

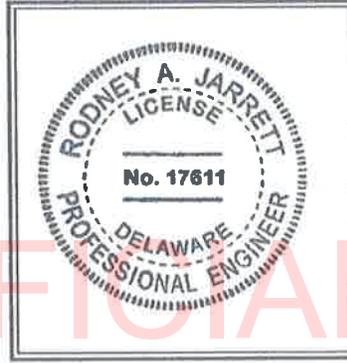
THE STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
Signature Sheet

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

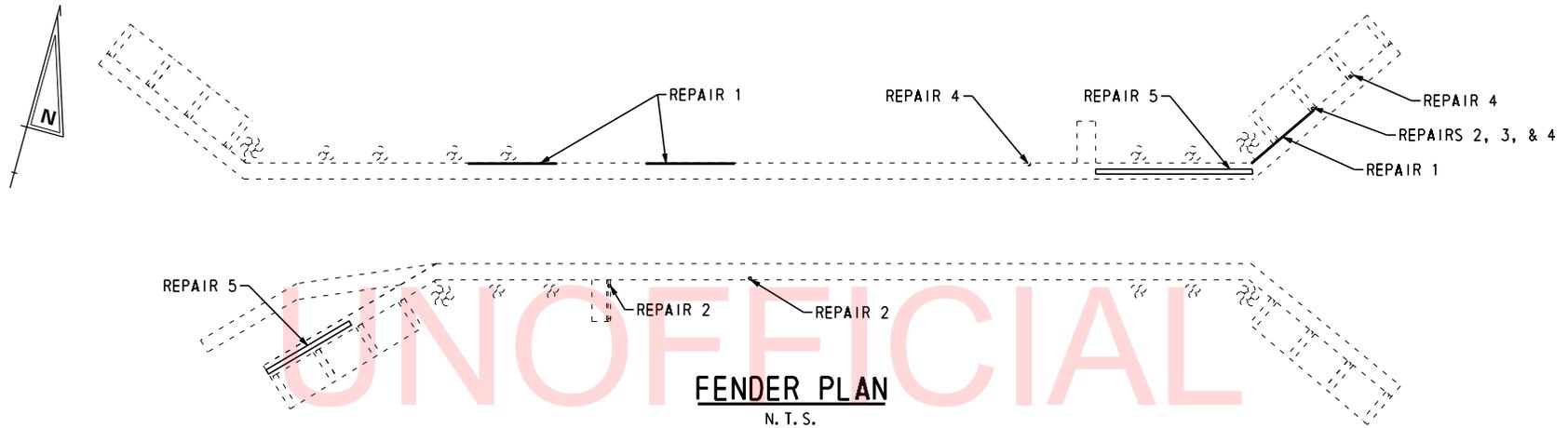

Hardesty & Hanover Project Manager
Date: 08-28-2018

APPROVED for ADVERTISEMENT


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

Bridge 1-693

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REPAIR 1
REPLACE WARPED RAIL
IN KIND, TYP.



REPAIR 2
REPAIR CONNECTION BETWEEN
POST AND TOP RAIL, TYP.



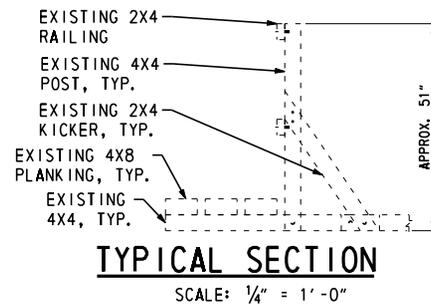
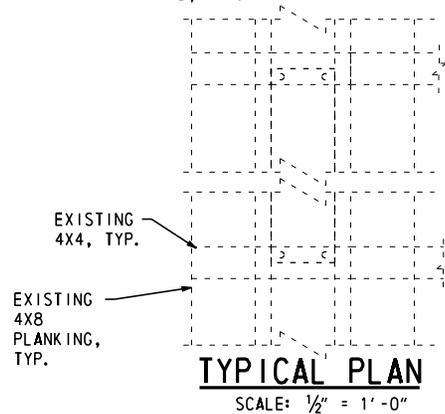
REPAIR 3
REPLACE POST IN KIND, TYP.



REPAIR 4
REPAIR CONNECTION BETWEEN
POST AND KICKER BOARD, TYP.



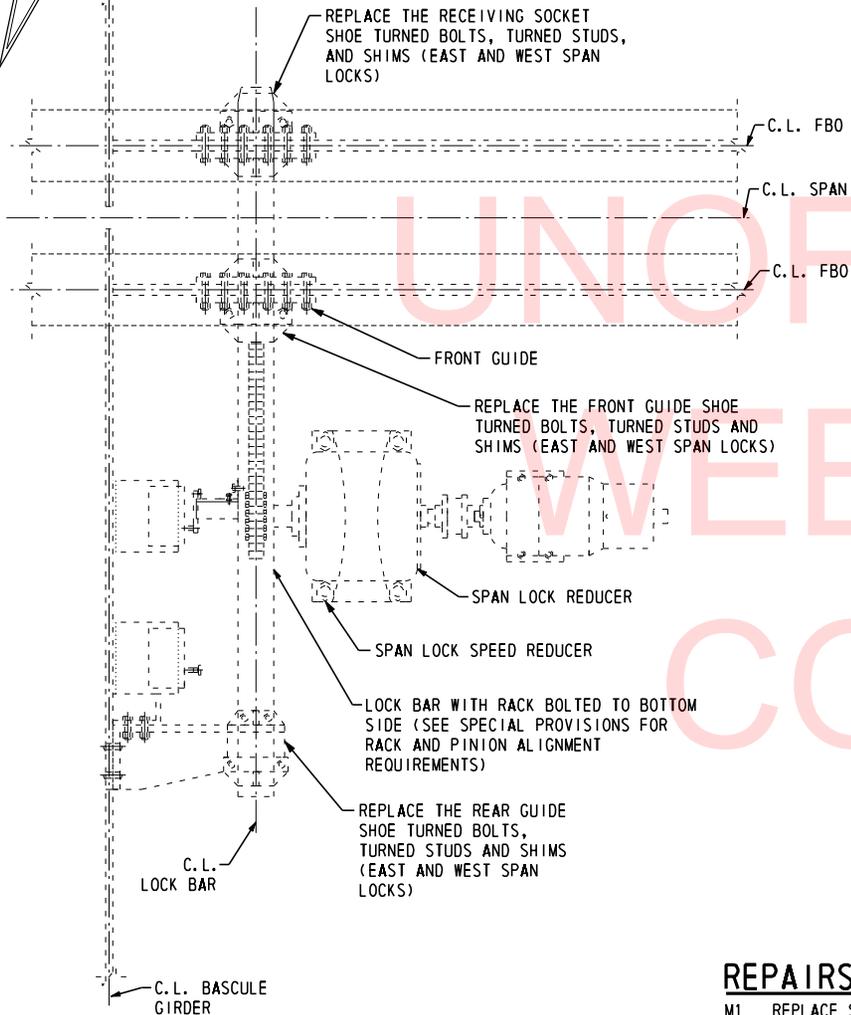
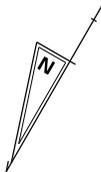
REPAIR 5
REPLACE ENTIRE LENGTH OF
DAMAGED PLANKING IN KIND, TYP.



NOTES:

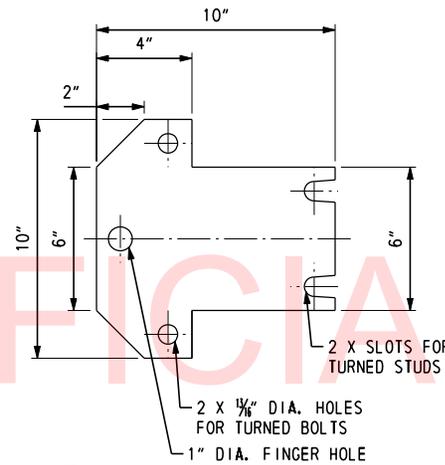
1. ALL FENDER REPAIRS SHALL BE IN ACCORDANCE WITH "SPECIAL PROVISION 615613 - INITIAL REPAIRS AT BRIDGE 1-693". PAID UNDER "ITEM 615613 - INITIAL REPAIRS AT BRIDGE 1-693."
2. ALL HARDWARE USED IN REPAIRS SHALL BE HOT DIP GALVANIZED. SEE DELDOT STANDARD SPECIFICATION 1041 FOR ADDITIONAL REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR S1	



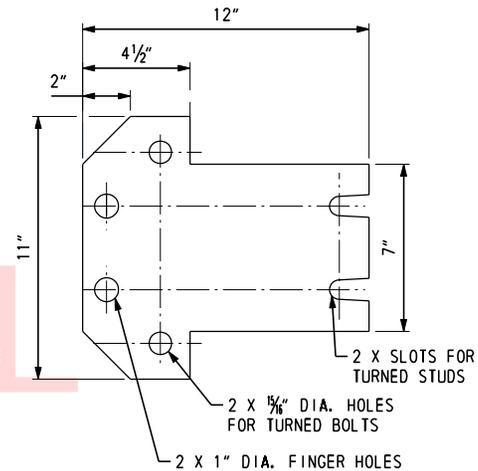
SPAN LOCK MACHINERY - PLAN

SCALE: NTS
 NOTES: EAST SPAN LOCK MACHINERY SHOWN.
 WEST SPAN LOCK MACHINERY SYMMETRICAL ABOUT CENTERLINE OF ROADWAY.



REAR GUIDE SHIM PACK

SCALE: NTS
 QTY: 4



FRONT GUIDE/RECEIVING SOCKET SHIM PACK

SCALE: NTS
 QTY: 8

MATERIAL: ASTM A240 TYPE 316 STAINLESS STEEL
 NOTES: CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS, INCLUDING BOLT SPACING.
 EACH SHIM PACK SHALL BE COMPRISED OF SHIMS OF THE FOLLOWING THICKNESSES:
 1 X 1/2", 1 X 1/4", 1 X 1/8", 1 X 1/16", 1 X 1/32", AND 5 X 0.003"

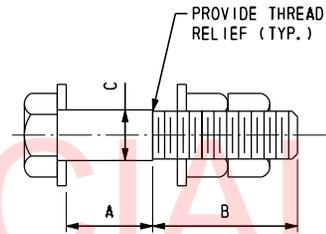
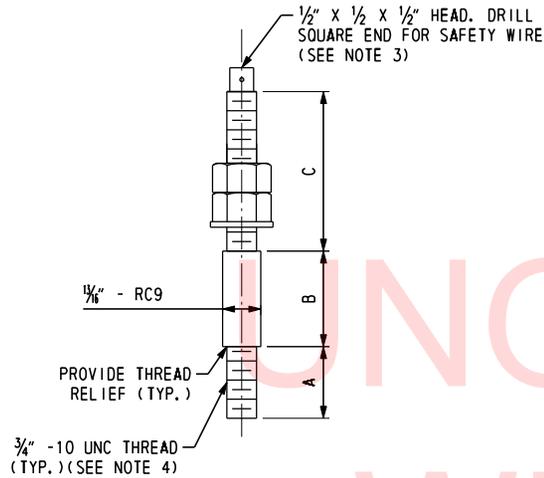
NOTES:

1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615613 "INITIAL REPAIRS AT BRIDGE 1-693."
2. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
3. REAR GUIDES SHALL BE SHIMMED TO PROVIDE 0.004" TO 0.011" CLEARANCE WITH THE LOCK BARS.
4. FRONT GUIDES AND RECEIVING SOCKETS SHALL BE SHIMMED TO PROVIDE 0.005" TO 0.013" CLEARANCE WITH THE LOCK BARS.
5. CLEAN AND SPOT PAINT ALL NEW TURNED BOLTS AFTER INSTALLATION.

REPAIRS

- M1 REPLACE SHIMS AND SHOE FASTENERS AT BOTH SPAN LOCK ASSEMBLIES (REAR GUIDES, FRONT GUIDES, AND RECEIVING SOCKETS). REPLACE 1 LOOSE TURNED BOLT AT THE EAST FRONT GUIDE.
- M2 REALIGN SHIMS AT THE EAST SPAN LOCK REDUCER AND REPLACE 1 LOOSE TURNED BOLT.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIRS M1 & M2 (1 OF 4)	



SPAN LOCK TURNED BOLTS

SCALE: NTS
MATERIAL: ASTM A449

NOTES: EACH GUIDE AND RECEIVING SOCKET SHOE IS SECURED WITH 2 TURNED STUDS AND 2 TURNED BOLTS. REAR GUIDE, FRONT GUIDE, AND RECEIVING SOCKET SHOE TURNED BOLTS SHALL BE SECURED WITH DOUBLE NUTS. EAST FRONT GUIDE TURNED BOLT AND EAST SPAN LOCK REDUCER TURNED BOLT SHALL BE SECURED WITH 1 NUT.

GUIDE AND RECEIVING SOCKET SHOE STUDS

SCALE: NTS
MATERIAL: ASTM A449
NOTE: EACH GUIDE AND RECEIVING SOCKET SHOE IS SECURED WITH 2 TURNED STUDS AND 2 TURNED BOLTS.

GUIDE AND RECEIVING SOCKET TURNED STUD DIMENSIONS (SEE NOTE 5)				
LOCATION	QTY.	A	B	C
REAR GUIDE	4	CONTRACTOR TO FIELD VERIFY	1 3/8" ±	2 5/8"
FRONT GUIDE / RECEIVING SOCKET	8	CONTRACTOR TO FIELD VERIFY	2 1/4" ±	2 5/8"

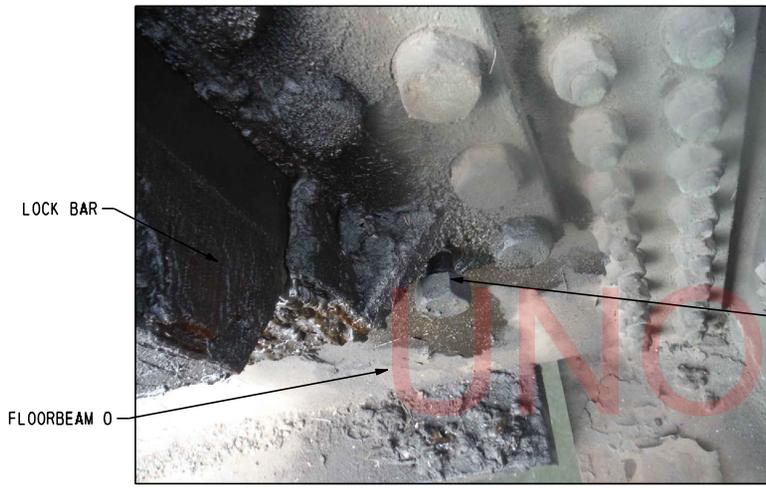
SPAN LOCK TURNED BOLT DIMENSIONS (SEE NOTE 5)

LOCATION	QTY.	A	B	C	THREADS
REAR GUIDE SHOES	4	2 1/4" ±	2 5/8"	1/4" DIA. RC9	3/4" UNC-10
FRONT GUIDE SHOES / RECEIVING SOCKET SHOES	8	2 7/8" ±	2 5/8"	5/8" DIA. RC9	7/8" UNC-9
EAST FRONT GUIDE	1	FIELD VERIFY	FIELD VERIFY	1 1/8" DIA. RC6	1" UNC-8
EAST SPAN LOCK REDUCER	1	FIELD VERIFY	FIELD VERIFY	5/8" DIA. RC6	7/8" UNC-9

NOTES:

- ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615613 "INITIAL REPAIRS AT BRIDGE 1-693."
- REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
- ALL RECEIVING SOCKET SAFETY WIRE SHALL BE STAINLESS STEEL WITH A MINIMUM DIAMETER OF 0.042" AND FILL A MINIMUM OF 75% OF THE HOLE DRILLED INTO THE SQUARE END OF THE STUDS. 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.
- CONTRACTOR SHALL FIELD VERIFY THREAD SIZE, PITCH, AND LENGTH IN EXISTING GUIDE / RECEIVING SOCKET SHOES PRIOR TO FABRICATING NEW STUDS. STUD THREAD LENGTH SHALL MATCH THE TAPPED DEPTH IN THE SHOES.
- PRIOR TO FABRICATING NEW TURNED BOLTS AND STUDS, THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, INCLUDING (BUT NOT LIMITED TO) THE HOLE DIAMETER IN THE GUIDE / RECEIVING SOCKET HOUSINGS AND THE NECESSARY SHANK LENGTH. NOTE APPROXIMATELY 1/4" OF THE SHANK IS RECESSED WITHIN THE GUIDE / SOCKET SHOES.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIRS M1 & M2 (2 OF 4)	



REPLACE 1 (1 1/8" DIA. H.S. TURNED BOLT) (EAST FRONT GUIDE ONLY) (SEE NOTE 3)

EAST FRONT GUIDE (FACING NORTH)



REALIGN THE LOOSE SPAN LOCK REDUCER SHIMS AND ADD SHIMS AS REQUIRED WHERE SHIMS ARE LOOSE TO ELIMINATE SOFT FOOT. REPLACE 1 TURNED BOLT WHERE SHIMS ARE LOOSE. NEW SHIMS SHALL MATCH THE DIMENSIONS OF THE EXISTING SHIMS (EAST SPAN LOCK REDUCER ONLY) (SEE NOTE 3)

EAST SPAN LOCK REDUCER (FACING SOUTH)

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NOTES:

1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615613 "INITIAL REPAIRS AT BRIDGE 1-693."
2. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
3. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING BOLT HOLE DIMENSIONS PRIOR TO FABRICATING NEW H.S. TURNED BOLTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIRS M1 & M2 (3 OF 4)	

LIVE LOAD BEARING SOLE PLATE (BOLTED TO BASCULE GIRDER)

ADJUST SHIMS BETWEEN THE BASCULE GIRDER AND SOLE PLATE. FURNISH AND INSTALL NEW SLOTTED HEAD COUNTERSUNK TURNED BOLTS AT EACH BEARING ASSEMBLY IF SHIMS ARE ADJUSTED (4 BOLTS PER SOLE PLATE).

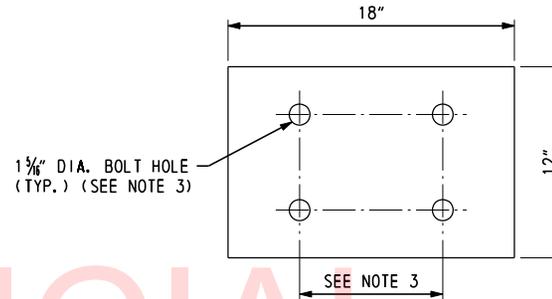
BASCULE GIRDER



LIVE LOAD BEARING ANCHORAGE

TYPICAL LIVE LOAD BEARING ASSEMBLY

QTY: 4 LIVE LOAD BEARING LOCATIONS



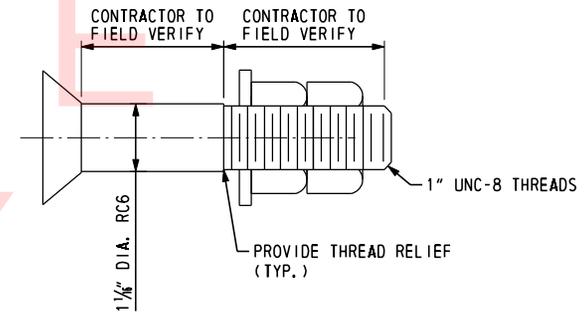
LIVE LOAD BEARING SHIM PACK

SCALE: NTS

QTY: 4

MATERIAL: ASTM A240 TYPE 316 STAINLESS STEEL

NOTE: EACH SHIM PACK SHALL BE COMPRISED OF SHIMS OF THE FOLLOWING THICKNESSES: 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".



LIVE LOAD BEARING SLOTTED HEAD COUNTERSUNK TURNED BOLT

SCALE: NTS

QTY: 16

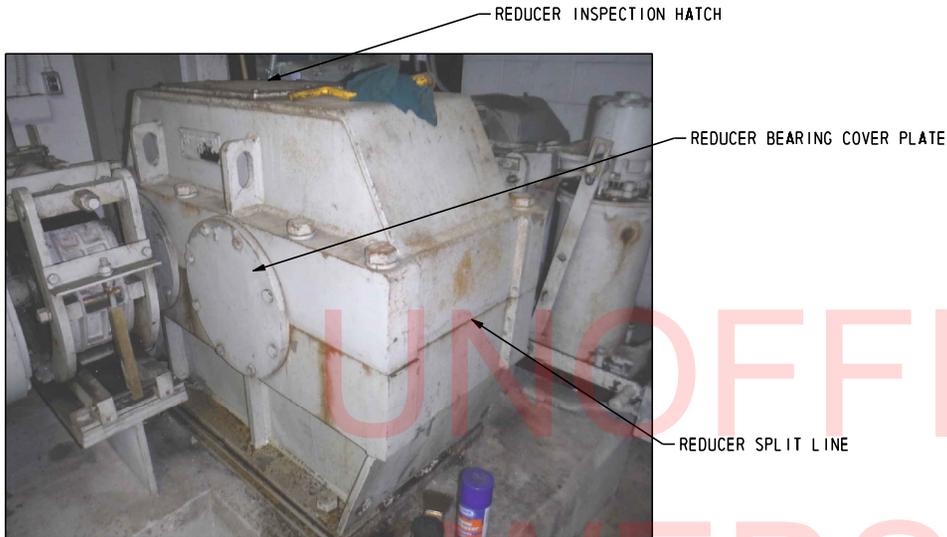
MATERIAL: ASTM A449

NOTE: SEE NOTE 3

NOTES:

1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615613 "INITIAL REPAIRS AT BRIDGE 1-693."
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 FOR NEW TURNED BOLTS PRIOR TO FABRICATING NEW SHIMS AND TURNED BOLTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIRS M1 & M2 (4 OF 4)	



NORTH LEAF REDUCER

NOTE: SOUTH LEAF REDUCER SIMILAR

EXISTING REDUCER INFORMATION		
REDUCER ID	REDUCER QTY	MODEL
SPAN DRIVE REDUCER	2	HORSBURGH & SCOTT, MARK 11, SIZE 170-S, RATIO 7.50:1, SERIAL NO. M-4868

SPEED REDUCER REPAIR PROCEDURE (SUGGESTED)

1. CONSULT WITH THE REDUCER MANUFACTURER TO PROVIDE A PROCEDURE FOR SEALING THE OIL LEAKS FROM THE SPEED REDUCERS IN THE FIELD. SUBMIT PROCEDURE TO THE ENGINEER FOR REVIEW. A REPRESENTATIVE OF THE MANUFACTURER SHALL BE ON-SITE TO PERFORM THIS WORK.
2. BEFORE DISASSEMBLY OF THE REDUCER, DRAIN OIL FROM THE REDUCER HOUSING AND AS PER THE MANUFACTURER'S RECOMMENDATION FLUSH THE INTERNAL SURFACES TO REMOVE ANY SLUDGE OR DEBRIS FROM WITHIN THE HOUSING. VISUALLY INSPECT INTERNAL SURFACES FOR DEBRIS WITHIN THE HOUSING.
3. WITH THE MACHINERY MOTORS LOCKED OUT/TAGGED OUT FOR OPERATION, RELEASE ANY RESIDUAL TORQUE FROM THE MACHINERY BY RELEASING THE BRAKES.
4. UNBOLT REDUCER AT THE BEARING COVER PLATES AND AT THE HOUSING SPLIT LINE. RAISE THE TOP HALF OF REDUCER HOUSING TO CLEAN THE MATING SURFACES WITH SOLVENT TO PREPARE THE REDUCER FOR NEW GASKET SEALANT.
5. REMOVE EXISTING GASKET SEALANT AT THE SPLIT LINE AS DIRECTED BY THE REDUCER MANUFACTURER.
6. CLEAN THE MATING SURFACES AT THE SPLIT LINE AND BETWEEN THE BEARING COVER PLATES AND HOUSING WITH SOLVENT.
7. APPLY GASKET SEALANT TO THE SPLIT LINE AND BEARING COVER PLATES AS DIRECTED BY THE REDUCER MANUFACTURER.
8. REINSTALL THE TOP HALF OF THE REDUCER HOUSING AND BEARING COVER PLATES.
9. TORQUE REDUCER FASTENERS AS SPECIFIED BY THE MANUFACTURER.
10. FLUSH THE INTERNAL SURFACES AGAIN AFTER ASSEMBLY TO REMOVE ANY DEBRIS FROM WITHIN THE HOUSING. VISUALLY INSPECT INTERNAL SURFACES FOR DEBRIS WITHIN THE HOUSING BEFORE ADDING NEW OIL.
11. FILL REDUCER HOUSING WITH NEW OIL.
12. PERFORM 5 TEST OPERATIONS AND VERIFY OIL DOES NOT LEAK FROM THE HOUSING SPLIT LINE OR BEARING COVER PLATES. REPEAT STEPS 2 THROUGH 11 IF OIL LEAKAGE IS OBSERVED.

NOTES:

1. ALL ITEMS ON THIS DRAWING SHALL BE PAID UNDER SECTION 615613 "INITIAL REPAIRS AT BRIDGE 1-693."
2. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

REPAIRS

M3 SEAL OIL LEAKS AT THE HOUSING SPLIT LINE, COVER PLATES, AND INSPECTION HATCH AT BOTH SPAN DRIVE SPEED REDUCERS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR M3	



CLEAN ALL SIDES OF MOTOR,
SCRAPE WITH WIRE BRUSH AND
PAINT AS SPECIFIED

TYPICAL SPAN LOCK MOTOR WITH CORROSION

QTY: 2 SPAN LOCK MOTORS



CLEAN EXISTING NAMEPLATES
WITH WIRE BRUSH OR SAND
PAPER BEFORE AND AFTER
PAINTING

**TYPICAL SPAN LOCK MOTOR
WITH PAINT COVERING BRAKE NAMEPLATE**

QTY: 2 SPAN LOCK MOTORS

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NOTES:

1. PROVIDE NEW NAMEPLATE IF EXISTING CANNOT BE CLEANED AND MADE LEGIBLE.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS. REFER TO "COMMON PROVISIONS FOR MECHANICAL WORK" SPECIAL PROVISION FOR PAINTING REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E1	



**WEST SPAN LOCK
DISCONNECT SWITCH**

QTY: 1 LOCATION FOR SPLICE REPAIR

DISCONNECT AND REMOVE EXISTING
LOAD SIDE WIRING AND FURNISH
AND INSTALL 3-NO. 10 AWG AND
1-NO. 10 AWG GND TO MOTOR IN
EXISTING CONDUIT



WEST SPAN LOCK MOTOR

QTY: 2 LOCATIONS FOR CONDUIT REPAIR
NOTE: EAST SPAN LOCK MOTOR SIMILAR

REPLACE CORRODED CONDUIT
BODY AND SUPPORT FLEXIBLE
CONDUIT WITHIN 18" OF
MOTOR TERMINATION

NOTES:

1. CONDUIT SUPPORT SHALL BE FABRICATED FROM VERTICAL GALV. (AFTER FABRICATION) STEEL SUPPORT ANCHORED FROM SPAN LOCK GRATING/MOTOR SUPPORT AND FLOOR BEAM/STRINGER.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
3. CONDUIT BODY SHALL BE GALV. STEEL, OUTDOOR RATED.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E2	



TYPICAL SPAN MOTOR DISCONNECT SWITCHES

QTY: 4 DISCONNECT SWITCH WARNING SIGNS

FURNISH AND INSTALL WARNING SIGNS ON LOCAL DISCONNECT SWITCHES AND MOTOR JUNCTION BOXES AS FOLLOWS: "-WARNING- THIS EQUIPMENT IS FED FROM MORE THAN ONE SOURCE, DE-ENERGIZE BEFORE SERVICING"



TYPICAL SPAN MOTOR

QTY: 4 SPAN MOTOR WARNING SIGNS

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NOTES:

1. WARNING SIGNALS SHALL BE PHENOLIC RED WITH WHITE FONT AND SHALL BE ATTACHED TO THE EQUIPMENT WITHOUT DAMAGE.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

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615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E3	



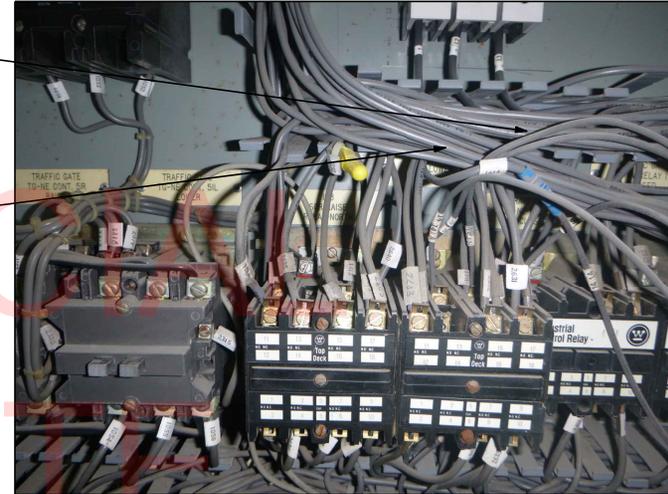
TYPICAL MOTOR CONTROL CABINET WITH UNORGANIZED WIRING

QTY: 2 LOCATIONS

SECURE LOOSE WIRING WITHIN EXISTING WIRING DUCTS, USE PLASTIC TIES AND STRAPS TO BUNDLE CABLES

FURNISH AND INSTALL MISSING WIRING DUCT COVERS, REROUTE CONDUCTORS WHERE POSSIBLE TO REDUCE WIRE DUCT FILL

REMOVE AND DISPOSE EXISTING PARTS AND DEBRIS



TYPICAL MOTOR CONTROL CABINET WITH UNORGANIZED WIRING

QTY: 2 LOCATIONS

NOTES:

1. FURNISH AND INSTALL NEW WIRE TAGS WHERE MISSING, ILLEGIBLE OR HAND-WRITTEN.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E4	



REMOVE WIRE NUT SPLICE
AND TERMINATE TO A
TERMINAL BLOCK OR AS
OTHERWISE SPECIFIED



**TYPICAL WIRE NUT SPLICE
IN MOTOR CONTROL CABINET**

QTY: ASSUME 12 WIRE NUT SPLICES TOTAL

**TYPICAL WIRE NUT SPLICE
IN MOTOR CONTROL CABINET**

QTY: ASSUME 12 WIRE NUT SPLICES TOTAL

NOTES:

1. FOR SPLICES THAT CANNOT BE ROUTED TO A NEW OR EXISTING TERMINAL BLOCK, THE USE OF AN INLINE COMPRESSION SPLICE WITH HEAT SHRINK IS ACCEPTABLE.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E5 (1 of 3)	



TYPICAL DRIVE CABINET
LOOSE SPARE CONDUCTORS

QTY: ASSUME 12 SPARE CONDUCTORS PER DRIVE

CONNECT SPARE CONDUCTORS
IN DRIVE CABINET TO NEW
TERMINAL BLOCK MOUNTED
SIMILAR TO EXISTING



TYPICAL DRIVE CABINET
LOOSE CONDUCTORS

QTY: ASSUME 12 SPARE CONDUCTORS PER DRIVE

NOTES:

1. FOR WIRING THAT CANNOT BE ROUTED TO A NEW OR EXISTING TERMINAL BLOCK, THE CONTRACTOR SHALL USE AN INLINE COMPRESSION SPLICE WITH HEAT SHRINK.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E5 (2 of 3)	



**SOUTH SUBMARINE CABLE
TERMINATION CABINET**

QTY: 1 LOCATION

REMOVE WIRE NUT SPLICE
AND TERMINATE TO A
TERMINAL BLOCK OR AS
OTHERWISE SPECIFIED



**DISCONNECTED CONDUCTOR IN THE SOUTH
SUBMARINE CABLE TERMINATION CABINET**

QTY: 1 CONDUCTOR

NOTES:

1. FOR WIRING THAT CANNOT BE ROUTED TO A NEW OR EXISTING TERMINAL BLOCK, THE CONTRACTOR SHALL USE AN INLINE COMPRESSION SPLICE WITH HEAT SHRINK.
2. TRACE EXISTING WIRE NO. S2211 IN THE SUBMARINE CABLE CABINET AND RELABEL.
3. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E5 (3 of 3)	



LOCATION OF SPAN POSITION ROTARY CAM LIMIT SWITCHES (2) AND POSITION TRANSMITTER

CLEAN AND PAINT POSITION TRANSMITTER (NOT SHOWN), AUXILIARY AND MAIN SPAN POSITION ROTARY CAM LIMIT SWITCHES AND FURNISH AND INSTALL MISSING HARDWARE (APPROX. 12 FASTENERS MISSING IN TOTAL)



LOCATION OF TYPICAL SPAN POSITION ROTARY CAM LIMIT SWITCHES AND POSITION TRANSMITTER

QTY: 2 LOCATIONS

TYPICAL SPAN POSITION ROTARY CAM LIMIT SWITCHES

QTY: 2 LOCATIONS

NOTES:

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

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E6 (1 of 2)	



CLEAN AND PAINT SPAN
LOCK PULLED AND DRIVEN
LIMIT SWITCHES

TYPICAL SPAN LOCK PULLED
AND DRIVEN LIMIT SWITCHES

QTY: 2 LOCATIONS

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NOTES:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E6 (2 of 2)	



GENERATOR ROOM FLOOR PENETRATIONS
FOR FUEL LINES

QTY: ASSUME 12

FURNISH AND INSTALL FIRE
STOP GROMMET OR SEALANT TO
COVER PIPE AND CONDUIT
OPENINGS IN FLOOR AND WALL
PENETRATIONS



TYPICAL BASCULE PIER CONDUIT
PENETRATIONS THROUGH WALL

QTY: ASSUME 12

NOTES:

1. REFER TO SPECIFICATIONS ON FIRE STOP SEAL TYPE REQUIRED FOR EACH LOCATION.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E7	



FURNISH AND
INSTALL NEW S. S.
CONDUIT FITTINGS

**TYPICAL FENDER JUNCTION BOX
WITH CORROSION ON CONDUIT FITTINGS**

QTY: MULTIPLE LOCATIONS ON EACH FENDER



FURNISH AND INSTALL
NEW S. S. CONDUIT
AND CABLE
FITTINGS

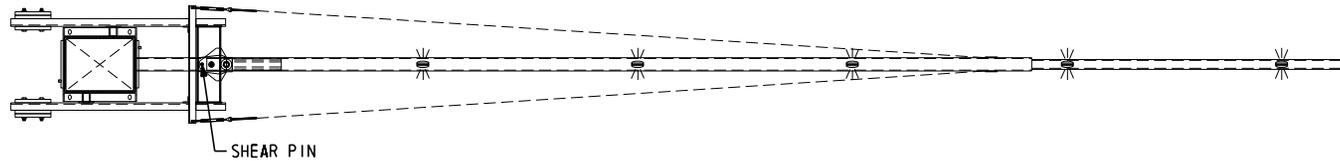
**TYPICAL FENDER CABLE
WITH CORROSION ON CONDUIT FITTINGS**

QTY: MULTIPLE LOCATION ON EACH FENDER

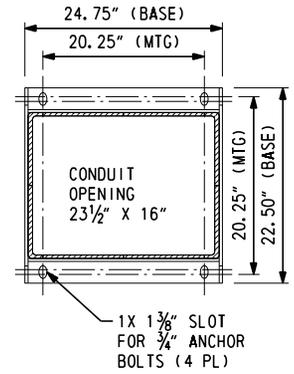
NOTES:

1. CONTRACTOR TO PROVIDE NECESSARY ACCESS AND SAFETY EQUIPMENT TO ACCESS FITTINGS AND CONTAIN PAINTING OPERATIONS.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

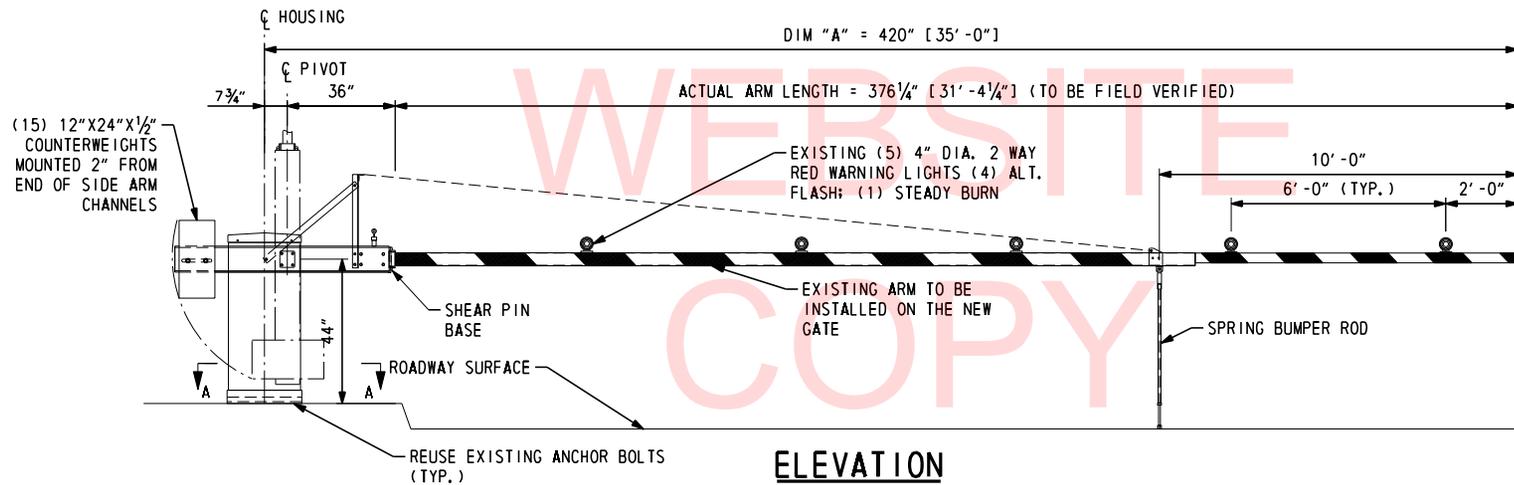
T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E8	



PLAN
NOT TO SCALE



SECTION A-A
NOT TO SCALE

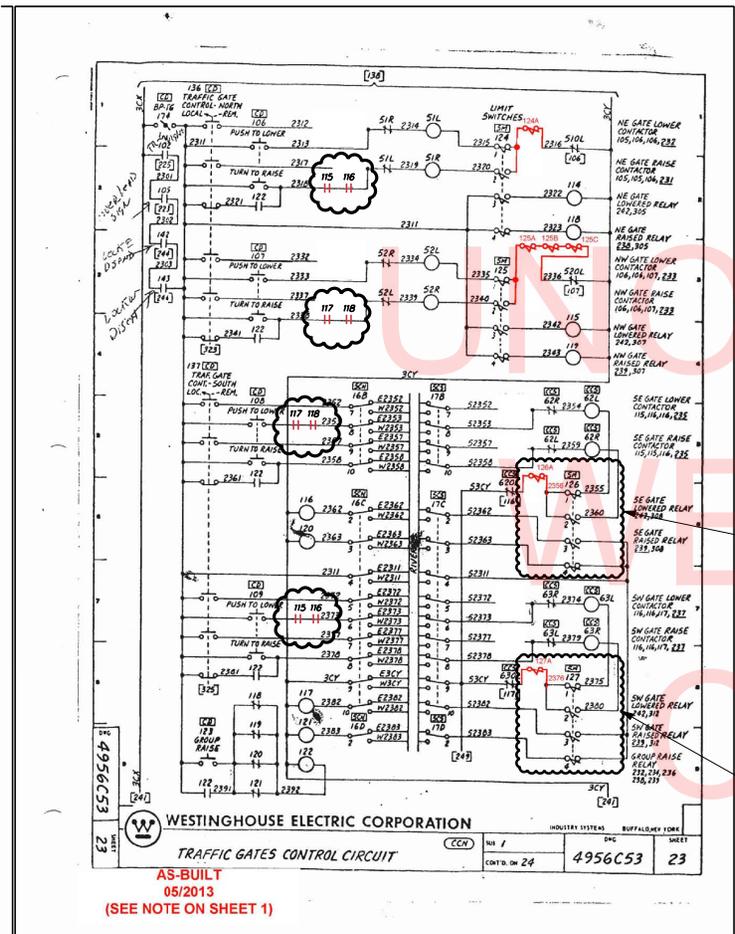


ELEVATION
NOT TO SCALE
QTY: 2 LOCATIONS

NOTES:

1. EXISTING ANCHORS SHALL BE REUSED, CONTRACTOR SHALL INSPECT AND MANUALLY CLEAN THE ANCHOR BOLT THREADS WITH A WIRE BRUSH AND DIE. THE EXISTING GROUT PADS SHALL BE REPLACED ON EACH GATE PLATFORM.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO ORDERING AND FABRICATION.
3. SIDE ARM CHANNELS, COUNTERWEIGHTS, & ANCHOR BOLTS TO BE HOT DIP GALVANIZED.
4. GATE TO HAVE HINGED REMOVABLE LOCKABLE DOORS, KEYED ALIKE.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E9 (1 OF 4)	



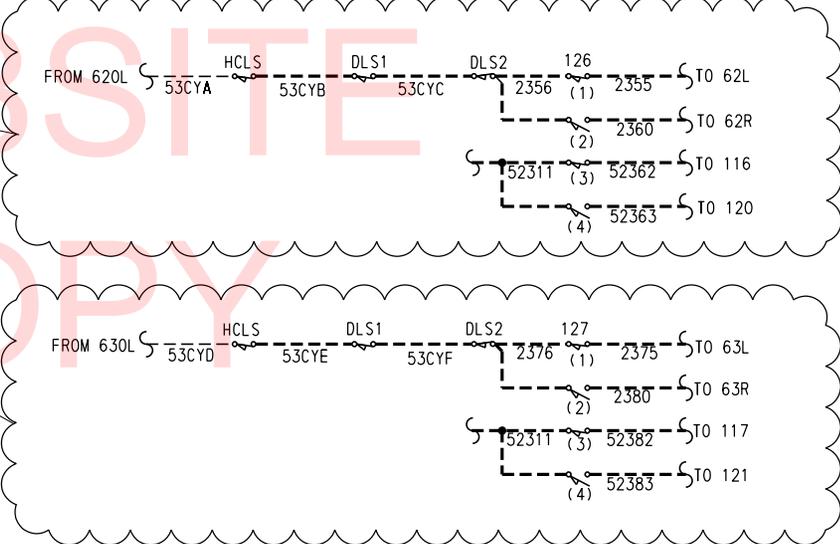
WESTINGHOUSE ELECTRIC CORPORATION
 TRAFFIC GATES CONTROL CIRCUIT
 AS-BUILT
 05/2013
 (SEE NOTE ON SHEET 1)

INDUSTRY SYSTEMS	BUFFALO, N.Y.
NO. 1	ENC.
CONT. OR 24	4956C53
	23

Delaware Department of Transportation

SCOPE OF WORK:

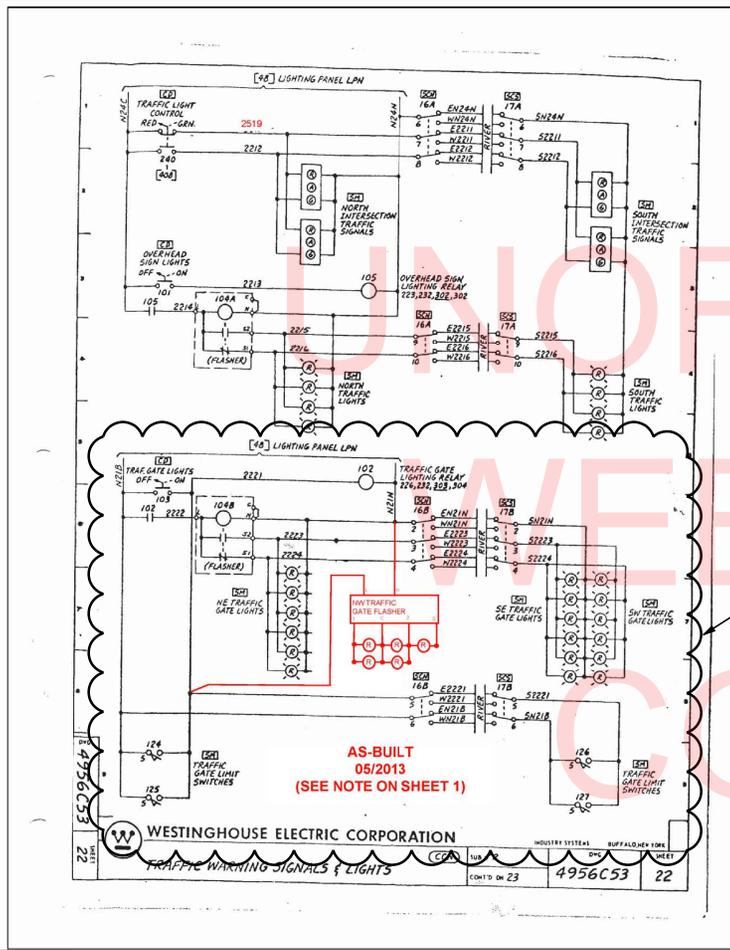
1. FURNISH AND INSTALL NEW RELAY CONTACTS IN EXISTING RELAYS. CONTACTS SHALL BE N.O. TYPE AND COMPATIBLE WITH THE EXISTING RELAYS (WESTINGHOUSE/EATON AR/ARD MACHINE TOOL RELAYS).
2. CONNECT NEW RELAY CONTACT INTO EXISTING CIRCUITS AS SHOWN AND MODIFY WIRING AS REQUIRED. WIRING FROM CONTROL DESK TO SUBMARINE CABLE TERMINATION CABINET SHALL BE TERMINATED AND REROUTED TO MOTOR CONTROL CABINETS AND THEN BACK TO MOTOR CONTROL CABINETS AS REQUIRED. NEW WIRING SHALL BE INSTALLED IN 3/4" RIGID STEEL CONDUIT MINIMUM.
3. ALL WIRING, TERMINAL BLOCKS, CONNECTORS AND WIRE LABELS SHALL BE AS SPECIFIED.
4. MODIFY LIMIT SWITCH SETTINGS WITHIN NEW AND EXISTING WARNING GATES AS REQUIRED.
5. PERFORM OPERATIONAL TESTING TO CONFIRM THE OFF-GOING GATES CANNOT BE LOWERED UNTIL BOTH ON-COMING GATES ARE LOWERED.
6. PERFORM OPERATIONAL TESTING TO CONFIRM ON-COMING GATES CANNOT BE RAISED UNTIL BOTH OFF-GOING GATES ARE RAISED.



NOTES:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. PILOT DEVICE NAMEPLATES AND TEXT NOT SHOWN FOR CLARITY.
3. REFER TO VOLUME 3 OF OPERATIONS & MAINTENANCE MANUAL FOR EXISTING AS-BUILT DRAWINGS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E9 (2 OF 4)	

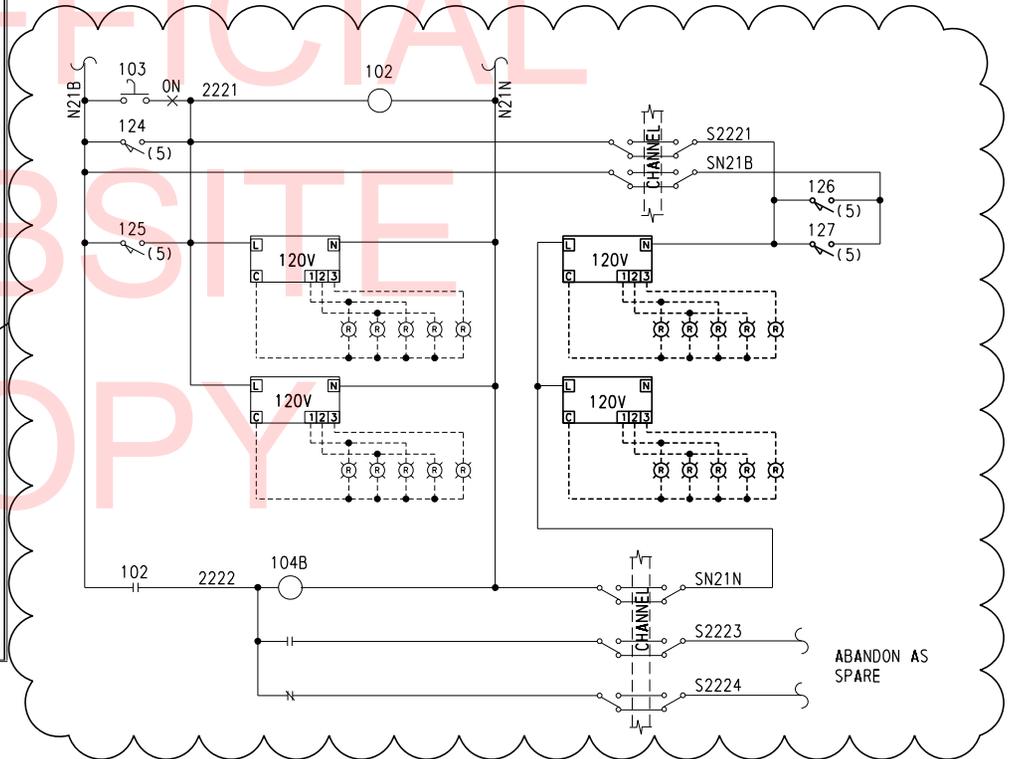


May 2013

14-6

SCOPE OF WORK:

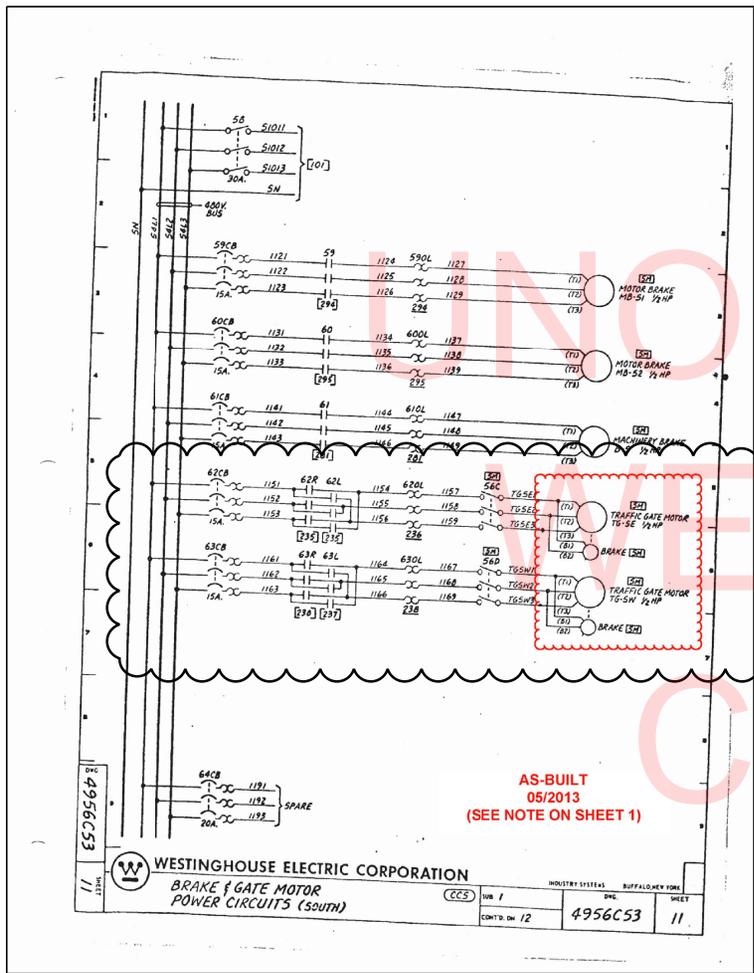
1. DISCONNECT EXISTING SOUTH GATES AND WIRING, KEEP ARMS AND REUSE WITH NEW GATES.
2. FURNISH AND INSTALL NEW SW AND SE WARNING GATES AS SHOWN ON SHEET NO. E9 (1 OF 4).
3. CONNECT EXISTING WIRING AS SHOWN ON SHEET NO. E9 (2 OF 4).
4. ALL WIRING, TERMINAL BLOCKS, CONNECTORS AND WIRE LABELS SHALL BE AS SPECIFIED.
5. ADJUST LIMIT SWITCH SETTINGS AS REQUIRED.
6. PERFORM OPERATIONAL TESTING TO CONFIRM PROPER OPERATION OF GATES AND ADJUST/MODIFY AS REQUIRED.
7. UPDATE AS-BUILT DRAWING TO REFLECT NEW EQUIPMENT AND WIRING INSTALLED.



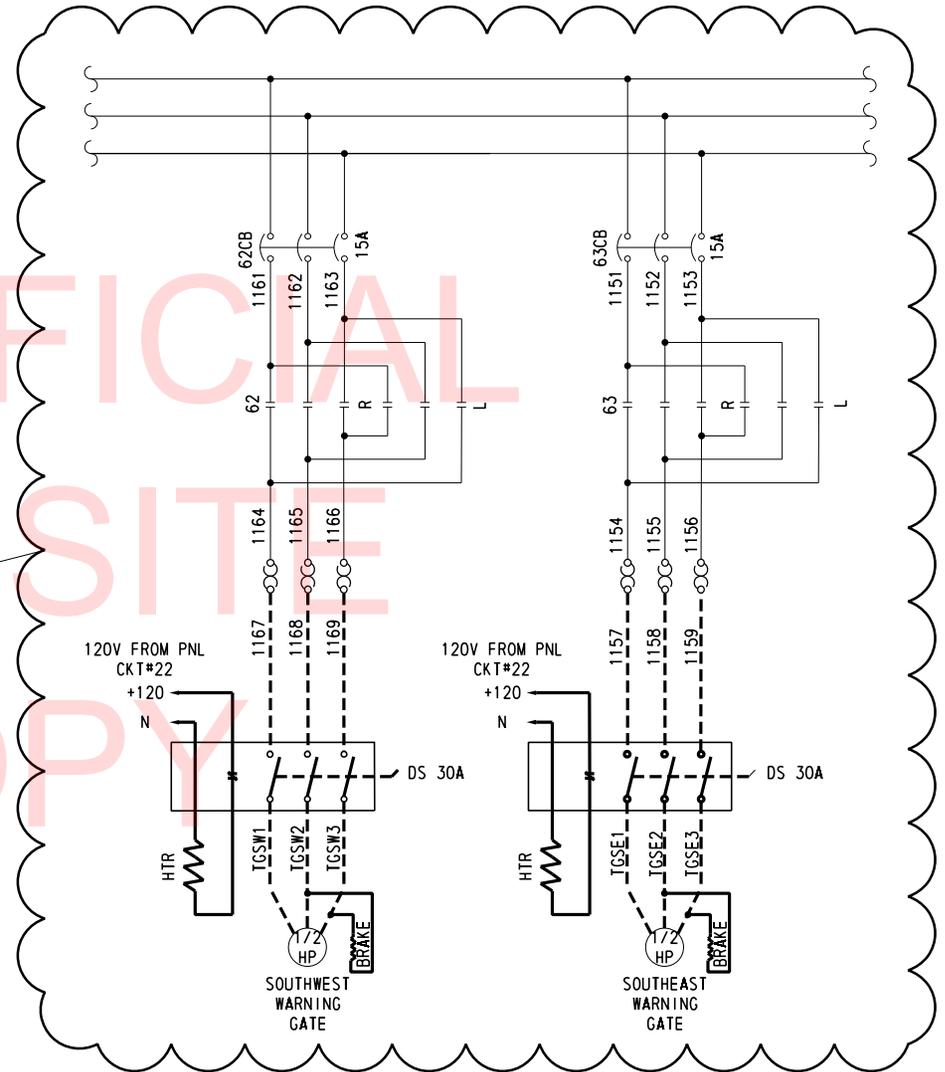
NOTES:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. PILOT DEVICE NAMEPLATES AND TEXT NOT SHOWN FOR CLARITY.
3. REFER TO VOLUME 3 OF OPERATIONS & MAINTENANCE MANUAL FOR EXISTING AS-BUILT DRAWINGS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E9 (3 OF 4)	



Delaware Department of Transportation



NOTES:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. PILOT DEVICE NAMEPLATES AND TEXT NOT SHOWN FOR CLARITY.
3. REFER TO VOLUME 3 OF OPERATIONS & MAINTENANCE MANUAL FOR EXISTING AS-BUILT DRAWINGS.

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615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E9 (4 OF 4)	



FUEL GENERATOR TANK
ON LOWER LEVEL

REMOVE FUEL TANK
AND PIPING

REMOVE FUEL PIPING TO
GENERATOR DAY TANK



GENERATOR FUEL PIPING ROUTED FROM
FUEL TANK

UNOFFICIAL
WEBSITE
COPY

NOTES:

1. CONTRACTOR SHALL REMOVE THE FUEL TANK AND ALL NECESSARY EQUIPMENT.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E10 (1 OF 2)	



GENERATOR DAY TANK

REMOVE GENERATOR DAY TANK
AND FURNISH AND INSTALL NEW
TANK AS SPECIFIED

REMAINING FUEL LINES TO
EXISTING DAY TANK, REMOVE
ALL OTHERS



GENERATOR FUEL LINES
FROM DAY TANK

OFFICIAL
WEBSITE
COPY

NOTES:

1. CONTRACTOR TO FURNISH AND INSTALL WIRING AS REQUIRED FOR DAY TANK OPERATION
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E10 (2 OF 2)	



SEAL ALL CONDUIT ENTRANCES AND OPENINGS TO PREVENT WATER INFILTRATION

FURNISH AND INSTALL DEBRIS/RAIN SHIELD OVER TOP OF DRIVE AND CONTACTOR CABINETS

REPLACE EXISTING SEALANT ON ENCLOSURE ROOF

CONTACTOR CABINET INTERIOR WITH SEALANT AND EVIDENCE OF WATER INFILTRATION

QTY: 5 ENCLOSURES



AREA ABOVE DRIVE AND CONTACTOR CABINET FOR PROPOSED SHIELD

QTY: 5 ENCLOSURES

NOTES:

1. CONTRACTOR TO DE-ENERGIZE ALL POWER SOURCES PRIOR TO WORKING INSIDE ENCLOSURES.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

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615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E11 (1 OF 3)	



REPLACE EXISTING SEALANT ON ENCLOSURE ROOF

CLEAN AND SPOT PAINT AREAS OF CORROSION OR WATER INFILTRATION

DRIVE CABINET INTERIOR WITH LEAK AT SEAL

QTY: 5 ENCLOSURES



CLEAN CORROSION AND DEBRIS FROM COMPONENTS INSIDE CONTACTOR CABINET

CONTACTOR CABINET INTERIOR WITH CORROSION ON CONTACTOR AND OTHER COMPONENTS

QTY: 1 LOCATION

NOTES:

1. CONTRACTOR TO DE-ENERGIZE ALL POWER SOURCES PRIOR TO WORKING INSIDE ENCLOSURES.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

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615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E11 (2 OF 3)	



CLEAN CORROSION AND DEBRIS FROM COMPONENTS INSIDE DRIVE CABINET, REPLACE HARDWARE LUGS, AND CONNECTORS WITH CORROSION

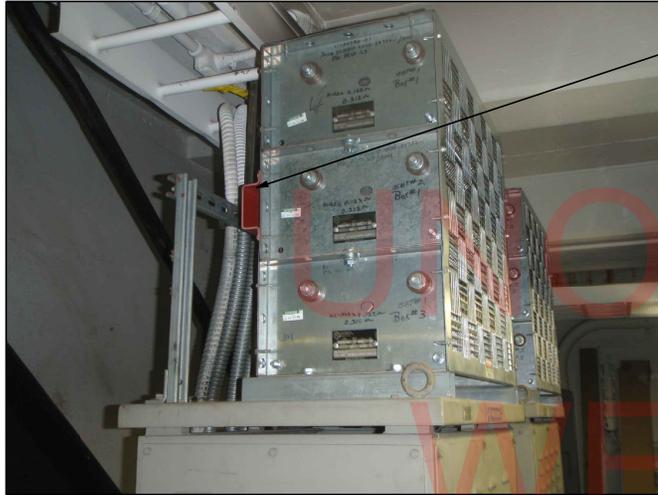
TYPICAL DRIVE CABINET INTERIOR WITH CORROSION ON COMPONENTS

QTY: 2 LOCATIONS

NOTES:

1. CONTRACTOR TO DE-ENERGIZE ALL POWER SOURCES PRIOR TO WORKING INSIDE ENCLOSURES.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E11 (3 OF 3)	



**RESISTORS IN NORTH ELECTRICAL /
MECHANICAL ROOM - TOP SECTION**

QTY: 8 RESISTOR ENCLOSURES

REPLACE EXISTING WIRING FROM
TERMINAL BLOCK TO RESISTORS
WITH HIGH TEMP WIRING

REPLACE ALL EXISTING WIRING
INSIDE RESISTOR BANKS WITH
HIGH TEMPERATURE WIRING



**RESISTORS IN NORTH ELECTRICAL /
MECHANICAL ROOM**

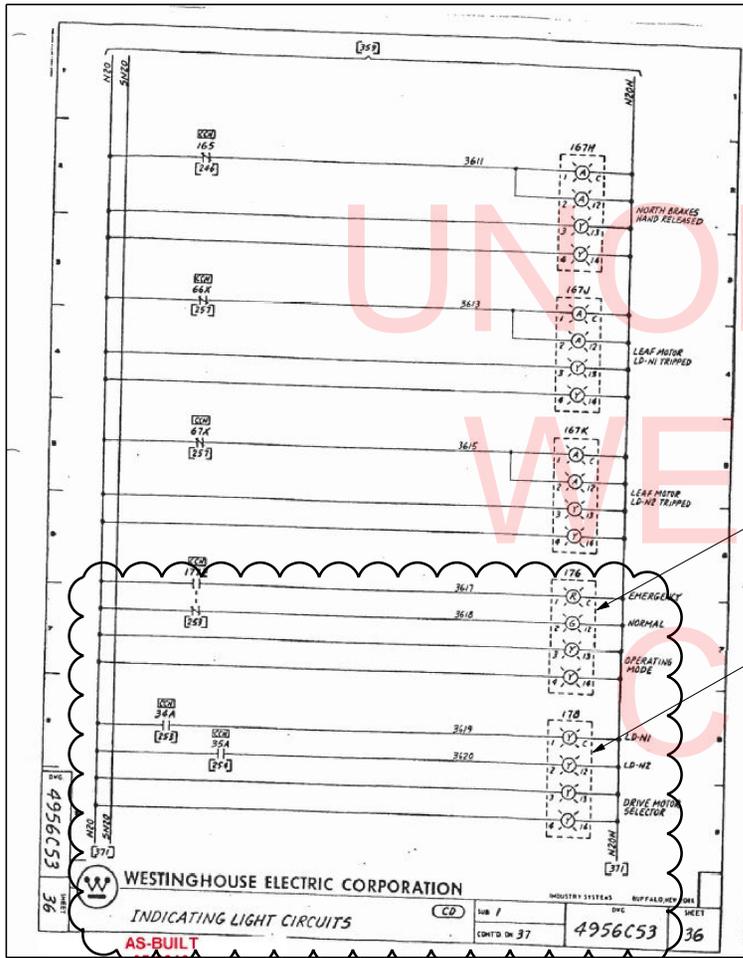
QTY: 6 RESISTOR ENCLOSURES AT NORTH ELECTRICAL / MECHANICAL ROOM (SHOWN)
2 RESISTOR ENCLOSURES IN SOUTH ELECTRICAL / MECHANICAL ROOM (NOT SHOWN)

OFFICIAL
WEBSITE
COPY

NOTES:

1. WIRING SHALL MATCH EXISTING SIZE.
2. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

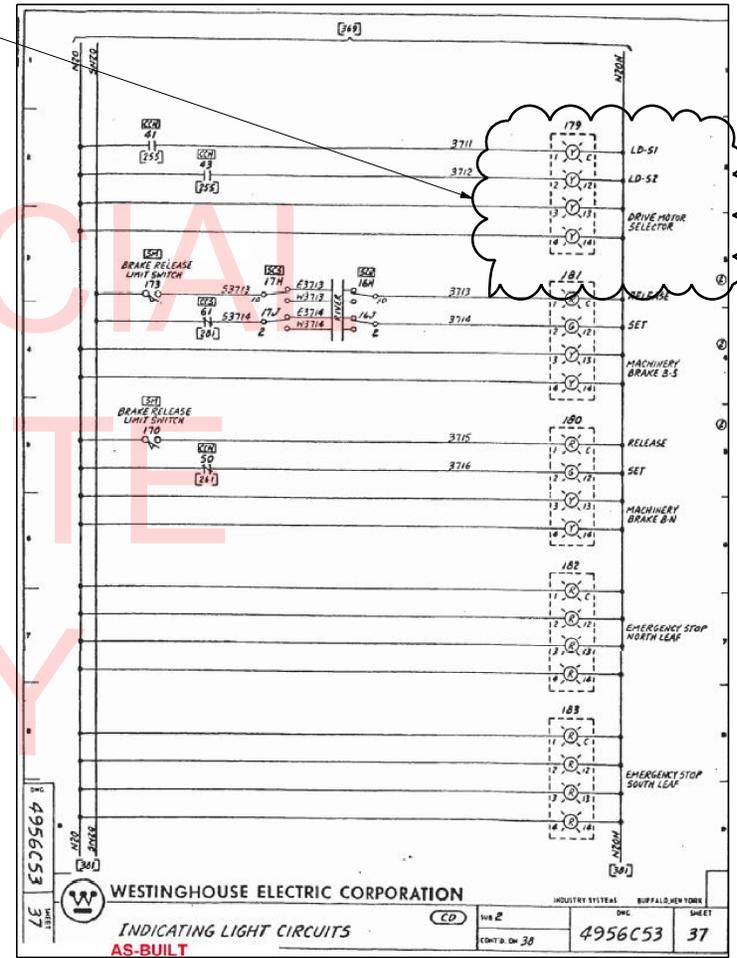
T201707005	THIRD STREET
615613 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E12	



REPLACE AND RELOCATE IN CONTACTOR CABINET

REPLACE IN KIND SEE DWG. E-13 (1 OF 7)

REPLACE AND RELOCATE IN CONTACTOR CABINET



NOTE:

- REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

T201707005	THIRD STREET
615619 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E13 (2 OF 7)	



EXISTING CONTROL DESK MODIFICATIONS

FURNISH AND INSTALL (2) NEW DRIVE MOTOR SELECTOR SWITCHES, (2) POSITION MAINTAINED SWITCHES (30MM SIZE) TO MATCH OTHER SELECTOR SWITCHES IN THE SAME CABINET.



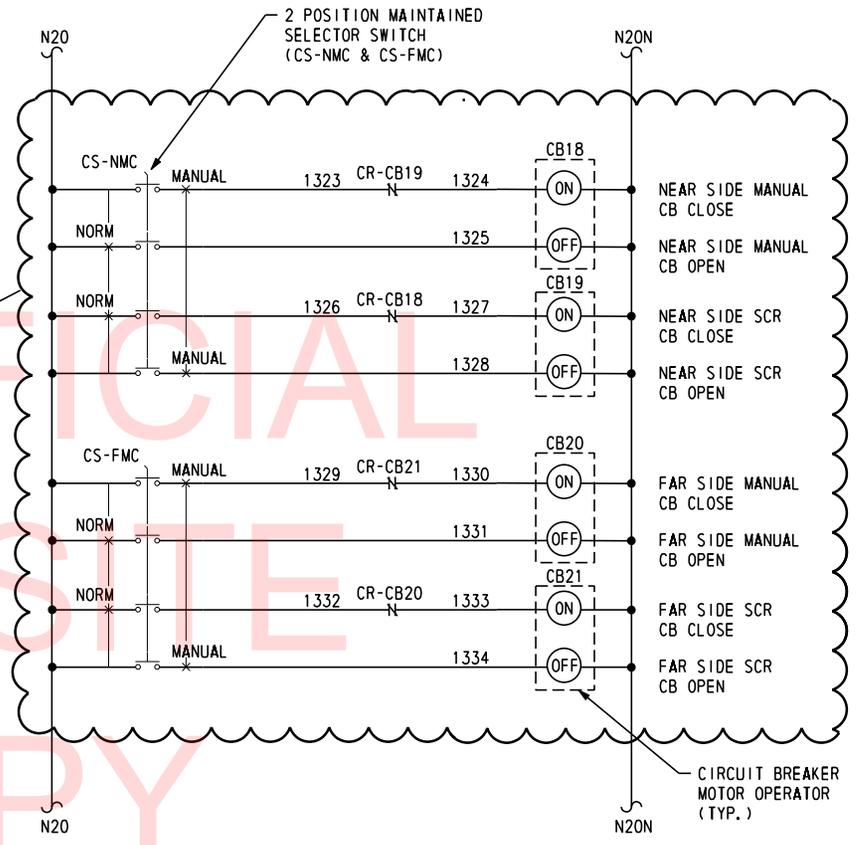
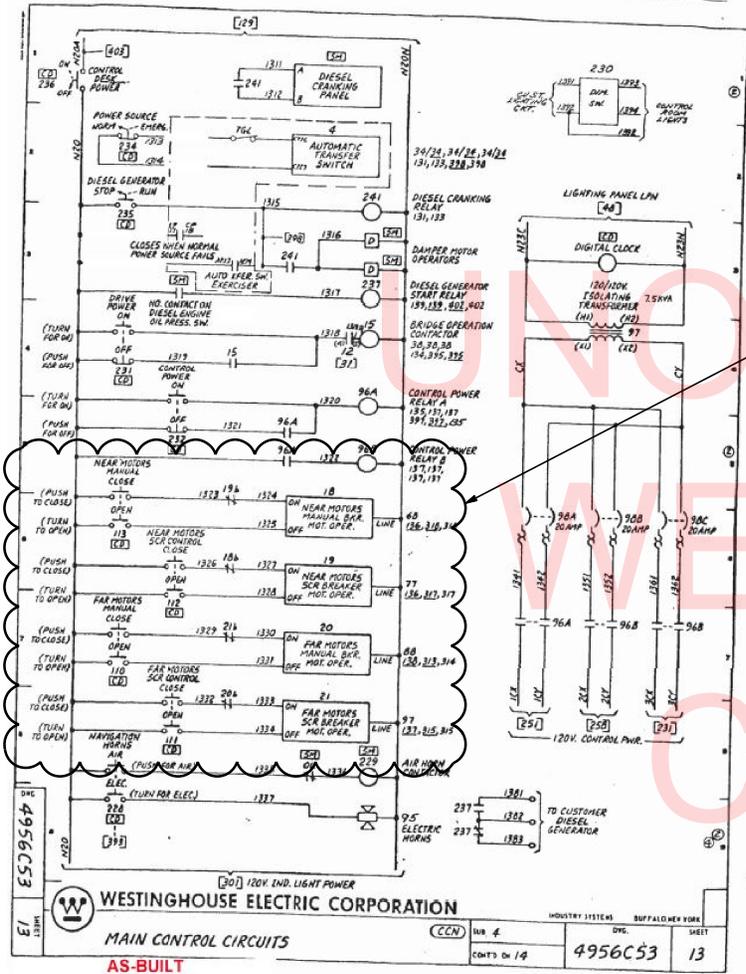
EXISTING DRIVE CABINET

REPLACE DRIVE MOTOR SELECTOR SWITCH WITH 2 POSITION DRIVE SELECTOR SWITCH, NORMAL/EMERGENCY. RELOCATE DRIVE MOTOR SELECTOR SWITCH AND FURNISH AND INSTALL NEW UNITS INSIDE CONTACTOR CABINET

NOTES:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. REFER TO SHEET E-13 (1 OF 7) AND (2 OF 7) FOR MODIFICATION DETAILS.
3. CONTRACTOR TO ADD SELECTOR SWITCHES TO THE LOCAL OPERATING PANEL AS SHOWN OR PROVIDE ADDITIONAL CONTACTS BLOCKS TO THE EXISTING SELECTOR SWITCHES IF FEASIBLE FOR NORTH AND SOUTH MOTOR OPERATION.

T201707005	THIRD STREET
615619 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E13 (3 OF 7)	



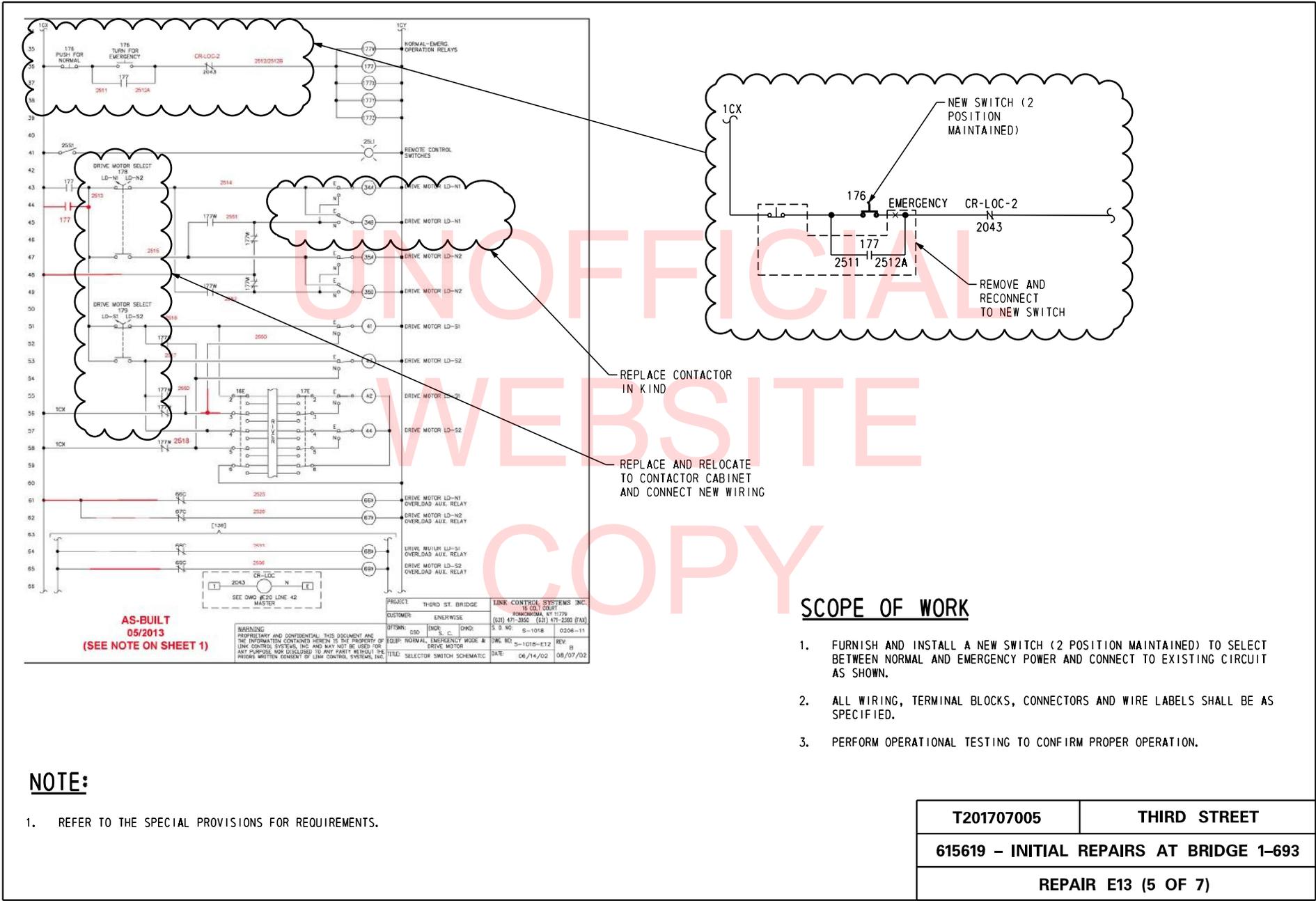
SCOPE OF WORK

1. MODIFY THE EXISTING CIRCUIT AS SHOWN IN THE NEW CIRCUIT.
2. ALL WIRING, TERMINAL BLOCKS, CONNECTORS AND WIRE LABELS SHALL BE AS SPECIFIED.
3. PERFORM OPERATIONAL TESTING TO CONFIRM PROPER OPERATION.

NOTE:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. CONTRACTOR TO PROVIDE NEW WIRING FOR FINAL CORRECTIONS AND TERMINATIONS TO NEW EQUIPMENT.

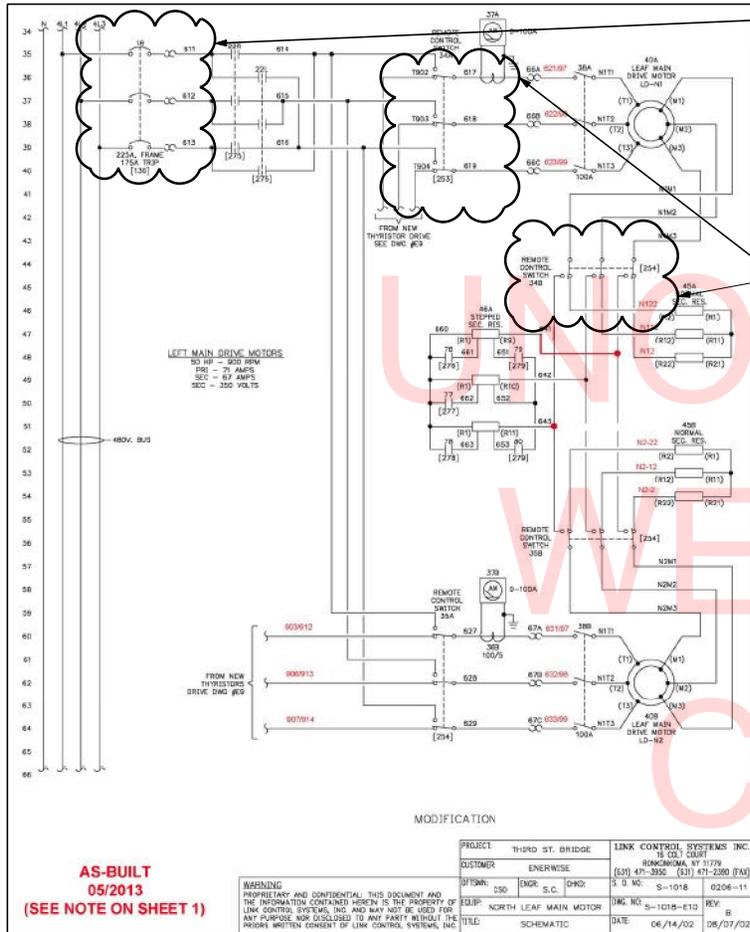
T201707005	THIRD STREET
615619 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E13 (4 OF 7)	



NOTE:

- REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.

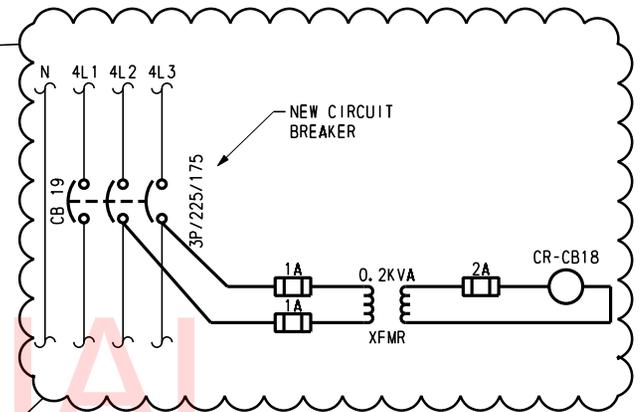
T201707005	THIRD STREET
615619 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E13 (5 OF 7)	



AS-BUILT
05/2013
(SEE NOTE ON SHEET 1)

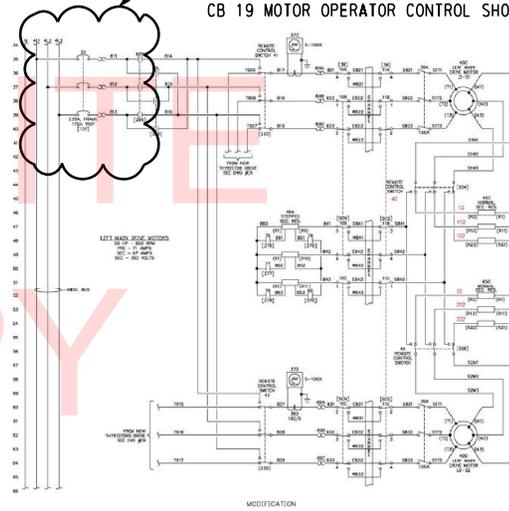
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REPLACE CONTACTOR IN KIND



MOTOR OPERATOR CONTROL

CB 19 MOTOR OPERATOR CONTROL SHOWN, CB 20 SHALL BE SIMILAR



AS-BUILT
05/2013
(SEE NOTE ON SHEET 1)

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NOTES:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. REFER TO SHEET E-13 (7 OF 7) FOR COMPONENTS TO BE REPLACED.
3. REPLACE THE EXISTING REMOTE CONTROL SWITCH WITH NEW SWITCH, ASCO 175 OR APPROVED EQUAL.

T201707005	THIRD STREET
615619 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E13 (6 OF 7)	



EXISTING CB AND
MOTOR OPERATORS
TO BE REPLACED

EXISTING MOTOR CONTROL CABINET
MODIFICATIONS FOR MAIN CIRCUIT BREAKERS



TYPICAL REMOTE
CONTACTORS TO
BE REPLACED

EXISTING MOTOR CONTROL CABINET
MODIFICATIONS FOR REMOTE CONTACTORS

NOTES:

1. REFER TO THE SPECIAL PROVISIONS FOR REQUIREMENTS.
2. REFER TO SHEET E-13 (6 OF 7) FOR MODIFICATION DETAILS.

T201707005	THIRD STREET
615619 - INITIAL REPAIRS AT BRIDGE 1-693	
REPAIR E13 (7 OF 7)	