



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. Box 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

VIA OVERNIGHT DELIVERY

July 26, 2018

Contract No. T201507602.01

Federal Aid Project No. EBHOS-S018(13)

BR 3-154 on US9 Savannah Road and BR 3-153 on SR1 Rehoboth Avenue over Lewes-Rehoboth Canal
Sussex County

Ladies and Gentlemen:

Enclosed is Addendum No. 3 for the referenced contract consisting of the following:

1. The Bid Proposal Cover, revised, to be substituted for the same page of the Proposal.
2. One (1) page, Prospective Bidders Notes, page ii, revised, to be substituted for the same page in the Proposal. Bidders Note 13 has been revised.
3. One (1) page, Special Provision 615503-Bridge Mechanical System, page 68 revised, to be substituted for the same page in the Proposal
4. Six (6) pages, Special Provision 615504-Bridge Electrical System, pages 85, 86, 120, 145, 146 and 153 revised, to be substituted for the same pages in the Proposal.
5. All of the Bid Pages have been revised and replaced.
6. The following Plan Sheets have been revised and replaced: 1, 10, 21, 22, 42, 44, 49, 61, 62, 63, 64, 70, 93, 94, 99, 102, 119, 121, 127, 140, 141, 142, 143 and 148.
7. Expedite File Disc, Amendments No. 1

Please note the revisions listed above and submit your bid based upon this information.

Sincerely,
~signature on file~

Robert A. Kovacs

Competitively Bid Contracts Coordinator
Delaware Department of Transportation

STATE OF DELAWARE



DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T201507602.01

FEDERAL AID PROJECT NO. EBHOS-S018(13)

CFDA NO. 20.205

BR 3-154 on US9 Savannah Road and BR 3-153 on SR1 Rehoboth
Avenue over Lewes-Rehoboth Canal

Sussex County

ADVERTISEMENT DATE: June 25, 2018

COMPLETION TIME: 404 Calendar Days

PROSPECTIVE BIDDERS ARE ADVISED THAT THERE WILL BE A PRE-BID MEETING MONDAY JULY 16, 2018 AT 10:00 A.M. IN REHOBOTH BEACH CITY HALL (3RD FLOOR) LOCATED AT 229 REHOBOTH AVENUE, REHOBOTH BEACH, DE 19971.

SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
DELAWARE DEPARTMENT OF TRANSPORTATION
AUGUST 2016

Bids will be received in the Bidder's Room at the Delaware Department of Transportation's Administration Building, 800 Bay Road, Dover, Delaware prior to 2:00 P.M. local time July 31, 2018

6. **DBE PROGRAM REQUIREMENTS** (49CFR §26.53(b)(3)(i)(B)) require submission of DBE participation information from the apparent low bidder no later than five (5) calendar days **after bid opening**, (*forms are attached*)
7. No RETAINAGE will be withheld on this contract.
8. EXTERNAL COMPLAINT PROCEDURE can be viewed on DelDOT's Website at: <http://regulations.delaware.gov/AdminCode/title2/2000/2500/2501.shtml> or you may request a copy by calling (302) 760-2555.
9. AUGUST 2016 STANDARD SPECIFICATIONS apply to this contract. The Contractor shall make himself aware of any revisions and corrections (Supplemental Specifications, if any) and apply them to the applicable item(s) of this contract. The 2016 Standard Specifications can be [viewed here](#).
- 9a. FLATWORK CONCRETE TECHNICIAN CERTIFICATION TRAINING: Section 501.03, 503.03, 505.03, 610.03, 701.03 and 702.03 of the 2016 Standard Specifications require contractor's to provide an American Concrete Institute (ACI) or National Ready Mix Concrete Association (NRMCA) certified concrete flatwork technician to supervise all finishing of flatwork concrete. Concrete flatwork certification will be effective starting on June 1, 2018.
10. BREAKOUT SHEETS MUST be submitted either with your bid documents; or within seven (7) calendar days following the bid due date by the lowest apparent bidder. Refer to instructions adjacent to the Breakout Sheets in this document.
11. PROPOSED TRAINEE PLANS - The number of trainees to be trained will be **1**, as listed in the Training Special Provisions within Contract General Notices. The program(s) must be submitted online at <https://deldotojt.com> as soon as possible by the apparent low bidder. Award of the Contract will not take place until acceptable On-the-Job (OJT) program plans are received and approved by the Department's Civil Rights Section. Failure of the apparent low bidder to submit acceptable OJT Trainee Programs within ten (10) calendar days of bid opening shall create a rebuttable presumption that the bid is not responsive.
12. The Contractor is advised that the rehabilitation work on BR 3-153, Rehoboth Avenue bridge, shall be coordinated with and scheduled around the upcoming SR1 Bridge Re-decking project (T201407602 - BR 3-150). The SR1 work is expected to begin in the Fall of 2019. Lane restrictions and detours shall not be permitted on BR 3-153 after August 31, 2019.
13. The Contractor is advised that their scheduling of engineering and construction activities will have a significant impact on the success of this project. The rehabilitation of the mechanical and electrical systems on the movable bridges includes specialized components that may require significant time to design, fabricate, shop test and install within the restrictions contained in this Contract. The Contractor is strongly encouraged to begin their construction engineering, planning and shop drawing process immediately upon receiving their Notice To Proceed (NTP). After the NTP is issued, it is anticipated that a ~~30~~ **45** day period will be provided to the Contractor to prepare shop drawings before the first chargeable day of the contract commences.
14. In accordance with 29 Del. C. §6962(d)(10)a, a **Pre-Bid Meeting** will be held to select the subcontractor categories to be included in the bids for performing the work required for this contract. In accordance with Title 29 Del. C. §6962(d)(10)b of the Delaware Code, a penalty of \$2,000.00 will be withheld from the successful bidder for each occurrence for the failure to utilize any or all of the Subcontractors submitted with the bid. It is **highly recommended** that interested bidders attend this Pre-Bid Meeting. The bidder's representative must sign-in and identify the name of the bidder they represent.

The **Pre-Bid Meeting will be held Monday July 16, 2018 at 10:00 a.m.** in the Rehoboth Beach City Hall (3rd Floor) Located at 229 Rehoboth Avenue, Rehoboth Beach, DE 19971.
15. **Parking:** You can pick-up a parking pass in the front office of City Hall. Parking will be marked off and on the right side of the building.
16. There will be a **Construction Site Walk-Through**, immediately following the Pre-Bid Meeting. It is **Highly** recommended that contractors attend the meeting and the walk-through.

Navigation Restriction.

BR 3-153, Rehoboth Avenue Bridge

It is anticipated that the work required within this Special Provision will be performed within the existing United States Coast Guard (USCG) regulations of a 24 hour notice for any bridge openings. If the Contractor requires longer notice to perform the work, a temporary deviation must be requested from the USCG. The Contractor will need to request and receive approval from the USCG prior to starting work requiring the temporary deviation at no extra cost to the Department.

BR 3-154, Savannah Road Bridge

It is anticipated that the work required within this Special Provision will be performed within the existing United States Coast Guard (USCG) regulations of a 4 hour notice for any bridge openings. If the Contractor requires longer notice to perform the work, a temporary deviation must be requested from the USCG. The Contractor will need to request and receive approval from the USCG prior to starting work requiring the temporary deviation at no extra cost to the Department.

Delivery and Storage; Protection for Shipment.

Machined surfaces shall be cleaned of dirt, chips, grit, and all other injurious materials prior to shipping and shall be given a coat of corrosion-inhibiting preservative.

Finished metal surfaces and unpainted metal surfaces that would be damaged by corrosion shall be coated as soon as practicable after finishing with a rust-inhibiting preservative. Excepting unfinished metal surfaces inside of gear reducers, this coating shall be removed from all surfaces prior to painting, after erection, and prior to operation.

Any interface between stainless steel and structural steel shall receive a coat of zinc-chromate primer prior to assembly.

New and rehabilitated components shall be completely protected from weather, dirt, and all other injurious conditions during manufacture, shipment, and storage.

Assembled units shall be mounted on skids or otherwise crated for protection during handling and shipment.

Machinery Installation Tolerances.

Machinery installation tolerances shall be in accordance with the motor, coupling, or reducer manufacturer requirements, whichever installation requirements are more stringent. The Contractor shall submit an installation procedure with the installation tolerances specified within the procedure. After installation of the components is complete, the Contractor shall document the final alignment and submit the measurements to the Engineer for review.

Welding.

Welding required for machinery shall be done in accordance with the requirements for AASHTO/AWS D.15M/D1.5:2015 Bridge Welding Code. At a minimum, the center lock guides, receiving sockets, actuator supports, and span motor and motor brake support weldment shall be stress relieved prior to final machining. ~~Completely test all welds used to fabricate machinery by ultrasonic inspection (ASTM E164-13) according to AASHTO/AWS D.15M/D1.5:2015 Bridge Welding Code for compression members unless noted otherwise. Perform all machining after welding and stress relieving.~~ Completely test all full penetration welds used to fabricate machinery by ultrasonic inspection (ASTM E164-13) according to AASHTO/AWS D.15M/D1.5:2015 Bridge Welding Code unless noted otherwise. Testing of fillet welds shall be performed in accordance with the testing specified within AWS D1.5 for main members. Perform all machining after welding and stress relieving.

Welding joint types, sizes and details shall be shown on shop, assembly and/or working drawings.

Distortion during fabrication shall be kept to a minimum by the use of welding fixtures and proper welding procedures.

In general, all mounting hardware and all wire and cable terminals shall be vibration resistant. If any departures from the Contract Plans or Specifications are deemed necessary by the Contractor, details of such departures, and the reasons for such departures shall be submitted for approval as soon as practicable. No such departures shall be made nor work started without the written approval of the Engineer.

Sole Source Equipment

The Contractors attention is directed to the various sole source items for PLC equipment (Allen Bradley Control Logix), span drive equipment (Allen Bradley Power Flex 753 or Control Techniques M700) and general control equipment (Square D). Information regarding sole source products are specified elsewhere. No substitutions shall be granted for these items other than alternate part and model numbers that may be required due to obsolescence of equipment or to adjust the specified equipment for proper operation.

Bridge Control System Vendor.

All apparatus and equipment comprising the bridge control system, including, but not limited to, motor brakes, motors, motor encoders, speed switches, limit switches, back panels, cabinets, drives, control desk, resolvers, PLC equipment, transformers and other apparatus required to provide a complete functioning system, shall be manufactured and/or furnished, assembled and integrated by a single qualified control system vendor. The vendor shall assemble all panels and cabinets at an Underwriters Laboratory approved facility in accordance with UL 508.

The control system vendor shall have experience in providing electrical control systems for movable highway bridges of various types, including bascule, vertical lift, and/or swing bridges with PLC control systems, including flux vector control of vector-duty motors. Such experience shall be demonstrated by identifying a minimum of five (5) movable bridges for which the system vendor has provided similar systems within the past five (5) years. Pre-approved vendors are listed below.

- (a) Panatrol Corporation (630-655-4700)
- (b) EHM (954-981-0023)
- (c) TSR Electric (410-355-8700)

The control system vendor shall assume complete system responsibility for the integrated functioning of all components to provide a satisfactory assembled system operating in accordance with specified requirements. The control system vendor shall be responsible for the detailed schematics and fabrication of the total control and power distribution system to ensure compatibility of equipment and suitability for the intended system functionality, including testing and tuning portions of the existing electrical system which must interface with the new equipment. The vendor shall provide supervisory assistance in the installation of equipment at the bridge site to ensure correct field wiring, maximum reliability, and ease of maintenance.

The system vendor shall provide a field service staff having the capability of providing services for field coordination of construction and final adjustments to the bridge control systems. Upon final acceptance of the bridge by DelDOT, the system vendor's staff shall provide on call warranty service for a period of one year.

The Contractor shall provide written certification of compliance with specified requirements for his control system vendor. Include documentation of conformance with these requirements. Provide references as needed to allow the Engineer to verify conformance with these requirements. This certification shall be submitted immediately after award of the contract and shall be subject to approval by the Engineer. No payments to the Contractor shall be made prior to submission and approval of the certification of compliance for the control system vendor.

Control Apparatus and Miscellaneous Equipment

Circuit Breakers: All branch circuits from the buses shall be protected by molded case circuit breakers and meet the requirements of UL 489. All breakers and meet the requirements of shall be compact and have quick-make, quick-break contacts and the mechanism shall be trip-free and trip indicating. Frame sizes shall be not less than 100 amperes. The breakers shall be equipped with thermal-magnetic trips or adjustable instantaneous magnetic trip units. Circuit breakers shall have a minimum interrupting capacity rating of 35 kAIC. The circuit breakers shall be powerpact model manufactured by Square D.

Miniature Circuit Breakers: Circuit breakers for control circuits shall be single pole miniature type and meet the requirements of UL 489. The miniature circuit breakers shall be din railed mounted in the control panels and shall have a trip curve of D. The miniature circuit breakers shall be multi 9 model manufactured by Square D.

Motor Starters and Magnetic Contactors: The continuous current rating of contactors and starters shall be adequate for the connected inductive loads, and no starter shall be smaller than the size specified. All contact poles shall be provided with arc chutes, and contactors rated 150-amperes and above shall be equipped with magnetic blowouts. Motor protective circuit breakers shall be provided for motor protection. The motor protective circuit breakers shall function as an overload and circuit breaker as one combined unit with plug in trip block modules. The motor protective units shall be of the automatic reset type unless otherwise specified. Contactors and circuit breakers, overload modules shall be provided with the required auxiliary contacts as shown on the Contract Plans. Reversing contactors shall be electrically and mechanically interlocked. All motor starters and circuit breakers shall be connectable to a bus bar system, both manufactured by a single manufacturer. All contactors shall be provided with surge suppressors. Motor protective circuit breakers and contactors shall be type GV2P03 and LC1/LC2 as manufactured by Schneider Electric.

Industrial Control Relays shall be multi-contact magnetic relays with contacts rated at 10 amperes, 600 volts on a continuous basis. All relays shall be provided with surge suppressors. Time delay relays shall be provided through a delay attachment to the specified control relays. The time delays shall be electronic type providing time delay intervals as required with a linear timing range in the ratio of 1:10. The number and type of poles shall be as shown on the Contract Plans. Relays shall be type CAD as manufactured by Square D.

Safety Control Relays: Industrial control safety relays shall be multi-contact magnetic machine tool relays with contacts rated at 10 amperes, 600 volts on a continuous basis. Relays shall feature mechanically linked double break contacts on each pole and shall be specifically designed for safety applications. Tamper resistant covers shall be provided on each relay. Each safety control relay shall be equipped with surge suppression. Safety relays shall be type 700S as manufactured by Allen Bradley or approved equal.

Terminal Blocks: Terminal blocks for conductors of Size No. 2 AWG and smaller shall be screw type din rail mountable terminals rated for a maximum voltage of 690 VAC/115 Amperes. Each terminal requiring a splice or jumper shall be provided with pin jumper connectors which are mountable to the terminal block. The terminal blocks assembly shall be provided with ground terminals, screw terminals, din rail, end plates, separators, pin connectors and any other required accessory. The terminal blocks shall wire connections for use insulated wire ferrule connectors. Factory printable corrosion resistant marking strips shall be provided for conductor identification. At least ten percent spare terminals shall be provided. Terminal blocks shall be Phoenix Contact UT4 or approved equal.

Power Distribution Terminal Blocks: Power distribution blocks shall be used for conductor sizes No. 6 and larger and shall be UL listed. Terminal blocks shall be suitable for use with copper wire and shall provide a withstand voltage rating of 750 volts per IEEE switchgear standards. Corrosion resistant marking strips shall be provided for conductor identification. At least ten percent spare terminals shall be provided. Terminal blocks shall be Gould Shawmut Power Distribution Blocks - Heavy Duty Series 68000 or approved equal.

Terminal Connectors: Connectors shall be seamless, heavy-duty insulated wire ferrules terminal lugs. Terminal lugs shall be installed per lug manufacturer recommendations using the proper tools approved by the manufacturer. Under no circumstance will splicing of wires be permitted without the use of a terminal block.

Nameplates: Nameplates, where required, shall be made of laminated phenolic plastic with white front and back and black core and shall be not less than 0.094 inches thick. The lettering shall be etched through the front layer to show black engraved letters on a white background. Lettering shall be not less than ¼ inch high, unless otherwise detailed on the Contract Plans. Nameplates shall be securely fastened to the equipment with stainless steel screws.

Control Desk Key Operated Selector Switches, Selector Switches, Indicating lights and Push-buttons: Control switches, key operated switches, selector switches, indicating lights and push-buttons on the control desk shall be heavy-duty NEMA type, 1.2 inch diameter base (30mm), oil-tight contact blocks operated by glove handle (pistol grip) selector knobs or push-buttons as indicated in the Plans. All switches, indicating lights and pushbuttons shall be equipped with escutcheon plates as shown on the plans. All lenses shall be

The following operation examples are for a complete bridge operation. It is the intent of the control logic that the operator can stop the operation at any time while attempting to open the bridge and 'back out' of the operation to safely allow vehicular traffic on the bridge. To 'back out' of an operation means to change the operation from opening to closing the bridge. For example, after lowering the on-coming traffic gate, the operator could 'back out' of the operation by raising the on-coming traffic gate and turning the red traffic warning signal off to release vehicular traffic.

The PLC system shall be programmed to send information to DeIDOT via a remote server. As part of this work the Contractor shall coordinate the required information with DeIDOT and add these features to the PLC program. DeIDOT will be responsible for the remote monitoring system off site (at DeIDOT TMC), the contractor will be responsible for all equipment on the bridge and vicinity including but not limited to the PLC system, communication, Ethernet and fiber cable and connections.

Rehoboth Avenue Bridge

(1) Fault/Reset

- (i) At any point where an alarm message is generated, the fault/reset illuminated push-button shall be turned on and remain on until the fault is cleared and the reset push-button is pressed.
- (ii) For critical faults including emergency stops, opening of specified electrical enclosure doors, and over travel, the main circuit breaker to the motor control enclosure shall be turned off through the UV circuit as shown on the plans.

(2) Control Power Selector Switch (CS-CP)

- (i) The operator shall turn the control desk Control Power (CS-CP) switch to the 'On' position.
- (ii) Control Power switch in the 'On' position is provided as an energized input 'Control Power On' to the PLC.
- (iii) The Control Power switch (CS-CP) activates bridge control relay as long as there is no power or if a fault condition exists in the service power.
- (iv) When the PLC has control power, the PLC shall verify all PLC Input card circuit breaker check inputs are energized.
- (v) If at any time during an operation, if a single or multiple PLC inputs of the above are de-energized while the 'Control Power On' PLC input is energized, the PLC shall de-energize all outputs, generate and provide an alarm, and shall not attempt any bridge operation until the PLC inputs are energized.
- (vi) The PLC input Power Fault Alarm shall be energized if there is a power fault. If there is a power fault the PLC shall de-energize all outputs, generate and provide an alarm, and shall not attempt any bridge operation until the PLC input is de-energized.

(3) Emergency Stop Push-Buttons (PB-ES1 and PB-ES2) and Safety Relays

- (i) If at any time during an operation, the 'Control Power On' PLC input is energized and the 'Emergency Stop' push-buttons or safety relay inputs de-energized (the 'Emergency Stop' button is pressed), the PLC shall de-energize all outputs, generate an alarm, and shall not attempt any bridge operation until the Emergency Stop inputs are energized.
- (ii) If any Emergency Stop push-button is depressed or safety relays are energized, or the emergency stop push-buttons are depressed during bridge operation, then the PLC input 'Emergency Stop' from PB-ES or safety relay inputs shall de-energize. The PLC shall stop all bridge operations and generate an alarm. The PLC shall not allow any other operation until all the Emergency Stop push-buttons are pulled out to the not depressed position.
- (iii) If any Emergency Stop push-button is depressed, the hardwired Master Control Relays will de-energize the control output power busses and the PLC shall verify that the emergency stop inputs are de-energized.
- (iv) If any of the inputs are not de-energized when the 'Emergency Stop' PLC inputs are de-energized, then the PLC shall generate an alarm.

(4) Bridge Status Indication - Upon the 'Control Power On' PLC input energizing, the PLC will scan the bridge for the status of the following items to illuminate or de-energize the touchscreen indicators as follows:

(i) Indication Lights

- (1) The PLC shall verify the span, warning gate, barrier gates, span locks, alarms, and other status indications and positions and illuminate the appropriate indicators on the touchscreen.

(ii) Brake Hand Release Status and Indication

- (1) The PLC shall verify that both Motor Brakes are not hand released. If either motor brake is hand released before or during span motor operation a warning message shall be displayed on the touchscreen and stored.
- (2) If both brakes are hand released an alarm shall be displayed on the touchscreen and stored.

(12) Hardwired Switch Only

- (i) The PLC shall operate in the same manner as noted above for the Center Locks, Tail Locks, and Span Motors while using the hardwired switch with exceptions noted below.
- (ii) When the PLC input 'Screen Operation' is energized the PLC shall disable touchscreen operation from any location on the bridge.
- (iii) Before operation of any piece of equipment using the hardwired switches and push-buttons the PLC shall check the PLC input "Control Desk Operation" prior to each component being operated.

Touchscreen Operation

General programming and operating requirements for each HMI touchscreen display screen is specified below. Each display screen shall consist of multiple selectable screens which are also noted below that are activated via the touchscreen. The Contractor shall adjust and add to the HMI screen program as directed by the Engineer during HMI and network testing as specified herein.

1. Operation Screen
 - a. Includes general layout of selector switches, push-buttons, and indicators to mimic the layout of the hardwired switches on the control desk unless otherwise specified.
 - b. Each device on the bridge shall have an individual button or switch represented pictorially which when selected shall operate the device as specified.
 - c. Time and date stamp
 - d. Angle of opening display
 - e. Active alarm message display
 - f. Selection tabs of alternate screens
 - g. Time of traffic stopped display
2. Main Display Screen:
 - a. Includes general imagine of the bridge including pictorial imagine of gates, locks, signals, brakes, etc. and their status (green for open to traffic, red for closed to traffic).
 - b. Time and date stamp
 - c. Angle of opening display
 - d. Active alarm message display
 - e. Selection tabs of alternate screens
 - f. Time of traffic stopped display
3. Traffic and Gates Screen:
 - a. Includes general imagine traffic gates and signals and their status (green for open to traffic, red for closed to traffic).
 - b. Time and date stamp
 - c. Angle of opening display
 - d. Active alarm message display
 - e. Selection tabs of alternate screens
 - f. Time of traffic stopped display
 - g. Operational status of each gate when selected including ~~voltage, current~~ limit switch contact set point and status (open or closed) and activate alarms.
4. Locks Screen:
 - a. Includes general imagine center locks and tail locks and their status (green for open to traffic, red for closed to traffic).
 - b. Time and date stamp
 - c. Angle of opening display
 - d. Active alarm message display
 - e. Selection tabs of alternate screens
 - f. Time of traffic stopped display
 - g. Operational status of each lock when selected including ~~voltage, current~~ limit switch contact set point and status (open or closed) and activate alarms.
5. Span and Brakes Screen:
 - a. Includes general imagine span operating machinery and their status (green for open to traffic, red for closed to traffic).
 - b. Time and date stamp
 - c. Angle of opening display

- d. Active alarm message display
 - e. Selection tabs of alternate screens
 - f. Time of traffic stopped display
 - g. Operational status of each set of operating machinery when selected including voltage, limit switch contact set point and status (open or closed) current and activate alarms.
 - h. Operational status of each drive when selected including speed, command, voltage, limit switch contact set point and status (open or closed) current, angle of opening, etc.
6. Alarm Screen:
- a. Includes alarm history page with last 12 alarms with date and time stamps and active or inactive status.
 - b. Acknowledge alarm button
 - c. Silence alarm button
7. Power Screen:
- a. Includes status of incoming service, generator and ATS
 - b. Includes voltage and current values for each phase on the incoming service
 - c. Time and date stamp
 - d. Angle of opening display
 - e. Active alarm message display
8. Maintenance Screen
- a. Directions screen when selected
 - b. Password protected bypass operation for manual operation, warning gate door switches, deceleration failure
 - c. Password protected manual operation of ATS and Generator
 - d. Any other operator commended which only intended for maintenance staff.
9. Temperature
- a. Active and set temperature of each room in the control house.
 - b. Status of each heating units (On or OFF).
 - c. Alarms for heating system (high temperature alarm, low temperature alarm, fault)

Limit switches

Fabrication and installation for the "Limit Switches" and all associated equipment shall be paid for under items E5 and E23 "Limit Switches" unless otherwise noted. The Contractor shall follow the testing guidelines as specified and paid for under the item "Testing," and all applicable paragraphs under this Section. For general material and installation requirements the Contractor is directed to the requirements as listed herein.

All work to properly install and adjust new and existing limit switches shall be covered under this item in accordance with the plans and specified herein. All work performed for fabrication and testing as specified shall be performed by an acceptable control system vendor.

Field work for installation of the limit switches including mounting and adjustments shall be performed by the Contractor as well as fabrication of targets and mounting brackets. The alignment and fastening of the rotary cam limit switches, speed switch and resolvers shall conform to and be paid for under the requirements specified under the item 615503-Bridge Mechanical System.

Motors

Fabrication of the "Motors" and all associated equipment shall be paid for under items E6 and E25 of section. The Contractor shall follow the testing guidelines as specified and paid for under the item "Testing", and all applicable paragraphs under this Section. For general material and installation requirements the Contractor is directed to the requirements as listed herein.

All work performed for fabrication and testing as specified shall be performed by an acceptable control system vendor unless otherwise noted.

A complete set of speed torque current curves for one motor of each type and size provided shall be prepared and submitted by the manufacturer to the Engineer for approval. Curves corresponding to full load

Field Measuring

Under items E13 and E31, the Contractor shall provide a field survey and field verifications of the existing equipment, bridge structure, layouts, and all other measurements required for the new electrical system as specified. The required field measurements shall be used as a way to avoid errors in fabrication and installation of the new equipment which could result in errors in the shop plans and working drawings, delays in the approval process, impacts to the project schedule, and problems with the assembly and operation of the systems. The work required to obtain measurements of some of the existing components may require temporary disassembly of those components or systems. The Contractor shall submit a Measure and Survey Plan that shall include but not be limited to the following:

- (1) The overall sequence and schedule of the systems and components to be measured.
- (2) A description and plan of how the Contractor will access all areas where measurements will be taken. Propose temporary platforms/access in accordance with Section Field Measuring.
- (3) A description of the methods, procedures and equipment that will be used where it may be necessary to disassemble and reassemble components or systems in order to perform the measurements.
- (4) A description of the methods and equipment used to perform the measurements. Identify control points, datum's and plumb lines.
- (5) A narrative of the potential impacts to the systems and operation of the bridge. The Contractor shall comply with the Coast Guard requirements that may limit the durations that the bridge can be taken out of service.
- (6) Identify the individuals doing the field measuring and provide resumes that show that they are competent and experienced.
- (7) A complete list of personnel who will be performing surveys or taking measurements to be used in the preparation of shop/working drawings or for coordinating and verifying the relationship of machined parts.

All measurements affecting elements to be included in the shop plans and working drawings shall be performed by or under the direct supervision of the Contractor who is responsible for preparing the shop plans or working drawings.

The Contractor shall not begin field measuring until the Measurement and Survey Plan for that work item is approved.

Manual Operation/Temporary Operating System

Under items E14, the Contractor shall utilize the air motor system during construction to operate the bridge once the main span motor become inoperable. The contractor shall furnish a portable air compressor and power source for the air motor system. Temporary operation shall occur with at least one motor brake installed and manually operable.

Under items E32, the Contractor shall utilize hand crank system during construction to operate the bridge once the main span motor become inoperable. The contractor may at his cost furnish a portable air compressor, power source, and air motor system to connect to the hand crank manual system. During the motor or machinery brake replacement, temporary operation shall be permitted when steady wind speeds are 25 mph or less with either both machinery brakes manually operable or the motor brake manually operable.

The warning gates, barrier gates, span locks and brakes shall be manually operated once electrical controls and power are removed. When the warning and barrier gates become manually inoperable a separate traffic barricade shall be used.

Bridge Operator

~~During the construction period, from the time the Contract is awarded until acceptance of the bridge by DelDOT, the Contractor shall provide and train personnel to operate the bridge, during scheduled bridge openings.~~ During the construction period, from the first day work is performed at the specific bridge until acceptance of the bridge by DelDOT, the Contractor shall provide and train personnel to operate the bridge, during scheduled bridge openings. Each Bridge Operator shall be familiar with the bridge layout as well as be trained in the operation and maintenance of the bridge. Included in the Contractor's training program shall be subjects such as troubleshooting, repair of electronic motor controls, drive circuit logic, maintenance and adjustment of all new, existing, and temporary electrical equipment and hardware, and other items required for full bridge operation and maintenance.

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 1
DATE:

CONTRACT ID: T201507602.01 PROJECT(S): EBHOS-S018(13)

All figures must be typewritten.

CONTRACTOR :

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS CTS	BID AMOUNT DOLLARS CTS
SECTION 0001 BR 3-153				
0010	504001 CRACK AND JOINT SEALING LESS THAN 3/4 INCH WIDE	154.000 LF		
0020	613500 CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOPCOAT	8203.000 SF		
0030	615006 STEEL STRUCTURE REPAIR	LUMP	LUMP	
0040	615506 WALKWAY GRATING	1400.000 SF		
0050	616000 CLEANING AND PAINTING EXISTING STEEL	LUMP	LUMP	
0060	616003 TESTING AND DISPOSAL OF EXISTING HAZARDOUS STEEL COATING	LUMP	LUMP	
0070	624013 COMPRESSION SEAL, 1"	430.000 LF		
0080	624014 COMPRESSION SEAL, 2"	140.000 LF		
0090	625500 EPOXY OVERLAY SYSTEM	43.000 SYIN		

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

PAGE: 2
DATE:

CONTRACT ID: T201507602.01 PROJECT(S): EBHOS-S018(13)

All figures must be typewritten.

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0100	628001 REPAIR OF CONCRETE STRUCTURE BY EPOXY INJECTION	26.000 LF				
0110	628020 ROUT AND SEAL CRACKS	416.000 LF				
0120	628040 SHALLOW SPALL REPAIR	45.000 CF				
0130	628041 DEEP SPALL REPAIR	90.000 CF				
0140	763000 INITIAL EXPENSE/DE-MOBILIZATION	LUMP	LUMP			
0150	763501 CONSTRUCTION ENGINEERING	LUMP	LUMP			
0160	763503 TRAINEE	3200.000 HOUR		0.80000		2560.00
0170	763508 PROJECT CONTROL SYSTEM DEVELOPMENT PLAN	LUMP	LUMP			
0180	763509 CPM SCHEDULE UPDATES AND/OR REVISED UPDATES	13.000 EAMO				
0190	763522 COAST GUARD SPECIFIC CONDITIONS	LUMP	LUMP			

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SCHEDULE OF ITEMS

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CONTRACTOR :

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0200	763569 BUILDING RENOVATION	LUMP	LUMP			
0210	763623 NETTING MIGRATORY BIRD EXCLUSION	LUMP	LUMP			
0220	801000 MAINTENANCE OF TRAFFIC	LUMP	LUMP			
0230	802001 ARROW PANELS TYPE A	60.000 EADY				
0240	803001 FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	90.000 EADY				
0250	805001 PLASTIC DRUMS	3840.000 EADY				
0260	810001 TEMPORARY WARNING SIGNS AND PLAQUES	1600.000 EADY				
0270	813001 TEMPORARY BARRICADES, TYPE III	2880.000 LFDY				
0280	817002 PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD-THERMOPLASTIC	92.000 SF				
0290	817013 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	1415.000 LF				

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SCHEDULE OF ITEMS

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CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0300	817015 PREFORMED RETROREFLECTIVE THERMOPLASTIC MARKINGS, BIKE SYMBOL	4.000 EACH				
0310	817031 REMOVAL OF PAVEMENT STRIPING	500.000 SF				
0320	905001 SILT FENCE	50.000 LF				
0330	905005 INLET SEDIMENT CONTROL, CURB INLET	2.000 EACH				
0340	908014 PERMANENT GRASS SEEDING, DRY GROUND	5.000 SY				
	SECTION 0001 TOTAL					

SECTION 0002 BR 3-153 SPECIALITY ITEMS

0350	615503 BRIDGE MECHANICAL SYSTEM	LUMP	LUMP		
0360	615504 BRIDGE ELECTRICAL SYSTEM	LUMP	LUMP		
	SECTION 0002 TOTAL				

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

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CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS

SECTION 0003 BR 3-154						

0370	202000 EXCAVATION AND EMBANKMENT	29.000 CY				

0380	211001 REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB AND SIDEWALK	143.000 SY				

0390	401005 SUPERPAVE TYPE C, PG 64-22 (CARBONATE STONE)	10.000 TON				

0400	613002 SILANE-BASED CONCRETE DECK SEALER	164.000 SF				

0410	613500 CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOPCOAT	9880.000 SF				

0420	615006 STEEL STRUCTURE REPAIR	LUMP	LUMP			

0430	615506 WALKWAY GRATING	860.000 SF				

0440	616000 CLEANING AND PAINTING EXISTING STEEL	LUMP	LUMP			

0450	616003 TESTING AND DISPOSAL OF EXISTING HAZARDOUS STEEL COATING	LUMP	LUMP			

0460	624014 COMPRESSION SEAL, 2"	181.000 LF				

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CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0470	625500 EPOXY OVERLAY SYSTEM	69.000 SYIN				
0480	628020 ROUT AND SEAL CRACKS	364.000 LF				
0490	628040 SHALLOW SPALL REPAIR	5.000 CF				
0500	628041 DEEP SPALL REPAIR	5.000 CF				
0510	705002 PORTLAND CEMENT CONCRETE SIDEWALK, 6"	1632.000 SF				
0520	711500 ADJUST AND REPAIR EXISTING SANITARY MANHOLE	1.000 EACH				
0530	762000 SAW CUTTING, BITUMINOUS CONCRETE	20.000 LF				
0540	762001 SAW CUTTING, CONCRETE, FULL DEPTH	139.000 LF				
0550	762002 SAW CUTTING, CONCRETE, VARIABLE DEPTH	25.000 LF				
0560	763000 INITIAL EXPENSE/DE-MOBILIZATION	LUMP	LUMP			

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SCHEDULE OF ITEMS

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CONTRACTOR :

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0570	763501 CONSTRUCTION ENGINEERING	LUMP	LUMP			
0580	763508 PROJECT CONTROL SYSTEM DEVELOPMENT PLAN	LUMP	LUMP			
0590	763509 CPM SCHEDULE UPDATES AND/OR REVISED UPDATES	EAMO	13.000			
0600	763522 COAST GUARD SPECIFIC CONDITIONS	LUMP	LUMP			
0610	763569 BUILDING RENOVATION	LUMP	LUMP			
0620	763623 NETTING MIGRATORY BIRD EXCLUSION	LUMP	LUMP			
0630	801000 MAINTENANCE OF TRAFFIC	LUMP	LUMP			
0640	802001 ARROW PANELS TYPE A	EADY	40.000			
0650	803001 FURNISH AND MAINTAIN PORTABLE CHANGEABLE MESSAGE SIGN	EADY	160.000			
0660	804001 FURNISH AND MAINTAIN PORTABLE LIGHT ASSEMBLY (FLOOD LIGHTS)	EADY	400.000			

DELAWARE DEPARTMENT OF TRANSPORTATION
SCHEDULE OF ITEMS

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CONTRACTOR :

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0670	805001 PLASTIC DRUMS	720.000				
	EADY					
0680	806001 TRAFFIC OFFICERS	200.000	75.00000		15000.00	
	HOUR					
0690	810001 TEMPORARY WARNING SIGNS AND PLAQUES	640.000				
	EADY					
0700	811009 FLAGGER, SUSSEX COUNTY, FEDERAL	800.000				
	HOUR					
0710	811018 FLAGGER, SUSSEX COUNTY, FEDERAL, OVERTIME	160.000				
	HOUR					
0720	813001 TEMPORARY BARRICADES, TYPE III	1960.000				
	LFDY					
0730	817002 PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD-THERMOPLASTIC	28.000				
	SF					
0740	817009 TEMPORARY MARKINGS, TAPE, 4"	400.000				
	LF					
0750	817013 PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE/YELLOW, 5"	748.000				
	LF					
0760	817031 REMOVAL OF PAVEMENT STRIPING	63.000				
	SF					

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SCHEDULE OF ITEMS

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CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0770	817032 REMOVAL OF PAVEMENT MARKING TAPE	 133.000 SF				
0780	818001 SUPPLY OF FLAT SHEET ALUMINUM SIGN PANEL, TYPE IV, RETROREFLECTIVE SHEETING	 26.000 SF				
0790	819018 INSTALLATION OR REMOVAL OF TRAFFIC SIGN(S) ON SINGLE SIGN POST	 12.000 EACH				
0800	830005 CONDUIT JUNCTION WELL, TYPE 11, PRECAST/POLYMER LID-FRAME	 1.000 EACH				
0810	830010 REMOVAL OF EXISTING JUNCTION WELL	 1.000 EACH				
0820	832035 REMOVAL OF CABLE FROM CONDUIT OR TRAFFIC /LIGHTING POLE	 33.000 LF				
0830	834002 POLE BASE, TYPE 3A	 1.000 EACH				
0840	905001 SILT FENCE	 50.000 LF				
0850	905005 INLET SEDIMENT CONTROL, CURB INLET	 4.000 EACH				

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SCHEDULE OF ITEMS

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CONTRACTOR :

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0860	908004 TOPSOIL, 6" DEPTH	55.000				
		SY				
0870	908014 PERMANENT GRASS SEEDING, DRY GROUND	5.000				
		SY				
	SECTION 0003 TOTAL					

SECTION 0004 BR 3-154 SPECIALITY ITEMS

0880	615503 BRIDGE MECHANICAL SYSTEM	LUMP	LUMP			
0890	615504 BRIDGE ELECTRICAL SYSTEM	LUMP	LUMP			
	SECTION 0004 TOTAL					
	TOTAL BID					

GENERAL NOTES

- STANDARDS AND SPECIFICATIONS:
 - AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION WITH 2015 AND 2016 INTERIMS
 - AASHTO LRFD MOVABLE HIGHWAY BRIDGE DESIGN SPECIFICATIONS, 2007 EDITION WITH 2008, 2010, 2011, 2014, AND 2015 INTERIM REVISIONS
 - U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", 2009 EDITION WITH INTERIMS
 - DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 2011 EDITION WITH INTERIMS
 - DELAWARE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", AUGUST 2016 EDITION
 - DELAWARE DEPARTMENT OF TRANSPORTATION "BRIDGE DESIGN MANUAL", 2016 EDITION
 - AASHTO/AWS D1.5M/D1.5:2015 BRIDGE WELDING CODE, 7TH EDITION
- DESIGN LIVE LOADS: AASHTO LRFD HL-93 AND DELDOT STANDARD LEGAL AND PERMIT LOADS IN ACCORDANCE WITH DELDOT BRIDGE DESIGN MANUAL.
- DURING CONSTRUCTION, THE CONTRACTOR MAY ENCOUNTER EXISTING CONDITIONS WHICH ARE NOT KNOWN DURING BID OR ARE AT VARIANCE WITH PROJECT DOCUMENTATION (DISCOVERY). SUCH CONDITIONS MAY INTERFERE WITH NEW CONSTRUCTION, PROPER EXECUTION OF THE WORK, REQUIRE PROTECTION AND/OR SUPPORT OF EXISTING WORK DURING CONSTRUCTION, OR MAY BE CONSIST OF DAMAGE OR DETERIORATION TO STRUCTURAL MATERIALS OR COMPONENTS WHICH JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE BRIDGE AND/OR OPERATOR HOUSE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ALL SUCH DISCOVERIES PRIOR TO PROCEEDING WITH WORK RELATED TO SUCH DISCOVERIES.
- ALL SHOWN DIMENSIONS ARE BASED ON ORIGINAL AS BUILT DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS AND CONSTRUCTION CONDITIONS APPLICABLE TO EXISTING STRUCTURE. IF CONDITIONS OR DIMENSIONS VARY SIGNIFICANTLY FROM THOSE ON THE DRAWINGS THE CONTRACTOR SHALL NOTIFY THE ENGINEER BEFORE PREPARATION OF SHOP DRAWINGS AND FABRICATION OF COMPONENTS. THE FIELD VERIFICATION SHALL BE MADE IN A TIMELY MANNER SO AS TO CAUSE NO DELAYS IN EXECUTION OF THE WORK.
- THE CURRENT DRAWINGS MAY SPECIFY DIMENSIONS, ELEVATIONS, AND CONSTRUCTION CONDITIONS TO BE FIELD VERIFIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD VERIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION OR FABRICATION OF COMPONENTS. THE FIELD VERIFICATION SHALL BE MADE IN A TIMELY MANNER SO AS TO CAUSE NO DELAYS IN EXECUTION OF THE WORK.
- PROJECT INCLUDES AREA OF SELECTIVE DEMOLITION AS INDICATED IN THE DRAWINGS. DURING THE ENTIRE LENGTH OF THE PROJECT, PROTECT ALL EXISTING EQUIPMENT AND MATERIALS WHICH ARE NOT BEING DEMOLISHED. ANY DAMAGE BY THE CONTRACTOR TO THE EXISTING EQUIPMENT AND MATERIALS THAT ARE NOT TO BE DEMOLISHED SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THEIR EXPENSE.
- WORK AREAS SHALL BE KEPT CLEAN AND SAFE AT ALL TIMES BY THE CONTRACTOR. TRASH AND DEBRIS SHALL NOT BE ALLOWED TO ACCUMULATE ON THE SITE. ALL HAZARDOUS WASTES SHALL BE PROPERLY AND LEGALLY DISPOSED OF ON A DAILY BASIS.
- DURING THE BIDDING PERIOD AND THE CONSTRUCTION PERIOD, ANY DISCREPANCIES, CONFLICTS AND/OR QUESTIONS OF INTERPRETATIONS IN THE DRAWINGS OR SPECIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER PROMPTLY FOR CLARIFICATION AS TO CAUSE NO DELAYS IN THE EXECUTION OF WORK.

MATERIALS

- STEEL:
 - ALL NEW STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270 GRADE 50 HIGH STRENGTH LOW ALLOY, UNLESS NOTED OTHERWISE ON PLANS OR SPECIFICATIONS. THE REQUIREMENTS FOR CHARPY V-NOTCH TESTING AS SPECIFIED IN SECTION 1039- STRUCTURAL STEEL OF 2016 DELDOT STANDARD SPECIFICATIONS SHALL APPLY TO ALL FLOORBEAM AND BASCULE GIRDER REPAIR STEEL COMPONENTS AND CONNECTIONS.
 - ALL FIELD CONNECTIONS SHALL BE BOLTED USING ASTM A325 TYPE 1 HIGH STRENGTH BOLTS (SLIP-CRITICAL), UNLESS NOTED OTHERWISE ON PLANS.
 - ALL WELDING ELECTRODES SHALL BE E70 SERIES CONFORMING TO AWS D1.5. THE MINIMUM SIZE OF FILLET WELDS SHALL BE 3/8" FOR ALL STEEL DETAILS THAT REQUIRE FILLET WELDS. NO FIELD WELDS IN TENSION ZONES WILL BE PERMITTED, UNLESS NOTED OTHERWISE ON PLANS. ALL WELDER QUALIFICATIONS, CERTIFICATIONS, AND WORK PERMITS RELATED TO WELDING SHALL BE SUBMITTED TO DELAWARE DOT AND ENGINEER OF RECORD FOR APPROVAL, PRIOR TO BEGINNING OF WORK.
- CONCRETE: ALL REPAIR CONCRETE SHALL BE CLASS A MIX, UNLESS NOTED OTHERWISE ON PLANS OR SPECIFICATIONS.
- REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE EPOXY-COATED AND CONFORM TO ASTM A615 GRADE 60. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS NOTED OTHERWISE ON PLANS OR SPECIFICATIONS.

STRUCTURAL SCOPE OF WORK ON REHOBOTH AVE. BRIDGE

- PERFORM TYPE 1A, TYPE 1B, TYPE 2, AND TYPE 3 CONCRETE REPAIRS ON WEST ABUTMENT, REST PIER, AND BASCULE PIER. APPLY CONCRETE ACRYLIC PRIMER, SEALER AND TEXTURED TOP COAT ON ALL EXPOSED CONCRETE SURFACES OF WEST ABUTMENT, REST PIER, BASCULE PIER AND CONTROL HOUSE.
- REPLACE THE SIDEWALK GRATING, TOP PLATE AND EPOXY GRIT SURFACING ON THE BASCULE LEAF, AND TRIM OR REPLACE THE SIDEWALK END ANGLES.
- CLEAN AND PAINT BEARINGS, LATERAL BRACING CONNECTIONS, UNDERSIDE OF THE BASCULE GIRDER TOP FLANGE, CURB STRINGERS, TOE FLOORBEAM, SIDEWALK RAILING CONNECTIONS, REST PIER WALKWAY, GRID DECK, STEEL CURBS, ALL SIDEWALK AND DECK ELEMENTS TO REMAIN THAT ARE EXPOSED TO TRAFFIC AND PEDESTRIANS AND ALL MISCELLANEOUS AREAS EXHIBITING PAINT FAILURE AND CORROSION.
- REPLACE JOINT SEAL AT THE JUNCTION OF WEST APPROACH AND WEST ABUTMENT; AND AT THE JUNCTION OF EAST APPROACH AND BASCULE PIER WITH NEW HOT-POURED SEAL; AND AT THE EAST EDGE OF GRID DECK WITH NEW HOT-POURED SEAL.
- REPLACE PREFORMED JOINT SEALER AT THE JUNCTION OF WEST ABUTMENT AND FIRST INTERIOR SPAN; AND AT THE JUNCTION OF DECK OVER COUNTERWEIGHT AND BASCULE PIER WITH NEW COMPRESSION SEAL.
- REPLACE PREFORMED JOINT SEALER AT THE JOINTS BETWEEN APPROACH SIDEWALK SLAB LIMITS; AND BETWEEN APPROACH SIDEWALK AND BASCULE PIER WALL WITH NEW COMPRESSION SEAL.
- INSTALL TEMPORARY MIGRATORY BIRD EXCLUSION NETTING OVER THE ENTIRE UNDERSIDE OF THE SUPERSTRUCTURE.
- REPLACE FLOOR AND CEILING TILES IN THE OPERATOR'S ROOM.
- REPLACE EXISTING DOORS IN SWITCHBOARD ROOM AND ENGINE ROOM WITH FIREDOORS.
- INSTALL TOUCH-UP PAINT AT CONTROL HOUSE INTERIOR LOCATIONS WHERE MAJOR ELECTRICAL WORK WILL BE DONE.
- REPLACE THE CONTROL HOUSE ROOFING SYSTEM, INCLUDING THE TOP FLASHING, ROOF OVERLAY AND INSULATION. REPAIR ANY DAMAGED ROOF DECKING AS NEEDED.

REHOBOTH AVE. BRIDGE PAY ITEMS			
SCOPE OF WORK NO.	DELDOT PAY ITEM NO.	PAY ITEM DESCRIPTION	UNITS
1	628001*	REPAIR OF CONCRETE STRUCTURES BY EPOXY INJECTION	LF
	628020*	ROUT AND SEAL CRACKS	LF
	628040*	SHALLOW SPALL REPAIR	CF
	628041*	DEEP SPALL REPAIR	CF
	613500*	CONCRETE ACRYLIC PRIMER, SEALER AND TEXTURED TOP COAT	SF
2	615506	WALKWAY GRATING	SF
2	625500	EPOXY OVERLAY SYSTEM	SYIN
2	615006	STEEL STRUCTURE REPAIR	LS
3	616000	CLEANING AND PAINTING EXISTING STEEL	LS
4, 5	624009	ASPHALTIC PLUG JT.	LF
X 5	624014	COMPRESSION SEAL, 2"	LF
X 6	624013	COMPRESSION SEAL, 1"	LF
X 7	763623	NETTING, MIGRATORY BIRD EXCLUSION	LS
8, 9, 10, 11, X	763569	BUILDING RENOVATION	LS
4	504001	CRACK AND JOINT SEALING LESS THAN 3/4 INCH WIDE	LF

*REPAIR QUANTITIES FOR THESE ITEM NUMBERS HAVE BEEN INCREASED BY 30% OVER THE QUANTITIES MEASURED DURING THE BRIDGE INSPECTIONS THAT BEGAN ON APRIL 7, 2015. PAYMENT WILL BE BASED UPON THE ACTUAL QUANTITIES REQUIRED TO COMPLETE THE REPAIRS.

STRUCTURAL SCOPE OF WORK ON SAVANNAH RD. BRIDGE

- PERFORM TYPE 1A, TYPE 1B, TYPE 2, AND TYPE 3 CONCRETE REPAIRS ON WEST BASCULE PIER, EAST BASCULE PIER AND CONCRETE CURBS IN DECK OVER COUNTERWEIGHT AND THE WEST APPROACH SLAB. APPLY CONCRETE ACRYLIC PRIMER, SEALER AND TEXTURED TOP COAT ON ALL EXPOSED CONCRETE SURFACES OF THE BASCULE PIERS AND THE CONTROL HOUSE. APPLY SILANE SEALER ON ALL CURBS IN THE DECK OVER COUNTERWEIGHT.
- RESTORE THE JOINT OPENING AT THE TOE OF THE BASCULE LEAFS BY MODIFICATIONS TO TOE FLOORBEAMS, GRID DECK AT THE TOE, BASCULE GIRDERS AND SIDEWALK FRAMING.
- REPLACE THE EPOXY FILL IN GRID DECK ON TOP OF ALL FLOORBEAMS OF BASCULE LEAFS.
- REPLACE THE SIDEWALK GRATING, TOP PLATE, AND EPOXY GRIT SURFACING ON BASCULE LEAFS.
- RELOCATE THE CENTER LOCKS FROM TOE FLOORBEAMS TO TOP OF THE BASCULE GIRDERS. CLOSE THE EXISTING CENTER LOCK ASSEMBLY WITH FILL PLATES. MODIFY THE RAILING ON TOP OF THE BASCULE GIRDERS TO ACCOMMODATE THE NEW CENTER LOCKS. COORDINATE WITH MECHANICAL SCOPE OF WORK.
- REPAIR ANY DAMAGED PORTIONS OF THE SIDEWALK NEXT TO THE HEEL JOINT.
- INSTALL RETROFIT PLATES TO FLOORBEAMS, CURBS, AND LOWER BRACES TO RESTORE THE LOAD CARRYING CAPACITY.
- REPLACE THE BASCULE GIRDER SHELF ANGLE OF EAST LEAF WHICH IS CURRENTLY INTERFERING WITH FIXED SIDEWALK ANGLE. RESTORE THE FULL LEAF OPENING ANGLE.
- CLEAN AND PAINT USING THREE COAT SYSTEM AREAS OF SECTION LOSS ON THE RACK AND PIN SUPPORT OF THE EAST LEAF.
- CLEAN AND PAINT USING THREE COAT SYSTEM LATERAL BRACING CONNECTIONS AT MIDSPAN OF ALL FLOORBEAMS IN BASCULE LEAFS.
- CLEAN AND PAINT (OVERCOAT ONLY) STEEL MEMBERS OF SUPERSTRUCTURE AND DECK.
- INSTALL NEW STAINLESS STEEL BOLTS AT SIDEWALK HANDRAIL POST CONNECTIONS, AT LOCATIONS WHERE BOLTS ARE MISSING.
- INSTALL NEW BIRD NETTING AT BOTH BASCULE PIERS NEAR MACHINERY ROOM.
- INSTALL TEMPORARY MIGRATORY BIRD EXCLUSION NETTING OVER THE ENTIRE UNDERSIDE OF THE SUPERSTRUCTURE.
- REPLACE PREFORMED JOINT SEALER AT THE JUNCTION OF APPROACH SPANS AND BASCULE PIERS.
- REPLACE FLOOR AND CEILING TILES IN THE OPERATOR'S ROOM.
- REPLACE EXISTING DOOR IN SWITCHBOARD ROOM WITH FIRE DOOR.
- INSTALL TOUCH-UP PAINT AT CONTROL HOUSE INTERIOR LOCATIONS WHERE MAJOR ELECTRICAL WORK WILL BE DONE.
- REPLACE THE CONTROL HOUSE ROOFING SYSTEM, INCLUDING THE TOP FLASHING, ROOF OVERLAY AND INSULATION. REPAIR ANY DAMAGED ROOF DECKING AS NEEDED.
- INSTALL NEW WALKWAY PLATFORM AT BASCULE PIERS TO ACCESS ELECTRICAL EQUIPMENT.

SAVANNAH RD. BRIDGE PAY ITEMS			
SCOPE OF WORK NO.	DELDOT PAY ITEM NO.	PAY ITEM DESCRIPTION	UNITS
1	628001*	REPAIR OF CONCRETE STRUCTURES BY EPOXY INJECTION	LF
	628020*	ROUT AND SEAL CRACKS	LF
	628040*	SHALLOW SPALL REPAIR	CF
	628041*	DEEP SPALL REPAIR	CF
	613500*	CONCRETE ACRYLIC PRIMER, SEALER AND TEXTURED TOP COAT	SF
	613002*	SILANE BASED CONCRETE SEALER	SF
	628042*	REHABILITATION OF PCC MASONRY	CY
2,5,7,8,12	615006	STEEL STRUCTURE REPAIR	LS
3,4	625500	EPOXY OVERLAY SYSTEM	SYIN
4	615506	WALKWAY GRATING	SF
6	705002	P.C.C. SIDEWALK, 6"	SF
9,10,11	616000	CLEANING AND PAINTING EXISTING STEEL	LS
13,16,17,18,19,20	763569	BUILDING RENOVATION	LS
14	763623	NETTING, MIGRATORY BIRD EXCLUSION	LS
15	624014	COMPRESSION SEAL, 2"	LF

*REPAIR QUANTITIES FOR THESE ITEM NUMBERS HAVE BEEN INCREASED BY 30% OVER THE QUANTITIES MEASURED DURING THE BRIDGE INSPECTIONS THAT BEGAN ON MAY 18, 2015. PAYMENT WILL BE BASED UPON THE ACTUAL QUANTITIES REQUIRED TO COMPLETE THE REPAIRS.

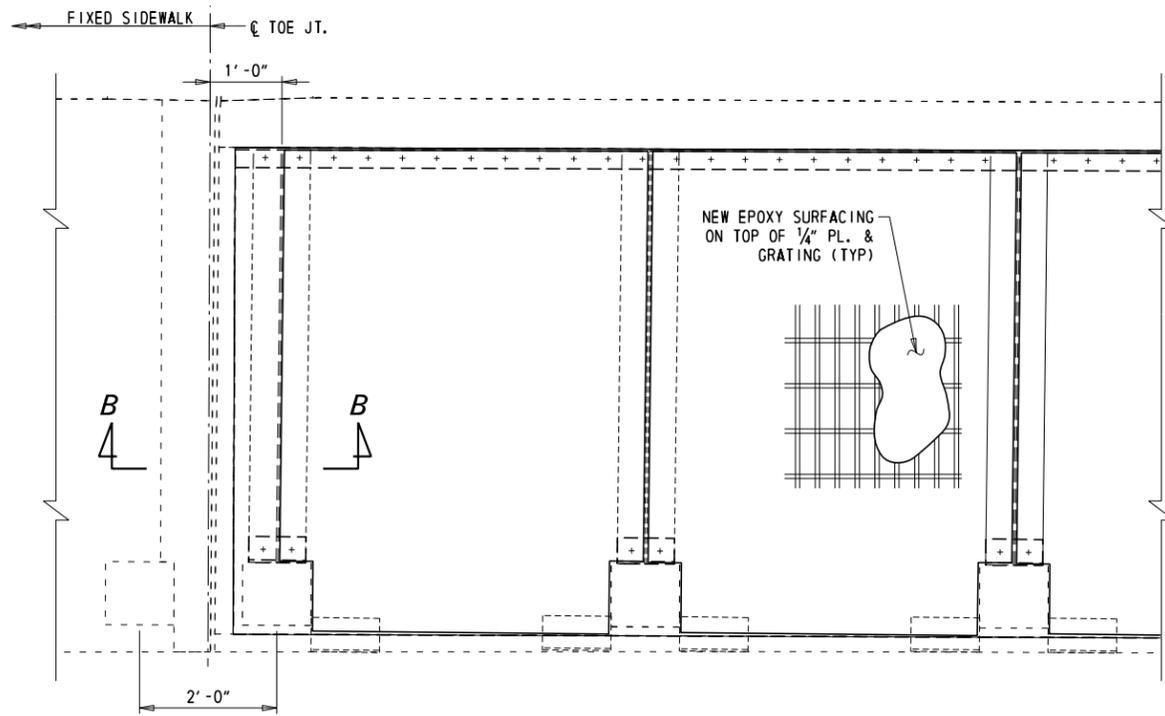
~~**REPAIR QUANTITIES FOR THESE ITEM NUMBERS HAVE BEEN INCREASED BY 10% OVER THE QUANTITIES MEASURED DURING THE BRIDGE INSPECTIONS THAT BEGAN ON MAY 18, 2015. PAYMENT WILL BE BASED UPON THE ACTUAL QUANTITIES REQUIRED TO COMPLETE THE REPAIRS.~~

ABBREVIATIONS

ABUT.	ABUTMENT
ADD'L	ADDITIONAL
APPROX.	APPROXIMATELY
ASR.	ALKALI SILICA REACTION
BOT./B	BOTTOM
BRG(S).	BEARING(S)
B. S.	BOTH SIDES
C/C	CENTER TO CENTER
©	CENTERLINE
C.G.	CENTER OF GRAVITY
CHK.	CHECKERED
CLR.	CLEAR
COL.	COLUMN
CONC.	CONCRETE
CONN(S).	CONNECTION
CONT.	CONTINUOUS
COV.	COVER
CTWT.	COUNTERWEIGHT
DIA.	DIAMETER
DIAPH.	DIAPHRAGM
DWG(S).	DRAWINGS
E.	EAST
EA.	EACH
EB	EASTBOUND
E.F.	EACH FACE
EL.	ELEVATION
EQ.	EQUAL
EXIST.	EXISTING
EXP.	EXPANSION
FB(S)	FLOORBEAM(S)
F.S.	FAR SIDE
FT	FOOT
GR.	GRADE
HOR.	HORIZONTAL
H.S.	HIGH STRENGTH
IN	INCH
JT.	JOINT
LF	LINEAR FOOT
LONG.	LONGITUDINAL
MAX	MAXIMUM
MECH.	MECHANICAL
M.H.W.	MEAN HIGH WATER
MIN	MINIMUM
M.L.W.	MEAN LOW WATER
NB	NORTHBOUND
NO.	NUMBER
N.	NORTH
N.S.	NEAR SIDE
NTS	NOT TO SCALE
O.C.	ON CENTER
OPP.	OPPOSITE
PL(S).	PLATE(S)
PSI	POUNDS PER SQUARE INCH
REINF.	REINFORCEMENT
REQ'D	REQUIRED
ROW	RIGHT OF WAY
S.	SOUTH
SB	SOUTHBOUND
SF	SQUARE FOOT
SIM.	SIMILAR
SPA.	SPACING
S.S.	STAINLESS STEEL
STA.	STATION
STD.	STANDARD
STIFF.	STIFFENER
SYM.	SYMMETRICAL
T	TOP
TEMP.	TEMPORARY
TGL	THEORETICAL GRADE LINE
TRANS.	TRANSVERSE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
V. I. F.	VERIFY IN FIELD
W.	WEST
W/	WITH
WB	WESTBOUND
WT	WEIGHT
&	AND
@	AT
%	PERCENT

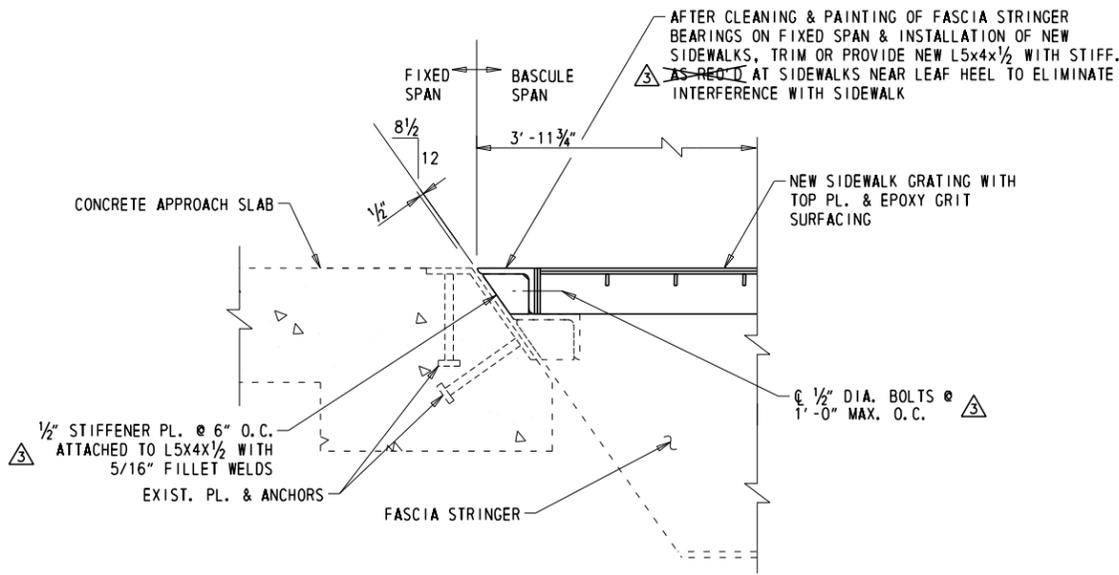
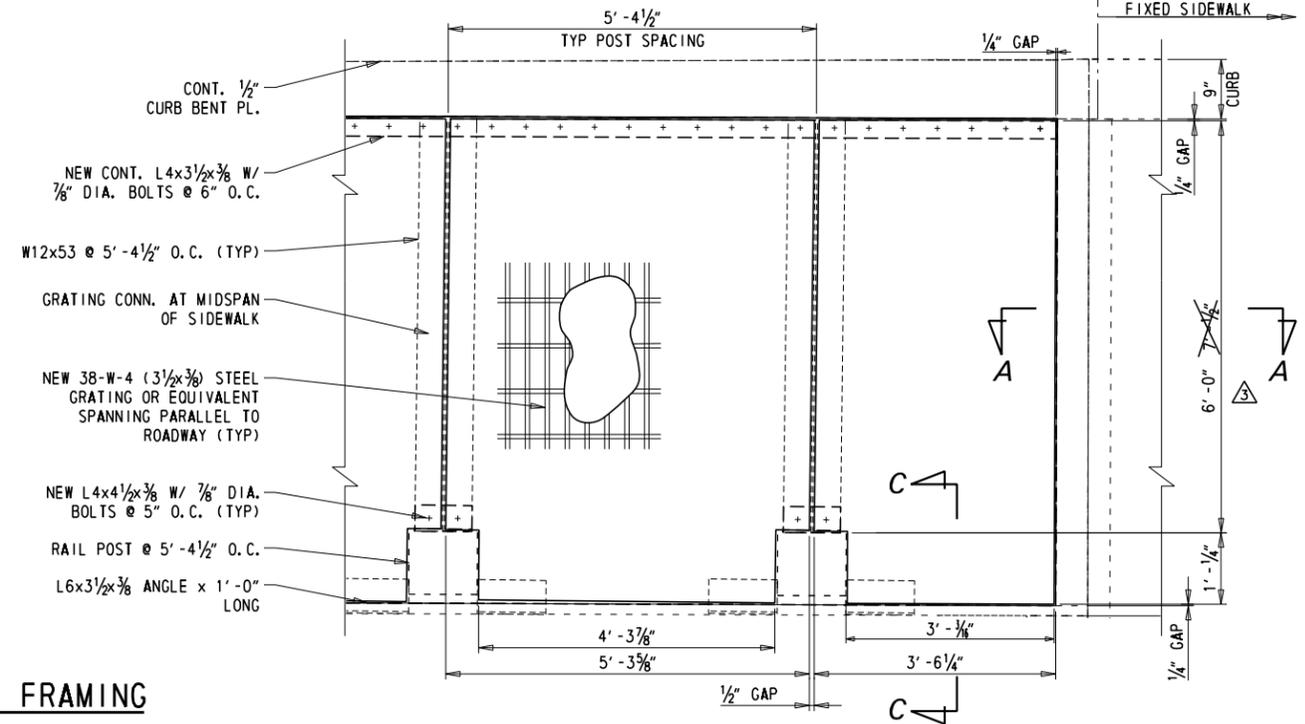
7/23/2018 M:\2018\04\0000_Fin_Dwg\CADD\10_Str\PS&E\G501 and RS01_General Notes and GR&E.dgn

<p>DELAWARE DEPARTMENT OF TRANSPORTATION</p>	ADDENDUMS / REVISIONS	<p>NOT TO SCALE</p>	<p>BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL</p>	CONTRACT	BRIDGE NO.	3-153 /3-154	<p>STRUCTURAL GENERAL NOTES</p>	GS-01
	<p>△ UPDATED PAY ITEM & NOTES (RAJ 7/23/18)</p>			T201507602	DESIGNED BY: BKS	SHEET NO.		
	<p> </p>			COUNTY	CHECKED BY: RAJ	TOTAL SHTS.		
	<p> </p>			SUSSEX		180		



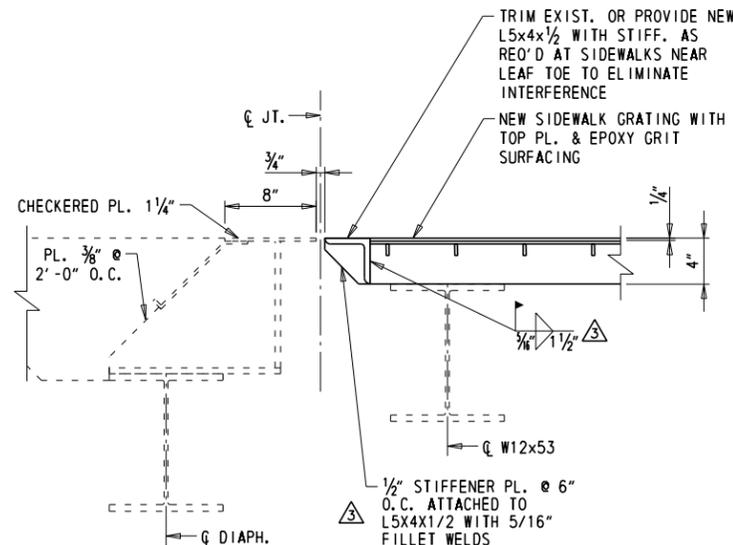
NEW SOUTH SIDEWALK FRAMING

3/4" = 1'-0"
 NOTE: TYP. INTERIOR & END GRATING PANEL DIMENSIONS AS SHOWN; N. SIDEWALK SIMILAR



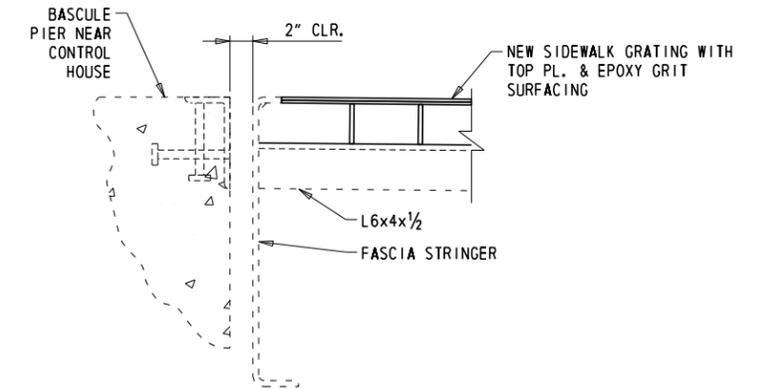
SECTION A-A

1 1/2" = 1'-0"
 NOTE: TYP. ON N. AND S. SIDEWALKS



SECTION B-B

1 1/2" = 1'-0"
 NOTE: TYP. ON N. AND S. SIDEWALKS



SECTION C-C

1 1/2" = 1'-0"

NOTE:

- ALL WORK INVOLVING TRIMMING OR REPLACING ANGLES AND STIFFENERS AT THE ENDS OF THE SIDEWALKS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 615 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615006 STEEL STRUCTURE REPAIR."

ADDENDUMS / REVISIONS

UPDATED SIDEWALK DETAILS (RAJ 7/23/18)

SCALE AS NOTED

BR 3-154 ON US9 SAVANNAH ROAD &
 BR 3-153 ON SR1A REHOBOTH AVENUE
 OVER LEWES-REHOBOTH CANAL

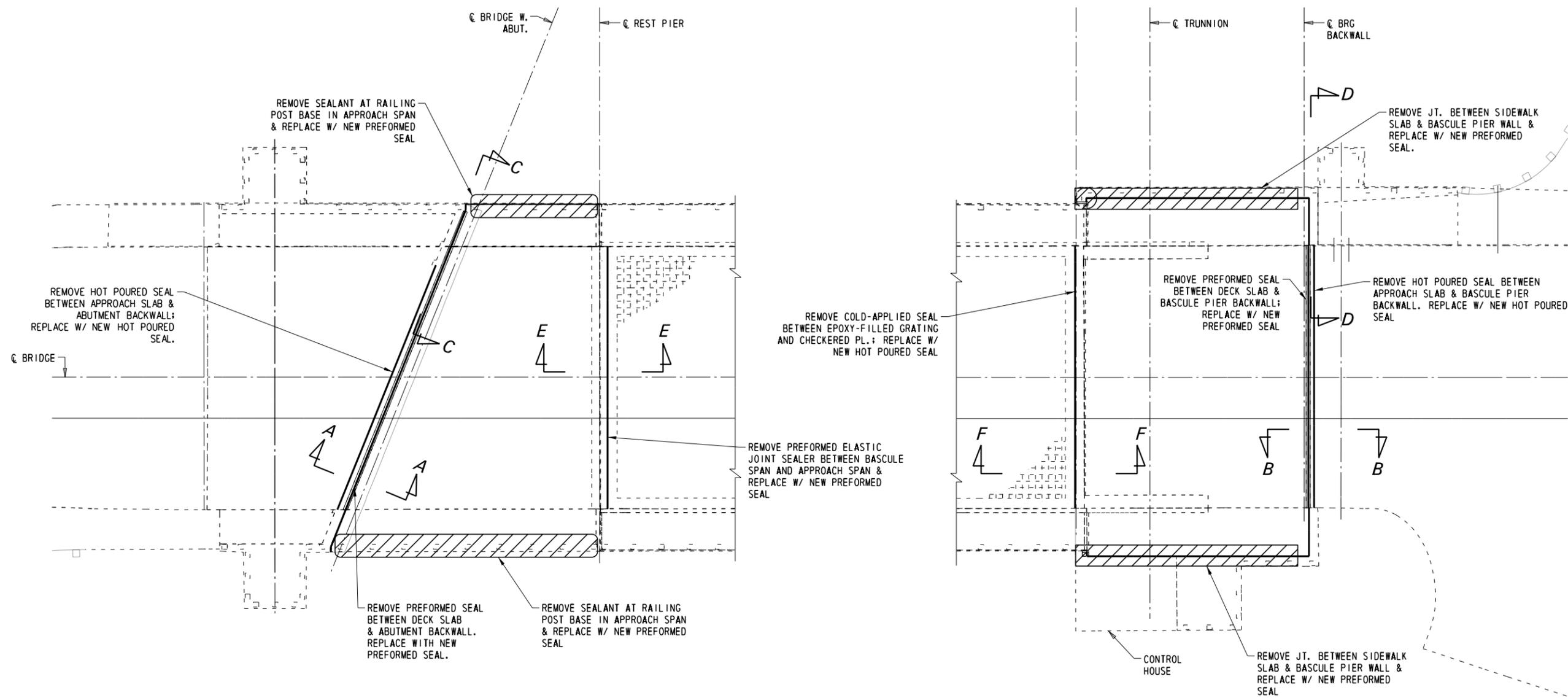
CONTRACT
 T201507602
 COUNTY
 SUSSEX

BRIDGE NO.
 3-153
 DESIGNED BY: BKS
 CHECKED BY: AR

SIDEWALK REPLACEMENT
 DETAILS 2

RS-11
 SHEET NO.
 21
 TOTAL SHTS.
 180

7/23/2018 M:\02889_04E\000_Fin_Dwg\CADD\10_Str\PS&E\RS12_Joint Replacement Plan.dgn



JOINT REMOVAL PLAN

1/8" = 1'-0"
SEE DWG. RS-13 FOR VIEWS A-A, B-B, C-C, D-D, E-E, AND F-F

- NOTES:**
- ALL WORK INVOLVING REPLACEMENT OF PREFORMED ELASTIC JT. SEALER AND HOT POURED SEAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 624 JOINTS OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 624013 - COMPRESSION SEAL, 1 INCH", "ITEM 624014 - COMPRESSION SEAL, 2 INCHES" AND "ITEM 624009 - ASPHALTIC PLUG JT."
 - "ITEM 504001 - CRACK AND JOINT SEALING LESS THAN 3/4 INCH WIDE".



ADDENDUMS / REVISIONS	
3	UPDATED JOINT PAY ITEM (RAJ 7/23/18)

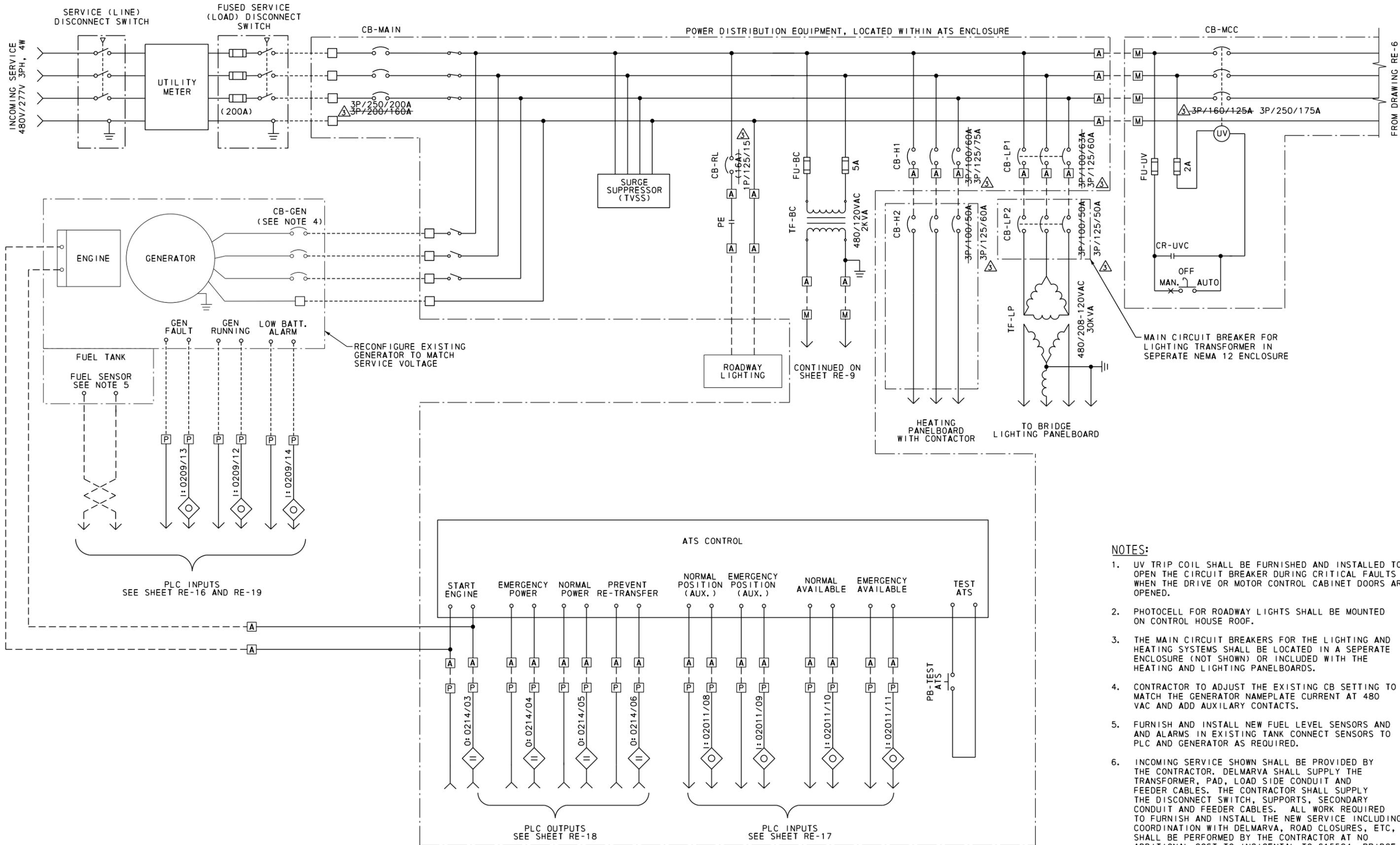
SCALE AS NOTED

BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-153
T201507602	DESIGNED BY:	BKS
COUNTY	CHECKED BY:	AR
SUSSEX		

JOINT REPLACEMENT PLAN

RS-12
SHEET NO.
22
TOTAL SHTS.
180



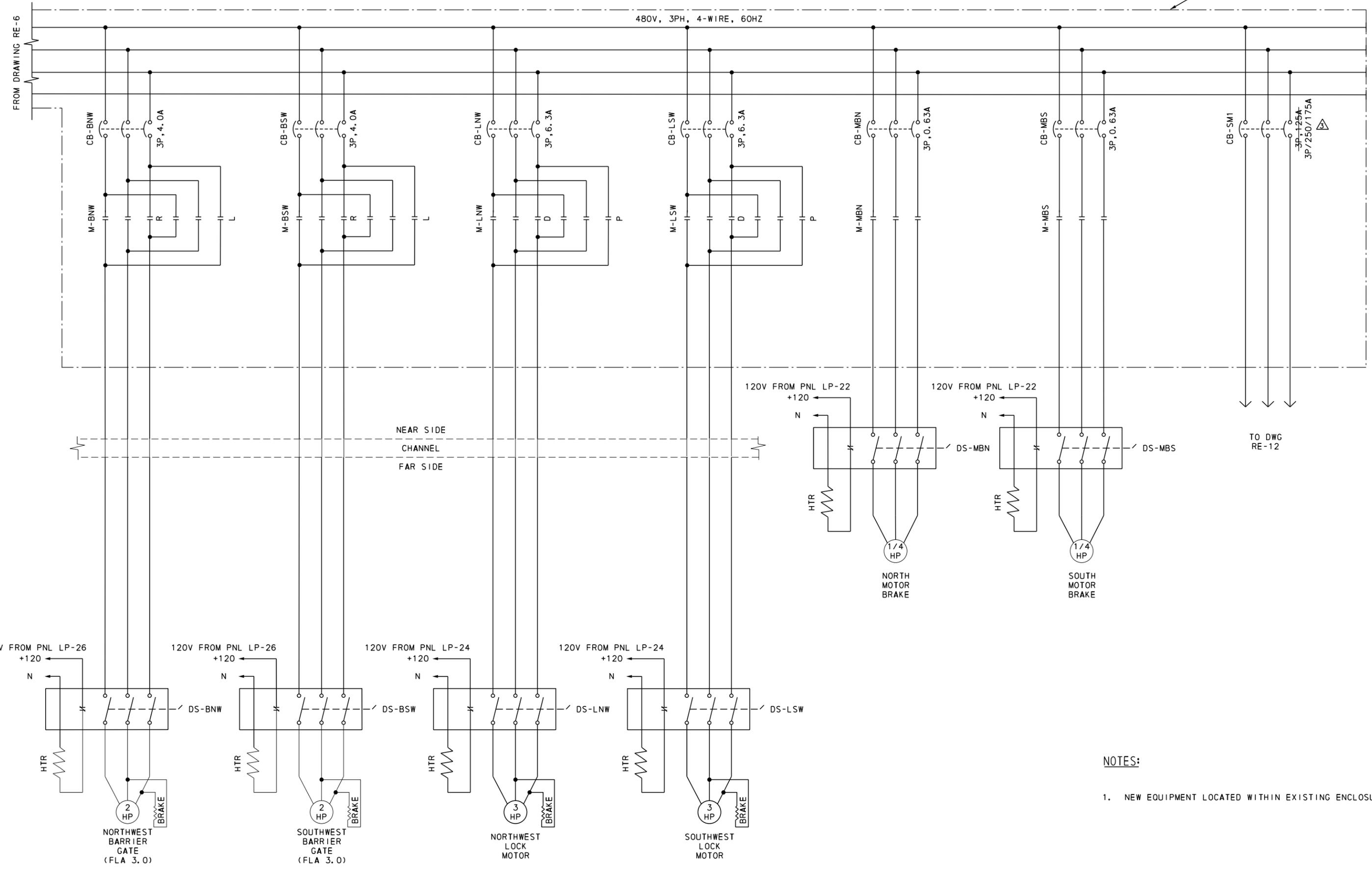
- NOTES:**
- UV TRIP COIL SHALL BE FURNISHED AND INSTALLED TO OPEN THE CIRCUIT BREAKER DURING CRITICAL FAULTS OR WHEN THE DRIVE OR MOTOR CONTROL CABINET DOORS ARE OPENED.
 - PHOTOCELL FOR ROADWAY LIGHTS SHALL BE MOUNTED ON CONTROL HOUSE ROOF.
 - THE MAIN CIRCUIT BREAKERS FOR THE LIGHTING AND HEATING SYSTEMS SHALL BE LOCATED IN A SEPARATE ENCLOSURE (NOT SHOWN) OR INCLUDED WITH THE HEATING AND LIGHTING PANELBOARDS.
 - CONTRACTOR TO ADJUST THE EXISTING CB SETTING TO MATCH THE GENERATOR NAMEPLATE CURRENT AT 480 VAC AND ADD AUXILIARY CONTACTS.
 - FURNISH AND INSTALL NEW FUEL LEVEL SENSORS AND ALARMS IN EXISTING TANK CONNECT SENSORS TO PLC AND GENERATOR AS REQUIRED.
 - INCOMING SERVICE SHOWN SHALL BE PROVIDED BY THE CONTRACTOR. DELMARVA SHALL SUPPLY THE TRANSFORMER, PAD, LOAD SIDE CONDUIT AND FEEDER CABLES. THE CONTRACTOR SHALL SUPPLY THE DISCONNECT SWITCH, SUPPORTS, SECONDARY CONDUIT AND FEEDER CABLES. ALL WORK REQUIRED TO FURNISH AND INSTALL THE NEW SERVICE INCLUDING COORDINATION WITH DELMARVA, ROAD CLOSURES, ETC, SHALL BE PERFORMED BY THE CONTRACTOR AT NO ADDITIONAL COST TO INCIDENTAL TO 615504, BRIDGE ELECTRICAL SYSTEM.
 - THE CONTRACTOR TO PROVIDE A GROUNDING SYSTEM FOR THE NEW TRANSFORMER AS SHOWN ON DWG RE-45 OR OTHERWISE REQUIRED BY DELMARVA.

7/23/2018 M:\02889_04B\0400_Fin_Des\CADD\30_Elec\EE05 - Three Line 1.dgn

	ADDENDUMS / REVISIONS △ MODIFIED CIRCUIT BREAKER SETTING (MJT 7/23/18)	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-153	THREE LINE DIAGRAM I	RE-5
	COUNTY SUSSEX			DESIGNED BY: MJT CHECKED BY: AHN	SHEET NO. 42		
TOTAL SHTS. 180							

SEE NOTE 1

480V, 3PH, 4-WIRE, 60HZ



NOTES:

1. NEW EQUIPMENT LOCATED WITHIN EXISTING ENCLOSURE.

7/23/2018 M:\02889\048\000_Fin_Des\CADD\30_Elec\EE07 - Three Line 3.dgn



ADDENDUMS / REVISIONS	
△	MODIFIED CIRCUIT BREAKER SETTING (MJT 7/23/18)

NOT TO SCALE

BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

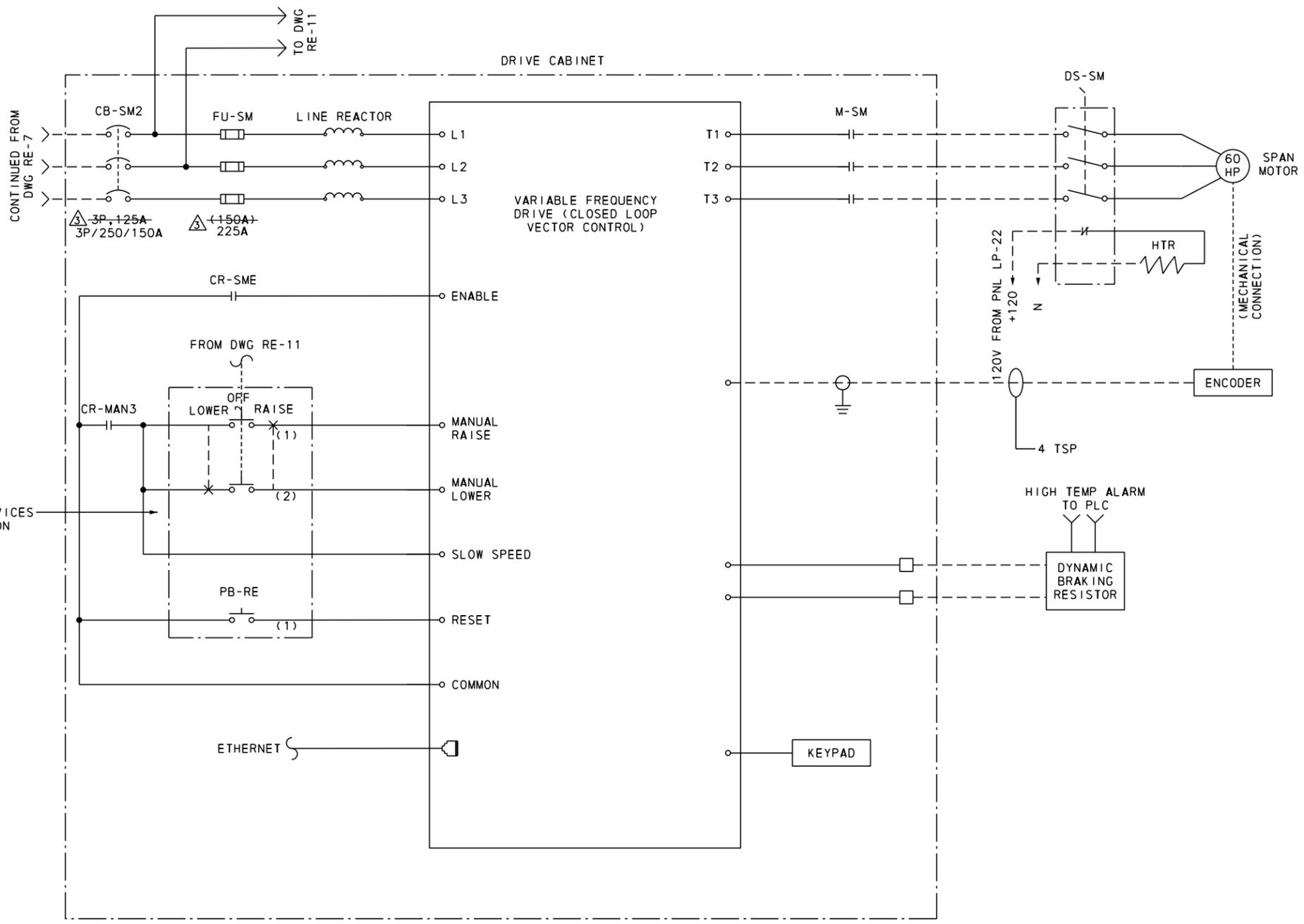
CONTRACT	BRIDGE NO.	3-153
T201507602	DESIGNED BY:	MJT
COUNTY	CHECKED BY:	AHN
SUSSEX		

THREE LINE DIAGRAM III

RE-7
SHEET NO.
44
TOTAL SHTS.
180

12-0
12-1
12-2
12-3
12-4
12-5
12-6
12-7
12-8
12-9
12-10
12-11
12-12
12-13
12-14
12-15
12-16
12-17
12-18
12-19
12-20
12-21
12-22
12-23
12-24
12-25
12-26
12-27
12-28
12-29
12-30
12-31
12-32
12-33
12-34
12-35
12-36

PILOT DEVICES MOUNTED ON DOOR



NOTES:

1. CIRCUIT BREAKER AND FUSE SIZES SHALL BE MODIFIED PER MANUFACTURER RECOMENDATIONS.
2. WIRING TO AND FROM RESISTOR ENCLOSURE SHALL BE HIGH TEMP WIRE.

7/23/2018 M:\02889\048\000_Fin_Dwg\CADD\30_Elec\EE12 - VFD Controls.dgn

ADDENDUMS / REVISIONS	
△	MODIFIED CIRCUIT BREAKER/FUSE SETTING (MJT 7/23/18)

NOT TO SCALE

BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-153
T201507602	DESIGNED BY:	MJT
COUNTY	CHECKED BY:	AHN
SUSSEX		

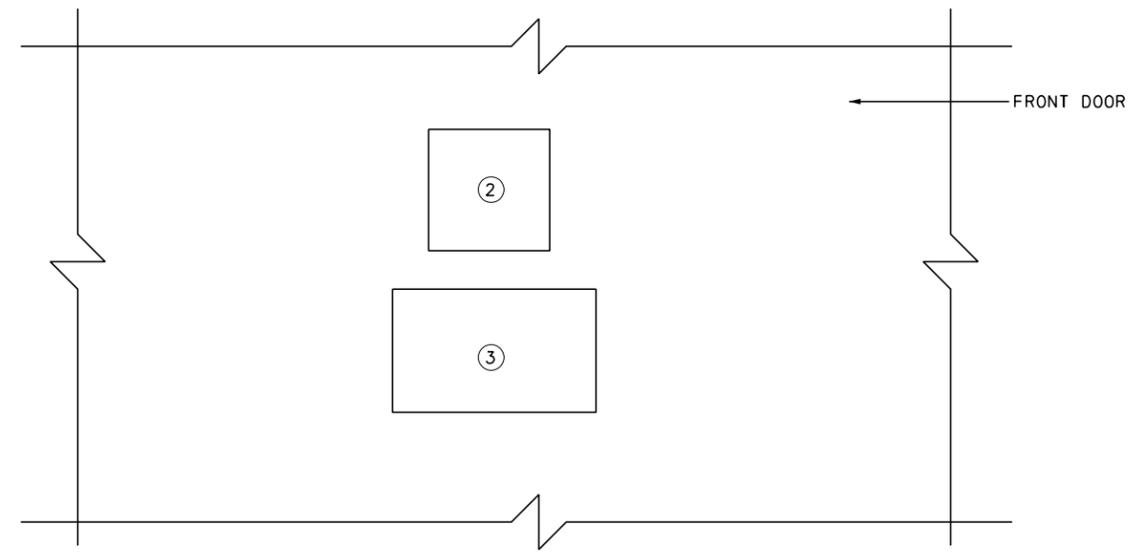
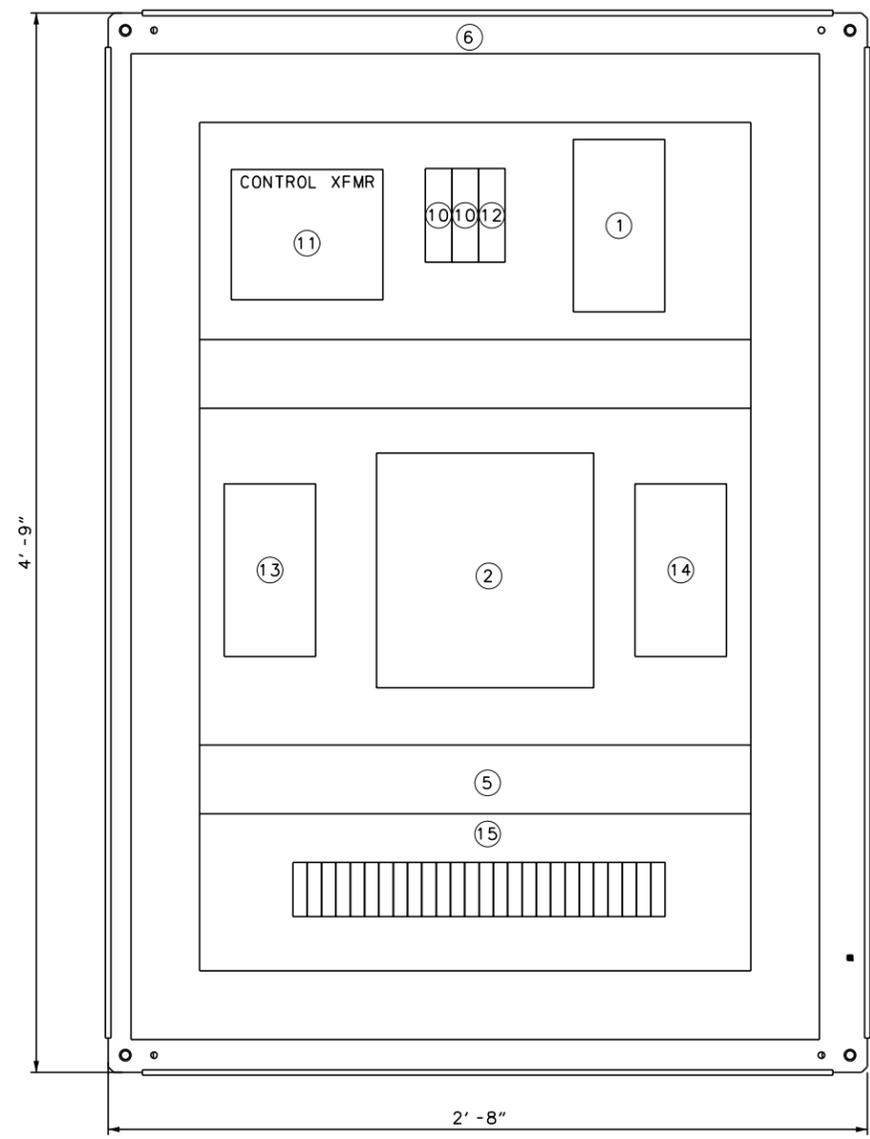
SPAN DRIVE CONTROLS	
RE-12	SHEET NO.
	49
	TOTAL SHTS.
	180

PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	MODEL NO.	DESCRIPTION 1	DESCRIPTION 2
1	CB-MAIN	1	SQUARE D ^Δ POWERPACT	COMPACT NSX-	MAIN CIRCUIT BREAKER	3P, 600V, 200AF/160AT, 35KAIC
		1	SQUARE D	-	DOOR DISCONNECT HANDLE	- ^Δ 250AF/200AT
		1	SQUARE D	-	TERMINAL LUG	-
2	ATS	1	ASCO	300 SERIES	AUTOMATIC TRANSFER SWITCH	3P, 600V, 200A
					ATS CONTROLLER	-
3	TVSS	1	SQUARE D	SURGELOGIC	SURGE SUPPRESSOR W/DISPLAY	480/277V, 3P, 4 WIRE, 120KA
4	-	-	HOFFMAN	PANELITE	ENCLOSURE LIGHT*	120V, FLUORESENT
5	A	ARO	PHOENIX CONTACT	UT4	TERMINAL BLOCKS	SCREW TYPE, 600V, 32A
					DIN RAIL	-
					END PLATE	-
					CROSS CONNECTORS	-
					TERMINAL MARKER	-
					GROUND TERMINAL	-
6	-	1	CUSTOM	CUSTOM	12 GAUGE STEEL BACK PANEL	-
					NEMA 12 ENCLOSURE	48" X 60" X 20"
7	DSS8	1	SQUARE D ^Δ XCP	OS+SENSE XC-	DOOR LIMIT SWITCH*	300V, 10A, 1N0/1NC
8	-	1	PHOENIX CONTACT	EM-DUO	DIN RAIL GFI OUTLET*	125V, 15A
9	-	1	HOFFMAN	DAH	ENCLOSURE HEATER*	115V, 100W
10	FU-BC	2	LITTLEFUZE	KLDR	CONTROL TRANSFORMER FUSE	600V, 5A
		1	LITTLEFUZE	-	FUSE HOLDER	2P, 30A
11	TF-BC	1	SQUARE D	9070T	CONTROL TRANSFORMER	2KVA, 480V PRI, 120V SEC
12	CB-RL	1	SQUARE D ^Δ POWERPACT	COMPACT NSX-	ROADWAY LIGHTING CB	1P, 10A CIRCUIT BREAKER
13	CB-LP1	1	SQUARE D ^Δ POWERPACT	COMPACT NSX-	LIGHTING CB	3P, 600V, 100AF/63AT, 35KAIC
14	CB-H1	1	SQUARE D ^Δ POWERPACT	COMPACT NSX-	HEATING CB	3P, 600V, 100AF/63AT, 35KAIC
15	-	1	PANDUIT	-	WIRING DUCTS, SIZE AS REQUIRED	-

ARO - QTY AS REQUIRED
 *NOT SHOWN IN LAYOUT

^Δ 3P, 600V, 125AF/60AT, 35KAIC
^Δ 3P, 600V, 125AF/75AT, 35KAIC

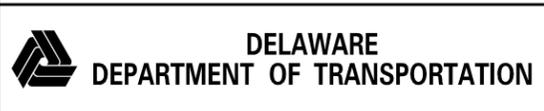


FRONT DOOR MODIFICATIONS

NOTES:

- CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL AND WITHIN THE ENCLOSURE. NOT ALL REQUIRED EQUIPMENT MAY BE SHOWN. CONTRACTOR SHALL PROVIDE THE NECESSARY EQUIPMENT AND DETAILS.
- THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE ENCLOSURE SHOWN CAN BE BROUGHT INTO THE GENERATOR ROOM BY NORMAL ACCESS MEANS, THROUGH THE DOORS. ADJUSTMENTS TO THE SIZE INCLUDING PROVIDING MULTIPLE SECTIONS SHALL BE MADE AT NO ADDITIONAL COST TO DELDOT.
- ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS WILL ONLY BE CONSIDERED WITH SIMILAR EQUIPMENT FROM SQUARE D THAT IS READILY AVAILABLE AND NOT OBSOLETE OR NEARING OBSOLESCENCE.
- ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS SHALL NOT BE PERMITTED.
- COORDINATE SIZE OF BACKPANEL AND CABINET WITH AVAILABLE SPACE ALONG THE WALL OF GENERATOR ROOM AND ADJUST AS REQUIRED.

7/23/2018 M:\02889\048\CADD\30_Elec\EE24 - ATS CABINET LAYOUT.dgn



ADDENDUMS / REVISIONS	
^Δ	MODIFIED BILL OF MATERIALS & NOTES (MJT 7/23/18)

NOT TO SCALE

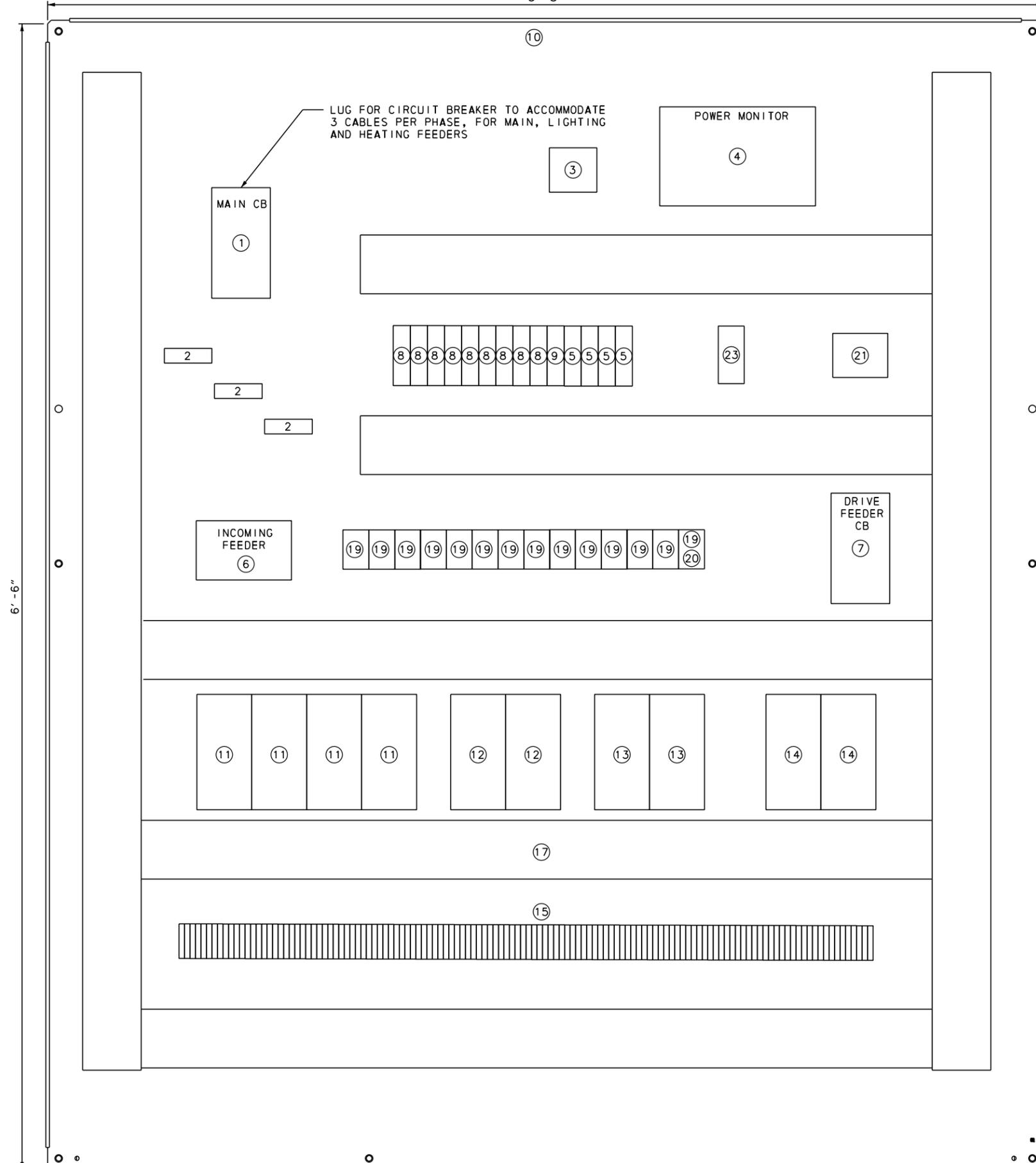
BR 3-154 ON US9 SAVANNAH ROAD &
 BR 3-153 ON SR1A REHOBOTH AVENUE
 OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-153
T201507602	DESIGNED BY:	MJT
COUNTY	CHECKED BY:	AHN
SUSSEX		

ATS CABINET
 BACKPANEL DETAILS

RE-24
SHEET NO.
61
TOTAL SHTS.
180

5' - 8"



LUG FOR CIRCUIT BREAKER TO ACCOMMODATE 3 CABLES PER PHASE, FOR MAIN, LIGHTING AND HEATING FEEDERS

POWER MONITOR

MAIN CB

1

3

4

2

2

2

INCOMING FEEDER

6

19 19 19 19 19 19 19 19 19 19 19 19 19 19 19 20

DRIVE FEEDER CB

7

11

11

11

11

12

12

13

13

14

14

17

15

ADDENDUMS / REVISIONS
 △ MODIFIED BILL OF MATERIALS & NOTES (MJT 7/23/18)

NOT TO SCALE

BR 3-154 ON US9 SAVANNAH ROAD &
 BR 3-153 ON SR1A REHOBOTH AVENUE
 OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-153
T201507602	DESIGNED BY:	MJT
COUNTY	CHECKED BY:	AHN
SUSSEX		

MOTOR CONTROL CABINET
 BACKPANEL DETAILS

RE-25
SHEET NO.
62
TOTAL SHTS.
180

PROPOSED BILL OF MATERIALS

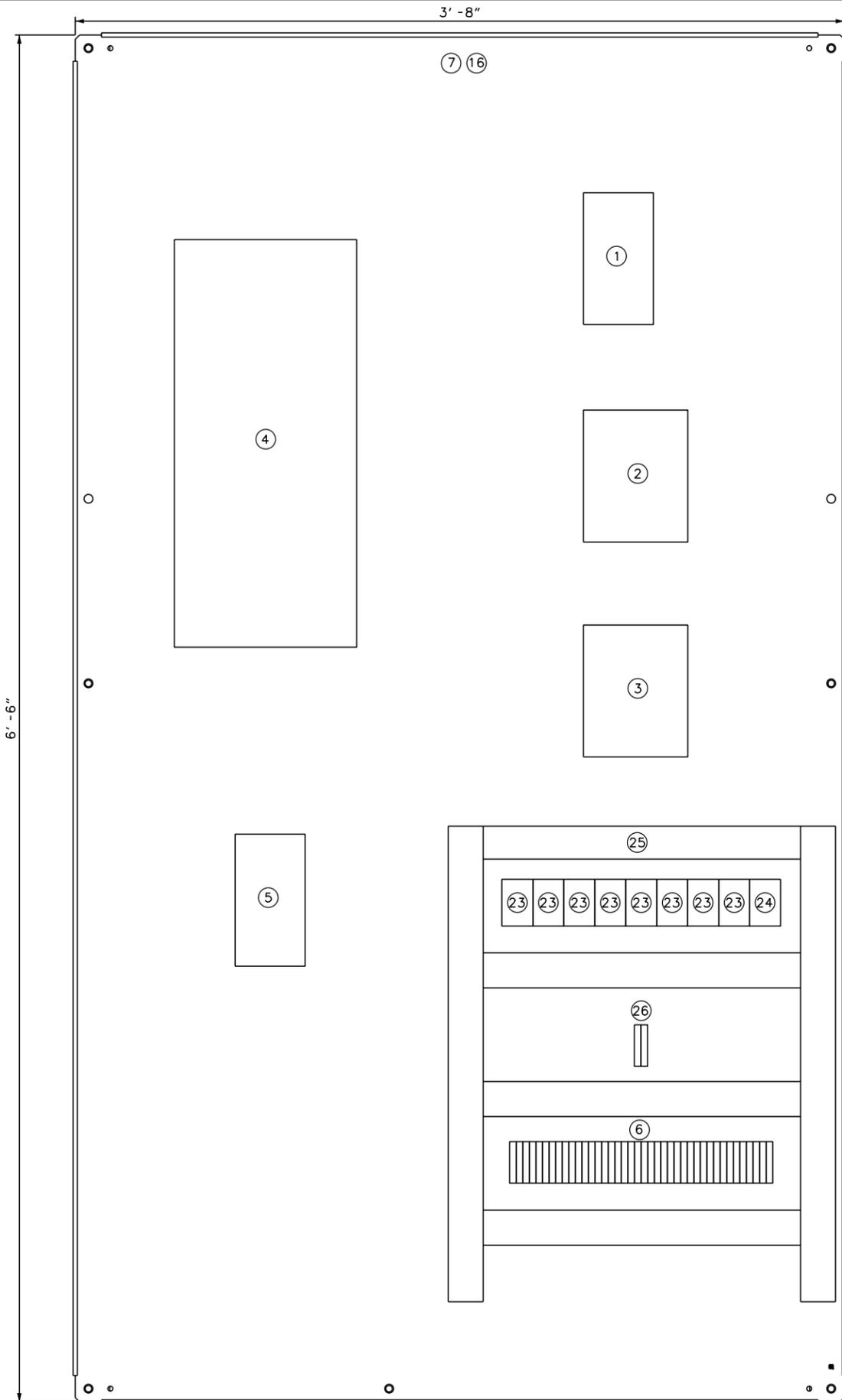
ITEM NO.	DWG ID	QTY	MANUFACTURER	MODEL NO.	DESCRIPTION	DESCRIPTION 1
1	CB-MCC	1	SQUARE D	△ COMPACT NSX-POWERPACT	MAIN CIRCUIT BREAKER	3P, 600V, 160AF/125AT, 35KAIC
					DOOR DISCONNECT HANDLE	- △ 250AF/175AT
					CIRCUIT BREAKER UV TRIP	-
					CIRCUIT BREAKER TERMINAL LUG	-
2	CT	3	SQUARE D	74RFT	CURRENT TRANSFORMER	200: 5A
3	PFR	1	SQUARE D	ZEL10	PHASE MONITOR	3P, 480V, 5A
4	PM	1	ELECTRO INDUSTRIES	NEXUS 1252	POWER MONITOR	3 PHASE MONITOR W/DISPLAY
5	CB-C1,C2 CB-C3,C4	4	SQUARE D	△ ACT19 MULTI9	CIRCUIT BREAKER	1P, 240V, 5A △ 250AF/175AT
6	-	1	MARATHON SP	EPB	ENCLOSED DISTRIBUTION BLOCK	600V, 200A
7	CB-SM1	1	SQUARE D △ POWERPACT	COMPACT NSX-	DRIVE FEEDER CB	3P, 600V, 160AF/125AT, 35KAIC
8	FU-**	11	LITTLE FUSE	KLK	FAST ACTING CARTRIDGE FUSE	1A/2A, 600V, 100KAIC
			MARATHON SP	-	ENCLOSED FUSE HOLDER	30A, 600V, 100KAIC
9	CB-CP	1	SQUARE D	△ ACT19 MULTI9	CIRCUIT BREAKER	1P, 240V, 20A
10	-	1	CUSTOM	AS NOTED	PAINTED STEEL BACK PANEL	NEMA 12 STEEL ENCLOSURE
	CB-G**	4		GV2P	WARNING GATE CB	3P, 1-1.6A, 35 KAIC (MIN)
	M-G**	4		LC2D	WARNING GATE CONTACTOR	3P, 9A, FVR CONTACTOR
	-	4	SQUARE D	-	ADAPTER PLATE	-
	-	4	-	-	AUX CONTACTS FOR CONTACTOR	-
	-	4	-	-	AUX CONTACT FOR CB	-
	-	8	-	-	COIL SURGE SUPPRESSOR	-
	CB-B**	2		GV2P	BARRIER GATE CB	3P, 2-4A, 35 KAIC (MIN)
	M-B**	2		LC2D	BARRIER GATE CONTACTOR	3P, 9A, FVR CONTACTOR
	-	2	SQUARE D	-	ADAPTER PLATE	-
	-	2	-	-	AUX CONTACTS FOR CONTACTOR	-
	-	2	-	-	AUX CONTACT FOR CB	-
	-	4	-	-	COIL SURGE SUPPRESSOR	-
	CB-L**	2		GV2P	SPAN LOCK CB	3P, 4-6.3A, 35 KAIC (MIN)
	M-L**	2		LC2D	SPAN LOCK CONTACTOR	3P, 9A, FVR CONTACTOR
	-	2	SQUARE D	-	ADAPTER PLATE	-
	-	2	-	-	AUX CONTACTS FOR CONTACTOR	-
	-	2	-	-	AUX CONTACT FOR CB	-
	-	4	-	-	COIL SURGE SUPPRESSOR	-
	CB-MB**	2		GV2P	MOTOR BRAKE CB	3P, 0.25-0.40, 35 KAIC (MIN)
	M-MB**	2		LC1D	MOTOR BRAKE CONTACTOR	3P, 9A, NFVR CONTACTOR
	-	2	SQUARE D	-	ADAPTER PLATE	-
	-	2	-	-	AUX CONTACTS FOR CONTACTOR	-
	-	2	-	-	AUX CONTACT FOR CB	-
	-	4	-	-	COIL SURGE SUPPRESSOR	-
15	M	-	PHOENIX CONTACT	UT4	TERMINAL BLOCKS	SCREW TYPE, 600V, 32A
					DIN RAIL	-
					END PLATE	-
					CROSS CONNECTORS	-
					TERMINAL MARKER	-
					GROUND TERMINAL	-
16	-	1	HOFFMAN	PANELITE	120VAC, LED ENCLOSURE LIGHT*	-
17	-	1	PANDUIT	-	WIRING DUCT, SIZE AS REQUIRED	-
18	DSS4,5	2	SQUARE D	XCP	DOOR LIMIT SWITCH***	300V, 10A
19	CR-**	14	SQUARE D	CAD SERIES	CONTROL RELAY W/TVSS	120V, 10A
20	TR-TS	1	SQUARE D	LAD SERIES	TIME DELAY ATTACHMENT	-
21	TF-PM	1	SQUARE D	9070T	PWR MONITOR TRANS.	100VA, 480V PRI, 120V SEC
22	-	-	-	-	-	-
23	M-HTC	1	SQUARE D	LC1D	HEAT TRACE CONTACTOR	30, 32A
24	-	1	HOFFMAN	DAH	ENCLOSURE HEATER***	100W
25	-	1	PHOENIX CONTACT	EM-DUO	120VAC, DIN RAIL GFI OUTLET***	125V, 15A
26	-	-	PHOENIX CONTACT	-	GALV. STEEL DIN RAIL***	-

**NOMENCLATURE PER SCHEMATIC WIRING DIAGRAM
 ***NOT SHOWN IN LAYOUT

NOTES:

- CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL AND WITHIN THE EXISTING DRIVE CABINET ENCLOSURE. NOT ALL REQUIRED EQUIPMENT MAY BE SHOWN, CONTRACTOR SHALL PROVIDE THE NECESSARY EQUIPMENT AND DETAILS.
- THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE BACKPANEL CAN BE BROUGHT INTO THE SWITCHBOARD ROOM BY NORMAL ACCESS MEANS, THROUGH THE DOORS AND/OR WINDOWS. ADJUSTMENTS TO THE SIZE INCLUDING PROVIDING MULTIPLE SECTIONS SHALL BE MADE AT NO ADDITIONAL COST TO DELDOT.
- THE CONTRACTOR SHALL DISCONNECT AND REMOVE THE EXISTING LOUVER/FAN ASSEMBLY ON THE EXISTING ENCLOSURE AND COVER WITH PAINTED STEEL PLATE AS REQUIRED.
- THE BACKPANEL FOR THE MOTOR CONTROL EQUIPMENT SHALL BE FURNISHED AND INSTALLED IN THE EXISTING SPAN DRIVE CABINET ENCLOSURE AND RELABELLED AS MOTOR CONTROL CABINET.
- △ ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS SHALL NOT BE PERMITTED.
- △ ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS WILL ONLY BE CONSIDERED WITH SIMILAR EQUIPMENT FROM SQUARE D THAT IS READILY AVAILABLE AND NOT OBSOLETE OR NEARING OBSOLESCENCE.

7/23/2018 M:\02889.048\0400_Fin_Dwg\CADD\30_Elec\EE25 - MCC_LAYOUT.dgn

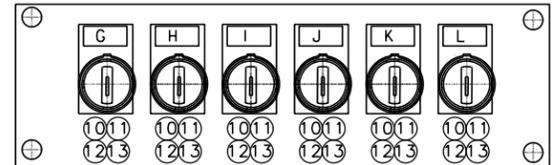
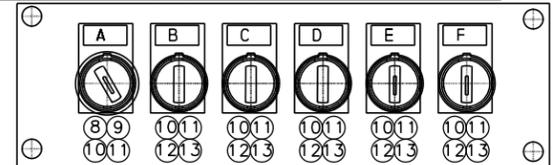


PROPOSED BILL OF MATERIALS

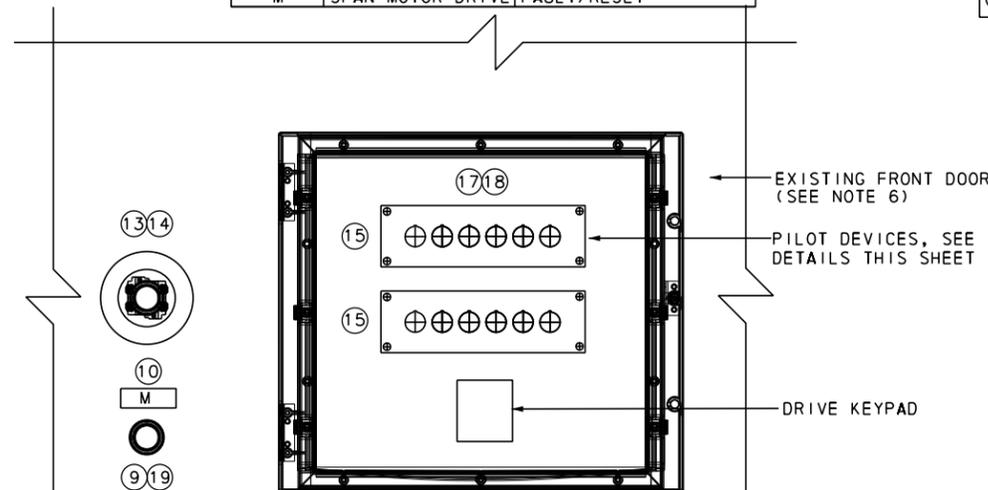
ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	PART NO.	DESCRIPTION	DESCRIPTION
1	CB-SM2	1	SQUARE D	COMPACT NSX- △ POWERPACT	MAIN CIRCUIT BREAKER DISCONNECT HANDLE CIRCUIT BREAKER TERMINAL LUG	3P, 600V, 160AF/125AF, 35KA IC △ 250AF/150AT
2	FU-SM	1	MERSEN	HSJ	FAST TRIP FUSE FUSE HOLDER	3P, 600VAC, 150A- 225A △ 3 POLE
3	LINE RTR	1	MTE CORP	RL SERIES	LINE FILTER	5%
4	VFD	1	ALLEN BRADLEY	POWER FLEX 753	FLUX VECTOR DRIVE	3P, 480V, 96A
5	M-SM	1	SQUARE D	LC1D	CONTACTOR	3P, 115A
6	[D]	-	PHOENIX CONTACT	UT4	TERMINAL BLOCKS DIN RAIL END PLATE CROSS CONNECTORS TERMINAL MARKER GROUND TERMINAL	SCREW TYPE, 690V, 32A
7	-	1	CUSTOM	-	PAINTED STEEL BACKPANEL	10 GA.
8	CS-MAN	1	SQUARE D	XB4	KEY SELECTOR SWITCH	22MM, 2 POS., MAINTAINED
9	-	13	SQUARE D	XB4	CONTACT BLOCK	1 NO
10	-	12	SQUARE D	-	BLANK LEGEND HOLDER	
11	-	13	SQUARE D	-	ENGRAVED LEGEND	
12	CS-***	11	SQUARE D	XB4	SELECTOR SWITCH	22MM, 3 POS. SPRING RETURN
13	PB-ES2	1	SQUARE D	9001	EMERGENCY STOP PB	30MM
14	PB-ES2	1	SQUARE D	-	EMERGENCY STOP NAMEPLATE	
15	-	2	SQUARE D	XAP	PB ENCLOSURE	6 POSITION
16	DSS1,2	2	SQUARE D	XCP	DOOR LIMIT SWITCH*	300V, 10A
17	-	1	HOFFMAN	-	WINDOW KIT	
18	-	1	HOFFMAN	-	LOCKING KNOB FOR WINDOW KIT	
19	PB-RE	1	HOFFMAN	9001	PUSH-BUTTON	30MM, 120V, RED ILLUMINATED
20	-	1	HOFFMAN	PANELITE	LED ENCLOSURE LIGHT*	120VAC
21	-	1	HOFFMAN	DAH	HEATER*	100W
22	-	1	HOFFMAN	EM-DUO	GFI OUTLET*	120VAC
23	CR-***	8	SQUARE D	CAD	CONTROL RELAY	120VAC, 10A
24	CR-SR2	1	ALLEN BRADLEY	700S-P	SAFETY RELAY	120VAC, 10A
25	-	1	PANDUIT	-	WIRING DUCT, SIZE AS REQUIRED	
26	CB-SMC	1	SQUARE D	△ ACT19 MULTI 9	CIRCUIT BREAKER	2P, 480V, 1A

*NOT SHOWN IN LAYOUT
 **MANUAL OPERATION SELECTOR SWITCHES
 ***NOMENCLATURE PER SCHEMATIC WIRING DIAGRAM

ITEM NO.	NAMEPLATE LINE 1	NAMEPLATE LINE 2
A	MAN. AUTO	MAN. AUTO
B	NE GATE	LOWER RAISE
C	SE GATE	LOWER RAISE
D	NW GATE	LOWER RAISE
E	SW GATE	LOWER RAISE
F	NW BARRIER	LOWER RAISE
G	SW BARRIER	LOWER RAISE
H	NW LOCK	PULL DRIVE
I	SW LOCK	PULL DRIVE
J	SPAN MOTOR	RAISE LOWER
K	SPARE	SPARE
L	SPARE	SPARE
M	SPAN MOTOR DRIVE	FAULT/RESET



MANUAL OPERATION CONTROL STATION
SCALE: NTS

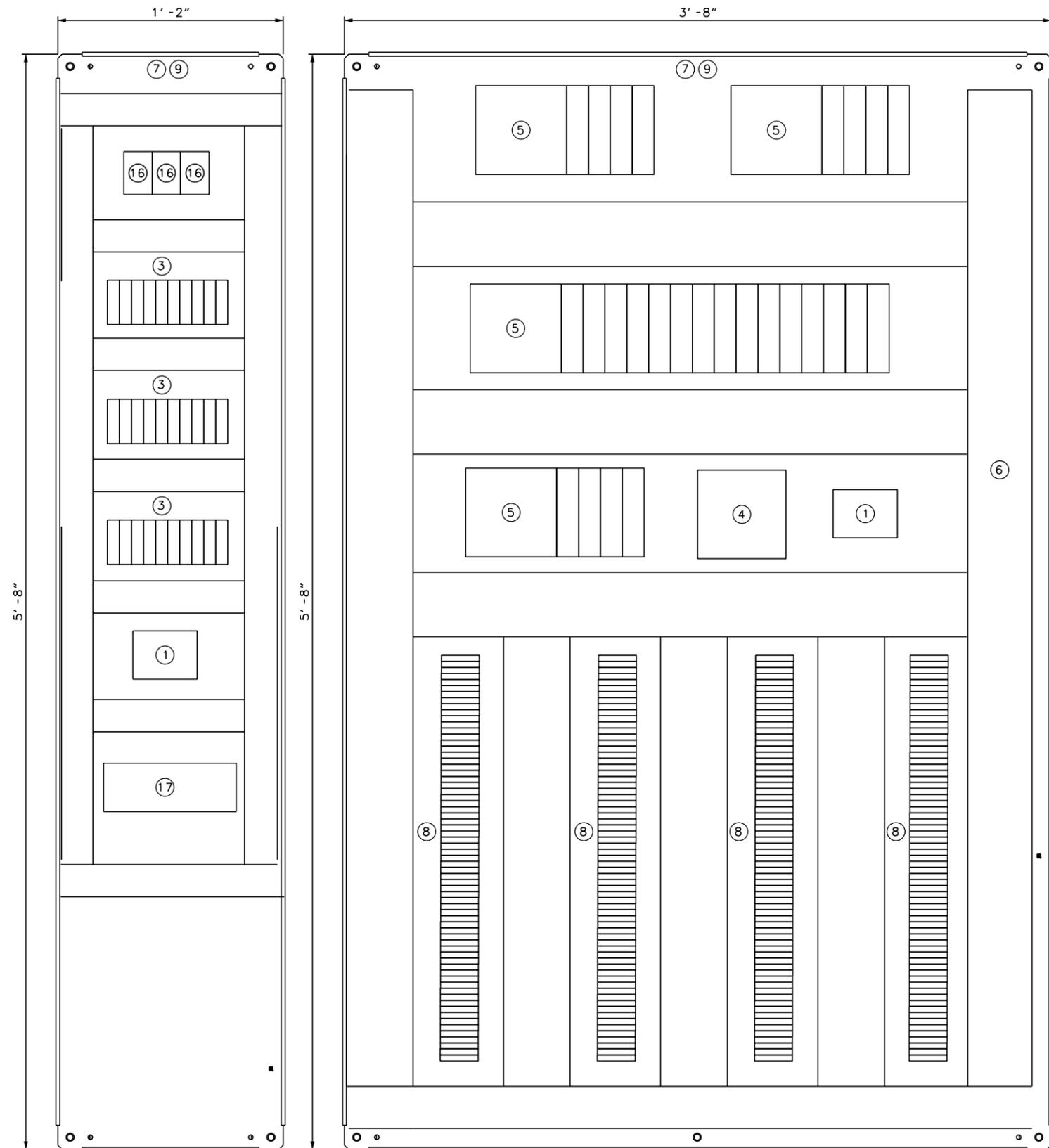


△ 7. ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS WILL ONLY BE CONSIDERED WITH SIMILAR EQUIPMENT FROM SQUARE D THAT IS READILY AVAILABLE AND NOT OBSOLETE OR NEARING OBSOLESCENCE.

NOTES:

- CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL AND WITHIN EXISTING AUXILIARY ENCLOSURE. NOT ALL REQUIRED EQUIPMENT MAY BE SHOWN, CONTRACTOR SHALL PROVIDE THE NECESSARY EQUIPMENT AND DETAILS.
- THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE BACKPANEL SHOWN CAN BE BROUGHT INTO THE SWITCHBOARD ROOM BY NORMAL ACCESS MEANS, THROUGH THE DOORS AND/OR WINDOWS. ADJUSTMENTS TO THE SIZE INCLUDING PROVIDING MULTIPLE SECTIONS SHALL BE MADE AT NO ADDITIONAL COST TO DELDOT.
- THE DRIVES SHALL BE ALLEN BRADLEY POWER FLEX UNITS OR EMERSON M700 UNITS. NO OTHER SUBSTITUTES ARE PERMITTED.
- THE CONTRACTOR SHALL SUPPLY A FAN AS REQUIRED BY THE DRIVE MANUFACTURER INSIDE THE DRIVE CABINET.
- THE BACKPANEL FOR THE DRIVE EQUIPMENT SHALL BE FURNISHED AND INSTALLED IN THE EXISTING AUXILIARY CABINET ENCLOSURE AND RELABELLED AS DRIVE CABINET.
- NON-AUTOMATIC CONTROL PILOT DEVICES SHALL BE MOUNTED ON EXISTING FRONT DOOR WITH LOCKABLE ENCLOSURE. THE EXISTING DOOR(S) SHALL BE SHIPPED TO THE CONTROL SYSTEM VENDORS SHOP FACILITY TO FURNISH AND INSTALL AS SPECIFIED AND SHOWN HERE.

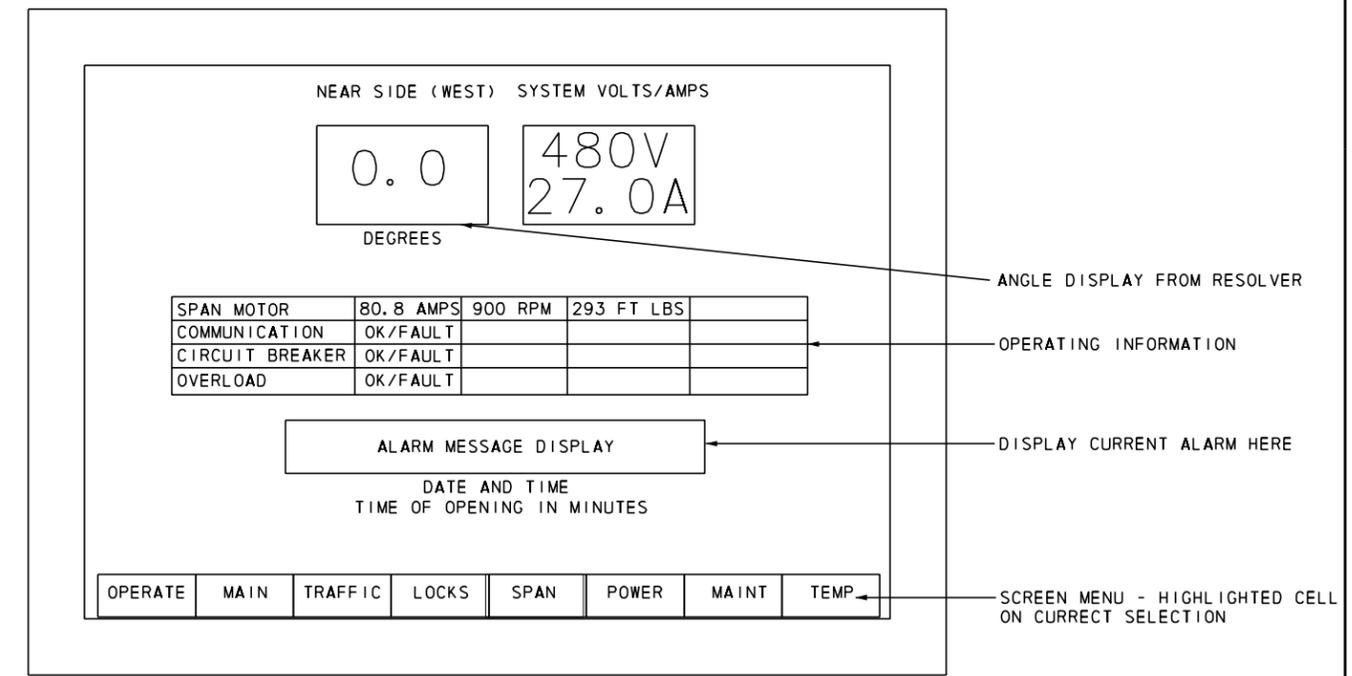
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PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	MODEL NO.	DESCRIPTION	DESCRIPTION
1	LF	1	ISLATROL	IE	LINE FILTER	
2	-	-	-	-	-	-
3	CB-**	28	SQUARE D	ACT19 MULTI 9	CIRCUIT BREAKER	1P, 240V, 5A
4	-	1	REDLION	N-TRON	NETWORK SWITCH	
5	PLC	3	ALLEN BRADLEY	SEE DWG E-30	AB CONTROL LOGIX PLC RACKS	
6	-	-	PANDUIT	-	WIRING DUCT, SIZE AS REQUIRED	
7	-	-	HOFFMAN	-	PAINTED STEEL BACK PANEL	10 GAUGE STEEL
8	M	-	PHOENIX CONTACT	UT4	TERMINAL BLOCKS	SCREW TYPE, 690V, 32A
					DIN RAIL	
					END PLATE	
					CROSS CONNECTORS	
					TERMINAL MARKER	
					GROUND TERMINAL	
9	-	1	CUSTOM	CUSTOM	NEMA 12 ENCLOSURE	90"X60"X18"
10	-	1	ALLEN BRADLEY	2711P	TOUCHSCREEN***	15"
11	-	-	-	-	-	-
12	DS6,7	2	SQUARE D	XCKP	DOOR LIMIT SWITCH*	300V, 10A
13	-	1	HOFFMAN	PANELITE	LED ENCLOSURE LIGHT**	120VAC
14	-	1	HOFFMAN	DAH	HEATER*	100W
15	-	1	PHOENIX CONTACT	EM-DUO	DIN RAIL GFI OUTLET*	120VAC
16	CR-***	3	SQUARE D	CAD SERIES	CONTROL RELAY W/TVSS	120VAC, 10A
17	24VDC	1	SQUARE D	ABL1	POWER SUPPLY	24VDC, 10A

* NOT SHOWN IN LAYOUT
 ** NOMENCLATURE PER SCHEMATIC WIRING DIAGRAMS
 *** TOUCH SCREEN NOT SHOWN ON DRAWING, TO BE MOUNTED ON DOOR OF ENCLOSURE



HMI TOUCH SCREEN LAYOUT

OTHER SCREENS SIMILAR
 OPERATION SCREEN LOCKED OUT FROM SWITCHBOARD ROOM

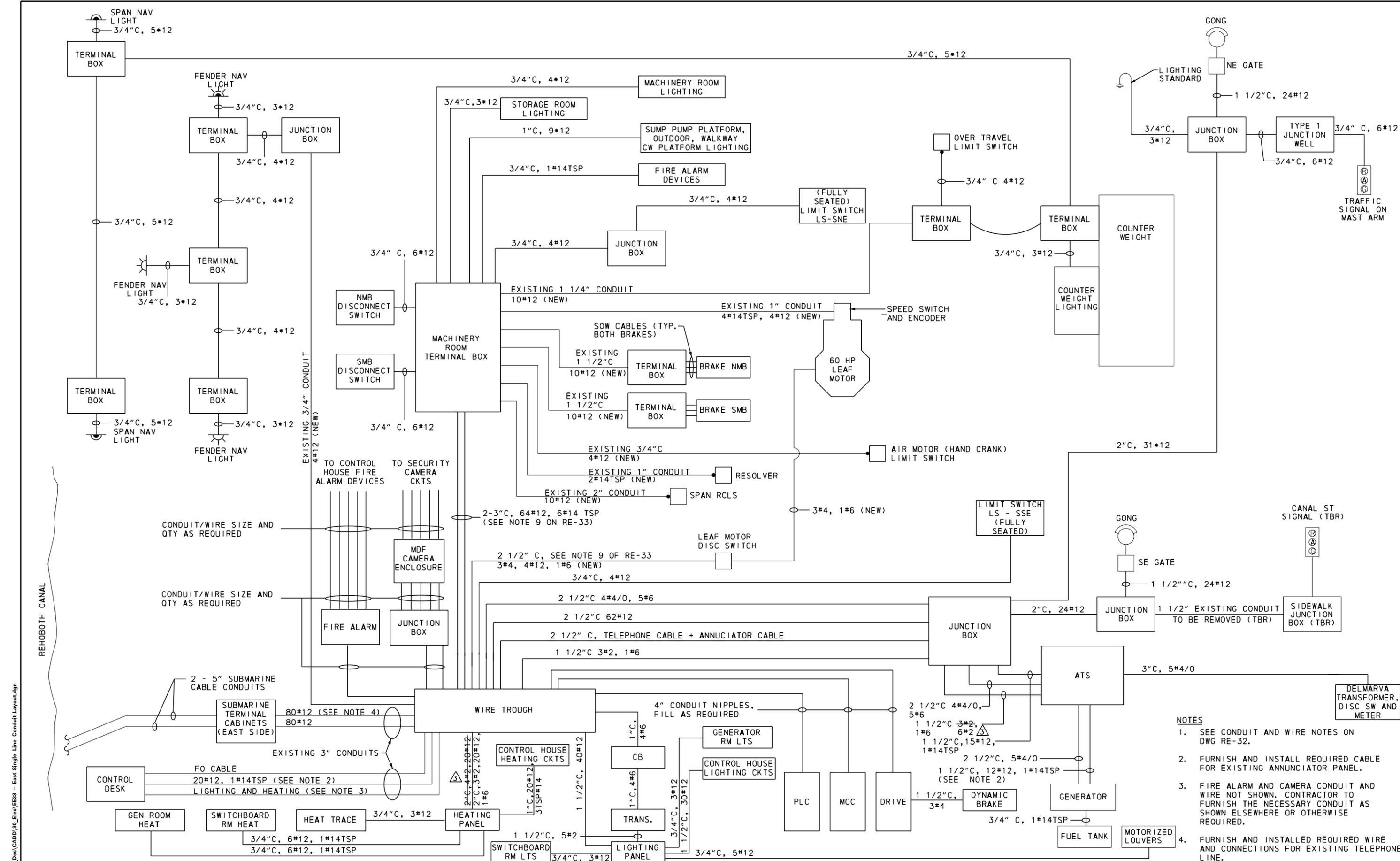
NOTES:

- CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL AND WITHIN THE ENCLOSURE.
- THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE ENCLOSURE SHOWN CAN BE BROUGHT INTO THE SWITCHBOARD ROOM BY NORMAL ACCESS MEANS, THROUGH THE DOORS AND/OR WINDOWS. ADJUSTMENTS TO THE SIZE INCLUDING PROVIDING MULTIPLE SECTIONS SHALL BE MADE AT NO ADDITIONAL COST TO DELDOT.
- THE CONTRACTOR SHALL FURNISH AN ADDITIONAL SIDE PANEL AS MAY BE REQUIRED TO INSTALL ADDITIONAL CIRCUIT EQUIPMENT.
- SEE SPECIAL PROVISIONS FOR SCREEN LAYOUT REQUIREMENTS.

5. ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS WILL ONLY BE CONSIDERED WITH SIMILAR EQUIPMENT FROM SQUARE D THAT IS READILY AVAILABLE AND NOT OBSOLETE OR NEARING OBSOLESCENCE.

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NOT TO SCALE



- NOTES**
1. SEE CONDUIT AND WIRE NOTES ON DWG RE-32.
 2. FURNISH AND INSTALL REQUIRED CABLE FOR EXISTING ANNUNCIATOR PANEL.
 3. FIRE ALARM AND CAMERA CONDUIT AND WIRE NOT SHOWN. CONTRACTOR TO FURNISH THE NECESSARY CONDUIT AS SHOWN ELSEWHERE OR OTHERWISE REQUIRED.
 4. FURNISH AND INSTALLED REQUIRED WIRE AND CONNECTIONS FOR EXISTING TELEPHONE LINE.

ADDENDUMS / REVISIONS	
△	ADDED WIRE AND CONDUIT (MJT 7/23/18)

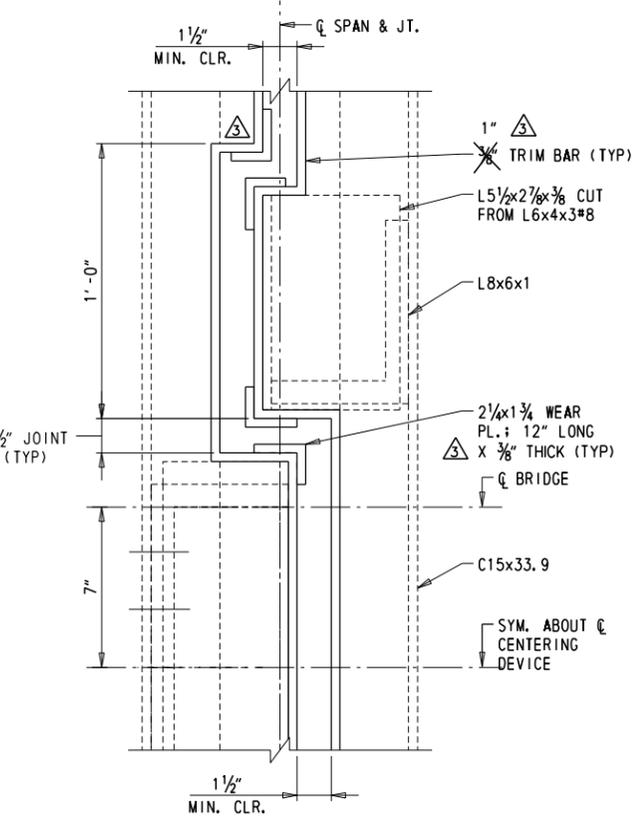
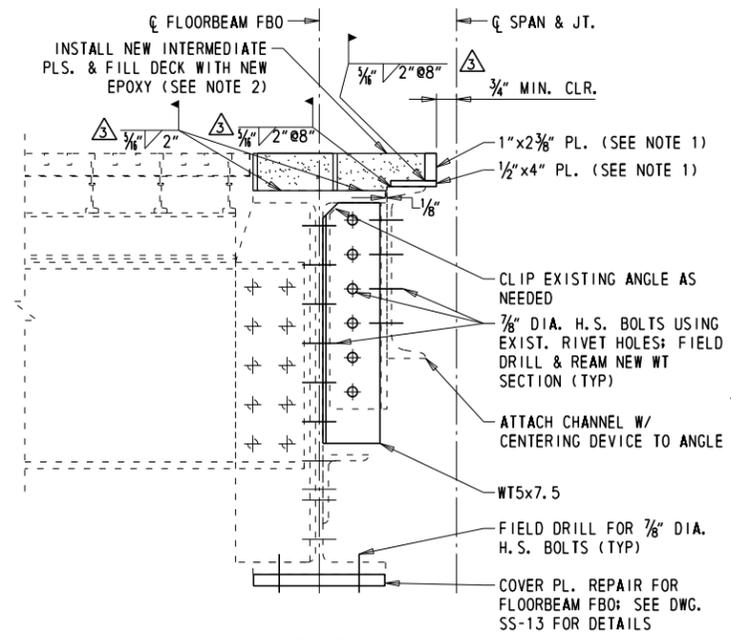
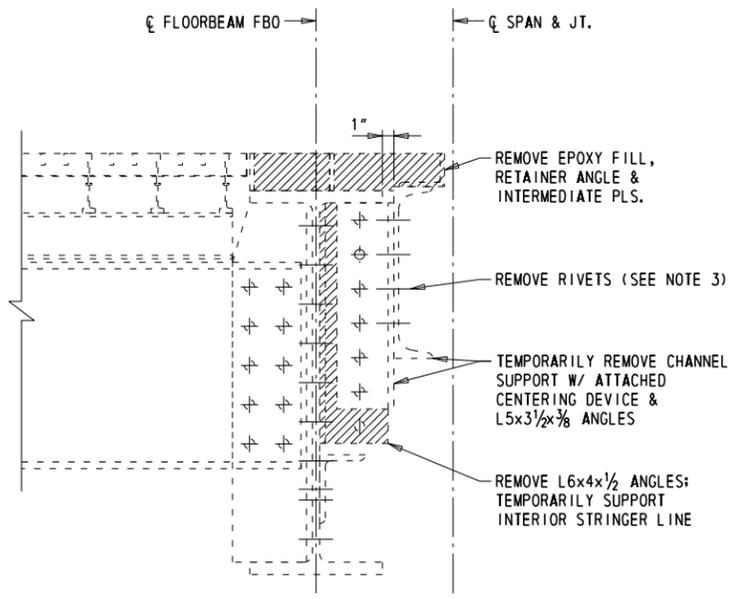
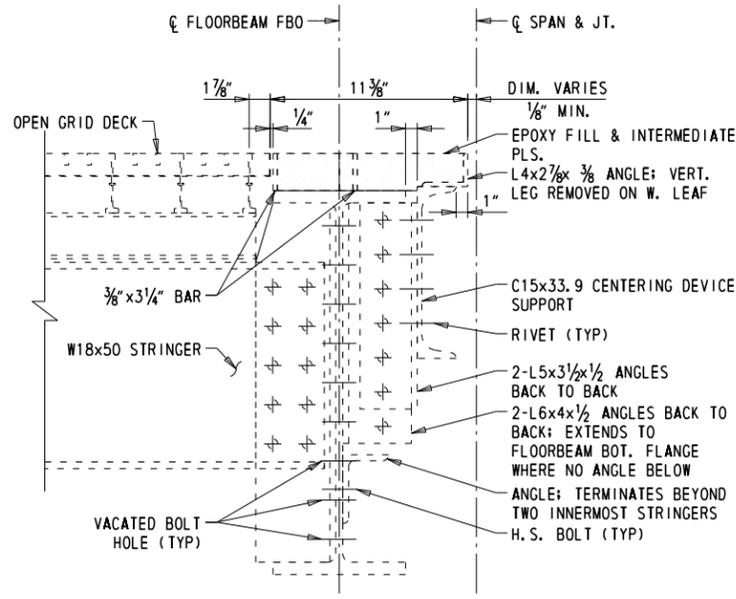
NOT TO SCALE

BR 3-154 ON US9 SAVANNAH ROAD &
BR 3-153 ON SR1A REHOBOTH AVENUE
OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-153
T201507602	DESIGNED BY:	MJT
COUNTY	CHECKED BY:	AHN
SUSSEX		

**CONDUIT BLOCK
DIAGRAM II
EAST**

RE-33
SHEET NO.
70
TOTAL SHTS.
180



SECTION A-A
1/2" = 1'-0"



PHOTO 1
NOT TO SCALE
VIEW OF THE CENTERING DEVICE SUPPORT CHANNEL & ANGLES FROM BELOW THE DECK



PHOTO 2
NOT TO SCALE
VIEW OF THE CENTERING DEVICE SUPPORT CHANNEL & ANGLES FROM BELOW THE DECK AT THE CENTERING DEVICE



PHOTO 3
NOT TO SCALE
VIEW OF THE EPOXY FILL & INTERMEDIATE PLATES AT DECK LEVEL

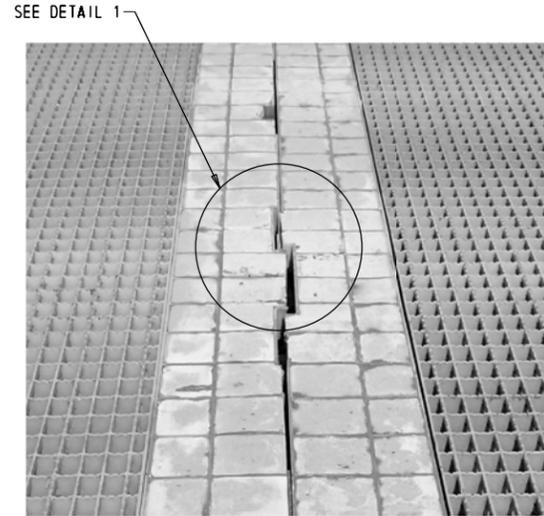
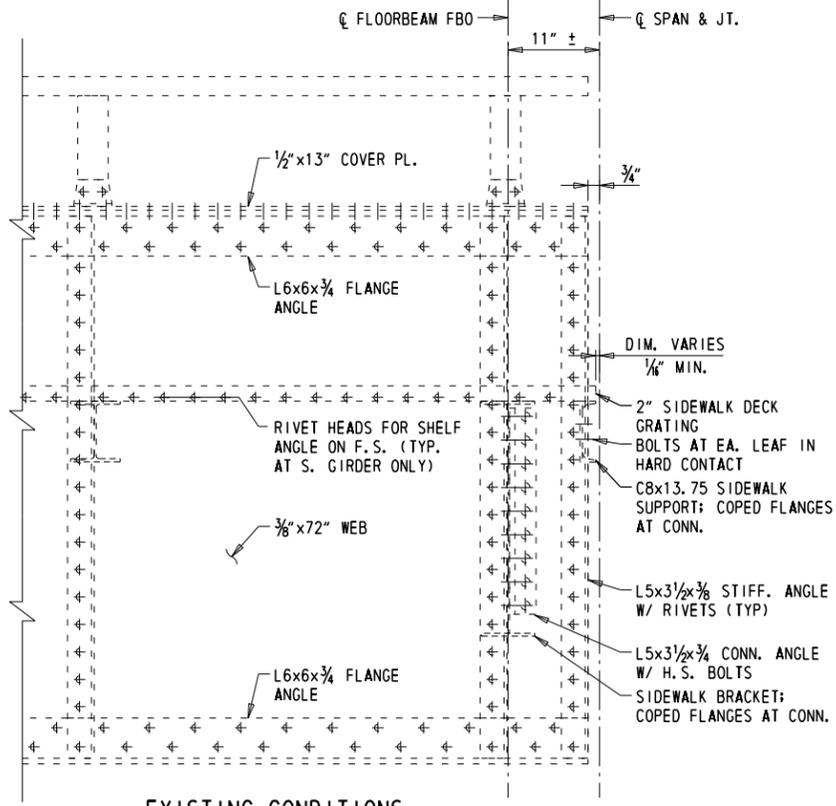


PHOTO 4
NOT TO SCALE
VIEW OF THE EPOXY FILL, INTERMEDIATE PLATES, AND DECK KEY-IN JT. AT DECK LEVEL NEAR THE CENTERING DEVICE

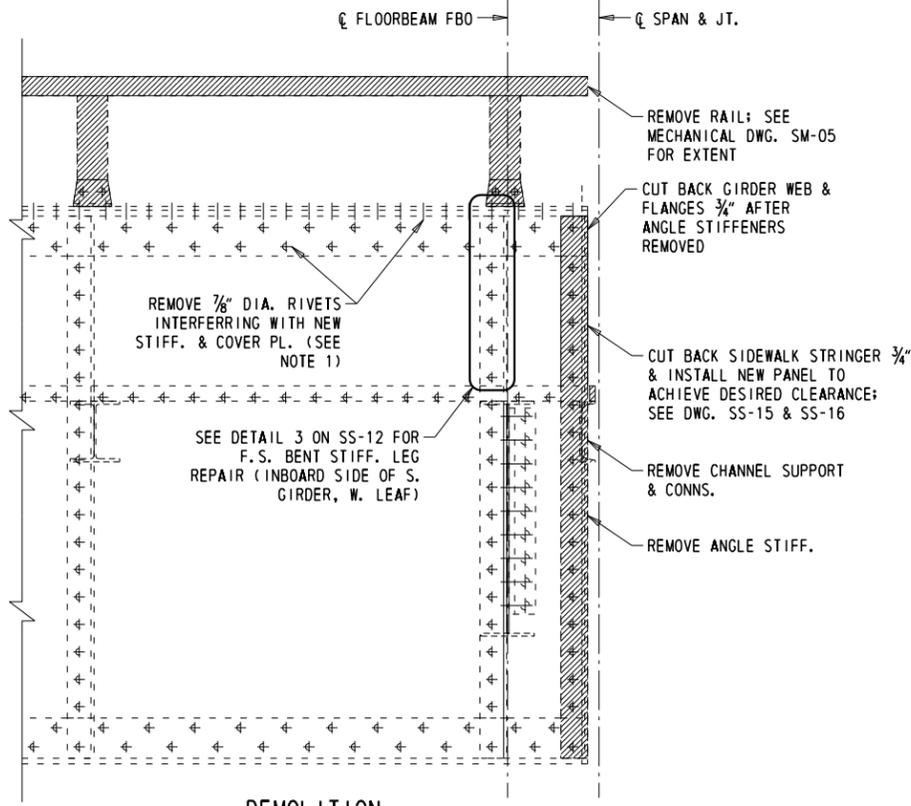
- NOTES:
1. THE PLAN ORIENTATION OF THE NEW PLS. SHALL BE MODIFIED ABOVE THE CENTERING DEVICE LOCATION TO MAINTAIN THE DECK KEY-IN JT. SHOWN IN PHOTO 4 AND DETAIL 1. PL. THICKNESS SHALL BE MAINTAINED AT THE KEY-IN JT. TO PROVIDE THE 3/4" MIN. CLEARANCE AT THE TOE.
 2. THE NEW INTERMEDIATE PLS. SHALL MATCH THE EXIST. PLS. NEW EPOXY FILL SHALL BE POURED AFTER INSTALLATION OF INTERMEDIATE PLS.
 3. REMOVAL OF EXIST. RIVETS IS TO BE PERFORMED BY MECHANICAL METHODS. BURNING, ARC-GOUGING, OR OXYGEN LACING METHODS ARE PROHIBITED.
 4. ALL WORK INVOLVING MODIFICATIONS TO THE TOE FBS FRAMING AND RESTORATION OF THE JT. OPENING SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 615 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615006 STEEL STRUCTURE REPAIR."
 5. ALL WORK INVOLVING REPLACEMENT OF EPOXY OVERLAY AT TOE FLOORBEAM SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - EPOXY OVERLAY SYSTEM" GUIDELINES. PAID UNDER "ITEM 625500 - EPOXY OVERLAY SYSTEM."

7/23/2018 M:\02889_04C\Fin_Des\CADD\10_Str\PS&E\SS10 - Toe Modifications 2.dgn

<p>DELAWARE DEPARTMENT OF TRANSPORTATION</p>	ADDENDUMS / REVISIONS		SCALE AS NOTED	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT	BRIDGE NO.	3-154	TOE MODIFICATIONS 2	SS-10
	3 UPDATED JOINT DETAILS (RAJ 7/23/18)				T201507602	DESIGNED BY: MR			SHEET NO.
					COUNTY	CHECKED BY: AR			93
					SUSSEX				TOTAL SHTS.
								180	

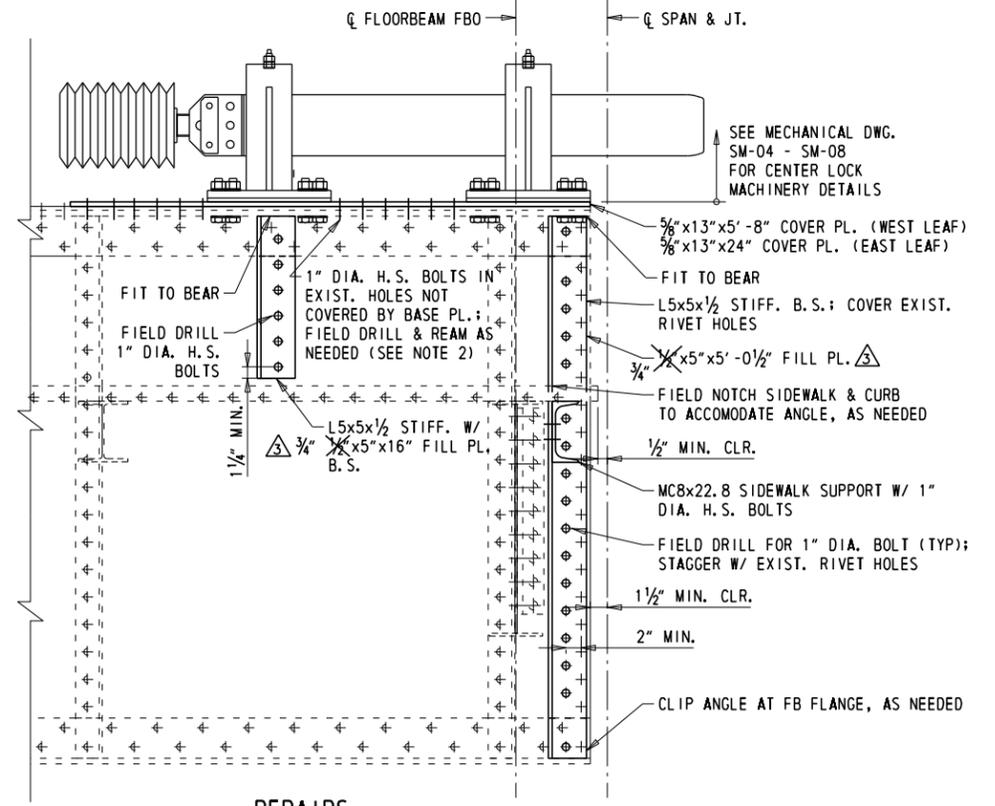


EXISTING CONDITIONS

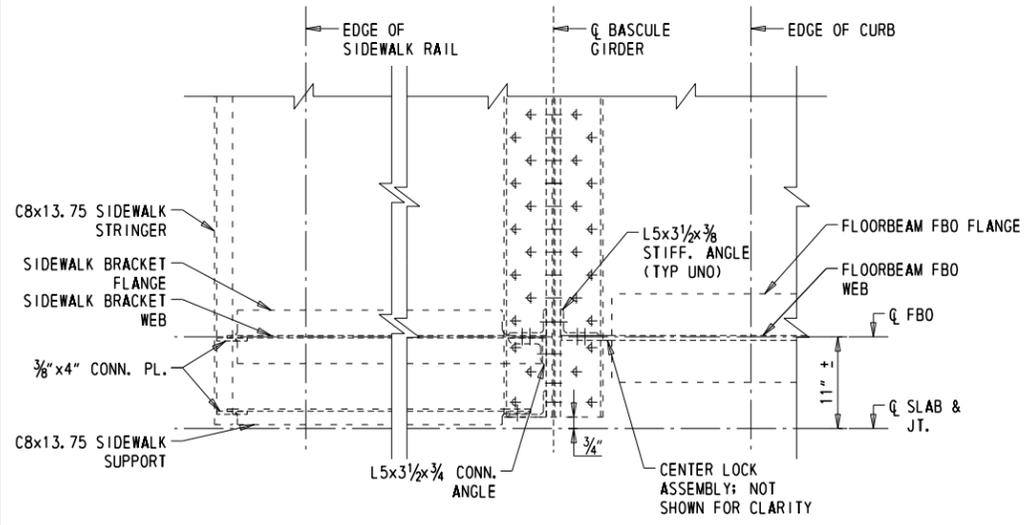


DEMOLITION SECTION B-B

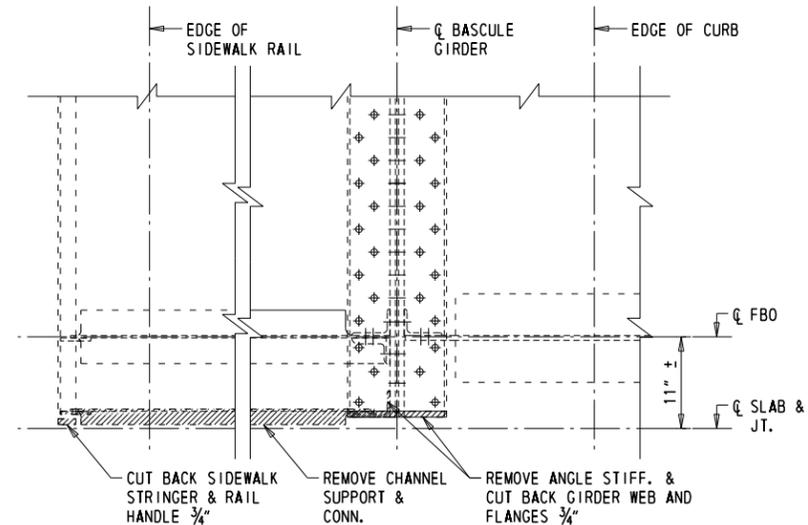
1" = 1'-0"
NOTE: SIDEWALK SUPPORT FRAMING NOT SHOWN FOR CLARITY



REPAIRS
NOTE: CLEAN & PAINT EXISTING STEEL USING THREE COAT SYSTEM PRIOR TO PROPOSED REPAIRS; PAINT NEW STEEL AFTER REPAIRS

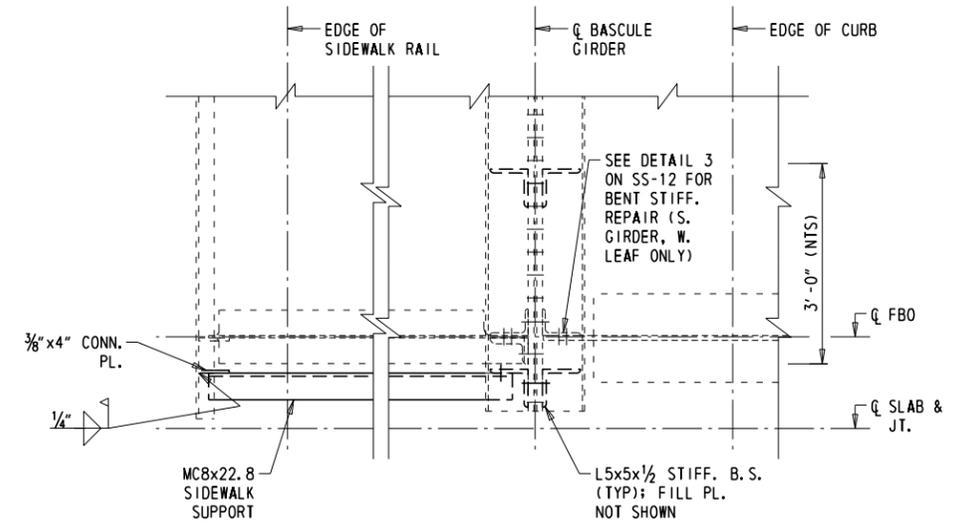


EXISTING CONDITIONS
NOTE: DECK, STRINGERS, RAILS, CURB DETAILS, AND CENTERING DEVICE SUPPORT CHANNEL NOT SHOWN FOR CLARITY



DEMOLITION SECTION C-C

1" = 1'-0"



REPAIRS
NOTE: CENTER LOCK MACHINERY AND TOP RIVETS NOT SHOWN FOR CLARITY; CUT BACK CURB TO MAINTAIN CLEARANCE CONSISTENT WITH BASCULE GIRDER AS NEEDED.

- NOTES:
1. REMOVAL OF EXIST. RIVETS IS TO BE PERFORMED BY MECHANICAL METHODS. BURNING, ARC-GOUGING, OR OXYGEN LACING METHODS ARE PROHIBITED.
 2. CONTRACTOR SHALL MAINTAIN STRUCTURAL INTEGRITY OF THE BASCULE GIRDER DURING RIVET REMOVAL AND REPLACEMENT AT THE TOP FLANGE.
 3. ALL WORK INVOLVING MODIFICATIONS TO THE BASCULE GIRDER AND SIDEWALK FRAMING AT THE TOE SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 615 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615006 STEEL STRUCTURE REPAIR."
 4. SEE DWG. SS-08 FOR CLEANING AND PAINTING NOTES.



ADDENDUMS / REVISIONS	
1	UPDATED SHIM THICKNESS (RAJ 7/23/18)

SCALE AS NOTED

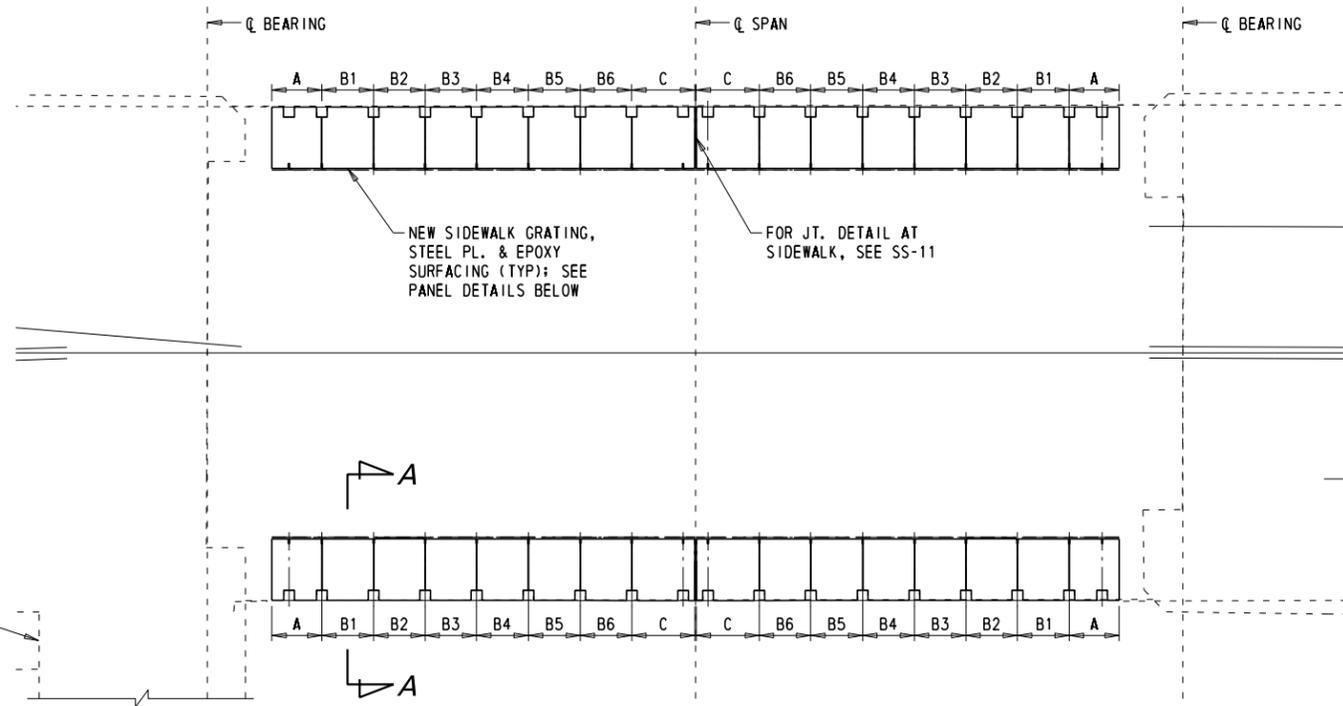
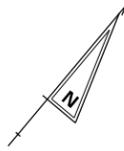
BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-154
T201507602	DESIGNED BY: MR	
COUNTY	CHECKED BY: AR	
SUSSEX		

TOE MODIFICATIONS 3

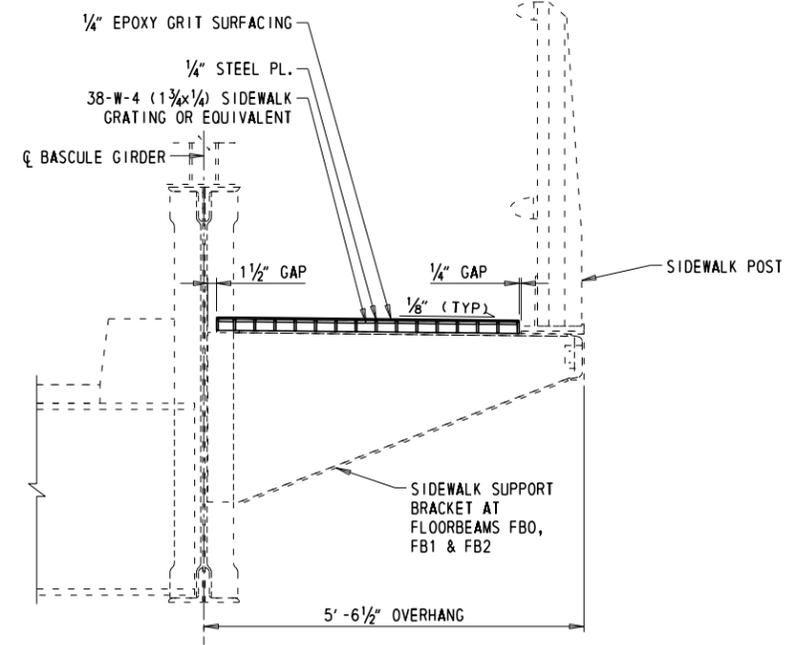
SS-11
SHEET NO.
94
TOTAL SHTS.
180

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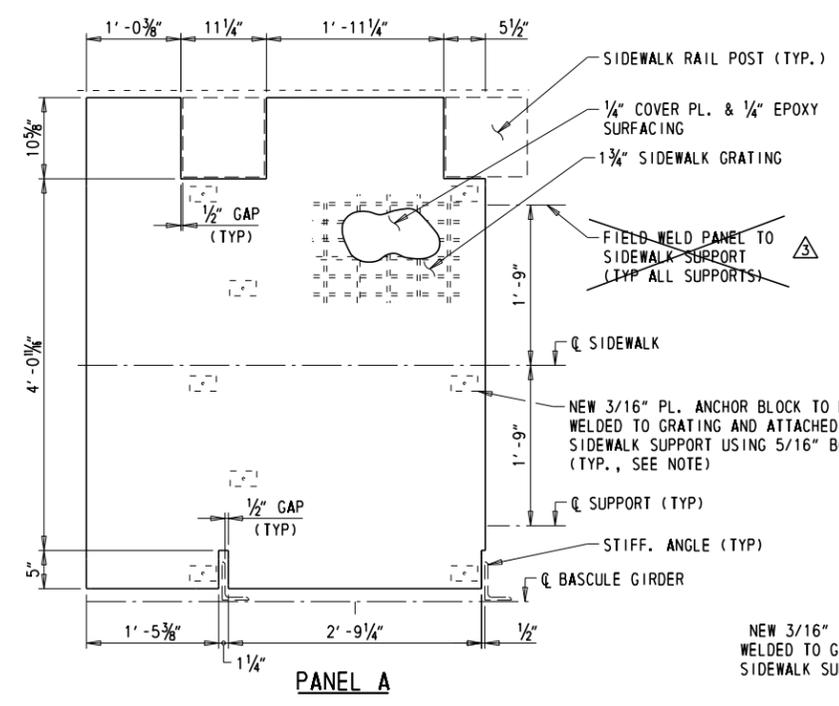
BASCULE SPAN SIDEWALK REPLACEMENT PLAN

1/8" = 1'-0"



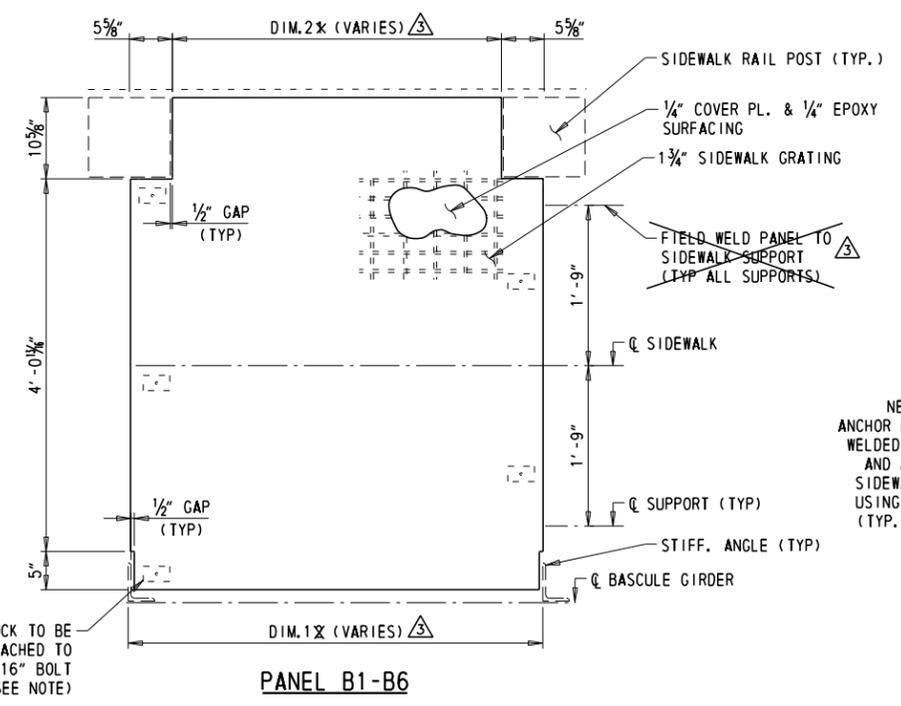
SECTION A-A

3/4" = 1'-0"
NOTE: DETAIL IS SIM. FOR BOTH SIDEWALKS ON BOTH LEAFS

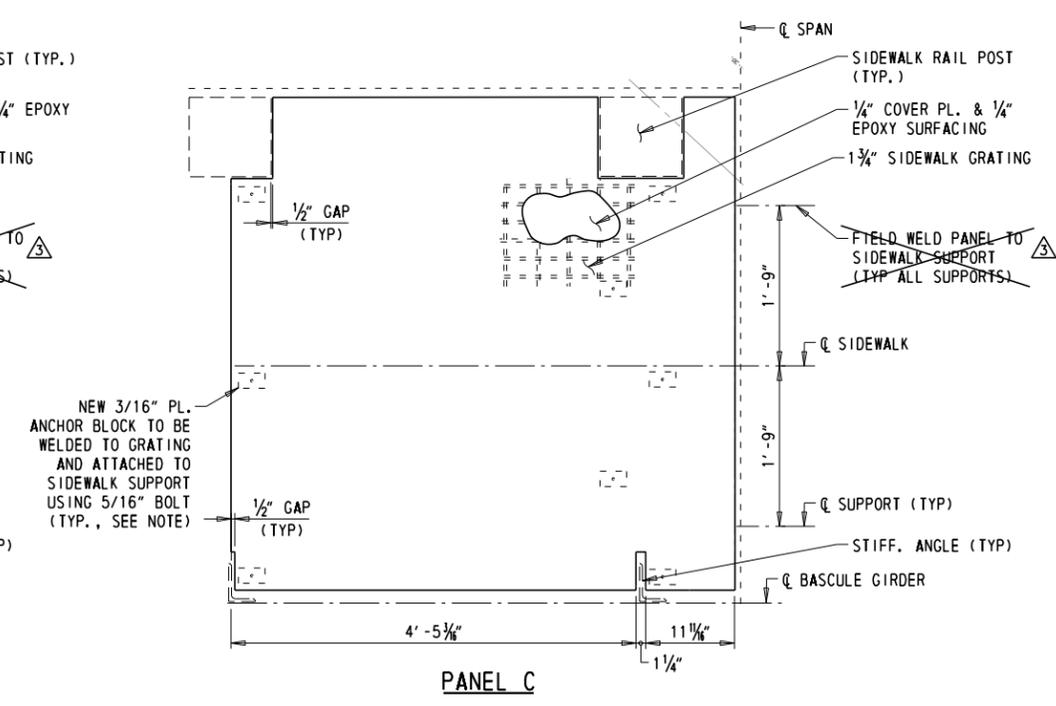


PANEL A

NEW 3/16" PL. ANCHOR BLOCK TO BE WELDED TO GRATING AND ATTACHED TO SIDEWALK SUPPORT USING 5/16" BOLT (TYP., SEE NOTE)



PANEL B1-B6



PANEL C

PANEL	B1	B2	B3	B4	B5	B6
DIM 1	4' - 6 3/8"	4' - 5 1/8"	4' - 5 3/4"	4' - 6 3/8"	4' - 6 3/8"	4' - 5 1/8"
DIM 2	3' - 7 3/8"	3' - 6 1/4"	3' - 6 3/4"	3' - 7 3/8"	3' - 7 3/8"	3' - 6 1/4"

PANEL DETAILS

1" = 1'-0"
NOTE: BASCULE GIRDER WEB NOT SHOWN FOR CLARITY. LOCATIONS OF NEW ANCHOR BLOCKS TO BE IN LOCATIONS OF EXISTING SUPPORT ANGLES SHOWN ON SS-15. USE EXISTING BOLT HOLES WHERE POSSIBLE. SEE NOTE 2 FOR FURTHER DETAIL.

NOTES:

1. THE CONTRACTOR SHALL FIELD MEASURE EXIST. WALKWAY GRATING DIMENSIONS PRIOR TO BEGINING OF REMOVAL AND REPLACEMENT. NEW PANEL DIMENSIONS MAY VARY FROM THAT SHOWN HERE DUE TO FIELD CONDITIONS.
2. THE CONTRACTOR SHALL SUBMIT ALL MEANS AND METHODS OF PANEL FABRICATION, COVER PL. FABRICATION, FIELD CONNECTIONS TO EXIST. SUPPORTS, EPOXY OVERLAY SURFACING, ETC. TO ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.
3. ALL WORK INVOLVING REPLACEMENT OF EXISTING SIDEWALK GRATING AND TOP PL. SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - WALKWAY GRATING" OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615506 WALKWAY GRATING."
4. ALL WORK INVOLVING REPLACEMENT OF EPOXY OVERLAY AT SIDEWALKS SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - EPOXY OVERLAY SYSTEM" OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 625500 - EPOXY OVERLAY SYSTEM." THICKNESS OF EPOXY VARIES, 1/4" MIN. - 1/2" MAX.

7/23/2018 M:\02889.04C\0000_Fin_Dwg\CADD\10_Str\PS&E\SS16 - Bascule Sidewalk Replacement.dgn

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	
1	UPDATED PANEL DIMENSIONS (RAJ 7/23/18)

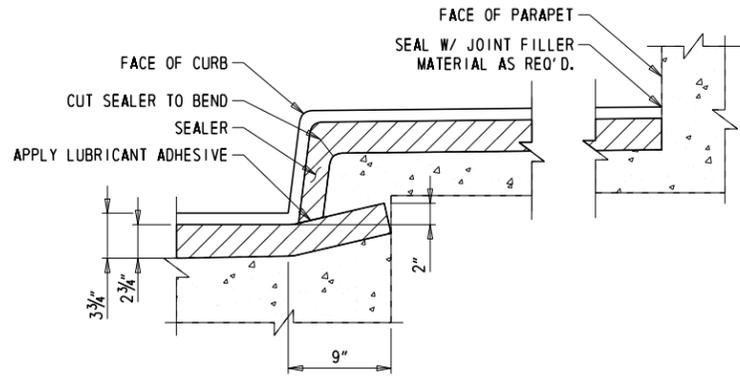
SCALE AS NOTED

BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

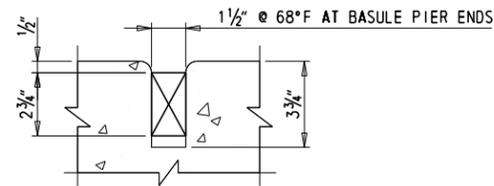
CONTRACT	T201507602	BRIDGE NO.	3-154
COUNTY	SUSSEX	DESIGNED BY:	BKS
		CHECKED BY:	AR

SAVANNAH ROAD BRIDGE BASCULE SIDEWALK REPLACEMENT

SS-16
SHEET NO. 99
TOTAL SHTS. 180

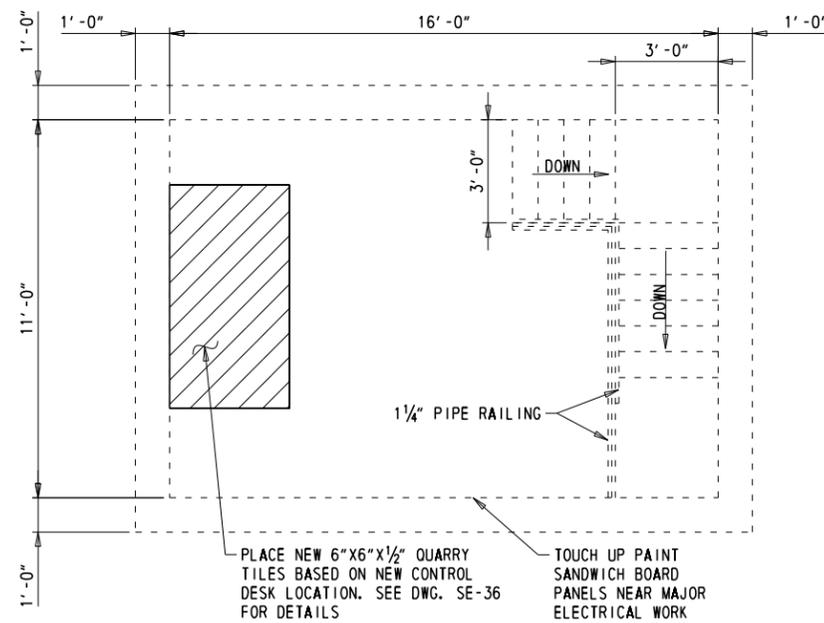


SECTION AT CURB & SIDEWALK
1 1/2" = 1'-0"



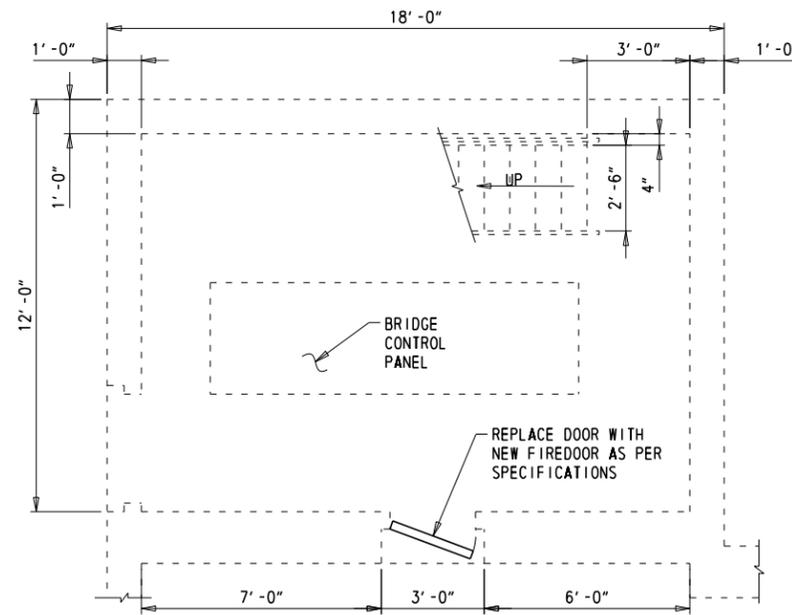
TYPICAL CROSS SECTION
3" = 1'-0"

DETAIL OF PREFORMED ELASTIC JOINT SEALER

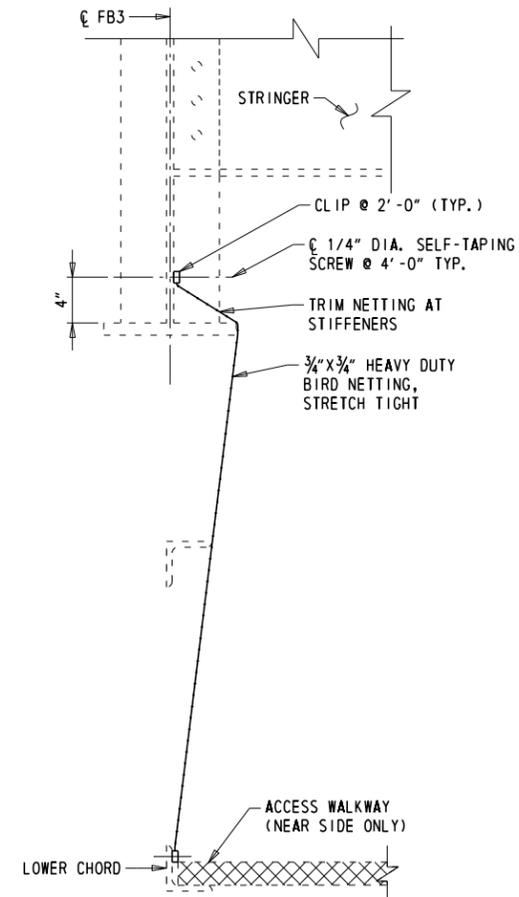


OPERATOR'S ROOM
3/8" = 1'-0"

NOTE: CEILING TILES NOT SHOWN FOR CLARITY.
 REPLACE DAMAGED CEILING TILES IN KIND
 REPLACE MISSING CEILING TILES WITH 12" X 12" MINERAL FIBER TILES OR APPROVED EQUAL



SWITCHBOARD ROOM
3/8" = 1'-0"



BIRD NETTING ELEVATION VIEW
1 1/2" = 1'-0"



PHOTO 1
NOT TO SCALE
MISSING HANDRAIL POST BOLTS; SEE NOTE 1



PHOTO 2
NOT TO SCALE
REPLACE EXIST. PROTECTIVE SHIELD; SEE NOTE 3

NOTES:

- SOME OF THE HANDRAIL POSTS IN THE BASCULE SPAN ARE MISSING CONNECTION BOLTS AS SHOWN IN PHOTO 1. NEW 3/4" DIA. STAINLESS STEEL BOLTS SHALL BE PROVIDED AT THESE BOLT HOLES. ALL WORK INVOLVING REPAIRS TO POSTS AND CONNECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 615 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615006 STEEL STRUCTURE REPAIR."
- REPAIR THE BROKEN WELD CONNECTION IN THE SOUTH BASCULE GIRDER RAILING AT THE FIFTH POST FROM THE TOE LOCATED ON THE EAST LEAF. ALL WORK INVOLVING REPAIRS TO WELD CONNECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 615 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615006 STEEL STRUCTURE REPAIR."
- THE EXIST. PROTECTIVE SHIELDS NEAR THE BASCULE PIER FB3 ON BOTH LEAFS AS SHOWN IN PHOTO 2, SHALL BE REPLACED WITH NEW INDUSTRIAL 3/4" HEAVY DUTY BIRD NETTING OR APPROVED EQUAL. PAID UNDER "ITEM 763569 - BUILDING RENOVATIONS."
- ALL WORK INVOLVING REPLACEMENT OF PREFORMED ELASTIC JT. SEALER SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 624 JOINTS OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 624014 COMPRESSION SEAL 2 INCHES."
- ALL WORK INVOLVING REPLACEMENT OF DOORS, FLOOR TILES, CEILING TILES, AND TOUCH-UP PAINTING OF THE CONTROL HOUSE INTERIOR LOCATIONS SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - BUILDING RENOVATION." PAID UNDER "ITEM 763569 - BUILDING RENOVATION."
- AFTER REPLACING DAMAGED CEILING TILES, CONTRACTOR SHALL PAINT ALL CEILING TILES TO MATCH.
- NEW SECURITY CAMERAS AND FIRE ALERT SYSTEM TO BE INSTALLED IN THE CONTROL HOUSE. SEE DWGS. SE-38 TO SE-41 FOR DETAILS.
- APPROXIMATE SQUARE FOOTAGE OF CONTROL HOUSE INTERIOR LOCATIONS NEEDING TOUCH-UP PAINT = 120 SF.
- APPROXIMATE SQUARE FOOTAGE OF FLOOR TILE REPLACEMENT = 25 SF.
- APPROXIMATE SQUARE FOOTAGE OF CEILING TILE REPLACEMENT = 176 SF.

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ADDENDUMS / REVISIONS	
3	UPDATED CEILING TILE QTY (RAJ 7/23/18)

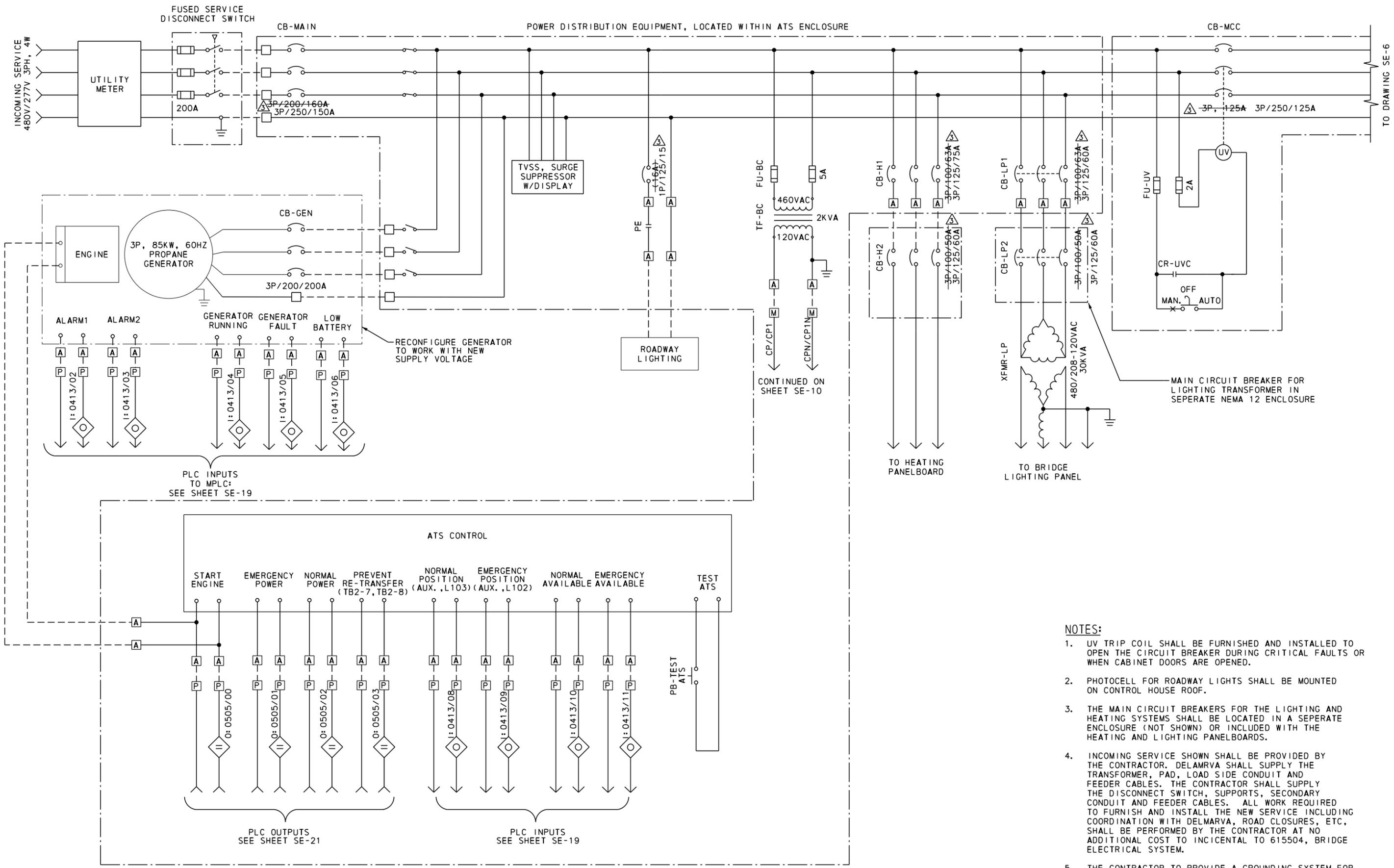
SCALE AS NOTED

BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-154
T201507602	DESIGNED BY:	BKS
COUNTY	CHECKED BY:	RAJ
SUSSEX		

MISCELLANEOUS & CONTROL HOUSE REPAIRS

SS-19
SHEET NO.
102
TOTAL SHTS.
180



- NOTES:**
- UV TRIP COIL SHALL BE FURNISHED AND INSTALLED TO OPEN THE CIRCUIT BREAKER DURING CRITICAL FAULTS OR WHEN CABINET DOORS ARE OPENED.
 - PHOTOCELL FOR ROADWAY LIGHTS SHALL BE MOUNTED ON CONTROL HOUSE ROOF.
 - THE MAIN CIRCUIT BREAKERS FOR THE LIGHTING AND HEATING SYSTEMS SHALL BE LOCATED IN A SEPARATE ENCLOSURE (NOT SHOWN) OR INCLUDED WITH THE HEATING AND LIGHTING PANELBOARDS.
 - INCOMING SERVICE SHOWN SHALL BE PROVIDED BY THE CONTRACTOR. DELAMRVA SHALL SUPPLY THE TRANSFORMER, PAD, LOAD SIDE CONDUIT AND FEEDER CABLES. THE CONTRACTOR SHALL SUPPLY THE DISCONNECT SWITCH, SUPPORTS, SECONDARY CONDUIT AND FEEDER CABLES. ALL WORK REQUIRED TO FURNISH AND INSTALL THE NEW SERVICE INCLUDING COORDINATION WITH DELMARVA, ROAD CLOSURES, ETC, SHALL BE PERFORMED BY THE CONTRACTOR AT NO ADDITIONAL COST TO INCIDENTAL TO 615504, BRIDGE ELECTRICAL SYSTEM.
 - THE CONTRACTOR TO PROVIDE A GROUNDING SYSTEM FOR THE NEW TRANSFORMER AS SHOWN ON DWG SE-47 OR OTHERWISE REQUIRED BY LEWES BPW.

ADDENDUMS / REVISIONS	
Δ	MODIFIED CIRCUIT BREAKER SETTING (MJT 7/23/18)

NOT TO SCALE

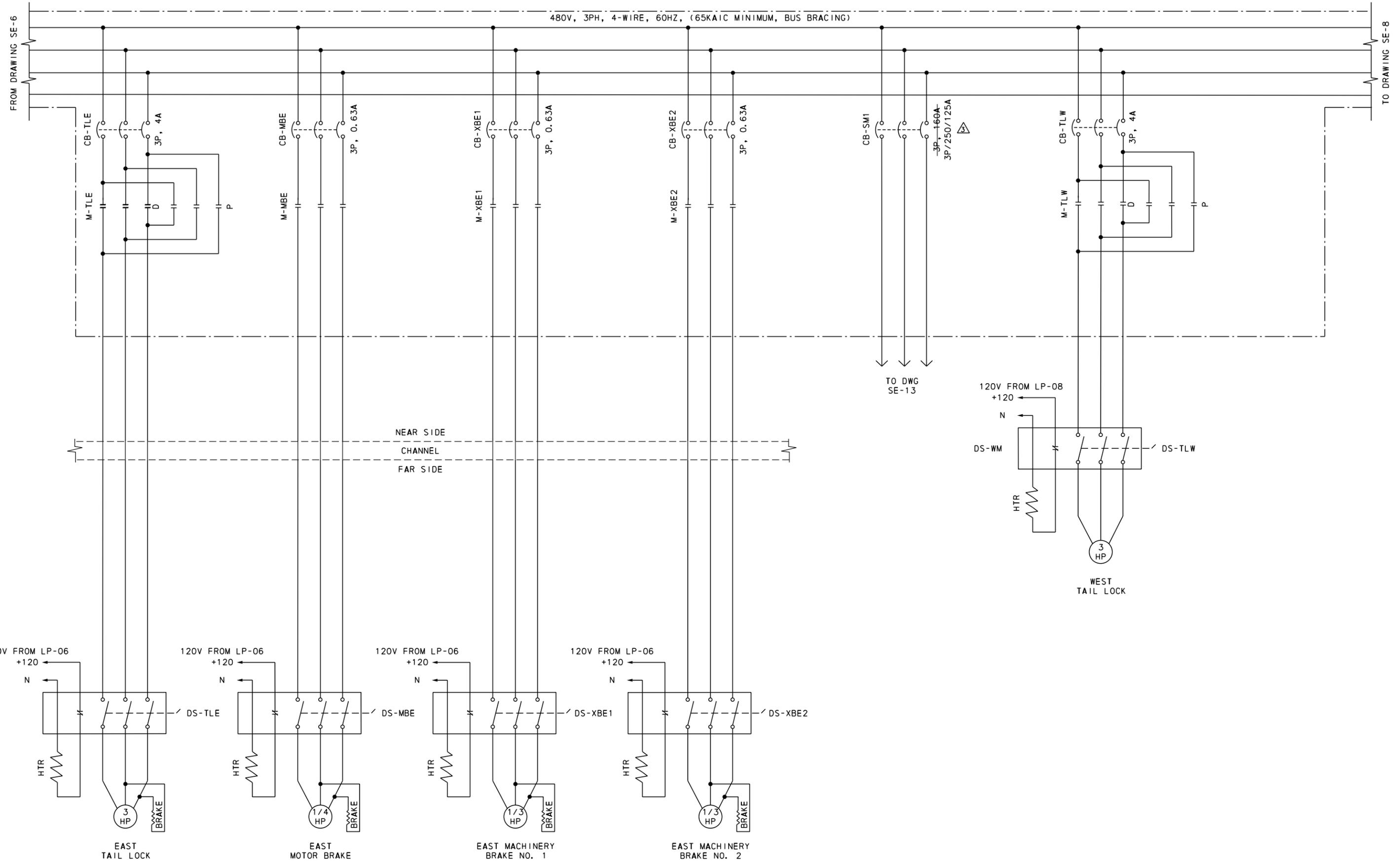
BR 3-154 ON US9 SAVANNAH ROAD &
BR 3-153 ON SR1A REHOBOTH AVENUE
OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-154
T201507602	DESIGNED BY:	MJT
COUNTY	CHECKED BY:	AHN
SUSSEX		

THREE LINE DIAGRAM I

SE-5
SHEET NO.
119
TOTAL SHTS.
180

7/23/2018 M:\02889.04C\000_Fin_Des\CADD\30_Elec\EE05 - Three Line 1.dgn



7/23/2018 M:\02889.04C\Fin_Des\CADD\30_Elec\EE07 - Three Line 3.dgn



ADDENDUMS / REVISIONS	
△	MODIFIED CIRCUIT BREAKER SETTING (MJT 7/23/18)

NOT TO SCALE

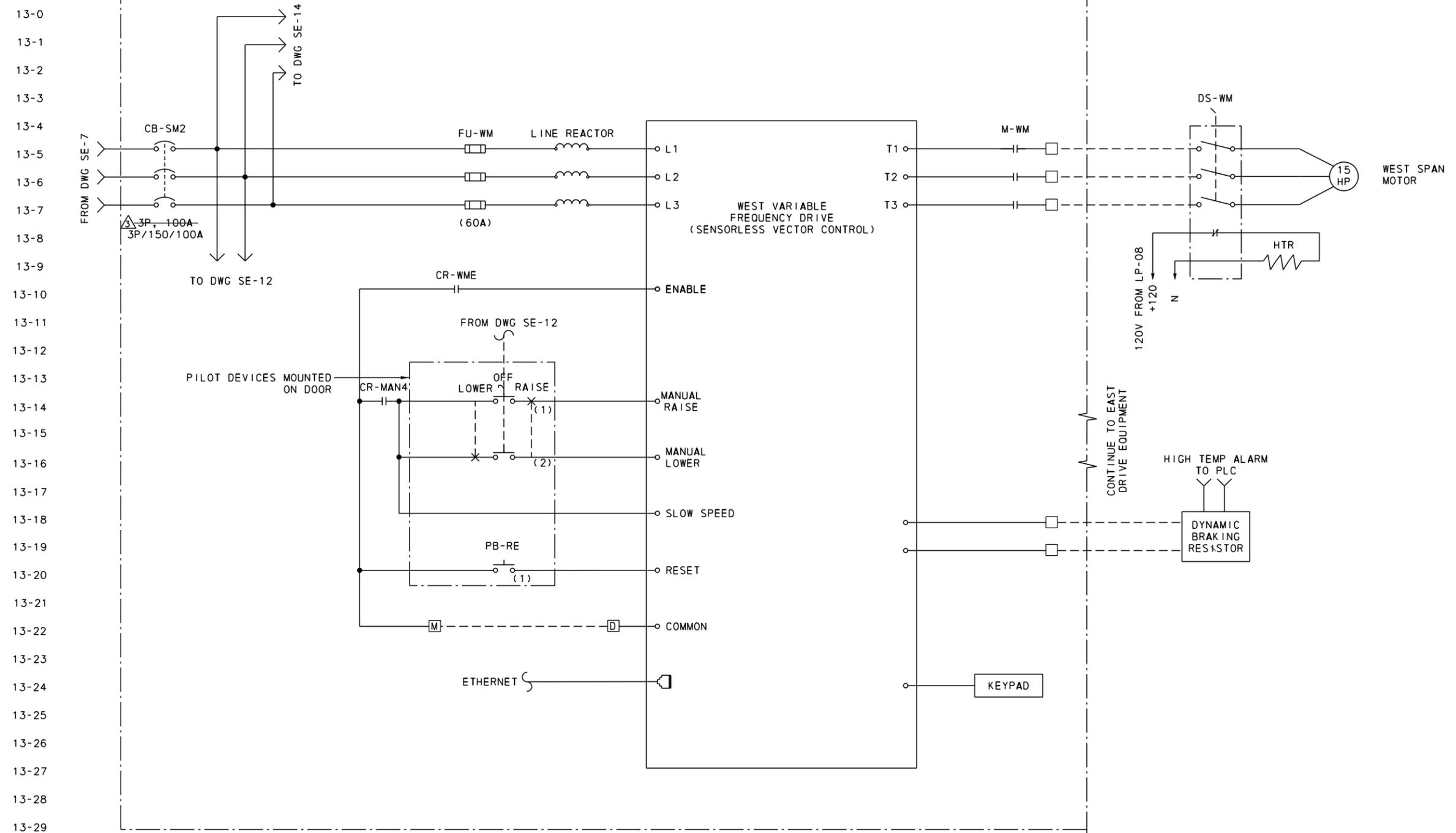
BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-154
T201507602	DESIGNED BY:	MJT
COUNTY	CHECKED BY:	AHN
SUSSEX		

THREE LINE DIAGRAM III

SE-7
SHEET NO.
121
TOTAL SHTS.
180

DRIVE CABINET



13-0
13-1
13-2
13-3
13-4
13-5
13-6
13-7
13-8
13-9
13-10
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13-34
13-35
13-36

- NOTES:**
1. CIRCUIT BREAKER AND FUSE SIZES SHALL BE MODIFIED PER MANUFACTURER RECOMMENDATIONS.
 2. WIRING TO AND FROM RESISTOR ENCLOSURE SHALL BE HIGH TEMP WIRE.
 3. EACH VFD SHALL OPERATE IN SENSORLESS VECTOR MODE.

7/23/2018 M:\02889\04C\000_Fin_Des\CADD\30_Elec\EE13 - WEST VFD Controls.dgn

ADDENDUMS / REVISIONS	
△	MODIFIED CIRCUIT BREAKER SETTING (MJT 7/23/18)

NOT TO SCALE

BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-154
T201507602	DESIGNED BY:	MJT
COUNTY	CHECKED BY:	AHN
SUSSEX		

WEST SPAN DRIVE CONTROLS

SE-13
SHEET NO.
127
TOTAL SHTS.
180

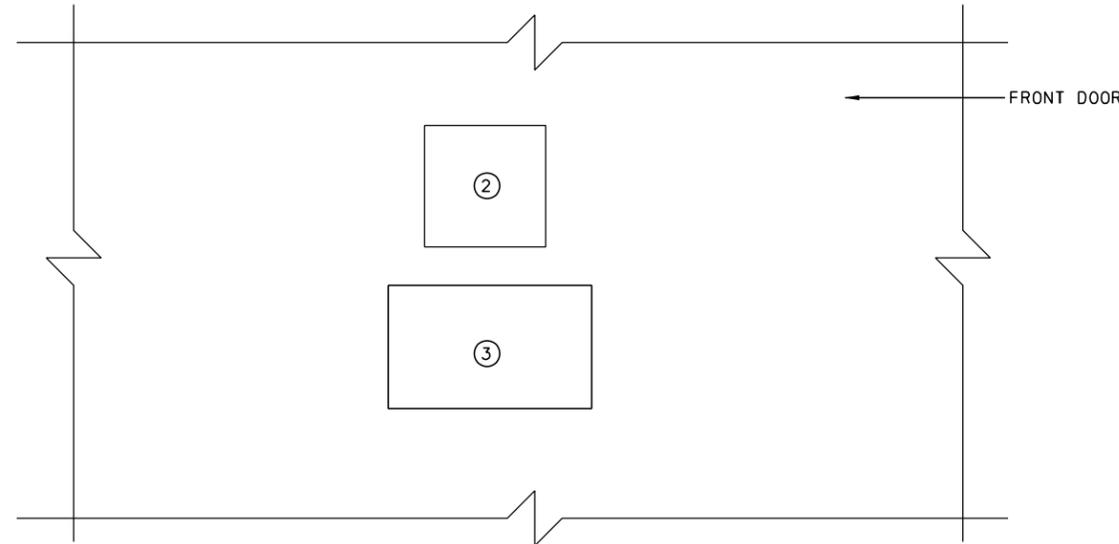
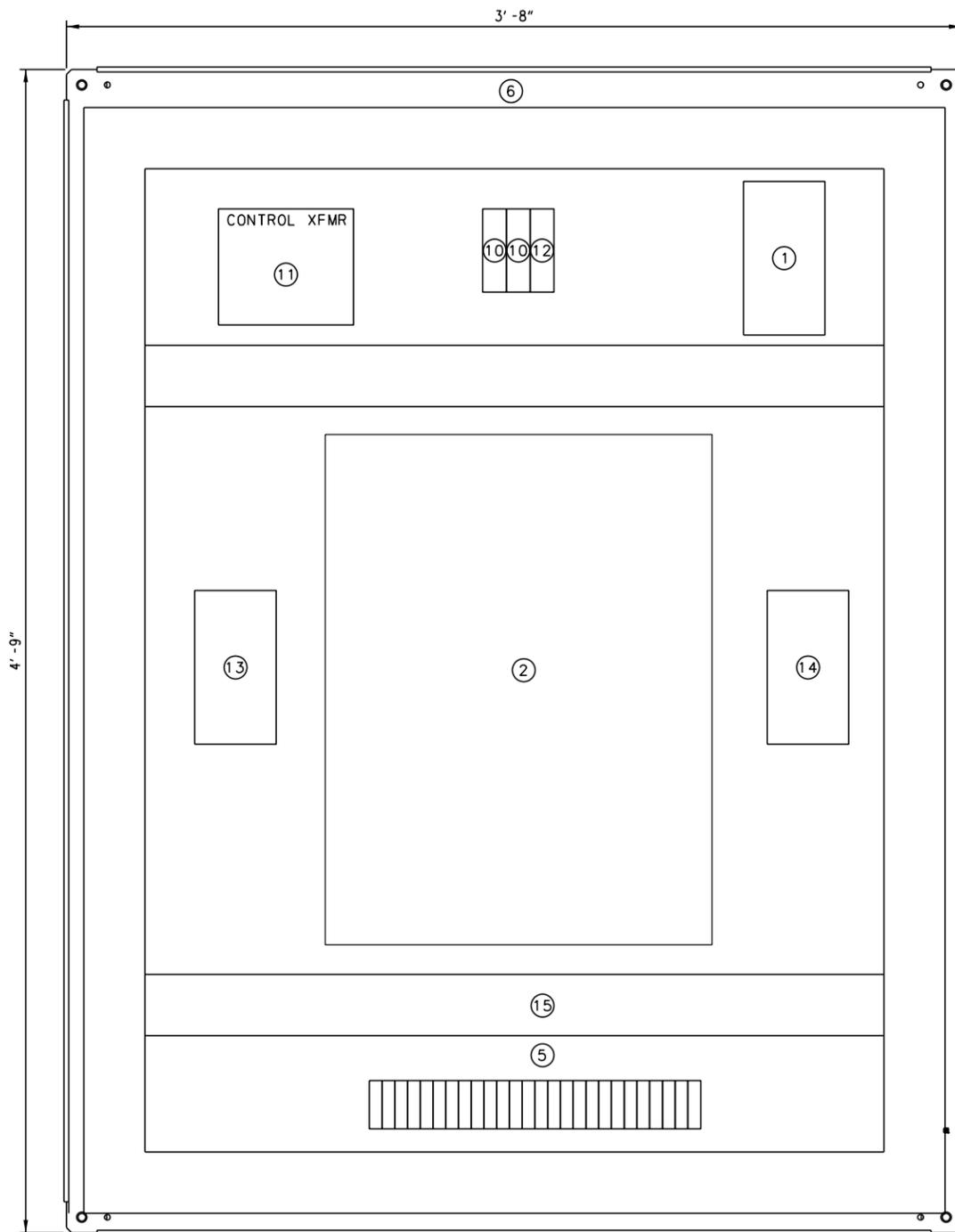
PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	MODEL NO.	DESCRIPTION 1	DESCRIPTION 2
1	CB-MAIN	1	SQUARE D ^Δ POWERPACT	COMPACT NSX	MAIN CIRCUIT BREAKER	3P, 600V, 200AF/160AT , 35KAIC (MIN.)
		1	SQUARE D	-	DOOR DISCONNECT HANDLE	- ^Δ 250AF/150AT
		1	SQUARE D	-	TERMINAL LUG	-
2	ATS**	1	CUMMINS	OTEC	AUTOMATIC TRANSFER SWITCH	3P, 400A
		1	CUMMINS	-	480V ATS CONVERSION KIT*	SEE NOTE 3
3	TVSS	1	SQUARE D	SURGELOGIC	SURGE SUPPRESSOR W/DISPLAY	480/277V, 3P, 4 WIRE, 120KA
4	-	-	HOFFMAN	PANELITE	ENCLOSURE LIGHT*	120V, FLUORESENT
					TERMINAL BLOCKS	SCREW TYPE, 690V, 32A
					DIN RAIL	-
					END PLATE	-
					CROSS CONNECTORS	-
					TERMINAL MARKER	-
					GROUND TERMINAL	-
5	[A]	ARO	PHOENIX CONTACT	UT4	10 GAUGE STEEL BACK PANEL	-
					NEMA 4X S.S. ENCLOSURE	48" X 60" X 20"
6	-	1	CUSTOM	CUSTOM	DOOR LIMIT SWITCH*	300V, 10A, 1NO/1NC
7	DSSB	1	SQUARE D ^Δ XCP	OSISENSE XG	DIN RAIL GFI OUTLET*	125V, 15A
8	-	1	PHOENIX CONTACT	-	ENCLOSURE HEATER*	115V, 100W
9	-	1	HOFFMAN	DAH	CONTROL TRANSFORMER FUSE	600V, 5A
10	FU-BC	2	LITTLEFUSE	KLDR	FUSE HOLDER	2P, 30A
		1	LITTLEFUSE	-	CONTROL TRANSFORMER	2KVA, 480V PRI, 120V SEC
11	TF-BC	1	SQUARE D	9070T	ROADWAY LIGHTING CB	1P, 10A CIRCUIT BREAKER
12	CB-RL	1	SQUARE D ^Δ POWERPACT	COMPACT NSX	LIGHTING CB	3P, 600V, 100AF/63AT , 35KAIC (MIN.)
13	CB-LP1	1	SQUARE D ^Δ POWERPACT	COMPACT NSX	HEATING CB	3P, 600V, 100AF/63AT , 35KAIC (MIN.)
14	CB-H1	1	SQUARE D ^Δ POWERPACT	COMPACT NSX	WIRING DUCTS, AS REQUIRED	-
15	-	1	PANDUIT	-		

ARO - QTY AS REQUIRED
 *NOT SHOWN IN LAYOUT
 **EXISTING ATS TO BE REUSED

^Δ 3P, 600V, 125AF/60AT, 35KAIC (MIN.)
^Δ 3P, 600V, 125AF/75AT, 35KAIC (MIN.)

^Δ 125AF, 15AT, 35KAIC



FRONT DOOR MODIFICATIONS

NOTES:

- CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL.
- THE CONTRACTOR SHALL ARRANGE FOR THE EXISTING ATS TO BE DELIVERED AND SHIPPED TO THE CONTROL SYSTEM VENDOR FOR USE IN THE NEW ENCLOSURE.
- ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS SHALL NOT BE PERMITTED.
- EXISTING ATS IS A CUMMINS MODEL OTEC. THE CONTRACTOR SHALL USE THE EXISTING ATS WITHIN THE NEW ENCLOSURE OR SUPPLY A NEW ATS AS SPECIFIED. THE EXISTING ATS IF REUSED, SHALL BE SHIPPED TO THE CONTROL SYSTEM VENDOR FOR INSTALLATION IN THE NEW ENCLOSURE AT THEIR FACILITY.

ADDENDUMS / REVISIONS

^Δ MODIFIED BILL OF MATERIALS & NOTES (MJT 7/23/18)

NOT TO SCALE

BR 3-154 ON US9 SAVANNAH ROAD &
 BR 3-153 ON SR1A REHOBOTH AVENUE
 OVER LEWES-REHOBOTH CANAL

CONTRACT	BRIDGE NO.	3-154
T201507602	DESIGNED BY:	MJT
COUNTY	CHECKED BY:	AHN
SUSSEX		

ATS CABINET
 BACKPANEL DETAILS

SE-26
SHEET NO.
140
TOTAL SHTS.
180

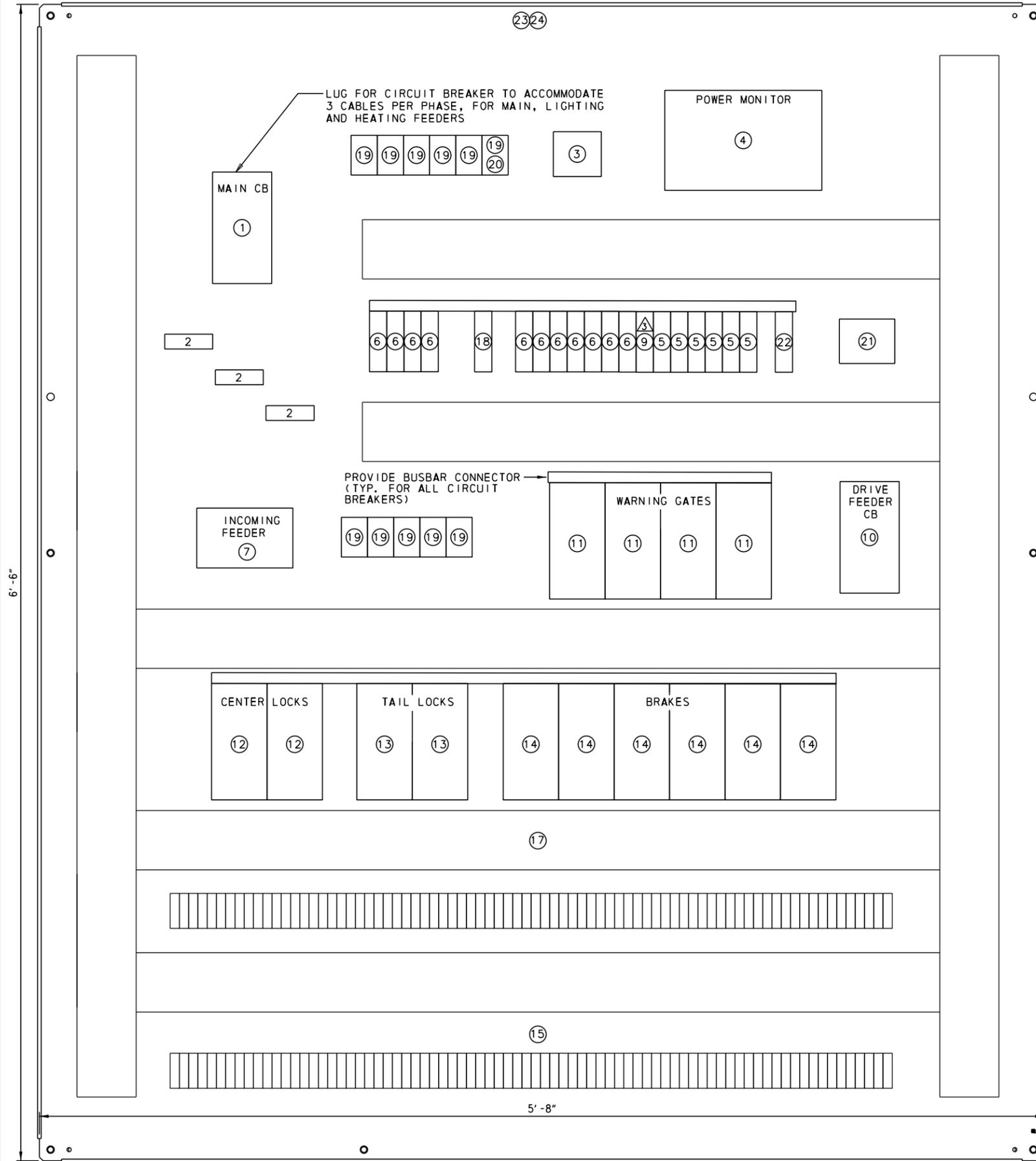
PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROP. MANUFACTURER	MODEL NO.	DESCRIPTION 1	DESCRIPTION 1
1	CB-MCC	1	SQUARE D	COMPACT NSX POWERPACT	MAIN CIRCUIT BREAKER	3P, 600V, 160AF/125AT, 35KAIC (MIN.)
					DOOR DISCONNECT HANDLE	- 250AF
					CIRCUIT BREAKER UV TRIP	-
					CIRCUIT BREAKER TERMINAL LUG	-
2	CT	3	SQUARE D	74RFT	CURRENT TRANSFORMER	200: 5A
3	PFR	1	SQUARE D	8430	PHASE MONITOR	3P, 480V, 5A
4	PM	1	ELECTRO INDUSTRIES	NEXUS 1252	POWER MONITOR	3 PHASE MONITOR W/DISPLAY
5	CB-C1-C4	4	SQUARE D	MULTI 9	MOTOR CONTROL CB	1P, 240V, 5A
6	FU-**	11	LITTLE FUSE	KLDR	FAST ACTING CARTRIDGE FUSE	1A/2A, 600V, 100KAIC
			MARATHON SP	-	ENCLOSED FUSE HOLDER	30A, 600V, 100KAIC
7	-	3	SQUARE D	NSYEB	POWER DISTRIBUTION BLOCK	600V, 335A
8	-	1	ALLEN BRADLEY	700S	SAFETY RELAY	120V, 10A
9	CB-CP	1	SQUARE D	MULTI 9	CIRCUIT BREAKER	1P, 240V, 20A
10	CB-SM1	1	SQUARE D	COMPACT NSX POWERPACT	DRIVE FEEDER CB	3P, 600V, 160AF/125AT, 35KAIC
	CB-G**	4		GV2	WARNING GATE MOTOR CB	3P, 1-1.6A, 35 KAIC (MIN)
	M-G**	4		LC2D	WARNING GATE CONTACTOR	3P, 9A, FVR CONTACTOR
	-	4		-	ADAPTER PLATE	-
	-	4		-	AUX CONTACTS FOR CONTACTOR	-
	-	4		-	AUX CONTACT FOR CB	-
	-	8		-	COIL SURGE SUPPRESSOR	-
	CB-CL1,2	2		GV2	CENTER LOCKS CB	3P, 2-4A, 35 KAIC (MIN)
	M-CL1,2	2		LC2D	CENTER LOCKS CONTACTOR	3P, 9A, FVR CONTACTOR
	-	2		-	ADAPTER PLATE	-
	-	2		-	AUX CONTACTS FOR CONTACTOR	-
	-	2		-	AUX CONTACT FOR CB	-
	-	4		-	COIL SURGE SUPPRESSOR	-
	CB-TLW,E	2		GV2	TAIL LOCK CB	3P, 4-6.3A, 35 KAIC (MIN)
	M-TLW,E	2		LC2D	TAIL LOCK CONTACTOR	3P, 9A, FVR CONTACTOR
	-	2		-	ADAPTER PLATE	-
	-	2		-	AUX CONTACTS FOR CONTACTOR	-
	-	2		-	AUX CONTACT FOR CB	-
	-	4		-	COIL SURGE SUPPRESSOR	-
	CB-MB, XB	6		GV2	MOTOR/MACH. BRAKE CB	3P, 0.25-0.40, 35 KAIC (MIN)
	M-MB, XB	6		LC1D	MOTOR/MACH. BRAKE CONTACTOR	3P, 9A, NFVR CONTACTOR
	-	6		-	ADAPTER PLATE	ADAPTER PLATE
	-	6		-	AUX CONTACTS FOR CONTACTOR	-
	-	6		-	AUX CONTACT FOR CB	-
	-	6		-	COIL SURGE SUPPRESSOR	-
15	[M]	-	PHOENIX CONTACT	UT4	TERMINAL BLOCKS	SCREW TYPE, 690V, 32A
					DIN RAIL	-
					END PLATE	-
					CROSS CONNECTORS	-
					TERMINAL MARKER	-
					GROUND TERMINAL	-
16	-	1	HOFFMAN	PANELITE	120VAC ENCLOSURE LIGHT*	FLUORESENT
17	-	1	PANDUIT	-	4"x4" WIRING DUCT	-
18	CB-BC	1	SQUARE D	MULTI 9	CONTROL TRANSFORMER CB	1P, 20A CIRCUIT BREAKER
19	CR-**	10	SQUARE D	CAD SERIES	CONTROL RELAY W/TVSS	120V, 10A
20	CR-TR	1	SQUARE D	LAD SERIES	TIME DELAY ATTACHMENT	TIME DELAY ATTACHMENT
21	TF-PM	1	SQUARE D	9070T	PWR MONITOR TRANSFORMER	100VA, 480V PRI, 120V SEC
22	M-HTC	1	SQUARE D	LC1D	HEAT TRACE CONTACTOR	30, 32A
23	-	1	CUSTOM	90"x72"x18"	NEMA 12 STEEL ENCLOSURE	NEMA 12 STEEL ENCLOSURE
24	-	1	CUSTOM	AS NOTED	PAINTED STEEL BACK PANEL	PAINTED STEEL BACK PANEL
25	-	1	HOFFMAN	DAH	ENCLOSURE HEATER*	100W
26	DSS3,4	2	SQUARE D	XCP	DOOR LIMIT SWITCH	300V, 10A
27	-	1	PHOENIX CONTACT	EM-DUO	120VAC, DIN RAIL GFI OUTLET*	125V, 15A

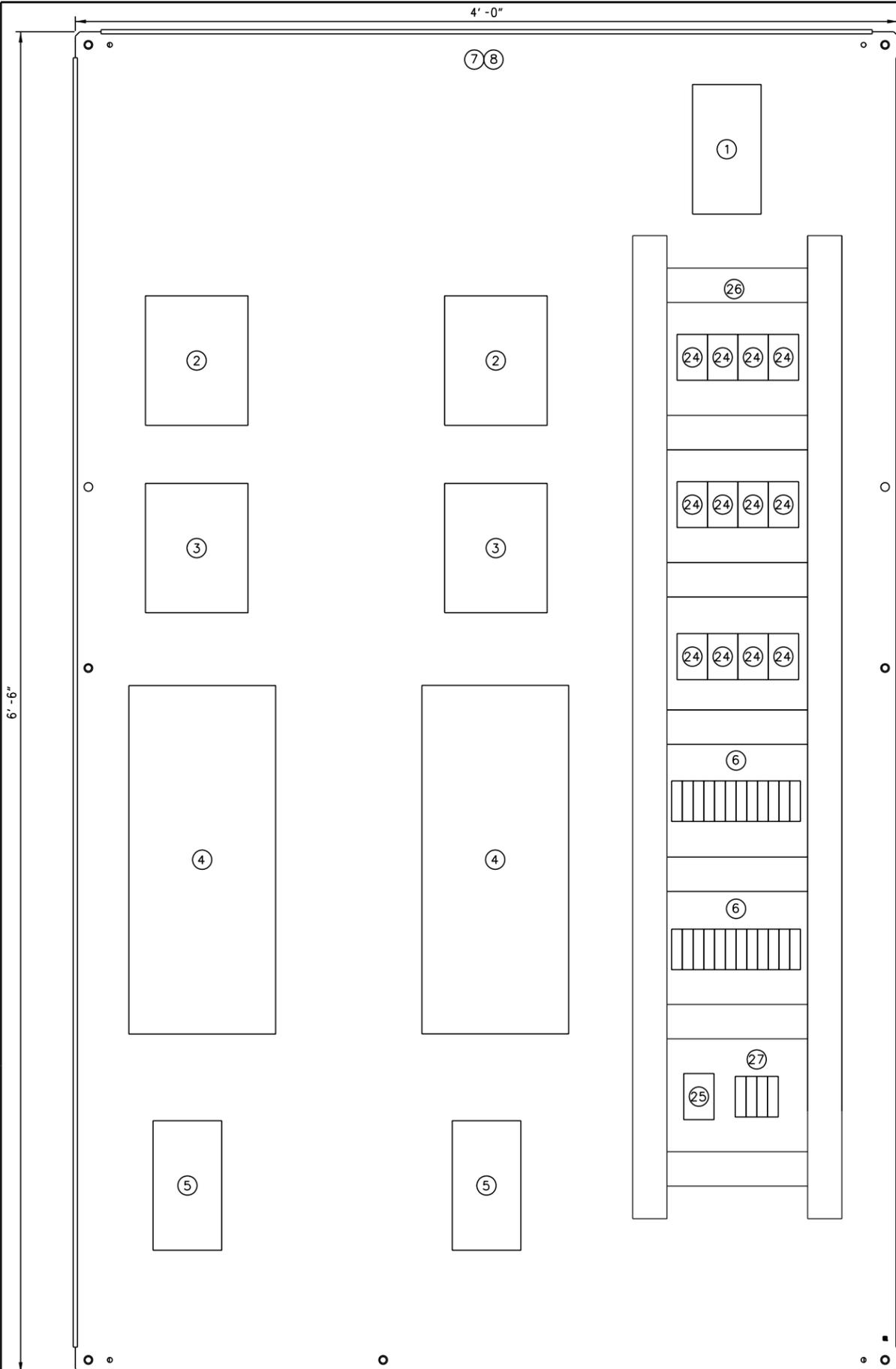
*NOT SHOWN IN LAYOUT
** CONTROL RELAYS PER SCHEMATIC WIRING DIAGRAMS

NOTES:

- CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL.
- THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE ENCLOSURE SHOWN CAN BE BROUGHT INTO THE SWITCHBOARD ROOM BY NORMAL ACCESS MEANS, THROUGH THE DOORS AND/OR WINDOWS. ADJUSTMENTS TO THE SIZE INCLUDING PROVIDING MULTIPLE SECTIONS SHALL BE MADE AT NO ADDITIONAL COST TO DELDOT.
- THE CONTRACTOR SHALL SUPPLY AN ENCLOSURE LIGHT, HEATER AND RECEPTACLE INSIDE EACH AUXILIARY CABINET.
- ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS WILL ONLY BE CONSIDERED WITH SIMILAR EQUIPMENT FROM SQUARE D THAT IS READILY AVAILABLE AND NOT OBSOLETE OR NEARING OBSOLESCENCE.



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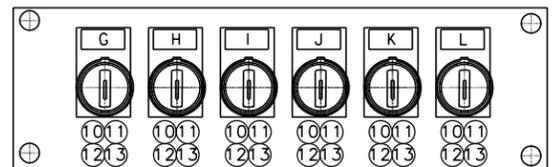
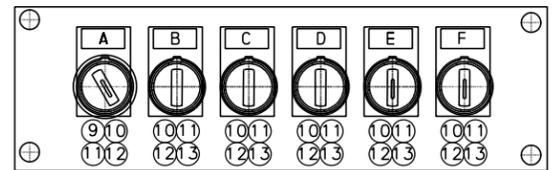


PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	PART NO.	DESCRIPTION 1	DESCRIPTION 2
1	CB-SM2	1	SQUARE D	COMPACT NSX- POWERPACT	MAIN CIRCUIT BREAKER DISCONNECT HANDLE CIRCUIT BREAKER TERMINAL LUG	3P, 600V, 160AF/100AT, 35KAIC 150AF
2	FU-WM,EM	2	MERSEN	HSJ	FAST TRIP FUSE	3P, 600VAC, 60A
3	LINE RTR	2	MTE CORP	RL SERIES	3 POLE FUSE HOLDER	
4	VFD	2	ALLEN BRADLEY	POWER FLEX 753	5% LINE FILTER FLUX VECTOR DRIVE(SEE NOTE 5)	3P, 480V, 40A
5	M-WM,EM	2	SQUARE D	LC1D	CONTACTOR	3P, 480V, 60A
6	[D]	-	PHOENIX CONTACT	UT4	TERMINAL BLOCKS DIN RAIL END PLATE CROSS CONNECTORS TERMINAL MARKER GROUND TERMINAL	SCREW TYPE, 690V, 32A
7	-	1	CUSTOM	-	PAINTED STEEL BACK PANEL	AS NOTED
8	-	1	CUSTOM	90"X50"X18"	NEMA 12 STEEL ENCLOSURE	90"X50"X18"
9	CS-MAN	1	SQUARE D	XB4	KEY SELECTOR SWITCH	22MM, 2 POS., MAINTAINED
10	-	13	SQUARE D	XB4	CONTACT BLOCK	1 NO
11	-	13	SQUARE D	-	LEGEND HOLDER	BLANK
12	-	12	SQUARE D	-	ENGRAVED LEGEND	ENGRAVED LEGEND
13	CS-**	11	SQUARE D	XB4	SELECTOR SWITCH	22MM, 3 POS. SPRING RETURN
14	PB-ES2	1	SQUARE D	9001	EMERGENCY STOP PB	30MM
15	-	1	SQUARE D	-	NAMEPLATE	EMERGENCY STOP
16	-	2	SQUARE D	XAP	PB ENCLOSURE	6 POSITIONS
17	-	1	HOFFMAN	-	WINDOW KIT	
18	-	1	HOFFMAN	-	LOCKING KNOB FOR WINDOW KIT	
19	DSS1,2	2	SQUARE D	XCP	DOOR LIMIT SWITCH*	300V, 10A
20	PB-RE	1	SQUARE D	9001	PUSH-BUTTON	30MM, 120V, RED ILLUMINATED
21	-	1	HOFFMAN	PANELITE	ENCLOSURE LIGHT*	120VAC
22	-	1	HOFFMAN	DAH	HEATER*	100W
23	-	1	SQUARE D	-	OUTLET*	120VAC
24	CR-***	12	SQUARE D	CAD	CONTROL RELAY	120VAC, 10A
25	CR-SR2	1	ALLEN BRADLEY	700S-P	SAFETY RELAY	120VAC, 10A
26	-	1	PANDUIT	-	WIRING DUCT, SIZE AS REQUIRED	
27	CB-WMC,EMC	2	SQUARE D	ACT19 MULTI 9	CIRCUIT BREAKER	2P, 480V, 1A

*NOT SHOWN IN LAYOUT
 **MANUAL OPERATION SELECTOR SWITCHES
 ***NOMENCLATURE PER SCHEMATIC WIRING DIAGRAM

ITEM NO.	NAMEPLATE LINE 1	NAMEPLATE LINE 2
A	MAN. AUTO	MAN. AUTO
B	NE GATE	LOWER RAISE
C	SE GATE	LOWER RAISE
D	NW GATE	LOWER RAISE
E	SW GATE	LOWER RAISE
F	W TAIL LOCK	PULL DRIVE
G	E TAIL LOCK	PULL DRIVE
H	CENTER LOCK 1	PULL DRIVE
I	CENTER LOCK 2	PULL DRIVE
J	W SPAN MOTOR	RAISE LOWER
K	E SPAN MOTOR	RAISE LOWER
L	SPARE	SPARE
M	SPAN MOTOR DRIVE	FAULT/RESET

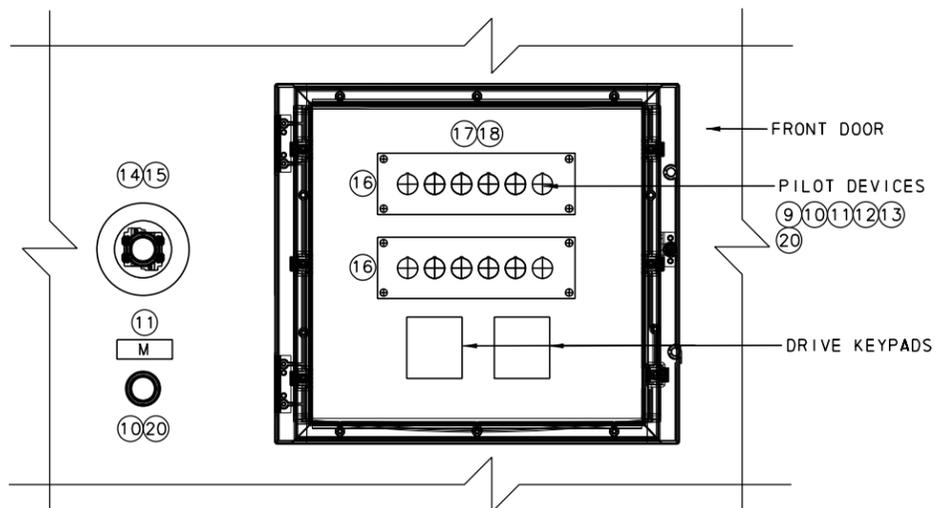


MANUAL OPERATION CONTROL STATION

SCALE: NTS

NOTES:

- CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL.
- THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE ENCLOSURE SHOWN CAN BE BROUGHT INTO THE SWITCHBOARD ROOM BY NORMAL ACCESS MEANS, THROUGH THE DOORS AND/OR WINDOWS. ADJUSTMENTS TO THE SIZE INCLUDING PROVIDING MULTIPLE SECTIONS SHALL BE MADE AT NO ADDITIONAL COST TO DELDOT.
- THE DRIVES SHALL BE ALLEN BRADLEY POWER FLEX UNITS OR EMERSON M700 UNITS. NO OTHER SUBSTITUTES ARE PERMITTED.
- THE CONTRACTOR SHALL SUPPLY A FAN AS REQUIRED BY THE DRIVE MANUFACTURER INSIDE EACH DRIVE CABINET.
- THE VFD SHALL BE SIZED TO OPERATE IN SENSORLESS VECTOR MODE AND MEET THE MOTOR REQUIREMENTS FOR BREAKWAY TORQUE.
- NON-AUTOMATIC CONTROL PILOT DEVICES SHALL BE MOUNTED ON EXISTING FRONT DOOR WITH LOCKABLE ENCLOSURE. THE EXISTING DOOR(S) SHALL BE SHIPPED TO THE CONTROL SYSTEM VENDORS SHOP FACILITY TO FURNISH AND INSTALL AS SPECIFIED AND SHOWN HERE.



FRONT DOOR MODIFICATIONS

7. ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS WILL ONLY BE CONSIDERED WITH SIMILAR EQUIPMENT FROM SQUARE D THAT IS READILY AVAILABLE AND NOT OBSOLETE OR NEARING OBSOLESCENCE.

NOT TO SCALE

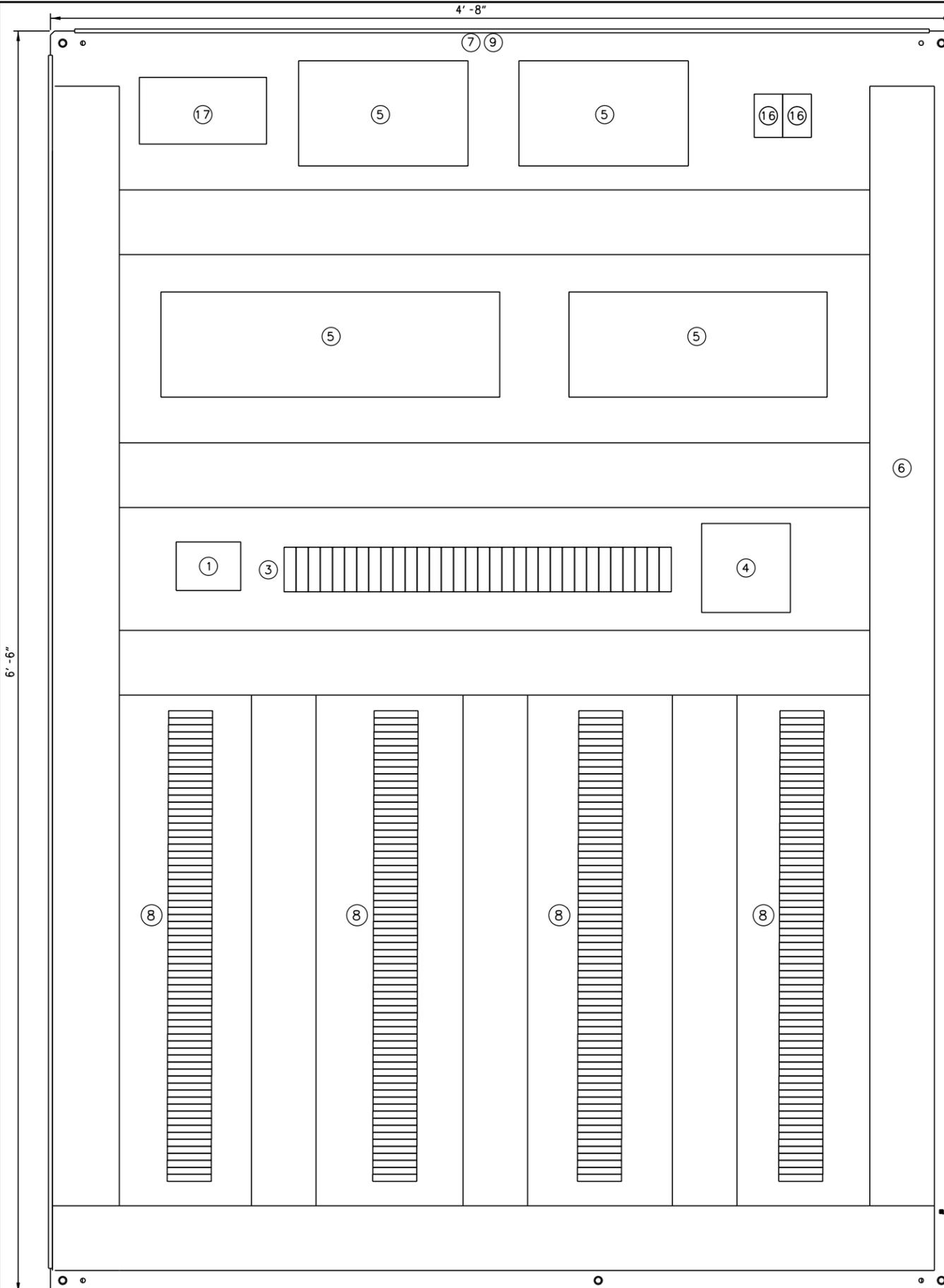
BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONTRACT T201507602
 COUNTY SUSSEX

BRIDGE NO. 3-154
 DESIGNED BY: MJT
 CHECKED BY: AHN

SPAN DRIVE CABINET BACKPANEL DETAILS

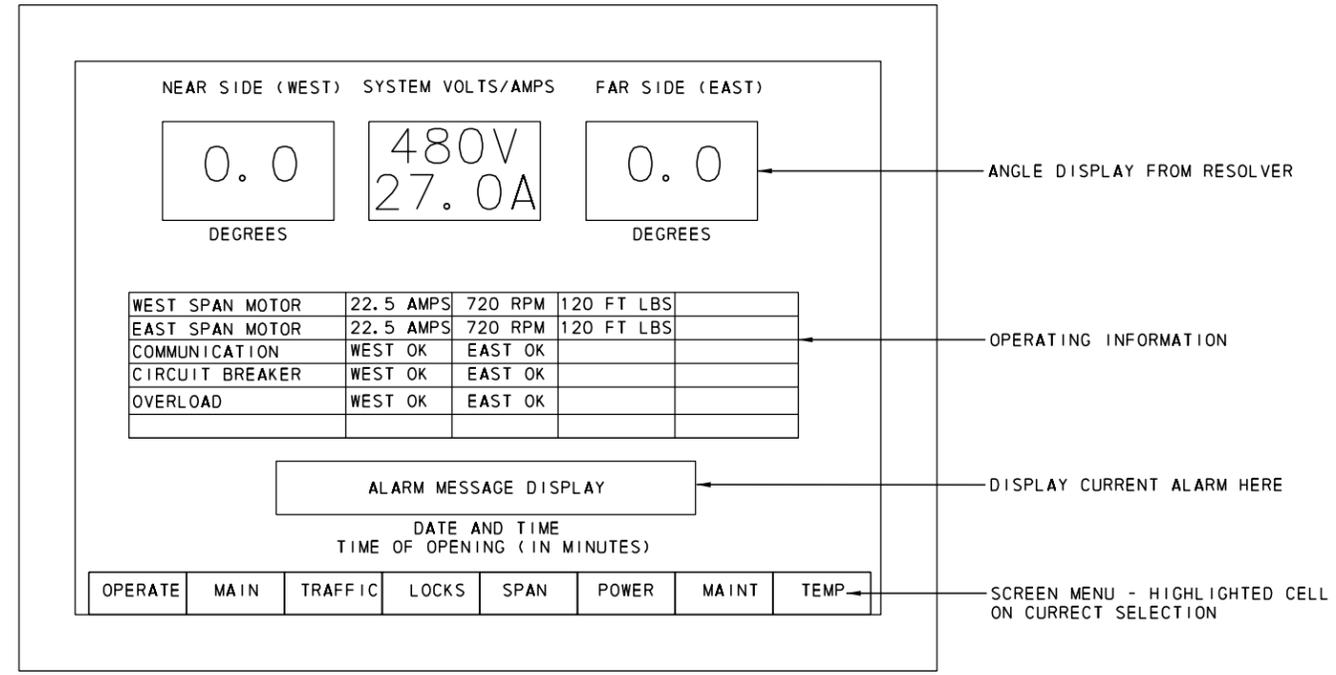
SE-28
 SHEET NO. 142
 TOTAL SHTS. 180



PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	PART NO.	DESCRIPTION	DESCRIPTION 2
1	-	1	ISLATROL	IE	LINE FILTER	-
2	-	-	-	-	-	-
3	CB-**	32	SQUARE D	ACT19- MULTI 9	CIRCUIT BREAKER	1P, 240V, 5A
4	-	1	REDL ION	N-TRON	NETWORK SWITCH	-
5	PLC	4	ALLEN BRADLEY	SEE DWG SE-32	AB CONTROL LOGIX PLC RACKS	-
6	-	-	PANDUIT	-	WIRING DUCT, SIZE AS REQUIRED	-
7	-	-	HOFFMAN	-	PAINTED STEEL BACK PANEL	10 GAUGE STEEL
8	P	-	PHOENIX CONTACT	UT4	TERMINAL BLOCKS	SCREW TYPE, 690V, 32A
					DIN RAIL	-
					END PLATE	-
					CROSS CONNECTORS	-
					TERMINAL MARKER	-
9	-	1	-	CUSTOM	NEMA 12 ENCLOSURE	90"X60"X18"
10	-	1	ALLEN BRADLEY	2711P	TOUCHSCREEN***	15"
11	-	-	-	-	-	-
12	DSS5,6	2	SQUARE D	XCKP	DOOR LIMIT SWITCH*	300V, 10A
13	-	1	HOFFMAN	PANELITE	LED ENCLOSURE LIGHT**	120VAC
14	-	1	HOFFMAN	DAH	HEATER*	100W
15	-	1	PHOENIX CONTACT	EM-DUO	DIN RAIL GFI OUTLET*	120VAC
16	CR-***	2	SQUARE D	CAD SERIES	CONTROL RELAY W/TVSS	120VAC, 10A
17	24VDC	1	SQUARE D	ABL1	POWER SUPPLY	24VDC, 10A

* NOT SHOWN IN LAYOUT
 ** NOMENCLATURE PER SCHEMATIC WIRING DIAGRAMS
 *** TOUCH SCREEN NOT SHOWN ON DRAWING, TO BE MOUNTED ON DOOR OF ENCLOSURE

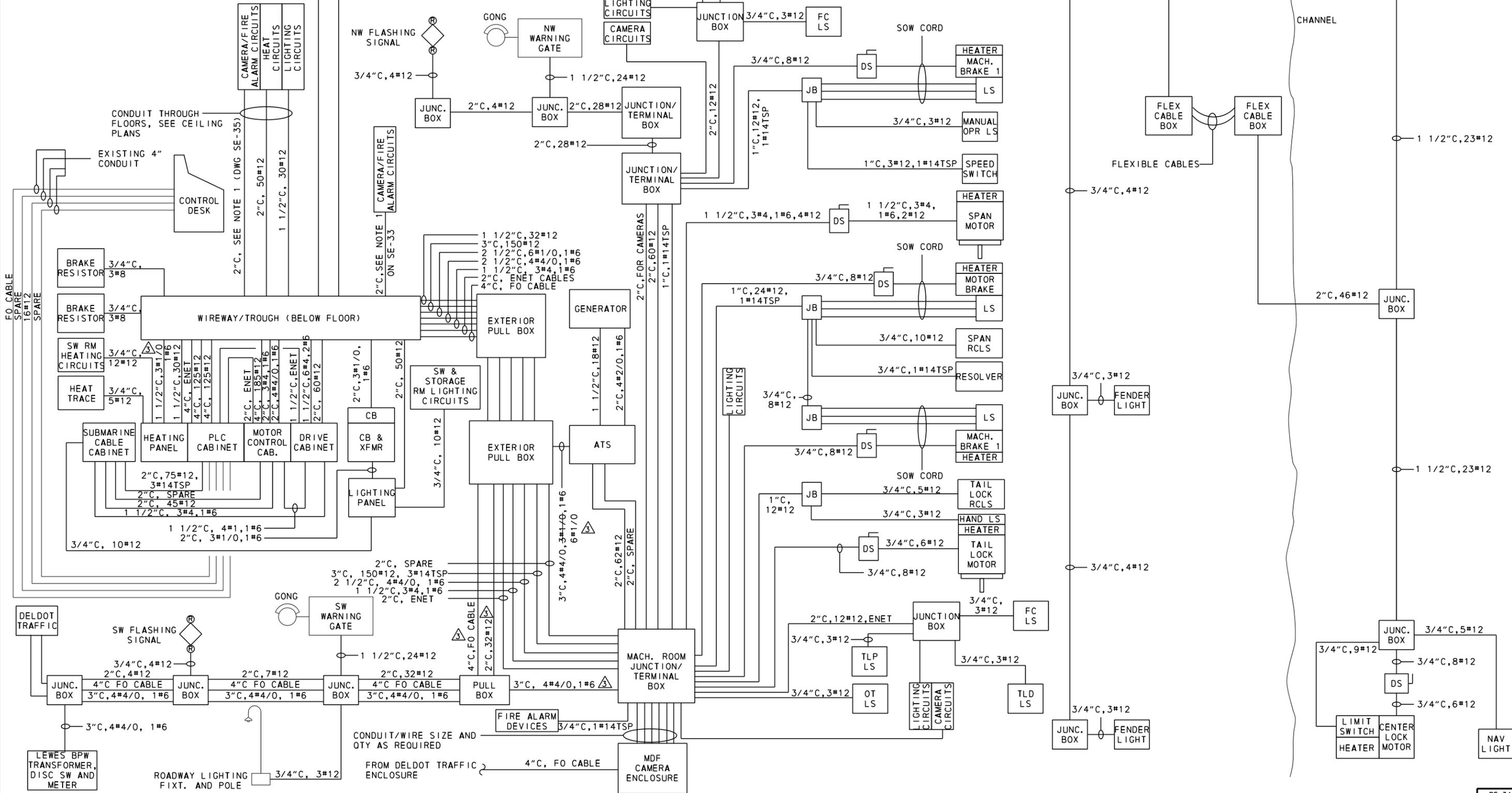


- NOTES:**
- CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL.
 - THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE ENCLOSURE SHOWN CAN BE BROUGHT INTO THE SWITCHBOARD ROOM BY NORMAL ACCESS MEANS, THROUGH THE DOORS AND/OR WINDOWS. ADJUSTMENTS TO THE SIZE INCLUDING PROVIDING MULTIPLE SECTIONS SHALL BE MADE AT NO ADDITIONAL COST TO DELDOT.
 - THE CONTRACTOR SHALL FURNISH AN ADDITIONAL SIDE PANELS AS MAY BE REQUIRED TO INSTALL ADDITIONAL EQUIPMENT.
 - 3 ALTERNATE MANUFACTURER SUBSTITUTIONS FOR SQUARE D EQUIPMENT AND COMPONENTS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS WILL ONLY BE CONSIDERED WITH SIMILAR EQUIPMENT FROM SQUARE D THAT IS READILY AVAILABLE AND NOT OBSOLETE OR NEARING OBSOLESCENCE.

7/23/2018 M:\02889\04C\000_Fin_Dwg\CADD\30_Elec\EE29 - PLC CABINET LAYOUT.dgn

NOTES:

1. SEE CONDUIT AND WIRE NOTES ON DWG RE-35.
2. FURNISH AND INSTALL REQUIRED CABLE FOR EXISTING ANNUNCIATOR PANEL.
3. FIRE ALARM AND CAMERA CONDUIT AND WIRE NOT SHOWN. CONTRACTOR TO FURNISH THE NECESSARY CONDUIT AS SHOWN ELSEWHERE OR OTHERWISE REQUIRED.
4. FURNISH AND INSTALLED REQUIRED WIRE AND CONNECTIONS FOR EXISTING TELEPHONE LINE.



ADDENDUMS / REVISIONS

△	ADDED WIRE AND CONDUIT (MJT 7/23/18)

NOT TO SCALE

BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONTRACT	T201507602	BRIDGE NO.	3-154
COUNTY	SUSSEX	DESIGNED BY:	MJT
		CHECKED BY:	AHN

CONDUIT BLOCK DIAGRAM - WEST

SE-34
SHEET NO.
148
TOTAL SHTS.
180

7/23/2018 M:\02889.04C\0000_Fin_Dwg\CADD\30_Elec\EE34 - Conduit Block Diagram.dwg

