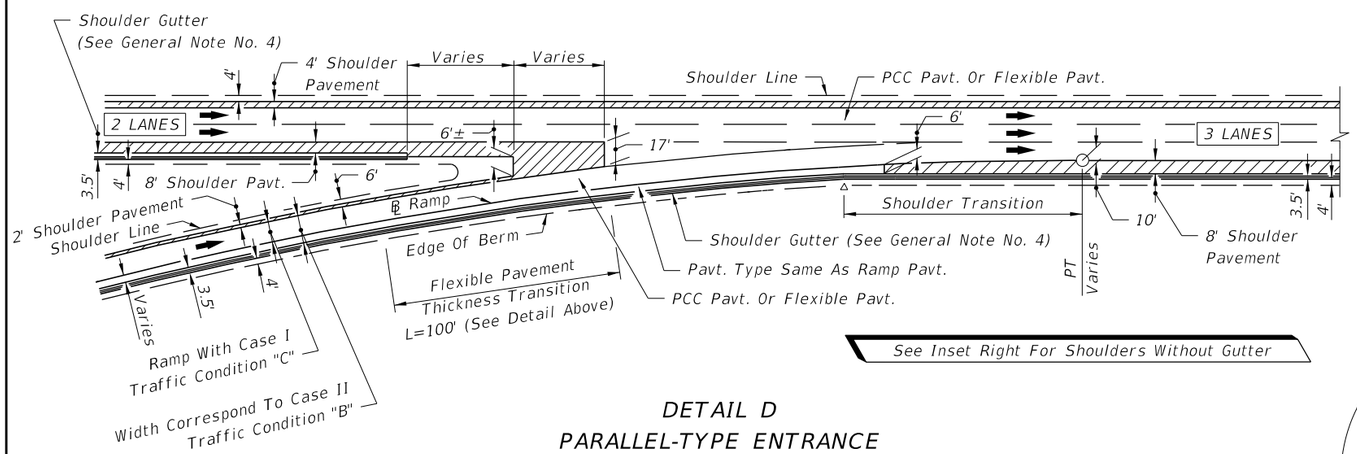

## DETAIL C
## TAPER-TYPE ENTRANCE




INSET




## FLEXIBLE PAVT. THICKNESS TRANSITION




## DETAIL D
## PARALLEL-TYPE ENTRANCE

## ENTRANCE TERMINALS
## SINGLE-LANE RAMPS

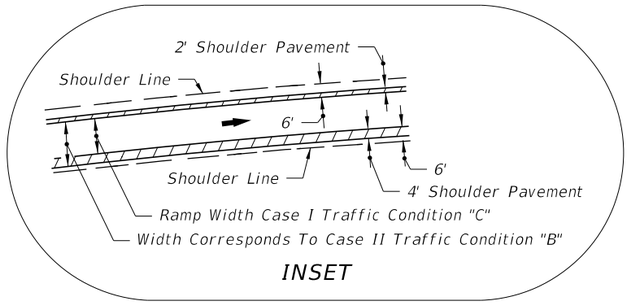
## GENERAL NOTES

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. a. PCC 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 No. 305.

4. Shoulder gutter applications will be determined by drainage design.




INSET

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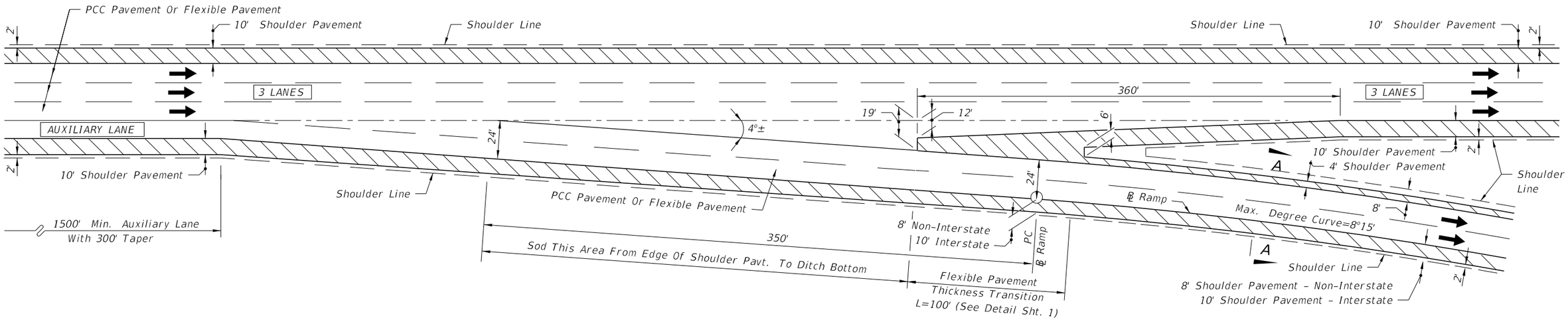
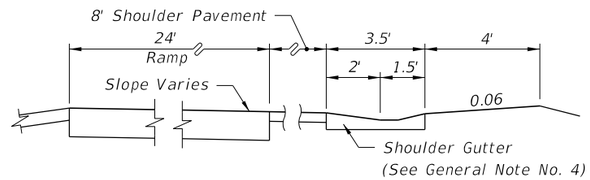
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | RAMP TERMINALS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/04 | | | | | 525 | 2 of 5 |




THREE THRU LANES - APPROACH AUXILIARY LANE

EXIT TERMINALS

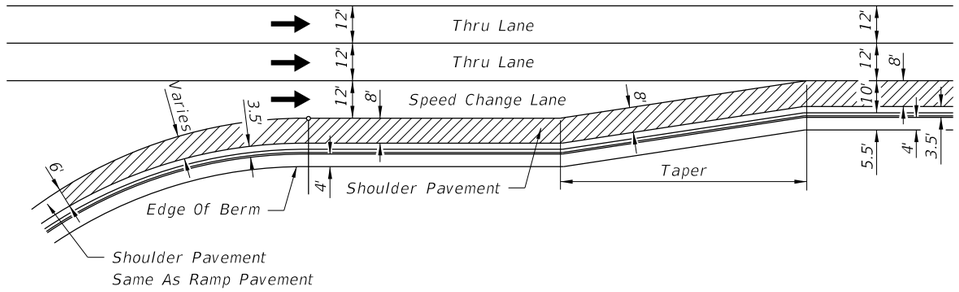
## TWO-LANE RAMPS



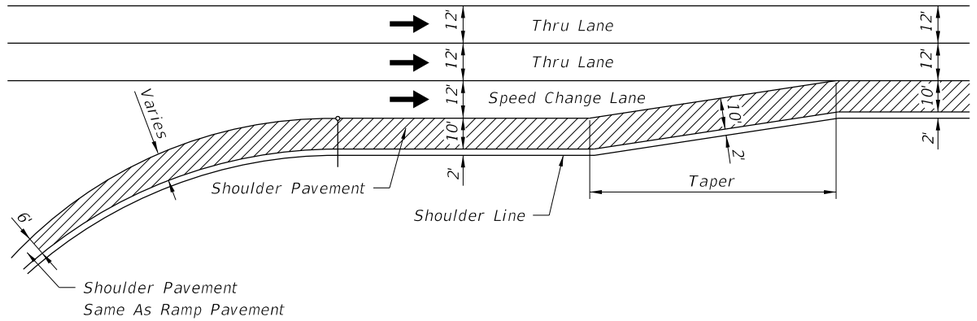

SECTION WHEN SHOULDER GUTTER USED
SECTION AA

12/3/2015 11:36:48 AM

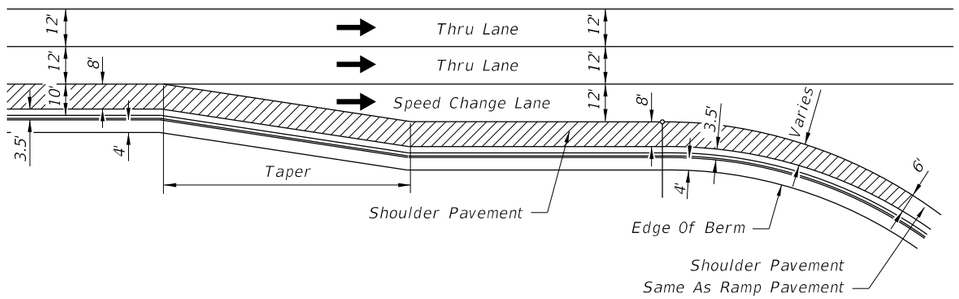
| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/00 | | | FY 2016-17 DESIGN STANDARDS | RAMP TERMINALS | 525 | 3 of 5 |



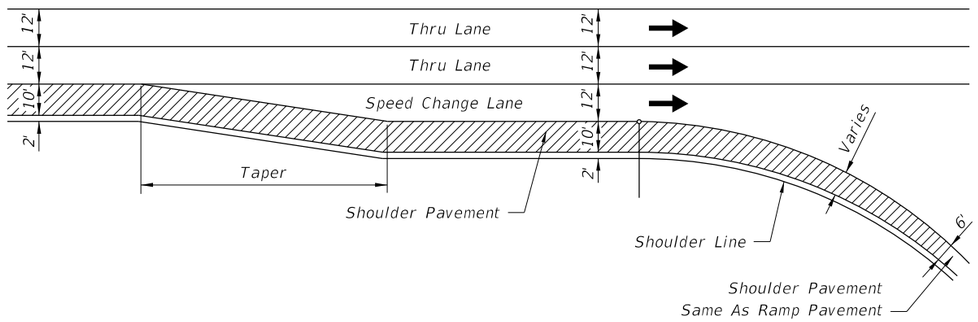

ACCELERATION LANE WITH SHOULDER GUTTER




ACCELERATION LANE WITHOUT SHOULDER GUTTER




DECELERATION LANE WITH SHOULDER GUTTER




DECELERATION LANE WITHOUT SHOULDER GUTTER

SHOULDER TREATMENT
AT SPEED CHANGE LANES AT FREEWAY RAMP TERMINALS

FREEWAY RAMP TERMINALS

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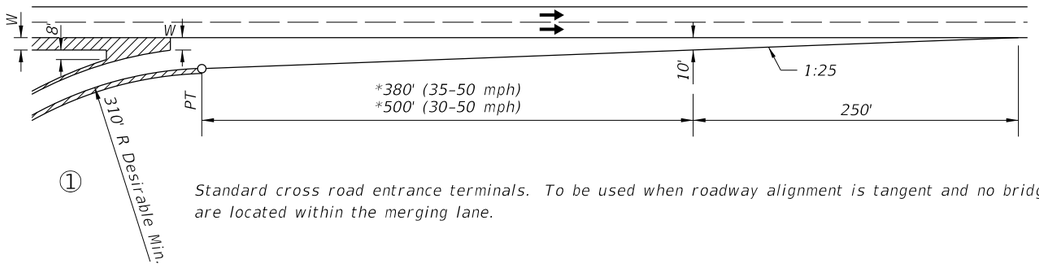
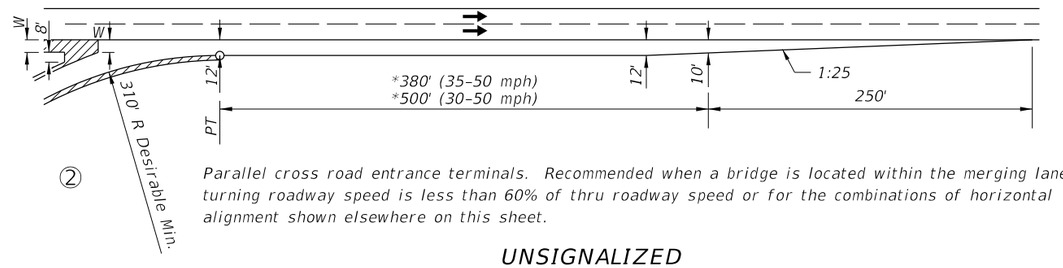
| LAST REVISION 07/01/05 | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | RAMP TERMINALS | INDEX NO. 525 | SHEET NO. 4 of 5 |
|---|---|---|---|---|---|---|




①

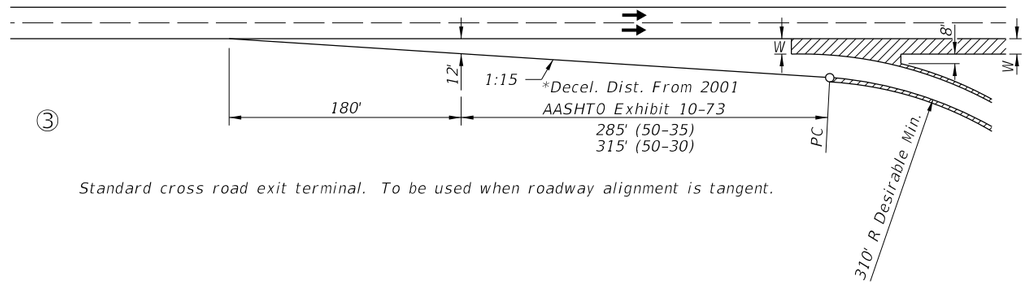
*Standard cross road entrance terminals. To be used when roadway alignment is tangent and no bridges are located within the merging lane.*




②

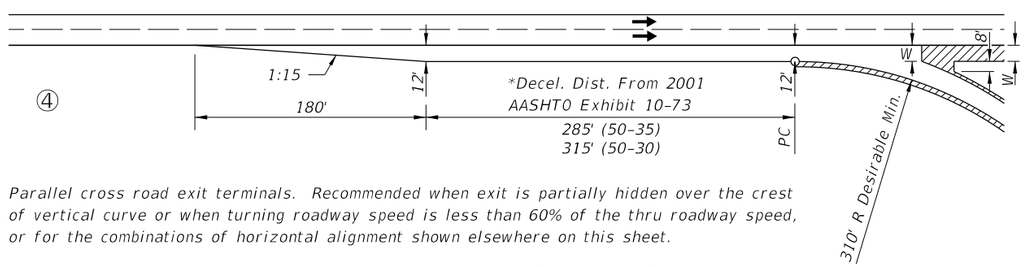
*Parallel cross road entrance terminals. Recommended when a bridge is located within the merging lane, turning roadway speed is less than 60% of thru roadway speed or for the combinations of horizontal alignment shown elsewhere on this sheet.*

## UNSIGNALIZED ENTRANCES




③

*Standard cross road exit terminal. To be used when roadway alignment is tangent.*




④

*Parallel cross road exit terminals. Recommended when exit is partially hidden over the crest of vertical curve or when turning roadway speed is less than 60% of the thru roadway speed, or for the combinations of horizontal alignment shown elsewhere on this sheet.*

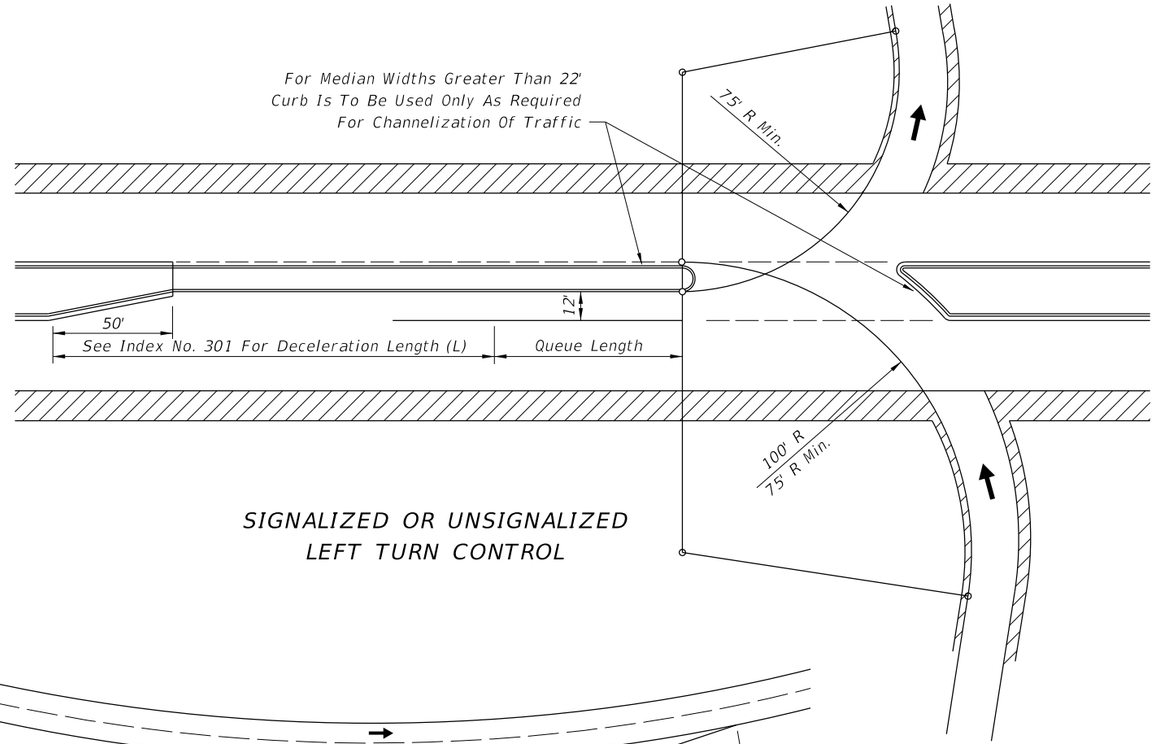
## UNSIGNALIZED EXITS

### FOOTNOTES:

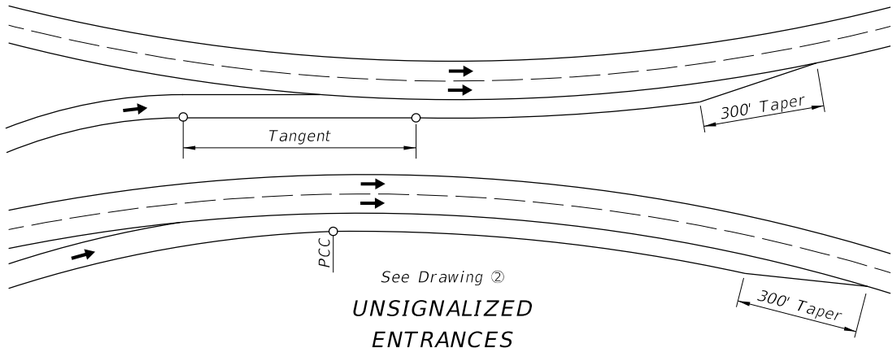
*W Normal shoulder pavement width.*

** Adjust for grades if greater than 2% (See Exhibit 10-71, AASHTO).*

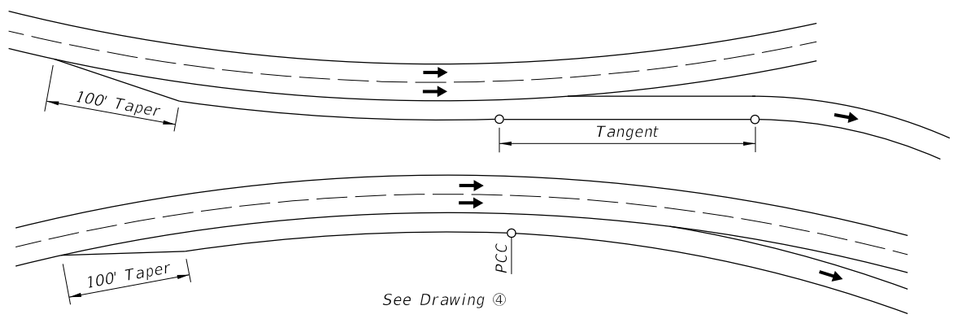
## RAMP TERMINALS




## SIGNALIZED OR UNSIGNALIZED LEFT TURN CONTROL




## UNSIGNALIZED ENTRANCES




## UNSIGNALIZED EXITS

*NOTE: Ramp terminals on curves should be avoided when possible.*

## RAMP TERMINALS ON CURVES

# CROSSROAD TERMINALS

| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | RAMP TERMINALS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/13 | | | | | 525 | 5 of 5 |

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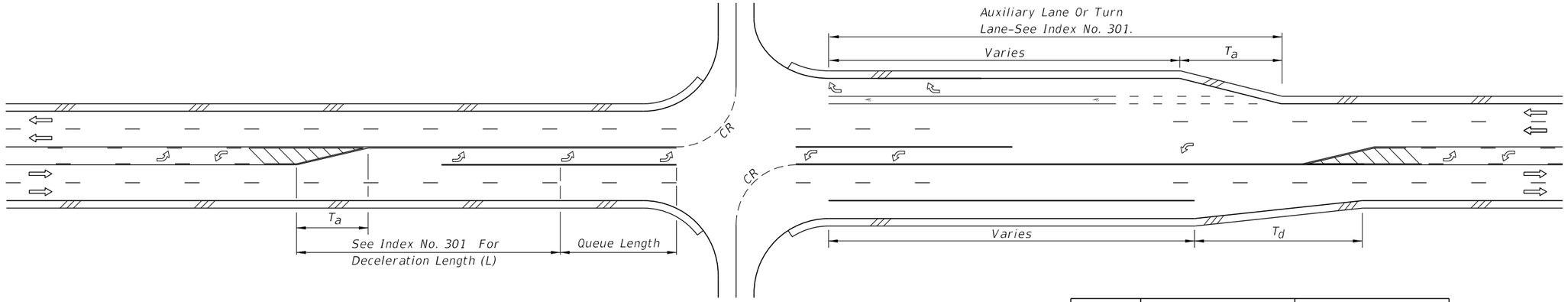
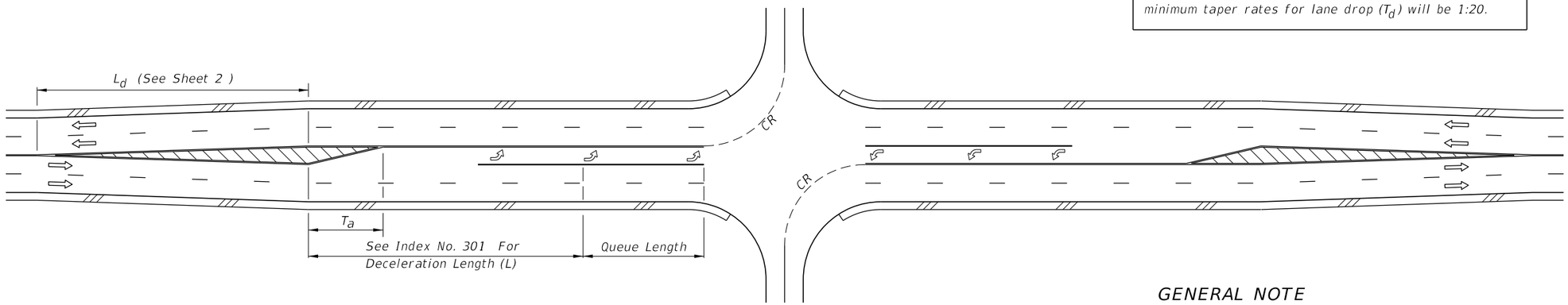



4-LANE WITH TWO-WAY LEFT-TURN LANES

| 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.



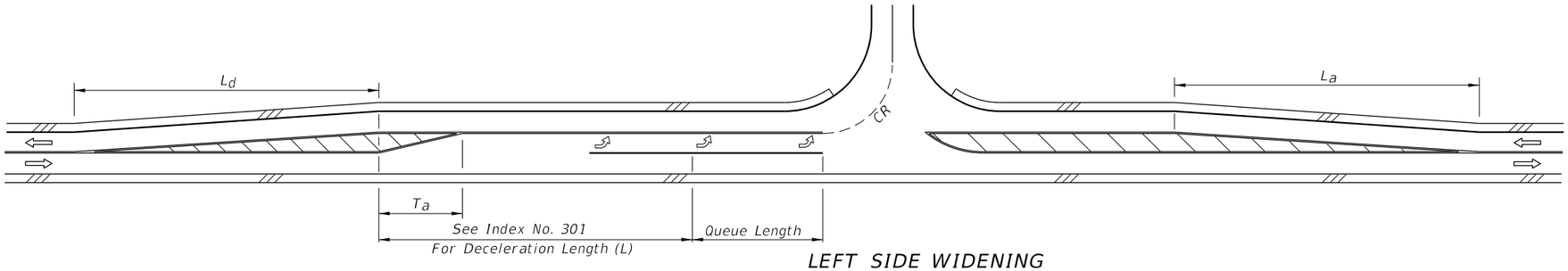

GENERAL NOTE

1. For pavement markings refer to Index No. 17346.

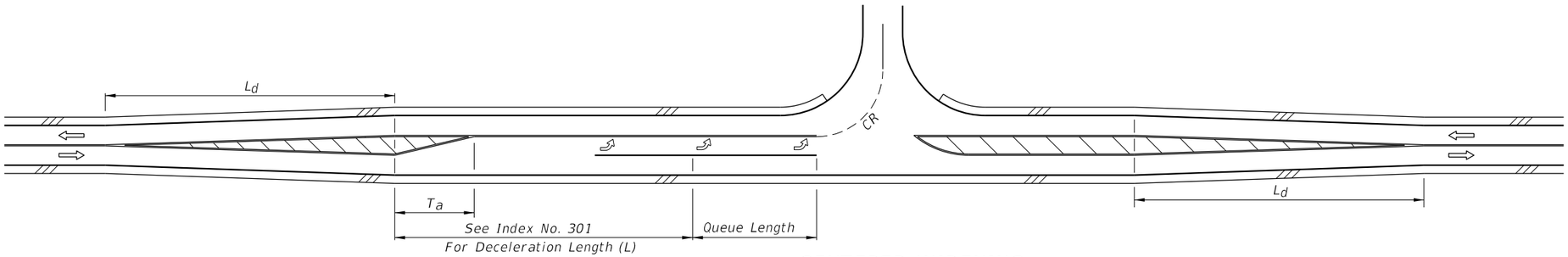
4-LANE UNDIVIDED FLARED - SYMMETRICAL

# INTERSECTION TURNS AND STORAGE

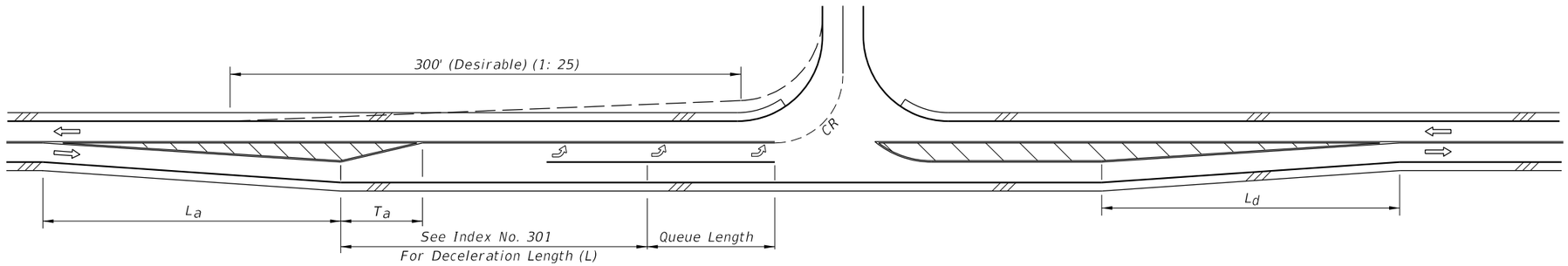
12/3/2015 11:36:50 AM




LEFT SIDE WIDENING




CENTERED WIDENING




RIGHT SIDE WIDENING

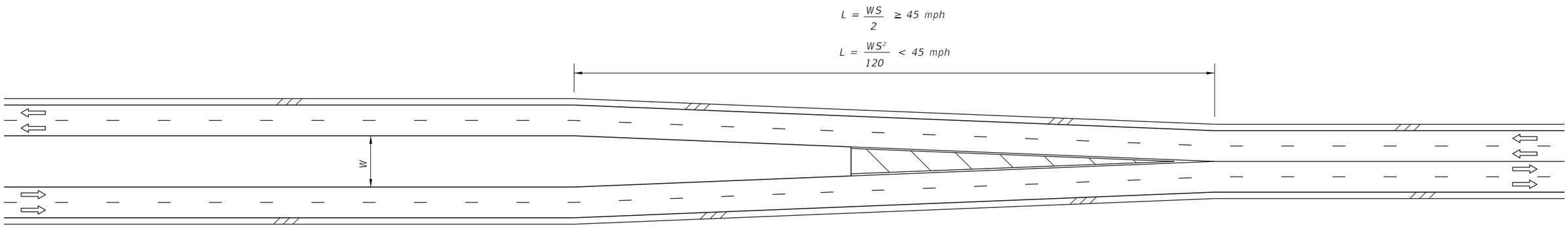
| DESIGN SPEED (mph) | $L_a$ (Ft.) | |
|---|---|---|
| | STANDARD | MINIMUM UNDER CONSTRAINTS |
| 30 | 180 | 120 |
| 40 | 320 | 150 |
| 50 | 500 | 180 |
| 60 | 720 | 240 |

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

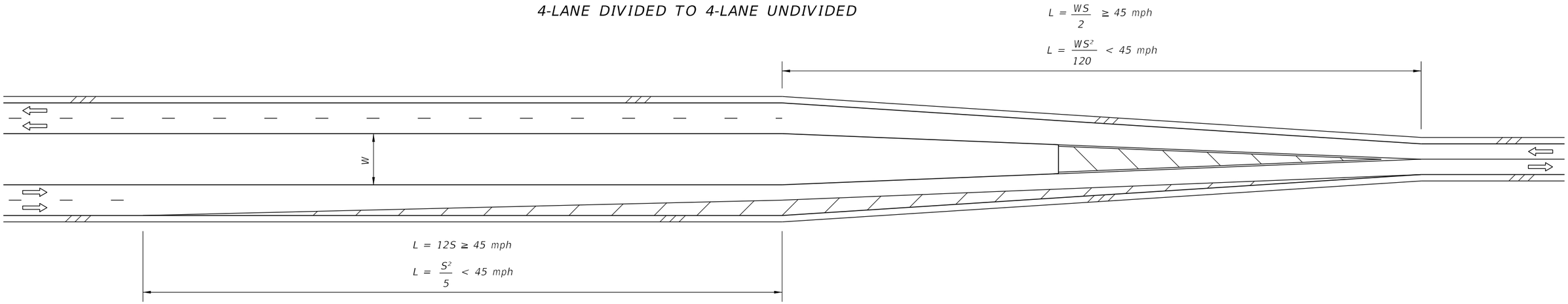
# FLARED & PAINTED LEFT TURNS FOR 2-LANE 2-WAY ROADWAYS

12/3/2015 11:36:51 AM

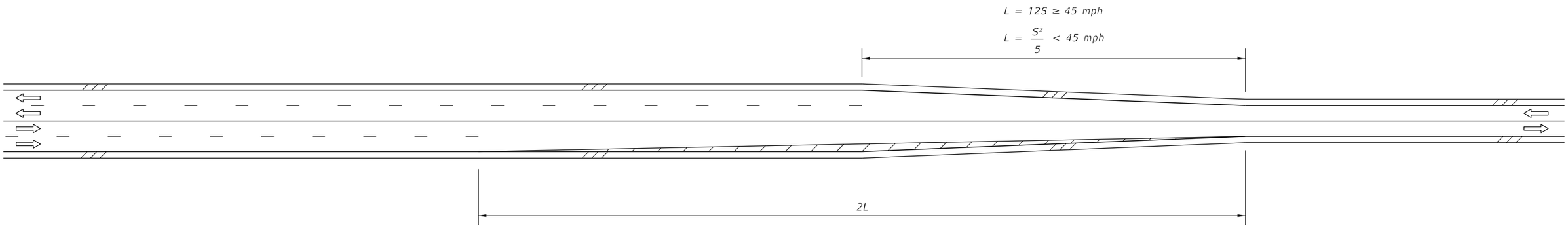
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | ROADWAY TRANSITIONS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/15 | | | | | 526 | 2 of 8 |




## 4-LANE DIVIDED TO 4-LANE UNDIVIDED




## 4-LANE DIVIDED TO 2-LANE UNDIVIDED

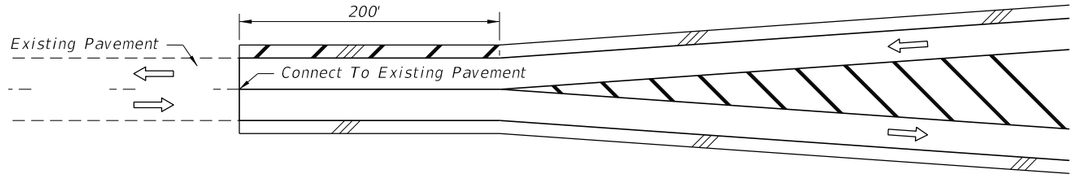



## 4-LANE UNDIVIDED TO 2-LANE UNDIVIDED

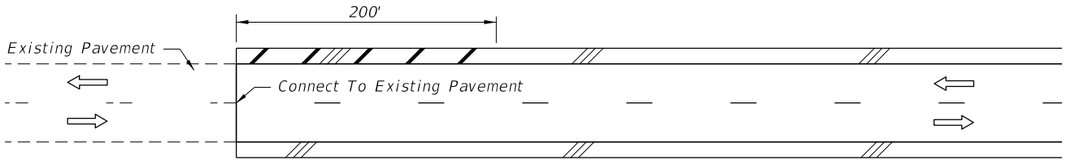

# LANE DIVERGENCE AND CONVERGENCE FOR CENTERED ROADWAYS

12/3/2015 11:36:52 AM

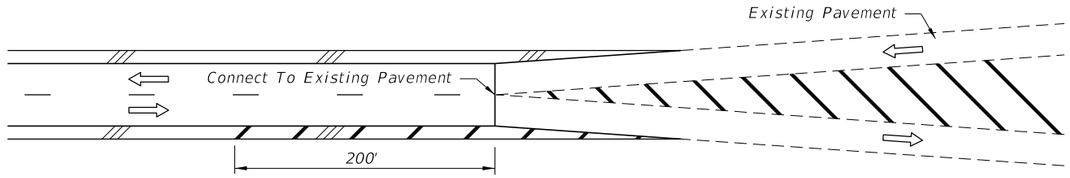
| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/00 | | | FY 2016-17 DESIGN STANDARDS | ROADWAY TRANSITIONS | 526 | 3 of 8 |



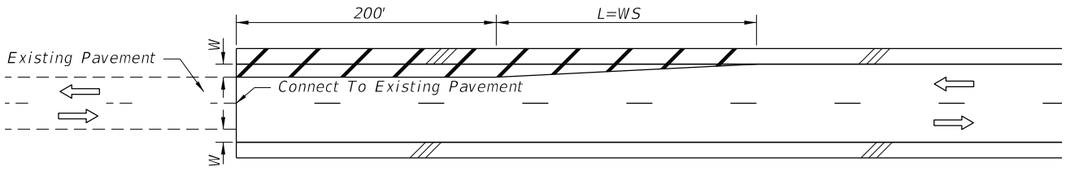

CONNECTING FLARE WITH PAVED SHOULDERS TO
EXISTING ROADWAY WITHOUT PAVED SHOULDERS



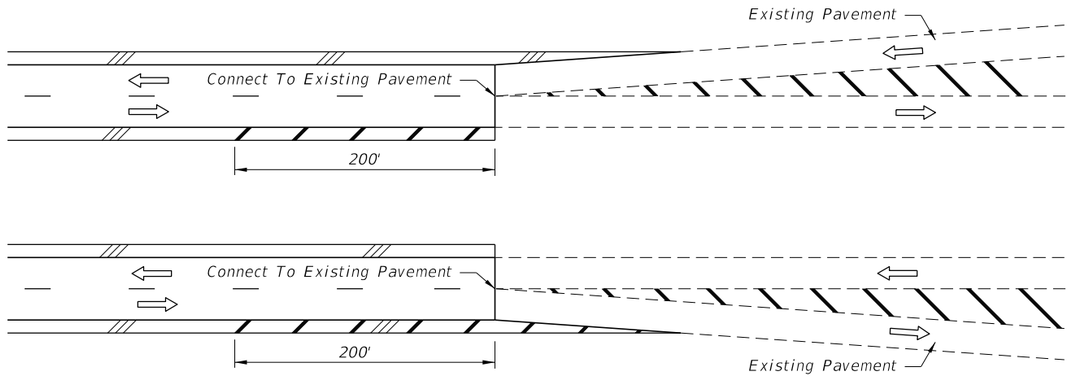

CONNECTING SIMILAR WIDTH PAVEMENTS



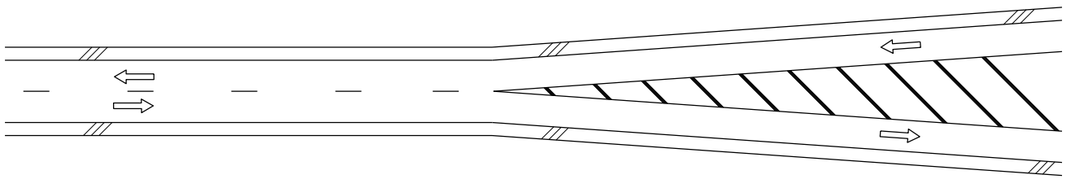

CONNECTING ROADWAY WITH PAVED SHOULDERS TO
EXISTING SYMMETRICAL FLARE WITHOUT PAVED SHOULDERS




CONNECTING DIFFERENT WIDTH PAVEMENTS




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



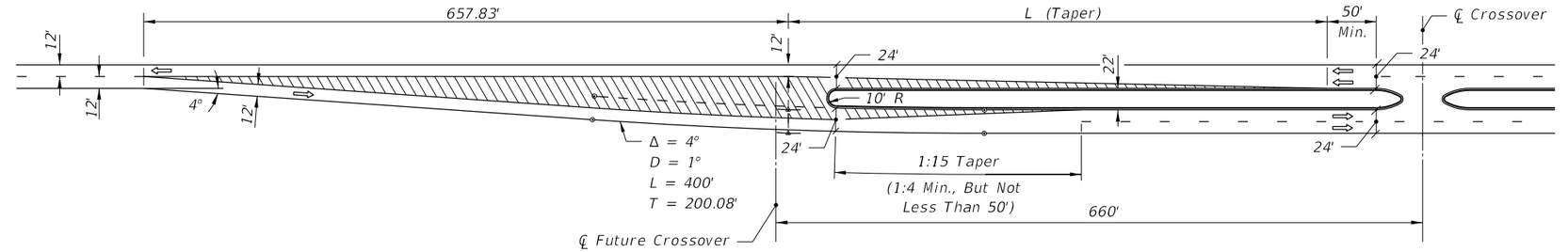
FLARED - PAVED SHOULDERS

S=Design speed (mph).

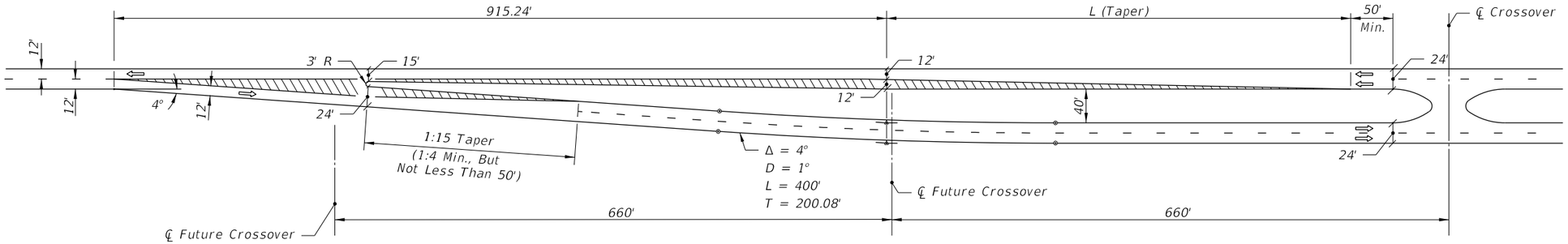
# PAVED SHOULDER TREATMENT AT TRANSITIONS AND CONNECTIONS

12/3/2015 11:36:52 AM

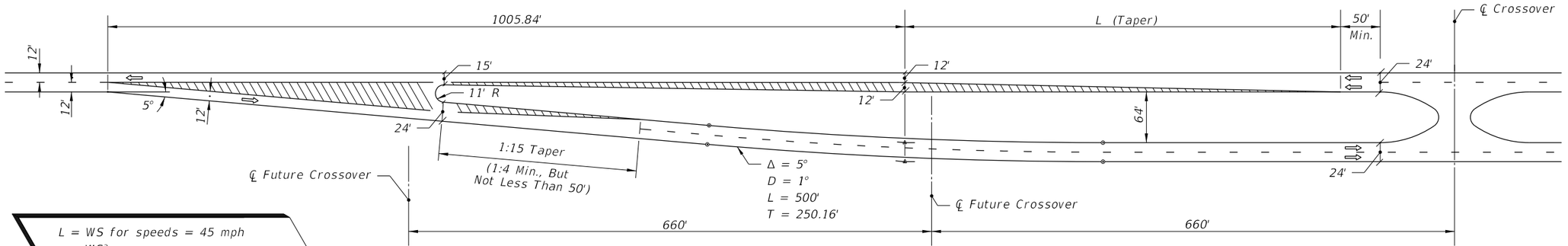
| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/00 | | | FDOT FY 2016-17 DESIGN STANDARDS | ROADWAY TRANSITIONS | 526 | 4 of 8 |




22' MEDIAN




40' MEDIAN




64' MEDIAN

$L = WS$ for speeds = 45 mph

$L = \frac{WS^2}{60}$ for speeds ≤ 40 mph

Where:

W=Width of lateral transition in feet.

S=Design speed.

## NOTES FOR SHEETS 5 THRU 8

1. 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 ≤ 45 mph, the median widths and lane widths shown.

2. Approach lane departures (Δ = 5°) are suitable for design speeds up to 60 mph. Interior curves (D = 1°) are suitable for normal crown for design speeds up to 50 mph. Merging curves (D ≥ 5°) will require superelevation.

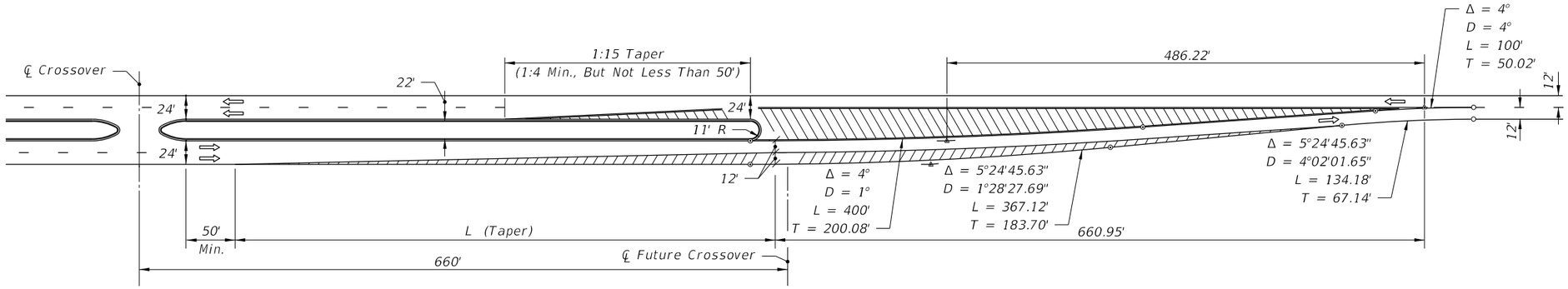
3. The geometrics of these schemes are associated with the standard subsectional spacing for side roads, but in any case will require modification to accommodate side road location, multilane and/or divided side roads, oblique side roads, crossover widths, storage and speed change lane requirements, and, other related features.

LEFT ROADWAY CENTERED ON APPROACH ROADWAY

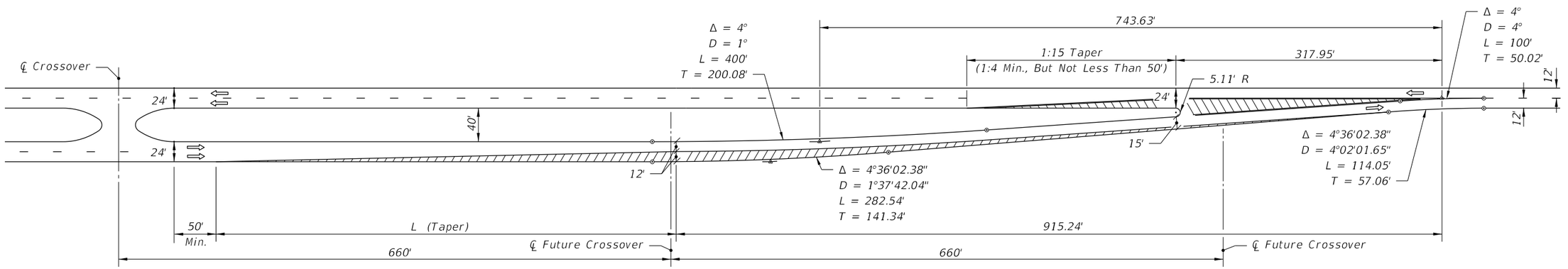
# TWO LANE TO FOUR LANE TRANSITION

12/3/2015 11:36:53 AM

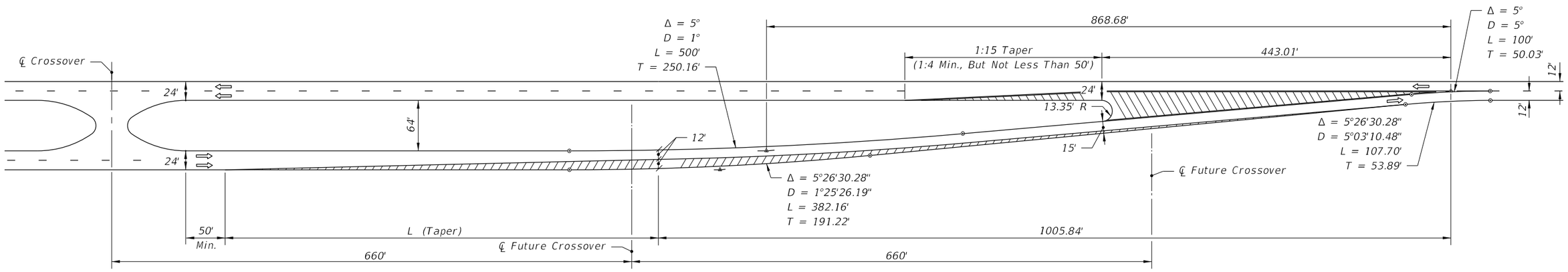
| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | ROADWAY TRANSITIONS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/00 | | | | | 526 | 5 of 8 |




22' MEDIAN




40' MEDIAN




64' MEDIAN

$L = WS$ for speeds = 45 mph

$L = \frac{WS^2}{60}$ for speeds ≤ 40 mph

Where:
W = Width of lateral transition in feet.
S = Design speed.

LEFT ROADWAY CENTERED ON THRU ROADWAY

# FOUR LANE TO TWO LANE TRANSITION

| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/00 | | | FY 2016-17 DESIGN STANDARDS | ROADWAY TRANSITIONS | 526 | 6 of 8 |

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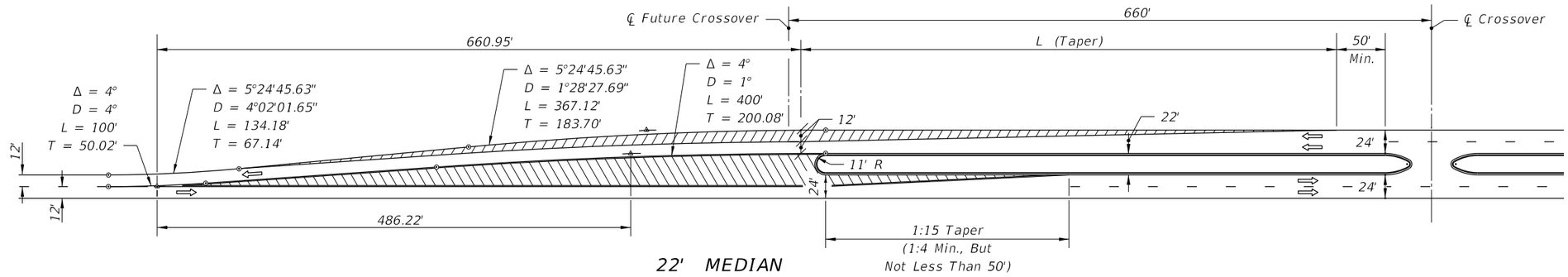
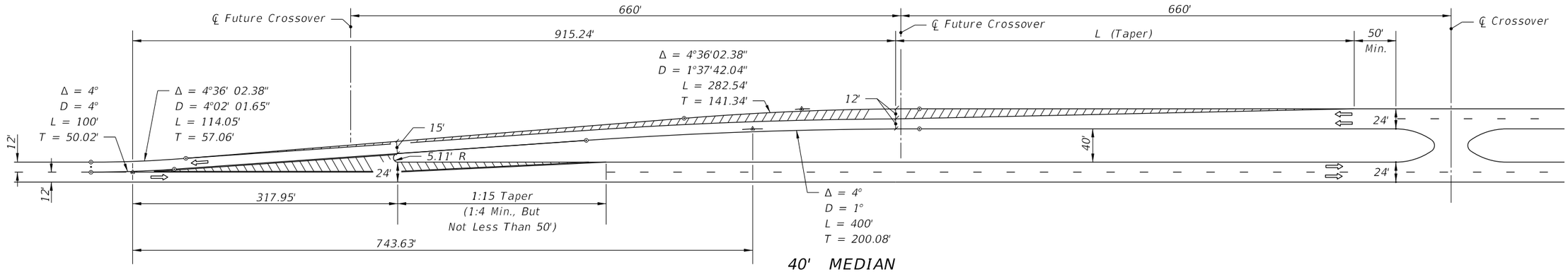
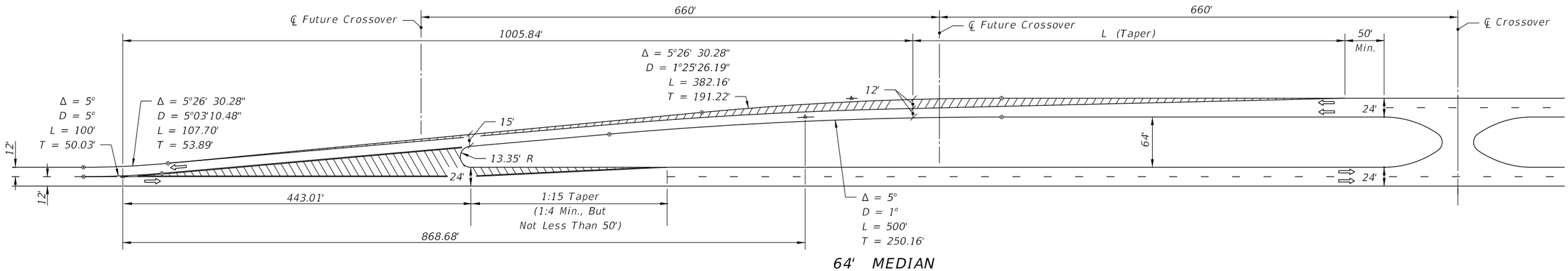



22' MEDIAN




40' MEDIAN




64' MEDIAN

$L = WS$ for speeds = 45 mph

$L = \frac{WS^2}{60}$ for speeds ≤ 40 mph

Where:
W = Width of lateral transition in feet.
S = Design speed.

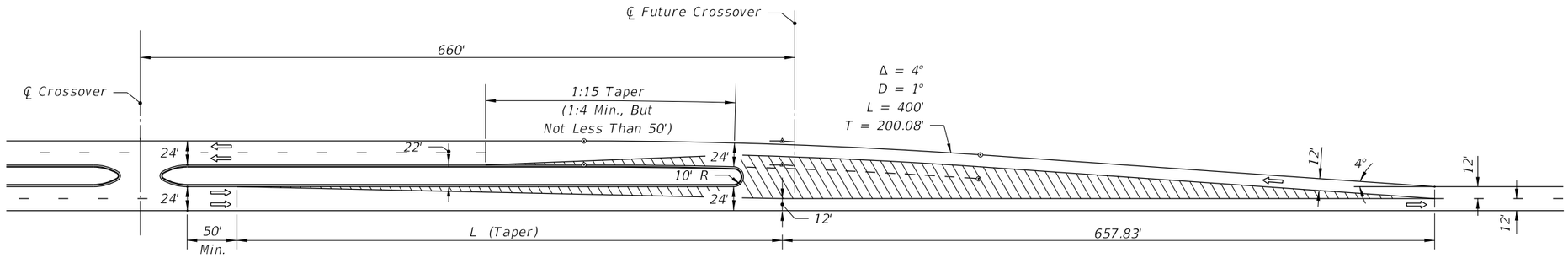
RIGHT ROADWAY CENTERED ON APPROACH ROADWAY

# TWO LANE TO FOUR LANE TRANSITION

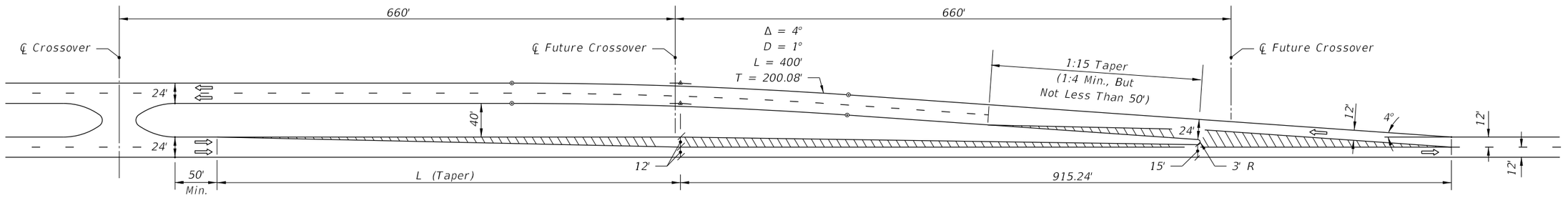
11:36:54 AM

12/3/2015

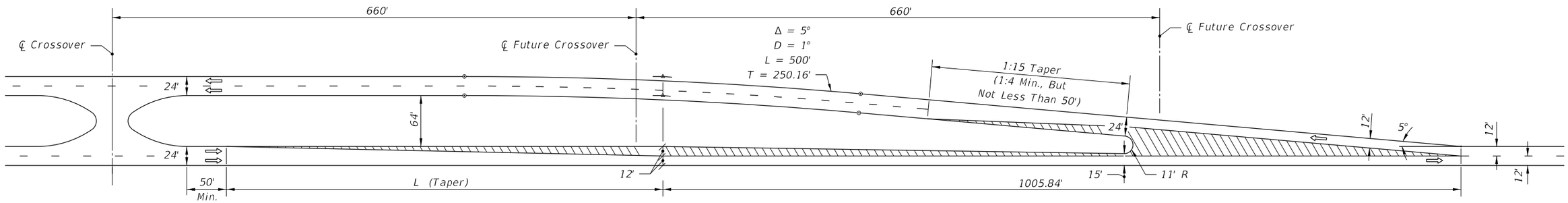
| LAST REVISION 07/01/00 | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | ROADWAY TRANSITIONS | INDEX NO. 526 | SHEET NO. 7 of 8 |
|---|---|---|---|---|---|---|




22' MEDIAN




40' MEDIAN




64' MEDIAN

$L = WS$ for speeds = 45 mph

$L = \frac{WS^2}{60}$ for speeds ≤ 40 mph

Where:

W = Width of lateral transition in feet.

S = Design speed.

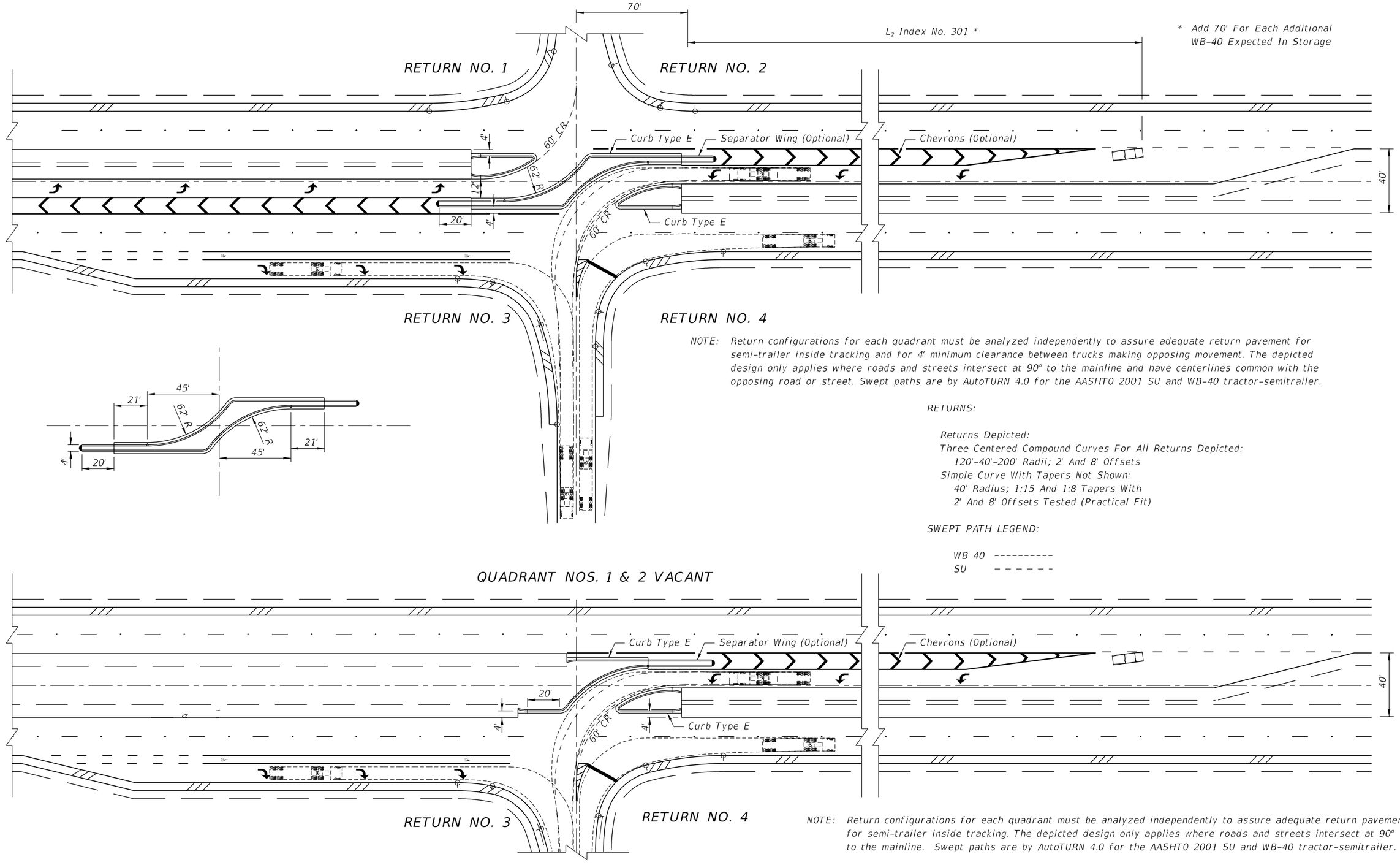
RIGHT ROADWAY CENTERED ON THRU ROADWAY

# FOUR LANE TO TWO LANE TRANSITION

11:36:55 AM

12/3/2015

| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | ROADWAY TRANSITIONS | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/00 | | | | | 526 | 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-semitrailer.*

*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* – – – – – –

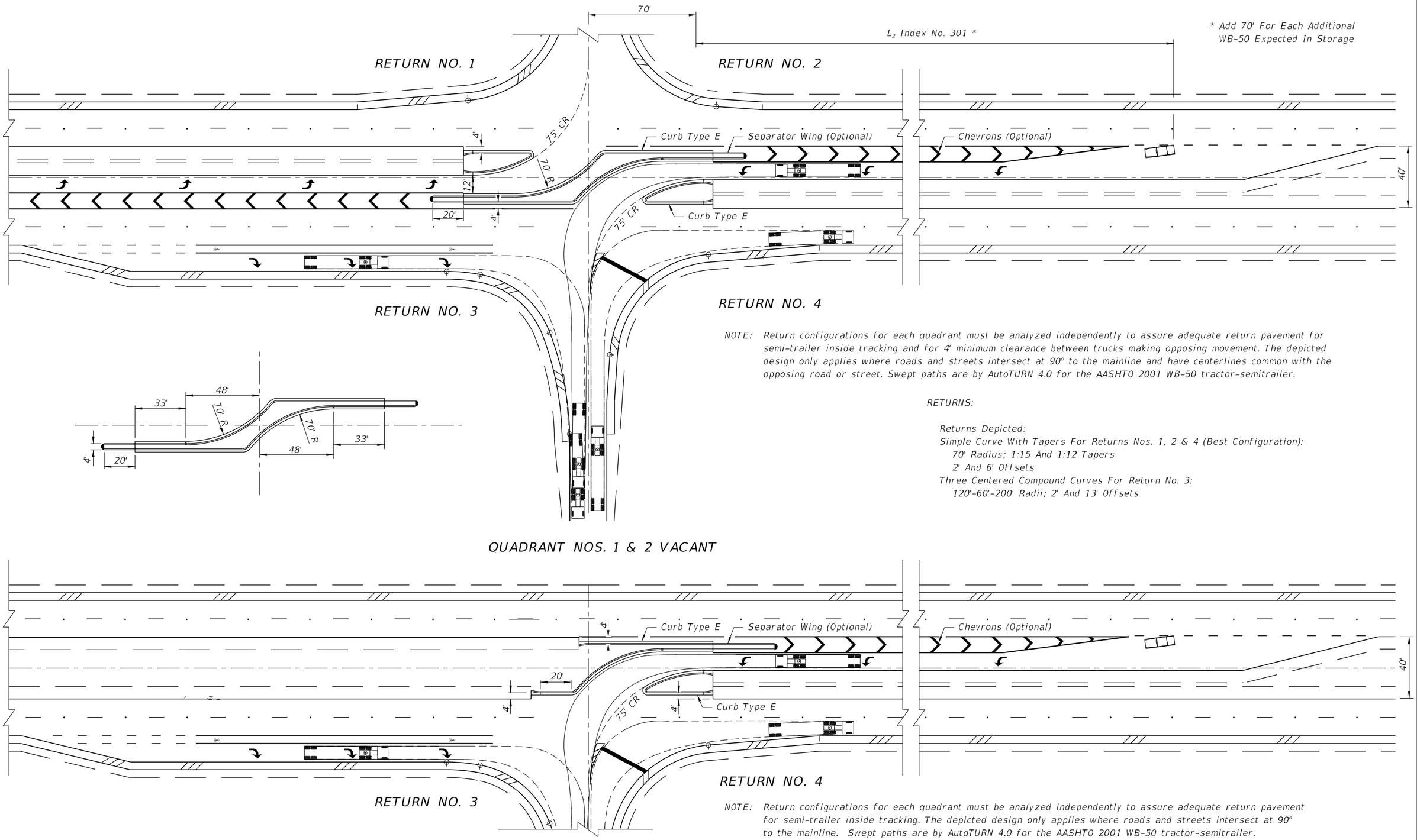



NOTE: *Return configurations for each quadrant must be analyzed independently to assure adequate return pavement for semi-trailer inside tracking. The depicted design only applies where roads and streets intersect at 90° to the mainline. Swept paths are by AutoTURN 4.0 for the AASHTO 2001 SU and WB-40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

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

| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/04 | | | FDOT FY 2016-17 DESIGN STANDARDS | DIRECTIONAL MEDIAN OPENINGS | 527 | 1 of 3 |

12/3/2015 11:36:55 AM




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 WB-50 tractor-semitrailer.*

*RETURNS:*

*Returns Depicted:*
*Simple Curve With Tapers For Returns Nos. 1, 2 & 4 (Best Configuration):*
*70' Radius; 1:15 And 1:12 Tapers*
*2' And 6' Offsets*
*Three Centered Compound Curves For Return No. 3:*
*120'-60'-200' Radii; 2' And 13' Offsets*

## QUADRANT NOS. 1 & 2 VACANT

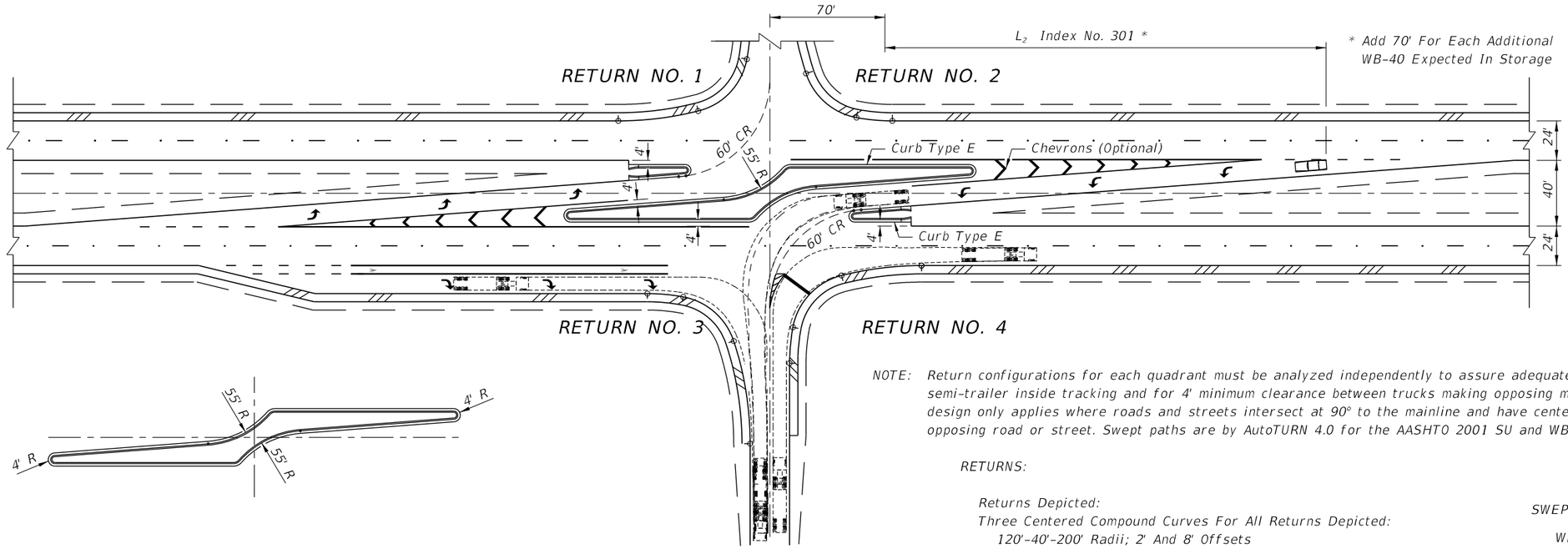



NOTE: *Return configurations for each quadrant must be analyzed independently to assure adequate return pavement for semi-trailer inside tracking. The depicted design only applies where roads and streets intersect at 90° to the mainline. Swept paths are by AutoTURN 4.0 for the AASHTO 2001 WB-50 tractor-semitrailer.*

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

| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/04 | | | FDOT FY 2016-17 DESIGN STANDARDS | DIRECTIONAL MEDIAN OPENINGS | 527 | 2 of 3 |

12/3/2015 11:36:56 AM







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-semitrailer.*

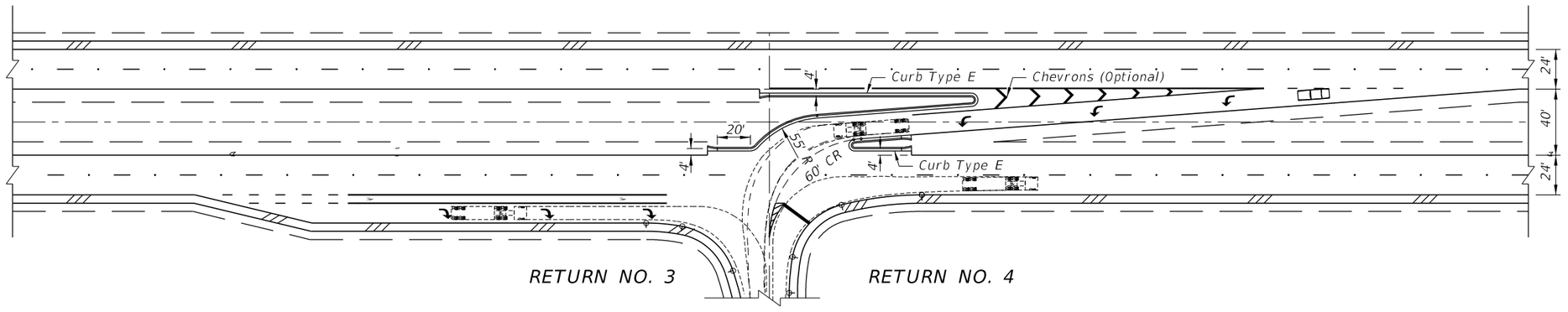
*RETURNS:*

*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*

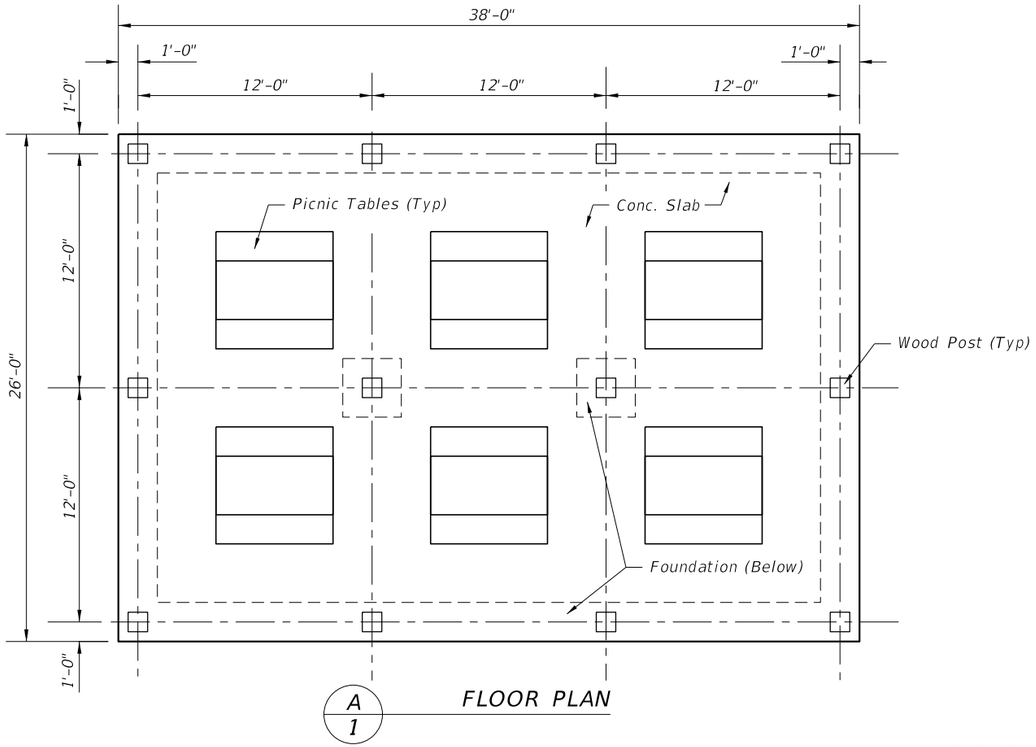



NOTE: *Return configurations for each quadrant must be analyzed independently to assure adequate return pavement for semi-trailer inside tracking. The depicted design only applies where roads and streets intersect at 90° to the mainline. Swept paths are by AutoTURN 4.0 for the AASHTO 2001 SU and WB-40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

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

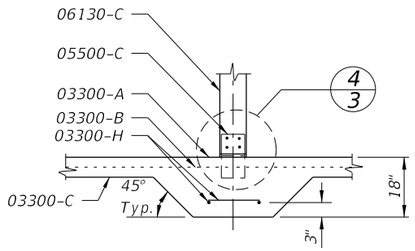
12/3/2015 11:36:57 AM

| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/04 | | | FDOT FY 2016-17 DESIGN STANDARDS | DIRECTIONAL MEDIAN OPENINGS | 527 | 3 of 3 |

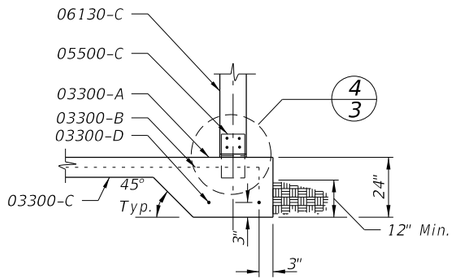



A/1 FLOOR PLAN

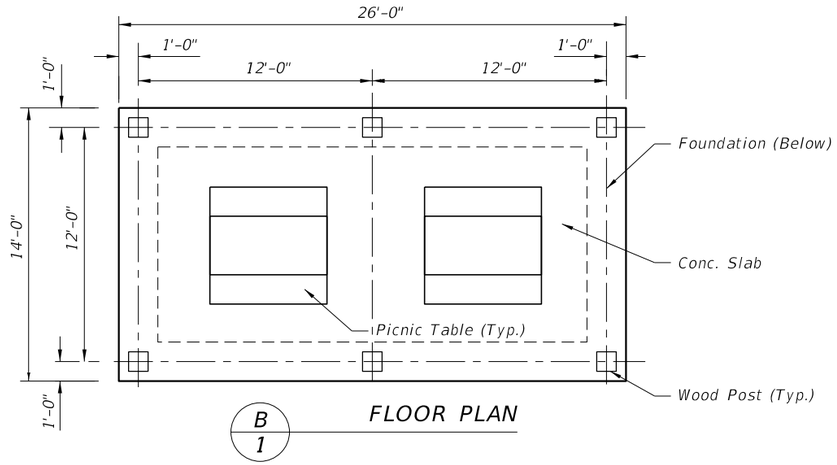
## LARGE PAVILION




1/1 SECTION

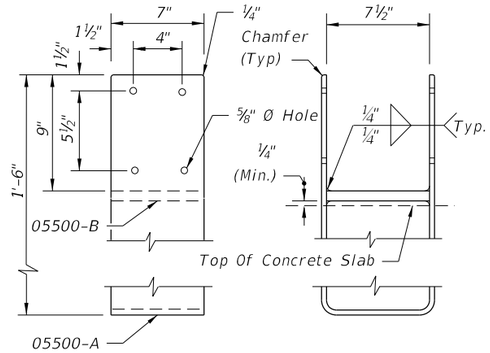



2/1 SECTION




B/1 FLOOR PLAN

## SMALL PAVILION




3/1 POST BASE DETAIL

## 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

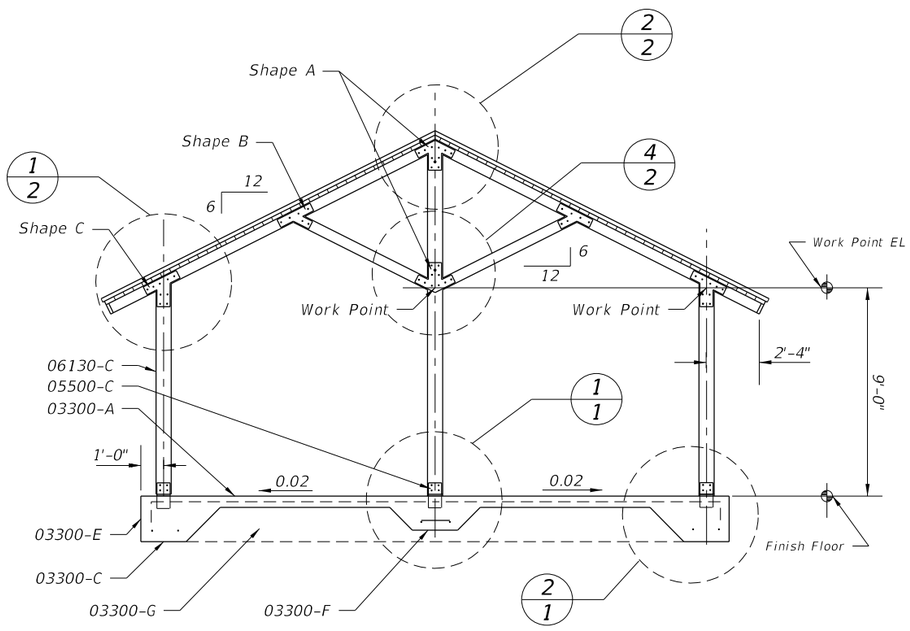
Picnic pavilions shall be constructed according to the requirements of the appropriate sections of the "Florida Building Code", current, adopted edition.

## PICNIC TABLES

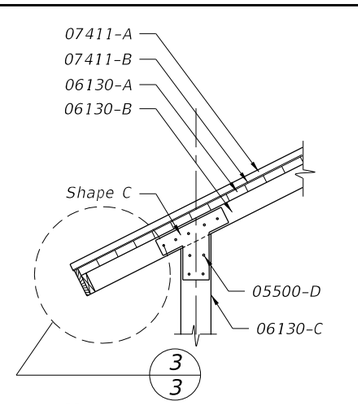
Picnic tables and benches shall be 6'x6' w/heavy galvanized pipe frames and recycled plastic wood seats and table tops. All tables shall be of walk thru design suitable for exterior locations. Pavilions shall meet the requirements of the Americans With Disabilities Act (ADA) accessibility guidelines.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

12/3/2015 11:36:58 AM

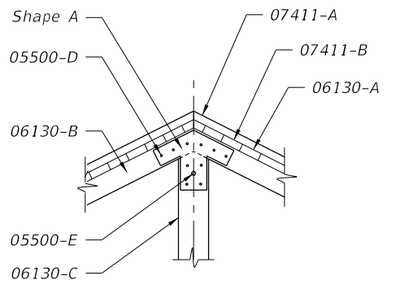
| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 01/01/12 | | | FDOT FY 2016-17 DESIGN STANDARDS | REST AREA PAVILION | 530 | 1 of 3 |



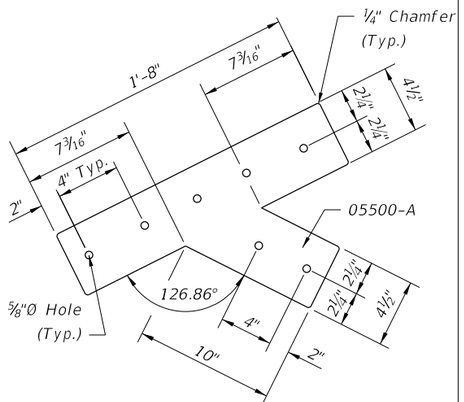

A/2 LARGE PAVILION SECTION



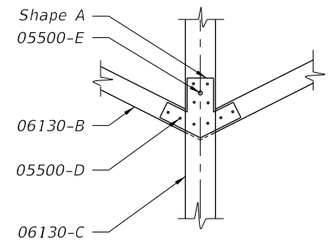

1/2 SECTION




2/2 SECTION




3/2 SHAPE B DETAIL

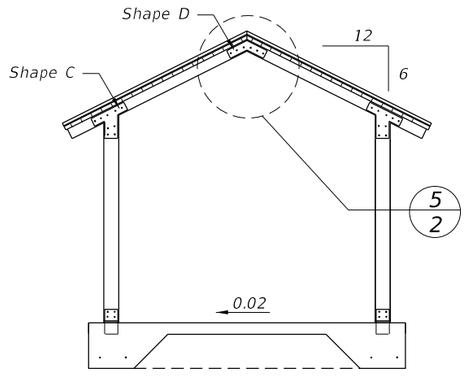



4/2 SECTION

## KEYNOTES

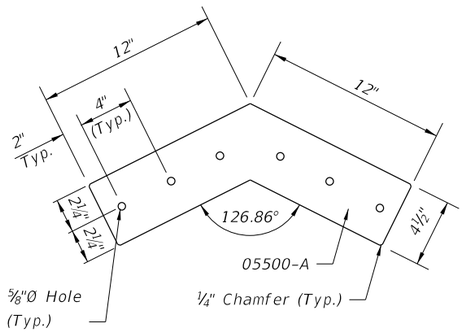
| | |
|---|---|
| 03300-A | Class II 6" conc slab |
| 03300-B | 6"x6"-W1.4xW1.4 @ ℄ of slab |
| 03300-C | 6 mil vapor barrier |
| 03300-D | #5 rebar cont. (2 required) |
| 03300-E | 24" cont. drop footing |
| 03300-F | 18"x18" drop footing |
| 03300-G | 6" min comp sand fill |
| 03300-H | #5x18" rebar (4 required) |
| 05500-A | 3/8" galv. steel plate |
| 05500-B | 1/2" galv. steel plate |
| 05500-C | post base. |
| 05500-D | 1/2" Ø bolt, washer & nut (typ.) |
| 05500-E | 3/4" Ø eyebolt, washer & nut for cross brace bars |
| 05500-F | 1/2" Ø 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" ± 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.*

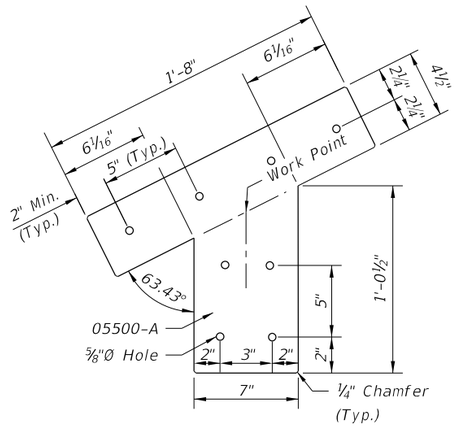



NOTE: DETAILS TO MATCH THOSE OF LARGE PICNIC PAVILION

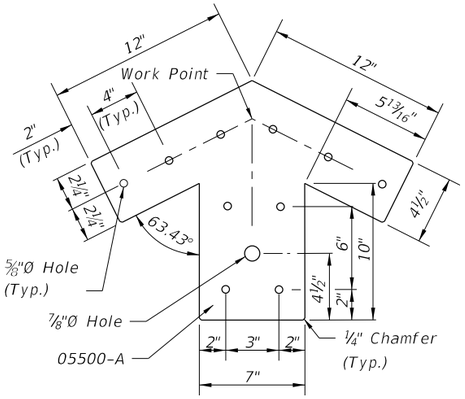
B/2 SMALL PAVILION SECTION




5/2 SHAPE D DETAIL




6/2 SHAPE C DETAIL




7/2 SHAPE A DETAIL

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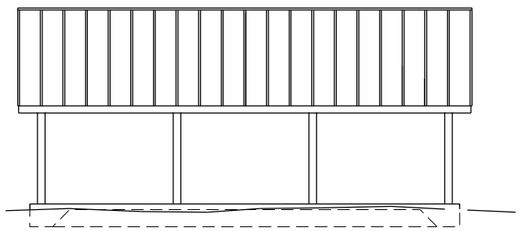
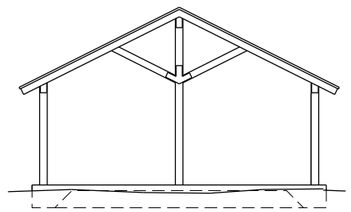
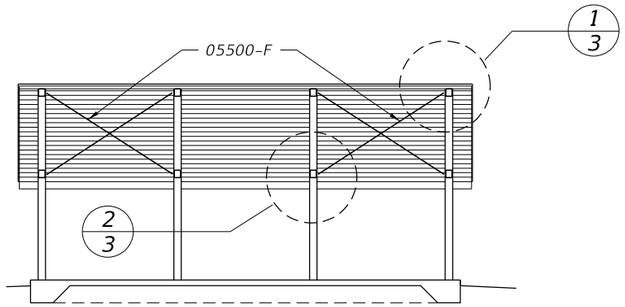
| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 01/01/12 | | | FDOT FY 2016-17 DESIGN STANDARDS | REST AREA PAVILION | 530 | 2 of 3 |



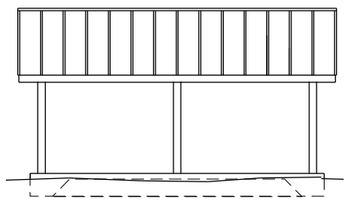
A/3 SIDE ELEVATION



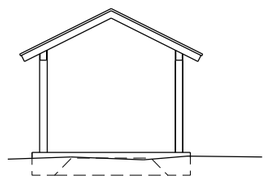
B/3 END ELEVATION



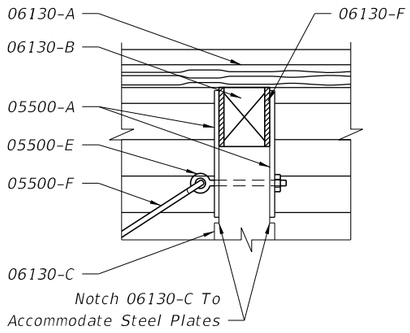

C/3 SECTION



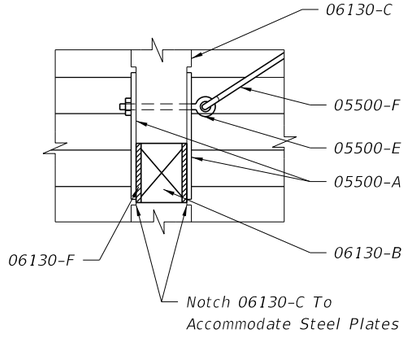
D/3 SIDE ELEVATION



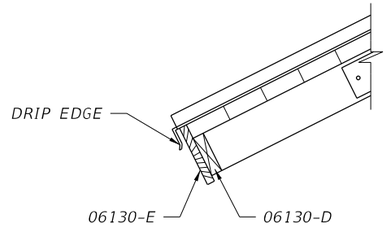
E/3 END ELEVATION



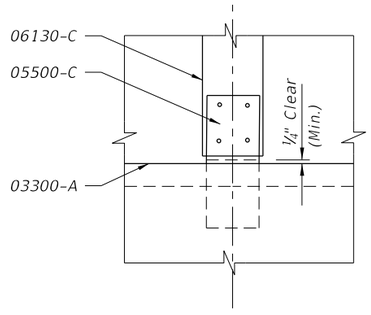

1/3 DETAIL




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.

Provide galvanizing in accordance with the requirements of ASTM A123.

Galvanized Fasteners: High-Strength bolts and nuts, ASTM A325 in accordance with Specification Section 962.

Galvanize shapes after fabrication, make field repairs to galvanizing in accordance with Specification Section 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 AWPA U1, category UC3B above ground exposed.

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

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## 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 Domestics 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" back of 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, shelfs 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.

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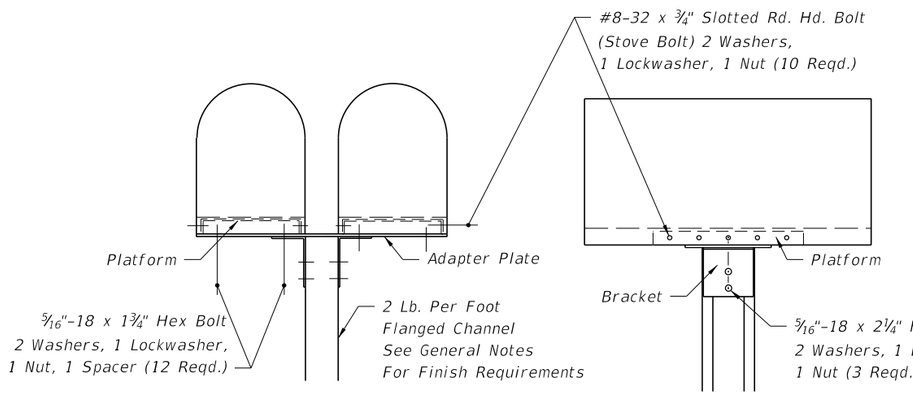
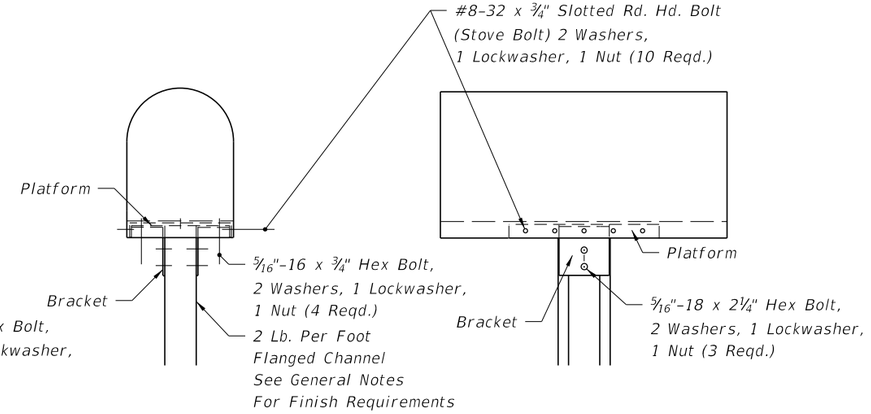


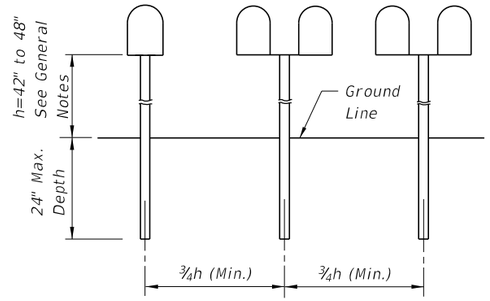

FRONT VIEW SIDE VIEW

FLANGED CHANNEL




FRONT VIEW SIDE VIEW

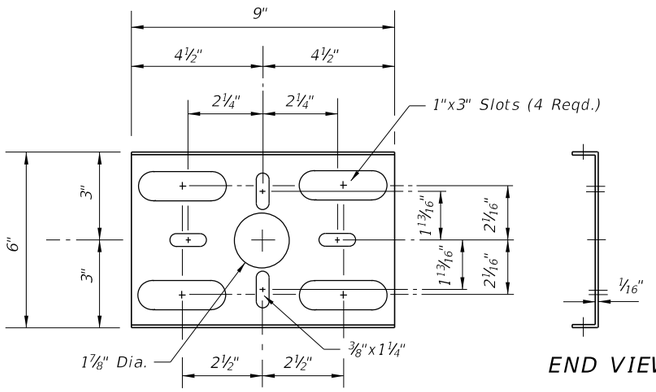
FLANGED CHANNEL




ELEVATION

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

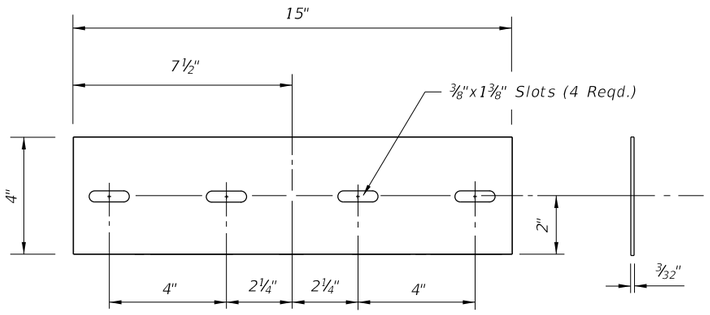
POST SPACING




BOTTOM VIEW



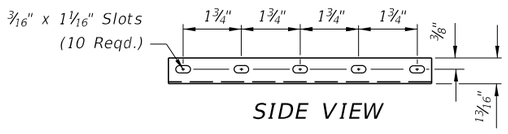

END VIEW




TOP VIEW END VIEW

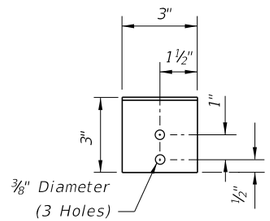
STEEL ADAPTER PLATE

Note: See General Notes for finish requirements.

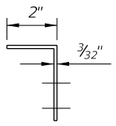



SIDE VIEW

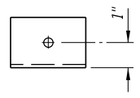
STEEL PLATFORM




FRONT VIEW

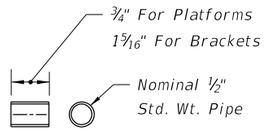



END VIEW




TOP VIEW

STEEL BRACKET




STEEL SPACER

# STEEL FLANGED CHANNEL SUPPORT POSTS

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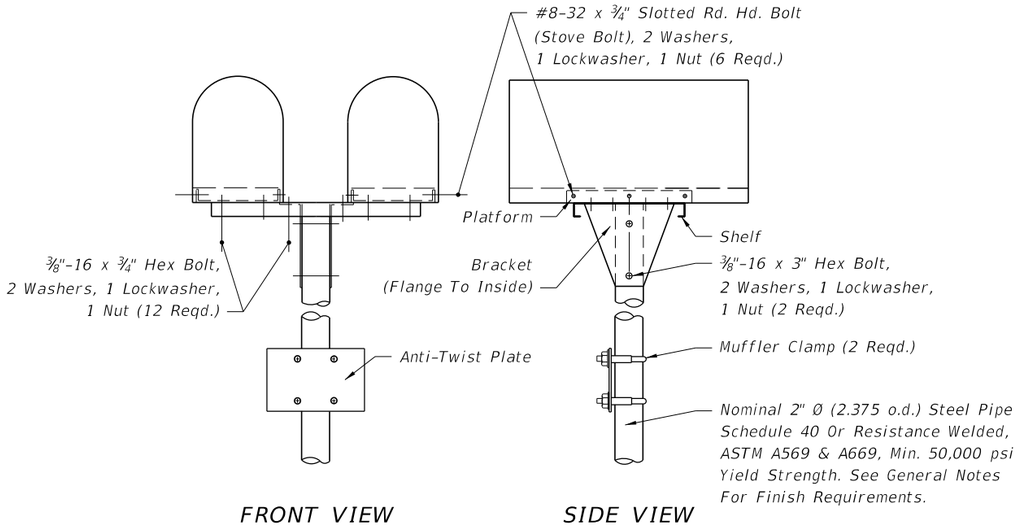
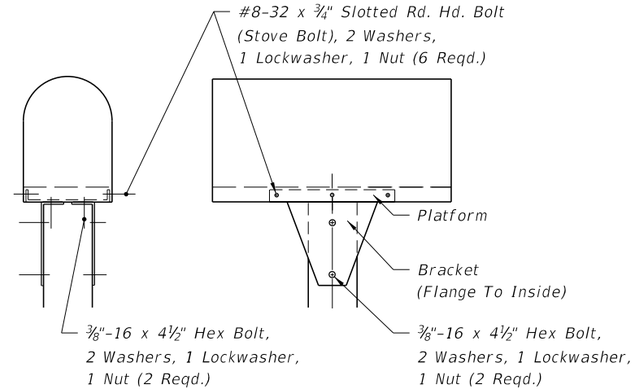
| 07/01/00 | | | FY 2016-17 DESIGN STANDARDS | MAILBOXES | 532 | 2 of 3 |



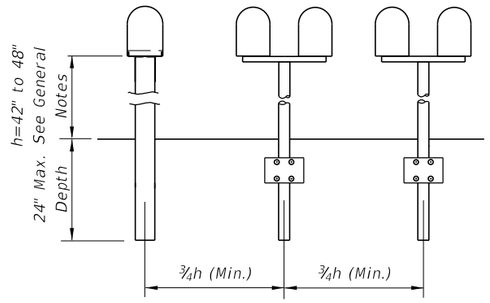

FRONT VIEW SIDE VIEW

2" Ø PIPE POST




FRONT VIEW SIDE VIEW

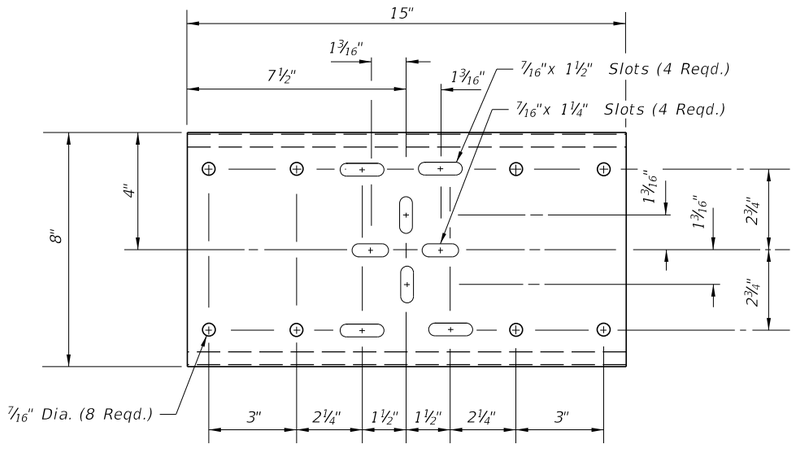
4" X 4" WOOD POST




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

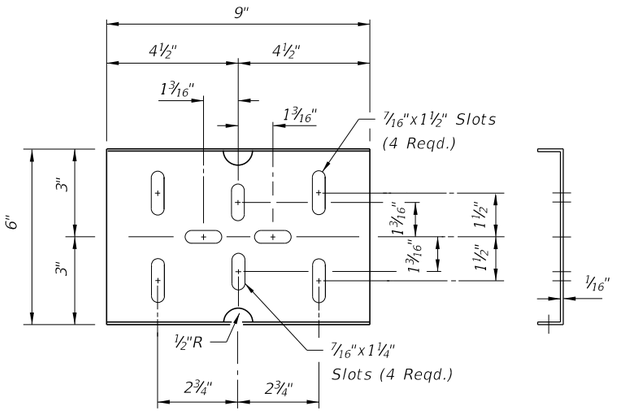
ELEVATION

POST SPACING

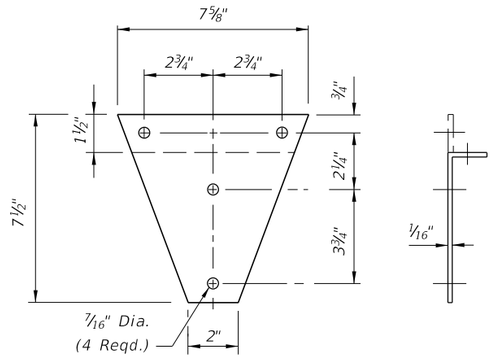



TOP VIEW END VIEW

STEEL SHELF

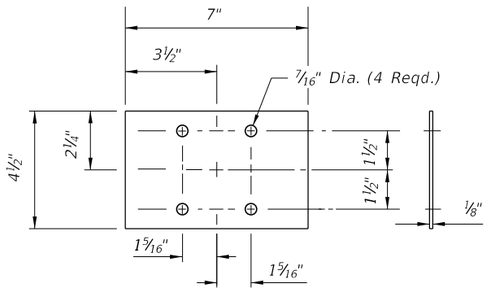



BOTTOM VIEW END VIEW



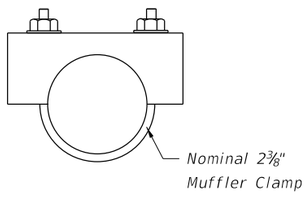

SIDE VIEW END VIEW

STEEL BRACKET



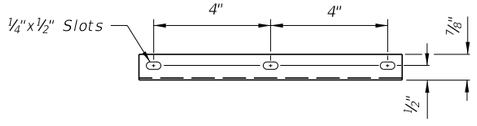

FRONT VIEW END VIEW

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

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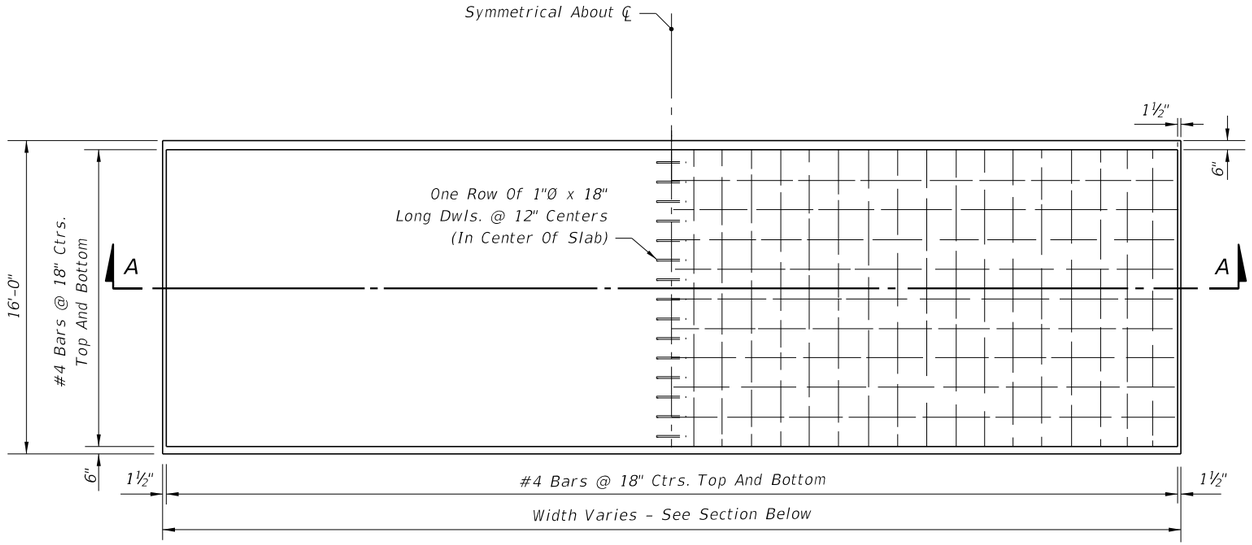
|---|---|---|---|---|---|---|
| 07/01/00 | | | FDOT FY 2016-17 DESIGN STANDARDS | MAILBOXES | 532 | 3 of 3 |

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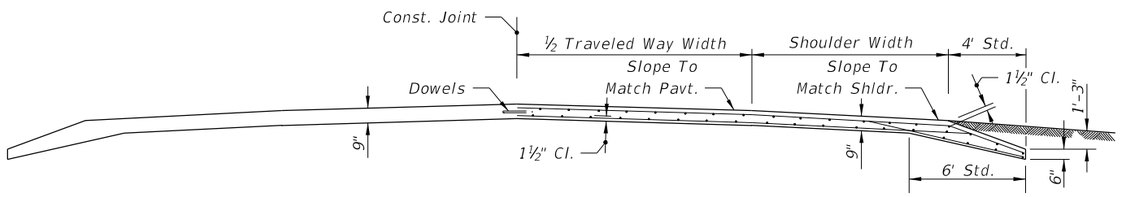
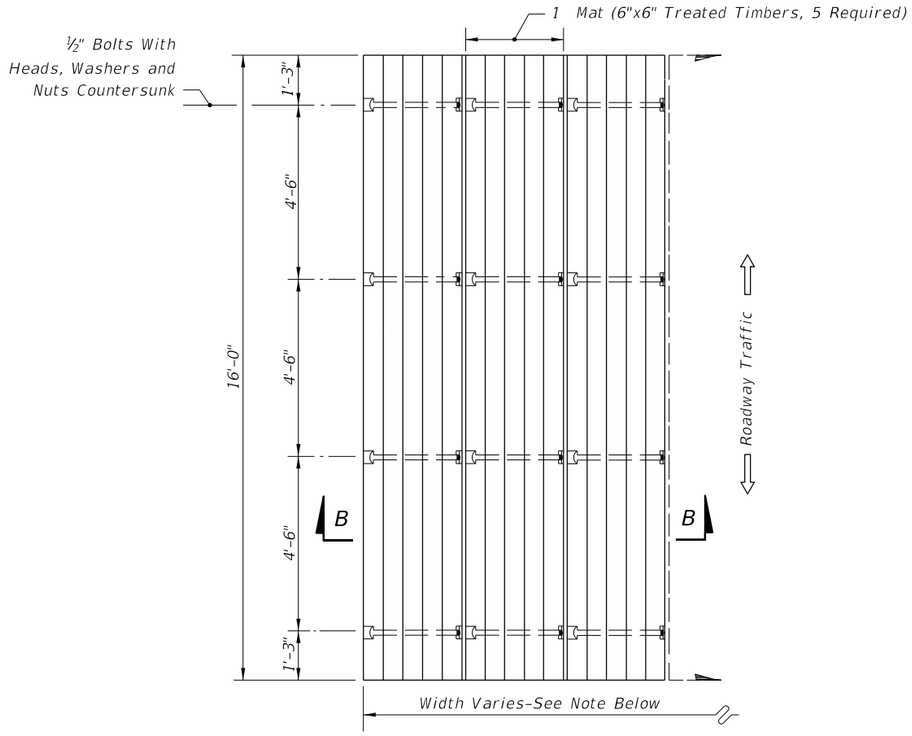



SECTION AA

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

REINFORCED CONCRETE

TYPE A

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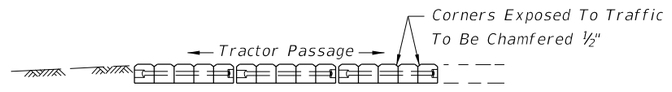


SECTION BB

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

| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | TRACTOR CROSSINGS | INDEX NO. | SHEET NO. |
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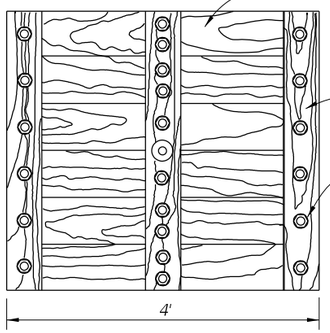
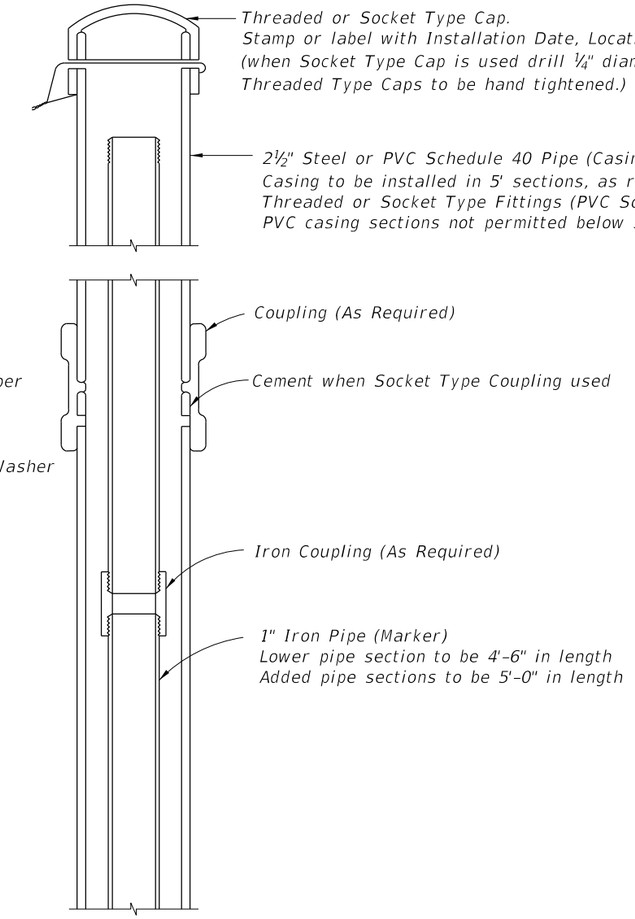
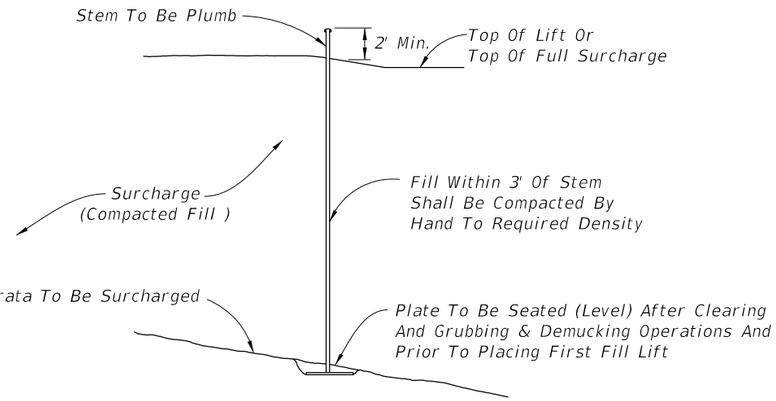



PLAN
TIMBER PLATE

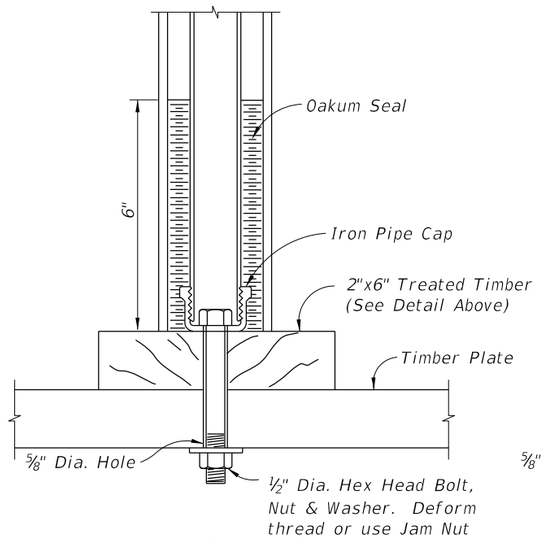



INSTALLATION

NOTES:

1. Elevation of the top of each length of marker pipe shall be determined as soon as it is installed and also immediately before the next length of marker pipe is added.
2. Settlement plate locations shall be flagged and protected from construction vehicles and equipment. If settlement plates are disturbed, they shall be replaced in kind.
3. Oakum used to construct seal should not have a mesh covering (plastic or other synthetic material).
4. The settlement plates shall be paid for under the contract unit price for Settlement Plate Assembly, AS.

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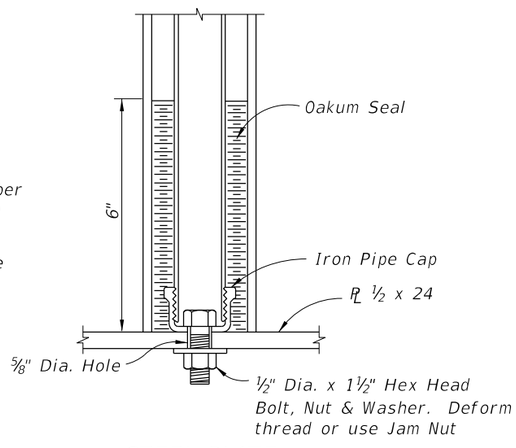
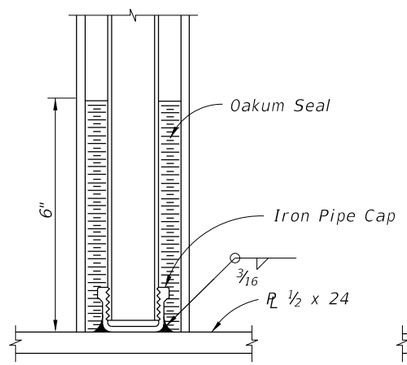



STEEL PLATE

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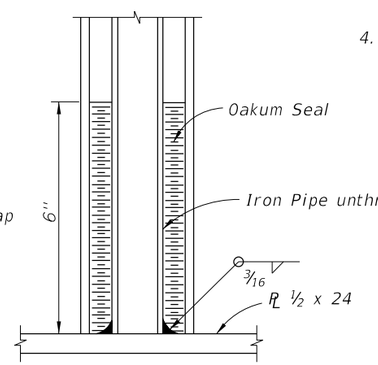


STEEL PLATE

STEM AND PLATE OPTIONS

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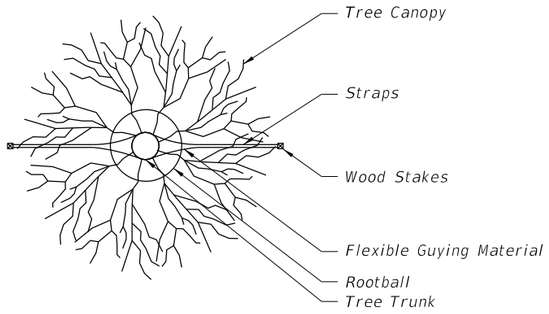
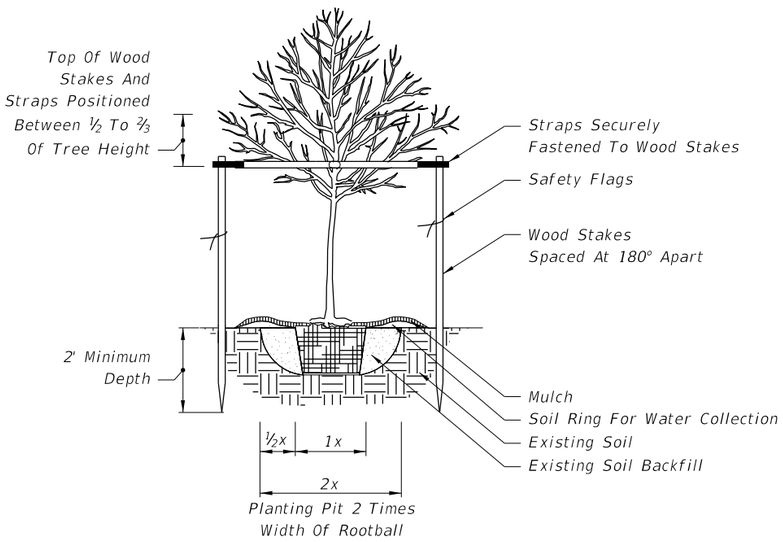
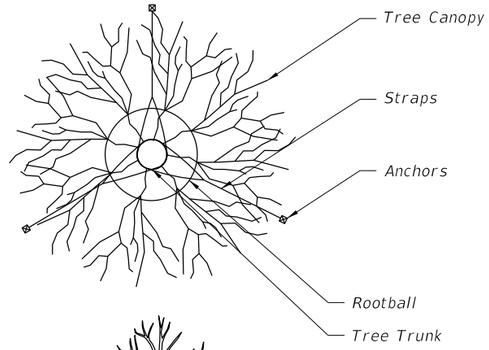
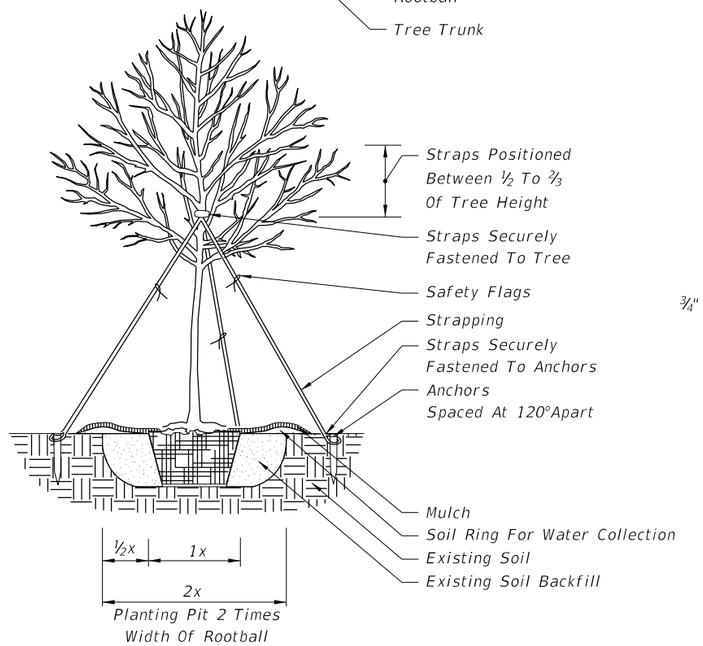
SETTLEMENT PLATE



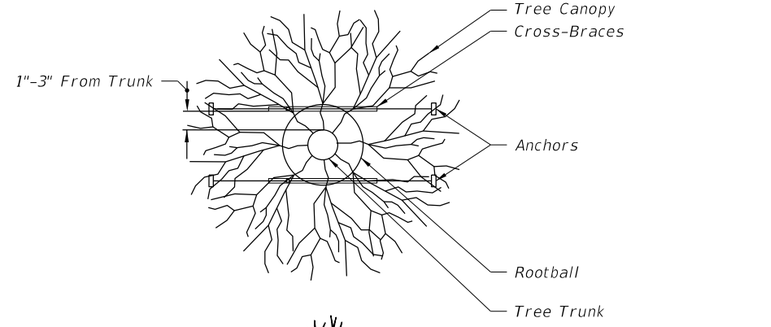



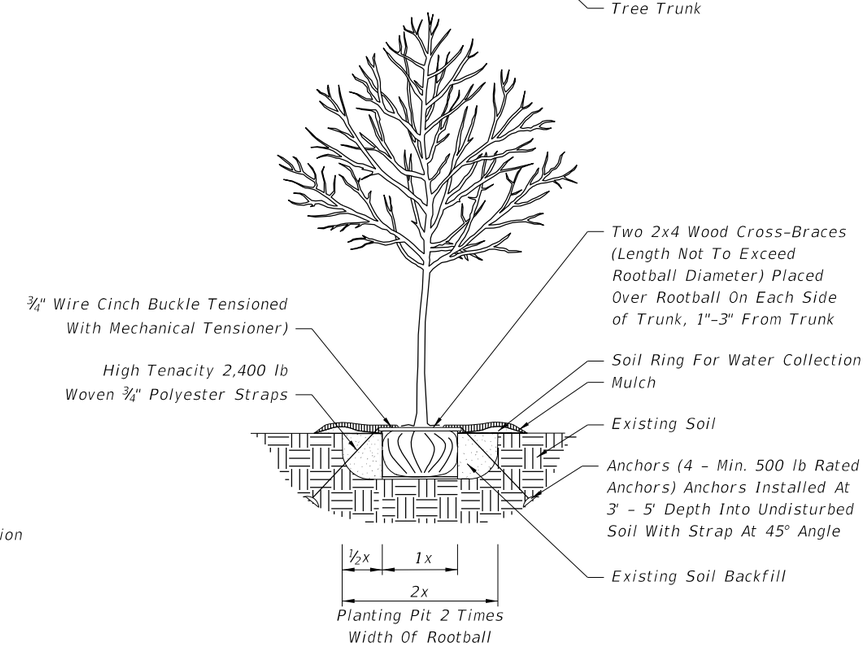

1" - 3 1/2 " CALIPER TREE PLANTING




4" AND LARGER CALIPER TREE PLANTING




1" - 3½" CALIPER TREE PLANTING WITH UNDERGROUND BRACING

## GENERAL NOTES:

1. All dimensions 6" and less are exaggerated for illustrative purposes only.
2. Plant containers shall be removed prior to planting. If plants are not container grown, remove a minimum of the top ⅓ of burlap, fabric, or wire mesh. Never lift or handle the tree by the trunk.
3. 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 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.
4. 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.
5. 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.
6. Mulch shall be a 3" deep layer placed to the edge of the trunk flare, around the base of shrub, or solidly around groundcover. Never pile mulch against the tree trunk.
7. Straps shall be minimum 1" wide nylon or polypropylene. All wood stakes or anchors shall be located beyond the edge of soil ring and located below finished grade, unless otherwise specified.
8. 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.
9. All dimensions provided for wood materials are nominal.
10. When a permanent, subsurface, or drip irrigation system is provided, a soil ring is not required. Mulch to edge of planting pit.
11. Alternate tree bracing and guying systems approved by the Engineer may be used in lieu of the tree bracing and guying methods detailed on the Index. Alternate tree protection systems approved by the Engineer may be used in lieu of the tree protection barricade detailed on the index.
12. Remove aboveground guying systems at the end of the establishment period.

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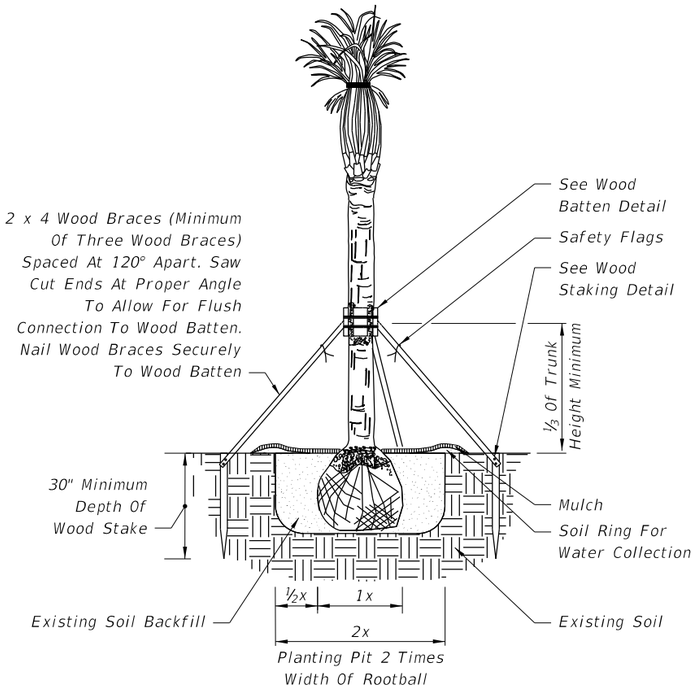
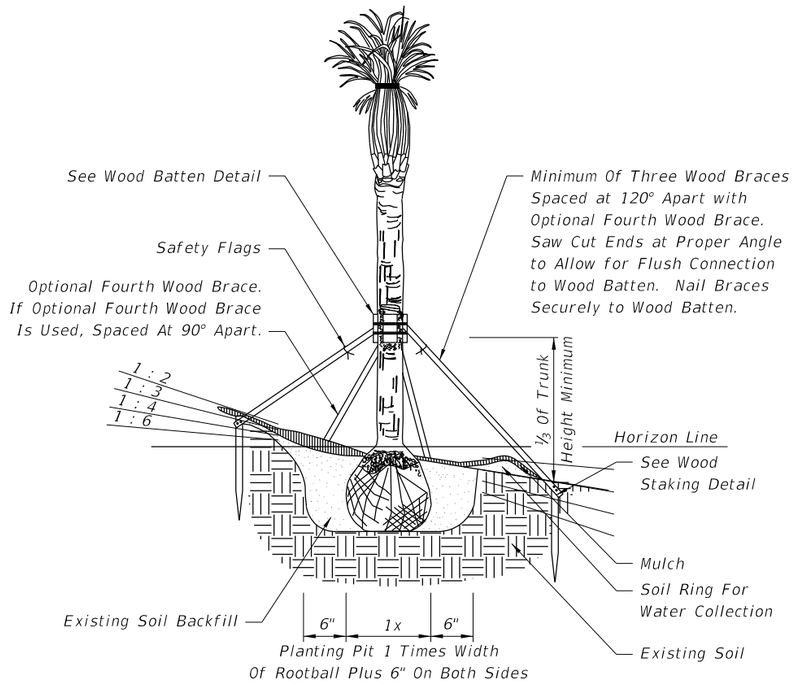
| 07/01/07 | | | | | 544 | 1 of 3 |



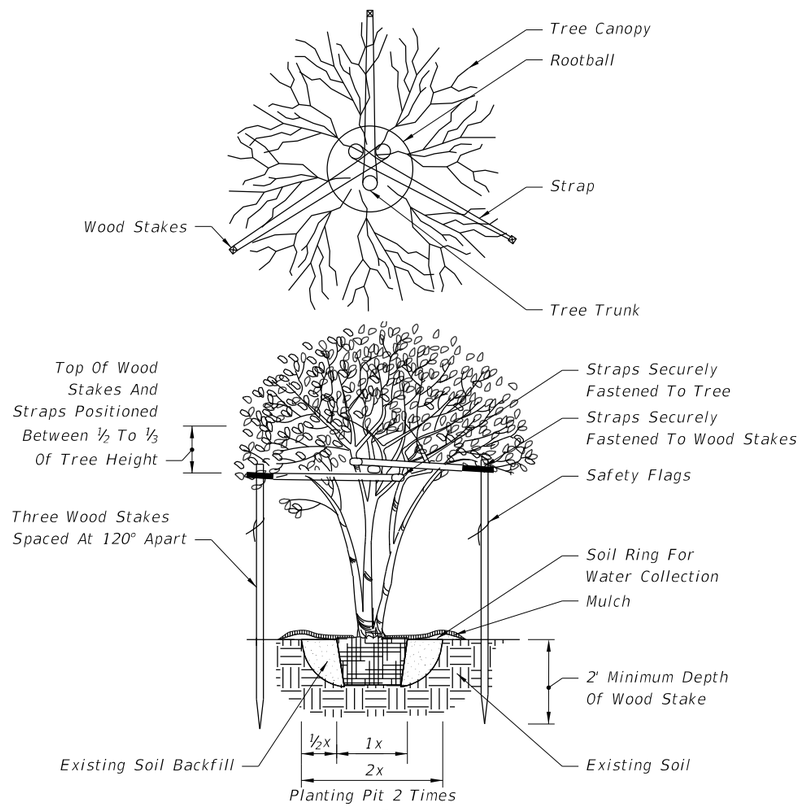

NOTE: For All Other Palms, Use Detail Provided By Landscape Architect In Contract Plans.

## CABBAGE PALM PLANTING FOR UP TO 24' CLEAR TRUNK

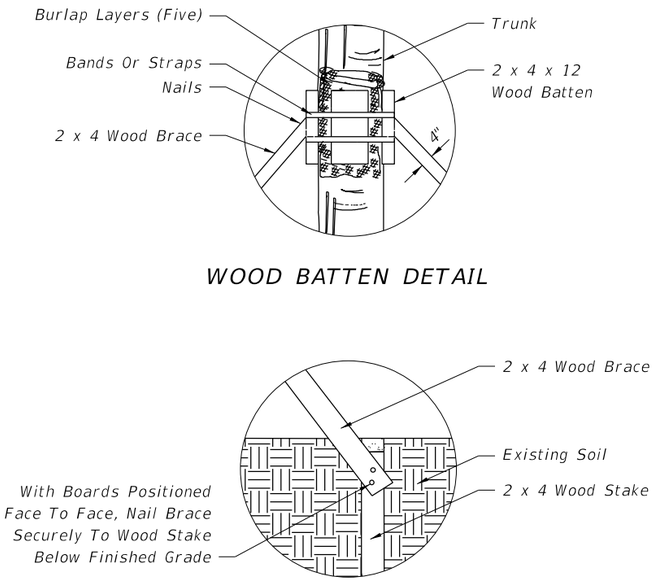



NOTES: Slope Provided As Rise:Run. For All Other Palms, Use Detail Provided By Landscape Architect In Contract Plans.

## CABBAGE PALM PLANTING ON SLOPE FOR UP TO 24' CLEAR TRUNK




## MULTI-TRUNK TREE PLANTING

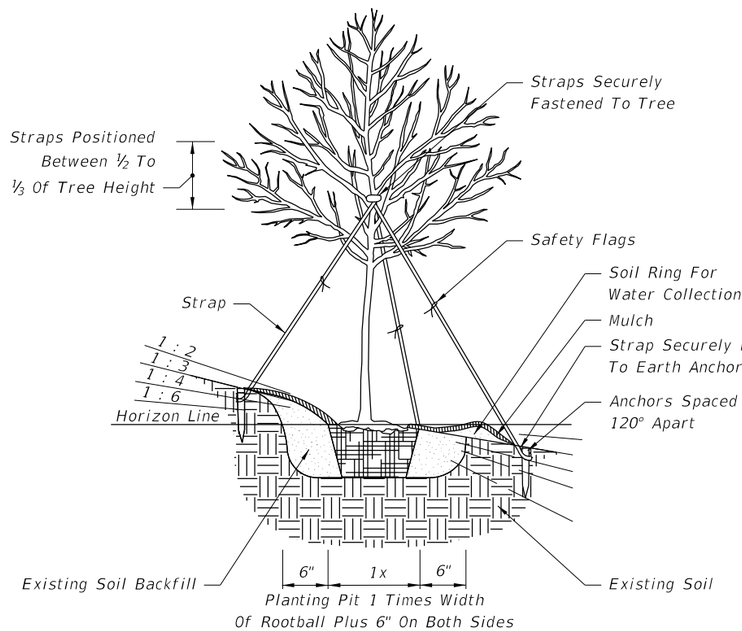



## WOOD BATTEN DETAIL



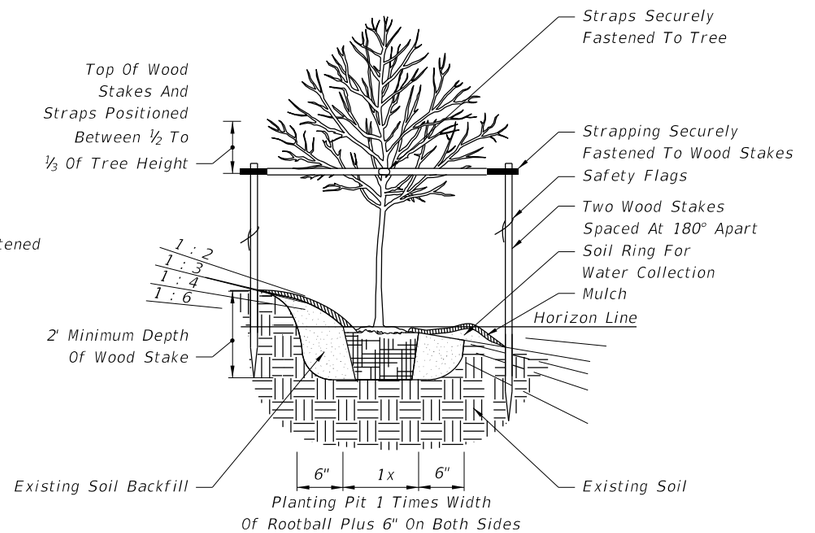

NOTE: Stake Into Firm, Existing Soil.

## WOOD STAKING DETAIL




NOTE: Slope Provided As Rise:Run.

## 4" AND LARGER CALIPER TREE PLANTING ON SLOPE




NOTE: Slope Provided As Rise:Run.

## 1" - 3 1/2 " CALIPER TREE PLANTING ON SLOPE

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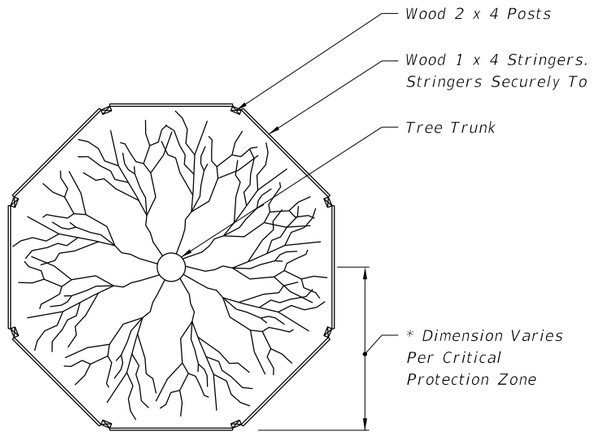
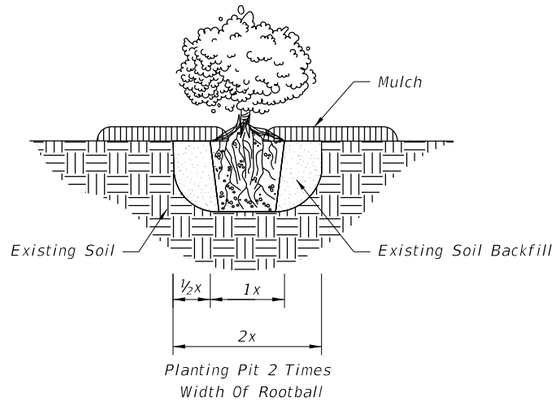
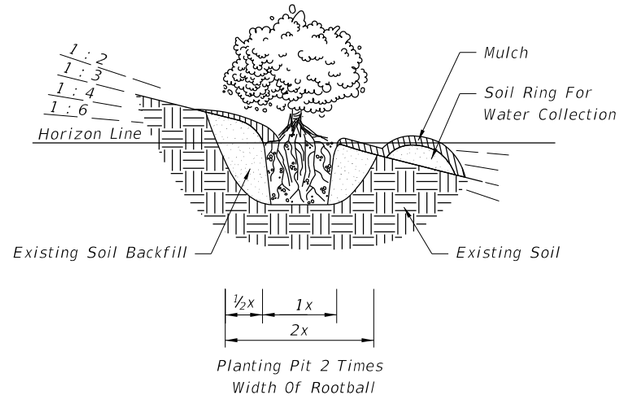
| LAST REVISION | REVISION | DESCRIPTION: | | | | |
|---|---|---|---|---|---|---|
| 07/01/07 | | | FDOT FY 2016-17 DESIGN STANDARDS | LANDSCAPE INSTALLATION | INDEX NO. 544 | SHEET NO. 2 of 3 |




NOTE: For Groups Of Trees, Place Barricades Between Trees And Construction Activity.

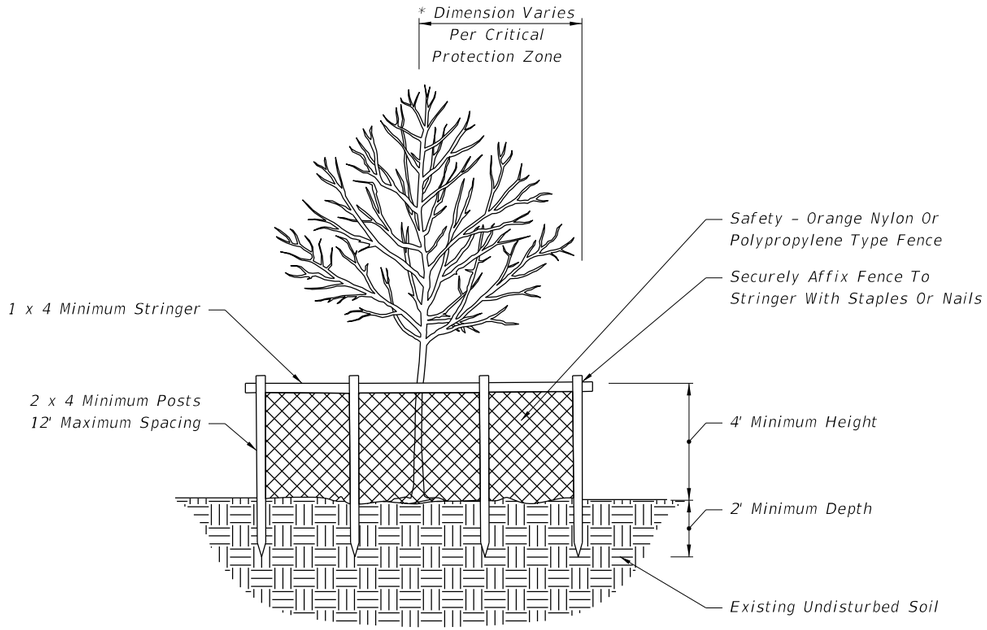



GROUND COVER/SHRUB PLANTING




NOTE: Slope Provided As Rise:Run.

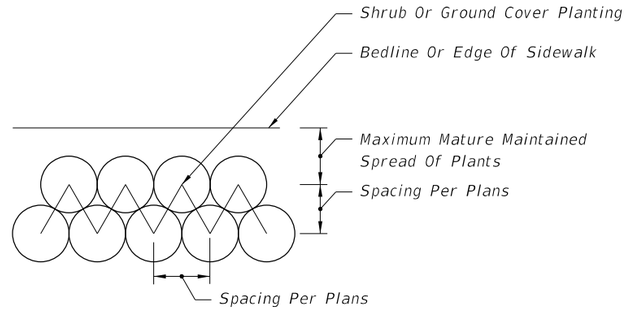
GROUND COVER/SHRUB PLANTING ON SLOPE




NOTES: Critical Protection Zone: The Area Surrounding A Tree Within A Circle Described By A Radius Of One Foot For Each Inch Of The Tree Trunk Diameter At 54" Above Finished Grade. For Groups Of Trees, Place Barricades Between Trees And Construction Activity.

* Tree Protection Barricades Shall Be Located To Protect A Minimum Of 75% Of The Critical Protection Zone.

TREE PROTECTION BARRICADE




GROUND COVER/SHRUB LAYOUT DETAIL

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| LAST REVISION | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | LANDSCAPE INSTALLATION | INDEX NO. | SHEET NO. |
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| 07/01/07 | | | | | 544 | 3 of 3 |

## DESIGN NOTES

1. 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.

2. For the purpose of this Index, Minor Road is defined as all intersecting highways, roads, streets and driveways.

3. 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).

4. 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.

5. 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.'

6. 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.

7. 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.

## GENERAL NOTES

1. 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.

2. 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 '$d_L$' and '$d_r$' 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 '$d_m$' 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.

3. 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.

4. Barrier systems within intersection sight corridors, where penetration into the sight window might occur, shall be located to provide the least adverse affect practical.

5. 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 '$d_a$'. 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:

5. (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 '$d_b$', 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.

### TREE SPACING TABLE **

| Description | Design Speed (mph) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30 | | 35 | | 40 | | 45 | | 50 | | 55 | | 60 | |
| Diameter (Within Limits Of Sight Window) | (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. A single line of trees in the median parallel to but not necessarily colinear with the centerline.

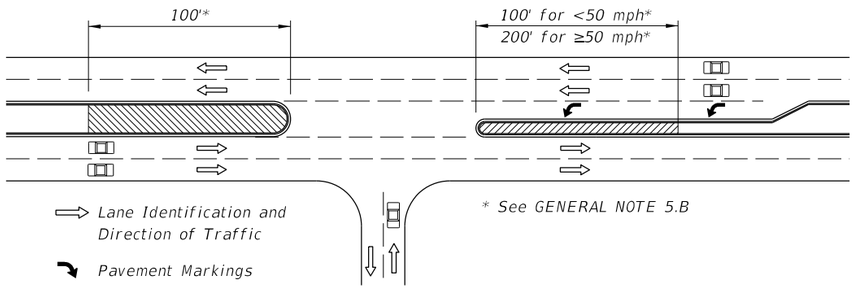
b. A straight approaching mainline, within skew limits as described in No. 2 above.

c. 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.

d. 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.




PLAN
Special Areas Limited to Ground Cover

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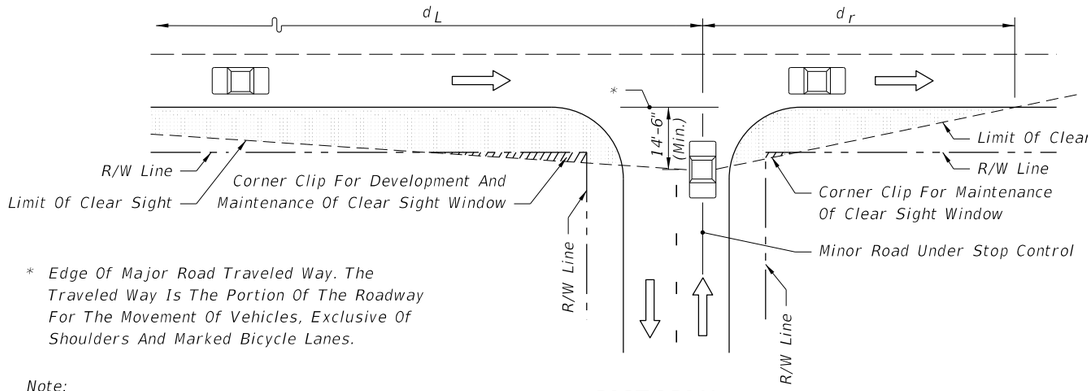
| LAST REVISION | REVISION | DESCRIPTION: | | | | |
|---|---|---|---|---|---|---|
| 07/01/15 | | | FDOT FY 2016-17 DESIGN STANDARDS | SIGHT DISTANCE AT INTERSECTIONS | INDEX NO. 546 | SHEET NO. 1 of 6 |

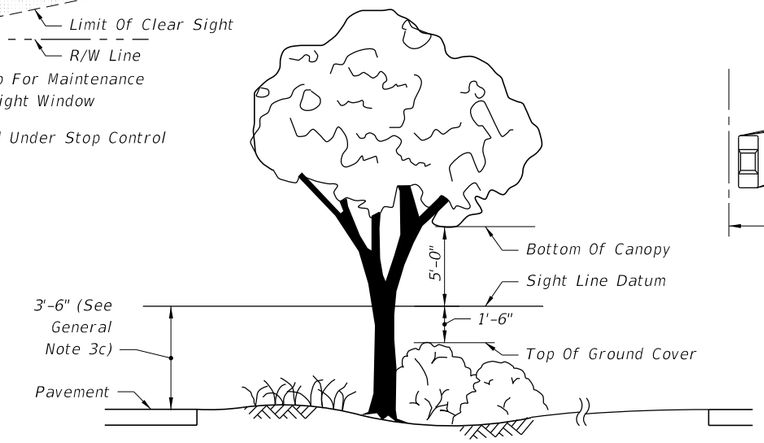



* Edge Of Major Road Traveled Way. The Traveled Way Is The Portion Of The Roadway For The Movement Of Vehicles, Exclusive Of Shoulders And Marked Bicycle Lanes.

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

PICTORIAL

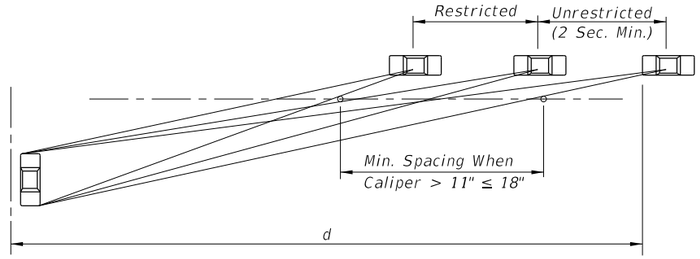
ORIGIN OF CLEAR SIGHT LINE ON MINOR ROAD




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.

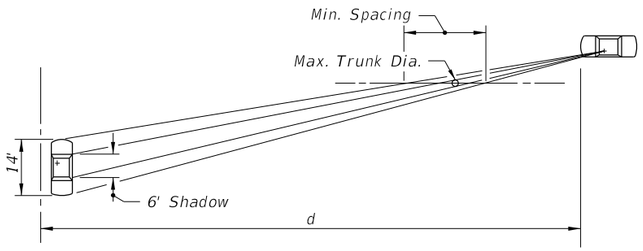
PICTORIAL

WINDOW DETAIL

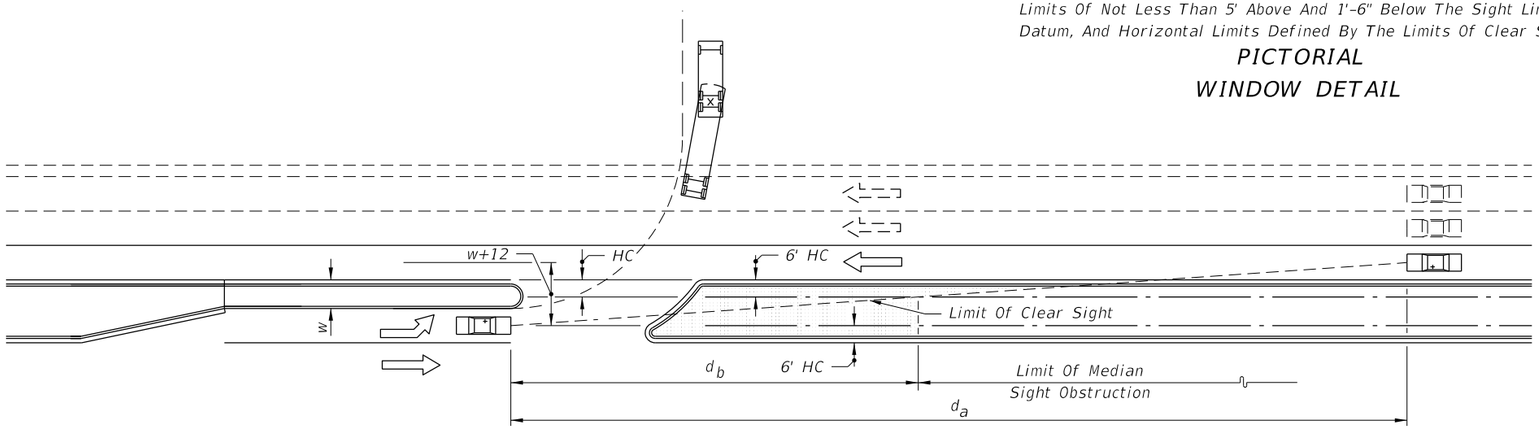



PERCEPTION DIAGRAM

SETTING SABAL PALM (STATE TREE) SPACING




SHADOW DIAGRAM




PICTORIAL

| $d_a$ (Feet) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Design Speed MPH | 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 2, and are applicable to urban, predominantly curbed roadways with design speeds of 45 mph or less and meeting the restricted conditions defined in Index No. 700. For horizontal clearance (HC) of 6', the values for $d_b$ may be determined by the equation $d_b = d_a\,(w/(w+12))$. For roadways with nonrestricted conditions, $d_a$ and $d_b$ should be based on the geometry for the left turn storage and on clear zone widths (See Index No. 700).

For wide medians where the turning vehicle can approach the through lanes at or near 90°, use $d_V$ 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.)

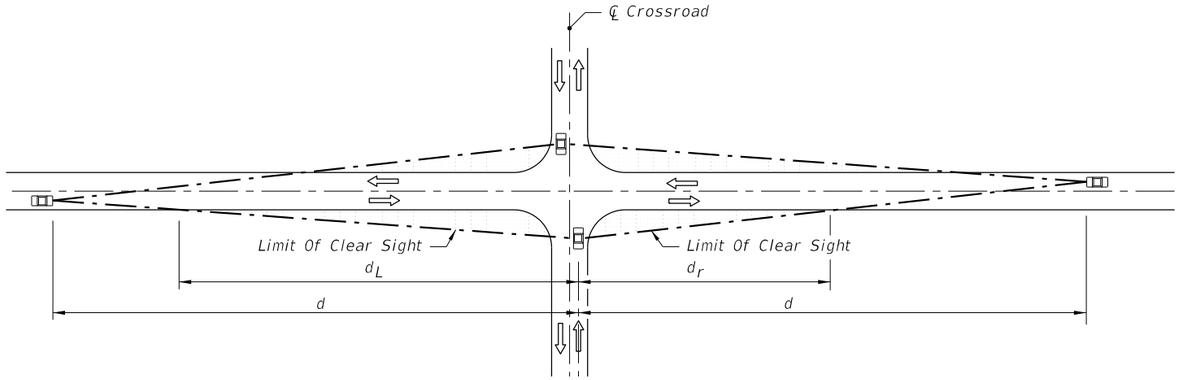
LEGEND

Areas Free Of Sight Obstructions

CHANNELIZED DIRECTIONAL MEDIAN OPENINGS

12/3/2015 11:37:04 AM

| LAST REVISION 07/01/15 | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | SIGHT DISTANCE AT INTERSECTIONS | INDEX NO. 546 | SHEET NO. 2 of 6 |
|---|---|---|---|---|---|---|




PICTORIAL

2 LANE UNDIVIDED

| Design Speed | d | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 |

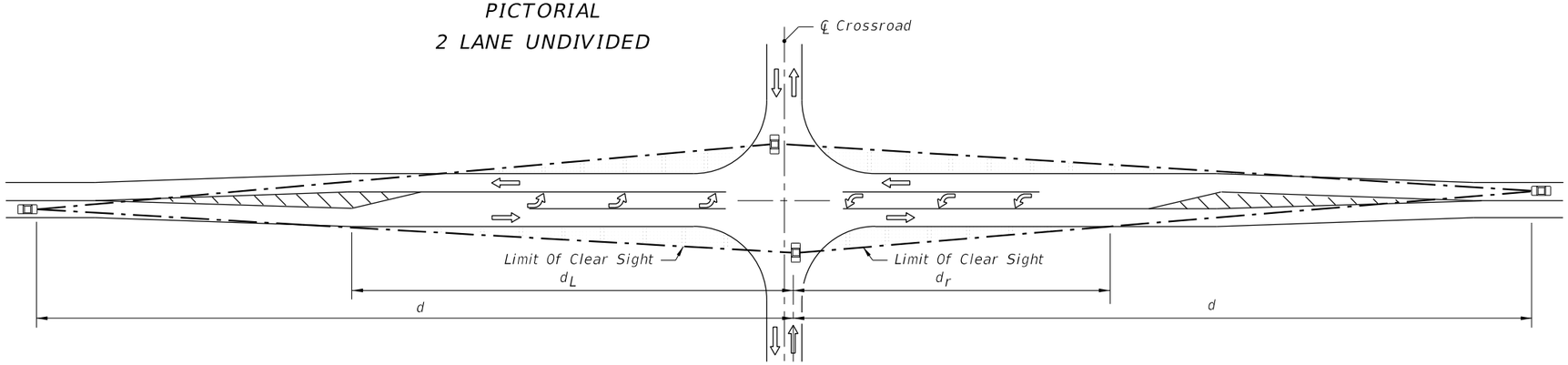
SU Vehicle

| Design Speed | d | $d_L$ | $d_r$ |
|---|---|---|---|
| 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

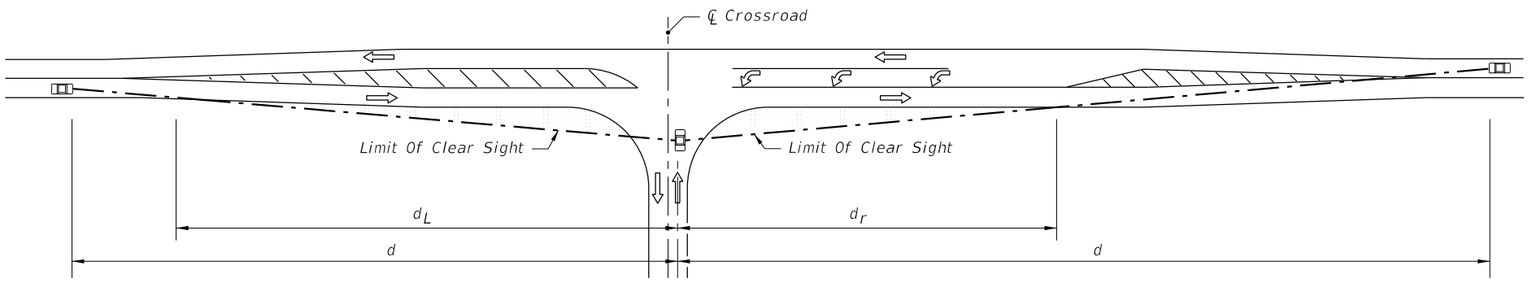
SIGHT DISTANCE (d) AND RELATED DISTANCES ($d_L$, $d_r$) (FEET)

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 | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 ($d_L$, $d_r$) (FEET)

2 LANE 2 WAY • FLARED FOR LEFT TURNS

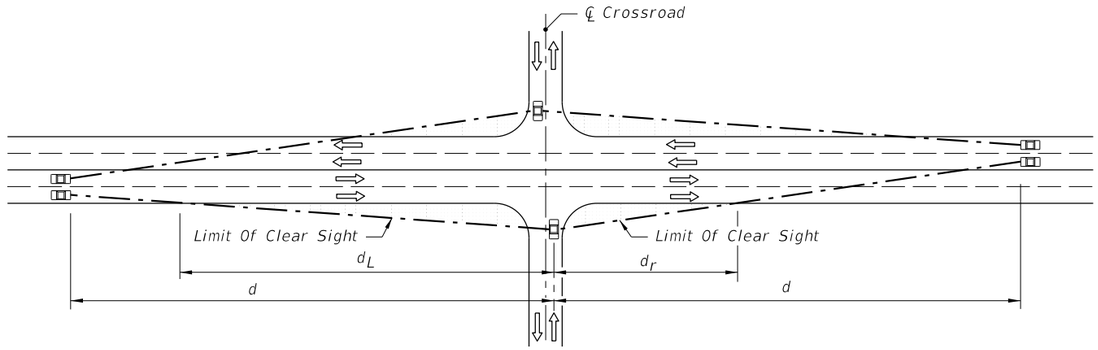
LEGEND

Areas Free Of Sight Obstructions

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

12/3/2015 11:37:05 AM

| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | FDOT FY 2016-17 DESIGN STANDARDS | SIGHT DISTANCE AT INTERSECTIONS | 546 | 3 of 6 |




PICTORIAL
4 LANE UNDIVIDED

| Design Speed | d | $d_L$ | $d_r$ |
|---|---|---|---|
| 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

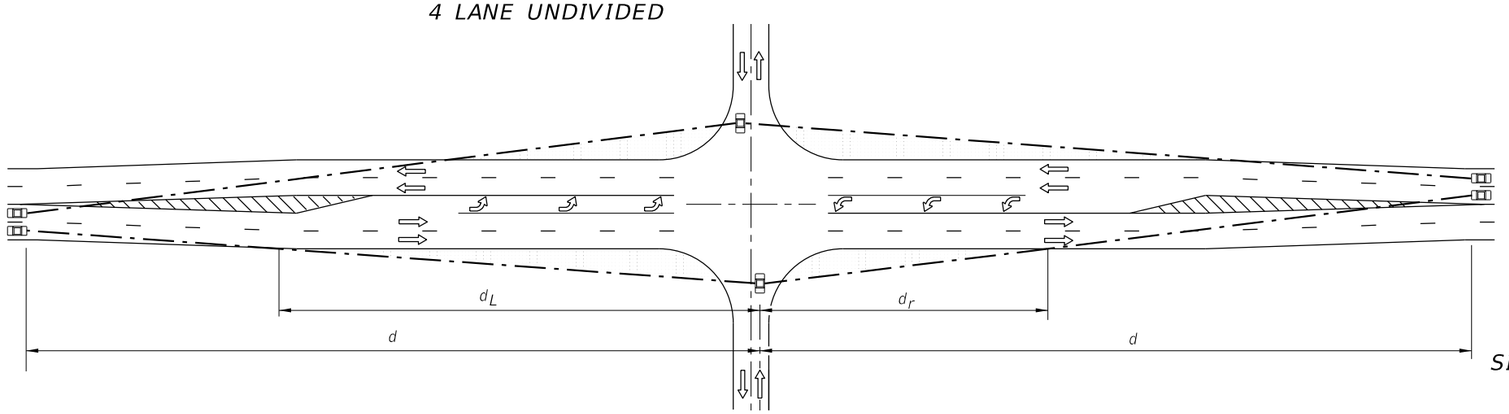
| Design Speed | d | $d_L$ | $d_r$ |
|---|---|---|---|
| 30 | 450 | 320 | 150 |
| 35 | 525 | 375 | 175 |
| 40 | 600 | 425 | 200 |
| 45 | 675 | 480 | 220 |
| 50 | 750 | 530 | 245 |
| 55 | 825 | 585 | 270 |
| 60 | 900 | 640 | 295 |
| 65 | 975 | 690 | 320 |

SU Vehicle

| Design Speed | d | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 ($d_L$, $d_r$) (FEET)
4 LANE UNDIVIDED




PICTORIAL
4 LANE UNDIVIDED FLARED - SYMMETRICAL

| Design Speed | d | $d_L$ | $d_r$ |
|---|---|---|---|
| 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

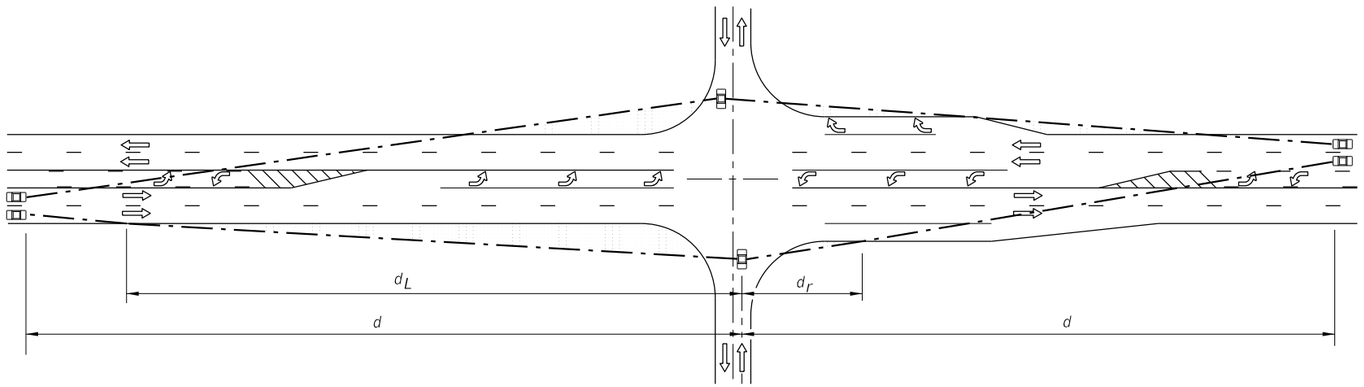
| Design Speed | d | $d_L$ | $d_r$ |
|---|---|---|---|
| 30 | 480 | 265 | 140 |
| 35 | 560 | 310 | 165 |
| 40 | 640 | 350 | 185 |
| 45 | 720 | 395 | 210 |
| 50 | 800 | 440 | 230 |
| 55 | 880 | 485 | 255 |
| 60 | 960 | 525 | 280 |
| 65 | 1040 | 570 | 300 |

SU Vehicle

| Design Speed | d | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 ($d_L$, $d_r$) (FEET)
4 LANE UNDIVIDED FLARED - SYMMETRICAL




PICTORIAL
4 LANE UNDIVIDED WITH OPTIONAL LANE

| Design Speed | d | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 | $d_L$ | $d_r$ |
|---|---|---|---|
| 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 ($d_L$, $d_r$) (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.

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| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | FDOT FY 2016-17 DESIGN STANDARDS | SIGHT DISTANCE AT INTERSECTIONS | 546 | 4 of 6 |

| MEDIAN 22' OR LESS | | | | |
|---|---|---|---|---|
| Design Speed | d | $d_L$ | $d_r$ | $d_m$ |
| 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 | $d_L$ | $d_v$ | $d_{vL}$ |
| 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 | $d_L$ | $d_r$ | $d_m$ |
| 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 | $d_L$ | $d_v$ | $d_{vL}$ |
| 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 |

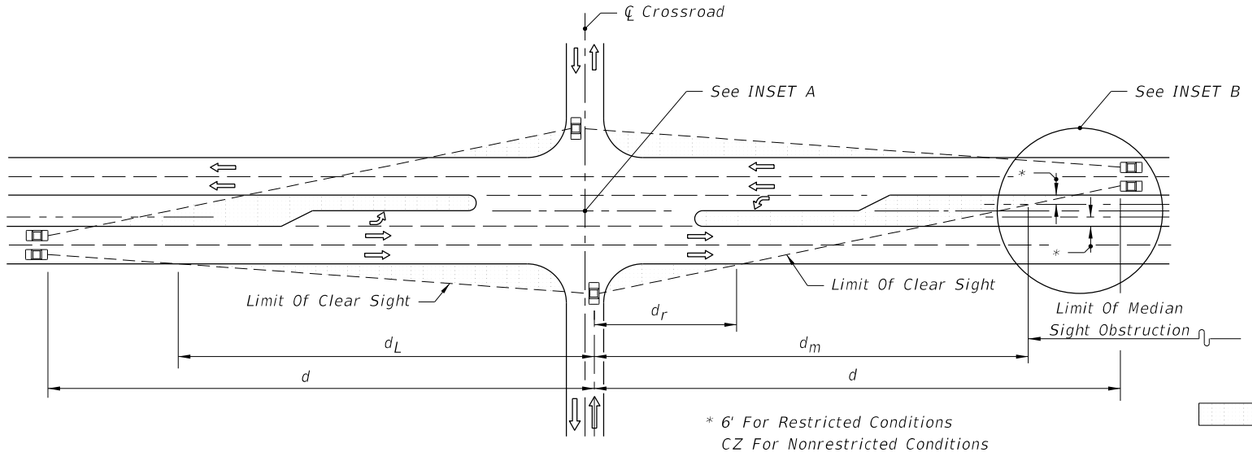
SINGLE-UNIT TRUCK (SU)

| MEDIAN 30' OR LESS | | | | |
|---|---|---|---|---|
| Design Speed | d | $d_L$ | $d_r$ | $d_m$ |
| 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 | $d_L$ | $d_r$ | $d_m$ |
| 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 | $d_L$ | $d_v$ | $d_{vL}$ |
| 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)



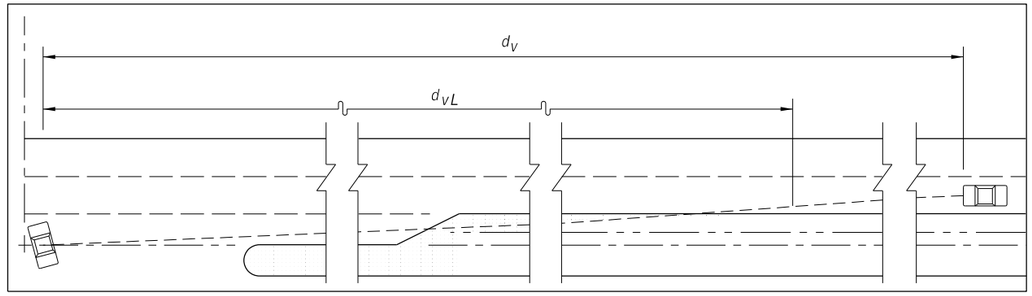

PLAN

* 6' For Restricted Conditions
CZ For Nonrestricted Conditions
See Index No. 700

PICTORIAL

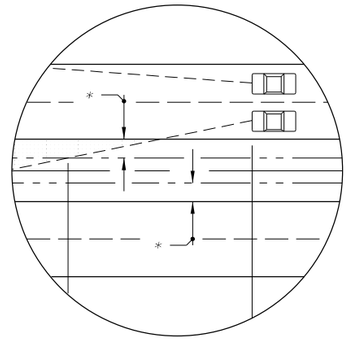
LEGEND

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 ($d_V$) 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

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

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.'

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

4 LANE DIVIDED ROADWAY

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| LAST REVISION 07/01/14 | REVISION | DESCRIPTION: | FDOT FY 2016-17 DESIGN STANDARDS | SIGHT DISTANCE AT INTERSECTIONS | INDEX NO. 546 | SHEET NO. 5 of 6 |
|---|---|---|---|---|---|---|

| 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 |

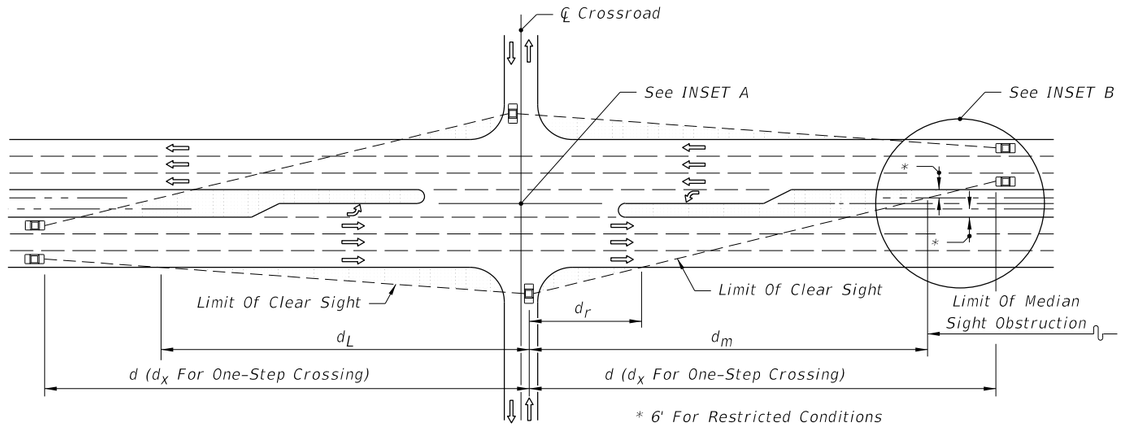
SINGLE-UNIT TRUCK (SU)

| 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)

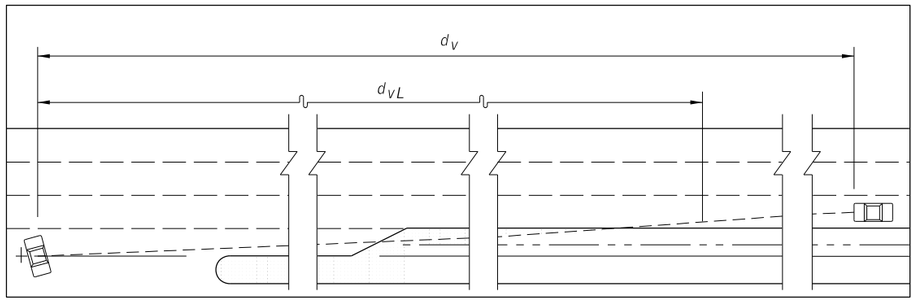



PLAN

PICTORIAL

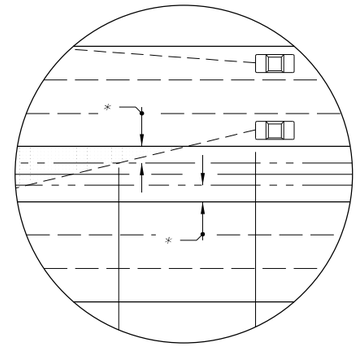
LEGEND

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 ($d_V$) 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

12/3/2015 11:37:07 AM

| LAST REVISION | REVISION | DESCRIPTION: | | | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|
| 07/01/14 | | | FY 2016-17 DESIGN STANDARDS | SIGHT DISTANCE AT INTERSECTIONS | 546 | 6 of 6 |

| 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:

1. 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.

2. Single track Type R Crossings within the zones on the chart may be used unless engineering or safety considerations dictate otherwise.

## GENERAL NOTES

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. All asphalt shall be installed in accordance with Index No. 514 and Section 300 of the Standard Specifications.

7. 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.

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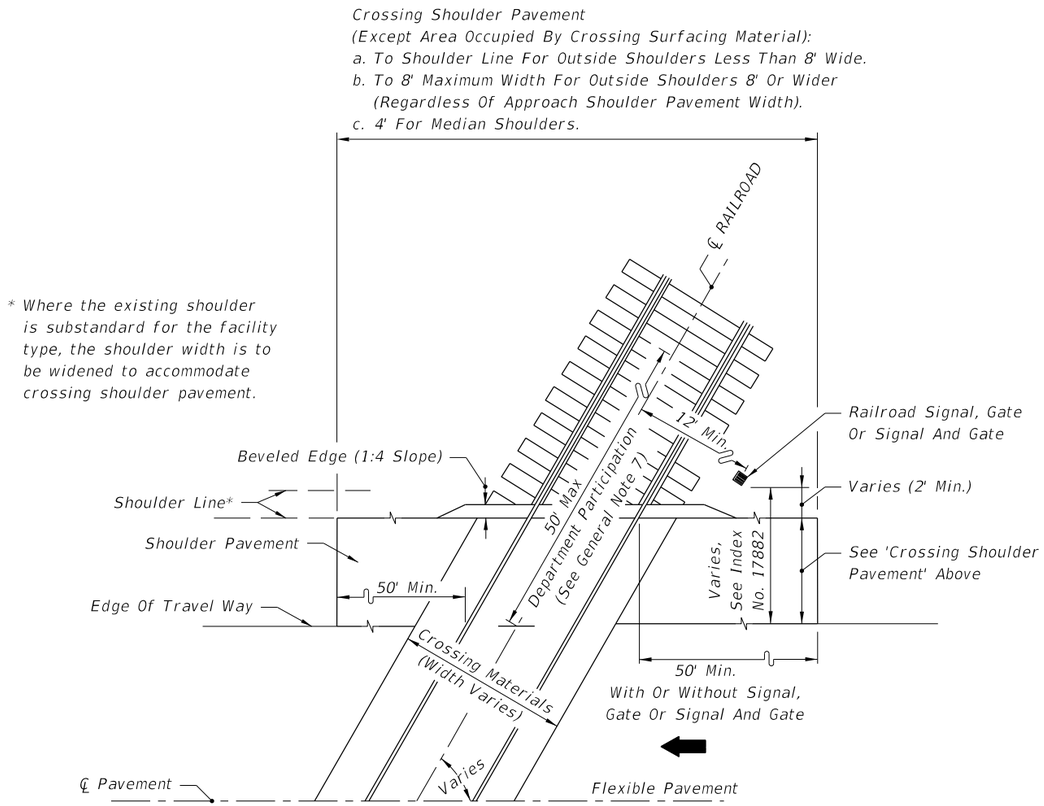
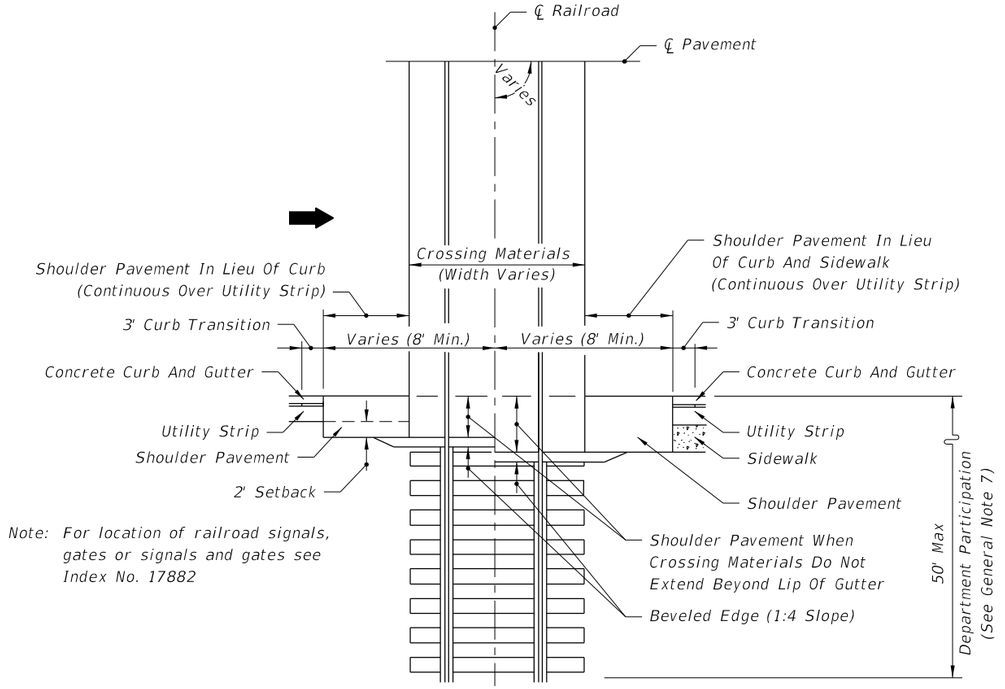
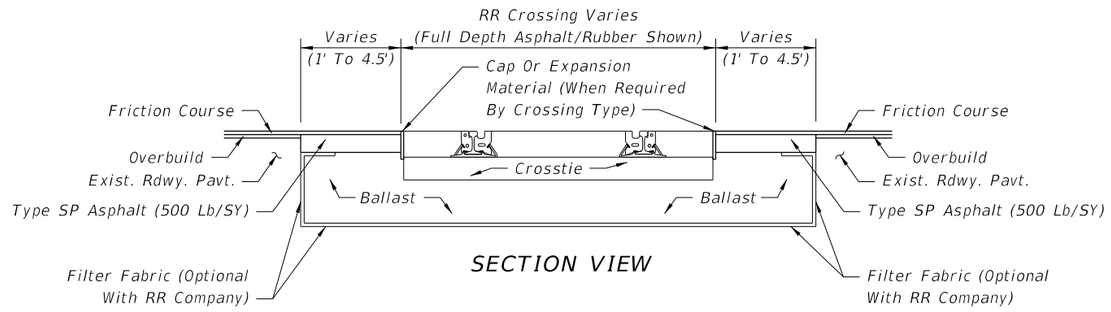



HALF PLAN
ROADWAYS WITH FLUSH SHOULDERS

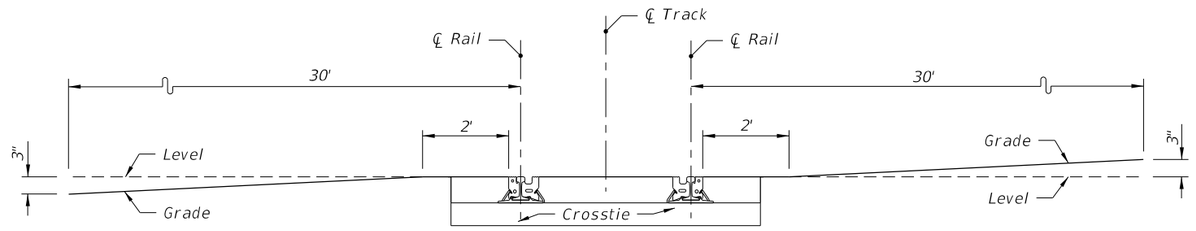



HALF PLAN
CURBED ROADWAYS




SECTION VIEW

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

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| LAST REVISION | REVISION | DESCRIPTION: | FDOT | FY 2016-17 DESIGN STANDARDS | RAILROAD CROSSING | INDEX NO. | SHEET NO. |
|---|---|---|---|---|---|---|---|
| 01/01/10 | | | | | | 560 | 2 of 2 |