Chapter 11 - Structural Repairs

SECTION 02

CONCRETE REPAIRS (SR-CR)
Removal limits for each segment

Deck

Abutment or pier

Girder

Abutment or pier

**ELEVATION - CONCRETE GIRDER**

Scale: None

**SECTION A-A**

Scale: None

Note:
E and F are original girder dimensions.

Remove to sound concrete to these lines, 6" maximum (typ.)

Rebuild to these lines (typ.)

**SECTION B-B**

Scale: None

Notes:
1. Concrete elements are divided into segments. Work to be performed on sections as provided below.
2. Refer to Sections 420, 421, and 423.03.
3. Contractor shall stage the work so that the worse sections are repaired first.
4. Contractor shall not work on more than two nonadjacent sections on each pier cap, column, or girder at one time.
5. Contractor shall wait 72 hours after completing repairs to a section before chipping adjacent sections, however he may perform work on other bridge elements.
6. Contractor shall stop removing deteriorated concrete when a maximum depth of 6 in. is reached. The Engineer shall immediately notify the Office of Structures if more removal seems necessary.
7. Existing reinforcing steel not shown.
8. For column repair details, see sheet 2 of 2.

**ELEVATION - PIER CAP**

Scale: None

9. Verify that the final clearance of all rebar is 2" min. The formwork shall be shifted, as needed to provide 2" clearance at all repair areas.
Notes:
1. When height of columns is more than 12 ft., the Contractor will be restricted to 12 ft. segments.
2. Refer to Sections 420, 421 and 423.03.
3. For notes, see sheet 1 of 2.
4. The most deteriorated section of the column shall be repaired first.
5. The engineer shall identify the order with which the sections are to be repaired.
Note:
1. Salvage existing steel reinforcement bars.
2. Clean and epoxy coat existing reinforcement bars.
3. Add additional reinforcement as in accordance with Section 421.03.07.
4. Pier detail shown, abutment detail similar.
5. Anchor edge of remaining SIP form with 5/8" dia. galvanized concrete anchors @ 2'-0" c/c, 4" embedment.
6. Refer to Section 423.03.03.

*Diaphragm reinforcement shown is typical; the reinforcement pattern may vary.
*The contractor shall contact the engineer if the delaminated concrete in the end diaphragm is deeper than the bottom of the deck.
*Use trowel grade mortar when the depth of the concrete removal or spall is less than 1" deep, or the volume of the concrete removal and/or spall is less than 1 cubic ft; otherwise, use Mix No.5 (or equal) concrete.
Remove to sound concrete to these lines, 6'' maximum (typ.)

The limits of removal and repair at the interior of the pier wall shall be determined by the Engineer

6' 0'' min.
3' 0'' max.

Remove to sound concrete to these lines, 6'' maximum (typ.)

6' 0'' max.
3' 0'' max.

Remove to sound concrete to these lines, 6'' maximum (typ.)

3' 0'' max.

Sequence of construction (typ.)

Sequence of construction (typ.)

6'' Max. (typ.)

6'' Max. (typ.)

Length of pier cap repair

Length of pier cap repair

Repair sections (typ.)

Repair sections (typ.)

Notes:
1. Concrete elements are divided into segments. Work to be performed on sections as provided above.
2. Refer to Sections 420, 421, and 423.03.
3. Contractor shall stage the work so that repair sections are completed following the number sequences 1, 2, 3, ... shown in the Elevation View, and the letter sequence: A, B, C, ... shown in the Section Views.
4. Contractor shall wait 72 hours after completing repairs to a section before chipping adjacent sections, however he may perform work on other bridge elements.
5. The existing concrete shall be removed to 2'' min. behind the existing reinforcement.
6. Contractor shall stop removing deteriorated concrete when a maximum depth of 6 in. is reached. The Engineer shall immediately notify the Office of Structures if more removal seems necessary.
7. Existing reinforcing steel not shown.

Note:
T is the original thickness of the pier.
Removal limits for each segment

**Deck**

**Abutment or pier**

**Girder**

**Abutment or pier**

**ELEVATION CONCRETE GIRDER**

Note: D and W are original girder dimensions.

Remove to sound concrete to these lines, 6" maximum (typ.)
Rebuild to these lines (typ.)

6" Max. (typ.)

New wire fabric

Remove to sound concrete to these lines, 6" maximum (typ.)
Rebuild to these lines (typ.)

Section 1

W/2 W/2 W

Section 2

Note: For new wire fabric refer to 908.08.

**SECTION A-A**

Scale: None

**SECTION B-B**

Scale: None

ELEVATION - PIER CAP

Scale: None

**Notes:**

1. Concrete elements are divided into segments. Work to be performed on sections as provided below.
2. Refer to Section 423.
3. Contractor shall stage the work so that the worse sections are repaired first.
4. Contractor shall not work on more than two nonadjacent sections on each pier cap, column, or girder at one time.
5. Contractor shall wait 72 hours after completing repairs to a section before chipping adjacent sections, however he may perform work on other bridge elements.
6. Contractor shall stop removing deteriorated concrete when a maximum depth of 6 in. is reached. The Engineer shall immediately notify the Office of Structures if more removal seems necessary.
7. Existing reinforcing steel not shown.
8. For column repair details, see sheet 2 of 2.
Vertical removal limits for each segment

Bottom of pier cap

Section 1

New wire fabric

Section 2

CIRCULAR COLUMN

Section 3

Note:
D is original diameter of column.

Remove to sound concrete to these lines, 6" maximum (typ.)

Rebuild to these lines (typ.)

Horizontal removal limits for each section

New wire fabric

Section 4

Remove to sound concrete to these lines, maximum (typ.)

Note:
For new wire fabric refer to 908.08.

For notes, see sheet 1 of 2.

Notes:
1. When height of columns is more than 12 ft., the Contractor will be restricted to 12 ft. segments.
2. Refer to Section 423.
3. For notes, see sheet 1 of 2.
Notes:
1. Salvage existing steel reinforcement bars.
2. Clean and epoxy coat existing reinforcement bars.
3. Add additional reinforcement as in accordance with Section 421.03.07.
4. Pier detail shown, abutment detail similar.
5. Anchor edge of remaining SIP form with 5/8" dia. galvanized concrete anchors @ 2'-0" c/c, 4" embedment.
6. Refer to Sections 423 and 423.03.03.

*Diaphragm reinforcement shown is typical. The reinforcement pattern may vary.

*The contractor shall contact the engineer if the delaminated concrete in the end diaphragm is deeper than the bottom of the deck.
Notes:
1. Concrete elements are divided into segments. Work to be performed on sections as provided above.
2. Refer to Section 423.
3. Contractor shall stage the work so that repair sections are completed following the number sequences, 1, 2, 3, ..., shown in the Elevation View, and the letter sequence: A, B, C, ..., shown in the Section Views.
4. Contractor shall wait 72 hours after completing repairs to a section before chipping adjacent sections, however he may perform work on other bridge elements.
5. If CIP concrete is used in lieu of PAM, the existing concrete shall be removed to 2" min. behind the existing reinforcement.
6. Contractor shall stop removing deteriorated concrete when a maximum depth of 6 in. is reached. The Engineer shall immediately notify the Office of Structures if more removal seems necessary.
7. Existing reinforcing steel not shown.