## 04 - STRUCTURE
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GENERAL NOTES

CONCRETE:

- Design of member or element shown in this structure is not allowed.
- Concrete shall be used in locations where the area exceeds 7,650 ft².
- The reinforcing bars are dimensioned to engage and anchor the matching materials.
- Concrete may be used for areas smaller than 7,650 ft² when there is a specified total volume to justify the use of this material and how the patch is to be removed and how to remove it properly.

REINFORCEMENT:

- Steel shall be determined by the engineer.
- Reinforcement shall be ASTM A615 Grade 60.
- Reinforcement shall be used in locations where the area exceeds 7,650 ft².

CONCRETE COVER:

- Concrete cover shall be determined by the engineer.
- Concrete cover shall be determined by the engineer.

GENERAL:

- The structural steel shall conform to Federal Standard Color No. 26329 (Blue).
- Structural steel shall be ASTM A921 Grade 50.

REPAIRS:

- Structural steel repairs shall be completed as noted.
- Structural steel repairs shall be completed as noted.

NOTE TO BRIDGE INPECTORS

The department's bridge safety procedures require that this bridge be inspected for any load limitation. All appropriate components listed in the governing manuals for bridge inspection, where applicable, shall be inspected and evaluated. The frequency of inspection of each component for specific attention shall be adjustable, as noted. The importance of this component is based on the recommendation of the bridge inspection official. The frequency of inspection of this structure shall be contingent on the recommendations of the bridge inspector. The inspection of any component of this structure shall be contingent on the recommendations of the bridge inspector. The inspection of this component shall be contingent on the recommendations of the bridge inspector.

2. See DWG. NO. S-10 for substructure repair notes and concrete patch repair details.
SOUTHEAST WINGWALL REPAIRS - ELEVATION

Scale: 1" = 1'-0"

NOTE: THERE ARE NO ANTICIPATED REPAIR LOCATIONS ON NORTHWEST WINGWALL, REFERENCING THE 2014 INSPECTION REPORT.

LEGEND

- CRACK
- HOLLOW AREA
- SPALL AREA WITH EXPOSED REBAR
- SHALLOW REBAR
- MAP CRACKING
- SCALE AREA
- SPALL AREA
- DEEP CRACK
- HONEYCOMBING
- H. HOLLOW AREA

REFERENCES

1. SEE DWG. NO. 8-11 FOR SUBSTRUCTURE REPAIR NOTES AND CONCRETE CRACK REPAIR DETAILS.
2. SEE DWG. NO. 10-11 FOR CONCRETE CRACK REPAIR DETAILS.

REHABILITATION OF BRIDGE NO. 03093 I-91 OVER FRONT STREET AND QUINNIPIAC RIVER

NEW HAVEN WINGWALLS

04.06
NEW HAVEN T. STRNAD 92-668

SCALE: 1'-0" = 1'-0"

A.HIPIUS/S.ERDAS

REFERENCES

2'-0" 2'-0"

EL. 5.00

4' -0"

EL. 25.46

2'-0"

EL. 28.08

SOUTH ELEVATION

NORTH ELEVATION

PIER 1 - REPAIRS

SCALE: ½" = 1'-0"

LEGEND

CRACK
HOLLOW AREA
HOLLOW AREA WITH EXPOSED REBAR
MAP CRACKING
SHALLOW REBAR
SCALE AREA

E = EFFLORESCENCE
FH = FULL HEIGHT
FW = FULL WIDTH
DP = DEEP
HC = HONEY COMBING
HA = HOLLOW AREA

REFERENCES

1. SEE DWG.NO. S-10 FOR SUBSTRUCTURE REPAIR NOTES AND CONCRETE CRACK REPAIR DETAILS.
2. SEE DWG.NO. S-13 FOR CONCRETE PATCH REPAIR DETAILS.

SEE DWG. NO. S-11 FOR CONCRETE PATCH REPAIR DETAILS.
PIER 2 - REPAIRS

SOUTH ELEVATION

NORTH ELEVATION

LEGEND

- CRACK
- SMALL AREA
- HOLLOW AREA
- MAP CRACKING
- SHALLOW REBAR
- E = EFFLORESCENCE
- FH = FULL HEIGHT
- FW = FULL WIDTH
- DP = DEEP
- HC = HONEYCOMBING
- HA = HOLLOW AREA
- SC = SCALE AREA

REFERENCES

1. SEE DWG. NO. 0510 FOR SUBSTRUCTURE REPAIR NOTES AND CONCRETE CRACK REPAIR DETAILS.
2. SEE DWG. NO. 0515 FOR CONCRETE PATCH REPAIR DETAILS.

SCALE: 1'-0" = 1'-0"

CONCRETE PILE (TYP.)
STEEL SHEET PILE (TYP.)
EXPANSION JOINT
CONCRETE PILE (TYP.)
STEEL SHEET PILE (TYP.)
SCALE AREA
CONCRETE SHEET PILE (TYP.)
REFERENCES

1. SEE DWG. NO. S-10 FOR SUBSTRUCTURE REPAIR NOTES AND CONCRETE CRACK REPAIR DETAILS.

2. SEE DWG. NO. S-11 FOR CONCRETE PATCH REPAIR DETAILS.
CRACK REPAIR PROCEEDURE FOR CRACKS \( \frac{1}{4} \)" - 1" WIDE

1. SURFACE PREPARATION
   - Remove all cracked, broken, spalled, discolored, or disintegrating concrete material. The repair should be done in such a way that the cracks are created. The repair should be done by a contractor or a qualified person who has experience in performing this type of repair work.
   - The repair work should be done in accordance with the recommendations of the contractor. The repair material should be thoroughly mixed and uniformly distributed.
   - The repair material should be applied to the surface in a single layer, with each layer being at least 1" thick. The repair material should be applied in a manner that ensures good adhesion to the base material.

2. Application and finishing
   - Mix the repair material according to the manufacturer's specifications.
   - Ensure that the repair material is applied evenly and densely to the surface to be repaired.
   - Allow the repair material to cure for a minimum of 30 minutes before applying a fresh layer.
   - The repair work should be completed within 12 hours of mixing the repair material.

3. Crack repair
   - If necessary, protect newly applied material from direct sunlight, wind, rain, or frost.
   - Cure the repair material for a minimum of 7 days before applying a fresh layer.
   - The repair work should be completed within 12 hours of mixing the repair material.

4. Crack repair for CRACKS OR GAPS IN CONCRETE SURFACE GREATER THAN 1", USE SHALLOW PATCH REPAIR DETAIL.

ANODE PLACEMENT - SMALL RECTANGULAR TYPE PATCH

1. ANODES SHOULD BE INSTALLED TO PROVIDE ENOUGH SPACE TO ALLOW FOR THE INSTALLATION OF THE REPAIR WORK. THE COST OF PROVIDING ACCESS SHALL BE INCLUDED IN THE COST OF THE REPAIR WORK. THE COST OF PROVIDING ACCESS SHALL BE INCLUDED IN THE COST OF THE REPAIR WORK.

2. INSTALLATION OF ANODES
   - The installation of anodes should be done by a qualified person who has experience in performing this type of work.
   - The installation of anodes should be done in accordance with the recommendations of the contractor who is responsible for the design of the repair work.
   - The installation of anodes should be done in such a way that the cracks are created. The installation of anodes should be done by a contractor or a qualified person who has experience in performing this type of work.

3. CRACK REPAIR DETAILS
   - CRACKS SHOULD BE REPAIRED IN ACCORDANCE WITH "SHALLOW PATCH REPAIR DETAIL" OR "DEEP PATCH REPAIR DETAIL" SHOWN ON THIS SHEET.
   - THE REPAIR MATERIAL TO BE USED FOR CRACK REPAIRS SHOULD BE APPLIED IN MULTIPLE LIFTS. EACH LIFT THICKNESS SHOULD BE ABOUT 1".
   - THE REPAIR MATERIAL SHOULD BE APPLIED IN A SINGLE LAYER, WITH EACH LAYER BEING AT LEAST 1" THICK. THE REPAIR MATERIAL SHOULD BE APPLIED IN A MANNER THAT ENSURES GOOD ADHESION TO THE BASE MATERIAL.

4. CRACK REPAIRS SHALL BE PERFORMED ONLY ABOVE THE WATER SURFACE.

SUBSTRUCTURE REPAIR NOTES

1. AT NO TIME SHOULD THE CONCRETE BE LEFT CURED FOR LONGER THAN 30 MINUTES BEFORE APPLYING A FRESH LIFT.

2. GAUGE THE DEPTH OF THE REPAIRS AND ADJUST THE REPAIR MATERIAL ACCORDINGLY.

3. CRACKS SHALL BE REPAIRED IN ACCORDANCE WITH "CRACK REPAIR DETAILS" SHOWN ON THIS SHEET.

4. ANY CRACKS LESS THAN 1" WIDE WHICH ARE NOT REPAIRED BUT ARE BOUND TO BE REPAIRED BY THE APPLICATION OF REINFORCING CONCRETE TO BE PAID UNDER THE ITEM "PROTECTIVE CONCRETE FOR BRIDGE".

REFERENCE

1. NEXON O. CONCRETE AND CONCRETE REHABILITATION OF BRIDGE NO. 03093 I-91 OVER FRONT STREET AND QUINNIPACIC RIVER.
DEEP PATCH REPAIR PROCEDURE

1. Deep patch repair detail applied to deteriorated areas of reinforced concrete or repair areas where no more than half the surface area of reinforcing is exposed or the patch area is less than 4 ft. 2.

2. Repair depth shall be at least 0.5 in. greater than the depth of the spall or spalling. Repair depth shall be less than 1 in. in areas where the concrete repair exceeds 4 in. depth in a single layer of new mix. In areas of non-uniform repair, the patch depth of each layer of repair material shall be in accordance with AWS D1.4 Structural Welding Code - Structural steel. The cost of new weldable reinforcing material shall be included in the cost of patching material.

3. The perimeter of each deteriorated area shall be determined and shown on the drawing.

4. Surface Preparation:
   - Remove loose and deteriorated concrete, including joint, oil, grime, and all bond-inhibiting materials from sound surfaces.
   - Remove all non-weldable reinforcing steel by grinding, brushing, washing, or other acceptable mechanical means.
   - Repairs shall be done to the minimum standard of a WELDED WIRE FABRIC, WIRE FABRIC REINFORCEMENT OR同等的材料来保证平面

5. Minimum stripping depth shall conform to the requirements shown in Table A.

6. Expansion anchor bolts shall conform to the requirements shown in Table A.

7. New concrete shall match the color of the existing concrete as closely as possible.

8. All new exposed concrete surfaces within areas to be bonded shall be rubbed to produce a smooth finish.

9. All new exposed concrete surfaces within area to be bonded shall be brushed clean and flashed with bituminous or other similar materials and installed in accordance with ASTM D1693, before applying patching material.

10. Patching material shall conform to the requirements shown in Table A.

11. All work shown on this drawing shall be performed where directed by the Engineer.

12. Deep patch repairs shall be paid under item class "3". Concrete patch repairs shall be paid under item class "5". New reinforcing steel shall be paid under item class "3". New reinforcing steel shall not contain galvanized blast furnace slag (SBS) or fly ash fly ash (SBS) or fly ash aggregate.

13. Surface preparation, proportioning and mixing of materials, application of patching material, and final cure shall be in accordance with the Contractor’s recommendations.

14. The Contractor shall pay for all materials and labor required to complete the work shown on this drawing and shall be responsible for all materials and labor required to complete the work shown on this drawing and shall be paid under the cost for patching material.

15. All new exposed concrete surfaces shall be brushed clean and flashed with bituminous or other similar materials and installed in accordance with ASTM D1693, before applying patching material.

16. New concrete patches shall match the color of existing concrete surfaces. Color and texture of new concrete patch shall be as determined by the Engineer.

17. New reinforcing steel shall be paid for in accordance with item class "3". New reinforcing steel shall be paid for in accordance with item class "3".

18. All new exposed concrete surfaces shall be brushed clean and flashed with bituminous or other similar materials and installed in accordance with ASTM D1693, before applying patching material.

19. New concrete patches shall match the color of existing concrete surfaces. Color and texture of new concrete patch shall be as determined by the Engineer.

20. New reinforcing steel shall be paid for in accordance with item class "3". New reinforcing steel shall be paid for in accordance with item class "3".

21. All work shown on this drawing shall be performed where directed by the Engineer.

22. Deep patch repairs shall be paid under item class "3". Concrete patch repairs shall be paid under item class "5". New reinforcing steel shall be paid under item class "3". New reinforcing steel shall not contain galvanized blast furnace slag (SBS) or fly ash fly ash (SBS) or fly ash aggregate.

23. Surface preparation, proportioning and mixing of materials, application of patching material, and final cure shall be in accordance with the Contractor’s recommendations.

24. The Contractor shall pay for all materials and labor required to complete the work shown on this drawing and shall be responsible for all materials and labor required to complete the work shown on this drawing and shall be paid under the cost for patching material.

25. All new exposed concrete surfaces shall be brushed clean and flashed with bituminous or other similar materials and installed in accordance with ASTM D1693, before applying patching material.

26. New concrete patches shall match the color of existing concrete surfaces. Color and texture of new concrete patch shall be as determined by the Engineer.

27. New reinforcing steel shall be paid for in accordance with item class "3". New reinforcing steel shall be paid for in accordance with item class "3".

28. All work shown on this drawing shall be performed where directed by the Engineer.

29. Deep patch repairs shall be paid under item class "3". Concrete patch repairs shall be paid under item class "5". New reinforcing steel shall be paid under item class "3". New reinforcing steel shall not contain galvanized blast furnace slag (SBS) or fly ash fly ash (SBS) or fly ash aggregate.

30. Surface preparation, proportioning and mixing of materials, application of patching material, and final cure shall be in accordance with the Contractor’s recommendations.

31. The Contractor shall pay for all materials and labor required to complete the work shown on this drawing and shall be responsible for all materials and labor required to complete the work shown on this drawing and shall be paid under the cost for patching material.

32. All new exposed concrete surfaces shall be brushed clean and flashed with bituminous or other similar materials and installed in accordance with ASTM D1693, before applying patching material.
EXISTING GIRDER REPAIR LEGEND

1. REPAIR BOTTOM OF GIRDER BRACKET WEB
2. REPAIR TOP OF GIRDER WEB
3. REPAIR BOTTOM OF GIRDER WEB
4. REPAIR BOTTOM OF INTERMEDIATE/CROSS FRAME
5. REPAIR BOTTOM OF INTERMEDIATE STIFFENER
6. PERFORM PENNING AT BOTTOM FLANGE COVER PLATE AND WELD
7. PERFORM PENNING AT INTERMEDIATE CROSS FRAME GUSSET PLATE TO GIRDER BOTTOM FLANGE AND WELD
8. REPAIR CRACKS/MISSING LATERAL BRACING GUSSET TO GIRDER BOTTOM FLANGE AND WELD
9. REPAIR CRACKS/MISSING LATERAL BRACING/CROSS FRAME GUSSET TO GIRDER BOTTOM FLANGE AND WELD
10. REPAIR GAP UNDER CROSS FRAME GUSSET PLATE AT GIRDER BOTTOM FLANGE
11. REPAIR DEBRIS CROSS FRAME GUSSET PLATE AT GIRDER BOTTOM FLANGE
12. REPAIR END CROSS FRAME TOP GUSSET PLATE
13. REPAIR END CROSS FRAME TOP GUSSET PLATE
14. REPAIR GIRDER LOWER LONGITUDINAL STIFFENER BUTT WELD
15. REPAIR GIRDER BOTTOM FLANGE AT MIDSPAN
16. INSTALL INTERMEDIATE CROSS FRAME
17. INSTALL DEBRIS PLATE ON GIRDER BOTTOM FLANGE
18. INSTALL WEEP PIPE SUPPORT BRACKET

REFERENCES

1. SEE DWG NO. S-15 TO S-22 FOR STEEL REPAIR DETAILS.
2. SEE DWG NO. S-24 AND S-25 FOR FIELD PAINTING DETAILS AND NOTES.
3. SEE DWG NO. S-26 TO S-29 FOR FIELD PAINTING NOTES.
4. SEE DWG NO. S-28 FOR WIND LOCK REPAIR DETAIL.
5. SEE DWG NO. S-38 FOR WEEP PIPE SUPPORT BRACKET DETAILS.
EXISTING GIRDER REPAIR LEGEND

1. Repair bottom of girder bracket web
2. Repair top of girder web
3. Repair bottom of girder web
4. Repair bottom of girder web near pin and hanger
5. Repair bottom of intermediate/jacking stiffener
6. Repair bottom of intermediate stiffener
7. Perform peening at bottom flange cover plate end weld
8. Perform peening at intermediate cross frame gusset plate to girder bottom flange weld
9. Repair cracked/pitting lateral bracing gusset to girder bottom flange weld
10. Repair cracked/pitting cross frame gusset plate to girder bottom flange weld
11. Repair cracked/pitting cross frame gusset plate to angle weld
12. Repair gap under cross frame gusset plate at girder bottom flange
13. Repair bent cross frame gusset plate at girder bottom flange
14. Repair bent lateral bracing gusset plate at girder bottom flange
15. Repair end cross frame bottom gusset plate
16. Repair end cross frame top gusset plate
17. Repair end cross frame top horizontal stiffener
18. Repair bottom longitudinal stiffener bottom weld
19. Repair girder bottom flange at pin and hanger
20. Install intermediate cross frame
21. Install drip plate on girder bottom flange
22. Install weep pipe support bracket

REFERENCES
3. See Dwg. No. S-26 to S-29 for jacking support system details and notes.
EXISTING CONDITION - EAST ELEVATION

PROPOSED REPAIR - EAST ELEVATION

SPAN 2 GIRDER WEB REPAIR - DETAILS A2 & A3

SCALE: 1" = 1'-0""}

NOTES:
1. DETAIL A2 APPLIES AT TOP OF GIRDER WEB.
2. DETAIL A3 APPLIES AT BOTTOM OF GIRDER WEB.

A SECTION - GIRDER WEB REPAIR - DETAIL A2

B SECTION - GIRDER WEB REPAIR - DETAIL A3

LEGEND

REFERENCE

1. SEE Framing Plan in DWG. NO. 5-12 TO 5-14 FOR REPAIR LOCATIONS.
SUGGESTED SEQUENCE OF STEEL REPAIRS NEAR HANGER PIN

1. CLEAN GIRDER ENDS TO LIMITS ShOWN IN PLANS.
2. REMOVE PORTION OF STIFFENERS 1, 2 & 3 TO LIMITS ShOWN IN PLANS.
3. REPAIR STIFFENERS 1 & 3.
4. INSTALL WEB REPAIR PLATES.
5. REPAIR STIFFENER 1.
6. REMOVE PORTION OF LONGITUDINAL STIFFENER TO LIMITS ShOWN IN PLANS.
7. INSTALL JACKING STIFFENER IN WEB PANEL 2.

NOTES:
1. INTERIOR GIRDER SHOWN FASCIA GIRDER SIMILAR.
2. STIFFENER DETERIORATION APPLIES TO STIFFENERS 1, 2 & 3.

REFERENCES
1. SEE DWG. NO. 9-10 FOR SECTION B.
2. SEE DWG. NO. 5-26 FOR DETAIL A.
3. SEE DWG. NO. 5-29 FOR JACKING STIFFENER DETAILS.
WELD REPAIR NOTES

1. WELD REPAIRS AT OPPOSITE HAND LOCATIONS SIMILAR.
2. REMOVE EXISTING CRACKED WELDS AND GRIND FLUSH PRIOR TO INSTALLING REPAIR WELDS.
3. REPAIRS OF MISSING OR CRACKED WELDS (TYP.) SHALL BE PAID UNDER THE ITEM "STRUCTURAL STEEL REPAIRS, SITE NO. 1".
ITEM "STRUCTURAL STEEL REPAIRS, (SITE NO. 1)"

REPAIR OF MISSING AND CRACKED WELDS SHALL BE PAID UNDER THE

REMOVE EXISTING CRACKED WELDS AND GRIND FLUSH PRIOR TO INSTALLING REPAIR WELDS.

WELD REPAIRS AT OPPOSITE HAND LOCATIONS SIMILAR.

SCALE: 1" = 1'-0"
END CROSS FRAME REPAIR DETAILS

SPAN 3 GIRDER LONGITUDINAL STIFFENER BUTT WELD REPAIR - DETAIL H3

STIFFENER BUTT WELD REPAIR NOTES

1. PERFORM LONGITUDINAL STIFFENER REPAIR AT ALL LOWER STIFFENER BUTT WELD LOCATIONS AT FASCIA GIRDER G1 & G18 IN THE SUSPENDED SPAN WITH 1/4" THICKNESS EXISTING CRACKED BUTT WELDS AND/OR EXISTING STOP HOLES IN THE GIRDER WEB ARE PRESENT AT SEVERAL LOCATIONS.

2. THE DIAMETER OF THE PROPOSED CORE HOLE SHALL BE FIELD MEASURED TO INCLUDE ALL EXISTING STOP HOLES AND BE CENTERED AT THE LONGITUDINAL STIFFENER BUTT WELD. THE MINIMUM HOLE DIAMETER SHALL BE 3".

3. GRIND SMOOTH ALL EDGES ON GIRDER WEB AND LONGITUDINAL STIFFENER AT THE CORE HOLE.

4. AT THE LONGITUDINAL STIFFENER BUTT WELD. THE MINIMUM HOLE DIAMETER SHALL BE FIELD MEASURED TO INCLUDE ALL EXISTING STOP HOLES AND BE CENTERED AT THE LONGITUDINAL STIFFENER BUTT WELD. THE MINIMUM HOLE DIAMETER SHALL BE 3".

5. GRIND SMOOTH ALL EDGES ON GIRDER WEB AND LONGITUDINAL STIFFENER AT THE CORE HOLE.

LEGEND

Deterioration in steel
Web core hole

EXISTING CONDITION - ELEVATION

A PROPOSED TOP GUSSET PLATE REPAIR - DETAIL H1

B PROPOSED BOTTOM GUSSET PLATE REPAIR - DETAIL H2

PROPOSED CONDITION

EXISTING CONDITION - ELEVATION

A SECTION - END CROSS FRAME TOP HORIZONTAL STIFFENER REPAIR - DETAIL H3

EXISTING CONDITION

SCALE: 1/2" = 1'-0"
**ELEVATION - SPAN 2 FASCIA GIRDERS G1**

**BOTTOM FLANGE REPAIR - DETAIL K**

**SCALE: 1" = 1'-0"**

**NOTE: WEST FACE SHOWN**

- **EXIST. STIFFENER**: 1½"x³/₈"
- **EXIST. BOTTOM FLANGE 20"x1"**
- **PROPOSED 9"x3/₈" REPAIR PLATE**

**SCALE: 1" = 1'-0"**

**NOTE: WEST FACE SHOWN**

- **EXIST. STIFFENER**: 1½"x³/₈"
- **EXIST. BOTTOM FLANGE 20"x1"**
- **PROPOSED 9"x3/₈" REPAIR PLATE**

**DETAIL K REPAIR NOTES**

1. AFTER CLEANING OF THE STEEL AND PRIOR TO INSTALLATION OF THE REPAIR PLATE APPLY A THIN VERNACULAR COMPOUND TO VESSELS SURFACES OF THE TOP OF THE BOTTOM FLANGE TO CREATE A SMOOTH SURFACE ALONG THE REPAIR MATERIAL TO FULLY CURE AND LEVEL ANY HIGH SPOTS AS REQUIRED PRIOR TO FIELD DRILLING HOLES.

2. THE THIN VERNACULAR COMPOUND SHALL BE REMOVED FROM STEEL SURFACES AND SHALL NOT CONTAIN ANY MATERIALS OR OTHER PRODUCTS THAT PROMOTE CORROSION OF STEEL. COST OF FURNISHING AND INSTALLING SPOT DRILL PAID FOR UNDER ITEM "STRUCTURAL STEEL REPAIRS (SITE NO.1)."

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**PLAN - PROPOSED INTERMEDIATE CROSS FRAME - DETAIL L**

**SCALE: 1/₄" = 1'-0"**

**NOTE: PROPOSED CROSS FRAME BETWEEN GIRDER G17 & G18 AT PIER 2 SHOWN**

- **EXIST. GIRDER G17**
- **EXIST. GIRDER G18**
- **EXIST. END CROSS FRAME**
- **EXIST. INTERMEDIATE CROSS FRAME**
- **EXIST. BEARINGS & PIER 2**
- **EXIST. BEARING 8"x3/₄" INTERMEDIATE STIFFENER**
- **EXIST. 9"x2'" BEARING CROSS FRAME**

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**SECTION - TYPICAL FLANGE REPAIR PLATE**

**SCALE: 1" = 1'-0"**

**EXIST. STIFFENER**: 1½"x³/₈"

- **EXIST. BOTTOM FLANGE 20"x1"**
- **PROPOSED 9"x3/₈" REPAIR PLATE**
- **1½"x3/₈" H.S. BOLT (TYP.)**
- **1½"x3/₈" H.S. BOLT IN EXIST. BOTTOM FLANGE**
- **FIELD DRILL 1½"x3/₈" H.S. BOLT (TYP.)**

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**SECTION**

**SCALE: 1/₄" = 1'-0"**

**EXIST. STIFFENER**: 1½"x³/₈"

- **EXIST. BOTTOM FLANGE 20"x1"**
- **PROPOSED 9"x3/₈" REPAIR PLATE**
- **1½"x3/₈" H.S. BOLT (TYP.)**
- **1½"x3/₈" H.S. BOLT IN EXIST. BOTTOM FLANGE**
- **FIELD DRILL 1½"x3/₈" H.S. BOLT (TYP.)**
FIELD PAINTING NOTES

1. THE ENDS OF EXISTING GIRDER AND END CROSS FRAMES (ON THEIR ENTIRETY) INCLUDING CONNECTION PLATES AND STIFFENERS AT HANGER PIN AND HINGE PIN LOCATIONS SHALL BE CLEARS AND PAINTED IN ACCORDANCE WITH THE SPECIFICATION "ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE" (S-12 NO. 17). THE CONTRACTOR SHALL SURVEY THE EXISTING BRIDGE AND FIELD PAINTING OF EXISTING STRUCTURE AND FIELD PAINTING OF AREAS IDENTIFIED BY THE ENGINEER OR DEPICTED IN THE PLANS.

2. CLEANING AND PAINTING OF AREAS IDENTIFIED BY THE ENGINEER OR DEPICTED IN THE PLANS.

3. PAINT AND DEBRIS COLLECTED FROM PAINT REMOVAL SHALL BE STORED ABOVE THE 100-YEAR FLOOD ELEVATION.

4. THE CONTRACTOR SHALL SURVEY THE EXISTING BRIDGE AND FIELD PAINTING OF EXISTING STRUCTURE AND FIELD PAINTING OF AREAS IDENTIFIED BY THE ENGINEER OR DEPICTED IN THE PLANS.

NOTE: SEE FRAMING PLAN FOR HORIZONTAL LIMITS OF TOP OF BOTTOM FLANGE CLEANING AND PAINTING.

LEGEND

REFERENCE

1. SEE DWG NO. S-12 THRU S-14 FOR FRAMING PLANS.

LIMITS OF CLEANING AND PAINTING
TYPICAL EXISTING CONDITION AT PIN & HANGER - EAST ELEVATION

SPAN 1, 2, & FIXED BEARINGS

SPAN 3, 4, & CANTILEVER SPANS

TYPICAL TEMPORARY JACKING / SUPPORT SYSTEM AT PIN & HANGER - EAST ELEVATION

DEAD LOAD DUE TO TEMPORARY COMPONENTS INCLUDING DEBRIS SHIELD, WORK PLATFORMS, CONTAINMENT STRUCTURE, ETC. ARE NOT INCLUDED.

REFERENCE:
1. SEE DWG. NO. S-29 FOR JACKING STIFFENER DETAILS AND JACKING/SUPPORT SYSTEM NOTE 7.
2. SEE DWG. NO. S-28 FOR DETAIL A, PIN REPLACEMENT DETAILS, AND WIND LOCK REPAIR DETAILS.
3. SEE DWG. NO. S-17 FOR SUSPENDED SPAN REPAIR DETAILS AT PIN & HANGER.

LEGEND:
- NEW ANCHOR ROOD IN NEW HOLES
- REPLACE EXISTING BOLT WITH NEW H.S. BOLT IF SECTION LOSS > 25%
- EXISTING BOLT

NOTE:
1. SERVICE LIVE LOAD INCLUDES PERMANENT DEAD LOAD ONLY.
2. SERVICE LIVE LOAD EXCLUDES IMPACT.
3. JACKING FORCES ARE FACTORED LOADS ASSUMING SIMULTANEOUS UNIFORM JACKING OF ALL GIRDERS AT A PIN LOCATION.

REFERENCES:
1. DWG. NO. S-17 FOR SUSPENDED SPAN REPAIR DETAILS AT PIN & HANGER.
2. DWG. NO. S-28 FOR DETAIL A, PIN REPLACEMENT DETAILS, AND WIND LOCK REPAIR DETAILS.
3. DWG. NO. S-29 FOR JACKING STIFFENER DETAILS AND JACKING/SUPPORT SYSTEM NOTE 7.

SCALE: 1'-0" = 1'-0"

DEAD LOAD = 185.0 KIPS
LOAD = 120.0 KIPS
TOTAL = 295.0 KIPS

SUSPENDED SPAN END REACTION PER GIRDER

TOTAL REACTION = 295.0 KIPS

DESIGNER/DRAFTER:
A. HiPius/S. Erdas

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

REHABILITATION OF BRIDGE NO. 03093 I-91 OVER FRONT STREET AND QUINNIPIAC RIVER

NEW HAVEN

PIN AND HANGER JACKING SYSTEM - 1

PROJECT NO. 92-668

DRAWING TITLE:
JACKING SYSTEM - 1

FIELD VERIFY

NOTES:
- NEW ANCHOR ROD IN NEW HOLES
- REPLACE EXISTING BOLT WITH NEW H.S. BOLT IF SECTION LOSS > 25%
- EXISTING BOLT

DEAD LOAD DUE TO TEMPORARY COMPONENTS INCLUDING DEBRIS SHIELD, WORK PLATFORMS, CONTAINMENT STRUCTURE, ETC. ARE NOT INCLUDED.

REFERENCE:
1. SEE DWG. NO. S-29 FOR JACKING STIFFENER DETAILS AND JACKING/SUPPORT SYSTEM NOTE 7.
2. SEE DWG. NO. S-28 FOR DETAIL A, PIN REPLACEMENT DETAILS, AND WIND LOCK REPAIR DETAILS.
3. SEE DWG. NO. S-17 FOR SUSPENDED SPAN REPAIR DETAILS AT PIN & HANGER.

LEGEND:
- NEW ANCHOR ROD IN NEW HOLES
- REPLACE EXISTING BOLT WITH NEW H.S. BOLT IF SECTION LOSS > 25%
- EXISTING BOLT

TYPICAL EXISTING CONDITION AT PIN & HANGER - EAST ELEVATION

SPAN 1, 2, & FIXED BEARINGS

DEAD LOAD = 185.0 KIPS
LOAD = 120.0 KIPS
TOTAL = 295.0 KIPS

SPAN 3, 4, & CANTILEVER SPANS

TYPICAL TEMPORARY JACKING / SUPPORT SYSTEM AT PIN & HANGER - EAST ELEVATION

DEAD LOAD DUE TO TEMPORARY COMPONENTS INCLUDING DEBRIS SHIELD, WORK PLATFORMS, CONTAINMENT STRUCTURE, ETC. ARE NOT INCLUDED.
GIRDER BOTTOM FLANGE WIND LOCK REPAIR DETAIL AT HINGE PIN - REFLECTED PLAN

NOTE: DETAIL APPLIES AT GIRDERS G1, G9, G10 & G18

EXIST. 8x1½ INTERMEDIATE STIFFENER
(TYP. EACH SIDE G1 - G18)
(TYP. INSIDE FACE ONLY G1 & G18)
EXISTING WIND LOCK BAR
WELDED TO BOTTOM FLANGE
EXISTING BOTTOM FLANGE

PROPOSED 8" x 1" JACKING STIFFENER
(TYP. EACH SIDE OF WEB)

EXIST. 8x1½ INTERMEDIATE STIFFENER
(TYP. ONE SIDE OF WEB ONLY)

EXIST. 1½" GIRDER WEB
GRIND WEB SMOOTH ALL CUT EDGES AND TRANSITIONS

REMOVAL HOLE; (TYP. 6")

REMOVAL OF 1½" GIRDER WEB TO HINGE PLATES.

PROPOSED 8½" JACKING STIFFENER
(TYP. ONE SIDE OF WEB)

REMOVAL OF EXISTING STAINLESS STEEL HINGE PLATES.

EXIST. G18 GIRDER WEB

EXIST. 2" BOLTS TO BOTTOM FLANGE

EXIST. 2" HINGE PIN PLATES

EXIST. 2" STAINLESS STEEL HINGE PLATES TO REMAIN.

EXIST. OPEN HOLE TO REMOVE PLATE (4 PLACES)

EXIST. 2¼"螺纹 HOLE FOR 1½" COTTER PIN

EXIST. 2½"螺纹 HOLE FOR 2" COTTER PIN

EXIST. 2½"螺纹 HOLE FOR 1½" COTTER PIN

EXIST. 2" DIA. HOLE FOR " COTTER PIN

REMOVING END HINGE PLATE.

EXIST. 2½" DIA. HOLE FOR " COTTER PIN

EXIST. 2" DIA. HOLE FOR " COTTER PIN

EXIST. 1½" STAINLESS STEEL HINGE PLATES.

EXIST. 1½" STAINLESS STEEL HINGE PLATES TO REMAIN.

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**JACKING / SUPPORT SYSTEM NOTES:***

1. THE DESIGN, FURNISHING, INSTALLATION, REMOVAL AND SALVAGE OF JACKING/SUPPORT ASSEMBLY SHALL BE PAID UNDER THE ITEM "TEMPORARY SUPPORT SYSTEM NO. 1", SEE SPECIAL PROVISIONS.

2. THE PLANS EFFECT A CONCEPTUAL METHOD TO JACK THE GIRDER FOR REPLACING THE PINS AT THE PIN & HANGER AND HINGE ASSEMBLIES. THE CONTRACTOR MAY SUBMIT ALTERNATE METHODS AND PROCEDURES TO THE ENGINEER FOR REVIEW & APPROVAL.

3. THE JACKING/SUPPORT SYSTEM AND MEANS OF ACCESS SHALL BE DESIGNED BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS AND COMPUTATIONS PREPARED, SIGNED & SEALED BY AN ENGINEER LICENSED IN THE STATE OF CONNECTICUT, TO THE ENGINEER FOR REVIEW AND APPROVAL.

4. JACKING OPERATIONS SHALL BE PERFORMED UNDER LIVE TRAFFIC. THE CONTRACTOR SHALL DESIGN THE JACKING ASSEMBLY FOR THE MINIMUM GIRDER END MOMENT EQUVALENT TO THE DESIGN LOADS.Provided for GIRDER STABILITY IN THE LONGITUDINAL AND TRANSVERSE BRIDGE DIRECTIONS AT ALL TIMES WHEN THE GIRDER ARE REMOVED.

5. THE CONTRACTOR IS CAUTIONED THAT HE WILL BE PERMITTED TO PERFORM THE WORK WHILE ENSURING THAT TRAFFIC LANE LIMITS ARE WITHIN THE TRAFFIC IN ACCORDANCE WITH THE "LIMITATIONS OF OPERATIONS" CHARTS CONTAINED IN THE SPECIAL PROVISIONS.

6. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS "PROTECTION AND MAINTENANCE" AND "MAINTENANCE & PROTECTION OF TRAFFIC", SEE SPECIAL PROVISIONS.

7.EXISTING INSPECTION PLATFORM SHALL BE POSITIONED TO NOT INTERFERE WITH JACKING SYSTEM OR BRIDGE REPAIRS DURING CONSTRUCTION OPERATIONS.

8. PIN & HANGER AND HINGE JACKING / SUPPORT SYSTEM FOR ALL GIRDER ARE TO BE REMOVED AS END OF CONSTRUCTION OPERATIONS AND INSPECTION AND VALUATION TO BE MADE. THE SPECIAL PROVISIONS SUPPORT BRACKETS AND JACKING STIFFENERS WELDED TO EXISTING GIRDER SHALL REMAIN IN PLACE.

9. EXISTING LONGITUDINAL STIFFENERS ARE LOCATED ON ONE SIDE OF THE GIRDER WEB ONLY. LOCATIONS SHOWN SHALL BE FIELD VERIFIED.

10. ALL CIRCUSE AT PIN AND HANGER OR HINGE LOCATIONS SHALL BE JACKED SIMULTANEOUSLY DURING CONSTRUCTION OPERATIONS. ONE END OF THE SUSPENDED SPAN SHALL BE JACKED AND/OR TEMPORARILY SUPPORTED AT A GIVEN TIME.

11. EXACT MEMBER LENGTHS SHALL BE DETERMINED TO SUIT EXISTING FIELD CONDITIONS.

12. REMOVAL OF PAINT IN THE VICINITY OF EXISTING WELDING BEARING STIFFENERS AND SUPPORT BRACKETS SHALL BE MADE UNDER THE ITEMS "ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE (SITE NO. 1)", SEE SPECIAL PROVISIONS.

13. INSTALL H-S BOLTS IN ALL OPEN HOLES USED FOR ATTACHMENT OF THE TEMPORARY JACKING/SUPPORT SYSTEM IN THE CANTILEVER SPAN 3 GIRDERS FOLLOWING REMOVAL OF THE TEMPORARY JACKING/SUPPORT SYSTEM.

14. A SHOP PRIMER SHALL BE APPLIED TO ALL STRUCTURAL STEEL COMPONENTS DESIGNATED TO BE REMOVED AND SALVAGED.

15. ALL JACKING/SUPPORT SYSTEM WELDS TO THE EXISTING GIRDER SHALL BE INSPECTED BY THE MAGNETIC PARTICLE METHOD. THE COST OF REMOVING AND REATTACHING THE EXISTING WELD LOCK BARS TO FACILITATE JACKING SHALL BE INCLUDED IN THE ITEM "TEMPORARY SUPPORT SYSTEM NO. 1".

16. THE COST OF REMOVING AND REATTACHING THE EXISTING WELD LOCK BARS TO FACILITATE JACKING SHALL BE INCLUDED IN THE ITEM "TEMPORARY SUPPORT SYSTEM NO. 1".

17. THE COST OF REMOVING AND REATTACHING THE EXISTING WELD LOCK BARS TO FACILITATE JACKING SHALL BE INCLUDED IN THE ITEM "TEMPORARY SUPPORT SYSTEM NO. 1".

The Plans Effect a Conceptual Method To Jack the Girder for Replacing the Pins at the Pin & Hanger and Hinge Assemblies. The Contractor May Submit Alternate Methods and Procedures to the Engineer for Review & Approval.
The deterioration location and dimensions depicted on the deck underside are based on information obtained from bridge safety inspection reports (2012 and supplemented by in-depth inspection performed by Dewberry in 2014). The information is intended to be used as a guide to the exact location and limits of deteriorated concrete to be removed on the underside of the deck.

The contractor shall not perform any repair work without prior approval from the engineer.

1. The contractor shall provide safe access to the engineer for examination and inspection of the deck underside and the repair work. The cost of providing access for the inspection shall be included in the cost of appropriate repair items.

2. Shredding shall be performed by the contractor to prevent any debris from falling into the river. The cost of shredding shall be included in the cost of the appropriate repair item.

3. Deck underside repairs (deck and haunch spalls, spalls with exposed reinforcing, hollow areas, honeycomb areas, etc.) shall be repaired in accordance with "Deck underside repair details" and paid under the item "Clean and coat exposed reinforcing steel", see special provisions.

4. Deck spall repairs (spalls with exposed reinforcing, hollow areas, etc.) shall be repaired in accordance with "Partial depth patch" and "Full depth patch" repair details. Full depth patch and partial depth patch repairs shall be paid under the item "Deck underside repair details", see special provisions.

5. Haunch shall be removed over sidewalks, travelways, and shoulders in span 1 and paid under the item "Concrete haunch removal", see special provisions.

6. Haunch shall be removed over sidewalks, travelways, and shoulders in span 1 and paid under the item "Concrete haunch removal", see special provisions.

7. Haunch shall be removed over sidewalks, travelways, and shoulders in span 1 and paid under the item "Concrete haunch removal", see special provisions.

8. At haunch locations to remain open, install web pipe expansion and shoulder in span 1 and paid under the item "Concrete haunch removal", see special provisions.

9. At haunch locations to remain open, install web pipe expansion and shoulder in span 1 and paid under the item "Concrete haunch removal", see special provisions.

10. At web pipe locations to be plugged, see plugged web pipe detail.

REFERENCES
1. See DWG. NO. S-30 FOR PARTIAL DEPTH PATCH AND FULL DEPTH PATCH REPAIR DETAILS.
2. See DWG. NO. S-34 FOR DECK UNDERSIDE REPAIR PROCEDURE AND DETAIL AND HAUNCH REMOVAL DETAILS.
3. See DWG. NO. S-36 FOR PLUGGED WEEPHOLE AND WEEP PIPE REPAIR DETAILS.
UNDERSIDE OF DECK DETERIORATION PLAN: SPAN 3

SCALE: 1" = 1'-0"

REFERENCES
1. SEE DWG NO. 5-33 FOR PARTIAL DEPTH PATCH AND FULL DEPTH PATCH REPAIR DETAILS.
2. SEE DWG NO. 5-34 FOR DECK UNDERSIDE DECOR RAIL PROCEDURE AND DETAIL AND HANGER REMOVAL DETAILS.
3. SEE DWG NO. S-38 FOR PLUGGED WEEPHOLE AND WEEP PIPE REPAIR DETAILS.

DECK DETERIORATION LEGEND
A. LEFT-IN-PLACE WOOD FORM
B. DECK SPALL
C. DECK SPALL WITH EXPOSED REBAR
D. DECK SPALL WITH PREVIOUSLY COATED EXPOSED REBAR
E. HOLLOW AREA
F. HOLLOW HANION
G. DECK WEEPHOLE TO REMAIN OPEN
H. DECK WEEPHOLE TO BE PLUGGED
I. HONEYCOMB AREA
DECK DETERIORATION LEGEND

A. LEFT-IN-PLACE WOOD FORM
B. DECK SPALL
C. DECK SPALL WITH EXPOSED REBAR
D. DECK SPALL WITH PREVIOUSLY COATED EXPOSED REBAR
E. HOLLOW AREA
F. HOLLOW HAUNCH
G. DECK WEEPHOLE TO REMAIN OPEN
H. DECK WEEPHOLE TO BE PLUGGED
I. HONEYCOMB AREA

UNDERSIDE OF DECK DETERIORATION PLAN: SPAN 4

SCALE: 1" = 5'-0"

REFERENCES

1. SEE DWG. NO. S-33 FOR PARTIAL DEPTH PATCH AND FULL DEPTH PATCH REPAIR DETAILS.
2. SEE DWG. NO. S-34 FOR DECK UNDERSIDE REPAIR PROCEDURE AND DETAIL AND HAUNCH REMOVAL DETAILS.
3. SEE DWG. NO. S-38 FOR PLUGGED WEEPHOLE AND WEEP PIPE REPAIR DETAILS.
EXISTING REINFORCING STEEL SHALL BE THOROUGHLY CLEANED. REPAIRS, REINFORCING STEEL IS DETERMINED TO BE DEFECTIVE BY THE ENGINEER. SEE FULL DEPTH PATCH REPAIR NOTE 4.

REMOVAL OF DEFECTIVE REINFORCING STEEL FOR PARTIAL DEPTH PATCH

Finishing Smoothing and Even with Adjacent Concrete

Top of Existing Slab

EXISTING REINFORCING STEEL

CUT EXISTING BROKEN, DAMAGED, OR DETERIORATED REINFORCING STEEL AT A POINT WHERE IT IS SOUND (TYP.).

EXISTING REINFORCING STEEL

TO BE DELETED BY THE ENGINEER. SEE DETAIL. REMOVAL OF DETERIORATED CONCRETE AT TOP OF DECK SHALL BE CLEANED & THE ENTIRE SURFACE OF THE POP-OUT SHALL BE COATED WITH AN EPOXY DESIGN TO BE INCLUDED UNDER THE ITEM "PARTIAL DEPTH PATCH".

NEW FINISHING STEEL IS TO BE SUPPORTED IN A MANNER APPROVED BY THE ENGINEER.

REPLACE WITH PATCHING MATERIAL.

REPAIR DETAIL FOR PARTIAL DEPTH PATCH

DELETION OF ADDITIONAL CONCRETE REMOVAL REQUIRES THE REPAIR OF THE DEEPER CONCRETE REMOVAL shall be paid under the item "PARTIAL DEPTH PATCH".

REPAIR DETAIL FOR FULL DEPTH PATCH

FULL DEPTH PATCH REPAIR NOTES

1. FULL DEPTH PATCH REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH DETAIL SHOWN AND SHALL BE PAID UNDER THE ITEM "FULL DEPTH PATCH" (HIGH EARLY STRENGTH CONCRETE). SEE SPECIAL PROVISIONS.

2. COST OF LEFT DEEP SAWCUT SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR ITEM "FULL DEPTH PATCH" (HIGH EARLY STRENGTH CONCRETE).

3. ALL BROKEN, DAMAGED, and DETERIORATED REINFORCING STEEL SHALL BE CUT EXISTING REINFORCING STEEL AT A POINT WHERE IT IS SOUND (TYP.).

4. NEW REINFORCING STEEL SHALL BE UNCOATED ASTM A 166 GR 50. REBAR SPlices SHALL BE PLACED UNDER THE ITEM "FULL DEPTH PATCH" (HIGH EARLY STRENGTH CONCRETE).

5. COST OF ADDITIONAL CONCRETE REMOVAL REQUIRED FOR THE REPAIR OF THE DEFECTIVE REINFORCING STEEL SHALL BE PAID UNDER THE ITEM "FULL DEPTH PATCH" (HIGH EARLY STRENGTH CONCRETE).

6. THE CONTRACTOR SHALL PROVIDE NEEDED SHIELDING TO PREVENT ANY DROPS FROM FALLING INTO WATER DURING FULL DEPTH PATCH REPAIR. THE COST OF SHIELDING SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR ITEM "FULL DEPTH PATCH" (HIGH EARLY STRENGTH CONCRETE).

PARTIAL DEPTH PATCH REPAIR NOTES

1. IN ANY CONCRETE REMOVAL, THE REINFORCING STEEL HAS AT LEAST ONE-HALF OF ITS SURFACE EXPOSED. THE CONCRETE SHALL BE SUPPORTED IN A MANNER APPROVED BY THE ENGINEER. SEE SPECIAL PROVISIONS.

2. EXPOSED REINFORCING STEEL IN THE AREAS OF POP-OUTS CAUSED BY THE REMOVAL OF DETERIORATED CONCRETE WHERE TOP OF DECK SHALL BE CLEANED & THE ENTIRE SURFACE OF THE POP-OUT SHALL BE COATED WITH AN EPOXY SEALING COAT. SEE DETAIL. THIS COST TO BE INCLUDED UNDER ITEM "CLEAN AND COAT EXPOSED REINFORCING STEEL".

3. CUTOFF OF COLD SAW CUT TO REMOVE & REPLACE DEFECTIVE REINFORCING STEEL shall be paid under the item "PARTIAL DEPTH PATCH".

4. THE CONTRACTOR SHALL PROVIDE NEEDED SHIELDING TO PREVENT ANY DROPS FROM FALLING INTO WATER DURING PARTIAL DEPTH PATCH REPAIR. THE COST OF SHIELDING SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR ITEM "PARTIAL DEPTH PATCH".

REFERENCES

1. SEE DWG. NO. S-30 TO S-32 FOR LOCATION OF UNDERSIDE DECK REPAIR.

2. ALL BROKEN, DAMAGED, or DETERIORATED REINFORCING STEEL BARS SHALL BE REMOVED TO A DEPTH OF 1" BELOW THE REINFORCING STEEL. THE EXPOSED SURFACE OF THE REINFORCING STEELshall be paid under the item "PARTIAL DEPTH PATCH".

3. IF AFTER CONCRETE REMOVAL, THE REINFORCING STEEL HAS AT LEAST ONE-HALF OF ITS SURFACE EXPOSED, THE CONCRETE SHALL BE FURTHER REMOVED TO A DEPTH OF 1/2". THE EXPOSED SURFACE OF THE REINFORCING STEEL shall be cleaned & COATED WITH AN EPOXY SEALING COAT. SEE DETAIL. THIS COST TO BE INCLUDED UNDER ITEM "CLEAN AND COAT EXPOSED REINFORCING STEEL".

4. THE CONTRACTOR SHALL PROVIDE NEEDED SHIELDING TO PREVENT ANY DROPS FROM FALLING INTO WATER DURING PARTIAL DEPTH PATCH REPAIR. THE COST OF SHIELDING SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR ITEM "PARTIAL DEPTH PATCH".

5. NEW REFINISHING STEEL SHALL BE UNCOATED ASTM A 166 GR 50. REBAR SPLICES MAY BE USED IF AUTHORIZED BY THE ENGINEER.

6. ALL BROKEN, DAMAGED, and DETERIORATED REINFORCING STEEL IS TO BE CUT AT A POINT WHERE IT IS SOUND (TYP.).

7. MECHANICAL SPLICES MAY BE USED IF AUTHORIZED BY THE ENGINEER.

8. NEW REINFORCING STEEL SHALL BE UNCOATED ASTM A 166 GR 50.

9. COATING. COST TO BE INCLUDED UNDER ITEM "CLEAN AND COAT EXPOSED REINFORCING STEEL".

10. STANDARD FINISHING STEEL IS TO BE SUPPORTED IN A MANNER APPROVED BY THE ENGINEER. SEE SPECIAL PROVISIONS.

DETECTIVE REINFORCING STEEL REPAIR FOR PARTIAL DEPTH PATCH

CUT EXISTING REINFORCING STEEL AT A POINT WHERE IT IS SOUND (TYP.).

REPLACE WITH PATCHING MATERIAL.

REPLACEMENT REINFORCING STEEL TO BE SUPPORTED IN A MANNER APPROVED BY THE ENGINEER.

REPAIR DETAIL FOR FULL DEPTH PATCH

FULL DEPTH PATCH REPAIR NOTES

1. FULL DEPTH PATCH REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH DETAIL SHOWN AND SHALL BE PAID UNDER THE ITEM "FULL DEPTH PATCH" (HIGH EARLY STRENGTH CONCRETE). SEE SPECIAL PROVISIONS.

2. COST OF LEFT DEEP SAWCUT SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR ITEM "FULL DEPTH PATCH" (HIGH EARLY STRENGTH CONCRETE).

3. ALL BROKEN, DAMAGED, and DETERIORATED REINFORCING STEEL SHALL BE CUT EXISTING REINFORCING STEEL AT A POINT WHERE IT IS SOUND (TYP.).

4. NEW REINFORCING STEEL SHALL BE UNCOATED ASTM A 166 GR 50. REBAR SPLICES MAY BE USED IF AUTHORIZED BY THE ENGINEER.

5. COST OF ADDITIONAL CONCRETE REMOVAL REQUIRED FOR THE REPAIR OF THE DEFECTIVE REINFORCING STEEL SHALL BE PAID UNDER THE ITEM "FULL DEPTH PATCH" (HIGH EARLY STRENGTH CONCRETE).

6. THE CONTRACTOR SHALL PROVIDE NEEDED SHIELDING TO PREVENT ANY DROPS FROM FALLING INTO WATER DURING FULL DEPTH PATCH REPAIR. THE COST OF SHIELDING SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR ITEM "FULL DEPTH PATCH" (HIGH EARLY STRENGTH CONCRETE).

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HAUNCH REMOVAL NOTES

1. The removal of the portion of concrete haunch shown shall be paid under the $5,000 CONCRETE REMOVAL DETAIL, as special provisions.

2. The removal of the portion of concrete haunch shown shall be paid under the $5,000 CONCRETE REMOVAL DETAIL, as special provisions.

3. If over-recommended results apply, two coats of epoxy resin to deck underside. The removal of the portion of concrete haunch shown shall be paid under the $5,000 CONCRETE REMOVAL DETAIL, as special provisions.

DECK UNDERSIDE REPAIR PROCEDURE

1. Remove left-in-place wood form by mechanical means to inspect for patch detail, and pay under the item "clean and coat exposed reinforcing steel". See special provisions.

2. If concrete that was previously covered by left-in-place wood form is deteriorated, then clean the concrete to sound concrete to the limits shown on the plans or as directed by the engineer.

3. If the concrete deck is not covered by left-in-place wood form, then clean the concrete to sound concrete to the limits shown on the plans, or as directed by the engineer.

4. Preserve exposed reinforcing steel, if any.

5. Clean the sound concrete surface area and exposed reinforcing steel of all loose or powdery rust, oil, dust, loose particles, and other bond inhibiting matter by an approved method.

6. Coat the exposed reinforcing steel with epoxy resin.

7. Deck underside repairs (rebars, bars with exposed reinforcing hidden areas) shall be repaired in accordance with "clean and coat exposed reinforcing steel", see special provisions.

8. At locations where skids or dams in shaking concrete on the undersides of concrete deck are deeper than half the slab thickness, remove the slab concrete full depth and repair as "full depth patch (high strength concrete)". If the reinforcing steel is exposed or if the bar has less than one foot in exposure with more than 10% of its effective area, then the proper treatment is "full depth patch (high strength concrete)".
**Provisional Asphalitic Plug Expansion Joint System Details**

1. The removal of all existing joint system materials to be included for payment under the item "Asphalitic Plug Expansion Joint System", see Special Provisions.

2. Installation of membrane waterproofing to be paid under the item "Membrane Waterproofing (Cold Liquid Substrate)".

3. Saw-cutting and removal of new PMMA pavement and membrane waterproofing for asphalitic plug joint installation to be included for payment under the item "Asphalitic Plug Expansion Joint System".

4. Closed cell backer rod diameter shall be determined after measuring the joint opening. The rod shall be 25% larger than the joint opening.

5. Asphalitic plus expansion joint systems may be installed within the temperature range specified in the special provision "Asphalitic Plug Expansion Joint System". Reference Table 2 for "Bridge Superstructure Surface Temperature Range" in the special provisions.

6. The non-sagging silicone sealant shall be placed on the backer rod 1/2" thick, at the cavity and along the length of the cavity. The silicone sealant shall be placed flush with the outside face of concrete.

7. The closed cell backer rod shall be placed a minimum of 2" from the outside face of parapets and medians.

8. Prior to installing the silicone sealant, clean joint sides by sandblasting. Joint shall be sealed by the method approved by the engineer. This work shall be included in the item "Asphalitic Plug Expansion Joint System".

9. The cost of removing existing bridge deck / approach slab within the limits of proposed joint shall be paid under the item "Partial Depth Patch", see Special Provisions.

**Reference**

1. See CWG No. 9-39 for partial depth patch repair details.

**Asphalitic Plug Expansion Joint System Notes**

2. Installation of membrane waterproofing to be paid under the item "Membrane Waterproofing (Cold Liquid Substrate)".

3. Saw-cutting and removal of new PMMA pavement and membrane waterproofing for asphalitic plug joint installation to be included for payment under the item "Asphalitic Plug Expansion Joint System".

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8. Prior to installing the silicone sealant, clean joint sides by sandblasting. Joint shall be sealed by the method approved by the engineer. This work shall be included in the item "Asphalitic Plug Expansion Joint System".

9. The cost of removing existing bridge deck / approach slab within the limits of proposed joint shall be paid under the item "Partial Depth Patch", see Special Provisions.
PREFORMED JOINT AT HINGE PIN

ASPHALTIC PLUG JOINT AT HINGE PIN

EXISTING DECK JOINT DETAIL AT PIN LOCATIONS

SCALE: 1" = 1'-0"

CONCRETE HEADER (TYP.)

NOTE: PREFORMED JOINT SEAL AT HANGER PIN SHOWN. JOINT AT HINGE PIN SIMILAR.

PROPOSED PREFORMED JOINT SEAL DETAIL AT PIN LOCATIONS

SCALE: 1" = 1'-0"

REFERENCES

1. SEE DWG NO. G-35 FOR PARTIAL DEPTH PATCH REPAIR DETAILS.
2. SEE DWG NO. S-33 FOR PROPOSED PREFORMED JOINT SEAL TREATMENT DETAILS AT MEDIAN & PARAPET Joints.

PREPARED BY:

T. STRNAD

DEPARTMENT OF TRANSPORTATION

NEW HAVEN

STREET AND QUINNIPIAC RIVER

REHABILITATION OF BRIDGE
NO. 03093 I-91 OVER FRONT STREET AND QUINNIPIAC RIVER

PREPARED JOINT SEAL DETAILS - 1

1. THE REMOVAL OF ALL EXISTING JOINT SYSTEM MATERIALS INCLUDING EXISTING SLIDING PLATE AT MEDIAN AND PARAPET JOINTS TO BE INCLUDED FOR PAYMENT UNDER ITEM "ASPHALTIC PLUG JOINT AT HINGE PIN", SEE SPECIAL PROVISIONS.
2. INSTALLATION OF MEMBRANE WATERPROOFING TO BE PAID UNDER THE ITEM "MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)".
3. SAW-CUTTING AND REMOVAL OF NEW PMA PAVEMENT AND MEMBRANE WATERPROOFING FOR PROPOSED PREFORMED JOINT SEAL INSTALLATION TO BE INCLUDED FOR PAYMENT UNDER THE ITEM "PREFORMED JOINT SEAL".
4. THE ELASTOMERIC CONCRETE HEADER AND PREFORMED SILICONE JOINT SEAL SHALL BE INSTALLED AFTER THE PAVEMENT HAS BEEN PLACED ON THE BRIDGE AND THE DESIGNATED AREA HAS BEEN SAW CUT AND REMOVED CONSTRUCTION OF ELASTOMERIC CONCRETE HEADER TO BE PAID UNDER ITEM "ELASTOMERIC CONCRETE HEADER".
5. THE ELASTOMERIC CONCRETE HEADER SHALL BE RECESSED 1/2" ALONG THE OPENING OF THE JOINT AND SHALL BE RECESSD 1/8" BELOW THE ELASTOMERIC CONCRETE OVERLAY.
6. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL GAP WIDTH NECESSARY TO ACCOMMODATE THE PRODUCT OF CHOICE.
7. THE COST OF REMOVING EXISTING BRIDGE DECK SLABS WITHIN THE LIMITS OF PROPOSED JOINT SHALL BE PAID UNDER THE ITEM "PARTIAL DEPTH PATCH, SEE SPECIAL PROVISIONS.

NOTE: PREFORMED JOINT SEAL SHOWN. JOINT AT HINGE PIN SIMILAR.

NOTE: PREFORMED JOINT SEAL DETAIL AT HANGER PIN SHOWN. JOINT AT HINGE PIN SIMILAR.
PROPOSED PREFORMED JOINT TREATMENT DETAIL AT MEDIAN PARAPET

PROPOSED PREFORMED JOINT TREATMENT DETAIL AT PARAPETS

V-SEAL

SILICOFLEX

EMSEAL BEJS

APPROVED JOINT TREATMENT PRODUCTS

REFERENCES
1. SEE DWG NO. S-37 FOR SILICONE LONGITUDINAL JOINT SEALANT DETAIL.
2. SEE DWG. NO. S-36 FOR PREFORMED JOINT SEAL NOTES.