

**DESIGN STANDARDS**

**CURB & CURB AND GUTTER**

**CONCRETE CURB AND 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.*

**Note:** To be paid for as parent curb.

**CONCRETE CURB**

Note: 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 curbs and concrete pavement only, see Sheet 2.

**DROP CURB**

**SHOULDER GUTTER**

Traffic bearing section for use in roundabout central island construction type RA.
CURB AND GUTTER ENDINGS

CONTRACTION JOINT IN CURB AND GUTTER

Sawcuts should be avoided within valley gutter and within curb and gutter endings.

CONTRACTION JOINT IN CURB

4" Min., 5" Max. 6" or ½ Holes
2" Min., 3" Max. 5" Max. 6" Min.

#4 Bars, 18" Long
Cast or Rubbed

Pitch Optional

CONCRETE BUMPER GUARD

APPLIES TO BOTH HIGH AND LOW SIDES OF PAVEMENT, LOW SIDE SHOWN.

APPLIES TO SHOULDER GUTTER ONLY WHERE ADJOINING TRAFFIC LANE.

SHOULDER GUTTER

TYPE E

Depth Of Sawcut
3 ½' Max.
0' Min.

Depth Of Sawcut
5' Max.
0' Min.

TYPE F

Depth Of Sawcut
3 ½' Max.
0' Min.

Depth Of Sawcut
5' Max.
0' Min.

CURB AND GUTTER TYPES E & F

EXPANSION JOINT BETWEEN GUTTER AND CONCRETE PAVEMENT

Joint Seal □

Concrete Gutter

Concrete Pavement

⅛" Exp. Joint And Preformed Joint Filler □

Applies to both high and low sides of pavement, low side shown.

CURB AND GUTTER AND TYPE A CURB ADJACENT TO FLEXIBLE PAVEMENT

GENERAL NOTES

1. For curb, gutter and curb & gutter provide ⅛" - ⅜" 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 joints 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'.

CURB & CURB AND GUTTER

INDEX No.
300

SHEET No.
2 of 2

2016 DESIGN STANDARDS
### DESIGN NOTES

1. Basis for turn lane configurations:
   - Informed Driver
   - Stop condition (With or Without Stop Control)
   - Wet Pavement
   - Reaction point or entry point,
   - Minimum braking distance for urban conditions
   - 75 mph for L_1
   - Comfortable deceleration rates for rural conditions (AASHTO 2001 threshold rate of 11.2 ft/s²).

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 specific under free flow or yield conditions.

4. These left turn configurations apply to continuous left turn lanes only, specifically called for in the plans.

5. For pavement markings see Index No. 17346.

#### GENERAL NOTES

1. The plan view shall show 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. Through vehicle queues will not block access to left turn lane.

3. Left turn queue vehicles are adequately provided for within the design queue length.

4. Minimum braking distance for urban conditions.


### MEDIAN CURB AND TRAFFIC SEPARATOR JUNCTURE DETAILS

#### MEDIAN CURB AND TRAFFIC SEPARATOR JUNCTURE DETAILS

**Design Standards**

**2016**

**TURN LANES**

**INDEX**

**NO.**

**301**

**SHEET**

1 of 1
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 1/4"-1/2" 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 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_) (Wide) LF. 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.

ROADWAY INSTALLATIONS
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 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 1/8" 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
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

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

DETAl AT POURED JOINT WITH BACKER ROD EXPANSION JOINTS

BRIDGE INSTALLATIONS - TYPE "F" CURB
CONTINUOUS REINFORCING STEEL BENDING DIAGRAMS

**REINFORCING STEEL OPTION A**

Bars 4C See Note
Bars 4A & 4E See Note

Bars 4A & 4E
Bar 4B

Note:
Length of Bars 4E is 2'-5" for 4'-0" Separator.
Length of Bars 4F is 4'-5" for 6'-0" Separator.
Length of Bars 4E is 6'-11" for 8'-6" Separator.

**REINFORCING STEEL OPTION B**

Bars 4C See Note
Bars 4A & 4E See Note

Bars 4A & 4C
Bar 4D

Note:
Length of Bars 4C is 2'-5" for 4'-0" Separator.
Length of Bars 4E is 4'-5" for 6'-0" Separator.
Length of Bars 4D is 6'-11" for 8'-6" Separator.

**REINFORCING STEEL NOTES:**

1. All dimensions are out to out.
2. The W vertical dimension shown for Bars 4B and 4D are based on a slab of 8" thick or greater with a wearing surface. If slab thickness is less than 8", decrease this dimension by an amount equal to the difference in thickness. If a wearing surface is to be provided, increase this dimension by an amount equal to the wearing surface thickness.

**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 4E. Bend the Welded Wire Reinforcement to the dimensions of Bar 4B 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 933.

**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.

**PAYMENT:** Separators having widths of 4'-0", 6'-0", and 8'-6" shall be paid under the contract unit price for Traffic Separator Concrete (Type II or V) (__' Wide), LF. Separators having widths other than 4'-0", 6'-0", or 8'-6" shall be detailed in the plans as special separators and paid under the contract unit price for Traffic Separator Concrete (Special), S.Y.

**TRAFFIC SEPARATOR CONSTRUCTION:** The Contractor may construct the separator by the use of stationary removable forms or by the use of slip forms without altering the separator dimensions shown.

**Dowel Notes:**
1. Shift Dowel Notes 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**

**DEFINITIONS:**

**Dimensions:** Measured from the outer surface of the facing to the centerline.

**Weight:**
- **OPTION A:** 8'-6" Width = 11.05 Lbs. per Ft.
- **OPTION B:** 8'-6" Width = 11.05 Lbs. per Ft.

**NOTE:**
- Length of Bars 4C is 2'-5" for 4'-0" Separator.
- Length of Bars 4C is 4'-4" for 6'-0" Separator.
- Length of Bars 4C is 6'-10" for 8'-6" Separator.

**CONCRETE:** See General Notes in Structures Plans.

**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.**
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
GENERAL NOTES

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. Curbled facilities with sidewalks and those without sidewalks are to have curb ramps constructed for all intersections and turnouts with curbled 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 1:12 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 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 and shared use paths 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 703.
   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

SECTION THROUGH RAMP AND LANDING
(UNRESTRICTED CONDITIONS)

SECTION B-B

Note: For Additional Information on Sidewalk Curb Construction, See SIDEWALK CURB and SIDEWALK CURB RAMPS details.

SECTION THROUGH LANDING
(UNRESTRICTED CONDITIONS)
DIMENSIONAL FEATURES OF SIDEWALK CURB RAMPS FOR LINEAR PEDESTRIAN TRAFFIC
SIDEWALK CURB OPTIONS

MONOLITHIC CAST CURB

SEPARATELY CAST CURB

SIDEWALK CURB OPTIONS

Construct Sidewalk Curb In Cut Sections.

SIDEWALK CURB

Pavement Relief

PICTORIAL VIEW

PAVEMENT RELIEF AT LIP OF CURB

Width Varies (18" Max.)

Asphalt Pavement

Final Rolled Surface

5% max.

Lip Of Curb

Note: Remove Elevated Pavement By Spading And Rolling; Smooth Willing, or Grinding

SECTION C-C

SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTHS ARE RESTRICTED

SECTION D-D

SECTION THROUGH RAMP AND LANDING
(RESTRICTED CONDITIONS)

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

15' Radius Curve Shown for CR-L.

Conform to Index No. 17344 and 17346.

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

15' Radius Curve Shown for CR-L.

Conform to Index No. 17344 and 17346.
PLAN VIEW - (ALTERNATE DETAIL)

SECTION F-F

MEDIAN REFUGE

DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS

LANDINGS FOR CURB RAMPS WITHOUT SIDEWALKS
**REVISION NO.:**

**INDEX NO.:**

**DESCRIPTION:**

**REVISION LAST OF DESIGN STANDARDS 2016**

**DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS**

**PLAN VIEW**

**PLAN VIEW - (ALTERNATE DETAIL)**

**MEDIAN CROSSING**

**RAILROAD CROSSING**

**PICTORIAL VIEW**

**PICTORIAL VIEW CR-L SHOWN (CR-D 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)**

**TYPICAL PLACEMENT OF DETECTABLE WARNINGS**

**FLUSH SHOULDER (OPTION A)**

**FLUSH SHOULDER (OPTION B)**

1. Flangeway Gap May Be Up To 3' For Freight-only Railways

2. Sidewalk Curb (Where Necessary)

3. Utility Strip

4. Ramp

5. Sidewalk

6. Utility Strip

7. Median Crossing

8. Railroad Crossing
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.

Areas of DetectableWARNINGS For SIDEWALK CURB RAMP AND FLUSH SHOULDER APPLICATIONS

Table of Detectable WARNINGS

<table>
<thead>
<tr>
<th>Curb Ramp Type</th>
<th>Curb Radius (FT)</th>
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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.

radial sidewalk ramps

linear sidewalk ramps

For the listed areas of detectable warnings, the back of sidewalk is measured at 10' from the edge of traveled way.
METAL OR PLASTIC CAPS FOR DOWEL BARS

Plain Steel Dowel Bar (Coat And Lubricate In Accordance With Section 350 Of The Std. Specs.)
Sheet Metal Bottom Strip In Accordance With Section 931 Of The Standard Specifications
Metal Or Plastic Cap

BUTT CONSTRUCTION JOINT TO BE USED AT DISCONTINUANCES OF WORK

Plain Steel Dowel Bar (Coat And Lubricate In Accordance With Section 350 Of The Std. Specs.)

TRANSVERSE CONTRACTION JOINT, VIBRO CAST METHOD

Plain Steel Dowel Bar (Coat And Lubricate In Accordance With Section 350 Of The Std. Specs.)

TRANSVERSE CONTRACTION JOINT, SAWED METHOD

DOWELS (LENGTH 18"")

Dowel Support
Approved Tie Bar Support

LONGITUDINAL BUTT CONSTRUCTION JOINT

LONGITUDINAL LANE-TIE JOINT

LONGITUDINAL JOINTS

Dowel Support
Approved Tie Bar Support

Dowel Support
Approved Tie Bar Support

Dowel Support
Approved Tie Bar Support

Dowel Support
Approved Tie Bar Support

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

TRANSVERSE JOINTS

Dowel Support
Approved Tie Bar Support

Dowel Support
Approved Tie Bar Support

Dowel Support
Approved Tie Bar Support

Dowel Support
Approved Tie Bar Support

Note for joint seal dimensions see Sheet 2.

Note: Slabs poured simultaneously. Tie bars may be inserted in the plastic concrete by means approved by the Engineer.

LONGITUDINAL JOINTS
Concrete-Pavement Joints

**For New Projects**

**Preformed Elastomeric Compression Seal**

**Concrete-Concrete Joints**

- Joint Sealant Material To Be As Specified In The Plans
- Tape Bond Breaker

**Concrete-Asphalt Shoulder Joints**

- Joint Sealant Material To Be As Specified In The Plans
- Backer Rod Bond Breaker

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**Joint Dimensions**

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<th>Joint Width (Inches)</th>
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<th>Backer Rod Dia.</th>
<th>Minimum Joint Depth</th>
<th>Backer Rod Placement Depth</th>
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Unless otherwise indicated in 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 will be shown on the plans or established by the Engineer based on field conditions.

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**Note:**

- Dimension w will be shown in the plans or established by the Engineer based on field conditions. Dimension d will be constructed so that the shape factor w/t has a maximum value of 2.0 and a minimum value of 1.0.

- Joint Sealant Material To Be As Specified In The Plans
- Tape Bond Breaker

**Concrete-Pavement Joints**

**Concrete-Asphalt Shoulder Joints**

**Joint Seal Dimensions**

- Joint Sealant Material To Be As Specified In The Plans
- Backer Rod Bond Breaker

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**For New and Rehabilitation Projects:**

Either Tape Or Backer Rod Bond Breaker Required; Shoulders Must Be Repaired If Proper Joint Shape Cannot Be Attained.
ALTERNATE KEYWAY AND HOOK BOLT

STEEL HOOK BOLT ASSEMBLY

ANCHOR BOLTS

Threaded sleeves shall develop the full strength of the bolt and meet the material and thread requirements of ASTM A 563.

Anchor bolts shall be Grade C in accordance with ASTM A 307.

After the concrete has set to the extent that the keyway will retain its shape, the hex bolt and plastic insert shall be removed. The remaining portion of the hook bolt assembly shall be installed immediately prior to placing of concrete in the adjacent lane.

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.

Joint Filler

Spacer Bar

Joint Seal

Expansion Cap

Filler Wire Support

Tie Wire

Staking Pin

Joint Filler Wire Support

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 1/2' preformed expansion joint material.
* 13 with tied Concrete Shoulders or 14' with Asphalt Shoulders.
**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 for expansion joint shall be calculated across pavement at right angles to the centerline of the roadway pavement. Shoulder pavement joint included.

3. 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.

**General Notes**

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

2. 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.

**Joint Dimensions**

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

**Detail Showing Sheet Metal Strip**

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

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<tr>
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**Compression Seal Detail**

Note: All contacting surfaces between the compression seal and concrete shall be thoroughly coated with a lubricant-adhesive.
FLEXIBLE PAVEMENT NOTES

PAVEMENT REMOVAL AND REPLACEMENT

Pavement shall be mechanically sawed.

The replacement asphalt shall match the existing structural and friction courses for type and thickness in accordance with current FDOT asphalt mix specifications.

The new base materials shall be either of the same type and composition as the materials removed or of equal or greater structural adequacy (See Index No. 514).

BACKFILL

COMPACTED AND STABILIZED FILL OPTION

Backfill material shall be placed in accordance with Section 125 of the Standard Specifications.

In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamp suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.

In Stage #2, construct compacted fill along the sides of the pipe and up to the bottom of the base, with the upper 12" receiving Type B Stabilization. In lieu of Type B Stabilization, the Contractor may construct using Optional Base Group 3.

* FLOWABLE FILL OPTION

If compaction cannot be achieved through normal methods then flowable fill may be used.

Flowable fill is to be placed in accordance with Section 121 of the Specifications, as approved by the Engineer.

Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.

In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.

In Stage #2, place flowable fill to the bottom of the existing base course.

RIGID PAVEMENT NOTES

PAVEMENT REMOVAL AND REPLACEMENT

High early-strength cement concrete (3000 psi) meeting the requirements of Standard Specification 346 shall be used for rigid pavement replacement.

Pavement shall be mechanically sawed and restored to conform with existing pavement joints within 12 hours. (See Index No. 305)

GRANULAR BACKFILL

Any edgetrench system that is removed shall be replaced with the same type materials. Any edgetrench system that is damaged shall be repaired with methods approved by the Engineer.

Fill material shall be placed in accordance with the Standard Specifications. Fill material shall be special select soil in accordance with Index No. 505.

In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamp suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.

In Stage #2, construct fill along the sides of the pipe and up to the bottom of replacement pavement.

* FLOWABLE FILL OPTION

If mechanical compaction cannot be achieved through normal methods then flowable fill may be used.

Flowable fill is to be placed in accordance with Section 121 of the Specifications, as approved by the Engineer.

Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.

In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.

In Stage #2, place flowable fill to the bottom of the stone layer.
SECTION LONGITUDINAL TO CARRIER PIPE
(Nonpressure Or Nonfluid Carrier Installations)

No Joints Allowed Within Structure

UTILITY CONFLICT CONDITION I

- Annular Space Plug/Seal Option: Flowable Fill Or Neoprene Flexible Seal. See Note No. 3.
- Carrier Spacer Or Cradle (Cradle Option Shown).
- 1" Min. Clearance Between Obstruction And Flow Line Of Outlet Pipe.

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 C478. 4000 psi may be used in lieu of Class I concrete.

3. Maximum opening for pipe shall be the pipe OD plus 4". 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 and 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 provide 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.

UTILITY CONFLICT PIPES THRU STORM DRAIN STRUCTURES

UTILITY CONFLICT CONDITION II

- Carrier Casing Or The Carrier If No Casing Is Used
- Allow 2 Foot Minimum Clearance On One Side Of Utility For Maintenance Purposes And No Less Than 1 Foot Clearance On The Other Side.

DESIGNER’S NOTE
'Sumped' Conflict Manholes Shall Not Be Used Unless The System Is Hydraulically Designed To Account For The Headloss Generated If The Sump Is Completely Blocked.
**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.

**NONTRENCH PAVEMENT CUTS FOR UNDERGROUND UTILITY STRUCTURES IN PAVEMENT**
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

FIGURE 10.6 - MULTIPLE SLAB FULL DEPTH REPLACEMENT

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 saws 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 overrun into adjacent slabs with epoxy.

8. Install tie bars at longitudinal joints when two full adjacent or multiple replaced slabs.

8. Install tie bars at longitudinal joints when two full adjacent or multiple replaced slabs.
### Distress Pattern

<table>
<thead>
<tr>
<th>CRACKING</th>
<th>SEVERITY/DESCRIPTION</th>
<th>REPAIR METHOD</th>
<th>REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal</td>
<td>Light: &lt;1/8&quot; no faulting, spalling &lt;1/2&quot; wide</td>
<td>None</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td></td>
<td>Moderate: &lt;3/16&quot; width, spalling &gt;3&quot; wide</td>
<td>Clean and Seal</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td></td>
<td>Severe: width &gt;3/8&quot;, spalling &gt;3&quot; faulting &gt;1/2&quot;</td>
<td>Replace</td>
<td>Figure 10.3</td>
</tr>
<tr>
<td>Transverse</td>
<td>Light: &lt;1/8&quot; no faulting, spalling &lt;1/2&quot; wide</td>
<td>None</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td></td>
<td>Moderate: &lt;3/16&quot; width, spalling &gt;3&quot; wide</td>
<td>Clean and Seal</td>
<td>Figure 10.2</td>
</tr>
<tr>
<td></td>
<td>Severe: width &gt;3/8&quot;, spalling &gt;3&quot; faulting &gt;1/2&quot;</td>
<td>Replace</td>
<td>Figure 10.3, 10.4 and 10.5</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>None</td>
<td>Figure 10.3, 10.4 and 10.5</td>
</tr>
<tr>
<td>Intersecting Random Cracks (Shattered Slab)</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>
</tbody>
</table>

### Joint Deficiencies

| Spall Nonwheel Path | Light: Spall width <1/8", <5/8" slab depth, <12" in length | None | Figure 10.4 and 10.5 |
| | Moderate: Spall width <3", <5/8" slab depth, <12" in length | None | Figure 10.4 and 10.5 |
| | Severe: Spall width >3" or length >12" | Full Depth | Figure 10.4 and 10.5 |
| Spall Wheel Path | Light: Spall width <1/8", <5/8" slab depth, <12" in length | None | Figure 10.4 and 10.5 |
| | Moderate: Spall width <3", <5/8" slab depth, <12" in length | Full Depth | Figure 10.4 and 10.5 |
| | Severe: Spall width >3" or length >12" | Full Depth | Figure 10.4 and 10.5 |

### Surface Deterioration

| Pop Outs Nonwheel Path | Small pieces of surface pavement broken loose, normally ranging from 1 to 4 in. diameter and 1/2 to 2 in. in depth. | None | Figure 10.4 |
| | Light: Not deemed to be a traffic hazard | Keep under observation | Figure 10.4 |
| | Severe: Flying debris deemed a traffic hazard | Full Depth | Figure 10.4 |
| Pop Outs Wheel Path | Small pieces of surface pavement broken loose, normally >3” diameter and 2” in depth. | None | Figure 10.4 |
| | Light: Deemed to be a traffic hazard | Full Depth | Figure 10.4 |
| | Severe: Flying debris deemed a traffic hazard | Full Depth | Figure 10.4 |

### Miscellaneous Distress

| Faulting | Elevation differences across joints or cracks. | None | Figure 10.4 |
| Light: Faulting <4/32” | | | |
| Moderate: 4 <Faulting <16/32” | Grind | | |
| Severe: Faulting >16/32” | Grind | | |
| Lane To Shoulder Drop Off | | None | N/A |
| Light: 0 <drop-off <1” | | | |
| Moderate: 1’ <drop-off <3” | Build Up | | |
| Severe: drop-off >3” | Build Up | | |
| Water Bleeding Or Pumping | Seeping or ejection of water through joints or cracks. | Install appropriate drainage, edge drain, permeable subbase, reseal joints, etc. | N/A |
| | | | |
| Blowups | Upward movement at transverse joints or cracks often accompanied by shattering of the concrete. | Full Depth | Figure 10.3 and 10.4 |

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**Figure 10.2**

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**Figure 10.3**

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**Figure 10.4**

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**Figure 10.5**
NOTES FOR CONCRETE SIDEWALK ON CURBED ROADWAYS

1. Construct sidewalks in accordance with Specification Section 522.

2. Include detectable warnings on sidewalk curb ramps and construct in accordance with Index No. 304.

3. Detectable warnings are not required where sidewalks intersect urban flared turnouts.

4. 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 1/16".

5. For turnouts see Index No. 515.

6. Construct sidewalks with 3" thick Edge Beam through the limits of any surface mounted Pedestrian/Bicycle Picket Railing or Pipe Guiderail shown in the plans.

CONCRETE SIDEWALK ON CURBED ROADWAYS

CONCRETE SIDEWALK
NOTES FOR CONCRETE SIDEWALKS ON UNCURBED ROADWAYS

1. Sidewalks shall be constructed in accordance with Specification Section 522.

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

3. For TOUTNOUTS see Index No. 515.

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

SIDEWALK JOINTS

LONGITUDINAL SECTIONS

(NOT TO SCALE)

JOINT LEGEND

A-1/8" Expansion Joints (Preformed Joint Filler)

B-1/8" Dummy Joints, Tooled

C-1/8" Formed Open Joints

D-1/16" Saw Cut Joints, 1/16" Deep (196 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.