THE STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
Signature Sheet

Contract No.: T201707005
F.A.P. No.: EBHOS-2018(36)
PJE 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

[Signatures and stamps]

APPROVED for ADVERTISEMENT

[Signature]
Director, Maintenance & Operations
Date: 9/4/2018
NOTES:

1. ALL WORK INVOLVING CLEANING AND PAINTING OF THE HANDRAILS SHALL BE PERFORMED IN ACCORDANCE WITH SPECIAL PROVISION "615606 - INITIAL REPAIRS AT BRIDGE 1-688".
   PAID UNDER "615606 - INITIAL REPAIRS AT BRIDGE 1-688."

2. QUANTITY OF BASCULE PIERS TO BE CLEANED = 2.

3. APPROXIMATE AREA OF STEEL TO BE CLEANED IN THE NORTH LEAF = 400 SF.

4. APPROXIMATE AREA OF STEEL TO BE CLEANED IN THE SOUTH LEAF = 400 SF.

5. APPROXIMATE AREA OF RAILING TO BE PAINTED = 170 SF.
**DEEP SPALL REPAIR**

- **Plan A-A**
  - **Section A-A**
    - **Deep Spall Repair**
      - **Surface Seal**
      - **Pressure Injection**
      - **Existing Cracks**
      - **Deep Spalled Surface**
      - **Repair with Class A Concrete Mix**
      - **Saw Cut 1" Depth on Rectangular Shape Around Spall Periphery (Typ.)**

- **Plan B-B**
  - **Section B-B**
    - **Spall in the South Counterweight**
    - **Typical Cracks in the Concrete Near the Rack Support**
    - **T201707005 South Market Street**
    - **615606 - Initial Repairs at Bridge 1-688**
    - **Repairs S3 & S4**

**Notes**

1. All work involving methods of deep spall repair shall be performed in accordance with special provision "615606 - Initial Repairs at Bridge 1-688", paid under "Item 615606 - Initial Repairs at Bridge 1-688."

2. All work involving methods of crack repair shall be performed in accordance with special provision "615606 - Initial Repairs at Bridge 1-688", paid under "Item 615606 - Initial Repairs at Bridge 1-688."

3. The cracks that are to be sealed are located in the rack support near the top of the rack at each leaf.

4. Material used for concrete repairs and crack sealing shall conform to DelDOT Standard Specification Section 628.
SPAN DRIVE MACHINERY - PLAN

NOTES:
- NORTH LEAF SHOWN, SOUTH LEAF OPPOSITE HAND
- TRUNNION BEARINGS SYMMETRICAL ABOUT CENTERLINE OF BRIDGE (ONLY 1 TRUNNION ASSEMBLY SHOWN)
- WALKWAYS INSIDE THE BASCULE PIER NOT SHOWN FOR CLARITY
- SCALE: NTS

GIRDER
BASCULE
C.L.
C.L. BRIDGE
C.L. TRUNNION
ENCLOSED BEVEL
AND BEARINGS
TRUNNION SHAFT
AND BEARINGS
TRUNNION BEARINGS SYMMETRICAL ABOUT CENTERLINE OF BRIDGE (ONLY 1 TRUNNION ASSEMBLY SHOWN)

NOTES:
- NORTH LEAF SHOWN, SOUTH LEAF OPPOSITE HAND
- TRUNNION BEARINGS SYMMETRICAL ABOUT CENTERLINE OF BRIDGE (ONLY 1 TRUNNION ASSEMBLY SHOWN)
- WALKWAYS INSIDE THE BASCULE PIER NOT SHOWN FOR CLARITY
- SCALE: NTS

REPAIRS

M1 REPLACE SEALS AND GASKETS AT THE SOUTH MOTOR COUPLING, SOUTH AUXILIARY MOTOR COUPLING, AND THE SOUTH ENCLOSED BEVEL SPEED REDUCER INPUT SHAFT COUPLING.

M2 CLEAN DEBRIS, GREASE, AND BIRD WASTE FROM ALL TRUNNION BEARING ASSEMBLIES, SHAFTS, BEARINGS, COUPLINGS, REDUCERS, AND GEARS. CLEAN AND PAINT GEAR FRAME COMPONENTS ON THE COUNTERWEIGHTS. (BOTH LEAFS)

EXISTING COUPLING INFORMATION

<table>
<thead>
<tr>
<th>COUPLING I.D.</th>
<th>MANUFACTURER</th>
<th>MODEL (SEE NOTE 4)</th>
<th>LOCATIONS TO REPLACE SEALS</th>
<th>QTY.</th>
<th>(BRIDGE TOTAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUXILIARY MOTOR COUPLING</td>
<td>FALK</td>
<td>GEAR DISCONNECT COUPLING 1020G72</td>
<td>SOUTH LEAF</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MOTOR COUPLING</td>
<td>FALK</td>
<td>GEAR COUPLING DOUBLE ENGAGEMENT 1025G20</td>
<td>SOUTH LEAF</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ENCLOSED BEVEL SPEED REDUCER INPUT SHAFT COUPLING</td>
<td>FALK</td>
<td>GEAR TYPE SPACER COUPLING SINGLE ENGAGEMENT FALK 1035G32</td>
<td>SOUTH LEAF</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615606 "INITIAL REPAIRS FOR BRIDGE 1-688."
2. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
3. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL BIRD WASTE AND DEBRIS AT THE SPAN DRIVE MACHINERY. THE CONTRACTOR SHALL UTILIZE PROPER PPE AND REMOVAL METHODS WHEN CLEANING THE WASTE. BIRD WASTE SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.
4. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING COUPLING MANUFACTURER AND MODELS PRIOR TO PURCHASING NEW SEAL, GASKET, AND BOLT KITS.
5. PRIOR TO DISASSEMBLING ANY COUPLING, THE CONTRACTOR SHALL LOCK OUT THE SPAN DRIVE MOTORS AND TEMPORARILY HAND RELEASE THE BRAKES TO REMOVE ANY RESIDUAL TORQUE WITHIN THE SPAN DRIVE MACHINERY. SET THE BRAKES AFTER THE RESIDUAL TORQUE HAS BEEN REMOVED.
6. TEMPORARILY SUPPORT SHAFTS WHENEVER ANY COUPLING IS DISASSEMBLED.
7. WHILE COUPLINGS ARE DISASSEMBLED, CLEAN OLD GREASE FROM THE COMPONENTS AND MANUALLY APPLY FRESH GREASE TO THE COUPLING TEETH. FINISH FILLING COUPLINGS WITH GREASE USING A GREASE GUN AFTER THE COUPLINGS HAVE BEEN REASSEMBLED. REFER TO O&M MANUALS FOR LUBRICATION PROCEDURES AND WARNINGS.
RECEIVING SOCKET SHIM PACK

Material: ASTM A240 Type 316 Stainless Steel

Thickens: 1 x 1/32", 1 x 1/16", 1 x 1/8", 1 x 3/16", 1 x 1/4", and 2 x 3/16"

Each receiving socket shim pack shall be comprised of shims of the following thicknesses: 1 x 1/32", 1 x 1/16", 1 x 1/8", 1 x 3/16", 1 x 1/4", and 2 x 3/16".

NOTES:
1. All items on this drawing shall be paid under Section 615606 "Initial Repairs at Bridge 1-688."
2. Refer to the special provisions for additional requirements.
3. All receiving socket safety wire shall be stainless steel with a minimum diameter of 0.020" and fill a minimum of 75% of the hole drilled into the square end of the stud. Safety wire shall be installed after final shimming of the receiving sockets and in a manner that will prevent the tendency of the studs to loosen.
4. Contractor shall field verify thread size, pitch, and length in existing receiving socket shoes prior to fabricating new studs. Stud thread length shall match the tapped depth in the receiving socket shoes.
5. Contractor shall field verify hole diameter in receiving socket housing prior to fabricating new studs.
6. Prior to measuring clearances at the receiving sockets and adjusting shims, verify that all live load bearings are in hard contact. No vehicles or equipment shall be on the span when the receiving socket clearances are being measured or when shims are adjusted.
7. Manually operate the span locks after the shimming is complete to verify that there is no binding in the span lock machinery when the lock bars are driven and pulled.

RECEIVING SOCKET STUD

Material: ASTM A354 Grade BD
NOTES:

1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615606 “INITIAL REPAIRS AT BRIDGE 1-688.”

2. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS AND SUGGESTED SHIMMING PROCEDURE.

3. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING SHIM DIMENSIONS (INCLUDING BOLT SPACING) AND BOLT HOLE DIMENSIONS PRIOR TO FABRICATING NEW SHIMS.

4. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING FIT BETWEEN THE SOLE PLATE FASTENERS AND THE BOLT HOLES IN THE SOLE PLATE AND BASCULE GIRDER. THE CLEARANCE BETWEEN THE EXISTING LIVE LOAD BEARING COMPONENT BOLT HOLES AND THE NEW BOLTS SHALL BE NO GREATER THAN THE EXISTING CLEARANCES. SUBMIT MEASUREMENTS TO THE ENGINEER FOR REVIEW PRIOR TO ORDERING NEW MATERIAL.
NOTE:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
NOTES:

1. RECONNECT EXISTING ARM LIGHTS TO NEW CABLE AND CONNECT TIP LIGHT TO STEADY CIRCUIT.

2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
NOTES:

1. Replace boxes on damaged conduit and associated conduit runs.
2. Connect flexible conduit to rigid conduit.

REPAIR E3
SOUTH MARKET STREET
615606 - INITIAL REPAIRS AT BRIDGE 1-688
NOTE:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
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