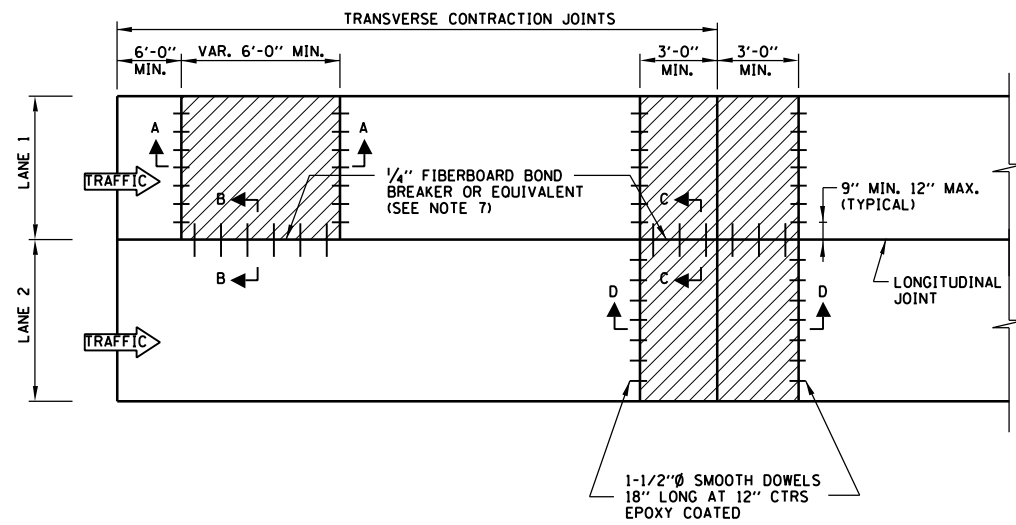


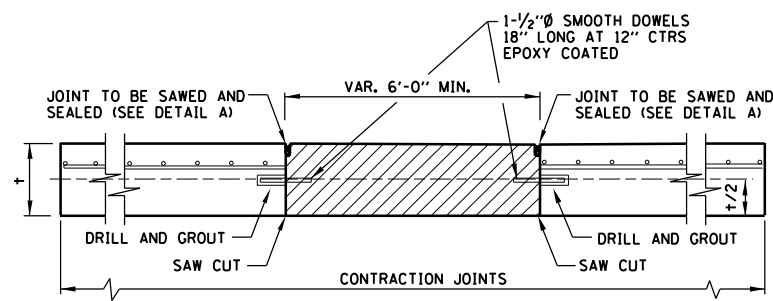
<b>Tollway Standard Drawing Revisions</b>
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<b>Section A</b>	<b>Roadway / Pavement</b>	
	<b>Standard</b>	<b>Modification Summary</b> <span style="float: right;"><b>Effective 03/01/2013</b></span>
	<b>All Sheets</b>	<b>Illinois Tollway Standard Logo Inserted In Title Block.</b>

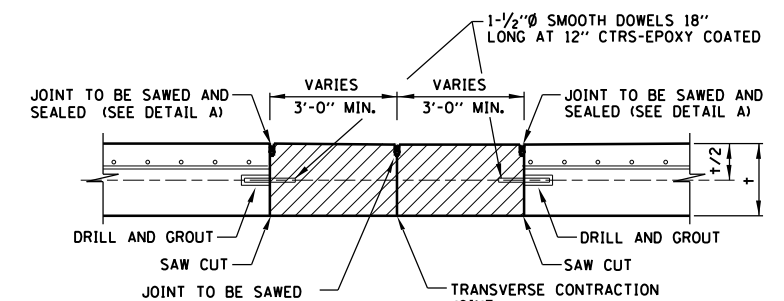
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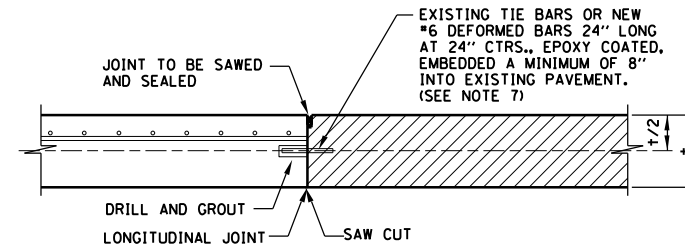
**PROPOSED CONCRETE PAVEMENT FULL DEPTH  
REPAIR TYPICAL ROADWAY PLAN  
(PAID AS CLASS B PATCH)**



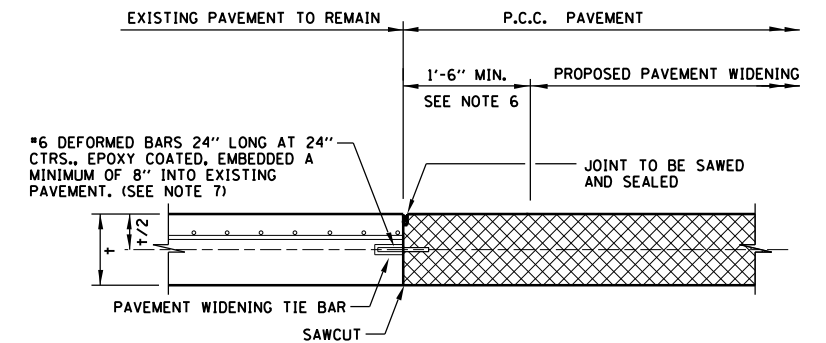
**SECTION A-A  
REPAIR - FULL DEPTH, ONE LANE**



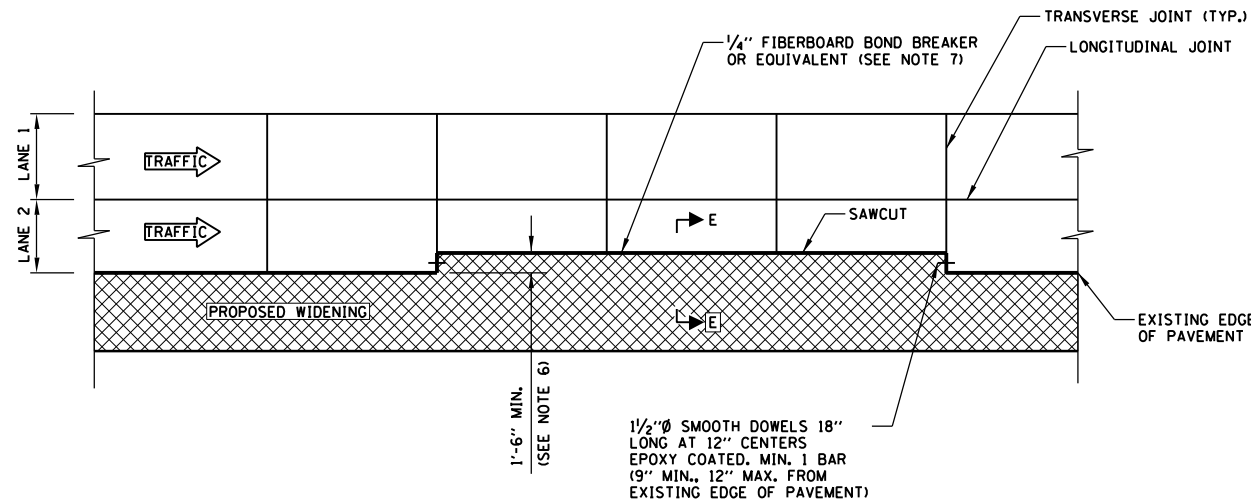
**SECTION D-D  
REPAIR AT CONTRACTION JOINT**



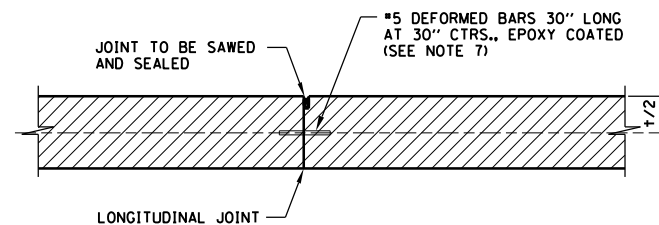
**SECTION B-B  
REPAIR ALONG LONGITUDINAL JOINT**



**SECTION E-E  
REPLACEMENT OF DETERIORATED PAVEMENT  
EDGES ADJACENT TO PROPOSED WIDENING**



**REPLACEMENT OF DETERIORATED PAVEMENT  
EDGES ADJACENT TO PROPOSED WIDENING  
(PAID AS PART OF WIDENING)**



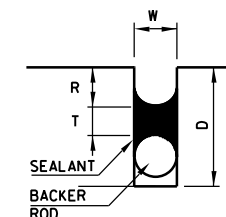
**SECTION C-C  
REPAIR THROUGH LONGITUDINAL JOINT**

**GENERAL NOTES:**

1. THE MINIMUM OVERALL DIMENSIONS OF REPAIRS SHALL BE SIX (6) FEET BY THE LANE WIDTH EXCEPT FOR REPLACEMENT OF DETERIORATED PAVEMENT EDGES ADJACENT TO PROPOSED WIDENING (SEE SECTION E-E). REPAIRS TERMINATING AT TRANSVERSE CONTRACTION JOINTS SHALL BE EXTENDED THREE FEET ACROSS THE JOINT. WHEN A REPAIR EXTENDS ACROSS AN EXISTING JOINT THE MINIMUM DIMENSION ON EITHER SIDE OF THE JOINT SHALL BE THREE FEET. LONGITUDINAL JOINTS IN THE REPAIR AREA SHALL BE SAWED AND SEALED (SEE DETAIL A).
2. WHENEVER A REPAIR IS CONSTRUCTED IN TWO OR MORE SEGMENTS BECAUSE OF MAINTENANCE OF TRAFFIC STAGING REQUIREMENTS, EACH SEGMENT SHALL BE CONSIDERED A SEPARATE PATCH WITH SIX (6) FOOT MINIMUM DIMENSION.
3. DRILLED AND GROUTED BARS SHALL BE EMBEDDED 1/3 THEIR LENGTH INTO THE EXISTING CONCRETE USING AN EPOXY GROUT AS SPECIFIED.
4. ALL TRANSVERSE CONTRACTION AND LONGITUDINAL JOINTS IN THE REPAIR AREA IN PAVEMENT NOT TO BE RESURFACED SHALL BE SAWCUT AND SEALED PER IDOT STANDARD 420001 (PAVEMENT JOINTS).
5. FOR SPOT REPAIR OF ASPHALT OVERLAY AND P.C.C. PAVEMENT SHALL BE SAW CUT FULL DEPTH.
6. AT LOCATIONS OF PROPOSED PAVEMENT WIDENING, EDGE DETERIORATION REQUIRING FULL DEPTH REPAIR SHALL BE REPAIRED BY REMOVAL AND REPLACEMENT OF A MINIMUM OF 1'-6" WIDE STRIP. THE NEW PAVEMENT SHALL BE CONSTRUCTED MONOLITHICALLY WITH THE PAVEMENT WIDENING. ANY SAW CUTTING AND REMOVAL WILL BE CONSIDERED EXTRA WORK, WITH PAYMENT PER ARTICLE 109.04 OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE PROVIDED IN THE CONTRACT.
7. WHEN PATCH LENGTH OR EDGE REPAIR LENGTH IS 20' OR LESS, TIE BARS CAN BE OMITTED. IF TIE BARS ARE OMITTED, THEN FIBERBOARD BOND BREAKER OR EQUIVALENT SHALL BE USED. WHEN PATCH LENGTH IS MORE THAN 20', TIE BARS SHALL BE USED.
8. TYPICAL ROADWAY PLAN FOR FULL DEPTH REPAIR IS APPLICABLE TO ALL PAVEMENTS, LANE WIDTHS AND NUMBER OF EXISTING LANES.

**LEGEND**

- EXISTING WELDED WIRE FABRIC (10" PAVEMENT ONLY)
- EXISTING PAVEMENT
- PROPOSED CONCRETE PAVEMENT REPAIR - FULL DEPTH
- PROPOSED CONCRETE PAVEMENT WIDENING
- $t$  = CONCRETE PAVEMENT THICKNESS



**DETAIL A**

**TYPICAL JOINT CROSS-SECTION**

- W = SEALANT WIDTH, 3/8" MIN.
  - T = SEALANT THICKNESS
  - R = SEALANT RECESS, FLUSH OR OVER BANDING NOT ALLOWED
  - D = JOINT CHANNEL DEPTH
- AS RECOMMENDED BY MANUFACTURER

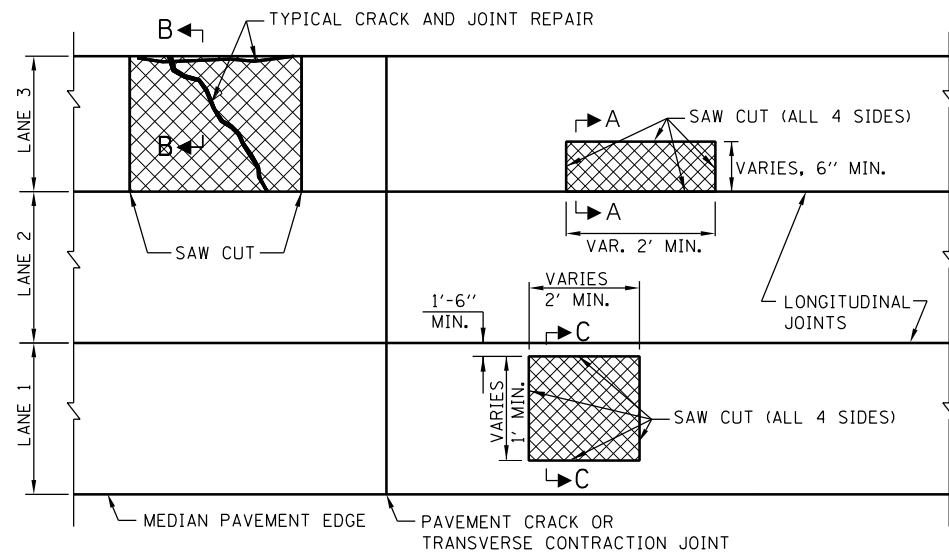
DATE	REVISIONS
5-1-2009	MODIFIED JOINT DETAILS
1-1-2011	REVISED NOTE 7.



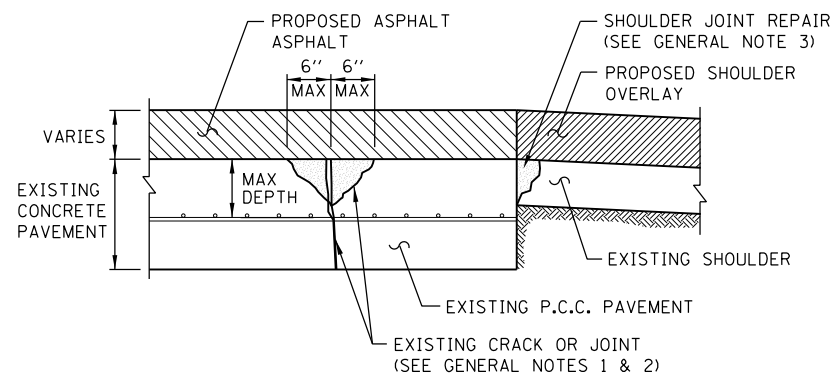
CONCRETE PAVEMENT REPAIR  
FULL DEPTH

STANDARD A1-02

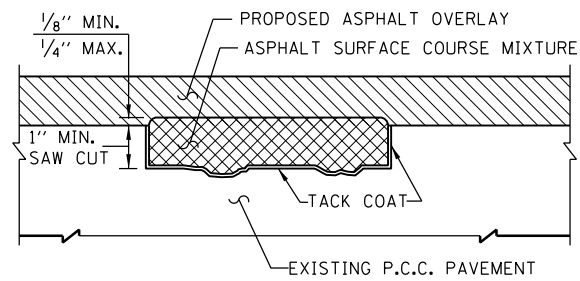
*Paul Kovacs*  
APPROVED ..... CHIEF ENGINEER ..... DATE 5-1-2009



PROPOSED PAVEMENT REPAIR (PARTIAL DEPTH)  
TYPICAL ROADWAY PLAN



SECTION B-B  
EXISTING CRACK AND JOINT REPAIR



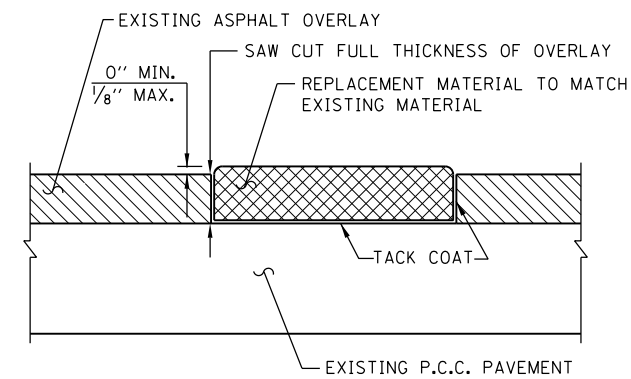
SECTIONS A-A & C-C  
PAVEMENT REPAIR (PARTIAL DEPTH) ASPHALT

NOTES: PARTIAL DEPTH ASPHALT

1. LOCATION OF PATCHING AREAS SHALL BE DETERMINED BY THE ENGINEER.
2. MINIMUM SAW CUT SHALL BE TO A DEPTH OF 1".
3. MINIMUM DIMENSIONS SHALL BE AS SHOWN.
4. TACK COAT SHALL BE APPLIED TO ALL EXPOSED SURFACES OF THE CAVITY.
5. ALL CONCRETE SHALL BE REMOVED TO A MINIMUM DEPTH OF ONE INCH.
6. THE COST OF TACK COAT AND ASPHALT SURFACE MIXTURE SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR PAVEMENT REPAIR (PARTIAL DEPTH) ASPHALT.

GENERAL NOTES:

1. THE CRACKS OR JOINTS SHALL BE CLEANED OF ALL DIRT, LOOSE OR SPALLED CONCRETE AND FOREIGN MATERIAL TO A DEPTH WHERE THE CRACK BECOMES LESS THAN 3/8 INCH WIDE OR UNTIL THE REINFORCEMENT IS ENCOUNTERED. THIS WORK SHALL BE PERFORMED BY MEANS OF APPROVED HAND TOOLS AND/OR PNEUMATIC TOOLS.
2. AFTER REMOVING LOOSE MATERIAL IN AND ADJACENT TO THE CRACK OR JOINT, THE CRACK OR JOINT SHALL BE FILLED WITH MIXTURE FOR CRACKS AND JOINTS AS REQUIRED BY STANDARD SPECIFICATIONS, OR AS DIRECTED BY THE ENGINEER.
3. REMOVE JOINT SEALER AND LOOSE OR DAMAGED ASPHALT, THEN FILL VOID WITH MIXTURE FOR CRACKS AND JOINTS AS REQUIRED BY THE STANDARD SPECIFICATIONS, OR AS DIRECTED BY THE ENGINEER.
4. WHEN THE SPALLED OR DETERIORATED AREA EXTENDS BELOW THE REINFORCING STEEL, OR ONE HALF THE PAVEMENT THICKNESS, A FULL DEPTH PATCH SHALL BE CONSTRUCTED.



SECTION A-A & C-C  
ASPHALT OVERLAY REPAIR

NOTES: TYPICAL ASPHALT OVERLAY REPAIR

1. LOCATION OF ALL OVERLAY REPAIR AREAS SHALL BE DETERMINED BY THE ENGINEER.
2. MINIMUM DIMENSIONS SHALL BE AS SHOWN IN TYPICAL ROADWAY PLAN.
3. ALL ASPHALT OVERLAY SHALL BE REMOVED TO THE TOP OF THE P.C. CONC. PAVEMENT.
4. SAWCUT MAY BE ELIMINATED IF MILLING EQUIPMENT IS USED AND VERTICAL AND STRAIGHT SIDES ARE OBTAINED.

LEGEND

- EXISTING REINFORCING MATERIAL
- EXISTING OR PROPOSED ASPHALT OVERLAY
- PROPOSED PAVEMENT REPAIR PARTIAL DEPTH (ASPHALT)
- MIXTURE FOR CRACKS AND JOINTS
- EXISTING AGGREGATE MATERIAL EARTH

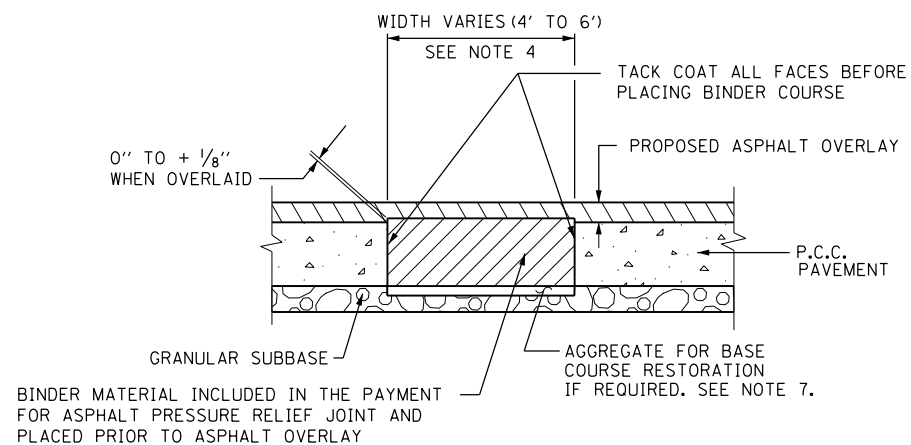
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

DATE	REVISIONS
5-1-2009	DELETED DETAIL A, REVISED NOTES
1-1-2011	REMOVED PARTIAL DEPTH P.C. CONCRETE REPAIR, ADDED SAW CUT TO CRACK REPAIR

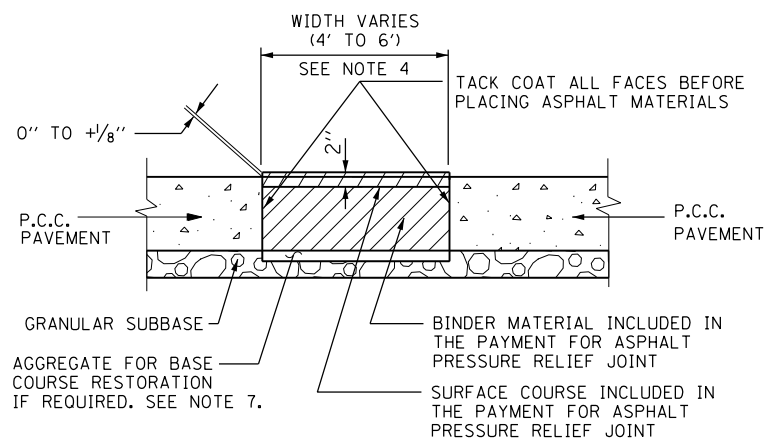


PAVEMENT REPAIR  
PARTIAL DEPTH

STANDARD A2-02



ASPHALT PRESSURE RELIEF JOINT  
WITH PROPOSED OVERLAY

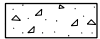
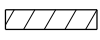
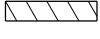
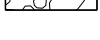


ASPHALT PRESSURE RELIEF JOINT  
WITHOUT PROPOSED OVERLAY

NOTES FOR ASPHALT PRESSURE RELIEF JOINT:

1. PAVEMENT SHALL BE SAWCUT OR BULKHEADED FULL DEPTH ALONG A NEAT LINE PERPENDICULAR TO THE EDGE OF PAVEMENT AT LOCATIONS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER. PAVEMENT BETWEEN SAWCUTS SHALL BE REMOVED AND THE AREA SHALL BE CLEANED TO THE SATISFACTION OF THE ENGINEER.
2. THE IN-PLACE DENSITY SHALL NOT BE LESS THAN 95% OF THE BULK SPECIFIC GRAVITY ("d") DENSITY, EXCEPT THAT IF A TARGET DENSITY HAS BEEN PREVIOUSLY ESTABLISHED FOR THE SAME MIX, THE IN-PLACE DENSITY OF EACH LIFT OF THE MIX WILL BE ACCEPTED AT 95% OF THE BULK SPECIFIC GRAVITY ("d") DENSITY, OR 98% OF THE TARGET DENSITY WHICHEVER IS THE LEAST.
3. THE REMOVAL OF EXISTING LONGITUDINAL TIE BARS OR REINFORCEMENT SHALL BE CONSIDERED INCIDENTAL TO ASPHALT PRESSURE RELIEF JOINT.
4. EXACT LOCATIONS AND WIDTH OF ASPHALT PRESSURE RELIEF JOINTS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
5. THE CONTRACT UNIT PRICE PER SQUARE FOOT FOR ASPHALT PRESSURE RELIEF JOINT SHALL INCLUDE THE COST OF THE SAW CUT OR BULKHEAD FULL DEPTH, REMOVAL OF EXISTING PAVEMENT, ASPHALT MATERIALS (TACK COAT), AND ASPHALT CONCRETE MATERIALS.
6. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS.
7. IF REQUIRED, AGGREGATE FOR BASE COURSE RESTORATION WILL BE MEASURED AND PAID FOR IN TONS, PER SECTION 351.

LEGEND

-  P.C.C. PAVEMENT
-  PROPOSED SURFACE COURSE (SEE DETAIL FOR ASPHALT P.R.J. W/OUT PROPOSED OVERLAY)
-  PROPOSED OVERLAY
-  GRANULAR SUBBASE

APPROVED  DATE 1-1-2007  
CHIEF ENGINEER

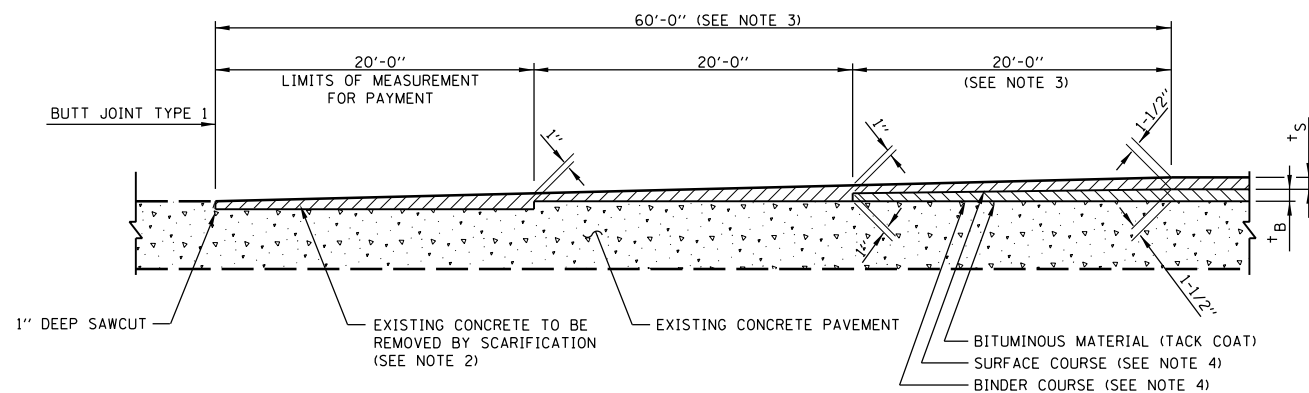
DATE	REVISIONS



ASPHALT PRESSURE  
RELIEF JOINTS

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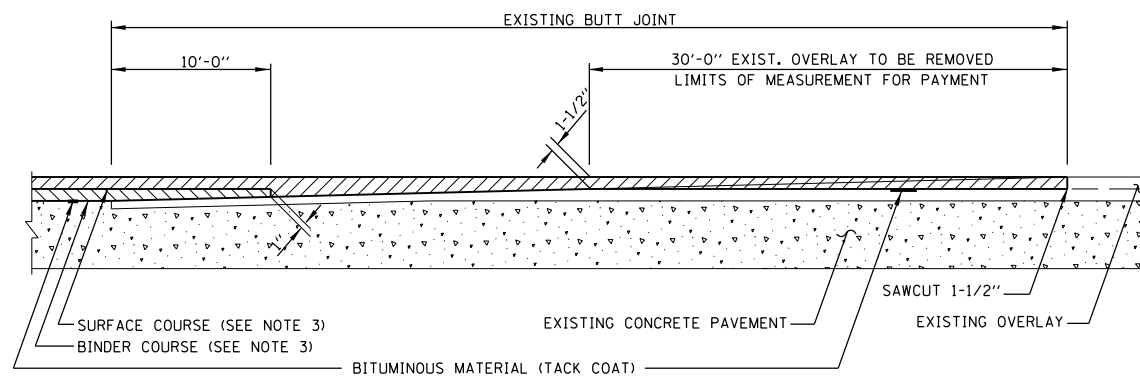
STANDARD A3-00



**DETAIL OF BUTT JOINT, TYPE 1**

**NOTES FOR BUTT JOINT TYPE 1**

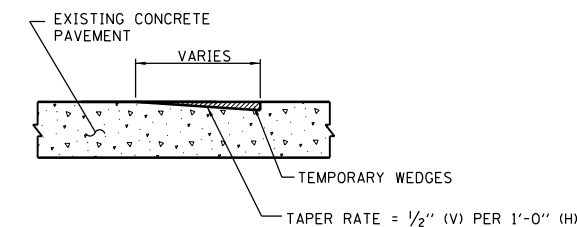
1. THE ABOVE WORK WILL BE PERFORMED AT THE ENDS OF ALL ASPHALT RESURFACING. THE REMOVAL OF CONCRETE PAVEMENT WILL BE INCLUDED IN CONTRACT UNIT PRICE PER SQUARE YARD FOR "PORTLAND CEMENT CONCRETE SURFACE REMOVAL - BUTT JOINT". ASPHALT OVERLAY TO BE PAID FOR UNDER ITEMS: "ASPHALT BINDER COURSE" AND "ASPHALT SURFACE COURSE", OF THE TYPE SPECIFIED IN THE CONTRACT.
2. ONLY APPROVED SCARIFYING OR MILLING EQUIPMENT SHALL BE USED TO SCARIFY THE CONCRETE PAVEMENT.
3. REGARDLESS OF TYPE OF SURFACE MIX USED, NUMBER OR THICKNESS OF COURSES OR LAYERS, THE OVERLAY THICKNESS TRANSITION LENGTH SHALL BE BASED ON 1" IN 20' AND THE MINIMUM LAYER THICKNESS SHALL BE 1".
4. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS. "t<sub>s</sub>" IS THE THICKNESS OF THE SURFACE COURSE SPECIFIED IN THE CONTRACT. "t<sub>b</sub>" IS THE THICKNESS OF THE BINDER COURSE SPECIFIED IN THE CONTACT. SEE NOTE 3.



**DETAIL OF BUTT JOINT, TYPE 2  
AT EXISTING OVERLAY AREAS**

**NOTES FOR BUTT JOINT, TYPE 2**

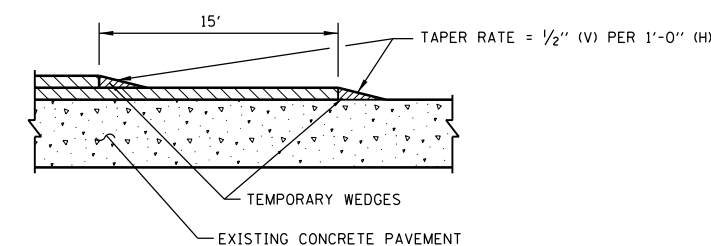
1. THE ABOVE WORK WILL BE PERFORMED AT THE ENDS OF ALL ASPHALT RESURFACING WHERE BUTT JOINTS EXIST. THE REMOVAL OF ASPHALT OVERLAY AND SAWCUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE PER SQUARE YARD FOR "ASPHALT SURFACE REMOVAL - BUTT JOINT".
2. ASPHALT OVERLAY TO BE PAID UNDER ITEMS: "ASPHALT BINDER COURSE" AND "ASPHALT SURFACE COURSE", OF THE TYPE SPECIFIED IN THE CONTRACT.
3. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS.



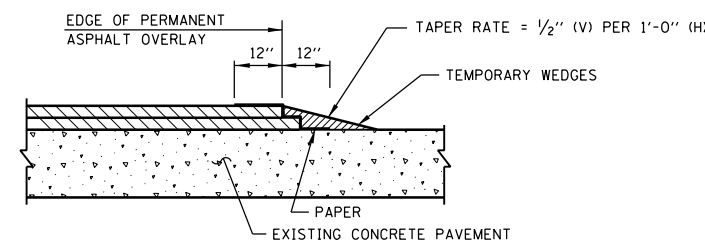
**TEMPORARY ASPHALT WEDGE  
AT SCARIFIED BUTT JOINT**

**NOTE FOR TEMPORARY ASPHALT WEDGE AT SCARIFIED BUTT JOINT**

TEMPORARY WEDGES AT SCARIFIED BUTT JOINTS AND TRANSVERSE TEMPORARY BUTT JOINTS ARE INCLUDED IN COST OF PAVEMENT RESURFACING MATERIALS.



**TEMPORARY TRANSVERSE BUTT JOINT**



**TEMPORARY LONGITUDINAL BUTT JOINT**

**NOTES FOR TEMPORARY LONGITUDINAL BUTT JOINT**

1. THIS ITEM WILL BE USED ONLY WHERE DIRECTED BY THE ENGINEER.
2. PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE PER SQUARE YARD FOR "TEMPORARY WEDGES" WHICH INCLUDES THE MAINTENANCE OF THE TEMPORARY WEDGES AS REQUIRED IN THE STANDARD SPECIFICATIONS.
3. UPON REMOVAL OF THE WEDGES, THE SURFACE COURSE SHALL BE SAWCUT PARALLEL TO THE JOINT TO PROVIDE A TRUE VERTICAL SURFACE.
4. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS.

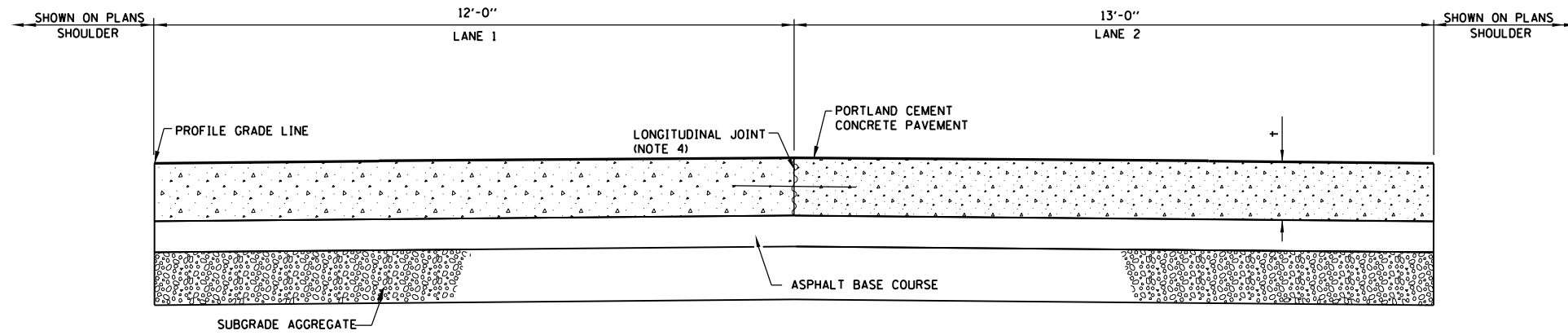
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

DATE	REVISIONS
5-1-2009	CHANGED WEDGE TAPER RATE NOTATION, REVISED NOTES

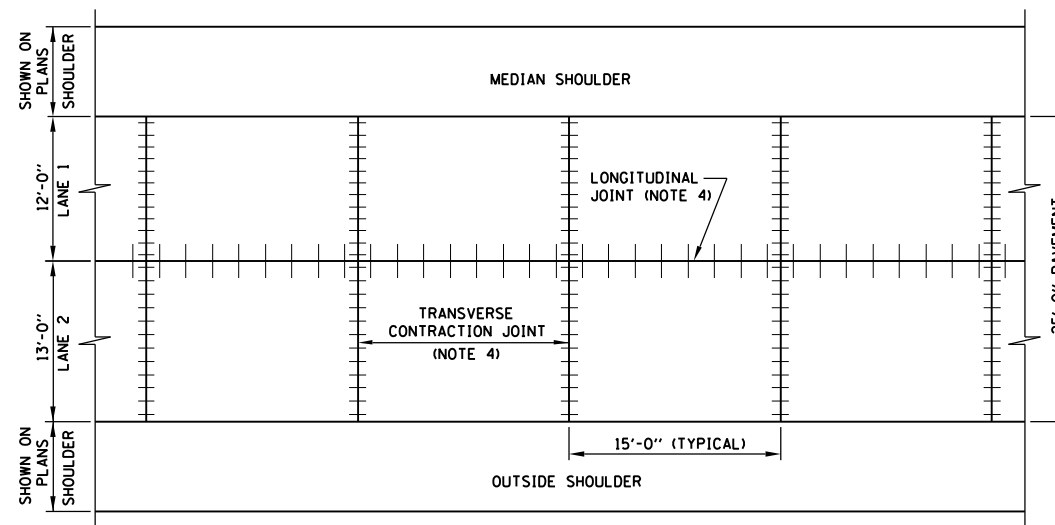
**Illinois Tollway**

BUTT JOINTS

STANDARD A4-01



PAVEMENT CROSS - SECTION (2 LANES)



PAVEMENT PLAN  
2 - LANE SECTION

**GENERAL NOTES:**

1. DOWEL BASKET ASSEMBLIES, WHERE USED, SHALL BE SUPPORTED AND ANCHORED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
2. WHEN ADJACENT LANES ARE NOT BUILT IN ONE OPERATION, A LONGITUDINAL JOINT SHALL BE REPLACED WITH BULKHEAD LONGITUDINAL JOINT.
3. MATERIALS ARE PROJECT SPECIFIC. REFER TO PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS.
4. SEE STANDARD A7 (PAVEMENT JOINTS) AND IDOT STANDARD 420001 (PAVEMENT JOINTS) FOR DETAILS OF JOINTS AND TIE BARS NOT SHOWN.
5. PAVEMENT DESIGNS ARE PROJECT SPECIFIC. OTHER MATERIALS MAY BE SUBSTITUTED FOR ASPHALT BASE COURSE AND SUBGRADE AGGREGATE REFER TO PROJECTS PLANS FOR DETAILS AND MATERIAL THICKNESS.

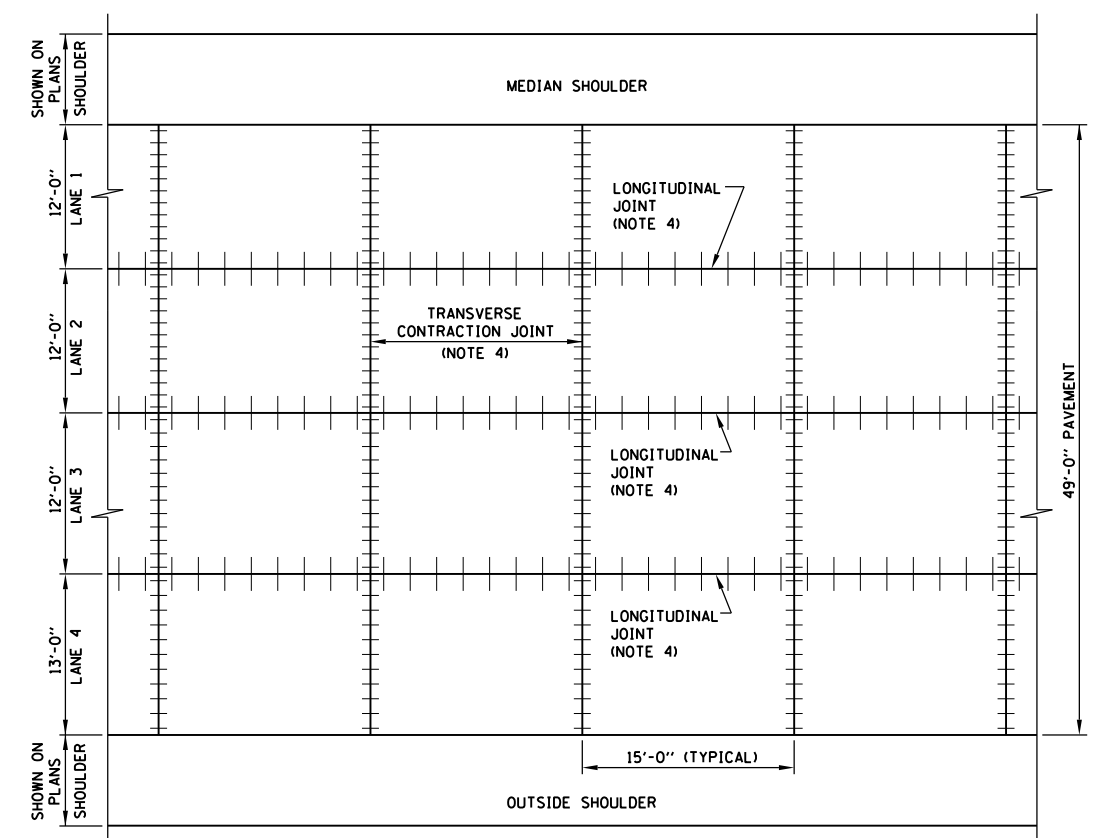
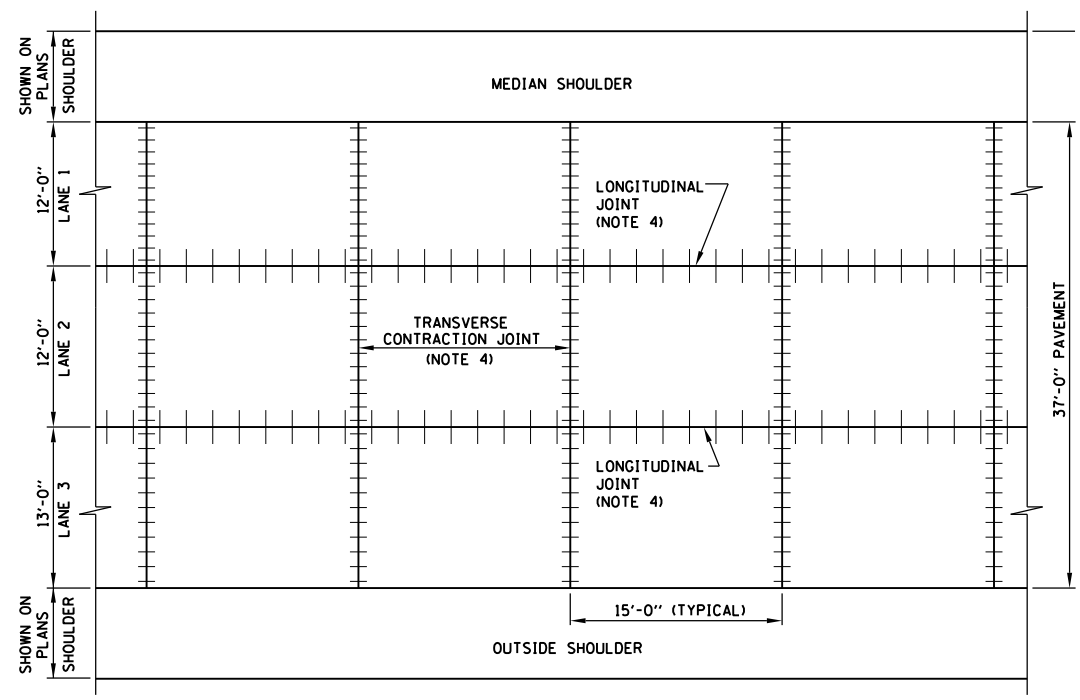
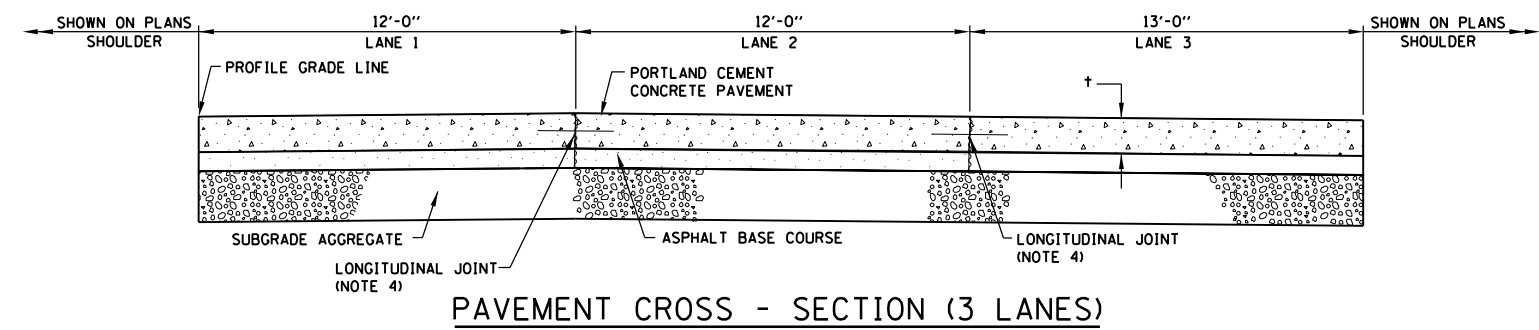
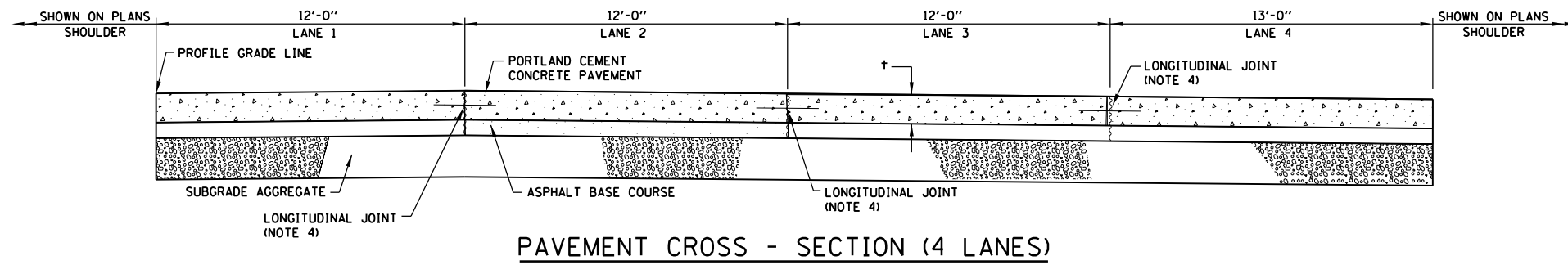


J.P.C. PAVEMENT  
12" OR LESS

STANDARD A5-01

DATE	REVISIONS
5-1-2009	DELETED BLOCK-OUTS DETAIL, REMOVED SHOULDER DIMENSIONS

*Paul Kovacs*  
APPROVED ..... CHIEF ENGINEER ..... DATE 5-1-2009 .....



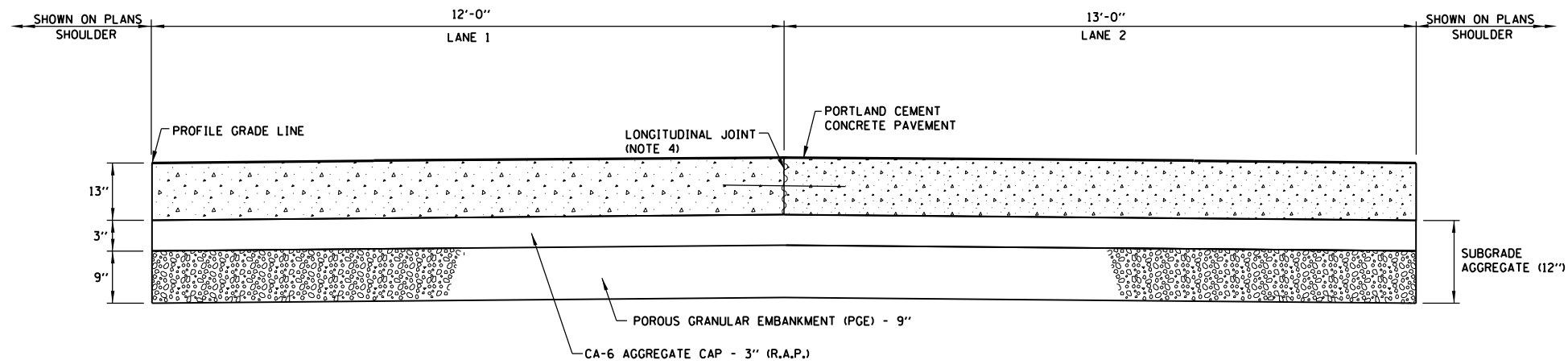
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

SEE SHEET 1 (OF 1) IN THIS SERIES FOR GENERAL NOTES.

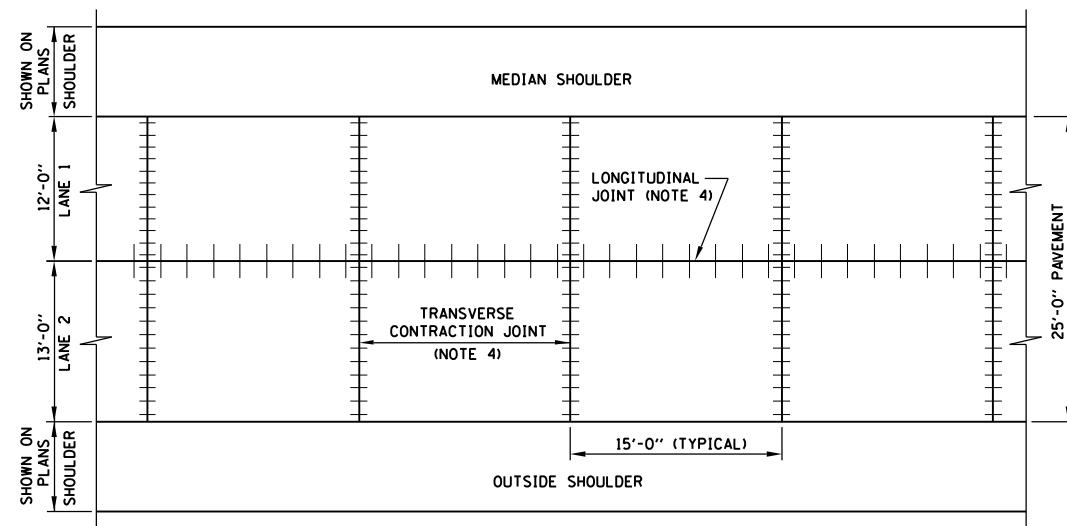
SHEET 2 OF 2

J.P.C. PAVEMENT  
12" OR LESS

STANDARD A5-01



**PAVEMENT CROSS - SECTION (2 LANES)**



**PAVEMENT PLAN  
2 - LANE SECTION**

**GENERAL NOTES:**


1. DOWEL BASKET ASSEMBLIES, WHERE USED, SHALL BE SUPPORTED AND ANCHORED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
2. WHEN ADJACENT LANES ARE NOT BUILT IN ONE OPERATION, A LONGITUDINAL JOINT SHALL BE REPLACED WITH BULKHEAD LONGITUDINAL JOINT.
3. MATERIALS ARE PROJECT SPECIFIC. REFER TO PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS.
4. SEE STANDARD A7 (PAVEMENT JOINTS) AND IDOT STANDARD 420001 (PAVEMENT JOINTS) FOR DETAILS OF JOINTS AND TIE BARS NOT SHOWN.
5. PAVEMENT DESIGNS ARE PROJECT SPECIFIC, OTHER MATERIALS MAY BE SUBSTITUTED FOR ASPHALT BASE COURSE AND SUBGRADE AGGREGATE. REFER TO PROJECTS PLANS FOR DETAILS AND MATERIAL THICKNESS.



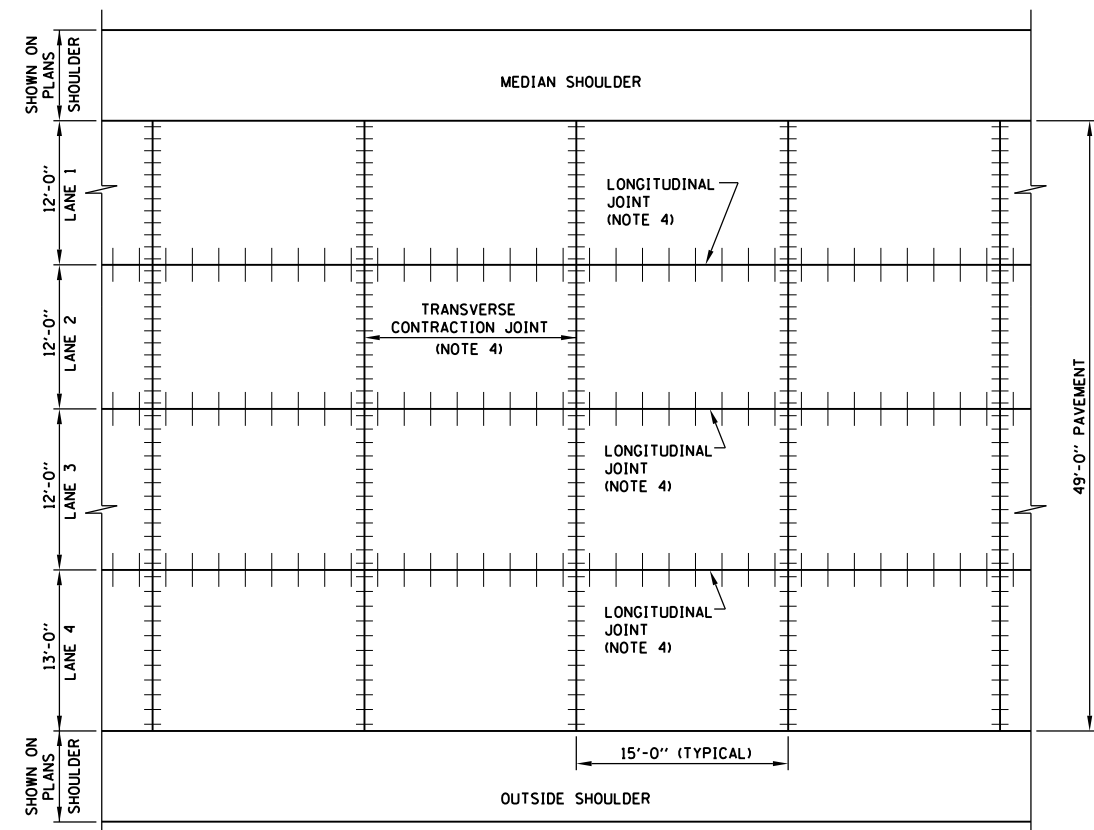
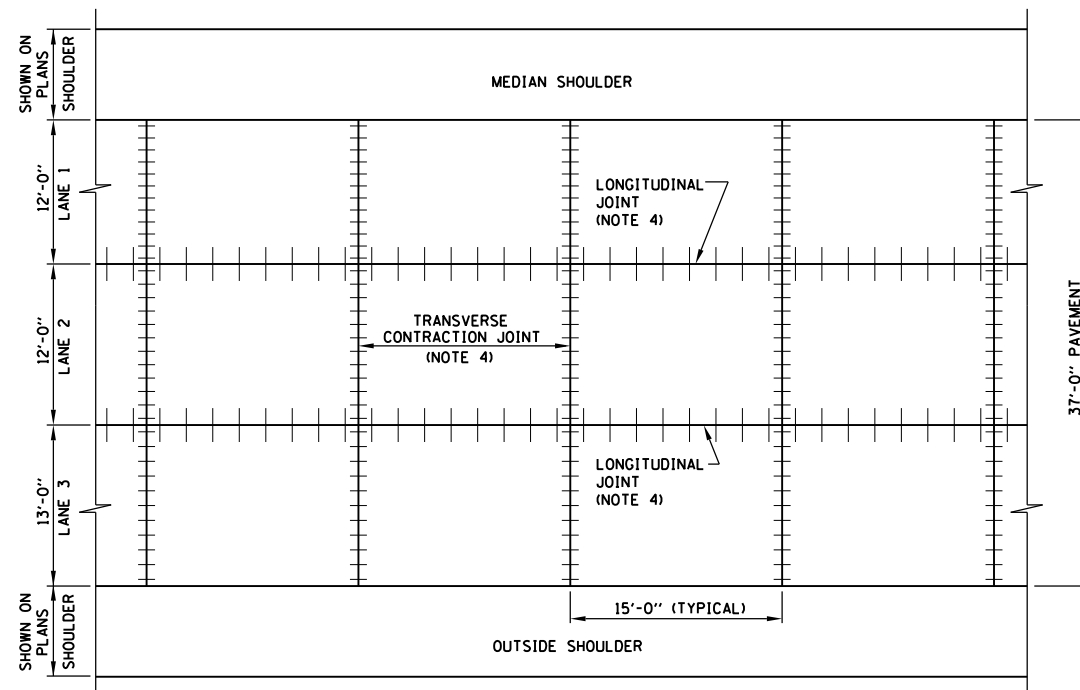
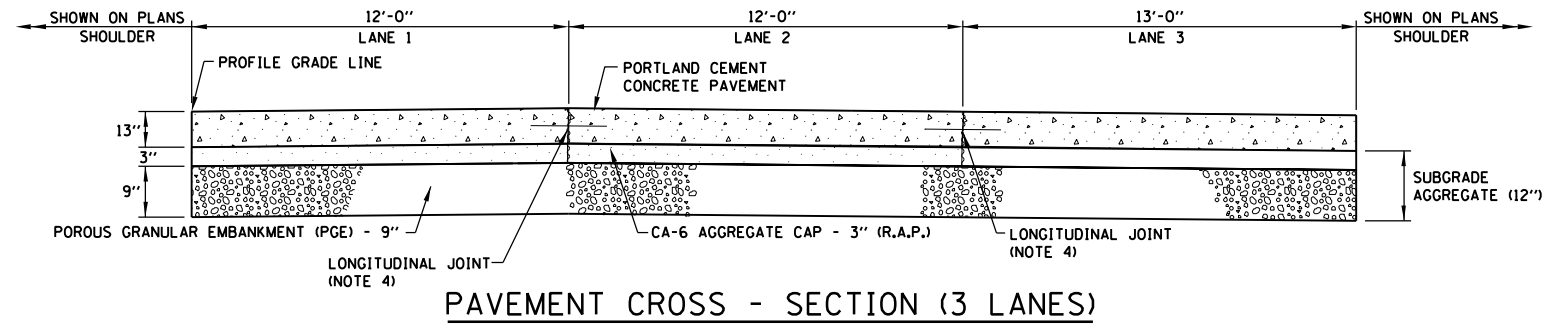
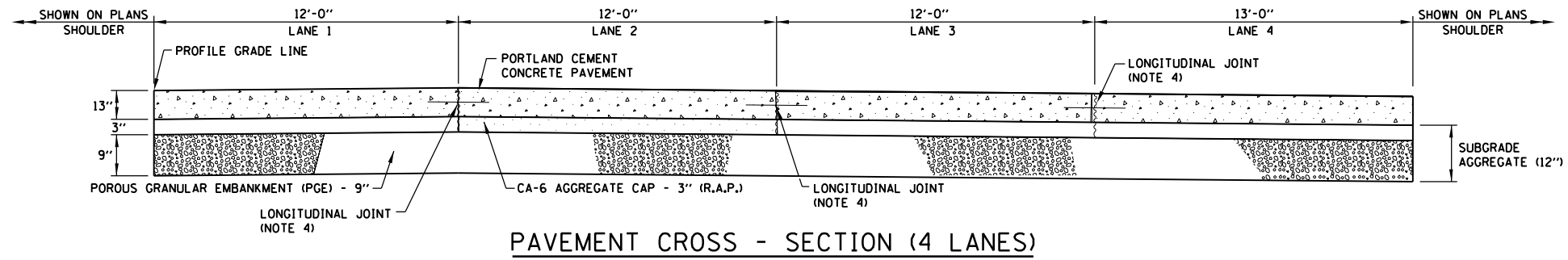
DATE	REVISIONS
5-1-2009	DELETED BLOCK-OUTS DETAIL REMOVED SHOULDER DIMENSIONS

J.P.C. PAVEMENT - 13"

STANDARD A6-01

  
 APPROVED ..... CHIEF ENGINEER ..... DATE 5-1-2009 .....





PAVEMENT PLAN  
3 - LANE SECTION

PAVEMENT PLAN  
4 - LANE SECTION

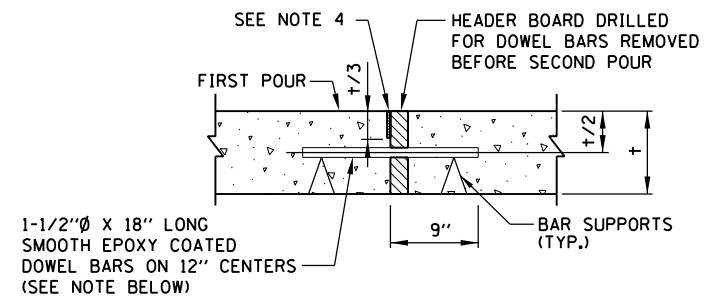


J.P.C. PAVEMENT - 13"

STANDARD A6-01

SEE SHEET 1 (OF 1)  
IN THIS SERIES  
FOR GENERAL NOTES.

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009



NOTE: FOR 13" PAVEMENT USE THE FOLLOWING  
 1-1/2"Ø X 18" LONG ON 9" CENTERS OR  
 1-3/4"Ø X 18" LONG ON 12" CENTERS

**TRANSVERSE CONSTRUCTION JOINT  
 (JOINED PLAIN CONCRETE PAVEMENT)**

**GENERAL NOTES**

1. DOWEL BAR CAPS SHALL BE PLACED ON OPPOSITE END OF ADJACENT DOWEL BARS.
2. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN.
3. + = PAVEMENT THICKNESS
4. A 3/8" SAW CUT SHALL BE PROVIDED FOR PAVEMENT CRACK CONTROL.

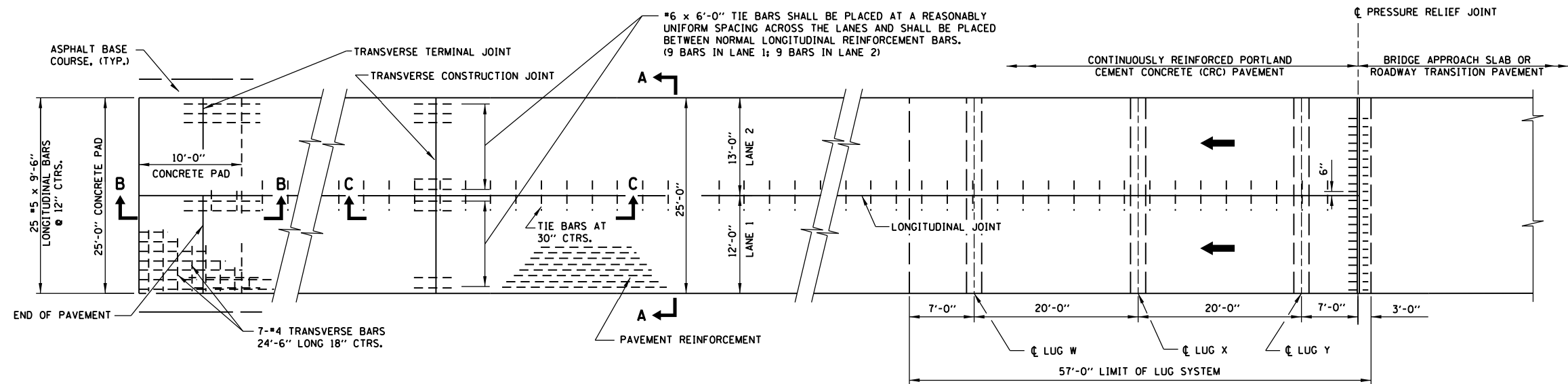


DATE	REVISIONS
5-1-2009	MODIFIED JOINT DETAIL, REVISED NOTES

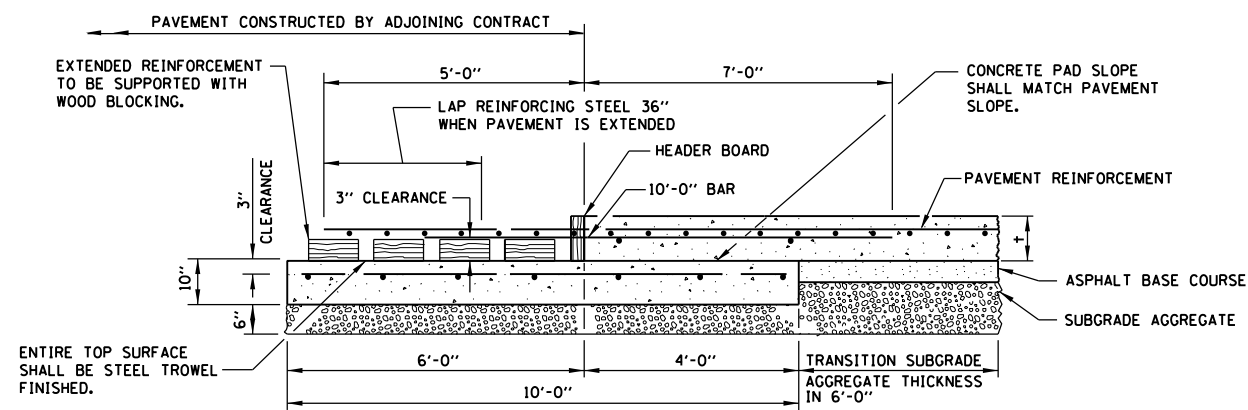
PAVEMENT JOINTS

STANDARD A7-01

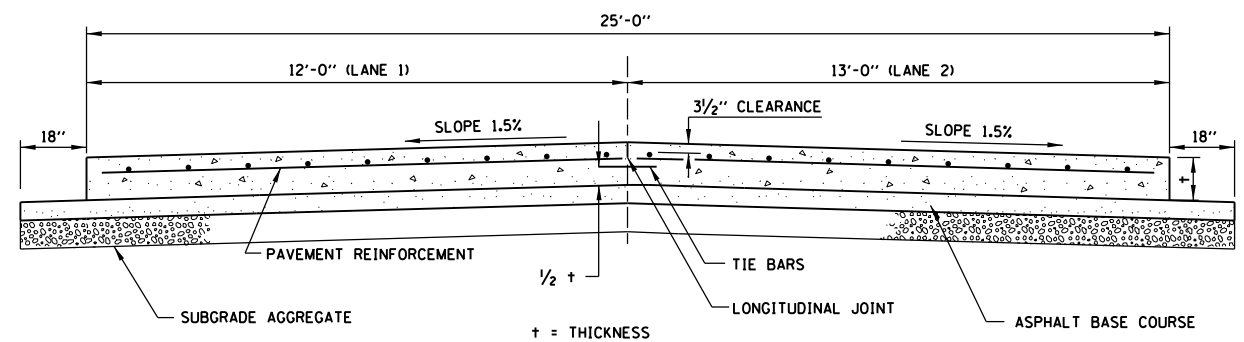
*Paul Kovacs*  
 APPROVED ..... CHIEF ENGINEER ..... DATE 5-1-2009 ...



PLAN



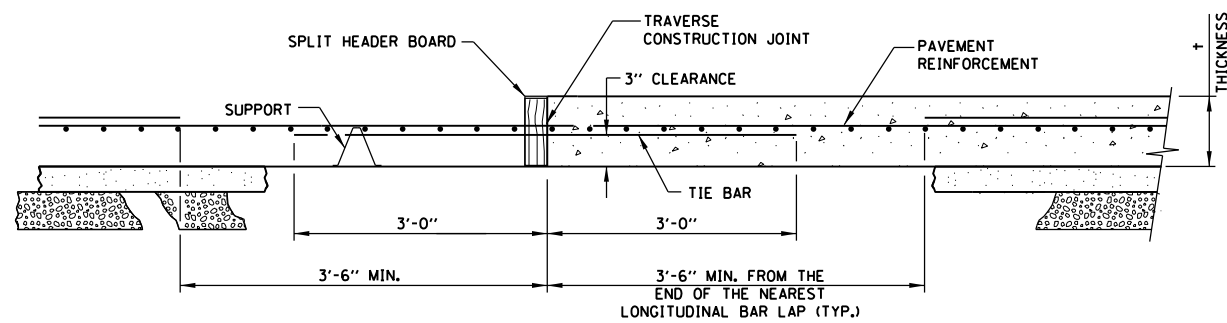
TRANSVERSE TERMINAL JOINT  
(ADJACENT TO NEW CONSTRUCTION)  
SECTION B-B



SECTION A-A  
(TYPICAL 2-LANE WITH SHOULDERS)

NOTES:

- SEE STANDARD A12 (BAR REINFORCEMENT FOR CRC PAVEMENT) FOR DETAILS OF PAVEMENT REINFORCEMENT.
- SEE STANDARD A7 (PAVEMENT JOINTS) AND IDOT STANDARD 420001 (PAVEMENT JOINTS) FOR DETAILS OF JOINTS AND TIE BARS NOT SHOWN.
- SEE STANDARD G6 (APPROACH SLAB TO CRC PAVEMENT, MAINLINE, GENERAL PLAN, AND SECTIONS AND DETAILS) FOR DETAILS OF BRIDGE APPROACH SLAB OR STANDARD A13 (CRC ROADWAY TRANSITION PAVEMENT) FOR DETAILS OF ROADWAY TRANSITION PAVEMENT.
- REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.
- REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
- SAWED AND CONSTRUCTION JOINTS MAY BE INTERCHANGED TO MATCH MAINTENANCE OF TRAFFIC. JOINTS SHOWN ARE FOR NEW CONSTRUCTION.
- THICKNESS OF MATERIALS IS PROJECT SPECIFIC. REFER TO PROJECT PLANS FOR DETAILS.
- QUANTITIES LISTED IN TABLE ON SHEET 2 HAVE BEEN ROUNDED AS FOLLOWS:
  - CONCRETE TO NEAREST CU YD
  - REINFORCING BARS TO NEAREST 10 LBS
  - SUBGRADE AGGREGATE TO NEAREST 50 YD



TRANSVERSE CONSTRUCTION JOINT  
SECTION C-C

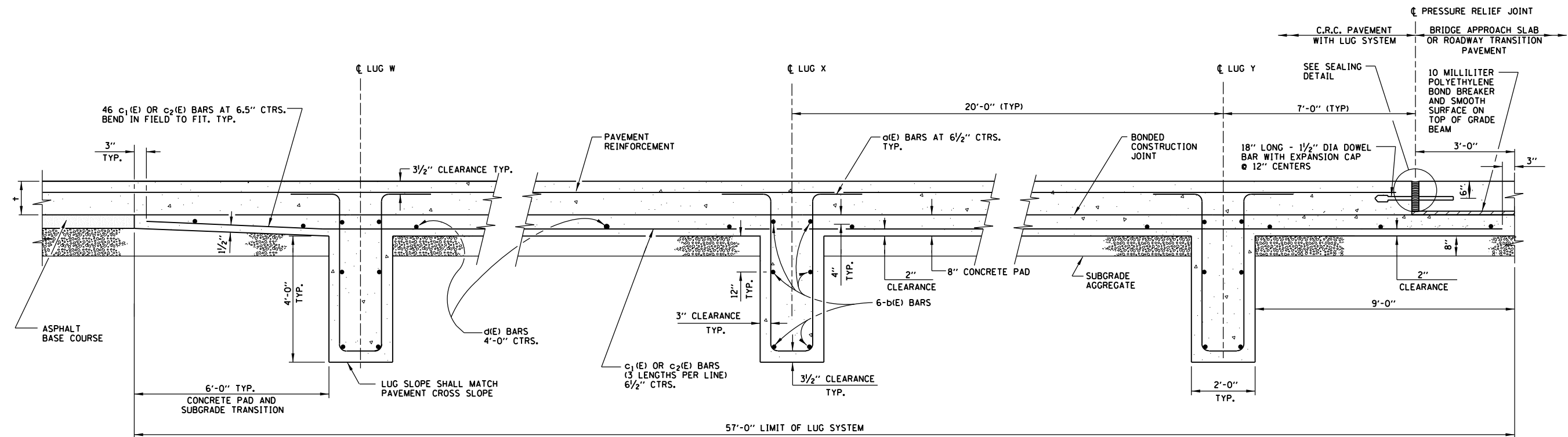


DATE	REVISIONS
5-1-2009	REMOVED PIPE UNDERDRAIN CHANGED BOND BREAKER MATERIAL CHANGED SUBGRADE AGGREGATE DEPTH

2-LANE CRC PAVEMENT  
(WITH LUG SYSTEM)

STANDARD A8-01

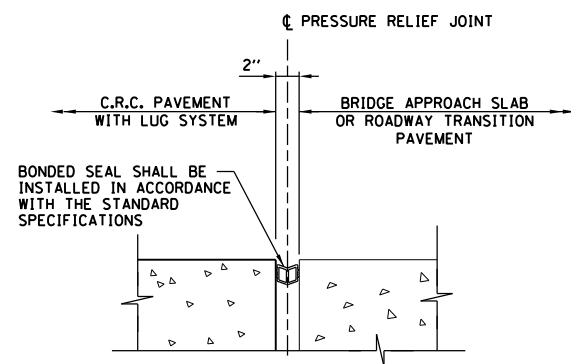
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009



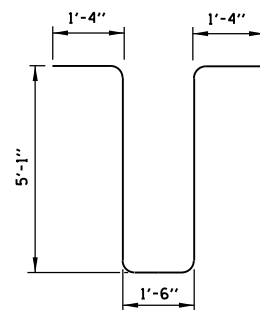
SECTION AT LUG W

SECTION AT LUG X

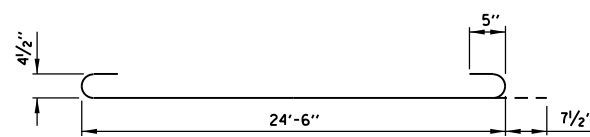
SECTION AT LUG Y



SEALING DETAIL



BAR a(E)



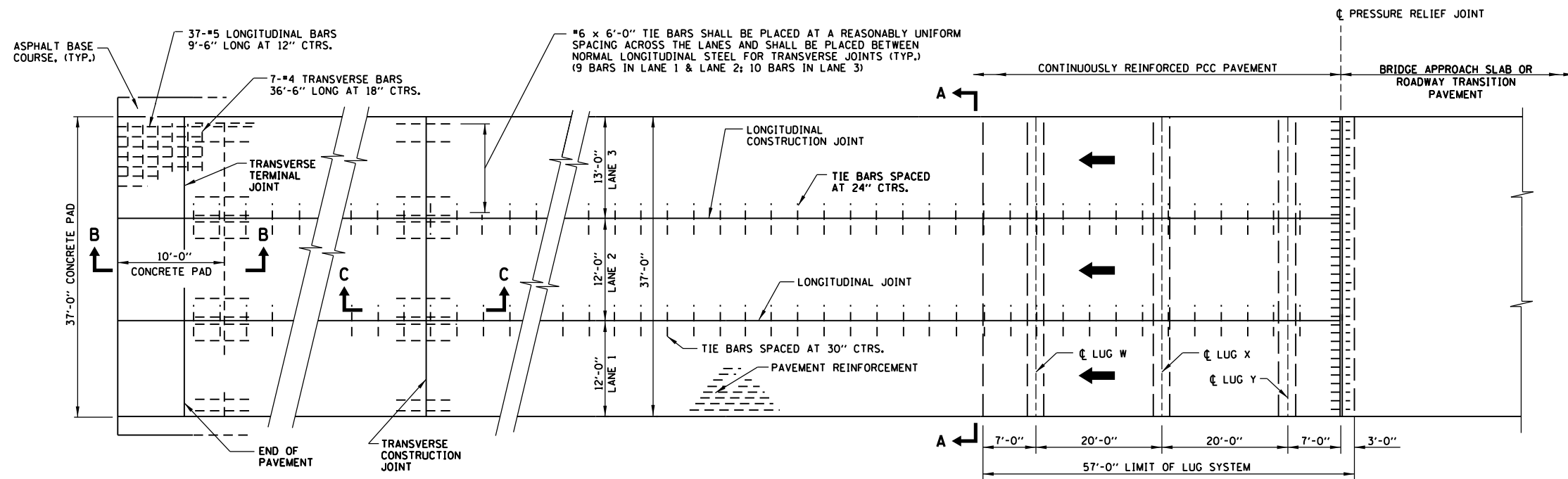
BAR b(E)

MATERIALS REQUIRED FOR ONE LUG SYSTEM  
(EXCLUDING PAVEMENT CONCRETE AND PAVEMENT REINFORCEMENT)

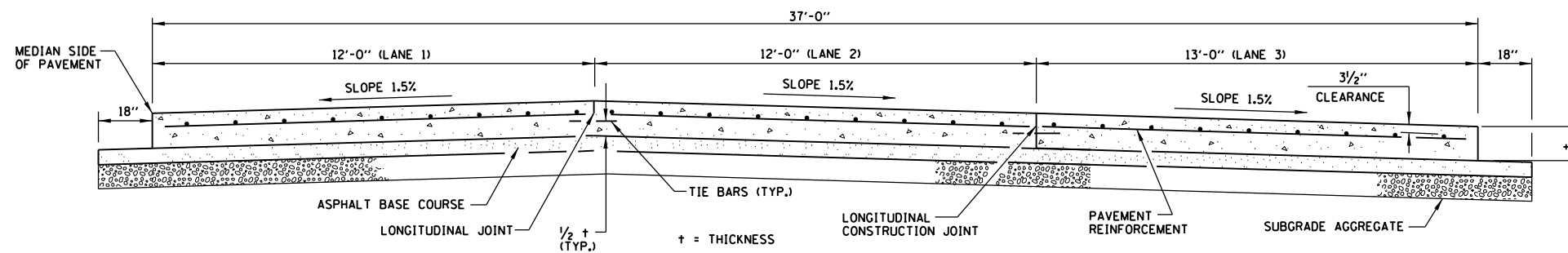
BAR	QTY.	SIZE	LENGTH	SHAPE	LANE WIDTH
a(E)	138	NO. 8	14'-4"		ALL
b(E)	18	NO. 5	25'-9"		ALL
c1(E)	92	NO. 5	21'-0"		ALL
c2(E)	46	NO. 5	18'-10"		ALL
d(E)	15	NO. 4	24'-6"		ALL
CONCRETE, CU. YDS.					57
REINFORCING BARS EPOXY COATED, LBS.					8,930
SUBGRADE AGGREGATE, SO. YDS.					142
DOWEL BARS, EACH					25
PRESSURE RELIEF JOINT, LF					25

SEE SHEET 1 (OF 1)  
IN THIS SERIES  
FOR GENERAL NOTES.

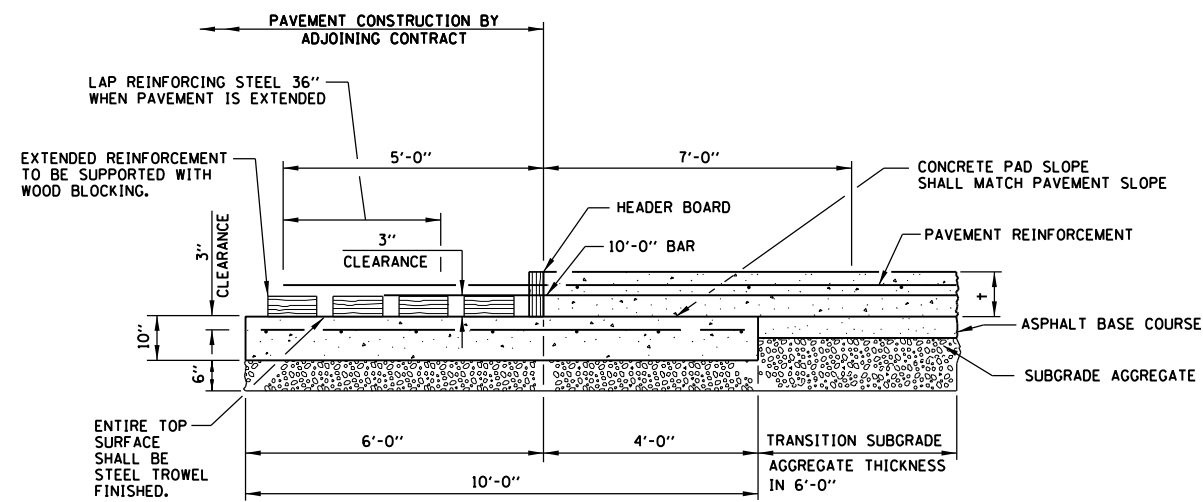




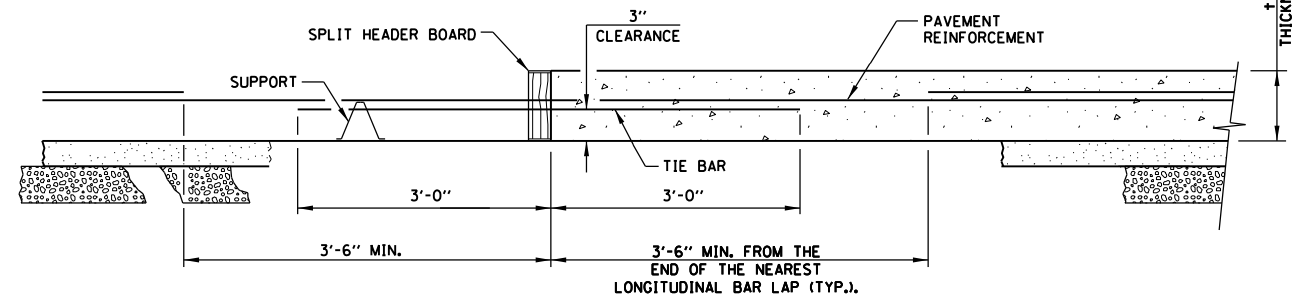
PLAN



SECTION A-A  
(TYPICAL 3-LANE, 1-WAY WITH SHOULDERS)



TRANSVERSE TERMINAL JOINT  
(ADJACENT TO NEW CONSTRUCTION)  
SECTION B-B



TRANSVERSE CONSTRUCTION JOINT  
SECTION C-C

SHEET 1 OF 2

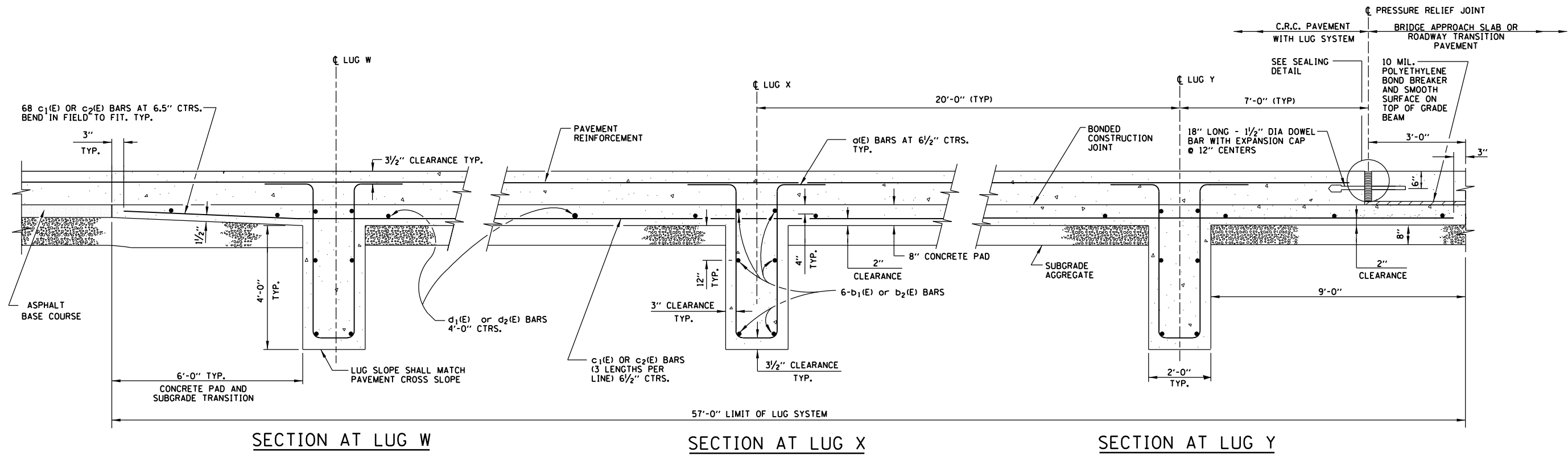


DATE	REVISIONS
5-1-2009	REMOVED PIPE UNDERDRAIN CHANGED BOND BREAKER MATERIAL CHANGED SUBGRADE AGGREGATE DEPTH

3-LANE CRC PAVEMENT  
(WITH LUG SYSTEM)

STANDARD A9-01

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

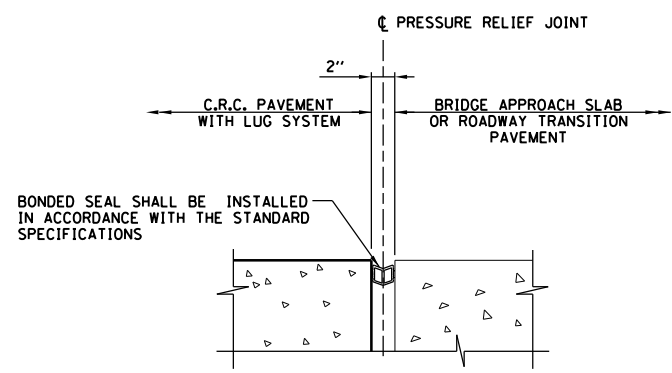


SECTION AT LUG W

SECTION AT LUG X

SECTION AT LUG Y

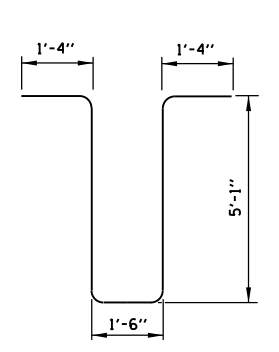
MATERIALS REQUIRED FOR ONE LUG SYSTEM (EXCLUDING PAVEMENT CONCRETE AND PAVEMENT REINFORCEMENT)					
BAR	QTY.	SIZE	LENGTH	SHAPE	LANE WIDTH
a(E)	204	#8	14'-4"		ALL
b1(E)	18	#5	26'-6 1/2"		1.2
b2(E)	18	#5	13'-4 1/2"		3
c1(E)	136	#5	21'-0"		ALL
c2(E)	68	#5	18'-10"		ALL
d1(E)	15	#4	25'-5"		1.2
d2(E)	15	#4	12'-9"		3
CONCRETE, CU. YDS.			85		
REINFORCING BARS EPOXY COATED, LBS.			13,250		
SUBGRADE AGGREGATE, SO. YDS.			210		
DOWEL BARS, EACH			37		
PRESSURE RELIEF JOINT, LF			37		



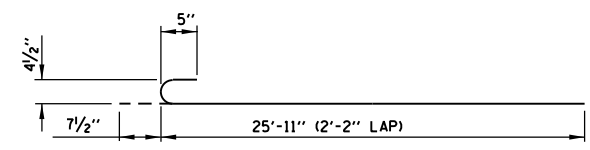
SEALING DETAIL

NOTES:

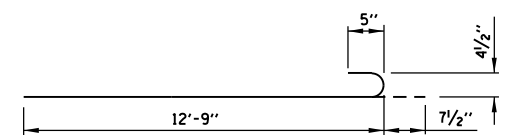
- SEE STANDARD A12 (BAR REINFORCEMENT FOR CRC PAVEMENT) FOR DETAILS OF PAVEMENT REINFORCEMENT.
- SEE STANDARD A7 (PAVEMENT JOINTS) AND IDOT STANDARD 420001 (PAVEMENT JOINTS) FOR DETAILS OF JOINTS AND TIE BARS NOT SHOWN.
- SEE STANDARD G6 (APPROACH SLAB TO CRC PAVEMENT, MAINLINE, GENERAL PLAN, AND SECTIONS AND DETAILS) FOR DETAILS OF BRIDGE APPROACH SLAB OR STANDARD A13 (CRC ROADWAY TRANSITION PAVEMENT) FOR DETAILS OF ROADWAY TRANSITION PAVEMENT.
- REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.
- REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
- SAWED AND CONSTRUCTION JOINTS MAY BE INTERCHANGED TO MATCH MAINTENANCE OF TRAFFIC. JOINTS SHOWN ARE FOR NEW CONSTRUCTION.
- THICKNESS OF MATERIALS IS PROJECT SPECIFIC. REFER TO PROJECT PLANS FOR DETAILS.
- QUANTITIES LISTED IN TABLE HAVE BEEN ROUNDED AS FOLLOWS:
  - CONCRETE TO NEAREST CU YD
  - REINFORCING BARS TO NEAREST 10 LBS
  - SUBGRADE AGGREGATE TO NEAREST SO YD



BAR a(E)



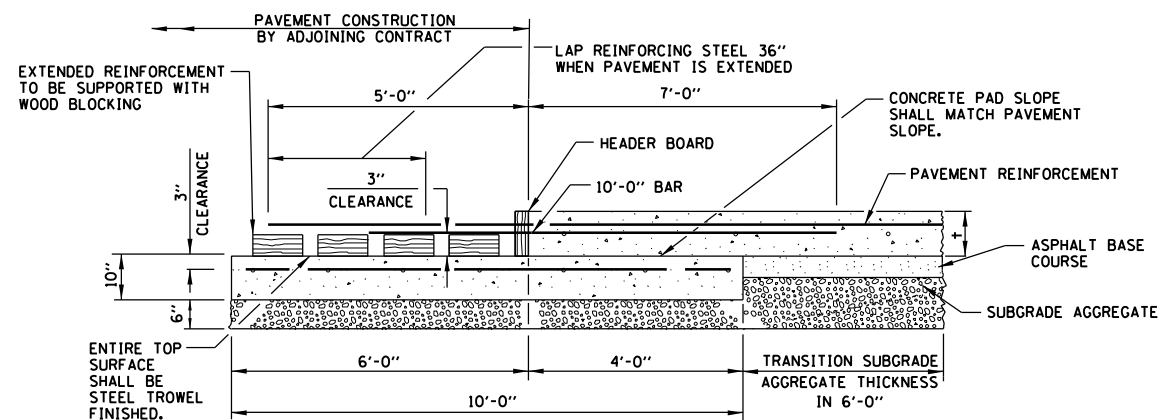
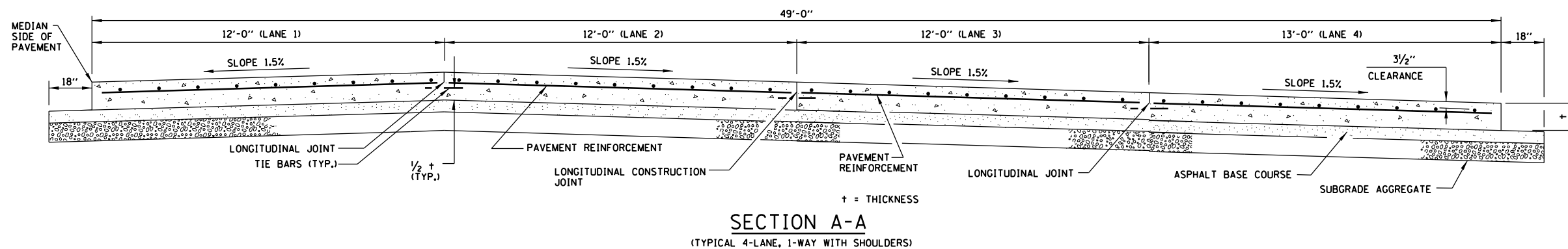
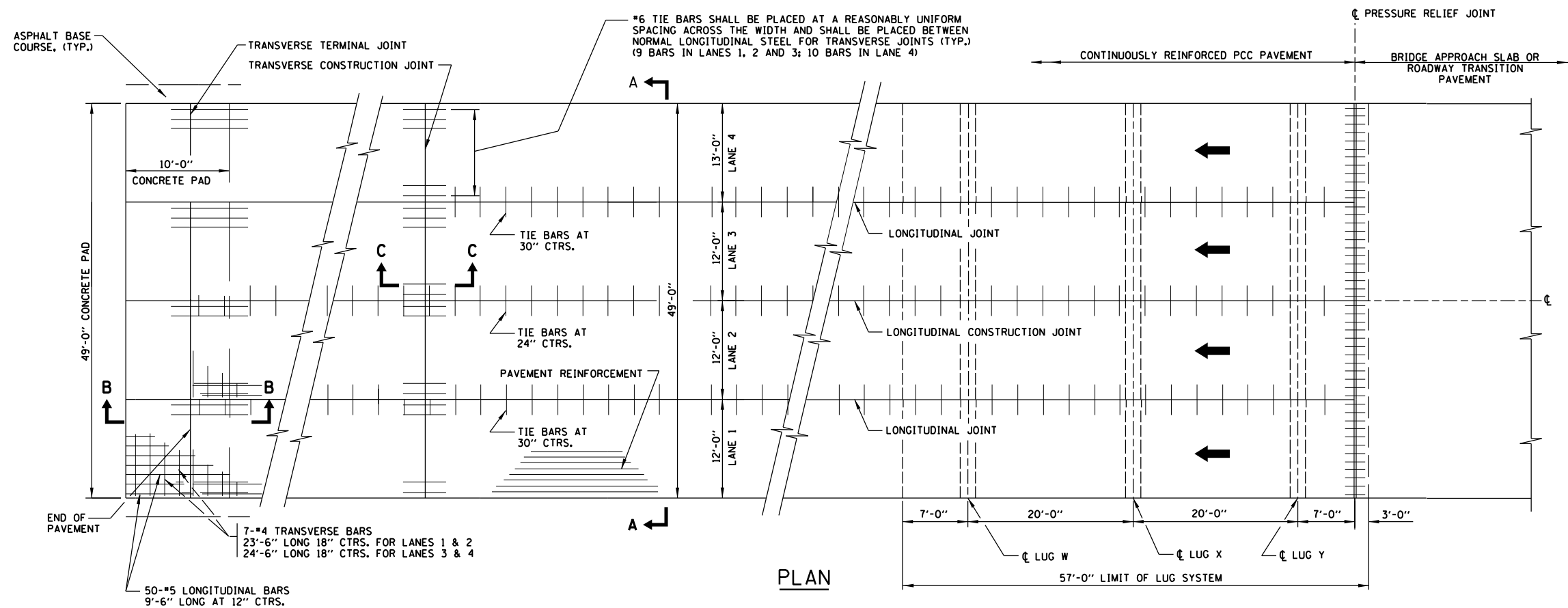
BAR b1(E)



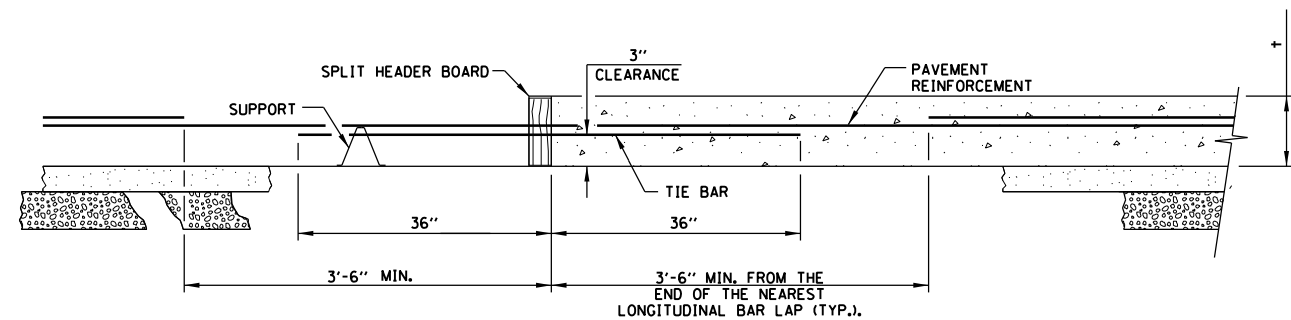
BAR b2(E)

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

3-LANE CRC PAVEMENT  
(WITH LUG SYSTEM)  
STANDARD A9-01



TRANSVERSE TERMINAL JOINT (ADJACENT TO NEW CONSTRUCTION)  
SECTION B-B



TRANSVERSE CONSTRUCTION JOINT  
SECTION C-C

SHEET 1 OF 2

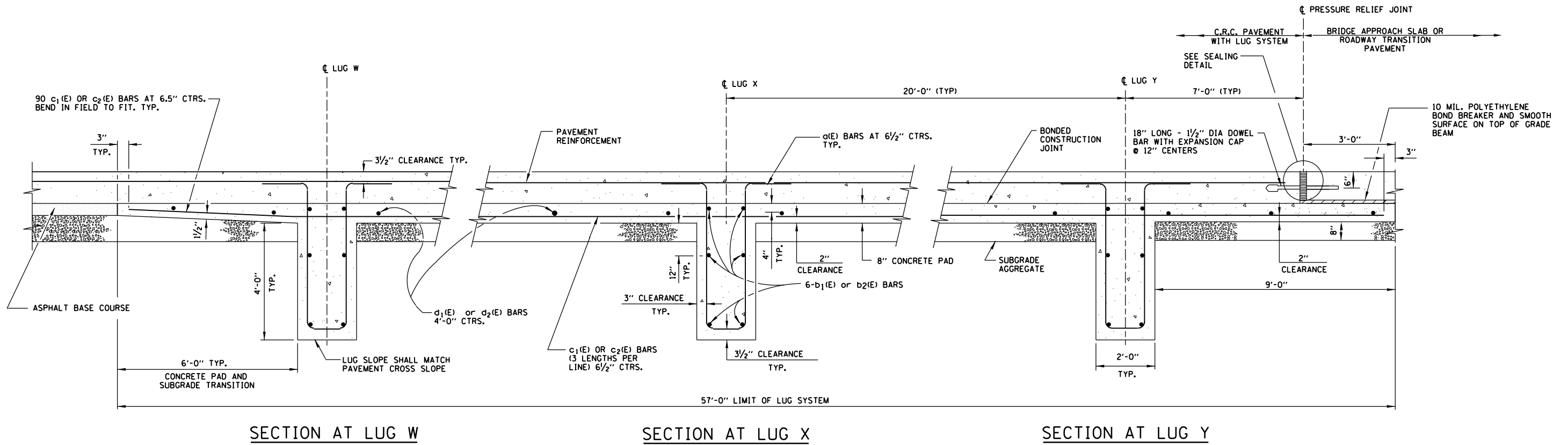


APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

DATE	REVISIONS
5-1-2009	REMOVED PIPE UNDERDRAIN
	CHANGED BOND BREAKER MATERIAL
	CHANGED SUBGRADE AGGREGATE DEPTH

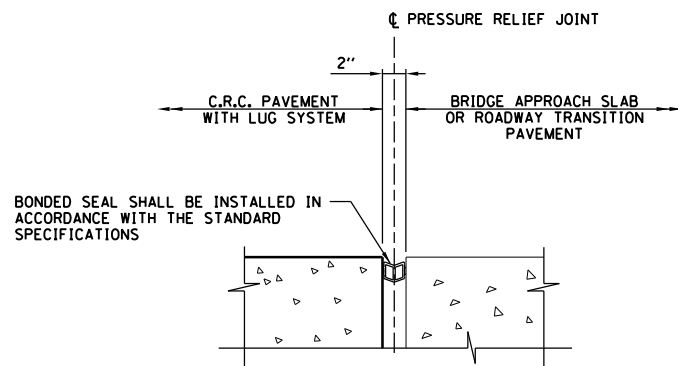
4- LANE CRC PAVEMENT  
(WITH LUG SYSTEM)

STANDARD A10-01



**MATERIALS REQUIRED FOR ONE LUG SYSTEM**  
(EXCLUDING PAVEMENT CONCRETE AND PAVEMENT REINFORCEMENT)

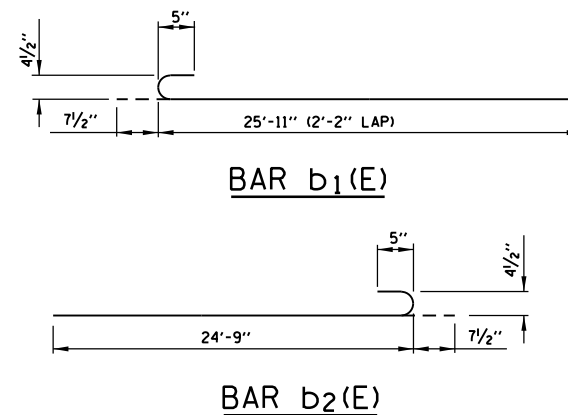
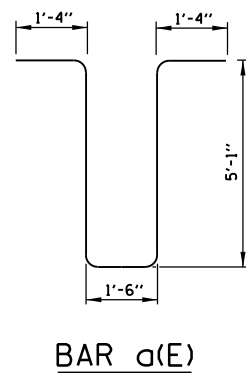
BAR	QTY.	SIZE	LENGTH	SHAPE	LANE WIDTH
a(E)	270	#8	14'-4"		ALL
b1(E)	18	#5	26'-6 1/2"		1,2
b2(E)	18	#5	25'-4 1/2"		3,4
c1(E)	180	#5	21'-0"		ALL
c2(E)	90	#5	18'-10"		ALL
d1(E)	15	#4	25'-5"		1,2
d2(E)	15	#4	24'-9"		3,4
CONCRETE, CU. YDS.			113		
REINFORCING BARS EPOXY COATED, LBS.			17,520		
SUBGRADE AGGREGATE, SQ. YDS.			278		
DOWEL BARS, EACH			49		
PRESSURE RELIEF JOINT, LF			49		



**SEALING DETAIL**

**NOTES:**

- SEE STANDARD A12 (BAR REINFORCEMENT FOR CRC PAVEMENT) FOR DETAILS OF PAVEMENT REINFORCEMENT.
- SEE STANDARD A7 (PAVEMENT JOINTS) AND IDOT STANDARD 420001 (PAVEMENT JOINTS) FOR DETAILS OF JOINTS AND TIE BARS NOT SHOWN.
- SEE STANDARD G6 (APPROACH SLAB TO CRC PAVEMENT, MAINLINE, GENERAL PLAN, AND SECTIONS AND DETAILS) AND STANDARD G8 (APPROACH SLAB TO CRC PAVEMENT, MAINLINE, BAR DETAILS AND SCHEDULES FOR 4 LANES) FOR DETAILS OF BRIDGE APPROACH SLAB OR STANDARD A13 (CRC ROADWAY TRANSITION PAVEMENT) FOR DETAILS OF ROADWAY TRANSITION PAVEMENT.
- REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.
- REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
- SAWED AND CONSTRUCTION JOINTS MAY BE INTERCHANGED TO MATCH MAINTENANCE OF TRAFFIC. JOINTS SHOWN ARE FOR NEW CONSTRUCTION.
- THICKNESS OF MATERIALS IS PROJECT SPECIFIC. REFER TO PROJECT PLANS FOR DETAILS.
- QUANTITIES LISTED IN TABLE HAVE BEEN ROUNDED AS FOLLOWS:
  - CONCRETE TO NEAREST CU YD
  - REINFORCING BARS TO NEAREST 10 LBS
  - SUBGRADE AGGREGATE TO NEAREST SQ YD

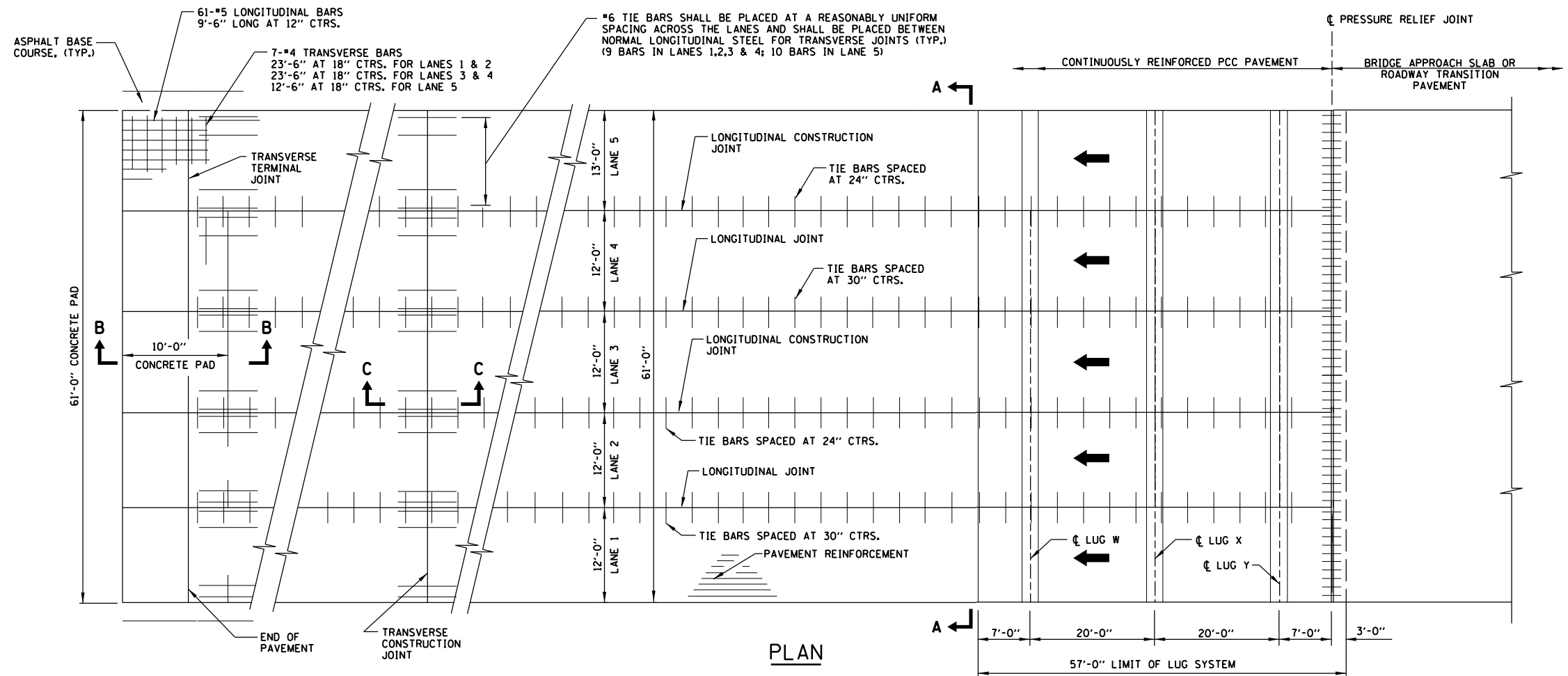


4-LANE CRC PAVEMENT  
(WITH LUG SYSTEM)

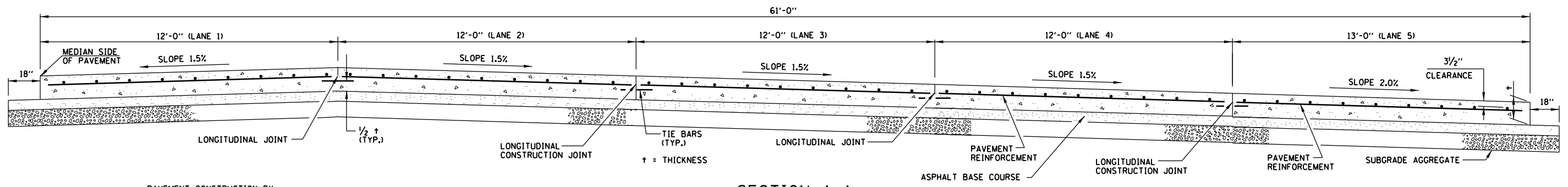
STANDARD A10-01

*Paul Kovacs*  
APPROVED... CHIEF ENGINEER... DATE 5-1-2009...

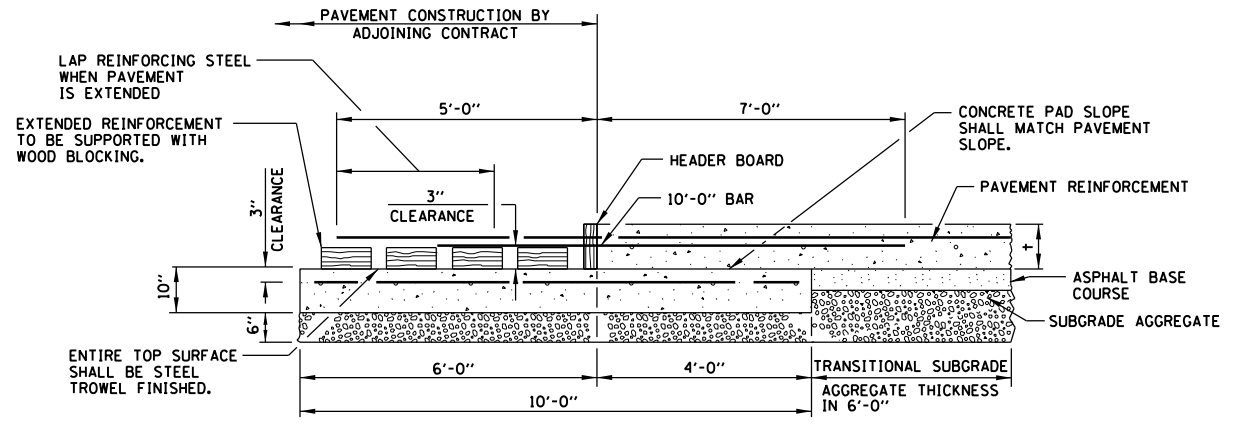




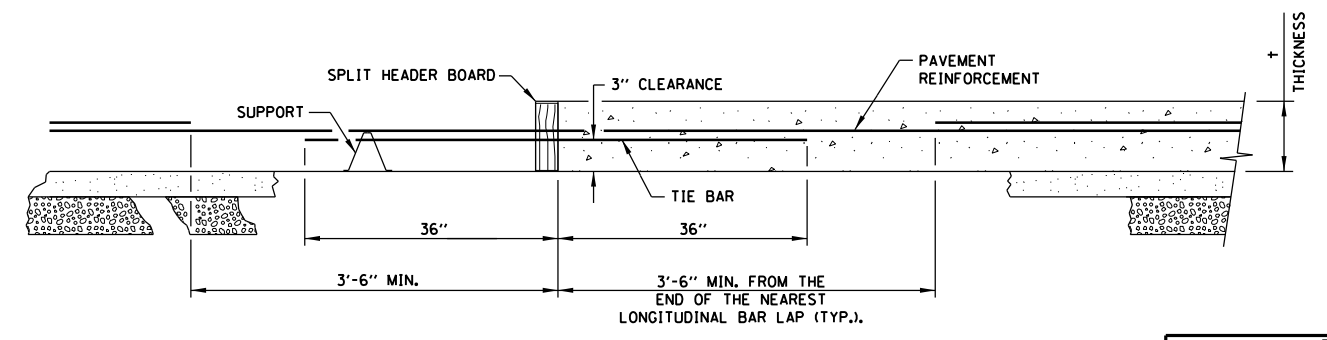
PLAN



SECTION A-A  
(TYPICAL 5-LANE, 1-WAY WITH SHOULDERS)



TRANSVERSE TERMINAL JOINT (ADJACENT TO NEW CONSTRUCTION)  
SECTION B-B



TRANSVERSE CONSTRUCTION JOINT  
SECTION C-C

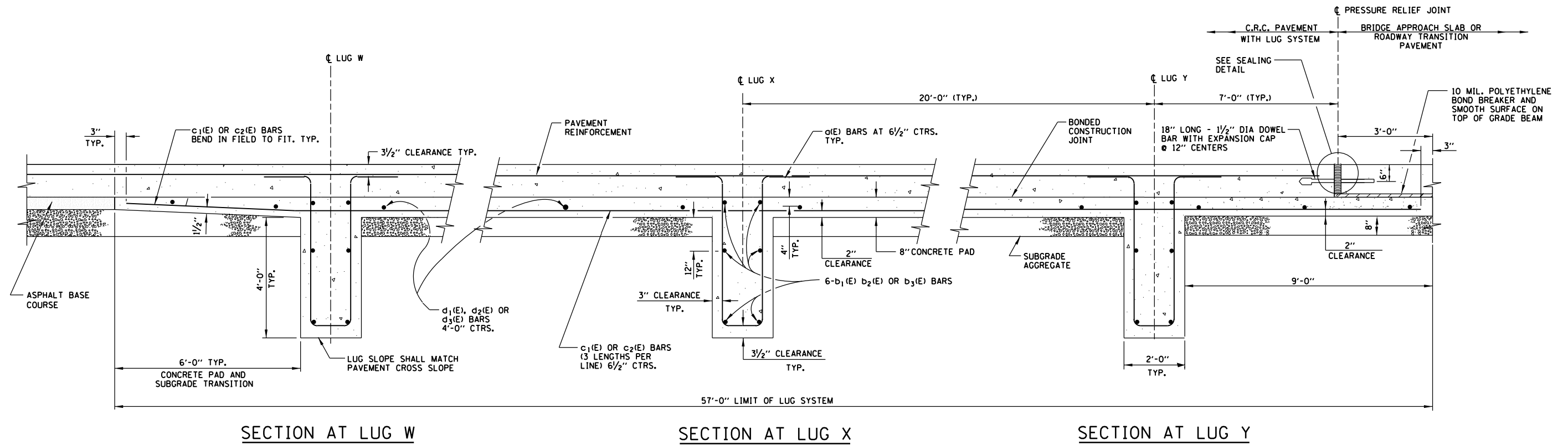


APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

DATE	REVISIONS
5-1-2009	REMOVED PIPE UNDERDRAIN
	CHANGED BOND BREAKER MATERIAL
	CHANGED SUBGRADE AGGREGATE DEPTH

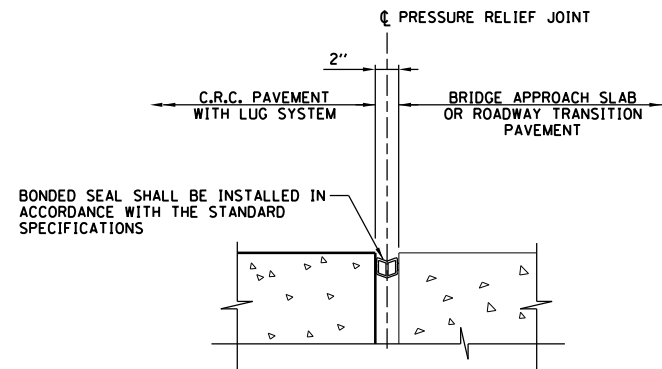
5-LANE CRC PAVEMENT  
(WITH LUG SYSTEM)

STANDARD A11-01



**MATERIALS REQUIRED FOR ONE LUG SYSTEM**  
(EXCLUDING PAVEMENT CONCRETE AND PAVEMENT REINFORCEMENT)

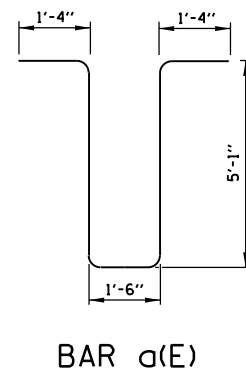
BAR	QTY.	SIZE	LENGTH	SHAPE	LANE WIDTH
a(E)	336	#8	14'-4"		ALL
b <sub>1</sub> (E)	18	#5	26'-6 1/2"		1,2
b <sub>2</sub> (E)	18	#5	26'-2"		3,4
b <sub>3</sub> (E)	18	#5	13'-4 1/2"		5
c <sub>1</sub> (E)	224	#5	21'-0"		ALL
c <sub>2</sub> (E)	112	#5	18'-10"		ALL
d <sub>1</sub> (E)	15	#4	25'-5"		1,2
d <sub>2</sub> (E)	15	No. 4	25'-8"		3,4
d <sub>3</sub> (E)	15	No. 4	12'-9"		5
CONCRETE, CU. YDS.			140		
REINFORCING BARS EPOXY COATED, LBS.			21,850		
SUBGRADE AGGREGATE, SQ. YDS.			346		
DOWEL BARS, EACH			61		
PRESSURE RELIEF JOINT, LF			61		



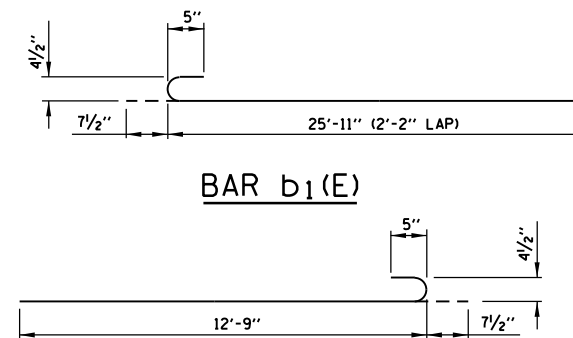
**SEALING DETAIL**

**NOTES:**

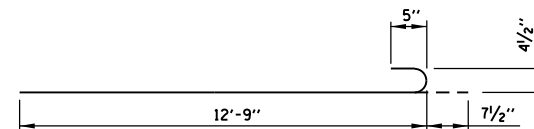
- SEE STANDARD A12 (BAR REINFORCEMENT FOR CRC PAVEMENT) FOR DETAILS OF PAVEMENT REINFORCEMENT.
- SEE STANDARD A7 (PAVEMENT JOINTS) AND IDOT STANDARD 420001 (PAVEMENT JOINTS) FOR DETAILS OF JOINTS AND TIE BARS NOT SHOWN.
- SEE STANDARD G6 (APPROACH SLAB TO CRC PAVEMENT, MAINLINE, GENERAL PLAN, AND SECTIONS AND DETAILS) AND STANDARD G7 (APPROACH SLAB TO CRC PAVEMENT, MAINLINE, BAR DETAILS AND SCHEDULES FOR 5 LANES) FOR DETAILS OF BRIDGE APPROACH SLAB OR STANDARD A13 (CRC ROADWAY TRANSITION PAVEMENT) FOR DETAILS OF ROADWAY TRANSITION PAVEMENT.
- REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.
- REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
- SAWED AND CONSTRUCTION JOINTS MAY BE INTERCHANGED TO MATCH MAINTENANCE OF TRAFFIC. JOINTS SHOWN ARE FOR NEW CONSTRUCTION.
- THICKNESS OF MATERIALS IS PROJECT SPECIFIC. REFER TO PROJECT PLANS FOR DETAILS.
- QUANTITIES LISTED IN TABLE HAVE BEEN ROUNDED AS FOLLOWS:
  - CONCRETE TO NEAREST CU YD
  - REINFORCING BARS TO NEAREST 10 LBS
  - SUBGRADE AGGREGATE TO NEAREST SQ YD



**BAR a(E)**

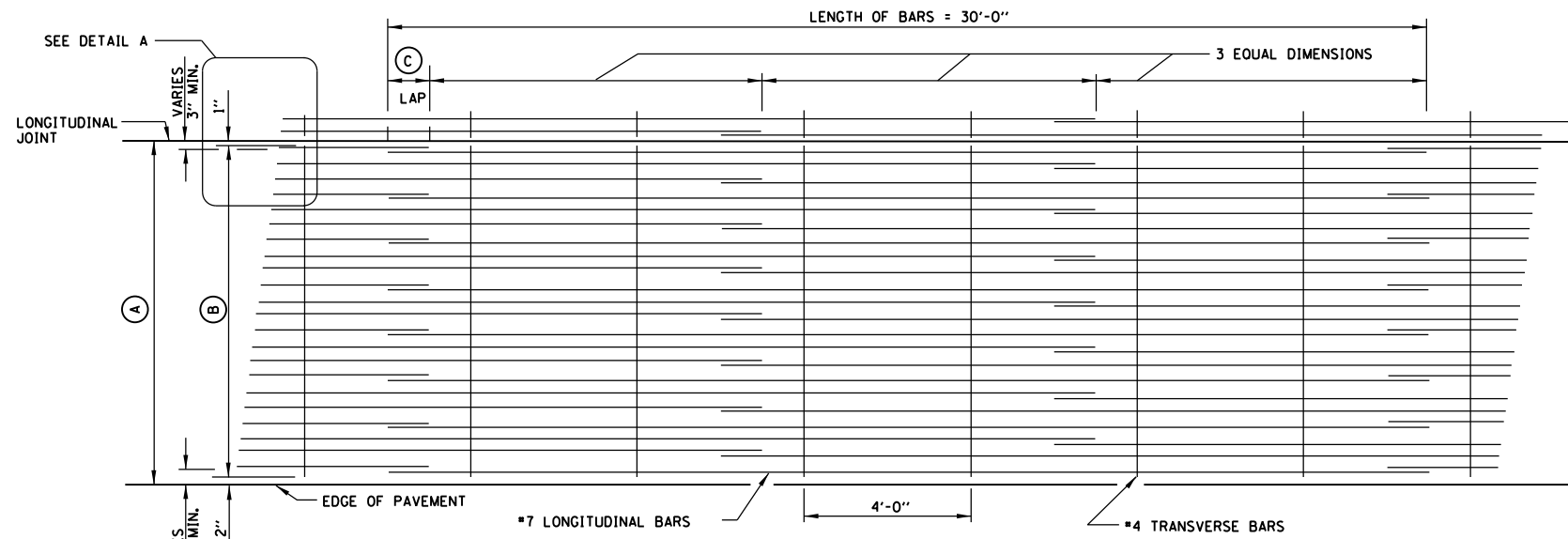


**BAR b<sub>1</sub>(E)**



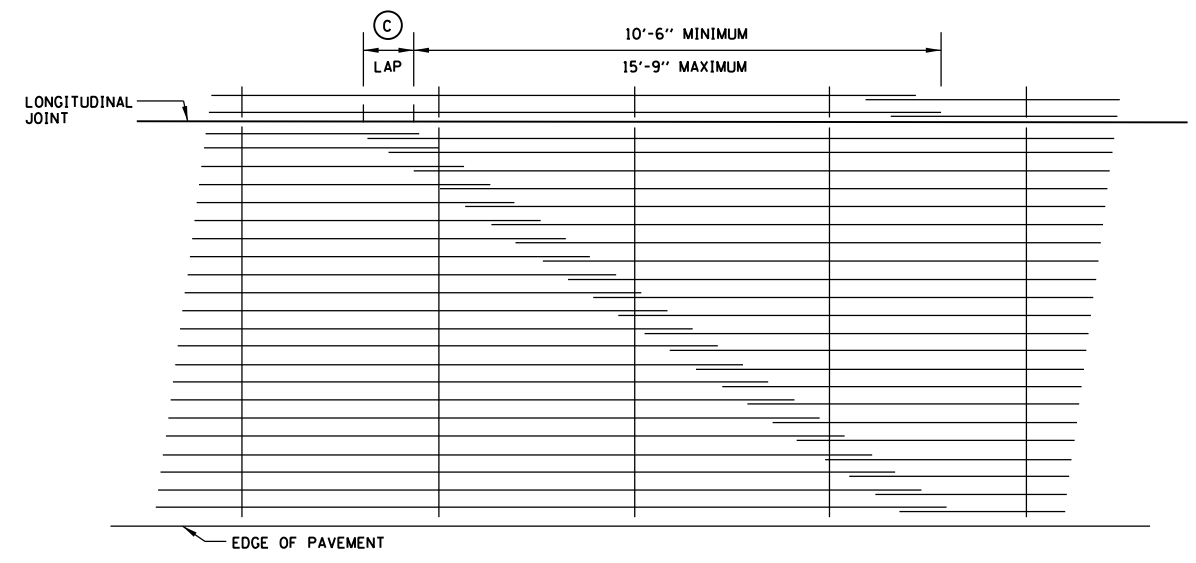
**BAR b<sub>3</sub>(E)**



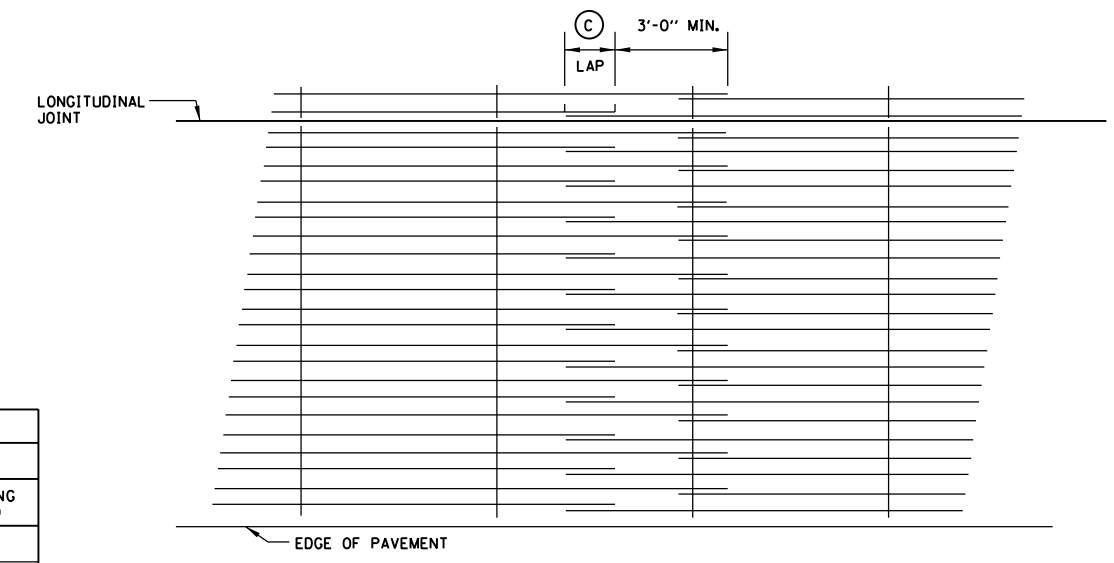


**LAP DETAIL I**  
**REINFORCEMENT BAR LAP PLAN LONGITUDINAL REINFORCEMENT BARS**

(A) LANE WIDTH	(B)	BAR SIZE	(C) LAP
12'-0"	11'-9"	*7	26"
13'-0"	12'-9"		



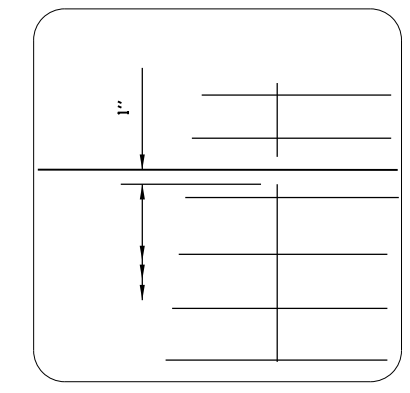
**LAP DETAIL II**



**LAP DETAIL III**

12'-0" LANE		PAVEMENT THICKNESS (IN.) (†)													
		10		10.5		11		11.5		12		12.5		13	
		NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)
PERCENTAGE OF STEEL REINFORCEMENT	0.65%	16	9 1/8	17	8 3/8	18	8 1/8	18	8 1/8	20	7 1/4	19	7 3/8	20	7 1/4
	0.70%	17	8 3/8	18	8 1/8	19	7 7/8	19	7 7/8	21	6 7/8	21	6 7/8	22	6 1/2
	0.75%	18	8 1/8	19	7 5/8	20	7 1/4	21	6 3/8	22	6 1/2	23	6 1/4	24	6
	0.80%	19	7 3/8	20	7 1/4	22	6 1/2	22	6 1/2	23	6 1/4	24	6	25	5 3/4
	0.85%	20	7 1/4	22	6 1/2	23	6 1/4	24	6	25	5 3/4	26	5 1/2	27	5 1/4

13'-0" LANE		PAVEMENT THICKNESS (IN.) (†)													
		10		10.5		11		11.5		12		12.5		13	
		NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)	NO. OF BARS (EA.)	SPACING (IN.)
PERCENTAGE OF STEEL REINFORCEMENT	0.65%	17	9 3/8	18	8 3/4	19	8 1/4	19	8 1/4	20	7 7/8	21	7 1/2	22	7 1/8
	0.70%	18	8 3/4	19	8 1/4	20	7 7/8	21	7 1/2	22	7 1/8	23	6 3/4	24	6 1/2
	0.75%	20	7 7/8	21	7 1/2	22	7 1/8	23	6 3/4	24	6 1/2	25	6 1/4	26	6
	0.80%	21	7 1/2	22	7 1/8	23	6 3/4	24	6 1/2	25	6 1/4	26	6	27	5 3/4
	0.85%	23	6 3/4	24	6 1/2	25	6 1/4	26	6	27	5 3/4	28	5 1/2	29	5 1/8



- GENERAL NOTES:**
- EXCEPT AS NOTED OR SHOWN, THE DIMENSIONS AND NOTES SPECIFIED FOR LAP DETAIL I ARE TYPICAL FOR LAP DETAIL II AND III.
  - \*7 REINFORCEMENT BARS ARE USED THROUGHOUT THESE TABLES.
  - THE DISTANCE FROM THE END OF THE TRANSVERSE BAR TO THE EDGE OF PAVEMENT MAY BE INCREASED BY 1" FOR SLIP FORM PAVING.
  - THE PERCENT OF STEEL REINFORCEMENT IS PROJECT SPECIFIC. REFER TO PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS.

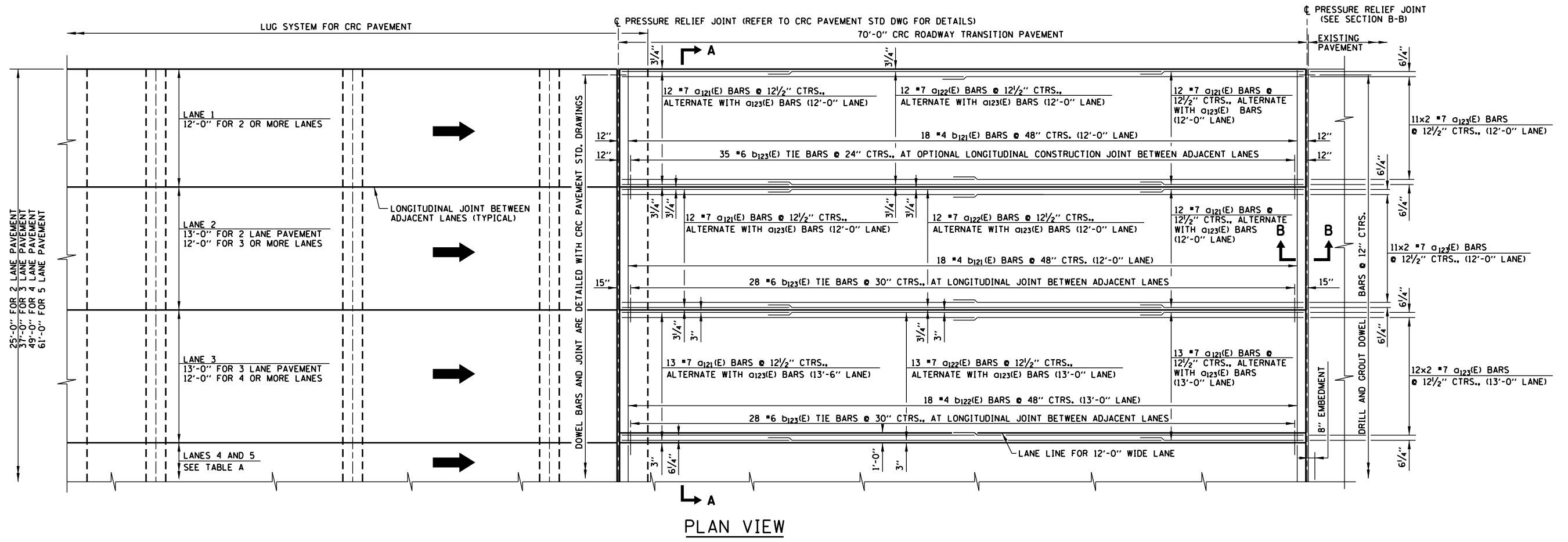
APPROVED *Jeff Daley* CHIEF ENGINEER DATE 1-1-2007

DATE	REVISIONS

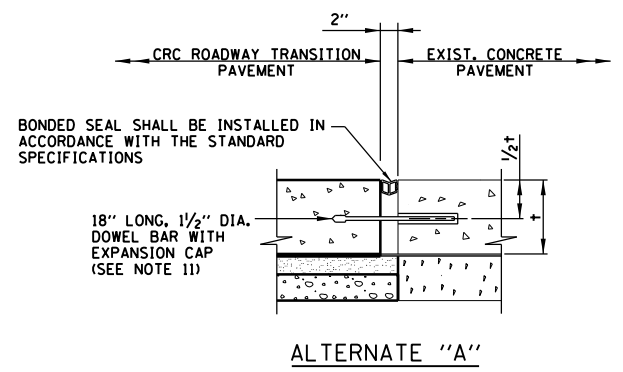
**Illinois Tollway**

BAR REINFORCEMENT FOR CRC PAVEMENT

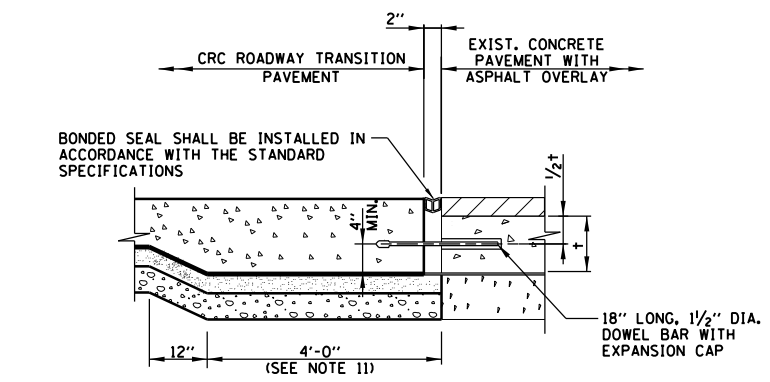
STANDARD A12-00



PLAN VIEW

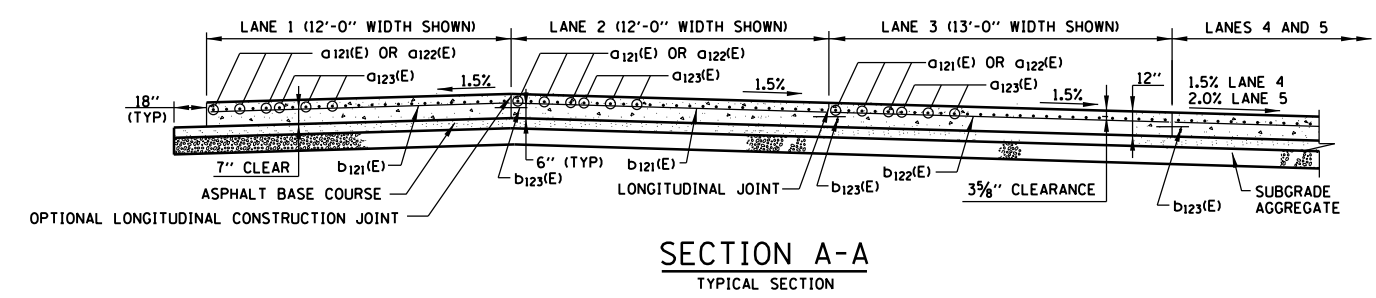


ALTERNATE "A"



ALTERNATE "B"  
SECTION B-B

PAVEMENT SECTION	LANE 4 WIDTH	LANE 5 WIDTH
4 LANE PAVEMENT	13'-0"	N/A
5 LANE PAVEMENT	12'-0"	13'-0"



SECTION A-A  
TYPICAL SECTION

NOTES:

- SEE STANDARDS A8, A9, A10 AND A11 (2-LANE, 3-LANE, 4-LANE, AND 5-LANE CRC PAVEMENT (WITH LUG SYSTEM) - RESPECTIVELY) FOR DETAILS OF CRC PAVEMENT, LUG SYSTEM, PRESSURE RELIEF JOINT ADJACENT TO LUG SYSTEM, AND CROSS SECTIONS THRU SAWED LONGITUDINAL JOINT AND LONGITUDINAL CONSTRUCTION JOINT.
- REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.
- USE 2'-2" MINIMUM LAP FOR #7 BARS.
- REINFORCING BARS SHOWN IN THE SCHEDULE ARE ALL STRAIGHT.
- THE DESIGN DRAWINGS GOVERN THE TYPE OF LONGITUDINAL JOINT, SAWED OR CONSTRUCTION, BETWEEN ADJACENT LANES DEPENDING ON MAINTENANCE OF TRAFFIC.
- BARS b<sub>123</sub>(E) (TIE BARS) IN THE BILL OF MATERIAL ASSUME A SPACING OF 24".
- THE QUANTITIES FOR CONCRETE, REINFORCING STEEL (INCLUDING TIE BARS), DOWEL BARS AND PRESSURE RELIEF JOINT ARE TYPICAL FOR 12" PAVEMENT.
- DOWEL BARS DRILLED AND GROUTED INTO EXISTING PAVEMENT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- TOOL EDGES OF PRESSURE RELIEF JOINTS TO 1/4" RADIUS.
- THE NOTATION MxN-#7a FOR REINFORCING BARS IS DEFINED AS M LINES OF BARS WITH N LENGTHS PER LINE.
- AT EXISTING PAVEMENT JOINT:
  - FOR PAVEMENT STRUCTURES > CRC ROADWAY TRANSITION PAVEMENT THICKNESS- PAVEMENT SHALL BE INCREASED AS REQUIRED TO MEET BOTTOM OF EXISTING CONCRETE PAVEMENT. ADDITIONAL CONCRETE SHALL BE INCLUDED IN THE COST OF CONTINUOUSLY REINFORCED PC CONCRETE PAVEMENT (12")
  - FOR PAVEMENT STRUCTURES < CRC ROADWAY TRANSITION PAVEMENT THICKNESS - 12" THICKNESS SHALL BE MAINTAINED. INSTALL DOWEL BAR AT 1/2 EXISTING PAVEMENT THICKNESS OR A MINIMUM OF 4" FROM TOP OF NEW PAVEMENT.

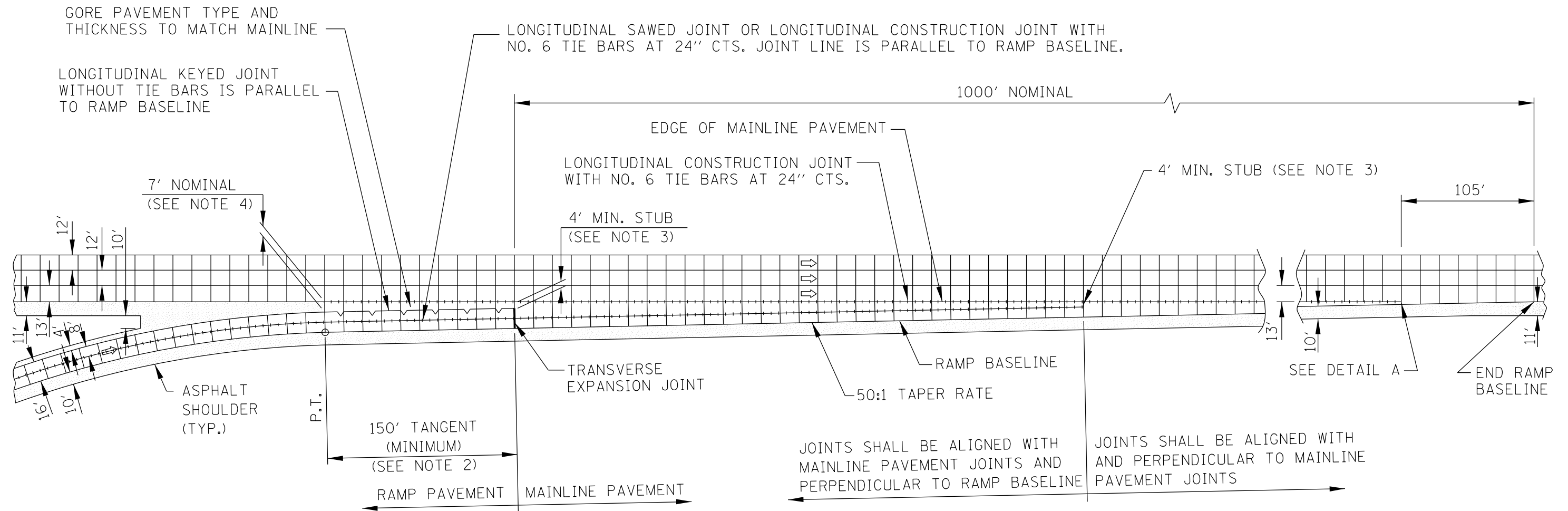
DESCRIPTION	UNIT	QUANTITY			
		2	3	4	5
CONTINUOUSLY REINFORCED PORTLAND CEMENT CONCRETE ROADWAY TRANSITION PAVEMENT	SO. YD.	194	288	381	474
CONCRETE (12")	CU. YD.	64.8	95.9	127.0	158.1
REINFORCING STEEL, EPOXY COATED	LBS	7,575	11,273	14,971	18,669
DRILL & GROUT DOWEL BARS	EACH	25	37	49	61
PRESSURE RELIEF JOINT	LIN. FT.	25	37	49	61

BAR	SIZE	LENGTH	NUMBER OF BARS				
			2	3	4	5	
a <sub>121</sub> (E)	#7	17'-0"	50	74	98	122	
a <sub>122</sub> (E)	#7	40'-0"	25	37	49	61	
a <sub>123</sub> (E)	#7	35'-10"	46	68	90	112	
b <sub>121</sub> (E)	#4	11'-8"	18	36	54	72	
b <sub>122</sub> (E)	#4	12'-8"	18	18	18	18	
b <sub>123</sub> (E)	#6	2'-6"	35	70	105	140	

DATE	REVISIONS
5-1-2009	DELETE NOTE FROM SECTION B-B

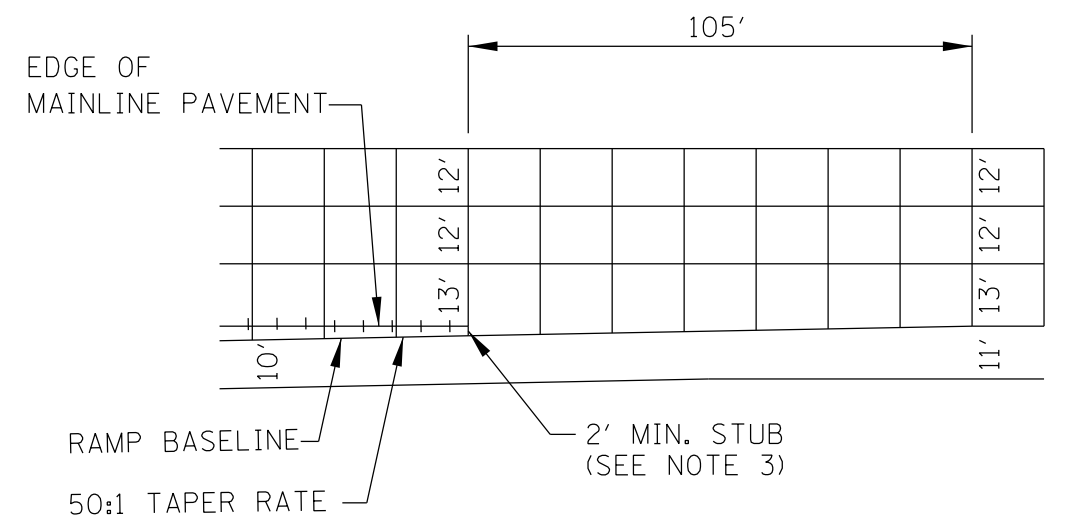
APPROVED: *Paul Kovacs*  
CHIEF ENGINEER DATE 5-1-2009

CRC ROADWAY TRANSITION PAVEMENT  
STANDARD A13-01



**NOTES:**

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON I.D.O.T. HWY. STANDARD 420001, EXCEPT EXPANSION JOINT SEALS SHALL BE AS DESCRIBED IN THE SPECIAL PROVISION, BONDED PERFORMED JOINT SEALER.
2. THE THICKNESS OF THE JOINTED RAMP PAVEMENT IN THE TANGENT AREA SHALL MATCH THE MAINLINE PAVEMENT. THE EXTRA THICKNESS OF PAVEMENT SHALL BE INCLUDED IN THE PRICE FOR THE RAMP PAVEMENT.
3. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. 7' NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
5. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15'.
6. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATION IN THE WHEEL PATH SHALL BE MINIMIZED.



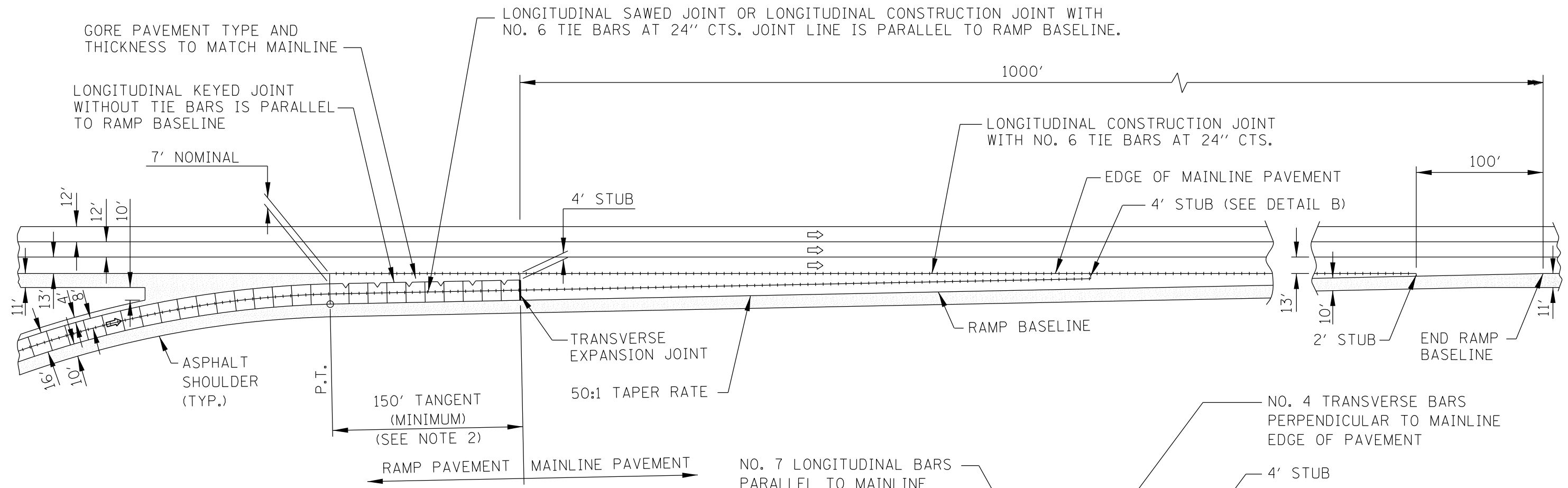
**DETAIL A**



DATE	REVISIONS

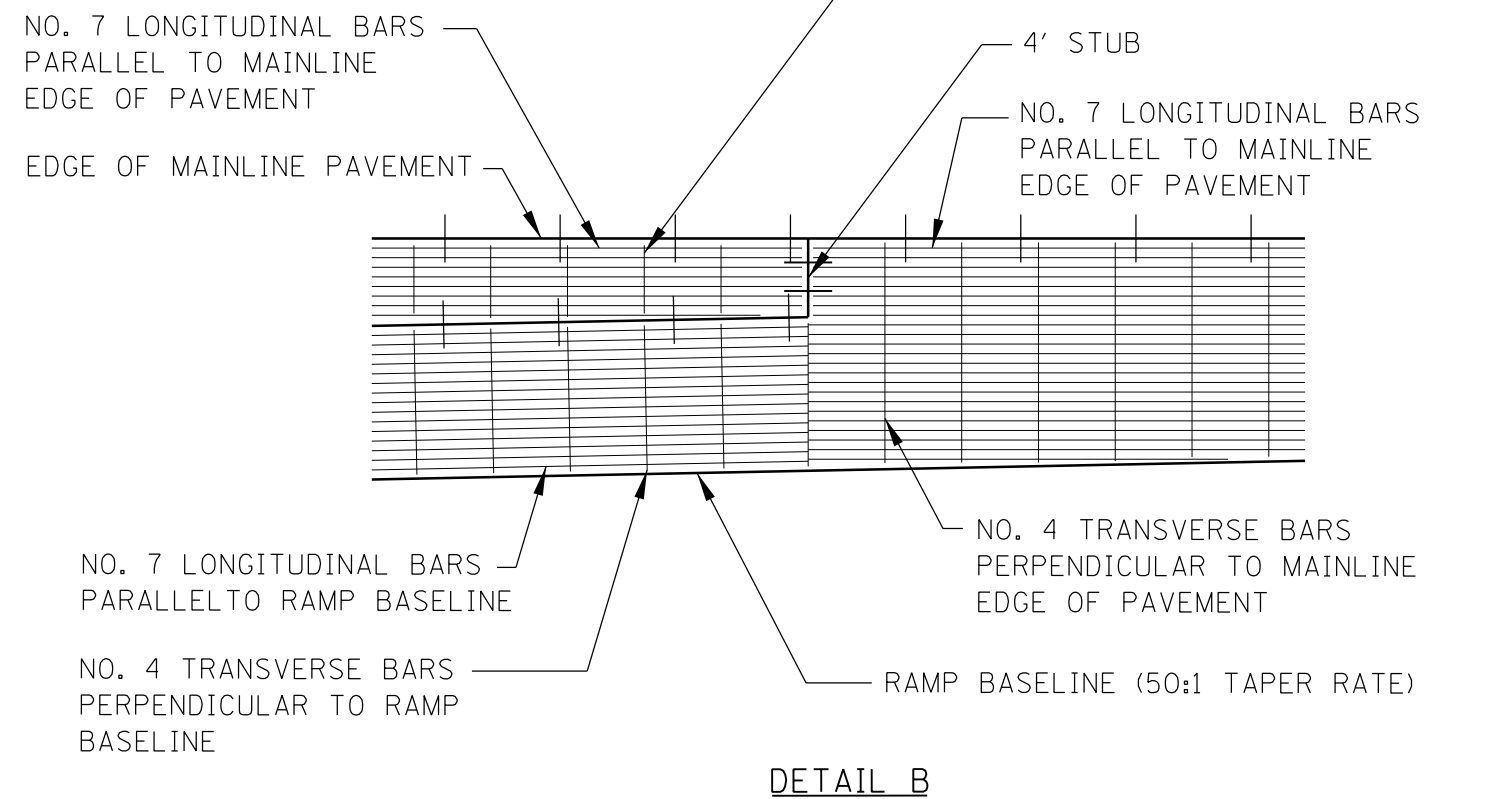
JOINTING PLAN  
 ENTRANCE RAMP TERMINAL  
 (JOINTED PCC RAMP PAVEMENT ADJACENT  
 TO JOINTED PCC MAINLINE PAVEMENT)  
 STANDARD A14-00

APPROVED: *Jeff Daley*  
 CHIEF ENGINEER DATE 10-15-2007



**NOTES:**

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON I.D.O.T. HWY. STANDARD 420001, EXCEPT EXPANSION JOINT SEALS SHALL BE AS DESCRIBED IN THE SPECIAL PROVISION, BONDED PREFORMED JOINT SEALER.
2. THE THICKNESS OF THE JOINTED RAMP PAVEMENT IN THE TANGENT AREA SHALL MATCH THE MAINLINE PAVEMENT. THE EXTRA THICKNESS OF PAVEMENT SHALL BE INCLUDED IN THE PRICE FOR THE RAMP PAVEMENT.
3. SEE STANDARD A12 (BAR REINFORCEMENT FOR CRC PAVEMENT) FOR DETAILS OF PAVEMENT REINFORCEMENT.
4. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15 FEET.
5. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL JOINT SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.



**DETAIL B**

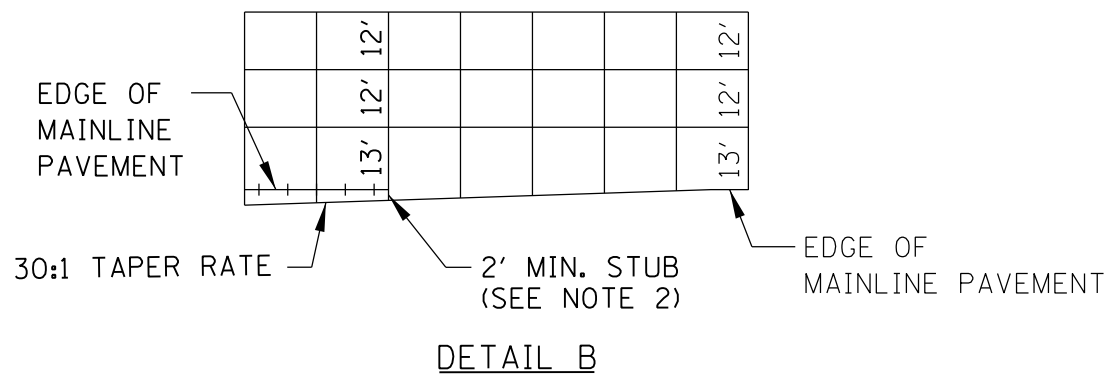
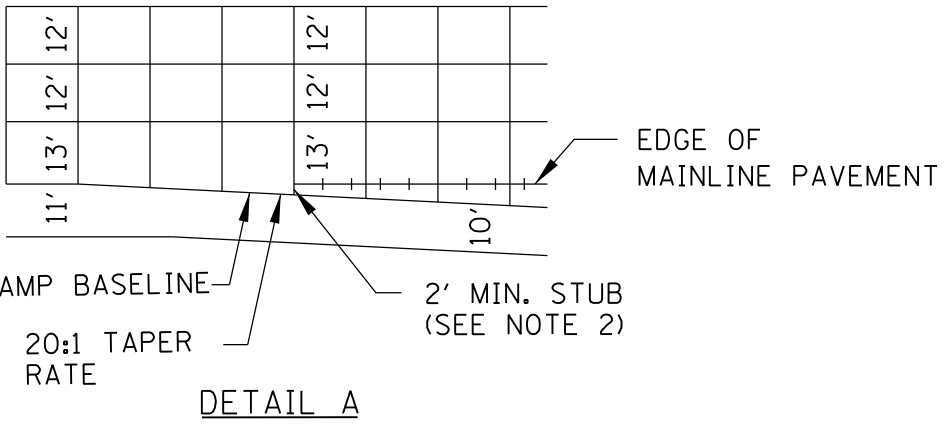
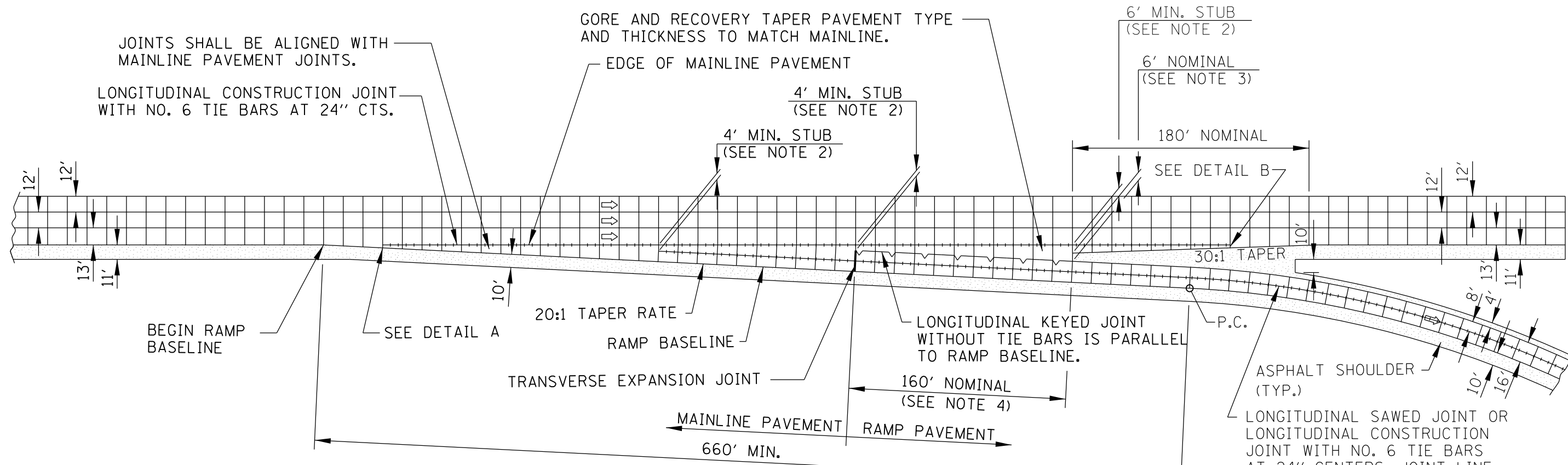
APPROVED *Jeff Daley* CHIEF ENGINEER DATE 10-15-2007

SHEET 2 OF 2



JOINTING PLAN  
ENTRANCE RAMP TERMINAL  
(JOINTED PCC RAMP PAVEMENT ADJACENT  
TO JOINTED CRC MAINLINE PAVEMENT)

STANDARD A14-00



**NOTES:**

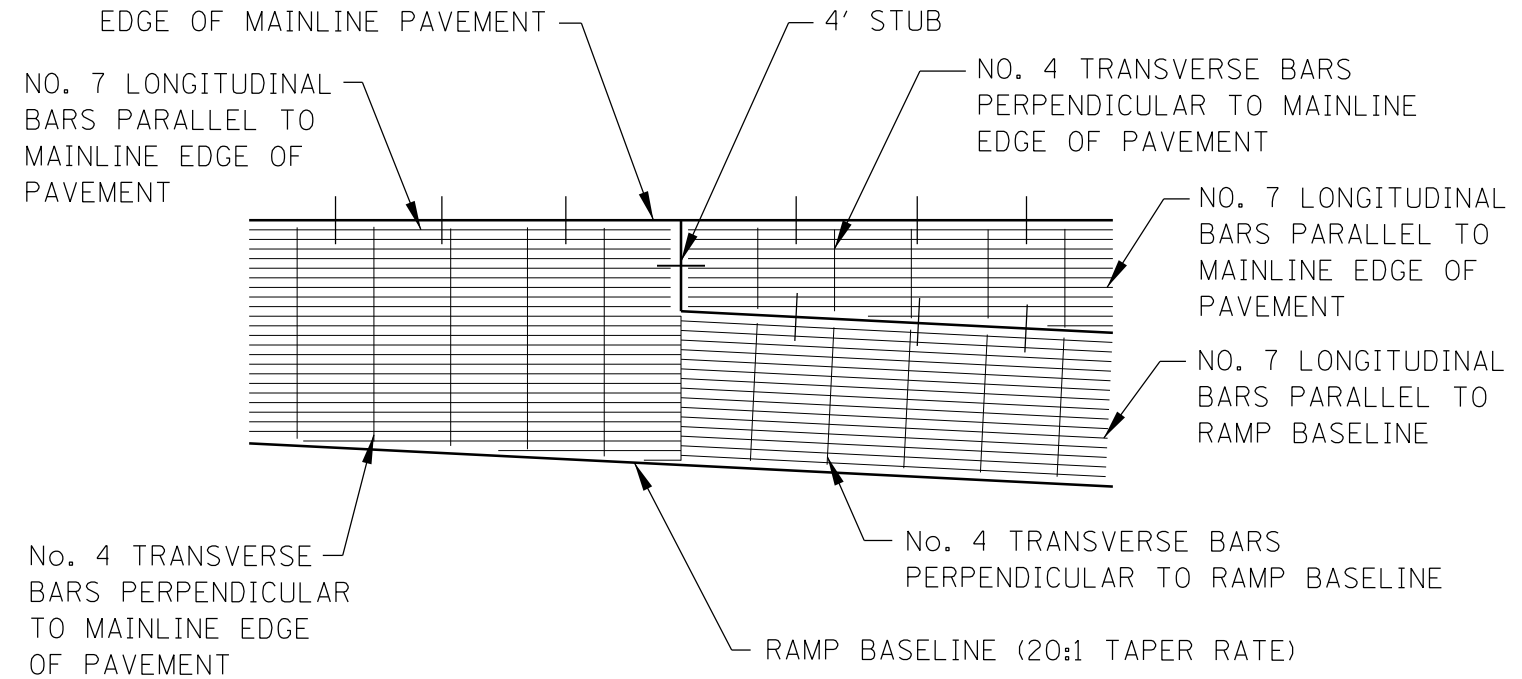
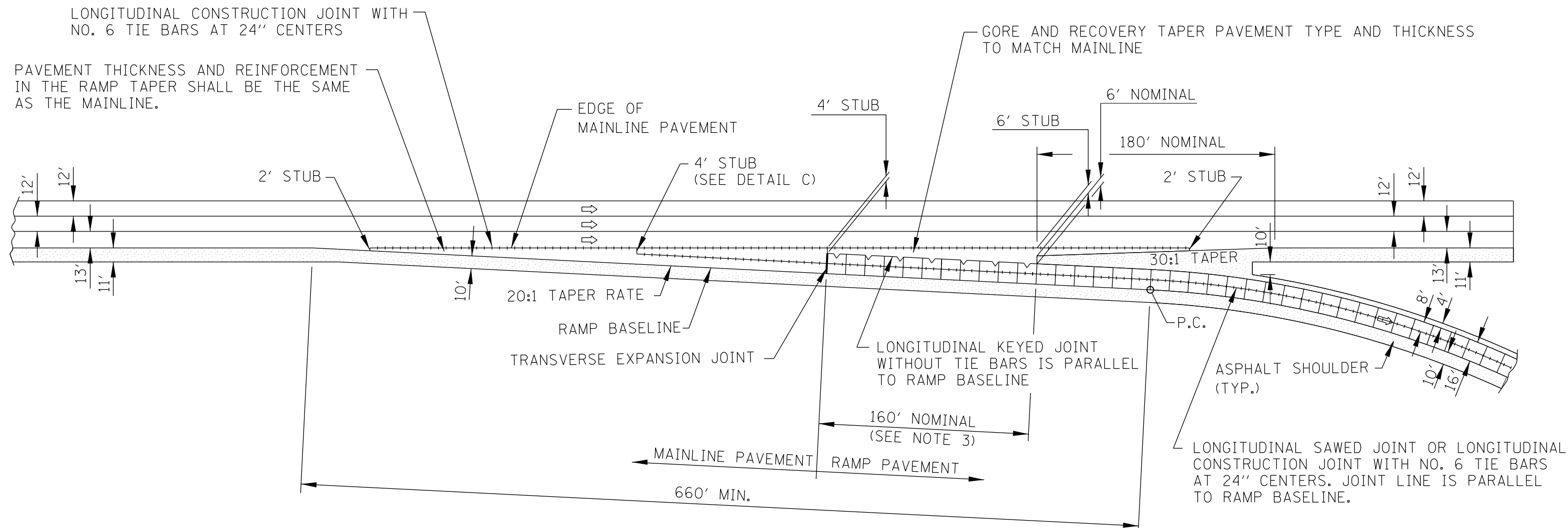
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2. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
3. 6-FOOT NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. THE THICKNESS OF THE JOINTED RAMP PAVEMENT IN THE TANGENT AREA SHALL MATCH THE MAINLINE PAVEMENT. THE EXTRA THICKNESS OF PAVEMENT SHALL BE INCLUDED IN THE PRICE FOR THE RAMP PAVEMENT.
5. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15 FEET.
6. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.



DATE	REVISIONS

JOINTING PLAN  
 EXIT RAMP TERMINAL  
 (JOINTED PCC RAMP PAVEMENT ADJACENT  
 TO JOINTED PCC MAINLINE PAVEMENT)  
 STANDARD A15-00

APPROVED: *Jeff Daley*  
 CHIEF ENGINEER DATE 10-15-2007



DETAIL C

**NOTES:**

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON I.D.O.T. HWY. STANDARD 420001, EXCEPT EXPANSION JOINT SEALS SHALL BE AS DESCRIBED IN THE SPECIAL PROVISION, BONDED PREFORMED JOINT SEALER.
2. SEE STANDARD A12 (BAR REINFORCEMENT FOR CRC PAVEMENT) FOR DETAILS OF PAVEMENT REINFORCEMENT.
3. THE THICKNESS OF THE JOINTED RAMP PAVEMENT IN THE TANGENT AREA SHALL MATCH THE MAINLINE PAVEMENT. THE EXTRA THICKNESS OF PAVEMENT SHALL BE INCLUDED IN THE PRICE FOR THE RAMP PAVEMENT.
4. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15 FEET.
5. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL JOINT SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.

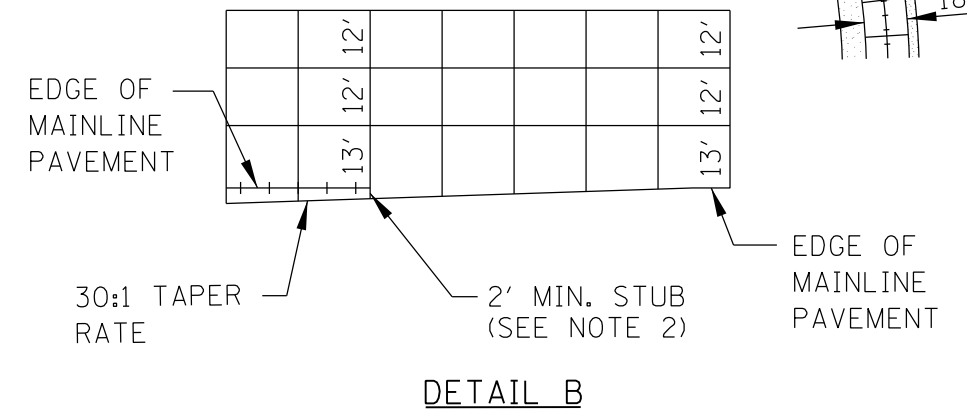
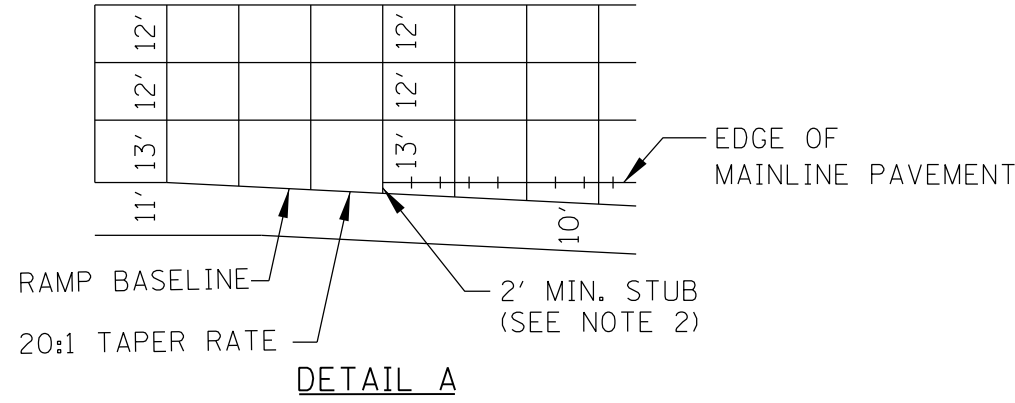
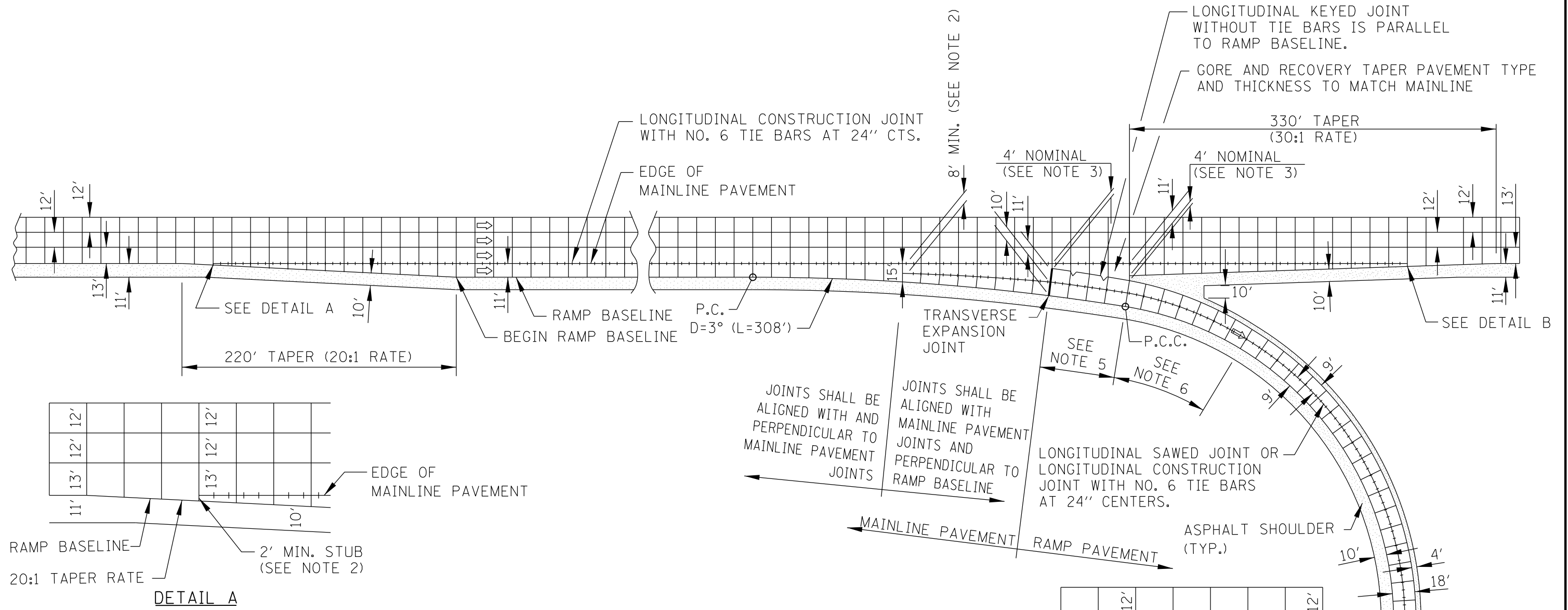


JOINTING PLAN  
EXIT RAMP TERMINAL  
(JOINTED PCC RAMP PAVEMENT ADJACENT  
TO CRC MAINLINE PAVEMENT)

STANDARD A15-00

APPROVED: *Jeff Daley*  
CHIEF ENGINEER DATE 10-15-2007





**NOTES:**

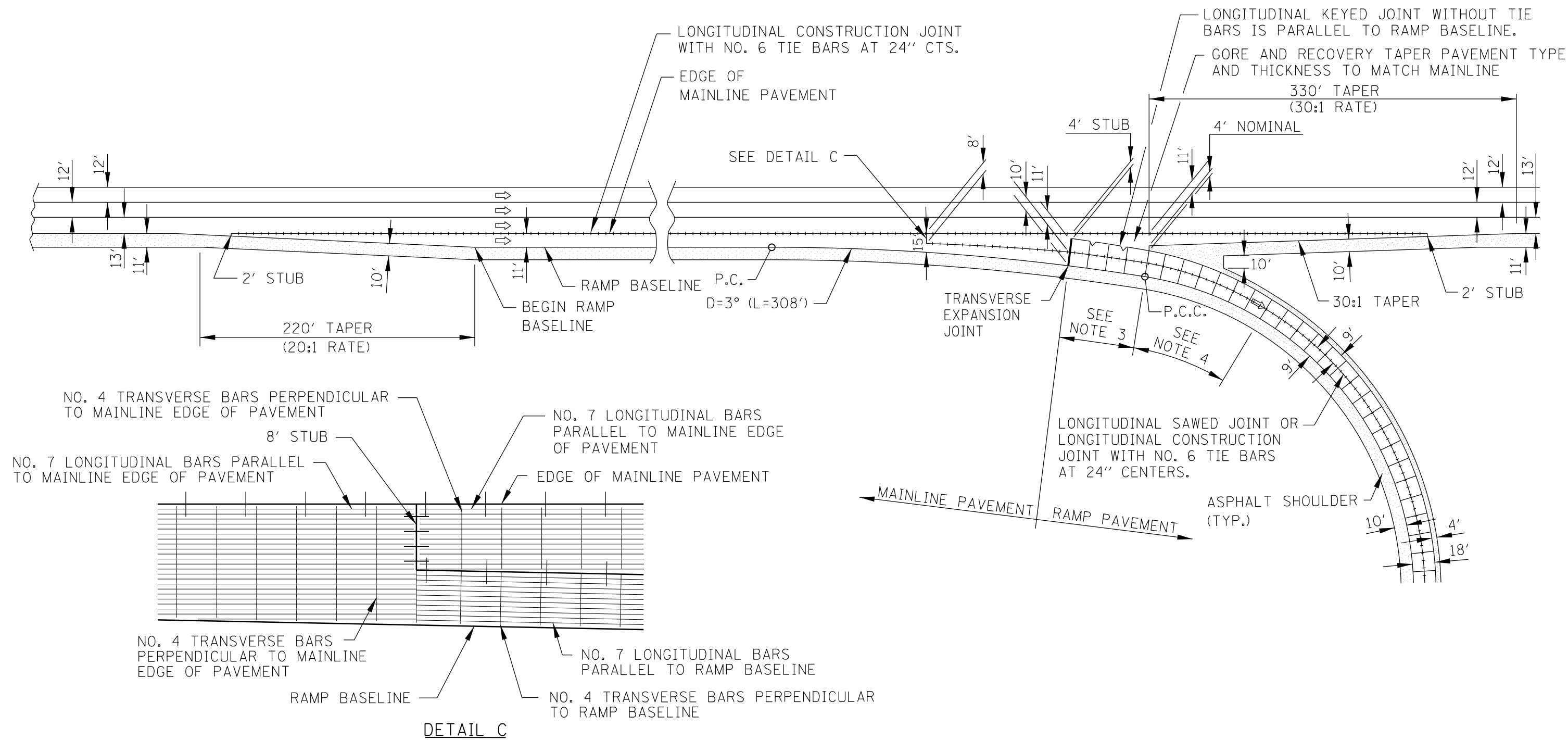
1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON I.D.O.T. HWY. STANDARD 420001, EXCEPT EXPANSION JOINT SEALS SHALL BE AS DESCRIBED IN THE SPECIAL PROVISION, BONDED PREFORMED JOINT SEALER.
2. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
3. 4-FOOT NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15 FEET.
5. THE THICKNESS OF THE JOINTED RAMP PAVEMENT SHALL MATCH THE MAINLINE PAVEMENT. THE EXTRA THICKNESS OF PAVEMENT SHALL BE INCLUDED IN THE PRICE FOR THE RAMP PAVEMENT.
6. RAMP NARROWS FROM 21' TO 18'. LONGITUDINAL JOINT SHALL TRANSITION FROM 10' FROM THE RAMP BASELINE TO 9' FROM THE RAMP BASELINE.
7. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL JOINT SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.



APPROVED: *Jeff Daley*  
 CHIEF ENGINEER DATE 10-15-2007

DATE	REVISIONS

JOINTING PLAN  
 PARALLEL EXIT RAMP TERMINAL  
 (JOINTED PCC RAMP PAVEMENT ADJACENT  
 TO JOINTED PCC MAINLINE PAVEMENT)  
 STANDARD A16-00



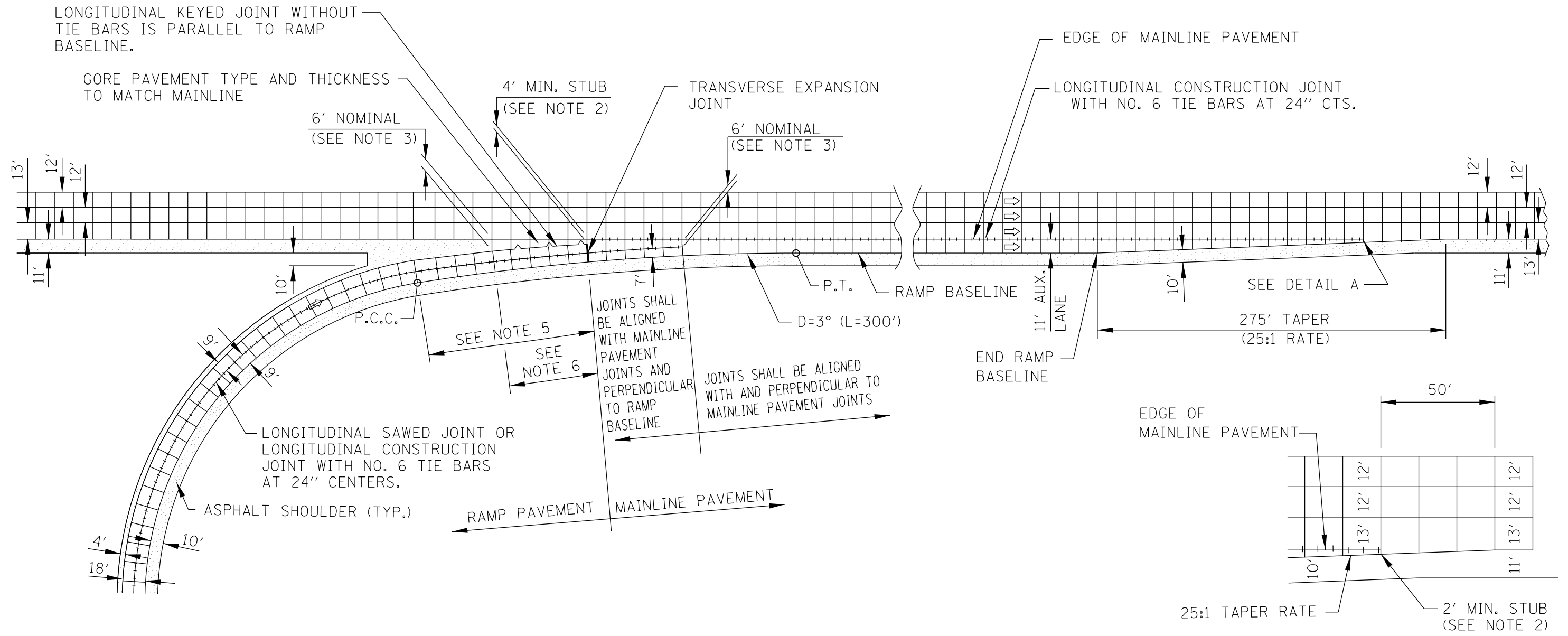
**NOTES:**

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON I.D.O.T. HWY. STANDARD 420001, EXCEPT EXPANSION JOINT SEALS SHALL BE AS DESCRIBED IN THE SPECIAL PROVISION, BONDED PREFORMED JOINT SEALER.
2. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15 FEET.
3. THE THICKNESS OF THE JOINTED RAMP PAVEMENT SHALL MATCH THE MAINLINE PAVEMENT. THE EXTRA THICKNESS OF PAVEMENT SHALL BE INCLUDED IN THE PRICE FOR THE RAMP PAVEMENT.
4. RAMP NARROWS FROM 21' TO 18'. LONGITUDINAL JOINT SHALL TRANSITION FROM 10' FROM THE RAMP BASELINE TO 9' FROM THE RAMP BASELINE.
5. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL JOINT SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.



JOINTING PLAN  
 PARALLEL EXIT RAMP TERMINAL  
 (JOINTED PCC RAMP PAVEMENT ADJACENT TO CRC MAINLINE PAVEMENT)  
 STANDARD A16-00

APPROVED: *Jeff Daley*  
 CHIEF ENGINEER DATE 10-15-2007



**NOTES:**

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON I.D.O.T. HWY. STANDARD 420001, EXCEPT EXPANSION JOINT SEALS SHALL BE AS DESCRIBED IN THE SPECIAL PROVISION, BONDED PREFORMED JOINT SEALER.
2. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
3. 6-FOOT NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15 FEET.
5. RAMP TAPERS FROM 18' TO 14'. LONGITUDINAL JOINT SHALL BE 9' FROM THE RAMP BASELINE AT THE PCC AND TRANSITION TO BE 7' FROM THE RAMP BASELINE AT THE EXPANSION JOINT.
6. THE THICKNESS OF THE JOINTED RAMP PAVEMENT SHALL MATCH THE MAINLINE PAVEMENT. THE EXTRA THICKNESS OF PAVEMENT SHALL BE INCLUDED IN THE PRICE FOR THE RAMP PAVEMENT.
7. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL JOINT SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.

**DETAIL A**

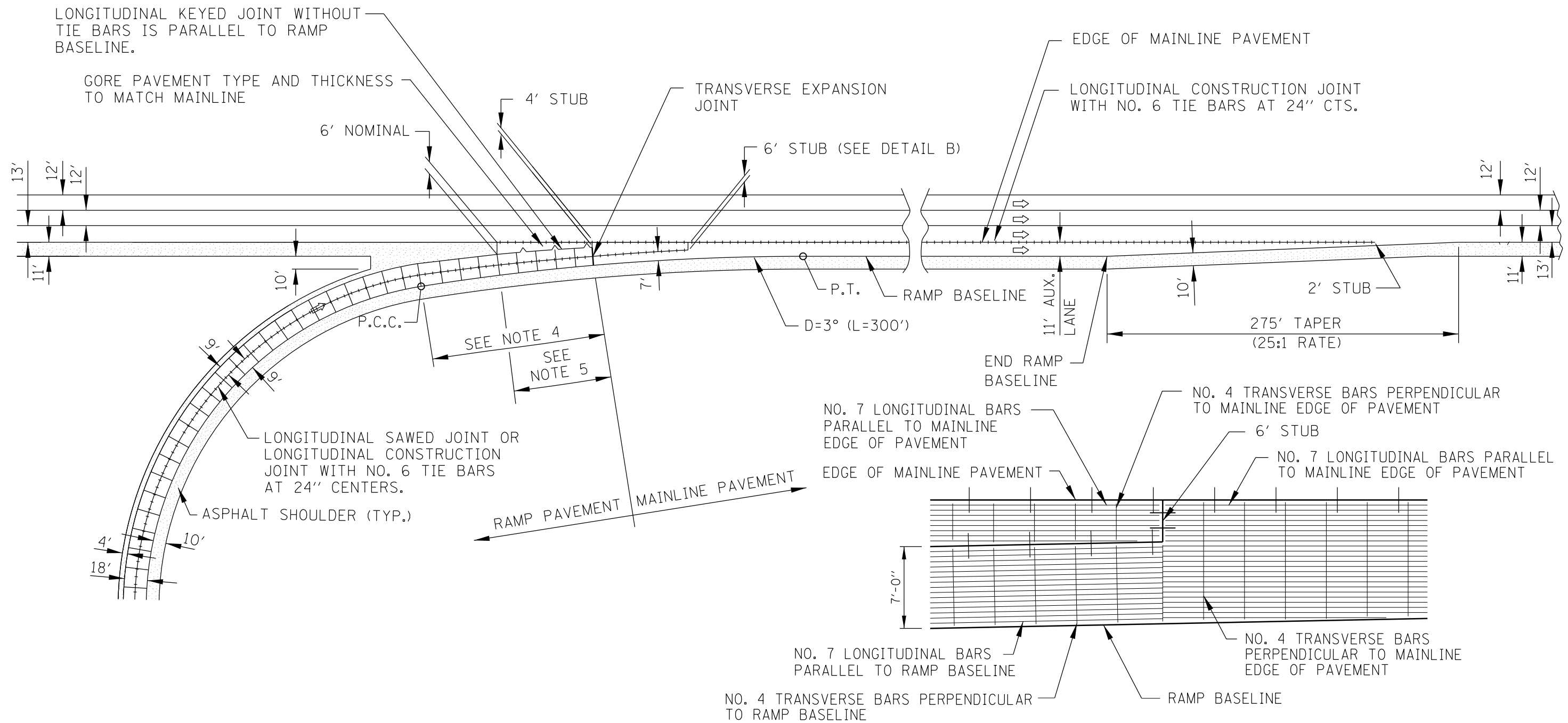
APPROVED: *Jeff Daley*  
 CHIEF ENGINEER DATE 10-15-2007

DATE	REVISIONS

**Illinois Tollway**

**JOINING PLAN PARALLEL ENTRANCE RAMP TERMINAL**  
 (JOINTED PCC RAMP PAVEMENT ADJACENT TO JOINTED PCC MAINLINE PAVEMENT)

**STANDARD A17-00**



**NOTES:**

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON I.D.O.T. HWY. STANDARD 420001, EXCEPT EXPANSION JOINT SEALS SHALL BE AS DESCRIBED IN THE SPECIAL PROVISION, BONDED PREFORMED JOINT SEALER.
2. SEE STANDARD A12 (BAR REINFORCEMENT FOR CRC PAVEMENT) FOR DETAILS OF PAVEMENT REINFORCEMENT.
3. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15 FEET.
4. RAMP TAPERS FROM 18' TO 14'. LONGITUDINAL JOINT SHALL BE 9' FROM THE RAMP BASELINE AT THE PCC AND TRANSITION TO BE 7' FROM THE RAMP BASELINE AT THE EXPANSION JOINT.
5. THE THICKNESS OF THE JOINTED RAMP PAVEMENT SHALL MATCH THE MAINLINE PAVEMENT. THE EXTRA THICKNESS OF PAVEMENT SHALL BE INCLUDED IN THE PRICE FOR THE RAMP PAVEMENT.
6. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL JOINT SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.

APPROVED: *Jeff Daley*  
 CHIEF ENGINEER DATE 10-15-2007

**DETAIL B**

**Illinois Tollway**

JOINTING PLAN PARALLEL  
 ENTRANCE RAMP TERMINAL  
 (JOINTED PCC RAMP PAVEMENT ADJACENT  
 TO CRC MAINLINE PAVEMENT)

STANDARD A17-00

## FABRICATION GENERAL NOTES

### MATERIALS:

1. EPOXY COATED DOWEL BARS USED SHALL COMPLY WITH ASTM A 615 GRADE 60.
2. ALL EMBEDDED LIFTING HARDWARE USED SHALL BE GALVANIZED.
  - A. FOR LIFTING INSERTS, INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION INCLUDING MINIMUM EDGE DISTANCE AND SPACING REQUIREMENTS. UNLESS THE CONTRACTOR AND FABRICATOR WILL BE USING A LIFTING BEAM OR ROLLING SHEAVE TO ENSURE THAT EACH OF THE FOUR INSERTS WILL SHARE THE LOAD EQUALLY, TWO OF THE FOUR INSERTS MUST BE CAPABLE OF CARRYING THE TOTAL LOAD WITH A 4:1 SAFETY FACTOR WHILE ADJUSTING FOR THE ANGLE OF THE CABLES AND THE STRENGTH OF THE CONCRETE OVER TIME. THE INSERT SHOULD BE RECESSED A MINIMUM OF 1/2" UNLESS THE SLAB IS TO BE OVERLAID IMMEDIATELY AFTER PLACEMENT. THE INSERT SHALL LEAVE A MAXIMUM 1/4" DIAMETER THREADED HOLE TO BE GROUTED AFTER SLAB INSTALLATION. IF THE INSERT IS INSTALLED WITH A FULL SLAB PENETRATION, THE LIFTING INSERT CAN BE USED AS A BEDDING GROUT PORT AT THE CONTRACTOR'S DISCRETION.
  - B. FOR LIFTING PLATES, INSTALLATION MUST BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND HAVE A STANDARD 5:1 SAFETY FACTOR FOR LIFTING HARDWARE. UNLESS A LIFTING BEAM IS USED TO SPACE THE FOUR PICK POINTS DIRECTLY ABOVE THE INSERTS, THE LIFTING HARDWARE MUST BE RATED FOR USE WITH CABLES AT AN ANGLE AND TWO OF THE FOUR DEVICES MUST BE CAPABLE OF LIFTING THE FULL LOAD AS WITH THE INSERTS REFERENCED IN THE PREVIOUS NOTE.
3. REINFORCEMENT USED SHALL BE EPOXY COATED, IN ACCORDANCE WITH ASTM A706 GRADE 60 AND IN COMPLIANCE WITH ARTICLE 1006.10 OF THE STANDARD SPECIFICATIONS.
4. CONCRETE COVER OVER REINFORCEMENT TO BE MAINTAINED USING WIRE OR THERMOPLASTIC CHAIRS OR SPACERS OR AN APPROVED EQUIVALENT.
5. CONCRETE USED SHALL MEET THE FOLLOWING REQUIREMENTS:
  - A. CONCRETE USED SHALL BE CLASS PC (f'c = 4,500 PSI @ 28 DAYS) IN ACCORDANCE WITH SECTION 1020 OF THE STANDARD SPECIFICATIONS.
  - B. MINIMUM STRIPPING STRENGTH OF CONCRETE SHALL BE 3,000 PSI.
  - C. CONCRETE MIX DESIGN TO BE SUBMITTED AND APPROVED PRIOR TO FABRICATION.
  - D. CURING OF CONCRETE SLABS TO BE IN ACCORDANCE WITH THE SPECIFIED METHODS OF SECTION 1020 OF THE STANDARD SPECIFICATIONS. THE CURING PROCEDURE TO BE USED SHALL BE SUBMITTED AND APPROVED PRIOR TO FABRICATION.

### SLAB DESIGN:

6. FOR STANDARD SLABS:
  - A. USE SLAB DIMENSIONS SHOWN ON THE TOLLWAY STANDARD DRAWINGS FOR DESIGN SLAB THICKNESS, WIDTH, AND LENGTH. ACTUAL WIDTH TO BE MODIFIED WITH ON-SITE SAW CUTS TO FIT THE OPENING.
  - B. USE ONE LAYER OF REINFORCEMENT WITH A MINIMUM STEEL AREA RATIO OF 0.2%.
  - C. SIZE ANY PREFORMED SLOTS THAT ARE DESIGNED FOR CONSECUTIVE STANDARD SLABS CONSISTENT WITH THE THICKNESS OF THE SLAB SUCH THAT THE BOTTOM OF THE OPENING IS AT LEAST 2 1/2" (±1/4") WIDE AND AT LEAST 1/2" OF GROUT COVER IS PROVIDED UNDER THE DOWEL.
  - D. FOR STANDARD SLABS WITH WIDE OPEN SLOTS AND/OR EMBEDDED DOWEL BARS, IT SHALL BE THE CONTRACTOR'S OPTION TO EITHER PRE-INSTALL/EMBED THE DOWEL BARS INTO THE SLABS AT THE PRECAST PLANT AND PARTIALLY RETROFIT THE EMBEDDED DOWELS INTO ADJACENT PAVEMENT SLABS IN THE FIELD, OR TO FULLY RETROFIT THE DOWEL BARS INTO BOTH THE INSTALLED PRECAST SLAB AND ANY ADJACENT SLAB IN THE FIELD DURING PLACEMENT IN ACCORDANCE WITH CONTRACT SPECIFICATIONS AND THE GENERAL NOTES FOR INSTALLATION. THE LOCATIONS AND SPACING OF THE DOWEL BARS IN THE STANDARD SLABS SHALL BE SHOWN ON THE TOLLWAY STANDARD DRAWINGS AND WITHIN THE SPECIFIED TOLERANCES FOR ALIGNMENT. FOR DOWEL BAR RETROFITTING WITH STANDARD SLAB INSTALLATION, A STANDARD TEMPLATE SHALL BE USED TO LOCATE THE CUTS AND POSITION THE DOWEL SLOTS CONSISTENTLY.
  - E. FOR STANDARD ISOLATED SLABS WITH NARROW ELONGATED PREFORMED DOWEL SLOTS, THE CENTERPOINT BETWEEN THE WHEEL PATH SLOTS SHALL BE MARKED.
7. FOR CUSTOM SLABS:
  - A. USE SLAB DIMENSIONS SHOWN ON THE TOLLWAY STANDARD DRAWINGS FOR DESIGN SLAB THICKNESS, LENGTHS AND WIDTHS OF EACH CUSTOM SLAB SHALL BE ACCURATE DIMENSIONS BASED ON FIELD SURVEY DATA COLLECTED BY THE CONTRACTOR TO

DEVELOP WORKING DRAWINGS FOR THE SLAB. MINIMUM AND MAXIMUM DIMENSIONS FOR LENGTHS AND WIDTHS ARE NOTED ON THE STANDARD DRAWINGS.

- B. ANY CUSTOM SLABS > 6 FT. IN LENGTH THAT WILL BE OPENED TO TRAFFIC BEFORE ANY HARDWARE AND UNDERSLAB GROUTING OR FILLING OCCURS SHALL REQUIRE TWO (2) LAYERS OF STEEL REINFORCEMENT AS NOTED ON SHEET 5.
  - C. FOR ANY CUSTOM SLAB FABRICATED TO REPLACE EXISTING WARPED PAVEMENT AT AN ISOLATED LOCATION, THE CUSTOM SLAB SHALL BE FABRICATED ON A SINGLE PLANE. THE SLAB THICKNESS OR BEDDING MATERIAL SHALL BE ADJUSTED TO ALLOW FOR THE ELEVATION OF ALL FOUR (4) CORNERS OF THE CUSTOM SLAB TO BE FLUSH OR HIGHER THAN THE EXISTING OR ADJOINING PAVEMENT WHEN INSTALLED. THE SURFACE OF ALL CUSTOM SLABS REPLACING WARPED PAVEMENT SHALL RECEIVE A COMPLETE PROFILE DIAMOND GRIND AFTER INSTALLATION AND GROUTING TO PROVIDE A SMOOTH SURFACE AND LEAVE ALL EDGES FLUSH WITH THE ADJOINING PAVEMENTS. THE PROFILE GRINDING OPERATION FOR CUSTOM SLABS REPLACING ANY WARPED PAVEMENTS, ON CURVED RAMPS OR SUPERELEVATED MAINLINE SECTIONS, SHALL BE IN ACCORDANCE WITH CONTRACT SPECIAL PROVISIONS FOR PROFILE DIAMOND GRINDING AND PAID FOR SEPARATELY. FOR CONSECUTIVELY PLACED CUSTOM SLABS FABRICATED TO REPLACE EXISTING WARPED PAVEMENT, FULL SURVEYS FOR X, Y, AND Z DIMENSIONS SHALL BE TAKEN BY THE CONTRACTOR BEFORE FABRICATION IN ORDER TO MATCH EXISTING GRADES AT ALL CORNERS DURING INSTALLATION.
  - D. FOR ALL CUSTOM SLABS WITH WIDE OPEN SLOTS, THE DOWEL BARS SHALL BE FULLY RETROFITTED INTO ADJACENT PAVEMENT SLABS DURING FIELD INSTALLATION OF THE PRECAST SLAB IN ACCORDANCE WITH CONTRACT SPECIFICATIONS AND GENERAL NOTES FOR INSTALLATION.
  - E. FOR ALL CUSTOM SLABS WITH NARROW ELONGATED PREFORMED DOWEL SLOTS, THE DOWEL BARS SHALL BE SLID INTO PREDRILLED HOLES IN THE ADJACENT PAVEMENT SLABS DURING FIELD INSTALLATION OF THE PRECAST SLAB IN ACCORDANCE WITH CONTRACT SPECIFICATIONS AND GENERAL NOTES FOR INSTALLATION.
8. ALL FABRICATED SLABS:
- A. THE MAXIMUM ALLOWABLE JOINT WIDTH CAN NOT BE LESS THAN THE TOTAL OF THE ALLOWABLE SLAB FABRICATION TOLERANCES.
  - B. BEDDING GROUT PORT HOLES SHALL BE LOCATED ON TRANSVERSE LINES ACROSS THE SLAB THAT ARE PARALLEL WITH EXISTING TRANSVERSE JOINTS. EACH PORT HOLE SHALL BE EVENLY DISTRIBUTED ON EACH LINE. THE DISTANCE BETWEEN BEDDING GROUT PORT HOLES SHALL NOT EXCEED 4'-0", WITH THE PORT HOLES AT THE END OF THE TRANSVERSE LINES TO BE NO LESS THAN 1'-8" AND NO MORE THAN 3'-0" OFF A LONGITUDINAL JOINT. THE TRANSVERSE LINES FOR PORT HOLES SHALL BE NO MORE THAN 4'-0" APART, AND NO LESS THAN 1'-8" AND NO MORE THAN 2'-6" OFF OF A TRANSVERSE JOINT.
  - C. RECESS LIFTING DEVICES 1" MINIMUM BELOW THE SURFACE OF THE SLAB TO ALLOW FOR A MINIMUM GROUT COVER OF 1" ON SLABS THAT WILL NOT BE OVERLAID.

### FABRICATION:

9. PREPARE WORKING DRAWINGS THAT SHALL INCLUDE THE FOLLOWING INFORMATION:
  - A. SLAB LAYOUT DRAWING FOR TYPICAL STANDARD SLABS AND FOR EACH CUSTOM SLAB TO BE FABRICATED, WITH ACCURATE DIMENSIONS CITED.
  - B. REINFORCEMENT SIZES, SPACING, NUMBER OF MATS, AND METHOD OF MAINTAINING CONCRETE COVER.
  - C. SIZES AND LOCATIONS FOR EMBEDDED DOWELS, OF DOWEL BARS TO BE RETROFITTED AFTER PLACEMENT OF THE SLAB, AND OF PREFORMED SLOTS AT THE FEMALE END OF STANDARD SLABS FOR CONSECUTIVE PLACEMENT.
  - D. SIZE AND LOCATION OF GROUT PORTS, LIFTING ANCHORS, AND GROUT SEAL GASKETS.
  - E. COMPRESSIVE STRENGTH AND AIR CONTENT OF CONCRETE.
  - F. CONCRETE CURING METHOD TO BE USED.
  - G. MARKING LEGEND FOR EACH SLAB TO INDICATE PRECAST MANUFACTURER, AND DATE OF PRODUCTION; AND FOR EACH CUSTOM SLAB TO INCLUDE CONTRACT NUMBER AND MARK NUMBER OF THE SLAB.
  - H. WEIGHT OF EACH SLAB.
  - I. THE SIZE AND LOCATION OF ANY EMBEDDED HARDWARE (TREADLE FRAMES, CONDUITS, ETC.) REQUIRED FOR CUSTOM PLAZA SLABS.
10. PERFORM A PRE-POUR INSPECTION OF THE FORMS TO CONFIRM THAT THEY ARE ASSEMBLED IN ACCORDANCE WITH THE FOLLOWING TOLERANCES:
 

LENGTH AND WIDTH	± 1/8"
DIAGONALS	± 3/16"
DOWEL VARIANCE FROM LEVEL, SQUARENESS TO EDGE OF SLAB, AND LOCATION.	± 1/8"

EDGE SQUARENESS - 1/8" IN 10" (IN RELATION TO TOP AND BOTTOM SURFACES).

11. INCLUDE A 1 INCH CHAMFER ALONG ALL BOTTOM EDGES OF SLABS, AND A STONED EDGE TO ALL TOP EDGES OF THE SLAB.
12. THE EXPOSED SURFACES OF ALL PREFORMED SLOTS FOR DOWEL BARS SHALL BE SANDBLASTED.
13. ACCURATELY SCREED TOP OF SLAB TO MEET SURFACE AND THICKNESS TOLERANCES.
14. APPLY EITHER AN ASTRO TURF DRAG FINISH TO TOP OF SLAB IN ACCORDANCE WITH ARTICLE 420.09(e)(2) OF THE STANDARD SPECIFICATIONS, OR A TINED FINISH IN ACCORDANCE WITH ARTICLE 420.09(e)(1) OF THE STANDARD SPECIFICATIONS AS INDICATED IN THE SLAB DESIGN SCHEDULE ON CONTRACT DRAWINGS.
15. AFTER REMOVAL OF FORMS AND ANY BLOCKOUTS, NO SPALLS OF THE FINISHED SURFACE WILL BE ALLOWED.

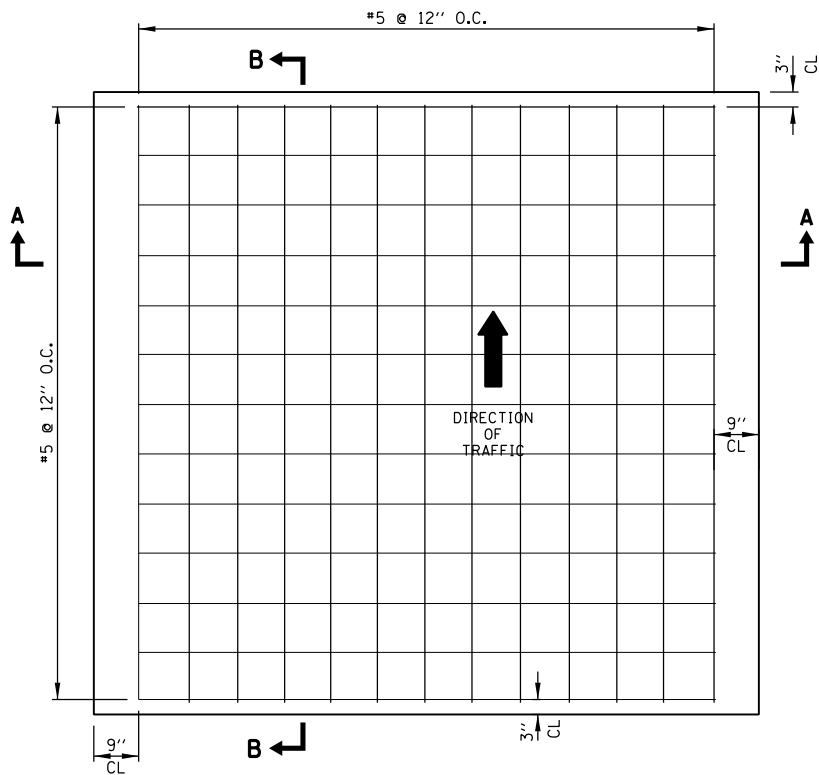


PRECAST PAVEMENT SLABS

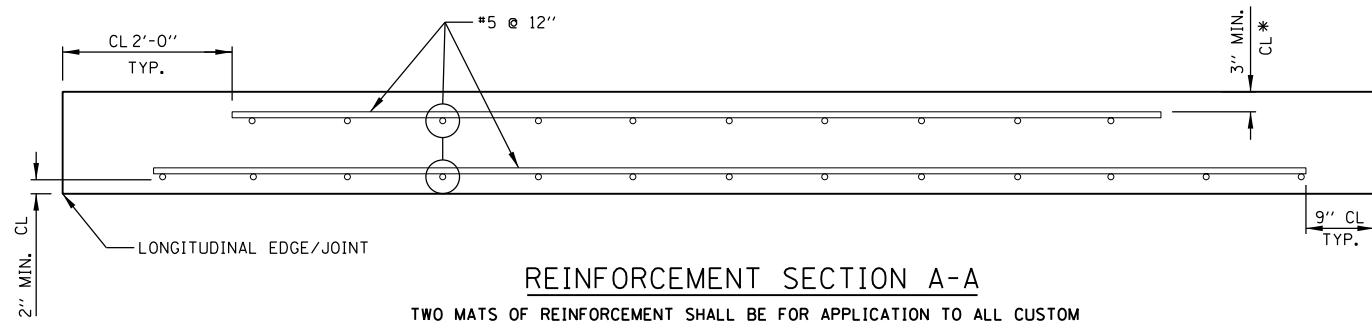
STANDARD A18-02

DATE	REVISIONS
2-7-2012	SEE A18-01 FOR REVISIONS PER THIS DATE
11-1-2012	REVISED NOTES

APPROVED ..... DATE 5-1-2009
   
CHIEF ENGINEER



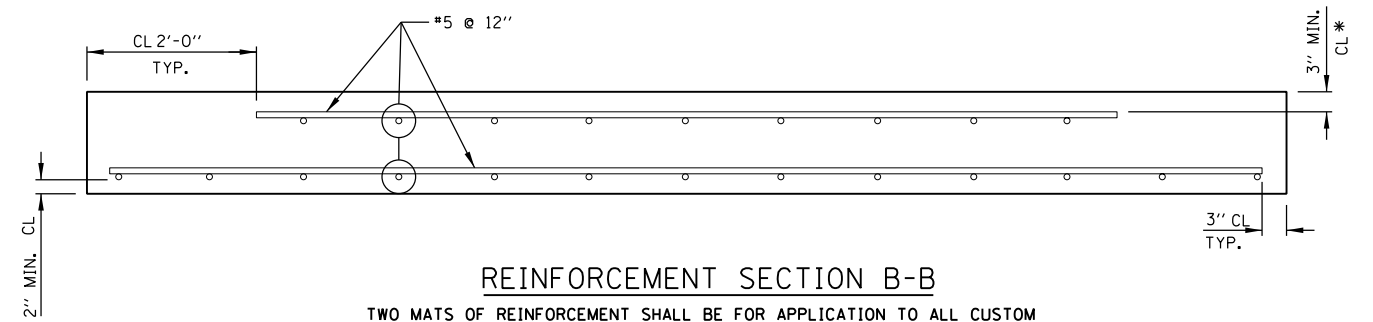
TYPICAL REINFORCEMENT DETAIL FOR STANDARD SLABS



REINFORCEMENT SECTION A-A

TWO MATS OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC BEFORE GROUTING IS COMPLETED

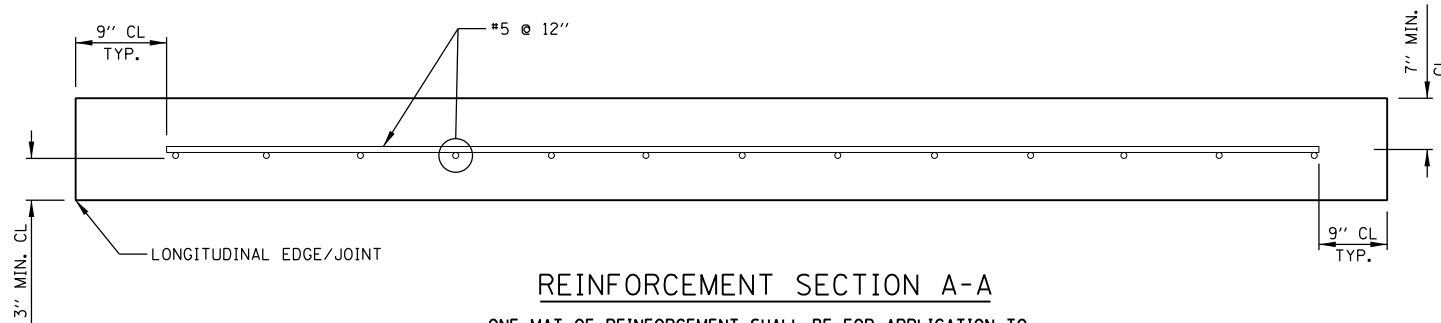
ALL BARS ARE TRIM TO FIT #5 BAR  
SAW CUTS OFF LONGITUDINAL EDGES SHALL BE NO MORE THAN 6" OFF THE EDGES



REINFORCEMENT SECTION B-B

TWO MATS OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC BEFORE GROUTING IS COMPLETED

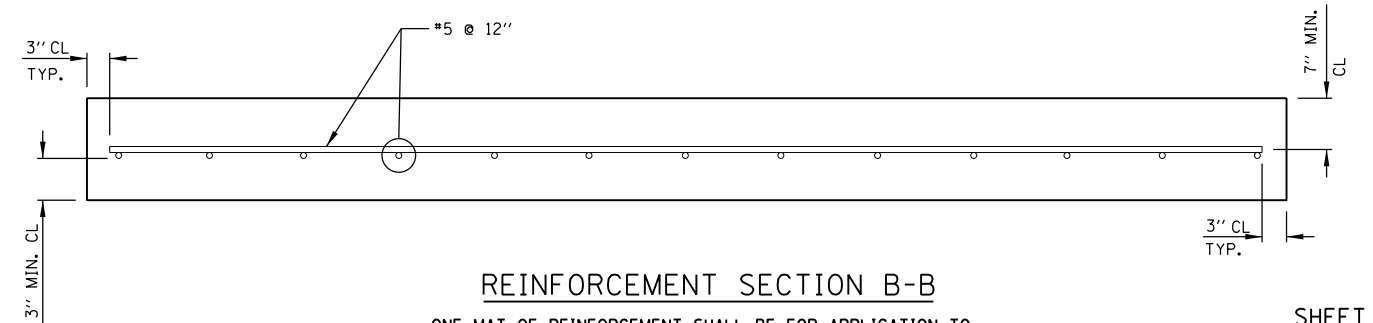
ALL BARS ARE TRIM TO FIT #5 BAR



REINFORCEMENT SECTION A-A

ONE MAT OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL STANDARD SLABS AND FOR ANY CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC ONLY AFTER GROUTING IS COMPLETED.

ALL BARS ARE TRIM TO FIT #5 BAR  
SAW CUTS OFF LONGITUDINAL EDGES SHALL BE NO MORE THAN 6" OFF THE EDGES

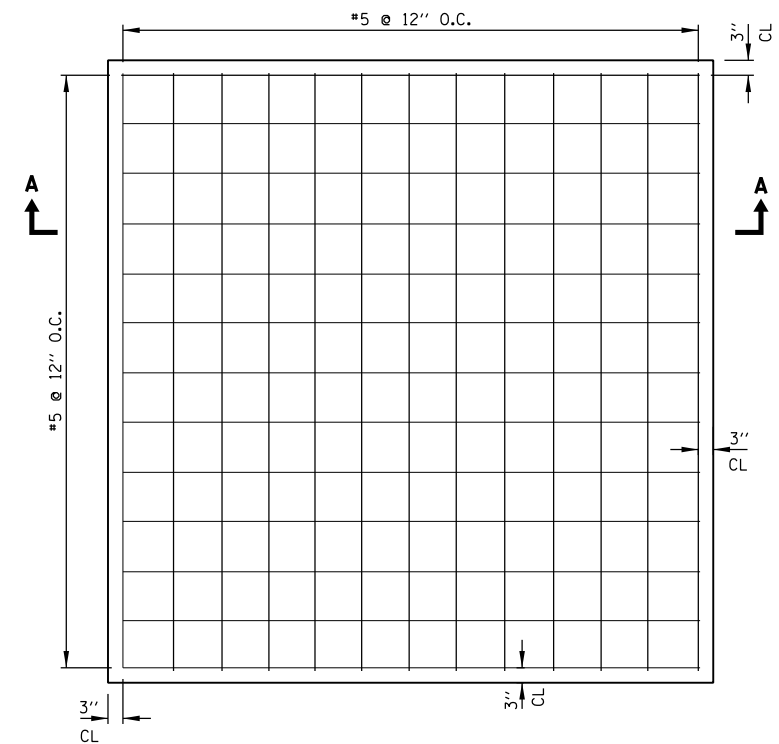


REINFORCEMENT SECTION B-B

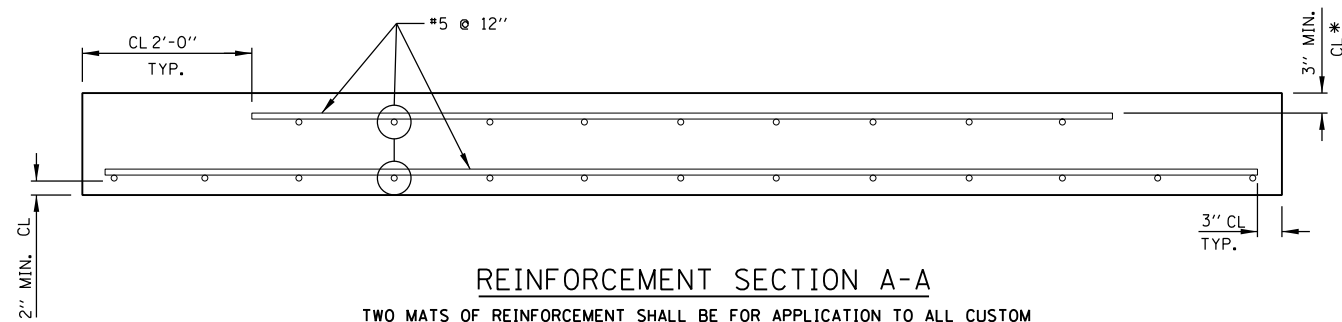
ONE MAT OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL STANDARD SLABS AND FOR ANY CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC ONLY AFTER GROUTING IS COMPLETED.

ALL BARS ARE TRIM TO FIT #5 BAR





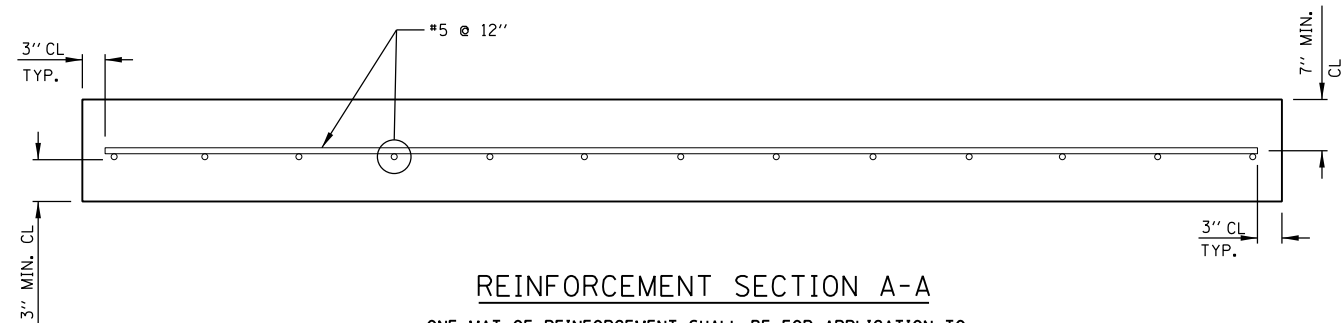
TYPICAL REINFORCEMENT DETAIL FOR CUSTOM SLABS



REINFORCEMENT SECTION A-A

TWO MATS OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC BEFORE GROUTING IS COMPLETED

ALL BARS ARE TRIM TO FIT #5 BAR



REINFORCEMENT SECTION A-A

ONE MAT OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL STANDARD SLABS AND FOR ANY CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC ONLY AFTER GROUTING IS COMPLETED.

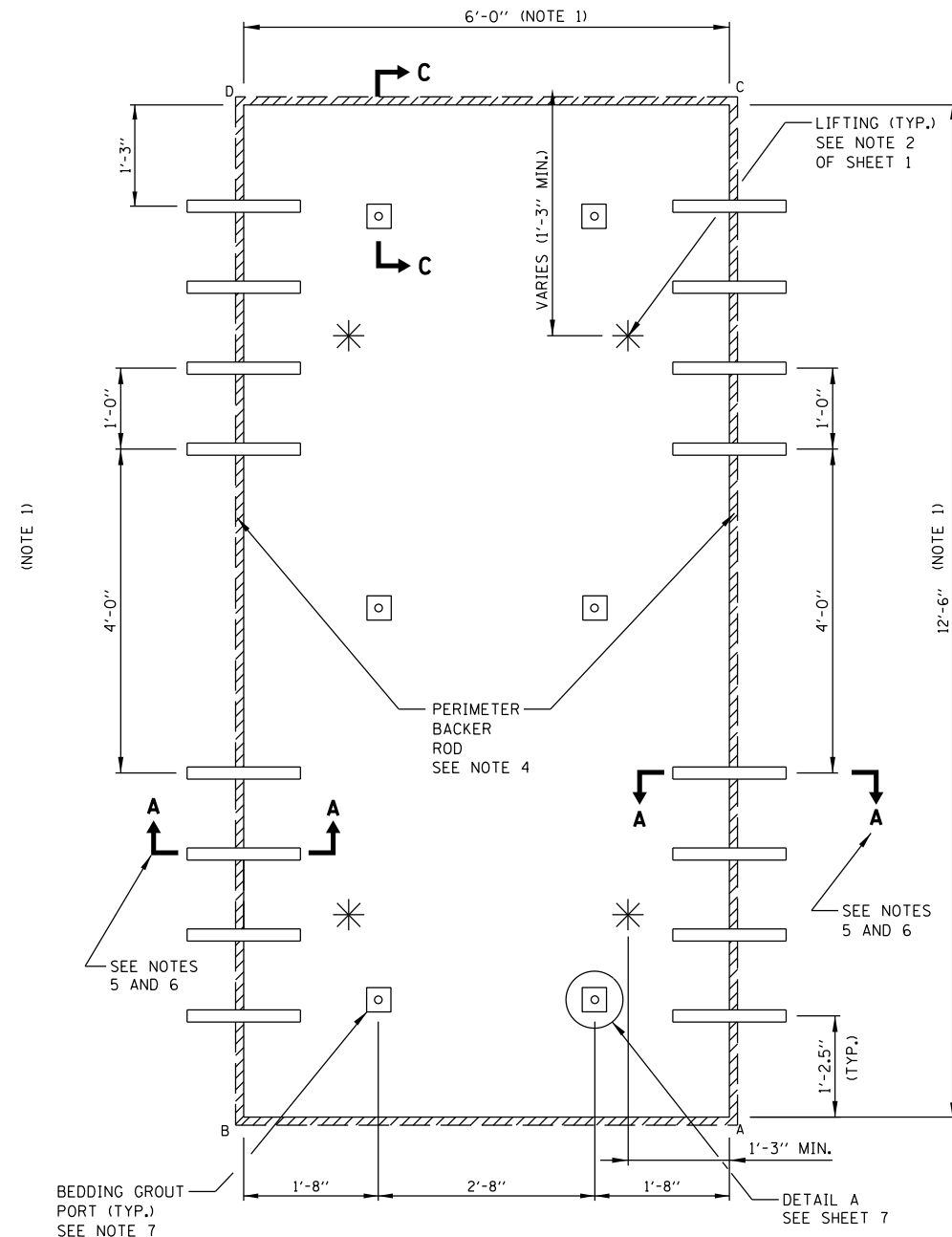
ALL BARS ARE TRIM TO FIT #5 BAR

**NOTE:**

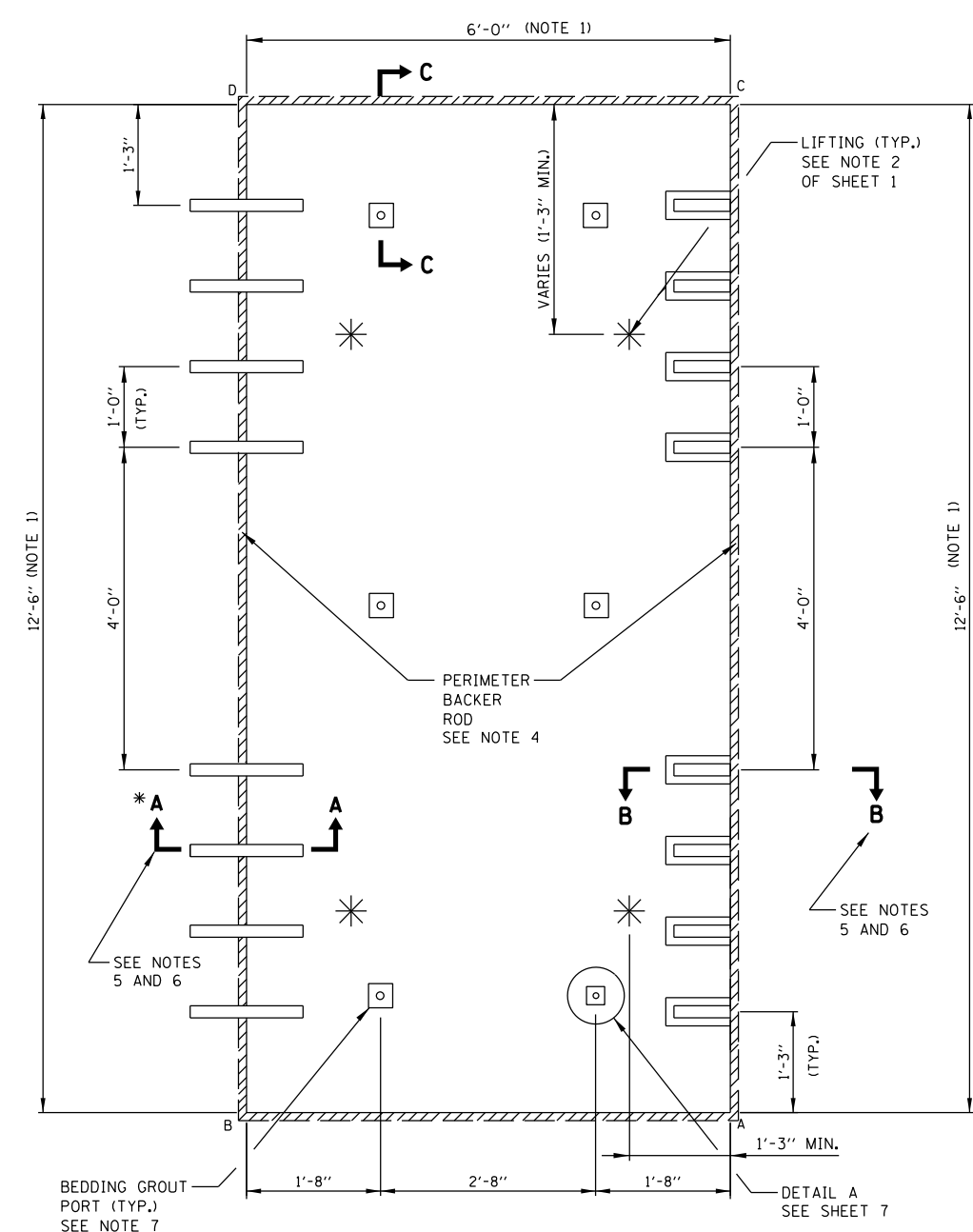
FOR ALL CUSTOM SLABS OF TRAPEZOID SHAPES, REINFORCEMENT SHALL BE LAID OUT IN A PERPENDICULAR GRID PATTERN, NOT SKEWED.

\* MIN. CLEARANCE FOR TOP REINFORCEMENT SHALL BE ADJUSTED FOR PLAZA SLAB TO FIT TREADLE FRAMES OR INSERTED HARDWARE.





**STANDARD 12'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT WITH EMBEDDED DOWELS FOR PRECUT WIDE MOUTH SLOTS IN ADJACENT PAVEMENT**



**STANDARD 12'-6" WIDE PANEL LAYOUT FOR CONSECUTIVE PLACEMENT**

\* FOR INTERNAL CONSECUTIVE SLABS, PREFORMED SLOTS IN ACCORDANCE WITH SECTION B-B OF SHEET 4 MAY BE USED IN-PLACE OF EMBEDDED DOWELS OR OF FIELD RETROFITTED DOWEL BARS WITH SAWCUT SLOTS. ALL PREFORMED SLOTS MUST BE FILLED BEFORE BEING OPENED TO TRAFFIC.

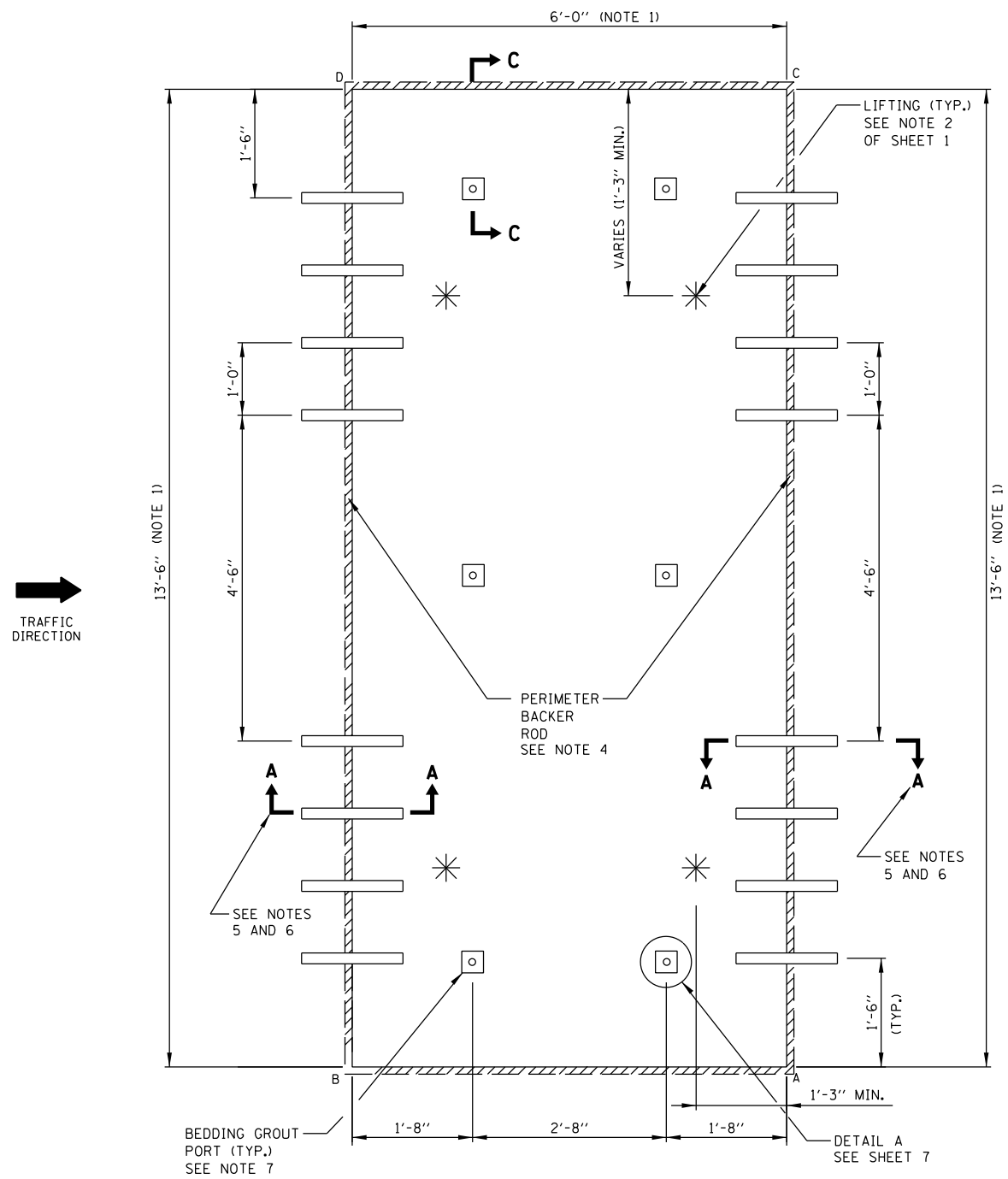
**NOTES:**

1. THE WIDTH AND LENGTH OF PRODUCED SLABS SHALL BE THE INDICATED DIMENSIONS  $\pm 1/8"$ .
2. FOR MIDDLE LANE SLAB OPENINGS/PATCHES LESS THAN 12'-6" IN WIDTH AND GREATER THAN 11'-6" IN WIDTH, THE STANDARD PERCAST SLAB CAN BE SAW CUT ON-SITE TO FIT THE OPENING AND TO MAINTAIN ALIGNMENT WITH EXISTING LONGITUDINAL JOINTS. OTHERWISE, THE SLAB PATCH LOCATION MUST BE PRESURVEYED BY THE CONTRACTOR AND THE SLAB FABRICATED AS A CUSTOM SLAB.
3. SLAB THICKNESS SHALL BE  $11\frac{1}{2}" \pm 1/8"$ .
4. A FOAM BACKER ROD SHALL BE PLACED AROUND THE OUTSIDE PERIMETER OF THE SLAB AT THE BOTTOM OF THE JOINTS BEFORE THE SLAB HAS BEEN SET AND BEFORE BEDDING GROUT OR POLYURETHANE LEVELING FILL IS APPLIED. THE BACKER ROD SHALL NOT BE REQUIRED WHEN ANY SLAB IS LEVELED WITH FLOWABLE FILL.
5. SEE SHEET 7 FOR SECTION DETAILS.
6. IT SHALL BE THE CONTRACTOR'S OPTION TO REPLACE ANY EMBEDDED DOWEL BARS OR PREFORMED SLOTS AS SHOWN ON THESE DRAWINGS WITH FULLY RETROFITTED DOWEL BARS FIELD INSTALLED IN ACCORDANCE WITH "DETAIL C" OF SHEET 13. THE CONTRACTOR SHALL USE AN APPROVED TEMPLATE TO LOCATE THE SAW CUTS REQUIRED FOR PROPER SPACING AND RETROFITTING OF THE DOWEL BARS IN ACCORDANCE WITH THESE DRAWINGS. DIAMOND BLADED GANG SAWS SHALL BE USED TO MAKE SAW CUTS PERPENDICULAR TO THE TRANSVERSE (NONSKewed) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE SPECIFIED TOLERANCES.
7. SEE NOTE 8 ON SHEET 1 FOR LOCATING UNDERSEALING GROUT PORTS.

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009



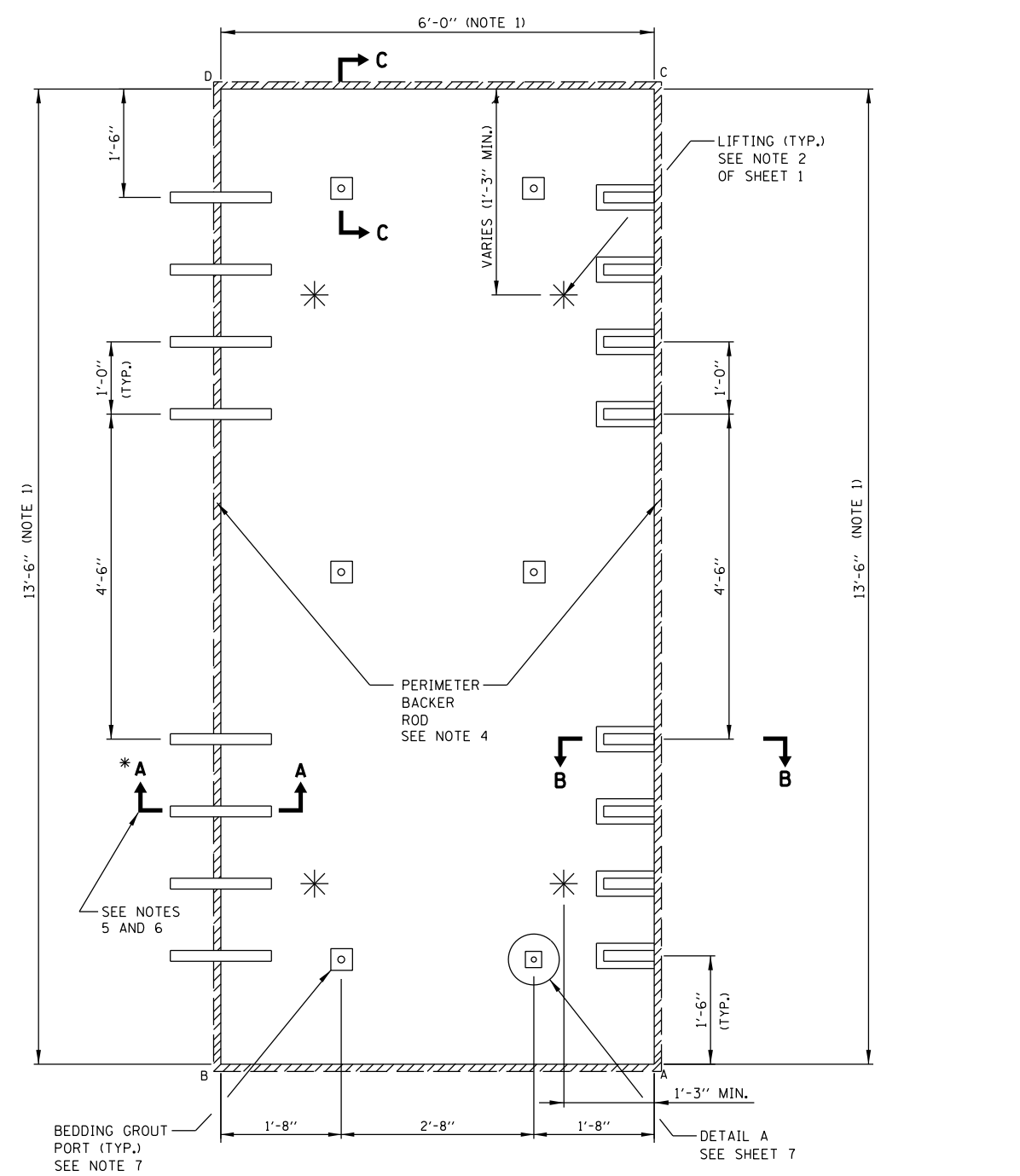




STANDARD 13'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT WITH EMBEDDED DOWELS FOR PRECUT WIDE MOUTH SLOTS IN ADJACENT PAVEMENT.

**NOTES:**

1. THE WIDTH AND LENGTH OF PRODUCED SLABS SHALL BE THE INDICATED DIMENSIONS  $\pm 1/8"$ .
2. FOR MIDDLE LANE SLAB OPENINGS/PATCHES LESS THAN 13'-6" IN WIDTH AND GREATER THAN 12'-6" IN WIDTH, THE STANDARD PERCAST SLAB CAN BE SAW CUT ON-SITE TO FIT THE OPENING AND TO MAINTAIN ALIGNMENT WITH EXISTING LONGITUDINAL JOINTS. OTHERWISE, THE SLAB PATCH LOCATION MUST BE PRESURVEYED BY THE CONTRACTOR AND THE SLAB FABRICATED AS A CUSTOM SLAB.
3. SLAB THICKNESS SHALL BE  $11\frac{1}{2}" \pm 1/8"$ .
4. A FOAM BACKER ROD SHALL BE PLACED AROUND THE OUTSIDE PERIMETER OF THE SLAB AT THE BOTTOM OF THE JOINTS BEFORE THE SLAB HAS BEEN SET AND BEFORE BEDDING GROUT OR POLYURETHANE LEVELING FILL IS APPLIED. THE BACKER ROD SHALL NOT BE REQUIRED WHEN ANY SLAB IS LEVELED WITH FLOWABLE FILL.
5. SEE SHEET 7 FOR SECTION DETAILS.
6. IT SHALL BE THE CONTRACTOR'S OPTION TO REPLACE ANY EMBEDDED DOWEL BARS OR PREFORMED SLOTS AS SHOWN ON THESE DRAWINGS WITH FULLY RETROFITTED DOWEL BARS FIELD INSTALLED IN ACCORDANCE WITH "DETAIL C" OF SHEET 13. THE CONTRACTOR SHALL USE AN APPROVED TEMPLATE TO LOCATE THE SAW CUTS REQUIRED FOR PROPER SPACING AND RETROFITTING OF THE DOWEL BARS IN ACCORDANCE WITH THESE DRAWINGS. DIAMOND BLADED GANG SAWS SHALL BE USED TO MAKE SAW CUTS PERPENDICULAR TO THE TRANSVERSE (NONSKewed) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE SPECIFIED TOLERANCES.
7. SEE NOTE 8 ON SHEET 1 FOR LOCATING UNDERSEALING GROUT PORTS.



STANDARD 13'-6" WIDE PANEL LAYOUT FOR CONSECUTIVE PLACEMENT

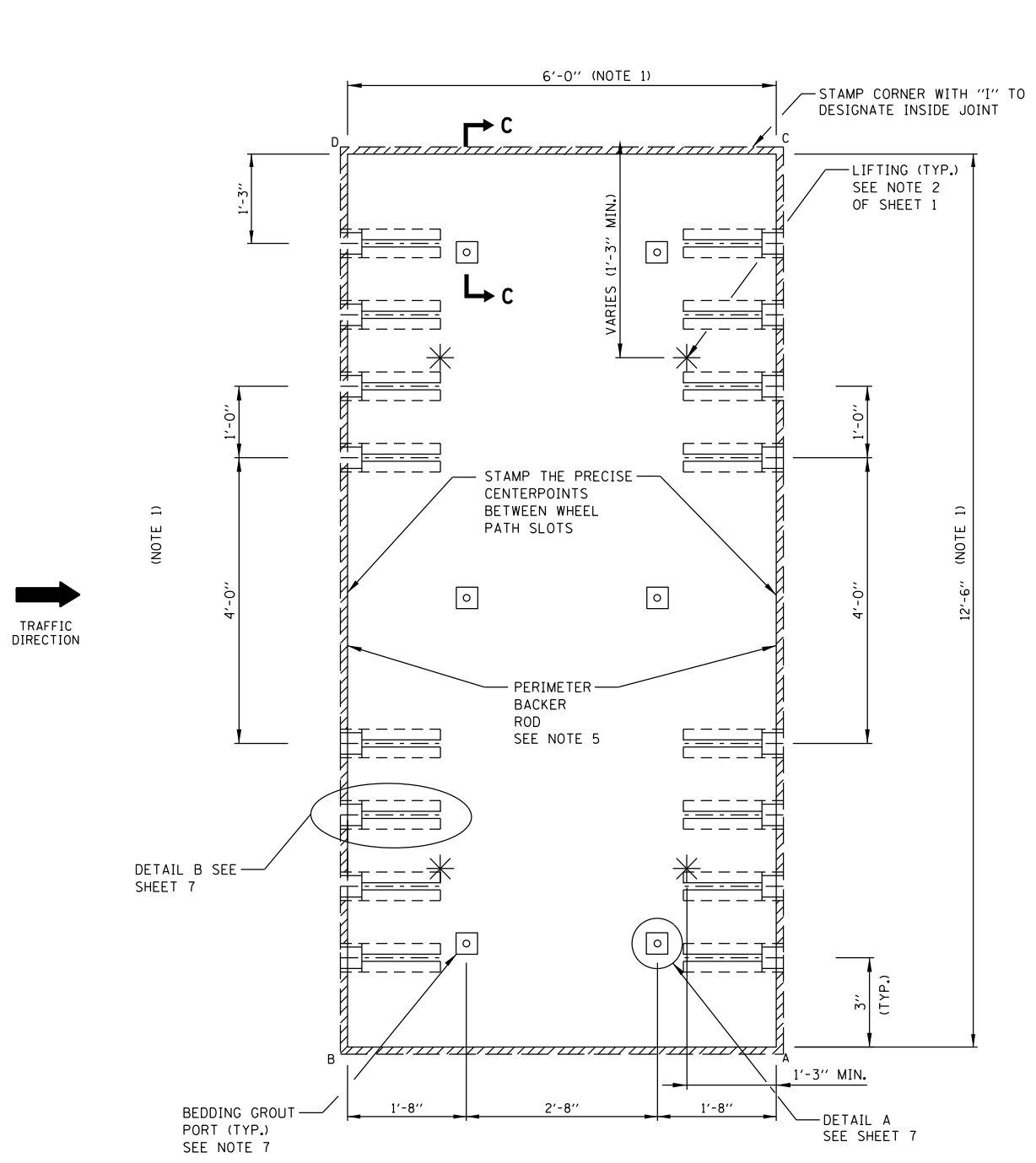
\* FOR INTERNAL CONSECUTIVE SLABS, PREFORMED SLOTS IN ACCORDANCE WITH SECTION B-B OF SHEET 4 MAY BE USED IN-PLACE OF EMBEDDED DOWELS OR OF FIELD RETROFITTED DOWEL BARS WITH SAWCUT SLOTS. ALL PREFORMED SLOTS MUST BE FILLED BEFORE BEING OPENED TO TRAFFIC.

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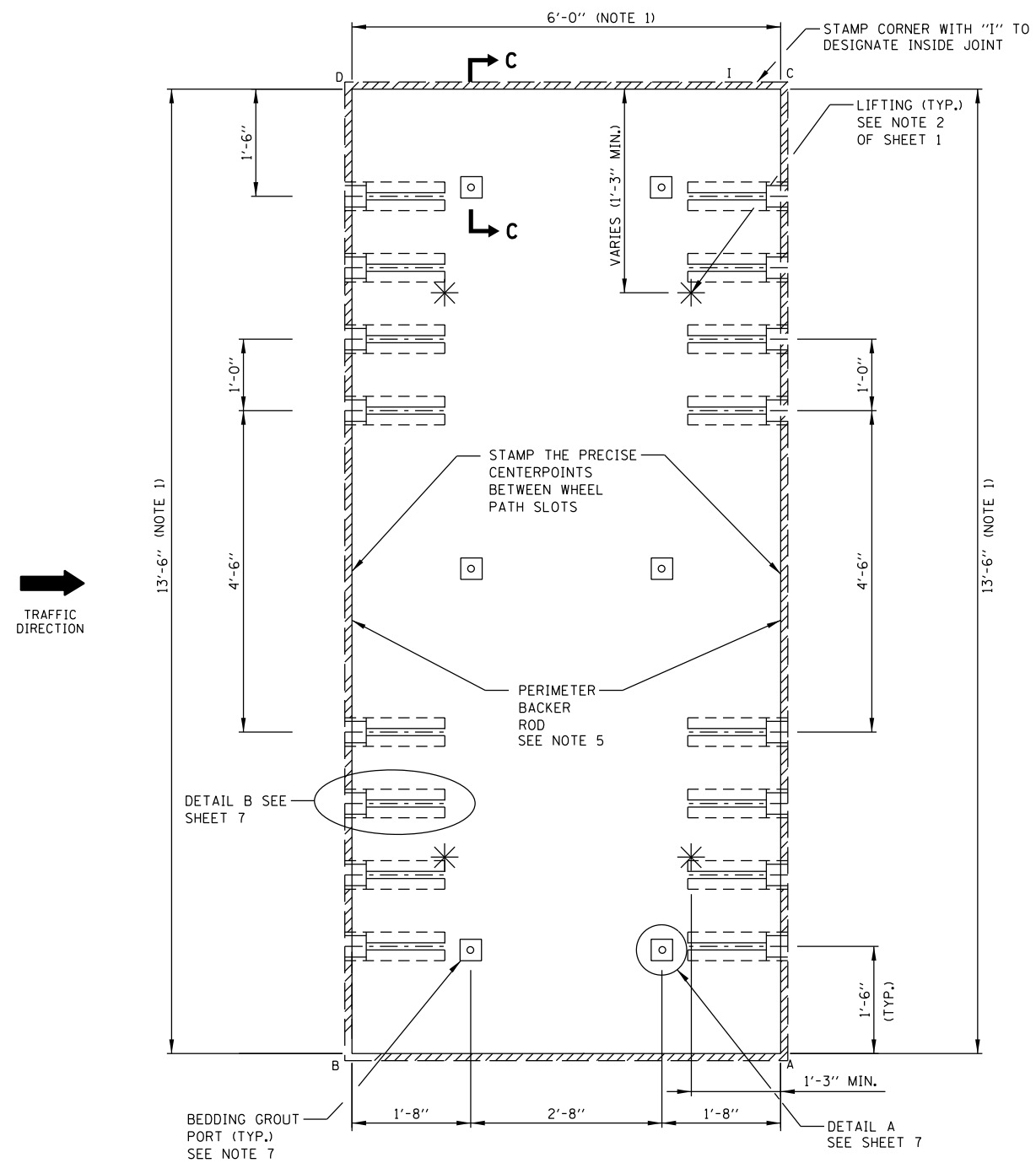


PRECAST PAVEMENT SLABS

STANDARD A18-02



STANDARD 12'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT WITH NARROW MOUTH PREFORMED DOWEL SLOTS TO ALIGN WITH PREDRILLED HOLES IN ADJACENT PAVEMENT.




STANDARD 13'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT WITH NARROW MOUTH PREFORMED DOWEL SLOTS TO ALIGN WITH PREDRILLED HOLES IN ADJACENT PAVEMENT.

**NOTES:**

1. THE WIDTH AND LENGTH OF PRODUCED SLABS SHALL BE THE INDICATED DIMENSIONS  $\pm 1/8"$ .
2. FOR MIDDLE LANE SLAB OPENINGS/PATCHES LESS THAN 12'-6" IN WIDTH AND GREATER THAN 11'-6" IN WIDTH, THE 12'-6" WIDE STANDARD PERCAST SLAB CAN BE SAW CUT ON-SITE TO FIT THE OPENING AND TO MAINTAIN ALIGNMENT WITH EXISTING LONGITUDINAL JOINTS. OTHERWISE, THE SLAB PATCH LOCATION MUST BE PRESURVEYED BY THE CONTRACTOR AND THE SLAB FABRICATED AS A CUSTOM SLAB.
3. FOR MIDDLE LANE SLAB OPENINGS/PATCHES LESS THAN 13'-6" IN WIDTH AND GREATER THAN 12'-6" IN WIDTH, THE 13'-6" WIDE STANDARD PERCAST SLAB CAN BE SAW CUT ON-SITE TO FIT THE OPENING AND TO MAINTAIN ALIGNMENT WITH EXISTING LONGITUDINAL JOINTS. OTHERWISE, THE SLAB PATCH LOCATION MUST BE PRESURVEYED BY THE CONTRACTOR AND THE SLAB FABRICATED AS A CUSTOM SLAB.
4. SLAB THICKNESS SHALL BE  $11\frac{1}{2}" \pm 1/8"$ .
5. A FOAM BACKER ROD SHALL BE PLACED AROUND THE OUTSIDE PERIMETER OF THE SLAB AT THE BOTTOM OF THE JOINTS BEFORE THE SLAB HAS BEEN SET AND BEFORE BEDDING GROUT OR POLYURETHANE LEVELING FILL IS APPLIED. THE BACKER ROD SHALL NOT BE REQUIRED WHEN ANY SLAB IS LEVELLED WITH FLOWABLE FILL.
6. SEE SHEET 7 FOR SECTION DETAILS.
7. SEE NOTE 8 ON SHEET 1 FOR LOCATING UNDERSEALING GROUT PORTS.

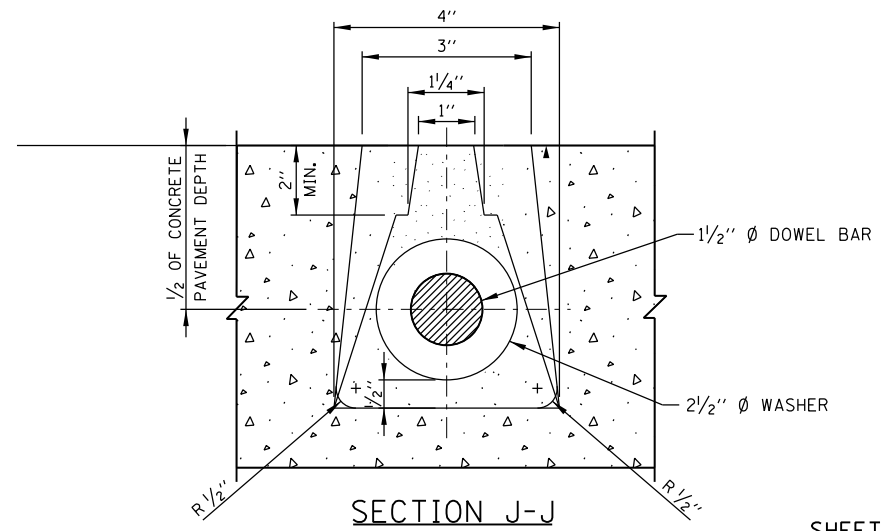
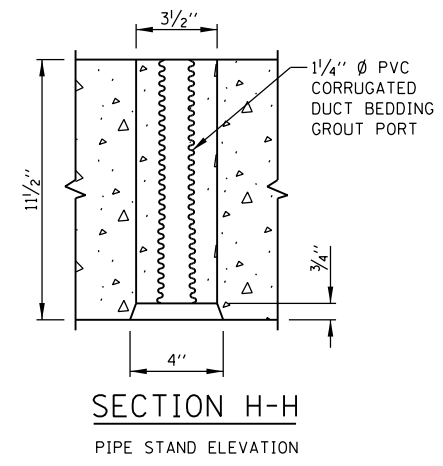
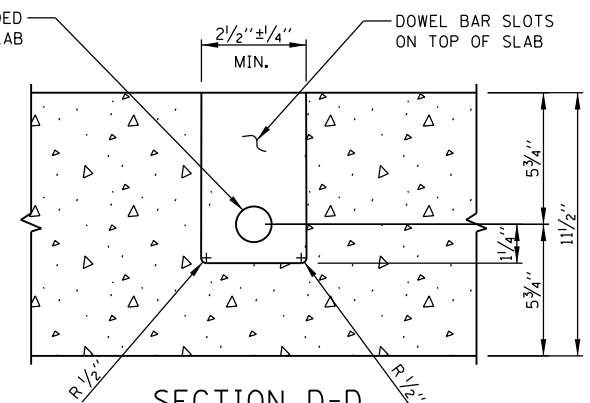
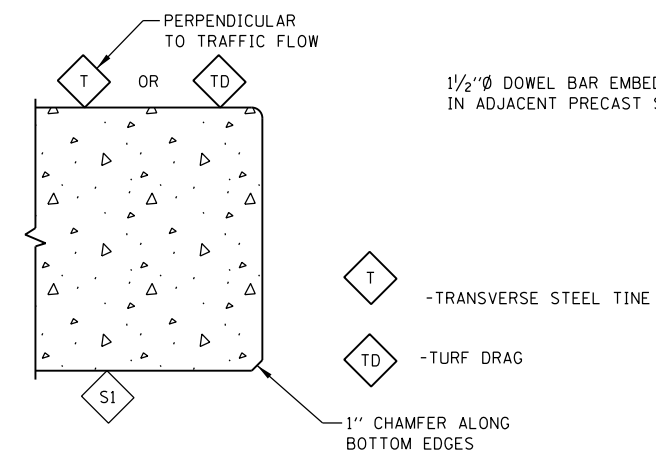
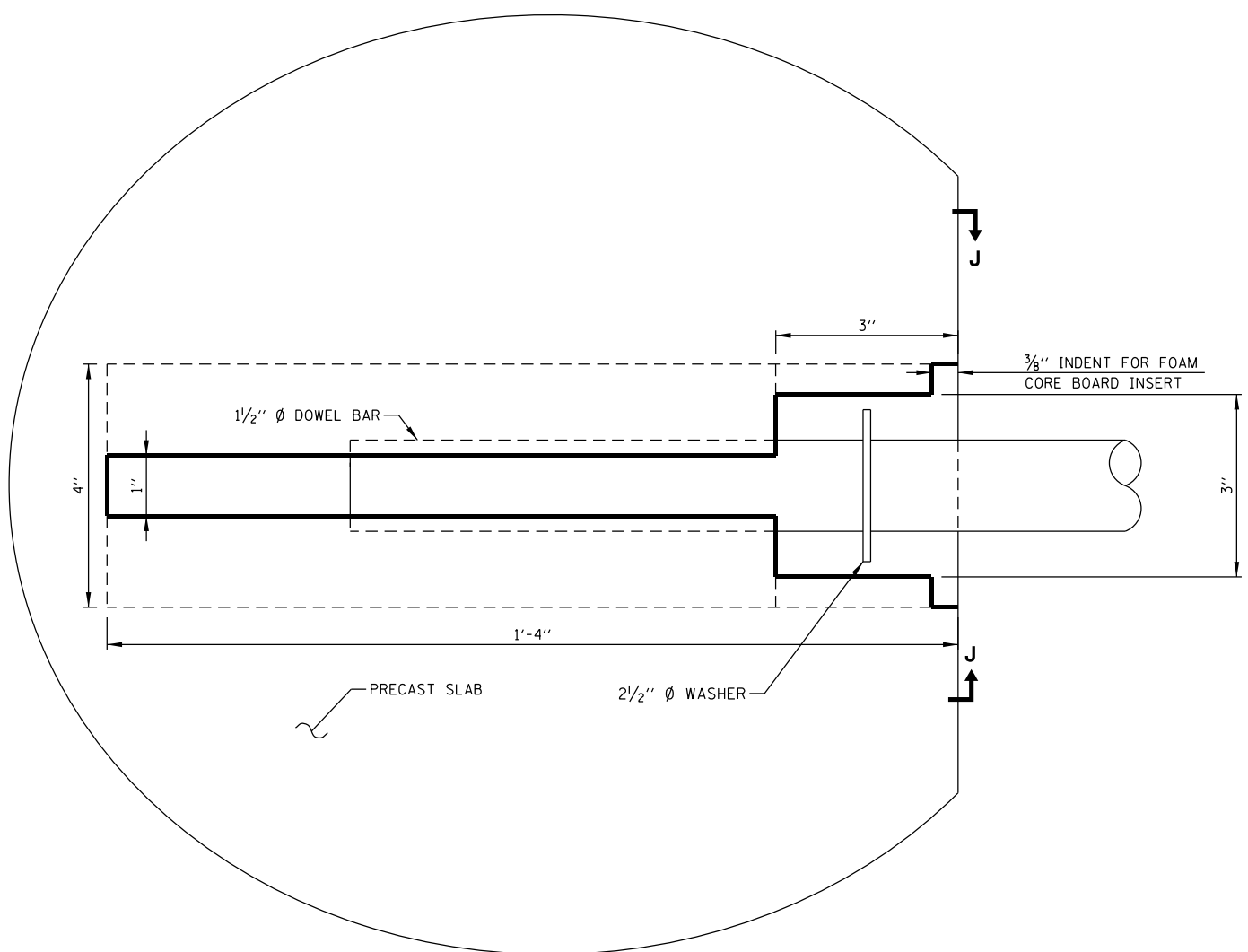
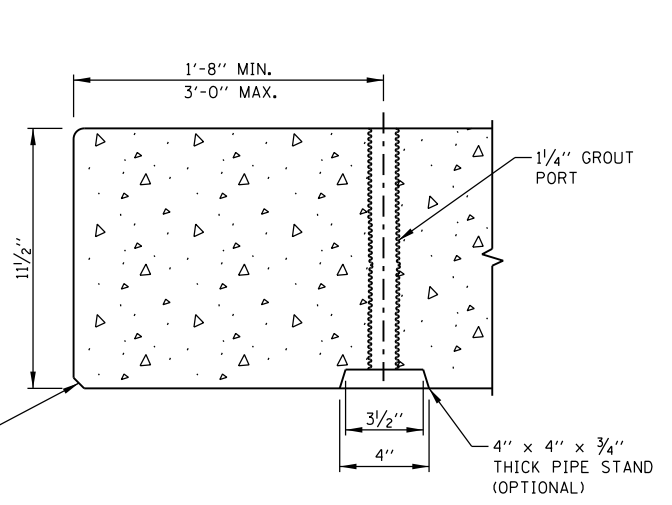
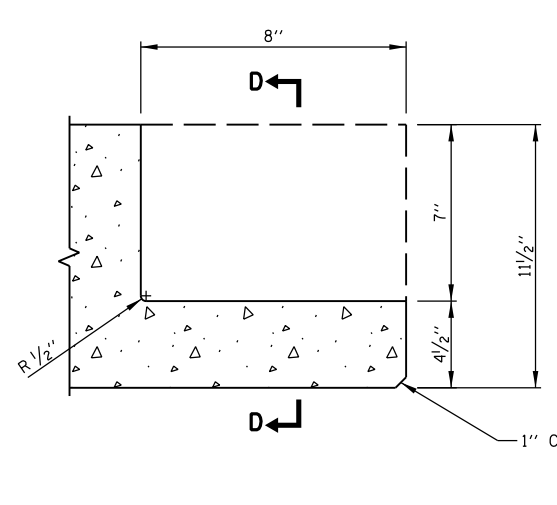
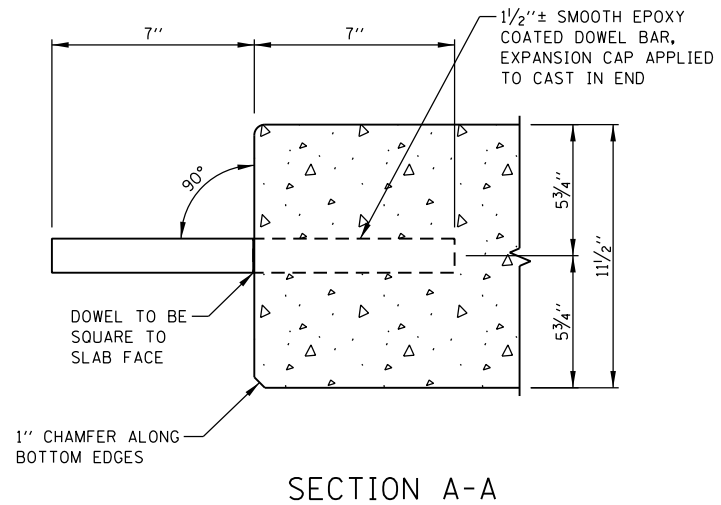
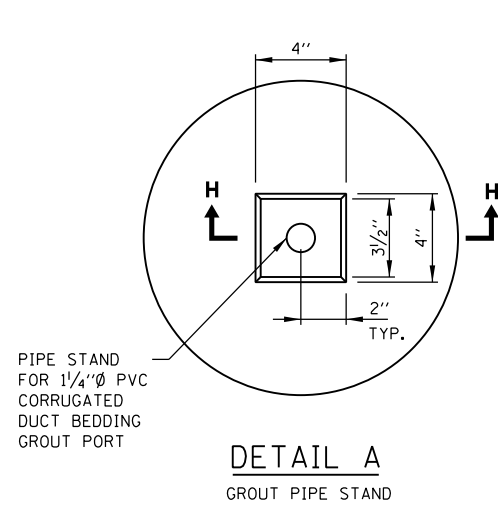
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

SHEET 6 OF 19



PRECAST PAVEMENT SLABS

STANDARD A18-02



**FABRICATION DETAILS**

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

SHEET 7 OF 19

PRECAST PAVEMENT SLABS

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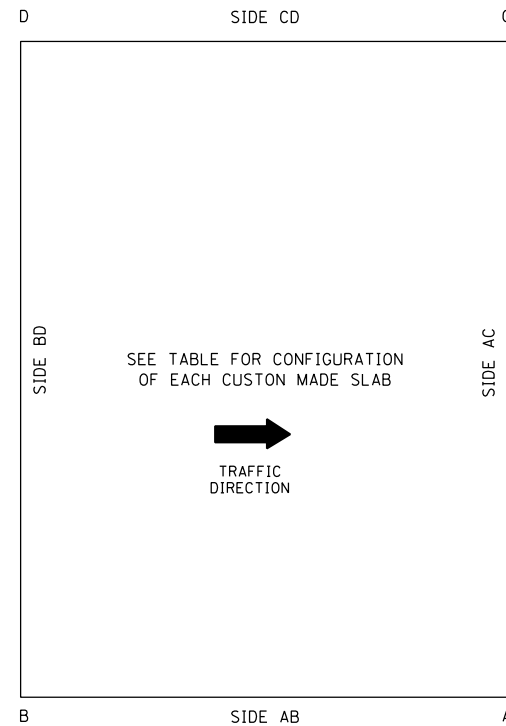
FOR NON STANDARD SLABS, UPON COMPLETION BY THE CONTRACTOR A SLAB LAYOUT WILL BE ADDED WITH SLAB DIMENSIONS TO INCLUDE BUT NOT BE LIMITED TO THE TABLE SHOWN BELOW.

EXAMPLE	CORRIDOR	STATION NUMBER	MAINLINE LANE NO.	RAMP ID.	RAMP LANE NO.	PLAZA NO.	PLAZA LANE NO.	MARK NO.	LANE TYPE	VARIABLES (FT.)				AB* SIDE	BD* SIDE	CD* SIDE	AC* SIDE	AREA (SQ.FT.)	VOLUME (CU. FT.)	WEIGHT (TONS)	DIAGONALS (FT.)	
										AB (FT.)	AC (FT.)	BD (FT.)	CD (FT.)								AD	BC

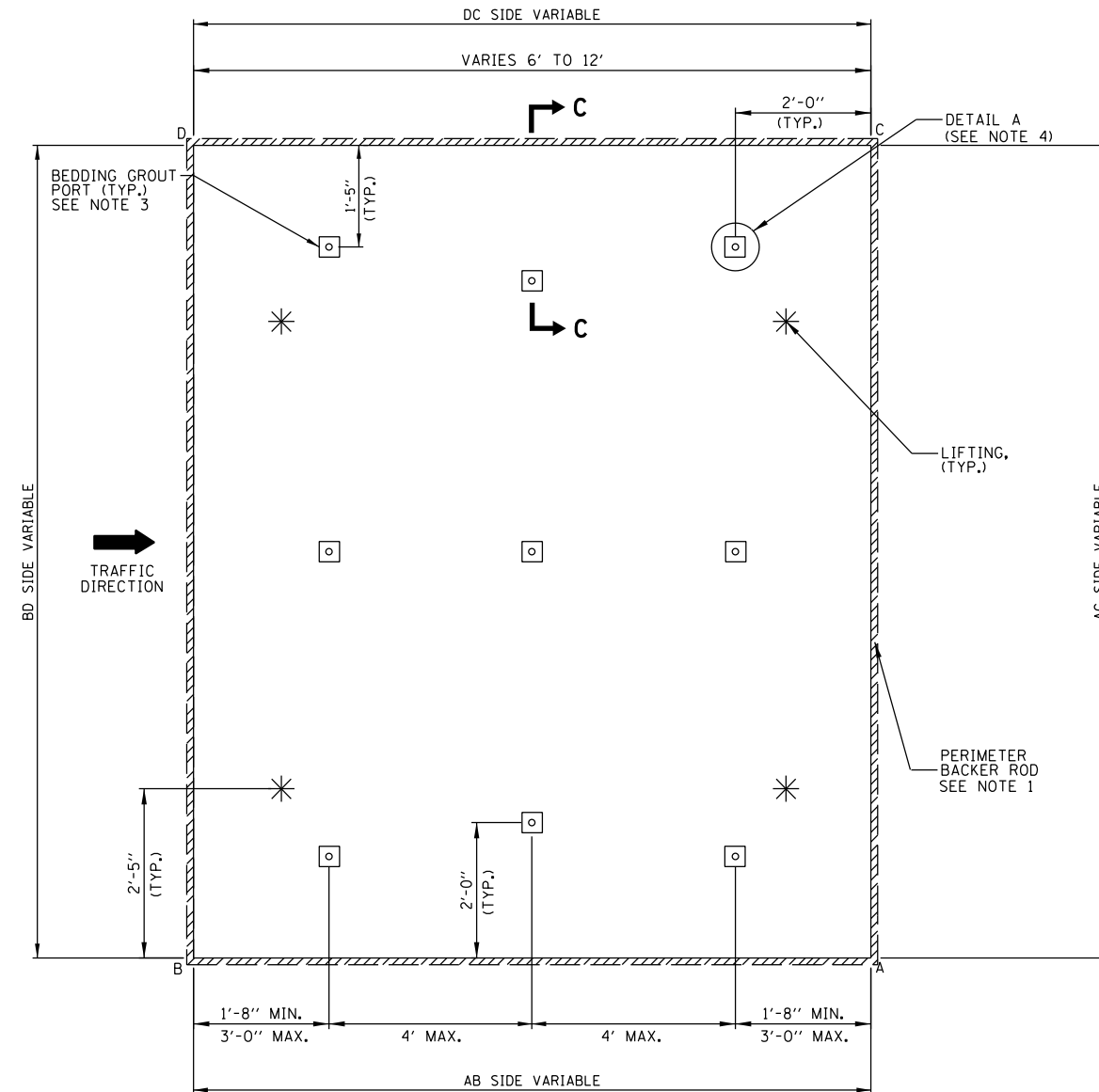
MAINLINE LANE NO.: LANE NO. 1 IS ADJACENT TO MEDIAN SHOULDER.  
 RAMP LANE NO.: LANE NO. 1 IS ADJACENT TO THE BUILDING  
 PLAZA LANE NO.: LANE NO. 1 IS ADJACENT TO THE BUILDING  
 MARK NO.: EACH PANEL SHALL BE INDIVIDUALLY MARKED FOR CORRECT PLACEMENT.  
 LANE TYPE: "OUT" IN THIS COLUMN INDICATES OUTSIDE LANE.  
 "MID" IN THIS COLUMN INDICATES MIDDLE LANE.  
 "IN" IN THIS COLUMN INDICATES INSIDE LANE  
 "PLAZA" IN THIS COLUMN INDICATES PLAZA LANE.

**\*LEGEND**

DB= DOWEL BAR EMBEDDED  
 DS= DOWEL SLOT  
 ST= SLOT OR HOLE FOR STITCHED TIE BAR  
 RD= FIELD RETROFITTED DOWEL BARS



**LAYOUT FOR CUSTOM SLABS**  
LAYOUT KEY



**LAYOUT DETAIL FOR CUSTOM SLABS 6'-12' IN LENGTH (VARIED WIDTH\*\*)**

\*\* FOR TRAPEZOID SLABS MINIMUM WIDTH IS 2 FT. WITH MAXIMUM WIDTH OF 16 FT.

**NOTES:**

1. A FOAM BACKER ROD SHALL BE PLACED AROUND THE OUTSIDE PERIMETER OF THE SLAB AT THE BOTTOM OF THE JOINTS BEFORE THE SLAB HAS BEEN SET AND BEFORE BEDDING GROUT OR POLYURETHANE LEVELING FILL IS APPLIED. THE BACKER ROD SHALL NOT BE REQUIRED WHEN ANY SLAB IS LEVELED WITH A FLOWABLE FILL.
2. EITHER SINGLE DIAMOND BLADED SAWS OR DIAMOND BLADED GANG SAWS SHALL BE USED TO MAKE THE SAW CUTS PERPENDICULAR TO THE TRANSVERSE (NSKEWED) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE SPECIFIED TOLERANCES.
3. SEE NOTE 8 ON SHEET 1 FOR LOCATING BEDDING GROUT PORTS.
4. SEE SHEET 7 FOR SECTION DETAILS.



## INSTALLATION GENERAL NOTES

### ALIGNMENT:

1. WHEN THE TRANSVERSE JOINTS OF ANY PRECAST SLAB CAN NOT BE ALIGNED WITH TRANSVERSE JOINTS IN ADJACENT LANES, A MINIMUM 2'-0" OFFSET BETWEEN JOINTS SHALL BE PROVIDED.
2. THE LONGITUDINAL JOINT OF ANY ISOLATED OR CONSECUTIVE STANDARD PRECAST SLAB MUST BE ALIGNED TO BE PARALLEL WITH EXISTING LONGITUDINAL JOINTS. NO LONGITUDINAL OFFSETS SHALL BE ALLOWED. THE WIDTH OF ANY OF THE STANDARD PRECAST SLABS SHALL BE SAW CUT ON-SITE TO BE ALIGNED WITH THE EXISTING LONGITUDINAL JOINTS IN ADJACENT LANES OF EXISTING CONCRETE PAVEMENTS. THE WIDTH OF THE PRECAST SLAB SHALL BE NO MORE THAN 1/2 INCH LESS THAN THE WIDTH OF THE EXISTING SLAB BEING REPLACED. IF A STANDARD SLAB DOES NOT COMPLY WITH TOLERANCES FOR MAXIMUM AND MINIMUM WIDTHS FOR A DESIGNATED LOCATION, THEN A CUSTOM SLAB SHALL BE REQUIRED TO BE PRODUCED AND PLACED.
3. THE TRANSVERSE JOINT OF ANY PRECAST SLAB SHALL BE NO LESS THAN 4'-0" DISTANCE FROM AN EXISTING TRANSVERSE JOINT THAT REMAINS, OR NO LESS THAN 2'-0" DISTANCE PAST ANY EXISTING TRANSVERSE JOINT THAT IS REMOVED AND REPLACED WITH A PRECAST SLAB.
4. PRIOR TO THE PLACEMENT OF AN ISOLATED STANDARD PRECAST SLAB IN A MIDDLE LANE, THE WIDTH BETWEEN EXISTING LONGITUDINAL CONCRETE PAVEMENT JOINTS SHALL BE MEASURED BY THE CONTRACTOR UNDER MAINTENANCE OF TRAFFIC PROVIDED BY THE CONTRACTOR. ONLY APPROXIMATE WIDTHS SHALL BE MEASURED BY AND PROVIDED BY THE DESIGNER FOR BIDDING PURPOSES. THE CONTRACTOR'S WIDTH MEASUREMENTS SHALL BE USED TO DETERMINE THE NEED FOR ANY ON-SITE SAWCUTS OF THE LONGITUDINAL EDGES TO FIT THE OPENING AND TO ALIGN THE SAW CUT EDGE(S) WITH ANY EXISTING LONGITUDINAL JOINTS. THE LONGITUDINAL EDGES OF ANY STANDARD SLAB SHALL NOT BE SAW CUT MORE THAN 6 INCHES OFF THE ORIGINAL EDGE. NO NEW LONGITUDINAL JOINT SHALL BE ALLOWED INSIDE THE EXISTING JOINT BY MORE THAN 3/8 INCH. IF THESE TOLERANCES CAN NOT BE MET, THEN A CUSTOM SLAB SHALL BE REQUIRED. FOR ISOLATED STANDARDS SLABS PLACED IN THE OUTSIDE OR INSIDE LANES, THE NEW CONCRETE LONGITUDINAL JOINT SHALL MATCH THE EXISTING JOINT. THE STANDARD PRECAST SLAB MAY EXTEND INTO THE EXISTING BITUMINOUS SHOULDERS NO MORE THAN 6 INCHES TO ALLOW FOR PROPER ALIGNMENT OF THE CONCRETE JOINTS. THE ONLY ALTERNATIVE TO ON-SITE SAW CUTTING OF ISOLATED STANDARD SIZES PRE-FABRICATED SLABS IS TO DESIGN AND FABRICATE EACH SLAB, TAKING WIDTH MEASUREMENTS AT THE BEGINNING OF A PROJECT AND THEN FABRICATING THE SLAB TO FIT THE SPECIFIC OPENING DIMENSIONS.
5. FOR STANDARD SLAB PLACEMENTS, A TEMPLATE SUPPLIED BY THE PRECAST FABRICATOR SHALL BE USED TO LOCATE THE PERIMETER SAW CUTS FOR THE SLAB. THE TEMPLATE MAY BE USED TO MARK LONGITUDINAL EDGE SAW CUT LOCATIONS ON A PRECAST SLAB TO FIT THE SAME PATCH OPENING THAT THE TEMPLATE WAS USED FOR TO LOCATE A PERIMETER SAW CUT. IF THE SLAB DOWEL BAR IS RETROFITTED OR FABRICATED FOR INSERTED DOWELS, THE TEMPLATE MAY ALSO BE USED FOR THE EMBEDDED /SLOTTED DOWEL BAR LOCATIONS TO BE RETROFITTED OR INSERTED INTO EXISTING PAVEMENT.

### LOAD TRANSFER:

6. ACROSS STANDARD SLABS
  - A. THE EMBEDDED DOWEL BARS OF ISOLATED STANDARD PRECAST SLABS SHALL BE RETROFITTED INTO EXISTING CONCRETE PAVEMENT IN ACCORDANCE WITH DETAIL D (SEE SHEET 14).
  - B. THE EMBEDDED DOWEL BARS OF CONSECUTIVE STANDARD SLABS SHALL BE:
    - i) RETROFITTED INTO THE EXISTING CONCRETE PAVEMENT AT THE LOCATION OF THE FIRST SLAB PLACEMENT IN ACCORDANCE WITH DETAIL D (SEE SHEET 14).
    - ii) RETROFITTED INTO THE PREFORMED SLOTS OF ADJACENT PRECAST SLABS IN ACCORDANCE WITH DETAIL E (SEE SHEET 15).
    - iii) EITHER FULLY RETROFITTED INTO THE PREFORMED SLOT OF THE LAST INSTALLED CONSECUTIVE PRECAST SLAB AND THE ADJACENT CONCRETE PAVEMENT IN ACCORDANCE WITH DETAIL F (SEE SHEET 16), OR PARTIALLY RETROFIT AN EMBEDDED DOWEL BAR OF A STANDARD ISOLATED SLAB INTO ADJACENT PAVEMENT AS THE LAST INSTALLED CONSECUTIVE PRECAST SLAB IN ACCORDANCE WITH DETAIL D (SEE SHEET 14).
  - C. FOR PRECAST STANDARD SLABS WITH NO EMBEDDED DOWEL BARS AND WITH NO NARROW MOUTH PREFORMED SLOTS FOR DOWEL INSERTIONS, THE DOWEL BARS SHALL BE FULLY RETROFITTED ACROSS ALL TRANSVERSE JOINTS IN THE FIELD IN ACCORDANCE WITH DETAIL C (SEE SHEET 13). THE LOCATIONS AND SPACING OF ALL FIELD RETROFITTED DOWEL BARS SHALL COMPLY WITH THE SPECIFIED TOLERANCES AS SHOWN ON SHEETS 4 AND 5.
  - D. FOR PRECAST STANDARD SLABS WITH LONG AND NARROW MOUTH PREFORMED SLOTS AS SHOWN ON SHEET 6, THE LOCATIONS FOR PREDRILLED HOLES FOR DOWEL BAR INSERTIONS SHALL BE ALIGNED WITH THE PREFORMED SLOTS IN THE SPECIFIC PANEL BEING PLACED. ONLY GANG DRILLS WILL BE USED TO DRILL THE HOLES. THE HOLES SHALL BE PARALLEL TO THE GRADE AND CENTERLINE OF THE PAVEMENT WITH A TOLERANCE OF 1/8 INCH IN 12 INCHES. THE DRILLING OPERATION SHALL NOT CRACK OR SPALL THE PAVEMENT. BEFORE SLAB PLACEMENT, THE DOWEL BARS SHALL BE PLACED WITHIN THE ELONGATED SLOTS AND THE PREDRILLED HOLES THOROUGHLY CLEANED OF DRILLING DEBRIS. AFTER SLAB PLACEMENT, THE DOWEL BARS WILL BE SLID INTO THE PREDRILLED HOLES AND EPOXIED IN ACCORDANCE WITH ARTICLE 442.06(a)(2) OF THE STANDARD SPECIFICATIONS WITH RETENTION DISKS OR WASHERS PLACED AGAINST THE FACE OF THE SLAB. SEE DETAIL G OF SHEET 17. IMMEDIATELY PRIOR TO FILLING THE PREFORMED SLOT WITH BACKFILL GROUT, THE EXPOSED ENDS OF THE DOWEL BARS SHALL BE CLEANED AND LIGHTLY OILED IN SUCH A MANNER AS TO NOT CONTAMINATE THE SURFACE OF ANY CLEANED SLOT AND THE FOAM CORE BOARD SHALL BE INSERTED AT THE FACE OF THE ADJACENT SLAB.

7. ACROSS CUSTOM MADE SLABS
  - A. THE DOWEL BARS OF CUSTOM DESIGNED PRECAST SLABS PLACED CONSECUTIVELY, PLACED ON WARPED GRADES, OR PLACED ON RAMPS SHALL BE FULLY RETROFITTED ACROSS THE JOINT IN THE FIELD IN ACCORDANCE WITH DETAIL C (SEE SHEET 13). FOR ALL SUCH CUSTOM SLABS, THE DOWELS BETWEEN ANY EXISTING CONCRETE PAVEMENT AND ANY ADJACENT PRECAST SLABS, AND BETWEEN CONSECUTIVELY PLACED CUSTOM PRECAST SLABS SHALL BE 1'-0" ON CENTER ACROSS THE ENTIRE JOINT.
  - B. THE DOWEL BARS OF CUSTOM DESIGNED ISOLATED PRECAST SLABS PLACED ON TANGENT MAINLINE PAVEMENT FOR MID SLAB CRACK REPAIR OR FOR JOINT REPLACEMENT CAN BE EITHER RETROFITTED ACROSS THE JOINT IN ACCORDANCE WITH DETAIL C (SEE SHEET 13), OR FULLY INSERTED INTO THE ADJACENT PAVEMENT IN ACCORDANCE WITH DETAIL G (SEE SHEET 17). THE LOCATIONS AND SPACING OF ALL FIELD RETROFITTED OR FIELD INSERTED DOWEL BARS SHALL COMPLY WITH THE SPECIFIED TOLERANCES AS SHOWN ON SHEETS 4 AND 5. FIELD INSERTION OF DOWEL BARS SHALL BE IN ACCORDANCE WITH NOTE 6(D) ABOVE.
  - C. NO END DOWEL BARS SHALL BE RETROFITTED OR INSERTED WITHIN 8" OR NO MORE THAN 1'-7" FROM THE CORNER OF THE PRECAST SLAB OR ADJOINING CONCRETE PAVEMENT SLAB THAT EXISTS.

### LONGITUDINAL TIE BAR STITCHING:

8. THE LOCATIONS OF LONGITUDINAL TIE BARS SHALL BE DETERMINED BASED ON THE CRITERIA THAT LONGITUDINAL TIES SHALL BE REQUIRED FOR ANY CLASS B FULL DEPTH REPAIR AND PRECAST REPAIR GREATER THAN 20 FT. IN LENGTH OR WITH ANY PRECAST REPAIR THAT REQUIRES MORE THAN 3 CONSECUTIVE PRECAST SLABS.
9. THE SPACING BETWEEN TIE BARS SHALL BE NO LESS THAN 24 INCHES. TIE BAR INSERTIONS SHALL BE NO LESS THAN 24 INCHES FROM ANY EXISTING TRANSVERSE JOINT OR FROM THE LOAD TRANSFER JOINTS OF ANY PLACED PRECAST SLAB OR CAST-IN-PLACE CONCRETE PATCH IN EITHER LANE ADJACENT TO THE LONGITUDINAL JOINT. THE PROCEDURE AND LOCATIONS FOR TIE BAR STITCHING SHALL BE IN ACCORDANCE WITH DETAIL H (SEE SHEET 19).

### MATERIALS:

10. FOR GRADE SUPPORTED PRECAST SLABS, THE BEDDING AND UNDERSEALING MATERIAL FOR LEVELING AND SUPPORT SHALL CONSIST OF:
  - A. LEVELING SAND SHALL BE 100% CRUSHED FINE AGGREGATE OF AN FA-6, FA-20, OR FA-21 GRADATION AS SPECIFIED IN SECTION 1003 OF THE STANDARD SPECIFICATIONS. THE FINE AGGREGATE SHALL BE REASONABLY FREE FROM AN EXCESS OF SOFT AND UNSOUND PARTICLES AND OTHER OBJECTIONABLE MATTER. THE TYPICAL THICKNESS OF THE LEVELING SAND LAYER SHALL BE APPROXIMATELY 1/4 INCH WITH A MAXIMUM THICKNESS OF 1 INCH.
  - B. FOR GRADE SUPPORTED SLABS, UNDERSEALING GROUT SHALL BE USED AFTER SLAB INSTALLATION TO FILL ALL VOIDS BENEATH THE PRECAST PANELS. THE MIXTURE USED FOR UNDERSEALING GROUT SHALL CONSIST OF PORTLAND CEMENT, FLY ASH, GROUND GRANULATED BLAST FURNACE SLAG (OPTIONAL), A SUPERPLASTICIZER, AND WATER ALL IN ACCORDANCE WITH DIVISION 1000 OF THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL SUBMIT THE PROPOSED MIX DESIGN FOR UNDERSEALING GROUT TO THE ENGINEER FOR TOLLWAY APPROVAL PRIOR TO PLACEMENT. THE UNDERSEALING GROUT PRODUCED SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
    - i) THE UNDERSEALING GROUT SHALL REMAIN FLUID AND NOT EXHIBIT A RESISTANCE TO FLOW FOR A MINIMUM OF ONE HOUR. THE GROUT MIXTURE SHALL HAVE A FLOW RATE OF 15 TO 25 SECONDS AS MEASURED BY ASTM C 939 TO ENSURE FLUIDITY.
    - ii) THE UNDERSEALING GROUT SHALL ACHIEVE AN INITIAL SET IN LESS THAN 4 HOURS AND A COMPRESSIVE STRENGTH AS MEASURED BY ASTM C 942 OF 300 PSI BEFORE OPENING THE SLAB TO TRAFFIC AND A COMPRESSIVE STRENGTH OF 500 PSI IN 12 HOURS.
11. FOR PRECAST SLABS SUPPORTED AND LEVELED BY FLOWABLE FILL PLACED BEFORE SLAB INSTALLATION, THE FLOWABLE FILL SHALL CONSIST OF PORTLAND CEMENT, FLY ASH, COARSE AND/OR FINE AGGREGATES, WATER, AND AIR ENTRAINING ADMIXTURE (OPTIONAL). THE CONTRACTOR SHALL SUBMIT THE PROPOSED MIX DESIGN FOR FLOWABLE FILL TO THE ENGINEER FOR TOLLWAY APPROVAL PRIOR TO PLACEMENT. THE FLOWABLE FILL PRODUCED SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
  - i) PORTLAND CEMENT SHALL BE TYPE 1 CEMENT IN ACCORDANCE WITH SECTION 1001 OF THE STANDARD SPECIFICATIONS.
  - ii) FLY ASH SHALL BE IN ACCORDANCE WITH SECTION 1010 OF THE STANDARD SPECIFICATIONS.
  - iii) FINE AGGREGATE SHALL BE IN ACCORDANCE WITH SECTION 1003 OF THE STANDARD SPECIFICATIONS.
  - iv) COARSE AGGREGATE, IF USED, SHALL BE IN ACCORDANCE WITH SECTION 1004 OF THE STANDARD SPECIFICATIONS WITH A MAXIMUM AGGREGATE SIZE OF 12.5 MM.
  - v) IF AN AIR ENTRAINMENT ADMIXTURE IS USED, THE AIR CONTENT OF THE FLOWABLE FILL SHALL NOT EXCEED 35% OF THE FLOWABLE FILL VOLUME.
  - vi) THE COMPRESSIVE STRENGTH OF THE FLOWABLE FILL MIXTURE SHALL NOT BE LESS THAN 50 PSI AT 3 DAYS, NOR LESS THAN 75 PSI OR GREATER THAN 150 PSI AT 28 DAYS.
  - vii) THE FINAL SET TIME SHALL BE DETERMINED IN ACCORDANCE WITH ASTM C403 ON A TRIAL BATCH SPECIMEN.
  - viii) THE MAXIMUM THICKNESS OF THE LEVELING FILL SHALL BE 1 INCH.

12. FOR PRECAST SLABS SUPPORTED AND LEVELED BY HIGH-DENSITY FOAM PLACED AFTER SLAB INSTALLATION, THE HIGH-DENSITY FOAM SHALL BE EXPANDING POLYURETHANE FOAM HAVING A WATER INSOLUBLE DILUENT AND SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
  - i) DENSITY (LBS./CU. FT.)-AIR RISE 6.0 MIN.  
TENSILE STRENGTH (PSI) ASTM D 1623 100 MIN.  
ELONGATION (%) 5.1  
COMPRESSIVE STRENGTH (PSI) ASTM D 1621 (AT YIELD) 100 MIN.  
VOLUME CHANGE (% OF ORIGINAL) 0  
THE MANUFACTURER SHALL PROVIDE DOCUMENTATION THAT THE LOT(S) OF FOAM MEETS THE SPECIFIED PROPERTIES. MANUFACTURER'S CERTIFICATION SHALL LIST LOT NUMBER(S) AND DOCUMENTATION OF COMPLIANCE WITH THE SPECIFICATION.
  - ii) THE MAXIMUM THICKNESS OF THE HIGH DENSITY FOAM SHALL BE 1 INCH.
13. HARDWARE GROUT/ADHESIVES
  - A. FOR DOWEL BAR RETROFITS OR INSERTIONS, FOR THE FILLING OF ANY GROUT PORT HOLES USED FOR HIGH DENSITY FOAM INJECTIONS, FOR THE FILLING OF DOWEL SLOTS AND FOR THE FILLING OF RECESSED LIFTING DEVICES, THE BACKFILL MATERIAL SHALL BE:
    - 1) FIVE STAR HIGHWAY PATCH AS MANUFACTURED BY FIVE STAR PRODUCTS INC. FAIRFIELD, CONNECTICUT.
    - 2) HIGHWAY DB RETROFIT MORTAR AS MANUFACTURED BY DAYTON SUPERIOR, MIAMISBURG, OHIO.
    - 3) A TOLLWAY APPROVED EQUIVALENT THAT HAS BEEN TESTED AS A RAPID SET CONCRETE PATCHING MATERIAL PER THE AASHTO NATIONAL TRANSPORTATION PRODUCT EVALUATION PROGRAM (NTPPEP), WHICH CONFORMS TO ASTM C 928. THE GROUT MATERIAL IS REQUIRED TO PROVIDE A COMPRESSIVE STRENGTH OF 4,000 PSI IN 24 HOURS (OPENING TO TRAFFIC AFTER 3,000 PSI) PER ASTM C 39, EXHIBITS EXPANSION OF LESS THAN 0.10 PERCENT PER ASTM C 531, AND HAS A CALCULATED DURABILITY FACTOR OF 90.0 PERCENT MINIMUM AT THE END OF 300 FREEZE-THAW CYCLES PER ASTM C 666. THE PROPOSED MATERIAL SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ANY PLACEMENT.
  - B. FOR TIE BAR STITCHING AN APPROVED CHEMICAL ADHESIVE IN ACCORDANCE WITH ARTICLE 1027.01 OF THE STANDARD SPECIFICATIONS SHALL BE USED AS THE ANCHORING MATERIAL FOR STITCHED TIE BARS.
  - C. FOR DOWEL BAR INSERTIONS, AN APPROVED CHEMICAL ADHESIVE OR EPOXY IN ACCORDANCE WITH ARTICLE 1027.01 OF THE STANDARD SPECIFICATIONS SHALL BE USED WITH PLACEMENT IN ACCORDANCE WITH ARTICLE 442.06 (a)(2) OF THE STANDARD SPECIFICATIONS WITH RETENTION DISCS OR WASHERS PLACED AGAINST THE FACE OF THE SLAB.
14. EPOXY COATED DOWEL BARS SHALL COMPLY WITH THE REQUIREMENTS OF ARTICLE 1006.06 (b) OF THE STANDARD SPECIFICATIONS. ANY ADDITIONAL MATERIAL REQUIRED FOR DOWEL BAR RETROFITTING SHALL BE IN ACCORDANCE WITH THE TOLLWAY SPECIAL PROVISION FOR "DOWEL BAR RETROFIT".
15. EPOXY COATED TIE BARS FOR STITCHING SHALL COMPLY WITH THE REQUIREMENTS OF ARTICLE 1006.10 OF THE STANDARD SPECIFICATIONS.
16. THE BACKER ROD USED AS A SEAL RESEVOIR GASKET AROUND THE PERIMETER OF A SLAB, NEAR THE TOP OF THE JOINTS, SHALL BE A CLOSED-CELL, PLASTIC FOAM ROD COMPATIBLE WITH THE SEALANT AND THE ELEVATED TEMPERATURES OF FINAL JOINT SEALANT APPLICATION. A CLOSED CELL PLASTIC FOAM BACKER ROD OF 3/8" DIAMETER SHALL BE PINNED OR NAILED TO THE FINISHED BASE AROUND THE PERIMETER OF EACH OPENING BEFORE THE PANELS ARE SET.

### EQUIPMENT:

17. FOR BASE PREPARATION, A MECHANICALLY-CONTROLLED SCREEDING DEVICE OR STRAIGHTEDGE DEVICE CAPABLE OF GRADING FULLY COMPACTED FINE AGGREGATE USED AS THE LEVELING SAND TO A TOLERANCE OF 1/8 INCH PER 6 FT. LENGTHS OF PLACEMENT.
18. CHIPPING HAMMERS SHALL BE HAND HELD AND HAVE A MAXIMUM WEIGHT OF 30 LBS. PRIOR TO ANY HANDLE MODIFICATION WHERE APPLICABLE.
19. WITH ANY FIELD RETROFITTING OF DOWEL BARS, A TEMPLATE SHALL BE ROUTINELY USED FOR ALL STANDARD SLABS IN ORDER TO LOCATE AND ALIGN THE SAWCUTS CONSISTENTLY. EITHER SINGLE DIAMOND BLADED SAWS OR DIAMOND BLADED GANG SAWS SHALL BE USED TO MAKE SAW CUTS PERPENDICULAR TO THE TRANSVERSE (NON-SKEWED) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE FOLLOWING TOLERANCES:
  - ± 1/2 INCH OF THE MIDDLE OF THE CONCRETE SLAB DEPTH.
  - ± 1/2 INCH OF BEING CENTERED OVER THE TRANSVERSE JOINT
  - ± 1/4" FROM PARALLEL TO THE CENTERLINE OVER 12 INCHES OF THE BAR
  - ± 1/4" FROM PARALLEL TO THE ROADWAY SURFACE OVER 12 INCHES OF THE BARSAWCUTS SAWED ACROSS SKEWED JOINTS SHOULD ALLOW EQUAL LENGTH OF THE DOWEL BAR TO BE PLACED ACROSS THE TRANSVERSE JOINT. THE ALIGNMENT OF SAWCUTS MUST BE PARALLEL TO THE ROADWAY CENTERLINE, REGARDLESS OF TRANSVERSE JOINT SKEW.

SHEET 9 OF 19



PRECAST PAVEMENT SLAB

STANDARD A18-02

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

## INSTALLATION GENERAL NOTES

20. WITH ANY FIELD INSERTIONS OF DOWEL BARS INTO PREDRILLED HOLES, THE DRILLING MACHINE SHALL BE IN ACCORDANCE WITH ARTICLE 442.03(g) OF THE STANDARD SPECIFICATIONS. HAND HELD DRILLING TOOLS WILL NOT BE ALLOWED.
21. THE COMPRESSOR FOR AIR BLASTING SHALL HAVE A MINIMUM CAPACITY OF 120 CFM. THE COMPRESSED AIR SHALL BE FREE FROM OIL AND OTHER CONTAMINANTS.
22. CONSOLIDATION EQUIPMENT USED TO CONSOLIDATE THE CONCRETE REPAIR MATERIAL IN THE RETROFITTED DOWEL BAR SLOTS SHALL BE INTERNAL VIBRATORS WITH A MAXIMUM DIAMETER OF 1 INCH AND SHALL HAVE A RESILIENT COVERING THAT WILL NOT DAMAGE THE EPOXY COATED REINFORCEMENT DURING USE. ANY VIBRATORS OR RODS USED FOR CONSOLIDATION OF THE REPAIR MATERIAL FOR NARROW MOUTH SLOTS SHALL HAVE A DIAMETER OF LESS THAN 1 INCH.
23. BATCHING EQUIPMENT FOR FLOWABLE FILL SHALL HAVE DEVICES DESIGNED TO MEASURE THE SPECIFIED QUANTITIES OF EACH COMPONENT MATERIAL, AND MIXING SHALL BE OF SUFFICIENT DURATION TO INSURE UNIFORM CONSISTENCY OF THE MIXTURE. NO WATER WILL BE ADDED TO THE FLOWABLE FILL MIXTURE AFTER BATCHING. WATER CONTENT SHALL BE MAINTAINED SUCH THAT COMPRESSIVE STRENGTHS ARE ACHIEVED AND A UNIFORM, FLOWABLE MIXTURE IS DEVELOPED THAT IS ESSENTIALLY SELF-LEVELLING WHEN PLACED.
24. EQUIPMENT FOR HIGH-DENSITY FOAM INJECTION SHALL INCLUDE A TRUCK MOUNTED PUMPING UNIT CAPABLE OF INJECTING THE POLYURETHANE BETWEEN THE CONCRETE AND THE SLAB SUBBASE. THE PUMP SHALL BE CAPABLE OF CONTROLLING THE RATE OF RISE OF THE PAVEMENT SLAB, A LEVELING UNIT SHALL BE PROVIDED TO ENSURE THE SLABS ARE RAISED TO AN EVEN PLANE, WITH VERTICAL ELEVATION DIFFERENCE ACROSS ANY CORNER NOT TO EXCEED 1/4 INCH.
25. EQUIPMENT FOR MIXING AND PUMPING ANY GROUT/ADHESIVE MATERIALS FOR BEDDING THE SLABS, RETROFITTING DOWEL BARS, OR CROSS STITCHING TIE BARS SHALL BE IN ACCORDANCE WITH THE MATERIAL MANUFACTURER'S INSTRUCTIONS AND THE SPECIFICATIONS.

### REMOVAL/INSTALLATION:

26. PERIMETER SAWCUTTING OF THE REMOVAL AREA AND SAWCUTTING OF THE DOWEL BAR SLOTS SHALL NOT BE CARRIED OUT MORE THAN (1) WEEK IN ADVANCE OF THE EXPECTED DATE OF REPAIR. THE CONTRACTOR SHALL USE A TEMPLATE TO PRECISELY DELINEATE THE LIMITS OF THE AREAS TO BE REPAIRED AS DEFINED ON THE CONTRACT DOCUMENTS AND APPROVED SHOP DRAWINGS. WITHIN A TOLERANCE OF 1/2 INCH, REPAIRS SHALL BE NO LESS THAN THE FULL WIDTH OF A LANE AND THE FULL DEPTH OF CONCRETE.
27. REMOVAL OF EXISTING PAVEMENT SHALL BE IN ACCORDANCE WITH SECTION 440 OF THE STANDARD SPECIFICATIONS EXCEPT AS FOLLOWS:
  - A. THE OUTER LIMITS OF THE REPAIR AREA WILL BE SAWCUT FULL DEPTH AND SHALL NOT EXTEND (OVERCUT) BY MORE THAN 10 INCHES INTO THE ADJACENT CONCRETE THAT IS TO REMAIN IN PLACE. OVERCUTS SHALL BE FILLED WITH A PRODUCT ACCEPTABLE TO THE TOLLWAY. THE OUTER LIMITS FOR REPAIR SHALL BE MARKED OUT BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO ANY SAWCUTTING.
  - B. REMOVAL OF CONCRETE WITHIN THE PERIMETER SAWCUTS SHALL BE BY THE LIFT-OUT METHOD, AND CONCRETE BETWEEN SAWCUTS FOR DOWEL BAR RETROFITS SHALL BE REMOVED USING JACKHAMMER AND HAND TOOLS. THE CONTRACTOR SHALL ENSURE THAT REMOVALS ARE CARRIED OUT WITHOUT DAMAGING THE ADJACENT CONCRETE PAVEMENT OR ASPHALT SHOULDER OR DISTURBING THE UNDERLYING BASE. HEAVY BREAKING EQUIPMENT SUCH AS HOE RAMS SHALL NOT BE USED IN THE REMOVAL OPERATION. THE CONCRETE PAVEMENT SHALL NOT BE BROKEN IN PLACE.
  - C. IF DURING THE REMOVAL PROCESS THE ADJACENT CONCRETE IN THE SAME LANE OR IN AN ADJACENT LANE THAT CAN ONLY BE REPAIRED DURING NIGHT TIME LANE CLOSURES, IS DAMAGED OR CRACKED DUE TO THE CONTRACTOR'S REMOVAL PROCEDURE, THE DAMAGED AREA SHALL BE CUT BACK FULL DEPTH TO SOUND CONCRETE AND REPLACED WITH PRECAST SLABS AT THE CONTRACTOR'S EXPENSE. IF CONCRETE IN THE ADJOINING LANE IS DAMAGED DURING THE REMOVAL PROCESS AND WEEKEND REPAIRS ARE POSSIBLE, THE DAMAGED CONCRETE SHALL BE REPAIRED IN ACCORDANCE SECTION 442 OF THE STANDARD SPECIFICATIONS AT THE CONTRACTOR'S EXPENSE. ASPHALT SHOULDER DAMAGED DURING THE REMOVAL PROCESS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL PROVIDE A PROPOSAL FOR REPAIRS TO THE TOLLWAY FOR APPROVAL.
  - D. DISPOSAL OF EXCAVATED MATERIALS FROM THE REMOVAL OF CONCRETE AND FROM ANY BASE COURSE RESTORATION SHALL BE IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF ARTICLE 202.03 OF THE STANDARD SPECIFICATIONS AT THE CONTRACTOR'S EXPENSE.
  - E. ALL SLURRY FROM SAW CUTTING OPERATIONS SHALL BE THOROUGHLY SCRAPPED AND REMOVED FROM THE PAVEMENT SURFACE BEFORE THE PAVEMENT IS OPENED TO TRAFFIC. DISPOSAL OF SLURRY SHALL BE IN ACCORDANCE WITH ARTICLE 202.03 OF THE STANDARD SPECIFICATIONS AT THE CONTRACTORS EXPENSE.
28. IF THE ENGINEER DETERMINES THAT THE EXISTING GRANULAR SUBBASE IS UNSUITABLE FOR THE INTENDED PURPOSE, THE CONTRACTOR SHALL REMOVE THE UNSUITABLE MATERIAL IN THE PAVEMENT REMOVAL AREAS TO THE DEPTH SPECIFIED BY THE ENGINEER AND NO LESS THAN 2 INCHES. THE MATERIAL REMOVED SHALL BE REPLACED WITH AN EQUAL THICKNESS OF NEW MATERIAL PLACED AND COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE TOLLWAY SPECIAL PROVISION FOR "AGGREGATE FOR BASE COURSE RESTORATION, SPECIAL".
29. LEVELING MATERIAL PLACED BEFORE SLAB INSTALLATION SHALL BE EITHER A FLOWABLE FILL OR A FINE AGGREGATE MEETING THE REQUIREMENTS OF THIS CONTRACT DOCUMENT.

FLOWABLE FILL SHALL BE USED AS A LEVELING MATERIAL ONLY ON TANGENT PAVEMENT SECTIONS. GRADE CONTROL SHALL BE ESTABLISHED FOR ALL LEVELING MATERIAL USING STRINGLINES, LASER GUIDANCE, OR OTHER APPROVED METHODS. THE TEMPERATURE OF THE FLOWABLE FILL MIXTURE AS MANUFACTURED AND DELIVERED SHALL BE AT LEAST 50°F. NO FLOWABLE FILL WILL BE ALLOWED IF THE ANTICIPATED AIR TEMPERATURE WILL BE 36°F OR LESS WITHIN 24 HOURS OF SLAB PLACEMENT. THE FLOWABLE FILL MUST OBTAIN FINAL SET BEFORE THE PAVEMENT MAY BE OPENED TO TRAFFIC.

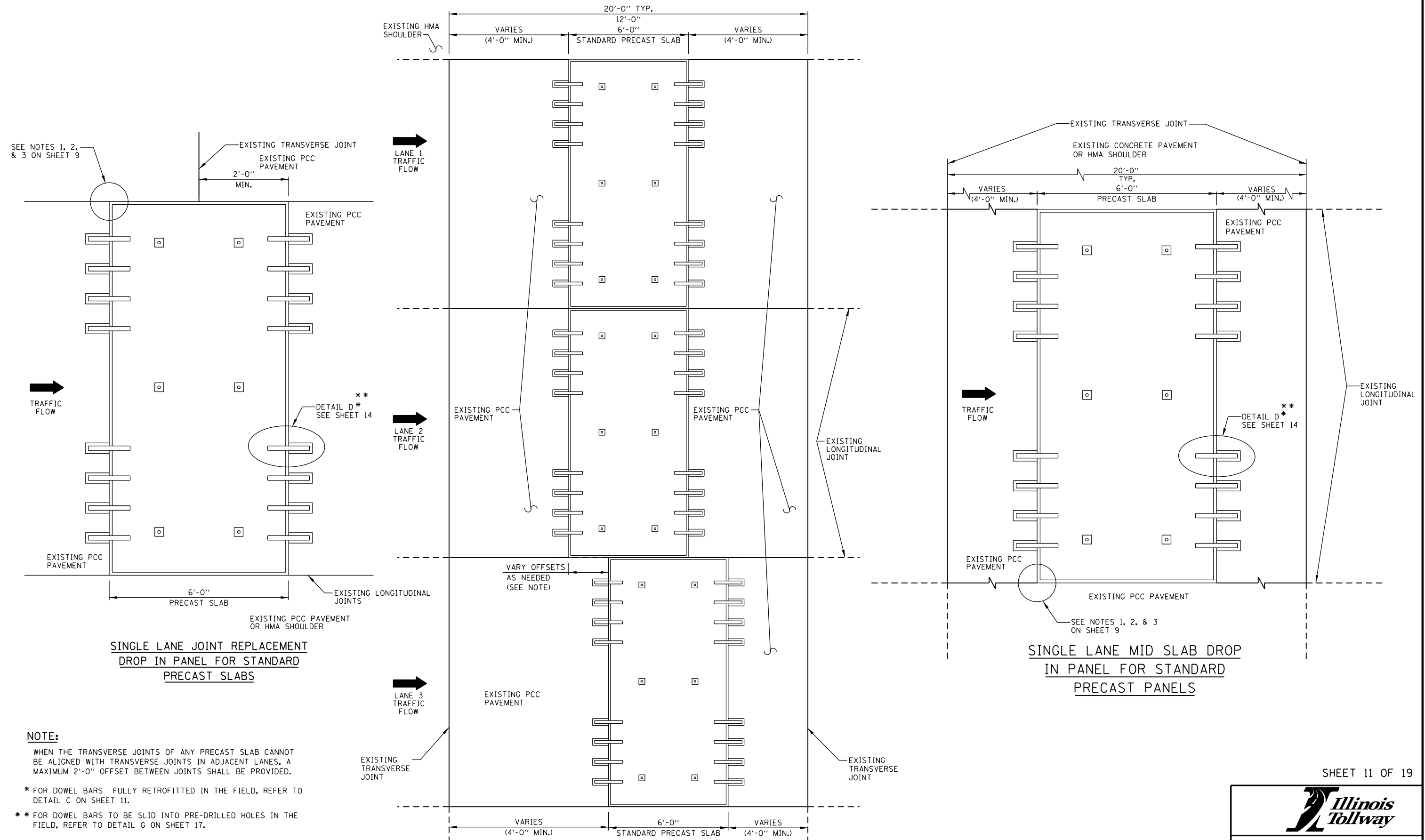
30. WHEN FLOWABLE FILL IS USED AS THE LEVELING MATERIAL WITH SLAB INSTALLATION, A PERIMETER BACKER ROD WILL NOT BE REQUIRED AROUND THE PERIMETER OF THE SLAB.
31. LEVELING MATERIAL PLACED IMMEDIATELY AFTER SLAB INSTALLATION SHALL ONLY BE A HIGH-DENSITY POLYURETHANE FOAM MEETING THE REQUIREMENTS OF THIS CONTRACT DOCUMENT. PLACEMENT OF POLYURETHANE FOAM SHALL FILL ALL VOIDS BENEATH THE PRECAST PANELS THAT MAY BE PRESENT AFTER PLACING THE PANELS OVER THE PREPARED SUBBASE AND LEVELING AGGREGATE. PLACEMENT OF THE POLYURETHANE SHALL UTILIZE THE UNDERSLAB GROUT PORT HOLES AS SHOWN ON THE PLANS. THE PORT HOLES ARE TO BE FILLED WITH THE DOWEL BAR BACKFILLING MATERIAL.
32. FOLLOWING PROPER REMOVAL OF EXISTING PAVEMENTS AND ACCEPTABLE BASE PREPARATION/LEVELING, THE CONTRACTOR SHALL HAVE ALL EQUIPMENT REQUIRED FOR PANEL INSTALLATION ON-SITE PRIOR TO BEGINNING PANEL INSTALLATION. LIFTING AND TRANSPORTING EQUIPMENT SHALL NOT DAMAGE THE PREPARED SUBBASE/LEVELING MATERIALS PRIOR TO OR DURING PANEL INSTALLATION. PRIOR TO SLAB INSTALLATION, ALL VERTICAL SURFACES OF SURROUNDING PAVEMENT SHALL BE COATED WITH A BOND BREAKER SUCH AS FORM OIL OR A CURING COMPOUND.
33. PANELS SHALL BE INSTALLED ONE AT A TIME, AND SHALL BE INSTALLED IN SUCH A MANNER THAT THE SUBBASE/LEVELING MATERIAL OR ANY REMAINING PAVEMENT IS NOT DAMAGED DURING INSTALLATION. DURING PLACEMENT OF THE SLABS, USE TIE OFF ROPES TO AVOID CHIPPING OR SPALLING EDGES OF THE PRECAST UNITS. USE WOOD SHIMS OR WEDGES TO GUIDE THE SLAB INTO THE CORRECT POSITION. THE USE OF STEEL PLY BARS THAT CHIP EDGES SHOULD BE AVOIDED.
34. IMMEDIATELY AFTER THE SLAB HAS BEEN SET AND LEVELED, SURVEY THE VERTICAL ELEVATION ACROSS ALL CORNERS TO VERIFY THAT THE VERTICAL DIFFERENCE BETWEEN ADJACENT SLABS ACROSS ANY CORNER DOES NOT EXCEED 1/4 INCH. IF THE DIFFERENCE EXCEEDS 1/4 INCH, THEN THE SLAB SHALL BE REMOVED AND RESET OR THE SURFACE SHALL RECEIVE A CORRECTIVE DIAMOND GRIND AT THE CONTRACTORS EXPENSE AFTER ANY REQUIRED BEDDING GROUT OR LEVELING MATERIAL HAS BEEN PLACED UNLESS COMPLETE PROFILE DIAMOND GRINDING OF THE ENTIRE PAVEMENT IS INCLUDED IN THE CONTRACT.
35. NO CUSTOM SLAB GREATER THAN 6 FT. IN LONGITUDINAL LENGTH SHALL BE SET AND OPENED TO TRAFFIC BEFORE GROUTING IS COMPLETE UNLESS THE SLAB WAS FABRICATED WITH TWO MATS OF STEEL REINFORCEMENT IN ACCORDANCE WITH THE DESIGN REQUIREMENTS SHOWN ON SHEETS 2 AND 3. IF THE SET PRECAST SLAB IS OPENED TO TRAFFIC BEFORE THE SLAB IS DOWEL RETROFITTED, TIE BAR STITCHED, OR UNDERSLAB GROUTED, PLACE INCOMPRESSIBLE SHIMS APPROVED BY THE ENGINEER DURING INSTALLATION IN EACH TRANSVERSE AND LONGITUDINAL JOINT TO CORRECT AND MAINTAIN HORIZONTAL ALIGNMENT OF THE SLABS. THE TOTAL THICKNESS OF SHIMS USED IN ANY JOINT SHALL BE NO MORE THAN 3/8 INCH. BACKFILL MATERIAL MUST BE PLACED THREE DAYS OF EACH SLAB'S PLACEMENT. BEFORE OPENING A NON-GROUTED SLAB TO TRAFFIC, BACKFILL THE ASPHALT SHOULDERS TO MAINTAIN HORIZONTAL ALIGNMENT. ANY WIDE MOUTH DOWEL SLOTS LEFT OPEN BEFORE THE SLAB IS OPENED TO TRAFFIC SHALL BE TEMPORARILY FILLED WITH A COMPRESSION SEAL APPROVED BY THE ENGINEER TO WITHIN 1 INCH OF THE PAVEMENT SURFACE. ANY NARROW MOUTH DOWEL SLOTS MAY BE LEFT OPEN AFTER THE SLAB IS OPENED TO TRAFFIC.
36. PRIOR TO DOWEL BAR PLACEMENT, THE TRANSVERSE JOINT SHALL BE CAULKED WITH A SILICONE SEALANT AT THE BOTTOM AND SIDES OF THE SLOT. THE CAULKING FILLER SHOULD NOT BE PLACED ANY FARTHER THAN 1/2 INCH OUTSIDE EITHER SIDE OF THE JOINT, AND APPLIED SUFFICIENTLY TO PREVENT ANY PATCHING MATERIAL FROM ENTERING THE JOINT AT THE BOTTOM OR SIDES OF THE SLOT. EXCESSIVE SEALANT AROUND THE SLOT DOES NOT ALLOW THE CONCRETE PATCHING MATERIAL TO BOND TO THE SIDES OF THE SLOT. BEFORE PLACEMENT, THE DOWEL BARS SHOULD BE LIGHTLY COATED WITH PARTING COMPOUND AND FULLY RETROFITTED DOWEL BARS PLACED ON A CHAIR THAT WILL PROVIDE A MINIMUM 1/2 INCH CLEARANCE BETWEEN THE BOTTOM OF THE DOWEL AND THE BOTTOM OF THE SLOT. FOR ANY DOWEL BARS INSERTED INTO PREDRILLED EPOXIED HOLES, AN APPARATUS CAPABLE OF MAINTAINING VERTICAL ALIGNMENT OF THE DOWEL AND TO PROVIDE A MINIMUM 1/2 INCH CLEARANCE BETWEEN THE BOTTOM OF THE DOWEL AND THE BOTTOM OF THE SLOT SHALL BE PROVIDED BY THE CONTRACTOR. A 3/8 INCH THICK FOAM INSERT SHOULD BE PLACED AT THE MIDDLE OF THE DOWEL TO MAINTAIN THE TRANSVERSE JOINT. THE FOAM INSERT SHOULD FIT TIGHTLY AROUND THE DOWEL, THE BOTTOM, AND THE EDGES OF THE SLOT, AND BE UP TO THE SURFACE OF THE EXISTING CONCRETE SURFACE. THE FOAM INSERT SHOULD BE CAPABLE OF REMAINING IN A VERTICAL POSITION AND HELD TIGHTLY TO ALL EDGES DURING PLACEMENT OF THE PATCH. IF FOR ANY REASON THE FOAM INSERT SHIFTS DURING PLACEMENT OF THE CONCRETE PATCHING MATERIAL, THE WORK SHALL BE REJECTED AND REDONE AT THE CONTRACTOR'S EXPENSE.
37. PLACEMENT OF HARDWARE GROUT/ADHESIVES
  - A. DOWEL BARS - THE PLACEMENT OF ANY APPROVED BACKFILL MATERIAL FOR DOWEL BAR RETROFITTING OR FOR DOWEL BAR INSERTIONS SHALL BE IN ACCORDANCE WITH THE TOLLWAY SPECIAL PROVISION FOR "DOWEL BAR RETROFIT". THE PAVEMENT WILL NOT BE OPENED TO TRAFFIC UNTIL THE BACKFILL MATERIAL AROUND THE PAVEMENT HARDWARE OBTAINS 3,000 PSI COMPRESSIVE STRENGTH. ALL CONCRETE SURFACES WITHIN THE SLOT SHALL BE SOLID, FREE FROM LOOSE OR UNSOUND FRAGMENTS.

BEFORE GROUTING, SANDBLAST ALL EXPOSED SURFACES IN THE DOWEL BAR SLOT FOLLOWED BY AIR BLASTING TO REMOVE ANY DUST, RESIDUE OR DEBRIS LEFT IN THE SLOT. UPON COMPLETION OF THE RETROFITTING WORK, THE GROUT OR CONCRETE PATCH MATERIAL SHALL FILL ALL SLOTS TO THE SURFACE OF THE EXISTING PAVEMENTS. ANY SLOTS INSUFFICIENTLY FILLED BELOW EXISTING PAVEMENT SURFACES SHALL BE REDONE AT THE CONTRACTOR'S EXPENSE.

- B. TIE BARS - A FOAM BOARD GASKET SHALL BE INSERTED INTO THE LONGITUDINAL JOINT AT THE STITCHING LOCATION AND THE TIEBAR HOLE PREDRILLED THROUGH THE GASKET. AFTER PREDRILLED HOLES ARE AIR BLASTED, PRESSURE INJECT THE APPROVED ADHESIVE INTO THE PREDRILLED HOLES, LEAVING SOME VOLUME FOR THE BAR TO OCCUPY THE HOLE. INSERT THE TIEBAR INTO THE HOLE, LEAVING ABOUT 1 INCH FROM THE TOP OF THE TIE BAR TO THE PAVEMENT SURFACE. REMOVE EXCESS ADHESIVE AND FINISH FLUSH WITH THE PAVEMENT SURFACE.
- C. FILL LIFTING INSERT HOLES AND GROUT PORTS WITH THE APPROVED GROUT USED FOR DOWEL BAR RETROFITTING.
38. PLACEMENT OF UNDERSEALING GROUT SHALL FILL ALL VOIDS BENEATH THE PRECAST PANELS AND GROUT PORT HOLES THAT MAY BE PRESENT AFTER PLACING THE PANELS OVER THE PREPARED SUBBASE AND LEVELING AGGREGATE. PLACEMENT OF THE UNDERSEALING GROUT SHALL UTILIZE THE UNDERSLAB GROUT PORT HOLES AS SHOWN ON THE PLANS. PLACEMENT OF UNDERSEALING GROUT SHALL NOT OCCUR UNTIL AFTER ALL HARDWARE DEVICES ARE PLACED AND GROUTED. IF UNDERSEALING GROUT FILLS ANY LONGITUDINAL JOINT TO WITHIN 9" OF THE SLAB SURFACE, A 9" SAW CUT OF THE JOINT SHALL BE REQUIRED DURING INSTALLATION. IF UNDERSEALING GROUT FILLS ANY TRANSVERSE JOINT TO WITHIN 9" OF THE SLAB SURFACE, THEN A 9" SAW CUT OF THE JOINT SHALL BE REQUIRED FOLLOWED BY REMOVAL AND FULL RETROFITTING OF ALL SEVERED DOWEL BARS ACROSS THE JOINT.
39. AFTER INSTALLATION AND GROUTING IS COMPLETED ALL LONGITUDINAL AND TRANSVERSE JOINTS SHALL BE SEALED IN ACCORDANCE WITH ARTICLE 420.12. REFER TO TOLLWAY STANDARD DRAWING A1, DETAIL A.



# INSTALLATION OF ISOLATED STANDARD PRECAST SLABS



**SINGLE LANE JOINT REPLACEMENT  
DROP IN PANEL FOR STANDARD  
PRECAST SLABS**

**SINGLE LANE MID SLAB DROP  
IN PANEL FOR STANDARD  
PRECAST PANELS**

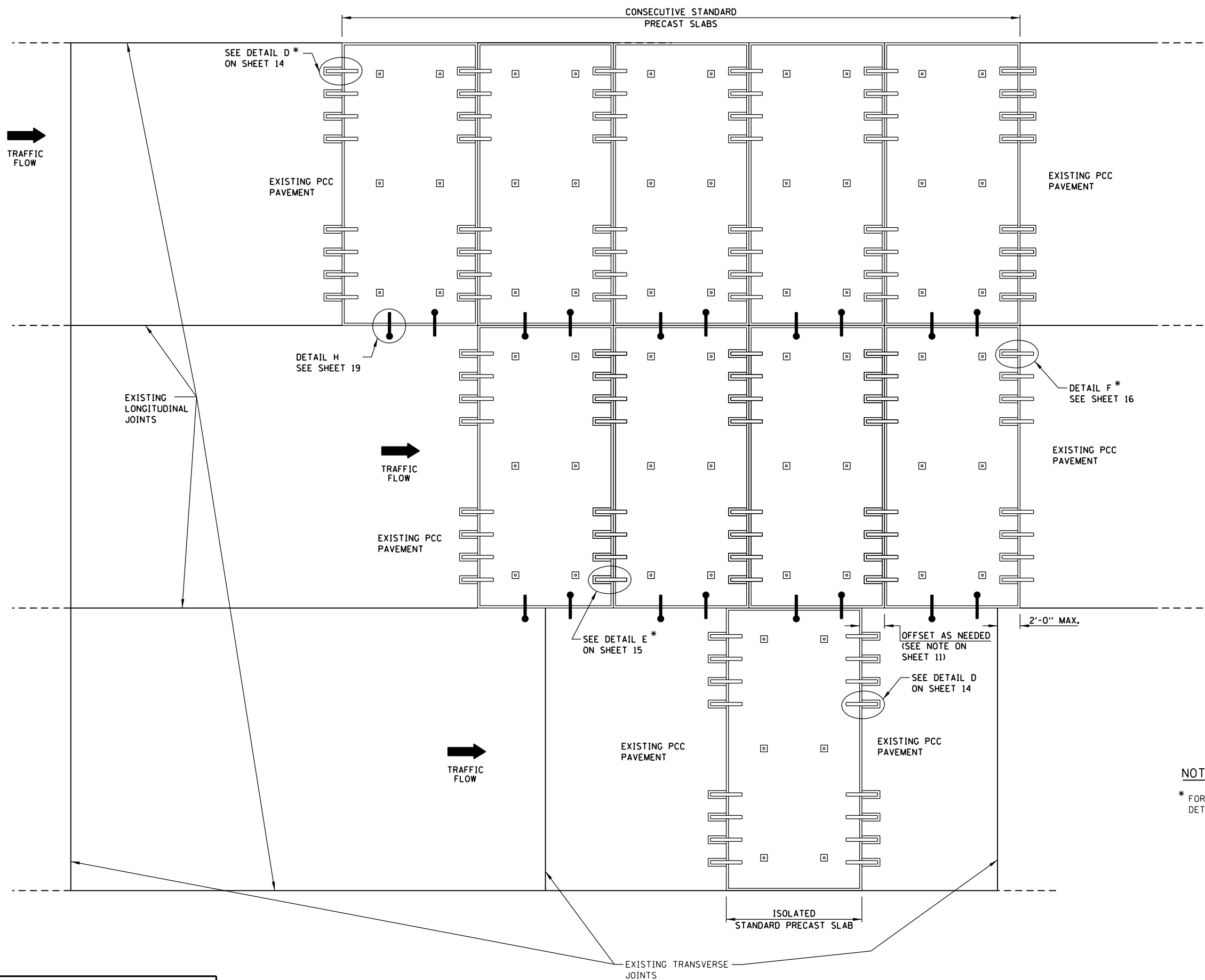
**MULTIPLE LANE MID SLAB DROP IN PANEL  
FOR STANDARD PRECAST PANELS**

**NOTE:**

- WHEN THE TRANSVERSE JOINTS OF ANY PRECAST SLAB CANNOT BE ALIGNED WITH TRANSVERSE JOINTS IN ADJACENT LANES, A MAXIMUM 2'-0" OFFSET BETWEEN JOINTS SHALL BE PROVIDED.
- \* FOR DOWEL BARS FULLY RETROFITTED IN THE FIELD, REFER TO DETAIL C ON SHEET 11.
- \*\* FOR DOWEL BARS TO BE SLID INTO PRE-DRILLED HOLES IN THE FIELD, REFER TO DETAIL G ON SHEET 17.

*Paul Kovacs*  
 APPROVED ..... CHIEF ENGINEER ..... DATE 5-1-2009






**NOTE:**

\* FOR DOWEL BARS FULLY RETROFITTED IN THE FIELD, REFER TO DETAIL C ON SHEET 13.



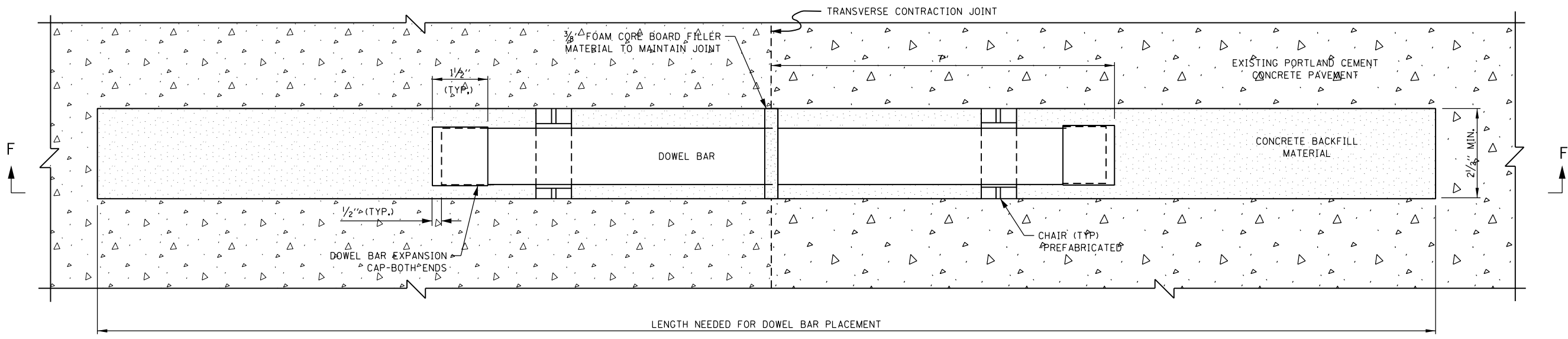
PRECAST PAVEMENT SLABS

STANDARD A18-02

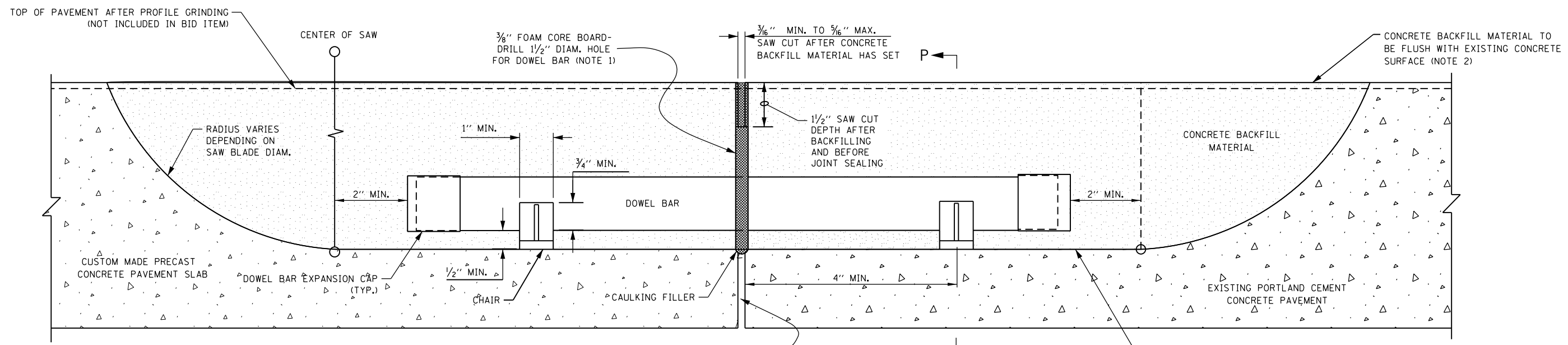
  
 APPROVED ..... CHIEF ENGINEER ..... DATE 5-1-2009

INSTALLATION OF CONSECUTIVE STANDARD PRECAST SLABS

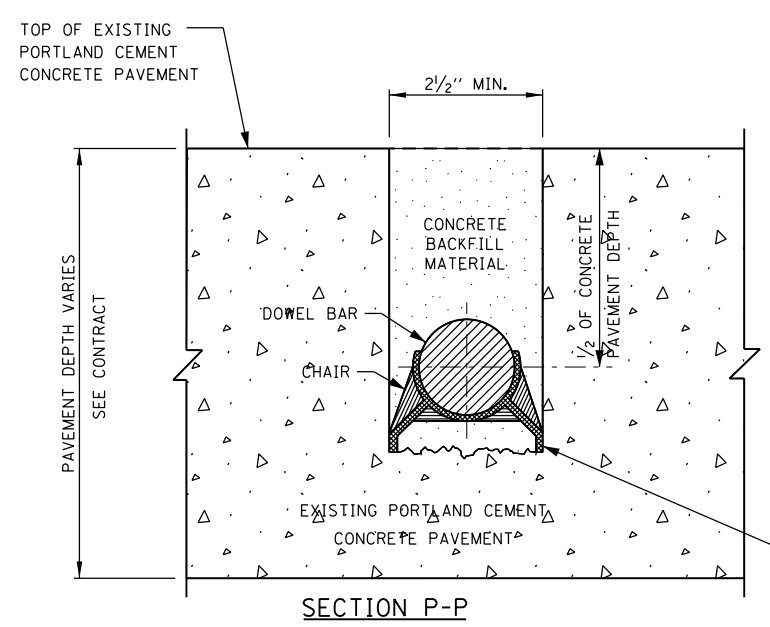




PLAN VIEW

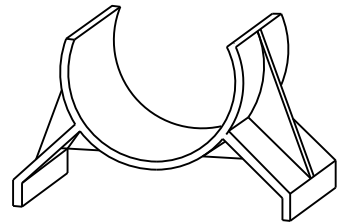


SECTION F-F



SECTION P-P

DETAIL-C, WIDE MOUTH DOWEL BAR PLACEMENT DETAIL FOR ALL CUSTOM MADE PRECAST PANELS AND OPTIONAL FOR STANDARD SLABS



CHAIR DETAIL

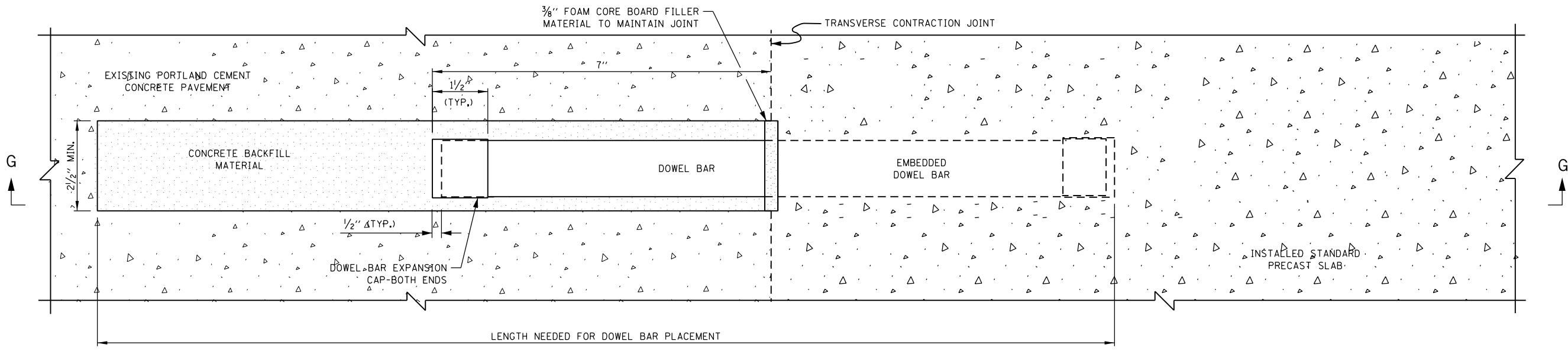
- NOTES:**
1. PLACE FOAM CORE BOARDS TO THE TOP OF PATCH.
  2. UPON COMPLETION, THE FINISHED SURFACE OF THE CONCRETE BACKFILL MATERIAL SHALL NOT BE BELOW EXISTING CONCRETE SURFACE.

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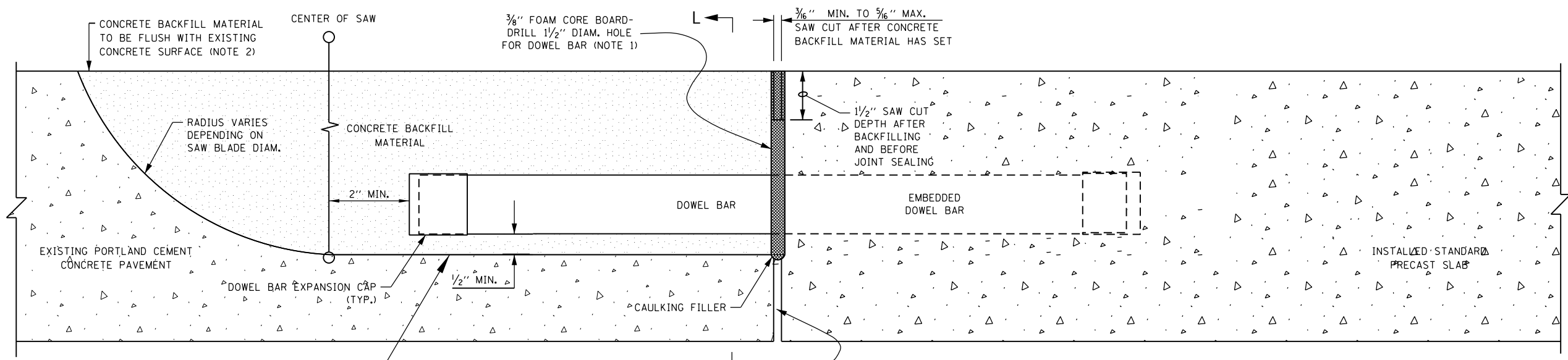
SHEET 13 OF 19

PRECAST PAVEMENT SLABS

STANDARD A18-02

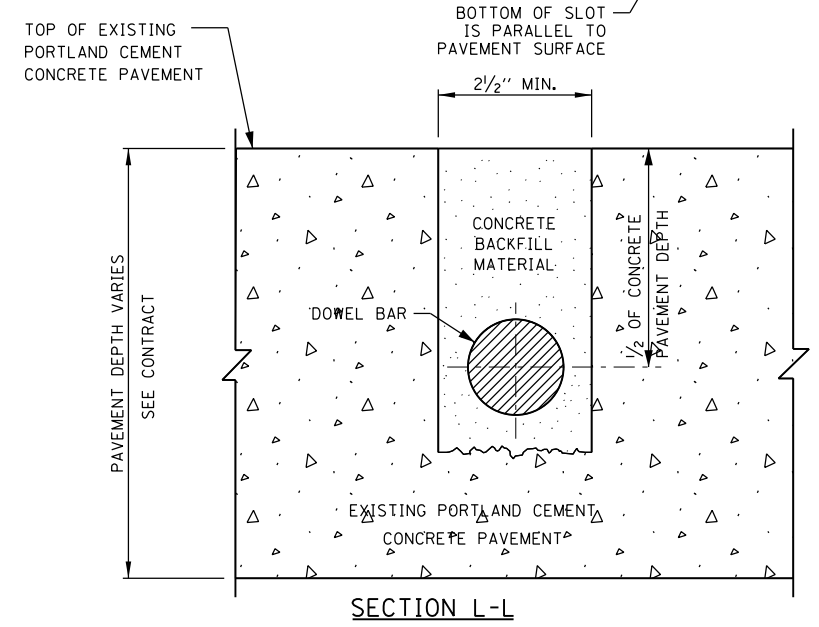


PLAN VIEW



SECTION G-G

TRANSVERSE CONTRACTION JOINT  
(1/2" MAX. AND 1/8" MIN. WIDTH  
AFTER PRECAST SLAB HAS BEEN SET)

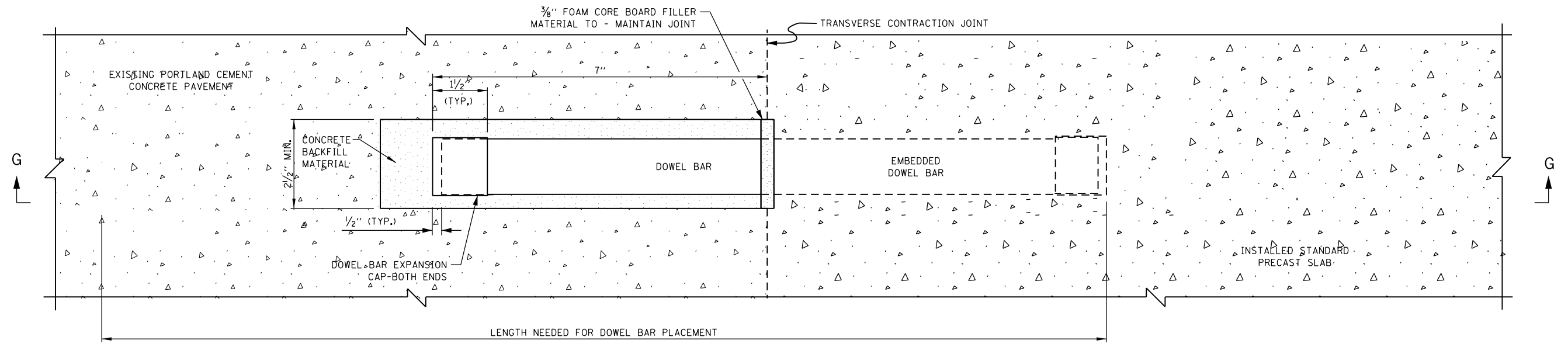


SECTION L-L

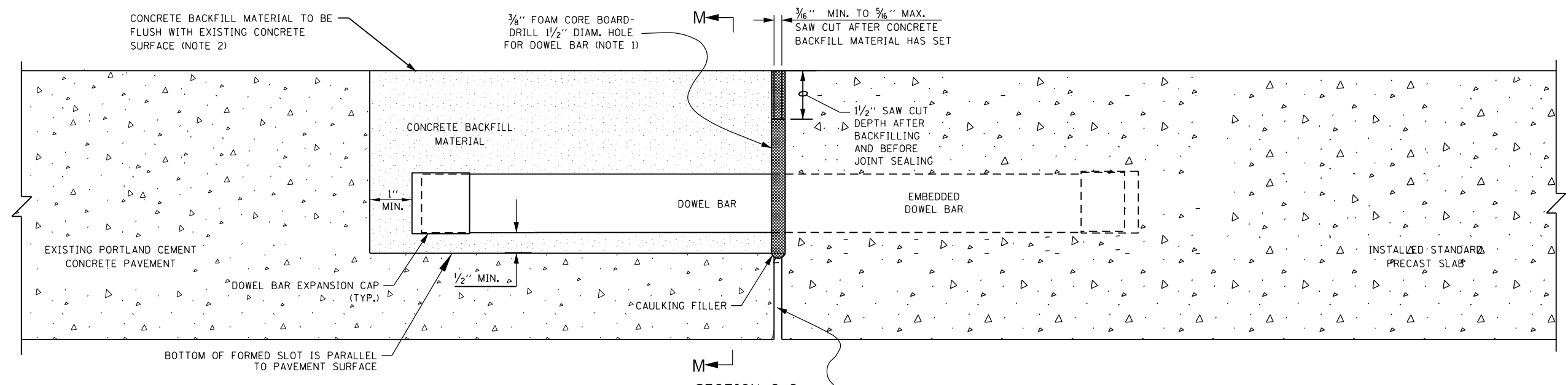
DETAIL D - WIDE MOUTH DOWEL BAR PLACEMENT  
DETAIL FOR STANDARD PRECAST PANELS  
(FOR APPLICATION WITH ALL ISOLATED STANDARD  
SLABS AND WITH INITIAL PLACEMENT OF  
CONSECUTIVE STANDARD SLABS)

- NOTES:
1. PLACE FOAM CORE BOARDS TO THE TOP OF PATCH.
  2. UPON COMPLETION, THE FINISHED SURFACE OF THE CONCRETE BACKFILL MATERIAL SHALL NOT BE BELOW EXISTING CONCRETE SURFACE.

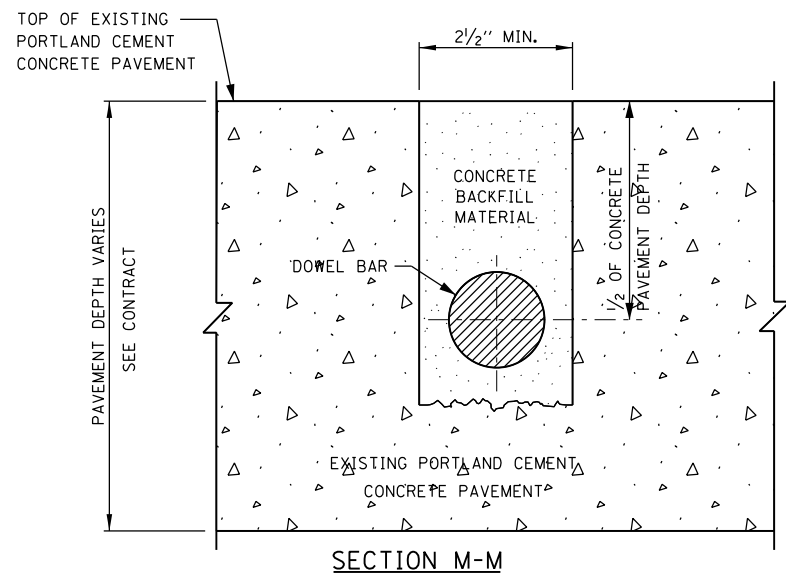




PLAN VIEW



SECTION G-G



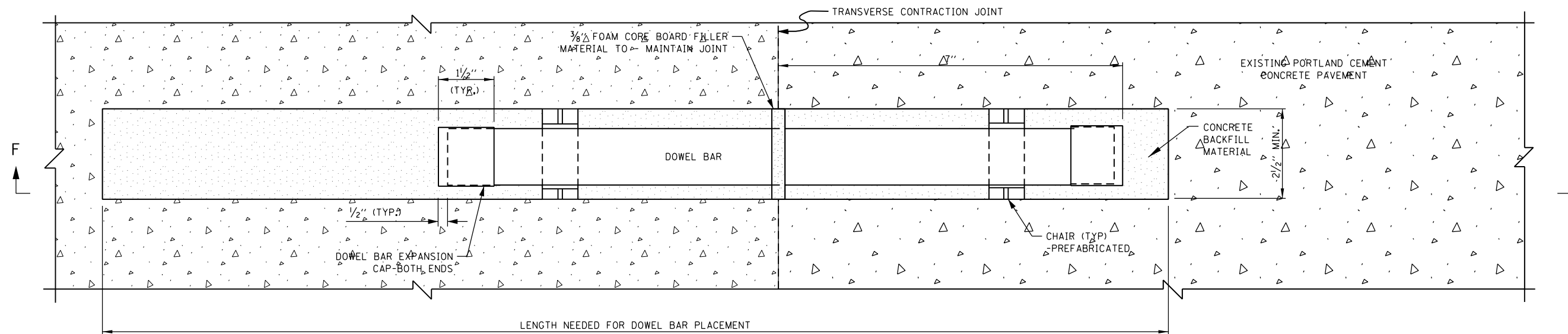
SECTION M-M

**DETAIL E - WIDE MOUTH DOWEL BAR PLACEMENT DETAIL FOR CONSECUTIVE STANDARD PRECAST PANELS**

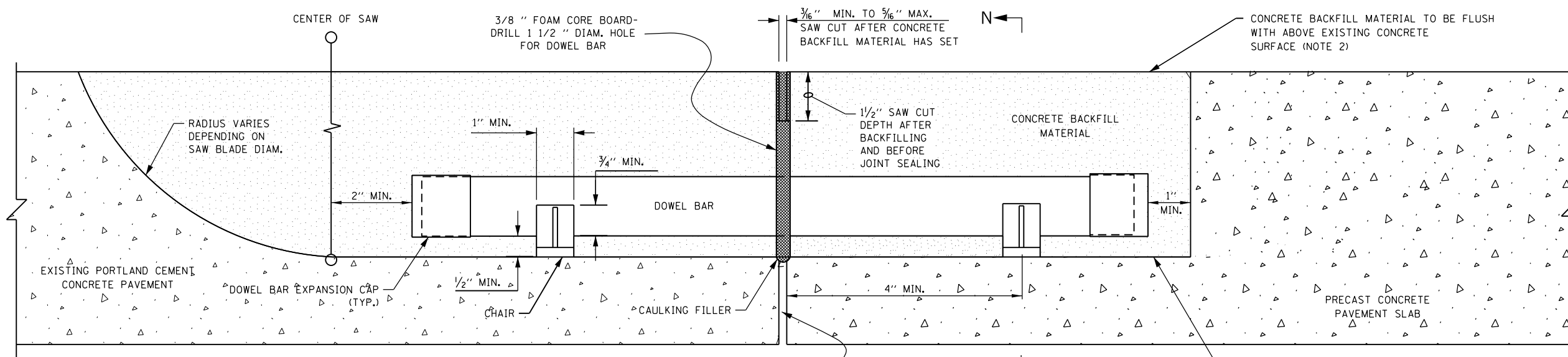
**NOTES:**

1. PLACE FOAM CORE BOARDS TO THE TOP OF PATCH.
2. UPON COMPLETION, THE FINISHED SURFACE OF THE CONCRETE BACKFILL MATERIAL SHALL NOT BE BELOW THE EXISTING CONCRETE SURFACE.



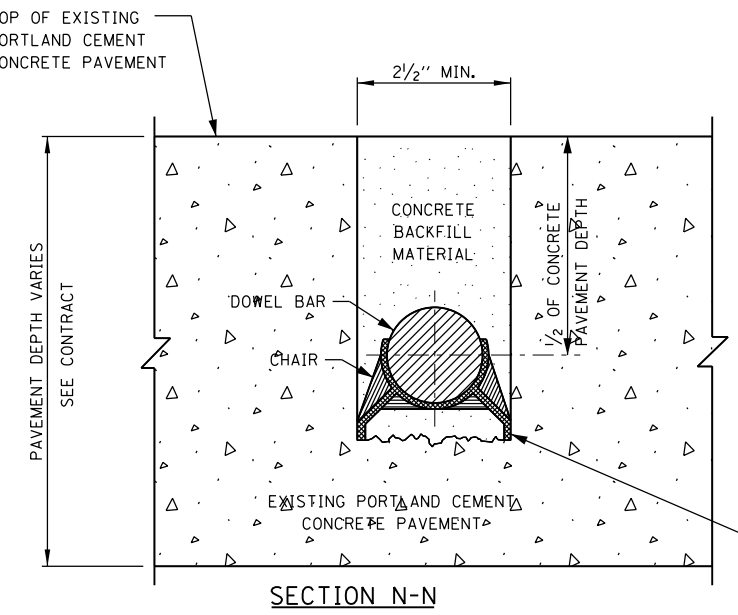


PLAN VIEW

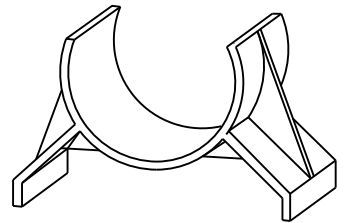


SECTION F-F

DETAIL-F, WIDE MOUTH DOWEL BAR PLACEMENT DETAIL FOR THE LAST TRANSFER JOINT OF CONSECUTIVELY PLACED STANDARD PRECAST PANELS



SECTION N-N

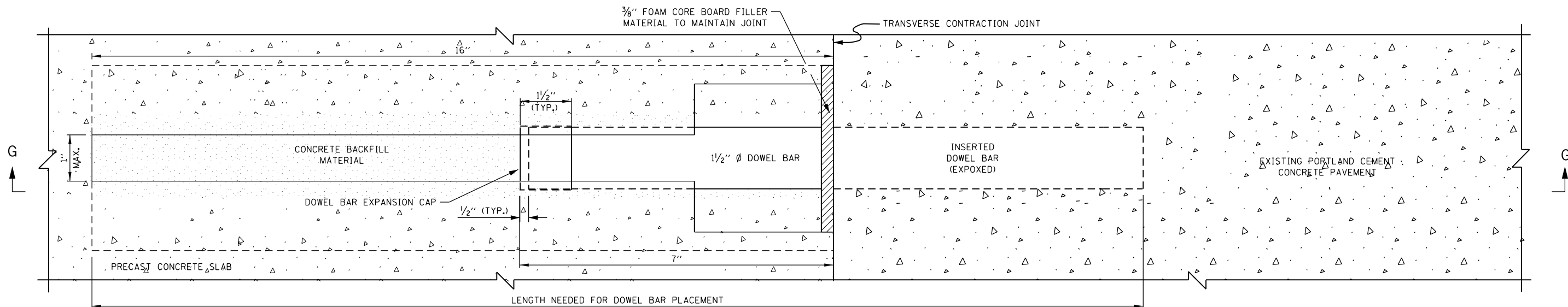


CHAIR DETAIL

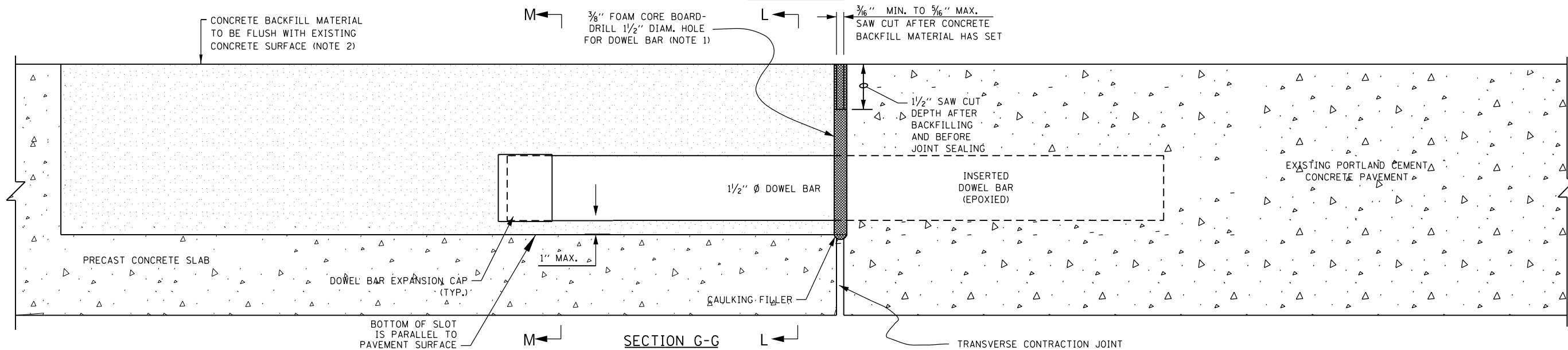
NOTES:

1. PLACE FOAM CORE BOARDS TO THE TOP OF PATCH.
2. UPON COMPLETION, THE FINISHED SURFACE OF THE CONCRETE BACKFILL MATERIAL SHALL NOT BE BELOW THE EXISTING CONCRETE SURFACE.



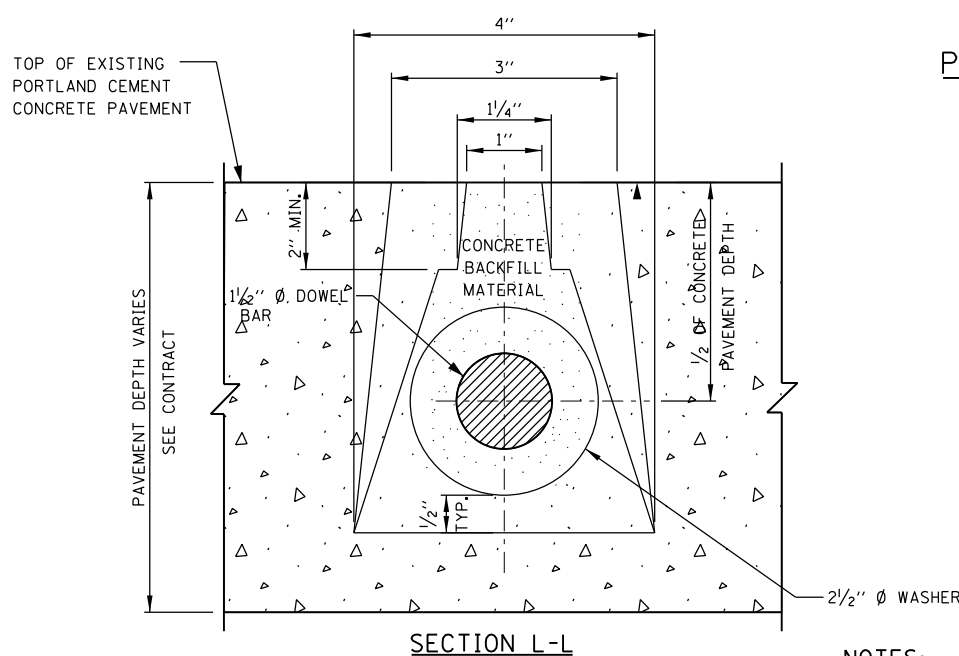


PLAN VIEW

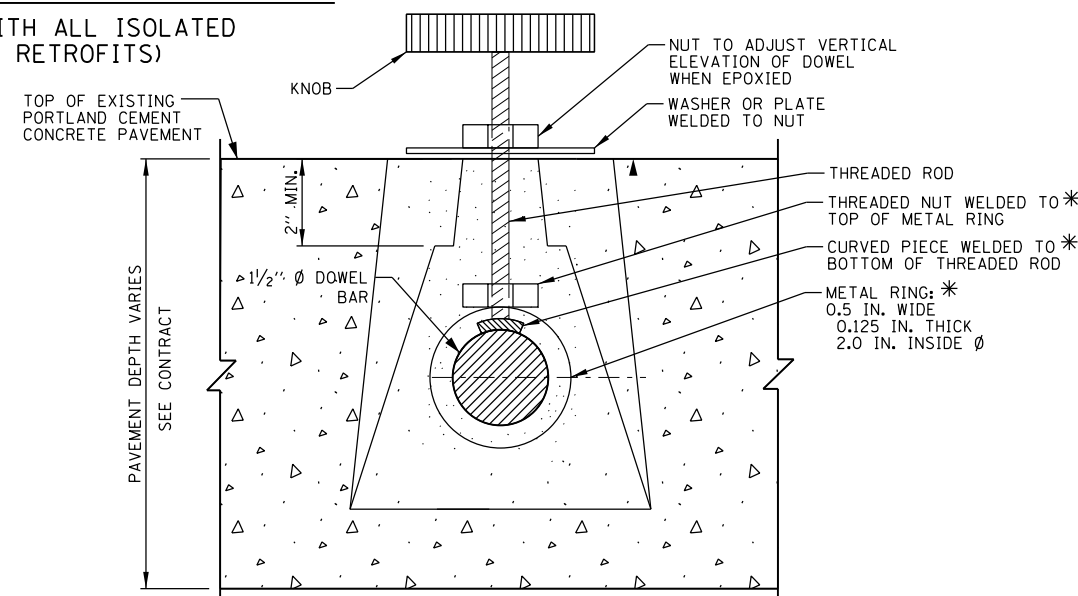


SECTION G-G

DETAIL G - NARROW MOUTH DOWEL BAR  
 PLACEMENT DETAIL FOR ISOLATED PRECAST PANELS  
 (FOR OPTIONAL APPLICATION WITH ALL ISOLATED  
 SLABS IN PLACE OF FULL RETROFITS)



SECTION L-L



SECTION M-M  
 CLAMP DETAIL FOR SLIDING DOWEL BAR SLOTS

NOTES:

1. PLACE FOAM CORE BOARDS TO THE TOP OF PATCH.
2. UPON COMPLETION, THE FINISHED SURFACE OF THE CONCRETE BACKFILL MATERIAL SHALL NOT BE BELOW EXISTING CONCRETE SURFACE.

\* METAL RING MAY BE REPLACED WITH A STRONG MAGNET WELDED TO THE THREADED ROD. AT LEAST ONE CLAMP WILL BE NEEDED FOR EACH INSERTED DOWEL BAR TO MAINTAIN ALIGNMENT.

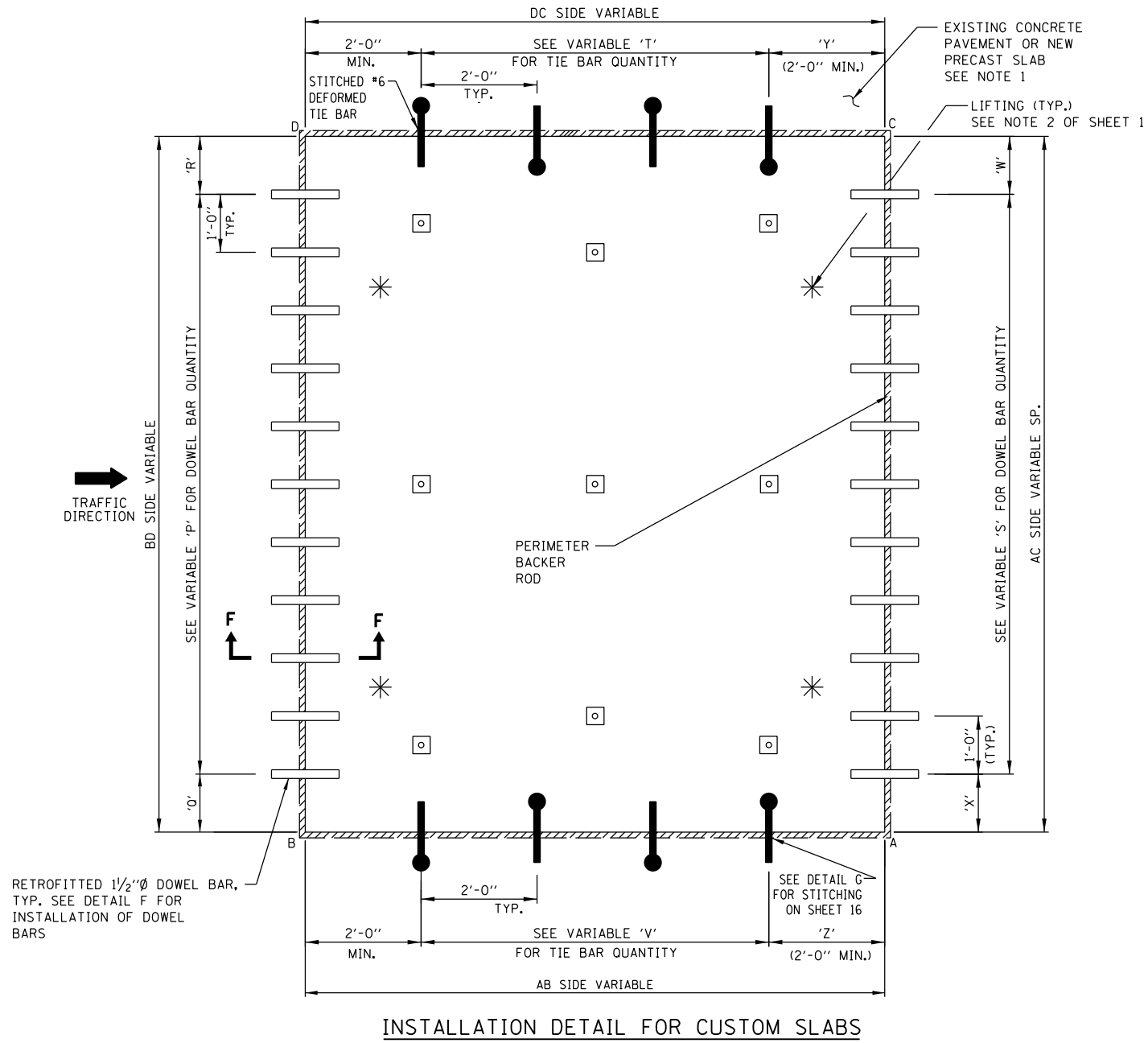
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

FOR NON STANDARD SLABS, UPON COMPLETION BY THE CONTRACTOR A SLAB LAYOUT WILL BE ADDED WITH SLAB DIMENSIONS TO INCLUDE BUT NOT BE LIMITED TO THE TABLE SHOWN BELOW.

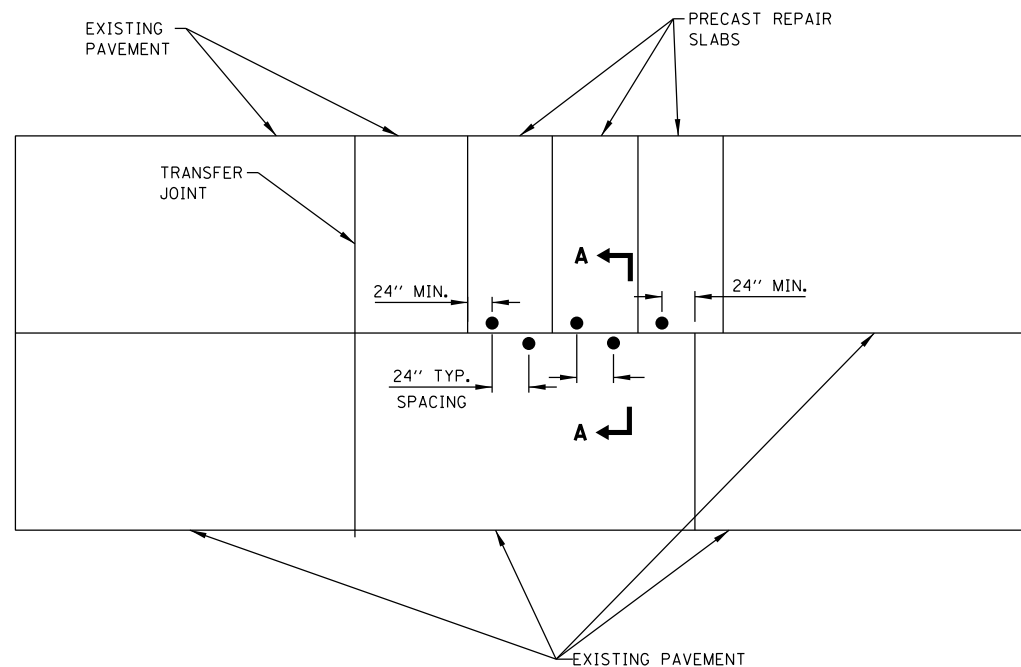
EXAMPLE	CORRIDOR	STATION NUMBER	MAINLINE LANE NO.	RAMP ID.	RAMP LANE NO.	PLAZA NO.	PLAZA LANE NO.	MARK NO.	LANE TYPE	VARIABLES										AB* SIDE	BD* SIDE	CD* SIDE	AC* SIDE	AREA (SQ.FT.)	VOLUME (CU. FT.)	WEIGHT (TONS)	DIAGONALS (FT.)												
										AB (FT.)	AC (FT.)	BD (FT.)	CD (FT.)	P (NO.)	Q (FT.)	R (FT.)	S (NO.)	T (NO.)	V (NO.)								W (FT.)	X (FT.)	Y (FT.)	Z (FT.)	AD	BC							

MAINLINE LANE NO.: LANE NO. 1 IS ADJACENT TO MEDIAN SHOULDER.  
 RAMP LANE NO.: LANE NO. 1 IS ADJACENT TO THE BUILDING.  
 PLAZA LANE NO.: LANE NO. 1 IS ADJACENT TO THE BUILDING.  
 MARK NO.: EACH PANEL SHALL BE INDIVIDUALLY MARKED FOR CORRECT PLACEMENT.  
 LANE TYPE: "OUT" IN THIS COLUMN INDICATES OUTSIDE LANE.  
 "MID" IN THIS COLUMN INDICATES MIDDLE LANE.  
 "IN" IN THIS COLUMN INDICATES INSIDE LANE  
 "PLAZA" IN THIS COLUMN INDICATES PLAZA LANE.

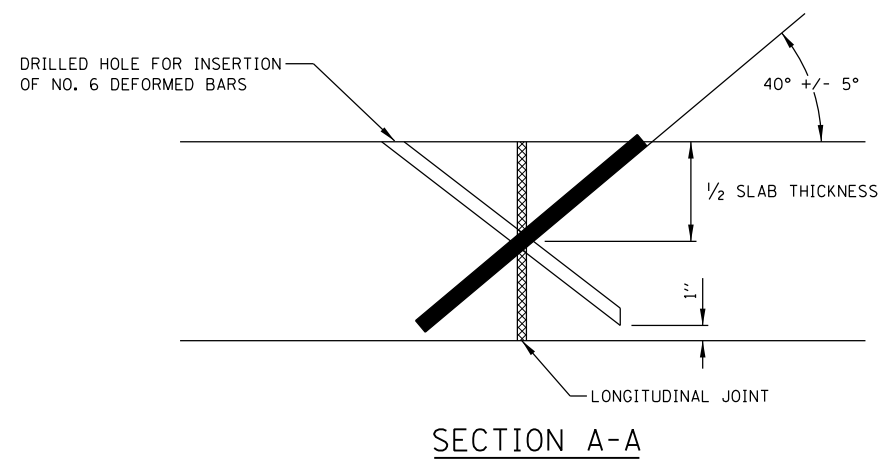
**\*LEGEND**  
 DB= DOWEL BAR EMBEDDED  
 DS= DOWEL SLOT  
 ST= SLOT OR HOLE FOR STITCHED TIE BAR  
 RD= FIELD RETROFITTED DOWEL BARS



- NOTES:**
- NO STITCHING OF DEFORMED TIE BARS IS REQUIRED WHEN PRECAST SLAB IS PLACED ADJACENT TO HMA SHOULDER OR PLAZA ISLAND.
  - TIE BAR STITCHING SHALL BE REQUIRED WHEN THE REPAIR AREA LENGTH EXCEEDS 20 FT. OR WHEN MORE THAN 3 PRECAST SLABS ARE PLACED IN SEQUENCE.
  - SHOP DRAWINGS SHALL BE REQUIRED FOR ALL CUSTOM PLAZA SLABS.



DETAIL H - LONGITUDINAL TIE BAR  
STITCHING FOR PRECAST PANELS



NOTES FOR TIE BAR STITCHING:

1. DRILL HOLES THAT ARE ORIENTED AT  $40^\circ \pm 5^\circ$  ANGLE TO THE PAVEMENT SURFACE SO THAT THEY INTERSECT THE LONGITUDINAL CRACK OR JOINT AT ABOUT MID-DEPTH. (IT IS IMPORTANT TO START DRILLING THE HOLE AT A CONSISTENT DISTANCE FROM THE JOINT, IN ORDER TO CONSISTENTLY CROSS AT THE MID-DEPTH OF THE SLAB.)
2. HOLE CENTERLINES ARE PERPENDICULAR TO THE JOINT (IN PLAN VIEW) AT EACH LOCATION BEING DRILLED.
3. SELECT A DRILL THAT MINIMIZES DAMAGE TO THE CONCRETE SURFACE, SUCH AS A HYDRAULIC POWERED DRILL. SELECT A DRILL DIAMETER NO MORE THAN 0.375 IN. LARGER THAN THE TIE-BAR DIAMETER. CHOOSE A GANG-MOUNTED DRILL IF A HIGHER PRODUCTIVITY IS NEEDED.
4. DRILL HOLES WITH NO LESS THAN A 24 INCH BAR SPACING. ADJACENT HOLES ARE DRILLED IN OPPOSITE DIRECTIONS ACROSS THE JOINT. THE HOLES AND INSERTED TIE BAR SHALL BE NO LESS THAN 24 INCHES FROM ANY EXISTING TRANSVERSE JOINT OR ANY PRECAST OR REPAIR TRANSFER JOINT.
5. HOLE BOTTOMS ARE NO MORE THAN 1 INCH FROM THE SLAB BOTTOM.
6. AIR BLOW THE HOLES TO REMOVE DUST AND DEBRIS AFTER DRILLING.
7. INJECT ADHESIVE INTO THE HOLE, LEAVING SOME VOLUME FOR THE BAR TO OCCUPY THE HOLE. (POURING THE ADHESIVE IS ACCEPTABLE FOR SMALL QUANTITIES.)
8. INSERT THE NO. 6 EPOXY COATED DEFORMED TIE BAR INTO THE HOLE, LEAVING ABOUT 1 IN. FROM THE TOP OF BAR TO THE PAVEMENT SURFACE. DEFORMED TIE BARS SHALL BE EPOXY COATED.
9. REMOVE EXCESS ADHESIVE AND FINISH FLUSH WITH THE PAVEMENT SURFACE.

SHEET 19 OF 19



PRECAST PAVEMENT SLABS

STANDARD A18-02

APPROVED *Paul Kovacs* DATE 5-1-2009  
CHIEF ENGINEER