

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.
 - 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, 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.
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, 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.
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.

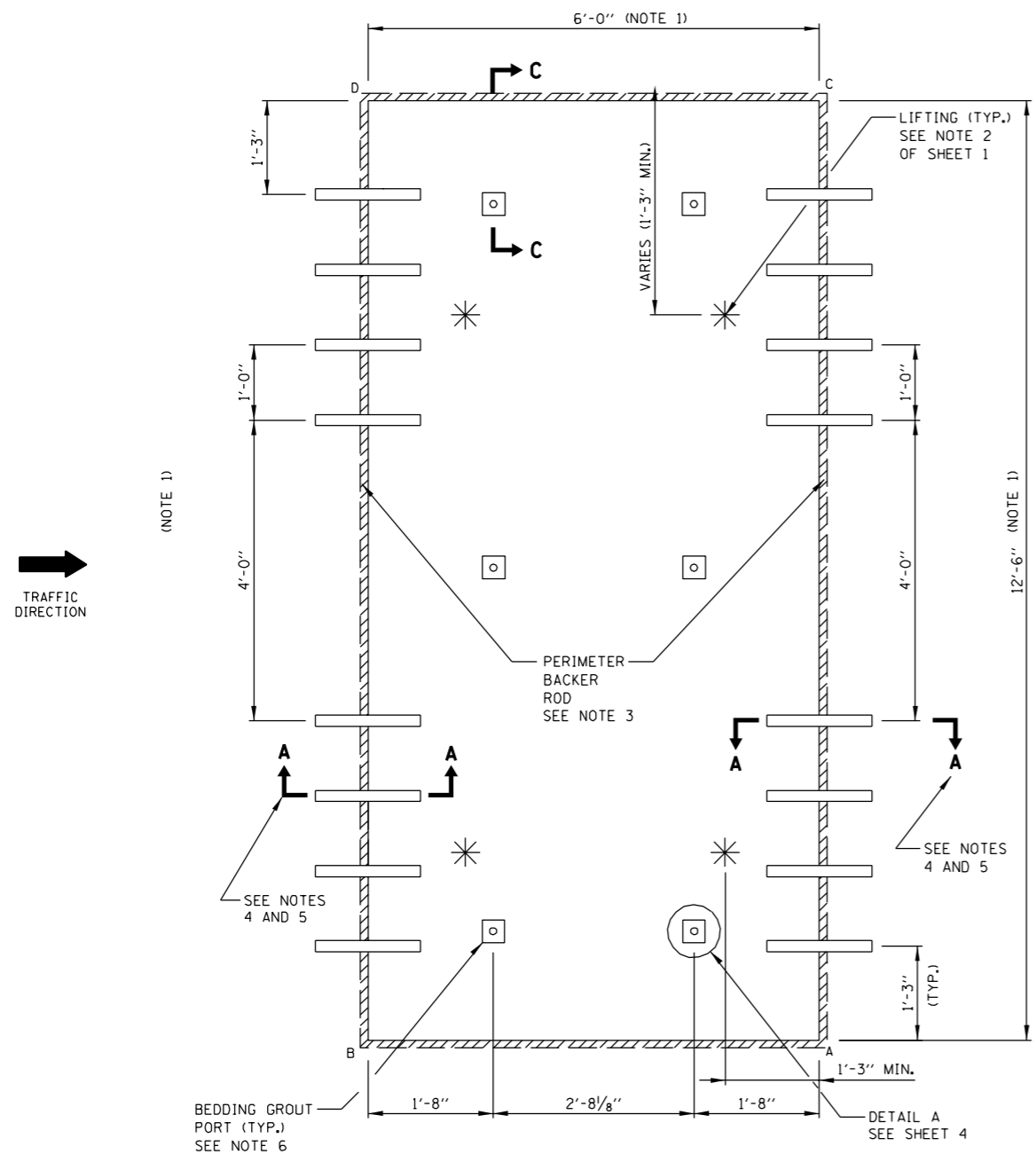


DATE	REVISIONS

PRECAST PAVEMENT SLABS

STANDARD A18-00

APPROVED _____ DATE 5-1-2009
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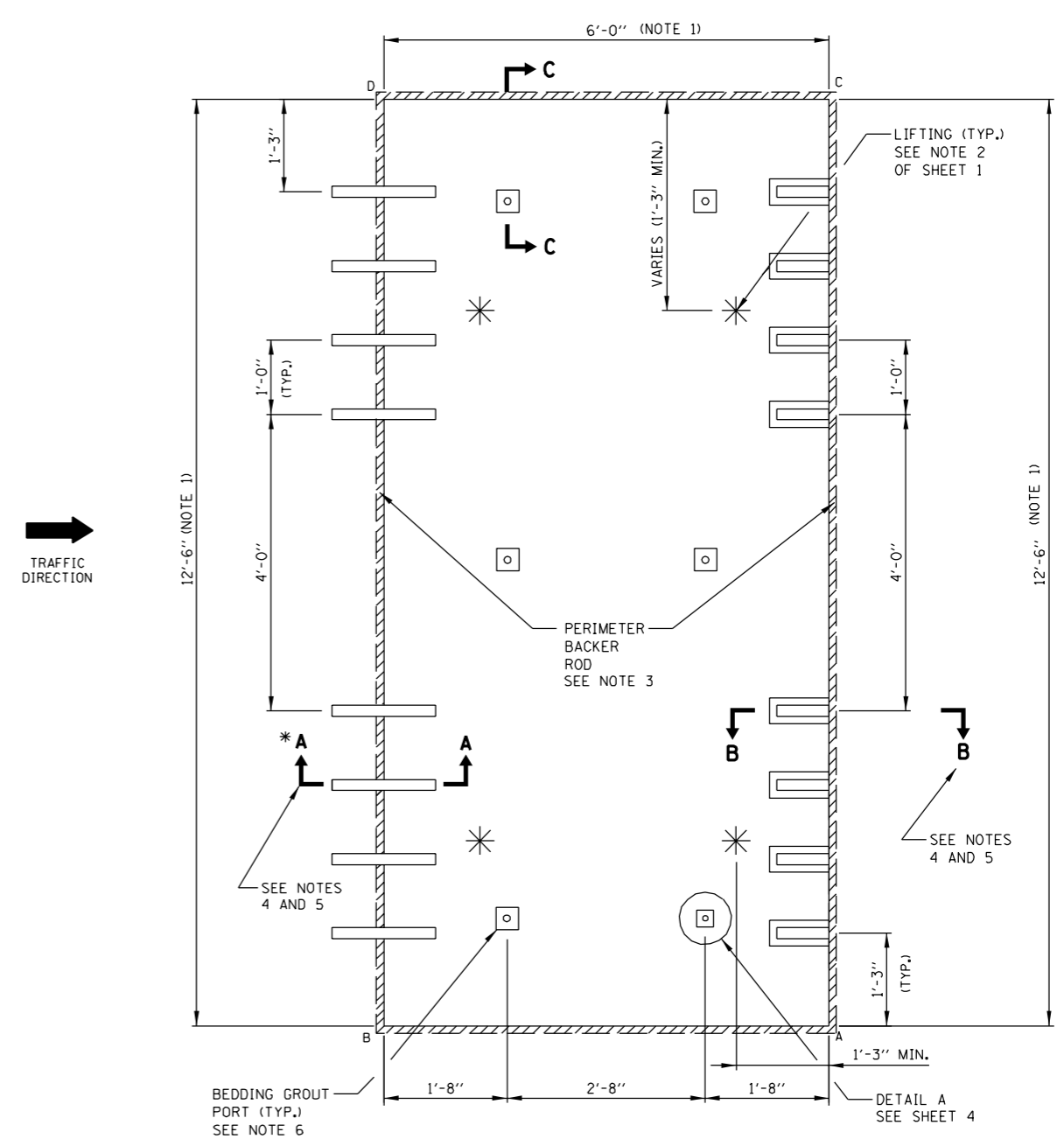


STANDARD 12'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT

NOTES:

1. THE WIDTH AND LENGTH OF PRODUCED SLABS SHALL BE THE INDICATED DIMENSIONS $\pm 1/8"$.
2. SLAB THICKNESS SHALL BE $11\frac{1}{2}" \pm 1/8"$.
3. A FOAM BACKER ROD SHALL BE PLACED AROUND THE OUTSIDE PERIMETER OF THE SLAB AT THE BOTTOM OF THE JOINTS AFTER 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.
4. SEE SHEET 4 FOR SECTION DETAILS.
5. 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 11. 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. EITHER SINGLE DIAMOND BLADED SAWS OR DIAMOND BLADED GANG SAWS SHALL BE USED TO MAKE THE SAW CUTS PERPENDICULAR TO THE TRANSVERSE (NONSKewed) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE SPECIFIED TOLERANCES.
6. SEE NOTE 9 ON SHEET 1 FOR LOCATING BEDDING GROUT PORTS.

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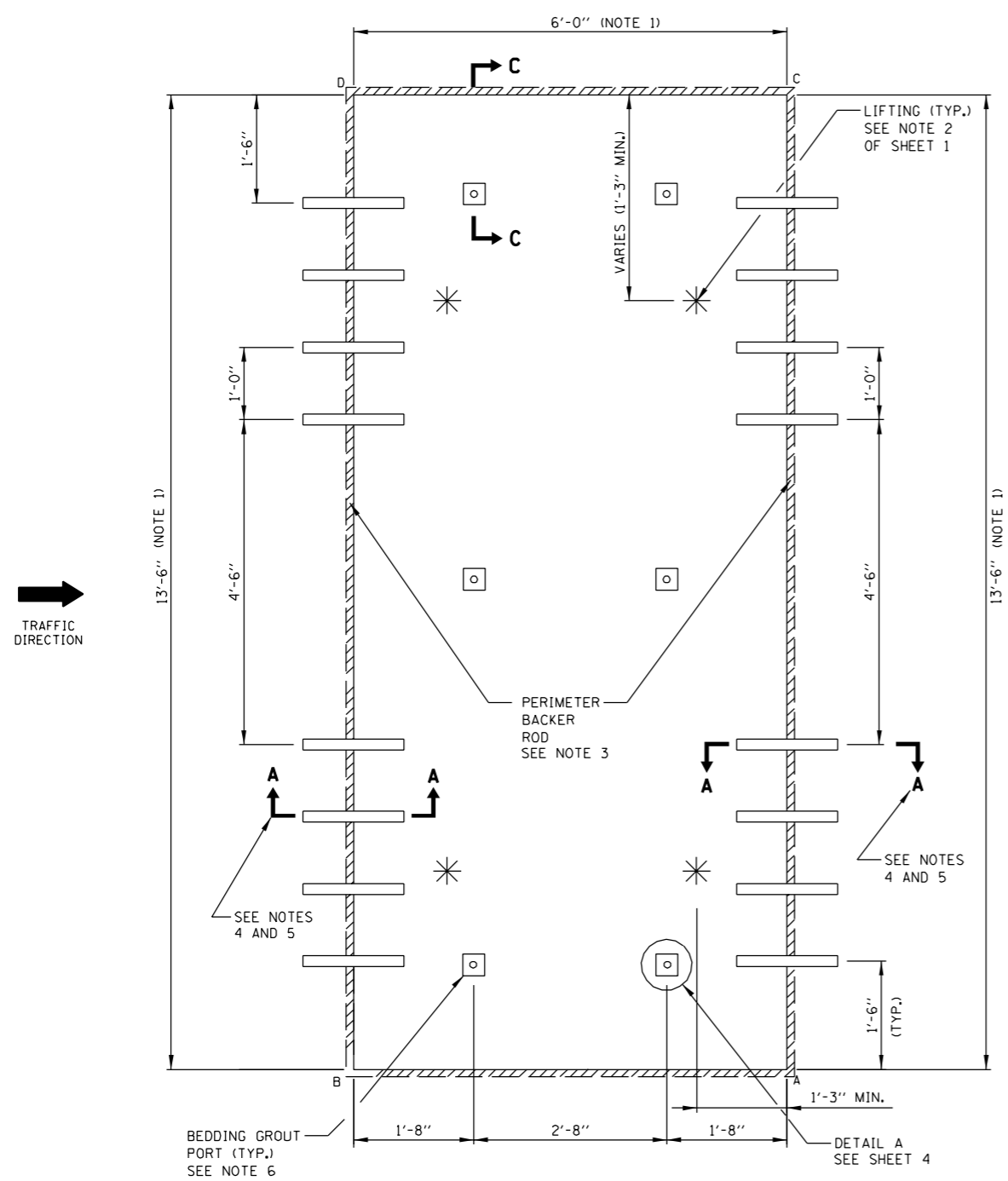
STANDARD 12'-6" WIDE PANEL LAYOUT FOR CONSECUTIVE PLACEMENT

* 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.



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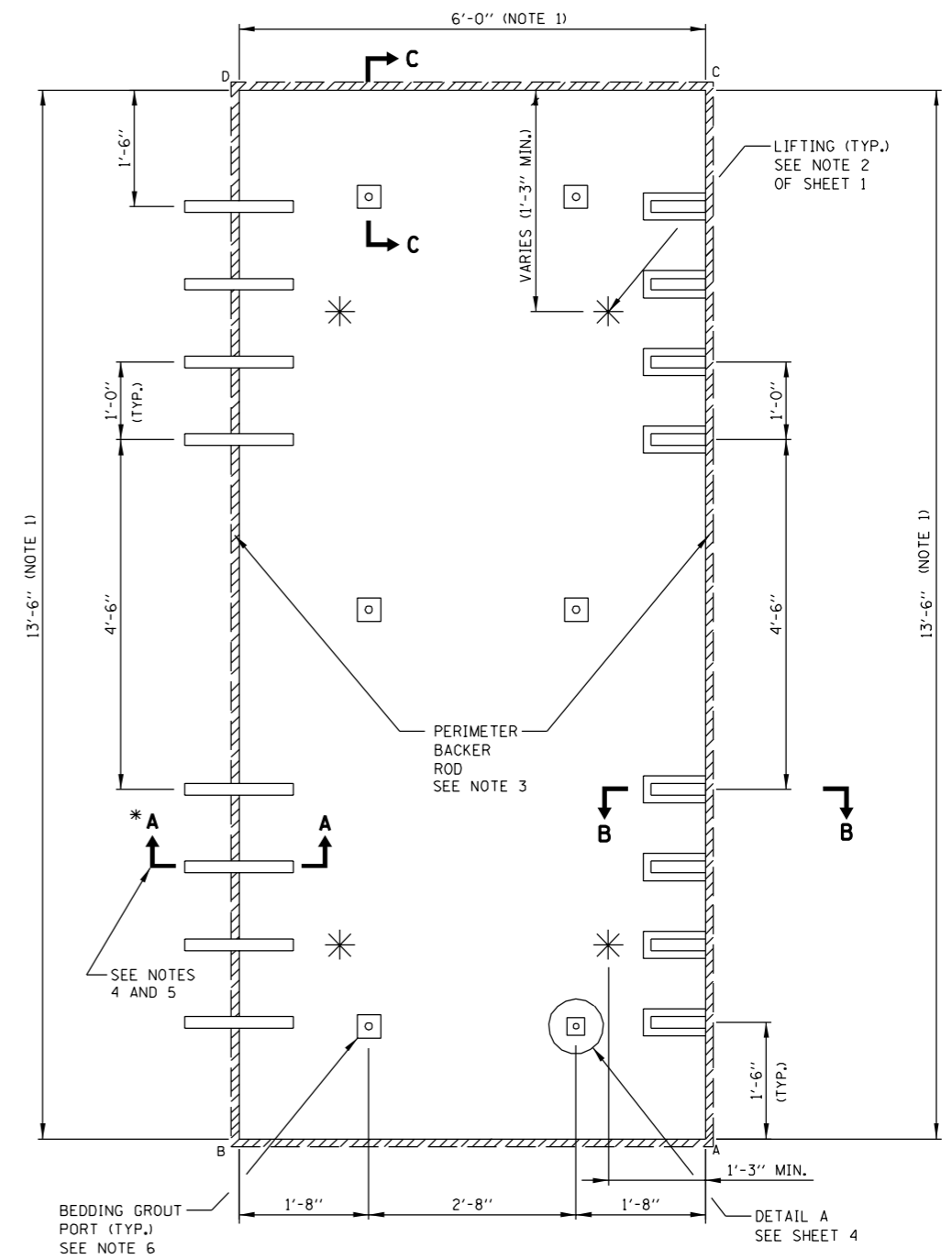
STANDARD 13'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT

NOTES:

1. THE WIDTH AND LENGTH OF PRODUCED SLABS SHALL BE THE INDICATED DIMENSIONS $\pm 1/8"$.
2. SLAB THICKNESS SHALL BE $11\frac{1}{2}" \pm 1/8"$.
3. A FOAM BACKER ROD SHALL BE PLACED AROUND THE OUTSIDE PERIMETER OF THE SLAB AT THE BOTTOM OF THE JOINTS AFTER 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.
4. SEE SHEET 4 FOR SECTION DETAILS.
5. 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 11. 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. EITHER SINGLE DIAMOND BLADED SAWS OR DIAMOND BLADED GANG SAWS SHALL BE USED TO MAKE THE SAW CUTS PERPENDICULAR TO THE TRANSVERSE (NON-SKEWED) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE SPECIFIED TOLERANCES.
6. SEE NOTE 9 ON SHEET 1 FOR LOCATING BEDDING GROUT PORTS.



TRAFFIC DIRECTION



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.

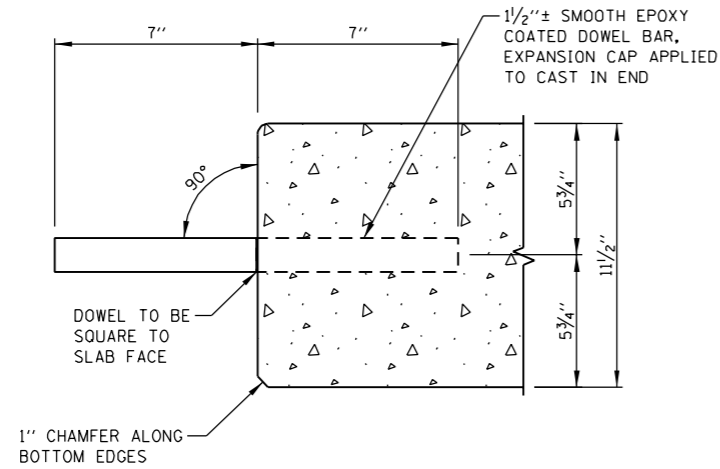


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PRECAST PAVEMENT SLABS

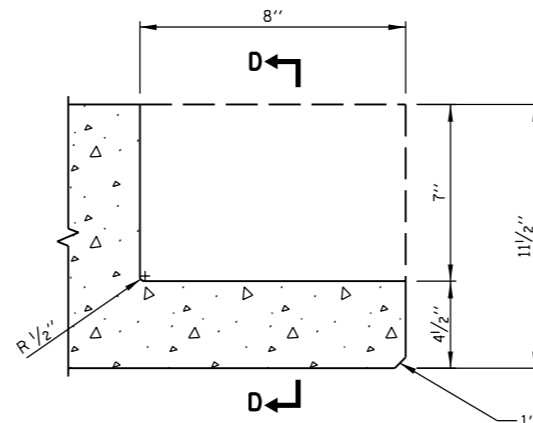
STANDARD A18-00

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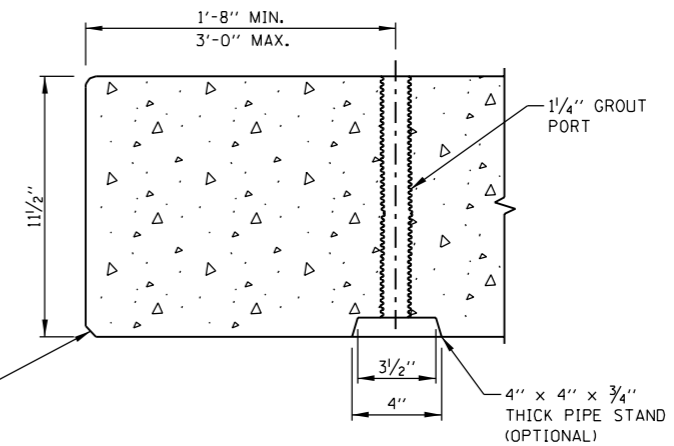
SECTION A-A

TRANSVERSE JOINT-DOWEL BAR (EMBEDDED INTO STANDARD PRECAST PAVEMENT SLAB FOR BOTH ISOLATED AND CONSECUTIVE PLACEMENT-TYP.)



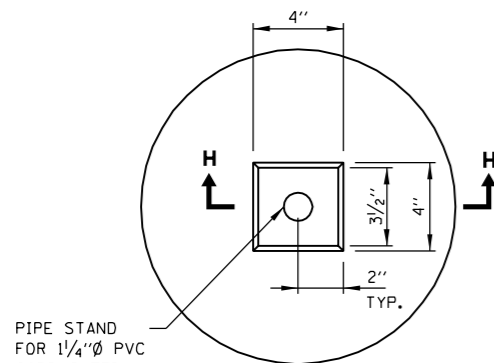
SECTION B-B

TRANSVERSE SLOT DETAIL FOR CONSECUTIVE STANDARD SLABS



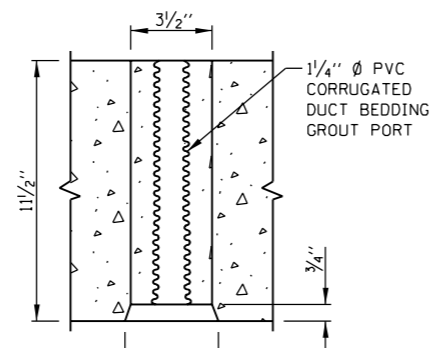
SECTION C-C

GROUT CHANNEL & PORT LOCATION



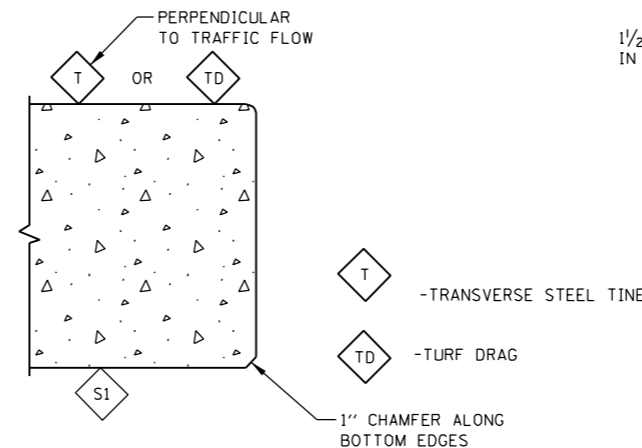
DETAIL A

GROUT PIPE STAND

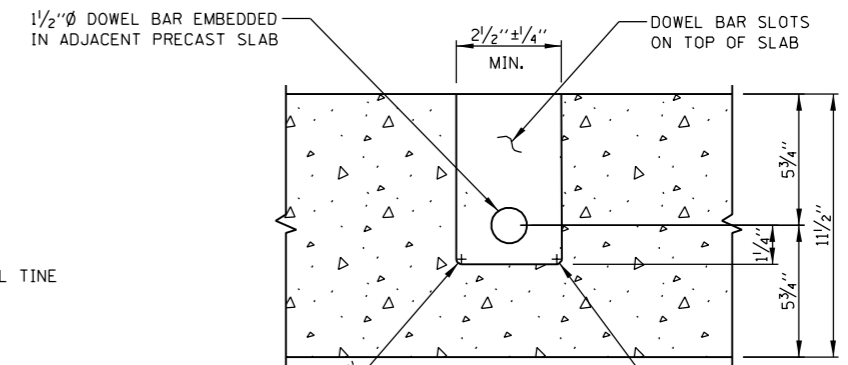


SECTION H-H

PIPE STAND ELEVATION



FINISH SCHEDULE



SECTION D-D

DOWEL BAR SECTION

FABRICATION DETAILS

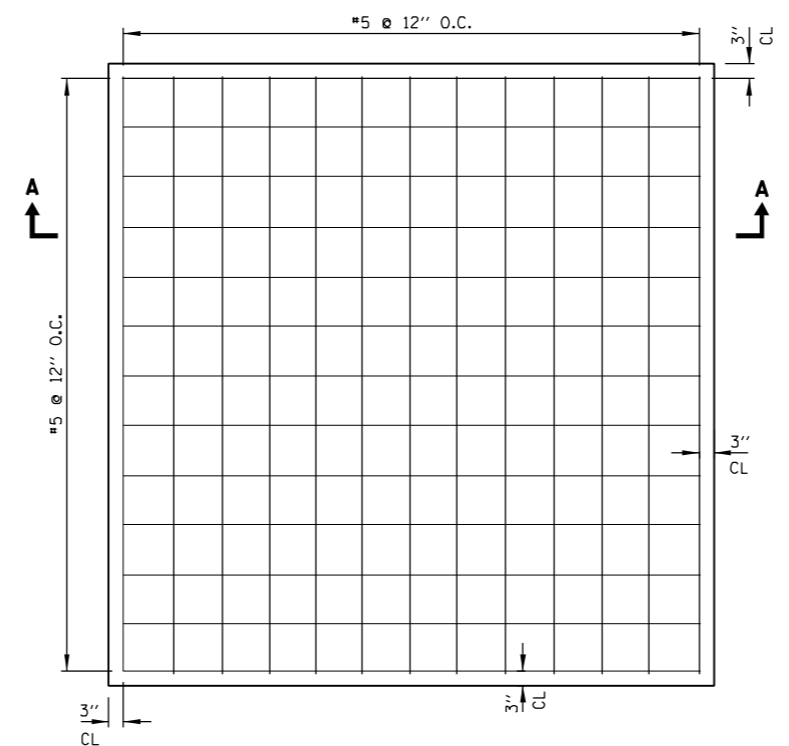


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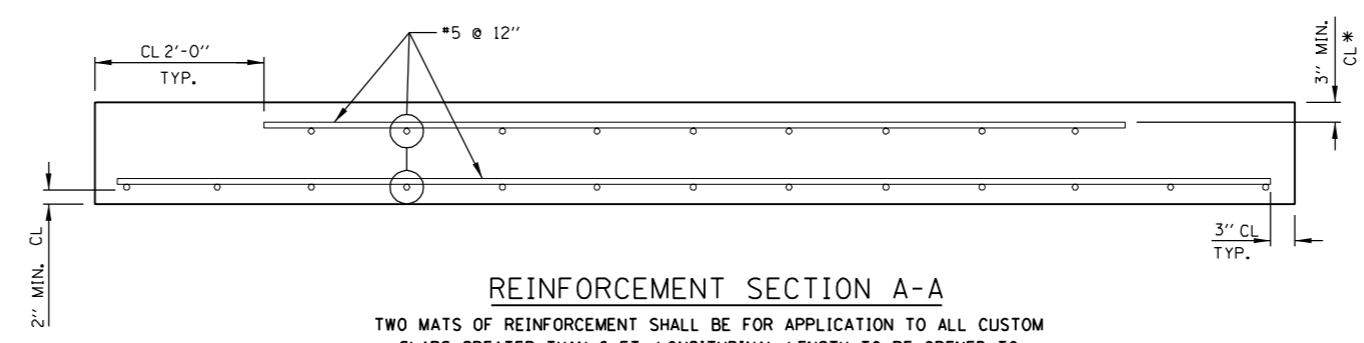
PRECAST PAVEMENT SLABS

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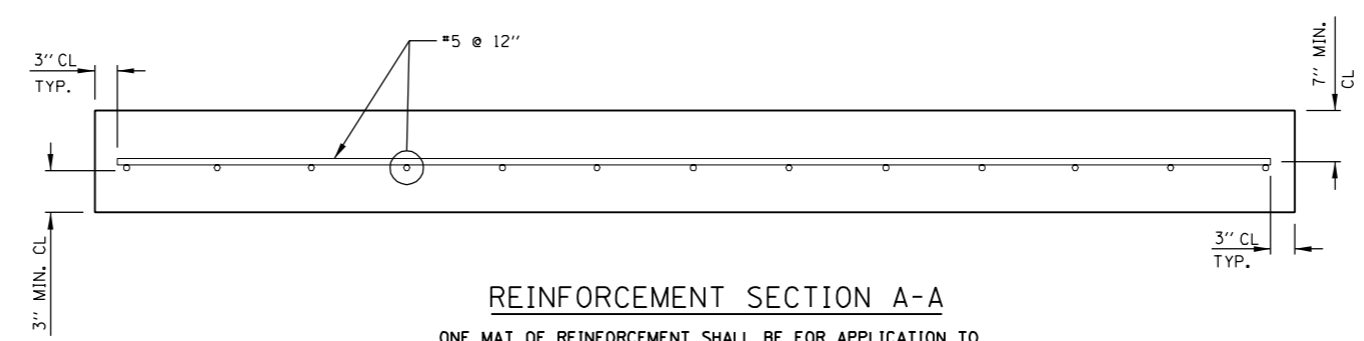
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TYPICAL REINFORCEMENT DETAIL



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.



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 STANDARD A18-00

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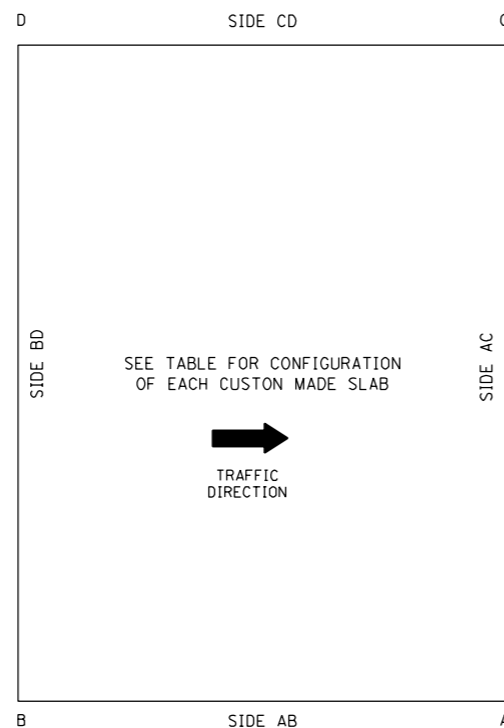
FOR NON STANDARD SLABS, UPON COMPLETION BY THE CONTRACTOR A SLAB LAYOUT WILL BE ADDED WITH SLAB DIMENSIONS TO INCLUDE BUT NOT BE LIMITED TO THE TABLE SHOWN BELOW.

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

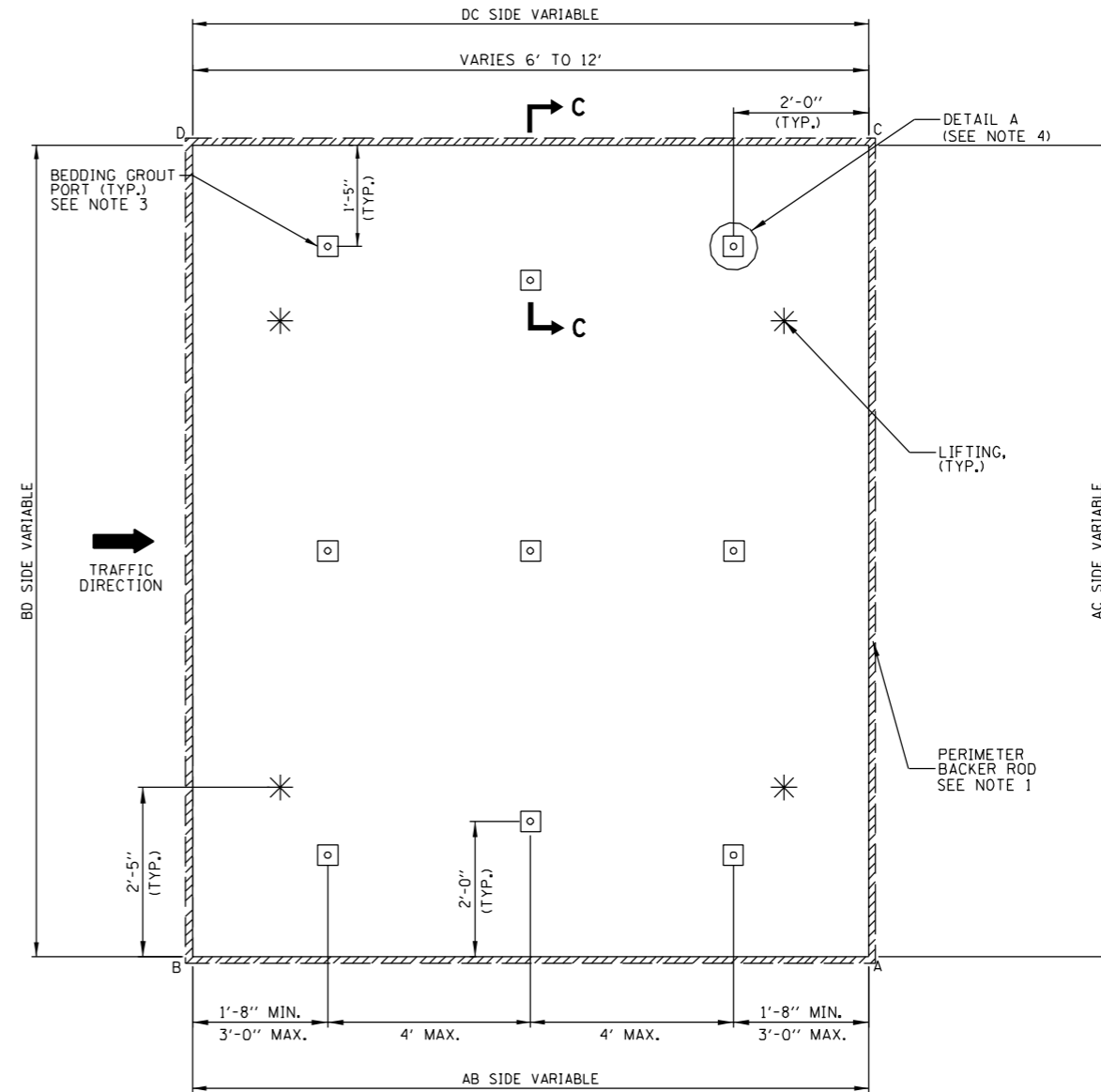
MAINLINE LANE NO.: LANE NO. 1 IS ADJACENT TO MEDIAN SHOULDER.
 RAMP LANE NO.: LANE NO. 1 IS ADJACENT TO THE BUILDING
 PLAZA LANE NO.: LANE NO. 1 IS ADJACENT TO THE BUILDING
 MARK NO.: EACH PANEL SHALL BE INDIVIDUALLY MARKED FOR CORRECT PLACEMENT.
 LANE TYPE: "OUT" IN THIS COLUMN INDICATES OUTSIDE LANE.
 "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 AFTER 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 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 (NON-SKEWED) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE SPECIFIED TOLERANCES.
3. SEE NOTE 9 ON SHEET 1 FOR LOCATING BEDDING GROUT PORTS.
4. SEE SHEET 4 FOR SECTION DETAILS.



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PRECAST PAVEMENT SLABS

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INSTALLATION GENERAL NOTES

ALIGNMENT:

1. WHEN THE TRANSVERSE JOINTS OF ANY PRECAST SLAB CAN NOT BE ALIGNED WITH TRANSVERSE JOINTS IN ADJACENT LANES, A MAXIMUM 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. THE WIDTH OF ANY OF THE STANDARD PRECAST SLABS SHALL BE NO MORE THAN 3 INCHES OUTSIDE OF THE EXISTING LONGITUDINAL JOINTS IN ADJACENT LANES OF EXISTING CONCRETE PAVEMENTS. THE WIDTH OF THE PRECAST SLAB SHALL BE NO MORE THAN 1/4 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, 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 CONSTRUCTION MANAGER UNDER MAINTENANCE OF TRAFFIC PROVIDED BY THE CONTRACTOR TO CONFIRM THAT THE PLACEMENT OF THE SLAB WILL NOT RESULT IN NEW LONGITUDINAL JOINTS MORE THAN 3 INCHES OUTSIDE OF THE EXISTING CONCRETE LONGITUDINAL JOINTS. NO NEW LONGITUDINAL JOINT SHALL BE ALLOWED INSIDE OF THE EXISTING JOINT. IF THESE TOLERANCES CAN NOT BE MET, THEN A CUSTOM SLAB SHALL BE REQUIRED. FOR ISOLATED STANDARD SLABS PLACED IN THE OUTSIDE OR INSIDE LANES, THE NEW CONCRETE LONGITUDINAL JOINT SHALL MATCH THE EXISTING JOINT BY NO MORE THAN 3 INCHES. THE PRECAST SLAB MAY EXTEND INTO THE EXISTING BITUMINOUS SHOULDERS NO MORE THAN 6 INCHES TO ALLOW FOR PROPER ALIGNMENT OF THE CONCRETE JOINTS.
5. FOR STANDARD SLAB PLACEMENTS, A TEMPLATE SUPPLIED BY THE PRECAST FABRICATOR SHALL BE USED TO LOCATE THE PERIMETER SAW CUTS FOR THE SLAB AND FOR THE EMBEDDED/SLOTTED DOWEL BAR LOCATIONS TO BE RETROFITTED 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 12).
 - 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 12).
 - ii) RETROFITTED INTO THE PREFORMED SLOTS OF ADJACENT PRECAST SLABS IN ACCORDANCE WITH DETAIL E (SEE SHEET 13).
 - 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 14), 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 12).
 - C. FOR PRECAST STANDARD SLABS WITH NO EMBEDDED DOWEL BARS, THE DOWEL BARS SHALL BE FULLY RETROFITTED ACROSS ALL TRANSVERSE JOINTS IN THE FIELD IN ACCORDANCE WITH DETAIL C (SEE SHEET 11). THE LOCATIONS AND SPACING OF ALL FIELD RETROFITTED DOWEL BARS SHALL COMPLY WITH THE SPECIFIED TOLERANCES AS SHOWN ON SHEETS 2 AND 3.
7. ACROSS CUSTOM MADE SLABS

THE DOWEL BARS OF CUSTOM DESIGNED PRECAST SLABS SHALL BE FULLY RETROFITTED ACROSS THE JOINT IN THE FIELD IN ACCORDANCE WITH DETAIL C (SEE SHEET 11). FOR ALL CUSTOM SLABS, THE DOWELS BETWEEN ANY EXISTING CONCRETE PAVEMENT AND ANY ADJACENT PRECAST SLAB, AND BETWEEN CONSECUTIVELY PLACED CUSTOM PRECAST SLABS SHALL BE 1'-0" ON CENTER ACROSS THE ENTIRE JOINT. NO END DOWEL BARS SHALL BE RETROFITTED 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 CASAL-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 G (SEE SHEET 16).

MATERIALS:

10. FOR GRADE SUPPORTED PRECAST SLABS, THE BEDDING 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.
- B. FOR GRADE SUPPORTED SLABS, BEDDING GROUT SHALL BE USED AFTER SLAB INSTALLATION TO FILL ALL VOIDS BENEATH THE PRECAST PANELS. THE MIXTURE USED FOR BEDDING 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 BEDDING GROUT TO THE ENGINEER FOR TOLLWAY APPROVAL PRIOR TO PLACEMENT. THE BEDDING GROUT PRODUCED SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
 - i) THE BEDDING 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 BEDDING 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.
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:

DENSITY (LBS./CU. FT.)	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.
13. HARDWARE GROUT/ADHESIVES
 - A. FOR DOWEL BAR RETROFITS, FOR THE FILLING OF ANY GROUT PORT HOLES USED FOR HIGH DENSITY FOAM INJECTIONS, AND FOR THE FILLING OF RECESSED LIFTING DEVICES, A NON-SHRINK BACKFILL MATERIAL SHALL BE USED THAT HAS BEEN TESTED AS A RAPID SET CONCRETE PATCHING MATERIAL PER THE AASHTO PRODUCT EVALUATION PROGRAM, OR A TOLLWAY APPROVED EQUIVALENT, 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 2,500 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.
14. EPOXY COATED DOWEL BARS SHALL COMPLY WITH ASTM A 615 GRADE 60. 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 GASKET AROUND THE PERIMETER OF A SLAB, AT THE BOTTOM OF THE JOINTS, SHALL BE A CLOSED-CELL, PLASTIC FOAM ROD COMPATIBLE WITH THE SEALANT AND THE ELEVATED TEMPERATURES OF FINAL JOINT SEALANT APPLICATION.

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 $\pm 1/8"$.

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 INSTALLATION OR 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 (NONSKWEVED) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE FOLLOWING TOLERANCES:
 - ± 1 INCH OF THE MIDDLE OF THE CONCRETE SLAB DEPTH.
 - ± 1 INCH OF BEING CENTERED OVER THE TRANSVERSE JOINT
 - $\pm 1/4"$ FROM PARALLEL TO THE CENTERLINE
 - $\pm 1/4"$ FROM PARALLEL TO THE ROADWAY SURFACE

SAWCUTS 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.
20. THE COMPRESSOR FOR AIR BLASTING SHALL HAVE A MINIMUM CAPACITY OF 120 CFM. THE COMPRESSED AIR SHALL BE FREE FROM OIL AND OTHER CONTAMINANTS.
21. CONSOLIDATION EQUIPMENT USED TO CONSOLIDATE THE CONCRETE REPAIR MATERIAL IN THE 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.
22. 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.
23. 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.
24. 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:

25. 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.
26. 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.



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		PRECAST PAVEMENT SLAB
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INSTALLATION GENERAL NOTES

- C. IF DURING THE REMOVAL PROCESS THE ADJACENT CONCRETE IN THE SAME LANE 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 AT THE CONTRACTOR'S EXPENSE. IF CONCRETE IN THE ADJOINING LANE IS DAMAGED DURING THE REMOVAL PROCESS, 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.
27. 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".
28. 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.
29. 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.
30. 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.
31. 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.
32. 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 PRY BARS THAT CHIP EDGES SHOULD BE AVOIDED.
33. 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, THAN 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.
34. 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 SHEET 5. 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 1/8 INCH. BEFORE OPENING A NON-GROUTED SLAB TO TRAFFIC, BACKFILL THE ASPHALT SHOULDERS TO MAINTAIN HORIZONTAL ALIGNMENT. ANY OPEN 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.
35. PRIOR TO DOWEL BAR PLACEMENT, THE TRANSVERSE JOINT SHOULD 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 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. A 3/8 INCH THICK FOAM INSERT SHOULD BE PLACED AT THE MDDLE 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.
36. PLACEMENT OF HARDWARE GROUT/ADHESIVES
- A. DOWEL BARS - THE PLACEMENT OF ANY APPROVED BACKFILL MATERIAL FOR DOWEL BAR RETROFITTING 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 2,500 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 PAVEMNT SURFACES SHALL BE REDONE AT THE CONTRACTOR'S EXPENSE.
- B. TIE BARS - 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 WITH THE APPROVED GROUT USED FOR DOWEL BAR RETROFITTING.
37. PLACEMENT OF BEDDING GROUT OR THE USE OF POLYURETHANE MATERIAL AS A COMBINED LEVELING/BEDDING GROUT METHOD 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 BEDDING GROUT SHALL UTILIZE THE UNDERSLAB GROUT PORT HOLES AS SHOWN ON THE PLANS. PLACEMENT OF BEDDING GROUT SHALL NOT OCCUR UNTIL AFTER ALL HARDWARE DEVICES ARE PLACED AND GROUTED. IF BEDDING GROUT FILLS ANY JOINT TO WITHIN 9" OF THE SLAB SURFACE, A 9" SAW CUT OF THE JOINT SHALL BE REQUIRED DURING INSTALLATION. GROUT PORT HOLES SHALL BE FILLED WITH APPROVED PATCHING MATERIAL USED FOR DOWEL BAR RETROFITTING.
38. AFTER INSTALLATION AND GROUTING IS COMPLETED ALL LONGITUDINAL AND TRANSVERSE JOINTS SHALL BE SEALED IN ACCORDANCE WITH ARTICLE 420.12.



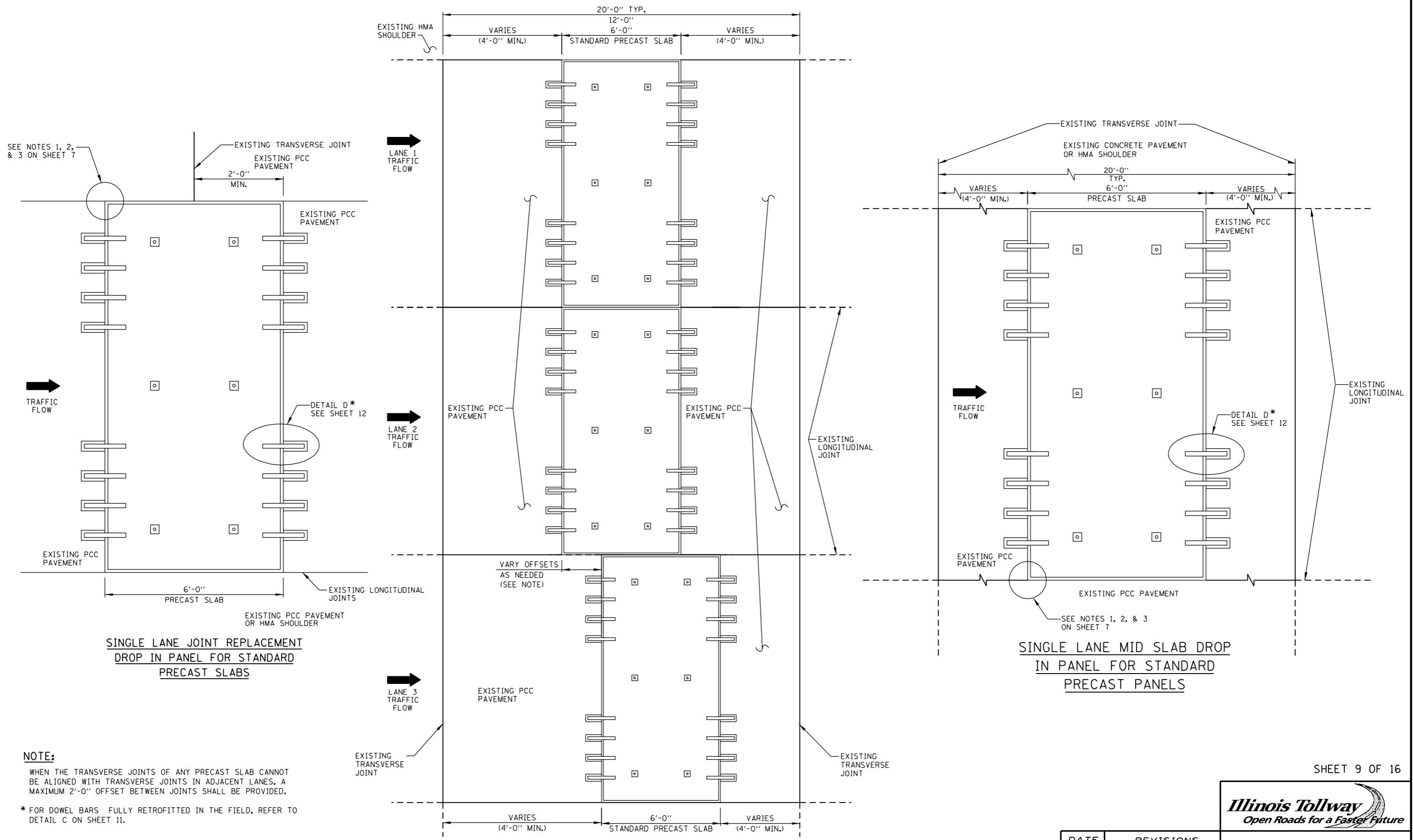
DATE	REVISIONS

PRECAST PAVEMENT SLABS

STANDARD A18-00

APPROVED DATE 5-1-2009
CHIEF ENGINEER

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**

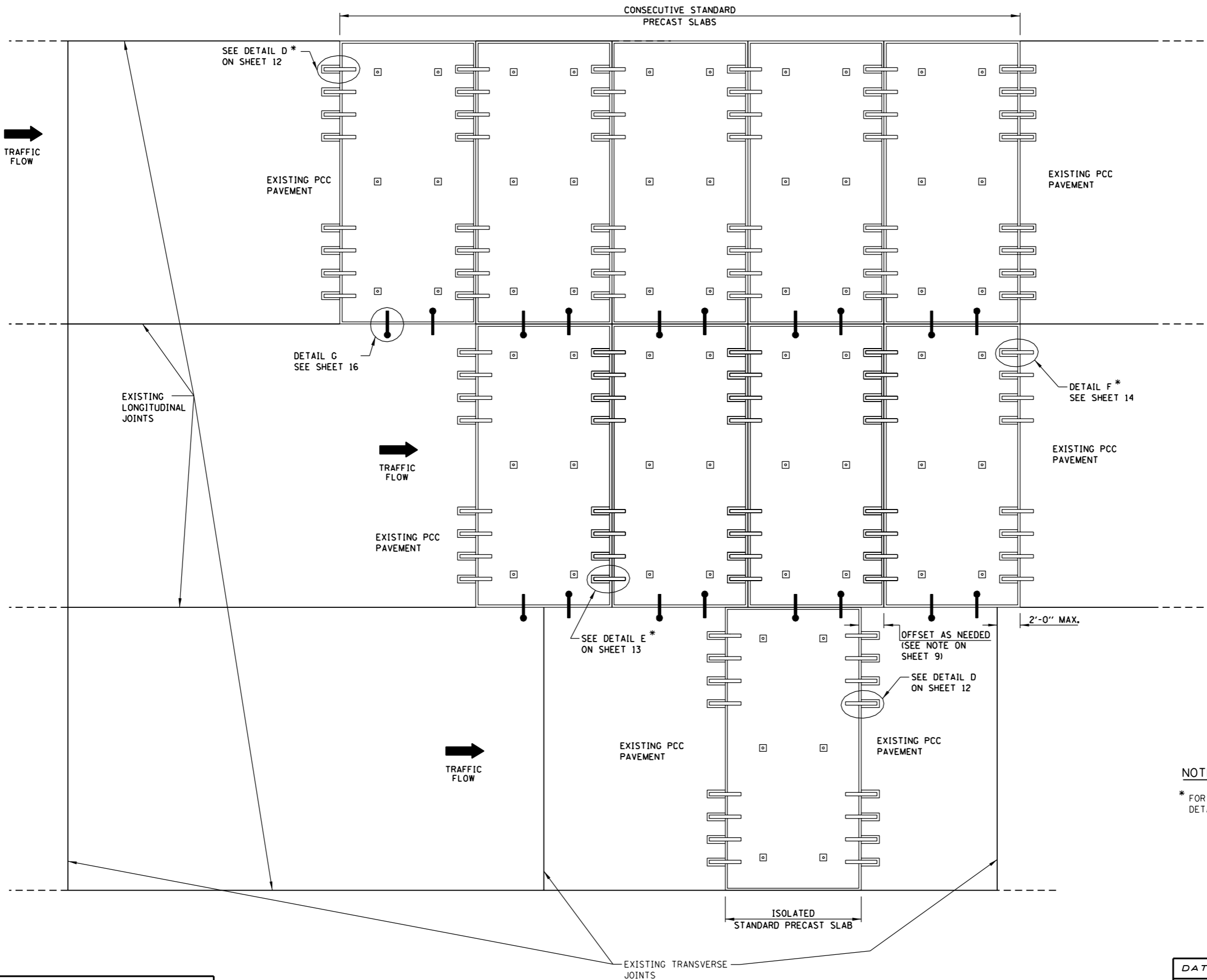
NOTE:
WHEN THE TRANSVERSE JOINTS OF ANY PRECAST SLAB CANNOT BE ALIGNED WITH TRANSVERSE JOINTS IN ADJACENT LANES, A MAXIMUM 2'-0" OFFSET BETWEEN JOINTS SHALL BE PROVIDED.
* FOR DOWEL BARS FULLY RETROFITTED IN THE FIELD, REFER TO DETAIL C ON SHEET 11.

APPROVED _____ DATE 5-1-2009
CHIEF ENGINEER



DATE	REVISIONS

PRECAST PAVEMENT SLABS
STANDARD 18-00



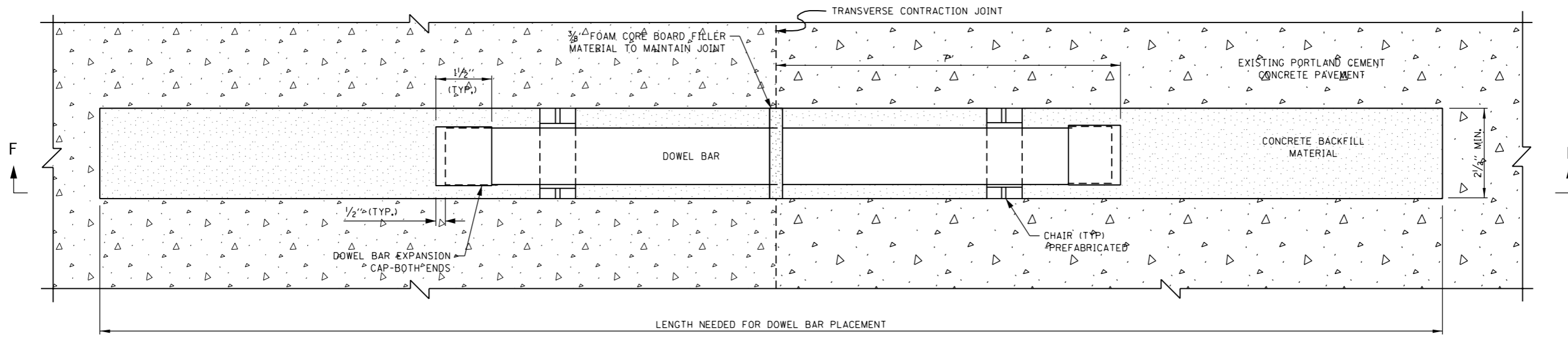
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PRECAST PAVEMENT SLABS

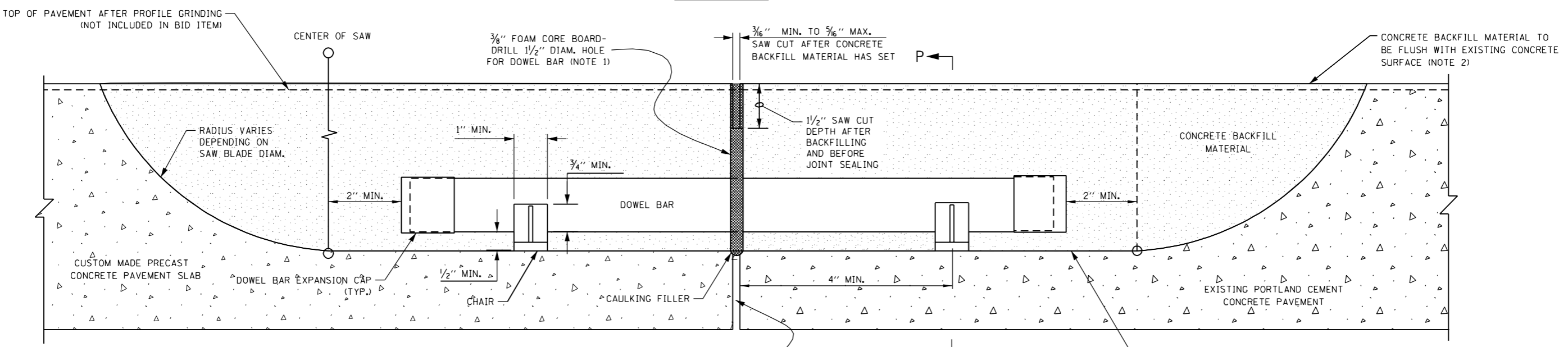
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APPROVED _____ DATE 5-1-2009
CHIEF ENGINEER

INSTALLATION OF CONSECUTIVE STANDARD PRECAST SLABS

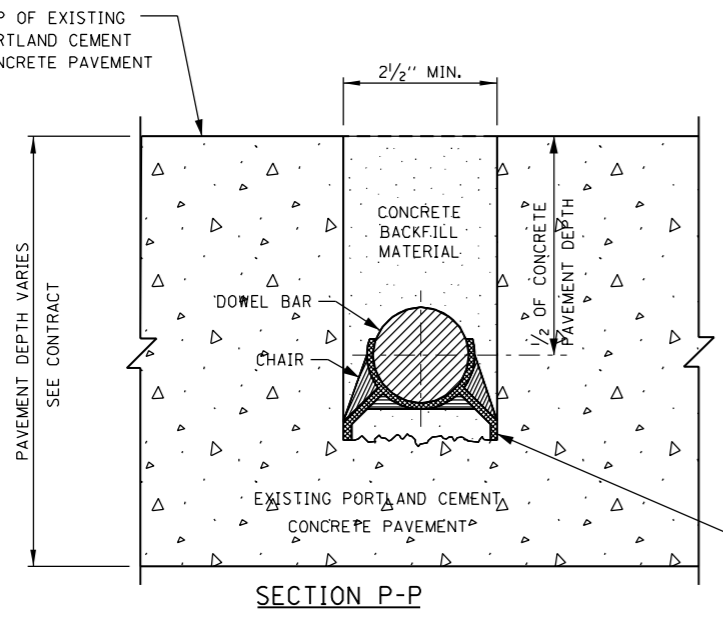


PLAN VIEW

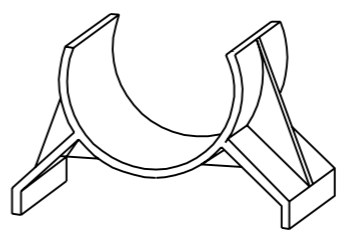


SECTION F-F

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



SECTION P-P



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.

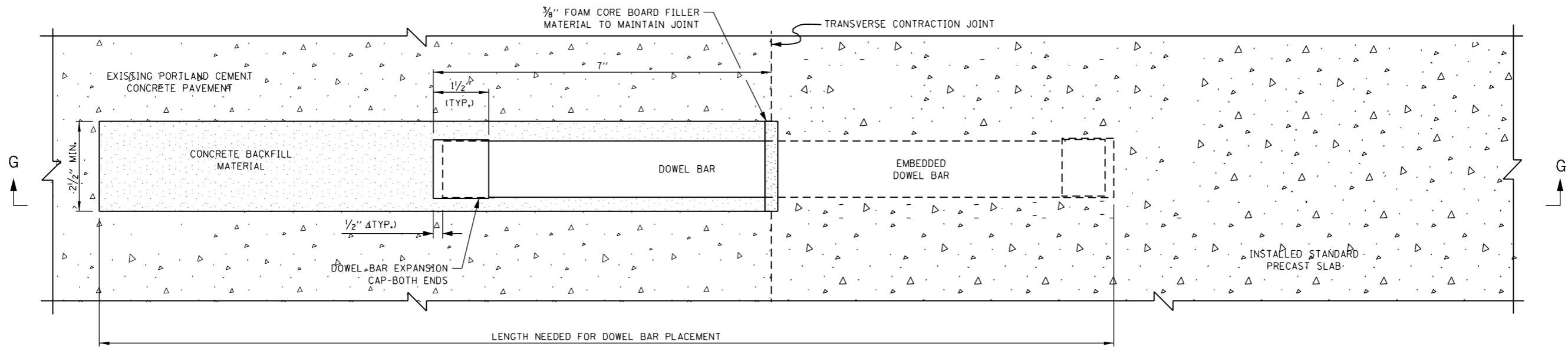


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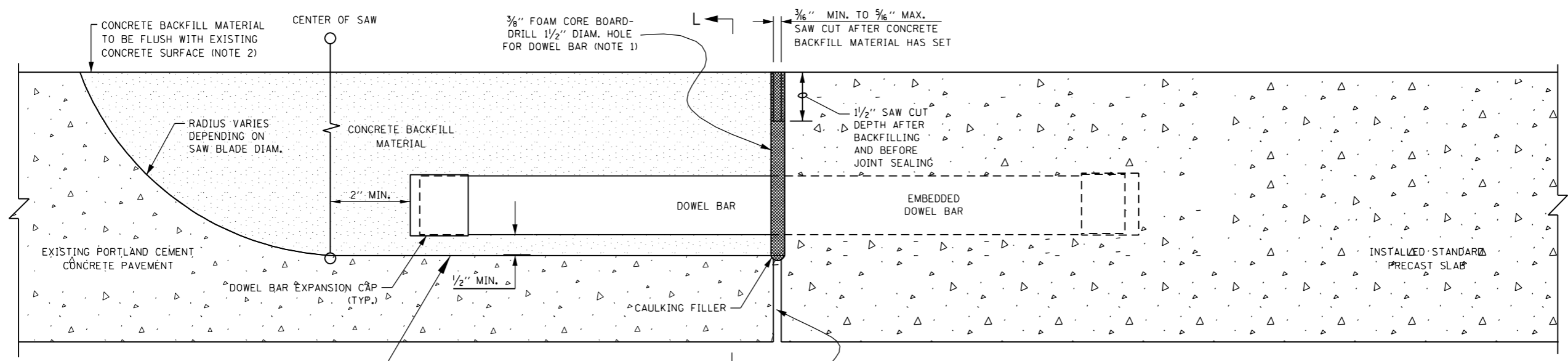
PRECAST PAVEMENT SLABS

STANDARD A18-00

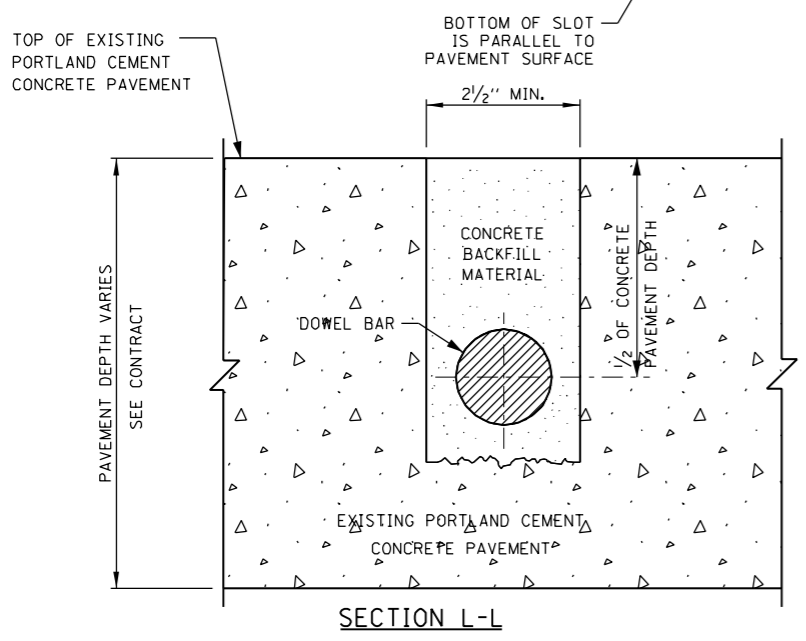
APPROVED _____ DATE 5-1-2009
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PLAN VIEW



SECTION G-G



SECTION L-L

DETAIL D - 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.

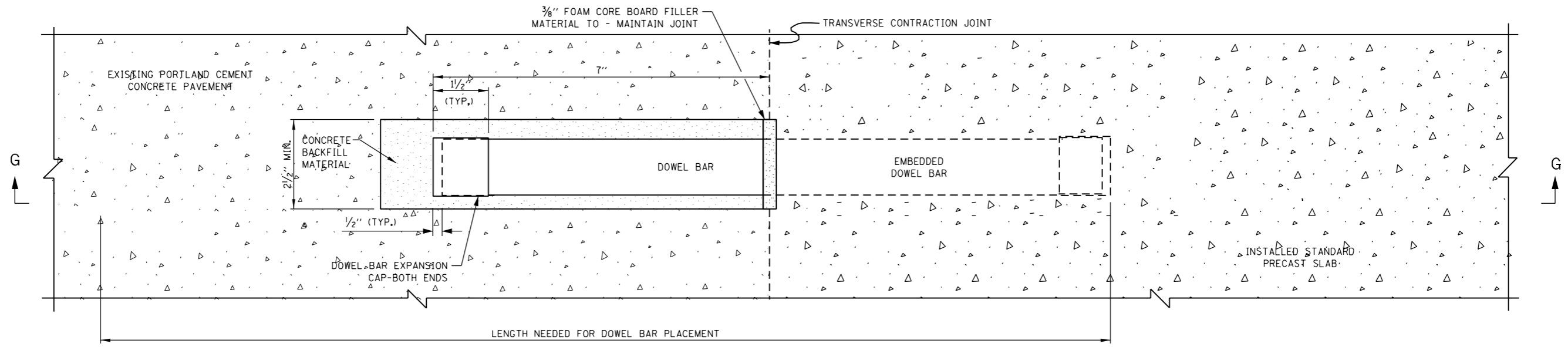


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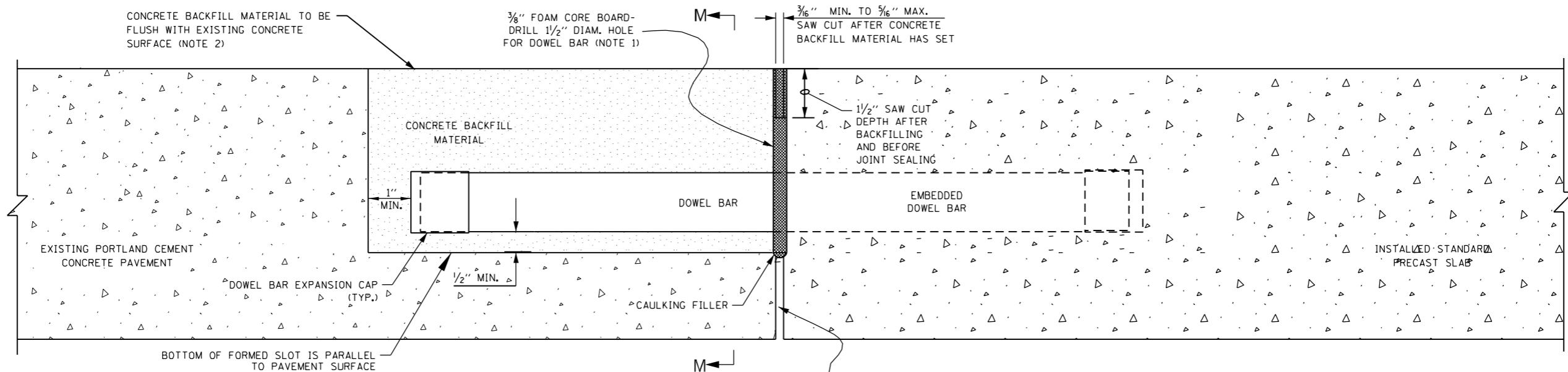
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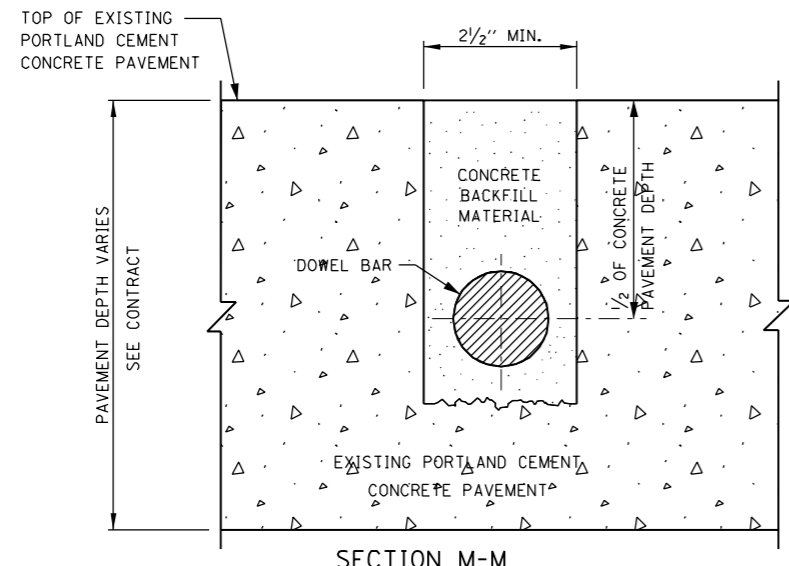
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PLAN VIEW



SECTION G-G



SECTION M-M

DETAIL E - 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.

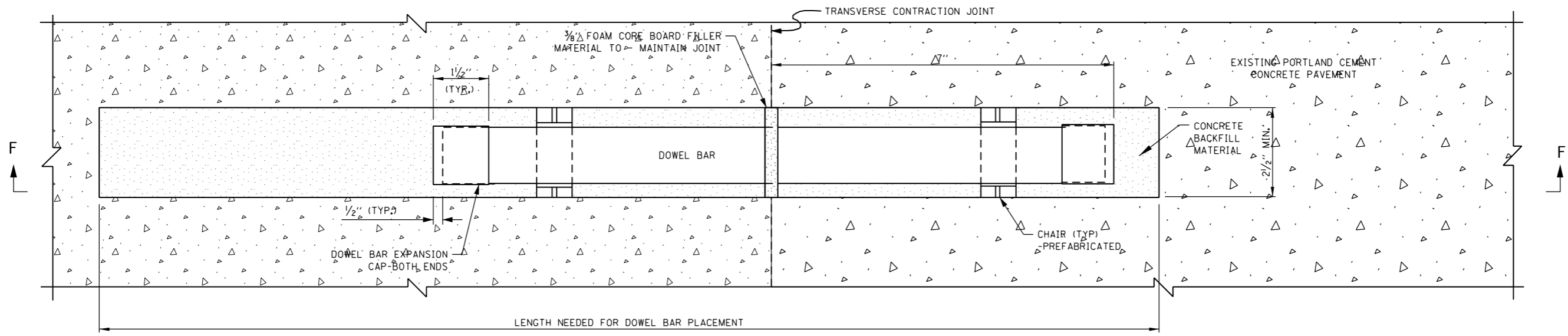


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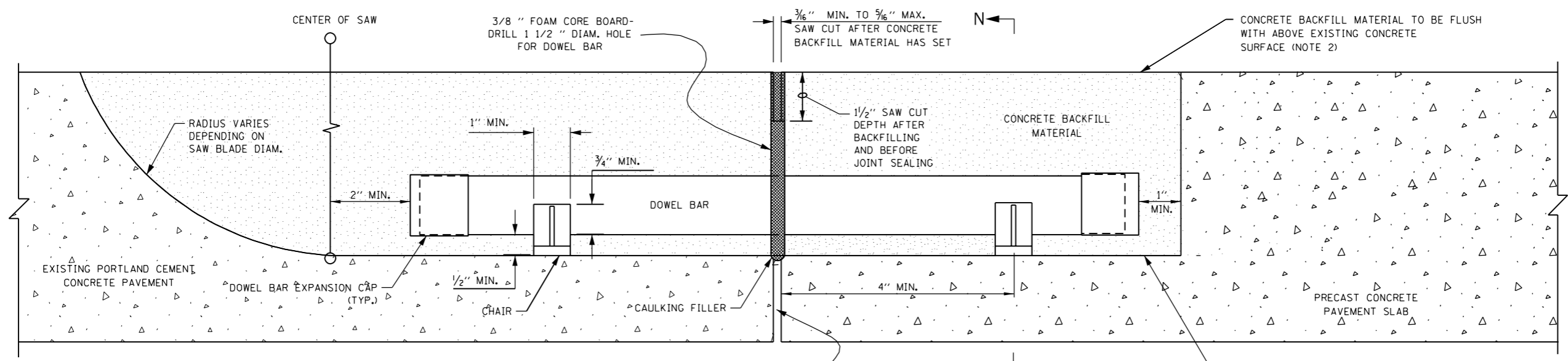
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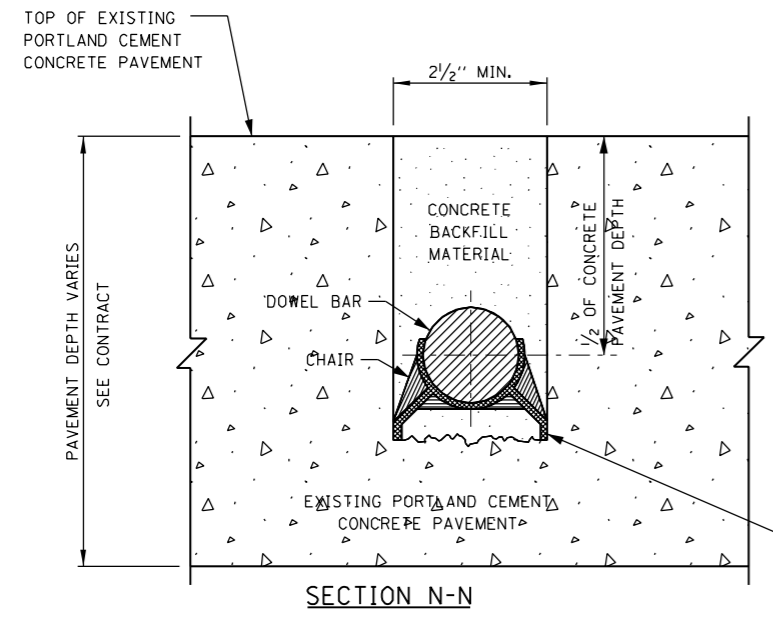


PLAN VIEW

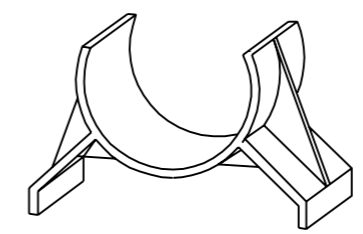


SECTION F-F

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



SECTION N-N



CHAIR DETAIL

NOTES:

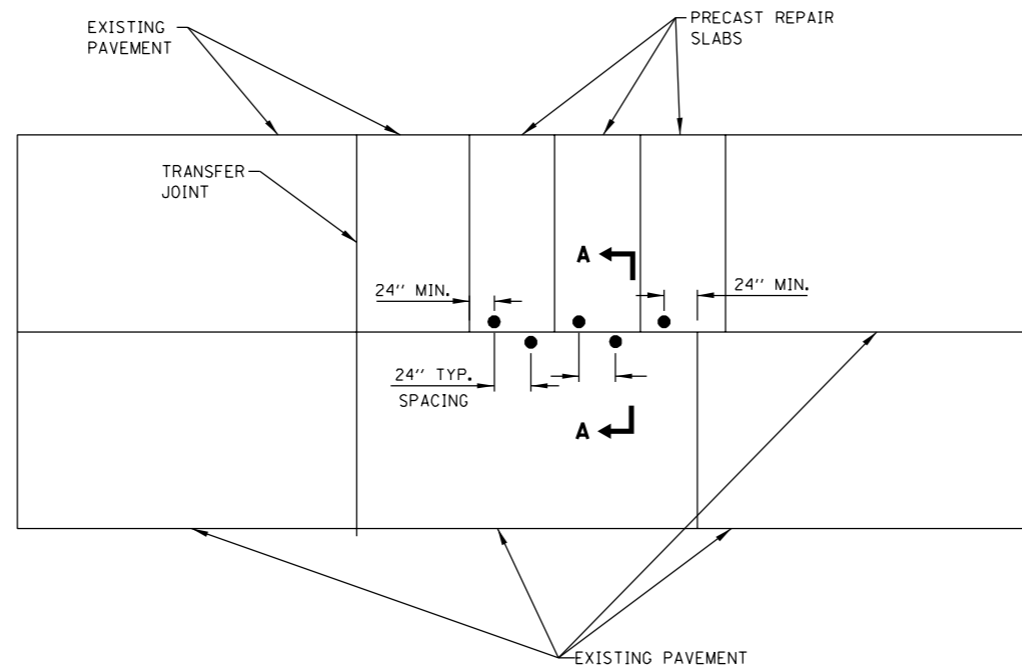
1. PLACE FOAM CORE BOARDS TO THE TOP OF PATCH.
2. UPON COMPLETION, THE FINISHED SURFACE OF THE CONCRETE BACKFILL MATERIAL SHALL NOT BE BELOW THE EXISTING CONCRETE SURFACE.



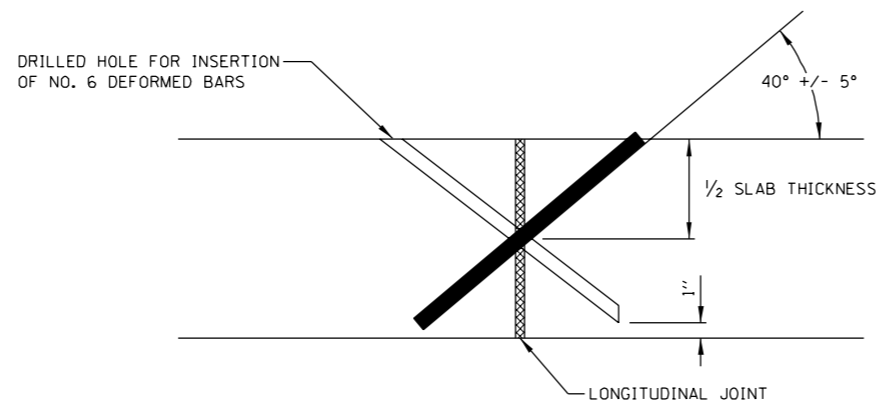
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**DETAIL G - LONGITUDINAL TIE BAR
STITCHING FOR PRECAST PANELS**



SECTION A-A

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.



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