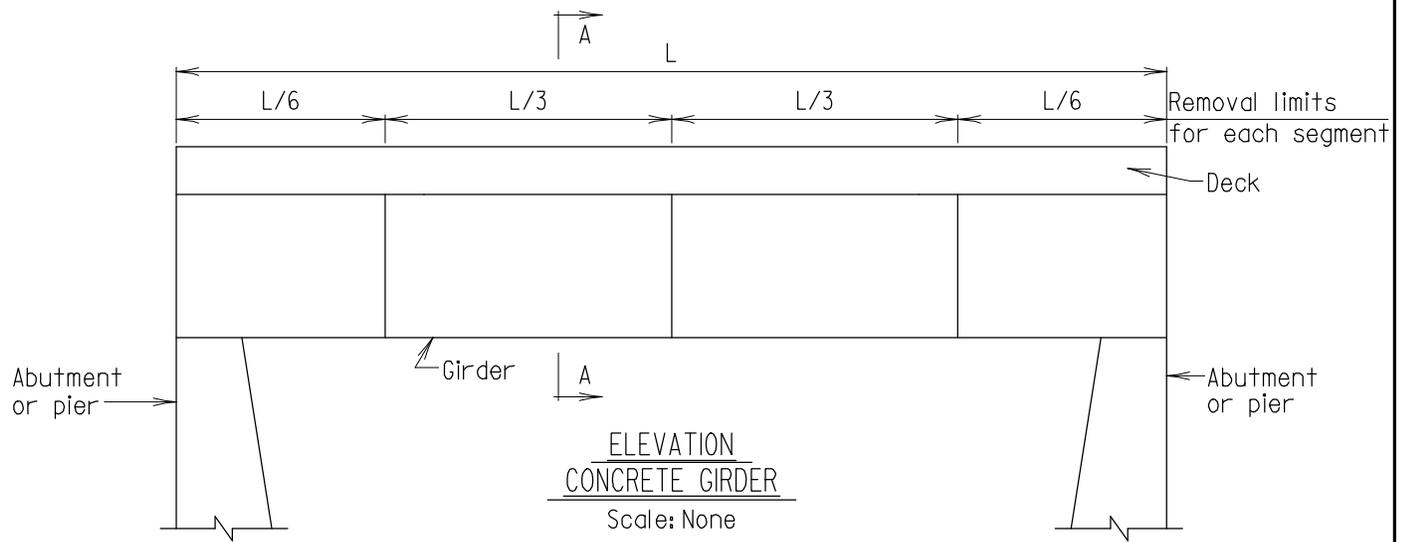


Chapter 11 - Structural Repairs

SECTION 02

CONCRETE REPAIRS (SR-CR)

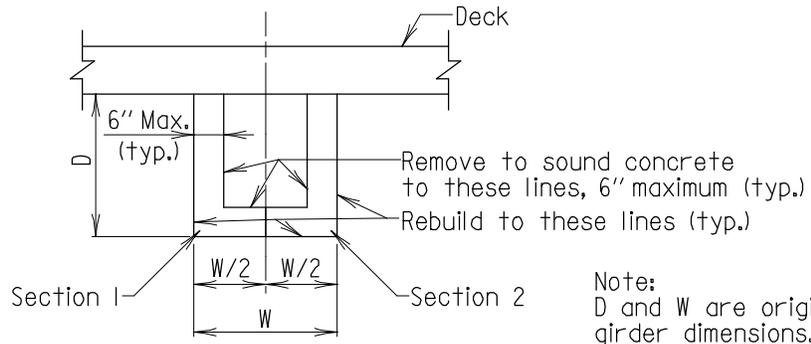
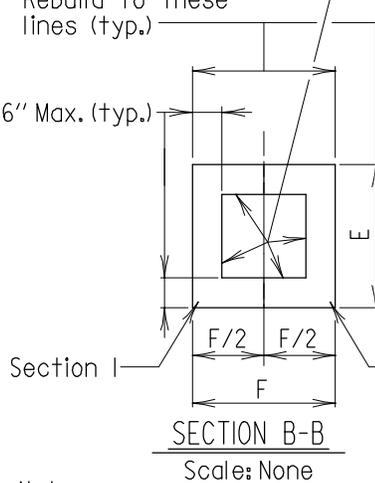


Note:
E and F are original
pier cap dimensions.

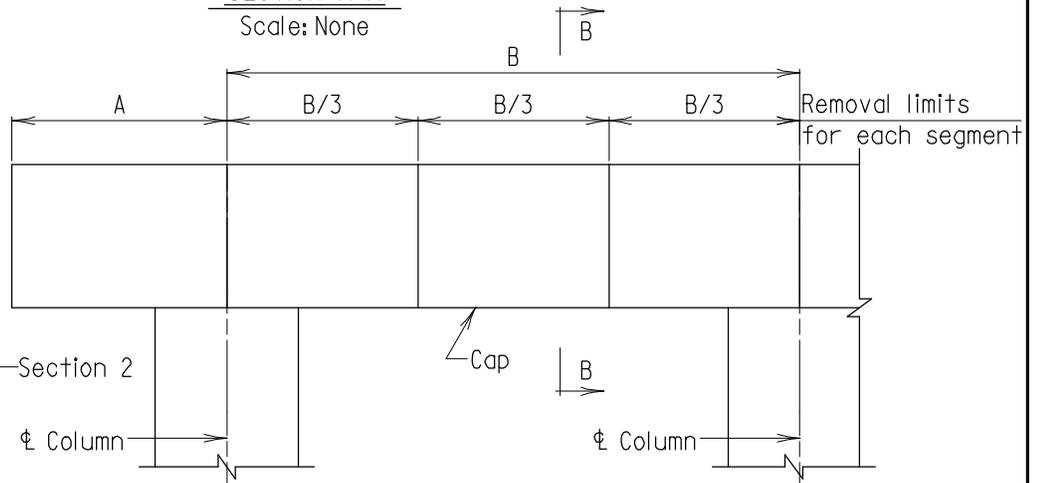
Remove to sound
concrete to these
lines, 6" maximum (typ.)

Rebuild to these
lines (typ.)

6" Max. (typ.)



Note:
D and W are original
girder dimensions.



Notes:

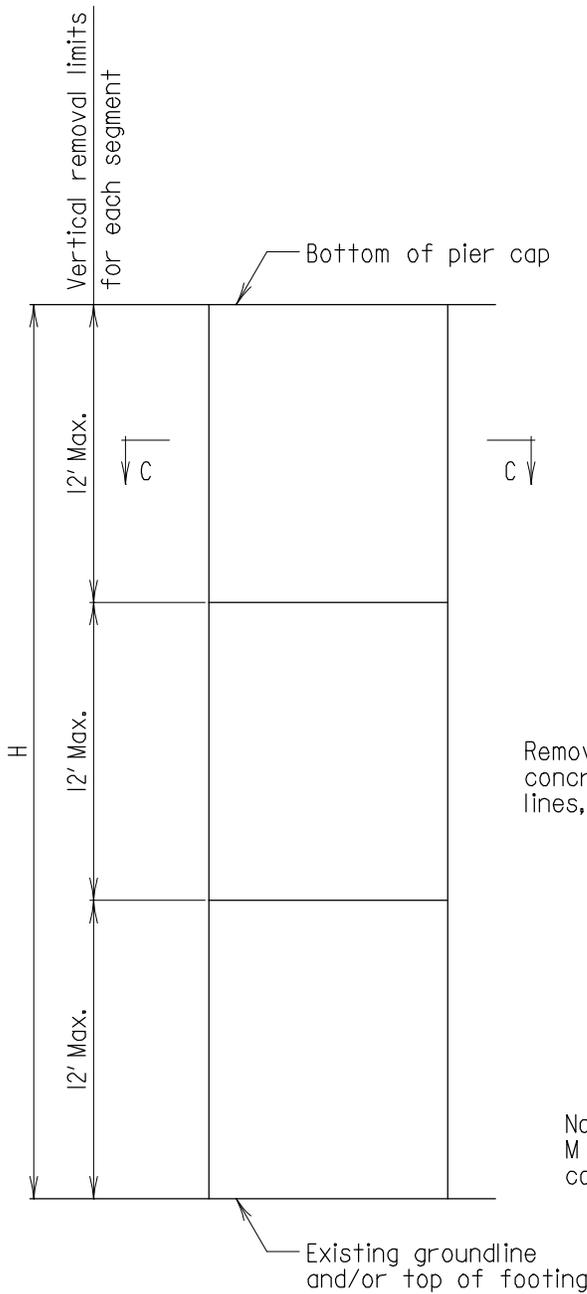
1. Concrete elements are divided into segments. Work to be performed on sections as provided below.
2. Refer to Sections 420, 421, and 423.03.
3. Contractor shall stage the work so that the worse sections are repaired first.
4. Contractor shall not work on more than two nonadjacent sections on each pier 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.

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.

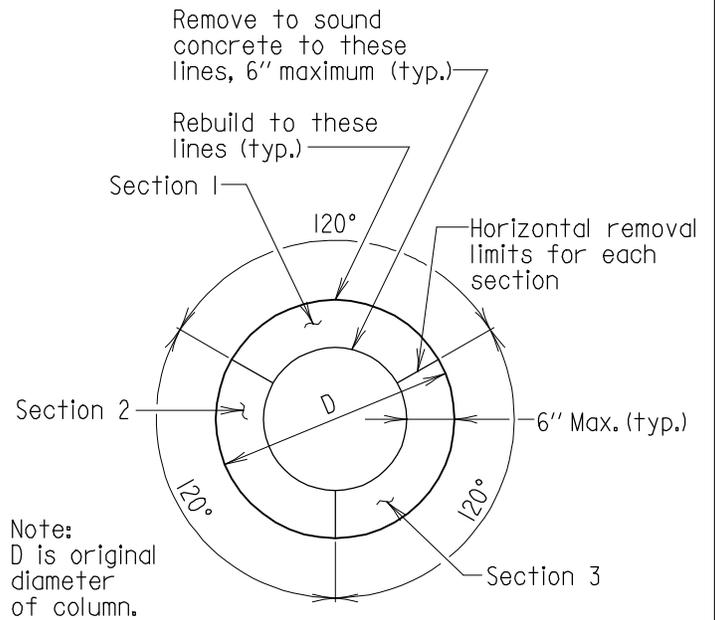
APPROVAL
 DIRECTOR OFFICE OF STRUCTURES DATE: 06/28/2017
VERSION
1.0

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
CAST-IN-PLACE CONCRETE SEQUENCE AND REPAIR DETAILS FOR PIER CAP
DETAIL NO. SR-CR-101
SHEET <u>1</u> OF <u>2</u>

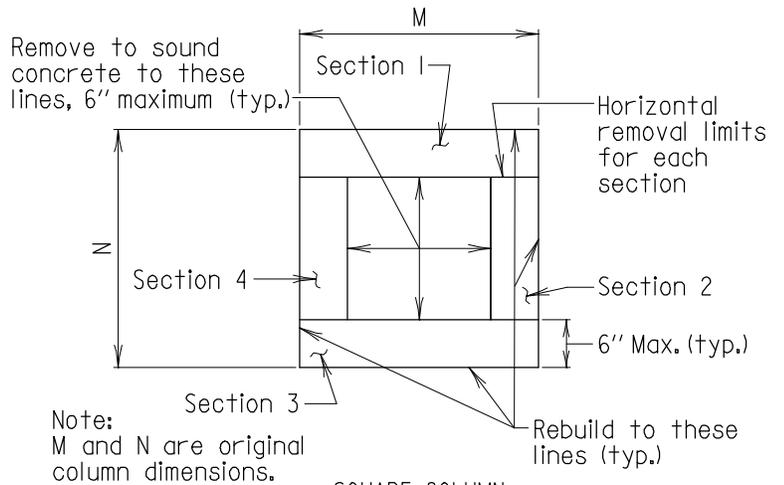
STRUCTURAL REPAIRS



ELEVATION
PIER COLUMN
Scale: None



CIRCULAR COLUMN



SQUARE COLUMN

SECTION C-C
Scale: None

Notes:

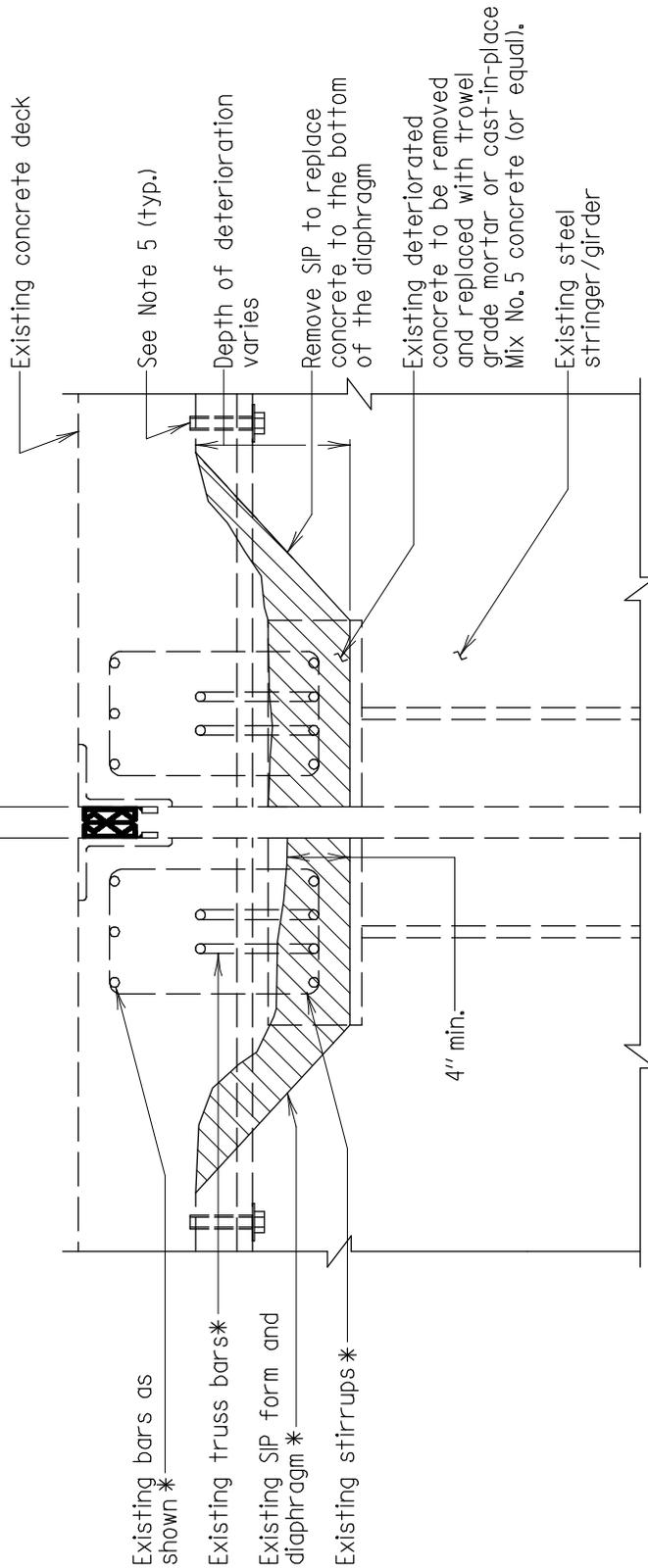
1. When height of columns is more than 12 ft., the Contractor will be restricted to 12 ft. segments.
2. Refer to Sections 420, 421 and 423.03.
3. For notes, see sheet 1 of 2.
4. The most deteriorated section of the column shall be repaired first.
5. The engineer shall identify the order with which the sections are to be repaired.

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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
CAST-IN-PLACE CONCRETE SEQUENCE AND REPAIR DETAILS FOR PIER COLUMN
DETAIL NO. SR-CR-101
SHEET <u>2</u> OF <u>2</u>

STRUCTURAL REPAIRS

Joint opening



SECTION

Scale: 1" = 1'-0"

- 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 $\frac{5}{8}$ " 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.

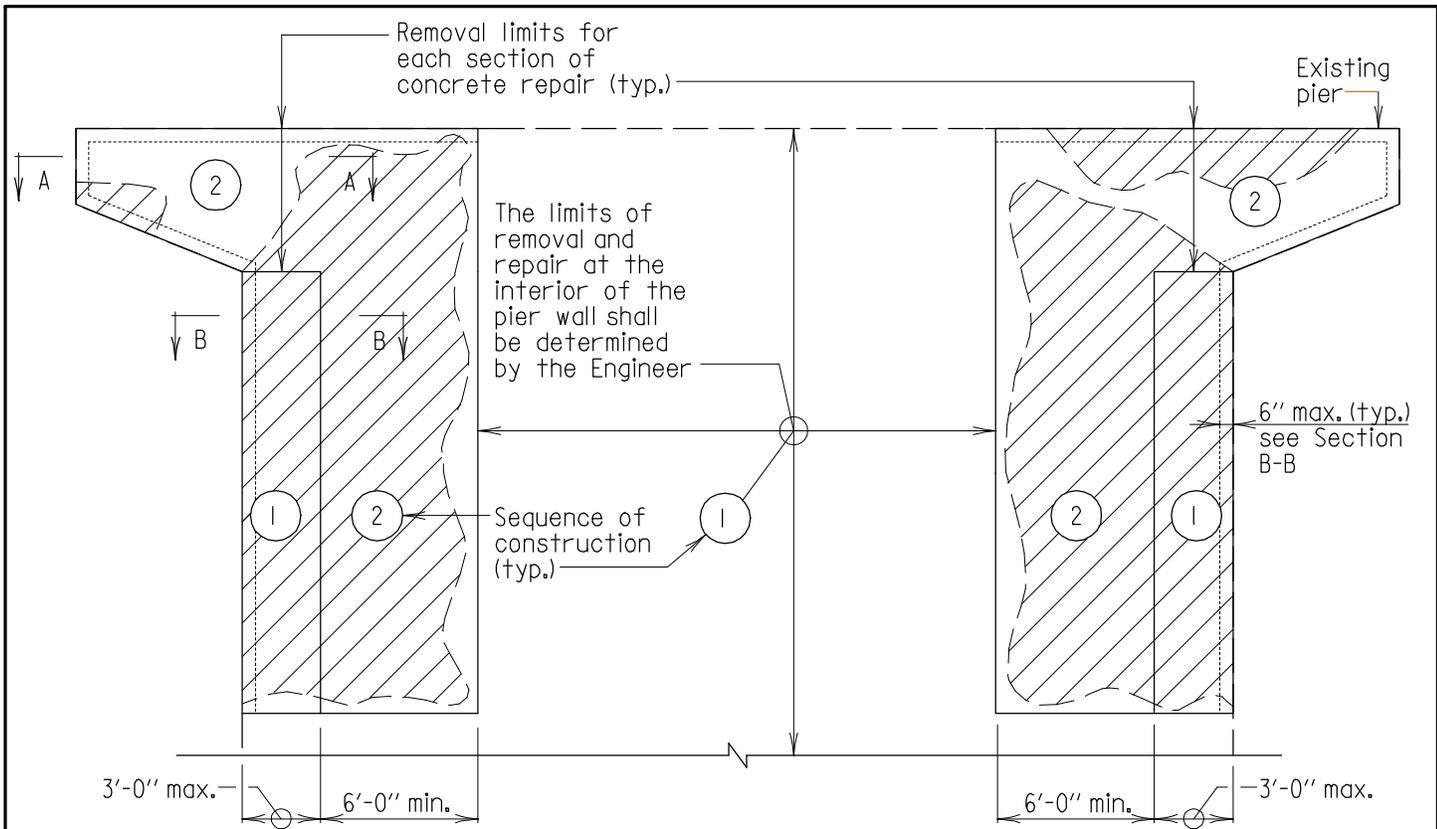
* Use trowel grade mortar when the depth of the concrete removal or spall is less than 1" deep, or the volume of the concrete removal and/or spall is less than 1 cubic ft. otherwise, use Mix No. 5 (or equal) concrete.

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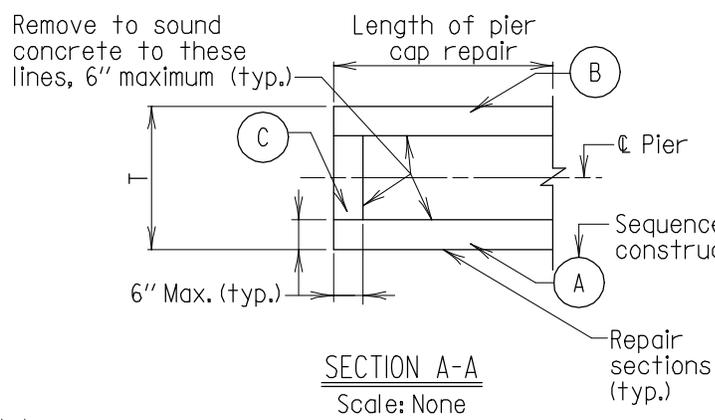
CAST-IN-PLACE CONCRETE REPAIR TO
 CONCRETE DIAPHRAGM
 SECTION AT PIER

DETAIL NO. SR-CR-102 SHEET 1 OF 1

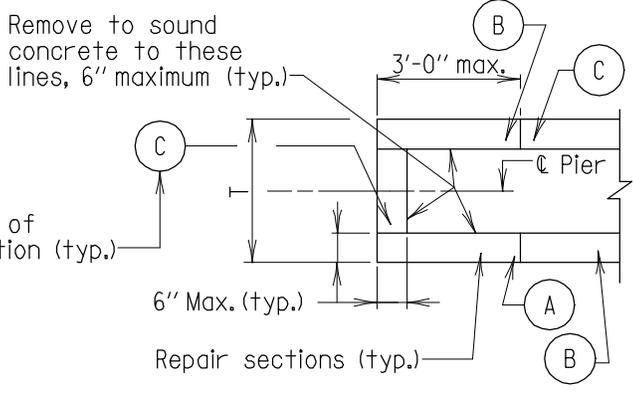


ELEVATION
CONCRETE PIER WALL
 Scale: None

Denotes location of deteriorated concrete



SECTION A-A
 Scale: None



SECTION B-B
 Scale: None

Notes:

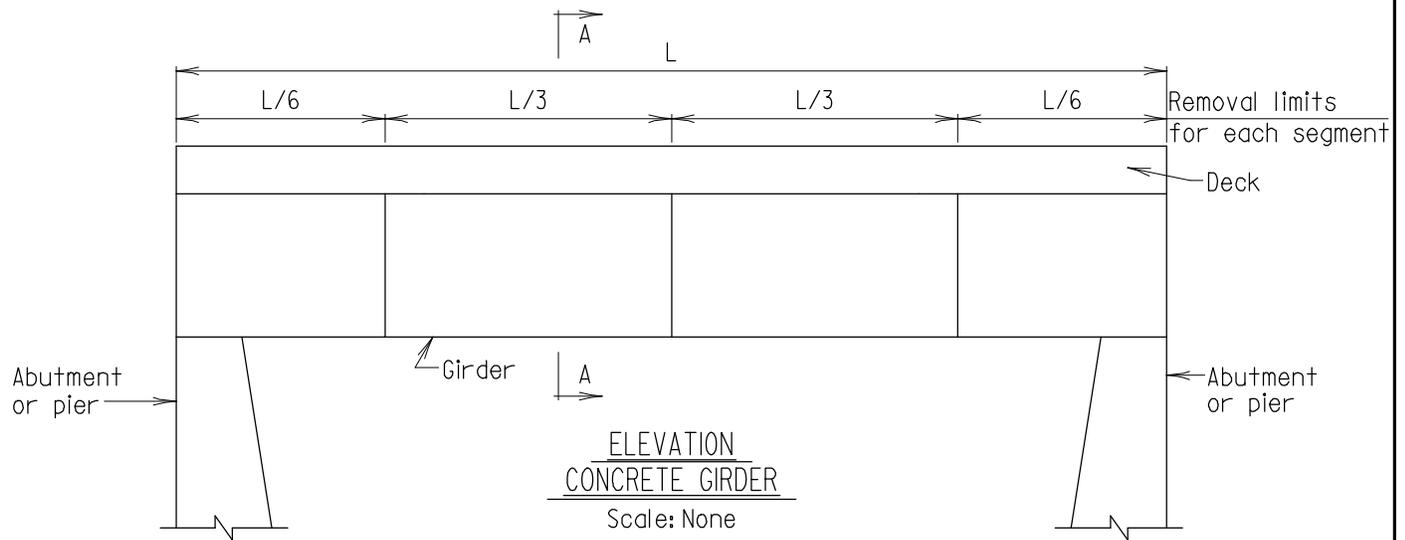
1. Concrete elements are divided into segments. Work to be performed on sections as provided above.
2. Refer to Sections 420, 421, and 423.03.
3. Contractor shall stage the work so that repair sections are completed following the number sequence: 1, 2, 3, ..., shown in the Elevation View, and the letter 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.

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DATE: 06/28/2017
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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
CAST-IN-PLACE CONCRETE SEQUENCE AND REPAIR DETAILS FOR CONCRETE PIER WALL
DETAIL NO. SR-CR-103 SHEET <u> </u> OF <u> </u>

STRUCTURAL REPAIRS



Note:
E and F are original
pier cap dimensions.

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

Rebuild to these
lines (typ.)

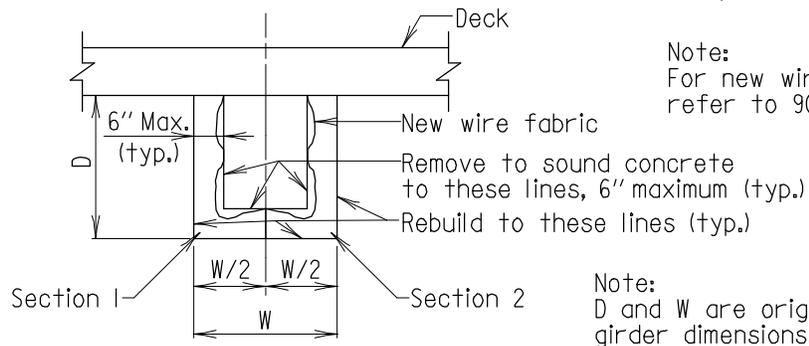
6" Max. (typ.)

New wire
fabric

Section 1

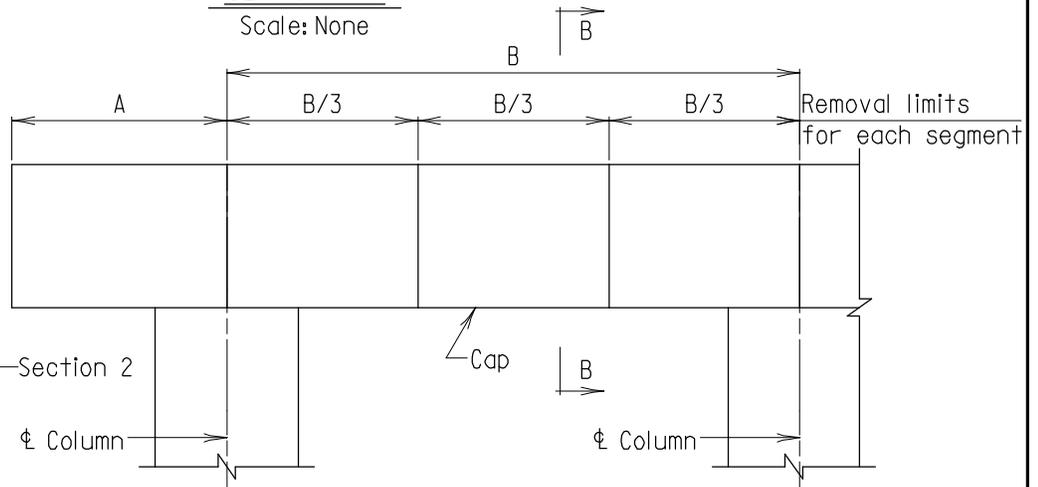
SECTION B-B

Scale: None



Note:
For new wire fabric
refer to 908.08.

Note:
D and W are original
girder dimensions.



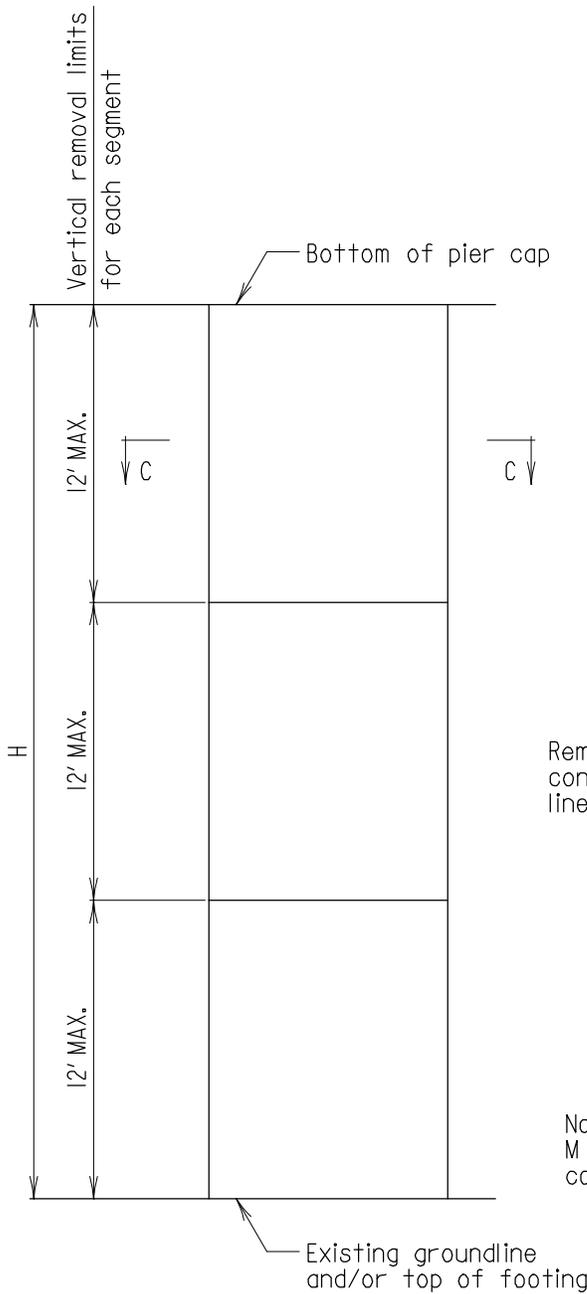
Notes:

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.

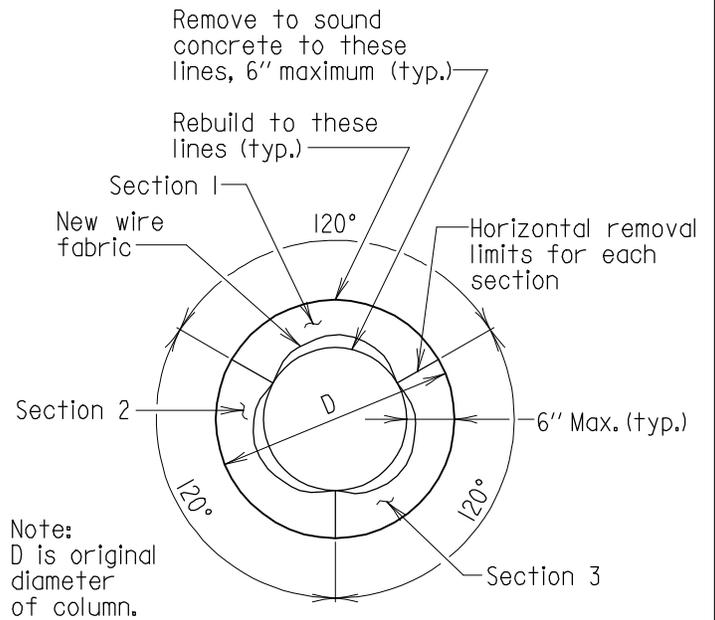
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<i>Gen. C. [Signature]</i> DIRECTOR OFFICE OF STRUCTURES DATE: 06/28/2017
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STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
PNEUMATICALLY APPLIED MORTAR SEQUENCE AND REPAIR DETAILS FOR PIER CAP
DETAIL NO. SR-CR-201
SHEET 1 OF 2

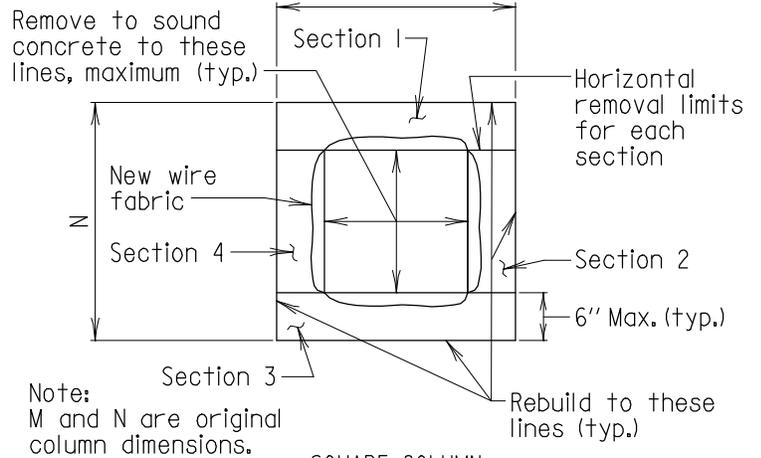
STRUCTURAL REPAIRS



ELEVATION
PIER COLUMN
Scale: None



CIRCULAR COLUMN



SQUARE COLUMN

Note:
For new wire fabric refer to 908.08.

SECTION C-C
Scale: None

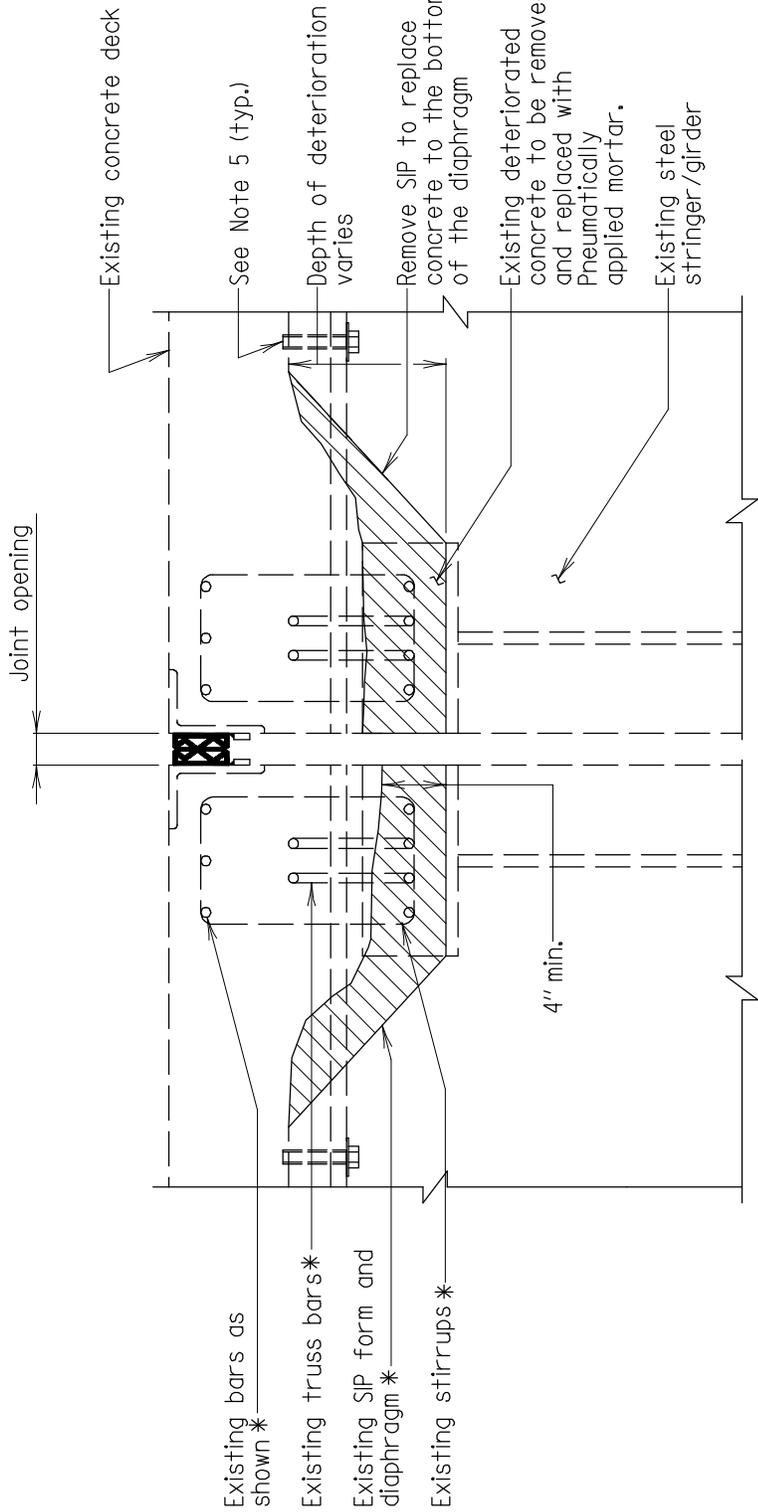
- Notes:
1. When height of columns is more than 12 ft., the Contractor will be restricted to 12 ft. segments.
 2. Refer to Section 423.
 3. For notes, see sheet 1 of 2.

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STATE OF MARYLAND
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OFFICE OF STRUCTURES

PNEUMATICALLY APPLIED MORTAR
SEQUENCE AND REPAIR DETAILS FOR PIER COLUMN

DETAIL NO. SR-CR-201



SECTION
Scale: 1" = 1'-0"

- 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.

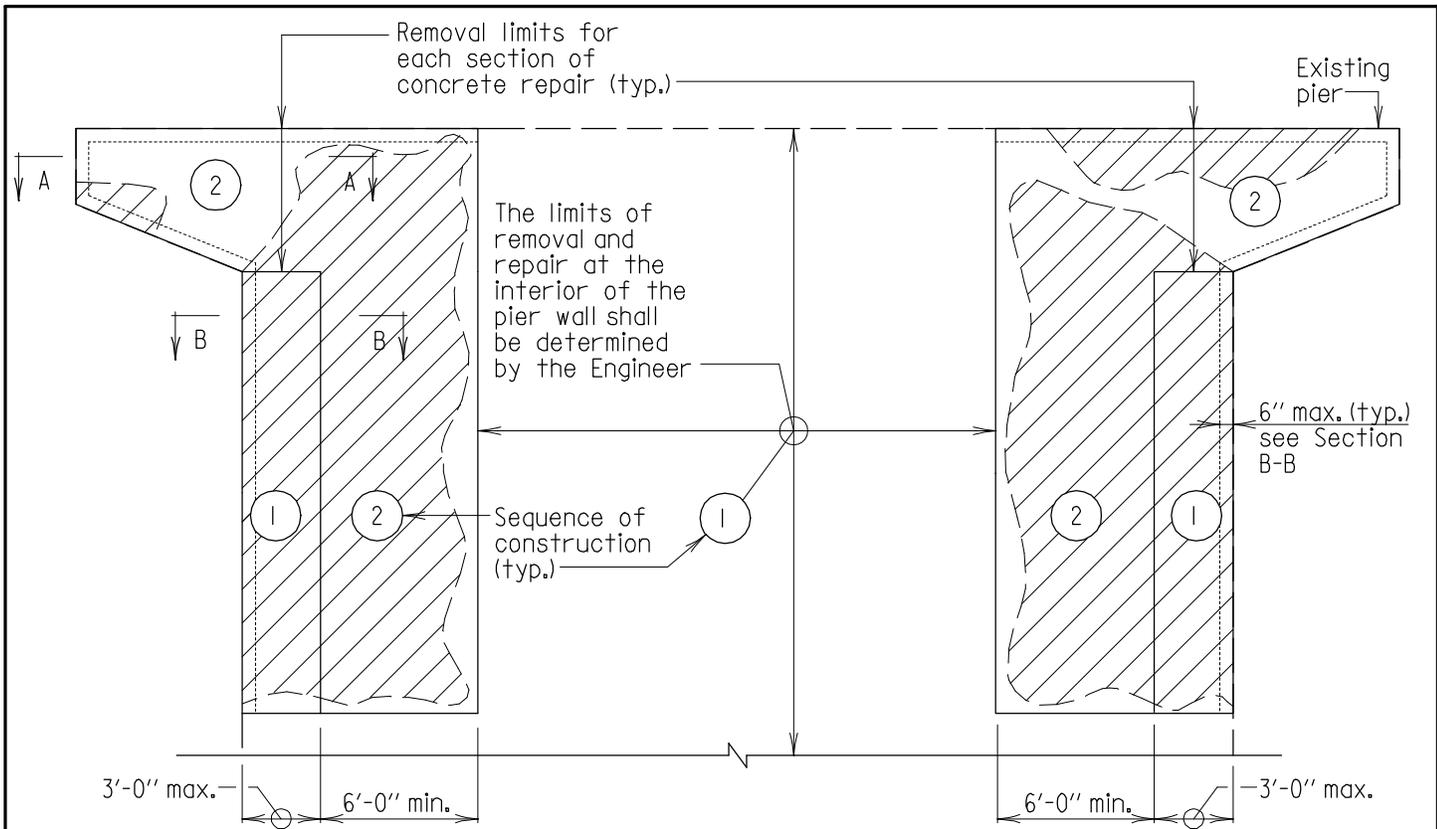
- * Diaphragm reinforcement shown is typical. Thereinforcement pattern may vary.
- * The contractor shall contact the engineer if the delaminated concrete in the end diaphragm is deeper than the bottom of the deck.

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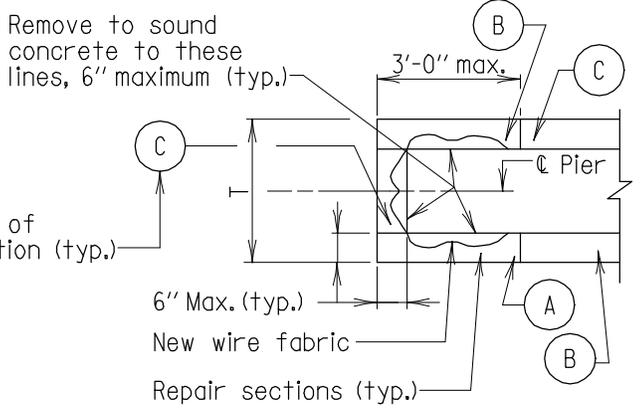
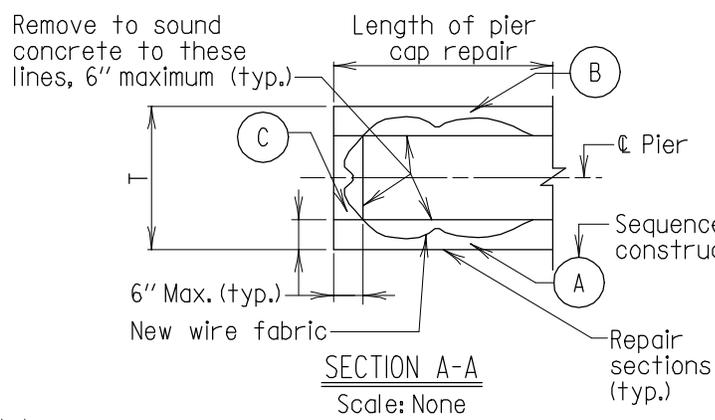
PNEUMATICALLY APPLIED MORTAR REPAIR
TO CONCRETE DIAPHRAGM
SECTION AT PIER

DETAIL NO. SR-CR-202 SHEET 1 OF 1



ELEVATION
CONCRETE PIER WALL
 Scale: None

Denotes location of deteriorated concrete



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 sequence: 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.

Note:
 For new wire fabric refer to 908.08.

Note:
 T is the original thickness of the pier.

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STATE OF MARYLAND
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PNEUMATICALLY APPLIED MORTAR SEQUENCE AND
 REPAIR DETAILS FOR CONCRETE PIER WALL

DETAIL NO. SR-CR-203

SHEET OF

STRUCTURAL REPAIRS