BRIDGE SAFETY INSPECTION
STATE PROJECT NO. 170-2357

BRIDGE NO. 03191B

INTERSTATE 84 WESTBOUND
OVER
ROUTE 8, ROUTE 8 RAMPS 128 & 129, NAUGATUCK RIVER, MNRR AND LOCAL ROADS

WATERBURY, CONNECTICUT

IN-DEPTH INSPECTION

September 25, 2006

P.E. Reviewer/Date: _____ 4/20/07

STATE OF CONNECTICUT
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LICENSED
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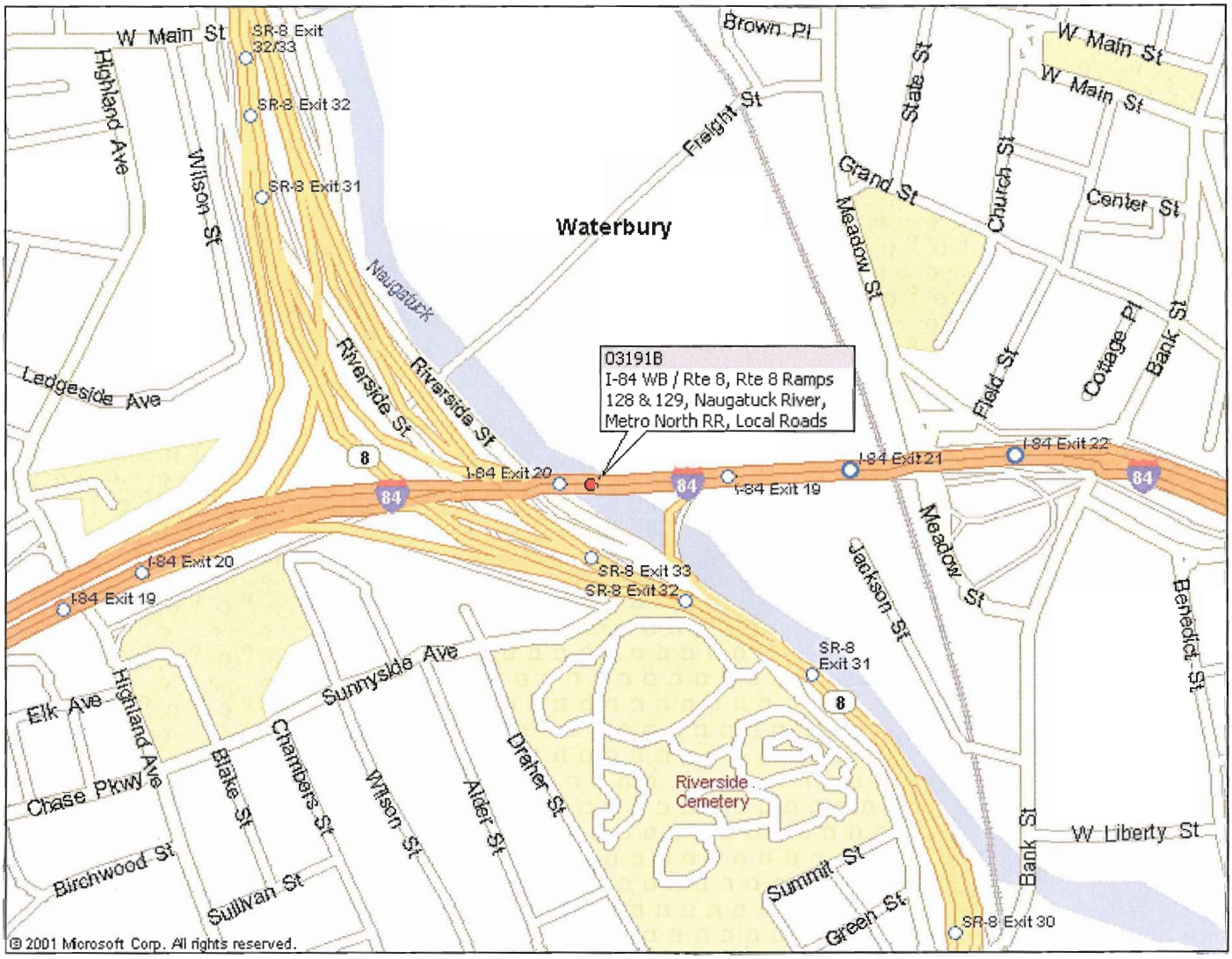
BRIDGE SAFETY INSPECTION
STATE PROJECT NO. 170-2357

LOCATION MAP



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

INSPECTION REPORT TRANSMITTAL FORM
FORM BRI-27, REV. 9/97

3

Structure No. 03191B Town: Waterbury

Inspectors: P. Goodwin, S. Watrous, C. Lewis, D. Shi Date: 9/25/06

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EXECUTIVE SUMMARY

Bridge No. 03191B was built in 1967 and rehabilitated in 1991 and carries Interstate 84 westbound over Route 8, Route 8 Ramps 128 & 129, Naugatuck River, Metro North Railroad, and local roads in the city of Waterbury. This structure is a thirty span bridge with an overall length of 2461 feet and a curb-to-curb width of 42 feet. The superstructure consists of five girder-floorbeam-stringer spans and twenty-five multi-girder spans supporting a reinforced concrete deck with bituminous concrete overlay. Reinforced concrete abutments and piers support the superstructure. According to the information on file at Connecticut Department of Transportation the AASHTO HS-20 inventory rating is 37 tons and the operating rating is 62 tons.

A GPR survey of the bridge deck was performed by Infrasense, Inc. in January 2007 using single-polarization methodology. See Appendix A for further information. Ultrasonic testing of superstructure members was performed by JGI Eastern, Inc. in November 2006 on flange transition welds that previously showed indications. See Appendix B for further information. During this in-depth inspection performed in October 2006, the bridge was found to be in fair condition.

Deck

The concrete deck is in fair condition. Bituminous concrete overlay has isolated small potholes and scattered patches depressed up to 1 inch. The underside of deck has random haunch spalls throughout and random areas of light honeycomb at scattered locations. South parapet has random spalls with exposed rebar and hollow areas on the interior face, typically at contraction joints. Railings have random areas of heavy rust with perforations, especially at rail ends and at post connections. Span 23, south scupper at pier 30 and span 29, north scupper at pier 36 are fully clogged. Span 26, north scupper at pier 33 and span 27, north scupper at pier 34 are partially clogged. Pier 30, column 4 downspout connection bracket at the lower elbow is cracked through. Broken/disconnected weeps in span 12 at G1 and FB13 and span 13 at G2 and FB16 drain onto superstructure elements. Span 12 weep at G2 and FB12 is located over the floorbeam and drains onto it. Compression seals have random separations between seal and headers up to 1/8 inch and concrete headers have wear with exposed aggregate and isolated cracks up to 1/8 inch wide. There is evidence of leakage at most piers. The above items have not exhibited significant change since the last inspection.

The following items have changed since last inspection and/or are new deficiencies found during this inspection:

- Spans 5-9 (not span 9 ramp lane) and span 27 on ramp have been resurfaced since the previous inspection. Bituminous concrete overlay has light to moderate raveling with isolated areas of heavy raveling up to 1-inch deep by up to full lane width with random uneven bituminous patches and small potholes causing moderate impact on rideability. There are isolated potholes up to 6 feet x 1 foot x up to 2 inches deep including a pothole exposing the deck in span 30, and random longitudinal paving seams are open up to 2 inches wide.
- The underside of deck deterioration consists mainly of transverse cracks and map cracks with widespread efflorescence. There are also spalls up to 12 feet x 2 feet x 2½ inches

deep with up to 50% section loss on exposed rebar at isolated locations, hollow areas up to full width of a bay (±7 feet) x 1 foot, and honeycomb areas up to 8 feet x 3 feet x 1 inch deep with exposed rebar. Span 8 deck underside at pier 14, three hollow areas up to 2 feet x 1 foot remain over Route 8 northbound and a 3-foot x 2-foot hollow area near pier 15 at girder 2 over Route 8 Ramp 128. All hollow areas over roadways are not loose. Areas of hollow sounding overlay indicate deck deterioration under the overlay, especially at areas of reflex cracking.

- A Priority A maintenance memo was issued on November 2, 2006 to remove three areas of loose concrete over Route 8 northbound. Maintenance forces responded and removed the loose concrete.
- Span 1 at midspan, south of G7, there is active leakage through the deck onto the girder.
- Span 9 between G2 & G3 at pier 16, all underside of deck spalls have been patched and span 22 in the left exit lane has a patch in the topside.
- Based on visual inspection of the deck, the underside has 8.3% total deterioration with a maximum of 25.7% in span 22.
- According to the GPR survey of the bridge deck, the overall deterioration is 12% with a maximum deterioration of 26% in span 22. Ten deck cores were collected. See Appendix A (GPR report) for more details.
- Span 12, north railing is missing one section of the upper rail. Span 13, south railing bottom rail is rusted through and disconnected from one post. Span 12, south railing, lower rail has a post clamp bolt that is broken and the rail is loose. Span 25, north railing has a post that is tilted back with a ¾ inch gap at the front edge and the southwest and southeast anchor bolts are missing.
- Downspout pipes are cracked, broken, or disconnected at the elbows at the following locations: pier 18 at column 2, pier 30 at columns 1 and 4, and pier 32 at column 1. Pier 16, column 2 downspout flex pipe has fallen off.
- Pier 5 compression seal is separated from header up to 5/16 inch x 16 feet long and pier 34 seal is separated up to ½ inch x full width. Seals are loose up to 6 feet long at both abutments and piers 5 and 36. Concrete headers have random spalls up to 2 feet x 4 inches x up to full depth.
- A Priority A maintenance memo was issued on October 30, 2006 to repair a 5-foot long x 12-inch wide x up to 4-inch deep spall in the pier 29 deck joint header located in the left ramp lane. ConnDOT maintenance forces responded and temporarily patched the spall with bituminous concrete during this inspection. Maintenance forces returned at a later date during this inspection and replaced the temporary bituminous patch with a concrete repair patch.
- A Priority C advance notification maintenance memo was issued on October 30, 2006 to repair a spall in the pier 35 deck joint header in the left travel lane that was 6 inches wide x 3 inches long x 12 inches deep at the south end with the remaining portion 18 inches long x 4 inches wide x 2 inches deep.
- Asphaltic plug joints installed at piers 12-15 and pier 34 (exit lane) since the previous inspection.
- There is active leakage through the joints at the west abutment x full width and at pier 9 over column 2.

Superstructure

The superstructure is in fair condition. There is light to moderate rust typical throughout all the bearings with pack rust under the rocker bearings and between the sole and masonry plates at fixed bearings. Random masonry plates overhang pedestals at the corners or at one end with no signs of distress in the masonry plates or pedestals. Stringers are generally in good condition with scattered areas of pack rust between the top flange and deck at haunch spalls. Girders have random painted over top flange loss throughout, web loss at girder ends, and bottom flange section loss at random areas throughout. Span 9, G12 near midspan has a 1½ inch diameter hole through the top flange with heavy rust around it and active leakage through it causing section loss on the bottom flange 2 feet long x 8 inches wide x 1/16 inch and on the web 2 feet long x 5 inches high x 1/8 inch. Span 14, S8 at splice near FB20, one splice bolt is broken. Span 12 G1 and G2 bottom flange splices between FB14 and FB15 each have one bolt that is not snug. Cross girder at pier 16, seismic retrofit at G3 is missing a cotter pin on the connection bolt and the nut can be turned by hand. Span 13, G2 at FB17, girder web has two cracks with drilled stop holes at the top. There are random cracked tack welds throughout the structure. Span 2, G2 and G6 seismic retrofit bolts go through the cover plate longitudinal welds, severing the welds at each bolt location (Category 'E' detail). The above items have not exhibited significant change since the last inspection.

The following items are new deficiencies found during this inspection:

- Random sliding, rocker, and pot bearings throughout the structure are in the incorrect mode for the ambient temperature or show abnormal movement for recorded temperature change.
- Sliding bearings show no sign of normal movement when compared to prior measurements at the following locations:
  -Span1 G4 at the west abutment
  -Span 4 G3 and G5 at pier 11
  -Span 18 G14 at pier 24
  -Span 22 G1, G4, and G10 at pier 29
  -Span 30 G1, G3, and G7 at the east abutment
- Span 27, G1 rocker bearing, north anchor bolt nut interferes with the rocker movement.
- Span 8 elastomeric bearings at pier 15, G4 southwest bolt and G5 northwest and northeast bolts between sole plate and load plate are missing.
- Rolled beam girders have random areas of rust with section loss up to 20 feet long x 6 inches wide x 9/16 inches remaining (¼ inch loss) on the bottom flange and web loss at girder ends up to 18 inches long x 2 inches high x 3/16-inch. The worst-case loss in a critical area is approximately 8% for the bottom flange and 31% for the web.
- FB22 bottom flange brackets have web loss up to 3/16 inch at G1 (50% of total thickness) and up to ¼ inch total both sides at G2 (67% of total thickness).
- Span 13, S6, S7, and S9 at FB16, one connection bolt to floorbeam at each stringer is not snug.
- There are cracks in welds between girder bottom flanges and sole plates at the following locations:
  -Span 6, G4 at pier 13, south and north welds
  -Span 21, G2 at pier 27, north weld
  -Span 21, G4 at pier 27, south weld

Substructure

The substructure is in fair condition. Abutments have random full height vertical cracks up to 1/8" wide and the west abutment has isolated spalls up to 16 inches x 16 inches x 1 inch deep with exposed rebar. Pier 9 footing at column 3 and column 7 is exposed 8 feet long with an 18-inch x 8-inch x 1-inch spall with exposed rebar on the corner near column 7. The above items have not exhibited significant change since the last inspection. The following items have changed since last inspection and/or are new deficiencies found during this inspection:

- East abutment footing is exposed at the south end due to erosion and also at a sinkhole in front of the footing.
- Piers 5, 7, 15, and 15-north caps and column tops have been patched and painted with protective coating since the previous inspection.
- Pier caps have spalls up to 6½ feet x 3 feet x 11 inches (corner spall) with up to 1/16-inch section loss to exposed rebar and hollow areas up to 10 feet x 4 feet. Pier 29 cap has approximately 25% deterioration over the entire surface.
- Random pedestals have corner spalls up to 12 inches x 6 inches x 4 inches with no undermining of bearings.
- Pier columns have spalled and hollow areas up to 11½ feet x 2 feet x 4 inches deep with up to 1/16-inch section loss on exposed rebar. Pier 9, column 7 has a 21-inch x 9-inch x 6-inch spall that undermines the girder bearing masonry plate 1½ inches x ¼-inch.
- The north (upstream) end of pier 19 has had 1 to 2 feet of scour in the silt creating a pocket around the end of the pier.

Channel and Channel Protection

The channel and channel protection are in good condition. Channel bottom is cobbles and sand with no penetration typical, but up to 8-inch penetration at random silt pockets. Channel bottom is scour resistant. The following item has changed since the last inspection:

- There is a minor accumulation of trees and branches at the north (upstream) nose of pier 18.

Approach Condition

The approaches are in good condition. Southeast wingwall parapet is settled 4½ inches and the two-pipe rail on top bends down due to settlement. The above item has not exhibited significant change since the last inspection. The following item is a new deficiency found during this inspection:

- East approach is settled 1 inch at the south shoulder but is ramped with bituminous creating a smooth transition.

Recommended repair:

Deck

1. Repair potholes and open paving seams in the overlay (10 CF). Consideration should be given to resurfacing the bridge and installing a new membrane where this has not already been done.

2. Remove deteriorated concrete and repair spalled and hollow areas in the underside of deck at the following locations (1 CY):
   -Span 9 between G5 and G6
   -Span 10 at random locations
   -Span 11 between S4 & S5 and FB5 & FB6
   -Span 13 at random locations
   -Span 14 between S4 & S5 and FB18 & FB19
   -Span 25 between G7 and G8
   -Span 28 at pier 34, south of G9
3. Replace the missing rail in span 12, north railing (8 LF).
4. Remove deteriorated concrete and repair spalls in parapets (¼ CY).
5. Clear the fully clogged scuppers in span 23, south side at pier 30 and span 29, north scupper at pier 36 (2 EA) and the partially clogged scuppers in spans 26, north scupper at pier 33 and span 27, north scupper at pier 34 (2 EA).
6. Repair the damaged downspouts at pier 18, column 2; pier 30, columns 1 and 4; and pier 32, column 1 (15 LF).
7. Replace, repair, or extend the broken/disconnected weeps in spans 12 and 13 (15 LF).
8. Repair the leaking deck joints at the west abutment and pier 9 (60 LF) and replace all loose and separated compression seals (300 LF). Consideration should be given to replacing all compression seal type joints with asphaltic plug type joints.
9. Clean and patch spalls in concrete headers (3 CF).

Superstructure

1. Reset or replace all bearings that are in the incorrect mode for the ambient temperature (49 EA).
2. Replace frozen sliding bearings with elastomeric type expansion bearings (11 EA).
3. Replace missing load plate connection bolts in span 8 elastomeric bearings with ¾-inch diameter high strength bolts (3 EA).
4. Spot clean and paint areas of rust and deterioration on superstructure (2,000 SF).
5. Replace broken connection bolt in span 14, stringer 8 splice with 7/8-inch diameter high strength bolt (1 EA).
6. Replace missing cotter pin in pier 16 cross girder seismic retrofit (1 EA).
7. Grind out cracked tack welds (6 EA) and reweld the cracked welds between girder bottom flanges and sole plates (4 EA).

Substructure

1. Remove deteriorated concrete and repair spalled and hollow areas in the abutments, pier caps and columns, and pedestals (4 CY).
2. Install modified rip rap at the east abutment, south end to cover the exposed footing (5 CF).
3. Install riprap at the north end of pier 19 (1 CY).

Channel and Channel Protection

1. Remove tree debris at the upstream end of pier 18 (LS).

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Bridge Inspection Report BRI-18

BRIDGE #: 03191B **INSPECTION DATE:** 9/25/2006

INSPECTION TYPE: Indepth **PREVIOUS INSPECTION DATE:** 9/13/2004 **SNOOPER REQUIRED:** Yes
INSPECTION PERFORMED BY: GCS **SNOOPER USED:** Yes

TOWN: WATERBURY **FEATURE CARRIED:** INTERSTATE-84 WB **YEAR BUILT:** 1967
LOCATION: WATERBURY LOWER LEVE **FEATURE INTERSECTED** RTE 8, NAUGATUCK RIVER **YEAR REBUILT:** 1991
MAIN MATERIAL: Steel continuous **MAIN DESIGN:** Girder and Floorbeam Syste

INSPECTION VISITS:

Inspection Date:	9/25/2006	Start Time:	9:00 AM
Temperature:	70 °F	End Time:	3:00 PM
Inspection Date:	12/8/2006	Start Time:	8:00 AM
Temperature:	30 °F	End Time:	10:00 AM

INSPECTORS:

Inspector:	P. Goodwin	Task:	Team Leader
Inspector:	S. Watrous	Task:	Assistant Team Leader
Inspector:	C. Lewis	Task:	Inspector
Inspector:	D. Shi	Task:	Inspector

58. DECK REINFORCED CONCRETE DECK.
BITUMINOUS CONCRETE OVERLAY WITH MEMBRANE.

OVERALL RATING 5

	RATING	
OVERLAY	5	Spans 5-9 (not span 9 ramp lane) & span 27 on ramp have been resurfaced since the previous inspection. Typically there is light to moderate raveling, random transverse and longitudinal cracks up to 1" wide, isolated small potholes (<6" dia.), and scattered patches depressed up to 1" throughout the overlay. There are isolated areas of heavy raveling up to 1" deep by up to full lane width with random uneven bituminous patches and small potholes causing moderate impact on rideability, random hollow sounding areas with reflex cracking in the overlay, especially in the south shoulder, and isolated potholes up to 6' x 1' x up to 2" (span 11). Random longitudinal paving seams are open up to 2" wide. Span 30, center lane has a 6" x 8" x 2" deep pothole that exposes the deck. See sheets 41-53 and photos 19-24.
DECK STR. CONDITION	5	The underside of deck has deterioration that consists primarily of transverse cracks and map cracks with widespread efflorescence. There are also spalls up to 12' x 2' x 2½" deep (span 28) with up to 50% section loss on exposed rebar (span 10) at isolated locations, hollow areas up to full width of a bay (±7') x 1' (span 25), and honeycomb areas up to 8' x 3' x 1" deep with exposed rebar (span 19) throughout the deck. There are random haunch spalls throughout and random areas of light honeycomb at scattered locations. Span 1 at midspan, south of G7, there is active leakage through the deck onto the girder. Span 9 between G2 & G3 at pier 16, all underside of deck spalls have been patched and span 22 in the left exit lane has a 12' x 5' patch in the top side. Areas of hollow sounding overlay indicate deck deterioration under the overlay. A Priority A maintenance memo was issued on November 2, 2006 to remove three areas of loose concrete over Route 8 NB. Maintenance forces responded and removed the loose concrete. Based on visual inspection of the deck, the underside has 8.3% total deterioration with a maximum of 25.7% in span 22. According to the GPR survey of the bridge deck, the overall deterioration is 12% with a maximum deterioration of 26% in span 22. See Appendix A (GPR report) for more details. See sheets 41-53 & 88-129 and photos 25-33.
CURBS	7	Granite block. Random vertical hairline cracks, chips, scrapes, and minor spalls. Span 4, south curb and safetywalk at pier 9 has a 2'L diagonal crack with a loose section that is held in place by joint seal. Average curb reveal is 6". See sheets 41-53.
MEDIAN	N	
SIDEWALKS	7	Concrete safetywalks. Random transverse hairline cracks and light debris. Span 4, south curb and safetywalk at pier 9 has a 2'L crack with a loose section that is held in place by joint seal.

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BITUMINOUS CONCRETE OVERLAY WITH MEMBRANE.

OVERALL RATING 5

See sheets 41-53.

PARAPET	6	Vertical concrete. Random vertical hairline cracks throughout. South parapet has random spalls up to 1½' x 1½' x 1½" deep with exposed rebar (span 10) and hollow areas up to 2½' x 1' (span 10) on the interior face, typically at contraction joints. Span 9 has a 1' x 2' x 2" spall with exposed rebar and two 2' x 1' hollow areas with mapcracks, efflorescence, and rust stains on the exterior face (not over traffic). See sheets 41-53 and photos 34 & 35.
RAILING	6	Standard two-pipe railing. There are random bent rails in spans 3, 12-14, 17, and 23. Span 12, north railing is missing one section of the upper rail. There are random areas of heavy rust with perforations, especially at rail ends and at post connections. Span 13, south railing bottom rail is rusted through and disconnected from one post. Span 12, south railing, lower rail has a post clamp bolt that is broken and the rail is loose. Span 25, north railing has a post that is tilted back with a 3/4" gap at the front edge and the southwest and southeast anchor bolts are missing. See sheets 41-53 and photos 36-39.
PAINT	N	
FENCE	N	
DRAINS	5	Span 23, south scupper at pier 30 and span 29, north scupper at pier 36 are fully clogged. Span 26, north scupper at pier 33 and span 27, north scupper at pier 34 are partially clogged. Pier 12, column 1 downspout broken/missing straps have been repaired/replaced. Piers 14 & 16 downspouts at column 1 have broken straps; pier 19, column 1 downspout bracket collar is hanging and missing one bolt; pier 27, column 3 downspout has two brackets with loose nuts; and pier 30, column 4 downspout connection bracket at the lower elbow is cracked through. Downspout pipes are cracked, broken, or disconnected at the following locations: pier 18 at column 2 (lower elbow), pier 30 at column 1 (lower elbow) and column 4 (upper and lower elbows), and pier 32 at column 1 (lower elbow). Pier 16, column 2 downspout flex pipe has fallen off. Pier 36, column 1 downspout has a bolt hole in the elbow that leaks onto the column base below. For a summary of drainage pipe deterioration, see sheets 54 & 55. There are short or missing weeps that do not drain onto the structure in span 6 at G7 & pier 13, span 7 at G1 & pier 13 and two at G7 near midspan, span 8 at G7, span 9 at G12 & pier 16, and span 29 at G10 & pier 35. Span 11 at G1 & FB7 weep drains onto the pier. Broken/disconnected weeps in span 12 at G1 & FB13 and span 13 at G2 & FB16 drain onto superstructure elements. Span 12 weep at G2 & FB12 is located over the floorbeam and drains onto it. Span 14 has a total of seven weeps that have the ends taped over and are blocked. See sheets 41-55 &132-188 and photos 40-43.
LIGHTING STANDARD	7	Light standard on span 2 north parapet. Random junction box covers in parapets are missing screws, covers are secure. See sheets 41-53.
UTILITIES TYPE/SIZE	N	The bridge carries no utilities. Rating revised from '8'.
CONSTRUCTION JOINTS	N	
EXPANSION JOINTS	5	Compression seals at both abutments, piers 5, 7, 9, 11, 22-29, 31, 32, 34 (through lanes), 35, and 36. Random separations between seal and headers up to 1/8". Pier 5 seal is separated from header up to 5/16" x 16'L and pier 34 seal is separated up to ½" x FW. Seals are loose up to 6'L at both abutments and piers 5 and 36. East abutment seal is sunk up to 1" in the center lane wheel lines. Concrete headers have wear throughout with exposed aggregate, random spalls up to 2' x 4" x up to full depth (pier 35), and isolated cracks transverse to the joint up to 12"L x 1/8" (east abutment). A Priority A maintenance memo was issued on October 30, 2006 to repair a 5'L x 12"W x up to 4" deep spall in the pier 29 deck joint header located in the left ramp lane. ConnDOT maintenance forces responded and temporarily patched the spall with bituminous concrete during this

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58. DECK

REINFORCED CONCRETE DECK.
BITUMINOUS CONCRETE OVERLAY WITH MEMBRANE.

OVERALL RATING 5

inspection. Maintenance forces returned at a later date during this inspection and replaced the temporary bituminous patch with a concrete repair patch. A Priority C advance notification maintenance memo was issued on October 30, 2006 to repair a spall in the pier 35 deck joint header in the left travel lane that was 6"W x 3"L x 12" deep at the south end with the remaining portion 18"L x 4"W x 2" deep.

Asphaltic plug joints installed at piers 12-15 and pier 34 (exit lane) since the previous inspection.

Armored gland joints over finger joints at piers 16, 21, 30, and 33. Joint at pier 16 in the right exit lane, the east steel anchor has a 2'W area of 1"L gouges on the leading edge.

There is evidence of leakage at most piers. There is active leakage through the joints at the west abutment x FW and at pier 9 over column 2.

See sheets 41-53 and photos 44-48.

59. SUPERSTRUCTURE

STEEL MULTI GIRDER FOR SPANS 1-9 & 15-30.
STEEL GIRDER-FLOORBEAM-STRINGER FOR SPANS 10-14.

OVERALL RATING 5

RATING

BEARING DEVICES 4

Sliding plate expansion bearings at both abutments (spans 1 & 30) and piers 5 (span 2), 7 (span 3), 11 (span 4), 24 (span 18), 29 (spans 22 &23), 30 (spans 23 & 24), 31 (span 24), 34 (span 28), and 35 (span 29). Bearings typically have light rust throughout.
Bearings show no sign of normal movement at the following locations: span 1 G4 at the west abutment; span 4 G3 & G5 at pier 11; span 18 G14 at pier 24; span 22 G1, G4, and G10 at pier 29; and span 30 G1, G3, and G7 at the east abutment.
All bearings at the west abutment; span 2, G7 at pier 5; span 18, G10-G14 at pier 24; span 22 all bearings and span 23 G1, G3, and G9 at pier 29; span 23 G1-G6, G8, and G10 at pier 30; span 24 G1, G7, and G8 at pier 31; all bearings in span 28 at pier 34; and span 29 G1 at pier 35 are in contraction mode at temperatures ranging from 60°F to 70°F.
Abnormal movements were noted at the following locations: span 2, G1, G4, and G7 at pier 5 contracted up to 1/8" 45°F to 60°F; span 23, G10 expanded 3/16" with no change in temperature; span 24, G1 at pier 30 contracted ¼" from 70°F to 60°F (1/8" movement typical for temp. change); and span 29, G1 at pier 35 expanded ±1/8" from 75°F to 60°F.
Masonry plate corners overhang pedestals (as-built condition) up to 8½" x 7½" (span 24, G7 at pier 31). Span 23, G9 at pier 30 masonry plate overhangs at the north end ±5" (23% loss of bearing area) with no signs of distress in the bearing or pedestal. Span 23, G10 at pier 30 masonry plate overhangs the back of the pedestal ¾" x FW. Span 30, G5-G7 masonry plates at the east abutment show evidence of sliding back on the pedestals up to ¼".

Rocker bearings at piers 31-33 (spans 25-27, respectively). Light to moderate rust throughout with pack rust under random rockers.
Span 25, pier 31, G5 rocker has expanded from 75°F to 55°F and G8 south anchor bolt nut is missing. Span 26, pier 32, G4 rocker is in contraction at 60°F and has expanded from 75°F to 60°F. Span 27, pier 33, G4 & G8 rockers are in contraction mode at 55°F with G8 contracted nearly ½" (approx. maximum per design), G7-G9 anchor bolt nuts are missing, and G1 north anchor bolt nut interferes with the rocker movement.

Elastomeric bearings at piers 12 (span 5), 13 (span 6), 15 (span 8), and 22-27 (spans 16-21). Bearings are typically in good condition.
Random gaps up to 1/8" and pack rust up to 3/16" between bearing elements. Span 8 at pier 15, G4 southwest bolt and G5 northwest and northeast bolts between sole plate and load plate are missing. Random bearings have cracks in the welds between sole plate and girder bottom flange. See "Welds-Cracks" below.

Nested rocker bearings at piers 16-21 (spans 10-14). Typically in good condition with areas of light to moderate rust.
Random anchor bolt nuts are cracked and/or have up to 50% loss. Random keeper plates are broken off or have cracked welds due to pack rust between masonry plate and keeper. Span 10, girder 2 bearing at pier 16, northwest anchor bolt nut is missing.

Pot bearings for transverse members (cross girders & floorbeams) at piers 14, 16, and 19-21.

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59. SUPERSTRUCTURE — STEEL MULTI GIRDER FOR SPANS 1-9 & 15-30.
STEEL GIRDER-FLOORBEAM-STRINGER FOR SPANS 10-14.

OVERALL RATING 5

Span 7 at pier 14, column 2 and span 8 at pier 14, column 2 bearings are in expansion mode at 45°F. Span 9 at pier 16, column 1 bearing is in contraction mode at 70°F. Span 15, pier 21 south bearing basepot to masonry plate welds are missing on the north and south sides.

Welds between girder bottom flange and sole plate at elastomeric and pot bearings are cracked at random locations. See "Welds-Cracks" below.

Fixed bearings. Curved sole plate fixed bearings typically have light to heavy rust with pack rust between the sole and masonry plates with loss to the underside of the sole plate. Span 7, G3 & G4 bearings have edge gaps up to ½" x 2" deep between the masonry plate and pedestal. Fixed pot bearings have light to moderate rust. Random anchor bolt nuts are missing.

See sheets 62-123 and photos 49-59.

STRINGERS 7

Spans 10-14 (girder-floorbeam-stringer system) only. Pack rust up to ¼" typical between top flange and deck at haunch spalls, lifting deck. Random gaps up to 1/8" between riser plates and floorbeam top flanges (as-built condition). There is no pitting at the stringer ends. Also see "Rivets & Bolts" and "Welds-Cracks" below.

See sheets 97-104 and photo 60.

GIRDERS 5

Steel rolled beam multi-girders with welded cover plates in spans 1-4, 15-23, 29, and 30.
Top flanges typically have laminated rust with <1/16" section loss at spalled haunches with pack rust between the top flange and deck. Random top flange loss up to 2'L x 3"W x 1/8" (span 1, G7 at midspan, painted over). Random bottom flange section loss up to 20'L x 6"W x 9/16" remaining (¼" loss, 13% loss of bottom flange, 8% loss where cover plate present) with heavy laminated rust (span 18, G10 at west end). Random web loss at girder ends up to 18"L x 2"H x 3/16" (span 1, G1 at pier 5, 31% section loss).

Welded steel plate multi-girders in spans 5-9 & 24-28.
Top flanges typically have laminated rust with negligible section loss at spalled haunches. Random areas of bottom flange section loss up to 3'L x 6"W x 3/16" (span 8, G1 at third point, 6.7% loss of bottom flange). Random areas of laminated rust on girder ends, end diaphragms, and diaphragm connection plates with negligible section loss. Span 9, G12 near midspan has a 1½" dia hole through the top flange with heavy rust around it and active leakage through it causing section loss on the bottom flange 2'L x 8"W x 1/16" and on the web 2'L x 5"H x 1/8".

Welded steel plate girders (girder-floorbeam-stringer system) in spans 10-14.
Top flanges typically have laminated rust with negligible section loss at spalled haunches. Span 10, G2 at pier 16 has a 4" x 2" perforation in the web at the bottom between bearing stiffeners. Random areas of painted over section loss on bottom flange up to 5" x 7" x 3/8" (span 10, G2 between FB's 3 & 4, 9.7% loss of bottom flange). Span 13, G2 at FB17, girder web has two cracks with drilled stop holes at the top, see "Welds-Cracks" below.

Welded steel plate cross girders at piers 14, 16, and 21.
Bottom flanges have painted over pitting up to 1/16" deep throughout and isolated section loss up to 20"L x 6" x ¼" (at pier 16, between G10 & G11, 4.2%).

See sheets 87-123 and photos 61-64.

FLOOR BEAMS 6

Spans 10-14 (girder-floorbeam-stringer system) only. FB1 at G1 has up to 15/16" pack rust between the bottom flange bracket and connection plate with up to 75% loss of nuts. FB22 bottom flange brackets have web loss up to 3/16" at G1 (50% of total thickness) and up to ¼" total both sides at G2 (67% of total thickness).

See sheets 97-106.

TRUSSES-GENERAL N

TRUSSES-PORTALS N

TRUSSES-BRACING N

PAINT 7

Spotty areas of peeling paint. Isolated areas of failed paint with heavy rust (<5% total area). There are multiple painted dates on the structure ranging from September 1991 (span 30) to July 1996

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59. SUPERSTRUCTURE STEEL MULTI GIRDER FOR SPANS 1-9 & 15-30.
STEEL GIRDER-FLOORBEAM-STRINGER FOR SPANS 10-14.
(spans 1 & 3).

OVERALL RATING 5

RUST	5	Areas of section loss painted over throughout. Isolated areas are actively corroding with section loss, typically at girder ends and areas of active deck leakage.
MACHINERY MOV SPAN	N	
RIVETS & BOLTS	6	Span 13, S6, S7, and S9 at FB16, one connection bolt to floorbeam at each stringer is not snug. Span 14, S8 at splice near FB20, one splice bolt is broken. Span 12 G1 & G2 bottom flange splices between FB's 14 & 15 each have one bolt that is not snug. Span 9, cross girder at pier 16, seismic retrofit at G3 is missing a cotter pin on the connection bolt and the nut can be turned by hand. Span 11, lateral brace at FB8 & S8 and span 13, at FB16 & S8, bolted end connection bolt hole is at the end of the member rendering bolt ineffective (no bearing capacity). See sheets 87-123 and photos 65-68.
WELDS & CRACKS	6	There are cracks in welds between girder bottom flanges and sole plates at the following locations: Span 6, G4 at pier 13, FL (10") south weld and 3½" north weld; span 10, G1 at pier 16, 6" north weld; span 21, G2 at pier 27, 4½" north weld and G4, 8½" south weld. Span 12, S4 at FB13, southwest tack weld between the riser and floorbeam top flange is cracked. Span 13, G1 between FB's 17 & 18, web splice has three tack welds along the edge that are cracked. G2 at FB17 has a crack in the web at the top with drilled stop holes at the ends of the crack. Span 13, FB16 at S5, 1" crack in the vertical weld at the bottom of the vertical stiffener/connection plate. Span 2, G2 & G6 seismic retrofit bolts go through the cover plate longitudinal welds, severing the welds at each bolt location (Category 'E' detail). Span 10, deflection lock truss brace welds are poor quality with random welds having poor fusion or are disconnected. Random diaphragm welded connections throughout are poor quality or missing welds. All cover plate end welds were checked 100% hands-on. All transition welds in tension zones were checked 100% hands-on and were also ultrasonically tested at eight locations where previous indications were found with no significant changes noted. See sheets 124 & 125, photos 69-73, and Appendix B (Ultrasonic Testing Report).
TIMBER DECAY	N	
CONCRETE CRACKING	N	
COLLISION DAMAGE	7	Random minor dents and gouges.
MEMBER ALIGNMENT	7	Spans 16 & 17, G7 ends are nearly in contact (1/16" to 1/8" gap at 70°F) with abrasion dust around beam ends. The girder ends were in contact at the previous inspection. See photo 74.
DEFLECT. UNDER LOAD	N	(N) Normal (E) Excessive
VIBR. UNDER LOAD	N	(N) Normal (E) Excessive
STAND PIPES	8	Standpipes located at piers 11, 17, 26, and 35 have no notable deficiencies.
BARREL LADDERS	N	

ARE BARREL LADDERS OSHA COMPLIANT? NA

60. SUBSTRUCTURE REINFORCED CONCRETE ABUTMENTS AND PIERS.

OVERALL RATING 5

RATING

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60. SUBSTRUCTURE REINFORCED CONCRETE ABUTMENTS AND PIERS. **OVERALL RATING** 5

ABUTMENTS-STEM	6	Abutments have random full height vertical cracks up to 1/8" wide and the west abutment has isolated spalls up to 16" x 16" x 1" deep with exposed rebar. See sheets 130 & 131 and photo 75.
ABUTMENTS-BACKWALL	6	Random full height vertical cracks up to 1/8" wide with isolated efflorescence. See sheets 130 & 131.
ABUTMENTS-FOOTINGS	8	East abutment footing is exposed at the south end and also at a sinkhole near the south end in front of the footing. Exposed portions have no notable deficiencies. See photo 76.
ABUT.-SETTLEMENT	8	1/8" wide vertical crack in the west abutment shows no differential settlement.
ABUTMENTS-WINGWALLS	7	Scattered hairline cracks. West abutment, south cheekwall has a 12" x 18" x 4" deep contact spall.
PIERS/BENTS-CAPS	5	Note: Piers have been renumbered to match the 1994 rehab plans. Piers 5, 7, and 9 were formerly 1, 2, and 3, respectively and piers 11-36 were formerly 4-29. There are currently no piers 1-4, 6, 8, or 10 for this structure. There are no caps at piers 14 and 16-21, see "Superstructure-Girders" above. See general plan on sheets 23-25 and key plans in Appendix C. Piers 5, 7, 12, 13, 15, and 15-north caps have been patched and painted with protective coating since the previous inspection. Pier 15 cap has an unpatched 3½' x 1½' hollow area with a 2' x 8" x 1" deep spall on the west elevation. Pier 15-north cap has hollow areas up to 2' x 2' and spalls up to 12" x 8" x 1" deep with exposed rebar in patches. Caps typically have spalls up to 6½' x 3' x 11" (corner spall at pier 29) with up to 1/16" section loss to exposed rebar and hollow areas up to 10' x full width (4') of cap (underside at pier 28). There are also random vertical hairline cracks, horizontal cracks up to 1/16" wide, areas of map cracking, and areas of light scale scattered throughout the structure. Pier 29 cap has approximately 25% deterioration over the entire surface. Random pedestals have corner spalls up to 12" x 6 " x 4" with no undermining of bearings. Random bearing masonry plates overhang pedestals up to 5" (span 23, G9 at pier 30, as-built condition). See sheets 132-188 and photos 77-85.
PIERS/BENTS-PILE BENT	N	
PIERS/BENTS-COLUMN	5	Piers 5, 7, and 15 columns have been patched at the top since the previous inspection. Columns have spalled and hollow areas up to 11½' x 2' x 4" deep (pier 15) with up to 1/16" section loss on exposed rebar. Pier 9, column 7 has a 21" x 9" x 6" spall that undermines the girder bearing masonry plate 1½" x ¼". See sheets 132-188 and photos 52, 77-82, & 86-88.
PIERS/BENTS-FOOTINGS	6	Pier 9 footing at column 3 and column 7 is exposed 8'L with an 18" x 8" x 1" spall with exposed rebar on the corner near column 7. See sheet 136 and photo 89.
PIERS/BENTS-SETTLEMent	8	
EROSION-SCOUR	6	Erosion rated 7. There is minor erosion at the east abutment, south end exposing the footing. Scupper downspouts typically have bituminous runoff troughs directing flow away from the structure. There are no troughs at pier 9 and erosion from scupper downspout runoff has exposed the footing in two locations. Scour rated 6. The north (upstream) end of pier 19 has had 1' to 2' of scour in the silt creating a pocket around the end of the pier. See sheets 130 & 136 and photos 76 & 89.
CONCRETE CRACK-SPALL	5	See above items.

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60. SUBSTRUCTURE REINFORCED CONCRETE ABUTMENTS AND PIERS. **OVERALL RATING** 5

Piers 18 & 19 ice/collision walls have random vertical hairline cracks with efflorescence, isolated spalls and hollow areas up to 18" x 10 " x 1" with exposed rebar, and scattered shallow rebars.

Piers 30-32 crash walls have random vertical hairline cracks with isolated efflorescence, areas of hairline mapcracking up to 3' x 6', hollow areas up to 5' x 6', and random areas of light honeycombing.

STEEL CORROSION	N	See "Piers/Bents-Caps" above.
PAINT	N	
TIMBER DECAY	N	
COLLISION DAMAGE	8	
DEBRIS	6	Minor pigeon and construction debris on pier caps. There is a large boulder leaning on pier 5, column 3. There is tree debris accumulated against the north end of pier 18.

61. CHANNEL & CHANNEL PROTECTION NAUGATUCK RIVER. **OVERALL RATING** 7

	RATING	
CHANNEL SCOUR	7	No significant change in channel. Channel bottom is scour resistant. There is a 1' to 2' deep scour pocket in the silt at the north (upstream) end of pier 19. See photos 17 & 18.
EMBANKMENT EROSION	7	Channel banks are lined with large boulders and rip rap in the vicinity of the structure. There is minor erosion at isolated areas.
DEBRIS	7	There is minor accumulation of trees and branches at the north (upstream) nose of pier 18.
VEGETATION	7	Heavy vegetation on both embankments.
CHANNEL CHANGE	8	Channel bottom is cobbles and sand with no penetration typical but up to 8" penetration at random silt pockets. Flow is approximately 4 fps.
FENDER SYSTEM	N	Not navigable.
SPUR DIKES & JETTIES	N	
RIP RAP	8	Large boulders and rip rap on both banks. Rip rap at north end of pier 18.

62. CULVERTS & RETAINING WALL **OVERALL RATING** N

APPROACH CONDITION **OVERALL RATING** 7

	RATING	
APPROACH SLAB	7	Not visible. Rating is based on the condition of the pavement. See below.
RELIEF JOINTS	7	Not visible. Rating is based on the condition of the pavement. See below.
APPROACH GUIDE RAIL	7	Metal beam rail at the northeast corner has minor scrapes and dents. Continuous concrete parapets at all other corners have scattered vertical hairline cracks and minor spalls and hollow areas. Southeast wingwall parapet is settled 4½" and the two-pipe rail on top bends down due to settlement. See photo 90.
APPROACH PAVEMENT	7	Light to moderate raveling at the west approach. East approach is settled 1" at the south shoulder but is ramped with bituminous creating a smooth transition. See sheets 41 & 53.
APPROACH EMBANKMENT	7	Minor erosion at all embankments.

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APPROACH CONDITION

OVERALL RATING 7

TRAFFIC SAFETY FEATURES:

BRIDGE RAILINGS	0	36" high concrete parapet with safetywalk.
TRANSITIONS	1	
APPROACH GUARDRAILS	0	Metal beam rail at northwest corner has steel blockouts. All other locations have 36" high concrete parapet with safetywalk.
APPR. GUARDRAIL ENDS	1	Railings are continuous at northwest, northeast, and southeast corners. Southwest concrete railing terminates flush with Bridge 03191A pier column.

LOAD POSTING

SINGLE UNIT (TONS)		
HS (TONS)		
4 AXLE (TONS)		
3S2 (TONS)		
ADVANCE WARNING Y/N	N	
LEGIBILITY	N	
VISIBILITY/LOCATION	N	

MISC.

MIN VERT. UNDERCLR.	16' 6"	Pier 14 over Route 8 NB at the left lane.
POSTED CLR. UNDER BRIDGE	' "	
POSTED CLR. ON BRIDGE	' "	
ADVANCE WARNING (Y/N)	No	
SPEED LIMIT (IF ANY)	45 MPH	
CHARACTER OF TRAFFIC		Heavy, mixed.

ADDITIONAL NOTES

-Bridge ID's typically in good condition.
-Log direction is west to east with girder 1 at the north fascia. Note: Piers have been renumbered to match the 1994 rehab plans. Piers 5, 7, and 9 were formerly 1, 2, and 3, respectively and piers 11-36 were formerly 4-29.
-All prior BMM items have been addressed or are considered routine maintenance.
-Structure was inspected using a 45' lift, an 80' lift, and a 75' snooper.

ADDITIONAL COMMENTS:

Connecticut Department of Transportation

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BRIDGE #: 03191B **INSPECTION DATE:** 9/25/2006

Inspectors' Signatures:

1) [illegible] Date: 04/20/07

2) [illegible] Date: 04/20/07

3) _____ Date: __/__/__

4) _____ Date: __/__/__

P.E. Signature: Daniel L Colaneschi Date: 04/20/07

P.E.#: 18533

Reviewed by: _____ CDOT Date: __/__/__

TIME AT SITE

Bridge No. 03191B

Proj. # 170-2357

Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

Sheet 18

Date: 9/25/06	Crew: PG, SW	
	Equipment Used: 43' Lift	
Time: 0900-1500	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed span 18 and 3/4 of span 19.		
Date: 9/26/06	Crew: PG, SW	
	Equipment Used: 43' Lift	
Time: 0900-1500	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed span 20 and 3/4 of span 21.		
Date: 9/27/06	Crew: PG, SW	
	Equipment Used: 43' Lift	
Time: 0900-1500	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed span 16 & 17 and 3/4 of span 15.		
Date: 10/2/06	Crew: PG, SW	
	Equipment Used: 80' Manlift, Inspection van	
Time: 0900-1600	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed spans 22 & 24.		
Date: 10/3/06	Crew: PG, SW	
	Equipment Used: 80' Manlift, Inspection van	
Time: 0900-1530	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed spans 15, 19, 21 & 23.		

TIME AT SITE

Bridge No. 03191B

Proj. # 170-2357

Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

Sheet 19

Date: 10/4/06	Crew: PG, SW	
	Equipment Used: 80' Lift	
Time: 0900-1300	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed 3/4 of span 14.		
Date: 10/5/06	Crew: PG, SW	
	Equipment Used: 43' Lift, 80' Manlift	
Time: 0830-1500	Police: Waterbury PD (Name/Time) Shared with HAKS	Flagman: N/A (Name/Time)
Work Done: Completed spans 29 & 30.		
Date: 10/6/06	Crew: PG, SW	
	Equipment Used: 43' Lift, 80' Manlift	
Time: 0900-1330	Police: Waterbury PD (Name/Time) Shared with HAKS	Flagman: N/A (Name/Time)
Work Done: Completed 1/2 of span 28.		
Date: 10/16/06	Crew: PG, SW	
	Equipment Used: 75' Snooper, Insp. vehicle, Crash truck	
Time: 0830-1500	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed span 14 and part of span 13.		
Date: 10/17/06	Crew: PG, SW, CL	
	Equipment Used: 75' Snooper, Insp. vehicle, Crash truck	
Time: 0830-1430	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed spans 12 & 13 and top of deck left lane for spans 1-16.		

TIME AT SITE

Bridge No. 03191B

Proj. # 170-2357

Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

Sheet 20

Date: 10/18/06	Crew: PG, SW	
	Equipment Used: 75' Snooper, Insp. vehicle, Crash truck	
Time: 0830-1500	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: UT inspection spans 11-14, top of deck left lane for spans 28-30, completed 1/2 of span 1.		
Date: 10/19/06	Crew: PG, CL	
	Equipment Used: 75' Snooper, Insp. vehicle, Crash truck	
Time: 0830-1500	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed span 11 and 1/4 of span 10.		
Date: 10/23/06	Crew: PG, SW	
	Equipment Used: 80' Manlift, Cube	
Time: 0845-1530	Police: (Waterbury) April #699 (Name/Time) 1030-1530	Flagman: N/A (Name/Time)
Work Done: Completed span 10 and 3/4 of span 9.		
Date: 10/24/06	Crew: PG, SW	
	Equipment Used: 80' Manlift, 43' Lift, Cube	
Time: 0845-1545	Police: (Waterbury) Brevetti #705 (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed spans 5 & 6, 3/4 of span 4 and 1/4 of span 7.		
Date: 10/25/06	Crew: PG, SW	
	Equipment Used: 43' Lift, Cube, Crash truck	
Time: 0830-1630	Police: Shared with HAKS (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed span 7 and 3/4 span 8.		

TIME AT SITE

Bridge No. 03191B

Proj. # 170-2357

Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

Sheet 21

Date: 10/30/06	Crew: PG, SW	
	Equipment Used: 75' Snooper, Insp. vehicle, Crash truck	
Time: 0845-1500	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed span 25 and top of deck spans 1-18, right side. UT inspection in spans 11 and 12 at Girder 1.		
Date: 10/31/06	Crew: PG, SW, CL	
	Equipment Used: 75' Snooper, Insp. vehicle, Crash truck, 43' Lift	
Time: 0845-1530	Police: N/A (Name/Time)	Flagman: (MNRR) Parete #109358 (Name/Time) 6 1/2 Hours
Work Done: Completed spans 27 & 28 and 1/4 of span 26. Completed top of deck spans 19-30, right side.		
Date: 11/1/06	Crew: PG, SW	
	Equipment Used: 75' Snooper, Insp. vehicle, Crash truck	
Time: 0900-1400	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed span 26 and 1/2 of span 3.		
Date: 11/6/06	Crew: PG, DS	
	Equipment Used: 43' Lift, Cube, Crash truck	
Time: 0830-1100	Police: Jacobi #1083 (Name/Time) 0830-1530	Flagman: N/A (Name/Time)
Work Done: Completed 1/2 of span 2. Inspected with Bridge 3190A.		
Date: 11/7/06	Crew: PG, DS	
	Equipment Used: 43' Lift, 80' Manlift, Cube, 2 Crash trucks	
Time: 0830-1200	Police: Ardolino #919 (Name/Time) 0830-1500	Flagman: N/A (Name/Time)
Work Done: Completed spans 1 & 2. Inspected with Bridge 3190A.		

TIME AT SITE

Bridge No. 03191B

Proj. # 170-2357

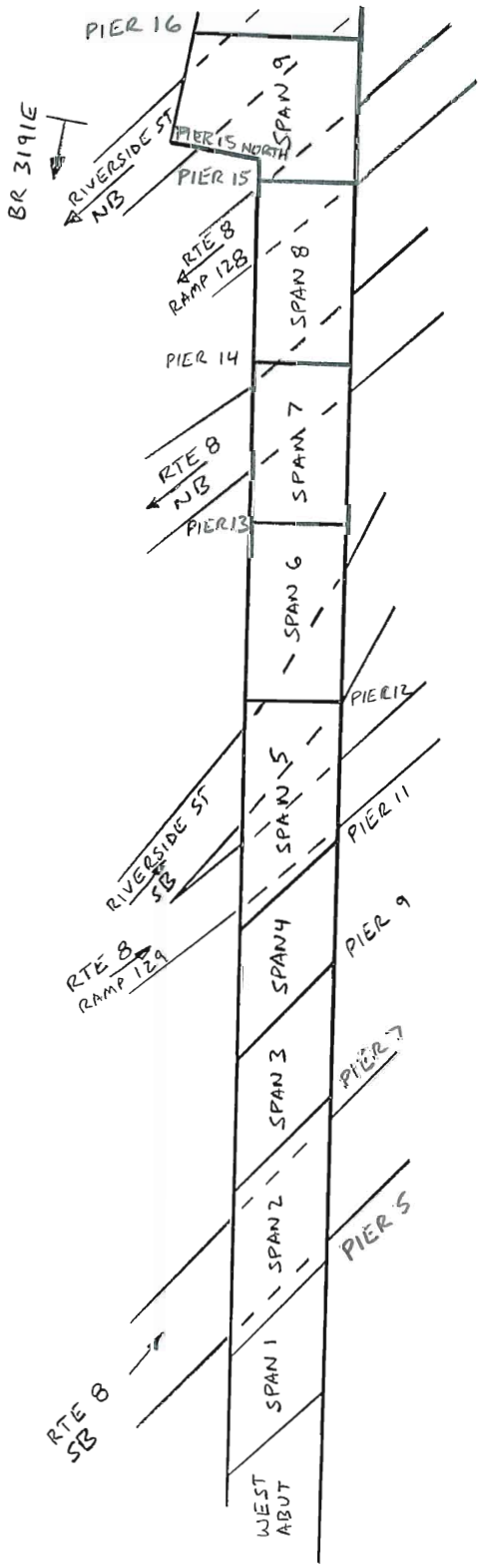
Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

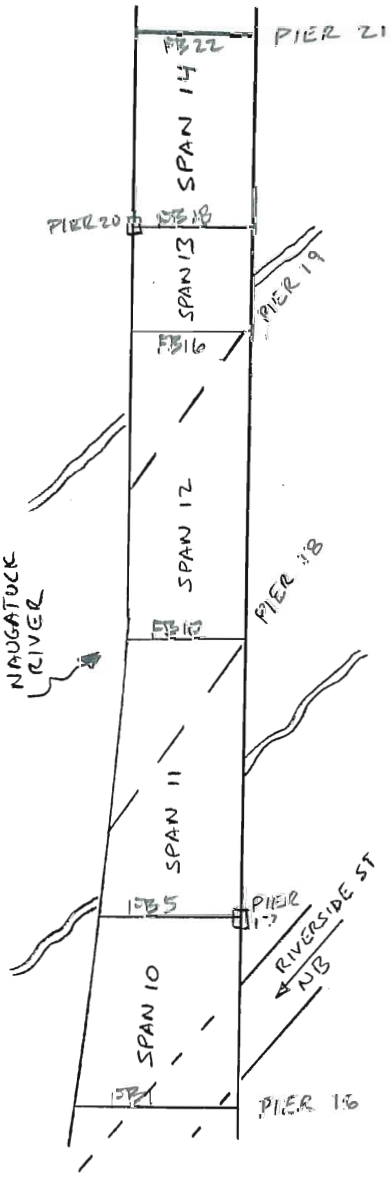
Sheet 22

Date: 11/17/06	Crew: PG, DS	
	Equipment Used: 43' Lift, Cube, Crash truck	
Time: 1130-1400	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed spans 8 & 9.		
Date: 11/20/06	Crew: PG, SW	
	Equipment Used: Cube	
Time: 1200-1330	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed spans 3 & 4.		
Date: 12/8/06	Crew: PG, SW	
	Equipment Used: Inspection vehicle	
Time: 0800-1000	Police: N/A (Name/Time)	Flagman: N/A (Name/Time)
Work Done: Completed channel inspection. Completed inspection of structure.		
Date:	Crew:	
	Equipment Used:	
Time:	Police: (Name/Time)	Flagman: (Name/Time)
Work Done:		
Date:	Crew:	
	Equipment Used:	
Time:	Police: (Name/Time)	Flagman: (Name/Time)
Work Done:		

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 9/25/06	SHEET 23
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW





GENERAL PLAN - SPANS 1-14

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 9/25/06	SHEET 24
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	

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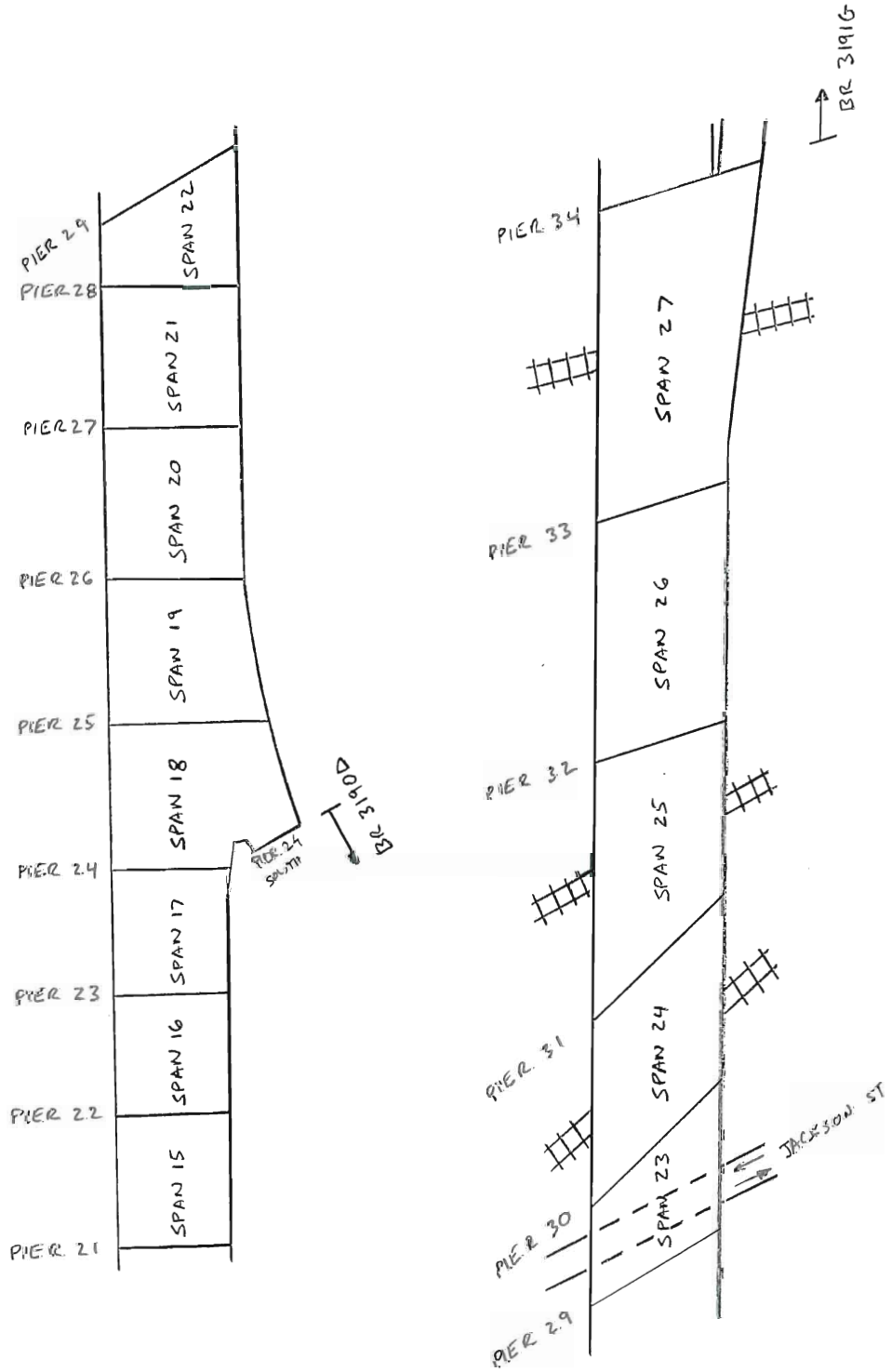
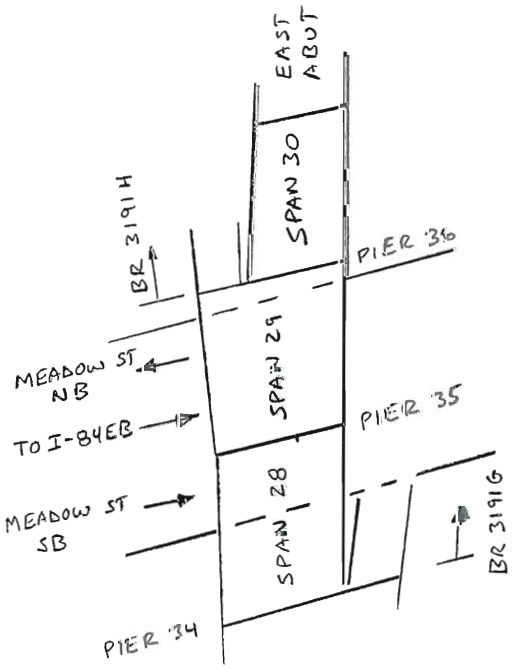


NOTE: RAILROADS HAVE MULTIPLE TRACKS. SINGLE TRACKS SHOWN FOR CLARITY.

GENERAL PLAN - SPANS 15-27

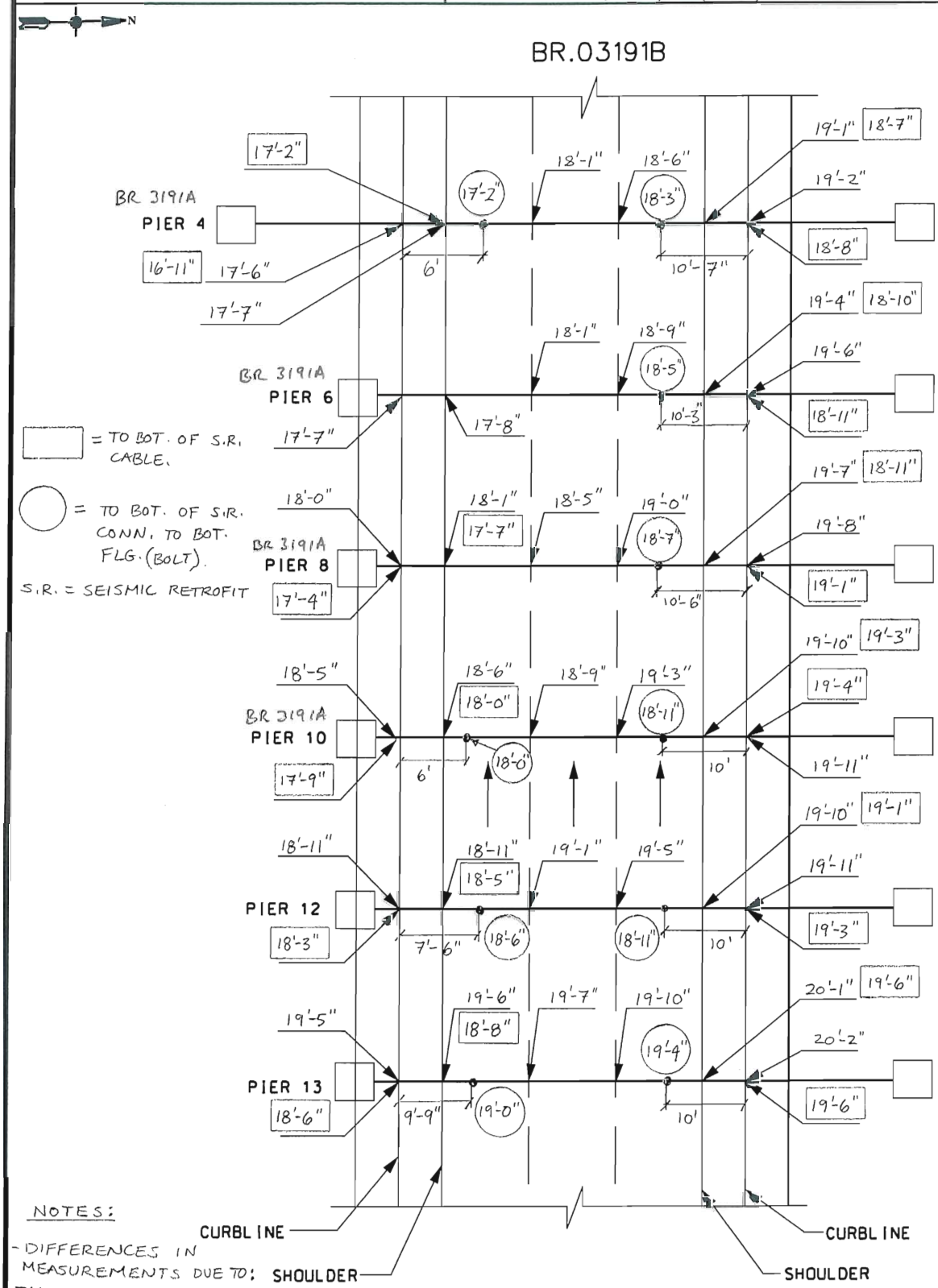
FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 9/25/06	SHEET 25
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	

AZ



GENERAL PLAN - SPANS 28-30

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191AB
	DATE: 10/17/06 & 10/30/06	SHEET 26
	CREW: PH, EJL, JM, LLV, MJW	



NOTES:

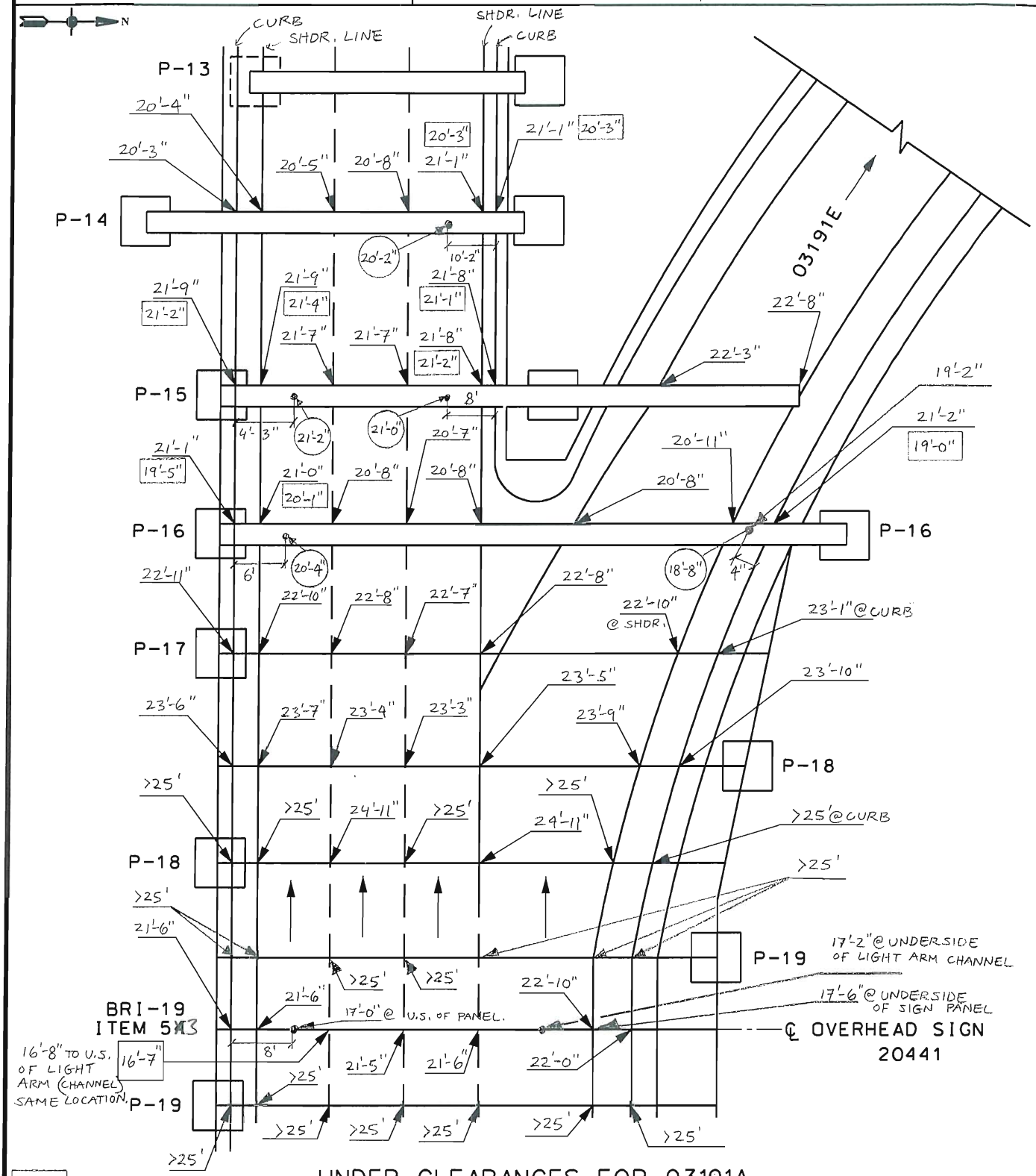
- DIFFERENCES IN MEASUREMENTS DUE TO: TAKEN @ WEST CAP GIRDER, WHICH IS LOWER THAN EAST (OR NEW OVERLAY @ A FEW LOCATIONS)

OVER CLEARANCE DIAGRAM, SPANS ~~5-9~~ 1-6

(N.T.S.)

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191AB
	DATE: 10/17/06 & 10/30/06	SHEET 27
	CREW: PH, EJL, JM, LLV, MJW	



= TO S.R. CABLE

= TO BOT. OF S.R. BOLTED CONN. @ BOT. FLG. (BOLT)

S.R. = SEISMIC RETROFIT.

UNDER CLEARANCES FOR 03191A

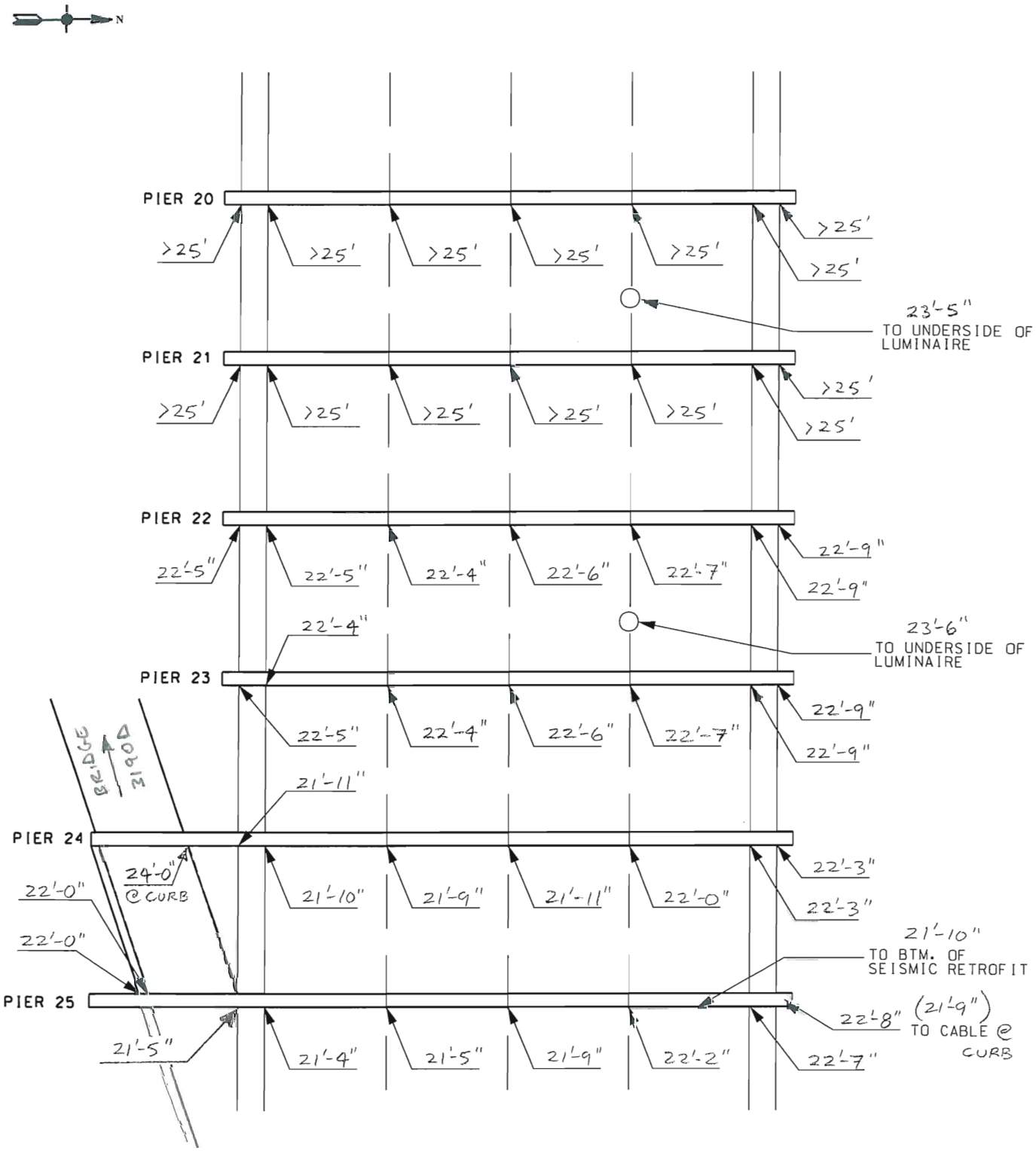
OVERHEAD CLEARANCES FOR 03191B

SPANS ~~10-15~~ 7-12

(N.T.S.)

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

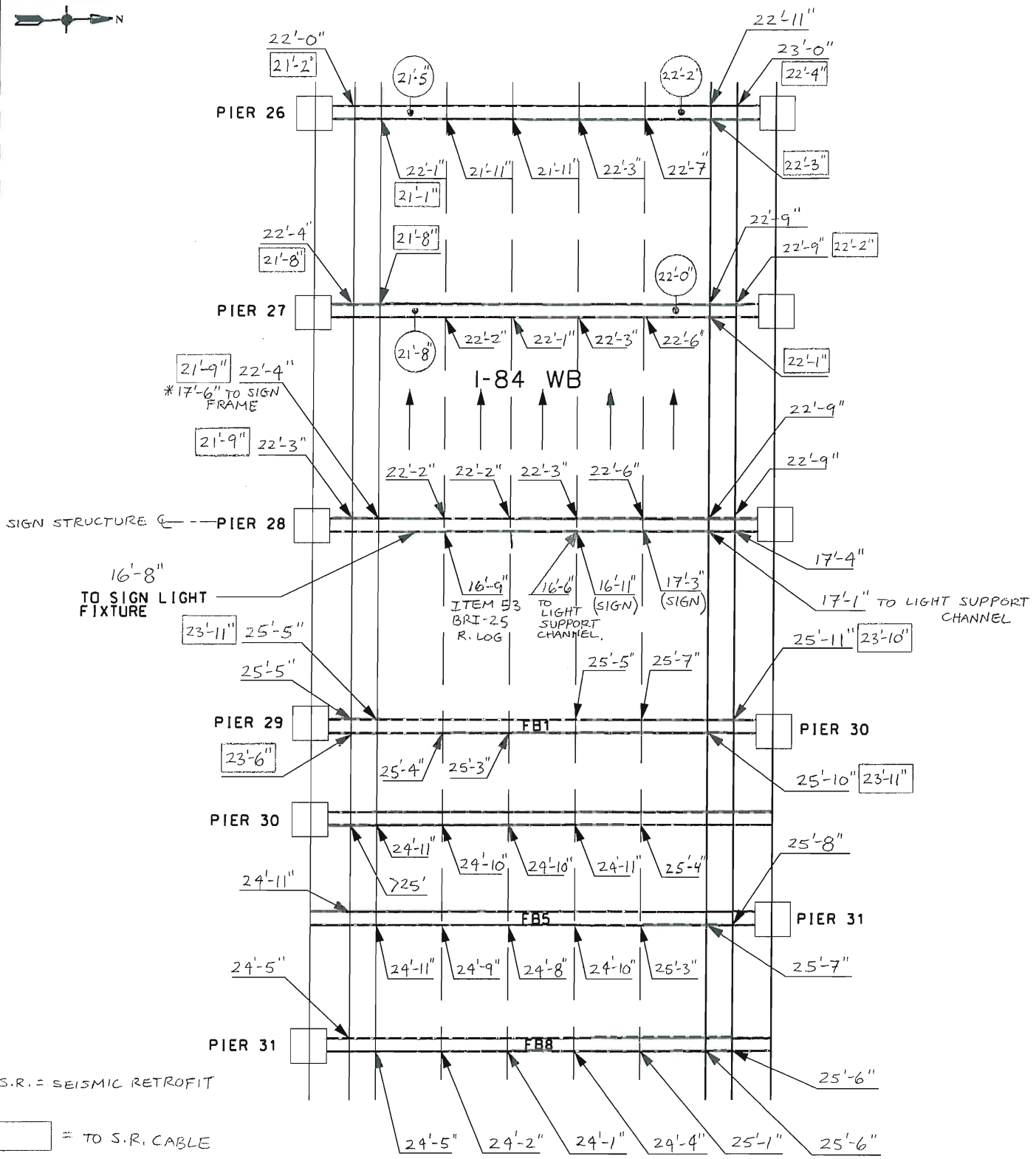
HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191AB
	DATE: 10/18/06	SHEET 28
	CREW: PH, EJL, JM, LLV, MJW	



OVER CLEARANCE DIAGRAM 03191A OVER 03191B (SPANS ~~17-21~~) 13-18
(N.T.S.)

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191XB
	DATE: 10/18/06	SHEET 29
	CREW: PH, EJL, JM, LLV, MJW	



S.R. = SEISMIC RETROFIT

▭ = TO S.R. CABLE

○ = TO BOT. OF S.R. BOLTED CONN. @ BOT. FLG. (BOLT)

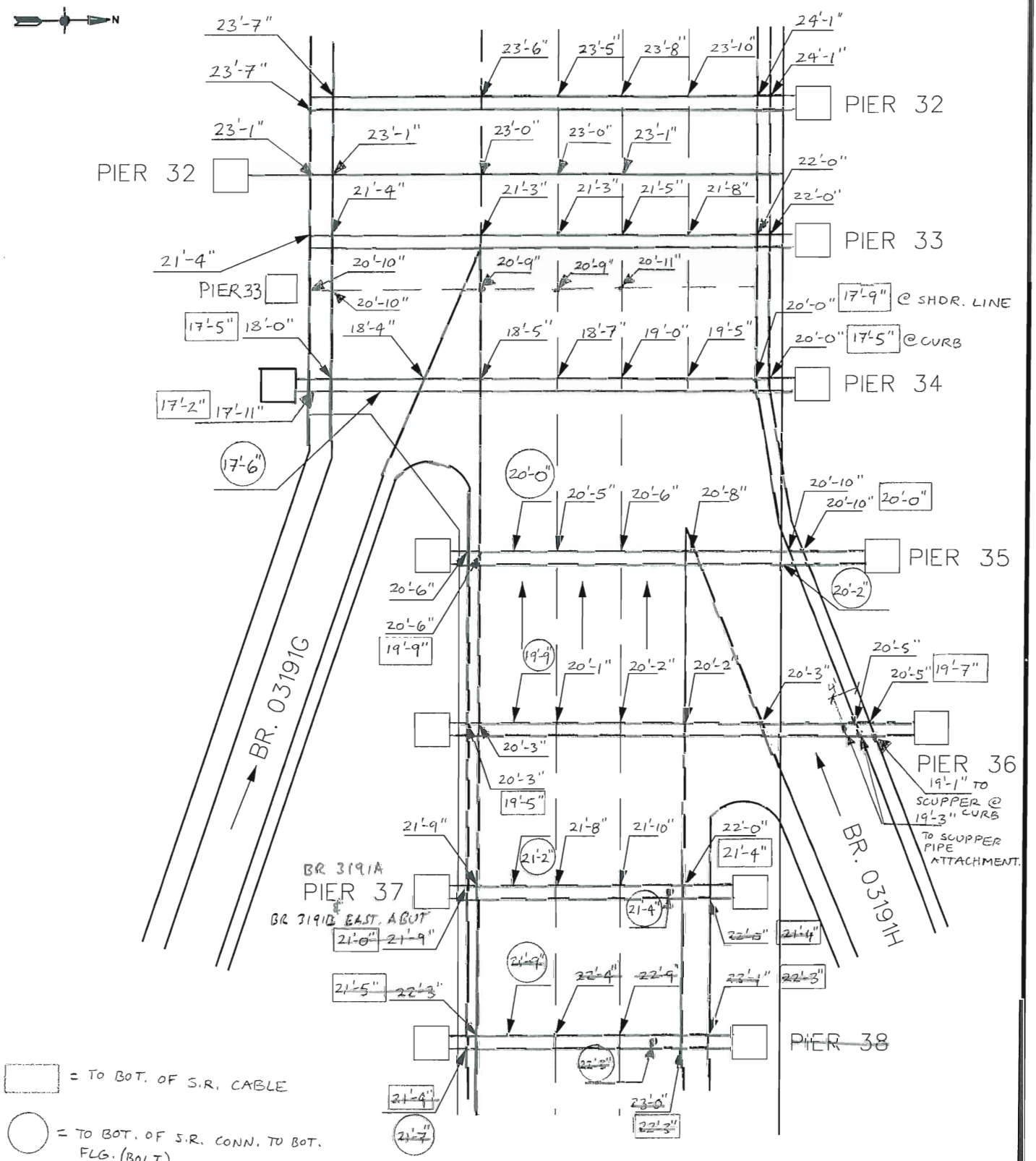
OVER

CLEARANCE DIAGRAM- SPANS ~~23-27~~ 19-24

(N.T.S.)

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191KB
	DATE: 10/19/06 & 10/31/06	SHEET 30
	CREW: MJW, EJL	



= TO BOT. OF S.R. CABLE

= TO BOT. OF S.R. CONN. TO BOT. FLG. (BOLT).

S.R. = SEISMIC RETROFIT

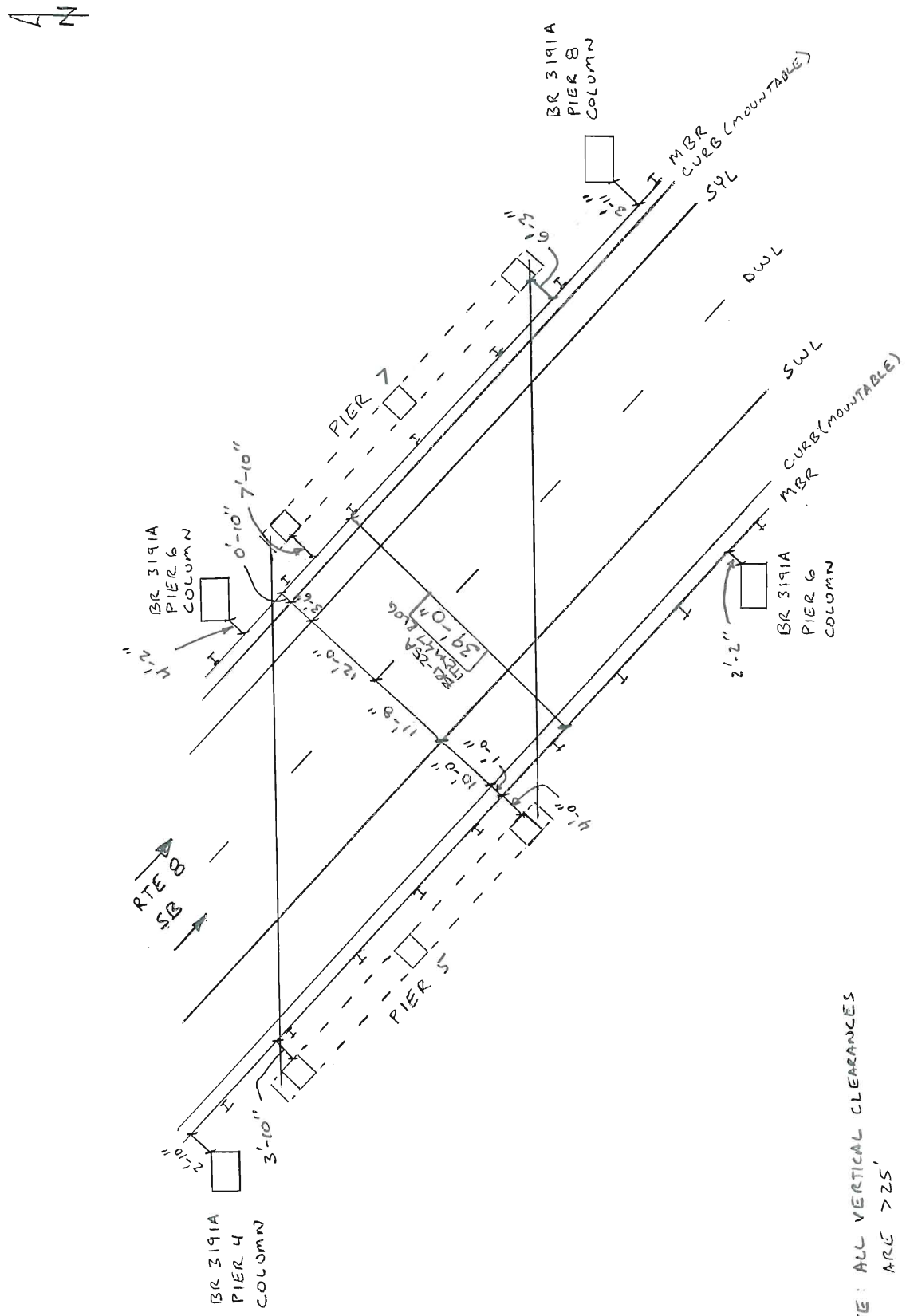
OVER CLEARANCE DIAGRAM- SPANS ~~23-34~~ 25-30

(N.T.S.)

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

FIELD NOTES

FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 11/6/06, 11/7/06	SHEET 31
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, DS, CL	



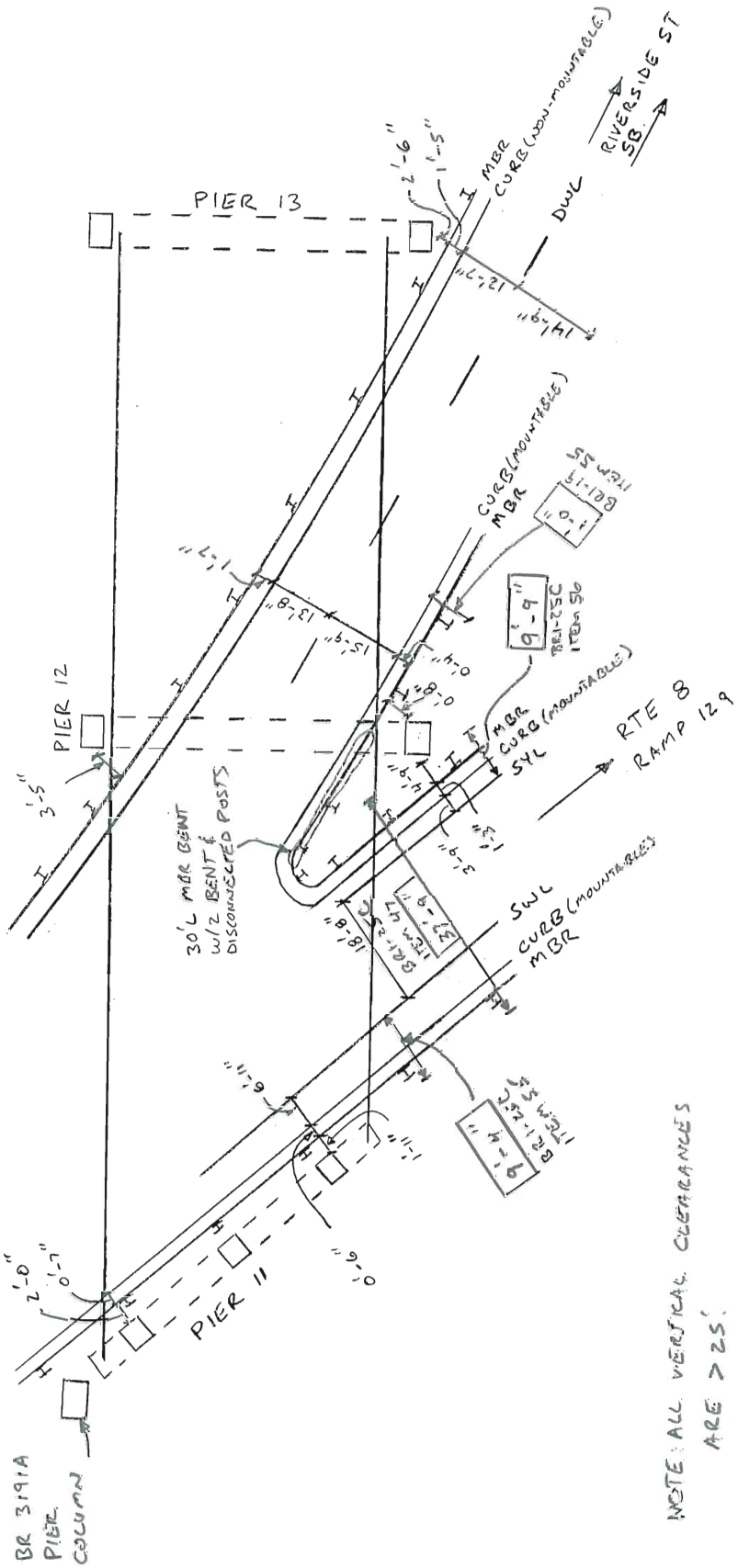
CLEARANCE DIAGRAM SPAN 2

I-84WB OVER ROUTE 8SB

NOTE: ALL VERTICAL CLEARANCES ARE >25'

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/24/06	SHEET 32
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	

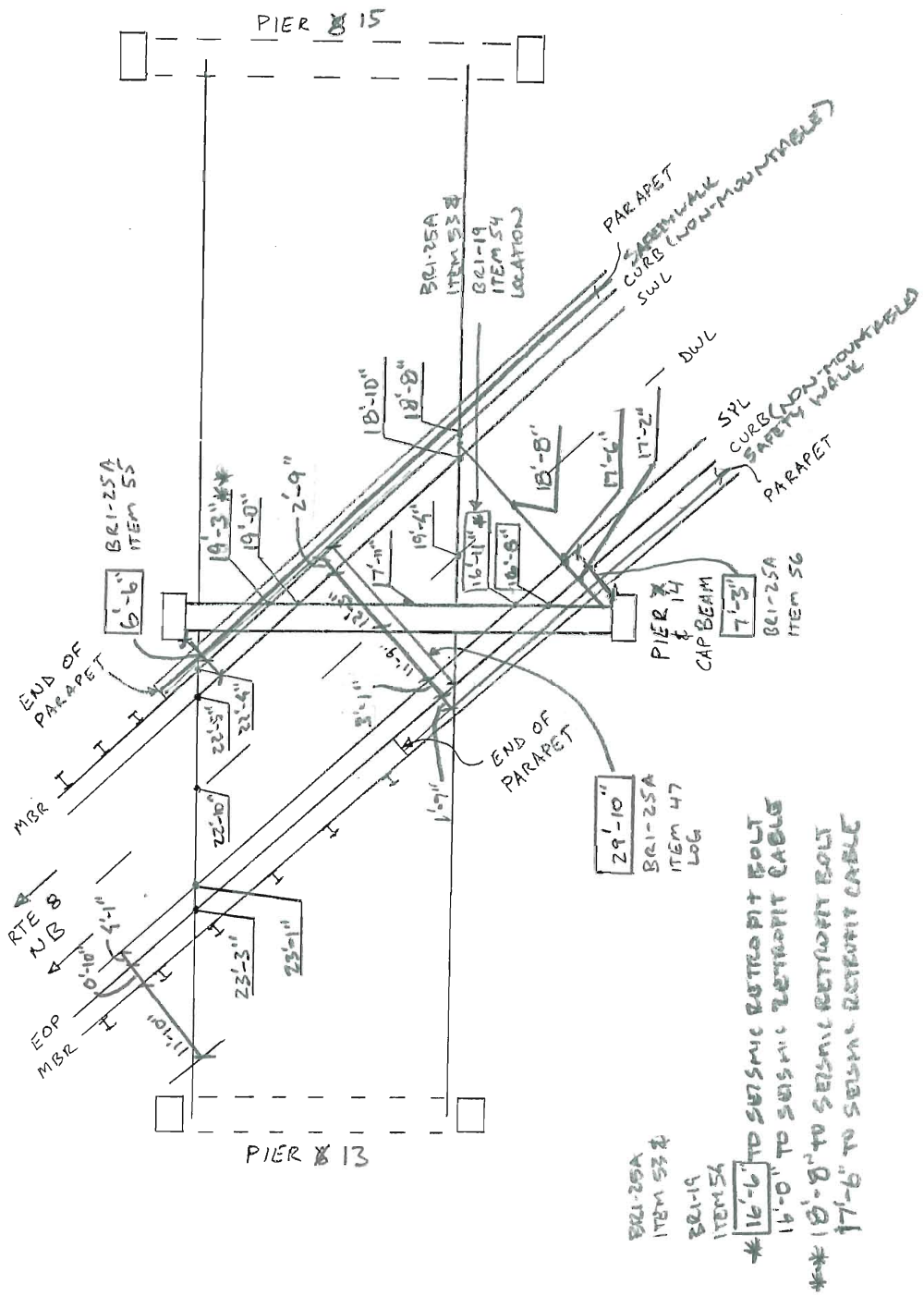


CLEARANCE DIAGRAM SPANS 5 & 6

I-8 WB OVER RTE 8 RAMP 129 & RIVERSIDE ST, SB

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/25/06	SHEET 33
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW



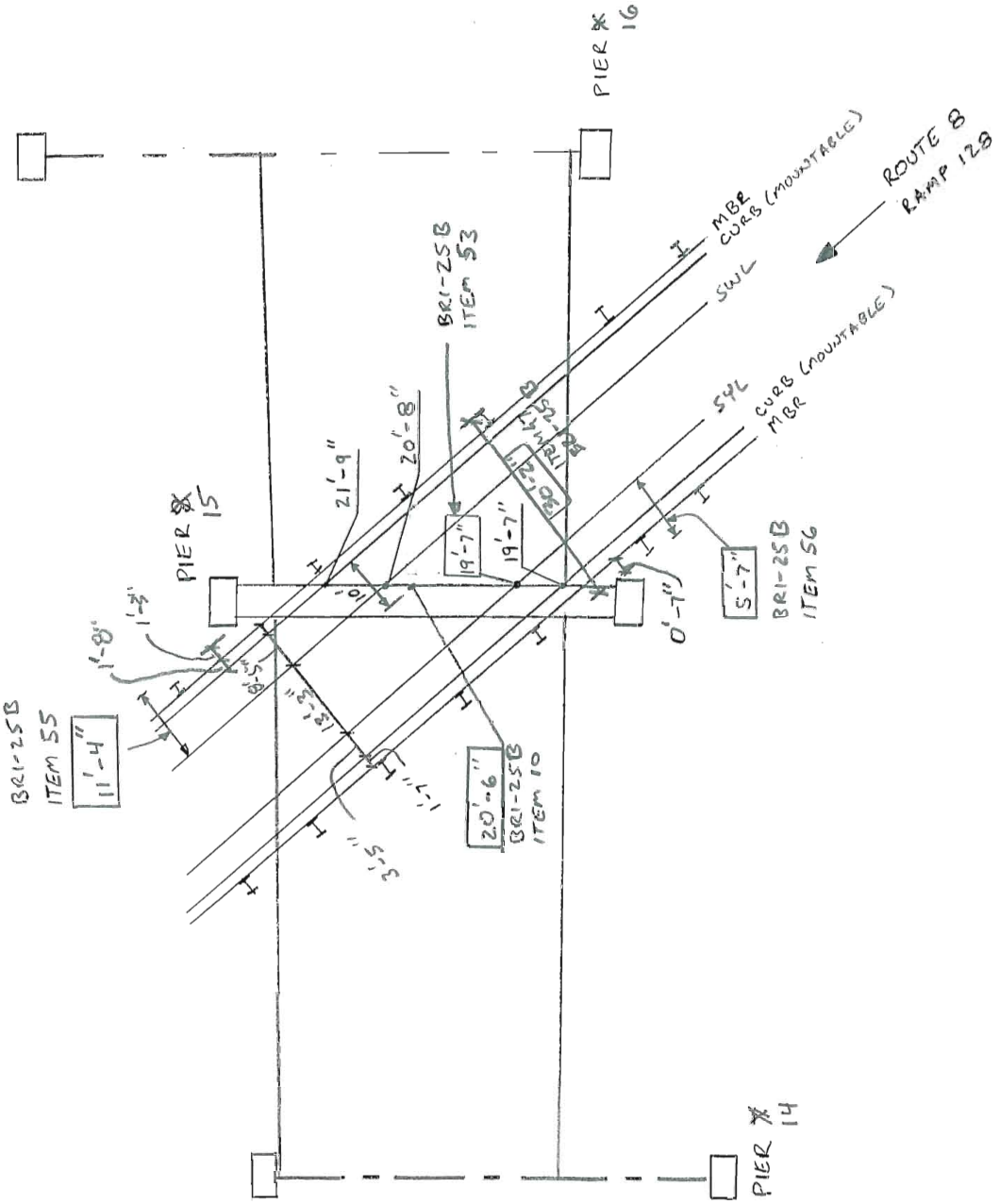
CLEARANCE DIAGRAM SPANS 7 & 8

I-84 WB OVER RTE 8 NB

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/25/06	SHEET 34
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	

N



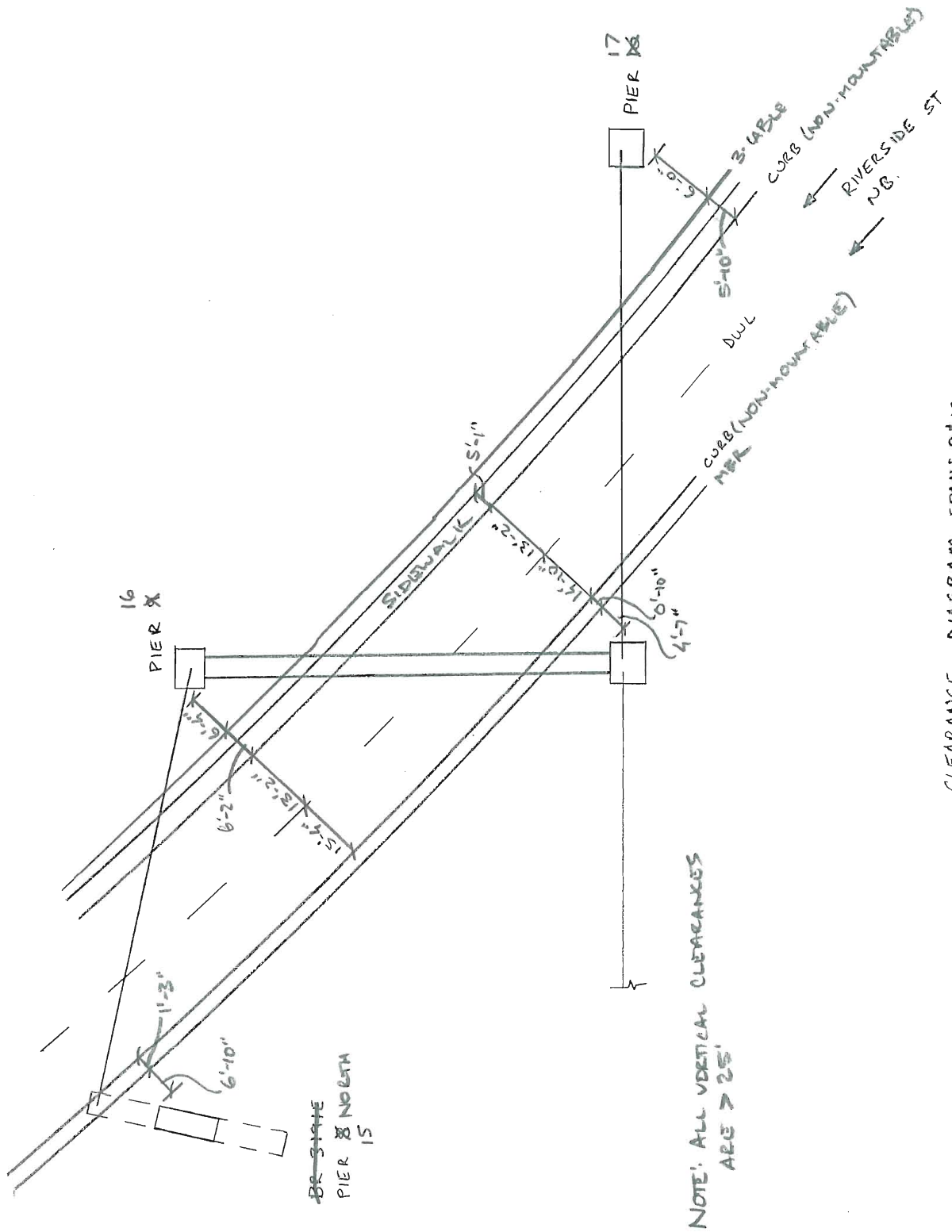
CLEARANCE DIAGRAM SPANS 8 & 9

I-84WB OVER ROUTE 8 RAMP 12B

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/23/06	SHEET 35
CREW FDG, SW	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



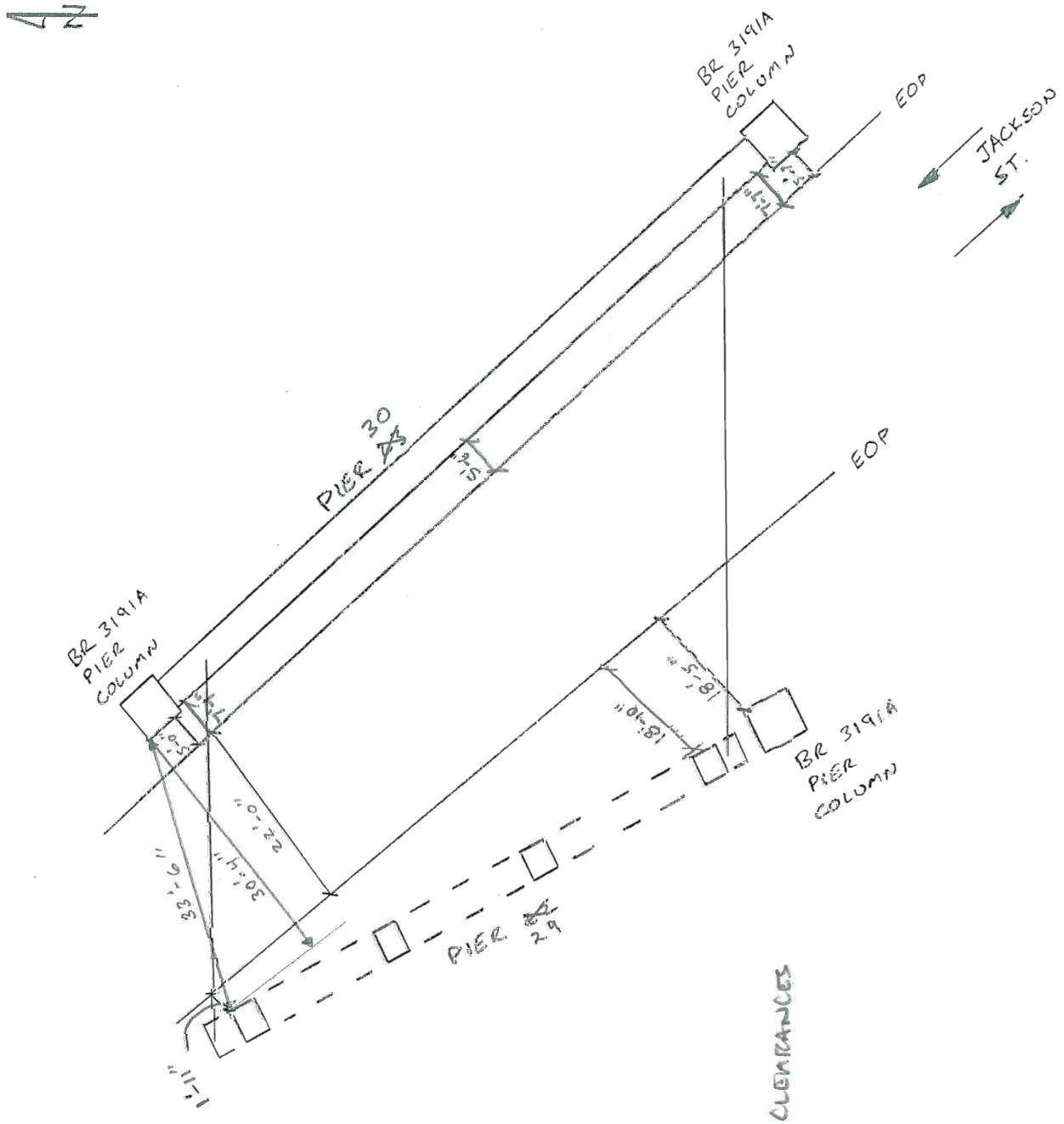
CLEARANCE DIAGRAM SPANS 9 & 10

I-84NB OVER RIVERSIDE ST NB

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/6/06	SHEET 36
CREW PG, SW	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



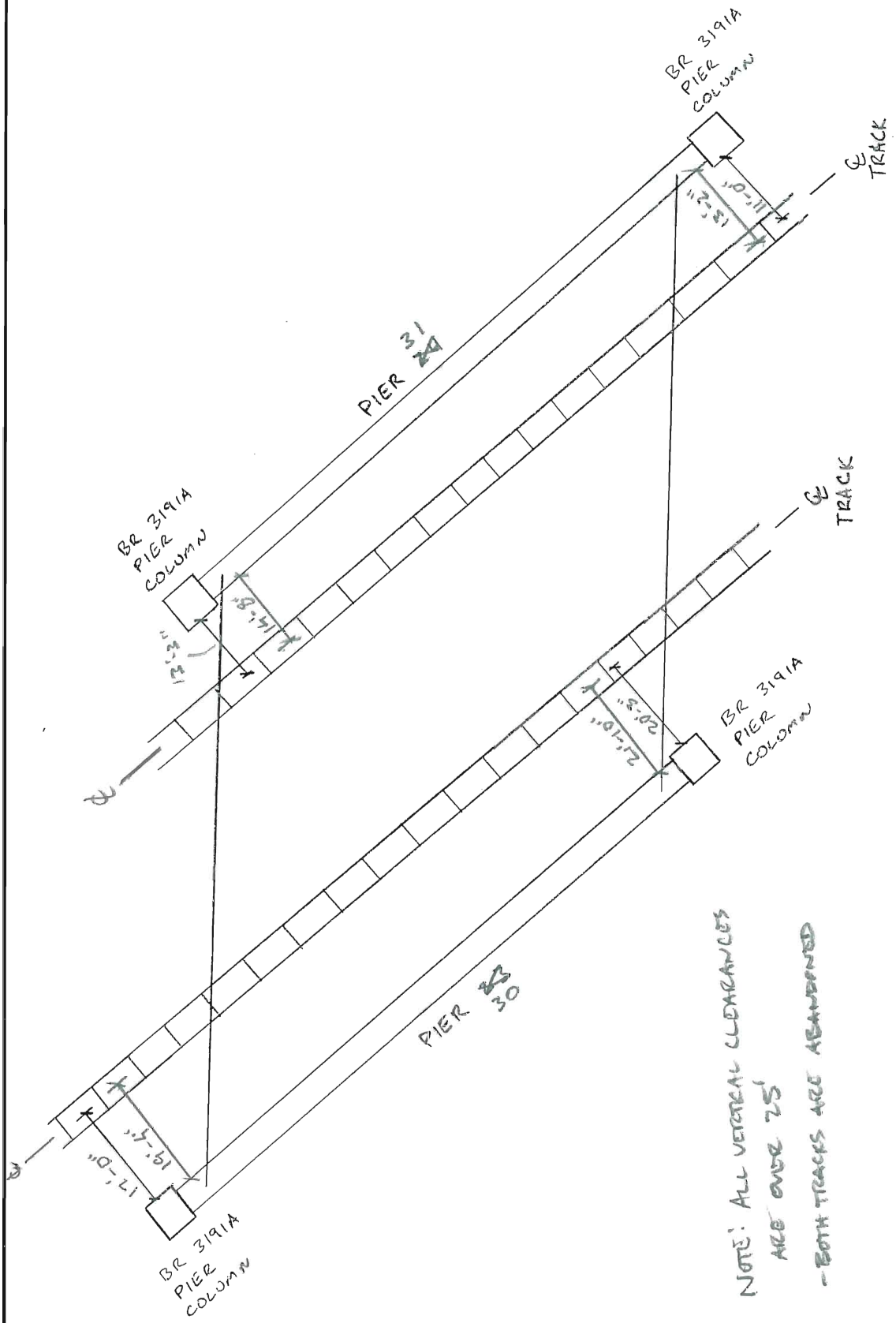
CLEARANCE DIAGRAM SPAN 23

I-84 WB OVER JACKSON ST.

NOTE: ALL VERTICAL CLEARANCES ARE OVER 25'

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/6/06	SHEET 37
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	

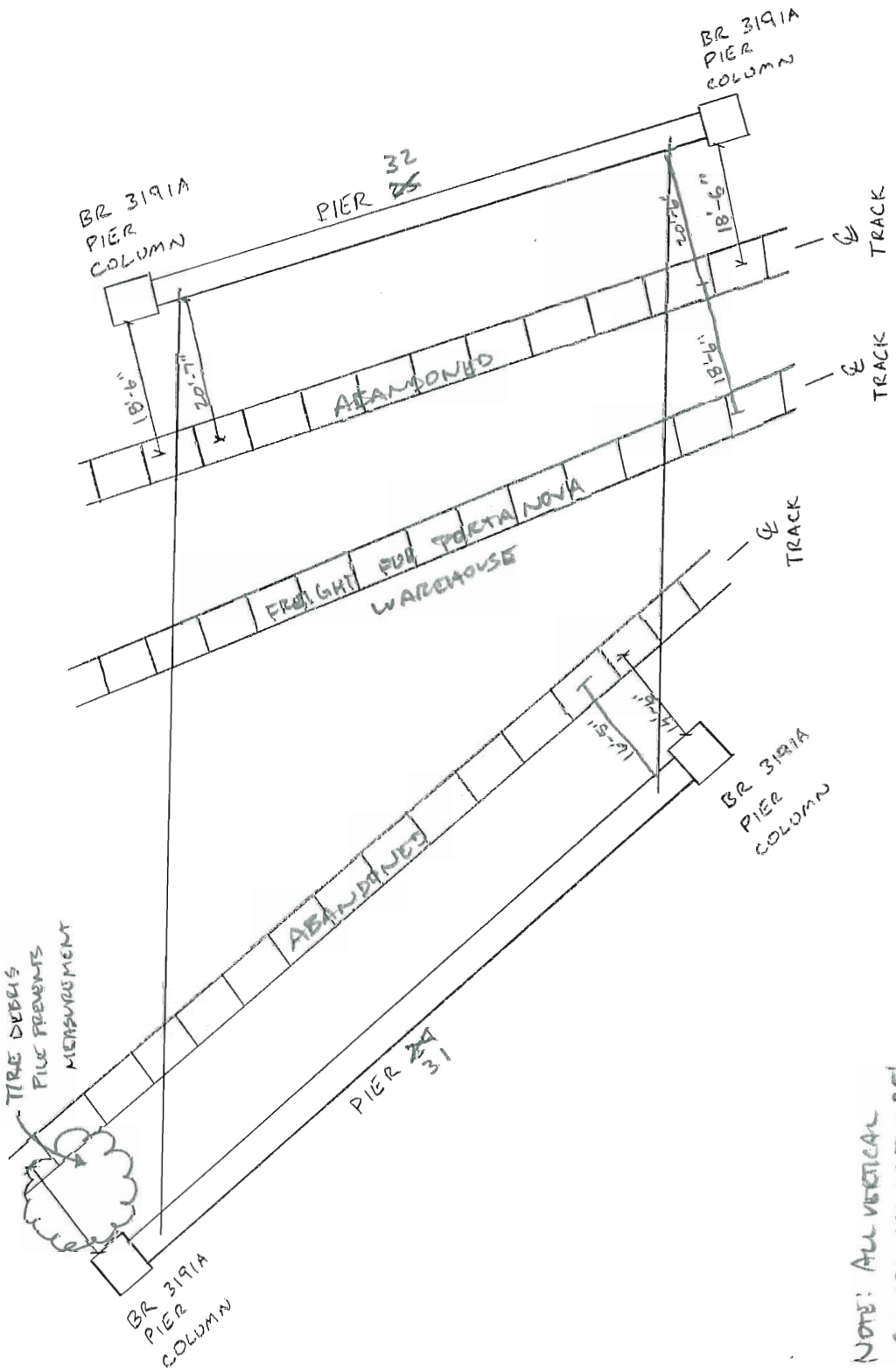


CLEARANCE DIAGRAM SPAN 24

NOTE: ALL VERTICAL CLEARANCES ARE OVER 25'
- BOTH TRACKS ARE ABANDONED

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/31/06	SHEET 38
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW, CL

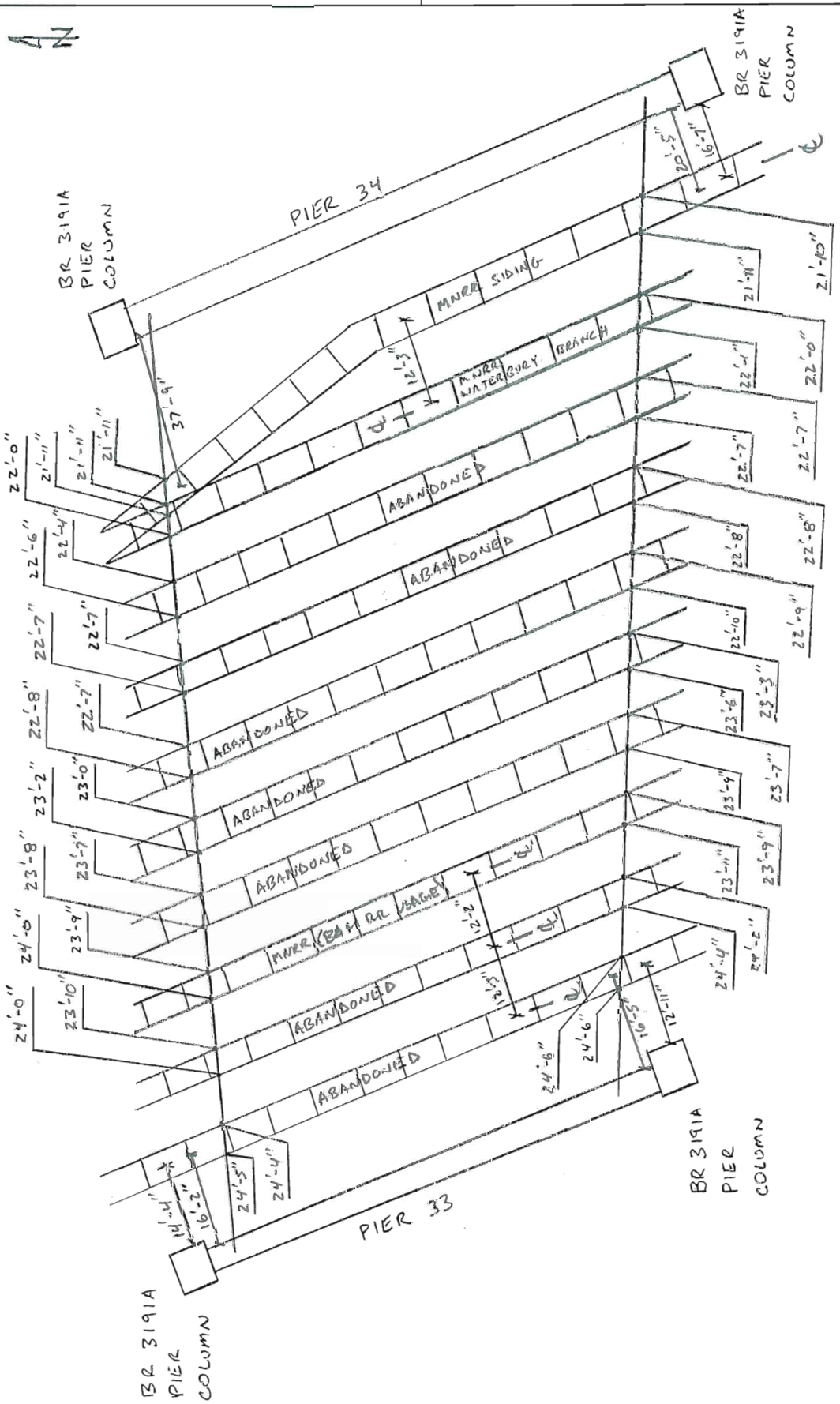


CLEARANCE DIAGRAM SPAN 25

NOTE: ALL VERTICAL CLEARANCES ARE > 25'

FIELD NOTES

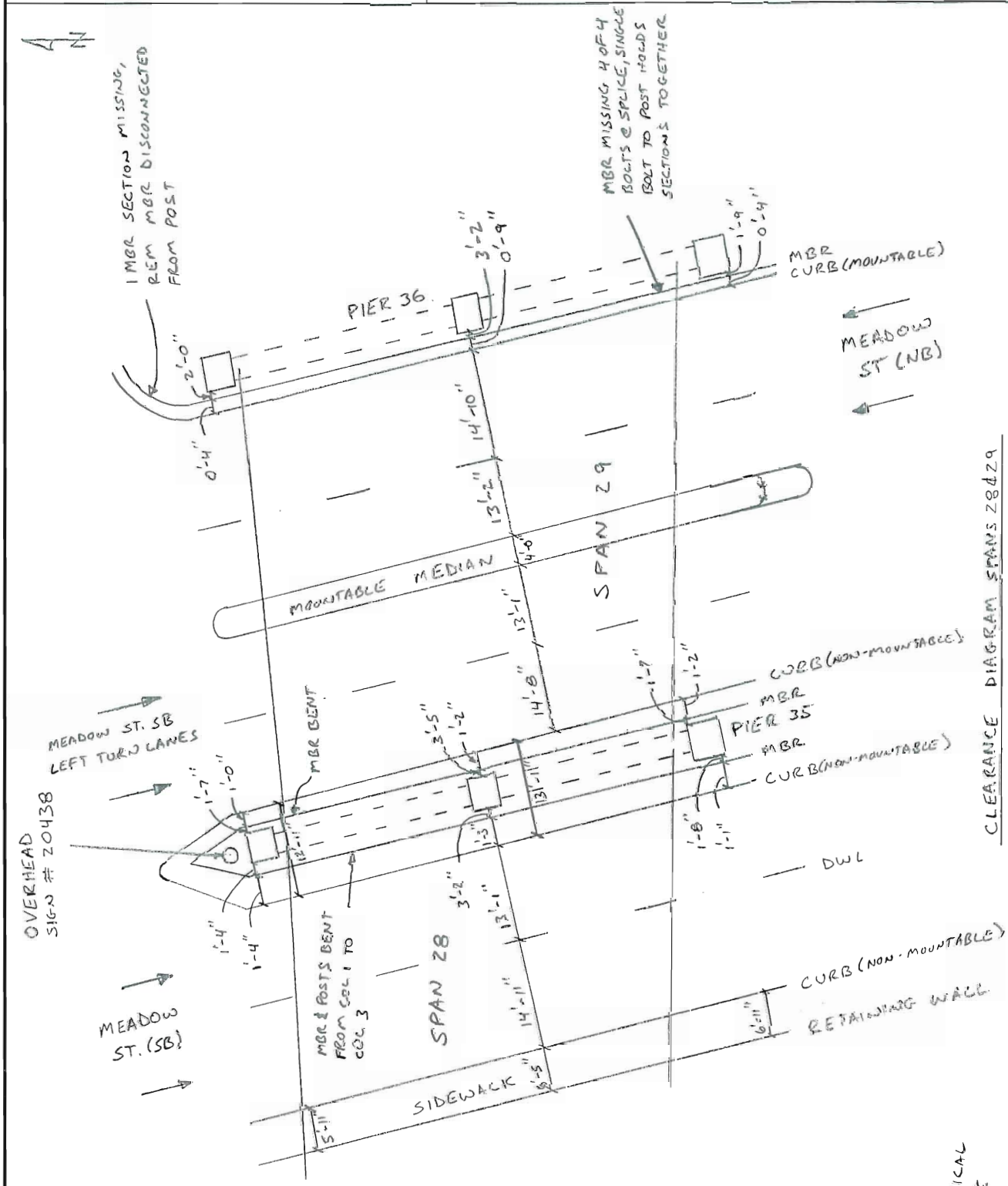
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/31/06	SHEET 39
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, CL



CLEARANCE DIAGRAM SPAN 27

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/5 & 10/6/06	SHEET 40
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



CLEARANCE DIAGRAM SPANS 28 & 29

I-84 WB OVER MEADOW ST

NOTE: ALL VERTICAL CLEARANCES ARE OVER 25'

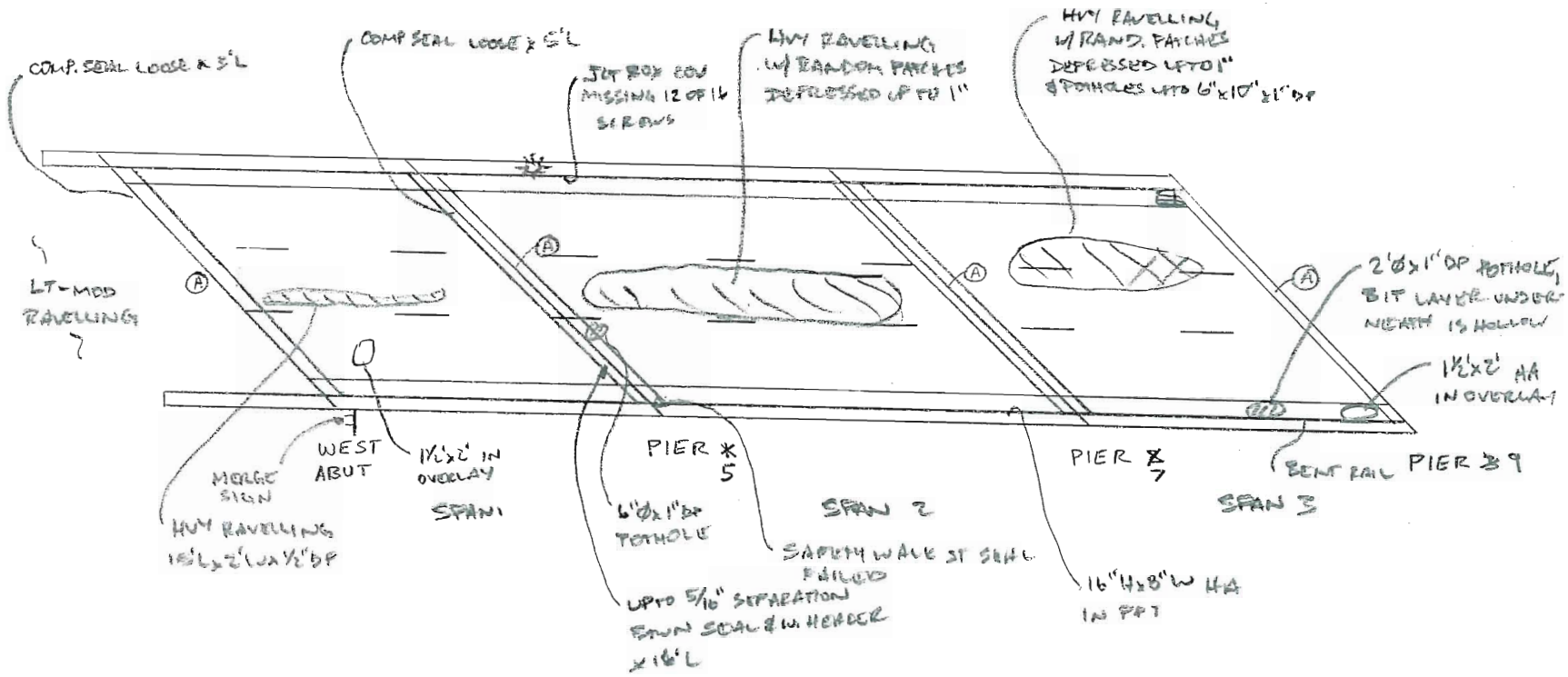
FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

JOB NO. 0156EXT | BRIDGE NO. 3918

DATE 10/17, 30/06 | SHEET 41

CREW PPG, SW, LL



Ⓐ COMPRESSION SEAL

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)
- LIGHT STR
- SCUFFER

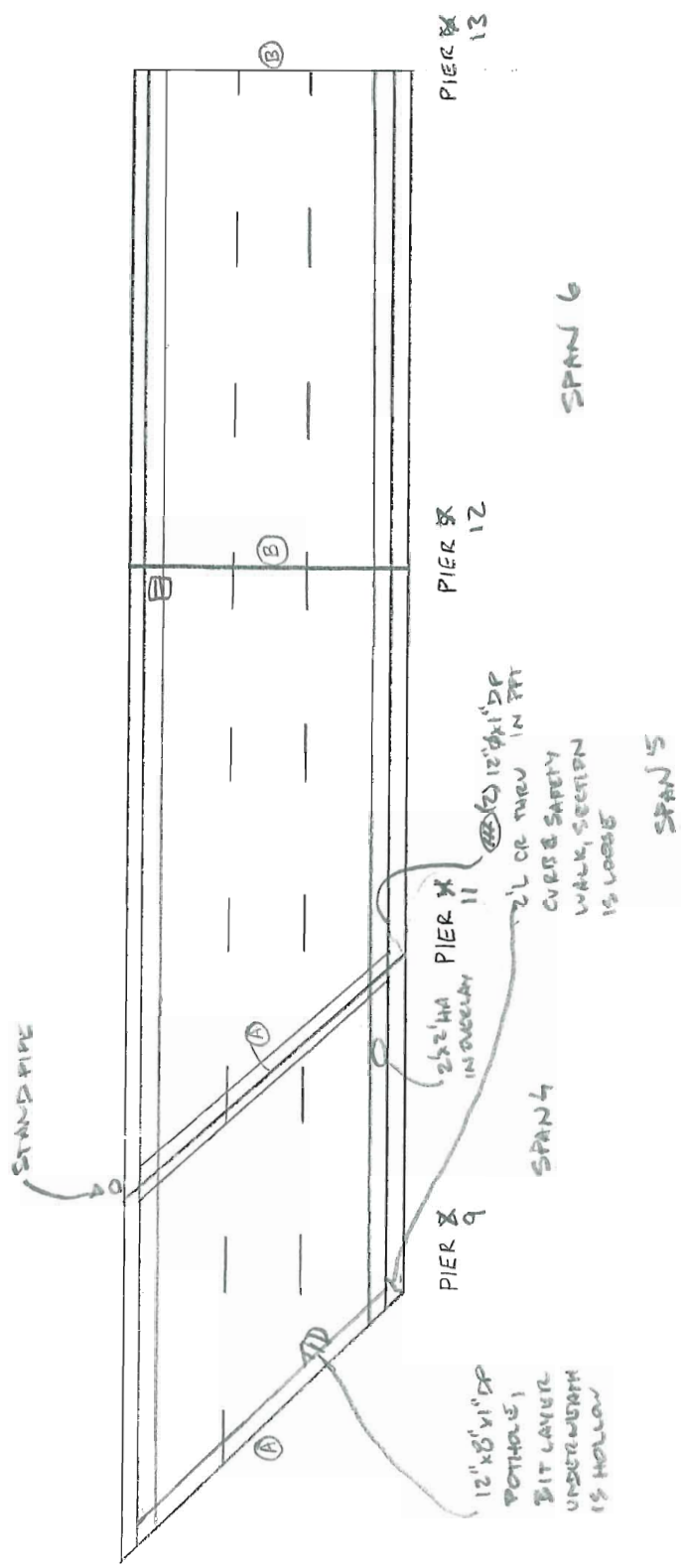
GENERAL NOTES:

- LT TO MOD RAVELLING THRU OUT OVERLAY UNLESS NOTED OTHERWISE
- RANDOM LONG. & TV CRS THRUOUT OPEN UPTO 1"
- DECK JT CONC. HEADERS W/ WEAR THROUGHOUT EXPOSING AGGREGATE
- PATCHES DEPRESSED UPTO 1"
- RANDOM SEPARATIONS BWN COMP SEALS & HEADERS UP TO 1/8" UNLESS NOTED OTHERWISE
- PPT'S HOLLOW/SPALLED @ PPT JT'S & RANDOM LOCATIONS THROUGHOUT
- LT VEG GROWTH ALONG RT (NORTH) SHOULDER & CURB

TOP OF DECK SPANS 1-3

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/17, 30/06	SHEET 42
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW, CL	



GENERAL NOTES:

- SEE SPANS 1-3 GENERAL NOTES.
- SPANS 5 & 6 HAVE BEEN RESURFACED SINCE THE PREVIOUS INSP.
- ASPH. PLUG, STS INSTALLED AT PIERS 12 & 13 SINCE PREVIOUS INSP.
- AVE CURB REVEAL IS 6"

TOP OF DECK SPANS 4-6

Ⓐ COMPESSION SEAL
Ⓑ ASPHALTIC PLUG

Ⓓ SCUPPER

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

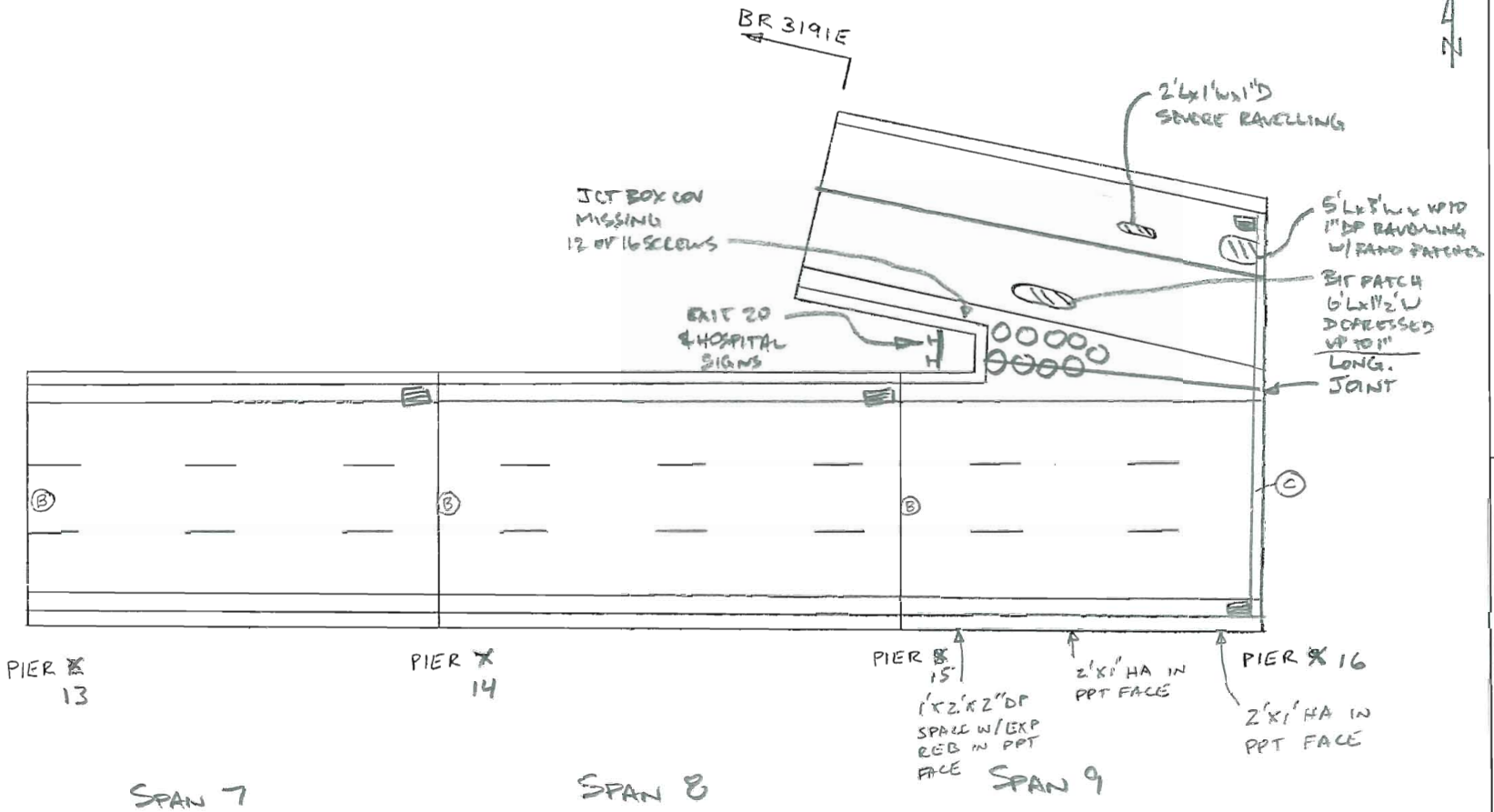
FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS · CONSULTANTS · CONSTRUCTION MANAGERS

JOB NO. 0156EXT | BRIDGE NO. 3191B

DATE 10/17, 30/06 | SHEET 43

CREW PTG, SW, LL



B ASPHALTIC PLUG
C GLAND OVER FINGER

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)
- SCUPPER

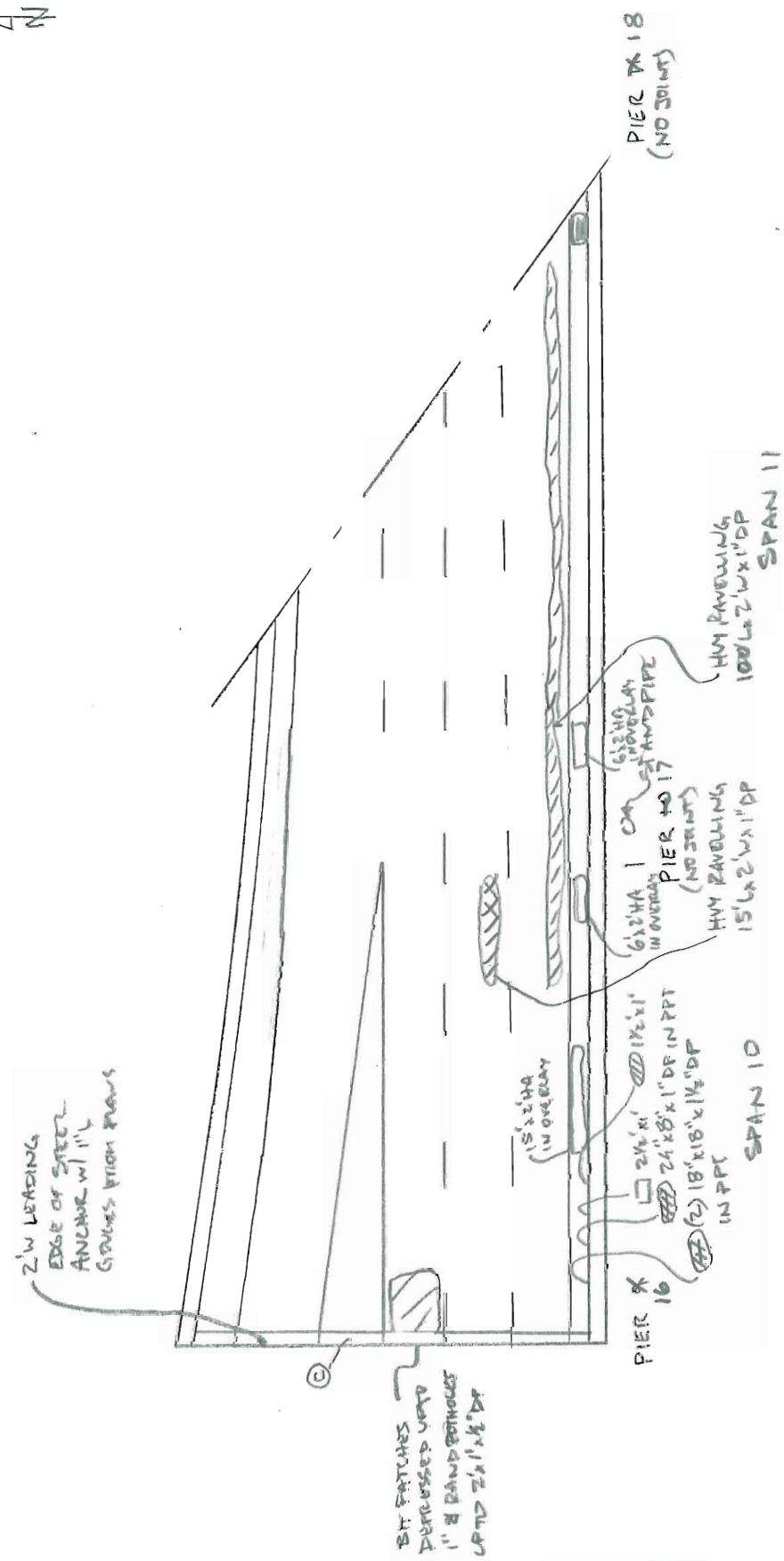
GENERAL NOTES:

- SEE SPANS 1-3 GENERAL NOTES
- SPANS 7, 8, & 9 (NOT RAMP) RESURFACED SINCE PREVIOUS INSP.
- ASPH. PLUG JT'S INSTALLED AT PIERS 14 & 15 SINCE PREVIOUS INSP.

TOP OF DECK SPANS 7-9

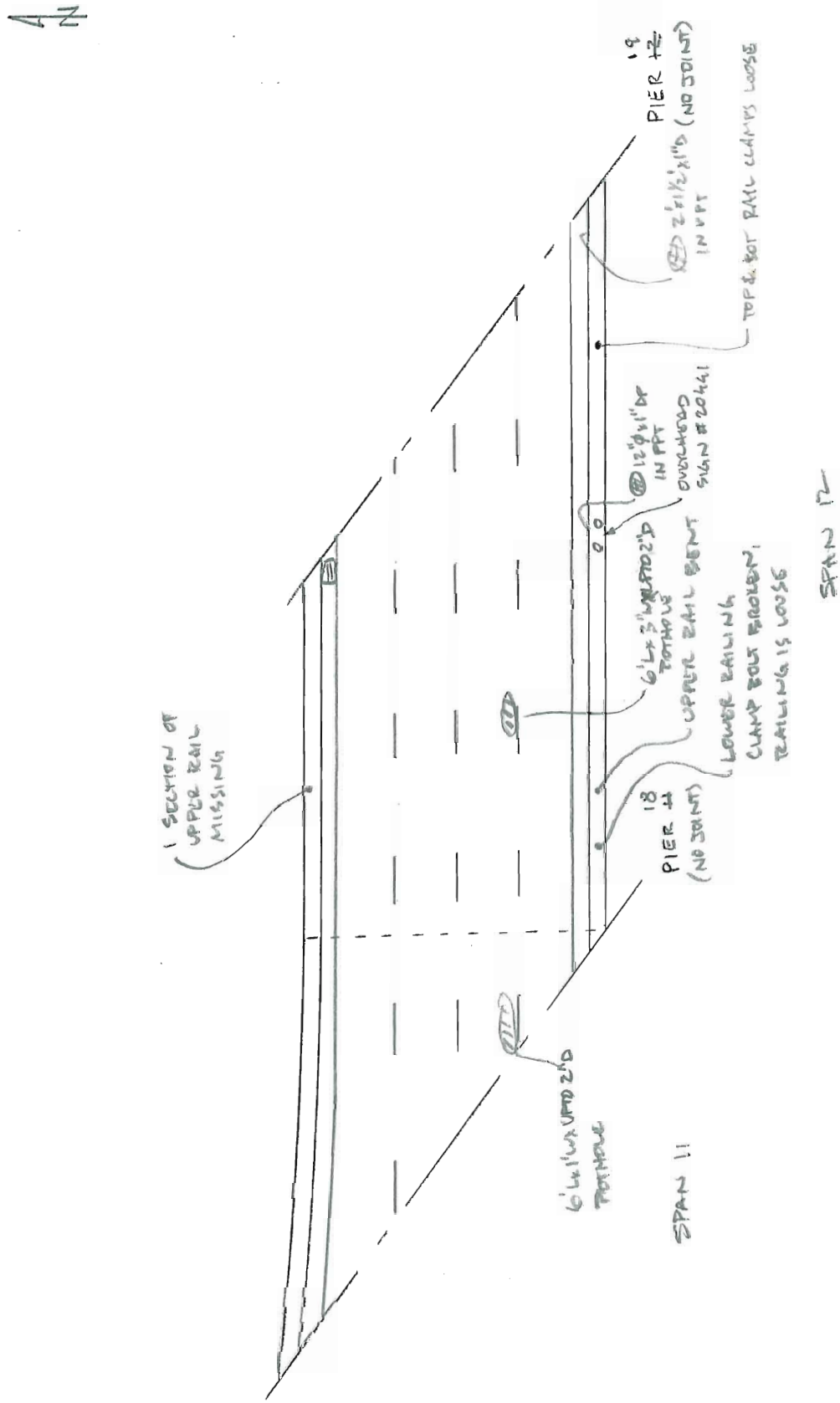
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/17,30/06	SHEET 44
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW, CL	



FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/17,30/06	SHEET 45
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW TLG, SW, CL	



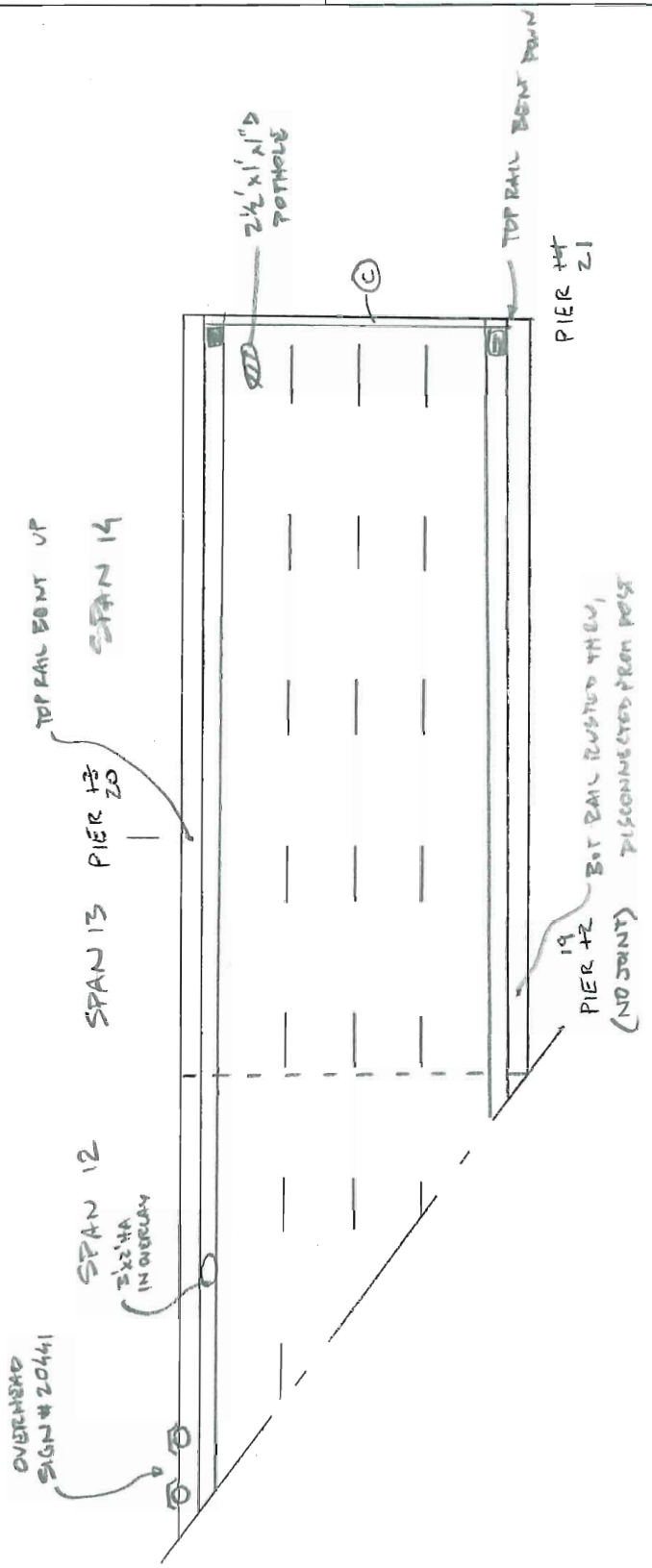
GENERAL NOTES:
- SEE SPANS 1-3 GENERAL NOTES

TOP OF DECK SPAN #12

LEGEND
- HOLLOW AREA
- SCUPPER
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/17, 30/06	SHEET 46
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW FDG, SW, CL	



GENERAL NOTES:
- SEE SPANS 1-3 GENERAL NOTES
- MPER THRU-OUT OPEN UPTO 1/2"W
- OVERLAY IN S. SHLD IS HOLLOW THROUGHOUT UPTO 2"W

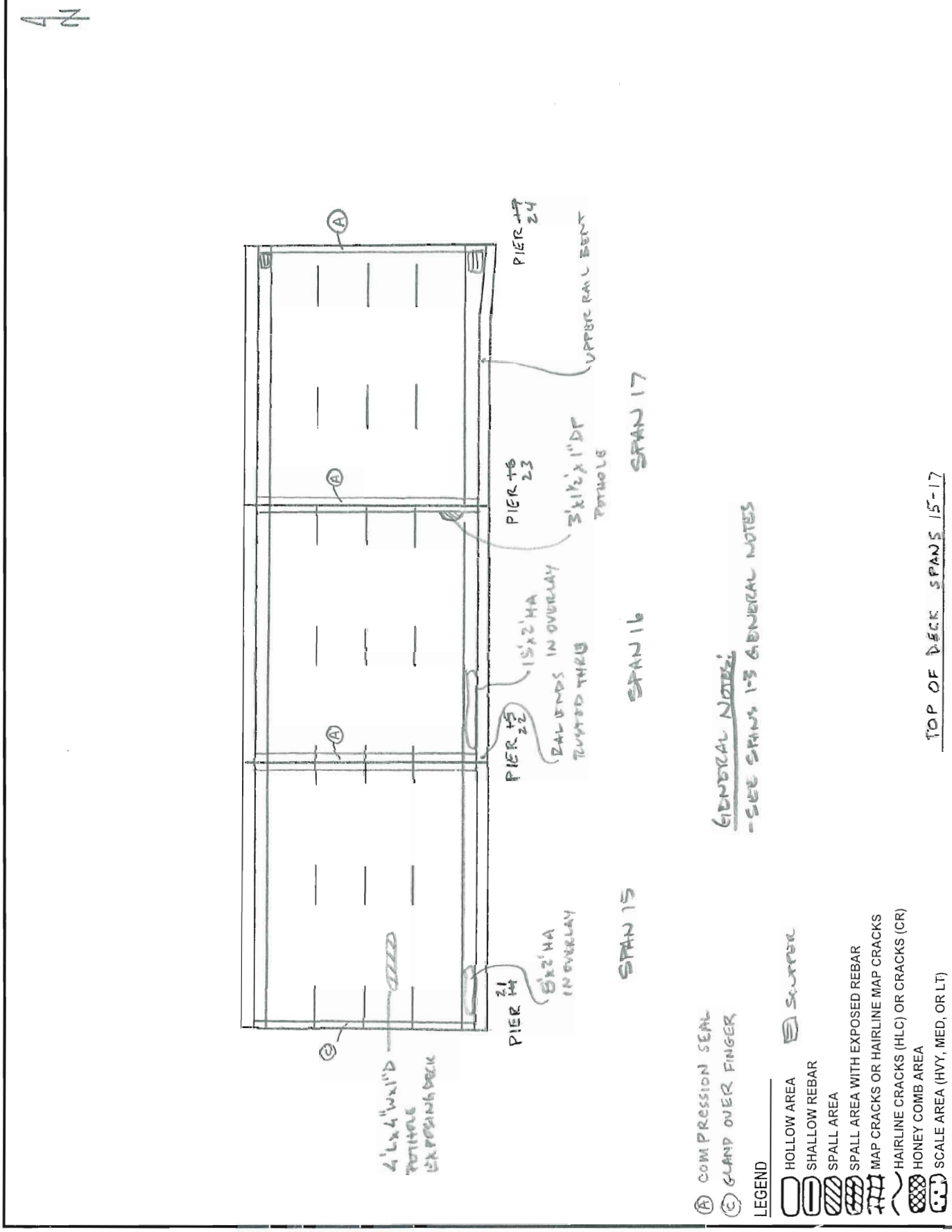
TOP OF DECK SPANS ~~13-14~~ 12-14

© GLAND OVER FINGER

LEGEND
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)
- SLOPPER

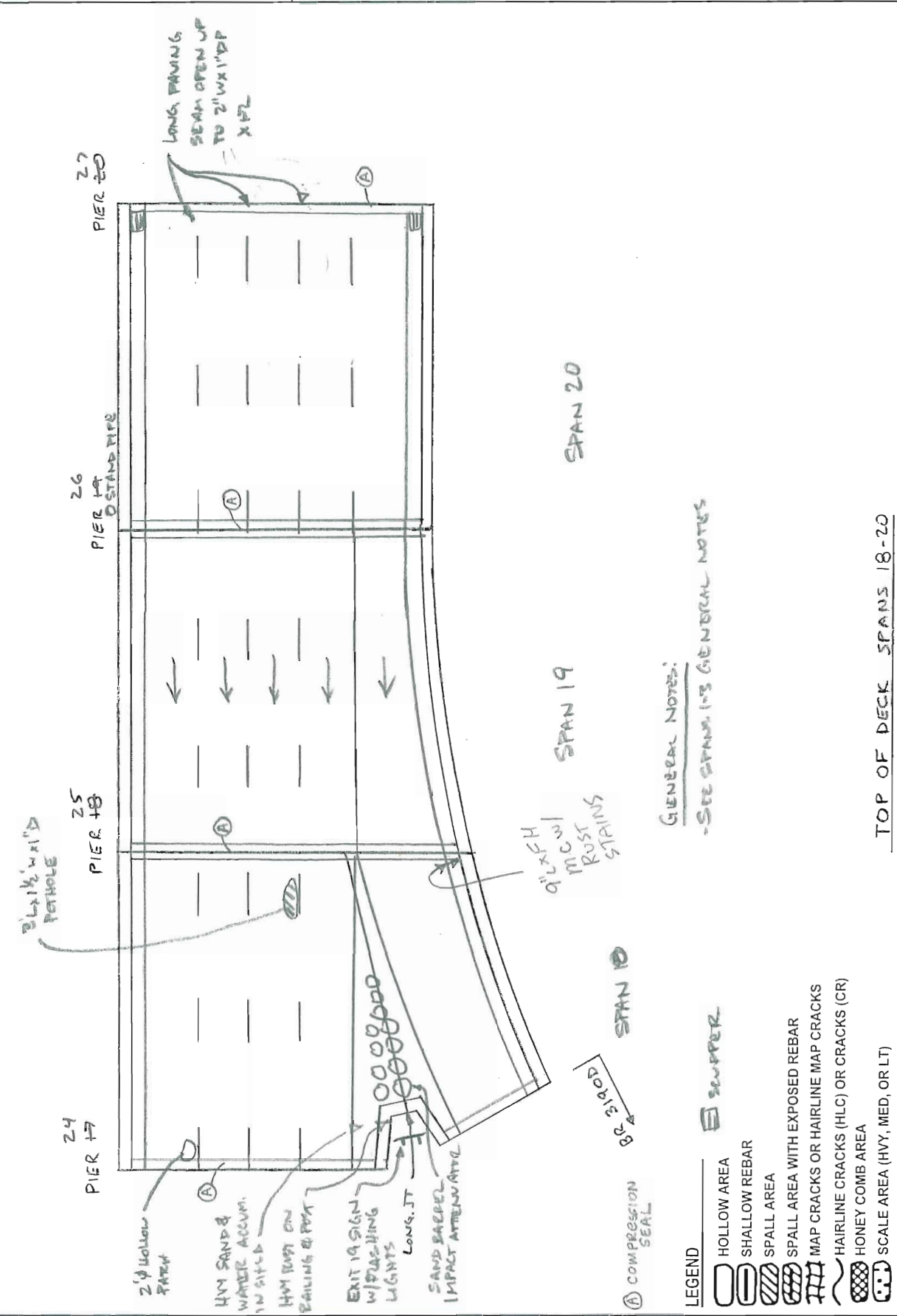
FIELD NOTES

FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/17, 30/06	SHEET 47
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW, CL	



FIELD NOTES

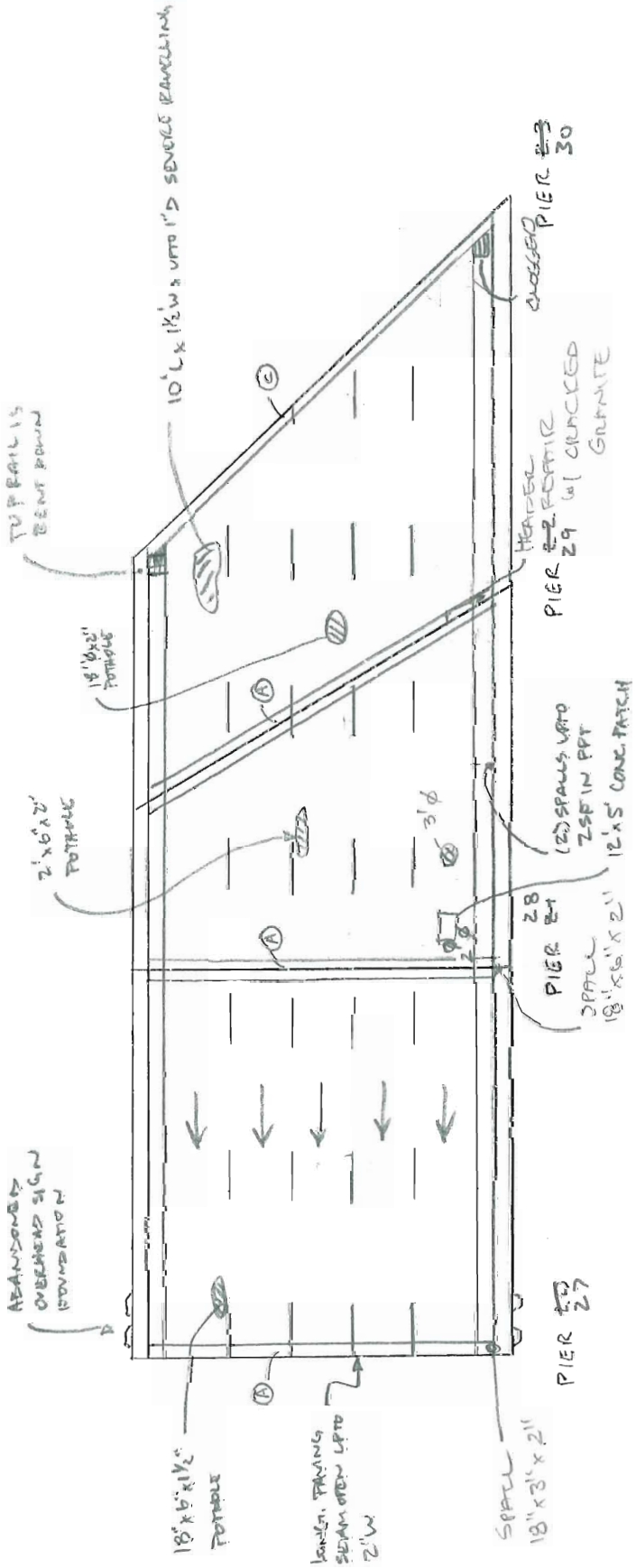
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/18, 30/06	SHEET 48
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW TDG, SW



FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/31/06	SHEET 49
CREW PDG, SWCL	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



GENERAL NOTES:
-SEE SPANS 1-3 GENERAL NOTES

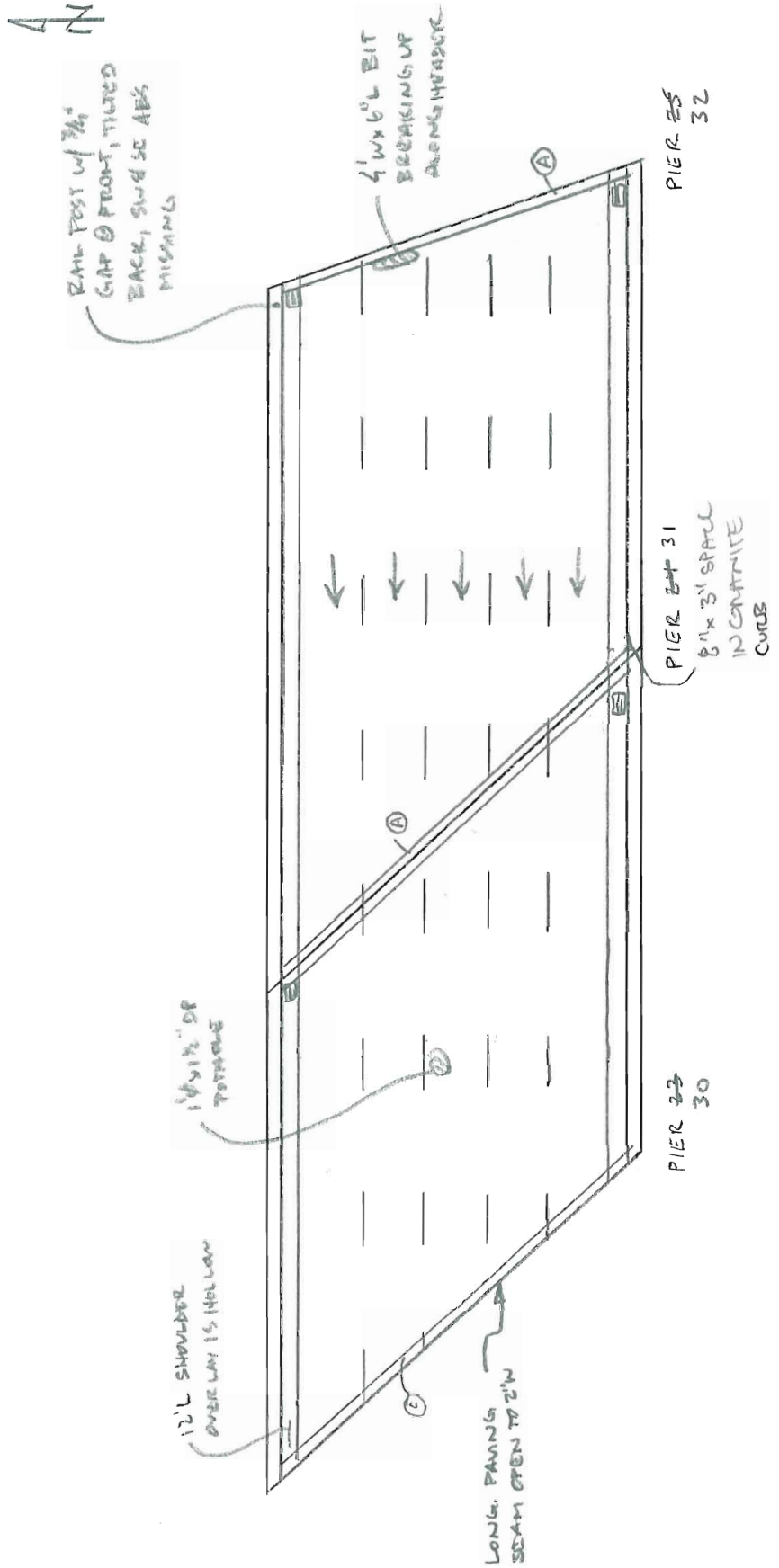
TOP OF DECK SPANS 21-23

LEGEND
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

(A) COMPRESSION SEAL
(B) GLAND OVER FINGER
(E) SCUPPER

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/31/06	SHEET 50
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW, CL	



GENERAL NOTES:
- SEE SPANS 1-3 GENERAL NOTES

TOP OF DECK SPANS 24 & 25

Ⓐ COMPRESSION SEAL
Ⓒ GLAND OVER FINGER

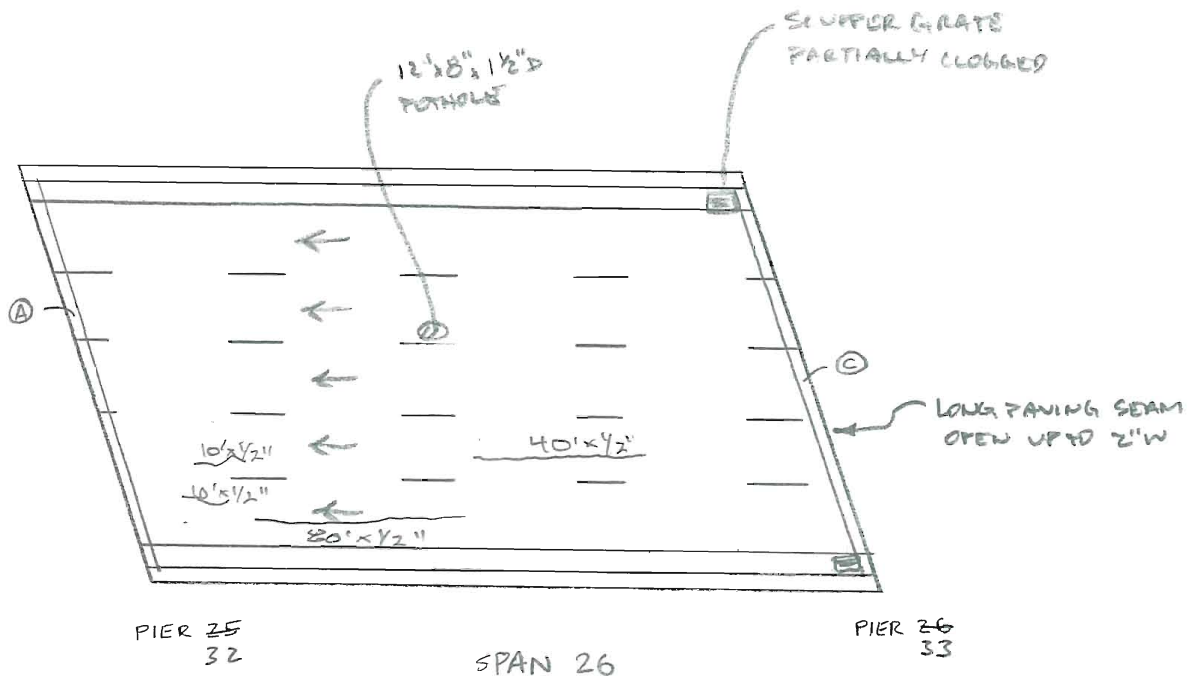
LEGEND
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

JOB NO. 0156EXT
DATE 10/31/06
CREW PDG, SW, CL

BRIDGE NO. 31918
SHEET 51



A COMPRESSION SEAL
C GLAND OVER FINGER

LEGEND

- HOLLOW AREA
- SCUPPER
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

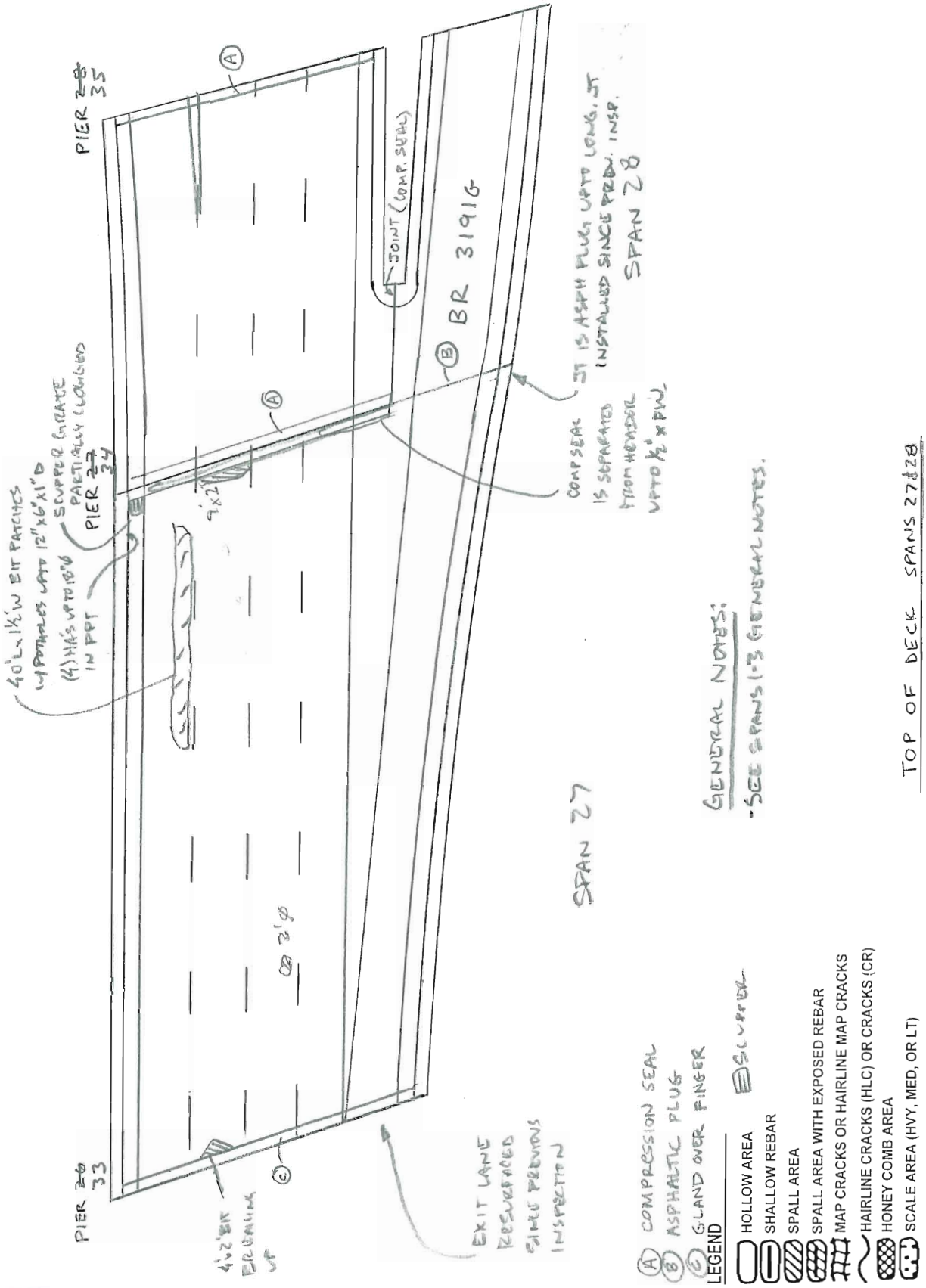
GENERAL NOTES:

- SEE SPANS 1-3 GENERAL NOTES

TOP OF DECK SPAN 26

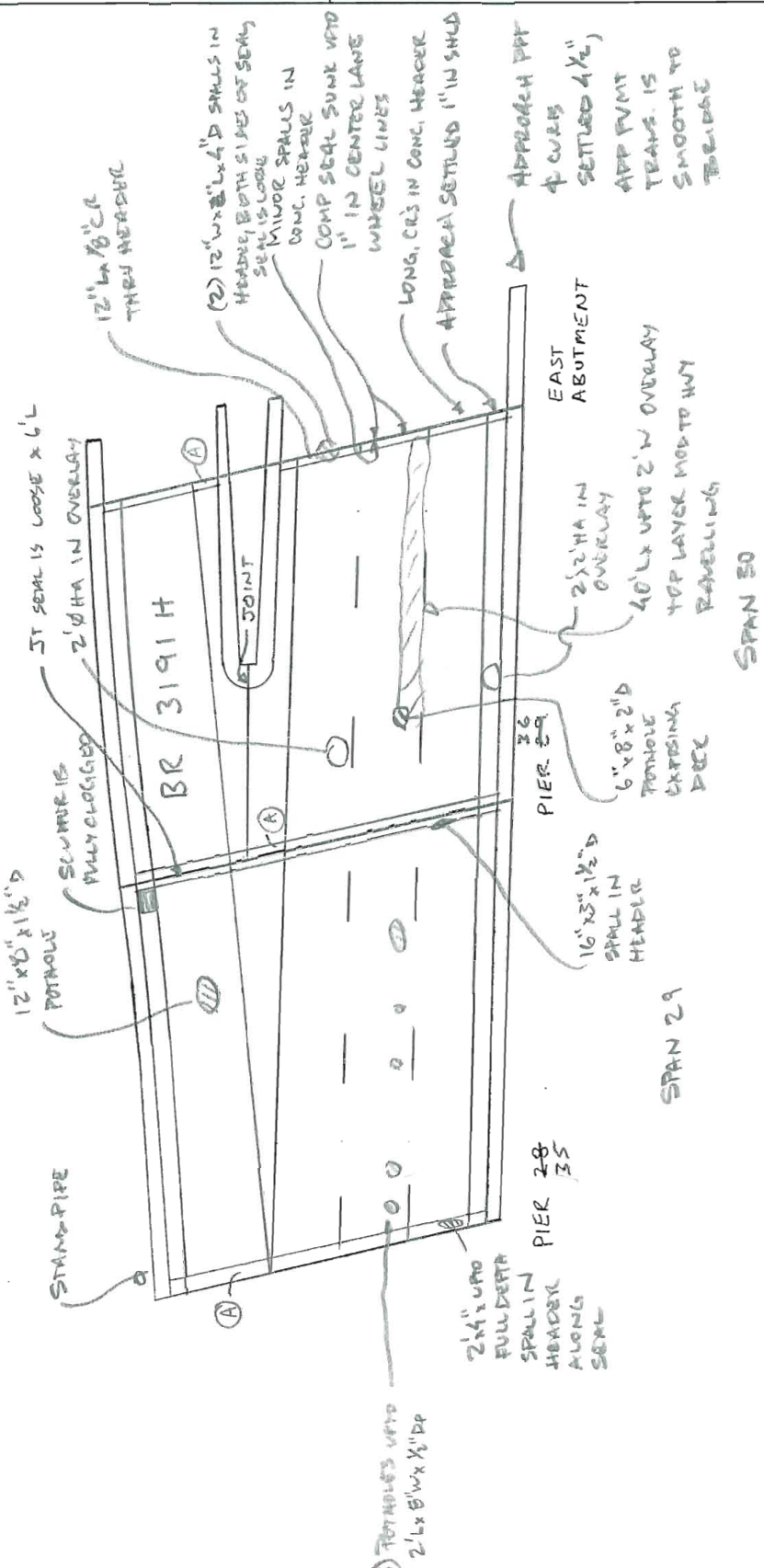
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/18, 31/06	SHEET 52
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW, CL	



FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/18, 31/06	SHEET 53
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW TDG, SW, CL	



GENERAL NOTES:
- SEE SPANS 1-3 GENERAL NOTES.

TOP OF DECK SPANS 29 & 30

SUMMARY TABLE
DRAINAGE PIPE AND STAND PIPE DETERIORATION

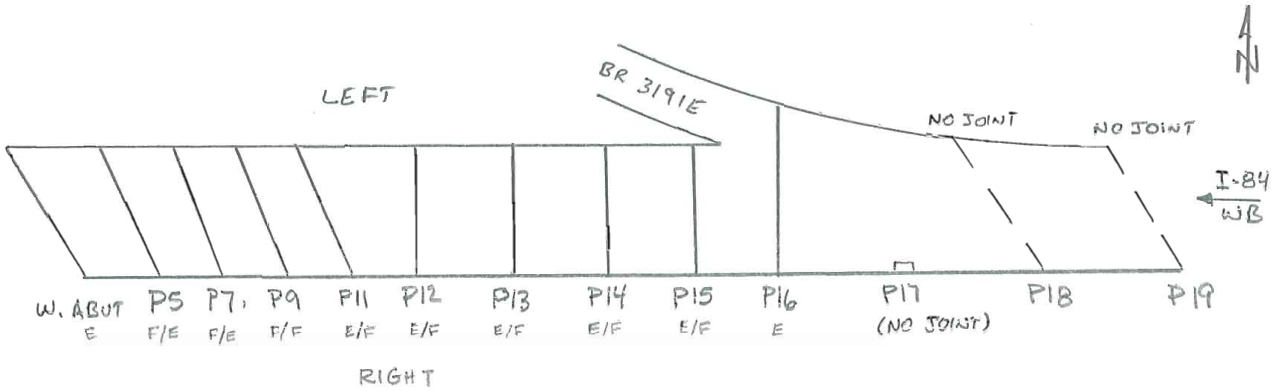
BRIDGE NUMBER	PIER NUMBER	ELEVATION	COLUMN NUMBER	DRAINAGE/STAND PIPE CONDITION
3191A	3	WEST	2	32' long x 8" diameter PVC drain pipe, disconnected section at column.
3191A	6	WEST	2	Lower 8' of corrugated flex pipe disconnected at bottom end.
3191B	9	WEST	1	10' long x 8" diameter, good condition
3191A	10	EAST	2	Stand pipe in good condition.
3191B	11	WEST	1	Stand pipe in good condition.
3191A	12	WEST	2	70' long x 8" wide diameter drain pipe with 12' of flex type at top. 2 brackets missing on column at middle.
3191B	12	WEST	1	40' long x 8" diameter, good condition, broken brackets replaced
3191A	14	WEST	2	70' x 8" diameter drain pipe with 50' of flex type at top. 4' long missing section of downspout at top.
3191B	14	WEST	1	30' long x 8" diameter, 4 broken straps
3191A	15	WEST	2	70' long x 8" wide diameter drain pipe with 50' flex type. Pipe is cracked and disconnected at joint between original pipe and flex pipe, near top. Also, (3) broken straps on column.
3191B	15	WEST	1	40' long x 8" diameter, good condition
3191A	16	WEST	1	70' long x 8" diameter drain pipe with 15'+/- of flex type. Flex pipe cracked at top connection to fiberglass pipe. There are 5 broken straps on the column connection of the downspout.
3191A	16	WEST	2	70' long x 8" diameter drain pipe with 20' +/- of flex type at bottom. There is 12' +/- of missing flex pipe at the top. Also, the pipe is not fully connected (with a gap) at the top horizontal portion.
3191B	16	WEST	1	40' long x 8" diameter, 5 broken straps
3191B	16	WEST	2	±35' missing downspout below elbow
3191A	17	WEST	N/A	70' long x 8" diameter drain pipe with 10' +/- of flex type at top. The downspout clamp is not bolted to the column, near the middle.
3191A&B	17	EAST	N/A	Fire stand pipe in good condition.
3191A	18	WEST	2	90' long x 8" diameter PVC drain pipe. 35' +/- of flex pipe missing in middle.
3191B	18	EAST	1	50' long x 8" diameter, downspout disconnected at lower elbow
3191A	19	WEST	2	80' long x 8" diameter drain pipe with 4' +/- of flex type at top.
3191B	19	WEST	1	50' long x 8" diameter, Collar is hanging, missing (1) bolt near top.
3191A	20	WEST	N/A	Missing clamp bolt near top connection.
3191A	21	WEST	1	70' long x 8" diameter, good condition
3191A	21	WEST	2	80' long x 8" diameter PVC drain. Missing 3 braces.
3191B	21	WEST	1	20' long x 8" diameter, good condition
3191B	21	WEST	2	40' long x 8" diameter, downspout torn at flex elbow
3191A	23	WEST	1	75' long x 8" diameter drain pipe in good condition.
3191A	23	WEST	2	75' long x 8" diameter drain pipe in good condition.
3191A	24	WEST	1	80' long x 8" diameter drain pipe. Downspout cracked at clean out. Also, base of scupper has fallen out.
3191A	24	WEST	2	80' long x 8" diameter pipe with moderate rust at middle section.
3191A	24	EAST	1	Scupper clean out has fallen out, 18" long hole
3191B	24	WEST	1	40' long x 8" diameter, heavy rust at bottom 6'
3191B	24	WEST	2	40' long x 8" diameter, good condition
3191A	26	WEST	1	70' long x 8" diameter drain pipe with 20'+/- flex type.

SUMMARY TABLE
DRAINAGE PIPE AND STAND PIPE DETERIORATION

BRIDGE NUMBER	PIER NUMBER	ELEVATION	COLUMN NUMBER	DRAINAGE/STAND PIPE CONDITION
3191A	26	EAST	1	Stand pipe in good condition.
3191A	27	WEST	1	70' long x 8" diameter drain pipe with 20' +/- flex type.
3191A	27	WEST	2	70' long x 8" diameter drain pipe with 20' +/- flex type. (1) bracket missing.
3191B	27	WEST	1	30' long x 8" diameter, good condition
3191B	27	WEST	~~2~~ 3	30' long x 8" diameter, two brackets with loose nuts
3191A	29	WEST	2	90' long x 8" diameter drain pipe with 5' +/- flex at top. Flex pipe is cracked at connection to fiberglass pipe near top.
3191A	30	WEST	1	75' long x 8" diameter drain pipe with 15' +/- flex at top.
3191A	30	WEST	2	80' long x 8" diameter drain pipe with 25' +/- flex at top.
3191B	30	WEST	1	50' long x 8" diameter, lower elbow cracked
3191B	30	WEST	~~2~~ 4	50' long x 8" diameter, upper and lower elbows cracked, bracket cracked through
3191A	31	WEST	1	85' long x 8" diameter drain pipe with 15' flex at top.
3191A	31	WEST	2	85' long x 8" diameter drain pipe with 20' flex type at top and 15' flex at bottom. Fiberglass downspout pipe and collar is cracked at connection to scupper.
3191B	31	WEST	1	40' long x 8" diameter, good condition
3191B	31	WEST	2	40' long x 8" diameter, good condition
3191A	32	WEST	1	75' long x 8" diameter drain pipe with 15' +/- flex at top.
3191A	32	EAST	2	75' long x 8" diameter flex type drain pipe. Abandoned scupper on north face.
3191B	32	WEST	1	40' long x 8" diameter, lower elbow cracked
3191B	32	WEST	2	40' long x 8" diameter, good condition
3191A	33	WEST	1	60' long x 8" diameter drain pipe with 15' flex at top.
3191A	33	WEST	2	60' long x 8" diameter drain pipe with 15' flex at bottom.
3191B	33	WEST	N/A (north)	40' long x 8" diameter, good condition
3191B	33	WEST	N/A (south)	40' long x 8" diameter, good condition
3191A	34	WEST	1	50' long x 8" diameter drain pipe with 8' flex at top and bottom .
3191A	34	WEST	2	50' long x 8" diameter drain pipe with 8' flex at top and bottom .
3191B	34	WEST	N/A (north)	40' long x 8" diameter, good condition
3191A&B	35	EAST	1	Stand pipe in good condition.
3191A	36	WEST	1	Clean out cover is missing
3191B	36	WEST	1	50' long x 8" diameter, pipe leaks onto pier base through bolt hole at elbow
3191A	37	WEST	1	110' long x 8" diameter drain pipe with 15' flex type between horizontal and vertical sections.
3191A	40	SOUTH	2	75' long x 8" diameter drain pipe with 30' flex type; 10' +/- missing section of flex pipe in middle and a missing extension near the bottom (south face).
3191A	43	WEST	3	40' long x 8" diameter drain pipe in good condition. Missing extension at the bottom. Water is not directed away from the pier on the south side causing embankment erosion.
3191A	43	EAST	3	40' long stand pipe in good condition (attached to 03191I).
3191A	45	WEST	N/A	45' long x 8" diameter drain pipe in good condition.
3191A	46	WEST	N/A	Pipe misaligned, near top.
3191A	46	EAST	N/A	10" x 6" cut section, near bottom of pipe.

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/17, 30/06	SHEET 56
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW, CL



E = EXPANSION
F = FIXED

LOCATION	WINTER MEASUREMENT < 50° F LEFT	RIGHT	TEMP L	TEMP R	DATE L	DATE R	SUMMER MEASUREMENT > 50° F LEFT	RIGHT	TEMP	DATE	JOINT TYPE
W. ABUT	1 15/16	1 1/2	55°	45°	10/30	10/17					COMP SEAL
PIER 5	1 1/8	1 1/4	55°	45°	10/30	10/17					↓
PIER 7	1 1/2	1 7/16	55°	45°	10/30	10/17					↓
PIER 9	9/16	1 1/4	55°	45°	10/30	10/17					↓
PIER 11	2 1/4	1 7/8	55°	45°	10/30	10/17					↓
PIER 12	3 11/16 **	1 7/16 *	55°	45°	10/30	10/17					ASPH PLUG
PIER 13	4 3/8 **	3 13/16 **	55°	45°	10/30	10/17					↓
PIER 14	3 3/8 **	1 1/4 *	55°	45°	10/30	10/17					↓
PIER 15	1 *	1 7/16 *	55°	45°	10/30	10/17					↓
PIER 16	4 9/16	2 3/4	55°	45°	10/30	10/17					GLAND WEB PLUGGED
PIER 17	NO JOINT						NO JOINT				
PIER 18	NO JOINT						NO JOINT				
PIER 19	NO JOINT						NO JOINT				

GENERAL NOTES

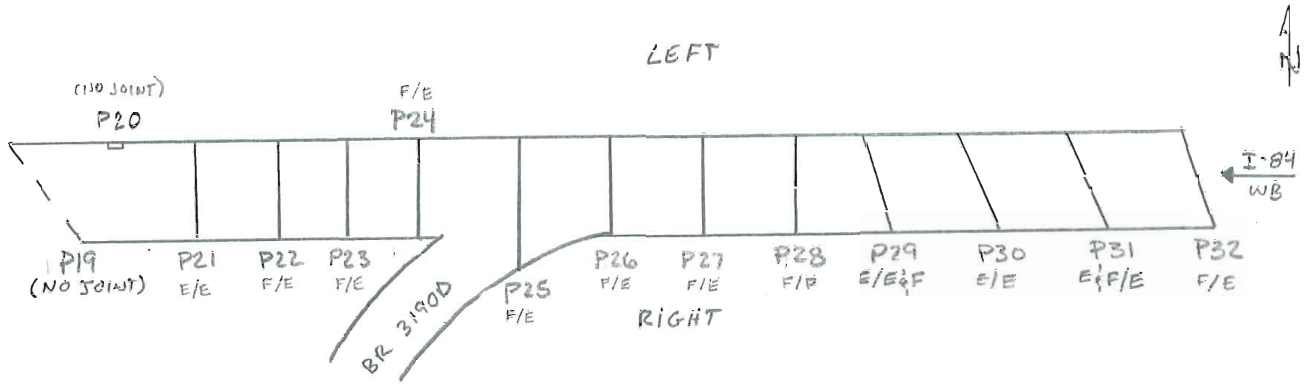
* MEASURED ON OUTSIDE OF PPT DUE TO JT SEAL

** MEASURE OUT TO OUT OF CHAMFER DUE TO JT SEAL

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/17, 10/30/06	SHEET 57
CREW PDG, SW, CL	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



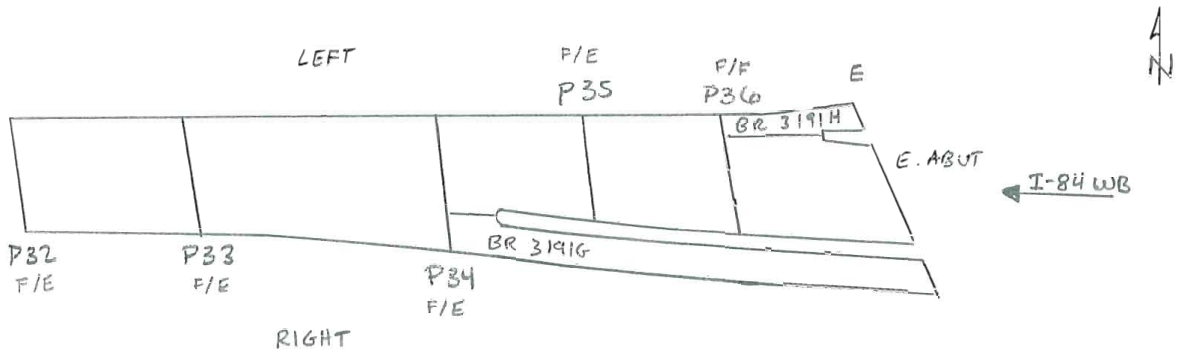
E = EXPANSION
F = FIXED

LOCATION	WINTER MEASUREMENT < 50° F LEFT	RIGHT	TEMP L	TEMP R	DATE L	DATE R	SUMMER MEASUREMENT > 50° F LEFT	RIGHT	TEMP	DATE	JOINT TYPE
PIER 20	NO	JOINT					NO	JOINT			
PIER 21	4 1/8	3 3/8	55°	45°	10/30	10/17					GLAND OVER FINGER
PIER 22	1 1/2	1 3/8	55°	45°	10/30	10/17					COMP SEAL
PIER 23	13/16	3/8	55°	45°	10/30	10/17					
PIER 24	1 5/16	2	55°	45°	10/30	10/17					
PIER 25	1 13/16	2 7/16	55°	45°	10/31	11/20					
PIER 26	2 1/8	1 11/16	55°	50°	10/30	11/1					
PIER 27	2	1 1/2"	55°	50°	10/30	11/1					
PIER 28	1 7/8	1 5/16"	60°	50°	10/31	11/1					
PIER 29	1 13/16	1 5/8"	60°	50°	10/31	11/1					COMP SEAL
PIER 30	2 9/16	2"	60°	50°	10/31	11/1					GLAND OVER FINGER
PIER 31	1 1/4	1 1/16"	60°	50°	10/31	11/1					COMP SEAL
PIER 32	1 1/2	1 1/4"	60°	50°	10/31	11/1					COMP SEAL

GENERAL NOTES

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/18/06	SHEET 58
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW FDG, SW



E = EXPANSION
F = FIXED

LOCATION	WINTER MEASUREMENT < 50° F LEFT	RIGHT	TEMP L	TEMP R	DATE L	DATE R	SUMMER MEASUREMENT > 50° F LEFT	RIGHT	TEMP	DATE	JOINT TYPE
PIER 33	3 7/16	2 1/4"	60°	50°	10/31	11/1					GLAND OVER FINGER
PIER 34	2 1/16	1"	60°	50°	10/31	11/1					COMP SEAL
PIER 35	9/16	5/16	60°	65°	10/31	10/18					↑
PIER 36	5/8	5/16	60°	65°	10/31	10/18					↓
E. ABUT	7/8	1 1/16	45°	65°	11/20	10/18					COMP SEAL

GENERAL NOTES

REGULAR INSPECTION [X]
Date: 09 / 25 / 06

SUMMER / WINTER JOINT MEASUREMENTS [ ]
Summer 20 __ __ Winter 20 __ __

JOINT MEASUREMENTS

Form BRI-17, Rev. 9/03

Measurements Taken By: SW

Measurements Reviewed By: PG

Bridge No.: 3191B I-84 WB over Rte 8, Naugatuck River **Town:** Waterbury

Deck Joint Location	Deck Joint Type[1]	Effect Span[2] (ft.)	Winter Measurements Temp °F	Winter Date: 10/6/06 Left (in.)	Winter Right (in.)	Summer Measurements Temp °F	Summer Date: 9/14/04 Left (in.)	Summer Right (in.)	Differential Movements Actual Left (in.)	Actual Right (in.)	by Formula	Comments	Difference Between Actual & Calc'd Mov't Left (in.)	Right (in.)
W Abut -L	comp	57.0	55	1-15/16		75	1-14/16		- 1/16		- 1/16	Exp	-0	
W Abut -R	comp	57.0	45		1- 8/16	75		1- 6/16		- 2/16	- 2/16	Exp		-0
Pier 5-L	comp	79.0	55	1- 2/16		75	1		- 2/16		- 2/16	Fixed/Exp	0	
Pier 5-R	comp	79.0	45		1- 4/16	75		1		- 4/16	- 3/16	Fixed/Exp		1/16
Pier 7-L	comp	60.0	55	1- 8/16		75	1- 8/16		0		- 1/16	Fixed/Exp	- 1/16	
Pier 7-R	comp	60.0	45		1- 7/16	75		1- 8/16		1/16	- 2/16	Fixed/Exp		- 3/16
Pier 9-L	comp	0.0	55	9/16		75	10/16		1/16		0	Fixed/Fixed	- 1/16	
Pier 9-R	comp	0.0	45		1- 4/16	75		1- 5/16		1/16	0	Fixed/Fixed		- 1/16
Pier 11-L	comp	60.0	55	2- 4/16		75	2- 4/16		0		- 1/16	Exp/Fixed	- 1/16	
Pier 11-R	comp	60.0	45		1-14/16	75		2		2/16	- 2/16	Exp/Fixed		- 4/16
Pier 12-L	plug	84.0	55	3-11/16		75	2- 7/16		-1 4/16		- 2/16	Exp/Fixed*	1 2/16	
Pier 12-R	plug	84.0	45		1- 7/16	75		1- 7/16		0	- 3/16	Exp/Fixed		- 3/16
Pier 13-L	plug	84.0	55	4- 6/16		75	2- 2/16		-2 4/16		- 2/16	Exp/Fixed*	2 2/16	
Pier 13-R	plug	84.0	45		3-13/16	75		1-10/16		-2 3/16	- 3/16	Exp/Fixed*		2
Pier 14-L	plug	75.0	55	3- 6/16		75	1- 3/16		-2 3/16		- 2/16	Exp/Fixed*	2 1/16	
Pier 14-R	plug	75.0	45		1- 4/16	75		1- 2/16		- 2/16	- 3/16	Exp/Fixed		- 1/16
Pier 15-L	plug	84.0	55	1		75	15/16		- 1/16		- 2/16	Exp/Fixed	- 1/16	
Pier 15-R	plug	84.0	45		1- 7/16	75		1- 5/16		- 2/16	- 3/16	Exp/Fixed		- 1/16
Pier 16-L	g/f	317.0	55	4- 9/16		75	4- 5/16		- 4/16		- 8/16	Exp	- 4/16	
Pier 16-R	g/f	317.0	45		2-12/16	75		4- 6/16		1 10/16	- 12/16	Exp		-2 6/16

1. The "Deck Joint Type" should be "plug" for Asphaltic Plug joints, "strip" for Strip Seals, "seg." for Segmental Joints, etc.
2. The "Effective Span" is the length contributing to expansion at the joint. This should be 0 at fixed joints of single span bridges.

Reviewer's Comments: * Measure out to out of chamfer due to joint seal this inspection,
g/f = Gland over finger (Deck Joint Type)
All measurements double checked in the field.

Summer / Winter Joint Measurements: (IF ADDING OR REMOVING, SEND A COPY OF THIS FORM TO SUPERVISOR FOR REVIEW/APPROVAL WITH REASONS FOR CHANGE INDICATED)

[ ] **ADD** TO SUMMER/WINTER LIST SUPERVISOR APPROVAL: _____

[ ] **REMOVE** FROM SUMMER/WINTER LIST MASTER LIST ENTRY: _____

File: 3191Bjnt(S Abut - P16), Revised September 2003

REGULAR INSPECTION [X]
Date: 09/25/06

SUMMER / WINTER JOINT MEASUREMENTS [ ]
Summer 20 __ __ Winter 20 __ __

JOINT MEASUREMENTS

Form BRI-17, Rev. 9/03

Bridge No.: 3191B I-84 WB over Rte 8, Naugatuck River **Town:** Waterbury

Measurements Taken By: SW
Measurements Reviewed By: PG

Deck Joint Location	Deck Joint Type[1]	Effect Span[2] (ft.)	Winter Measurements Temp °F	Winter Date: 10/6/06 Left (in.)	Winter Right (in.)	Summer Measurements Temp °F	Summer Date: 9/14/04 Left (in.)	Summer Right (in.)	Differential Movements Actual Left (in.)	Actual Right (in.)	by Formula	Comments	Difference Between Actual & Calc'd Mov't Left (in.)	Right (in.)
Pier 17									0	0	0	No Joint		
Pier 18									0	0	0	No Joint		
Pier 19									0	0	0	No Joint		
Pier 20									0	0	0	No Joint		
Pier 21 -L	g/f	317.0	55	4- 2/16		75	3-13/16		- 5/16		- 8/16	Exp/Exp	- 3/16	
Pier 21-R	g/f	317.0	45		3- 6/16	75		3		- 6/16	- 12/16	Exp/Exp		- 6/16
Pier 22-L	comp	63.0	55	1- 8/16		75	1- 8/16		0		- 2/16	Fixed/Exp	- 2/16	
Pier 22-R	comp	63.0	45		1- 6/16	75		1- 7/16		1/16	- 2/16	Fixed/Exp		- 3/16
Pier 23-L	comp	63.0	55	13/16		75	14/16		1/16		- 2/16	Fixed/Exp	- 3/16	
Pier 23-R	comp	63.0	45		6/16	75		4/16		- 2/16	- 2/16	Fixed/Exp		-0
Pier 24-L	comp	73.0	55	1- 5/16		75	1- 4/16		- 1/16		- 2/16	Fixed/Exp	- 1/16	
Pier 24-R	comp	73.0	45		2	75		1-12/16		- 4/16	- 3/16	Fixed/Exp		1/16
Pier 25-L	comp	73.0	55	1-13/16		75	1-14/16		1/16		- 2/16	Fixed/Exp	- 3/16	
Pier 25-R	comp	73.0	45		2- 7/16	75		2- 4/16		- 3/16	- 3/16	Fixed/Exp		0
Pier 26-L	comp	73.0	55	2- 2/16		75	2- 2/16		0		- 2/16	Fixed/Exp	- 2/16	
Pier 26-R	comp	73.0	50		1-11/16	75		1-12/16		1/16	- 2/16	Fixed/Exp		- 3/16
Pier 27-L	comp	73.0	55	2		75	1-15/16		- 1/16		- 2/16	Fixed/Exp	- 1/16	
Pier 27-R	comp	73.0	50		1- 8/16	75		1- 8/16		0	- 2/16	Fixed/Exp		- 2/16
Pier 28-L	comp	0.0	60	1-14/16		75	1-14/16		0		0	Fixed/Fixed	0	
Pier 28-R	comp	0.0	50		1- 5/16	75		1- 8/16		3/16	0	Fixed/Fixed		- 3/16

1. The "Deck Joint Type" should be "plug" for Asphaltic Plug joints, "strip" for Strip Seals, "seg." for Segmental Joints, etc.
2. The "Effective Span" is the length contributing to expansion at the joint. This should be 0 at fixed joints of single span bridges.

Reviewer's Comments:

g/f = Gland over finger (Deck Joint Type)

All measurements double checked in the field.

Summer / Winter Joint Measurements: (IF ADDING OR REMOVING, SEND A COPY OF THIS FORM TO SUPERVISOR FOR REVIEW/APPROVAL WITH REASONS FOR CHANGE INDICATED)

[ ] **ADD** TO SUMMER/WINTER LIST SUPERVISOR APPROVAL: _____

[ ] **REMOVE** FROM SUMMER/WINTER LIST MASTER LIST ENTRY: _____

REGULAR INSPECTION [X]
Date: 09/25/06

SUMMER / WINTER JOINT MEASUREMENTS [ ]
Summer 20 __ __ Winter 20 __ __

JOINT MEASUREMENTS

Form BRI-17, Rev. 9/03

Measurements Taken By: SW
Measurements Reviewed By: PG

Bridge No.: 3191B I-84 WB over Rte 8, Naugatuck River **Town:** Waterbury

Deck Joint Location	Deck Joint Type[1]	Effect Span[2] (ft.)	Winter Measurements Temp °F	Winter Date: 10/6/06 Left (in.)	Winter Date: 10/6/06 Right (in.)	Summer Measurements Temp °F	Summer Date: 9/14/04 Left (in.)	Summer Date: 9/14/04 Right (in.)	Differential Movements Actual Left (in.)	Differential Movements Actual Right (in.)	Differential Movements by Formula	Comments	Difference Between Actual & Calc'd Mov't Left (in.)	Difference Between Actual & Calc'd Mov't Right (in.)
Pier 29-L	comp	46.0	60	1-13/16		75	1-13/16		0		- 1/16	Exp/Fixed	- 1/16	
Pier 29-R	comp	46.0	50		1-10/16	75		1-12/16		2/16	- 1/16	Exp/Fixed		- 3/16
Pier 30-L	g/f	156.0	60	2- 9/16		75	2- 5/16		- 4/16		- 3/16	Exp/Exp	1/16	
Pier 30-R	g/f	156.0	50		2	75		1- 7/16		- 9/16	- 5/16	Exp/Exp		4/16
Pier 31-L	comp	109.0	60	1- 4/16		75	1- 3/16		- 1/16		- 2/16	Fixed/Exp	- 1/16	
Pier 31-R	comp	109.0	50		1- 1/16	75		1- 4/16		3/16	- 3/16	Fixed/Exp		- 6/16
Pier 32-L	comp	123.0	60	1- 8/16		75	1- 7/16		- 1/16		- 2/16	Fixed/Exp	- 1/16	
Pier 32-R	comp	123.0	50		1- 4/16	75		1- 4/16		0	- 4/16	Fixed/Exp		- 4/16
Pier 33-L	g/f	158.0	60	3- 7/16		75	3- 6/16		- 1/16		- 3/16	Fixed/Exp	- 2/16	
Pier 33-R	g/f	158.0	50		2- 4/16	75		2- 5/16		1/16	- 5/16	Fixed/Exp		- 6/16
Pier 34-L	plug	80.0	60	2- 1/16		75	2		- 1/16		- 1/16	Fixed/Exp	-0	
Pier 34-R	comp	80.0	50		1	75		1- 5/16		5/16	- 2/16	Fixed/Exp		- 7/16
Pier 35-L	comp	73.0	60	9/16		75	4/16		- 5/16		- 1/16	Fixed/Exp	4/16	
Pier 35-R	comp	73.0	65		5/16	75		4/16		- 1/16	- 1/16	Fixed/Exp		0
Pier 36-L	comp	0.0	60	10/16		75	8/16		- 2/16		0	Fixed/Fixed	2/16	
Pier 36-R	comp	0.0	65		5/16	75		4/16		- 1/16	0	Fixed/Fixed		1/16
E Abut L	comp	73.0	45	14/16		75	1		2/16		- 3/16	Exp	- 5/16	
E Abut R	comp	73.0	65		1- 1/16	75		1- 4/16		3/16	- 1/16	Exp		- 4/16

1. The "Deck Joint Type" should be "plug" for Asphaltic Plug joints, "strip" for Strip Seals, "seg." for Segmental Joints, etc.
2. The "Effective Span" is the length contributing to expansion at the joint. This should be 0 at fixed joints of single span bridges.

Reviewer's Comments:

g/f = Gland over finger (Deck Joint Type)

All measurements double checked in the field.

Summer / Winter Joint Measurements: (IF ADDING OR REMOVING, SEND A COPY OF THIS FORM TO SUPERVISOR FOR REVIEW/APPROVAL WITH REASONS FOR CHANGE INDICATED)

[ ] **ADD** TO SUMMER/WINTER LIST SUPERVISOR APPROVAL: _____

[ ] **REMOVE** FROM SUMMER/WINTER LIST MASTER LIST ENTRY: _____

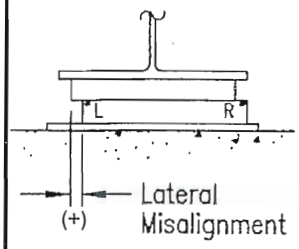
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/18/06	SHEET 62
CREW FDG, SW	

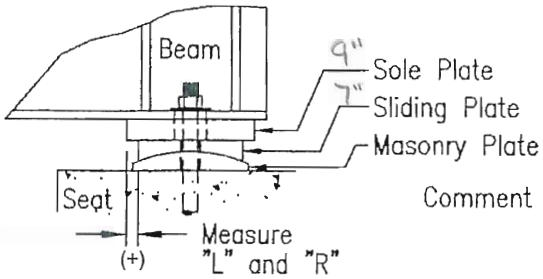
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 1

Substructure Unit = W. ABUT

Temperature = 65 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.*	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
G7	1 5/16	1 5/16	C	+1/16	N	Y	L	
G6	1 1/4	1 3/16	C	0	N	Y	L	
G5	1 1/4	1 5/16	C	0	N	Y	L	
G4	1 1/4	1 5/16	C	+1/16	Y	N	L	NO MVMT SINCE 2004 (50%)
G3	1 1/8	1 1/4	C	+1/16	N	Y	—	MASTIC S. CORNER OVERHANGS FED 5"x7"
G2	3/4	1 1/8	N	+1/16	N	Y	—	
G1	1 1/2	1 3/8	C	+1/8	N	Y	L	

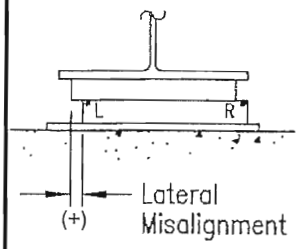
*NOTE THAT +1/8" IS NEUTRAL FOR LAT. MVMT BECAUSE SOLE PL IS 1/4" WIDER THAN SLIDING PL

FIELD NOTES

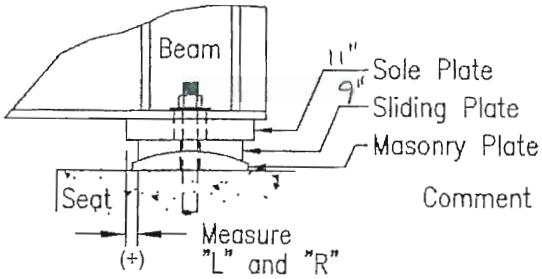
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 11/7/06	SHEET 63
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW TDG, DS, CL

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 2

Substructure Unit = PIER 5

Temperature = 60°F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

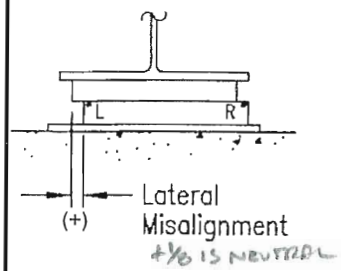
Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
G1	13/16	11/16	E	+1/8	N	N	L	CONTRACTED SINCE 2004 (45°F)
G2	15/16	13/16	E	+1/16	N	Y	L	
G3	1	13/16	E	0	N	Y	L	
G4	13/16	1	E	+1/4	N	N	L	CONTRACTED SINCE 2004 (45°F)
G5	7/8	7/8	E	+1/16	N	Y	L	
G6	15/16	11/16	E	+1/16	N	Y	L	
G7	1 1/4	1 1/4	C	+1/16	N	N	L	CONTRACTED SINCE 2004 (45°F)

FIELD NOTES

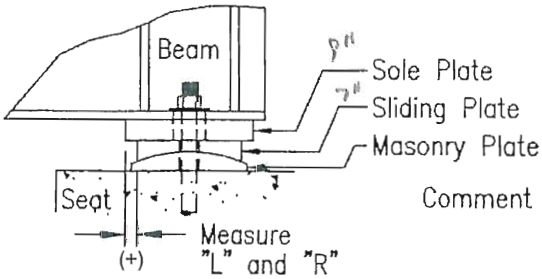
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 11/1/06	SHEET 64
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW

SLIDING BEARING MEASUREMENTS

Form BRd-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 3

Substructure Unit = Pier 7

Temperature = 60 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
G1	1 3/16	15/16	C	+ 3/16	N	Y	L	11/6/06 55°F
G4	11/16	7/8	E	+1/8	N	Y	L	
G7	1 1/8	1	N	+1/16	N	Y	L	

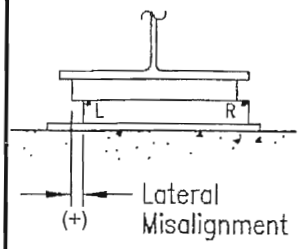
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/24/06	SHEET 65
CREW PG, SW	

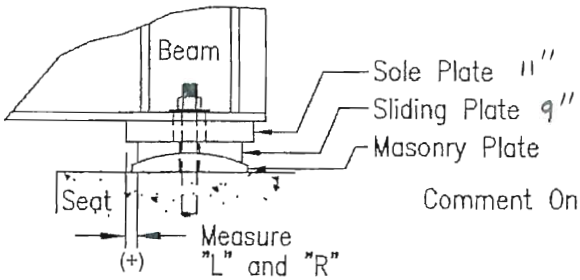
PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 4

Substructure Unit = PIER 11

Temperature = 50 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
1	1 1/4	1 7/16	C	0	N	Y	L	
2	1 1/8	1 1/4	C	0	N	Y	L	
3	1 1/4	1 1/4	C	0	Y	N	L	NO MVMT SINCE 2004 (75°F)
4	1 1/8	1 3/16	C	-1/16	N	Y	L	
5	1 3/16	1 1/4	C	0	Y	N	L	NO MVMT SINCE 2004 (75°F)
6	1 1/16	1 1/4	C	-1/8	N	Y	L	
7	1 1/4	1 3/8	C	0	N	Y	L	

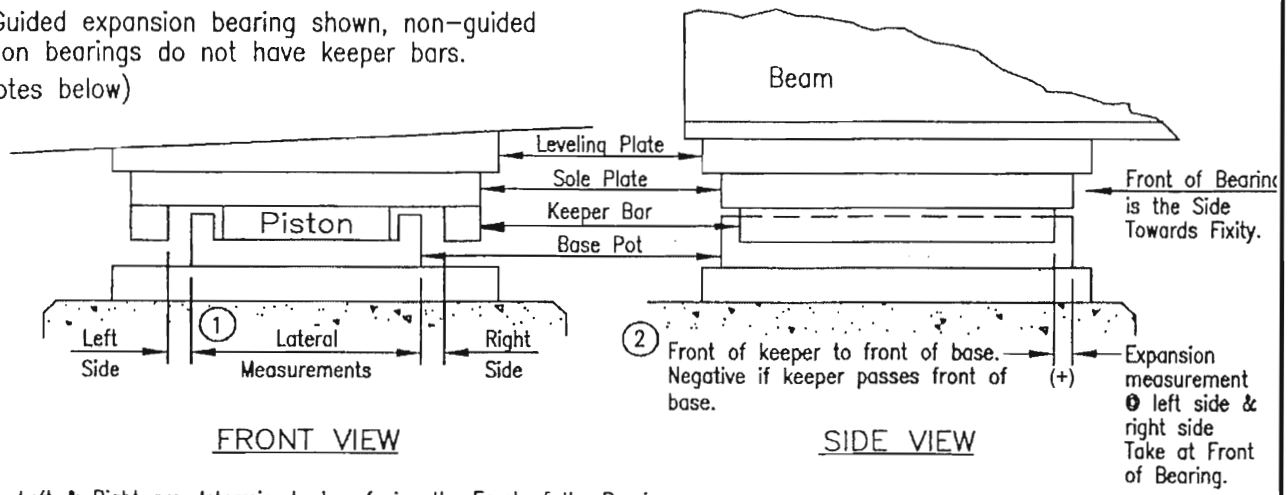
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/26/06	SHEET 66
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW

POT BEARING MEASUREMENTS

Form BRI-16, Rev. 9/97

Note: Guided expansion bearing shown, non-guided expansion bearings do not have keeper bars. (see notes below)



(1) –Left & Right are determined when facing the Front of the Bearing.
–For non-guided bearings, measure from side of sole plate to side of piston @ center line of piston.

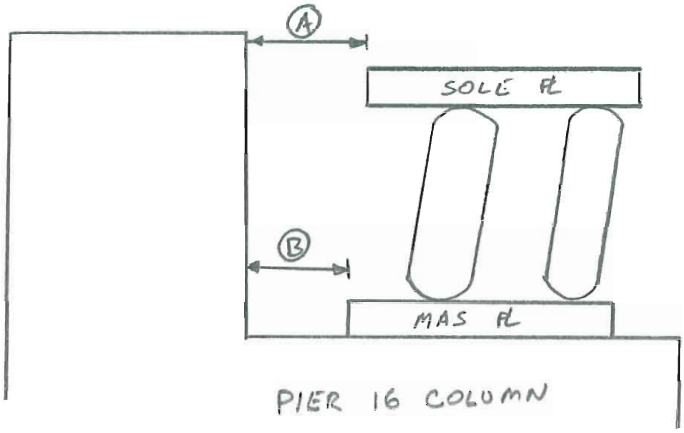
(2) –For non-guided bearings, measure expansion from front of sole plate to front of piston @ center line of bearing.

Span No. & Substructure Unit = SEE BELOW

Temperature = 45 °F

Beam	Expansion			Lateral		Comments
	Exp. Measurement		Side of Brg.	Left	Right	
	L	R	(N,S,E,W)			
	SPAN 7	PIER 14				
C1	1	1 1/16	W	0	3/16	KEEPER = 18" BASE = 16"
C2	℄	7/16	N	1 1/4	1 5/16	NON GUIDED
	SPAN 8	PIER 14				
C1	-	-	-	-	-	FIXED
C2	7/16	5/16	N	3/16	0	KEEPER = 13 3/4" BASE = 12 1/2"
	SPAN 9	PIER 16	10/23/06	TEMP=	70°F	
C1	℄	5/8	W	1 9/16	1 5/16	NONGUIDED
C2	9/16	5/8	W	3/16	5/16	GUIDED KEEPER = 18" BASE = 16"

FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/23/06	SHEET 67
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



SOUTH ELEVATION

TEMP = 50°F

	A		B		
	NORTH	SOUTH	NORTH	SOUTH	LATERAL
G1	5 3/8	5 7/16	5 1/8	5	0
G2	8 5/8	8 3/8	8 1/2	7 11/16	0

NOTES:

@ G1

- NW CORNER BOT FLG TO SOLE PL WELD CRACKED X 6" L
- SW & NE AB NUTS ARE CRACKED

@ G2

- NW AB NUT MISSING
- SE AB NUT 50% SEC. LOSS
- SW & NE AB NUTS ARE CRACKED W/UP TO 50% SEC LOSS

SPAN 10 NESTED ROCKERS AT PIER 16

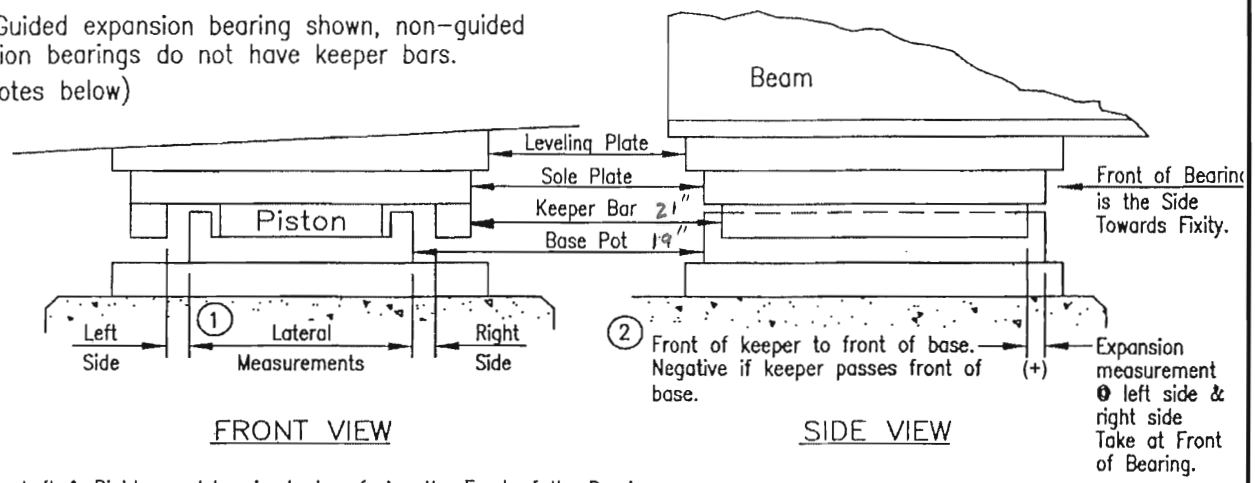
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/23/06	SHEET 68
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW

POT BEARING MEASUREMENTS

Form BRI-16, Rev. 9/97

Note: Guided expansion bearing shown, non-guided expansion bearings do not have keeper bars. (see notes below)



1 –Left & Right are determined when facing the Front of the Bearing.
–For non-guided bearings, measure from side of sole plate to side of piston @ center line of piston.

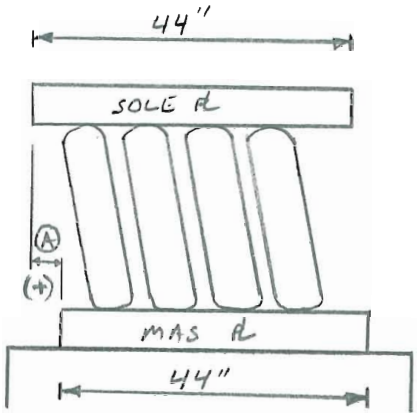
2 –For non-guided bearings, measure expansion from front of sole plate to front of piston @ center line of bearing.

Span No. & Substructure Unit = SPAN 10 @ PIER 16 Temperature = 50 °F

Beam	Expansion			Lateral		Comments
	Exp. Measurement		Side of Brg.	Left	Right	
	L	R	(N,S,E,W)			
FB 1	@ G1					
	1 1/8	1 1/16	S	1/8	1/8	

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/16/06, 10/19/06	SHEET 69
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, CL	



NORTH ELEVATION

TEMP = 60°F

LOCATION	Ⓐ NORTH	Ⓐ SOUTH	COMMENTS
PIER 17, G1	0	1/8"	BOTH S. KEEPER PL'S BROKEN FREE NE KEEPER PL E. WELD CRACKED DUE TO PACK RUST
PIER 18, G1	1/4"	3/16"	NE AB NOT IS CRACKED, S. KEEPER PL WELDS CRACKED 1/4" PACK RUST BTWN S. KEEPER & MAS PL
PIER 19, G2	1/4"	1/4"	

NESTED ROCKERS AT PIERS 17-19

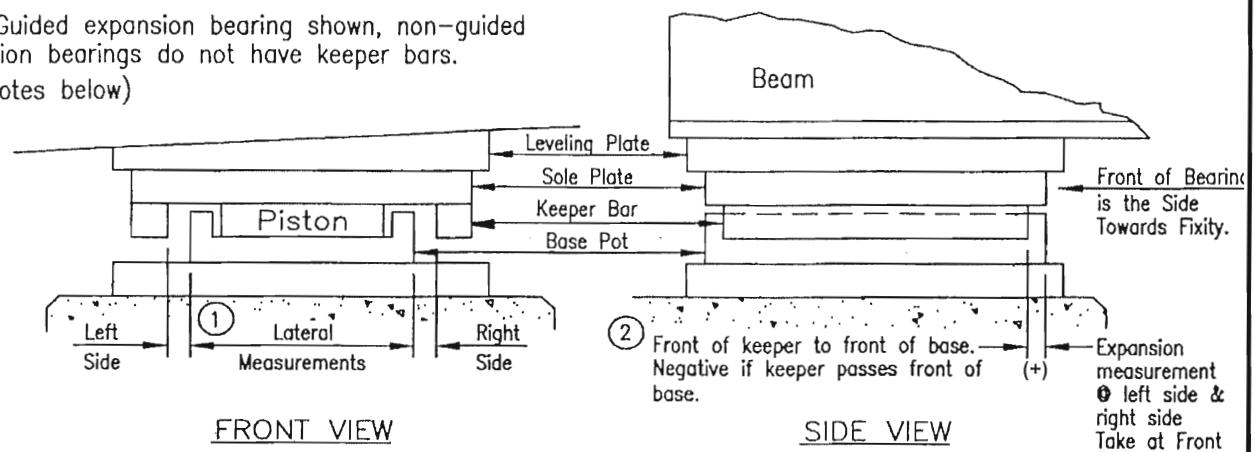
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/16/07	SHEET 70
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW

POT BEARING MEASUREMENTS

Form BRI-16, Rev. 9/97

Note: Guided expansion bearing shown, non-guided expansion bearings do not have keeper bars. (see notes below)



(1) –Left & Right are determined when facing the Front of the Bearing.
–For non-guided bearings, measure from side of sole plate to side of piston @ center line of piston.

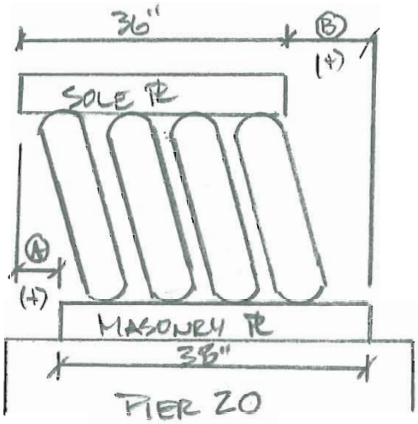
(2) –For non-guided bearings, measure expansion from front of sole plate to front of piston @ center line of bearing.

Span No. & Substructure Unit = SPAN 12 @ PIER 19 Temperature = 60 °F

Beam	Expansion			Lateral		Comments
	Exp. Measurement		Side of Brg.	Left	Right	
	L	R	(N,S,E,W)			
FB13	@ G1					
	1/4	3/8	S	0	1/16	

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/4/06	SHEET 71
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	



PIER 20
NORTH ELEV.

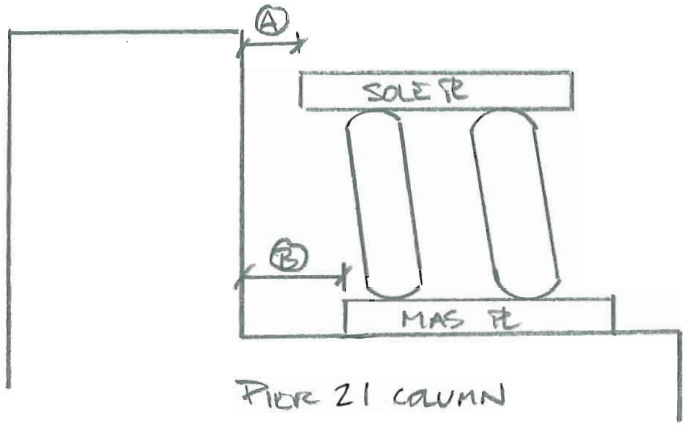
TEMP = 80°F

	NORTH	SOUTH
A	-3/16	1/8
B	1 5/16	1 1/2

GIRDER 1 NEEDED ROCKERS AT PIER 20

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/4/06	SHEET 72
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW



SIDE VIEW

TEMP = 80°F

	A		B		
	NORTH	SOUTH	NORTH	SOUTH	LATERAL
G1	4 3/16	4 1/16	4 11/16	4 7/8	0
G2	1 15/16	1 7/8	2 7/8	2 7/8	0

SPAN 14 NESTED ROCKERS AT PIER 21

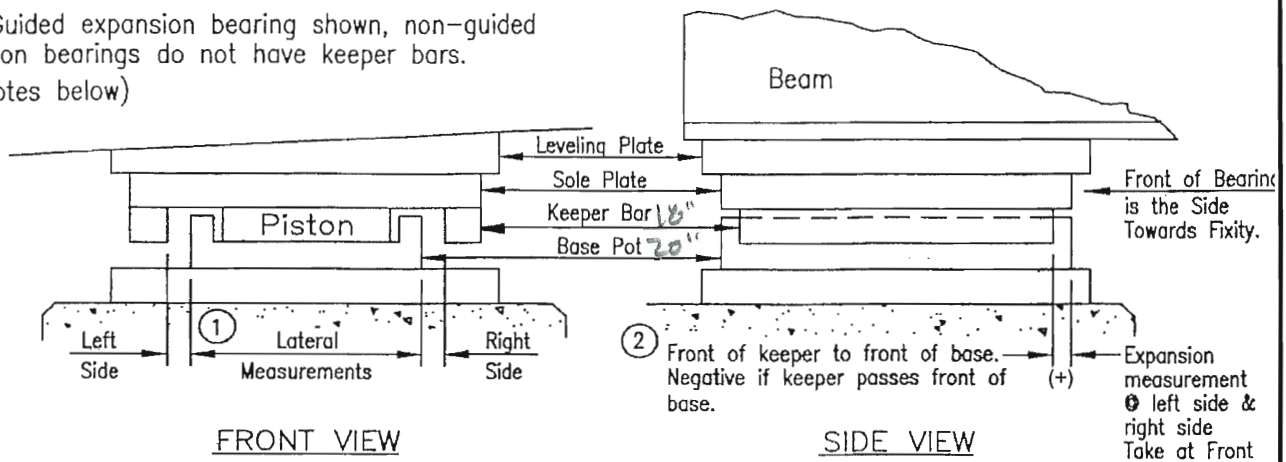
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/4/06	SHEET 73
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW FDG, SW

POT BEARING MEASUREMENTS

Form BRI-16, Rev. 9/97

Note: Guided expansion bearing shown, non-guided expansion bearings do not have keeper bars. (see notes below)



1 –Left & Right are determined when facing the Front of the Bearing.
–For non-guided bearings, measure from side of sole plate to side of piston @ center line of piston.

2 –For non-guided bearings, measure expansion from front of sole plate to front of piston @ center line of bearing.

Span No. & Substructure Unit = SPAN 14 Temperature = 75 °F

Beam	Expansion			Lateral		Comments
	Exp. Measurement		Side of Brg.	Left	Right	
	L	R	(N,S,E,W)			
FB18	@ G1 (PIER 20)					
	1/8	1/4	S	0	0	
FB22	@ G1 (PIER 21)					
	3/16	1/4	S	1/8	1/4	

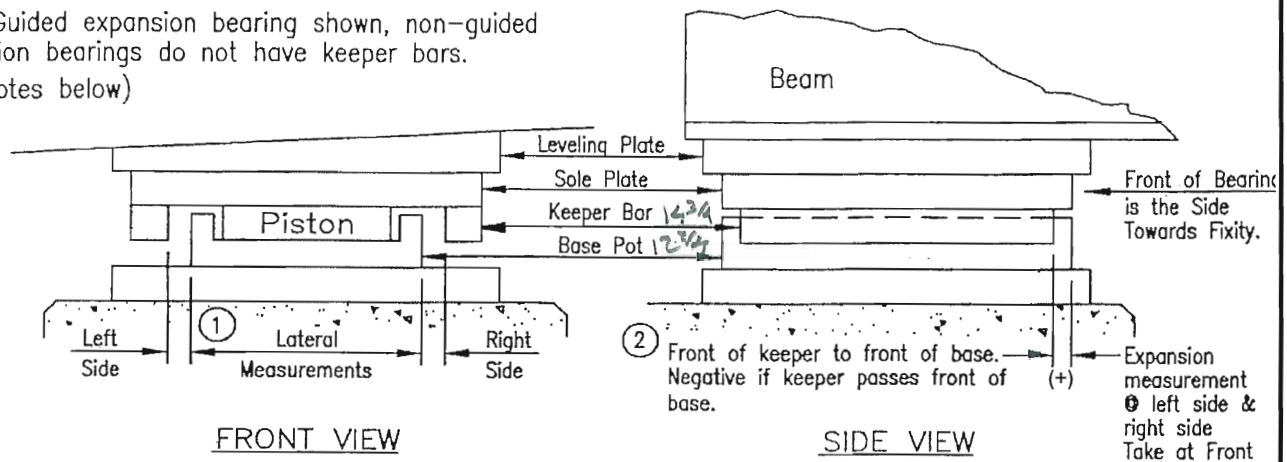
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/4/06	SHEET 74
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW FDG, SW

POT BEARING MEASUREMENTS

Form BRI-16, Rev. 9/97

Note: Guided expansion bearing shown, non-guided expansion bearings do not have keeper bars. (see notes below)



1 –Left & Right are determined when facing the Front of the Bearing.
–For non-guided bearings, measure from side of sole plate to side of piston @ center line of piston.

2 –For non-guided bearings, measure expansion from front of sole plate to front of piston @ center line of bearing.

Span No. & Substructure Unit = SPAN 15 @ PIER 21 Temperature = 75 °F

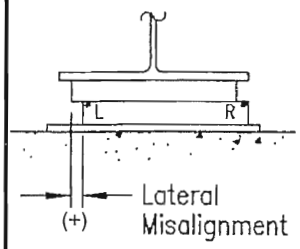
Beam	Expansion			Lateral		Comments
	Exp. Measurement		Side of Brg.	Left	Right	
	L	R	(N,S,E,W)			
CROSS GIRDER						
NORTH	@ ℄	1 1/16	S	1 1/16	1 3/8	UNGUIDED (FOR SPAN & X-GIRDER EXP)
SOUTH	-13/16	-15/16	E	1/8	1/8	BASE POT WELDED TO MASTIC ON E. & W. SIDES ONLY

FIELD NOTES

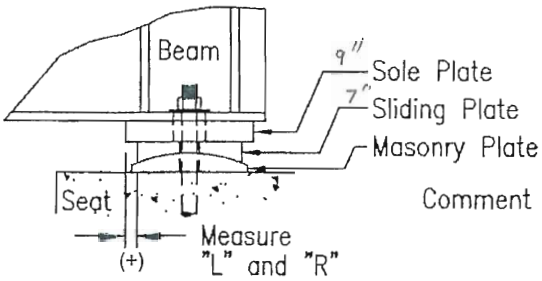
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 9/25/06	SHEET 75
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 18

Substructure Unit = PIER 24

Temperature = 70 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

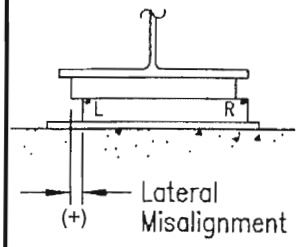
Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
1	NA							ELASTOMERIC
↓								↓
9							NA	
10	1 3/8	1 3/8	C	1/4	N	N	L	
11	1 3/8	1 3/8	C	1/4	N	N	L	
12	1 1/8	1 1/4	C	0	N	N	L	
13	1 1/4	1 1/4	C	1/16	N	N	L	
14	1 1/4	1 3/16	C	1/4	Y	N	H	

FIELD NOTES

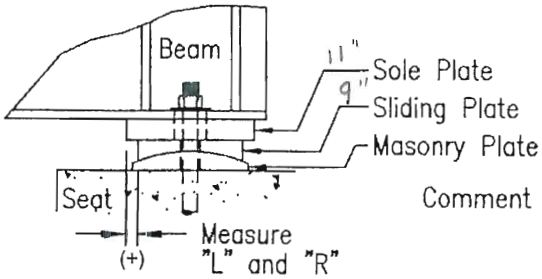
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/2/06	SHEET 76
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW FDG, SW

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 22

Substructure Unit = PIER 29

Temperature = 60 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

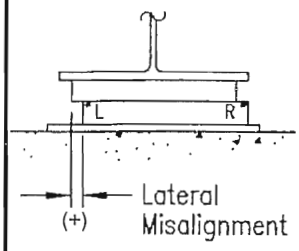
Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
10	1 1/4	1 1/4	C	0	Y	N	M	NO MVMT SINCE 2004 (75°F)
9	1 5/16	1 1/4	C	- 1/16	N	N	L	
8	1 3/16	1 3/16	C	- 1/8	N	N	L	
7	1 1/4	1 1/4	C	- 1/8	N	N	L	
6	1 1/8	1	C	- 1/16	N	N	L	
5	1 1/4	1 5/8	C	+ 1/8	N	N	L	
4	1	1 3/16	C	+ 1/16	Y	N	L	NO MVMT SINCE 2004 (75°F)
3	1 1/8	1 3/16	C	+ 1/16	N	N	L	
2	1 1/16	1	N	+ 1/8	N	N	L	
1	1 1/16	1 13/16	C	+ 1/4	Y	N	H	NO MVMT SINCE 2004 (75°F)

FIELD NOTES

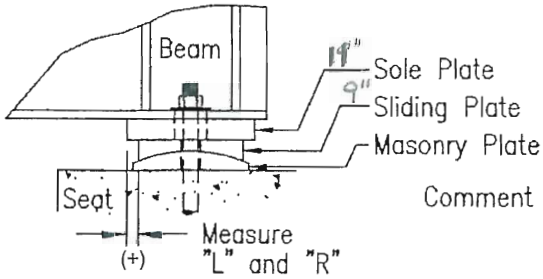
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/3/06	SHEET 77
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW FDG, SW

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 23

Substructure Unit = Pier 29

Temperature = 65 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

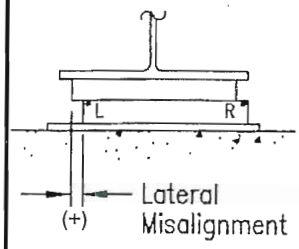
Beam	Movement "L"	Movement "R"	Mode Exp. or Contr.	Lateral Misalign.	Condition Bearing Frozen?	Condition Normal Mov't?	Condition Rust ? H/M/L	Comments
10	1	15/16	N	-1/16	N	N	M	
9	1 1/16	1 1/8	C	+3/16	N	N	L	
8	9/16	7/8	E	0	N	Y	L	SE AB NUT LIFTED 1"
7	N/A							(FIXED) NO SLIDING PL, AB NUTS NOT SNUG
6								
5								
4							N/A	
3	1 1/8	1 1/8	C	-1/8	N	N	L	
2	13/16	15/16	E	0	N	Y	L	
1	1 3/16	1 3/16	C	-1/8	N	N	M	

FIELD NOTES

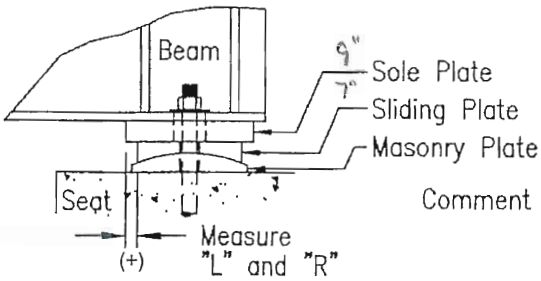
FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/3/06	SHEET 78
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW FDG, SW	

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 23

Substructure Unit = PIER 30

Temperature = 70 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
1	1 5/16	1 1/4	C	-1/16	N	N	M	(A)
2	1	1 1/16	N	0	N	N	L	(A)
3	1 1/8	1	N	0	N	N	—	(A)
4	1 1/16	15/16	N	-1/8	N	N	—	(A)
5	15/16	1 1/16	N	0	N	N	—	(A)
6	1 1/8	1	N	0	N	N	—	(A)
7	5/8	3/4	E	0	N	Y	—	
8	1	1 1/16	N	+1/16	N	N	—	(A)
9	5/8	3/4	E	+1/16	N	Y	L	MAS # OVERHANGS @ N. END ±5"
10	1 3/16	1 3/16	C	+1/16	N	N	M	MAS # OVERHANGS PED @ BACK PWX UPTO 3/4" (A)

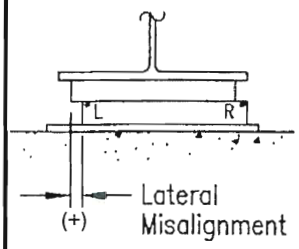
(A) BRGS ARE NEUTRAL OR IN CONT. MODE @ 70°F

FIELD NOTES

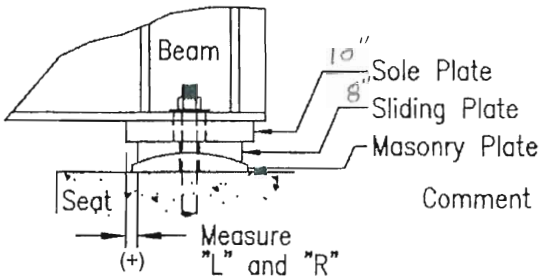
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/2/06	SHEET 79
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW

SLIDING BEARING MEASUREMENTS

Form BRd-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 24

Substructure Unit = PIER 30

Temperature = 60 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

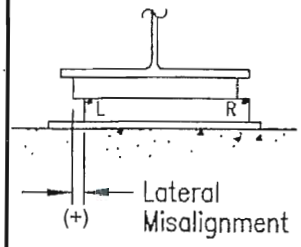
Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
1	1/2	1/2	E	+1/16	N	Y	L	
4	7/16	9/16	E	+1/16	N	Y	L	
8	5/8	9/16	E	-1/16	N	Y	M	

FIELD NOTES

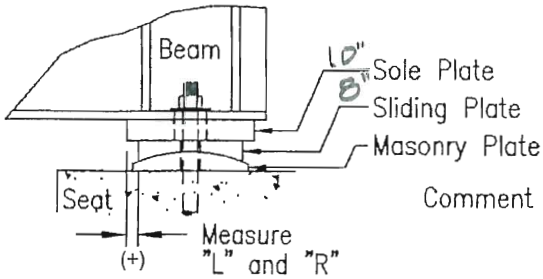
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/2/06	SHEET 80
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 24

Substructure Unit = PIER 31

Temperature = 60 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
1	1 1/8	1 3/16	C	-1/8	N	N	L	
2	1	1	N	0	N	N	L	
3	N/A							FIXED
4								
5								
6							N/A	
7	1 1/8	1 1/8	C	-1/16	N	N	L	N. CORNER OVERHANGS PED 8 1/2" x 7 1/2" W. CORNER " " " 2 1/2" x 2 1/2"
8	1 1/8	1 1/8	C	0	N	N	L	N. CORNER OVERHANGS PED 7 1/2" x 8"

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/30/06	SHEET 81
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW

ROCKER BEARING MEASUREMENTS

Form BRI-15, Rev. 9/97

Span No. = 25

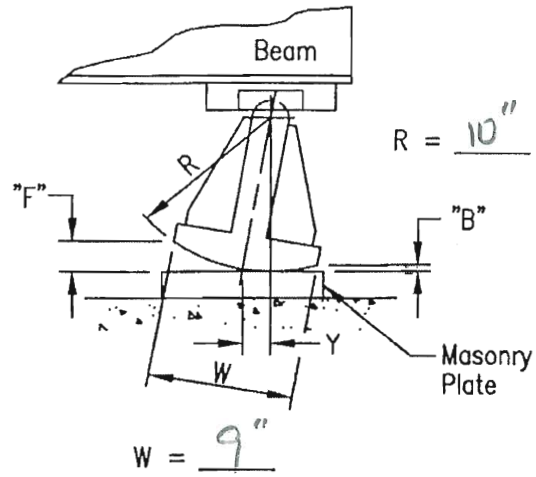
Substructure Unit = PIER 31

Temperature = 55 °F

$\theta = \sin^{-1} (F-B)/W$

$Y = R \tan \theta$

The "Front" of the bearing is the side facing the fixed bearing.



NOTE:

"F" & "B" should be measured at the left side corners of the rocker or on the side closest to to the front face of the substructure on skewed bridges.

Beam	"F"	"B"	Y	Cont. or Exp.	Comments
1	3/4	7/8	-1/8	C	
5	3/4	15/16	-3/16	C	
8	15/16	7/8	+1/16	N	S. AB NUT MISSING

PACK RUST UNDER ROCKER, TYPICAL.

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 11/1/06	SHEET 82
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW

ROCKER BEARING MEASUREMENTS

Form BRI-15, Rev. 9/97

Span No. = 26

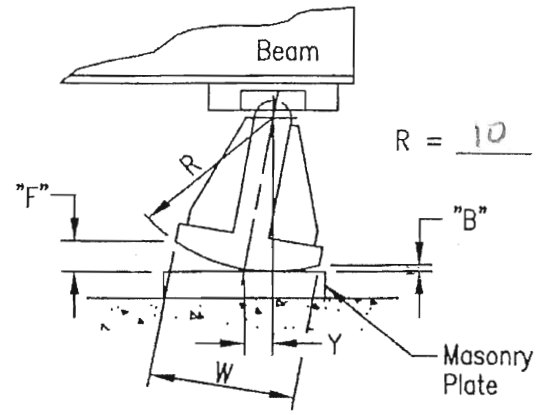
Substructure Unit = Pier 32

Temperature = 60 °F

$\theta = \sin^{-1} (F-B)/W$

$Y = R \tan \theta$

The "Front" of the bearing is the side facing the fixed bearing.



R = 10

W = 9

NOTE:

"F" & "B" should be measured at the left side corners of the rocker or on the side closest to to the front face of the substructure on skewed bridges.

Beam	"F"	"B"	Y	Cont. or Exp.	Comments
1	3/4	3/4	0	N	
4	3/4	7/8	-1/8	C	
8	15/16	7/8	+1/16	N	

PACK RUST UNDER ROCKER, TYPICAL.

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 319/B
DATE 10/31/06	SHEET 83
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW SW, CL, PDG

ROCKER BEARING MEASUREMENTS

Form BRI-15, Rev. 9/97

Span No. = 27

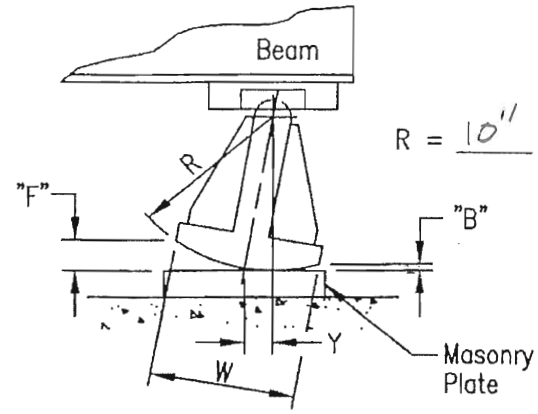
Substructure Unit = Pier 33

Temperature = 55 °F

$\theta = \sin^{-1} (F-B)/W$

$Y = R \tan \theta$

The "Front" of the bearing is the side facing the fixed bearing.



R = 10"

W = 9"

NOTE:

"F" & "B" should be measured at the left side corners of the rocker or on the side closest to to the front face of the substructure on skewed bridges.

Beam	"F"	"B"	Y	Cont. or Exp.	Comments
G1	7/8"	3/4"	+1/8	E	LIGHT TO MOD. RUST ON MAS. PLATE, NE AB SHORT 2 THREADS
G4	11/16"	7/8"	-3/16	C	
G8	3/8"	13/16"	-7/16	C	MISSING AB NUTS (G7 & G9 ALSO MISSING AB NUTS)

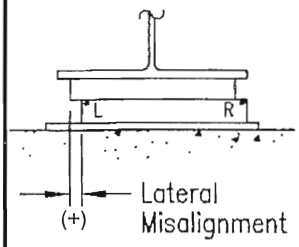
BACK RUST UNDER ROCKER, TYPICAL.

FIELD NOTES

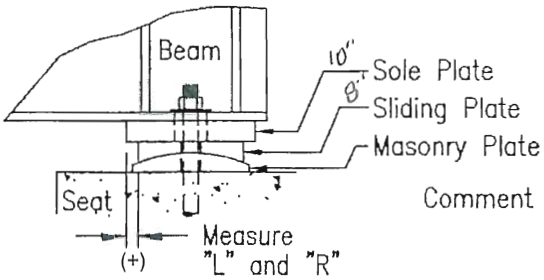
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/31/06	SHEET 84
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW, CL

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 28

Substructure Unit = PIER 34

Temperature = 65 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

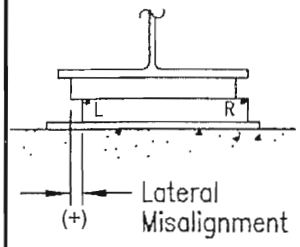
Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
1	1 3/8	1 1/4	C	0	N	Y	L	
2	1 3/16	1 3/8	C	0	N	Y	L	
3	1 5/16	1 1/4	C	− 1/16	N	Y	L	
4	1 3/8	1 3/16	C	+ 1/16	N	Y	L	
5	1 1/2	1 1/2	C	0	N	Y	L	
6	1 1/4	1 1/2	C	0	N	Y	L	
7	1 3/8	1 3/8	C	0	N	Y	L	
8	1 7/16	1 1/4	C	0	N	Y	L	
9	1 5/16	1 1/16	C	0	N	Y	L	
								** SE & NW CORNERS ON MAS PL'S
								OVER HANG PEDS UPTO 1 1/2" x 5'

FIELD NOTES

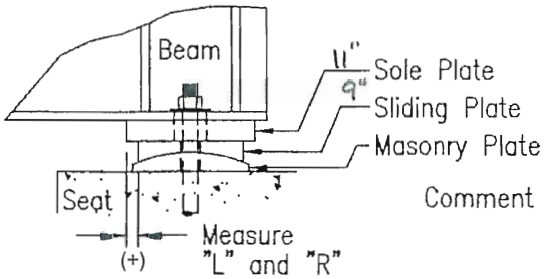
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/5/06	SHEET 85
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW SW, PDG

SLIDING BEARING MEASUREMENTS

Form BRI-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 29

Substructure Unit = PIER 35

Temperature = 60 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

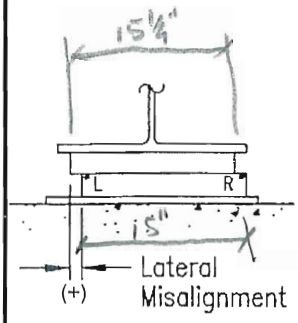
Beam	Movement				Condition			Comments
	"L"	"R"	Mode Exp. or Contr.	Lateral Misalign.	Bearing Frozen?	Normal Mov't?	Rust ? H/M/L	
1	1 1/16	1 1/16	C	0	N	N	L	
2	3/4	3/4	E	0	N	Y	L	
3	5/8	9/16	E	+ 1/16	N	Y	L	
4	3/4	9/16	E	- 1/16	N	Y	L	
5	9/16	5/8	E	+ 1/16	N	Y	L	
6	5/8	5/8	E	+ 1/16	N	Y	L	
7	5/8	9/16	E	+ 1/16	N	Y	L	
8	11/16	11/16	E	+ 1/16	N	Y	L	
9	3/4	5/8	E	- 1/8	N	Y	L	
10	15/16	1	N	+ 1/16	N	Y	L	

FIELD NOTES

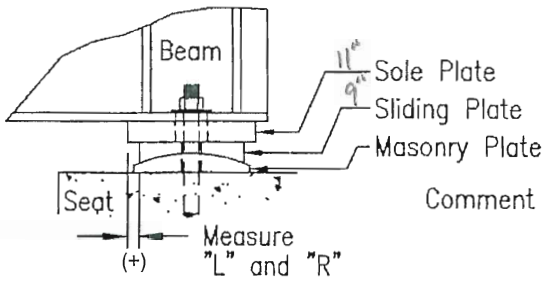
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/5/06	SHEET 86
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PEG, SW

SLIDING BEARING MEASUREMENTS

Form BRd-14, Rev. 9/01



FRONT VIEW



SIDE VIEW

Span No. = 30

Substructure Unit = E. ABUT

Temperature = 55 °F

Comment On:
- Presence of keepers or work done on bearings.
- Undermining of bearing. Attach sketch with dimensions.
- Cracking of plates or welds.
- Condition of anchor bolts.

Beam	Movement "L"	Movement "R"	Mode Exp. or Contr.	*Lateral Misalign.	Condition Bearing Frozen?	Condition Normal Mov't?	Condition Rust ? H/M/L	Comments
1	15/16	13/16	E	+1/16	Y	N	—	STEEL KEEPERS WELDED TO SOLE PL, ALL BRGS NO MVMT SINCE 2004 (75°F)
2	3/4	3/4	E	+1/8**	N	Y	—	
3	7/8	15/16	E	0	Y	N	—	NO MVMT SINCE 2004 (75°F)
4	1	15/16	N	+1/16	N	Y	—	
5	1 1/16	1	N	+1/8	N	Y	—	SLIDING PL HAS SLID BACK 1/8" ON MAS PL
6	3/4	15/16	E	+1/4	N	Y	—	SLIDING PL HAS SLID BACK 1/4" ON MAS PL
7	15/16	15/16	N	+3/16	Y	N	—	" " " 1/8" " NO MVMT SINCE 2004 (75°F)
*NOTE THAT SOLE PL IS WIDER THAN SLIDING PL, NEUTRAL LATERAL MEASUREMENT								
	IS + 1/8"							
**SLIDING PL HAS SHIFTED 3/16" SOUTH ON MASONRY PL								

FIELD NOTES

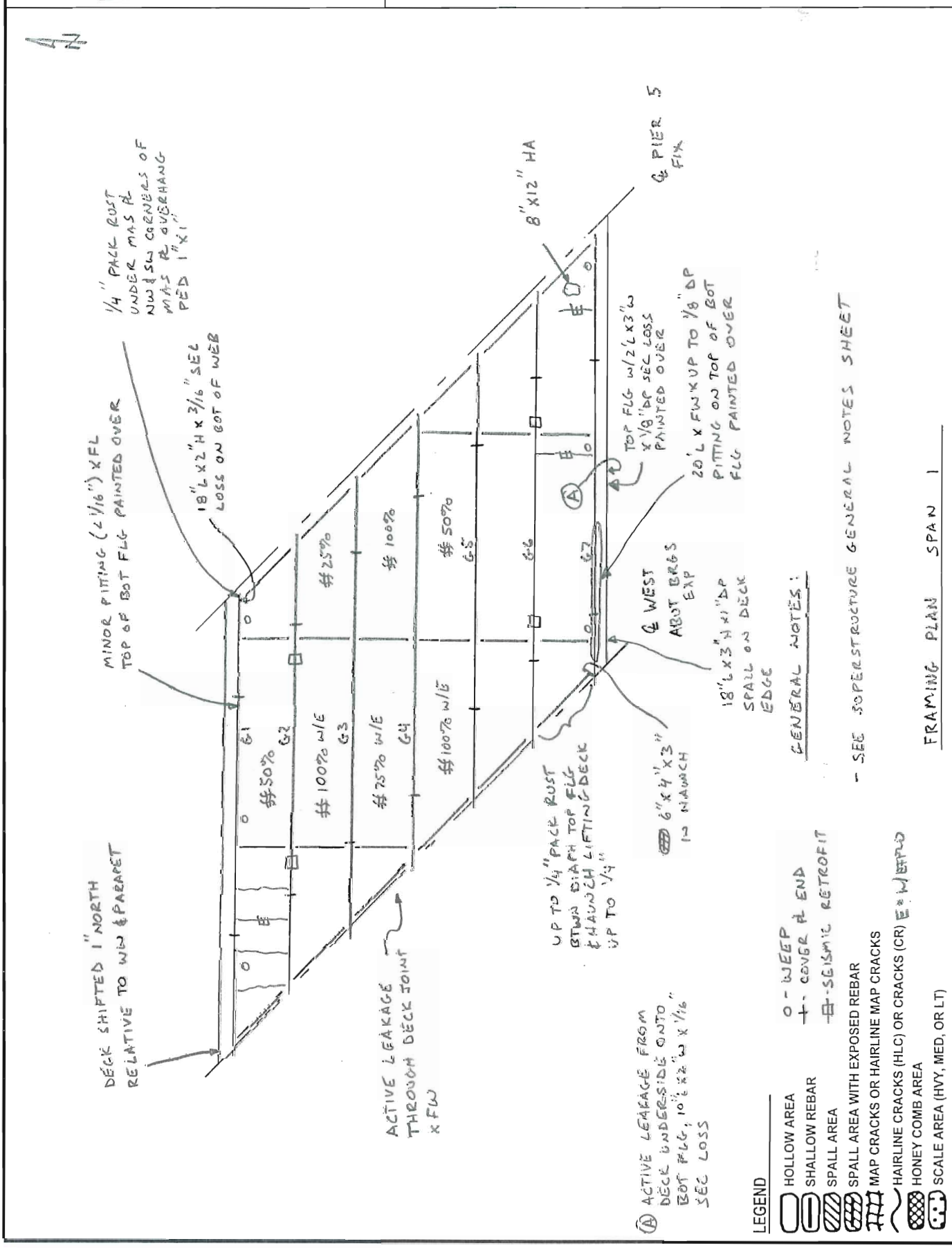
	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 9/25/06	SHEET 87
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	

GENERAL NOTES FOR UNDERSIDE OF DECK & SUPERSTRUCTURE

- UNDERSIDE OF DECK HAS RANDOM AREAS OF HONEYCOMB 1'Ø x 1"D
- RANDOM DECK HAUNCHES ALONG GIRDERS HAVE BEEN REMOVED OR SPALLED & GIRDER TOP FLG EDGES @ THESE LOCATIONS HAVE HVY RUST & THERE IS UP TO 1/8" PACK RUST BTWN THE TOP FLG & DECK LIFTING THE DECK.
- POOR QUALITY WELDS BTWN DIAPH'S & STIFFENERS / CONN. PL'S @ RANDOM LOCATIONS

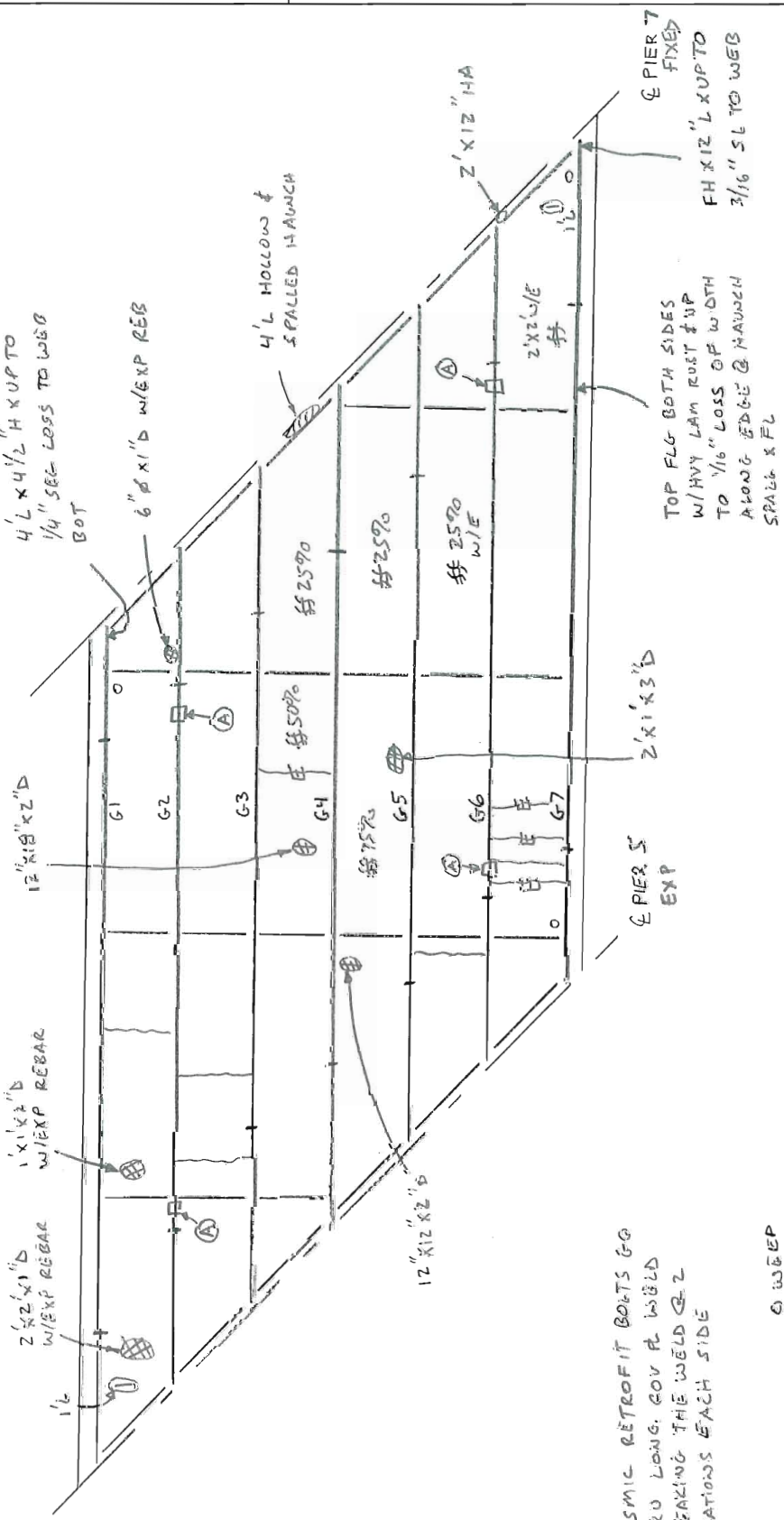
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/18/06, 11/7/06	SHEET 88
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, DS, CL	



FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 11/6/06, 11/7/06	SHEET 89
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, DS, CL	



Ⓐ SEISMIC RETROFIT BOLTS GG THRU LONG. GOV PL WELD BREAKING THE WELD @ 2 LOCATIONS EACH SIDE

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

GENERAL NOTES:

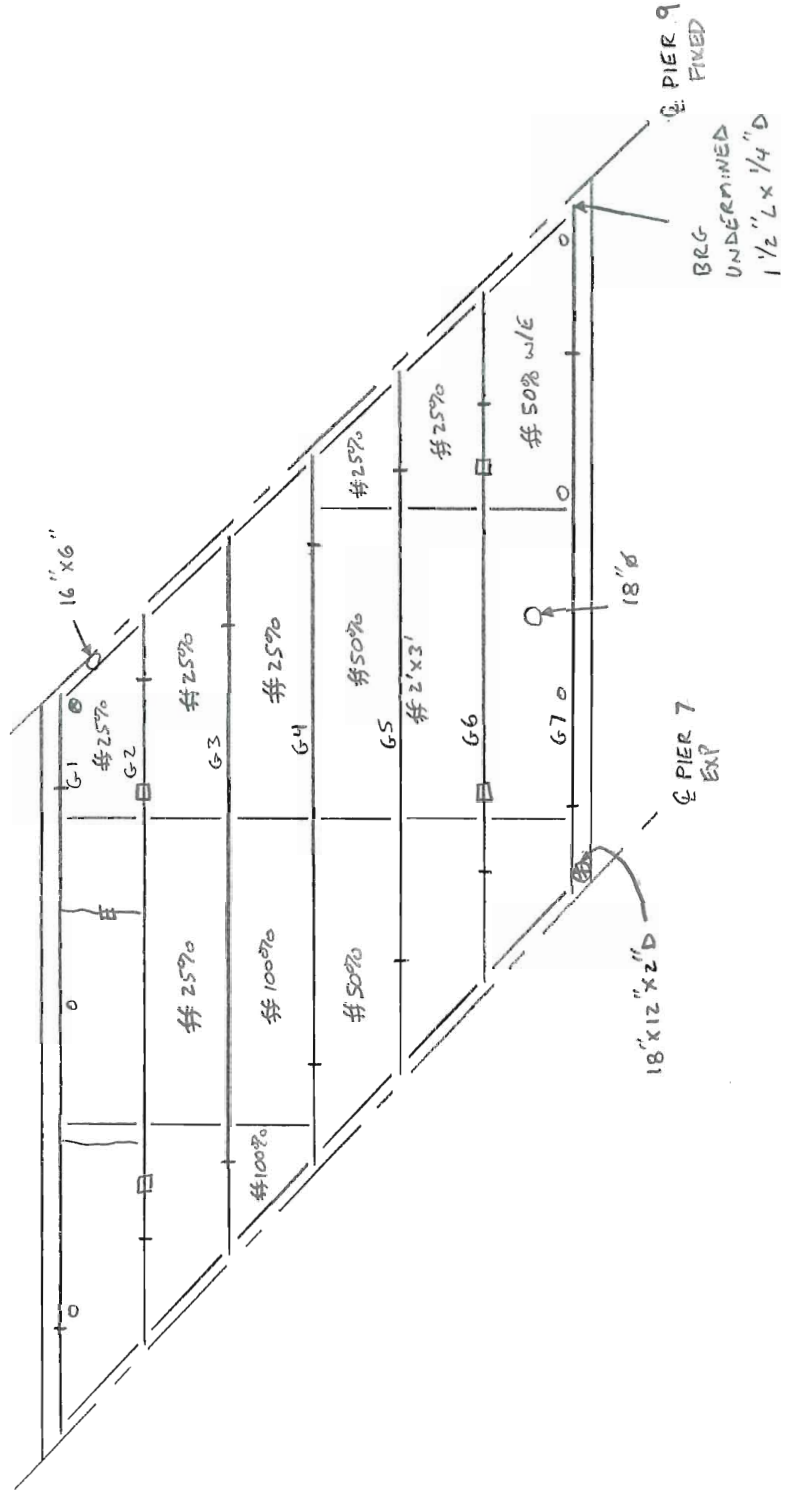
- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

FRAMING PLAN SPAN 2

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 11/1/06, 11/20/06	SHEET 90
CREW PG, SW	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



GENERAL NOTES:

- 2'L x UP TO 1/8"D PITING ON BOT FLG @ BEAM ENDS
- UP TO 2'L x UP TO 3"H x UP TO 1/8"D PITING ON WEB @ BEAM ENDS
- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

FRAMING PLAN SPAN 3

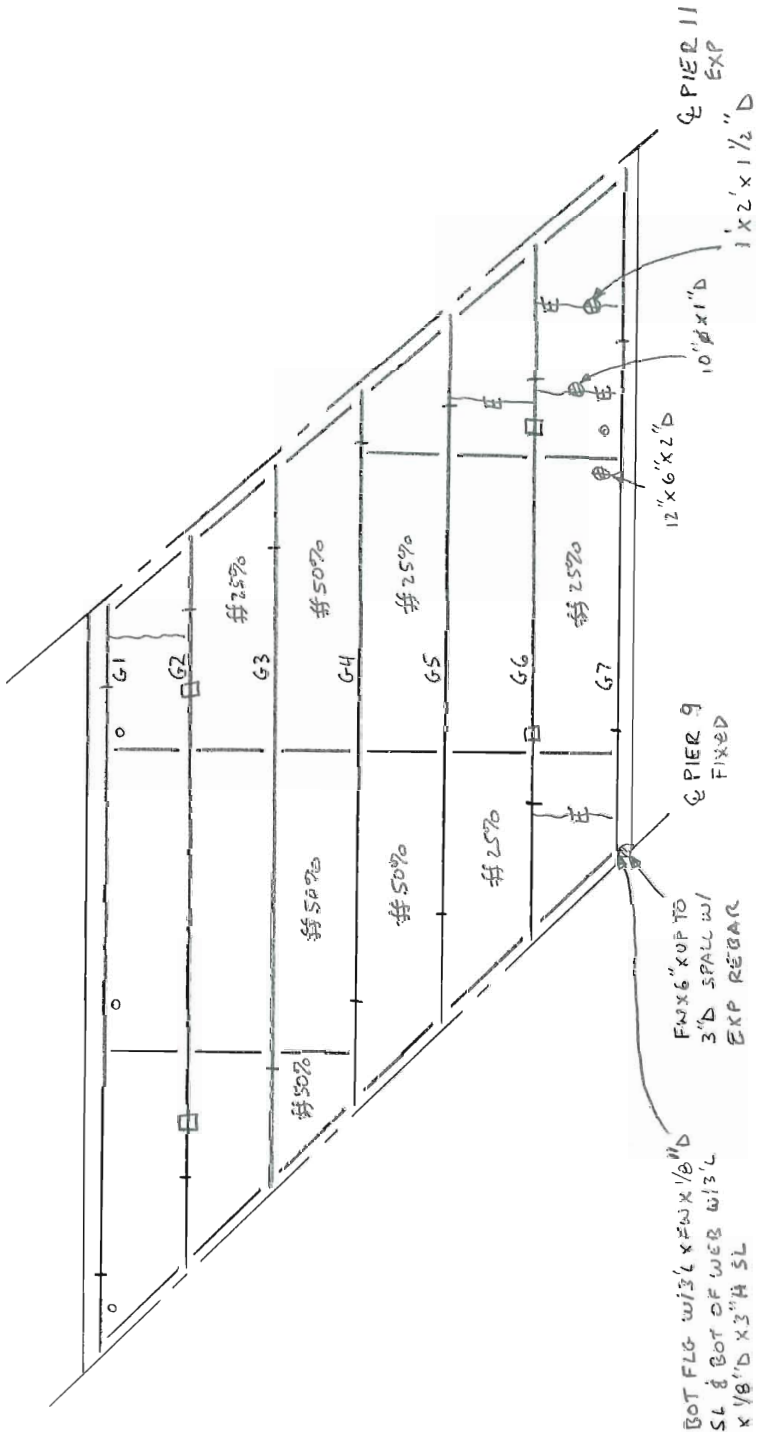
LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR) E w/ EPOXY
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

- SCUPPER
- WEEP
- COV PL END
- SEISMIC RETROFIT

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/24/06, 11/20/06	SHEET 91
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



GENERAL NOTES:

- FASCIA GIRDER ENDS @ BOTH PIERS HAVE PAINTED OVER WEB LOSS UP TO 1/16" D UP TO FH
- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

FRAMING PLAN SPAN 4

LEGEND

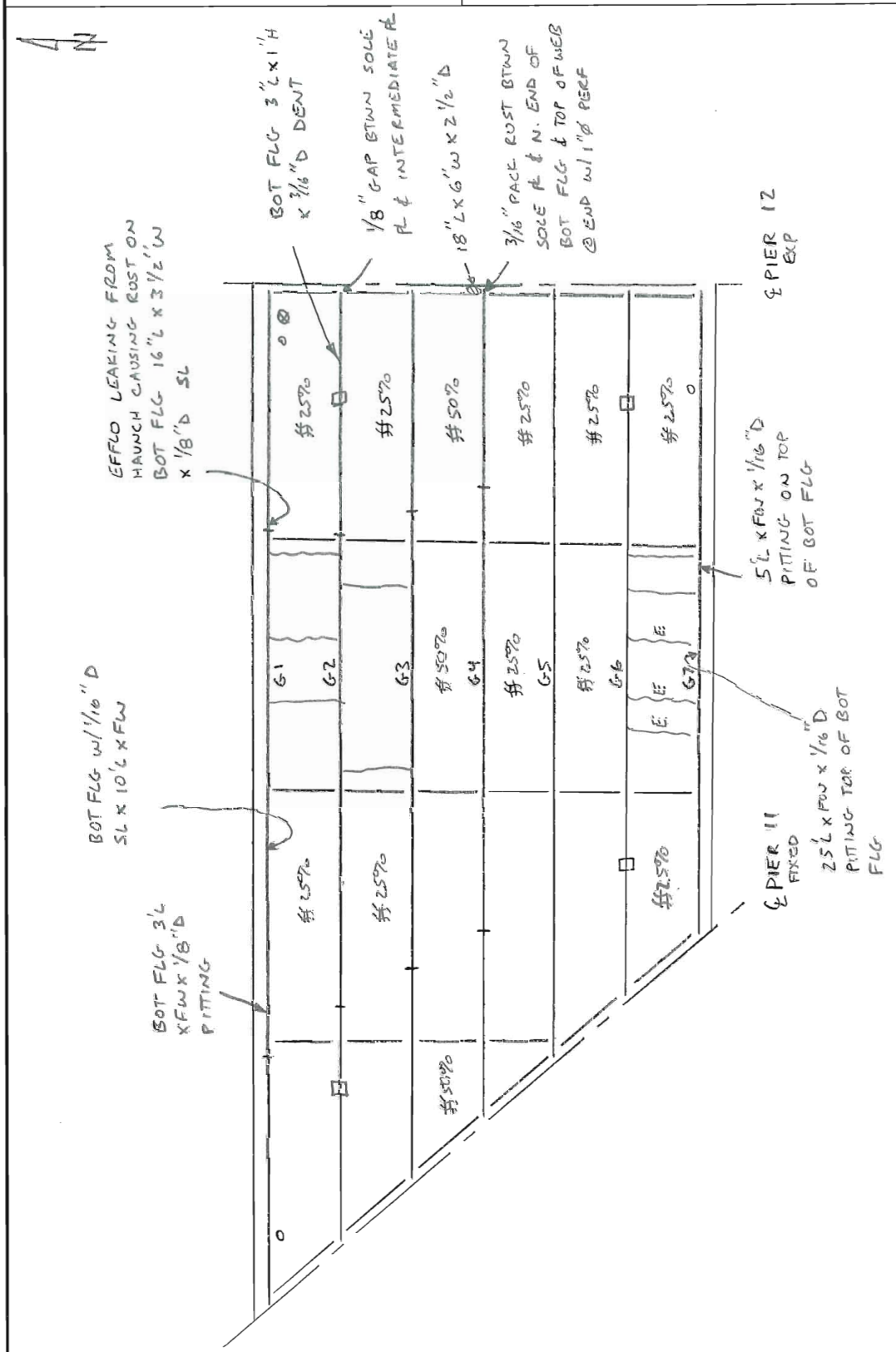
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

O - WEEP
+ - COV RL END
- SEISMIC RETROFIT

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 31518
DATE 10/24/06	SHEET 92
CREW PG, SW	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



GENERAL NOTES:

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET
- LT-MOD RUST ON FIXED BLG'S @ PIER 11

FRAMING PLAN SPAN 5

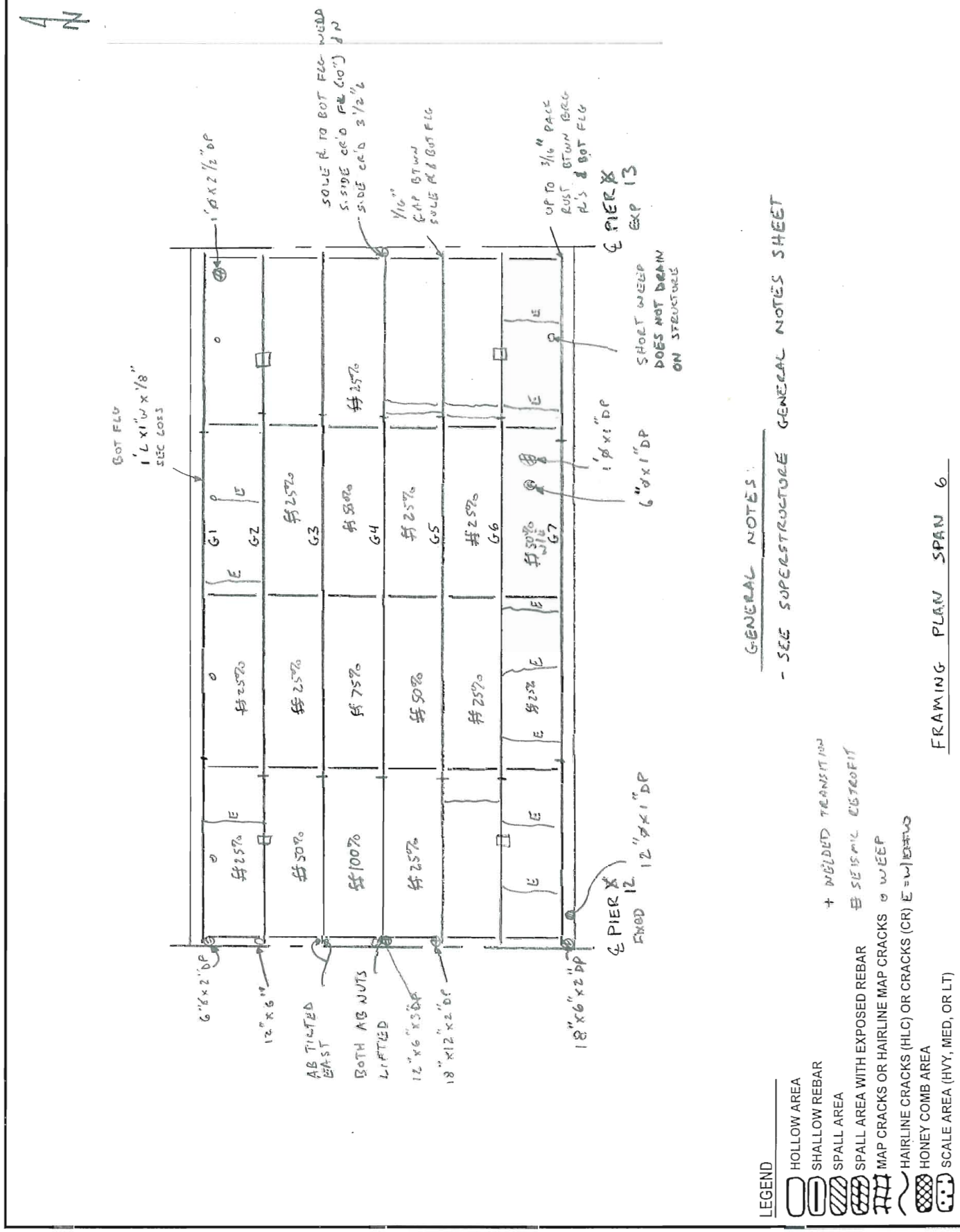
LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

O - WEEP
⊗ - SCUPPER
+ - WELDED TRANSITION
⊟ - SEISMIC RETROFIT
E = W/ REPAIR

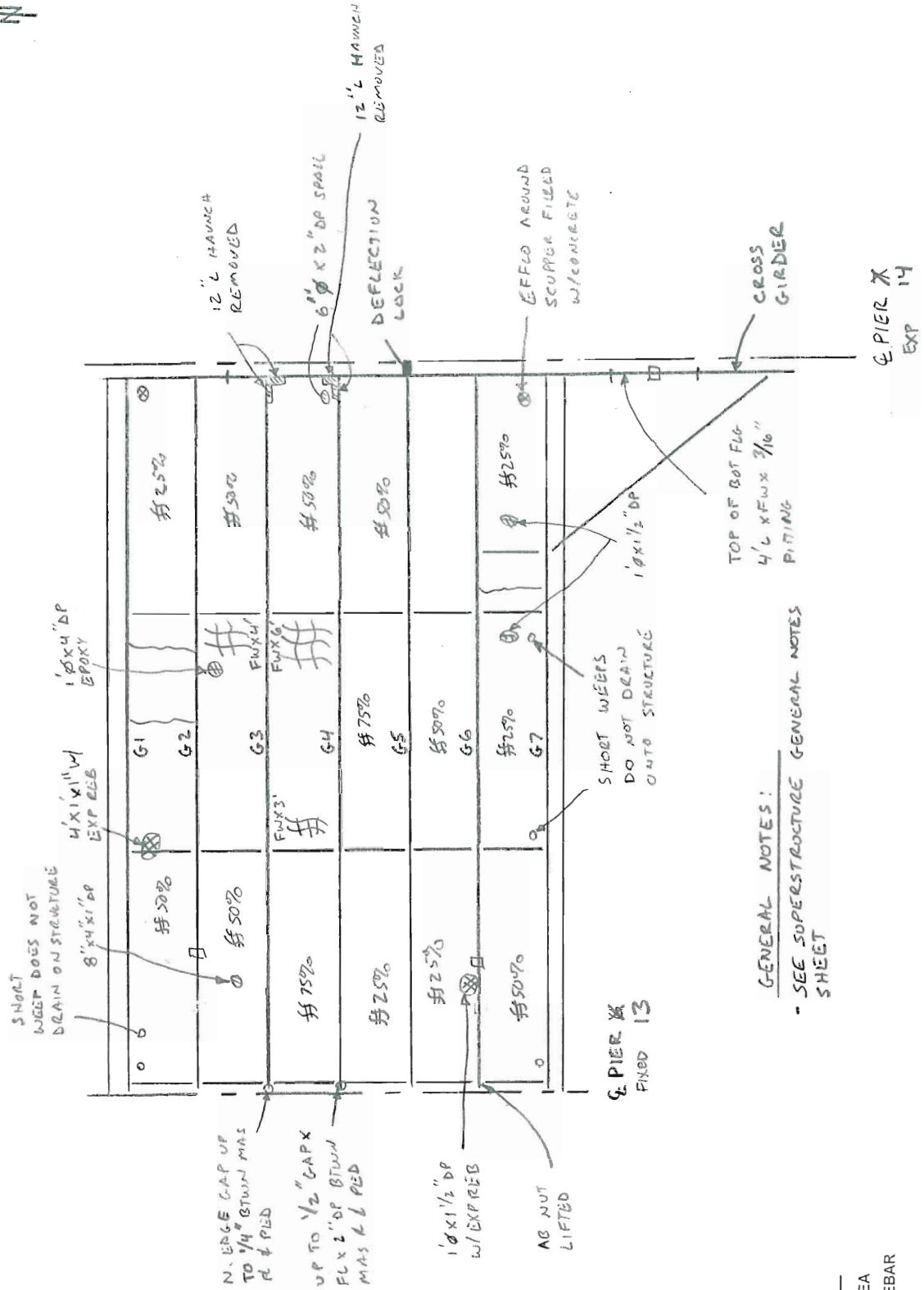
FIELD NOTES

FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/24/06	SHEET 93
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	



FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/24, 10/25/06	SHEET 94
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW



GENERAL NOTES:

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

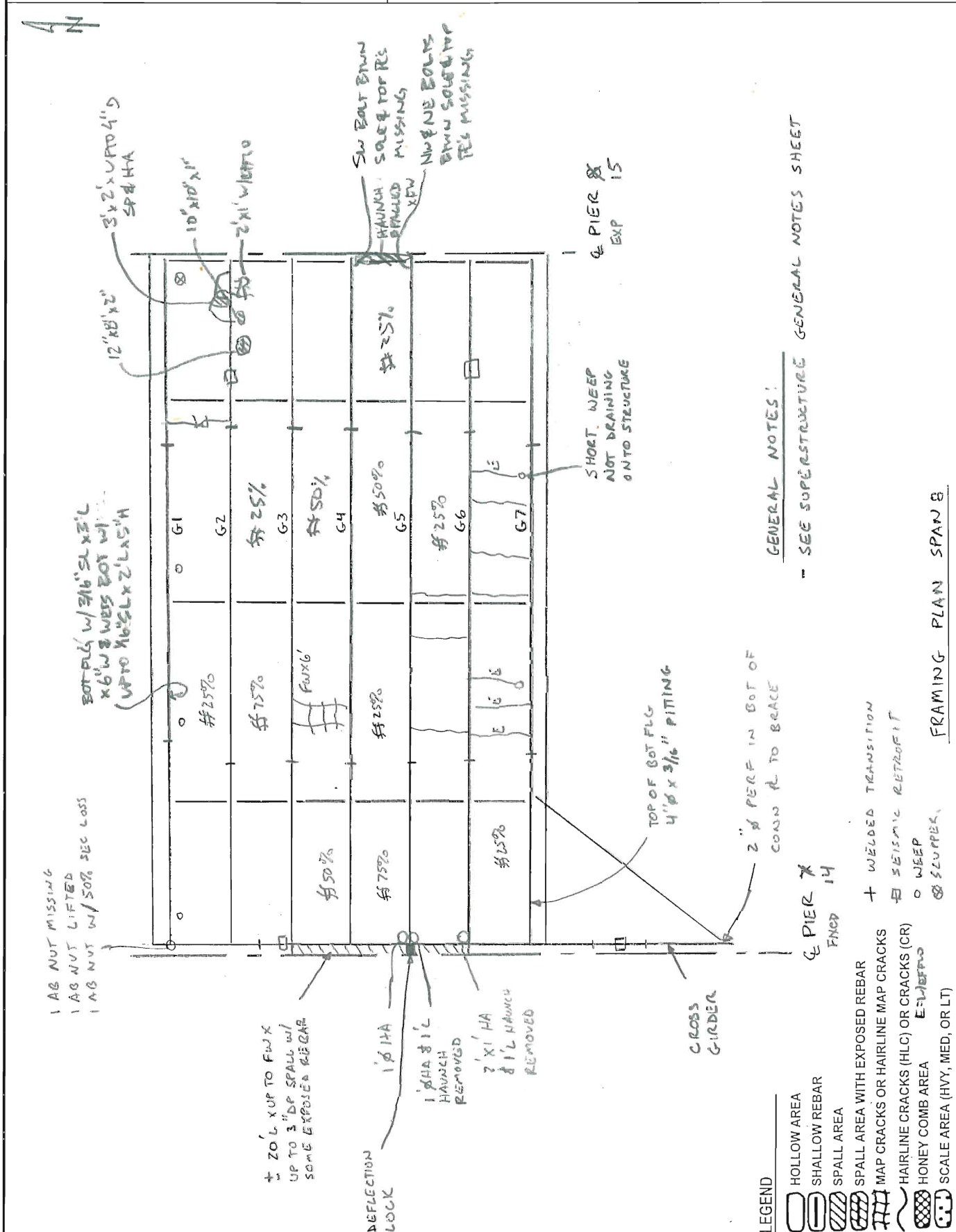
FRAMING PLAN SPAN 7

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)
- WELDED TRANSITION
- SEISMIC RETROFIT
- WEEP
- SCUPPER

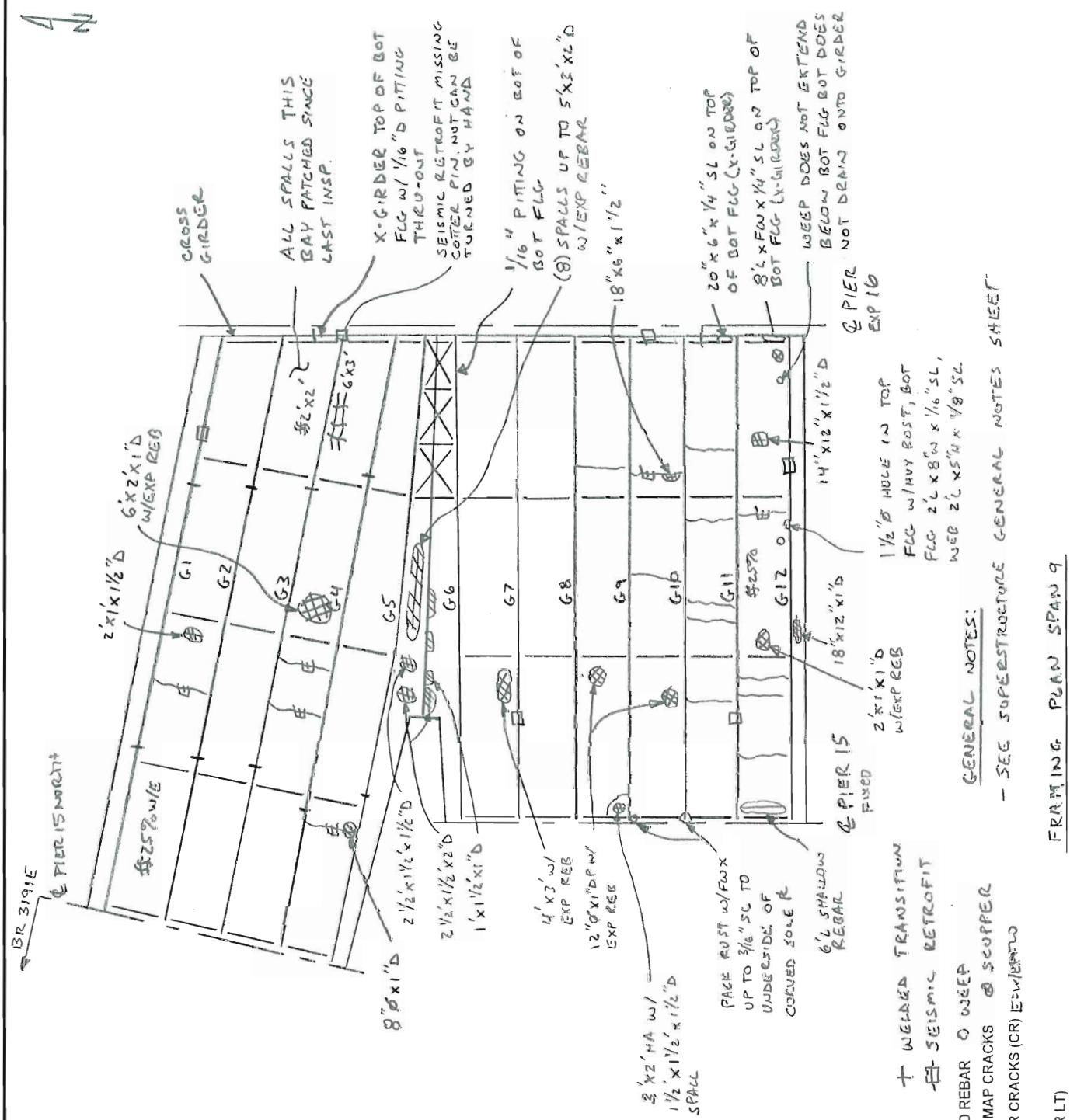
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/26, 11/17/06	SHEET 95
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW TDG, SW, TS	



FIELD NOTES

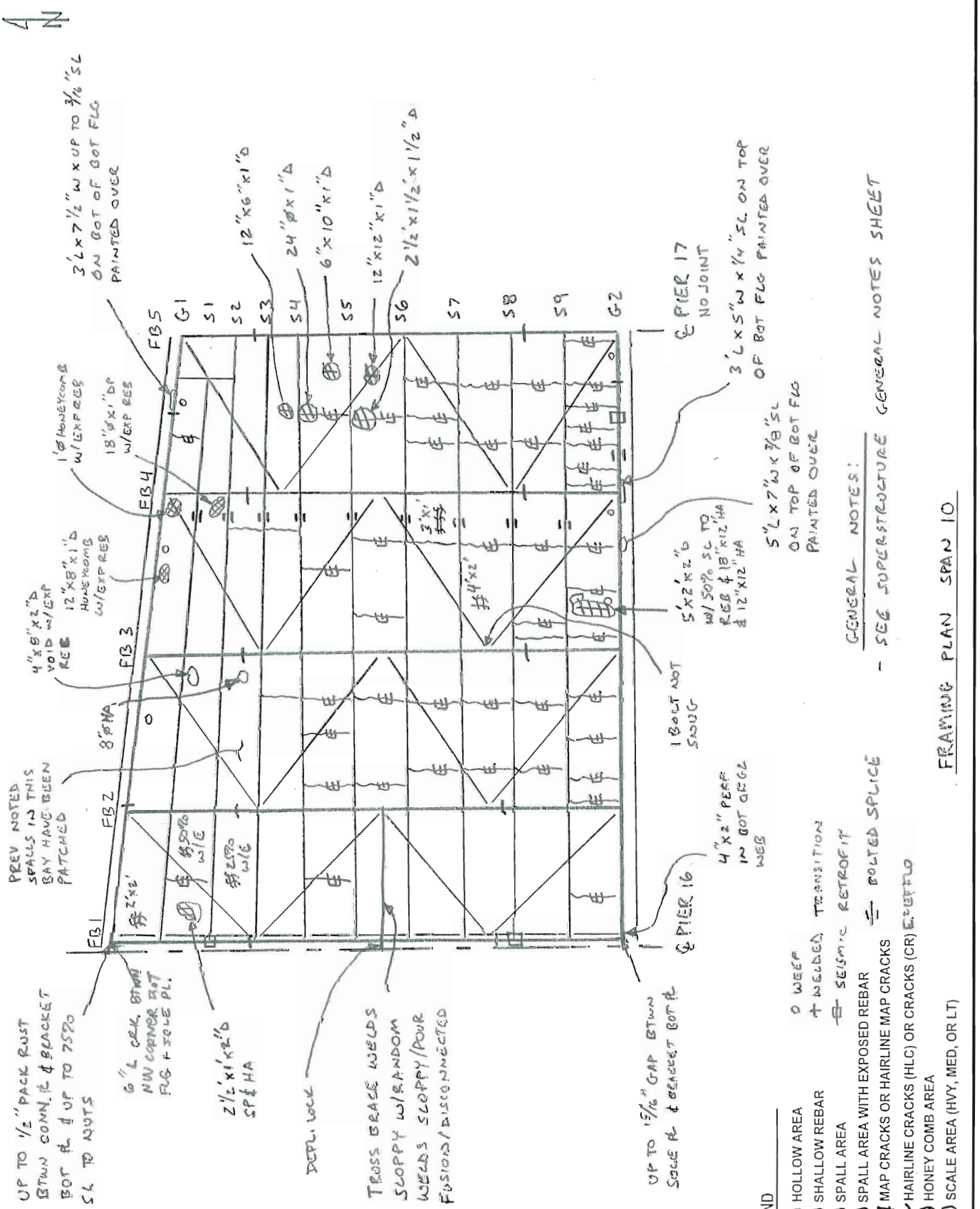
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/23/06 , 11/17/06	SHEET 96
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, DS



FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/19/06, 10/23/06	SHEET 97
CREW PG, SW, CL	

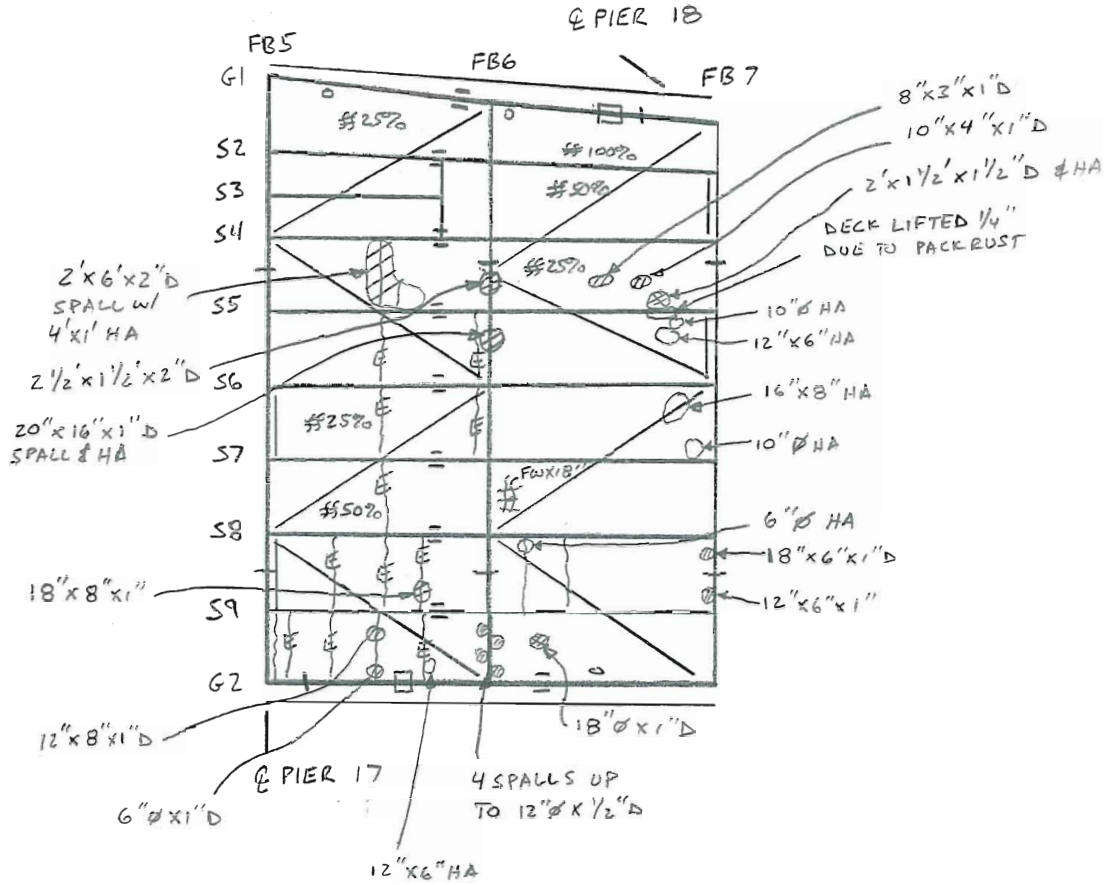
PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

JOB NO. 0156EXT
BRIDGE NO. 31918
DATE 10/17/06, 10/19/06
SHEET 98
CREW PG, SW, CC



GENERAL NOTES:

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

LEGEND

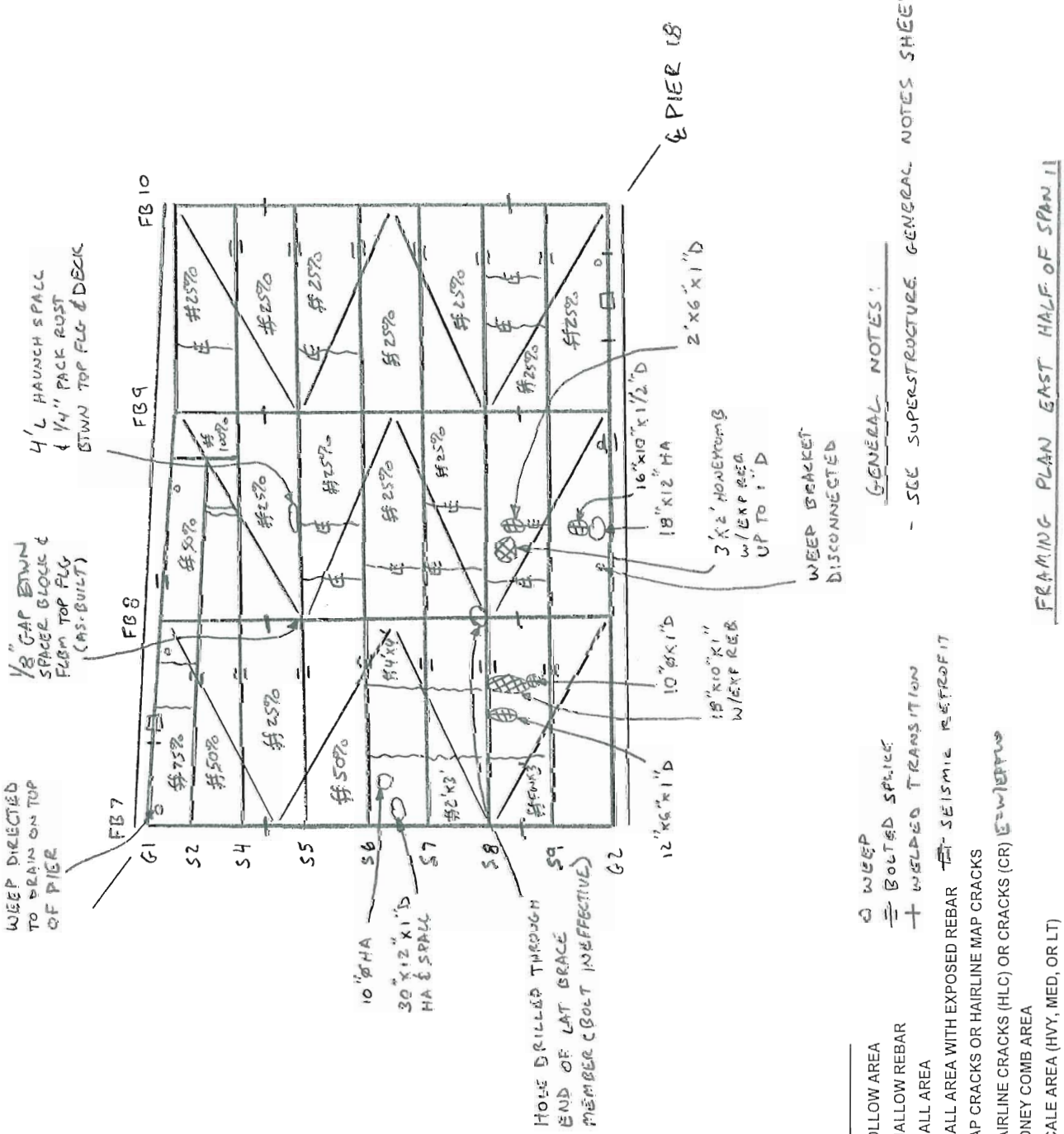
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR) E3W/ EFFLO
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)
- o WEEP
- BOLTED SPLICE
- + WELDED TRANSITION
- SEISMIC RETROFIT

FRAMING PLAN WEST HALF OF SPAN 11

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/17/06, 10/19/06	SHEET 99
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, CL	

4N



GENERAL NOTES:

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

FRAMING PLAN EAST HALF OF SPAN 11

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

- WEEP
- BOLTED SPLICE
- WELDED TRANSITION
- SEISMIC RETROFIT

FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

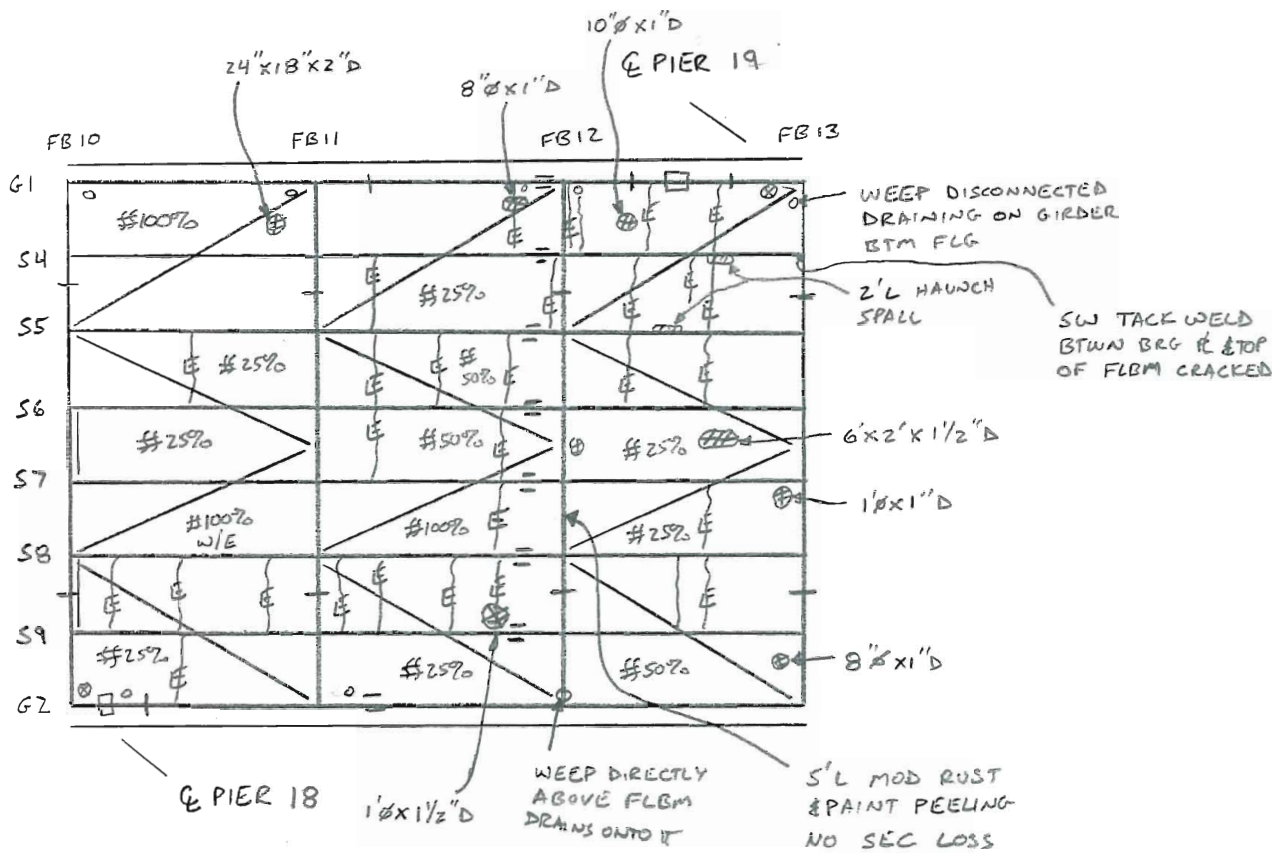
JOB NO. 0156EXT

DATE 10/16/06, 10/17/06

CREW PG, SW, CC

BRIDGE NO. 3191B

SHEET 100



LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR) E=W/EFFLO
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

⊗ SCUPPER
O WEEP
+ WELDED TRANSITION
⊜ BOLTED SPLICE
SEISMIC RETROFIT

GENERAL NOTES

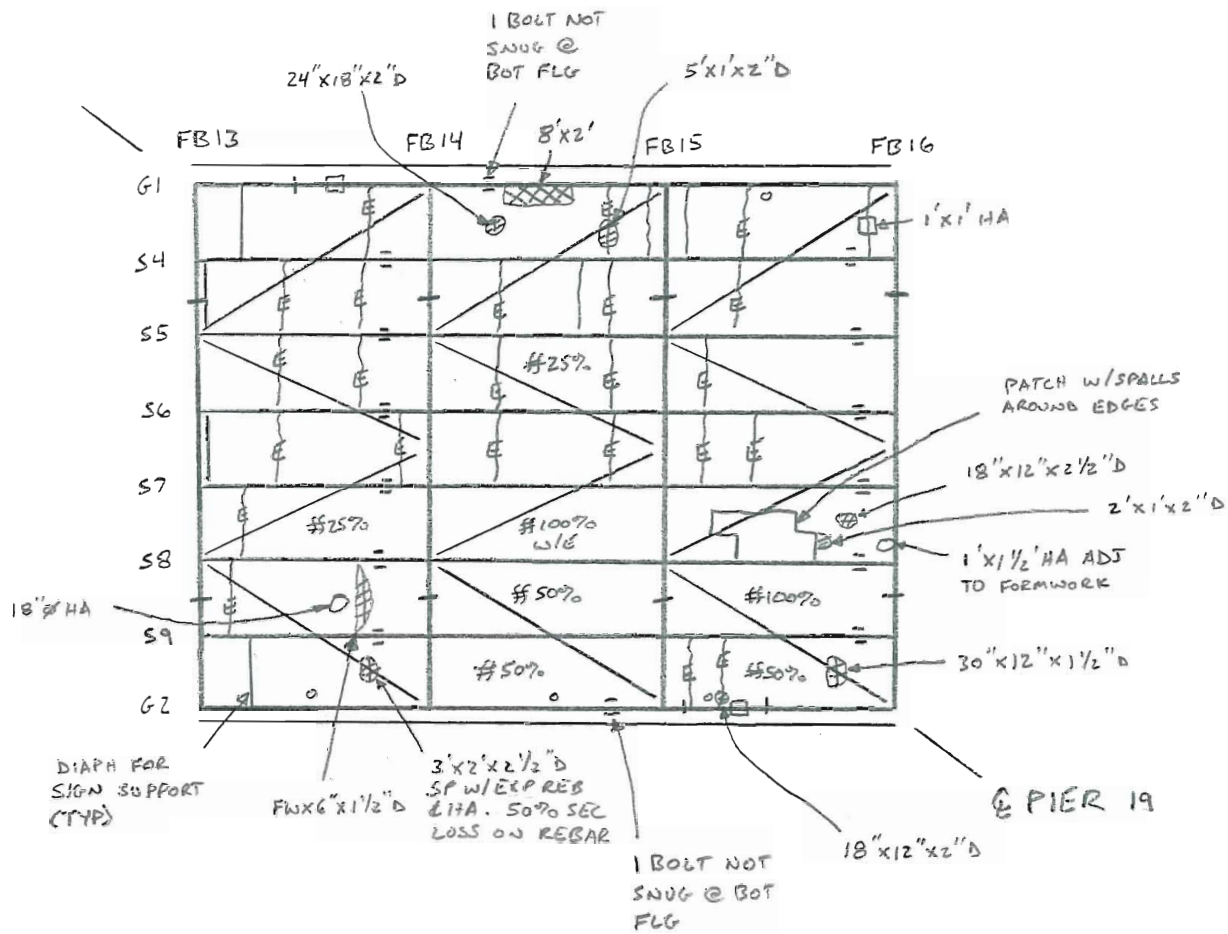
- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

FRAMING PLAN WEST HALF OF SPAN 12

FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

JOB NO. 0156EXT
DATE 10/16/06, 10/17/06
CREW PG, SW, CC
BRIDGE NO. 31913
SHEET 101



LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR) E=W/EFFLO
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

o WEEP
+ WELDED TRANSITION
= BOLTED SPLICE
SEISMIC RETROFIT

GENERAL NOTES:

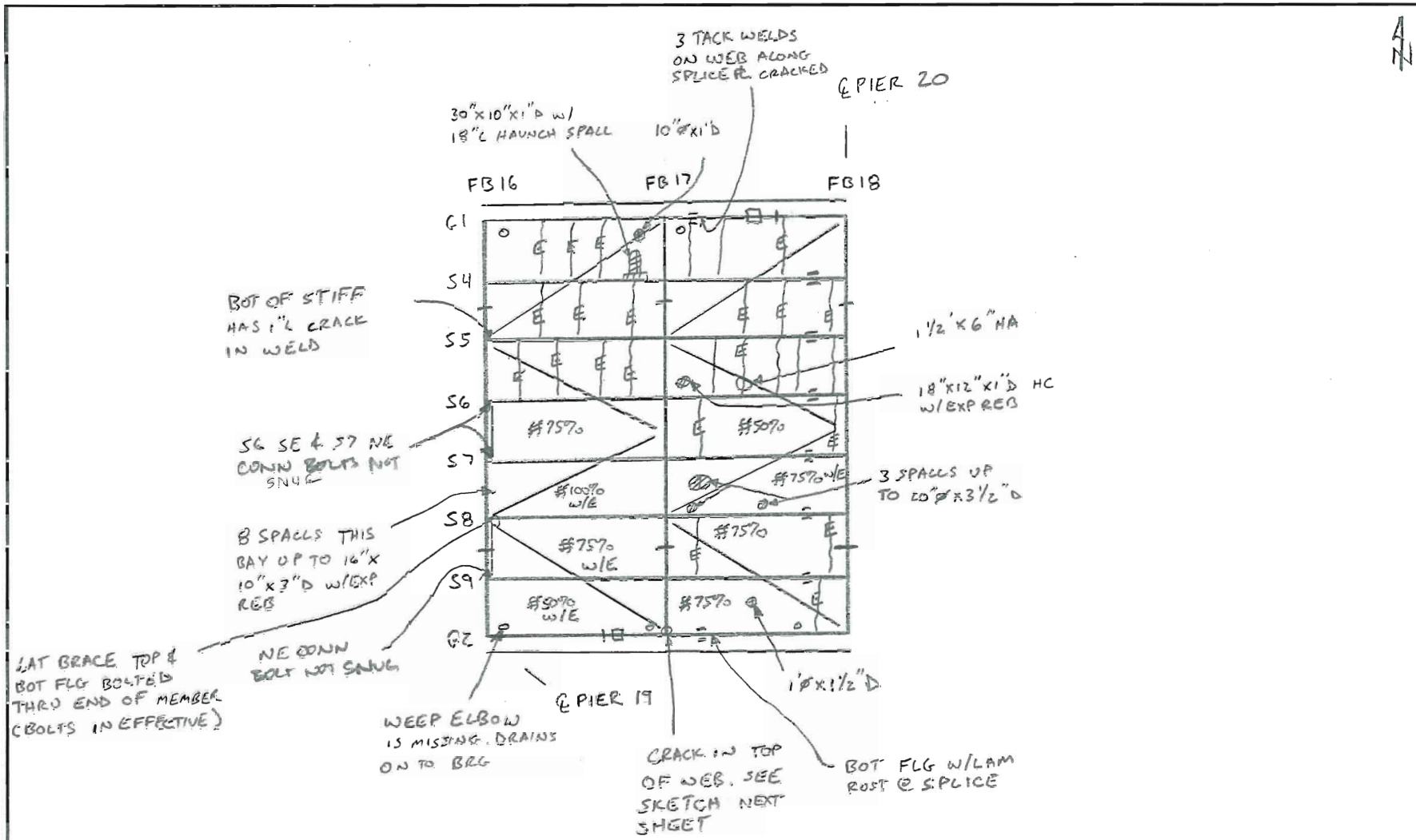
- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

FRAMING PLAN EAST HALF OF SPAN 12

FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

JOB NO. 0156EXT
DATE 10/4/06, 10/16/06
CREW PG, SW
BRIDGE NO. 3191B
SHEET 102



LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR) E=W/EFFW
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

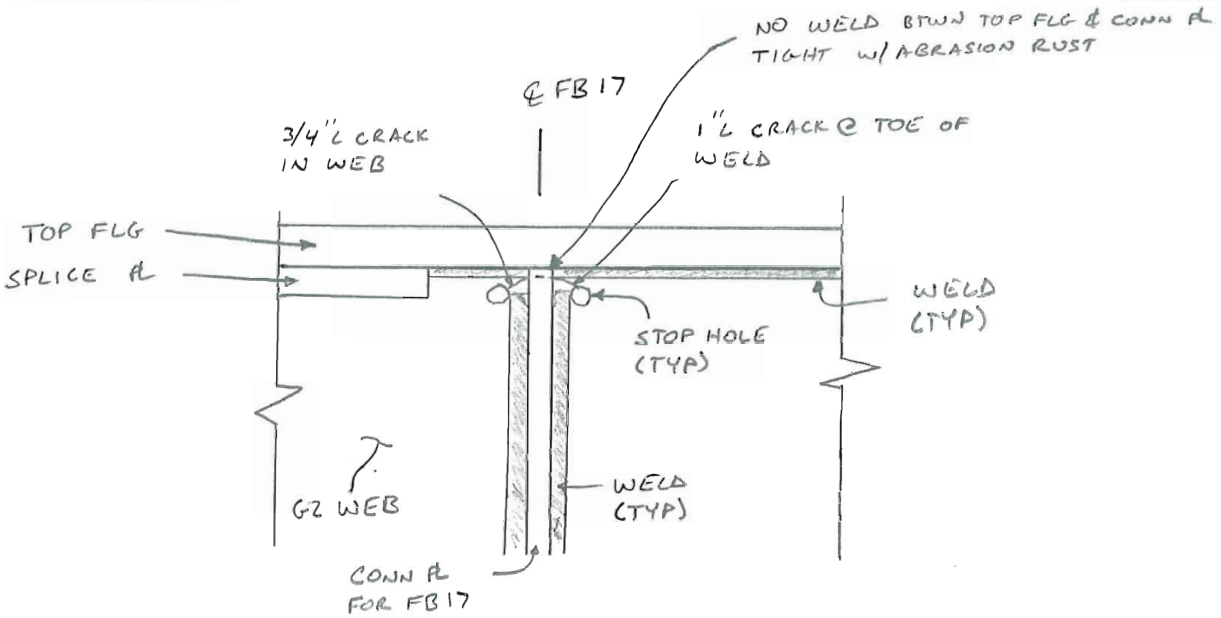
o WEEP
+ WELDED TRANSITION
= BOLTED SPLICE
SEISMIC RETROFIT

GENERAL NOTES:

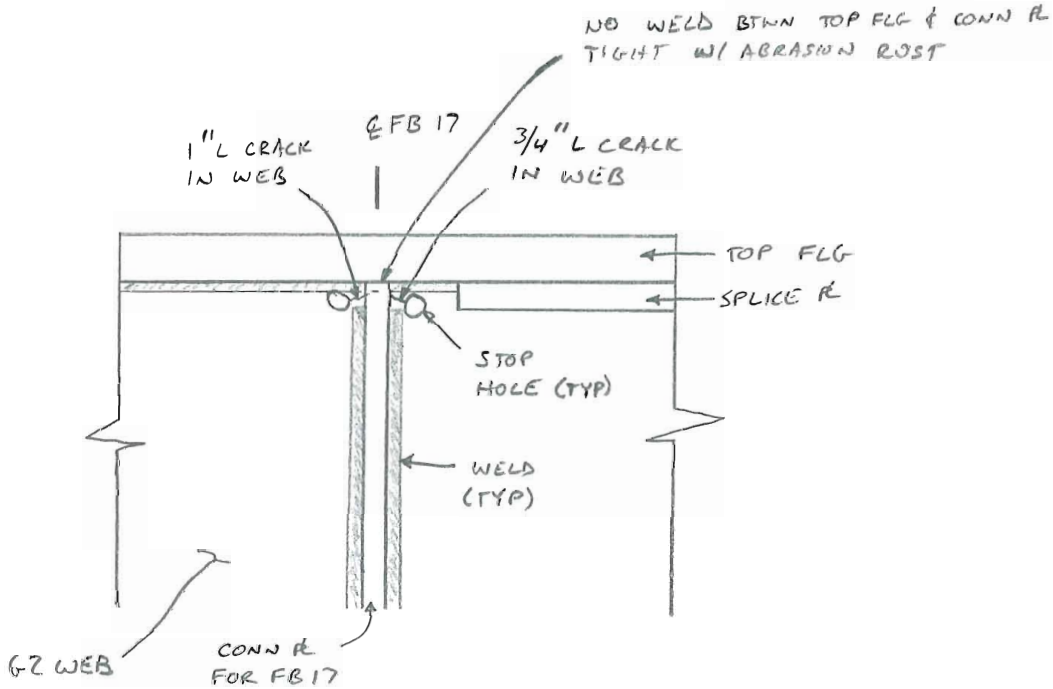
- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

FRAMING PLAN SPAN 13

FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/4/06	SHEET 103
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



NORTH SIDE (INTERIOR)



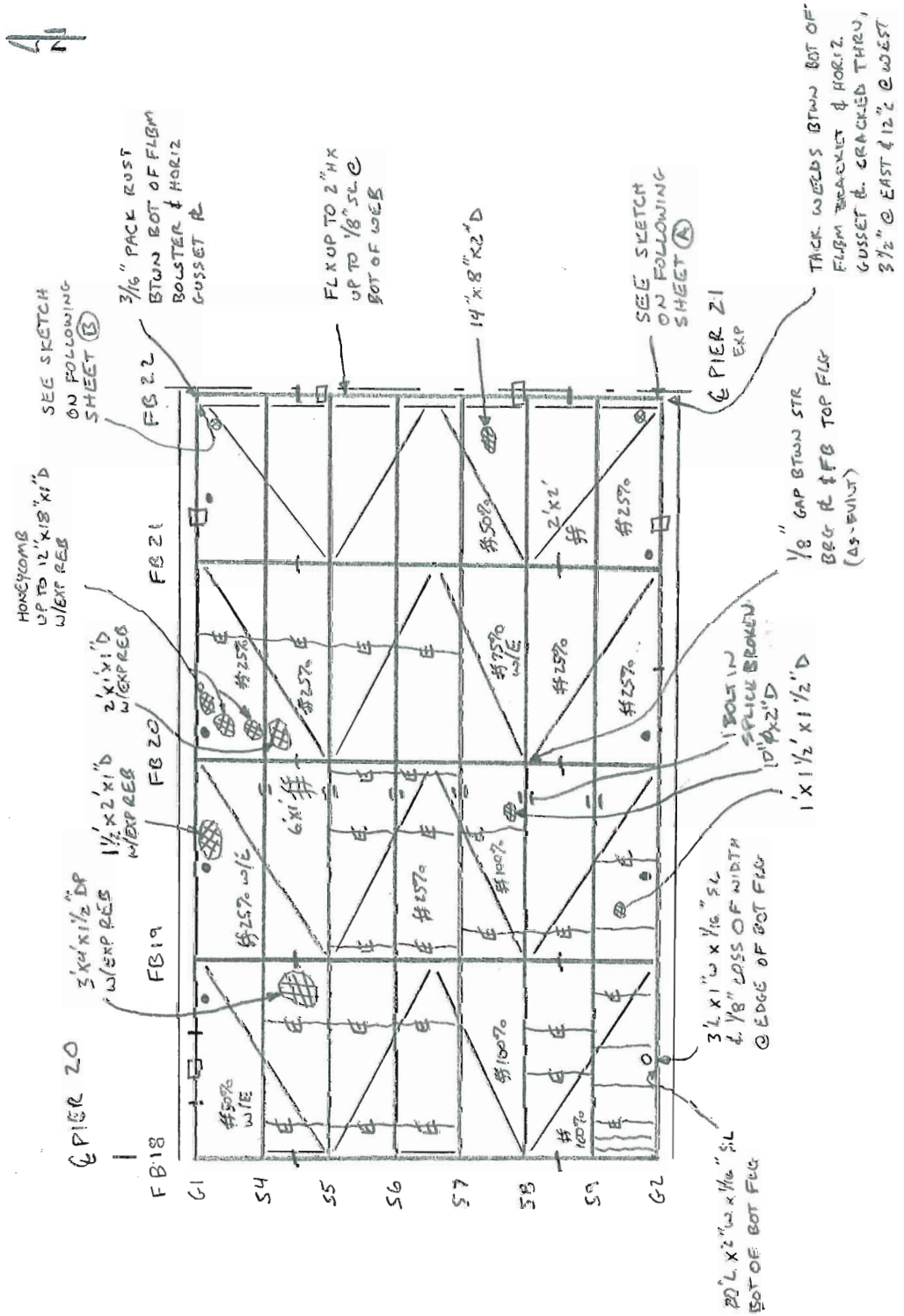
SOUTH SIDE (EXTERIOR)

* NO CHANGES SINCE LAST INSPECTION

SPAN 13 G2 WEB @ FB 17

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 31916
	DATE 10/4/06, 10/16/06	SHEET 104
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



GENERAL NOTES:

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

FRAMING PLAN SPAN 14

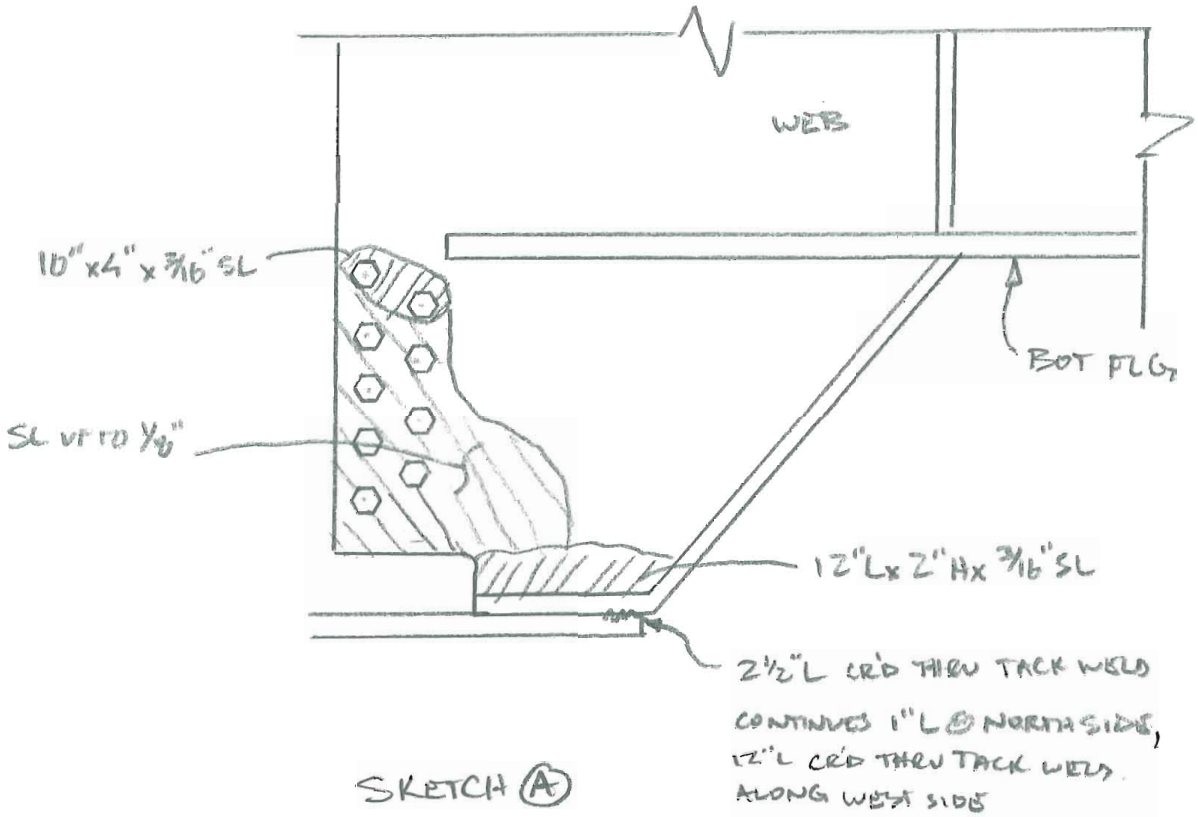
LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

- ● WEEP END TAPED OVER CLOSED
- ○ WEEP
- ⊗ SCUPPER
- + WELDED TRANSITION
- BOLTED SPLICE
- SEISMIC RETROFIT

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/4/06	SHEET 105
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW TDG, SW	

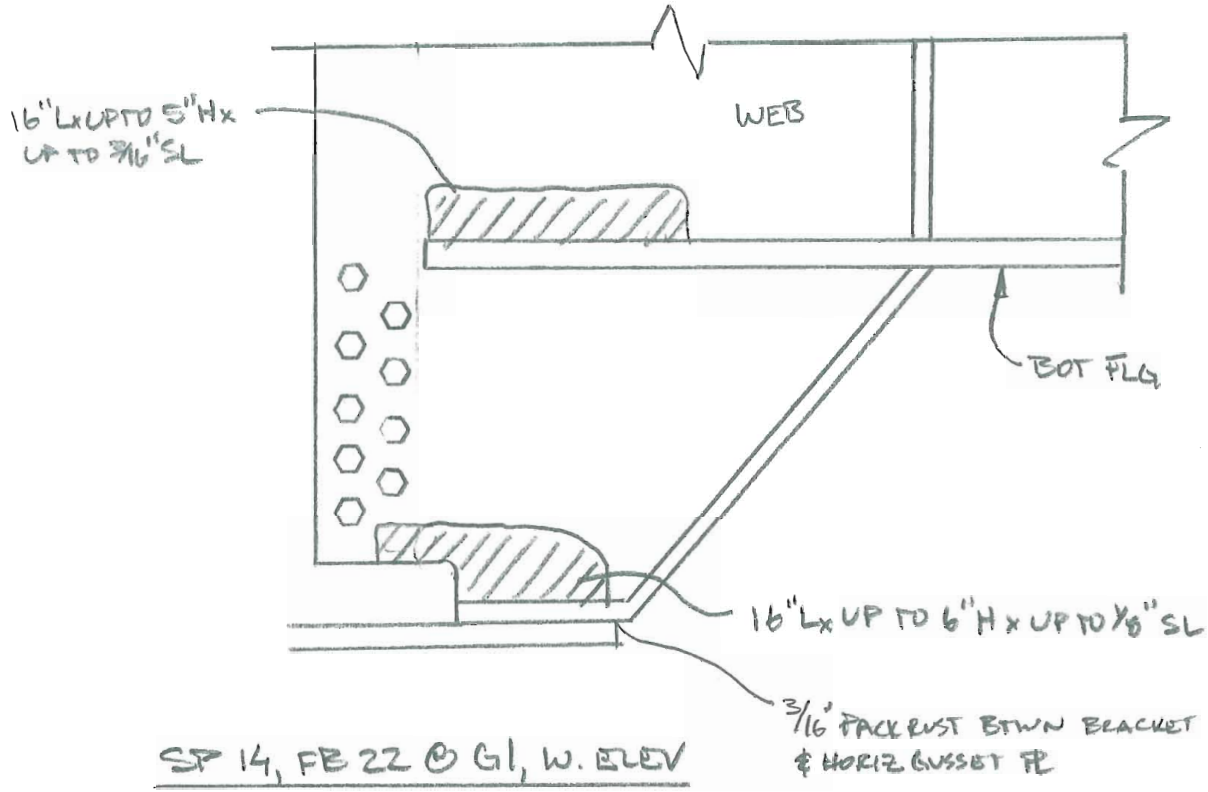


SKETCH (A)

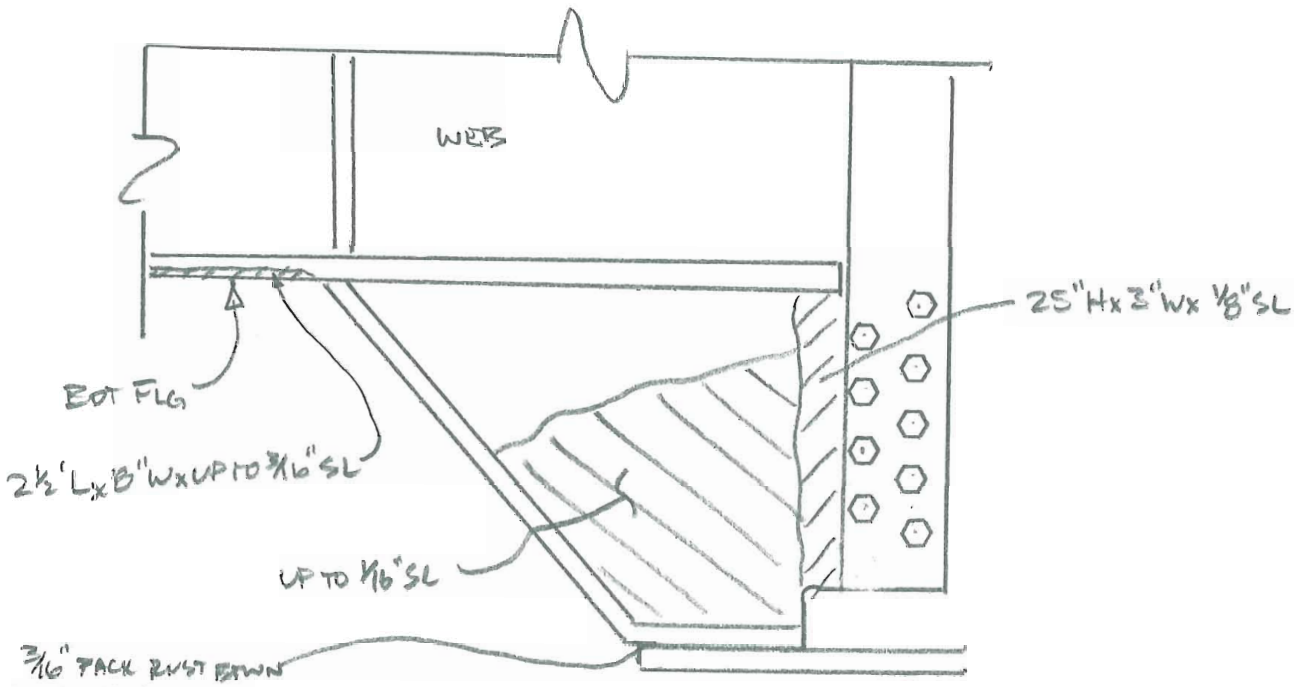
SP14, FB 22 @ G2, E. ELEV

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 31915
	DATE 10/4/06	SHEET 106
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	



SP 14, FB 22 @ G1, W. ELEV



SP 14, FB 22 @ G1, E. ELEV

SKETCH (B)

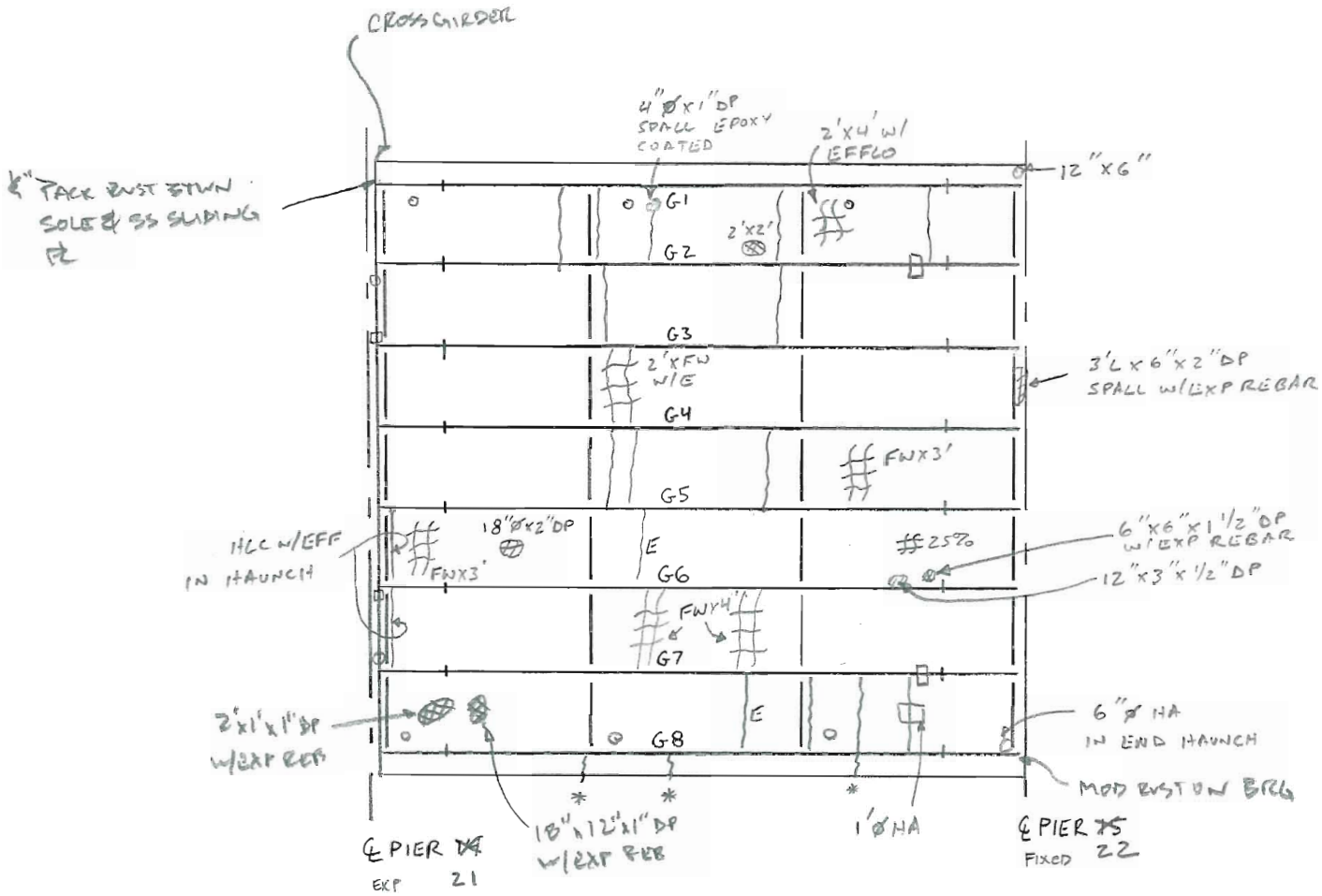
FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

JOB NO. 0156EXT | BRIDGE NO. 31918

DATE 10/3/06 | SHEET 107

CREW PG, SW



GENERAL NOTES

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET
- FIXED BRG'S ON PIER 22 AB R'S ARE BENT DUE TO PACK RUST

LEGEND

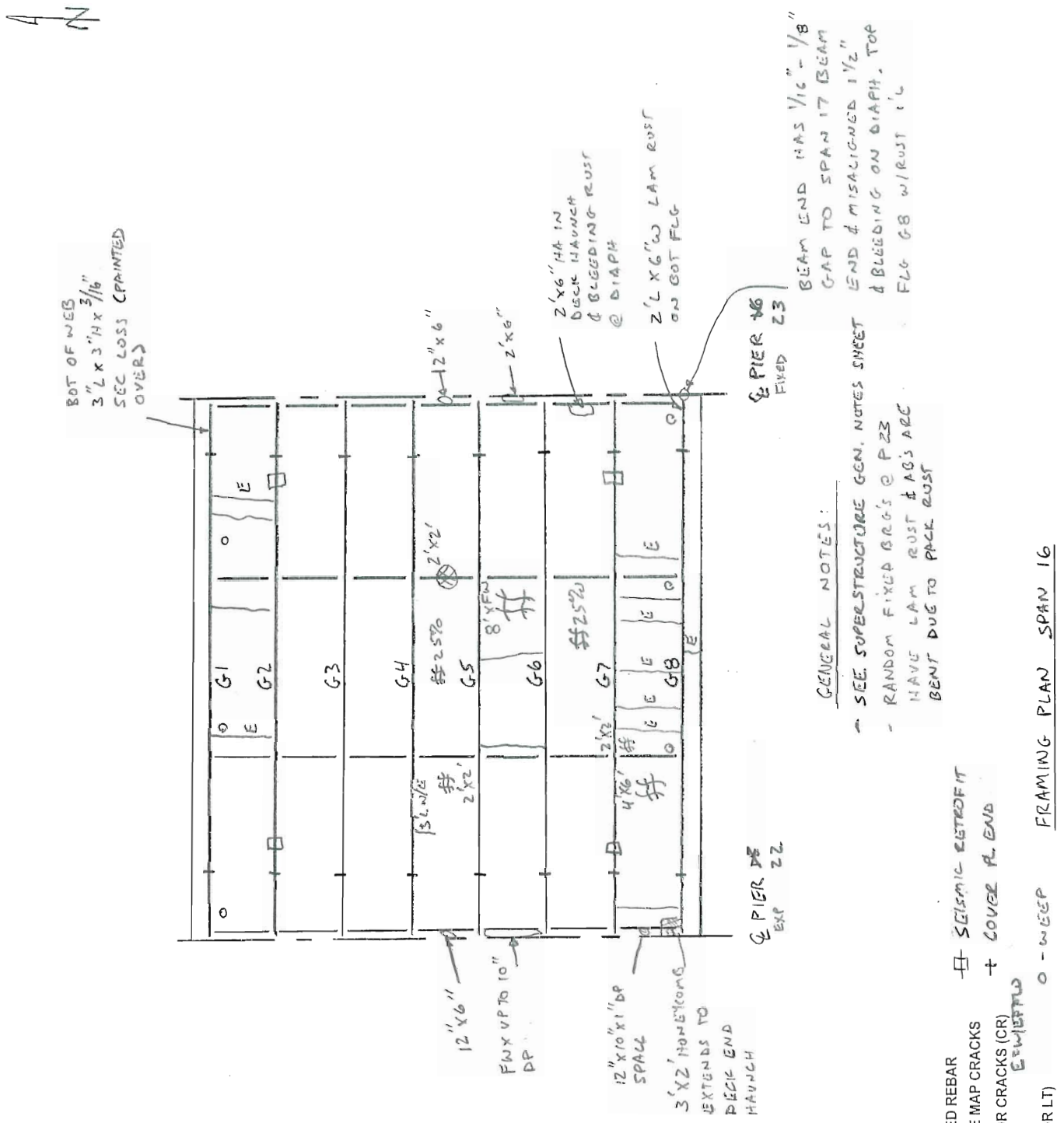
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR) EF w/EFFLO
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

⊖ WELDED TRANSITION
⊟ SEISMIC RETROFIT
+ COVER PL END
O- WEEP

FRAMING PLAN SPAN 15

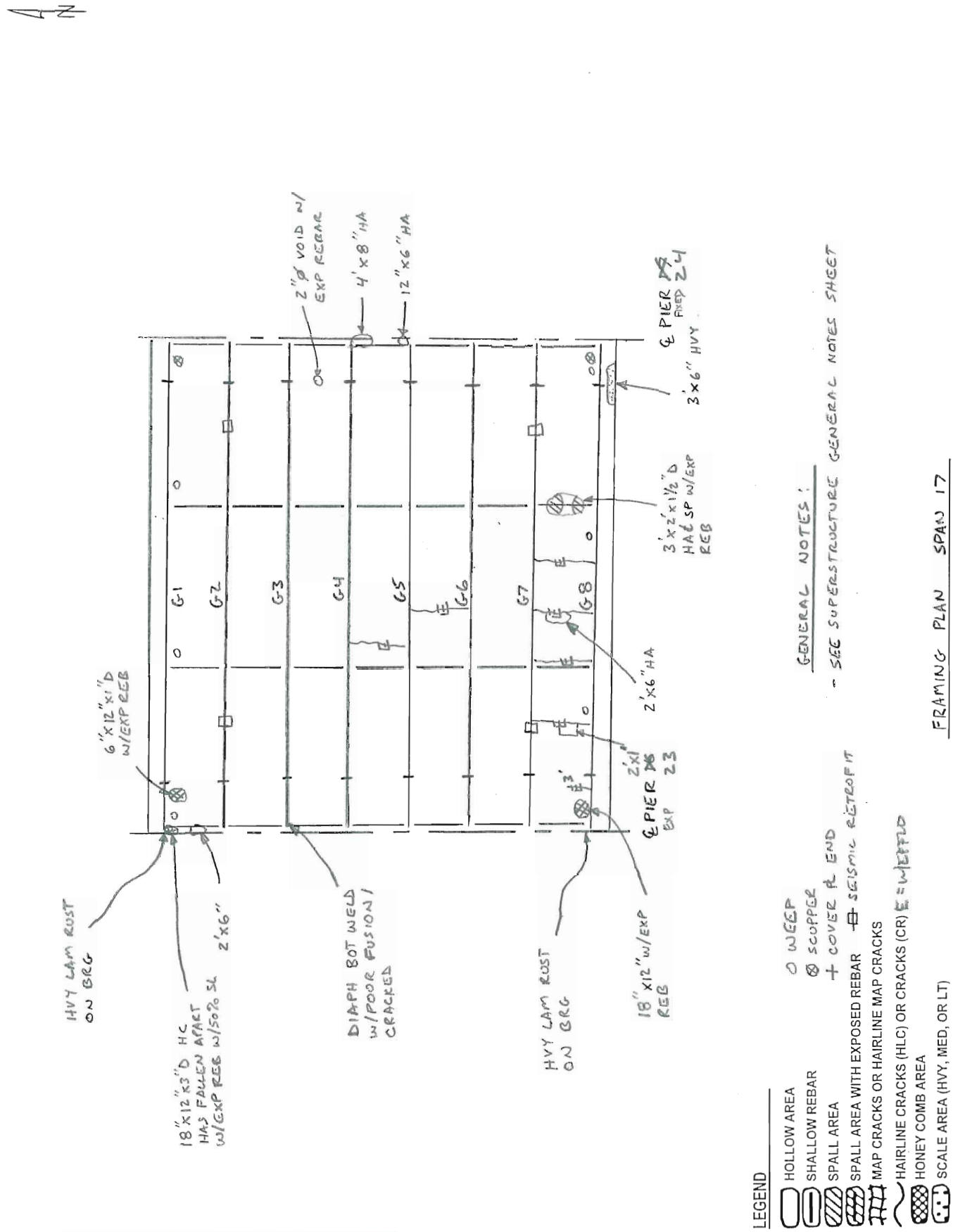
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 9/27/06	SHEET 108
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW SW, PRG	



FIELD NOTES

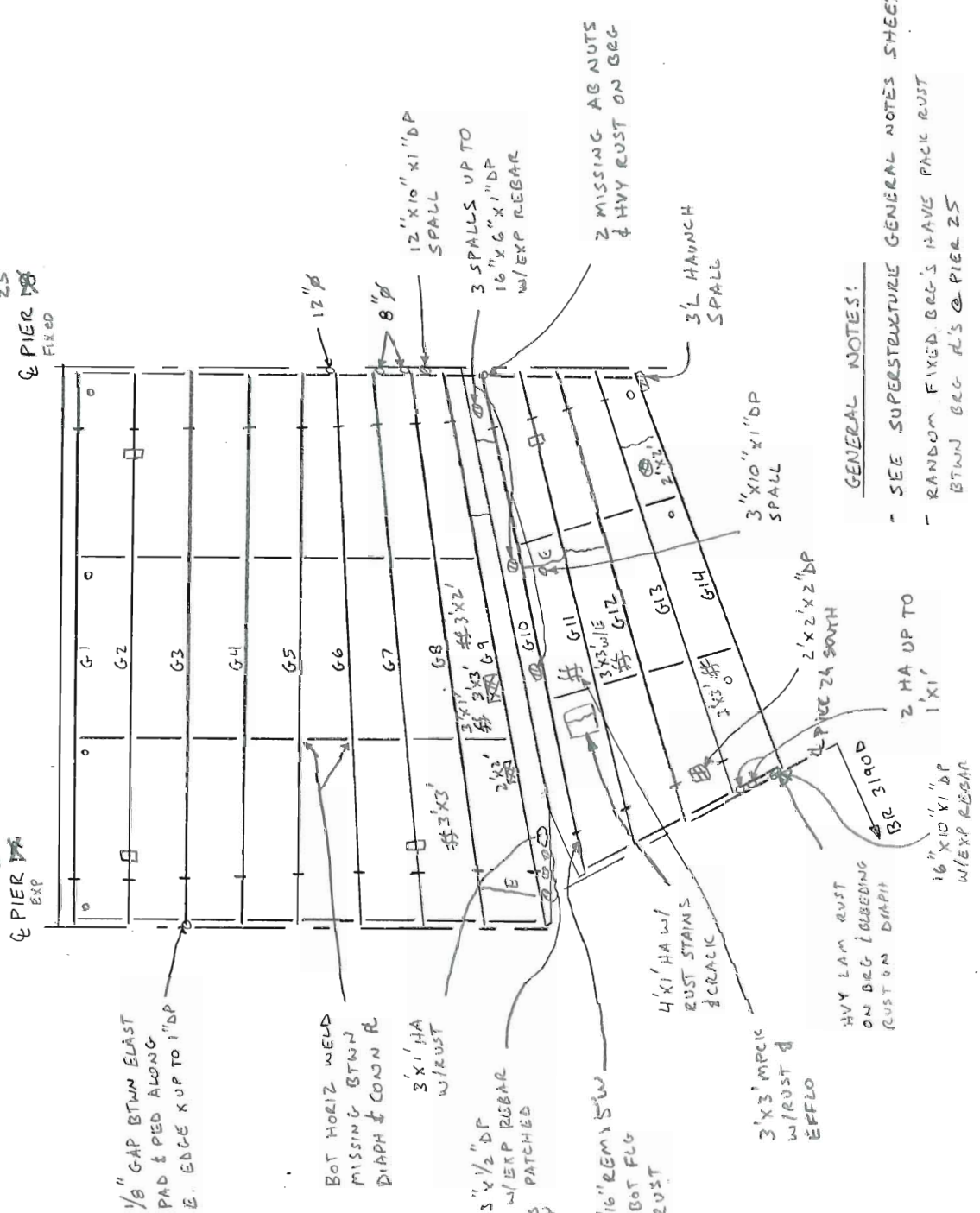
FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 9/27/06	SHEET 109
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 9/25/06	SHEET 110
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	

A2

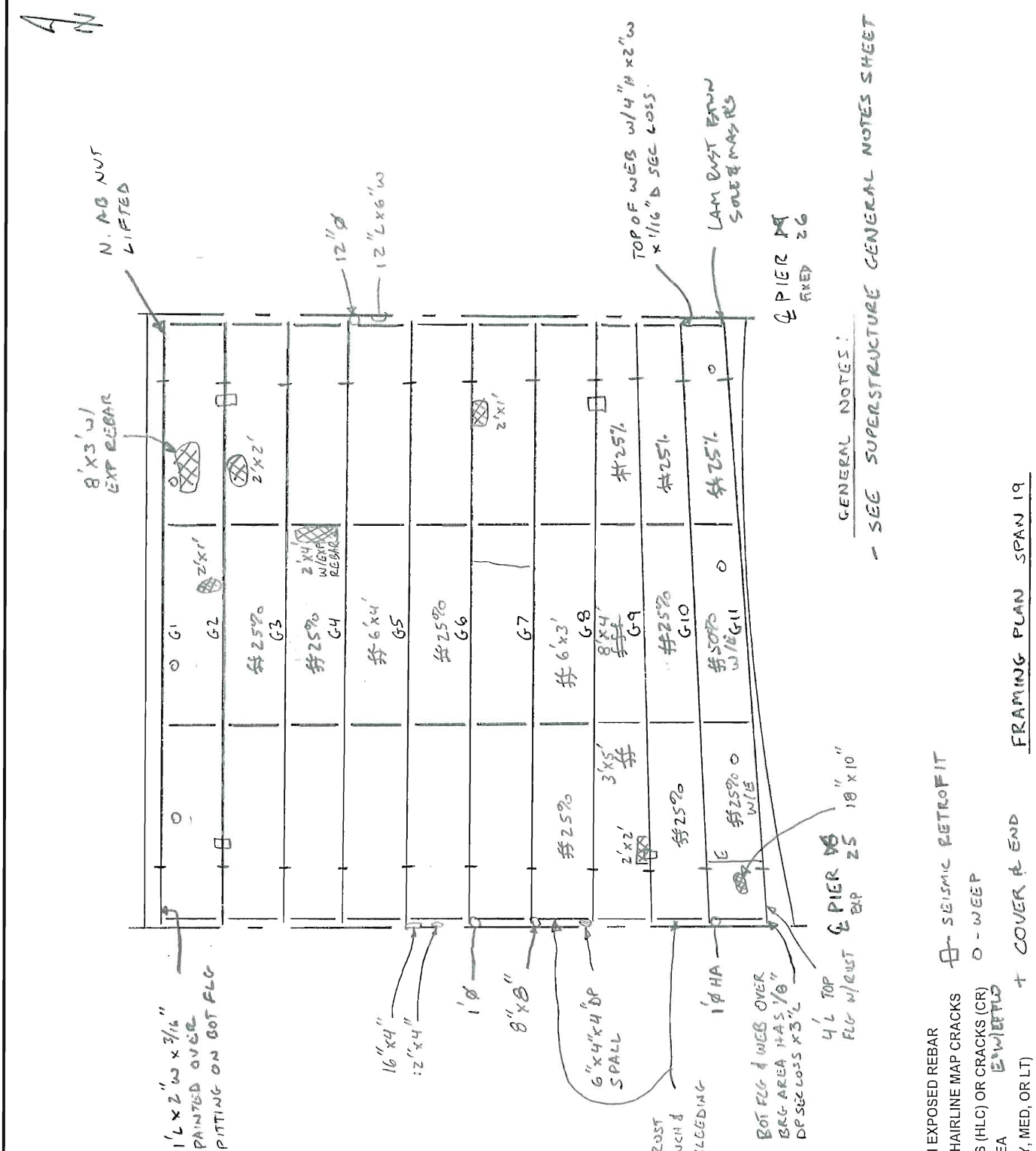


LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS — SEISMIC RETROFIT
- HAIRLINE CRACKS (HLC) OR CRACKS (CR) — COVER PL END
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT) — O - WEEP

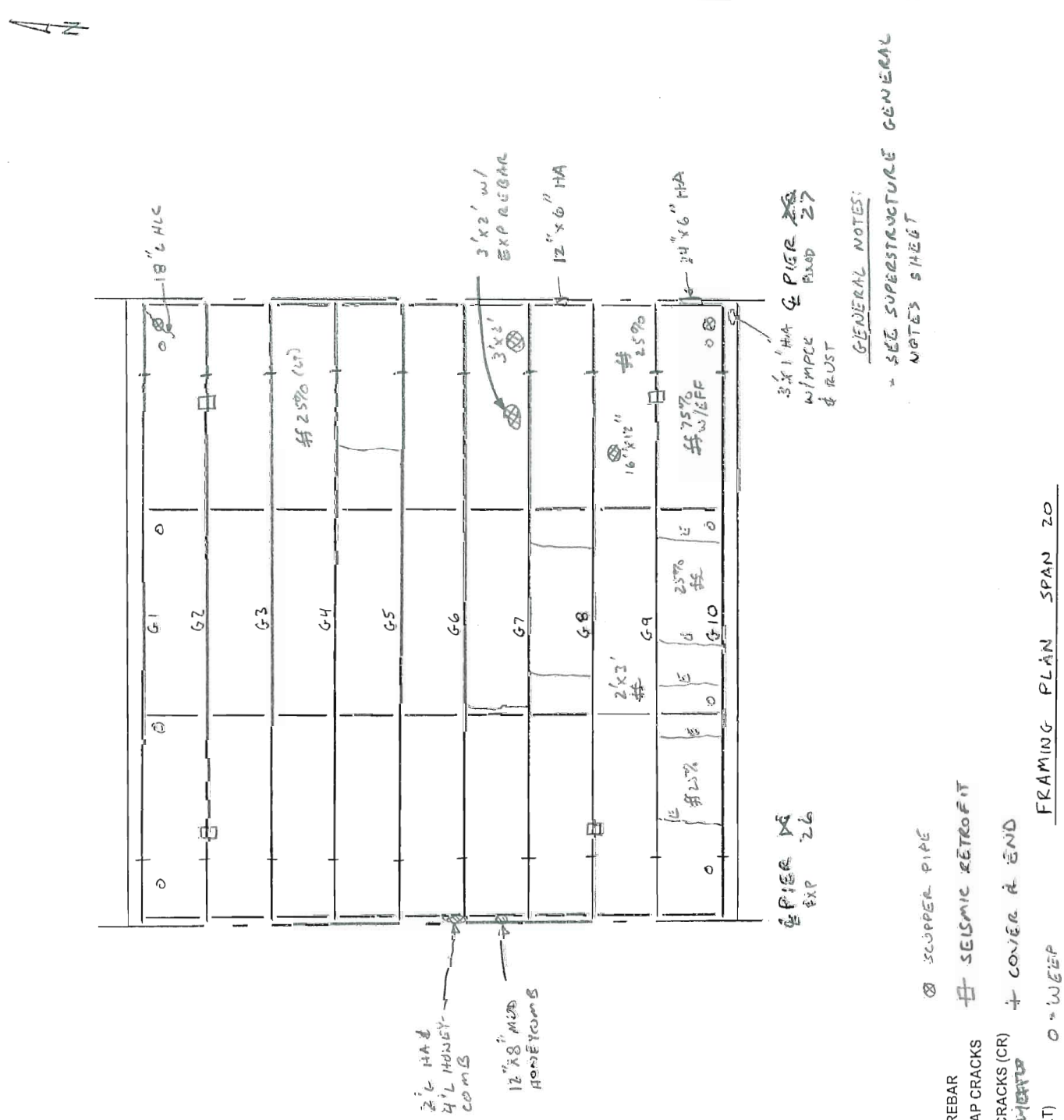
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 9/25/06	SHEET 111
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



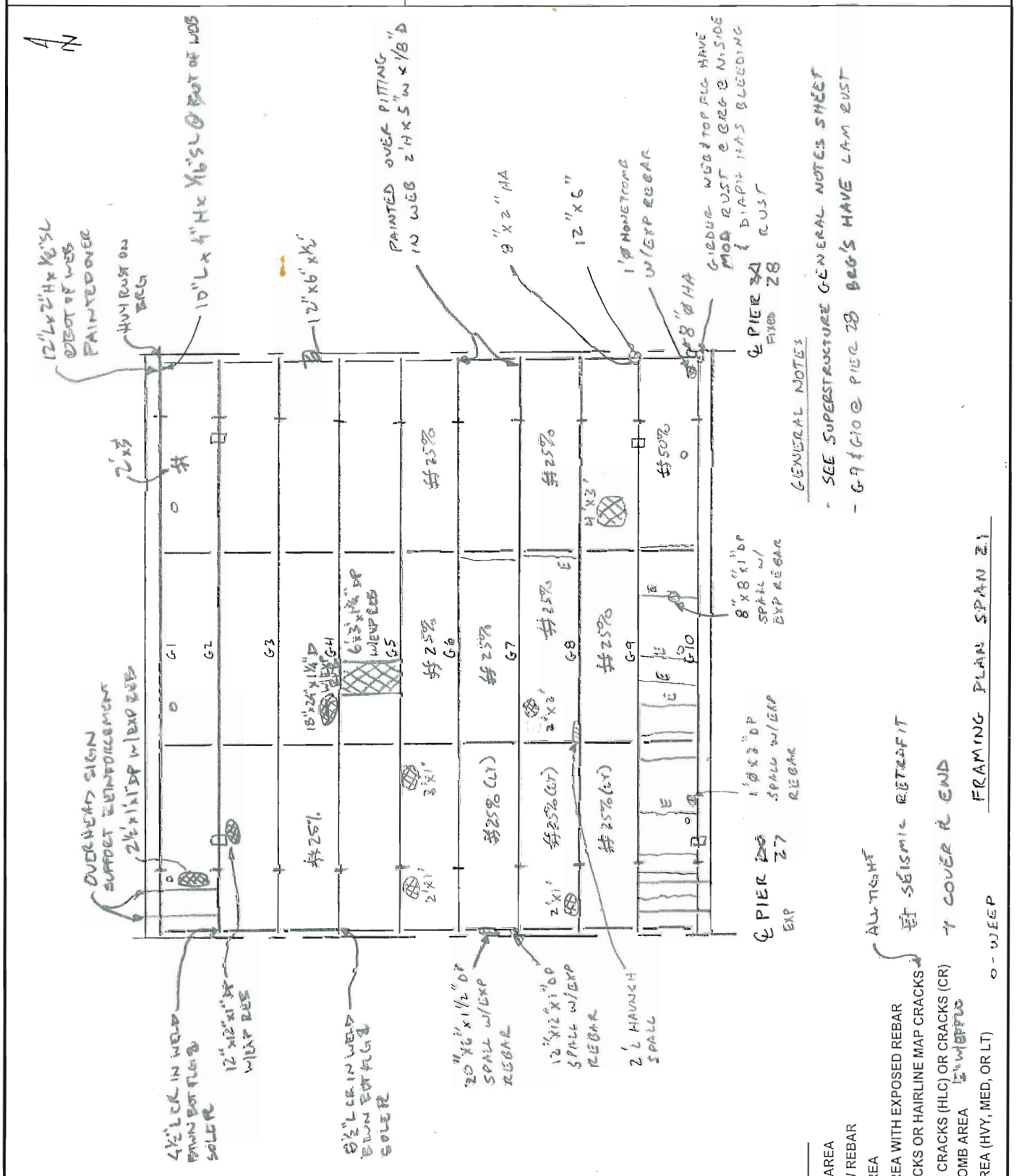
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 31918
	DATE 9/26/06	SHEET 1/2
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, CL	



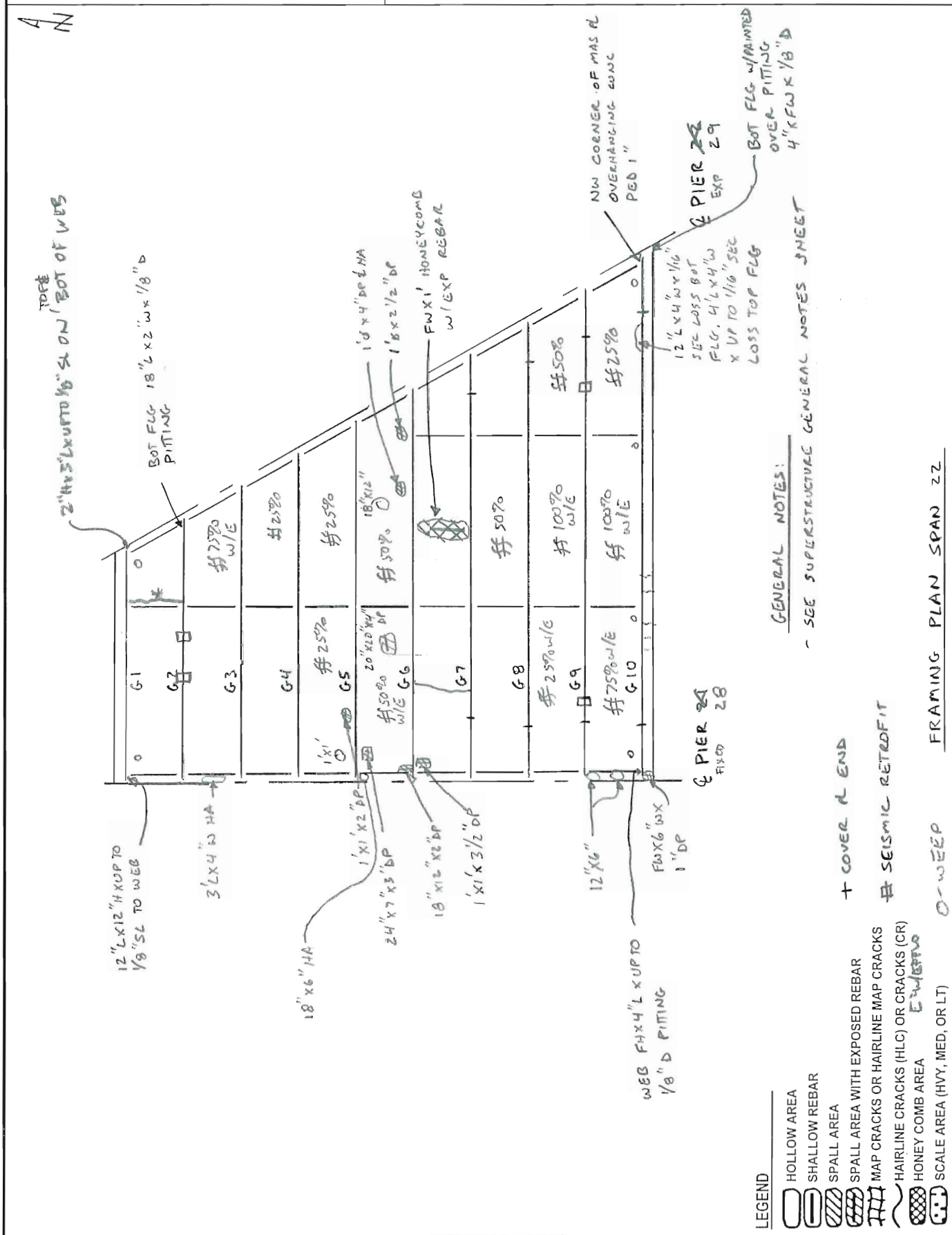
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 9/26/06	SHEET 113
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, CL



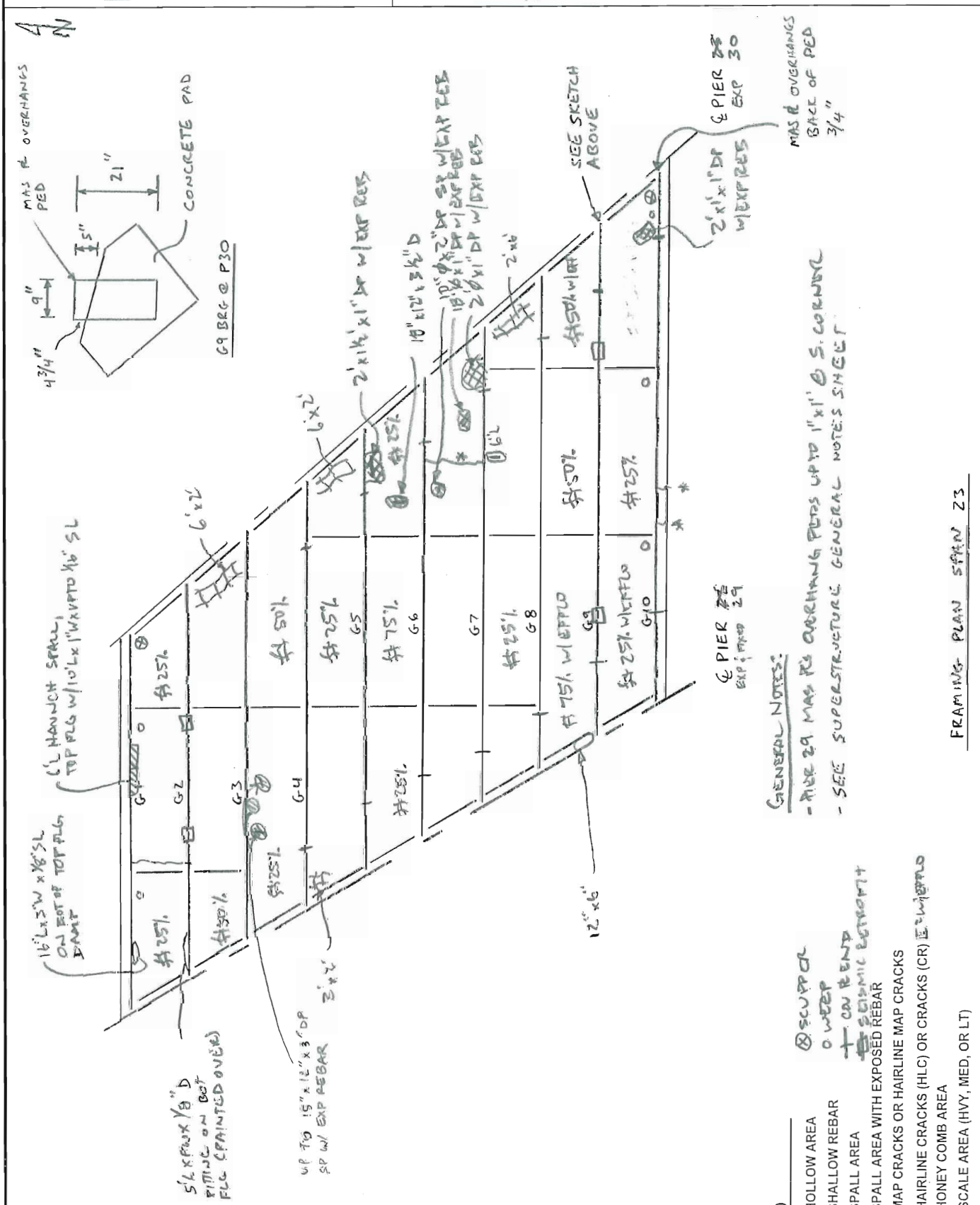
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/2/06	SHEET 114
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	



FIELD NOTES

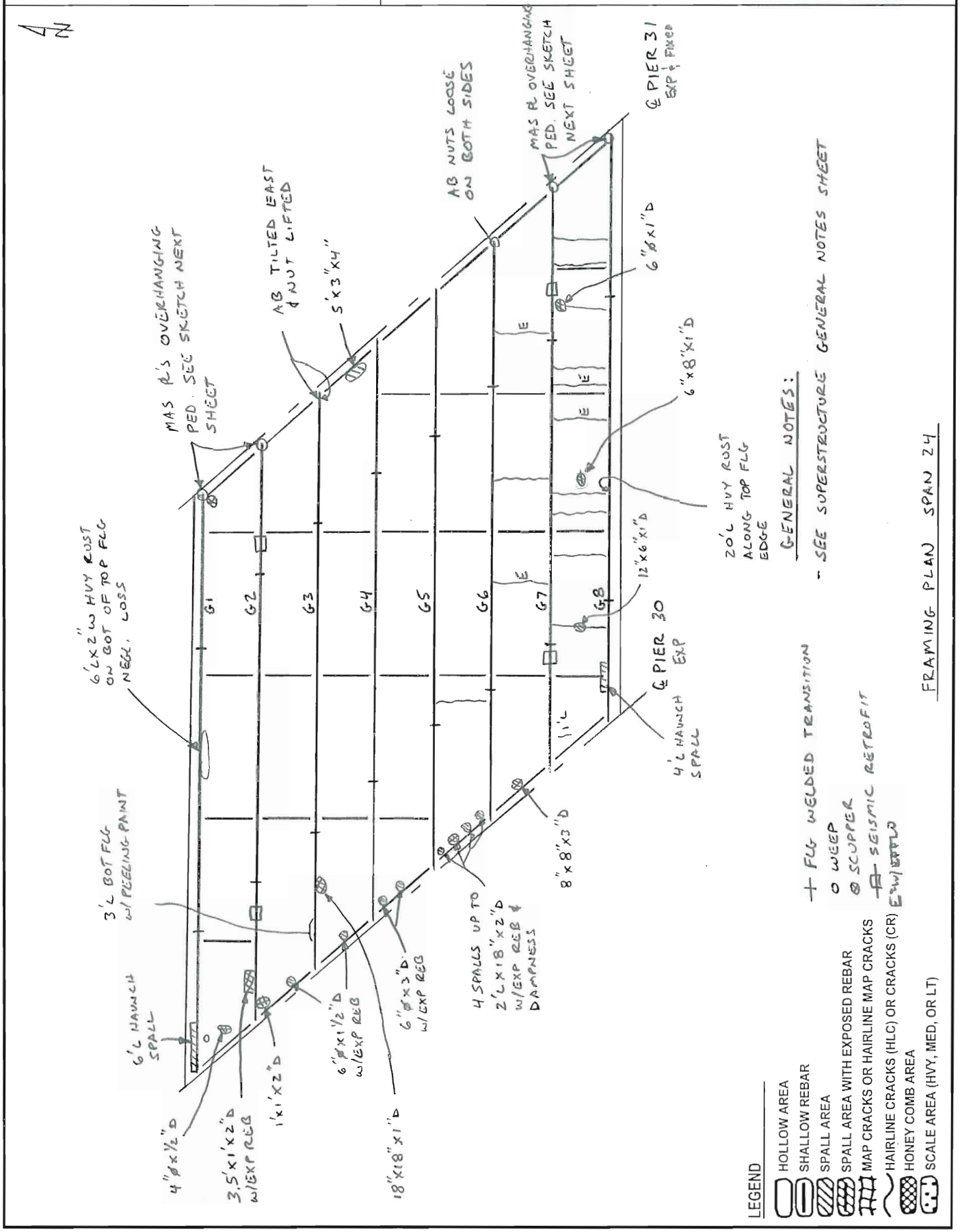
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/3/06	SHEET 115
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PIG, SW



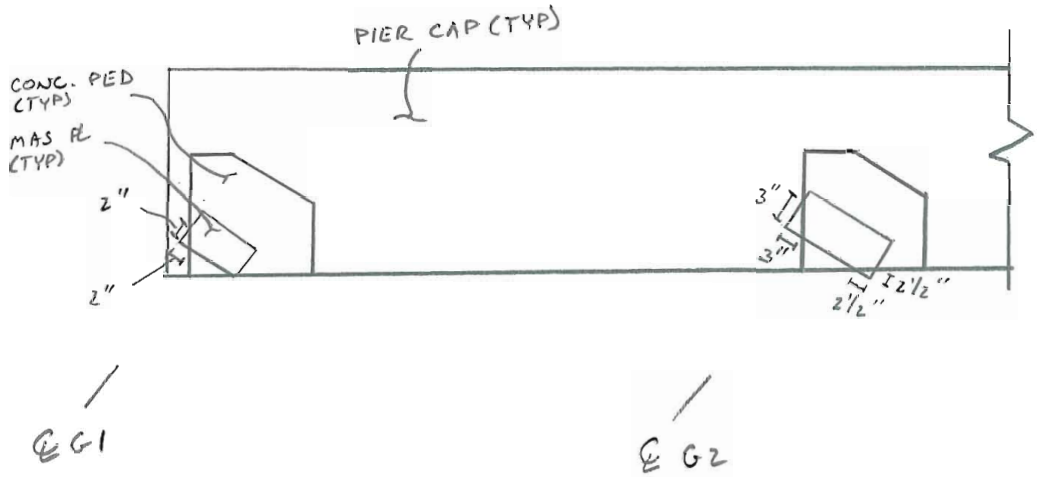
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/2/06	SHEET 1/6
CREW PG, SW	

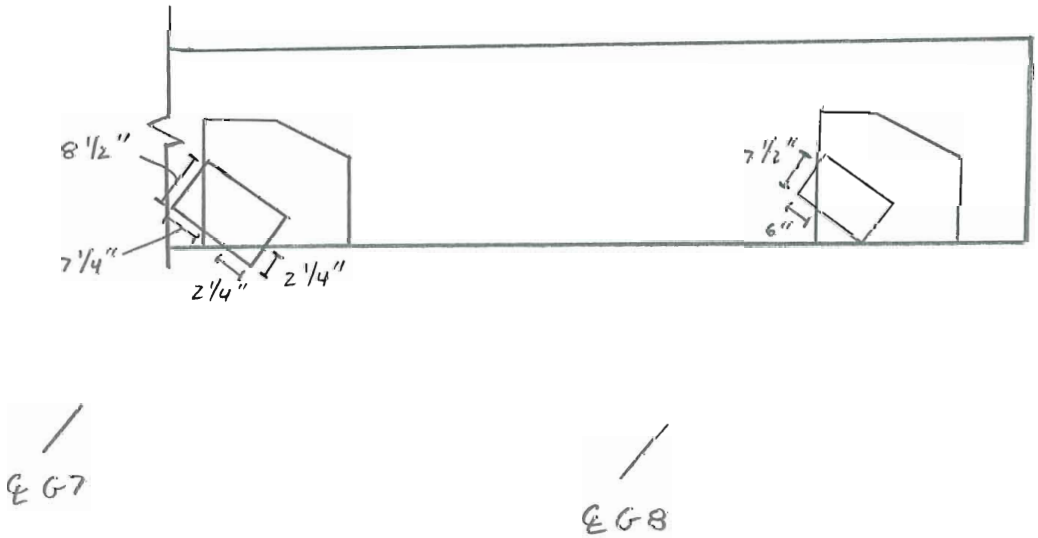
PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/2/06	SHEET 117
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



PLAN VIEW



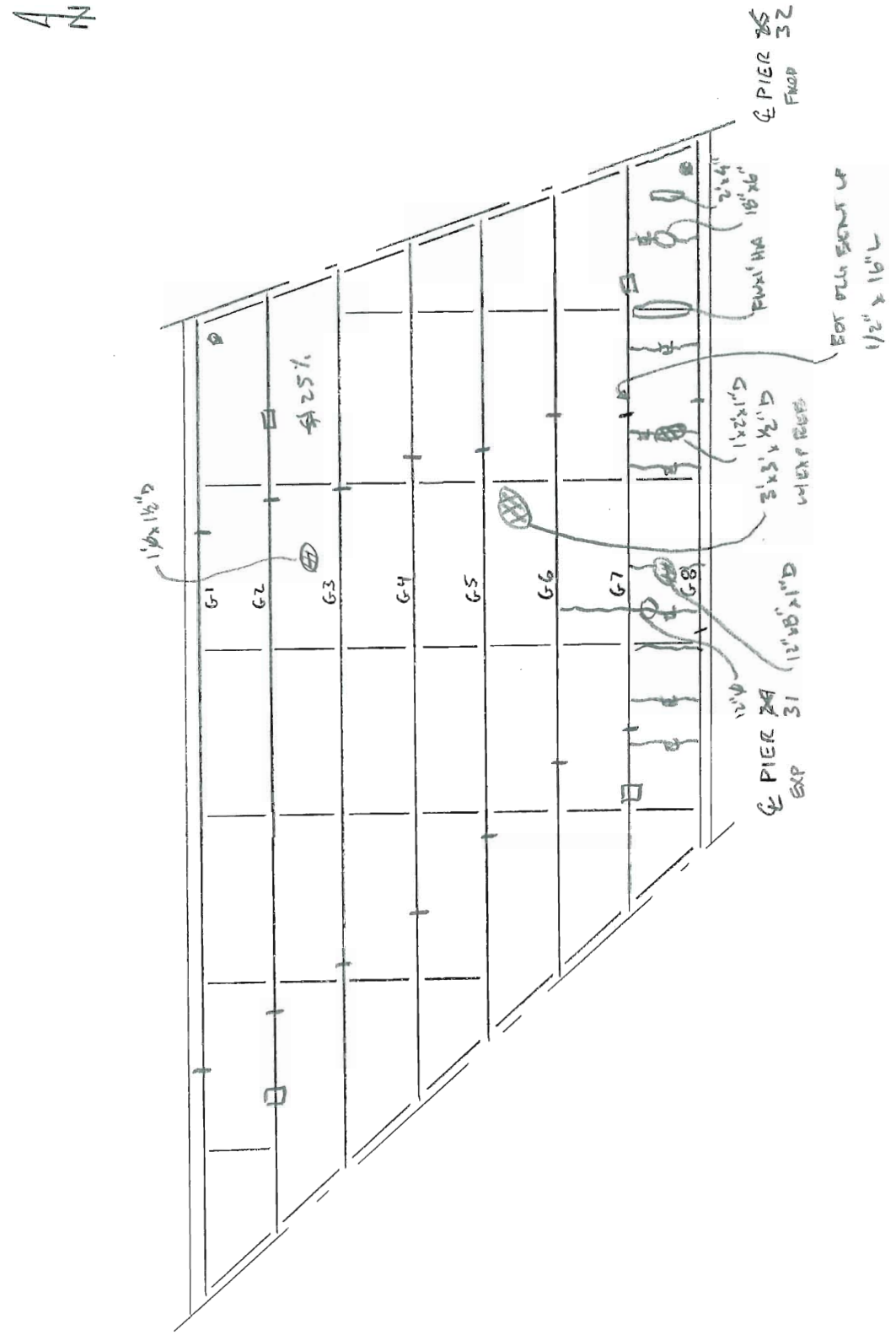
PLAN VIEW

MASONRY PLATE DIMENSIONS
30"W X 11"L

SPAN 24 @ PIER 31
BEARINGS OVERHANG PEDESTALS

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/30/06	SHEET 118
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	



GENERAL NOTES:

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

FRAMING PLAN SPAN 25

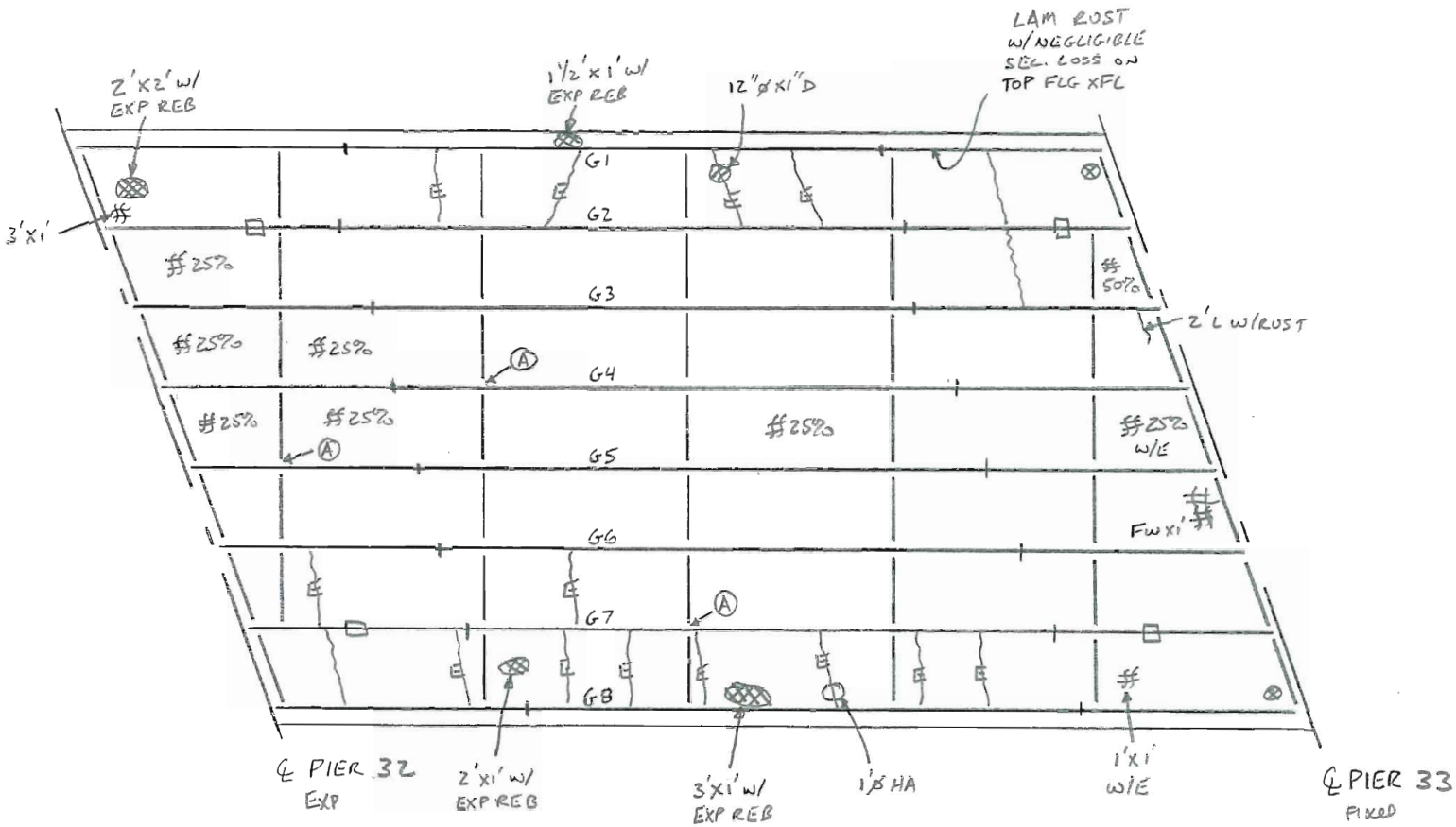
LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS · CONSULTANTS · CONSTRUCTION MANAGERS

JOB NO. 0156EXT
BRIDGE NO. 31913
DATE 10/31/06, 11/1/06
SHEET 119
CREW PG, SW, CL



GENERAL NOTES:

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR) E DW/EPLD
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)
- ⊗ SCUPPER
- + WELDED TRANSITION
- SEISMIC RETROFIT

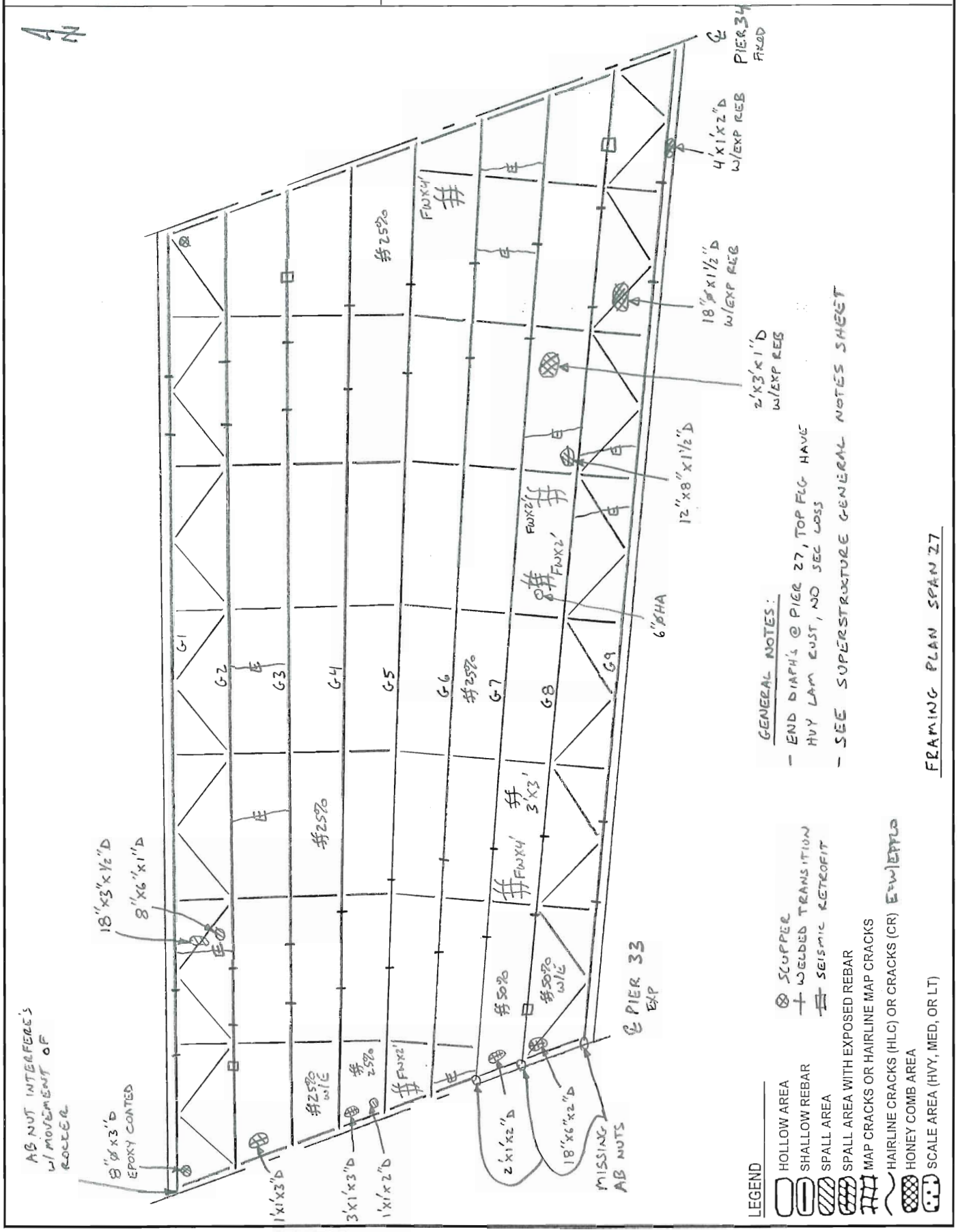
(A) BOT WELD W/POOR FUSION ONLY PART OF CONNECTS HORIZ MEMBER TO VERT STIFF

FRAMING PLAN SPAN 26

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/31/06	SHEET 120
CREW PG, SW, CL	

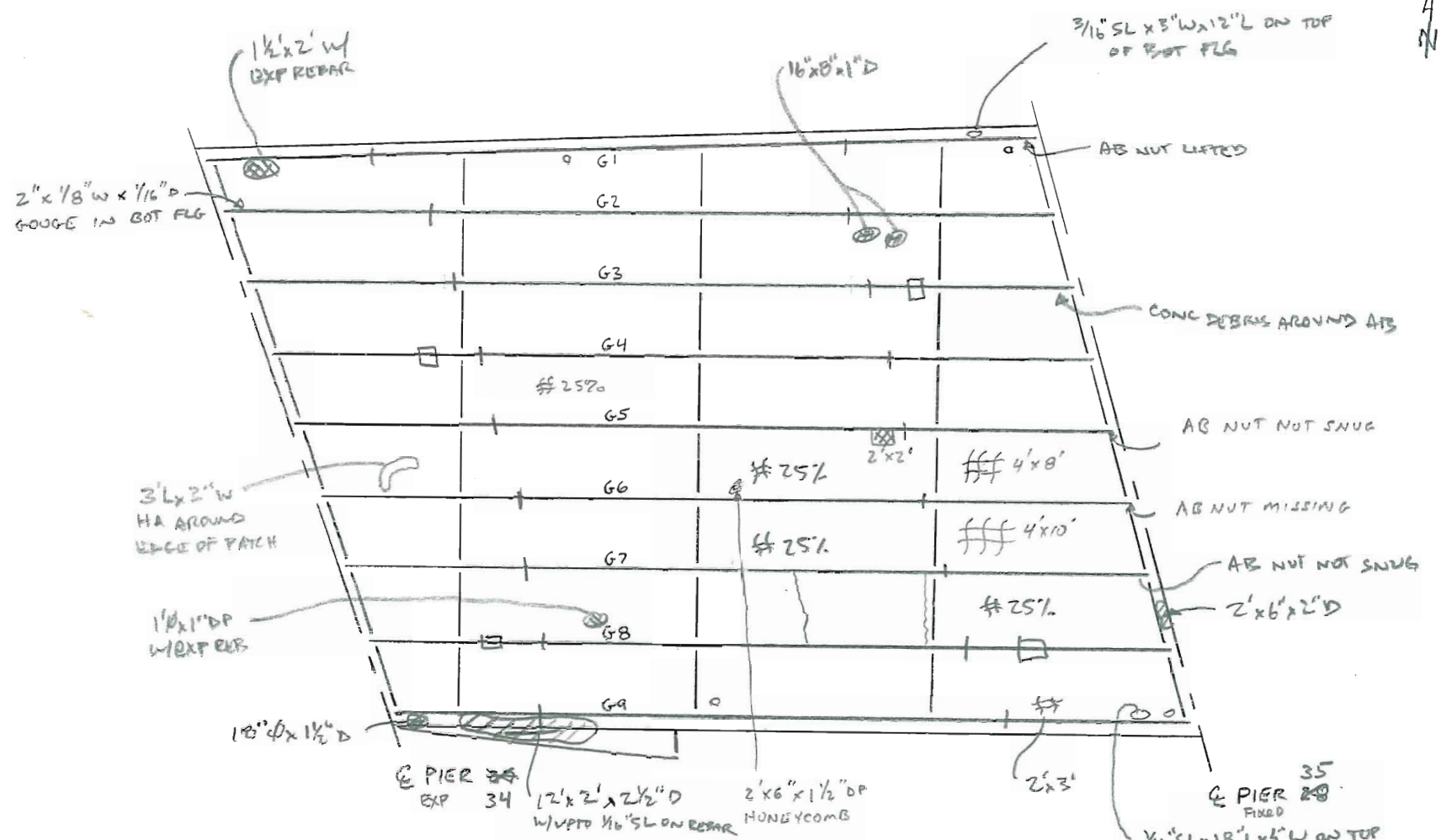
PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

JOB NO. 0156EXT
DATE 10/6/31/06
CREW PG, SW, CL
BRIDGE NO. 3191B
SHEET 121



GENERAL NOTES:

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET
- BEARING MAS PL CORNERS @ PIER 34 ARE OVERHANGING PED UP TO 2"x3" @ G2 - G5, G8 & G9.

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR) E=W/EFFLO
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

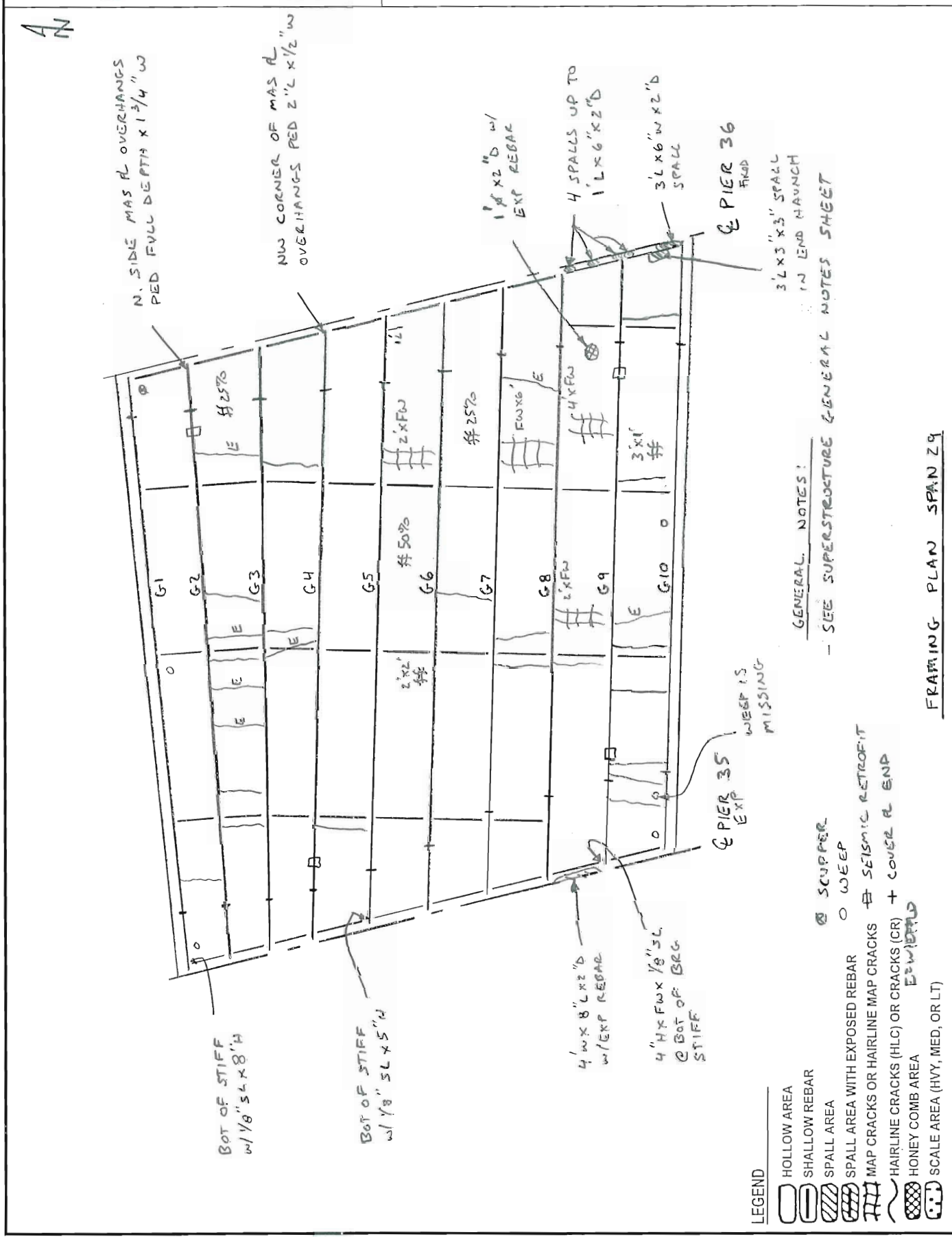
- WEEP
- FLG TRANSITION
- SEISMIC RETROFIT

FRAMING PLAN SPAN 28

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/5/06	SHEET 122
CREW PG, SW	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc.
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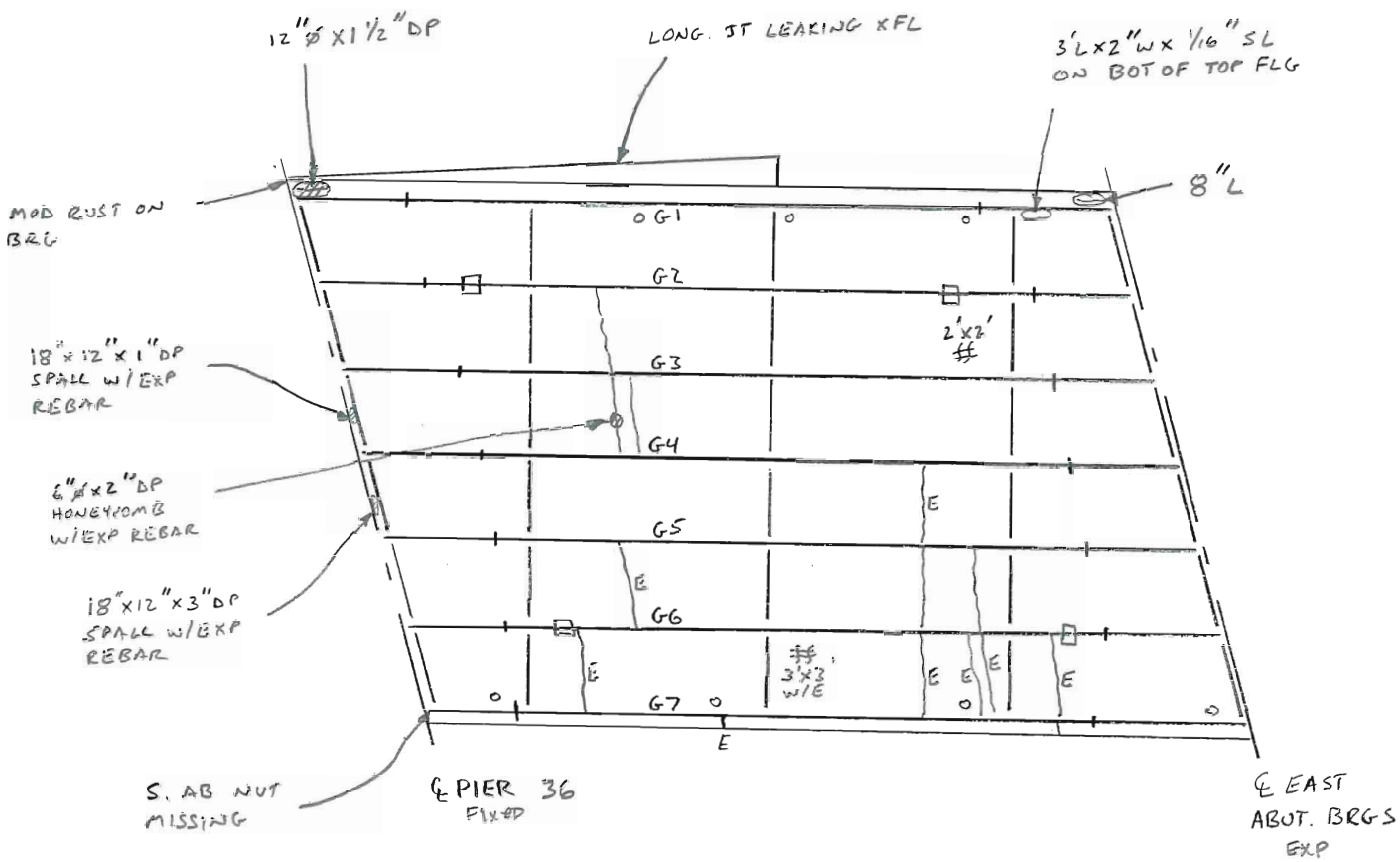
JOB NO. 0156EXT
DATE 10/5/06
CREW PG, SW
BRIDGE NO. 3191B
SHEET 123



GENERAL NOTES:

- SEE SUPERSTRUCTURE GENERAL NOTES SHEET

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

o WEEP
+ COVER PL END
⊟ SEISMIC RETROFIT
E = W/E

FRAMING PLAN SPAN 30

FIELD NOTES

PROJ. NO. 170- 2357	BRIDGE NO. 3191B	
DATE 9/25/06	SHEET 124	
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	

CRACK SCHEDULE

SPAN	MEMBER	DESCRIPTION	LENGTH
6	G4	G4 @ P13 SOLE PL TO BOT FLG WELD CRACKED @ SOUTH SIDE	FL (10")
6	G4	G4 @ P13 SOLE PL TO BOT FLG WELD CRACKED @ NORTH SIDE	3 1/2"
12	S4	S4 @ FB 13 SOUTHWEST TACK WELD BTWN BRG PL & TOP OF FLBM IS CRACKED	FL
13	FB 16	FB 16 E. SIDE @ S5 WELD BTWN BOTTOM OF STIFFENER & FB 16 WEB IS CRACKED	1"
13	G1	G1, EAST OF FB 17 BOLTED SPLICE S. SIDE. 3 TACK WELDS ALONG WEB SPLICE PL CRACKED FULL LENGTH	3@FL
13	G2	G2 @ FB 17 TOP OF WEB HAS 2 CRACKS W/ STOP HOLES DRILLED. NO PROPAGATION	3/4", 1"
14	FB 22	FB22 @ G2 TACK WELD BTWN BOT OF FLBM BOLSTER & HORIZ GUSSET PL CRACKED THRU. (EAST SIDE)	3 1/2"
14	FB 22	FB 22 @ G2 TACK WELD BTWN BOT OF FLBM BOLSTER & HORIZ GUSSET PL CRACKED THRU. (WEST SIDE)	12"
21	G2	G2 @ PIER 27 CRACK IN WELD BTWN BOT FLG & SOLE PL @ N. SIDE	4 1/2"
21	G4	G4 @ PIER 27 CRACK IN WELD BTWN BOT FLG & SOLE PL @ S. SIDE	8 1/2"
10	G1	BRG @ PIER 16, NW CORNER BOT FLG TO SOLE PL WELD CRACKED	6"
10 & 11	G2	BRG @ PIER 17, BOTH SOUTH KEEPER PL'S BROKEN PREV & NE KEEPER PL E. WELD IS CRACKED DUE TO PACK RUST BTWN ROLLER & KEEPER	N/A

Revision	Date	Crew	Company	Revision	Date	Crew	Company
Revision	Date	Crew	Company	Revision	Date	Crew	Company

FIELD NOTES

PROJ. NO. 170-2357	BRIDGE NO. 3191B
DATE 9/25/06	SHEET 125
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW

CRACK SCHEDULE

SPAN	MEMBER	DESCRIPTION	LENGTH
11	G1	BRG @ PIER 18, SOUTH KEEPER PL WELDS CRACKED DUE TO PACK RUST	N/A

Revision	Date	Crew	Company	Revision	Date	Crew	Company
Revision	Date	Crew	Company	Revision	Date	Crew	Company

Bridge No.: 03191B Date: 10/24/06 Prepared By: CL Checked By: PG

CONCRETE DETERIORATION WORKSHEET

Form BRI-10, Rev. 9/01

	Deterioration By Span - In Square Feet										
	Span Number										
Deterioration Type	1	2	3	4	5	6	7	8	9	10	Total
Spalled and Delaminated Areas	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top: 0
	Bot: 1	Bot: 9	Bot: 2	Bot: 3	Bot: 1	Bot: 6	Bot: 3	Bot: 11	Bot: 51	Bot: 22	Bot: 107
Scale (Moderate to Severe Only)	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top: 0
	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 0
Cracks: w/Efflorescence (use 6 in. width x length)	Bot: 11	Bot: 14	Bot: 4	Bot: 14	Bot: 11	Bot: 36	Bot: 0	Bot: 18	Bot: 23	Bot: 172	Bot: 303
w/o Efflo. (use 3 in. width x length)	Bot: 5	Bot: 12	Bot: 2	Bot: 2	Bot: 4	Bot: 9	Bot: 5	Bot: 11	Bot: 18	Bot: 10	Bot: 78
Map Cracking: w/Efflorescence (use full area)	Bot: 477	Bot: 48	Bot: 161	Bot: 0	Bot: 0	Bot: 74	Bot: 0	Bot: 2	Bot: 41	Bot: 199	Bot: 1,002
w/o Efflo. (use 50% of area)	Bot: 185	Bot: 152	Bot: 303	Bot: 237	Bot: 328	Bot: 428	Bot: 522	Bot: 365	Bot: 30	Bot: 8	Bot: 2,558
Honeycombed Areas (only areas more than 1 1/2 in. deep)	Bot: 0	Bot: 5	Bot: 0	Bot: 0	Bot: 0	Bot: 0	Bot: 5	Bot: 0	Bot: 28	Bot: 3	Bot: 41
Total Span Area (Square Feet)	2,798	3,764	2,788	2,798	4,011	3,995	3,534	3,995	6,410	6,461	40,555
% Spalled and Delaminated on Top	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
% Deterioration on Bottom	24.28%	6.35%	16.91%	9.17%	8.54%	13.85%	15.12%	10.20%	2.98%	6.40%	10.08%

Bridge No.: 03191B Date: 10/24/06 Prepared By: CL Checked By: PG

CONCRETE DETERIORATION WORKSHEET

Form BRI-10, Rev. 9/01

	Deterioration By Span - In Square Feet										
	Span Number										
Deterioration Type	11-13	14	15	16	17	18	19	20	21	22	Total
Spalled and Delaminated Areas	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top: 0
	Bot: 114	Bot: 3	Bot: 5	Bot: 20	Bot: 15	Bot: 20	Bot: 4	Bot: 6	Bot: 5	Bot: 15	Bot: 206
Scale (Moderate to Severe Only)	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top: 0
	Bot:	Bot:	Bot:	Bot:	Bot: 2	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 2
Cracks: w/Efflorescence (use 6 in. width x length)	Bot: 367	Bot: 95	Bot: 15	Bot: 30	Bot: 25	Bot: 7	Bot: 3	Bot: 19	Bot: 22	Bot: 4	Bot: 587
w/o Efflo. (use 3 in. width x length)	Bot: 44	Bot: 10	Bot: 24	Bot: 12	Bot: 2	Bot: 4	Bot: 2	Bot: 7	Bot: 13	Bot: 2	Bot: 119
Map Cracking: w/Efflorescence (use full area)	Bot: 954	Bot: 280	Bot: 24	Bot: 0	Bot: 0	Bot: 18	Bot: 431	Bot: 133	Bot: 0	Bot: 669	Bot: 2,509
w/o Efflo. (use 50% of area)	Bot: 1,828	Bot: 551	Bot: 75	Bot: 88	Bot: 0	Bot: 14	Bot: 56	Bot: 91	Bot: 268	Bot: 212	Bot: 3,184
Honeycombed Areas (only areas more than 1 1/2 in. deep)	Bot: 23	Bot: 22	Bot: 8	Bot: 10	Bot: 2	Bot: 17	Bot: 45	Bot: 26	Bot: 48	Bot: 7	Bot: 207
Total Span Area (Square Feet)	19,800	5,341	3,603	3,647	3,755	6,143	5,382	5,165	5,165	3,545	61,543
% Spalled and Delaminated on Top	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
% Deterioration on Bottom	16.82%	17.96%	4.19%	4.38%	1.21%	1.27%	10.08%	5.45%	6.90%	25.66%	11.07%

Bridge No.: 03191B Date: 10/24/06 Prepared By: CL Checked By: PG

CONCRETE DETERIORATION WORKSHEET

Form BRI-10, Rev. 9/01

	Deterioration By Span - In Square Feet										
	Span Number										
Deterioration Type	23	24	25	26	27	28	29	30			Total
Spalled and Delaminated Areas	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top: 0
	Bot: 6	Bot: 17	Bot: 12	Bot: 1	Bot: 10	Bot: 29	Bot: 28	Bot: 4	Bot:	Bot:	Bot: 106
Scale (Moderate to Severe Only)	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top: 0
	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 0
Cracks: w/Efflorescence (use 6 in. width x length)	Bot: 6	Bot: 19	Bot: 34	Bot: 62	Bot: 43	Bot: 0	Bot: 24	Bot: 26	Bot:	Bot:	Bot: 215
w/o Efflo. (use 3 in. width x length)	Bot: 2	Bot: 24	Bot: 7	Bot: 8	Bot: 2	Bot: 4	Bot: 33	Bot: 10	Bot:	Bot:	Bot: 90
Map Cracking: w/Efflorescence (use full area)	Bot: 294	Bot: 0	Bot: 0	Bot: 32	Bot: 118	Bot: 0	Bot: 0	Bot: 9	Bot:	Bot:	Bot: 452
w/o Efflo. (use 50% of area)	Bot: 331	Bot: 0	Bot: 32	Bot: 158	Bot: 297	Bot: 123	Bot: 131	Bot: 2	Bot:	Bot:	Bot: 1,075
Honeycombed Areas (only areas more than 1 1/2 in. deep)	Bot: 10	Bot: 6	Bot: 9	Bot: 11	Bot: 11	Bot: 9	Bot: 1	Bot: 0	Bot:	Bot:	Bot: 56
Total Span Area (Square Feet)	4,001	6,856	7,896	8,566	12,372	4,456	5,014	3,614			52,776
% Spalled and Delaminated on Top	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			0.00%
% Deterioration on Bottom	16.20%	0.96%	1.20%	3.16%	3.89%	3.69%	4.33%	1.40%			3.78%

Bridge No.: 03191B Date: 10/24/06 Prepared By: CL Checked By: PG

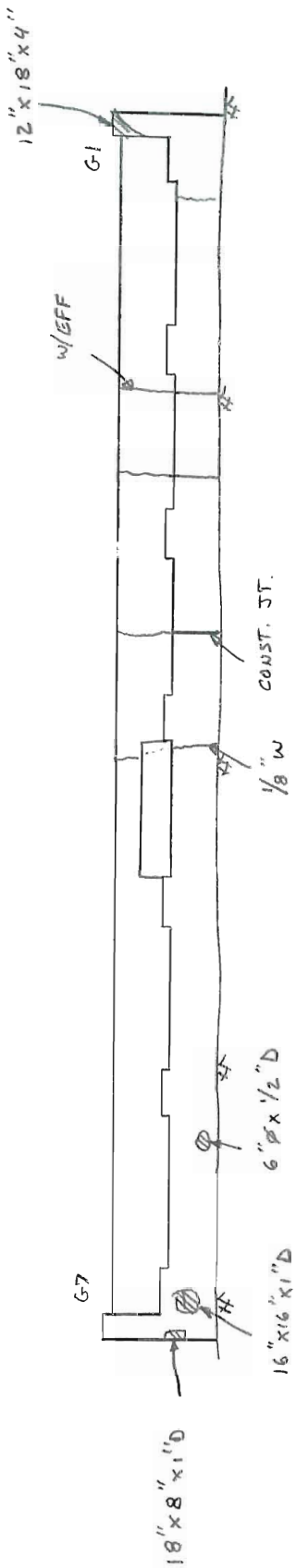
CONCRETE DETERIORATION WORKSHEET

Form BRI-10, Rev. 9/01

	Deterioration By Span - In Square Feet										
	Span Number										
Deterioration Type	1-10	11-22	22-30								Total
Spalled and Delaminated Areas	Top: 0	Top: 0	Top: 0	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top: 0
	Bot: 107	Bot: 206	Bot: 106	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 419
Scale (Moderate to Severe Only)	Top: 0	Top: 0	Top: 0	Top:	Top:	Top:	Top:	Top:	Top:	Top:	Top: 0
	Bot: 0	Bot: 2	Bot: 0	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 2
Cracks: w/Efflorescence (use 6 in. width x length)	Bot: 303	Bot: 587	Bot: 215	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 1,105
w/o Efflo. (use 3 in. width x length)	Bot: 78	Bot: 119	Bot: 90	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 287
Map Cracking: w/Efflorescence (use full area)	Bot: 1,002	Bot: 2,509	Bot: 452	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 3,963
w/o Efflo. (use 50% of area)	Bot: 2,558	Bot: 3,184	Bot: 1,075	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 6,817
Honeycombed Areas (only areas more than 1 1/2 in. deep)	Bot: 41	Bot: 207	Bot: 56	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot:	Bot: 304
Total Span Area (Square Feet)	40,555	61,543	52,776								154,873
% Spalled and Delaminated on Top	0.00%	0.00%	0.00%								0.00%
% Deterioration on Bottom	10.08%	11.07%	3.78%								8.33%

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/18/06	SHEET 130
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



GENERAL NOTES:

- ACTIVE LEAKAGE THROUGH DECK JT XFW OF ABUT

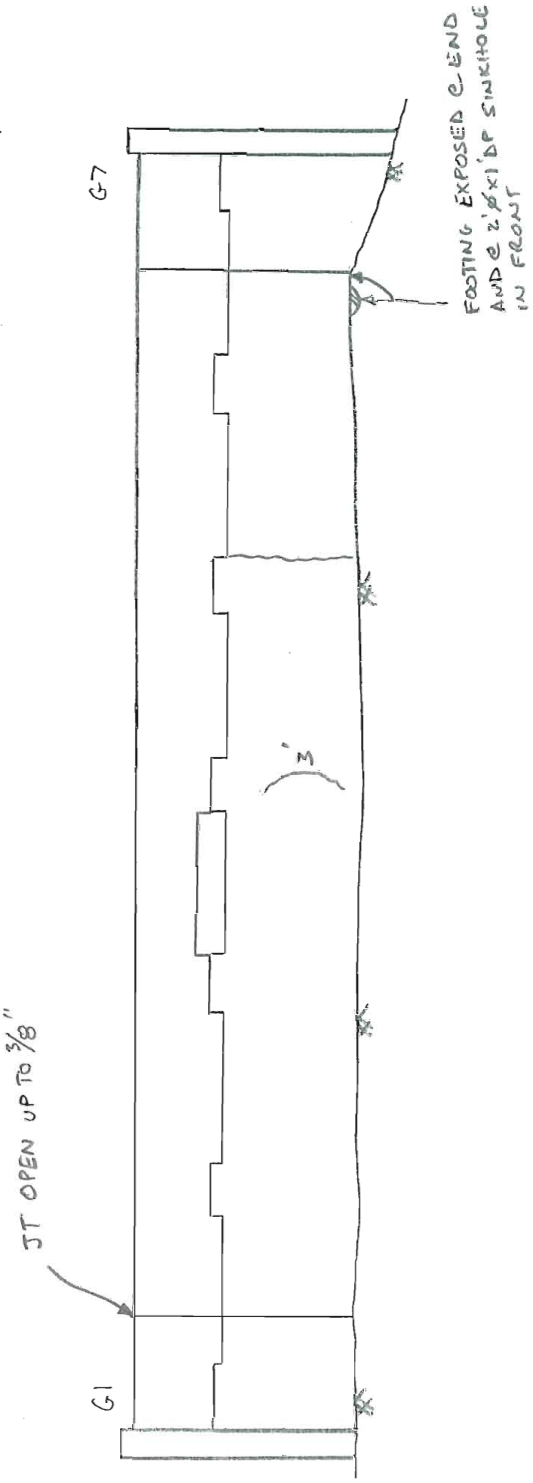
WEST ABUTMENT

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/5/06	SHEET 131
	CREW PG, SW	



GENERAL NOTES:

- SEAT IS DAMP THROUGHOUT W/EVIDENCE OF DECK ST LEAKAGE FOR FULL WIDTH OF ABUTMENT
- SE WINGWALL NOT VISIBLE DUE TO BR 3191A COLUMN BASE
- E. APPROACH S. PPT @ SE WW HAS SETTLED 4 1/2"

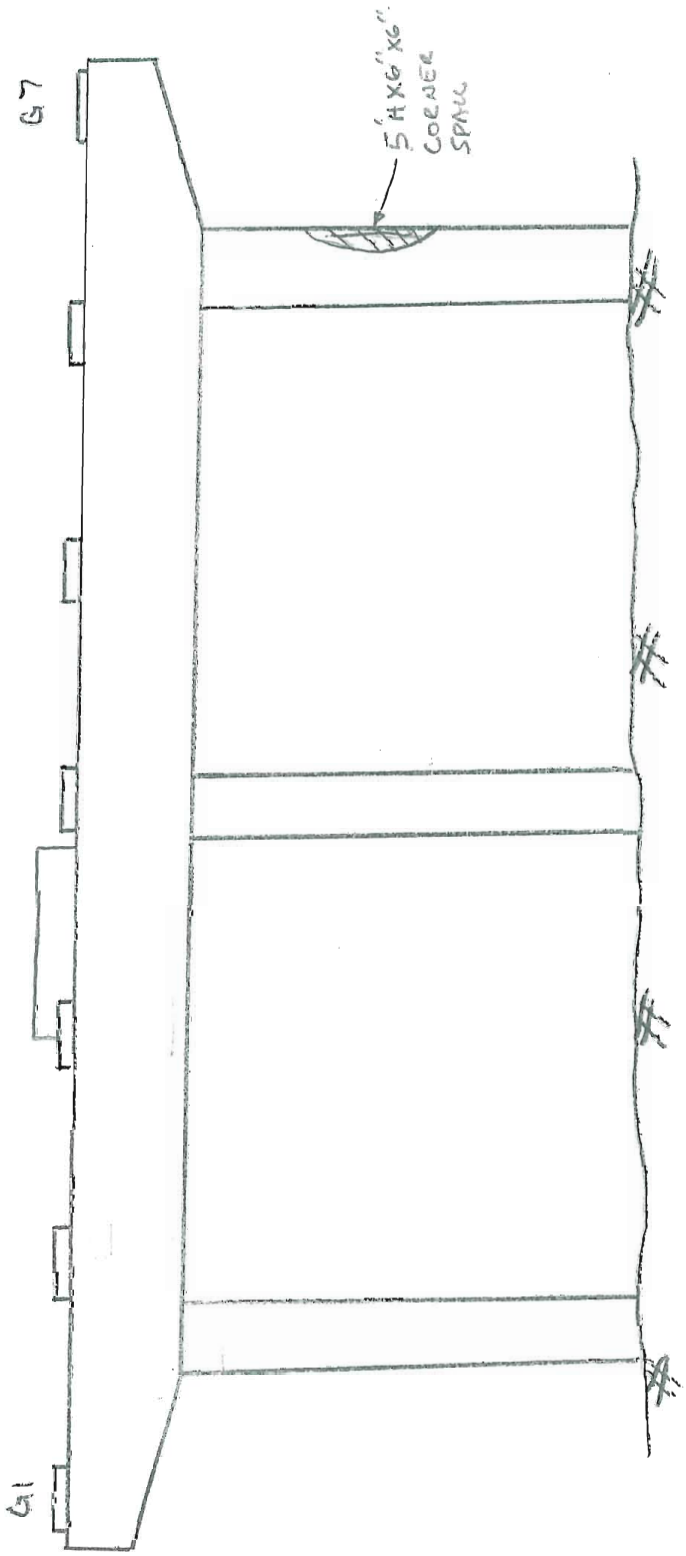
EAST ABUTMENT

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 11/7/06	SHEET 132
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW [illegible]	



GENERAL NOTES:

- PIER CAP & TOPS OF COLUMN SPALLS & HAS HAVE BEEN PATCHED & PAINTED W/ PROTECTIVE COATING SINCE PREV. INSP.
- EXPOSED REBAR @ SPALLS TYPICALLY HAS UP TO 1/16" LOSS, ALL PIERS

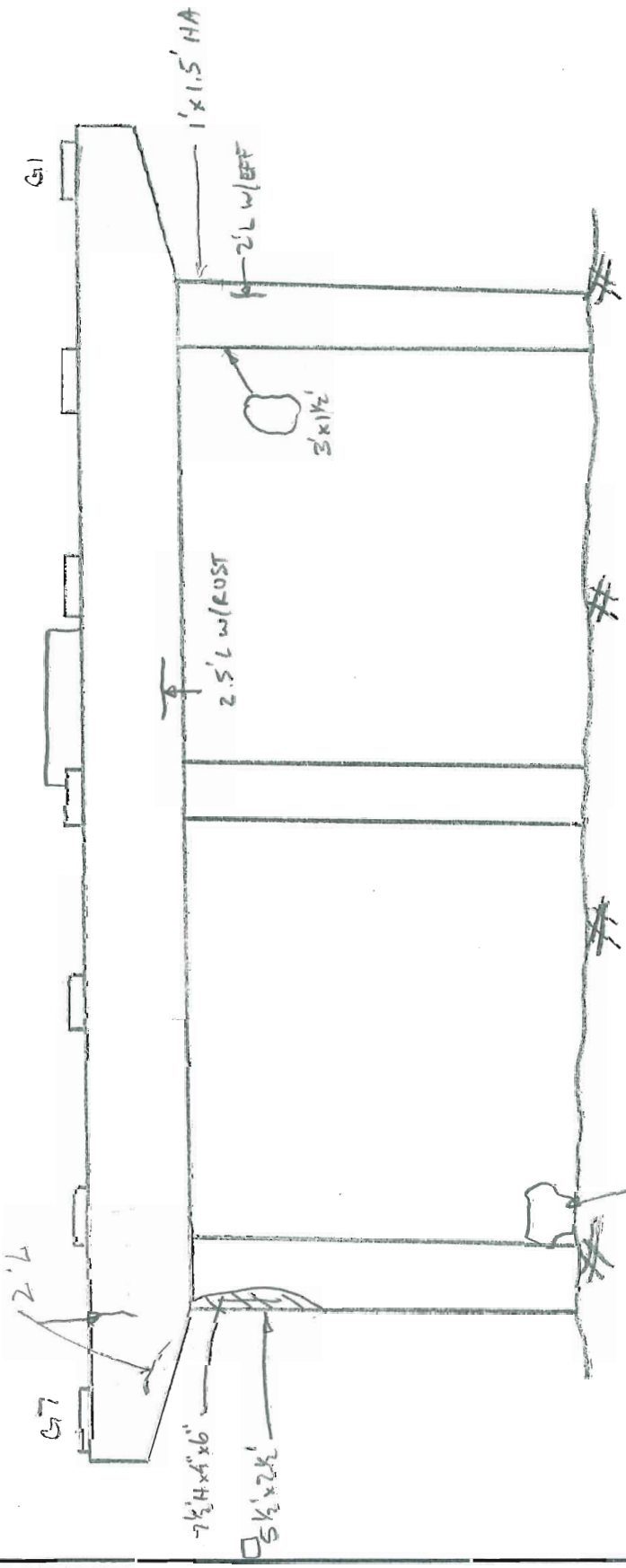
PIER #5 WEST ELEV.

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. N191B
	DATE 11/9/06	SHEET 133
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, DS, CL	



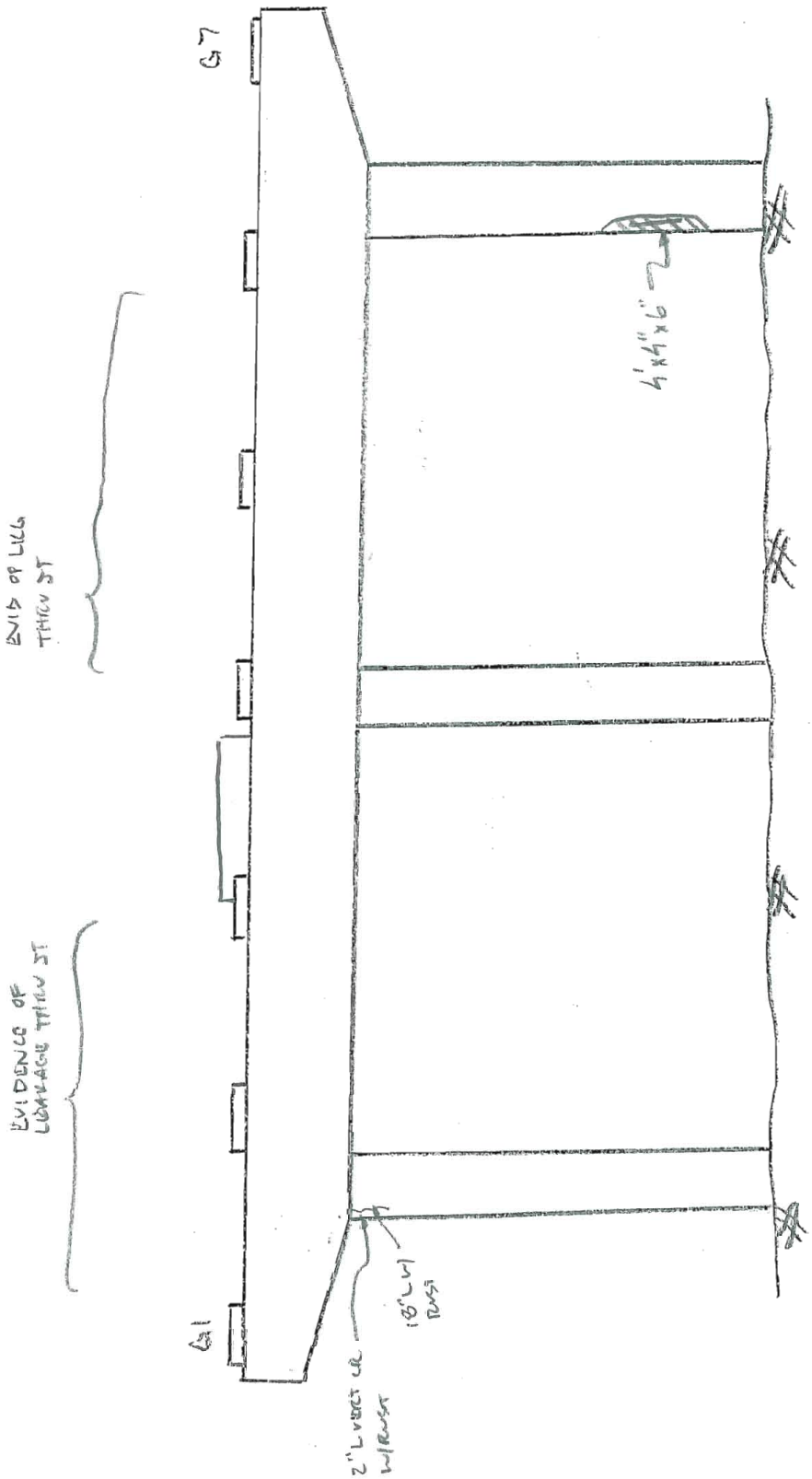
GENERAL NOTES:
- PIER CAP & TOPS OF COLUMN SPALLS & HA'S HAVE BEEN PATCHED & PAINTED W/ REACTIVE COATING SHEET PREV. INSP.

5
PIER X, EAST ELEV

LEGEND
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 11/6/06	SHEET 134
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, DS	



GENERAL NOTES:
- PIER CAP & TOPS OF COLUMN SPALLS & HAS HAVE BEEN PATCHED & PAINTED W/ PROTECTIVE COATING SINCE PREV. INSP.

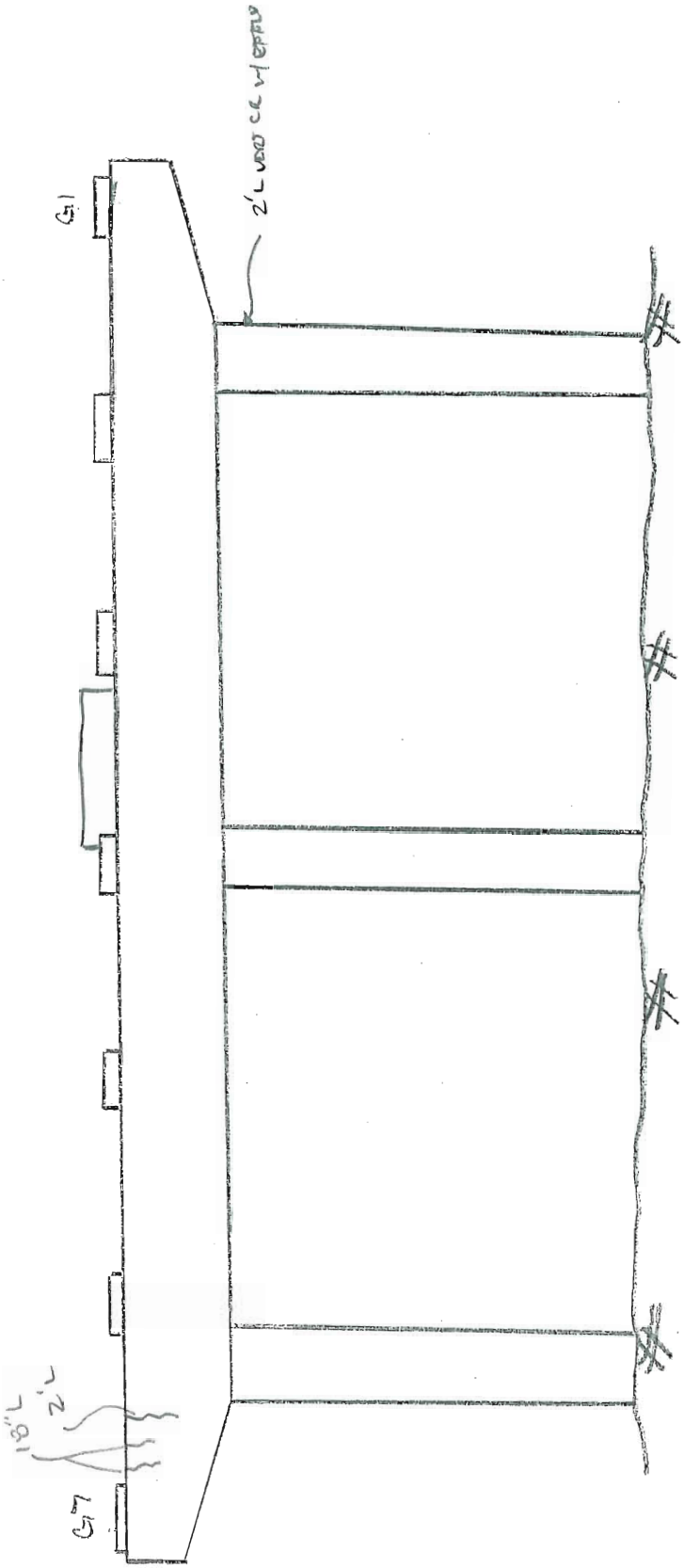
PIER 7, WEST ELEV.

LEGEND
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. N1918
DATE 11/1,6/06	SHEET 135
CREW FDG, SW, DS	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



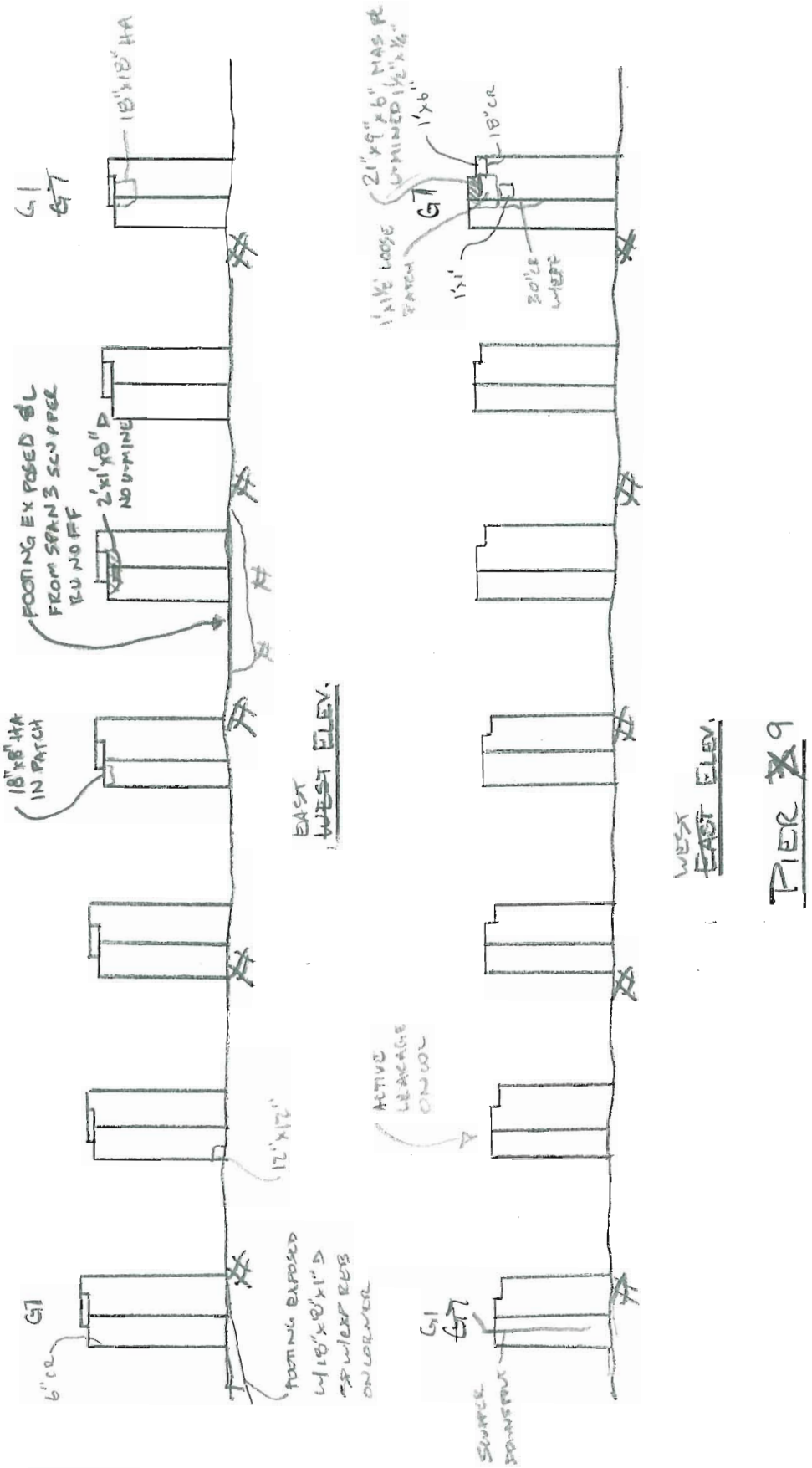
GENERAL NOTES:
- PIER CAP & TOPS OF COLUMN SPALLS & HAS HAVE BEEN PATCHED & PAINTED W/ PROTECTIVE COATING, SHEE PREV. INSP.

PIER 7 & EAST ELEV

LEGEND
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE	SHEET 136
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW	

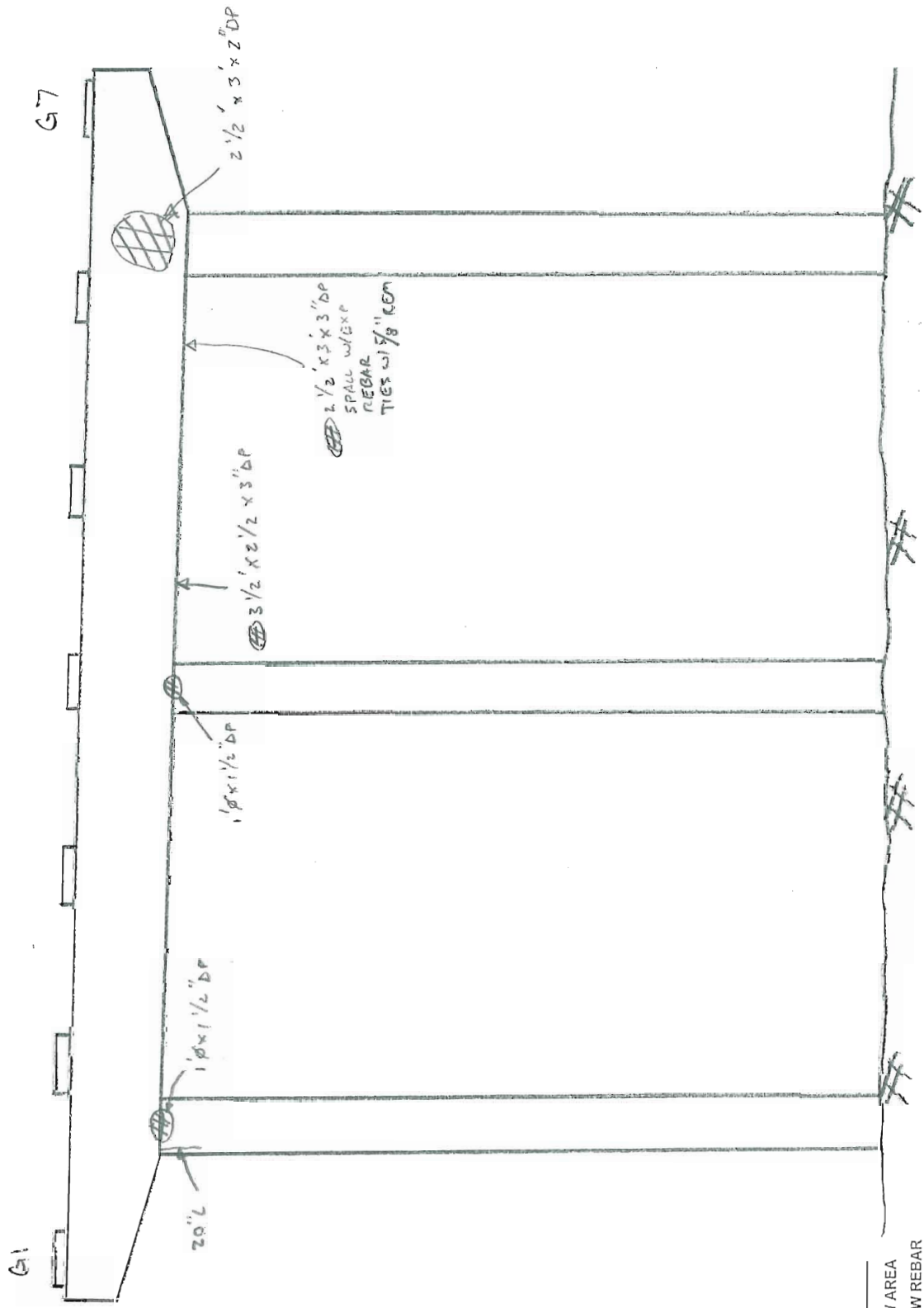


LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/24/06	SHEET 137
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW SW, PDH	



PIER #1 WEST ELEV.

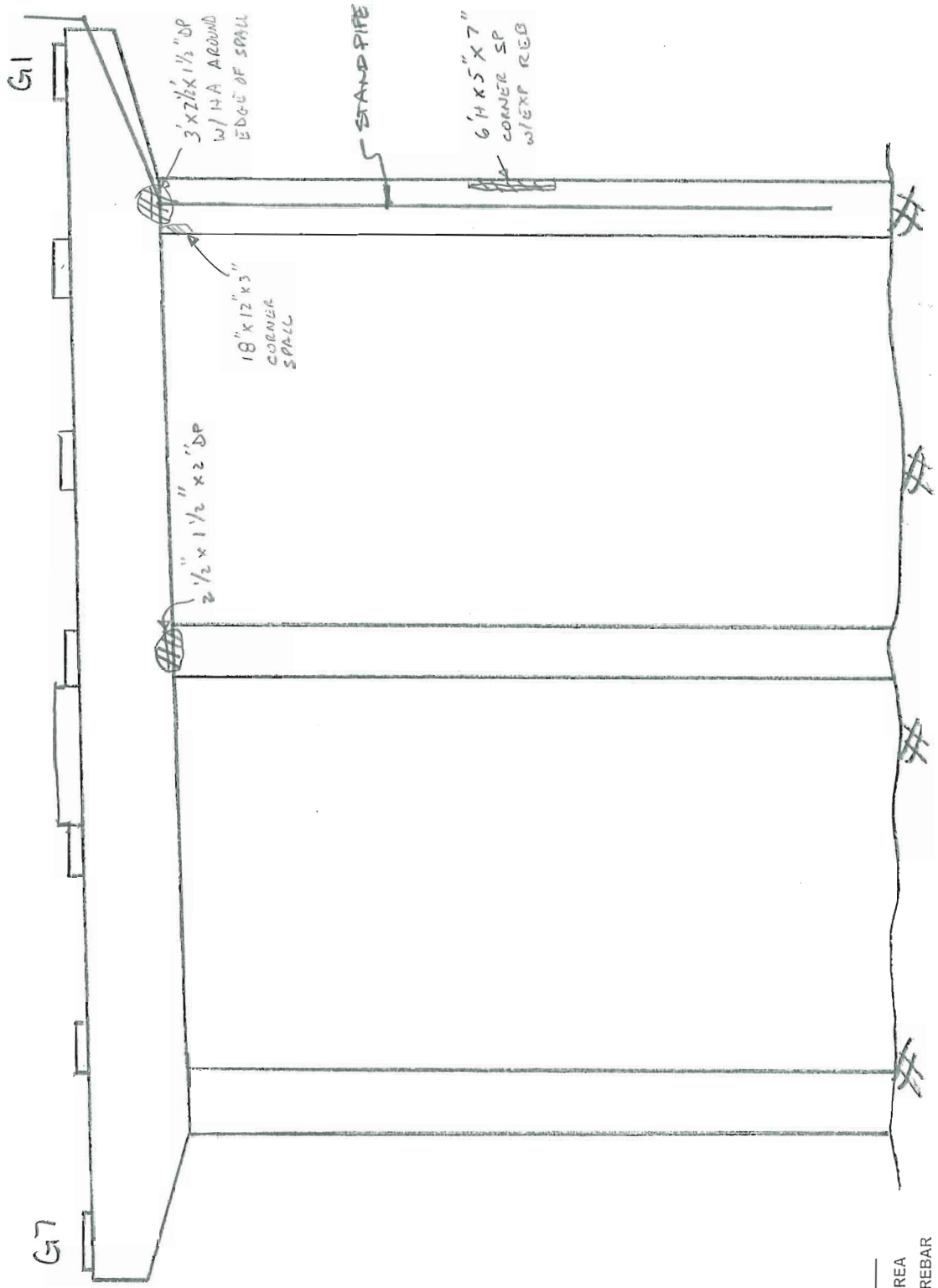
LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/24/06	SHEET 138
CREW SW, PDG	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS

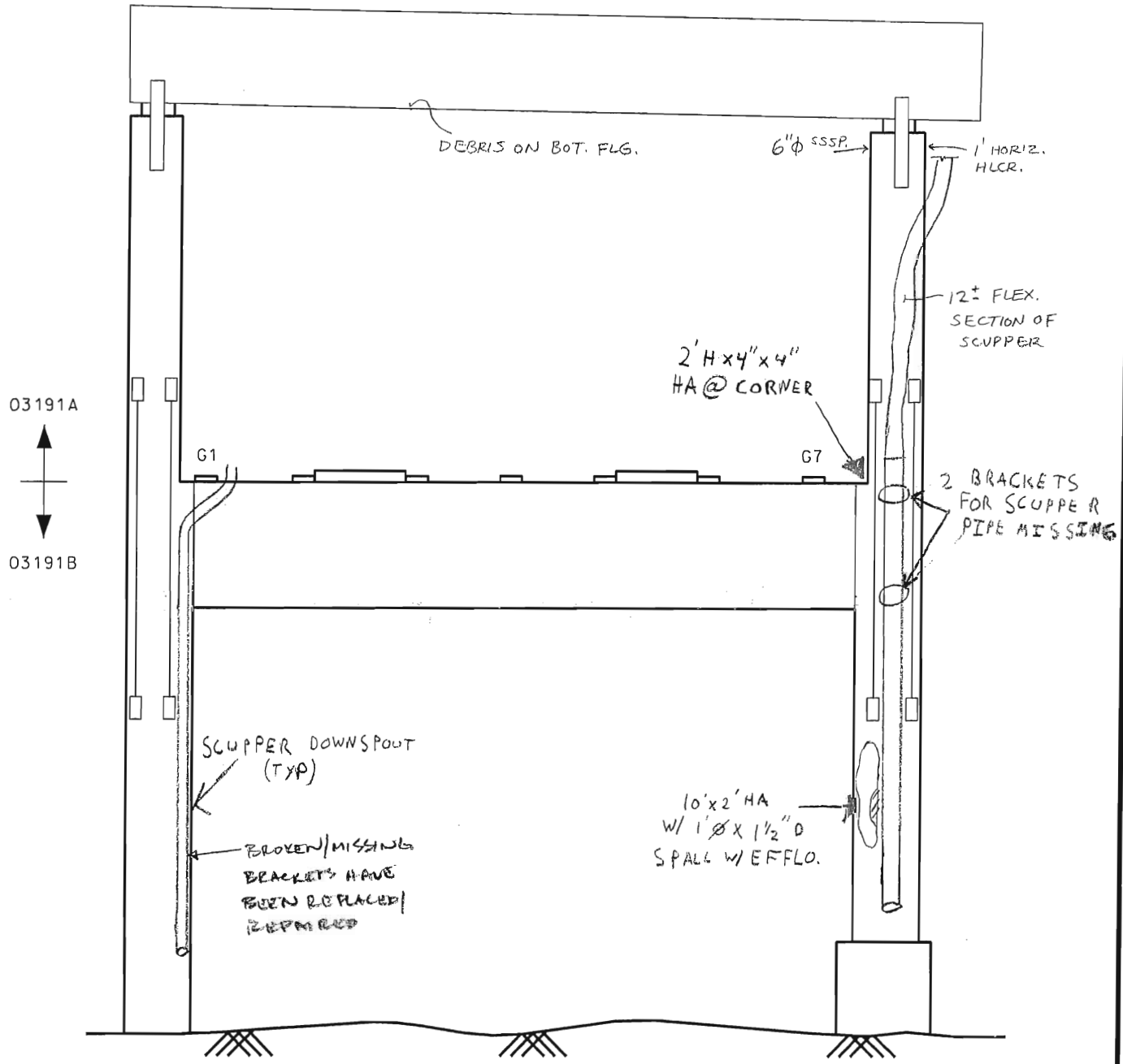


PIER #1, EAST ELEV.

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 10/24/06	SHEET 139
	CREW: TDG, SW	



PIER 12 - WEST ELEVATION

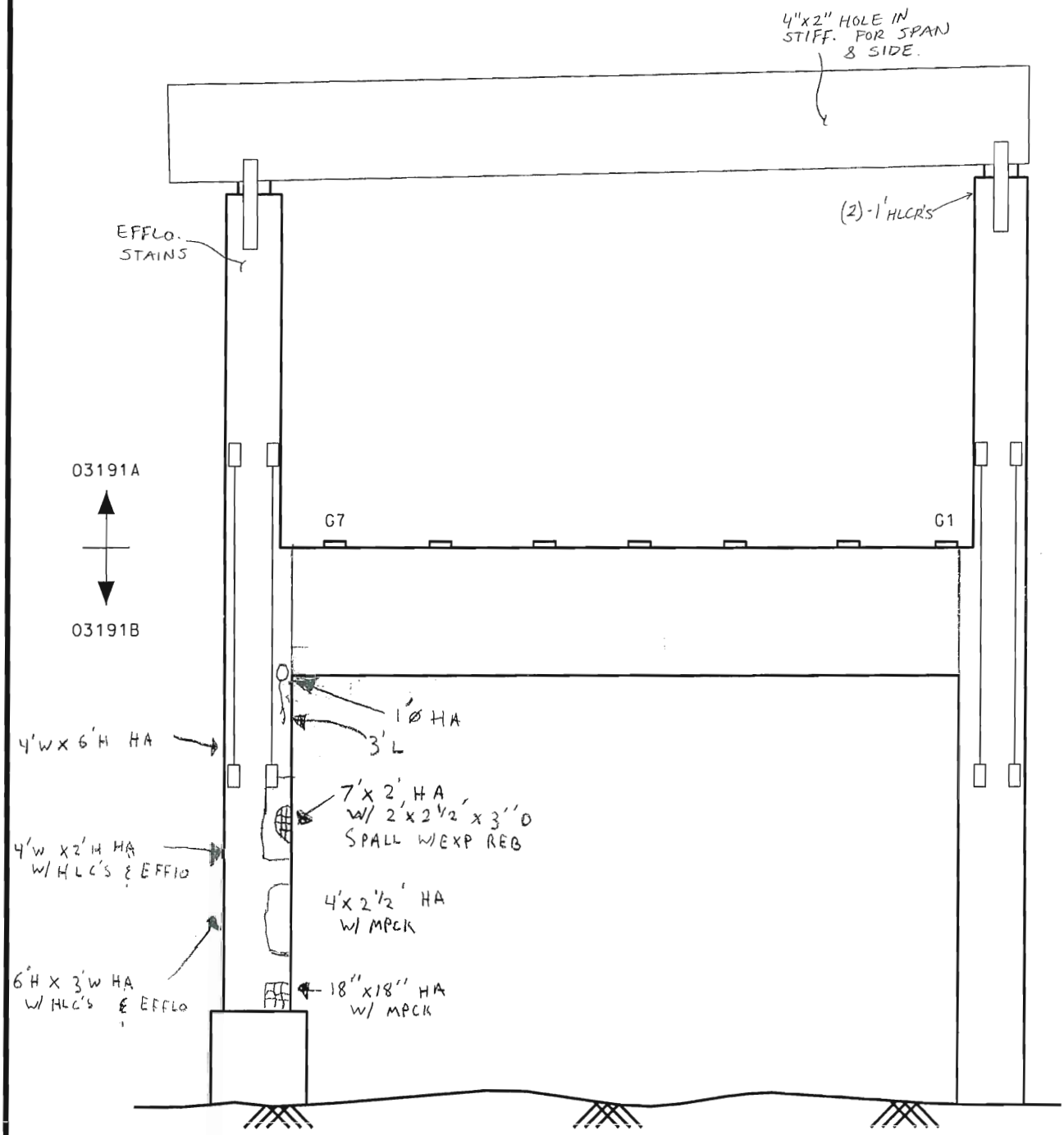
LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

GENERAL NOTES:

- PIERCAP SPALLS & HA'S HAVE BEEN PATCHED & PAINTED W/ PROTECTIVE COATING SINCE PREV. INSP.

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 10/24/06	SHEET 140
	CREW: PDG, SW	



PIER 12 - EAST ELEVATION

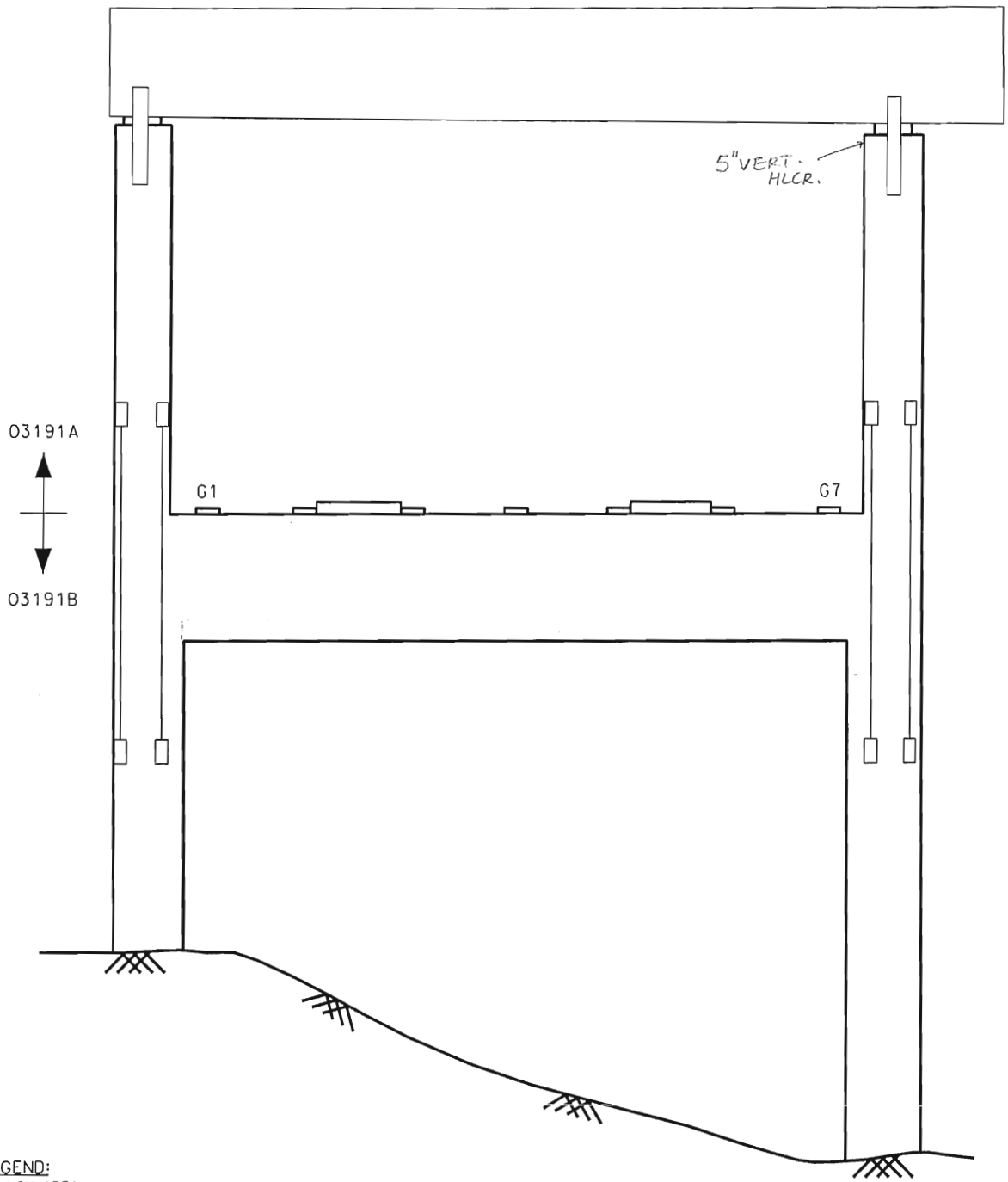
LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

GENERAL NOTES:

- PIER CAP SPALLS & HA'S HAVE BEEN PACHED & PAINTED W/ PROTECTIVE COATING SINCE PREV. INSP.

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/24/06	SHEET 141
	CREW: PDG, SW	



LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

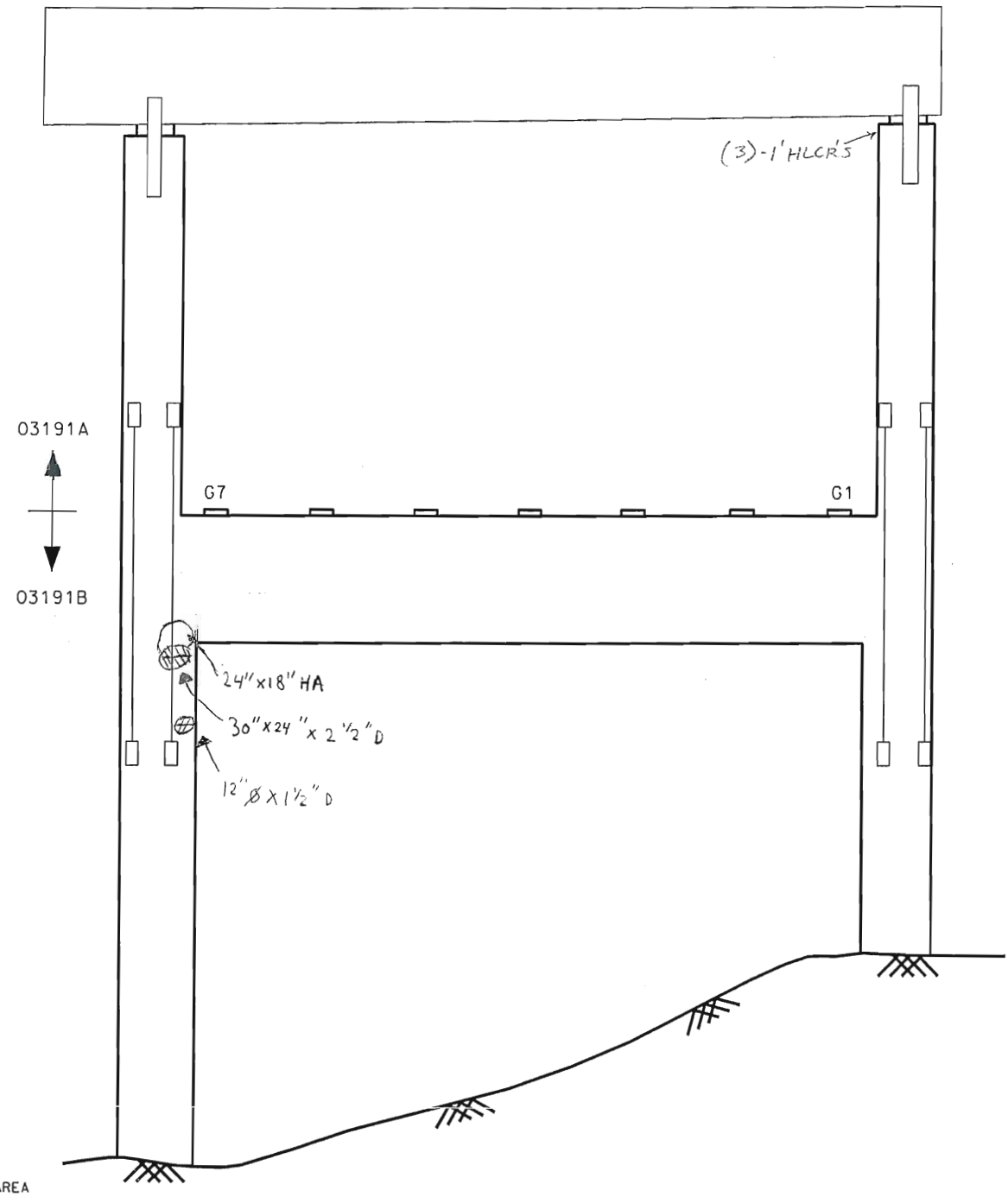
PIER 13 – WEST ELEVATION

GENERAL NOTES:

- PIER CAP SPALLS & MA'S HAVE BEEN PATCHED & PAINTED W/ PROTECTIVE COATING SINCE PREV. INSP.

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 10/24/06	SHEET 142
	CREW: PDG, SN	



LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

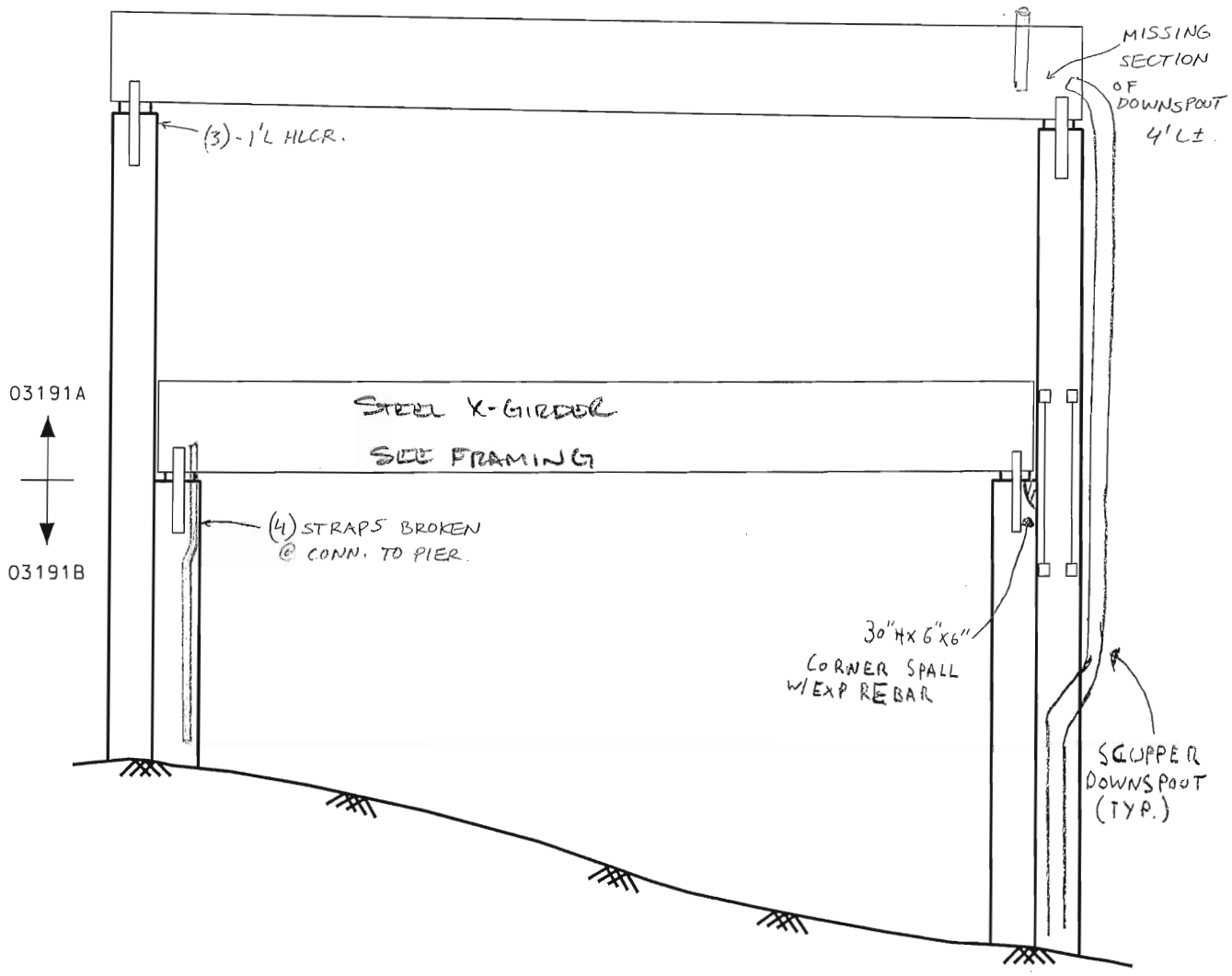
PIER 13 - EAST ELEVATION

GENERAL NOTES:

- PIER CAP SPALLS & HA'S HAVE BEEN PATCHED & PAINTED W/ PROTECTIVE COATING SINCE PREV. INSP.

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/25/06	SHEET 143
	CREW: PDG, SW	

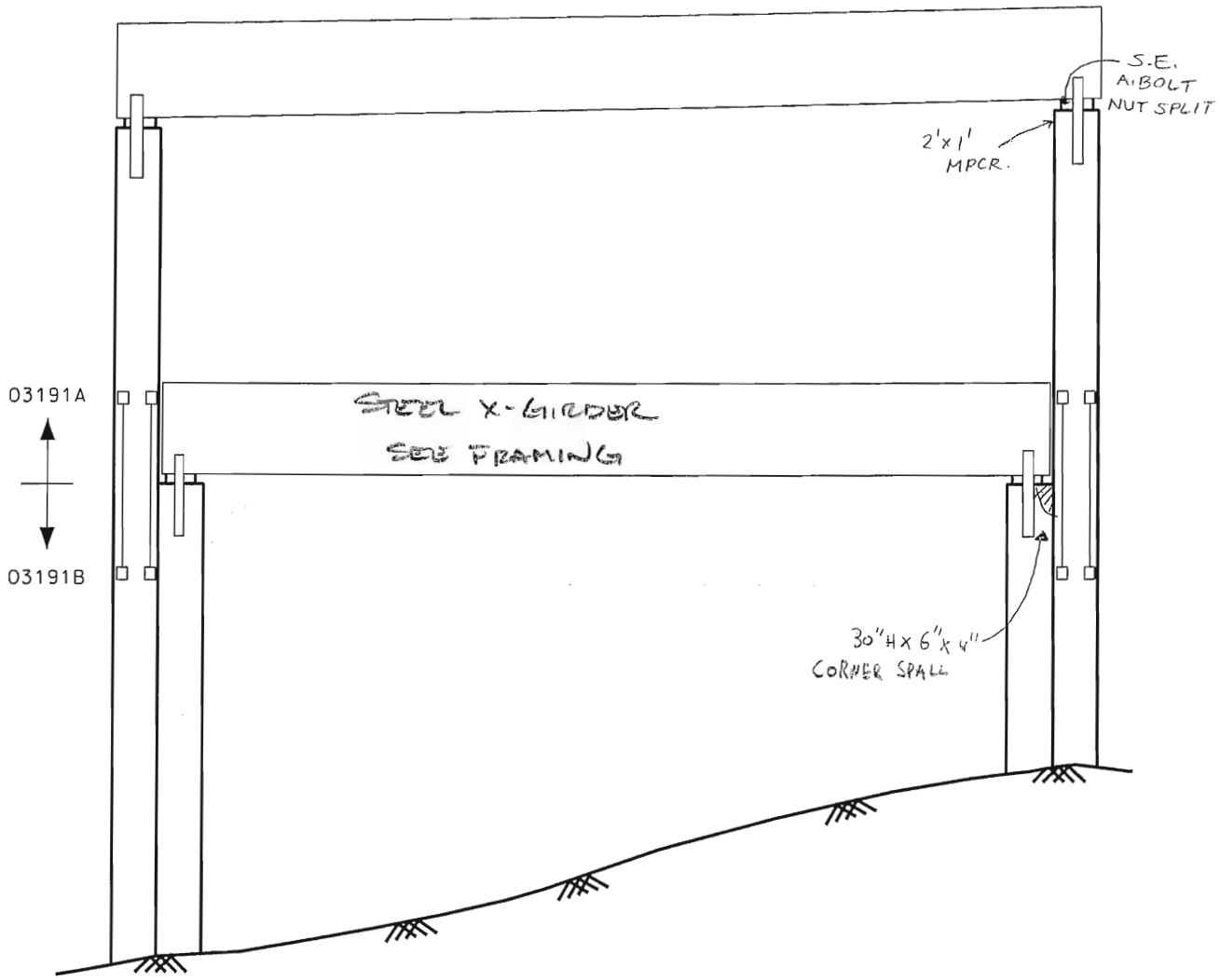


PIER 14 - WEST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/25/06	SHEET 144
	CREW: PDG, SW	

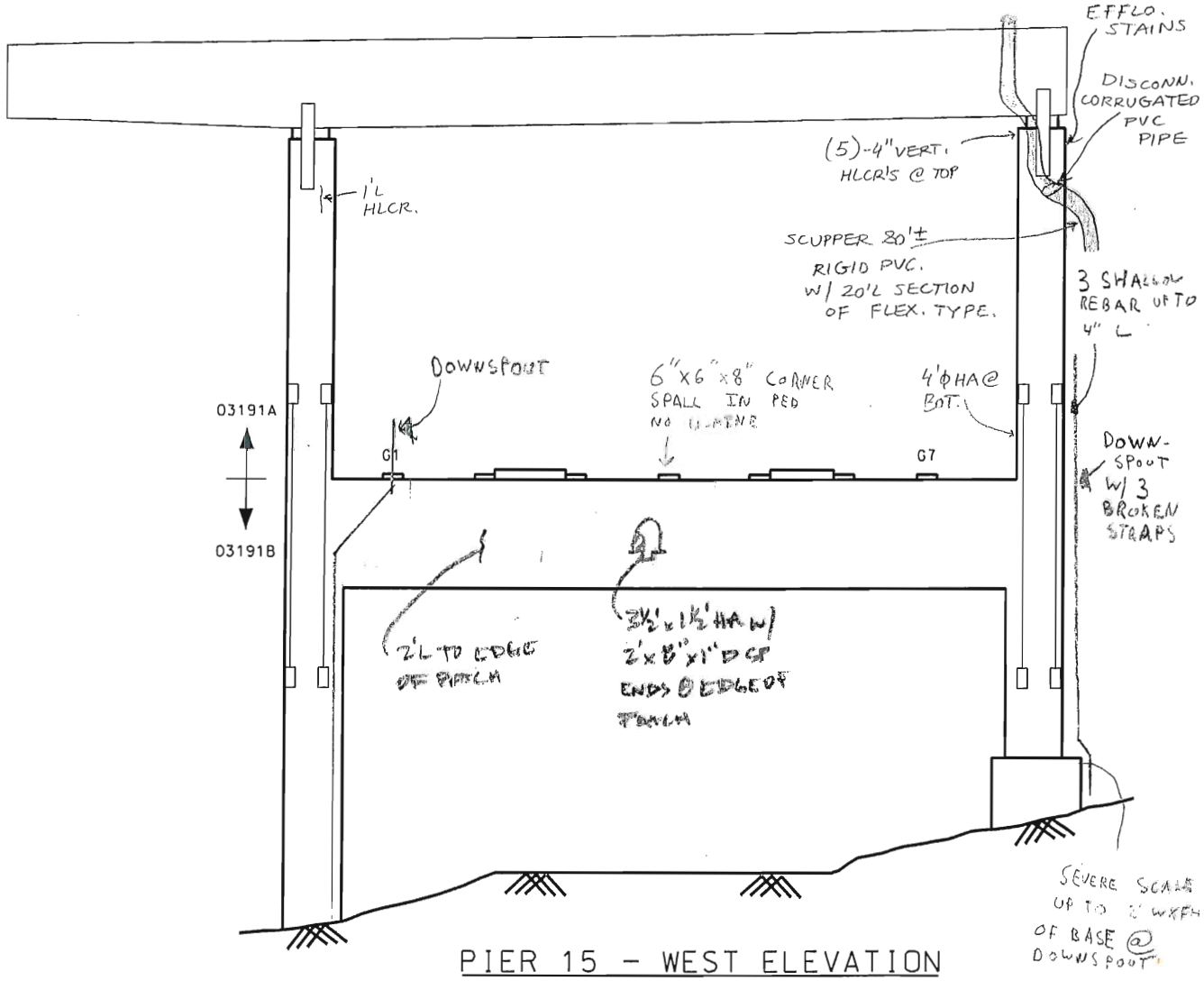


PIER 14 - EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 10/25/06	SHEET 145
	CREW: PDG, SW	



PIER 15 - WEST ELEVATION

GENERAL NOTES

- PIER CAP SPALLS & HA'S HAVE BEEN PATCHED & PAINTED W/ PROTECTIVE COATING SINCE PREV. INSP.

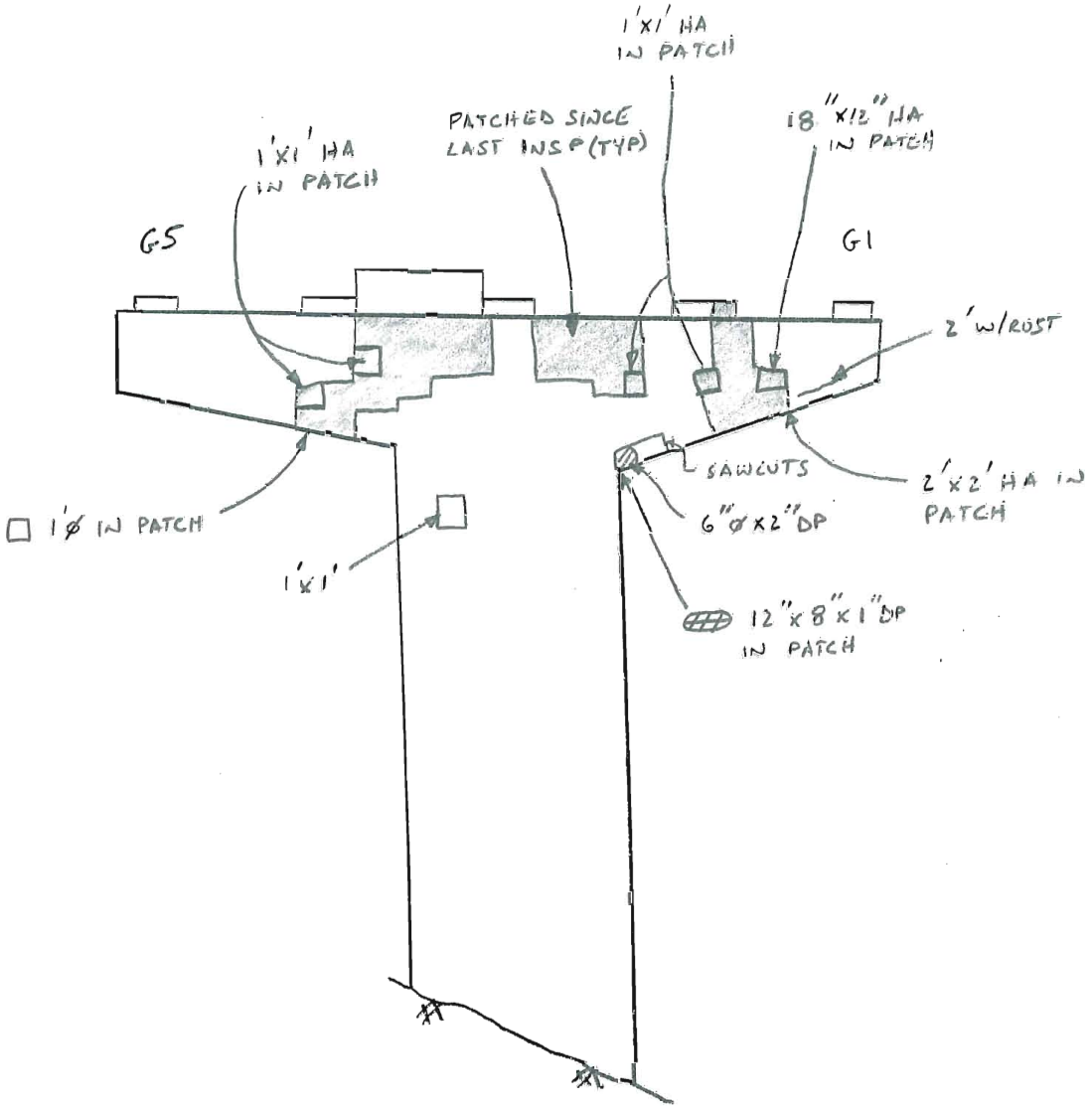
LEGEND:

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 11/17/06	SHEET 146
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, DS	



NOTE: WEST ELEVATION IS WITH BRIDGE 3191E

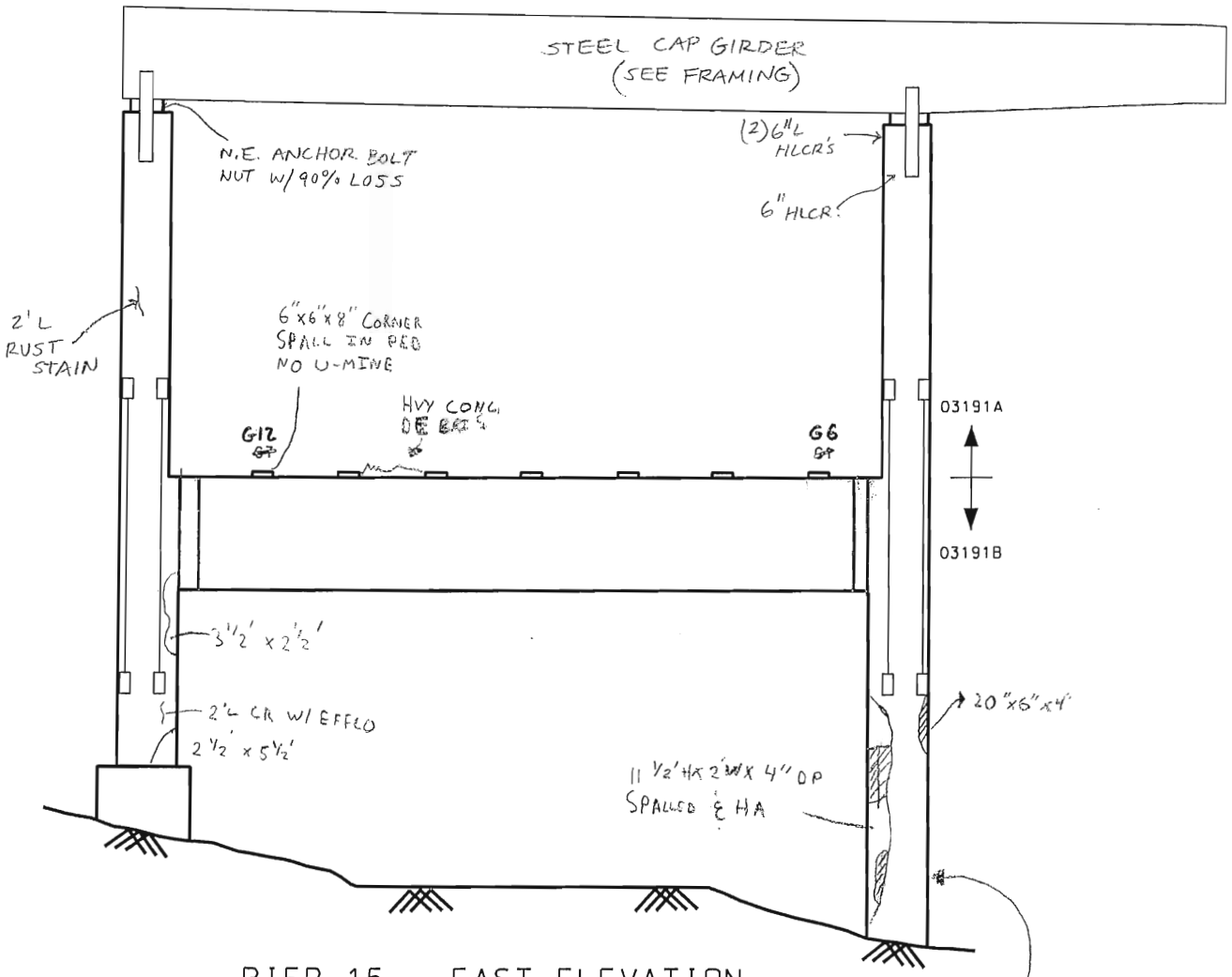
LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

PIER 15 NORTH

EAST ELEVATION

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 10/23/06	SHEET 147
	CREW: PDG, SW, DS	



PIER 15 - EAST ELEVATION

GENERAL NOTES:

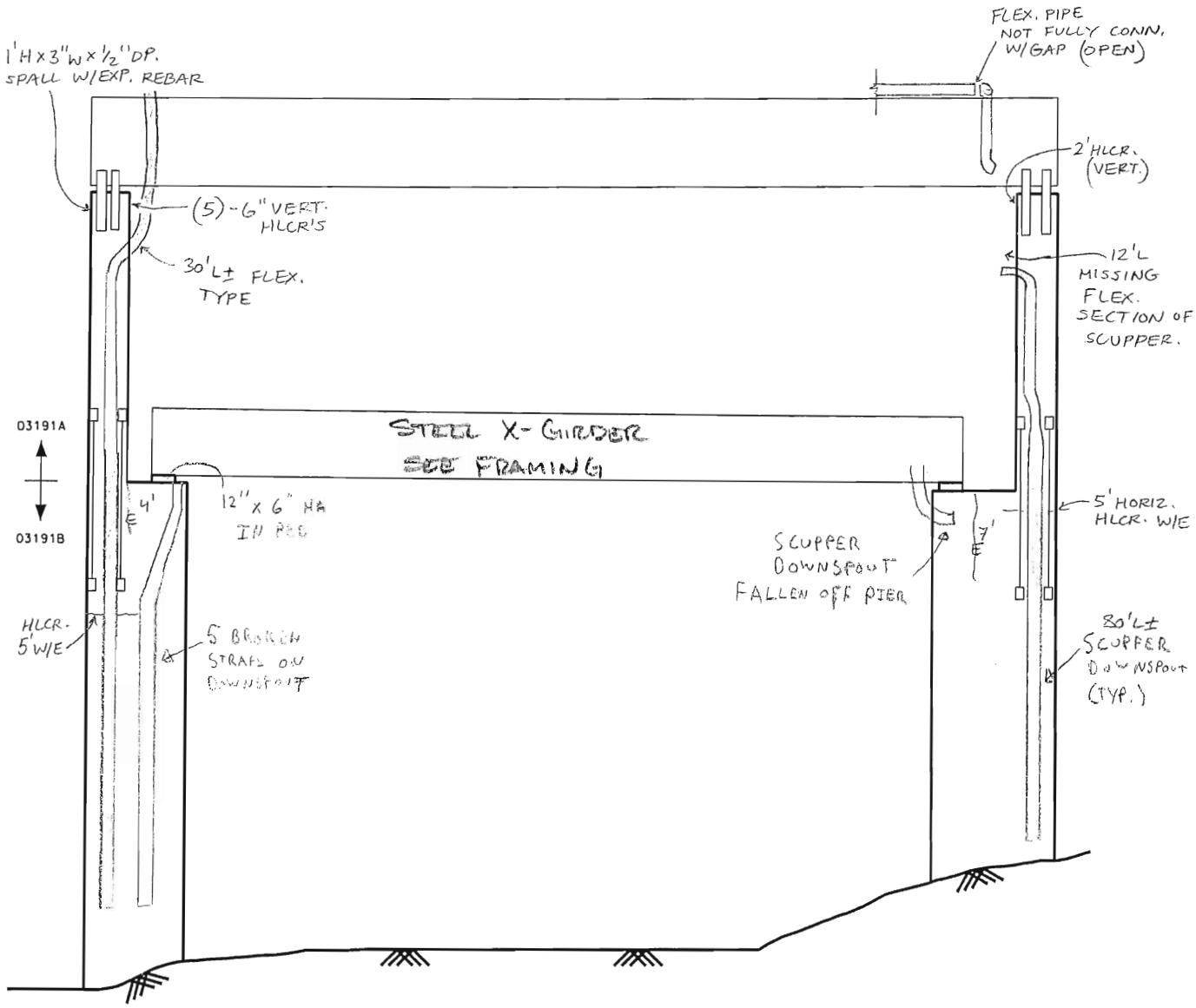
- PIER CAP SPALLS & HA'S HAVE BEEN PATCHED & PAINTED W/ PROTECTIVE COATING SINCE PREVIOUS INSP.

LEGEND:

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 10/23/06	SHEET 148
	CREW: FDG, SW	

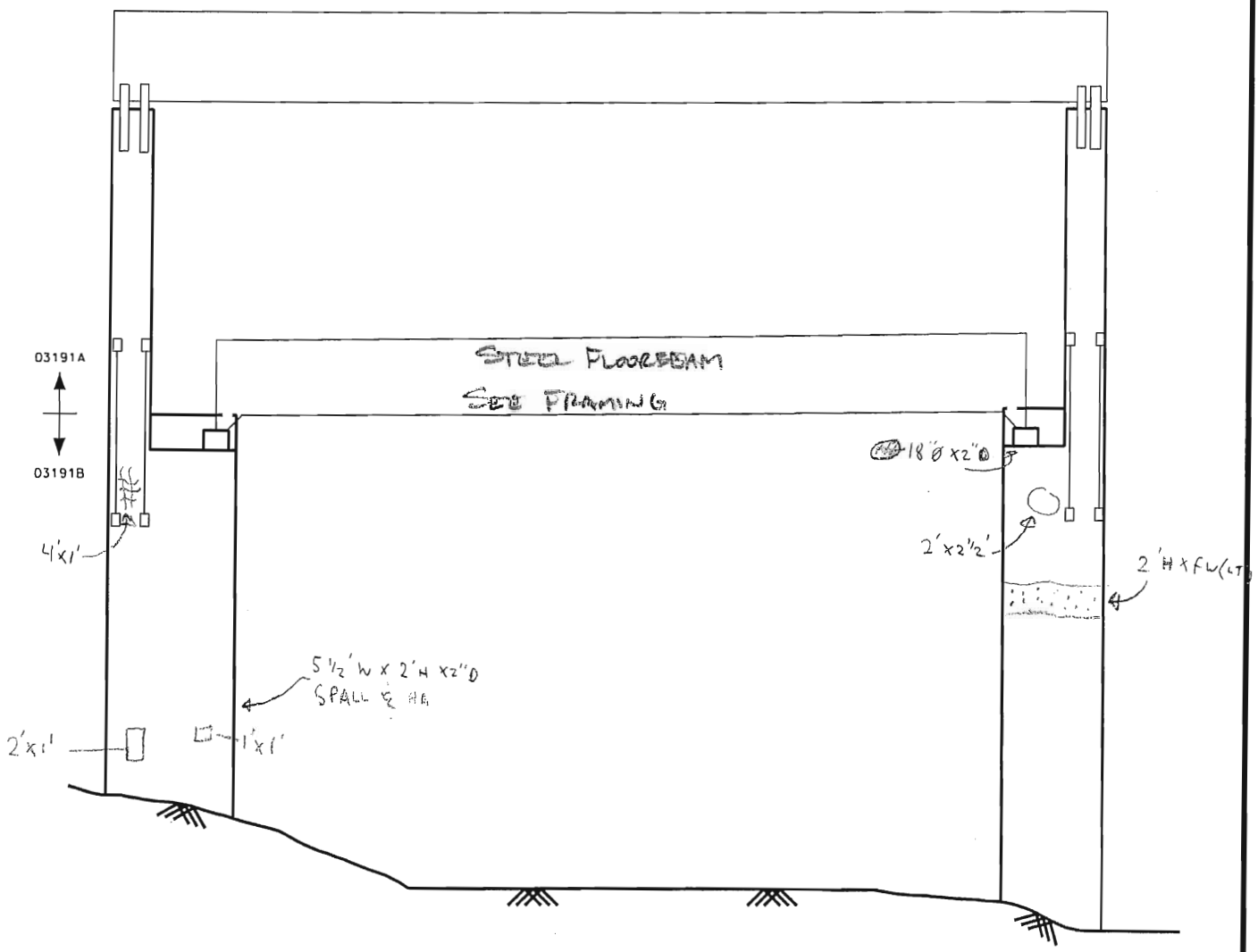


PIER 16 - WEST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/23/06	SHEET 149
	CREW: TDG, SW	

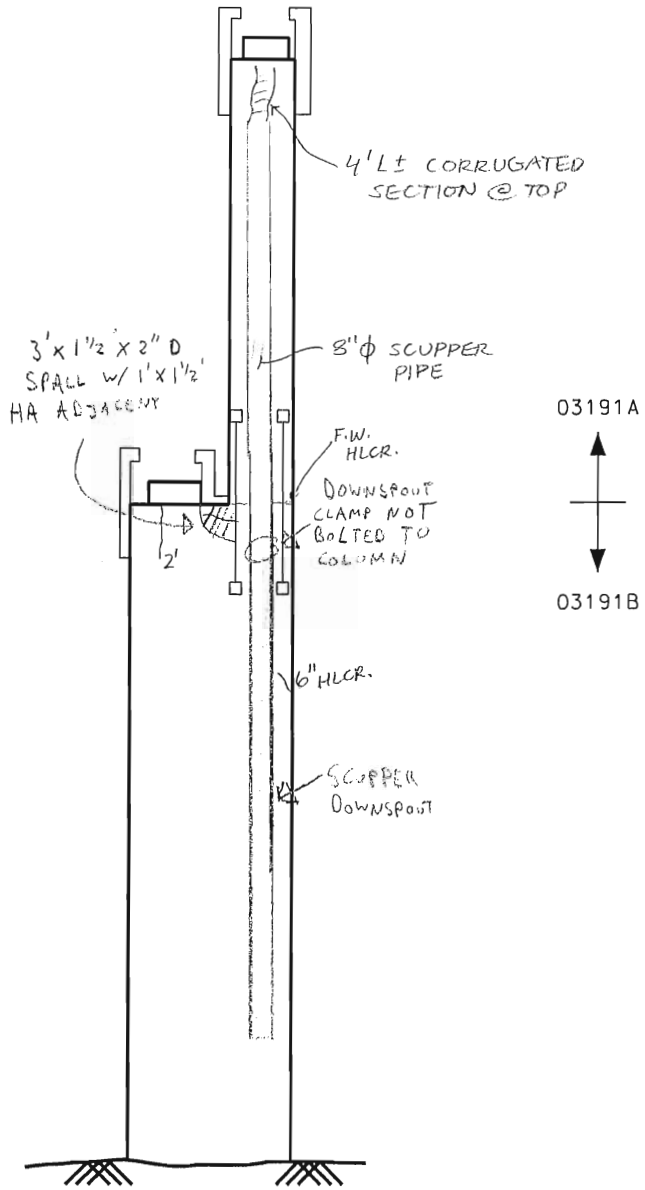


PIER 16 - EAST ELEVATION

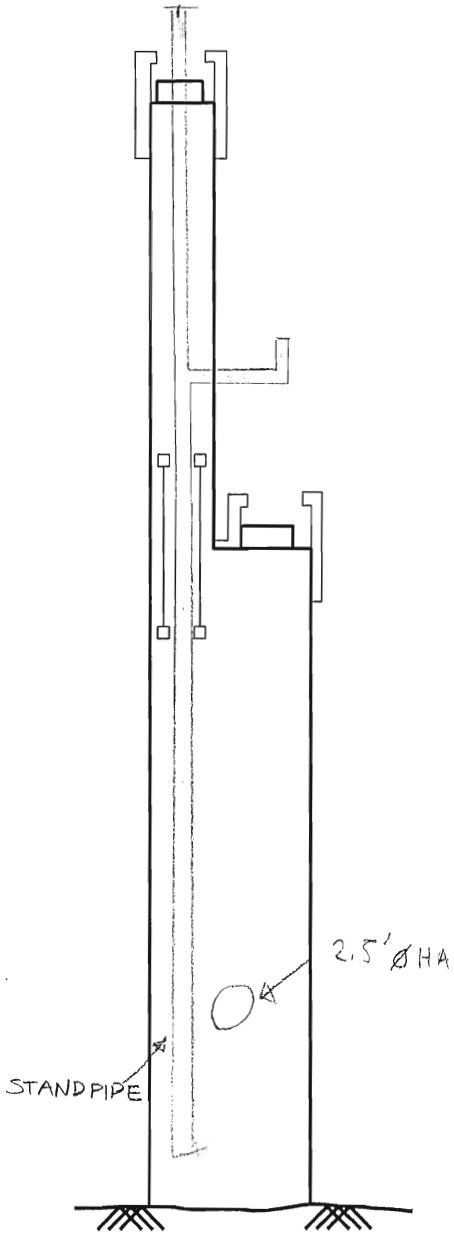
LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/19/06	SHEET 150
	CREW: TDG, SW, CL	



WEST ELEVATION



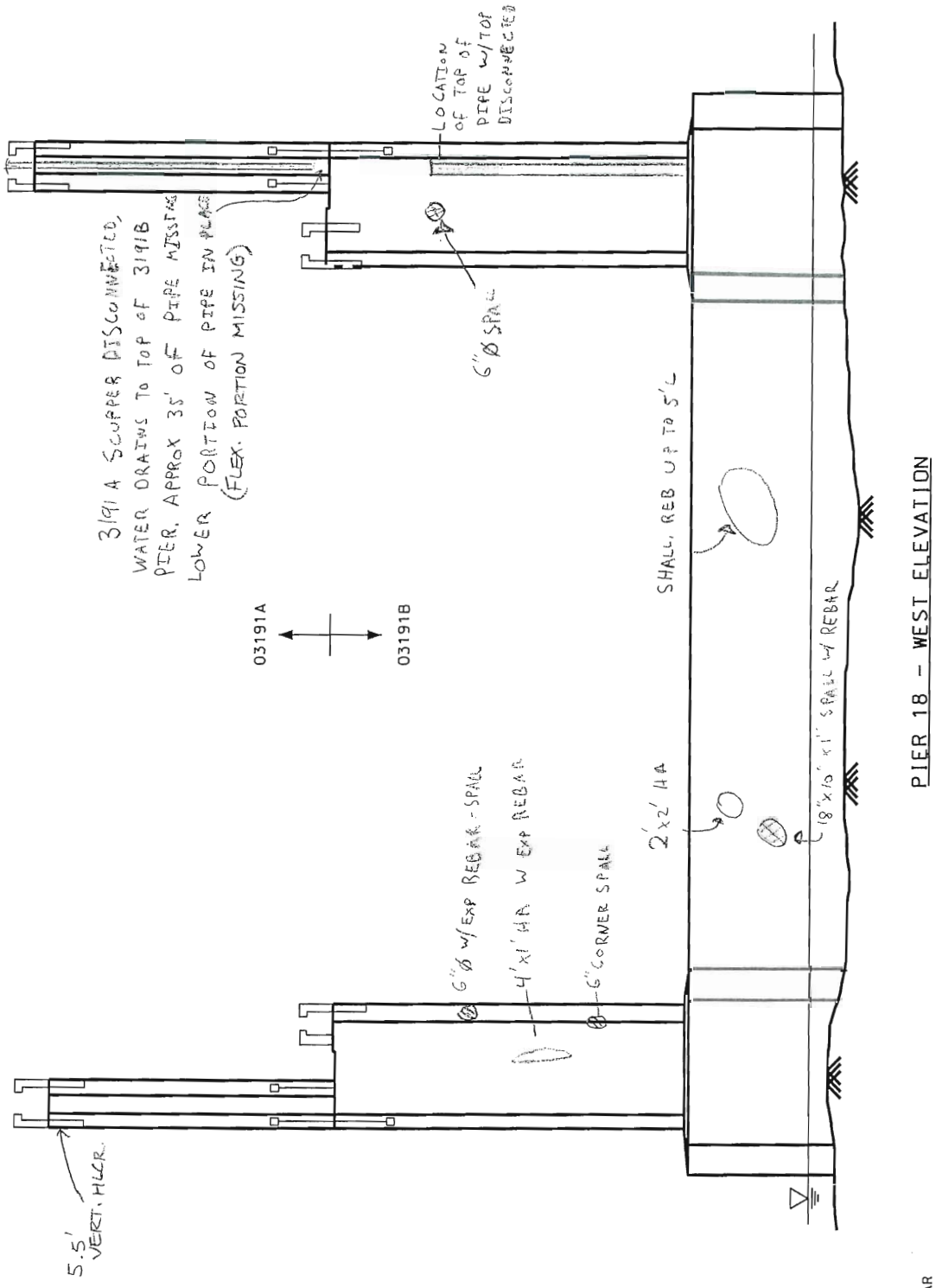
EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

PIER 17

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/19/06	SHEET 151
	CREW: PDG,CL	

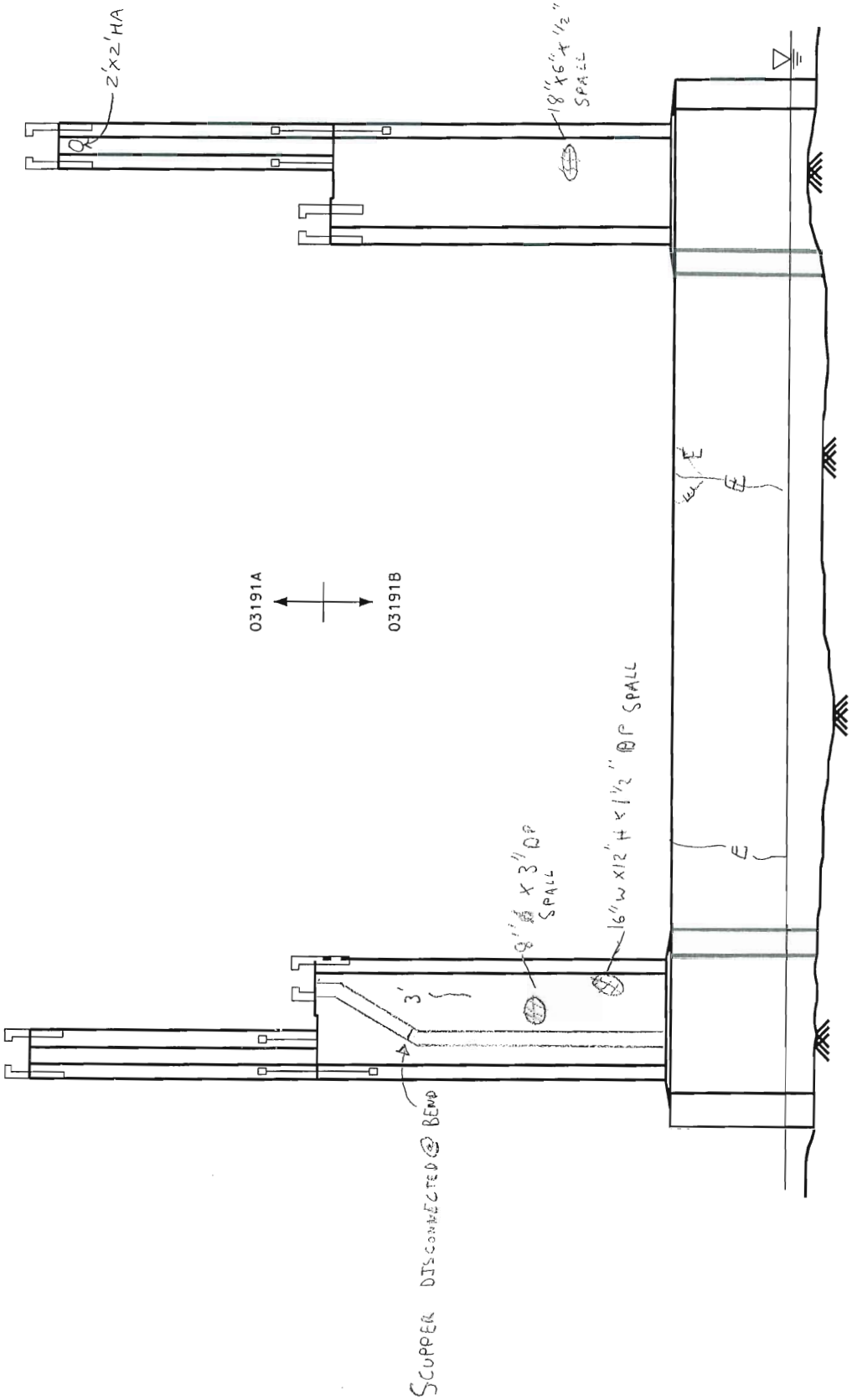


PIER 18 - WEST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/17/06	SHEET 152
	CREW: PDG, SW, CL	

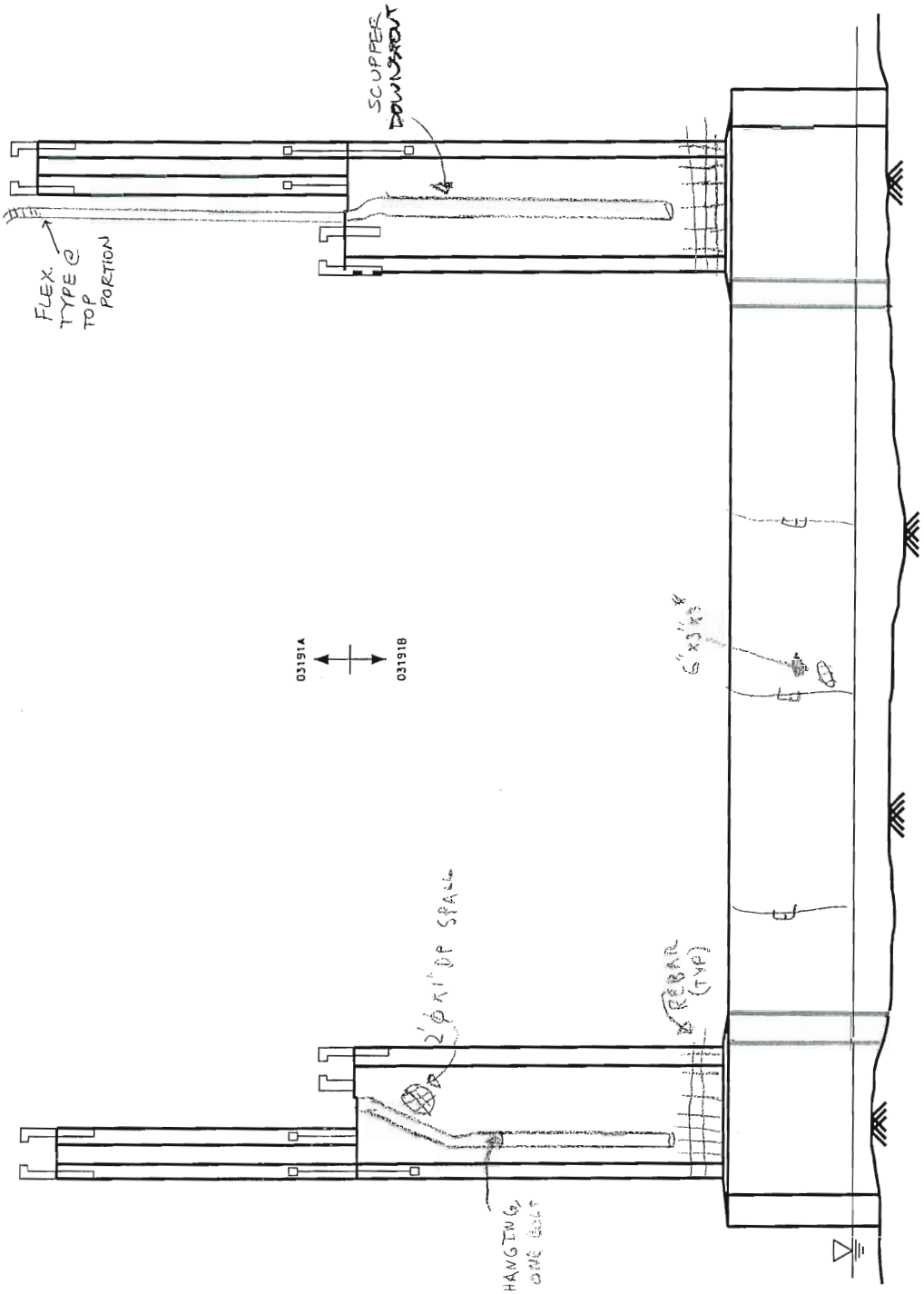


PIER 18 - EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/11/06	SHEET 153
	CREW: PDG, SW, CL	

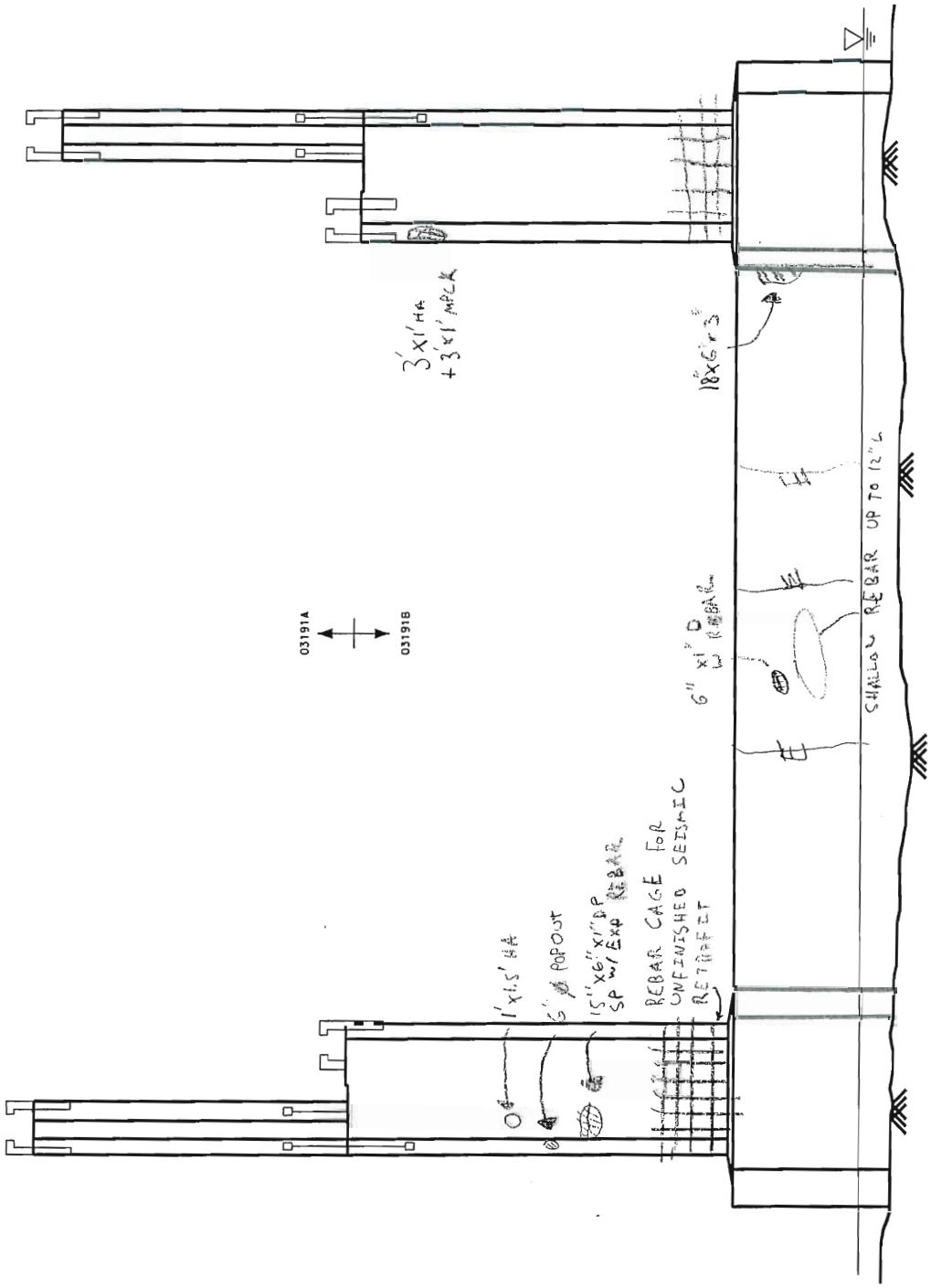


PIER 19 - WEST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/16/06	SHEET 154
	CREW: PDG, SW	

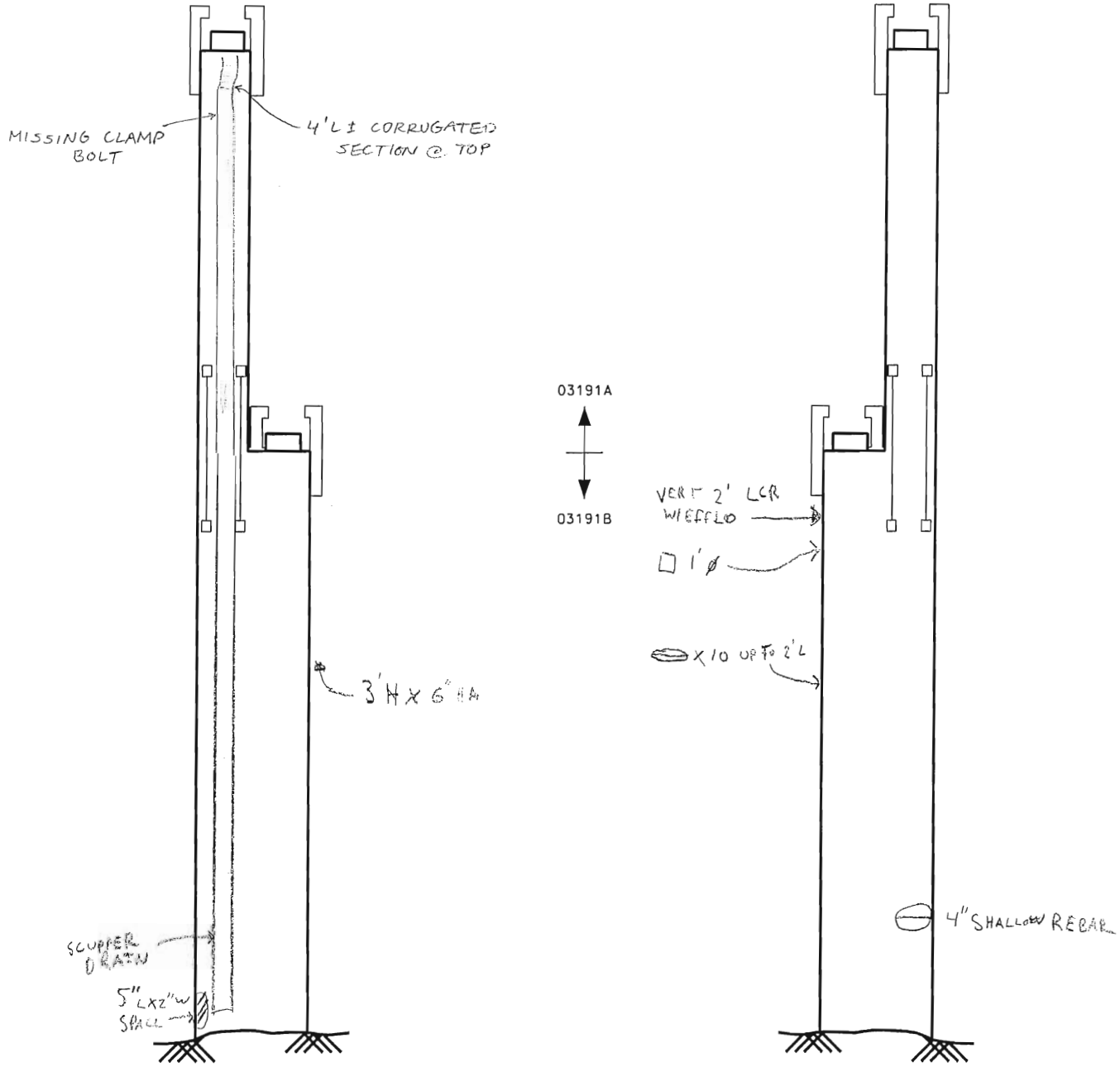


PIER 19 - EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 155
	CREW: PDG, SW, CL	



WEST ELEVATION

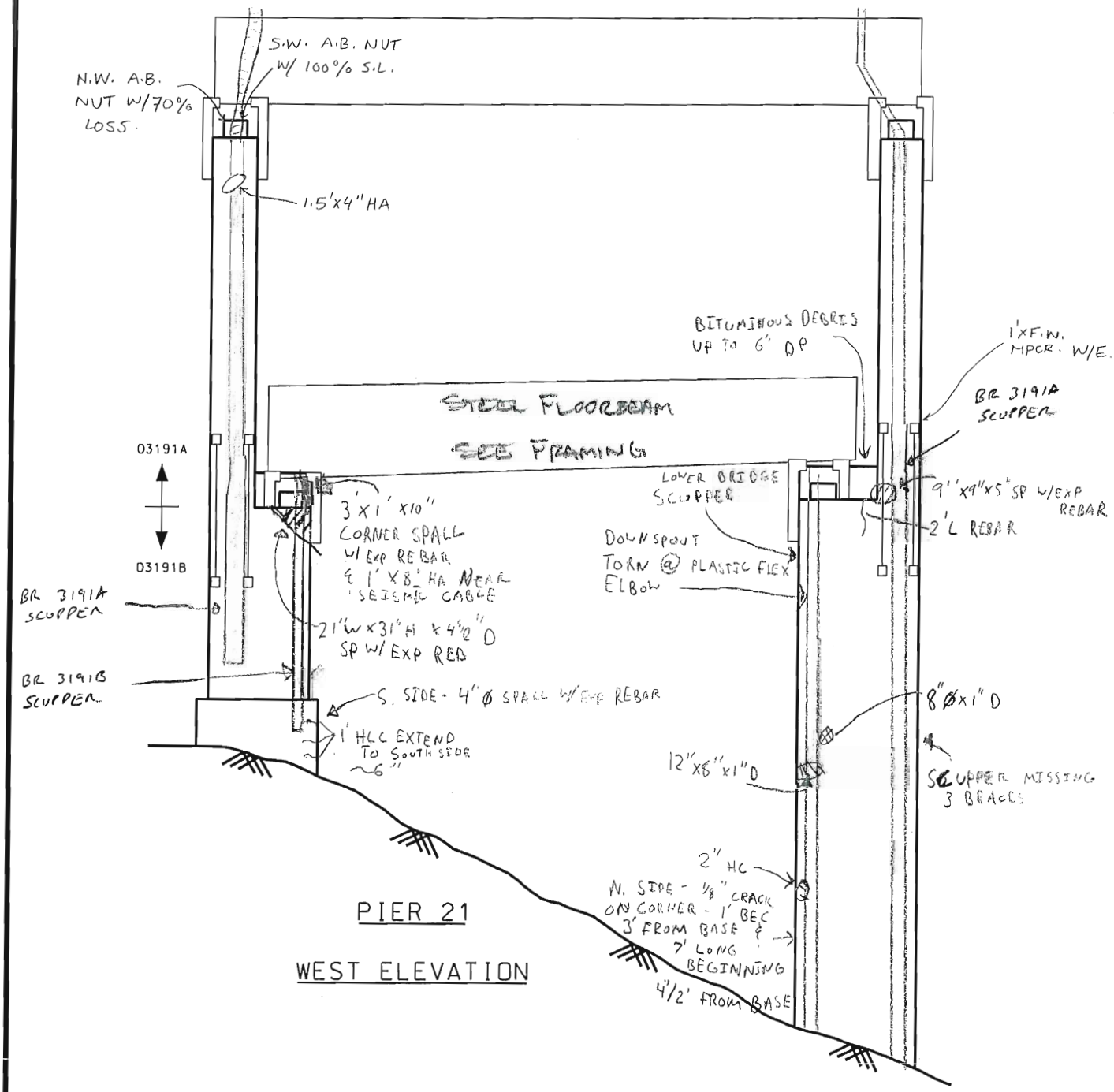
EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

PIER 20

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 156
	CREW: PDG, SW, CL	

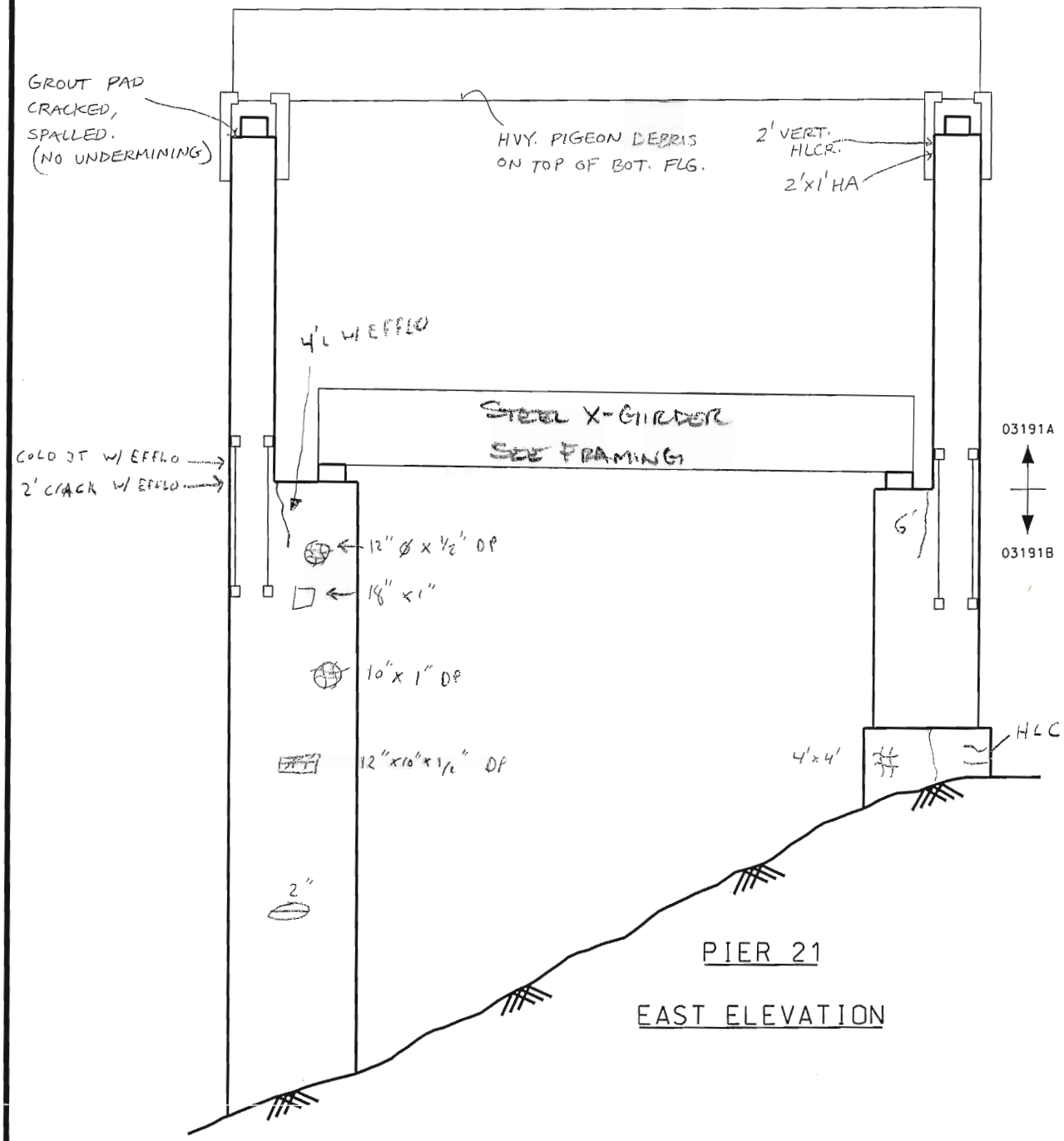


LEGEND:

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 157
	CREW: PDG, SW, CL	



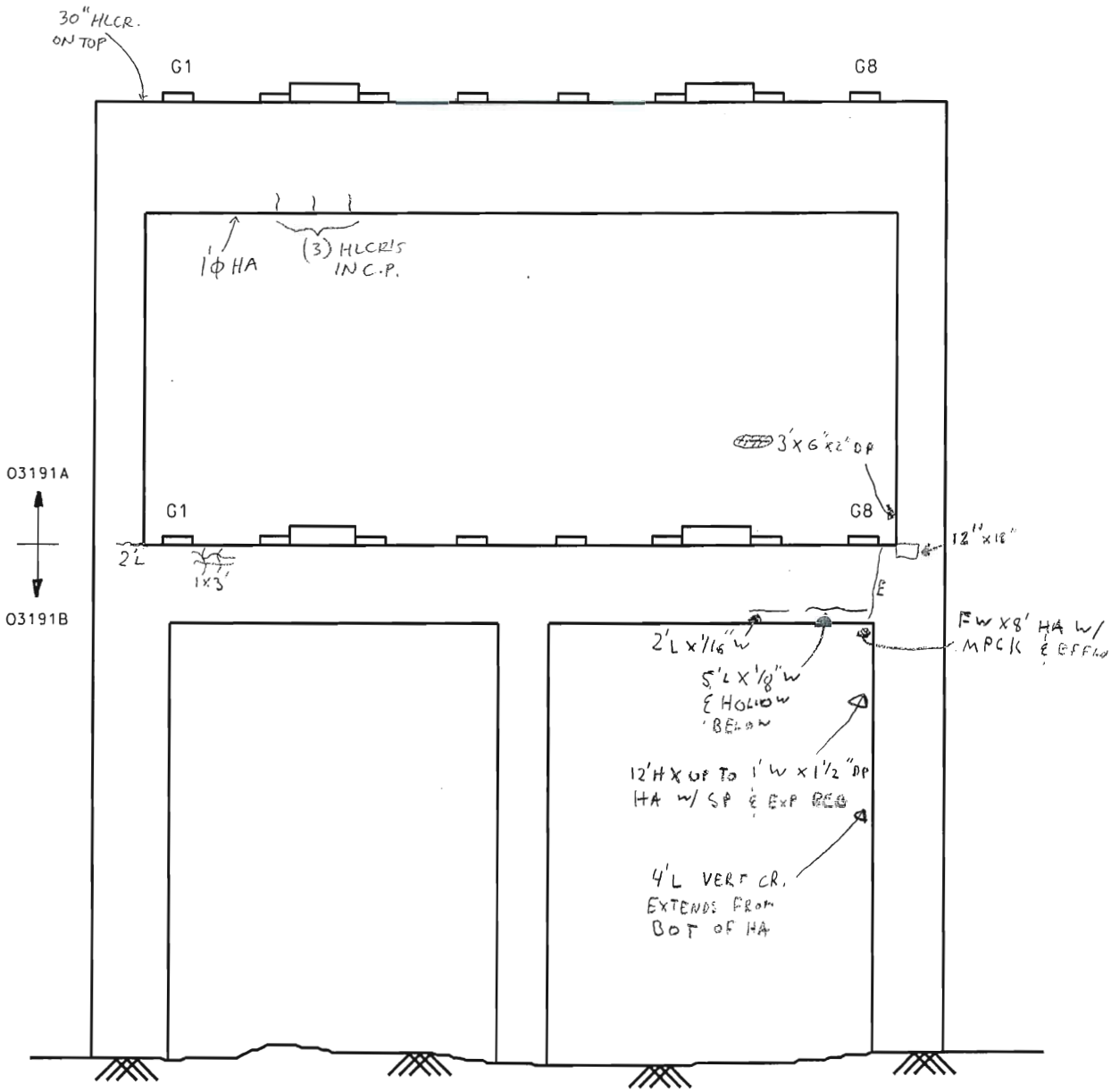
PIER 21

EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 158
	CREW: PDG, SW, CL	



PIER 22 – WEST ELEVATION

LEGEND:

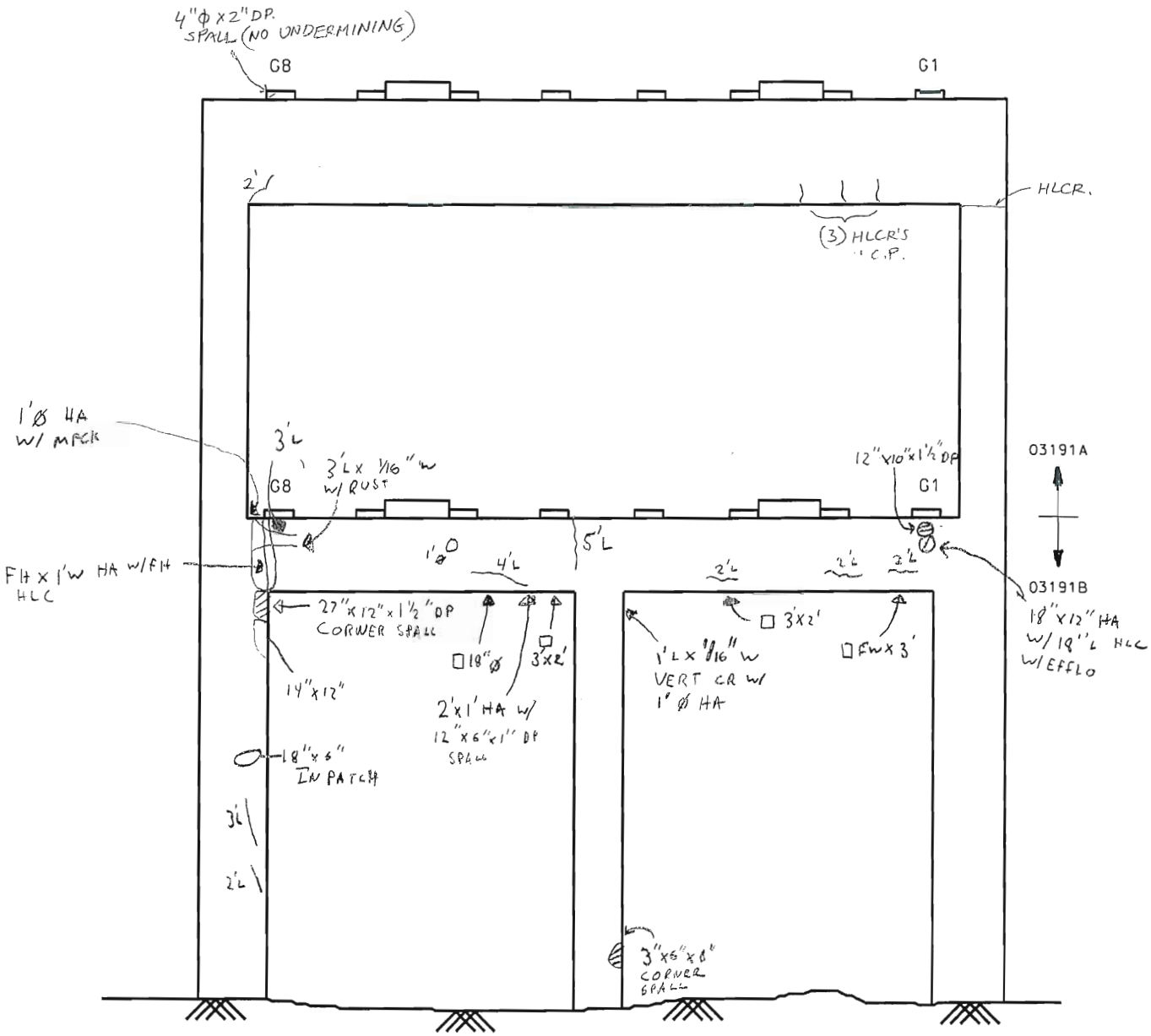
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

GENERAL NOTES:

- NUMEROUS CONCRETE PATCH REPAIRS THROUGHOUT UPPER CAP.

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 159
	CREW: TDG, SW, CL	



PIER 22 – EAST ELEVATION

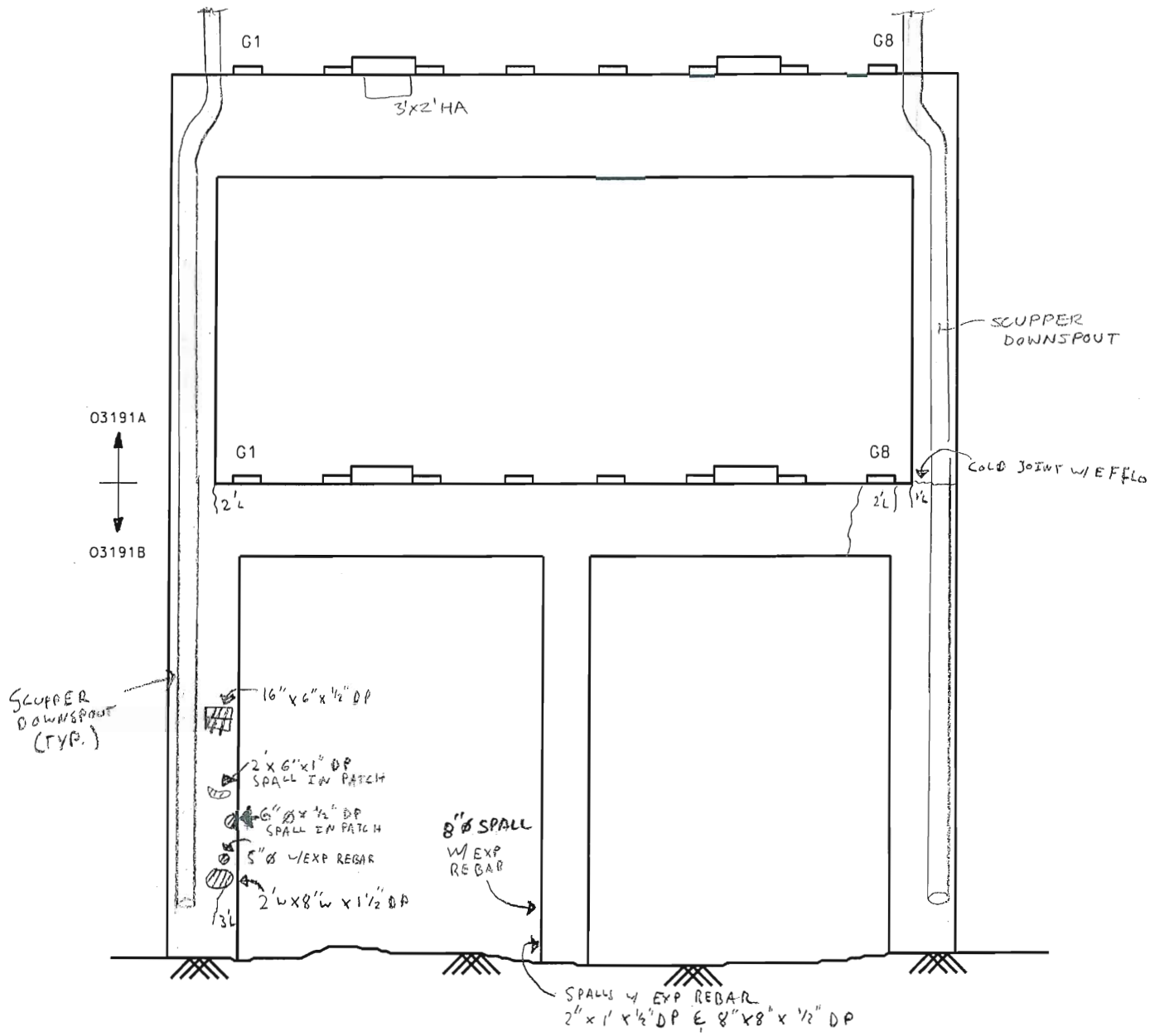
LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

GENERAL NOTES:

- NUMEROUS CONCRETE PATCH REPAIRS THROUGHOUT UPPER CAP.

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 160
	CREW: TDG, SW, CL	



PIER 23 – WEST ELEVATION

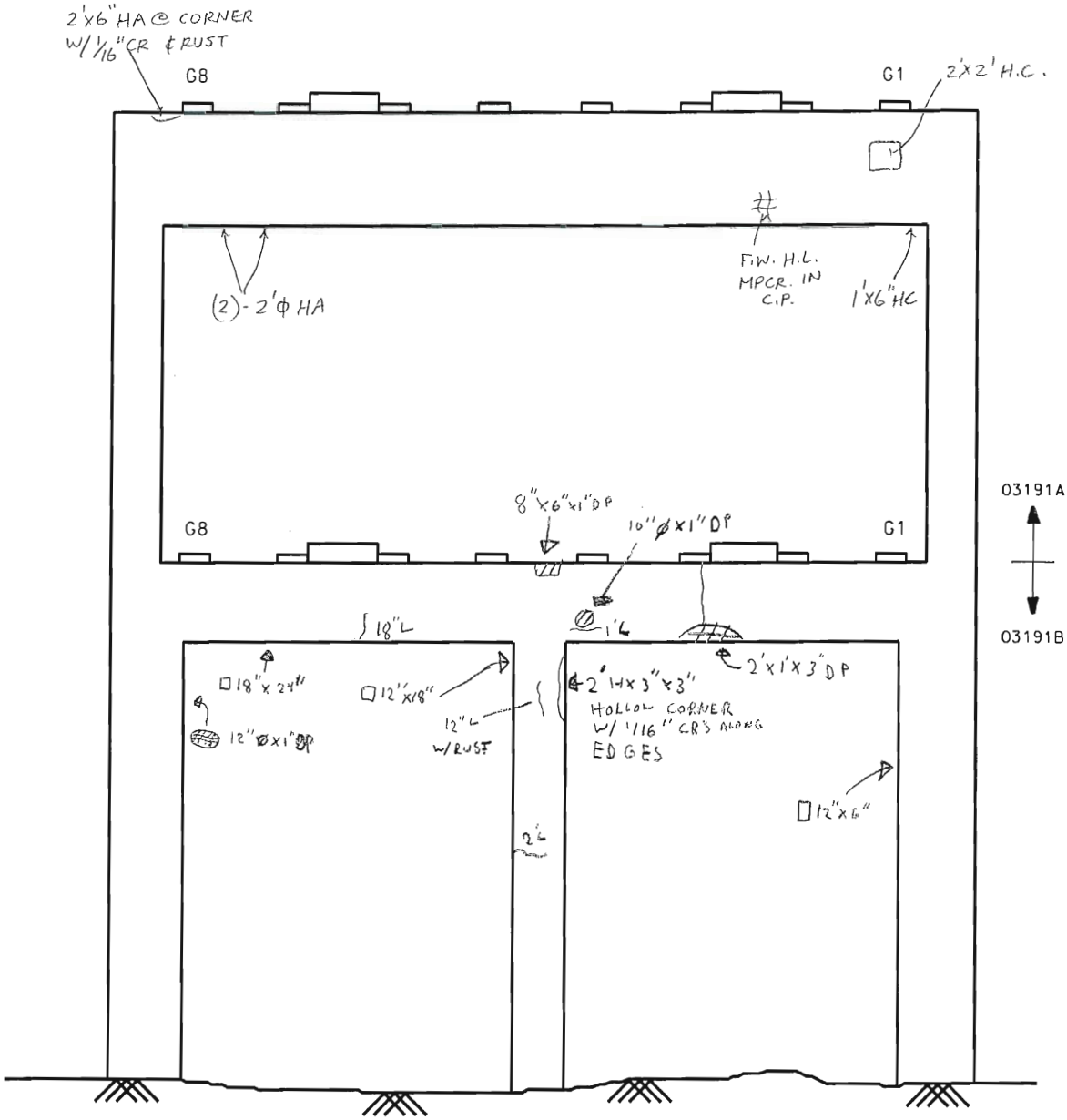
LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

GENERAL NOTES:

- CONCRETE PATCH REPAIRS THROUGHOUT ~~ON~~ UPPER CAP.

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 161
	CREW: PDG, SW, CL	



PIER 23 – EAST ELEVATION

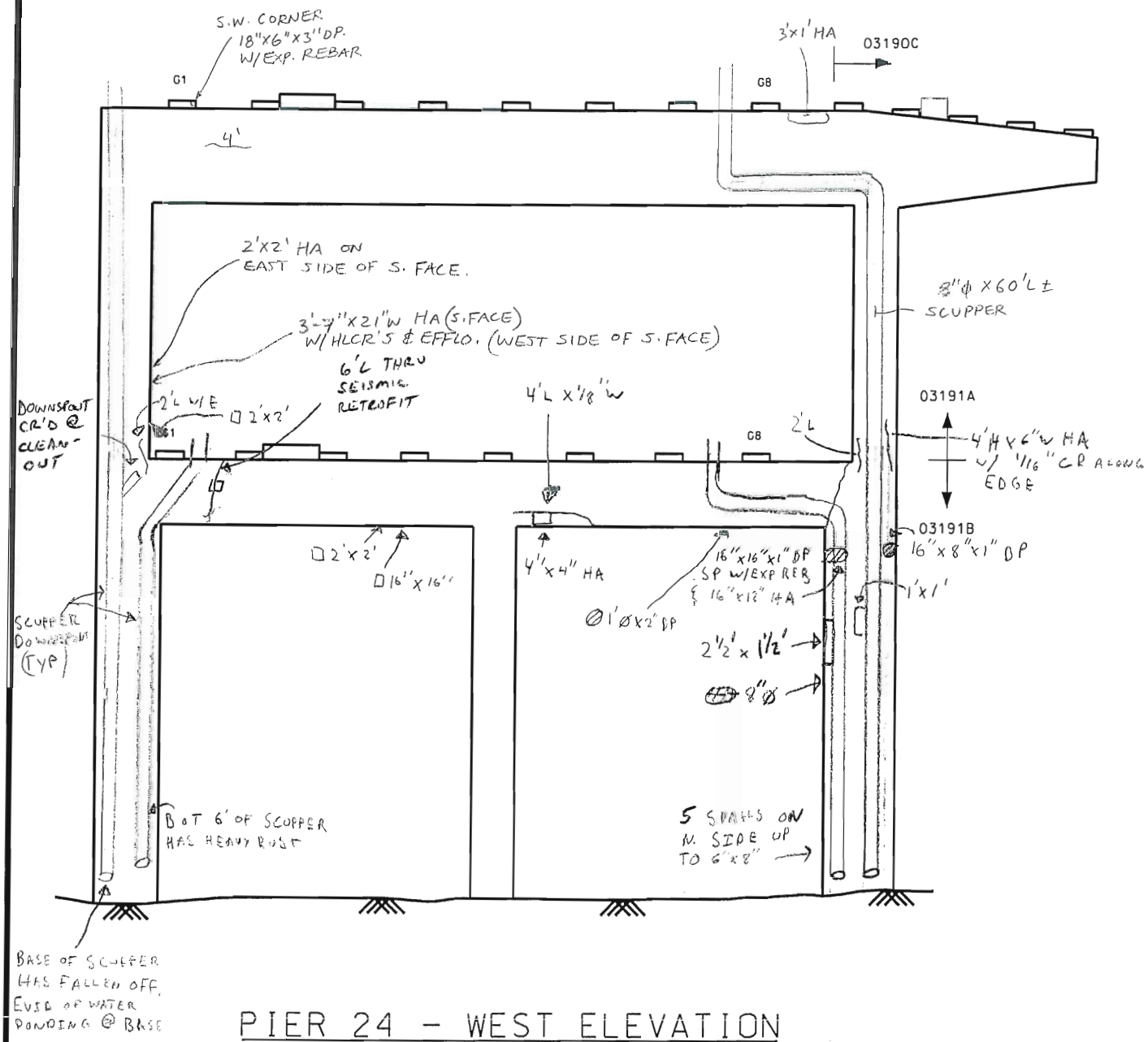
LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

GENERAL NOTES:

- PEDESTALS HAVE RANDOM SHALLOW REBAR ON SIDES
- COLUMN 3 HAS SMALL CONC PATCHES W/ SOME RE-SPALLED W/EXP REBAR
- LARGE CONC. PATCHES ON UPPER CAP.

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 162
	CREW: PDG, SW, CL	



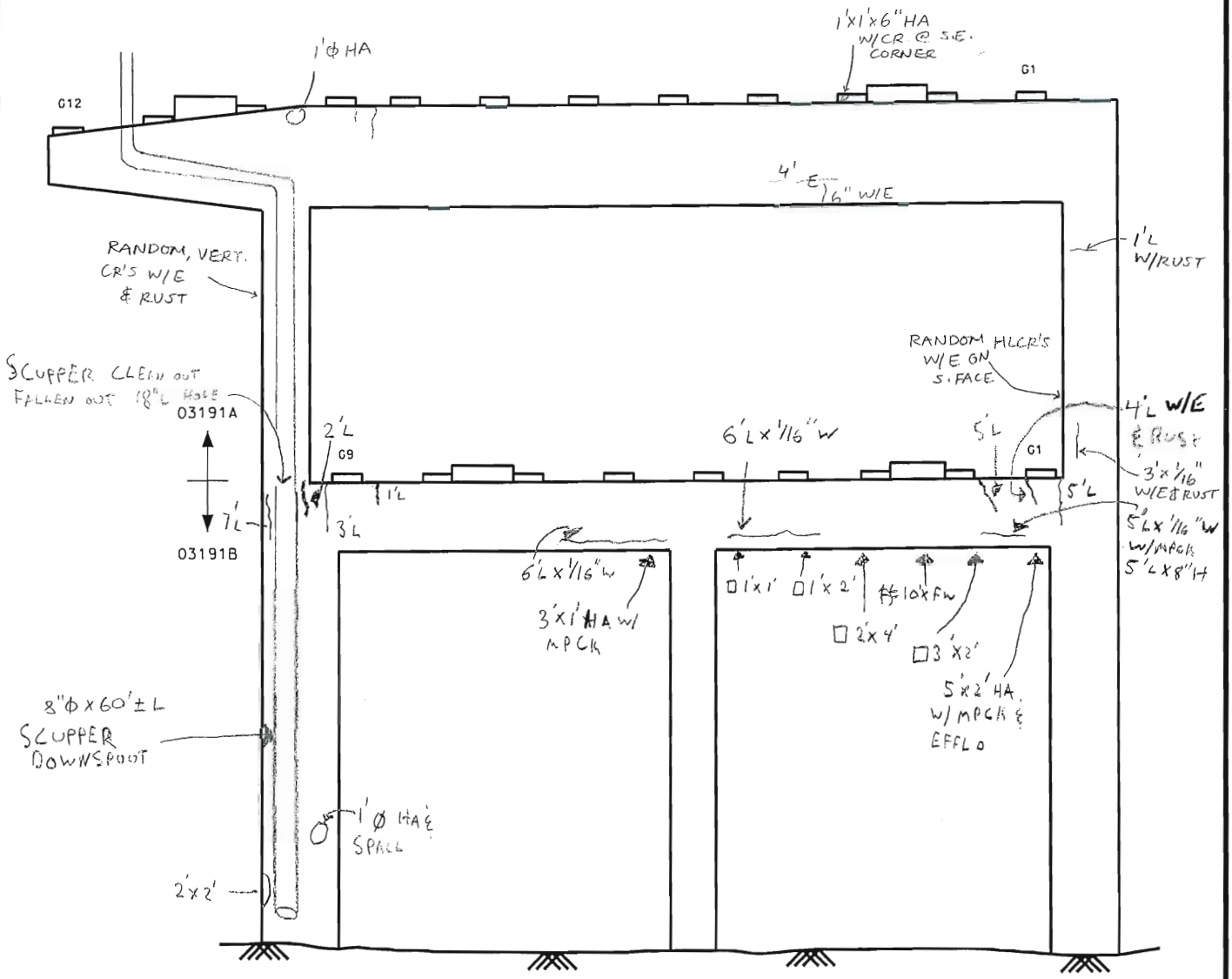
PIER 24 – WEST ELEVATION

LEGEND:

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/25/06	SHEET 163
	CREW: RDG, SW	



PIER 24 – EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

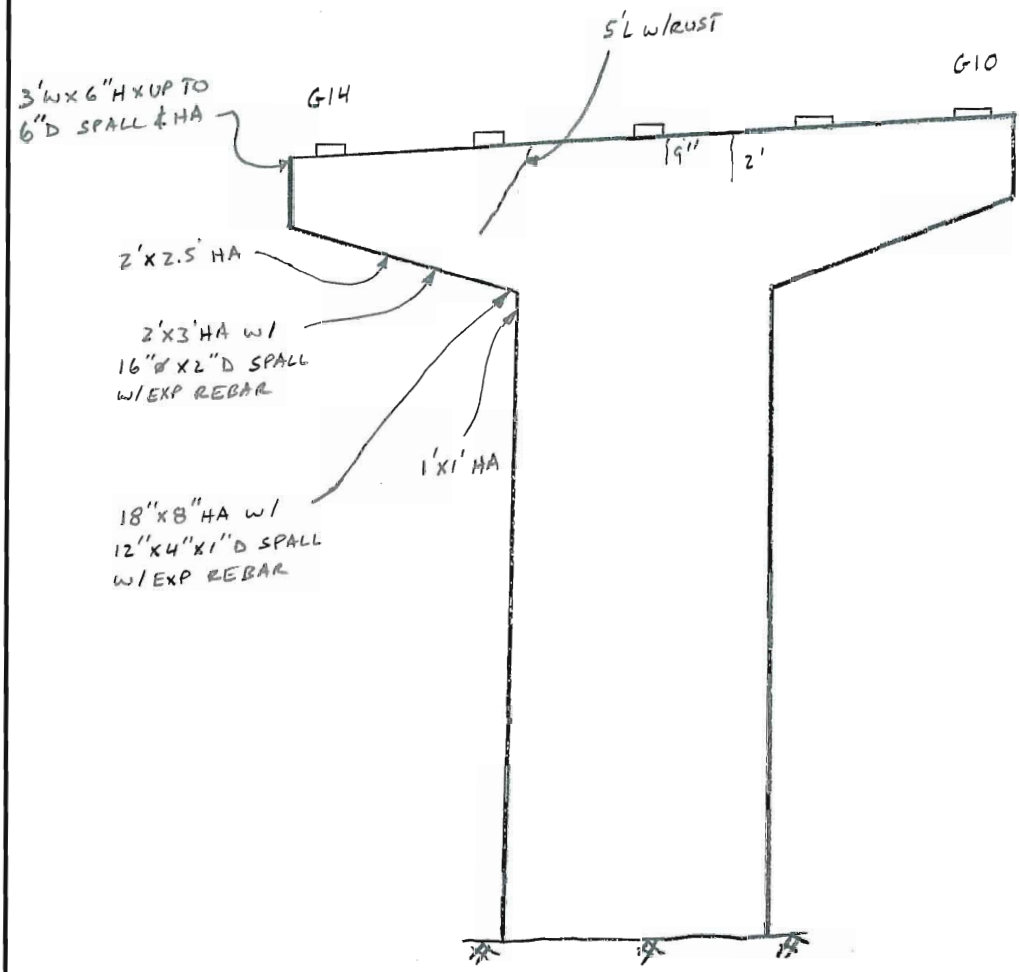
GENERAL NOTES:

- NUMEROUS RAISED CONC. PATCHES THROUGHOUT UPPER CAP.

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 319B
	DATE 9/25/06	SHEET 164
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



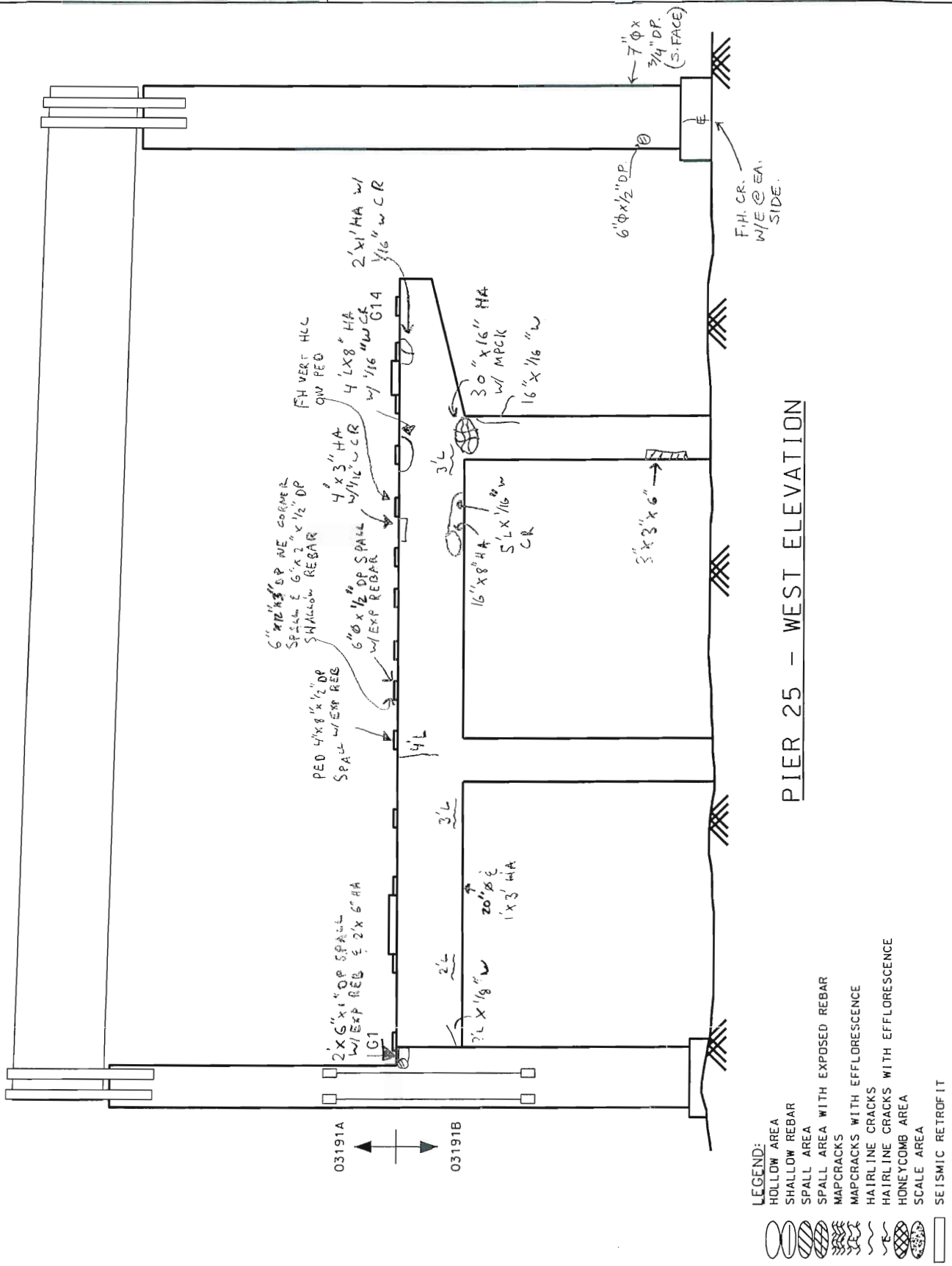
LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

PIER 24 SOUTH

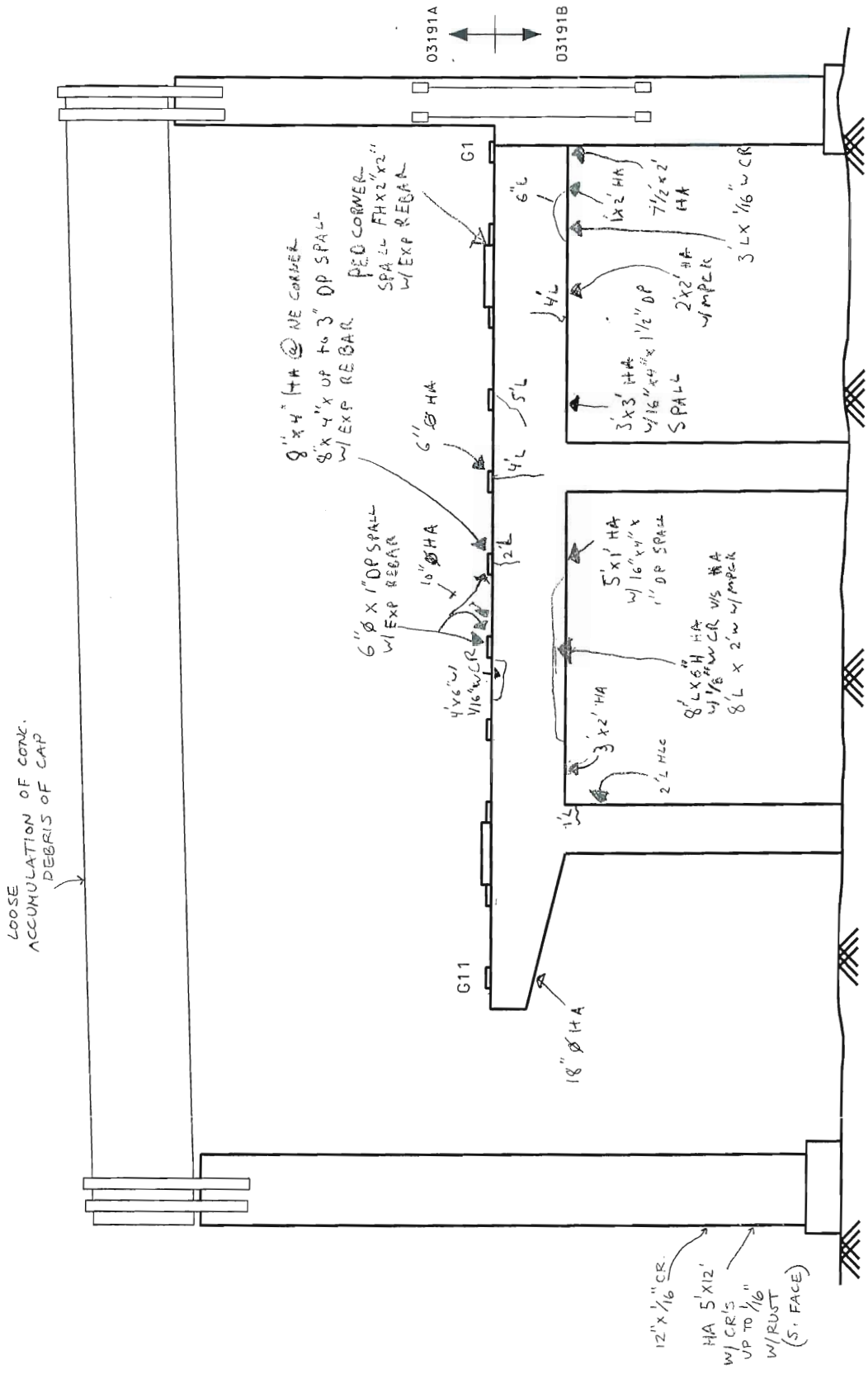
EAST ELEVATION

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 9/25/06	SHEET 165
	CREW: PDG, SW	



REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 9/25/06	SHEET 166
	CREW: PDG, SW	

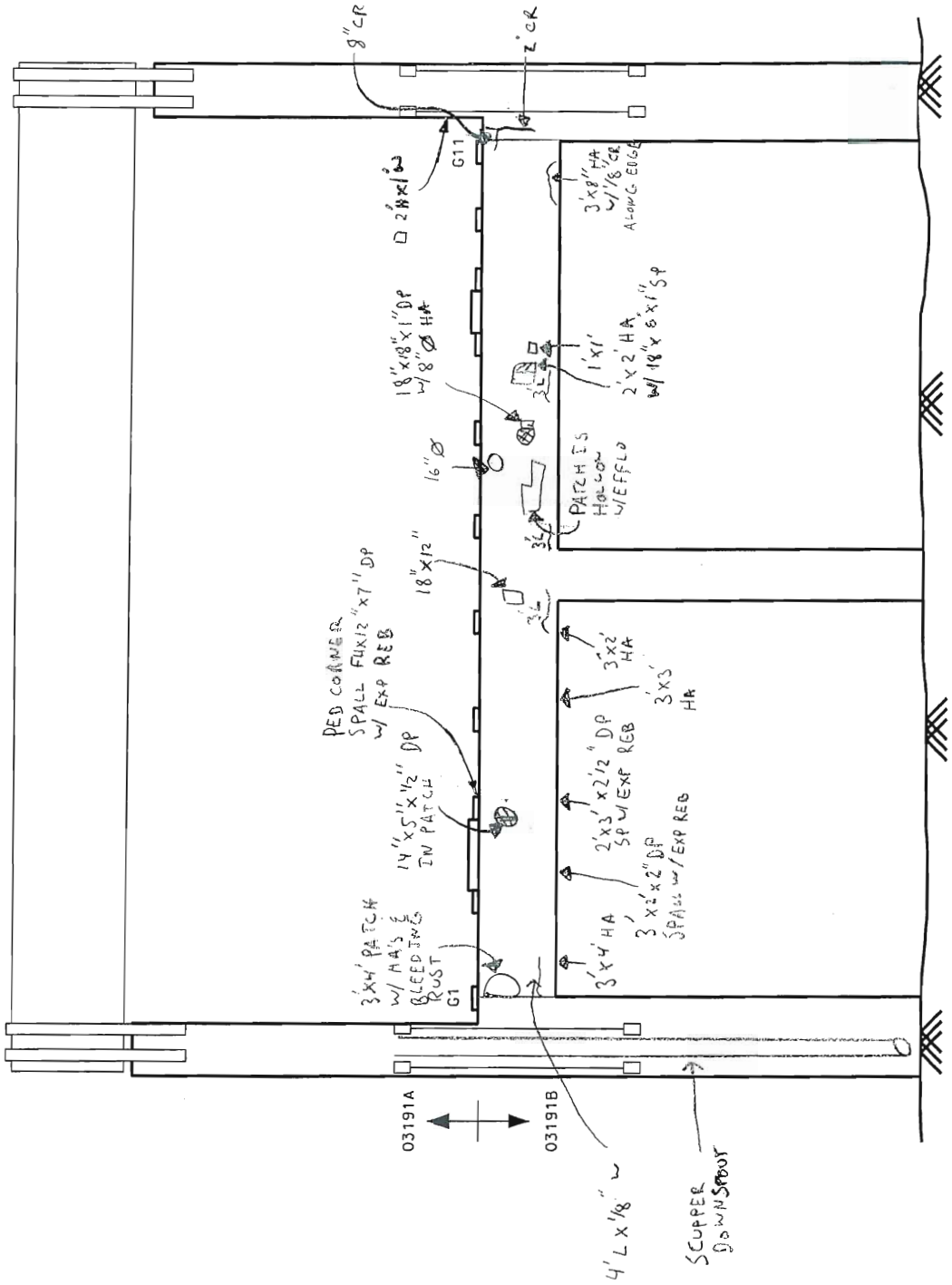


PIER 25 - EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/25/06	SHEET 167
	CREW: PDG, SW	

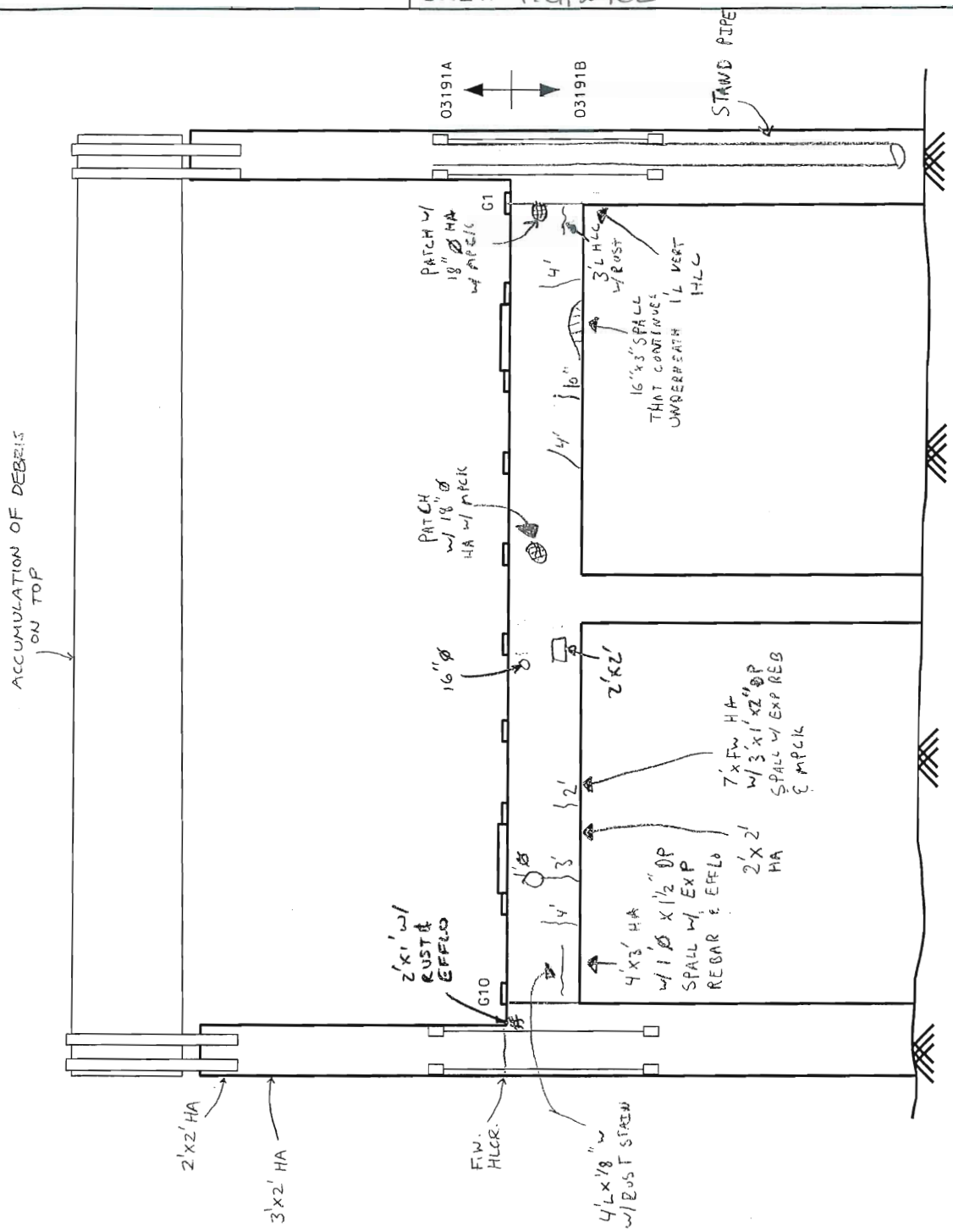


PIER 26 - WEST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 168
	CREW: PDG, SW, CL	

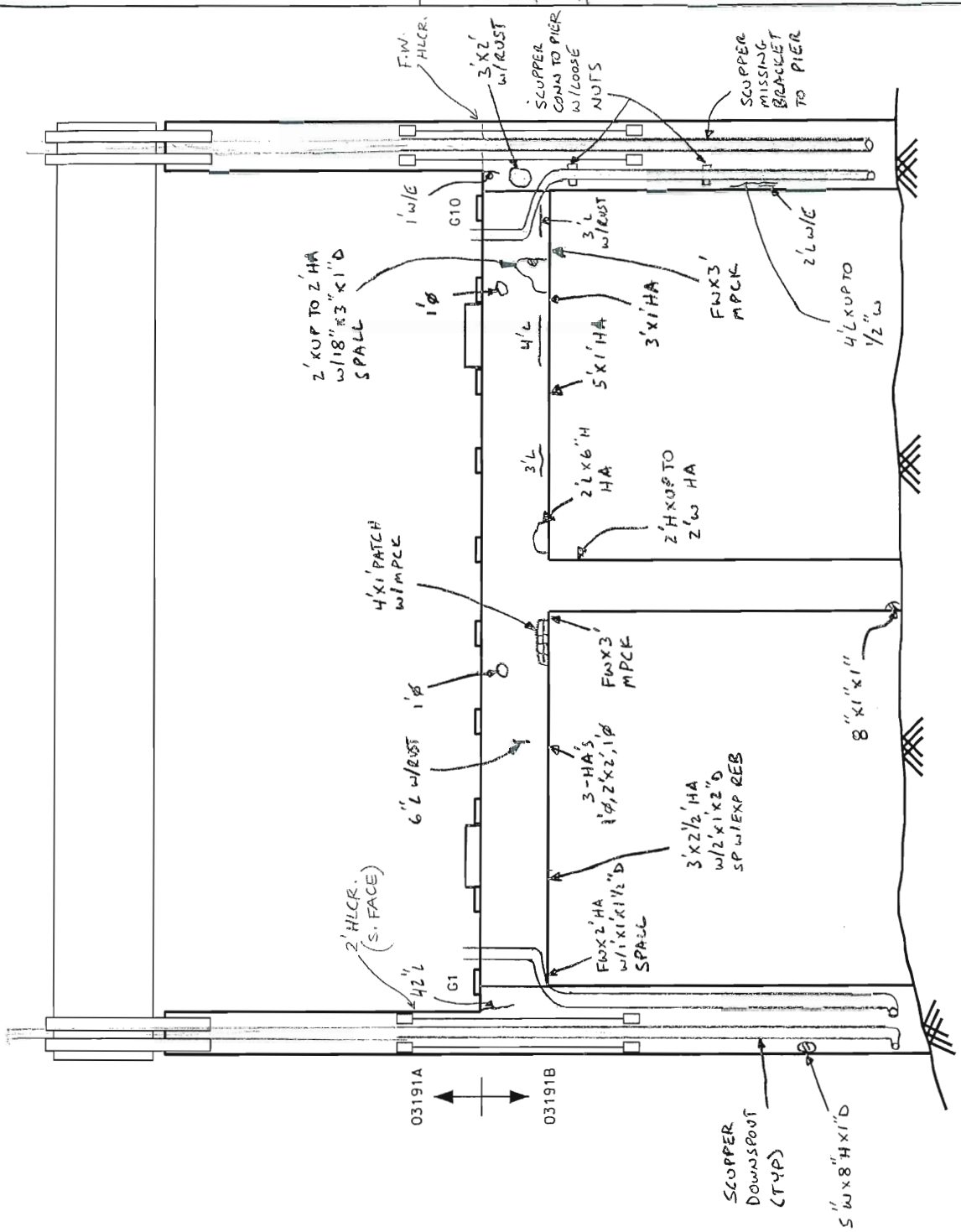


PIER 26 – EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 169
	CREW: PDG, SW, CL	

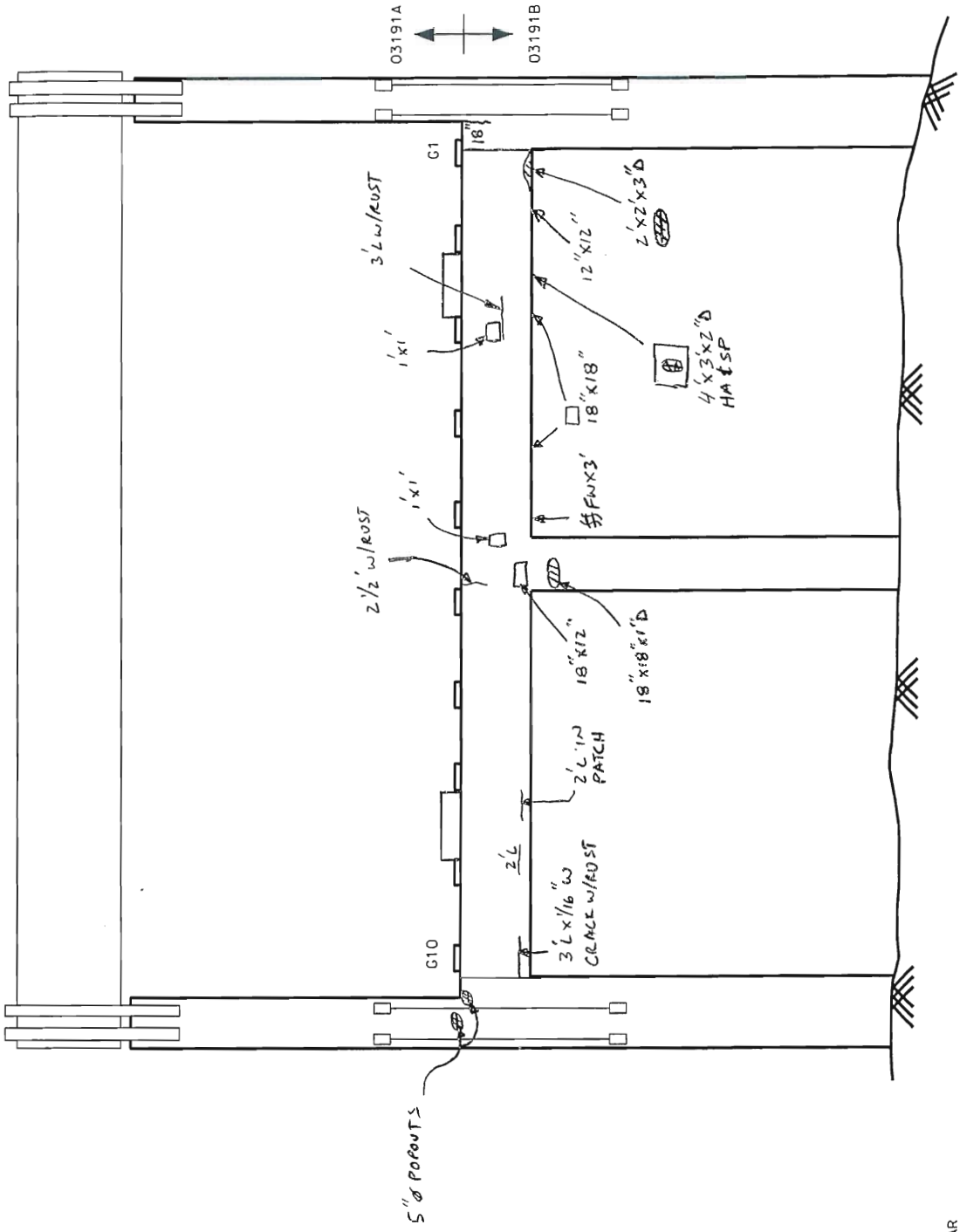


PIER 27 - WEST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 170
	CREW: PDG, SW, CL	

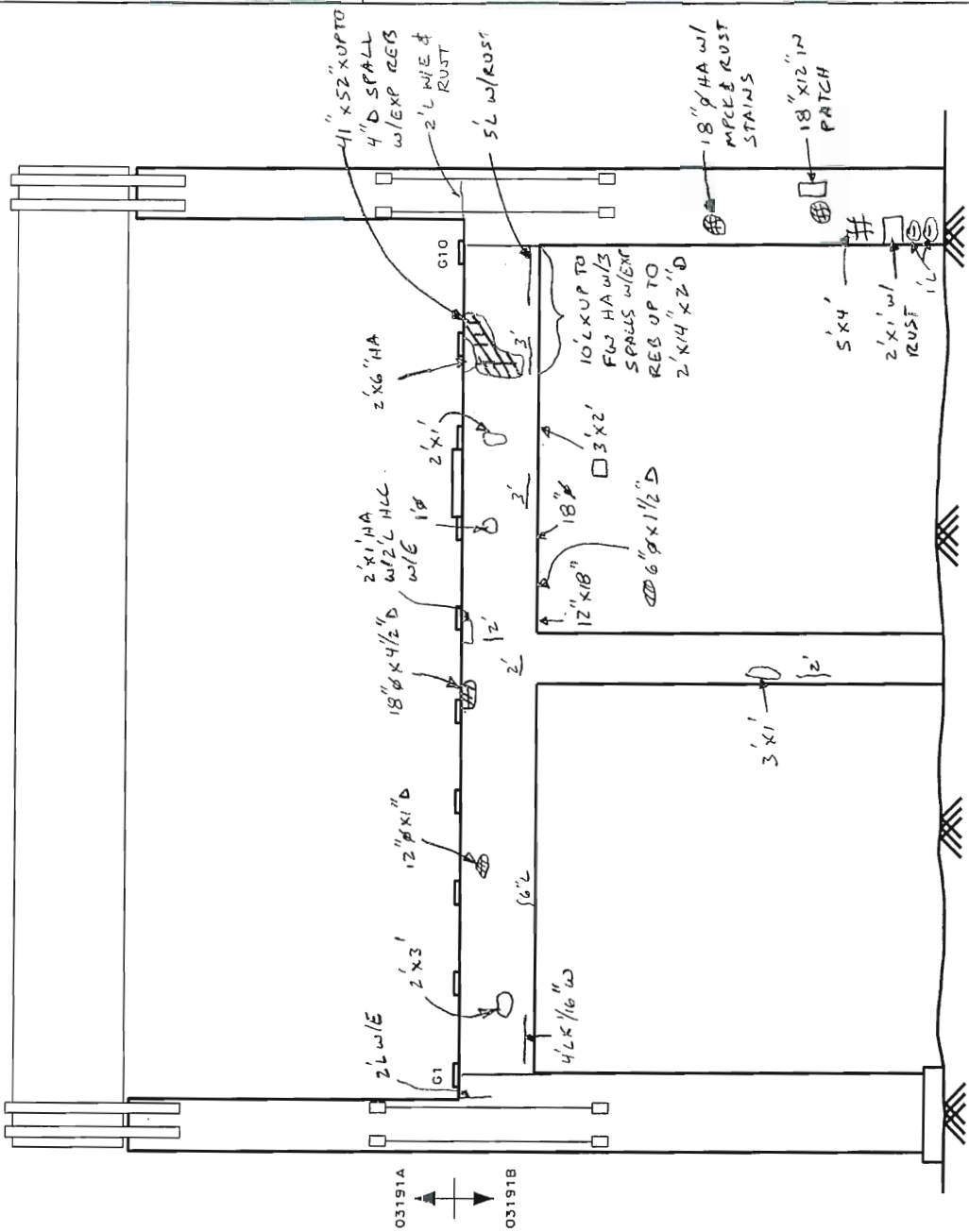


PIER 27 – EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 9/26/06	SHEET 171
	CREW: PDG, SW, CL	

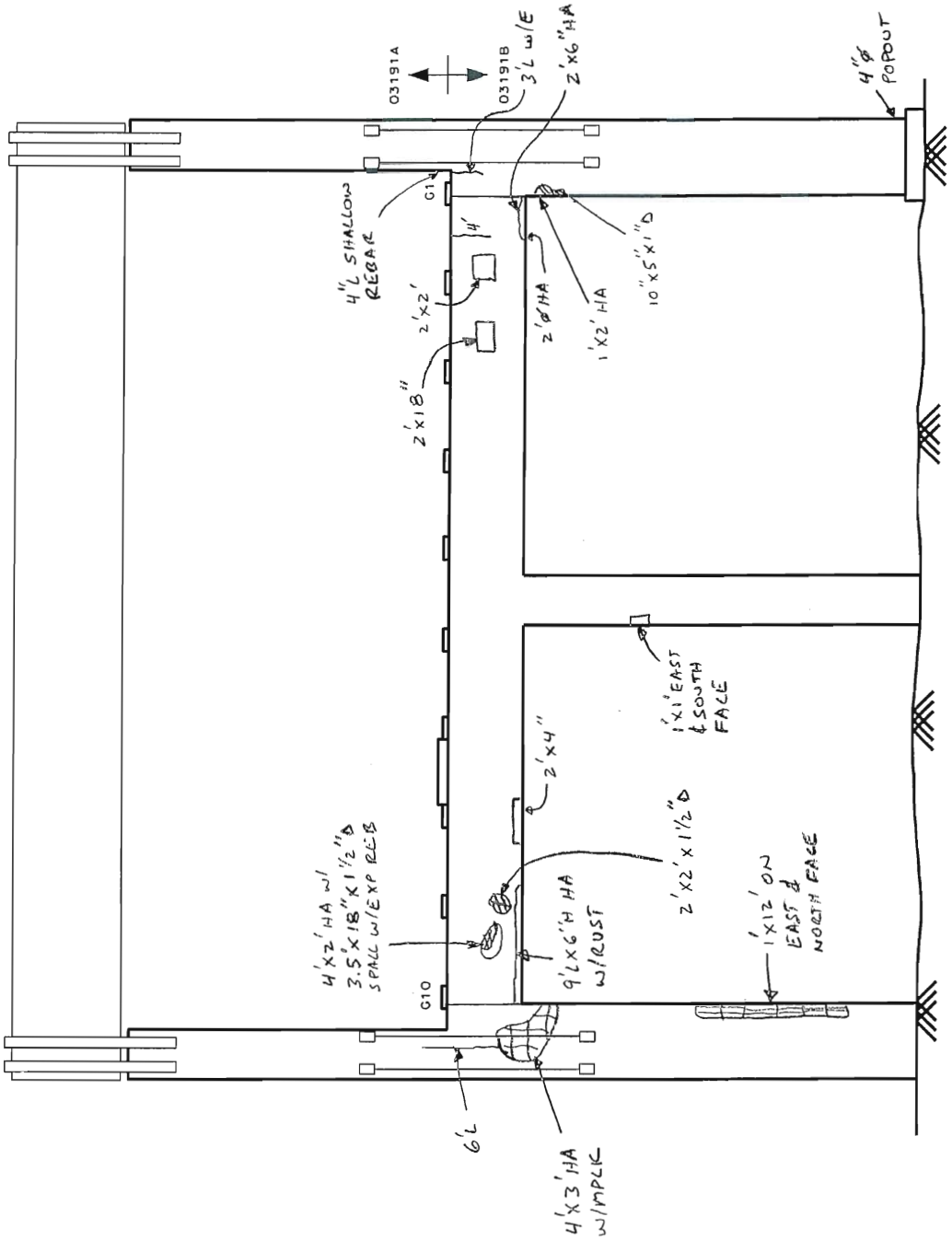


PIER 28 - WEST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/2/06	SHEET 172
	CREW: TDG, SW	



PIER 28 - EAST ELEVATION

LEGEND:
- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/2/06	SHEET 173
CREW PDG, SW	

PREPARED BY: Garg Consulting Services, Inc.
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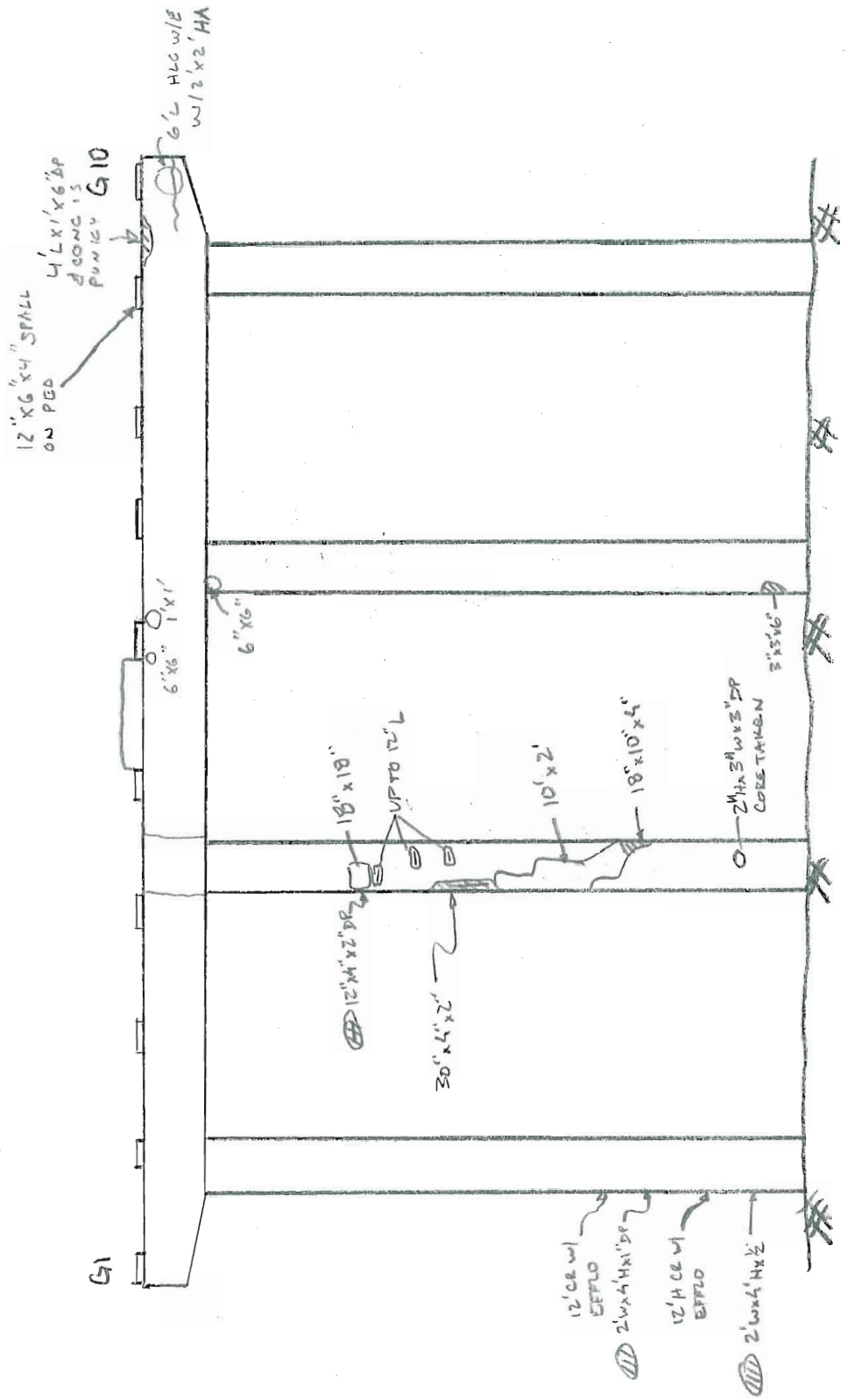

PIER 29, WEST ELEV.

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/3/06	SHEET 174
CREW PDG, SN	

PREPARED BY: Garg Consulting Services, Inc.
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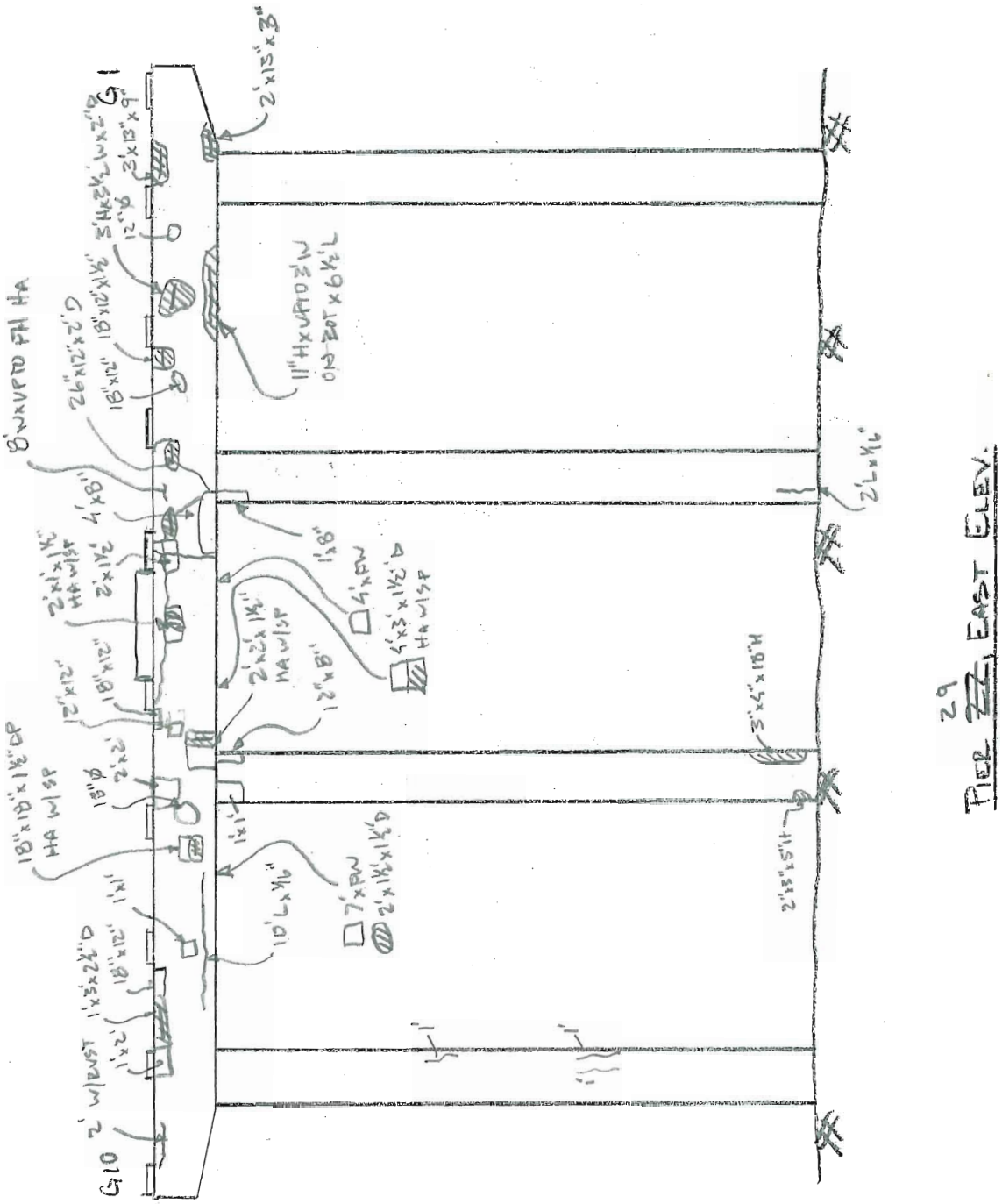
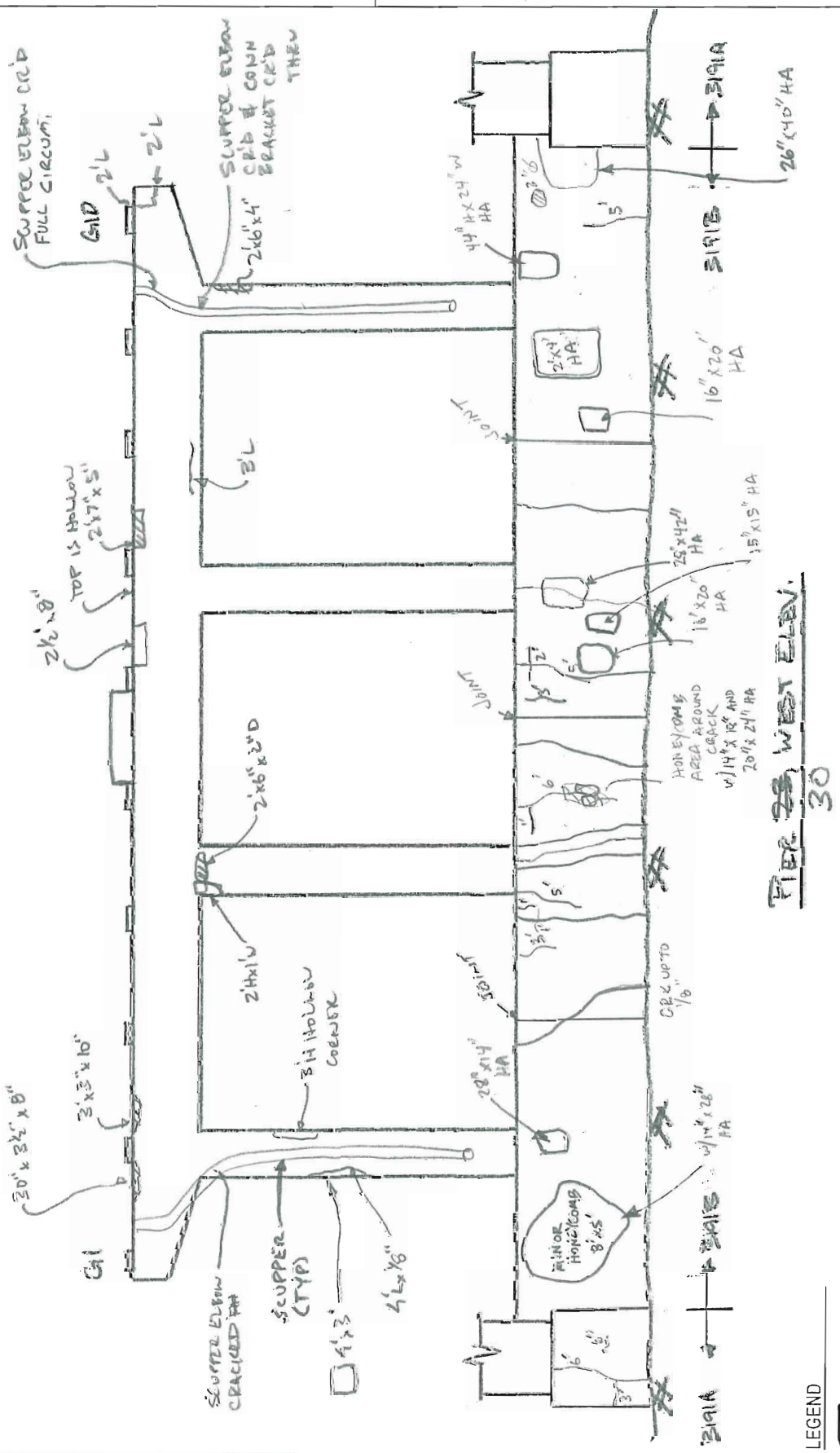


LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

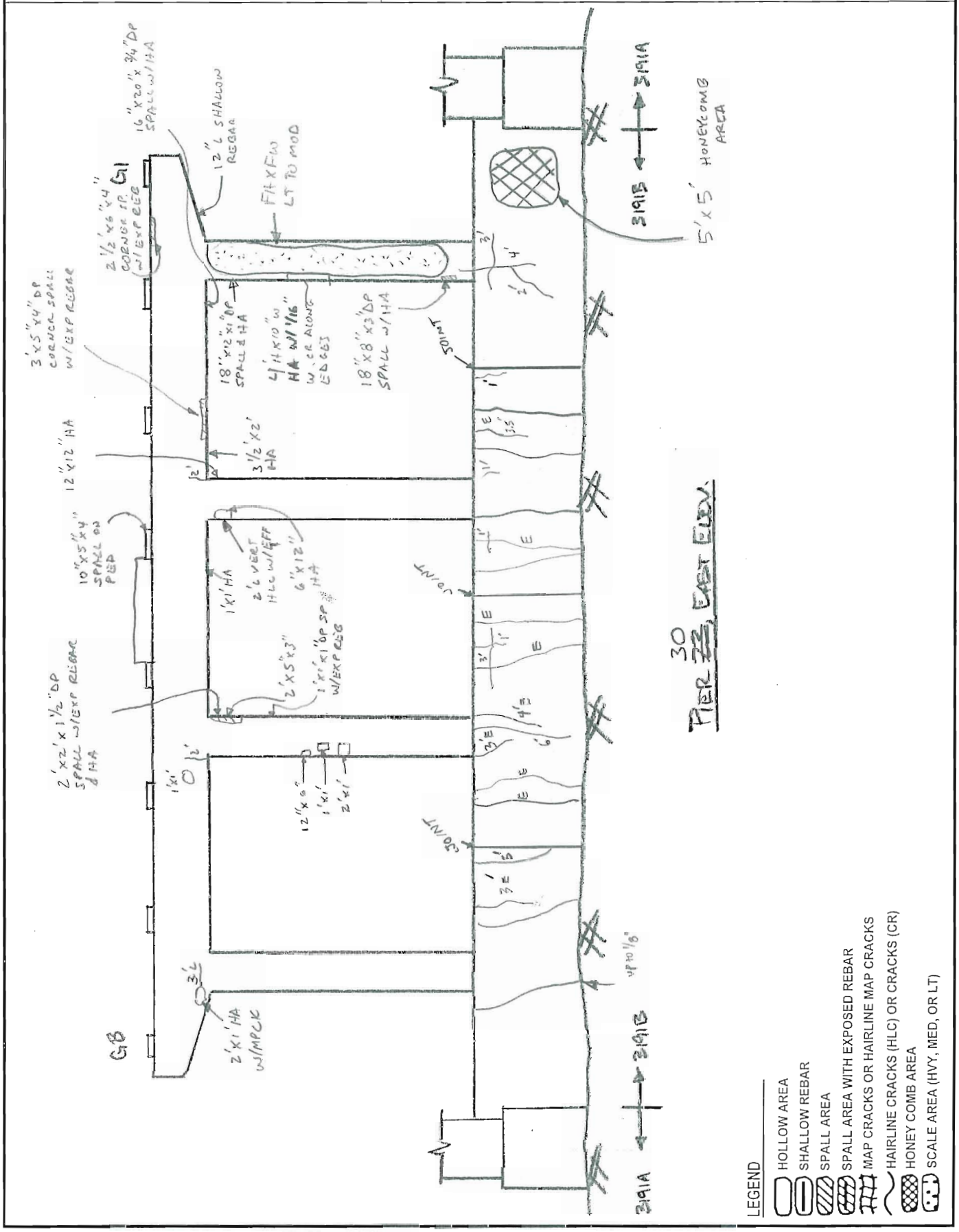
	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/3/06	SHEET 175
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	



FIELD NOTES

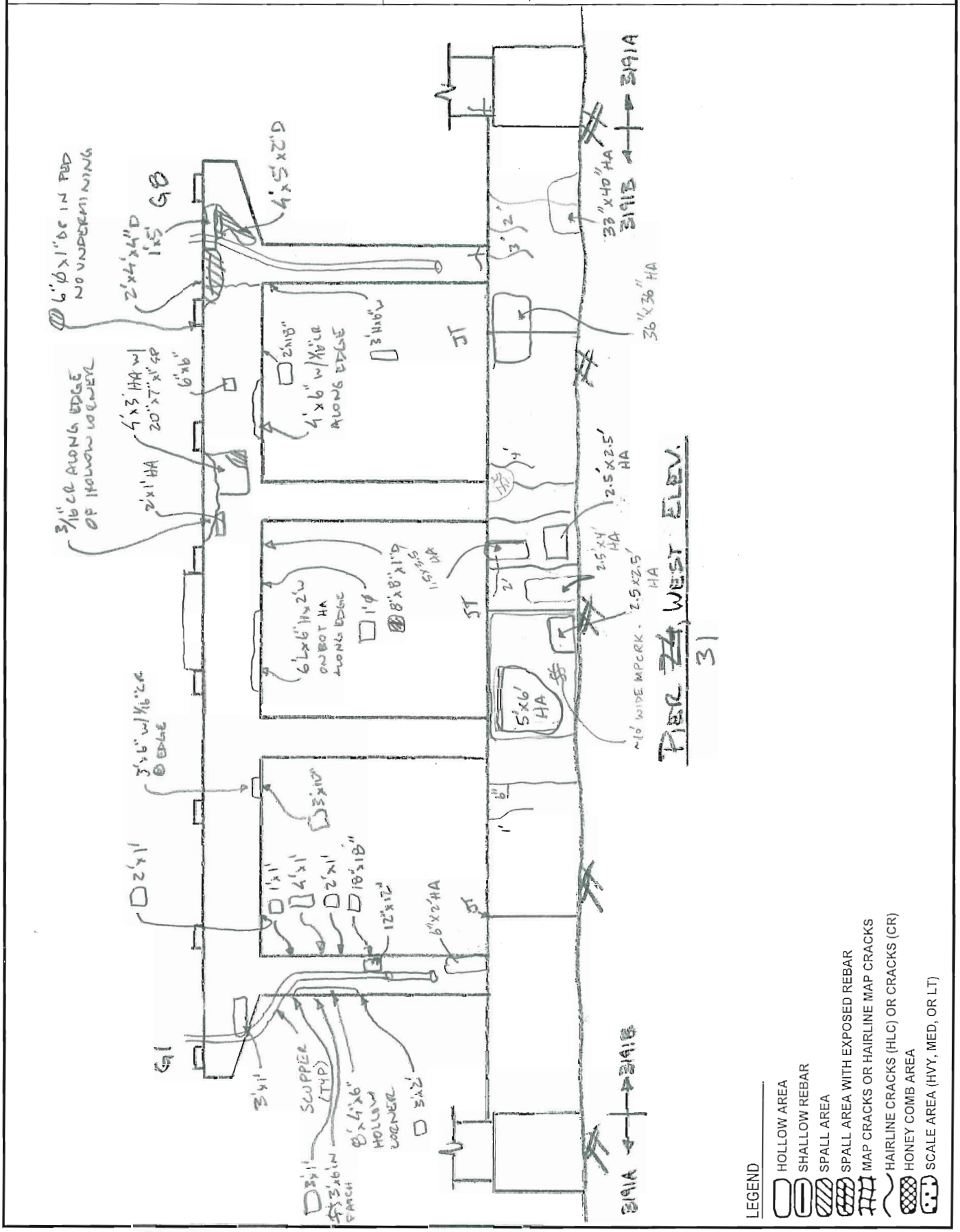
JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/2/06	SHEET 176
CREW TDG, SW	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



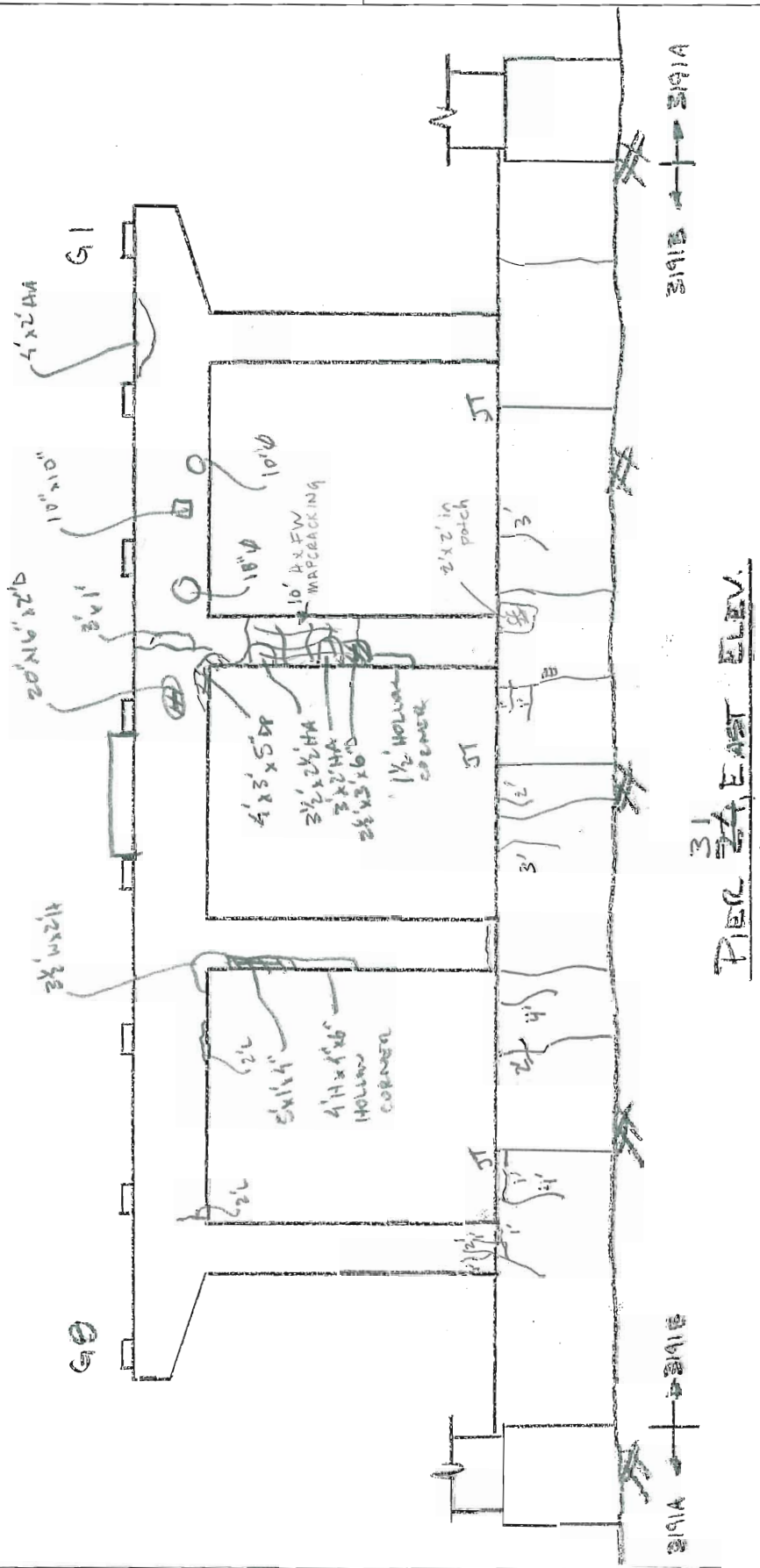
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/2/06	SHEET 177
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	



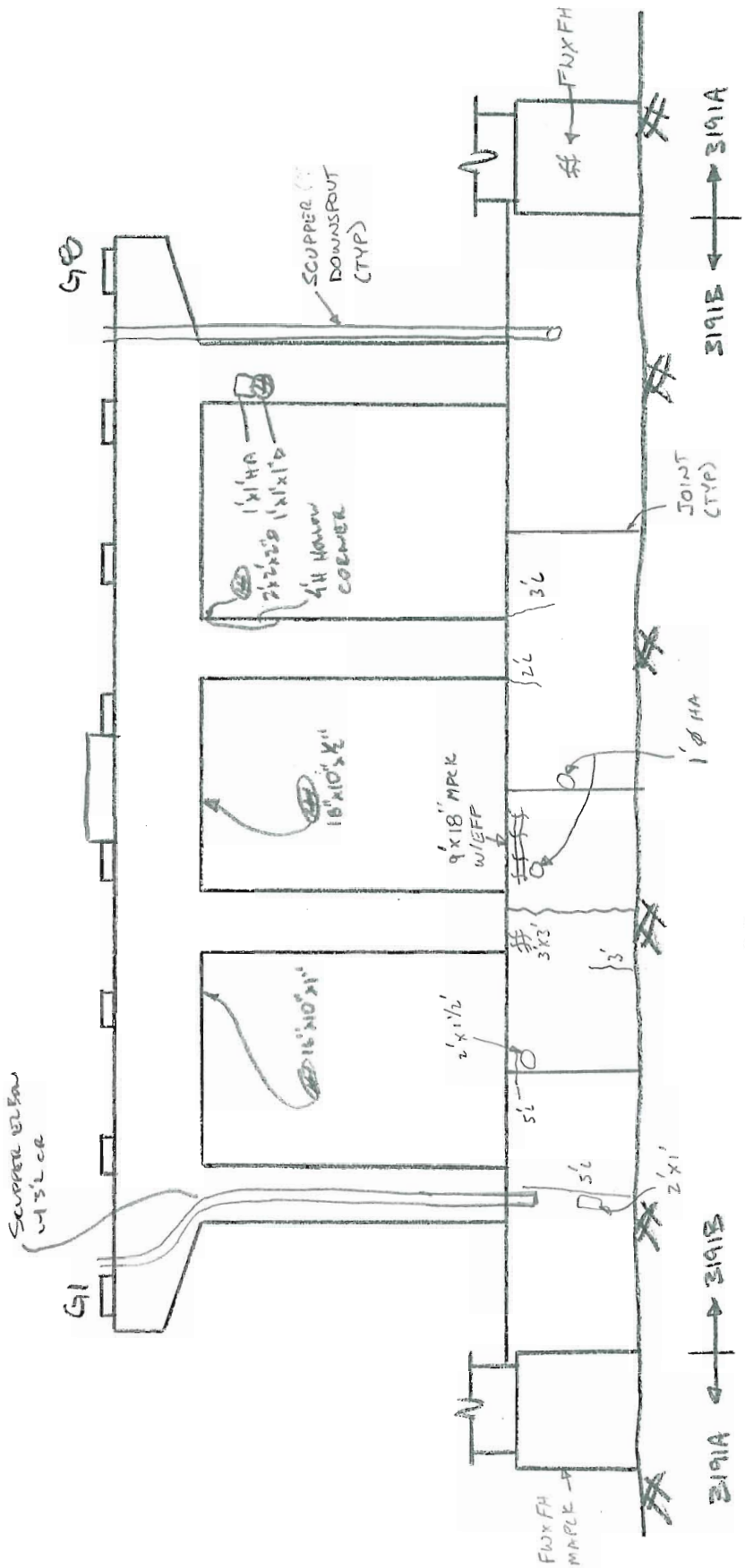
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/30/06	SHEET 178
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	



FIELD NOTES

FIELD NOTES	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/30/06	SHEET 179
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	

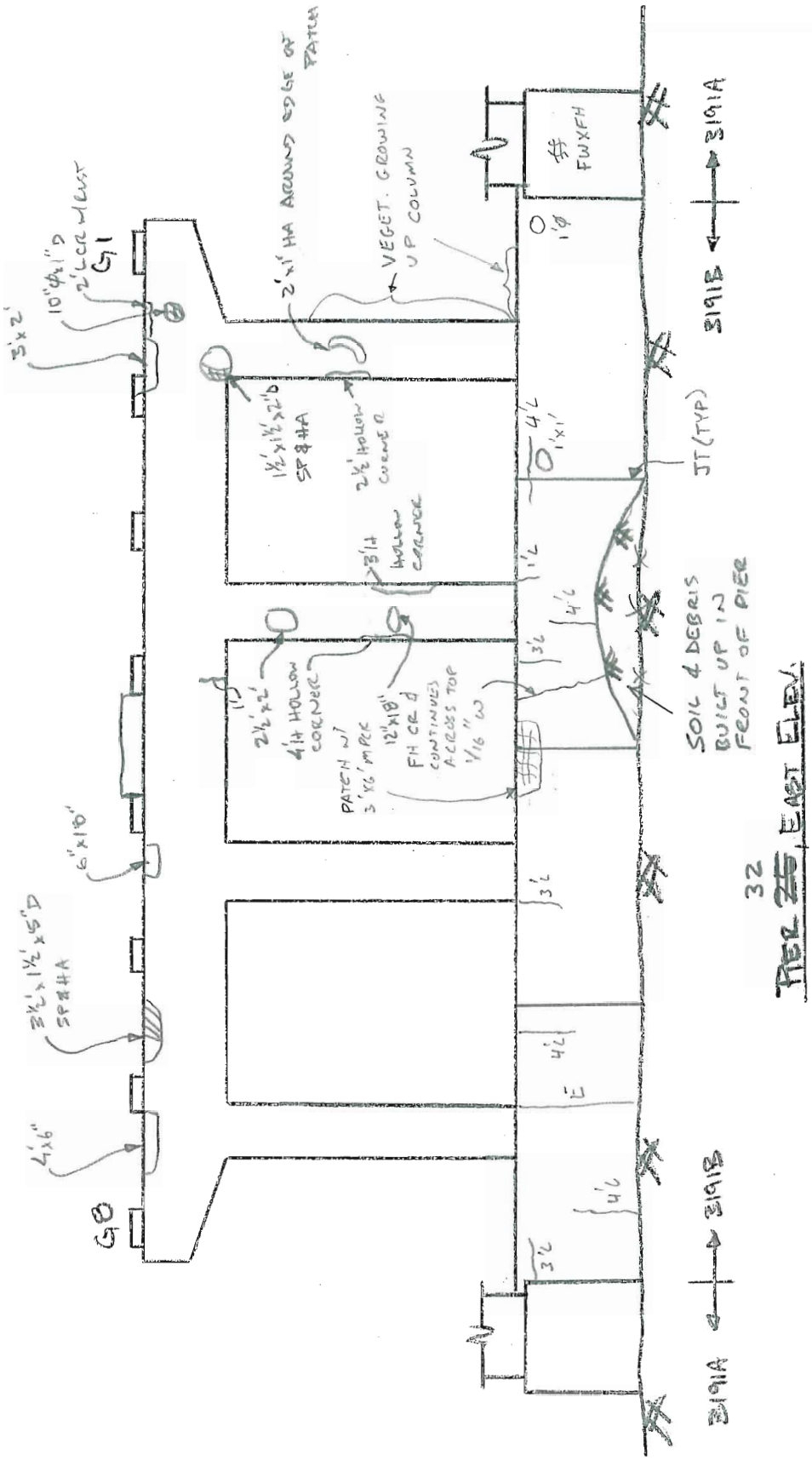


LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 11/1/06	SHEET 180
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PDG, SW	

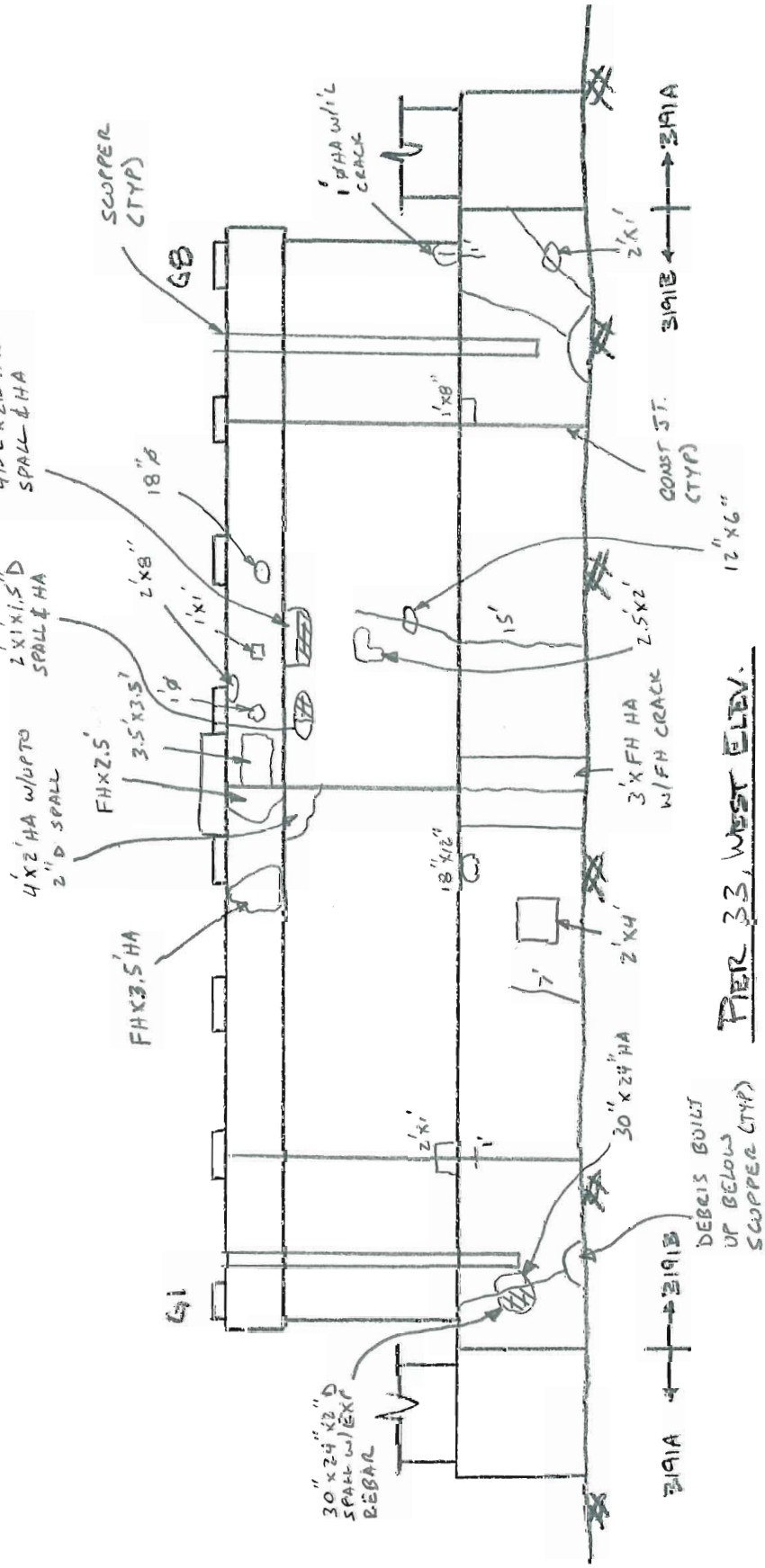


LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 2917
	DATE 10/31/06 & 11/1/06	SHEET 181
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, CL	

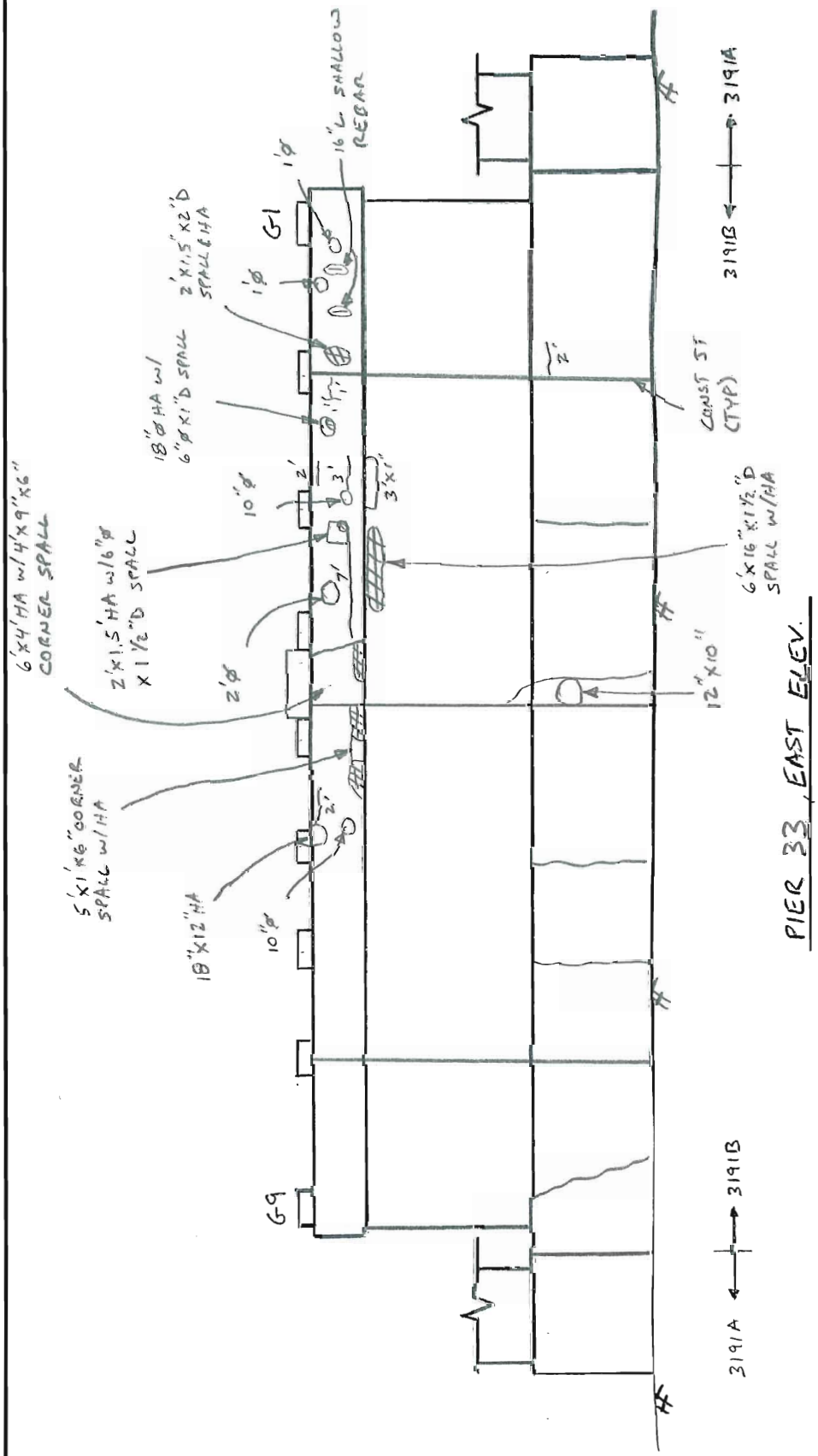


LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/31/06	SHEET 182
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, CL	



PIER 33, EAST ELEV.

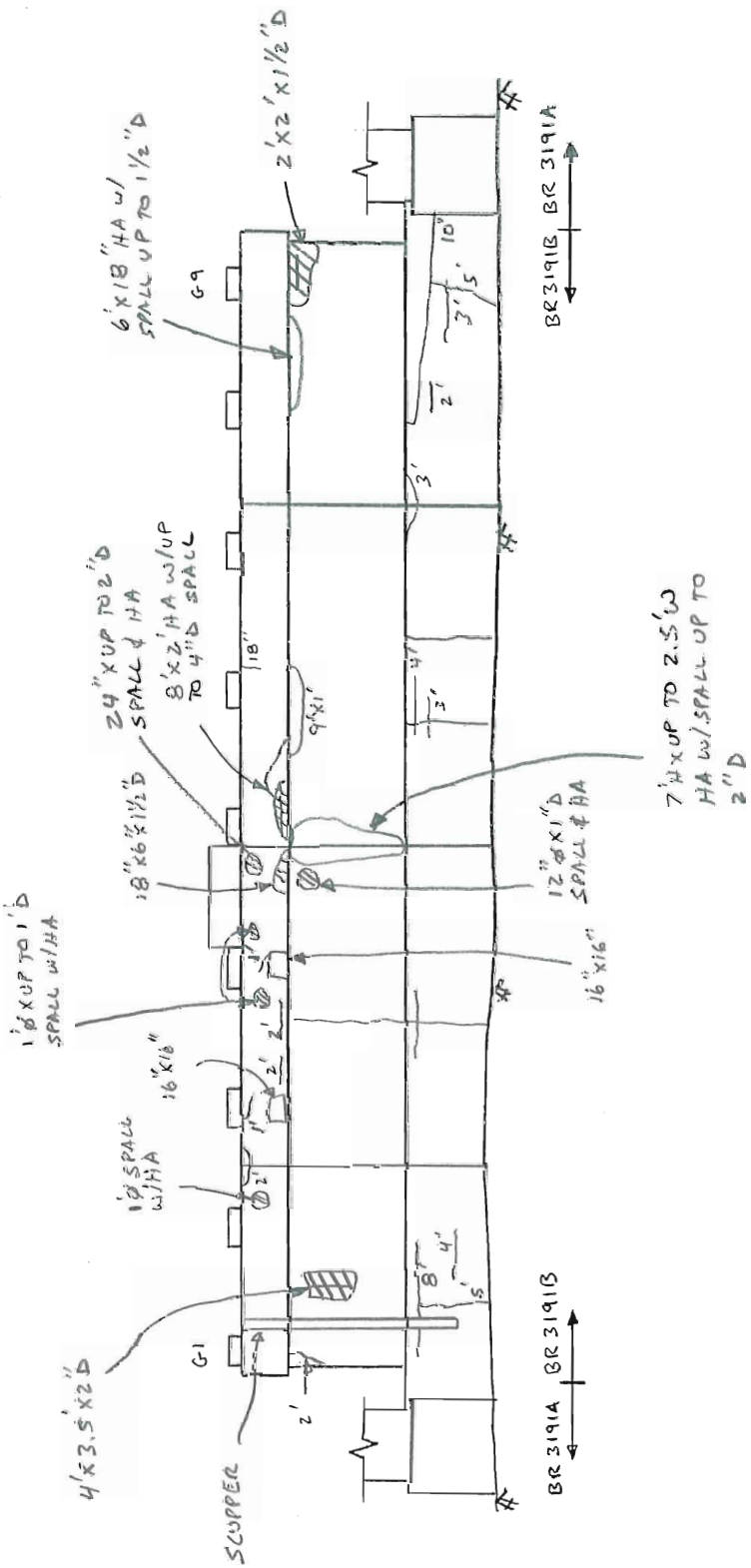
LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 10/31/06	SHEET 183
CREW PG, SW, CL	

PREPARED BY: Garg Consulting Services, Inc.
ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS



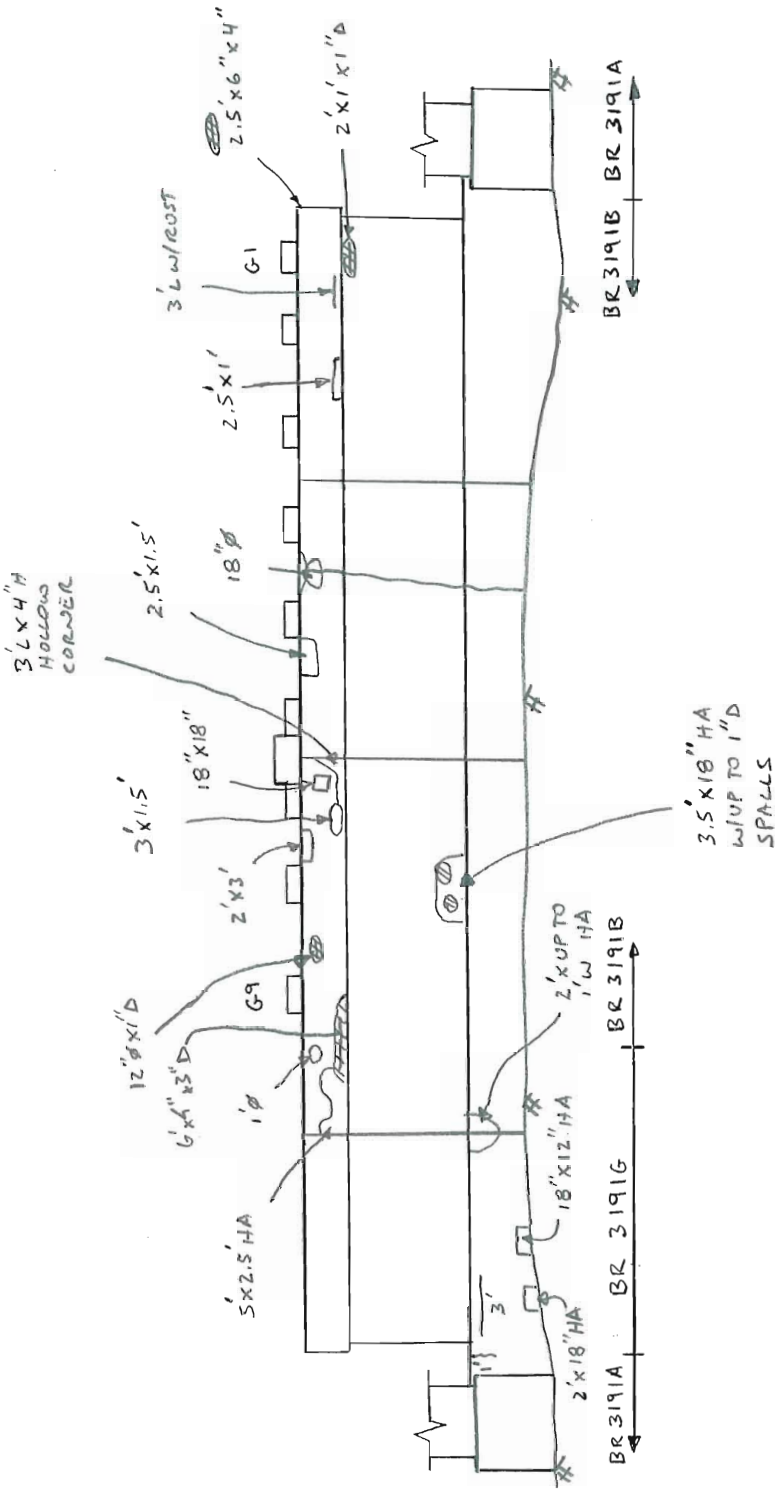
PIER 34 WEST ELEVATION

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 10/31/06 & 11/1/06	SHEET 184
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW, CL	

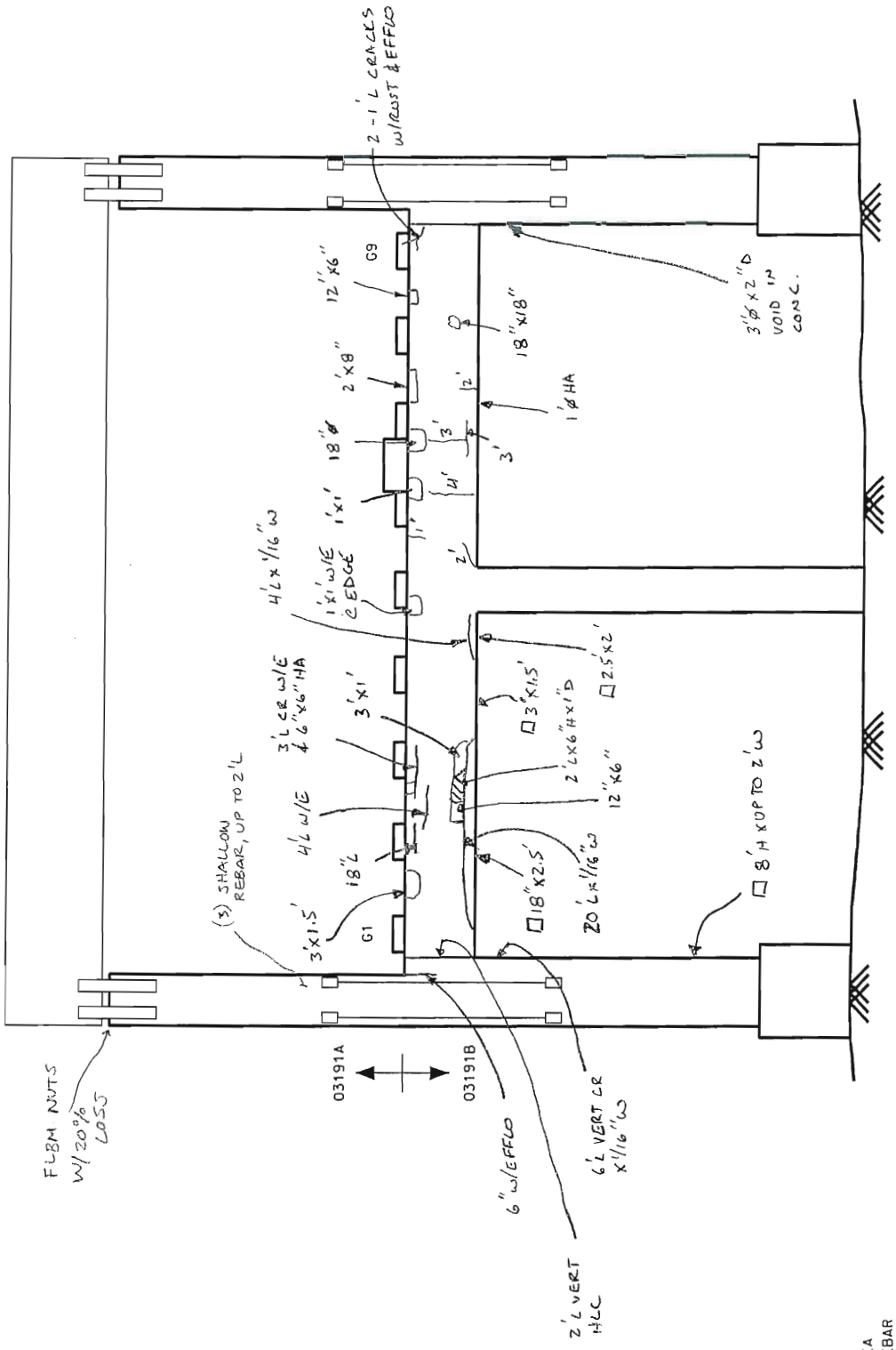


PIER 34 EAST ELEVATION

LEGEND

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAP CRACKS OR HAIRLINE MAP CRACKS
- HAIRLINE CRACKS (HLC) OR CRACKS (CR)
- HONEY COMB AREA
- SCALE AREA (HVY, MED, OR LT)

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 10/6/06	SHEET 185
	CREW: PDG, SW	



PIER 35 - WEST ELEVATION

GENERAL NOTES:

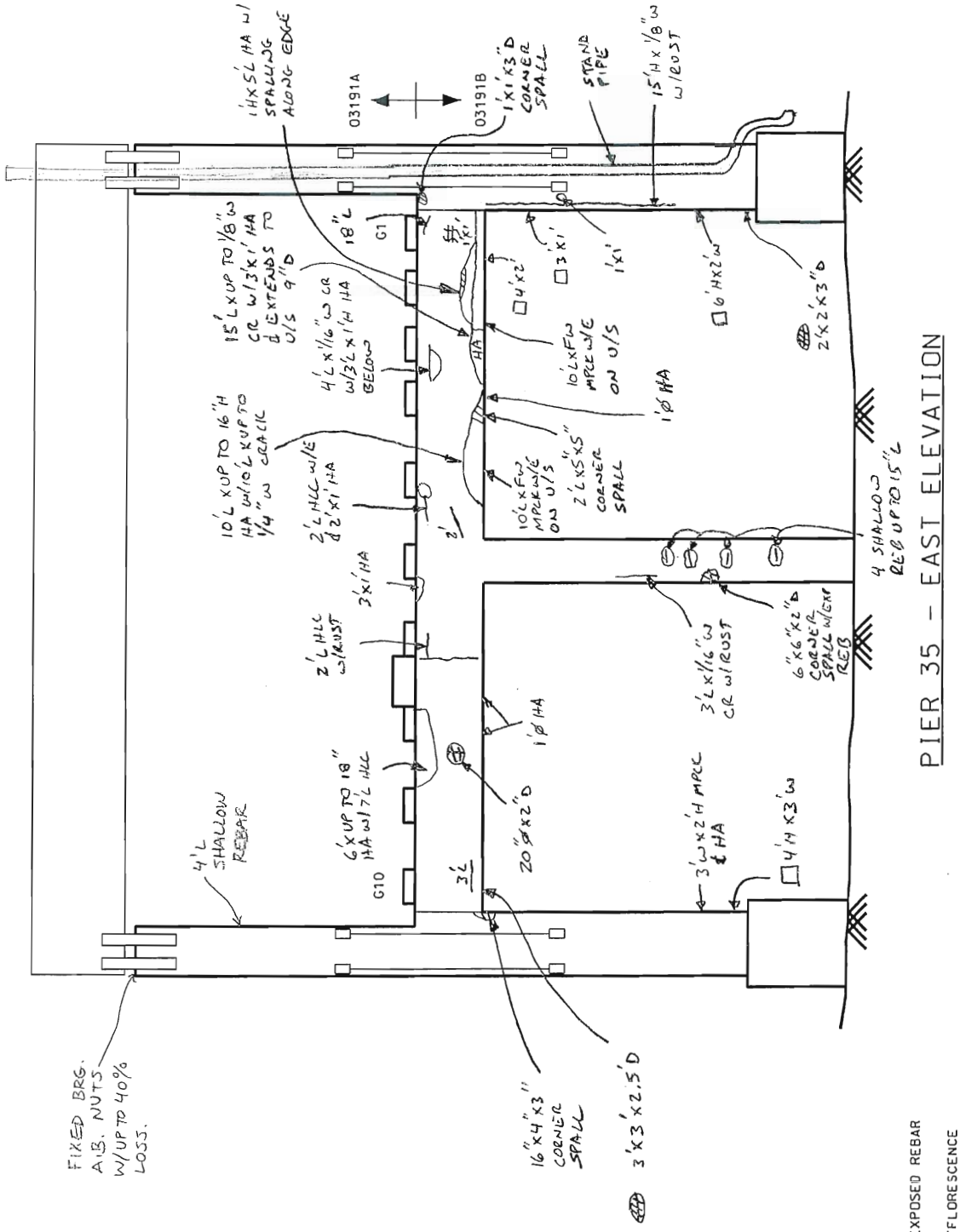
- SEISMIC BASES @ COLUMNS 1 & 3 RUB COAT HAS RANDOM HORIZ & VERT CRACKS W/EFFLO

LEGEND:

- HOLLOW AREA
- SHALLOW REBAR
- SPALL AREA
- SPALL AREA WITH EXPOSED REBAR
- MAPCRACKS
- MAPCRACKS WITH EFFLORESCENCE
- HAIRLINE CRACKS
- HAIRLINE CRACKS WITH EFFLORESCENCE
- HONEYCOMB AREA
- SCALE AREA
- SEISMIC RETROFIT

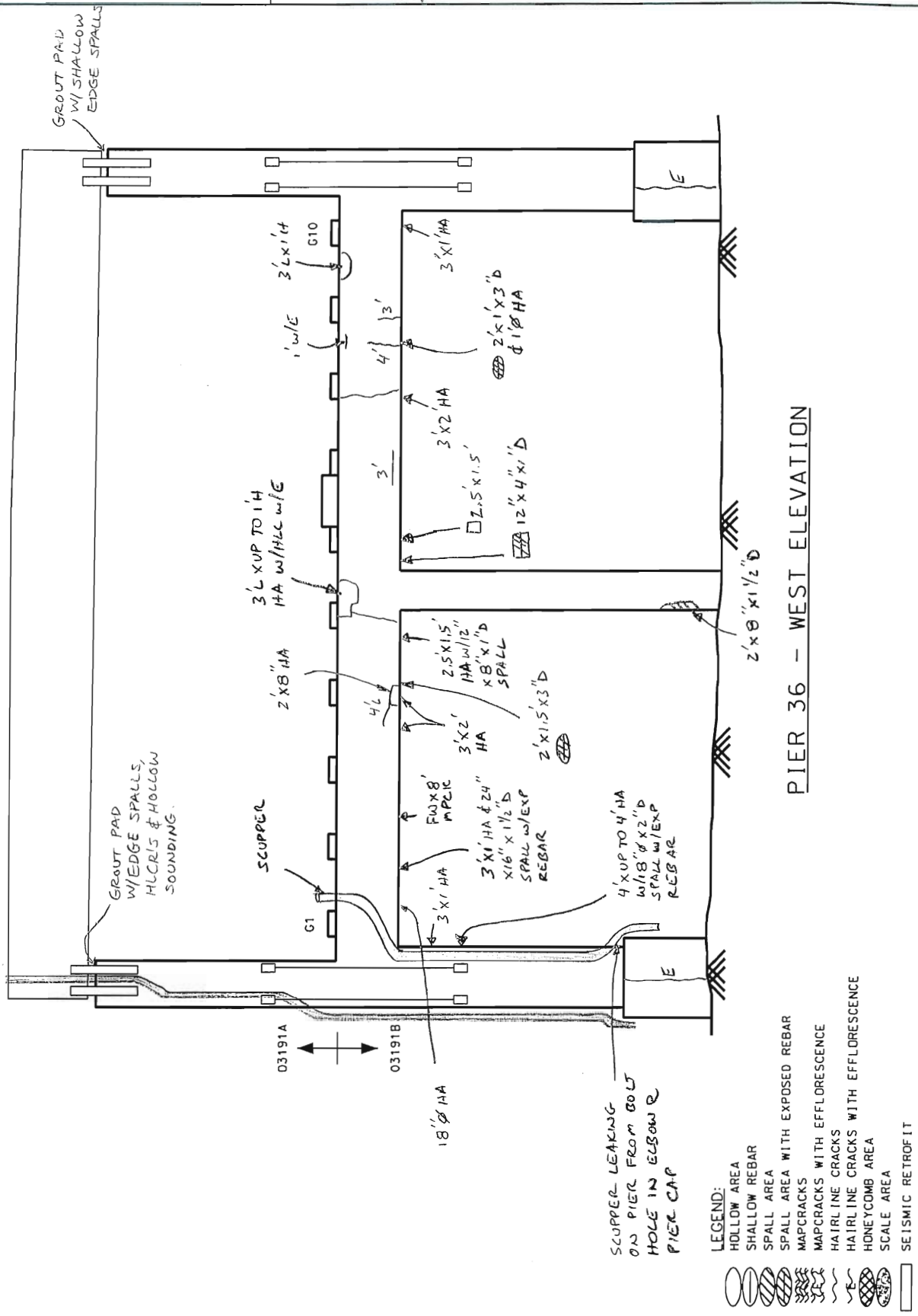
REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO.170-2357	BRIDGE NO. 03191A&B
	DATE: 10/5/06	SHEET 186
	CREW: PDG, SW	



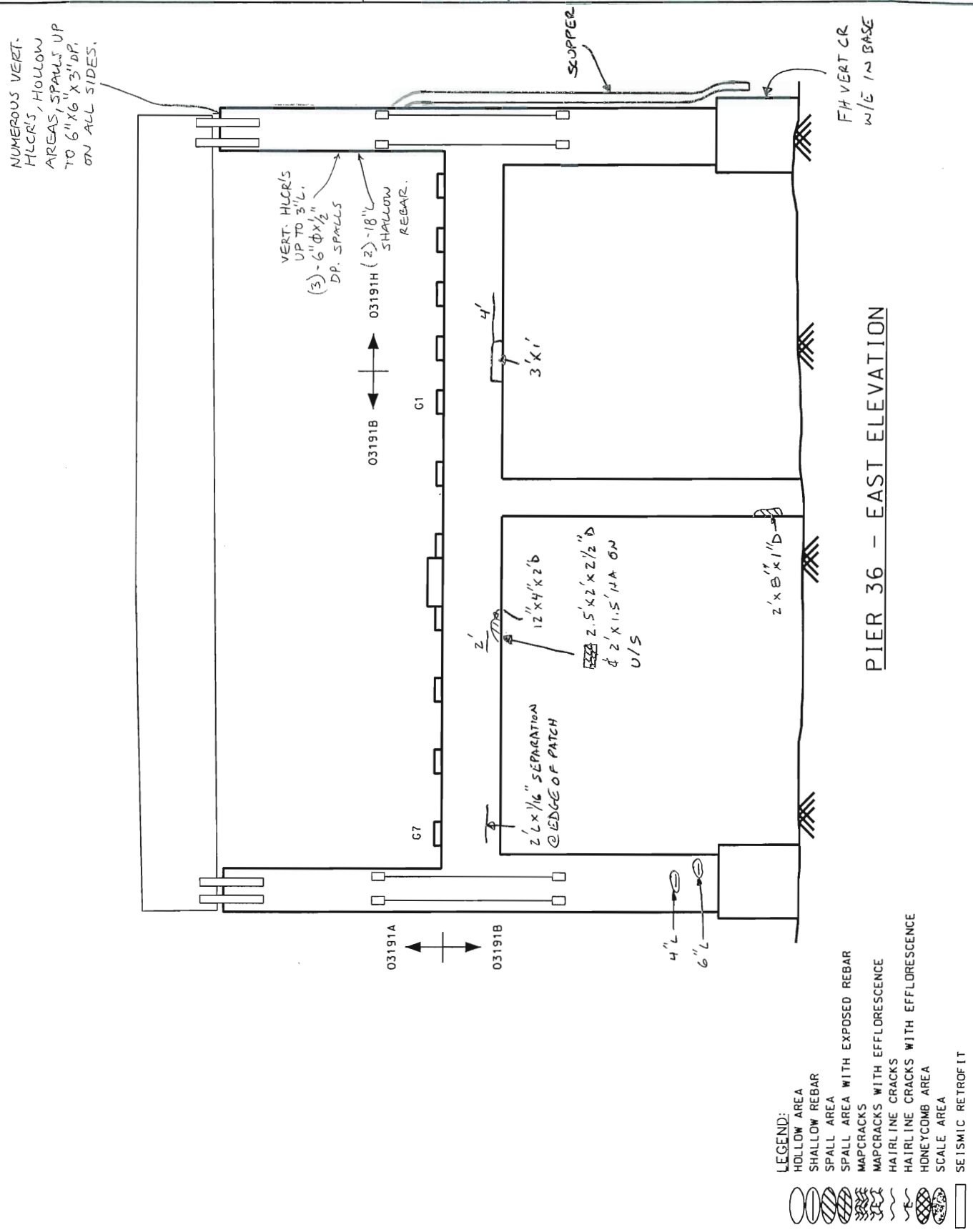
REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 10/5/06	SHEET 187
	CREW: PDG, SW	



REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

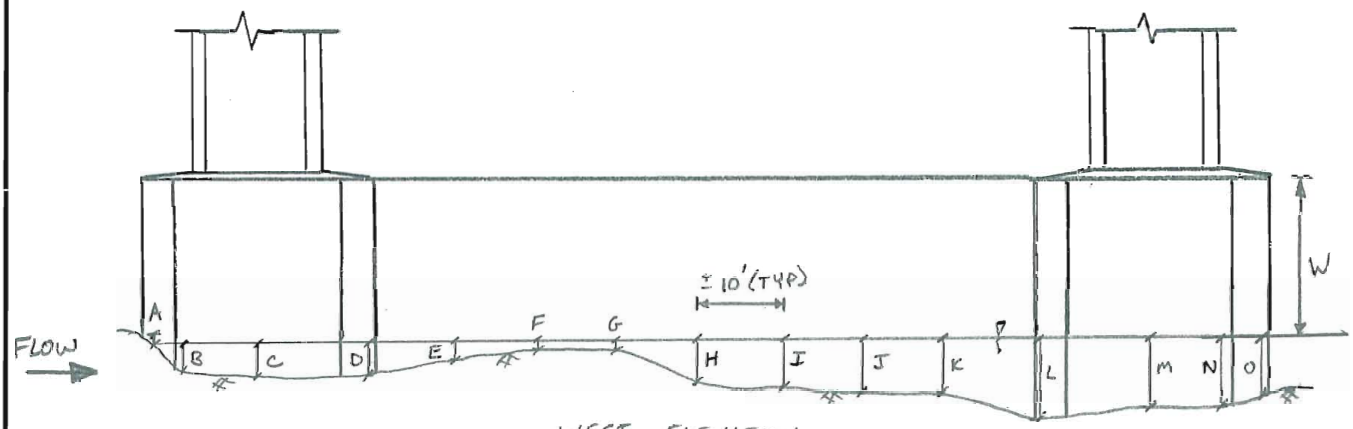
HAKS FIELD NOTES	JOB NO. 170-2357	BRIDGE NO. 03191A&B
	DATE: 10/5/06	SHEET 188
	CREW: PDG, SW	



REVISION 1	DATE	CREW	REVISION 3	DATE	CREW
REVISION 2	DATE	CREW	REVISION 4	DATE	CREW

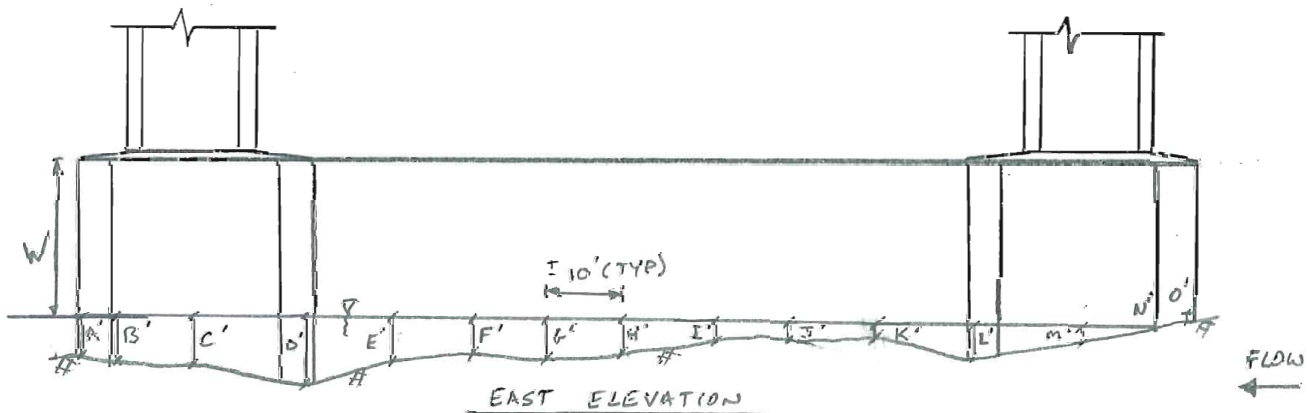
FIELD NOTES

JOB NO. 0156EXT	BRIDGE NO. 3191B
DATE 12/8/06	SHEET 189
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW



WEST ELEVATION

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	W
2006	-0'-4"	1'-1"	1'-2"	1'-2"	0'-9"	0'-5"	0'-6"	1'-3"	1'-5"	1'-6"	1'-5"	2'-6"	1'-11"	1'-11"	1'-6"	15'-3"



EAST ELEVATION

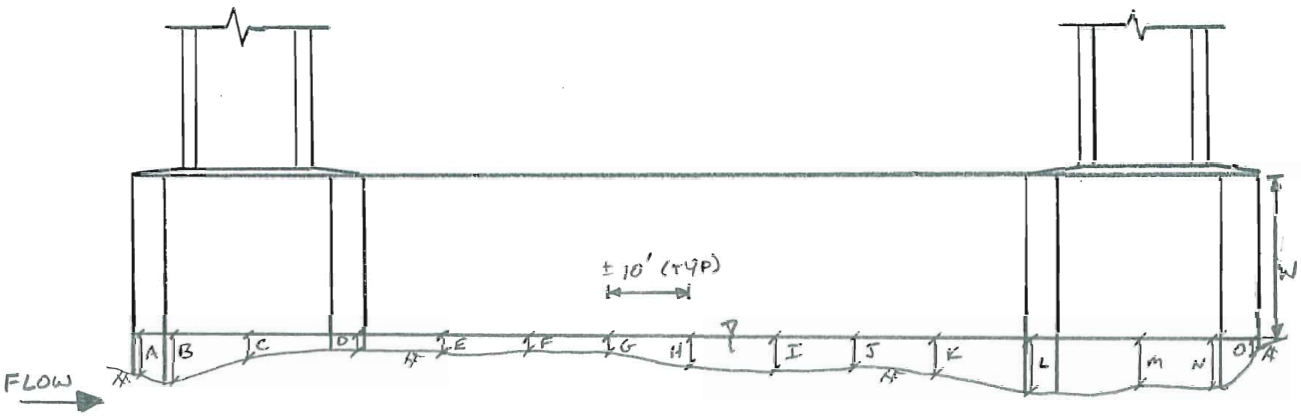
	A'	B'	C'	D'	E'	F'	G'	H'	I'	J'	K'	L'	M'	N'	O'	W
2006	1'-6"	1'-10"	1'-10"	3'-2"	1'-9"	1'-8"	1'-6"	1'-10"	1'-6"	0'-11"	0'-8"	1'-3"	0'-10"	0'-0"	-0'-4"	15'-3"

* ALL MEAS. BTWN CHANNEL BOTTOM & TOP OF WATER. NEGATIVE MEAS. @ N. END DUE TO BUILT-UP DEBRIS

SCOUR DOCUMENTATION - PIER 18

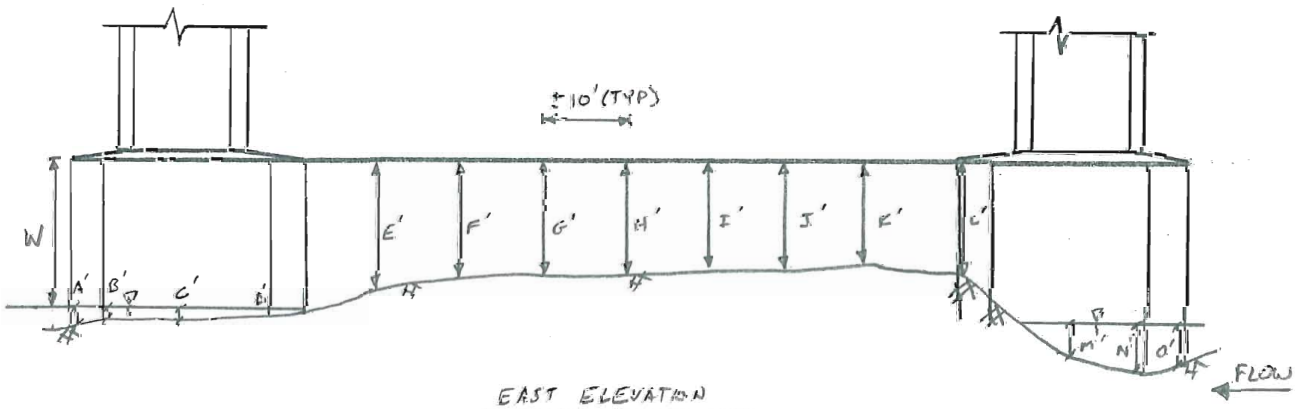
FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 12/8/06	SHEET 190
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



WEST ELEVATION

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	W
2006	1'-10"	2'-0"	0'-9"	0'-4"	0'-7"	0'-7"	0'-9"	1'-0"	1'-2"	0'-11"	1'-3"	2'-0"	1'-8"	1'-10"	0'-5"	15'-4"



EAST ELEVATION

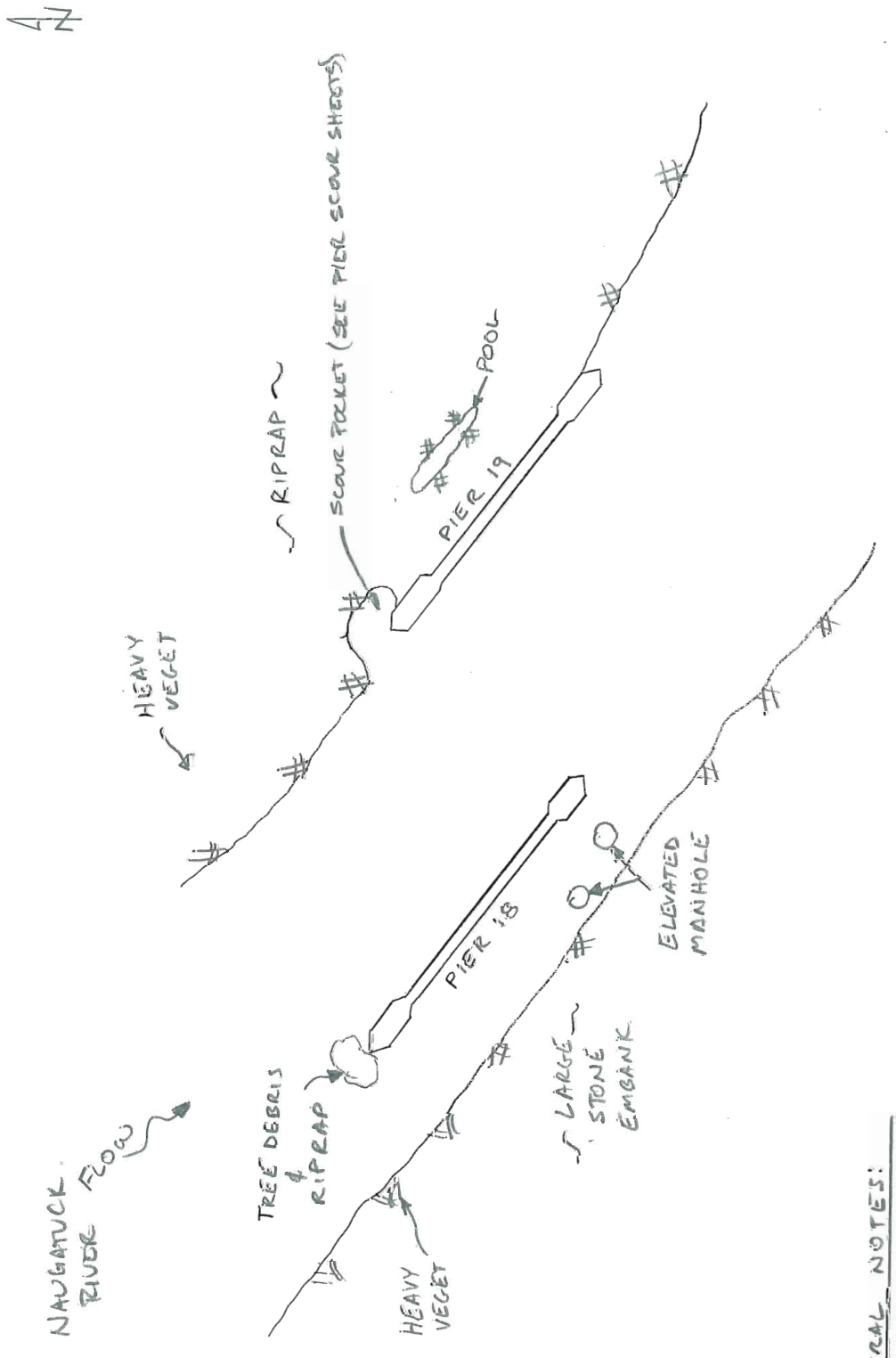
	A'	B'	C'	D'	E'	F'	G'	H'	I'	J'	K'	L'	M'	N'	O'	W
2006	0'-5"	0'-2"	0'-3"	0'-0"	13'-6"	13'-1"	13'-1"	13'-1"	13'-0"	13'-0"	12'-10"	13'-1"	0'-9"	2'-3"	1'-10"	15'-4"

* MEAS. E'-L' & P ARE BTWN CHANNEL BOTTOM & TOP OF PIER WALL. ALL OTHER MEAS. ARE BTWN CHANNEL BOTTOM & TOP OF WATER.

SCOUR DOCUMENTATION - PIER 19

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 12/8/06	SHEET 191
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



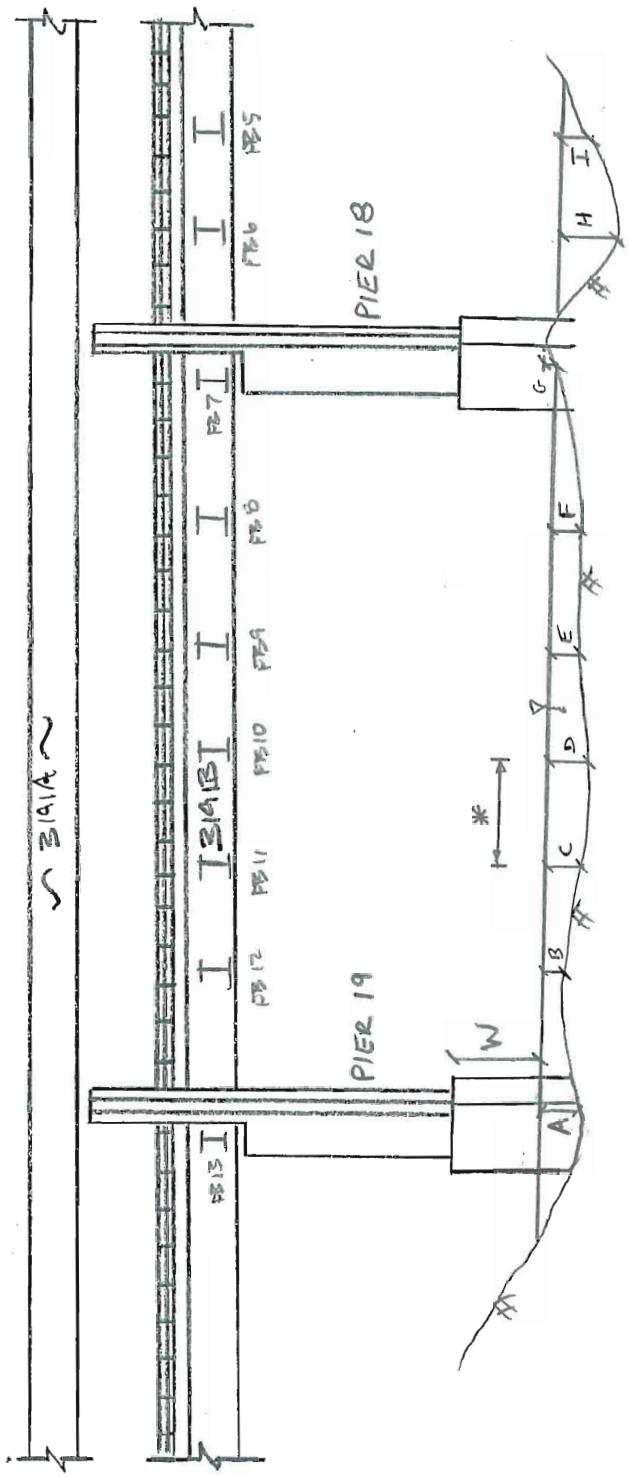
CHANNEL DIAGRAM
SPANS 11 & 12

GENERAL NOTES:

- CHANNEL BOTTOM IS COBBLES/SAND W/ 0" PEN, TYPICAL W/ UP TO 8" PENETRATION & SILT POCKETS
- FLOW IS APPROX 4FPS

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 12/8/06	SHEET 192
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	



	A	B	C	D	E	F	G	H	I	W
2006	1'-10"	0'-9"	1'-4"	1'-6"	1'-2"	1'-3"	-0'-4"	3'-3"	1'-6"	15'-3"

* MEAS ARE TAKEN @ FLBM LOCATIONS (±24' APART) BTWN CHANNEL BOTTOM & TOP OF WATER. NEGATIVE MEAS. @ PIER 18 DUE TO BUILT-UP DEBRIS.

CHANNEL PROFILE

UPSTREAM (NORTH) ELEV.

PHOTO LOG

Form BRI-13, Rev. 9/97

Bridge Information System

Image Inventory

Bridge No. 3191B

Date 9/25/06

Town: WATERBURY

Photographer: SW/PG

Carried / Crossed: I-84 WB / RTE 8, NAUGATUCK RIVER, MNRR & LOCAL STREETS

Film Frame #	Image Description
1	SP 19 G10 @ PIER 25 TYP EXP BRG
2	P26 U/S UNDER G3 SPALL W/ EXP REBAR
3	SP 18 G10 @ PIER 25 FIXED BRG W/ HVY RUST & MISSING ABNUT
4	SP 18 BTWN G5 & G6 1ST DIAPH FROM PIER 24 MISSING BOT HORIZ WELD
5	SP 18 G10 @ P24 TYP EXP BRG NOTE: CONTRACTION @ 70°F
6	SP 18 G10 TOP OF BOT FLG W/ HVY RUST
7	PIER 24 S. COLUMN ABOVE BR 3191B SCUPPER DAMAGED W/ HOLE
8	SP 18 BTWN G12 & G13 NEAR PIER 24 SPALL W/ EXP REBAR
9	SP 18 G14 @ P24 BRG & END OF GIRDER W/ HVY RUST
10, 11	SP 20 BTWN G8 & G7 1ST DIAPH FROM PIER 26 SLOPPY WELD BTWN DIAPH & CONN PL
12	SP 21 BTWN G10 & G9 @ PIER 27 CONN BTWN FLBM? & GIRDER
13	SP 21 G10 @ PIER 28 TOP FLG W/ RUST
14	SP 21 G10 BRG @ PIER 28 W/ LAM RUST
15	P28 WEST SIDE UNDER G9 CAP W/ SPALL & EXP REBAR
16	SP 21 BAY 4 NEAR MIDSPAN HONEY COMB W/ EXP REBAR
17	SP 21 G4 @ P27 CR IN WELD TAWN BOT FLG & SOLE PL
18	SP 21 G2 N. SIDE @ P27 " " " "
19	SP 17 DECK DOWN G1 & 2 @ P23 HC W/ EXP REB
20	SP 17 G3 @ P23 S. SIDE DIAPH WELD W/ POOR FUSION / CRD
21	PIER 23 G8 BEAM ENDS W/ 1/16" - 1/8" GAP
22	PIER 23 G8 LOOKING E BEAM ENDS MISALIGNED
23	PIER 21 NE CORNER OF SPAN 15 W/ SPALL, EXP REBAR & HA AROUND SEISMIC CABLE

PHOTO LOG

Form BRI-13, Rev. 9/97

Bridge Information System

Image Inventory

Bridge No. 3191B Date 10/2/06

Town: WATERBURY Photographer: PG, SW

Carried / Crossed: I-84WB / RTE 8, NAUGATUCK RIVER, MNRR & LOCAL ROADS

Film Frame #	Image Description
24	SP 24 @ P30 BAY 1 END DIAPH W/ MISSING WELDS ?
25	SP 24 @ P30 BAY 5 SPALLS W/EXP REBAR & DAMPNESS
26	P31 W. ELEV @ COL 4 CAP W/SPALLS/HA
27	SP 24 G7 @ P31 N. WEN OF BRG OVERHANGS PED
28	SP 22 BAY 5 SPALLS W/EXP REBAR
29	SP 22 BAY 6 HONEYCOMB W/EXP REBAR
30	~~SP~~ P29 E. SIDE BTWN G2&3 SPALLS IN CAP
31	P29 E. SIDE FROM G2 TO G5 SPALLS IN CAP
32	SP 23 G1 S. SIDE @ MIDSPAN HAUNCH SPALL & RUSTED TOP FLG
33	SP 23 G9 @ P30 MAS FL OVERHANGS PED
34	P30 S. SCUPPER ON W. SIDE, CR'S IN ELBOWS & CR'D SUPPORT BRACKET
35	SPs 21 & 22 G1 @ P28 S. SIDE WEB LOSS
36	SP 15 K-GIRDER @ P21 S. POT BRG WELDED ON W & E ONLY (TYP GUIDED POT BRG)
37	N. POT BRG TYP NON GUIDED
38, 39, 40 (E. SIDE, W. SIDE)	SP 14 PB 22 @ G2 TACK WELDS @ BOT BROKEN, & BRG TOP PL. NOTE: GAP BTWN GIRD SOLE PL
41	TYP BRG P21 N. COL SPALLS W/EXP REB @ TOP
42	N. ELEV SPS 14-24
43, 44	SP 14 BTWN PBS 21 & 22 @ G2 PACK RUST BTWN TOP FLG & DECK LIFTING BOLT
45	SP 14 S8 @ PB 20 GAP BTWN PL & PB TOP FLG

PHOTO LOG

Form BRI-13, Rev. 9/97

Bridge Information System

Image Inventory

Bridge No. 3191B

Date 10/5/06

Town: WATERBURY

Photographer: PG, SW

Carried / Crossed: I-84 WB / EXIT 8, NAUGATUCK RIVER, RAMPS, LOCAL RDS

Film Frame #	Image Description
46	BIN
47	PAINTED DATE
48	E. ABUT S. END FOOTING EXPOSED
49	SP 29 G2 @ P36 N. SIDE MAS & OVERHANGS PED
50	SP 29 G1 BAY 3 S. SIDE TOP FLG RUST @ SPALLED HAUNCH (TYP)
51	P35 E. FACE @ N. END CR, SPALLS & HA
52	SP 28 G3 @ P35 S. SIDE CONC DEBRIS ON AB
53	SP'S 26 & 27 N. ELEV
54	SP'S 18-25 N. ELEV
55	SP'S 28-30 N. ELEV
56	SP 13 G2 @ BOLTED SPLICE BOT FLG W/ 1 BOLT NOT SNUG
57	SP 13 G2 @ FB17 CRACK IN TOP OF WEB N. SIDE
58	" " " " " " S. SIDE
59	SP 13 BTWN G2 & S9 @ FB 16 WEEP MISSING ELBOW
60	SP 14 G2 BTWN FB 18 & 19 GAP BTWN TOP FLG & DECK
61	SP 13 FB 16 @ S5 BOT OF STIFF W/ CR IN WELD N. SIDE
62	SP 13 FB 16 @ S5 " " " " " S. SIDE
63	SP13 FB 16 @ S9 BOLT NOT SNUG
64	SP13 FB 16 @ S8 LAT BRACE TOP FLG BOLT THRU END OF MEMBER
65	SP12 BTWN FB14 & 15 @ G1 BOLTED SPLICE 1 BOLT NOT SNUG
66	SP12 BTWN FB 13 & 14 BTWN G2 & S9 SPALL W/ EXP REBAR & SEC LOSS
67	ST 17.0 PIER 19 COL 1, WEEP PIPE BROKEN
68	SP11 Pier 1B, east side, slopper disconnected
69	Upstream channel

PHOTO LOG

Form BRI-13, Rev. 9/97

Bridge Information System

Image Inventory

Bridge No. 3191B Date 10/19/06

Town: WATERBURY Photographer: PDG

Carried / Crossed: I-84 WB/RTE 8, NAUGATUCK RIVER, RAMPS, LOCAL ROADS

Film Frame #	Image Description
70	Downstream Channel
71	Span 12, Btwn FB8 + FB9, pack wstone stringer
72	Span 12, Btwn FB8 + 9, Sout side, w weep, bracket disconnected
73	span 12, pier 18, W. SIDE. DISCONNECTED SCUPPER
74	span 12. pier 18 N column S. side, cracked welds + 1/4" pack wst
75	SP 11, 3RD BAY FROM N BTWN FB6 + 7, SPALL + DECK RAISED 1/4"
76	SP 11, BTWN FB5 + 6, 4th BAY FROM N, 2'x6' SPALL
77-79	JT OVER P29 LEFT EXIT LN EAST HEADER SPALL
80	" " " " COLD PATCH REPAIR
81	S. ELEV SP's 8-11
82	S. ELEV SP's 11-13
83, 84	SP 10 BAY 10 BTWN FB's 3 & 4 SPALL w/ EXP RBS & LOSS TO REBAR
85	SP 10 BAY 3 BTWN FB's 2 & 3 SPALLS PATCHED
86	SP 10 G1 @ P16 NW CORN BOT FLG TO SOLE PL NEEDS GRD
87	SP 9 @ X-GIRD N. SEISMIC RETROFIT MISSING COTTER PIN
88	SP 9 BTWN G2 & 3 @ P16 ALL SPALLS PATCHED
89	SP 10 G2 @ P16 PORE IN WEB BOT
90	SP 5 @ P12 G2 BRG GAP BTWN BRG PL's
91, 92	SP 6 G4 BRG @ P13 WELD BTWN SOLE PL & BOT FLG CRACKED S. SIDE
93	P12 G1 W. FACE SCUPPER BRACKETS REPAIRED
94	SP 8 BAY 5 @ P14 HOLLOW
95	SP 8 BAY 4 @ P14 HOLLOW
96	SP 8 @ P14 JT U/S BTWN G3 & G4 SPALL 20" L x UP TO 3" DEEP
97	SP 7 @ P14 @ G3 HOLLOW MAYNED

PHOTO LOG

Form BRI-13, Rev. 9/97

Bridge Information System

Image Inventory

Bridge No. 3191B Date 10/25/06

Town: WATERBURY Photographer: PG

Carried / Crossed: I-84WB / RTE 8. NAUGATUCK RIVER, MNRR & LOCAL ROADS

Film Frame #	Image Description
98	SP8 BTWN G4&G5 @ P22 HOLLOW HAUNCH
99	SP8 G5 @ P15 BRG CONN BOLTS MISSING
100	P15 W. ELEV BTWN G3 & G4 SPALLED & HA
101	SAME AS PHOTO 94 AFTER DOT MAINTENANCE
102	" " " 95 AFTER DOT MAINTENANCE
103	SP 7 @ P7 BAY 3 HAUNCHES REMOVED BY DOT MAINTENANCE
104	SP3 OVERLAY IN RT & C LANES
105	SP25 G8 @ P31 TYP ROCKER, MISSING AB NUT. OVERHANG
106	SP27, G7 @ P33, MISSING AB NUTS ON ROCKER BEARING
107	SP22, Center Lane,
108	SP23, center Lane
109	SP23, Rt Lane + Rt exit Lane
110	SP25 @ P25, rail post tilted back w/ 2 missing AB
111	SP26 @ P33, N. scupper part. clogged.
112	PIER 33, E Elev.
113	PIER 13 E. ELEV TYP PIER CAP REPAIRS
114	SP2 G4 @ E. SEISMIC RETROFIT, BOLTS GO THROUGH COV PL CONN. WELD
115	P5 C3 S. FACE CORNER SPALLS
116	P5 C3 E. FACE BOULDER LEANING AGAINST COL BASE
117	S. ELEV SPANS 4-7
118	SP9 G12 TOP FLG NEAR MIDSPAN HOLE IN FLG
119	" " WEB & BOT FLG W/ SL DUE TO LKG THRU TOP FLG HOLE
120	SP9 G9 @ P15 SL TO UNDERSIDE OF CURVED SOLE PL
121	SP9 BAY 8 @ P15 DECK W/ SP & HA

PHOTO LOG

Form BRI-13, Rev. 9/97

Bridge Information System

Image Inventory

Bridge No. 3191B

Date 11/17/06

Town: WATERBURY

Photographer: PG, SW

Carried / Crossed: I-84WB / RTE 8, NAUGATUCK RIVER, MNRR & LOCAL ROADS

Film Frame #	Image Description
122	SP8 BAY 1 @ P15 SP8 HA IN DECK
123	SP9 S. PPT W/SP8 HA
124	P9 @ S. END FOOTING EXPOSED
125	P9 @ C3 FOOTING EXPOSED
126	P9 @ C7 SPALL @ TOP W/MINES BRG S. SIDE
127	SP4 LOOKING W U/S OF DECK
128	P9 C3 E. SIDE SPALL W/EXP REB @ TOP
129	N. ELEV SPANS 1-3
130, 131	P1B N. END DEBRIS

PHOTO LOG

Form BRI-13, Rev. 9/97

Bridge Information System

Image Inventory

Bridge No. 3191B

Date 9/26/06 10/17/06

Town: Waterbury

Photographer: CL, PDG

Carried / Crossed: I-84 WB / NAUGATUCK RIVER, MNRR, RTE 8 & LOCAL ROADS

Film Frame #	Image Description CAMERA #2
1	Pier 20, SOUTH SIDE, SHALLOW SPALLS W/ EXP. REBAR
2	Pier 20, From north, Typ. pier
3	Pier 21, W. ELEV, SCUPPER (S. SIDE FOR UPPER BRIDGE) MISSING 3 BRACES
4	PIER 19 (near) From East, TYP PIER OVER RIVER
5	Pier 22, N SIDE OF PIER AT G8, FH CRACK TO 1/4" W/ RUST STAINING.
6	PIER 23, W. ELEV, TYP PIER
7	PIER 22, G8, E. ELEV, PATCHS W/ CRACKS + SPALLS W/ EXPOSED REBAR
8	PIER 23, G1, SPALLS W/ EXP. REBAR.
9	PIER 24, G1, SCUPPER, BASE FALLEN OFF, WATER PONDS AT BASE OF PIER.
10	PIER 24, E. ELEV. W/ PIER FOR RAMP GOING SOUTH
11	PIER 29, E. ELEVATION, TYP.
12	TYP UNDERSIDE, MULTI-GIRDER. SPANS 20 + 21 LOOKING WEST.
13	PIER 30, TYP.
14	SPANS 21+22, TYP UNDERSIDE - LOOKING WEST - 10 GIRDERS
15	TYPICAL N. ELEVATION. LIFT TRUCK AT PIER 27 NOTE TYP. SEISMIC RETROFITTING
16	SPANS 13 + 14, TYP U/S W/ 2 GIRDERS + FLOOR BEAMS
17	SPAN 26 LOOKING W TYP U/S
18	PIER 33 W. ELEV TYP PIER
19	BRIDGE FROM W. APPROACH
20	W. APPROACH FROM BRIDGE
21	TYP TOP OF DECK SPS 2 & 3
22	JT OVER P1 LKG. N. SEPARATION BTWN JT SEAL & HEADER
23	SPG LKG NE NEW OVERLAY
24	JT OVER P12 LKG N. NEW ASPH PLUG INSTALLED

PHOTO LOG

Form BRI-13, Rev. 9/97

Bridge Information System

Image Inventory

Bridge No. 3191B Date 10/17, 18/06

Town: WATERBURY Photographer: PDG

Carried / Crossed: I-84 WB / RTE 8, NAUGATUCK RIVER, RAMPS, LOCAL RDS

Film Frame #	Image Description CAMERA #2
25	JT OVER P16 LKG N
26	SP10 S. PPT SPALLS
27	SP'S 10 & 11 HVY RAVELLING IN LEFT & CENTER LANES
28	SP 12 S. RAILING LOWER RAIL DISCONNECTED FROM POST UPPER RAIL BENT
29	SP 12 N. RAILING UPPER RAIL MISSING
30	SP15 CL NEAR P21 SPALL ALONG PATCH EDGE EXPOSING DECK
31	SP 13 S. RAILING NEAR P19 BOT RAIL RUSTED THRU / DISCONNECTED
32	SP1 BTWN G6&7 DECK UNDERSIDE IS WET
33	SP1 @ NW WW DECK SHIFTED NORTH NOTE: VEG GROWTH IN JT
34	SP1 G3 @ W. ABUT MAS PL OVERHANGS PED
35	W. ABUT
36	SP1 @ W ABUT BTWN G6&7 PACK RUST ON DIAPH LIFTING HAUNCH
37	BRIDGE FROM E. APPROACH
38	E. APPROACH
39	E. APP S. PPT SETTLED @ END OF WW
40	E. APP SETTLED @ E. ABUT S. SIDE
41	JT OVER E. ABUT LKG N.
42	SP 30 CL POTHOLE EXPOSING DECK
43, 44	~~SP~~ JT OVER P35, LEFT LANE SPALL IN HEADER (FULL DEPTH)
45	SP 27 EXIT LN RESURFACED SINCE PREV. INSP, NOTE: ASPH PLG JT @ 3191G
46	JT OVER P34 LKG N. COMP SEAL SEPARATED FROM SP27 HEADER
47	SP 29 @ P36 NORTH SCUPPER IS FULLY CLOGGED
48	~~SP~~ JT OVER E. ABUT IN RT TRAVEL LANE SPALLS IN HEADER
49	E. APPROACH

PHOTO LOG

Form BRI-13, Rev. 9/97

Bridge Information System

Image Inventory

Bridge No. 3191B

Date 10/31/06

Town: WATERBURY

Photographer: PG

Carried / Crossed: I-84 WB / RTE 8, NAUGATUCK RIVER, RAMPS, LOCAL ROADS

Film Frame #	Image Description CAMERA #2
50	BRIDGE FROM EL APPROACH
51	SP 27 TYP U-SIDE LKG WEST
52	JT OVER P29 IN LEFT EXIT LANE HEADER REPAIR
53	SP 22 CONC PATCH IN LEFT EXIT LANE

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #1:
Description: Bridge Identification Number.

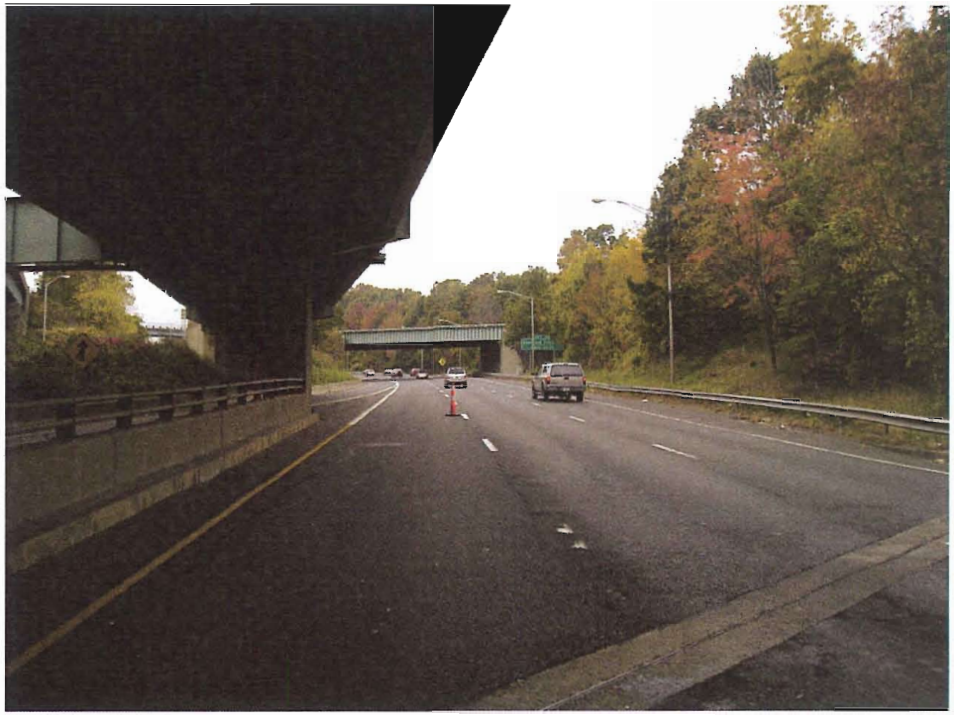

Photo #2:
Description: West approach from bridge.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #3:
Description: Bridge from west approach.

Photo #4:
Description: East approach from bridge.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #5:
Description: Bridge from east approach.

Photo #6:
Description: North elevation, spans 1-3.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #7:
Description: South elevation, spans 4-7.

Photo #8:
Description: South elevation, spans 8-11.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #9:
Description: South elevation, spans 11-13.

Photo #10:
Description: North elevation, spans 17-25.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #11:
Description: North elevation, spans 25-27.

Photo #12:
Description: North elevation, spans 28-30.

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Photo #13:
Description: Typical underside of deck, span 4. Rolled-beam multi-girder with cover plates. Spans 1-3, 15-23, 29 and 30 are similar.

Photo #14:
Description: Typical underside of deck, spans 13 and 14, looking west. Girder-floorbeam-stringer.

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Photo #15:
Description: Typical underside of deck, span 26, looking west. Plate girder multi-girder. Spans 5-9, 24, 25 and 28 are similar.

Photo #16:
Description: Typical underside of deck, span 27, looking west. Plate girder multi-girder with lateral bracing.

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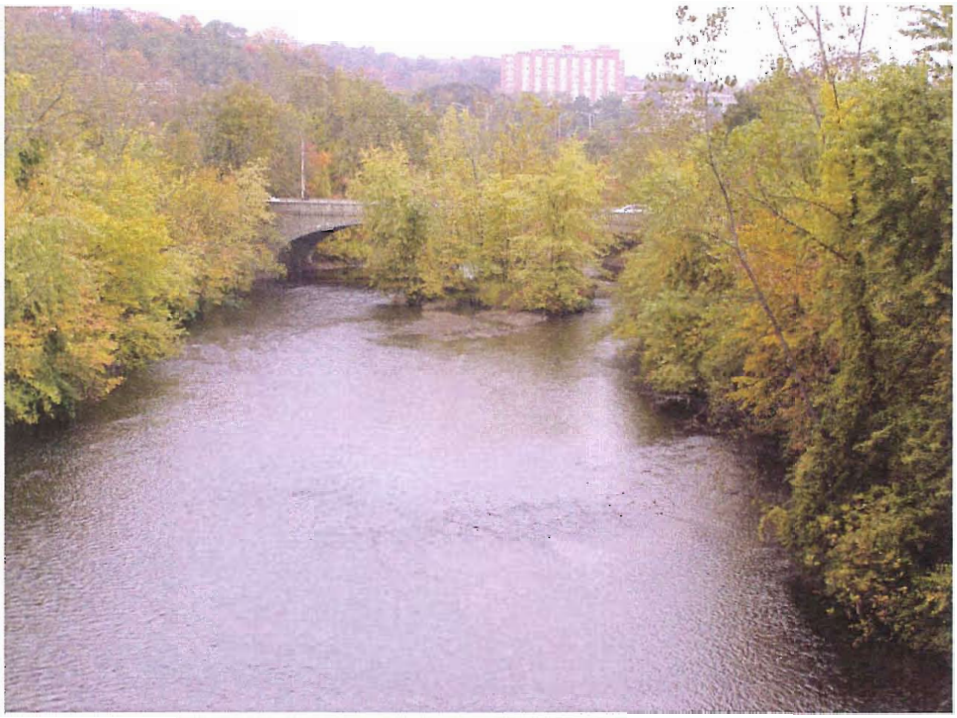

Photo #17:
Description: Upstream (north) channel from bridge.

Photo #18:
Description: Downstream (south) channel from bridge.

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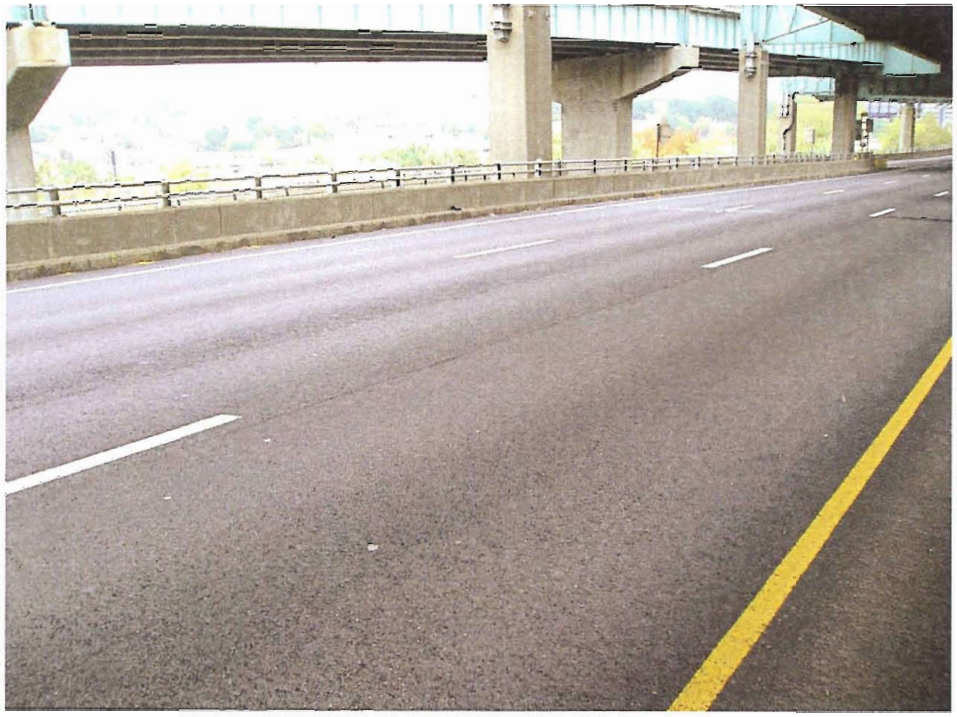

Photo #19:
Description: Span 6, looking northeast. New overlay.

Photo #20:
Description: Span 27, looking west from ramp (Bridge No. 3191G). Exit lane resurfaced since previous inspection.

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Photo #21:
Description: Span 3, looking east. Overlay in right and center lanes has random uneven patches.

Photo #22:
Description: Spans 10 and 11, looking west. Overlay has heavy raveling with patches in left and center lanes.

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Photo #23:
Description: Span 22, looking north. Overlay has cracks and raveling in center lane and longitudinal paving seams are open up to 2 inches wide.

Photo #24:
Description: Span 30. Overlay in center lane has pothole exposing deck.

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Photo #25:
Description: Span 9 between girders 2 and 3 at pier 16. All spalls have been patched since previous inspection.

Photo #26:
Description: Span 22, looking west. Full depth concrete patch in left exit lane.

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Photo #27:
Description: Span 8, bay 4 at pier 14. Hollow area (not loose concrete) in deck over Route 8 Northbound.

Photo #28:
Description: Span 8, between girders 4 and 5 at pier 15. Hollow haunch (not loose) over Route 8 Ramp 128.

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Photo #29:
Description: Span 8, bay 1 at pier 15. Spall with exposed rebar and hollow area (not loose) in underside of deck over Route 8 Ramp 128.

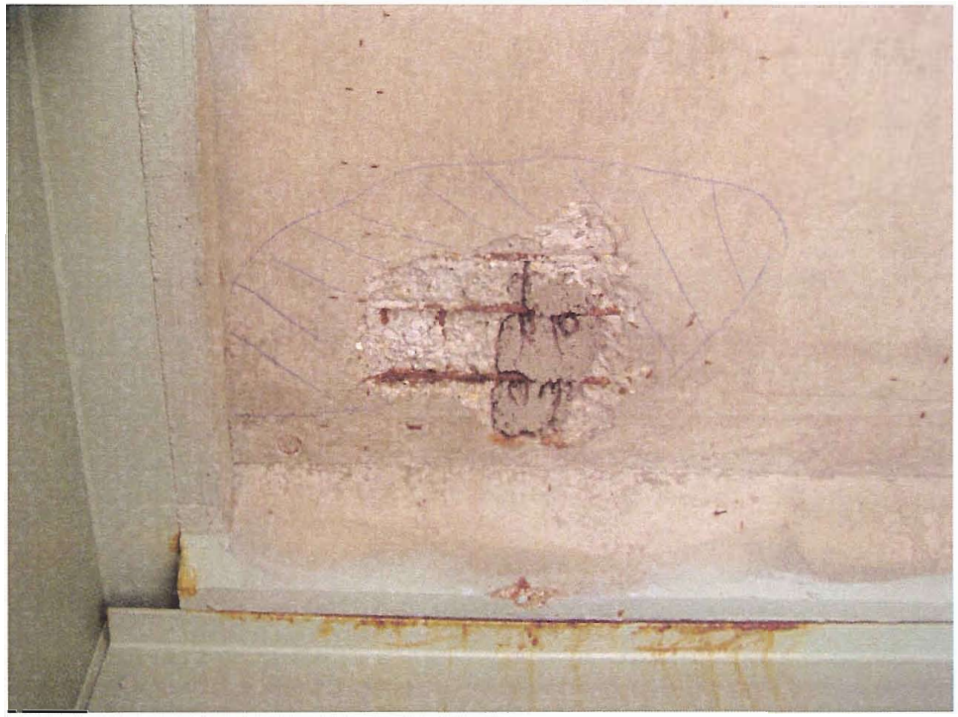

Photo #30:
Description: Span 9, bay 8 at pier 15. Spall with exposed rebar and hollow area (not loose) in underside of deck over Route 8 Ramp 128.

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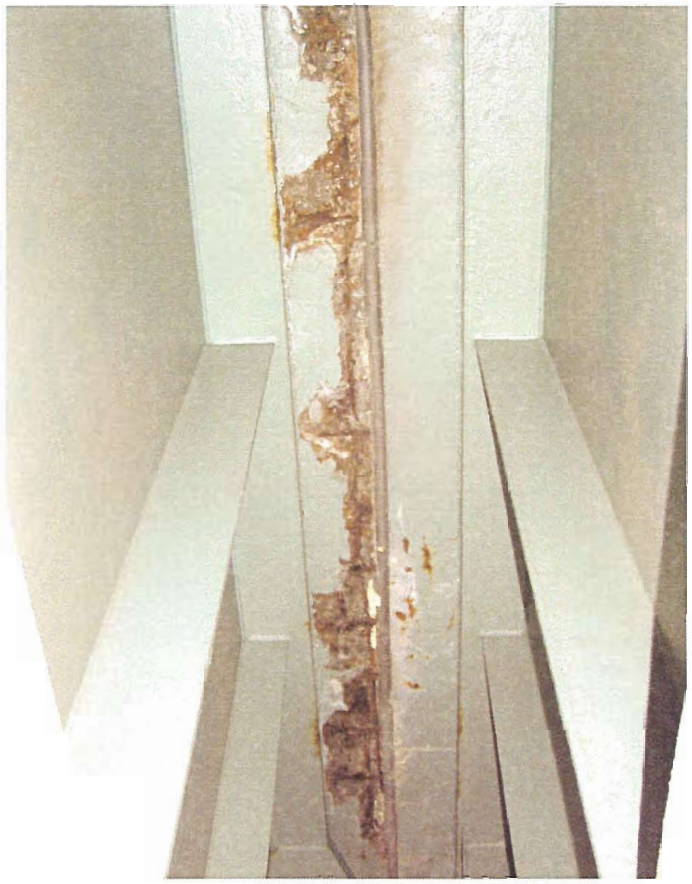

Photo #31:
Description: Span 8, between girders 3 and 6 at pier 14. Spall in deck edge along joint.

Photo #32:
Description: Span 10, bay 10, between floorbeams 3 and 4. Spall and hollow area with section loss on exposed rebar.

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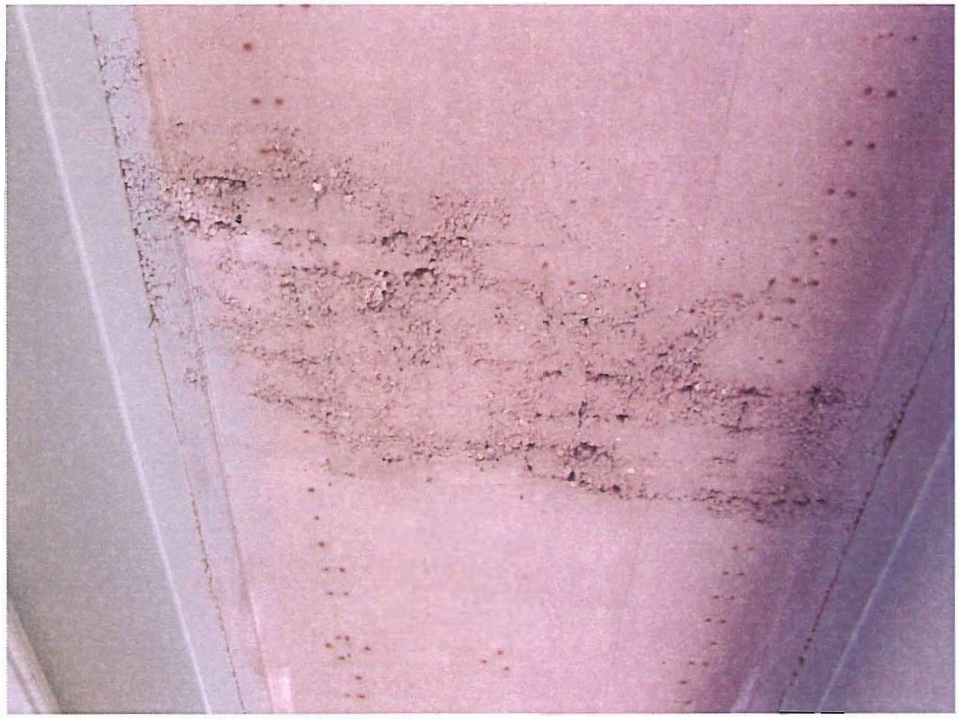

Photo #33:
Description: Span 21, bay 4, near midspan. Honeycomb area with exposed rebar.

Photo #34:
Description: Span 10, looking south. Spalls in south parapet.

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Photo #35:
Description: Span 9, looking north. Exterior face of south parapet has spalls and hollow areas (not loose) over Route 8 Ramp 128.

Photo #36:
Description: Span 25 at pier 32. Rail post is tilted back towards pier column and missing 2 anchor bolts. Note: deterioration at end of railing with perforations.

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Photo #37:
Description: Span 12, north railing. Upper rail is missing.

Photo #38:
Description: Span 12, south railing. Lower rail is disconnected from post and upper rail is bent.

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Photo #39:
Description: Span 13, south railing near pier 19. Bottom rail is rusted through and disconnected from post connection.

Photo #40:
Description: Span 29 at pier 36. North scupper is fully clogged.

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Photo #41:
Description: Pier 12, column 1. West face downspout brackets have been repaired since last inspection.

Photo #42:
Description: Pier 18, east side. Scupper downspout is broken at coupling.

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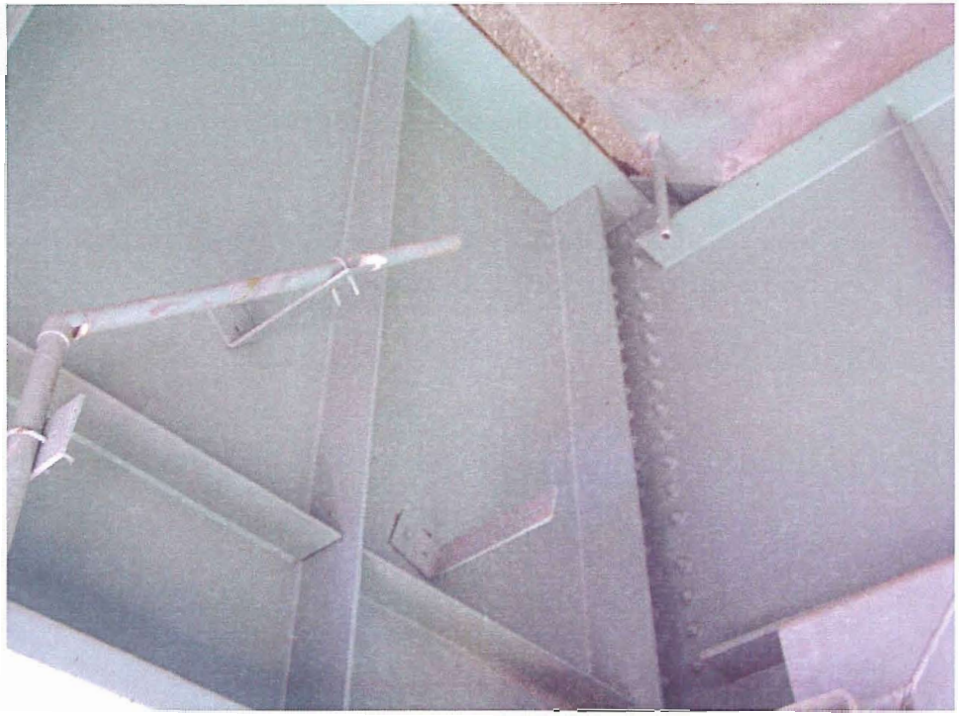

Photo #43:
Description: Span 13 between girder 2 and stringer 9 at floor beam 16. Weep is missing elbow and drains onto superstructure.

Photo #44:
Description: Joint over pier 12, looking north. New asphaltic plug joint installed since last inspection.

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Photo #45:
Description: Joint over pier 29 in left exit lane. Header repaired since last inspection.

Photo #46:
Description: Joint over pier 34, looking north. Compression seal is separated from span 27 header.

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Photo #47:
Description: Joint over pier 35, left lane. Full depth spall in header.

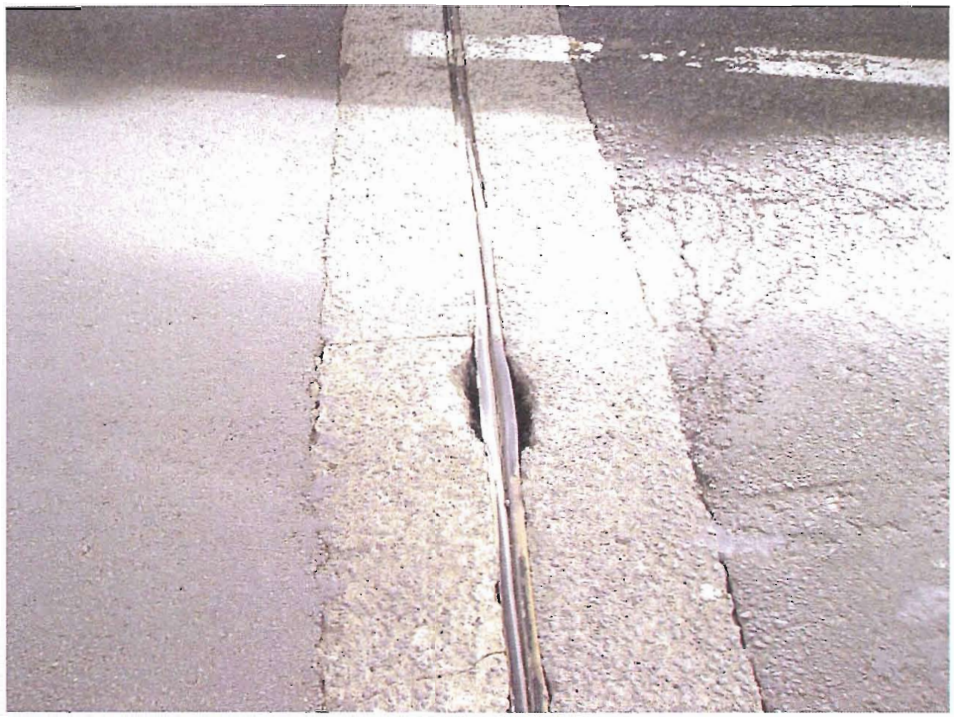

Photo #48:
Description: Joint over east abutment, right travel lane. Spalls in headers.

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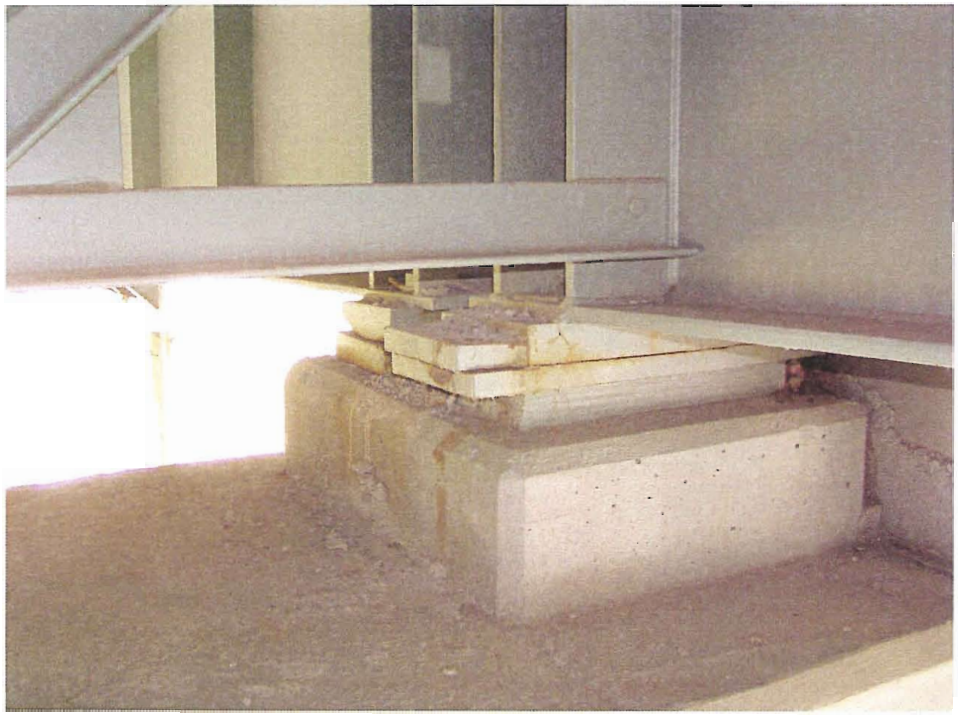

Photo #49:
Description: Span 8, girder 5 at pier 15. Typical elastomeric bearing. Note: connection bolts between sole plate and load plate are missing on bearing.

Photo #50:
Description: Span 9, girder 9 at pier 15. Typical fixed bearing. Note: section loss to underside of curved sole plate and pack rust between plates.

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Photo #51:
Description: Span 11, pier 18, north column bearing masonry plate on south side. Cracked weld and pack rust between keeper plate and rocker.

Photo #52:
Description: Pier 21, north column. Typical nested rocker bearing. Note: spalls with exposed rebar in concrete column.

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Photo #53:
Description: Span 15, cross girder at pier 21, south side. Typical guided pot bearing. Note: base pot to masonry plate north and south welds are missing.

Photo #54:
Description: Span 15, cross girder at pier 21, north side. Typical non-guided pot bearing.

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Photo #55:
Description: Span 18, girder 10 at pier 25. Typical fixed bearing. Note: bearing has heavy rust and missing anchor bolt nut.

Photo #56:
Description: Span 18, girder 10 at pier 24. Typical expansion bearing. Note: bearing is in contraction at 70°F.

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Photo #57:
Description: Span 18, girder 14 at pier 24. Bearing and end of girder have heavy rust. Note: Section loss on diaphragm connection plate at base.

Photo #58:
Description: Span 23, girder 9 at pier 30. Masonry plate overhangs pedestal (as-built condition).

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Photo #59:
Description: Span 25, girder 8 at pier 31. Typical rocker bearing. Note: missing anchor bolt nut and masonry plate overhangs pedestal.

Photo #60:
Description: Span 11, stringer 5 between floorbeams 8 and 9. Pack rust between deck and top flange of stringer with gap.

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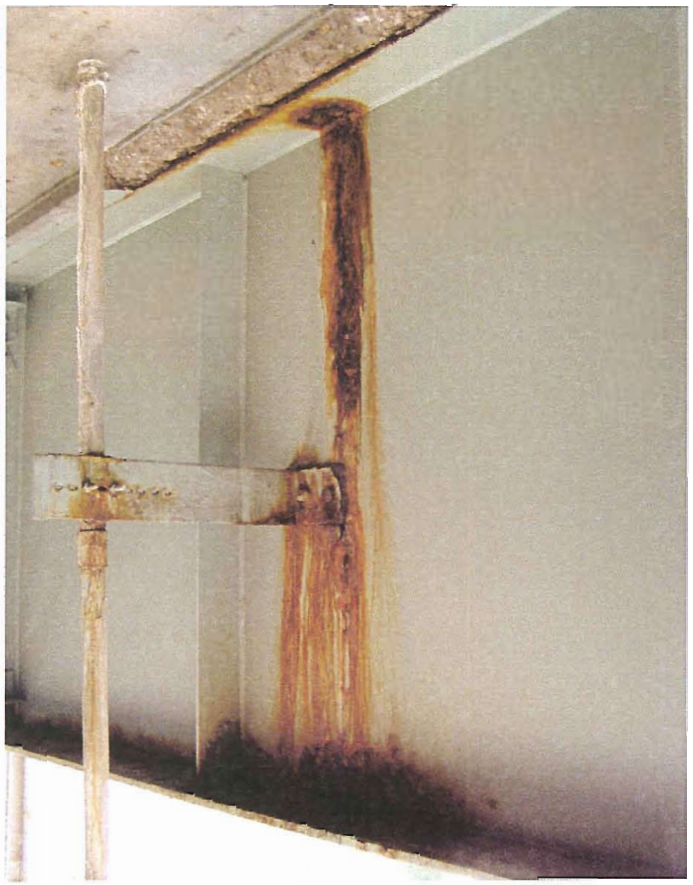

Photo #61:
Description: Span 9, girder 12. Web and bottom flange have section loss due to deck leakage through hole in top flange.

Photo #62:
Description: Span 10, girder 2 at pier 16. Perforation in web bottom.

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Photo #63:
Description: Span 14 between floorbeams 21 and 22 at girder 2. Pack rust between top flange and deck is lifting the deck.

Photo #64:
Description: Spans 21 and 22, girder 1 south side at pier 28. Web has heavy rust with section loss.

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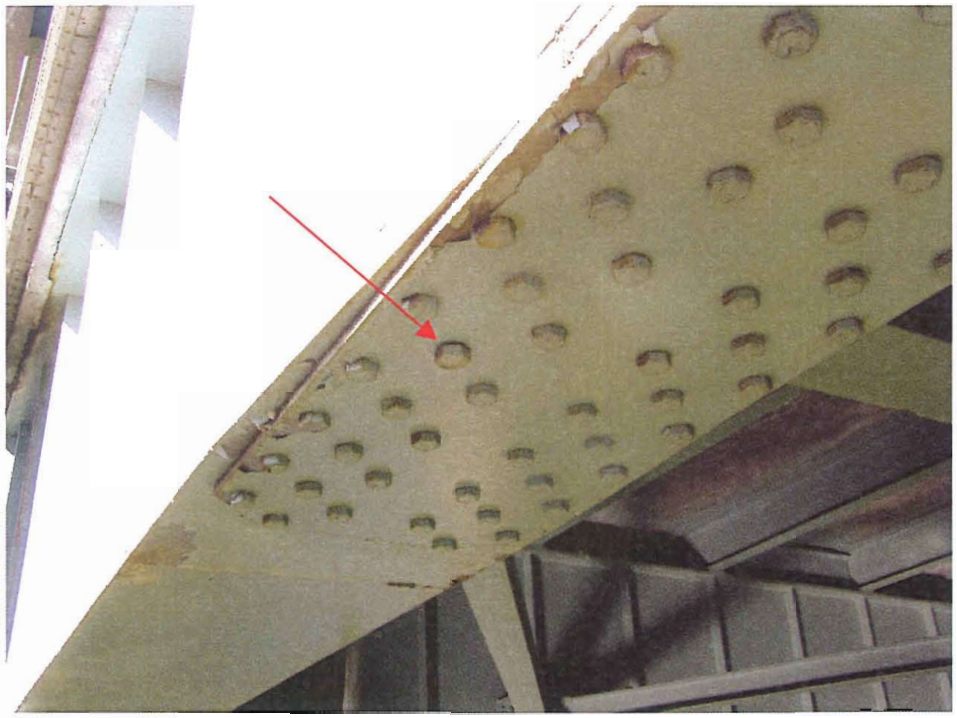

Photo #65:
Description: Span 12, girder 2 at bolted splice. Bottom flange has 1 bolt not snug.

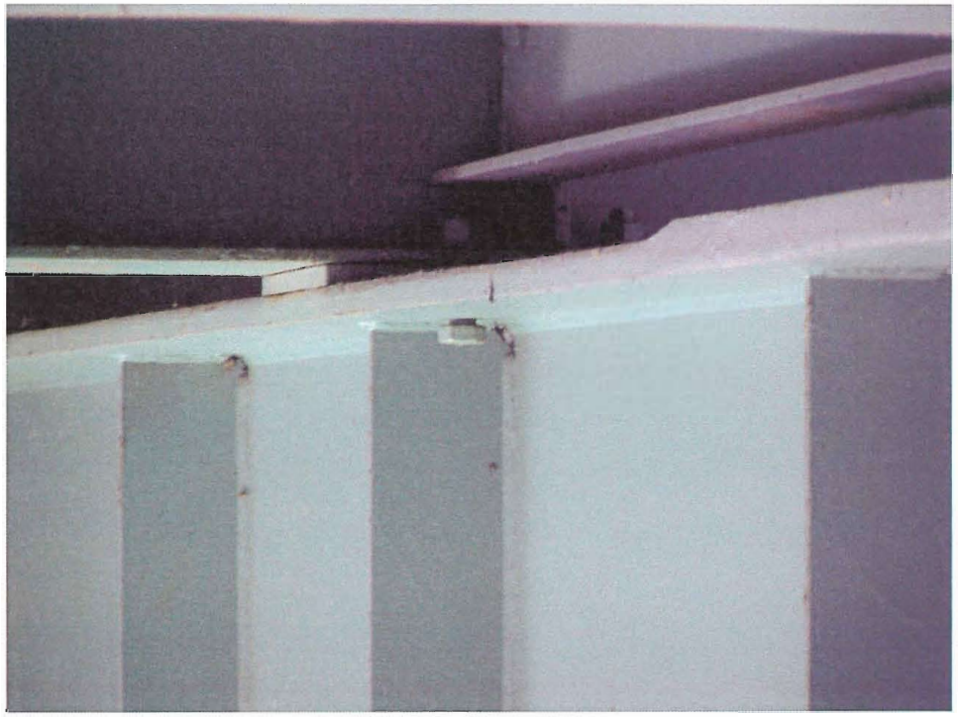

Photo #66:
Description: Span 13, stringer 9 at floorbeam 16. Connection bolt is not snug.

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Photo #67:
Description: Span 13, floorbeam 16 at stringer 8. Lateral brace top flange bolt is through end of member.

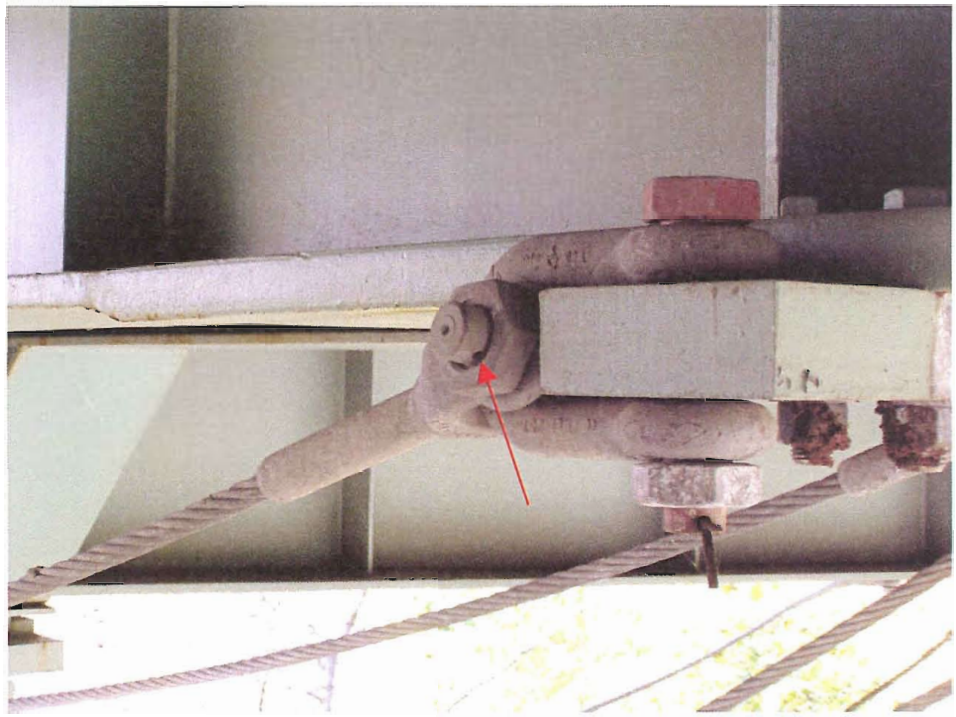

Photo #68:
Description: Span 9 at pier 16 cross girder. North seismic retrofit connection bolt is missing cotter pin and nut can be turned by hand.

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Photo #69:
Description: Span 6, girder 4 at pier 13. Weld between sole plate and bottom flange is cracked on the south side.

Photo #70:
Description: Span 10, girder 1 at pier 16. Weld at northwest corner between bottom flange and sole plate is cracked.

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Photo #71:
Description: Span 13, girder 2 at floorbeam 17, south side. Crack in top of web with stop holes.

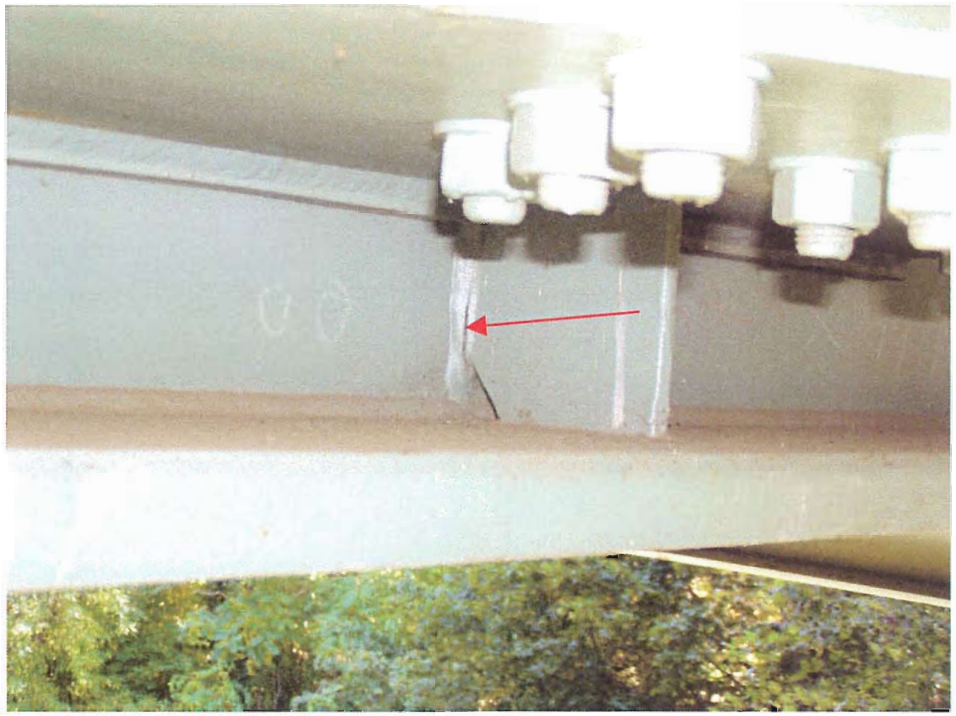

Photo #72:
Description: Span 13, floorbeam 16 at stringer 5, south side. Crack in the weld at bottom of stiffener.

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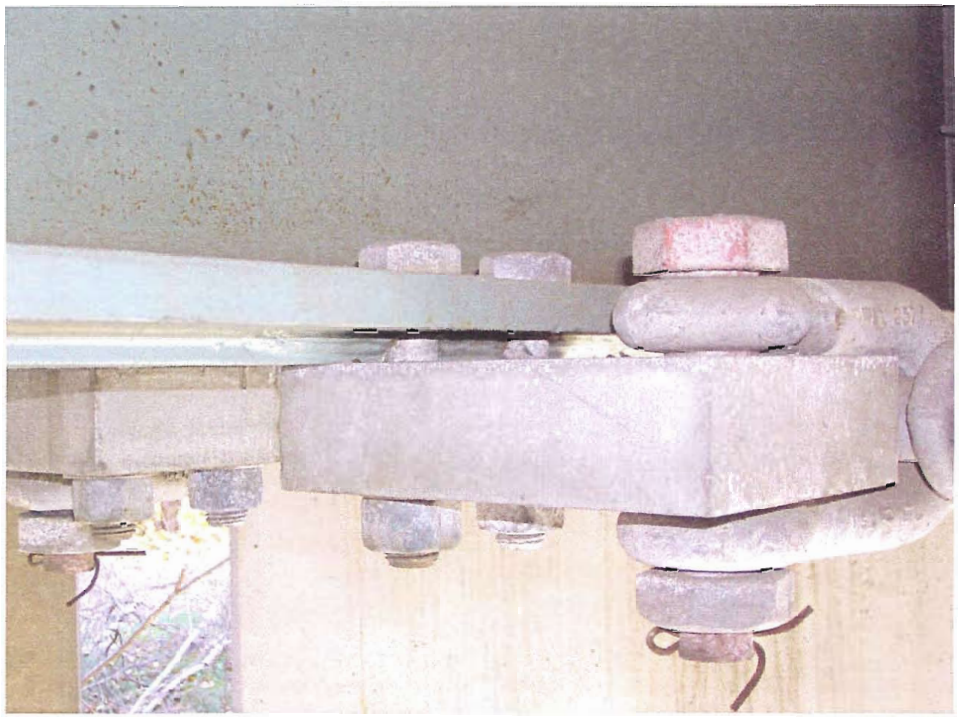

Photo #73:
Description: Span 2, girder 2 at east seismic retrofit. Bolts go through cover plate longitudinal weld (Category "E" detail). West side is similar.

Photo #74:
Description: Girder 8 at pier 23. Beam ends are nearly in contact.

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Photo #75:
Description: West abutment.

Photo #76:
Description: East abutment. South end footing exposed.

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Photo #77:
Description: Pier 9, looking west. Typical pier configuration.

Photo #78:
Description: Pier 13, east elevation. Typical pier configuration.
Note: repairs to pier cap.

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Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

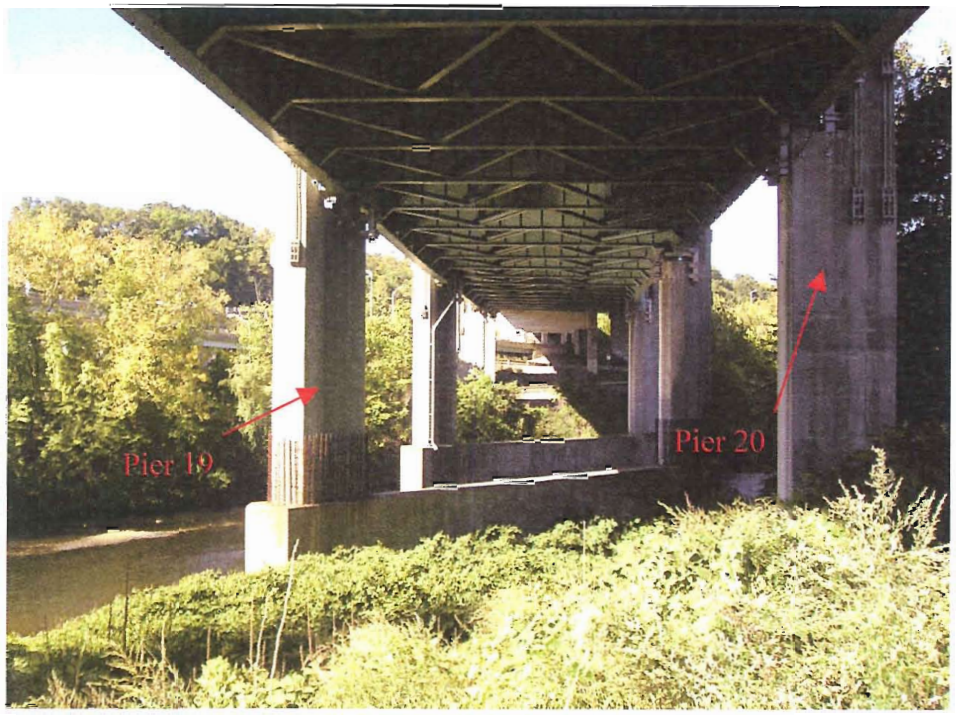

Photo #79:
Description: Piers 19 and 20, west elevation. Typical pier configurations over river.

Photo #80:
Description: Pier 23, west elevation. Typical pier configuration.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #81:
Description: Pier 29, east elevation. Typical pier configuration.

Photo #82:
Description: Pier 33, east elevation. Typical pier configuration.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #83:
Description: Pier 15, west elevation between span 8 girders 3 and 4. Spall and hollow area in pier cap. Note: concrete repairs to cap

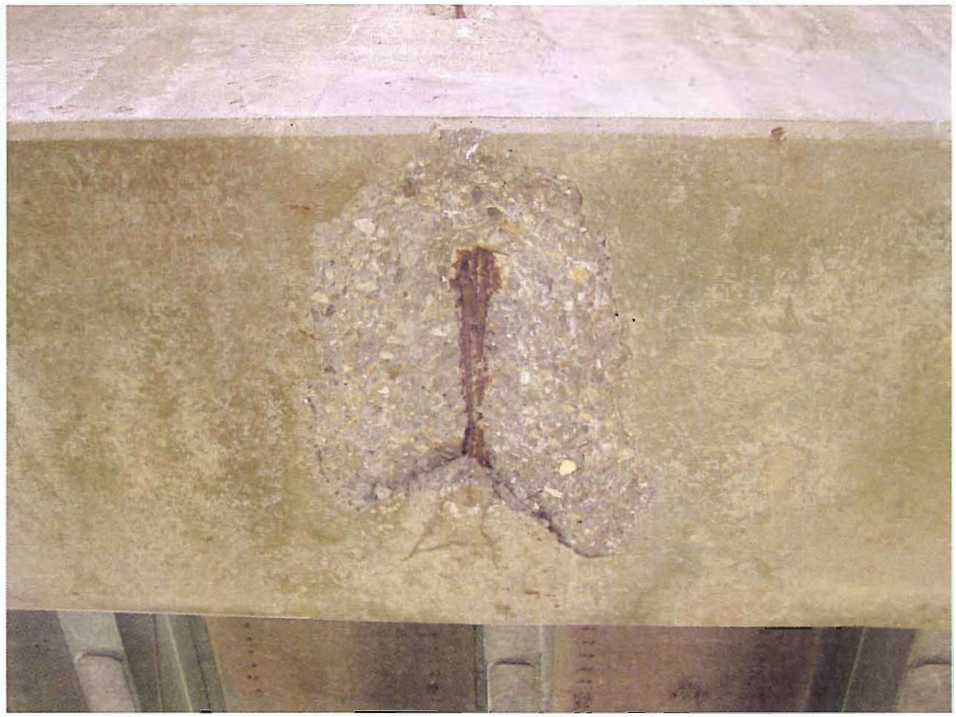

Photo #84:
Description: Pier 26, underside of cap under girder 3. Spall with exposed rebar and hollow area.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #85:
Description: Pier 29, east side. Spalls with exposed rebar in pier cap.

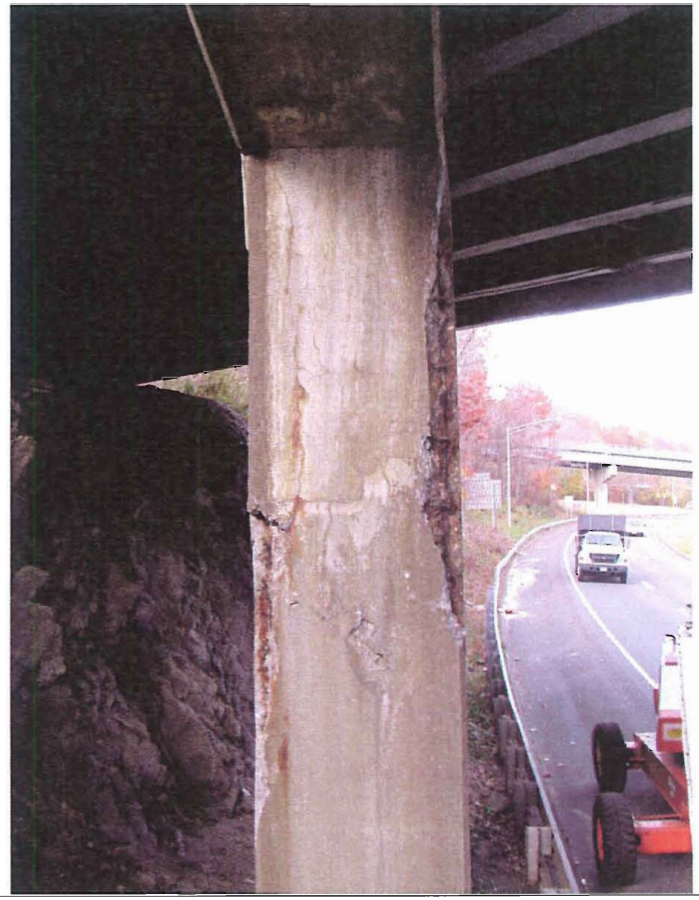

Photo #86:
Description: Pier 5, column 3, south face. Corner spalls with exposed rebar.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #87:
Description: Pier 9, column 7, south side. Spall at top of column undermining bearing.

Photo #88:
Description: Span 15, pier 21, northeast corner. Corner spall with exposed rebar and hollow area around seismic cable.

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Bridge No.	3191B	**Town:**	Waterbury	**Inspected by:**	P. Goodwin
Feature Carried:	I-84 Westbound			**Inspected by:**	S. Watrous
Feature Crossed:	Route 8, Naugatuck River, MNRR & Local Streets			**Date Inspected:**	9/25/2006

Photo #89:
Description: Pier 9, south end. Footing exposed.

Photo #90:
Description: East approach, south parapet. Parapet settled at end of wingwall.

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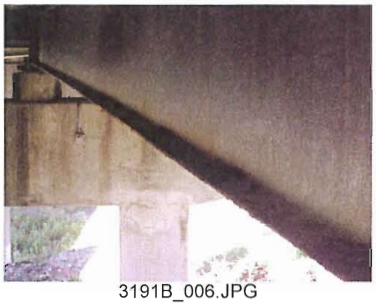
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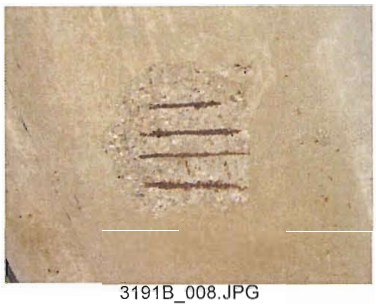
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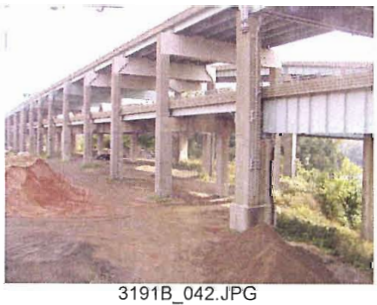
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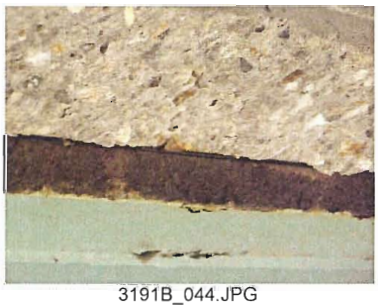
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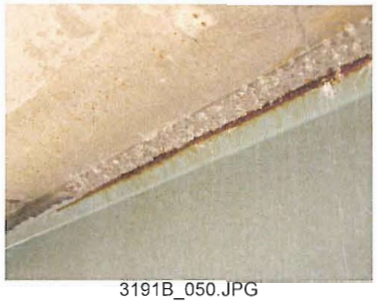
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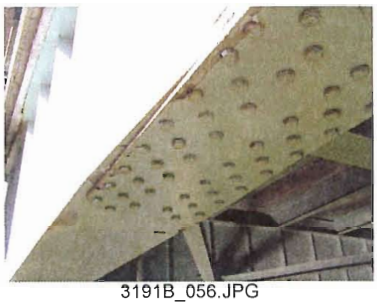
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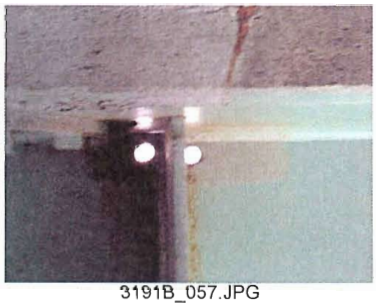
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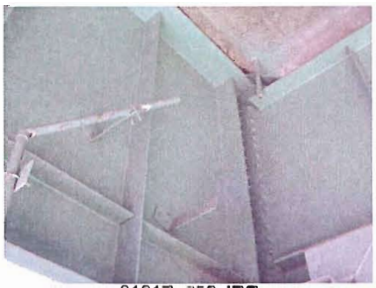
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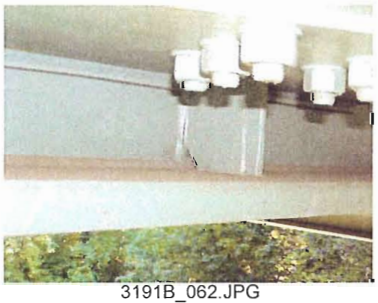
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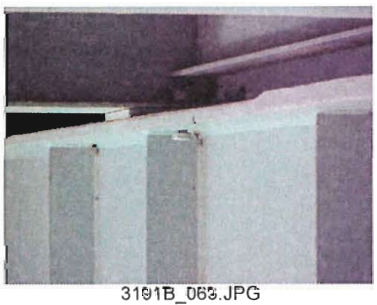
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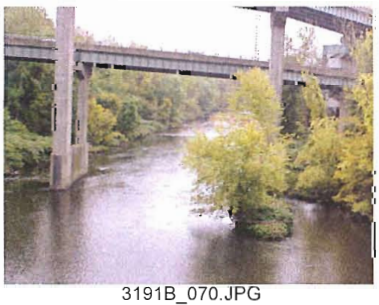
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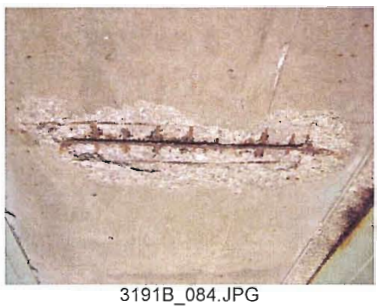
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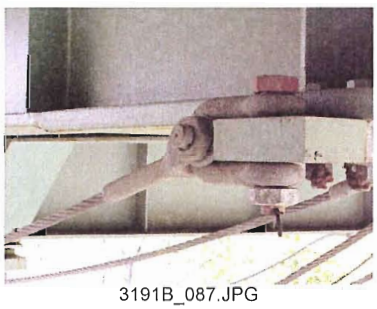
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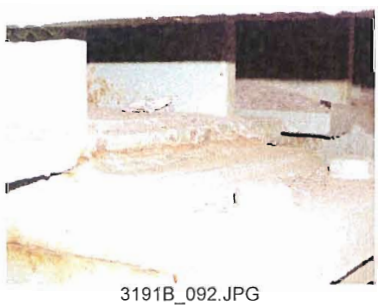
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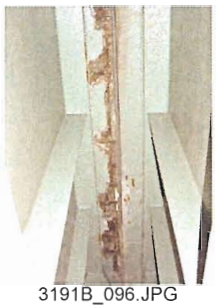
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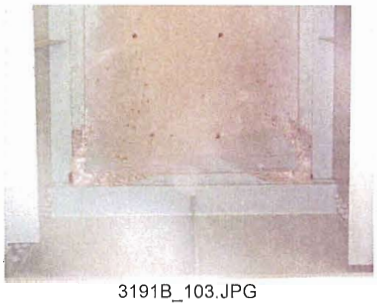
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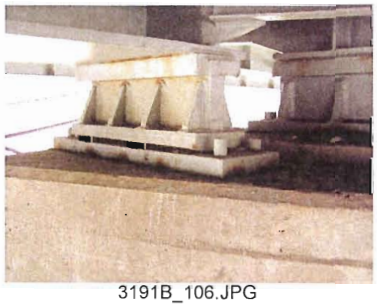
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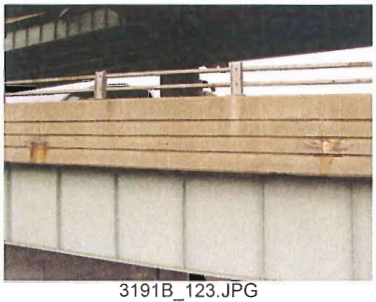
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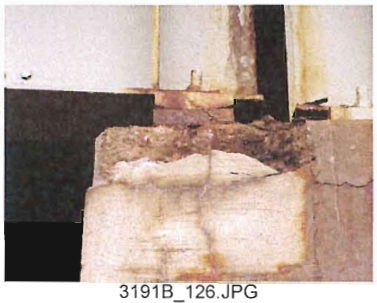
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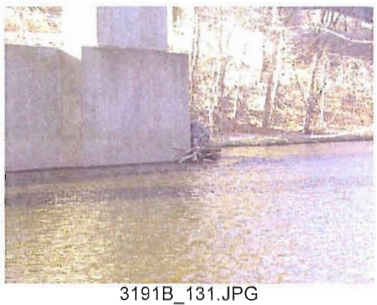
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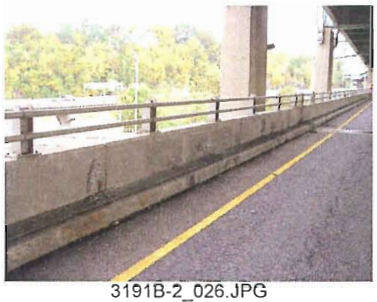
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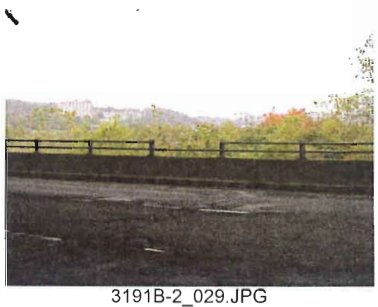
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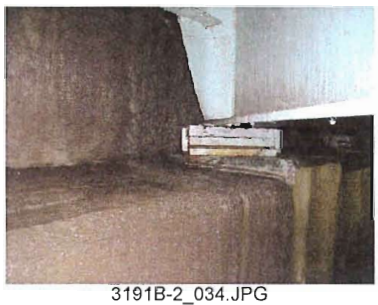
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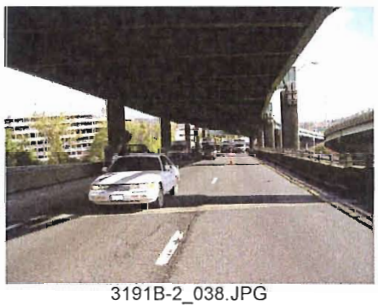
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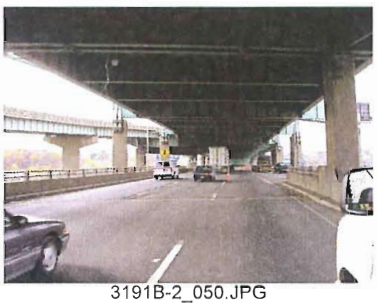
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APPENDIX A

GROUND PENETRATING RADAR REPORT

INFRASENSE, Inc.

Ground Penetrating Radar (GPR) Bridge Deck Inspection

Bridge No. 03191B

I-84 WB over Route 8, Route 8 Ramps 128 and 129, Naugatuck River, MNRR and Local Streets
Waterbury, Connecticut

Inspection Report

submitted to

HAKS Engineers, P.C.
Centerpoint Executive Park
306 Industrial Park Road, Suite 201
Middletown, CT 06457

by

INFRASENSE, Inc.
14 Kensington Road
Arlington, MA 02476

March 19, 2007

1. BRIDGE DATA

Bridge No. 03191B:

I-84 WB over Route 8, Ramps 128 and 129, Naugatuck River, MNRR and Local Streets, Waterbury, Connecticut

Deck Area: 158,050 S.F.

Structure Type: Steel Multi-Girder approach spans, Girder/Floorbeam/Stringer main spans

Structure Length: 2,461 feet

Number of Spans: 30

Curb to Curb (Bridge Roadway) width: 42.0 feet in spans 1-9 & 30, Start width 74.5 feet and end width 54.0 feet in spans 10-14, 54.0 feet in spans 15-17, 61.0 feet in spans 18-22, Start width 66.0 feet and end width 77.0 feet in spans 23-27 & Start width 56.0 feet and end width 66.0 feet in spans 28-29

Out to Out Deck width: 47.5 feet in spans 1-9 & 30, Start width 80.0 feet and end width 59.5 feet in spans 10-14, 59.5 feet in spans 15-17, 66.5 feet in spans 18-22, Start width 71.5 feet and end width 82.5 feet in spans 23-27 & Start width 61.5 feet and end width 71.5 feet in spans 28-29

Deck Thickness: 7.25 inches

Overlay: Approximately 2 to 3 inches bituminous overlay with waterproofing membrane

Number of travel lanes carried by bridge: 3 lanes in span 1-9 & 30, 4-lanes in spans 10-17, 28 & 29 and 5-lanes in spans 18-27

2. DESCRIPTION OF GROUND PENETRATING RADAR (GPR) SURVEY

2.1 Background

Ground penetrating radar operates by transmitting short pulses of electromagnetic energy into the pavement using an antenna attached to a survey vehicle. These pulses are reflected back to the antenna with an arrival time and amplitude that is related to the location and nature of dielectric discontinuities in the material (air/asphalt or asphalt/concrete, reinforcing steel, etc). The reflected energy is captured and may be displayed on an oscilloscope to form a series of pulses that are referred to as the radar signal. The signal contains a record of the properties and thicknesses of the layers within the deck, as shown schematically in Figure 1.

Bridge deck deterioration can be inferred from changes in the dielectric properties and attenuation of the GPR signal in concrete (see Maser and Roddis, 1990; SHRP C-101, ASTM D 6087-05). GPR was originally developed for overlaid decks, since access to the structural concrete surface via other traditional methods is limited. The concepts have been shown to work equally well on non-overlaid decks. The variation of the dielectric constant of the deck concrete is used as one measure of deterioration (Maser, 1990). The attenuation (loss of signal strength) of the radar signal, as measured from the top rebar reflection and/or the bottom of the deck, is used as a measure of concrete delamination. This is because contaminated and delaminated concrete will cause the GPR signal to dissipate and lose strength as it travels through the deck and reflects back from the rebar and the bottom.

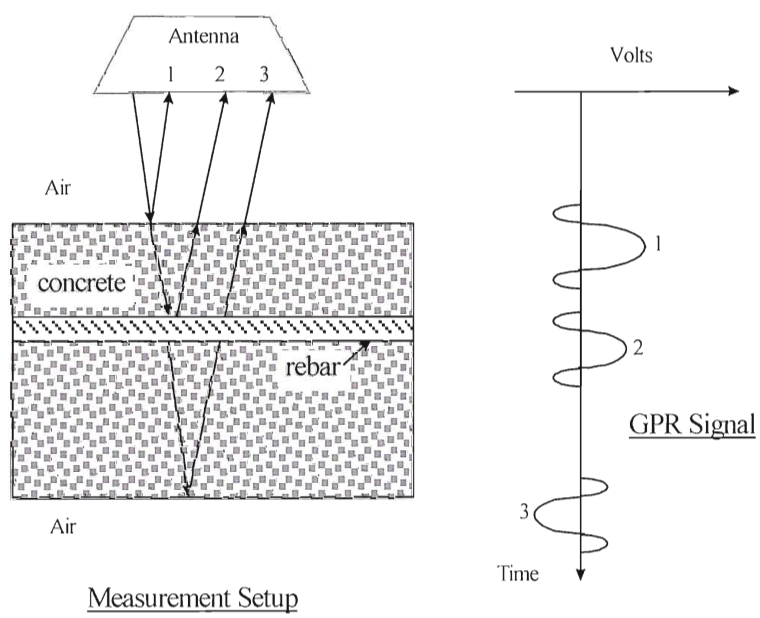


Figure 1 – Structure of the GPR Signal for Concrete Bridge Decks

2.2 Data Collection

The data on this project was collected on January 11 and 12, 2007. The weather conditions were clear, with temperatures in the low 30's °F. The GPR equipment used for this inspection project is a dual 1 GHz horn antenna system manufactured by GSSI, Inc. of Salem, NH, and is shown in Figure 2. The survey vehicle is equipped with an electronic distance-measuring instrument (DMI) mounted to the rear wheel of the survey van, providing continuous distance data as the GPR data is collected. The data collection and recording is controlled by the SIR-20 GPR system operated from within the survey vehicle. The antennas are mounted to the vehicle via a rectangular mounting bar, so that the lateral position of each antenna can be varied. This arrangement enables the GPR survey to cover the full width of the deck without straddling lanes.

Using this system, the GPR data is collected with a series of longitudinal passes, each at fixed offset from the curb, at a collection rate of 4 scans per linear foot. The overall objective of the survey layout is to generate passes at 3-foot transverse spacing from curb to curb. The actual location of each pass is determined approximately by visual reference using lane markers and other visual reference points. Data collection for each pass is initiated about 200 feet before the vehicle reached the actual start of the deck.

The GPR survey is carried at speeds up to 45 mph. Data is digitized and stored to hard disk as the survey progressed. The DMI distance data is continuously recorded into each GPR record, so that each GPR data scan has an associated distance.

Horn Antennas

Figure 2 – GPR Survey Vehicle

2.3 GPR Data Analysis

The bridge deck analysis is carried out with Infrasense's proprietary software *win*DECAR® using the following steps:

(1) Identification of the deck limits and major joints in each radar file, and check of the radar distance measurement against the known length and other features within the deck;

(2) Identification of features (top rebar, bottom of deck) that appear as dielectric discontinuities in the GPR data (see example data, Figure 3);

(3) Setup of the analysis for all of the passes for a given deck, computation of concrete dielectric constant, (rebar depth, and AC thickness, if applicable), and concrete attenuation; and

(4) Map the results and calculate quantities

The analyzed GPR data is presented in the form of contour plots. The attenuation is used as the measure of deterioration, and the potential areas of deteriorated concrete are identified by a threshold, which is calculated from the data.

Figure 3 below shows a sample of raw GPR data from an asphalt-overlaid bridge deck. The data has been compressed and preprocessed for removal of the concrete surface reflection. The significant boundaries appearing in the data are labeled in the figure. The figure represents a cross section through the deck, where the time axis is equivalent to depth.

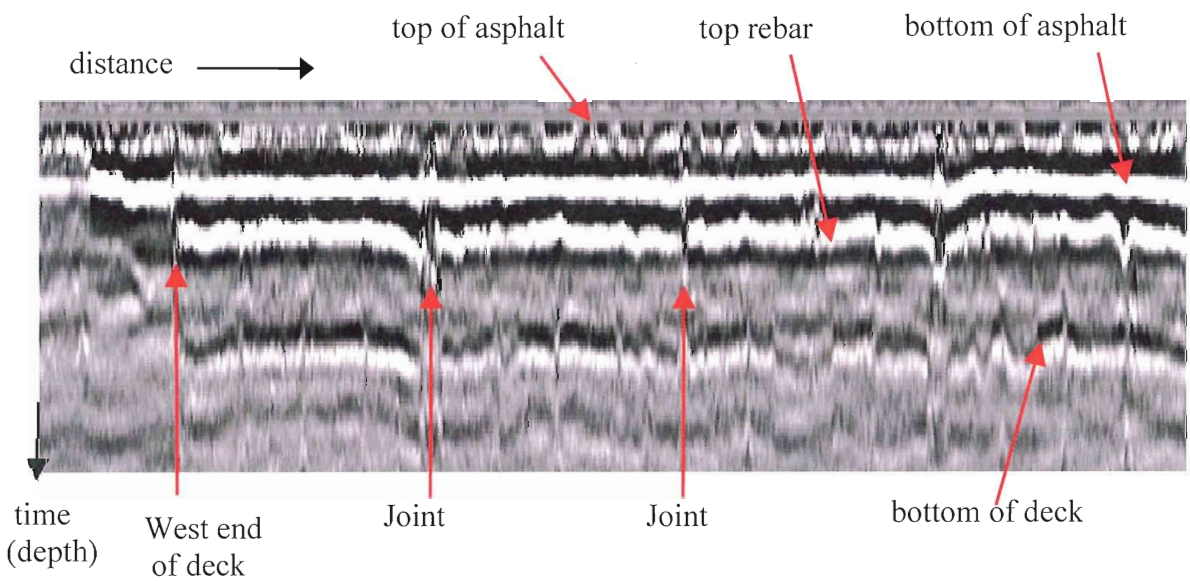


Figure 3 – GPR Data Sample

The calculated deterioration quantities per span are presented in tabular form in Attachment A. The plan view deck deterioration maps are presented in Attachment B.

For decks where cores were extracted, the core information was used to calibrate the final GPR results

2.4 DECK CORING

Coring was carried out on Monday, February 12 and Thursday, February 15, 2007. The coring was carried out by MT Materials Testing of Wallingford, CT under Infrasense supervision, with lane closures provided by E-L Engineering Support Services of Rocky Hill, CT. Ten cores were taken, at locations determined from both the preliminary GPR output and underside condition maps. The location of the cores is shown in Table 1.

All cores were 3 inches in diameter and drilled to a depth of 8 inches from the surface. Since the AC overlay was approximately 3 inches thick, this coring depth provided 5 inches of penetration into the concrete (just above the lower mat of reinforcement). The concrete specimens were removed, labeled and saved for subsequent inspection. As time allowed, observations of the interior of the core hole were made. After coring, each hole was filled with rapid set grout up to the level of the concrete and then cold patch was added to be flush with the deck surface.

Table 1 summarizes the core information and conditions, and Figure 4 shows a photograph of the coring process. Photographs of the cores are shown in Attachment C.

Figure 4 – Coring on Bridge 03191B

Table 1 – Summary of Core Data for Bridge 03191B

Core No.	Station	Span No.	Offset from North Curb (ft)	Selection Criteria*	Observed Core Condition
B1	186+09	27	6	Shows on GPR, Underside spall & effl.	intact
B2	184+89	26	7	Good condition	broke at rebar 4" down; no sign of corrosion
B3	181+54	22	7	Shows on GPR, Underside efflorescence	delaminated
B4	181+42	22	7	Shows on GPR, Nothing on underside	intact
B5	179+64	19	11	Nothing on GPR, Map cracking underside	intact; large voids in mix
B6	178+32	17	8	Good condition	broke at temperature steel; no sign of corrosion; AC overlay is 4" thick
B7	177+90	17	8	Shows on GPR, Nothing on underside	intact

Core No.	Station	Span No.	Offset from South Curb (ft)	Selection Criteria	Observed Core Condition
B8	169+97	7	5	Shows on GPR, 25% cracking below	intact; overlay separated
B9	169+35	7	10	Shows on GPR, 25% cracking below	intact; overlay separated
B10	167+66	4	4	Shows on GPR, Efflorescent cracks below	delaminated

*based on preliminary GPR results

3. REFERENCES

ASTM "Standard Test Method for Evaluating Asphalt-Covered Concrete Bridge Decks Using Ground Penetrating Radar" Designation D 6087-05, ASTM International, West Conshohocken, PA. 2005.

AASHTO "Standard Test Method for Evaluating Asphalt-Covered Concrete Bridge Decks using Pulsed Radar", AASHTO Provisional Standard, Designation TP36, 1993.

Maser, K.R. and Rawson, A. "Network Bridge Deck Surveys Using High Speed Radar: Case Studies of 44 Decks." Transportation Research Record No. 1347. Transportation Research Board. National Research Council, 1992.

Maser, K.R. "Bridge Deck Condition Surveys Using Radar: Case Studies Of 28 New England Decks. Transportation Research Record No. 1304", Transportation Research Board. National Research Council, 1991.

Maser, K.R. "New Technology for Bridge Deck Assessment", Phase I and II Final Report prepared for the New England Transportation Consortium, Center for Transportation Studies, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1990.

Maser, K.R., and Roddis, W.M.K "Principles of Radar and Thermography for Bridge Deck Assessment", ASCE Journal of Transportation Engineering, Vol. 116, No. 5, Sept/Oct, 1990.

SHRP C-101. "Condition Evaluation of Concrete Bridges Relative to Reinforcement Corrosion – Volume 3: Method of Evaluating the Condition of Asphalt-Covered Decks" Strategic Highway Research Program Report SHRP-S-325, Washington, D.C., 1993.

ATTACHMENT A

Bridge 03191B

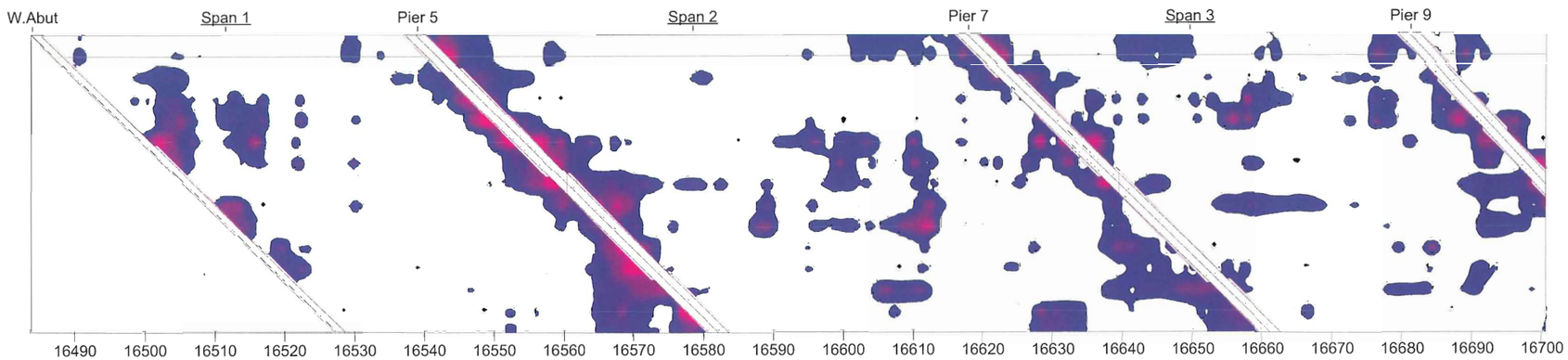
Table of Deterioration Percentages by Span

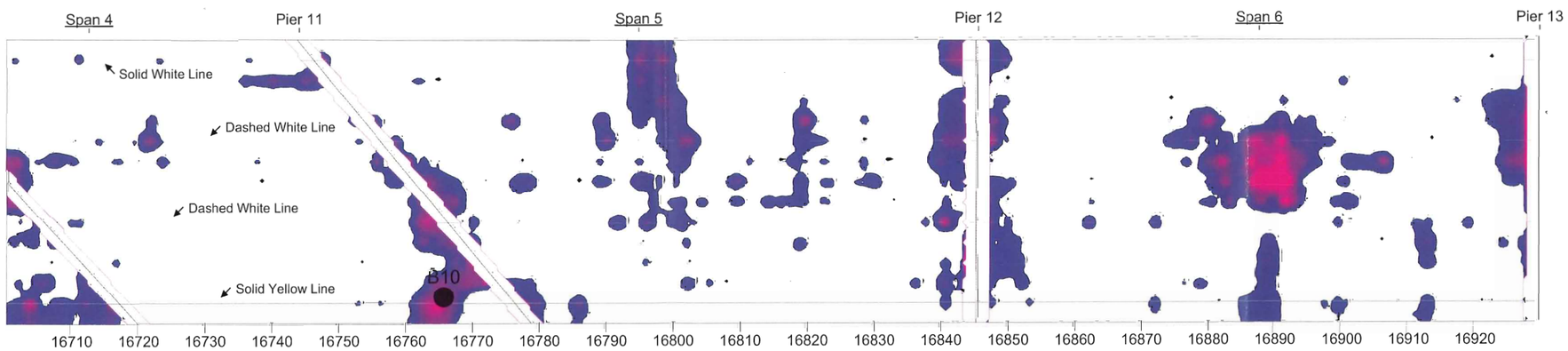
SPAN NO.	FROM	TO	% DETERIORATED
1	W. Abut	Pier 5	19%
2	Pier 5	Pier 7	23%
3	Pier 7	Pier 9	23%
4	Pier 9	Pier 11	8%
5	Pier 11	Pier 12	17%
6	Pier 12	Pier 13	17%
7	Pier 13	Pier 14	13%
8	Pier 14	Pier 15	10%
9	Pier 15	Pier 16	7%
10	Pier 16	Pier 17	10%
11	Pier 17	FB 10	6%
12	FB 10	FB 16	10%
13	FB 16	Pier 20	15%
14	Pier 20	Pier 21	6%
15	Pier 21	Pier 22	12%
16	Pier 22	Pier 23	11%
17	Pier 23	Pier 24	8%
18	Pier 24	Pier 25	14%
19	Pier 25	Pier 26	12%
20	Pier 26	Pier 27	7%
21	Pier 27	Pier 28	10%
22	**Pier 28**	**Pier 29**	**26%**
23	Pier 29	Pier 30	7%
24	Pier 30	Pier 31	15%
25	Pier 31	Pier 32	3%
26	Pier 32	Pier 33	7%
27	Pier 33	Pier 34	22%
28	Pier 34	Pier 35	2%
29	Pier 35	Pier 36	9%
30	Pier 36	E. Abut	21%
Overall Deterioration			**12%**

ATTACHMENT B

Bridge 03191B

Deck Deterioration Maps





● = core

= conditions not detectable

Indication of Deck Deterioration

Severity --->

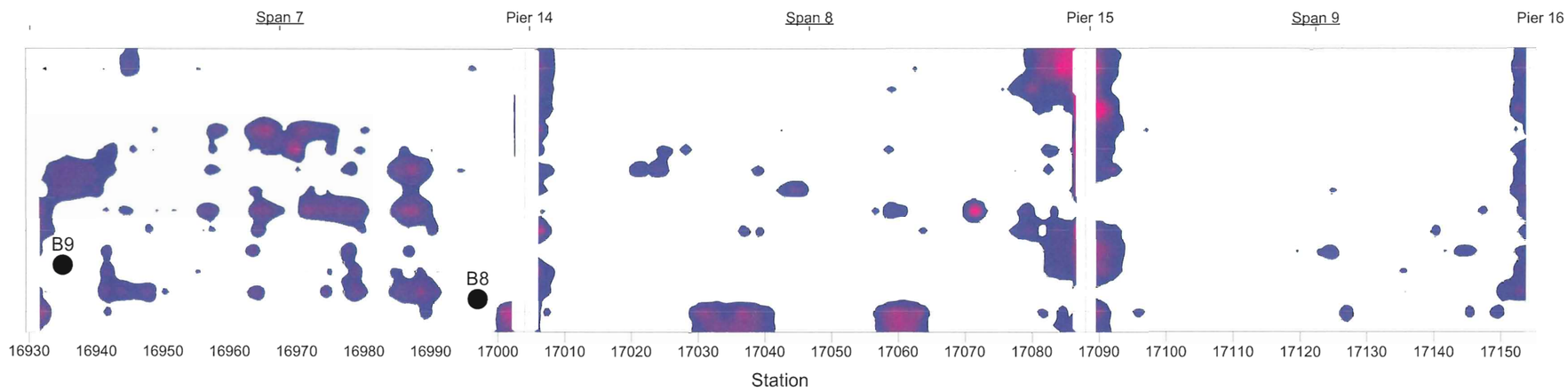
Ground Pentrating Radar
Deck Condition Evaluation

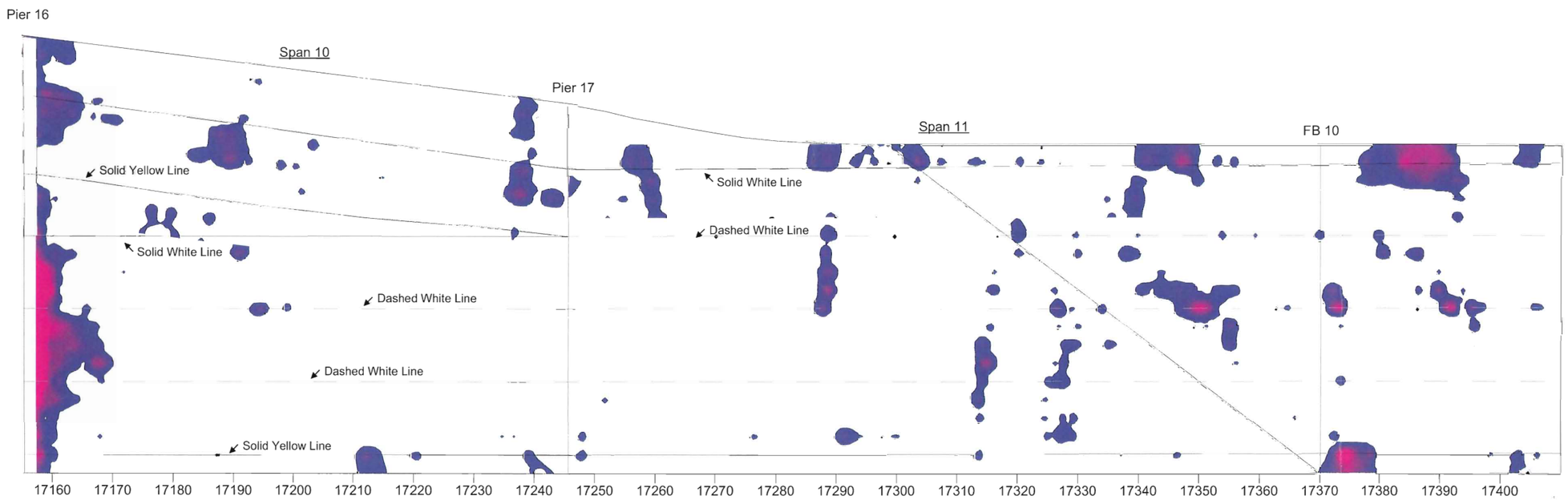
Bridge 03191B: I-84 WB

Analyzed by: BCM Date: 03/02/07
Checked by: KRM Date: 03/07/07

INFRASENSE, Inc.

Sheet: 1 of 5





● = core

= conditions not detectable

Indication of Deck Deterioration

Severity --->

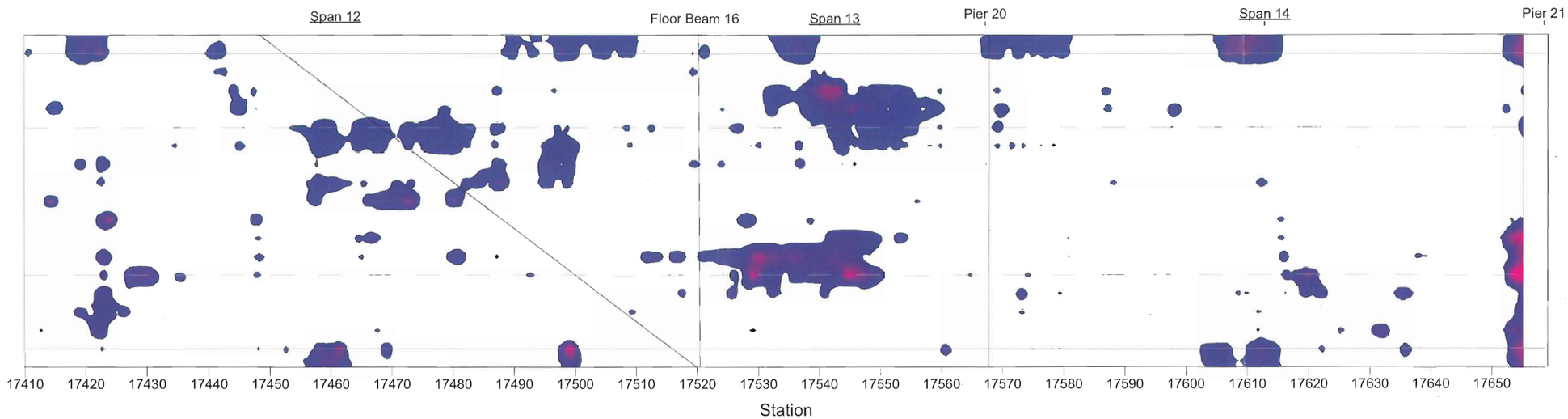
Ground Pentrating Radar
Deck Condition Evaluation

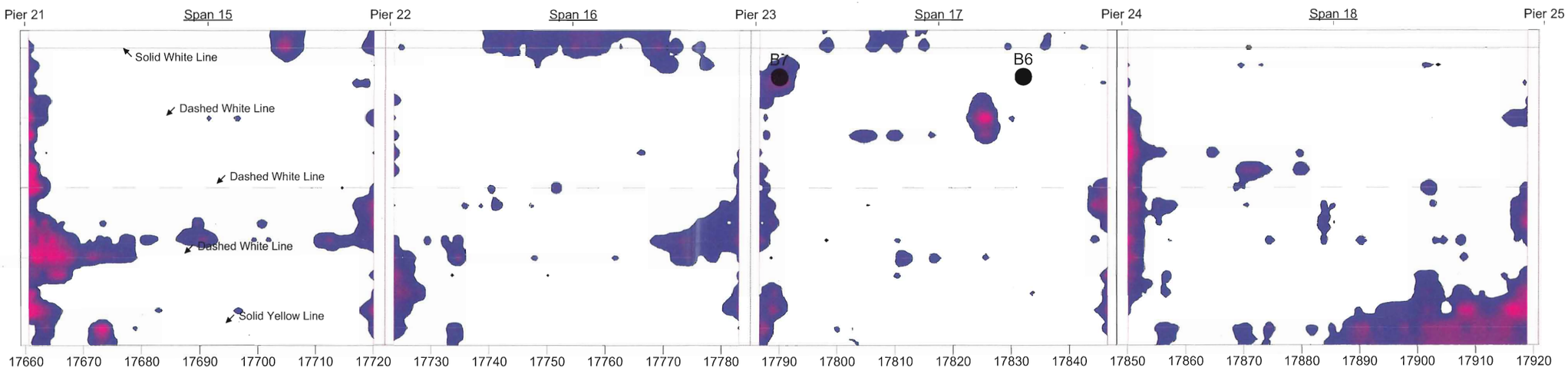
Bridge 03191B: I-84 WB

Analyzed by: BCM Date: 03/02/07
Checked by: KRM Date: 03/07/07

INFRASENSE, Inc.

Sheet: 2 of 5





● = core

= conditions not detectable

Indication of Deck Deterioration

Severity --->

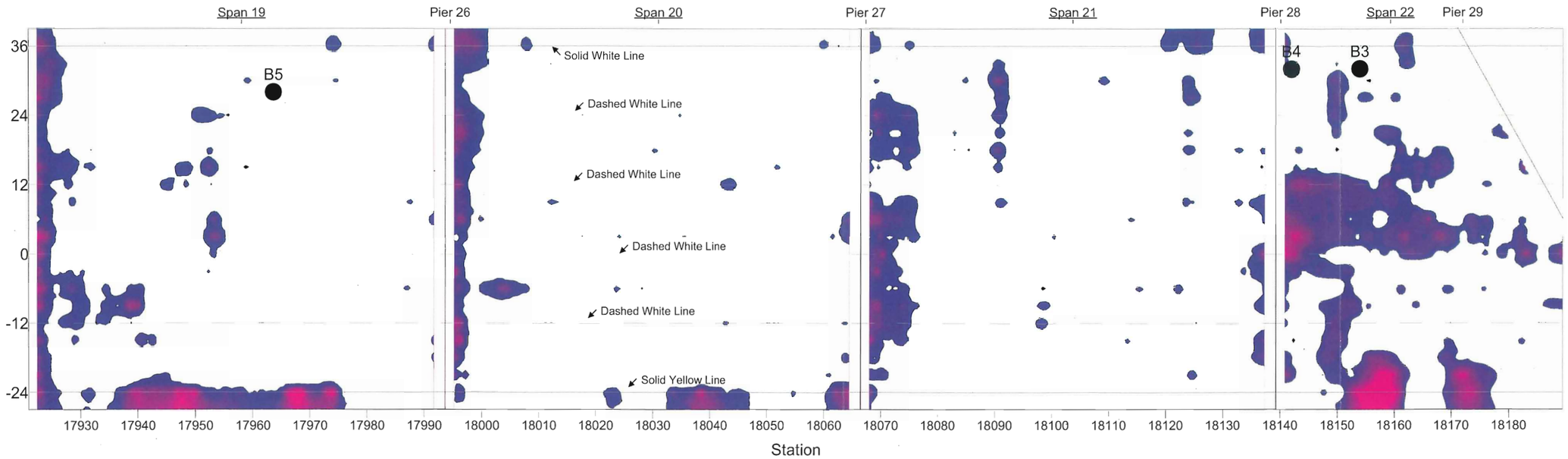
Ground Pentrating Radar
Deck Condition Evaluation

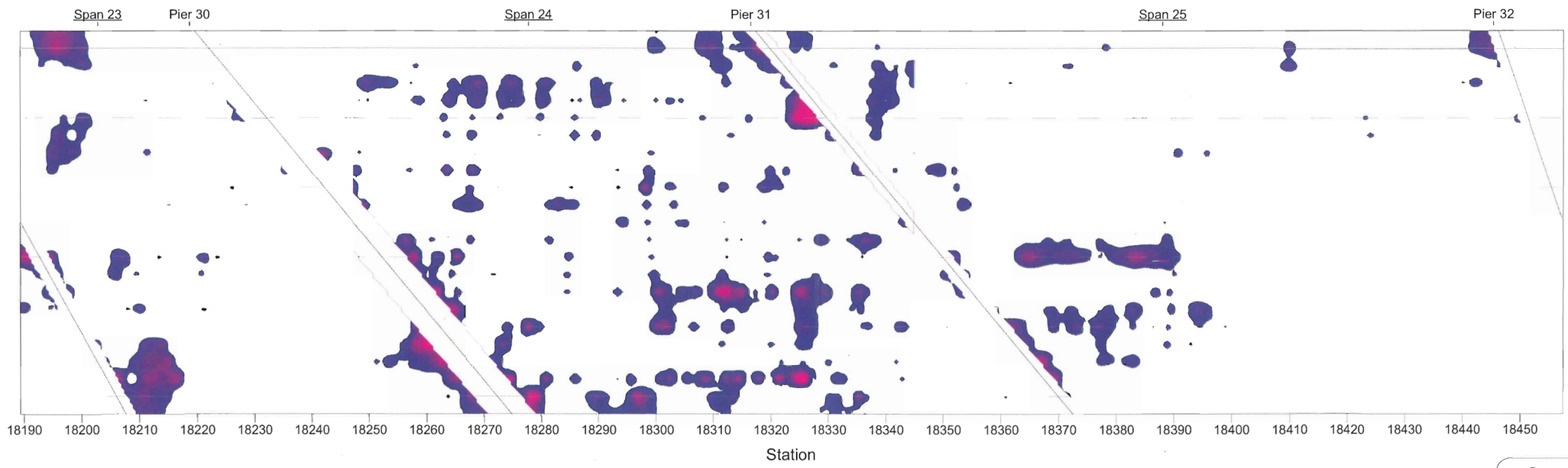
Bridge 03191B: I-84 WB

Analyzed by: BCM Date: 03/02/07
Checked by: KRM Date: 03/07/07

INFRASENSE, Inc.

Sheet: 3 of 5





● = core

= conditions not detectable

Indication of Deck Deterioration

Severity --->

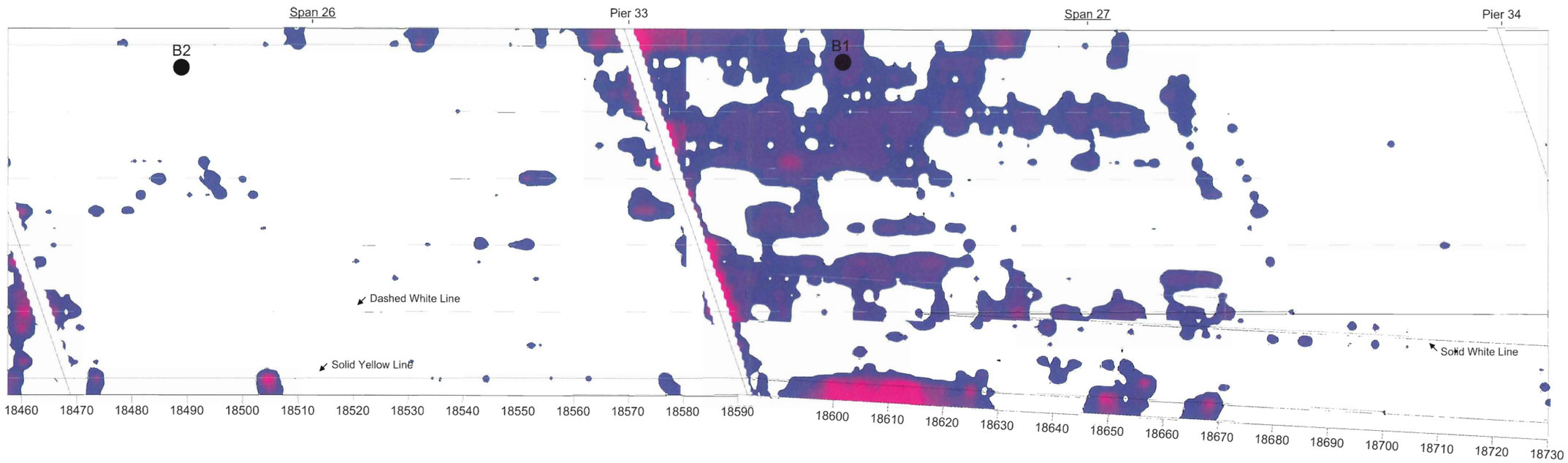
Ground Pentrating Radar
Deck Condition Evaluation

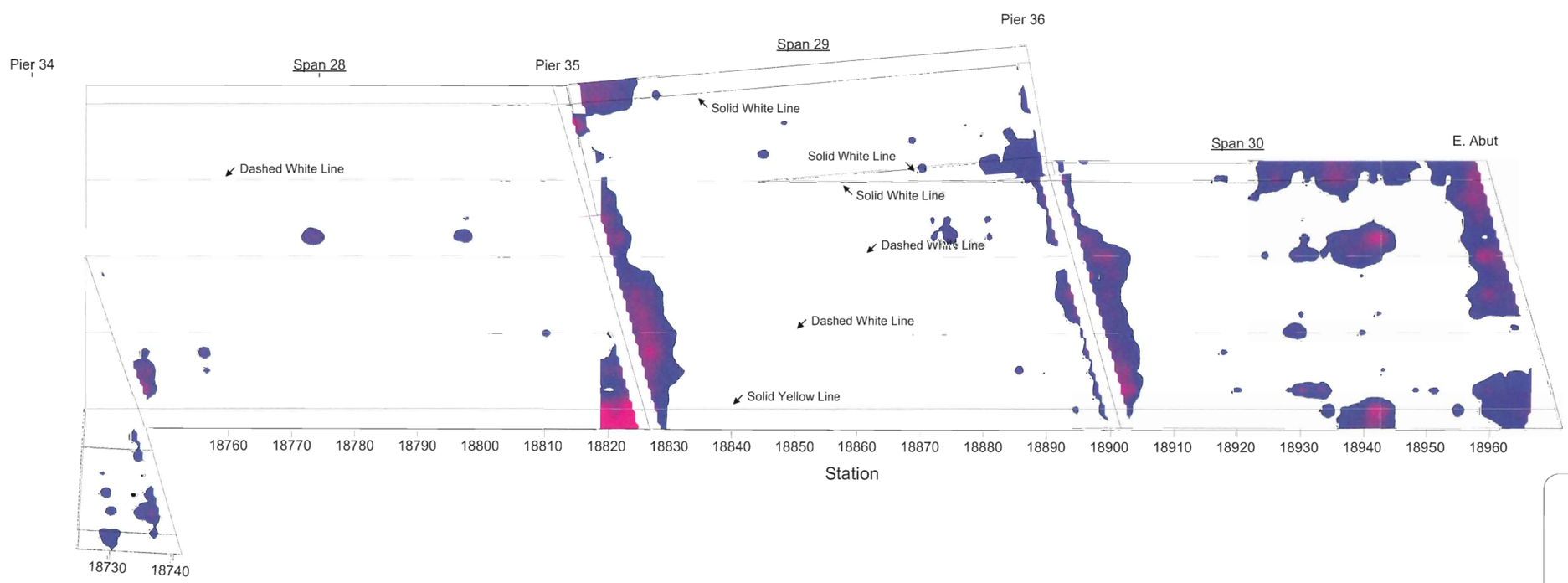
Bridge 03191B: I-84 WB

Analyzed by: BCM Date: 03/02/07
Checked by: KRM Date: 03/07/07

INFRASENSE, Inc.

Sheet: 4 of 5





= conditions not detectable

= core

Indication of Deck Deterioration

Severity --->

Ground Pentrating Radar
Deck Condition Evaluation

Bridge 03191B: I-84 WB

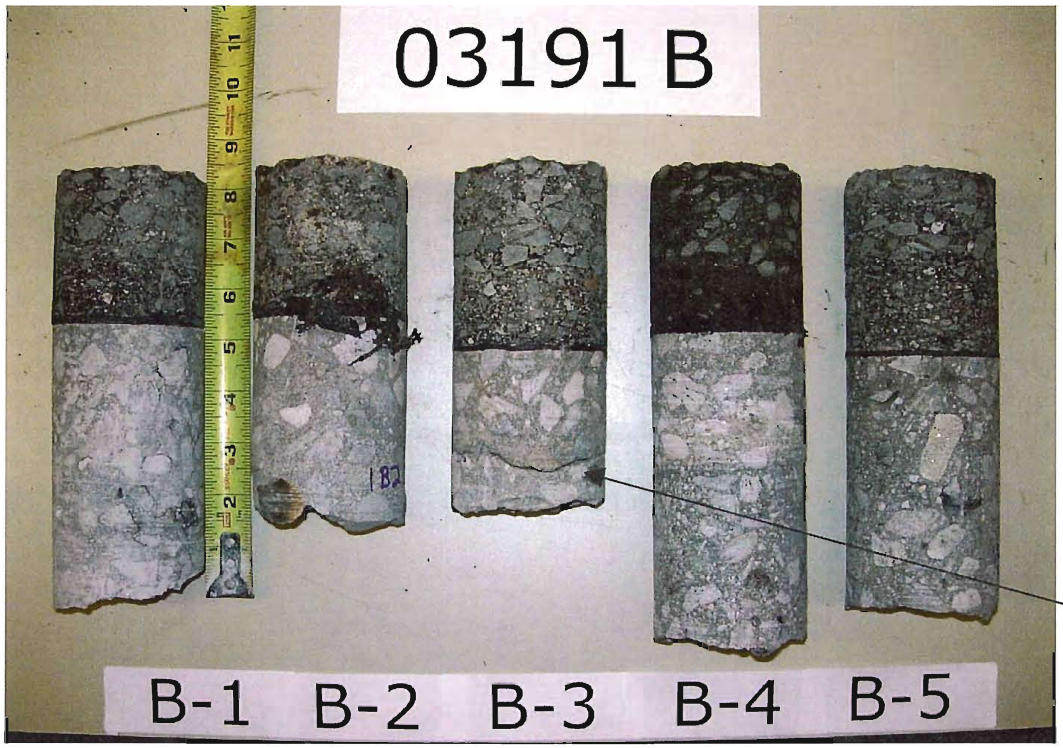
Analyzed by: BCM Date: 03/02/07
Checked by: KRM Date: 03/07/07

INFRASENSE, Inc.

Sheet: 5 of 5

ATTACHMENT C

Bridge 03191B — Core Photos



APPENDIX B

ULTRASONIC TESTING REPORT

EASTERN, Inc.

FIELD REPORT

Project:	**Connecticut DOT Overhead Sign & Bridge Inspections Waterbury, CT**	Client:	Haks Engineers P.C.
		Contractor:	
Project No.:	06453C	Weather:	Clear
Date:	October 18, 2006	Technician:	Jim Carrano, Level II
		Visit No.	2

Purpose: To observe structural steel using NDT methods.

JGI Activities:

This writer performed the 2nd ultrasonic testing of welds at Bridge No. 03191B and 03190B. These welds were selected due to previous discontinuities/indications identified during testing from prior years. The welds were ultrasonically tested to the AWS specification for cyclically loaded connection Table 6.3.

There were no increases in size or length of the previously reported discontinuities or indications.

Reviewed by: KJB Date: 10/28/06

DENSITY TEST RESULTS:	☐ COMPLY	☐ DO NOT COMPLY WITH SPECIFICATIONS	
	☐ NOT COMPLETE	☒ NOT APPLICABLE	
DEVIATION REPORT:	☐ ATTACHED	☒ NOT ATTACHED	☐ AMENDED AND ATTACHED
OBSERVED CONSTRUCTION:	☒ COMPLIES	☐ DOES NOT COMPLY WITH SPECIFICATIONS	
	☐ NOT COMPLETE	☐ NOT APPLICABLE	

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JGI EASTERN, Inc.

114 Woodlawn Road
Berlin, CT 06037
(860) 829-1725
Fax (860) 829-1745

77 Sundial Avenue, Suite 401
Manchester, NH 03109
(603) 647-9700
Fax (603) 647-4432

www.jgieastern.com

NDT ULTRASONIC TESTING REPORT

Project	Connecticut DOT Overhead Sign & Bridge Inspections	Contractor:	
		Sub-Contractor:	
Client	Haks Engineering	Date:	10/18/2006
Project No.:	06453C	Weather:	Clear

Testing Parameters:

1. Connection Type: Moment: Splice: X Other:
2. Transducer Angle: 70
3. Unit Type: USN 60
4. From Face A/B
5. Reference Level: 47 6. Leg: 1 and 2

JC.

3190B Location	Floor	Resulting Condition
Bridge ~~03191B~~, Pier 13, Span 13, Cap girder G-4 to G-5	Top	Class C
Bridge 03191B, Pier 18, Span 12, FB-8	Bottom	Class C
Pier 18, Span 11, Girder 1	Top	Class A
Pier 18, Span 12, Girder 1 (Inside) MD JC	Top	None (inside only)
Pier 19, FB-13	Bottom	Class A (3), Class C (1)
Pier 19, FB-17	Bottom	Class C
Pier 19, Span 13, Girder 2	Top	Class A
Pier 20, Span 14, FB-19	Bottom	Class C
Pier 18, Span 12, Girder 1 (West)	Top	Class A

Material Parameters:

Welding Process: N/A Thickness: Varies
Weld Joint: N/A Backing: N/A

Manufacturer or Contractor: N/A

Remarks: No changes in size or length of the previously reported discontinuities.

Technician: Jim Carrano, Level II

Reviewed by: JCB Date: 10/28/06

The information contained in this report may not be reproduced except in its entirety without the express written consent of JGI EASTERN, Inc. Reports are relevant only to the items tested and may not be attributed to other work. Testing was perfored in general accordance with the stated ASTM test method.

EASTERN, Inc.

FIELD REPORT

Project:	**Connecticut DOT Overhead Sign & Bridge Inspections Waterbury, CT**	Client:	Haks Engineers P.C.
		Contractor:	
Project No.:	06453C	Weather:	Clear
Date:	October 30, 2006	Technician:	Jim Carrano, Level II
		Visit No.	3

Purpose: To observe structural steel using NDT methods.

JGI Activities:

This writer performed ultrasonic testing of the welds at Bridge Nos. 03191B and 03191A. These welds were selected due to previous discontinuities/indications in prior years. The welds were ultrasonically tested to the AWS specification for cyclically loaded connections Table 6.3.

There were no increases in size or length of the previously reported discontinuities or indications.

Reviewed by: KJB Date: 11/13/06

DENSITY TEST RESULTS:	☐ COMPLY	☐ DO NOT COMPLY WITH SPECIFICATIONS	
	☐ NOT COMPLETE	☒ NOT APPLICABLE	
DEVIATION REPORT:	☐ ATTACHED	☒ NOT ATTACHED	☐ AMENDED AND ATTACHED
OBSERVED CONSTRUCTION:	☒ COMPLIES	☐ DOES NOT COMPLY WITH SPECIFICATIONS	
	☐ NOT COMPLETE	☐ NOT APPLICABLE	

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Manchester, NH 03109
(603) 647-9700
Fax (603) 647-4432

www.jgieastern.com

NDT ULTRASONIC TESTING REPORT

Project	Connecticut DOT Overhead Sign & Bridge Inspections	Contractor:	
		Sub-Contractor:	
Client	Haks Engineering	Date:	10/30/2006
Project No.:	06453C	Weather:	Clear

Testing Parameters:

1. Connection Type: Moment: Splice: X Other:
2. Transducer Angle: 70
3. Unit Type: USN 60
4. From Face A/B
5. Reference Level: 46 6. Leg: 1 and 2

Location	Flange	Resulting Condition
Bridge 03191B		
Pier 18, Span 11, Girder 1 (East)	Top	Class A
Pier 18, Span 12, Girder 1 (West)	Top	Class A
Pier 18, Span 12, Girder 1 (Mid)	Top	No discontinuities found

Material Parameters:

Welding Process: N/A Thickness: Varies
Weld Joint: N/A Backing: N/A

Manufacturer or Contractor: N/A

Remarks: No increase in size or lengths of the previously reported discontinuities.

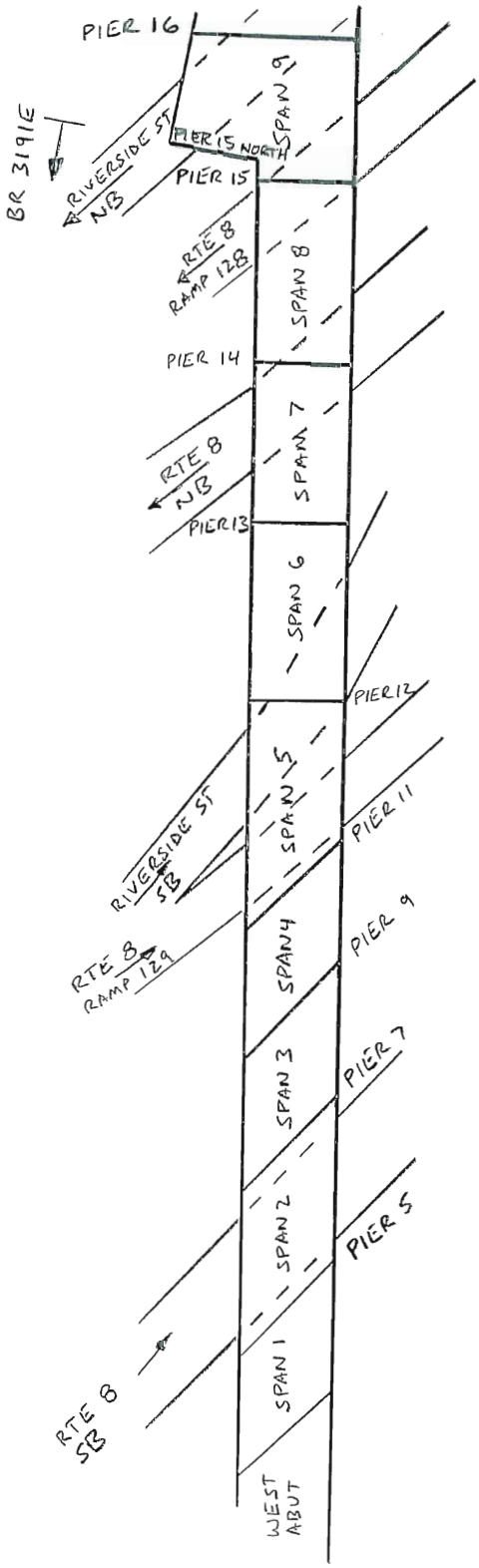
Technician: Jim Carrano, Level II

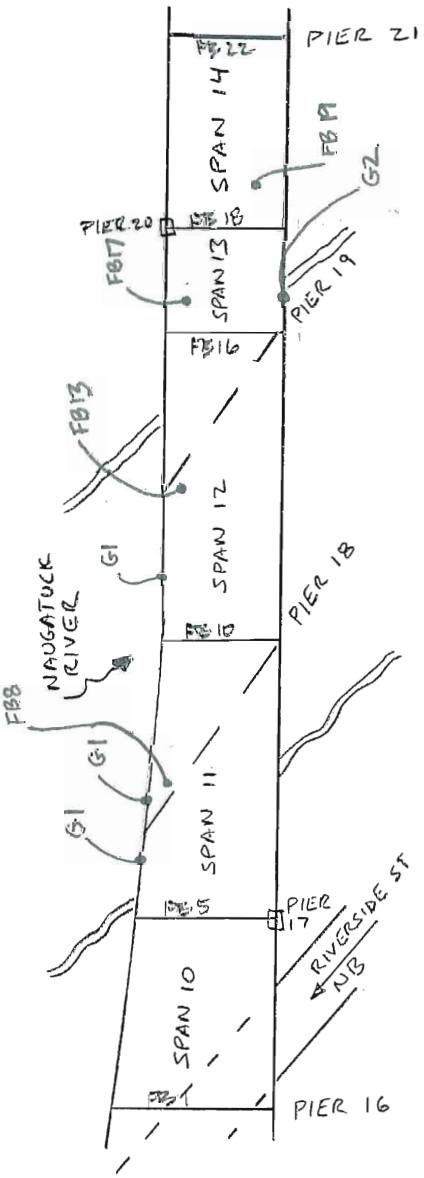
Reviewed by: Date: 11/13/06

The information contained in this report may not be reproduced except in its entirety without the express written consent of JGI EASTERN, Inc. Reports are relevant only to the items tested and may not be attributed to other work. Testing was perfored in general accordance with the stated ASTM test method.

FIELD NOTES

	JOB NO. 0156EXT	BRIDGE NO. 3191B
	DATE 9/25/06	SHEET
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	

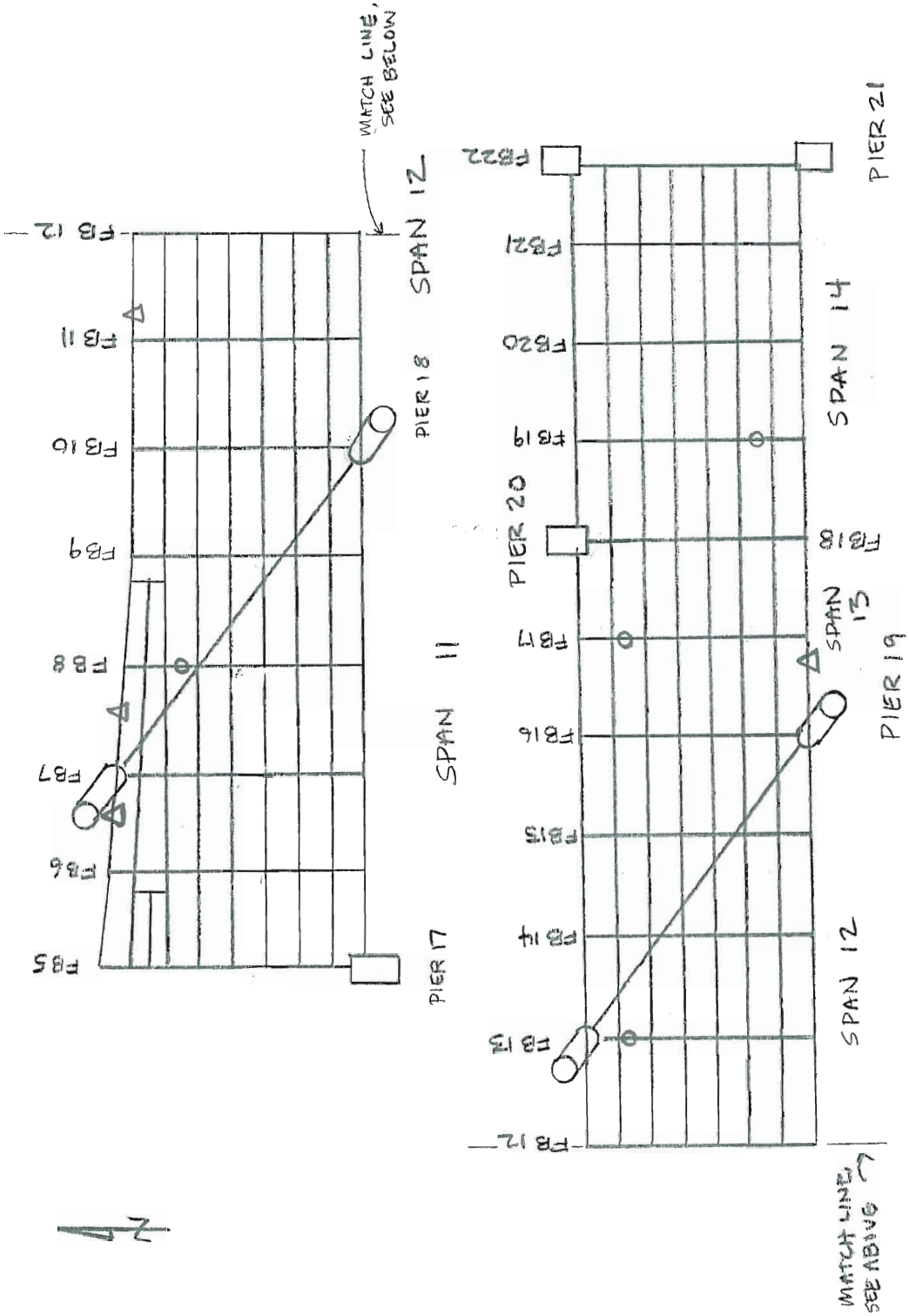




GENERAL PLAN — SPANS 1-14

FIELD NOTES

	PROJ. NO. 170-2357	BRIDGE NO. 03191B
	DATE	SHEET
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW	



Revision	Date	Crew	Company	Revision	Date	Crew	Company
Revision	Date	Crew	Company	Revision	Date	Crew	Company

HAKS FIELD NOTES	BRIDGE NO. 03191B	DATE :
	CREW :	SHEET

BR.03191B- ULTRASONIC TESTING

LOCATION	PIER #	SPAN #	I-84 WB	COMPONENT	TF/BF	N/E/S/W
1	18	11	RT LANE	GIRDER 1	TOP FLG.	E
2	18	12	RT LANE	FB 8	BTM FLG.	N
3	18	12	LT LANE	GIRDER 1	TOP FLG.	W
4	18	12	LT LANE	GIRDER 1	TOP FLG.	MID
5	19	12	LT LANE	FB 13	BTM FLG.	N
6	19	13	LT LANE	FB 17	BTM FLG.	N
7	19	13	LT LANE	GIRDER 2	TOP FLG.	E
8	20	14	LT LANE	FB 19	BTM FLG.	S

MQS

NDE EXAMINATION REPORT/ AWS ULTRASONIC

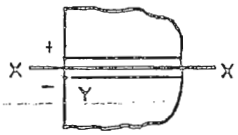
FORM 22-2 (REV. 1)

Client: AG Lichtenstein Project: 1919 CT # 03191B

Facility QC Control No.: 46F7710 Technique No.: 7710

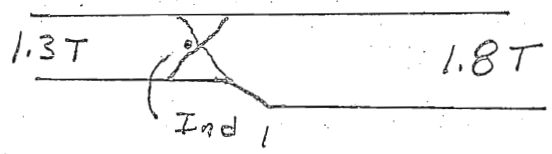
Item Description: Transition Weld

Project: CT Bridge # 03191B Report no.: 46F7710

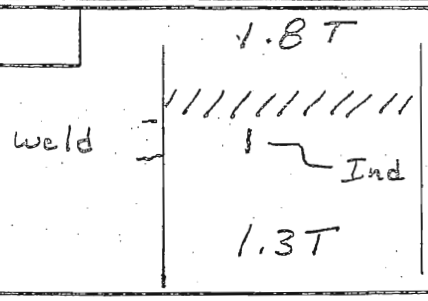


Weld Identification: Pier 18, Span 12, FB8, BF-N
Material thickness: see below
Weld joint AWS: Butt
Welding process: not supplied
Quality requirements — section no.: Tension
Remarks: N/A

WELD GEOMETRY



PLAN VIEW



WELD LOCATION

Note: Data taken with Tx^er facing West

weld number	Indication number	Transducer angle	From Face	Leg°	Decibels: Indication level a	Decibels: Reference level b	Decibels: Attenuation factor c	Decibels: Indication rating d	Discontinuity: Length	Discontinuity: Angular distance (sound path)	Discontinuity: Depth from "A" surface	Discontinuity: Distance From X	Discontinuity: Distance From Y	Discontinuity elevation	Remarks
	1	70°	B	1	64	52	2	+10	1/4"	1.8"	0.7"	-0.38"	6 3/8"	Cl. C	Reportable
	2002			No	significant				change	SINCE LAST	INSPECTION			(1999)	
	10/18/06			NO	Significant				Change	Since the	last	Inspection			

U.T. Operator & Lab Location: Alan W. Smith L-III

U.T. Interpretation By & Lab Location: RJ Lisko 6046/6078 III

Date: 3/17/99

MQS

NDE EXAMINATION REPORT/ AWS ULTRASONIC

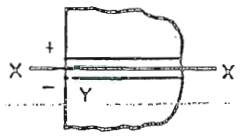
FORM 22-2 (REV. 1)

Client: AG Lichtenstein Project: 1919 CT # 03191B

Facility QC Control No.: 46F7710 Technique No.: 7710

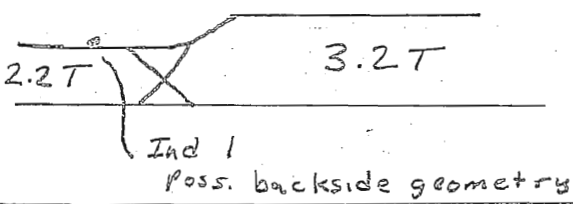
Item Description: Transition Weld

Project: CT Bridge # 03191B Report no.: 46F7710

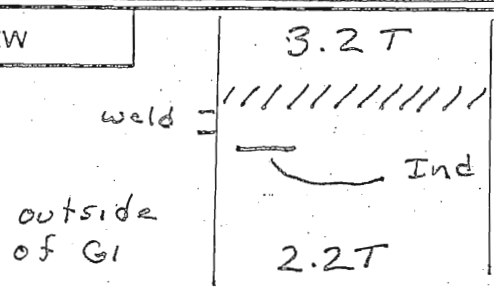


Weld identification: Pier 18, Span 12, G1, TF-W
Material thickness: see below
Weld joint AWS: Butt
Welding process: not supplied
Quality requirements — section no.: Tension
Remarks: N/A

WELD GEOMETRY Concrete



PLAN VIEW



WELD LOCATION

poss Geometry inside of G1

weld number	Indication number	Transducer angle	From Face	Leg°	Decibels: Indication level a	Decibels: Reference level b	Decibels: Attenuation factor c	Decibels: Indication rating d	Discontinuity: Length	Discontinuity: Angular distance (sound path)	Discontinuity: Depth from "A" surface	Distance: From X	Distance: From Y	Discontinuity elevation	Remarks
	1	60°	A	1	56	50	7	-1	1½"	4.3"	2.1"	-1.0"	3/4"	Cl. A	Reject
2002	No change since last inspection (1999) [signature]														
10/30/06	No significant change since the last inspection [signature]														

U.T. Operator & Lab Location: Alan W. Smith L-III

U.T. Interpretation By & Lab Location: [signature] 6046/6078 III

Date: 3.17.99

MQS

NDE EXAMINATION REPORT / AWS ULTRASONIC

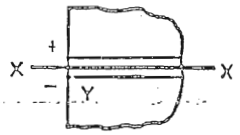
FORM 22-2 (REV. 1)

Client: AG Lichtenstein Project: 1919 CT # 03191B

Facility QC Control No. 46F7710 Technique No. 7710

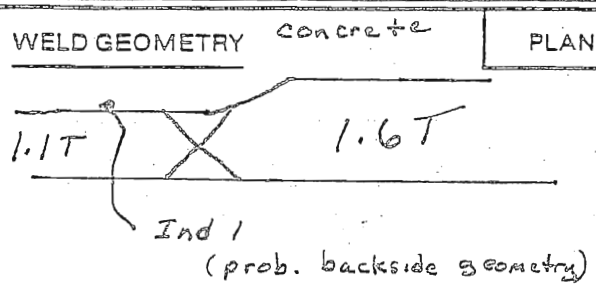
Item Description: Transition Weld

Project: CT Bridge # 03191B Report no. 46F7710

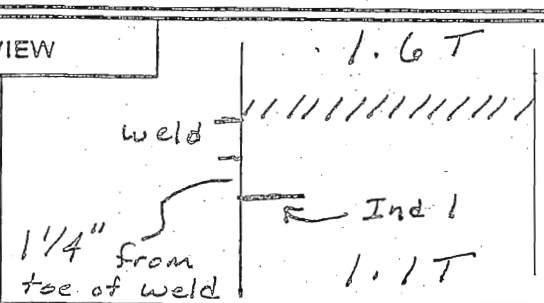


Weld identification: Pier 18, Span 12, G1, TF-mid
Material thickness: see below
Weld joint AWS: Butt
Welding process: not supplied
Quality requirements — section no.: Tension
Remarks: N/A

WELD GEOMETRY



PLAN VIEW



WELD LOCATION

weld number	Indication number	Transducer angle	From Face	Leg	Decibels: Indication level (a)	Decibels: Reference level (b)	Decibels: Attenuation factor (c)	Decibels: Indication rating (d)	Discontinuity: Length	Discontinuity: Angular distance (sound path)	Discontinuity: Depth from "A" surface	Distance: From X	Distance: From Y	Discontinuity elevation	Remarks
	1	70°	A	1	55	49	4	+2	2.5"	2.80"	0.96"	-2.0"	0.0	Cl. A	Reject
		No change since last inspection													
		2002 NO CHANGE SINCE LAST INSPECTION (1999)													
10/30/06		NO discontinuity's found													

U.T. Operator & Lab Location: Alan W. Smith L-III

U.T. Interpretation By & Lab Location: RJ Luke 6046/6078 III

Date: 3-11-99

MQS

NDE EXAMINATION REPORT / AWS ULTRASONIC

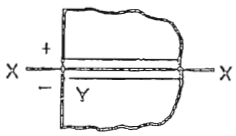
FORM 22-2 (REV. 1)

Client A.G. LICHTENSTEIN Project 1919 CT. # 03191B

Facility QC Control No. WLF 7710 Technique No. 7710

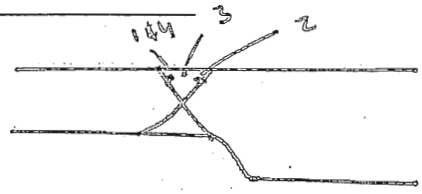
Item Description TRANSITION WELDS

Project CT. BRIDGE # 03191B Report no.

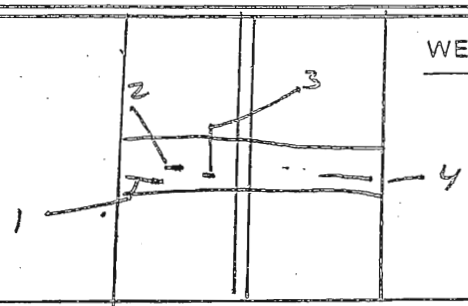


Weld Identification PIER 19 FLOOR BEAM 13 BF NORTH WLD
Material thickness SEE BELOW
Weld joint AWS BUTT
Welding process N/A
Quality requirements — section no. TENSION
Remarks

WELD GEOMETRY



PLAN VIEW



WELD LOCATION

weld number	Indication number	Transducer angle	From Face	Leg°	Decibels: Indication level a	Reference level b	Attenuation factor c	Indication rating d	Discontinuity: Length	Angular distance (sound path)	Depth from "A" surface	Distance: From X	Distance: From Y	Discontinuity elevation	Remarks
	1	70	A	1	59	49	2	+8	1 7/8"	2.0"	.500"	-.250"	7/2"	Class A	REJECT
	2	70	A	1	63	49	6	+13	1"	4.0"	.190"	+.100"	2.5"	Class A	REJECT
	3	70	A	1	65	49	6	+10	3/8"	3.75"	.080"	0	6"	Class C	RECORDABLE
	4	70	A	1	58	49	2	+7	3"	2.0"	.500"	-.125"	11"	Class A	REJECT
		2002	NO	CHANGE	SINCE	LAST	INSPECTION								
10/18/06	NO	Significant	changes	Since	the	last	Inspection	If	Corrected						

U.T. Operator & Lab Location: Alan Smith Ltd

U.T. Interpretation By & Lab Location: Alan Smith L-III

Date: 3-17-99

MQS

NDE EXAMINATION REPORT/ AWS ULTRASONIC

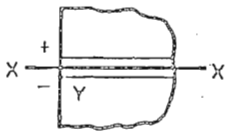
FORM 22-2 (REV. 1)

Client LICHTENSTEIN A-G Project 1919 CT. # 03191B

Facility QC Control No. 46F 7710 Technique No. 7710

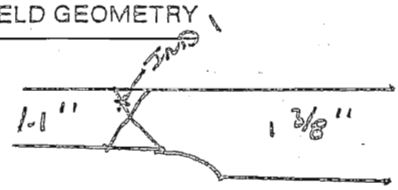
Item Description TRANSITION WELDS

Project _____ Report no. _____

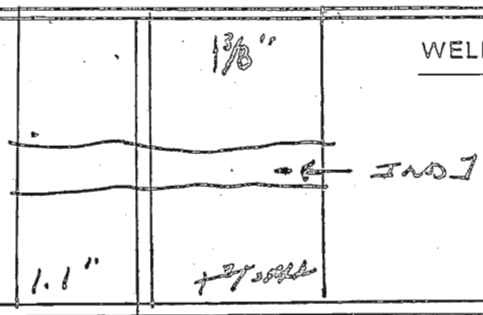


Weld Identification PIER 19 FLOORBEAM 17 BF NORTH WLD
Material thickness SEE BELOW
Weld joint AWS BUTT
Welding process N/A
Quality requirements — section no. TENSION
Remarks

WELD GEOMETRY



PLAN VIEW



WELD LOCATION

weld number	Indication number	Transducer angle	From Face	Leg	Decibels: Indication level a	Reference level b	Attenuation factor c	Indication rating d	Discontinuity: Length	Angular distance (sound path)	Depth from "A" surface	Distance: From X	Distance: From Y	Discontinuity elevation	Remarks
	1	70	A	1	62	49	3	+10	3/8"	2.40"	.280"	-1/8	14.5"	CLASS C	
	1	60	A	1	53	47	1	+5	3/8"	1.59"	.300"	-1/8"	14.5"	CLASS B	REJECT.
			SAME	INDICATION					60°	USED	TO	EVALUATE	FUSION	LINE	
			INDICATION												
	2002		NO CHANGE SINCE LAST INSPECTION												
10/18/06			NO Significant Changes Since the last inspection												

U.T. Operator & Lab Location: Alan Smith L-III

U.T. Interpretation By & Lab Location: L-III

Date: 3-11-99

MQS

NDE EXAMINATION REPORT / AWS ULTRASONIC

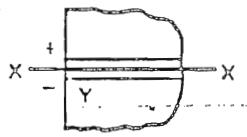
FORM 22-2 (REV. 1)

Client: AG Lichtenstein Project: 1919 CT # 03191B

Facility QC Control No.: 46F7710 Technique No.: 7710

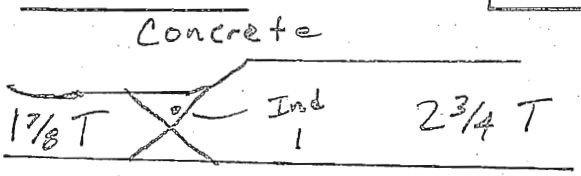
Item Description: Transition Weld

Project: CT Bridge # 03191B Report no.: 46F7710

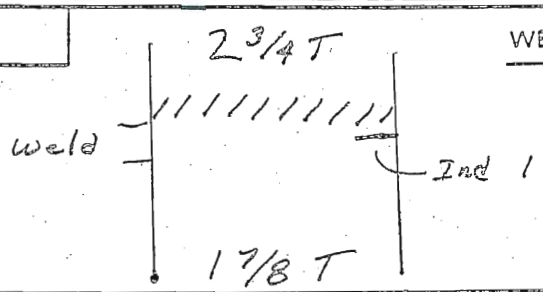


Weld Identification: Pier 19, Span 13, 62, TF-E
Material thickness: see below
Weld joint AWS: Butt
Welding process: not supplied
Quality requirements — section no.: Tension
Remarks: N/A

WELD GEOMETRY



PLAN VIEW



WELD LOCATION

weld number	Indication number	Transducer angle	From Face	Leg	Decibels: Indication level (a)	Decibels: Reference level (b)	Decibels: Attenuation factor (c)	Decibels: Indication rating (d)	Discontinuity: Length	Discontinuity: Angular distance (sound path)	Discontinuity: Depth from "A" surface	Distance: From X	Distance: From Y	Discontinuity elevation	Remarks
	1	70°	A	1	63	52	6	+5	5/8"	3.9"	1.3"	+1/4"	0	Cl. A	Reject
					No	significant		Change							
		2002			No	CHANGE	SINCE	LAST	INSPECTION						
10/18/06	No significant change since the last inspection														

U.T. Operator & Lab Location: Alan W. Smith L-III

U.T. Interpretation By & Lab Location: 6046/6078 III

Date: 3.17.99

MES

NDE EXAMINATION REPORT / AWS ULTRASONIC

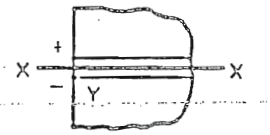
FORM 22-2 (REV. 1)

Client: AG Lichtenstein Project: 1919 CT # 03191B

Facility QC Control No.: 46F7710 Technique No.: 7710

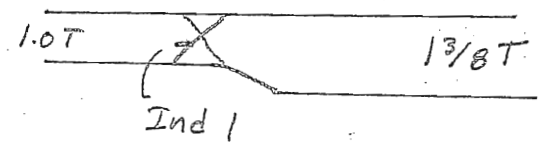
Item Description: Transition Weld

Project: CT Bridge # 03191B Report no.: 46F7710

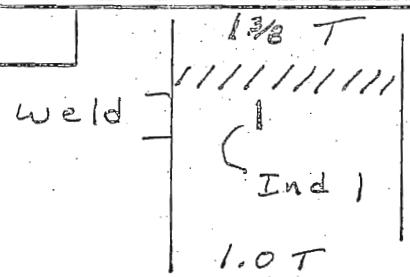


Weld identification: Pier 20, Span 14, FB19, BF-S
Material thickness: see below
Weld joint AWS: Butt
Welding process: not supplied
Quality requirements — section no.: Tension
Remarks: N/A

WELD GEOMETRY



PLAN VIEW



WELD LOCATION

weld number	Indication number	Transducer angle	From Face	Leg°	Decibels: Indication level a	Decibels: Reference level b	Decibels: Attenuation factor c	Decibels: Indication rating d	Discontinuity: Length	Discontinuity: Angular distance (sound path)	Discontinuity: Depth from "A" surface	Distance: From X	Distance: From Y	Discontinuity elevation	Remarks
	1	70°	B	1	61	52	0	+9	½"	1.0"	0.6"	−0.25"	6.6"	Cl. B	Recordable
				No significant Change											
		2002		NO CHANGE SINCE					1999	INSPECTION					
10/18/06		Class "C" discontinuity detected												of Concern	

U.T. Operator & Lab Location: Alan W. Smith

U.T. Interpretation By & Lab Location: [signature] 6046/6078 III

Date: 3/17/99

MQS

NDE EXAMINATION REPORT/AWS ULTRASONIC

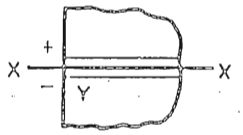
FORM 22-2 (REV. 1)

Client LICHTENSTEIN A.G Project CT-BRIDGES 03191B

Facility QC Control No. 46F7710 Technique No. 46F7710

Item Description TRANSITION WELDS

Project _____ Report no. _____



Weld identification PIER 18 SPAN 11 GIRDER 1 TF EAST

Material thickness SEE BELOW

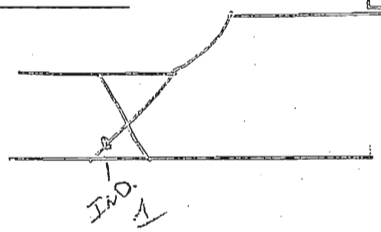
Weld joint AWS BUTT

Welding process N/A

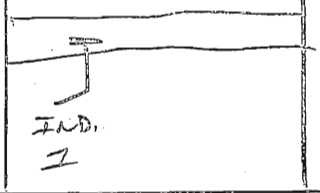
Quality requirements — section no. TENSION

Remarks _____

WELD GEOMETRY



PLAN VIEW



WELD LOCATION

weld number	Indication number	Transducer angle	From Face	Leg°	Decibels: Indication level a	Decibels: Reference level b	Decibels: Attenuation factor c	Decibels: Indication rating d	Discontinuity: Length	Discontinuity: Angular distance (sound path)	Discontinuity: Depth from "A" surface	Discontinuity: Distance From X	Discontinuity: Distance From Y	Discontinuity elevation	Remarks
	1	70	B	1	56	50	1	+5	3/4"	1.1"	.750"	-1/16"	20"	class A	REJECT
	2002		NO CHANGE SINCE LAST INSPECTION (1999) [signature]												
10/18/06			NO significant change since the last inspection [signature]												

U.T. Operator & Lab Location [signature] LFTT

U.T. Interpretation By & Lab Location [signature] 6046/6078 III

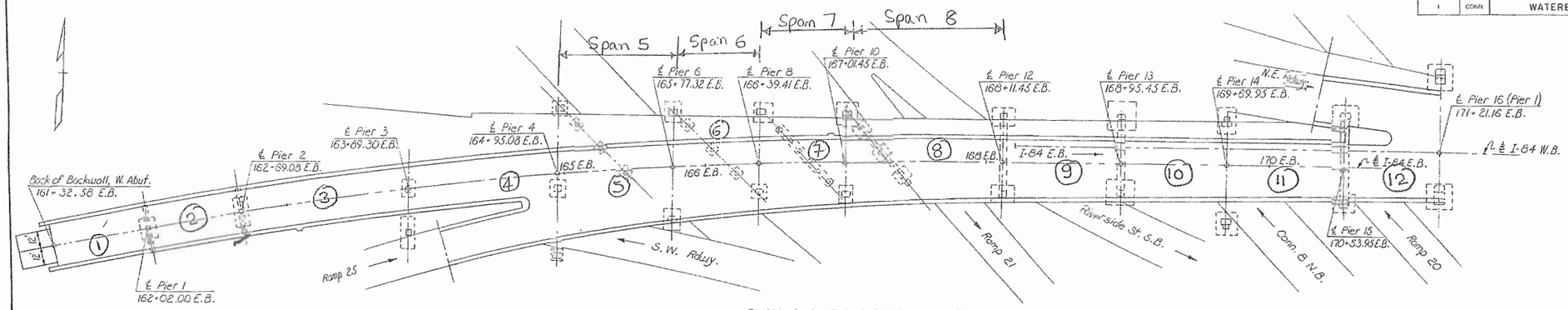
Date 3-17-99

APPENDIX C

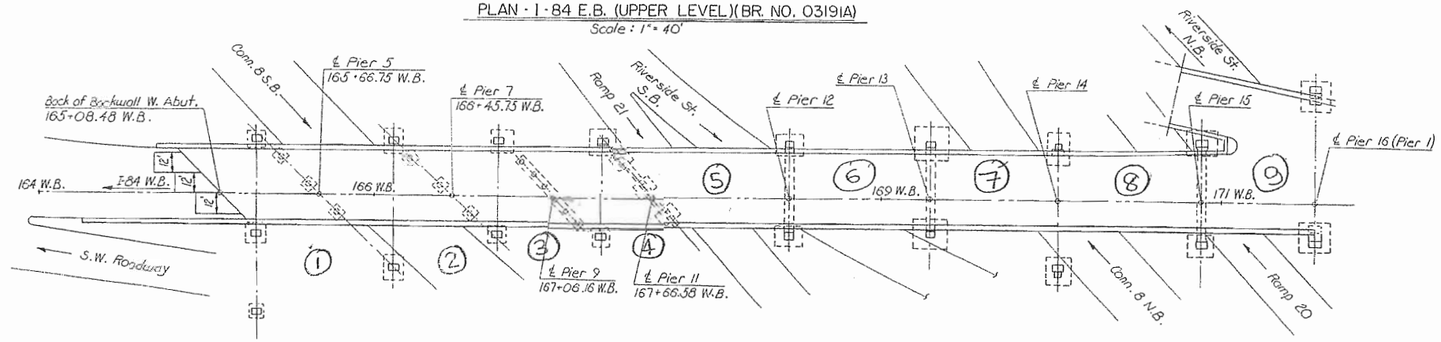
KEY PLAN

STATE OF CONNECTICUT - DEPT. OF TRANSPORTATION

FHWA REGION	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CONN.	WATERBURY		151-246	1994	I-84/8	53	131

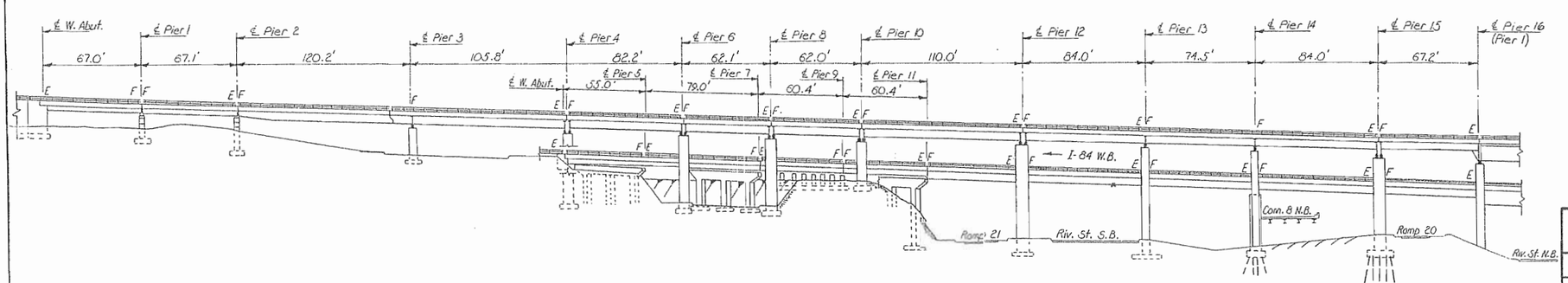


PLAN - I-84 E.B. (UPPER LEVEL)(BR. NO. 03191A)
Scale: 1" = 40'



PLAN - I-84 W.B. (LOWER LEVEL)(BR. NO. 03191B)
Scale: 1" = 40'

Seismic Retrofit Details	
Location	Str. Sht.
W. ABUT., PIERS 1 & 2 I-84 E.B.	12
PIERS 3 & 4 I-84 E.B.	13
W. ABUT. PIER 5, 7, 9 & 11 I-84 W.B.	14
PIERS 6, 8 & 10 I-84 E.B.	15
Pier 12	16
Pier 13	17
Pier 14	18
Pier 15	19
Pier 16	20



ELEVATION I-84 E.B. & W.B.
Scale: 1" = 40'

KEY PLAN - 03191A/B

SHEET 1 OF 6

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

NO.	DATE	DESCRIPTION

REVISIONS

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
WATERBURY

I - 84 - ROUTE 8
INTERCHANGE
SEISMIC RETROFIT

LOCATION PLAN I

ENGINEER BRIDGE DESIGN UNIT
DESIGNER J.M. DRAFTER R.G. CHECKER D.M.
APPROVED DATE 2/2/94
STRUCTURE NO. BRIDGE LOG NO. STRUCTURE SHEET NO. 2 of 77

LOCATION PLAN I

151-246/247

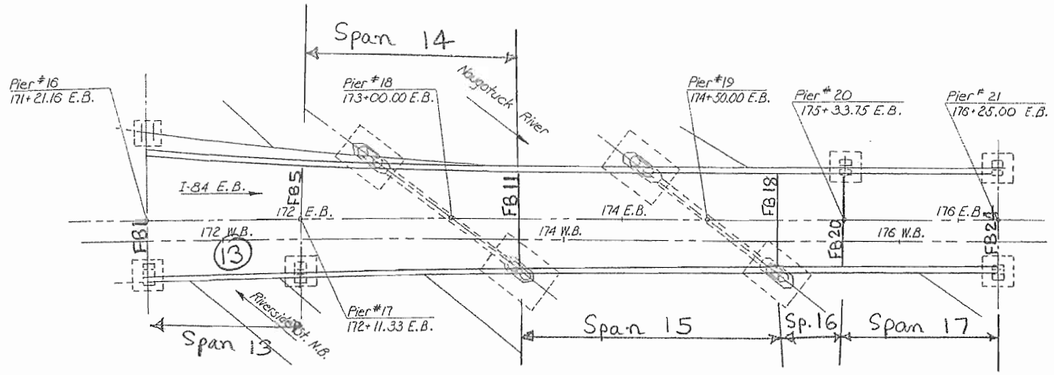
644-01

53

STATE OF CONNECTICUT - DEPT. OF TRANSPORTATION

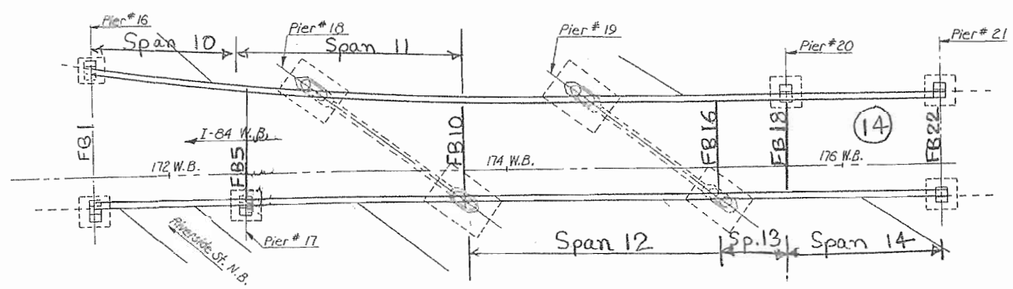
FORM NO. ENG. 15A ED. 1-68

F.H.W.A. REGION NO.	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CONN	WATERBURY		151-246	1994	I 84/8	54	131



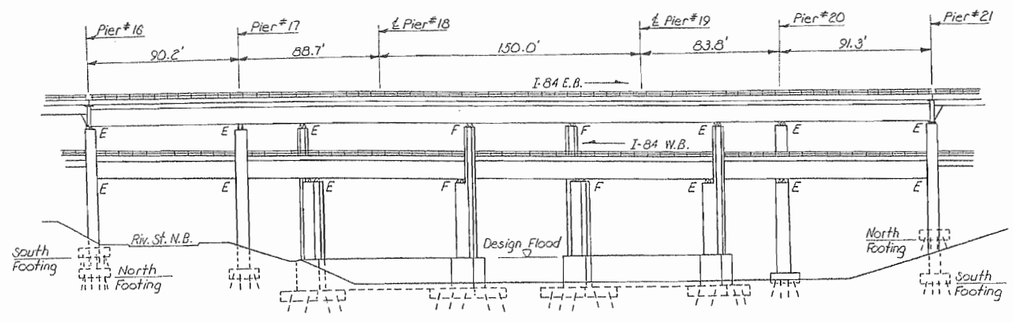
PLAN - I-84 E.B. (UPPER LEVEL)(BR. NO. 03191A)

Scale: 1" = 40'



PLAN - I-84 E.B. (LOWER LEVEL)(BR. NO. 03191B)

Scale: 1" = 40'



ELEVATION I-84 E.B & W.B.

Scale: 1" = 40'

Seismic Retrofit Details	
Location	Str. Sht.
Pier 16	20
Piers 17, 20	21
Pier 18	22
Pier 19	23
Pier. 21	24

KEY PLAN - 03191 A/B

SHEET 2 OF 6

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

NO.	DATE	DESCRIPTION

REVISIONS

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

WATERBURY

I - 84 - ROUTE 8

INTERCHANGE

SEISMIC RETROFIT

LOCATION PLAN 2

ENGINEER BRIDGE DESIGN UNIT

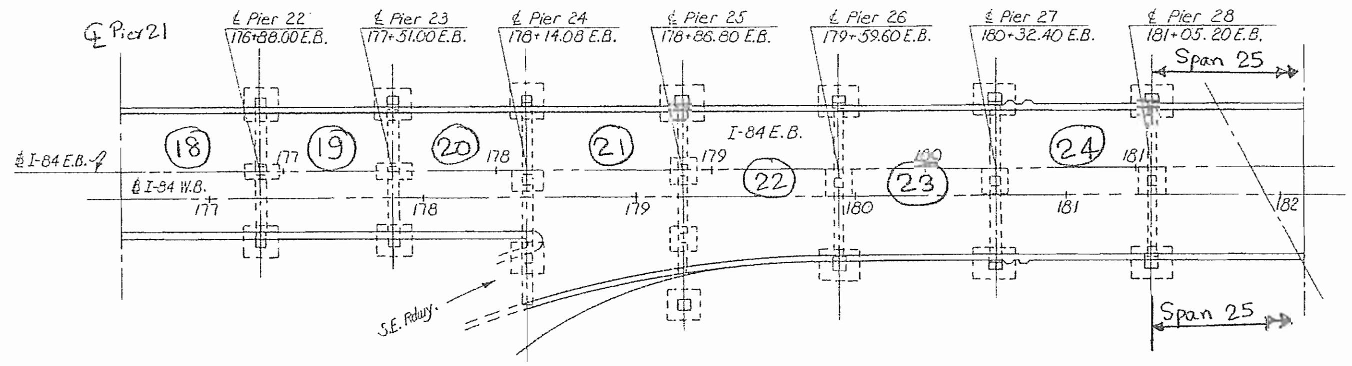
DESIGNER J.M. DRAFTER R.G. CHECKER D.M.

APPROVED DATE 3/2/94

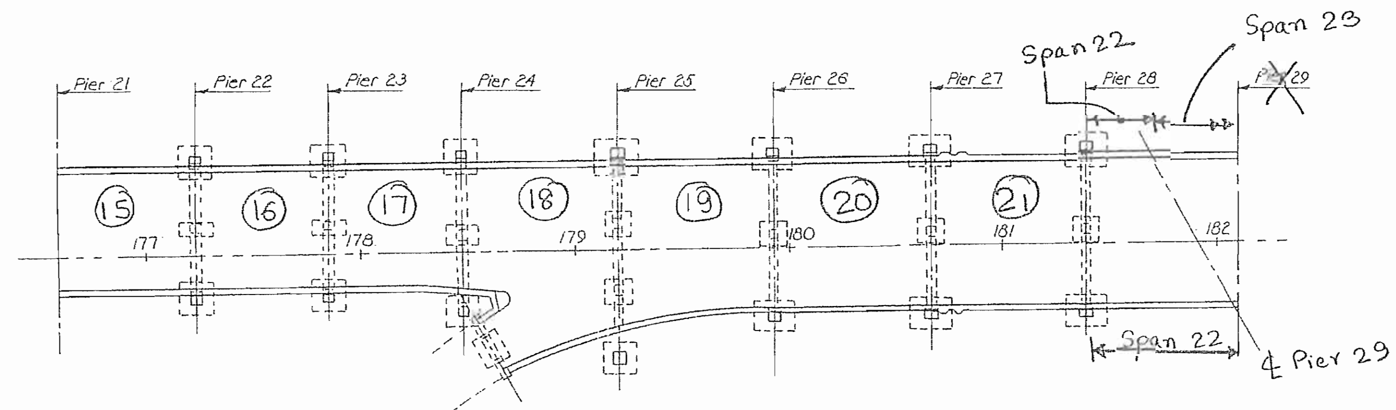
STRUCTURE NO. BRIDGE LOC NO. STRUCTURE SHEET NO. 3 OF 77

151-246/247

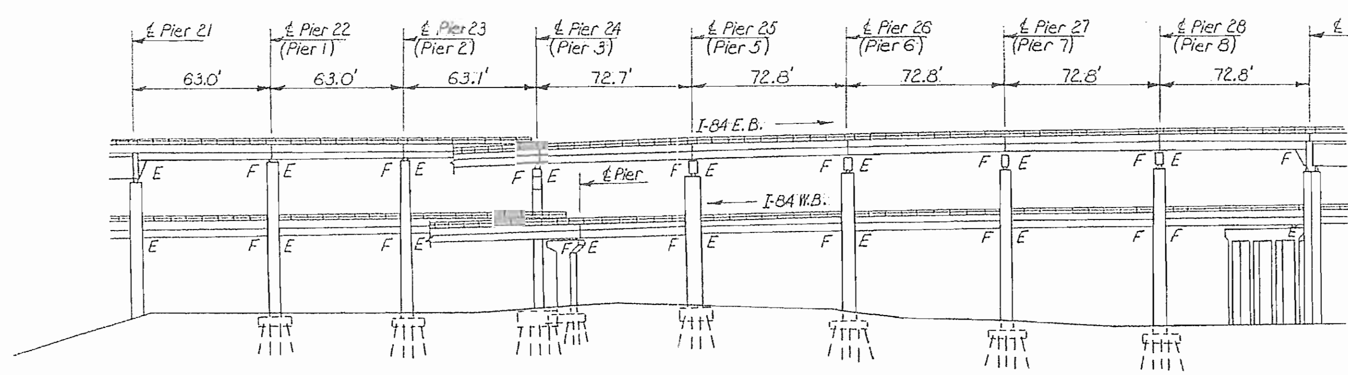
LOCATION PLAN 2



PLAN - I-84 E.B. (UPPER LEVEL)(BR. NO. 03191A)
Scale: 1"=40'



PLAN - I-84 W.B. (LOWER LEVEL)(BR. NO. 03191B)
Scale: 1"=40'



ELEVATION I-84 E.B. & W.B.
Scale: 1"=40'

Seismic Retrofit Details	
Location	Str. Sht.
Pier 21	24
Piers 22,23,24	25
Pier 25	26
Pier 26	27
Pier 27	28
Pier 28	29
Pier 29	30

KEY PLAN - 03191 A/B
SHEET 3 OF 6

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

NO.	DATE	DESCRIPTION

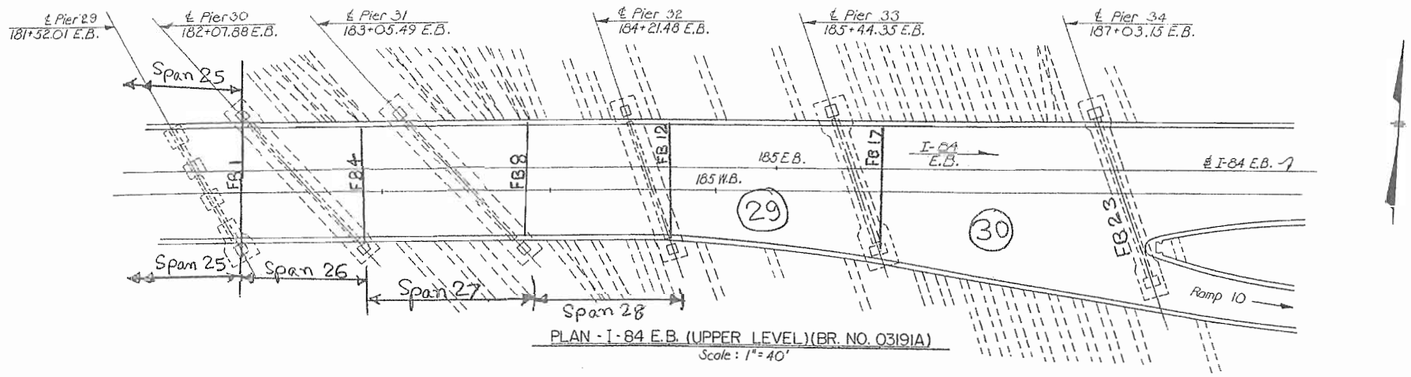
REVISIONS

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
WATERBURY
I - 84 - ROUTE 8
INTERCHANGE
SEISMIC RETROFIT
LOCATION PLAN 3

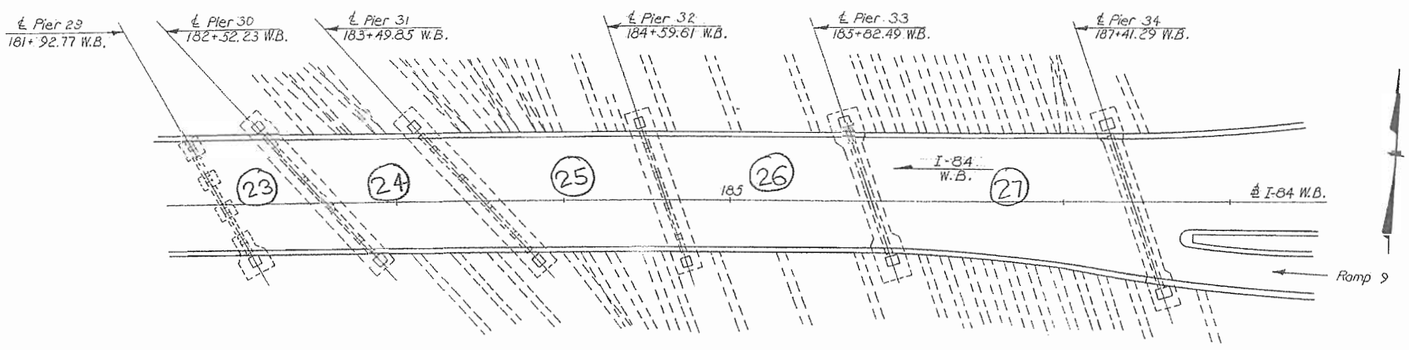
ENGINEER BRIDGE DESIGN UNIT
DESIGNER J.M. DRAFTER S.D. CHECKER D.M.
APPROVED DATE 2/2/94
STRUCTURE NO. BRIDGE LOG NO. STRUCTURE SHEET NO. 4 of 77

STATE OF CONNECTICUT · DEPT. OF TRANSPORTATION

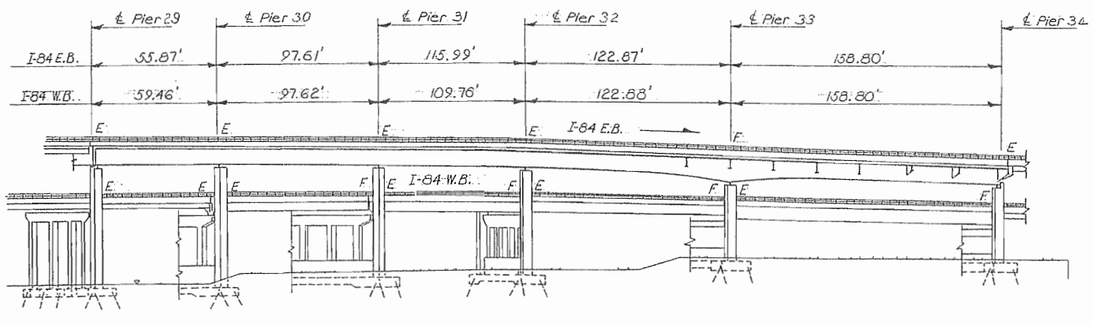
FHWA REGION NO.	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CONN	WATERBURY		151-246	1994	I-84/8	56	131



PLAN - I-84 E.B. (UPPER LEVEL) (BR. NO. 03191A)
Scale : 1" = 40'



PLAN - I-84 W.B. (LOWER LEVEL) (BR. NO. 03191B)
Scale : 1" = 40'



ELEVATION I-84 E.B. & W.B.
Scale : 1" = 40'

Seismic Retrofit Details	
Location	Str. Sht.
Pier 29	30
Pier 30	31
Pier 31	32
Pier 32	33
Pier 33	34
Pier 34	35

KEY PLAN - 03191 A/B
SHEET 4 OF 6

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

NO.	DATE	DESCRIPTION

REVISIONS

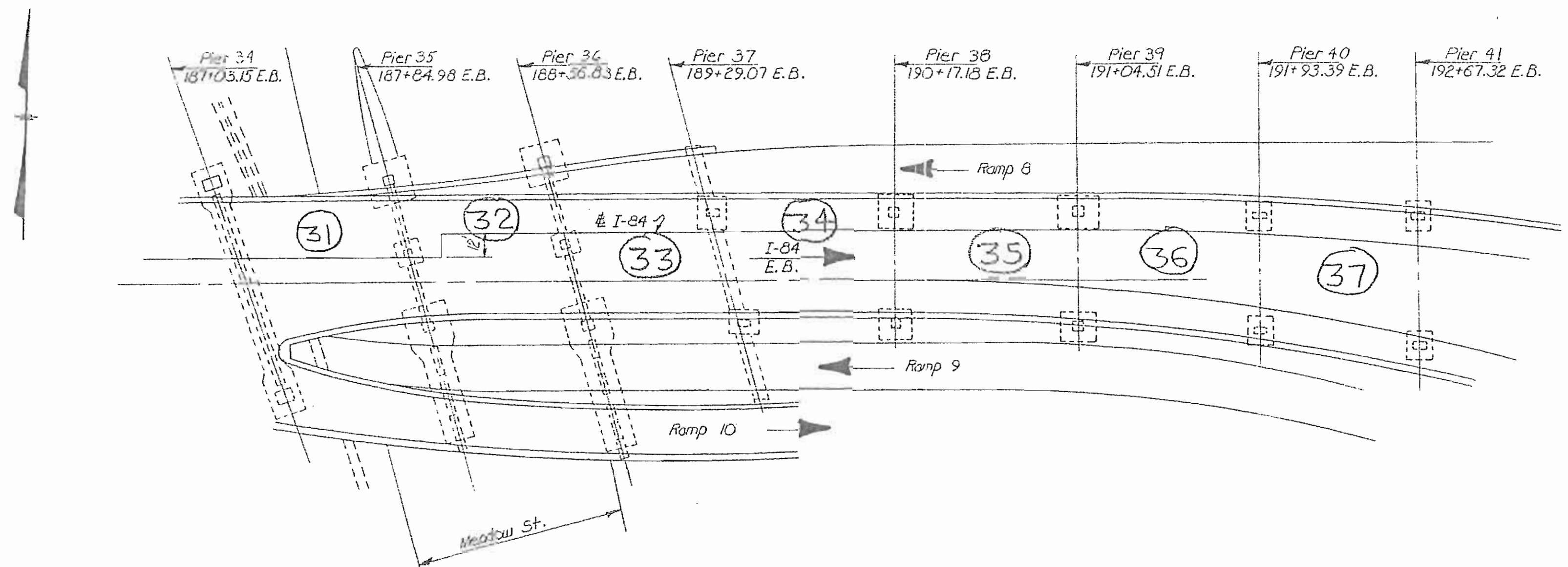
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

WATERBURY

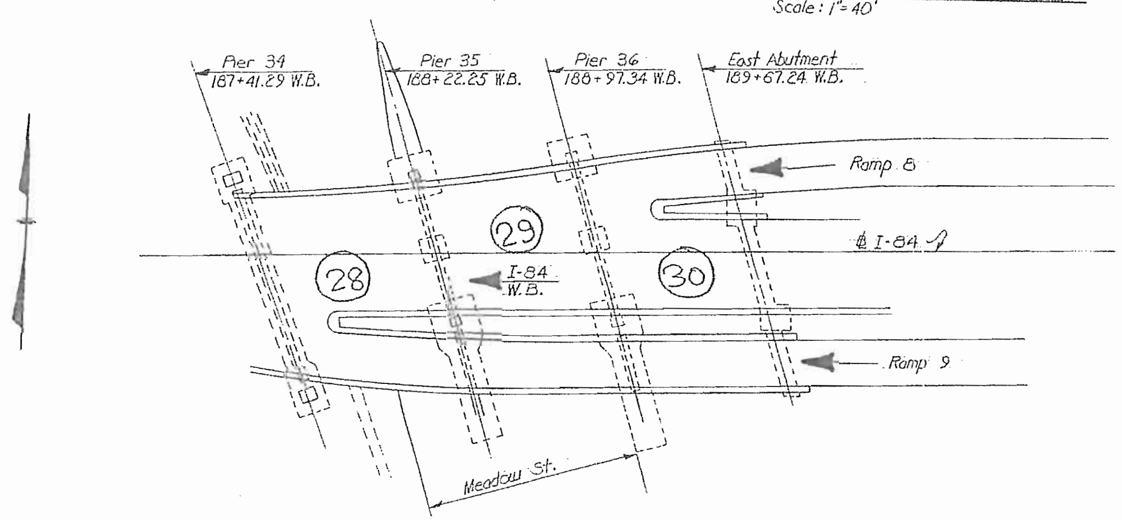
I 84 ROUTE 8
INTERCHANGE
SEISMIC RETROFIT

LOCATION PLAN 4

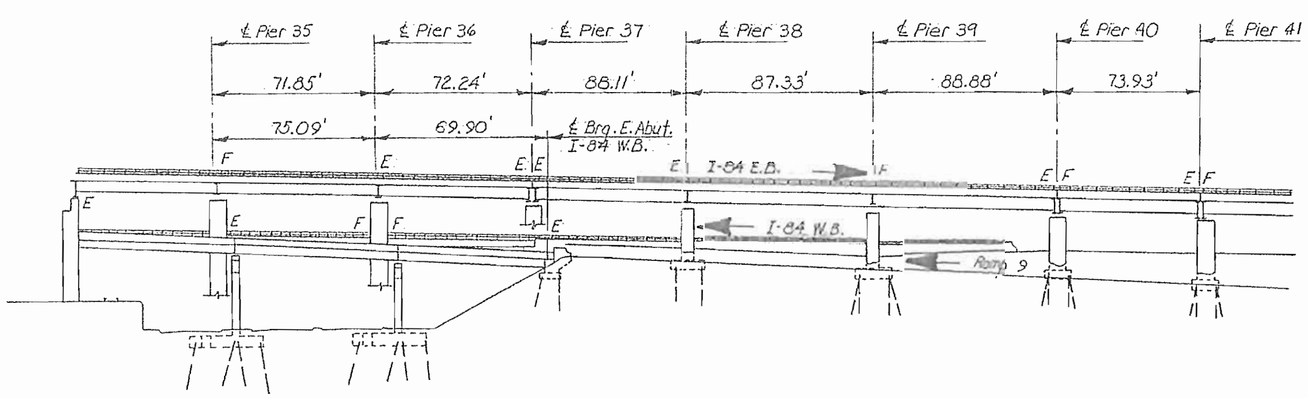
ENGINEER BRIDGE DESIGN UNIT
DESIGNER JM DRAFTER R.G. CHECKER DM.
APPROVED DATE 2/2/94
STRUCTURE NO. BRIDGE LOG NO. STRUCTURE SHEET NO. 5 OF 77



PLAN - I-84 E.B. (UPPER LEVEL)(BR. NO. 03191A)
Scale : 1"=40'



PLAN - I-84 W.B. (LOWER LEVEL)(BR. NO. 03191B)
Scale : 1"=40'



ELEVATION I-84 E.B. & W.B.
Scale : 1"=40'

Seismic Retrofit Details	
Location	Str. Sht.
Pier 34	35
Pier 35	36
Pier 36	37
Pier 37, WB Abut	38
Piers 38, 39	39
Piers 40, 41	40

KEY PLAN - 03191 A/B
SHEET 5 OF 6

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

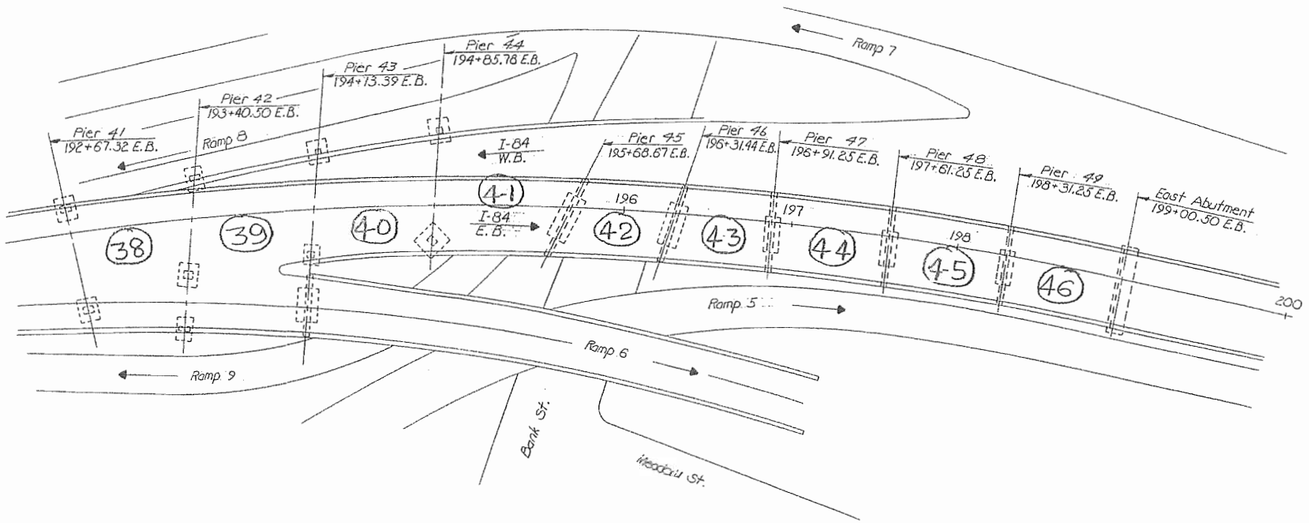
NO.	DATE	DESCRIPTION
REVISIONS		

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
WATERBURY
I - 84 - ROUTE 8
INTERCHANGE
SEISMIC RETROFIT
LOCATION PLAN 5

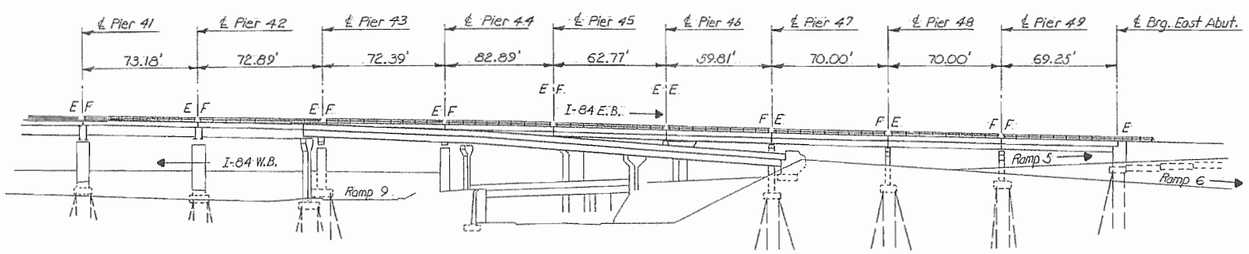
ENGINEER BRIDGE DESIGN UNIT
DESIGNER J.M. DRAFTER D.M. CHECKER D.M.
APPROVED DATE 2/2/94
STRUCTURE NO. SHEET NO. 6 of 77

STATE OF CONNECTICUT - DEPT. OF TRANSPORTATION

FHWA REGION NO.	STATE	TRANSV	FED AID PROJ NO.	PROJ NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CONN	WATERBURY		151-246	1994	I-84/8	58	131



PLAN - I-84 E.B. (UPPER LEVEL)(BR. NO. 03191A)
Scale: 1" = 40'-0"



ELEVATION I-84 E.B.
Scale: 1" = 40'-0"

Seismic Retrofit Details	
Location	Str. Sht.
East Abut, Piers 45-49	44
Pier 44	43
Pier 43	42
Pier 42	41
Pier 41	40

KEY PLAN - 03191 A/B

SHEET 6 OF 6

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

NO.	DATE	DESCRIPTION

REVISIONS

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
WATERBURY

I - 84 - ROUTE 8
INTERCHANGE
SEISMIC RETROFIT

LOCATION PLAN 6

ENGINEER BRIDGE DESIGN UNIT
DESIGNER JM DRAFTER RG. CHECKER DM
APPROVED DATE 2/2/94
STRUCTURE NO. BRIDGE LOG NO. STRUCTURE SHEET NO. 7 OF 77

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

MEMORANDUM

subject: **BMM No.**
Bridge No. 03191B
I-84 WB over Rte 8, Rte 8 Ramps 128 & 129, Naugatuck River, MNRR
Waterbury

date:

to: Mr. Robert P. Mongillo
Transportation Maintenance Administrator
Bureau of Engineering
and Highway Operations

from: Sandra A. Dumas
Transportation Supervising Engineer
Bridge Safety and Evaluation
Bureau of Engineering
and Highway Operations

Attached are two copies of our most recent inspection report for the subject structure. The following deficiencies were found:

1. Span 8 underside of deck has three hollow areas up to 2 feet x 1 foot at G5 and G6 along pier 14 located over Route 8 NB.
2. There are fully clogged scuppers in span 23, south side at pier 30 and span 29, north side at pier 36 and partially clogged scuppers in span 26, north side at pier 33 and span 27, north scupper at pier 34.
3. Broken/disconnected weeps in span 12 at G1 and FB13 and span 13 at G2 and FB16 drain onto superstructure elements. Span 12 weep at G2 and FB12 is located over the floorbeam and drains onto it.
4. Span 14, S8 at splice near FB20, one bolt in splice is sheared off.
5. Pier 15 cap, west elevation has a 3½-foot x 1½-foot hollow area located over Route 8 Ramp 128.
6. Compression seals at both abutments, pier 5, pier 9, and pier 34 are separated, loose, or sagging. There is active leakage through the joints at the west abutment and pier 9.
7. Sliding bearings are frozen at the following locations:
   -Span1 G4 and G7 at the west abutment
   -Span 4 G3 and G5 at pier 11
   -Span 18 G14 at pier 24
   -Span 22 G1, G4, and G10 at pier 29
   -Span 30 G1, G3, and G7 at the east abutment
8. The underside of deck has hollow areas and spalls with isolated section loss on exposed rebar at the following locations:
   - Span 9 between G5 and G6
   -Span 10 at random locations
   -Span 11 between S4 & S5 and FB5 & FB6
   -Span 13 at random locations
   -Span 14 between S4 & S5 and FB18 & FB19
   -Span 25 between G7 and G8
   -Span 28 at pier 34, south of G9

9. Downspout pipes are cracked/broken at the following locations:
   -Pier 18 at column 2 (lower elbow)
   -Pier 30 at column 1 (lower elbow) and column 4 (upper and lower elbows)
   -Pier 32 at column 1 (lower elbow)
10. Concrete headers at piers 35 & 36 and east abutment have random spalls up to 2 feet x 4 inches x up to full depth.
11. Span 8 elastomeric bearings at pier 15, G4 southwest bolt and G5 northwest and northeast bolts between sole plate and pad top plate are missing.
12. Fascia girders have random areas of rust with section loss up to 20 feet long x 6 inches wide x 9/16 inches remaining (¼ inch loss).
13. Cross girder at pier 16, seismic retrofit at G3 is missing a cotter pin on the connection bolt and the nut can be turned by hand.

14. This item supersedes BMM 03-445 items 3, 4, and 5. There are random cracked tack welds throughout the structure. There are cracks in welds between girder bottom flanges and sole plates. See attached crack schedule for size and location.
15. Pier caps and columns throughout have spalls and hollow areas up to 11½ feet x 2 feet x 4 inches deep with up to 1/16-inch section loss on exposed rebar. Pier 29 cap has approximately 25% deterioration (spalls and hollow areas) over the entire surface. Pier 9, column 7 has a 21-inch x 9-inch x 6-inch spall that undermines the girder bearing masonry plate 1½ inches x ¼-inch.
16. Pedestals have corner spalls up to 12 inches x 6 inches x 4 inches with no undermining of bearings at the following locations:
    -Span 8, G4 at pier 15
    -Span 9, G12 at pier 15
    -Span 18, G6 at pier 25
    -Span 19, G2, G6, and G7 at pier 25
    -Span 19, G3 at pier 26
    -Span 22, G9 at pier 29
    -Span 24, G4 at pier 30
    -Span 25, G7 at pier 31

Please direct persons under your jurisdiction to:

1. Remove the hollow areas (4 SF).
2. Clear the fully and partially clogged scuppers (4 EA).
3. Replace, repair, or extend the broken/disconnected weeps (15 LF).
4. Replace broken splice bolt with 7/8-inch diameter high strength bolt (1 EA).
5. Remove the hollow area (5 SF).
6. Repair the seals (150 LF).
7. Replace frozen sliding bearings with elastomeric type expansion bearings (11 EA).
8. Remove deteriorated concrete and repair spalled and hollow areas in the underside of deck (1 CY).
9. Repair the damaged downspouts (15 LF).

10. Clean and patch spalls in concrete headers (3 CF).
11. Replace missing bolts in elastomeric bearings with ¾-inch diameter high strength bolts (3 EA).
12. Spot clean and paint areas of rust and deterioration on superstructure (2,000 SF).
13. Replace missing cotter pin (1 EA).
14. Grind out cracked tack welds (6 EA) and reweld the cracked welds between girder bottom flanges and sole plates (4 EA).
15. Remove deteriorated concrete and repair spalled and hollow areas in piers (3 CY).
16. Remove deteriorated concrete in pedestals and repair (¼ CY).

Items 1-5 above should be considered Priority C, items 6 & 7 above should be considered Priority D, and all other items above should be considered Priority E. There may be other deficiencies which are considered routine maintenance and should be corrected.

All repairs shall be performed utilizing appropriate, approved materials and tried and proven methods unless otherwise specified.

If you have any questions concerning this matter, please contact me at (860) 594-2072. Please notify this office when the work has been completed.

Attachments

Paul D. Goodwin/pdg

cc: Joseph J. Obara
Robert P. Zaffetti – Sandra A. Dumas – Karen M. Riemer
HAKS Engineers – Garg Consulting Services, Inc.
Team

FIELD NOTES

FIELD NOTES	PROJ. NO. 170-2357	BRIDGE NO. 3191B
	DATE 9/25/06	SHEET 4 OF 4
PREPARED BY: Garg Consulting Services, Inc. ENGINEERS • CONSULTANTS • CONSTRUCTION MANAGERS	CREW PG, SW	

CRACK SCHEDULE

SPAN	MEMBER	DESCRIPTION	LENGTH
6	G4	G4 @ P13 SOLE PL TO BOT FLG WELD CRACKED @ SOUTH SIDE	FL (10")
6	G4	G4 @ P13 SOLE PL TO BOT FLG WELD CRACKED @ NORTH SIDE	3 1/2"
12	S4	S4 @ FB 13 SOUTHWEST TACK WELD BTWN BRG PL & TOP OF FLBM IS CRACKED	FL
13	FB 16	FB 16 E. SIDE @ S5 WELD BTWN BOTTOM OF STIFFENER & FB 16 WEB IS CRACKED	1"
13	G1	G1, EAST OF FB 17 BOLTED SPLICE S. SIDE. 3 TACK WELDS ALONG WEB SPLICE PL CRACKED FULL LENGTH	FL
13	G2	G2 @ FB 17 TOP OF WEB HAS 2 CRACKS W/ STOP HOLES DRILLED. NO PROPAGATION	3/4", 1"
14	FB 22	FB22 @ G2 TACK WELD BTWN BOT OF FLBM BOLSTER & HORIZ GUSSET PL CRACKED THRU. (EAST SIDE)	3 1/2"
14	FB 22	FB 22 @ G2 TACK WELD BTWN BOT OF FLBM BOLSTER & HORIZ GUSSET PL CRACKED THRU. (WEST SIDE)	12"
21	G2	G2 @ PIER 27 CRACK IN WELD BTWN BOT FLG & SOLE PL @ N. SIDE	4 1/2"
21	G4	G4 @ PIER 27 CRACK IN WELD BTWN BOT FLG & SOLE PL @ S. SIDE	8 1/2"
10	G1	BRG @ PIER 16, NW CORNER BOT FLG TO SOLE PL WELD CRACKED	6"
10 & 11	G2	BRG @ PIER 17, BOTH SOUTH KEEPER PLS BROKEN FREE & NE KEEPER PL E. WELD IS CRACKED DUE TO TACK RUST BTWN ROLLER & KEEPER	N/A

Revision	Date	Crew	Company	Revision	Date	Crew	Company
Revision	Date	Crew	Company	Revision	Date	Crew	Company

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

MEMORANDUM

subject: **BMM No. 06-413**
Bridge No. 03191B
I-84 WB over Rte 8, Naugatuck River,
Ramps, & Local Roads
Waterbury

date: October 30, 2006

to: Mr. Michael W. Lonergan
Acting Trans. Maintenance Administrator
Bureau of Engineering
and Highway Operations

from: Robert P. Zaffetti
Manager of Bridge Safety and Evaluation
Bureau of Engineering
and Highway Operations

This memorandum is a follow-up to a telephone conversation on October 19, 2006 between David Hiscox of your staff and Karen M. Riemer of Bridge Safety and Evaluation, concerning the following deficiency and recommendation for the subject structure:

1. Joint over Pier 29, a 5 feet section of the east concrete header in the left exit lane and the left shoulder (I-84 WB) is completely spalled/missing, resulting in a pothole up to 4 inches deep. See attached photos.

Please direct persons under your jurisdiction to:

1. Repair the concrete header. (3 CF)

This item is considered **Priority A**.

This inspection is currently in progress. **Maintenance forces responded and performed temporary repairs with a bituminous patch. Permanent repairs should be scheduled prior to the winter snow season.** Additional items may be forwarded with the final inspection report.

All repairs shall be performed utilizing appropriate, approved materials and tried and proven methods unless otherwise specified.

If you have any questions concerning this matter, please contact Sandra A. Dumas at (860) 594-2072. Please contact me when this work has been completed.

Laszlo L. Vers/llv

cc: Arthur W. Gruhn – Richard T. Jankovich
Michael W. Lonergan
Joseph J. Obara
Robert P. Zaffetti – Sandra A. Dumas – Karen M. Riemer
Joseph E. Chilstrom, FHWA
HAKS Engineers – Garg

Bridge No.	03191B	**Inspected by:**	Laszlo L. Vers
Town:	Waterbury	**Inspected by:**	Mahmood A. Mohammed
Feature Carried:	I-84 WB	**Date Inspected:**	10/19/06
Feature Crossed:	Rte 8, Naugatuck River, Ramps & Local Roads	**Project No.:**	170-2357

Photo # 1: Pier 29, 5' section of the east concrete header is completely spalled/missing, resulting in a pothole up to 4" deep.

Photo # 2: Maintenance forces performed temporary repairs with a bituminous patch.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

MEMORANDUM

subject: **BMM No. 06-440**
Bridge No. 03191B
I-84 WB over Rte 8, Naugatuck River,
Ramps, & Local Roads
Waterbury

date: October 30, 2006

to: Mr. Michael W. Lonergan
Acting Transportation Maintenance
Administrator
Bureau of Engineering
and Highway Operations

from: Sandra A. Dumas
Transportation Supervising Engineer
Bridge Safety and Evaluation
Bureau of Engineering
and Highway Operations

During our current inspection of the subject structure, the following deficiency was found:

1. Joint over pier 35, east concrete header in the left travel lane at the left wheel line has a spall that is 12" deep at the south end for 6" wide x 3" long. The remaining portion of the spall is 18" wide x 4" long but only 2" deep. The compression seal at this location is loose. See attached photos.

Please direct persons under your jurisdiction to:

1. Clean and patch the spalled area (1 CF) and reinstall the loose compression seal (6 LF).

This item is considered **Priority C.**

The inspection is still ongoing, but advance notice is being given prior to the start of the winter season. Additional items may be forwarded with copies of the approved inspection report.

All repairs shall be performed utilizing appropriate, approved materials and tried and proven methods unless otherwise specified.

If you have any questions concerning this matter, please contact me at (860) 594-2072. Please notify this office when the work has been completed.

Paul D. Goodwin/pdg/sad

cc: Joseph J. Obara
Robert P. Zaffetti – Sandra A. Dumas – Karen M. Riemer
HAKS Engineers – Garg
Team 5

Pier 28 (Bridge No. 3191A Pier 35), east header in left lane, left wheel line.
12" deep spall.

Pier 28 joint header spall.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

MEMORANDUM

subject: **BMM No. 06-431**
Bridge No. 03191B
I-84 WB over Rte 8, Naugatuck River, Ramps, and Local Roads
Waterbury

date: November 2, 2006

to: Michael W. Lonergan
Acting Transportation Maintenance Administrator
Bureau of Engineering
and Highway Operations

from: Robert P. Zaffetti
Manager of Bridge Safety and Evaluation
Bureau of Engineering
and Highway Operations

This memorandum is a follow-up to a telephone conversation on October 25, 2006 between Mary J. Mears of your staff and Sandra A. Dumas of Bridge Safety and Evaluation, concerning the following deficiency and recommendation for the subject structure:

1. Spans 7 and 8 haunches along cross girder and at girder ends at pier 14 have loose concrete at the following locations:
   -Span 7 between girders 3 and 4.
   -Span 8 between girders 4 & 5 and 5 & 6.

Please direct persons under your jurisdiction to:

1. Remove all loose concrete.

This item is considered **Priority A**.

This inspection is currently in progress. **Maintenance forces responded and removed all loose concrete on October 25, 2006.** Additional items may be forwarded with the final inspection report.

All repairs shall be performed utilizing appropriate, approved materials and tried and proven methods unless otherwise specified.

If you have any questions concerning this matter, please contact Sandra A. Dumas at (860) 594-2072. Please contact me when this work has been completed.

Paul D. Goodwin/pdg

cc: Arthur W. Gruhn – Richard T. Jankovich
James H. Norman
Joseph J. Obara
Robert P. Zaffetti – Sandra A. Dumas – Karen M. Riemer
Joseph E. Chilstrom, FHWA
HAKS Engineers – Garg

CONNECTICUT DEPARTMENT OF TRANSPORTATION
FRACTURE CRITICAL MEMBERS/FATIGUE PRONE DETAILS
INSPECTION DATA SHEET

Form BRI12, Rev 9/97

Bridge No: 03191B

Year Built: 1967

Fracture Critical Inspection Date: 09/25/06

FC Insp Freq: 24 Months **FC Type Code:** J

Town: Waterbury

ADT: 37,350 Year of ADT: 2005

Facility Carried: I-84 Westbound

Structure Type: 403 % Truck: 14

Feature Intersected: Route 8, Naugatuck River, MNRR

Access Equipment Needed: 45' Lift, 80' Manlift, 75' Snooper

Traffic Control Required: I-84 WB, Rte 8 NB & SB, and local road lane closures. MNRR flagman over RR.

Reference to Plans: Project 151-91

MEMBER/DETAIL TYPE # A

Member/Detail Type: One girder system

[X] Fracture Critical

Fatigue Category: B Steel Type: A-36

[ ] Fatigue Prone

Description: Welded plate cross girders at piers 14, 16 & 21.

Inspection Procedure: 100% hands on.

MEMBER/DETAIL TYPE # A

Member/Detail Type: Two girder system

[X] Fracture Critical

Fatigue Category: B Steel Type: A-36

[ ] Fatigue Prone

Description: Girders in GFS system in spans 10-14.

Inspection Procedure: 100% hands on.

CONNECTICUT DEPARTMENT OF TRANSPORTATION
FRACTURE CRITICAL MEMBERS/FATIGUE PRONE DETAILS
INSPECTION DATA SHEET

Form BRI12, Rev 9/97

MEMBER/DETAIL TYPE # O

Member/Detail Type: Super/sub integral framing details

[X] Fracture Critical

Fatigue Category: B

Steel Type: A-36

[ ] Fatigue Prone

Description: Floorbeams in GFS system in spans 10-14.

Inspection Procedure: 100% hands on.

MEMBER/DETAIL TYPE # M

Member/Detail Type: Partial length welded cover plates

[ ] Fracture Critical

Fatigue Category: E'

Steel Type: A-36

[X] Fatigue Prone

Description: Girder bottom flange partial length welded cover plates in spans 1-4, 15-23, 29 & 30.

Inspection Procedure: 100% hands on.

MEMBER/DETAIL TYPE # H

Member/Detail Type: Highly fatigue prone detail in tension zone

[ ] Fracture Critical

Fatigue Category: E

Steel Type: A-36

[X] Fatigue Prone

Description: Span 2, G2 & G6 seismic retrofit bolts go through cover plate longitudinal welds, severing each weld at four locations along the length.

Inspection Procedure: 100% hands on.

MEMBER/DETAIL TYPE #

Member/Detail Type:

[ ] Fracture Critical

Fatigue Category:

Steel Type:

[ ] Fatigue Prone

Description:

Inspection Procedure:

Bridge Number **03191B**

Inspected By: P. GOODWIN & S. WATROUS

Sufficiency Rating 55.49

Previous Inspection Date 9/13/2004

BS&E Received ☐ Data Entry By:

Copies Made ☐ Data Entry Date:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BRIDGE SAFETY & EVALUATION

STRUCTURE EVALUATION

SHEET 1 OF 2 FORM BRI-19 REV 10/00

SHEET_____ OF_____ (INSP. REPORT)

90) Inspection Date	Inspection Team	91) Frequency	Class
09 25 06	25 25	24	03

Indepth Insp	Deck Survey	Access	Flagman
11/5/1996 9/25/06	1/11/07	38 3 8	1 0 1

CRITICAL FEATURE INSPECTIONS

	Type	Frequency	Team	Date	
Fracture:	J J	24 2 4	20 2 5	9/13/2004	9/25/06
Uwater:					
Special:					

RED FLAG ☐

IDENTIFICATION

Bridge Name

Town Name WATERBURY Town Code 80070

5) Inventory Route:

A) Record Type 1 ☐ D) Route Number 00084

B) Signing Prefix 1 Interstate High ☐ E) Directional Suffix 4 West ☐

C) Level of Service 1 Mainline ☐

6) Feature Intersected RTE 8, NAUGATUCK RIVER

7) Facility Carried INTERSTATE-84 WB

9) Location WATERBURY LOWER LEVEL

11) Milepoint 32.09 Miles

16) Latitude 41 deg 33 min 6.00 sec deg min sec

17) Longitude 73 deg 3 min 12.00 sec deg min sec

98) Border Bridge:

A) State Code B) Percent Responsibility %

C) Border Town Name

99) Border Bridge Structure No

STRUCTURE TYPE AND MATERIAL

43) Structure Type, Main:

A) Material 4 Steel continuous ☐ B) Design Type 3 Girder and Floorbea

44) Structure Type, Approach:

A) Material 3 Steel ☐ B) Design Type 2 Stringer/Multi-beam

45) Number of Spans, Main Unit 5

46) Number of Approach Spans 25

107) Deck Structure Type 1 Concrete Cast-in-Place

108) Wearing Surface/Protective System:

A) Type of Wearing Surface 6 Bituminous

B) Type of Membrane 2 Preformed Fabric

C) Type of Deck Protection 0 None

AGE AND SERVICE

27) Year Built 1967 106) Year Reconstructed 1991

42) Type of Service:

A) On 6 Overpass structure ☐ B) Under 8 HIGHWAY-WATE ☐

28) Number of Lanes:

A) On 3 B) Under 13 16

29) Average Daily Traffic 69400 63250 Half ADT?: Yes Y

109) Percent Truck 14 %

30) Year of ADT 2003 2005

19) Bypass, Detour Length 1 miles

GEOMETRIC DATA

48) Length of Max Span 156 ft

49) Structure Length 2461 ft

50) Curb or Sidewalk Widths:

A) Left 1.5 ft B) Right 1.5 ft

51) Brg Rdwy width,curb-curb 42.0 ft

52) Deck Width, Out-Out 47.5 ft

32) Approach Roadway Width 42 ft

33) Bridge Median 0 No Median

Deck Area 158050 sqft 154873 sq

34) Skew Angle 99 deg

35) Structure Flared 1

10)Inv. Rte. Min. Vert Clearance 18 ft 6 in ft in

47) Log Inv. Rte. Total Horiz Clr.: 42.0 ft 0.0 ft

47) RLog Inv. Rte. Total Horiz. Clr.: 42 ft ft

53) Min Vert Clearance Over Bridge 16 ft 10 in ft in

54) Min Vert Under Clearance H Ref 17 ft 0 in H Ref 16 ft 06 in

55) Min Lat Under Clearance on Right H Ref 2.5 ft H Ref 1.0 ft

56) Min Lat Under Clearance on Left 1.3 ft ft

BRIDGE COMMENTS

~~9/9/02~~ - ITEM 29: MAX ADT ON BRIDGE IS GIVEN. ~~ITEM 47: ONE WAY ROADWAY THEREFORE NO REVERSE LOG.~~

ITEM (47) - INV. RTE CARRIED IS ONE-WAY ROADWAY IN REV. LOG DIRECTION, THEREFORE RLOG ITEM CODED ONLY.

ITEM (54) - MEASURED TO SEISMIC RETROFIT

STRUCTURE EVALUATION

SHEET 2 OF 2 FORM BRI-19 REV 10/00

SHEET_____ OF_____ (INSP. REPORT

Bridge Number	03191B	NBIS Length	
Town Name	WATERBURY	Yes	2461
Facility Carried	INTERSTATE-84 WB		
Feature Crossed	RTE 8, NAUGATUCK RIVER		

Inspected By: P. GOODWIN & S. WATROUS

CLASSIFICATION

112) NBIS Bridge Length	Yes	
104) Highway System	1	On System
26) Functional Class	11	Urban Principal Arterial - Interstate
100) Defense Highway	2	Defense Highway over/under another
101) Parallel Structure	N	No parallel structure exists
102) Direction of Traffic	1	1-way traffic
103) Temporary Structure		
110) Designated National Network	1	On national network
20) Toll	3	On Free Road
21) Maintain	1	State Highway Agency
22) Owner	1	State Highway Agency
Report Class	S	STATE
37) Historical Significance	5	Bridge is not eligible for National Register

WATERWAY

DrainageBasinCode	6900	
38) Navigation Control	0	No navigation control on waterway
39) Navigation Vert Clr.	0	40) Navigation Horiz Clr. 0
116) Vert-Lift Brg Nav Min		
111) Pier Abutment Protection		

PROPOSED IMPROVEMENTS

75A) Type of Work Proposed		Replacement - incidental widening
75B) Work Done By		Work done by contract
76) Length of Struct. Improvement		ft
94) Bridge Improvement Cost	$	
95) Roadway Improvement Cost	$	
96) Total Project Cost	$	
97) Year of Improvement Cost Est.		
114) Future ADT		115) Year Future ADT

List No. 04 Project No. Advertised

POSTED SIGNS & UTILITIES

Other Posted Signs 1	1	Speed Limit lower than the Inventory Route			
Other Posted Signs 2	3	Directional & Route information signs			
Actual P.L. Single Unit Truck	tons		Actual P.L. 4Axle Truck	tons	
Rec. P.L. Single Unit Truck	tons		Rec. P.L. 4Axle Truck	tons	
Actual P.L. Semi-TrailerTruck	tons		Actual P.L. 3S2 Truck	tons	
Rec. P.L. Semi-TrailerTruck	tons		Rec. P.L. 3S2 Truck	tons	
Rec. P.L. All Vehicles	tons		Actual P.L. All Vehicles	tons	
Posted Vert Clearance On Bridge	ft	in		ft	In
Posted Vert UnderClearance	ft	in		ft	In
Posted Speed Limit	45	mph			mph
Utility					

LOAD RATING AND POSTING

31) Design Load	5	Evaluation Code	L	
63) Operating Rating Type	1	Year of Evaluation	1999	
64) Operating Rating	62.0	70) Bridge Posting	5	
65) Inventory Rating Type	1	41) Structure Status	A	A
66) Inventory Rating	37.0	Open, no restriction		

CONDITION

	Rating	By
58) Deck	5	PDG
59) Superstructure	5	PDG
60) Substructure	5	PDG
61) Channel & Chan. Protection	6	PDG
62) Culverts	N	PDG

APPRAISALS

	Rating	By
67) Structure Evaluation	5	
68) Deck Geometry	4	PDG
69) Under Clear Vert & Horiz	3	PDG
71) Waterway Adequacy	9	PDG
72) Approach Rdwy Alignment	6	PDG
113) Scour Critical	8	

Items 58 Thru 72 Checked By:

36) Traffic Safety Features:

A) Bridge Railings	0
B) Transitions	1
C) Approach Guardrail	0
D) Approach Guardrail End	1

OTHER FEATURES

Fence Required	No		Barrel Ladder	No N
Fence Present	No	N	Stand Pipes	No Y
Fence Height	0.0 ft	ft	Cat Walks	No N
Fence Type	Solid Panel		Movable Inspection System	No N
Fence Material	Aluminum		Loose Concrete Checked?	Yes Y
Fence Top Type	Vertical			

INSPECTION COMMENTS

Proposed Next Indepth Insp Year 2006 2016

Senior consultant

Supervisor consultant

REVIEWED BY PE #18533 Date 4/20/07

BRIDGE NUMBER	TOWN NAME	NBIS BRG LGTH
03191B	WATERBURY	Yes 2461
FACILITY CARRIED	FEATURE CROSSED	
INTERSTATE-84 WB	RTE 8, NAUGATUCK RIVER	

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGE SAFETY EVALUATION

INVENTORY ROUTE UNDER STRUCTURE EVALUATION

FORM BRI-25 REV 10/00

INSPECTED BY: P. GOODWIN [signature]
S. WATROUS [signature]

REVIEWED BY: [signature] DATE: 4/20/07

SHEET_____ OF_____ (INSP. REPORT)

IDENTIFICATION

DESCRIPTION: ~~Rt 8 Main Lane~~ RTE 8

5) INVENTORY ROUTE:

A) RECORD TYPE	A		
B) ROUTE SIGNING PREFIX	3	State Highway	
C) DESIGNATED LEVEL OF SERVICE	1	Mainline	
D) ROUTE NO.	00008		
11) MILE POINT (INV.RTE)	30.23		

AGE & SERVICE

+ 28B) NUMBER OF INV.ROUTE LANES	4		
* 29) ADT (INV. RTE)	23000		25200
* 109) TRUCK ADT % (INV.RTE)	8		
* 30) YEAR OF ADT (INV. RTE)	2003		2005
* 41) INV ROUTE OPERATIONAL STATUS	A	Open, no restriction	A
19) BYPASS DETOUR LENGTH	1	Miles	

GEOMETRIC DATA

+ 10) INV. RTE. MIN. VERT. CLEARANCE	26 ft	2 in		ft	in
+ 47) LOG INV. RTE. TOTAL HORIZ CLR.	30.2 ft			29.8 ft	
+ 47) RLOG INV. RTE. TOTAL HORIZ CLR.	37.1 ft			39.0 ft	
+ LOG MIN VERT CLR OVER INV ROUTE	17 ft	in	16 ft	06 in	
+ RLOG MIN VERT CLR OVER INV ROUTE	25 ft	0 in		ft	in
+ 55) MIN LAT UNDERCLR ON RIGHT	H 6.8 ft		H	6.5 ft	
+ 56) MIN LAT UNDERCLR ON LEFT	7.3 ft			. ft	

CLASSIFICATION

26) INV. RTE. FUNCT CLASSIFICATION	12	Urban Principal Arterial -	
100) DEFENSE HIGHWAY DESIGNATION	1	Defense Highway	0
** 102) DIRECTION OF TRAFFIC	2	2-way traffic	
104) HIGHWAY SYSTEM OF INV. ROUTE	1	On System	
110) DESIGNATED NATIONAL NETWORK	1	On national network	

POSTED SIGNS

+ POSTED VERT. CLR UNDER BRIDGE ~~0~~ ft ~~0~~ in — — ft — — in

COMMENTS:
ITEM (53) LOG MEASURED TO SEISMIC RETROFIT

* FILL OUT ON EVERY INSPECTION 29, 109, 30, 41
\+ VERIFY EVERY INSPECTION 28B, 10, 47, 53, 55, 56 & POSTED VERT CLEARANCE UNDER THE BRIDGE
** MUST BE FILLED OUT OR VERIFIED ON THE FIRST INSPECTION MADE BASED ON THE NEW FHWA GUIDE 102

BRIDGE NUMBER	TOWN NAME	NBIS BRG LGTH	
03191B	WATERBURY	Yes	2461
FACILITY CARRIED	FEATURE CROSSED		
INTERSTATE-84 WB	RTE 8, NAUGATUCK RIVER		

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGE SAFETY EVALUATION

INVENTORY ROUTE UNDER STRUCTURE EVALUATION

FORM BRI-25 REV 10/00

INSPECTED BY: R. GOODWIN [illegible]
S. WATROUS [illegible]

REVIEWED BY: [illegible] DATE: 4/20/07

SHEET_____ OF_____ (INSP. REPORT)

IDENTIFICATION

DESCRIPTION: Rte 8 ramp 128, Rte 8 NB to Riverside St.

5) INVENTORY ROUTE:

A) RECORD TYPE	C		B
B) ROUTE SIGNING PREFIX	3	State Highway	
C) DESIGNATED LEVEL OF SERVICE	7	Ramp, Wye, Connector,	
D) ROUTE NO.	00008		
11) MILE POINT (INV.RTE)	30.23		

AGE & SERVICE

+ 28B) NUMBER OF INV.ROUTE LANES	1		
* 29) ADT (INV. RTE)	2000		
* 109) TRUCK ADT % (INV.RTE)	3		
* 30) YEAR OF ADT (INV. RTE)	1992		
* 41) INV ROUTE OPERATIONAL STATUS	A	Open, no restriction	A
19) BYPASS DETOUR LENGTH	1	Miles	

GEOMETRIC DATA

+ 10) INV. RTE. MIN. VERT. CLEARANCE	20 ft	4 in	20 ft	06 in
+ 47) LOG INV. RTE. TOTAL HORIZ CLR.	25.5 ft		30.1 ft	
+ 47) RLOG INV. RTE. TOTAL HORIZ CLR.	ft		. ft	
+ LOG MIN VERT CLR OVER INV ROUTE	19 ft	7 in	ft	in
+ RLOG MIN VERT CLR OVER INV ROUTE	ft	in	ft	in
+ 55) MIN LAT UNDERCLR ON RIGHT	H	10.3 ft	H 11.3 ft	
+ 56) MIN LAT UNDERCLR ON LEFT		5.8 ft	5.6 ft	

CLASSIFICATION

26) INV. RTE. FUNCT CLASSIFICATION	17	Urban Collector	
100) DEFENSE HIGHWAY DESIGNATION	0	Not Defense Highway	
** 102) DIRECTION OF TRAFFIC	1	1-way traffic	
104) HIGHWAY SYSTEM OF INV. ROUTE	1	On System	
110) DESIGNATED NATIONAL NETWORK	0	Not on national network	1

POSTED SIGNS

+ POSTED VERT. CLR UNDER BRIDGE ~~0~~ ft ~~0~~ in - - ft - - in

COMMENTS:

* FILL OUT ON EVERY INSPECTION 29, 109, 30, 41

\+ VERIFY EVERY INSPECTION 28B, 10, 47, 53, 55, 56 & POSTED VERT CLEARANCE UNDER THE BRIDGE

** MUST BE FILLED OUT OR VERIFIED ON THE FIRST INSPECTION MADE BASED ON THE NEW FHWA GUIDE 102

BRIDGE NUMBER	TOWN NAME	NBIS BRG LGTH	
03191B	WATERBURY	Yes	2461
FACILITY CARRIED	FEATURE CROSSED		
INTERSTATE-84 WB	RTE 8, NAUGATUCK RIVER		

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
DIVISION OF BRIDGE SAFETY EVALUATION

INVENTORY ROUTE UNDER STRUCTURE EVALUATION

FORM BRI-25 REV 10/00

INSPECTED BY: R. GOODWIN
S. WATKOUS

REVIEWED BY: DK Clauschen DATE: 4/20/07

SHEET_____ OF_____ (INSP. REPORT)

IDENTIFICATION

DESCRIPTION: RTE 8 RAMP 129 (RIVERSIDE ST TO RTE 8 SB)

5) INVENTORY ROUTE:

A) RECORD TYPE	D		C
B) ROUTE SIGNING PREFIX	3	State Highway	
C) DESIGNATED LEVEL OF SERVICE	7	Ramp, Wye, Connector,	
D) ROUTE NO.	00008		
11) MILE POINT (INV.RTE)	30.23		

AGE & SERVICE

+ 28B) NUMBER OF INV.ROUTE LANES	1		
* 29) ADT (INV. RTE)	2000		
* 109) TRUCK ADT % (INV.RTE)	3		
* 30) YEAR OF ADT (INV. RTE)	1992		
* 41) INV ROUTE OPERATIONAL STATUS	A	Open, no restriction	A
19) BYPASS DETOUR LENGTH	1	Miles	

GEOMETRIC DATA

+ 10) INV. RTE. MIN. VERT. CLEARANCE	27 ft 0 in		ft in
+ 47) LOG INV. RTE. TOTAL HORIZ CLR.	32 ft		0.0 ft
+ 47) RLOG INV. RTE. TOTAL HORIZ CLR.	32 ft		37.7 ft
+ LOG MIN VERT CLR OVER INV ROUTE	0 ft 0 in		ft in
+ RLOG MIN VERT CLR OVER INV ROUTE	27 ft in		ft in
+ 55) MIN LAT UNDERCLR ON RIGHT	H 8.2 ft	H	9.3 ft
+ 56) MIN LAT UNDERCLR ON LEFT	11.4 ft		9.7 ft

CLASSIFICATION

26) INV. RTE. FUNCT CLASSIFICATION	17	Urban Collector	
100) DEFENSE HIGHWAY DESIGNATION	0	Not Defense Highway	
** 102) DIRECTION OF TRAFFIC	1	1-way traffic	
104) HIGHWAY SYSTEM OF INV. ROUTE	1	On System	
110) DESIGNATED NATIONAL NETWORK	0	Not on national network	1

POSTED SIGNS

+ POSTED VERT. CLR UNDER BRIDGE ~~0~~ ft ~~0~~ in — — ft — — in

COMMENTS:

* FILL OUT ON EVERY INSPECTION 29, 109, 30, 41

\+ VERIFY EVERY INSPECTION 28B, 10, 47, 53, 55, 56 & POSTED VERT CLEARANCE UNDER THE BRIDGE

** MUST BE FILLED OUT OR VERIFIED ON THE FIRST INSPECTION MADE BASED ON THE NEW FHWA GUIDE 102

Structure Inventory and Appraisal Sheet (English Units)

Bridge Key: 03191B | Agency ID: 03191B | Sufficiency Rating: 39.0

IDENTIFICATION

State 1: 09 Connecticut | Struc Num 8: 03191B
Facility Carried 7: INTERSTATE-84 WB | Location 9: WATERBURY LOWER LEVEL
Rte.(On/Under)5A: Route On Structure | Rte. Signing Prefix 5B: 1 Interstate Hwy
Level of Service 5C: 1 Mainline | Rte. Number 5D: 00084
Directional Suffix 5E: 4 West | % Responsibility : 0
SHD District 2: 04 | County Code 3: New Haven
Place Code 4: WATERBURY | Mile Post 11: 32.096 mi
Feature Intersected 6: RTE 8, NAUGATUCK RIVER
Latitude 16: 41d 33' 06" | Longitude 17: 073d 03' 12"
Border Bridge Code 98: Not Applicable (P)
Border Bridge Number 99: NA

STRUCTURE TYPE AND MATERIALS

Number of Approach Spans 46: 25 | Number of Spans Main Unit 45: 5
Main Span Material/Design 43A/B:
4 Steel Continuous | 03 Girder-Floorbeam
Approach Span Material/Design 44A/B:
3 Steel | 02 Stringer/Girder
Deck Type 107: 1 Concrete-Cast-in-Place
Wearing Surface 108A: 6 Bituminous
Membrane 108B: 2 Preformed Fabric
Deck Protection 108C: None

AGE AND SERVICE

Year Built 27: 1967 | Year Reconstructed 106: 1991
Type of Service on 42A: 6 2d level interchg
Type of Service under 42B: 8 Hwy-waterway-RR
Lanes on 28A: 3 | Lanes Under 28B: 16 | Detour Length 19: 1.2 mi
ADT 29: 63,250 | Truck ADT 109: 14 % | Year of ADT 30: 2005

GEOMETRIC DATA

Length Max Span 48: 155.8 ft | Structure Length 49: 2,461.0 ft
Curb/Sdwlk Wdth L 50A: 1.6 ft | Curb/Sidewalk Width R 50B: 1.6 ft
Width Curb to Curb 51: 42.0 ft | Width Out to Out 52: 47.6 ft
Approach Roadway Width 32: (w/ shoulders) 42.0 ft | Median 33: 0 No median
Deck Area: 154,873. sq. ft
Skew 34: 99.00 ° | Structure Flared 35: 1 Yes, flared
Minimum Vertical Clearance Over Bridge 53: 16.8 ft
Minimum Vertical Underclearance Reference 54A: H Hwy beneath struct
Minimum Vertical Underclearance 54B: 16.5 ft
Minimum Lateral Underclearance Reference R 55A: H Hwy beneath struct
Minimum Lateral Undrclearance R 55: 1.0 ft
Minimum Lateral Undrclearance L 56: 1.3 ft

INSPECTION

Frequency 91: 24 months | Inspection Date 90: 9/25/2006 | Next Inspection: 09/25/2008
FC Frequency 92A: 24 months | FC Inspection Date 93A: 9/25/2006 | Next FC Inspection: 9/25/2008
UW Frequency 92B: NA | UW Inspection Date 93B: NA | Next UW Inspection: NA
SI Frequency 92C: NA | SI Date 93C: NA | Next SI: NA
Element Frequency: 24 months | Element Inspection Date: 09/25/2006 | Next Elem. Insp. Due: 09/25/2008

CLASSIFICATION

Defense Highway 100: 1 STRAHNET hwy | Parallel Structure 101: No || bridge exists
Direction of Traffic 102: 1 1-way traffic | Temporary Structure 103: Not Applicable (P)
Highway System 104: 1 On the NHS | NBIS Length 112: Long Enough
Toll Facility 20: 3 On free road | Functional Class 26: 11 Urban Interstate
Historical Significance 37: 5 Not eligible for NRHP
Owner 22: 1 State Highway Agency
Custodian 21: 1 State Highway Agency

CONDITION

Deck 58: 5 Fair | Super 59: 5 Fair | Sub 60: 5 Fair
Culvert 62: N N/A (NBI) | Channel/Channel Protection 61: 7 Minor Damage

LOAD RATING AND POSTING

Inventory Rating Method 65: 1 LF Load Factor | Operating Rating Method 63: 1 LF Load Factor
Inventory Rating 66: HS20.4 | Operating Rating 64: HS34.2
Design Load 31: 5 MS 18 (HS 20) | Posting 70: 5 At/Above Legal Loads
Posting status 41: A Open, no restriction

APPRAISAL

Bridge Rail 36A: 0 Substandard | Approach Rail 36C: 0 Substandard
Transition 36B: 1 Meets Standards | Approach Rail Ends 36D: 1 Meets Standards
Str. Evaluation 67: 4 | Deck Geometry 68: 4 Tolerable
Underclearance, Vertical and Horizontal 69: 3 Intolerable - Correct
Waterway Adequacy 71: 9 Above Desirable | Approach Alignment 72: 6 Equal Min Criteria
Scour Critical 113: 8 Stable Above Footing

PROPOSED IMPROVEMENTS

Bridge Cost 94: $ 1,000 | Type of Work 75: 38 Other Structural
Roadway Cost 95: $ 1,000 | Length of Improvment 76: 0.3 ft
Total Cost 96: $ 2,000 | Future ADT 114: 28,125
Year of Cost Estimate 97: 2000 | Year of Future ADT 115: 2019

NAVIGATION DATA

Navigation Control 38: 0 Permit Not Required
Vertical Clearance 39: 0.0 ft | Horizontal Clearance 40: 0.0 ft
Pier Protection 111: Unknown (NBI) | Lift Bridge Vertical Clearance 116:

ELEMENT CONDITION STATE DATA

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
0	14/3	P Conc Deck/AC Ovly	(SF)	154,873	0 %	0	0 %	0	100 %	154,873	0 %	0	0 %	0
0	107/3	Paint Stl Opn Girder	(LF)	17,652	96 %	17,007	1 %	120	2 %	302	1 %	223	0 %	0
0	113/3	Paint Stl Stringer	(LF)	3,283	100 %	3,277	0 %	0	0 %	6	0 %	0	0 %	0
0	152/3	Paint Stl Floor Beam	(LF)	1,295	95 %	1,234	0 %	6	0 %	0	4 %	55	0 %	0
0	205/3	R/Conc Column	(EA)	77	57 %	44	21 %	16	22 %	17	0 %	0	0 %	0
0	210/3	R/Conc Pier Wall	(LF)	692	78 %	537	16 %	114	6 %	41	0 %	0	0 %	0

Structure Inventory and Appraisal Sheet (English Units)

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
0	215/3	R/Conc Abutment	(LF)	129	92 %	119	6 %	8	2 %	2	0 %	0	0 %	0
0	234/3	R/Conc Cap	(LF)	1,574	78 %	1,222	18 %	282	4 %	70	0 %	0	0 %	0
0	300/3	Strip Seal Exp Joint	(LF)	283	98 %	276	2 %	7	0 %	0	0 %	0	0 %	0
0	301/3	Pourable Joint Seal	(LF)	197	100 %	197	0 %	0	0 %	0	0 %	0	0 %	0
0	302/3	Compressn Joint Seal	(LF)	1,188	76 %	898	24 %	290	0 %	0	0 %	0	0 %	0
0	310/3	Elastomeric Bearing	(EA)	87	99 %	86	1 %	1	0 %	0	0 %	0	0 %	0
0	311/3	Moveable Bearing	(EA)	130	58 %	76	15 %	20	26 %	34	0 %	0	0 %	0
0	313/3	Fixed Bearing	(EA)	186	94 %	174	6 %	12	0 %	0	0 %	0	0 %	0
0	314/3	Pot Bearing	(EA)	9	100 %	9	0 %	0	0 %	0	0 %	0	0 %	0
0	321/3	R/Conc Approach Slab	(EA)	2	100 %	2	0 %	0	0 %	0	0 %	0	0 %	0
0	331/3	Conc Bridge Railing	(LF)	4,920	99 %	4,876	1 %	44	0 %	0	0 %	0	0 %	0
0	359/3	Soffit Smart Flag	(EA)	1	0 %	0	0 %	0	100 %	1	0 %	0	0 %	0
0	370/3	deck drainage system	(LF)	824	98 %	810	1 %	6	1 %	8	0 %	0	0 %	0
0	371/3	Free Fall Pipes, Scu	(EA)	24	83 %	20	8 %	2	8 %	2	0 %	0	0 %	0