

STRUCTURES INSPECTION FIELD REPORT

ROUTINE INSPECTION

BR. DEPT. NO.

W-06-016

2-DIST 05 B.I.N. 45K

| | | | | |
|---|---|---|--|---------------------------------------|
| CITY/TOWN WAREHAM | 8-STRUCTURE NO. W06016-45K-DOT-NBI | 11-Kilo. POINT 066.097 | 41-STATUS A:OPEN | 90-ROUTINE INSP. DATE OCT 12, 2016 |
| 07-FACILITY CARRIED US 6 MARION RD | MEMORIAL NAME/LOCAL NAME | 27-YR BUILT 1929 | 106-YR REBUILT 1957 | YR REHAB'D (NON 106) 0000 |
| 06-FEATURES INTERSECTED WATER WEWEANTIC RIVER | 26-FUNCTIONAL CLASS Urban Minor Arterial | DIST. BRIDGE INSPECTION ENGINEER G. Simpson <i>[Signature]</i> | | |
| 43-STRUCTURE TYPE 204 : Concrete continuous Tee Beam | 22-OWNER State Highway Agency | 21-MAINTAINER State Highway Agency | TEAM LEADER J. Hanley <i>[Signature]</i> | |
| 107-DECK TYPE 1 : Concrete Cast-in-Place | WEATHER Sunny | TEMP. (air) 17°C | TEAM MEMBERS M. MARSHALL J. GONSALVES <i>[Signature]</i> | |

ITEM 58 5

DECK DEF

| | | |
|-----------------------|---|-----|
| 1.Wearing surface | 6 | S-A |
| 2.Deck Condition | 5 | S-A |
| 3.Stay in place forms | N | - |
| 4.Curbs | 5 | S-P |
| 5.Median | N | - |
| 6.Sidewalks | 4 | S-A |
| 7.Parapets | N | - |
| 8.Railing | 7 | - |
| 9.Anti Missile Fence | N | - |
| 10.Drainage System | N | - |
| 11.Lighting Standards | N | - |
| 12.Utilities | 5 | S-P |
| 13.Deck Joints | N | - |
| 14. | N | - |
| 15. | N | - |
| 16. | N | - |

CURB REVEAL (In millimeters) N 235 S 230

ITEM 59 5

SUPERSTRUCTURE DEF

| | | |
|--------------------------------|---|-----|
| 1.Stringers | N | - |
| 2.Floorbeams | N | - |
| 3.Floor System Bracing | N | - |
| 4.Girders or Beams | 5 | S-A |
| 5.Trusses - General | N | - |
| a. Upper Chords | N | - |
| b. Lower Chords | N | - |
| c. Web Members | N | - |
| d. Lateral Bracing | N | - |
| e. Sway Bracings | N | - |
| f. Portals | N | - |
| g. End Posts | N | - |
| 6.Pin & Hangers | N | - |
| 7.Conn Plt's, Gussets & Angles | N | - |
| 8.Cover Plates | N | - |
| 9.Bearing Devices | 7 | - |
| 10.Diaphragms/Cross Frames | 6 | M-P |
| 11.Rivets & Bolts | 7 | - |
| 12.Welds | 7 | - |
| 13.Member Alignment | 7 | - |
| 14.Paint/Coating | 5 | S-P |
| 15. | N | - |

Year Painted 1992

COLLISION DAMAGE: Please explain
None Minor () Moderate () Severe ()

LOAD DEFLECTION: Please explain
None Minor () Moderate () Severe ()

LOAD VIBRATION: Please explain
None Minor () Moderate () Severe ()

Any Fracture Critical Member: (Y/N) N

Any Cracks: (Y/N) N

ITEM 60 4

SUBSTRUCTURE DEF

| | | | | | |
|--------------------------|---|------|-----|---|-----|
| 1. Abutments | | Dive | Cur | 5 | DEF |
| a. Pedestals | N | N | | | - |
| b. Bridge Seats | N | 5 | | | M-P |
| c. Backwalls | N | 7 | | | - |
| d. Breastwalls | N | 5 | | | M-P |
| e. Wingwalls | N | 7 | | | M-P |
| f. Slope Paving/Rip-Rap | N | 6 | | | M-P |
| g. Pointing | N | 7 | | | - |
| h. Footings | N | H | | | - |
| i. Piles | N | H | | | - |
| j. Scour | N | 7 | | | - |
| k. Settlement | N | 7 | | | - |
| l. | N | N | | | - |
| m. | N | N | | | - |
| 2. Piers or Bents | | | | 5 | DEF |
| a. Pedestals | N | N | | | - |
| b. Caps | N | 5 | | | S-P |
| c. Columns | N | N | | | - |
| d. Stems/Webs/Pierwalls | 5 | 5 | | | S-A |
| e. Pointing | 5 | 4 | | | S-A |
| f. Footing | 5 | H | | | - |
| g. Piles | H | H | | | - |
| h. Scour | 4 | H | | | S-P |
| i. Settlement | 7 | 5 | | | S-P |
| j. | N | N | | | - |
| k. | N | N | | | - |
| 3. Pile Bents | | | | N | DEF |
| a. Pile Caps | N | N | | | - |
| b. Piles | N | N | | | - |
| c. Diagonal Bracing | N | N | | | - |
| d. Horizontal Bracing | N | N | | | - |
| e. Fasteners | N | N | | | - |

UNDERMINING (Y/N) If YES please explain Y

COLLISION DAMAGE:
None Minor () Moderate () Severe ()

SCOUR: Please explain
None () Minor () Moderate () Severe (X)

I-60 (Dive Report): 4 I-60 (This Report): 1/5

93B-U/W (DIVE) Insp 03/17/2016

X=UNKNOWN N=NOT APPLICABLE H=HIDDEN/INACCESSIBLE R=REMOVED

| | | | | |
|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

ITEM 61
CHANNEL & CHANNEL PROTECTION

4

| | Dive | Cur | DEF |
|----------------------------|------|-----|-----|
| 1.Channel Scour | 4 | H | S-P |
| 2.Embankment Erosion | 7 | 7 | - |
| 3.Debris | 7 | 7 | - |
| 4.Vegetation | 7 | 7 | - |
| 5.Utilities | X | X | - |
| 6.Rip-Rap/Slope Protection | 7 | 7 | - |
| 7.Aggradation | 7 | H | - |
| 8.Fender System | N | N | - |

STREAM FLOW VELOCITY:
Tidal (X) High () Moderate () Low () None ()

ITEM 61 (Dive Report): 4 ITEM 61 (This Report): 4
93b-U/W INSP. DATE: 03/17/2016

ITEM 36 TRAFFIC SAFETY

| | 36 | COND | DEF |
|----------------------------|----|------|-----|
| A. Bridge Railing | 0 | 7 | M-P |
| B. Transitions | 0 | 7 | M-P |
| C. Approach Guardrail | 1 | 7 | - |
| D. Approach Guardrail Ends | N | N | - |

WEIGHT POSTING *Not Applicable* X

| | | | |
|---------------------|---|---|---|
| H | 3 | 3S2 | Single |
| Actual Posting | N | N | N |
| Recommended Posting | N | N | N |

Waived Date: 00/00/0000 EJDMT Date: 00/00/0000

| | | | |
|---|---|---|---|
| At bridge | | Other Advance | |
| E | W | E | W |
| / | / | / | / |

Signs In Place (Y=Yes, N=No, NR=Not Required)
Legibility/Visibility

CLEARANCE POSTING

| | | | |
|--------------------------|---|---|---|
| Not | X | N | S |
| Actual Field Measurement | ft | in | meter |
| | 0 | 0 | 0 |
| Posted Clearance | 0 | 0 | 0 |

| | | | |
|---|---|---|---|
| At bridge | | Advance | |
| N | S | N | S |
| / | / | / | / |

Signs In Place (Y=Yes, N=No, NR=Not Required)
Legibility/Visibility

ACCESSIBILITY (Y/N/P)

| | Neede | Used |
|-----------------|-------|------|
| Lift Bucket | N | N |
| Ladder | N | N |
| Boat | Y | Y |
| Waders | N | N |
| Inspector 50 | P | N |
| Rigging | N | N |
| Staging | N | N |
| Traffic Control | N | N |
| RR Flagger | N | N |
| Police | N | N |
| Other: | | |
| | N | N |

TOTAL HOURS 40

PLANS (Y/N): Y

(V.C.R.) (Y/N): N

TAPE#: _____

List of field tests performed:
Sounding

RATING
Rating Report (Y/N): Y
Date: 01/01/1980
Inspection data at time of existing rating
I 58: 7 I 59: 7 I 60: 7 Date :06/17/1977

(To be filled out by DBIE)
Request for Rating or Rerating (Y/N): N
If YES please give priority:
HIGH () MEDIUM () LOW ()
REASON: _____

CONDITION RATING GUIDE

(For Items 58, 59, 60 and 61)

| CODE | CONDITION | DEFECTS |
|------|--------------------|---|
| N | NOT APPLICABLE | |
| G 9 | EXCELLENT | Excellent condition. |
| G 8 | VERY GOOD | No problem noted. |
| G 7 | GOOD | Some minor problems. |
| F 6 | SATISFACTORY | Structural elements show some minor deterioration. |
| F 5 | FAIR | All primary structural elements are sound but may have minor section loss, cracking, spalling or scour. |
| P 4 | POOR | Advance section loss, deterioration, spalling or scour. |
| P 3 | SERIOUS | Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present. |
| C 2 | CRITICAL | Advance deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken. |
| C 1 | "IMMINENT" FAILURE | Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put it back in light service. |
| 0 | FAILED | Out of service - beyond corrective action. |

DEFICIENCY REPORTING GUIDE

DEFICIENCY A defect in a structure that requires corrective action.

CATEGORIES OF DEFICIENCIES:

M= Minor Deficiency - Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor pot holes, Minor corrosion of steel, Minor scouring, Clogged drainage, etc.

S= Severe/Major Deficiency - Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroded rebars, Considerable settlement, Considerable scouring or undermining, Moderate to extensive corrosion to structural steel with measurable loss of section, etc.

C-S= Critical Structural Deficiency - A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.

C-H= Critical Hazard Deficiency - A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Loose concrete hanging down over traffic or pedestrians, A hole in a sidewalk that may cause injuries to pedestrians, Missing section of bridge railing, etc.

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

A = ASAP- [Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report].

P = Prioritize- [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

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|----------------------|---------------|---------------------------|--|---------------------------------|
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|----------------------|---------------|---------------------------|--|---------------------------------|

REMARKS

BRIDGE ORIENTATION

U.S. 6 over the Weweantic River has an east/west orientation. The spans and piers are numbered from the west. The 6 Tee beams, 4 steel beams, and bays are numbered separately from the north per sketches 1, 2, and 3.

GENERAL REMARKS

S/A - Following the routine field inspection an email, with photos and sketches under separate cover, was sent to the DBIE to be forwarded to bridge maintenance. Email was sent to inform them of the holes in the wearing surface along the north gutter line and the approximate limits of the extensive deck/sidewalk soffit spalls. See items 58.1, 58.2, and 58.6.

S/A - Notable change at the north nose of pier 1. Second and third coarse blocks have shifted and currently have gaps up to several inches wide, see Item 60.2.d.

Underside inspection was conducted during low tide. Would suggest the District 6, Aspen snooper be utilized for the next routine inspection. The tide chart for Great Hill, Marion should be used for accurate tide times.

ITEM 58 - DECK

Item 58.1 - Wearing surface

S/A - There are two holes along the north gutter line, each 8" wide by 1' long. One is located in span 1 and the other in span 3 adjacent to an old concrete patch. Surface holes coincide with voids below. See sketches 4 & 5, photos 3 - 6 and 10 - 12. Also see Item 58.2 for underside. In addition see General Comments.

The bit. conc. has scattered longitudinal, transverse, and map cracking, see photo 1 for general topside. In the EB lane of span 3, near the pier 2, there is a full depth deck repair (4' wide by 12' long) with full width hairline transverse cracks with 1.5' spacing, see photo 2 for overview. There is minor rutting and heaving in the EB lane near the curb.

Item 58.2 - Deck Condition

1929 Tee Beams/Deck -

The original tee beam section of the deck has cover spalls, delaminations, some rust bleed, and repairs throughout. There are hairline cracks, particularly at interface of beams and deck with moderate to heavy efflo and dampness in bays 1 and 2, see photos 17 and 18 for examples. There are two areas that sound hollow, span 1, bay 2, at the west abutment and span 3, bay 2 at the east abutment, see photo 19 for example.

S/A - There are currently two holes along the north gutter line, each 8" wide by 1' long. One is located in span 1 and the other in span 3 adjacent to an old concrete patch. Surface holes coincide with voids below. See previous Item 58.1 (Wearing Surface) and General Comments.

The soffit of the north sidewalk and deck is mostly inaccessible due to the utility pipes filling most of Bay 1 in all 3 spans. The visible areas show previously reported serious deterioration in spans 2 & 3 and now in span 1. Spalled areas have heavily rusted rebar, some with 100% section loss. The spalling is full depth, exposing the light weight partition tiles, which are broken and resting on what's left of the rebar. In span 2 some areas the tiles have fallen through, exposing the bottom of the sidewalk slab. In span 3, bay 1, this condition extends over beam 2 and under edge of roadway.

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

REMARKS

Item 58.2 - Deck Condition (Cont'd)

Spalls:

Span 1 - Up to full width by 3' long with an 8" by 1' long through hole, see photos 7 and 8.

Span 2 - Up to full width by 15' long, see photo 9 and 17.

Span 3 - Up to full width by 30' long with a 8" by 1' long through hole, see photos 13, 14, 15, and 16.

Also see sketches 4 and 5.

1956 Deck Widening -

The south deck widening has areas of contamination, hairline map cracking, honeycombing with dampness, rust stains, and efflo see photos 15 & 16. In span 3, bay 2, near the pier, there is timber formwork left in place below a previous full depth deck repair, see photos 20 through 28.

The north face above beam 1 in all spans has a full length repair that has disjointed longitudinal cracking with adjacent scaling, see photos 29 and 41 for overview. See photo 30 for worst area in span 2, where it is up to 5 inches high by 2 inches deep by 25' long.

Item 58.4 - Curbs

See item 58.6 for details and photos.

Item 58.6 - Sidewalks

The south sidewalk has full length x $\leq 6"$ W x $\leq 10"$ D spalling/scaling with heavy weed growth along the back of curb, see photos 2 and 31.

The north sidewalk has a similar condition, about 60% of the length by up to 3 inches wide and 10" deep, with several sections of curb separated, settled and/or rotating, see photo 32 for example. Isolated area of scale (4 sq ft) under rail in span 3, see photo 33.

S/A - See item 58.2 for details and photos of the of the north sidewalk soffit.

Item 58.8 - Railing

There are a few bent pickets at the NE approach.

Item 58.12 - Utilities

There are several disconnected conduits at the east and west abutment, see photo 7 for example.

SP - Bay 5 in all spans has a steel utility pipe with severe corrosion and holes (possibly abandoned). Adjacent to this pipe is a concrete/wood encased utility with scale and spalls scattered throughout, see photos 34 and 35.

APPROACHES

Approaches a - Appr. pavement condition

Both have longitudinal cracking up to 1" wide with irregular transverse cracking throughout and at the sawcuts where the bit. conc. is beginning to break up in the EB lane, see photo 36 for typical overview.

Approaches b - Appr. Roadway Settlement

Minor rutting.

| | | | | |
|----------------------|---------------|---------------------------|--|---------------------------------|
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|----------------------|---------------|---------------------------|--|---------------------------------|

REMARKS

Approaches c - Appr. Sidewalk Settlement

Generally approaches have up to 2 inches of settlement at the bridge, see photo 4 for typical.

SP - The NE has up to 3" settlement at middle of settled patch, see photo 10.

The SE sidewalk has a repair that has settled approx 6 inches near the end post, see photo 37 for overview.

ITEM 59 - SUPERSTRUCTURE

Item 59.4 - Girders or Beams

1956 Deck Widening - In general the steel beams are in good condition with scattered surface and spot rust where the paint has failed, see photos 20, 21, 24, 38, and 39 for overviews.

Beam 3 in span 3 has an area of web and bottom flange section loss ($\leq 1/8"$ at this time) below previous full depth deck repair, see photo 28 for overview.

1929 Tee Beams - Beams 3 through 6 have numerous repairs, minor to moderate spalls with exposed rebar, delaminations, and minor rust stains throughout the concrete reinforced tee beams, see photos 18, 40, and 44 for examples.

Beams 1 and 2 have horizontal and longitudinal cracking with moderate to heavy efflorescence throughout all 3 spans, see photos 43 and 44 for examples. Beam 2, span 2 has an isolated full width bottom spall by 3' L by 2" D located near midspan with associated deteriorated concrete, scale, delams and heavy efflo, see photo 44.

S/A - Beam 1 - Span 1 - The north face and bottom has a large series of spalls (up to full width by 20' L by 8" H) with exposed corroding rebar with section loss, in some areas debonded, and broken stirrups with associated deteriorated concrete, scale, delams and heavy efflo, see photos 41, 42, and 43.

S/A - Beam 2 - Span 3 - As noted in item 58.2, full deck spall in span 3, bay 1, extends over and into the top of beam 2 exposing longitudinal rebar and top of stirrups for a length of 7 ft, see sketches 4 and 5 for additional detail. In addition, the north face near pier 2 has a full height spall by 4' L with exposed corroding rebar with associated deteriorated concrete, scale, delams and heavy efflo, see photo 45.

Item 59.9 - Bearing Devices

Minor rust on some bearings, see photos 38 and 39 for typical.

Item 59.10 - Diaphragms/Cross Frames

Some of the concrete diaphragms have cracking with efflo., delam., and/or repairs, worst in bays 1 and 2, all spans, see photo 18 for example.

Item 59.14 - Paint/Coating

The 25 year old paint is chalky with peeling and flaking, especially on the bottom flanges of some beams where there are areas of scaling rust, see item 59.4 for photos.

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|----------------------|---------------|---------------------------|--|---------------------------------|
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|----------------------|---------------|---------------------------|--|---------------------------------|

REMARKS

ITEM 60 - SUBSTRUCTURE

Item 60.1 - Abutments

Item 60.1.b - Bridge Seats

The seats have repairs, cracks and map cracking, and minor scale. The north end of the west seat has map cracking with heavy efflo., rust stains and scale between Beams 1 - 3, and a spall \approx 4ftL x 3 in D x full height under Beam 1, see photo 47. The north end of the east seat is similar, see photo 49. The east bridge seat under Beam 6, has a spall \approx 3ft x 7in x 2in D with vertical cracks \leq 1/8in wide under tee Beam 6 and steel Beam 1, see photo 50. The west bridge seat under steel Beam 1, has a full height spall/scale that is up to the bearing, see photo 48.

Item 60.1.d - Breastwalls

See item 60.1b for photos and details. In addition see photo 46 for overview of west abutment with patches, map cracking with rust bleed, delams and efflo.

Item 60.1.e - Wingwalls

See item 60.1f.

Item 60.1.f - Slope Paving/Rip-Rap

There is a void under the SE wingwall, approx 18" deep by 4' long. This may be causing the settlement at the SE approach sidewalk above. See Approach Sidewalk.

Item 60.2 - Piers or Bents

Item 60.2.b - Caps

Both concrete caps have many vertical cracks, hairline to 1/4 inch wide. Some cracks extend through the granite blocks below. In addition the north ends of both piers have scale/spall, map cracking, and associated delam with heavy efflo, see photos 51 through 57.

Item 60.2.d - Stems/Webs/Pierwalls

Some of the cracks in the caps extend through the top blocks with evidence of settlement at the north ends of both piers and at the pier 2 widening at pier 2. Except for the joints between the two top courses of granite, most of the pointing is gone in the tidal range, see photos 51 through 57 and 60 & 61.

SA - Notable change at the north nose of pier 1. Second and third coarse blocks have shifted and currently have gaps up to several inches wide, see photos 58 and 59.

Also see Routine Underwater Inspection Report Dated 3/17/2016.

Item 60.2.e - Pointing

Except for the joints between the two top courses of granite, most of the pointing is gone. Some areas exist where you can see through the pierwall.

SA - Notable change at the north nose of pier 1, see previous item 60.2d.

Also see Routine Underwater Inspection Report Dated 3/17/2016.

Item 60.2.f - Footing

See Routine Underwater Inspection Report Dated 3/17/2016 for M/P Deficiency.

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|----------------------|---------------|---------------------------|--|---------------------------------|

REMARKS

Item 60.2.h - Scour

See Routine Underwater Inspection Report Dated 3/17/2016 for S/P Deficiency.

Item 60.2.i - Settlement

See items 60.2b, d, e, and h.

SubStructure Undermining Notes

See Routine Underwater Inspection Report dated 3/17/2016.

SubStructure Scour Notes

See Routine Underwater Inspection Report dated 3/17/2016.

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.1 - Channel Scour

See Routine Underwater Inspection Report Dated 3/17/2016 for S/P Deficiency.

TRAFFIC SAFETY

Item 36a - Bridge Railing

AL- 3 bridge rail, non-standard.

Item 36b - Transitions

Type W guard rail smoothly attached to the end posts with nested panels and improper post spacing, non-standard.

The SE transition has concrete at the base of the posts that is settled and cracked, see photo 62.

Sketch / Photo Log

- Sketch 1 : 1929 Plan view - West half, spans 1 and 2 - not to scale
- Sketch 2 : 1929 Plan View - East half, spans 2 and 3 (not to scale)
- Sketch 3 : Framing Plan of 1956 widening (not to scale)
- Sketch 4 : 1956 Section view with overlay of void at span 3, bay 1. Full depth void extends over the top of beam 2. Spalls in span 1 and 2 are similar
- Sketch 5 : 1929 Section view at midspan (not to scale). Typical deck and beam reinforcement
- Photo 1 : General topside looking east
- Photo 2 : Overview of south wearing surface and sidewalk looking west. Previous full depth deck repair in span 3, bay 2.
- Photo 3 : Overview of north wearing surface and sidewalk looking east. Cones are located at holes in wearing surface
- Photo 4 : Close up of previous photo
- Photo 5 : Close up of previous photos. Heaving in foreground with hole in background
- Photo 6 : Reverse angle of previous photo
- Photo 7 : Underside of previous photo looking west. Span 1, bay 1 at west abutment
- Photo 8 : Close up of previous photo
- Photo 9 : Span 2, bay 1 at near pier 2 looking east
- Photo 10 : Overview of north wearing surface and sidewalk looking west. Approach sidewalk settlement up to 3" at middle. Previous concrete and asphalt patches in gutter
- Photo 11 : Similar to previous photo. Previous concrete and asphalt patches in gutter line
- Photo 12 : Close up of previous photo. Through hole to underside

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|----------------------|---------------|---------------------------|--|---------------------------------|
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|----------------------|---------------|---------------------------|--|---------------------------------|

REMARKS

Sketch / Photo Log (Cont'd)

- Photo 13 : Underside of previous photos 10, 11 and 12 looking east. Span 3, bay 1, spall extending from midspan to east abutment
- Photo 14 : Close up of previous photo. Area below photo 12 looking east
- Photo 15 : Span 3, bay 1, spall extending from east abutment to beyond midspan looking west
- Photo 16 : Span 3, bay 1, spall at east abutment extending up to expose bottom of curb
- Photo 17 : Span 2, bays 2 and 1 (L to R) looking west. Previous deck patch in foreground of bay 2
- Photo 18 : Span 2, bays 5, 4, and 3 (L to R) looking west. Previous deck patches in bays 4 and 3
- Photo 19 : Span 1, bays 2 at west abutment
- Photo 20 : General underside of span 1 (south extension) looking east
- Photo 21 : General underside of span 2 (south extension) looking west
- Photo 22 : Close up of previous photo, bay 1 near pier 1
- Photo 23 : Close up of previous photo 21, bay 2 near pier 1
- Photo 24 : General underside of span 3 (south extension) looking west
- Photo 25 : Close up of previous photo, bay 1 near pier 2
- Photo 26 : Span 3 bay 1 and 2 (L to R) near east abutment
- Photo 27 : Close up of photo 24. View of wood shielding and formwork left in place at bay 2. Formwork located below full depth deck repair
- Photo 28 : Similar to previous photo. Beam 3 with active corrosion along bottom flange
- Photo 29 : Overview of north face of sidewalk and deck
- Photo 30 : Span 2 north face spall
- Photo 31 : South sidewalk looking west
- Photo 32 : North sidewalk, span 2 looking west
- Photo 33 : North sidewalk, span 3 north edge spall/scale
- Photo 34 : Span 2, bay 5 utilities. Utility pipe on right with holes, apparently abandoned
- Photo 35 : Same utilities as previous photo, span 3 at east abutment. Utility pipe on right with a hole, apparently abandoned
- Photo 36 : Overview of west approach pavement and sawcut joint. East approach pavement and sawcut joint is similar
- Photo 37 : Overview of SE approach sidewalk
- Photo 38 : Overview of BM 4 south face, span 1 - Typical
- Photo 39 : BM 2, north face at west abutment. Typical beam end at abutments
- Photo 40 : Span 1, BM 6 at midspan. spall with adjacent delam
- Photo 41 : Overview BM 1, span 1, north face and bottom
- Photo 42 : Close up of previous photo
- Photo 43 : Underside of BM 2 and 1 (L to R), span 1 looking west
- Photo 44 : Underside of span 2 at midspan looking north. BM 3 in foreground and BM 2 with spall in background
- Photo 45 : Span 3, BM 2 near pier 2, full height spall with exposed and debonded rebar at bottom edge
- Photo 46 : Overview of west abutment
- Photo 47 : West abutment, at bay 1, north end
- Photo 48 : West abutment, at BM-1 (South extension). Spall extends back to masonry plate
- Photo 49 : East abutment, at bay 1, north end
- Photo 50 : East abutment, at BM1 (South extension). Vertical irregular cracking
- Photo 51 : Overview of pier 1, NW. Vertical cracks in cap. Missing pointing
- Photo 52 : Overview of pier 1, east face
- Photo 53 : Close up of previous photo at NE end of pier. Missing pointing
- Photo 54 : Overview of pier 2, NW. Vertical cracks in cap and into blocks below. Missing pointing
- Photo 55 : Overview of pier 2, NE. Vertical cracks in cap. Missing pointing

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

REMARKS**Sketch / Photo Log (Cont'd)**

- Photo 56 : Overview of pier 2 and south widening pier (L to R), west face. Missing pointing
- Photo 57 : Close up of previous photo. Cracks in cap extending down into first block
- Photo 58 : Overview of north nose of pier 1. Notable shift in 2nd and 3rd course blocks
- Photo 59 : Close up of previous photo. Gap up to several inches wide
- Photo 60 : Pier 1, NE face - Typical of missing mortar and pointing
- Photo 61 : Pier 1 and south extension pier, west face. Missing pointing
- Photo 62 : SE transition concrete at base of posts is settled and cracked

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45K

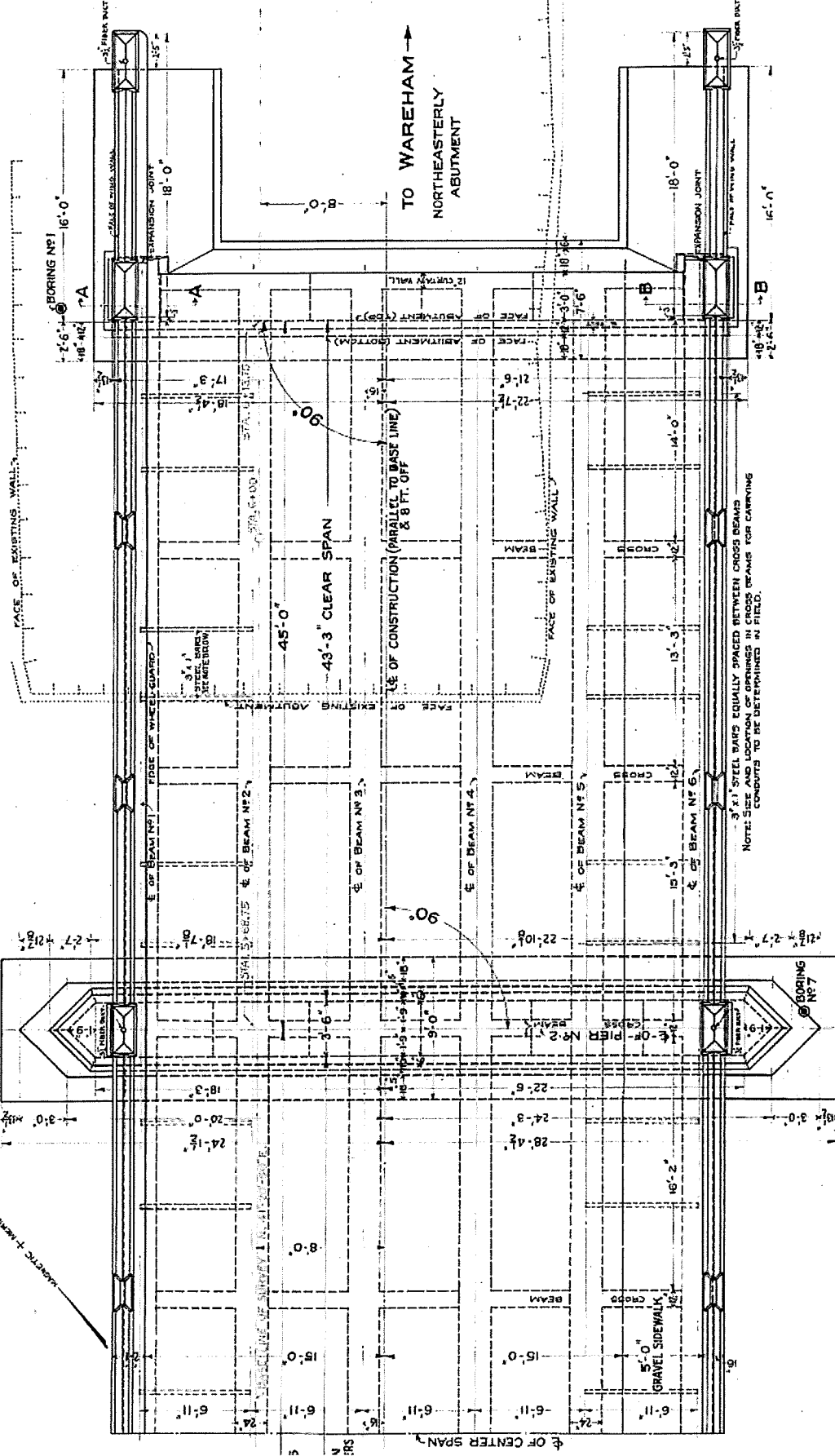
BR. DEPT. NO.
WV-06-016

&-STRUCTURE NO.
W06016-45K-DOT-NBI

INSPECTION DATE
OCT 12, 2016

SKETCHES

©BORING N#2

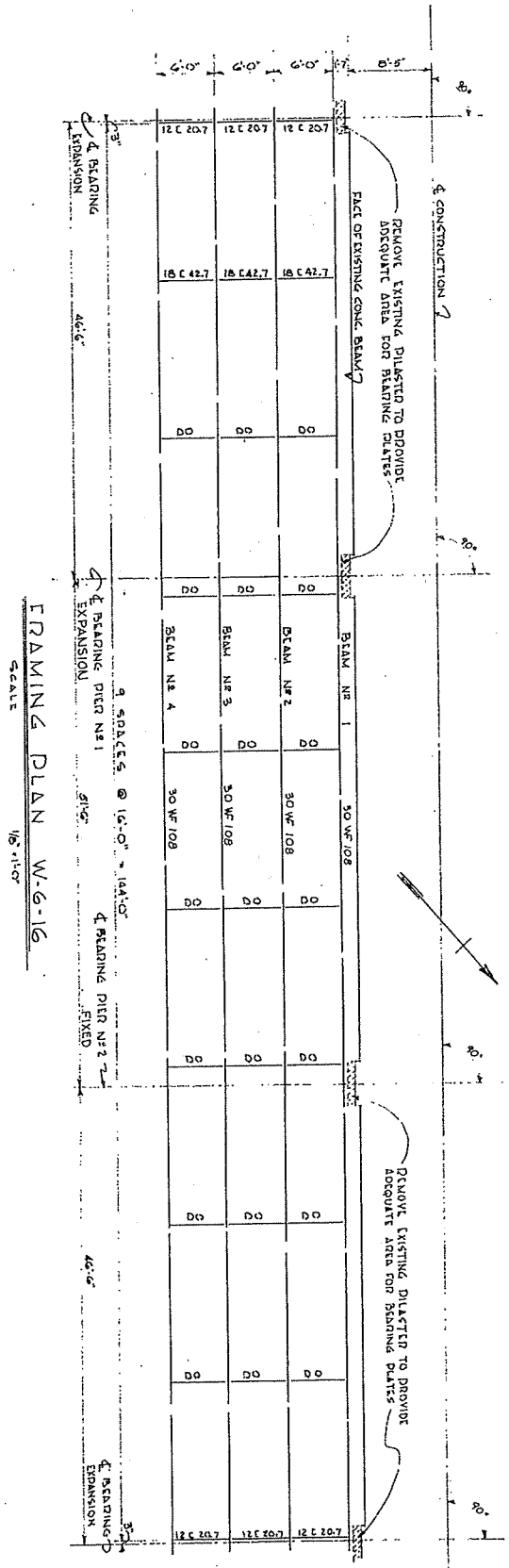


ONE HALF PLAN VIEW

Sketch 2: 1929 Plan View - East half, spans 2 and 3 (not to scale)

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

SKETCHES



Sketch 3: Framing Plan of 1956 widening (not to scale)

CITY/TOWN
WAREHAM

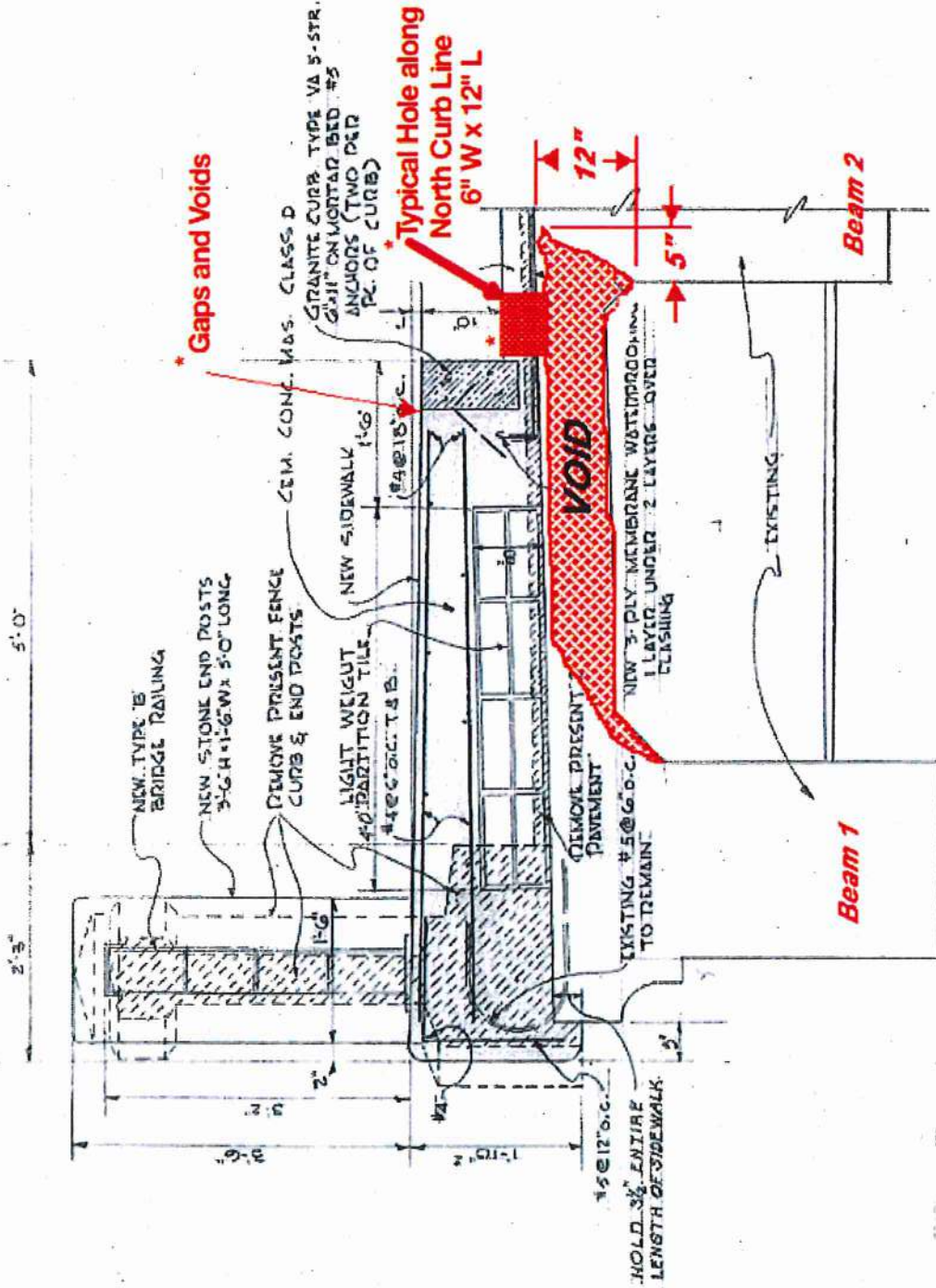
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BR. DEPT. NO.
W-06-016

&-STRUCTURE NO.
W06016-45K-DOT-NBI

INSPECTION DATE
OCT 12, 2016

SKETCHES



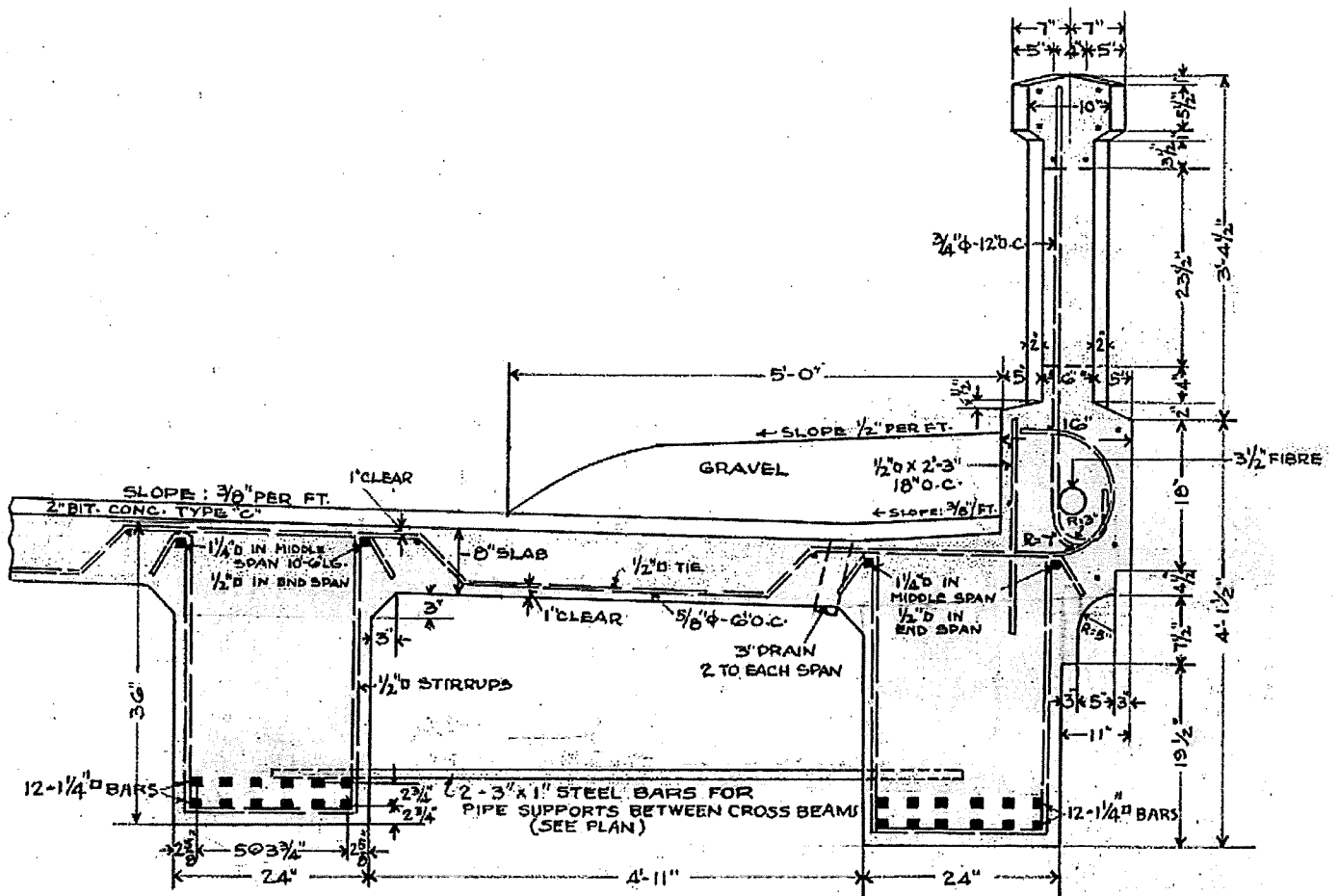
Scale: NTS

* Revised JH 10/14/16

Sketch 4: 1956 Section view with overlay of void at span 3, bay 1. Full depth void extends over the top of beam 2. Spalls in span 1 and 2 are similar

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|----------------------|---------------|---------------------------|---------------------------------------|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|---------------------------------------|---------------------------------|

SKETCHES



DETAIL OF SUPERSTRUCTURE AT $\frac{1}{2}$ OF SPAN
(SOUTHEASTERLY SIDE)
SCALE: $\frac{3}{4}$ "=1'-0"

Sketch 5: 1929 Section view at midspan (not to scale). Typical deck and beam reinforcement

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS



Photo 1: General topside looking east



Photo 2: Overview of south wearing surface and sidewalk looking west. Previous full depth deck repair in span 3, bay 2.

CITY/TOWN
WAREHAMB.I.N.
45KBR. DEPT. NO.
W-06-0168.-STRUCTURE NO.
W06016-45K-DOT-NBIINSPECTION DATE
OCT 12, 2016

PHOTOS



Photo 3: Overview of north wearing surface and sidewalk looking east. Cones are located at holes in wearing surface



Photo 4: Close up of previous photo

CITY/TOWN
WAREHAMB.I.N.
45KBR. DEPT. NO.
W-06-0168.-STRUCTURE NO.
W06016-45K-DOT-NBIINSPECTION DATE
OCT 12, 2016

PHOTOS

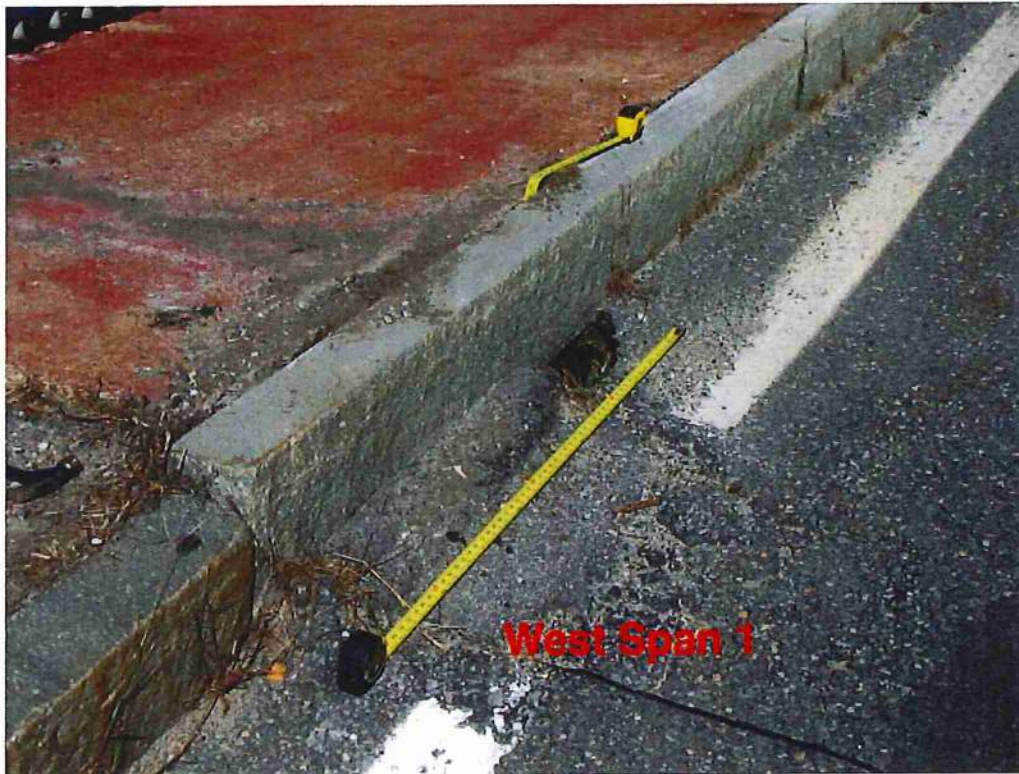


Photo 5: Close up of previous photos. Heaving in foreground with hole in background



Photo 6: Reverse angle of previous photo

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 7: Underside of previous photo looking west. Span 1, bay 1 at west abutment

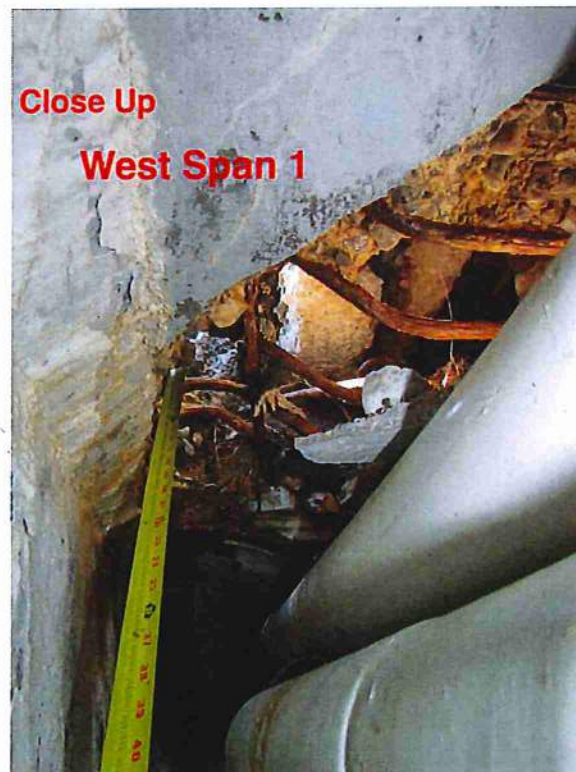


Photo 8: Close up of previous photo

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

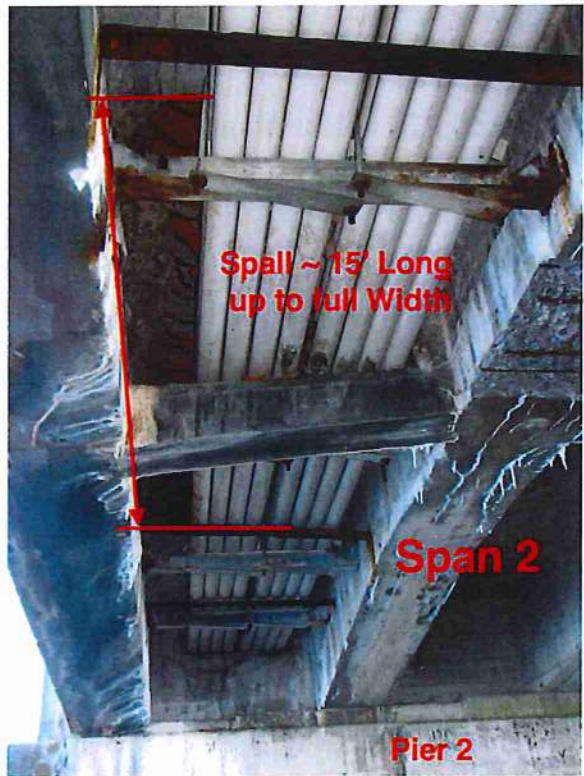


Photo 9: Span 2, bay 1 at near pier 2 looking east



Photo 10: Overview of north wearing surface and sidewalk looking west. Approach sidewalk settlement up to 3" at middle. Previous concrete and asphalt patches in gutter

CITY/TOWN
WAREHAMB.I.N.
45KBR. DEPT. NO.
W-06-0168.-STRUCTURE NO.
W06016-45K-DOT-NBIINSPECTION DATE
OCT 12, 2016

PHOTOS



Photo 11: Similar to previous photo. Previous concrete and asphalt patches in gutter line



Photo 12: Close up of previous photo. Through hole to underside

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS



Photo 13: Underside of previous photos 10, 11 and 12 looking east. Span 3, bay 1, spall extending from midspan to east abutment



Photo 14: Close up of previous photo. Area below photo 12 looking east

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

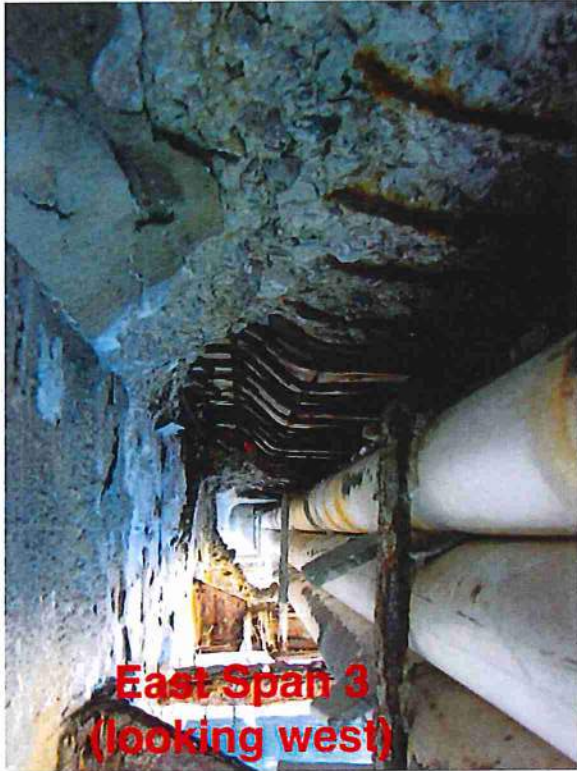


Photo 15: Span 3, bay 1, spall extending from east abutment to beyond midspan looking west

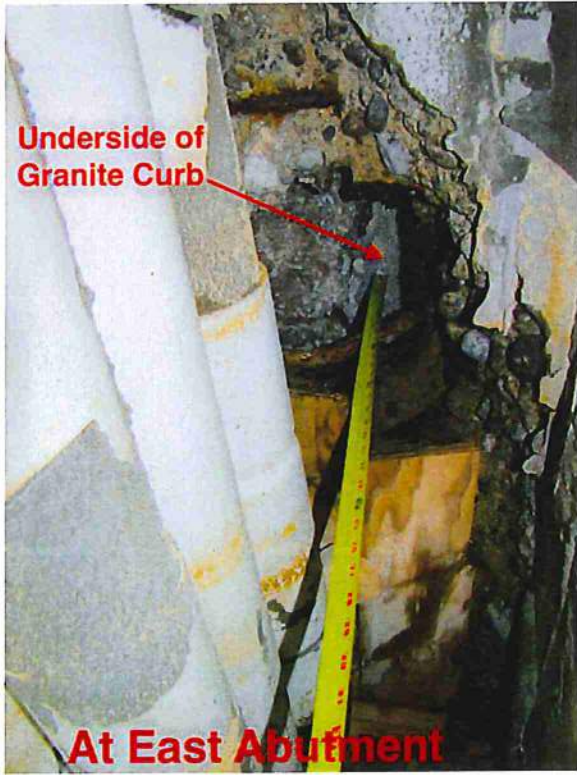


Photo 16: Span 3, bay 1, spall at east abutment extending up to expose bottom of curb

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 17: Span 2, bays 2 and 1 (L to R) looking west. Previous deck patch in foreground of bay 2



Photo 18: Span 2, bays 5, 4, and 3 (L to R) looking west. Previous deck patches in bays 4 and 3

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|----------------------|---------------|---------------------------|---------------------------------------|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|---------------------------------------|---------------------------------|

PHOTOS

Photo 19: Span 1, bays 2 at west abutment



Photo 20: General underside of span 1 (south extension) looking east

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 21: General underside of span 2 (south extension) looking west



Photo 22: Close up of previous photo, bay 1 near pier 1

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

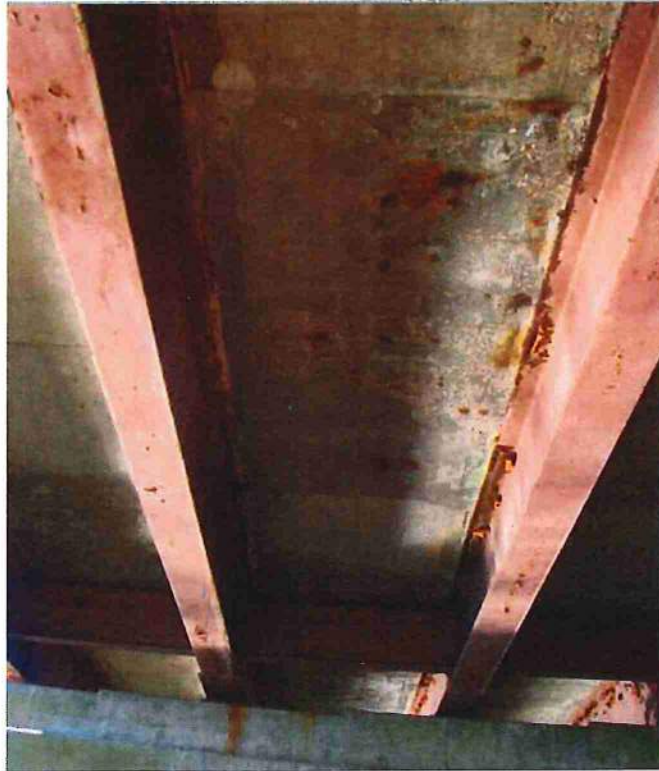
PHOTOS

Photo 23: Close up of previous photo 21, bay 2 near pier 1



Photo 24: General underside of span 3 (south extension) looking west

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 25: Close up of previous photo, bay 1 near pier 2



Photo 26: Span 3 bay 1 and 2 (L to R) near east abutment

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 27: Close up of photo 24. View of wood shielding and formwork left in place at bay 2. Formwork located below full depth deck repair



Photo 28: Similar to previous photo. Beam 3 with active corrosion along bottom flange

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 29: Overview of north face of sidewalk and deck



Photo 30: Span 2 north face spall

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 31: South sidewalk looking west



Photo 32: North sidewalk, span 2 looking west

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 33: North sidewalk, span 3 north edge spall/scale



Photo 34: Span 2, bay 5 utilities. Utility pipe on right with holes, apparently abandoned

CITY/TOWN
WAREHAMB.I.N.
45KBR. DEPT. NO.
W-06-0168.-STRUCTURE NO.
W06016-45K-DOT-NBIINSPECTION DATE
OCT 12, 2016

PHOTOS



Photo 35: Same utilities as previous photo, span 3 at east abutment. Utility pipe on right with a hole, apparently abandoned



Photo 36: Overview of west approach pavement and sawcut joint. East approach pavement and sawcut joint is similar

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 37: Overview of SE approach sidewalk

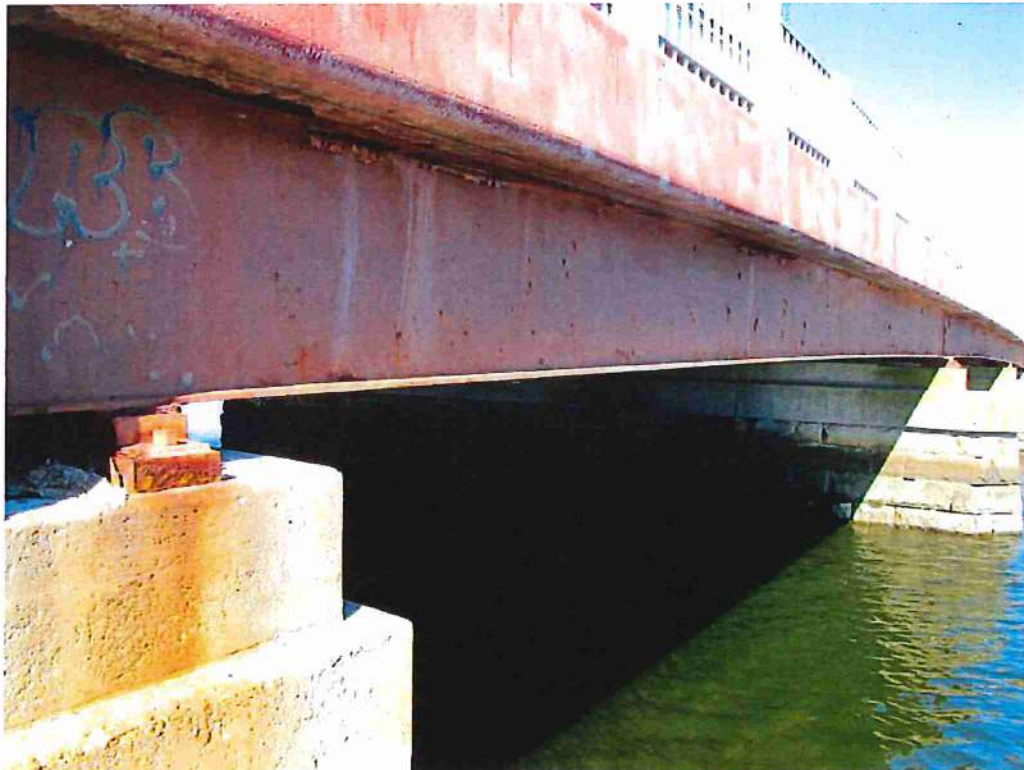


Photo 38: Overview of BM 4 south face, span 1 - Typical

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| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 39: BM 2, north face at west abutment. Typical beam end at abutments



Photo 40: Span 1, BM 6 at midspan. spall with adjacent delam

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 41: Overview BM 1, span 1, north face and bottom



Photo 42: Close up of previous photo

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS



Photo 43: Underside of BM 2 and 1 (L to R), span 1 looking west

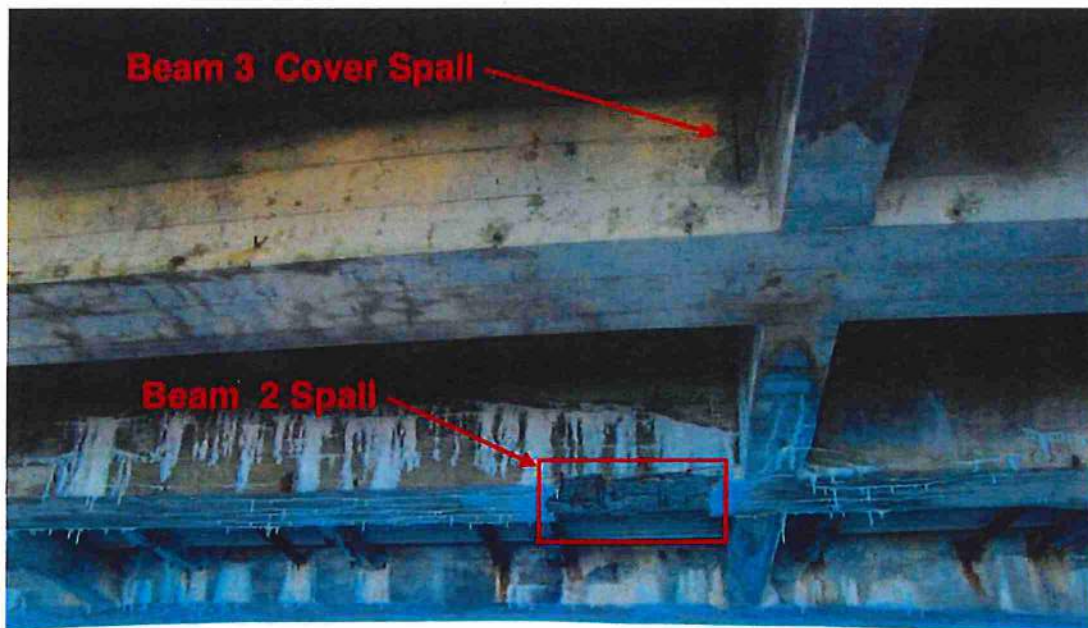


Photo 44: Underside of span 2 at midspan looking north. BM 3 in foreground and BM 2 with spall in background

CITY/TOWN
WAREHAMB.I.N.
45KBR. DEPT. NO.
W-06-0168.-STRUCTURE NO.
W06016-45K-DOT-NBIINSPECTION DATE
OCT 12, 2016**PHOTOS**

Photo 45: Span 3, BM 2 near pier 2, full height spall with exposed and debonded rebar at bottom edge



Photo 46: Overview of west abutment

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 47: West abutment, at bay 1, north end



Photo 48: West abutment, at BM1 (South extension). Spall extends back to masonry plate

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 49: East abutment, at bay 1, north end



Photo 50: East abutment, at BM1 (South extension). Vertical irregular cracking

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 51: Overview of pier 1, NW. Vertical cracks in cap. Missing pointing



Photo 52: Overview of pier 1, east face

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 53: Close up of previous photo at NE end of pier. Missing pointing



Photo 54: Overview of pier 2, NW. Vertical cracks in cap and into blocks below. Missing pointing

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS



Photo 55: Overview of pier 2, NE. Vertical cracks in cap. Missing pointing



Photo 56: Overview of pier 2 and south widening pier (L to R), west face. Missing pointing

CITY/TOWN
WAREHAMB.I.N.
45KBR. DEPT. NO.
W-06-0168.-STRUCTURE NO.
W06016-45K-DOT-NBIINSPECTION DATE
OCT 12, 2016

PHOTOS

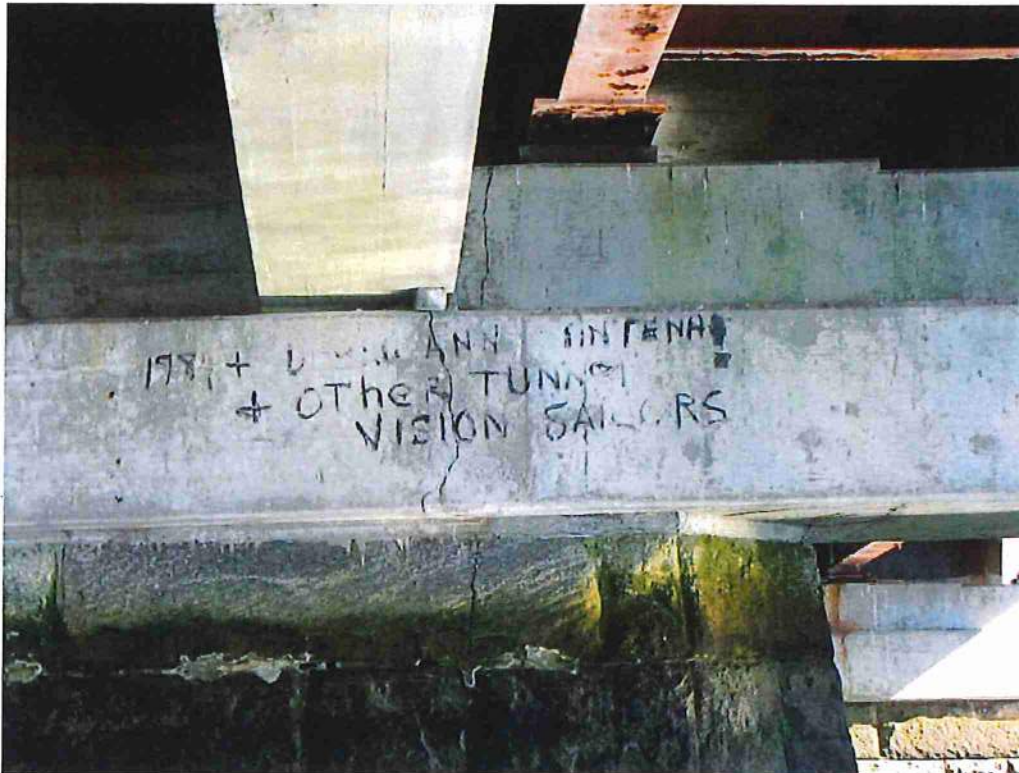


Photo 57: Close up of previous photo. Cracks in cap extending down into first block

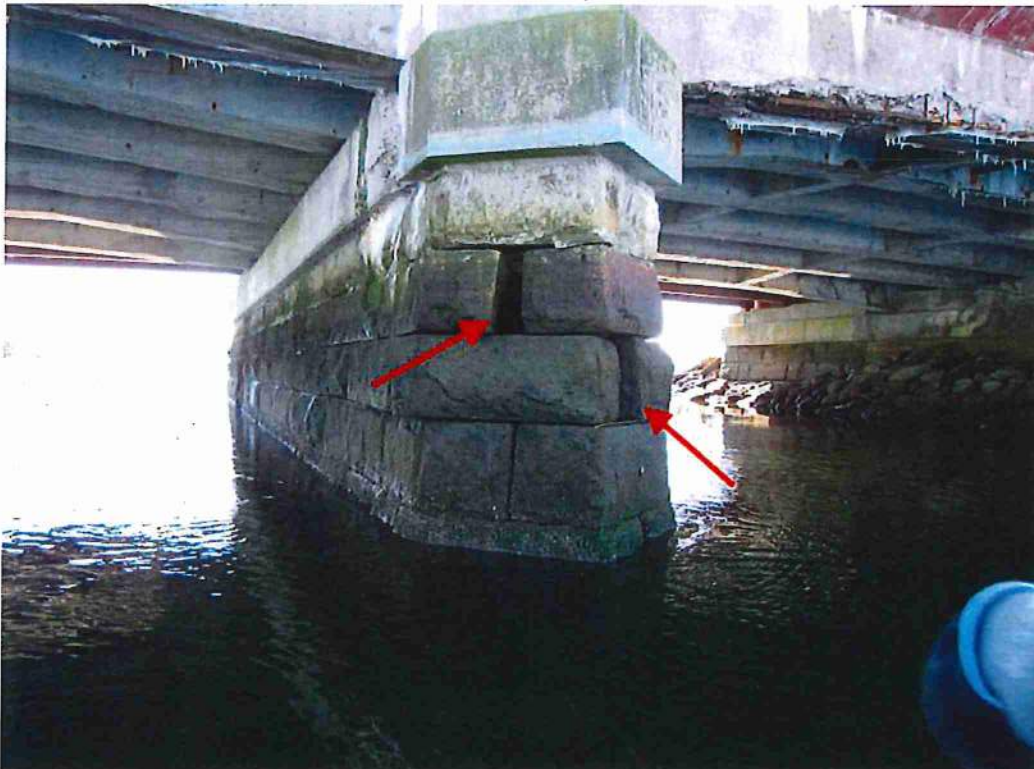


Photo 58: Overview of north nose of pier 1. Notable shift in 2nd and 3rd course blocks

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 59: Close up of previous photo. Gap up to several inches wide



Photo 60: Pier 1, NE face - Typical of missing mortar and pointing

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|----------------------|---------------|---------------------------|--|---------------------------------|
| CITY/TOWN WAREHAM | B.I.N. 45K | BR. DEPT. NO. W-06-016 | 8.-STRUCTURE NO. W06016-45K-DOT-NBI | INSPECTION DATE OCT 12, 2016 |
|----------------------|---------------|---------------------------|--|---------------------------------|

PHOTOS

Photo 61: Pier 1 and south extension pier, west face. Missing pointing

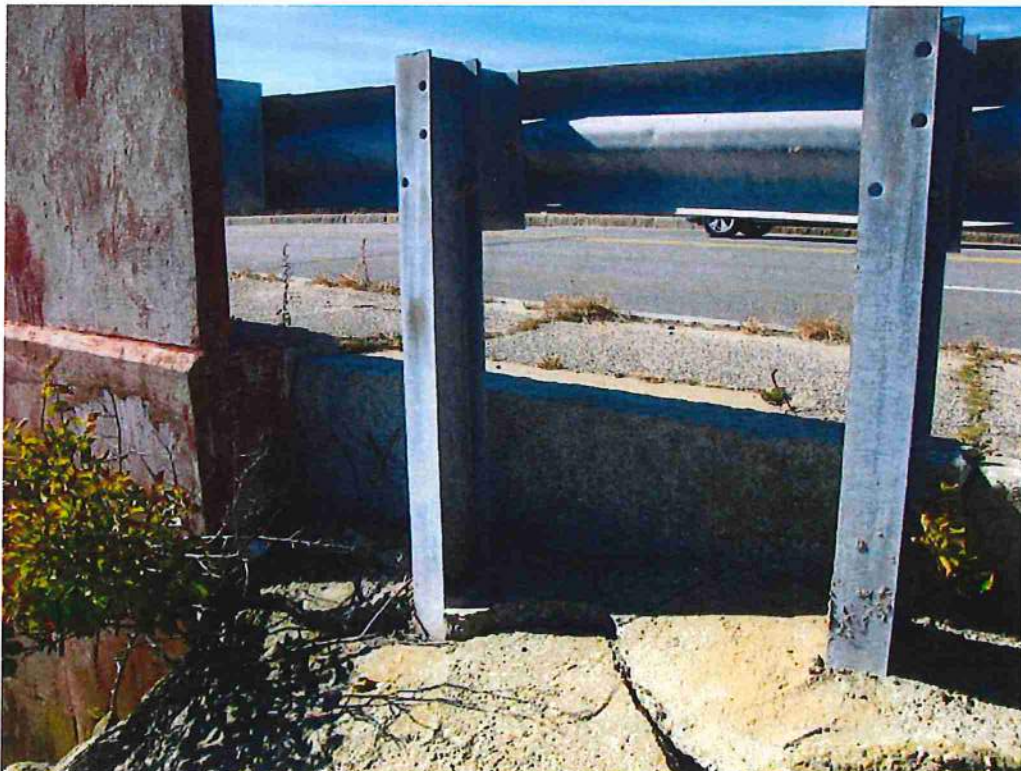


Photo 62: SE transition concrete at base of posts is settled and cracked

National Bridge Element Inspection

BDEPT# W-06-016

Date 10/12/2016

B.I.N. 45K

District Bridge Inspection Eng'r Grant Simpson

Item 8 W06016-45K-DOT-NBI

Inspecting Agency Mass. Highway Dept.

Span Group 1

Team Leader John Hanley

Town Wareham

Team Member(s) Marquis Marshall, Jake

District 5

Gonsalves

| El # | Element Name | Units | Env. | Total Q. | % or Q | State 1 | State 2 | State 3 | State 4 |
|---------|------------------------------------|---------|------|-----------|----------------------------|-----------|-----------|-----------|---------|
| 12 | Re Concrete Deck | sq feet | 3 | 3,051.590 | <input type="checkbox"/> % | 1,659.118 | 527.162 | 865.308 | |
| Notes : | | | | | | | | | |
| > 1120 | <i>Efflorescence/Rust Staining</i> | sq feet | 3 | 1.000 | <input type="checkbox"/> % | 1.000 | | | |
| Notes : | | | | | | | | | |
| > 510 | Wearing Surfaces | sq feet | 3 | 1,851.250 | <input type="checkbox"/> % | 734.666 | 1,116.583 | | |
| Notes : | | | | | | | | | |
| 16 | Re Conc Top Flange | sq feet | 2 | 5,457.120 | <input type="checkbox"/> % | 2,967.581 | 942.444 | 1,547.093 | |
| Notes : | | | | | | | | | |
| > 510 | Wearing Surfaces | sq feet | 2 | 4,614.750 | <input type="checkbox"/> % | 1,831.594 | 2,783.155 | | |
| Notes : | | | | | | | | | |
| 107 | Steel Opn Girder/Beam | feet | 3 | 586.000 | <input type="checkbox"/> % | | 568.000 | 18.000 | |
| Notes : | | | | | | | | | |
| > 515 | Steel Protective Coating | sq feet | 3 | 4,342.260 | <input type="checkbox"/> % | | 4,342.260 | | |
| Notes : | | | | | | | | | |
| 110 | Re Conc Opn Girder/Beam | feet | 3 | 879.000 | <input type="checkbox"/> % | 347.110 | 221.620 | 265.944 | 44.324 |
| Notes : | | | | | | | | | |
| 213 | Masonry Pier Wall | feet | 3 | 123.430 | <input type="checkbox"/> % | 30.250 | | 93.180 | |
| Notes : | | | | | | | | | |
| 217 | Masonry Abutment | feet | 3 | 187.500 | <input type="checkbox"/> % | 110.740 | 38.379 | 38.379 | |
| Notes : | | | | | | | | | |
| 234 | Re Conc Pier Cap | feet | 3 | 132.680 | <input type="checkbox"/> % | 85.435 | 35.433 | 11.811 | |
| Notes : | | | | | | | | | |
| 311 | Moveable Bearing | each | 3 | 12 | <input type="checkbox"/> % | | 12 | | |
| Notes : | | | | | | | | | |

National Bridge Element Inspection

BDEPT# **W-06-016**

Date **10/12/2016**

B.I.N. **45K**

District Bridge Inspection Eng'r **Grant Simpson**

Item 8 **W06016-45K-DOT-NBI**

Inspecting Agency **Mass. Highway Dept.**

Span Group **1**

Team Leader **John Hanley**

Town **Wareham**

Team Member(s) **Marquis Marshall, Jake**

District **5**

Gonsalves

| El # | Element Name | Units | Env. | Total Q. | % or Q | State 1 | State 2 | State 3 | State 4 |
|---------|--------------------------|---------|------|----------|----------------------------|---------|---------|---------|---------|
| > 515 | Steel Protective Coating | sq feet | 3 | 24.000 | <input type="checkbox"/> % | | 24.000 | | |
| Notes : | | | | | | | | | |
| 313 | Fixed Bearing | each | 3 | 4 | <input type="checkbox"/> % | | 4 | | |
| Notes : | | | | | | | | | |
| > 515 | Steel Protective Coating | sq feet | 3 | 8.000 | <input type="checkbox"/> % | | 8.000 | | |
| Notes : | | | | | | | | | |
| 330 | Metal Bridge Railing | feet | 3 | 356.299 | <input type="checkbox"/> % | 356.299 | | | |
| Notes : | | | | | | | | | |