SECTION 300

PAVEMENT ITEMS
STEEL FABRIC REINFORCEMENT: Steel fabric reinforcement shall consist of members rigidly attached at all joints or points of intersection except as noted below. Longitudinal members shall be of No. 2 gage wire spaced at 6" on centers, traverse members shall be No. 4 gage wire, spaced at 12" on centers. (Wire reinforcement steel Institute designation 6 X 12 - W5.5 X W4).

The widths of steel fabric sheets shall be 4" less than the width of the slab. The number of sheets allowable between contraction joints, or between contraction and expansion joints, shall not exceed 3.

All members, longitudinal or transverse, shall be so cut that the projecting ends will extend not less than 1" nor more than 1½" from the joints or points of intersection of the fabric members.

When it is necessary to lap steel fabric reinforcement, the minimum amount of lap shall be equivalent to the spacing of the wires parallel to the lap.

Other types of mesh reinforcement may be used on written permission of the engineer. The width of sheets and other general requirements, which apply, shall be the same as for steel fabric reinforcement.

Dowels at contraction joints may be placed in the full thickness of pavement by mechanical device in lieu of dowel baskets.

Hinged steel reinforcement may be used in lieu of rigid sheets.

REINFORCED

PLAIN

LONGITUDINAL JOINT

CONTRACTION JOINT

EXPANSION JOINT

TYPICAL CROSS SECTION CONCRETE PAVEMENT

NOTES:

FOR PAVEMENT CROWN SLOPE, THICKNESS - "H"<sup>"L"</sup> LANE WIDTH - "W", SEE TYPICAL SECTIONS IN PLANS.

LONGITUDINAL SECTION A-A

EXPANSION AND CONTRACTION JOINTS:

CONSTRUCTION JOINTS IN BOTH PLAIN AND REINFORCED PAVEMENT SHALL HAVE THE SAME LOAD TRANSFER DEVICES AS NOTED FOR CONTRACTION JOINTS IN REINFORCED PAVEMENT.

CONTRACTION JOINTS OF THE TYPE SPECIFIED ON SHEET 2 SHALL BE SPACED AT 30 FOOT INTERVALS FOR REINFORCED CONCRETE PAVEMENT AND AT 15 FOOT INTERVALS FOR PLAIN CONCRETE PAVEMENT UNLESS OTHERWISE NOTED ON JOINT LAYOUTS IN PLANS.

ADJACENT TO RIGID STRUCTURES, CONCRETE STREET INTERSECTIONS, OR R-S, GRADE X-NDS, BRIDGE APPROACH EXPANSION JOINTS AND/OR TRANSVERSE EXPANSION JOINTS ARE TO BE PLACED AS SHOWN ON SHEET 2 OF 3. OTHER EXPANSION JOINTS ARE TO BE USED AS SPECIFIED ON PLANS.

IF ASPHALT CONCRETE IS TO BE APPLIED, ALL TRANSVERSE JOINTS ARE TO BE SAWN, BUT NOT WIDENED, EXCEPT AT THE END OF A DAYS RUN AND WHEN INTERRUPTIONS OCCUR IN THE CONCRETE OPERATIONS OF MORE THAN 30 MINUTES DURATION. IN THESE CASES, BUTT CONSTRUCTION JOINTS ARE TO BE USED.

PAVED SHOULDER: When concrete paved shoulders are to be used adjacent to either plain or reinforced concrete pavement, the edge of the concrete slab is to be panted, to its full depth, with asphaltic material either CSE 2 or RC 250 as directed by the Engineer.

LONGITUDINAL JOINTS: The contractor will be permitted to construct the concrete pavement in dual lanes simultaneously, where the sum of the lane widths does not exceed 25 feet, provided a satisfactory and true longitudinal dummy groove joint is obtained. This is to be done by the use of an approved forming strip or by sawing at the contractor's option. Where lanes are poured separately, the hook bolts or tie bolts shall be in accordance with the details shown on sheet 2, where both lanes are poured simultaneously, tie bars shall be as detailed on sheet 2. The maximum width of pavement that may be constructed without a longitudinal joint is 14'-0". For widths greater than 14 feet the longitudinal joint shall be in the center. No other deviations are to be allowed unless shown on joint layouts in plans, or directed by the engineer.

METHOD OF FINISHING AT EXPANSION JOINTS: A protective cap or installation shield of 1/8" steel shall be placed over the top of the expansion joint filler. The finishing machine shall then be allowed to pass over the joint, leaving it as shown in Figure 1, Sheet 2. Prior to the initial set the shield shall be removed and a rectangular bar 1/8" less in width than the preformed filler placed on top of the filler. The concrete squeeze finished adjacent to it as shown in Figure 2, and the edges rounded with hand tools, using the bar as a guide. The bar shall then be withdrawn, leaving a joint gap of the same width as the filler.

PLAN AND REINFORCED CONCRETE PAVEMENT SHOWING REINFORCEMENT, LONGITUDINAL AND TRANSVERSE JOINTS

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

316

SHOWN ON SHEET 1 OF 5
GENERAL NOTES

ALTERNATE PRE-FORMED SEALANTS HAVING A CROSS-SECTIONAL AREA COMPARABLE TO TYPE A (CONTRACTION JOINTS) AND TYPE D (EXPANSION JOINTS) AND MEETING THE APPROVAL OF THE ENGINEER MAY BE SUBSTITUTED.

OTHER TYPES OF JOINT MATERIAL ARE TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

ALL DETAILS NOT SHOWN HEREIN ARE TO BE IN ACCORDANCE WITH STANDARD PR-2, SHEET 2 OF 5.

ALL CONTRACTION JOINTS TO BE SAWED IN CONFORMANCE WITH DETAIL TO THE LEFT, EXCEPT THAT WHERE GRAVEL AGGREGATE IS USED IN THE CONCRETE, THE JOINT MAY BE PREPARED BY FORMING 1/8" OR LESS OF THE WIDTH FOR THE DEPTH SHOWN WITH NON-METALLIC OR REMOVABLE MATERIAL, FOLLOWED BY SAWING TO COMPLETE THE JOINT TO THE REQUIRED WIDTH AND DEPTH.

FOR DETAILS OF TRANSVERSE CONSTRUCTION JOINT, SEE BELOW.

SEALANTS FOR TRANSVERSE CONTRACTION JOINTS

SEALANTS FOR TRANSVERSE EXPANSION JOINTS

METHODS OF WIDENING CONCRETE PAVEMENT

FOR 15" SLAB LENGTHS (PLAN)

<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>SEALANT TYPE</th>
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</thead>
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<tr>
<td>A</td>
<td>B</td>
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<tr>
<td>X</td>
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<tr>
<td>Y</td>
<td>1/4&quot;</td>
</tr>
<tr>
<td>W</td>
<td>1/8&quot;-1/4&quot;</td>
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FOR 30" SLAB LENGTHS (REINFORCED)

<table>
<thead>
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</tr>
</thead>
<tbody>
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<tr>
<td>Y</td>
<td>1/6&quot;</td>
</tr>
<tr>
<td>W</td>
<td>1/4&quot;-1/2&quot;</td>
</tr>
</tbody>
</table>

PRE-FORMED CHLOROPRENE ELASTOMERIC JOINT SEALANT

SILICONE JOINT SEALANT

TYPE A

Y = 1/4" OR 1/16" PLAIN BARS 1/2" C-C

DETAIL OF TRANSVERSE EXPANSION JOINT (BEFORE INSTALLATION OF SEAL)

DETAIL OF TRANSVERSE CONTRACTION JOINT (BEFORE INSTALLATION OF SEAL)

EXISTING CONCRETE PAVEMENT

WIDEN TOP OF GROOVE TO 1/4" X 1/2" AND SEAL WITH NOT POURED ELASTOMERIC SEALANT IF ASPHALT TOP IS NOT USED.

PROPOSED WIDENING 24" X 7" DEFORMED DOWELS WITH EPOXY GROUT.

DOUL DIA. MAX. 1/2" (MIN. 1/4") X 1/8" PLAIN BARS 1/2" C-C.

Y = 1/4" OR 1/16" PLAIN BARS 1/2" C-C.

J OINT FILLER

JOINT COINCIDES WITH SPECIFIED JOINT, CONSTRUCT IN ACCORDANCE WITH DETAIL ON SHEET 2 (CONTRACTION OR EXPANSION JOINT).

DETAIL OF TRANSVERSE CONSTRUCTION (BUCK) JOINT (FOR USE WITH PLAIN, REINFORCED, AND PLAIN BASE WITH ASPHALT TOP)

PLAN AND REINFORCED CONCRETE PAVEMENT SHOWING REINFORCEMENT, LONGITUDINAL AND TRANSVERSE JOINTS

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

316

Rev. 7/03
301.03
1. Entire bar to be lubricated.
2. Stake pins, a minimum six per assembly, three to each side.
3. Expansion and contraction joints: the device for supporting dowels at expansion and contraction joints shall be so constructed that it will hold the dowels firmly in position, parallel to the surface and centerline of the slab.
4. No members shall be placed so that they will interfere with the free flow of concrete between the dowels.
5. Assembly and welding of all members shall be such as to insure a good workmanlike job, with all joints true and square.
6. Assemblies which have become warped or damaged in transit or storage so they will not conform to the subgrade shall not be used.
7. A sample of the supporting device shall be submitted for approval prior to the filling of job orders.
NOTES:
1. Dowel bar to be min. length of 18". If bar is not centered the long side shall be the free end. See standard PR-2.
2. Entire bar to be lubricated.
3. Staking pins, a minimum six per assembly, three to each side.
4. Expansion and contraction joints: the device for supporting dowels at expansion and contraction joints shall be so constructed that it will hold the dowels firmly in position, parallel to the surface and centerline of the slab.
5. No members shall be placed so that they will interfere with the free flow of concrete between dowels.
6. Assembly and welding of all members shall be such as to insure a good workmanlike job, with all joints true and square.
7. Assemblies which have become warped or damaged in transit or storage so they will not conform to the subgrade shall not be used.
8. A sample of the supporting device shall be submitted for approval prior to the filling of job orders.
NOTES:

- FOR 36 PAVEMENT, USE SINGLE 12' LANES WITH 2 CONSTRUCTION JOINTS, OR 12' AND 24 LANE WITH ONE GROOVE AND ONE CONSTRUCTION JOINT.
- TRANSVERSE WIRE DO NOT EXTEND THROUGH LONGITUDINAL JOINT.
- TIE BARS AND DOWEL BARS ARE TO BE AS NEAR MIDPOINT OF PAVEMENT DEPTH AS FEASIBLE.
- THE DOUBLE LAP REQUIREMENT (36') AND OR EXTRA BAR METHOD APPLIES ONLY TO LAPS FALLING WITHIN A AREA 10' BEYOND THE CONSTRUCTION JOINT.
- #5 X 6'-0" DEFORMED TIE BARS AT 30' C.C. MAY BE USED IN LIEU OF HOOK BOLTS WHERE SHOWN HEREIN.

- SMOOTH SURFACE TO BE STEEL TROWELED 8" IN FROM THE EDGE OR PAVEMENT EVERY 500 FEET, AND STATION NUMBER STAMPED INTO IT. THE DATE IS TO BE SHOWN IN A SIMILAR MANNER AT THE BEGINNING OF EACH DAYS POUR.
- BOTH OUTSIDE EDGES OF DIVIDED HIGHWAY TO BE STAMPED, ONE EDGE OF UNDIVIDED HIGHWAYS WHERE FEASIBLE. (TRAVEL LANE)
- SHEETS TO BE SECURELY FASTENED TO PREVENT SEPARATION DURING CONCRETE PLACEMENT.

END LAP DETAIL

1/4" EFFECTIVE DIA X 6" HOOK BOLT
1/2" EFFECTIVE DIA X 8" HOOK BOLT

SECTION A-A

SHEETS TO BE SECURELY FASTENED TO PREVENT SEPARATION DURING CONCRETE PLACEMENT.

TRANSVERSE CONSTRUCTION JOINT
NO LAP WITHIN 3' OF JOINT.

LONGITUDINAL REINFORCEMENT CONCRETE PAVEMENT
8" THICK CONTINUOUSLY REINFORCED CONCRETE PAVEMENT  
(WIRE MESH REINFORCEMENT)
8" THICK CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (STEEL BAR REINFORCEMENT)

SPECIFICATION REFERENCE

316

VIRGINIA DEPARTMENT OF TRANSPORTATION
NOTES:
CONCRETE FOR LUG ANCHORS SHALL BE POURED AGAINST COMPACTED SUBGRADE. CONCRETE FOR LUGS AND ANCHOR SLAB MAY BE POURED MONOLITHICALLY OR POURED USING RASED KEY CONSTRUCTION JOINT METHOD.

ADEQUATE CONSOLIDATION OF CONCRETE IN LUGS WILL BE OBTAINED WITHOUT DISPLACING LONGITUDINAL CONTINUOUS STEEL, BY THE USE OF INTERNAL VIBRATION.

WHEN LESS THAN FULL WIDTH LUG AND PAVEMENT SLAB IS PLACED, THE #5 TRANSVERSE STEEL IN THE LUGS SHALL BE EXTENDED, LAPPED AND SPLICE AT LEAST 25 DIAMETERS.

DETAIL-RAISED KEY CONSTRUCTION JOINT

SECTION A-A

FOR USE ADJACENT TO PLAN CONCRETE PAVEMENT

SECTION B-B ANCHOR SLAB TYPE I

FOR USE ADJACENT TO PLAN CONCRETE PAVEMENT

WF BEAM (WEIGHT AND DIMENSIONS)

<table>
<thead>
<tr>
<th>CRCP Thickness</th>
<th>Embedment in &quot;SUB SLAB&quot;</th>
<th>WF Beam Width</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>6&quot;</td>
<td>14 X 61</td>
<td>10&quot;</td>
</tr>
</tbody>
</table>

NOTES:
CONCRETE SHOULD BE ADEQUATELY VIBRATED UNDER BEAM FLANGE TO ELIMINATE HONEYCOMB.

2" MIN. CONCRETE COVER FOR STEEL IN SUB-SLAB.

WELDED 1/4" STEEL PLATE AT BOTH ENDS OF WF BEAM TO SEAL ENDS.

DENOTES 1" EXPANSION JOINT MATERIAL POLYSTYRENE OR EQUIVALENT

8" THICK CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

FOR USE WITH BAR OR WIRE MESH REINFORCEMENT

VIRGINIA DEPARTMENT OF TRANSPORTATION
* Longitudinal steel to continue through joint.

Extra #5 (Grade 60) Bars (21' long) shall be spaced at 12" c.c.
9" THICK CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
(STEEL BAR REINFORCEMENT)

916

301.10

Virginia Department of Transportation

Page 1 of 3

Sheet 10F 3

Specification Reference
SECTION A-A
ANCHOR SLAB TYPE I
(For use adjacent to plain concrete pavement)

NOTES:

Concrete for lug anchors shall be poured against compacted subgrade. Concrete for lugs and anchor slab may be poured monolithically or poured using Raised Key Construction Joint method.

Adequate consolidation of concrete in lugs will be obtained without displacing longitudinal continuous steel, by the use of internal vibration.

When less than full width lug and pavement slab is placed, the #5 Transverse steel in the lugs shall be extended, lapped, and spliced at least 25 diameters.

SECTION A-A
ANCHOR SLAB TYPE II
(For use adjacent to plain concrete pavement)

NOTES:

Concrete should be adequately vibrated under beam flange to eliminate honeycomb.

2" min. concrete cover for steel in sub-slab.

Welded ¼" steel plate at both ends of WF beam to seal ends.

SPECIFICATION REFERENCE
316

REV 8/07
301.11
LONGITUDINAL STEEL TO CONTINUE THROUGH JOINT.

EXTRA #6 (GRADE 60) BARS (21' LONG) SHALL BE SPACED AT 15' C-C.

LEAVE OUT JOINT STEEL BAR REINFORCEMENT ONLY
CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

SECTION C-C

BARS TO BE SECURELY FASTENED TO PREVENT SEPARATION DURING CONCRETE PLACEMENT.

TYPICAL LONGITUDINAL LAP

SECTION A-A

PLAN-RAMP & MAIN LINE CONNECTION

9" THICK CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
14 FOOT TRAVEL LANE

VIRGINIA DEPARTMENT OF TRANSPORTATION
NOTES:

1. HOOK BOLTS OR TIE BARS ARE TO BE PLACED IN THE SAME HORIZONTAL PLANE AS THE #5 TRANSVERSE BARS. WHERE NECESSARY, ADJUST THE LOCATION OF THE HOOK BOLTS OR TIE BARS TO A 2'-0" MINIMUM CLEARANCE BETWEEN HOOK BOLTS OR TIE BARS AND TRANSVERSE BARS.

2. TRANSVERSE CONSTRUCTION JOINT BARS ARE TO BE PLACED IN THE SAME HORIZONTAL PLANE AS THE #6 LONGITUDINAL BARS.

3. #6 LONGITUDINAL BARS ARE TO BE LAPPED AND TIED IN THE SAME HORIZONTAL PLANE.

4. FOR THE 38 FOOT WIDTH PAVEMENT USE SINGLE 12 FOOT LANES WITH TWO LONGITUDINAL CONSTRUCTION JOINTS OR 12 FOOT AND 14 FOOT LANES WITH ONE LONGITUDINAL CONSTRUCTION JOINT AND ONE SAW CUT OR TAPE INSERT LONGITUDINAL JOINT TRANSVERSE BARS SHALL NOT EXTEND THROUGH LONGITUDINAL CONSTRUCTION JOINTS, BUT SHALL EXTEND FULL LENGTH (28'-6" FOR SAW CUT OR TAPE INSERT LONGITUDINAL JOINT.

5. SMOOTH SURFACE TO BE STEEL TROLLEYED 8" IN FROM EDGE OF PAVEMENT EVERY 500 FT., AND THE STATION NUMBER STAMPED INTO IT AS SHOWN BELOW. THE DATE IS TO BE SHOWN IN A SIMILAR MANNER AT THE BEGINNING OF EACH DAY'S WORK. BOTH OUTSIDE EDGES OF Divided HIGHWAY IS TO BE STAMPED, ONE EDGE OF UNDIVIDED HIGHWAY WHERE FEASIBLE (TRAVEL LANE).

6. DOUBLE LAP REQUIREMENT (40') AND THE EXTRA BAR METHOD APPLY ONLY TO LAPS FALLING WITHIN AN AREA OF 10' BEYOND THE CONSTRUCTION JOINT.

7. CONCRETE FOR LUG ANCHORS SHALL BE POURED AGAINST COMPACTED SUBGRADE. CONCRETE FOR LUGS AND ANCHOR SLAB MAY BE POURED MONOBLITICALLY OR POURED USING RAISED KEY. CONSTRUCTION JOINT METHOD. ADEQUATE CONSOLIDATION OF CONCRETE IN LUGS WILL BE OBTAINED WITHOUT DISPLACING LONGITUDINAL CONTINUOUS STEEL. BENDING OF INTERNAL VIBRATION, WHEN LESS THAN FULL WIDTH, IN PAVEMENT SLAB IS PLACED, THE #5 TRANSVERSE STEEL IN THE LUGS SHALL BE EXTENDED, LAPPED AND SPACED AT LEAST 25 DIAMETERS.

8. LONGITUDINAL STEEL TO CONTINUE THROUGH JOINT. EXTRA #6 BARS 20'-6" LONG SHALL BE PLACED AT 13'-0" C-C.

9. CONCRETE SHOULD BE ADEQUATELY VIBRATED UNDER BEAM FLANGE TO ELIMINATE HONEYCOMBS.

10. IN CONDITIONS OF SOFT CLAY UNDERLYING SOILS (AASHTO SOIL CLASSIFICATION OF GROUP A-4, A-5, A-6, OR A-7) INCLUSIVE OF SUBGROUPS (PER AASHTO MATERIALS SPECIFICATIONS M-145), AN ANCHOR SLAB TYPE I UTILIZING 5 ANCHOR LUGS (ANCHOR SLAB LENGTH = 28') OR AN ANCHOR SLAB TYPE II SHALL BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.

11. WELD STEEL END PLATE TO BOTH ENDS OF WF BEAM TO SEAL ENDS. WELD SHEAR CONNECTIONS TO WEB AND FLANGE OF WF BEAM.

12. 2 INCH MINIMUM CONCRETE COVER FOR STEEL IN SUB-SLABS.

13. WIDE FLANGE BEAM TO BE TREATED WITH CORROSION INHIBITOR PER SECTION 407 OF THE ROAD AND BRIDGE SPECIFICATIONS.

14. ALL REINFORCED BARS SHALL BE GRADE 60 STEEL.

15. THE USE OF TUBE FEEDING TO PLACE REINFORCEMENT IN PLASTIC CONCRETE WILL NOT BE ALLOWED.
NOTES:
1. HOOK BOLTS OR TIE BARS ARE TO BE PLACED IN THE SAME HORIZONTAL PLANE AS THE #5 TRANSVERSE BARS. WHERE NECESSARY, ADJUST THE LOCATION OF THE HOOK BOLTS OR TIE BARS TO A 2/3" MINIMUM CLEARANCE BETWEEN HOOK BOLTS OR TIE BARS AND TRANSVERSE BARS.

2. TRANSVERSE CONSTRUCTION JOINT BARS ARE TO BE PLACED IN THE SAME HORIZONTAL PLANE AS THE #6 LONGITUDINAL BARS.

3. #6 LONGITUDINAL BARS ARE TO BE LAPPED AND TIED IN THE SAME HORIZONTAL PLANE.

4. FOR THE 38 FOOT WIDTH PAVEMENT USE SINGLE 12 FOOT LANES WITH TWO LONGITUDINAL CONSTRUCTION JOINTS OR 12 FOOT AND 14 FOOT LANES WITH ONE LONGITUDINAL CONSTRUCTION JOINT OR ONE SAW CUT OR TAPE INSERT LONGITUDINAL JOINT. TRANSVERSE BARS SHALL NOT EXTEND THROUGH LONGITUDINAL CONSTRUCTION JOINTS. BUT SHALL EXTEND FULL LENGTH (20'-0") FOR SAW CUT OR TAPE INSERT LONGITUDINAL JOINT.

5. SMOOTH SURFACE TO BE STEEL TROWELED 8" IN FROM EDGE OF PAVEMENT EVERY 500 FT. AND THE STATION NUMBER STAMPED INTO IT AS SHOWN BELOW. THE DATE IS TO BE SHOWN IN A SIMILAR MANNER AT THE BEGINNING OF EACH DAYS POUR. BOTH OUTSIDE EDGES OF DIVIDED HIGHWAY IS TO BE STAMPED. ONE EDGE OF UNDIVIDED HIGHWAY WHERE FEASIBLE (TRAVEL LANE)

6. DOUBLE LAP REQUIREMENT (40") AND THE EXTRA BAR METHOD APPLY ONLY TO LADS FALLING WITHIN AN AREA OF 10" BEYOND THE CONSTRUCTION JOINT.

7. CONCRETE FOR LUG ANCHORS SHALL BE POURED AGAINST COMPACTED SUBGRADE. CONCRETE FOR LUGS AND ANCHOR SLAB MAY BE POURED MONOLITHICALLY OR POURED USING RAISED KEY CONSTRUCTION JOINT METHOD. ADEQUATE CONSOLIDATION OF CONCRETE IN LUGS WILL BE OBTAINED WITHOUT DISPLACING LONGITUDINAL CONTINUOUS STEEL, BY THE USE OF INTERNAL VIBRATION. WHEN LESS THAN FULL WIDTH LUG ANCHOR SLAB IS PLACED, THE #5 TRANSVERSAL STEEL IN THE LUGS SHALL BE EXTENDED, LAPPED AND SPACED AT LEAST 25 DIAMETERS.

8. LONGITUDINAL STEEL TO CONTINUE THROUGH JOINT. EXTRA #6 BARS 20'-0" LONG SHALL BE SPACED AT 13/4" C-C.

9. CONCRETE SHOULD BE ADEQUATELY VIBRATED UNDER BEAM FLANGE TO ELIMINATE HONEYCOMBS.

10. IN CONDITIONS OF SOFT CLAY UNDERLYING SOILS (AASHO SOIL CLASSIFICATION OF GROUP A-4, A-5, A-6, OR A-7) INCLUSIVE OF SUBGROUPS (PER AASHO MATERIALS SPECIFICATIONS M 445), AN ANCHOR SLAB TYPE I UTILIZING 5 ANCHOR LUGS (ANCHOR SLAB LENGTH = 85") OR AN ANCHOR SLAB TYPE I SHALL BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.

IN CONDITIONS OF GRANULAR UNDERLYING SOILS ONLY (AASHO SOIL CLASSIFICATION OF GROUP A-1, A-2, OR A-3) INCLUSIVE OF SUBGROUPS (PER AASHO MATERIALS SPECIFICATIONS M 445), AN ANCHOR SLAB TYPE I UTILIZING 3 ANCHOR LUGS (ANCHOR SLAB LENGTH = 55") OR AN ANCHOR SLAB TYPE I MAY BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.

11. WELD STEEL END PLATE TO BOTH ENDS OF WF BEAM TO SEAL ENDS. WELD SHEAR CONNECTORS TO WEB AND FLANGE OF WF BEAM.

12. 2 INCH MINIMUM CONCRETE COVER FOR STEEL IN SUB-SLABS.

13. WIDE FLANGE BEAM TO BE TREATED WITH CORROSION INHIBITOR PER SECTION 407 OF THE ROAD AND BRIDGE SPECIFICATIONS.

14. ALL REINFORCED BARS SHALL BE GRADE 60 STEEL.

15. THE USE OF TUBE FEEDING TO PLACE REINFORCEMENT IN PLASTIC CONCRETE WILL NOT BE ALLOWED.
11" THICK CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
14 FOOT TRAVEL LANE

Virginia Department of Transportation

Sheet 2 of 3

11" EXP. JT. STD. PR-2 (Type C OR D Seals Only)
1/2" EXPANSION JOINT MATERIAL

For dowel & joint details, see detail of transverse expansion joint PR-2

SECTION E-E
ANCHOR SLAB TYPE I

PLAN VIEW
ANCHOR SLAB TYPE I

15 FOOT TO 6' 6" OF FIRST LUG ANCHOR
9 1/2" CLEAR
ANCHOR SLAB

SECTION D-D
PERMISSIBLE CONST. JOINT
PAY LINE ANCHOR SLAB
PERMISSIBLE RAISED KEY CONSTRUCTION JOINT
6 = 5 Bars
8 LONGITUDINAL STEEL SPACING

1/4" DIA. HOLES
EXPANSION SIDE

1/4" STEEL PLATE
(See Note 12)

ANCHOR SLAB TYPE II

DETAIL RAISED KEY CONSTRUCTION JOINT

DETAIL A

W16 x 57

SECTION F-F
ANCHOR SLAB TYPE II

END PLATE DETAIL

1/4" EXP. JT. SD. PR-2 (Type C OR D Seals Only)
1" EXPANSION JOINT MATERIAL

Longitudinal Joint
Continuously Reinforced Concrete Pavement
Approach Slab

See Detail A
1" Groove, Hot Poured Seal
1/2" Dia. x 8" LG. Studs

See Notes 9 & 12

CrCP

Trowel Finish and Bond Breaker
Pay Line Anchor Slab (Includes Sub Slab and Pavement Slab)

#6 Reinforcement Bar
5/16" ± 3/8"

Permissible Const. Joint
Pay Line Anchor Slab
Permissible Raised Key Construction Joint
6 = 5 Bars
8 Longitudinal Steel Spacing

3/4" Dia. Holes
Expansion Side

1/4" Steel Plate
(See Note 12)

W16 x 57

See Sheet 3 of 3 for Notes
1. Hook bolts or tie bars are to be placed in the same horizontal plane as the #5 transverse bars. Necessary, adjust the location of the hook bolts or tie bars to a 2/3 minimum clearance between hook bolts or tie bars and transverse bars.

2. Transverse construction joint bars are to be placed in the same horizontal plane as the #6 longitudinal bars.

3. #6 longitudinal bars are to be lapped and tied in the same horizontal plane.

4. For the 38-foot width pavement use single 12-foot lanes with two longitudinal construction joints or 12-foot and 14-foot lanes with one longitudinal construction joint and one saw cut or tape insert longitudinal joint. Transverse bars shall not extend through longitudinal construction joints, but shall extend full length (25'-6") for saw cut or tape insert longitudinal joint.

5. Smooth surface to be steel troweled 6" from edge of pavement every 500 ft. and the station number stamped into it. As shown below, the date is to be shown in a similar manner at the beginning of each day. Pour both outside edges of divided highway are to be stamped, one edge of undivided highway where feasible (travel lane).

6. Double lap requirement (40") and the extra bar method apply only to laps falling within an area of 0'0" beyond the construction joint.

7. Concrete for lug anchors shall be poured against compacted subgrade. Concrete for lugs and anchor slabs may be poured monolithic-ally or poured using raised key construction joint method. Adequate consolidation of concrete in lugs will be obtained without displacing longitudinal continuous steel by the use of internal vibration. When less than full width lug and pavement slab is placed, the #5 transverse steel in the lugs shall be extended, lapped and spliced at least 25 diameters.

8. Longitudinal steel to continue through joint, extra #6 bars 20' long shall be spaced at 15'-0" c-c.

9. Concrete should be adequately vibrated under beam flange to eliminate honeycombs.

10. In conditions of soft clay underlying soils (AASHTO soil classification of group A-4, A-5, A-6, or A-7) inclusive of subgroups (per AASHTO materials specifications M 145) an anchor slab type I utilizing 3 anchor lugs (anchor slab length = 8") or an anchor slab type II shall be used. Reinforcement steel size and spacing will be the same as the continuous concrete pavement.

11. Weld steel end plate to both ends of WF beam to seal ends. Weld shear connectors to web and flange of WF beam.

12. 2 inch minimum concrete cover for steel in slab slabs.

13. Wide flange beam to be treated with corrosion inhibitor per SEC 407 of the road and bridge specifications.

14. All reinforced bars shall be grade 60 steel.

15. The use of tube feeding to place reinforcement in plastic concrete will not be allowed.
**12" THICK CONTINUOUSLY REINFORCED CONCRETE PAVEMENT - 14' TRAVEL LANE**

*Virginia Department of Transportation*

**PLAN VIEW**
CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

- **FULL WIDTH TRANSVERSE BARS**
  - 5 TRANSVERSE BARS AT 48" ± 2" C.C
  - 7 BARS 6'-0" LONG @ 30" C.C
  - 6 Hook Bolts @ 15" C.C or Tie Bars @ 30" C.C (Standard PR-2)
  - Saw cut or tape insert longitudinal joint

**SECTION A-A**
- 7 BARS 6'-0" @ 6 5/8" + 7/8" C.C
- 5 TRANSVERSE BARS @ 48" ± 2" C.C
- 6 Chairs per 14'-0" lane @ 25 1/2" ± 1/4" C.C

**SECTION B-B**
- 7 BARS 6'-0" LONG @ 19 5/8" C.C
- 5 TRANSVERSE BARS AND CHAIRS @ 48" C.C

**SECTION C-C**
- 7 BARS 6'-0" LONG @ 13 1/4" C.C
- 7 LONGITUDINAL BARS
- Extra 6 longitudinal bars 6'-0" long centered

**NOTES**
- No lap within 3'-0" behind construction joint
- Symmetrical with lap splice

**REFERENCES**
- See Sheet 3 of 3 for notes
NOTES:
1. HOOK BOLTS OR TIE BARS ARE TO BE PLACED IN THE SAME HORIZONTAL PLANE AS #5 TRANSVERSE BARS. WHERE NECESSARY, ADJUST THE LOCATION OF THE HOOK BOLTS OR TIE BARS TO A 2 1/2" MIN. CLEARANCE BETWEEN HOOK BOLTS OR TIE BARS AND TRANSVERSE BARS.

2. TRANSVERSE CONSTRUCTION JOINT BARS ARE TO BE PLACED IN THE SAME HORIZONTAL PLANE AS THE #7 LONGITUDINAL BARS.

3. #7 LONGITUDINAL BARS ARE TO BE LAPPED AND TIED IN THE SAME HORIZONTAL PLANE.

4. FOR THE 38 FOOT WIDTH PAVEMENT USE SINGLE 12 FOOT LANES WITH TWO LONGITUDINAL CONSTRUCTION JOINTS OR 12 FOOT AND 14 FOOT LANES WITH ONE LONGITUDINAL CONSTRUCTION JOINT AND ONE SAW CUT OR TAPE INSERT LONGITUDINAL JOINT. TRANSVERSE BARS SHALL NOT EXTEND THROUGH LONGITUDINAL CONSTRUCTION JOINTS, BUT SHALL EXTEND FULL LENGTH (25'-6") FOR SAW CUT OR TAPE INSERT LONGITUDINAL JOINT.

5. SMOOTH SURFACE TO BE STEEL TROVELED BY FROM EDGE OF PAVEMENT EVERY 500 FT. AND THE STATION NUMBER STAMPED INTO IT AS SHOWN BELOW. THE DATE IS TO BE SHOWN IN A SIMILAR MANNER AT THE BEGINNING OF EACH DAY FOR BOTH OUTSIDE EDGES OF DIVIDED HIGHWAY ARE TO BE STAMPED. ONE EDGE OF UNDIVIDED HIGHWAY WHERE FEASIBLE (TRAVEL LANE),

6. DOUBLE LAP REQUIREMENT (4") AND THE EXTRA BAR METHOD APPLY ONLY TO LAPS FALLING WITHIN AN AREA OF 10' BEYOND THE CONSTRUCTION JOINT.

7. CONCRETE FOR LUG ANCHORS SHALL BE POURED AGAINST COMPACTED SUBGRADE. CONCRETE FOR LUGS AND ANCHOR SLAB MAY BE POURED MONOLITHICALLY OR USING RAISED KEY CONSTRUCTION JOINT METHOD. ADEQUATE CONSOLIDATION OF CONCRETE IN LUGS WILL BE OBTAINED WITHOUT DISPLACING LONGITUDINAL CONCRETE STEEL. BY THE USE OF INTERNAL VIBRATION, WHEN LESS THAN FULL WIDTH LUG AND PAVEMENT SLAB IS PLACED, THE #5 TRANSVERSE STEEL IN THE LUGS SHALL BE EXTENDED, LAPPED AND SPACED AT LEAST 25 DIAMETERS.

8. LONGITUDINAL STEEL TO CONTINUE THROUGH JOINT. EXTRA #6 BARS 20' LONG SHALL BE SPACED AT 13 1/2" C-C.

9. CONCRETE SHOULD BE ADEQUATELY VIBRATED UNDER BEAM FLANGE TO ELIMINATE HONEYCOMBS.

10. IN CONDITIONS OF SOFT CLAY UNDERLYING SOILS (AASHTO SOIL CLASSIFICATION OF GROUP A-4, A-5, A-6, OR A-7) INCLUSIVE OF SUBGROUPS (PER AASHTO MATERIALS SPECIFICATIONS M-453), AN ANCHOR SLAB TYPE I UTILIZING 5 ANCHOR LUGS (ANCHOR SLAB LENGTH = 83") OR AN ANCHOR SLAB TYPE II IS ALL BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.

11. IN CONDITIONS OF GRANULAR UNDERLYING SOILS ONLY (AASHTO SOIL CLASSIFICATION OF GROUP A-1, A-2, OR A-3) INCLUSIVE OF SUBGROUPS (PER AASHTO MATERIALS SPECIFICATIONS M-453), AN ANCHOR SLAB TYPE I UTILIZING 5 ANCHOR LUGS (ANCHOR SLAB LENGTH = 83") OR AN ANCHOR SLAB TYPE II IS ALL BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.

12. WELD STEEL END PLATE TO BOTH ENDS OF WF BEAM TO SEAL ENDS. WELD SHEAR CONNECTORS TO WEB AND FLANGE OF WF BEAM.

13. 2 INCH MINIMUM CONCRETE COVER FOR STEEL IN SUB-SLABS.

14. WRC FLANGE BEAM TO BE TREATED WITH CORROSION INHIBITOR PER SECTION 407 OF THE ROAD AND BRIDGE SPECIFICATIONS.

15. ALL REINFORCED BARS SHALL BE GRADE 60 STEEL.

16. THE USE OF TUBE FEEDING TO PLACE REINFORCEMENT IN PLASTIC CONCRETE WILL NOT BE ALLOWED.

12" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
14' TRAVEL LANE

VIRGINIA DEPARTMENT OF TRANSPORTATION

SHEET 3 OF 3
NOTES:

1. Hook bolts or tie bars are to be placed in the same horizontal plane as #5 transverse bars, where necessary, adjust the location of the hook bolts or tie bars to a 2½" min. clearance between hook bolts or tie bars and transverse bars.

2. Transverse construction joint bars are to be placed in the same horizontal plane as the #7 longitudinal bars.

3. #7 longitudinal bars are to be lapped and tied in the same horizontal plane.

4. For the 38 foot width pavement use single 12 foot lanes with two longitudinal construction joints on 12 foot and 14 foot lanes, with one longitudinal construction joint and one saw cut or tape insert longitudinal joint. Transverse bars shall not extend through longitudinal construction joints, but shall extend full length (25'-6") for saw cut or tape insert longitudinal joint.

5. Smooth surface to be steel troweled 8" from edge of pavement every 500 ft. and the station number stamped into it as shown below. The date is to be shown in a similar manner at the beginning of each day. Pour both outside edges of divided highway to be staked one edge of undivided highway where feasible (travel lane).

6. Double lap requirement (40") and the extra bar method apply only to laps falling within an area of 10' beyond the construction joint.

7. Concrete for lug anchors shall be poured against compacted subgrade. Concrete for lugs and anchor slab may be poured monolithically on using raised key construction joint method. Adequate consolidation of concrete in lugs will be obtained without displacing longitudinal continuous steel, by the use of internal vibration, when less than full width lug and pavement slab is placed. The #5 transverse steel in the lugs shall be extended, lapped and spaced at least 25' diameter.

8. Longitudinal steel to continue through joint, extra #6 bars 20' long shall be spaced at 13½" c-c.

9. Concrete should be adequately vibrated under beam flange to eliminate honeycombs.

10. In conditions of soft clay underlying soil (AASHTO soil classification of group A-4, A-5, A-6, or A-7) inclusive of subgroups (per AASHTO materials specifications M 145), an anchor slab type 1 utilizing 3 anchor lugs (anchor slab length = 5") or an anchor slab type II shall be used. Reinforcement steel size and spacing will be the same as the continuous concrete pavement.

11. Weld steel end plate to both ends of WF beam to seal ends, weld shear connectors to web and flange of WF beam.

12. 2 inch minimum concrete cover for steel in sub-slabs.

13. Wide flange beam to be treated with corrosion inhibitor per section 497 of the road and bridge specifications.

14. All reinforced bars shall be grade 60 steel.

15. The use of tube feeding to place reinforcement in plastic concrete will not be allowed.

SHEET 3 OF 3

13" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
14' TRAVEL LANE

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE 310 REV. 7/03 301.27
NOTE:
BRIDGE APPROACH EXPANSION JOINT INCLUDING SUB-SLAB IS TO TERMINATE AT EDGE OF THROUGH PAVEMENT.

USED ADJACENT TO RAISED MEDIAN

USED ADJACENT TO CURB OR COMBINATION CURB AND GUTTER

NOTES:
ALL CONSTRUCTION FEATURES TO BE IN ACCORDANCE WITH SHEET 1 OF 2.
IF CONCRETE PAVEMENT IS USED ADJACENT TO CONCRETE PAVEMENT WITH ASPHALT CONCRETE SURFACE, THE JOINT IS TO CONTINUE ACROSS ENTIRE WIDTH IN ACCORDANCE WITH SHEET 1 OF 2 AND VIEW A.
IF CONCRETE PAVEMENT IS USED ADJACENT TO FLEXIBLE PAVEMENT THE JOINT IS TO EXTEND THROUGH RIGID PAVEMENT ONLY.

BRIDGE APPROACH EXPANSION JOINT
(INSTALLATION CRITERIA)

VIRGINIA DEPARTMENT OF TRANSPORTATION
METHOD OF WIDENING APPROACHES TO DUAL STRUCTURES

NOTES:

ON FULL SHOULDER WIDTH BRIDGES, NO WIDENING IS TO BE PROVIDED.

\( X_1 \) AND \( X_2 \) • AMOUNT OF BRIDGE WIDENING PER SIDE (10' MAXIMUM).

* IF BRIDGE DRAINAGE APRONS ARE REQUIRED THE PAVEMENT WIDENING IS TO BE APPLIED AT THE END OF THE DRAINAGE APRON FARTHEST FROM THE ABUTMENT BACKWALL.

SPECIFICATION

REFERENCE

NONE

METHOD OF WIDENING BRIDGE APPROACH PAVEMENT

VIRGINIA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION JOINT DETAIL

- REMOVE EXISTING ASPHALT LAYERS TO EXISTING SUBBASE AND REPLACE WITH PROPOSED ASPHALT WIDENING LAYERS
- PROPOSED MINIMUM 1 1/2 INCH THICK ASPHALT SURFACE COURSE (SEE NOTE 5)
- MINIMUM 12 INCHES OR GREATER AS NECESSARY TO ABUT THE FULL THICKNESS OF EXISTING ASPHALT LAYERS AS DETERMINED BY CORES (SEE NOTE 3)

NOTES:
1. ASPHALT PAVEMENT WIDENING SHALL HAVE A PAVEMENT DESIGN IN ACCORDANCE WITH CURRENT VDOT PROCEDURES AND BE APPROVED BY THE ENGINEER.
2. THE PAVEMENT DESIGN FOR ASPHALT PAVEMENT WIDENING SHALL MEET OR EXCEED THE DEPTHS AND TYPES OF THE LAYERS OF EXISTING PAVEMENT. SUBSURFACE DRAINAGE OF THE EXISTING AND PROPOSED PAVEMENT SHALL BE ADDRESSED IN THE PAVEMENT DESIGN.
3. A MINIMUM OF THREE CORES SHALL BE TAKEN ALONG THE CENTER OF THE ADJACENT TRAVEL LANE TO DETERMINE THE TYPE AND THICKNESS OF EXISTING PAVEMENT LAYERS. THESE CORES SHALL BE SPACED NO MORE THAN 500 FEET APART.
4. THE ADJACENT TRAVEL LANE SHALL BE MILLED A MINIMUM DEPTH OF 1 1/2 INCHES AND REPLACED WITH AN ASPHALT SURFACE COURSE TO MATCH THE PROPOSED PAVEMENT WIDENING SURFACE COURSE, UNLESS WAIVED BY THE ENGINEER.
5. THE ENGINEER MAY REQUIRE THE MILLING DEPTH OF THE EXISTING PAVEMENT TO BE ADJUSTED TO ACHIEVE AN ACCEPTABLE PAVEMENT CROSS-SLOPE AND EFFECTIVE SURFACE DRAINAGE.
6. EXISTING PAVEMENT MARKINGS AND MARKERS WITHIN THE PROJECT LIMITS SHALL BE RESTORED SUBJECT TO THE APPROVAL OF THE ENGINEER.
7. FINAL TRANSVERSE PAVEMENT TIE-IN SHALL CONFORM TO THE REQUIREMENTS OF SECTION 315.05(c) OF THE SPECIFICATIONS EXCEPT THAT ALL JOINTS AT TIE-IN LOCATIONS SHALL BE TESTED USING A 10 FOOT STRAIGHTEDGE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 315.07(a) OF THE SPECIFICATIONS.
CONTINUOUS SHOULDER RUMBLE STRIPS

NOTES

Rumble strips shall be placed continuously as directed by the engineer.

Rumble strips shall not be placed within limits of bridge drainage aprons or special design shoulder slot inlets.

Rumble strips shall be placed on mainline shoulders only.

*Where bicycles are not prohibited, the minimum width of the outside paved shoulder shall be 8 ft.

PLAN VIEW

SECTION A-A
NOTES

1. CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED WITHIN THE LIMITS OF BRIDGES.

2. CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED ON SUBDIVISION STREETS OR IN NARROW UNMARKED ROAD SECTIONS WITHOUT PAVEMENT MARKINGS.

3. CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED WITHIN THE LIMITS OF CENTER TWO-WAY TURN Lanes.

4. CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED IN PASSING ZONES EXCEPT AS DIRECTED BY THE TRAFFIC ENGINEER. THE DEPTH OF CENTERLINE RUMBLE STRIPS IN PASSING ZONES SHALL BE 3/8".

5. USE OF RAISED PAVEMENT MARKERS IS OPTIONAL. SEE STANDARD PM-9 FOR DETAILS ON RAISED PAVEMENT MARKER PLACEMENT.
NOTES

1. TRANSVERSE PAVEMENT TIE-IN SHALL BE USED TO PROVIDE A SMOOTH TRANSITION BETWEEN NEW PAVEMENT AND EITHER EXISTING PAVEMENT OR AN EXISTING BRIDGE DECK AS SHOWN ON THE PLANS AND DIRECTED BY THE ENGINEER.

2. THE EXISTING PAVEMENT SHALL BE PLANED A MINIMUM DEPTH OF 1/2". THE FULL DEPTH OF PLANING SHALL EQUAL THE DEPTH OF THE ASPHALT OVERLAY.

3. TRANSVERSE PAVEMENT TIE-IN SHALL BE CONSTRUCTED A MINIMUM OF 10 FEET IN LENGTH FOR EVERY INCH OF DEPTH OF PAVEMENT PLANING PERFORMED.

4. TRANSVERSE PAVEMENT TIE-IN SHALL CONFORM TO THE REQUIREMENTS OF SECTION 315.031(c) OF THE SPECIFICATIONS EXCEPT THAT ALL JOINTS AT TIE-IN LOCATIONS SHALL BE TESTED USING A 10 FOOT STRAIGHT EDGE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 315.071(c) OF THE SPECIFICATIONS. THE VARIATION FROM THE TESTING EDGE OF THE STRAIGHT EDGE BETWEEN ANY TWO CONTACT POINTS WITH THE PAVEMENT SURFACE SHALL NOT EXCEED 1/8".

WEDGE DETAIL

NOTES

1. TEMPORARY PAVEMENT WEDGE SHALL BE CONSTRUCTED OF SURFACE MIX ASPHALT A MINIMUM OF 3 FEET IN LENGTH FOR EVERY INCH OF DEPTH OF PAVEMENT MILLING.

SPECIFICATION REFERENCE

| 210 | 315 | 515 |

NEW 9/06

VIRGINIA DEPARTMENT OF TRANSPORTATION

395.01