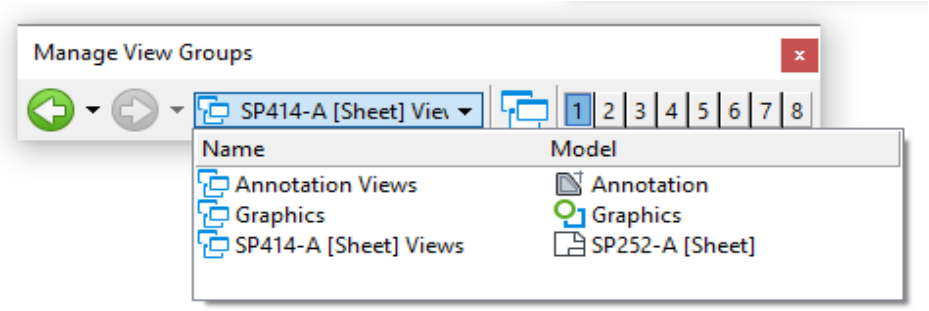
Notes to the Designer

Updated February 2024

Minor Concrete Pavement Joints

General Information

- Printing should be done from the **[Sheet]** View model



- **Joint types.** Joints should be placed in all rigid pavements. Most jointed concrete pavement failures can be attributed to failures at the joint, as opposed to inadequate structural capacity.
  The most common types of pavement joints, which are defined by their function, are as follows:
  o Transverse Contraction Joint - a sawed, formed, or tooled groove in a concrete slab that creates a weakened vertical plane. It regulates the location of the cracking caused by dimensional changes in the slab, and is by far the most common type of joint in concrete pavements.
  o Longitudinal Joint - a joint between two slabs which allows slab warping without appreciable separation or cracking of the slabs.
  o Construction Joint - a joint between slabs that results when concrete is placed at different times. This type of joint can be further broken down into transverse and longitudinal joints.
- **Layout Guidance.**
  Provide a joint layout plan and this detail for all rigid pavements. Coordinate joint layout with pavements and materials engineer.

Applicable SCRs

- **Section 703 (FP-24):** https://highways.dot.gov/federal-lands/specs/cfl-los/fp-24-library/703-fp24.docx
- **Section 703 (FP-14):** https://flh.fhwa.dot.gov/resources/specs/fp-14/cfl/documents/S703-14_09112014.docx

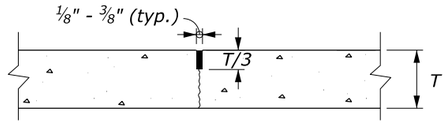
Typical Pay Item Used

- 50101-**??**00 Minor Concrete Pavement, reinforced, [6-inch (150mm) to 12-inch (300mm)] depth [SQYD (m2)]
- 50102-**??**00 Minor Concrete Pavement, plain, [6-inch (150mm) to 12-inch (300mm)] depth [SQYD (m2)]

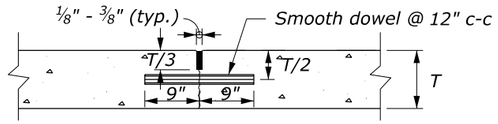
Updates

- **July 2021**
  - Updated for OpenRoads Designer
- **February 2024**
  - Updated border; Updated for FP24

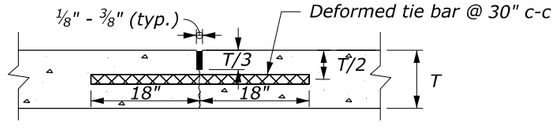
PROJECT	SHEET NUMBER
PROJECT NUMBER PROJECT NAME	



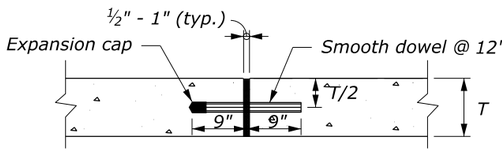
CONTRACTION JOINT
UNDOWELED - TRANSVERSE and UNTIED - LONGITUDINAL



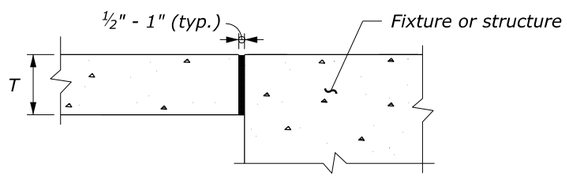
CONTRACTION JOINT
DOWELED - TRANSVERSE



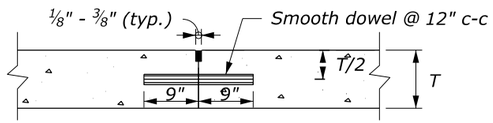
CONTRACTION JOINT
TIED - LONGITUDINAL



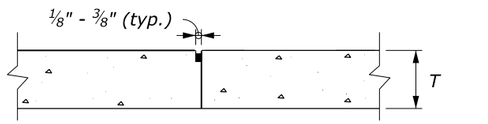
CONTRACTION JOINT
DOWELED - TRANSVERSE



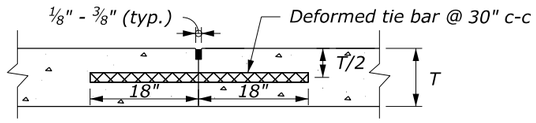
ISOLATION JOINT
UNDOWELED - LONGITUDINAL



CONSTRUCTION JOINT
DOWEL BUTT - TRANSVERSE



CONSTRUCTION JOINT
PLAIN - TRANSVERSE or LONGITUDINAL

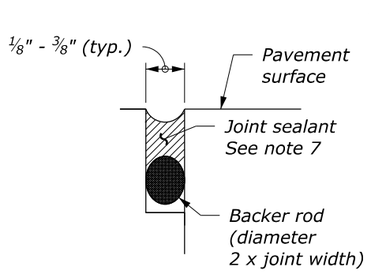


CONSTRUCTION JOINT
TIED BUTT - LONGITUDINAL

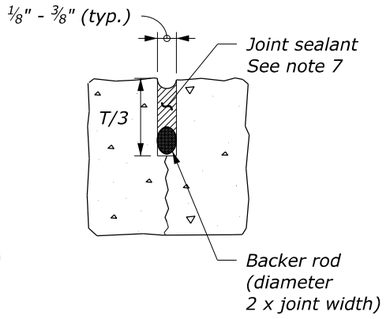
NOTE:

1. *Use epoxy-coated material for all tie bars, dowels, and other steel used in the construction of concrete pavement.*
2. *Use deformed reinforcing bars for tie bars.*
3. *Install isolation joints when abutting a fixed structure. Use expansion joint material extending the full depth Use expansion joint material extending the full depth.*
4. *Transverse and longitudinal construction joints are not included in the joint layout plan. Use transverse and longitudinal construction joints sparingly. Submit planned construction joint locations to the CO for approval.*
5. *Do not place tie bars within 15 inches of transverse joints.*
6. *For construction joints, if tie bars and dowels are not set into concrete during placement, drill and anchor the tie bars and dowels into the existing concrete construction with epoxy resin.*
7. *Maintain joint sealant shape factor of 1:1 except when silicone sealant is used, the width to depth shape factor is 2:1 or as recommended by sealant manufacturer.*

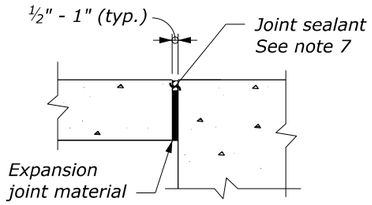
Pavement Thickness (T) (inches)	*Tie Bar*	*Dowel Bar Diameter (inches)*
T ≤ 8	*#5*	*1*
8 < T ≤ 10	*#5*	*1¼*
10 < T ≤ 12	*#6*	*1½*



CONSTRUCTION JOINT



SAWED or FORMED JOINT



ISOLATION JOINT

JOINT SEALING DETAILS

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION, FHWA OFFICE OF FEDERAL LANDS HIGHWAY	CFLHD DETAIL C501-50
MINOR CONCRETE PAVEMENT JOINTS	SPECIFICATION FP-24, FP-14
	APPROVED FOR USE 06/2024