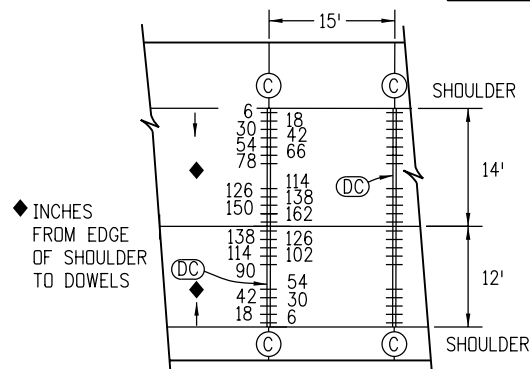


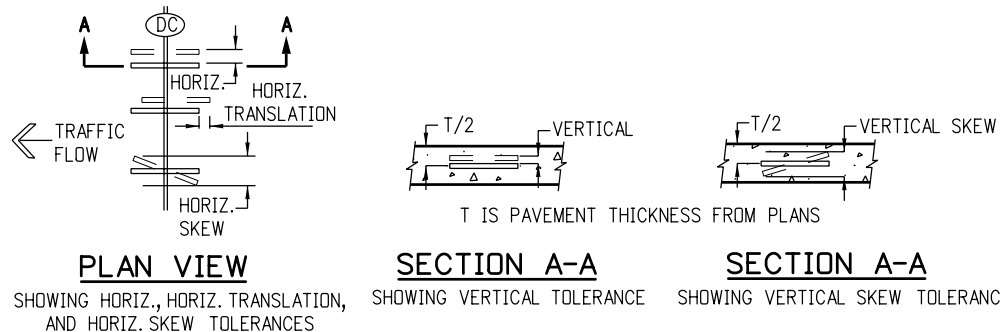
TYPICAL JOINT LAYOUT FOR CONCRETE ROADWAY WITH CONCRETE SHOULDERS

GENERAL NOTES

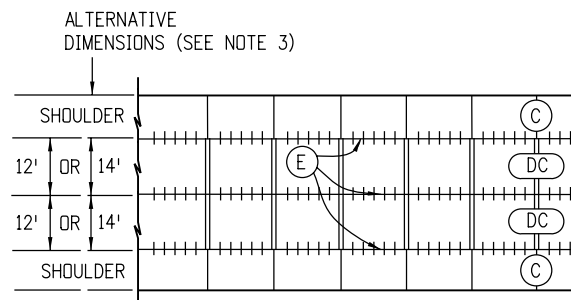
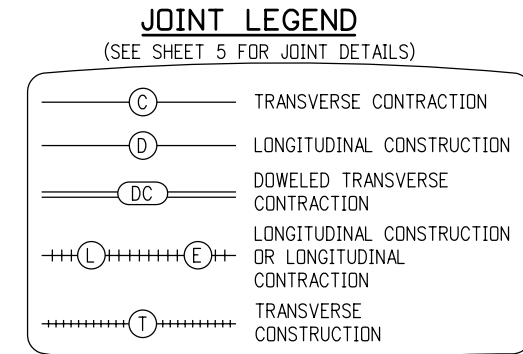
1. THIS STANDARD PLAN DOES NOT APPLY TO THIN CONCRETE OVERLAYS (WHITETOPPING).
2. LOCATE (T) JOINT AT A (C) JOINT OR A MINIMUM OF 6 FT. FROM A (C) JOINT.
3. THIS JOINT LAYOUT SHALL BE USED AS A STANDARD FOR THE JOINT LAYOUT FOR THE PROJECT. IF THE CONTRACTOR PROPOSES VARIATIONS FROM THIS STANDARD OR THE PROJECT HAS UNUSUAL OR IRREGULAR CONDITIONS NOT COVERED HEREIN, THE CONTRACTOR SHALL PREPARE A PAVEMENT JOINT LAYOUT FOR APPROVAL BY THE ENGINEER. SLABS 14 FT. IN WIDTH SHALL BE CONSTRUCTED ONLY WHERE DESIGNATED ON THE PLANS.
4. WHEN A CONTINUOUS WIDTH OF PAVEMENT IS POURED WIDER THAN 40 FT., THE JOINT NEAREST THE CENTERLINE SHALL BE AN UNTIED (D) JOINT.
5. ON 4 LANE DIVIDED HIGHWAYS, THE 2 LANE DIRECTIONAL PAVEMENT AND BOTH SHOULDERS SHALL BE PLACED WITH (E) LONGITUDINAL SAWED CONTRACTION JOINTS.
6. ON VARIABLE WIDTH SLABS, THE 2 FT. OR 4 FT. END OF SLAB WIDTH DIMENSION MAY VARY ±6 INCHES.
7. (L) TO BE USED WHEN TRAFFIC LANE IS ADDED SEPARATELY OR FOR TAPERS OR SPEED CHANGE LANES. ALTERNATIVE LONGITUDINAL JOINT LOCATIONS AT SPEED CHANGE LANE MAY BE USED IF APPROVED.



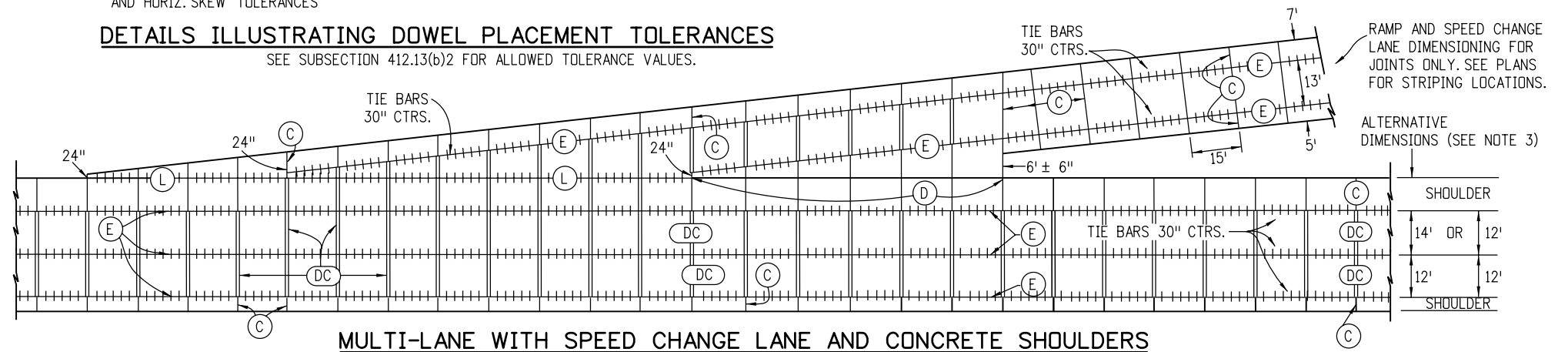
DOWEL BAR DETAIL FOR (DC) JOINT WITH 14 FT. AND 12 FT. LANES



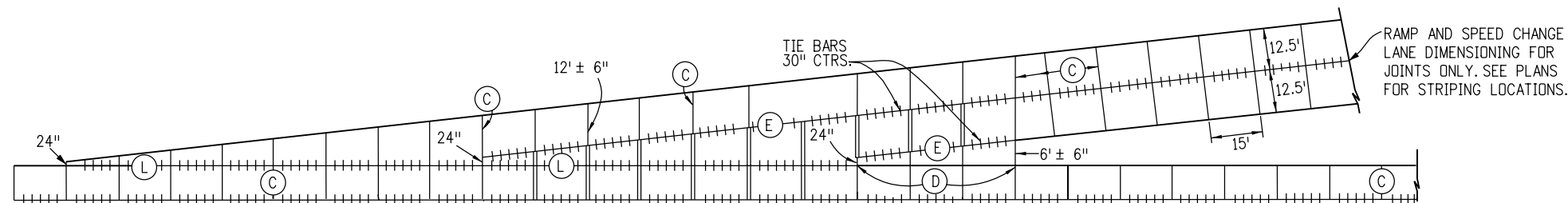
DETAILS ILLUSTRATING DOWEL PLACEMENT TOLERANCES
SEE SUBSECTION 412.13(b)2 FOR ALLOWED TOLERANCE VALUES.



RURAL TWO-LANE



MULTI-LANE WITH SPEED CHANGE LANE AND CONCRETE SHOULDERS



OPTIONAL LONGITUDINAL JOINT IN CENTER FOR SINGLE LANE SPEED CHANGE LANE

Computer File Information

Creation Date: 07/04/06	Initials: DD
Last Modification Date: 07/09/09	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 412010105.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions

Date:	Comments
(R-X) 07/09/09	Increased (T) spacing from (C) from 2 ft. to 6 ft.
(R-X) 07/09/09	Revised sheets 1 and 3.
(R-X)	

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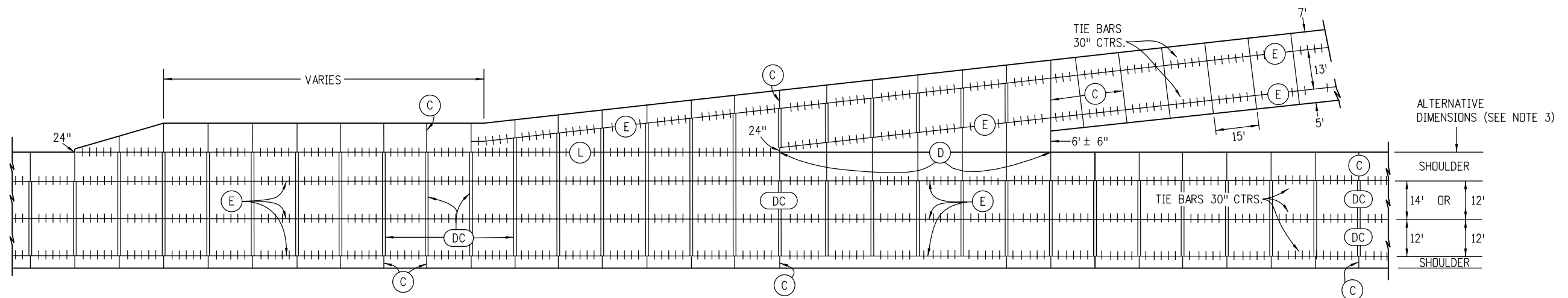
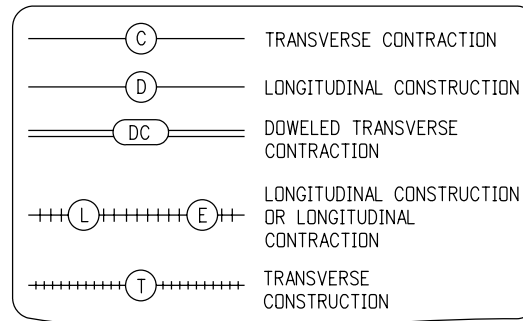
STANDARD PLAN NO.

M-412-1

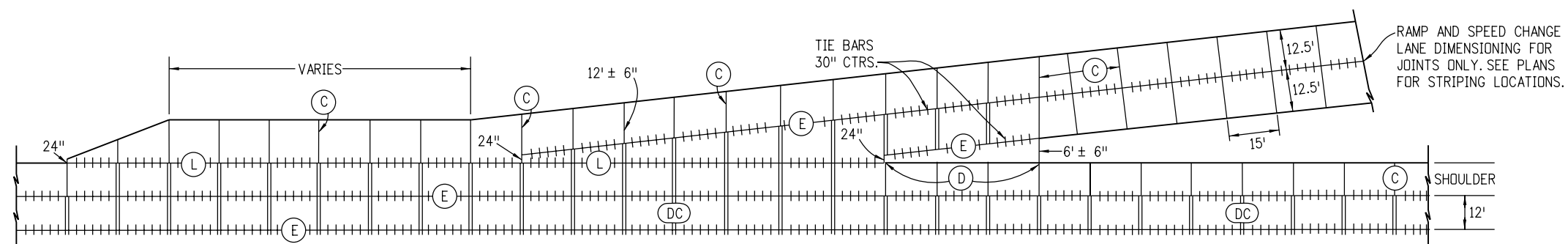
Sheet No. 1 of 5

JOINT LEGEND

(SEE SHEET 5 FOR JOINT DETAILS)



MULTI-LANE WITH ACCELERATION AND DECELERATION LANES AND CONCRETE SHOULDERS



OPTIONAL LONGITUDINAL JOINT IN CENTER FOR SINGLE LANE ACCELERATION AND DECELERATION LANE

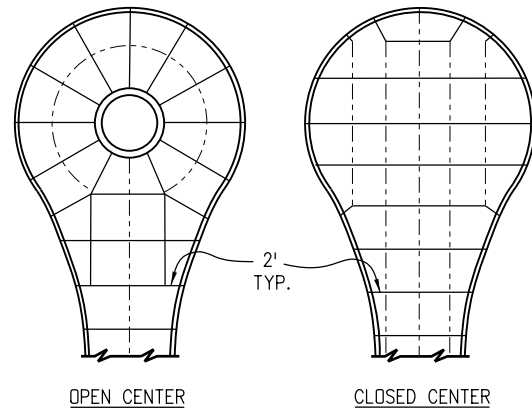
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CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
(R-X)	
(R-X)	
(R-X)	
(R-X)	

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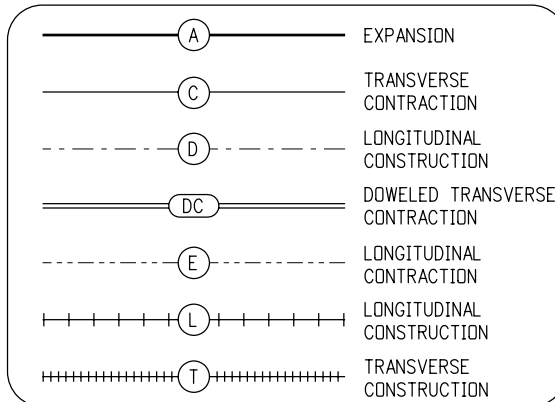
STANDARD PLAN NO.
M-412-1
Sheet No. 2 of 5



CUL-DE-SAC

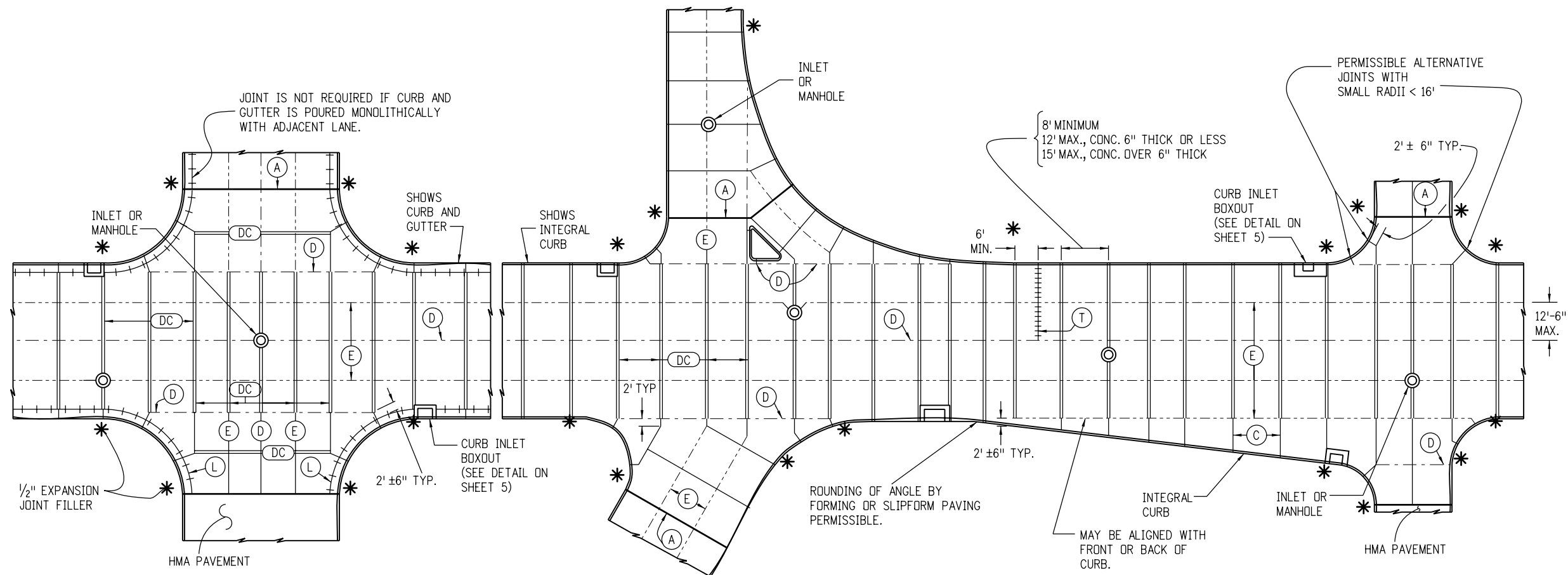
JOINT LEGEND

(SEE SHEET 5 FOR JOINT DETAILS)



NOTES

1. LONGITUDINAL JOINTS SHALL BE PLACED ADJACENT TO LANE MARKINGS WHEN POSSIBLE, AND HAVE A MAXIMUM SPACING OF 12 FT.-6 IN. (15 FT. IS PERMITTED WITH MONOLITHIC CURB AND GUTTER).
2. CONSTRUCT TRANSVERSE JOINTS PERPENDICULAR TO THE CENTERLINE OF PAVEMENT AND EXTEND THROUGH THE CURB OR CURB AND GUTTER.
- * 3. PLACE 1/2 IN. MIN. EXPANSION JOINT FILLER IN TOP 6 IN. OF CURB JOINT AT INTERSECTION RETURN RADIUS POINTS.
4. THE CONTRACTOR SHALL, UNLESS OTHERWISE SHOWN ON THE PLANS, SELECT AND USE A BOND BREAKER AT INLETS, MANHOLES AND SIMILAR SIZE STRUCTURES. SMALLER STRUCTURES SUCH AS VALVE AND MONUMENT BOXES SHALL NOT REQUIRE A BOND BREAKER.
5. WHERE A LONGITUDINAL JOINT PASSES LESS THAN 1 FT. FROM A CAST-IN-PAVEMENT MANHOLE OR SIMILAR SIZE STRUCTURE, A TYPICAL 2 FT. RADIAL JOINT, AS SHOWN IN THE DETAILS, SHALL BE USED.
6. TRANSVERSE JOINTS SHALL EITHER INTERSECT THE CENTER OF CIRCULAR MANHOLES AND INLETS OR BE AT LEAST 4 FT. AWAY FROM THE EDGE OF CIRCULAR MANHOLES. SEE CURB INLET BOXOUT DETAIL ON SHEET 5.
7. LOCATE (T) JOINT AT A (DC) JOINT OR A MINIMUM OF 6 FT. FROM A (DC) JOINT.



TYPICAL CURBED PAVEMENT JOINT LAYOUT

Computer File Information	
Creation Date: 07/04/06	Initials: DD
Last Modification Date: 07/09/09	Initials: LTA
Full Path: www.dot.state.co.us/DesignSupport/	
Drawing File Name: 412010305.dgn	
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	

Sheet Revisions	
Date:	Comments
(R-X) 07/09/09	Increased spacing (T) from (DC) from 2' ft. to 6 ft.
(R-X)	
(R-X)	

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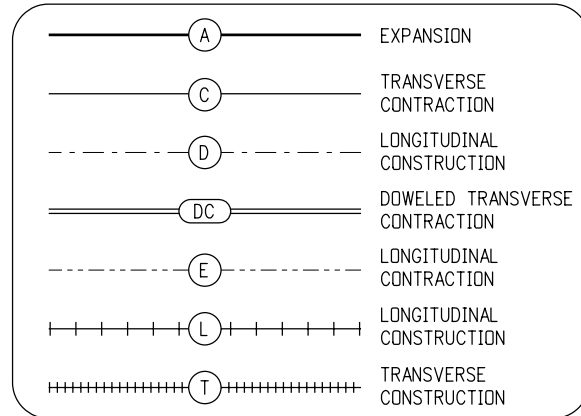
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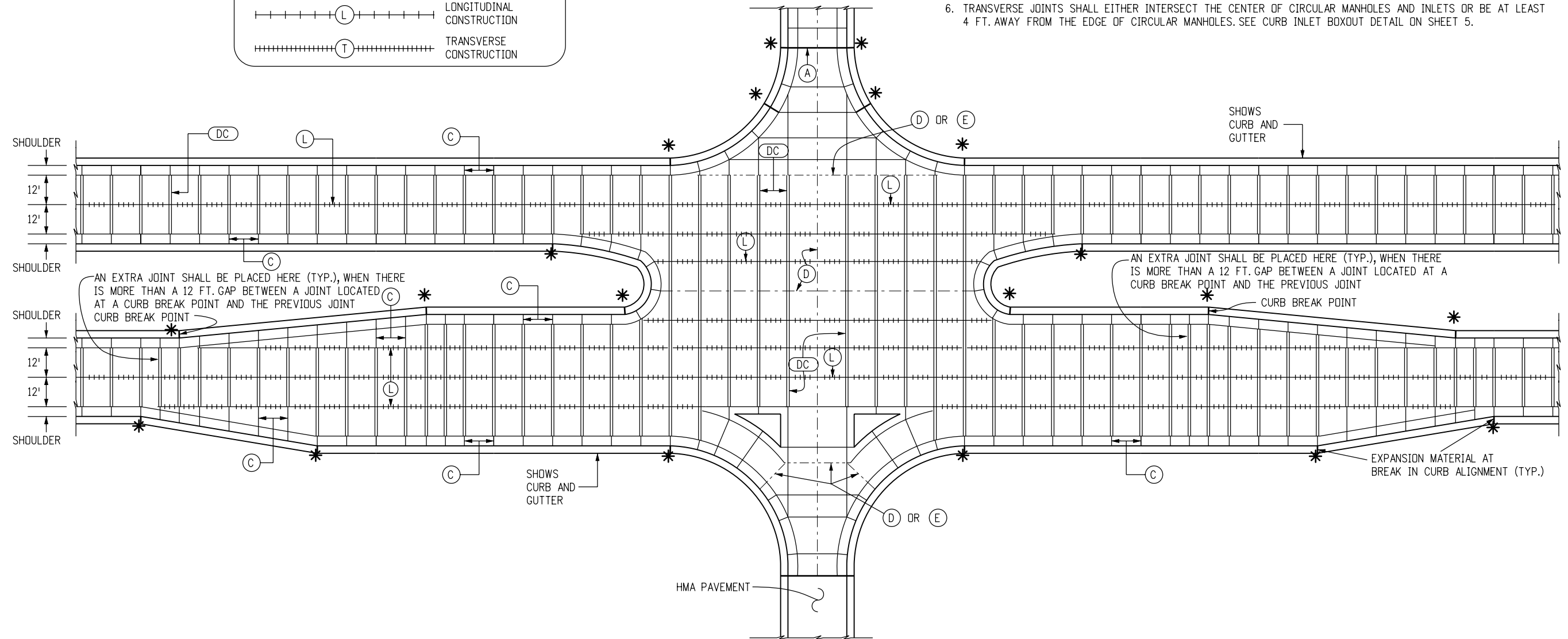
STANDARD PLAN NO.
M-412-1
Sheet No. 3 of 5

JOINT LEGEND
(SEE SHEET 5 FOR JOINT DETAILS)



NOTES

- LONGITUDINAL JOINTS SHALL BE PLACED ADJACENT TO LANE MARKINGS WHEN POSSIBLE, AND HAVE MAXIMUM SPACING OF 12 FT.-6 IN. (15 FT. IS PERMITTED WITH MONOLITHIC CURB AND GUTTER).
- CONSTRUCT TRANSVERSE JOINTS PERPENDICULAR TO THE CENTERLINE OF PAVEMENT AND EXTEND THROUGH THE CURB OR CURB AND GUTTER.
- PLACE 1/2 IN. MIN. EXPANSION JOINT FILLER IN TOP 6 IN. OF CURB JOINT AT INTERSECTION RETURN RADIUS POINTS.
- THE CONTRACTOR SHALL, UNLESS OTHERWISE SHOWN ON THE PLANS, SELECT AND USE A BOND BREAKER AT INLETS, MANHOLES AND SIMILAR SIZE STRUCTURES. SMALLER STRUCTURES SUCH AS VALVE AND MONUMENT BOXES DO NOT REQUIRE A BOND BREAKER.
- WHERE A LONGITUDINAL JOINT WOULD PASS LESS THAN 1 FT. FROM A CAST-IN-PAVEMENT MANHOLE OR SIMILAR SIZE STRUCTURE, A TYPICAL 2 FT. RADIAL JOINT, AS SHOWN IN THE DETAILS, SHALL BE USED.
- TRANSVERSE JOINTS SHALL EITHER INTERSECT THE CENTER OF CIRCULAR MANHOLES AND INLETS OR BE AT LEAST 4 FT. AWAY FROM THE EDGE OF CIRCULAR MANHOLES. SEE CURB INLET BOXOUT DETAIL ON SHEET 5.



MULTI-LANE INTERSECTION WITH SPEED CHANGE LANE AND CONCRETE SHOULDERS

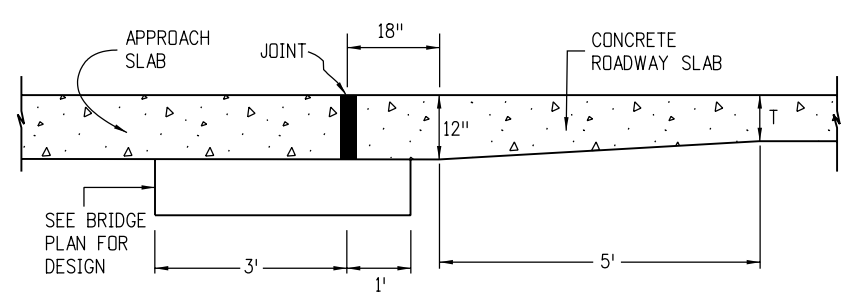
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Drawing File Name: 412010405.dgn	
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Date:	Comments
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(R-X)	

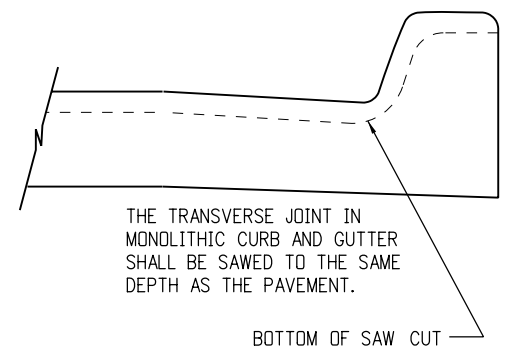
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Sheet No. 4 of 5



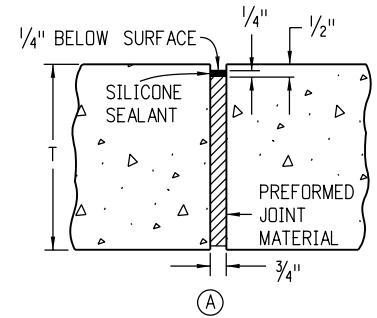
BRIDGE APPROACH



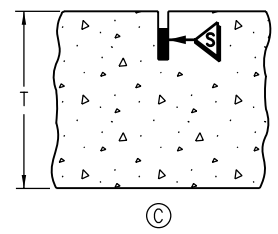
NOTE
PAVEMENT THICKNESS (T), SHALL BE AS SHOWN ON THE PLANS.

PAVEMENT THICKNESS (T)	TIE BAR SIZE	DOWEL BAR DIAMETER
T < 8 IN.	No. 4	1 IN.
8 IN. ≥ T ≤ 10 IN.	No. 5	1.25 IN.
10 IN. > T ≤ 15 IN.	No. 6	1.50 IN.

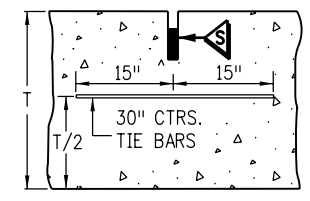
REINFORCING SIZE TABLE



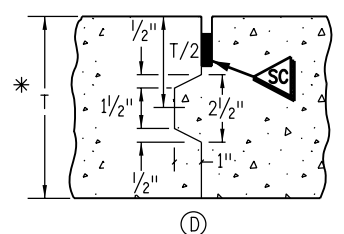
EXPANSION JOINT



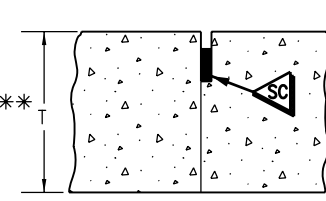
TRANSVERSE CONTRACTION JOINT
(TRANSVERSE WEAKENED PLANE JOINT)



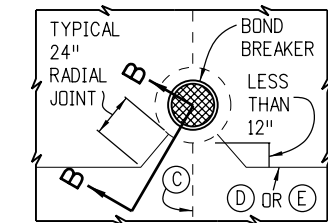
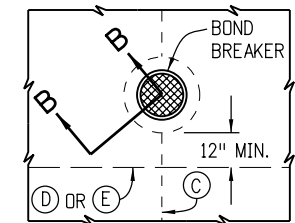
LONGITUDINAL CONTRACTION JOINT
(LONGITUDINAL WEAKENED PLANE JOINT)



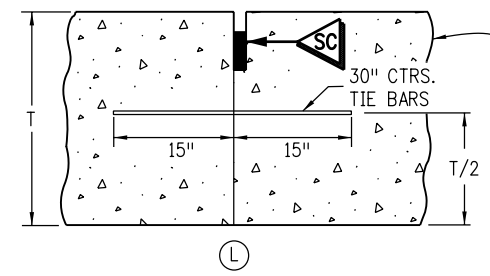
LONGITUDINAL CONSTRUCTION JOINT
* USE ONLY IF T ≥ 8 IN.
FORM ONLY FEMALE KEYWAY



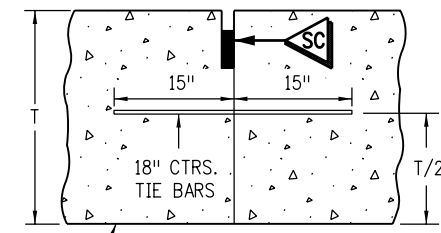
LONGITUDINAL CONSTRUCTION JOINT
** USE ONLY IF T < 8 IN.



INLET OR MANHOLE CAST IN PAVEMENT

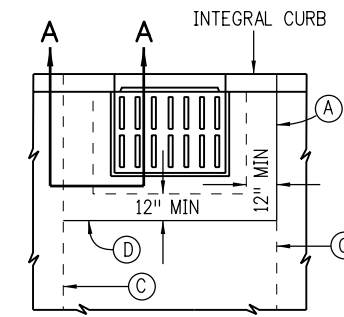


LONGITUDINAL CONSTRUCTION JOINT



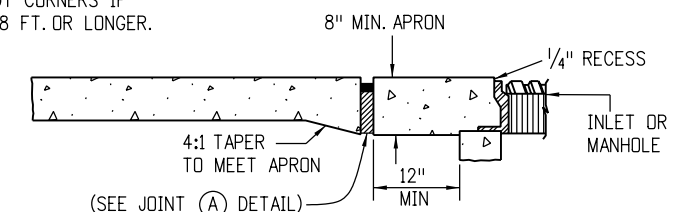
TRANSVERSE CONSTRUCTION JOINT

A KEYWAY IS ALLOWED TO FACILITATE USE OF BENT GRADE 40 TIE BARS OR APPROVED TWO PIECE CONNECTORS

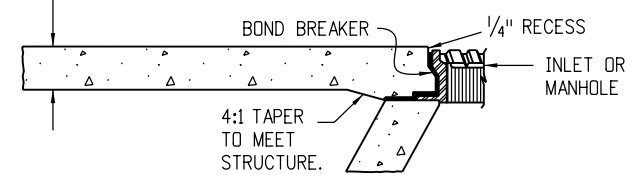


CURB INLET BOXOUT

INSTALL TRANSVERSE JOINT AT BOTH BOXOUT CORNERS IF BOXOUT IS 8 FT. OR LONGER.

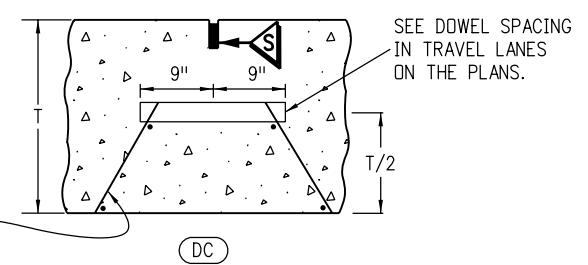


SECTION A-A

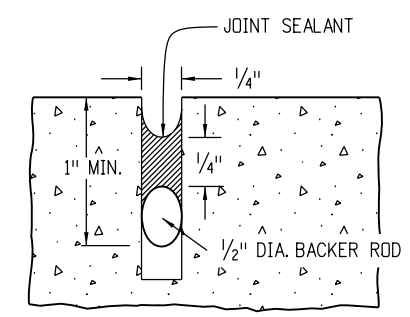


SECTION B-B

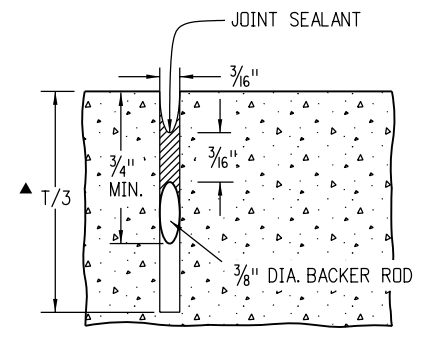
BOND BREAKER SHALL BE COMPOSED OF PLASTIC SHEET, BUILDING PAPER OR OTHER APPROVED MATERIAL THAT PREVENTS BONDING.



DOWELED TRANSVERSE CONTRACTION JOINT



SEAL AT CONSTRUCTION JOINT



SAWED JOINT
▲ SHALL BE 0.4T FOR LONGITUDINAL JOINTS ALONG SLABS 14 FT. IN WIDTH.

Computer File Information

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Drawing File Name: 412010505.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions

Date:	Comments
(R-X)	
(R-X)	
(R-X)	
(R-X)	

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