

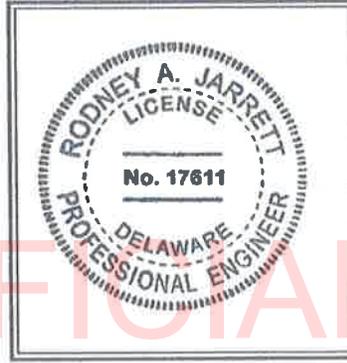
THE STATE OF DELAWARE  
DEPARTMENT OF TRANSPORTATION  
Signature Sheet

Contract No.: T201707005

F.A.P. No.: EBHOS-2018(36)  
P3E No.: 17-07005

Title: Statewide Movable Bridge Preventative Maintenance  
Location: Bridges 1-687, 1-688, 1-693, 2-021A, 3-151, 3-153, 3-154, 3-164  
County: Statewide

PREPARED BY



  
AECOM Project Manager  
Date: 08/31/2018

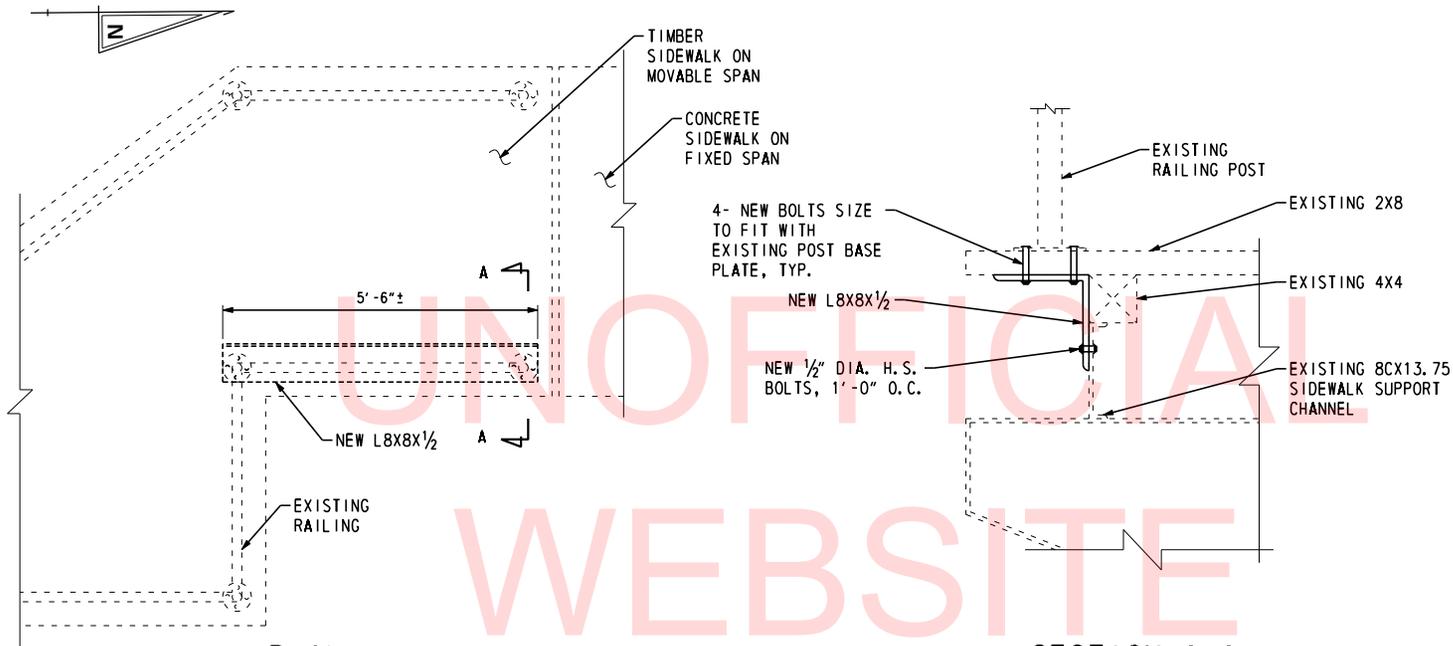
  
Hardesty & Hanover Project Manager  
Date: 08-28-2018

APPROVED for ADVERTISEMENT

  
Director, Maintenance & Operations  
Date: 9/4/2018

Bridge 2-021A

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WEBSITE  
COPY



**PLAN**

NORTH END OF THE BASCULE SPAN SIDEWALK  
SCALE: NTS

**SECTION A-A**

SCALE: NTS



NEW L8X8X1/2 TO CONNECT TO EXISTING DECKING AND SUPPORTING CHANNEL AT THE NORTH END OF THE BASCULE SIDEWALK

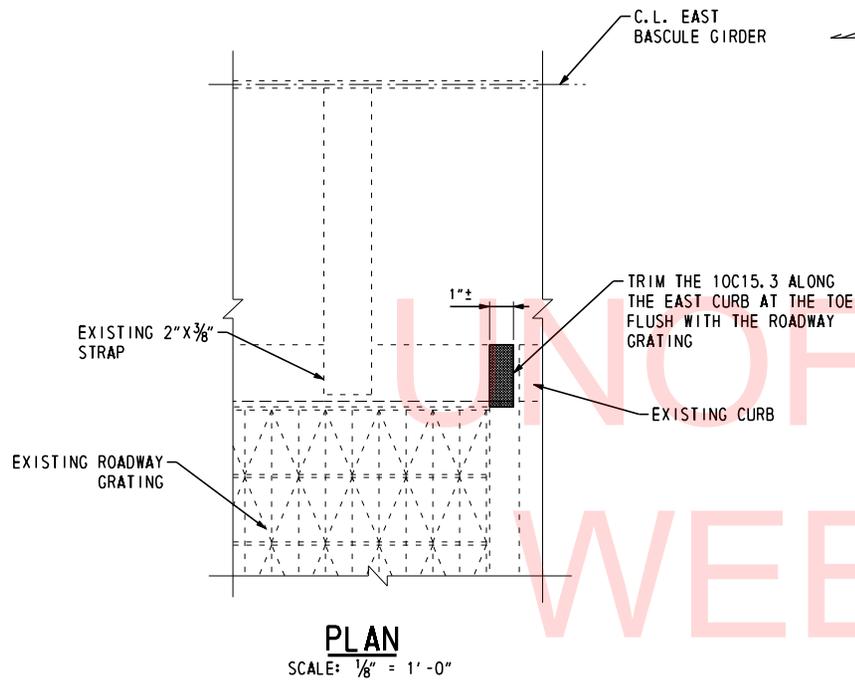
**EXISTING POST CONNECTION TO SIDEWALK**

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**NOTES:**

1. ALL WORK INVOLVING STRENGTHENING THE SIDEWALK POST CONNECTION SHALL BE PERFORMED IN ACCORDANCE WITH SPECIAL PROVISION 615619 - INITIAL REPAIRS AT BRIDGE 2-021A. PAID UNDER "615619 - INITIAL REPAIRS AT BRIDGE 2-021A."
2. NEW ANGLE AND BOLTS TO BE PAINTED TO MATCH EXISTING STEEL.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR S1	



LOCATION OF  
HANDRAIL  
INTERFERENCE

LOCATION OF  
CHANNEL  
INTERFERENCE



**LOCATION OF INTERFERENCES  
AT EAST BASCULE GIRDER TOE JOINT**  
LOOKING SOUTHEAST

TRIM THE 10C15.3 BACK  
FLUSH WITH ROADWAY  
GRATING



**CHANNEL INTERFERENCE AT TOE JOINT**

**NOTES:**

1. ALL WORK INVOLVING TRIMMING THE CURB CHANNEL SHALL BE PERFORMED IN ACCORDANCE WITH SPECIAL PROVISION 615619 - INITIAL REPAIRS AT BRIDGE 2-021A. PAID UNDER "615619 - INITIAL REPAIRS AT BRIDGE 2-021A."
2. GRIND SMOOTH ANY ROUGH AREAS ON THE 10C15.3 AFTER TRIMMING IS COMPLETE.
3. APPLY TOUCH UP PAINT TO REPAIRED AREA. PAINT TO MATCH EXISTING.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR S2 (1 OF 2)	



CUT EXISTING CAP COVER FROM HANDRAIL. CONTRACTOR TO FURNISH AND INSTALL NEW WELDABLE UNTHREADED PIPE CAP COVER IN PLACE. CONTRACTOR TO PROVIDE 1" GAP BETWEEN THE EXISTING HANDRAIL AND THE REPAIRED HANDRAIL.

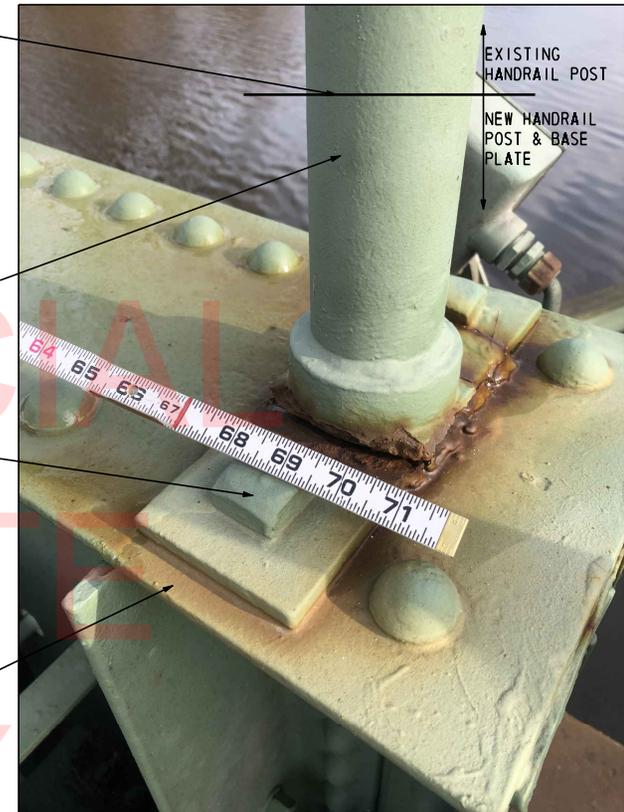
CUT EXISTING POST 1'-0" FROM TOP FLANGE. FURNISH NEW 2" DIA. PIPE WITH NEW ATTACHMENT PLATE WELDED TO BOTTOM OF PIPE USING 1/4" FILLET WELD.

REMOVE EXISTING BOLTS (2) AND PLATE FROM TOP FLANGE OF BASCULE GIRDER. CLEAN AREA USING MECHANICAL MEANS. FURNISH NEW ATTACHMENT PLATE TO MATCH EXISTING SIZE. NEW BOLTS TO BE SIZED TO FIT EXISTING HOLES.

EAST BASCULE GIRDER

EAST BASCULE GIRDER

**EAST SIDE HANDRAIL INTERFERENCE AT TOE JOINT**



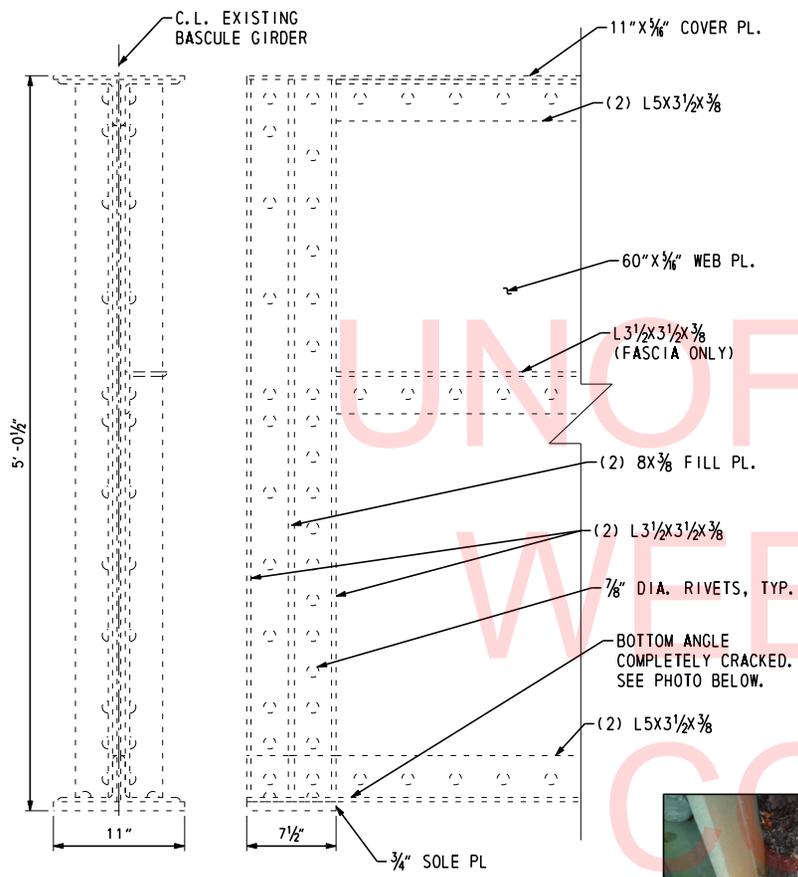
EXISTING HANDRAIL POST  
NEW HANDRAIL POST & BASE PLATE

**EAST SIDE HANDRAIL POST DETACHMENT AT THE TOE JOINT**

**NOTES:**

1. ALL WORK INVOLVING REPAIRS TO THE HANDRAIL AND HANDRAIL POST SHALL BE PERFORMED IN ACCORDANCE WITH SPECIAL PROVISION 615619 - INITIAL REPAIRS AT BRIDGE 2-021A. PAID UNDER "615619 - INITIAL REPAIRS AT BRIDGE 2-021A."
2. NEW PIPE CAP COVER TO BE PAINTED TO MATCH EXISTING COLOR. APPLY TOUCH UP PAINT AS NEEDED ON ADJACENT CAP COVER TO MATCH EXISTING.
3. CLEANING OF THE HANDRAIL POST SHALL BE IN ACCORDANCE WITH SSPC-SP3 SPECIFICATIONS.
4. ALL WELDING SHALL BE DONE WITH E70 ELECTORDE.
5. APPLY TOUCH UP PAINT TO REPAIRED POST AREA UPON COMPLETION. PAINT TO MATCH EXISTING COLOR.
6. ALTERNATIVELY, CONTRACTOR MAY REPLACE ENTIRE HANDRAIL POST AND BASE PLATE. NEW POST SHALL BE EQUAL TO AND COMPATIBLE WITH THE EXISTING SYSTEM. HANDRAIL SHALL BE PAINTED TO MATCH EXISTING COLOR.

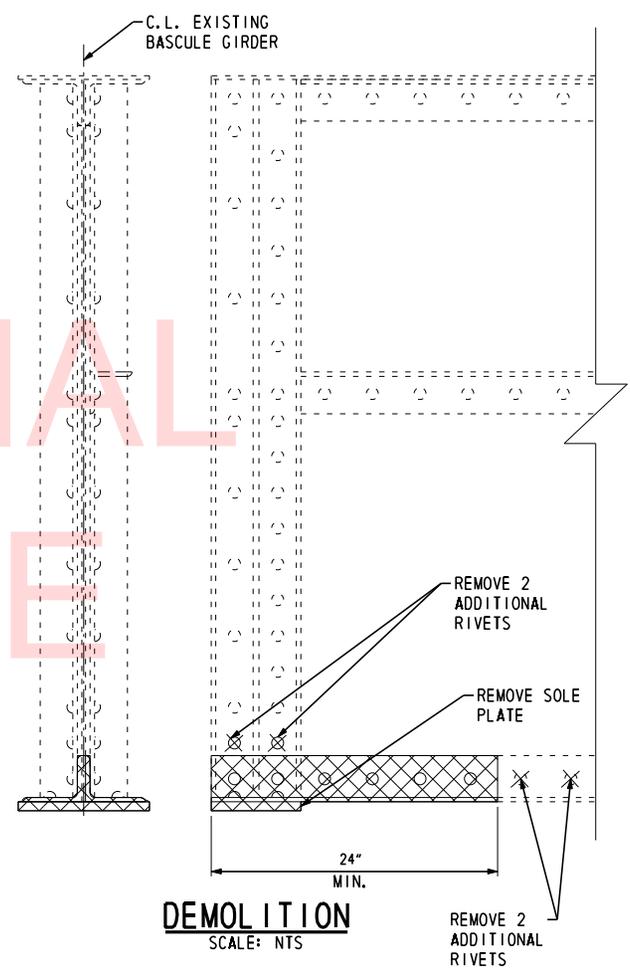
T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR S2 (2 OF 2)	



**EXISTING BASCULE GIRDER**  
 TOE SECTION OF THE EAST BASCULE  
 GIRDER SHOWN, WEST BASCULE GIRDER SIMILAR  
 SCALE: NTS



**CRACK IN BOTTOM FLANGE OF EAST  
 BASCULE GIRDER AT LIVE LOAD BEARING  
 (TYP.)**

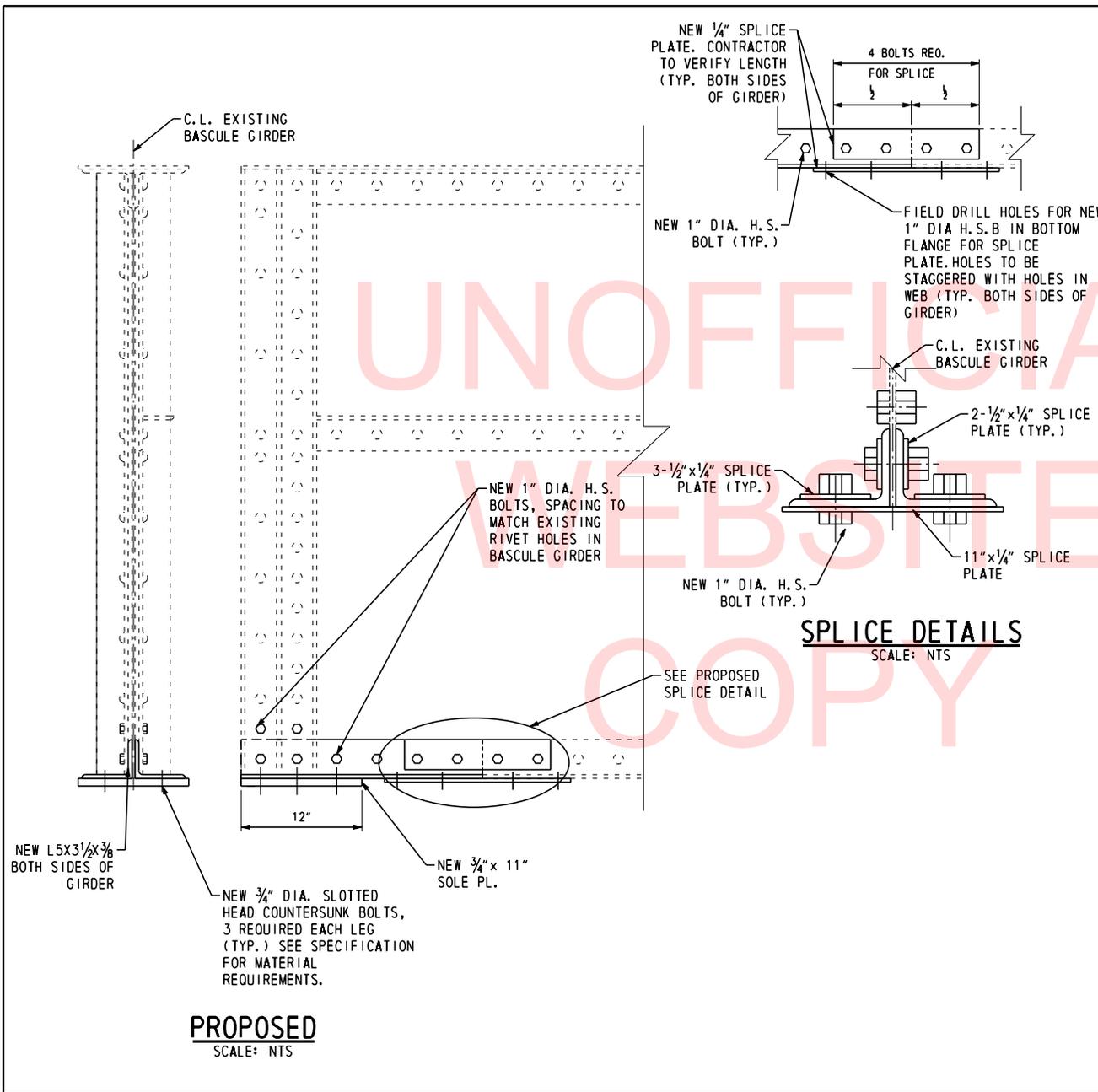


**DEMOLITION**  
 SCALE: NTS

**NOTES:**

1. SEE SHEET 2 FOR PROPOSED REPAIR DETAILS AND NOTES.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR S3 (1 OF 3)	



**NOTES:**

1. ALL WORK INVOLVING MODIFICATIONS TO THE EAST AND WEST BASCULE GIRDER SHALL BE PERFORMED IN ACCORDANCE WITH SPECIAL PROVISION 615619 - INITIAL REPAIRS AT BRIDGE 2-021A. PAID UNDER "615619 - INITIAL REPAIRS AT BRIDGE 2-021A."
2. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ADJUST LIMITS OF REMOVAL AS NECESSARY IN ORDER TO COVER THE LIMITS OF THE CRACK AS WELL AS ANY DEFORMATION IN THE ANGLE.
3. REMOVAL OF EXISTING RIVETS IS TO BE PERFORMED BY MECHANICAL METHODS. BURNING, ARC-GOUGING OR OXYGEN LACING METHODS ARE PROHIBITED.
4. CONTRACTOR SHALL MAINTAIN STRUCTURAL INTEGRITY OF THE BASCULE GIRDER DURING RIVET REMOVAL AND SHALL EXHIBIT EXTREME CAUTION WHILE REMOVING THE EXISTING ANGLES AS TO NOT DAMAGE THE BASCULE GIRDER WHICH REMAINS.
5. ALL NEW STEEL SHALL BE PAINTED TO MATCH THE EXISTING STEEL.
6. THE BRIDGE MUST BE CLOSED AT NIGHT FOR THE GIRDER DEMO AND REPAIR INSTALLATION. THE BRIDGE CLOSURE SHALL BE COORDINATED WITH DELDOT. REFER TO SPECIAL PROVISIONS FOR ADDITION BRIDGE CLOSURE REQUIREMENTS.
7. AFTER REMOVING THE EXISTING BOTTOM FLANGE ANGLES, THE EXISTING STEEL SHALL BE BLAST CLEANED AND PAINTED TO MATCH THE EXISTING STEEL.
8. WHEN INSTALLING NEW L5X3 $\frac{1}{2}$ X $\frac{3}{8}$  ANGLES, CONTRACTOR MAY TEMPORARILY SHIM THE VERTICAL ANGLES TO HELP SLIDE NEW ANGLE BACK INTO PLACE.
9. CONTRACTOR SHALL ENSURE THE NEW SOLE PLATE BEARS EQUALLY ON THE HORIZONTAL ANGLE LEGS PRIOR TO BOLTING.
10. THE PROPOSED SLOTTED HEAD COUNTERSUNK BOLTS SHALL HAVE A MINIMUM EDGE DISTANCE OF 1- $\frac{3}{4}$ " AND A MINIMUM SPACING OF 3".

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR S3 (2 OF 3)	



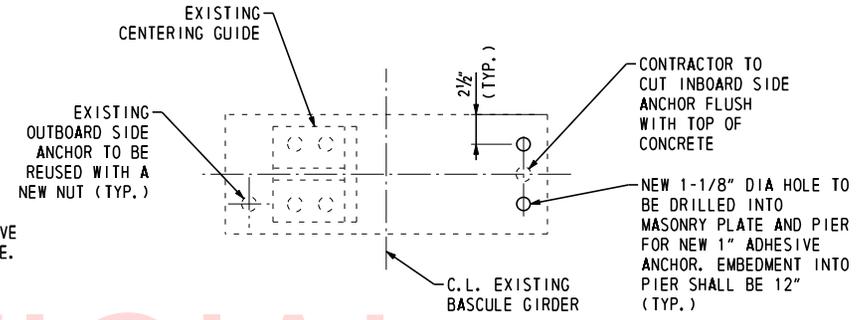
**WEST LIVE LOAD BEARING MASONRY PLATE**

EAST LIVE LOAD BEARING SIMILAR  
NOTE: BASCULE LEAF IN THE RAISED POSITION AND NOT SHOWN IN PHOTO

SOUTH APPROACH SPAN ROADWAY

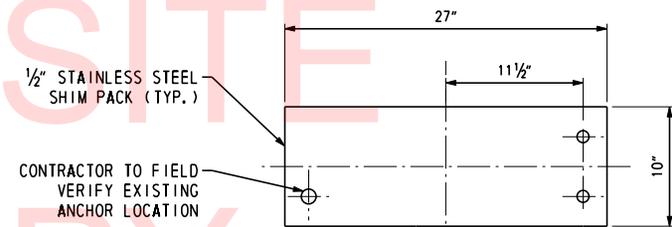
- FULLY SEATED LIMIT SWITCH TARGET (WEST L.L. BEARING LOCATION ONLY. SEE NOTE 5)
- EXISTING CENTERING GUIDE
- MISSING ANCHOR BOLT IN LIVE LOAD BEARING MASONRY PLATE. TWO NEW 1" DIA. ADHESIVE ANCHORS TO BE INSTALLED

— REST PIER



**EXISTING LIVE LOAD BEARING MASONRY PLATE WITH NEW ANCHOR LOCATIONS**

WEST LIVE LOAD BEARING SHOWING, EAST SIMILAR  
SCALE: NTS



**LIVE LOAD BEARING SHIM DETAIL**

SCALE: NTS

QTY: 2 SHIM PACKS

MATERIAL: ASTM A240 TYPE 316 STAINLESS STEEL

EACH SHIM PACK SHALL BE COMPRISED OF SHIMS OF THE FOLLOWING THICKNESS: 1 x 1/2", 1 x 1/4", 1 x 1/8", 1 x 1/16", 1 x 1/32", AND 2 x 1/64"

**NOTES:**

1. ALL WORK INVOLVING MODIFICATIONS TO THE EAST AND WEST BASCULE GIRDER SHALL BE PERFORMED IN ACCORDANCE WITH SPECIAL PROVISION 615619 - INITIAL REPAIRS AT BRIDGE 2-021A. PAID UNDER "615619 - INITIAL REPAIRS AT BRIDGE 2-021A."
2. CONTRACTOR TO FIELD VERIFY EXISTING ANCHOR LOCATIONS. NEW ADHESIVE ANCHORS TO BE INSTALLED ON THE INBOARD SIDE ONLY FOR BOTH EAST AND WEST LIVE LOAD BEARING MASONRY PLATES.
3. ADHESIVE ANCHORS SHALL BE HILTI HAS-R STAINLESS STEEL ANCHOR USED WITH HILTI HIT-HY ADHESIVE. THE STAINLESS STEEL SHALL CONFORM TO ASTM F593 GRADE 316 SPECIFICATIONS.
4. SHIM THE LIVE LOAD BEARINGS AS NEEDED TO ALIGN THE TOE JOINTS WHEN BOTH SOLE PLATES ARE IN HARD CONTACT WITH THE MASONRY PLATES. CONTRACTOR TO MAINTAIN EXISTING GAP BETWEEN THE CENTERING GUIDE AND SOLE PLATE FOR BOTH GIRDERS. REFER TO "COMMON PROVISIONS FOR MECHANICAL WORK" FOR SHIM REQUIREMENTS.
5. ADJUST FULLY SEATED LIMIT SWITCH AND/OR F.S. LIMIT SWITCH TARGET POSITIONING AS NEEDED FOR PROPER INDICATION WHEN THE TOE JOINTS ARE ALIGNED AND THE L.L. BEARINGS ARE IN HARD CONTACT.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR S3 (3 OF 3)	



REPLACE 1/2" DIA. CHECK VALVE (SEE NOTES 3 & 4)

REPLACE 1/2" DIA. NEEDLE VALVE (SEE NOTES 3 & 4)

INSTALL TEMPORARY BALANCE MATERIAL WHILE AIR BUFFER IS REMOVED. SEE SPECIAL PROVISIONS FOR DETAILS.

FB3

### AIR BUFFER ASSEMBLY - FRONT ELEVATION

NOTE: AIR BUFFER SHOWN WITH THE LEAF PARTIALLY RAISED

### NOTES:

1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615619 "INITIAL REPAIRS AT BRIDGE 2-021A."
2. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
3. NEW CHECK VALVE AND NEEDLE VALVE SHALL BE SUITABLE FOR SUSTAINING FOR AIR PRESSURES OF 1000 PSI AND 800°F FOR SHORT INTERVALS. NEW NEEDLE AND CHECK VALVES SHALL BE BRASS OR STAINLESS STEEL.
4. FURNISH AND INSTALL ALL FITTINGS, ADAPTERS, ETC. AS NEEDED FOR CONNECT NEW VALVES TO THE AIR BUFFER HOUSING.
5. NEW PISTON RINGS SHALL BE CAST IRON. THE CONTRACTOR SHALL VERIFY THE QUANTITY, DIMENSIONS, AND TYPE OF THE EXISTING PISTON RINGS PRIOR TO ORDERING NEW PISTON RINGS. PISTON RINGS WITH CUSTOM DIMENSIONS MAY BE REQUIRED, DEPENDING UPON THE FINAL DIMENSIONS OF THE AIR BUFFER HOUSING BORE AFTER PLATING.
6. AFTER REASSEMBLY OF THE AIR BUFFER, THE CONTRACTOR SHALL VERIFY THAT THE PISTON ROD ASSEMBLY WILL LOWER UNDER ITS OWN WEIGHT WHEN THE NEEDLE VALVE IS MOSTLY OPEN. THE CONTRACTOR SHALL ALSO VERIFY THE AIR BUFFER BUILDS PRESSURE WHEN THE PISTON ROD IS PRESSED INTO THE HOUSING WHEN THE NEEDLE VALVE IS MOSTLY CLOSED.
7. ONLY THE SURFACES ON THE INSIDE OF THE BUFFER HOUSING SHALL BE PLATED. ALL OTHER SURFACES SHALL BE MASKED DURING THE APPLICATION OF THE PLATING MATERIAL.

### AIR BUFFER REHABILITATION SCOPE OF WORK

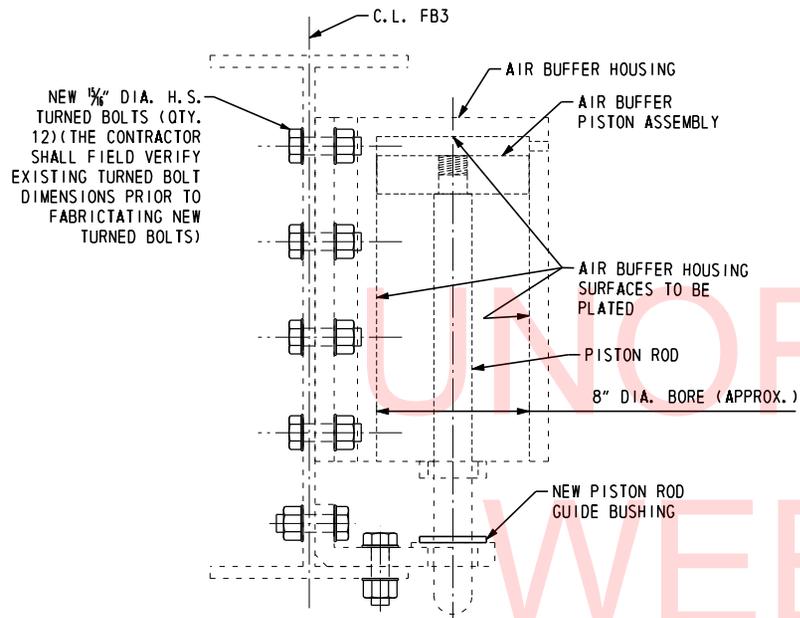
AT A MINIMUM, REHABILITATION OF THE AIR BUFFER SHALL INCLUDE THE FOLLOWING:

1. REMOVE AIR BUFFER AND INSTALL TEMPORARY BALANCE WEIGHT (SEE SPECIAL PROVISIONS FOR DETAILS).
2. DISASSEMBLE AIR BUFFER AND INSPECT COMPONENTS FOR WEAR AND DAMAGE. DETERMINE THE AMOUNT OF MATERIAL THAT MUST BE REMOVED FROM THE INSIDE SURFACE OF THE HOUSING AND NOTIFY THE ENGINEER.
3. AFTER RECEIVING APPROVAL FROM THE ENGINEER, HONE / MACHINE THE INSIDE SURFACE OF HOUSING TO REMOVE CORROSION, SCORING OR OTHER DAMAGE.
4. APPLY ELECTROLESS NICKEL PLATING TO THE INSIDE SURFACE OF HOUSING. HONE / POLISH THE INSIDE OF THE HOUSING IF NEEDED TO PROVIDE 0.001" TO 0.002" CLEARANCE BETWEEN THE HOUSING BORE AND THE PISTON RINGS AND SURFACE FINISH OF 32 MICROINCHES. THE FINAL PLATING THICKNESS AFTER HONING/POLISHING SHALL BE 0.0005" TO 0.001". (SEE NOTE 7)
5. FURNISH AND INSTALL NEW STEP CUT CAST IRON PISTON RINGS (SEE NOTE 5).
6. REPLACE NEEDLE VALVE AND CHECK VALVE (SEE NOTES 3 & 4).
7. POLISH THE PISTON ROD TO REMOVE CORROSION, SCORING, OR OTHER DAMAGE.
8. REPLACE PISTON ROD GUIDE BUSHING.
9. REASSEMBLE THE AIR BUFFER.
10. CLEAN AND PAINT AIR BUFFER. THE PAINT COLOR SHALL MATCH THE EXISTING STRUCTURAL STEEL PAINT. DO NOT PAINT AIR BUFFER PISTON ROD OR OTHER SLIDING SURFACES.
11. VERIFY OPERATION OF THE PISTON ROD ASSEMBLY IN THE SHOP (SEE NOTE 6).
12. REMOVE THE TEMPORARY BALANCE WEIGHT AND REINSTALL AIR BUFFER WITH NEW H.S. TURNED BOLTS.
13. TEST OPERATE THE AIR BUFFER AND ADJUST NEEDLE VALVE TO ALLOW THE BRIDGE TO SEAT GENTLY.

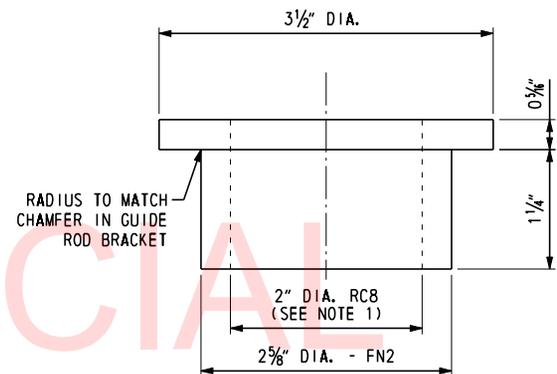
### REPAIR:

M1 REHABILITATE THE AIR BUFFER.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR M1 (1 OF 2)	



NEW 1/4" DIA. H. S. TURNED BOLTS (QTY. 12) (THE CONTRACTOR SHALL FIELD VERIFY EXISTING TURNED BOLT DIMENSIONS PRIOR TO FABRICATING NEW TURNED BOLTS)



**NEW AIR BUFFER PISTON ROD GUIDE BUSHING**

SCALE: NTS  
QTY: 1

MATERIAL: ASTM B-22 C91300 PHOSPHOR BRONZE  
NOTE: THE CONTRACTOR SHALL FIELD VERIFY ALL BUSHING DIMENSIONS PRIOR TO FINAL MACHINING THE BUSHING.

**AIR BUFFER - SIDE ELEVATION SECTION VIEW**

SCALE: NTS  
NOTE: GRID DECK, STRINGERS, AND PURLINS NOT SHOWN FOR CLARITY

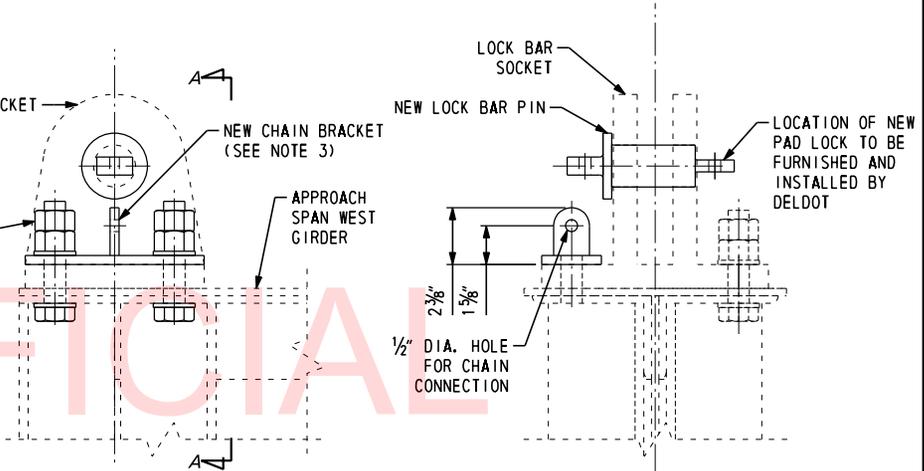
**NOTES:**

1. VERIFY PISTON ROD DIAMETER AFTER POLISHING THE SHAFT AND PRIOR TO MACHINING BUSHING BORE FOR ANSI RC8 FIT.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR M1 (2 OF 2)	



SPAN LOCK BAR SOCKET  
 LOCK BAR SOCKET  
 APPROACH SPAN WEST GIRDER  
 2 NEW 7/8" DIA. H.S. BOLTS. HOLES IN CHAIN BRACKET TO MATCH SIZE AND LOCATION OF HOLES IN LOCK BAR SOCKET  
 LOCATION OF NEW SPAN LOCK CHAIN BRACKET



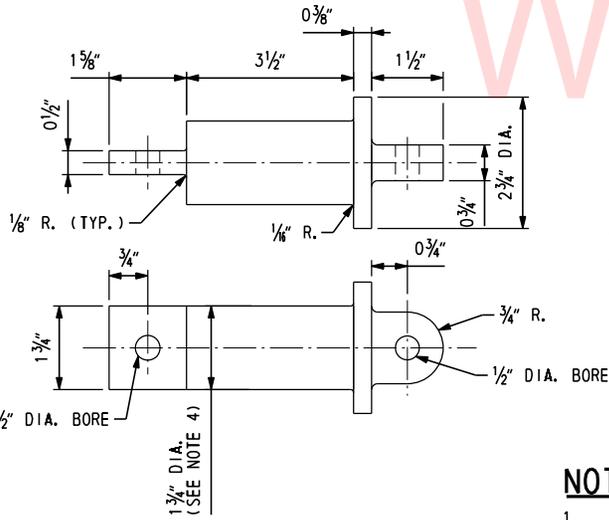
**SPAN LOCK (FACING EAST)**

**SPAN LOCK SOCKET**

SCALE: NTS  
 NOTES: LOCK BAR NOT SHOW FOR CLARITY.

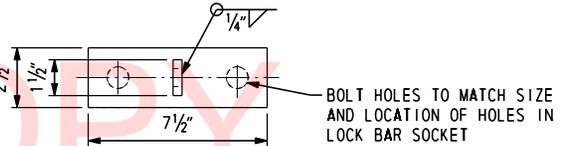
**SECTION A-A**

SCALE: NTS  
 NOTES: LOCK BAR AND NEW BOLTS NOT SHOW FOR CLARITY.



**LOCK BAR PIN DETAIL**

SCALE: NTS  
 QTY: 1  
 MATERIAL: ASTM A668 CL. F



**SPAN LOCK CHAIN BRACKET - TOP VIEW**

SCALE: NTS  
 QTY: 1  
 MATERIAL: ASTM A709 GR. 50  
 NOTES: BOTH CHAIN BRACKET PLATES ARE 3/8" THICK

**NOTES:**

1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615619 "INITIAL REPAIRS AT BRIDGE 2-021A."
2. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR SHALL FURNISH AND INSTALL A STEEL CHAIN TO CONNECT THE LOCK BAR PIN TO THE CHAIN BRACKET.
4. PROVIDE 1/8" MAX. CLEARANCE BETWEEN THE HOLES IN THE LOCK BAR SOCKET AND THE NEW PIN.

**REPAIR**

M2 - REPLACE THE MISSING SPAN LOCK PIN.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR M2	



**EXISTING MACHINERY BRAKE COVER**

EXISTING MACHINERY BRAKE COVER

INSPECT MACHINERY BRAKE HAND  
RELEASE LEVER LINKAGE FOR  
DAMAGE AND ADJUST FOR PROPER  
OPERATION OF THE HAND  
RELEASE MECHANISM

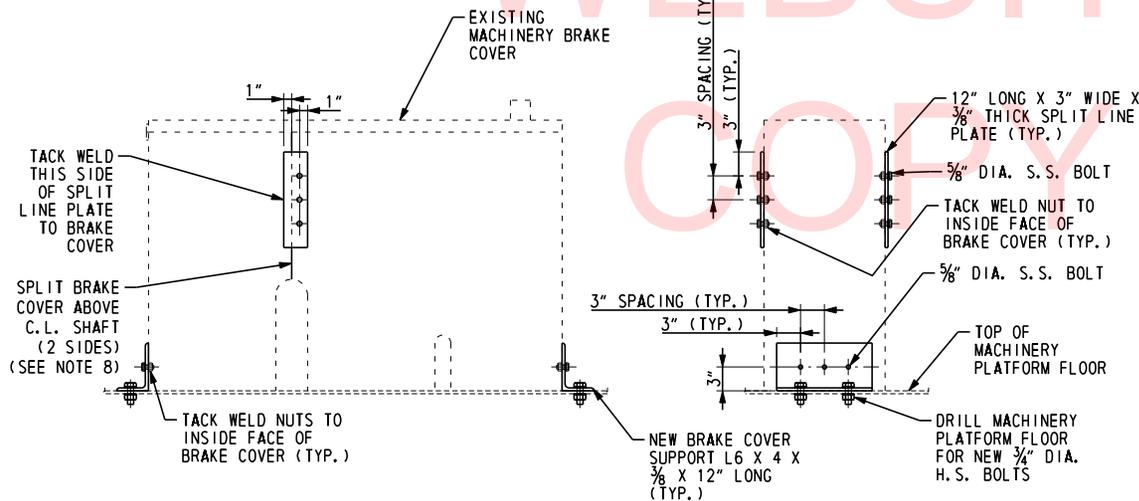
REMOVE EXISTING TABS WELDED TO  
BRAKE COVER



**MACHINERY BRAKE INSIDE  
BRAKE COVER**

**NOTES:**

1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615619 "INITIAL REPAIRS AT BRIDGE 2-021A."
2. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
3. CONTRACTOR TO VERIFY WELDED NUTS FOR SPLIT LINE PLATE AND SUPPORT BRACKETS WILL NOT INTERFERE WITH BRAKE OPERATION.
4. FURNISH AND INSTALL A HANDLE (NOT SHOWN) FOR EACH END OF THE BRAKE COVER (2 HANDLES TOTAL).
5. CLEAN AND SPOT PAINT NEW BRAKE COVER COMPONENTS AND ANYWHERE THE EXISTING PAINT WAS DISTURBED.
6. STAINLESS STEEL BOLTS SHALL BE ASTM A320 GRADE B8M CL. 2 AND SECURED WITH AN ASTM A194 GR. 2H NUT AND S.S. LOCK WASHER.
7. NEW BRAKE COVER SUPPORT BRACKETS AND SPLIT LINE PLATES SHALL BE ASTM A709 GR. 50 STEEL.
8. DO NOT SPLIT THE MACHINERY BRAKE COVER HINGED LID.



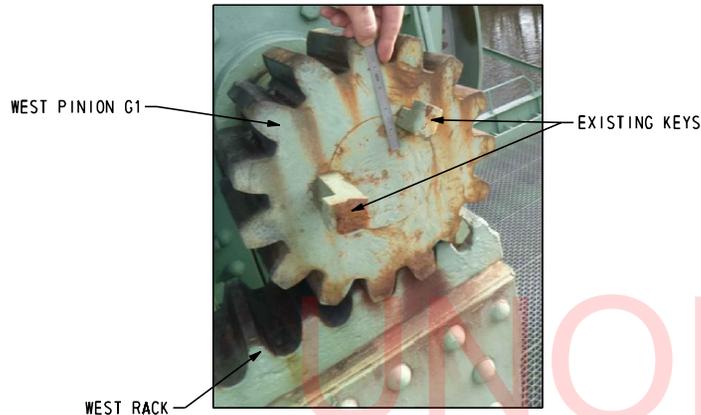
**EXISTING MACHINERY BRAKE COVER -  
ELEVATION**

SCALE: NTS

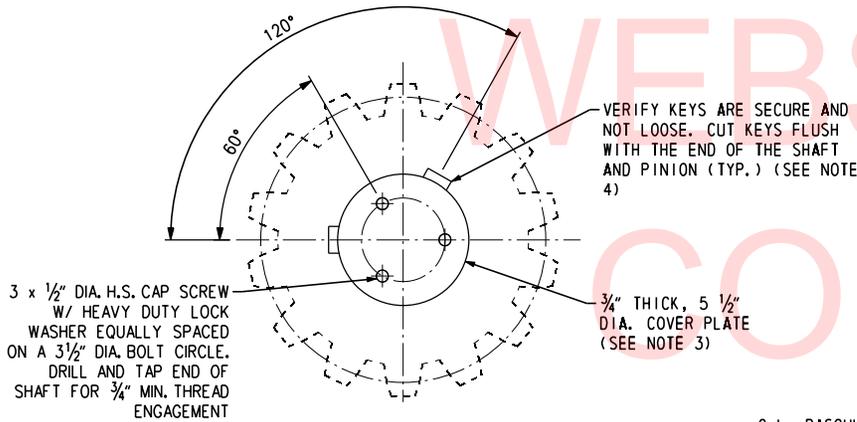
**REPAIR**

M3 MODIFY THE MACHINERY BRAKE COVER. INSPECT AND ADJUST THE HAND RELEASE LINKAGE.

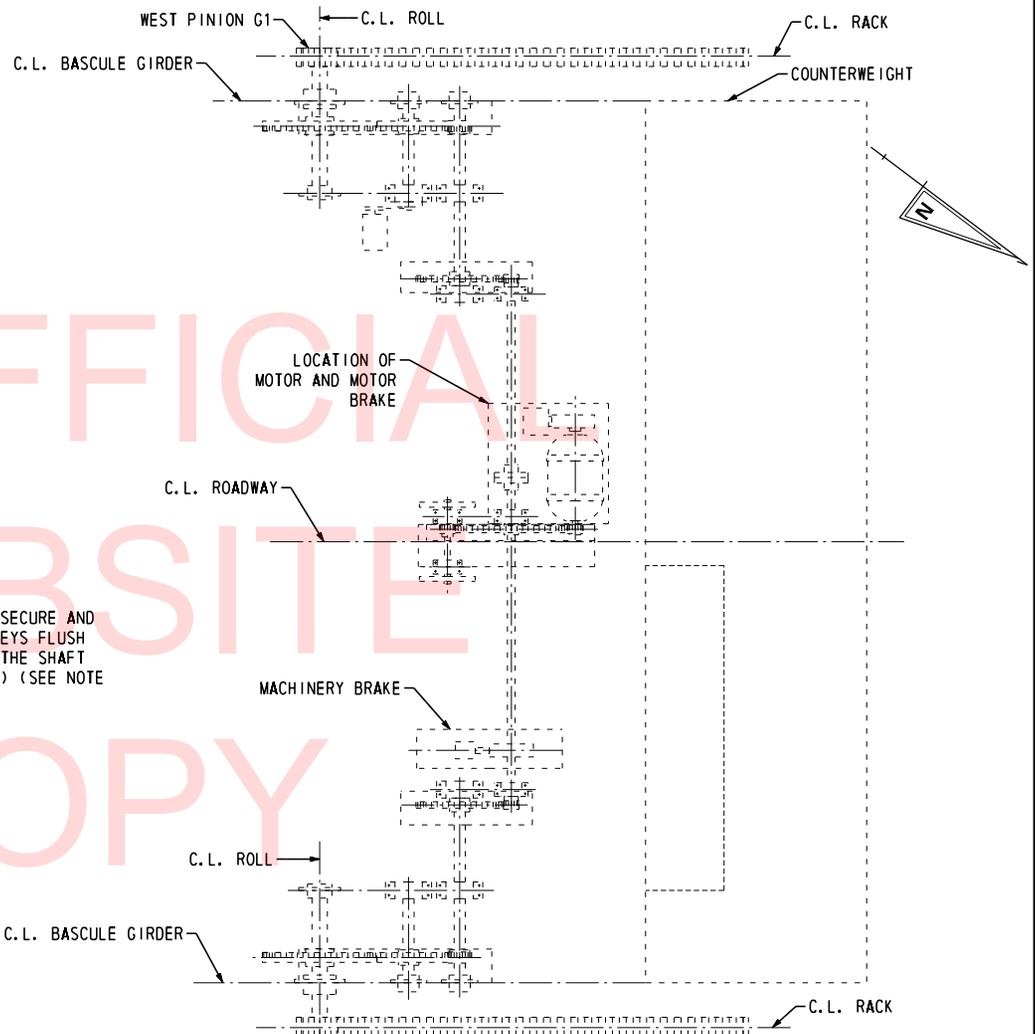
T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR M3	



**WEST PINION G1**



**WEST PINION G1 COVER  
PLATE DETAIL**  
SCALE: NTS



**SPAN DRIVE MACHINERY - PLAN**

SCALE: NTS

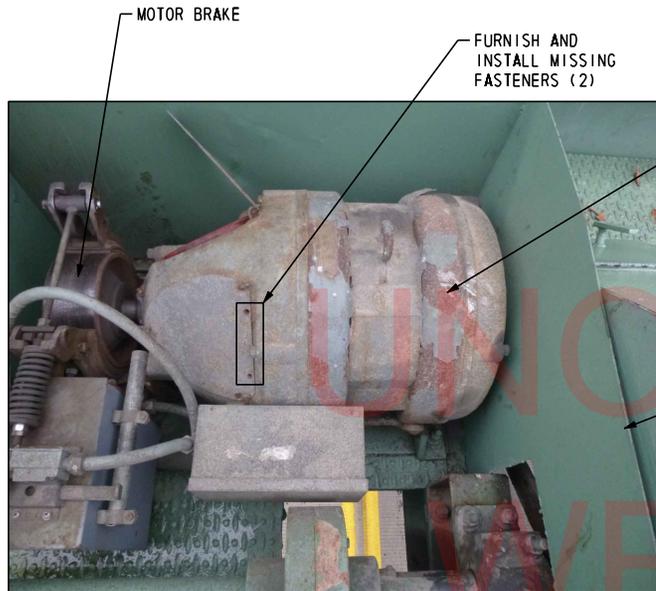
**NOTES:**

1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615619 "INITIAL REPAIRS AT BRIDGE 2-021A."
2. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
3. COVER PLATE SHALL BE ASTM A709 GR. 50 STEEL.
4. KEYS SHALL BE TRIMMED USING MECHANICAL METHODS.

**REPAIR:**

- M4 TRIM KEYS AT WEST PINION G1.  
INSTALL COVER PLATE OVER THE KEYS.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR M4	



**SPAN MOTOR AND MOTOR BRAKE WITH CORROSION AND PEELING PAINT**

QTY: 1 LOCATION



**CORROSION AND DEBRIS ON THE MACHINERY BRAKE**

QTY: 1 MACHINERY BRAKE

REMOVE CORROSION AND DEBRIS WITH WIRE BRUSH AND PAINT THE MOTOR. CLEAN AND PAINT THE BRAKE FRAME.

SPAN MOTOR AND MOTOR BRAKE ENCLOSURE

CLEAN WITH A WIRE BRUSH AND APPLY PAINT

FURNISH AND INSTALL MISSING FASTENERS (2)

MOTOR BRAKE

UNOFFICIAL  
WEBSITE  
COPY

**NOTES:**

1. ALL HARDWARE SHALL BE TYPE 316 S.S.
2. DO NOT PAINT FLEXIBLE CONDUIT, PVC OR S.S. EQUIPMENT.
3. PROTECT ALL PINS AND MOVING PARTS FROM PAINT.
4. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
5. PRIOR TO PAINTING THE THE MOTOR BRAKE OR MACHINERY BRAKE, THE CONTRACTOR SHALL CONSULT WITH THE BRAKE MANUFACTURERS TO PROVIDE A PROCEDURE TO PAINT EACH BRAKE WITH THE MANUFACTURER'S SPECIFIED PAINT SYSTEM. SUBMIT THE MANUFACTURER'S PROCEDURE AND PAINT SYSTEM TO THE ENGINEER FOR REVIEW. AFTER PAINTING THE BRAKES, THE CONTRACTOR SHALL VERIFY THAT ALL BRAKE LINKAGES AND COMPONENTS OPERATE AS INTENDED AND WITHOUT BINDING.
6. REFER TO "COMMON PROVISIONS FOR MECHANICAL WORK" FOR PAINTING REQUIREMENTS FOR THE SPAN MOTOR.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E1	



TERMINATE  
LOOSE/DISCONNECTED  
CONDUCTORS TO  
EXISTING TERMINAL  
BLOCK

UNCAPPED/UNTERMINATED CONDUCTORS INSIDE  
THE MOTOR CONTROL PANEL

QTY: 1 SPARE CONDUCTOR



FURNISH & INSTALL  
NEW TERMINAL BLOCK  
AND TERMINATE ALL  
LOOSE CONDUCTORS

UNCAPPED/UNTERMINATED CONDUCTORS INSIDE  
THE NORTH (NEAR SIDE) SUBMARINE TERMINAL  
BOX

QTY: 19 SPARE CONDUCTORS

NOTES:

1. LABEL ALL SPARE CONDUCTORS AS SPARE.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E2 (1 OF 2)	

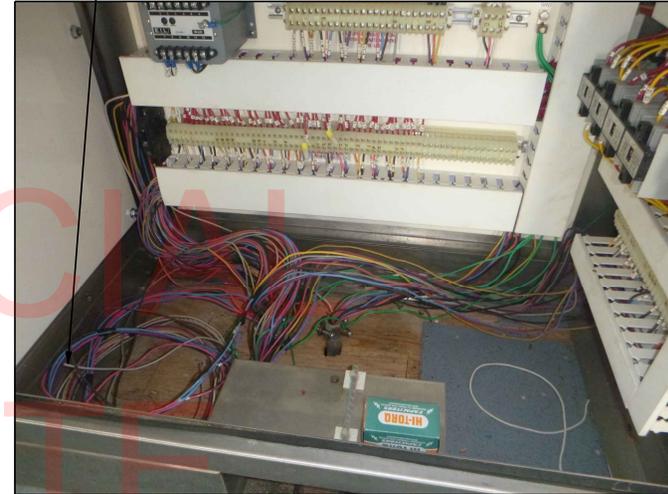


FURNISH & INSTALL  
NEW SUBMARINE  
TERMINAL BOX WITH  
BACK PANEL

FURNISH AND INSTALL NEW  
SUPPORT TO ELEVATE FROM  
GROUND OR PROVIDE  
EXTENDED CONCRETE PAD

**UNCAPPED/UNTERMINATED CONDUCTORS INSIDE  
THE SOUTH SUB CABLE TERMINAL BOX**

QTY: 1 SUBMARINE TERMINAL BOX



TERMINATE LOOSE  
CONDUCTORS TO  
TERMINAL BLOCK

**UNCAPPED/UNTERMINATED CONDUCTORS INSIDE  
THE CONTROL DESK**

QTY: 5 SPARE CONDUCTORS

**NOTES:**

1. TERMINATE ALL SPARE CONDUCTORS AND LABEL AS SPARE.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
3. ENCLOSURE SHALL BE NEMA 4X S.S.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E2 (2 OF 2)	



REPLACE CORRODED FITTINGS AND HARDWARE

FURNISH AND INSTALL A NEW JUNCTION BOX

JUNCTION BOX ADJACENT TO THE MACHINERY BRAKE WITH CORROSION ON THE ENCLOSURE, LATCHES AND CONDUIT FITTINGS

QTY: 1 JUNCTION BOX



FURNISH AND INSTALL A NEW CONDUIT BOX COVER AND CONDUIT FITTING

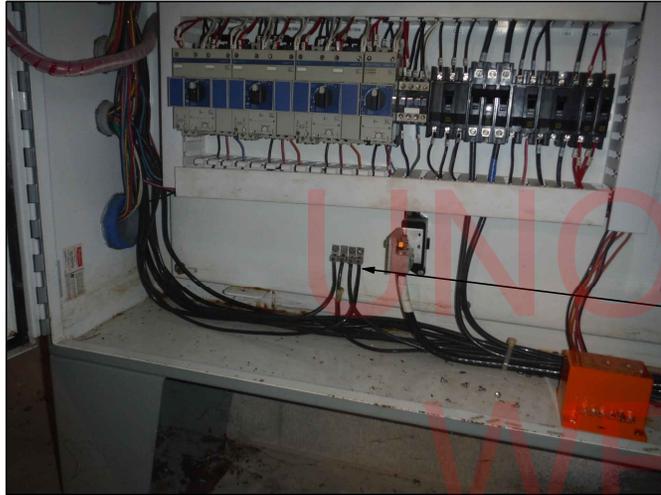
MISSING CONDUIT BOX COVER ON THE COUNTERWEIGHT

QTY: 1 LOCATION

**NOTES:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. ALL HARDWARE SHALL BE TYPE 316 S.S.
3. PROVIDE CONDUIT BOX COVER SIZE TO MATCH BOX WITH SIMILAR MATERIAL.

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615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E3	



TYPICAL GROUND CONDUCTORS INSIDE THE MOTOR CONTROL PANEL WITHOUT AN IDENTIFIABLE MARKING

QTY: 4 CONDUCTORS



TYPICAL GROUND CONDUCTOR INSIDE THE CONTACTOR PANEL WITHOUT AN IDENTIFIABLE MARKING

QTY: 1 CONDUCTOR

FURNISH AND MARK ALL EXISTING UNMARKED GROUND CONDUCTORS WITH GREEN TAPE

UNOFFICIAL WEBSITE COPY

**NOTE:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

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REPAIR E4	



REMOVE CORROSION  
WITH WIRE BRUSH  
AND APPLY PAINT.  
REPLACE CORRODED  
HARDWARE.

TYPICAL CORROSION AT THE BASE OF THE  
MOTOR CONTROL PANEL

QTY: 2 LOCATIONS, 4 BOLTS

NOTES:

1. ALL HARDWARE SHALL BE TYPE 316 S.S.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

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615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E5	



**CONTACTOR PANEL WITH A DAMAGED/MISSING DOOR LATCH (EXTERIOR VIEW)**

QTY: 1 LOCATION



**CONTACTOR PANEL WITH A DAMAGED/MISSING DOOR LATCH (INTERIOR VIEW)**

FURNISH AND  
INSTALL A NEW  
SLOTTED FLUSH  
DOOR LATCH

UNOFFICIAL WEBSITE COPY

**NOTES:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. CONTACTOR ENCLOSURE MODEL A30N24DLP, HOFFMAN ENCLOSURES.

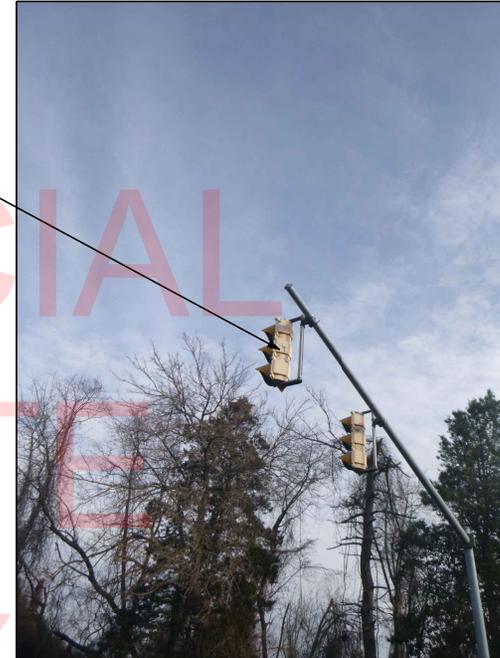
T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E6	



TYPICAL PEELING PAINT ON THE NORTH TRAFFIC SIGNAL HEADS (FRONT VIEW)

QTY: 2

CLEAN AND APPLY PAINT



PEELING PAINT ON THE NORTH TRAFFIC SIGNAL HEADS (BACK VIEW)

QTY: 2

**NOTES:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. PROTECT THE LENSES FROM PAINT.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E7	



INSTALL S.S  
CONDUIT CLAMP TO  
EXISTING STRUT

**MISSING CONDUIT CLAMP ON THE MACHINERY  
PLATFORM**

QTY: 1 LOCATION



FURNISH AND  
INSTALL MISSING  
HARDWARE. REPLACE  
CORRODED HARDWARE

**SOUTHWEST PIER LIGHT JUNCTION BOX WITH  
MISSING HARDWARE**

QTY: 2 FASTENERS REQUIRED

**NOTES:**

1. ALL HARDWARE SHALL BE TYPE 316 S.S.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

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615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E8	



**TYPICAL WARNING GATE MOTOR INSIDE GATE HOUSING EXHIBITING CORROSION**

QTY: 2 GATE MOTORS



**BROKEN MOTOR DISCONNECT SWITCH INSIDE THE SOUTH GATE**

QTY: 1 LOCATION

DAMAGE A PHASE OF DISCONNECT SWITCH

REPLACE THE MOTOR DISCONNECT SWITCH AND RECONNECT LINE SIDE AND MOTOR FEEDER CONDUCTORS

SOLENOID BRAKE

CLEAN WITH WIRE BRUSH AND APPLY PAINT

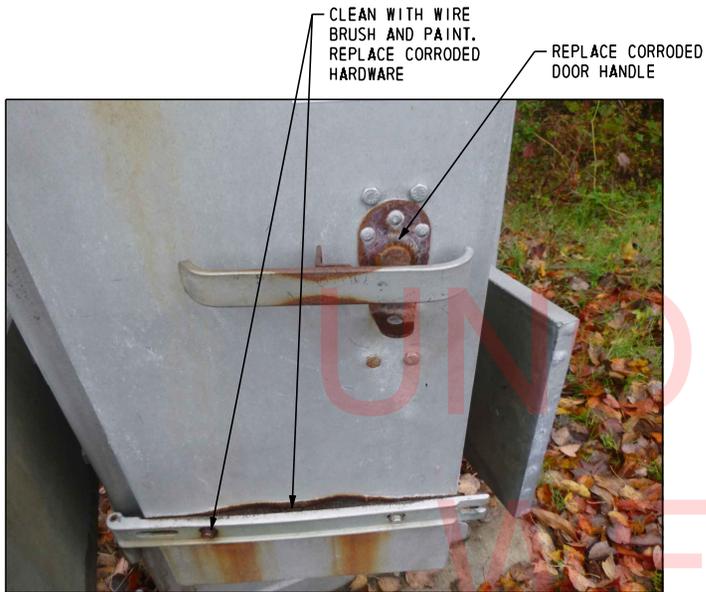
RECONNECT LINE SIDE A PHASE

OFFICE WEBSITE COPY

**NOTES:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. PROTECT ALL NAMEPLATES FROM PAINT.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E9 (1 OF 2)	



SOUTH WARNING GATE WITH CORROSION BEHIND  
THE DOOR HINGES AND THE REAR DOOR HANDLE

QTY: 1 FOR SOUTH GATE

**NOTES:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. ALL HARDWARE SHALL BE TYPE 316 S.S.

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615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E9 (2 OF 2)	



REMOVE EXISTING DISCOLORED STRIPING. FURNISH AND COVER GATE ARMS FRONT AND REAR WITH ALTERNATING RED AND WHITE REFLECTIVE SHEETING

**TYPICAL WARNING GATE ARM WITH DISCOLORED STRIPES**

QTY: 2 WARNING GATE ARMS



FURNISH AND INSTALL A NEW PEDESTRIAN GATE ARM

**PEDESTRIAN GATE ARM FOR THE NORTH GATE UNABLE TO RESTRICT WALKWAY PASSAGE**

QTY: 1 LOCATION

**NOTES:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. NEW PEDESTRIAN GATE ARM SHALL MEASURE APPROXIMATELY 5' -5" LONG (CONTRACTOR TO FIELD VERIFY).
3. EXISTING WARNING GATES ARE B&B ROADWAY MODEL VT-40.

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615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E10 (1 OF 2)	



**DAMAGED FLEXIBLE CABLE AT THE SOUTH  
WARNING GATE**

QTY: 1 FOR THE SOUTH GATE

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WEBSITE  
COPY

**NOTES:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. NEW HANDLE SHALL BE SUPPLIED THROUGH WARNING GATE MANUFACTURER.
3. EXISTING WARNING GATES ARE B&B ROADWAY MODEL VT-40.
4. ALL HARDWARE SHALL BE TYPE 316 S. S.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E10 (2 OF 2)	

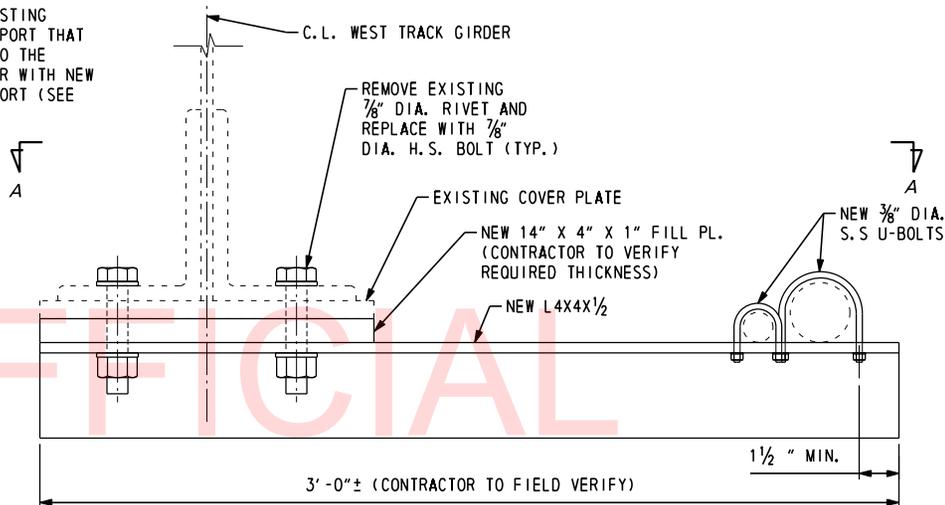


WEST TRACK GIRDER

**EXISTING NORTH SPAN CONDUIT BRACKET NEAR THE SIDEWALK**

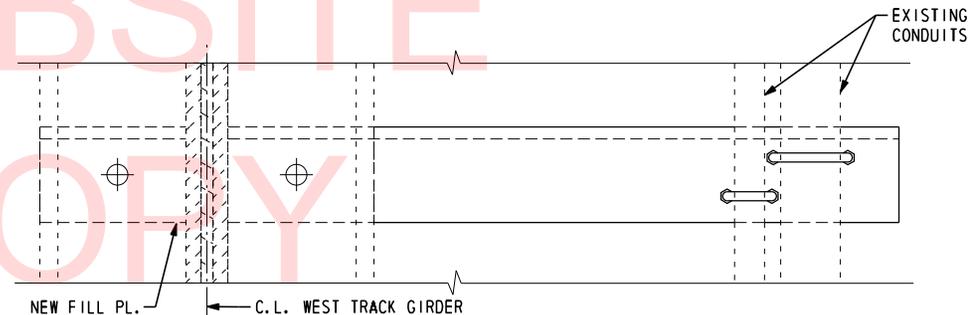
QTY: 1 LOCATION

REPLACE EXISTING CONDUIT SUPPORT THAT IS WELDED TO THE TRACK GIRDER WITH NEW BOLTED SUPPORT (SEE NOTE 2)



**PROPOSED CONDUIT SUPPORT**

SCALE: NTS



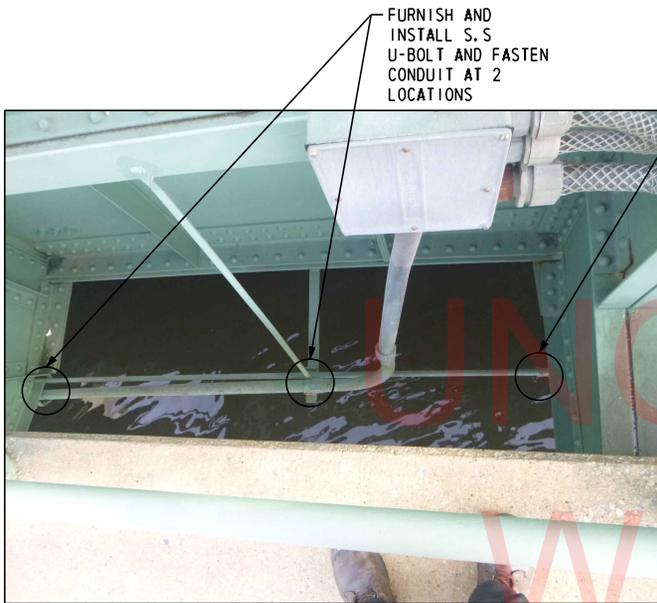
**SECTION A-A**

SCALE: NTS

**NOTES:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. THE CONDUIT SUPPORTS THAT ARE WELDED TO THE GIRDER SHALL BE REMOVED VIA MECHANICAL METHODS. THE SURFACE OF THE STRUCTURAL MEMBERS TO REMAIN SHALL BE CAREFULLY GROUND SMOOTH TO PREVENT GOUGING OR OTHER DAMAGE. THE CONTRACTOR SHALL PERFORM DYE PENETRANT TESTING AND ULTRASONIC TESTING TO CHECK FOR CRACKS IN A 12" DIAMETER AREA AROUND ALL WELDS THAT ARE REMOVED. SUBMIT TEST REPORT TO THE ENGINEER FOR REVIEW. ANY AREA WHERE THE PAINT IS DISTURBED BY THE WORK SHALL BE PAINTED TO MATCH THE EXISTING.
3. COORDINATE THE WORK WITH REPAIR E12.
4. THE NEW SUPPORT SHALL BE INSTALLED ADJACENT TO THE EXISTING SUPPORT USING THE EXISTING RIVET HOLES.
5. NEW STEEL SHALL BE ASTM A709 GRADE 50. PAINT SUPPORT TO MATCH EXISTING STRUCTURAL STEEL AFTER INSTALLATION.
6. ADJUST CONDUIT, WIRE AND BOX TO ACCOMMODATE NEW SUPPORT.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E11	



FURNISH AND  
INSTALL S.S  
U-BOLT AND FASTEN  
CONDUIT AT 2  
LOCATIONS

FURNISH AND  
INSTALL CONDUIT  
SUPPORT AND S.S  
U-BOLT AND FASTEN  
CONDUIT

TYPICAL UNSUPPORTED CONDUIT BELOW THE  
SPAN AT THE NORTHWEST APPROACH

QTY: 3



FURNISH AND  
INSTALL S.S  
U-BOLT AND  
FASTEN DROOP  
CABLES

UNFASTENED DROOP CABLES TO SUPPORT

QTY: 1

**NOTES:**

1. ALL HARDWARE SHALL BE TYPE 316 S.S.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
3. COORDINATE THE WORK WITH REPAIR E11.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E12	



CLEAN AND PAINT THE WARNING SIGNAL HEADS

TEST AND PERFORM REPAIRS TO RESTORE OPERATION OF THE WARNING SIGNAL. FURNISH AND INSTALL DRAWBRIDGE AHEAD SIGN (W3-6)

NONFUNCTIONAL ADVANCED WARNING SIGNAL AT THE SOUTH APPROACH

QTY: 1 LOCATION



TEST AND PERFORM REPAIRS TO GONG. CLEAN AND PAINT THE GONG

NONFUNCTIONAL GONG AT THE NORTH TRAFFIC SIGNAL POLE

QTY: 1 LOCATION

**NOTE:**

- 1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E13	



NON-OPERATIONAL EMERGENCY LIGHT IN THE LOWER LEVEL OF THE OPERATOR'S HOUSE

QTY: 1 LOCATION



NON-OPERATIONAL EMERGENCY LIGHT IN THE MAIN LEVEL OF THE OPERATOR'S HOUSE

QTY: 1 LOCATION

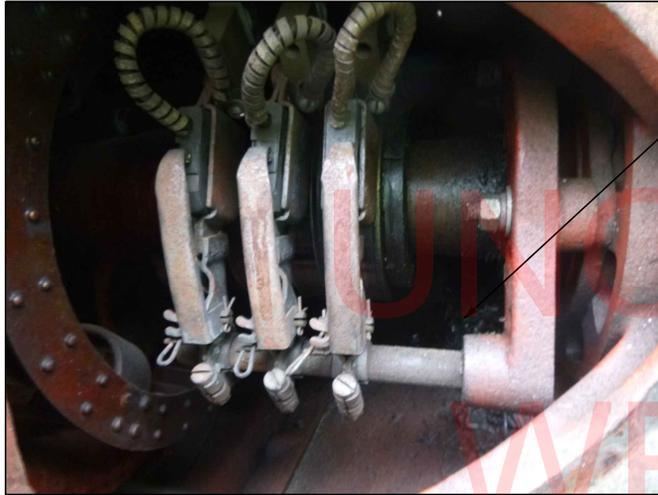
REPLACE THE EMERGENCY LIGHTS

UNOFFICIAL WEBSITE COPY

**NOTE:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E14	



CLEAN AND REMOVE  
EXCESSIVE  
LUBRICATION

OVER-LUBRICATION INSIDE THE SPAN MOTOR

QTY: 1 SPAN MOTOR



TYPICAL OVER-LUBRICATION ON COMPONENTS  
INSIDE THE WARNING GATE

QTY: 2 WARNING GATES

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WEBSITE  
COPY

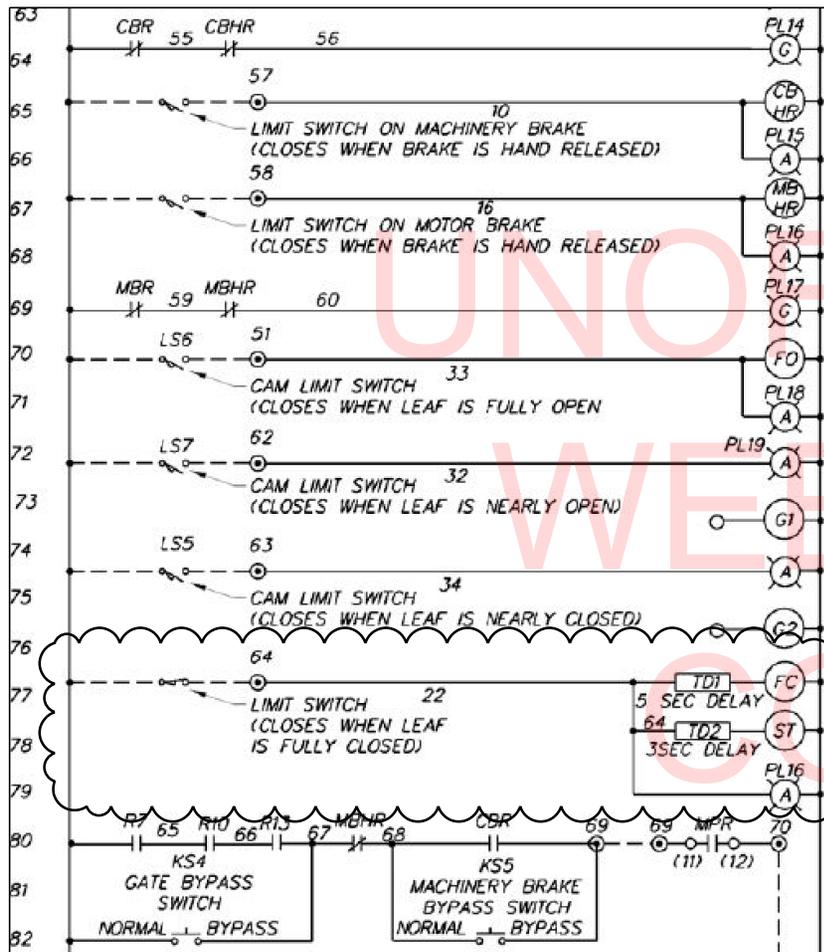
**NOTE:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E15	

## SCOPE OF WORK

1. FURNISH AND INSTALL NEW RELAY CONTACTS IN EXISTING RELAYS. CONTACTS SHALL BE N.O. TYPE AND COMPATIBLE WITH THE EXISTING RELAYS.
2. CONNECT NEW RELAY CONTACT INTO EXISTING CIRCUITS AS SHOWN AND MODIFY WIRING AS REQUIRED.
3. ALL WIRING, TERMINAL BLOCKS, CONNECTORS AND WIRE LABELS SHALL BE AS SPECIFIED.
4. PERFORM OPERATIONAL TESTING TO CONFIRM THE MOTOR BRAKE SETS WHEN THE F.C. PROXIMITY SENSOR IS CLOSED AND THE LOWER RELAY IS ON.
5. FIELD ADJUST SENSOR AND TIMERS AT THE DISCRETION OF DELDOT.



## NOTES:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. REFER TO EXISTING AS-BUILT DRAWINGS FOR ADDITIONAL DETAILS.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E16	



ADJUST AND ROTATE  
EXISTING PIER  
LIGHTS TO MEET  
USCG REQUIREMENTS  
33 CFR 118.65

**TYPICAL FENDER PIER LIGHTS NOT ALIGNED  
WITH THE CHANNEL**

QTY: 4 PIER LIGHTS



REPLACE GASKET AS  
NECESSARY AND  
TIGHTEN FIRMLY

**EAST SPAN NAVIGATION LIGHT SYSTEM WITH  
WATER INTRUSION**

QTY: 1

NO OFFICIAL  
WEBSITE  
COPY

**NOTE:**

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E17	



REPLACE THE HANDLE AND OPERATING MECHANISM FOR THE MAIN CIRCUIT BREAKER

DAMAGED MOTOR CONTROL PANEL CIRCUIT BREAKER REMOTE OPERATOR

QTY: 1



SECURE TIMER RELAYS AND PROVIDE PRINTED LABELS

TYPICAL UNSECURED/UNSTABILIZED MOTOR OFF AND BRAKE TIMER RELAYS IN THE CONTROL DESK

QTY: 2

**NOTES:**

1. ALL LABELS TO BE PROVIDED SHALL NOT BE HANDWRITTEN.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E18	



REPLACE THE COVER ON  
THE ELECTRIC BOX UNDER  
THE SOUTHWEST  
CANTILEVERED CONCRETE  
SIDEWALK

**ELECTRICAL BOX MISSING A COVER**

QTY: 1 LOCATION

UNOFFICIAL  
WEBSITE  
COPY

**NOTES:**

1. ALL HARDWARE SHALL BE TYPE 316 S.S.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
3. PROVIDE BOX COVER SIZE TO MATCH BOX WITH SIMILAR MATERIAL.

T201707005	REHOBOTH BOULEVARD
615619 - INITIAL REPAIRS AT BRIDGE 2-021A	
REPAIR E19	