

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
**BRIDGE DECK REMOVAL AND SALVAGING SHEAR DEVELOPERS ON STEEL
BEAMS**

BRG:JAB

1 of 3

APPR:BMW:REL:01-06-23

FHWA:APPR:01-20-23

a. Description. This work consists of removing and disposing of portions of the structure as shown on the plans, salvaging existing shear developers on steel beams, replacing damaged shear developers on steel beams, and furnishing and installing new shear developers on steel beams as shown on the plans and as directed by the Engineer.

b. Materials. Furnish shear developers in accordance with subsection 906 of the Standard Specifications for Construction.

c. Equipment. Use equipment meeting the requirements of 712.03.A, except as modified herein.

Machine-mounted hydraulic or pneumatic equipment may be used in areas on the bridge decks between steel beams/girders. For removal of superstructure concrete over steel beams, limit the impact energy of machine-mounted hydraulic or pneumatic hammers to a maximum rating of 2,000 foot-pounds. Do not allow the machine-mounted hydraulic or pneumatic hammers to contact the structural steel or shear developers.

Do not use machine-mounted hydraulic or pneumatic hammers to remove concrete between and around the shear developers.

Use manual pneumatic hammers with a 60-pound maximum to remove concrete between and around the shear developers.

Use equipment approved by the Engineer for shear developer removal. Do not use machine-mounted equipment to remove shear developers.

d. Construction. Remove concrete in accordance with section 712 of the Standard Specifications for Construction, except as modified herein.

Mark out beam and diaphragm locations before beginning removal operations.

Do not damage the concrete and steel portions of the superstructure to be retained. Repair damage to retained portions to the Engineer's satisfaction at no additional cost to the contract. If damage occurs, submit a corrective action plan to the Engineer for review and approval prior to beginning repairs. Ensure repairs for damage affecting structural elements are designed by a Professional Engineer licensed in the State of Michigan.

Do not cut the deck longitudinally over the beams.

Do not damage existing shear developers. Remove and replace any shear developers

damaged due to Contractor's operations in accordance with this special provision and at no cost to the contract. Damage includes, but is not limited to, any operation that causes shear developers to be torn or bent out of plane beyond 30 degrees during removal operations.

The Department will sound existing shear developers to determine whether shear developer removal is required.

Remove damaged shear developers, and shear developers that are to be removed as shown on the plans, using methods approved by the Engineer. Do not use flame cutting within 1 inch of the beam to remove existing shear developers.

In locations where shear developers are called for on the plans, damaged shear developers that do not have damaged welds may be cut off to 1 inch above the top flange and left. Place the new shear developer adjacent to the damaged shear developer as directed by the Engineer. Maintain transverse spacing of shear developers when locating replacement shear developer.

Remove existing shear developer welds and grind to 125 micro-inches per inch root mean square and taper to the original surface using a 1:10 slope in any of the following conditions:

- Locations where welds from existing shear developers that have been removed will interfere with placement of new shear developers.
- The existing shear developer weld is damaged.
- The shear developer weld is in a location where shear developers are not called for on the plans.

Report cracks or tears in beams and girders, or in other structural steel members not shown on the plans, to the Engineer.

Clean and coat structural steel in accordance with the contract prior to installing new shear developers.

Install new shear developers in accordance with subsection 707.03.E.7.h of the Standard Specifications for Construction.

Do not proceed with deck reinforcement installation until the Engineer accepts all removal and shear developer work items.

e. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

Pay Item	Pay Unit
Structures, Rehabilitation, Rem Portions, Modified (Structure Identification)	Lump Sum
Shear Developer, Rem.....	Each
Shear Developer, Spec	Each

1. Structures, Rehabilitation, Rem Portions, Modified (Structure Identification) includes the cost of removing materials as shown on the plans, saw cuts required for removal, and disposal of materials in accordance with subsection 204.03.B of the Standard Specifications for Construction.

2. **Shear Developer, Rem** includes the cost of removing old shear developers as shown on the plans and any necessary grinding.

3. **Shear Developer, Spec** includes the cost of providing studs as shown on the plans, cleaning the surface by grinding, and welding studs to the girder flanges.

Costs associated with corrections and Non-Destructive Testing to damaged concrete and steel portions of the superstructure to be retained will be borne by the Contractor.

Costs associated with removing and replacing shear developers damaged by the Contractor's operations will be borne by the Contractor.

Cleaning and coating of structural steel will be paid for with other items of work.