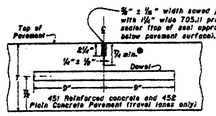
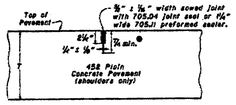
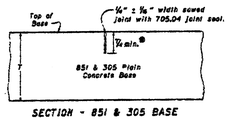
CONTRACTION JOINTS



SECTION - 451 & 452 PAVEMENT



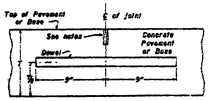
SECTION - 452 SHOULDER



SECTION - 851 & 305 BASE

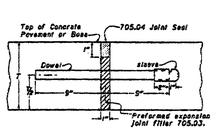
● Where T > 10" the sawcut depth shall be ⅓

CONSTRUCTION JOINT

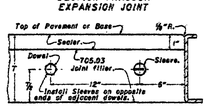


SECTION THROUGH CONSTRUCTION JOINT

EXPANSION JOINT



SECTION THROUGH EXPANSION JOINT



SIDE ELEVATION OF EXPANSION JOINT

GENERAL : Notes and details shown on this drawing shall be considered in conjunction with and supplemental to the pertinent specifications for portland cement concrete pavements and bases, and incidentals related thereto.

All joints shall be constructed normal to the centerline of the pavement lane unless otherwise directed.

Where dowels are specified, they shall be round, straight steel bars of the size indicated in the following table, and shall be coated in accordance with the requirements of specification 709.13. Dowel basket assemblies shall also be coated in accordance with 709.13. Dowels shall be spaced at 12"centers, beginning 6" from the longitudinal joint.

DOWEL SIZE	
(T) THICKNESS OF PAVEMENT	DIAMETER OF DOWEL
8.5" or less	1"
8.6" to 10"	1¼"
over 10"	1½" or as shown on plan

ASSEMBLY : Each joint assembly used to hold dowels in position shall be continuous between longitudinal joints or between longitudinal joint and pavement edge. The assembly shall be firmly held in proper position by at least eight ½" steel pins driven at an angle to brace the assembly from lateral and vertical displacement during the placing of the concrete. These pins shall be at least 18" in length. Two of these pins shall be driven opposite each other at each end of the assembly and the remaining pins shall be driven in staggered positions on each side of the assembly. In exceptional cases where it is impractical to use the 18" length pins, such as where hardpan or rock is encountered, the Engineer may authorize use of shorter pins provided the assembly is held firmly. Where the assembly is placed on granular material which may allow settlement or distortion, the assembly shall be anchored to prevent settlement or distortion with some combination of pins and/or steel plates, or by some other means to the satisfaction of the Engineer.

When concrete pavement is placed on an existing concrete pavement or a stabilized base, the joint assemblies (baskets) shall be held firmly in position by the use of a power driven fastener and an appropriate clip at 6 locations along the assembly (3 each side of the assembly) to secure the basket from lateral and vertical displacement during concrete placement.

Dowel spacing is shown for pavement lanes of even foot widths. Where other widths are specified, standard gages may be used with dowel spacings adjusted as follows :

The 6" dowel spacing shall be maintained at the longitudinal joint. The spacing at the outer edge of the lane may be increased up to 12". Where an odd width of lane occurs, a dowel shall be placed 6" from the outer edge of the lane if the standard gage would provide for a space exceeding 12". Such a dowel shall be held rigidly in proper position by a method satisfactory to the Engineer or a dowel gage of greater length than required may be used by cutting the assembly and splicing to attain the required length.

This drawing is intended for use with a uniform depth pavement. When the project involves the placing of variable depth pavement, the joint components shall be held in place in accordance with the method shown in the plan or as approved by the Engineer.

EXPANSION JOINTS : Expansion joint filler shall be held rigidly in position and shall be continuous for the full width of each face. The face of the expansion joint shall be perpendicular to the concrete surface and shall not be skewed horizontally except when abutting a skewed bridge approach slab.

Smooth dowels shall be used, and free movement shall be provided by applying a coating of a thin layer of oil or other "debonding" material just prior to placing the concrete. One free end of each dowel shall be equipped, after coating, with a sleeve of metal or other approved material approximately 3" long, designed with crimped end and overlapping seams, fitting closely around the dowel. Each sleeve shall be provided with a depression or interior projection to act as a stop for the dowel, sufficiently distant from the crimped end to allow ½" for longitudinal dowel movement with pavement expansion. In lieu of this requirement, any other means may be used if approved by the Director.

Proper size dowel holes shall be punched or drilled into the preformed expansion joint filler in order to insure tight fitting dowels.

CONTRACTION JOINTS : All contraction joints in 451 reinforced concrete and 452 plain concrete pavements shall be doweled. Contraction joints in 305 plain concrete base or shoulders shall be doweled if within 500' of a pressure relief joint.

To provide for longitudinal movement of the joint, dowels shall be smooth and coated with a bond breaking material such as a thin layer of oil just prior to placing the concrete.

Contraction joints of the type specified shall be spaced in accordance with the following table :

SEE TYPICAL JOINT DETAIL

CONTRACTION JOINT SPACING	
TYPES OF PAVEMENT OR BASE	MAXIMUM SPACING BETWEEN JOINTS
451 Reinforced Concrete Pavement	21 lin. ft.
452 Plain Concrete Pavement	17 lin. ft.
851 & 305 Plain Concrete Base	20 lin. ft.

* Where the 452 Plain Concrete Pavement is being placed next to the 451 Reinforced Concrete Pavement, the joint spacing in the 452 shall be 21 feet and match the joints in the existing pavement. Where the 452 Plain Concrete Pavement is being used as a shoulder, rumble strips shall be placed as per SP-9.1.

CONSTRUCTION JOINTS : Smooth dowels shall be used in transverse construction joints in all portland cement concrete pavements, shoulders and base. The joint shall be formed by using an adequate bulkhead that will provide a straight joint. The bulkhead shall have openings provided for dowel bars spaced as outlined under "ASSEMBLY". The bulkhead shall be shaped to fit the typical section of the pavement or base. Dowels shall be held rigidly in position during the placing of the concrete.

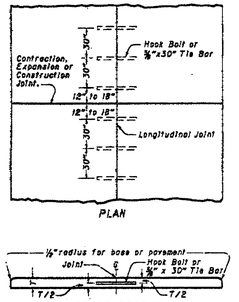
Construction joints in reinforced concrete pavement may be located at a contraction joint or between contraction joints, provided they are not closer than 10 feet to another parallel joint. In plain concrete pavement or concrete base a construction joint shall not be located closer than 6 feet to another parallel joint.

Keyed and seal conforming in all respects to details shown for contraction joints shall be provided at each construction joint in concrete pavement and base.

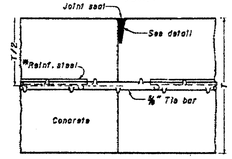
SEALING BASE CONTRACTION JOINTS : All contraction joints for plain concrete bases shall be sealed as detailed hereon and the cost included in the unit price bid for Item 305 or 851.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION
TRANSVERSE PAVEMENT JOINTS
DATE 2-2-00
STANDARD CONSTRUCTION DRAWING **BP-2.2**
APPROVED: D.V. Hubbard ENGR., L & D

TIE BAR OR HOOK BOLT SPACING

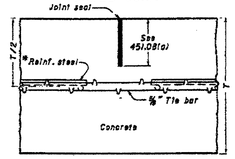


BUTT JOINT



DETAIL OF JOINT

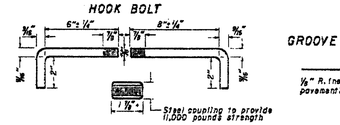
SAWED JOINT



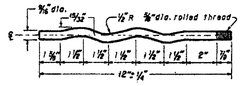
DETAIL OF JOINT

* For 451 only

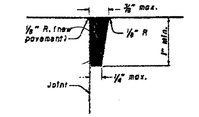
HOOK BOLT



HOOK BOLT ALTERNATE



GROOVE AND SEAL DETAIL



NOTES

GENERAL: Longitudinal joints shall be used when called for on the typical section and shall be constructed as shown on this drawing in 451 and 452 pavement and 305 base.

The joint shall be on the centerline of the pavement unless otherwise shown on the plans.

Tie bars shall be ⅝ inch round, deformed bars. A satisfactory device shall be used to hold the tie bars in proper position or they may be installed by a mechanical installing device.

BUTT JOINT: The longitudinal joint between adjoining slabs poured in separate operations shall be a butt joint with hook bolts or tie bars unless otherwise shown on plans. Bent tie bar construction shall not be permitted.

TYPE D (DRILLED TIED LONGITUDINAL) JOINT: Type D joints shall be constructed in accordance with 255.05. Grout shall meet the requirements of 835.06. The use of ¾" expansion anchors, FF-S-325, Group XIII, Type I or Group II, Type 4, Class 1 may be used (lieu of the #5 x 24" deformed bar and shall be installed according to the manufacturer's recommendations.

The use of self drilling expansion shield anchors, FF-S-325, Group III, Type II or III shall not be permitted.

GROOVES: Grooves for sealing expansion bolt or butt joints in 451 or 452 pavements shall be formed by impressing a device or bar into the newly deposited concrete adjacent to the existing or previously poured lane. The device or bar shall be removed as soon as the concrete is in such condition as to preclude distortion of the concrete.

Adjoining slabs adjacent to grooves joints shall be edged with a thin metal edger having a radius of ⅛ inch. Any impression left in the surface of the pavement by the flat part of the edging tool shall be eliminated.

In lieu of the above method the longitudinal joint may be constructed in accordance with 451.03(a).

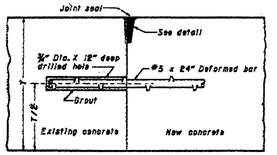
After the joint is formed it shall be protected from dirt and foreign matter until the joint seal is placed.

SEALING JOINTS: Sawed or hand-formed joints may be sealed with 705.04 or 705.11 joint sealer.

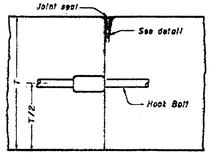
HOOK BOLTS: Hook bolt inserts shall be turned to a tight fit when installed in threaded hook bolts or couplings.

METAL STRENGTH: Tie bars, hook bolt assemblies and hook bolt alternate shall have a minimum strength of 11,000 pounds.

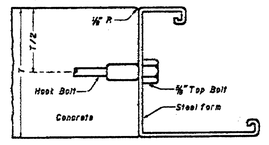
TYPE D (DRILLED TIED LONGITUDINAL) JOINT



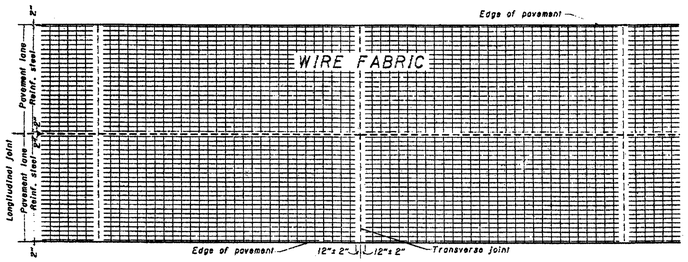
BUTT JOINT



ACCEPTABLE METHOD OF FORMING JOINT



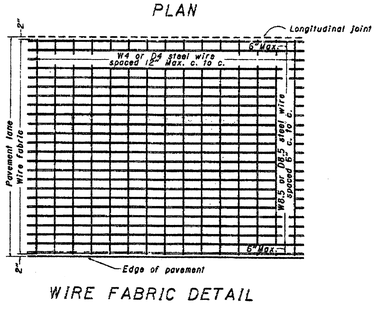
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION
LONGITUDINAL PAVEMENT JOINTS
DATE 2-2-00
STANDARD CONSTRUCTION DRAWING **BP-2.1**
APPROVED: D.V. Hubbard ENGR., L & D



NOTES

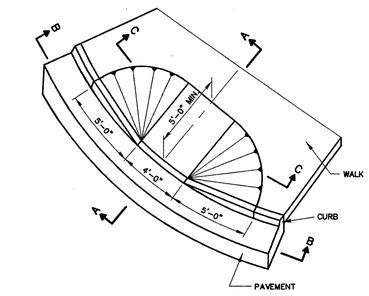
STEEL REINFORCING In normal or wider lane widths may consist of two units with an approved longitudinal hinge. The hinge shall consist of W4 or D4 steel wires connecting the two units such that the longitudinal members on either side of the hinge will be properly spaced when the reinforcing is in final position.

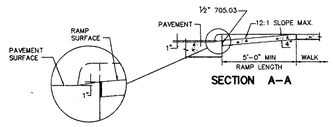
The distance from the top of the concrete pavement to the reinforcing steel may vary from 2½ inches to 1/3 + 1 inch, where T=thickness of the concrete pavement.



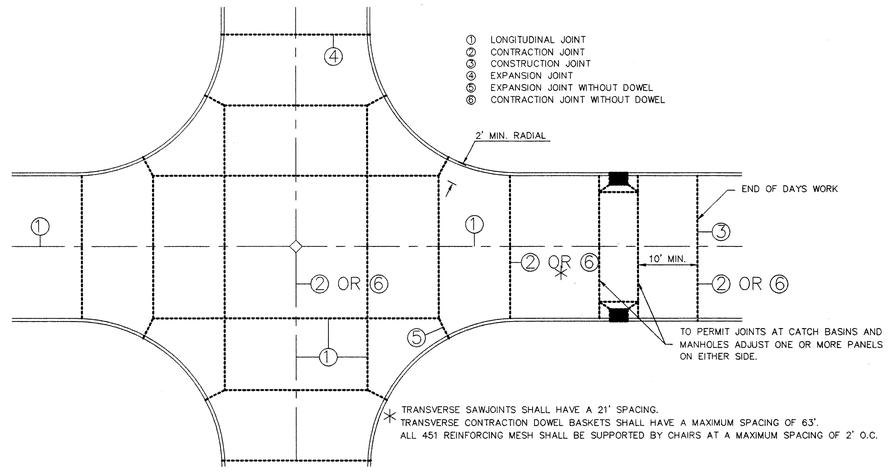
WIRE FABRIC DETAIL

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION
CONCRETE PAVEMENT REINFORCING
DATE 2-2-00
STANDARD CONSTRUCTION DRAWING **BP-1.1**
APPROVED: D.V. Hubbard ENGR., L & D





TYPE 1 CURB RAMP DETAIL



TYPICAL JOINT DETAIL

CT Consultants, Inc.
Engineers • Architects • Planners
Willoughby • Mentor • Columbus • North Canton • Youngstown

STATE OF OHIO — PETER J. FORMICA 58646 — REGISTERED PROFESSIONAL ENGINEER

REV. NO.	DESCRIPTION	DATE	BY	CH'K'D.

LLOYD ROAD IMPROVEMENTS

CITY OF WICKLIFFE, LAKE COUNTY, OHIO

DATE: 2-2-00
DRAWN BY: J.R.R.
CHECKED BY: P.J.F.
APPROVED BY: P.J.F.
F.B. No. — PG. —

MISCELLANEOUS DETAILS

SCALE: NONE
CONTRACT No. 98367
SHEET NO. 19 OF 20