Future Curb And Gutter Construction

20' R or As Shown On Plans

Valley Gutter  Curb And Gutter

SECTION AA

TYPE E

SECTION BB

TYPE F

SECTION CC

VALLEY GUTTER

* When used on high side of roadways, the cross slope of the gutter shall match the cross slope of the adjacent pavement. The thickness of the lip shall be 6", unless otherwise shown on plans.

* Rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.

For use adjacent to concrete or flexible pavement. For details depicting usage adjacent to flexible pavement, see Sheet 2. Expansion joint, preformed joint filler and joint seal are required between curb & gutter and concrete pavement only, see Sheet 2.

For use adjacent to concrete or flexible pavement, see diagram right. Expansion joint, preformed joint filler and joint seal are required between curb & gutter and concrete pavement only, see Sheet 2.

For details depicting usage adjacent to flexible pavement, see diagram right.

Note: To be paid for as parent curb.

CONCRETE CURB

CONCRETE CURB AND GUTTER
CURB & CURB AND GUTTER

CURB TYPE A

CURB AND GUTTER ENDINGS

CURB AND GUTTER TYPES E & F

SHOULDER GUTTER

CURB AND GUTTER ENDINGS

CURB AND GUTTER AND TYPE A CURB

ADJACENT TO FLEXIBLE PAVEMENT

GENERAL NOTES

1. For curb, gutter and curb & gutter provide W- W contraction joints at 10' centers (max). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joint not to exceed 10' centers. Curb, gutter and curb & gutter expansion joints shall be located in accordance with Section 520 of the Standard Specifications.

2. Ends of Curbs Types B and D shall transition from full to zero heights in 3'.

EXPANSION JOINT BETWEEN GUTTER

AND CONCRETE PAVEMENT

CURB AND GUTTER AND TYPE A CURB

ADJACENT TO FLEXIBLE PAVEMENT

GENERAL NOTES

1. For curb, gutter and curb & gutter provide W- W contraction joints at 10' centers (max). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joint not to exceed 10' centers. Curb, gutter and curb & gutter expansion joints shall be located in accordance with Section 520 of the Standard Specifications.

2. Ends of Curbs Types B and D shall transition from full to zero heights in 3'.
**GENERAL NOTES**

1. The plan views shown are for turn lane taper shapes and dimensional purposes only; they do not prescribe the use of curb, curb and gutter, shoulders or separators specifically to either rural or urban conditions.

2. Total deceleration distances must not be reduced except where lesser values are imposed by un relocatable control points.

3. Right turn lane tapers and distances identical to left turn lanes under stop control conditions. Right turn lane tapers and/or distances are site specific under free flow or yield conditions.

4. These left turn configurations apply to continuous left turn lanes only when:
   a. Approved by District Design Engineer.
   b. Through vehicle queues will not block access to left turn lane.
   c. Left turn queue vehicles are adequately provided for within the design queue length.

5. For pavement markings see Index No. 17346.

**DESIGN STANDARDS**

- **Urban Conditions**
  - Average Running Speed: 10 mph below design speed
  - Entry Speed: 20 mph below design speed
  - Deceleration: 6.9 ft/s² (AASHTO 2001 threshold rate)

- **Rural Conditions**
  - Average Running Speed: 10 mph below design speed
  - Entry Speed: 20 mph below design speed
  - Deceleration: 11.2 ft/s² (AASHTO 2001 threshold rate)

**MEDIAN CURB AND TRAFFIC SEPARATOR JUNCTURE DETAILS**

- **Turning Lanes**
  - **Turn Lanes – Curbed and Uncurbed Medians**
    - **Design Speed (mph)**: 25, 30, 40, 50, 60, 75, 90, 105
    - **Entry Speed (mph)**: 20, 25, 30, 35, 40, 45, 50, 55
    - **Curb Only**
      - **Curb And Gutter**
      - **Uncurbed**

- **Design Notes**
  - **R E V I S I O N**
    - **1. GENERAL NOTES**
    - **2. DESIGN STANDARDS**
    - **3. MEDIAN CURB AND TRAFFIC SEPARATOR JUNCTURE DETAILS**

**FLUSH AND/OR CURBED SEPARATION**

- **FLUSH AND/OR CURBED SEPARATION**
  - **RAISED SEPARATION**
    - **Single Left Turns**
    - **Double Left Turns**

**INDEX NO. 300**

- **Description**
  - **Last Revision** 07/01/05
  - **Sheets** 1 of 1
  - **FDO 2014 Design Standards**
NOTES

1. Separators Type I and IV are to be used with flexible pavement. Separators Types II and V are to be used with rigid pavement.

2. Either Option I or Option II may be used for Types I and IV separators except when a specific option is called for in the plans.

3. For all separators provide 1/8" concrete joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers.

4. Separators having widths of 4', 6' or 8'-6" shall be paid for under the contract unit price for Concrete Traffic Separator (Type I, II, Wide) SY. Separators having widths other than 4', 6' or 8'-6" shall be detailed in the plans as special separators and paid for under the contract unit price for Concrete Traffic Separator (Special) SY.
**Traffic Separators**

**TYPICAL SECTION THRU TRAFFIC SEPARATOR**
(Bridge Deck Shown, Approach Slab Similar)

**LONGITUDINAL SECTION THRU TRAFFIC SEPARATOR AT NOSE**
(Bridge Deck Shown, Approach Slab Similar)

**REINFORCING STEEL OPTION A**

**PARTIAL PLAN VIEW OF SKEWED BRIDGE DECK AND APPROACH SLAB WITH TRAFFIC SEPARATOR**
(Deck Expansion Joint at Begin or End Bridge Shown, Expansion Joint at Q Pier or Intermediate Bents Similar)

Notes:
1. Traffic Separator transverse reinforcement adjacent to deck expansion joints shall be field adjusted to maintain clearance and spacing. Bars shall be field cut as shown, bars may be rotated to maintain clearance.
2. Traffic Separator ends at deck expansion joints shall follow the deck joint limits. Drainage joints and V-Grooves shall be placed perpendicular or radial to the Q of the Traffic Separator. See Structures Plans, Superstructure and Approach Slab Sheets for details.

**Bridge Installations - Type "E" Curb**

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**FDOT 2014 Design Standards**

**Traffic Separators**

**Index No.**

**Sheet No.** 2 of 4
Details of traffic separators including:

- **TYPICAL SECTION THRU TRAFFIC SEPARATOR**
  - (Bridge Deck Shown, Approach Slab Similar)
  - 4'-0", 6'-0", or 8'-6"

- **LONGITUDINAL SECTION THRU TRAFFIC SEPARATOR AT NOSE**
  - (Bridge Deck Shown, Approach Slab Similar)
  - REINFORCING STEEL OPTION A

- **DETAIL AT EXPANSION JOINTS**
  - (Strip Seal Shown, Other Armored Joint Types Similar)

- **DETIAL AT POURRED JOINT WITH BACKER ROD EXPANSION JOINTS**

- **BRIDGE INSTALLATIONS - TYPE "F" CURB**

Note: Treatment of separators on straight bridges shown. For additional notes and treatment of separators on skewed bridges, see Sheet 2.
### CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

**Bars 4A**
- Length as required

**Bars 4B**
- See Note

**Bars 4A & 4E**
- See Note

**Bars 4A & 4C**
- Length as required

### ALTERNATE REINFORCING STEEL DETAILS (WELDED WIRE REINFORCEMENT)

**OPTION A:** Use Welded Wire Reinforcement 3 x 4 - W5.0 x W6.7 as required by plans in place of Bars 4A, 4B and 4C. Bond the Welded Wire Reinforcement to the dimensions of Bar 4D shown in the Bending Diagram for Reinforcing Steel Option A.

**OPTION B:** Use Welded Wire Reinforcement 3 x 4 - W5.0 x W6.7 as required by plans in place of Bars 4A and 4C shown in Reinforcing Steel Option B.

**Note:** Welded Wire Reinforcement to consist of smooth wire meeting the requirements of Specification Section 931.

<table>
<thead>
<tr>
<th>SPICE DETAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Between WWR 3 x 4 - W5.0 x W6.7 Sections)</td>
</tr>
</tbody>
</table>

### ESTIMATED TRAFFIC SEPARATOR QUANTITIES

**CONCRETE:**
- **CONSTANT WIDTH OF SEPARATOR:**
  - **TYPE "E"**
    - 4'-0" Width = 0.167 CY per Ft.
    - 6'-0" Width = 0.179 CY per Ft.
    - 8'-6" Width = 0.182 CY per Ft.
  - **TYPE "F"**
    - 4'-0" Width = 0.073 CY per Ft.
    - 6'-0" Width = 0.084 CY per Ft.
    - 8'-6" Width = 0.087 CY per Ft.

**NOTE:**
- **TYPE "E"**
  - 4'-0" Width = 0.180 CY
  - 6'-0" Width = 0.237 CY
  - 8'-6" Width = 0.403 CY

**REINFORCING STEEL:**
- **(All quantities are based on an 8" slab.)**
  - **OPTION A:**
    - 8'-6" Width = 8.50 Lbs. per Ft.
    - 6'-0" Width = 5.60 Lbs. per Ft.
    - 4'-0" Width = 4.60 Lbs. per Ft.
  - **OPTION B:**
    - 8'-6" Width = 11.05 Lbs. per Ft.
    - 6'-0" Width = 8.60 Lbs. per Ft.
    - 4'-0" Width = 6.37 Lbs. per Ft.

### REINFORCING STEEL NOTES:

1. All dimensions are cut to cut.
2. The B" vertical dimension shown for Bars 4B and 4D is limited to the constant width section of separator.

### DRAINAGE JOINT DETAIL

FOR 5" OPENING OR LESS

See Structures Plans, Superstructure Sheets for location(s) of drainage joints. Locations for drainage joints shall be limited to the constant width section of separator.

### NOTES:

- **CONCRETE:** See General Notes in Structures Plans.
- **REINFORCING STEEL:** Reinforcing Steel shall be ASTM A615 Grade 60.
- **REINFORCING STEEL:**
  - Welded Wire Reinforcement to consist of smooth wire meeting the requirements of Specification Section 931.

### DOWEL DETAIL

Dowel Notes:
1. Shift Dowel Holes to clear if existing reinforcement is encountered.
2. Provide and install an adhesive bonding material system in accordance with Sections 416 and 937 of the Specifications.

### BRIDGE INSTALLATIONS - TYPE "E" AND "F" CURBS
Profile grades should be established that will allow inlets to be located outside the return whenever practical. Inlets should be located to avoid conflict with pedestrian movement. Special care must be exercised to prevent conflict with public sidewalk curb ramps for the disabled. For information on public sidewalk curb ramps refer to Index No. 304.

SHOWING LOCATION OF INLETS AT RETURNS

TYPICAL RETURN PROFILES
1. Sidewalk curb ramps shall be constructed at locations that will provide continuous unobstructed pedestrian circulation path to pedestrian areas, elements and facilities within the right of way and to accessible pedestrian routes on adjacent sites. Curb facilties with sidewalks and those without sidewalks are to have curb ramps constructed for all intersections and turnouts with curbed returns. To accommodate curb ramps, partial curb returns are to extend to the limits prescribed in Index No. 315. Ramps constructed at locations without sidewalks are to have a landing constructed at the top of each ramp, see LANDINGs FOR CURB RAMPS WITHOUT SIDEWALKS.

2. When altering existing pedestrian facilities, where existing restricted conditions preclude the accommodation of a ramp slope of 1:12, a ramp slope between 1:13 and 1:10 is permitted for a rise of 6" maximum. Where compliance with the requirements for cross slope cannot be fully met, the minimum feasible cross slope shall be provided. Ramp slopes are not required to exceed 15' in length.

3. If sidewalk curb ramps are located where pedestrians must walk across the ramp, then provide transition slopes to the ramp; otherwise a sidewalk curb may be required.

4. All sidewalks, ramps, and landings with a cross slope of 0.02 shown in this Index are 0.02 maximum. All ramp slopes shown in this Index as 1:12 are 1:12 maximum. Landings shall have slopes less than or equal to 0.02 in any direction.

5. grade breaks at the top and bottom of ramps shall be parallel to each other and perpendicular to the direction of the ramp slope.

6. Where a sidewalk curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transition or to the extent that no remaining section of curb or curb and gutter is less than 5' long. Existing sidewalks shall be removed to the nearest joint beyond the transition slope or to the extent that no remaining section of sidewalk is less than 5' long. For CONCRETE SIDEWALK details refer to Index No. 310.

7. Sidewalk curb ramp alpha-identifications are for reference purposes (plans, permits, etc.). Alpha-identifications CR-I and CR-J were intentionally omitted.

8. Detectable warnings shall extend the full width of the ramp and to a depth of 2'. Detectable warnings shall be constructed in accordance with Specification Section 527. For the layout of detectable warnings, refer to the TYPICAL PLACEMENT OF DETECTABLE WARNINGS details. Detectable warnings shall not be provided on transition slopes.

9. When detectable warnings are placed on a slope greater than 5%, domes shall be aligned with the centerline of the ramp; otherwise domes are not required to be aligned.

10. Detectable warnings shall be required on sidewalks at:
    a. Intersecting roads.
    b. Median Crossings greater than or equal to 6' in width.
    c. Railroad Crossings.
    d. Signalized driveways.

11. Detectable Warnings - Acceptance Criteria:
    a. Color and texture shall be complete and uniform.
    b. 90% of individual truncated domes shall be in accordance with the Americans with Disabilities Act Standards for Transportation Facilities, Section 705.
    c. There shall be no more than 4 non-compliant domes in any one square foot.
    d. Non-compliant domes shall not be adjacent to other non-compliant domes.
    e. Surfaces shall not deviate more than 0.10" from a true plane.

12. Detectable warnings shall be installed no greater than 5' from the back of curb or edge of pavement.

13. Detectable warnings shall not be installed over grade breaks.
Sidewalk Curb Ramps Where Ramp and Landing Depths Are Not Restricted

Note: For Additional Information On Sidewalk Curb Construction, See SIDEWALK CURB and SIDEWALK CURB OPTIONS details.

SECTION A-A
SECTION THROUGH RAMP AND LANDING (UNRESTRICTED CONDITIONS)

SECTION B-B
SECTION THROUGH LANDING (UNRESTRICTED CONDITIONS)

Sidewalk Curb (Where Necessary)
DIMENSIONAL FEATURES OF SIDEWALK CURB RAMPS FOR LINEAR PEDESTRIAN TRAFFIC
**SIDEWALK CURB OPTIONS**

- **MONOLITHIC CAST CURB**
- **SEPARATELY CAST CURB**

**SIDEWALK CURB**

- Construct Sidewalk Curb In Cut Sections.

**SECTION C-C**

- **PAVEMENT RELIEF AT LIP OF CURB**
  - Note: Remove Elevated Pavement By Spading And Rolling; Smooth Milling; or Grinding

**SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTHS ARE RESTRICTED**

**SECTION D-D**

- **SECTION THROUGH RAMP AND LANDING**
  - **RESTRICTED CONDITIONS**

**SECTION E-E**

- **SECTION THROUGH LANDING**
  - **RESTRICTED CONDITIONS**

**SIDEWALK WITH UTILITY STRIP**

**PICTORIAL VIEW**

**PLAN VIEW**

- Note: Crosswalk Width and Configuration Vary; Must Conform to Index No. 17344 and 17346.

- 19' Radius Curve Shown for CR-L.
DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS

MEDIAN CROSSING

PLAN VIEW

PLAN VIEW - (ALTERNATE DETAIL)

SECTION F-F

MEDIAN REFUGE

LANDINGS FOR CURB RAMPS WITHOUT SIDEWALKS
PLAN VIEW - (ALTERNATE DETAIL)

TYPICAL PLACEMENT OF DETECTABLE WARNINGS

PLAN VIEW

MEDIAN CROSSING

PLAN VIEW CR-L SHOWN
(CR-D SIMILAR)

PLAN VIEW CR-L SHOWN
(CR-D SIMILAR)

PICTORIAL VIEW CR-A SHOWN
(CR-B, CR-E AND CR-K SIMILAR)

PICTORIAL VIEW CR-A SHOWN
(CR-B, CR-E AND CR-K SIMILAR)

PICTORIAL VIEW CR-G SHOWN
(OPTION A) (CR-F AND CR-H SIMILAR)

PICTORIAL VIEW CR-G SHOWN
(OPTION B) (CR-F AND CR-H SIMILAR)

PICTORIAL VIEW FLUSH SHOULDER
(OPTION A)

PICTORIAL VIEW FLUSH SHOULDER
(OPTION B)

DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS

INDEX NO. 304

SHEET NO. 6 of 7
DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS

TYPICAL PLACEMENT OF SIDEWALK CURB RAMPS AT CURBED RETURNS

NOTES:

1. Where crosswalk markings are used, ramps shall fall within the crosswalk limits. A clear space of 48" minimum is required at the bottom of the ramp within a marked crosswalk. If crosswalk markings are not present, a clear space of 48" minimum is required at the bottom of the ramp outside of active travel lanes.

2. Crosswalk widths and configurations vary; must conform to Index No. 17344 and 17346.

TABLE OF DETECTABLE WARNINGS

<table>
<thead>
<tr>
<th>CURB RAMP TYPE</th>
<th>CURB RADIUS (FT)</th>
<th>TOTAL AREA (SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR-A</td>
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<td>8</td>
</tr>
<tr>
<td>CR-B</td>
<td>N/A</td>
<td>8</td>
</tr>
<tr>
<td>CR-C</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>CR-D</td>
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<td>8</td>
</tr>
<tr>
<td>CR-E</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>CR-F</td>
<td>20</td>
<td>13</td>
</tr>
<tr>
<td>CR-G</td>
<td>25</td>
<td>12</td>
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<tr>
<td>CR-H</td>
<td>30</td>
<td>14</td>
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<td>CR-I</td>
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<td>8</td>
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<tr>
<td>CR-J</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>CR-K</td>
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<td>8</td>
</tr>
<tr>
<td>CR-L</td>
<td>10</td>
<td>11</td>
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<tr>
<td>SHOULDER</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>OPTION A</td>
<td>30</td>
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<td>OPTION B</td>
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Note:
Due to construction applications, CR-L is the only curb ramp for which a detectable warning quantity was calculated using a curb radius of 15'.

For flush shoulder options with 5' sidewalks, the back of sidewalk is measured at 10' from the edge of traveled way.

AREAS OF DETECTABLE WARNINGS FOR SIDEWALK CURB RAMP AND FLUSH SHOULDER APPLICATIONS
CONCRETE PAVEMENT JOINTS

TRANVERSE EXPANSION JOINT

Plain Steel Dowel Bar (Coat And Lubricate In Accordance With Section 350 Of The Standard Specifications)

Metal Or Plastic Cap

Sheet Metal Bottom Strip In Accordance With Section 931 Of The Standard Specifications

Formed Groove (Depth 9/16 to 1 1/4" Max. Thickness)

Initial Cut (Depth 9/16 to 1 1/4"

Preformed Joint Filler (Punch Clean Holes Greater Than Bar Diameter)

Plain Steel Dowel Bar (Coat And Lubricate In Accordance With Section 350 Of The Standard Specifications)

Metal Or Plastic Cap

Sheet Metal Bottom Strip In Accordance With Section 931 Of The Standard Specifications

Formed Groove (Depth 9/16 to 1 1/4"

Initial Cut (Depth 9/16 to 1 1/4"

TRANVERSE CONTRACTION JOINT, VIBRO CAST METHOD

TRANVERSE CONTRACTION JOINT, SAWED METHOD

DOWELS (LENGTH 18")

Pavement Thickness Diameter

6"-8" 1/4"

7"-9" 1/2"

9"-10" 1 1/4"

11" 1 1/2"

Bend Up Against End Of Pavement After Forms Are Removed

Plain Steel Dowel Bars

Sheet Metal Bottom Strip For Expansion Joints Only

Dowel Support And Spacers

Approved Tie Bar Support

Top Of Pavement

Steel Tie Bar

Approx. 3"

Initial 1/8" Saw Cut Or 1/8" Max.

Formed Groove (Depth 9/16 to 1 1/4"

Anticipated Break

Note: Expansion joints to be placed on approaches to bridges, at street intersections and other locations indicated in detail plans.

TRANSVERSE JOINTS ARE TO BE SPACED AT A MAXIMUM OF 15'. DOWELS ARE REQUIRED AT ALL TRANSVERSE JOINTS UNLESS OTHERWISE NOTED IN PLANS.

LONGITUDINAL BUTT CONSTRUCTION JOINT TO BE USED AT DISCONTINUANCES OF WORK

LONGITUDINAL LANE-TIE JOINT

LONGITUDINAL JOINTS

Note: For joint seal dimensions see Sheet 2.
**Concrete Pavement Joints**

**Joint Seal Dimensions**

**Concrete-Concrete Joints**

<table>
<thead>
<tr>
<th>Joint Type</th>
<th>Sealant Material</th>
<th>Backer Rod Bond Breaker</th>
<th>Tape Bond Breaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw Cut Joint</td>
<td>Performed Elastomeric Compression Seal</td>
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<td></td>
</tr>
<tr>
<td>Asphalt Shoulder Pavement</td>
<td></td>
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</tr>
</tbody>
</table>

**Concrete-Asphalt Shoulder Joints**

For new and rehabilitation projects:
- Either tape or backer rod bond breaker required.
- Shoulder must be repaired if proper joint shape cannot be attained.

**Joint Dimensions (Concrete-Concrete Joints)**

<table>
<thead>
<tr>
<th>Joint Width</th>
<th>Joint Depth</th>
<th>Backer Rod Dia.</th>
<th>Minimum Joint Depth</th>
<th>Backer Rod Placement Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>1/16</td>
<td>3/32</td>
<td>1/32</td>
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<td>3/32</td>
<td>1/32</td>
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<td>1/8</td>
<td>1/4</td>
<td>1/4</td>
<td>1/2</td>
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</table>

Unless otherwise indicated on the plans, the joint width for new construction will be 1/2 for construction joints, 1/4 for all other joints.

For rehabilitation projects, the joint width shall be shown on the plans or established by the engineer based on field conditions.
ALTERNATE KEYWAY AND HOOK BOLT

STEEL HOOK BOLT ASSEMBLY

CONTRACTION ASSEMBLY

EXPANSION ASSEMBLY

NOTES
1. Longitudinal joints will not be required for single lane pavement 14' or less in width. For entrance and exit ramp joint details, see Sheet 4.
2. Arrangement of longitudinal joints are to be as directed by the Engineer.
3. All manholes, meter boxes and other projections into the pavement shall be boxed-in with 1" preformed expansion joint material.

ANCHOR BOLTS

Anchor bolts shall be Grade C in accordance with ASTM A 307.
Threaded sleeves shall develop the full strength of the bolt and meet the material and thread requirements of ASTM A 563.

FEET AND LEGS

The remaining portion of the hex bolt assembly shall be installed immediately prior to placing of concrete in the adjacent lane.

STEEL HOOK BOLT ASSEMBLY

ANCHOR BOLTS

After the concrete has set to the extent that the keyway will retain its shape, the hex bolt and plastic insert shall be removed.

EXPANSION ASSEMBLY

Note: Proprietary contraction and expansion assemblies may be used. Products shall be introduced to the State Construction Office in accordance with section (C) of the Product Evaluation Procedure.
* 13' with tied Concrete Shoulders or 14' with Asphalt Shoulders.

CONCRETE PAVEMENT JOINTS

2-THRU LANES WITH SINGLE LANE ENTRANCE RAMP

ENTRANCE TAPER WITH AUXILIARY LANE

ENTRANCE RAMP WITH ADDED LANE

2-THRU LANES WITH SINGLE LANE EXIT RAMP

EXIT TAPER WITH AUXILIARY LANE

3-THRU LANES WITH AUXILIARY LANE AND 2-LANE EXIT RAMP

JOINT LAYOUT AT ENTRANCE AND EXIT RAMP TERMINALS

Note: On single lane ramps, longitudinal joint to be constructed along centerline of ramp.

Rate Varies

Auxiliary Lane

PCC Core Part

Mainline Part

Ramp Part

Pavt.

Ramp Pavt.

Pavt.

Auxiliary Lane

Ramp Pavt.

Pavt.

Auxiliary Lane

Mainline Pavt.

Ramp Pavt.

Note: On single lane ramps, longitudinal joint to be constructed along centerline of ramp.

Rate Varies

Auxiliary Lane

PCC Core Part

Mainline Part

Ramp Part

Pavt.

Ramp Pavt.

Pavt.

Auxiliary Lane

Mainline Pavt.

Ramp Pavt.

Note: On single lane ramps, longitudinal joint to be constructed along centerline of ramp.

Rate Varies

Auxiliary Lane

PCC Core Part

Mainline Part

Ramp Part

Pavt.

Ramp Pavt.

Pavt.

Auxiliary Lane

Mainline Pavt.

Ramp Pavt.

Note: On single lane ramps, longitudinal joint to be constructed along centerline of ramp.

Rate Varies

Auxiliary Lane

PCC Core Part

Mainline Part

Ramp Part

Pavt.

Ramp Pavt.

Pavt.

Auxiliary Lane

Mainline Pavt.

Ramp Pavt.

Note: On single lane ramps, longitudinal joint to be constructed along centerline of ramp.
**DESIGN NOTES**

1. For rehabilitation projects, the designer must indicate in the plans the number of slabs to be removed, the number of subslabs to be constructed/reconstructed, and the location of expansion joints.

2. Pay quantity of expansion joint to be calculated across pavement at right angles to the centerline of the roadway. Shoulder pavement joint included.

**GENERAL NOTES**

1. The centerline of roadway and the centerline of bridge do not necessarily coincide. Prior to the placement of the expansion joint, the centerline of the roadway pavement shall be determined.

2. For information on other types of concrete pavement joints see Index No. 305.

3. Pay quantity for expansion joint is the length of joint to be constructed across the roadway and shoulder pavements, measured at right angles to the centerline of the roadway. Payment for expansion joint shall be full compensation for joint construction, including reinforced concrete subslab, sheet metal strip and compression seal, but not including roadway pavement reconstruction associated with joint replacement or reconstruction. Expansion joint to be paid for under the contract unit price for Bridge Approach Expansion Joint, LF.

**PLAN**

- Expansion Joints Shall Be Constructed Parallel To The Existing Transverse Pavement Joints On Rehabilitation Projects, And Parallel To The Standard Transverse Pavement Joints Shown In The Plans For New Construction.

**SECTION AA**

- Extension Joint Dimensions

**OPTIONAL SEALS**

- Compression Seal Detail

**DETAIL SHOWING SHEET METAL STRIP**

* Finish surface smooth. Cure with heavy coating of wax base pigment curing compound. Apply second application immediately prior to placing pavement.

**REINFORCING STEEL**

- Mark: C
- Slab: 4'-6" Varies
- Length: 10'-0"

**with Rigid Shoulder Pavement**

- Compression Seal
- Subslab
- Concrete Pavement
- Sheet Metal Strip

**with Grassed Shoulder or Flexible Shoulder Pavement**

- Compression Seal
- Subslab
- Concrete Pavement
- Sheet Metal Strip

**NOTES**

- Immediately prior to placing the seal, the joint shall be thoroughly cleaned of all foreign material. Immediately after the seal is placed, sheet metal strip shall be bent up against the pavement edge.

- The sheet metal strip shall be a minimum 16 gage steel, 12" wide and shall be galvanized in accordance with ASTM A-526, Coating Designation G90.
MISCELLANEOUS UTILITY DETAILS

GENERAL NOTES
1. The details provided in this standard index apply to cases in which jack and bore or directional boring methods are not required by the Engineer.
2. Flowable Fill shall not be placed directly over loose, or high plastic, or muck materials (see Index No. 305) which will cause pavement settlement due to fill weight. Where highly compressible material exists, the amount, shape and depth of flowable fill must be engineered to prevent pavement settlement.
3. These details do not apply to utility cuts longitudinal to the centerline of the roadway which may require the additional use of geotextiles, special bedding and backfill, or other special requirements.
4. Method of construction must be approved by the Engineer.
5. Some pipe may require special granular backfill up to 6" above top of pipe. Geotextiles may be required to encapulate the special granular material.
6. Where asphalt concrete overlays exist over full slab concrete pavement, the replacement pavement shall have an overlay constructed over the replacement slab. The overlay shall match the existing asphalt pavement thickness. The replacement friction course shall match the existing friction course, except structural course may be used in lieu of dense graded friction course.
7. All shoulder pavement, curb, curb and gutter, and their substructure disturbed by utility trench cut construction shall be restored in kind.
8. The use of flowable fill to reduce the time traffic is taken off a facility is acceptable but must have prior approval by the Engineer. Flowable fill use is allowed only when properly engineered for pavement crossings, whether straight or diagonal, and shall not be installed for significant depths or lengths. The maximum length shall be fifty (50) feet and a maximum depth of six (6) feet unless supported by an engineering document prepared by a registered professional engineer that specializes in soils engineering. The engineering document shall address the evaluation of local groundwater flow interruption and settlement potential.
9. Excavatable flowable fill is to be used when the flowable fill option is selected.
NOTES FOR UTILITY CONFLICT PIPE

1. These details are for construction field expediency to resolve utility conflicts that cannot be remedied by relocation. For conflicts determined during design, use the construction shop drawings for structure details.

2. Concrete used in conflict structures shall be as specified in ASTM C494. 4000 psi may be used in lieu of Class 1 concrete.

3. Maximum opening for pipe shall be the pipe OD plus 6". Mortar used to seal the pipe into the opening will be of such mix that shrinkage will not cause leakage into or out of the structure.

4. If the conflict structure is round or there are multiple inlet or outlet pipes, then the wall section should be reviewed for strength.

5. If during construction or the plans design process it is determined that a potable water supply line must pass through a storm drain structure, it must be in compliance with Chapter 62-555.314 (3) F.A.C. and shown on the design or construction plans submitted to the Florida Department of Environmental Protection (FDEP) Administrator For Drinking Water in the respective FDEP District for review and comment. This Index and rule citation provides accepted methods for addressing conflicts when and where they cannot be reasonably avoided. To be submitted along with the plans shall be a justification describing inordinate cost and the impracticability of avoidance. If identified, properly justified, and accomplished in accordance with this index, approval is granted. Upon request, the Utility Agency Owner (UAO) must provide support data on the cost of relocation or adjustment to the FDOT for submittal to the FDEP. See the following web site for District FDEP Drinking Water Contacts: www.dep.state.fl.us/water/drinkingwater/index.htm and click on “Organization” on the menu to the right.

SECTION LONGITUDINAL TO CARRIER PIPE
(Nonpressure Or Nonfluid Carrier Installations)
No Joints Allowed Within Structure
UTILITY CONFLICT CONDITION I

SECTION LONGITUDINAL TO CARRIER PIPE
(Pressure Or Fluid Carrier Installations)
UTILITY CONFLICT CONDITION II

UTILITY CONFLICT PIPES THRU STORM DRAIN STRUCTURES

DESIGNER'S NOTE

"Sunken" Conflict Manholes Shall Not Be Used Unless The System Is Hydraulically Designed To Account For The Headloss Generated If The Sump Is Completely Blocked
NONTRENCH PAVEMENT CUTS FOR UNDERGROUND UTILITY STRUCTURES IN PAVEMENT

PARTIAL CUTS FOR RING AND COVER ADJUSTMENTS

NOTES
1. No irregular seams are permitted. All seams must be clean sawed.

2. Pavement cut seams for underground utility structures in rigid pavement are the same longitudinally, but the transverse seams shall extend to the nearest existing joint.

3. See Sheet 1 for replacement pavement.
Concrete Slab Replacement

**FIGURE 10.2 - REPAIR METHOD: NONE OR CLEAN AND SEAL**

**FIGURE 10.3 - FULL SLAB FULL DEPTH REPLACEMENT**

**FIGURE 10.4 - PARTIAL SLAB FULL DEPTH REPLACEMENT**

**FIGURE 10.5 - FULL-DEPTH REPAIR ON BOTH SIDES OF THE JOINT**

**GENERAL NOTES**

1. For Repair and Replacement Criteria see Sheet 2.

2. Full depth repairs consist of removing and replacing at least a portion of the existing slab to the bottom of the concrete.

3. Repair boundaries shall be sawed full-depth with diamond saw blades. On hot days, it may not be possible to make this cut without first making a wide, pressure relief cut within the repair boundaries. A carbide-tipped wheel saw may be used for this purpose, but the wheel saw must not intrude on the adjacent lane, unless the lane is slated for repair. The wheel saw cuts produce a ragged edge that promotes excessive spalling along joints. Hence, if wheel saw cuts are made, diamond saw cuts must be made 18 in. outside the wheel saw cuts. To prevent damage to the base, the wheel saw must not be allowed to penetrate more than 0.5 in. into the base.

4. No additional base or subgrade material shall be added and all loose base or subgrade material shall be removed prior to placement of the new concrete slab. The concrete slab shall be placed to the full depth of the material removed. No additional compensation will be allowed for additional concrete required to bring proposed concrete slab up to finished grade.

5. Removal of the damaged concrete pavement shall be by lifting. Any good concrete pavement which is damaged during removal of damaged areas shall be removed and replaced by the contractor at his expense.

6. If the roadway contract includes grinding, then the slab replacement shall be performed first.

7. During slab replacement operations, fill any saw cut over runs into adjacent slabs with epoxy.
<table>
<thead>
<tr>
<th>DISTRESS PATTERN</th>
<th>SEVERITY/DESCRIPTION</th>
<th>REPAIR METHOD</th>
<th>REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CRACKING</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longitudinal</td>
<td>Light: &lt;1/8&quot; no faulting, spalling &lt;1/16&quot; wide</td>
<td>None</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td></td>
<td>Moderate: 1/8&quot; width &lt;1/8&quot;, spalling &lt;1/16&quot; wide</td>
<td>Clean and Seal</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td></td>
<td>Severe: width &gt;1/8&quot;, spalling &gt;1/16&quot; faulting &gt;1/8&quot;</td>
<td>Replace</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td>Transverse</td>
<td>Light: &lt;1/8&quot; no faulting, spalling &lt;1/16&quot; wide</td>
<td>None</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td></td>
<td>Moderate: 1/8&quot; width &lt;1/8&quot;, spalling &lt;1/16&quot; wide</td>
<td>Clean and Seal</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td></td>
<td>Severe: width &gt;1/8&quot;, spalling &gt;1/16&quot; faulting &gt;1/8&quot;</td>
<td>Replace</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td>Corner Breaks</td>
<td>A corner of the slab is separated by a crack that intersects the adjacent longitudinal and transverse joint, describing an approximate 45° angle with the direction of traffic.</td>
<td>Full Depth</td>
<td>Figure 10.4 and 10.5</td>
</tr>
<tr>
<td>Intersecting Random Cracks</td>
<td>Cracking patterns that divide the slab into three or more segments.</td>
<td>Full Depth</td>
<td>Figure 10.3 and 10.4</td>
</tr>
<tr>
<td>(Shattered Slab)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>JOINT DEFICIENCIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spall Nonwheel Path</td>
<td>Light: spall width &lt;1/16&quot;, &lt; 1/4 slab depth, &lt;1/16&quot; in length</td>
<td>None</td>
<td>Figure 10.4 and 10.5</td>
</tr>
<tr>
<td></td>
<td>Moderate: spall width &lt;1/8&quot;, &lt; 1/4 slab depth, &lt;1/16&quot; in length</td>
<td>None</td>
<td>Figure 10.4 and 10.5</td>
</tr>
<tr>
<td></td>
<td>Severe: spall width &gt;1/8&quot;, or depth &gt;1/16&quot; or length &gt;12&quot;</td>
<td>Full Depth</td>
<td>Figure 10.4 and 10.5</td>
</tr>
<tr>
<td>Spall Wheel Path</td>
<td>Light: spall width &lt;1/16&quot;, &lt; 1/4 slab depth, &lt;1/16&quot; in length</td>
<td>None</td>
<td>Figure 10.4 and 10.5</td>
</tr>
<tr>
<td></td>
<td>Moderate: spall width &lt;1/8&quot;, &lt; 1/4 slab depth, &lt;1/16&quot; in length</td>
<td>None</td>
<td>Figure 10.4 and 10.5</td>
</tr>
<tr>
<td></td>
<td>Severe: spall width &gt;1/8&quot;, or depth &gt;1/16&quot; or length &gt;12&quot;</td>
<td>Full Depth</td>
<td>Figure 10.4 and 10.5</td>
</tr>
<tr>
<td><strong>SURFACE DETERIORATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pop Outs Nonwheel Path</td>
<td>Small pieces of surface pavement broken loose, normally ranging from 1 to 4 in diameter and 1/2 to 2 in depth.</td>
<td>Keep under observation</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Light: Not deemed to be a traffic hazard</td>
<td>Keep under observation</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Severe: Flying debris deemed a traffic hazard</td>
<td>Full Depth</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td>Pop Outs Wheel Path</td>
<td>Small pieces of surface pavement broken loose, normally &gt;3&quot; diameter and 2&quot; in depth.</td>
<td>Keep under observation</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Light: Deemed to be a traffic hazard</td>
<td>Full Depth</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Severe: Flying debris deemed a traffic hazard</td>
<td>Full Depth</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td><strong>MISCELLANEOUS DISTRESS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faulting</td>
<td>Elevation differences across joints or cracks.</td>
<td>None</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Light: Faulting &lt;1/8&quot;</td>
<td>None</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Moderate: 1/8&quot; &lt; Faulting &lt;1/4&quot;</td>
<td>Grind</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Severe: Faulting &gt;1/4&quot;</td>
<td>Grind</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td>Lane To Shoulder Drop-Off</td>
<td>Elevation differences across joints or cracks.</td>
<td>None</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Light: 0 drop-off &lt;1&quot;</td>
<td>None</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Moderate: 1&quot; drop-off &lt;3&quot;</td>
<td>Build Up</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td></td>
<td>Severe: drop-off &gt;3&quot;</td>
<td>Build Up</td>
<td>Figure 10.4</td>
</tr>
<tr>
<td>Water Bleeding Or Pumping</td>
<td>Keeping or ejection of water through joints or cracks.</td>
<td>Install appropriate drainage, edge drain, permeable subbase, reseal joints, etc.</td>
<td>N/A</td>
</tr>
<tr>
<td>Blowups</td>
<td>Upward movement at transverse joints or cracks often accompanied by shattering of the concrete.</td>
<td>Full Depth</td>
<td>Figure 10.3 and 10.4</td>
</tr>
</tbody>
</table>
NOTES FOR CONCRETE SIDEWALK ON CURBED ROADWAYS

1. Sidewalks shall be constructed in accordance with Specification Section 522. Sidewalk curb ramps shall include detectable warnings and be constructed in accordance with Index No. 304. Detectable warnings are not required where sidewalks intersect urban flared turnouts.

2. Bond breaker material can be any impermeable coated or sheet membrane or preformed material having a thickness of not less than 6 mils nor more than 16 mils.

3. For turnouts see Index No. 515.

4. Construct sidewalks with a thick Edge Beam through the limits of any surface mounted Pedestrian/Bicycle Picket Railings or Pipe Guiderail shown in the plans.
NOTES FOR CONCRETE SIDEWALKS ON UNCURBED ROADWAYS

1. Sidewalks shall be constructed in accordance with Specification Section 322.

2. Detectable Warnings shall conform to the requirements described in Index No. 304. Detectable Warnings are not required for sidewalks that run continuous through driveways.

3. For TURNOUTS see Index No. 513.

4. Construct sidewalks with a 1'-0" thick Edge Beam through the limits of any surface mounted Pedestrian/Bicycle Picket Railing or Pipe Guardrail shown in the plans (see SIDEWALK WITH EDGEBEAM FOR SURFACE MOUNTED RAILINGS detail).

5. When driveways are newly constructed, reconstructed, or altered, cross slopes for discontinuous sidewalks shall not exceed 0.02.

CONCRETE SIDEWALK ON UNCURBED ROADWAYS

LONGITUDINAL SECTIONS

JOINT LEGEND

A- 1/8" Expansion Joints (Preformed Joint Filler)
B- 1/8" Dummy Joints, Tooled
C- 1/8" Formed Open Joints
D- 1/4" Saw Cut Joints, 1/4" Deep (96 Hour) Max. 5' Centers
E- 1/8" Saw Cut Joints, 1/8" Deep (12 Hour) Max. 30 Centers
F- 1/8" Expansion Joint When Run Of Sidewalk Exceeds 120. Intermediate locations when called for in the plans or at locations as directed by the Engineer.

SIDEWALK JOINTS