
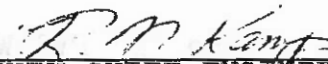


TO: MAIN OFFICE  REGIONAL OFFICE  <b>SUPERSEDED BY EI 77-031</b> <b>EFFECTIVE 5/1/1977</b>	 <b>ENGINEERING INSTRUCTION</b> NEW YORK STATE DEPARTMENT OF TRANSPORTATION
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EFFECTIVE IMMEDIATELY, THE FOLLOWING ON SUBSTRUCTURE JOINTS WILL SUPERSEDE ALL PREVIOUS INSTRUCTIONS.

SUBSTRUCTURE JOINTS

DEFINITIONS AND DESCRIPTIONS

Joints in concrete shall be classified as either construction, contraction, or expansion joints.

CONSTRUCTION JOINTS

Construction joints shall be defined as interruptions in the concrete placement provided to facilitate construction. In some cases, vertical construction joints are introduced in abutment stems and backwalls in order to reduce the possibility of cracks forming due to shrinkage of the concrete during curing, thus performing the function of a contraction joint as well.

Reinforcement shall always extend through construction joints. All construction joints shall be provided with shear keys, unless otherwise specified.

All construction joints shall be sealed with a Type "D" PVC Water-stop, except where leakage through the joint is unlikely or where staining due to leakage would not be objectionable.

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### CONTRACTION JOINTS

Contraction joints shall be defined as interruptions in the concrete placement introduced to reduce the possibility of cracks forming in walls due to shrinkage of the concrete during curing.

Reinforcement shall not extend through a contraction joint. All contraction joints shall be provided with a shear key.

All contraction joints shall be sealed with a Type "D" PVC Waterstop, except where leakage through the joint is unlikely or where staining due to leakage would not be objectionable.

### EXPANSION JOINTS

Expansion joints shall be defined as interruptions in the concrete placement provided to allow for movements of a wall and footing due to thermal expansion.

Reinforcement shall not extend through the expansion joint. Expansion joints in walls shall be provided with a shear key, a Type "E" PVC Waterstop, and a layer of joint material separating the concrete surfaces. The requirements for expansion joints in footings shall be the same except that waterstops will not be required.

### USES AND LOCATIONS

#### LONG ABUTMENTS (MORE THAN 60 FEET) WHERE STAINING IS OBJECTIONABLE

Long abutment backwalls and stems (more than sixty feet in length) at locations where the appearance of staining due to leakage through shrinkage cracks would be objectionable, shall have vertical construction joints at thirty-foot intervals (maximum). These construction joints shall not extend through the footing.

The construction joints, if required, should be placed preferably midway between the pedestals and spaced at fairly uniform intervals. Construction joints, if required, should be placed at the beginning and end of the abutment backwall (and stem, if highwall abutment) at the juncture with the wingwall (except in the case of flared wingwalls where a contraction joint is required).

Example of a long abutment at a location where leakage stains might be deemed objectionable - a high wall abutment in an urban area.

Examples of long abutments at locations where leakage stains might not be thought objectionable: Stream crossings, bridges over railroads, abutments set back more than thirty feet from nearest travel lane.

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### STUB ABUTMENT PEDESTALS

Vertical construction joints will be provided in all stub abutments to separate the pedestals from the backwall; however, no shear key is required.

### CONTRACTION JOINTS IN WALLS

Vertical contraction joints will be required at thirty-foot intervals in all retaining walls, and wingwalls more than sixty feet long. These contraction joints shall not extend through the footings.

### CONTRACTION JOINTS AT JUNCTURE OF FLARED WALL AND ABUTMENT

A contraction joint will be required at locations where a wingwall joins an abutment or box culvert. This contraction joint shall extend through the footing.

### EXPANSION JOINTS

Expansion joints will be required at ninety-foot intervals in all retaining walls and wingwalls more than one hundred and eighty feet long. These expansion joints shall extend through the footing.

### JOINTS IN FOOTINGS ON PILES

At contraction joints or expansion joints in footings supported on piles, the joint should be treated like the end of the footing when laying out the piles. One pile should be placed in each row 1'-6" from the joint.

### WALL LAYOUT TO ACCOMMODATE WATERSTOPS

At locations where a waterstop is to be installed, the walls should be laid out so that the rear faces of the two adjoining walls are flush at the joint in order to accommodate the waterstop.

### CONSTRUCTION JOINTS REQUIRED TO BE SHOWN ON PLANS

All joints required in conformance with this Instruction shall be shown on the plans.