

**EXISTING PCCP TO NEW HMA PAVEMENT**

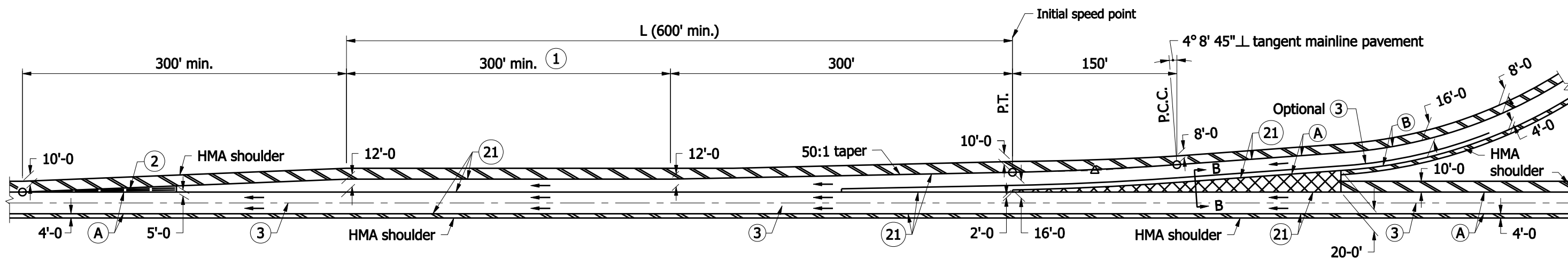
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>PAVEMENT TYPE TRANSITION</b>	
SEPTEMBER 1999	
STANDARD DRAWING NO. <b>E 400-PTRN-01</b>	
	<i>/s/ Anthony L. Uremovich</i> 9-01-99 <small>DESIGN STANDARDS ENGINEER      DATE</small>
	<i>/s/ Donald W. Lucas</i> 9-01-99 <small>CHIEF HIGHWAY ENGINEER      DATE</small>
<small>DESIGN STANDARDS ENGINEER</small>	

**GENERAL NOTES**

- ① Required additional length of L above the 600' minimum shall be added to the length of this parallel lane segment. (Example: If required L = 720', then this parallel lane segment length = 420'). See tables on Standard Drawing E 401-REBS-04.
- ② Ear construction type A: 2 lines of #5 bars required (Est. weight = 255 lb). Transverse sawed and sealed joint, in line with pavement contraction joint, shall extend through ear construction. The #5 bars shall be discontinued at such joints. See Detail B-B.
3. See Standard Drawing E 401-REBS-03 for Section B-B.

**CURVE DATA**

$\Delta = 3^{\circ}00'00''$   
 $R = 2864.79'$   
 $T = 75.02'$   
 $L = 150.0'$   
 $E = 0.98'$

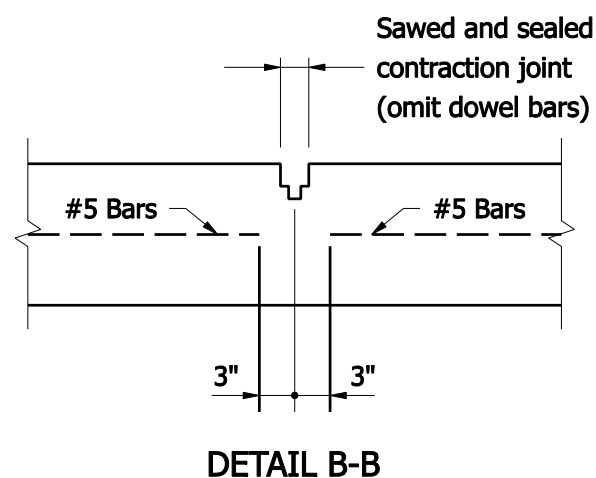


**NOTES :**

**ENTRANCE**

**LEGEND**

- Ⓐ Pavement type and thickness as specified for the mainline.
- Ⓑ Pavement type and thickness as specified for ramps.
- ③ Longitudinal joint
- 21 Longitudinal construction joint
- ▨ HMA shoulder (Thickness of mainline pavement)
- ▩ HMA shoulder (Thickness as specified on Typical Sections)

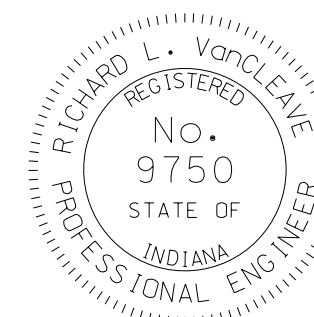


**INDIANA DEPARTMENT OF TRANSPORTATION**

**RAMP ENTRANCE TERMINAL  
HMA SHOULDER**

**SEPTEMBER 2008**

**STANDARD DRAWING NO. E 401- REBS-01**



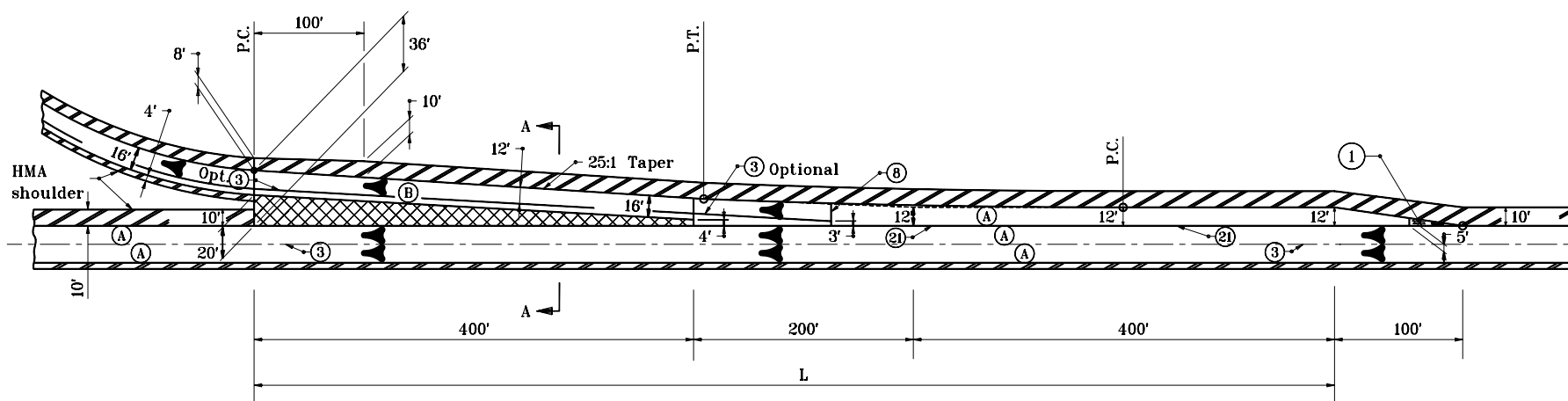
**DESIGN STANDARDS ENGINEER**

*/s/ Richard L. VanCleave*      09/02/08  
DESIGN STANDARDS ENGINEER      DATE

*/s/ Mark A. Miller*      09/02/08  
CHIEF HIGHWAY ENGINEER      DATE

### GENERAL NOTES

- ① Ear construction type A:  
2 lines of #5 bars required (Est. wt. = 86 lb).  
Transverse sawed and sealed joint, in line with pavement contraction joint, shall extend through ear construction. The #5 bars shall be discontinued at such joints. See Detail B-B on Standard Drawing E 401-REBS-01.
2. See Standard Drawing E 401-REBS-03 for Section A-A.



### EXIT

### LEGEND

- Ⓐ Pavement type and thickness as specified for the mainline.
- Ⓑ Pavement type and thickness as specified for ramps.
- ③ Longitudinal Joint (Optional where indicated)
- ② Longitudinal Construction Joint
- ▨ HMA Shoulder (Thickness of mainline pavement)
- ▩ HMA Shoulder (Thickness as specified on Typical Sections)

### CURVE DATA

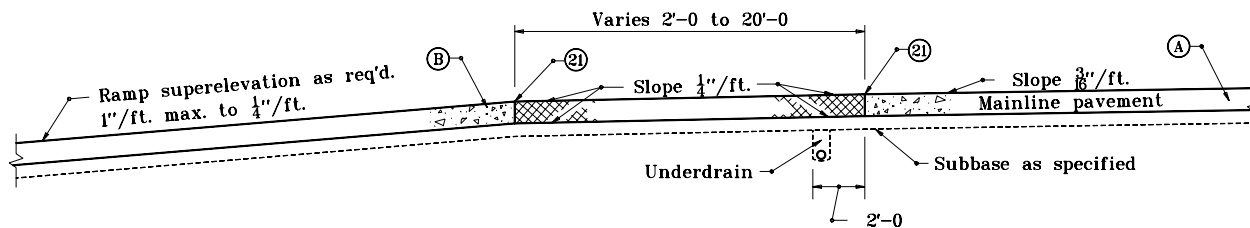
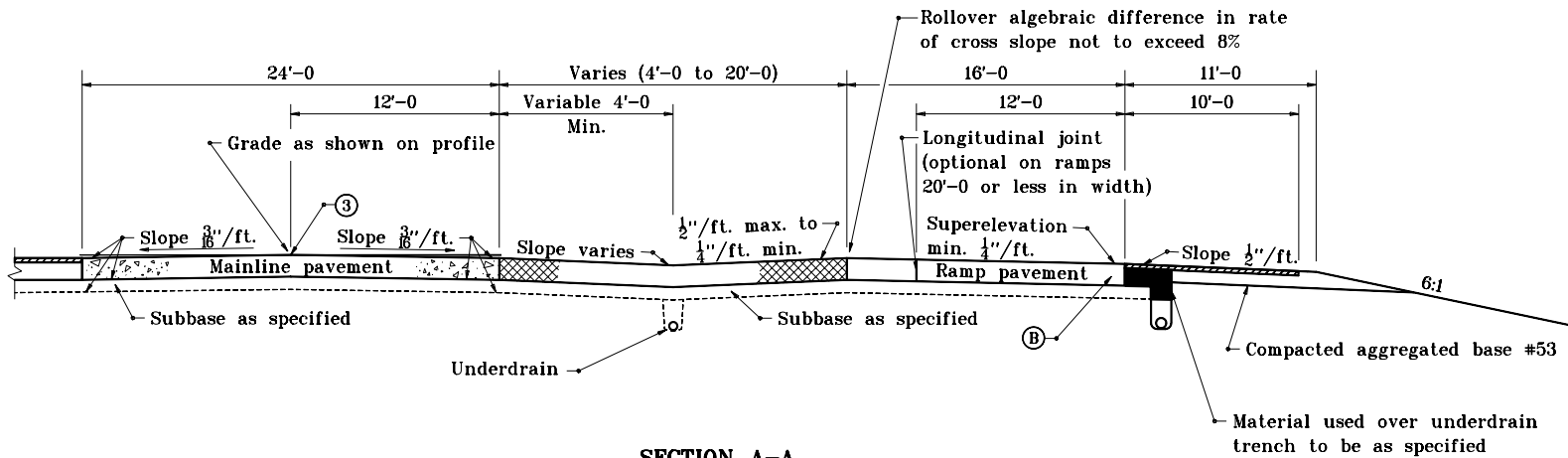
$\Delta = 2^\circ 17' 26''$   
 $T = 190.91'$   
 $L = 381.76'$   
 $E = 1.91'$   
 $R = 9549.30'$

INDIANA DEPARTMENT OF TRANSPORTATION

### RAMP EXIT TERMINAL HMA SHOULDER JANUARY 1999

STANDARD DRAWING NO. E 401-REBS-02

	DETAILS PLACED IN THIS FORMAT	11-15-99
	/s/ Anthony L. Uremovich	11-15-99
	DESIGN STANDARDS ENGINEER	DATE
/s/ Firooz Zandi	11-15-99	
DESIGN STANDARDS ENGINEER	CHIEF HIGHWAY ENGINEER	DATE
	ORIGINALLY APPROVED	1-04-99



**LEGEND**

- (A) Pavement type and thickness as specified for the mainline.
- (B) Pavement type and thickness as specified for ramps.
- (3) Longitudinal joint
- (21) Longitudinal construction joint
- HMA shoulder (Thickness of mainline pavement)

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>RAMP CROSS SECTIONS</b>	
<b>HMA SHOULDER</b>	
SEPTEMBER 2000	
STANDARD DRAWING NO. <b>E 401-REBS-03</b>	
	/s/ Anthony L. Uremovich 9-01-00 <small>DESIGN STANDARDS ENGINEER      DATE</small>
	/s/ Firooz Zandi 9-01-00 <small>CHIEF HIGHWAY ENGINEER      DATE</small>
<small>DESIGN STANDARDS ENGINEER</small>	

		ACCELERATION LENGTH, L (ft)								
		ENTRANCE CURVE DESIGN SPEED (mph)								
HIGHWAY	STOP CONDITION	15	20	25	30	35	40	45	50	
		INITIAL SPEED (mph)								
DESIGN SPEED (mph)	SPEED REACHED (mph)	0	14	18	22	25	30	36	40	44
30	23	190	—	—	—	—	—	—	—	—
40	31	380	320	250	220	140	—	—	—	—
50	39	760	700	630	580	500	380	160	—	—
60	47	1170	1120	1070	1000	910	800	590	400	170
70	53	1590	1540	1500	1410	1330	1230	1010	830	580

MINIMUM ACCELERATION LENGTHS FOR ENTRANCE TERMINALS  
(Flat grades of 2 percent or less)

**TABLE A**

DESIGN SPEED (mph)	ACCELERATION LANE				
	Ratio of length of grade to length of level for ①				
	Design speed of turning roadway curve (mph)				
	20	30	40	50	ALL SPEEDS
	2.01 to 4 percent upgrade				2.01 to 4 percent downgrade
40	1.3	1.3	—	—	0.7
50	1.3	1.4	1.4	—	0.65
60	1.4	1.5	1.5	1.6	0.6
70	1.5	1.6	1.7	1.8	0.6
	4.01 to 6 percent upgrade				4.01 to 6 percent downgrade
40	1.5	1.5	—	—	0.6
50	1.5	1.7	2.2	—	0.55
60	1.7	1.9	2.2	2.2	0.5
70	2.0	2.2	2.6	3.0	0.5

① Ratio from this table multiplied by length in Table A gives length of speed change lane on grade.

RATIO OF LENGTH OF SPEED-CHANGE LANE ON GRADE TO LENGTH OF LEVEL ACCELERATION LANE

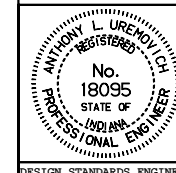
**TABLE B**

INDIANA DEPARTMENT OF TRANSPORTATION

**RAMP TERMINAL TABLES**

JUNE 1996

STANDARD DRAWING NO. E 401-REBS-04

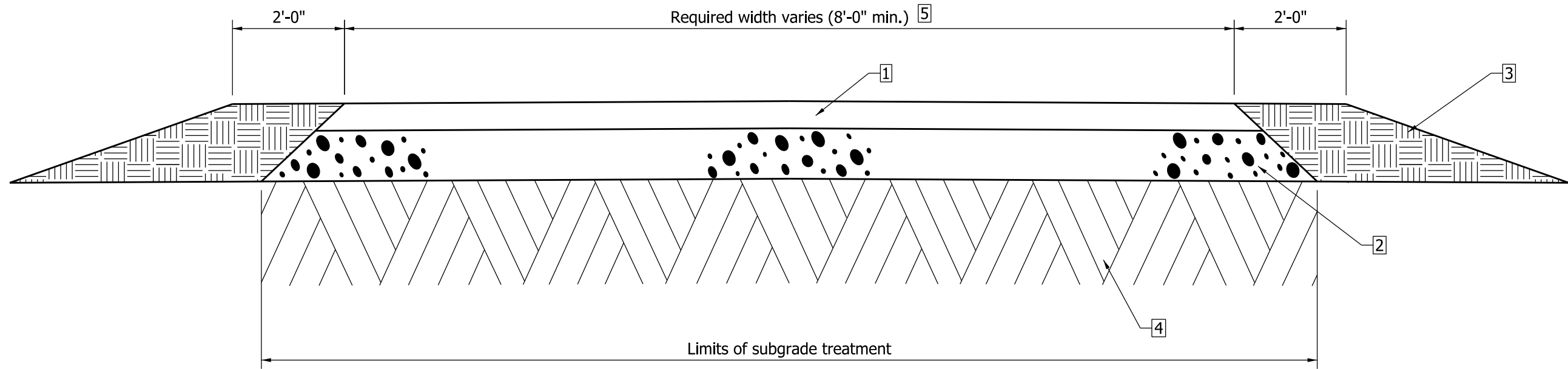


DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 6-03-96



**LEGEND**

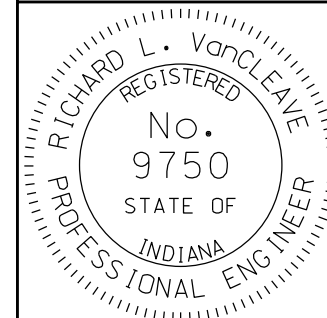
- [1] 140 lb/yd<sup>2</sup> HMA Surface Type A, on 220 lb/yd<sup>2</sup> HMA Intermediate, Type A
- [2] 6" Compacted Aggregate No.53, Base
- [3] Earth Shoulder
- [4] Subgrade Treatment (6" Coarse Aggregate No.53)
- [5] Width and Cross Slope as required

INDIANA DEPARTMENT OF TRANSPORTATION

HMA NONMOTORIZED-VEHICLE-USE FACILITY  
PAVEMENT SECTION

SEPTEMBER 2010

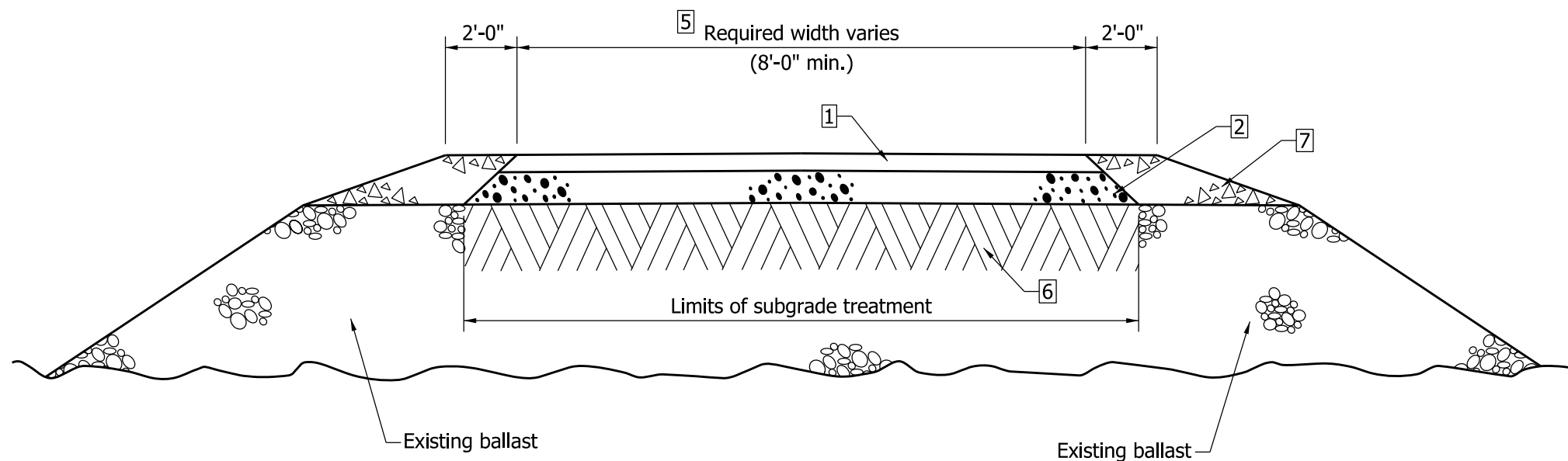
STANDARD DRAWING NO. E 402-NVUF-01



DESIGN STANDARDS ENGINEER

*/s/ Richard L. VanCleave* 09/01/10  
DESIGN STANDARDS ENGINEER DATE

*/s/ Mark A. Miller* 09/01/10  
CHIEF HIGHWAY ENGINEER DATE



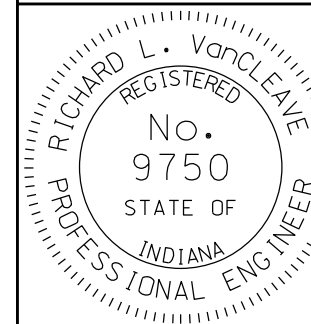
**LEGEND:**

- 1 140 lb/yd<sup>2</sup> HMA Surface Type A, on 220 lb/yd<sup>2</sup> HMA Intermediate, Type A
- 2 6" Compacted Aggregate No.53, Base
- 5 Width and Cross Slope as required
- 6 Subgrade Treatment (3" subgrade excavated and replaced with 3" Coarse Aggregate No.53)
- 7 Variable-depth Compacted Aggregate No.53 or No.73

INDIANA DEPARTMENT OF TRANSPORTATION

HMA NONMOTORIZED-VEHICLE-USE FACILITY  
PAVEMENT SECTION  
ON ABANDONED-RAILROAD CORRIDOR  
SEPTEMBER 2010

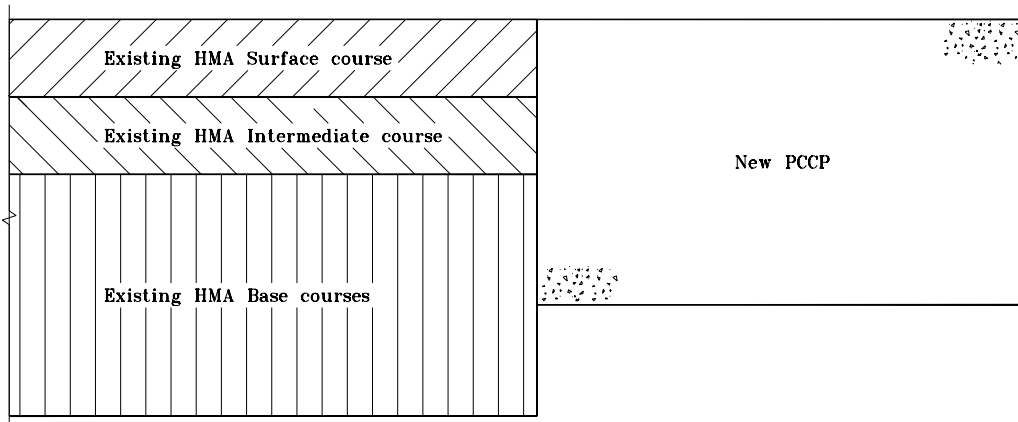
STANDARD DRAWING NO. E 402-NVUF-02



DESIGN STANDARDS ENGINEER

/s/ *Richard L. VanCleave* 09/01/10  
DESIGN STANDARDS ENGINEER DATE

/s/ *Mark A. Miller* 09/01/10  
CHIEF HIGHWAY ENGINEER DATE

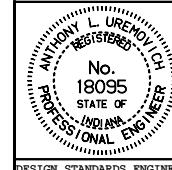


EXISTING HMA PAVEMENT TO NEW PCCP

INDIANA DEPARTMENT OF TRANSPORTATION

**PAVEMENT TYPE  
TRANSITION**  
SEPTEMBER 1999

STANDARD DRAWING NO. **E 500-PTRN-01**

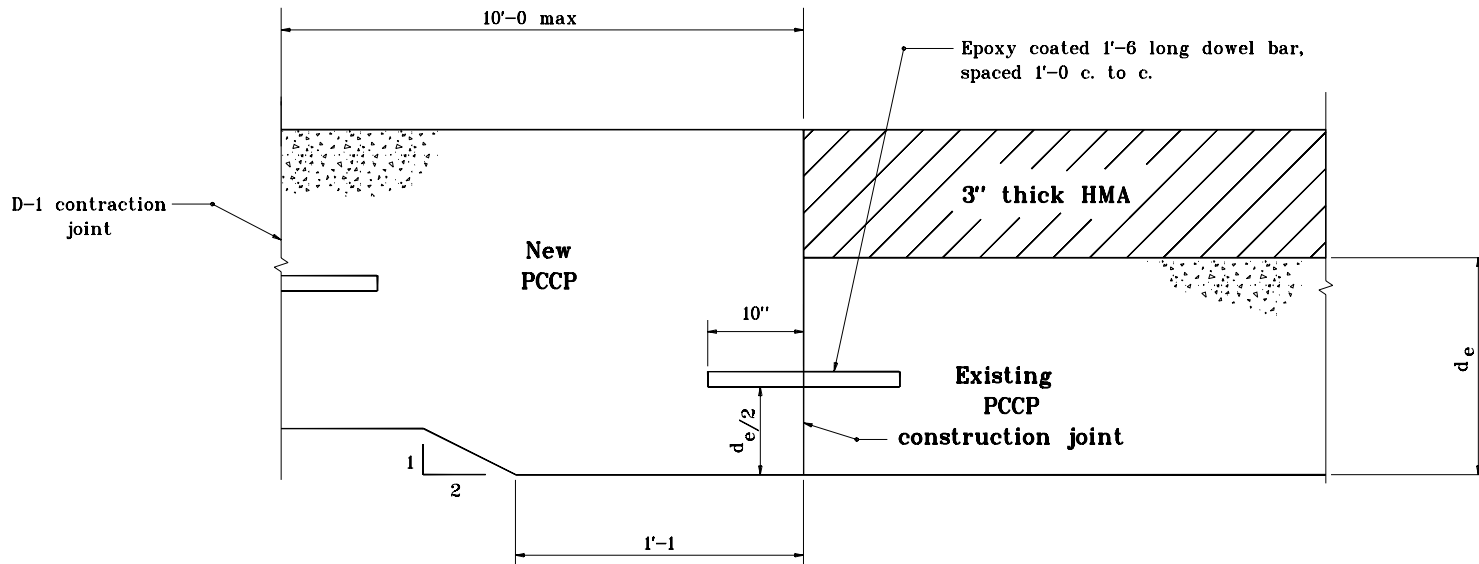


*/s/ Anthony L. Uremovich* 9-01-99  
DESIGN STANDARDS ENGINEER DATE

*/s/ Donald W. Lucas* 9-01-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

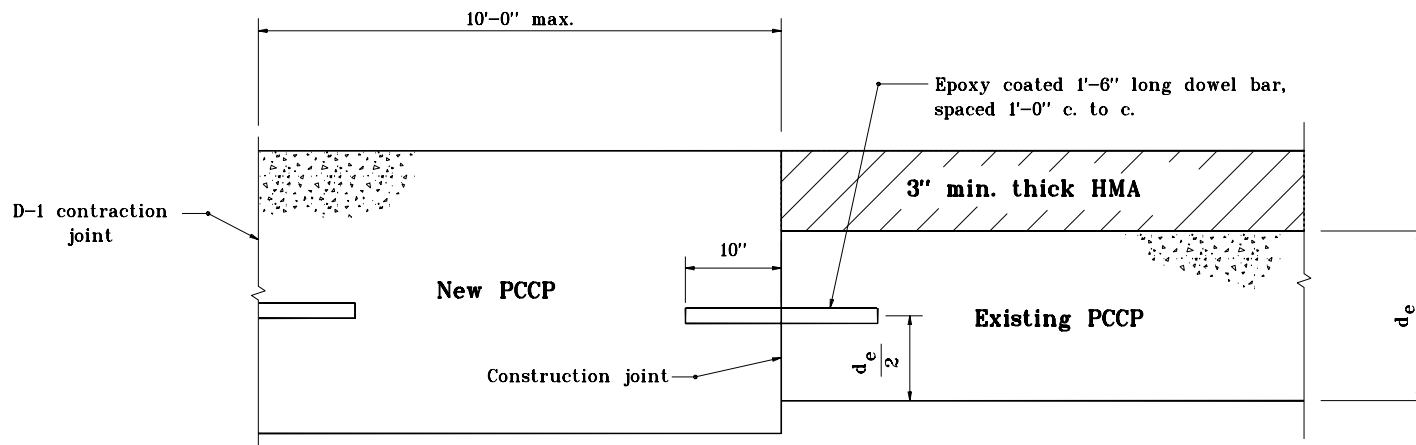




**TRANSITION DESIGN WITH THICKENED SLAB**

New PCCP Thickness is Less Than  
that of 3" Thick HMA + Existing PCCP

INDIANA DEPARTMENT OF TRANSPORTATION	
PAVEMENT TYPE TRANSITION JANUARY 2000	
STANDARD DRAWING NO. E 500-PTRN-02	
	<i>/s/ Anthony L. Uremovich</i> 1-03-00 <small>DESIGN STANDARDS ENGINEER      DATE</small>
	<i>/s/ Firooz Zandi</i> 1-03-00 <small>CHIEF HIGHWAY ENGINEER      DATE</small>
<small>DESIGN STANDARDS ENGINEER</small>	



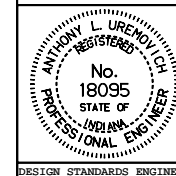
**TRANSITION DESIGN**

New PCCP Thickness is Greater Than or Equal to That  
of 3' Thick HMA + Existing PCCP

INDIANA DEPARTMENT OF TRANSPORTATION

**PAVEMENT TYPE  
TRANSITION**  
SEPTEMBER 1999

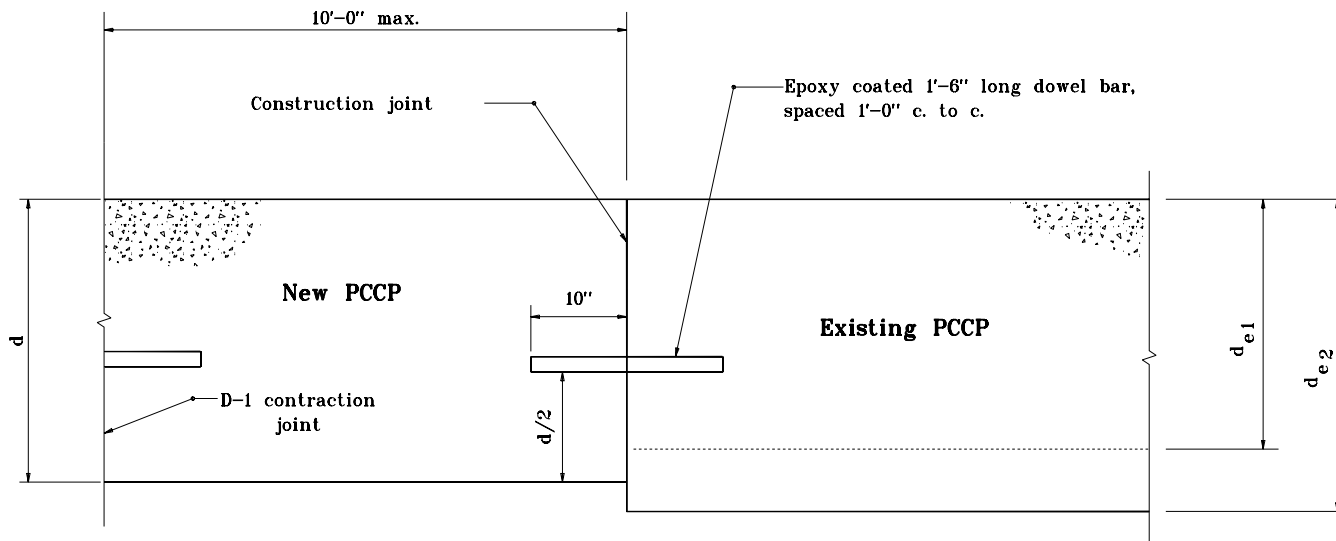
STANDARD DRAWING NO. **E 500-PTRN-03**



*/s/ Anthony L. Urenovich* 9-01-99  
DESIGN STANDARDS ENGINEER DATE

*/s/ Donald W. Lucas* 9-01-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



**TRANSITION DESIGN**

New PCCP to Existing PCCP

$d > d_{e1}$  (New PCCP Thicker Than Existing)

$d < d_{e2}$  (New PCCP Thinner Than Existing)

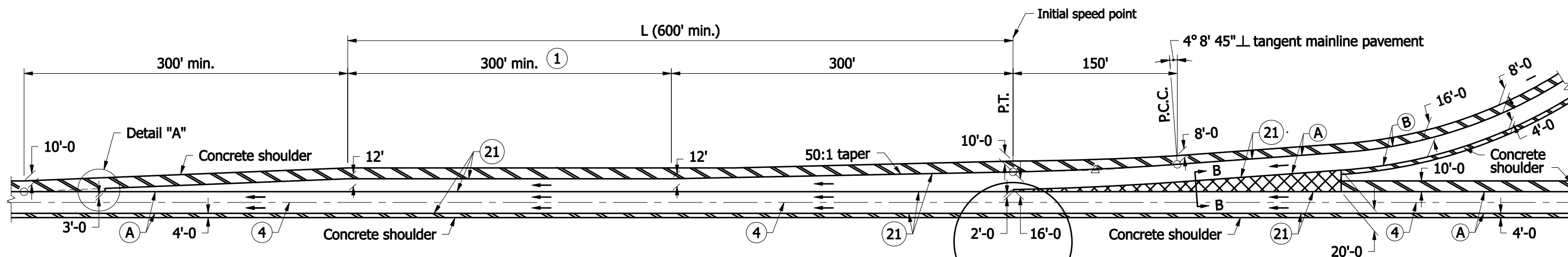
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>PAVEMENT TYPE TRANSITION</b>	
SEPTEMBER 1999	
STANDARD DRAWING NO. <b>E 500-PTRN-04</b>	
	<i>/s/ Anthony L. Urenovich</i> 9-01-99 DESIGN STANDARDS ENGINEER      DATE
	<i>/s/ Donald W. Lucas</i> 9-01-99 CHIEF HIGHWAY ENGINEER      DATE

**GENERAL NOTES**

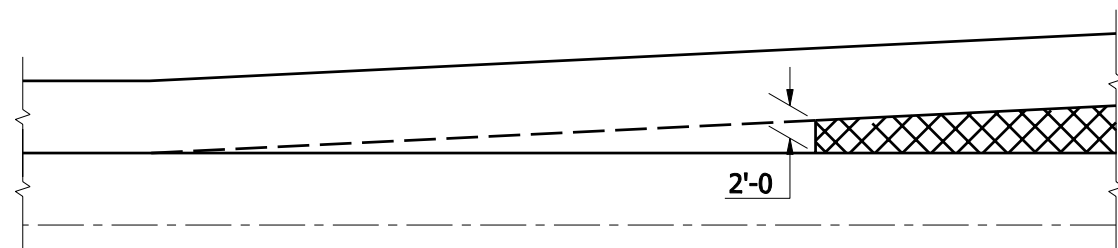
- ① Pavement contraction joints shall be extended through the concrete shoulder in the gore areas.
- ② Shoulder corrugations shall be omitted in this area.
- ③ Any required additional length of L above the 600' minimum shall be added to the length of this parallel lane segment.  
(Example: required L = 700' then this parallel lane segment length = 400')
4. See tables on Standard Drawing E 401-REBS-04.
5. See Standard Drawing E 401-REBS-03 for Section B-B.

**CURVE DATA**

$\Delta = 3^{\circ}00'00''$   
 $R = 2864.79'$   
 $T = 75.02'$   
 $L = 150.0'$   
 $E = 0.98'$



**ENTRANCE**



**DETAIL "A"**

**LEGEND**

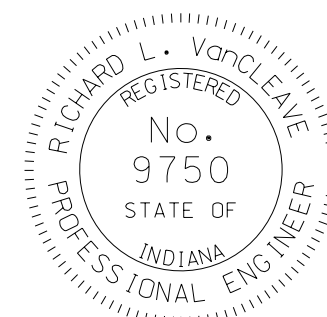
- Ⓐ Pavement type and thickness as specified for the mainline.
- Ⓑ Pavement type and thickness as specified for ramps.
- ④ Longitudinal joint
- ②① Longitudinal construction joint
- ▨ Concrete shoulder (Thickness of mainline pavement)
- ▩ Concrete shoulder (Thickness as specified on Typical Sections)

**INDIANA DEPARTMENT OF TRANSPORTATION**

**RAMP ENTRANCE TERMINAL  
 CONCRETE SHOULDER**

**SEPTEMBER 2008**

**STANDARD DRAWING NO. E 501-RECS-01**



**DESIGN STANDARDS ENGINEER**

*/s/ Richard L. VanCleave* 09/02/08  
 DESIGN STANDARDS ENGINEER DATE

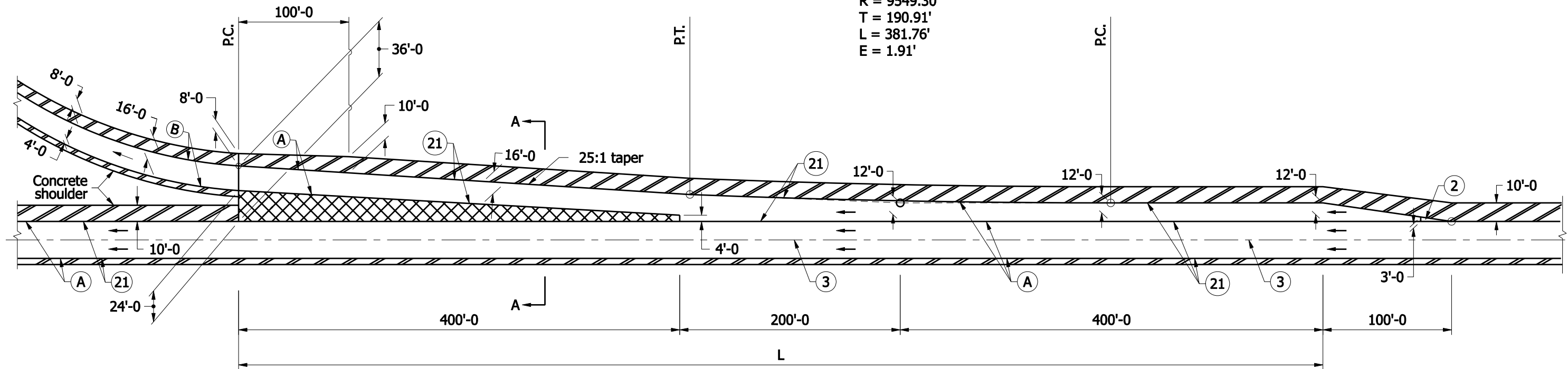
*/s/ Mark A. Miller* 09/02/08  
 CHIEF HIGHWAY ENGINEER DATE

**GENERAL NOTES**

- ① Pavement contraction joints shall be extended through the concrete shoulder in the gore areas.
- ② Shoulder corrugations shall be omitted in this area.
3. See tables on Standard Drawing E 401-REBS-04.
4. See Standard Drawing E 501-RECS-03 for Section A-A.

**CURVE DATA**

$\Delta = 2^{\circ}17'26''$   
 $R = 9549.30'$   
 $T = 190.91'$   
 $L = 381.76'$   
 $E = 1.91'$



**LEGEND**

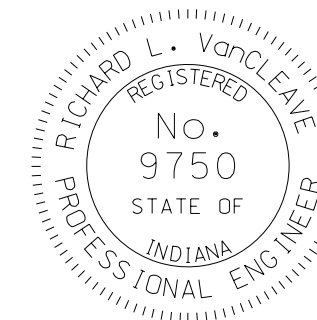
- Ⓐ Pavement type and thickness as specified for the mainline.
- Ⓑ Pavement type and thickness as specified for ramps.
- ③ Longitudinal joint
- ②① Longitudinal construction joint
- ▨ Concrete shoulder (Thickness of mainline pavement)
- ▩ Concrete shoulder (Thickness as specified on Typical Sections)

INDIANA DEPARTMENT OF TRANSPORTATION

RAMP EXIT TERMINAL  
 CONCRETE SHOULDER

SEPTEMBER 2008

STANDARD DRAWING NO. E 501- RECS-02



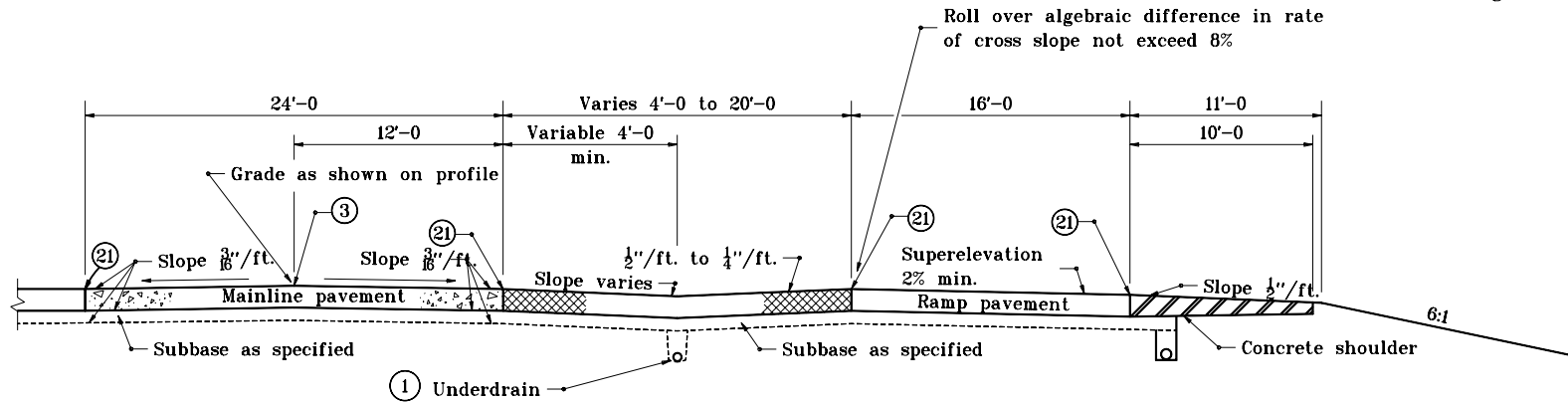
DESIGN STANDARDS ENGINEER

*/s/ Richard L. VanCleave* 09/02/08  
 DESIGN STANDARDS ENGINEER DATE

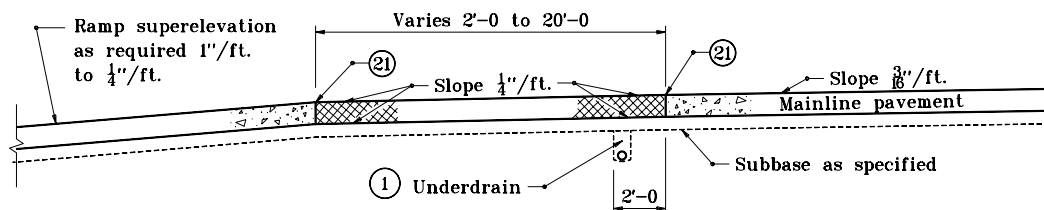
*/s/ Mark A. Miller* 09/02/08  
 CHIEF HIGHWAY ENGINEER DATE

**GENERAL NOTES**

- ① For underdrain details see Standard Drawing E 718-UNDR-01.



**SECTION A-A**



**SECTION B-B**

**LEGEND**

- Ⓐ Pavement type and thickness as specified for the mainline.
- Ⓑ Pavement type and thickness as specified for ramps.
- ③ Longitudinal joint
- ② Longitudinal construction joint
- ▨ Concrete shoulder (Thickness of mainline pavement)
- ▧ Concrete shoulder (Thickness as specified on Typical Sections)

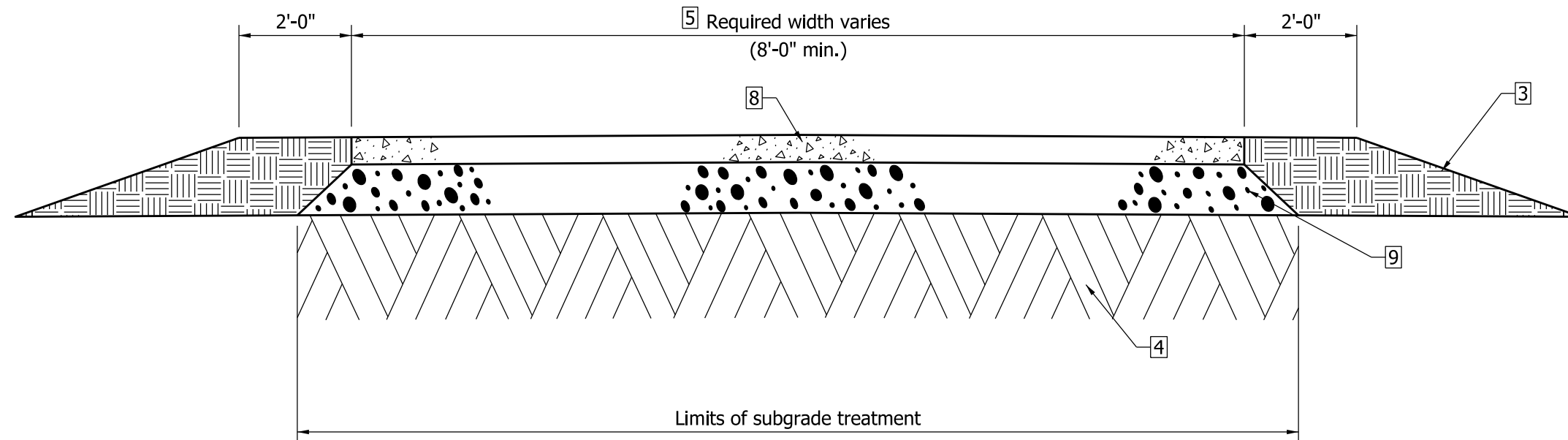
INDIANA DEPARTMENT OF TRANSPORTATION

**RAMP CROSS SECTIONS  
CONCRETE SHOULDERS**

JANUARY 1999

STANDARD DRAWING NO. E 501-RECS-03

	DETAILS PLACED IN THIS FORMAT	11-15-99
	/s/ Anthony L. Uremovich	11-15-99
	DESIGN STANDARDS ENGINEER	DATE
/s/ Firooz Zandi	11-15-99	
CHIEF HIGHWAY ENGINEER	DATE	
DESIGN STANDARDS ENGINEER	ORIGINALLY APPROVED	1-04-99



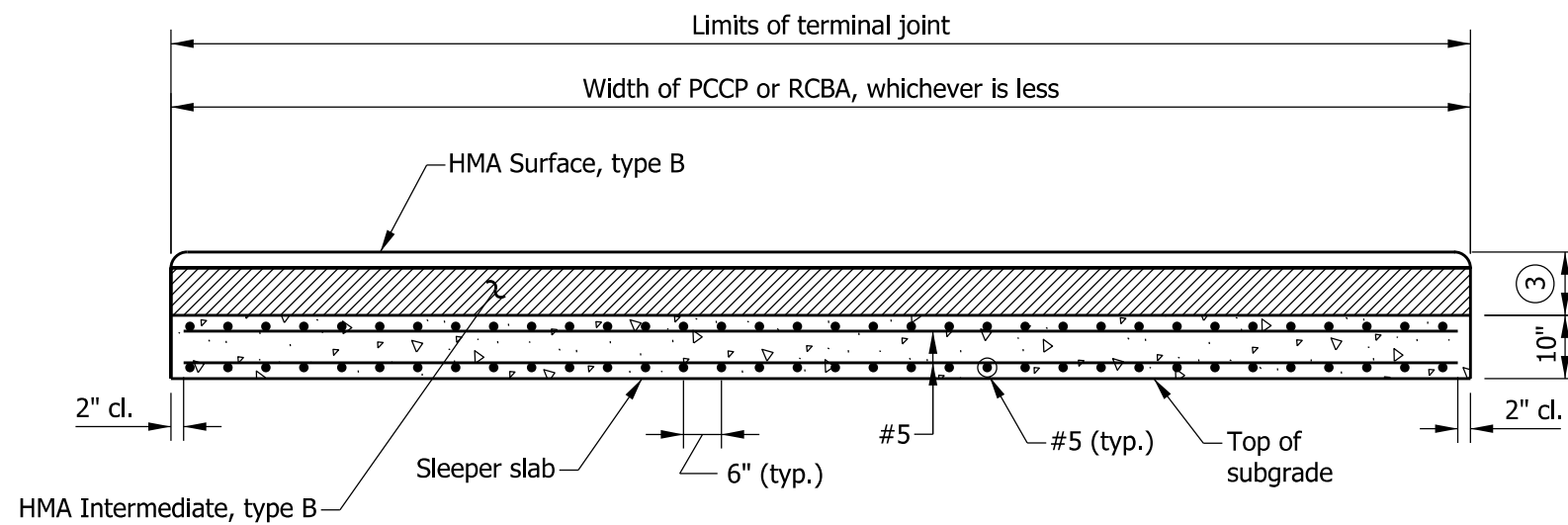
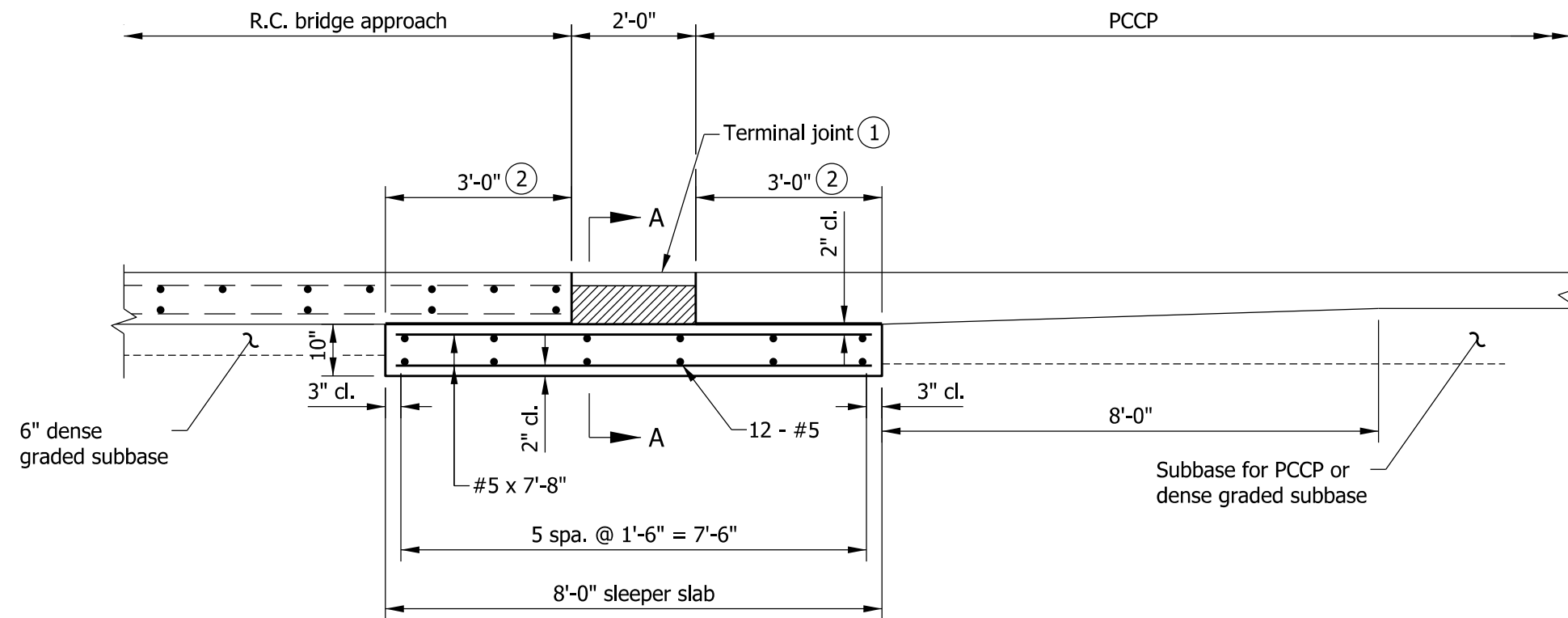
**LEGEND:**

- 3 Earth Shoulder
- 4 Subgrade Treatment (6" Coarse Aggregate No.53)
- 5 Width and Cross Slope as required
- 8 4" of PCCP with 1/8" saw cut Transverse Joint spaced at 8'-0" without Dowel Bars
- 9 4" Compacted Aggregate No.53, Base

INDIANA DEPARTMENT OF TRANSPORTATION									
PCCP NONMOTORIZED-VEHICLE-USE FACILITY PAVEMENT SECTION									
SEPTEMBER 2010									
STANDARD DRAWING NO. E 502-NVUF-01									
	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%; border-bottom: 1px solid black;">/s/ <i>Richard L. VanCleave</i></td> <td style="width: 30%; border-bottom: 1px solid black;">09/01/10</td> </tr> <tr> <td>DESIGN STANDARDS ENGINEER</td> <td>DATE</td> </tr> <tr> <td style="border-bottom: 1px solid black;">/s/ <i>Mark A. Miller</i></td> <td style="border-bottom: 1px solid black;">09/01/10</td> </tr> <tr> <td>CHIEF HIGHWAY ENGINEER</td> <td>DATE</td> </tr> </table>	/s/ <i>Richard L. VanCleave</i>	09/01/10	DESIGN STANDARDS ENGINEER	DATE	/s/ <i>Mark A. Miller</i>	09/01/10	CHIEF HIGHWAY ENGINEER	DATE
/s/ <i>Richard L. VanCleave</i>	09/01/10								
DESIGN STANDARDS ENGINEER	DATE								
/s/ <i>Mark A. Miller</i>	09/01/10								
CHIEF HIGHWAY ENGINEER	DATE								
DESIGN STANDARDS ENGINEER									

**NOTES**

- ① Terminal joint elevation shall match elevation of adjacent PCCP and RCBA.
- ② Limits of polyethylene bond breaker.
- ③ RCBA thickness.

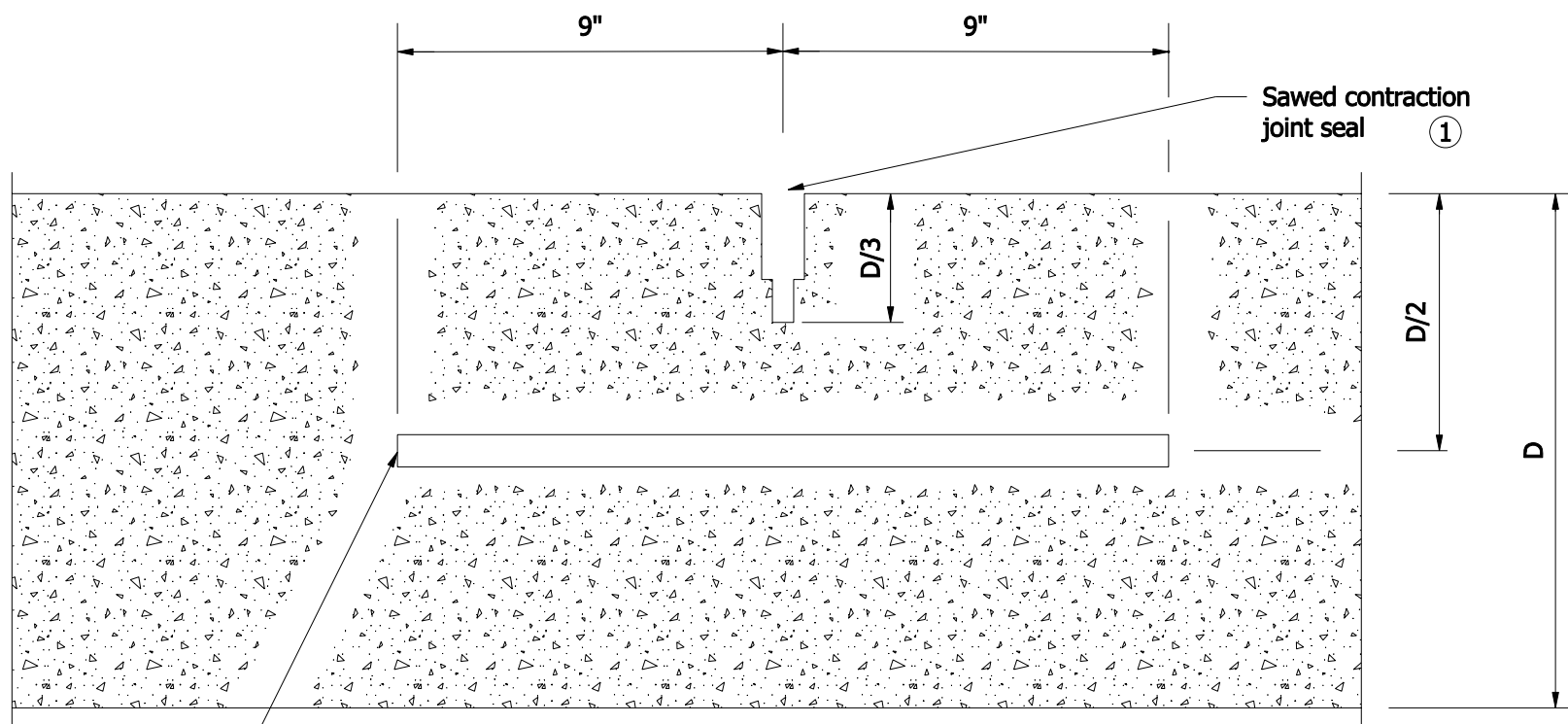


**SECTION A-A**

INDIANA DEPARTMENT OF TRANSPORTATION									
REINFORCED CONCRETE BRIDGE APPROACH TERMINAL JOINT FOR USE WITH PCCP SEPTEMBER 2012									
STANDARD DRAWING NO. E 503-BATJ-01									
	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%; border-bottom: 1px solid black;">/s/ <i>Richard L. VanCleave</i></td> <td style="width: 30%; border-bottom: 1px solid black;">09/04/12</td> </tr> <tr> <td style="font-size: small;">SUPERVISOR, ROADWAY STANDARDS</td> <td style="font-size: small;">DATE</td> </tr> <tr> <td style="border-bottom: 1px solid black;">/s/ <i>Mark A. Miller</i></td> <td style="border-bottom: 1px solid black;">09/04/12</td> </tr> <tr> <td style="font-size: small;">CHIEF ENGINEER</td> <td style="font-size: small;">DATE</td> </tr> </table>	/s/ <i>Richard L. VanCleave</i>	09/04/12	SUPERVISOR, ROADWAY STANDARDS	DATE	/s/ <i>Mark A. Miller</i>	09/04/12	CHIEF ENGINEER	DATE
/s/ <i>Richard L. VanCleave</i>	09/04/12								
SUPERVISOR, ROADWAY STANDARDS	DATE								
/s/ <i>Mark A. Miller</i>	09/04/12								
CHIEF ENGINEER	DATE								



DOWEL BAR SIZES	
Pavement Thickness, D	Dowel Bar Diameter
Less than 9"	1"
9" through 12"	1 1/4"
Greater than 12"	1 1/2"



Epoxy coated dowel bars at 1'-0" c/c, at 6" min. from edge of PCCP  
(See table for dowel bar diameter)

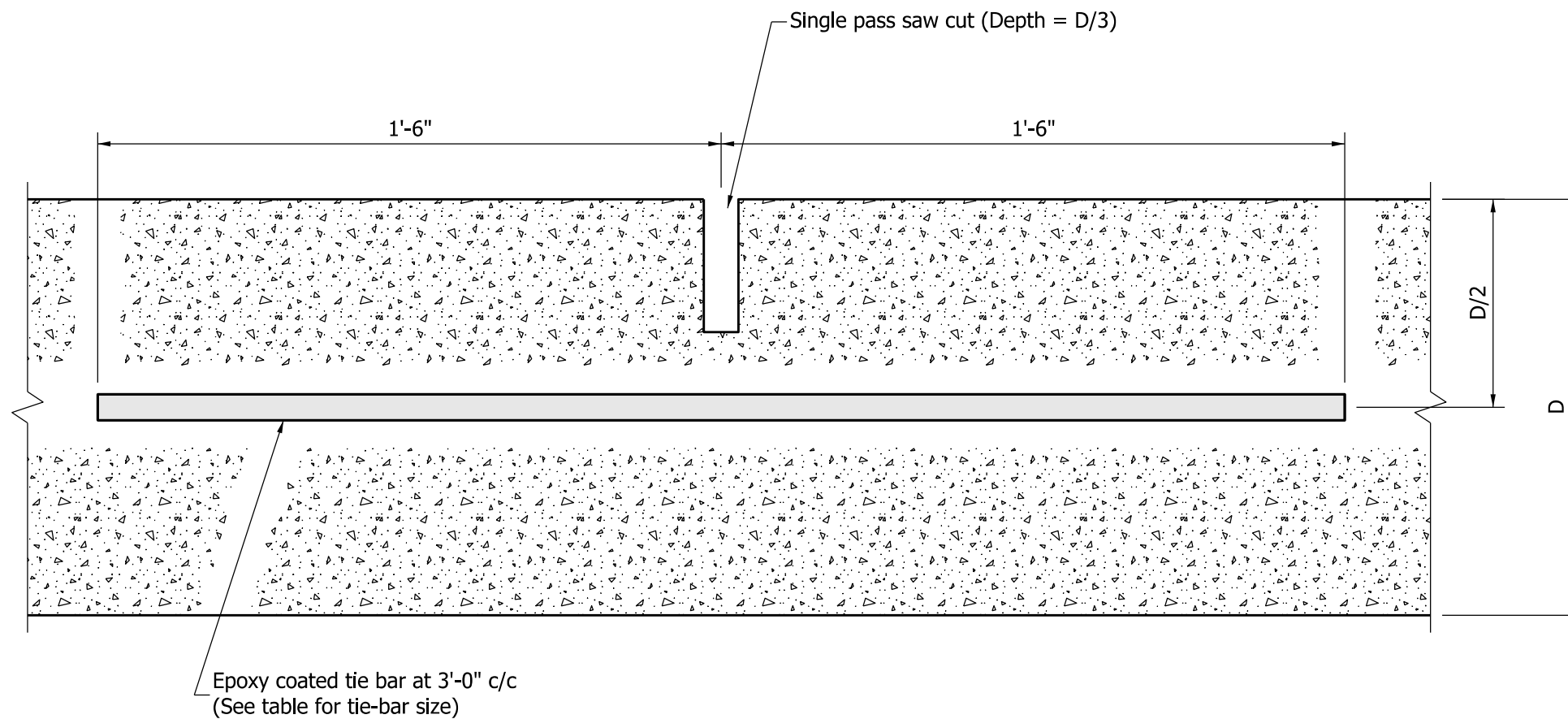
**LONGITUDINAL SECTION THROUGH PCCP**

**NOTES:**

- ① For Type D-1 contraction joint sealant options, see Standard Drawing E 503-CCPJ-06.

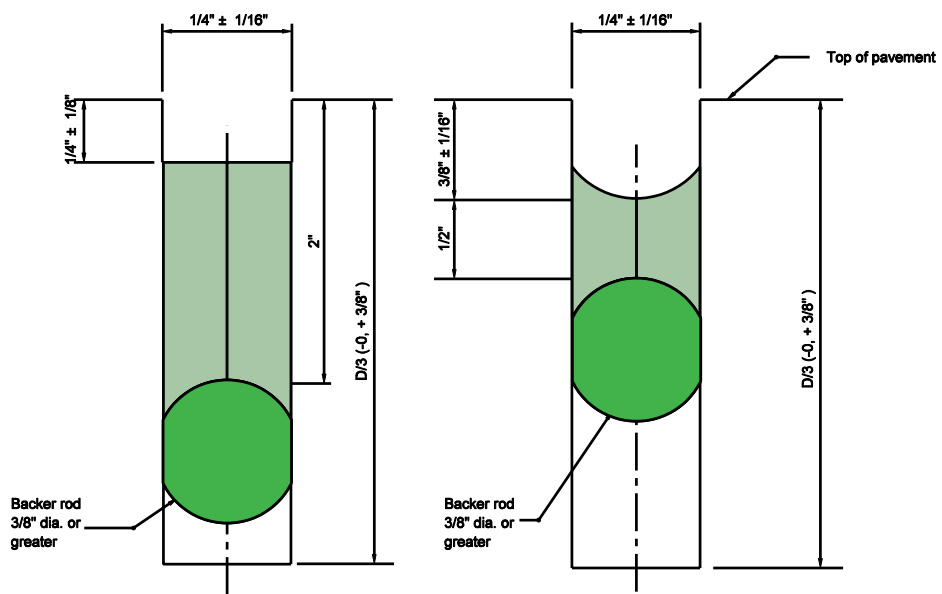
INDIANA DEPARTMENT OF TRANSPORTATION	
TYPE D-1 CONTRACTION JOINT	
SEPTEMBER 2007	
STANDARD DRAWING NO. E 503-CCPJ-01	
	<i>/s/ Richard L. VanCleave</i> 9/4/07 DESIGN STANDARDS ENGINEER      DATE
	<i>/s/ Mark A. Miller</i> 9/4/07 CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	

TIE-BAR SIZES FOR LONGITUDINAL JOINT	
Pavement Thickness, D	Tie-Bar Size
Less than or equal to 9"	#5
Greater than 9"	#6



TRANSVERSE SECTION THROUGH PCCP

INDIANA DEPARTMENT OF TRANSPORTATION	
LONGITUDINAL JOINT	
SEPTEMBER 2012	
STANDARD DRAWING NO.	E 503-CCPJ-02
	<i>/s/ Richard L. VanCleave</i> 09/04/12 SUPERVISOR, ROADWAY STANDARDS      DATE
	<i>/s/ Mark A. Miller</i> 09/04/12 CHIEF ENGINEER      DATE



**HOT POURED JOINT SEALANT**

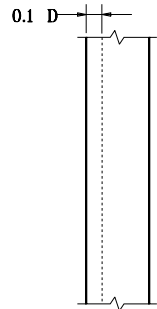
**SILICONE JOINT SEALANT**

**SAWED LONGITUDINAL JOINT SEALANT OPTIONS**

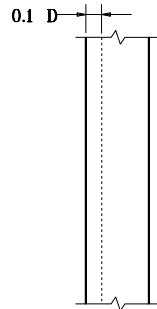
INDIANA DEPARTMENT OF TRANSPORTATION	
LONGITUDINAL JOINT	
MARCH 2004	
STANDARD DRAWING NO. E 503-CCPJ-03	
	<i>/s/ Richard L. VanCleave</i> <b>3-0-04</b> DESIGN STANDARDS ENGINEER DATE
	<i>/s/ Richard K. Smutzer</i> <b>3-0-04</b> CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

**NOTES**

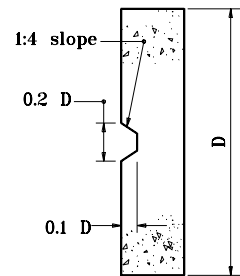
1. See Standard Drawings E 503-CCPJ-01, -02, and -03 for sawed construction joint sealant options.



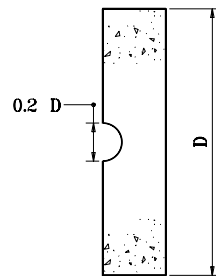
PLAN



PLAN



ELEVATION



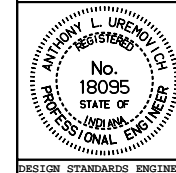
ELEVATION

INDIANA DEPARTMENT OF TRANSPORTATION

**LONGITUDINAL  
KEYWAY JOINT**

SEPTEMBER 1999

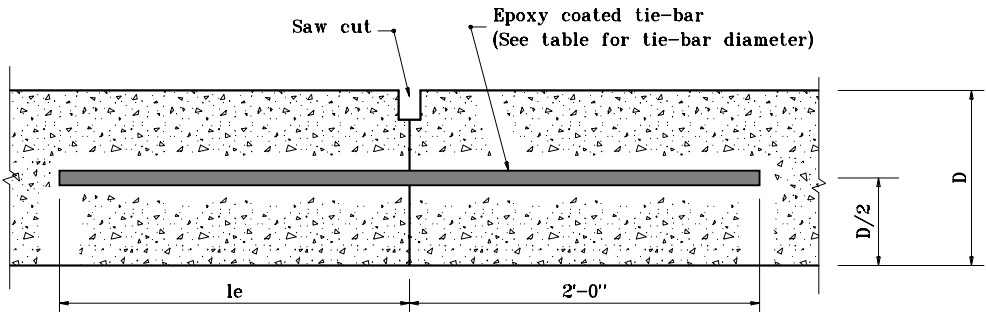
STANDARD DRAWING NO. **E 503-CCPJ-04**



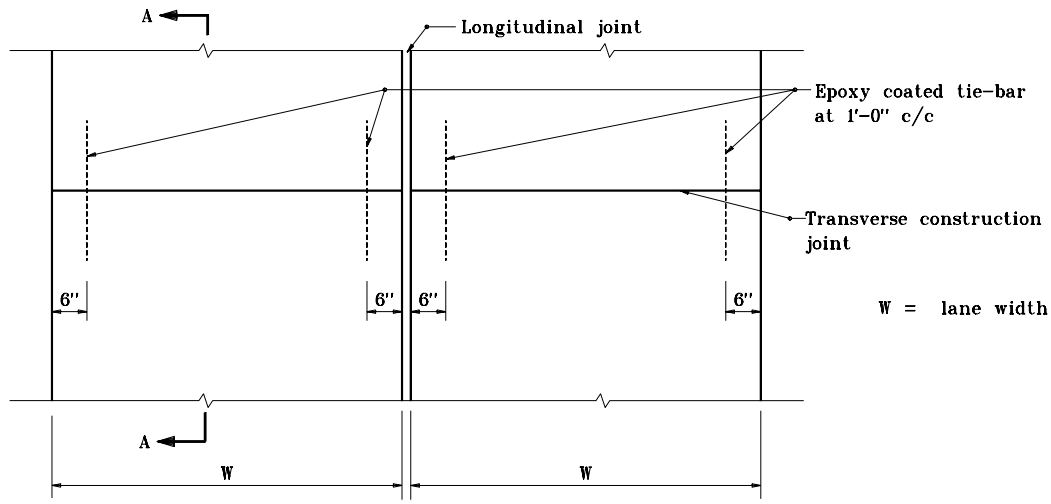
/s/ Anthony L. Urenovich 9-01-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Donald W. Lucas 9-01-99  
CHIEF HIGHWAY ENGINEER DATE

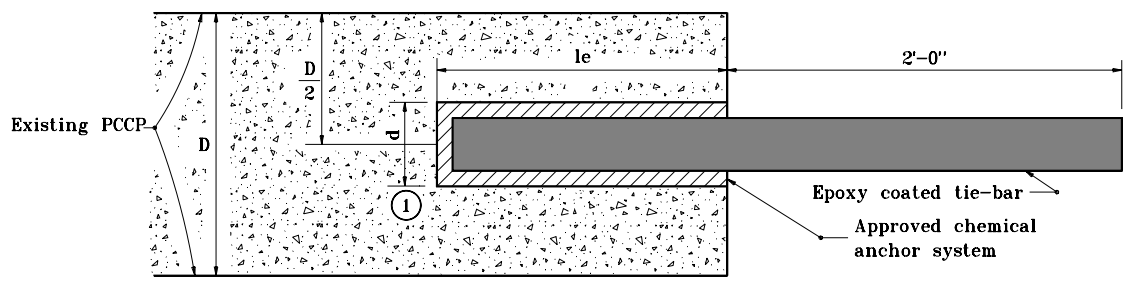
DESIGN STANDARDS ENGINEER



**SECTION A-A**



**PLAN**



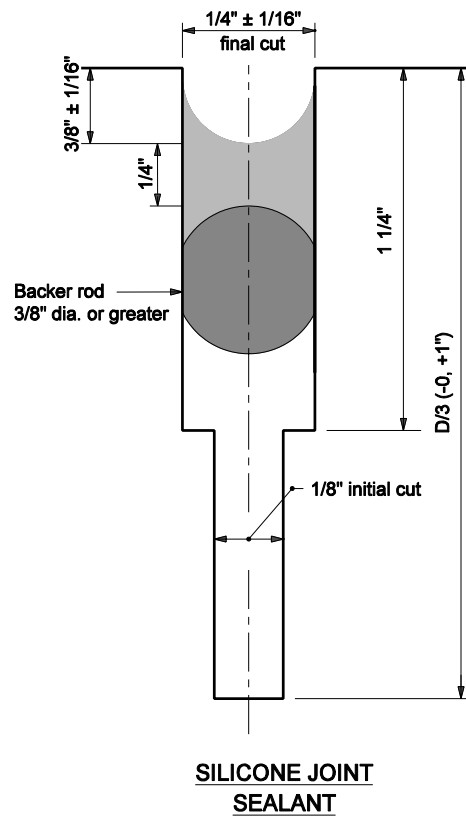
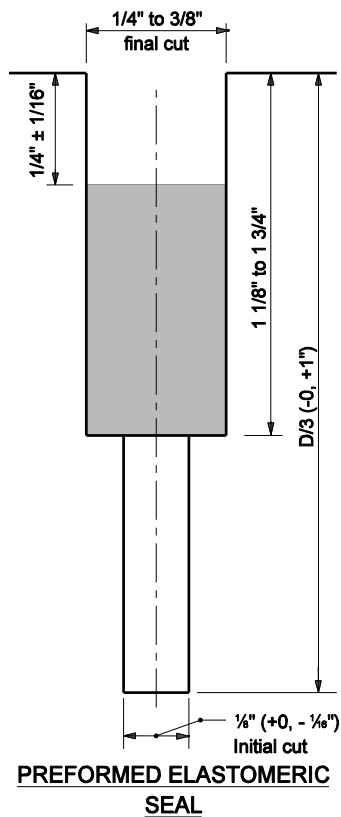
**RETROFIT CONSTRUCTION TIE-BAR EMBEDMENT DETAIL**

**NOTES**

- ① Diameter of drilled hole d shall be in accordance with the chemical anchor system manufacturer's instructions.

TIE-BAR SIZES FOR TRANSVERSE CONSTRUCTION JOINT		
Pavement Thickness, D	Tie Bar Size	Min. le
Less than 9"	#5	1'-0"
9" through 12"	#8	1'-8"
Greater than 12"	#10	2'-0"

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>TRANSVERSE CONSTRUCTION JOINT</b>	
SEPTEMBER 1999	
STANDARD DRAWING NO. <b>E 503-CCPJ-05</b>	
	/s/ Anthony L. Urenovich 9-01-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Donald W. Lucas 9-01-99 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	



**TYPE D-1 SAWED CONTRACTION JOINT SEALANT OPTIONS**

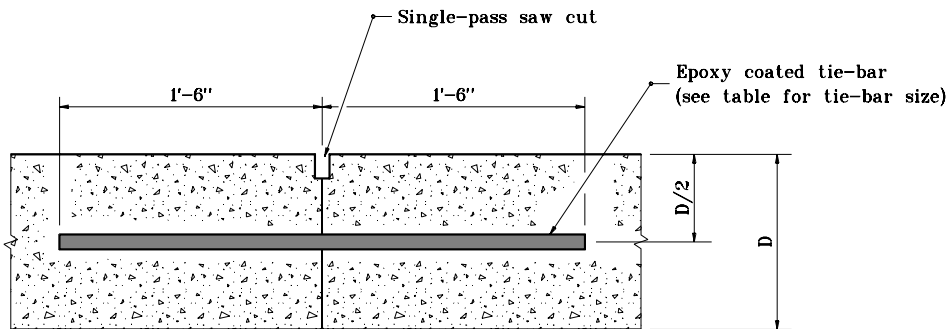
**NOTES**

1. Transverse joints shall be constructed perpendicular to the centerline with a maximum spacing of 18'-0" unless otherwise specified.
2. The configuration of the preformed elastomeric joint seal shall be a 9/16" to 5/8" wide seal with at least a five cell internal design. The seal height shall be 9/16" to 13/16" in uncompressed stage.
3. For transverse construction joints, the initial saw cut may be eliminated.

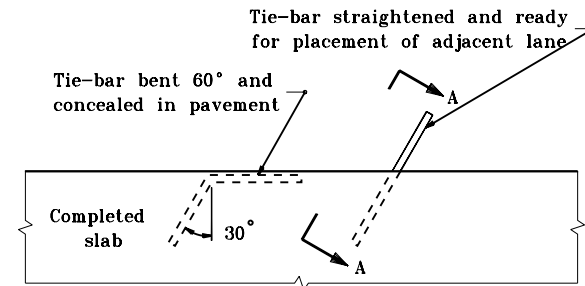
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>TRANSVERSE JOINT SEALS</b>	
MARCH 2005	
STANDARD DRAWING NO. E 503-CCPJ-06	
	/s/ Richard L. VanCleave 3-01-05 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 3-01-05 CHIEF HIGHWAY ENGINEER DATE

**TIE-BAR SIZES FOR LONGITUDINAL CONSTRUCTION JOINT**

Pavement Thickness, D	Tie-Bar Size	Spacing
Less than 9"	#5	3'-0" c/c
9" through 12"	#6	3'-0" c/c
Greater than 12"	#6 or #7	2'-0" c/c 3'-0" c/c



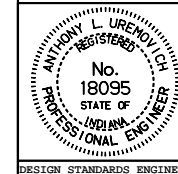
**SECTION A-A**



**PLAN VIEW**

**METHOD OF PLACING TIE-BAR  
FOR LONGITUDINAL CONSTRUCTION JOINT**

INDIANA DEPARTMENT OF TRANSPORTATION  
**LONGITUDINAL CONSTRUCTION  
 JOINT**  
 SEPTEMBER 1999  
 STANDARD DRAWING NO. **E 503-CCPJ-07**



*/s/ Anthony L. Urenovich* 9-01-99  
 DESIGN STANDARDS ENGINEER DATE

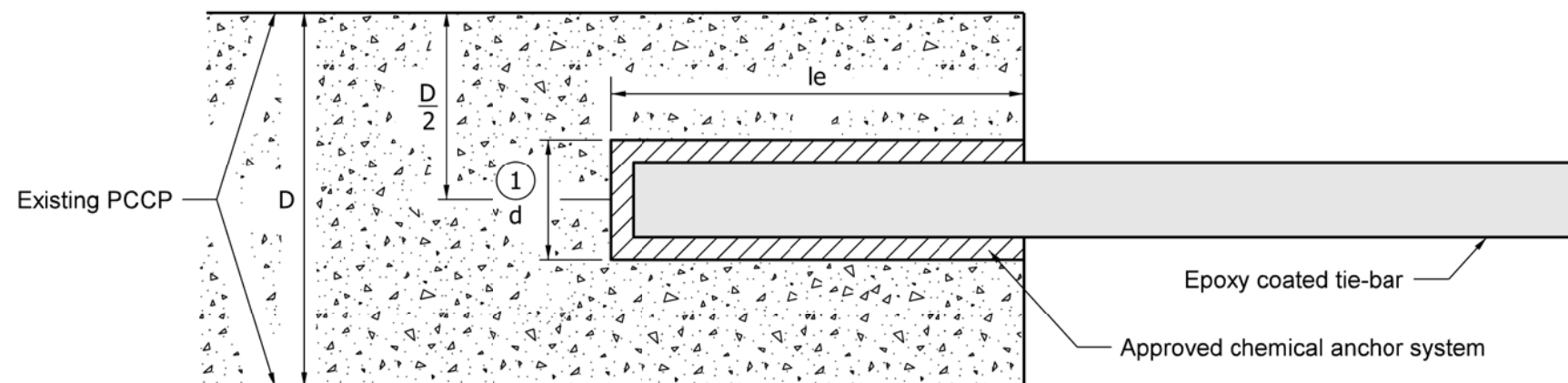
*/s/ Donald W. Lucas* 9-01-99  
 CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

NOTES:

- ① Diameter of drilled hole (d) shall be in accordance with the chemical anchor system manufacturer's instructions.

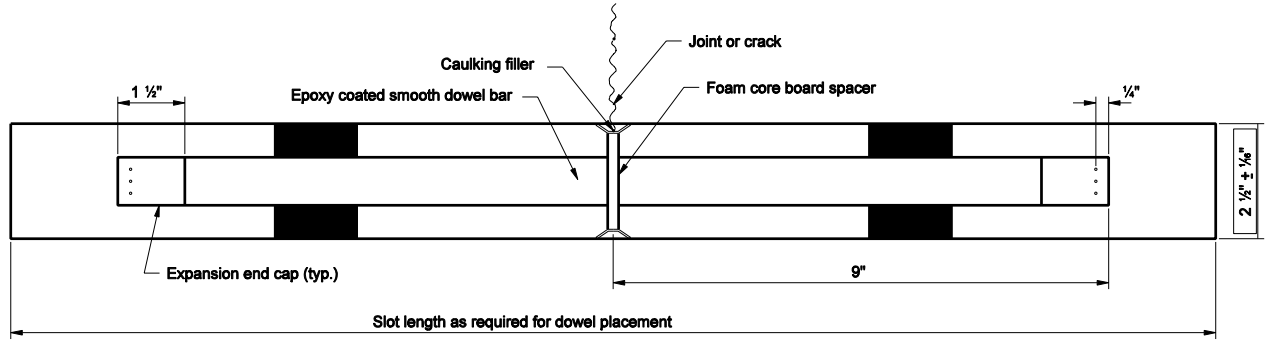
PAVEMENT THICKNESS, D	LONGITUDINAL CONSTRUCTION JOINT Retrofit Tie-bars at 3'-0" c/c	
	TIE-BAR SIZE	MIN. LENGTH OF EMBEDMENT, $l_e$
Less than or equal to 9"	#5	1'-0"
Greater than 9"	#6	1'-0"



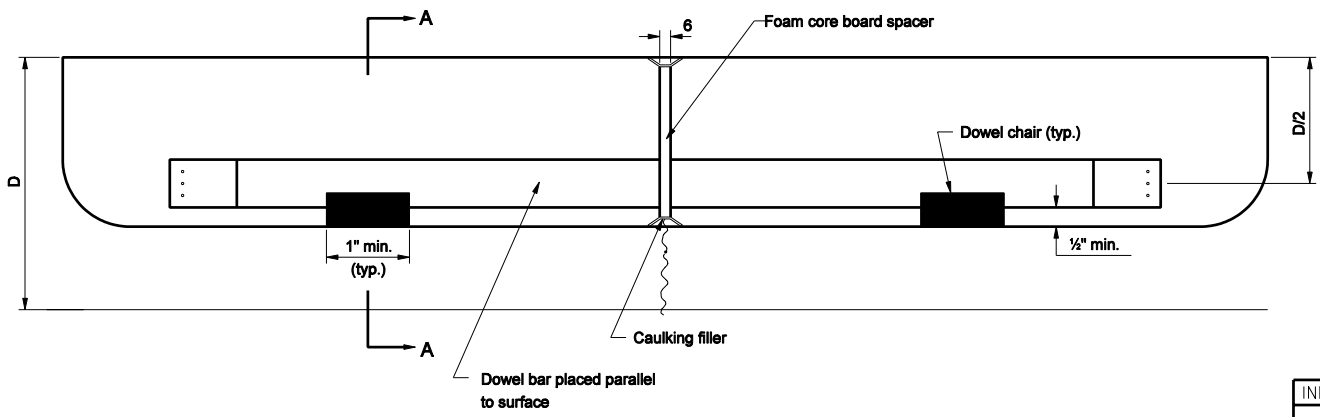
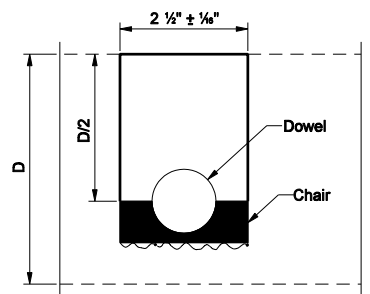
RETROFIT CONSTRUCTION TIE-BAR EMBEDMENT DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION	
LONGITUDINAL CONSTRUCTION JOINT	
SEPTEMBER 2011	
STANDARD DRAWING NO.	E 503-CCPJ-08
	<i>/s/ Richard L. VanCleave</i> 09/01/11 DESIGN STANDARDS ENGINEER      DATE
	<i>/s/ Mark A. Miller</i> 09/01/11 CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	





**NOTES:**  
 1. For dowel slot layout requirements, see Standard Drawing E 305-RLTC-02.



**DOWEL SLOT DETAILS**

DOWEL BAR SIZES	
Pavement Thickness D	Minimum Dowel Bar Diameter
Less than 12"	1 1/4"
Greater than or equal to 12"	1 1/2"

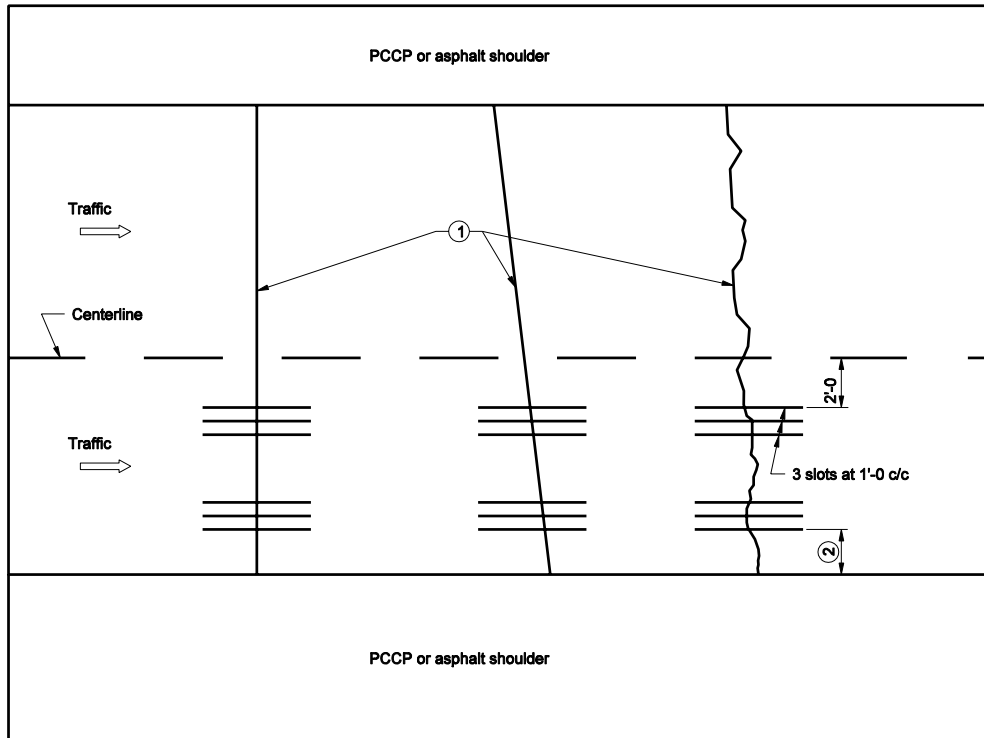
INDIANA DEPARTMENT OF TRANSPORTATION

**RETROFIT LOAD TRANSFER FOR PCCP**

SEPTEMBER 2004

STANDARD DRAWING NO. E 507-RLTC-01

	/s/ Richard L. VanCleave	9-01-04
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Richard K. Smutzer	9-01-04
	CHIEF HIGHWAY ENGINEER	DATE



**NOTES:**

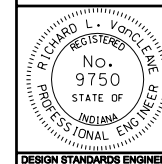
- ① PCCP retrofit load transfer may be utilized at perpendicular joints, skewed joints, or at random cracks.
- ② If lane width is 12 ft, use 3' offset. If lane width is 14 ft, use 4' offset.
- 3. Dowel slots shall be constructed parallel to pavement centerline.

INDIANA DEPARTMENT OF TRANSPORTATION

**RETROFIT LOAD  
TRANSFER FOR LOAD**

SEPTEMBER 2004

STANDARD DRAWING NO. E 507-RLTC-02



/s/ Richard L. VanCleave 9-01-04  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 9-01-04  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER