

# SECTION 300

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PAVEMENT ITEMS

STANDARD

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ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1

REVISION DATE

TITLE

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION  
REFERENCE

2016 ROAD & BRIDGE STANDARDS

STANDARD	TITLE	PAGE
PR-2	PLAIN AND REINFORCED CONCRETE PAVEMENT SHOWING REINFORCEMENT, LONGITUDINAL AND TRANSVERSE JOINTS	301.01
	PLAIN AND REINFORCED CONCRETE PAVEMENT SHOWING REINFORCEMENT, LONGITUDINAL AND TRANSVERSE JOINTS	301.02
	PLAIN AND REINFORCED CONCRETE PAVEMENT SHOWING REINFORCEMENT, LONGITUDINAL AND TRANSVERSE JOINTS	301.03
	STANDARD LOAD TRANSFER ASSEMBLY CONTRACTION JOINT	301.04
	STANDARD LOAD TRANSFER ASSEMBLY EXPANSION JOINT	301.05
PR-3	8" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (STEEL BAR REINFORCEMENT)	301.07
	8" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (FOR USE WITH BAR OR WIRE MESH REINFORCEMENT)	301.08
	8" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (LEAVE OUT JOINT DETAIL)	301.09
PR-4	9" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (STEEL BAR REINFORCEMENT)	301.10
	9" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (FOR USE WITH BAR REINFORCEMENT ONLY)	301.11
	9" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (LEAVE OUT JOINT DETAIL)	301.12
PR-5	9" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.13
	9" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.14
	9" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.15
PR-6	10" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.16
	10" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.17
	10" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.18
PR-7	11" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.19
	11" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.20
	11" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.21
PR-8	12" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.22
	12" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.23
	12" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.24
PR-9	13" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.25
	13" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.26
	13" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT 14 FOOT TRAVEL LANE	301.27
XJ-1	BRIDGE APPROACH EXPANSION JOINT (FOR WIDENING OR MAINTENANCE OF EXISTING XJ-1 ONLY)	302.01
	BRIDGE APPROACH EXPANSION JOINT (INSTALLATION CRITERIA)	302.02
WP-2	PAVEMENT WIDENING	303.02
RS-1	CONTINUOUS GROOVE SHOULDER RUMBLE STRIPS	304.01
RS-3	CENTERLINE RUMBLE STRIPES	304.02
RS-4	EDGE LINE RUMBLE STRIPES	304.03
RS-5	EDGE LINE SHOULDER RUMBLE STRIPS	304.04
RS-6	SHOULDER EDGE RUMBLE STRIPS	304.05
ACOT-1	ASPHALT CONCRETE OVERLAY TRANSITIONS	305.01

INDEX OF SHEETS  
SECTION 300-PAVEMENT ITEMS

VIRGINIA DEPARTMENT OF TRANSPORTATION



ROAD AND BRIDGE STANDARDS

REVISION DATE

07/16

SHEET 1 OF 1

300.01

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ROAD AND BRIDGE STANDARDS

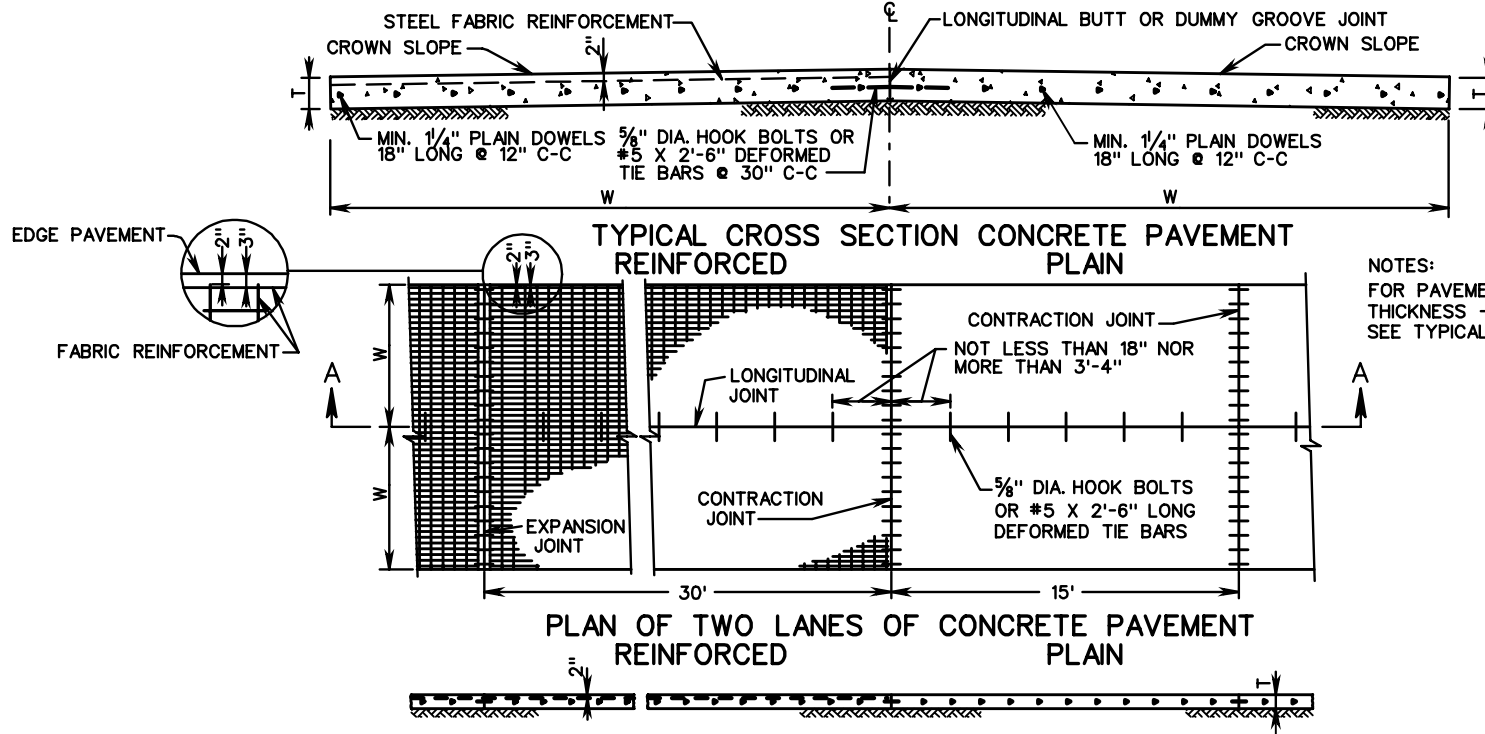
SHEET 1 OF 1

REVISION DATE

300.02

SPECIFICATION  
REFERENCE

VIRGINIA DEPARTMENT OF TRANSPORTATION



NOTES:  
 FOR PAVEMENT CROWN SLOPE, THICKNESS - "T", LANE WIDTH - "W", SEE TYPICAL SECTIONS IN PLANS.

**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 11" 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.

**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.R. GRADE X-INGS, 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 SAWED, 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 SHOULDERS: WHEN ASPHALT CONCRETE PAVED SHOULDERS ARE TO BE USED ADJACENT TO EITHER PLAIN OR REINFORCED CEMENT CONCRETE PAVEMENT, THE EDGE OF THE CONCRETE SLAB IS TO BE PAINTED, TO ITS FULL DEPTH, WITH ASPHALTIC MATERIAL EITHER CRS-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 OF 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 LAYOUT IN PLANS, OR DIRECTED BY THE ENGINEER.

**METHOD OF FINISHING AT EXPANSION JOINTS:** A PROTECTIVE CAP OR INSTALLATION SHIELD OF 1/16" 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 1/4" LESS IN WIDTH THAN THE PREFORMED FILLER PLACED ON TOP OF THE FILLER, THE CONCRETE SQUEEGE 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.

SPECIFICATION REFERENCE

316

**PLAIN AND REINFORCED CONCRETE PAVEMENT  
 (SHOWING REINFORCEMENT, LONGITUDINAL AND TRANSVERSE JOINTS)**

VIRGINIA DEPARTMENT OF TRANSPORTATION

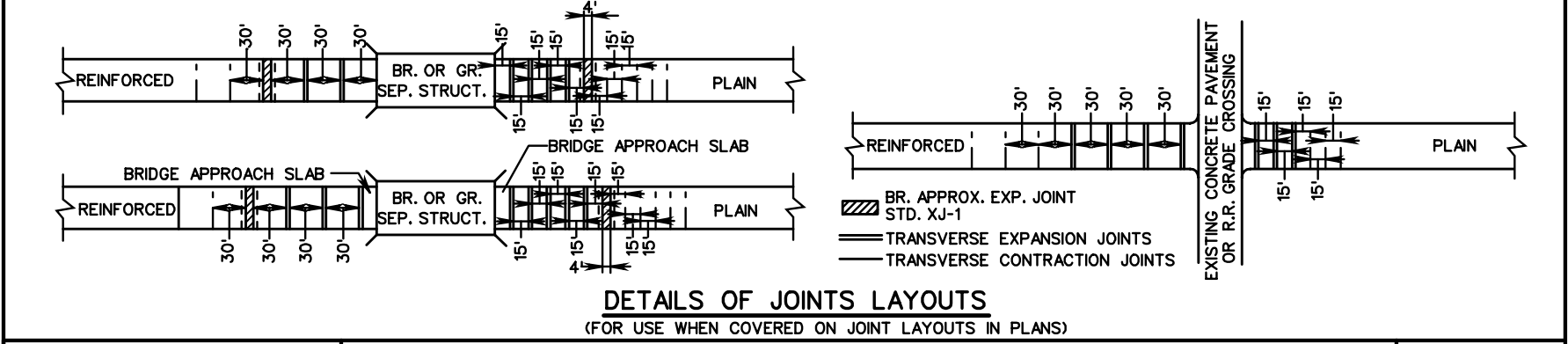
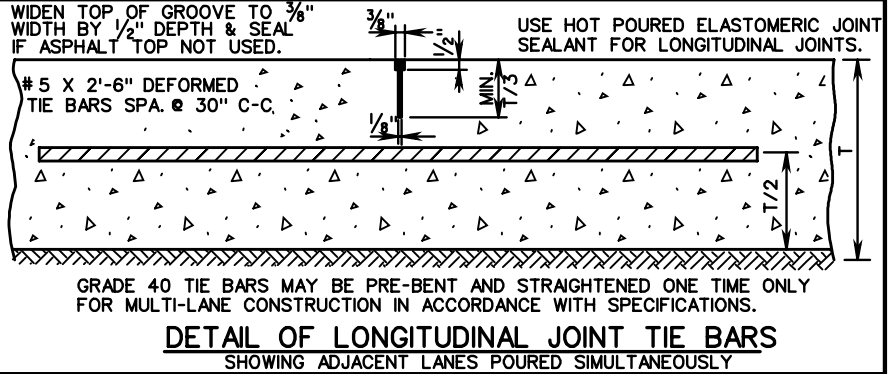
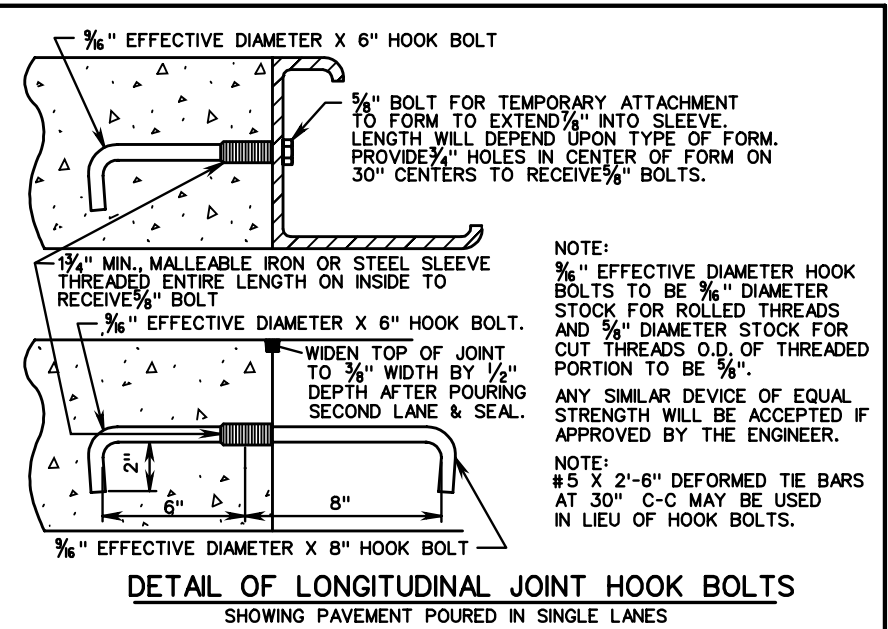
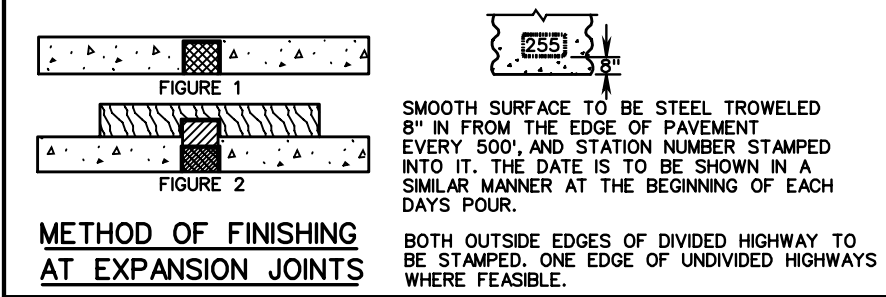
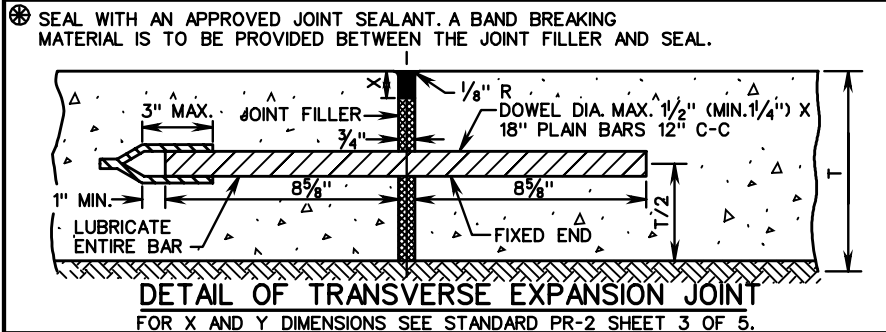
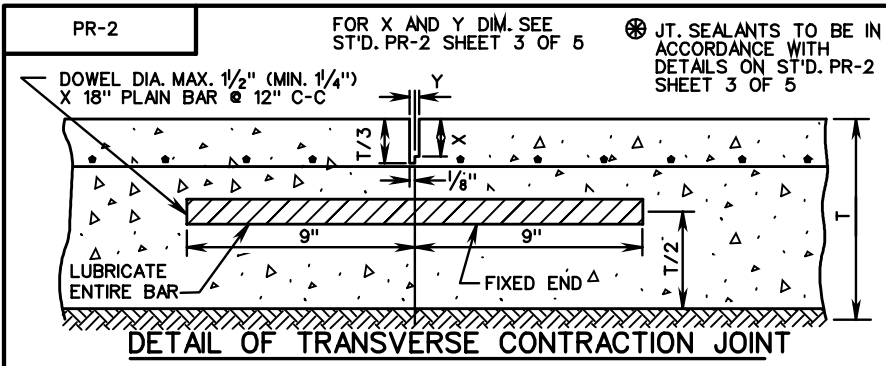
**VDOT**

ROAD AND BRIDGE STANDARDS

REVISION DATE

SHEET 1 OF 5

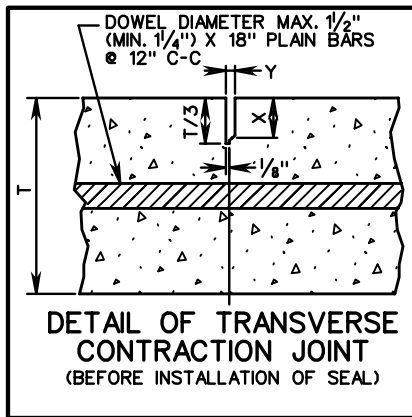
301.01



<b>VDOT</b>	
ROAD AND BRIDGE STANDARDS	
SHEET 2 OF 5	REVISION DATE
301.02	

<b>PLAIN AND REINFORCED CONCRETE PAVEMENT</b>
(SHOWING REINFORCEMENT, LONGITUDINAL AND TRANSVERSE JOINTS)
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
316



**DETAIL OF TRANSVERSE CONTRACTION JOINT**  
(BEFORE INSTALLATION OF SEAL)

**GENERAL NOTES**

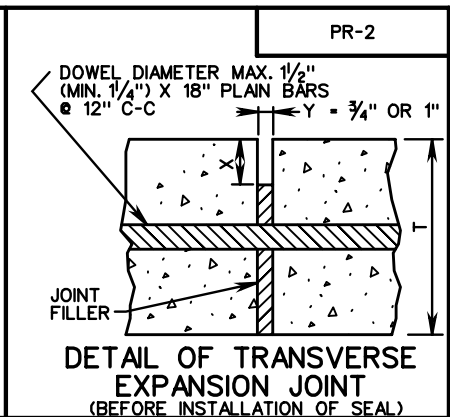
ALTERNATE PREFORMED SEALANTS HAVING A CROSS-SECTIONAL AREA COMPARABLE TO TYPE A (CONTRACTION JOINTS) AND TYPE D (EXPANSION JOINTS) AND MEETING THE APPROVAL OF THE ENGINEER MAY BE SUBSTITUTED.

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

ALL DETAILS NOT SHOWN HEREON TO BE IN ACCORDANCE WITH STANDARDS PR-2, SHEET 2 OF 5.

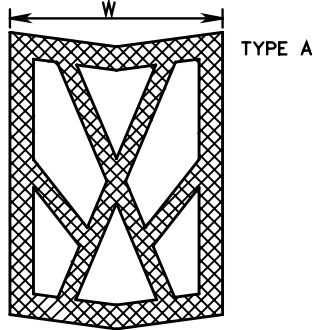
ALL CONTRACTION JOINTS TO BE SAWED IN CONFORMANCE WITH DETAIL TO THE LEFT, EXCEPT THAT WHERE GRAVEL AGGREGATE IS USED IN THE CONCRETE, THE JOINT MAY BE PREPARED BY FORMING 1/4" OR LESS OF THE WIDTH, FOR THE DEPTH SHOWN WITH NON-METALLIC OR REMOVABLE MATERIAL, FOLLOWED BY SAWING TO COMPLETE THE JOINT TO THE REQUIRED WIDTH AND DEPTH.

FOR DETAILS OF TRANSVERSE CONSTRUCTION JOINT, SEE BELOW.



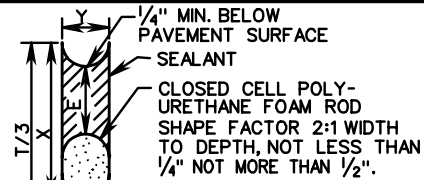
**DETAIL OF TRANSVERSE EXPANSION JOINT**  
(BEFORE INSTALLATION OF SEAL)

**PREFORMED CHLOROPRENE ELASTOMERIC JOINT SEALANT**



**SEALANTS FOR TRANSVERSE CONTRACTION JOINTS**

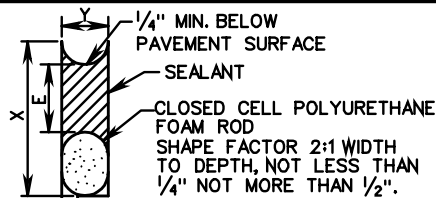
**SILICONE JOINT SEALANT**



BACK-UP MATERIAL SHALL BE 25% GREATER DIAMETER THAN Y DIMENSION.

JOINT WIDTH (Y)	MIN. SILICONE SEALER THICKNESS (E)
1/4"	1/4"
3/8"	1/4"
1/2"	1/4"

**SILICONE JOINT SEALANT**



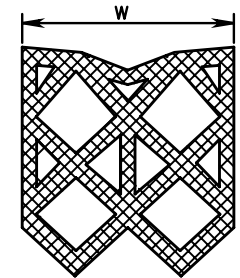
BACK-UP MATERIAL SHALL BE 25% GREATER DIAMETER THAN Y DIMENSION.

JOINT WIDTH (Y)	MIN. SILICONE SEALER THICKNESS (E)
3/4"	3/8"
1"	1/2"

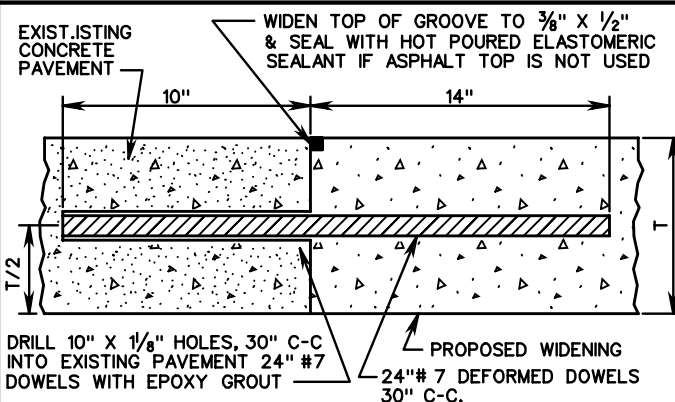
**SEALANTS FOR TRANSVERSE EXPANSION JOINTS**

**PREFORMED CHLOROPRENE ELASTOMERIC JOINT SEALANT**

WHEN Y = 3/4" WHEN Y = 1"  
W = 1/4" W = 15/8"  
X = 2" X = 2"



TYPE D

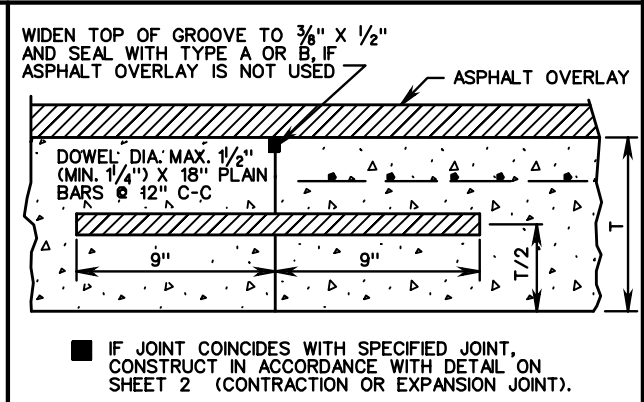


**METHODS OF WIDENING CONCRETE PAVEMENT**  
(PLAIN AND REINFORCED)

DIMENSION	SEALANT TYPE			
	A	B	C	D
X	1 3/4"	1/4"	1 3/4" - 2"	2"
Y	1/4"	1/4"	3/4" OR 1"	3/4" OR 1"
W	5/8" ± 1/16"	-	-	-

DIMENSION	SEALANT TYPE			
	A	B	C	D
X	1 3/4"	1/4"	1 3/4" OR 2"	2"
Y	3/8"	3/8"	3/4" OR 1"	3/4" OR 1"
W	1/4" ± 1/16"	-	-	-



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

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

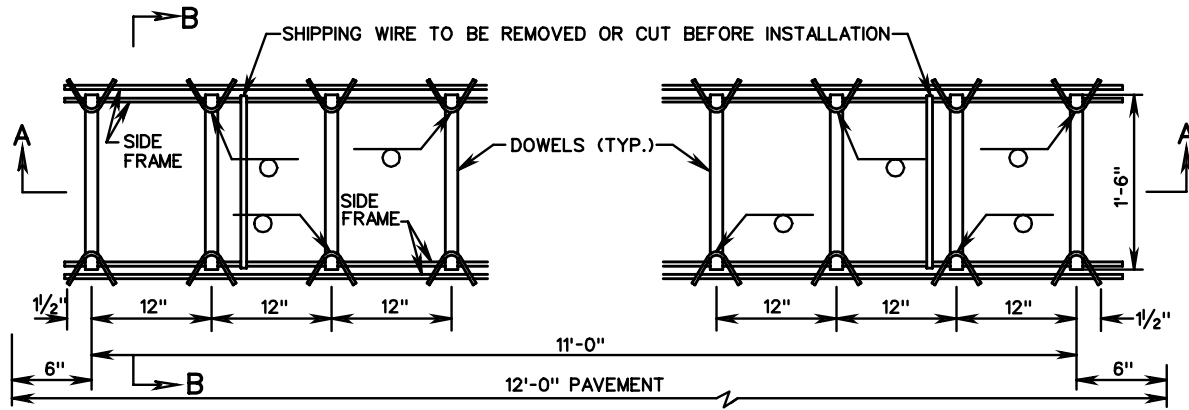
SPECIFICATION REFERENCE
316

**PLAIN AND REINFORCED CONCRETE PAVEMENT**  
SHOWING REINFORCEMENT, LONGITUDINAL AND TRANSVERSE JOINTS

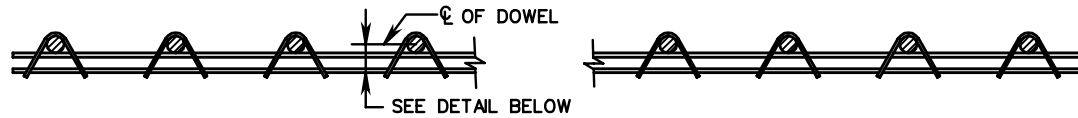
VIRGINIA DEPARTMENT OF TRANSPORTATION

<b>VDOT</b> ROAD AND BRIDGE STANDARDS	
REVISION DATE	SHEET 3 OF 5
301.03	

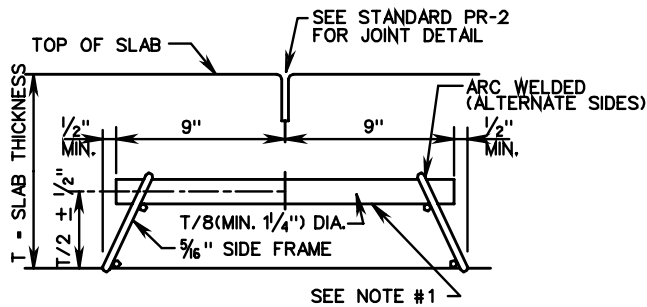
PR-2



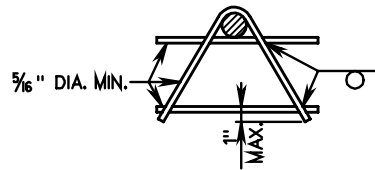
PLAN OF DOWEL UNIT FOR CONTRACTION JOINT



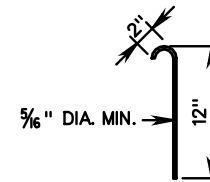
SIDE ELEVATION A - A CONTRACTION JOINT



SECTION B - B  
THRU CONTRACTION JOINT



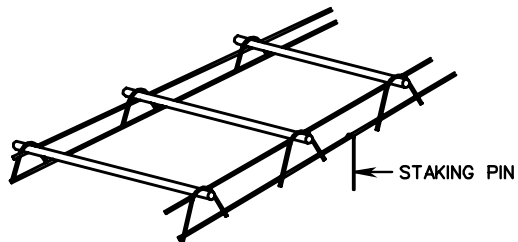
SIDE FRAME DETAIL



STAKING PIN

NOTES:

1. ENTIRE BAR TO BE LUBRICATED.
2. STAKING 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.



PERSPECTIVE VIEW



ROAD AND BRIDGE STANDARDS

SHEET 4 OF 5

REVISION DATE

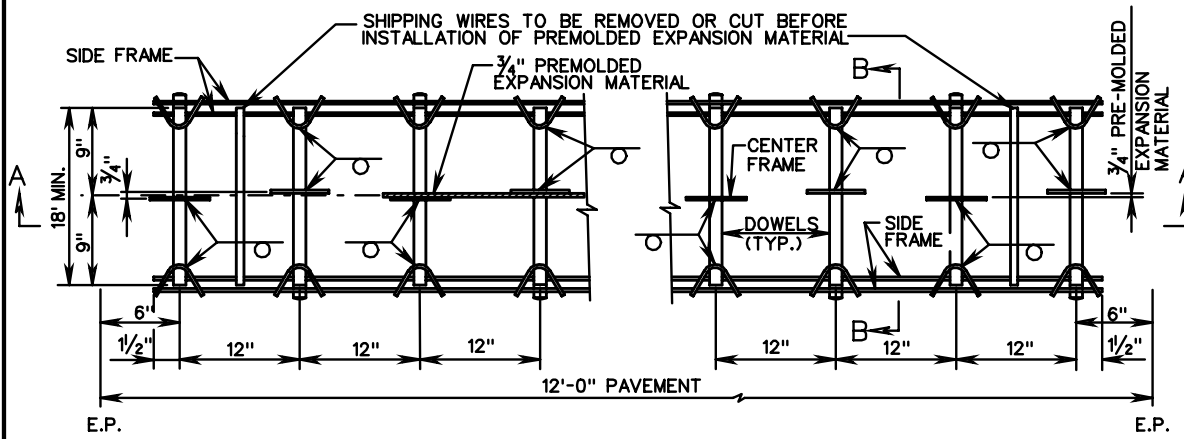
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STANDARD LOAD TRANSFER ASSEMBLY  
CONTRACTION JOINT

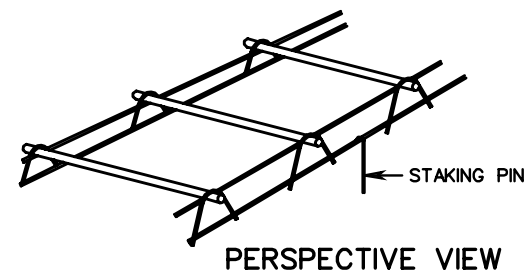
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION  
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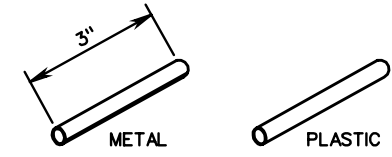




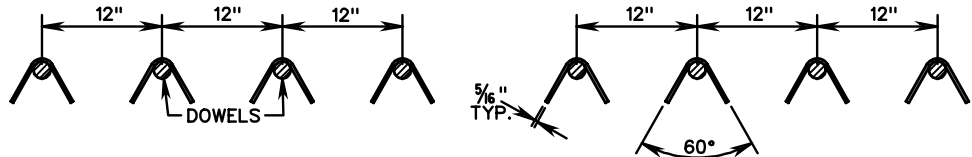
PLAN OF EXPANSION LIMIT



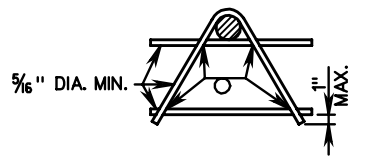
PERSPECTIVE VIEW



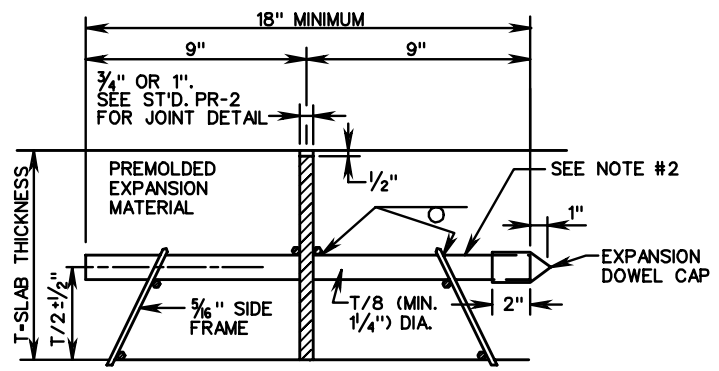
EXPANSION DOWEL CAPS



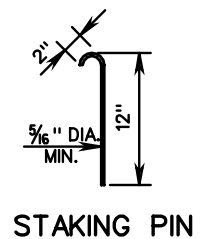
SECTION A - A CENTER FRAME



SIDE FRAME DETAIL



SECTION B - B THRU EXPANSION JOINT



STAKING PIN

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 CENTER-LINE OF THE SLAB.
5. NO MEMBERS SHALL BE PLACED SO THAT THEY WILL INTERFERE WITH THE FREE FLOW OF CONCRETE BETWEEN DOWELS.
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8. A SAMPLE OF THE SUPPORTING DEVICE SHALL BE SUBMITTED FOR APPROVAL PRIOR TO THE FILLING OF JOB ORDERS.

SPECIFICATION REFERENCE
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## STANDARD LOAD TRANSFER ASSEMBLY EXPANSION JOINT

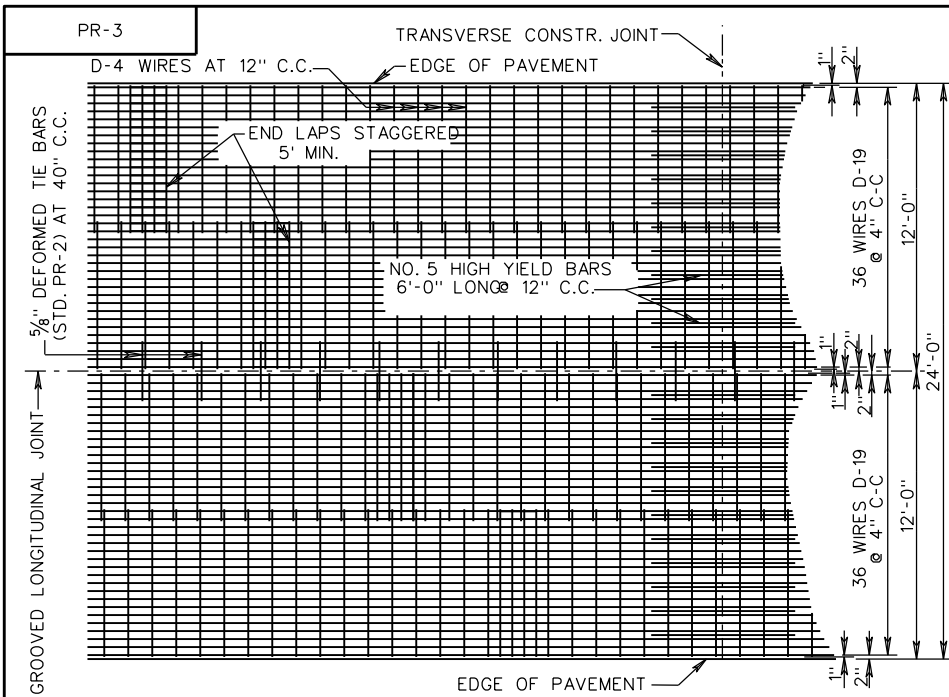
VIRGINIA DEPARTMENT OF TRANSPORTATION



ROAD AND BRIDGE STANDARDS

REVISION DATE	SHEET 5 OF 5
301.05	

2016 ROAD & BRIDGE STANDARDS



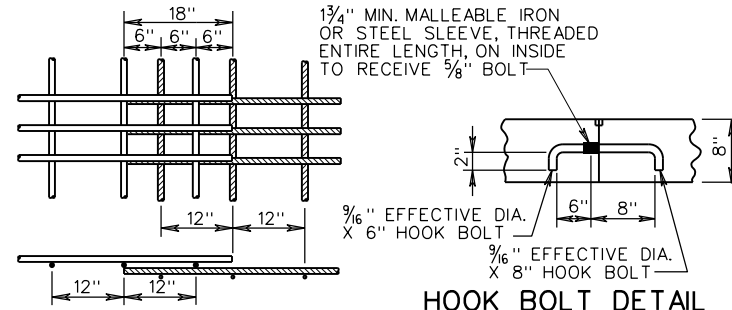
PLAN VIEW

NOTES:  
 FOR 36' PAVEMENT, USE SINGLE 12' LANES WITH 2 CONSTRUCTION JOINTS, OR 12' AND 24' LANES WITH ONE GROOVE AND ONE CONSTRUCTION JOINT.  
 TRANSVERSE WIRES DO NOT EXTEND THROUGH LONGITUDINAL JOINTS.  
 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 AAN AREA 10' BEYOND THE CONSTRUCTION JOINT.  
 #5 X 2'-6" DEFORMED TIE BARS AT 30" O.C. MAY BE USED IN LIEU OF HOOK BOLTS WHERE SHOWN HEREON.

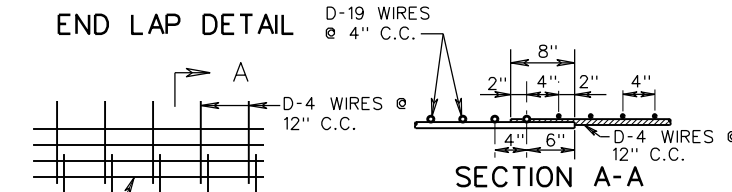
SMOOTH SURFACE TO BE STEEL TROWELED 8" IN FROM THE EDGE OF PAVEMENT EVERY 500 FEET, AND STATION NUMBER STAMPED INTO IT. THE DATE IS TO BE SHOWN IN A SIMILAR MANNER AT THE BEGINNING OF EACH DAYS POUR.

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.

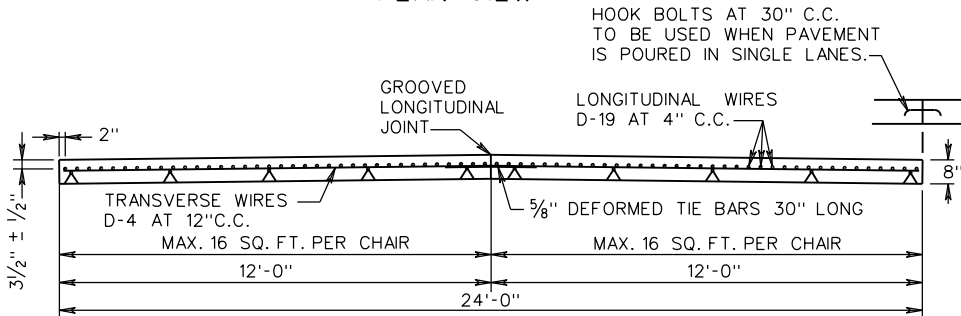


HOOK BOLT DETAIL

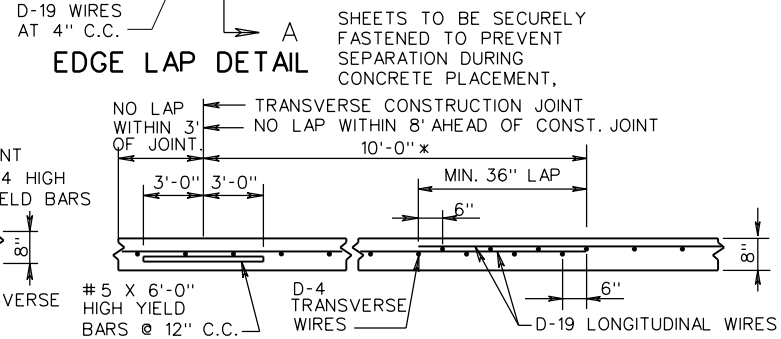


END LAP DETAIL

SECTION A-A



TRANSVERSE SECTION

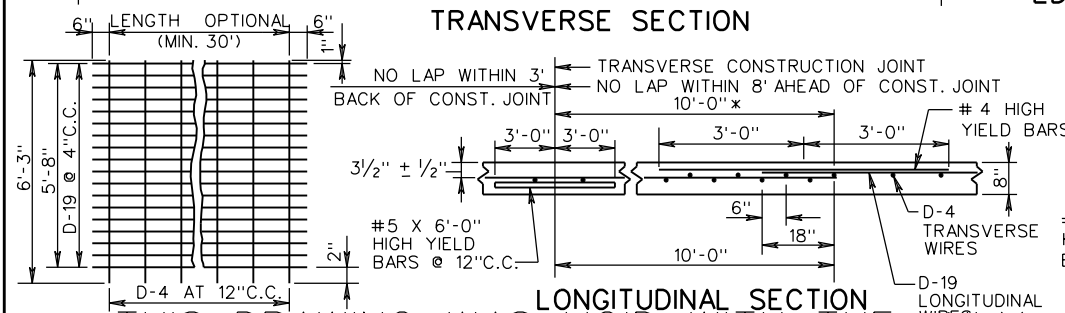


EDGE LAP DETAIL

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

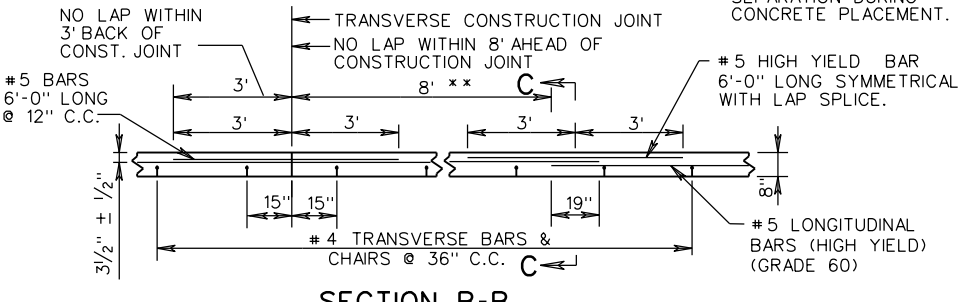
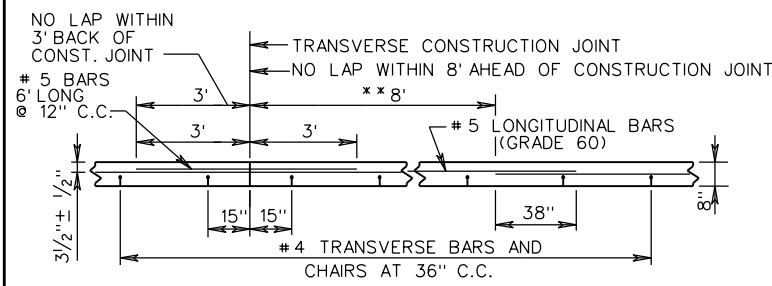
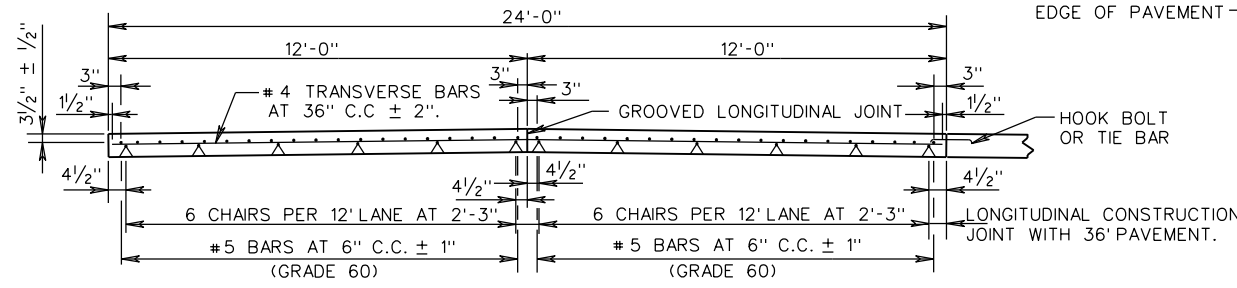
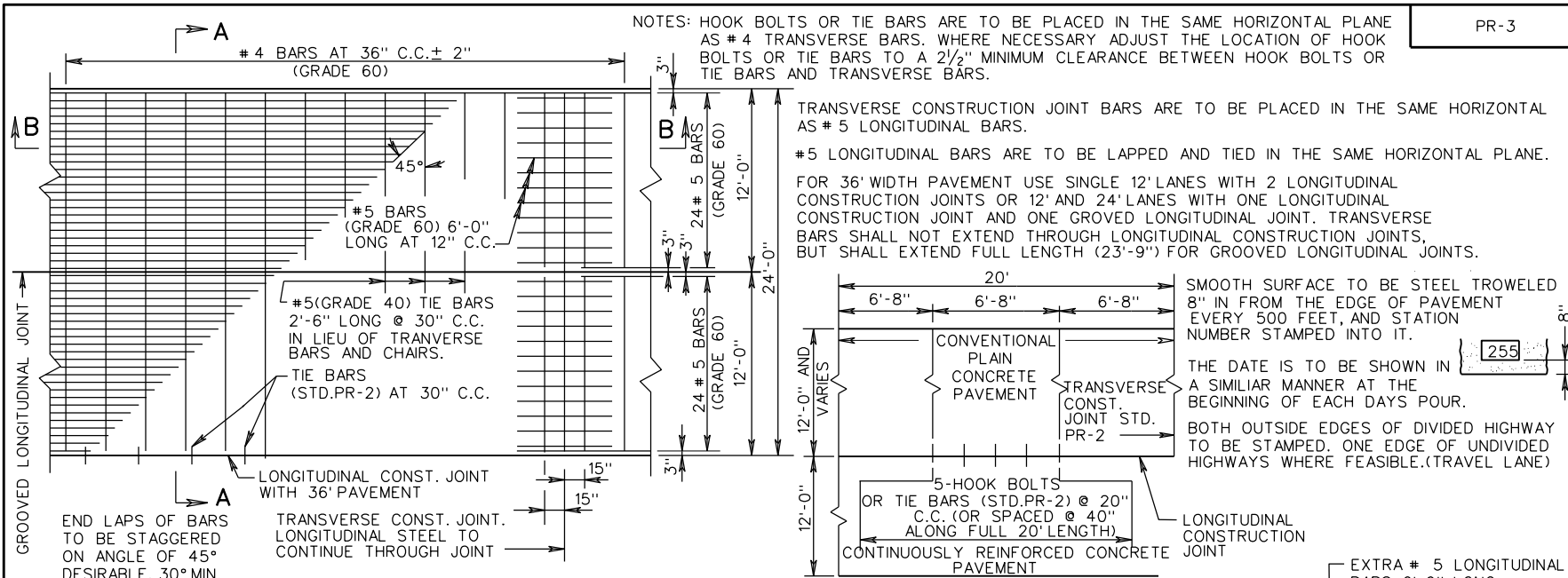
LONGITUDINAL SECTION

LONGITUDINAL SECTION



TYPICAL WIRE FABRIC SHEET

		<p>8" THICK CONTINUOUSLY REINFORCED CONC. PAVE.                  (WIRE MESH REINFORCEMENT)</p> <p><b>VOID</b></p> <p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	SPECIFICATION REFERENCE
ROAD AND BRIDGE STANDARDS	SHEET 1 OF 4		316
301.06	REVISION DATE	2016 ROAD & BRIDGE STANDARDS	



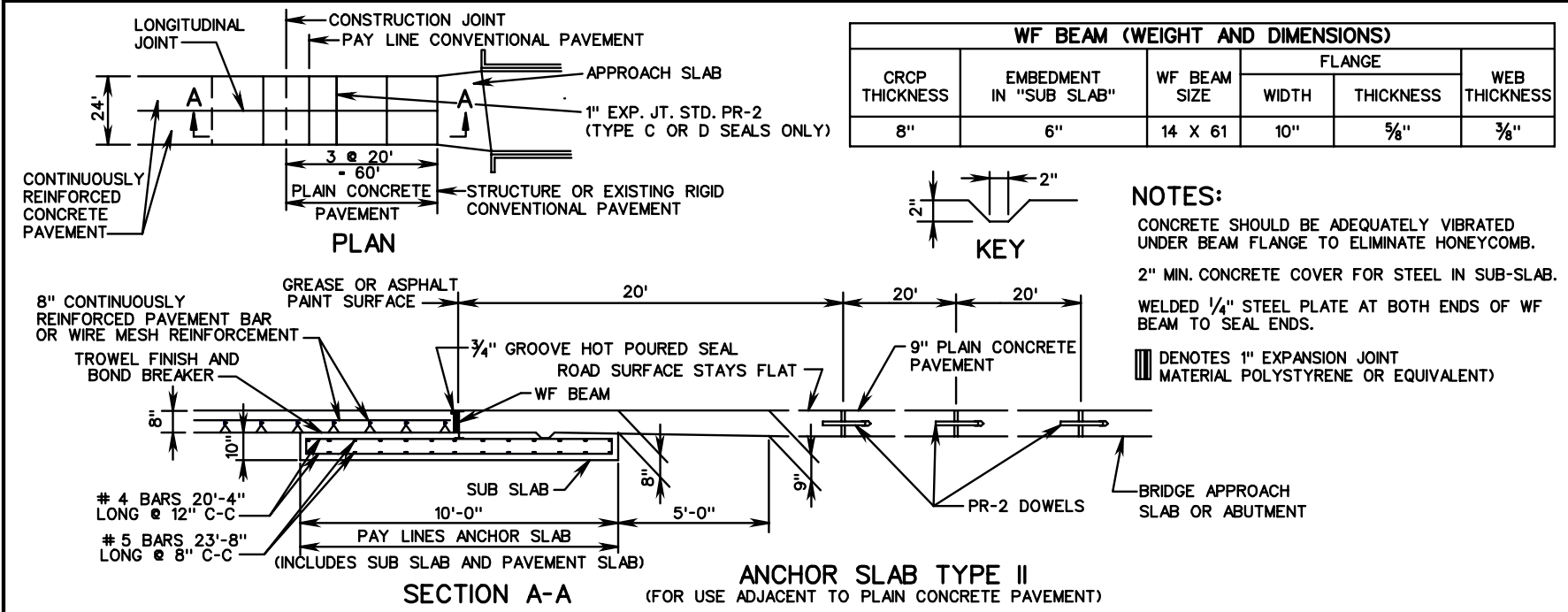
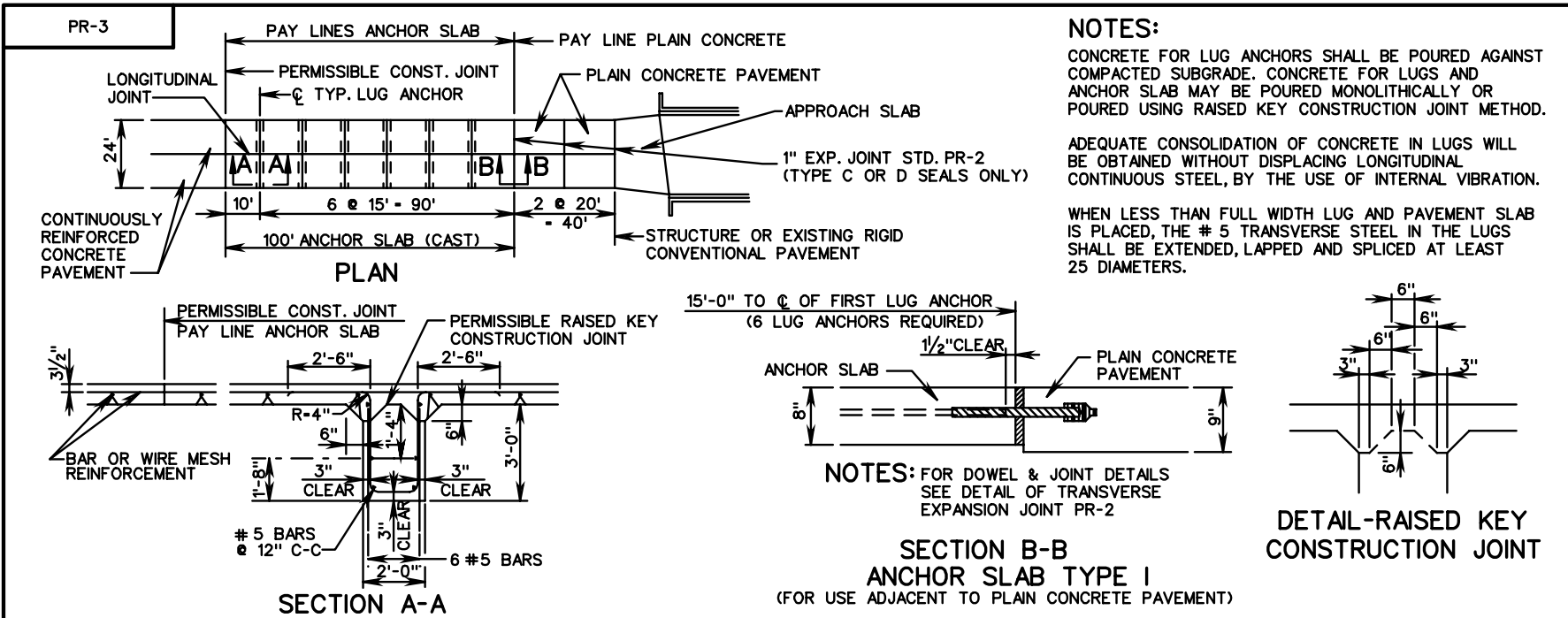
A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

**8" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
(STEEL BAR REINFORCEMENT)

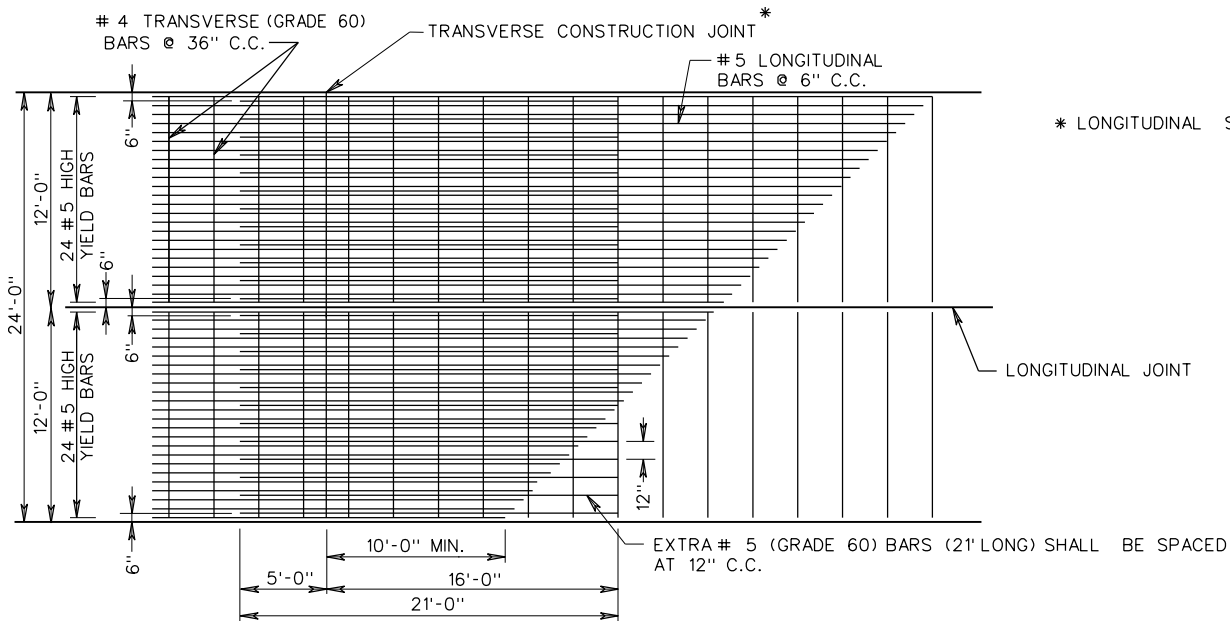
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
316

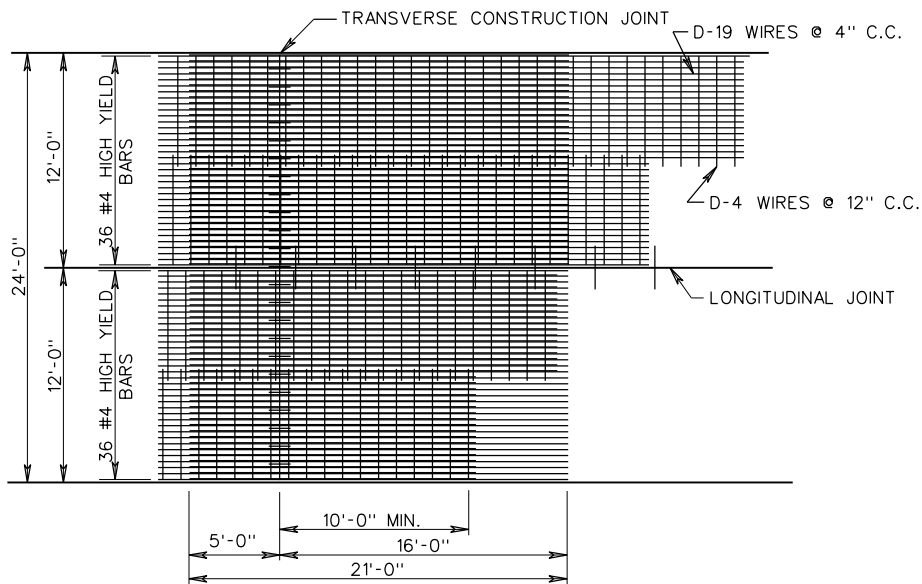
VDOT ROAD AND BRIDGE STANDARDS	
REVISION DATE	SHEET 2 OF 4
7/12	301.07



<p>ROAD AND BRIDGE STANDARDS</p>		<p><b>8" THICK CONTINUOUSLY REINFORCED CONC. PAVE.</b> (FOR USE WITH BAR OR WIRE MESH REINFORCEMENT)</p>	<p>SPECIFICATION REFERENCE</p>
<p>SHEET 3 OF 4</p>	<p>REVISION DATE</p>		<p>316</p>
<p>301.08</p>		<p>VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	



LEAVE OUT JOINT FOR USE WITH STEEL BAR REINFORCEMENT



LEAVE OUT JOINT FOR USE WITH WIRE MESH REINFORCEMENT

SPECIFICATION REFERENCE

316

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

**8" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
(LEAVE OUT JOINT DETAIL)

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

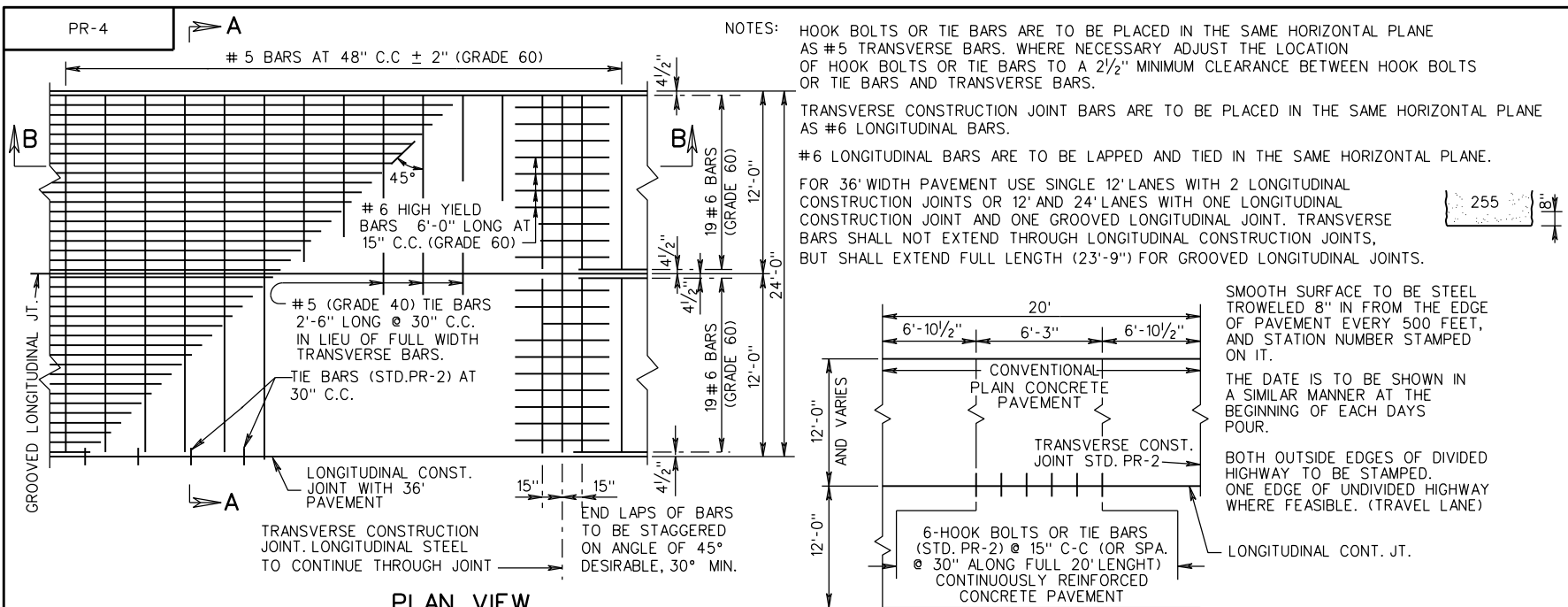
ROAD AND BRIDGE STANDARDS

REVISION DATE

7/12

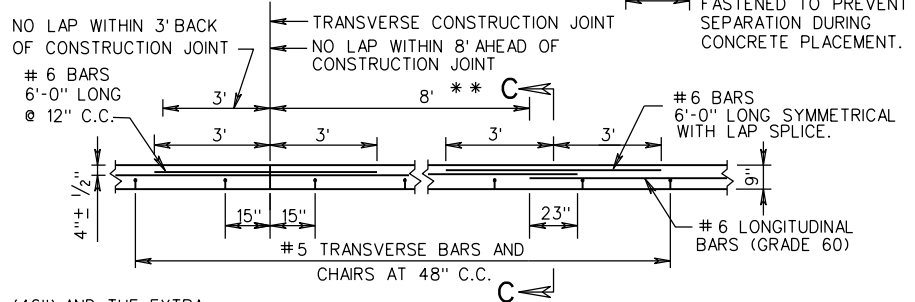
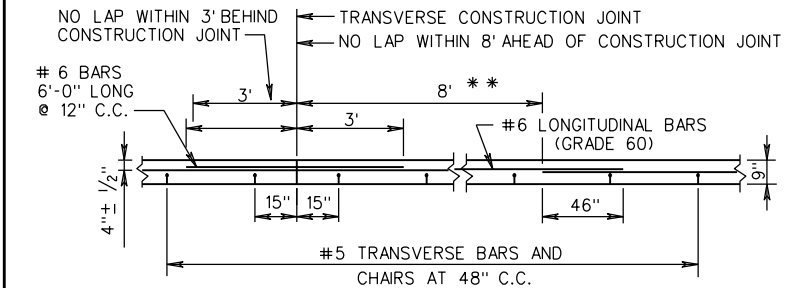
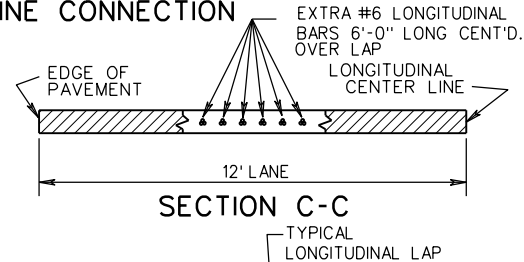
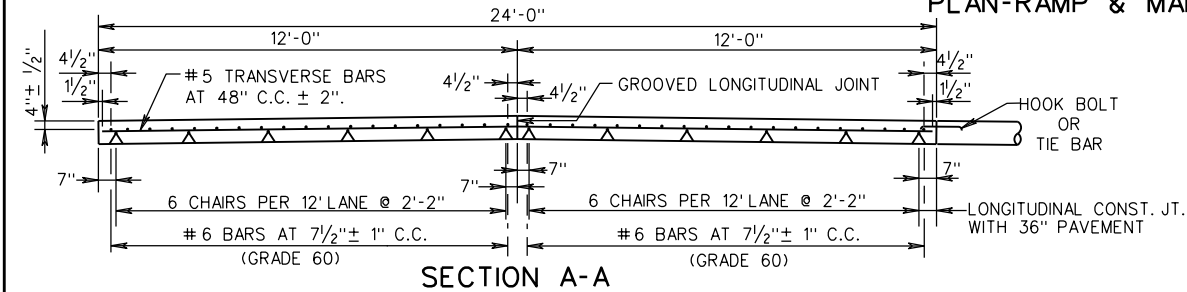
SHEET 4 OF 4

301.09



PLAN VIEW

PLAN-RAMP & MAIN LINE CONNECTION



\*\* DOUBLE LAP REQUIREMENT (46") AND THE EXTRA BAR METHOD APPLY ONLY TO LAPS FALLING WITHIN AN AREA OF 8' BEYOND THE CONSTRUCTION JOINT.

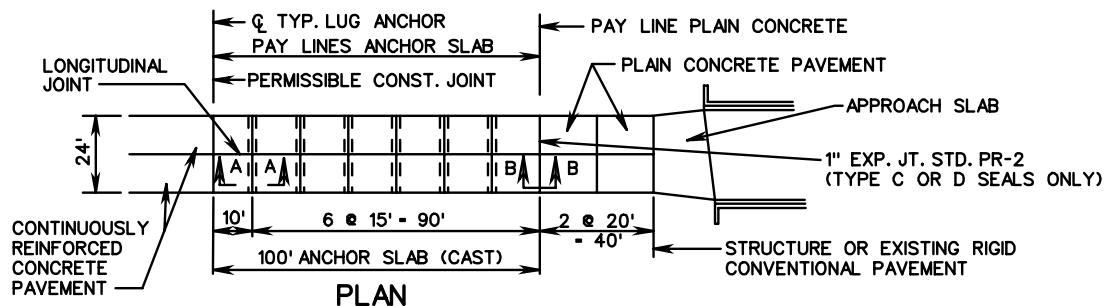
VDOT ROAD AND BRIDGE STANDARDS	
SHEET 1 OF 3	REVISION DATE
301.10	7/12

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

**9" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
(STEEL BAR REINFORCEMENT)

VIRGINIA DEPARTMENT OF TRANSPORTATION

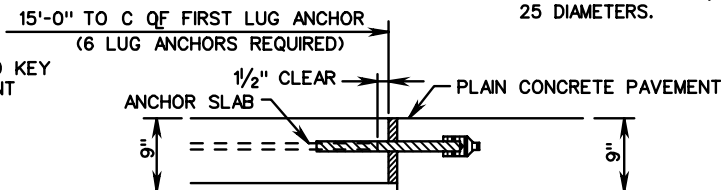
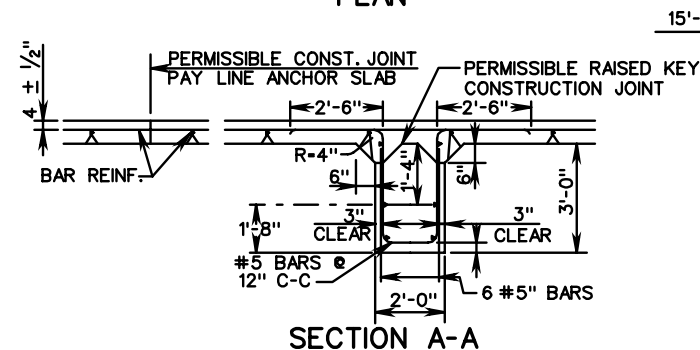
SPECIFICATION REFERENCE
316



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.

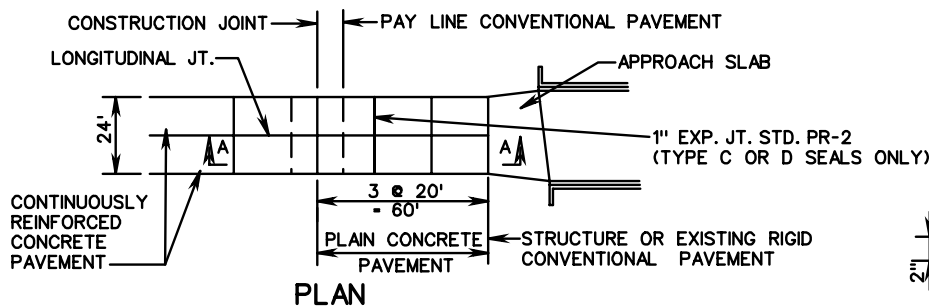
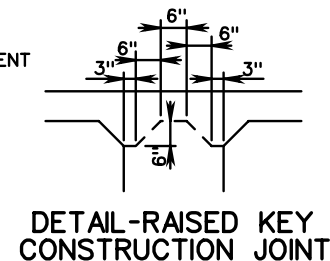
ADEQUATE CONSOLIDATION OF CONCRETE IN LUGS WILL BE OBTAINED WITHOUT DISPLACING LONGITUDINAL CONTINUOUS STEEL, BY THE USE OF INTERNAL VIBRATION.

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.



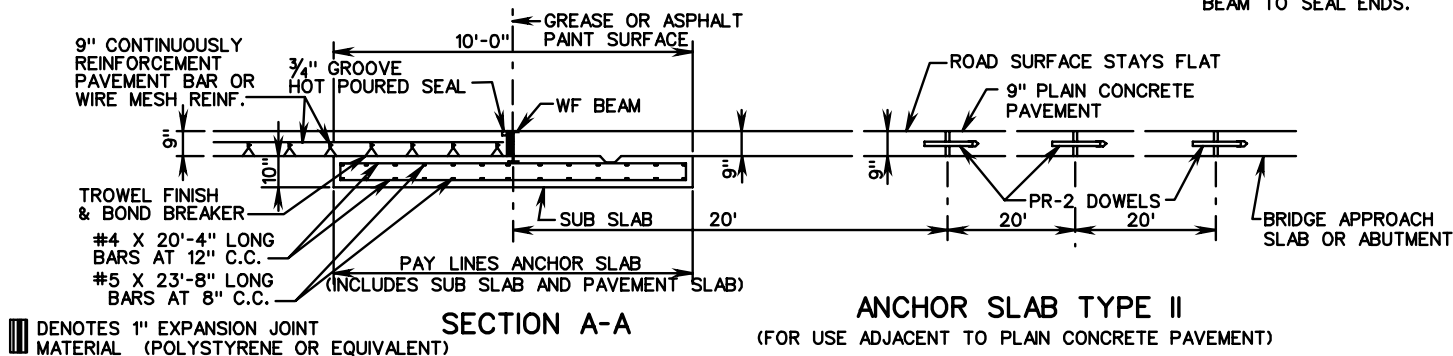
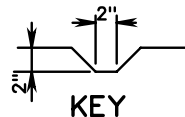
NOTE: FOR DOWEL & JOINT DETAILS SEE DETAIL OF TRANSVERSE EXPANSION JOINT PR-2

**SECTION B-B**  
**ANCHOR SLAB TYPE I**  
(FOR USE ADJACENT TO PLAIN CONCRETE PAVEMENT)



WF BEAM (WEIGHT AND DIMENSIONS)					
CRCP THICKNESS	EMBEDMENT IN "SUB SLAB"	WF BEAM SIZE	FLANGE		WEB THICKNESS
			WIDTH	THICKNESS	
9"	6"	14 X 61	10"	5/8"	3/8"

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.



**ANCHOR SLAB TYPE II**  
(FOR USE ADJACENT TO PLAIN CONCRETE PAVEMENT)

SPECIFICATION REFERENCE

**9" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
(FOR USE WITH BAR REINFORCEMENT ONLY)

316

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

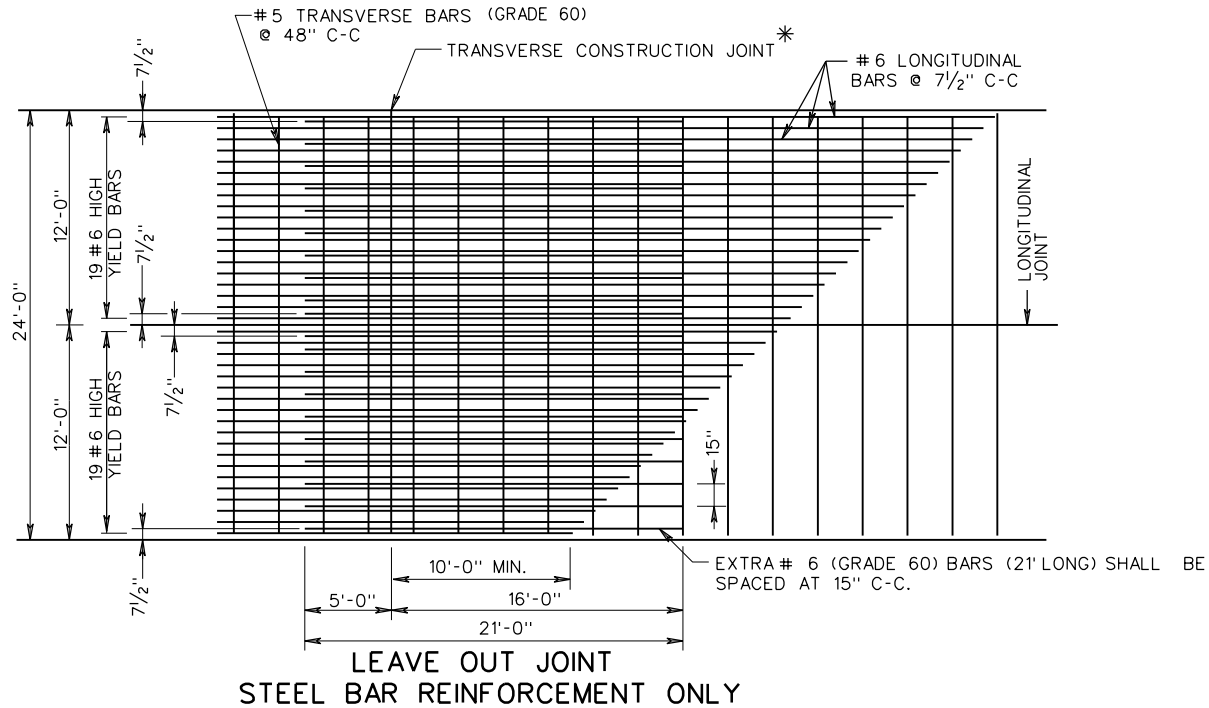
ROAD AND BRIDGE STANDARDS

REVISION DATE

SHEET 2 OF 3

301.11

PR-4



\* LONGITUDINAL STEEL TO CONTINUE THROUGH JOINT.



ROAD AND BRIDGE STANDARDS

SHEET 3 OF 3

REVISION DATE

301.12

7/12

A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.

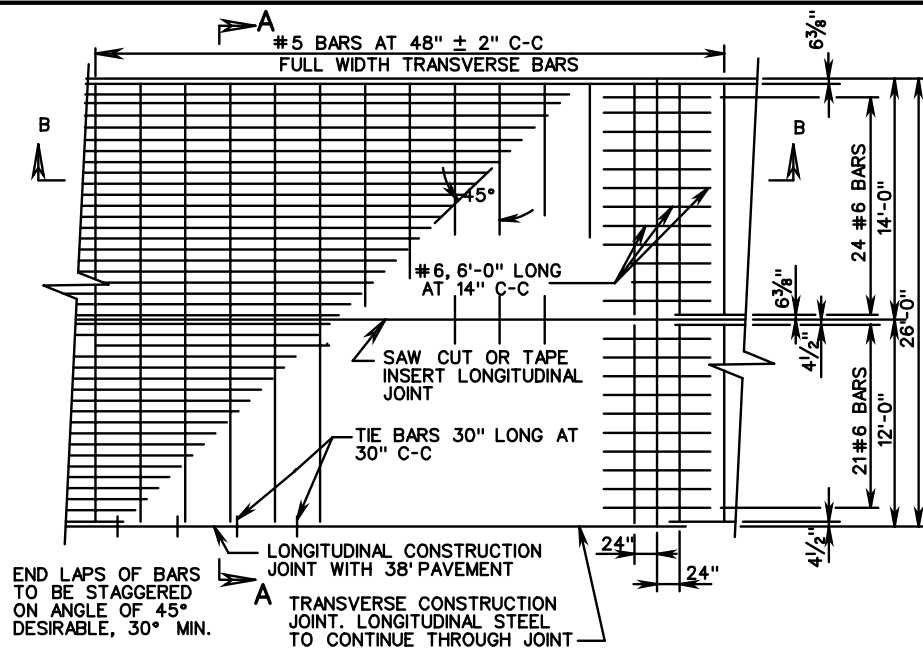
**9" THICK CONTINUOUSLY REINFORCED CONC. PAVE.  
(LEAVE OUT JOINT DETAIL)**

VIRGINIA DEPARTMENT OF TRANSPORTATION

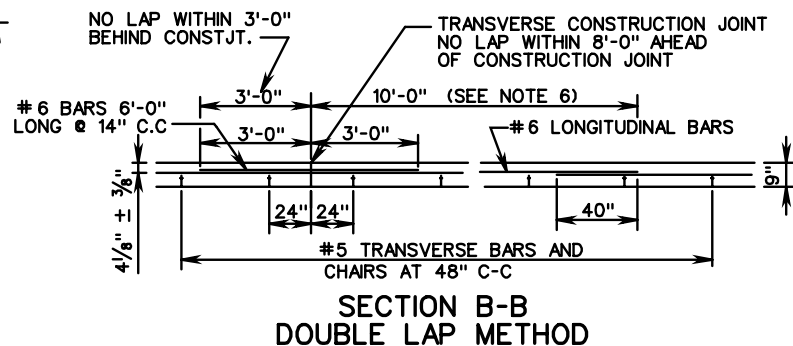
SPECIFICATION  
REFERENCE

316

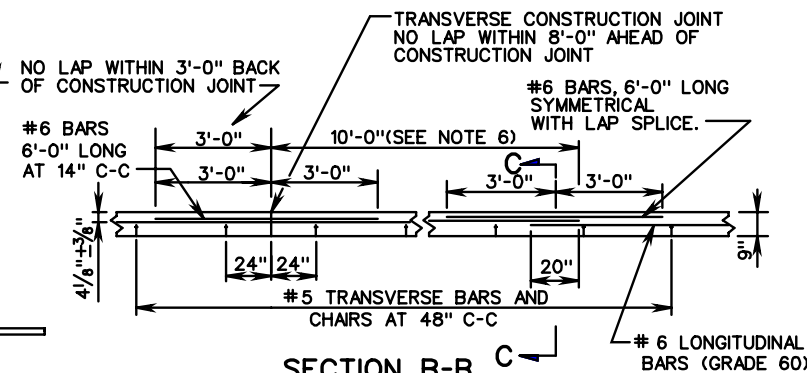




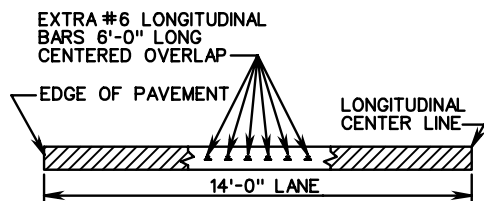
**PLAN VIEW**  
**CONTINUOUSLY REINFORCED CONCRETE PAVEMENT**



**SECTION B-B**  
**DOUBLE LAP METHOD**



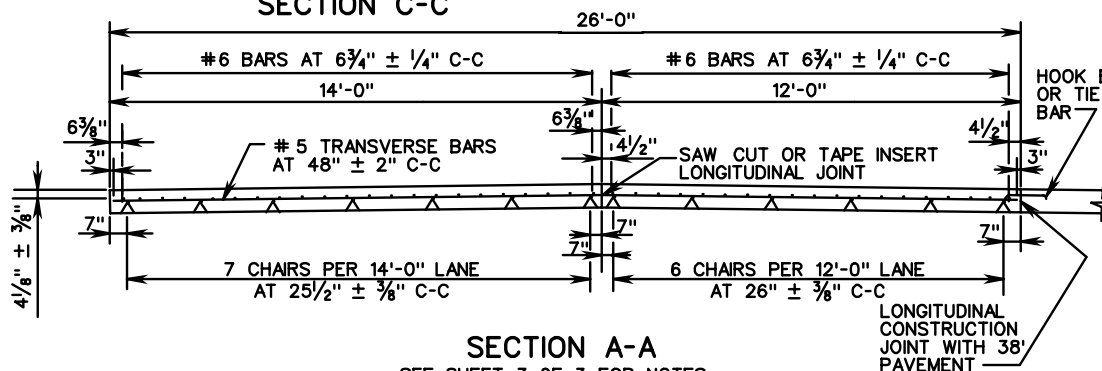
**SECTION B-B C**  
**EXTRA BAR METHOD**



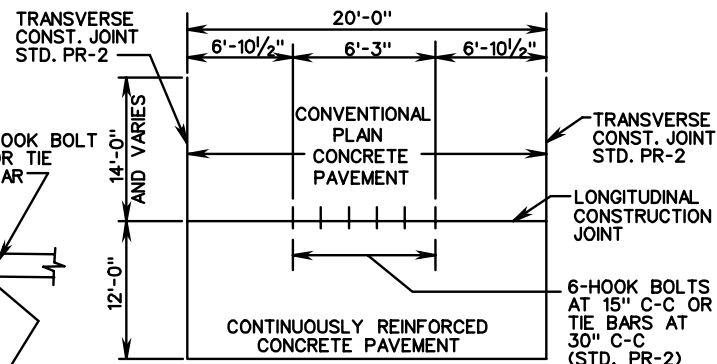
**SECTION C-C**

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

**TYPICAL**  
**LONGITUDINAL LAP**



**SECTION A-A**  
SEE SHEET 3 OF 3 FOR NOTES.



**PLAN-RAMP & MAIN LINE CONNECTION**

SPECIFICATION REFERENCE

316

**9" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
**(14 FOOT TRAVEL LANE)**

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

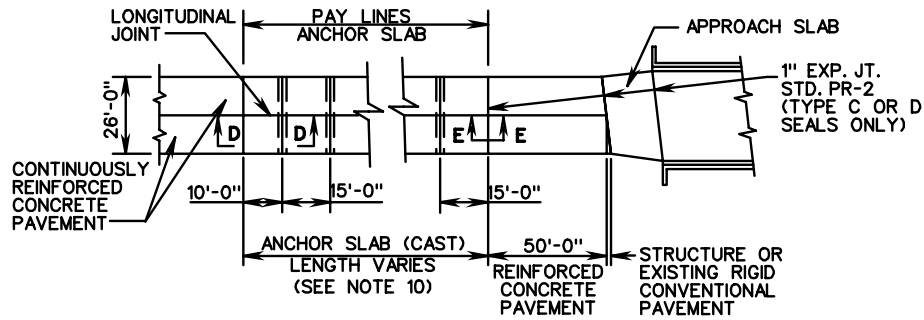
ROAD AND BRIDGE STANDARDS

REVISION DATE

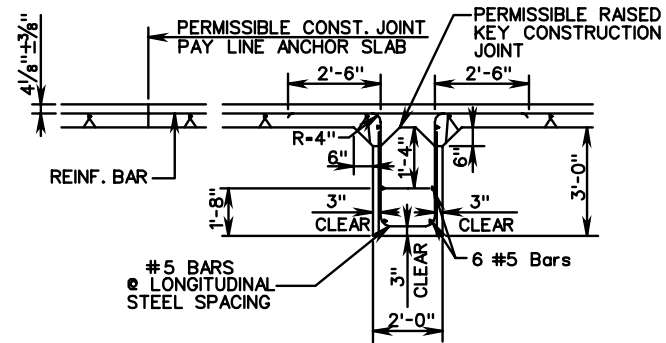
SHEET 1 OF 3

301.13

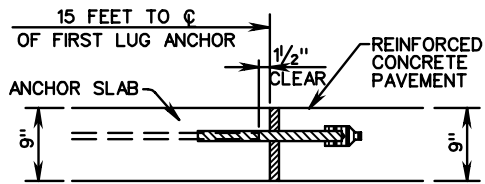
PR-5



PLAN VIEW ANCHOR SLAB TYPE I

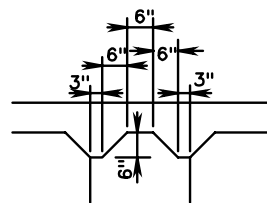


SECTION D-D

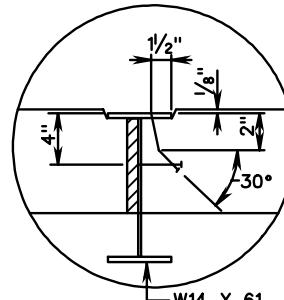


FOR DOWEL & JOINT DETAILS SEE DETAIL OF TRANSVERSE EXPANSION JOINT PR-2

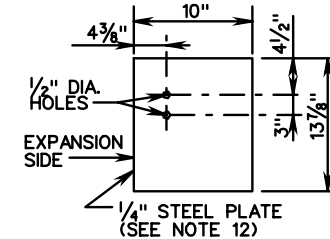
SECTION E-E ANCHOR SLAB TYPE I



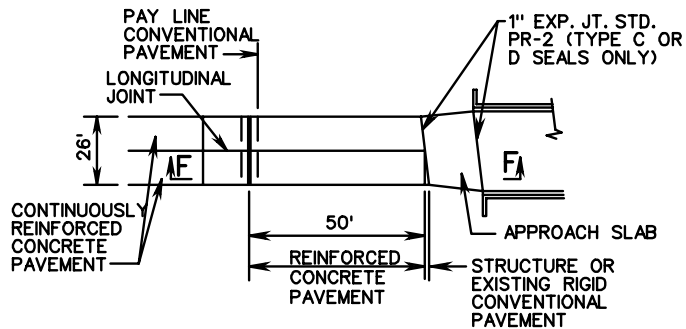
DETAIL-RAISED KEY CONSTRUCTION JOINT



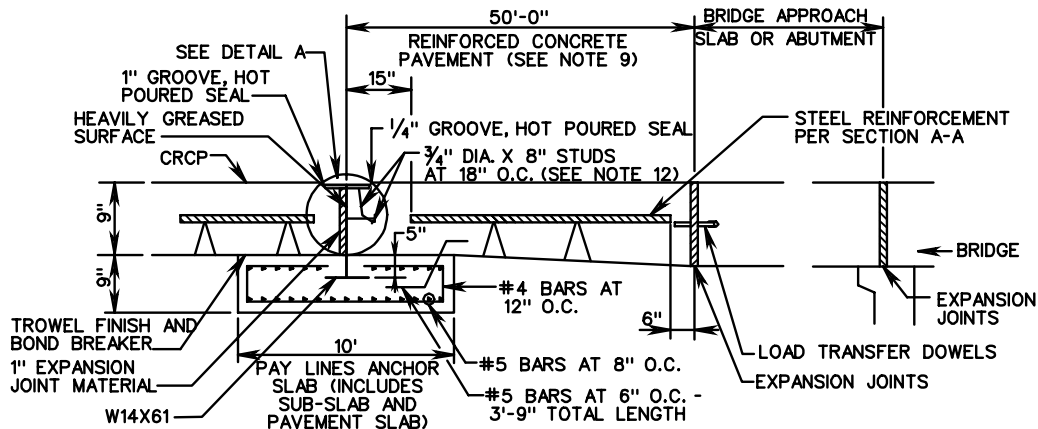
DETAIL A



END PLATE DETAIL ANCHOR SLAB TYPE II



PLAN VIEW II ANCHOR SLAB TYPE (SEE NOTE 11)



SECTION F-F ANCHOR SLAB TYPE II

SEE SHEET 3 OF 3 FOR NOTES.



ROAD AND BRIDGE STANDARDS

9" THICK CONTINUOUSLY REINFORCED CONC. PAVE.

SPECIFICATION REFERENCE

SHEET 2 OF 3

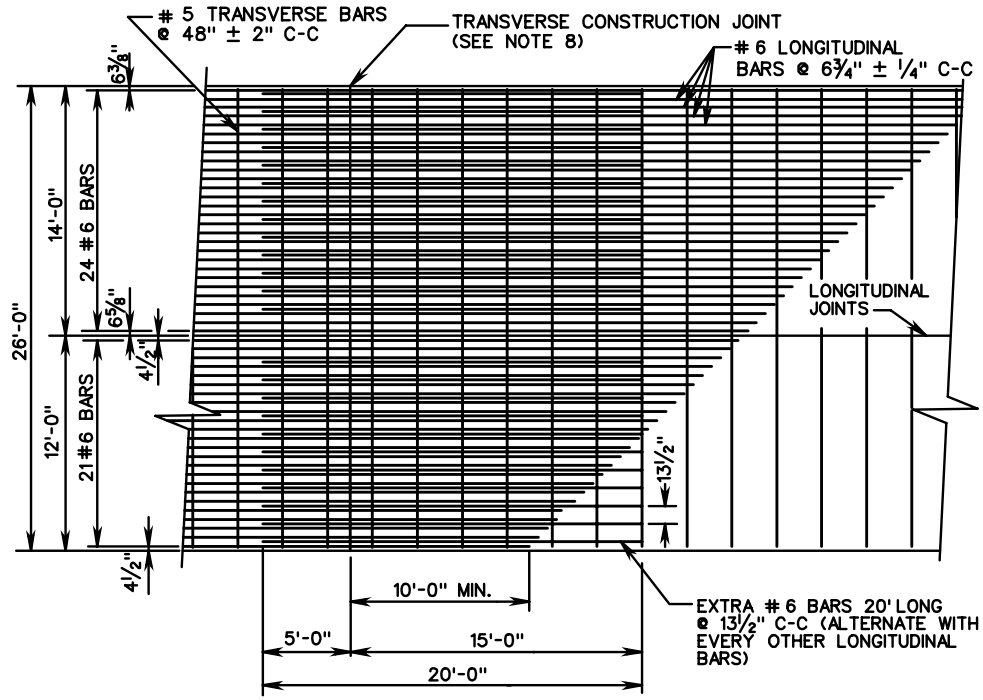
REVISION DATE

(14 FOOT TRAVEL LANE)

301.14

VIRGINIA DEPARTMENT OF TRANSPORTATION

316

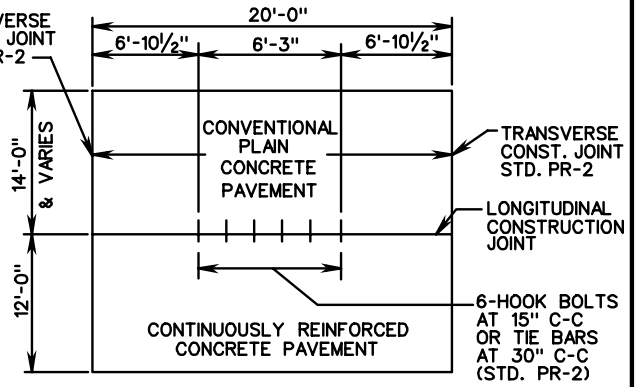
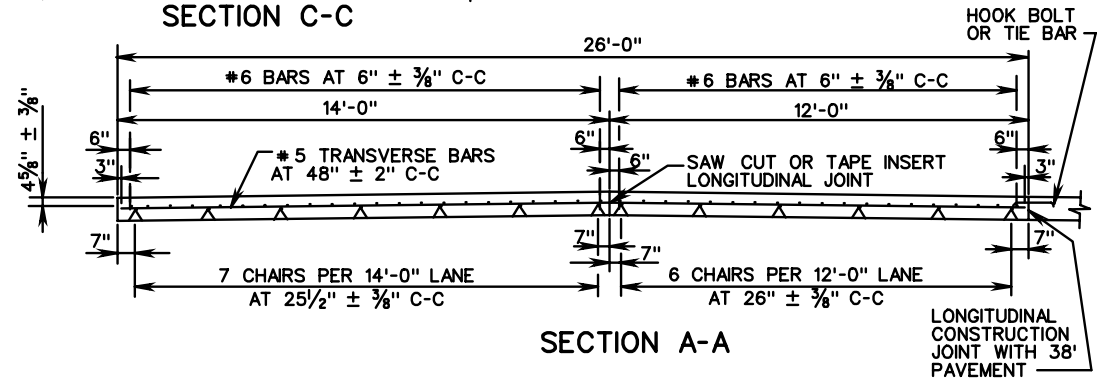
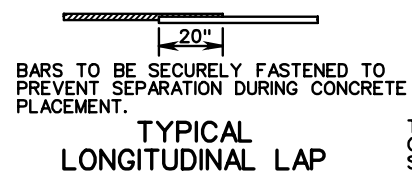
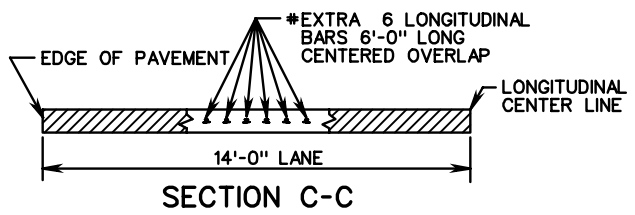
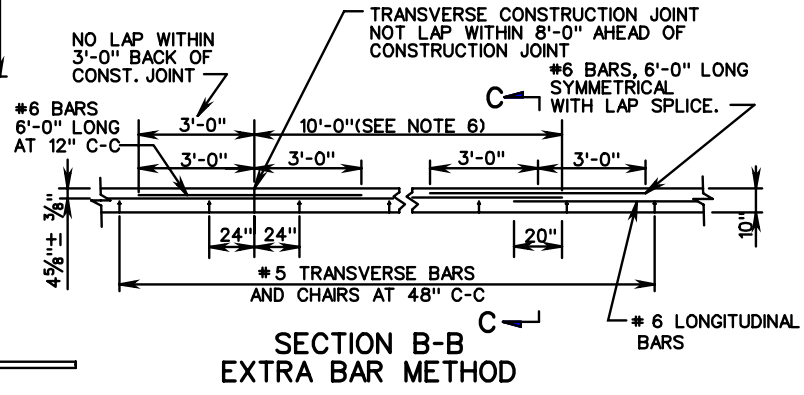
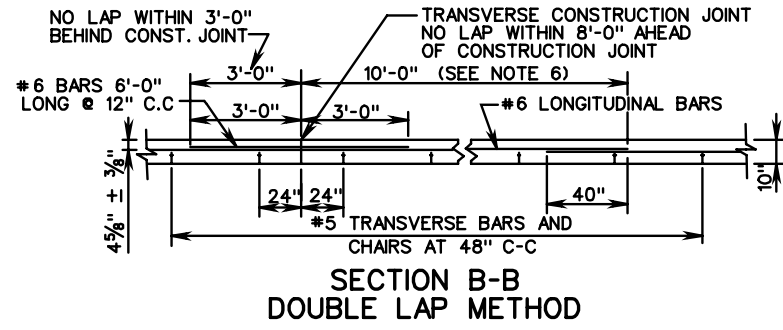
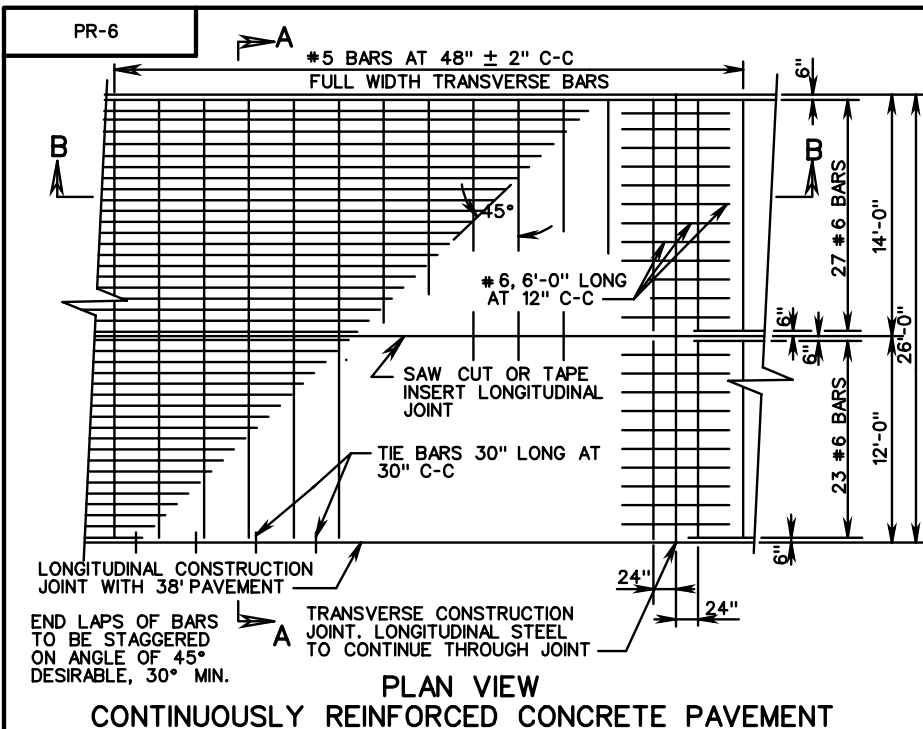


PLAN VIEW  
LEAVE OUT JOINT  
STEEL BAR REINFORCEMENT ONLY

**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 1/2" 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 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 SIMILIAR 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 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 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 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 145), AN ANCHOR SLAB TYPE I UTILIZING 5 ANCHOR LUGS (ANCHOR SLAB LENGTH = 85') OR AN ANCHOR SLAB TYPE II SHALL BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.  
  
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 145), AN ANCHOR SLAB TYPE I UTILIZING 3 ANCHOR LUGS (ANCHOR SLAB LENGTH = 55') OR AN ANCHOR SLAB TYPE II 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.

SPECIFICATION REFERENCE  316	<h2 style="margin: 0;">9" THICK CONTINUOUSLY REINFORCED CONC. PAVE.</h2> <p style="margin: 0;">(14 FOOT TRAVEL LANE)</p> <p style="margin: 0;">VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	ROAD AND BRIDGE STANDARDS REVISION DATE      SHEET 3 OF 3 301.15
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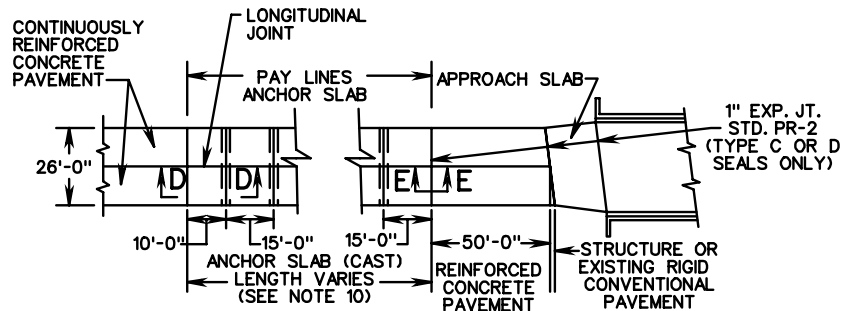
SEE SHEET 3 OF 3 FOR NOTES.

<b>VDOT</b>	
ROAD AND BRIDGE STANDARDS	
SHEET 1 OF 3	REVISION DATE
301.16	

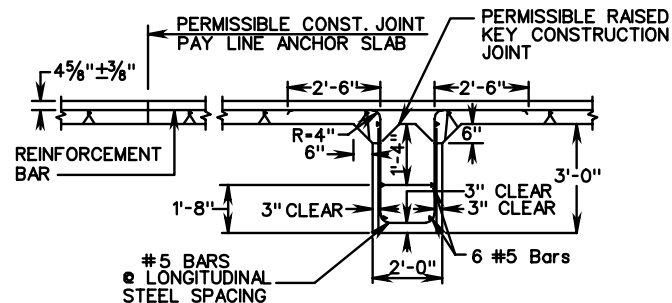
## 10" THICK CONTINUOUSLY REINFORCED CONC. PAVE. (14 FOOT TRAVEL LANE)

VIRGINIA DEPARTMENT OF TRANSPORTATION

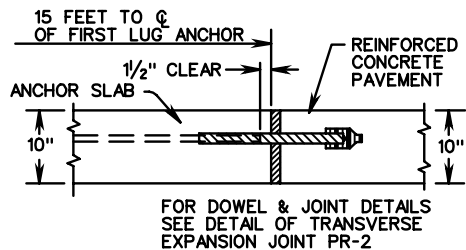
SPECIFICATION REFERENCE
316



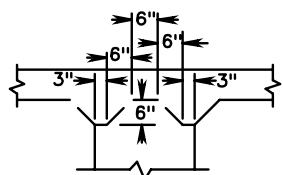
PLAN VIEW  
ANCHOR SLAB TYPE I



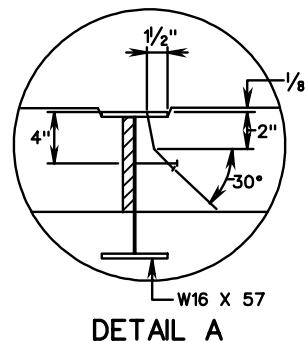
SECTION D-D



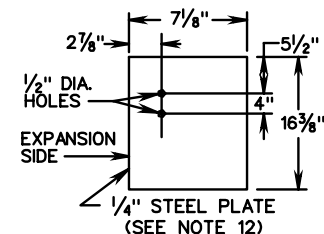
SECTION E-E  
ANCHOR SLAB TYPE I



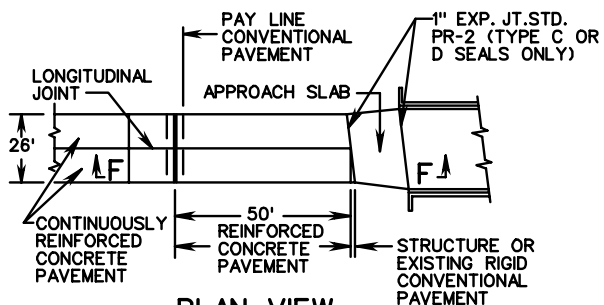
DETAIL-RAISED KEY  
CONSTRUCTION JOINT



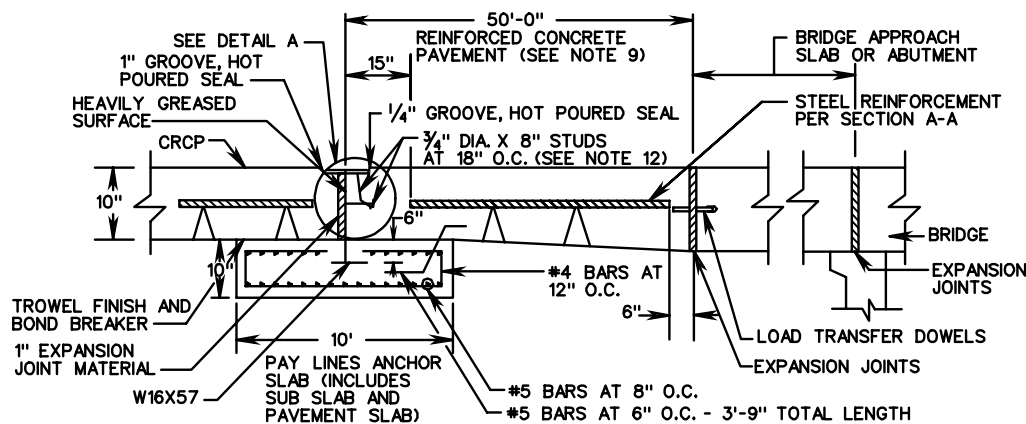
DETAIL A



ANCHOR SLAB TYPE II  
END PLATE DETAIL



PLAN VIEW  
ANCHOR SLAB TYPE II  
(SEE NOTE 11)



SECTION F-F  
ANCHOR SLAB TYPE II

SEE SHEET 3 OF 3 FOR NOTES

SPECIFICATION REFERENCE
316

10" THICK COUNTINUOUSLY REINFORCED CONC. PAVE.  
(14 FOOT TRAVEL LANE)

VIRGINIA DEPARTMENT OF TRANSPORTATION

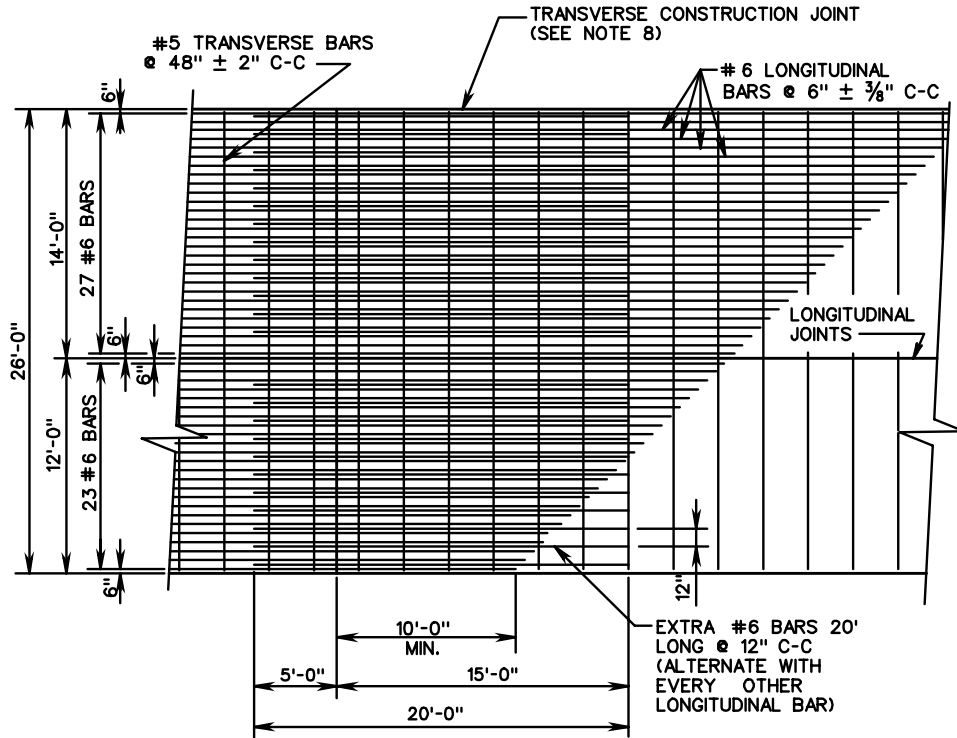


ROAD AND BRIDGE STANDARDS

REVISION DATE SHEET 2 OF 3

301.17

PR-6



PLAN VIEW  
LEAVE OUT JOINT  
STEEL BAR REINFORCEMENT ONLY

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 1/2" 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 FT. WIDTH PAVEMENT USE SINGLE 12 FOOT LANES WITH TWO LONGITUDINAL CONSTRUCTION JOINTS OR 12 FT. AND 14 FT. 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" 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 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 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 DIA.
  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 145), AN ANCHOR SLAB TYPE I UTILIZING 5 ANCHOR LUGS (ANCHOR SLAB LENGTH = 85') OR AN ANCHOR SLAB TYPE II SHALL BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.
- 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 145), AN ANCHOR SLAB TYPE I UTILIZING 3 ANCHOR LUGS (ANCHOR SLAB LENGTH = 55') OR AN ANCHOR SLAB TYPE II 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.

**VDOT**  
ROAD AND BRIDGE STANDARDS

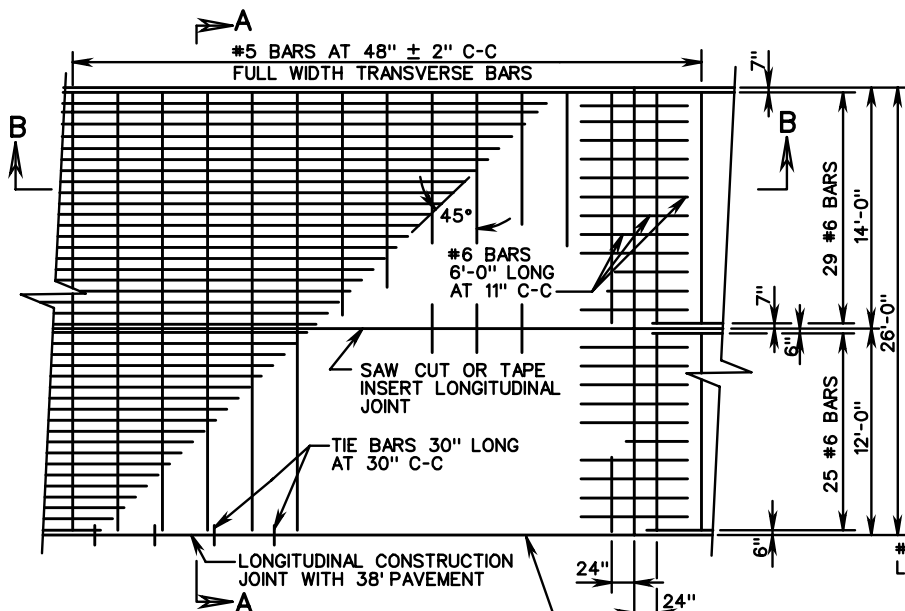
SHEET 3 OF 3      REVISION DATE  
301.18

**10" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
**(14 FOOT TRAVEL LANE)**

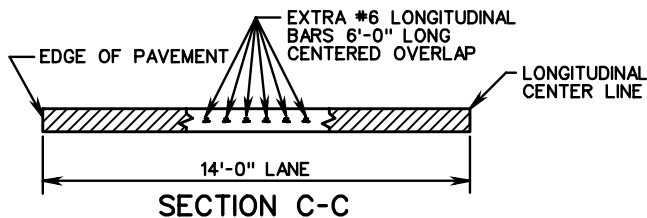
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION  
REFERENCE

316



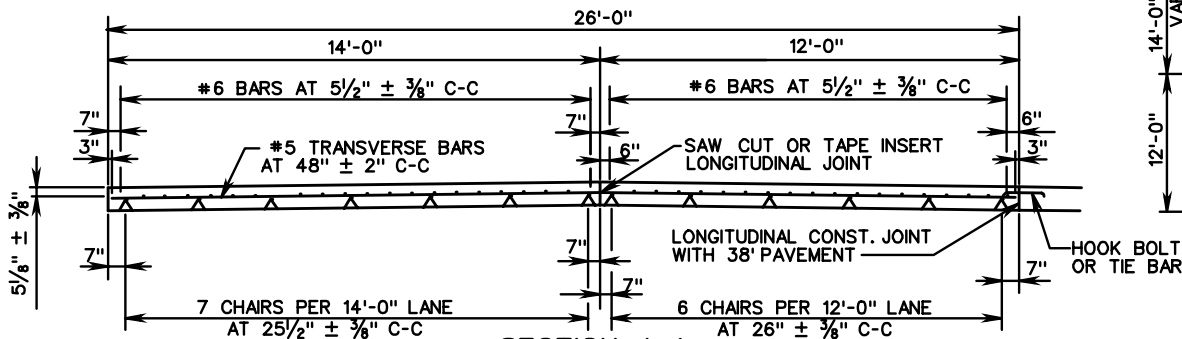
**PLAN VIEW**  
**CONTINUOUSLY REINFORCED CONCRETE PAVEMENT**



**SECTION C-C**

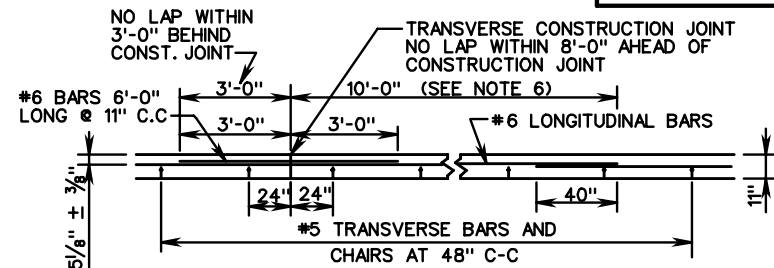


**TYPICAL LONGITUDINAL LAP**  
BARS TO BE SECURELY FASTENED TO PREVENT SEPARATION DURING CONCRETE PLACEMENT.

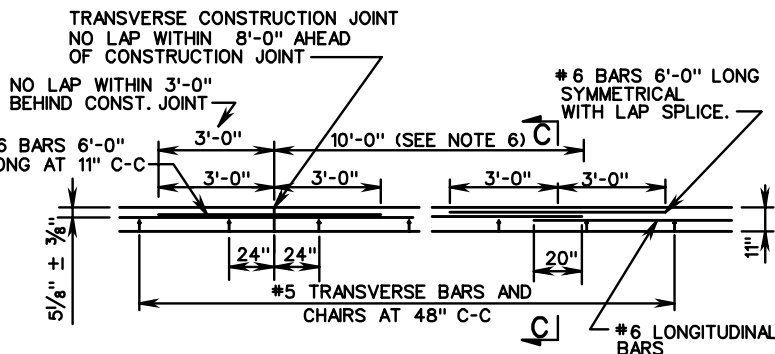


**SECTION A-A**

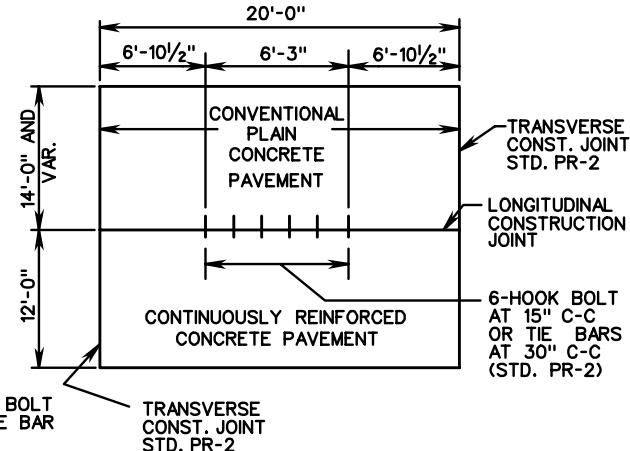
SEE SHEET 3 OF 3 FOR NOTES



**SECTION B-B**  
**DOUBLE LAP METHOD**



**SECTION B-B**  
**EXTRA BAR METHOD**



**PLAN-RAMP & MAIN LINE**  
**CONNECTION**

SPECIFICATION REFERENCE

316

**11" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**

**(14 FOOT TRAVEL LANE)**

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

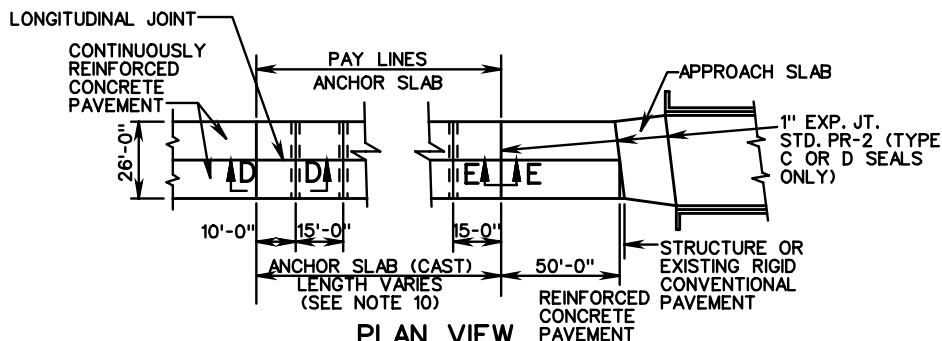
ROAD AND BRIDGE STANDARDS

REVISION DATE

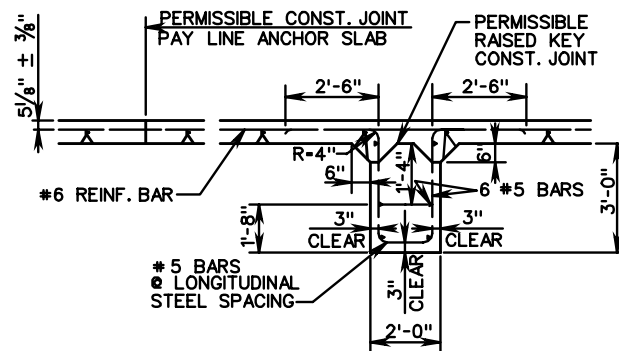
SHEET 1 OF 3

301.19

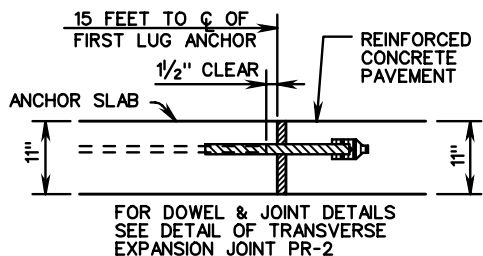
PR-7



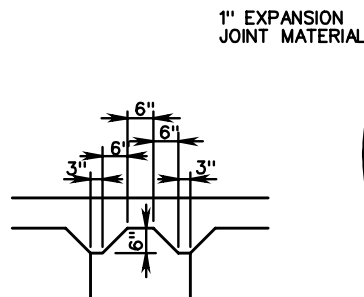
PLAN VIEW  
ANCHOR SLAB TYPE I



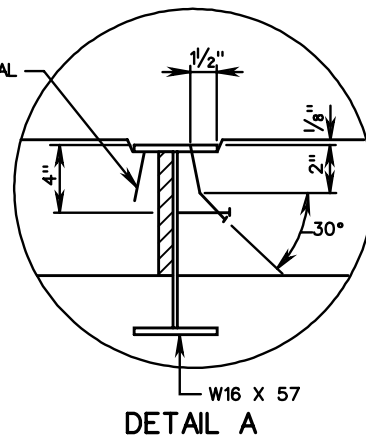
SECTION D-D



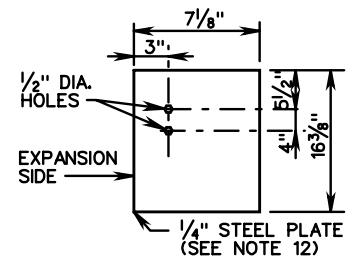
SECTION E-E  
ANCHOR SLAB TYPE I



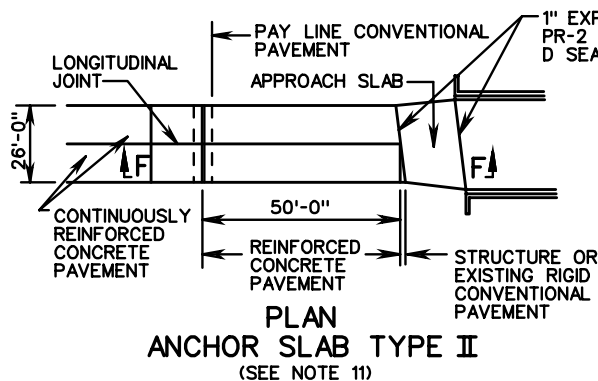
DETAIL-RAISED KEY  
CONSTRUCTION JOINT



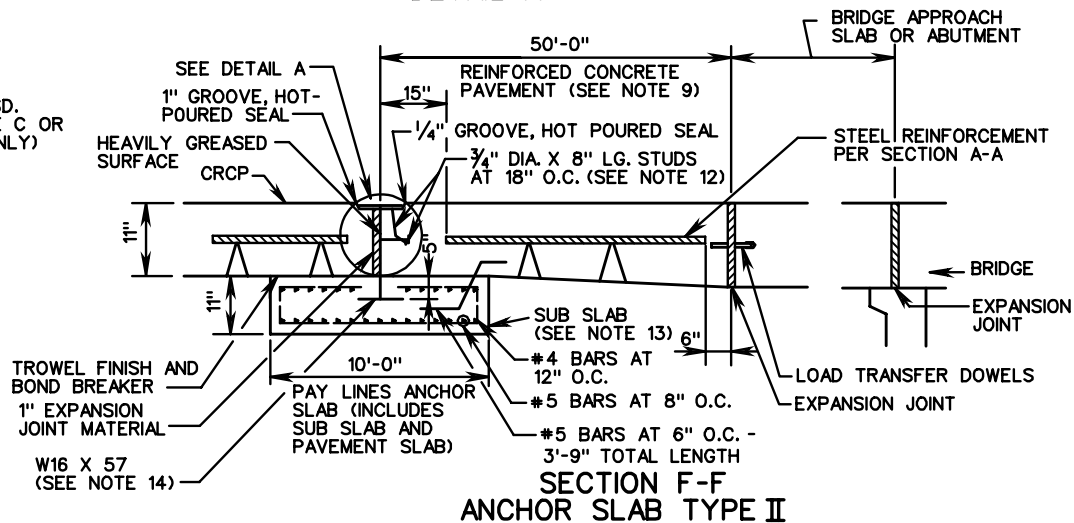
DETAIL A



ANCHOR SLAB TYPE II  
END PLATE DETAIL



PLAN  
ANCHOR SLAB TYPE II  
(SEE NOTE 11)



SECTION F-F  
ANCHOR SLAB TYPE II

SEE SHEET 3 OF 3 FOR NOTES



ROAD AND BRIDGE STANDARDS

11" THICK CONTINUOUSLY REINFORCED CONC. PAVE.  
(14 FOOT TRAVEL LANE)

SPECIFICATION  
REFERENCE

SHEET 2 OF 3

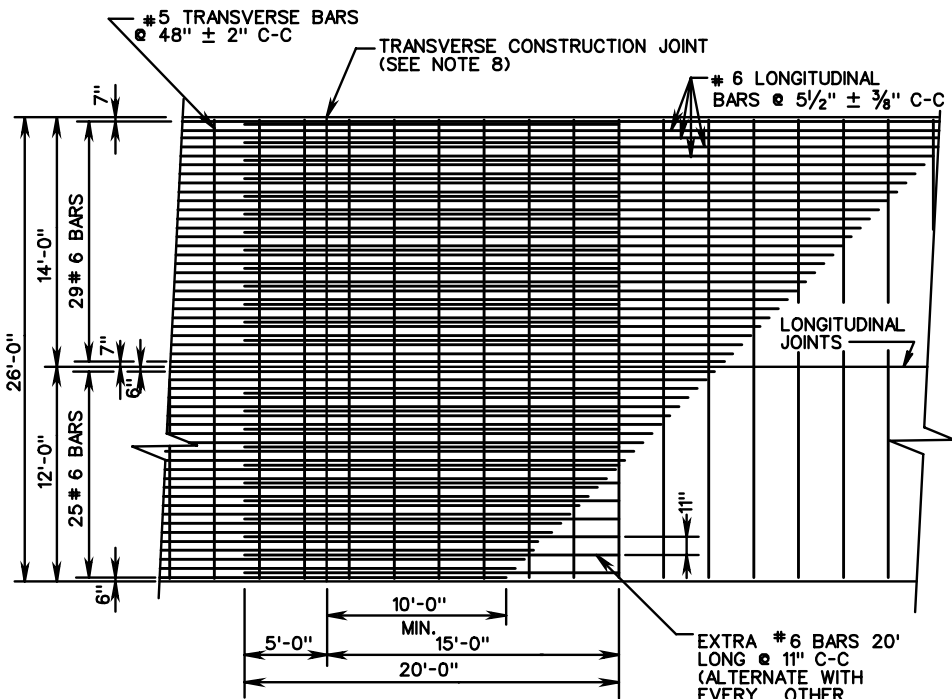
REVISION DATE

VIRGINIA DEPARTMENT OF TRANSPORTATION

301.20

316





PLAN VIEW  
LEAVE OUT JOINT  
STEEL BAR REINFORCEMENT ONLY

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 1/2" 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 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 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 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 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 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 145), AN ANCHOR SLAB TYPE I UTILIZING 5 ANCHOR LUGS (ANCHOR SLAB LENGTH = 85') OR AN ANCHOR SLAB TYPE II SHALL BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.  
  
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 145), AN ANCHOR SLAB TYPE I UTILIZING 3 ANCHOR LUGS (ANCHOR SLAB LENGTH = 55') OR AN ANCHOR SLAB TYPE II MAY BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.
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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.

SPECIFICATION REFERENCE

316

11" THICK CONTINUOUSLY REINFORCED CONC. PAVE.  
(14 FOOT TRAVEL LANE)

VIRGINIA DEPARTMENT OF TRANSPORTATION

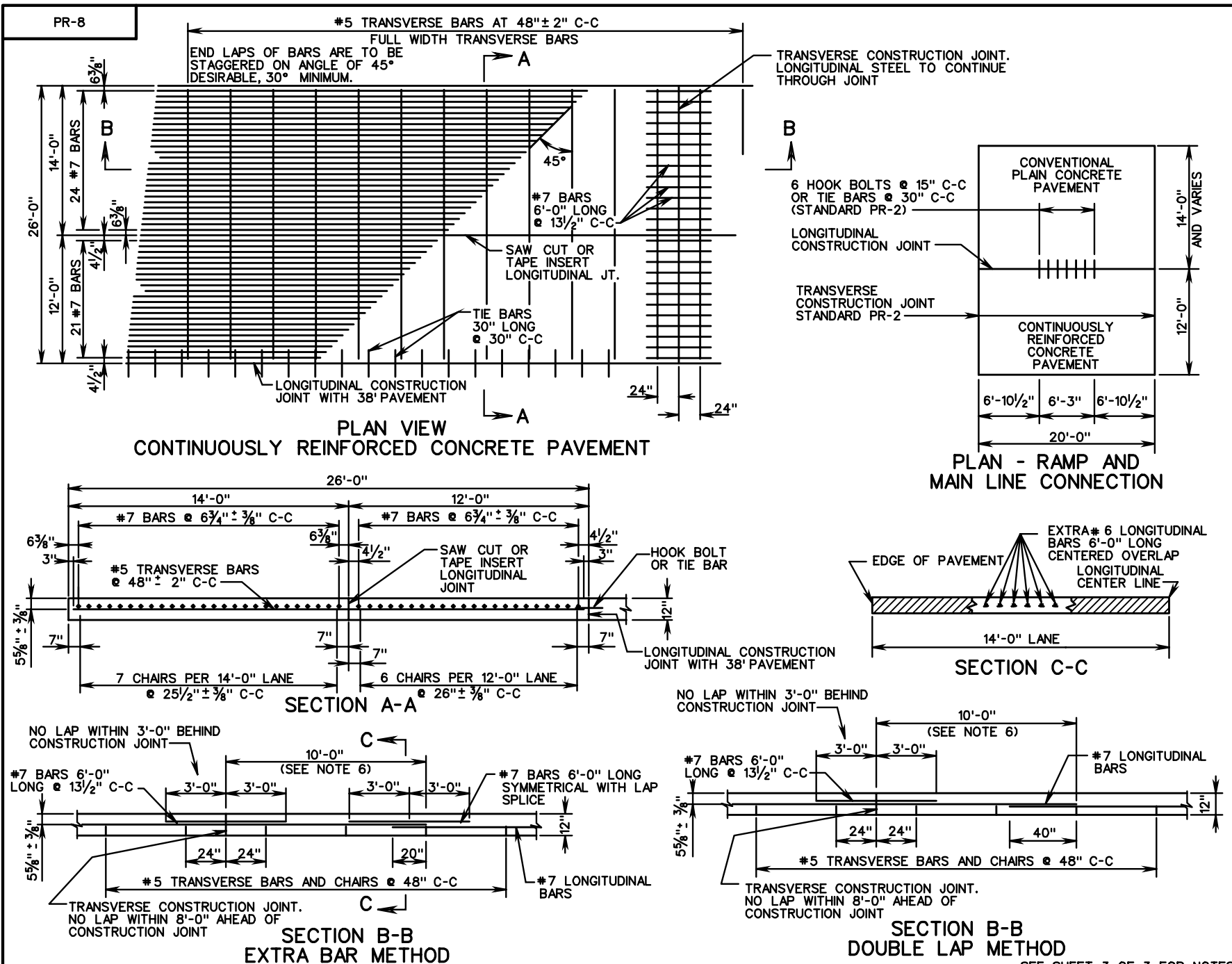


ROAD AND BRIDGE STANDARDS

REVISION DATE

SHEET 3 OF 3

301.21



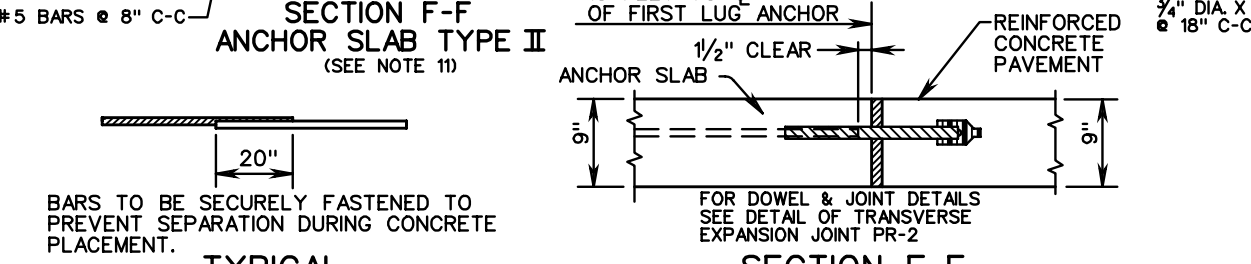
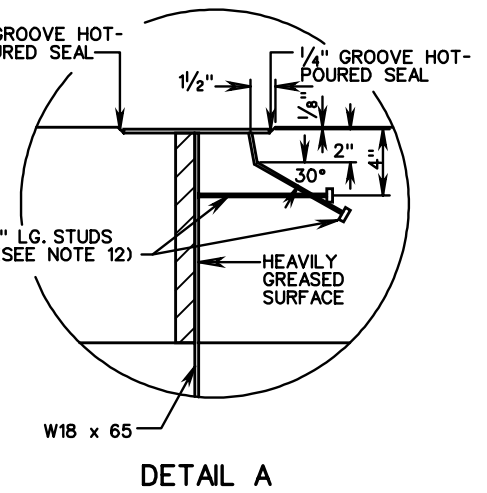
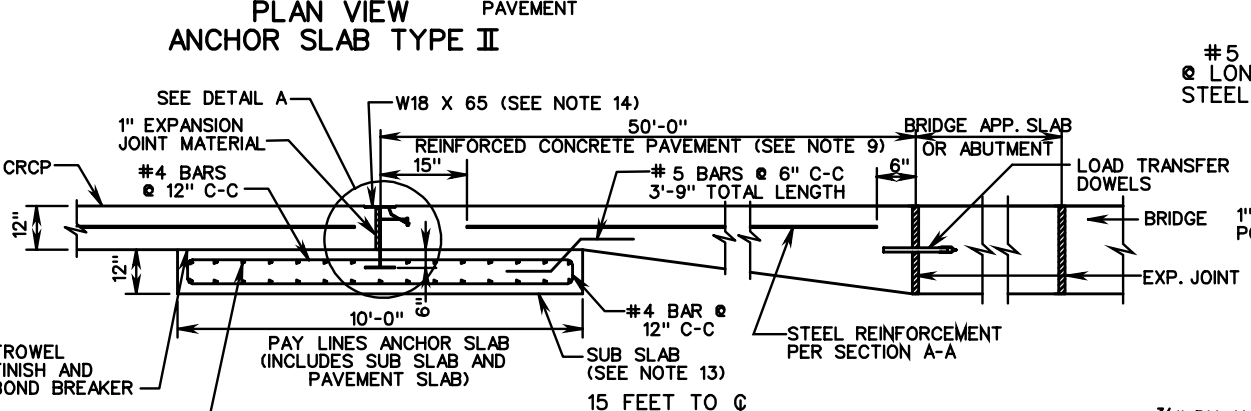
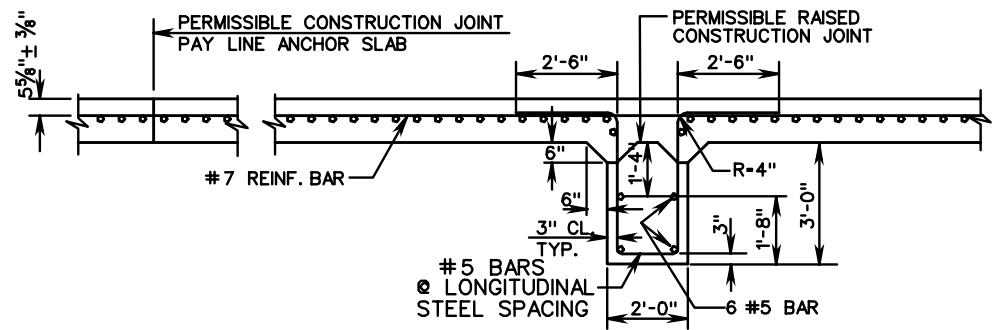
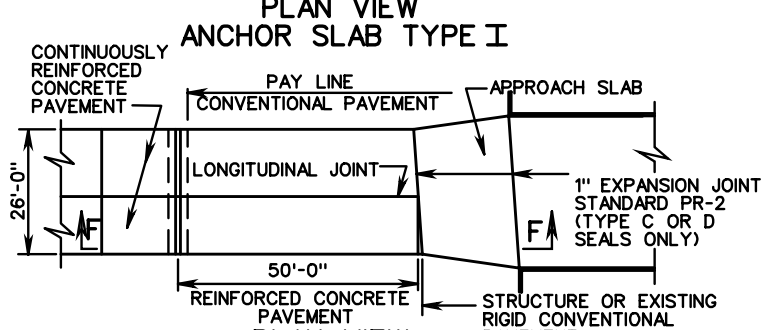
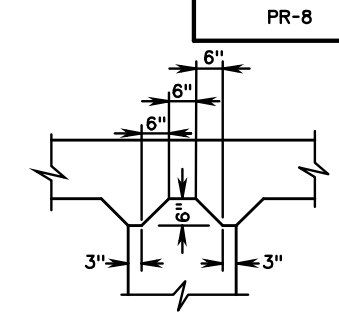
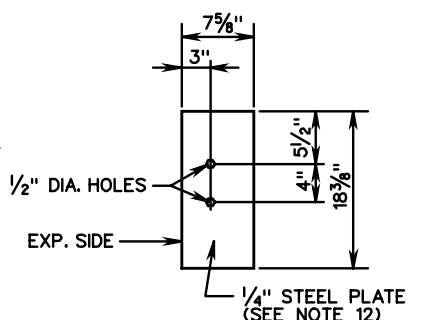
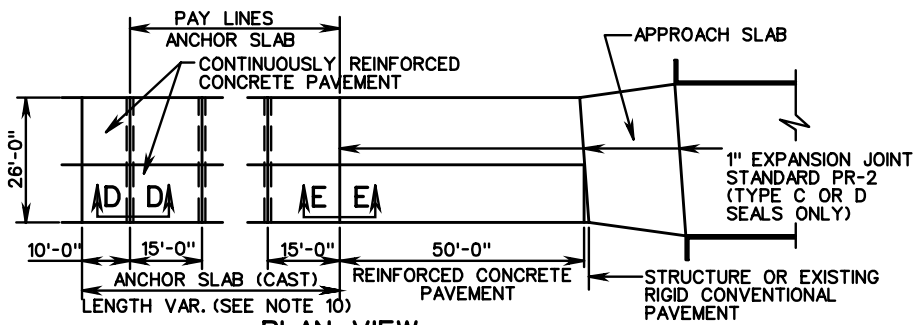
SEE SHEET 3 OF 3 FOR NOTES

<b>VDOT</b>	
ROAD AND BRIDGE STANDARDS	
SHEET 1 OF 3	REVISION DATE
301.22	

**12" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
(14' TRAVEL LANE)

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
316



SEE SHEET 3 OF 3 FOR NOTES

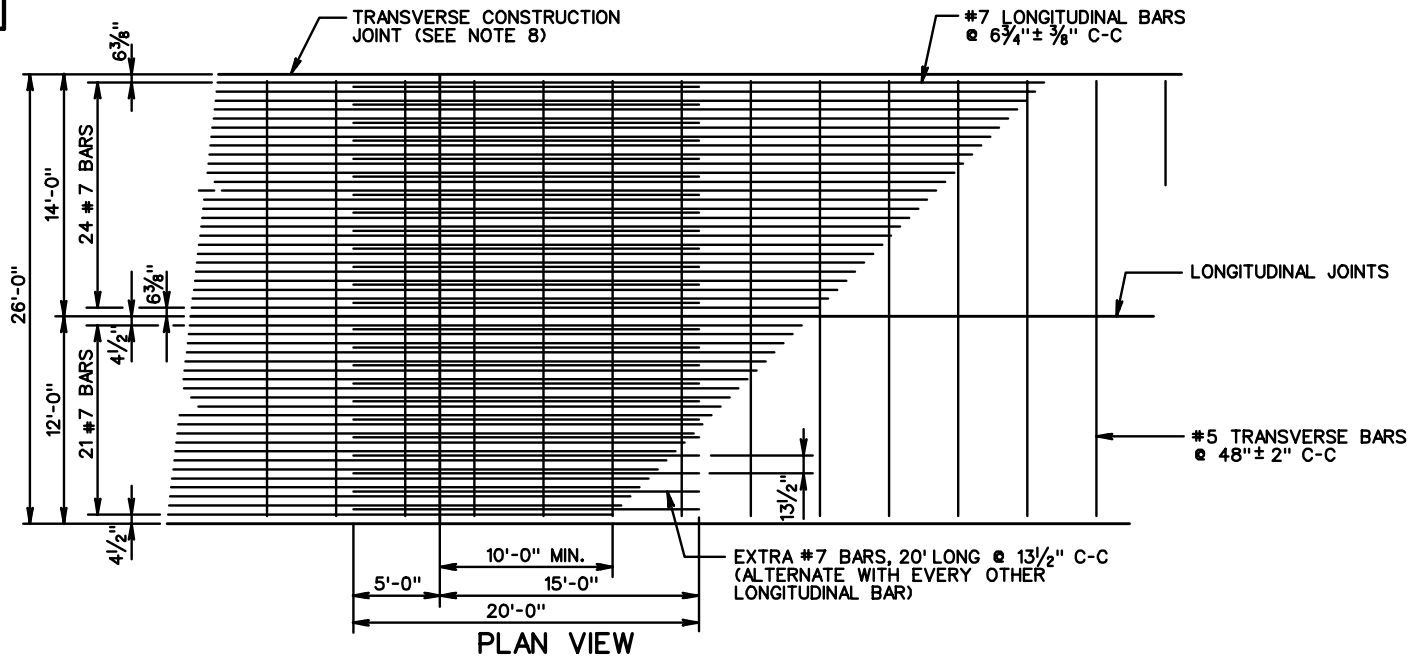
SPECIFICATION REFERENCE
316

**12" THICK CONTINUOUSLY REINFORCED CONC PAVE. (14' TRAVEL LANE)**

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS	
REVISION DATE	SHEET 2 OF 3
301.23	

PR-8



PLAN VIEW  
LEAVE OUT JOINT STEEL BAR REINFORCEMENT ONLY

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 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 DAYS POUR. BOTH OUTSIDE EDGES OF DIVIDED HIGHWAY ARE TO BE STAMPED. ONE EDGE OF UNDIVIDED HIGHWAY WHERE FEASIBLE (TRAVEL LANE).  

255
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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 OR 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.

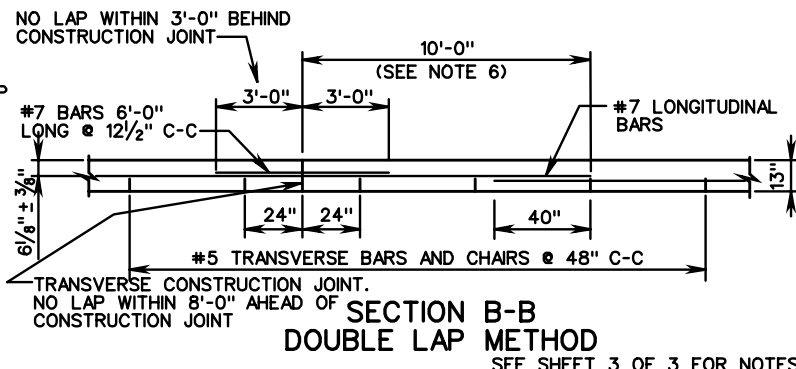
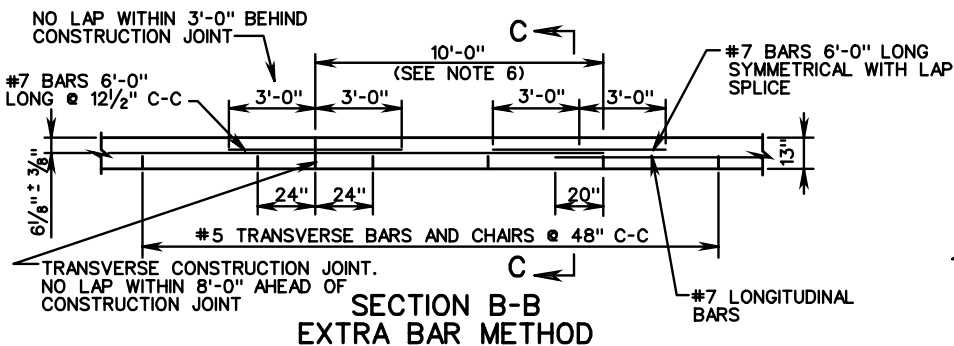
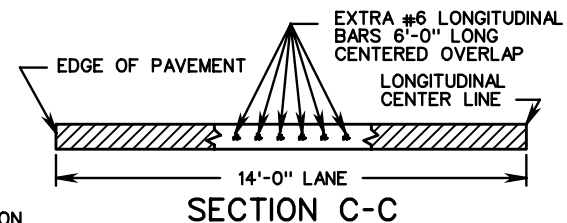
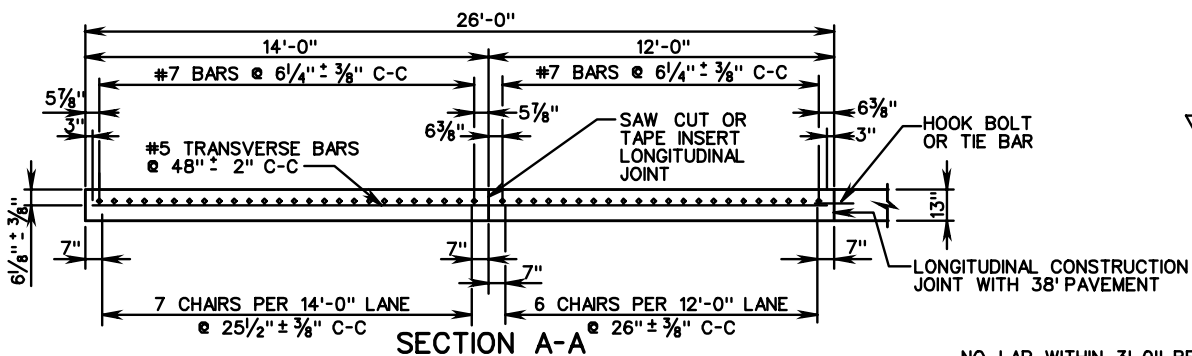
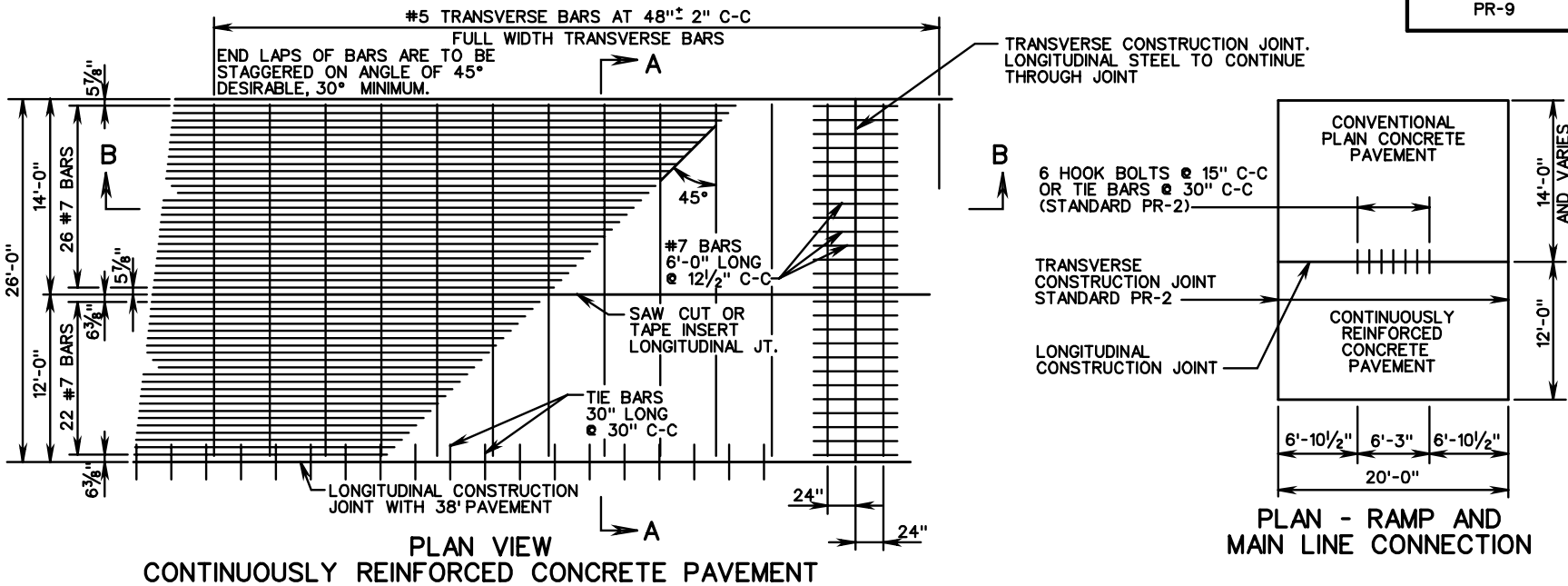
8. LONGITUDINAL STEEL TO CONTINUE THROUGH JOINT. EXTRA # 6 BARS 20' LONG SHALL BE SPACED AT 13 1/2" C-C.
9. CONCRETE SHOULD BE ADEQUATELY VIBRATED UNDER BEAM FLANGE TO ELIMINATE HONEYCOMBS.
10. IN CONDITIONS OF SOFT CLAY UNDERLYING SOILS (AASHTO SOIL CLASSIFICATION OF GROUP A-4, A-5, A-6, OR A-7) INCLUSIVE OF SUBGROUPS (PER AASHTO MATERIALS SPECIFICATIONS M 145), AN ANCHOR SLAB TYPE I UTILIZING 5 ANCHOR LUGS (ANCHOR SLAB LENGTH = 85') OR AN ANCHOR SLAB TYPE II SHALL BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.  
  
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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.

<b>VDOT</b>	
ROAD AND BRIDGE STANDARDS	
SHEET 3 OF 3	REVISION DATE
301.24	

**12" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
(14' TRAVEL LANE)

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
316



SPECIFICATION REFERENCE

**13" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**

(14' TRAVEL LANE)

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

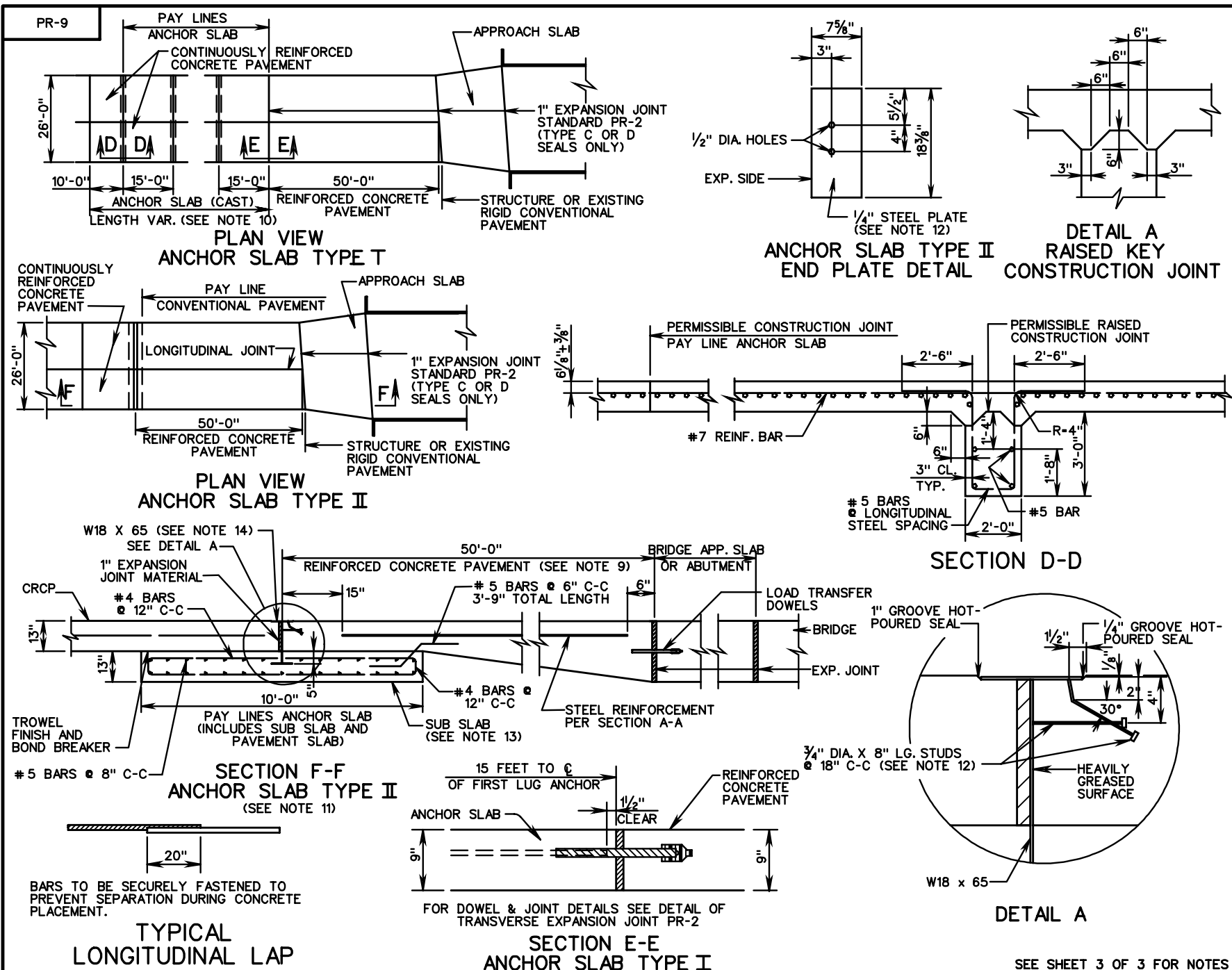
ROAD AND BRIDGE STANDARDS

REVISION DATE

SHEET 1 OF 3

316

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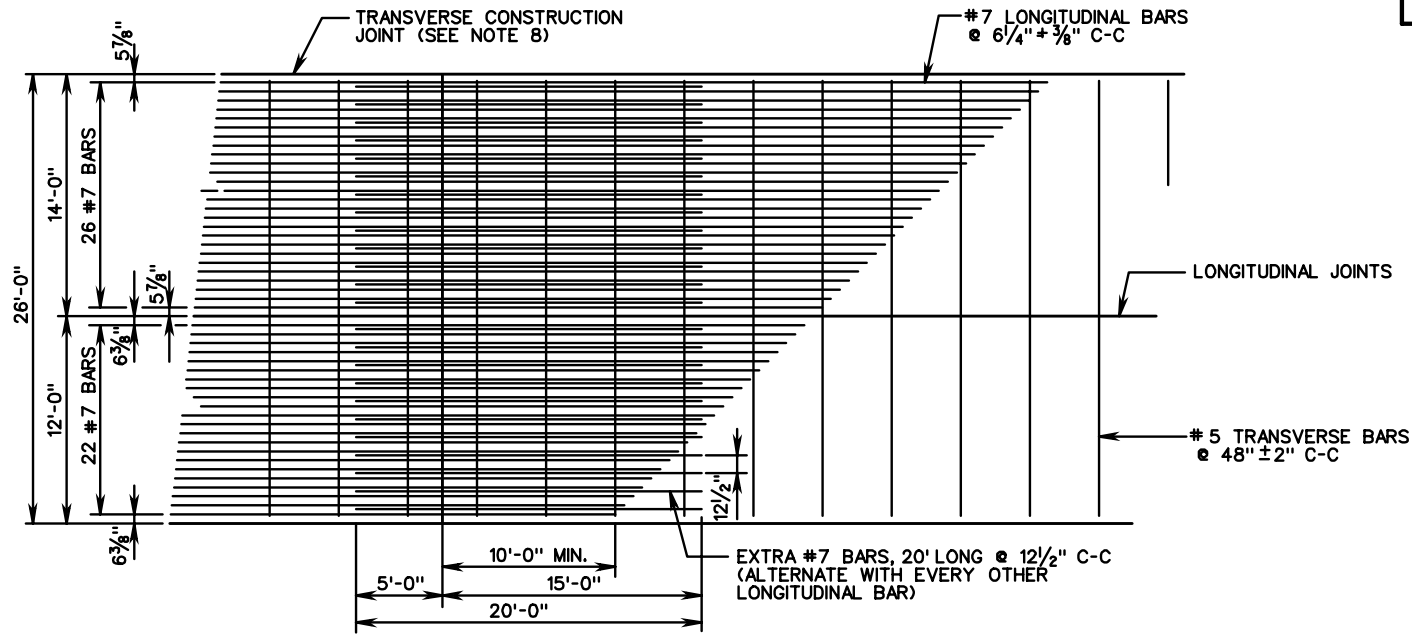


SEE SHEET 3 OF 3 FOR NOTES

<b>VDOT</b>	
ROAD AND BRIDGE STANDARDS	
SHEET 2 OF 3	REVISION DATE
301.26	

**13" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
 (14' TRAVEL LANE)

SPECIFICATION REFERENCE
316



PLAN VIEW  
LEAVE OUT JOINT STEEL BAR REINFORCEMENT ONLY

NOTES:

- 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.
- TRANSVERSE CONSTRUCTION JOINT BARS ARE TO BE PLACED IN THE SAME HORIZONTAL PLANE AS THE #7 LONGITUDINAL BARS.
- #7 LONGITUDINAL BARS ARE TO BE LAPPED AND TIED IN THE SAME HORIZONTAL PLANE.
- 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.
- 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 DAYS POUR. BOTH OUTSIDE EDGES OF DIVIDED HIGHWAY ARE TO BE STAMPED. ONE EDGE OF UNDIVIDED HIGHWAY WHERE FEASIBLE (TRAVEL LANE).
- DOUBLE LAP REQUIREMENT (40") AND THE EXTRA BAR METHOD APPLY ONLY TO LAPS FALLING WITHIN AN AREA OF 10' BEYOND THE CONSTRUCTION JOINT.
- 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 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.
- LONGITUDINAL STEEL TO CONTINUE THROUGH JOINT. EXTRA #6 BARS 20' LONG SHALL BE SPACED AT 13 1/2" C-C.
- CONCRETE SHOULD BE ADEQUATELY VIBRATED UNDER BEAM FLANGE TO ELIMINATE HONEYCOMBS.
- 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 = 85') OR AN ANCHOR SLAB TYPE II SHALL BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.  
  
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 145), AN ANCHOR SLAB TYPE I UTILIZING 3 ANCHOR LUGS (ANCHOR SLAB LENGTH = 55') OR AN ANCHOR SLAB TYPE II MAY BE USED. REINFORCEMENT STEEL SIZE AND SPACING WILL BE THE SAME AS THE CONTINUOUS CONCRETE PAVEMENT.
- WELD STEEL END PLATE TO BOTH ENDS OF WF BEAM TO SEAL ENDS. WELD SHEAR CONNECTORS TO WEB AND FLANGE OF WF BEAM.
- 2 INCH MINIMUM CONCRETE COVER FOR STEEL IN SUB-SLABS.
- WIDE FLANGE BEAM TO BE TREATED WITH CORROSION INHIBITOR PER SECTION 407 OF THE ROAD AND BRIDGE SPECIFICATIONS.
- ALL REINFORCED BARS SHALL BE GRADE 60 STEEL.
- THE USE OF TUBE FEEDING TO PLACE REINFORCEMENT IN PLASTIC CONCRETE WILL NOT BE ALLOWED.

SPECIFICATION REFERENCE
316

**13" THICK CONTINUOUSLY REINFORCED CONC. PAVE.**  
**(14' TRAVEL LANE)**

VIRGINIA DEPARTMENT OF TRANSPORTATION

<b>VDOT</b> ROAD AND BRIDGE STANDARDS	
REVISION DATE	SHEET 3 OF 3
301.27	

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ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1

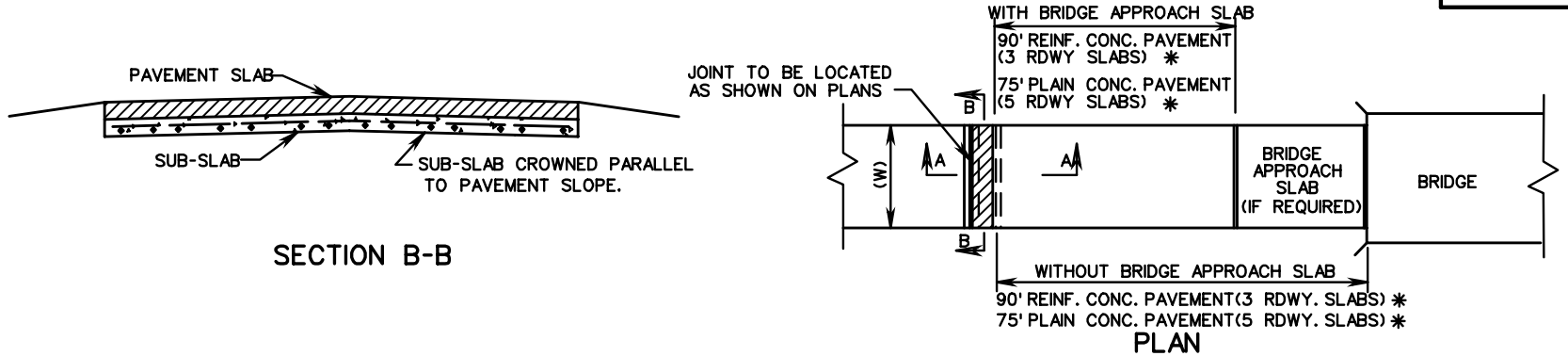
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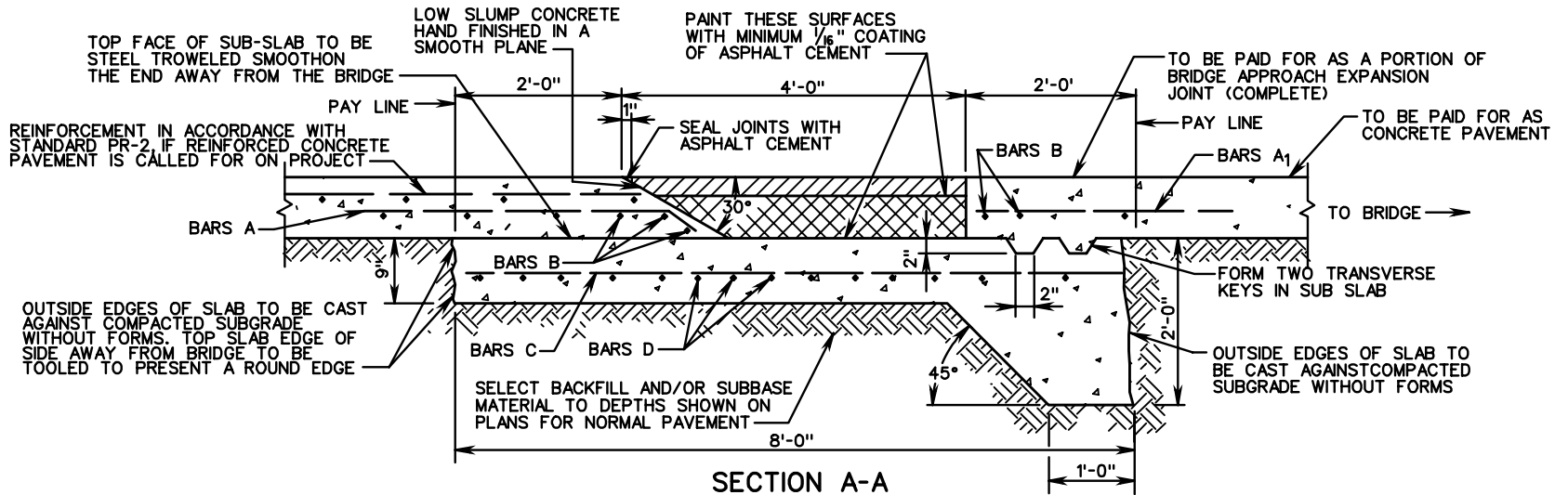
SPECIFICATION  
REFERENCE

VIRGINIA DEPARTMENT OF TRANSPORTATION





\* DENOTES DESIRABLE VALUES, PAVEMENT TYPE (PLAIN OR REINFORCED) TO BE DETERMINED BY THE MATERIALS DIVISION.



	APPROXIMATE QUANTITIES PER YARD OF TRANSVERSE MEASURE	
	MAIN LINE PAVEMENT DEPTH 8"	9"
CUBIC YARDS CLASS A3 CONCRETE	0.30	0.30
REINFORCING STEEL LBS.	33.44	33.44
ASPHALT CONCRETE BM-25.0 TONS	0.16	0.18
TONS ASPHALT CONCRETE CONN. SM-9.5A OR D	0.06	0.06
SQ. YARDS CONCRETE PAVEMENT **	0.51	0.52

\*\* BEVELED PORTION OF PAVEMENT SLAB HAS BEEN CONVERTED TO EQUIVALENT DESIGN DEPTH OF MAIN LINE PAVEMENT.

SCHEDULE OF REINFORCING STEEL					
MARK	SIZE	SPACING C-C	LENGTH	NO. REQ'D.	WEIGHT/FT. TRANSVERSE MEASURE LBS.
A	5	12"	4'-0"	(W)	4.172
A <sub>1</sub>	5	12"	3'-0"	(W)	3.129
B	5	6"	W-4"	5	5.215
C	4	6"	7'-8"	(W)(2)	10.240
D	4	6"	W-4"	16	10.688

ASPHALT CONCRETE BASE COURSE TYPE BM-25.0  
6" WITH 8" PAVEMENT  
7" WITH 9" PAVEMENT

2" ASPHALT CONCRETE TYPE SM-9.5A OR D

NOTES:  
CONCRETE IN SUBSLAB TO BE CLASS A3.  
BARS A, A<sub>1</sub>, & B TO BE PLACED AS SHOWN WHETHER PLAIN OR REINFORCED CONCRETE PAVEMENT IS USED.  
PORTIONS OF BARS A AND A<sub>1</sub>, WHICH ARE OUTSIDE OF THE INDICATED PAY LINES ARE INCLUDED IN PRICE BID FOR COMPLETE JOINT.

SPECIFICATION REFERENCE

316

## BRIDGE APPROACH EXPANSION JOINT

(FOR WIDENING OR MAINTENANCE OF EXISTING XJ-1 ONLY)

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

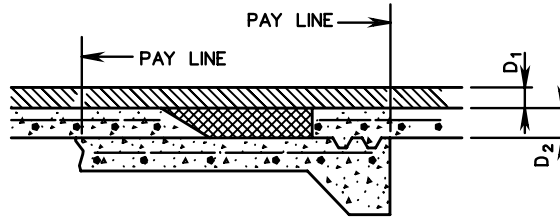
ROAD AND BRIDGE STANDARDS

REVISION DATE

SHEET 1 OF 2

302.01

XJ-1



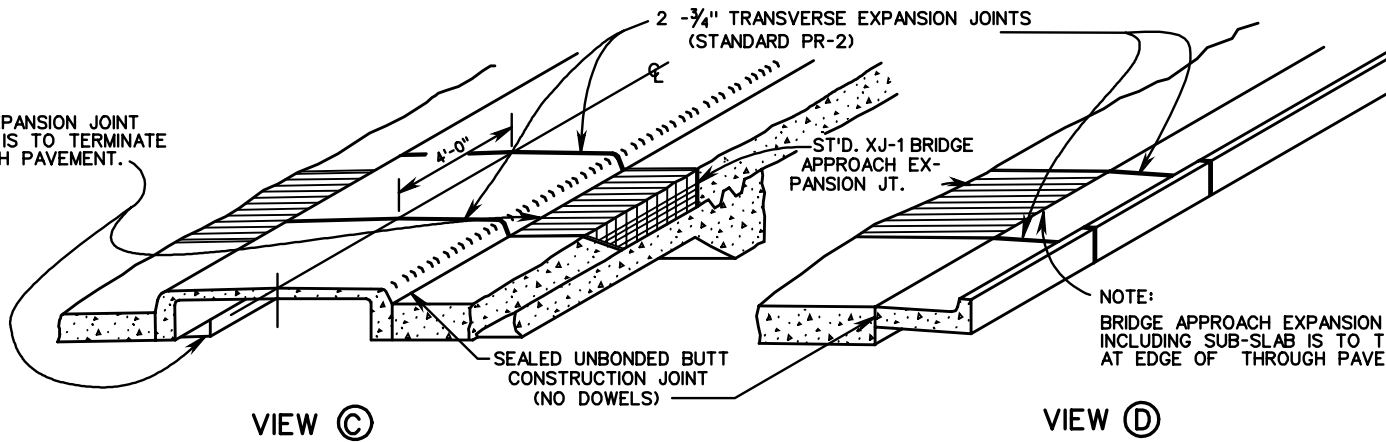
D<sub>1</sub> = DEPTH OF ASPHALT TOP USED ON APPROACHES  
 D<sub>2</sub> = DEPTH OF CONCRETE BASE USED ON APPROACHES

VIEW (A)

USED WITH CONCRETE BASE WITH ASPHALT CONCRETE SURFACE

**NOTE:**

BRIDGE APPROACH EXPANSION JOINT INCLUDING SUB-SLAB IS TO TERMINATE AT EDGE OF THROUGH PAVEMENT.



VIEW (C)

USED ADJACENT TO RAISED MEDIAN

VIEW (D)

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.



ROAD AND BRIDGE STANDARDS

SHEET 2 OF 2

REVISION DATE

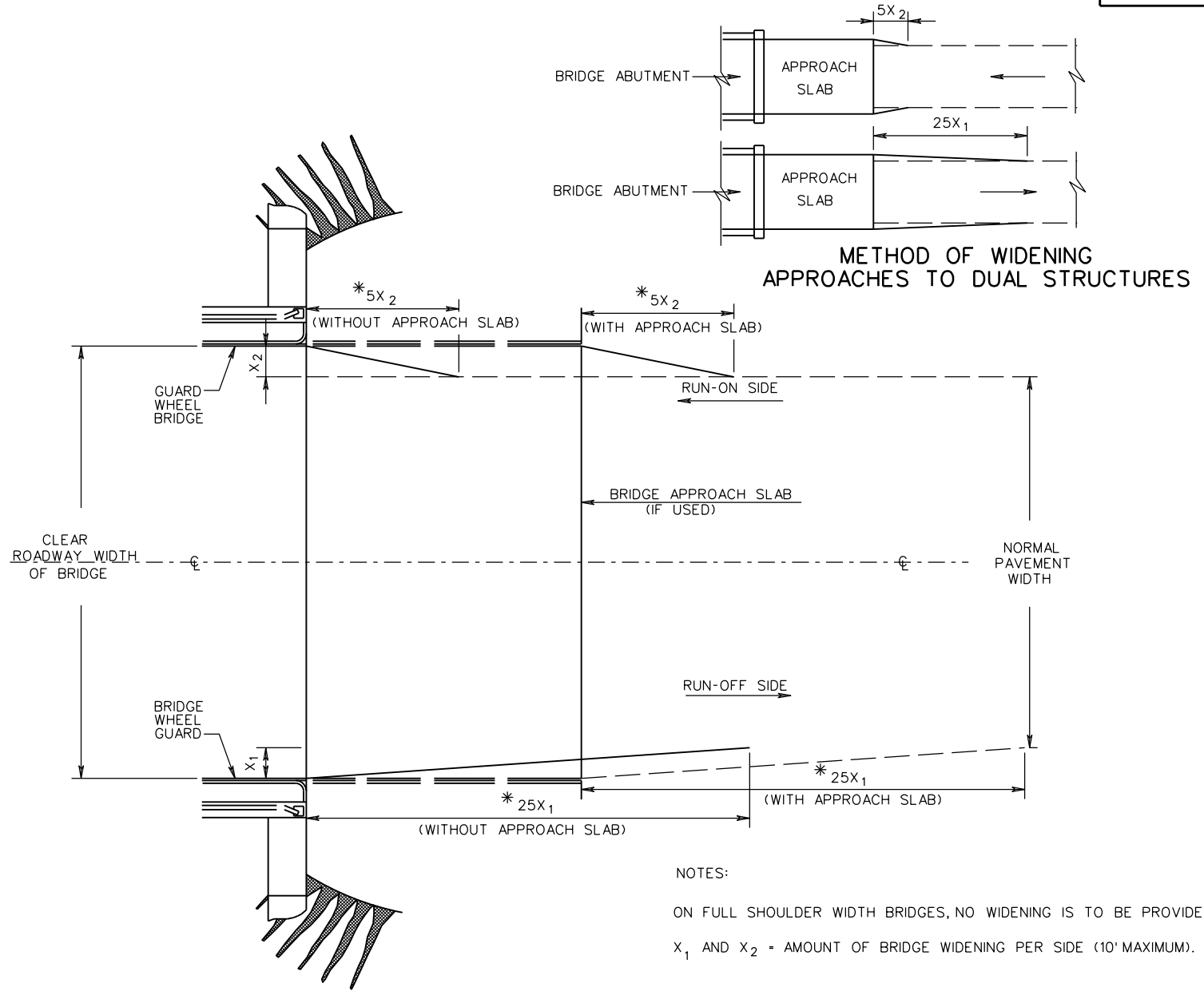
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**BRIDGE APPROACH EXPANSION JOINT  
 (INSTALLATION CRITERIA)**

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE

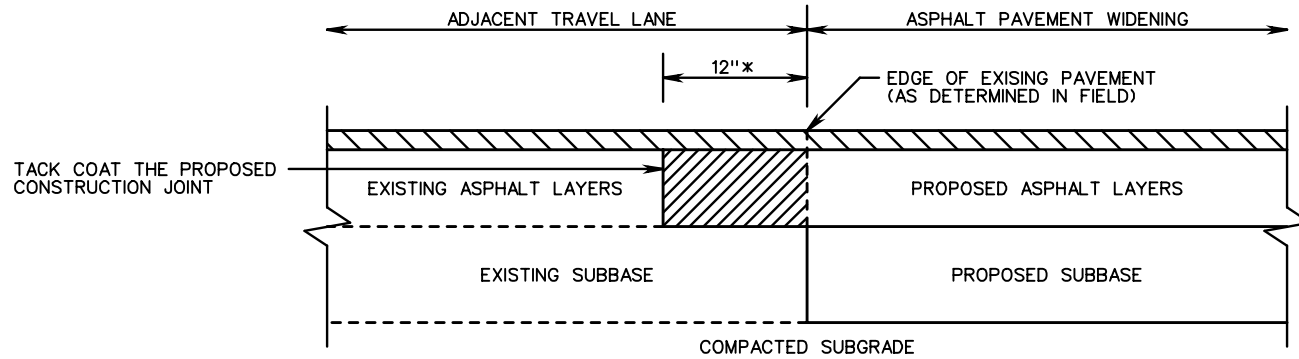
316





THIS DRAWING WAS VOID WITH THE JULY 2013 R&B STANDARDS REVISION

SPECIFICATION REFERENCE  NONE	<p style="font-size: 2em; font-weight: bold; opacity: 0.5;">VOID</p> <p style="font-size: 1.5em; font-weight: bold;">METHOD OF WIDENING BRIDGE APPROACH PAVEMENT</p> <p style="font-size: 0.8em;">VIRGINIA DEPARTMENT OF TRANSPORTATION</p>	<p style="font-weight: bold; font-size: 1.2em;">VDOT</p> <p style="font-size: 0.8em;">ROAD AND BRIDGE STANDARDS</p> <table style="width: 100%; border: none;"> <tr> <td style="border: none; width: 50%;">REVISION DATE</td> <td style="border: none; width: 50%;">SHEET 1 OF 1</td> </tr> <tr> <td style="border: none; text-align: center;">7/12</td> <td style="border: none; text-align: center;">303.01</td> </tr> </table>	REVISION DATE	SHEET 1 OF 1	7/12	303.01
REVISION DATE	SHEET 1 OF 1					
7/12	303.01					

WP-2



**CONSTRUCTION JOINT DETAIL**

-  REMOVE EXISTING ASPHALT LAYERS TO EXISTING SUBBASE AND REPLACE WITH PROPOSED ASPHALT WIDENING LAYERS
-  PROPOSED MINIMUM 1½ 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 1½ 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(q) OF THE SPECIFICATIONS.



ROAD AND BRIDGE STANDARDS

**PAVEMENT WIDENING**

SPECIFICATION REFERENCE

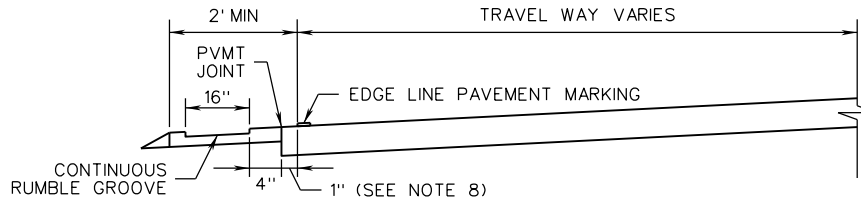
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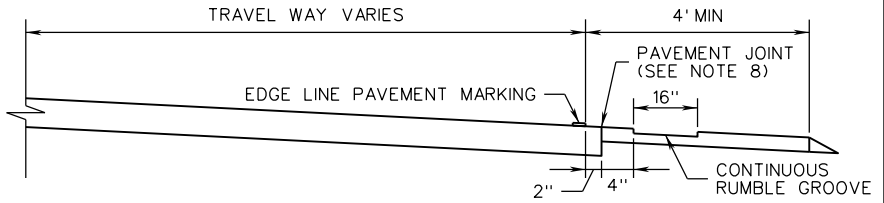
VIRGINIA DEPARTMENT OF TRANSPORTATION

315

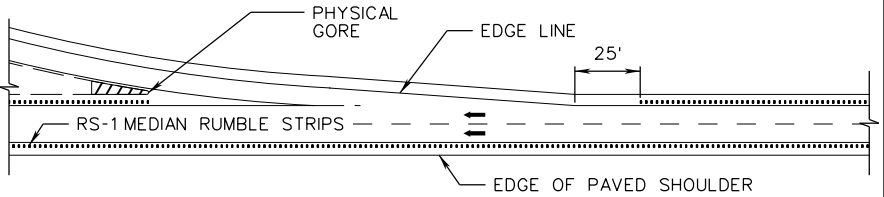
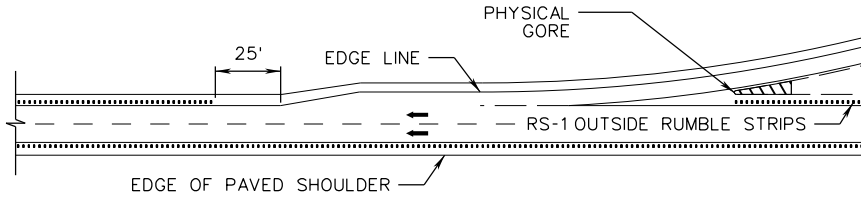
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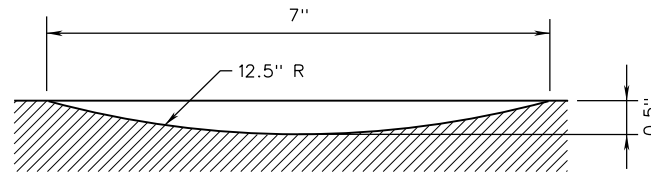
RS-1 MEDIAN, SECTION VIEW A-A



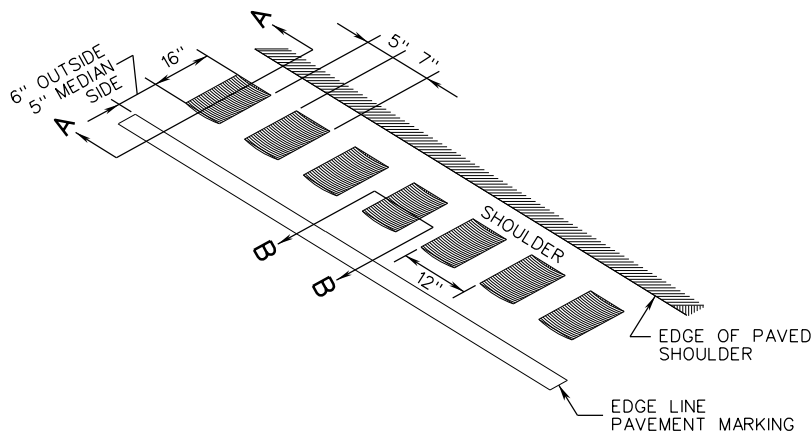
RS-1 OUTSIDE, SECTION VIEW A-A



PLAN VIEW



RUMBLE GROOVE SECTION B-B



NOTES

1. RUMBLE STRIPS SHALL BE MILLED-IN CONTINUOUSLY FOLLOWING THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. RUMBLE STRIPS SHALL BE INSTALLED ON MAINLINE SHOULDERS ONLY, UNLESS DIRECTED BY THE REGIONAL TRAFFIC ENGINEER FOR RAMPS.
3. RUMBLE STRIPS SHALL NOT BE PLACED WITHIN LIMITS OF BRIDGE DRAINAGE APRONS OR SPECIAL DESIGN SHOULDER SLOT INLETS.
4. ALL MATERIAL MILLED TO FORM THE RUMBLE STRIP SHALL BE THOROUGHLY REMOVED, DISPOSED OF IN A LOCATION APPROVED BY THE ENGINEER, AND SWEEPED CLEAN OF DUST.
5. MILLING INTO EXISTING AND NEW PAVEMENTS SHALL BE IN ACCORDANCE WITH VDOT SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. OVERSPRAY OF LIQUID ASPHALT COATING (EMULSION) SHALL NOT EXTEND MORE THAN 2 INCHES BEYOND THE WIDTH OF GROOVE AND/OR SHALL NOT COME IN CONTACT WITH PAVEMENT MARKINGS.
6. RUMBLE STRIPS SHALL NOT BE PLACED WITHIN 25 FEET OF ANY MEDIAN BREAK CROSSOVER OR ACCELERATION/DECELERATION LANE TAPER OR WITHIN THE GORE AREA.
7. PAVEMENT MARKINGS AND MARKERS SHALL BE PLACED AT TIMES AND LOCATIONS IN ACCORDANCE WITH THE CURRENT VDOT STANDARDS, CONTRACT DOCUMENTS, THE VIRGINIA SUPPLEMENT TO THE MUTCD, AND AS DIRECTED BY THE ENGINEER.
8. OUTSIDE EDGE LINE SHALL BE PLACED 2 INCHES FROM THE PAVEMENT JOINT AND MEDIAN EDGE LINE SHALL BE PLACED 1 INCH FROM THE PAVEMENT JOINT, UNLESS APPROVED BY THE ENGINEER. THE PAVEMENT JOINT SHALL BE WITHIN THE SHOULDER UNLESS APPROVED BY THE ENGINEER.

SPECIFICATION REFERENCE

310  
315

A COPY OF THE ORIGINAL SEALED AND SIGNED STANDARD DRAWING IS ON FILE IN THE CENTRAL OFFICE  
**CONTINUOUS GROOVE SHOULDER RUMBLE STRIPS**

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

ROAD AND BRIDGE STANDARDS

REVISION DATE

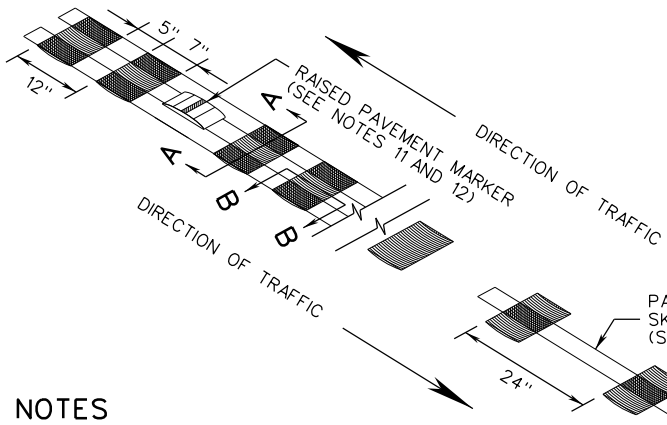
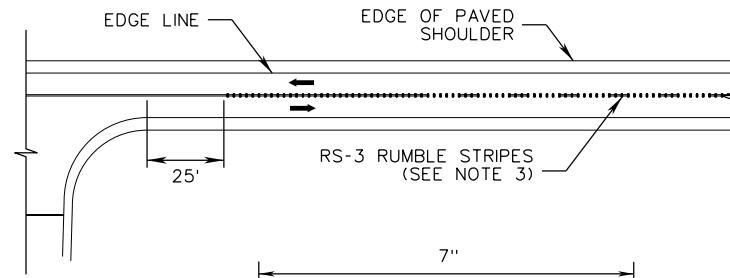
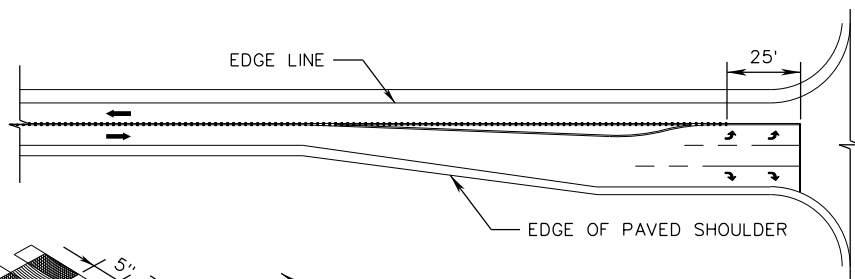
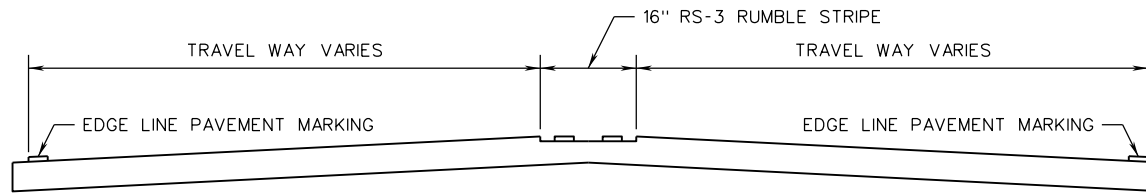
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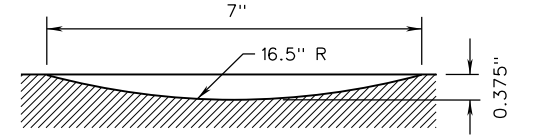
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2016 ROAD & BRIDGE STANDARDS

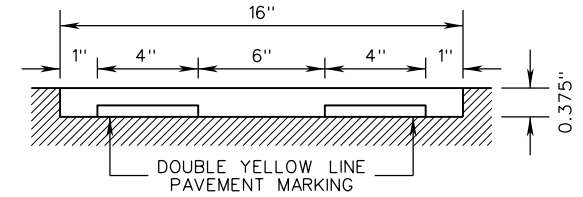
RS-3



**PLAN VIEW**  
PUBLIC ROADWAY OR COMMERCIAL ENTRANCE



**RUMBLE GROOVE SECTION B-B**



**CENTER LINE STRIPE SECTION A-A**

**NOTES**

- CENTER LINE RUMBLE STRIPES SHALL BE MILLED-IN CONTINUOUSLY FOLLOWING THE PLANS OR AS DIRECTED BY THE ENGINEER.
- CENTER LINE RUMBLE STRIPES SHALL NOT BE INSTALLED ON SUBDIVISION STREETS OR IN NARROW UNMARKED ROAD SECTIONS WITHOUT PAVEMENT MARKINGS.
- CENTER LINE RUMBLE STRIPES SHALL NOT BE INSTALLED IN PASSING ZONES EXCEPT WHEN SPECIFIED WITH 12 OR 24 INCH SPACING IN THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE REGIONAL TRAFFIC ENGINEER.
- CENTER LINE RUMBLE STRIPES SHALL NOT BE INSTALLED WITHIN THE LIMITS OF BRIDGES DRAINAGE APRONS, RAIL GRADE CROSSINGS, MARKED CROSSWALKS OR CENTER TWO-WAY TURN LANES, UNLESS DIRECTED BY THE ENGINEER.
- CENTER LINE RUMBLE STRIPES SHALL NOT BE PLACED WITHIN 25 FEET OF ANY PUBLIC ROADWAY OR COMMERCIAL DRIVEWAY TAPER OR TURN RADIUS.
- WHERE A LEFT-TURN LANE IS MARKED, THE CONTINUOUS CENTER LINE RUMBLE STRIPES SHALL FOLLOW THE DOUBLE YELLOW MARKINGS OF THE OPPOSING LANES AND SHALL STOP 25 FEET FROM THE RADIUS POINT OF THE INTERSECTING DRIVEWAY OR ROADWAY.
- ALL MATERIAL MILLED TO FORM THE RUMBLE STRIPE SHALL BE THOROUGHLY REMOVED, DISPOSED OF IN A LOCATION APPROVED BY THE ENGINEER, AND SWEEPED CLEAN OF DUST.
- MILLING INTO EXISTING AND NEW PAVEMENTS SHALL BE IN ACCORDANCE WITH VDOT SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. OVERSPRAY OF LIQUID ASPHALT COATING (EMULSION) SHALL NOT EXTEND MORE THAN 2 INCHES BEYOND THE WIDTH OF GROOVE AND/OR SHALL NOT COME IN CONTACT WITH PAVEMENT MARKINGS.
- TEMPORARY PAVEMENT MARKINGS OR MARKERS SHALL BE INSTALLED IF PERMANENT MARKINGS CANNOT BE INSTALLED IN ACCORDANCE WITH TIME LIMITS SPECIFIED IN SECTION 704 OF THE SPECIFICATIONS AND AT THE DIRECTION OF THE ENGINEER.
- PAVEMENT MARKINGS AND MARKERS SHALL BE PLACED AT TIMES AND LOCATIONS IN ACCORDANCE WITH THE CURRENT VDOT STANDARDS, CONTRACT DOCUMENTS, VIRGINIA SUPPLEMENT TO THE MUTCD, AND AS DIRECTED BY THE ENGINEER.
- WHEN SPECIFIED ON THE PLANS OR DIRECTED BY THE ENGINEER, RAISED PAVEMENT MARKERS SHALL BE INSTALLED WITH THE CENTER LINE RUMBLE STRIPES IN ACCORDANCE WITH STANDARD PM-8 FOR THE TYPE OF INSTALLATION SPECIFIED.
- TWO CONSECUTIVE GROOVES FOR THE CENTER LINE RUMBLE STRIPES SHALL BE OMITTED AT THE LOCATION OF THE TYPE C OR D SINGLE RAISED PAVEMENT MARKER TO FACILITATE INSTALLATION.



ROAD AND BRIDGE STANDARDS

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**CENTER LINE RUMBLE STRIPES**

SPECIFICATION REFERENCE

SHEET 1 OF 1

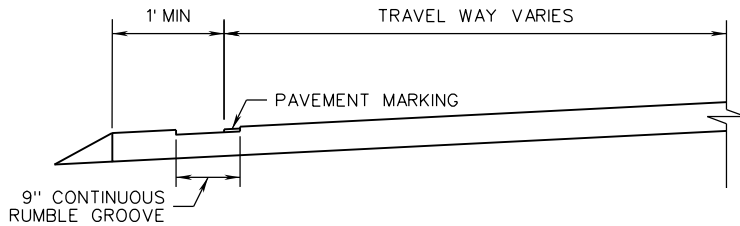
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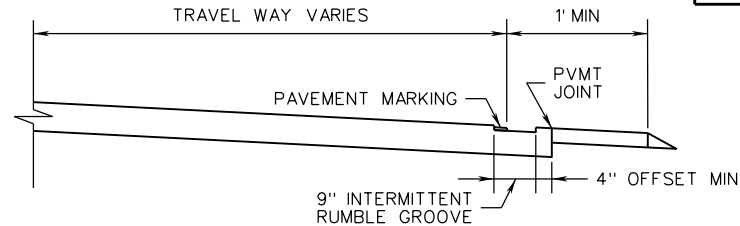
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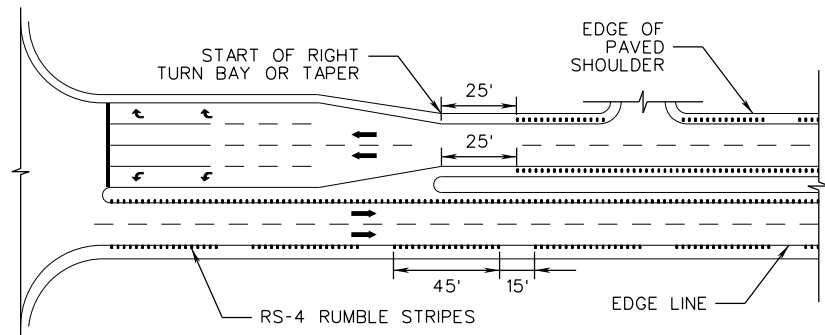
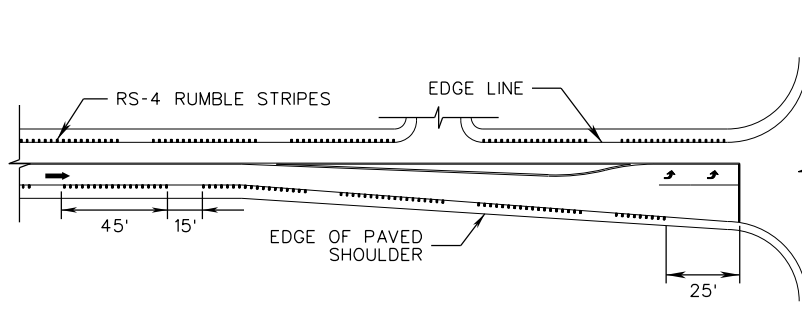
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RS-4 MEDIAN, SECTION VIEW A-A  
(SHOULDER WIDTH GREATER THAN 1'-0")



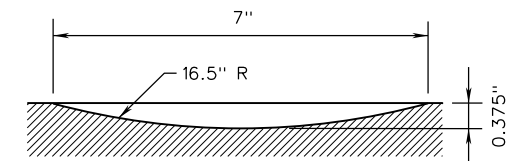
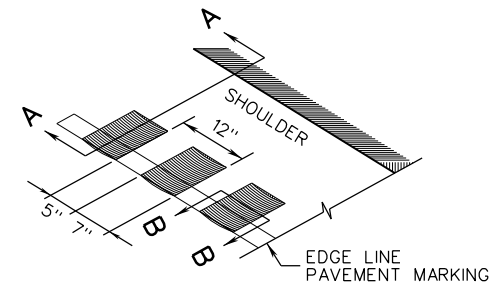
RS-4 OUTSIDE, SECTION VIEW A-A  
(SHOULDER WIDTH GREATER THAN 1'-0")



PLAN VIEW  
PUBLIC ROADWAY OR COMMERCIAL ENTRANCE

NOTES

- EDGE LINE RUMBLE STRIPE GROOVES ON THE OUTSIDE RIGHT SHOULDER SHALL BE MILLED-IN WITH INTERMITTENT PATTERN OF 45 FEET OF GROOVES FOLLOWED BY A 15-FOOT GAP AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- EDGE LINE RUMBLE STRIPE GROOVES ON THE MEDIAN SHOULDER OF DIVIDED HIGHWAYS SHALL BE MILLED-IN CONTINUOUSLY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER
- EDGE LINE RUMBLE STRIPES SHALL BE INSTALLED ON MAINLINE SHOULDERS ONLY, UNLESS DIRECTED BY THE REGIONAL TRAFFIC ENGINEER FOR RAMP.
- EDGE LINE RUMBLE STRIPES SHALL NOT BE INSTALLED WITHIN THE LIMITS OF BRIDGES DRAINAGE APRONS, RAIL GRADE CROSSINGS, OR MARKED CROSSWALKS UNLESS DIRECTED BY THE ENGINEER.
- EDGE LINE RUMBLE STRIPES SHALL NOT BE PLACED WITHIN 25 FEET OF ANY PUBLIC ROADWAY, COMMERCIAL DRIVEWAY, MEDIAN BREAK CROSSOVER TAPER OR TURN RADIUS; TURN LANE OR ACCELERATION / DECELERATION LANE TAPER; OR, WITHIN THE GORE AREA.
- ALL MATERIAL MILLED TO FORM THE RUMBLE STRIPE SHALL BE THOROUGHLY REMOVED, DISPOSED OF IN A LOCATION APPROVED BY THE ENGINEER, AND SWEEPED CLEAN OF DUST
- MILLING INTO EXISTING AND NEW PAVEMENTS SHALL BE IN ACCORDANCE WITH VDOT SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. LIQUID ASPHALT COATING (EMULSION) OVERSPRAY SHALL NOT EXTEND MORE THAN 2 INCHES BEYOND THE WIDTH OF GROOVE AND/OR SHALL NOT COME IN CONTACT WITH PAVEMENT MARKINGS.
- TEMPORARY PAVEMENT MARKINGS OR MARKERS SHALL BE INSTALLED IF PERMANENT MARKINGS CANNOT BE INSTALLED IN ACCORDANCE WITH TIME LIMITS SPECIFIED IN SECTION 704 OF THE SPECIFICATIONS AND AT THE DIRECTION OF THE ENGINEER.
- PAVEMENT MARKINGS AND MARKERS SHALL BE PLACED AT TIME AND LOCATIONS IN ACCORDANCE WITH THE CURRENT VDOT STANDARDS, CONTRACT DOCUMENTS, VIRGINIA SUPPLEMENT TO THE MUTCD, AND AS DIRECTED BY THE ENGINEER.



RUMBLE GROOVE SECTION B-B

SPECIFICATION REFERENCE

310  
315

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EDGE LINE RUMBLE STRIPES

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

ROAD AND BRIDGE STANDARDS

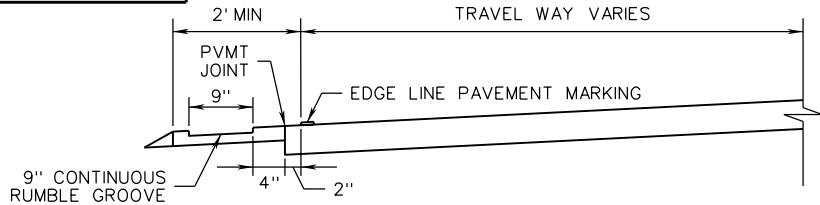
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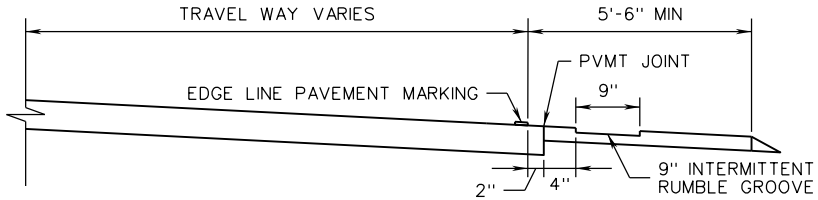
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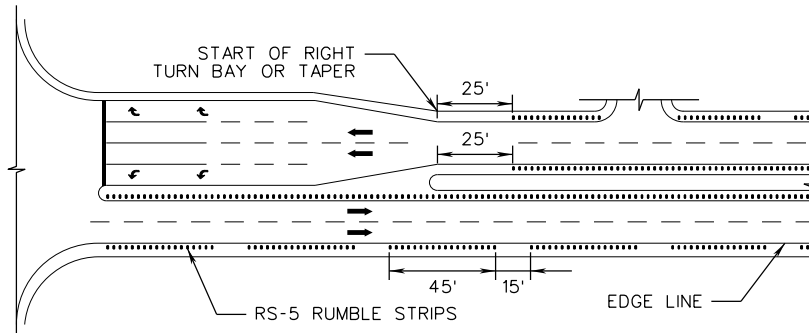
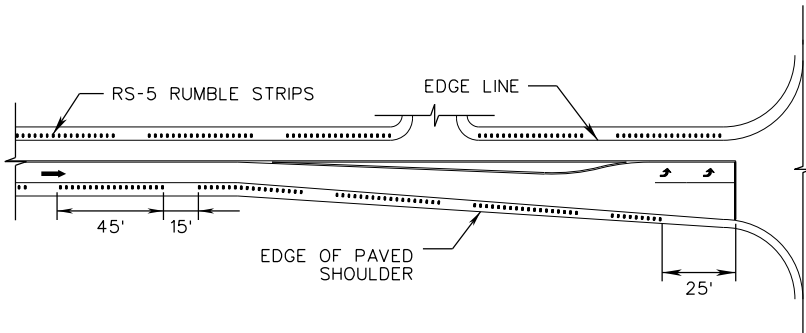
RS-5



RS-5 MEDIAN, SECTION VIEW



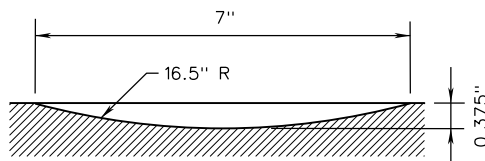
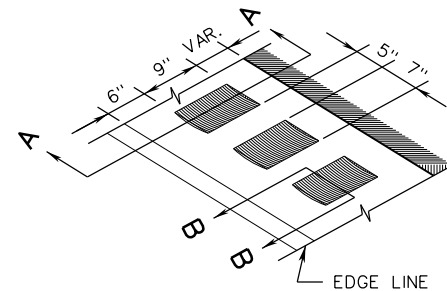
RS-5 OUTSIDE, SECTION VIEW A-A  
(SHOULDER WIDTH GREATER THAN OR EQUAL TO 5'-6")



PLAN VIEW  
PUBLIC ROADWAY OR COMMERCIAL ENTRANCE

NOTES

1. SHOULDER RUMBLE STRIP GROOVES ON THE OUTSIDE RIGHT SHOULDER SHALL BE MILLED-IN WITH INTERMITTENT PATTERN OF 45 FEET OF GROOVES FOLLOWED BY A 15-FOOT GAP AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. SHOULDER RUMBLE STRIP GROOVES ON THE MEDIAN SHOULDER OF DIVIDED HIGHWAYS SHALL BE MILLED-IN CONTINUOUSLY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
3. SHOULDER RUMBLE STRIPS SHALL BE INSTALLED ON MAINLINE SHOULDERS ONLY, UNLESS DIRECTED BY THE REGIONAL TRAFFIC ENGINEER FOR RAMP.
4. SHOULDER RUMBLE STRIPS SHALL NOT BE INSTALLED WITHIN THE LIMITS OF BRIDGES DRAINAGE APRONS, RAIL GRADE CROSSINGS, OR MARKED CROSSWALKS, UNLESS DIRECTED BY THE ENGINEER.
5. SHOULDER RUMBLE STRIPS SHALL NOT BE PLACED WITHIN 25 FEET OF ANY PUBLIC ROADWAY, COMMERCIAL DRIVEWAY, MEDIAN BREAK CROSSOVER TAPER OR TURN RADIUS; TURN LANE TAPER OR ACCELERATION/DECELERATION LANE; OR, WITHIN THE GORE AREA.
6. ALL MATERIAL MILLED TO FORM THE RUMBLE STRIP SHALL BE THOROUGHLY REMOVED, DISPOSED OF IN A LOCATION APPROVED BY THE ENGINEER, AND SWEEPED CLEAN OF DUST.
7. MILLING INTO EXISTING AND NEW PAVEMENTS SHALL BE IN ACCORDANCE WITH VDOT SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. LIQUID ASPHALT COATING (EMULSION) OVERSPRAY SHALL NOT EXTEND MORE THAN 2 INCHES BEYOND THE WIDTH OF GROOVE AND/OR SHALL NOT COME IN CONTACT WITH PAVEMENT MARKINGS.
8. PAVEMENT MARKINGS AND RAISED MARKERS SHALL BE PLACED AT TIMES AND LOCATIONS IN ACCORDANCE WITH THE CURRENT VDOT STANDARDS, CONTRACT DOCUMENTS, THE VIRGINIA SUPPLEMENT TO THE MUTCD, AND AS DIRECTED BY THE ENGINEER.
9. OUTSIDE EDGE LINE SHALL BE PLACED 2 INCHES FROM THE PAVEMENT JOINT AND MEDIAN EDGE LINE SHALL BE PLACED 1 INCH FROM THE PAVEMENT JOINT, UNLESS APPROVED BY THE ENGINEER. THE PAVEMENT JOINT SHALL BE WITHIN THE SHOULDER UNLESS APPROVED BY THE ENGINEER.



RUMBLE GROOVE SECTION B-B



ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1

REVISION DATE

304.04

07/16

A COPY OF THE ORIGINAL SEALED AND SIGNED STANDARD DRAWING IS ON FILE IN THE CENTRAL OFFICE

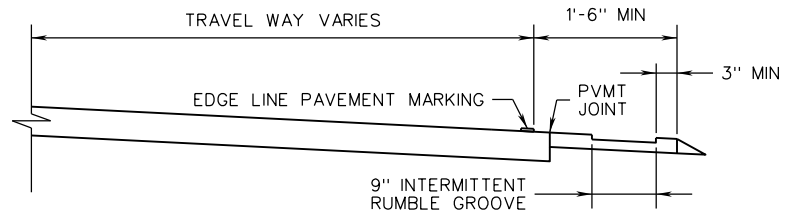
EDGE LINE SHOULDER RUMBLE STRIPS

VIRGINIA DEPARTMENT OF TRANSPORTATION

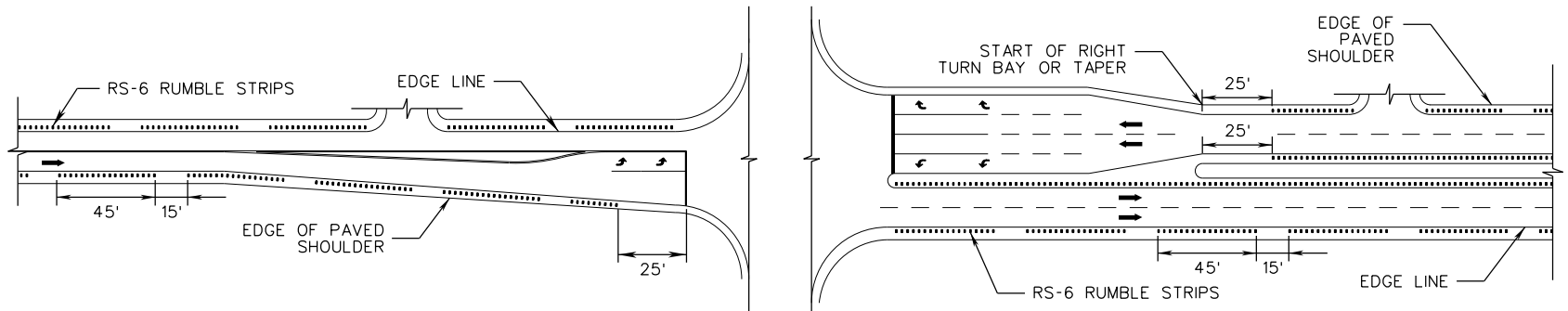
SPECIFICATION REFERENCE

310  
315





RS-6 OUTSIDE, SECTION VIEW A-A  
(SHOULDER WIDTH GREATER THAN 1'-6")

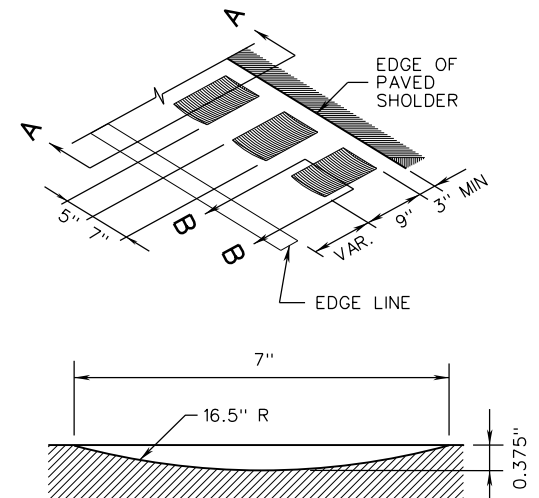


PLAN VIEW

PUBLIC ROADWAY OR COMMERCIAL ENTRANCE

NOTES

- SHOULDER EDGE RUMBLE STRIP GROOVES ON THE OUTSIDE RIGHT SHOULDER SHALL BE MILLED-IN WITH INTERMITTENT PATTERN OF 45 FEET OF GROOVES FOLLOWED BY A 15-FOOT GAP AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- SHOULDER RUMBLE STRIP/STRIPE GROOVES ON THE MEDIAN SHOULDER OF DIVIDED HIGHWAYS SHALL BE MILLED-IN CONTINUOUSLY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
- SHOULDER EDGE RUMBLE STRIPS SHALL BE INSTALLED ON MAINLINE SHOULDER ONLY, UNLESS DIRECTED BY REGIONAL TRAFFIC ENGINEER FOR RAMP.
- SHOULDER EDGE RUMBLE STRIPS SHALL NOT BE INSTALLED WITHIN THE LIMITS OF BRIDGES DRAINAGE APRONS, RAIL GRADE CROSSINGS, OR MARKED CROSSWALKS, UNLESS DIRECTED BY THE ENGINEER.
- SHOULDER EDGE RUMBLE STRIPS SHALL NOT BE PLACED WITHIN 25 FEET OF ANY PUBLIC ROADWAY, COMMERCIAL DRIVEWAY, MEDIAN BREAK CROSSOVER TAPER OR TURN RADIUS; TURN LANE TAPER OR ACCELERATION/DECELERATION LANE; OR, WITHIN THE GORE AREA.
- ALL MATERIAL MILLED TO FORM THE RUMBLE STRIP SHALL BE THOROUGHLY REMOVED, DISPOSED OF IN A LOCATION APPROVED BY THE ENGINEER, AND SWEEP CLEAN OF DUST.
- MILLING INTO EXISTING AND NEW PAVEMENTS SHALL BE IN ACCORDANCE WITH VDOT SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS. LIQUID ASPHALT COATING (EMULSION) OVERSPRAY SHALL NOT EXTEND MORE THAN 2 INCHES BEYOND THE WIDTH OF GROOVE AND/OR SHALL NOT COME IN CONTACT WITH PAVEMENT MARKINGS.
- PAVEMENT MARKINGS AND RAISED MARKERS SHALL BE PLACED AT TIMES AND LOCATIONS IN ACCORDANCE WITH THE CURRENT VDOT STANDARDS, CONTRACT DOCUMENTS, THE VIRGINIA SUPPLEMENT TO THE MUTCD, AND AS DIRECTED BY THE ENGINEER.
- OUTSIDE EDGE LINE SHALL BE PLACED 2 INCHES FROM THE PAVEMENT JOINT, UNLESS APPROVED BY THE ENGINEER. THE PAVEMENT JOINT SHALL BE WITHIN THE SHOULDER UNLESS APPROVED BY THE ENGINEER.



RUMBLE GROOVE SECTION B-B

SPECIFICATION REFERENCE

310  
315

A COPY OF THE ORIGINAL SEALED AND SIGNED STANDARD DRAWING IS ON FILE IN THE CENTRAL OFFICE

SHOULDER EDGE RUMBLE STRIPS

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT

ROAD AND BRIDGE STANDARDS

REVISION DATE

07/16

SHEET 1 OF 1

304.05

STANDARD

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ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1

REVISION DATE

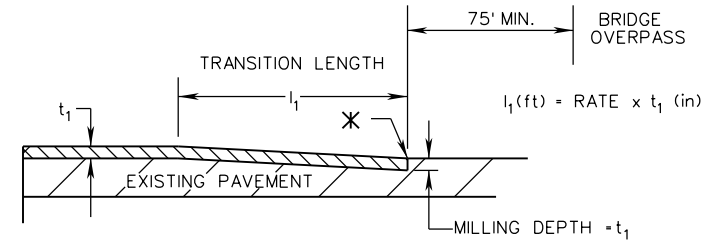
TITLE

SPECIFICATION  
REFERENCE

VIRGINIA DEPARTMENT OF TRANSPORTATION

**NOTES**

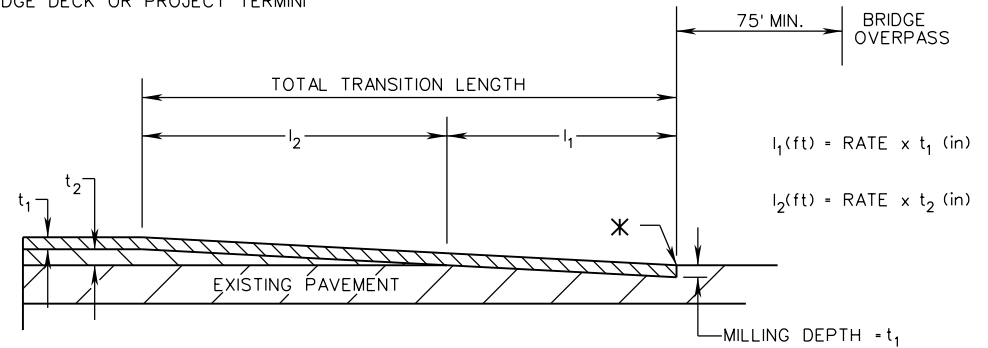
1. TIE-IN REQUIREMENTS TO INTERSECTING ROADS OR STREETS SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR AT THE DIRECTION OF THE ENGINEER.
2. EXISTING PAVEMENT SURFACE SHALL BE PLANED TO TRANSITION THE TOP COURSE OF THE ASPHALT CONCRETE OVERLAY. ANY SUB-COURSE TERMINATION MAY BE NOTCHED INTO THE EXISTING PAVEMENT OR BLENDED WITH THE NEXT COURSE OF PAVEMENT.
3. WHEN THERE IS A SPECIAL PROVISION FOR RIDEABILITY INCLUDED IN THE CONTRACT, A DISTANCE OF 105 FEET (0.02 OF A MILE), MEASURED FROM THE LINE OF THE TIE-IN WILL BE EXEMPTED FROM PAY ADJUSTMENT.
4. TRANSITION SHALL BEGIN/END AT THE PROJECT LIMITS, AT BRIDGE APPROACH SLAB/ABUTMENT (OR AN INTERMEDIATE POINT DETERMINED BY THE ENGINEER), AND A MINIMUM OF 75 FEET FROM A VERTICAL PLANE OF THE NEAREST OUTER FACE OF THE BRIDGE OVERPASS.
5. NO OVERLAY OR MILLING SHALL BE PERMITTED ON THE BRIDGE DECK WITHOUT THE PRIOR WRITTEN APPROVAL OF THE DISTRICT BRIDGE ENGINEER.



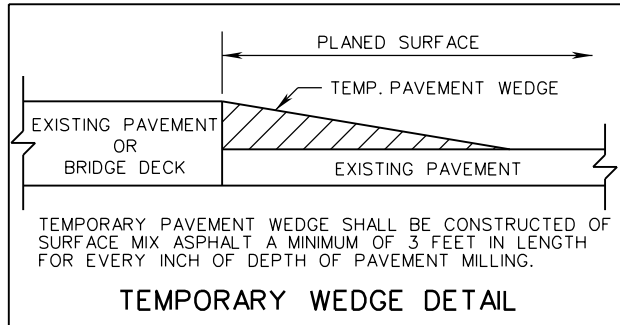
**SINGLE COURSE OVERLAY TRANSITION GEOMETRY**  
(NOT TO SCALE)

TRANSITION RATE		POSTED SPEED MPH					
		25	35	45	55	65	70
RATE (FT/INCH)		20	25	35	40	45	50

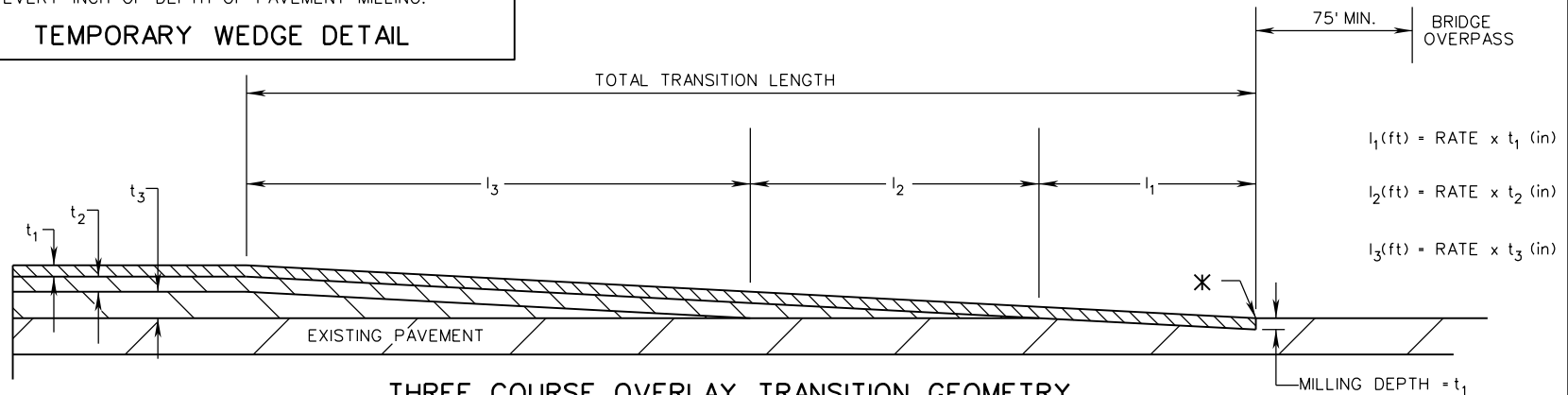
✱ BRIDGE DECK OR PROJECT TERMINI



**TWO COURSE OVERLAY TRANSITION GEOMETRY**  
(NOT TO SCALE)



**TEMPORARY WEDGE DETAIL**



**THREE COURSE OVERLAY TRANSITION GEOMETRY**  
(NOT TO SCALE)

SPECIFICATION REFERENCE

- 210
- 315
- 515

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**ASPHALT CONCRETE OVERLAY TRANSITIONS**

VIRGINIA DEPARTMENT OF TRANSPORTATION

**VDOT**

ROAD AND BRIDGE STANDARDS

REVISION DATE

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ROAD AND BRIDGE STANDARDS

SHEET 1 OF 1

REVISION DATE

305.02

SPECIFICATION  
REFERENCE

VIRGINIA DEPARTMENT OF TRANSPORTATION