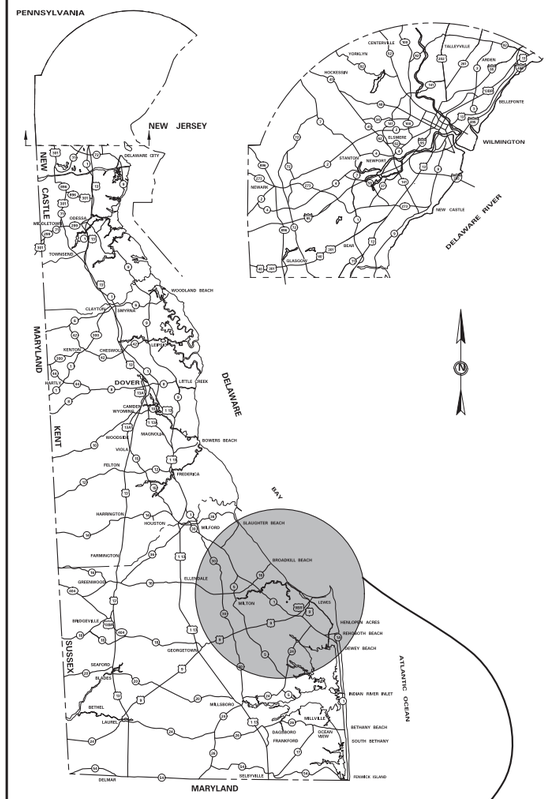


GENERAL LOCATION OF CONTRACT

THE STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY UNITS

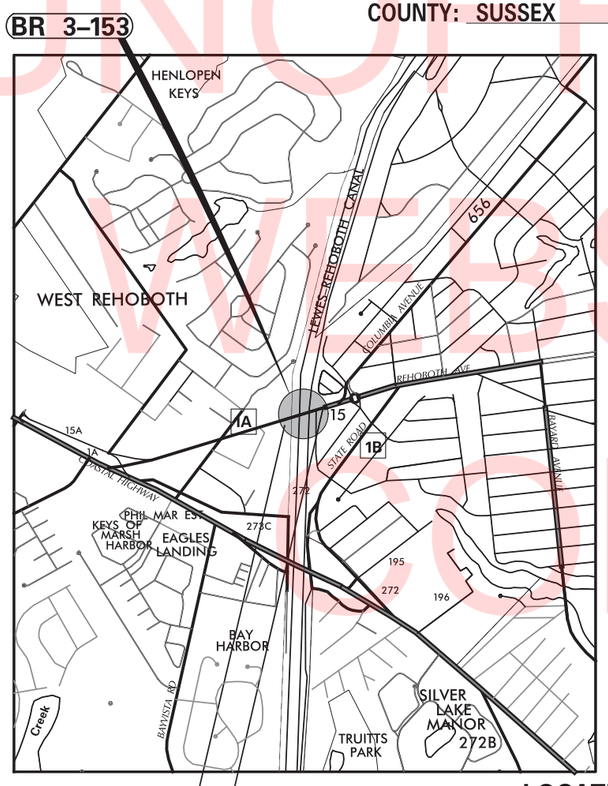
CONSTRUCTION PLANS FOR:

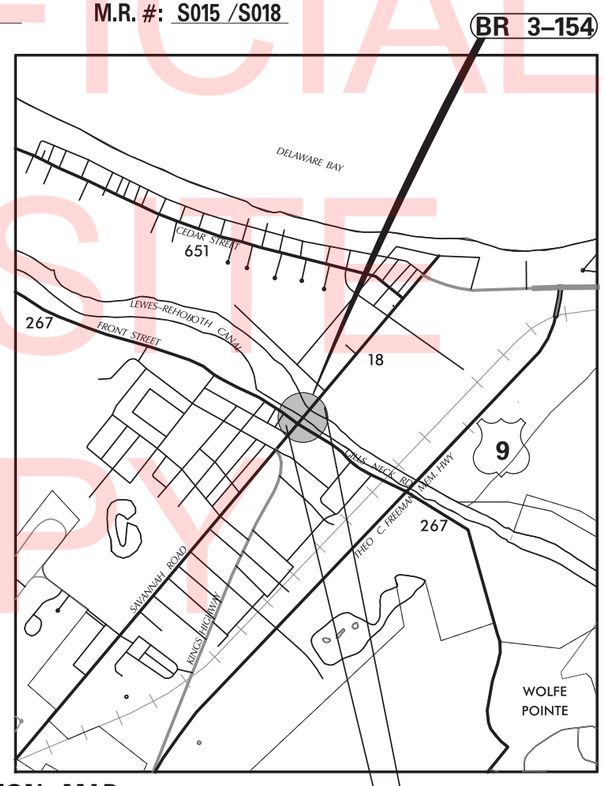
BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONSTRUCTION CONTRACT NUMBER: T201507602

FEDERAL AID PROJECT NUMBER: EBHOS-S018(13)

COUNTY: SUSSEX M.R. #: S015 /S018





LOCATION MAP

SCALE 0 1000 2000 3000 FEET

BEGIN CONTRACT STATION 108+45 REHOBOTH AVENUE

END CONTRACT STATION 112+75 REHOBOTH AVENUE

BEGIN CONTRACT STATION 10+40 US 9B SAVANNAH ROAD

END CONTRACT STATION 14+10 US 9B SAVANNAH ROAD

DESIGN DESIGNATION

FUNCTIONAL CLASS: URBAN MINOR ARTERIAL			D.H.V. PROJECTED: 1,716	YEAR: 2016	
TYPE OF CONSTRUCTION: BR 3-153 REHABILITATION			DESIGN SPEED: 25 M.P.H.		
A.A.D.T. CURRENT: 21,857	YEAR: 2014		TRUCKS: 10% PER DAY		
A.A.D.T. PROJECTED: 26,000	YEAR: 2040		DIRECTION OF DISTRIBUTION: 60%		
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR			D.H.V. PROJECTED: 812	YEAR: 2016	
TYPE OF CONSTRUCTION: BR 3-154 REHABILITATION			DESIGN SPEED: 25 M.P.H.		
A.A.D.T. CURRENT: 9,898	YEAR: 2014		TRUCKS: 10% PER DAY		
A.A.D.T. PROJECTED: 14,000	YEAR: 2040		DIRECTION OF DISTRIBUTION: 58%		

INDEX OF SHEETS

TOTAL SHEETS: 180

APPROVED DESIGN EXCEPTIONS

DESIGN PARAMETER	REQUIRED	PROVIDED	DATE

ADDENDA & REVISIONS

DESCRIPTION	NAME & DATE

ASSOCIATED CONTRACTS

CONTRACT NO.	CONTRACT NAME
82-073-05	BRIDGE 153 - REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL
	TUDOR ELECTRIC, CONDUIT AND LAYOUT SHOP DRAWINGS
	LINK CONTROLS SCHEMATICS SHOP DRAWINGS
	REHOBOTH AVENUE BRIDGE AS-BUILT DRAWINGS, H&H
80-023-02	BRIDGE 154 ON SR 9 (SAVANNAH ROAD) OVER LEWES-REHOBOTH CANAL
	ELECTRICAL CONDUIT AND LAYOUT SHOP DRAWINGS
	WESTINGHOUSE CONTROL SCHEMATIC SHOP DRAWINGS
	SAVANNAH ROAD BRIDGE AS-BUILT DRAWINGS, H&H
T201704001	US 9 (SAVANNAH ROAD) AT FRONT ST./GILLS NECK RD.
80-023-03	SAVANNAH ROAD BRIDGE - WALL ENCLOSURES AND RAILING

PREPARED BY
THE CONSULTING FIRM OF

HARDESTY & HANOVER
180 ADMIRAL COCHRANE DRIVE,
SUITE 555
ANNAPOLIS, MD 21401
(410) 573-1999

RODNEY A. JARRETT LICENSE No. 17611 DELAWARE PROFESSIONAL ENGINEER — SEAL

Rodney A. Jarrett — RECOMMENDED — 01/02/2018 DATE

RECOMMENDED

SOUTH DISTRICT MAINTENANCE ENGINEER — 01/10/2018 DATE

SOUTH DISTRICT ENGINEER — 01/11/2018 DATE

RECOMMENDED

SQUAD MANAGER, BRIDGE DESIGN — DATE 01/16/2018

STEPHEN DIRK RICHTER REGISTERED NO. 9235 DELAWARE PROFESSIONAL ENGINEER — SEAL

RECOMMENDED

BRIDGE DESIGN ENGINEER — DATE 01/11/2018

CRAIG A. STEVENS LICENSE No. 15250 DELAWARE PROFESSIONAL ENGINEER — SEAL

RECOMMENDED

ASSISTANT DIRECTOR, BRIDGE — DATE 01/11/2018

JASON N. HASTINGS REGISTERED No. 13545 DELAWARE PROFESSIONAL ENGINEER — SEAL

APPROVED

CHIEF ENGINEER — DATE 01/16/2018

ROBERT BRIAN MCCLEARY REGISTERED No. 8567 DELAWARE PROFESSIONAL ENGINEER — SEAL

EXISTING SYMBOLS

DRAINAGE

	DITCH OR STREAM CENTERLINE
	DIRECTIONAL STREAM FLOW ARROW
C.B. / D.I.	DRAINAGE INLET
J.B.	DRAINAGE JUNCTION BOX
Ⓓ	DRAINAGE MANHOLE
SIZE/TYPE LABEL	DRAINAGE PIPE AND FLOW ARROW
	DRAINAGE PIPE HEADWALL
	RIPRAP - AREA FEATURE
	RIPRAP - LINEAR FEATURE

MANMADE ROADSIDE FEATURES

	BOLLARD - STEEL POLE
	BOLLARD - WOOD POST
(TYPE LABEL)	CURB
(TYPE LABEL)	CURB AND GUTTER
	FENCE - CHAINLINK OR STRANDED
	FENCE - STOCKADE OR SPLIT RAIL
FP	FLAG POLE
	GUARDRAIL - STEEL BEAM
	GUARDRAIL - WIRE ROPE
LAMP	LAMP AND POST - RESIDENTIAL
MB	MAILBOX
PM	PARKING METER AND POST
	PAVEMENT - FLEXIBLE
	PAVEMENT - RIGID
□	PILE - BRIDGE
○	PILLAR OR MISCELLANEOUS POST
	TRAFFIC SIGN AND POST
	WALL - BRICK OR BLOCK
	WALL - STONE

NATURAL ROADSIDE FEATURES

	GRASS LAWN
	HEDGEROW OR THICKET
	MARSH BOUNDARY LINE
	TREE - CONIFEROUS
	TREE - DECIDUOUS
	TREE STUMP
	SHRUBBERY
WL	DELINEATED WETLAND BOUNDARY LINE
	WOODS LINE BOUNDARY

RIGHT-OF-WAY SYMBOLS

C.M.	PROPERTY MARKER - CONCRETE MON.
I.P.	PROPERTY MARKER - IRON PIPE
100+00	HISTORIC RIGHT-OF-WAY BASELINE
	EXISTING RIGHT-OF-WAY
PL	EXISTING PROPERTY LINE
EASEMENT TYPE	EXISTING EASEMENT
DA	EXISTING DENIAL OF ACCESS
R/W-DA	EXISTING R/W & DENIAL OF ACCESS

SURVEY CONTROL & MONUMENTATION

B.M.	SURVEY BENCHMARK LOCATION
T.P.	SURVEY TIE POINT LOCATION
△	SURVEY TRAVERSE POINT
⊙	POINT OF CURVATURE OR TANGENCY
⊙	POINT OF INTERSECTING TANGENTS

UTILITY

	SOIL BORING LOCATION
	UTILITY TEST HOLE LOCATION
TV	CABLE TV DISTRIBUTION BOX
Ⓔ	ELECTRIC MANHOLE
EM	ELECTRIC METER
E	ELECTRIC TRANSFORMER
	POLE MOUNTED LUMINAIRE
Ⓖ	GAS MANHOLE
G.M.	GAS METER
G.V.	GAS VALVE
G.P.	GAS PUMP - SERVICE STATION
	RAILROAD TRACKS
Ⓢ	SANITARY SEWER MANHOLE
S.V.	SANITARY SEWER VALVE
VENT	SANITARY SEWER VENT OR CLEANOUT
S.D.F.	SEPTIC DRAIN FIELD
B	TELEPHONE BOOTH
Ⓣ	TELEPHONE MANHOLE
T	TELEPHONE TEST POINT
J.W.	TRAFFIC - CONDUIT JUNCTION WELL
	TRAFFIC - LIGHT POLE AND BASE
	TRAFFIC - PEDESTRIAN POLE & BASE
	TRAFFIC - SIGNAL CABINET & BASE
⊗	TRAFFIC - SIGNAL POLE AND BASE
U	UTILITY BOX
	UTILITY POLE GUY WIRE ANCHOR
	UTILITY POLE
F.H.	WATER - FIRE HYDRANT
W.M.	WATER METER
W.V.	WATER VALVE
WELL	WELL HEAD
?	MANHOLE - UNDETERMINED OWNER

UTILITY COMPANY FACILITIES

G	EXISTING GAS UNDERGROUND
DP&L-OH	EXISTING ELECTRIC-DP&L OVERHEAD
OH	EXISTING ELECTRIC OVERHEAD
CL-W	EXISTING WATER UNDERGROUND
CATV(QL-D) (AATFI)	EXISTING CABLE LINES UNDERGROUND
VER-C	EXISTING TELE.- VER. UNDERGROUND
CL-E	EXISTING ELECTRIC CITY OF LEWES
CL-W	EXISTING WATER CITY OF LEWES

PROPOSED SYMBOLS

CONSTRUCTION

	CONCRETE SAFETY BARRIER - PERMANENT
BFS	BIOFILTRATION SWALE
	BRICK PATTERNED SURFACE
	BUTT JOINT
100+00	CONSTRUCTION BASELINE
CSF	CONSTRUCTION SAFETY FENCE
	CURB, TYPE 1 & TYPE 3
	CURB, TYPE 2
	CURB & GUTTER, TYPE 1
	CURB & GUTTER, TYPE 2
	CURB & GUTTER, TYPE 3
	CURB & GUTTER, TYPE 4
CZ	CLEAR ZONE
	DRAINAGE INLET
	DITCH
	FENCE - METAL
	FENCE - WOOD
	FLARED END SECTION
	GUARDRAIL, TYPE 1
	GUARDRAIL, TYPE 2
	GUARDRAIL, TYPE 3
	GUARDRAIL END ANCHORAGE
	GUARDRAIL END TREATMENT, TYPE 1
	GUARDRAIL END TREATMENT, TYPE 2
	GUARDRAIL END TREATMENT, TYPE 3
	IMPACT ATTENUATOR
	JUNCTION BOX - DRAINAGE
LO	LATERAL OFFSET
LOC	LIMIT OF CONSTRUCTION
MB	MAILBOX
	MANHOLE
	PAVEMENT PATCH
	PAVEMENT REMOVAL - TOPSOIL, SEED AND MULCH
	PIPE & DIRECTIONAL FLOW ARROW
	RIPRAP
	P.C.C. SIDEWALK - 4"
	P.C.C. SIDEWALK - 6" (USE 8" DEPTH FOR CHANNELIZATION ISLANDS.)
	UNDERDRAIN
	UNDERDRAIN OUTLET

RIGHT-OF-WAY SYMBOLS

	PROPOSED RIGHT-OF-WAY MONUMENT
DA	PROPOSED DENIAL OF ACCESS
PE	PROPOSED PERMANENT EASEMENT
R/W	PROPOSED RIGHT-OF-WAY
R/W-DA	PROPOSED R/W & DENIAL OF ACCESS
TCE	TEMPORARY CONSTRUCTION EASEMENT
100+00	PROPOSED RIGHT-OF-WAY BASELINE

IDENTIFIERS

A C	ADJUST BY CONTRACTOR
A O	ADJUST BY OTHERS
B	CONCRETE SAFETY BARRIER
C	CURB OR CURB & GUTTER
CJB	CONVERT TO JUNCTION BOX
CMH	CONVERT TO DRAINAGE MANHOLE
C O	CURB OPENING
CR	CURB RAMP / TYPE
CR-W	CURB RAMP / TYPE - WITHOUT SIDEWALK SURFACE DETECTABLE WARNING SYSTEM
CSF	CONSTRUCTION SAFETY FENCE
DI	DRAINAGE INLET
DND	DO NOT DISTURB
ED	ENERGY DISSIPATOR
F	FENCE
FES	FLARED END SECTION
FT C	FILL WITH FLOWABLE FILL
FS	FILTRATION STRUCTURE
GR	GUARDRAIL
JB	JUNCTION BOX
MH	MANHOLE
M	MONUMENT - RIGHT-OF-WAY
P	PIPE
RL C	RELOCATE BY CONTRACTOR
RL O	RELOCATE BY OTHERS
RM C	REMOVE BY CONTRACTOR
RM O	REMOVE BY OTHERS
UD	UNDERDRAIN / LENGTH
UDO	UNDERDRAIN OUTLET PIPE

LANDSCAPING

LS	LANDSCAPE PLANTINGS
	SHRUBBERY
	CONIFEROUS TREE
	DECIDUOUS TREE

TRAFFIC

ITMS-CON	ITMS CONDUIT
SIG-CON	SIGNAL CONDUIT
	CONDUIT JUNCTION WELL
	LUMINAIRE
	PAVEMENT MARKINGS
	PAVEMENT STRIPING
	TRAFFIC SIGN

PAVEMENT SECTION(S)

	OVERLAY PAVEMENT - SEE TYPICAL SECTIONS FOR MATERIALS AND DEPTHS
	RECONSTRUCTED PAVEMENT - SEE TYPICAL SECTIONS FOR MATERIALS AND DEPTHS
	DRIVEWAY AND ENTRANCE PAVEMENT - SEE TYPICAL SECTIONS FOR MATERIALS AND DEPTHS

EROSION & SEDIMENT CONTROL

DWBAG	DEWATERING BAG
DWB	DEWATERING BASIN
ED	EARTH DIKE
	INLET SEDIMENT CONTROL
	PERIMETER DIKE/SWALE
PST	PORTABLE SEDIMENT TANK
SBD	SANDBAG DIKE
SB	SANDBAG DIVERSION
	STONE CHECK DAM
SCE	STABILIZED CONSTRUCTION ENTRANCE
SF	SILT FENCE / LENGTH
SF	SILT FENCE
RSF	SILT FENCE - REINFORCED
SP	SUMP PIT
ST	SEDIMENT TRAP / NUMBER
ST	SEDIMENT TRAP
ST	SEDIMENT TRAP WITH INLET AS OUTLET
ST	SEDIMENT TRAP PIPE OUTLET
SW	STILLING WELL
	TEMPORARY SWALE
TSD	TEMPORARY SLOPE DRAIN
XXX	TURBIDITY CURTAIN / LENGTH
T	TURBIDITY CURTAIN

SHEET LEGEND

BRIDGE LOCATION

S - SAVANNAH ROAD
R - REHOBOTH AVE.

XX-YY

DISCIPLINE

G - GENERAL
H - HIGHWAY
S - STRUCTURAL
M - MECHANICAL
E - ELECTRICAL

SHEET NUMBER PER DISCIPLINE

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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.	3-153 /3-154
DESIGNED BY:	KK
CHECKED BY:	JW

NOTES SHEET

SHEET NO.	G-1
TOTAL SHTS.	2
	180

GENERAL NOTES

1. THIS PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS", DATED AUGUST 2016 AND THE DELAWARE DEPARTMENT OF TRANSPORTATION "STANDARD CONSTRUCTION DETAILS", DATED 2016, INCLUDING ALL REVISIONS UP TO THE DATE OF ADVERTISEMENT.

2.

EROSION POTENTIAL FOR THIS PROJECT	CONTRACTOR ESC SUPERVISOR REQUIREMENT
( ) INSIGNIFICANT	NONE
(X) MINOR	CONTRACTOR TRAINING PROGRAM, AS DEFINED IN SECTION 6.2 OF THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS.
( ) MEDIUM	CONTRACTOR TRAINING PROGRAM, AS DEFINED IN SECTION 6.2 OF THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS.
( ) MAJOR	CERTIFIED CONSTRUCTION REVIEWER (CCR), AS DEFINED IN SECTION 6.3 OF THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS.

3. ELECTRONIC PROJECT FILES THAT WILL BE MADE AVAILABLE TO THE AWARDED CONTRACTOR, INCLUDE:

( )	NONE
( )	ASCII DATA FILES WITH COORDINATES AND ELEVATIONS FOR PROPOSED POINTS AS SELECTED BY THE ENGINEER.
(X)	ALL PLAN SHEETS, IN PDF FORMAT.
( )	EXISTING DIGITAL TERRAIN MODEL, IN .DTM FILE FORMAT, COMPATIBLE WITH SOFTWARE CURRENTLY USED BY DELDOT.
( )	PROPOSED DIGITAL TERRAIN MODEL, IN .DTM FILE FORMAT, COMPATIBLE WITH SOFTWARE CURRENTLY USED BY DELDOT.
( )	DESIGN FILE, IN .DGN FILE FORMAT, CONTAINING ONLY THE PROPOSED 3D TRIANGLES OF THE PROPOSED DIGITAL TERRAIN MODEL (DTM).

NOTE: THE DOCUMENT ENTITLED "RELEASE FOR DELIVERY OF DOCUMENTS IN ELECTRONIC FORM TO A CONTRACTOR" MUST BE SIGNED BY ALL PARTIES PRIOR TO THE DELIVERY OF ANY ELECTRONIC PROJECT FILES.

4. PROJECT FILES THAT WILL BE MADE AVAILABLE TO THE CONTRACTOR, INCLUDE:

( )	CROSS SECTIONS
N/A	RIGHT-OF-WAY PLANS (WILL BE MADE AVAILABLE TO THE AWARDED CONTRACTOR)

5. THE DISTURBED AREA FOR THIS PROJECT IS 0.06 ACRES.

6. THE SEDIMENT AND STORMWATER MANAGEMENT PLANS HAVE BEEN APPROVED BY DELDOT'S STORMWATER ENGINEER UNDER DELDOT'S DELEGATED AUTHORITY. THE SEDIMENT AND STORMWATER MANAGEMENT PLANS ARE VALID FOR A FIVE YEAR PERIOD, BEGINNING ON THE DATE THE STORMWATER ENGINEER SIGNED THE CONSTRUCTION TITLE SHEET. IF THE FINAL ACCEPTANCE OF THE PROJECT IS ANTICIPATED TO EXTEND BEYOND THE FIVE YEARS, THE CONTRACTOR WILL INFORM THE ENGINEER THREE MONTHS PRIOR TO THE EXPIRATION OF THE APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLANS. THE STORMWATER ENGINEER WILL REVIEW THE CURRENT SEDIMENT AND STORMWATER MANAGEMENT PLAN AND ISSUE AN EXTENSION WITH ANY APPROPRIATE MODIFICATIONS. IMPERVIOUS AREA ADDED 0.00 SF.

PROJECT NOTES

SECTION 100

1. ANY DAMAGE TO ITEMS NOTED TO BE RELOCATED OR RESET BY THE CONTRACTOR, AT THE DISCRETION OF THE ENGINEER, SHALL BE REPAIRED AND/OR REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.

2. THE CONTRACTOR WILL CONTACT THE DELAWARE TMC AT 302-659-4600 PRIOR TO ANY UNMANNED AIRCRAFT VEHICLE (UAV) FLIGHTS. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE THE FOLLOWING INFORMATION: THE REGISTRATION NUMBER OF THE UAV, THE FLIGHT TIME, LOCATION OF THE FLIGHT, THE PILOT'S NAME AND THE PILOT'S CONTACT NUMBER DURING THE FLIGHT.

SECTION 200

1. ITEM 211001 REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB, AND SIDEWALK SHALL INCLUDE THE REMOVAL OF APPROACH SIDEWALKS AT BR 3-154.

SECTION 700

1. WHERE PROPOSED CONCRETE SIDEWALK IS CONSTRUCTED TO MEET EXISTING SIDEWALK, THE EXISTING SIDEWALK SHALL BE SAWCUT AT THE TIE-IN POINT OR MEET THE NEAREST EXISTING SIDEWALK JOINT. ALL SAW CUTTING SHALL BE FULL DEPTH, UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 762001 - SAWCUTTING, CONCRETE, FULL DEPTH.

2. THE PAVED AREAS TO BE RECONSTRUCTED OR WIDENED SHALL BE SAWCUT AT THE POINT WHERE THE NEW PAVEMENT IS TO TIE INTO THE EXISTING PAVEMENT.

SECTION 900

1. THIS PROJECT IS COVERED UNDER AN NPDES GENERAL PERMIT FOR CONSTRUCTION. UNDER THE GENERAL PERMIT, COMPLIANCE WITH DELDOT'S APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLANS WILL CONSTITUTE COMPLIANCE WITH THE NPDES INDUSTRIAL PERMITTING REQUIREMENTS FOR THIS CONSTRUCTION PROJECT. A COPY OF THE NPDES GENERAL PERMIT AND NOI IS KEPT ON FILE IN EACH OF THE CONSTRUCTION OFFICES AND THE DEPARTMENT'S STORMWATER SECTION. A COPY OF THE GENERAL PERMIT OR THE NOI CAN BE OBTAINED UPON REQUEST FROM EITHER THE DEPARTMENT'S STORMWATER ENGINEER OR THE APPROPRIATE CONSTRUCTION ENGINEER.

MISCELLANEOUS

1. LOCATION AND DESCRIPTION: BRIDGE NO. 3-153 IS LOCATED ON REHOBOTH AVENUE OVER LEWES AND REHOBOTH CANAL IN THE CITY OF REHOBOTH. BRIDGE NO. 3-154 IS LOCATED ON SAVANNAH ROAD OVER THE LEWES AND REHOBOTH CANAL IN THE CITY OF LEWES.

2. AS BUILT PLANS OF THE EXISTING STRUCTURE ARE AVAILABLE AND SHALL BE OBTAINED THROUGH THE DEPARTMENT AND USED IN CONJUNCTION WITH THESE DRAWINGS WHEN DETERMINING EXISTING DIMENSIONS. ALL DIMENSIONS SHOWN ON THESE DRAWINGS WERE TAKEN FROM THE EXISTING PLANS AND MUST BE VERIFIED IN THE FIELD. THE EXISTING PLANS ARE AS FOLLOWS:

   CONTRACT NO. 82-073-05
   DESCRIPTION : BRIDGE 153 - REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

   CONTRACT NO. 80-023-02
   DESCRIPTION : BRIDGE 154 ON SR 9 - SAVANNAH ROAD OVER LEWES-REHOBOTH CANAL

3. ANY DAMAGE DONE BY THE CONTRACTOR'S OPERATIONS TO THE EXISTING FACILITIES NOT DESIGNATED FOR REPAIRS UNDER THE CONTRACT SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

4. THE CONTRACTOR SHALL CONTACT THE CHIEF OF SCHEDULING FOR DART FIRST STATE, 14 DAYS PRIOR TO THE START OF CONSTRUCTION AT 302-576-6191.

5. THE CONTRACTOR SHALL CONTACT DART FIRST STATE AT 302-576-6191 72 HOURS PRIOR TO INSTALLING A DETOUR TO ALLOW THE BUS SERVICE TO MAKE NECESSARY ADJUSTMENTS TO THEIR SCHEDULE.

6. 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 REDECKING PROJECT (T201407602-BR 3-150). THE SR 1 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.

7. ENVIRONMENTAL COMPLIANCE - SEE ENVIRONMENTAL COMPLIANCE PLAN FOR FURTHER RESTRICTIONS/GUIDANCE ASSOCIATED WITH THIS PROJECT.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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 /3-154	NOTES SHEET	G-2
				COUNTY SUSSEX	DESIGNED BY: KK		SHEET NO. 3
					CHECKED BY: JW		TOTAL SHTS. 180

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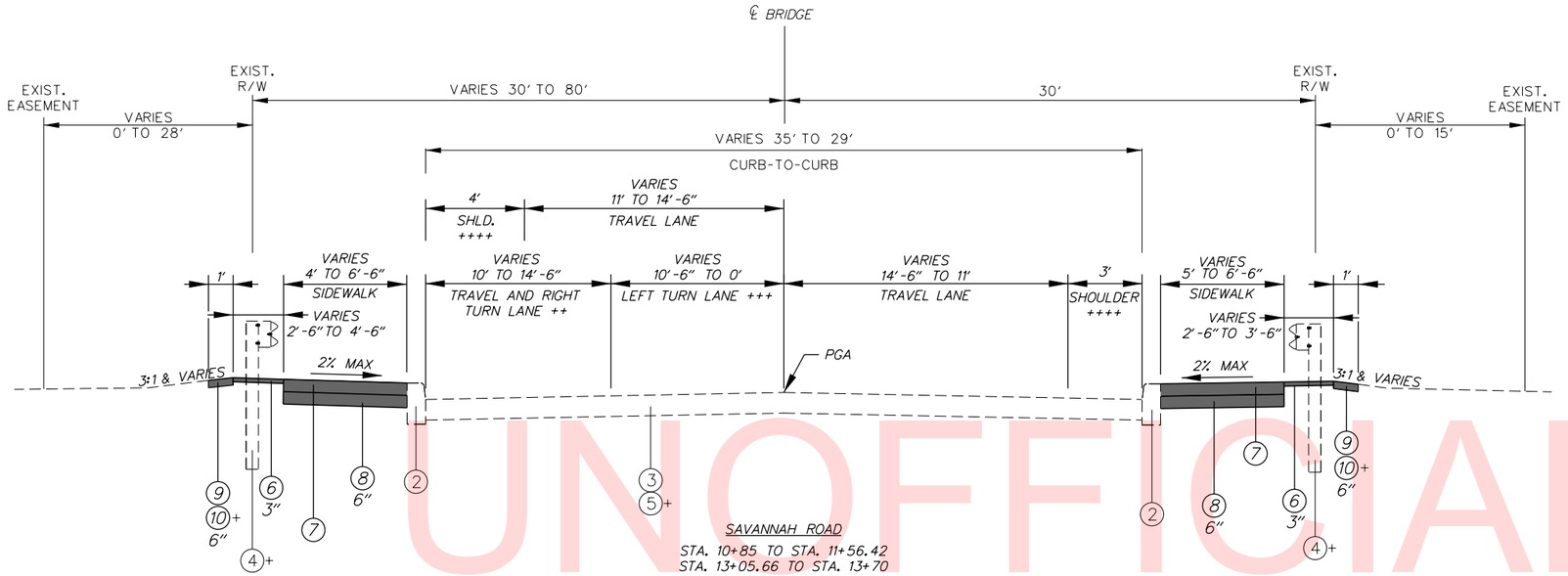
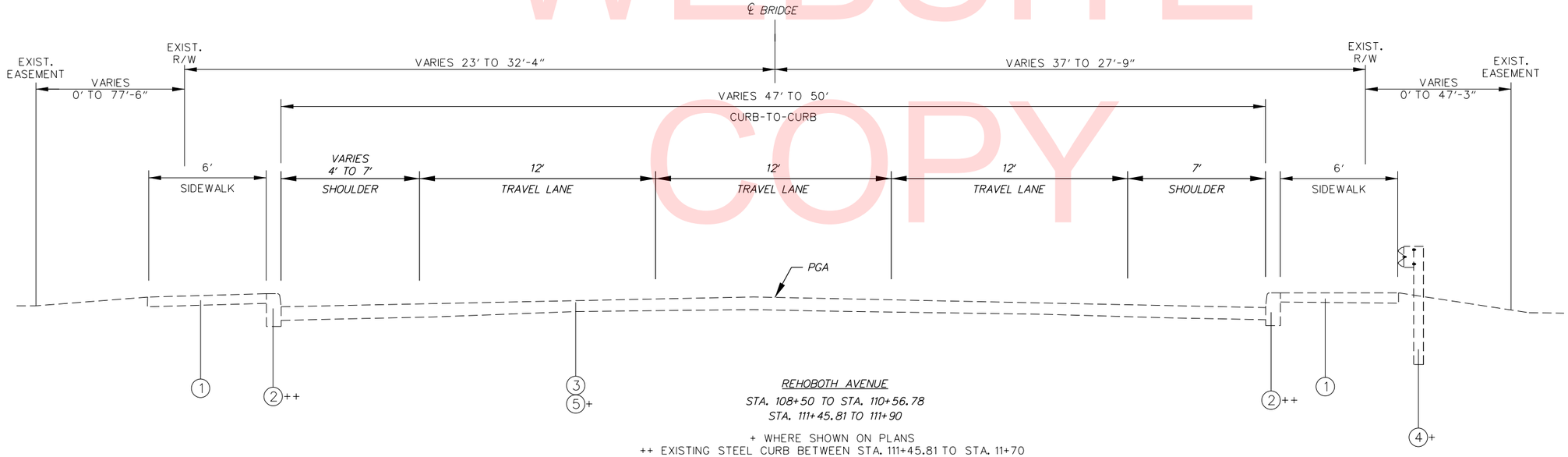


SAVANNAH ROAD
STA. 10+85 TO STA. 11+56.42
STA. 13+05.66 TO STA. 13+70

\+ WHERE SHOWN ON PLANS
++ RIGHT TURN LANE ENDS AT STA. 11+05
+++ LEFT TURN LANE ENDS AT STA. 11+56.42
++++ SHOULDERS BEGIN AT STA. 13+05.66

LEGEND

1. EXISTING PCC SIDEWALK, 6″ TO REMAIN
2. EXISTING PCC CURB TO REMAIN
3. EXISTING ASPHALT PAVEMENT
4. EXISTING STEEL GUARDRAIL & POST TO REMAIN
5. EXISTING PCC PAVEMENT
6. *ITEM 401005 - ASPHALT CONCRETE MAINTENANCE PAVEMENT*
7. *ITEM 705002 - PCC SIDEWALK, 6″*
8. *GRADED AGGREGATE BASE COURSE, TYPE B, (INCIDENTAL TO ITEM 705002)*
9. *ITEM 908014 - SEED AS REQUIRED*
10. *ITEM 908004 - TOPSOIL, 6″ DEPTH*



REHOBOTH AVENUE
STA. 108+50 TO STA. 110+56.78
STA. 111+45.81 TO 111+90

\+ WHERE SHOWN ON PLANS
++ EXISTING STEEL CURB BETWEEN STA. 111+45.81 TO STA. 11+70

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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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. 3-153 /3-154
DESIGNED BY: KK
CHECKED BY: JW

TYPICAL SECTIONS

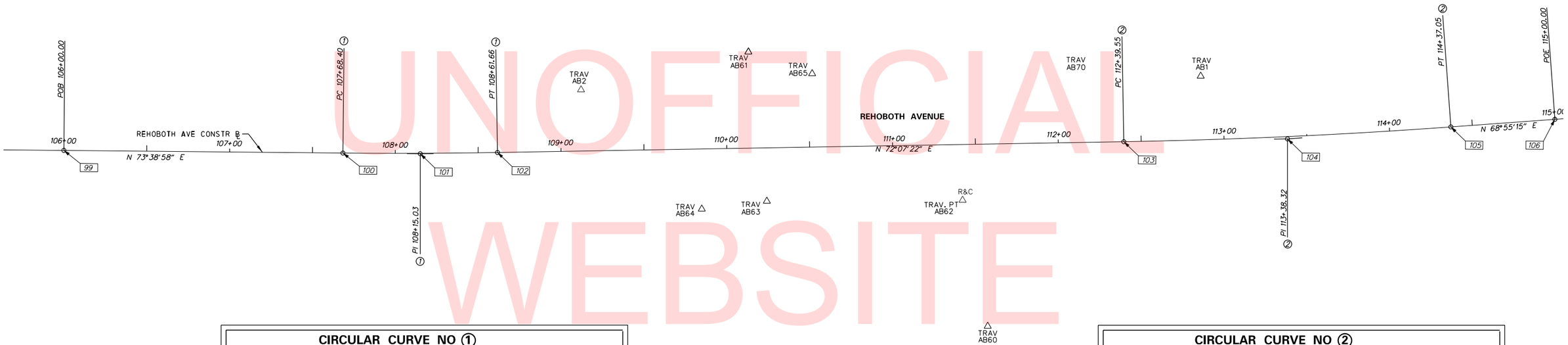
G-3
SHEET NO. 4
TOTAL SHTS. 180

HORIZONTAL / VERTICAL CONTROL DATA

POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
T. P. AB1	112+87.16	38.35 LT	260,417.7707	748,739.0763	24.05
T. P. AB2	109+12.71	36.84 LT	260,301.2436	748,383.7703	23.74
T. P. AB60	111+55.54	109.76 RT	260,236.2635	748,659.8717	22.99
T. P. AB61	110+14.02	57.97 LT	260,352.4487	748,473.6996	24.05
T. P. AB62	111+41.65	33.55 RT	260,304.5281	748,623.2608	5.45
T.P. AB63	110+26.06	22.86 RT	260,279.2205	748,509.9669	8.35
T.P. AB64	109+84.24	36.20 RT	260,253.6876	748,474.2623	23.79
T.P. AB65	110+52.23	44.19 LT	260,351.0650	748,514.2938	9.08
T.P. AB70	112+20.10	47.68 LT	260,405.9233	748,672.9841	24.54

CONSTRUCTION ALIGNMENT CONTROL

POINT	STATION	OFFSET	NORTHING	EASTING
99	106+00.00	0.00	260,175.6605	748,095.7724
100	107+68.40	0.00	260,223.0685	748,257.3659
101	108+15.03	0.31	260,236.1951	748,302.1087
102	108+61.66	0.00	260,250.5089	748,346.4859
103	112+39.55	0.00	260,366.5126	748,706.1320
104	113+38.32	1.38	260,396.8411	748,800.1363
105	114+37.05	0.00	260,432.3598	748,892.3047
106	115+00.00	0.00	260,455.0018	748,951.0465



CIRCULAR CURVE NO ①

Element: Circular

		Station	Northing	Easting
PC	STA (100)	107+68.40	260,223.0685	748,257.3659
PI	STA (101)	108+15.03	260,236.1951	748,302.1087
CC	( )		263,581.5193	747,272.0701
PT	(102)	108+61.66	260,250.5089	748,346.4859

Radius:	3,500.000
Delta:	1°31'35.57" LEFT
Degree of Curvature (Arc):	1°38'13.28"
Length:	93.25
Tangent:	46.63
Chord:	93.25
Middle Ordinate:	0.31
External:	0.31
Tangent Direction:	N 73°38'58.08" E
Radial Direction:	S 16°21'01.91" E
Chord Direction:	N 72°05'10.29" E
Radial Direction:	S 17°52'37.49" E
Tangent Direction:	N 72°07'22.51" E

CIRCULAR CURVE NO ②

Element: Circular

		Station	Northing	Easting
PC	STA (103)	112+39.55	260,366.5126	748,706.1320
PI	STA (104)	113+38.32	260,396.8411	748,800.1363
CC	( )		263,738.3690	747,618.2747
PT	(105)	114+37.05	260,432.3598	748,892.3047

Radius:	3,543.000
Delta:	3°11'37.96" LEFT
Degree of Curvature (Arc):	1°37'01.75"
Length:	197.50
Tangent:	98.77
Chord:	197.47
Middle Ordinate:	1.37
External:	1.37
Tangent Direction:	N 72°07'07.73" E
Radial Direction:	S 17°52'52.26" E
Chord Direction:	N 70°31'18.75" E
Radial Direction:	S 21°04'30.23" E
Tangent Direction:	N 68°55'29.77" E

DATUM REFERENCE

HORIZONTAL - THIS PROJECT IS REFERENCED TO THE DELAWARE STATE PLANE COORDINATE SYSTEM (NAD83/91)

VERTICAL - THIS PROJECT IS REFERENCED TO NAVD88

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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

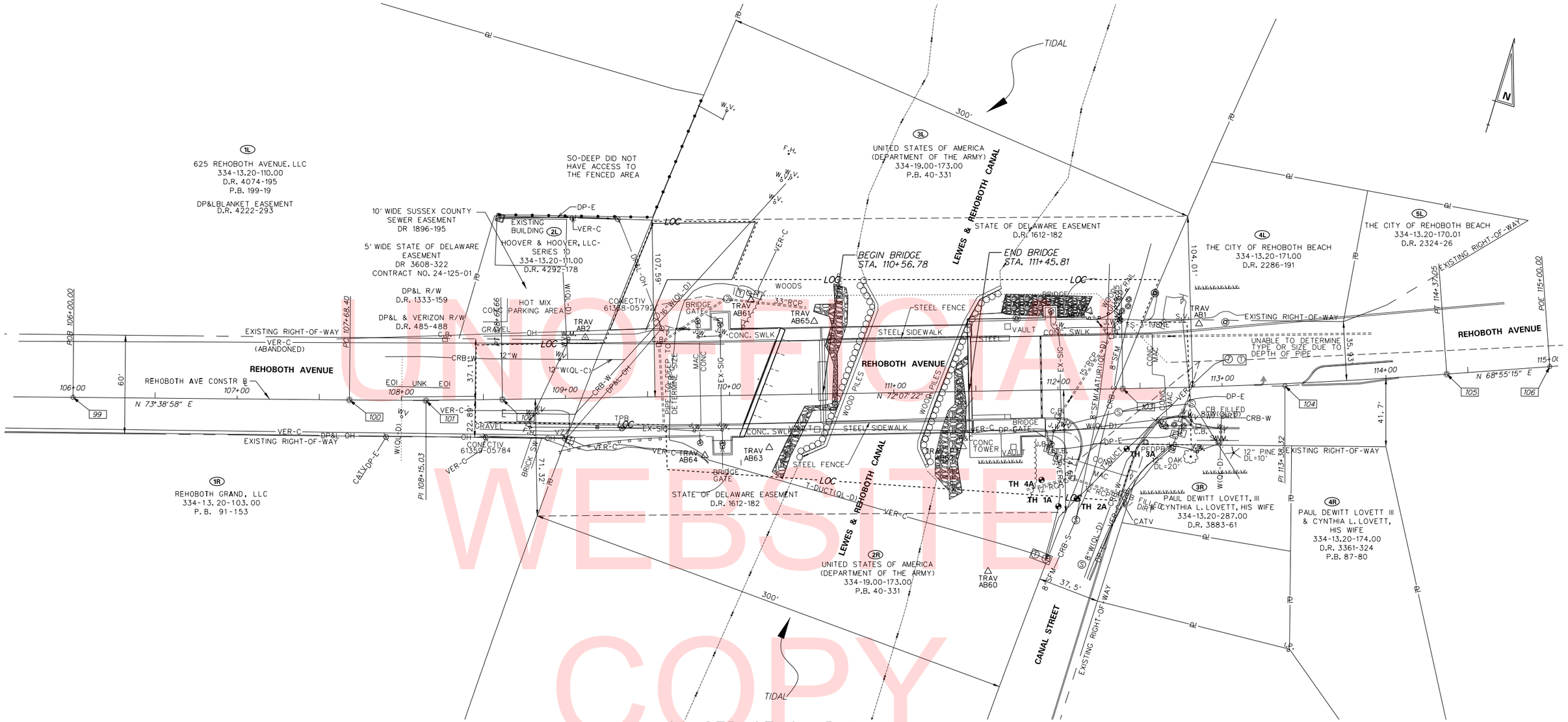
SCALE
0 30 60 90
FEET

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:	KK
CHECKED BY:	JW

REHOBOTH AVENUE BRIDGE
HORIZONTAL AND
VERTICAL CONTROL

	RH-1
SHEET NO.	5
TOTAL SHTS.	180



UTILTIY TEST PITS NOTES

1. *TOP OF UTILITY ELEVATION IN TH 1A = 20.46' (2.36' BELOW GRADE).*
2. *TWO 4¼" OD PLASTIC TELEPHONE CONDUIT LOCATED IN TH 1A.*
3. *TOP OF UTILITY ELEVATION IN TH 2A = 20.10' (2.63' BELOW GRADE). BOTTOM ELEVATION = 19.35' AT THIS LOCATION.*
4. *SIX 4¼" PLASTIC TELEPHONE CONDUITS LOCATED IN TH 2A, SPREAD OVER 1.75' WIDTH.*
5. *SIX 4¼" PLASTIC TELEPHONE CONDUITS LOCATED IN TH 3A AT EL. 20.85' (2.36' BELOW EXISTING GRADE) SPREAD OVER 2.0' WIDTH.*
6. *12" RCP STORM LINE LOCATED AT EL. 20.26 (3.10' BELOW EXISTING GRADE) LOCATED IN TH 4A.*

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

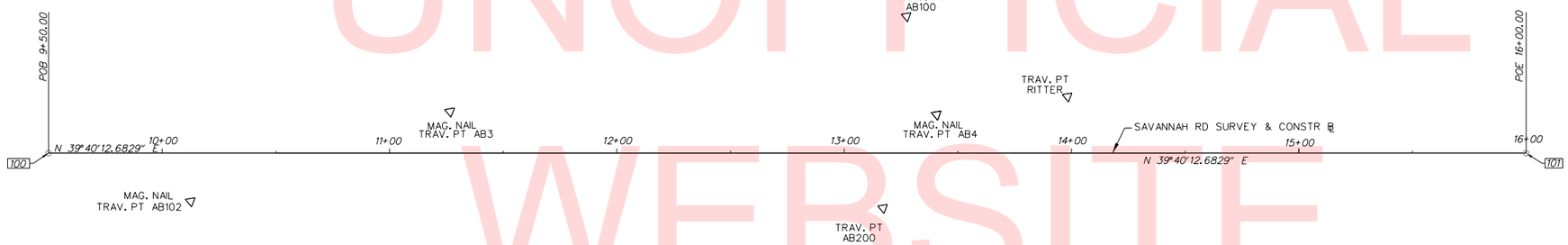
SCALE 0 30 60 90 FEET

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:	KK
CHECKED BY:	JW

REHOBOTH AVENUE BRIDGE CONSTRUCTION PLAN

	RH-2
SHEET NO.	6
TOTAL SHTS.	180



HORIZONTAL / VERTICAL CONTROL DATA

POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
T.P. AB3	11+64.62	-18.22	282,580.3401	735,642.8880	19.65
T.P. AB4	13+78.69	-16.93	282,744.2921	735,780.5413	19.18
T.P. AB5	11+00.98	121.50	282,442.1616	735,709.8118	10.61
T.P. AB70	11+66.79	-83.63	282,623.7684	735,593.9283	8.87
T.P. AB100	13+65.44	-60.12	282,761.6693	735,738.8348	4.36
T.P. AB101	11+53.88	-81.29	282,612.3387	735,587.4886	9.00
T.P. AB102	10+50.51	21.22	282,467.3309	735,600.3998	14.28
RITTER	14+36.25	-24.85	282,793.6600	735,811.1900	16.84
T.P. AB200	13+55.07	24.14	282,699.8997	735,797.0791	20.31

CONSTRUCTION ALIGNMENT CONTROL

POINT	STATION	OFFSET	NORTHING	EASTING
100	9+50.00	0	282,403.5118	735,519.9103
101	16+00.00	0	282,826.8643	735,871.0124

DATUM REFERENCE

HORIZONTAL - THIS PROJECT IS REFERENCED TO THE DELAWARE STATE PLANE COORDINATE SYSTEM (NAD83/91)

VERTICAL - THIS PROJECT IS REFERENCED TO NAVD88

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE
0 30 60 90
FEET

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:	KK
CHECKED BY:	JW

SAVANNAH ROAD BRIDGE
HORIZONTAL AND
VERTICAL CONTROL

	SH-1
SHEET NO.	7
TOTAL SHTS.	180

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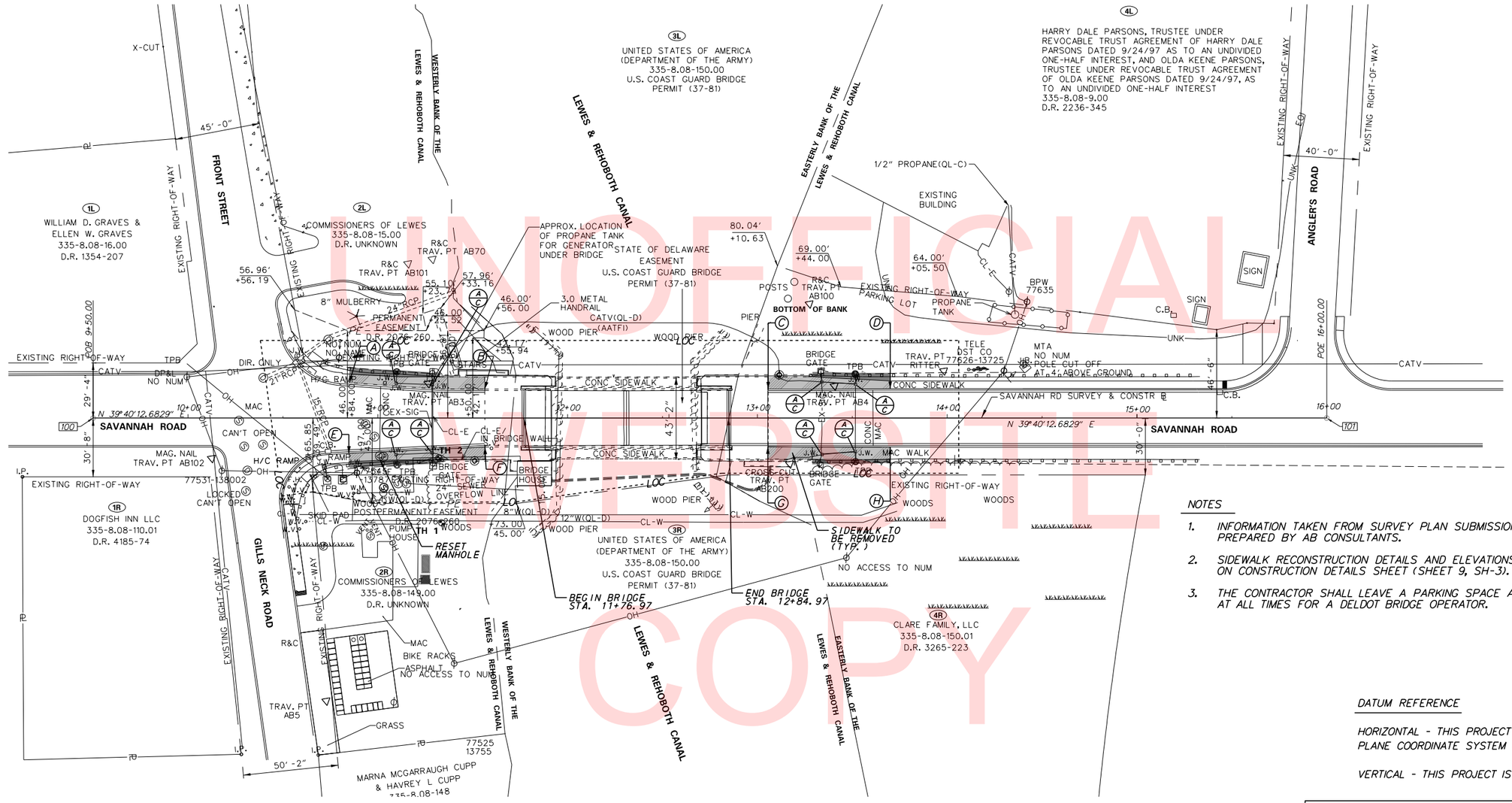

NOTES

1. INFORMATION TAKEN FROM SURVEY PLAN SUBMISSION PREPARED BY AB CONSULTANTS.
2. SIDEWALK RECONSTRUCTION DETAILS AND ELEVATIONS ARE SHOWN ON CONSTRUCTION DETAILS SHEET (SHEET 9, SH-3).
3. THE CONTRACTOR SHALL LEAVE A PARKING SPACE AVAILABLE AT ALL TIMES FOR A DELDOT BRIDGE OPERATOR.

DATUM REFERENCE

HORIZONTAL - THIS PROJECT IS REFERENCED TO THE DELAWARE STATE PLANE COORDINATE SYSTEM (NAD83/91)

VERTICAL - THIS PROJECT IS REFERENCED TO NAVD88

SIDEWALK RECONSTRUCTION LIMITS

POINT	STATION	OFFSET	NORTHING	EASTING
A	10+85.00	-18.59	282,548.5285	735,616.0208
B	11+56.37	-15.29	282,601.3548	735,664.1294
C	13+05.66	-15.23	282,716.2282	735,759.4770
D	13+70.00	-15.41	282,765.8723	735,800.4030
E	10+84.79	18.61	282,524.6266	735,644.4655
F	11+56.44	15.31	282,581.8679	735,687.7227
G	13+05.51	15.19	282,696.6986	735,782.7898
H	13+70.00	15.30	282,746.2655	735,824.0445

UTILITY TEST HOLE SCHEDULE

NO.	UTILITY	STATION	OFFSET	GRND EL.	COVER	O.D. & MATERIAL
1	WATER	11+33.70	55.2' RT	9.49'	9.09'	12" METAL
2	WATER	11+36.30	21.1' RT	20.00'	3.73'	1" COPPER

** TEST PIT INFORMATION PROVIDED BY SO-DEEP INC.

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE
0 30 60 90
FEET

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:	KK
COUNTY	CHECKED BY:	JW
SUSSEX		

SAVANNAH ROAD BRIDGE CONSTRUCTION PLAN

SH-2
SHEET NO. 8
TOTAL SHTS. 180

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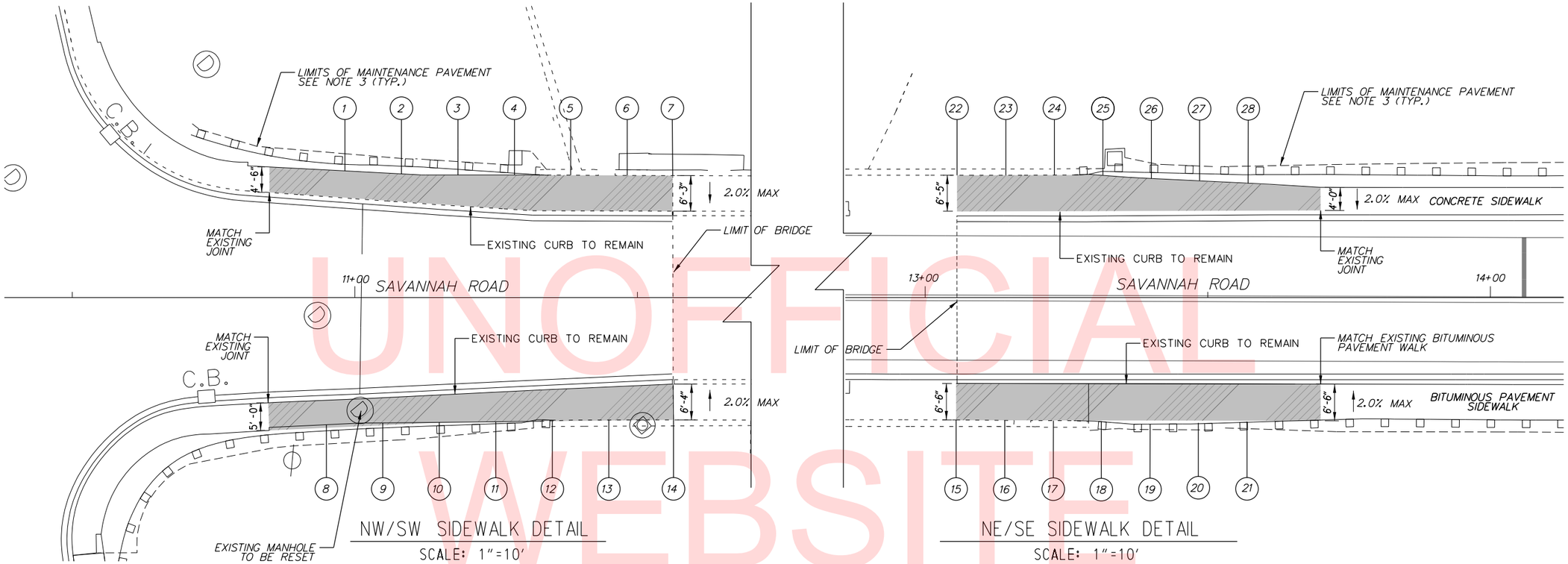

NW/SW SIDEWALK COORDINATES TABLE

POINT	NORTHING	EASTING	ELEVATION
1	282,561.2533	735,621.6255	18.63
2	282,568.6080	735,628.4093	18.99
3	282,576.1832	735,634.9343	19.34
4	282,583.8808	735,641.3217	19.65
5	282,591.5114	735,647.6987	20.01
6	282,599.1821	735,654.1135	20.41
7	282,605.3761	735,659.2937	20.72
8	282,529.7123	735,654.5207	18.41
9	282,537.6828	735,660.5392	18.73
10	282,545.6787	735,666.5770	19.06
11	282,553.4744	735,567.8132	19.40
12	282,561.2470	735,679.1232	19.76
13	282,569.0118	735,685.4271	20.23
14	282,577.8905	735,692.6351	20.76

NE/SE SIDEWALK COORDINATES TABLE

POINT	NORTHING	EASTING	ELEVATION
15	282,692.5388	735,787.7844	20.74
16	282,699.1688	735,793.3026	20.32
17	282,705.7734	735,798.7996	19.90
18	282,712.3004	735,804.2329	19.52
19	282,718.9271	735,809.7475	19.21
20	282,725.4964	735,815.2152	18.90
21	282,732.1043	735,820.7149	18.59
22	282,720.3236	735,754.5389	20.74
23	282,727.0031	735,760.0528	20.32
24	282,733.6151	735,765.5110	19.90
25	282,740.1861	735,771.0408	19.52
26	282,746.4229	735,776.9382	19.25
27	282,752.7219	735,782.7219	18.97
28	282,759.0274	735,788.5523	18.69

NOTES:

1. *FRONT OF SIDEWALK ELEVATIONS TO MATCH THE ADJACENT EXISTING TOP OF CURB ELEVATIONS.*
2. *THE ASPHALT CONCRETE MAINTENANCE PAVEMENT BEHIND THE SIDEWALK SHALL BE REMOVED AND REPLACED AS NEEDED FOR THE INSTALLATION OF NEW SIDEWALK. THE MAINTENANCE PAVEMENT IN OTHER AREAS SHALL BE REPAIRED WHERE DAMAGED AS DIRECTED BY THE ENGINEER. PAYMENT SHALL BE MADE UNDER ITEM NO. 401005.*
3. *ALL WORK INVOLVING CONDUITS SHALL BE PERFORMED ACCORDANCE WITH SECTION 831 OF THE STANDARD SPECIFICATIONS AND STANDARD CONSTRUCTION DETAIL NO. P-4 (2013).*
4. *FOR LOCATION OF JUNCTION WELLS AND CONDUITS, SEE SHEET 158.*

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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SAVANNAH ROAD BRIDGE CONSTRUCTION DETAILS	SH-3
				COUNTY SUSSEX	DESIGNED BY: KK		SHEET NO. 9
					CHECKED BY: JW		TOTAL SHTS. 180

GENERAL NOTES

1. STANDARDS AND SPECIFICATIONS:

   1.1 - AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION WITH 2015 AND 2016 INTERIMS

   1.2 - AASHTO LRFD MOVABLE HIGHWAY BRIDGE DESIGN SPECIFICATIONS, 2007 EDITION WITH 2008, 2010, 2011, 2014, AND 2015 INTERIM REVISIONS

   1.3 - U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", 2009 EDITION WITH INTERIMS

   1.4 - DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 2011 EDITION WITH INTERIMS

   1.5 - DELAWARE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", AUGUST 2016 EDITION

   1.6 - DELAWARE DEPARTMENT OF TRANSPORTATION "BRIDGE DESIGN MANUAL", 2016 EDITION

   1.7 - AASHTO/AWS D1.5M/D1.5:2015 BRIDGE WELDING CODE, 7TH EDITION

2. DESIGN LIVE LOADS: AASHTO LRFD HL-93 AND DELDOT STANDARD LEGAL AND PERMIT LOADS IN ACCORDANCE WITH DELDOT BRIDGE DESIGN MANUAL.

3. 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 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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

1. STEEL:

   1.1 - 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.

   1.2 - ALL FIELD CONNECTIONS SHALL BE BOLTED USING ASTM A325 TYPE 1 HIGH STRENGTH BOLTS (SLIP-CRITICAL), UNLESS NOTED OTHERWISE ON PLANS.

   1.3 - ALL WELDING ELECTRODES SHALL BE E70 SERIES CONFORMING TO AWS D1.5. THE MINIMUM SIZE OF FILLET WELDS SHALL BE ⅜" 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.

2. CONCRETE: ALL REPAIR CONCRETE SHALL BE CLASS A MIX, UNLESS NOTED OTHERWISE ON PLANS OR SPECIFICATIONS.

3. 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

1. 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.
2. REPLACE THE SIDEWALK GRATING, TOP PLATE AND EPOXY GRIT SURFACING ON THE BASCULE LEAF, AND TRIM OR REPLACE THE SIDEWALK END ANGLES.
3. 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.
4. REPLACE JOINT SEAL AT THE JUNCTION OF WEST APPROACH AND WEST ABUTMENT; AND AT THE JUNCTION OF EAST APPROACH AND BASCULE PIER; AND AT THE EAST EDGE OF GRID DECK WITH NEW HOT POURED SEAL.
5. 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.
6. REPLACE PREFORMED JOINT SEALER AT THE JOINTS BETWEEN APPROACH SIDEWALK SLAB LIMITS; AND BETWEEN APPROACH SIDEWALK AND BASCULE PIER WALL WITH NEW COMPRESSION SEAL.
7. INSTALL TEMPORARY MIGRATORY BIRD EXCLUSION NETTING OVER THE ENTIRE UNDERSIDE OF THE SUPERSTRUCTURE.
8. REPLACE FLOOR AND CEILING TILES IN THE OPERATOR'S ROOM.
9. REPLACE EXISTING DOORS IN SWITCHBOARD ROOM AND ENGINE ROOM WITH FIREDOORS.
10. INSTALL TOUCH-UP PAINT AT CONTROL HOUSE INTERIOR LOCATIONS WHERE MAJOR ELECTRICAL WORK WILL BE DONE.
11. 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	504001	CRACK AND JOINT SEALING LESS THAN 3/4 INCH WIDE	LF
5	624014	COMPRESSION SEAL, 2"	LF
6	624013	COMPRESSION SEAL, 1"	LF
7	763623	NETTING, MIGRATORY BIRD EXCLUSION	LS
8, 9, 10, 11	763569	BUILDING RENOVATION	LS

*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

1. 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.
2. 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.
3. REPLACE THE EPOXY FILL IN GRID DECK ON TOP OF ALL FLOORBEAMS OF BASCULE LEAFS.
4. REPLACE THE SIDEWALK GRATING, TOP PLATE, AND EPOXY GRIT SURFACING ON BASCULE LEAFS.
5. 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 GRIDERS TO ACCOMODATE THE NEW CENTER LOCKS. COORDINATE WITH MECHANICAL SCOPE OF WORK.
6. REPAIR ANY DAMAGED PORTIONS OF THE SIDEWALK NEXT TO THE HEEL JOINT.
7. INSTALL RETROFIT PLATES TO FLOORBEAMS, CURBS, AND LOWER BRACES TO RESTORE THE LOAD CARRYING CAPACITY.
8. REPLACE THE BASCULE GIRDER SHELF ANGLE OF EAST LEAF WHICH IS CURRENTLY INTERFERING WITH FIXED SIDEWALK ANGLE. RESTORE THE FULL LEAF OPENING ANGLE.
9. CLEAN AND PAINT USING THREE COAT SYSTEM AREAS OF SECTION LOSS ON THE RACK AND PIN SUPPORT OF THE EAST LEAF.
10. CLEAN AND PAINT USING THREE COAT SYSTEM LATERAL BRACING CONNECTIONS AT MIDSPAN OF ALL FLOORBEAMS IN BASCULE LEAFS.
11. CLEAN AND PAINT (OVERCOAT ONLY) STEEL MEMBERS OF SUPERSTRUCTURE AND DECK.
12. INSTALL NEW STAINLESS STEEL BOLTS AT SIDEWALK HANDRAIL POST CONNECTIONS, AT LOCATIONS WHERE BOLTS ARE MISSING.
13. INSTALL NEW BIRD NETTING AT BOTH BASCULE PIERS NEAR MACHINERY ROOM.
14. INSTALL TEMPORARY MIGRATORY BIRD EXCLUSION NETTING OVER THE ENTIRE UNDERSIDE OF THE SUPERSTRUCTURE.
15. REPLACE PREFORMED JOINT SEALER AT THE JUNCTION OF APPROACH SPANS AND BASCULE PIERS.
16. REPLACE FLOOR AND CEILING TILES IN THE OPERATOR'S ROOM.
17. REPLACE EXISTING DOOR IN SWITCHBOARD ROOM WITH FIRE DOOR.
18. INSTALL TOUCH-UP PAINT AT CONTROL HOUSE INTERIOR LOCATIONS WHERE MAJOR ELECTRICAL WORK WILL BE DONE.
19. REPLACE THE CONTROL HOUSE ROOFING SYSTEM, INCLUDING THE TOP FLASHING, ROOF OVERLAY AND INSULATION. REPAIR ANY DAMAGED ROOF DECKING AS NEEDED.
20. 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.

**COMPENSATION FOR ANY ADDITIONAL STEEL REPAIR WORK NOT SHOWN ON THE PLANS THAT IS REQUESTED AND APPROVED BY DELAWARE DOT WILL BE NEGOTIATED WITH THE CONTRACTOR DURING CONSTRUCTION.

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

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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

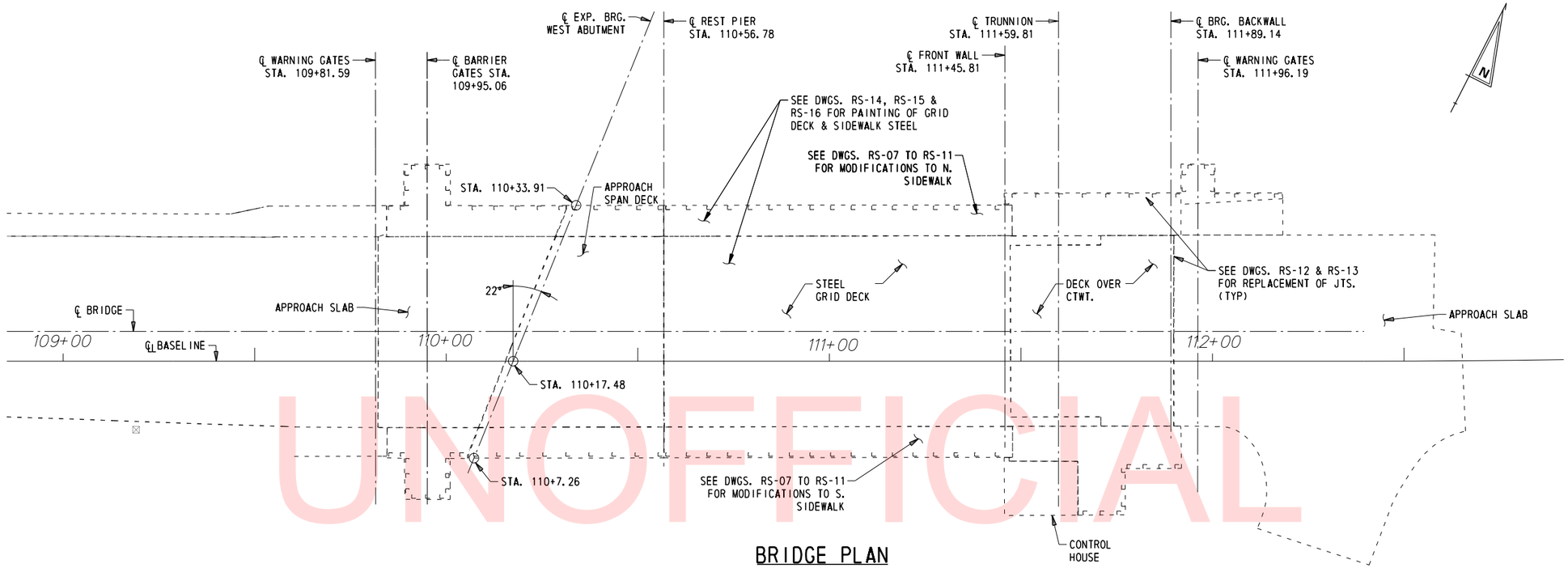
NOT TO SCALE

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

CONTRACT	BRIDGE NO.	3-153 /3-154
T201507602	DESIGNED BY: BKS	
COUNTY	CHECKED BY: RAJ	
SUSSEX		

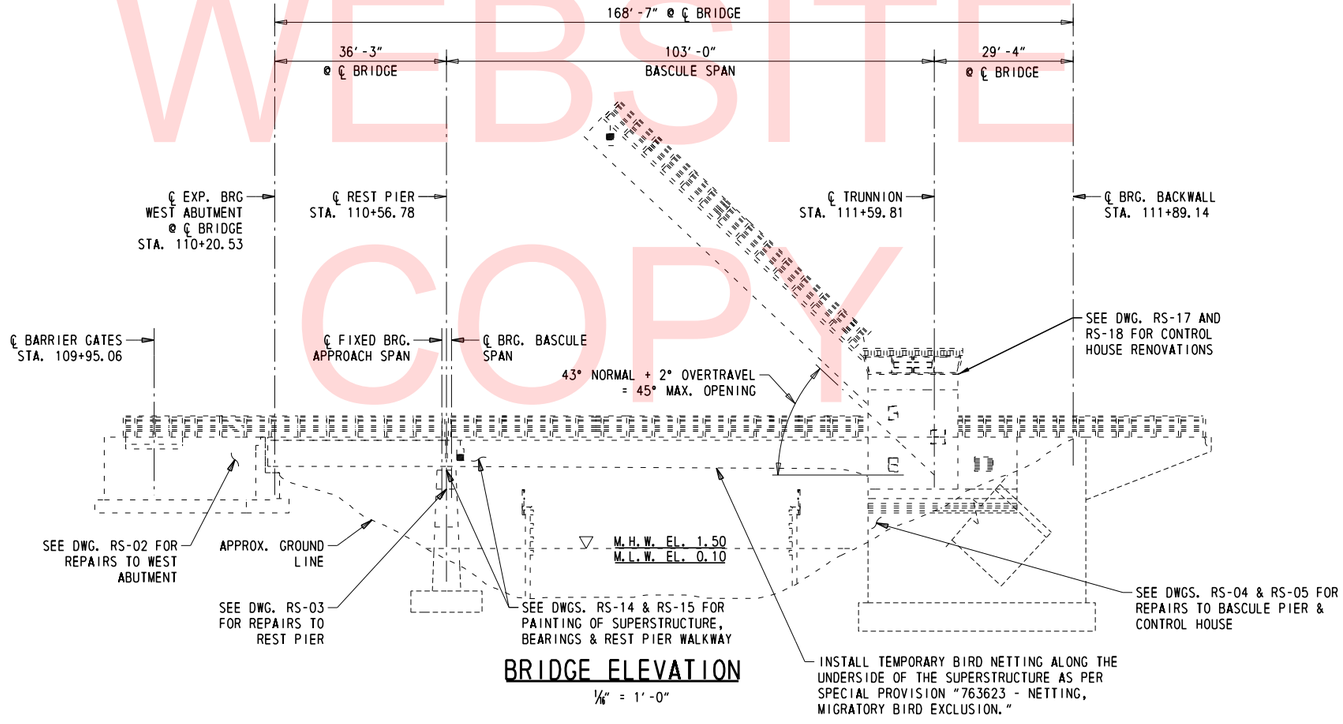
STRUCTURAL
GENERAL NOTES

GS-01	
SHEET NO.	10
TOTAL SHTS.	180



BRIDGE PLAN

1⁄16" = 1'-0"



BRIDGE ELEVATION

1⁄16" = 1'-0"

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	GENERAL PLAN & ELEVATION
				COUNTY SUSSEX	DESIGNED BY: BKS	RS-01
					CHECKED BY: AR	SHEET NO. 11
						TOTAL SHTS. 180

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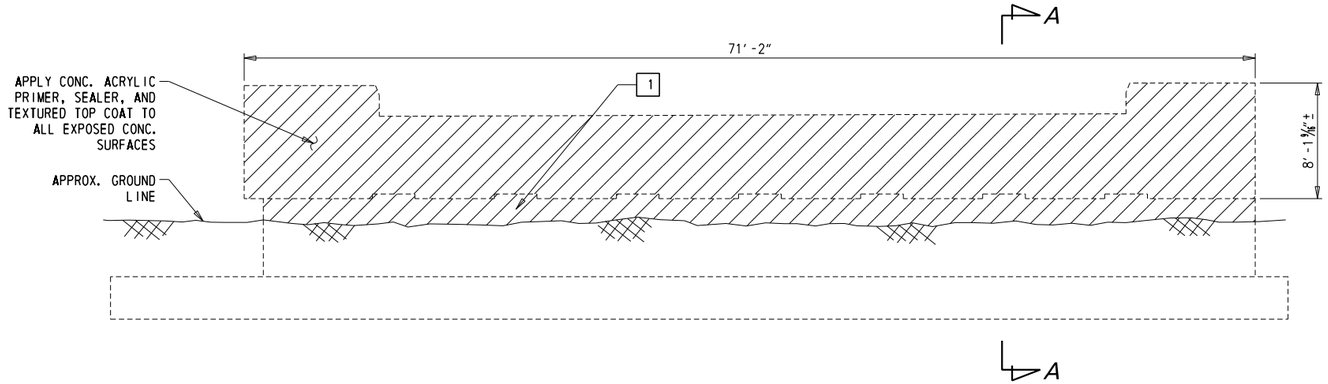
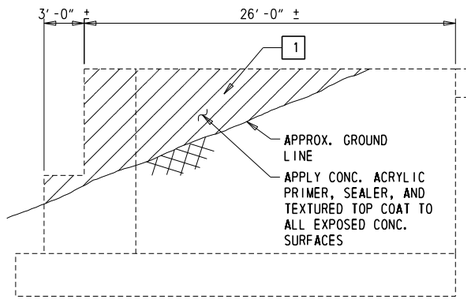
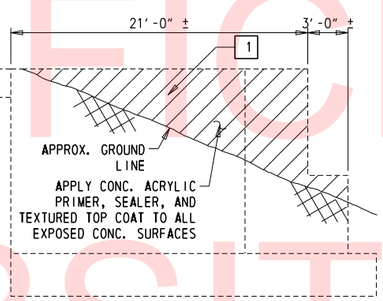


WEST ABUTMENT ELEVATION

NOTE: WINGWALLS NOT SHOWN FOR CLARITY



ABUTMENT NORTH WINGWALL



ABUTMENT SOUTH WINGWALL

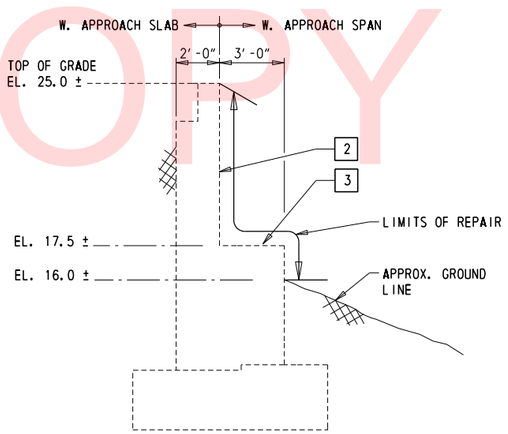
PHOTO NOTES:

1 PHOTO 1: TYPE 1B REPAIR AT ALL CRACKED LOCATIONS ON THE W. ABUT., WINGWALLS & GIRDER SEAT WALL.

2 3 PHOTO 2 & 3: W. ABUT. BACKWALL & GIRDER SEAT AREA EXHIBIT MAP CRACKING & DELAMINATION. TYPE 2 OR TYPE 3 REPAIR IS ANTICIPATED.

NOTES:

1. APPROX. TOTAL LENGTH OF TYPE 1B REPAIR = 50 FT.
2. APPROX. CONC. VOLUME FOR TYP 2 REPAIR = 13 CF AND TYPE 3 REPAIR = 26 CF.
3. APPROX. AREA OF CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT AT ABUT. STEM WALL = 1300 SF; AT N. WINGWALL = 180 SF; AT S. WINGWALL = 180 SF
4. SEE DWG. RS-06 FOR REPAIR DETAILS.



SECTION A-A

PHOTO 1

PHOTO 2

PHOTO 3

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	WEST ABUTMENT CONCRETE REPAIRS	RS-02
				COUNTY SUSSEX	DESIGNED BY: BKS		SHEET NO. 12
					CHECKED BY: AR		TOTAL SHTS. 180

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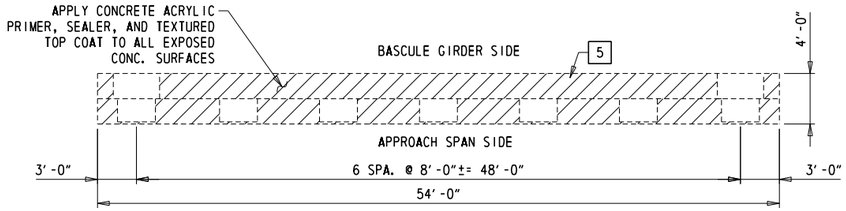
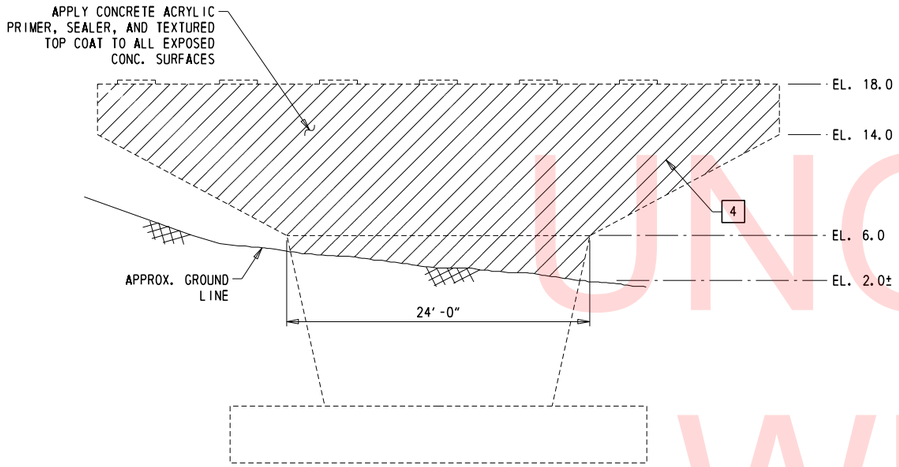
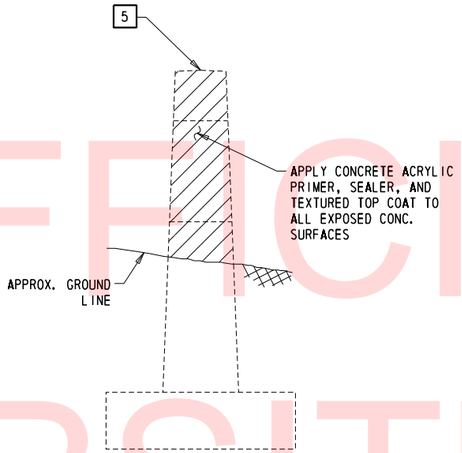


REST PIER PLAN



REST PIER ELEVATION

(LOOKING E.)



REST PIER END VIEW

PHOTO 4

PHOTO 5

PHOTO NOTES:

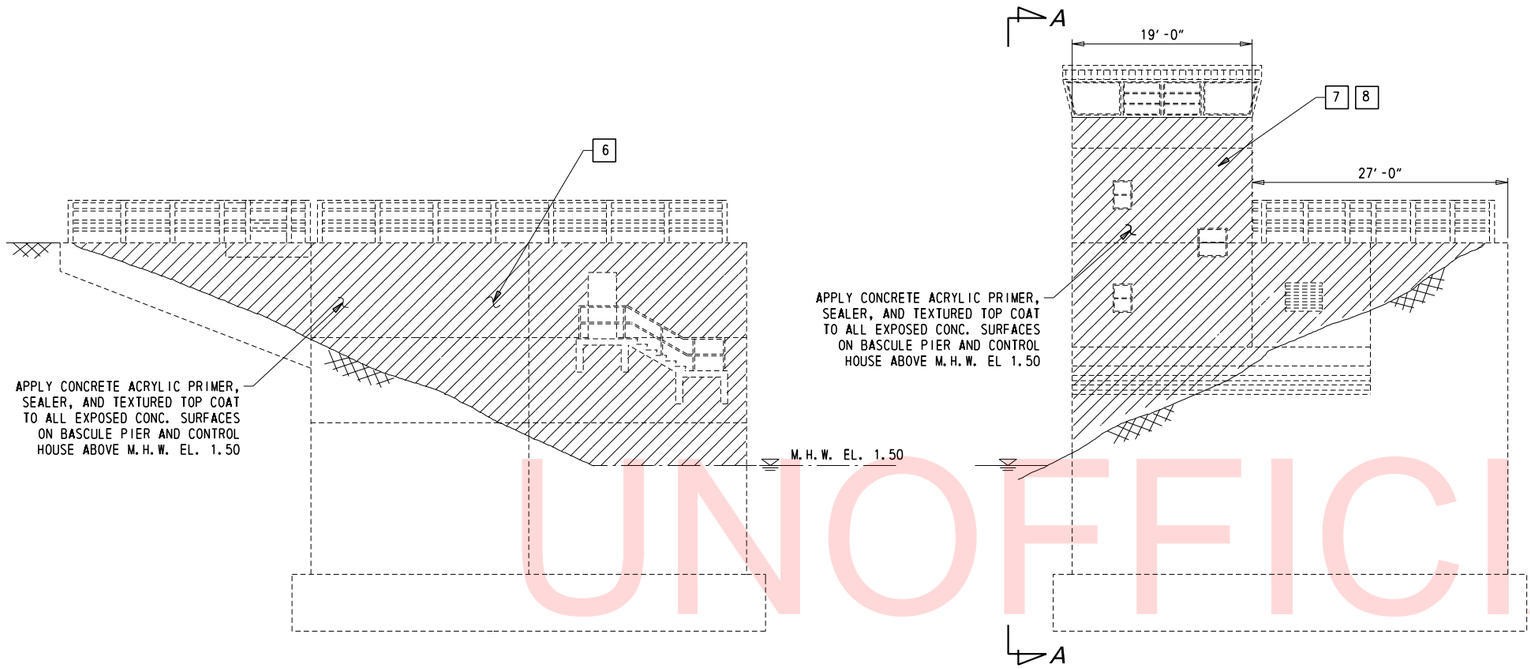
[4] PHOTO 4: W. AND E. FACES OF THE REST PIER EXHIBIT CRACKING & DELAMINATED AREAS. TYPE 2 OR TYPE 3 REPAIR IS ANTICIPATED.

[5] PHOTO 5: REST PIER ENDS & BEARING PEDESTAL LOCATIONS EXHIBIT MAP CRACKING UP TO 1/8" WIDE. TYPE 1A AND 1B REPAIR IS ANTICIPATED.

NOTES:

1. APPROX. TOTAL LENGTH OF TYPE 1A REPAIR = 20 FT.
2. APPROX. TOTAL LENGTH OF TYPE 1B REPAIR = 80 FT.
3. APPROX. CONC. VOLUME FOR TYPE 2 REPAIR = 30 CF AND TYPE 3 REPAIR = 62 CF.
4. APPROX. AREA OF CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT AT FRONT FACES OF REST PIER = 1200 SF; TOP FACE = 200 SF; AT END FACES = 200 SF
5. SEE DWG. RS-06 FOR REPAIR DETAILS.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153 / DESIGNED BY: BKS / CHECKED BY: AR	REST PIER CONCRETE REPAIRS	RS-03 / SHEET NO. 13 / TOTAL SHTS. 180



BASCULE PIER NORTH FACE

BASCULE PIER SOUTH FACE

PHOTO 6

PHOTO 7

PHOTO 8

PHOTO NOTES:

6 PHOTO 6; EXTENSIVE MAP CRACKING OBSERVED ON N. FACE OF THE BASCULE PIER. TYPE 1B REPAIR IS ANTICIPATED.

7 8 PHOTO 7 & 8; EXTENSIVE MAP CRACKING OBSERVED ON ALL FACES OF CONTROL HOUSE. TYPE 1B REPAIR IS ANTICIPATED.

NOTES:

1. APPROX. TOTAL LENGTH OF TYPE 1B REPAIR = 90 FT.
2. APPROX. AREA OF CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT AT N. FACE = 950 SF; AT S. FACE = 700 SF.
3. SEE DWG. RS-06 FOR REPAIR DETAILS.
4. SEE DWG. RS-05 FOR VIEW A-A.

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

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: BKS	
COUNTY	CHECKED BY: AR	
SUSSEX		

BASCULE PIER CONCRETE REPAIRS 1

RS-04	
SHEET NO.	14
TOTAL SHTS.	180

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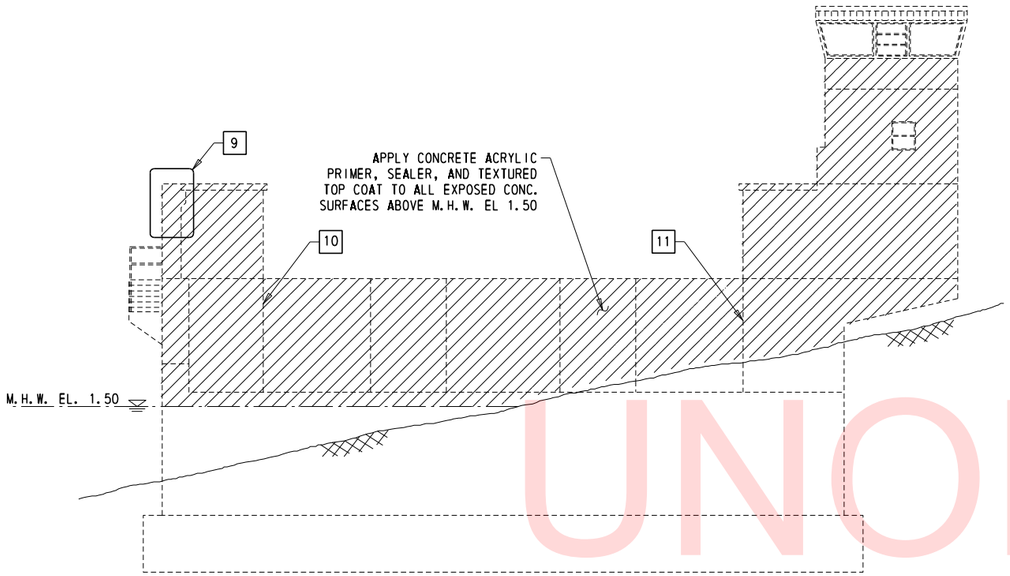


VIEW A-A

PHOTO 9

PHOTO NOTES:

9 PHOTO 9: N. E. CORNER OF BASCULE PIER EXHIBITS CRACKING UP TO ¼" WIDE, SPALLING AND DELAMINATION. TYPE 2 OR 3 REPAIR IS ANTICIPATED.

10 PHOTO 10: EXTENSIVE MAP CRACKING OBSERVED ON W. FACE OF BASCULE PIER BELOW THE CONTROL HOUSE. TYPE 1B REPAIR IS ANTICIPATED AT THIS LOCATION.

11 PHOTO 11: EXTENSIVE MAP CRACKING OBSERVED ON THE PIER. TYPE 1B REPAIR IS ANTICIPATED AT THIS LOCATION.

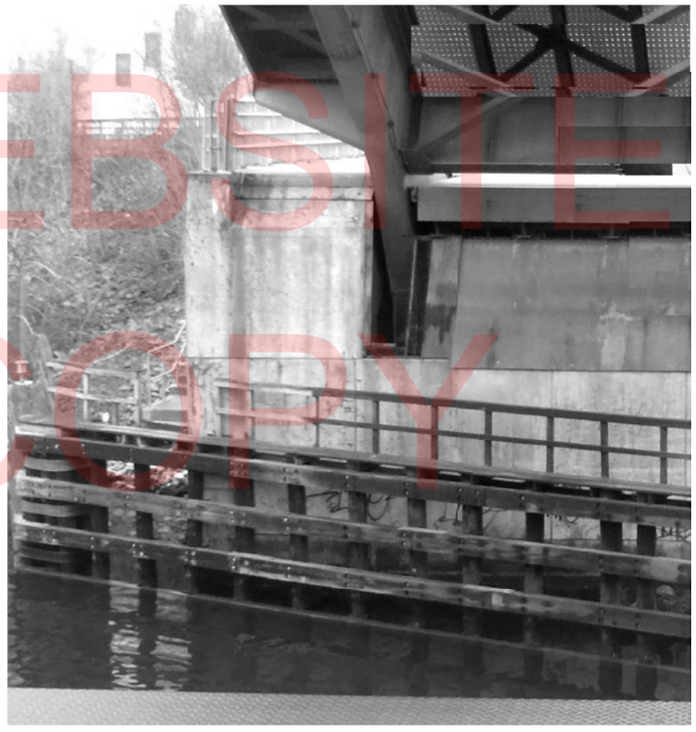


PHOTO 10

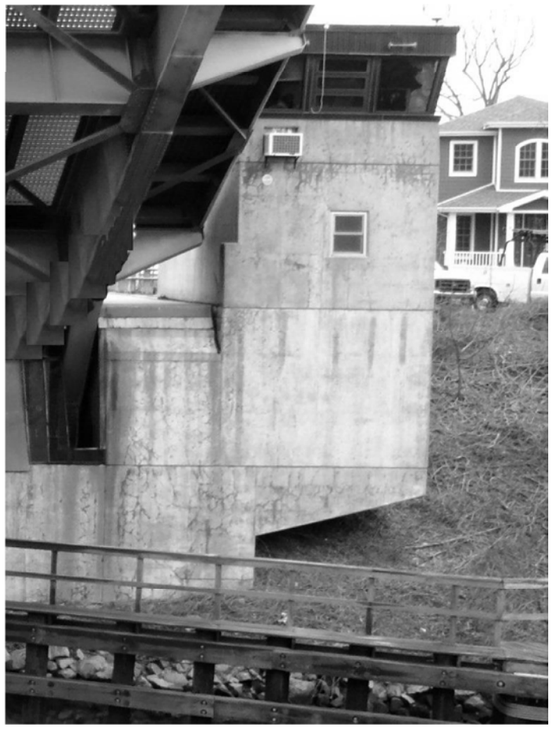
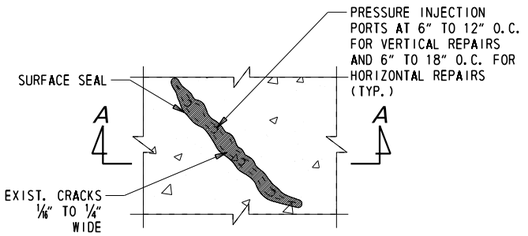


PHOTO 11

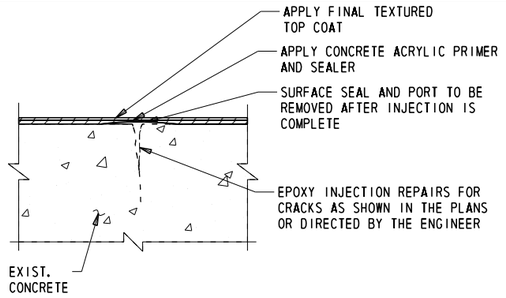
NOTES:

1. APPROX. TOTAL LENGTH OF TYPE 1B REPAIR = 100 FT.
2. APPROX. CONC. VOLUME FOR TYPE 2 REPAIR = 2 CF AND TYPE 3 REPAIR = 2 CF.
3. APPROX. AREA OF CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT AT BASCULE PIER, W. FACE = 1400 SF.
4. SEE DWG. RS-06 FOR REPAIR DETAILS.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	BASCULE PIER CONCRETE REPAIRS 2	RS-05
				COUNTY SUSSEX	DESIGNED BY: BKS		SHEET NO. 15
					CHECKED BY: AR		TOTAL SHTS. 180



VIEW OF REPAIR AREA



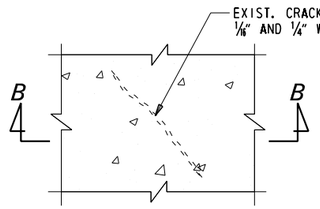
SECTION A-A

TYPE 1A
CRACK REPAIR

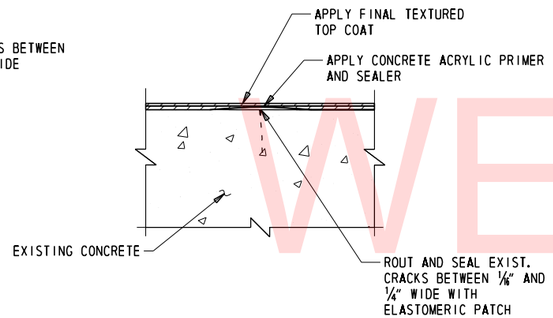
TYPE 1A REPAIR NOTES:

1. TYPE 1A REPAIRS SHALL ONLY APPLY TO ANY LOCATIONS INDICATED ON DWG. RS-2 TO RS-5.
2. ALL WORK INVOLVING METHODS OF "TYPE 1A CRACK REPAIR" SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 628.03A OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 628001 - REPAIR OF CONCRETE STRUCTURES BY EPOXY INJECTION".
3. MATERIALS USED TO ACCOMPLISH THIS WORK SHALL BE IN ACCORDANCE WITH SECTION 628.02 OF THE STANDARD SPECIFICATIONS AND THE FOLLOWING:

   - EPOXY INJECTION USING TWO-COMPONENT EPOXY RESIN ADHESIVE SHALL BE AS PER ACI 503.7-07.



VIEW OF REPAIR AREA



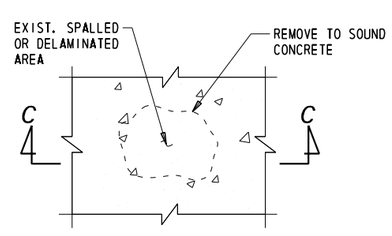
SECTION B-B

TYPE 1B
CRACK REPAIR

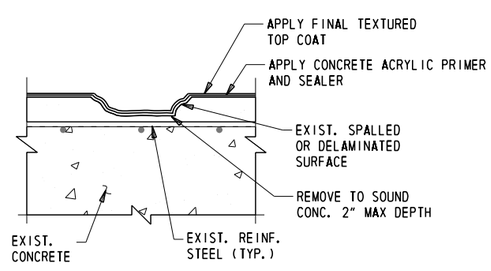
TYPE 1B REPAIR NOTES:

1. ALL CRACKS TO BE REPAIRED, AS DETERMINED BY THE ENGINEER, SHALL BE A TYPE 1B REPAIR UNLESS DIRECTED OTHERWISE.
2. ALL WORK INVOLVING METHODS OF "TYPE 1B CRACK REPAIR" SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 628.03C OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 628020 - ROUT AND SEAL CRACKS".
3. MATERIALS USED TO ACCOMPLISH THIS WORK SHALL BE IN ACCORDANCE WITH SECTION 628.02 OF THE STANDARD SPECIFICATIONS AND THE FOLLOWING:

   - ELASTOMERIC PATCH SHALL BE "112.74 CONCRETE & MASONRY SMOOTH ELASTOMERIC PATCH" BY SHERWIN WILLIAMS OR APPROVED EQUAL. INSTALLATION PROCEDURE SHALL BE AS PER MANUFACTURERS RECOMMENDATION.



VIEW OF REPAIR AREA

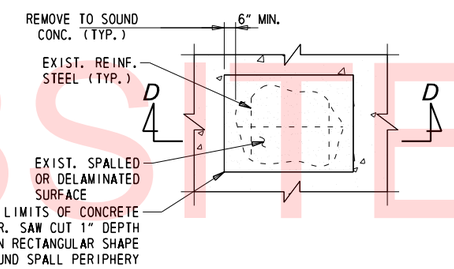


SECTION C-C

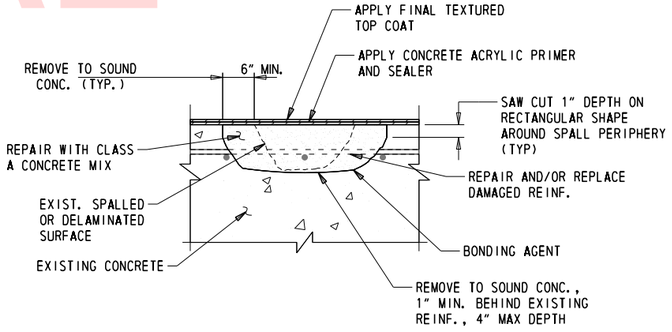
TYPE 2
SHALLOW SPALL REPAIR

TYPE 2 REPAIR NOTES:

1. ALL WORK INVOLVING METHODS OF "SHALLOW SPALL REPAIR" SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 628.03E OF THE STANDARD SPECIFICATIONS. HOWEVER, NOTE THAT NO PATCHING MATERIAL SHALL BE APPLIED FOR REPAIRS AFTER REMOVAL OF SPALL TO SOUND CONCRETE. PAID UNDER "ITEM 628040 - SHALLOW SPALL REPAIR".



VIEW OF REPAIR AREA



SECTION D-D

TYPE 3
DEEP SPALL REPAIR

TYPE 3 REPAIR NOTES:

1. ALL WORK INVOLVING METHODS OF "DEEP SPALL REPAIR" SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 628.03E OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 628041 - DEEP SPALL REPAIR".

PRIMER & TOP COAT NOTES:

1. A CONCRETE ACRYLIC PRIMER AND SEALER SHALL BE APPLIED. INSTALLATION PROCEDURE SHALL BE AS PER MANUFACTURERS RECOMMENDATION. PAID UNDER "613500 - CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT".
2. A TEXTURED TOP COAT THAT IS COMPATIBLE WITH THE SELECTED PRIMER AND SEALER SHALL BE APPLIED. INSTALLATION PROCEDURE SHALL BE AS PER MANUFACTURERS RECOMMENDATION. PAID UNDER "613500 - CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT". TOP COAT COLOR TO MATCH EXISTING. IT IS BELIEVED THAT THE EXISTING COATING IS INSIGNIA WHITE (FEDERAL COLOR FS 37925 OF FED-STD-595C), HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING COLOR BEFORE ORDERING MATERIALS.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153 / DESIGNED BY: BKS / CHECKED BY: RAJ	SUBSTRUCTURE REPAIR SCHEMATIC	RS-06 / SHEET NO. 16 / TOTAL SHTS. 180

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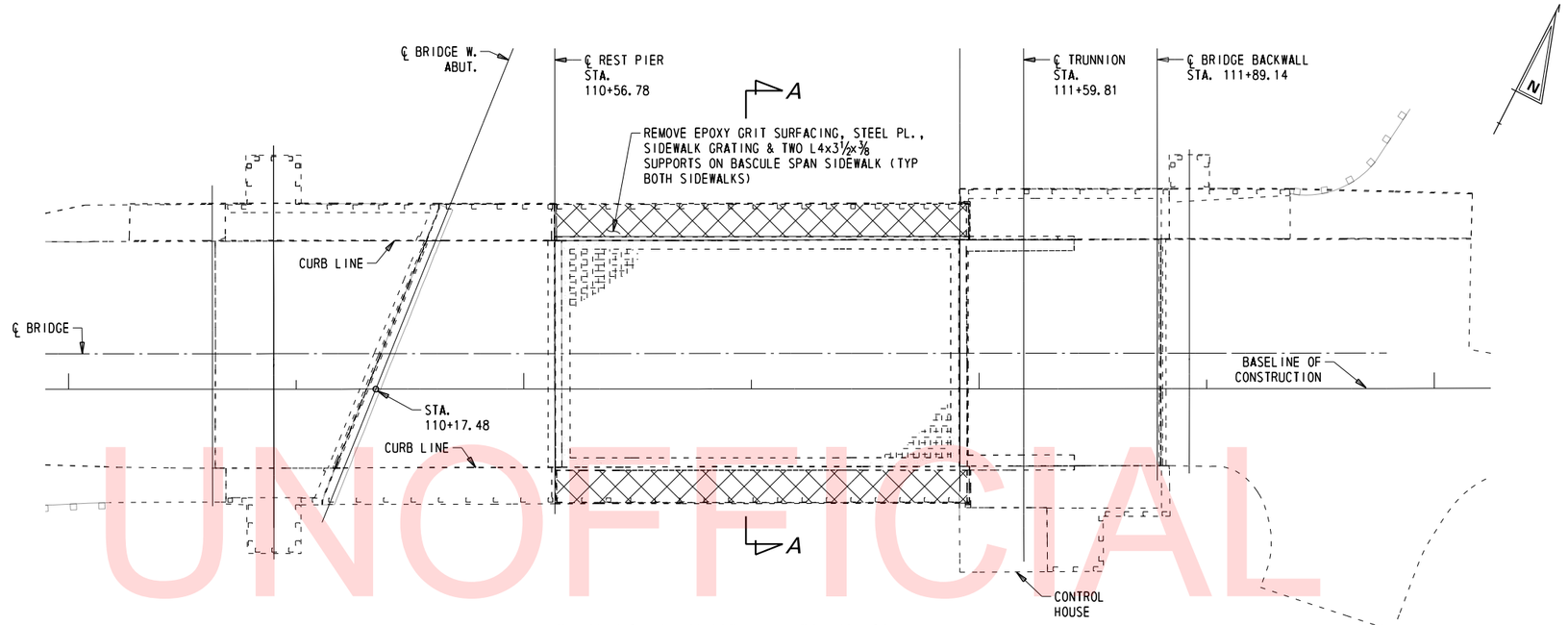
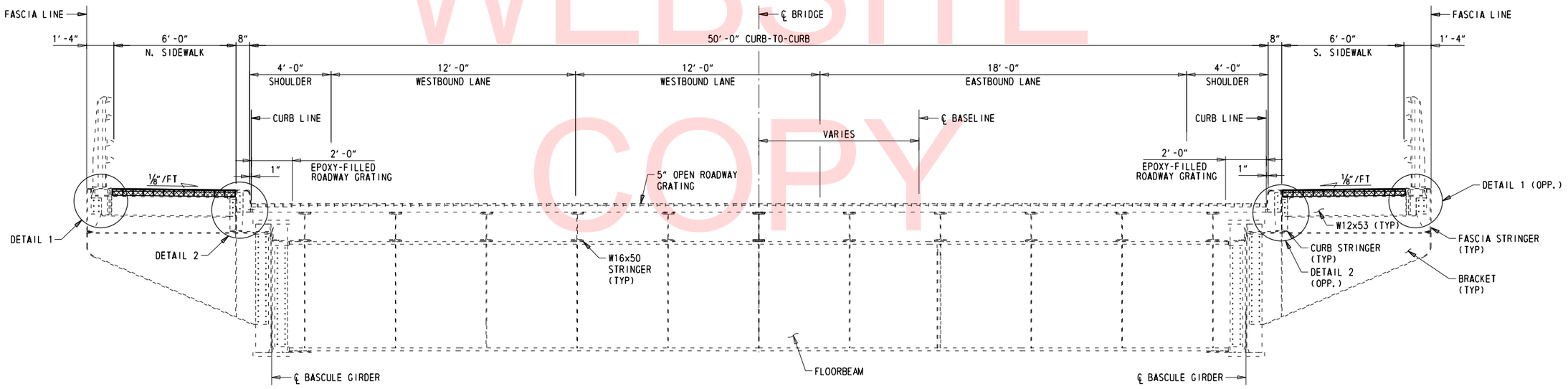


SIDEWALK DEMOLITION PLAN

⅛" = 1'-0"



SECTION A-A

⅜" = 1'-0"

NOTE: SEE DWG. RS-08 FOR DETAIL 1 & 2

LEGEND:

LIMITS OF SIDEWALK REMOVAL

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	SIDEWALK DEMOLITION PLAN
				COUNTY SUSSEX	DESIGNED BY: BKS	RS-07 / SHEET NO. 17 / TOTAL SHTS. 180
					CHECKED BY: AR	

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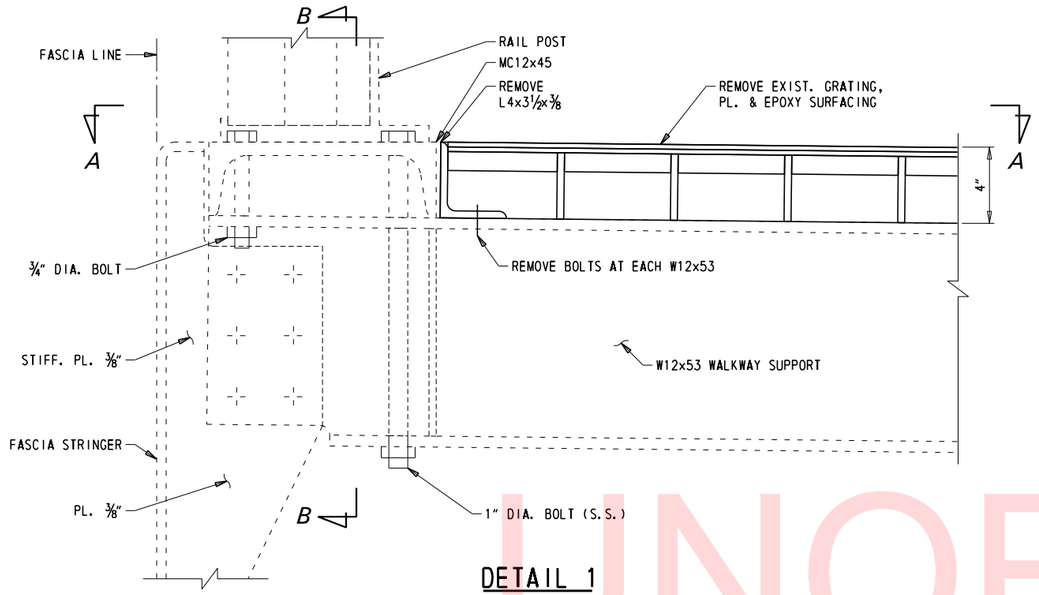
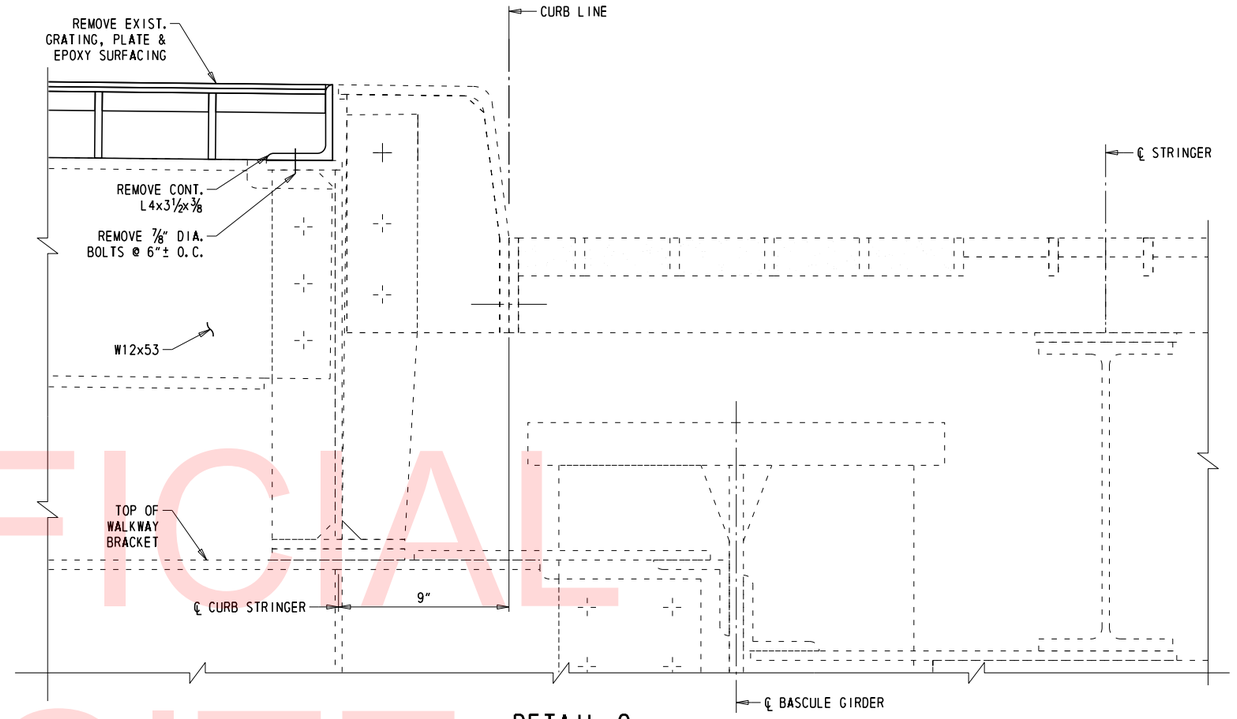


DETAIL 1

3" = 1'-0"

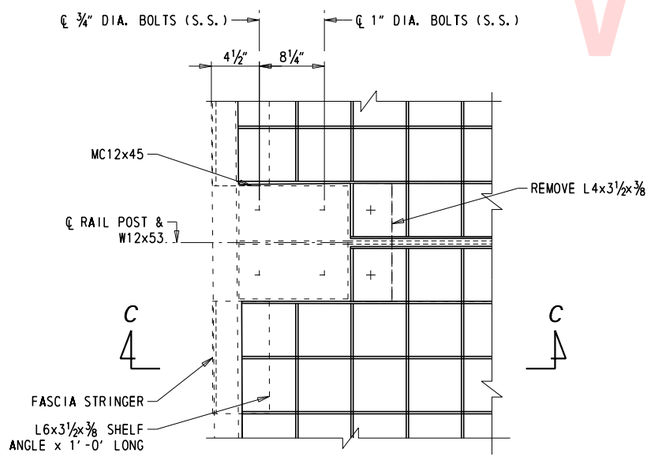
NOTE: N. SIDEWALK IS SHOWN; S. SIDEWALK IS SIM. BUT OPP. HAND.



DETAIL 2

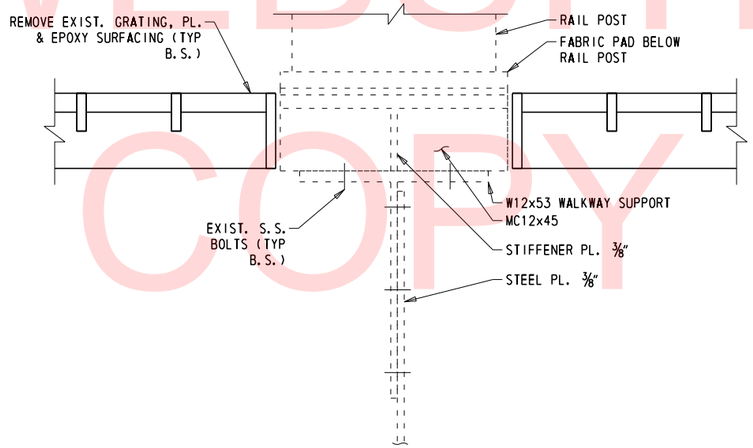
3" = 1'-0"

NOTE: N. SIDEWALK IS SHOWN; S. SIDEWALK IS SIM. BUT OPP. HAND



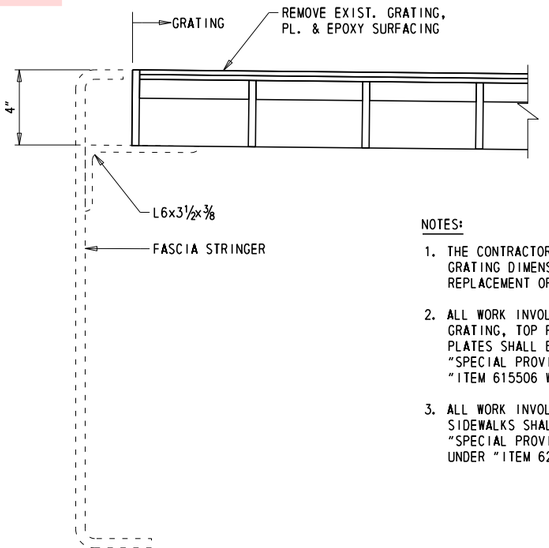
SECTION A-A

3" = 1'-0"



SECTION B-B

3" = 1'-0"



SECTION C-C

3" = 1'-0"

NOTES:

1. THE CONTRACTOR SHALL FIELD MEASURE EXISTING WALKWAY GRATING DIMENSIONS PRIOR TO BEGINNING REMOVAL AND REPLACEMENT OF THE GRATING.
2. ALL WORK INVOLVING REPLACEMENT OF EXISTING SIDEWALK GRATING, TOP PL., L PLATES, AND BOLTS CONNECTING L PLATES SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - WALKWAY GRATING". PAID UNDER "ITEM 615506 WALKWAY GRATING."
3. ALL WORK INVOLVING REPLACEMENT OF EPOXY OVERLAY AT SIDEWALKS SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - EPOXY OVERLAY SYSTEM." PAID UNDER "ITEM 625500 EPOXY OVERLAY SYSTEM."

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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 DEMOLITION DETAILS

RS-08 | SHEET NO. 18 | TOTAL SHTS. 180

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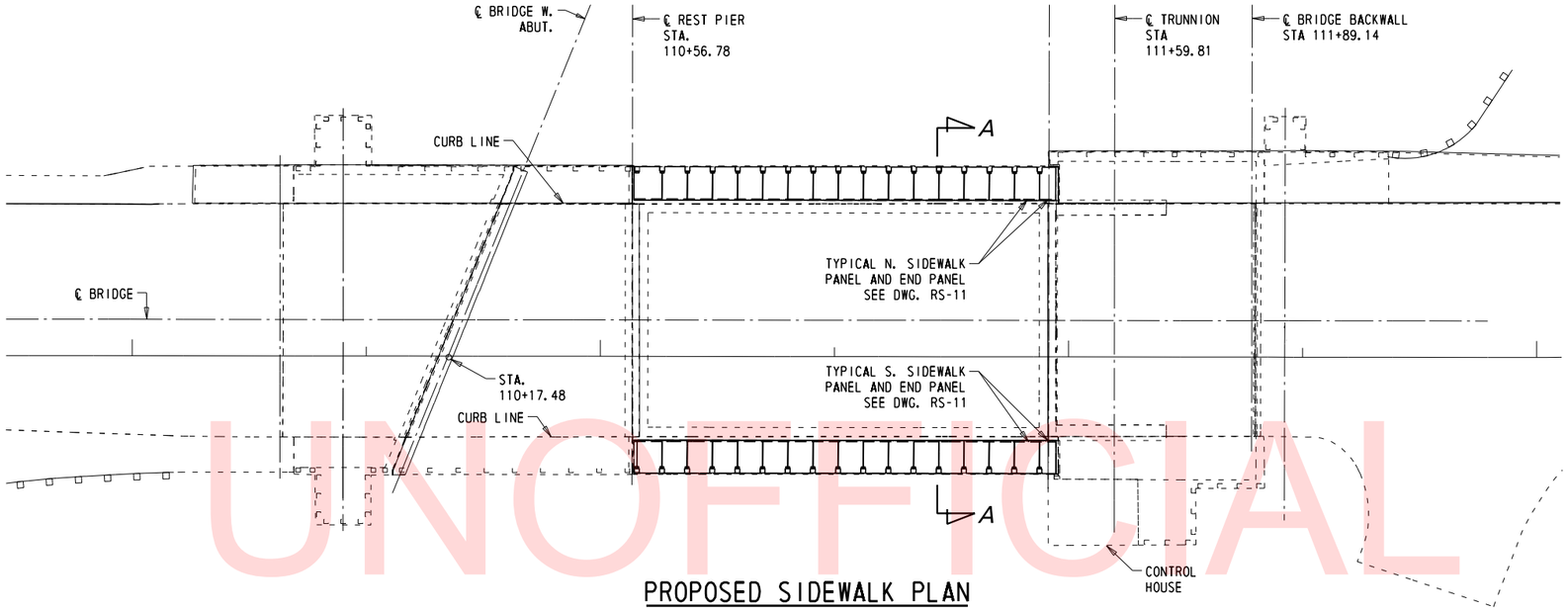
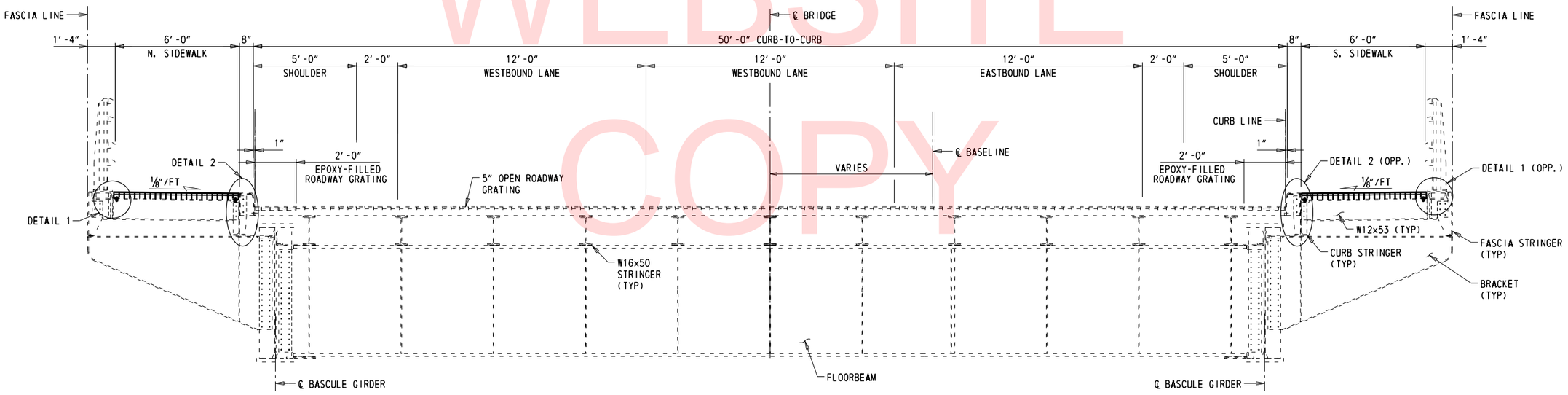


PROPOSED SIDEWALK PLAN

1/16" = 1'-0"



SECTION A-A

3/8" = 1'-0"

NOTE: SEE DWG. RS-10 FOR DETAILS 1 & 2

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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 PLAN	RS-09 / SHEET NO. 19 / TOTAL SHTS. 180

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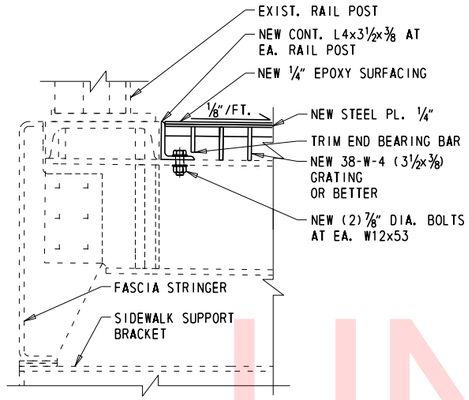
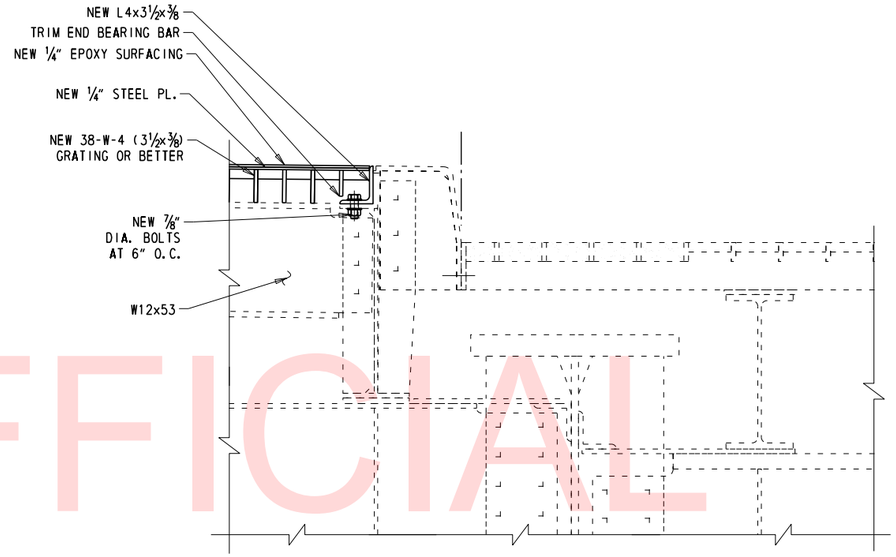


DETAIL 1

1½" = 1'-0"

NOTE: NORTH SIDEWALK IS SHOWN; SOUTH SIDEWALK IS SIM. BUT OPP. HAND



DETAIL 2

1½" = 1'-0"

NOTE: N. SIDEWALK IS SHOWN; S. SIDEWALK IS SIM. BUT OPP. HAND

NOTES:

1. 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.
2. ALL WORK INVOLVING REPLACEMENT OF EXIST. SIDEWALK GRATING AND TOP PL. SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - WALKWAY GRATING." PAID UNDER "ITEM 615506 WALKWAY GRATING."
3. ALL WORK INVOLVING REPLACEMENT OF EPOXY OVERLAY AT SIDEWALKS SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - EPOXY OVERLAY SYSTEM." PAID UNDER "ITEM 625500 - EPOXY OVERLAY SYSTEM". THICKNESS OF EPOXY VARIES, ¼" MIN. - ½" MAX.

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

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 1

	RS-10
SHEET NO.	20
TOTAL SHTS.	180

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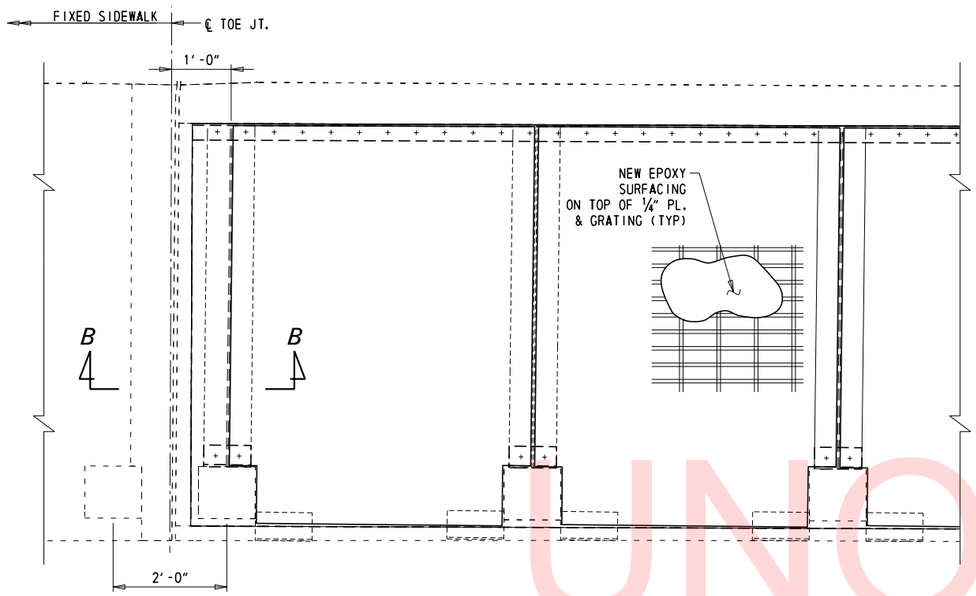
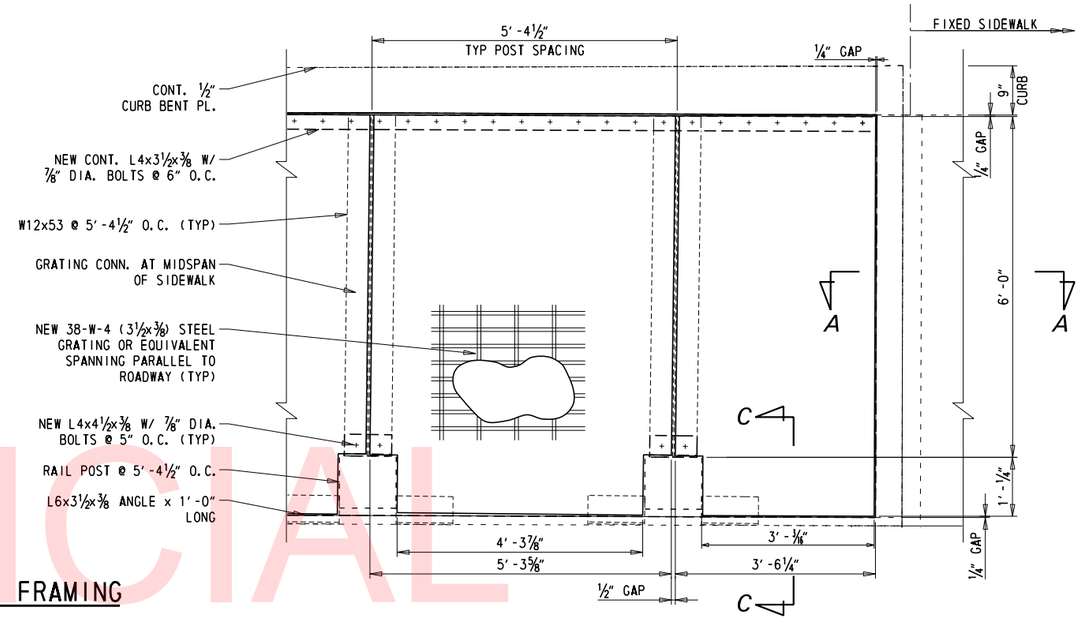
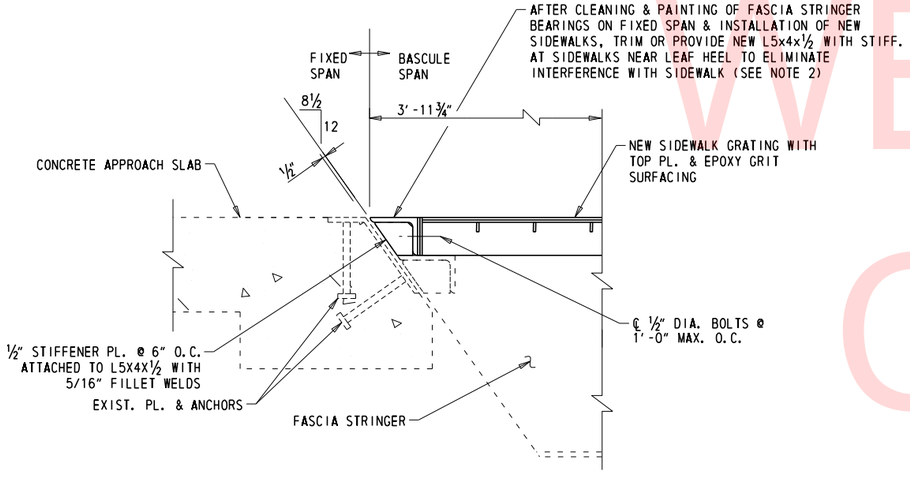




NEW SOUTH SIDEWALK FRAMING

¾" = 1'-0"

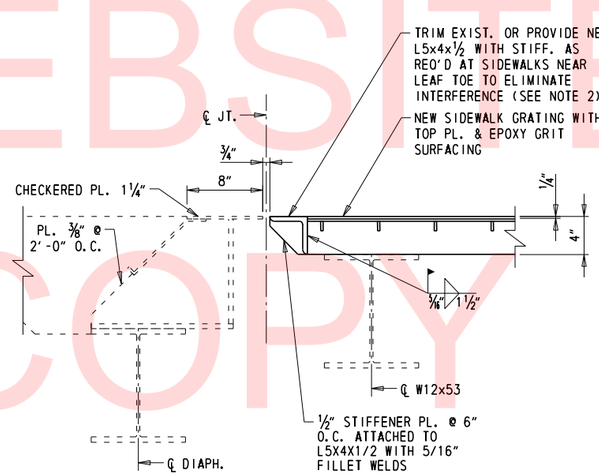
NOTE: TYP. INTERIOR & END GRATING PANEL DIMENSIONS AS SHOWN; N. SIDEWALK SIMILAR



SECTION A-A

1½" = 1'-0"

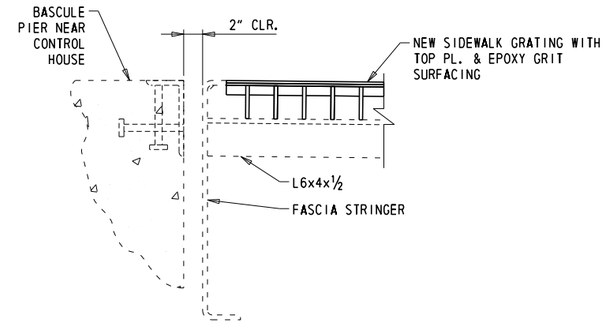
NOTE: TYP. ON N. AND S. SIDEWALKS



SECTION B-B

1½" = 1'-0"

NOTE: TYP. ON N. AND S. SIDEWALKS



SECTION C-C

1½" = 1'-0"

NOTE:

1. 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."
2. THE L5x4x½ MAY BE CUT FROM A L6x4x1/2 OR L5x5x½. THE LEG OF THE STANDARD SIZE ANGLE TO BE CUT TO PROVIDE THE L5x4x½ SHALL BE THE HORIZONTAL LEG.

8/2/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

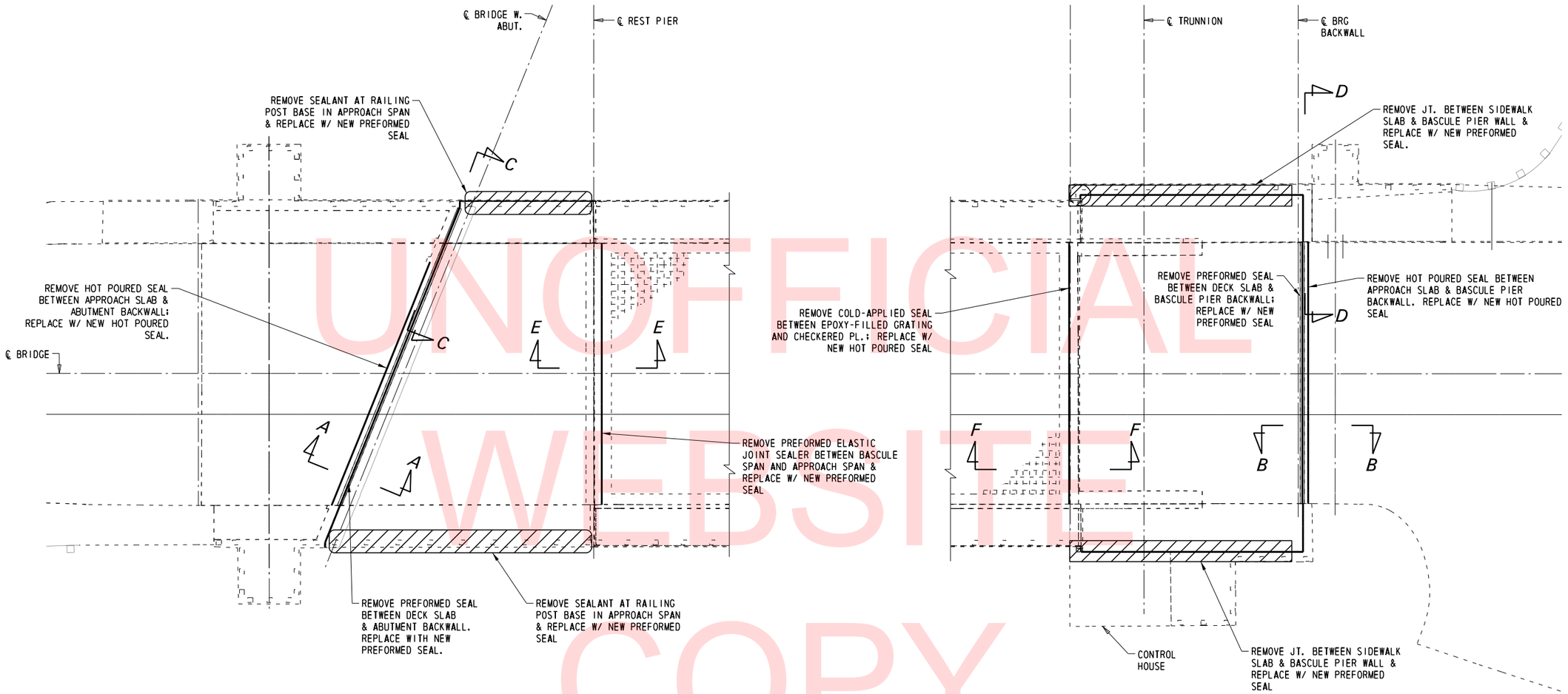
SCALE AS NOTED

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

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

SIDEWALK REPLACEMENT DETAILS 2

RS-11
SHEET NO. 21
TOTAL SHTS. 180



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:

1. 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 624013 - COMPRESSION SEAL, 1 INCH" AND "ITEM 624014 - COMPRESSION SEAL, 2 INCHES".

2. ALL WORK INVOLVING REPLACEMENT OF HOT POURED SEAL SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 504 CRACK AND JOINT SEALING OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 504001 - CRACK AND JOINT SEALING LESS THAN 3/4 INCH WIDE."

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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

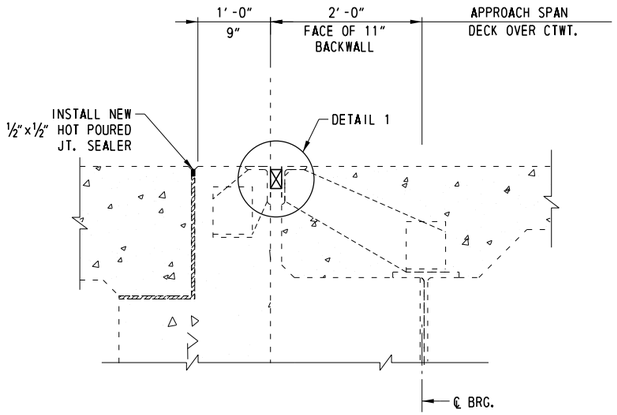
SCALE AS NOTED

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

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

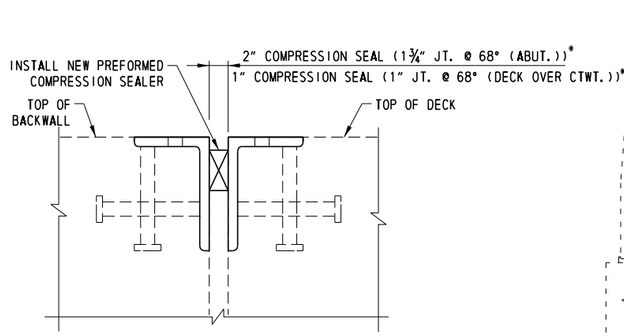
JOINT REPLACEMENT PLAN

RS-12
SHEET NO. 22
TOTAL SHTS. 180



SECTION A-A
SECTION B-B

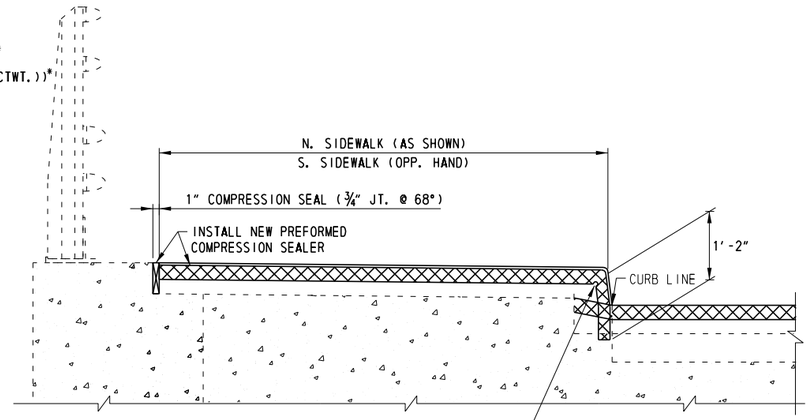
1" = 1'-0"



DETAIL 1

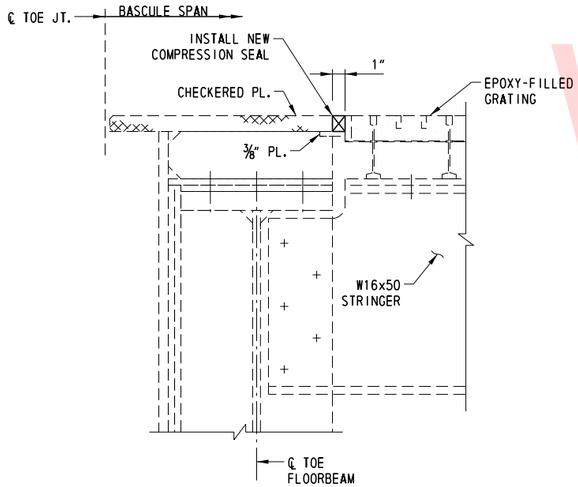
3" = 1'-0"

NOTE: "*" DIMENSIONS TO BE FIELD MEASURED BY CONTRACTOR PRIOR TO REPLACEMENT



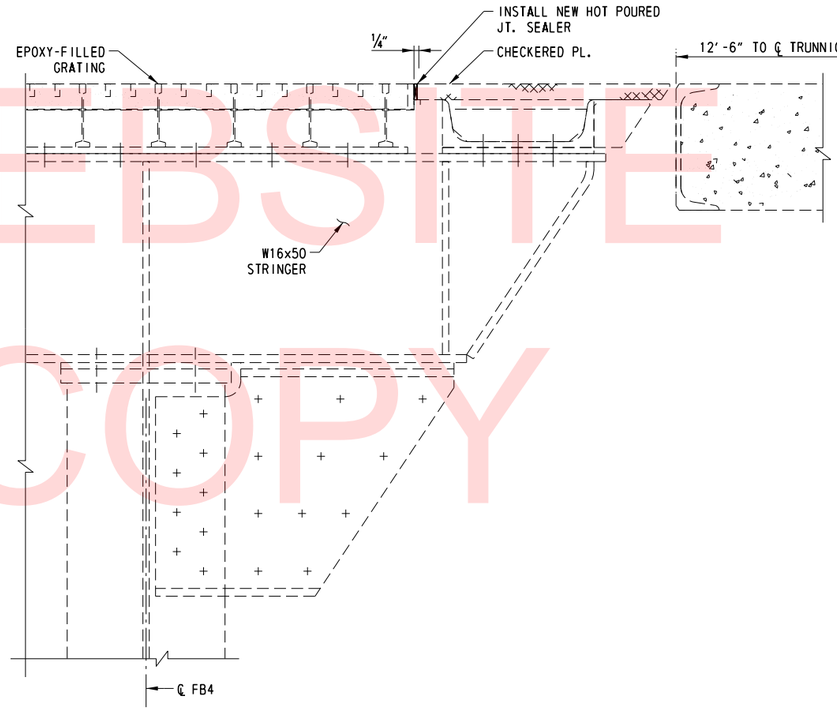
SECTION C-C
SECTION D-D

¾" = 1'-0"



SECTION E-E

3" = 1'-0"



SECTION F-F

3" = 1'-0"

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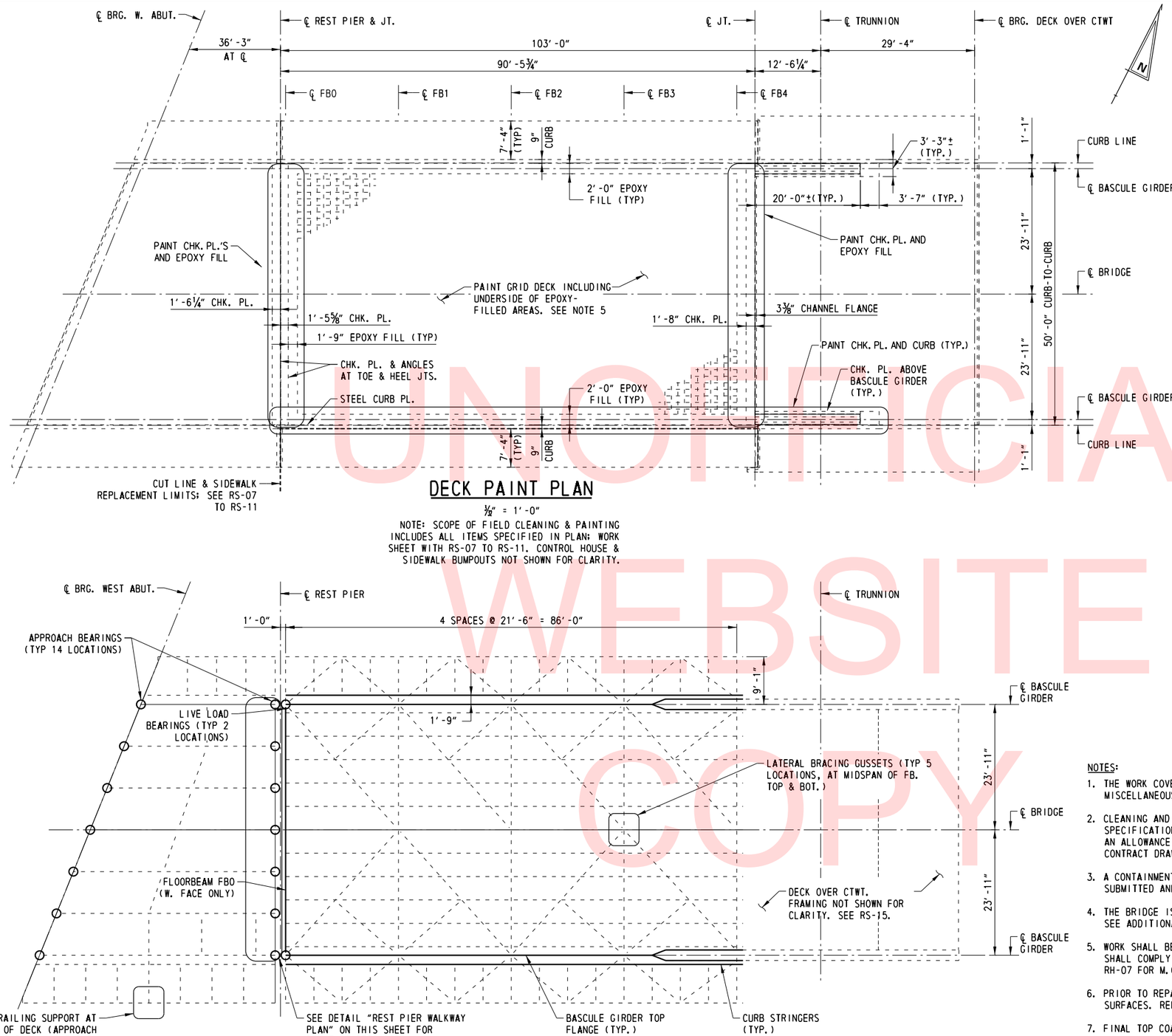
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE AS NOTED	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-153	JOINT REPLACEMENT DETAILS
				COUNTY SUSSEX	DESIGNED BY: BKS	RS-13
					CHECKED BY: AR	SHEET NO. 23
						TOTAL SHTS. 180



DECK PAINT PLAN

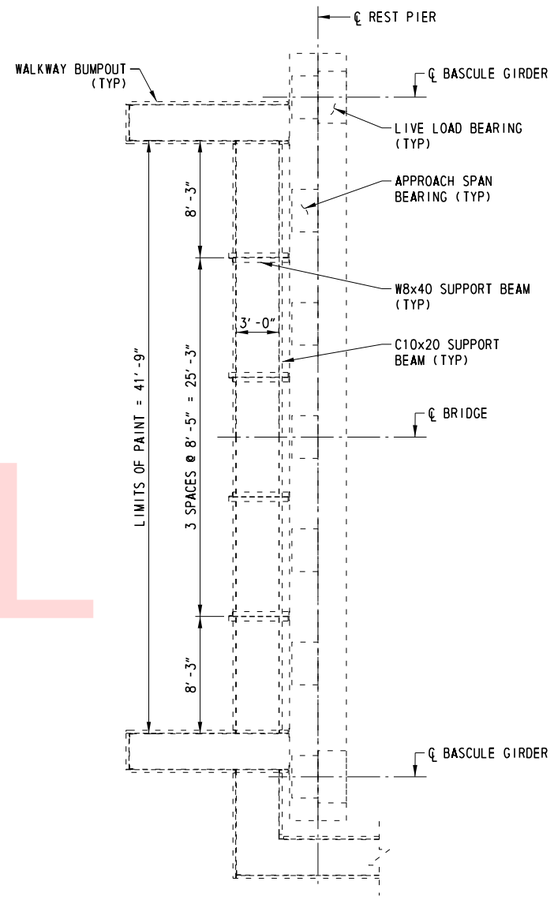
½" = 1'-0"

NOTE: SCOPE OF FIELD CLEANING & PAINTING INCLUDES ALL ITEMS SPECIFIED IN PLAN; WORK SHEET WITH RS-07 TO RS-11. CONTROL HOUSE & SIDEWALK BUMPOUTS NOT SHOWN FOR CLARITY.

FRAMING PAINT PLAN

½" = 1'-0"

NOTE: SCOPE OF FIELD CLEANING & PAINTING INCLUDES ALL ITEMS SPECIFIED IN PLAN



REST PIER WALKWAY PLAN

1/16" = 1'-0"

NOTE: LIMITS OF PAINT INCLUDES EXPOSED WALKWAY SUPPORT BEAMS, BASE PLS., AND ANCHOR HEADS INTO REST PIER CONC.

APPROXIMATE PAINT QUANTITIES:

1. GRID DECK: 15,888 SF
2. OTHER DECK MEMBERS: 1,612 SF
3. SUPERSTRUCTURE: 2,786 SF

NOTES:

1. THE WORK COVERED UNDER BRIDGE CLEANING AND PAINTING INCLUDES ALL ITEMS SPECIFIED ON THIS SHEET AND ANY MISCELLANEOUS SPOT PAINTING REQ'D.
2. CLEANING AND PAINTING OF ALL EXIST. STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH SECTION 616 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 616000 CLEANING AND PAINTING EXISTING STEEL." THE LUMP SUM ESTIMATE INCLUDES AN ALLOWANCE FOR 600 SF OF PAINT COVERAGE FOR MISCELLANEOUS SPOT CLEANING AND PAINTING, NOT SPECIFIED ON THE CONTRACT DRAWINGS, AS DIRECTED BY THE ENGINEER.
3. A CONTAINMENT SYSTEM SHALL BE PROVIDED FOR ALL ABRASIVE BLASTING. THE DESIGN OF THE CONTAINMENT SYSTEM SHALL BE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO ANY WORK BEING PERFORMED.
4. THE BRIDGE IS TO REMAIN OPERATIONAL DURING PAINTING UNLESS PERMISSION IS GRANTED BY THE DEPARTMENT IN ADVANCE. SEE ADDITIONAL REQUIRMENTS IN SPECIAL PROVISION "763522 - COAST GUARD SPECIFIC CONDITIONS".
5. WORK SHALL BE PERFORMED IN A MANNER AS TO LIMIT OBSTRUCTIONS TO TRAFFIC CONSISTENT WITH SAFETY STANDARDS AND SHALL COMPLY WITH REQUIRMENTS PER THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. SEE DWG. RH-04 - RH-07 FOR M.O.T. PLANS FOR MAINTAINING TRAFFIC DURING PAINTING.
6. PRIOR TO REPAINTING, THE CONTRACTOR SHALL PROVIDE OPPORTUNITY FOR THE ENGINEER TO INSPECT BLAST-CLEANED SURFACES. REPORT EVIDENCE OF CRACKS OR SECTION LOSS DUE TO CORROSION GREATER THAN 25%.
7. FINAL TOP COAT COLOR SHALL MATCH EXIST. 24172 (GREEN) OF FED-STD-595C.
8. THE CONTRACTOR SHALL TAKE NECESSARY MEASURES TO PROTECT THE ADJACENT CONC. SURFACES DURING THE PAINTING OPERATION. PAINTED OR STAINED CONC. SURFACES SHALL BE RESTORED TO THE ORIGINAL COLOR WITHOUT DAMAGE TO THE CONC.
9. THE CONTRACTOR SHALL ASSUME THE EXISTING PAINT SYSTEMS CONTAIN LEAD BASED PAINT AND SHALL TAKE THE APPROPRIATE MEASURES IN REGARDS TO REMOVAL, HANDLING, DISPOSAL, ETC.
10. SEE DWG. RS-15 AND RS-16 FOR SPECIFIC LIMITS OF CLEANING AND PAINTING FOR VARIOUS STRUCTURAL ELEMENTS.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	PAINTING PLAN
				COUNTY SUSSEX	DESIGNED BY: MR	RS-14
					CHECKED BY: RAJ	SHEET NO. 24
						TOTAL SHTS. 180

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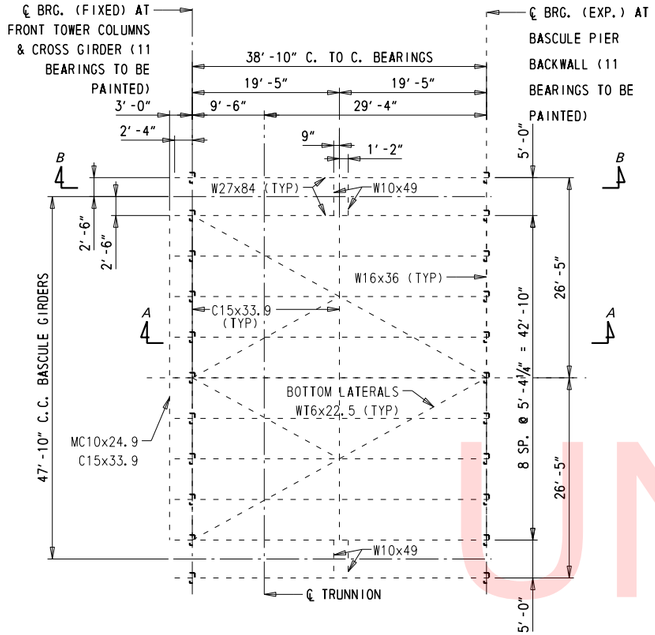
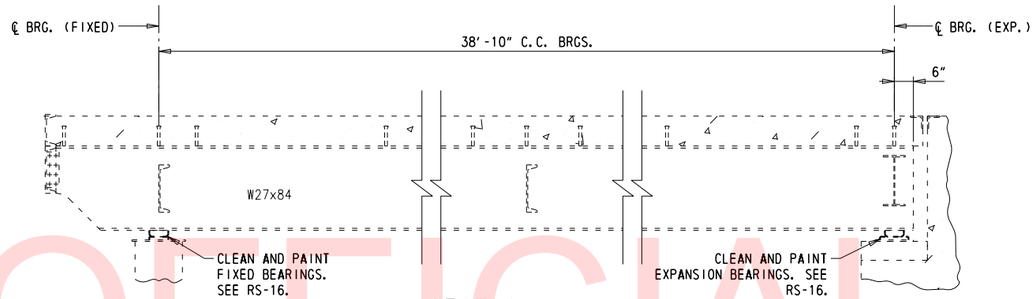


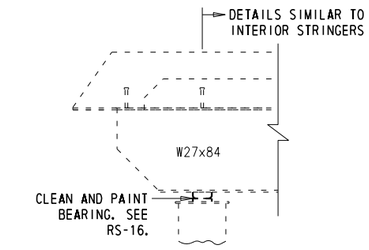
DECK OVER COUNTERWEIGHT
FRAMING PLAN

1" = 10'-0"



SECTION A-A
TYPICAL INTERIOR STRINGER

½" = 1'-0"
14 REQUIRED



SECTION B-B
FASCIA STRINGER END DETAIL

½" = 1'-0"
8 REQUIRED

NOTES:

1. CLEANING AND PAINTING OF EXIST. STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH SECTION 616 OF THE STANDARD SPECIFICATIONS.
2. SEE DWG. RS-14 FOR ADDITIONAL NOTES.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	PAINTING DETAILS 1	RS-15
				COUNTY SUSSEX	DESIGNED BY: BKS		SHEET NO. 25
					CHECKED BY: AR		TOTAL SHTS. 180

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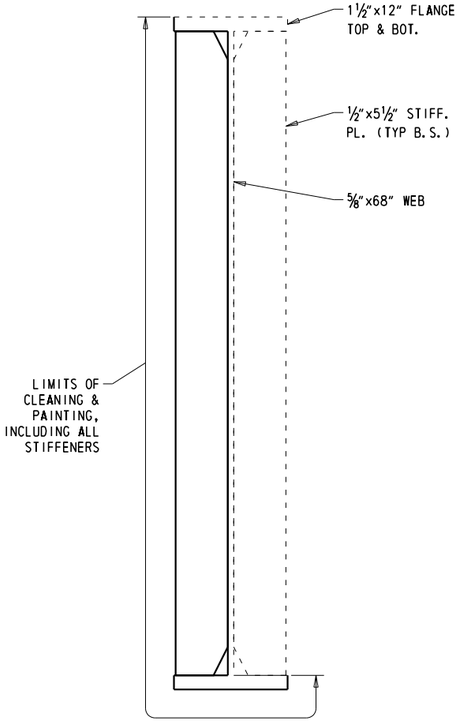
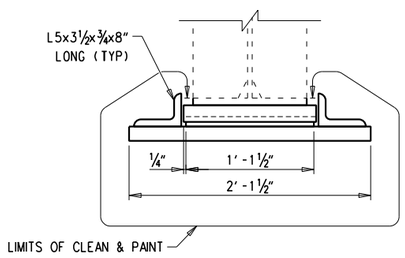
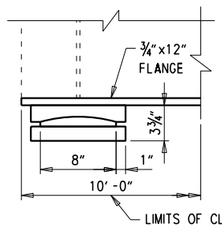


FLOORBEAM 0 (W. FACE ONLY)

1½" = 1'-0"

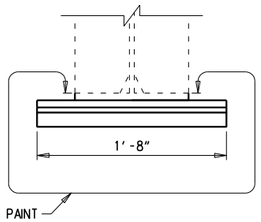


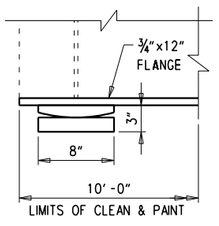


EXPANSION BEARINGS - AT WEST ABUTMENT AND BASCULE PIER BACKWALL

1½" = 1'-0"

NOTE: LIMITS OF CLEANING & PAINTING INCLUDE ANCHOR BOLTS, ALL BEARING COMPONENTS & GIRDER BOTTOM FLANGE AS SHOWN

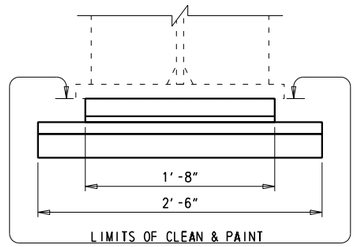


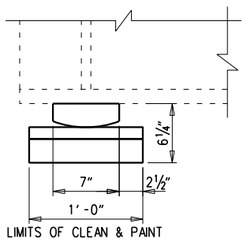


FIXED BEARINGS - AT REST PIER AND BASCULE PIER FRONT TOWER

1½" = 1'-0"

NOTE: LIMITS OF CLEANING & PAINTING INCLUDE ANCHOR BOLTS, ALL BEARING COMPONENTS & GIRDER BOTTOM FLANGE AS SHOWN

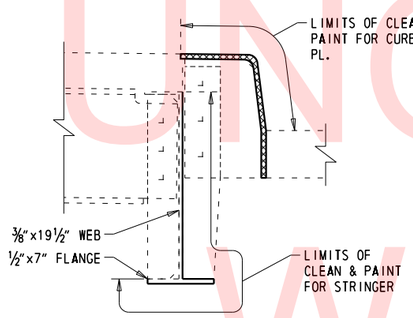


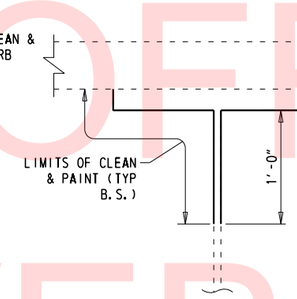


BASCULE SPAN LIVE LOAD BEARING

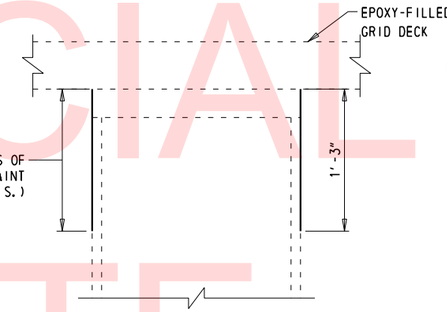
1½" = 1'-0"

NOTE: LIMITS OF CLEANING & PAINTING INCLUDE ANCHOR BOLTS & ALL BEARING COMPONENTS





SINGLE WEB SECTION



BOX SECTION

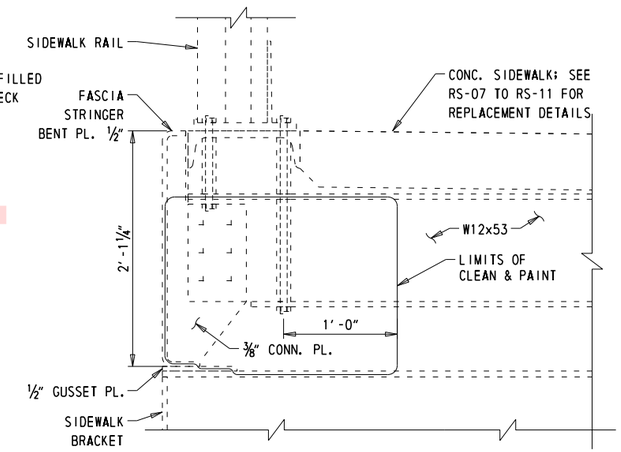
CURB STRINGER & PLATE

1½" = 1'-0"

BASCULE GIRDER

1½" = 1'-0"

NOTE: SCOPE OF CLEANING & PAINTING INCLUDES SPLICE PLS. IN LIMITS SHOWN ABOVE

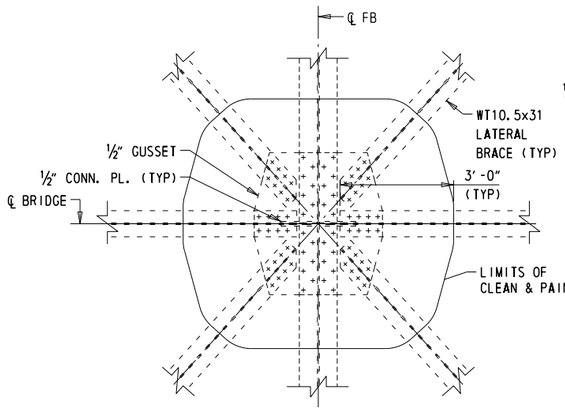


APPROACH SPAN RAIL SUPPORT

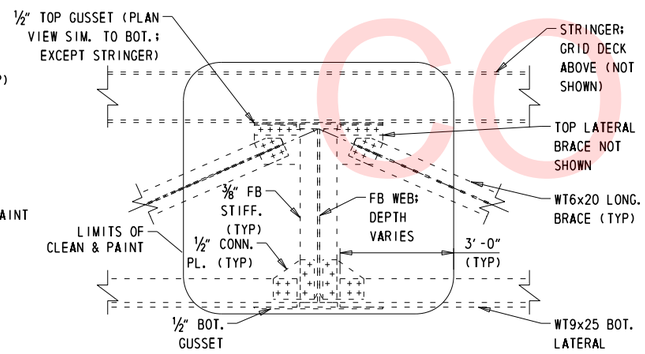
1½" = 1'-0"

14 LOCATIONS (AS SHOWN ON DWG. RS-14)

NOTE: SCOPE OF CLEANING & PAINTING INCLUDES ALL EXPOSED AND ACCESSIBLE STEEL SURFACES WITHIN LIMITS SHOWN ABOVE, INCLUDING 1'-0" LENGTH THE STRINGERS INBOARD OF THE RAIL POST CONNECTION.



TYPICAL BOTTOM PLAN VIEW



TYPICAL ELEVATION VIEW AT C.L. BRIDGE

LATERAL BRACING CONNECTIONS

½" = 1'-0"

NOTE: ALL EXPOSED SURFACES ARE INCLUDED IN LIMITS OF CLEANING & PAINTING

NOTES:

1. CLEANING AND PAINTING OF EXIST. STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH SECTION 616 OF THE STANDARD SPECIFICATIONS.
2. SEE DWG. RS-14 FOR LOCATIONS OF CLEANING AND PAINTING.

8/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

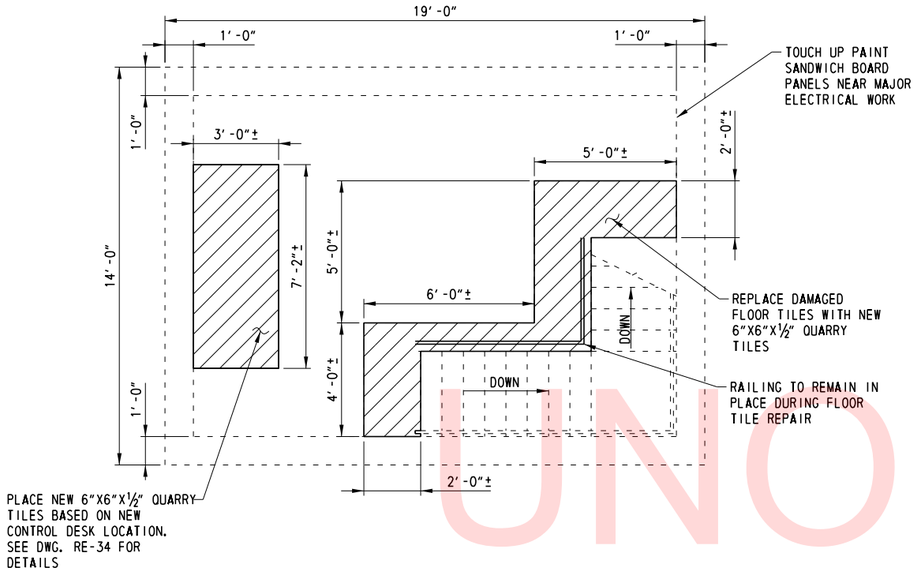
SCALE AS NOTED

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

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

PAINTING DETAILS 2

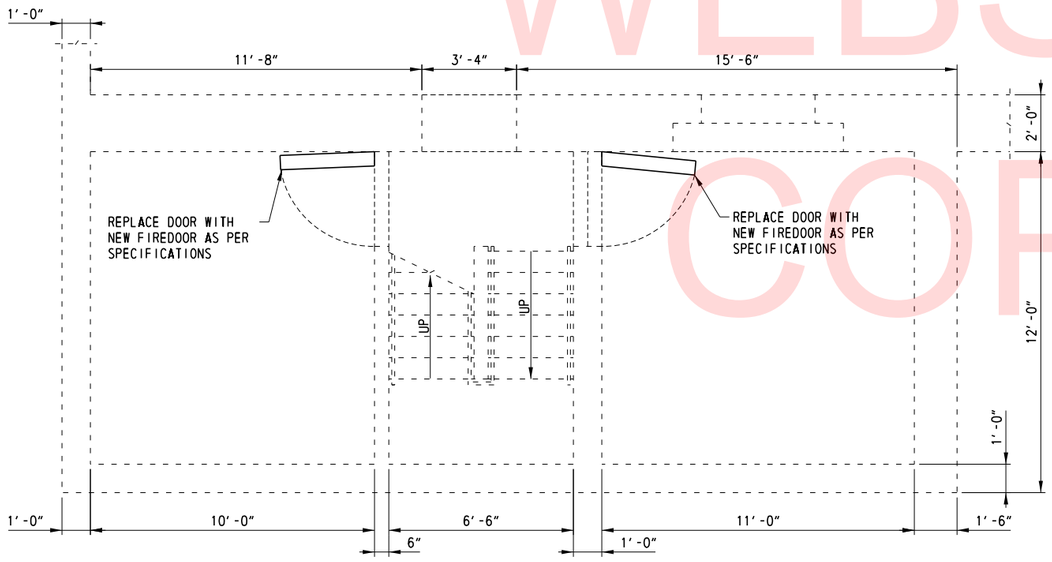
RS-16
SHEET NO. 26
TOTAL SHTS. 180



OPERATOR'S ROOM

⅜" = 1'-0"

NOTE: CEILING TILES NOT SHOWN FOR CLARITY. REPLACE DAMAGED CEILING TILES IN-KIND



SWITCHBOARD & GENERATOR ROOM

⅜" = 1'-0"

NOTES:

1. ALL WORK INVOLVING REPLACEMENT OF DOORS, FLOOR TILES, CEILING TILES, AND TOUCH-UP PAINTING OF CONTROL HOUSE INTERIOR LOCATIONS SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - BUILDING RENOVATION." PAID UNDER "ITEM 763569 - BUILDING RENOVATION."
2. AFTER REPLACING DAMAGED CEILING TILES, CONTRACTOR SHALL PAINT ALL CEILING TILES TO MATCH.
3. NEW SECURITY CAMERAS AND FIRE ALERT SYSTEM TO BE INSTALLED IN THE CONTROL HOUSE. SEE DWGS. RE-36 TO RE-39 FOR DETAILS.
4. APPROXIMATE SQUARE FOOTAGE OF CONTROL HOUSE INTERIOR LOCATIONS NEEDING TOUCH-UP PAINT = 120 SF.
5. APPROXIMATE SQUARE FOOTAGE OF FLOOR TILE REPLACEMENT = 55 SF.
6. APPROXIMATE SQUARE FOOTAGE OF CEILING TILE REPLACEMENT = 32 SF.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	CONTROL HOUSE MODIFICATIONS
				COUNTY SUSSEX	DESIGNED BY: BKS	RS-17
					CHECKED BY: RAJ	SHEET NO. 27
						TOTAL SHTS. 180

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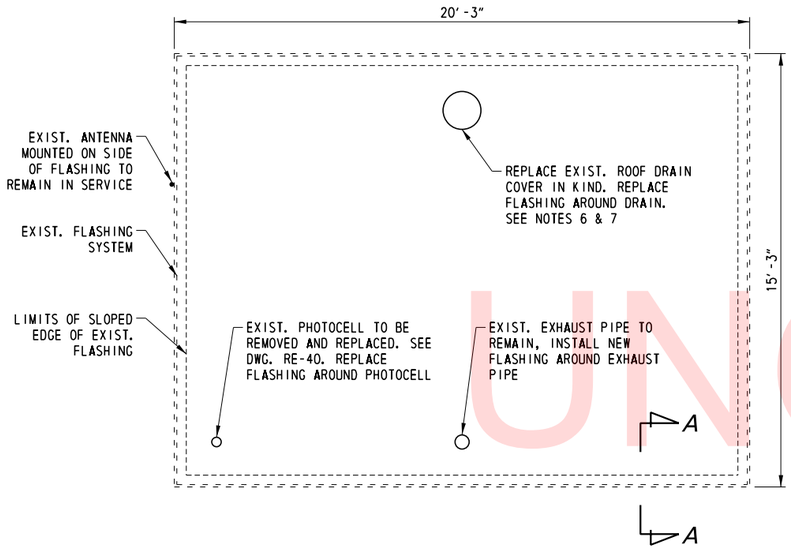
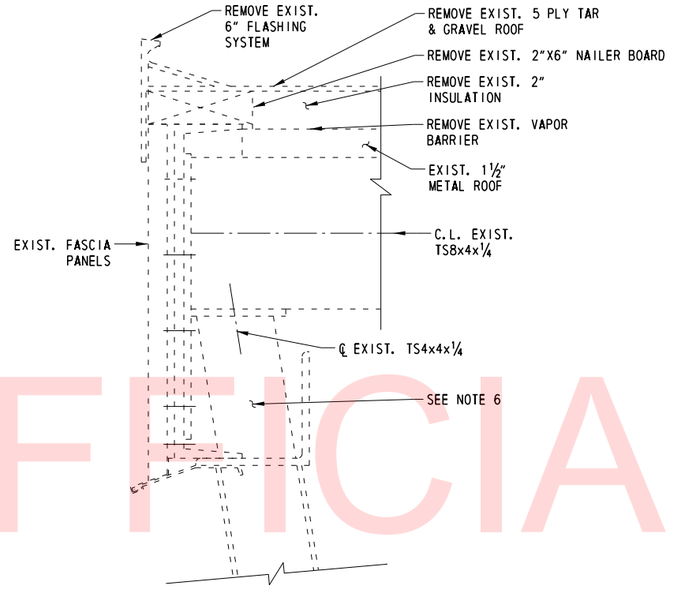
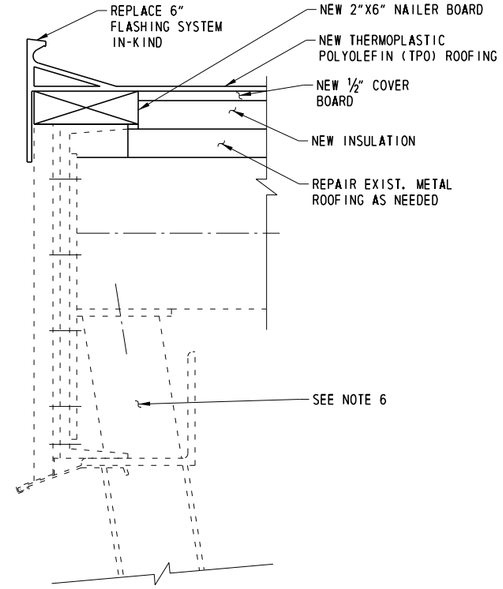


ROOF PENETRATION OUTLINE

⅜" = 1'-0"



EXISTING WALL TYPICAL SECTION



PROPOSED WALL TYPICAL SECTION

SECTION A-A

3" = 1'-0"

REMOVAL SEQUENCE:

1. REMOVE TOP PORTIONS OF THE EXISTING MULTI-PLY BUILT-UP ROOF SYSTEM AS SHOWN.
2. INSPECT METAL ROOF DECK FOR DETERIORATION AND REPAIR.
3. REMOVE PORTIONS OF PERIMETER FLASHING AS SHOWN.

REPLACEMENT:

1. INSTALL NEW ROOF DRAIN.
2. INSTALL INSULATION, MECHNICALLY FASTENED TO METAL ROOF DECK.
3. INSTALL NEW COVER BOARDS.
4. INSTALL NEW ADHERED TPO ROOF MEMBRANE AND FLASHING.

NOTES:

1. ALL WORK INVOLVING REPLACEMENT OF THE ROOFING SYSTEM SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS 763512 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING AND 763513 - SHEET METAL FLASHING AND TRIM" AND PAID UNDER "ITEM 763569 - BUILDING RENOVATION."
2. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ROOF PENETRATION LOCATIONS.
3. EXISTING ROOF DECK IS ASSUMED TO BE TYPE B GAUGE 22 GALVANIZED METAL DECK.
4. AFTER REMOVING EXISTING ROOFING THE CONTRACTOR SHALL INSPECT THE ROOF DECK FOR DETERIORATION. CONTRACTOR SHALL BRING ANY DETERIORATION TO THE ATTENTION OF DELDOT. REPAIR PROCEDURES FOR DETERIORATED DECKING SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
5. CONTRACTOR SHALL MATCH THE EXISTING ROOF SLOPE TO DRAIN.
6. CONTRACTOR SHALL INSPECT THE EXISTING STORM WATER DRAINAGE PIPING THAT RUNS INTO THE WINDOW COLUMNS IN THE CONTROL HOUSE. REPAIR PROCEDURES FOR DRAINAGE PIPING SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
7. CONTRACTOR SHALL INSTALL A NEW ROOF DRAIN WITH STRAINER TO MATCH EXISTING ROOF DRAIN SIZE. CONNECT ROOF DRAIN TO EXISTING STORM WATER DRAINAGE PIPING.

DELAWARE
DEPARTMENT OF TRANSPORTATION

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.	3-153
T201507602	DESIGNED BY: BKS	
COUNTY	CHECKED BY: RAJ	
SUSSEX		

ROOF REPLACEMENT

RS-18
SHEET NO. 28
TOTAL SHTS. 180

8/2018
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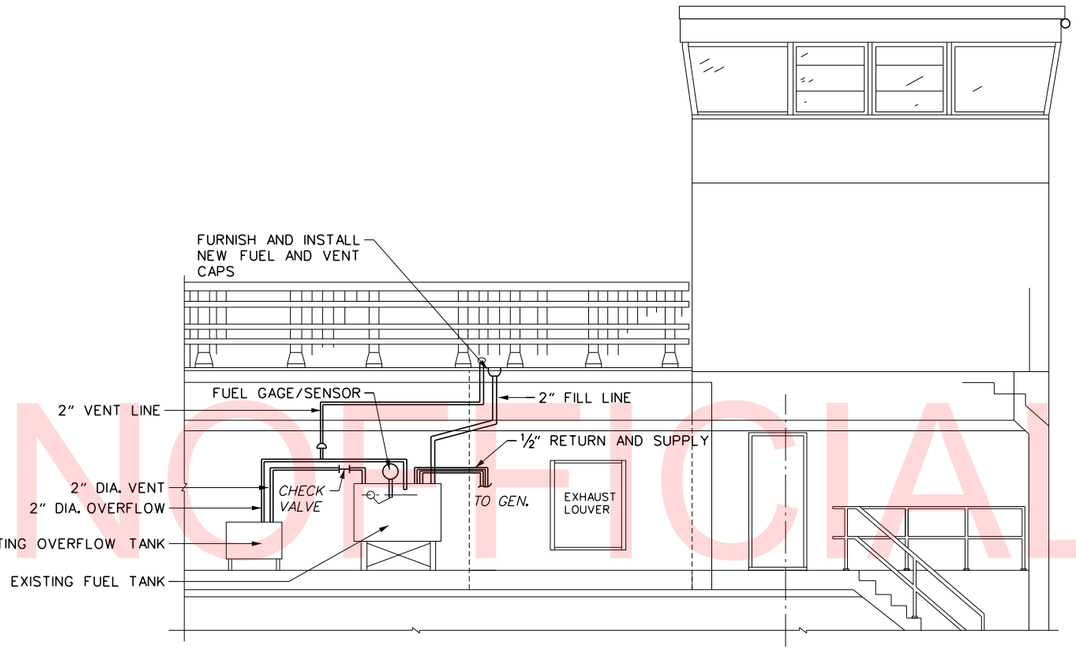
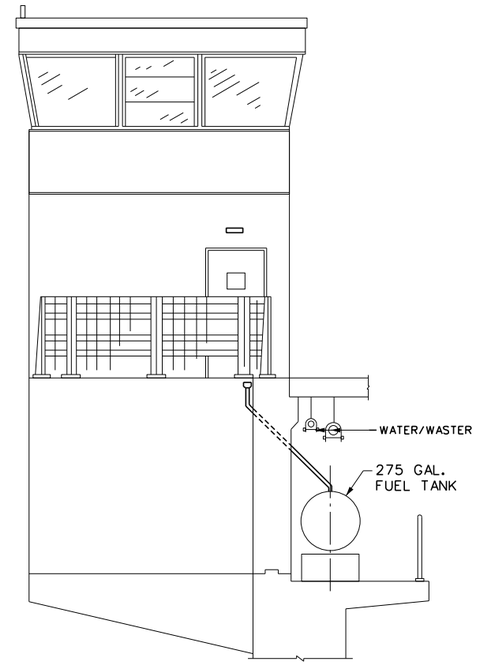
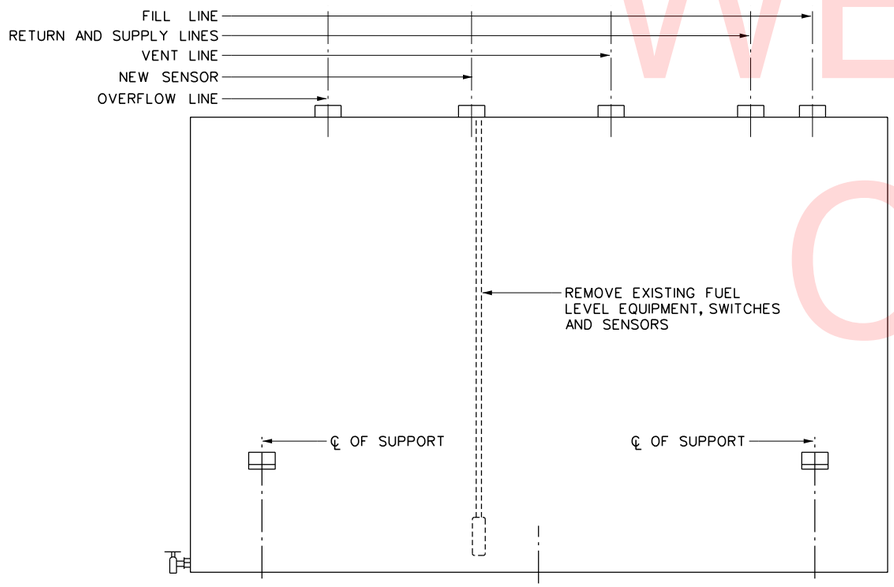


NORTH ELEVATION



EAST ELEVATION



EXISTING FUEL TANK ELEVATION

NOTES:

1. EXISTING FUEL LINES SHALL BE REPLACED IN KIND (MATERIALS AND LAYOUT) TO MATCH THE EXISTING WITH REQUIRED MODIFICATIONS DUE TO AS-BUILT LAYOUT OR EQUIPMENT NOT REQUIRED OR USED. DETAILS SHOWN WERE TAKEN FROM THE RECORD AS-BUILT DRAWINGS.
2. THE CONTRACTOR SHALL REMOVE EXISTING FUEL GAGE ASSEMBLY AND FURNISH AND INSTALL NEW ULTRASONIC LEVEL SENSORS. THE CONTRACTOR SHALL ADJUST/MODIFY EXISTING TAP TO ACCOMMODATE THE NEW SENSOR. FUEL SENSOR SHALL BE CONNECTED WITH THE PLC AS SHOWN ON THE SCHEMATIC WIRING DIAGRAMS.
3. ALL WORK INVOLVING THE GENERATOR FUEL LINES AND SENSORS SHALL BE PAID UNDER "ITEM 615504 - BRIDGE ELECTRICAL SYSTEM."

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	GENERATOR FUEL LINES AND SENSOR	RS-19
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 29
					CHECKED BY: RAJ		TOTAL SHTS. 180

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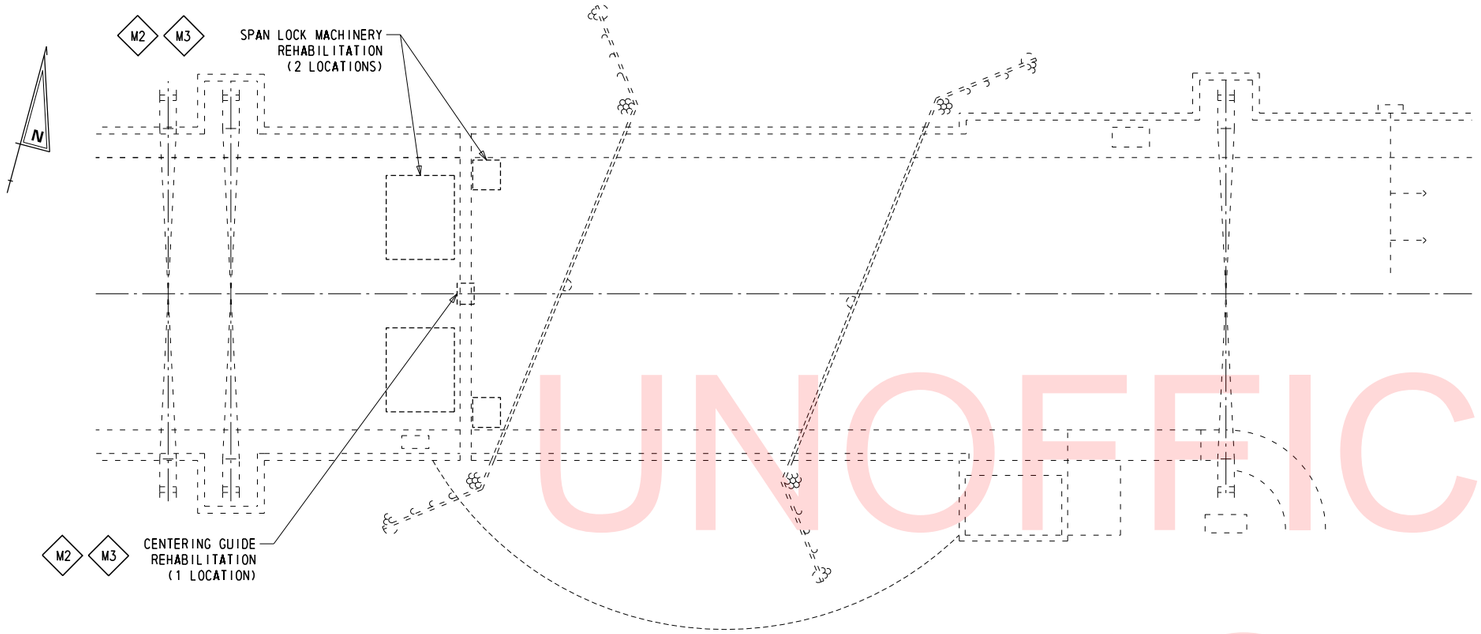
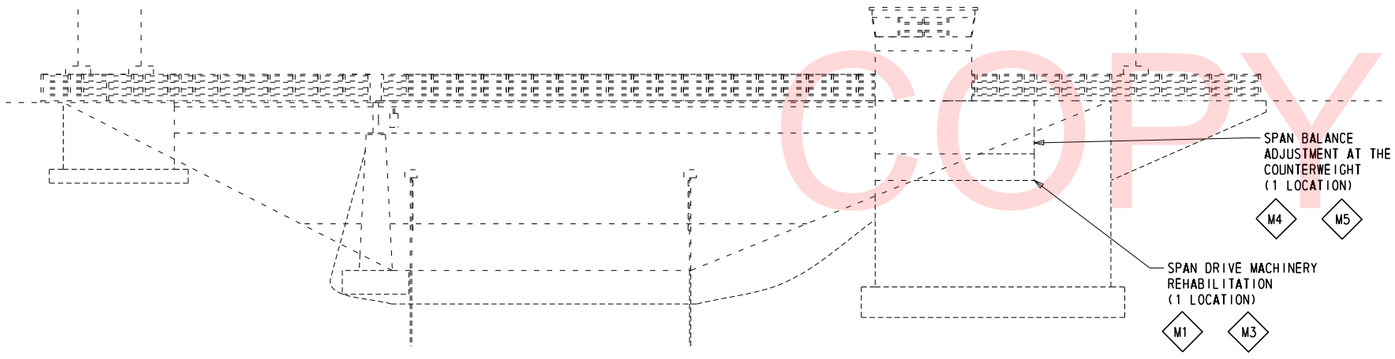


GENERAL PLAN



GENERAL ELEVATION

NOTES:

1. ALL WORK FOR BRIDGE MACHINERY SHALL BE PAID FOR UNDER ITEM 615503 - BRIDGE MECHANICAL SYSTEM. REFER TO SPECIAL PROVISION SP 615503 FOR ADDITIONAL SCOPE OF WORK ITEMS AND DETAILS.
2. THE GENERAL NOTES SHOWN FOR BR. 3-153 SHALL ALSO APPLY TO BR. 3-154.

SCOPE OF WORK:

M1 SPAN DRIVE MACHINERY REHABILITATION

A. REPLACE SPAN DRIVE MOTOR.
B. REPLACE MOTOR COUPLING C1 HUB, GRID, SEALS, GASKETS, AND LUBRICANT.
C. REPLACE BOTH MOTOR BRAKES.
D. REPLACE ALL FLOATING SHAFT COUPLING SEALS, GASKETS AND LUBRICANT.
E. SEAL LEAKING REDUCERS AND REPLACE ALL REDUCER BREATHERS.
F. REPLACE DIFFERENTIAL AND SECONDARY SPEED REDUCER OIL.
G. REPLACE THE MISSING FASTENER ON SOUTH COUPLING C5.
H. REPOSITION AND SECURE THE KEY AT NORTH COUPLING C5.
I. REPLACE ALL MAIN PINION BEARING SEALS AND BEARING GREASE.
J. INSTALL MACHINERY GUARD ON COUPLING C1
K. REMOVE EXISTING GREASE AND LUBRICATE THE RACKS AND PINIONS.
L. REPLACE SPAN POSITION TRANSMITTER WITH A NEW RESOLVER.
M. INSTALL AND ALIGN NEW SPEED SWITCH, SUPPORT, AND MACHINERY GUARD.
N. PERFORM FIELD TESTING OF THE MACHINERY COMPONENTS.

M2 SPAN LOCK MACHINERY AND CENTERING GUIDE REHABILITATION

A. REPLACE SPAN LOCK MOTORS.
B. REPLACE SPAN LOCK MOTOR COUPLING HUB, GRID, AND LUBRICANT.
C. REPLACE ALL COUPLING SEALS, GASKETS, AND GREASE.
D. REMOVE SOUTH REDUCER FOR SHOP INSPECTION AND REPAIR.
E. SHOP PAINT THE SOUTH REDUCER. REINSTALL AND ALIGN SOUTH SPAN LOCK REDUCER.
F. SEAL LEAK AT NORTH SPAN LOCK REDUCER.
G. REPLACE REDUCER INSPECTION COVER GASKETS AND INSTALL BREATHERS AT BOTH SPAN LOCK REDUCERS.
H. REPLACE SPAN LOCK REDUCER OIL.
I. REPLACE ALL SPAN LOCK BEARING SEALS AND GREASE.
J. REALIGN NORTH SPAN LOCK ROTARY CAM LIMIT SWITCH.
K. TEMPORARILY REMOVE NORTH RECEIVING SOCKET FOR MODIFICATION.
L. REPLACE AND ADJUST RECEIVING SOCKET SHOE SHIMS AT BOTH SPAN LOCKS.
M. ADJUST SHIMS AT THE CENTERING GUIDE.
N. PROVIDE MEANS TO TEMPORARILIY HOLD DOWN THE LEAF.
O. PERFORM FIELD TESTING OF THE MACHINERY COMPONENTS.

M3 MACHINERY PAINT

A. FURNISH PAINT FOR THE BRIDGE MACHINERY.
B. PREPARE EXISTING TRUNNION BEARINGS, SPAN DRIVE MACHINERY, SPAN LOCK MACHINERY, AND CENTERING GUIDE COMPONENT SURFACES.
C. FIELD PAINT EXISTING TRUNNION BEARINGS, SPAN DRIVE MACHINERY, SPAN LOCK MACHINERY, AND CENTERING GUIDE COMPONENTS.

M4 STRAIN GAUGE BALANCE TESTING AND MAINTAINING SPAN BALANCE

A. PERFORM STRAIN GAUGE TESTING.
B. PREPARE BALANCE CALCULATIONS PRIOR TO AND DURING CONSTRUCTION.
C. DOCUMENT SPAN BALANCE PROCEDURE AND METHODS.
D. INSTALL BALANCE PLATE ANCHORS ON COUNTERWEIGHT AND ADJUST BALANCE MATERIAL IN COUNTERWEIGHT POCKETS, ON TOP OF COUNTERWEIGHT, AND WITHIN THE BASCULE PIER.
E. BALANCE THE BRIDGE THROUGHOUT CONSTRUCTION.

M5 BALANCE MATERIAL

A. FURNISH BALANCE PLATES FOR BALANCE ADJUSTMENTS.

GENERAL MACHINERY NOTES

1. MACHINERY DIMENSIONS SHOWN ON DRAWINGS ARE DIMENSIONS AFTER MACHINING.
2. UNLESS OTHERWISE INDICATED ON THE PLANS, OR REQUIRED FOR THE PROPER ASSEMBLY OF PARTS, DIMENSIONAL TOLERANCES OF MACHINERY, IN GENERAL, SHALL BE AS FOLLOWS:

SURFACE	TOLERANCE
MACHINED (TO 1")	±0.015"
MACHINED (OVER 1")	±0.030"
ROLLED	±0.030"
NON-MACHINED CAST (TO 1")	±0.030"
NON-MACHINED CAST (OVER 1")	±0.060"
COMPONENT LOCATIONS	±0.030"
BOLT HOLE LOCATIONS	±0.030"
ANGULAR	±½°

3. THE GENERAL MACHINERY FINISH, UNLESS OTHERWISE INDICATED ON THE PLANS, IS 125 MICROINCHES. ALL TRANSITIONS OF SURFACES OF MACHINERY SHALL BE BLENDED SMOOTH. ALL SURFACES OF FORGINGS SHALL BE MACHINED TO DIMENSIONS SHOWN ON THE PLANS. ALL MATING SURFACES OF MACHINERY PARTS, SUPPORTS, AND EXTERNAL EDGES SHALL BE MACHINED.
4. FITS AND FINISHES (IN MICROINCHES) FOR MACHINERY SHALL BE AS FOLLOWS:

SURFACE	FIT	FINISH
MACHINERY BASE ON STEEL	-	250
MACHINERY BASE ON MASONRY	-	500
SHAFT JOURNALS	RC6	8
JOURNAL BUSHINGS	RC6	16
SPLIT BUSHING IN BASE	LC1	125
SOLID BUSHING IN BASE (TO ¼" WALL) FN1	63	
SOLID BUSHING IN BASE (OVER ¼" WALL) FN2	63	
HUBS ON SHAFTS (TO 2" BORE)	FN2	32
HUBS ON SHAFTS (OVER 2" BORE)	FN2	63
TURNED BOLTS IN FINISHED HOLES	LC6	63
SLIDING BEARINGS	RC6	32
KEYS AND KEYWAYS	LC3	63
MACHINERY PARTS IN FIXED CONTACT	-	125
DRIVE SHAFTS	-	63

THE ABOVE FITS FOR CYLINDRICAL PARTS SHALL ALSO APPLY TO THE MAJOR DIMENSIONS OF NON-CYLINDRICAL PARTS.

5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
6. UNLESS OTHERWISE NOTED, ASTM A449 H.S. BOLTS INSTALLED WITH 1 NUT AND USED TO CONNECT MOTORS, REDUCERS, BRAKES, FRONT AND REAR GUIDES, RECEIVING SOCKETS, AND CENTERING GUIDE WEAR PLATE SHOES TO SUPPORTS OR STRUCTURAL STEEL SHALL BE PRETENSIONSED TO THE VALUES FOR AN ASTM A325 H.S. BOLT WITH EQUAL THREAD SIZE, AS SPECIFIED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS' SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS.
7. FOR ASTM A449 FASTENERS INSTALLED WITH DOUBLE NUTS AT THE TAIL LOCKS AND LIVE LOAD BEARINGS, THE FIRST NUT SHALL BE PRETENSIONSED TO 50% OF THE YIELD STRENGTH OF AN ASTM A325 H.S. BOLT WITH EQUAL THREAD SIZE, AS SPECIFIED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS' SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS. THE TOP NUT SHALL BE PRETENSIONSED TO 90% OF THE YIELD STRENGTH OF AN ASTM A325 H.S. BOLT WITH EQUAL THREAD SIZE.
8. THE REHOBOTH AVENUE BRIDGE RECEIVING SOCKET BUSHING FASTENERS SHALL BE TIGHTENED TO 150 FT-LBS. THE SAVANNAH ROAD BRIDGE CENTER LOCK GUIDE AND RECEIVING SOCKET BUSHING FASTENERS SHALL BE TIGHTENED TO 125 FT-LBS.

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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. 3-153
DESIGNED BY: DJM
CHECKED BY: DTS

GENERAL PLAN AND ELEVATION MECHANICAL REHABILITATION

RM-1
SHEET NO. 30
TOTAL SHTS. 180

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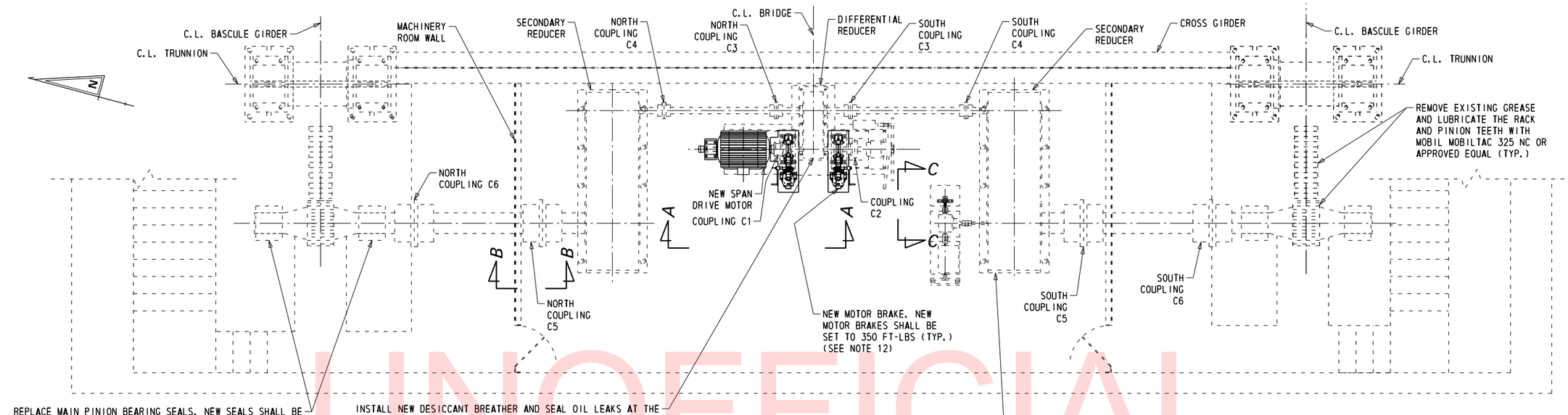


SPAN DRIVE MACHINERY - PLAN

3/8" = 1'-0"

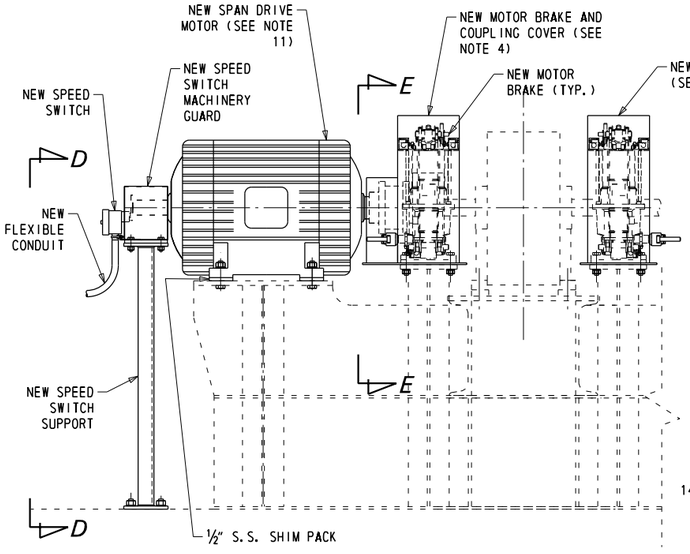
NOTE: TRUNNION TOWERS, TRUNNION ACCESS PLATFORMS, COUNTERWEIGHT ACCESS PLATFORM, AND NEW MOTOR BRAKE COVERS NOT SHOWN FOR CLARITY

EXISTING REDUCER INFORMATION		
REDUCER ID	REDUCER QTY.	MODEL
DIFFERENTIAL REDUCER	1	EARLE GEAR, MODEL NO. 6DD, RATIO 14:1, SERIAL NO. 9560.H
SECONDARY REDUCER	2	EARLE GEAR, MODEL NO. 11T, RATIO 69.72:1, SERIAL NO. 9565.H-1 & 9565.H-2

EXISTING COUPLING INFORMATION		
COUPLING ID	COUPLING QTY.	MODEL
C1	1	FALK 1090T10
C2	1	FAST'S FCCM SIZE 2 1/2
C3	2	PHILADELPHIA GEAR H-ER SIZE 3
C4	2	
C5	2	PHILADELPHIA GEAR ERD SIZE 10
C6	2	

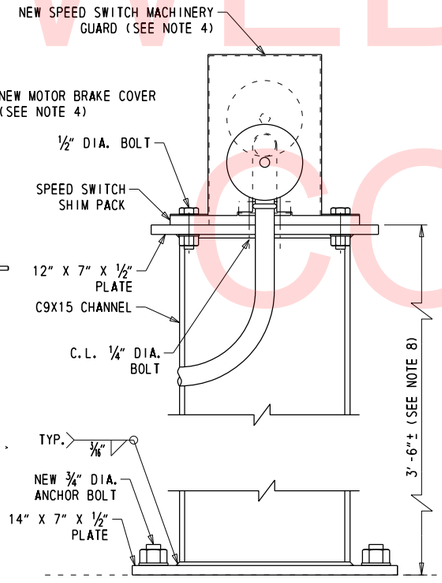
NOTES:

1. PRIOR TO REMOVING THE MOTOR BRAKES OR DISASSEMBLING COUPLINGS OR BEARINGS, REMOVE ANY RESIDUAL TORQUE IN THE SPAN DRIVE MACHINERY BY MANUALLY RELEASING THE BRAKES. BOTH SPAN LOCK BARS MUST BE FULLY DRIVEN OR TEMPORARY HOLD DOWNS MUST BE INSTALLED PRIOR TO RELEASING THE BRAKES. THE LOCK BARS MUST REMAIN DRIVEN OR THE TEMPORARY HOLD DOWNS MUST REMAIN INSTALLED WHILE THE COUPLINGS, BEARINGS, OR BRAKES ARE DISASSEMBLED.
2. REPLACE THE MISSING FASTENER AT SOUTH COUPLING C5 WITH A NEW ASTM A449 BOLT. THE CONTRACTOR SHALL TEMPORARILY REMOVE ONE OF THE EXISTING BOLTS TO VERIFY THE BOLT LENGTH AND DIAMETER.
3. AT COUPLING C1, REPLACE THE MOTOR SHAFT COUPLING GRID, SEALS, GASKETS, AND GREASE. REPLACE THE SEALS, GASKETS, AND GREASE AT SPAN DRIVE MACHINERY COUPLINGS C2, C3, C4, C5, AND C6. REFER TO THE COUPLING TABLE FOR EXISTING COUPLING MODELS AND QUANTITIES. NOTE NORTH COUPLING C5 AND SOUTH COUPLINGS C5 AND C6 HAVE A SPACER PLATE BETWEEN THE FLANGES AND REQUIRE 2 FLANGE GASKETS EACH.
4. NEW MACHINERY GUARDS/COVERS SHALL NOT INTERFERE WITH THE OPERATION OF THE ADJACENT COMPONENTS, INCLUDING THE MOTOR, COUPLING, MOTOR BRAKE, AND SPEED SWITCH.
5. SEE SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR NEW SPAN DRIVE MOTOR. THE NEW MOTOR SHALL BE INSTALLED WITH NEW TURNED BOLTS AND A NEW COUPLING HUB TO MATCH THE EXISTING.
6. SEE SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR NEW SPEED SWITCH DETAILS.
7. SEE DWG. RM-3 FOR VIEWS B-B, C-C, & E-E.
8. CONTRACTOR TO FIELD VERIFY SUPPORT HEIGHT REQUIRED TO ALLOW FOR PROPER ALIGNMENT OF SPEED SWITCH.
9. CONTRACTOR SHALL PROVIDE AND INSTALL ALL FITTINGS REQUIRED TO INSTALL A NEW DESICCANT BREATHER IN THE EXISTING BREATHER PORT AT EACH SPEED REDUCER.
10. REFER TO DWG. RM-4 FOR THE SUGGESTED SPEED REDUCER SEALING PROCEDURE FOR THE PRIMARY AND SECONDARY REDUCERS.
11. REPLACEMENT OF THE NEW SPAN DRIVE MOTOR WILL REQUIRE MODIFICATION TO THE MACHINERY ROOM ENCLOSURE. THE CONTRACTOR SHALL SUBMIT DETAILS OF ANY NECESSARY MODIFICATIONS TO THE MACHINERY ROOM ENCLOSURE, INCLUDING REPAIR OF ANY HOLES CUT IN THE WALLS OR CEILING, TO THE ENGINEER FOR APPROVAL.
12. SEE SPECIAL PROVISIONS SECTION 615504 - ELECTRICAL WORK FOR NEW MOTOR BRAKE DETAILS. THE MOTOR BRAKES SHALL BE INSTALLED WITH NEW TURNED BOLTS, COVERS, ½" SHIM PACK, AND BRAKE COVER SUPPORT PLATES. SEE DWG. RM-3 FOR ADDITIONAL BRAKE COVER DETAILS.



VIEW A-A

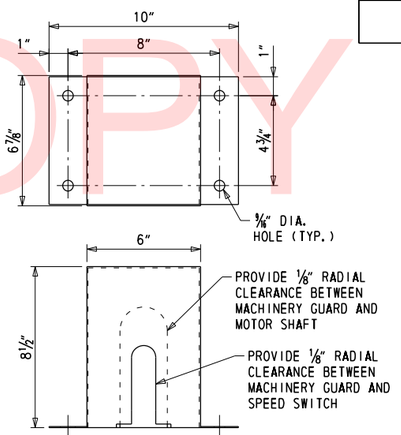
1" = 1'-0"



VIEW D-D

3" = 1'-0"

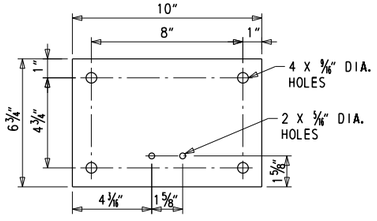
SPEED SWITCH SUPPORT MATERIAL: ASTM A709 GR. 50



SPEED SWITCH MACHINERY GUARD

3" = 1'-0"

MATERIAL: 16 GAUGE TYPE 316 S.S.



SPEED SWITCH SHIMS

3" = 1'-0"

QTY: 1

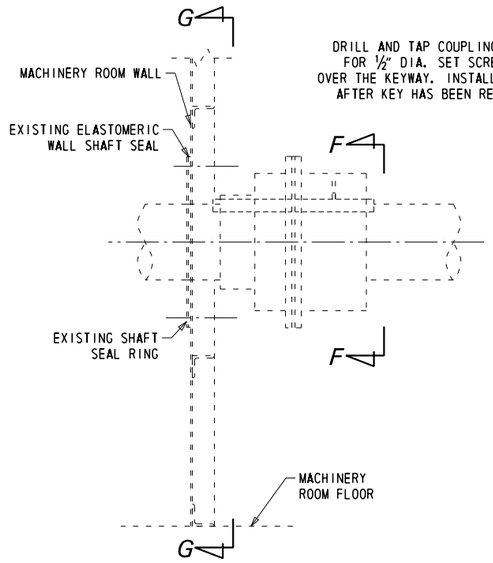
NOTE: EACH SPEED SWITCH SHIM PACK SHALL INCLUDE SHIMS OF THE FOLLOWING THICKNESSES - ½", ¼", ⅛", 1/16", 1/32", AND 2 X 1/64".

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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: DJM / CHECKED BY: DTS

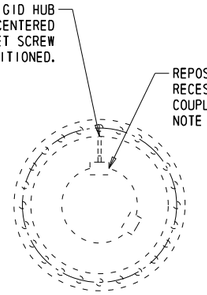
SPAN DRIVE MACHINERY REHABILITATION

RM-2 | SHEET NO. 31 | TOTAL SHTS. 180

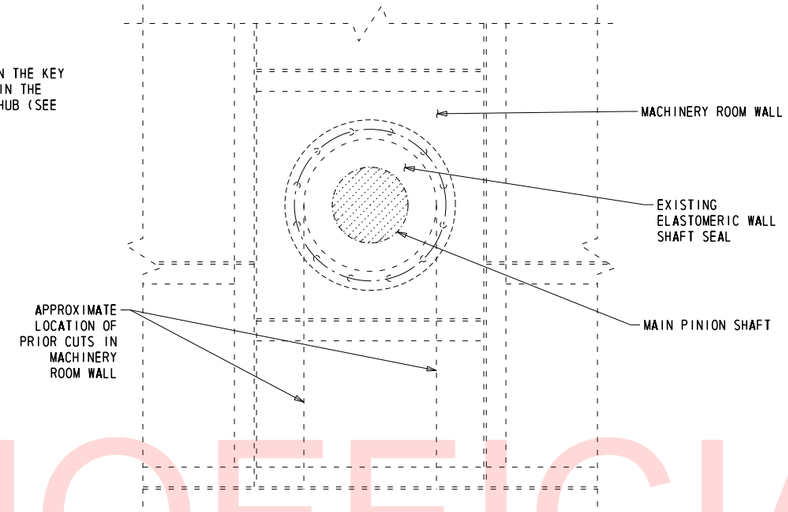
8/9/2018
M:\02889.04B\4000_Fin_Des\CADD\20_Mech\M-2.dgn



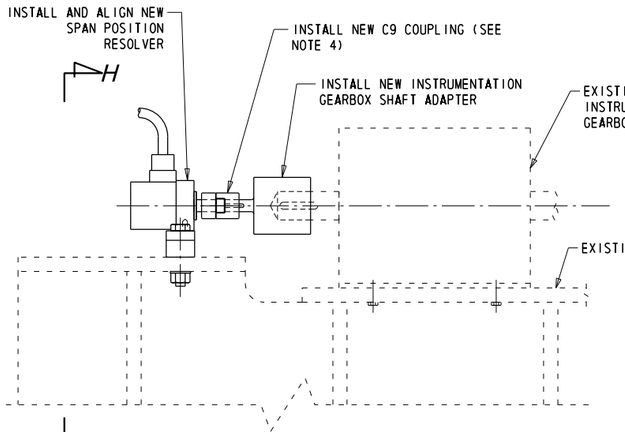
VIEW B-B
1" = 1'0"



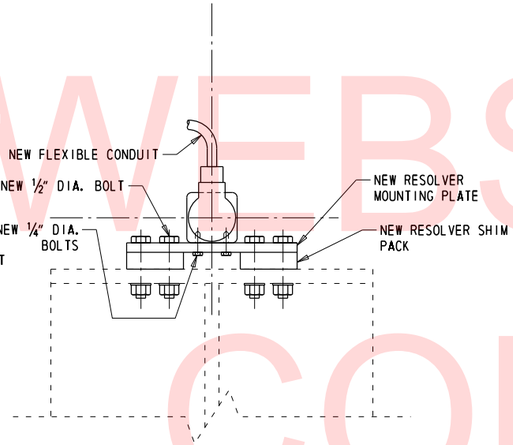
VIEW F-F
1" = 1'0"



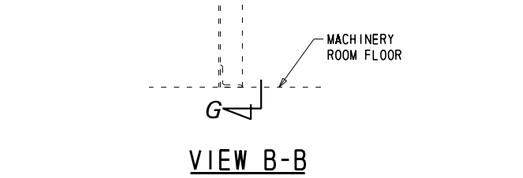
VIEW G-G
1" = 1'0"



VIEW C-C
3" = 1'0"

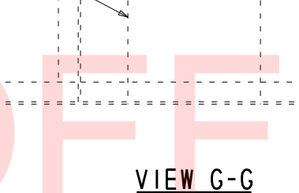


VIEW H-H
3" = 1'0"

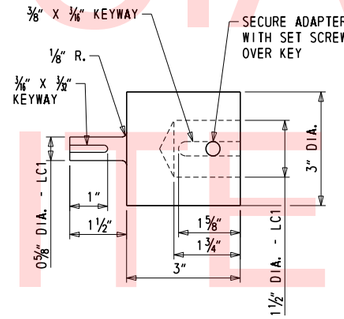


RESOLVER MOUNTING PLATE
6" = 1'0"
QTY: 1
MATERIAL: ASTM A36

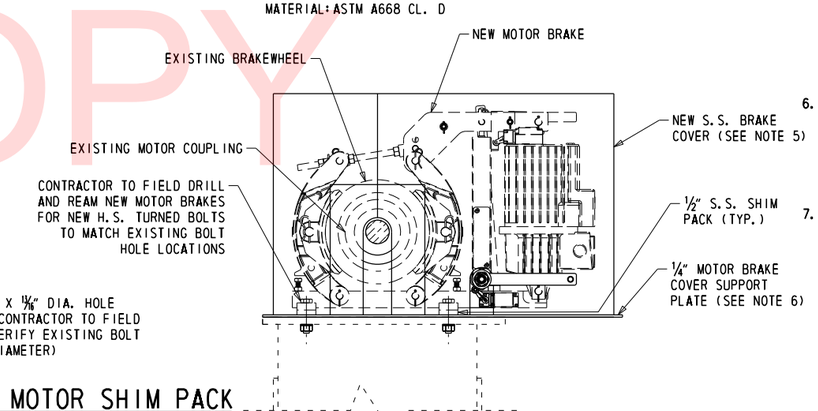
RESOLVER SHIMS
6" = 1'0"
QTY: 2
NOTE: EACH RESOLVER SHIM PACK SHALL INCLUDE SHIMS OF THE FOLLOWING THICKNESSES - ¾", ½", ¼", ⅛", 1/16", 1/32", 2 X 1/64"



SPAN DRIVE MOTOR SHIM PACK
1" = 1'0"
QTY: 2 (SEE NOTE 3)
NOTE: EACH SPAN DRIVE MOTOR SHIM PACK SHALL INCLUDE SHIMS OF THE FOLLOWING THICKNESSES - ½", ¼", 1/16", 1/16", 1/32", AND 2 X 1/64"



INSTRUMENTATION GEARBOX SHAFT ADAPTER
6" = 1'0"
QTY: 1
MATERIAL: ASTM A668 CL. D



VIEW E-E
NOT TO SCALE
MOTOR BRAKE COVER SUPPORT PLATE MATERIAL: ASTM A709 GR. 50

NORTH COUPLING C5 KEY REPOSITIONING SUGGESTED PROCEDURE:

1. WITH BOTH SPAN LOCK BARS DRIVEN, HAND RELEASE THE BRAKES TO REMOVE RESIDUAL TORQUE FROM THE SYSTEM.
2. SET THE BRAKES AND ELECTRICALLY LOCK OUT THE SPAN DRIVE MOTOR.
3. DISASSEMBLE THE ELASTOMERIC WALL SHAFT SEAL AND CUT THE PORTION OF THE MACHINERY ROOM WALL WHERE IT HAS PREVIOUSLY BEEN CUT.
4. SUPPORT THE FLOATING SHAFT AND DISASSEMBLE NORTH COUPLINGS C5 AND C6. LOWER THE FLOATING SHAFT TO THE FLOOR.
5. REMOVE THE KEY FROM THE COUPLING RIGID HUB / SPEED REDUCER OUTPUT SHAFT.
6. DRILL AND TAP NORTH COUPLING C5 RIGID HUB FOR A NEW SET SCREW. PARTIALLY INSTALL THE NEW SET SCREW.
7. REINSTALL THE KEY AT THE SPEED REDUCER OUTPUT SHAFT RIGID HUB. WHEN THE KEY IS REINSTALLED, IT SHOULD NOT OVERHANG THE END OF THE SHAFT. TIGHTEN THE SET SCREW.
8. CLEAN OLD GREASE FROM NORTH COUPLINGS C5 AND C6. REASSEMBLE THE COUPLINGS WITH NEW SEALS, GASKET, AND LUBRICANT (MOBIL MOBILUX EP-0 OR APPROVED EQUAL).
9. REINSTALL THE PORTION OF THE MACHINERY ROOM WALL THAT WAS REMOVED AND TACK WELD BACK INTO PLACE. REINSTALL THE WALL SHAFT SEAL. SPOT PAINT THE WALL WHERE PAINT WAS DISTURBED.
10. REMOVE THE LOCK OUT.

NOTES:

1. SEE DWG. RM-2 FOR THE LOCATIONS OF VIEWS B-B, C-C, AND E-E.
2. SEE SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR NEW POSITION RESOLVER DETAILS.
3. CONTRACTOR SHALL PROVIDE ALL SHIMS NECESSARY TO ALIGN THE NEW SPAN DRIVE MOTOR AS NOTED IN THE SPECIAL PROVISIONS. ANY ADDITIONAL SHIMS NEEDED TO MEET THE ALIGNMENT REQUIREMENTS SHALL BE IN CONFORMANCE WITH THE SPECIAL PROVISIONS. ALL SHIM DIMENSIONS SHALL BE VERIFIED IN THE SHOP DRAWING SUBMISSIONS AND SHALL MATCH THE MOUNTING FOOT OF THE COMPONENT.
4. REMOVE EXISTING COUPLING C9 HUB FROM THE INSTRUMENTATION GEARBOX AND INSTALL NEW COUPLING. NEW COUPLING C9 SHALL BE LOVEJOY LO7O JAW TYPE L COUPLING OR APPROVED EQUAL. COUPLING C9 RESOLVER HUB BORE TO PROVDE ANSI LC1 FIT WITH RESOLVER SHAFT AND KEYWAY TO MATCH RESOLVER KEY.
5. THE NEW BRAKE COVERS SHALL BE MADE OF 16 GAUGE TYPE STAINLESS STEEL AND SHALL INCLUDE A HINGED LID. THE COVERS SHALL BE SPLIT VERTICALLY AT THE SHAFT CENTERLINE AND HAVE S.S. LATCHES TO CONNECT THE SECTIONS OF THE COVER. THE COVER SHALL NOT INTERFERE WITH ELECTRICAL OR MANUAL OPERATION OF THE BRAKES, COUPLINGS, MOTOR, DIFFERENTIAL REDUCER, OR LIMIT SWITCHES. PROVIDE ¼" RADIAL CLEARANCE BETWEEN THE COVERS AND SHAFTS/COUPLING. THE COVERS SHALL INCLUDE HANDLES (NOT SHOWN) FOR REMOVAL AND INSTALLATION. THE NORTH MOTOR BRAKE COVER SHALL ALSO COVER THE MOTOR COUPLING.
6. MOTOR BRAKE COVER SUPPORT PLATE DIMENSIONS TO BE AS NEEDED TO SUPPORT AND SECURE THE NEW BRAKE COVERS. COPE MOTOR BRAKE COVER SUPPORT PLATE AS NEEDED FOR INSTALLATION AND OPERATION OF ADJACENT COMPONENTS INCLUDING (BUT NOT LIMITED TO) THE SPAN DRIVE MOTOR AND CUTOUT COUPLING C2.
7. WHEN REPOSITIONING THE KEY WITHIN THE KEYWAY, THE CONTRACTOR SHALL TAKE CARE TO AVOID ANY DAMAGE TO THE REDUCER COMPONENTS INCLUDING THE GEAR TEETH, BEARINGS, AND SHAFT.

8/2/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

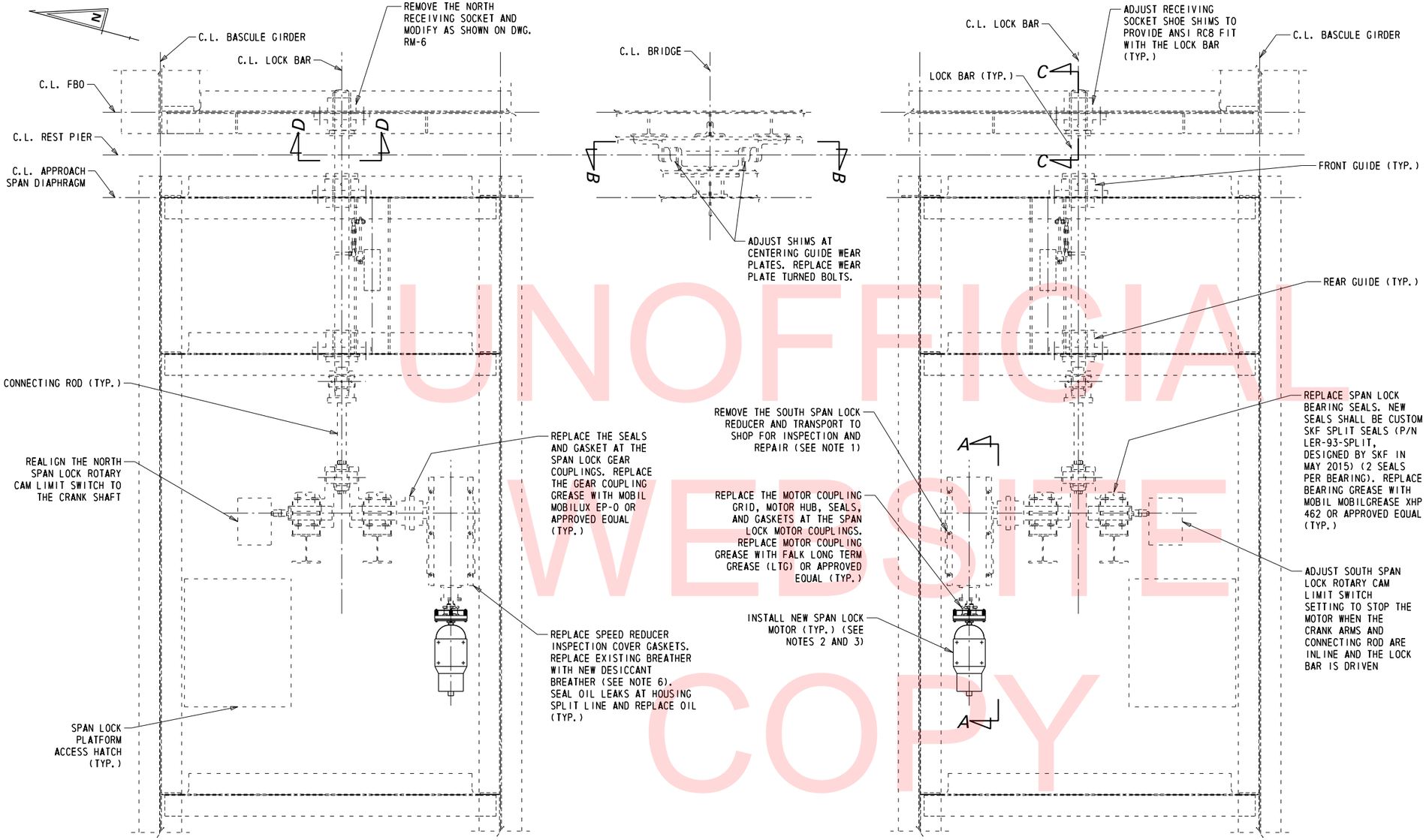
SCALE AS NOTED

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

CONTRACT	BRIDGE NO.	3-153
T201507602	DESIGNED BY: DJM	
COUNTY	CHECKED BY: DTS	
SUSSEX		

SPAN DRIVE MACHINERY REHABILITATION DETAILS

RM-3
SHEET NO. 32
TOTAL SHTS. 180



SPEED REDUCER SEALING PROCEDURE (SUGGESTED):

1. CONSULT WITH THE REDUCER MANUFACTURER TO PROVIDE A PROCEDURE FOR SEALING THE OIL LEAKS FROM THE SPEED REDUCERS IN THE FIELD. SUBMIT PROCEDURE TO THE ENGINEER FOR REVIEW. A REPRESENTATIVE OF THE MANUFACTURER SHALL BE ON-SITE TO PERFORM THIS WORK.
2. DRAIN OIL FROM THE REDUCER HOUSING AND AS PER THE MANUFACTURER'S RECOMMENDATION FLUSH THE INTERNAL SURFACES TO REMOVE ANY SLUDGE OR DEBRIS FROM WITHIN THE HOUSING. VISUALLY INSPECT INTERNAL SURFACES FOR DEBRIS WITHIN THE HOUSING.
3. WITH THE MACHINERY MOTORS LOCKED OUT/TAGGED OUT FOR OPERATION, RELEASE ANY RESIDUAL TORQUE FROM THE MACHINERY BY RELEASING THE BRAKES.
4. UNBOLT REDUCER AT THE BEARING COVER PLATES AND AT THE HOUSING SPLIT LINE. RAISE THE TOP HALF OF REDUCER HOUSING TO CLEAN THE MATING SURFACES WITH SOLVENT TO PREPARE THE REDUCER FOR NEW GASKET SEALANT.
5. REMOVE GASKET SEALANT TO THE SPLIT LINE AS DIRECTED BY THE REDUCER MANUFACTURER.
6. CLEAN THE MATING SURFACES AT THE SPLIT LINE AND BETWEEN THE BEARING COVER PLATES AND HOUSING WITH SOLVENT.
7. APPLY GASKET SEALANT TO THE SPLIT LINE AND BEARING COVER PLATES AS DIRECTED BY THE REDUCER MANUFACTURER.
8. REINSTALL THE TOP HALF OF THE REDUCER HOUSING AND BEARING COVER PLATES.
9. TORQUE REDUCER FASTENERS AS SPECIFIED BY THE MANUFACTURER.
10. FLUSH THE INTERNAL SURFACES TO REMOVE ANY DEBRIS FROM WITHIN THE HOUSING. VISUALLY INSPECT INTERNAL SURFACES FOR DEBRIS WITHIN THE HOUSING BEFORE ADDING NEW OIL.
11. FILL REDUCER HOUSING WITH NEW OIL.

NOTES:

1. AT A MINIMUM, REPAIRS TO THE SOUTH SPAN LOCK SPEED REDUCER SHALL INCLUDE VISUAL INSPECTION OF HOUSING, SHAFTS, AND GEAR TEETH AND REPLACEMENT OF BEARINGS, SEALS, AND GASKETS. UPON DISASSEMBLY AND INSPECTION OF THE SPEED REDUCER, THE ENGINEER SHALL PROVIDE DIRECTION TO THE CONTRACTOR IF ANY ADDITIONAL REPAIRS ARE REQUIRED. UPON REINSTALLATION, THE SPEED REDUCER SHALL BE REFILLED WITH MOBIL MOBILGEAR 600 XP 320 OIL OR APPROVED EQUAL.
2. ELECTRICALLY DISCONNECT, REMOVE, AND DISCARD EXISTING SPAN LOCK MOTORS. INSTALL NEW SPAN LOCK MOTORS. REFER TO SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR DETAILS. INSTALL NEW SPAN LOCK MOTORS WITH NEW TURNED BOLTS.
3. FURNISH AND INSTALL A NEW CONTROLLED TORQUE MOTOR COUPLING HUB ON SPAN LOCK MOTOR SHAFT TO MATCH THE EXISTING. SET THE COUPLING SLIP TORQUE TO 27 FT-LBS.
4. SEE DWG. RM-5 FOR VIEW A-A. SEE DWG. RM-6 FOR VIEWS B-B AND D-D AND SECTION C-C.
5. PRIOR TO DISASSEMBLING COUPLINGS OR BEARINGS, LOCK OUT THE SPAN LOCK MOTOR AND REMOVE ANY RESIDUAL TORQUE IN THE MACHINERY BY MANUALLY RELEASING THE BRAKE AT THE BACK OF THE MOTOR.
6. CONTRACTOR TO SUPPLY AND INSTALL ANY FITTINGS NECESSARY TO INSTALL NEW DESICCANT BREATHERS IN THE EXISTING BREATHER PORT AT EACH SPEED REDUCER.

SPAN LOCK MACHINERY - PLAN

EXISTING REDUCER INFORMATION		
REDUCER ID	QTY.	MODEL
SPAN LOCK REDUCER	2	EARLE GEAR MODEL NO. 5TR RATIO 159:1 SERIAL NO. 9555.H-1 (SOUTH) & 9555.H-2 (NORTH)

EXISTING COUPLING INFORMATION		
COUPLING ID	QTY.	MODEL
SPAN LOCK MOTOR COUPLING	2	FALK 1040T41
SPAN LOCK GEAR COUPLING	2	PHILADELPHIA GEAR H-E SIZE 3

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE 0 1.33 2.67 4 FEET

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: DJM	
COUNTY	CHECKED BY: DTS	
SUSSEX		

SPAN LOCK MACHINERY AND CENTERING GUIDE REHABILITATION

RM-4
SHEET NO. 33
TOTAL SHTS. 180

8/2018
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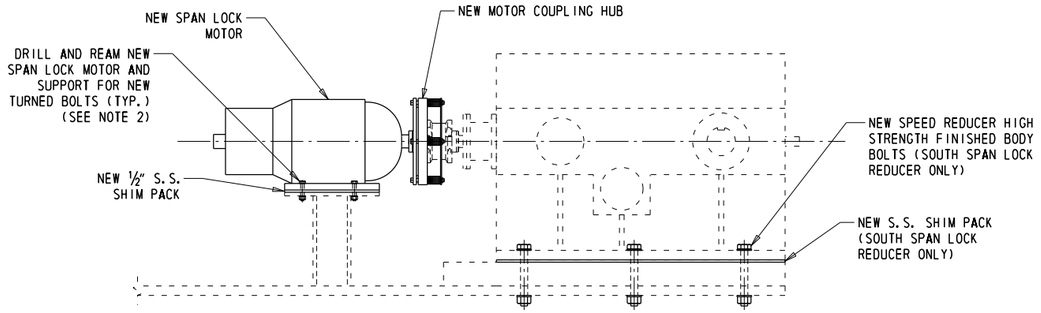
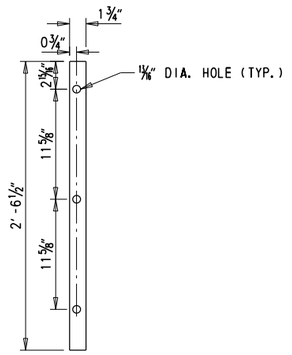


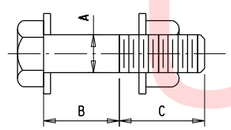


NOTES:

1. SEE DWG. RM-4 FOR THE LOCATION OF VIEW A-A.
2. COORDINATE SPAN LOCK MOTOR TURNED BOLT DIMENSIONS WITH MOTOR MANUFACTURER'S SUPPLIED BOLT HOLES AND THE EXISTING MOTOR SUPPORT BOLT HOLES. IF NEW TURNED BOLTS CAN NOT BE INSTALLED WITH THE PROPER FIT IN THE EXISTING MOTOR SUPPORT BOLT HOLES, 2 TAPERED DOWEL PINS SHALL BE INSTALLED AFTER THE MOTOR IS ALIGNED TO THE REDUCER.

VIEW A-A

1½" = 1'0"



SOUTH SPAN LOCK SPEED REDUCER SHIM PACK

1½" = 1'0"
QTY: 2
NOTE: EACH SOUTH SPAN LOCK SPEED REDUCER SHIM PACK SHALL INCLUDE SHIMS OF THE FOLLOWING THICKNESSES - ¼", ⅛", 1/16", ½", AND 2 X 1/16"

HIGH STRENGTH FINISHED BODY BOLT					
COMPONENT	QTY	A	B	C	THREADS
SOUTH SPAN LOCK SPEED REDUCER	6	0.746" - 0.750"	CONTRACTOR TO FIELD VERIFY	1½"	¾"-10

SOUTH SPEED REDUCER HIGH STRENGTH FINISHED BODY BOLTS

NOT TO SCALE
MATERIAL: ASTM A449
NOTES: EACH NEW BOLT SHALL BE INSTALLED WITH 2 WASHERS AND A NUT

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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

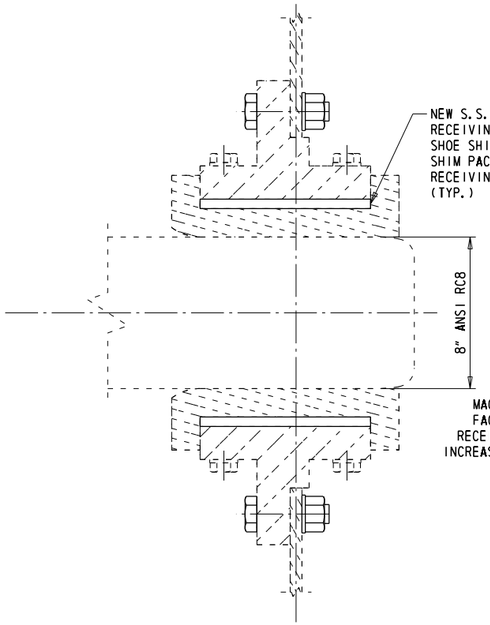
SCALE AS NOTED

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

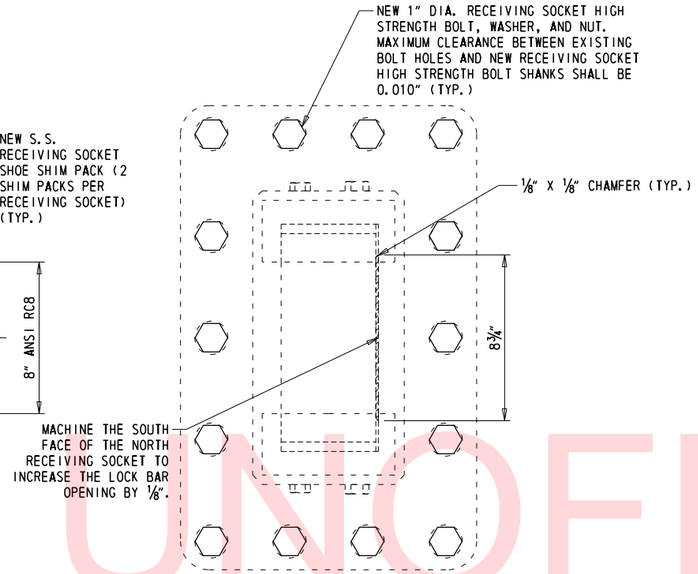
CONTRACT	T201507602
COUNTY	SUSSEX
BRIDGE NO.	3-153
DESIGNED BY:	DJM
CHECKED BY:	DTS

SPAN LOCK MACHINERY AND CENTERING GUIDE REHABILITATION DETAILS 1

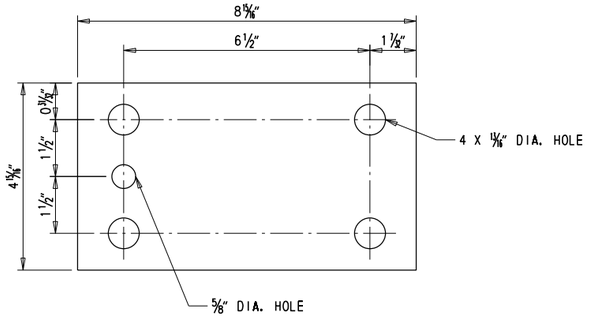
RM-5	
SHEET NO.	34
TOTAL SHTS.	180



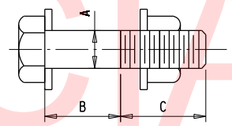
SECTION C-C
3" = 1'0"



VIEW D-D
3" = 1'0"



RECEIVING SOCKET SHIMS
6" = 1'0"
QTY: 4
NOTE: EACH RECEIVING SOCKET SHIM PACK SHALL INCLUDE SHIMS OF THE FOLLOWING THICKNESSES - ½", ¼", ⅛", 1/16", ½", 1/16", AND 3 X 0.005"



RECEIVING SOCKET BOLT DIMENSIONS				
QTY	A	B	C	THREADS
14	0.996" - 1.000"	2"	2¼"	1-8 UNC

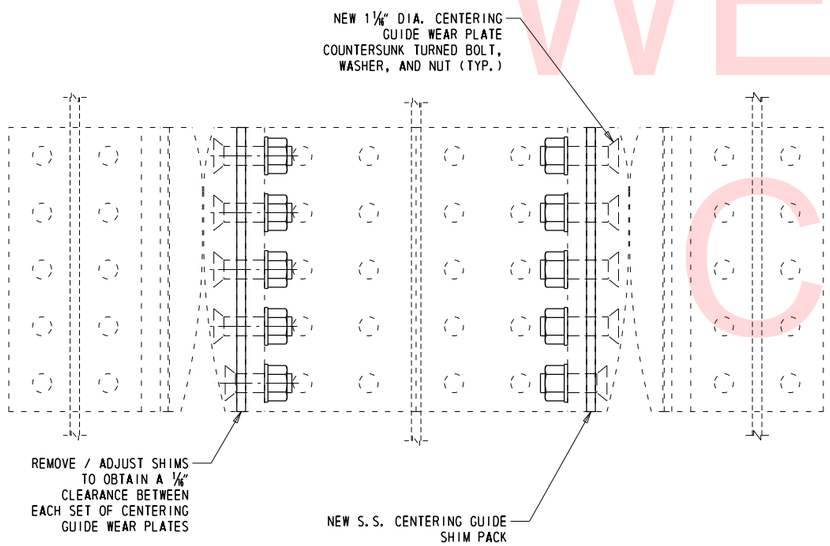
RECEIVING SOCKET HIGH STRENGTH BOLTS
NOT TO SCALE
MATERIAL: ASTM A449

SUGGESTED CENTERING GUIDE / RECEIVING SOCKET ADJUSTMENT PROCEDURE:

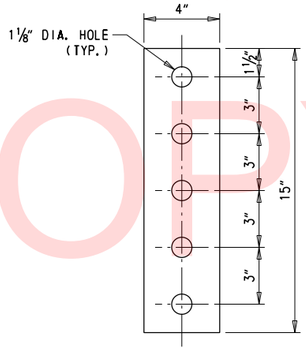
1. INSTALL TEMPORARY HOLD DOWN FOR THE NORTH BASCULE GIRDER.
2. ELECTRICALLY LOCK OUT THE NORTH SPAN LOCK MOTOR.
3. USE THE HAND CRANK TO MANUALLY PULL THE NORTH SPAN LOCK BAR.
4. REMOVE THE NORTH RECEIVING SOCKET, SHOES, SHIMS, AND BACKING PLATE.
5. MODIFY THE RECEIVING SOCKET AS SHOWN.
6. REINSTALL THE RECEIVING SOCKET WITH NEW HIGH STRENGTH BOLTS.
7. WITH THE BRIDGE CLOSED TO TRAFFIC, ADJUST SHIMS AT THE CENTERING GUIDE TO PROVIDE 1/16" OF CLEARANCE BETWEEN EACH SET OF WEAR PLATES WHEN THE LIVE LOAD BEARINGS ARE IN HARD CONTACT. INSTALL NEW TURNED BOLTS AT THE WEAR PLATES. LUBRICATE THE WEAR PLATES WITH MOBIL MOBILUX EP-2 OR APPROVED EQUAL.
8. WITH THE BRIDGE CLOSED TO TRAFFIC, THE LIVE LOAD BEARINGS IN HARD CONTACT, AND THE CENTERING GUIDE WEAR PLATES FREE OF CONTACT, REPLACE THE SHIMS AT THE SHOES OF BOTH RECEIVING SOCKETS. AT EACH RECEIVING SOCKET, THE TOTAL CLEARANCE BETWEEN THE LOCK BAR AND THE SHOES SHALL BE EQUAL TO AN ANSI RC8 CLEARANCE. THE SHOES SHOULD NOT BE IN CONTACT WITH THE LOCK BAR WHEN THE SPAN LOCKS ARE DRIVEN.
9. LUBRICATE THE LOCK BAR, AND RECEIVING SOCKET SHOES WITH MOBIL MOBILUX EP-2 OR APPROVED EQUAL.
10. REMOVE THE TEMPORARY HOLD DOWN FOR THE NORTH BASCULE GIRDER.
11. REMOVE THE LOCKOUT.

NOTES:

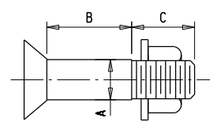
1. SEE DWG. RM-4 FOR THE LOCATION OF VIEWS B-B AND D-D AND SECTION C-C.
2. AT EITHER SPAN LOCK, IF THE LOCK BAR IS NOT ENGAGED WITH THE RECEIVING SOCKET OR THE SPAN LOCK MOTOR BRAKE IS NOT SET, A TEMPORARY BASCULE GIRDER HOLD DOWN MUST BE INSTALLED PRIOR TO ALLOWING TRAFFIC ON THE SPAN.
3. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING CENTERING GUIDE WEAR PLATE BOLT HOLE DIMENSIONS PRIOR TO FABRICATING THE NEW BOLTS. NEW TURNED BOLTS SHALL HAVE A MAXIMUM 0.010" CLEARANCE WITH THE BOLT HOLES IN THE WEAR PLATES AND CONNECTED ANGLES.



VIEW B-B
3" = 1'0"



WEAR PLATE SHIMS
3" = 1'0"
QTY: 2
NOTE: EACH CENTERING GUIDE WEAR PLATE SHIM PACK SHALL INCLUDE SHIMS OF THE FOLLOWING THICKNESSES - ¼", ⅛", 1/16", ½", AND 2 X 1/16"



WEAR PLATE COUNTERSUNK TURNED BOLT DIMENSIONS				
QTY	A (SEE NOTE 3)	B	C	THREADS
10	1⅛"	CONTRACTOR TO FIELD VERIFY LENGTH OF EACH BOLT	1½"	1-8 UNC

WEAR PLATE TURNED BOLTS
NOT TO SCALE
MATERIAL: SLOTTED HEAD COUNTERSUNK TURNED BOLTS MADE FROM ASTM A449 BLANKS OR APPROVED EQUAL

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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: DJM / CHECKED BY: DTS	SPAN LOCK MACHINERY AND CENTERING GUIDE REHABILITATION DETAILS 2	RM-6 / SHEET NO. 35 / TOTAL SHTS. 180

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BALANCE NOTES:

1. THE CONTRACTOR SHALL INVENTORY AND ARRANGE ALL EXISTING BLOCKS IN COUNTERWEIGHT POCKETS PRIOR TO ANY CONSTRUCTION ACTIVITY AS PER SPECIAL PROVISION SECTION 615503 - BRIDGE MECHANICAL SYSTEM. RESULTS OF THE INVENTORY SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

2. VALUES SHOWN IN THE BALANCE TABLE ARE FOR THE BALANCE IN THE SPAN CLOSED POSITION AND IN ACCORDANCE WITH THE SCHEMATIC MOMENT SIGN CONVENTION SHOWN ON THIS DRAWING.

3. THE VALUES IN THE BALANCE TABLE ARE APPROXIMATE. THE CONTRACTOR SHALL PREPARE AND SUBMIT BALANCE COMPUTATIONS IN ACCORDACE WITH SPECIAL PROVISION SECTION 615503 - BRIDGE MECHANICAL SYSTEM AND THE FORMAT THAT MATCHES THE BALANCE TABLE SHOWN ON THIS DRAWING.

4. THE LOCATIONS AND QUANTITIES OF BALANCE MATERIAL SHOWN IN THE BALANCE TABLE ARE APPROXIMATE. THE EXACT QUANTITY AND LOCATION OF BALANCE MATERIAL SHALL BE DETERMINED AND DOCUMENTED BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISION SECTION 615503 - BRIDGE MECHANICAL SYSTEM.

5. SPAN BALANCING IS AN ITERATIVE PROCESS AND MAY REQUIRE MULTIPLE ADJUSTMENTS TO ACHIEVE THE TEMPORARY AND FINAL BALANCE PARAMETERS SPECIFIED IN SPECIAL PROVISION SECTION 615503 - BRIDGE MECHANICAL SYSTEM.

6. STEEL BALANCE PLATES, AS DETAILED ON THIS DRAWING, SHALL BE USED TO ADJUST THE FINAL SPAN BALANCE. EACH LAYER OF BALANCE BLOCKS/PLATES SHALL BE ARRANGED IN SUCH A MANNER AS TO PREVENT SHIFTING OF BLOCKS/PLATES DURING BRIDGE OPERATION. IN ORDER TO ACCOUNT FOR OVERALL POCKET DIMENSIONS AND THE POSSIBILITY OF VARYING BALANCE BLOCK DIMENSIONS, THE INSTALLATION OF SMALLER STEEL PLATES MAY BE REQUIRED TO ENSURE TIGHT FIT OF BLOCKS/PLATES IN EACH POCKET. SUCH BLOCKS/PLATES SHALL BE PROVIDED BY THE CONTRACTOR AND MEET THE SAME MATERIAL AND COATING REQUIREMENTS SPECIFIED FOR THE DETAILED BALANCE PLATES SHOWN ON THIS DRAWING.

7. APPROXIMATELY 15 PERCENT SPARE BALANCE PLATES HAVE BEEN INCLUDED IN THE QUANTITIES LISTED BELOW. SPARE BLOCKS AND ANY CONCRETE BLOCKS REMOVED FROM THE POCKETS SHALL BE STORED IN THE COUNTERWEIGHT PIT STORAGE LOCATIONS OR AT A LOCATION DIRECTED BY THE ENGINEER.

8. THERE ARE APPROXIMATELY 415 SPARE 10"X10"X10" CONCRETE BALANCE BLOCKS LOCATED IN THE BOTTOM OF THE COUNTERWEIGHT PIT THAT MAY BE USED FOR ADJUSTING SPAN BALANCE.

9. EACH BALANCE PLATE SHALL BE COATED WITH ONE COAT OF PRIMER PRIOR TO INSTALLATION. THE BALANCE PLATES INSTALLED ON TOP OF THE COUNTERWEIGHT SHALL BE CLEANED AND PAINTED AFTER INSTALLATION IN ACCORDANCE WITH SECTION 616 OF THE 2016 DELDOT STANDARD SPECIFICATIONS.

10. THE EXISTING LOWER POCKETS DO NOT HAVE ANY COUNTERWEIGHT BALANCE BLOCKS WITHIN THE POCKETS.

11. THE BALANCE BLOCKS SHOWN IN THE COUNTERWEIGHT PLAN AND BASCULE GIRDER SCHEMATIC DO NOT REPRESENT THE CURRENT POCKET INVENTORY.

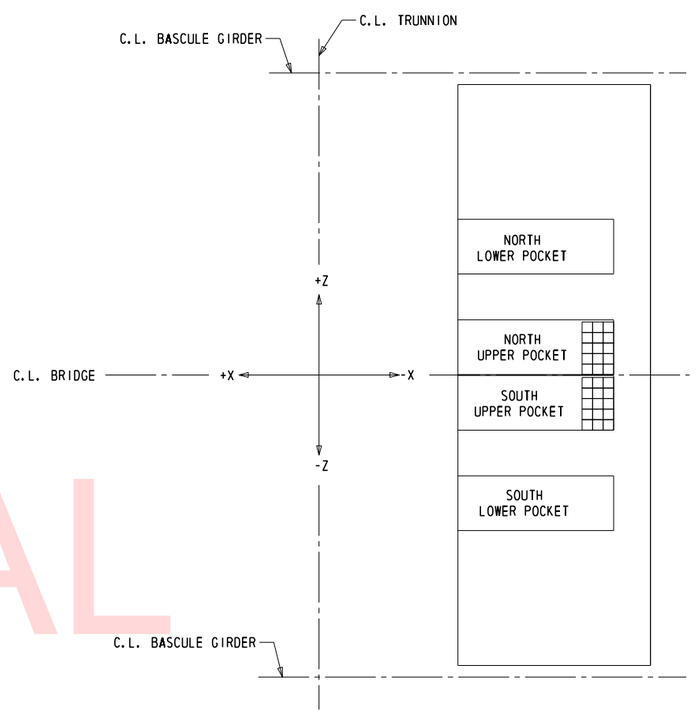
12. THE EXISTING ACCESS PLATFORMS HAVE MOVABLE PLATFORMS TO ACCESS THE COUNTERWEIGHT POCKETS WHEN THE LEAF IS IN THE SEATED POSITION. THE ENDS OF THE MOVABLE PLATFORMS ARE SUPPORTED WITH CHAINS CONNECTED TO THE FIXED PLATFORM RAILING AND A LEDGE ON THE FACE OF THE COUNTERWEIGHT, ALTHOUGH THE END OF THE RAMP MAY NOT FULLY BEAR ON THE LEDGE. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY PLATFORMS OR SUPPORTS NEEDED TO PERFORM THE WORK AT OR WITHIN THE COUNTERWEIGHT.

BASCULE LEAF - CHANGES TO SPAN BALANCE

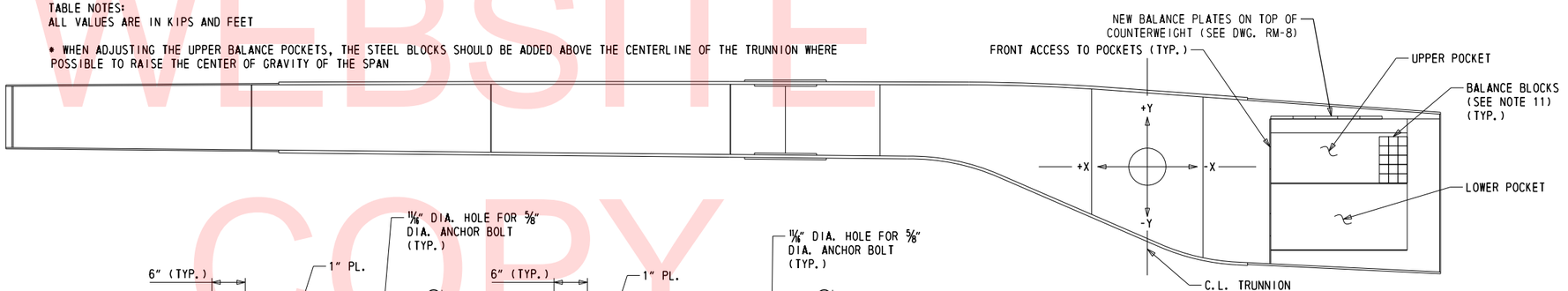
LOCATION	# OF BLOCKS/PLATES ADDED/REMOVED	WEIGHT	X	Y	Z	X-MOM	Y-MOM	Z-MOM
SIDEWALK REPAIRS - REMOVED	-	-29.0	-	-	-	-1658.5	-262.8	0
SIDEWALK REPAIRS - ADDED	-	44.8	-	-	-	2558.3	404.1	0
NORTH - LOWER POCKET CONCRETE	0	0	-	-	-	0	0	0
NORTH - LOWER POCKET STEEL	0	0	-	-	-	0	0	0
NORTH - UPPER POCKET CONCRETE	-220	-19.1	-17.4	1.4 *	2.2	332.6	-26.5	-42.0
NORTH - UPPER POCKET STEEL	350	19.8	-17.4	2.1 *	2.2	-345.7	40.8	43.7
SOUTH - UPPER POCKET CONCRETE	-220	-19.1	-17.4	1.4 *	-2.2	332.6	-26.5	42.0
SOUTH - UPPER POCKET STEEL	350	19.8	-17.4	2.1 *	-2.2	-345.7	40.8	-43.7
SOUTH - LOWER POCKET CONCRETE	0	0	-	-	-	0	0	0
SOUTH - LOWER POCKET STEEL	0	0	-	-	-	0	0	0
PLATES ON TOP OF COUNTERWEIGHT TYPE 1	66	16.2	-16.4	4.8	0	-264.6	78.3	0
PLATES ON TOP OF COUNTERWEIGHT TYPE 2	90	27.5	-16.0	4.8	0	-441.0	133.5	0
TOTAL	-	60.9	-	-	-	167.9	381.7	0

TABLE NOTES:
ALL VALUES ARE IN KIPS AND FEET

* WHEN ADJUSTING THE UPPER BALANCE POCKETS, THE STEEL BLOCKS SHOULD BE ADDED ABOVE THE CENTERLINE OF THE TRUNNION WHERE POSSIBLE TO RAISE THE CENTER OF GRAVITY OF THE SPAN



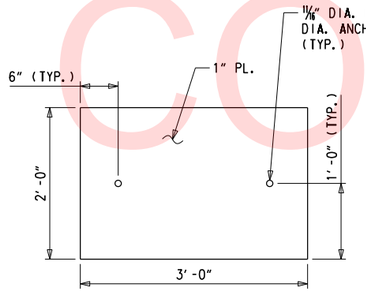
COUNTERWEIGHT PLAN



SPAN BALANCE SCHEMATIC - GIRDER ELEVATION

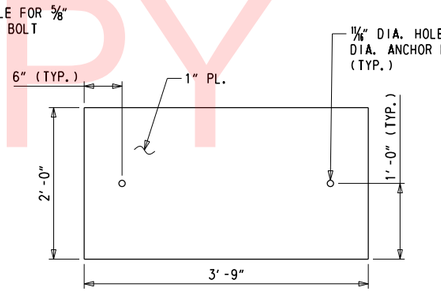
BALANCE PLATES FOR COUNTERWEIGHT POCKETS

WEIGHT OF STEEL PLATES: 57 LBS ±
MATERIAL: ASTM A36
QTY: 800



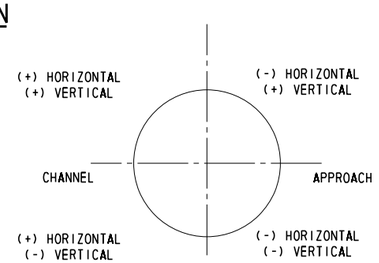
BALANCE PLATE FOR TYPE OF COUNTERWEIGHT - TYPE #1

WEIGHT OF STEEL PLATES: 245 LBS ±
MATERIAL: ASTM A36
QTY: 76



BALANCE PLATE FOR TYPE OF COUNTERWEIGHT - TYPE #2

WEIGHT OF STEEL PLATES: 305 LBS ±
MATERIAL: ASTM A36
QTY: 105



MOMENT SIGN CONVENTION SCHEMATIC

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153 · DESIGNED BY: JAB · CHECKED BY: DJM · SPAN BALANCE · RM-7 · SHEET NO. 36 · TOTAL SHTS. 180

8/3/2018
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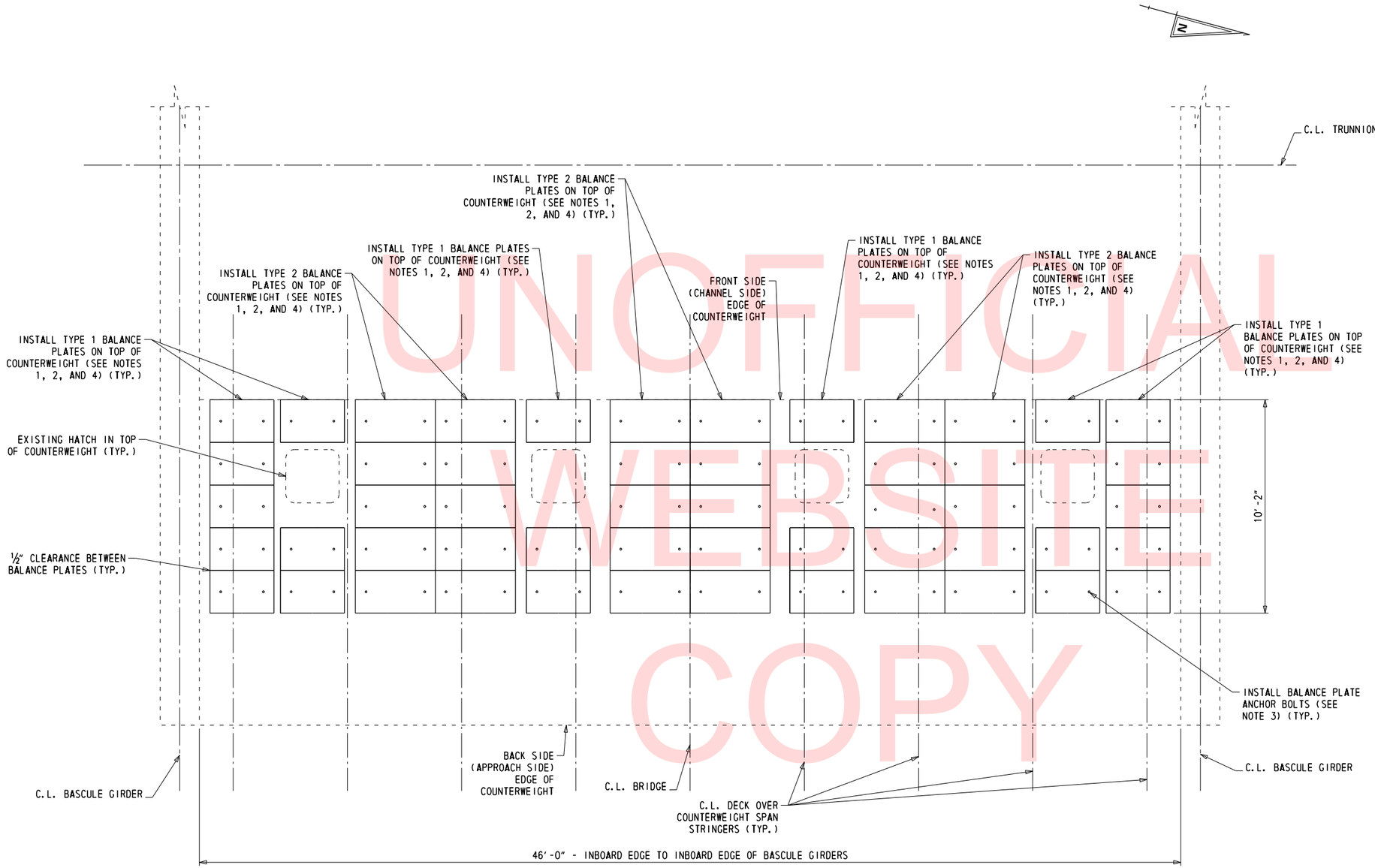

COUNTERWEIGHT - PLAN

3/8" = 1'-0"

NOTE: TRUNNION TOWERS, TRUNNION ACCESS PLATFORMS, COUNTERWEIGHT ACCESS PLATFORM AND BASCULE PIER NOT SHOWN FOR CLARITY

NOTES:

1. REFER TO DWG. RM-7 FOR BALANCE PLATE DETAILS.
2. PROVIDE 4" MINIMUM CLEARANCE BETWEEN BALANCE PLATES AND HATCHES ON THE TOP OF THE COUNTERWEIGHT.
3. BALANCE PLATES SHALL BE INSTALLED ON TOP OF THE COUNTERWEIGHT IN STACKS OF THREES AND SHALL BE SECURED IN PLACE USING 5/8" DIAMETER WEDGE-ALL ANCHORS MANUFACTURED BY SIMPSON OR AN APPROVED EQUAL. ANCHOR BOLTS SHALL HAVE A MINIMUM CONCRETE EMBEDMENT OF 3". NOTE THE COUNTERWEIGHT IS ENCASED IN 1" STEEL PLATE. VERIFY THAT PROTRUDING ENDS OF ANCHOR BOLTS ARE CLEAR OF THE DECK OVER COUNTERWEIGHT SPAN STRINGERS.
4. AFTER INSTALLATION OF THE BALANCE PLATES BUT PRIOR TO THE FINAL PAINTING, THE CONTRACTOR SHALL APPLY CAULK ALONG THE COUNTERWEIGHT AND BALANCE PLATE INTERFACES.
5. DURING INSTALLATION, BALANCE PLATES SHALL NOT REST ON ANY OTHER INSTALLED BALANCE PLATE STACK IN A MANNER THAT THAT WOULD RESULT IN ADDITIONAL LOADING TO THE ANCHOR BOLTS.
6. BALANCE PLATES SHALL BE FABRICATED AND DELIVERED PER ITEM M5 WITHIN SP 615503 (BREAKOUT SHEET ITEM "SPAN BALANCE STEEL PLATES AT BRIDGE 3-153"). INSTALLATION AND ADJUSTMENT OF THE BALANCE PLATES (INCLUDING INSTALLATION OF ANCHOR BOLTS ON THE COUNTERWEIGHT) SHALL BE PAID FOR UNDER ITEM M4 WITHIN SP 615503 (BREAKOUT SHEET ITEM "SPAN BALANCING AT BRIDGE 3-153").

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	SPAN BALANCE - COUNTERWEIGHT PLATES
				COUNTY SUSSEX	DESIGNED BY: AR	
					CHECKED BY: DMM	

RM-8 | SHEET NO. 37 | TOTAL SHTS. 180

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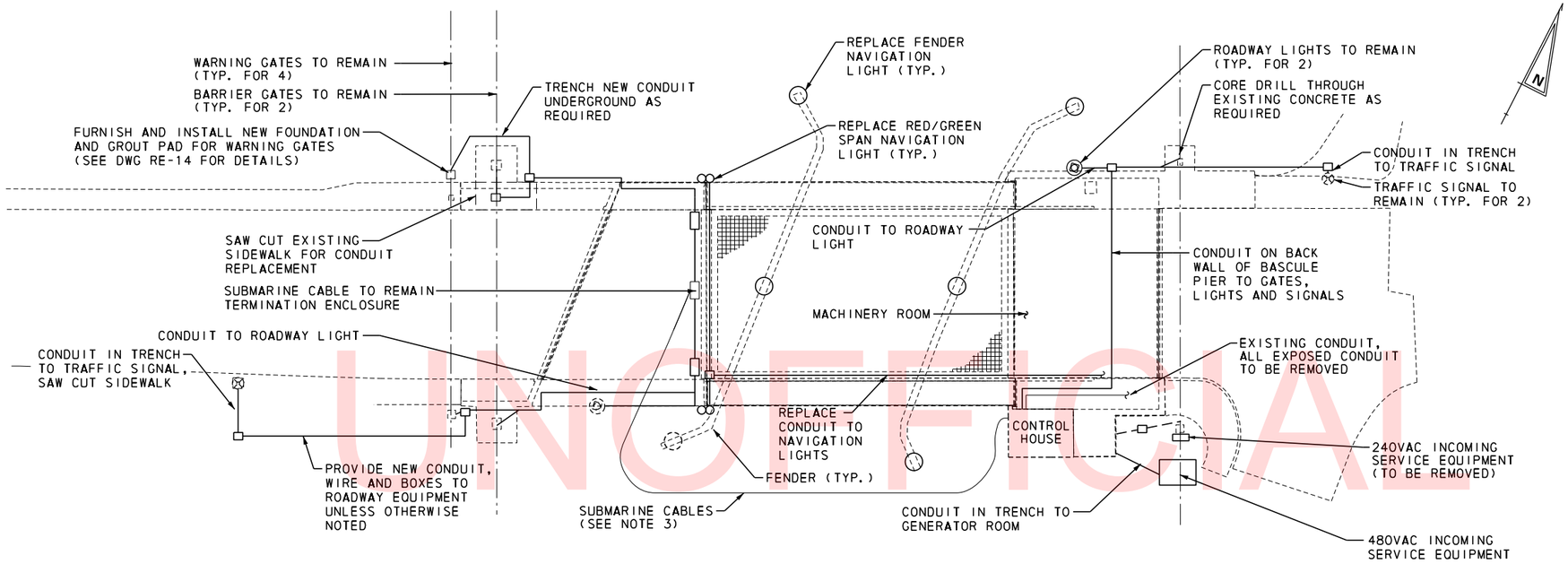
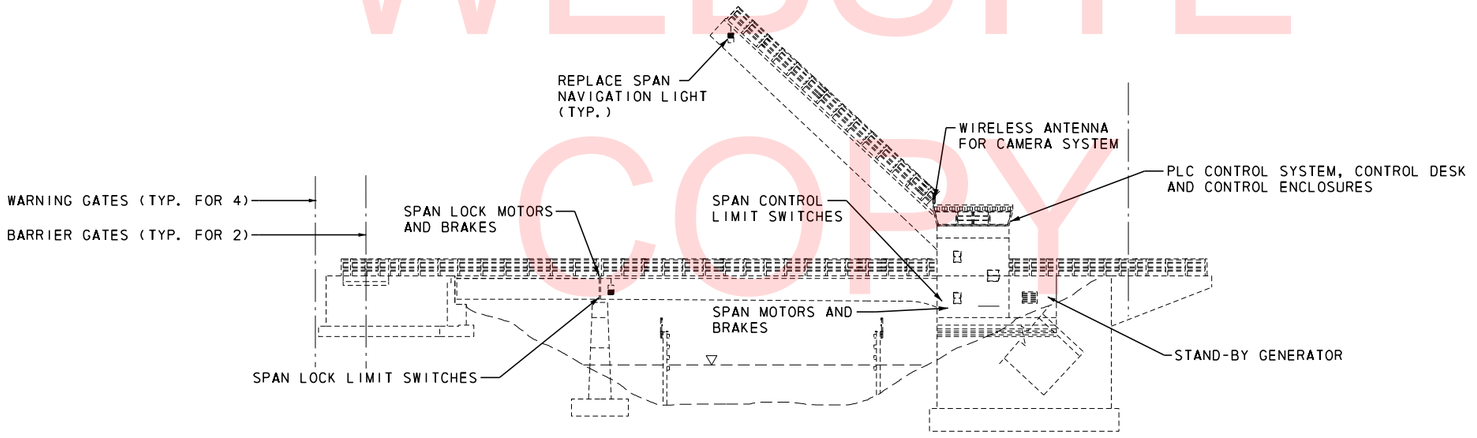


BRIDGE PLAN



BRIDGE ELEVATION

NOTES:

1. SEE DWG RE-02 FOR SCOPE OF WORK NOTES.
2. NOT ALL CONDUIT SHOWN ON THIS LAYOUT DWG.
3. THE EXISTING SUBMARINE CABLES CONSIST OF 2 CABLES WITH 61#10 AWG CONDUCTORS EACH (122#10 TOTAL) PER E84 OF AS-BUILT DWGS.
4. ALL ELECTRICAL WORK SHOWN FOR REHOBOTH AVE BRIDGE SHALL BE PAID FOR UNDER THE ITEM "615504 BRIDGE ELECTRICAL SYSTEM."

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	GENERAL PLAN & ELEVATION	RE-1
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 38
					CHECKED BY: AHN		TOTAL SHTS. 180

8/9/2018
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ELECTRICAL SCOPE OF WORK

1. STANDARDS - ALL WORK SHALL CONFORM TO THE MOST CURRENT VERSIONS OF THE FOLLOWING STANDARDS:

A. AASHTO AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS LRFD MOVABLE HIGHWAY BRIDGE DESIGN SPECIFICATIONS
B. NEC NATIONAL FIRE PROTECTION ASSOCIATION 70 NATIONAL ELECTRICAL CODE
C. NFPA NATIONAL FIRE PROTECTION ASSOCIATION 101 LIFE SAFETY CODE
D. OSHA OCCUPATIONAL SAFETY AND HEALTH ASSOCIATION
E. IEEE INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
F. IPCEA INSULATED POWER CABLE ENGINEERS ASSOCIATION
G. NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
H. UL UNDERWRITERS LABORATORY
I. ANSI AMERICAN NATIONAL STANDARDS INSTITUTE
J. ASTM AMERICAN SOCIETY FOR TESTING AND MATERIAL

2. FIELD MEASURING AND VERIFICATION

THE CONTRACTOR SHALL PERFORM A FIELD SURVEY TO DETERMINE ALL EXISTING DIMENSIONS OF THE CONTROL HOUSE, MACHINERY ROOMS, SPAN LOCK PLATFORMS AND THE ROADWAY TO LOCATE AND INSTALL THE NEW EQUIPMENT. THE CONTRACTOR SHALL PERFORM A FIELD SURVEY TO VERIFY THE EXISTING WIRING TO VERIFY THE WIRE TAGS, AS-BUILT DOCUMENTATION, AND CONTRACT PLANS.

3. INCOMING SERVICE

A NEW INCOMING SERVICE TRANSFORMER AND CONCRETE PAD SHALL BE FURNISHED AND INSTALLED BY DELMARVA (DPL) AS PART OF THIS WORK. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE INCOMING SERVICE WITH DELDOT AND DPL. AS PART OF THIS WORK THE CONTRACTOR SHALL FURNISH AND INSTALL THE ASSOCIATED DISCONNECT SWITCH, GROUNDING SYSTEM, SECONDARY CONDUIT, SECONDARY CONDUCTORS, SUPPORT RACK AND OTHER REQUIRED EQUIPMENT AS REQUIRED TO COMPLETE THE WORK AS SHOWN AND SPECIFIED.

THE EXISTING SERVICE CONNECTED TO THE BRIDGE IS A 240V, 3 PHASE, HIGH LEG DELTA SERVICE. THE CONTRACTOR SHALL MAINTAIN THIS SERVICE DURING CONSTRUCTION AS NEEDED AND DISCONNECT AND REMOVE ONCE ALL EQUIPMENT AND SYSTEMS ARE OPERABLE AT 480/277VAC, 3 PHASE.

4. STANDBY GENERATOR AND ATS

THE EXISTING GENERATOR LOCATED IN THE CONTROL HOUSE SHALL REMAIN. THE CONTRACTOR SHALL RECONNECT THE EXISTING UNIT AS A 480-277V WYE SYSTEM. A NEW AUTOMATIC TRANSFER SWITCH SHALL BE FURNISHED AND INSTALLED IN THE GENERATOR ROOM TO TRANSFER POWER FROM THE NORMAL UTILITY SOURCE TO THE STANDBY GENERATOR POWER SOURCE.

5. CONTROL ENCLOSURE MODIFICATIONS

THE EXISTING MOTOR CONTROL CABINET (MCC) AND DRIVE CABINET ENCLOSURES LOCATED IN THE SWITCHBOARD ROOM SHALL REMAIN. THE CONTRACTOR SHALL REPLACE THE EXISTING BACKPANEL AND EQUIPMENT AS SHOWN ON THE PLANS. ALL WIRING SHALL BE NEW UNLESS OTHERWISE NOTED.

A NEW PLC ENCLOSURE SHALL BE FURNSIHED AND INSTALLED AS SHOWN ON THE PLANS.

THE NEW DRIVES SHALL BE FLUX VECTOR TYPE AND LOCATED WITHIN THE EXISTING AUXILARY CABINET AS SHOWN ON THE PLANS. THE DRIVE SYSTEM SHALL OPERATE AS A CLOSED LOOP SYSTEM WITH AN ENCODER CONNECTED TO THE NEW MOTOR. THE DRIVE SHALL BE PROVIDED WITH CIRCUIT BREAKER, FUSE, LINE FILTER, LOAD CONTACTOR AND ALL ACCESSORIES AS SHOWN ON THE PLANS AND SPECIFIED.

6. MOTORS

REMOVE AND DISPOSE OF THE EXISTING SPAN MOTOR AND SPAN LOCK MOTORS. MODIFY AND RECONNECT EXISTING WARNING GATE AND BARRIER GATE MOTORS FOR NEW 480VAC SERVICE.

FURNISH AND INSTALL ONE (1) NEW 60HP, 480VAC, 900 RPM, INVERTER DUTY, TENV NEMA DESIGN A MOTOR. THE MOTOR SHALL BE EQUIPPED WITH AN INTERNAL HEATER AND AN ENCODER TO PROVIDE MOTOR SPEED FEEDBACK TO THE ASSOCIATED DRIVE. FURNISH AND INSTALL IN-SIGHT, NEMA-4X STAINLESS STEEL DISCONNECT SWITCH FOR THE MOTOR.

FURNISH AND INSTALL TWO (2) NEW 3HP, 480 VAC 900 RPM, TENV NEMA DESIGN D MOTORS FOR THE SPAN LOCKS. THE MOTOR SHALL BE EQUIPPED WITH AN INTERNAL HEATER AND SOLENOID BRAKE. FURNISH AND INSTALL IN-SIGHT, NEMA-4X STAINLESS STEEL DISCONNECT SWITCH FOR THE MOTOR.

7. BRAKES

FURNISH AND INSTALL TWO (2) MOTOR BRAKES. CONNECT EACH UNIT TO THE NEW CONTROL SYSTEM. EACH BRAKE SHALL BE EQUIPPED WITH A HAND RELEASE MECHANISM AND LIMIT SWITCHES TO INDICATE SET, RELEASED, AND HAND RELEASED POSITIONS. FURNISH AND INSTALL TWO (2) IN-SIGHT, NEMA-4X STAINLESS STEEL DISCONNECT SWITCHES, ONE FOR EACH BRAKE.

8. LIGHTING AND HEATING

FURNISH AND INSTALL ONE (1) NEMA-12 STEP DOWN 480V/208-120 VAC CONNECTED TRANSFORMER IN THE CONTROL HOUSE TO POWER THE BRIDGE SERVICE EQUIPMENT.

THE HEATING SYSTEM SHALL BE PROVIDED THROUGH NEW HEAT FIXTURES AND INCORPORATE THE CONTROLS AS PART OF THE NEW CONTROL ENCLOSURES AS SHOWN ON THE PLANS.

THE CONTRACTOR SHALL REMOVE THE EXISTING PANELBOARDS, FIXTURES AND ASSOCIATED CONDUIT AND WIRE.

9. PLC CONTROL SYSTEM

FURNISH AND INSTALL A NEW PROGRAMMABLE LOGIC CONTROLLER (PLC) BASED CONTROL SYSTEM. THIS WILL INCLUDE A NEW CONTROL DESK IN THE CONTROL HOUSE AND A NEW PLC CABINET IN THE SWITCHBOARD ROOM. THE EQUIPMENT ENCLOSURES LOCATED IN THE CONTROL HOUSE SHALL BE RATED NEMA-12. THE PANELS SHALL USE ALLEN-BRADLEY (AB) CONTROLLOGIX PLC WITH AND TOUCHSCREEN DISPLAYS. REMOVE AND DISPOSE FROM SITE ALL EXISTING EQUIPMENT TO BE REPLACED INCLUDING BUT NOT LIMITED TO: CONTROL DESK, DRIVE CABINETS, AUXILIARY CABINETS, POWER CABINETS, ATS, SPAN LOCK MOTOR, SPAN MOTOR, LIMIT SWITCHES NOT SCHEDULED TO BE REUSED, AND ASSOCIATED CONDUIT, BOXES, WIRE ETC. ALL EQUIPMENT TO REMAIN IN SERVICE SHALL BE PROTECTED AT ALL TIMES. ETHERNET COMMUNICATION NETWORK TO COMMUNICATE BETWEEN THE CONTROL DESK AND THE PLC CABINET IN THE SWITCHBOARD ROOM. ALL REQUIRED PROGRAMMING SHALL BE PROVIDED BY THE CONTRACTOR. THE PROGRAMMABLE LOGIC CONTROLLER (PLC) SHALL BE INTERFACED WITH THE AUTOMATIC TRANSFER SWITCH (ATS) AND GENERATOR PANEL.

10. LIMIT SWITCHES

INTEGRATE THE EXISTING LIMIT SWITCHES FOR SPAN POSITION, SPAN LOCK MOTOR OPERATION, WARNING GATES MOTOR OPERATION AND BARRIER GATES MOTOR OPERATION INTO THE NEW CONTROL SYSTEM. FURNISH AND INSTALL TWO (2) NEW FULLY CLOSED PROXIMITY SENSORS, TWO (2) NEW SPAN LOCK BAR PROXIMITY SENSORS, ONE (1) OVER TRAVEL PROXIMITY SENSOR, SPAN POSITION RESOLVER, ENCODER AND SPEED SWITCH INTO THE NEW CONTROL SYSTEM. INTEGRATE THE NEW BRAKE LIMIT SWITCHES INTO THE NEW CONTROL SYSTEM.

ALL LIMIT SWITCHES SHOWN IN THE WIRING DIAGRAMS ARE SHOWN IN THE CONFIGURATION CORRESPONDING TO THE ROADWAY OPEN TO VEHICULAR TRAFFIC: SPAN FULLY CLOSED, ALL BRAKES SET AND NOT HAND RELEASED, WEDGES FULLY DRIVEN, ALL GATES FULLY RAISED, AND ALL DISCONNECT SWITCHES IN THE NOT DISCONNECTED POSITION.

11. TRAFFIC CONTROL EQUIPMENT MODIFICATIONS

THE CONTRACTOR SHALL MODIFY THE EXISTING WARNING, BARRIER GATES AND TRAFFIC SIGNALS AS SHOWN ON THE PLANS AND SPECIFIED. ALL WIRING FROM THE MOTOR CONTROL ENCLOSURE TO THE DISCONNECT SWITCH, EXCLUDING THE SUBMARINE CABLE, SHALL BE NEW, INCLUDING THE DISCONNECT SWITCH. THE CONTRACTOR SHALL INCORPORATE THE EXISTING TRAFFIC CONTROL EQUIPMENT INTO THE NEW CONTROL SYSTEM.

12. CONDUIT AND WIRE

FURNISH AND INSTALL NEW CONDUIT, BOXES, AND WIRE AS REQUIRED TO FULLY CONNECT ALL EXISTING AND NEW EQUIPMENT TO THE ELECTRICAL SYSTEM AS SPECIFIED AND SHOWN ON THE PLANS.

UNLESS OTHERWISE NOTED, ALL NEW CONDUIT SHALL BE PVC COATED RIGID GALVANIZED STEEL CONDUIT, EXCEPT FOR FINAL CONNECTIONS TO LIMIT SWITCHES AND MOTORS WHICH SHALL BE LIQUIDTIGHT FLEXIBLE CONDUITS. NO CONDUIT USED SHALL BE SMALLER THAN 3/4".

FOR THE MOTOR BRAKE FINAL CONNECTIONS, THE CONTRACTOR SHALL SUPPLY FLEXIBLE SOOW CORDS FROM THE LOCAL TERMINAL BOX.

FLEXIBLE CONNECTIONS REQUIRED TO CONNECT CONDUIT AND WIRE ON THE MOVABLE SPAN SHALL BE MADE USING FLEXIBLE DROOP CABLES FABRICATED FROM TYPE SOOW CABLES WITH STRAIN RELIEF FITTINGS. THE DROOP CABLES SHALL BE TERMINATED AT LOCAL TERMINAL BOXES. THE DROOP CABLES AND TERMINAL BOXES SHALL BE LOCATED IN A SIMILAR LOCATION TO THE EXISTING.

ALL NEW WIRING SHALL BE XHHW AND INSTALLED IN CONDUIT. THE MINIMUM WIRE SIZE FOR CONTROL WIRES INSIDE ENCLOSURES SHALL BE #14 AWG AND THE MINIMUM SIZE FOR POWER WIRES SHALL BE #12AWG FOR ALL NEW WIRING IN ACCORDANCE WITH AASHTO.

THE CONTRACTOR SHALL FIELD VERIFY ALL CONDUCTORS, TRACE THE WIRING, AND PROVIDE WIRE TAGS ON ALL EXISTING WIRING. THIS INFORMATION SHALL BE INCLUDED ON THE AS-BUILT DRAWINGS FOR EASE OF FUTURE MAINTENANCE.

13. FIRE ALARM AND SECURITY SYSTEM

THE CONTRACTOR SHALL FURNISH AND INSTALL A NEW FIRE ALARM SYSTEM IN ACCORDANCE WITH NFPA 72, THE DELAWARE FIRE MASHALL AND AS SHOWN ON THE PLANS AND SPECIFIED HEREIN.

THE CONTRACTOR SHALL FURNISH AND INSTALL HEAT, SMOKE, CO DETECTORS AS SHOWN ON THE PLANS OR OTHERWISE REQUIRED. THE EXISTING PHONE LINE SHALL BE REPAIRED AND MADE OPERATIONAL AND A NEW SECONDARY COMMINICATION LINE SHALL BE FURNISHED AND INSTALLED.

THE CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT AND BOXES FOR THE CAMERAS. DELDOT'S SECURITY CONTRACTOR SHALL FURNISH AND INSTALL UNDER A SEPERATE CONTRACT THE CAMERAS, WIRING, KEYLESS ACCESS, ANNTENA, PORTIONS OF FIBER OPTIC CABLES AND OTHER RELATED ACCESSORIES UNLESS OTHERWISE NOTED.

14. DEMOLITION

REMOVE AND DISPOSE FROM SITE EXISTING EQUIPMENT TO BE REPLACED INCLUDING BUT NOT LIMITED TO: CONTROL DESK, DRIVE CABINET BACK PANEL, AUXILIARY CABINET, BACKPANEL POWER CABINET, SPAN LOCK MOTORS, SPAN MOTOR, SPAN LOCK BAR LIMIT SWITCHES, AND ASSOCIATED CONDUIT, BOXES WIRE, ETC. ALL EQUIPMENT TO REMAIN IN SERVICE SHALL BE PROTECTED AT ALL TIMES.

15. BRIDGE OPERATION BY THE CONTRACTOR

THE CONTRACTOR SHALL KEEP THE SPAN OPERATIONAL AT ALL TIMES, IN ACCORDANCE WITH THE COAST GUARD APPROVALS. THE CONTRACTOR SHALL PROVIDE A TEMPORARY POWER AND CONTROL SYSTEM TO OPERATE THE SPAN, LOCKS, GATES, AND ASSOCIATED EQUIPMENT SAFELY DURING CONSTRUCTION. ANY REQUEST TO TAKE THE SPAN OUT OF SERVICE SHALL BE APPROVED BY DELDOT AND THE US COAST GUARD. THE CONTRACTOR SHALL MAINTAIN A COMPLETE FUNCTIONAL CHANNEL NAVIGATIONAL LIGHTING SYSTEM DURING ENTIRE CONSTRUCTION PERIOD.

16. OPERATION AND MAINTENANCE MANUALS

THE CONTRACTOR SHALL FURNISH COMPLETE MAINTENANCE MANUALS WITH ACCURATE AS-BUILT DOCUMENTATION FOR ALL WORK INCLUDING EXISTING EQUIPMENT. THESE MANUALS SHALL BE COMPLETED PRIOR TO COMMISSIONING THE BRIDGE ELECTRICAL AND CONTROL SYSTEMS AND USED AS PART OF THE COMMISSIONING PROCESS TO VERIFY THE MANUAL ACCURACY. THE MANUALS SHALL BE USED AS PART OF THE TRAINING OF THE BRIDGE OPERATORS AND TECHNICIANS ON THE SAFE OPERATION AND MAINTENANCE OF THE BRIDGE.

17. COMMISSIONING

THE CONTRACTOR SHALL COMPLETELY COMMISSION THE BRIDGE CONTROL SYSTEM IN A FACTORY TEST AND THEN ONSITE TO SHOW THE EQUIPMENT IS INSTALLED ACCURATELY AND SAFELY IN ACCORDANCE WITH THE PLANS AND SPECIAL PROVISIONS. ALL EQUIPMENT SHALL BE OPERATED AND TESTED TO THE SATISFACTION OF THE ENGINEER AND A TESTING PROCEDURE SHALL BE DEVELOPED FOR SHOP AND FIELD TESTING TO DOCUMENT THE TESTING OF ALL EQUIPMENT.

GENERAL ELECTRICAL WORK NOTES

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC), AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO), U.S. COAST GUARD AND LOCAL ORDINANCE AND REGULATIONS. COORDINATE ALL ELECTRICAL WORK WITH DELDOT AND OTHER CONTRACTORS ON THE SITE.

2. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES AND SHALL BE SCHEDULED CONSISTENT WITH THE OVERALL CONSTRUCTION STAGING SEQUENCE.

3. THE PLANS ARE DIAGRAMMATIC AND ARE NOT TO BE SCALED. THE LOCATIONS OF EQUIPMENT AND ROUTING OF CONDUITS SHOWN ON THE CONTRACT DRAWINGS ARE APPROXIMATE. EXACT LOCATIONS SHALL BE DETERMINED BASED UPON APPROVED SHOP DRAWINGS SUBMITTED BY THE CONTRACTOR.

4. THE LOCATION AND NUMBER OF RACEWAYS AND JUNCTION BOXES SHOWN ON THE PLANS ARE OF SCHEMATIC TYPE AND DO NOT PURPORT TO BE EXACT. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REQUIRED RACEWAYS, JUNCTION BOXES, CONDUIT FITTINGS, ELBOWS, AND HARDWARE FOR A COMPLETE INSTALLATION IN ACCORDANCE WITH THE NEC WHETHER OR NOT THEY ARE EXPLICITLY SHOWN OR INDICATED ON THE CONTRACT DRAWINGS.

5. THE CONTRACTOR SHALL FURNISH AND INSTALL EXPANSION FITTINGS OF THE APPROVED TYPE WHEREVER CONDUITS PASS THROUGH STRUCTURAL EXPANSION JOINTS. DEFLECTION FITTINGS SHALL ALSO BE FURNISHED AND INSTALLED AS NECESSARY.

6. PROVIDE EQUIPMENT GROUNDING PER NEC REQUIREMENTS RUNNING SEPARATE GROUNDING WIRE IN EACH CONDUIT. GROUND CONDUCTORS SHALL BE PROVIDED IN ALL FLEXIBLE CABLES. MINIMUM SIZE GROUND CONDUCTOR SHALL BE #12 AWG. ALL CABINETS, TERMINAL AND JUNCTION BOXES SHALL BE GROUNDED IN ACCORDANCE WITH THE NEC.

7. RUN CONDUIT AT RIGHT ANGLES OR PARALLEL TO HOUSE/BRIDGE LINES. RACK NEATLY AND FASTEN SECURELY ALL CONDUITS. USE INSULATED BUSHINGS AND DOUBLE NUTS ON MOVABLE SPAN AND WHERE INDICATED IN THE SPECIFICATIONS. PROVIDE PULL/JUNCTION BOXES AS REQUIRED TO FACILITATE WIRING.

8. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL ELECTRICAL COMPONENTS, CONDUITS, HANGERS, SUPPORTS, ETC. WITH THE OTHER DISCIPLINES OR AS REQUIRED BY THE ENGINEER.

9. STRUCTURAL STEEL SHALL NOT BE CUT, DRILLED, OR WELDED TO EXCEPT AS MAY BE EXPLICITLY AUTHORIZED BY THE ENGINEER IN WRITING.

10. ALL CONDUCTORS SHALL BE CONNECTED TO TERMINAL BLOCKS OR DEVICES. EXISTING CONDUCTORS WHERE REUSED SHALL BE RETAGGED WITH THE NEW WIRE NUMBERS AS SHOWN ON THE CONTRACTORS APPROVED WIRING DIAGRAM.

11. ALL SWITCHES, RELAYS, CONTACTORS AND STARTERS ARE SHOWN ON THE DRAWINGS AS DE-ENERGIZED AND WITH THE SPAN FULLY CLOSED.

12. THE CONTRACTOR SHALL PROVIDE AND INSTALL A HARD NEOPRENE GASKET 1/8" MINIMUM THICKNESS BETWEEN ANY INSTALLED CABINET AND THE CONCRETE FLOOR OR STRUCTURE.

13. ALL ELECTRICAL ENCLOSURES SHALL BE AS INDICATED. ENCLOSURES LOCATED IN WET LOCATIONS SHALL BE TYPE 316L STAINLESS STEEL, DUST-TIGHT, RAIN-TIGHT, WATER-TIGHT AND OIL-TIGHT, TYPE NEMA-4X.

14. PROVIDE RUBBER MATS IN FRONT OF ALL EQUIPMENT AND A CONTINUOUS COPPER GROUND BUS CONNECTION TO ALL EQUIPMENT IN THE ELECTRICAL ROOMS AND AS SHOWN ON THE PLANS. STANDARD SAFETY/FATIGUE MATS INTENDED FOR INDUSTRIAL AREAS ARE TO BE PROVIDED.

15. UPON COMPLETION OF ELECTRICAL INSTALLATION, THE CONTRACTOR SHALL TEST THE COMPLETE ELECTRICAL SYSTEM FOR SHORT CIRCUITS, GROUNDS AND PROPER OPERATION IN THE PRESENCE OF THE ENGINEER.

16. NOT ALL WORK OR DETAILS MAY BE EXPLICITLY SHOWN ON THESE PLANS. WHERE DETAILS ARE NOT PROVIDED OR WORK IS NOT SHOWN, THE CONTRACTOR IS RESPONSIBLE FOR COMPLETING SUCH WORK AS SPECIFIED AND IDENTIFIED ELSEWHERE IN THE PLANS OR SPECIAL PROVISIONS USING HIS MEANS AND METHODS AT NO ADDITIONAL COST TO DELDOT.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

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		

ELECTRICAL SCOPE OF WORK

RE-2	
SHEET NO.	39
TOTAL SHTS.	180

ELECTRICAL SYMBOLS

TRANSFORMER

1 FVNR — STARTER (FULL VOLTAGE NON-REVERSING STARTER SIZE 1)

2 FVR — STARTER (FULL VOLTAGE REVERSING STARTER SIZE 2)

SERVICE DISCONNECT SWITCH (3 POLE, SINGLE THROW)

MOTOR DISCONNECT SWITCH

CT — CURRENT TRANSFORMER

OVERLOAD RELAY (THERMAL)

LIMIT SWITCH WITH NORMALLY OPEN CONTACT

LIMIT SWITCH WITH NORMALLY CLOSED CONTACT

LIMIT SWITCH WITH NORMALLY OPEN HELD CLOSED CONTACT

LIMIT SWITCH WITH NORMALLY CLOSED HELD OPEN CONTACT

NORMALLY OPEN TIMER RELAY CONTACT, ON-DELAY

NORMALLY OPEN TIMER RELAY CONTACT, OFF-DELAY

NORMALLY CLOSED TIMER RELAY CONTACT, ON-DELAY

NORMALLY CLOSED TIMER RELAY CONTACT, OFF-DELAY

PUSHBUTTON WITH NORMALLY OPEN CONTACT

PUSHBUTTON WITH NORMALLY CLOSED CONTACT

FUSE

MULTI POSITION SELECTOR SWITCH (QUANTITY OF POSITIONS AS SHOWN) MAINTAINED IN ALL POSITIONS UNLESS NOTED OTHERWISE.

M — MOTOR

A — AMMETER

METER

TWISTED SHIELD PAIR (TSP) CONDUCTORS WITH GROUNDED SHIELD

PLC INPUT

PLC OUTPUT

3 PHASE DISCONNECT SWITCH

HEATER

SR — SAFETY RELAY

DISC BRAKE

CIRCUIT BREAKER

3P/200/160A — THERMAL/MAGNETIC, MCP-MOTOR CIRCUIT PROTECTOR
CB TRIP (160AT)
CB FRAME RATING (200AF)
3-POLE

NEAR SIDE / CHANNEL / FAR SIDE — CHANNEL MARKER IDENTIFYING SUBMARINE CABLES

DROOP CABLE

COIL OF MAGNETIC CONTACTOR

LIGHTING FIXTURE

TIMING RELAY COIL

COIL NORMALLY OPEN CONTACT

COIL NORMALLY CLOSED CONTACT

SWITCH (BYPASS)

SWITCH

GROUND (ELECTRICAL)

INDICATOR LIGHT (A-AMBER, B-BLUE G-GREEN, R-RED, W-WHITE)

Q: Q1 Q2/Q0 PLC NOTATION
- DIGITAL I/O NUMBER (00)
- ANALOG I/O CHANNEL (0)
- CHASSIS SLOT NUMBER (02)
- I/O NODE DROP NUMBER (01)
- O - OUTPUT (O)
- I - INPUT

CONTROL TRANSFORMER

3 PHASE TRANSFORMER DELTA-WYE CONNECTION

EXISTING EQUIPMENT TO REMAIN

NEW EQUIPMENT

WIRES CONNECTED

WIRE CROSSING WITHOUT BEING CONNECTED

ENCLOSURE BOUNDARY

DIODE

REMOTE CONTACT

T — THERMOSTAT

EMERGENCY STOP PUSH BUTTON

ETHERNET

TERMINATION SYMBOLS

C — CONTROL DESK

M — MOTOR CONTROL CABINET

P — PLC CABINET

A — ATS CABINET

D — DRIVE CABINET

CONNECTION LUG

LIGHTING/FIRE ALARM/SECURITY SYMBOLS

RECEPTACLE

10 — SECURITY CAMERA WITH DELDOT ID NUMBER

INTERIOR SECURITY CAMERA CEILING MOUNTED

SECURITY CAMERA ANTENNA

KE — KEYLESS ENTRY SYSTEM

LED LIGHT FIXTURE

LED COMBINATION EMERGENCY/EXIT LIGHT

S_D — DIMMER LIGHT SWITCH

S_3 — 3 WAY LIGHT SWITCH

S — LIGHT SWITCH

SECURITY/FIRE ALARM CONDUIT

HEATING CONDUIT

LIGHTING CONDUIT

SA — SMOKE ALARM/DETECTOR

CO — CARBON MONOXIDE DETECTOR

H — HEAT DETECTOR

M — MANUAL PULL STATION/HORN STROBE FOR FIRE ALARM SYSTEM

FLASHING WARNING SIGNAL

TRAFFIC SIGNAL

GONG

FENDER NAV LIGHT

ROADWAY LIGHTING

ELECTRICAL ABBREVIATIONS

A	AMPERES
ATS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT
C.L.	CENTER LINE
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CONT	CONTINUOUS
CP	CONTROL POWER
CPS	CATHODIC PROTECTION SYSTEM
CS	CONTROL SWITCH
D	DRIVEN
DELDOT	DELAWARE DEPARTMENT OF TRANSPORTATION
DESIG.	DESIGNATION
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DS	DISCONNECT SWITCH
EMERG	EMERGENCY
FLA	FULL LOAD AMPERES
FS	FAR SIDE
FVD	FLUX VECTOR DRIVE
FVR	FULL VOLTAGE REVERSING STARTER
FVNR	FULL VOLTAGE NON-REVERSING STARTER
G	GREEN
GALV.	GALVANIZED
GEN	GENERATOR
GRD.	GROUND
GNE	NORTHEAST WARNING GATE
GNW	NORTHWEST WARNING GATE
GSE	SOUTHEAST WARNING GATE
GSW	SOUTHWEST WARNING GATE
H	HEATER
HC	HAND CRANK
HDGAF	HOT DIPPED GALVANIZED AFTER FABRICATION
HP	HORSEPOWER
HZ	HERTZ
INNER	INNER LOOP
KVA	KILO VOLT-AMPERES
KW	KILOWATT
LP	LIGHTING PANELBOARD
LRR	LINE/LOAD REACTOR
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
NAV	NAVIGATION
N.C.	NORMALLY CLOSED CONTACT
N.O.	NORMALLY OPEN CONTACT
NOS.	NUMBERS
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON-COMING
OG	OFF-GOING
OL	OVERLOAD
OUTER	OUTER LOOP
P	PULLED
PA	POWER PANELBOARD A
PBX	PULL BOX
PB	POWER PANELBOARD B
PD	POWER PANELBOARD D
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMR	PHASE MONITOR RELAY
PNL QTY	PANEL QUANTITY
R	RED
RCLS	ROTARY CAM LIMIT SWITCH
RECEPT.	RECEPTACLE
SL	SPAN LOCK
SPL	SUMP PUMP PANEL
SS	STAINLESS STEEL
TB	TERMINAL BOX
TBR	TO BE REMOVED
TG	TRAFFIC GATE
TL	TAIL LOCK
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP.	TYPICAL
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITY
VAC	VOLTAGE ALTERNATING CURRENT
WSE	WARNING SIGNAL ENCLOSURE
WS	WARNING SIGNAL
XF	TRANSFORMER

LINE TYPES

ALL SHEETS/DRAWINGS

——— EXISTING EQUIPMENT TO REMAIN

——— NEW EQUIPMENT

LAYOUT AND DETAILS

------- EXISTING EQUIPMENT AND STRUCTURE

——— -- NEW CAMERA AND FIRE ALARM CONDUIT/RACEWAY

..... NEW LIGHTING CONDUIT/RACEWAY

——— - NEW HEATING CONDUIT/RACEWAY

8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

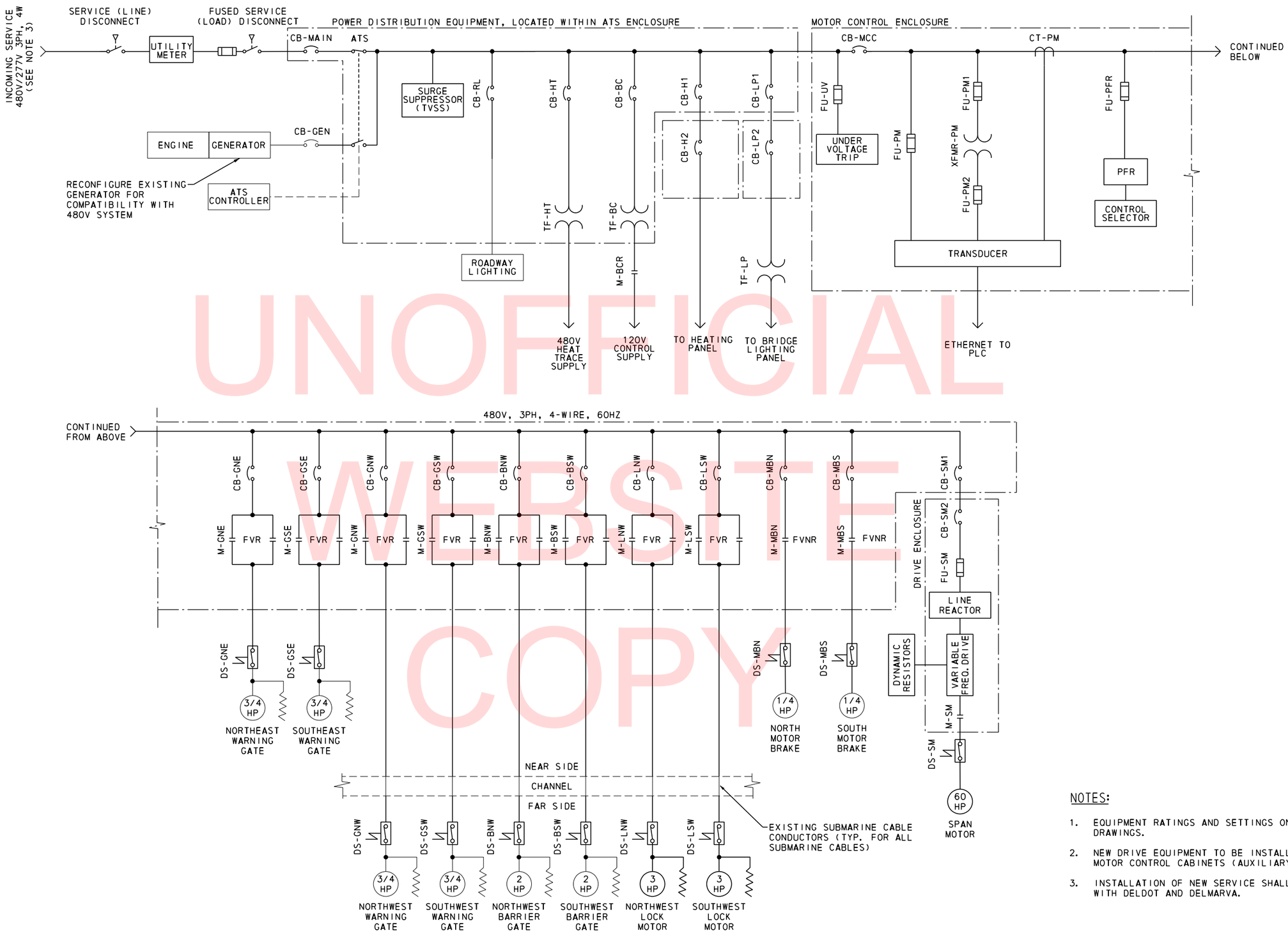
NOT TO SCALE

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

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

ELECTRICAL SYMBOLS AND ABBREVIATIONS

RE-3	
SHEET NO.	40
TOTAL SHTS.	180



NOTES:

1. EQUIPMENT RATINGS AND SETTINGS ON FOLLOWING DRAWINGS.
2. NEW DRIVE EQUIPMENT TO BE INSTALLED IN EXISTING MOTOR CONTROL CABINETS (AUXILIARY CABINET).
3. INSTALLATION OF NEW SERVICE SHALL BE COORDINATED WITH DELDOT AND DELMARVA.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	ONE LINE DIAGRAM
				COUNTY SUSSEX	DESIGNED BY: MJT	
					CHECKED BY: AHN	

RE-4 | SHEET NO. 41 | TOTAL SHTS. 180

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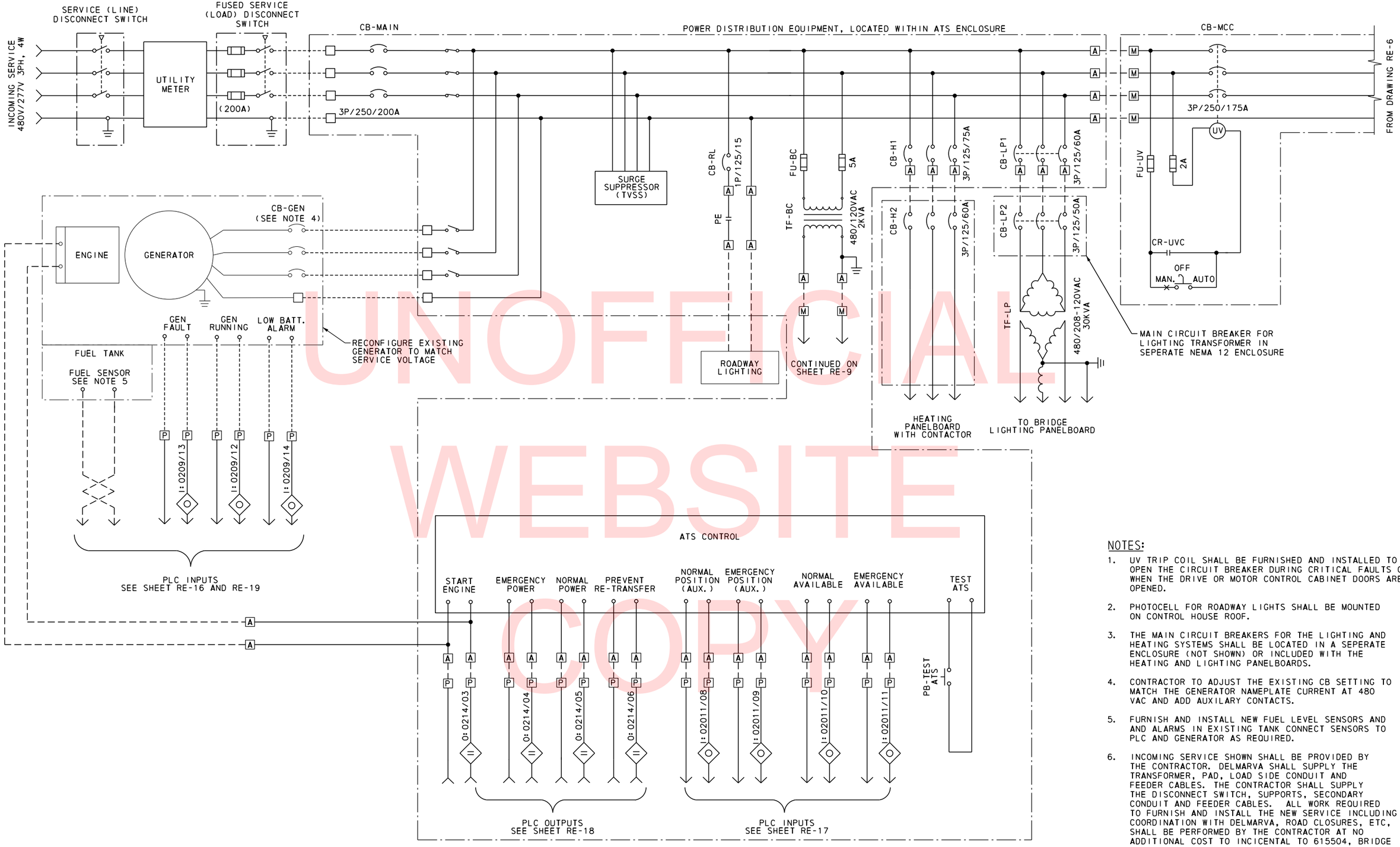

NOTES:

1. 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.
2. PHOTOCELL FOR ROADWAY LIGHTS SHALL BE MOUNTED ON CONTROL HOUSE ROOF.
3. THE MAIN CIRCUIT BREAKERS FOR THE LIGHTING AND HEATING SYSTEMS SHALL BE LOCATED IN A SEPERATE ENCLOSURE (NOT SHOWN) OR INCLUDED WITH THE HEATING AND LIGHTING PANELBOARDS.
4. CONTRACTOR TO ADJUST THE EXISTING CB SETTING TO MATCH THE GENERATOR NAMEPLATE CURRENT AT 480 VAC AND ADD AUXILARY CONTACTS.
5. FURNISH AND INSTALL NEW FUEL LEVEL SENSORS AND AND ALARMS IN EXISTING TANK CONNECT SENSORS TO PLC AND GENERATOR AS REQUIRED.
6. 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 INCICENTAL TO 615504, BRIDGE ELECTRICAL SYSTEM.
7. THE CONTRACTOR TO PROVIDE A GROUNDING SYSTEM FOR THE NEW TRANSFORMER AS SHOWN ON DWG RE-45 OR OTHERWISE REQUIRED BY DELMARVA.

8/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

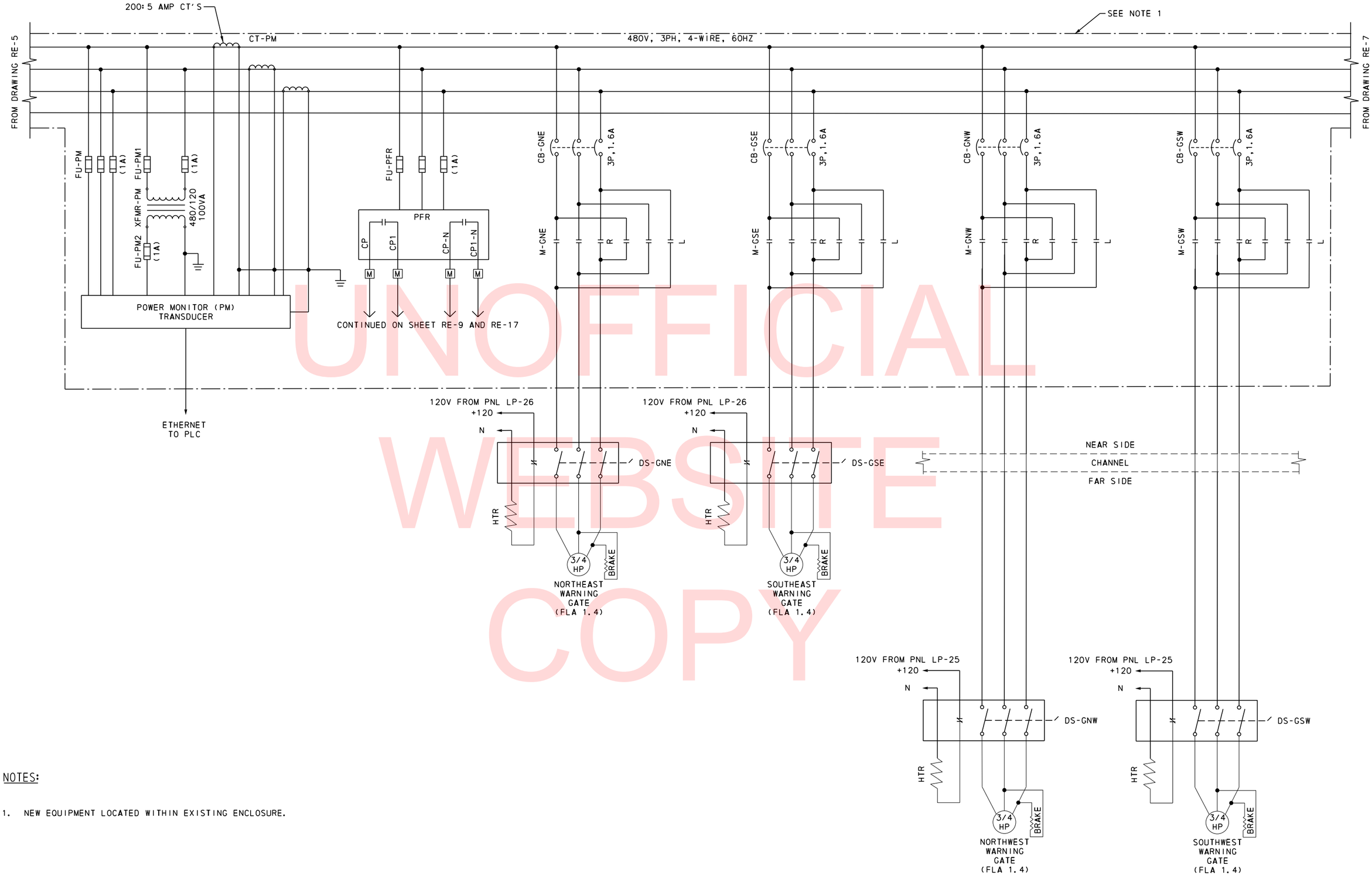
NOT TO SCALE

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 I

RE-5
SHEET NO. 42
TOTAL SHTS. 180



NOTES:

1. NEW EQUIPMENT LOCATED WITHIN EXISTING ENCLOSURE.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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 II
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-6
					CHECKED BY: AHN	SHEET NO. 43
						TOTAL SHTS. 180

8/9/2018
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SEE NOTE 1

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

FROM DRAWING RE-6

CB-BNW 3P, 4.0A — M-BNW R L

CB-BSW 3P, 4.0A — M-BSW R L

CB-LNW 3P, 6.3A — M-LNW D P

CB-LSW 3P, 6.3A — M-LSW D P

CB-MBN 3P, 0.63A — M-MBN

CB-MBS 3P, 0.63A — M-MBS

CB-SM1 3P/250/175A

TO DWG RE-12

NEAR SIDE

CHANNEL

FAR SIDE

120V FROM PNL LP-22 +120 N — DS-MBN — HTR — 1/4 HP — NORTH MOTOR BRAKE

120V FROM PNL LP-22 +120 N — DS-MBS — HTR — 1/4 HP — SOUTH MOTOR BRAKE

120V FROM PNL LP-26 +120 N — DS-BNW — HTR — 2 HP BRAKE — NORTHWEST BARRIER GATE (FLA 3.0)

120V FROM PNL LP-26 +120 N — DS-BSW — HTR — 2 HP BRAKE — SOUTHWEST BARRIER GATE (FLA 3.0)

120V FROM PNL LP-24 +120 N — DS-LNW — HTR — 3 HP BRAKE — NORTHWEST LOCK MOTOR

120V FROM PNL LP-24 +120 N — DS-LSW — HTR — 3 HP BRAKE — SOUTHWEST LOCK MOTOR

NOTES:

1. NEW EQUIPMENT LOCATED WITHIN EXISTING ENCLOSURE.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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 III	RE-7 / SHEET NO. 44 / TOTAL SHTS. 180
				COUNTY SUSSEX	DESIGNED BY: MJT		
					CHECKED BY: AHN		

8/9/2018
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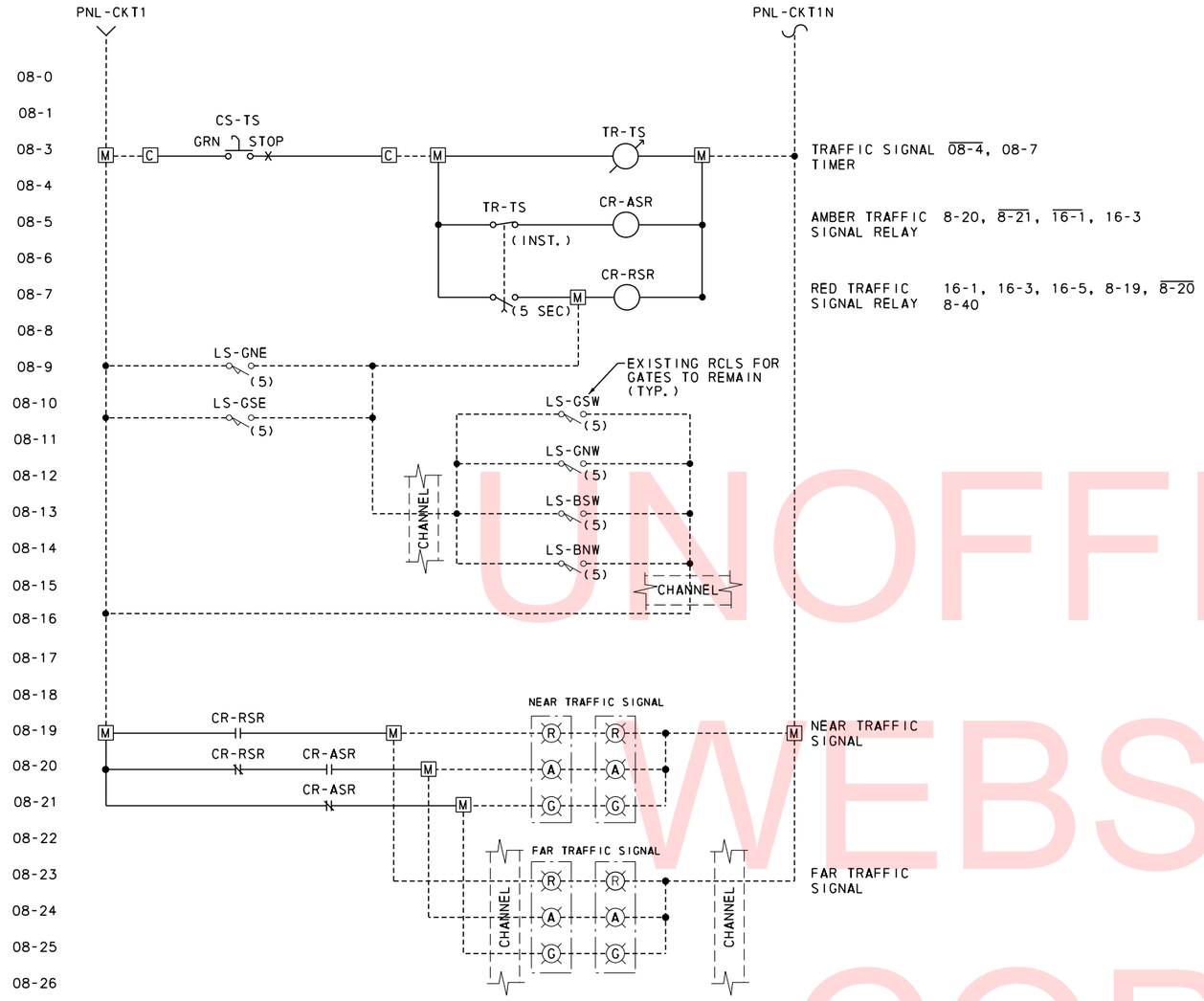

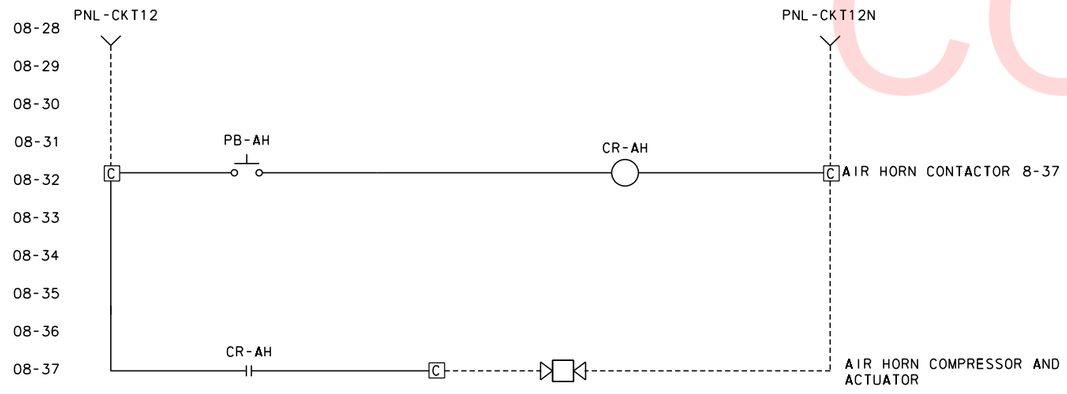

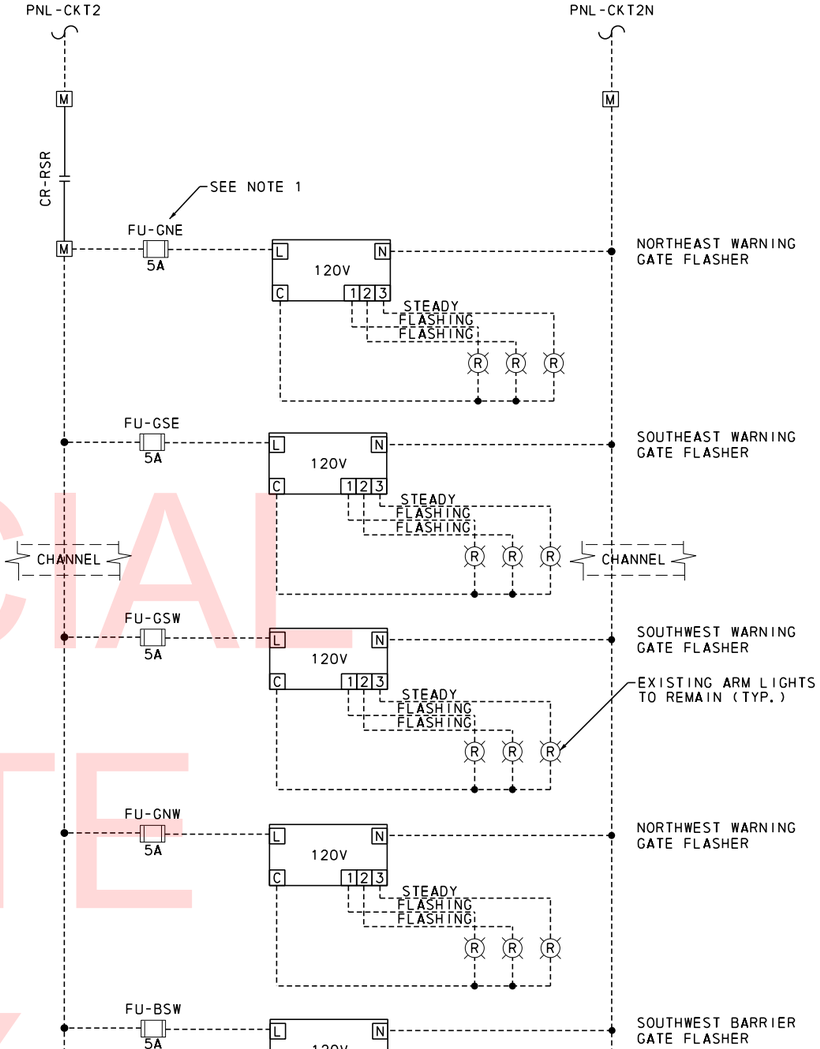

NOTES:

1. CONTRACTOR SHALL RECONNECT EXISTING WARNING AND BARRIER GATE ARM LIGHTS AND FUSES TO NEW FLASHERS. THE NEW FLASHERS SHALL BE MOUNTED IN THE EXISTING GATE HOUSING.
2. CONTRACTOR SHALL CONNECT EXISTING WARNING GATE RECEPTACLE, LIGHT AND HEATER INSIDE EACH GATE TO SEPERATE CIRCUITS. HEATERS SHALL BE CONNECTED AS SHOWN ON DWGS RE-6 AND RE-7. RECEPTACLES/LIGHTS SHALL BE CONNECTED TO EXISTING FUSE/CIRCUIT BREAKER INSIDE EXISTING GATE HOUSING TO NEW CIRCUITS.

8/2/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

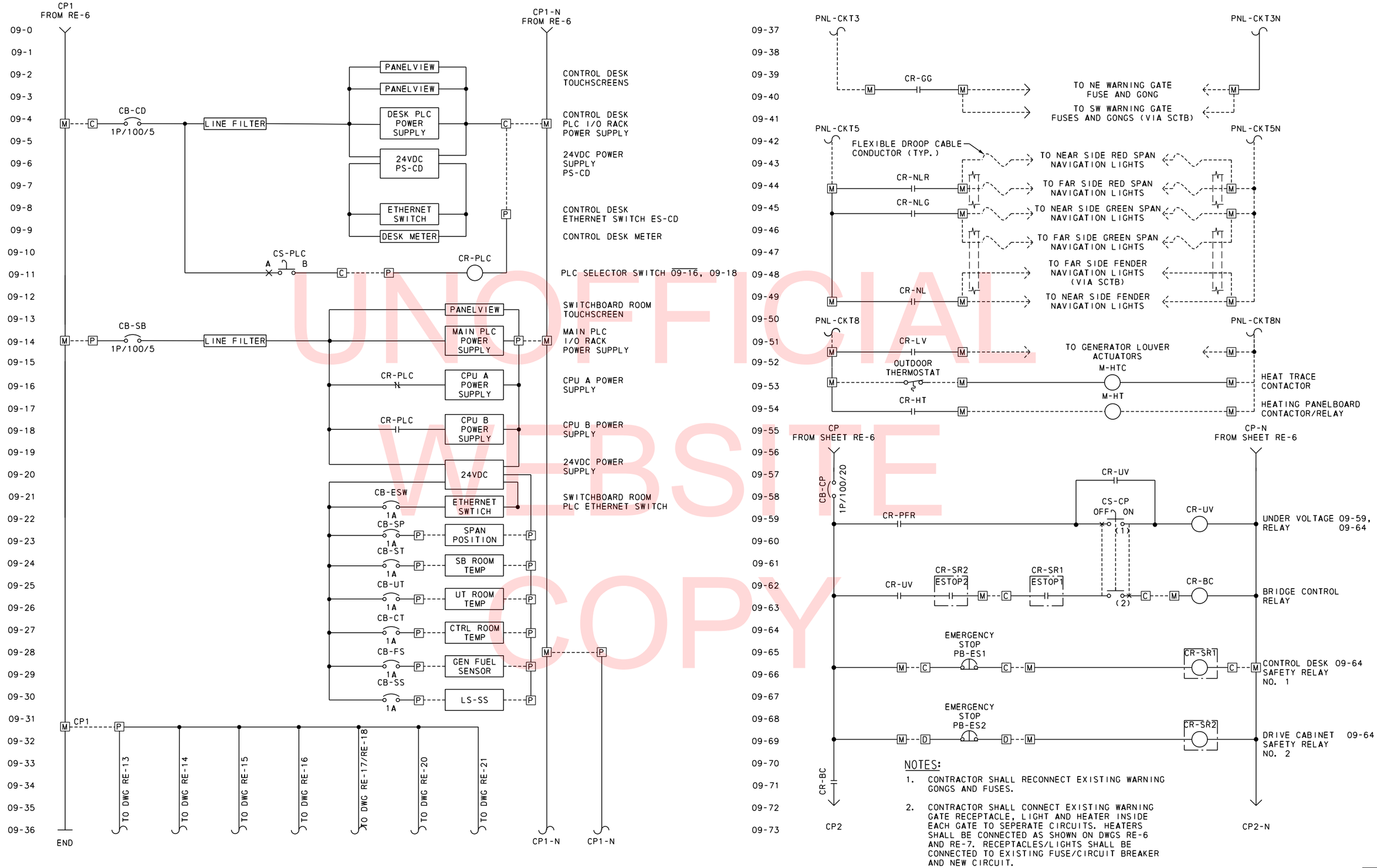
NOT TO SCALE

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

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

TRAFFIC CONTROL
POWER

	RE-8
SHEET NO.	45
TOTAL SHTS.	180



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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

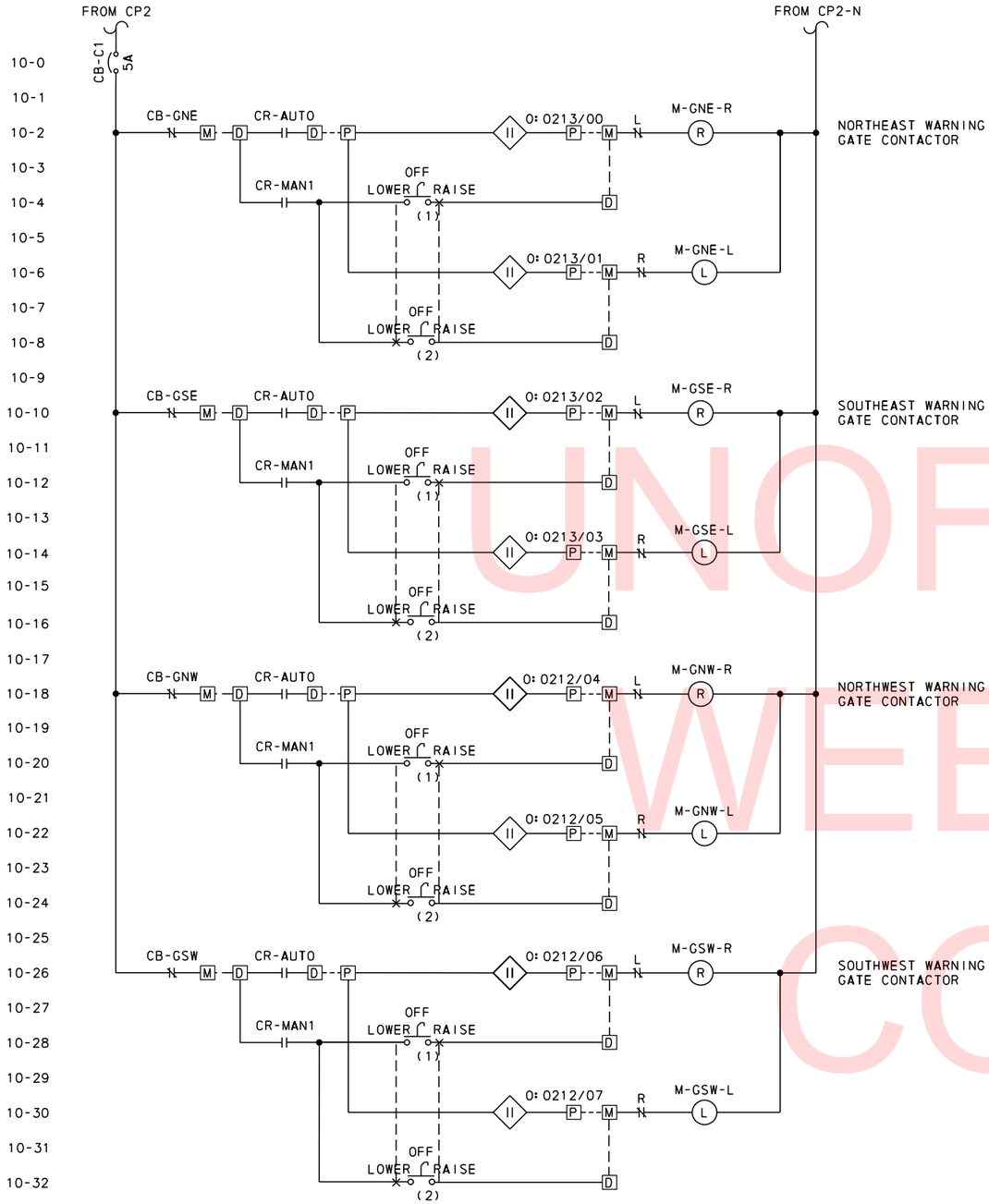
NOT TO SCALE

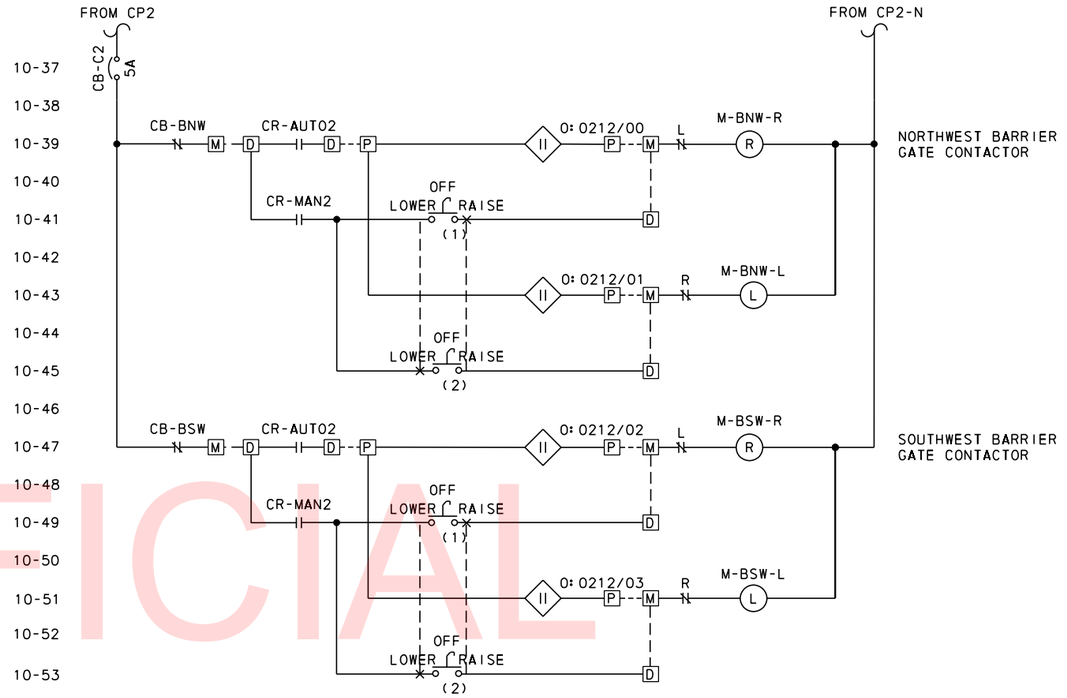
BR 3-154 ON US9 SAVANNAH ROAD &
BR 3-153 ON SR1A REHOBOTH AVENUE
OVER LEWES-REHOBOTH CANAL

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

BRIDGE CONTROL POWER

RE-9
SHEET NO. 46
TOTAL SHTS. 180





NOTES:

1. NON-AUTOMATIC (MANUAL) CONTROL PILOT DEVICES SHALL BE MOUNTED ON EXISTING FRONT DOOR WITH LOCKABLE ENCLOSURE (SEE RE-26).

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	WARNING GATE & BARRIER GATE CONTROLS	RE-10 / SHEET NO. 47 / TOTAL SHTS. 180
				COUNTY SUSSEX	DESIGNED BY: MJT		
					CHECKED BY: AHN		

8/9/2018
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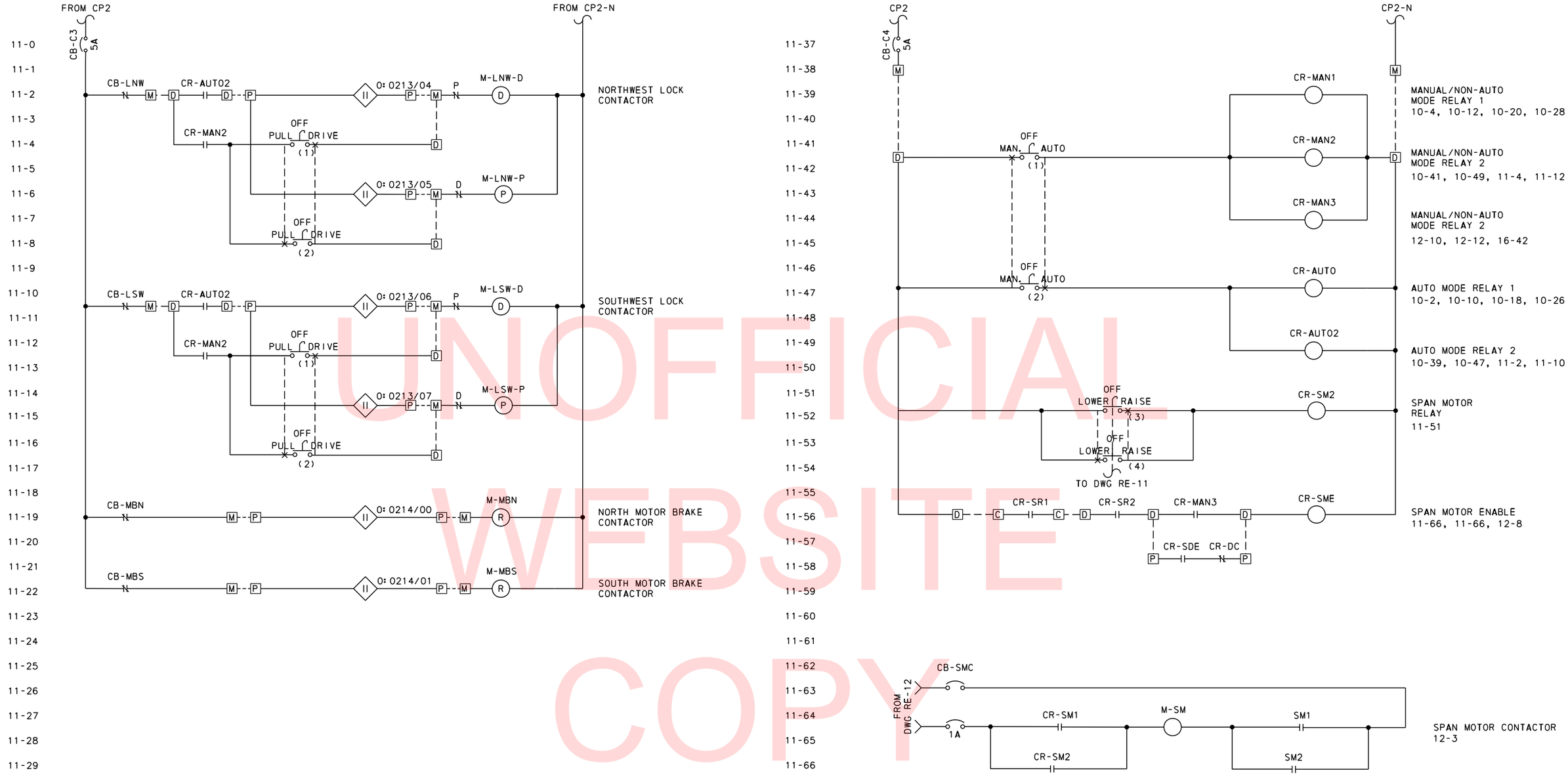

NOTES:

1. NON-AUTOMATIC (MANUAL) CONTROL PILOT DEVICES SHALL BE MOUNTED ON EXISTING FRONT DOOR WITH LOCKABLE ENCLOSURE (SEE RE-26).

8/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

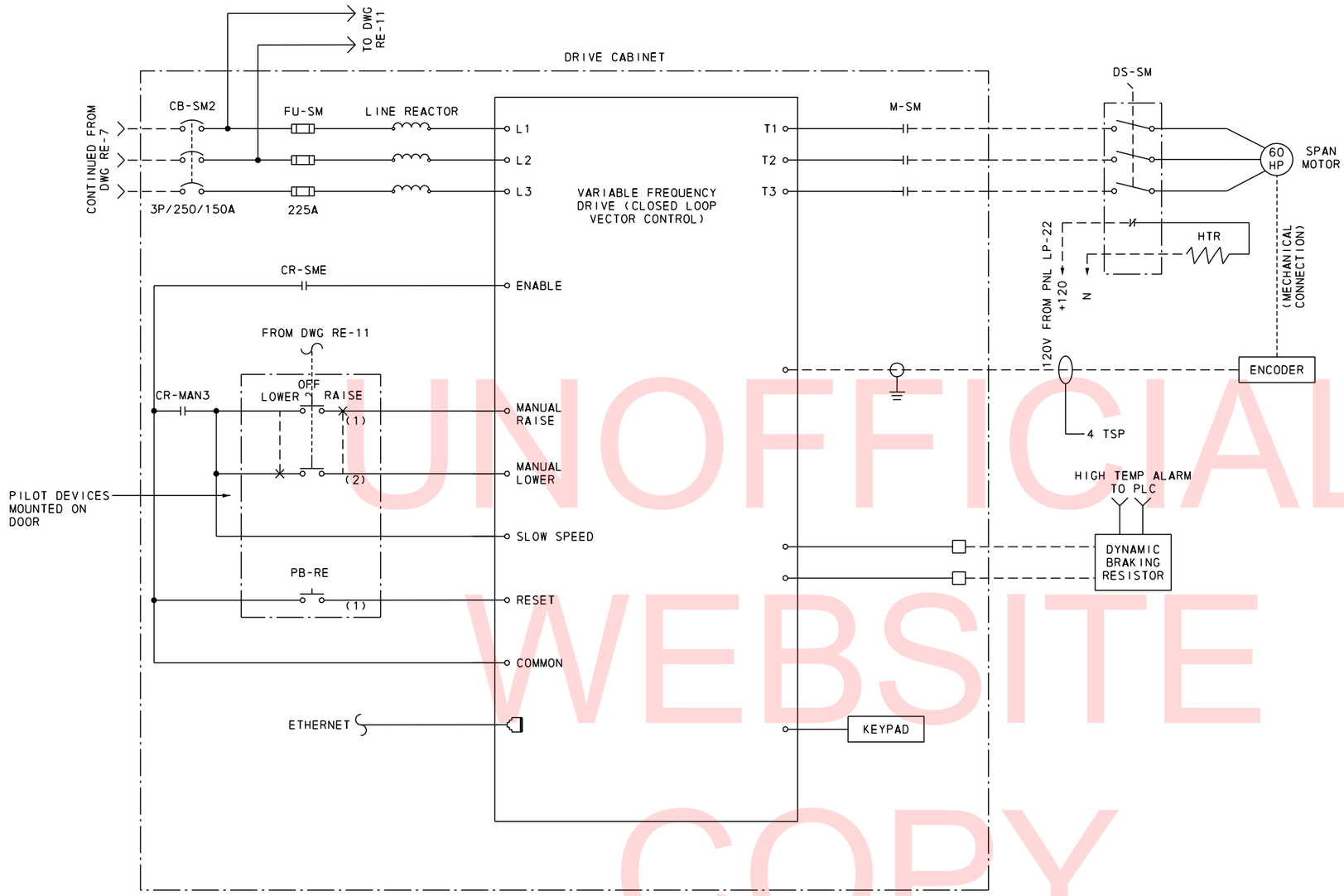
NOT TO SCALE

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 LOCK & BRAKE CONTROLS

RE-11
SHEET NO. 48
TOTAL SHTS. 180



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.

8/14/2018
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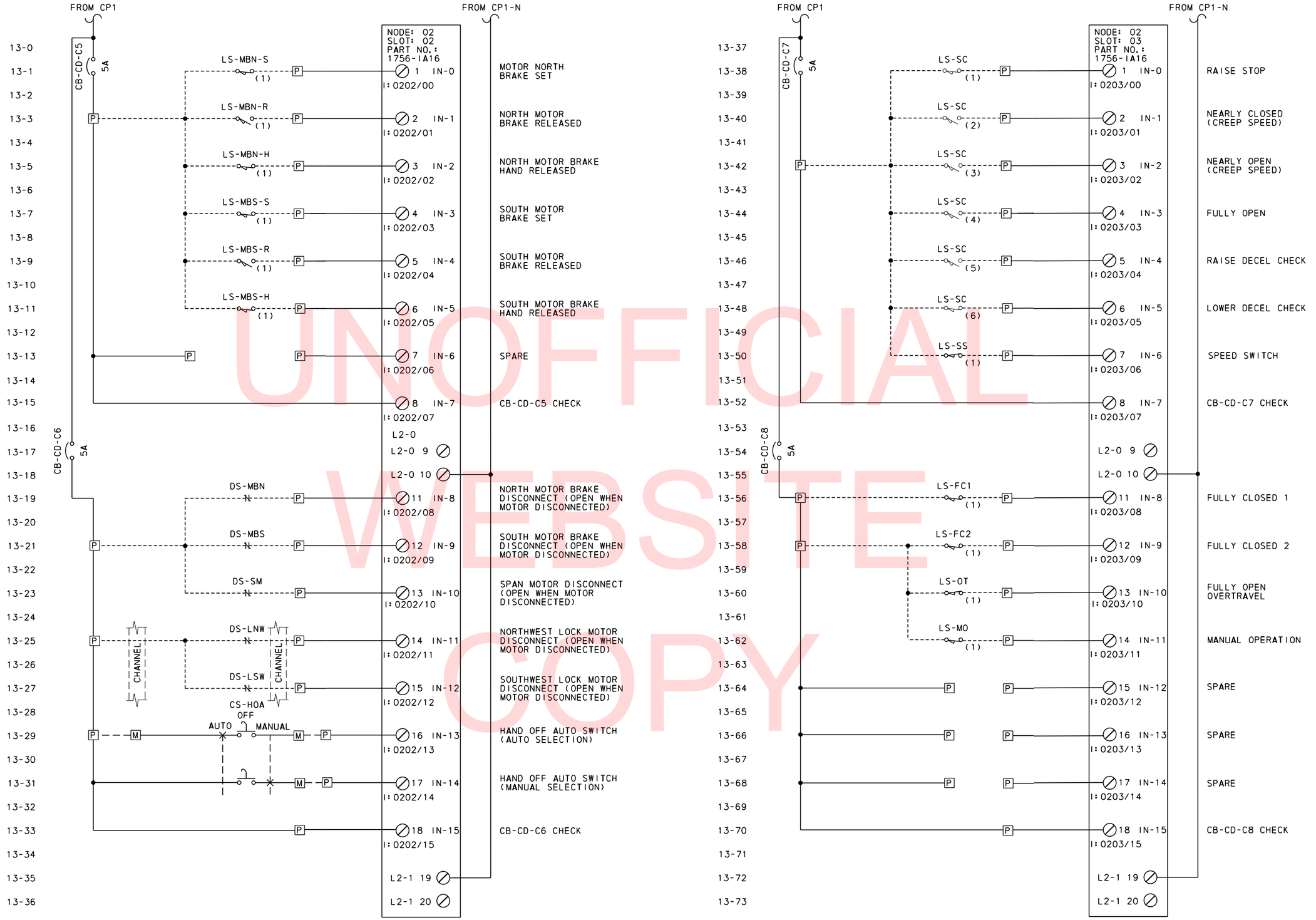
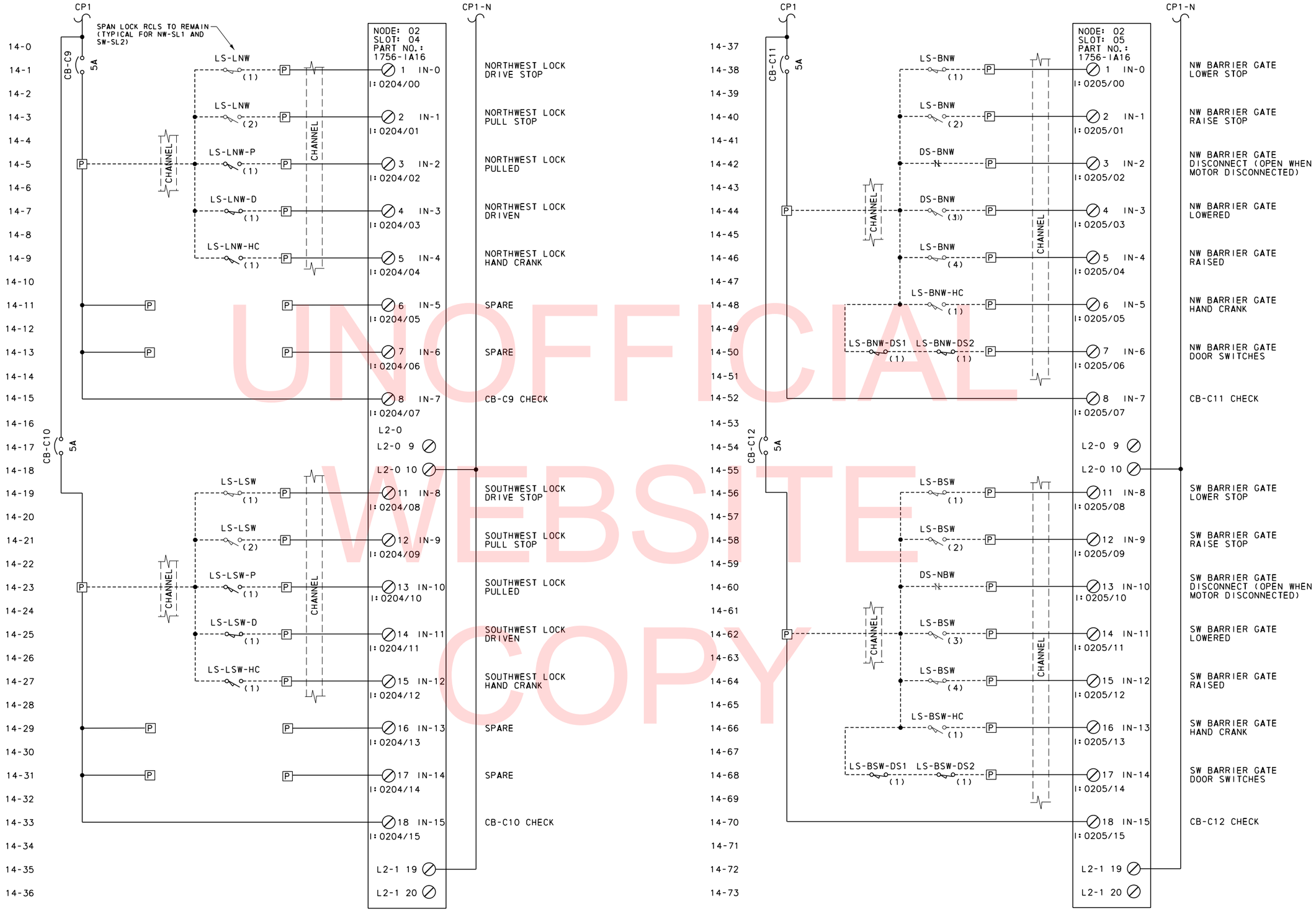
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-153	SPAN DRIVE CONTROLS	RE-12
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 49
					CHECKED BY: AHN		TOTAL SHTS. 180



8/9/2018
M:\02889.048\v000_Fin_Des\CADD\30_Elec\EE13 - Limit Switch PLC Input 1.dgn

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SWITCHBOARD ROOM: PLC INPUTS I
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-13
					CHECKED BY: AHN	SHEET NO. 50
						TOTAL SHTS. 180



8/8/2018
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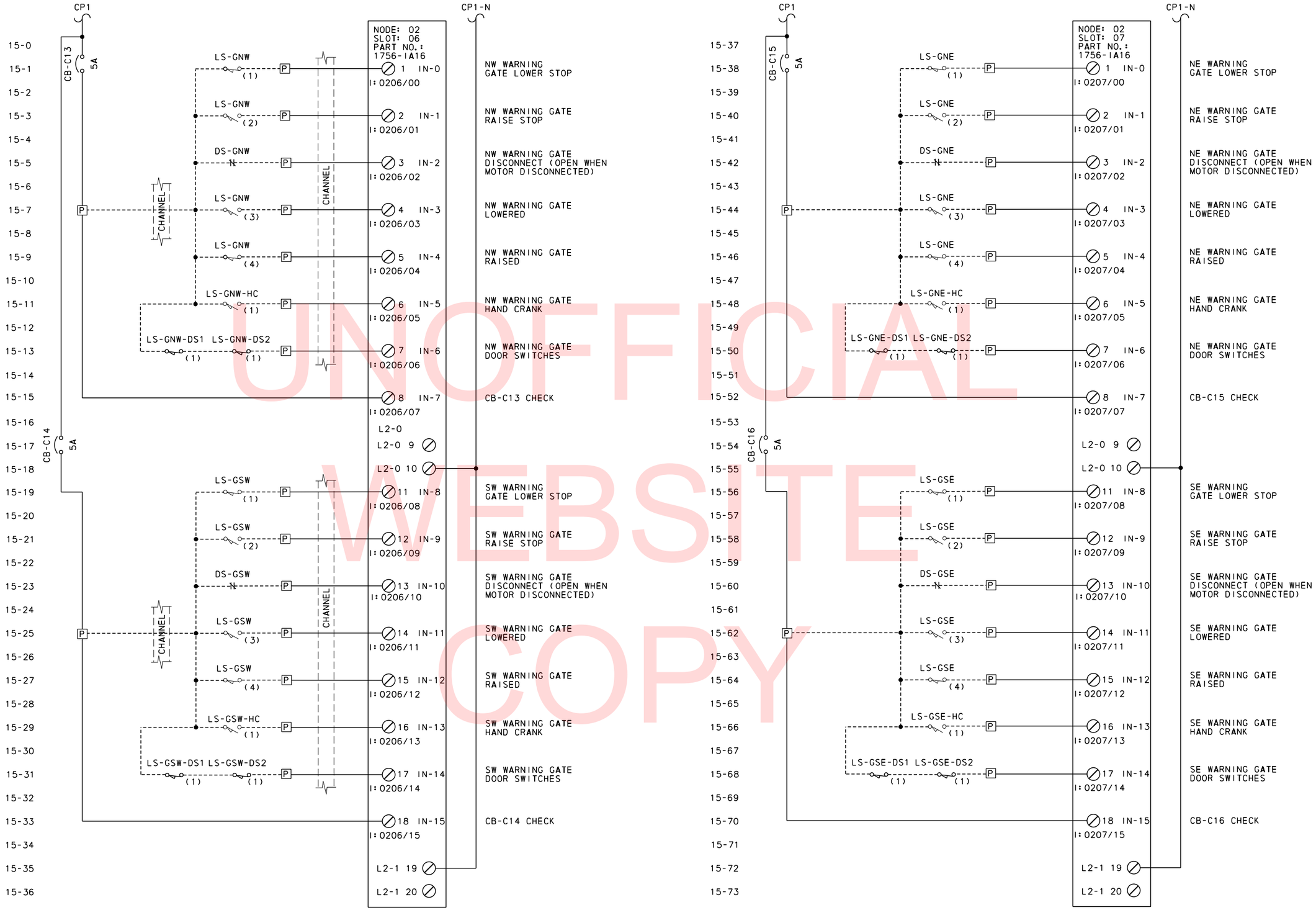
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-153	SWITCHBOARD ROOM: PLC INPUT II
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-14
					CHECKED BY: AHN	SHEET NO. 51
						TOTAL SHTS. 180



8/2/2018
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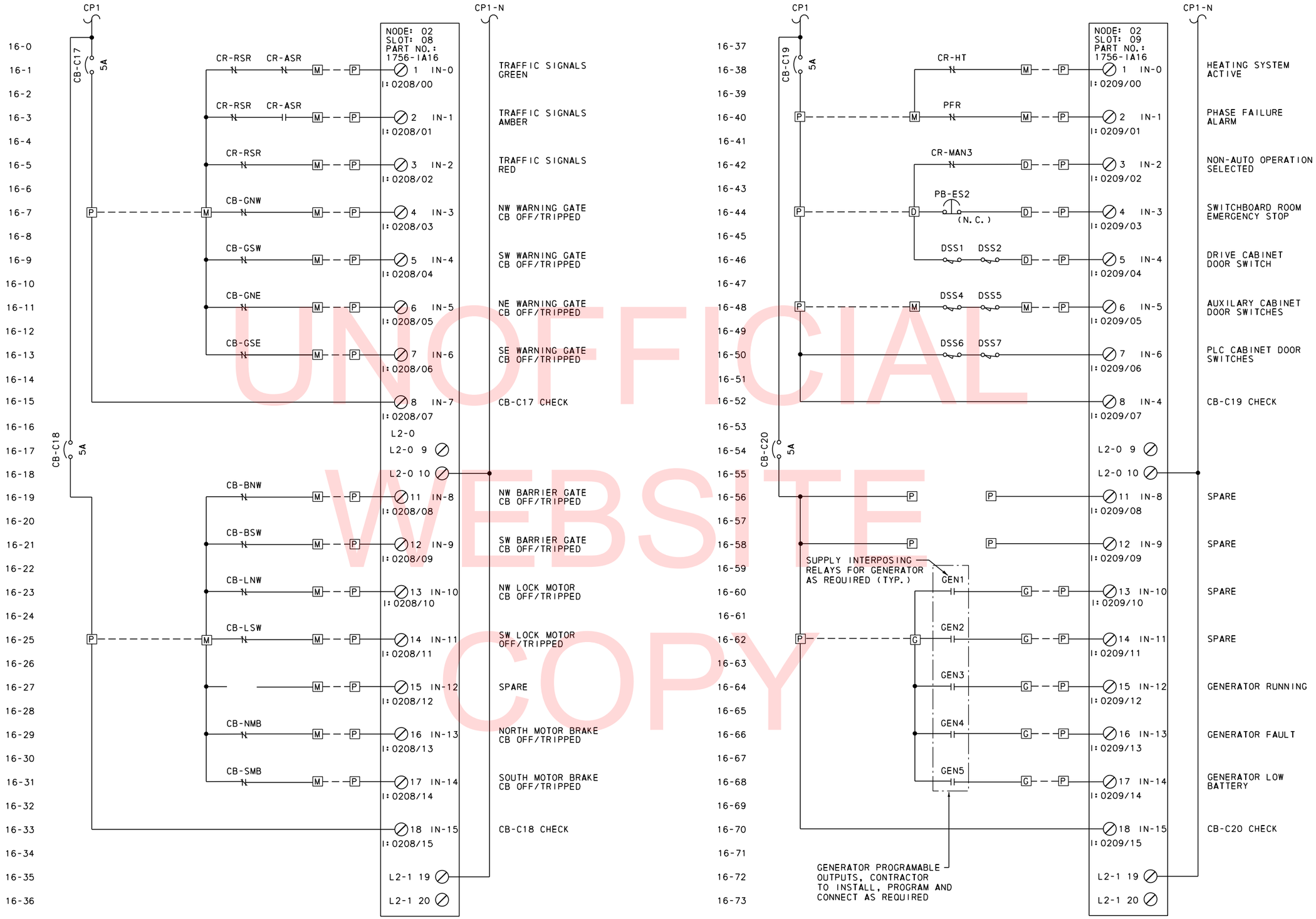
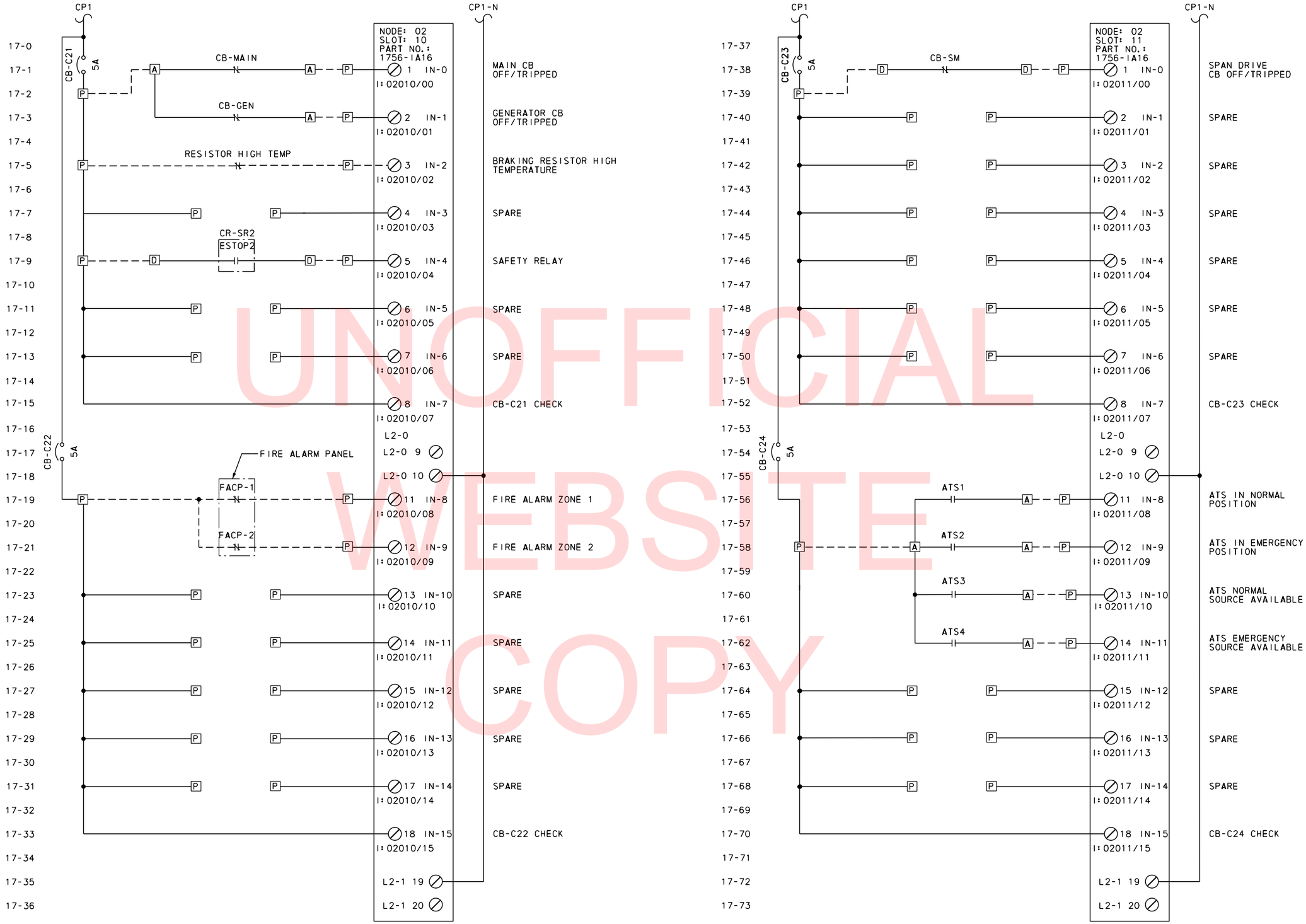
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-153	SWITCHBOARD ROOM: PLC INPUT III
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-15
					CHECKED BY: AHN	SHEET NO. 52
						TOTAL SHTS. 180



DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153 / DESIGNED BY: MJT / CHECKED BY: AHN	SWITCHBOARD ROOM: PLC INPUT IV	RE-16 / SHEET NO. 53 / TOTAL SHTS. 180

8/2018
M:\02889.048\v000_Fin_Des\CADD\30_Elec\EE16 - Limit Switch PLC Input 4.dgn



DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153 / DESIGNED BY: MJT / CHECKED BY: AHN	SWITCHBOARD ROOM: PLC INPUT V	RE-17 / SHEET NO. 54 / TOTAL SHTS. 180

8/9/2018
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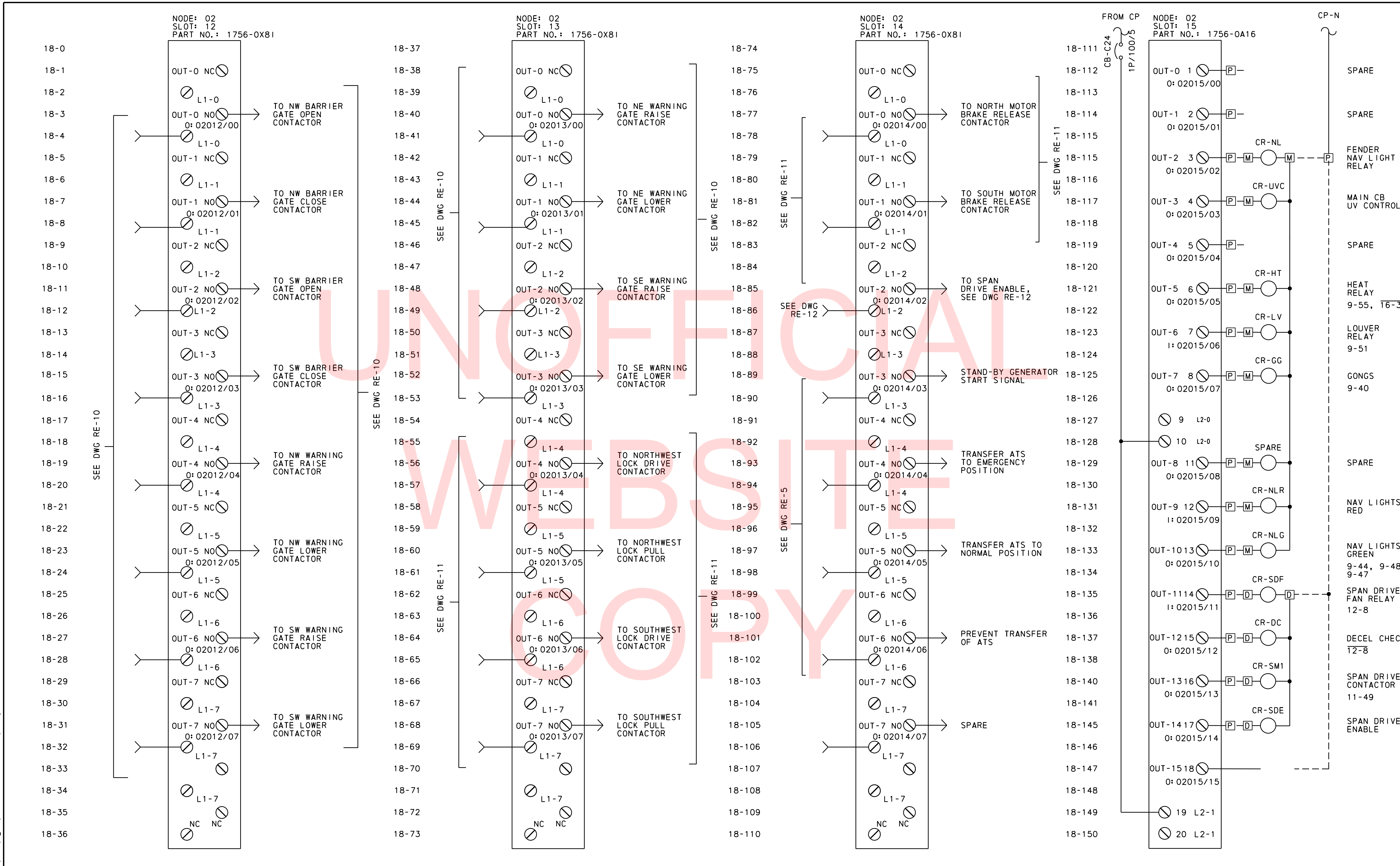

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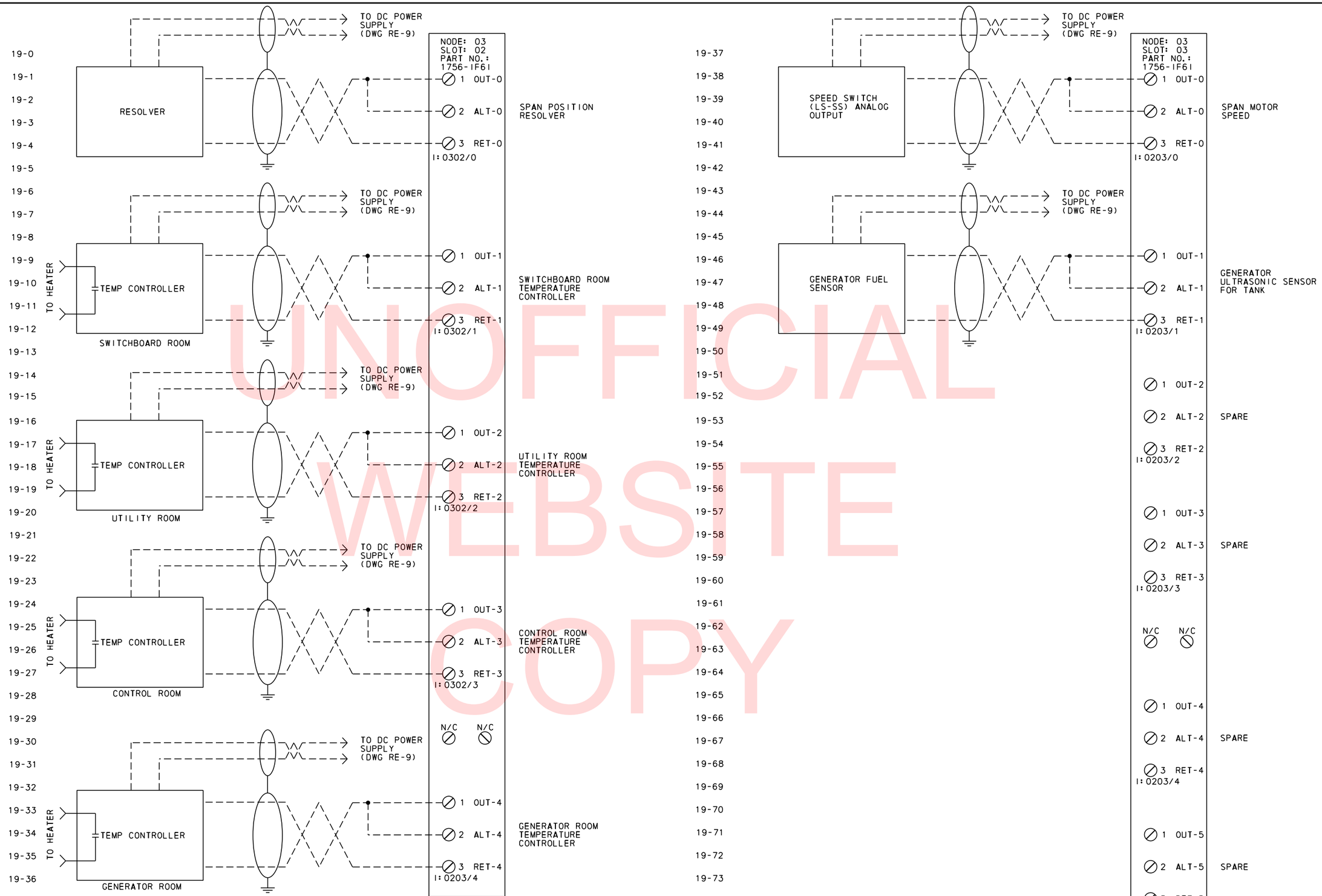
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602 COUNTY SUSSEX	BRIDGE NO. 3-153 DESIGNED BY: MJT CHECKED BY: AHN

SWITCHBOARD ROOM: PLC OUTPUTS I

RE-18
SHEET NO. 55
TOTAL SHTS. 180



8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

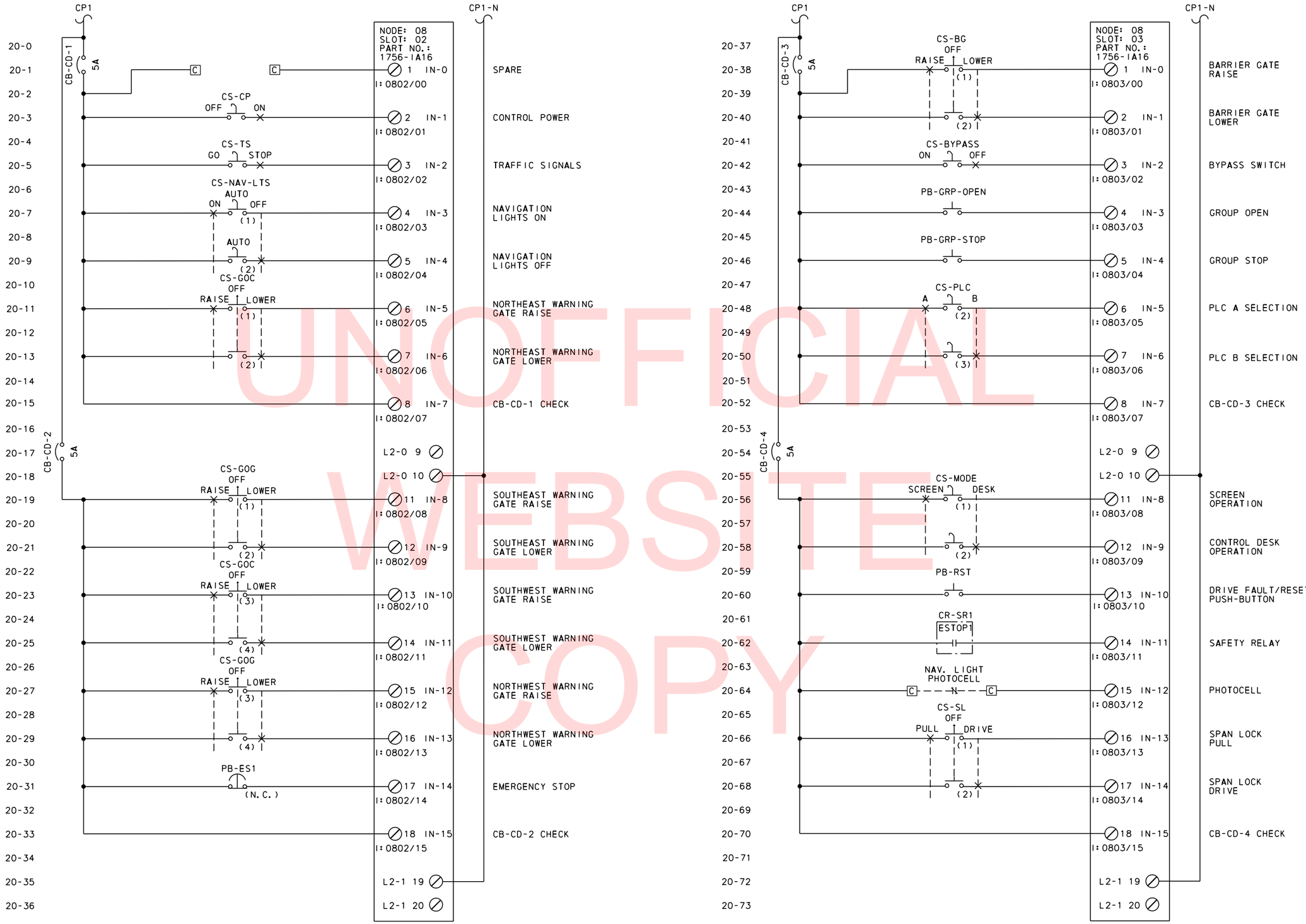
NOT TO SCALE

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

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

SWITCHBOARD ROOM: PLC ANALOG INPUT

	RE-19
SHEET NO.	56
TOTAL SHTS.	180



DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153 / DESIGNED BY: MJT / CHECKED BY: AHN	CONTROL DESK: PLC INPUTS I

RE-20 | SHEET NO. 57 | TOTAL SHTS. 180

8/9/2018
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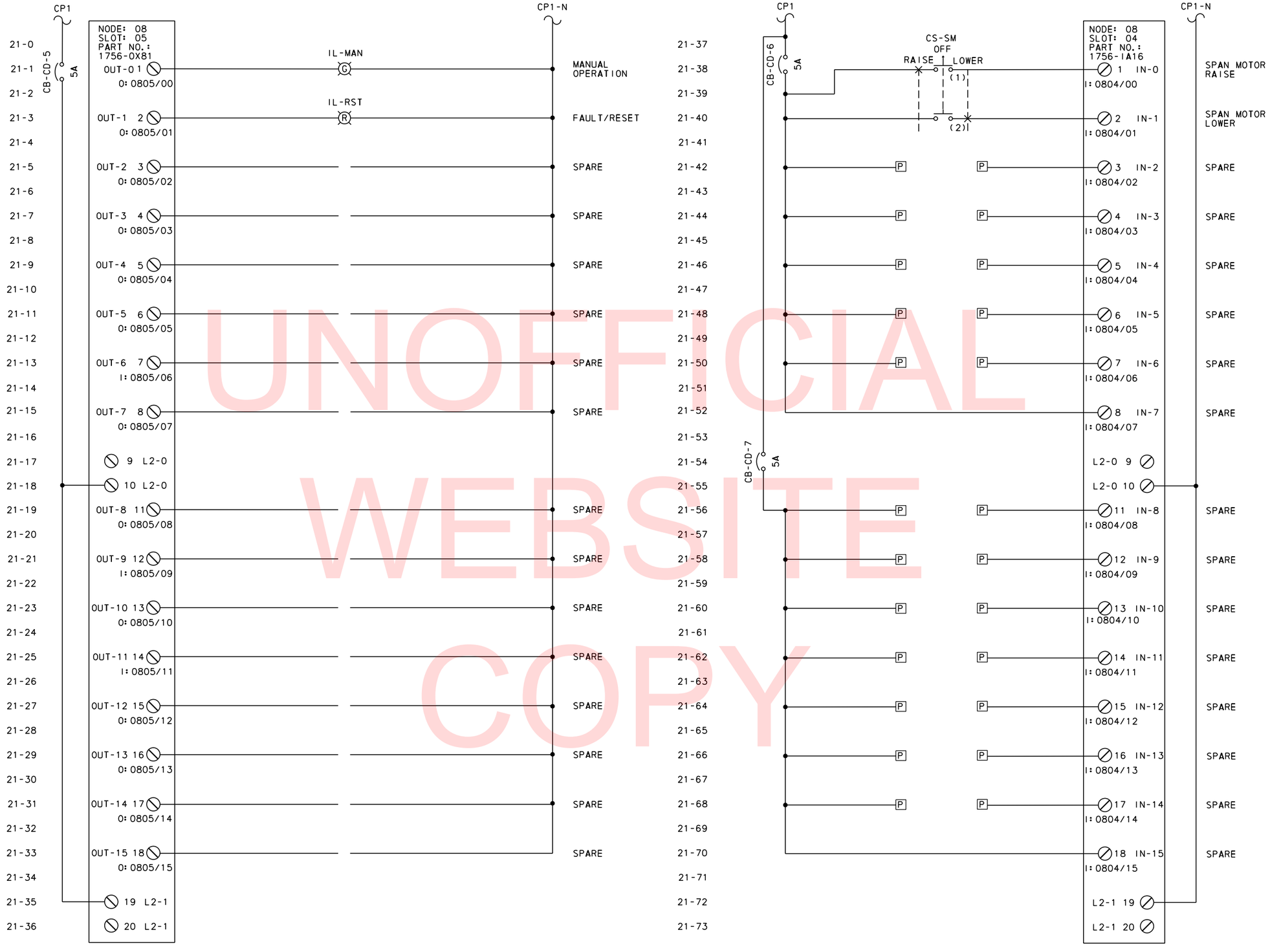

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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. 3-153
DESIGNED BY: MJT
CHECKED BY: AHN

CONTROL DESK:
PLC OUTPUTS I

RE-21
SHEET NO. 58
TOTAL SHTS. 180

8/9/2018
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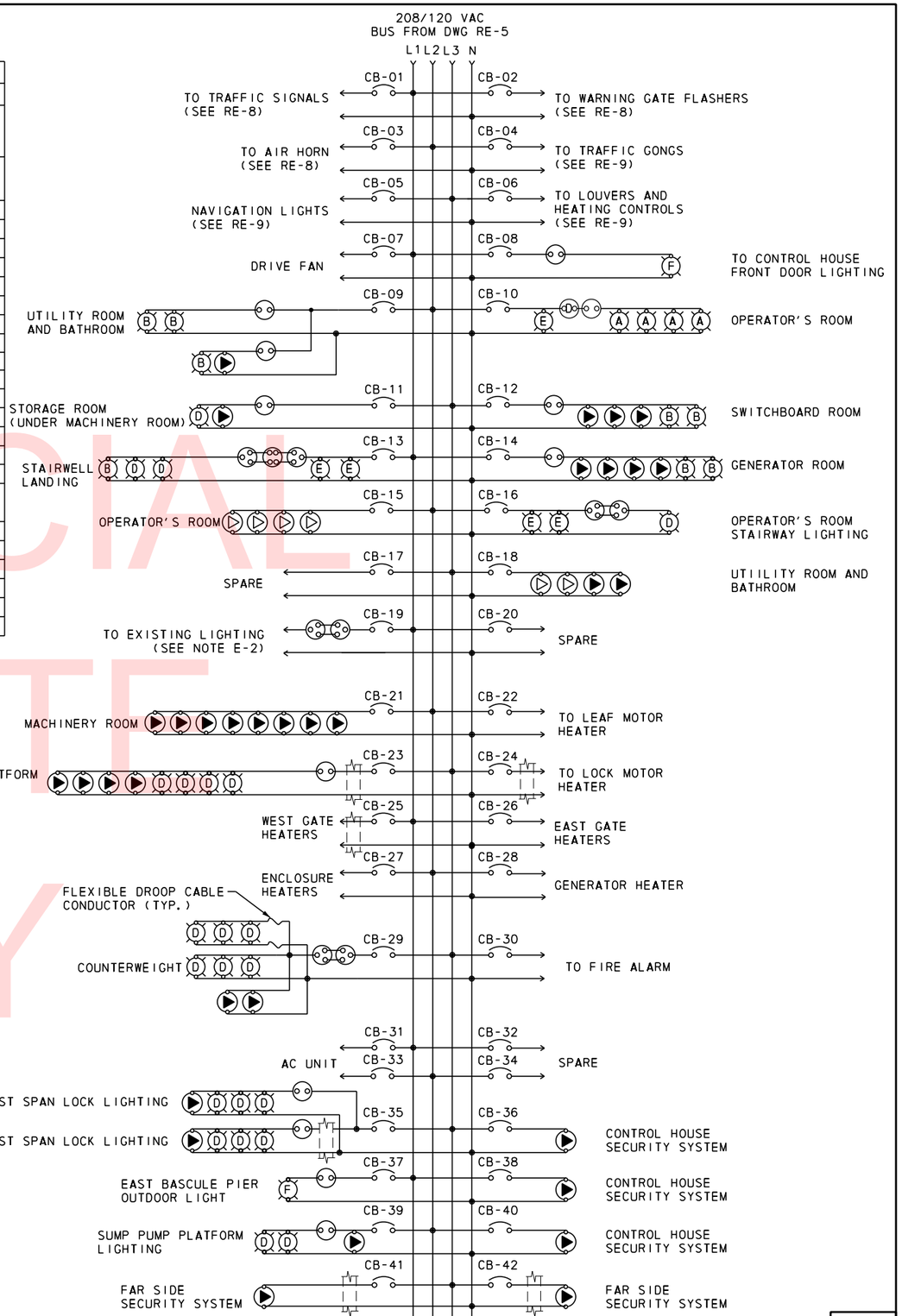
NAME/RATINGS: 208/120 VOLT, 42 SPACES, 100 A-PANELBOARD

DESIGNATION				LOCATION				PANEL TYPE & SERVICE					
LIGHTING PANEL				SWITCHBOARD ROOM				BUS: 120/208 VOLT 3-PHASE, 4-WIRE MAIN BREAKER: 100A, 3-POLE					
CIRCUIT DESCRIPTION	KVA/PHASE *A	KVA/PHASE *B	KVA/PHASE *C	TRIP	WIRE SIZE		WIRE SIZE	TRIP	KVA/PHASE *A	KVA/PHASE *B	KVA/PHASE *C	CIRCUIT DESCRIPTION
TRAFFIC SIGNALS	0.2			15	12	1 2	12	15	0.1			WARNING GATE FLASHERS
AIR HORN		1.2		15	12	3 4	12	15		0.12		TRAFFIC GONGS
NAVIGATION LIGHTS			0.15	15	12	5 6	12	15			0.2	LOUVERS AND HEATING CONTROLS
DRIVE FAN	0.1			15	12	7 8	12	15	0.1			FRONT DOOR LIGHTING
UTILITY ROOM AND BATHROOM LIGHTING		0.1		15	12	9 10	12	15		0.16		OPERATOR'S ROOM LIGHTING
STORAGE ROOM LIGHTING			0.22	15	12	11 12	12	15			0.8	SWITCHBOARD RM LIGHTING AND RECEPS
STAIRWAY LANDING LIGHTING	0.15			15	12	13 14	12	15	0.8			GENERATOR RM LIGHTING AND RECEPS
OPERATOR'S ROOM RECEPS		0.72		15	12	15 16	12	15		0.1		OPERATOR'S ROOM STAIRWAY LIGHTING
SPARE			0	15	12	17 18	12	15			0.72	UTILITY ROOM AND BATHROOM RECEPS
MACHINERY ROOM LIGHTING	0.4			15	12	19 20	12	15	0			SPARE
MACHINERY ROOM RECEPS		1.5		20	12	21 22	12	15		0.2		LEAF MOTOR HEATER
REST PIER LIGHTING			0.9	15	12	23 24	12	15			0.2	LOCK MOTOR HEATERS
WEST GATE HEATERS	0.4			15	12	25 26	12	15	0.2			EAST GATE HEATERS
ENCLOSURE HEATERS		0.5		15	12	27 28	12	15		1.0		GENERATOR ENGINE HEATER
COUNTERWEIGHT LIGHTS AND RECEPS			0.5	15	12	29 30	12	15			0.4	FIRE ALARM
AIR CONDITIONER	1.5			15	12	31 32	12	15	0			SPARE
		1.5		15	12	33 34	12	15		0		
SPAN LOCK PLATFORM LIGHTS/RECEPS			0.6	15	12	35 36	12	15			0.40	SECURITY CAMERA RACK CKT NO. 1
EAST BASCULE PIER OUTDOOR LIGHT	0.1			15	12	37 38	12	15	1.2			SECURITY CAMERA RACK CKT NO. 2
SUMP PUMP PLATFORM LIGHTS		0.25		15	12	39 40	12	20		2.0		SECURITY CAMERA RACK CKT NO. 3
FAR SIDE CAMERA RACK CKT NO. 1			0.40	15	12	41 42	12	15			1.2	FAR SIDE CAMERA RACK CKT NO. 2
SUB TOTAL LOAD	2.45	5.77	2.77						2.4	3.58	3.92	SUB TOTAL LOAD
TOTAL CONNECTED LOAD	20.89											TOTAL CONNECTED LOAD

*A *B *C

NEUTRAL BUS

GROUNDING BUS



LEGEND

- LIGHT TUMBLER SWITCH 4-WAY
- LIGHT TUMBLER SWITCH 3-WAY
- LIGHT TUMBLER SWITCH 2-WAY
- LIGHT TUMBLER SWITCH WITH DIMMER
- LIGHT FIXTURE A = FIXTURE TYPE (SEE SPECIAL PROVISIONS FOR INFORMATION ON FIXTURE TYPES)
- DUPLEX RECEPTACLE
- GFI DUPLEX RECEPTACLE

NOTES:

1. FURNISH NEW WALL MOUNTED AC UNIT AND RECEPTACLE IN THE CONTROL ROOM TO OPERATE FROM THE 208VAC 2 POLE CIRCUIT BREAKER (CKT 31/33).
2. FURNISH AND INSTALL NEW CONDUIT AND WIRE TO EXISTING MACHINERY ROOM LIGHT FIXTURES.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	LIGHTING PANELBOARD SCHEDULE	RE-22
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 59
					CHECKED BY: AHN		TOTAL SHTS. 180

8/9/2018
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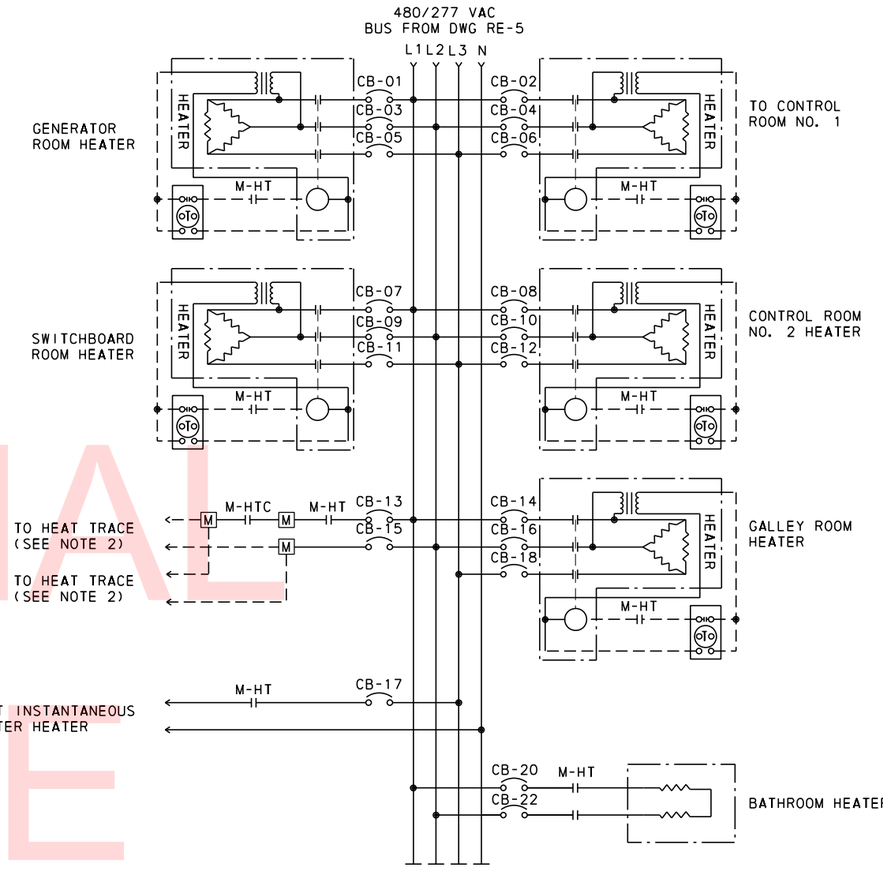
NAME/RATINGS: 480/277 VOLT, 18 SPACES, 100 A-PANELBOARD													
DESIGNATION				LOCATION					PANEL TYPE & SERVICE				
HEATING PANEL (HPL) WITH MUTIPOLE LIGHTING CONTACTOR				SWITCHBOARD ROOM					BUS: 480/277 VOLT 3-PHASE, 4-WIRE MAIN BREAKER: 50A, 3-POLE				
CIRCUIT DESCRIPTION	KVA/PHASE			TRIP	WIRE SIZE	*A *B *C	WIRE SIZE	TRIP	KVA/PHASE			CIRCUIT DESCRIPTION
	*A	*B	*C						*A	*B	*C	
GENERATOR ROOM	0.67			15	10	1 2	12	15	1.67			CONTROL ROOM HEATER 1
		0.67		15	10	3 4	12	15		1.67		
			0.67	15	12	5 6	12	15			1.67	
SWITCHBOARD ROOM	0.67			15	12	7 8	12	15	1.67			CONTROL ROOM HEATER 2
		0.67		15	12	9 10	12	15		1.67		
			0.67	15	12	11 12	12	15			1.67	
HEAT TRACE (SEE NOTE 2)	5			15	12	13 14	12	20	1.67			GALLEY ROOM HEATER
		5		15	12	15 16	12	15		1.67		
WATER HEATER			4	15	12	17 18	12	15			1.67	
				15	12	19 20	12	15	0.5			BATHROOM HEATER
				15	12	21 22	12	15		0.5		
				15	12	23 24	12	15				
				15	12	25 26	12	15				
				15	12	27 28	12	15				
				15	12	29 30	12	15				
SUB TOTAL LOAD	6.34	6.34	5.34			NEUTRAL BUS GROUNDING BUS			5.50	5.50	5.00	SUB TOTAL LOAD
TOTAL CONNECTED LOAD	34.00												



NOTES:

1. CONTRACTOR TO PROVIDE MULTIPOLE LIGHTING CONTACTORS/RELAYS IN PANELBOARD TO DE-ENERGIZE HEATING CIRCUITS WHEN THE BRIDGE IS IN OPERATION.
2. EXISTING HEAT TRACE OPERATING VOLTAGE SHALL BE VERIFIED BY THE CONTRACTOR AND A NEW TRANSFORMER SHALL BE FURNISHED AND INSTALLED AS REQUIRED.
3. THE NEW HEATERS SHALL BE FURNISHED AND INSTALLED WITH INTERNAL 120VAC POWER SUPPLY AS SHOWN. IF A 120VAC SOURCE IS NOT AVAILABLE IN THE PROPOSED UNIT THE CONTRACTOR SHALL PROVIDE A 120VAC SOURCE THROUGH A TRANSFORMER.

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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		
SUSSEX	CHECKED BY: AHN	

HEATING
PANELBOARD SCHEDULES

RE-23
SHEET NO. 60
TOTAL SHTS. 180

8/9/2018
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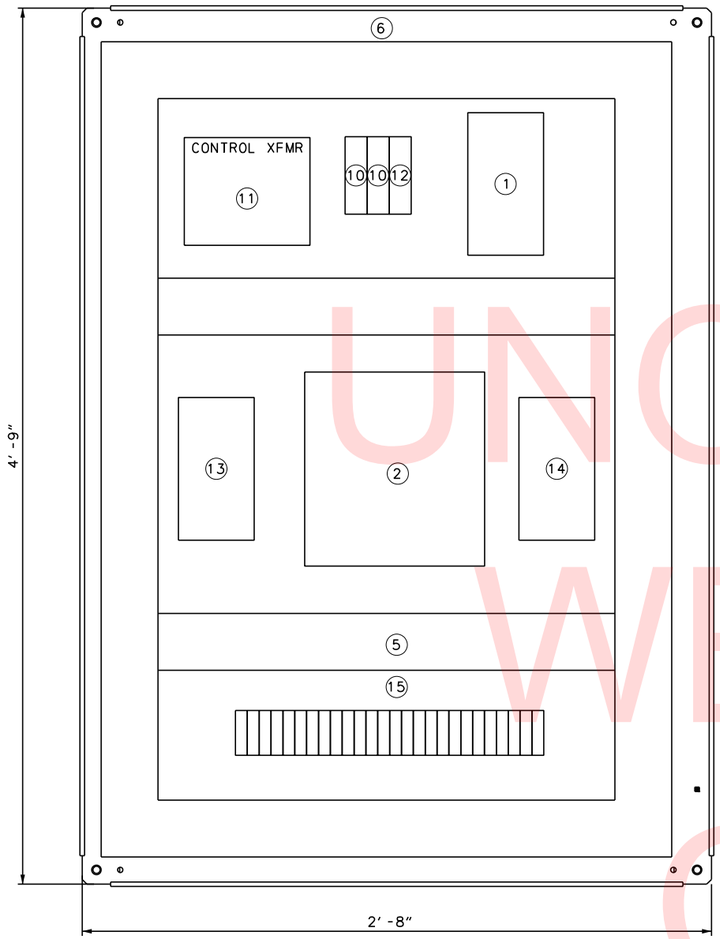
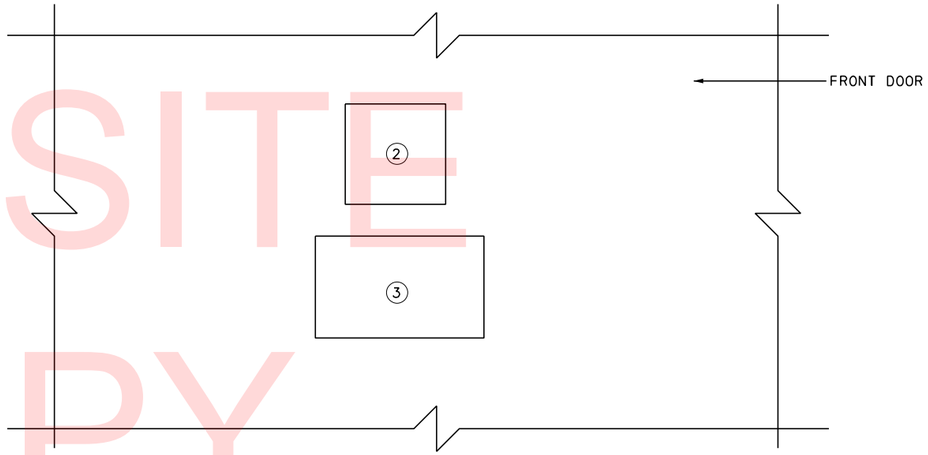


PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	MODEL NO.	DESCRIPTION 1	DESCRIPTION 2
1	CB-MAIN	1	SQUARE D	POWERPACT	MAIN CIRCUIT BREAKER	3P, 600V, 250AF/200AT, 35KAIC
		1	SQUARE D	-	DOOR DISCONNECT HANDLE	-
		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	XCP	DOOR LIMIT SWITCH*	300V, 10A, 1NO/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	LITTLEFUSE	KLDR	CONTROL TRANSFORMER FUSE	600V, 5A
		1	LITTLEFUSE	-	FUSE HOLDER	2P, 30A
11	TF-BC	1	SQUARE D	9070T	CONTROL TRANSFORMER	2KVA,480V PRI, 120V SEC
12	CB-RL	1	SQUARE D	POWERPACT	ROADWAY LIGHTING CB	1P, 600V, 125AF, 15AT, 35KA1C
13	CB-LP1	1	SQUARE D	POWERPACT	LIGHTING CB	3P, 600V, 125AF/60AT, 35KAIC
14	CB-H1	1	SQUARE D	POWERPACT	HEATING CB	3P, 600V, 125AF/75AT, 35KAIC
15	-	1	PANDUIT	-	WIRING DUCTS, SIZE AS REQUIRED	

ARO - QTY AS REQUIRED
*NOT SHOWN IN LAYOUT



FRONT DOOR MODIFICATIONS

NOTES:

1. 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.
2. 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.
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.
4. COORDINATE SIZE OF BACKPANEL AND CABINET WITH AVAILABLE SPACE ALONG THE WALL OF GENERATOR ROOM AND ADJUST AS REQUIRED.

8/2/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

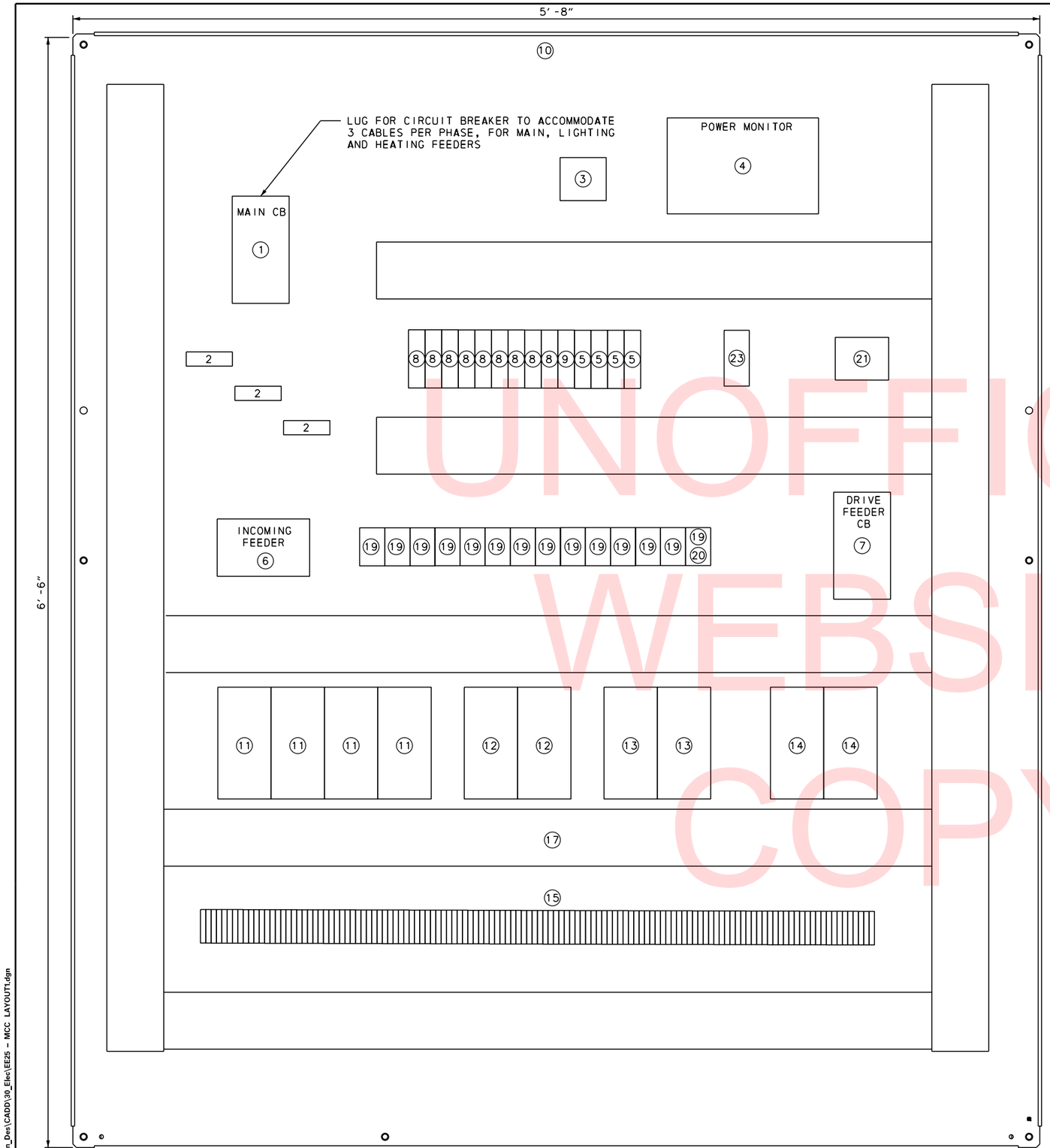
NOT TO SCALE

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



PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	MANUFACTURER	MODEL NO.	DESCRIPTION	DESCRIPTION 1
1	CB-MCC	1	SQUARE D	POWERPACT	MAIN CIRCUIT BREAKER	3P,600V,250AF/175AT,35KAIC
					DOOR DISCONNECT HANDLE	-
					CIRCUIT BREAKER UV TRIP	-
					CIRCUIT BREAKER TERMINAL LUG	-
2	CT	3	SQUARE D	74RFT	CURRENT TRANSFORMER	200:5A
3	PFR	1	SQUARE D	ZELIO	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	MULT19	CIRCUIT BREAKER	1P, 240V, 5A 250AF/175AT
6	-	1	MARATHON SP	EPB	ENCLOSED DISTRIBUTION BLOCK	600V, 200A
7	CB-SM1	1	SQUARE D	POWERPACT	DRIVE FEEDER CB	3P,600V,250AF/175AT,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	MULT19	CIRCUIT BREAKER	1P, 240V, 20A
10	-	1	CUSTOM	AS NOTED	PAINTED STEEL BACK PANEL	NEMA 12 STEEL ENCLOSURE
11	CB-G**	4	SQUARE D	GV2P	WARNING GATE 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	-
12	CB-B**	2	SQUARE D	GV2P	BARRIER GATE CB	3P,2-4A,35 KAIC (MIN)
	M-B**	2		LC2D	BARRIER GATE CONTACTOR	3P,9A,FVR CONTACTOR
	-	2		-	ADAPTER PLATE	-
	-	2		-	AUX CONTACTS FOR CONTACTOR	-
	-	2		-	AUX CONTACT FOR CB	-
	-	4		-	COIL SURGE SUPPRESSOR	-
13	CB-L**	2	SQUARE D	GV2P	SPAN LOCK CB	3P,4-6.3A,35 KAIC (MIN)
	M-L**	2		LC2D	SPAN LOCK CONTACTOR	3P,9A,FVR CONTACTOR
	-	2		-	ADAPTER PLATE	-
	-	2		-	AUX CONTACTS FOR CONTACTOR	-
	-	2		-	AUX CONTACT FOR CB	-
	-	4		-	COIL SURGE SUPPRESSOR	-
14	CB-MB**	2	SQUARE D	GV2P	MOTOR BRAKE CB	3P,0.25-0.40,35 KAIC (MIN)
	M-MB**	2		LC1D	MOTOR BRAKE CONTACTOR	3P,9A,NFVR CONTACTOR
	-	2		-	ADAPTER PLATE	-
	-	2		-	AUX CONTACTS FOR CONTACTOR	-
	-	2		-	AUX CONTACT FOR CB	-
	-	4		-	COIL SURGE SUPPRESSOR	-
15	Ⓜ	-	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:

1. 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.
2. 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.
3. THE CONTRACTOR SHALL DISCONNECT AND REMOVE THE EXISTING LOUVER/FAN ASSEMBLY ON THE EXISTING ENCLOSURE AND COVER WITH PAINTED STEEL PLATE AS REQUIRED.
4. 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.
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.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

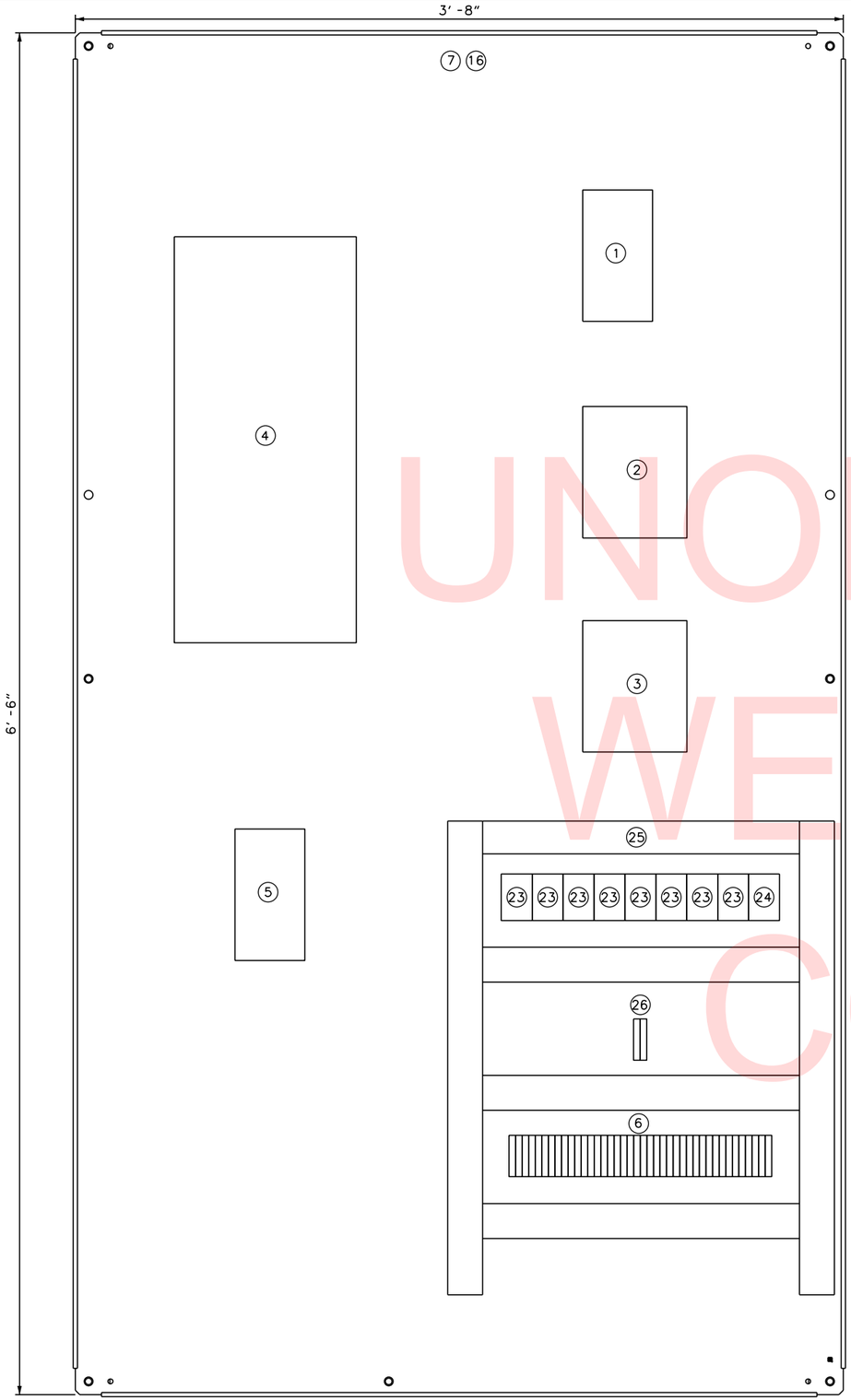
NOT TO SCALE

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

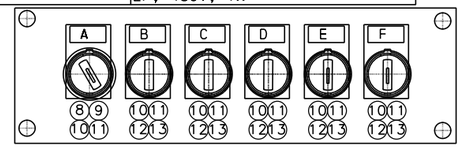


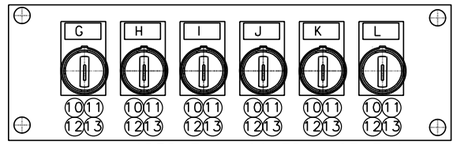
PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	PART NO.	DESCRIPTION	DESCRIPTION
1	CB-SM2	1	SQUARE D	POWERPACT	MAIN CIRCUIT BREAKER	3P, 600V, 250AF/150AT, 35KAIC
					DISCONNECT HANDLE	
					CIRCUIT BREAKER TERMINAL LUG	
2	FU-SM	1	MERSEN	HSJ	FAST TRIP FUSE	3P, 600VAC, 225A
				-	FUSE HOLDER	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	SCREW TYPE, 690V, 32A
					DIN RAIL	
					END PLATE	
					CROSS CONNECTORS	
					TERMINAL MARKER	
					GROUND TERMINAL	
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	MULTI 9	CIRCUIT BREAKER	2P, 480V, 1A

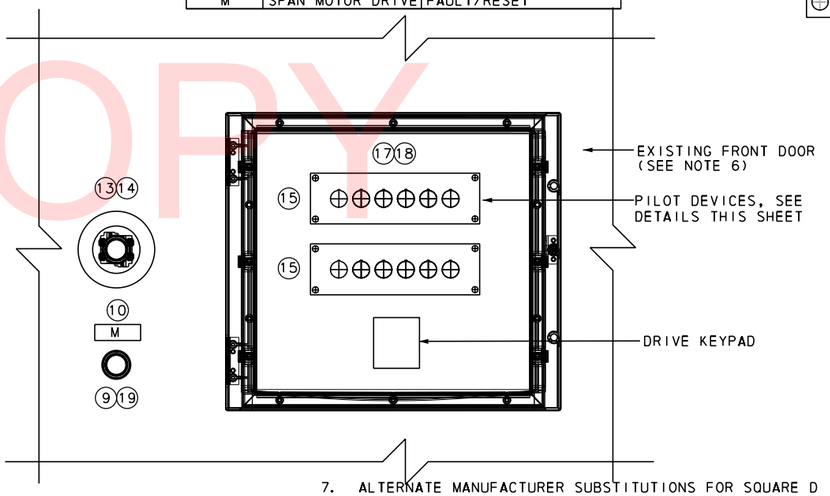
*NOT SHOWN IN LAYOUT
**MANUAL OPERATION SELECTOR SWITCHES
***NOMENCLATURE PER SCHEMATIC WIRING DIAGRAM

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



NOTES:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL AND WITHIN EXISTING AUXILARY ENCLOSURE. NOT ALL REQUIRED EQUIPMENT MAY BE SHOWN, CONTRACTOR SHALL PROVIDE THE NECESSARY EQUIPMENT AND DETAILS.
2. 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.
3. THE DRIVES SHALL BE ALLEN BRADLEY POWER FLEX UNITS OR EMERSON M700 UNITS. NO OTHER SUBSTITUTES ARE PERMITTED.
4. THE CONTRACTOR SHALL SUPPLY A FAN AS REQUIRED BY THE DRIVE MANUFACTURER INSIDE THE DRIVE CABINET.
5. THE BACKPANEL FOR THE DRIVE EQUIPMENT SHALL BE FURNISHED AND INSTALLED IN THE EXISTING AUXILARY CABINET ENCLOSURE AND RELABELLED AS DRIVE CABINET.
6. 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.
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.

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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 CABINET BACKPANEL DETAILS

RE-26
SHEET NO. 63
TOTAL SHTS. 180

8/2/2018
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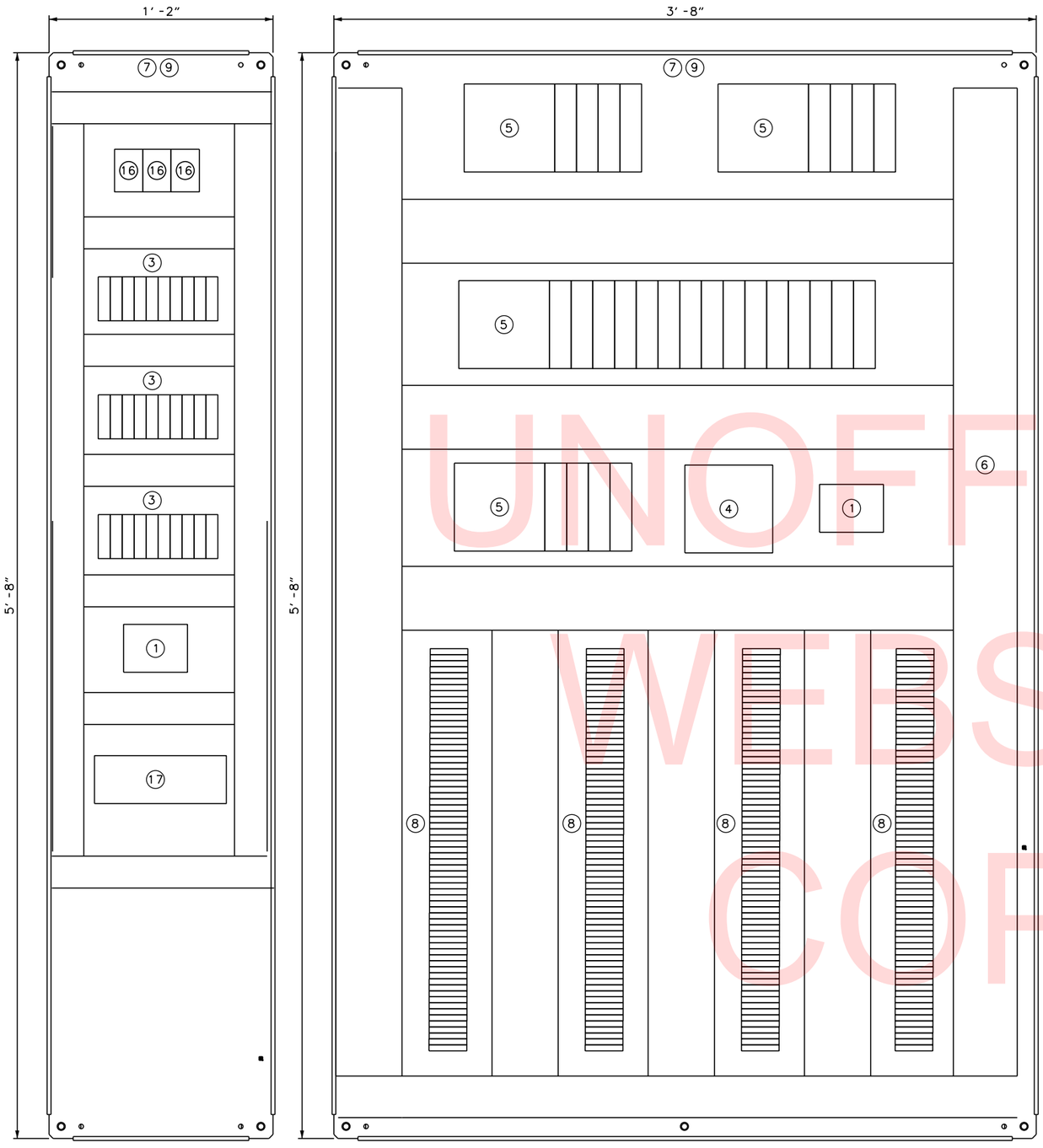
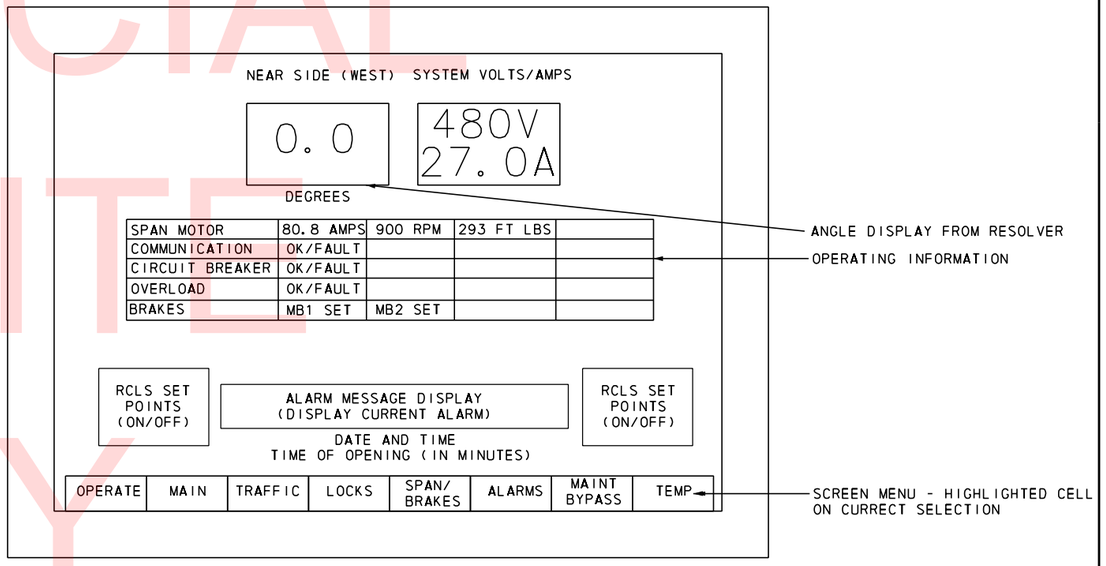


PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	MODEL NO.	DESCRIPTION	DESCRIPTION
1	LF	1	ISLATROL	IE	LINE FILTER	
2	-	-	-	-	-	-
3	CB-**	28	SQUARE D	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	Ⓜ	-	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
SEE SPECIAL PROVISIONS FOR REQUIREMNETS ON EACH SCREEN

NOTES:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL AND WITHIN THE ENCLOSURE.
2. 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.
3. THE CONTRACTOR SHALL FURNISH AN ADDITIONAL SIDE PANEL AS MAY BE REQUIRED TO INSTALL ADDITIONAL CIRCUIT EQUIPMENT.
4. 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.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

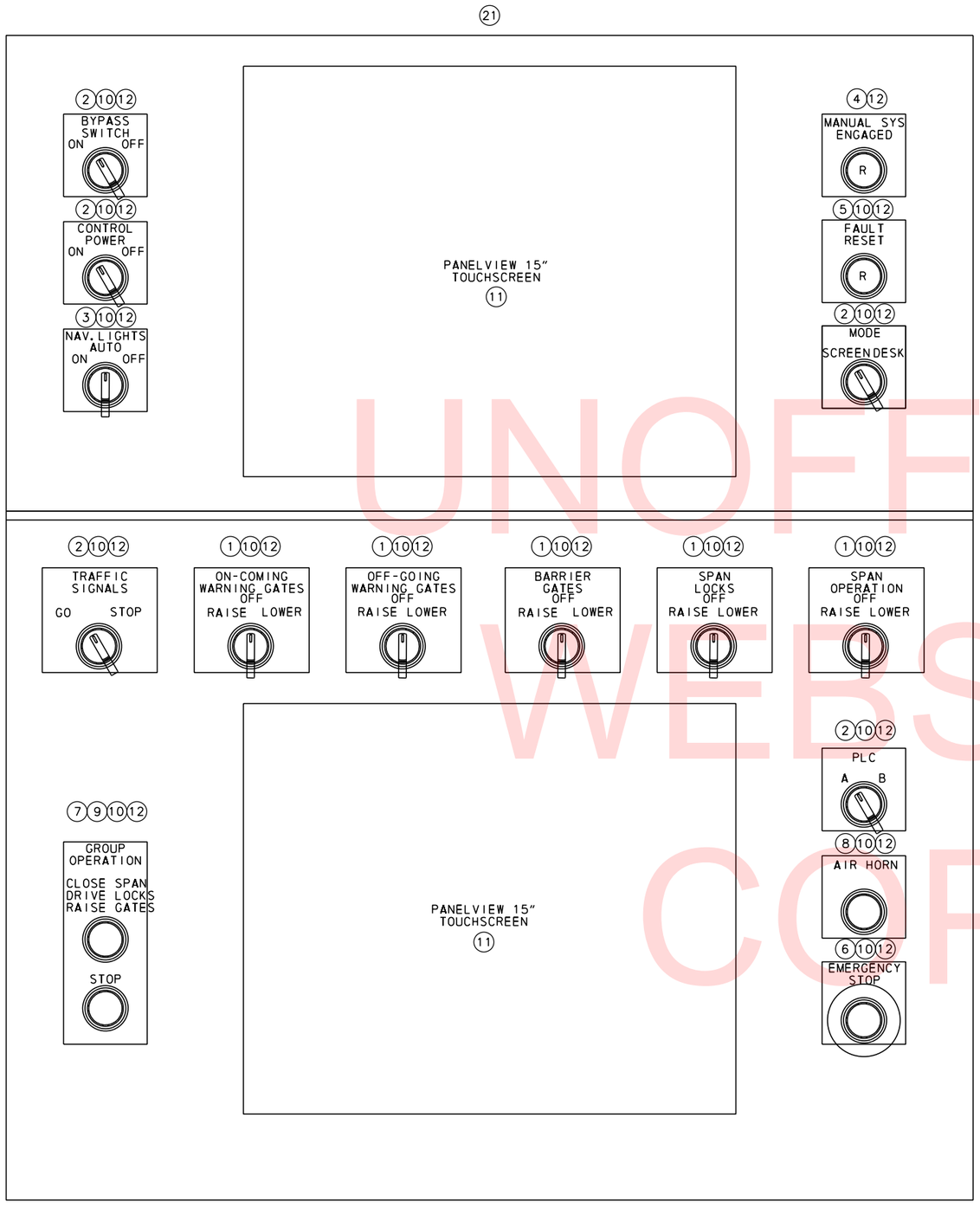
NOT TO SCALE

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		

PLC CABINET
BACKPANEL DETAILS

RE-27
SHEET NO.
64
TOTAL SHTS.
180



CONTROL DESK PLAN VIEW

SCALE: 6"=1'-0"

PROPOSED BILL OF MATERIALS

ITEM NO.	QTY	PROPOSED MANUFACTURER	MODEL NO.	DESCRIPTION	DESCRIPTION
1	5	SQUARE D	9001K	SPRING RETURN SELECTOR SWITCH	3 POSITION
2	5	SQUARE D	9001K	MAINTAINED SELECTOR SWITCH	2 POSITION
3	1	SQUARE D	9001K	MAINTAINED SELECTOR SWITCH	3 POSITION
4	1	SQUARE D	9001K	PILOT LIGHT	RED LED
5	1	SQUARE D	9001K	ILLUMINATED PUSHBUTTON	RED LED
6	1	SQUARE D	9001K	EMERGENCY PUSHBUTTON	RED
7	1	SQUARE D	9001K	PUSHBUTTON	GREEN
8	1	SQUARE D	9001K	PUSHBUTTON	BLACK
9	1	SQUARE D	9001K	PUSHBUTTON	RED
10	25	SQUARE D	9001K	CONTACT BLOCK	NO/NC
11	2	ALLEN BRADLEY	PANEL VIEW	TOUCHSCREEN	15"
12	1	CUSTOM	DETAILS AS NOTED	ENGRAVED NAME PLATES	
13	1	HOFFMAN	LF120V	ENCLOSURE LIGHT*	
14	1	HOFFMAN	DAH	ENCLOSURE HEATER*	
15	1	PHOENIX CONTACT	EM-DUO	DIN RAIL OUTLET*	
16	1	ALLEN BRADLEY	SEE DWG RE-30	AB CONTROL LOGIX PLC RACKS	
17	7	SQUARE D	ACTI	CIRCUIT BREAKERS	1P, 240V, 5A
18	1	REDLION	N-TRON 700	NETWORK SWITCH	
19	1	ISATROL	IE	FILTER	
20	1	PANDUIT	-	WIRING DUCTS, SIZE AS REQUIRED	
21	1	CUSTOM	CUSTOM	CONTROL DESK ENCLOSURE & PANELS	10 GAUGE S.S
22	-	PHOENIX CONTACT	UT4	TERMINAL BLOCKS	SCREW TYPE, 690V, 32A
				DIN RAIL	
				END PLATE	
				CROSS CONNECTOR	
				TERMINAL MARKER	
				GROUND TERMINAL	
23	1	-	-	FIBER OPTIC SPLICE BOX	
24	1	ALLEN BRADLEY	700S-P	SAFETY RELAY	120VAC, 10A

NOTES:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT.
2. THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE CONTROL DESK SHOWN CAN BE BROUGHT INTO THE CONTROL 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.
3. SEE DWG RE-29 FOR COMPONENTS ON CONTROL DESK BACKPANEL.

8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

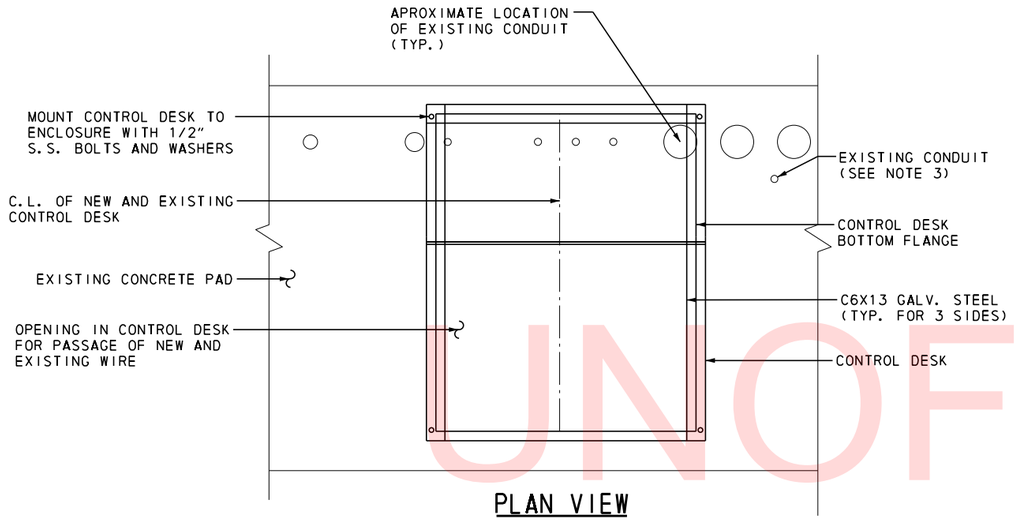
SCALE AS NOTED

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

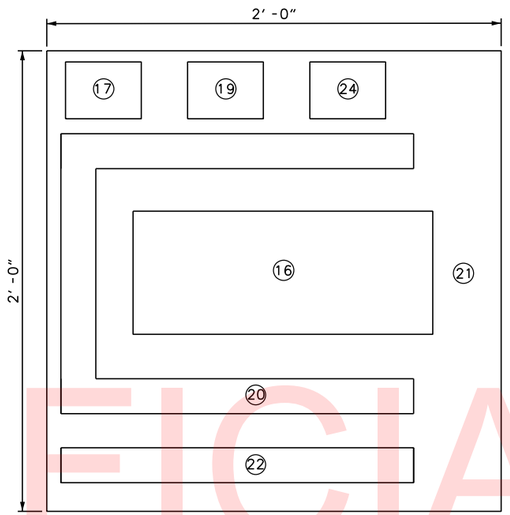
CONTRACT	BRIDGE NO.	3-153
T201507602	DESIGNED BY: MJT	
COUNTY	CHECKED BY: AHN	
SUSSEX		

CONTROL DESK LAYOUT

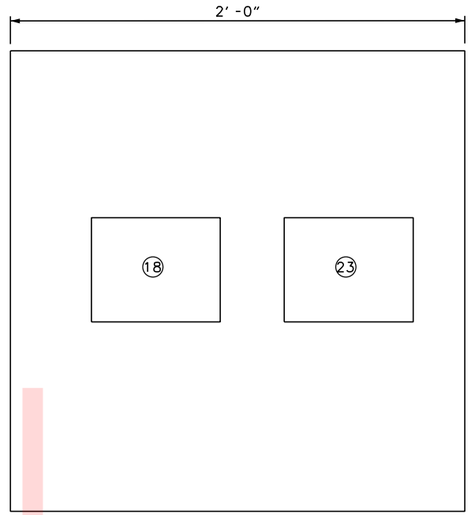
RE-28
SHEET NO. 65
TOTAL SHTS. 180



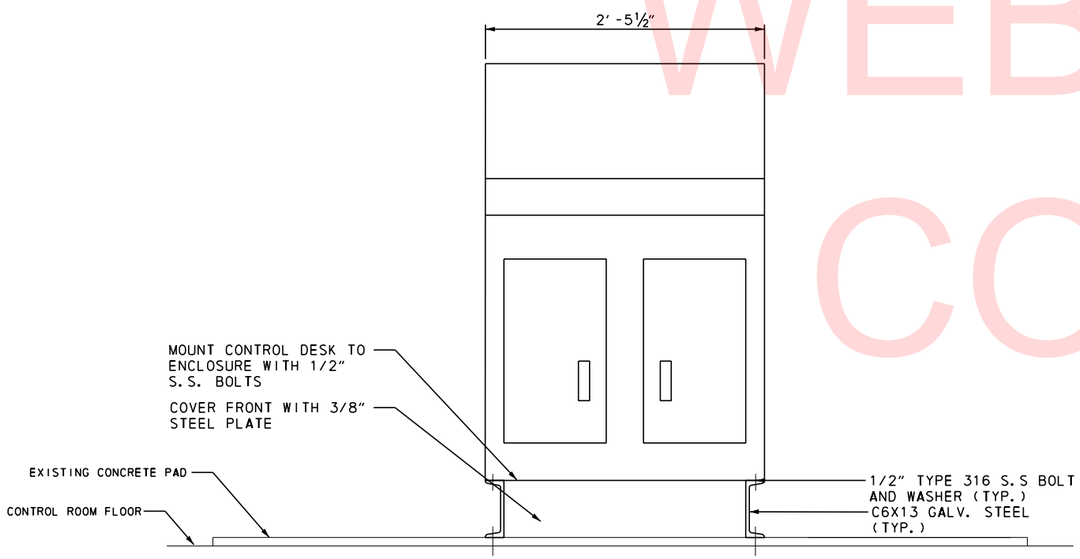
PLAN VIEW
SCALE: 1½" = 1'-0"



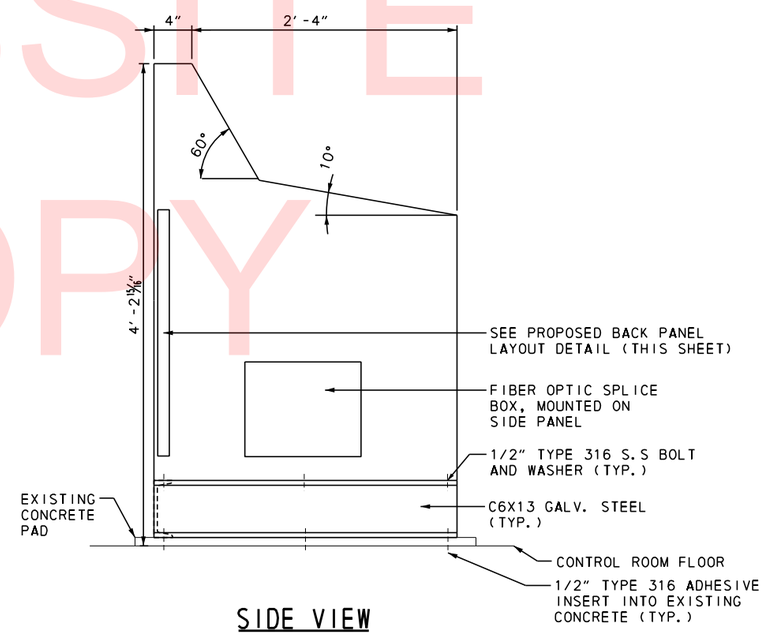
BACK PANEL LAYOUT
SCALE: NTS



SIDE PANEL LAYOUT
SCALE: NTS



FRONT VIEW
SCALE: 1½" = 1'-0"



SIDE VIEW
SCALE: 1½" = 1'-0"

NOTES:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL AND WITHIN THE ENCLOSURE.
2. THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE CONTROL DESK SHOWN CAN BE BROUGHT INTO THE CONTROL 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.
3. CUT ANY USED CONDUIT FLUSH WITH THE FLOOR.
4. CONTRACTOR SHALL SEAL AND ABANDON CONDUIT LOCATED OUTSIDE OF THE FRAME OF THE NEW CONTROL DESK NOT TO BE REUSED AND ROUTE NEW CONDUIT AND WIRE USING EXPOSED CONDUIT AS MAY BE REQUIRED.
5. NOT ALL CONDUIT MAY BE SHOWN, CONTRACTOR SHALL REFER TO AS-BUILT DRAWINGS AND FIELD CONDITIONS FOR CONDUIT WITHIN THE FRAME OF THE EXISTING CONTROL DESK.
6. REFER TO RE-28 FOR BILL OF MATERIAL REFERENCES
7. ADJUST CONTROL DESK LOCATION TO ACCOMMODATE LOCATION OF EXISTING CONDUIT.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	CONTROL DESK DETAILS
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-29 / SHEET NO. 66 / TOTAL SHTS. 180
					CHECKED BY: AHN	

8/9/2018
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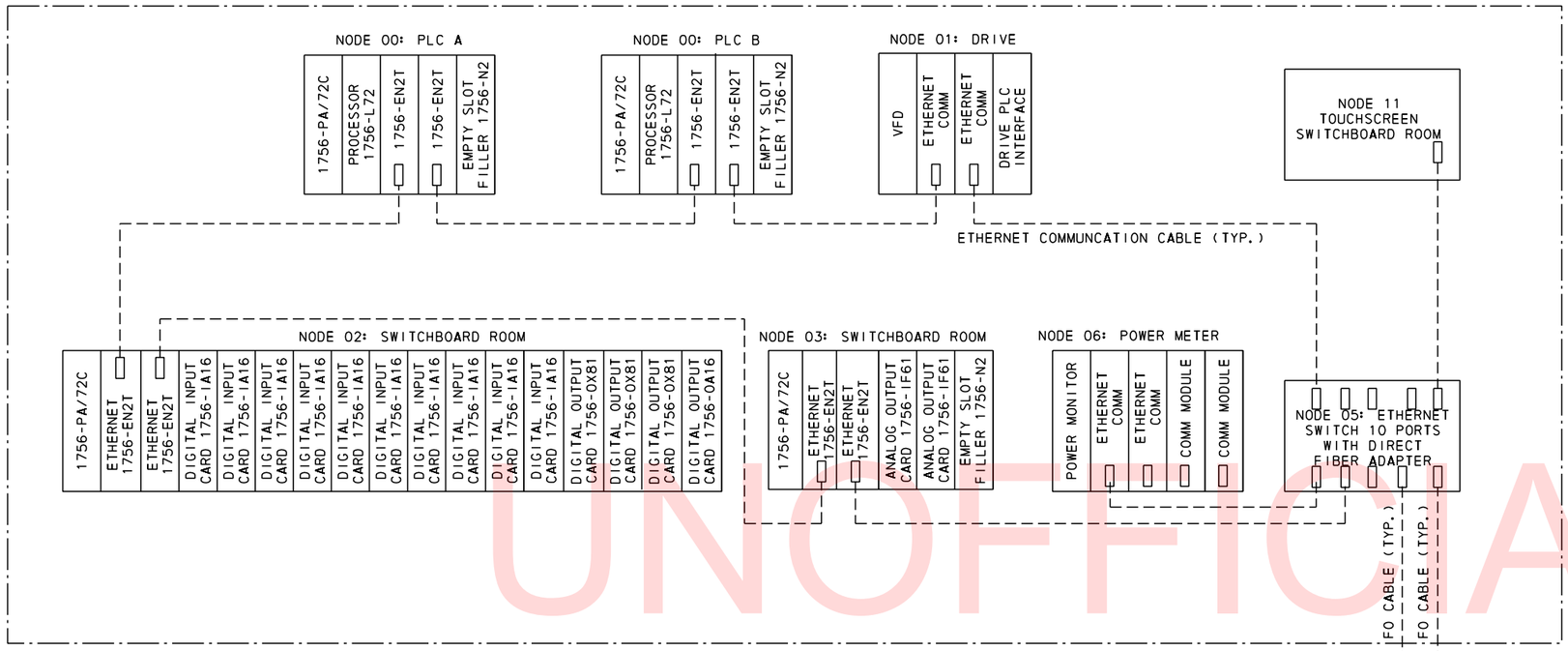

NOTES

1. EACH CHASIS SLOT THAT IS NOT EQUIPPED WITH A CARD SHALL BE FURNISHED WITH A BLANK SLOT FILLER.
2. EACH CARD IN THE I/O RACK SHALL BE EQUIPPED WITH WIRING ARMS WITH SCREW TERMINALS.
3. FURNISH AND INSTALL PROGRAMMING CONNECTIONS AVAILABLE ON THE ETHERNET NETWORK. FURNISH ALL NECESSARY CABLING AND ADAPTERS FOR THE PROGRAMMING CONNECTIONS. FURNISH AND INSTALL ETHERNET COMMUNICATIONS ON THE PROGRAMMER LAPTOP COMPUTER AND ASSOCIATED PROGRAMMING CABLES FOR THE PROGRAMMER LAPTOP COMPUTER.
4. THE CONTRACTOR SHALL PROVIDE BRIDGE STATUS INFORMATION FROM THE PLC TO DELDOT THROUGH THE WEB SERVER AND FIBER OPTIC CABLE CONNECTION TO THE DELDOT NETWORK. ALL WORK TO COORDINATE, ENABLE, ADJUST AND TEST THE SCADA SYSTEM SHALL BE PERFORMED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER AND DELDOT.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL FO AND ETHERNET CABLES AS REQUIRED BASED ON LAYOUT PER MANUFACTURER RECOMMENDATIONS.

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

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		

PLC BLOCK DIAGRAM

RE-30	
SHEET NO.	67
TOTAL SHTS.	180

8/9/2018
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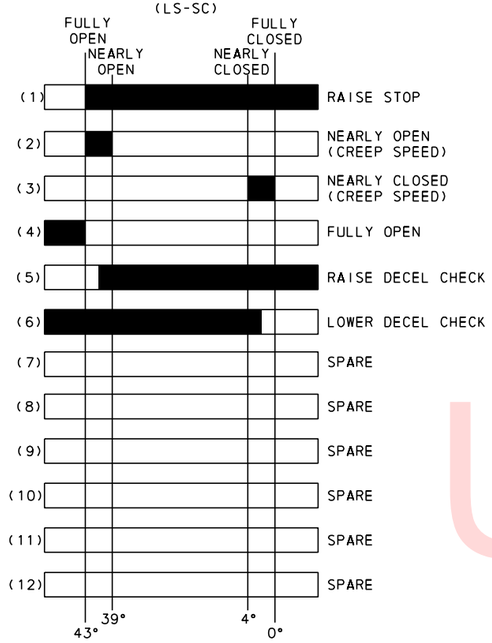
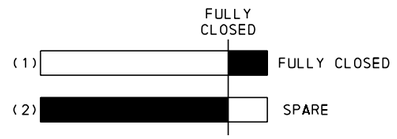
DEVELOPMENT: SPAN ROTARY LIMIT SWITCH (EXISTING)

(LS-SC)



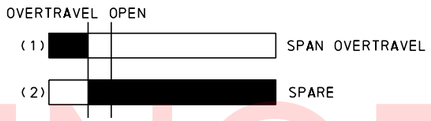
DEVELOPMENT: SPAN FULLY CLOSED PROXIMITY LIMIT SWITCH

(LS-FC1, LS-FC2)



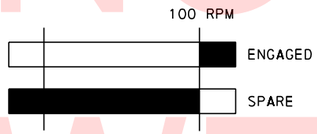
DEVELOPMENT: SPAN FULLY OPEN OVERTRAVEL PROXIMITY LIMIT SWITCH

(LS-OT)



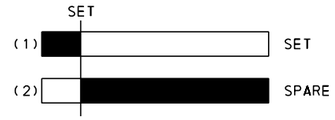
DEVELOPMENT: SPAN SPEED SWITCHES

(LS-SS)



DEVELOPMENT: BRAKE SET LEVER ARM LIMIT SWITCHES

(LS-MBN-S, LS-MBS-S)

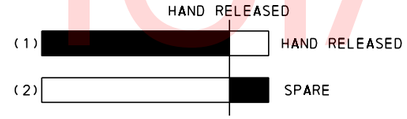


DEVELOPMENT: BRAKE RELEASED LEVER ARM LIMIT SWITCHES

(LS-MBN-R, LS-MBS-R)

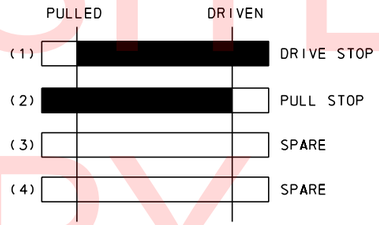
DEVELOPMENT: BRAKE HAND RELEASED LEVER ARM LIMIT SWITCHES

(LS-MBN-H, LS-MBS-H)



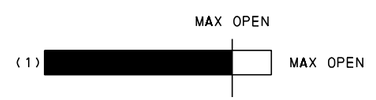
DEVELOPMENT: SPAN LOCK ROTARY LIMIT SWITCH (EXISTING)

(LS-LNW, LS-LSW)



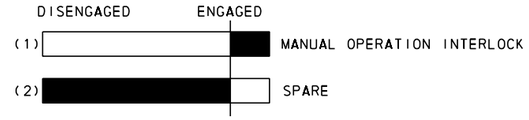
DEVELOPMENT: SPAN OVER TRAVEL PROXIMITY LIMIT SWITCH

(LS-FC1, LS-FC2)



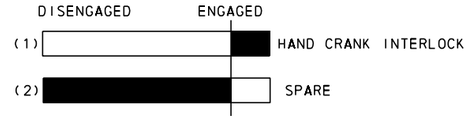
DEVELOPMENT: MANUAL OPERATION LIMIT SWITCH

(LS-MO)



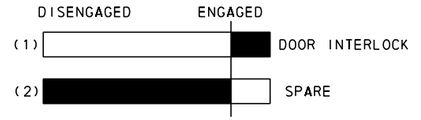
DEVELOPMENT: TYPICAL MOTOR HAND CRANK LIMIT SWITCH

(LS-LNW-HC, LS-LSW-HC, LS-GNE-HC, LS-GSE-HC, LS-GSW-HC, LS-GNW-HC, LS-BSW-HC, LS-BNW-HC)



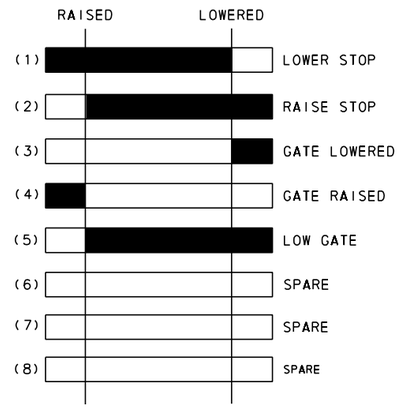
DEVELOPMENT: TYPICAL DOOR INTERLOCK LIMIT SWITCH

(LS-GNW-DS1, LS-GNW-DS2, LS-GSW-DS1, LS-GSW-DS2, LS-GNE-DS1, LS-GNE-DS2, LS-GSE-DS1, LS-GSE-DS2, LS-BNW-DS1, LS-BNW-DS2, LS-BSW-DS1, LS-BSW-DS2 DSS1, DSS2, DSS3, DSS4, DSS5, DSS6, DSS7)

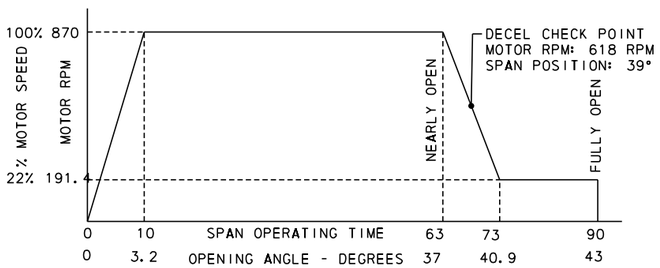


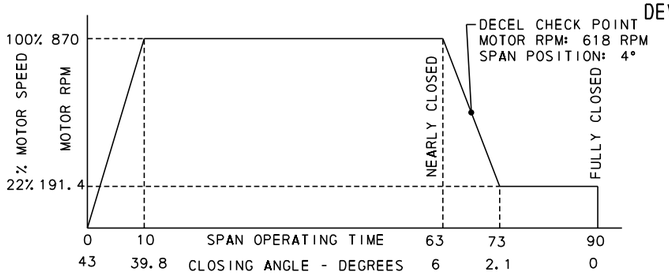
DEVELOPMENT: TRAFFIC & BARRIER GATE ROTARY LIMIT SWITCH (EXISTING)

(LS-GNE, LS-GSE, LS-GSW, LS-GNW, LS-BNW, LS-BSW)



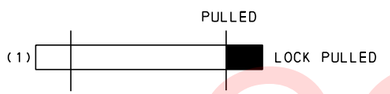
DEVELOPMENT: LEAF SPEED VERSUS POSITION





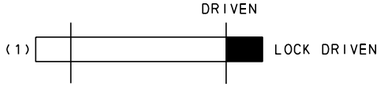
DEVELOPMENT: SPAN LOCK PULLED PROXIMITY SWITCHES

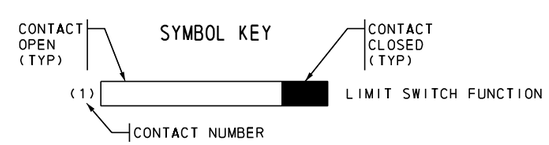
(LS-LNW-P, LS-LSW-P)



DEVELOPMENT: TAIL & CENTER LOCK DRIVEN PROXIMITY SWITCHES

(LS-LNW-D, LS-LSW-D)





NOTES:

1. EXISTING LIMIT SWITCHES SHALL BE ADJUSTED AS REQUIRED.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	LIMIT SWITCH DEVELOPMENT
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-31
					CHECKED BY: AHN	SHEET NO. 68
						TOTAL SHTS. 180

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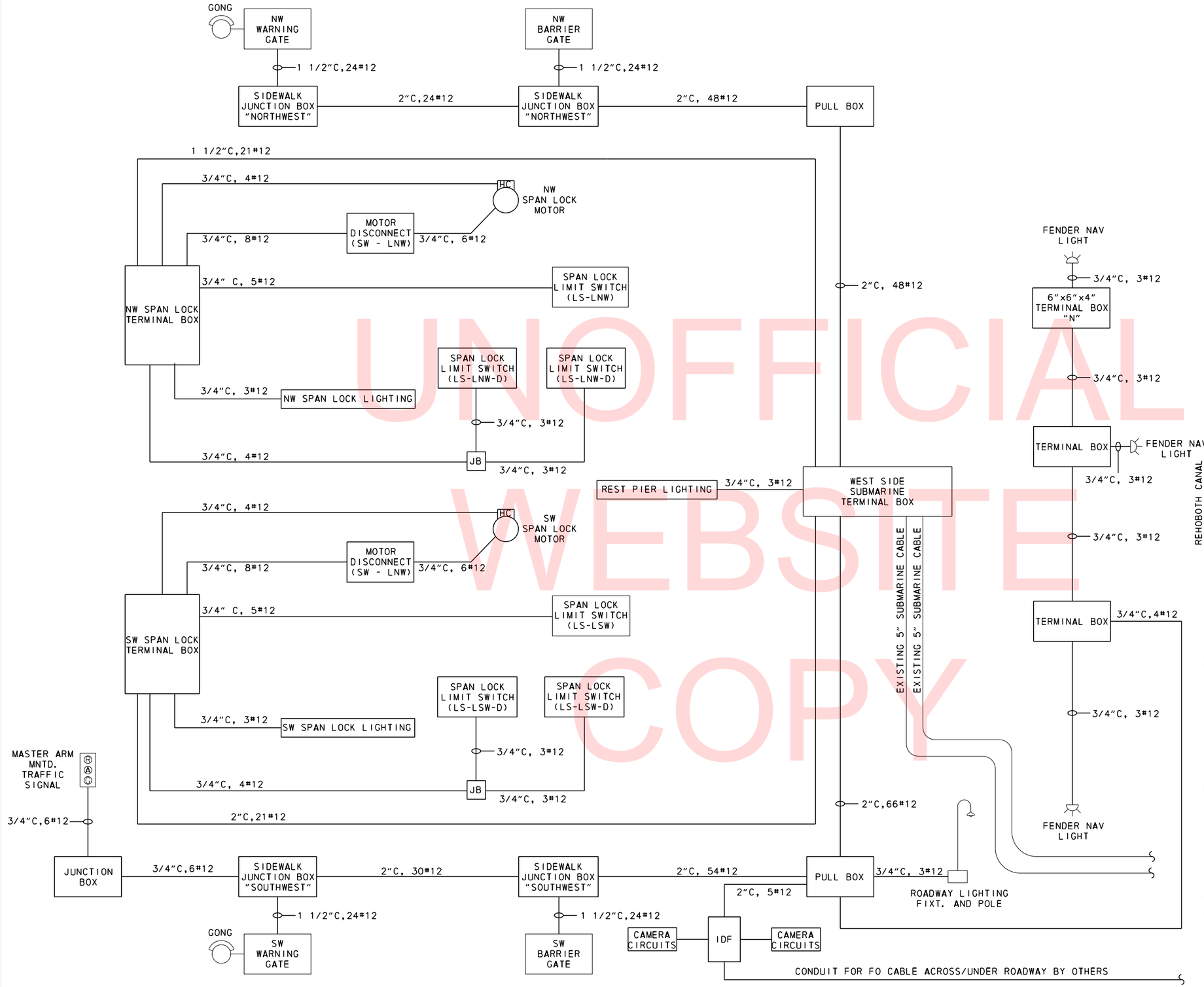

NOTES: RE-32 AND RE-33

1. CONTRACTOR SHALL FURNISH AND INSTALL SPECIFIED CONDUIT AND THE FIRE ALARM CABLES. THE SECURITY SYSTEM CABLE(S) SHALL BE FURNSIHED BY OTHERS BUT INSTALLED BY THE CONTRACTOR IN COORDINATION WITH DELDOT'S SECURITY CONTRACTOR.
2. THE SCHEMATIC CONDUIT DIAGRAMS SHOW MINIMUM DESIGN QUANTITIES OF PULL, TERMINAL AND JUNCTION BOXES THAT MAY BE REQUIRED FOR THE PROPOSED INSTALLATION. THE CONTRACTOR SHALL FURNISH AND INSTALL ANY ADDITIONAL NECESSARY BOXES REQUIRED FOR THE ACTUAL LAYOUT AT NO ADDTIONAL COST TO DELDOT.
3. THE NUMBER OF WIRES AND SIZES OF CONDUCTORS SHOWN IN CONDUITS AND CABLES ARE BASED ON THE CONTRACT WIRING DIAGRAMS AND ARE THE MINIMUM PERMISSIBLE. THE CONTRACTOR SHALL PROVIDE CONDUCTORS OF SUFFICIENT NUMBER AND SIZE, INCLUDING SPARES, AS MAY BE REQUIRED FOR THE INSTALLATION IN ACCORDANCE WITH THE FINAL WIRING DIAGRAMS ON HIS APPROVED WORKING DRAWINGS.
4. CONDUIT AND WIRE REQUIREMENTS FOR SERVICE LIGHTING, RECEPTACLES, FIRE ALARM SYSTEM, SECURITY CAMERAS ARE NOT SHOWN. THE CONTRACTOR SHALL PROVIDE AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE NEW CONDUIT AND WIRE TO THE TRAFFIC CONTROL EQUIPMENT AS SHOWN HERE AND RE-44. THE NEW CONDUIT SHALL BE TRENCHED, CORE DRILLED AND/OR SAW CUT THROUGH THE EXISTING CONCRETE PLATFORMS, SIDEWALKS AND GROUND. JUNCTION BOXES SHALL BE SURFACE MOUNTED ON THE EXISTING STRUCTURE OR WHERE FEASIBLE INSTALLED FLUSH WITH SIDEWALK OR GROUND.
6. ALL WORK REQUIRED TO FURNISH AND INSTALL THE NEW CONDUIT AND WIRE SHALL BE PROVIDED BY THE CONTRACTOR, INCLUDING REMOVAL AND RE-INSTALLATION OF THE EXISTING WARNING AND BARRIER GATES, AT NO ADDITIONAL COST TO DELDOT.
7. THE SECURITY CAMERAS SHALL BE FURNISHED AND INSTALLED BY DELDOT AND SHALL BE POE UNITS. 120VAC POWER FOR THE CAMERAS SHALL BE ROUTED TO THE RACK MOUNTED EQUIPMENT AND CONDUIT SHALL BE ROUTED FROM THE RACK TO THE CAMERA LOCATIONS SHOWN ON THE PLANS.
8. CONDUIT AND WIRE DESIGNATED AS LIGHTING SHALL ALSO BE FOR RECEPTACLES AND OTHER LIGHTING PANELBOARD LOADS.
9. THE CONTRACTOR SHALL REMOVE ALL EXISTING CONDUCTORS FROM THE EXISTING INDICATED 1-2 1/2" AND 2-3" CONDUIT SHOWN ON RE-33 ROUTED FROM THE CONTROL HOUSE TO THE MACHINERY ROOM, CLEAN THE INTERIOR OF THE CONDUIT AND CAREFULLY EXAMINE THE NOTED CONDUIT. AFTER INSPECTION AND CLEANING, IF IN THE OPINION OF THE ENGINEER THE CONDUIT CANNOT BE REUSED THE CONTRACTOR SHALL REPLACE AT NO ADDITIONAL COST. THE EXISTING PORTIONS OF THE CONDUIT CAST IN THE CONCRETE TO THE CONTROL HOUSE MAY BE REUSED.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING THE PROPOSED INSTALLATION DETAILS, CONDUIT ROUTING, CONDUIT BLOCK DIAGRAMS, INTERCONNECT DWGS/SPREADSHEET, LAYOUT AND OTHER REQUIRED DETAILED SHOP DRAWINGS USING THE INFORMATION PROVIDED IN THESE PLANS, EXISTING AS-BUILT DWGS. AND FIELD CONDITIONS. THESE SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO THE START OF THE WORK.

8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

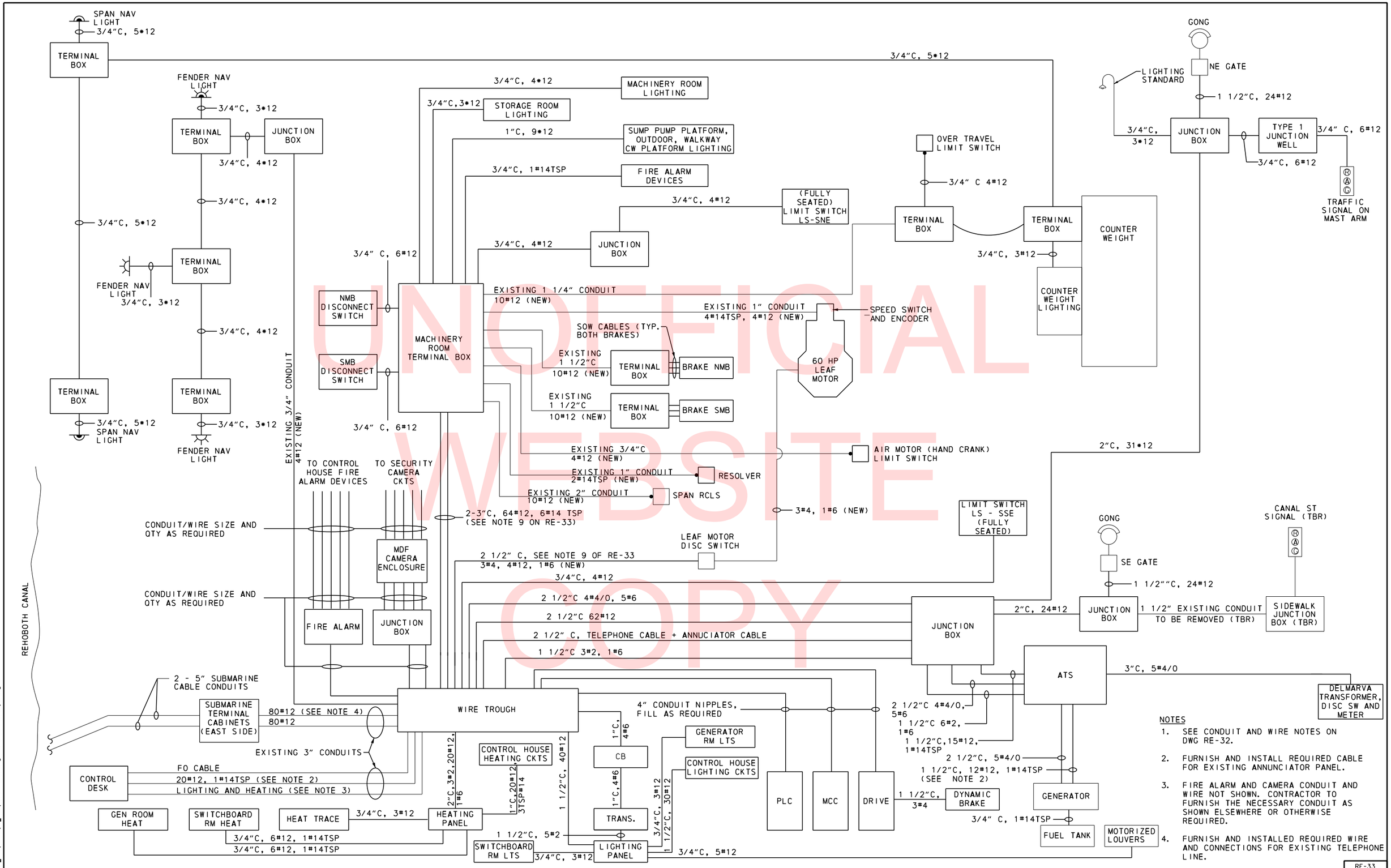
NOT TO SCALE

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 I WEST

RE-32
SHEET NO. 69
TOTAL SHTS. 180



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.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153 / DESIGNED BY: MJT / CHECKED BY: AHN

CONDUIT BLOCK DIAGRAM II EAST

RE-33 | SHEET NO. 70 | TOTAL SHTS. 180

8/2018
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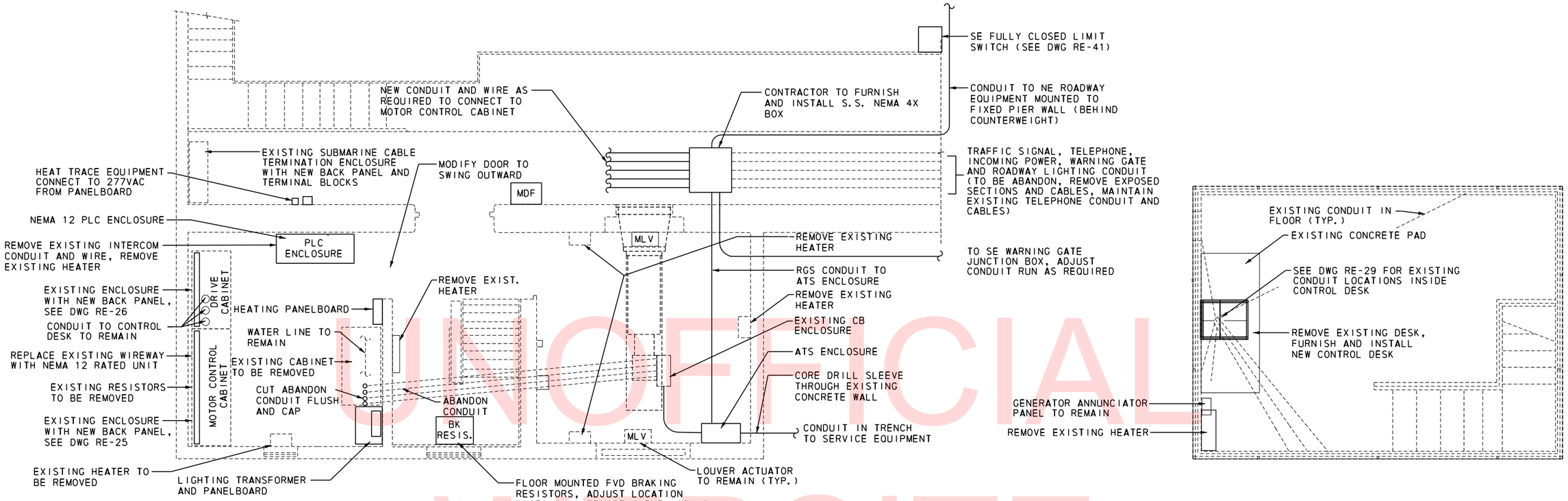
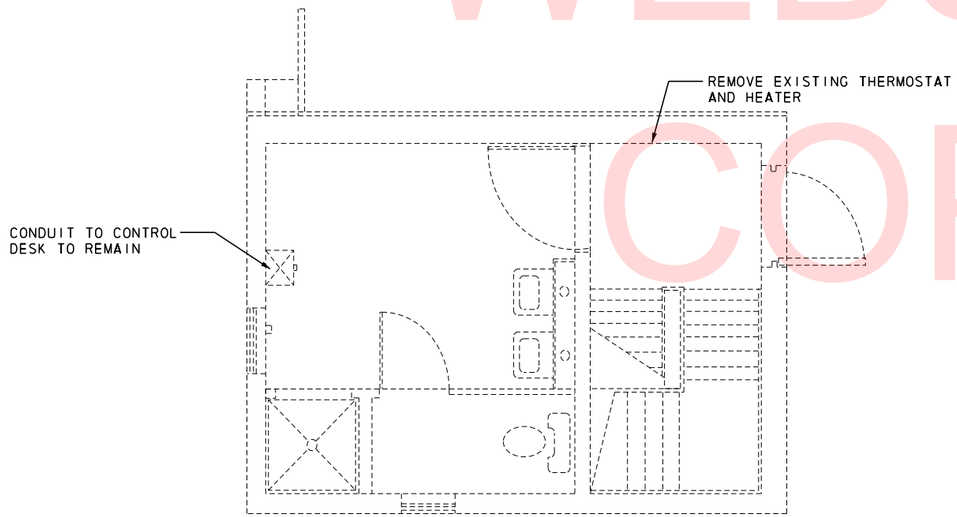


SWITCHBOARD AND GENERATOR ROOM LAYOUT

OPERATORS ROOM



UTILITY ROOM AND MAIN ENTRANCE

NOTES

1. FOR SECURITY CAMERA, FIRE ALARM, LIGHTING, AND HEATING LAYOUTS SEE DWGS RE-36 TO RE-39.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINAL LAYOUT OF THE SWITCHBOARD ROOM. IF THE LAYOUT SHOWN REQUIRES ADJUSTMENT FOR PROPER FIT, TO MEET CODE REQUIREMENTS OR AS DIRECTED BY DELDOT THE CONTRACTOR SHALL MAKE SUCH ADJUSTMENTS AT NO ADDTIONAL COST.
3. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
4. ALL EXISTING CONDUIT EMBEDED IN FLOOR, WALLS AND CEILING INSIDE THE CONTROL HOUSE SHALL BE ABANDONED UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL FURNISH AND INSTALL SURFACE MOUNTED CONDUIT TO NEW AND EXISTING EQUIPMENT.
5. CONTRACTOR TO FURNISH NEW BACK PANEL WITH NEW TERMINALS FOR EXISTING SUBMARINE CABLE TERMINATION BOXES (2 IN TOTAL).
6. THE NEW ENCLOSURES AND EQUIPMENT SHALL BE INSTALLED BY THE CONTRACTOR THROUGH THE EXISTING CONTROL HOUSE AND/OR MACHINERY ROOM DOORS. ANY MODIFICATIONS OR ADJUSTMENTS TO THE ENCLOSURES OR SURROUNDING EQUIPMENT INCLUDING THE REMOVAL OF DOORS AND RAILINGS SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST.
7. FURNISH AND INSTALL WIREWAY/TROUGH IN STORAGE ROOM TO ROUTE CONDUIT INTO SWITCHBOARD ROOM ELECTRICAL EQUIPMENT.
8. KEEP AREA UNDER WATER LINES FROM FROM ELECTRICAL EQUIPMENT IN THE LOCATION OF THE EXISTING POWER CABINET.

8/9/2018
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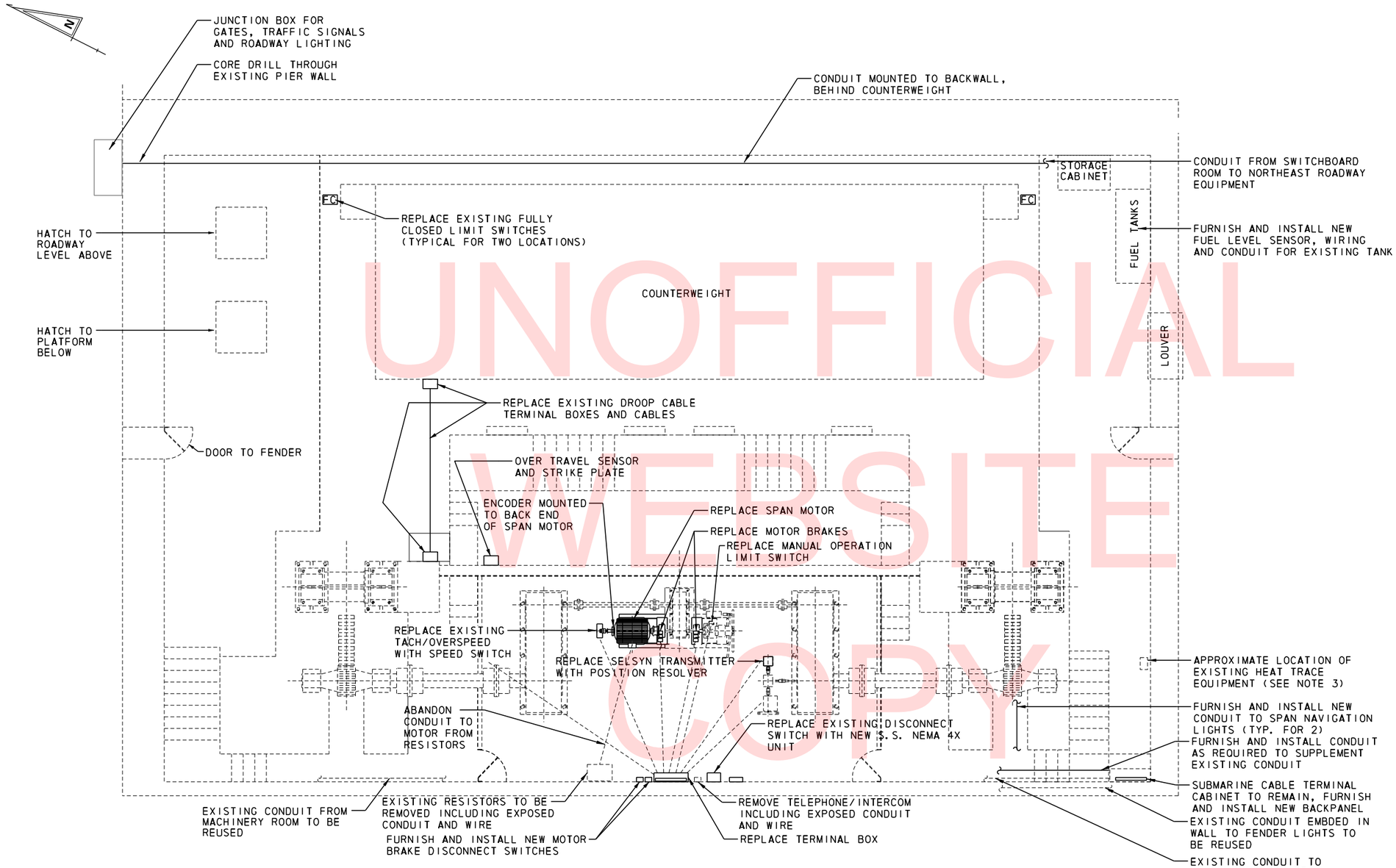
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-153	CONTROL HOUSE LAYOUT	RE-34
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 71
					CHECKED BY: AHN		TOTAL SHTS. 180



PROPOSED MACHINERY ROOM ELECTRICAL EQUIPMENT LAYOUT

SCALE 1/4" = 1'-0"

NOTES:

1. FOR SECURITY CAMERA, FIRE ALARM, LIGHTING, AND HEATING LAYOUTS SEE DWGS RE-36 TO RE-39.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL NEW FLEXIBLE CONDUIT FOR FINAL CONNECTIONS TO NEW EQUIPMENT SUCH AS SPAN MOTOR, LIMIT SWITCHES, SENSORS, ETC. AS MAY BE REQUIRED.
3. THE EXISTING HEAT TRACE CONTACTOR AND THERMOSTAT SHALL BE REPLACED. THE NEW CONTACTOR SHALL BE LOCATED IN THE AUXILARY CONTROL ENCLOSURE AS SHOWN ON THE PLANS. THE NEW THERMOSTAT SHALL BE LOCATED IN A SIMILAR LOCATION AS THE EXISTING. NEW CONDUIT AND WIRE SHALL BE FURNISHED AND INSTALLED TO THE NEW THERMOSTAT AND A JUNCTION POINT TO CONNECT THE EXISTING HEAT TRACE CABLE.
4. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	MACHINERY ROOM ELECTRICAL LAYOUT	RE-35
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 72
					CHECKED BY: AHN		TOTAL SHTS. 180

8/9/2018
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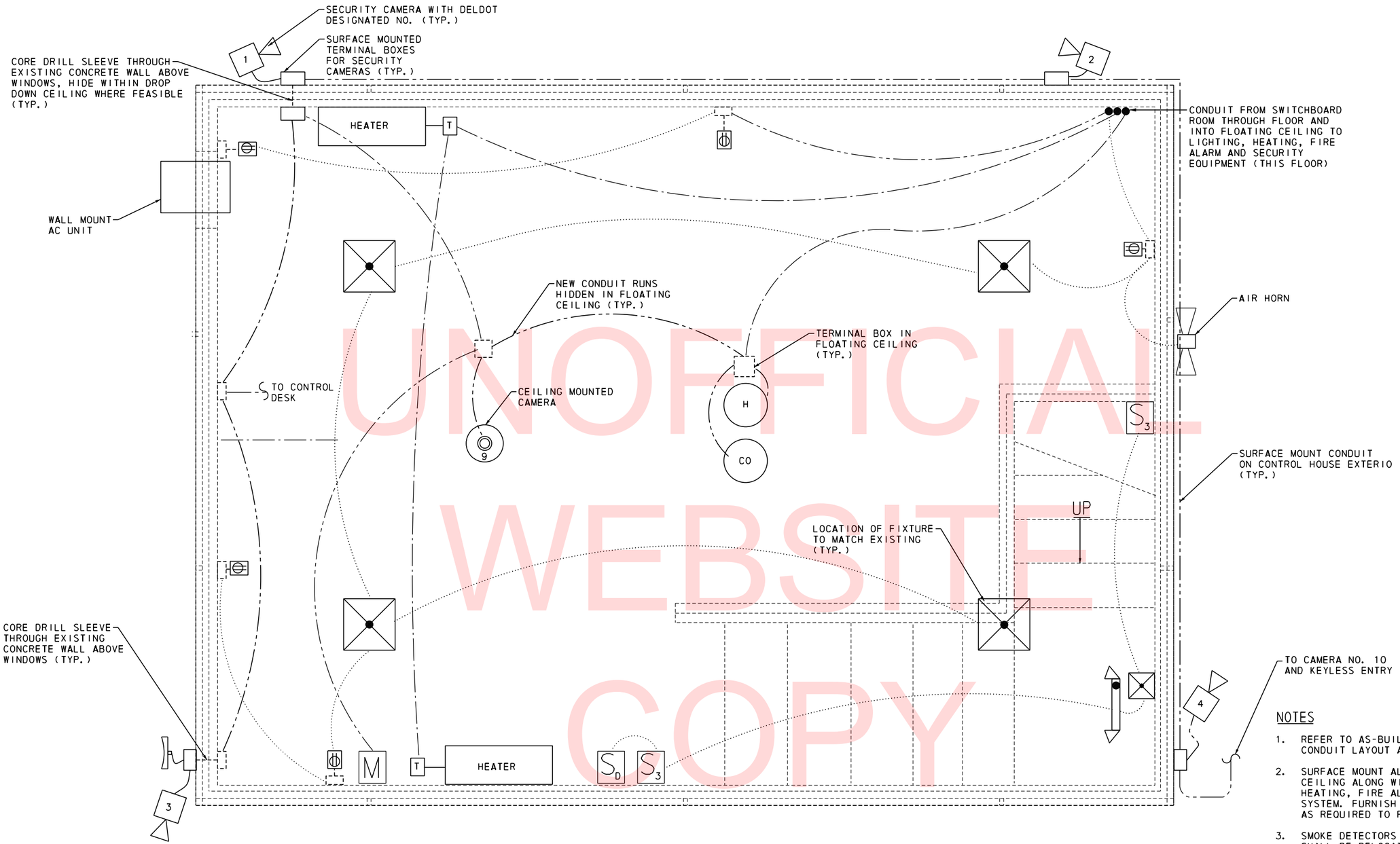
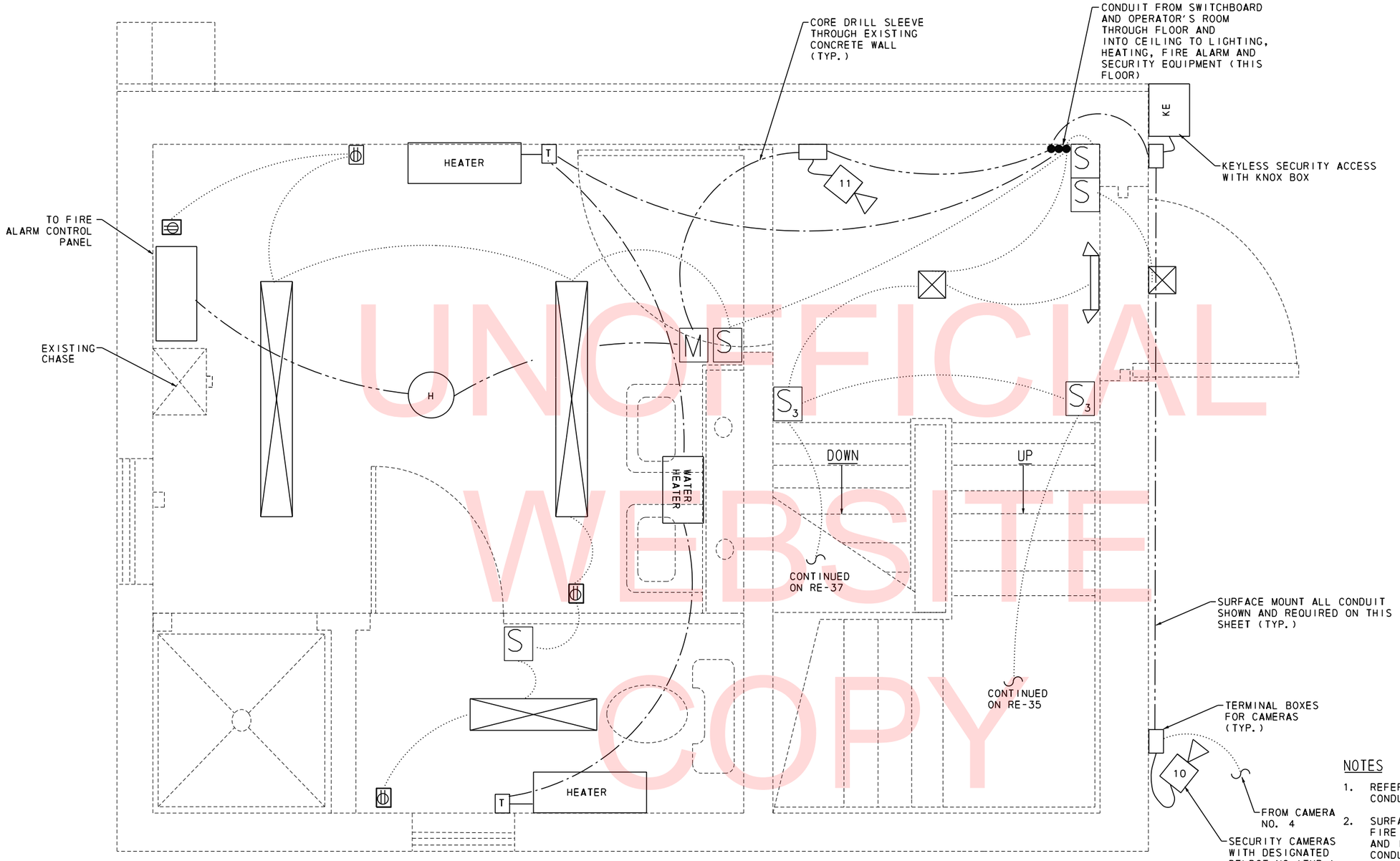


OPERATORS ROOM LIGHTING PLAN

NOTES

1. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
2. SURFACE MOUNT ALL CONDUIT FROM FLOATING CEILING ALONG WINDOW FRAME FOR LIGHTING, HEATING, FIRE ALARM, AND SECURITY CAMERA SYSTEM. FURNISH AND INSTALL JUNCTION BOXES AS REQUIRED TO ROUTE CONDUIT TO EACH DEVICE.
3. SMOKE DETECTORS SHOWN ON THIS LAYOUT DRAWING SHALL BE RELOCATED AS REQUIRED TO AVOID OTHER WATERLINES, LIGHTING,ETC.
4. CONTRACTOR TO FURNISH AND INSTALL COMPRESSOR FOR THE AIR HORN (NOT SHOWN HERE).
5. CONTRACTOR SHALL MAKE ALL NECESSARY CORE DRILL OPENINGS THROUGH THE FLOOR AND WALL TO ACOMINATE NEW CONDUIT TO LIGHTING, HEATING, FIRE ALARM AND SECURITY SYSTEMS.
6. CONTRACTOR SHALL ADJUST CONDUIT LOCATIONS AS REQUIRED BASED ON EQUIPMENT LAYOUT.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	OPERATOR ROOM REFLECTED CEILING PLAN
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-36
					CHECKED BY: AHN	SHEET NO. 73
						TOTAL SHTS. 180



UTILITY ROOM AND MAIN ENTRANCE LIGHTING PLAN

NOTES

1. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
2. SURFACE MOUNT ALL CONDUIT FOR LIGHTING, HEATING, FIRE ALARM, AND SECURITY CAMERA SYSTEM. FURNISH AND INSTALL JUNCTION BOXES AS REQUIRED TO ROUTE CONDUIT TO EACH DEVICE.
3. SMOKE DETECTORS SHOWN ON THIS LAYOUT DRAWING SHALL BE RELOCATED AS REQUIRED TO AVOID OTHER WATERLINES, LIGHTING,ETC.
4. CONTRACTOR SHALL MAKE ALL NECESSARY CORE DRILL OPENINGS THROUGH THE FLOOR AND WALL TO ACCOMMODATE NEW CONDUIT TO LIGHTING, HEATING, FIRE ALARM AND SECURITY SYSTEMS.
5. CONTRACTOR SHALL ADJUST CONDUIT LOCATIONS AS REQUIRED BASED ON EQUIPMENT LAYOUT.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	UTILITY ROOM AND MAIN ENTRANCE REFLECTED CEILING PLAN
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-37
					CHECKED BY: AHN	SHEET NO. 74
						TOTAL SHTS. 180

8/2/2018
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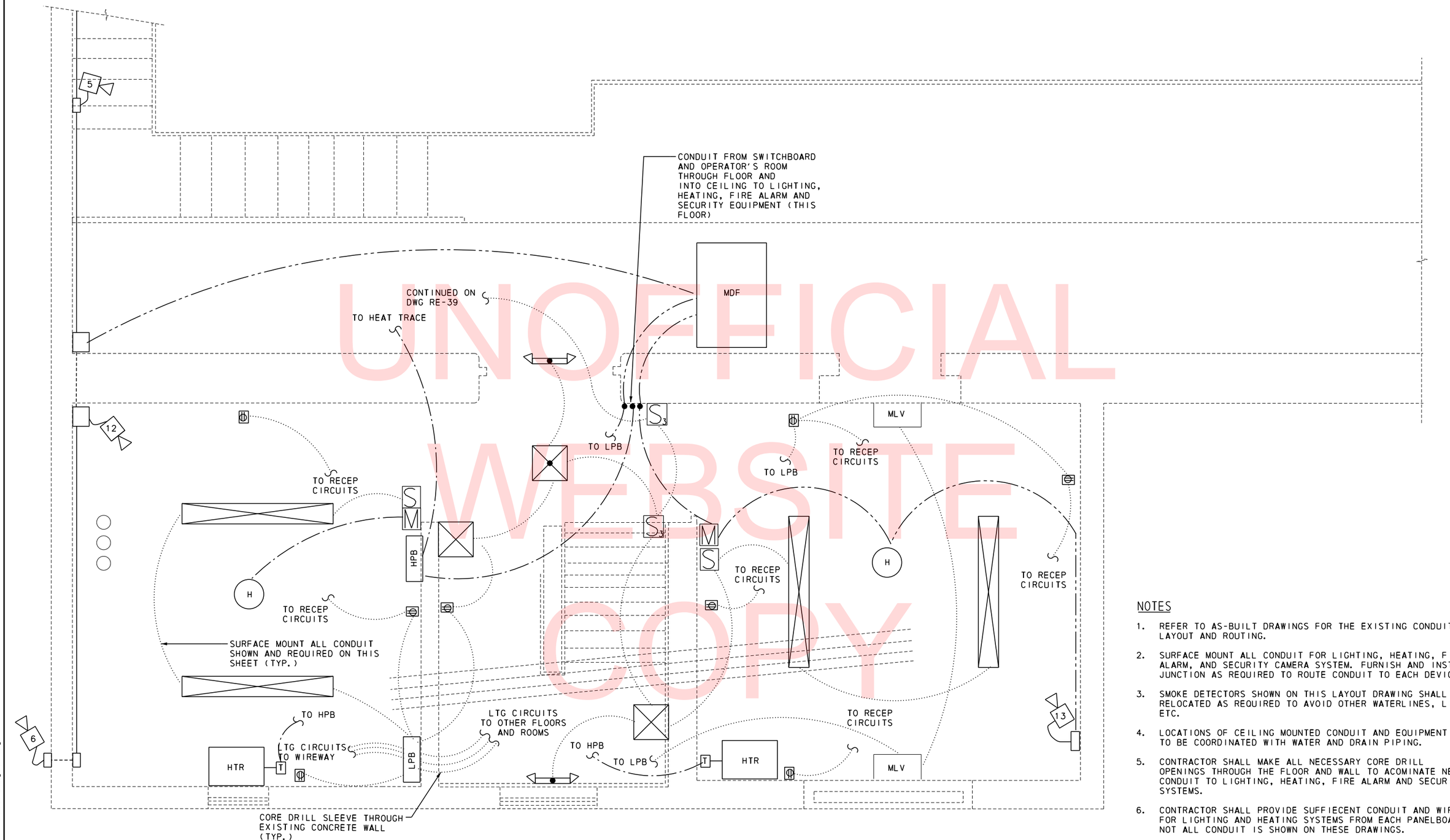


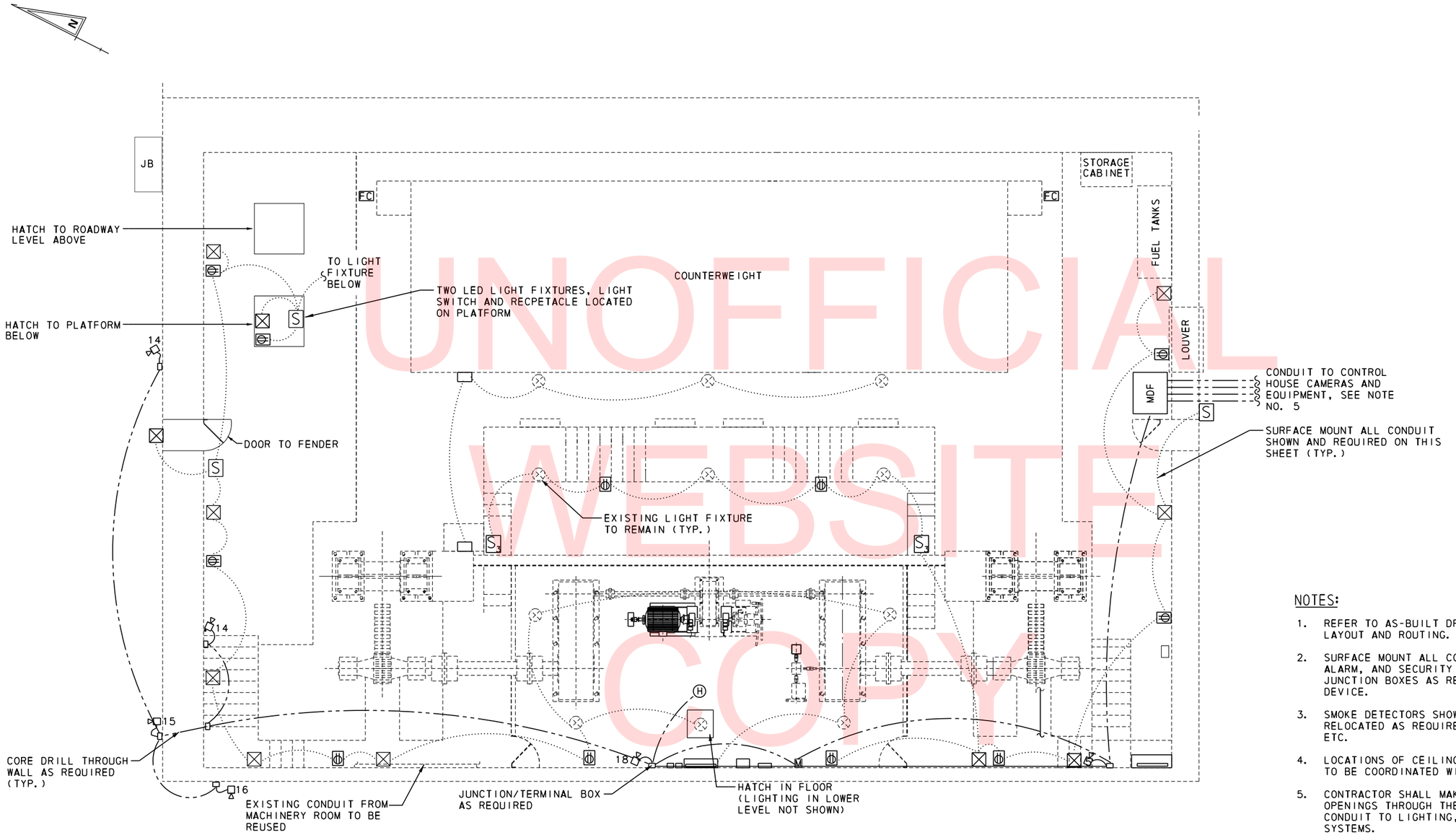
SWITCHBOARD AND GENERATOR LIGHTING PLAN

NOTES

1. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
2. SURFACE MOUNT ALL CONDUIT FOR LIGHTING, HEATING, FIRE ALARM, AND SECURITY CAMERA SYSTEM. FURNISH AND INSTALL JUNCTION AS REQUIRED TO ROUTE CONDUIT TO EACH DEVICE.
3. SMOKE DETECTORS SHOWN ON THIS LAYOUT DRAWING SHALL BE RELOCATED AS REQUIRED TO AVOID OTHER WATERLINES, LIGHTING, ETC.
4. LOCATIONS OF CEILING MOUNTED CONDUIT AND EQUIPMENT TO BE COORDINATED WITH WATER AND DRAIN PIPING.
5. CONTRACTOR SHALL MAKE ALL NECESSARY CORE DRILL OPENINGS THROUGH THE FLOOR AND WALL TO ACOMINATE NEW CONDUIT TO LIGHTING, HEATING, FIRE ALARM AND SECURITY SYSTEMS.
6. CONTRACTOR SHALL PROVIDE SUFFIECENT CONDUIT AND WIRE FOR LIGHTING AND HEATING SYSTEMS FROM EACH PANELBOARD. NOT ALL CONDUIT IS SHOWN ON THESE DRAWINGS.
7. CONTRACTOR SHALL ADJUST CONDUIT LOCATIONS AS REQUIRED BASED ON EQUIPMENT LAYOUT.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SWITCHBOARD AND GENERATOR ROOMS REFLECTED CEILING PLAN	RE-38
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 75
					CHECKED BY: AHN		TOTAL SHTS. 180

8/9/2018
M:\02889.04B\4000_Fin_Des\CADD\30_Elec\EE38 - Reflected Ceiling Plan 3.dgn

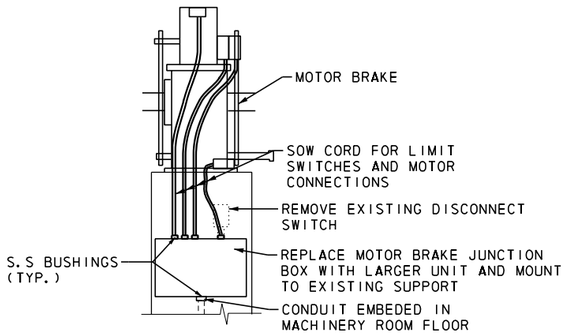


PROPOSED MACHINERY ROOM LIGHTING, FIRE ALARM AND CAMERA PLAN

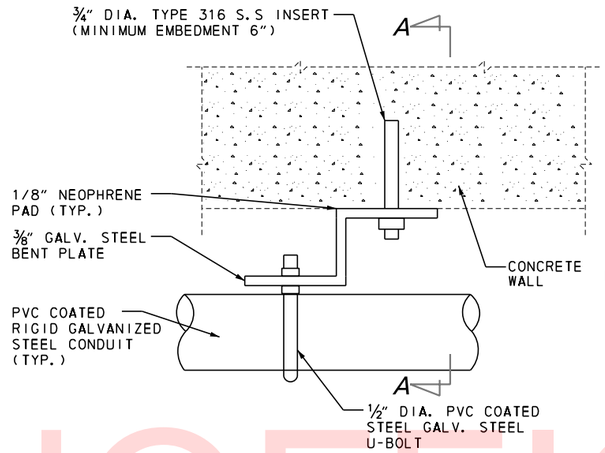
NOTES:

1. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
2. SURFACE MOUNT ALL CONDUIT FOR LIGHTING, HEATING, FIRE ALARM, AND SECURITY CAMERA SYSTEM. FURNISH AND INSTALL JUNCTION BOXES AS REQUIRED TO ROUTE CONDUIT TO EACH DEVICE.
3. SMOKE DETECTORS SHOWN ON THIS LAYOUT DRAWING SHALL BE RELOCATED AS REQUIRED TO AVOID OTHER WATERLINES, LIGHTING, ETC.
4. LOCATIONS OF CEILING MOUNTED CONDUIT AND EQUIPMENT TO BE COORDINATED WITH WATER AND DRAIN PIPING.
5. CONTRACTOR SHALL MAKE ALL NECESSARY CORE DRILL OPENINGS THROUGH THE FLOOR AND WALL TO ACOMINATE NEW CONDUIT TO LIGHTING, HEATING, FIRE ALARM AND SECURITY SYSTEMS.
6. FURNISH AND INSTALL A FLEXIBLE CONNECTION TO THE MDF CABINET FOR THE SECURITY CAMERA SYSTEM. THE CONDUIT SHALL BE CORE DRILLED THROUGH THE EXISTING WALL AND RUN DOWN ALONG THE WALL. A CONDUIT BODY T FITTING SHALL BE USED WITH AT LEAST 12" CLEARANCE FROM THE FLOOR. AT THE BOTTOM OF THE T FITTING A NEMA 4X S.S. DRAIN FITTING SHALL BE INSTALLED.
7. CONTRACTOR SHALL ADJUST CONDUIT LOCATIONS AS REQUIRED BASED ON EQUIPMENT LAYOUT.

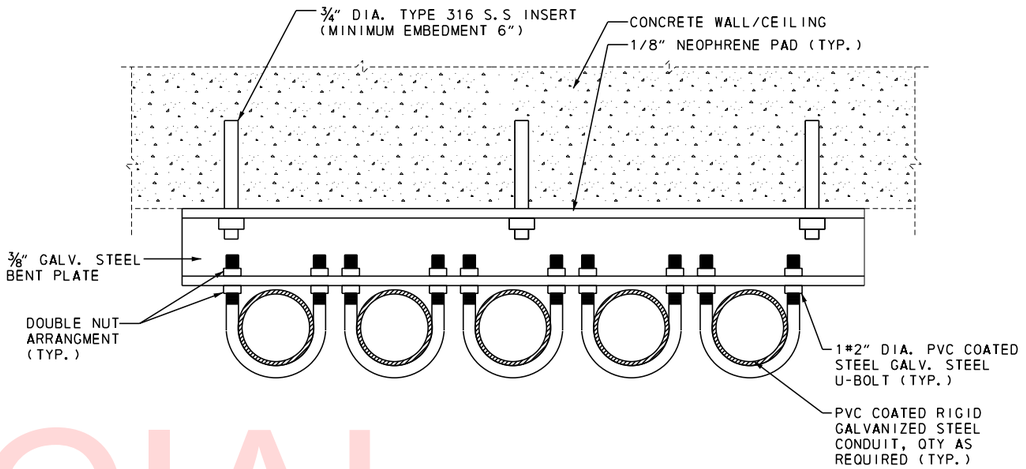
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-153	MACHINERY ROOM LIGHTING, FIRE ALARM AND CAMERA PLAN
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-39 / SHEET NO. 76 / TOTAL SHTS. 180
					CHECKED BY: AHN	



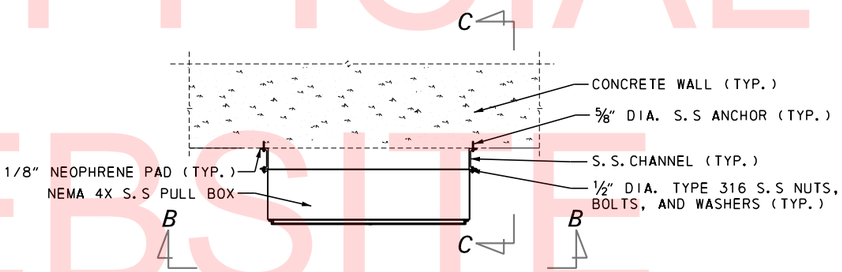
TYPICAL MOTOR BRAKE DETAIL



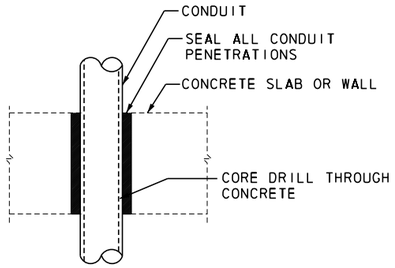
TYPICAL CONDUIT SUPPORT DETAIL



SECTION A-A

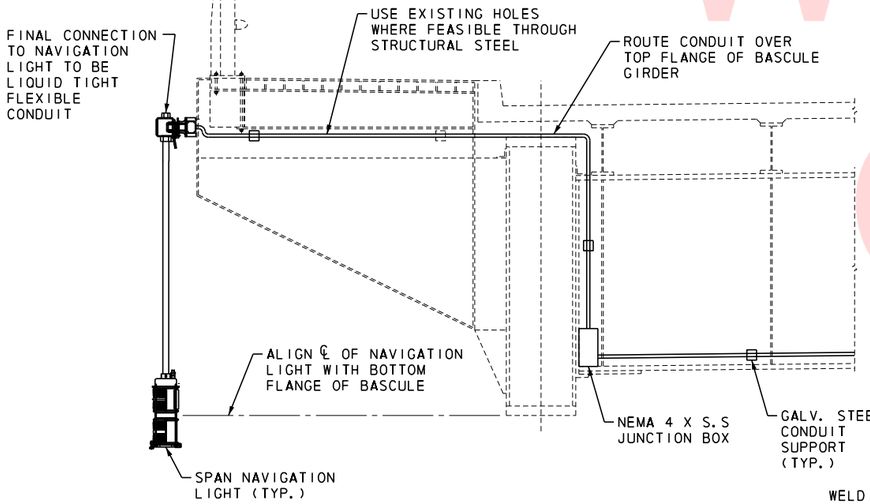


TYPICAL PULL BOX DETAIL

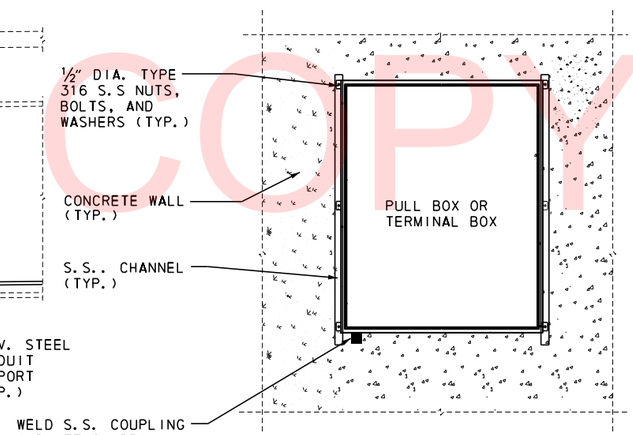


CONDUIT DETAIL
THRU WALL/FLOOR

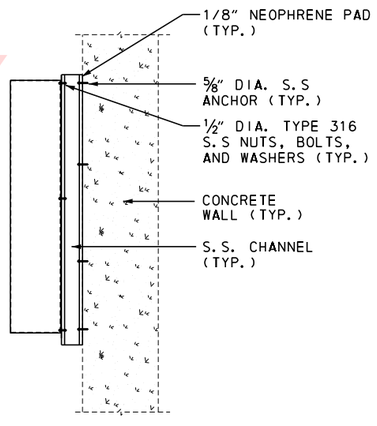
TYPICAL FOR ALL CONDUIT UNLESS NOTED OTHERWISE



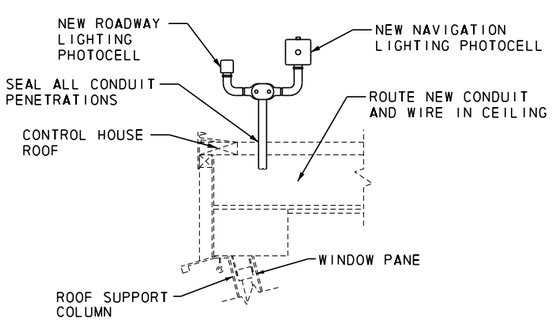
SPAN NAVIGATION LIGHTS MOUNTING DETAIL



SECTION B-B



SECTION C-C



PHOTOCELL MOUNTING DETAIL

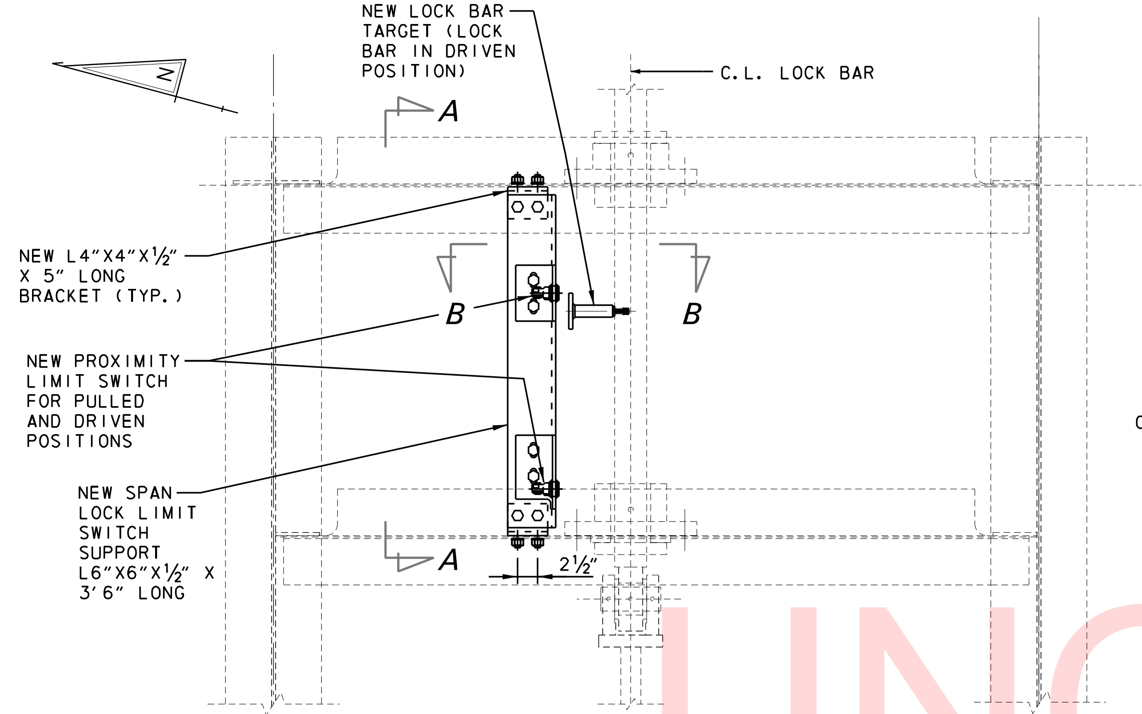
NOTES:

1. WELD S.S. COUPLING TO BASE OF ALL PULL, JUNCTION AND TERMINAL ENCLOSURES MOUNTED OUTSIDE THE CONTROL HOUSE AND MACHINERY ROOM. FURNISH AND INSTALL A DRAIN/BREATHER FITTING TO THE WELDED COUPLING. THE COUPLING SHALL NOT PROTRUDE INTO THE BOX AND SHOULD BE FLUSH WITH THE BASE.

8/8/2018
M:\02889.048\v000_Fin_Des\CADD\30_Elec\EE40 - Electrical Details 1-Misc Details.dgn

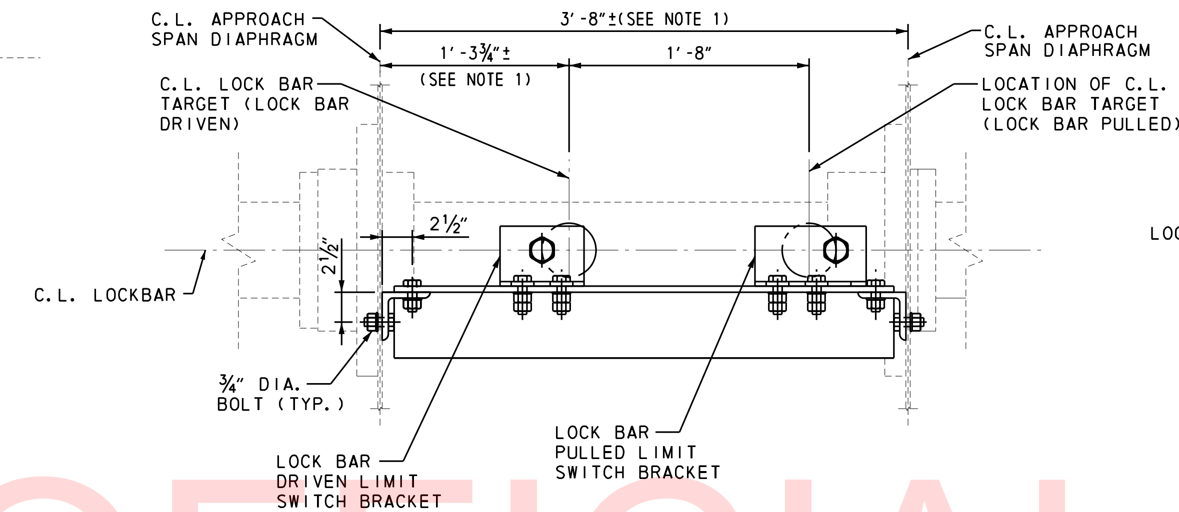
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-153	ELECTRICAL DETAILS I MISC. DETAILS
				COUNTY SUSSEX	DESIGNED BY: MJT	
					CHECKED BY: AHN	

RE-40 | SHEET NO. 77 | TOTAL SHTS. 180



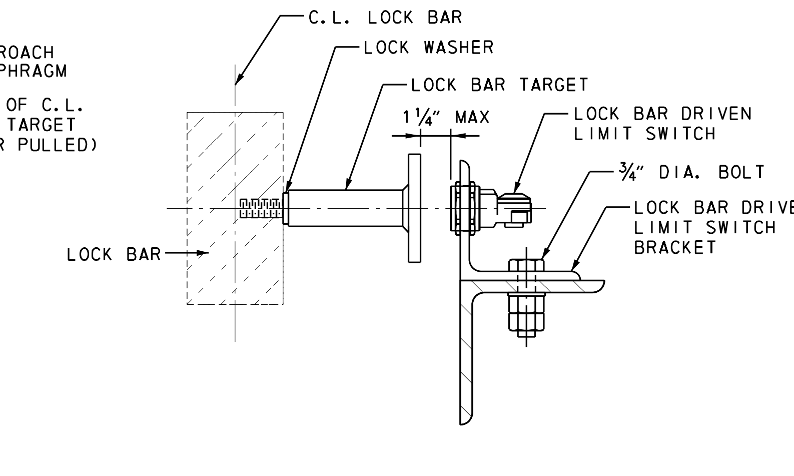
SPAN LOCK LIMIT SWITCH - INSTALLATION

SCALE: 1" = 1'-0"
SOUTH SPAN LOCK SHOWN
NORTH SPAN LOCK SYMMETRICAL ABOUT CENTERLINE OF BRIDGE
NOTE: LOCK BAR SHOWN IN THE DRIVEN POSITION



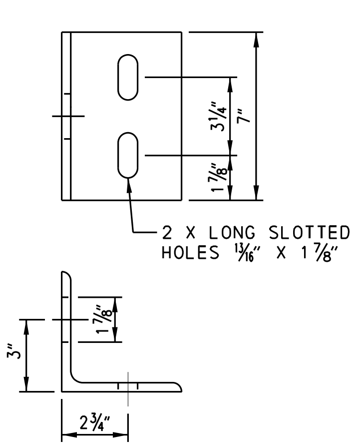
VIEW A-A

SCALE: 1½" = 1'-0"



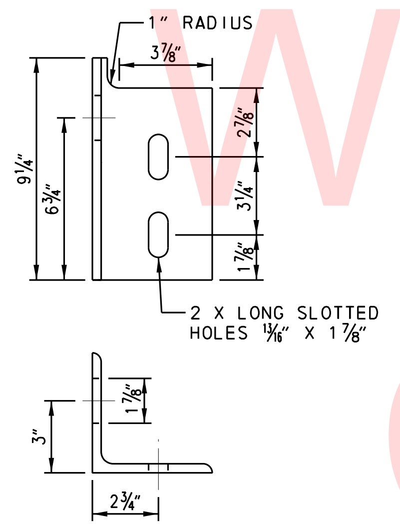
VIEW B-B

SCALE: 3" = 1'-0"



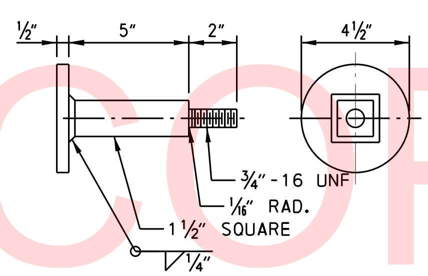
DRIVEN LIMIT SWITCH BRACKET

SCALE: 3" = 1'-0"
MATERIAL: ASTM A36
QTY: 2



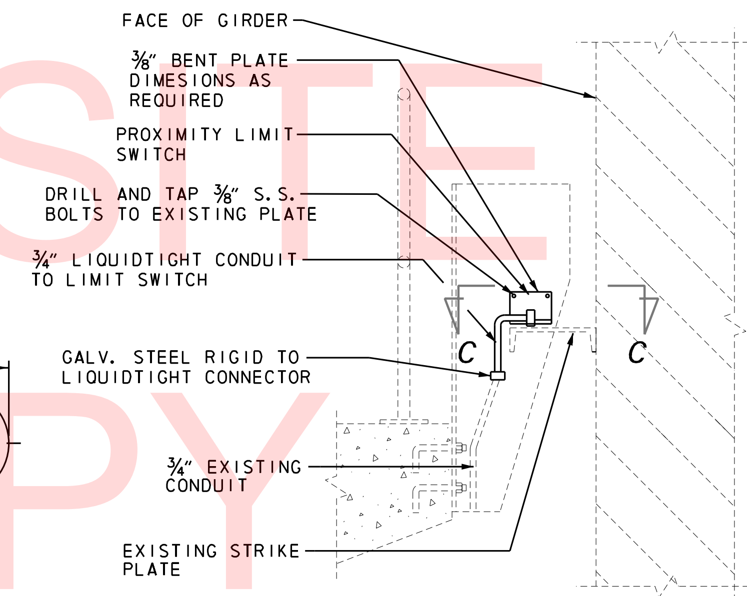
PULLED LIMIT SWITCH BRACKET

SCALE: 3" = 1'-0"
MATERIAL: ASTM A36
QTY: 1 AS SHOWN AND 1 OPPOSITE HAND



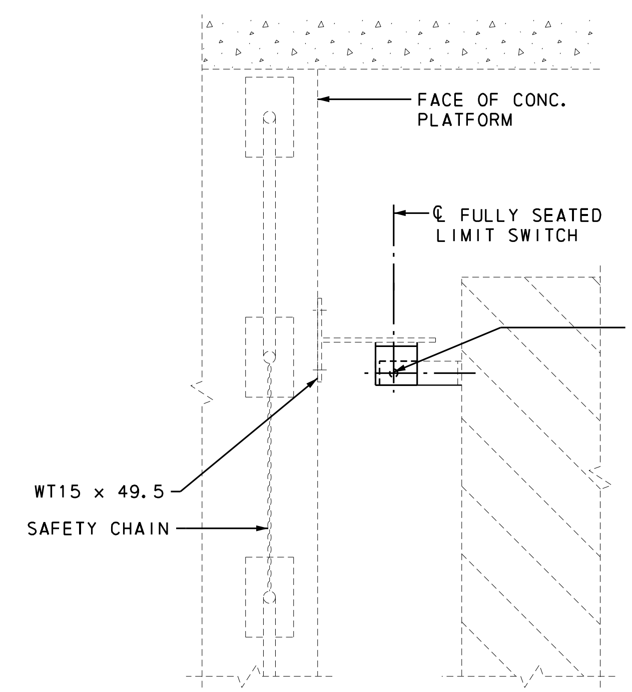
LOCK BAR TARGET

SCALE: 3" = 1'-0"
MATERIAL: ASTM A36
QTY: 2



ELEVATION

TYPICAL FOR TWO LOCATIONS
SCALE: 1" = 1'-0"



SECTION C-C

SCALE: 1" = 1'-0"

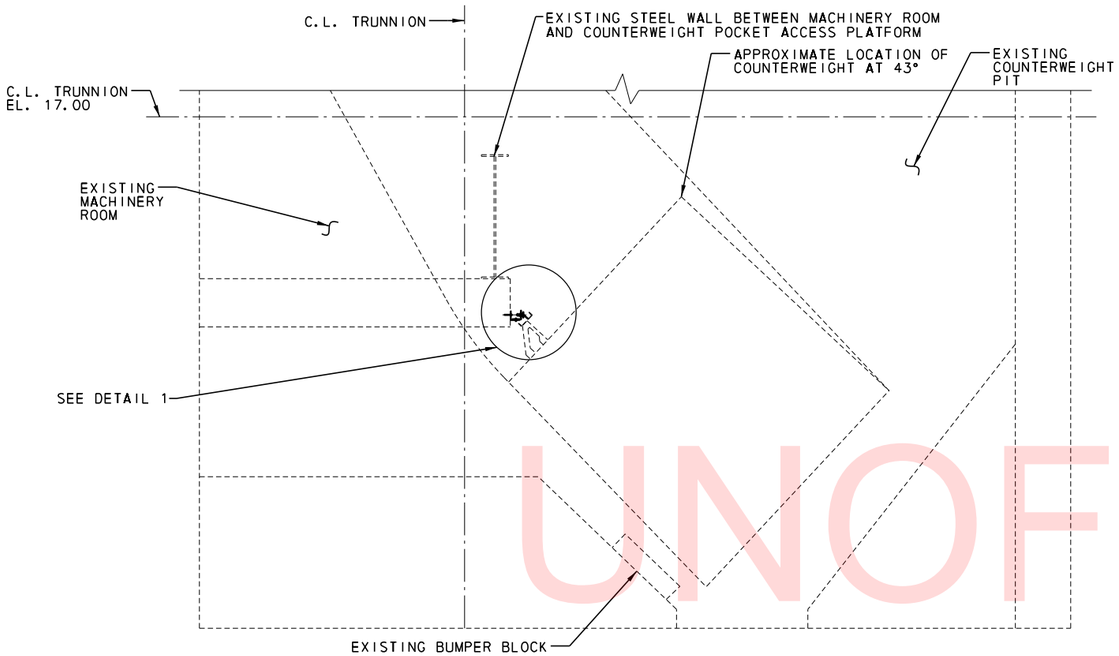
NOTES:

1. DIMENSIONS FOR REFERENCE ONLY. CONTRACTOR TO INSTALL AND ALIGN LIMIT SWITCHES FOR PROPER INDICATION WHEN THE LOCK BARS ARE IN THE FULLY PULLED AND DRIVEN POSITIONS.

8/9/2018 REVISED: 12/02/2010
M:\02880\04B\4000-Fin_Des\CADD\30_Elec\EE41- Electrical Details II - Span Lock Limit Switch Details.dgn

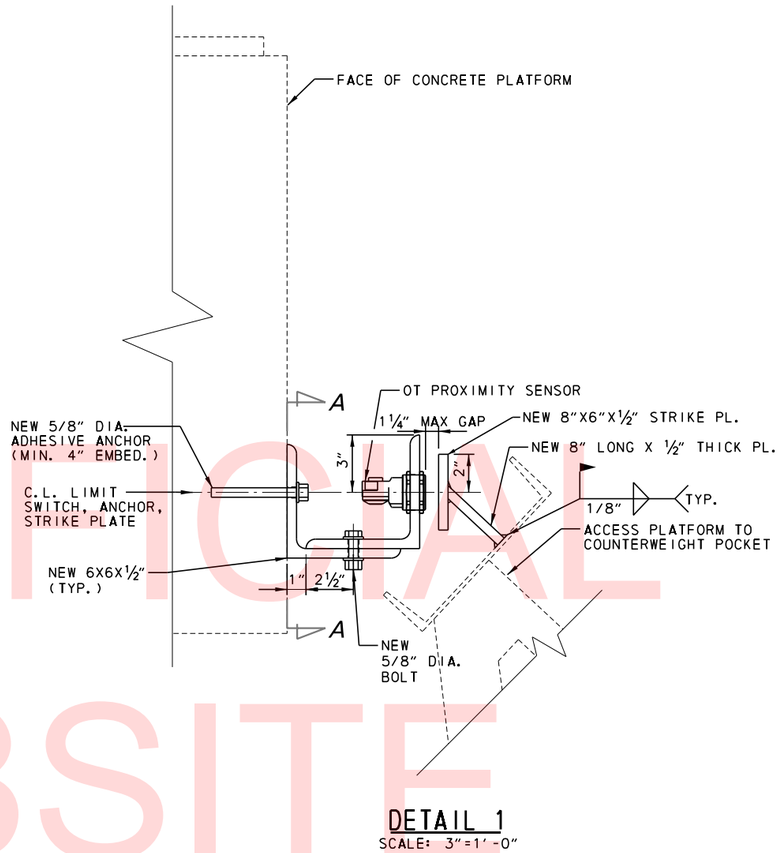
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE AS NOTED	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602; COUNTY SUSSEX	BRIDGE NO. 3-153; DESIGNED BY: MJT; CHECKED BY: AHN

ELECTRICAL DETAILS II
SPAN LOCK/FULL CLOSED LIMIT SWITCH DETAILS



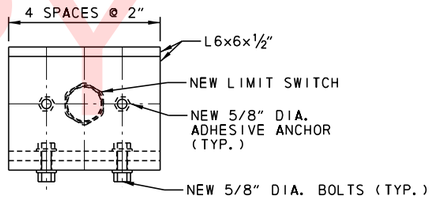
ELEVATION LOCATION OF LIMIT SWITCH

SCALE: ¼"=1'-0"



DETAIL 1

SCALE: 3"=1'-0"



VIEW A-A

SCALE: 3"=1'-0"

NOTES:

1. ALL NEW INDUCTIVE PROXIMITY SENSORS SHALL BE BY TURCK, MODEL NUMBER NI40-G47SR-FZ3X2 W/M16X1.5, OR ENGINEER APPROVED EQUAL.
2. THE DIMENSIONS SHOWN ARE APPROXIAMATE AND MAY VARY BY LOCATION DUE TO EXISTING CONDITIONS.
3. THE CONTRACTOR IS RESPONSIBLE TO ADJUST THESE DIMENSION BY USING THE PROXIMITY SWITCH BARREL ADJUSTMENT IN CONBIMATION WITH THE BENT PLATE DEPTH SIZES. THE PROXIMITY SWITCH SENSING RANGE IS 1.575" (40 MM) AND SHOULD BE SET TO 65% OF THIS OR 1" (26 MM) FOR REPEATABLE ACCURACY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY ALL DIMENSIONS BEFORE ORDERING AND INSTALLING MATERIALS.
5. ALL BOLTS USED SHALL BE 5/8" MECHANICALLY GALVANIZED HIGH STRENGTH BOLT A325, WITH WASHERS AND DOUBLE NUTS.
6. ALL MOUNTING EQUIPMENT AND TARGETS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
7. QUANTITIES GIVEN ARE PER LIMIT SWITCH ASSEMBLY.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

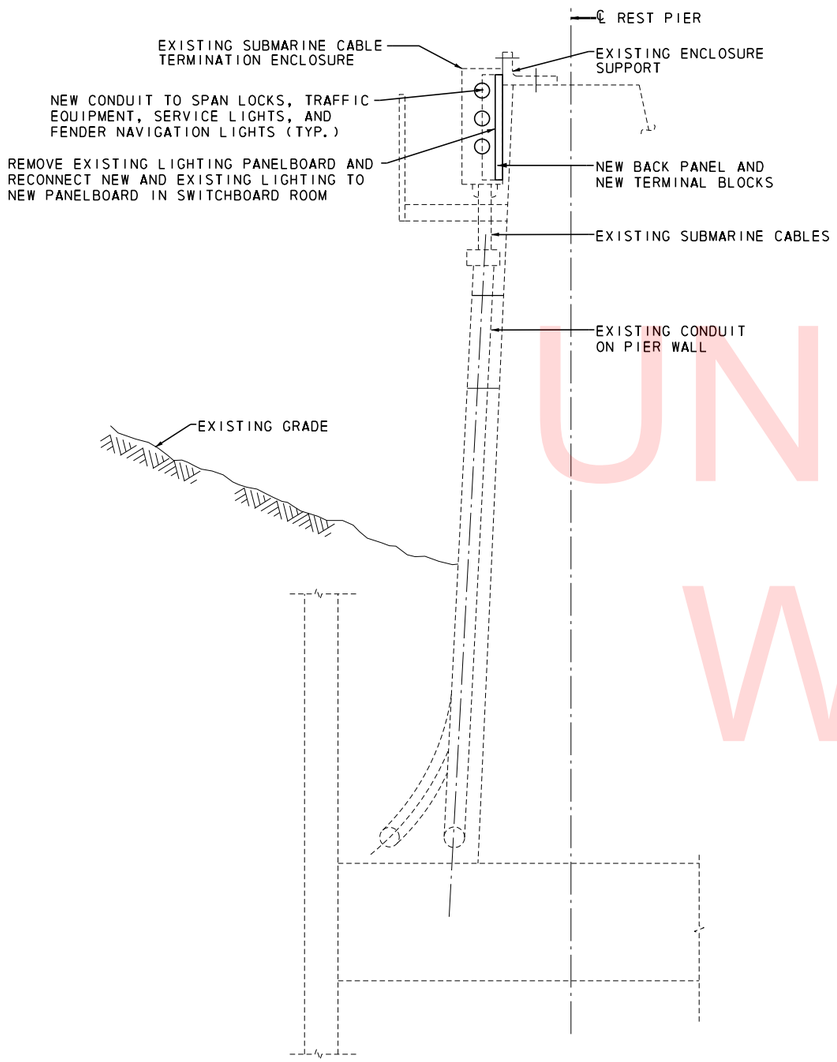
SCALE AS NOTED

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

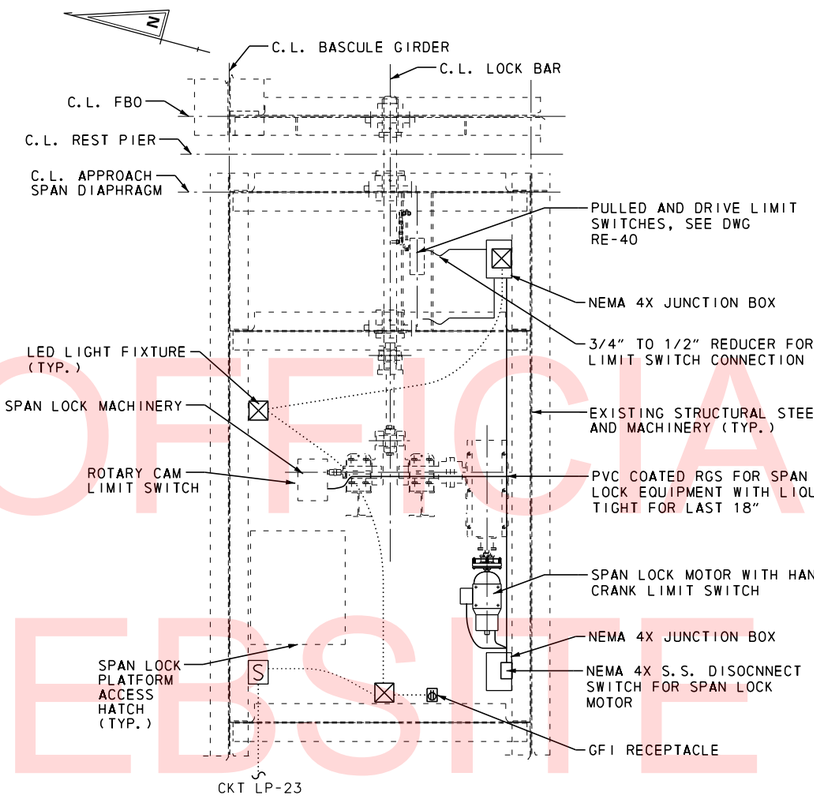
CONTRACT	BRIDGE NO.	3-153
T201507602	DESIGNED BY: MJT	
COUNTY	CHECKED BY: AHN	
SUSSEX		

ELECTRICAL DETAILS III
OVER TRAVEL LIMIT
SWITCH DETAILS

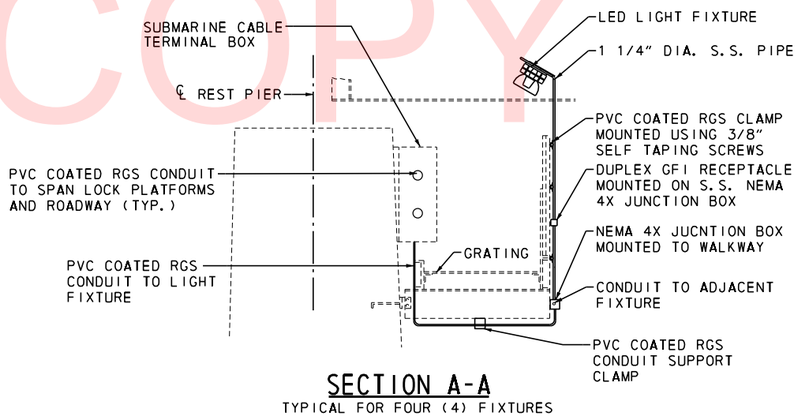
RE-42	
SHEET NO.	79
TOTAL SHTS.	180



ELEVATION AT REST PIER

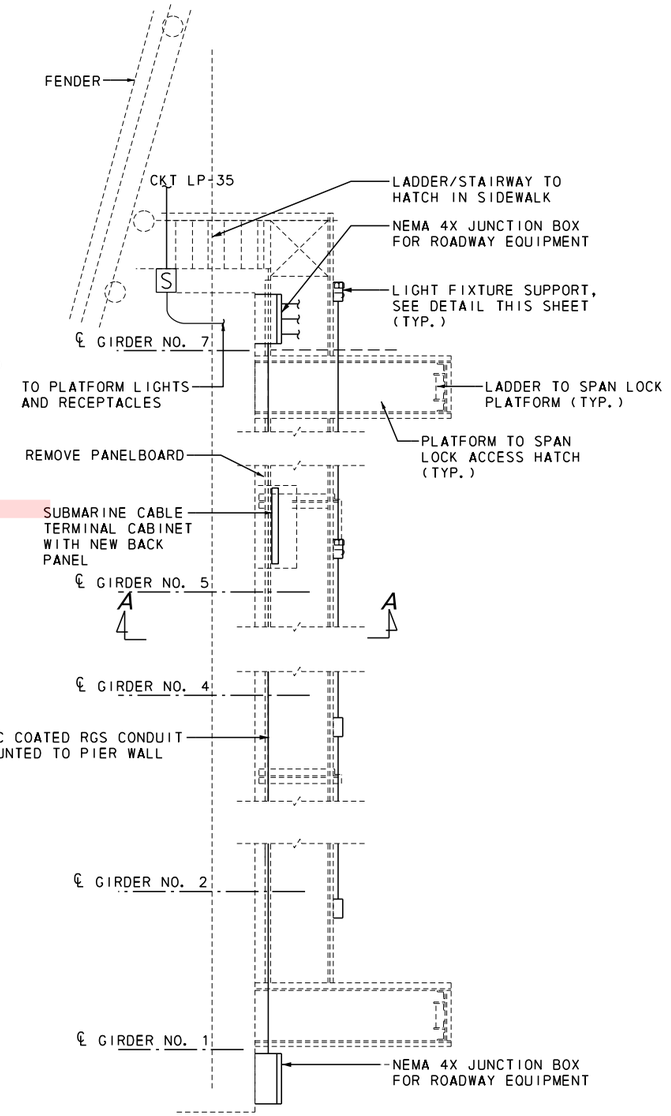


TYPICAL SPAN LOCK CONDUIT



SECTION A-A

TYPICAL FOR FOUR (4) FIXTURES



REST PIER ELECTRICAL PLAN

NOTES:

1. THE CONTRACTOR SHALL REPLACE ALL CONDUIT, LIGHTING RECEPTACLES, LIGHTS ON REST PIER UNLESS OTHERWISE NOTED.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	ELECTRICAL DETAILS IV REST PIER ELECTRICAL DETAILS
				COUNTY SUSSEX	DESIGNED BY: MJT	RE-43 / SHEET NO. 80 / TOTAL SHTS. 180
					CHECKED BY: AHN	

8/2/2018
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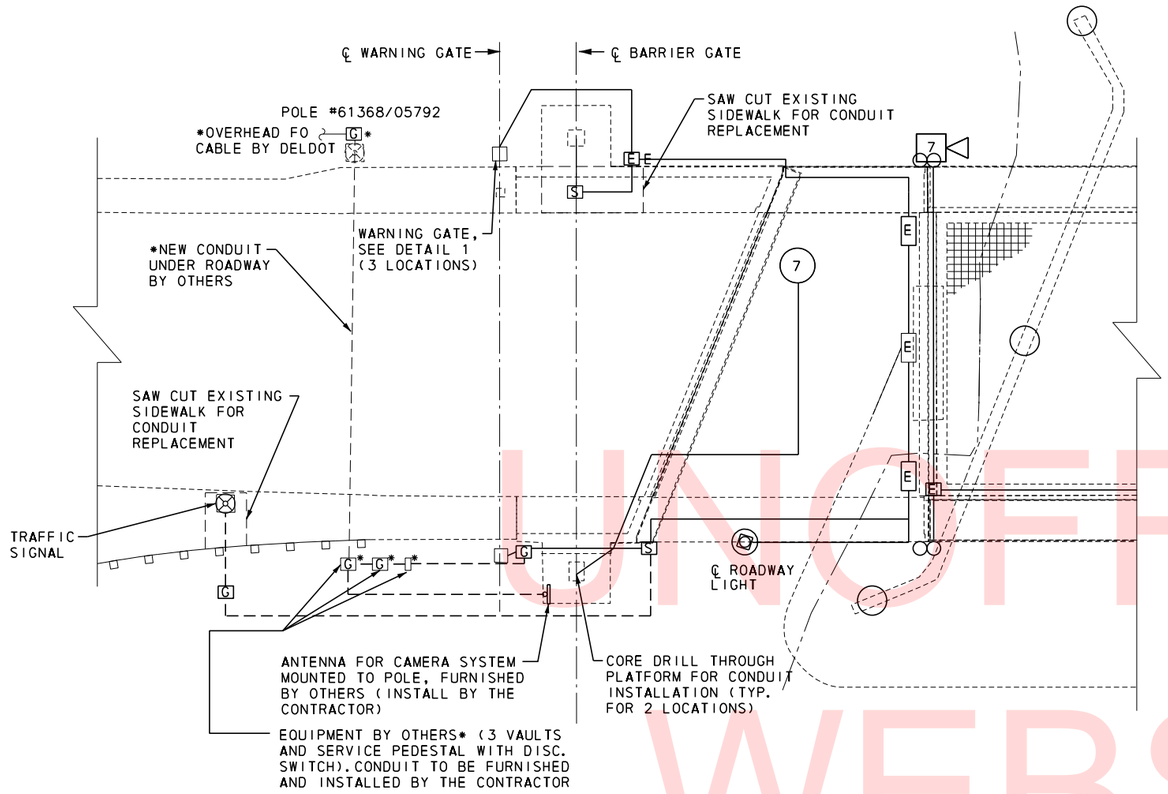
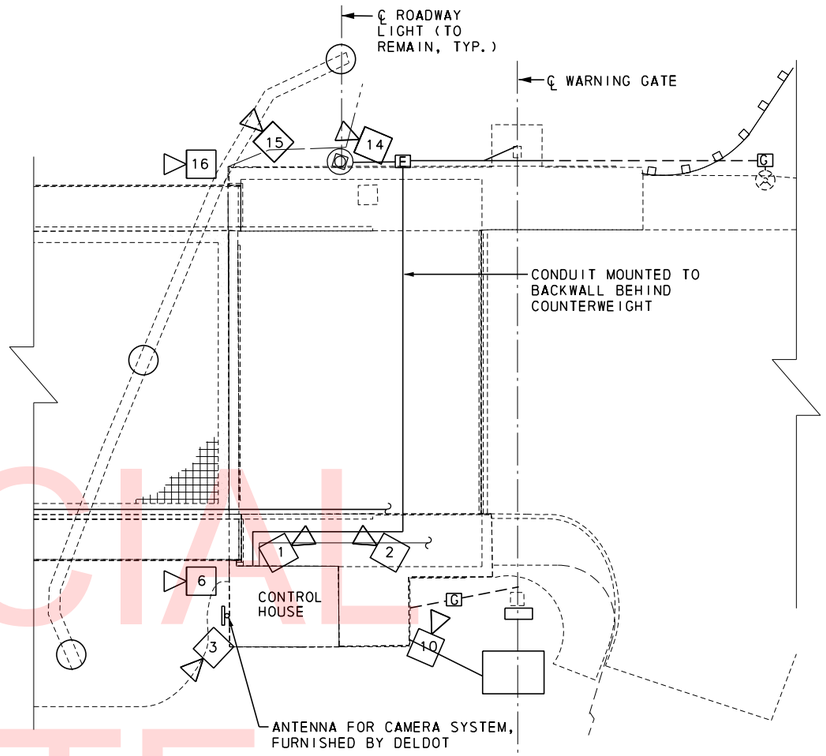
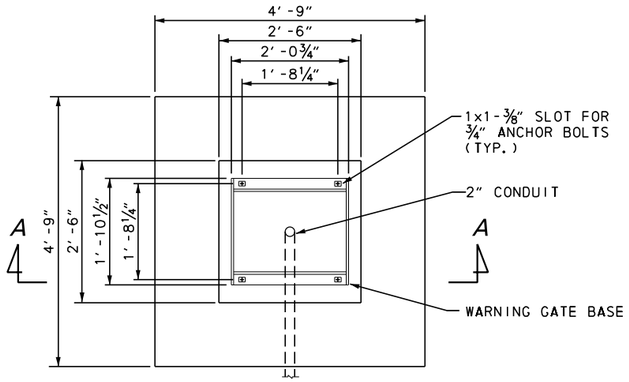


PLAN
N. T. S.



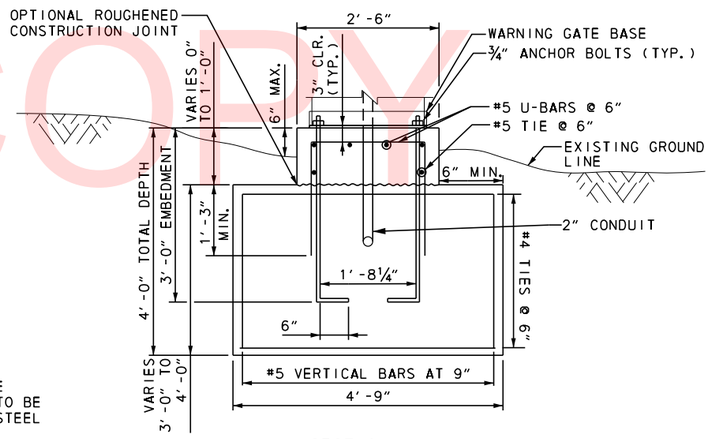
LEGEND

G	VAULT / JB IN GROUND
S	VAULT / JB IN SIDEWALK
E	VAULT / JB ON STRUCTURE
– –	CONDUIT IN TRENCH
——	EXPOSED CONDUIT



DETAIL 1
WARNING GATE FOUNDATION PLAN
¾″ = 1′-0″
NOTE: FOUNDATION AT N.W., S.E. AND S.W. WARNING GATE LOCATIONS

NOTE: FOR WARNING GATE FOUNDATION, CONCRETE TO BE CLASS A CONCRETE AND STEEL TO BE GRADE 60 REBAR.



SECTION A-A
WARNING GATE FOUNDATION ELEVATION
¾″ = 1′-0″

NOTES:

1. CONDUIT TRENCHES SHALL BE PER DELDOT STANDARD DETAIL P-4(2013) AND CONDUIT VAULTS / JUNCTION BOXES SHALL BE PER DELDOT STANDARD DETAIL T-1 (2013). THESE SHALL NOT BE MEASURED FOR PAYMENT BUT INCLUDED IN THE LUMP SUM PRICE FOR 615504 BRIDGE ELECTRICAL SYSTEM.

2. REMOVAL OF THE EXISTING ROADWAY CONDUIT AND VAULTS SHALL NOT BE MEASURED FOR PAYMENT BUT INCLUDED IN THE LUMP SUM PRICE FOR 615504 BRIDGE ELECTRICAL SYSTEM.

3. SECURITY CAMERA CONDUIT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRE AND CABLE FOR THE SECURITY CAMERAS FURNISHED AND INSTALLED BY DELDOT.

4. REQUIREMENTS FOR BRIDGE POWER AND CONTROL SHALL BE AS SHOWN ELSEWHERE.

5. CONDUIT FOR FIBER OPTIC CABLES SHALL BE 2″, ALL OTHER SECURITY CAMERA SHALL BE 1″ UNLESS OTHERWISE SPECIFIED.

6. FOR ADDITIONAL CAMERA LOCATIONS SEE CONTROL HOUSE AND MACHINERY ROOM PLANS.

7. JUNCTION WELLS IN THE SIDEWALK WHERE REPLACED SHALL BE RESET FLUSH WITH SIDEWALK.

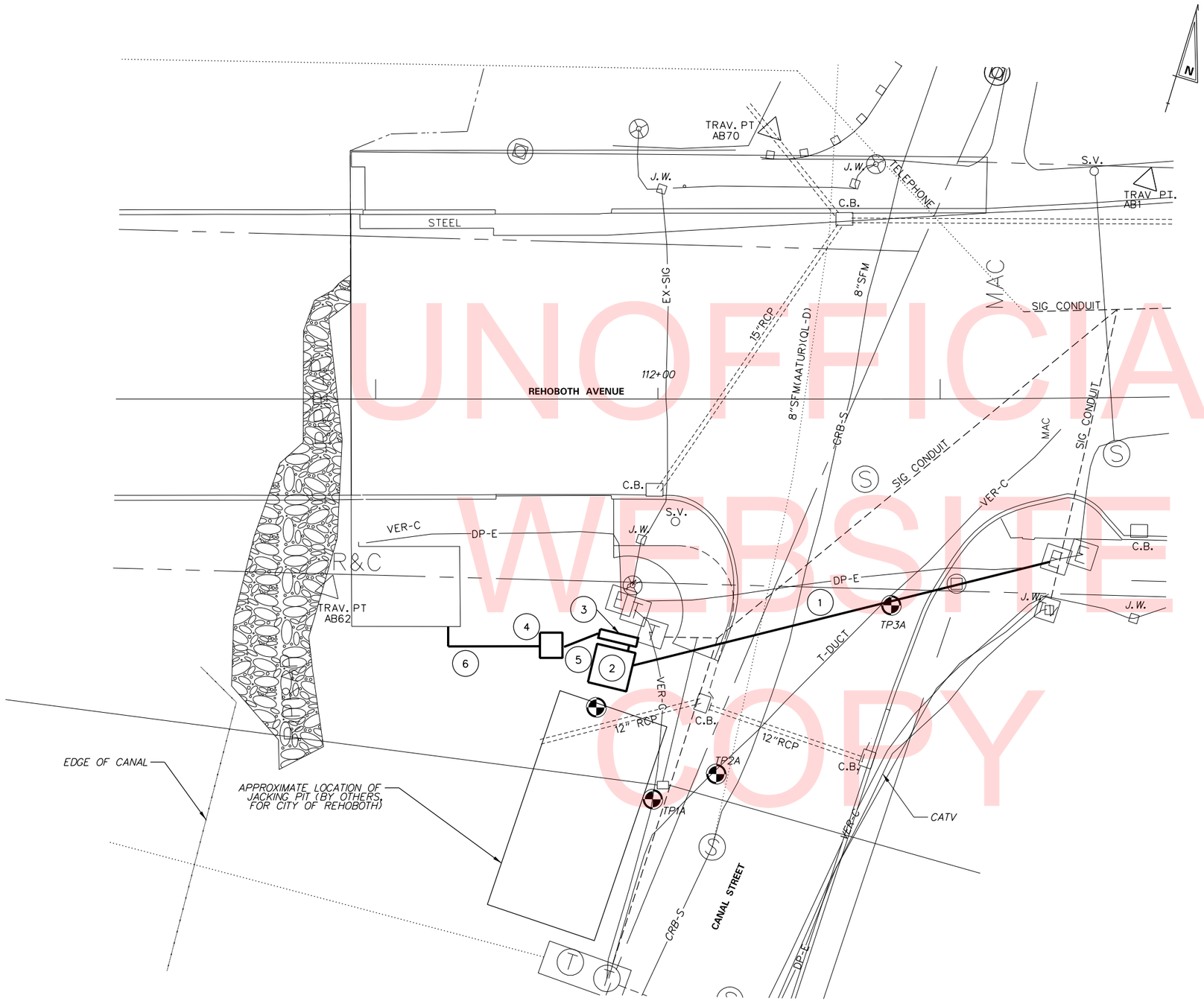
8. ALL WORK INVOLVING WARNING GATE FOUNDATIONS SHALL BE INCIDENTAL TO "MODIFICATIONS TO WARNING AND BARRIER GATES" AND PAID UNDER "ITEM 615504 - BRIDGE ELECTRICAL SYSTEM".

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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: AHN

ELECTRICAL DETAILS V
ROADWAY CONDUIT DETAILS

RE-44 | SHEET NO. 81 | TOTAL SHTS. 180

8/2/2018
M:\02889.04B\4000_Fin_Des\CADD\30_Elec\EE44 - Electrical Detail V - Roadway layout.dgn



ELECTRICAL NOTES

1. FINAL LOCATION OF CONCRETE PAD AND TRANSFORMER MAY BE ADJUSTED BASED ON FIELD CONDITIONS.
2. CONTRACTOR MAY REMOVE SHRUBS/TREES FROM THE ROW AS REQUIRED FOR THE INSTALLATION OF THE CONDUIT AND ASSOCIATED EQUIPMENT. ALL WORK SHALL BE PAID FOR UNDER "615504 - BRIDGE ELECTRICAL SYSTEM."
3. CONTRACTOR TO NOTIFY DELMARVA POWER AND VERIZON PRIOR TO THE START OF WORK.
4. CONDUIT TRENCH OR BORE UNDER CANAL STREET SHALL MEET DELDOT/DELMARVA STANDARDS. DELMARVA MAY CONSIDER REUSING EXISTING PRIMARY CONDUIT UNDER CANAL STREET. IF EXISTING CANNOT BE REUSED DELMARVA WILL EITHER OPEN CUT A NEW TRENCH OR BORE THE NEW CONDUIT IN THE ROADWAY.

LEGEND

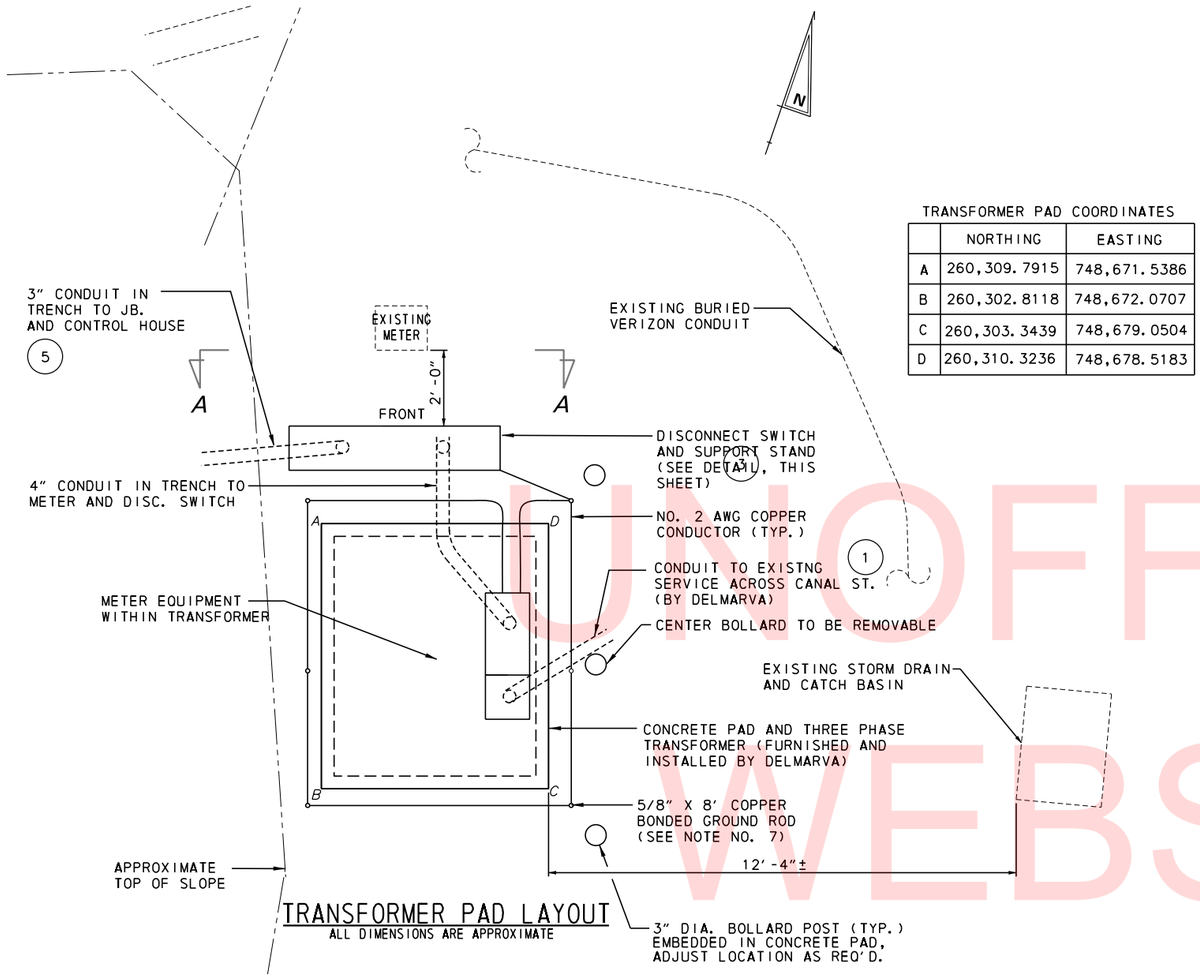
1. PRIMARY CONDUIT AND WIRE IN UNDERGROUND TRENCH TO TRANSFORMER (BY DELMARVA POWER)
2. CONCRETE PAD AND TRANSFORMER WITH METER (BY DELMARVA POWER)
3. DISCONNECT SWITCH AND SUPPORT STAND
4. JUNCTION BOX
5. SECONDARY CONDUIT AND WIRE TO JUNCTION BOX
6. SECONDARY CONDUIT AND WIRE TO CONTROL HOUSE

TEST POINTS (3), COMPLETED BY SO-DEEP ON JUNE 23, 2017

ELECTRICAL UTILITY LOCATION PLAN

8/9/2018
M:\02888.048\4000_Fin_Des\CADD\30_Elec\EE45 - Incoming Service Plan.dgn

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	REHOBOTH AVENUE ELECTRICAL INCOMING SERVICE PLAN	RE-45
				COUNTY SUSSEX	DESIGNED BY: M.TINE		SHEET NO. 82
					CHECKED BY: AHN		TOTAL SHTS. 180

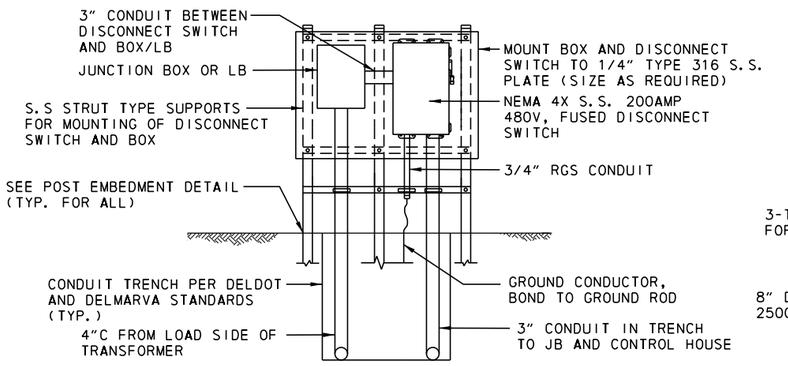


TRANSFORMER PAD LAYOUT

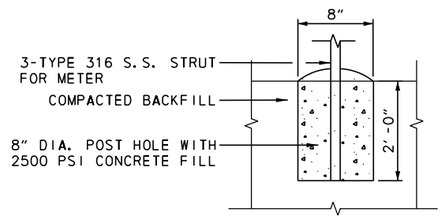
ALL DIMENSIONS ARE APPROXIMATE

TRANSFORMER PAD COORDINATES

	NORTHING	EASTING
A	260,309.7915	748,671.5386
B	260,302.8118	748,672.0707
C	260,303.3439	748,679.0504
D	260,310.3236	748,678.5183



VIEW A-A



POST EMBEDMENT DETAIL

NOTES

1. SUPPORT STRUCTURE SHALL BE FABRICATED FROM TYPE 316 S.S. 1-5/8" STRUT CHANNEL SYSTEM. THE CONDUIT SHALL BE SUPPORTED ON SUPPORT STRUCTURE WITH S.S. PIPE CLAMPS, SPRING NUTS, ETC.
2. EQUIPMENT SHALL BE INSTALLED PER NEC, DELMARVA, AND AASHTO REQUIREMENTS.
3. LOCATIONS OF TRANSFORMER, SUPPORT STRUCTURE AND JUNCTION BOX MAY BE ADJUSTED AS REQUIRED BASED ON SITE CONDITIONS.
4. WORK SHALL BE COORDINATED WITH THE EXISTING WARNING GATE LOCATION, EXISTING DELMARVA SERVCIES, DRAINAGE, AND VERIZON UTILITIES.
5. THE NEW SERVICE EQUIPMENT SHALL BE SERVICE RATED AND SHALL HAVE A MINIMUM SHORT CIRCUIT CURRENT RATING AT THE A.T.S. MAIN CIRCUIT BREAKER OF 35KAIC.
6. THE NEUTRAL AND GROUND CONDUCTORS SHALL BE BONDED ON THE GROUNDING LUG ONLY INSIDE THE DISCONNECT SWITCH.
7. GROUND ROD TYPE, QUANTITY, DEPTH AND LOCATION PER DELMARVA POWER.

(1) SEE LEGEND REFERENCE FROM SHEET RE-45

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

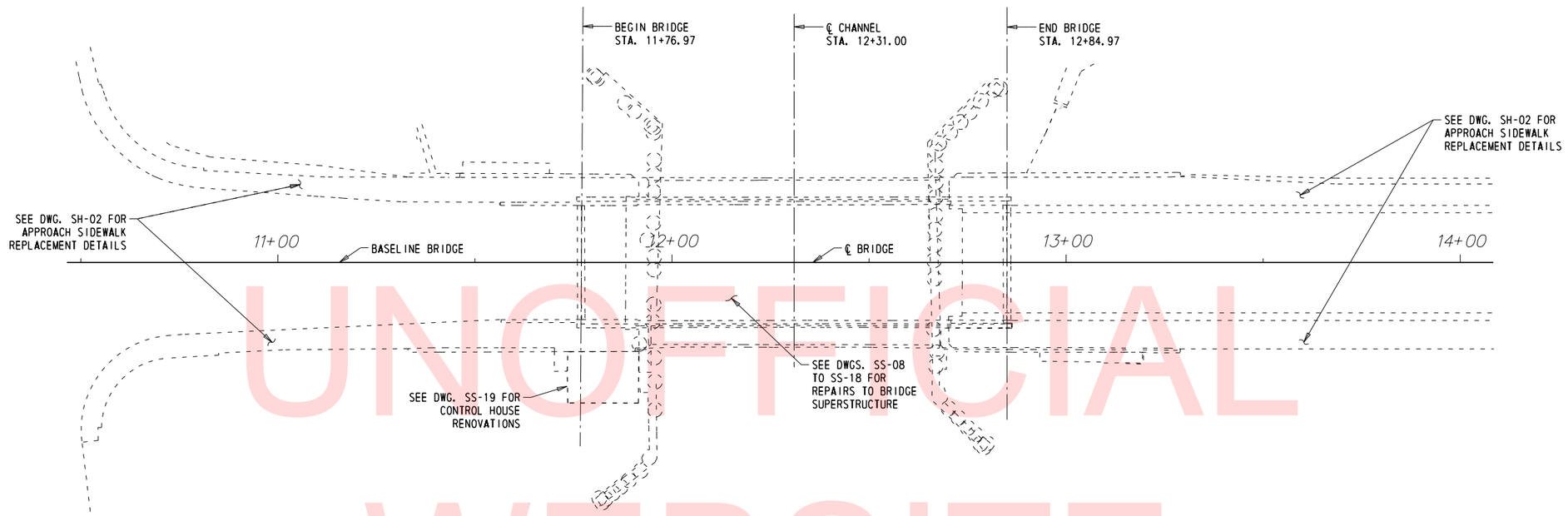
NOT TO SCALE

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

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

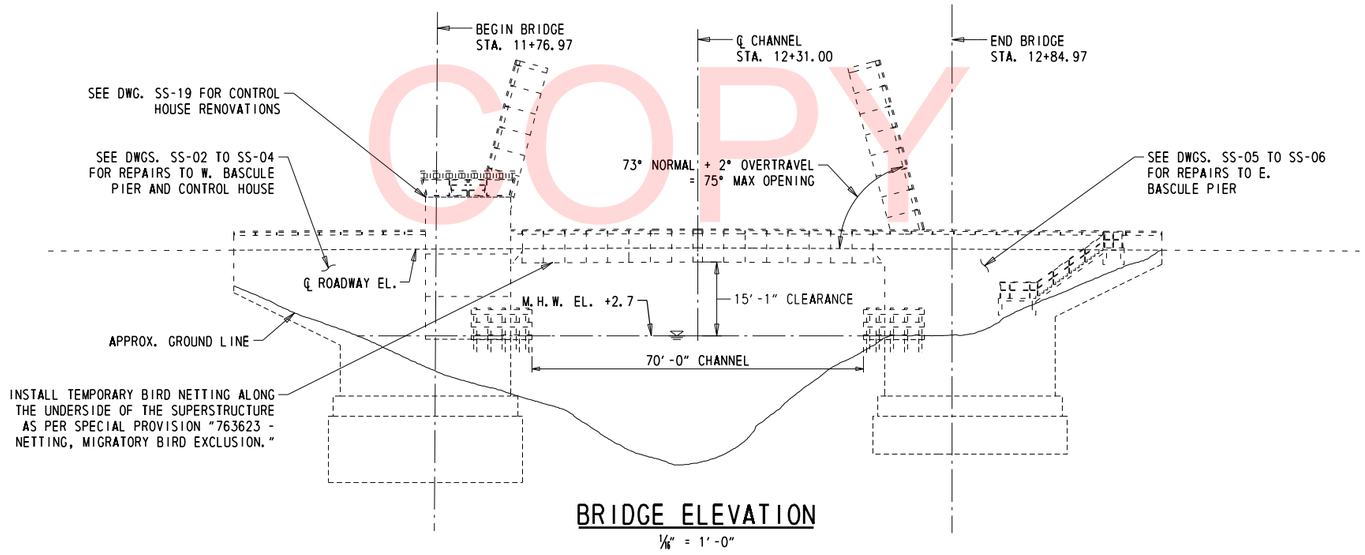
REHOBOTH AVENUE UTILITY DETAILS

	RE-46
SHEET NO.	83
TOTAL SHTS.	180



BRIDGE PLAN

1/16" = 1'-0"



BRIDGE ELEVATION

1/16" = 1'-0"

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	GENERAL PLAN & ELEVATION	SS-01
				COUNTY SUSSEX	DESIGNED BY: BKS		SHEET NO. 84
					CHECKED BY: AR		TOTAL SHTS. 180

8/9/2018
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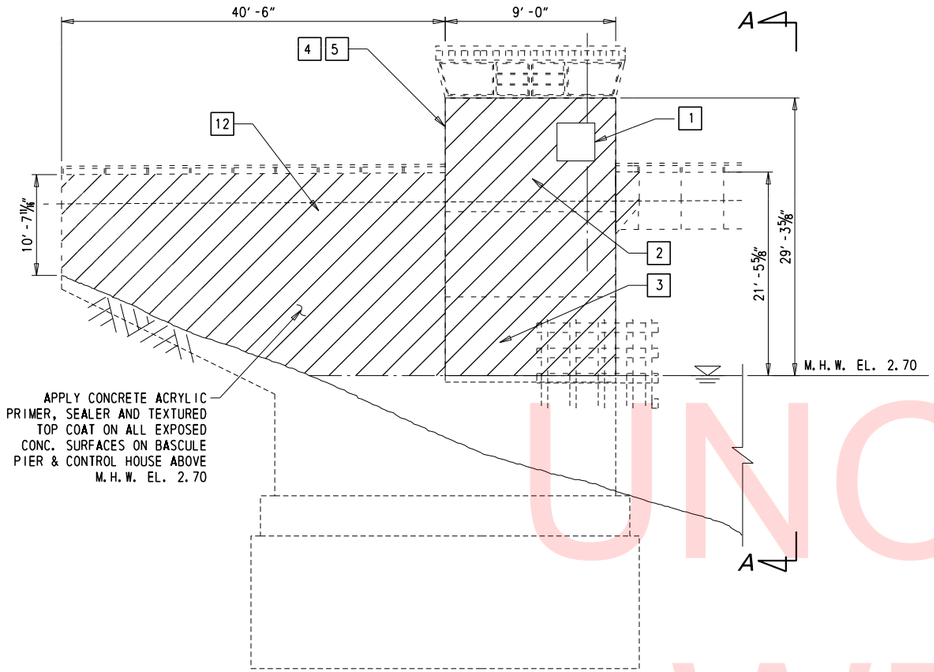

CONCRETE REPAIRS
WEST PIER SOUTH FACE

PHOTO NOTES:

- 1 — PHOTO 1: TYPE 1B REPAIR AT CRACKS ADJACENT TO THE CONTROL HOUSE WINDOW.
- 2 — PHOTO 2: TYPE 1B REPAIR AT ISOLATED CRACK LOCATIONS ON EXPOSED S. FACE OF CONTROL HOUSE.
- 3 — PHOTO 3: TYPE 1B REPAIR AT EXPOSED S. FACE OF CONTROL HOUSE ABOVE WATERLINE.
- 4 & 5 — PHOTO 4 & 5: TYPE 1B REPAIR AT W. FACE OF CONTROL HOUSE NEAR ENTRY DOORWAY.
- 12 — PHOTO 12: SEE DWG. SS-04 FOR DESCRIPTION.

NOTES:

1. APPROX. TOTAL LENGTH OF TYPE 1B REPAIR = 40 FT.
2. APPROX. AREA OF CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT ON W. PIER, S. FACE = 1474 SF.
3. SEE DWG. SS-07 FOR REPAIR DETAILS.
4. SEE SWG. SS-03 FOR VIEW A-A.

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

PHOTO 5

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	WEST BASCULE PIER CONCRETE REPAIRS 1	SS-02
				COUNTY SUSSEX	DESIGNED BY: BKS		SHEET NO. 85
					CHECKED BY: AR		TOTAL SHTS. 180

8/2/2018
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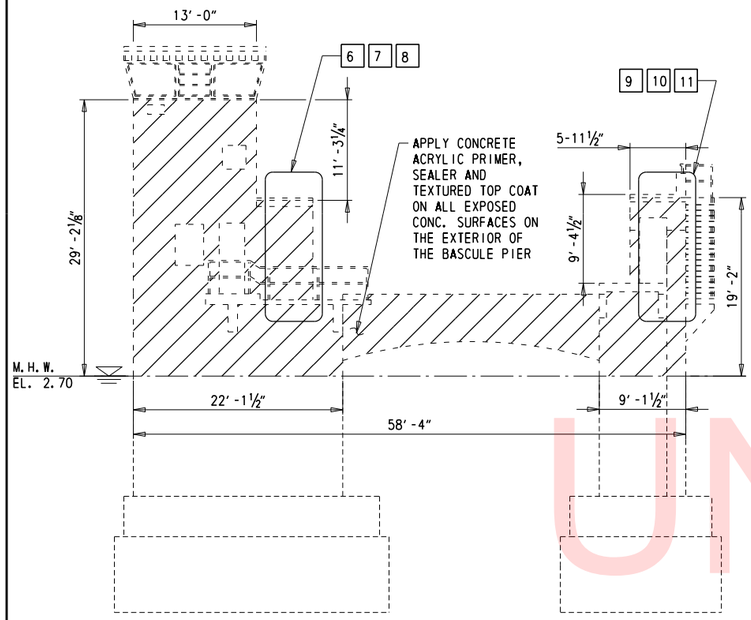

VIEW A-A

PHOTO 6

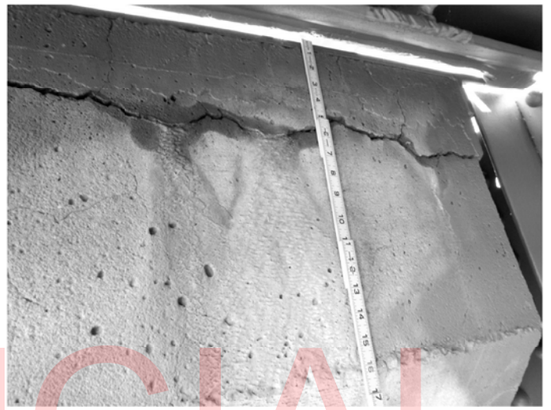

PHOTO 7

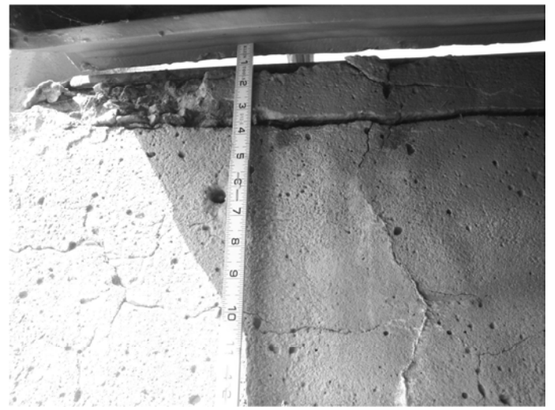

PHOTO 8

PHOTO NOTES:

6 7 8 PHOTO 6-8: EXTENSIVE CRACKING UP TO ¼" WIDE, SPALLING & DELAMINATION OBSERVED AT SOUTHWEST CORNER OF W. PIER BELOW THE SIDEWALK ADJACENT TO S. BASCULE GIRDER. TYPE 1B AND TYPE 2 OR TYPE 3 REPAIR IS ANTICIPATED.

9 10 11 PHOTO 9-11: EXTENSIVE CRACKING UP TO ¼" WIDE & DELAMINATION OBSERVED AT NORTHWEST CORNER OF W. PIER BELOW THE SIDEWALK ADJACENT TO N. BASCULE GIRDER. TYPE 1B AND TYPE 2 OR TYPE 3 REPAIR IS ANTICIPATED.

PHOTO 9

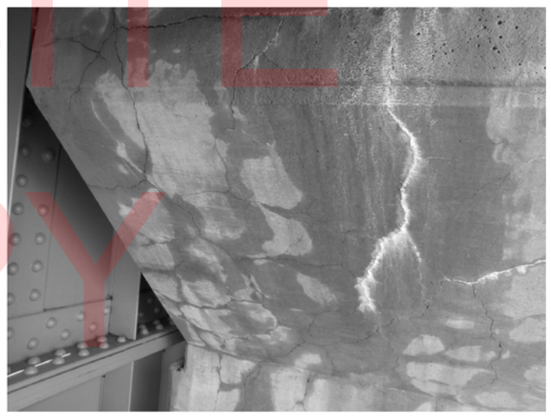

PHOTO 10

PHOTO 11

NOTES:

1. APPROX. TOTAL LENGTH OF TYPE 1B REPAIR = 60 FT.
2. APPROX. CONC. VOLUME FOR TYPE 2 REPAIRS = 1 CF AND TYPE 3 REPAIRS = 1 CF.
3. APPROX. AREA OF CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT ON W. PIER, E. FACE = 1250 SF.
4. SEE DWG. SS-07 FOR REPAIR DETAILS.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	WEST BASCULE PIER CONCRETE REPAIRS 2
				COUNTY SUSSEX	DESIGNED BY: BKS	SS-03
					CHECKED BY: AR	SHEET NO. 86
						TOTAL SHTS. 180

8/9/2018
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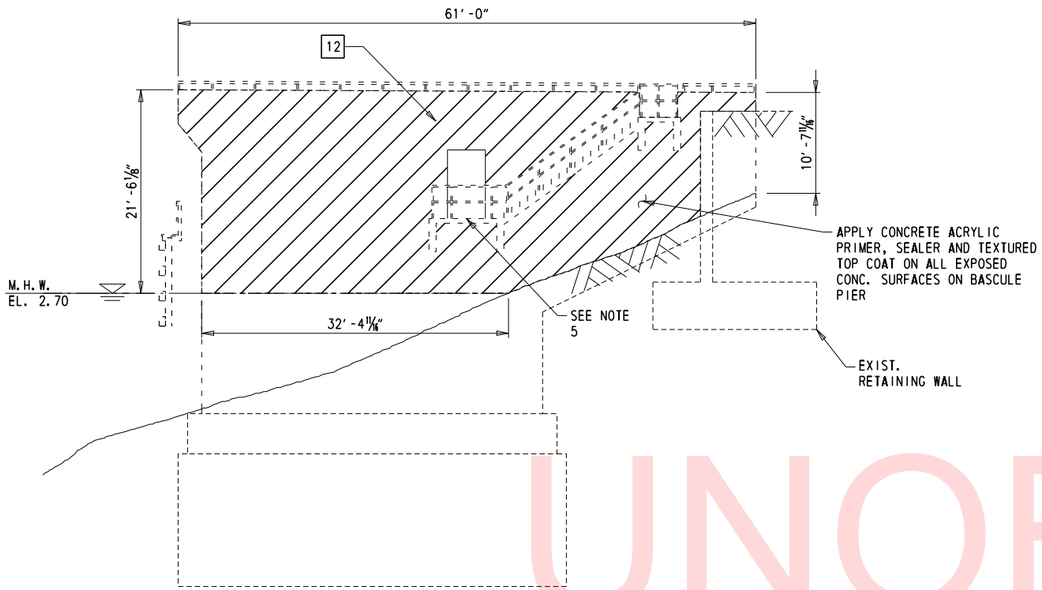

CONCRETE REPAIRS
WEST PIER NORTH FACE

PHOTO 12

PHOTO NOTES:

12 PHOTO 12: EXTENSIVE MAP CRACKING IS SEEN ON THE N. & S. FACE OF W. BASCULE PIER. TYPE 1B REPAIR IS ANTICIPATED AT THESE LOCATIONS.

13 PHOTO 13: SPALL AND DELAMINATION ON THE WEST APPROACH SLAB. REPAIR TYPE 3 IS ANTICIPATED.

PHOTO 13

NOTES:

1. APPROX. TOTAL LENGTH OF TYPE 1B REPAIR = 40 FT.
2. APPROX. AREA OF CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT ON W. PIER, N. FACE = 1376 SF.
3. APPROX. CONC. VOLUME FOR TYPE 2 REPAIRS = 1 CF AND TYPE 3 REPAIRS = 1 CF.
4. SEE DWG. SS-07 FOR REPAIR DETAILS.
5. CONTRACTOR TO SAW CUT ¼" SQUARE GROOVES ON THE STAIRCASE LANDING TO DIRECT WATER AWAY FROM THE MACHINERY ROOM DOOR. ALL WORK INVOLVING SAW CUTTING CONCRETE SHALL BE PERFORMED IN ACCORDANCE TO SECTION 762 OF THE STANDARD SPECIFICATION. PAID UNDER "ITEM 762002 - SAW CUTTING, CONCRETE, VARIABLE DEPTH."

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	WEST BASCULE PIER CONCRETE REPAIRS AND WEST APPROACH SLAB REPAIRS	SS-04
				COUNTY SUSSEX	DESIGNED BY: BKS		SHEET NO. 87
					CHECKED BY: AR		TOTAL SHTS. 180

8/9/2018
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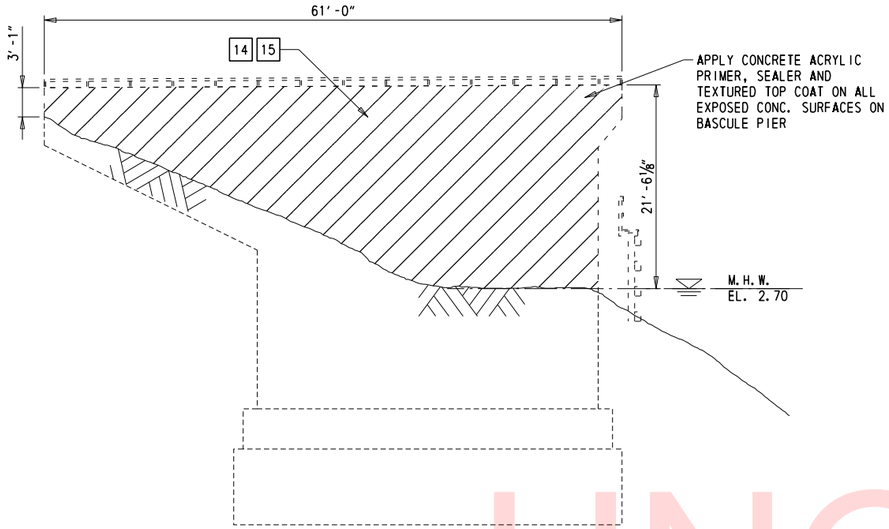
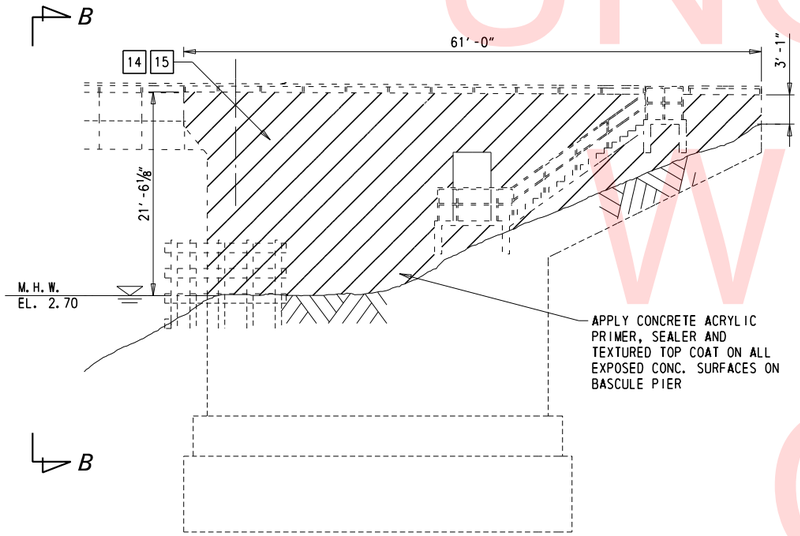


CONCRETE REPAIRS EAST PIER NORTH FACE



CONCRETE REPAIRS EAST PIER SOUTH FACE

PHOTO NOTES:

14 15 PHOTO 14 & 15: EXTENSIVE MAP CRACKING ON THE N. & S. FACE OF THE E. BASCULE PIER. TYPE 1B REPAIR IS ANTICIPATED AT THESE LOCATIONS.

NOTES:

1. APPROX. TOTAL LENGTH OF TYPE 1B REPAIR = 80 FT.
2. APPROX. AREA OF CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT ON E. PIER, N. FACE = 1119 SF; ON E. PIER, S. FACE = 1076 SF.
3. SEE DWG. SS-07 FOR REPAIR DETAILS.
4. SEE DWG. SS-06 FOR VIEW B-B.

PHOTO 14

PHOTO 15

8/2/2018
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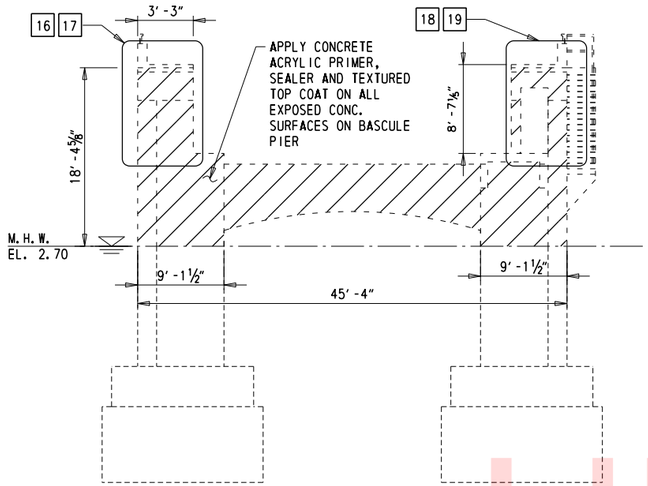
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-154	EAST BASCULE PIER CONCRETE REPAIRS 1
				COUNTY SUSSEX	DESIGNED BY: BKS	
					CHECKED BY: AR	

SS-05
SHEET NO. 88
TOTAL SHTS. 180



VIEW B-B

PHOTO NOTES:

16 17 PHOTO 16 & 17: EXTENSIVE CRACKING UP TO ¼" WIDE & DELAMINATION OBSERVED AT NORTHWEST CORNER OF E. PIER BELOW THE SIDEWALK ADJACENT TO N. BASCULE GIRDER. TYPE 1B AND TYPE 2 OR TYPE 3 REPAIR IS ANTICIPATED.

18 19 PHOTO 18 & 19: EXTENSIVE CRACKING UP TO ½" WIDE & DELAMINATION OBSERVED AT SOUTHEAST CORNER OF E. PIER BELOW THE SIDEWALK ADJACENT TO S. BASCULE GIRDER. TYPE 1B AND TYPE 2 OR TYPE 3 REPAIR IS ANTICIPATED.

PHOTO 16

PHOTO 17

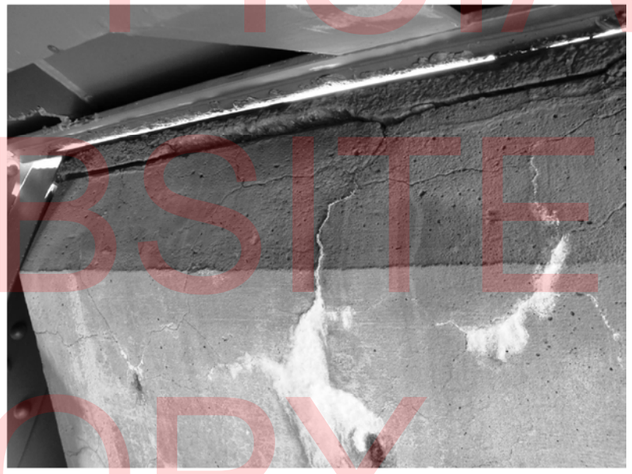


PHOTO 18

PHOTO 19

NOTES:

1. APPROX. TOTAL LENGTH OF TYPE 1B REPAIR = 60 FT.
2. APPROX. CONC. VOLUME FOR TYPE 2 REPAIR = 2 CF AND TYPE 3 REPAIR = 2 CF.
3. APPROX. AREA OF CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT ON E. PIER, W. FACE = 1250 SF.
4. SEE DWG. SS-07 FOR REPAIR DETAILS.

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

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: BKS	
COUNTY	CHECKED BY: AR	
SUSSEX		

EAST BASCULE PIER CONCRETE REPAIRS 2

	SS-06
SHEET NO.	89
TOTAL SHTS.	180

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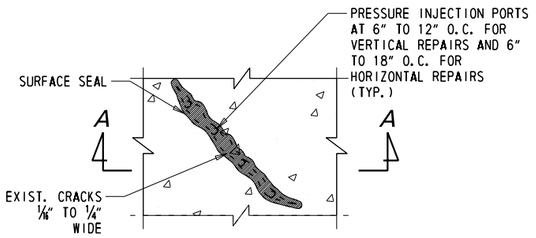
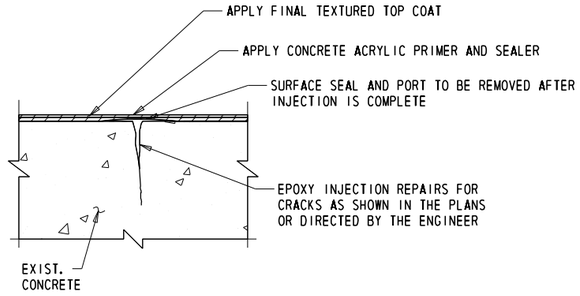


VIEW OF REPAIR AREA



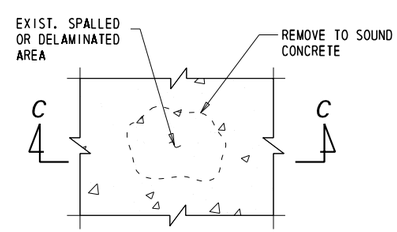
SECTION A-A

TYPE 1A
CRACK REPAIR

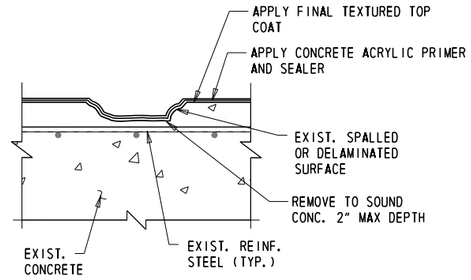
TYPE 1A REPAIR NOTES:

1. TYPE 1A REPAIRS SHALL ONLY APPLY TO ANY LOCATIONS INDICATED ON DWG. SS-2 TO SS-6.
2. ALL WORK INVOLVING METHODS OF "TYPE 1A CRACK REPAIR" SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 628.03A OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 628001 - REPAIR OF CONCRETE STRUCTURES BY EPOXY INJECTION".
3. MATERIALS USED TO ACCOMPLISH THIS WORK SHALL BE IN ACCORDANCE WITH SECTION 628.02 OF THE STANDARD SPECIFICATIONS AND THE FOLLOWING:

   - EPOXY INJECTION USING TWO-COMPONENT EPOXY RESIN ADHESIVE SHALL BE AS PER ACI 503.7-07.



VIEW OF REPAIR AREA

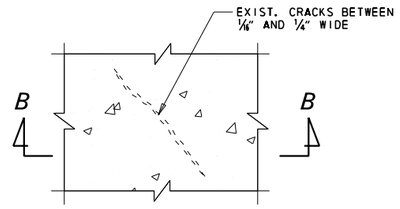


SECTION C-C

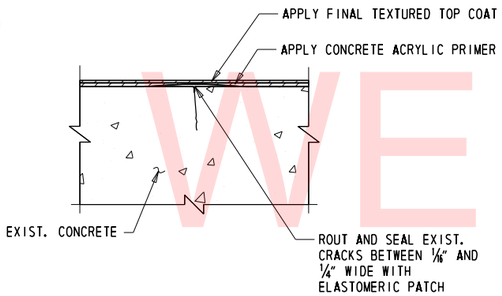
TYPE 2
SHALLOW SPALL REPAIR

TYPE 2 REPAIR NOTES:

1. ALL WORK INVOLVING METHODS OF "SHALLOW SPALL REPAIR" SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 628.03E OF THE STANDARD SPECIFICATIONS. HOWEVER, NOTE THAT NO PATCHING MATERIAL SHALL BE APPLIED FOR REPAIRS AFTER REMOVAL OF SPALL TO SOUND CONCRETE. PAID UNDER "ITEM 628040 - SHALLOW SPALL REPAIR".



VIEW OF REPAIR AREA



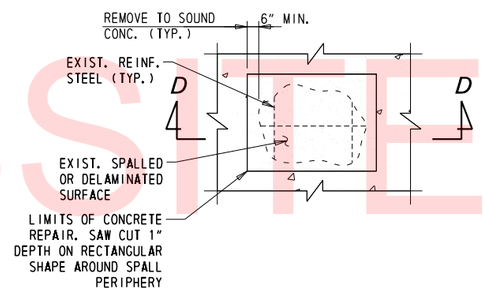
SECTION B-B

TYPE 1B
CRACK REPAIR

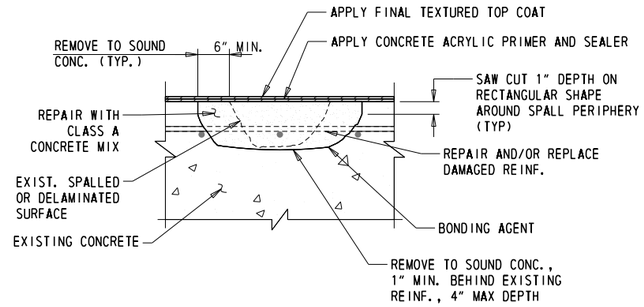
TYPE 1B REPAIR NOTES:

1. ALL CRACKS TO BE REPAIRED, AS DETERMINED BY THE ENGINEER, SHALL BE A TYPE 1B REPAIR UNLESS DIRECTED OTHERWISE.
2. ALL WORK INVOLVING METHODS OF "TYPE 1B CRACK REPAIR" SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 628.03C OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 628020 - ROUT AND SEAL CRACKS".
3. MATERIALS USED TO ACCOMPLISH THIS WORK SHALL BE IN ACCORDANCE WITH SECTION 628.02 OF THE STANDARD SPECIFICATIONS AND THE FOLLOWING:

   - ELASTOMERIC PATCH SHALL BE "112.74 CONCRETE & MASONRY SMOOTH ELASTOMERIC PATCH" BY SHERWIN WILLIAMS OR APPROVED EQUAL. INSTALLATION PROCEDURE SHALL BE AS PER MANUFACTURERS RECOMMENDATION.



VIEW OF REPAIR AREA



SECTION D-D

TYPE 3
DEEP SPALL REPAIR

TYPE 3 REPAIR NOTES:

1. ALL WORK INVOLVING METHODS OF "DEEP SPALL REPAIR" SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 628.03E OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 628041 - DEEP SPALL REPAIR".

PRIMER & TOP COAT NOTES:

1. A CONCRETE ACRYLIC PRIMER AND SEALER SHALL BE APPLIED. INSTALLATION PROCEDURE SHALL BE AS PER MANUFACTURERS RECOMMENDATION. PAID UNDER "613500 - CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT".
2. A TEXTURED TOP COAT THAT IS COMPATIBLE WITH THE SELECTED PRIMER AND SEALER SHALL BE APPLIED. INSTALLATION PROCEDURE SHALL BE AS PER MANUFACTURERS RECOMMENDATION. PAID UNDER "613500 - CONCRETE ACRYLIC PRIMER, SEALER, AND TEXTURED TOP COAT". TOP COAT COLOR TO MATCH EXISTING. IT IS BELIEVED THAT THE EXISTING COATING IS INSIGNIA WHITE (FEDERAL COLOR FS 37925 OF FED-STD-595C), HOWEVER THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING COLOR BEFORE ORDERING MATERIALS.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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: BKS / CHECKED BY: RAJ	SUBSTRUCTURE AND APPROACH SLAB REPAIR SCHEMATIC	SS-07 / SHEET NO. 90 / TOTAL SHTS. 180

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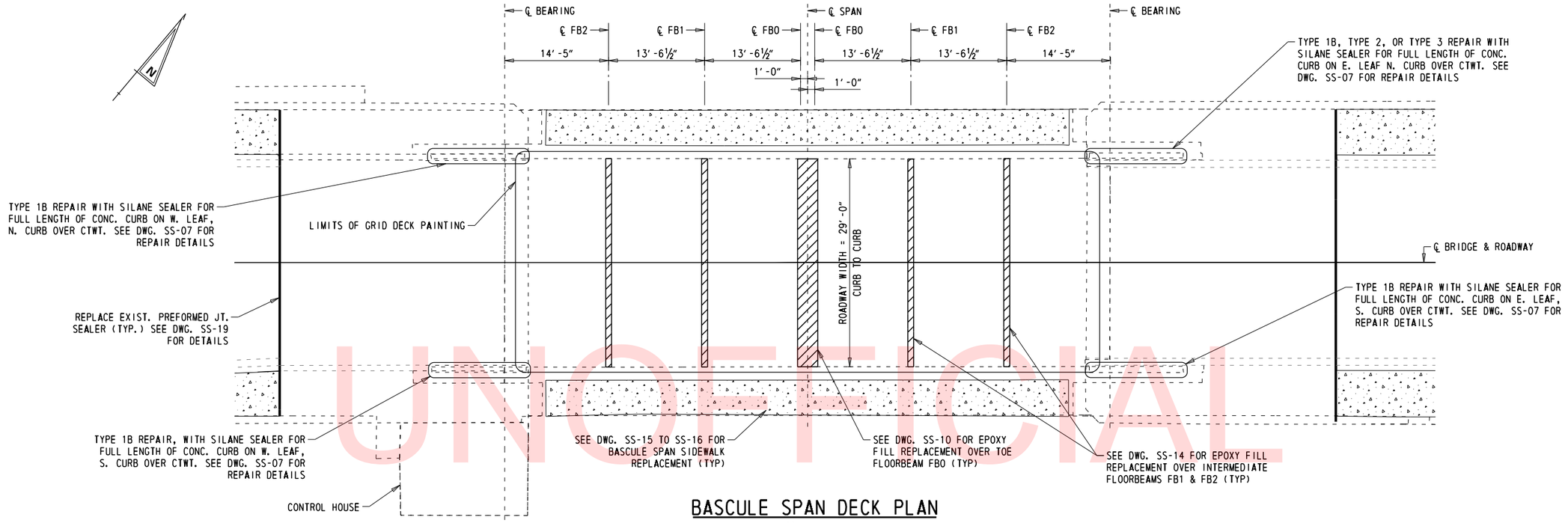


BASCULE SPAN DECK PLAN

1/8″ = 1′-0″

PAINTING GENERAL NOTES (FOR DWG. SS-08 - SS-18)

1. THE WORK COVERED UNDER BRIDGE PAINTING WITH THE THREE COAT SYSTEM INCLUDES ALL ITEMS SPECIFIED ON THIS SHEET AND ANY MISCELLANEOUS SPOT PAINTING REQUIRED. ALL OTHER STEEL MEMBERS OF THE DECK AND SUPERSTRUCTURE SHALL BE PAINTED WITH OVERCOAT.

2. CLEANING AND PAINTING OF EXISTING STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH SECTION 616 OF THE SPECIFICATIONS. PAID UNDER "ITEM 616000 CLEANING & PAINTING OF EXIST. STEEL".

3. A CONTAINMENT SYSTEM SHALL BE PROVIDED FOR ALL ABRASIVE BLASTING. THE DESIGN OF THE CONTAINMENT SYSTEM SHALL BE SUBMITTED AND APPROVED BY THE DEPARTMENT PRIOR TO ANY WORK BEING PERFORMED.

4. THE BRIDGE IS TO REMAIN OPERATIONAL DURING REPAINTING UNLESS PERMISSION IS GRANTED BY THE DEPARTMENT IN ADVANCE. SEE ADDITIONAL REQUIRMENTS IN SPECIAL PROVISION "763522 - COAST GUARD SPECIFIC CONDITIONS".

5. WORK SHALL BE PERFORMED IN A MANNER AS TO LIMIT OBSTRUCTIONS TO TRAFFIC CONSISTENT WITH SAFETY STANDARDS AND SHALL COMPLY WITH REQUIRMENTS PER THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL.

6. PRIOR TO REPAINTING, THE CONTRACTOR SHALL PROVIDE OPPORTUNITY FOR THE ENGINEER TO INSPECT BLAST-CLEANED SURFACED. REPORT EVIDENCE OF CRACKS OR SECTION LOSS DUE TO CORROSION GREATER THAN 25%.

7. THE CONTRACTOR SHALL TAKE NECESSARY MEASURES TO PROTECT THE ADJACENT CONC. SURFACES AND MACHINERY COMPONENTS DURING THE PAINTING OPERATION. PAINTED OR STAINED CONC. SURFACES SHALL BE RESTORED TO THE ORIGINAL COLOR WITHOUT DAMAGE TO THE CONC. REFER TO SPECIAL PROVISION SECTION SP. 615503 - BRIDGE MECHANICAL SYSTEM FOR REQUIREMENTS WHEN PAINTING AROUND BRIDGE MACHINERY.

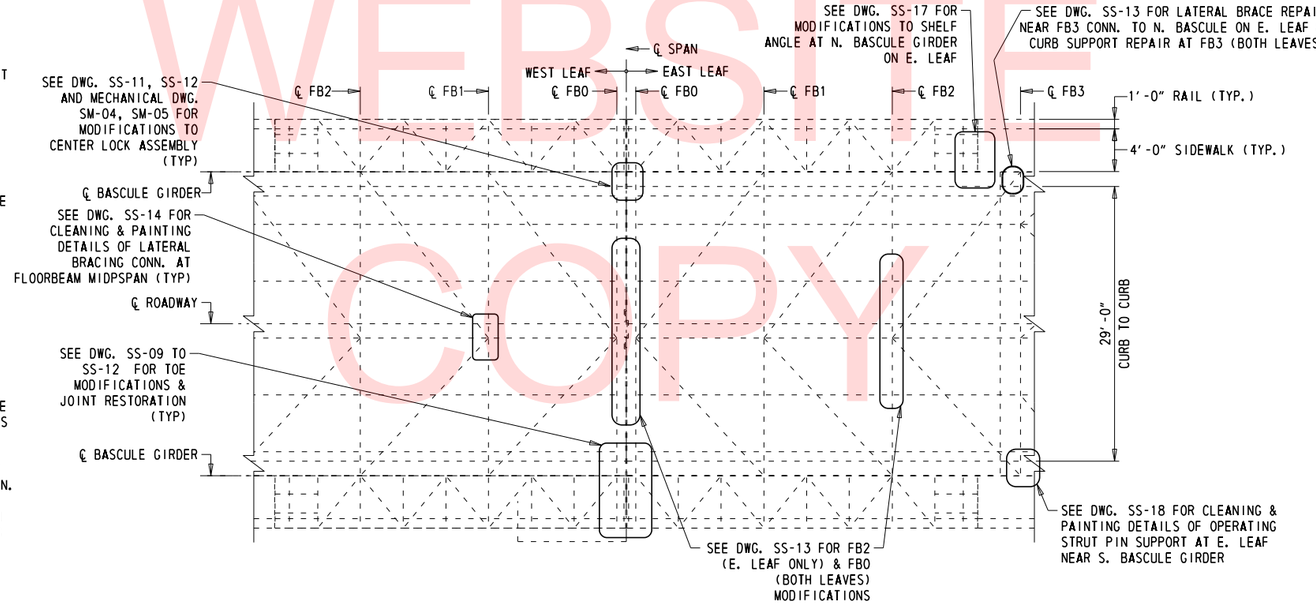
8. THE CONTRACTOR SHALL ASSUME THE EXISTING PAINT SYSTEMS CONTAIN LEAD BASED PAINT AND SHALL TAKE THE APPROPRIATE MEASURES IN REGARDS TO REMOVAL, HANDLING, DISPOSAL, ETC.

9. MATERIALS:

   9.1 - OVERCOAT SYSTEM: OVERCOAT TO BE FUNCTIONAL WITH EXISTING TOP COAT (MOISTURE CURED URETHANE).

   9.2 - THREE COAT SYSTEM: PRIME COAT SHALL BE ORGANIC ZINC. INTERMEDIATE COAT SHALL BE EPOXY. TOP COAT SHALL BE MOISTURE CURE URETHANE.

   9.3 - FINAL TOP COAT COLOR SHALL BE 33448 (TAN) OF FED-STD-595C.



BASCULE SPAN FRAMING PLAN

1/8″ = 1′-0″

NOTE: REFER TO THE DETAILS AND SECTION CUTS FOR AS-INSPECTED JOINT CLEARANCES

APPROXIMATE PAINT QUANTITIES

1. GRID DECK: 8,400 SF
2. OTHER DECK MEMBERS: 700 SF
3. SUPERSTRUCTURE: 13,000 SF

NOTES:

1. ALL WORK INVOLVING SILANE SEALER ON THE CURBS SHALL IN ACCORDANCE WITH SECTION 1045.03 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 613002 SILANE BASED CONCRETE DECK SEALER".
2. APPROXIMATE TOTAL LENGTH OF TYPE 1B REPAIR = 81 LF.
3. APPROXIMATE CONCRETE VOLUME FOR TYPE 2 REPAIR = 1 CF AND TYPE 3 REPAIR = 1 CF.
4. APPROXIMATE AREA OF SILANE SEALER ALONG CURBS = 69 SF.

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

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.	3-154
DESIGNED BY:	MR
CHECKED BY:	AR

BASCULE SPAN REPAIR PLAN

	SS-08
SHEET NO.	91
TOTAL SHTS.	180

8/9/2018
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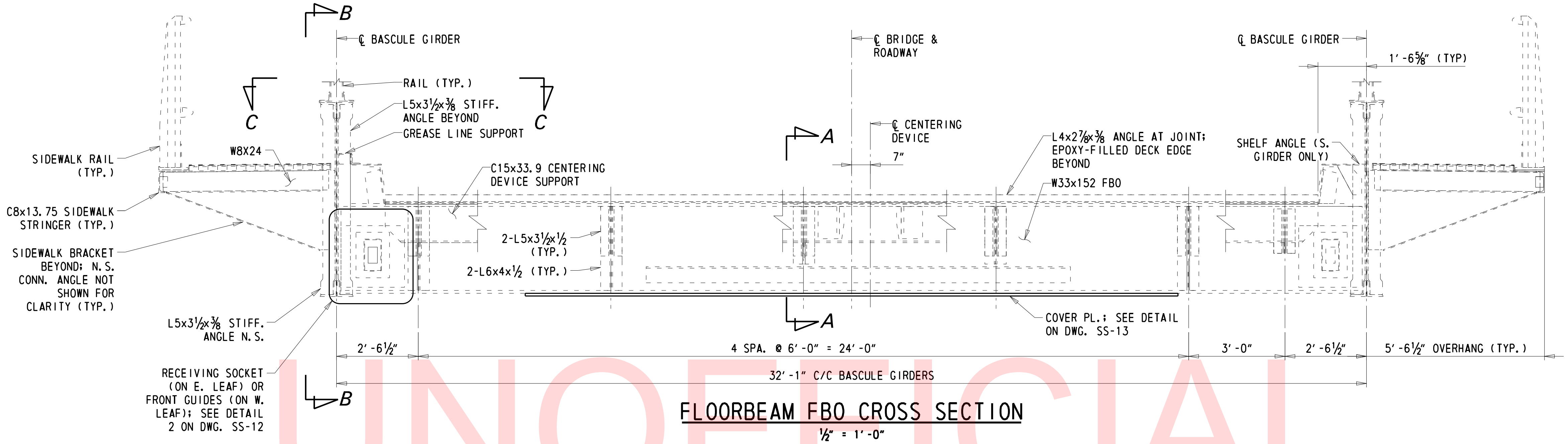


FLOORBEAM FBO CROSS SECTION

½" = 1'-0"

NOTE: E. LEAF SHOWN; W. LEAF SIM.; REFER TO PHOTO 1 FOR VISUAL
SEE DWG. SS-10 AND SS-11 FOR VIEWS A-A, B-B, AND C-C

PHOTO 1

NOT TO SCALE

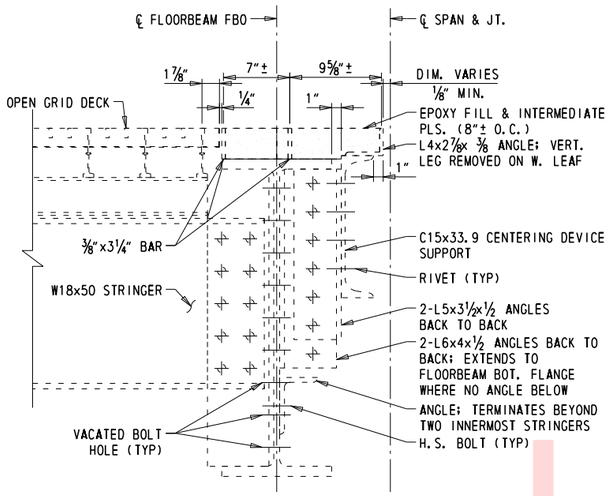
CROSS-SECTION VIEW OF FLOORBEAM FBO

NOTES:

1. REFER TO DWGS. SS-10 TO SS-11 FOR SECTION VIEWS.

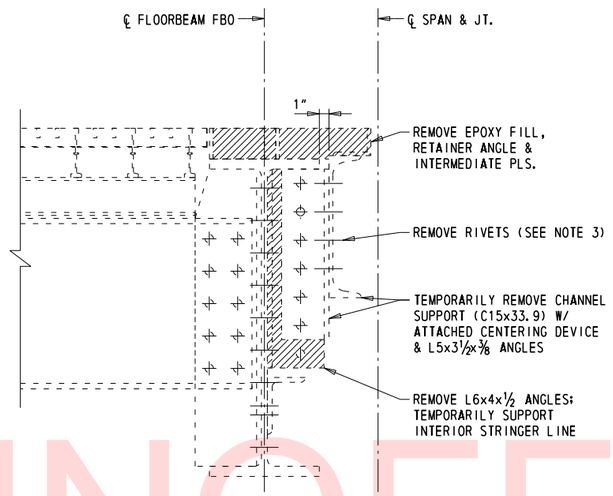
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE AS NOTED	BR 3–154 ON US9 SAVANNAH ROAD & BR 3–153 ON SR1A REHOBOTH AVENUE OVER LEWES–REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3–154	TOE MODIFICATIONS 1	SS-09
				COUNTY SUSSEX	DESIGNED BY: MR		SHEET NO. 92
					CHECKED BY: AR		TOTAL SHTS. 180

DATE REVISED: 12/02/2010



EXISTING CONDITIONS

NOTE: DETAIL IS SIM. FOR BOTH LEAVES AT THE TOE

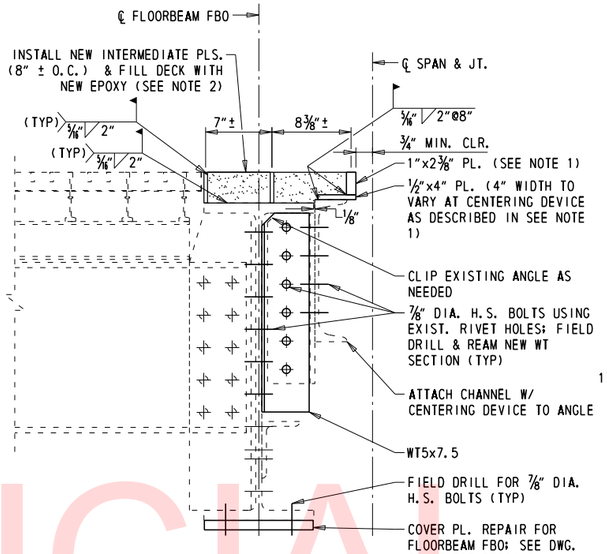


DEMOLITION

NOTE: DETAIL IS SIM. FOR BOTH LEAVES AT THE TOE

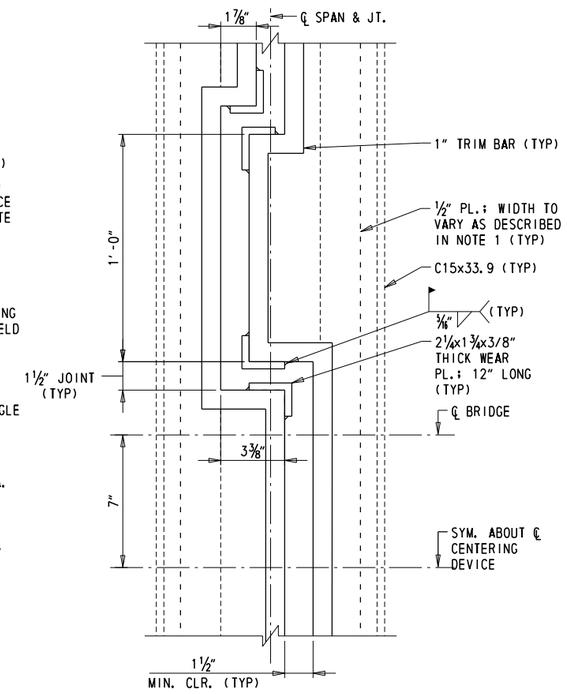
SECTION A-A

1½" = 1'-0"



REPAIRS

NOTE: DETAIL IS SIM. FOR BOTH LEAVES AT THE TOE



DETAIL 1

3" = 1'-0"

PLAN AT CENTERING DEVICE

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

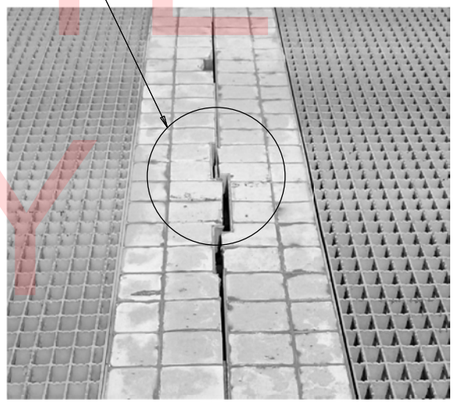


PHOTO 4

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. WEARING PL. THICKNESS SHALL BE MAINTAINED AT THE KEY-IN JT. TO PROVIDE THE ¾" 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 OVERALY AT TOE FLOORBEAM SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - EPOXY OVERLAY SYSTEM" GUIDELINES. PAID UNDER "ITEM 625500 - EPOXY OVERLAY SYSTEM."

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	TOE MODIFICATIONS 2
				COUNTY SUSSEX	DESIGNED BY: MR	SS-10 / SHEET NO. 93
					CHECKED BY: AR	TOTAL SHTS. 180

8/9/2018
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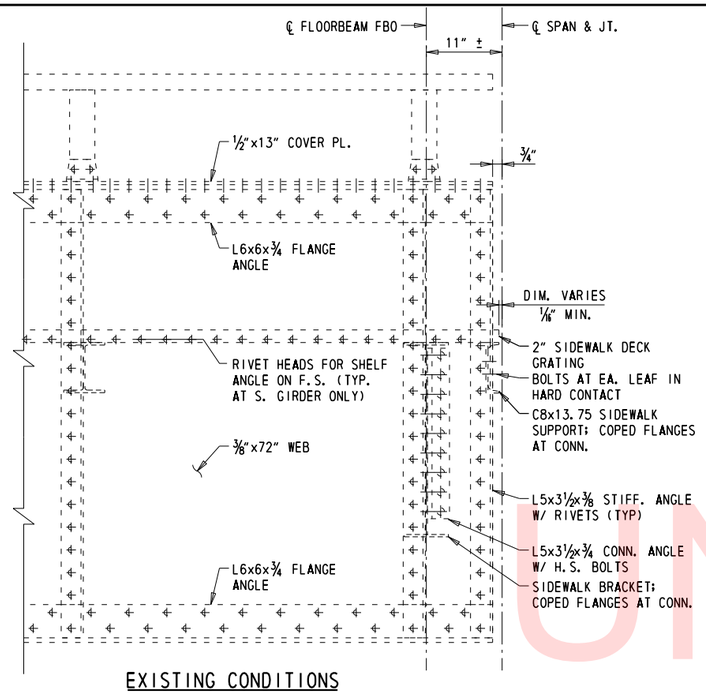
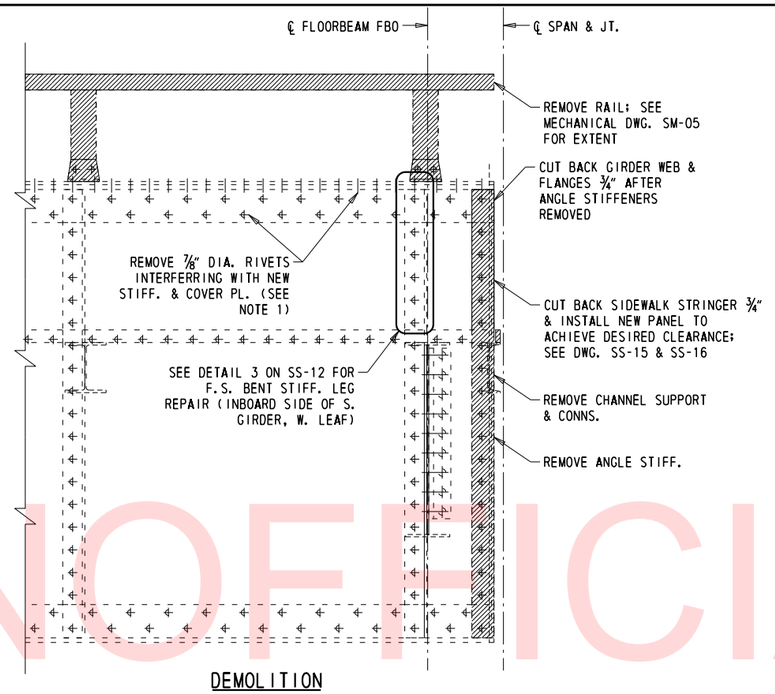
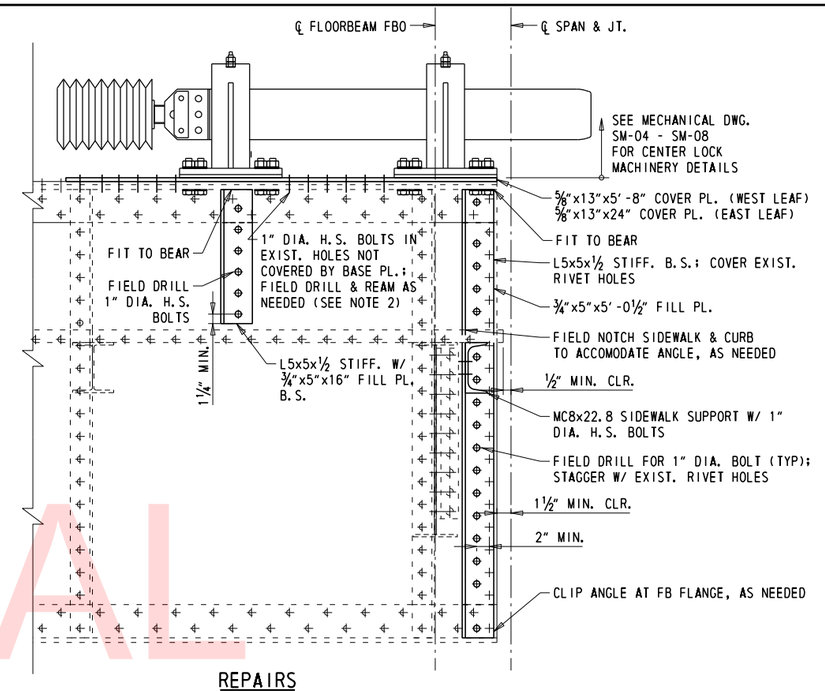


EXISTING CONDITIONS



DEMOLITION



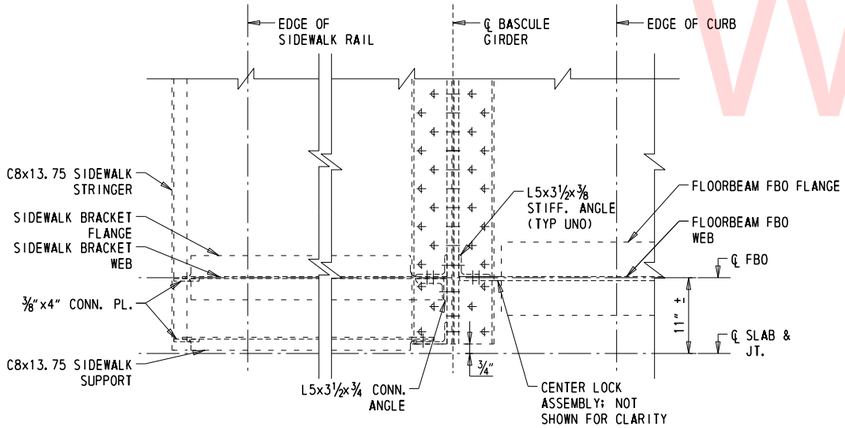
REPAIRS

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

SECTION B-B

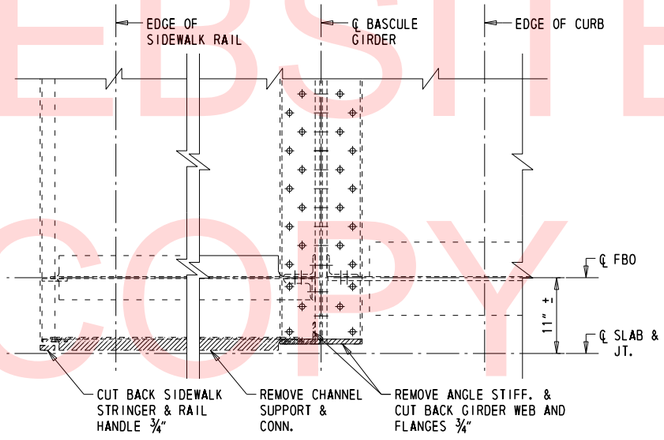
1" = 1'-0"

NOTE: SIDEWALK SUPPORT FRAMING NOT SHOWN FOR CLARITY



EXISTING CONDITIONS

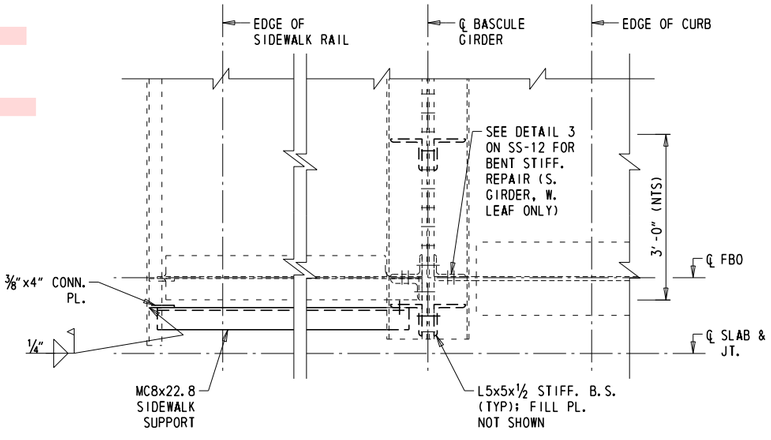
NOTE: DECK, STRINGERS, RAILS, CURB DETAILS, AND CENTERING DEVICE SUPPORT CHANNEL NOT SHOWN FOR CLARITY



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.

DELAWARE DEPARTMENT OF TRANSPORTATION

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
T201507602	DESIGNED BY: MR	
COUNTY	CHECKED BY: AR	
SUSSEX		

TOE MODIFICATIONS 3

	SS-11
SHEET NO.	94
TOTAL SHTS.	180

8/9/2018
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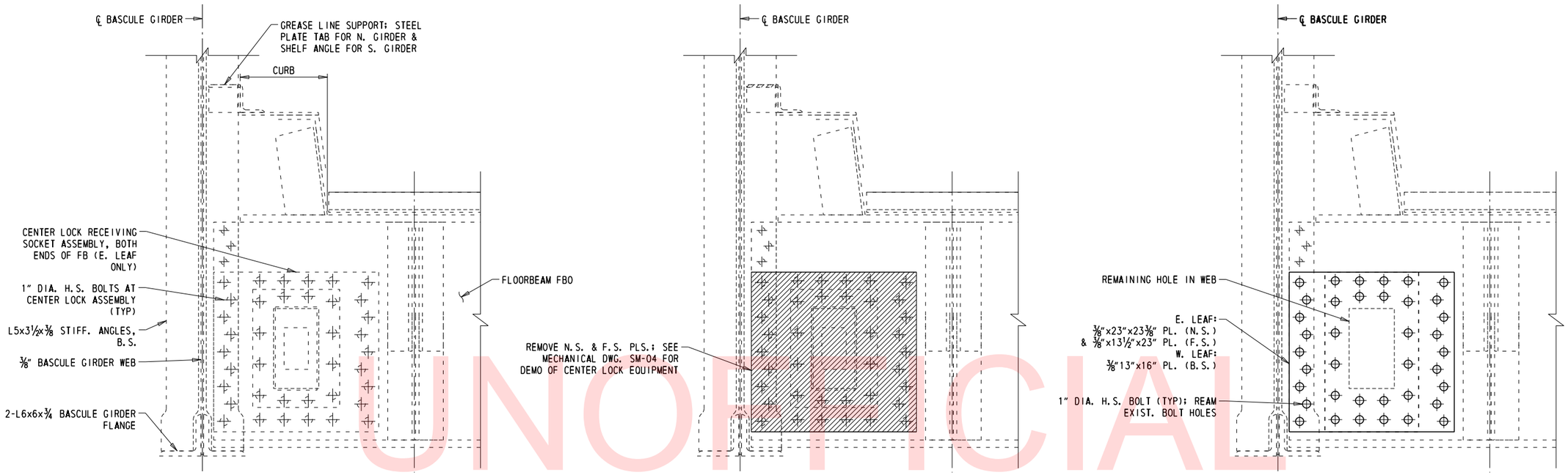


EXISTING CONDITIONS

NOTE: CENTER LOCK CHANNEL SUPPORT NOT SHOWN FOR CLARITY; BOLT HOLE PATTERN IS SYM. ON W. LEAF FOR FRONT GUIDE

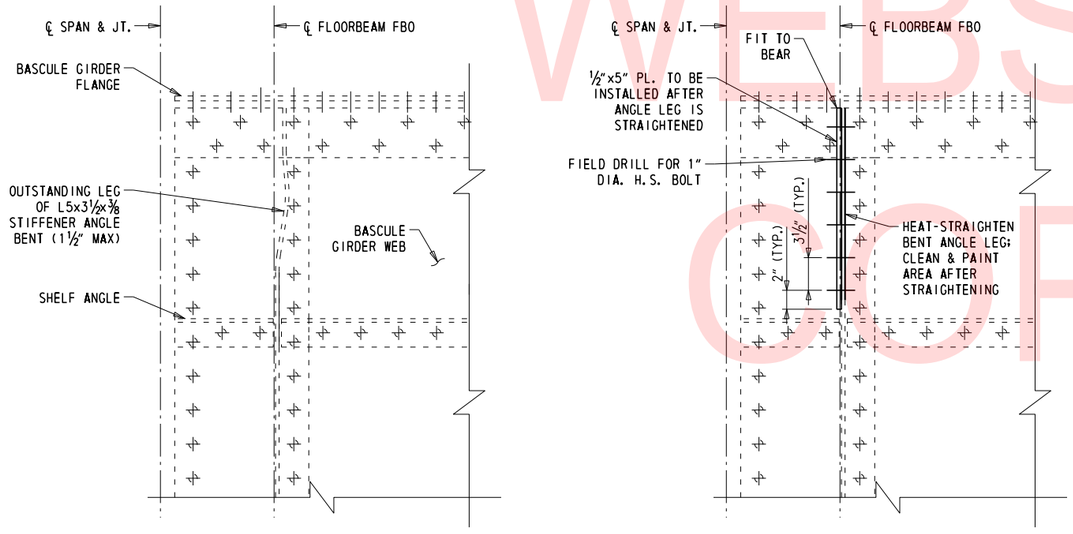
DEMOLITION

REPAIRS

NOTE: FILL ALL VACANT BOLT HOLES W/ BOLTS (INCLUDING REAR GUIDE & HANGER SUPPORTS), IF NOT COVERED BY PL. PAINT EXIST. & NEW STEEL AFTER REPAIRS USING THREE COAT SYSTEM.

DETAIL 2

1½" = 1'-0"



EXISTING CONDITIONS

NOTE: FLOORBEAM FBO NOT SHOWN FOR CLARITY

REPAIRS

NOTE: FLOORBEAM FBO NOT SHOWN FOR CLARITY

DETAIL 3

1½" = 1'-0"

NOTE: REPAIR DETAIL APPLIES TO INBOARD ANGLE STIFFENER OF S. BASCULE GIRDER ON W. LEAF NEAR FBO

NOTES:

1. ALL WORK INVOLVING MODIFICATIONS TO TOE FBS AT CENTER LOCK RECEIVING SOCKET ASSEMBLY SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 615 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615006 STEEL STRUCTURE REPAIR."
2. SEE DWG. SS-08 FOR CLEANING AND PAINTING NOTES.
3. HEAT-STRAIGHTENING OF STEEL MEMBERS SHALL BE IN CONFORMANCE WITH SECTION 615 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615006 STEEL STRUCTURE REPAIR."

DELAWARE DEPARTMENT OF TRANSPORTATION

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
T201507602	DESIGNED BY: MR
COUNTY	CHECKED BY: RAJ
SUSSEX	

TOE MODIFICATIONS 4

SS-12
SHEET NO. 95
TOTAL SHTS. 180

8/9/2018
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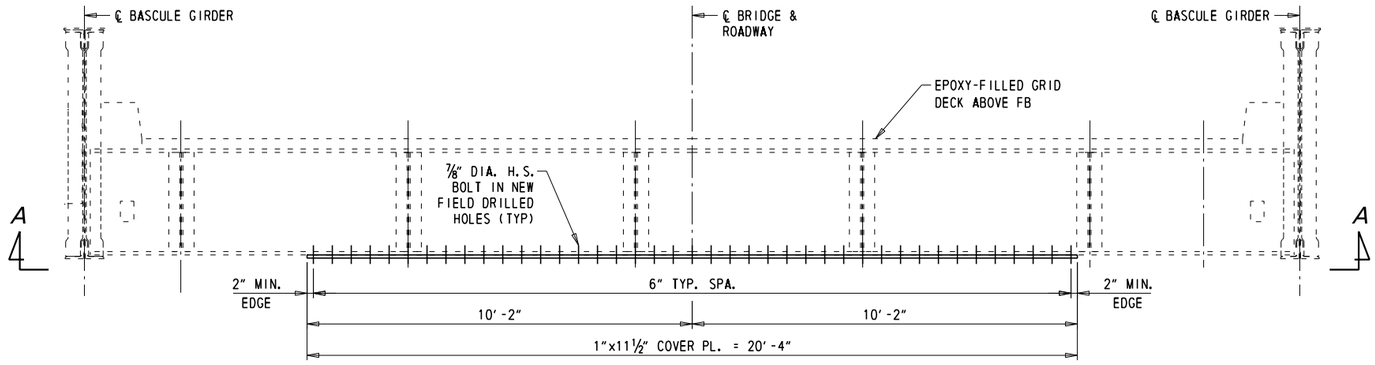
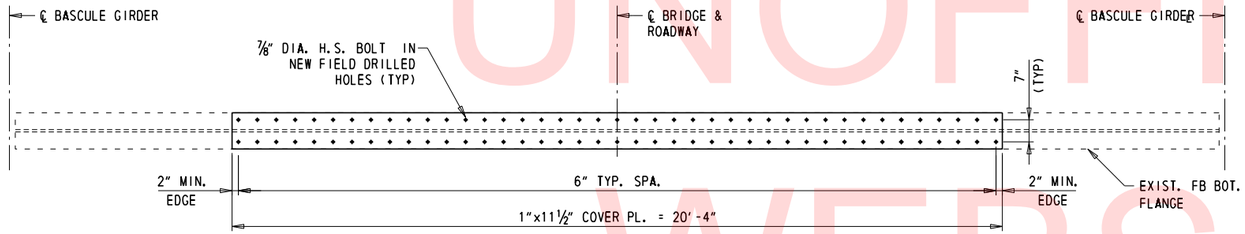


FLOORBEAM COVER PLATE REPAIR

½" = 1'-0"

NOTE: REPAIR APPLIES TO FB0 ON BOTH LEAVES AND FB2 ON E. LEAF. SIDEWALKS NOT SHOWN FOR CLARITY.

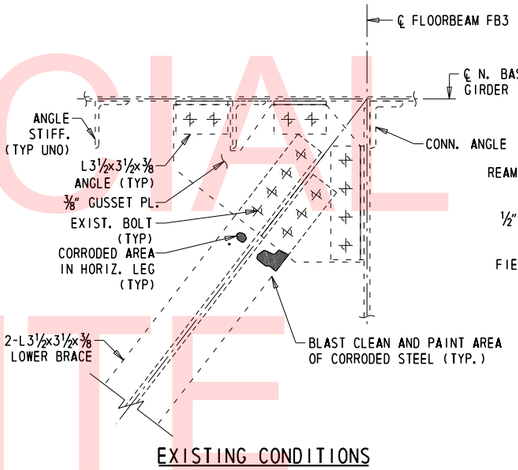


SECTION A-A

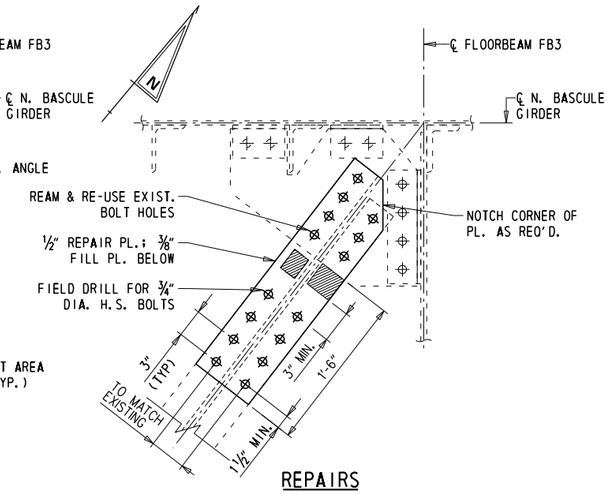
½" = 1'-0"

NOTE: CLEAN AND PAINT EXIST. STEEL USING THREE COAT SYSTEM PRIOR TO INSTALLATION OF COVER PL.

LOAD RATING SUMMARY					
VEHICLE TYPE	RATING FACTOR	RATING WEIGHT (TONS)	CONTROLLING MEMBER	CONTROLLING POINT	LOAD EFFECT
HL-93 TRUCK (INVENTORY)	1.01	N/A	INT. FLOORBEAM FB2	105	FLEXURE
HL-93 TANDEM (INVENTORY)	0.80	N/A	END FLOORBEAM FB0	105	FLEXURE
HS20 (INVENTORY)	1.12	40.32	INT. FLOORBEAM FB2	105	FLEXURE
HL-93 TRUCK (OPERATING)	1.31	N/A	INT. FLOORBEAM FB2	105	FLEXURE
HL-93 TANDEM (OPERATING)	1.03	N/A	INT. FLOORBEAM FB2	105	FLEXURE
HS20 (OPERATING)	1.45	52.20	INT. FLOORBEAM FB2	105	FLEXURE
DE S220 & LEGAL-LANE	2.05	41.00	INT. FLOORBEAM FB2	105	FLANGE STRESS
DE S335 & LEGAL-LANE	1.00	35.00	INT. FLOORBEAM FB2	105	FLANGE STRESS
DE S437 & LEGAL-LANE	1.05	38.85	END FLOORBEAM FB0	105	FLANGE STRESS
DE T330 & LEGAL-LANE	1.82	54.60	INT. FLOORBEAM FB2	105	FLANGE STRESS
DE T435 & LEGAL-LANE	1.35	47.25	INT. FLOORBEAM FB2	105	FLANGE STRESS
DE T540 & LEGAL-LANE	1.35	54.00	END FLOORBEAM FB0	105	FLANGE STRESS
EV2 EMERGENCY	1.40	40.25	END FLOORBEAM FB0	105	FLANGE STRESS
EV3 EMERGENCY	1.05	45.15	END FLOORBEAM FB0	105	FLANGE STRESS



EXISTING CONDITIONS



REPAIRS

NOTE: CONTRACTOR SHALL CLEAN & PAINT ALL EXIST. & PROPOSED STEEL ADJACENT TO DETERIORATED AREA USING THREE COAT SYSTEM; ALL BOLTS SHALL BE NEW

LOWER BRACE REPAIR

NOT TO SCALE

NOTE: PLAN VIEW AT LOWER BRACING LEVEL, E. LEAF NEAR N. BASCULE GIRDER SHOWN

NOTES:

1. ALL WORK INVOLVING STRENGTHENING FBS & BRACING SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 615 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615006 STEEL STRUCTURE REPAIR."
2. SEE DWG. SS-08 FOR CLEANING AND PAINTING NOTES.
3. CONTRACTOR SHALL MAINTAIN STRUCTURAL INTEGRITY OF THE BRACING DURING BOLT REMOVAL AND REPLACEMENT.
4. REMOVAL OF EXIST. RIVETS IS TO BE PERFORMED BY MECHANICAL METHODS. BURNING, ARC-GOUGING, OR OXYGEN LACING METHODS ARE PROHIBITED.

8/2/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

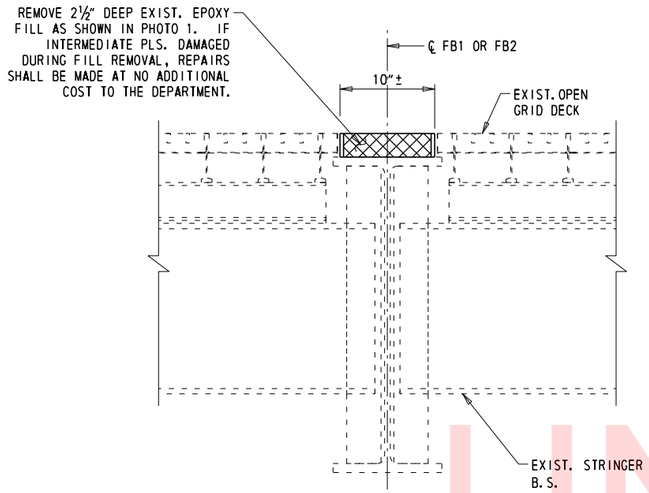
SCALE AS NOTED

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

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

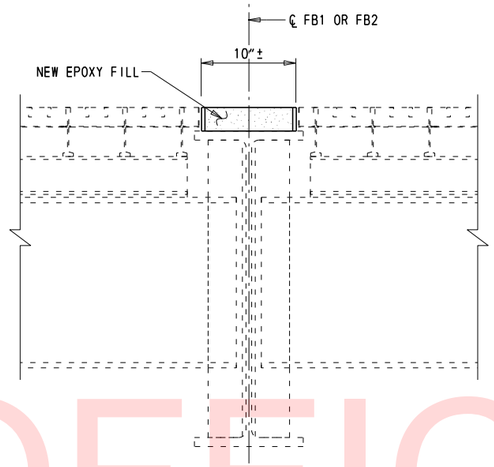
STEEL STRENGTHENING REPAIRS

SS-13
SHEET NO. 96
TOTAL SHTS. 180



DEMOLITION

1½" = 1'-0"



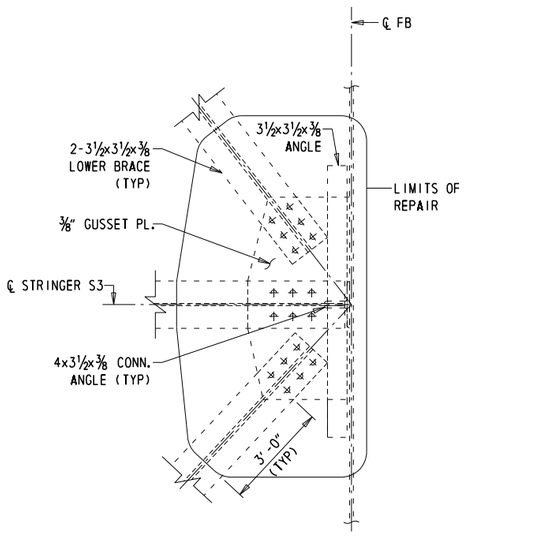
REPAIRS

1½" = 1'-0"

PHOTO 1

NOT TO SCALE

VIEW OF EPOXY FILL & INTERMEDIATE PLS. AT DECK LEVEL ABOVE FB1 & FB2; SEE NOTE 1



TYP LATERAL BRACING PAINT DETAIL

NOT TO SCALE

NOTE: ALL EXPOSED SURFACES ARE INCLUDED IN LIMITS OF REPAIR; FB BOT. FLANGE NOT SHOWN FOR CLARITY

PHOTO 2

NOT TO SCALE

NOTE: CLEAN & PAINT ALL EXPOSED SURFACES OF BRACING CONN. AT MIDSPAN OF FB USING THREE COAT SYSTEM; REFER TO TYP DETAIL ON THIS SHEET.

NOTES:

1. ALL WORK INVOLVING REPLACEMENT OF EPOXY OVERLAY AT FLOORBEAM FB1 AND FB2 SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISIONS - EPOXY OVERLAY SYSTEM" GUIDELINES. PAID UNDER "ITEM 625500 - EPOXY OVERLAY SYSTEM". THICKNESS OF EPOXY VARIES, 2½" MIN. - 3" MAX.

2. SEE DWG. SS-08 FOR CLEANING AND PAINTING NOTES.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SAVANNAH ROAD BRIDGE EPOXY FILL & PAINT REPAIRS
				COUNTY SUSSEX	DESIGNED BY: MR	SS-14 / SHEET NO. 97 / TOTAL SHTS. 180
					CHECKED BY: AR	

8/2/2018
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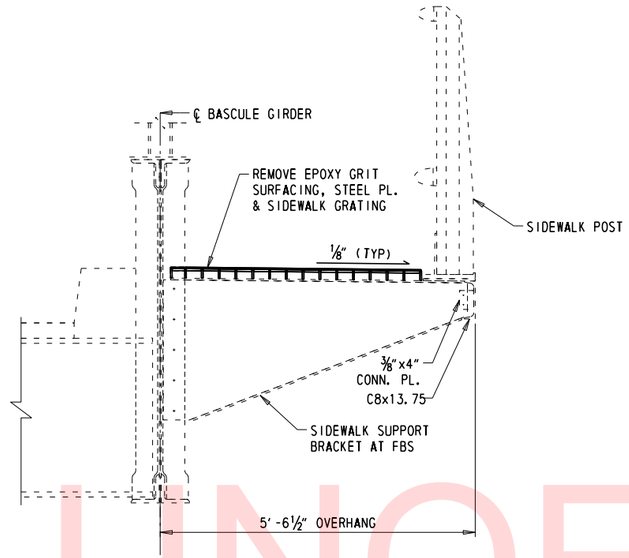
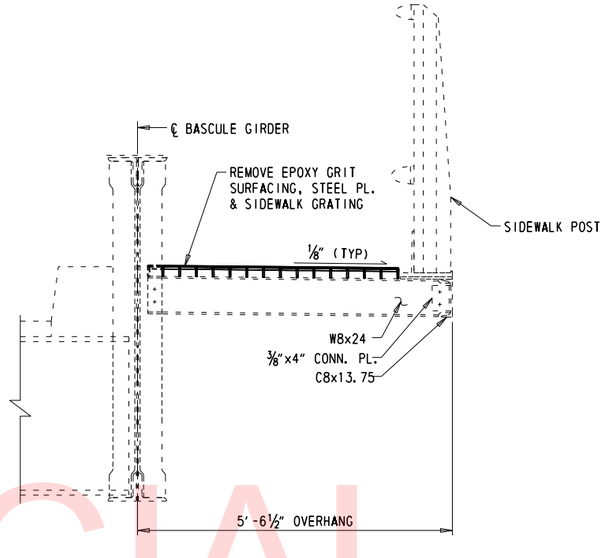


EXISTING SIDEWALKS AT FLOORBEAMS

¾" = 1'-0"

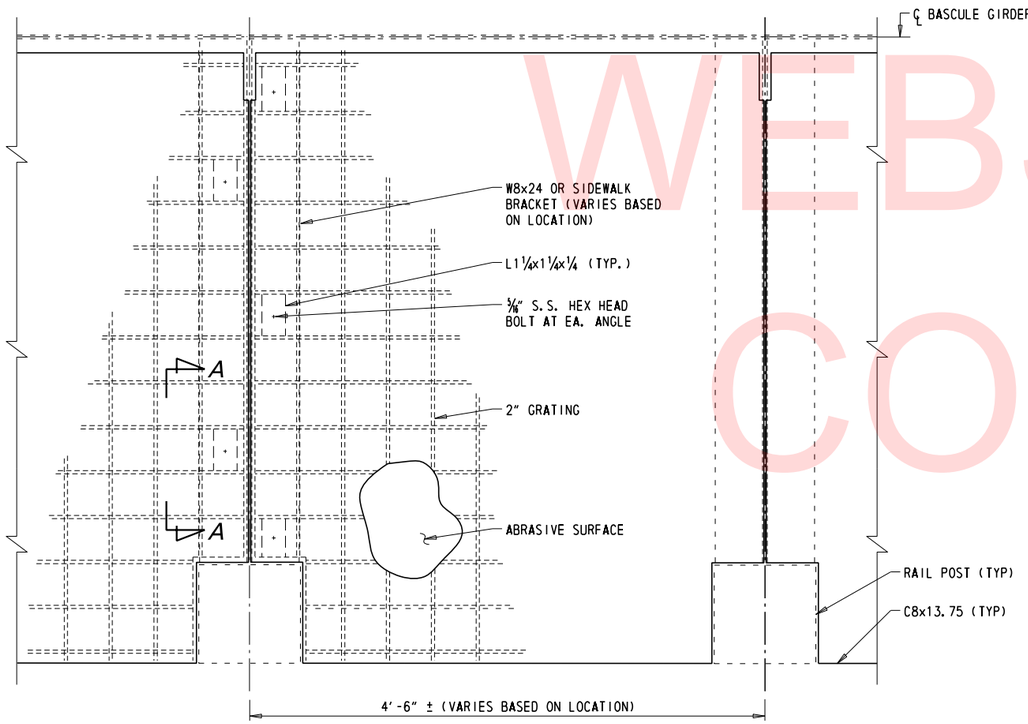
NOTE: S. SIDEWALK IS SHOWN; N. SIDEWALK IS SIM. BUT OPP. HAND



EXISTING SIDEWALKS BETWEEN FLOORBEAMS

¾" = 1'-0"

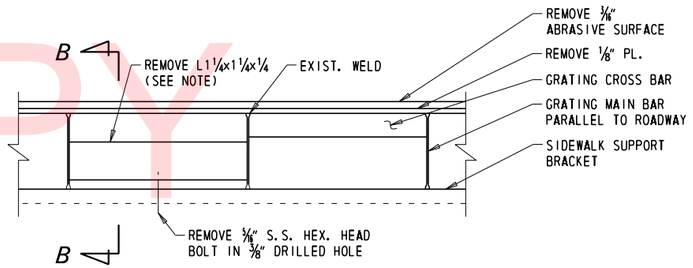
NOTE: S. SIDEWALK IS SHOWN; N. SIDEWALK IS SIM. BUT OPP. HAND



EXISTING SIDEWALKS CONNECTIONS PLAN

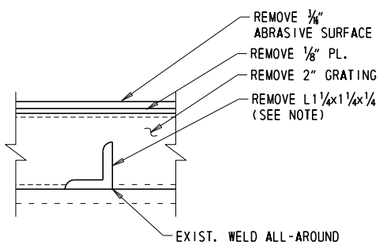
1½" = 1'-0"

NOTE: DETAIL IS TYP AT ALL SUPPORT MEMBERS



SECTION A-A

6" = 1'-0"



SECTION B-B

6" = 1'-0"

NOTE:

EXISTING ANGLES TO BE REMOVED AS REQUIRED TO AVOID INTERFERENCE WITH NEW GRATING AND ATTACHMENT HARDWARE. CONTRACTOR SHALL SUBMIT WORK PLAN FOR REVIEW TO ENSURE EXISTING SUPPORT BRACKETS ARE UNDAMAGED.

8/2/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

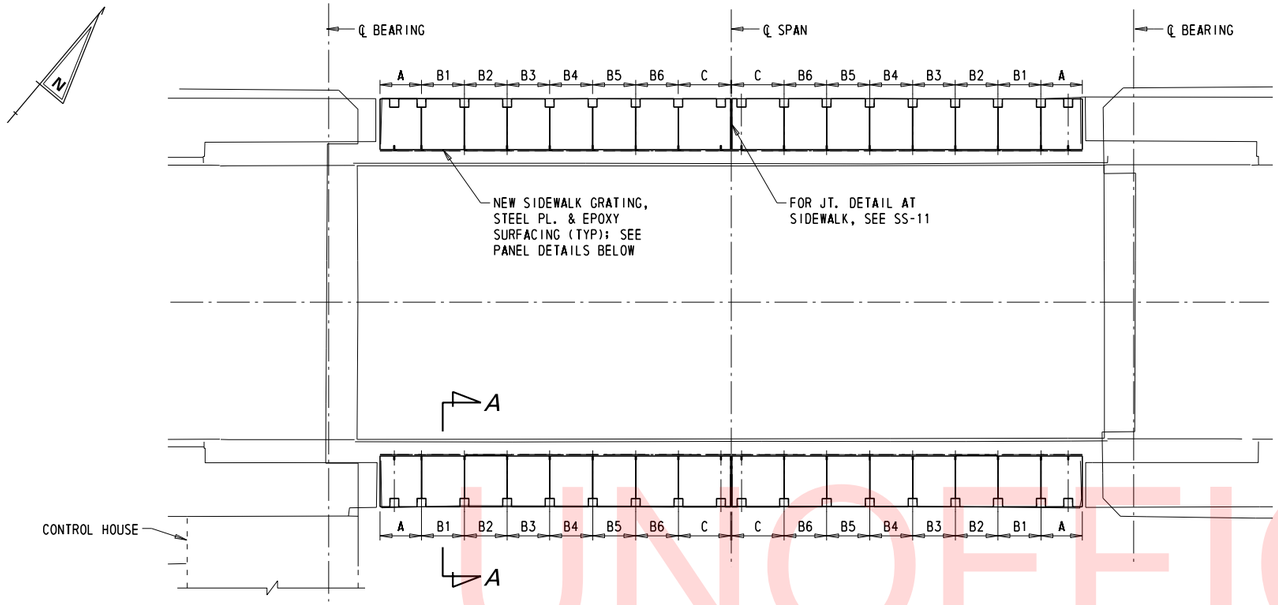
SCALE AS NOTED

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

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

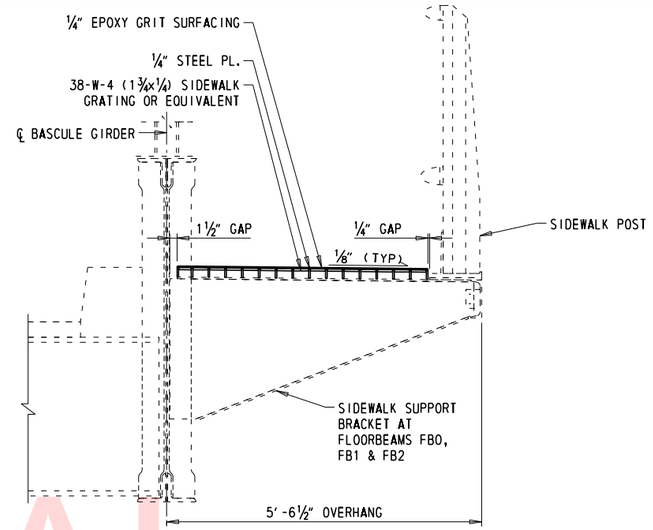
BASCULE SIDEWALK DEMOLITION

SS-15
SHEET NO.
98
TOTAL SHTS.
180



BASCULE SPAN SIDEWALK REPLACEMENT PLAN

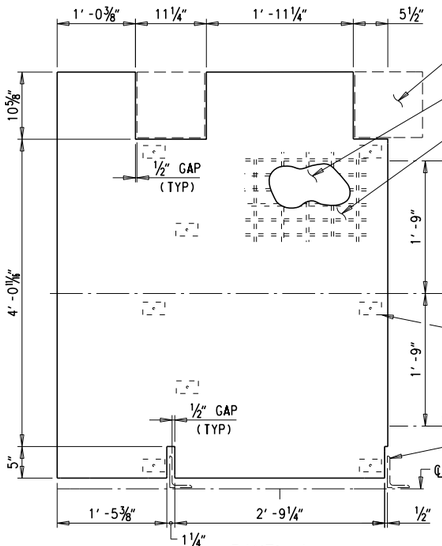
⅛" = 1'-0"



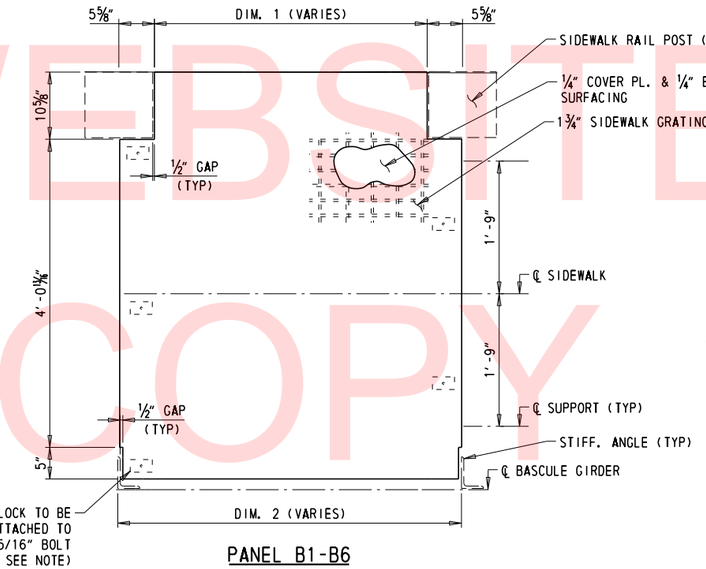
SECTION A-A

¾" = 1'-0"

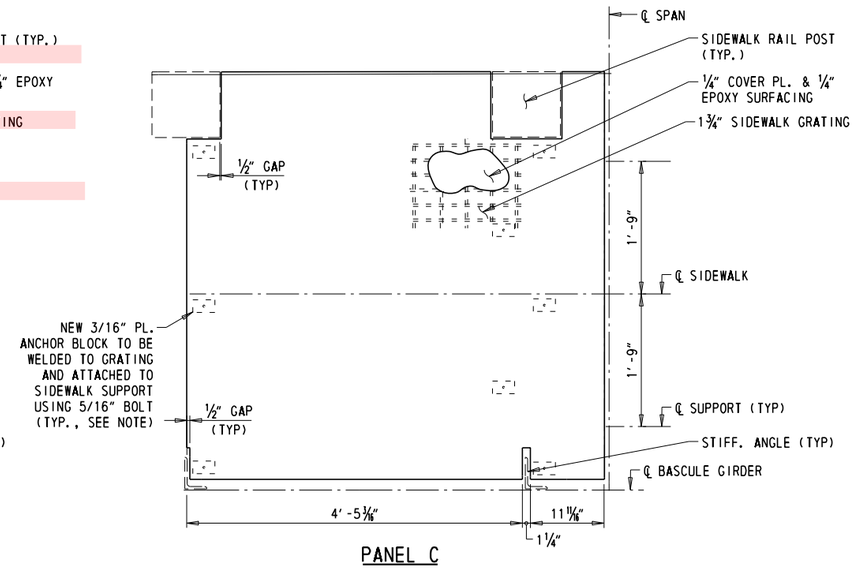
NOTE: DETAIL IS SIM. FOR BOTH SIDEWALKS ON BOTH LEAFS



PANEL A



PANEL B1-B6



PANEL C

PANEL	B1	B2	B3	B4	B5	B6
DIM 1	3'-7⅛"	3'-6 15/16"	3'-6¾"	3'-7⅛"	3'-7⅛"	3'-6 15/16"
DIM 2	4'-6⅜"	4'-5 15/16"	4'-5¾"	4'-6⅜"	4'-6⅜"	4'-5 15/16"

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, ¼" MIN. - ½" MAX.

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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.	3-154
DESIGNED BY:	BKS
CHECKED BY:	AR

SAVANNAH ROAD BRIDGE BASCULE SIDEWALK REPLACEMENT

SS-16	
SHEET NO.	99
TOTAL SHTS.	180

8/9/2018
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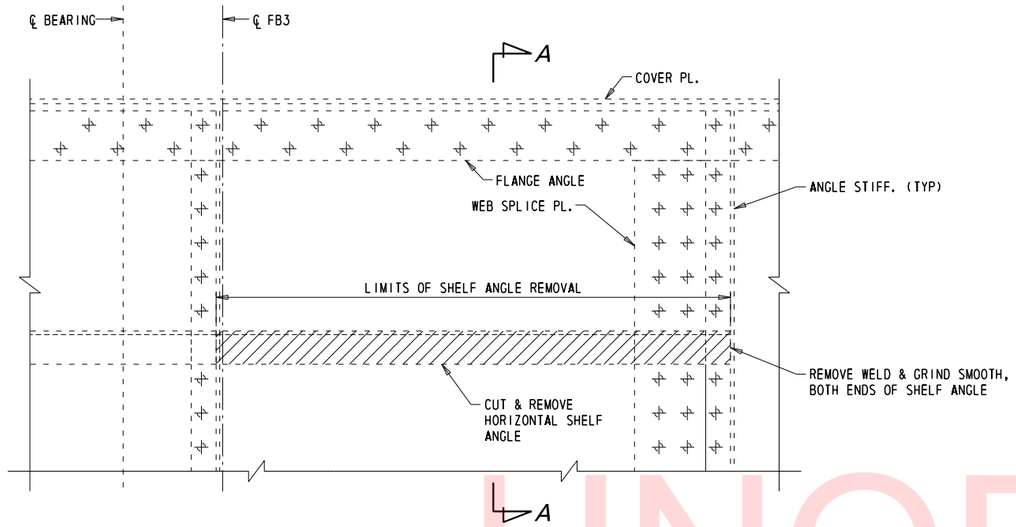
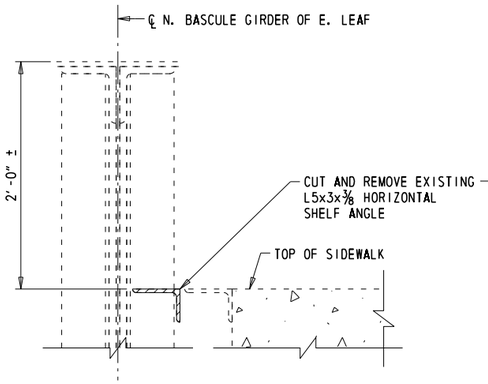


GIRDER ELEVATION EAST LEAF NORTH BASCULE

1½" = 1'-0"

NOTE: VIEW LOOKING S.; SEE NOTES



SECTION A-A

1½" = 1'-0"

PHOTO 1

NOT TO SCALE

VIEW OF BASCULE GIRDER & SHELF ANGLE WHILE STANDING ON FIXED SIDEWALK

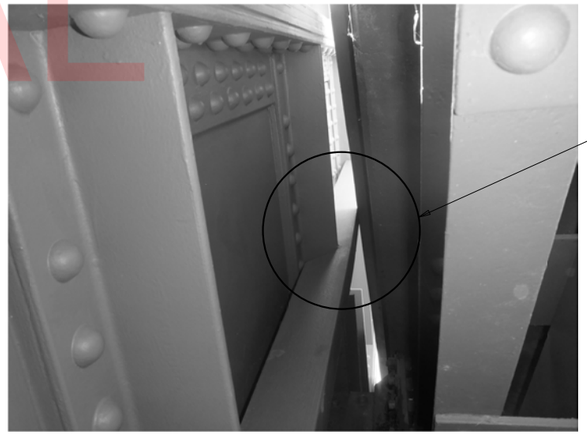
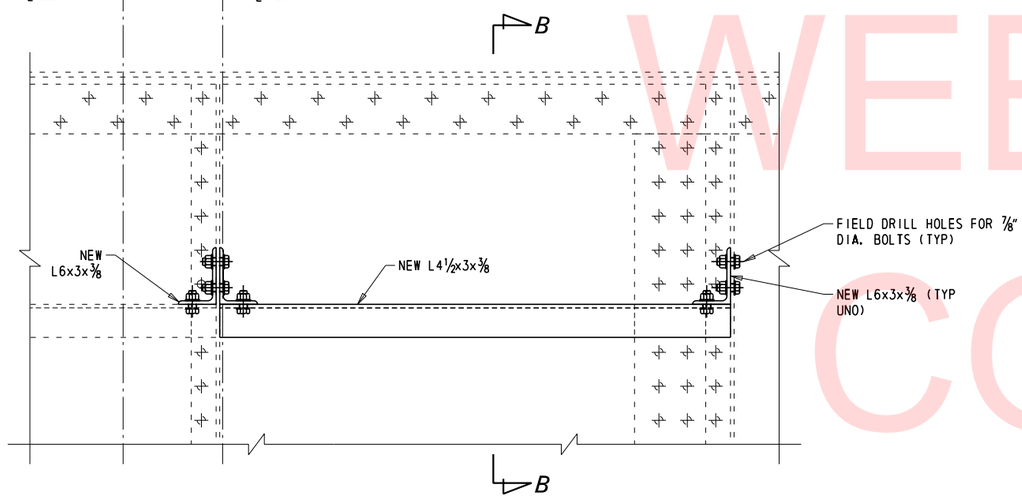


PHOTO 2

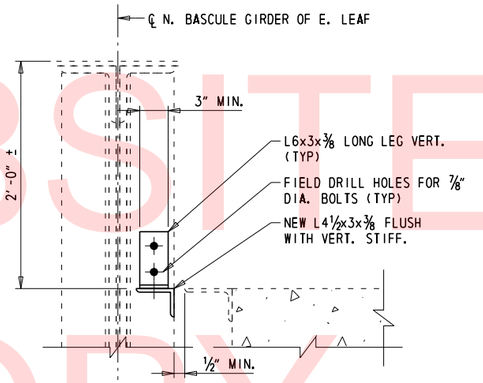
NOT TO SCALE

VIEW OF INTERFERENCE WHILE STANDING BELOW FIXED SIDEWALK



NEW SHELF ANGLE INSTALLATION

1½" = 1'-0"



SECTION B-B

1½" = 1'-0"

NOTES:

1. THE EXIST. SHELF ANGLE, CONNECTING THE WEB STIFFENERS OF THE N. BASCULE GIRDER OF THE E. LEAF, AT THE JUNCTION OF FIXED SIDEWALK AND BASCULE SIDEWALK IS AS SHOWN IN SECTION A-A AND PHOTO 1.
2. THE SHELF ANGLE INTERFERES WITH THE FIXED SIDEWALK ANGLE AT A LEAF OPENING OF APPROX. 50° AS SHOWN IN PHOTO 2, AND HENCE HAS TO BE REPLACED.
3. INSTALL NEW L4½x3x⅜ LONG LEG HORIZONTAL AND CONNECTIONS. AFTER INSTALLATION OF SHELF ANGLE, CONTRACTOR SHALL OPEN THE E. LEAF AND CHECK FOR INTERFERENCE OF NEW SHELF ANGLE AND CONNECTIONS, AND THE BOT. FLANGE OF THE BASCULE GIRDER WITH THE FIXED SIDEWALK.
4. THIS WORK SHALL BE ACCEPTABLE WHEN NO INTERFERENCE IS DETECTED AND FULL LEAF OPENING ANGLE IS RESTORED WITH ½" CLEARANCE MIN.
5. ALL WORK INVOLVING SHELF ANGLE REPLACEMENT AND CONNECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 615 OF THE STANDARD SPECIFICATIONS. PAID UNDER "ITEM 615006 STEEL STRUCTURE REPAIR."
6. ALL EXIST. AND NEW ANGLES AND CONNECTIONS SHALL BE PAINTED AFTER SHELF ANGLE REPLACEMENT USING THE THREE COAT SYSTEM. SEE DWG. SS-08 FOR CLEANING AND PAINTING NOTES.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-154 / DESIGNED BY: MR / CHECKED BY: AR	SAVANNAH ROAD BRIDGE SHELF ANGLE REMOVAL	SS-17 / SHEET NO. 100 / TOTAL SHTS. 180

8/2/2018
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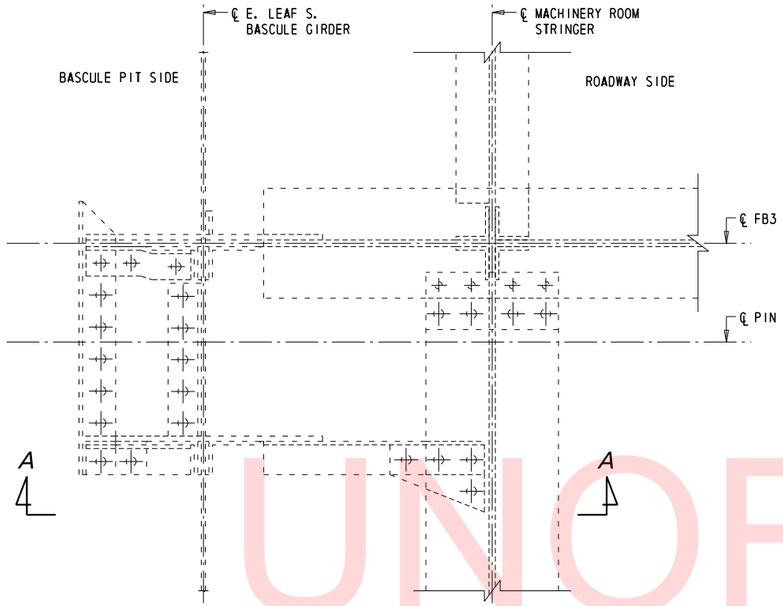


PLAN
1½" = 1'-0"

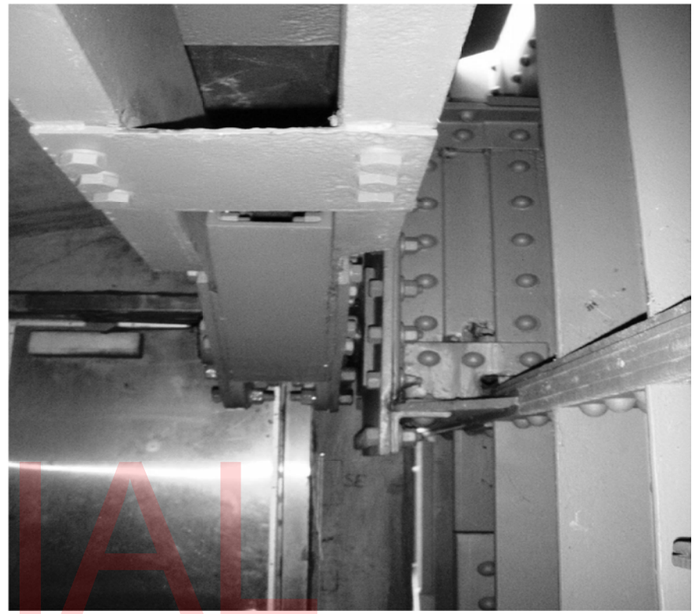
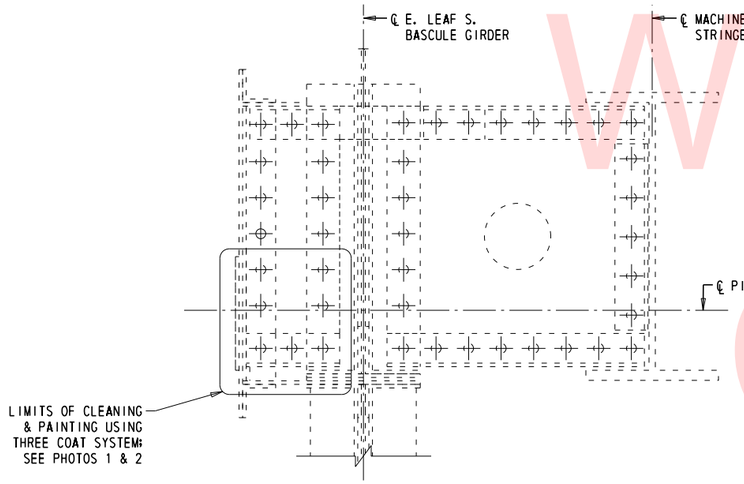


PHOTO 1
NOT TO SCALE



SECTION A-A
1½" = 1'-0"

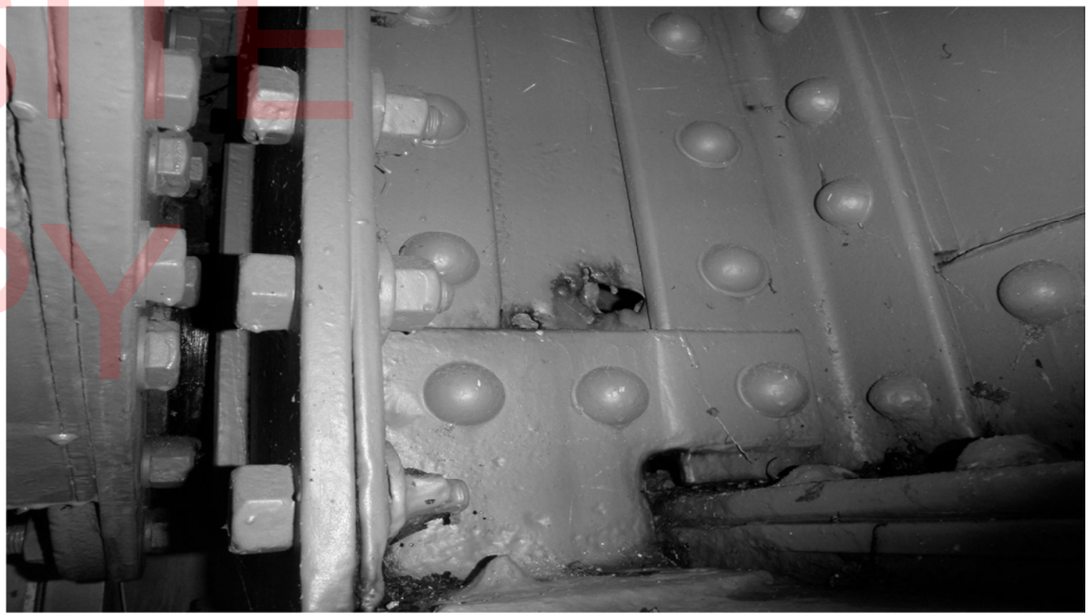


PHOTO 2
NOT TO SCALE

NOTES:

1. SEE DWG. SS-08 FOR CLEANING AND PAINTING NOTES.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	RACK AND PIN SUPPORT MODIFICATIONS
				COUNTY SUSSEX	DESIGNED BY: MR	SS-18
					CHECKED BY: AR	SHEET NO. 101
						TOTAL SHTS. 180

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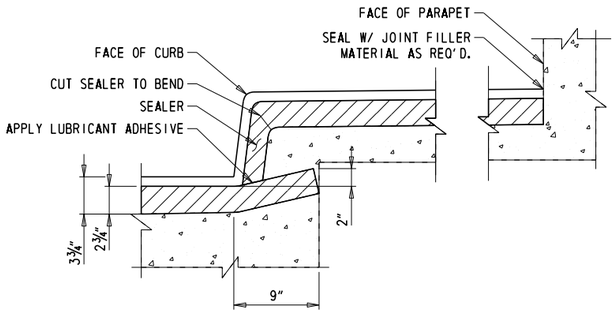
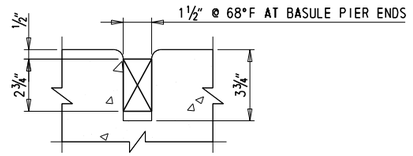


SECTION AT CURB & SIDEWALK

1½" = 1'-0"



TYPICAL CROSS SECTION

3" = 1'-0"

DETAIL OF PREFORMED ELASTIC JOINT SEALER

PHOTO 1

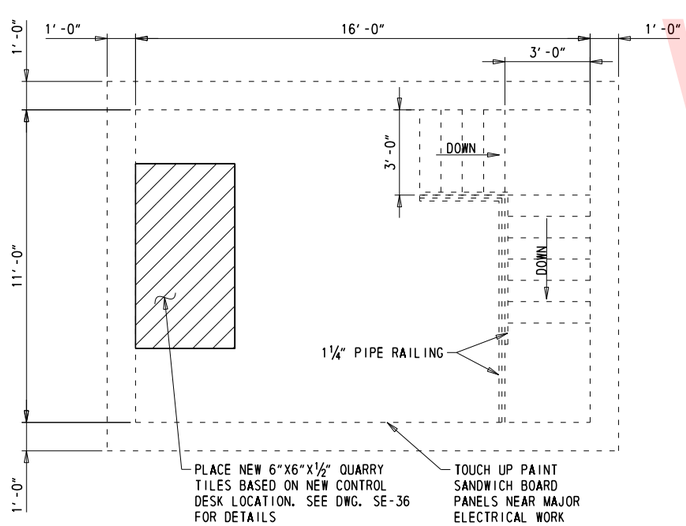
NOT TO SCALE

MISSING HANDRAIL POST BOLTS; SEE NOTE 1

PHOTO 2

NOT TO SCALE

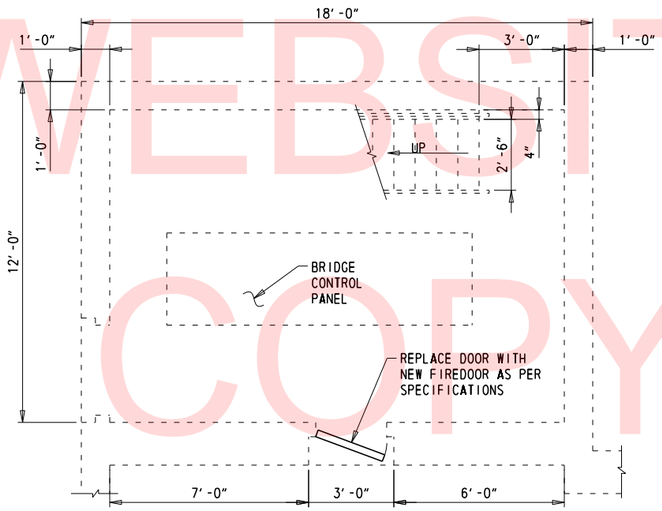
REPLACE EXIST. PROTECTIVE SHIELD; SEE NOTE 3



OPERATOR'S ROOM

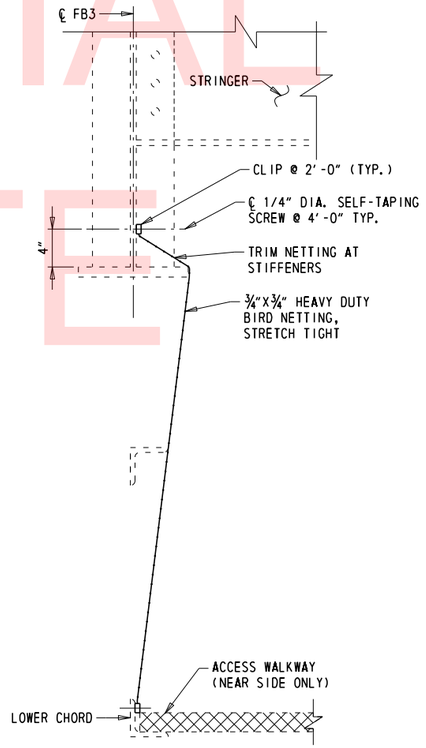
⅜" = 1'-0"

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



SWITCHBOARD ROOM

⅜" = 1'-0"



BIRD NETTING ELEVATION VIEW

1½" = 1'-0"

NOTES:

1. SOME OF THE HANDRAIL POSTS IN THE BASCULE SPAN ARE MISSING CONNECTION BOLTS AS SHOWN IN PHOTO 1. NEW ¾" 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."
2. 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."
3. THE EXIST. PROTECTIVE SHIELDS NEAR THE BASCULE PIER FB3 ON BOTH LEAFS AS SHOWN IN PHOTO 2, SHALL BE REPLACED WITH NEW INDUSTRIAL ¾" HEAVY DUTY BIRD NETTING OR APPROVED EQUAL. PAID UNDER "ITEM 763569 - BUILDING RENOVATIONS."
4. ALL WORK INVOLVING REPLACMENT 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."
5. 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 PROVISONS - BUILDING RENOVATION." PAID UNDER "ITEM 763569 - BUILDING RENOVATION."
6. AFTER REPLACING DAMAGED CEILING TILES, CONTRACTOR SHALL PAINT ALL CEILING TILES TO MATCH.
7. NEW SECURITY CAMERAS AND FIRE ALERT SYSTEM TO BE INSTALLED IN THE CONTROL HOUSE. SEE DWGS. SE-38 TO SE-41 FOR DETAILS.
8. APPROXIMATE SQUARE FOOTAGE OF CONTROL HOUSE INTERIOR LOCATIONS NEEDING TOUCH-UP PAINT = 120 SF.
9. APPROXIMATE SQUARE FOOTAGE OF FLOOR TILE REPLACEMENT = 25 SF.
10. APPROXIMATE SQUARE FOOTAGE OF CEILING TILE REPLACEMENT = 176 SF.

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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

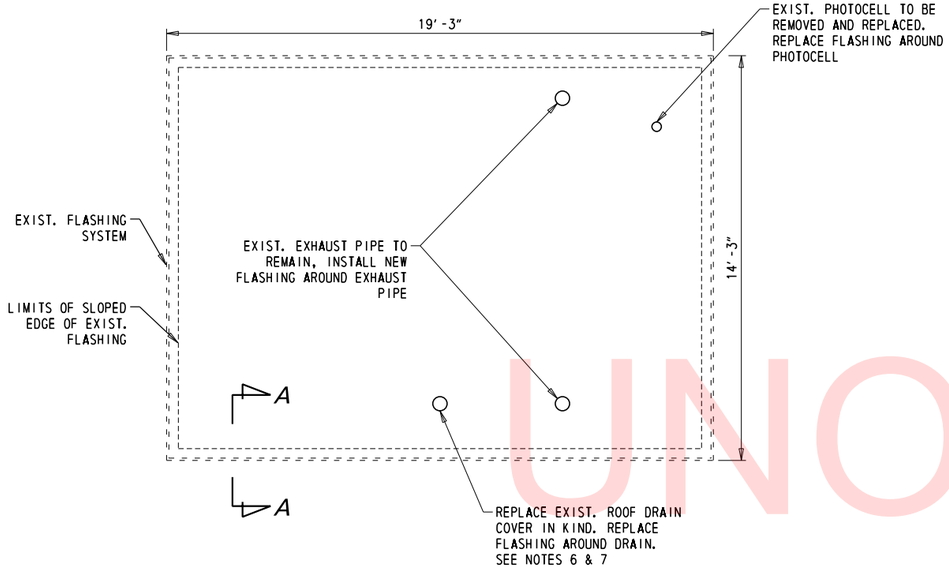
SCALE AS NOTED

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

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

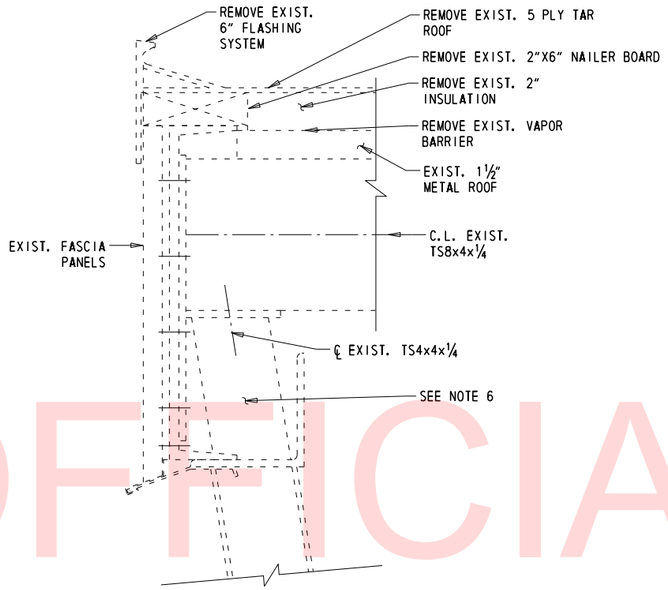
MISCELLANEOUS &
CONTROL HOUSE REPAIRS

SS-19	
SHEET NO.	102
TOTAL SHTS.	180

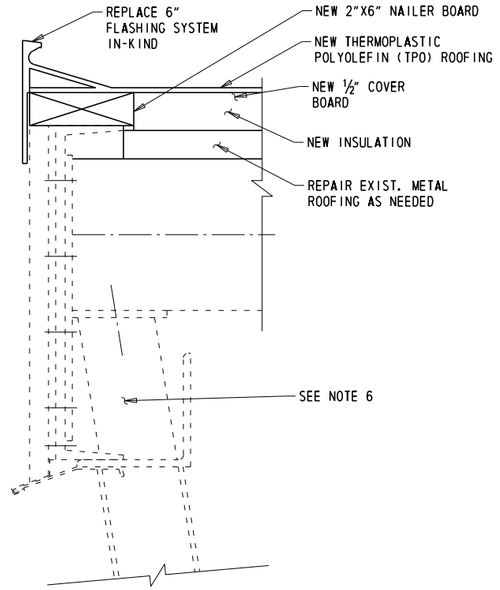


ROOF PENETRATION OUTLINE

3/8" = 1'-0"



EXISTING WALL TYPICAL SECTION



PROPOSED WALL TYPICAL SECTION

SECTION A-A

3" = 1'-0"

DEMOLITION SEQUENCE:

1. DEMOLISH TOP PORTIONS OF THE EXISTING MULTI-PLY BUILT-UP ROOF SYSTEM AS SHOWN.
2. INSPECT METAL ROOF DECK FOR DETERIORATION AND REPAIR.
3. DEMOLISH PORTIONS OF PERIMETER FLASHING AS SHOWN.

REPLACEMENT:

1. INSTALL NEW ROOF DRAIN.
2. INSTALL INSULATION, MECHNICALLY FASTENED TO METAL ROOF DECK.
3. INSTALL NEW COVER BOARDS.
4. INSTALL NEW ADHERED TPO ROOF MEMBRANE AND FLASHING.

NOTES:

1. ALL WORK INVOLVING REPLACEMENT OF THE ROOFING SYSTEM SHALL BE PERFORMED IN ACCORDANCE WITH "SPECIAL PROVISION 763512 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING AND 763513 - SHEET METAL FLASHING AND TRIM" AND PAID UNDER "ITEM 763569 - BUILDING RENOVATION."
2. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND ROOF PENETRATION LOCATIONS.
3. EXISTING ROOF DECK IS ASSUMED TO BE TYPE B GAUGE 22 GALVANIZED METAL DECK.
4. AFTER REMOVING EXISTING ROOFING THE CONTRACTOR SHALL INSPECT THE ROOF DECK FOR DETERIORATION. CONTRACTOR SHALL BRING ANY DETERIORATION TO THE ATTENTION OF DELDOT. REPAIR PROCEDURES FOR DETERIORATED DECKING SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
5. CONTRACTOR SHALL MATCH THE EXISTING ROOF SLOPE TO DRAIN.
6. CONTRACTOR SHALL INSPECT THE EXISTING STORM WATER DRAINAGE PIPING THAT RUNS INTO THE WINDOW COLUMNS IN THE CONTROL HOUSE. REPAIR PROCEDURES FOR DRAINAGE PIPING SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
7. CONTRACTOR SHALL INSTALL A NEW ROOF DRAIN WITH STRAINER TO MATCH EXISTING ROOF DRAIN SIZE. CONNECT ROOF DRAIN TO EXISTING STORM WATER DRAINAGE PIPING.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	ROOF REPLACEMENT	SS-20
				COUNTY SUSSEX	DESIGNED BY: BKS		SHEET NO. 103
					CHECKED BY: RAJ		TOTAL SHTS. 180

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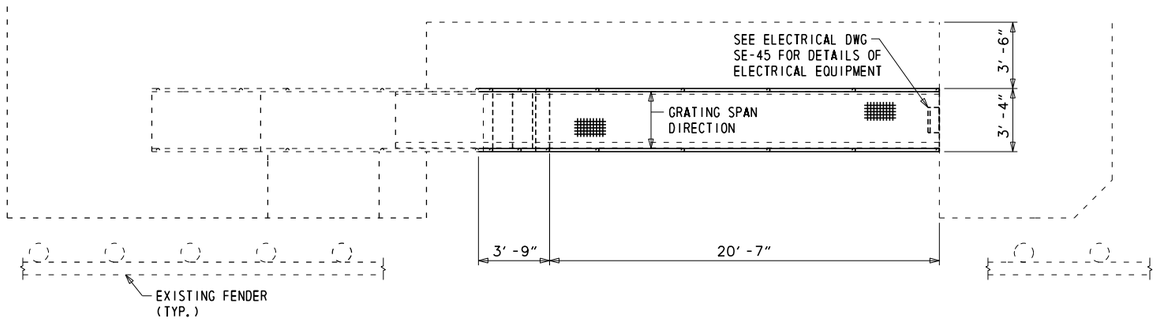
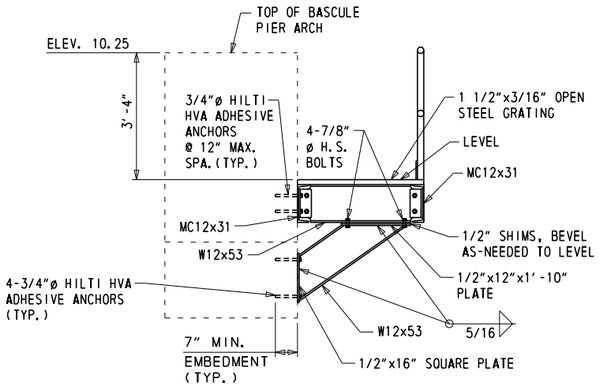


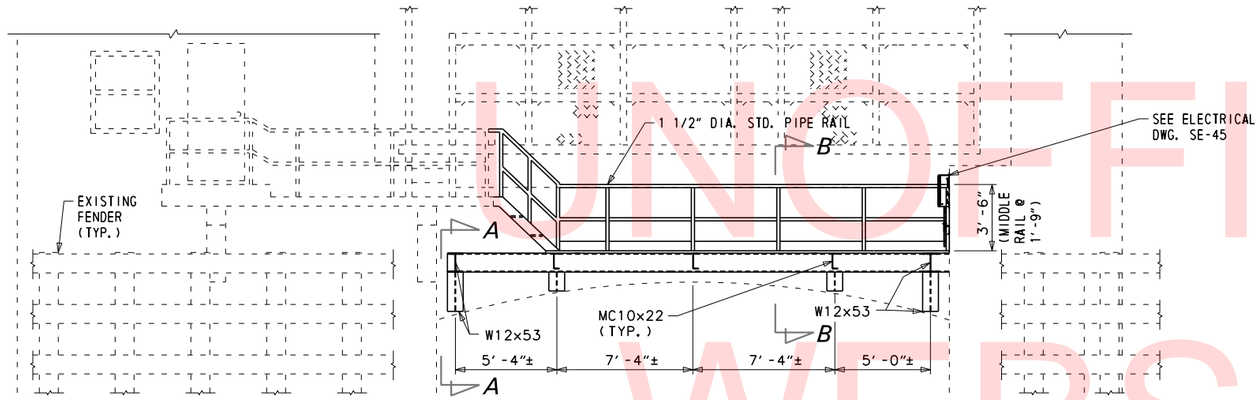
DROOP CABLE TERMINAL BOXES MOUNTING PLAN

(WEST PIER SHOWN, EAST SIMILAR)
SCALE: 1/4" = 1'-0"



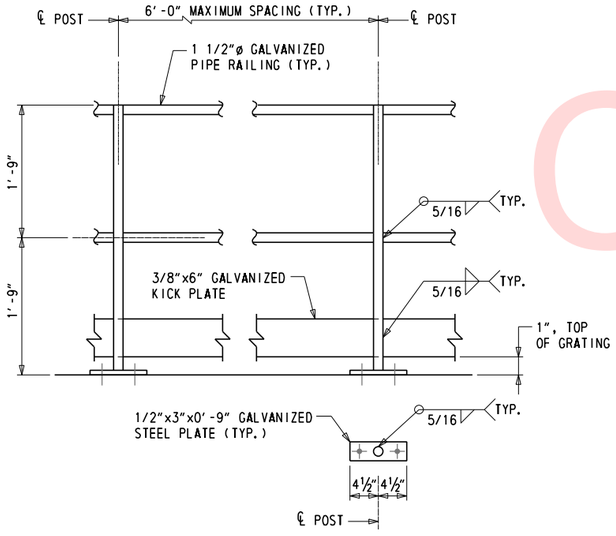
SECTION A-A

SCALE: 1/2" = 1'-0"



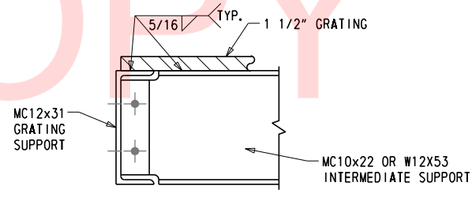
DROOP CABLE TERMINAL BOXES MOUNTING ELEVATION

(WEST PIER SHOWN, EAST SIMILAR)
SCALE: 1/4" = 1'-0"



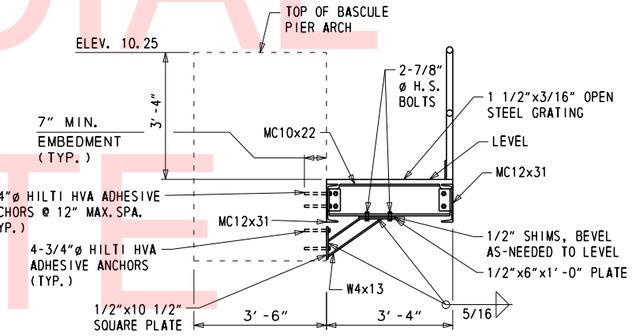
TYPICAL RAILING DETAIL

SCALE: 1" = 1'-0"



TYPICAL GRATING CONNECTION DETAIL

SCALE: 1½" = 1'-0"



SECTION B-B

SCALE: 1/2" = 1'-0"

GRATING NOTES:

1. THE GRATING SHALL BE WELDED BAR GRATING AND SHALL CONSIST OF 1 1/2"x3/16" BEARING BARS AT 1 3/16" MAXIMUM SPACING WITH 3/16" CROSS BAR AT 4" MAXIMUM SPACING.
2. STEEL FOR GRATING SHALL CONFORM TO ASTM A1011 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

NOTES:

1. STEEL FOR NEW PLATFORM SHALL CONFORM TO ASTM A709, GRADE 50 AND SHALL BE PAINTED. SEE GENERAL NOTES FOR SAVANNAH ROAD BRIDGE (SHEET GS-01).
2. ALL FASTENERS, UNLESS NOTED OTHERWISE, SHALL BE 7/8"ø ASTM A325, TYPE 1 H.S. BOLTS AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153, CLASS C.
3. ALL ANCHOR BOLTS SHALL BE ASTM F1554, GRADE 55 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM F2329.
4. PAYMENT WILL BE UNDER ITEM NO. 763569, BUILDING RENOVATION.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	NEW PLATFORM ON BASCULE PIER
				COUNTY SUSSEX	DESIGNED BY: DN	SS-21
					CHECKED BY: RAJ	SHEET NO. 104
						TOTAL SHTS. 180

8/2/2018
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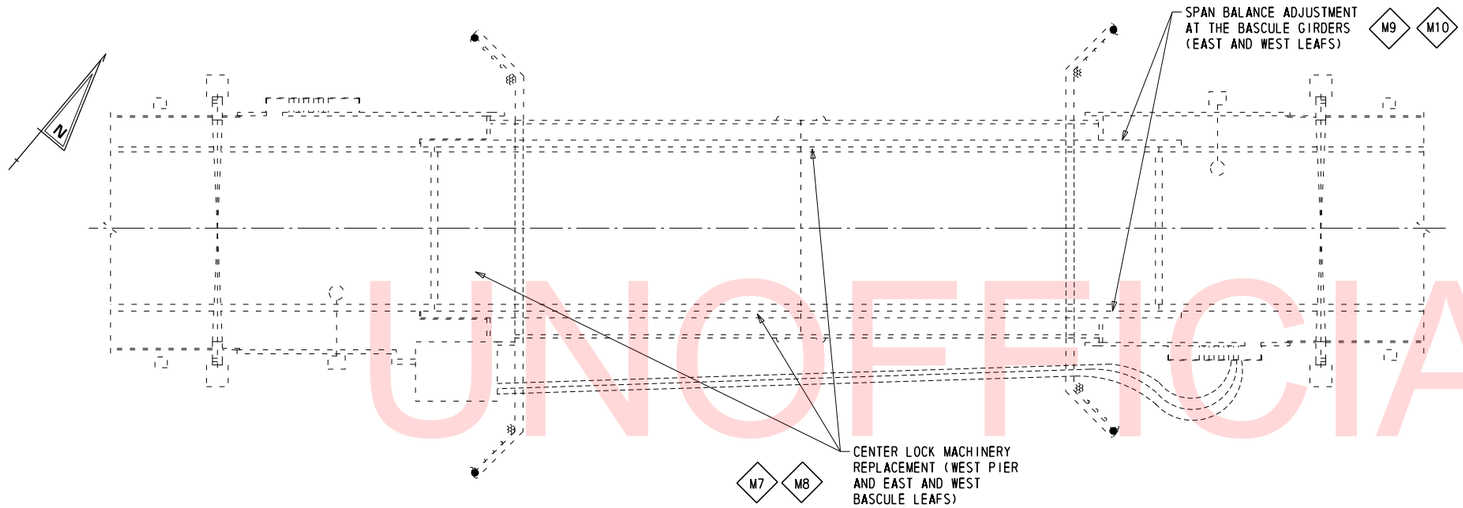
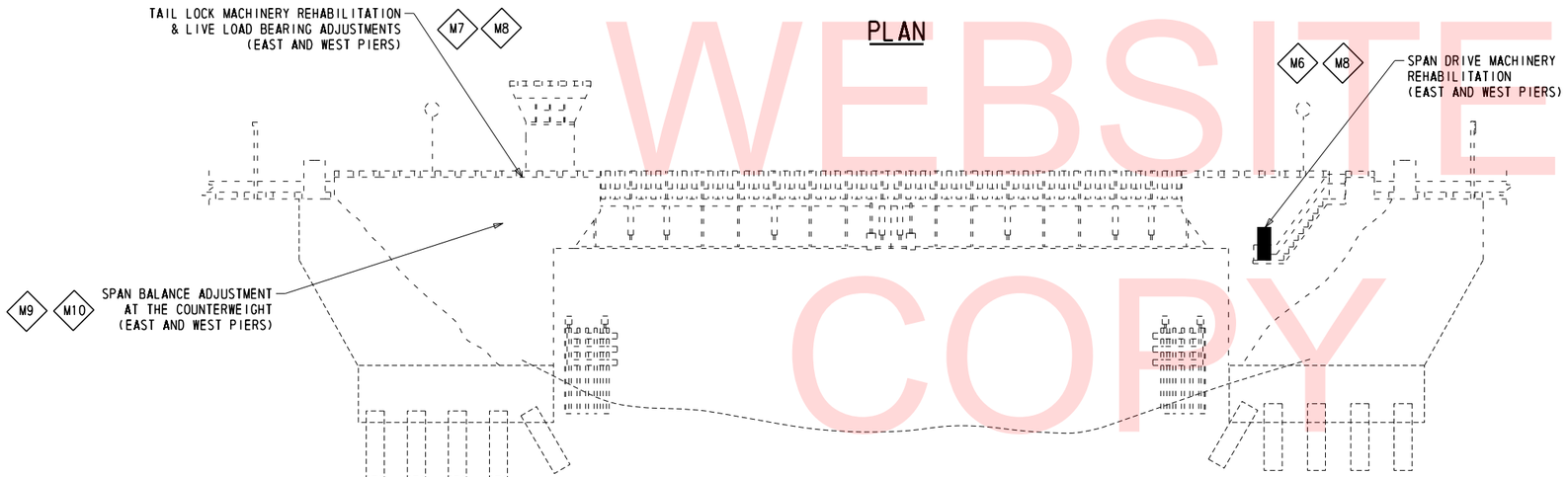


PLAN



SOUTH ELEVATION

SCOPE OF WORK:

M6 SPAN DRIVE MACHINERY REHABILITATION

A. REPLACE SPAN DRIVE MOTORS.
B. REPLACE MOTOR COUPLING HUB, GRID, SEALS, GASKETS, AND GREASE. INSTALL NEW MACHINERY GUARD.
C. REPLACE MOTOR AND MOTOR BRAKE SUPPORTS.
D. REPLACE MOTOR BRAKES AND BRAKEWHEELS.
E. REPLACE MACHINERY BRAKES.
F. REPLACE LOWER FLOATING SHAFT GASKETS AND GREASE.
G. INSTALL LOCK WASHERS ON DIFFERENTIAL BEVEL PINION FASTENERS.
H. REPLACE MISSING BEARING AND RETAINER PLATE FASTENERS.
I. REMOVE EXISTING GREASE AND LUBRICATE OPEN GEARING.
J. REPLACE EXISTING SPAN POSITION INSTRUMENTATION COMPONENTS WITH A NEW SPAN POSITION ROTARY CAM LIMIT SWITCH, RESOLVER, COUPLINGS, FLOATING SHAFT AND SUPPORT.
K. REPLACE TACHOMETER AND OVERSPEED SWITCH ASSEMBLY WITH A NEW SPEED SWITCH, SUPPORT, AND MACHINERY GUARD.
L. PERFORM FIELD TESTING OF MACHINERY COMPONENTS.

M7 CENTER LOCK MACHINERY REPLACEMENT AND REHABILITATION OF TAIL LOCKS

A. INSTALL NEW CENTER LOCK MACHINERY ACTUATORS, SUPPORTS, REAR GUIDES, FRONT GUIDES, RECEIVING SOCKETS, AND MACHINERY GUARDS.
B. REMOVE EXISTING CENTER LOCK MACHINERY.
C. REPLACE TAIL LOCK REDUCER INSPECTION HATCH GASKETS AND BREATHERS.
D. REPLACE EAST TAIL LOCK REDUCER SHAFT SEALS.
E. REPLACE TAIL LOCK REDUCER OIL.
F. SHIM THE TAIL LOCK STRIKE PLATES AND LIVE LOAD BEARINGS.
G. REPLACE THE TAIL LOCK MOTORS.
H. REPLACE THE TAIL LOCK MOTOR COUPLING HUB, GRID, SEALS, GASKETS, AND GREASE.
I. REPLACE THE TAIL LOCK ROTARY CAM LIMIT SWITCHES.
J. PERFORM FIELD TESTING OF MACHINERY COMPONENTS.

M8 MACHINERY PAINT

A. FURNISH PAINT FOR THE BRIDGE MACHINERY.
B. PREPARE THE EXISTING COMPONENTS SURFACES AFFECTED BY THE REHABILITATION SCOPE ITEMS AT THE SPAN DRIVE MACHINERY, TAIL LOCK MACHINERY, AND LIVE LOAD BEARINGS.
C. PREPARE NEW COMPONENT SURFACES AT THE SPAN DRIVE MACHINERY, CENTER LOCK MACHINERY, AND TAIL LOCK MACHINERY.
D. FIELD PAINT THE EXISTING COMPONENTS AFFECTED BY THE REHABILITATION SCOPE ITEMS AND NEW BRIDGE MACHINERY COMPONENTS FOR THE SPAN DRIVE MACHINERY, CENTER LOCK MACHINERY, TAIL LOCK MACHINERY, AND LIVE LOAD BEARINGS.

M9 STRAIN GAUGE BALANCE TESTING AND MAINTAINING SPAN BALANCE

A. PERFORM STRAIN GAUGE TESTING.
B. PREPARE BALANCE CALCULATIONS PRIOR TO AND DURING CONSTRUCTION.
C. DOCUMENT SPAN BALANCE PROCEDURE AND METHODS.
D. INSTALL BASCULE GIRDER BALANCE PLATE FASTENERS AND ADJUST BALANCE MATERIAL AT THE BASCULE GIRDERS, IN COUNTERWEIGHT POCKETS, AND WITHIN THE BASCULE PIER.
E. BALANCE BRIDGE THROUGHOUT CONSTRUCTION.

M10 BALANCE MATERIAL

A. FURNISH BALANCE PLATES FOR BALANCE ADJUSTMENTS

NOTES:

1. ALL WORK FOR BRIDGE MACHINERY SHALL BE PAID FOR UNDER ITEM 615503 - BRIDGE MECHANICAL SYSTEM. REFER TO SPECIAL PROVISIONS FOR ADDITIONAL SCOPE OF WORK ITEMS AND DETAILS.
2. REFER TO DWG. RM-1 FOR GENERAL MACHINERY NOTES.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	GENERAL PLAN AND ELEVATION MECHANICAL REHABILITATION	SM-1
				COUNTY SUSSEX	DESIGNED BY: DJM		SHEET NO. 105
					CHECKED BY: DTS		TOTAL SHTS. 180

8/9/2018
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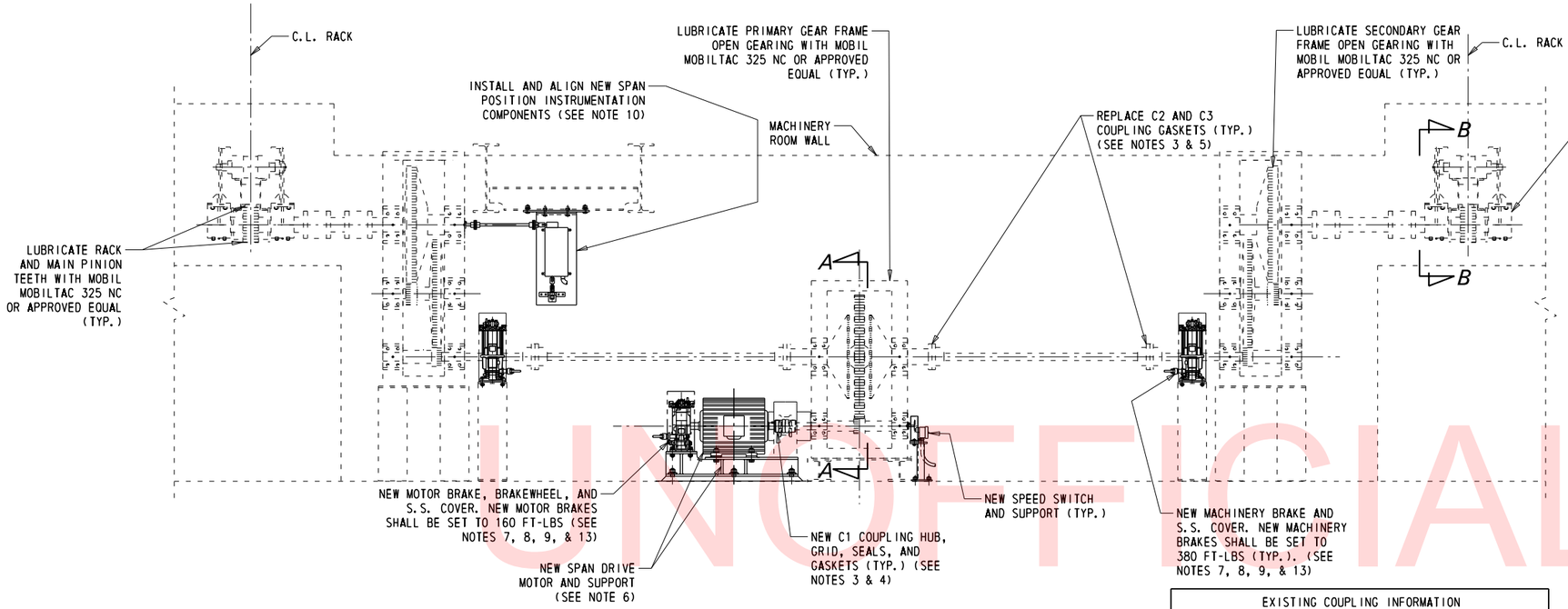


SPAN DRIVE MACHINERY - ELEVATION

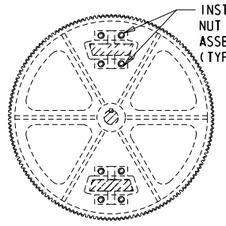
NOT TO SCALE

NOTES: EAST LEAF SPAN DRIVE MACHINERY SHOWN (FACING WEST)
SPAN DRIVE MACHINERY SYMMETRICAL ABOUT MIDSPAN

NOTES ON THE DRAWING ABOVE ARE TYPICAL OF BOTH LEAFS UNLESS NOTED OTHERWISE

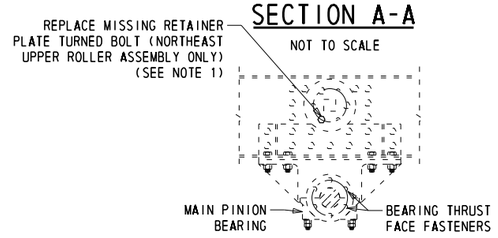
MANUAL OPERATION GEAR SETS, BAND BRAKE, AND OVERHEAD SUPPORTS (EXCEPT SPAN POSITION INSTRUMENTATION SUPPORTS) NOT SHOWN FOR CLARITY

EXISTING COUPLING INFORMATION		
COUPLING ID	COUPLING QTY. (PER LEAF)	MODEL
C1	1	FALK 1080T10
C2	2	FAST'S SIZE 2½
C3	2	



SECTION A-A

NOT TO SCALE

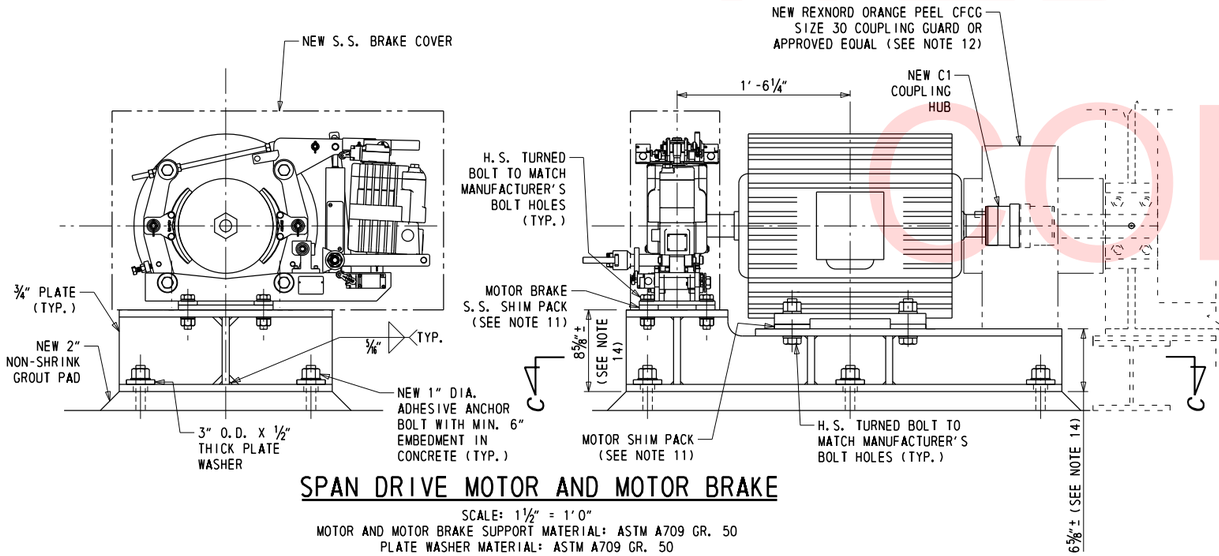


SECTION B-B

NOT TO SCALE

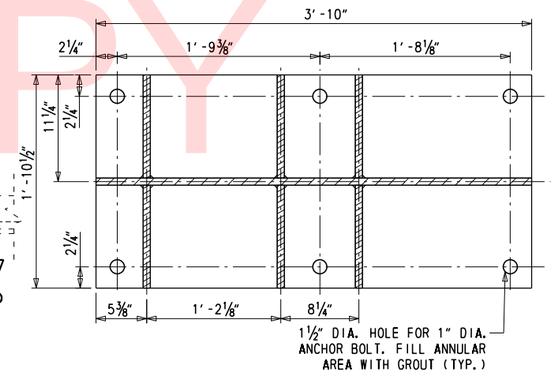
NOTES:

1. THE CONTRACTOR SHALL TEMPORARILY REMOVE ONE OF THE UPPER ROLLER RETAINER PLATE TURNED BOLTS FOR DIMENSION VERIFICATION, INCLUDING CLEARANCE BETWEEN THE BODY OF THE BOLT AND THE BOLT HOLE. NEW TURNED BOLT SHALL BE ASTM A449 OR APPROVED EQUAL.
2. THE CONTRACTOR SHALL TEMPORARILY REMOVE ONE OF THE NORTHEAST OUTBOARD BEARING THRUST FACE TURNED BOLTS FOR DIMENSION VERIFICATION INCLUDING CLEARANCE BETWEEN THE BODY OF THE BOLT AND THE BOLT HOLE. NEW TURNED BOLT SHALL BE ASTM A449 OR APPROVED EQUAL.
3. PRIOR TO DISASSEMBLING THE COUPLINGS, LOCK OUT THE MOTOR AND TEMPORARILY HAND RELEASE THE MOTOR BRAKE AND BOTH MACHINERY BRAKES TO REMOVE ANY RESIDUAL TORQUE WITHIN THE SPAN DRIVE MACHINERY. SET THE BRAKES AFTER THE RESIDUAL TORQUE HAS BEEN REMOVED.
4. AT THE C1 (MOTOR) COUPLING, REPLACE THE GRID, SEALS, GASKETS AND GREASE. THE C1 COUPLING SHALL BE LUBRICATED WITH FALK LONG TERM GREASE (LTG) OR APPROVED EQUAL.
5. AT COUPLINGS C2 AND C3, REPLACE THE GASKETS AND GREASE. THE C2 AND C3 COUPLINGS SHALL BE LUBRICATED WITH MOBIL MOBILUX EP-0 OR APPROVED EQUAL.
6. REFER TO SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR NEW SPAN DRIVE MOTOR DETAILS. THE NEW MOTOR SHALL BE INSTALLED WITH NEW TURNED BOLTS AND A NEW MOTOR COUPLING HUB TO MATCH THE EXISTING.
7. PRIOR TO REMOVING ANY OF THE EXISTING BRAKES OR DISASSEMBLING ANY OF THE SPAN DRIVE MACHINERY COUPLINGS, INSTALL WEDGED CHOCKS AT EACH OF THE SEGMENTAL GIRDERS TO HOLD THE LEAF IN THE SEATED POSITION. THE CONTRACTOR MAY SUBMIT ANOTHER METHOD TO HOLD THE LEAF IN THE SEATED POSITION TO THE ENGINEER FOR APPROVAL.
8. THE SPAN DRIVE MACHINERY SHALL NOT BE OPERATED UNLESS THE MOTOR BRAKE AND BOTH MACHINERY BRAKES ARE INSTALLED AND OPERATIONAL.
9. REFER TO SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR NEW BRAKE DETAILS. THE NEW BRAKES SHALL BE INSTALLED WITH S.S. BRAKE COVER. BRAKE COVER SHALL INCLUDE A HINGED LID. THE COVERS SHALL BE SPLIT VERTICALLY AT THE SHAFT CENTERLINE AND HAVE S.S. LATCHES TO CONNECT THE SECTION OF THE THE COVER. THE COVERS SHALL NOT INTERFERE WITH THE ELECTRICAL OR MANUAL OPERATION OF THE BRKES, COUPLINGS, MOTOR, OR OTHER ADJACENT COMPONENTS. PROVIDE ¼" RADIAL CLEARANCE BETWEEN THE COVERS AND SHAFTS. THE COVERS SHALL INCLUDE HANDLES FOR REMOVAL AND INSTALLATION.
10. REFER TO SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR SPEED SWITCH, ROTARY CAM LIMIT SWITCH, AND POSITION RESOLVER DETAILS.
11. EACH MOTOR SHIM PACK AND MOTOR BRAKE SHIM PACK SHALL INCLUDE THE FOLLOWING SHIMS: ½", ¼", ⅛", 1/16", ½", AND 2 X 1/64".
12. MAXIMUM CLEARANCE BETWEEN EACH END OF THE COUPLING GUARD AND MOTOR / GEAR FRAME SHALL BE ¼".
13. CONTRACTOR TO PROVIDE AND INSTALL SUPPORTS AS NEEDED TO SECURE THE MOTOR BRAKE AND MACHINERY COVERS. NEW SUPPORTS SHALL NOT RESTRICT ACCESS TO OR INTERFER WITH THE OPERATION OF ADJACENT COMPONENTS INCLUDING BUT NOT LIMITED TO THE BRAKES AND MOTORS.
14. CONTRACTOR TO FIELD VERIFY SUPPORT HEIGHT REQUIRED TO ALLOW FOR PROPER ALIGNMENT OF NEW MOTOR AND MOTOR BRAKE.



SPAN DRIVE MOTOR AND MOTOR BRAKE

SCALE: 1½" = 1'0"
MOTOR AND MOTOR BRAKE SUPPORT MATERIAL: ASTM A709 GR. 50
PLATE WASHER MATERIAL: ASTM A709 GR. 50



SECTION C-C

SCALE: 1½" = 1'0"

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-154 / DESIGNED BY: DJM / CHECKED BY: DTS	SPAN DRIVE MACHINERY REHABILITATION	SM-2 / SHEET NO. 106 / TOTAL SHTS. 180

8/9/2018
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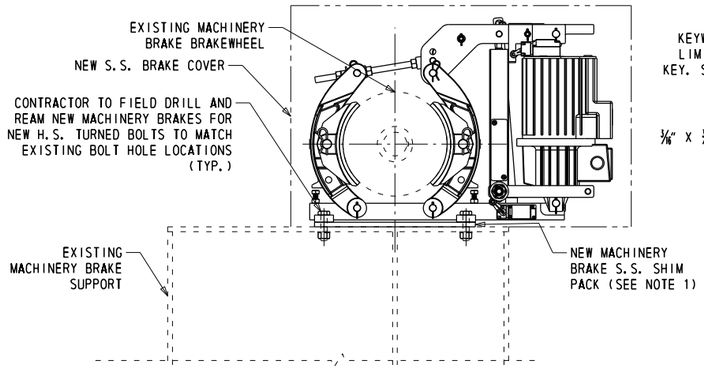
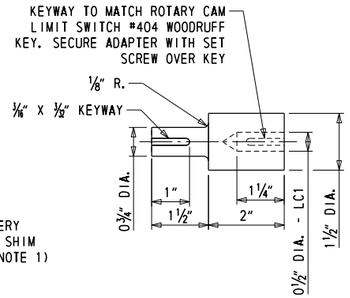


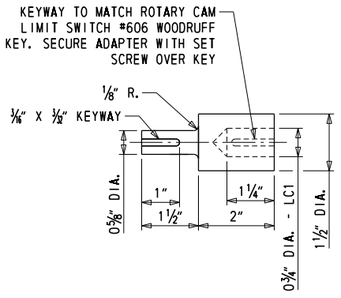
SPAN DRIVE MACHINERY BRAKE - DETAIL

1½" = 1'0"



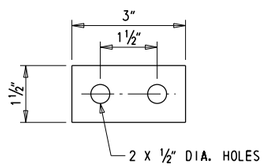
ROTARY CAM LIMIT SWITCH INPUT SHAFT ADAPTER

6" = 1'0"
QTY: 1
MATERIAL: ASTM A668 CL. D



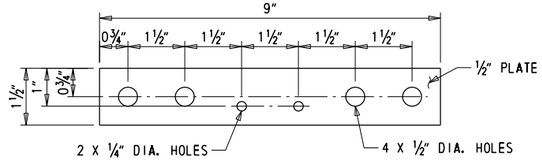
ROTARY CAM LIMIT SWITCH OUTPUT SHAFT ADAPTER

6" = 1'0"
QTY: 1
MATERIAL: ASTM A668 CL. D



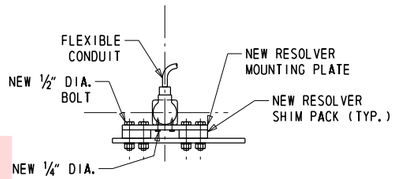
RESOLVER SHIMS

6" = 1'0"
QTY: 2
NOTE: EACH RESOLVER SHIM PACK SHALL INCLUDE SHIMS OF THE FOLLOWING THICKNESSES - ¾", ½", ¼", ⅛", 1/16", ½", 2 X ⅛"



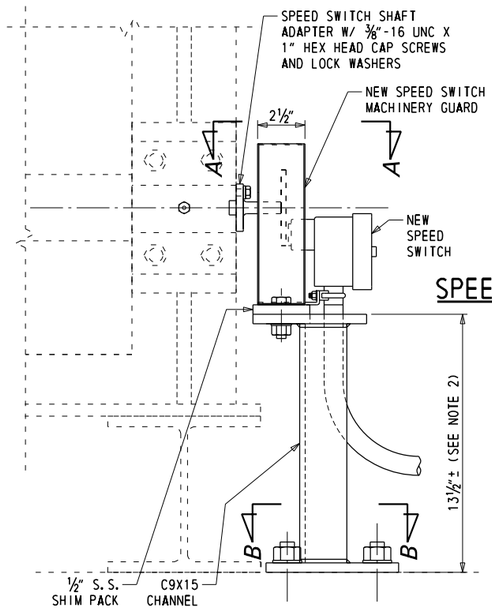
RESOLVER MOUNTING PLATE

6" = 1'0"
QTY: 1
MATERIAL: ASTM A36



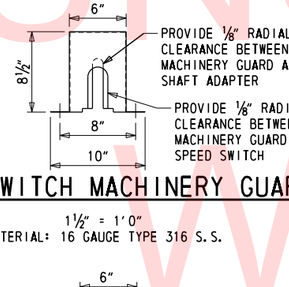
VIEW C-C

1½" = 1'0"



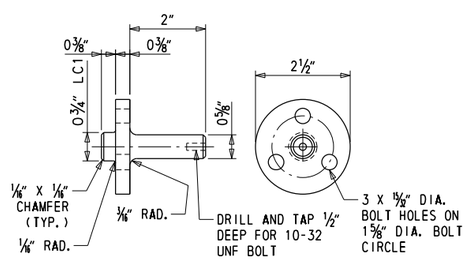
SPEED SWITCH - ELEVATION

3" = 1'0"
SPEED SWITCH SUPPORT MATERIAL: ASTM A709 GR. 50



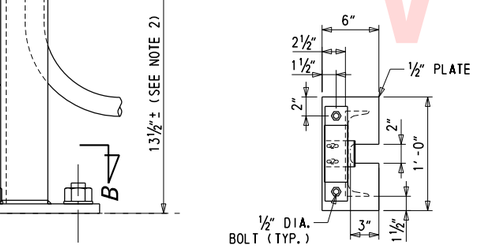
SPEED SWITCH MACHINERY GUARD

1½" = 1'0"
MATERIAL: 16 GAUGE TYPE 316 S.S.



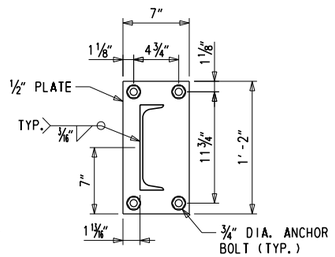
SPEED SWITCH SHAFT ADAPTER

6" = 1'0"
MATERIAL: ASTM A668 CL. D



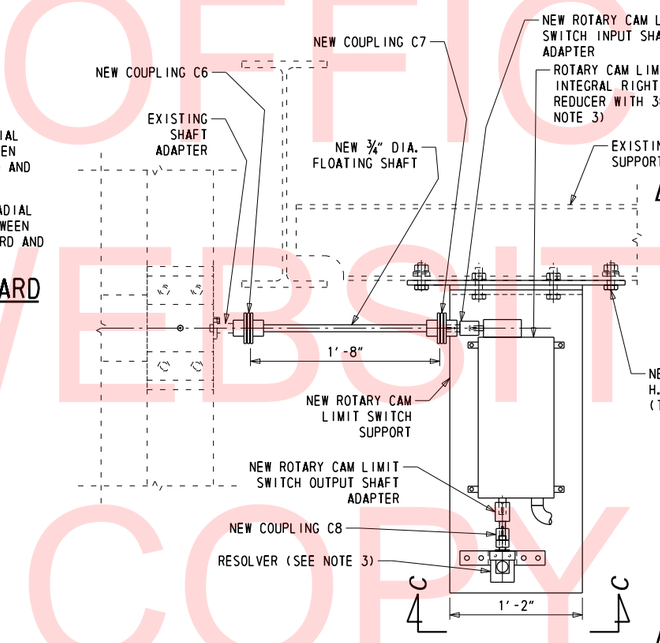
VIEW A-A

1½" = 1'0"
NOTE: SPEED SWITCH NOT SHOWN FOR CLARITY



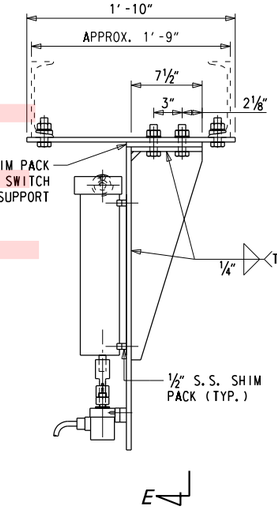
VIEW B-B

1½" = 1'0"



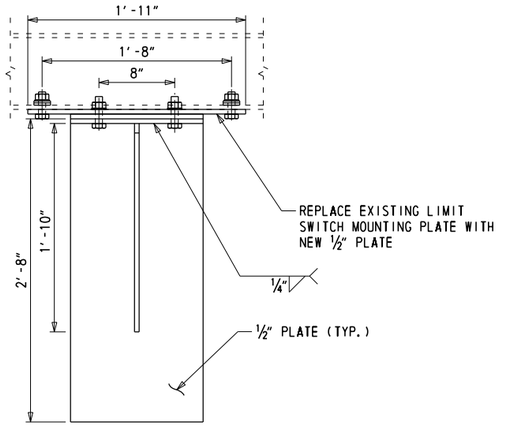
SPAN POSITION ROTARY CAM LIMIT SWITCH DETAIL

1½" = 1'0"
FLOATING SHAFT MATERIAL: ASTM A668 CL. D
ROTARY CAM LIMIT SWITCH SUPPORT AND MOUNTING PLATE MATERIAL: ASTM A709 GR. 50



VIEW D-D

1½" = 1'0"



VIEW E-E

1½" = 1'0"

NEW SPAN DRIVE MACHINERY COUPLINGS											
ID	QTY PER LEAF	MANUFACTURER	SIZE	TYPE	TORQUE RATING (IN.-LB.)	DRIVING HALF		DRIVEN HALF			
						NOMINAL BORE (IN.)	KEY (IN. X IN.)	R = RIGID F = FLEX	KEY (IN. X IN.)	NOMINAL BORE (IN.)	
C6	1	REXNORD	SN 100	THOMAS DISC	820	** - LC1	**	R	R	⅛" x ⅛"	¾ - LC1
C7	1	REXNORD	SN 100	THOMAS DISC	820	¾ - LC1	⅛" x ⅛"	R	R	•	• - LC1
C8	1	LOVEJOY	L070	JAW W/ SOX INSERT	43.2	⅝ - LC1	⅛ X ⅛	R	R	•	• - LC1

• - SIZE TO MATCH COMMERCIAL COMPONENT
** - SIZE TO MATCH EXISTING COMPONENT. CONTRACTOR TO FIELD VERIFY.

NOTES:

1. EACH MACHINERY BRAKE SHIM PACK SHALL INCLUDE THE FOLLOWING SHIMS: ½", ¼", ⅛", ⅛", ½", AND 2 X ⅛".
2. CONTRACTOR TO FIELD VERIFY SUPPORT HEIGHT REQUIRED TO ALLOW FOR PROPER ALIGNMENT OF SPEED SWITCH.
3. REFER TO SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR SPEED SWITCH, ROTARY CAM LIMIT SWITCH, AND POSITION RESOLVER DETAILS.

8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE AS NOTED

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

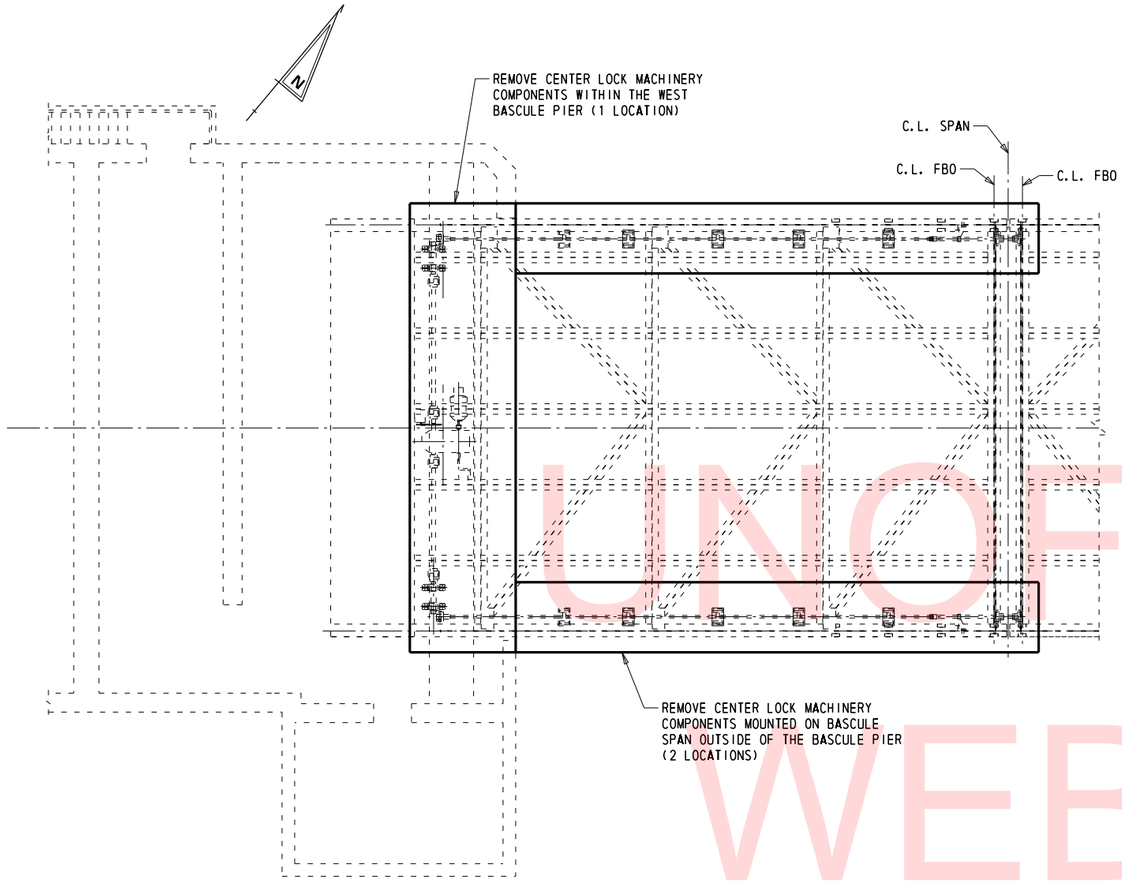
CONTRACT	BRIDGE NO.	3-154
T201507602	DESIGNED BY: DJM	
COUNTY	CHECKED BY: DTS	
SUSSEX		

SPAN DRIVE MACHINERY REHABILITATION DETAILS

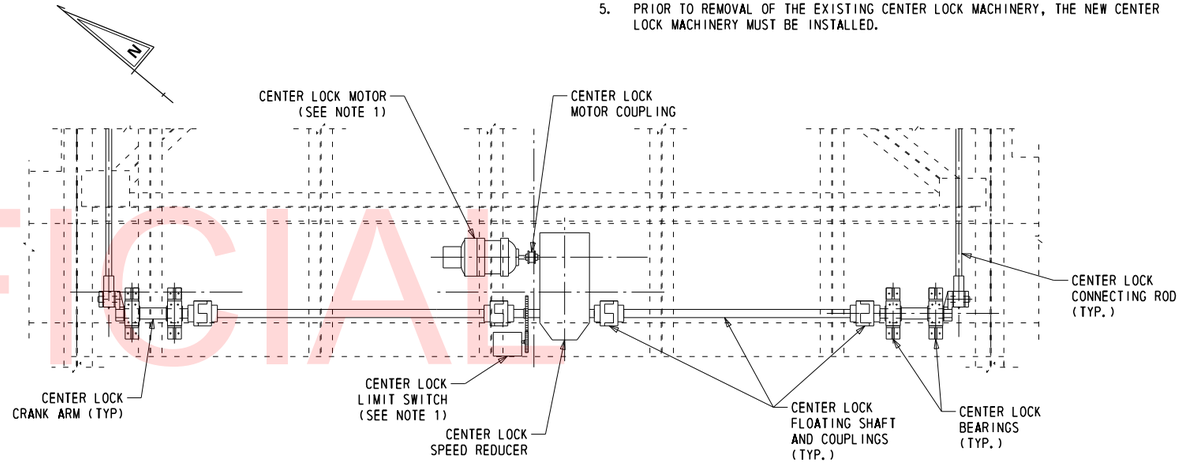
SM-3
SHEET NO. 107
TOTAL SHTS. 180

DEMOLITION NOTES

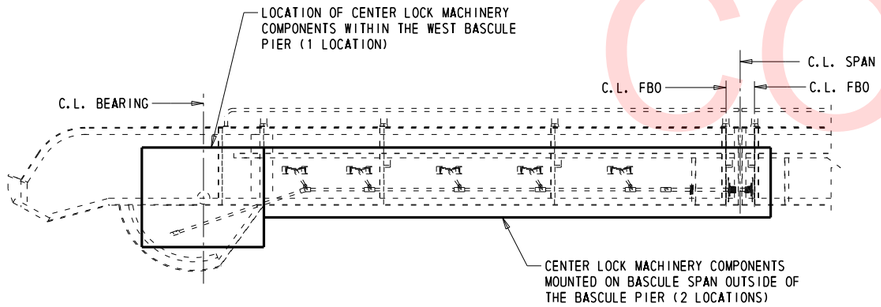
1. ELECTRICALLY DISCONNECT THE CENTER LOCK MOTOR AND LIMIT SWITCH.
2. REMOVE AND DISCARD THE CENTER LOCK MACHINERY MOUNTED TO THE WEST BASCULE LEAF WITHIN THE BASCULE PIER. THE MACHINERY INCLUDES BEARINGS, COUPLINGS, SHAFTS, SPEED REDUCER, MOTOR, CRANK ARMS, CONNECTING RODS, LIMIT SWITCH, AND OPEN GEARING.
3. REMOVE AND DISCARD THE CENTER LOCK MACHINERY MOUNTED TO THE WEST BASCULE LEAF. THE MACHINERY INCLUDES THE LINKAGE ARMS, CONNECTING RODS, BEARINGS, LOCK BARS, FRONT GUIDES, REAR GUIDES, AND LUBRICATION LINES.
4. REMOVE AND DISCARD THE RECEIVING SOCKETS MOUNTED TO FLOORBEAM 0 (FB0) ON THE EAST LEAF. REMOVE AND DISCARD THE RECEIVING SOCKET LUBRICATION LINES.
5. PRIOR TO REMOVAL OF THE EXISTING CENTER LOCK MACHINERY, THE NEW CENTER LOCK MACHINERY MUST BE INSTALLED.



EXISTING CENTER LOCK MACHINERY - PLAN

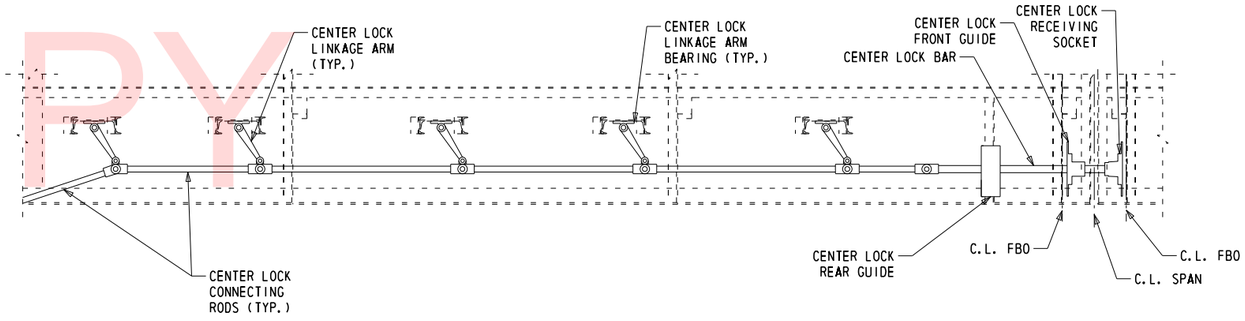


EXISTING CENTER LOCK MACHINERY WITHIN BASCULE PIER DETAIL



EXISTING CENTER LOCK MACHINERY - ELEVATION

NOTE: CENTER LOCK MACHINERY WITHIN THE BASCULE PIER NOT SHOWN FOR CLARITY



EXISTING CENTER LOCK MACHINERY OUTSIDE OF BASCULE PIER DETAIL

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	EXISTING CENTER LOCK MACHINERY – DEMOLITION	SM-4
				COUNTY SUSSEX	DESIGNED BY: DJM		SHEET NO. 108
					CHECKED BY: DTS		TOTAL SHTS. 180

8/2/2018
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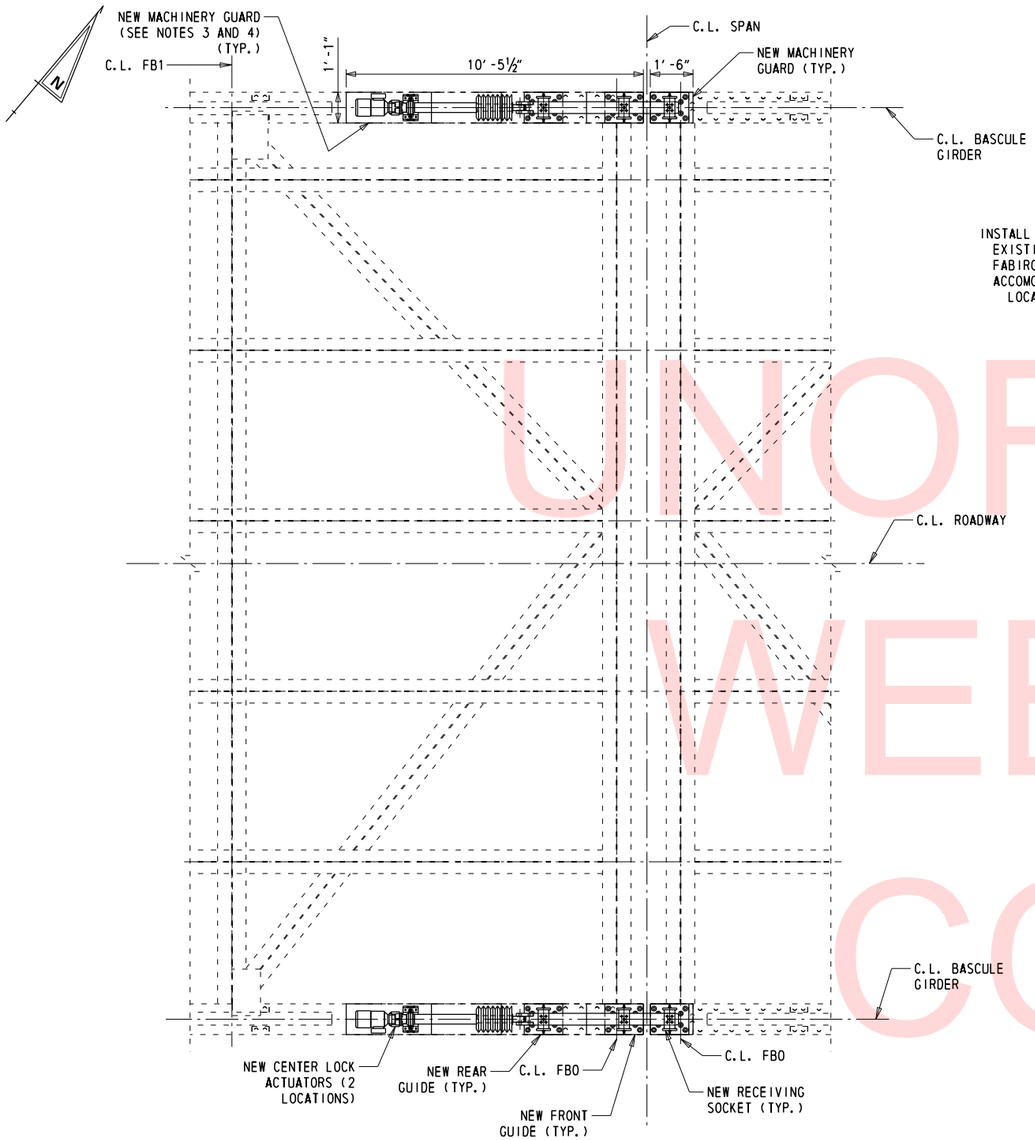
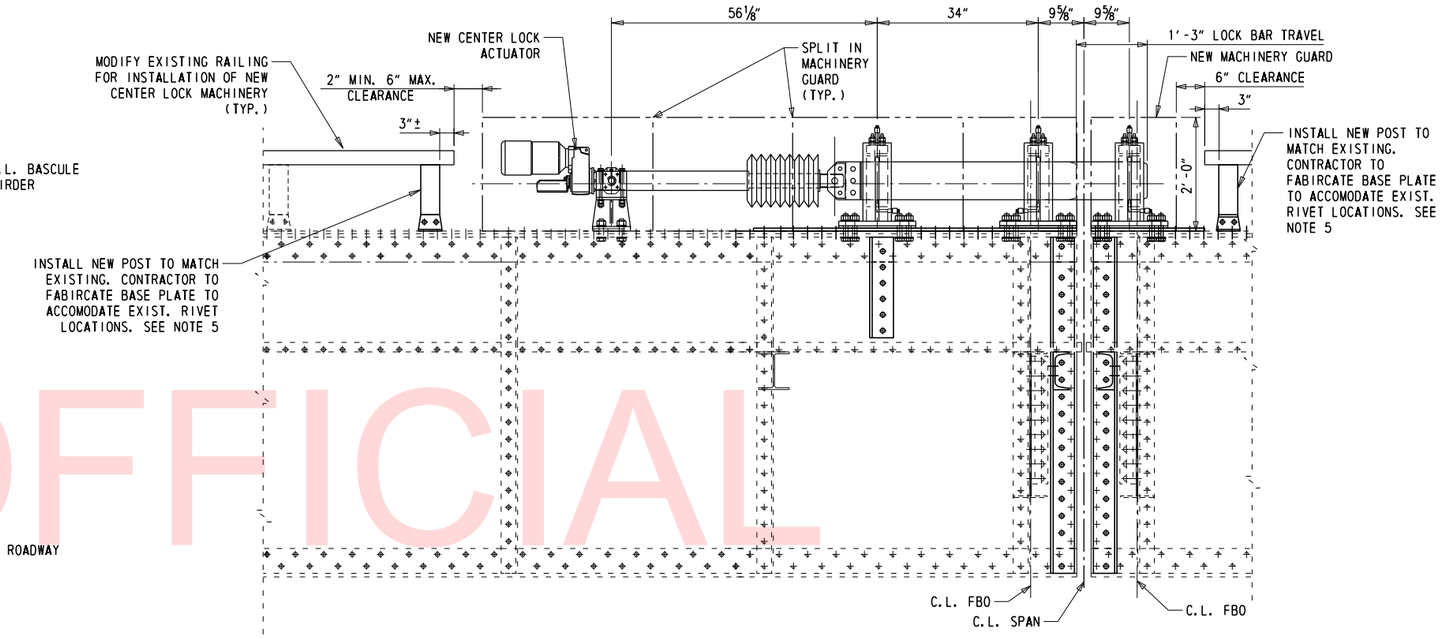


CENTER LOCK MACHINERY - PLAN

⅜" = 1'-0"



CENTER LOCK MACHINERY - ELEVATION

¾" = 1'-0"

CENTER LOCK MACHINERY				
MATERIALS LIST				
PART	QUANTITY	MATERIAL	DESIGNATION	NOTES
REAR GUIDE SHOES	4	MANG. BRONZE	ASTM B22 UNS NO. 86300	
FRONT GUIDE SHOES	4	MANG. BRONZE	ASTM B22 UNS NO. 86300	
RECEIVING SOCKET SHOES	4	MANG. BRONZE	ASTM B22 UNS NO. 86300	
LOCK BAR	2	FORGED ALLOY STEEL	ASTM A668 CLASS M	
GUIDE & SOCKET WELDMENTS	6	STRUCTURAL STEEL	ASTM A709 GRADE 50	
MACHINERY GUARDS	2	STAINLESS STEEL	ASTM A240 TYPE 316	16 GAUGE
SIDE PLATE	4	FORGED ALLOY STEEL	ASTM A668 CLASS K	
KEEPER PLATE	4	STRUCTURAL STEEL	ASTM A709 GRADE 50	
LOCK BAR PIN	2	FORGED ALLOY STEEL	ASTM A668 CLASS K	
ACTUATOR SUPPORT WELDMENT	2	STRUCTURAL STEEL	ASTM A709 GRADE 50	
BEARING END PLATE	4	STRUCTURAL STEEL	ASTM A709 GRADE 50	

NOTES:

1. REFER TO DWG. SS-11 FOR BASCULE GIRDER MODIFICATION DETAILS.
2. REFER TO DWGS. SM-6 & SM-7 FOR SPAN LOCK COMPONENT DETAILS.
3. THE CENTER LOCK MACHINERY GUARD SHALL BE SPLIT INTO SEGMENTS TO PERMIT REMOVAL FOR MAINTENANCE. THE COVER SHOULD INCLUDE HANDLES (NOT SHOWN) TO ASSIST WITH REMOVAL. THE COVER AND SUPPORTS SHALL NOT PROTRUDE INTO THE ROADWAY OR SIDEWALK AREAS. PROVIDE CONDUIT OPENINGS IN THE THE BRAKE COVER FOR CONDUIT AS NEEDED.
4. THE CONTRACTOR SHALL PROVIDE SUPPORTS AS NEEDED TO SECURE THE MACHINERY GUARD SEGMENTS TO THE BASCULE GIRDER. THE SUPPORTS MAY NOT PROTRUDE INTO THE ROADWAY OR SIDEWALK AREAS. WELDING SUPPORTS TO THE BASCULE GIRDER IS NOT PERMITTED. THE SUPPORTS SHALL NOT INTERFERE WITH THE OPERATION OF THE CENTER LOCK MACHINERY.
5. EXISTING POSTS MAY BE MODIFIED AND REUSED AS APPROVED BY THE ENGINEER. ALL WORK INVOLVING THE REMOVAL AND REPLACEMENT OF THE RAILING POSTS SHALL BE PAID UNDER "ITEM 615006 - STEEL STRUCTURAL REPAIR."

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

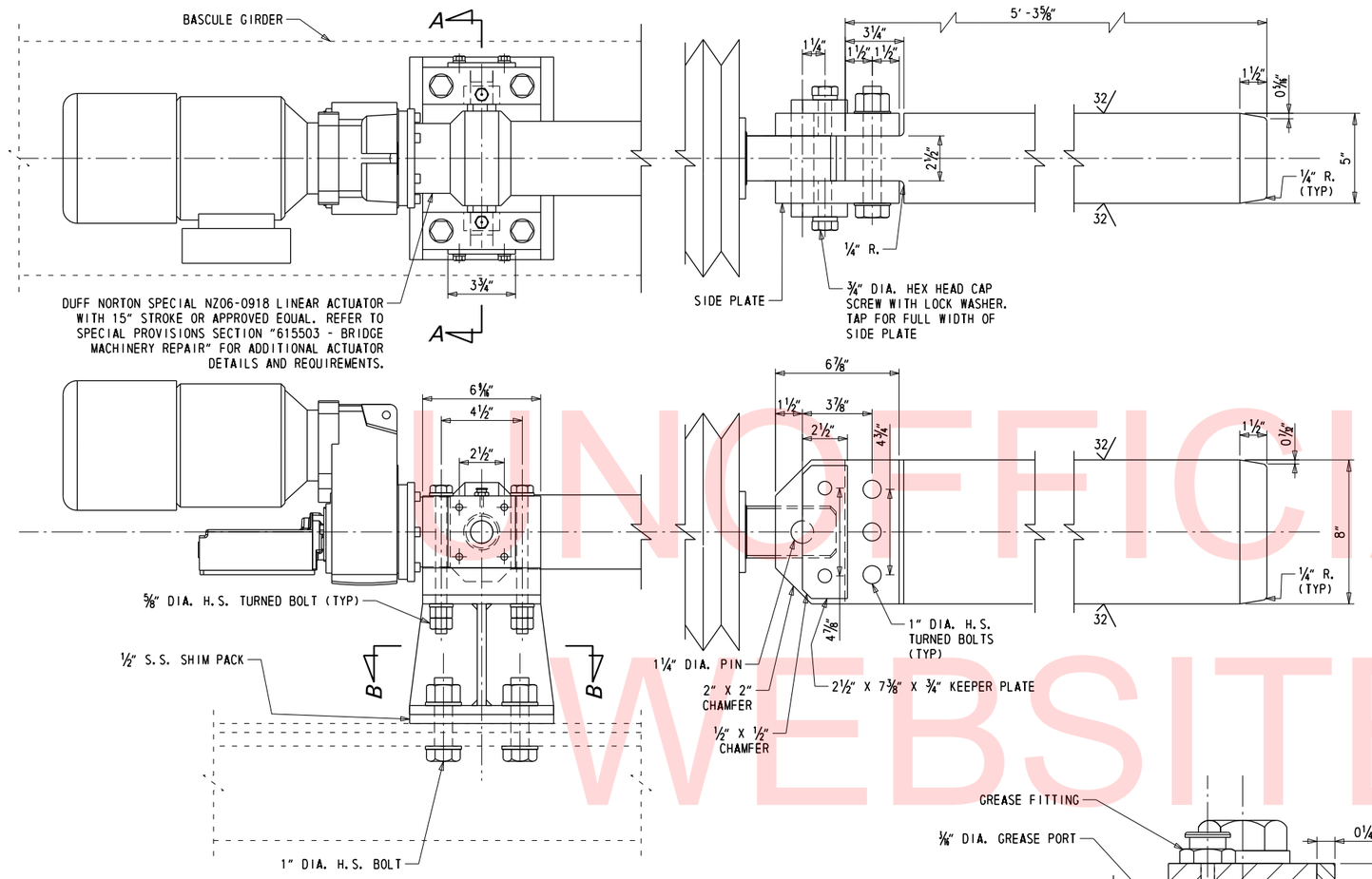
SCALE AS NOTED

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

CONTRACT	BRIDGE NO. 3-154
T201507602	DESIGNED BY: DJM
COUNTY	CHECKED BY: DTS
SUSSEX	

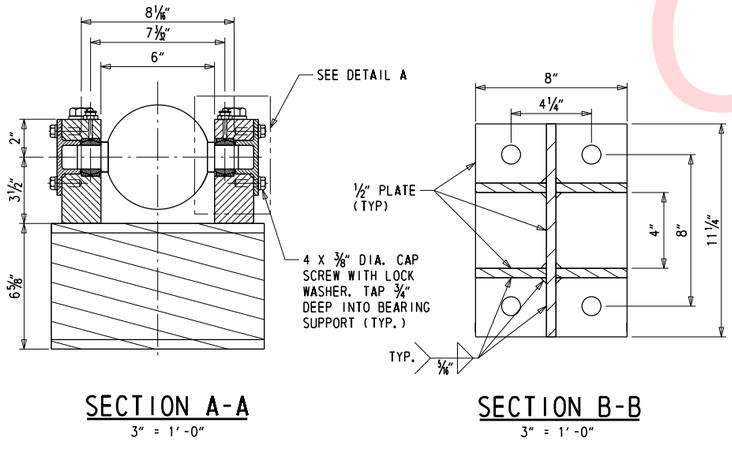
CENTER LOCK MACHINERY - PROPOSED

SM-5
SHEET NO.
109
TOTAL SHTS.
180



LOCK BAR DETAILS - PLAN AND ELEVATION

3" = 1'-0"

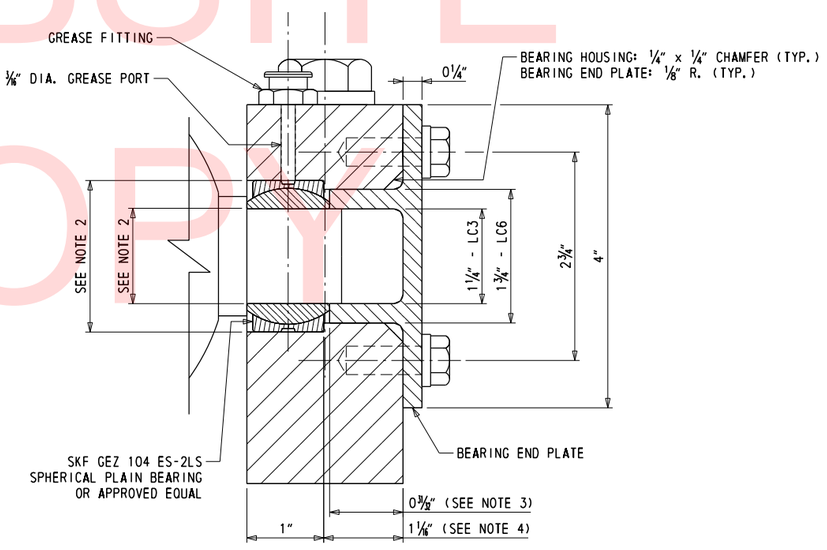


SECTION A-A

3" = 1'-0"

SECTION B-B

3" = 1'-0"



DETAIL A

FULL SIZE

NOTES:

1. REFER TO DWG. SM-5 FOR CENTER LOCK MACHINERY MATERIALS LIST.
2. COMPONENTS SHALL HAVE THE FIT SPECIFIED BY THE BEARING MANUFACTURER.
3. PROVIDE 0.003" TO 0.006" CLEARANCE BETWEEN BEARING AND BEARING END PLATE.
4. PROVIDE 0.006" TO 0.010" CLEARANCE BETWEEN BEARING AND LIP OF BEARING HOUSING.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	CENTER LOCK MACHINERY DETAILS I	SM-6
				COUNTY SUSSEX	DESIGNED BY: DJM		SHEET NO. 110
					CHECKED BY: DTS		TOTAL SHTS. 180

8/9/2018
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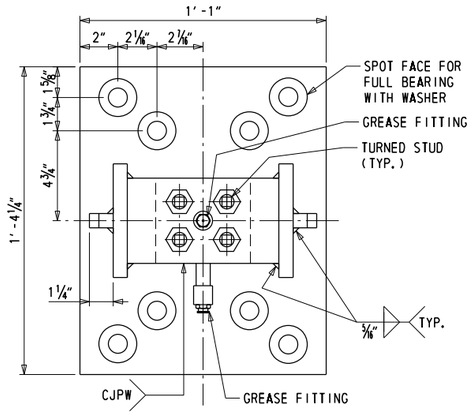
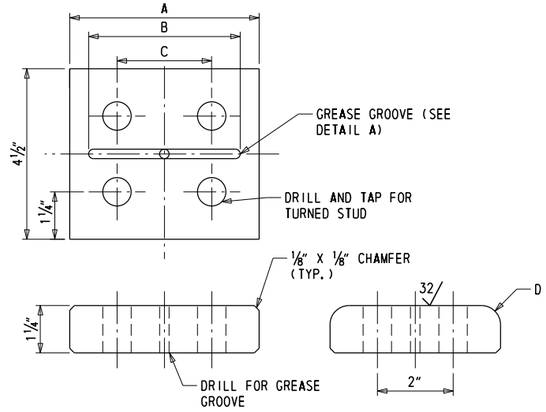
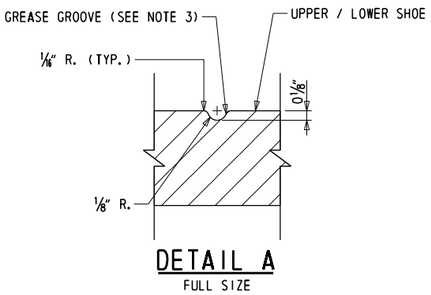




UPPER SHOE DETAIL

6" = 1'-0"

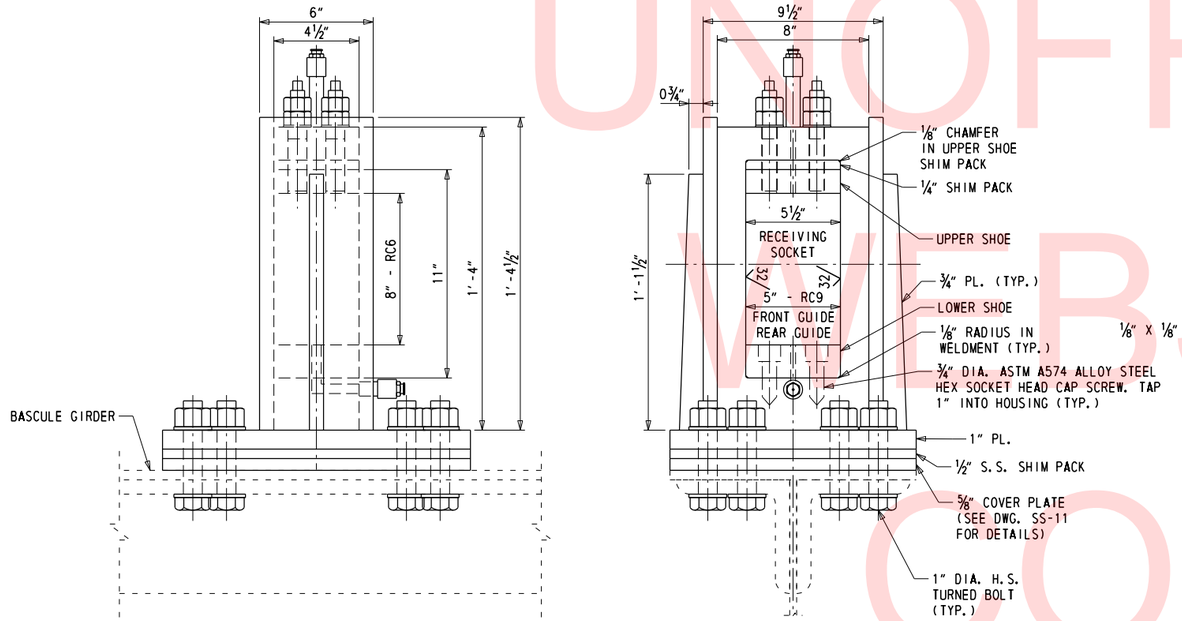


DETAIL A

FULL SIZE

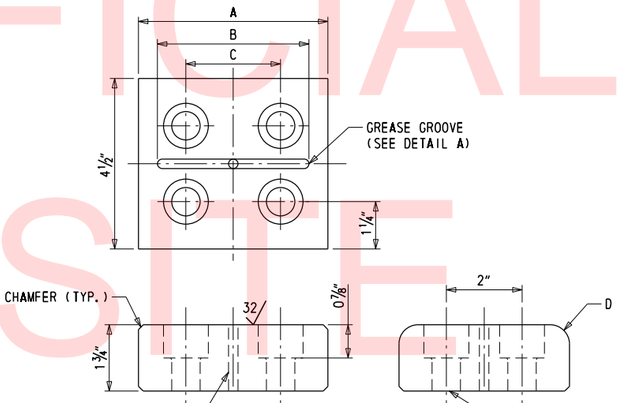
NOTES:

1. THE GUIDE AND SOCKET WELDMENTS SHALL HAVE 3/16" FILLET WELDS ALL AROUND UNLESS OTHERWISE NOTED.
2. REFER TO DWG. SM-5 FOR CENTER LOCK MACHINERY MATERIALS LIST.
3. ALL GREASE GROOVES SHALL BE 1/4" WIDE AND 1/8" DEEP WITH ALL CORNERS AND ENDS ROUNDED TO 1/16" RADIUS.
4. ALL GUIDE AND RECEIVING SOCKET SAFETY WIRE SHALL BE STAINLESS STEEL WITH A MINIMUM DIAMETER OF 0.042" AND FILL A MINIMUM OF 75% OF THE HOLE DRILLED INTO THE SQUARE END OF THE STUDS. SAFETY WIRE SHALL BE INSTALLED AFTER FINAL SHIMMING OF THE CENTER LOCKS AND IN A MANNER THAT WILL PREVENT THE TENDENCY OF THE STUDS TO LOOSEN.



GUIDE & SOCKET WELDMENT DETAIL

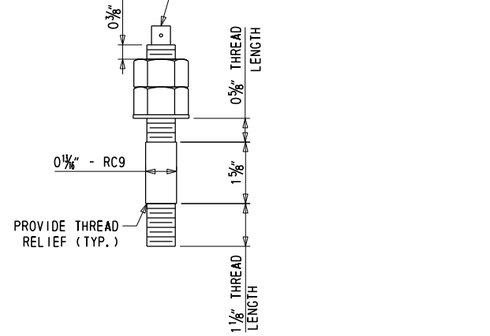
3" = 1'-0"



LOWER SHOE DETAIL

6" = 1'-0"

CENTER LOCK SHOE DIMENSIONS				
LOCATION	A	B	C	D
FRONT AND REAR GUIDE	5" - LC1	4"	2 1/2"	1/4" R.
RECEIVING SOCKET	5 1/2" - LC1	4 1/2"	3"	1/2" R.



GUIDE & SOCKET TURNED STUD

6" = 1'-0"
MATERIAL: ASTM A449

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	CENTER LOCK MACHINERY DETAILS 2
				COUNTY SUSSEX	DESIGNED BY: DJM	SM-7 / SHEET NO. 111 / TOTAL SHTS. 180
					CHECKED BY: DTS	

8/2018
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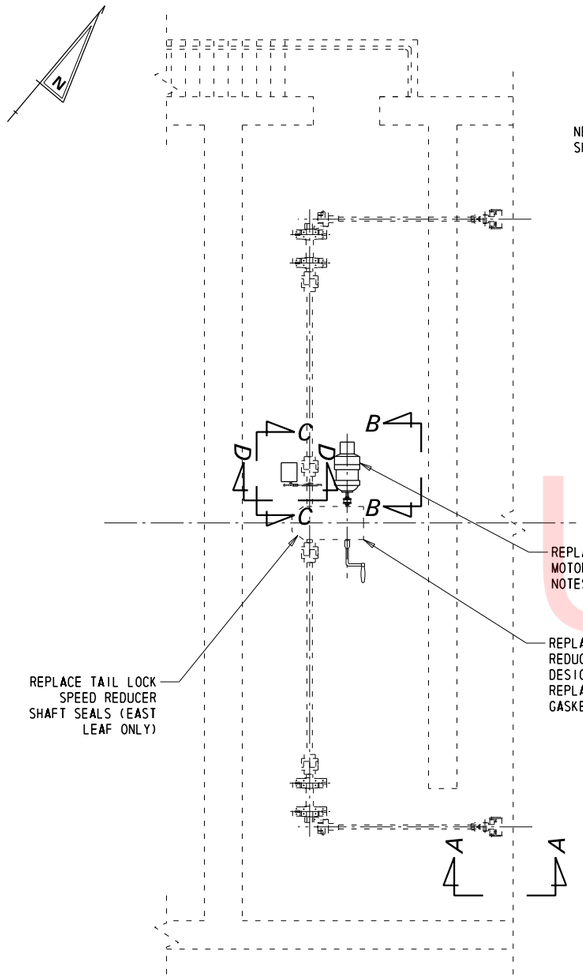
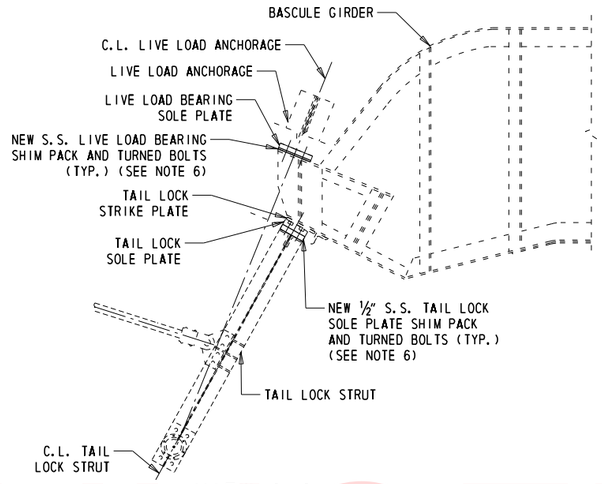


TAIL LOCK MACHINERY - PLAN

NOT TO SCALE
NOTES: WEST TAIL LOCK MACHINERY SHOWN,
EAST TAIL LOCK MACHINERY SYMMETRICAL ABOUT MIDSPAN

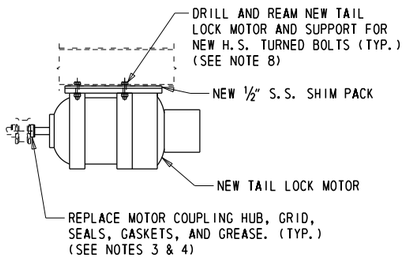
SPAN DRIVE MACHINERY NOT SHOWN FOR CLARITY

NOTES SHOWN ARE TYPICAL OF EACH LEAF UNLESS NOTED OTHERWISE



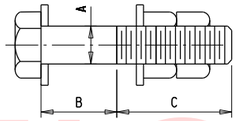
VIEW A-A

NOT TO SCALE



VIEW B-B

NOT TO SCALE

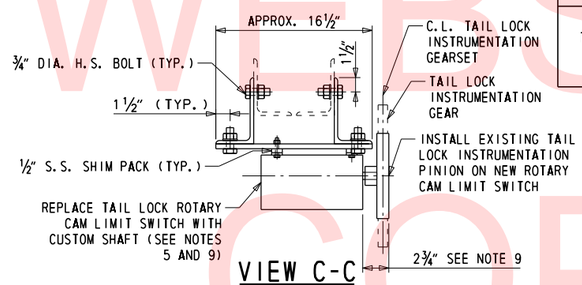


TURNED BOLT DIMENSIONS					
COMPONENT	QTY	A (SEE NOTE 6)	B	C	THREADS
LIVE LOAD BEARING SOLE PLATE	16	15⁄16"	CONTRACTOR TO FIELD VERIFY	2"	7⁄8-9 UNC
TAIL LOCK STRUT SOLE PLATE	16	1 1⁄16"	CONTRACTOR TO FIELD VERIFY	2"	1-8 UNC

TURNED BOLTS

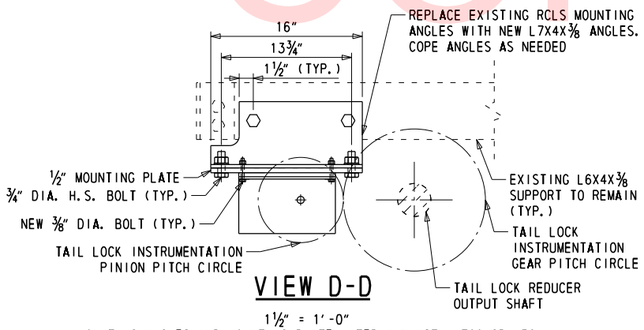
NOT TO SCALE
MATERIAL: ASTM A449
NOTE: EACH NEW TURNED BOLT SHALL BE INSTALLED WITH 2 WASHERS AND 2 NUTS

EXISTING REDUCER INFORMATION		
REDUCER ID	REDUCER QTY.	MODEL
TAIL LOCK REDUCER	2	EARLE GEAR MODEL NO. 5T RATIO 160:1 SERIAL NO. 4459



VIEW C-C

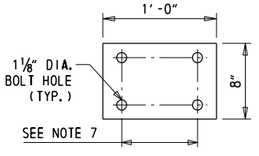
1½" = 1'-0"



VIEW D-D

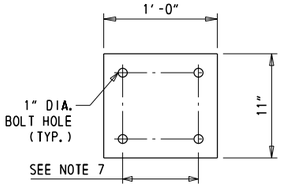
1½" = 1'-0"

MOUNTING ANGLES AND MOUNTING PLATE MATERIAL: ASTM A709 GR. 50



TAIL LOCK SOLE PLATE SHIMS

1½" = 1'-0"
QTY: 4



LIVE LOAD BEARING SHIMS

1½" = 1'-0"
QTY: 4

SUGGESTED PROCEDURE FOR SHIMMING THE LIVE LOAD BEARINGS, TAIL LOCK STRUTS, AND CENTER LOCKS:

1. PRIOR TO SHIMMING THE LIVE LOAD BEARINGS AND TAIL LOCK STRUTS, THE CONTRACTOR SHALL FIELD VERIFY BOLT DIMENSIONS AND BOLT SPACING FOR THE FABRICATION OF THE NEW TURNED BOLTS AND SHIMS.
2. SHIMMING OF THE LIVE LOAD BEARINGS, TAIL LOCK STRUTS, AND CENTER LOCKS SHALL BE PERFORMED AFTER THE NEW CENTER LOCK MACHINERY IS INSTALLED, THE EXISTING CENTER LOCK MACHINERY IS REMOVED, AND ALL STRUCTURAL AND ELECTRICAL WORK ON THE BASCULE SPANS IS COMPLETED.
3. VERIFY THAT THERE ARE NO VEHICLES OR MATERIALS ON THE LEAFS DURING SHIMMING OF THE LIVE LOAD BEARINGS, TAIL LOCKS, AND CENTER LOCKS.
4. TEMPORARILY REMOVE THE LIVE LOAD BEARING SOLE PLATES AND SHIMS.
5. SEAT THE LEAF UNTIL THE DECK JOINTS AT THE HEEL AND TOE OF THE LEAFS ARE ALIGNED WITHIN ⅛" AT THE CROWN OF THE ROADWAY. MEASURE THE LIVE LOAD BEARING LOCATION CLEARANCE BETWEEN THE BASCULE GIRDERS AND LIVE LOAD BEARING ANCHORAGES TO DETERMINE THE AMOUNT OF SHIMS NEEDED FOR THE LIVE LOAD BEARINGS TO BE IN HARD CONTACT.
6. PARTIALLY RAISE THE LEAFS AND REINSTALL THE LIVE LOAD BEARING SOLE PLATE AND SHIMS (AS NEEDED) WITH UNDERSIZED BOLTS.
7. LOWER THE LEAFS UNTIL THE LIVE LOAD BEARINGS ARE IN HARD CONTACT. VERIFY THE DECK JOINTS ARE PROPERLY ALIGNED. ADJUST SHIMS AS NEEDED UNTIL THE JOINTS ARE PROPERLY ALIGNED WHEN THE LIVE LOAD BEARINGS ARE IN HARD CONTACT. ADJUST THE FULLY SEATED LIMIT SWITCHES TO STOP THE LEAFS WHEN IN THE NEW SEATED POSITION.
8. REMOVE THE TAIL LOCK SOLE PLATES.
9. WITH THE LEAF JOINTS ALIGNED AND THE LIVE LOAD BEARINGS IN HARD CONTACT, DRIVE THE TAIL LOCKS AND MEASURE THE CLEARANCE BETWEEN THE TOP OF THE TAIL LOCK STRUT AND THE TAIL LOCK STRIKE PLATE TO DETERMINE THE AMOUNT OF SHIMS NEEDED TO PROVIDE ⅛" CLEARANCE BETWEEN THE SOLE PLATE AND STRIKE PLATE.
10. PULL THE TAIL LOCK STRUTS AND INSTALL THE SHIMS (AS NEEDED) WITH UNDERSIZED BOLTS.
11. DRIVE THE TAIL LOCK STRUTS. MEASURE THE CLEARANCE BETWEEN THE TAIL LOCK SOLE PLATES AND STRIKE PLATES. ADJUST SHIMS AS NEEDED.
12. WITH THE LIVE LOAD BEARINGS IN HARD CONTACT AND THE TAIL LOCKS DRIVEN, DRIVE THE NEW CENTER LOCKS AND MEASURE THE RECEIVING SOCKET CLEARANCE AT THE TOP AND BOTTOM SIDE OF EACH LOCK BAR.
13. ADJUST SHIMS AT THE CENTER LOCK RECEIVING SOCKETS. THE TOTAL CLEARANCE (TOP AND BOTTOM) AT THE RECEIVING SOCKET SHALL EQUAL AN ANSI RC6 CLEARANCE. WHEN THE LOCK BAR IS DRIVEN, IT SHALL NOT BE IN CONTACT WITH THE TOP OR BOTTOM SHOES AT THE RECEIVING SOCKETS.
14. PERFORM A BRIDGE OPERATION. UPON SEATING THE LEAFS, VERIFY THE CONTACT/CLEARANCES AT THE LIVE LOAD BEARINGS, TAIL LOCK STRUTS, AND CENTER LOCKS. RESHIM COMPONENTS IF NEEDED.
15. REPLACE UNDERSIZED BOLTS AT THE LIVE LOAD BEARING SOLE PLATES AND THE TAIL LOCK STRUT SOLE PLATES WITH FULL-SIZED TURNED BOLTS.
16. INSTALL SAFETY WIRE AT REAR GUIDE, FRONT GUIDE, AND RECEIVING SOCKET STUDS.

NOTES:

1. REFER TO SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR NEW TAIL LOCK MOTOR DETAILS. THE NEW MOTORS SHALL BE INSTALLED WITH NEW TURNED BOLTS AND MOTOR COUPLING HUB TO MATCH THE EXISTING.
2. PRIOR TO REMOVING THE TAIL LOCK MOTOR OR REPLACING TAIL LOCK REDUCER SEALS, THE TAIL LOCK STRUTS SHALL BE TEMPORARILY SECURED TO PREVENT THE STRUTS FROM BACKING OUT. THE TAIL LOCK STRUTS MUST BE SECURED UNTIL THE NEW TAIL LOCK MOTORS ARE INSTALLED.
3. REPLACE THE TAIL LOCK MOTOR COUPLING GRID, SEALS, GASKETS, AND GREASE. THE EXISTING COUPLING IS A FALK 50T10 STEELFLEX GRID COUPLING. THE COUPLING SHALL BE LUBRICATED WITH FALK LONG TERM GREASE (LTG) OR AN APPROVED EQUAL.
4. PRIOR TO DISASSEMBLING THE MOTOR COUPLING, LOCK OUT THE MOTOR AND TEMPORARILY HAND RELEASE THE BRAKE AT THE BACK OF THE MOTOR TO REMOVE ANY RESIDUAL TORQUE WITHIN THE TAIL LOCK MACHINERY.
5. REFER TO SPECIAL PROVISIONS SECTION 615504 - BRIDGE ELECTRICAL SYSTEM FOR NEW TAIL LOCK ROTARY CAM LIMIT SWITCH DETAILS. THE EXISTING ROTARY CAM LIMIT SWITCH PINION SHALL BE INSTALLED ON THE NEW LIMIT SWITCH.
6. THE CONTRACTOR SHALL VERIFY BOLT HOLE DIAMETERS PRIOR TO FABRICATING THE NEW TURNED BOLTS.
7. THE CONTRACTOR SHALL VERIFY THE BOLT SPACING AT THE TAIL LOCK SOLE PLATES AND LIVE LOAD BEARINGS PRIOR TO FABRICATING SHIMS.
8. COORDINATE TAIL LOCK MOTOR TURNED BOLT DIMENSIONS WITH MOTOR MANUFACTURER'S SUPPLIED BOLT HOLES AND THE EXISTING MOTOR SUPPORT BOLT HOLES. IF NEW TURNED BOLTS CAN NOT BE INSTALLED WITH THE PROPER FIT IN THE EXISTING MOTOR SUPPORT BOLT HOLES, 2 TAPERED DOWEL PINS SHALL BE INSTALLED AFTER THE MOTOR IS ALIGNED TO THE REDUCER.
9. NEW TAIL LOCK ROTARY CAM LIMIT SWITCH SHAFT DIAMETER AND KEYWAY SHALL MATCH EXISTING PINION BORE AND KEYWAY. LIMIT SWITCH SHAFT SHALL PROVIDE FULL ENGAGEMENT WITH PINION HUB. CONTRACTOR TO FIELD VERIFY LENGTH OF ROTARY CAM LIMIT SWITCH REQUIRED FOR PROPER GEARSET ALIGNMENT.

DELAWARE
DEPARTMENT OF TRANSPORTATION

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
T201507602	DESIGNED BY: DJM	
COUNTY	CHECKED BY: DTS	
SUSSEX		

TAIL LOCK MACHINERY AND LIVE LOAD BEARING REHABILITATION

SM-8
SHEET NO. 112
TOTAL SHTS. 180

8/9/2018
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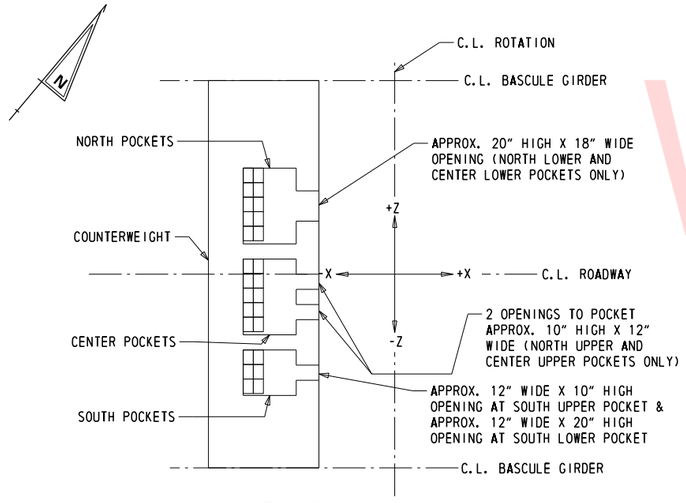
BALANCE NOTES:

1. PRIOR TO ADJUSTING THE BALANCE MATERIALS IN THE COUNTERWEIGHT POCKETS, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL BIRD WASTE AND DEBRIS WITHIN THE COUNTERWEIGHT POCKETS. THE CONTRACTOR SHALL UTILIZE PROPER PPE AND REMOVAL METHODS WHEN CLEANING THE WASTE. BIRD WASTE SHALL NOT BE DROPPED INTO THE WATERWAY AND SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. THE COST OF THE BIRD WASTE REMOVAL AND DISPOSAL SHALL BE INCIDENTAL TO SPAN BALANCING WORK.
2. THE CONTRACTOR SHALL INVENTORY AND ARRANGE ALL EXISTING BLOCKS IN THE COUNTERWEIGHT POCKETS PRIOR TO ANY CONSTRUCTION ACTIVITY AS PER SPECIAL PROVISION SECTION 615503 - BRIDGE MECHANICAL SYSTEM. RESULTS OF THE INVENTORY SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
3. VALUES SHOWN IN THE BALANCE TABLE ARE FOR THE BALANCE IN THE SPAN CLOSED POSITION AND IN ACCORDANCE WITH THE MOMENT SIGN CONVENTION SCHEMATIC SHOWN ON THIS DRAWING.
4. THE VALUES IN THE BALANCE TABLE ARE APPROXIMATE. THE CONTRACTOR SHALL PREPARE AND SUBMIT BALANCE COMPUTATIONS IN ACCORDACE WITH THE SPECIAL PROVISION SECTION 615503 - BRIDGE MECHANICAL SYSTEM AND THE FORMAT THAT MATCHES THE BALANCE TABLE SHOWN ON THIS DRAWING.
5. THE LOCATIONS AND QUANTITIES OF BALANCE MATERIAL SHOWN IN THE BALANCE TABLE ARE APPROXIMATE. THE EXACT QUANTITY AND LOCATION OF BALANCE MATERIAL SHALL BE DETERMINED AND DOCUMENTED BY THE CONTRACTOR IN ACCORDANCE WITH SPECIAL PROVISION SECTION 615503 - BRIDGE MECHANICAL SYSTEM.
6. SPAN BALANCING IS AN ITERATIVE PROCESS AND MAY REQUIRE MULTIPLE ADJUSTMENTS TO ACHIEVE THE TEMPORARY AND FINAL BALANCE PARAMETERS SPECIFIED IN SPECIAL PROVISION SECTION 615503 - BRIDGE MECHANICAL SYSTEM.
7. STEEL BALANCE PLATES, AS DETAILED ON THIS DRAWING AND DRAWING SM-10, SHALL BE USED TO ADJUST THE FINAL SPAN BALANCE. EACH LAYER OF BALANCE BLOCKS/PLATES SHALL BE ARRANGED IN SUCH MANNER AS TO PREVENT SHIFTING OF MATERIAL DURING BRIDGE OPERATION. IN ORDER TO ACCOUNT FOR OVERALL POCKET DIMENSIONS AND THE POSSIBILITY OF VARYING BALANCE BLOCK/PLATE DIMENSIONS, THE INSTALLATION OF SMALLER STEEL PLATES MAY BE REQUIRED TO ENSURE TIGHT FIT OF BLOCKS/PLATES IN EACH POCKET. SUCH PLATES SHALL BE PROVIDED BY THE CONTRACTOR AND MEET THE SAME MATERIAL AND COATING REQUIREMENTS SPECIFIED FOR THE DETAILED BALANCE PLATE SHOWN ON THIS DRAWING.
8. APPROXIMATELY 15 PERCENT SPARE BALANCE PLATES HAVE BEEN INCLUDED IN THE QUANTITY OF COUNTERWEIGHT POCKET BALANCE PLATES LISTED BELOW. ANY SPARE BLOCKS/PLATES NOT USED FOR BALANCING SHALL BE STORED AT A LOCATION DIRECTED BY THE ENGINEER.
9. EACH COUNTERWEIGHT POCKET BALANCE PLATE SHALL BE COATED WITH ONE COAT OF PRIMER PRIOR TO INSTALLATION IN ACCORDANCE WITH SECTION 616 OF THE 2016 DELDOT STANDARD SPECIFICATIONS. REFER TO DWG. SM-10 FOR BASCULE GIRDER BALANCE PLATE PAINTING REQUIREMENTS.
10. THE BALANCE BLOCKS SHOWN IN THE COUNTERWEIGHT PLAN AND BASCULE GIRDER SCHEMATIC DO NOT REPRESENT THE CURRENT POCKET INVENTORY.
11. THE EXISTING CONCRETE COUNTERWEIGHT BLOCKS IN THE POCKETS ARE APPROXIMATELY 11.5"X9.5"X8".

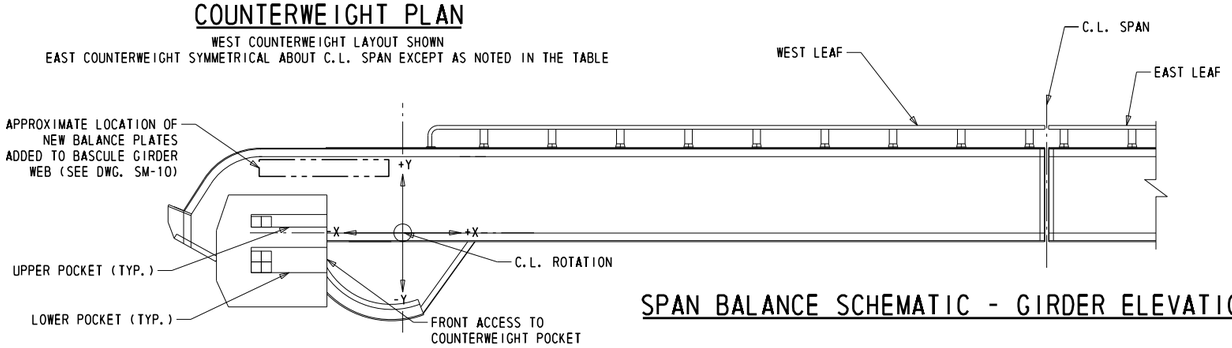


COUNTERWEIGHT PLAN

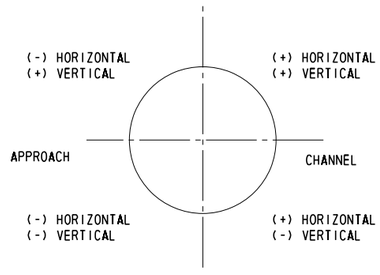
WEST COUNTERWEIGHT LAYOUT SHOWN
EAST COUNTERWEIGHT SYMMETRICAL ABOUT C.L. SPAN EXCEPT AS NOTED IN THE TABLE

LOCATION	# OF BLOCKS / PLATES ADDED OR REMOVED	WEIGHT	X	Y	Z	X-MOM	Y-MOM	Z-MOM	# OF BLOCKS / PLATES ADDED OR REMOVED	WEIGHT	X	Y	Z	X-MOM	Y-MOM	Z-MOM
	WEST LEAF								EAST LEAF							
BASCULE STEEL REPAIRS REMOVED	-	-7.6	-	-	-	-210.0	-25.8	0	-	-7.3	-	-	-	-198.9	-23.3	0
BASCULE STEEL REPAIRS ADDED	-	11.5	-	-	-	321.4	35.7	0	-	12.2	-	-	-	330.3	34.7	0
SPAN LOCK MACHINERY REMOVED	-	-2.3	-	-	-	-81.0	-1.9	0	-	-0.4	-	-	-	-15.3	-0.2	0
SPAN LOCK MACHINERY ADDED	-	3.8	-	-	-	148.7	24.2	0	-	0.8	-	-	-	23.9	3.7	0
NORTH - LOWER POCKET CONCRETE	-20	-1.5	-7.5	-2.0	4.5	11.4	3.0	-6.8	0	0	-7.5	-2.0	4.5	0	0	0
NORTH - LOWER POCKET STEEL	63	2.9	-7.5	-2.0	4.5	-21.9	-5.7	13.1	121	5.6	-7.5	-2.0	4.5	-42.1	-11.0	25.3
NORTH - UPPER POCKET CONCRETE	-8	-0.6	-7.5	0.8	4.5	4.6	-0.5	-2.7	-8	-0.6	-7.5	0.8	4.5	4.6	-0.5	-2.7
NORTH - UPPER POCKET STEEL	120	5.6	-7.5	0.8	4.5	-41.7	4.4	25.0	115	5.3	-7.5	0.8	4.5	-40.0	4.2	24.0
CENTER - LOWER POCKET CONCRETE	-20	-1.5	-7.5	-2.0	-1.5	11.4	3.0	2.3	0	0	-7.5	-2.0	-1.5	0	0	0
CENTER - LOWER POCKET STEEL	130	6.0	-7.5	-2.0	-1.5	-45.2	-11.8	-9.0	0	0	-7.5	-2.0	-1.5	0	0	0
CENTER - UPPER POCKET CONCRETE	-20	-1.5	-7.5	0.8	-1.5	11.4	-1.2	2.3	-20	-1.5	-7.5	0.8	-1.5	11.4	-1.2	2.3
CENTER - UPPER POCKET STEEL	120	5.6	-7.5	0.8	-1.5	-41.7	4.4	-8.3	120	5.6	-7.5	0.8	-1.5	-41.7	4.4	-8.3
SOUTH - LOWER POCKET CONCRETE	-	-	-	-	-	-	-	-	0	0	-7.5	-2.0	-6.5	0	0	0
SOUTH - LOWER POCKET STEEL	-	-	-	-	-	-	-	-	82	3.8	-7.5	-2.0	-6.5	-28.5	-7.4	-24.7
SOUTH - UPPER POCKET CONCRETE	-12	-0.9	-7.5	0.8	-6.5	6.8	-0.7	5.9	-12	-0.9	-7.5	0.8	-6.5	6.8	-0.7	5.9
SOUTH - UPPER POCKET STEEL	72	3.3	-7.5	0.8	-6.5	-25.0	2.6	-21.7	72	3.3	-7.5	0.8	-6.5	-25.0	2.6	-21.7
BALANCE PLATES ADDED TO NORTH BASCULE GIRDER WEB	30	3.8	-3.0	4.1	16.0	-11.4	15.6	61.4	24	2.7	-5.2	4.1	16.0	-14.0	11.0	43.0
BALANCE PLATES ADDED TO SOUTH BASCULE GIRDER WEB	30	3.8	-3.0	4.1	-16.0	-11.4	15.6	-61.4	24	2.7	-5.2	4.1	-16.0	-14.0	11.0	-43.0
TOTAL	-	30.4	-	-	-	26.2	61.0	0	-	31.3	-	-	-	-42.5	27.2	0

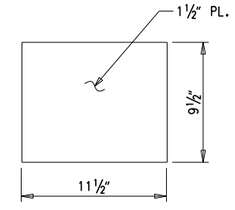
TABLE NOTES:
ALL VALUES ARE IN KIPS AND FEET.
AT THE WEST LEAF, THERE IS NO SOUTH LOWER POCKET.



SPAN BALANCE SCHEMATIC - GIRDER ELEVATION



MOMENT SIGN CONVENTION SCHEMATIC



COUNTERWEIGHT POCKET BALANCE PLATE

WEIGHT OF STEEL PLATE: 46 LB ±
MATERIAL: ASTM A36
QTY: 1200

8/2/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

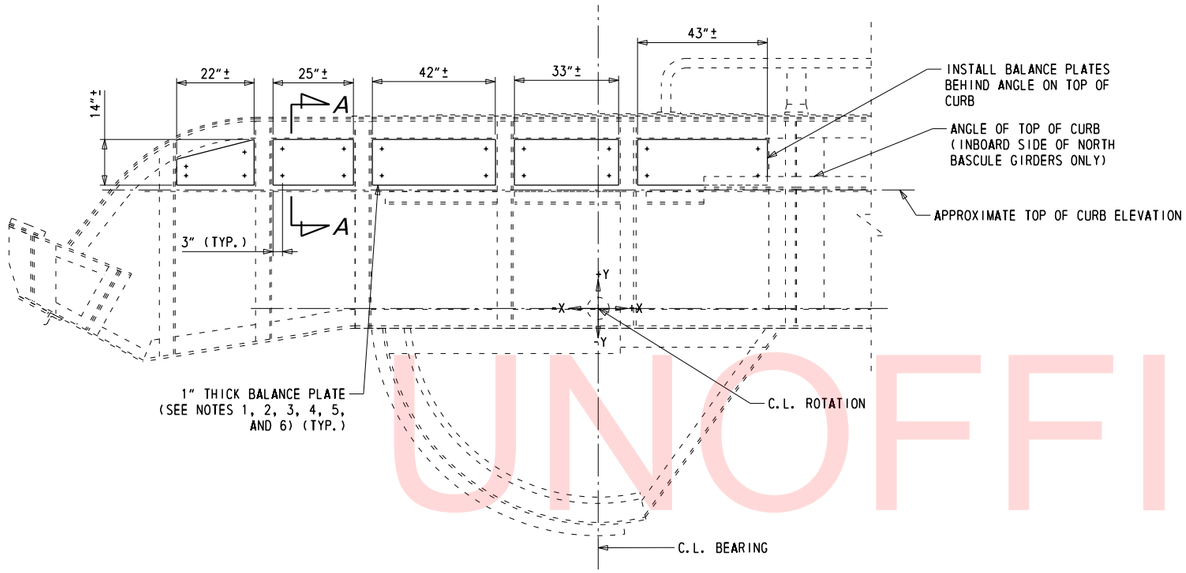
NOT TO SCALE

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

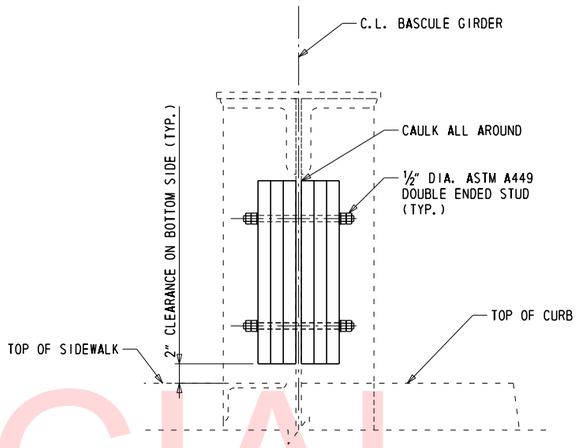
CONTRACT T201507602
COUNTY SUSSEX
BRIDGE NO. 3-154
DESIGNED BY: JAB
CHECKED BY: DJM

SPAN BALANCE

SM-9
SHEET NO. 113
TOTAL SHTS. 180



BASCULE GIRDER BALANCE PLATES



SECTION A-A

NOTES:

1. AT EACH BASCULE GIRDER, INSTALL UP TO 3 BALANCE PLATES ON EACH SIDE OF THE WEB AT EACH OF THE LOCATIONS SHOWN.
2. BASCULE GIRDER BALANCE PLATE DIMENSIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY THE BASCULE GIRDER DIMENSIONS PRIOR TO FABRICATING BALANCE PLATES. PROVIDE ½" CLEARANCE BETWEEN BALANCE PLATES AND BASCULE GIRDER ANGLES.
3. AFTER THE BALANCE PLATES HAVE BEEN INSTALLED BUT PRIOR TO FIELD PAINTING, THE CONTRACTOR SHALL CAULK AROUND THE PERIMETER OF THE BALANCE PLATES AT THE BASCULE GIRDER WEB INTERFACE.
4. BALANCE PLATES SHALL BE COATED IN 1 COAT OF PRIMER PRIOR TO INSTALLATION. AFTER INSTALLATION, THE BASCULE GIRDER BALANCE PLATES SHALL BE PAINTED IN ACCORDANCE WITH SECTION 616 OF THE DELDOT STANDARD SPECIFICATIONS.
5. BASCULE GIRDER BALANCE PLATES SHALL BE ASTM A36 STEEL.
6. AT EACH BASCULE GIRDER BALANCE PLATE LOCATION, THE PLATES SHALL BE EVEN DISTRIBUTED ON BOTH SIDES OF THE GIRDER WEB.
7. REFER TO DWG. SM-9 FOR ADDITIONAL SPAN BALANCE DETAILS.
8. BALANCE PLATES SHALL BE FABRICATED AND DELIVERED PER ITEM M10 WITH SP 615503 (BREAKOUT SHEET ITEM "SPAN BALANCE STEEL PLATES AT BRIDGE 3-154"). INSTALLATION AND ADJUSTMENT OF THE BALANCE PLATES (INCLUDING INSTALLATION OF STUDS AT THE BASCULE GIRDERS) SHALL BE PAID FOR UNDER ITEM M9 WITHIN SP 615503 (BREAKOUT SHEET ITEM "SPAN BALANCING BRIDGE 3-154").

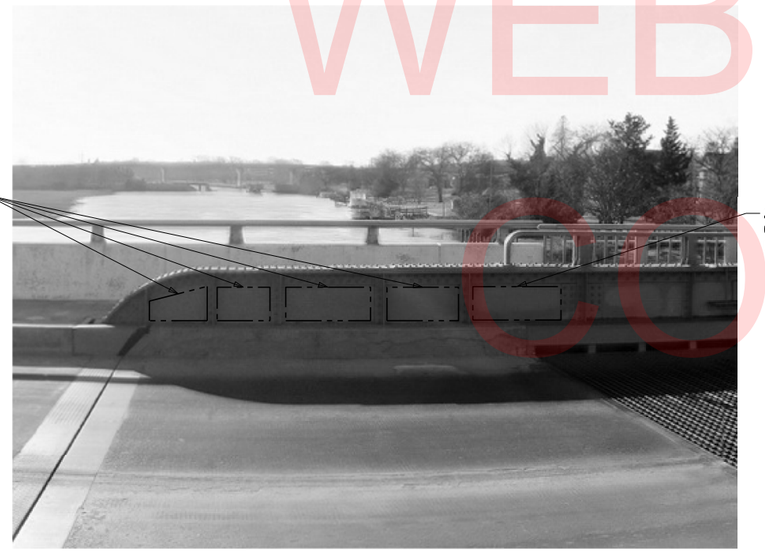


PHOTO 1

TYPICAL BASCULE GIRDER AT ROADWAY LEVEL

PHOTO 2

TYPICAL BASCULE GIRDER AT ROADWAY LEVEL NEAR HEEL JOINT

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SPAN BALANCE – BASCULE GIRDER PLATES	SM-10
				COUNTY SUSSEX	DESIGNED BY: JAB / AR		SHEET NO. 114
					CHECKED BY: DMM		TOTAL SHTS. 180

8/9/2018
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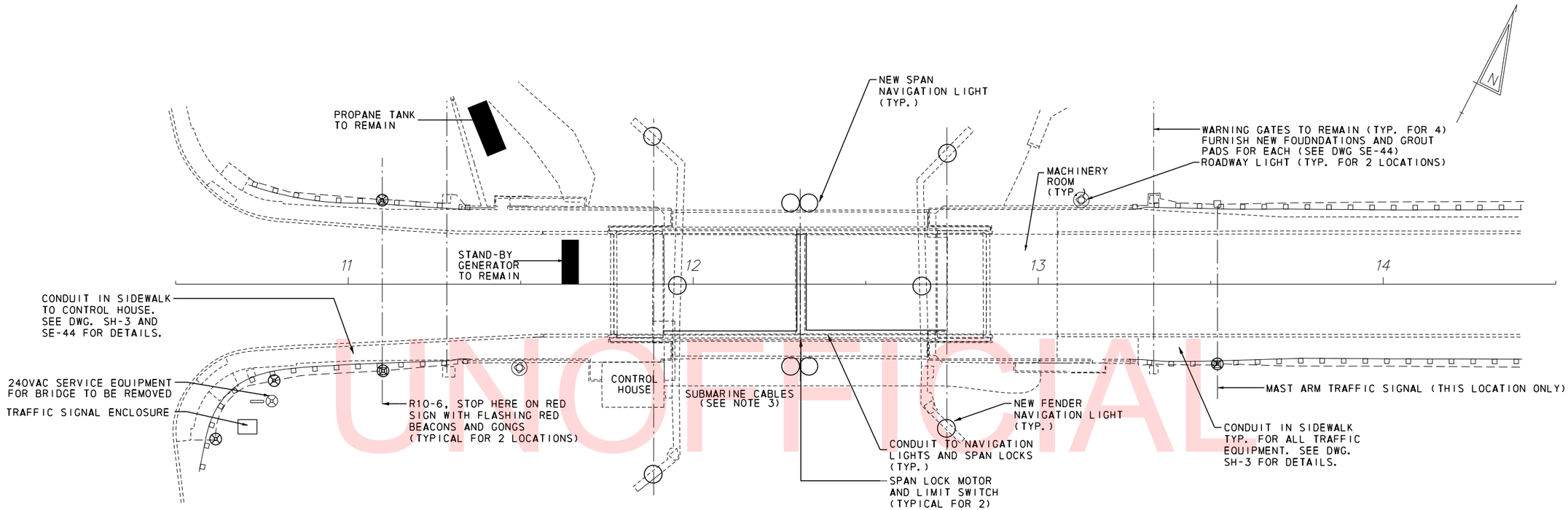
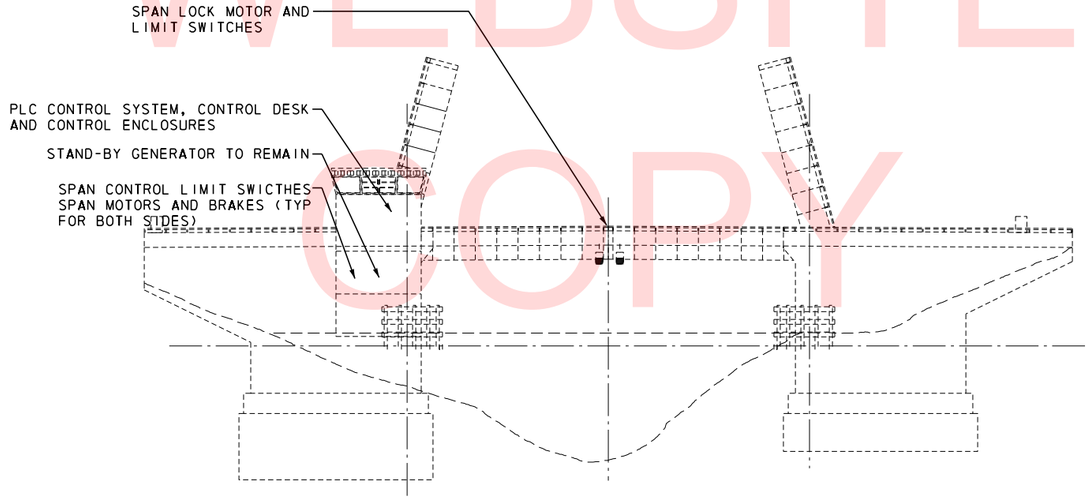


PLAN



ELEVATION

NOTES:

1. SEE DWG SE-2 FOR SCOPE OF WORK NOTES.
2. NOT ALL CONDUIT SHOWN ON THIS LAYOUT DWG.
3. THE EXISTING SUBMARINE CABLES CONSIST OF 3 CABLES WITH 35#10, 1 TP #18, 3#4 AWG CONDUCTORS EACH (105#10, 3-TP#18, 9#4 TOTAL)
4. ALL WORK INVOLVING BURYING THE CONDUITS BENEATH THE SIDEWALK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 831 OF THE STANDARD SPECIFICATIONS.
5. ALL ELECTRICAL WORK SHOWN FOR SAVANNAH RD BRIDGE SHALL BE PAID FOR UNDER THE ITEM "615504 BRIDGE ELECTRICAL SYSTEM."
6. NEW SERVICE TRANSFORMER NOT SHOWN, SEE DWG. SE-46 FOR LOCATION.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	ELECTRICAL GENERAL PLAN AND ELEVATION
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-1 / SHEET NO. 115 / TOTAL SHTS. 180
					CHECKED BY: AHN	

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ELECTRICAL SCOPE OF WORK

1. STANDARDS - ALL WORK SHALL CONFORM TO THE MOST CURRENT VERSIONS OF THE FOLLOWING STANDARDS:

A. AASHTO AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS LRFD MOVABLE HIGHWAY BRIDGE DESIGN SPECIFICATIONS
B. NEC NATIONAL FIRE PROTECTION ASSOCIATION 70 NATIONAL ELECTRICAL CODE
C. NFPA NATIONAL FIRE PROTECTION ASSOCIATION 101 LIFE SAFETY CODE
D. OSHA OCCUPATIONAL SAFETY AND HEALTH ASSOCIATION
E. IEEE INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
F. IPCEA INSULATED POWER CABLE ENGINEERS ASSOCIATION
G. NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
H. UL UNDERWRITERS LABORATORY
I. ANSI AMERICAN NATIONAL STANDARDS INSTITUTE
J. ASTM AMERICAN SOCIETY FOR TESTING AND MATERIAL

2. FIELD MEASURING AND VERIFICATION

THE CONTRACTOR SHALL PERFORM A FIELD SURVEY TO DETERMINE ALL EXISTING DIMENSIONS OF THE CONTROL HOUSE, MACHINERY ROOMS, CENTER LOCK PLATFORMS AND THE ROADWAY TO LOCATE AND INSTALL THE NEW EQUIPMENT. THE CONTRACTOR SHALL PERFORM A FIELD SURVEY TO VERIFY THE EXISTING WIRING TO VERIFY THE WIRE TAGS, AS-BUILT DOCUMENTATION, AND CONTRACT PLANS.

3. INCOMING SERVICE

A NEW INCOMING SERVICE TRANSFORMER AND CONCRETE PAD SHALL BE FURNISHED AND INSTALLED BY LEWES BPW AS PART OF THIS WORK. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE INCOMING SERVICE WITH DELDOT AND LEWES BPW. AS PART OF THIS WORK THE CONTRACTOR SHALL FURNISH AND INSTALL THE ASSOCIATED DISCONNECT SWITCH, SECONDARY CONDUIT, SECONDARY CONDUCTORS, SUPPORT RACK AND OTHER REQUIRED EQUIPMENT AS REQUIRED TO COMPLETE THE WORK AS SHOWN AND SPECIFIED.

THE EXISTING SERVICE CONNECTED TO THE BRIDGE IS A 240V, 3 PHASE, HIGH LEG DELTA SERVICE. THE CONTRACTOR SHALL MAINTAIN THIS SERVICE DURING CONSTRUCTION AS NEEDED AND DISCONNECT AND REMOVE ONCE ALL EQUIPMENT AND SYSTEMS ARE OPERABLE AT 480/277VAC, 3 PHASE.

4. STANDBY GENERATOR AND ATS

THE EXISTING GENERATOR LOCATED IN THE WEST MACHINERY ROOM SHALL REMAIN. THE CONTRACTOR SHALL RECONNECT THE EXISTING UNIT AS A 480-277V WYE SYSTEM. THE EXISTING AUTOMATIC TRANSFER SWITCH SHALL BE FURNISHED AND INSTALLED IN A NEW ENCLOSURE AND LOCATED AS SHOWN ON THE PLANS TO TRANSFER POWER FROM THE NORMAL UTILITY SOURCE TO THE STANDBY GENERATOR POWER SOURCE.

5. CONTROL ENCLOSURE MODIFICATIONS

NEW MOTOR CONTROL CABINET (MCC), PLC AND DRIVE CABINET ENCLOSURE SHALL BE FURNISHED AND INSTALLED IN THE SWITCHBOARD ROOM AS SHOWN ON THE PLANS.

THE NEW DRIVES SHALL BE FLUX VECTOR TYPE AND OPERATE AS AN OPEN LOOP SENSORLESS SYSTEM CONNECTED TO THE NEW MOTOR. THE DRIVE SHALL BE PROVIDED WITH CIRCUIT BREAKER, LINE FILTER, LOAD CONTACTOR AND ALL ACCESSORIES AS SHOWN ON THE PLANS AND SPECIFIED.

6. MOTORS

REMOVE AND DISPOSE OF THE EXISTING SPAN, TAIL LOCK AND CENTER LOCK MOTORS. MODIFY AND RECONNECT EXISTING WARNING GATE FOR THE NEW 480VAC SERVICE.

FURNISH AND INSTALL TWO (2) NEW 15HP, 480VAC, 685 RPM, INVERTER DUTY, TENV NEMA DESIGN A MOTORS. EACH MOTOR SHALL BE EQUIPPED WITH AN INTERNAL HEATER AND ENCODER. FURNISH AND INSTALL IN-SIGHT, NEMA-4X STAINLESS STEEL DISCONNECT SWITCH FOR EACH MOTOR.

FURNISH AND INSTALL TWO (2) NEW 3HP, 480 VAC, 900 RPM, TENV NEMA DESIGN D MOTORS FOR THE TAIL LOCKS. THE MOTORS SHALL BE EQUIPPED WITH AN INTERNAL HEATER AND SOLENOID BRAKE. FURNISH AND INSTALL IN-SIGHT, NEMA-4X STAINLESS STEEL DISCONNECT SWITCH FOR THE MOTORS.

TWO NEW CENTER LOCK MOTORS SHALL BE FURNISHED AND INSTALLED AS PART OF THE ACTUATOR ASSEMBLY. UNDER THE ELECTRICAL WORK, THE CONTRACTOR SHALL FURNISH AND INSTALL NEW IN-SIGHT, NEMA-4X STAINLESS STEEL DISCONNECT SWITCH FOR THE MOTORS.

7. BRAKES

THE EXISTING TWO MOTOR BRAKES AND FOUR MACHINERY BRAKES SHALL BE REPLACED. THE BRAKES SHALL BE ELECTRICALLY OPERATED THRUSTER TYPE UNITS AND SET WHEN DE-ENERGIZED AND RELEASE UPON ENERGIZATION. EACH BRAKE SHALL BE RATED TO PREVENT THE BRIDGE FROM MOVING WHEN SET AND BE EQUIPPED WITH AN EXISTING HAND RELEASE MECHANISM.

EACH BRAKE SHALL BE EQUIPPED WITH NEW LIMIT SWITCHES FOR SET, RELEASED, AND HAND RELEASED POSITIONS. FURNISH AND INSTALL SIX (6) IN-SIGHT, NEMA-4X STAINLESS STEEL DISCONNECT SWITCHES, ONE FOR EACH BRAKE. EACH BRAKE ASSEMBLY SHALL BE PROVIDED WITH A COVER AND HEATING ELEMENTS. THE HEATING ELEMENTS SHALL BE POSITIONED TO PREVENT THE BRAKE WHEEL FROM FREEZING AND TO KEEP THE THRUST OR FLUID AT ITS OPTIMAL OPERATING TEMPERATURE.

8. LIGHTING AND HEATING

FURNISH AND INSTALL ONE (1) NEMA-12 STEP DOWN 480V/208-120 VAC CONNECTED TRANSFORMER IN THE CONTROL HOUSE TO POWER THE BRIDGE SERVICE EQUIPMENT.

THE HEATING SYSTEM SHALL BE PROVIDED THROUGH NEW HEAT FIXTURES AND INCORPORATE THE CONTROLS AS PART OF THE NEW CONTROL ENCLOSURES AS SHOWN ON THE PLANS.

THE CONTRACTOR SHALL REMOVE THE EXISTING PANELBOARDS, FIXTURES AND ASSOCIATED CONDUIT AND WIRE.

9. PLC CONTROL SYSTEM

FURNISH AND INSTALL A NEW PROGRAMMABLE LOGIC CONTROLLER (PLC) BASED CONTROL SYSTEM. THIS WILL INCLUDE A NEW CONTROL DESK IN THE CONTROL HOUSE AND A NEW PLC CABINET IN THE SWITCHBOARD ROOM. THE EQUIPMENT ENCLOSURES LOCATED IN THE CONTROL HOUSE SHALL BE RATED NEMA-12. THE PANELS SHALL USE ALLEN-BRADLEY (AB) CONTROLLOGIX PLC WITH AN ETREMOVE AND DISPOSE FROM SITE ALL EXISTING EQUIPMENT TO BE REPLACED INCLUDING BUT NOT LIMITED TO: CONTROL DESK, DRIVE CABINETS, AUXILIARY CABINETS, POWER CABINETS, ATS,CENTER LOCK MOTOR, TAIL LOCK MOTORS, SPAN MOTOR, LIMIT SWITCHES NOT SCHEDULED TO BE REUSED, AND ASSOCIATED CONDUIT, BOXES, WIRE ETC. ALL EQUIPMENT TO REMAIN IN SERVICE SHALL BE PROTECTED AT ALL TIMES. EHERNET COMMUNICATION NETWORK TO COMMUNICATE BETWEEN THE CONTROL DESK AND THE PLC CABINET IN THE SWITCHBOARD ROOM. ALL REQUIRED PROGRAMMING SHALL BE PROVIDED BY THE CONTRACTOR. THE PROGRAMMABLE LOGIC CONTROLLER (PLC) SHALL BE INTERFACED WITH THE AUTOMATIC TRANSFER SWITCH (ATS) AND GENERATOR PANEL.

10. LIMIT SWITCHES

INTEGRATE THE EXISTING WARNING GATES LIMIT SWITCHES INTO THE NEW CONTROL SYSTEM. FURNISH AND INSTALL FOUR (4) NEW FULLY CLOSED PROXIMITY SENSORS, TWO (2) NEW SPAN POSITION ROTARY CAM LIMIT SWITCHES, TWO (2) NEW TAIL LOCK ROTARY CAM LIMIT SWITCHES, EIGHT (8) NEW TAIL LOCK STRUT PROXIMITY SENSORS, TWO (2) NEW OVER TRAVEL PROXIMITY SENSOR, TWO (2) NEW SPAN POSITION TRANSMITTER, SIX (6) NEW BRAKE SET LIMIT SWITCHES, SIX (6) NEW BRAKE RELEASED LIMIT SWITCHES, SIX (6) NEW HAND RELEASE LIMIT SWITCHES, TWO NEW SPEED SWITCHES INTO THE NEW CONTROL SYSTEM. ALL LIMIT SWITCHES SHOWN IN THE WIRING DIAGRAMS ARE SHOWN IN THE CONFIGURATION CORRESPONDING TO THE ROADWAY OPEN TO VEHICULAR TRAFFIC: SPAN FULLY CLOSED, ALL BRAKES SET AND NOT HAND RELEASED, LOCKS FULLY DRIVEN, ALL GATES FULLY RAISED, AND ALL DISCONNECT SWITCHES IN THE NOT DISCONNECTED POSITION.

11. TRAFFIC CONTROL EQUIPMENT MODIFICATIONS

THE CONTRACTOR SHALL MODIFY AND REPLACE THE EXISTING TRAFFIC SIGNALS AS SHOWN ON THE PLANS AND SPECIFIED HEREIN. THE NEW AND EXISTING TRAFFIC CONTROL EQUIPMENT SHALL BE INCORPORATED INTO THE NEW CONTROL SYSTEM.

12. CONDUIT AND WIRE

FURNISH AND INSTALL NEW CONDUIT, BOXES, AND WIRE AS REQUIRED TO FULLY CONNECT ALL EXISTING AND NEW EQUIPMENT TO THE ELECTRICAL SYSTEM AS SPECIFIED AND SHOWN ON THE PLANS.

UNLESS OTHERWISE NOTED, ALL NEW CONDUIT SHALL BE PVC COATED RIGID GALVANIZED STEEL CONDUIT, EXCEPT FOR FINAL CONNECTIONS TO LIMIT SWITCHES AND MOTORS WHICH SHALL BE LIQUIDTIGHT FLEXIBLE CONDUITS. NO CONDUIT USED SHALL BE SMALLER THAN 3/4".

FOR THE MOTOR BRAKE FINAL CONNECTIONS, THE CONTRACTOR SHALL SUPPLY FLEXIBLE SOOW CORDS FROM THE LOCAL TERMINAL BOX.

FLEXIBLE CONNECTIONS REQUIRED TO CONNECT CONDUIT AND WIRE ON THE MOVABLE SPAN SHALL BE MADE USING FLEXIBLE DROOP CABLES FABRICATED FROM TYPE SOOW CABLES WITH STRAIN RELIEF FITTINGS. THE DROOP CABLES SHALL BE TERMINATED AT LOCAL TERMINAL BOXES. THE DROOP CABLES AND TERMINAL BOXES SHALL BE LOCATED IN A SIMILAR LOCATION TO THE EXISTING.

ALL NEW WIRING SHALL BE XHHW AND INSTALLED IN CONDUIT. THE MINIMUM WIRE SIZE FOR CONTROL WIRES INSIDE ENCLOSURES SHALL BE #14 AWG AND THE MINIMUM SIZE FOR POWER WIRES SHALL BE #12AWG FOR ALL NEW WIRING IN ACCORDANCE WITH AASHTO.

THE EXISTING SUBMARINE CABLES BETWEEN THE CONTROL HOUSE AND THE FAR SIDE ACROSS THE CHANNEL SHALL BE REUSED AND INTEGRATED INTO THE POWER DISTRIBUTION SYSTEM AND THE CONTROL SYSTEM.

THE CONTRACTOR SHALL FIELD VERIFY ALL CONDUCTORS, TRACE THE WIRING, AND PROVIDE WIRE TAGS ON ALL EXISTING WIRING. THIS INFORMATION SHALL BE INCLUDED ON THE AS-BUILT DRAWINGS FOR EASE OF FUTURE MAINTENANCE.

13. FIRE ALARM AND SECURITY SYSTEM

THE CONTRACTOR SHALL FURNISH AND INSTALL A NEW FIRE ALARM SYSTEM IN ACCORDANCE WITH NFPA 72, THE DELAWARE FIRE MASHALL AND AS SHOWN ON THE PLANS AND SPECIFIED HEREIN.

THE CONTRACTOR SHALL FURNISH AND INSTALL HEAT, SMOKE, CO DETECTORS AS SHOWN ON THE PLANS OR OTHERWISE REQUIRED. THE EXISTING PHONE LINE SHALL BE REPAIRED AND MADE OPERATIONAL AND A NEW SECONDARY COMMINICATION LINE SHALL BE FURNISHED AND INSTALLED.

THE CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT AND BOXES FOR THE CAMERAS. DELDOT'S SECURITY CONTRACTOR SHALL FURNISH AND INSTALL UNDER A SEPERATE CONTRACT THE CAMERAS, WIRING, KEYLESS ACCESS, ANNTENA, PORTIONS OF FIBER OPTIC CABLES AND OTHER RELATED ACCESSORIES UNLESS OTHERWISE NOTED.

14. DEMOLITION

REMOVE AND DISPOSE FROM SITE ALL EXISTING EQUIPMENT TO BE REPLACED INCLUDING BUT NOT LIMITED TO: CONTROL DESK, DRIVE CABINETS, AUXILIARY CABINETS, POWER CABINETS, ATS, CENTER LOCK MOTOR, TAIL LOCK MOTORS, SPAN MOTOR, LIMIT SWITCHES NOT SCHEDULED TO BE REUSED, AND ASSOCIATED CONDUIT, BOXES, WIRE ETC. ALL EQUIPMENT TO REMAIN IN SERVICE SHALL BE PROTECTED AT ALL TIMES.

15. BRIDGE OPERATION BY THE CONTRACTOR

THE CONTRACTOR SHALL KEEP THE SPAN OPERATIONAL AT ALL TIMES, IN ACCORDANCE WITH THE COAST GUARD APPROVALS. THE CONTRACTOR SHALL PROVIDE A TEMPORARY POWER AND CONTROL SYSTEM TO OPERATE THE SPAN, LOCKS, GATES, AND ASSOCIATED EQUIPMENT SAFELY DURING CONSTRUCTION. ANY REQUESTS TO TAKE THE SPAN OUT OF SERVICE SHALL BE APPROVED BY DELDOT AND THE US COAST GUARD. THE CONTRACTOR SHALL MAINTAIN A COMPLETE FUNCTIONAL CHANNEL NAVIGATIONAL LIGHTING SYSTEM DURING ENTIRE CONSTRUCTION PERIOD.

16. OPERATION AND MAINTENANCE MANUALS

THE CONTRACTOR SHALL FURNISH COMPLETE MAINTENANCE MANUALS WITH ACCURATE AS-BUILT DOCUMENTATION FOR ALL WORK INCLUDING EXISTING EQUIPMENT. THESE MANUALS SHALL BE COMPLETED PRIOR TO COMMISSIONING THE BRIDGE ELECTRICAL AND CONTROL SYSTEMS AND USED AS PART OF THE COMMISSIONING PROCESS TO VERIFY THE MANUAL ACCURACY. THE MANUALS SHALL BE USED AS PART OF THE TRAINING OF THE BRIDGE OPERATORS AND TECHNICIANS ON THE SAFE OPERATION AND MAINTENANCE OF THE BRIDGE.

17. COMMISSIONING

THE CONTRACTOR SHALL COMPLETELY COMMISSION THE BRIDGE CONTROL SYSTEM IN A FACTORY TEST AND THEN ONSITE TO SHOW THE EQUIPMENT IS INSTALLED ACCURATELY AND SAFELY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL EQUIPMENT SHALL BE OPERATED AND TESTED TO THE SATISFACTION OF THE ENGINEER AND A TESTING PROCEDURE SHALL BE DEVELOPED TO FOR FIELD AND SHOP TESTING TO DOCUMENT THE TESTING OF ALL EQUIPMENT.

GENERAL ELECTRICAL WORK NOTES

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE (NEC), AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO), U.S. COAST GUARD AND LOCAL ORDINANCE AND REGULATIONS. COORDINATE ALL ELECTRICAL WORK WITH DELDOT AND OTHER CONTRACTORS ON THE SITE.

2. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES AND SHALL BE SCHEDULED CONSISTENT WITH THE OVERALL CONSTRUCTION STAGING SEQUENCE.

3. THE PLANS ARE DIAGRAMMATIC AND ARE NOT TO BE SCALED. THE LOCATIONS OF EQUIPMENT AND ROUTING OF CONDUITS SHOWN ON THE CONTRACT DRAWINGS ARE APPROXIMATE. EXACT LOCATIONS SHALL BE DETERMINED BASED UPON APPROVED SHOP DRAWINGS SUBMITTED BY THE CONTRACTOR.

4. THE LOCATION AND NUMBER OF RACEWAYS AND JUNCTION BOXES SHOWN ON THE PLANS ARE OF SCHEMATIC TYPE AND DO NOT PURPORT TO BE EXACT. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL REQUIRED RACEWAYS, JUNCTION BOXES, CONDUIT FITTINGS, ELBOWS, AND HARDWARE FOR A COMPLETE INSTALLATION IN ACCORDANCE WITH THE NEC WHETHER OR NOT THEY ARE EXPLICITLY SHOWN OR INDICATED ON THE CONTRACT DRAWINGS.

5. THE CONTRACTOR SHALL FURNISH AND INSTALL EXPANSION FITTINGS OF THE APPROVED TYPE WHEREVER CONDUITS PASS THROUGH STRUCTURAL EXPANSION JOINTS. DEFLECTION FITTINGS SHALL ALSO BE FURNISHED AND INSTALLED AS NECESSARY.

6. PROVIDE EQUIPMENT GROUNDING PER NEC REQUIREMENTS RUNNING SEPARATE GROUNDING WIRE IN EACH CONDUIT. GROUND CONDUCTORS SHALL BE PROVIDED IN ALL FLEXIBLE CABLES. MINIMUM SIZE GROUND CONDUCTOR SHALL BE #12 AWG. ALL CABINETS, TERMINAL AND JUNCTION BOXES SHALL BE GROUNDED IN ACCORDANCE WITH THE NEC.

7. RUN CONDUIT AT RIGHT ANGLES OR PARALLEL TO HOUSE/BRIDGE LINES. RACK NEATLY AND FASTEN SECURELY ALL CONDUITS. USE INSULATED BUSHINGS AND DOUBLE NUTS ON MOVABLE SPAN AND WHERE INDICATED IN THE SPECIFICATIONS. PROVIDE PULL/JUNCTION BOXES AS REQUIRED TO FACILITATE WIRING.

8. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL ELECTRICAL COMPONENTS, CONDUITS, HANGERS, SUPPORTS, ETC. WITH THE OTHER DISCIPLINES OR AS REQUIRED BY THE ENGINEER.

9. STRUCTURAL STEEL SHALL NOT BE CUT, DRILLED, OR WELDED TO EXCEPT AS MAY BE EXPLICITLY AUTHORIZED BY THE ENGINEER IN WRITING.

10. ALL CONDUCTORS SHALL BE CONNECTED TO TERMINAL BLOCKS OR DEVICES. EXISTING CONDUCTORS WHERE REUSED SHALL BE RETAGGED WITH THE NEW WIRE NUMBERS AS SHOWN ON THE CONTRACTORS APPROVED WIRING DIAGRAM.

11. ALL SWITCHES, RELAYS, CONTACTORS AND STARTERS ARE SHOWN ON THE DRAWINGS AS DE-ENERGIZED AND WITH THE SPAN FULLY CLOSED.

12. THE CONTRACTOR SHALL PROVIDE AND INSTALL A HARD NEOPRENE GASKET 1/8" MINIMUM THICKNESS BETWEEN ANY INSTALLED CABINET AND THE CONCRETE FLOOR OR STRUCTURE.

13. ALL ELECTRICAL ENCLOSURES SHALL BE AS INDICATED. ENCLOSURES LOCATED IN WET LOCATIONS SHALL BE TYPE 316L STAINLESS STEEL, DUST-TIGHT, RAIN-TIGHT, WATER-TIGHT AND OIL-TIGHT, TYPE NEMA-4X.

14. PROVIDE RUBBER MATS IN FRONT OF ALL EQUIPMENT AND A CONTINUOUS COPPER GROUND BUS CONNECTION TO ALL EQUIPMENT IN THE ELECTRICAL ROOMS AND AS SHOWN ON THE PLANS. STANDARD SAFETY/FATIGUE MATS INTENDED FOR INDUSTRIAL AREAS ARE TO BE PROVIDED.

15. UPON COMPLETION OF ELECTRICAL INSTALLATION, THE CONTRACTOR SHALL TEST THE COMPLETE ELECTRICAL SYSTEM FOR SHORT CIRCUITS, GROUNDS AND PROPER OPERATION IN THE PRESENCE OF THE ENGINEER.

16. NOT ALL WORK OR DETAILS MAY BE EXPLICITLY SHOWN ON THESE PLANS. WHERE DETAILS ARE NOT PROVIDED OR WORK IS NOT SHOWN, THE CONTRACTOR IS RESPONSIBLE FOR COMPLETING SUCH WORK AS SPECIFIED AND IDENTIFIED ELSEWHERE IN THE PLANS OR SPECIAL PROVISIONS USING HIS MEANS AND METHODS AT NO ADDITIONAL COST TO DELDOT.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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

ELECTRICAL SCOPE OF WORK

SE-2 | SHEET NO. 116 | TOTAL SHTS. 180

8/9/2018
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ELECTRICAL SYMBOLS

TRANSFORMER

1 FVNR — STARTER (FULL VOLTAGE NON-REVERSING STARTER SIZE 1)

2 FVR — STARTER (FULL VOLTAGE REVERSING STARTER SIZE 2)

SERVICE DISCONNECT SWITCH (3 POLE, SINGLE THROW)

MOTOR DISCONNECT SWITCH

CT — CURRENT TRANSFORMER

OVERLOAD RELAY (THERMAL)

LIMIT SWITCH WITH NORMALLY OPEN CONTACT

LIMIT SWITCH WITH NORMALLY CLOSED CONTACT

LIMIT SWITCH WITH NORMALLY OPEN HELD CLOSED CONTACT

LIMIT SWITCH WITH NORMALLY CLOSED HELD OPEN CONTACT

NORMALLY OPEN TIMER RELAY CONTACT, ON-DELAY

NORMALLY OPEN TIMER RELAY CONTACT, OFF-DELAY

NORMALLY CLOSED TIMER RELAY CONTACT, ON-DELAY

NORMALLY CLOSED TIMER RELAY CONTACT, OFF-DELAY

PUSHBUTTON WITH NORMALLY OPEN CONTACT

PUSHBUTTON WITH NORMALLY CLOSED CONTACT

FUSE

MULTI POSITION SELECTOR SWITCH (QUANTITY OF POSITIONS AS SHOWN) MAINTAINED IN ALL POSITIONS UNLESS NOTED OTHERWISE.

M — MOTOR

A — AMMETER

METER

TWISTED SHIELD PAIR (TSP) CONDUCTORS WITH GROUNDED SHIELD

PLC INPUT

PLC OUTPUT

3 PHASE DISCONNECT SWITCH

HEATER

SR — SAFETY RELAY

DISC BRAKE

CIRCUIT BREAKER

3P/200/160A — THERMAL/MAGNETIC, MCP-MOTOR CIRCUIT PROTECTOR
CB TRIP (160AT)
CB FRAME RATING (200AF)
3-POLE

NEAR SIDE / CHANNEL / FAR SIDE — CHANNEL MARKER IDENTIFYING SUBMARINE CABLES

DROOP CABLE

COIL OF MAGNETIC CONTACTOR

LIGHTING FIXTURE

TIMING RELAY COIL

COIL NORMALLY OPEN CONTACT

COIL NORMALLY CLOSED CONTACT

SWITCH (BYPASS)

SWITCH

GROUND (ELECTRICAL)

INDICATOR LIGHT (A-AMBER, B-BLUE G-GREEN, R-RED, W-WHITE)

Q: Q1 02/00 PLC NOTATION
- DIGITAL I/O NUMBER (00)
- ANALOG I/O CHANNEL (0)
- CHASIS SLOT NUMBER (02)
- I/O NODE DROP NUMBER (01)
- O - OUTPUT (O)
- I - INPUT

CONTROL TRANSFORMER

3 PHASE TRANSFORMER DELTA-WYE CONNECTION

WIRES CONNECTED

WIRE CROSSING WITHOUT BEING CONNECTED

ENCLOSURE BOUNDARY

DIODE

REMOTE CONTACT

T — THERMOSTAT

EMERGENCY STOP PUSH BUTTON

ETHERNET

TERMINATION SYMBOLS

C — CONTROL DESK

M — MOTOR CONTROL CABINET

P — PLC CABINET

A — ATS CABINET

D — DRIVE CABINET

CONNECTION LUG

LIGHTING/FIRE ALARM/SECURITY SYMBOLS

RECEPTACLE

TO — SECURITY CAMERA WITH DELDOT ID NUMBER

INTERIOR SECURITY CAMERA CEILING MOUNTED

SECURITY CAMERA ANTENNA

KE — KEYLESS ENTRY SYSTEM

LED LIGHT FIXTURE

LED COMBINATION EMERGENCY/EXIT LIGHT

S_D — DIMMER LIGHT SWITCH

S_3 — 3 WAY LIGHT SWITCH

S — LIGHT SWITCH

SA — SMOKE ALARM/DETECTOR

CO — CARBON MONOXIDE DETECTOR

H — HEAT DETECTOR

M — MANUAL PULL STATION/HORN STROBE FOR FIRE ALARM SYSTEM

FLASHING WARNING SIGNAL

TRAFFIC SIGNAL

GONG

FENDER NAV LIGHT

ROADWAY LIGHTING

ELECTRICAL ABBREVIATIONS

A	AMPERES
ATS	AUTOMATIC TRANSFER SWITCH
BPW	BOARD OF PUBLIC WORKS
C	CONDUIT
C.L.	CENTER LINE
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CONT	CONTINUOUS
CP	CONTROL POWER
CPS	CATHODIC PROTECTION SYSTEM
CS	CONTROL SWITCH
D	DRIVEN
DELDOT	DELAWARE DEPARTMENT OF TRANSPORTATION
DESIG.	DESIGNATION
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DS	DISCONNECT SWITCH
EMERG	EMERGENCY
FLA	FULL LOAD AMPERES
FS	FAR SIDE
FVD	FLUX VECTOR DRIVE
FVR	FULL VOLTAGE REVERSING STARTER
FVNR	FULL VOLTAGE NON-REVERSING STARTER
G	GREEN
GALV.	GALVANIZED
GEN	GENERATOR
GRD.	GROUND
GNE	NORTHEAST WARNING GATE
GNW	NORTHWEST WARNING GATE
GSE	SOUTHEAST WARNING GATE
GSW	SOUTHWEST WARNING GATE
H	HEATER
HC	HAND CRANK
HDGAF	HOT DIPPED GALVANIZED AFTER FABRICATION
HP	HORSEPOWER
HZ	HERTZ
INNER	INNER LOOP
KVA	KILO VOLT-AMPERES
KW	KILOWATT
LP	LIGHTING PANELBOARD
LRR	LINE/LOAD REACTOR
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
NAV	NAVIGATION
N.C.	NORMALLY CLOSED CONTACT
N.O.	NORMALLY OPEN CONTACT
NOS.	NUMBERS
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON-COMING
OG	OFF-GOING
OL	OVERLOAD
OUTER	OUTER LOOP
P	PULLED
PA	POWER PANELBOARD A
PBX	PULL BOX
PB	POWER PANELBOARD B
PD	POWER PANELBOARD D
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMR	PHASE MONITOR RELAY
PNL QTY	PANEL QUANTITY
R	RED
RECEPT.	RECEPTACLE
SL	SPAN LOCK
SPL	SUMP PUMP PANEL
SS	STAINLESS STEEL
TB	TERMINAL BOX
TBR	TO BE REMOVED
TG	TRAFFIC GATE
TL	TAIL LOCK
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP.	TYPICAL
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITY
VAC	VOLTAGE ALTERNATING CURRENT
WSE	WARNING SIGNAL ENCLOSURE
WS	WARNING SIGNAL
XF	TRANSFORMER

LINE TYPES

ALL SHEETS/DRAWINGS

——— EXISTING EQUIPMENT TO REMAIN

——— NEW EQUIPMENT

LAYOUT AND DETAILS

------- EXISTING EQUIPMENT AND STRUCTURE

——— - - NEW CAMERA AND FIRE ALARM CONDUIT/RACEWAY

..... NEW LIGHTING CONDUIT/RACEWAY

——— - — NEW HEATING CONDUIT/RACEWAY

8/2/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

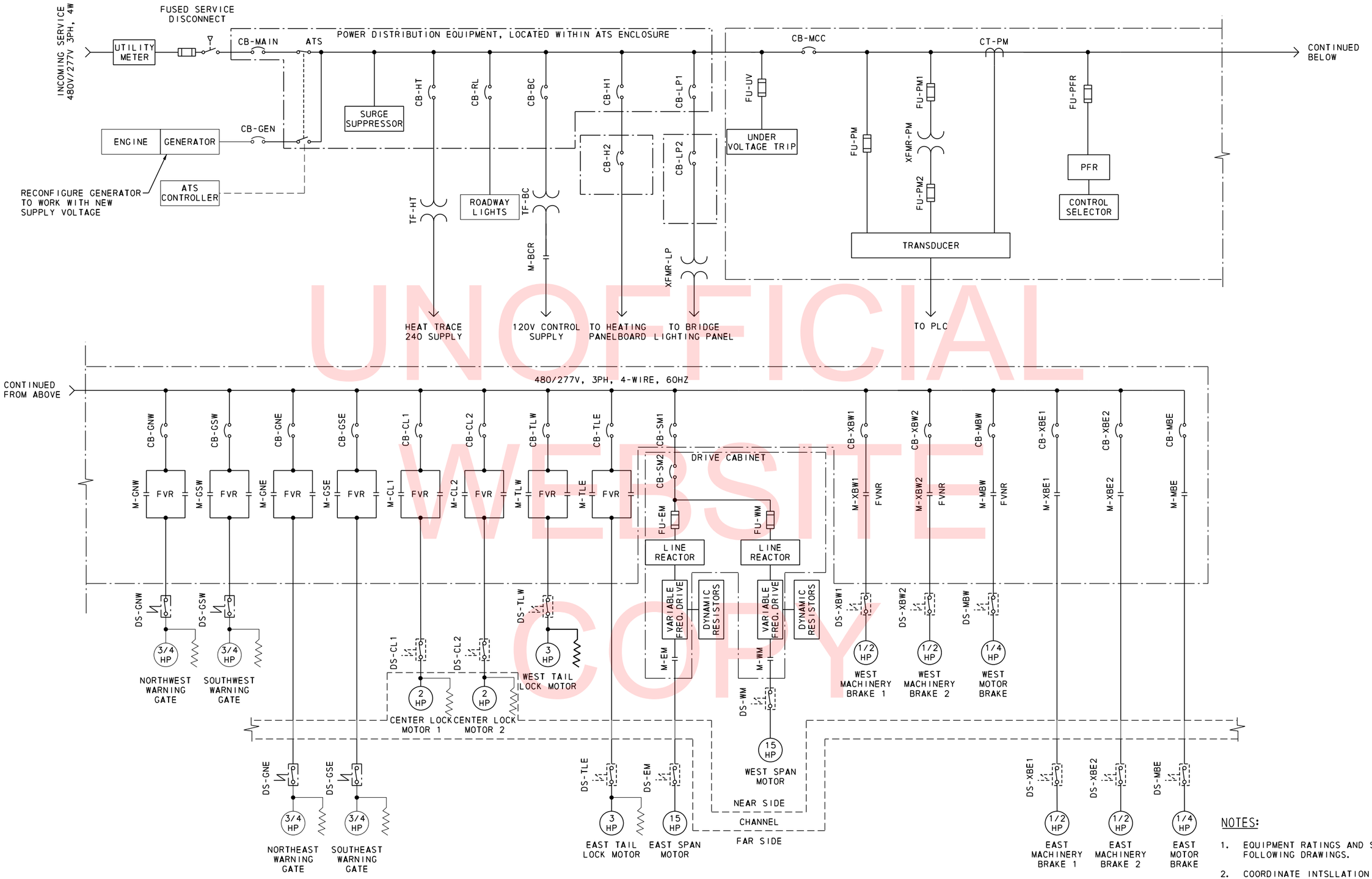
NOT TO SCALE

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	

ELECTRICAL SYMBOLS AND ABBREVIATIONS

SE-3
SHEET NO. 117
TOTAL SHTS. 180



NOTES:

1. EQUIPMENT RATINGS AND SETTINGS ON FOLLOWING DRAWINGS.
2. COORDINATE INTSLLATION OF NEW SERVICE WITH DELDOT AND DELMARVA.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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

ONE LINE DIAGRAM

SE-4 | SHEET NO. 118 | TOTAL SHTS. 180

8/2/2018
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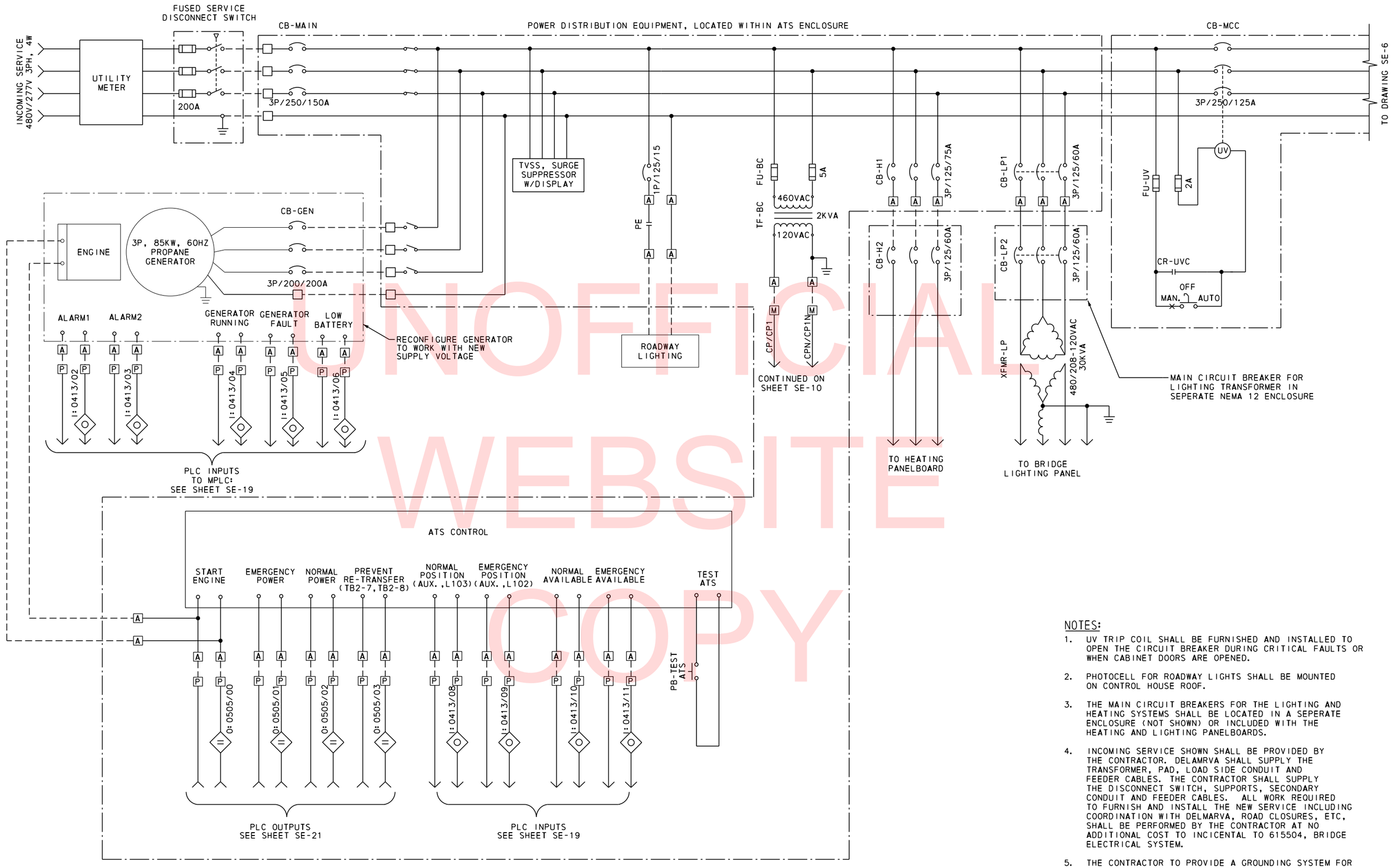

NOTES:

1. UV TRIP COIL SHALL BE FURNISHED AND INSTALLED TO OPEN THE CIRCUIT BREAKER DURING CRITICAL FAULTS OR WHEN CABINET DOORS ARE OPENED.
2. PHOTOCELL FOR ROADWAY LIGHTS SHALL BE MOUNTED ON CONTROL HOUSE ROOF.
3. THE MAIN CIRCUIT BREAKERS FOR THE LIGHTING AND HEATING SYSTEMS SHALL BE LOCATED IN A SEPERATE ENCLOSURE (NOT SHOWN) OR INCLUDED WITH THE HEATING AND LIGHTING PANELBOARDS.
4. 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 INCICENTAL TO 615504, BRIDGE ELECTRICAL SYSTEM.
5. THE CONTRACTOR TO PROVIDE A GROUNDING SYSTEM FOR THE NEW TRANSFORMER AS SHOWN ON DWG SE-47 OR OTHERWISE REQUIRED BY LEWES BPW.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	THREE LINE DIAGRAM I
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-5 / SHEET NO. 119 / TOTAL SHTS. 180
					CHECKED BY: AHN	

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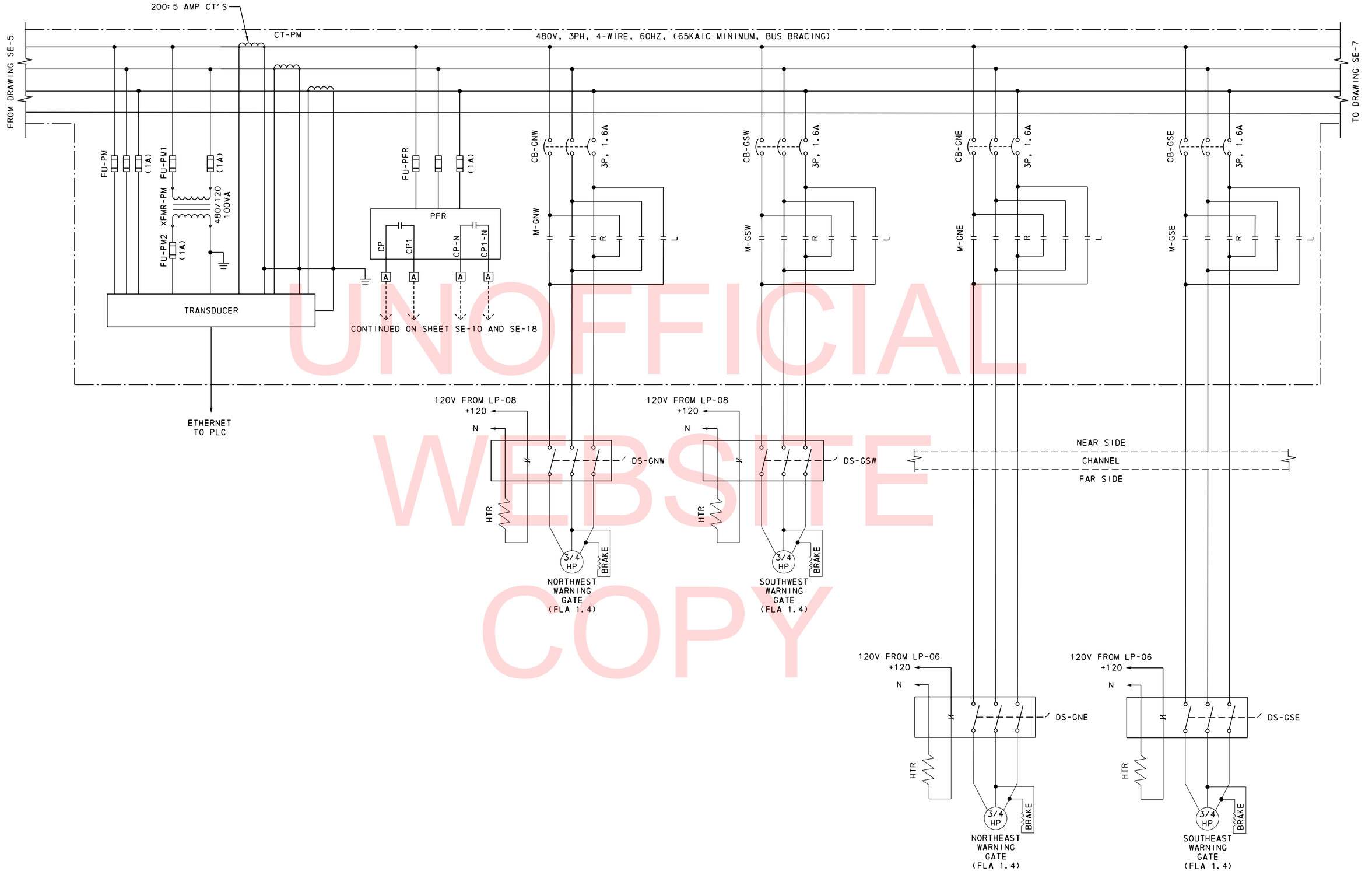

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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-154	THREE LINE DIAGRAM II
				COUNTY SUSSEX	DESIGNED BY: MJT	SHEET NO. SE-6
					CHECKED BY: AHN	TOTAL SHTS. 120 / 180

FROM DRAWING SE-6

480V, 3PH, 4-WIRE, 60HZ, (65KAIC MINIMUM, BUS BRACING)

TO DRAWING SE-8

CB-TLE 3P, 4A — M-TLE (D, P)

CB-MBE 3P, 0.63A — M-MBE

CB-XBE1 3P, 0.63A — M-XBE1

CB-XBE2 3P, 0.63A — M-XBE2

CB-SM1 3P/250/125A — TO DWG SE-13

CB-TLW 3P, 4A — M-TLW (D, P)

NEAR SIDE
CHANNEL
FAR SIDE

120V FROM LP-08 (+120, N) — DS-WM — DS-TLW — HTR — 3 HP

WEST TAIL LOCK

120V FROM LP-06 (+120, N) — DS-TLE — HTR — 3 HP BRAKE

EAST TAIL LOCK

120V FROM LP-06 (+120, N) — DS-MBE — HTR — 1/4 HP BRAKE

EAST MOTOR BRAKE

120V FROM LP-06 (+120, N) — DS-XBE1 — HTR — 1/3 HP BRAKE

EAST MACHINERY BRAKE NO. 1

120V FROM LP-06 (+120, N) — DS-XBE2 — HTR — 1/3 HP BRAKE

EAST MACHINERY BRAKE NO. 2

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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

THREE LINE DIAGRAM III

SE-7	
SHEET NO.	121
TOTAL SHTS.	180

8/2/2018
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FROM DRAWING SE-7

480V, 3PH, 4-WIRE, 60HZ, (65KAIC MINIMUM, BUS BRACING)

CB-MBW — 3P, 0.63A — M-MBW

CB-XBW1 — 3P, 0.63A — M-XBW1

CB-XBW2 — 3P, 0.63A — M-XBW2

CB-CL1 — 3P, 6.3A — M-CL1 (D, P)

CB-CL2 — 3P, 6.3A — M-CL2 (D, P)

120V FROM LP-08 +120 N — DS-MBW — HTR — 1/4 HP — WEST MOTOR BRAKE

120V FROM LP-08 +120 N — DS-XBW1 — HTR — 1/3 HP — WEST MACHINERY BRAKE NO. 1

120V FROM LP-08 +120 N — DS-XBW2 — HTR — 1/3 HP — WEST MACHINERY BRAKE NO. 2

FLEXIBLE DROOP CABLES

NEAR SIDE

120V FROM LP-08 +120 N — DS-CL1 — HTR — 2 HP — CENTER LOCK MOTOR 1

120V FROM LP-08 +120 N — DS-CL2 — HTR — 2 HP — CENTER LOCK MOTOR 2

CHANNEL

FAR SIDE

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	THREE LINE DIAGRAM IV	SE-8
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 122
					CHECKED BY: AHN		TOTAL SHTS. 180

8/9/2018
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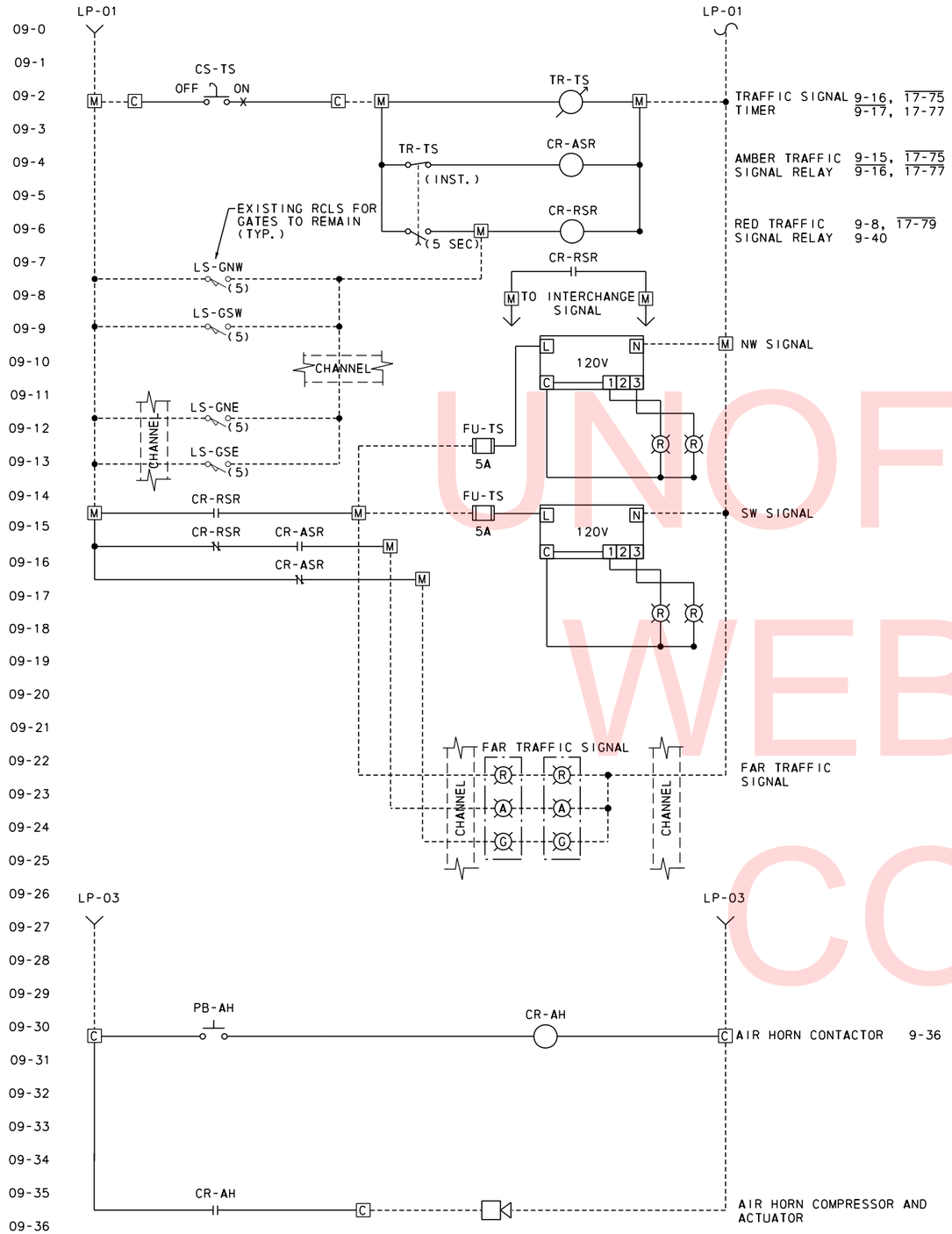

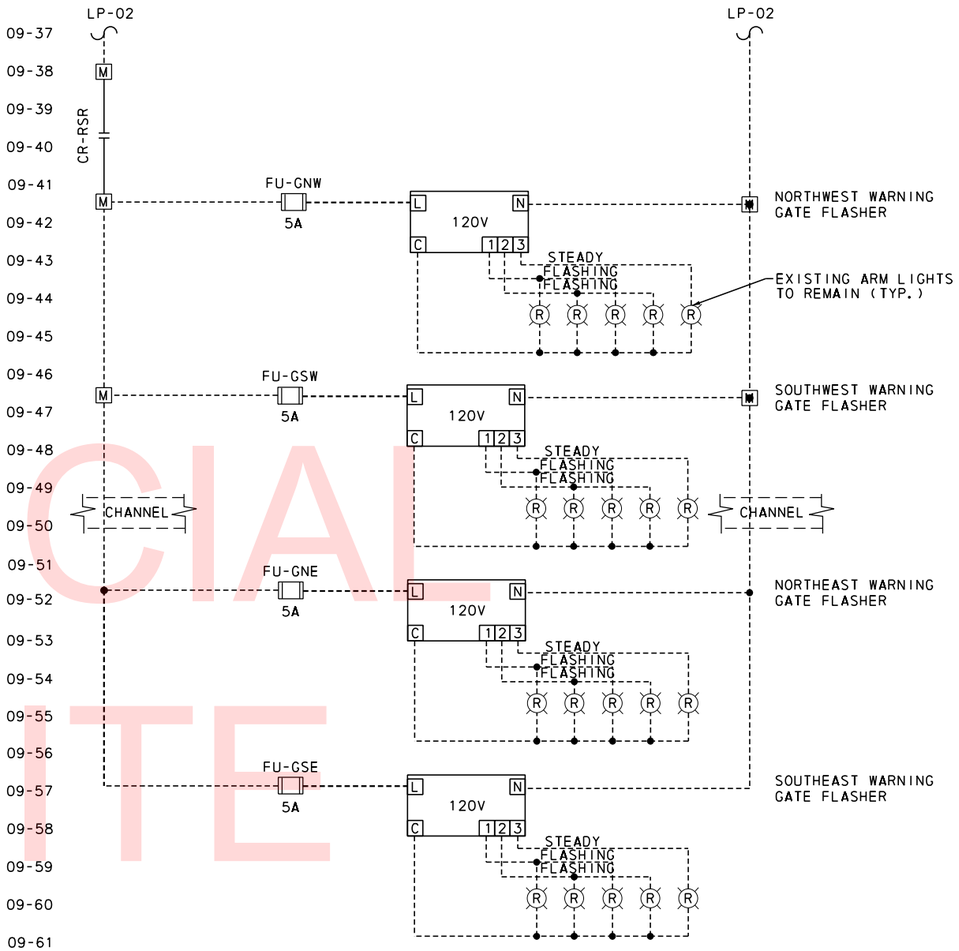

NOTES:

1. CONTRACTOR SHALL RECONNECT EXISTING WARNING GATE ARM LIGHTS AND FUSES TO NEW FLASHERS. THE NEW FLASHERS SHALL BE MOUNTED IN THE EXISTING GATE HOUSING.
2. CONTRACTOR SHALL CONNECT EXISTING WARNING GATE RECEPTACLE, LIGHT AND HEATER INSIDE EACH GATE TO SEPERATE CIRCUITS. HEATERS SHALL BE CONNECTED AS SHOWN ON DWGS SE-6, SE-7 AND SE-8. RECEPTACLES/LIGHTS SHALL BE CONNECTED TO EXISTING FUSE/CIRCUIT BREAKER AND NEW CIRCUIT.

8/2/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

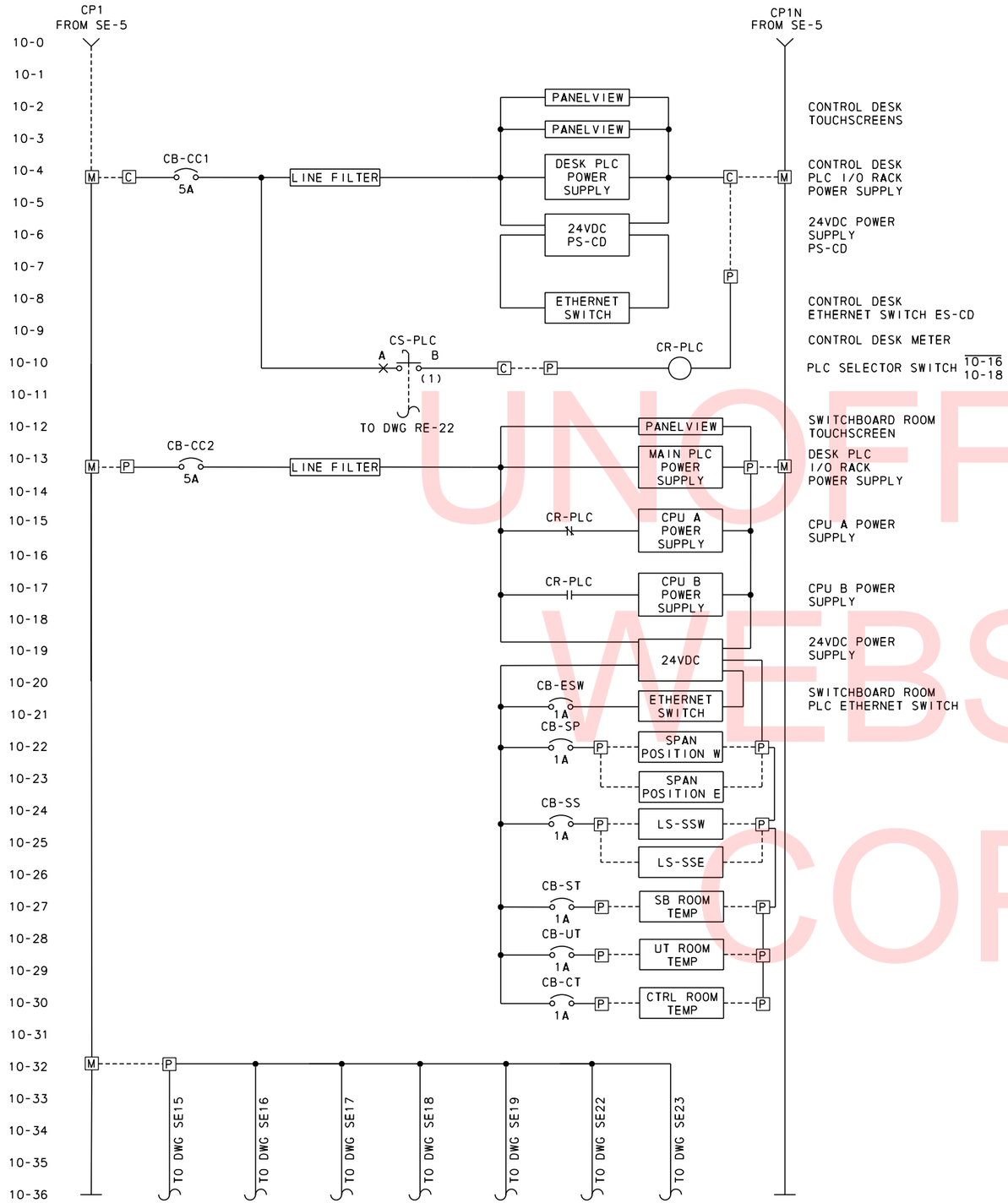
NOT TO SCALE

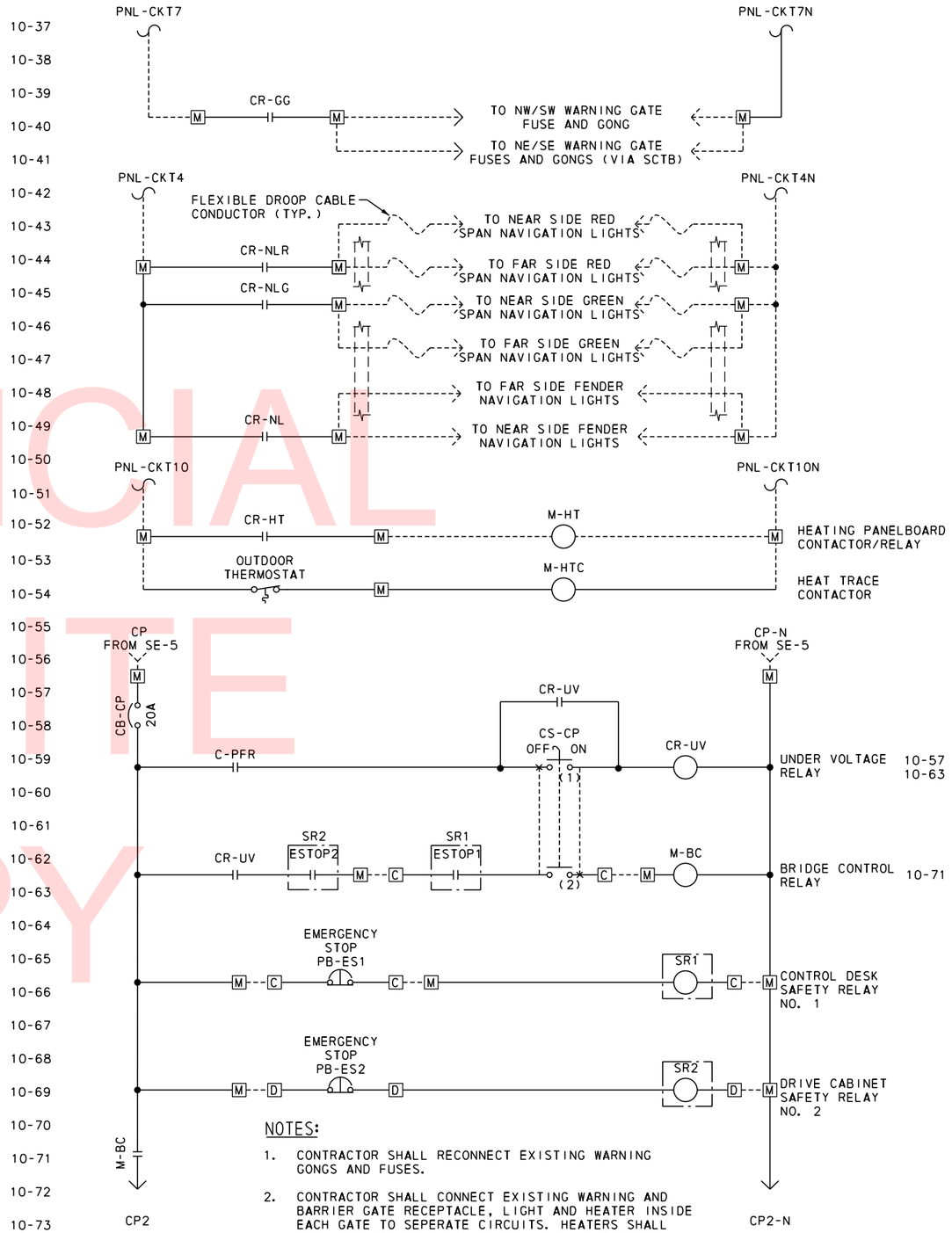
BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

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

TRAFFIC CONTROL POWER

SE-9
SHEET NO. 123
TOTAL SHTS. 180





NOTES:

1. CONTRACTOR SHALL RECONNECT EXISTING WARNING GONGS AND FUSES.
2. CONTRACTOR SHALL CONNECT EXISTING WARNING AND BARRIER GATE RECEPTACLE, LIGHT AND HEATER INSIDE EACH GATE TO SEPERATE CIRCUITS. HEATERS SHALL BE CONNECTED AS SHOWN ON DWGS SE-6, SE-7 AND SE-8. RECEPTACLES/LIGHTS SHALL BE CONNECTED TO EXISTING FUSE/CIRCUIT BREAKER AND NEW CIRCUIT.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	BRIDGE CONTROL POWER
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-10
					CHECKED BY: AHN	SHEET NO. 124
						TOTAL SHTS. 180

8/9/2018
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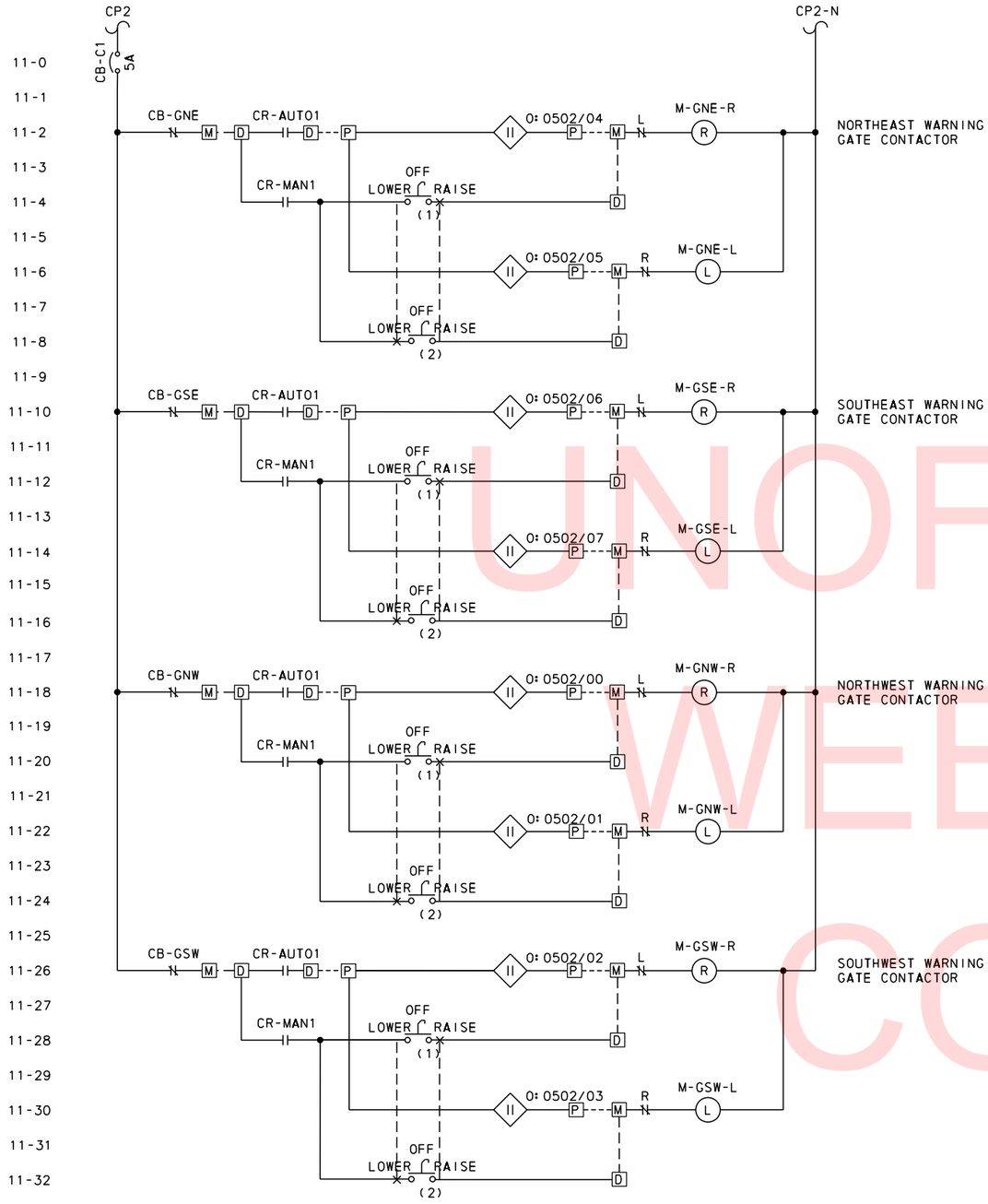

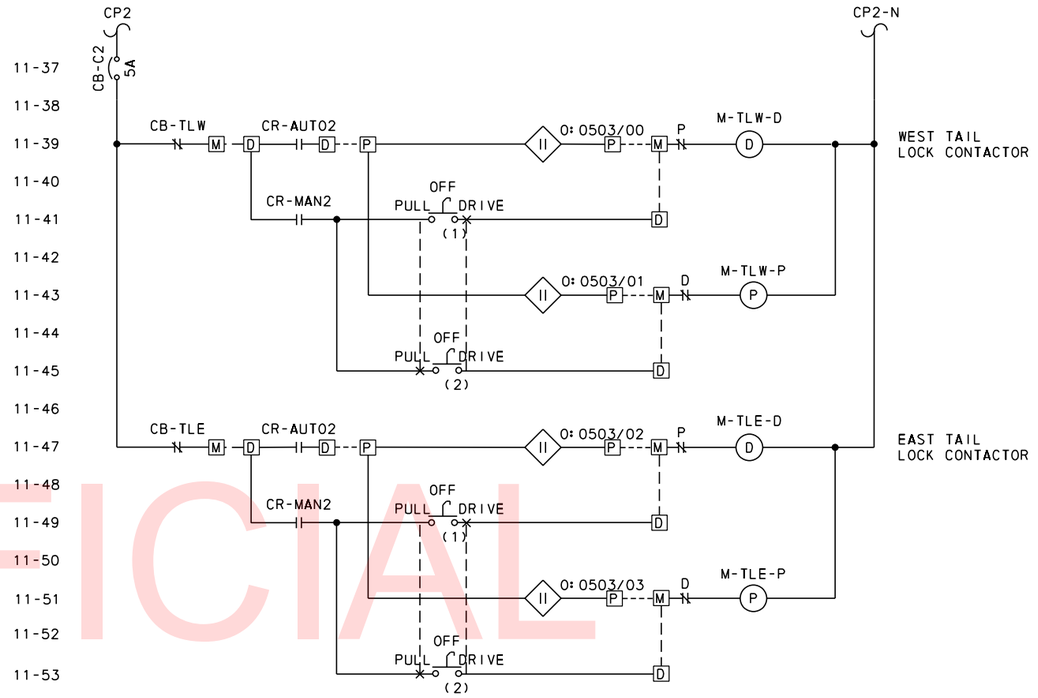

NOTES:

1. NON-AUTOMATIC (MANUAL) CONTROL PILOT DEVICES SHALL BE MOUNTED ON EXISTING FRONT DOOR WITH LOCKABLE ENCLOSURE (SEE SE-28).

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	WARNING GATE & TAIL LOCK CONTROLS
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-11 / SHEET NO. 125
					CHECKED BY: AHN	TOTAL SHTS. 180

8/9/2018
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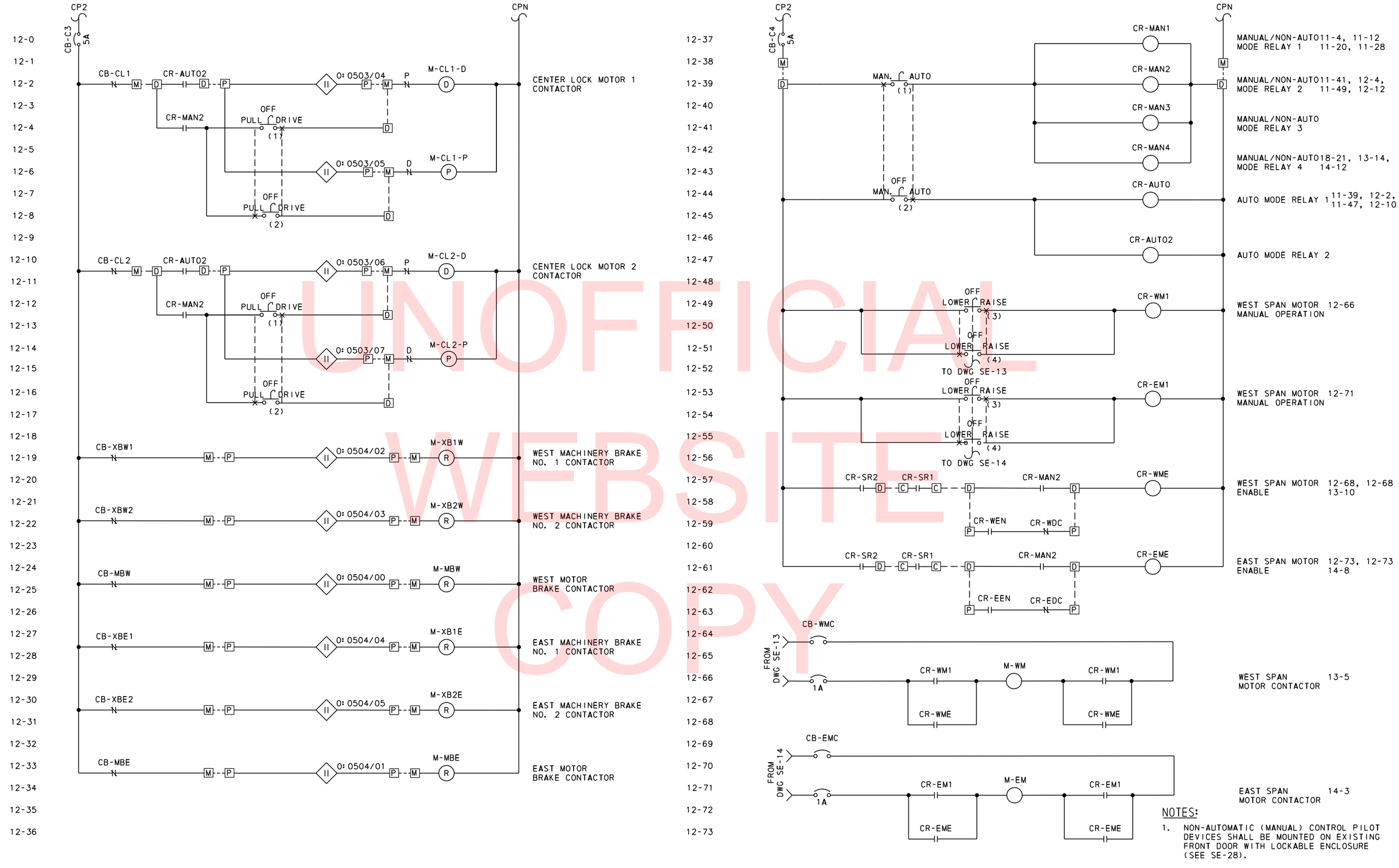

NOTES:

1. NON-AUTOMATIC (MANUAL) CONTROL PILOT DEVICES SHALL BE MOUNTED ON EXISTING FRONT DOOR WITH LOCKABLE ENCLOSURE (SEE SE-28).

8/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

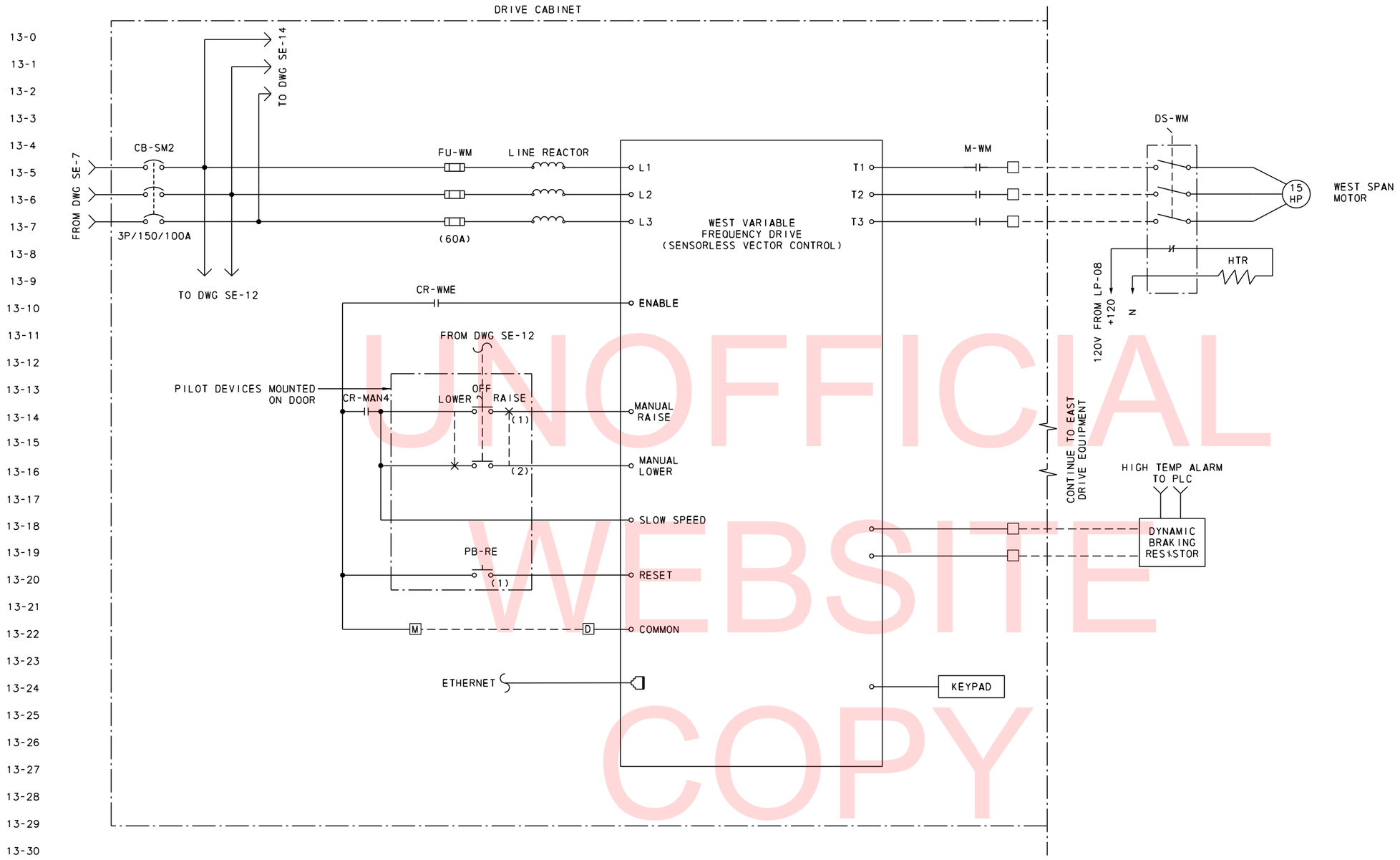
NOT TO SCALE

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	

CENTER LOCK & BRAKE CONTROLS

SE-12
SHEET NO. 126
TOTAL SHTS. 180



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.
3. EACH VFD SHALL OPERATE IN SENSORLESS VECTOR MODE.

8/2/2018
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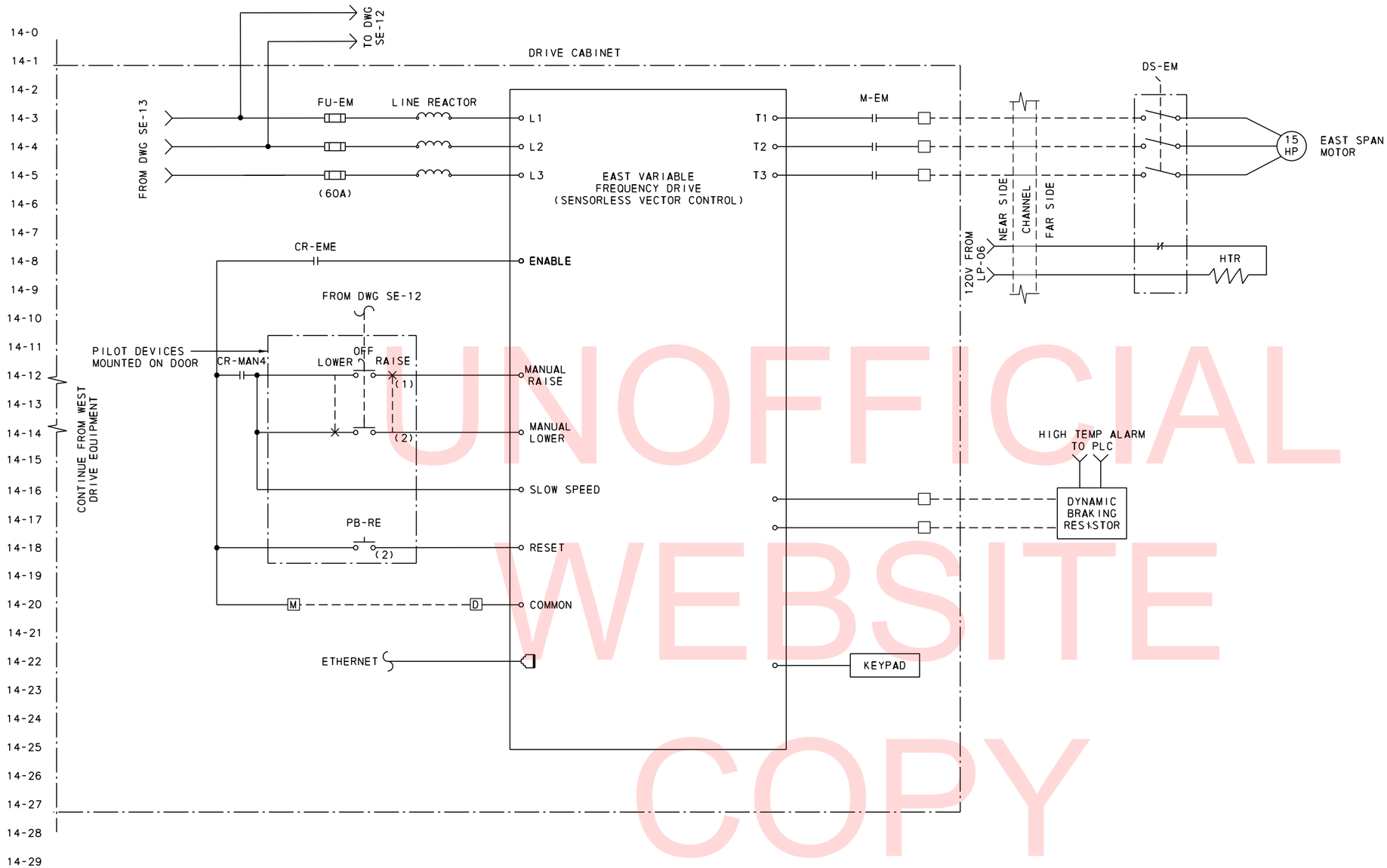
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-154	WEST SPAN DRIVE CONTROLS	SE-13
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 127
					CHECKED BY: AHN		TOTAL SHTS. 180



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.
3. EACH VFD SHALL OPERATE IN SENSORLESS VECTOR MODE.

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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

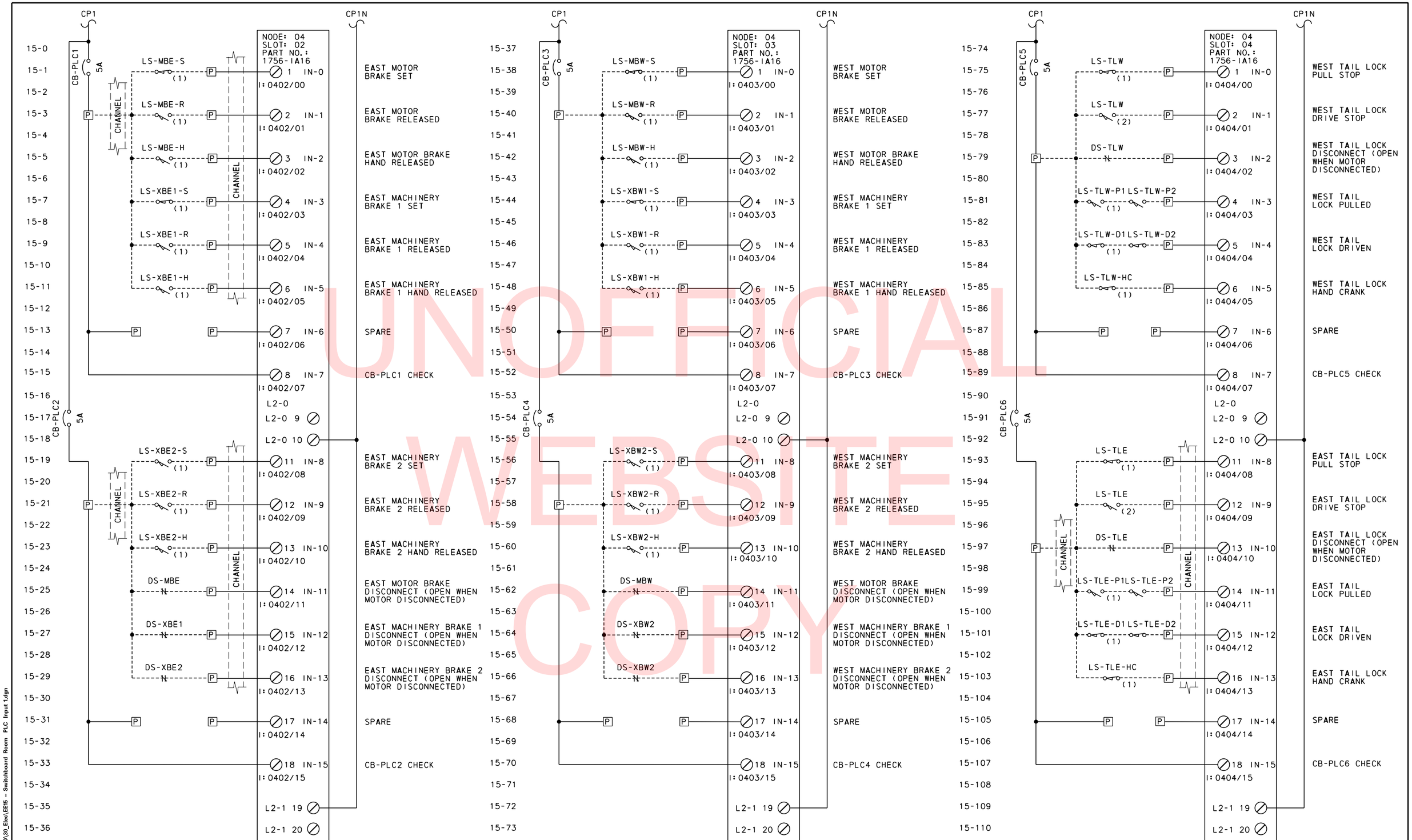
NOT TO SCALE

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	

EAST SPAN DRIVE CONTROLS

	SE-14
SHEET NO.	128
TOTAL SHTS.	180



DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SWITCHBOARD ROOM: PLC INPUT I

SE-15
SHEET NO. 129
TOTAL SHTS. 180

8/9/2018
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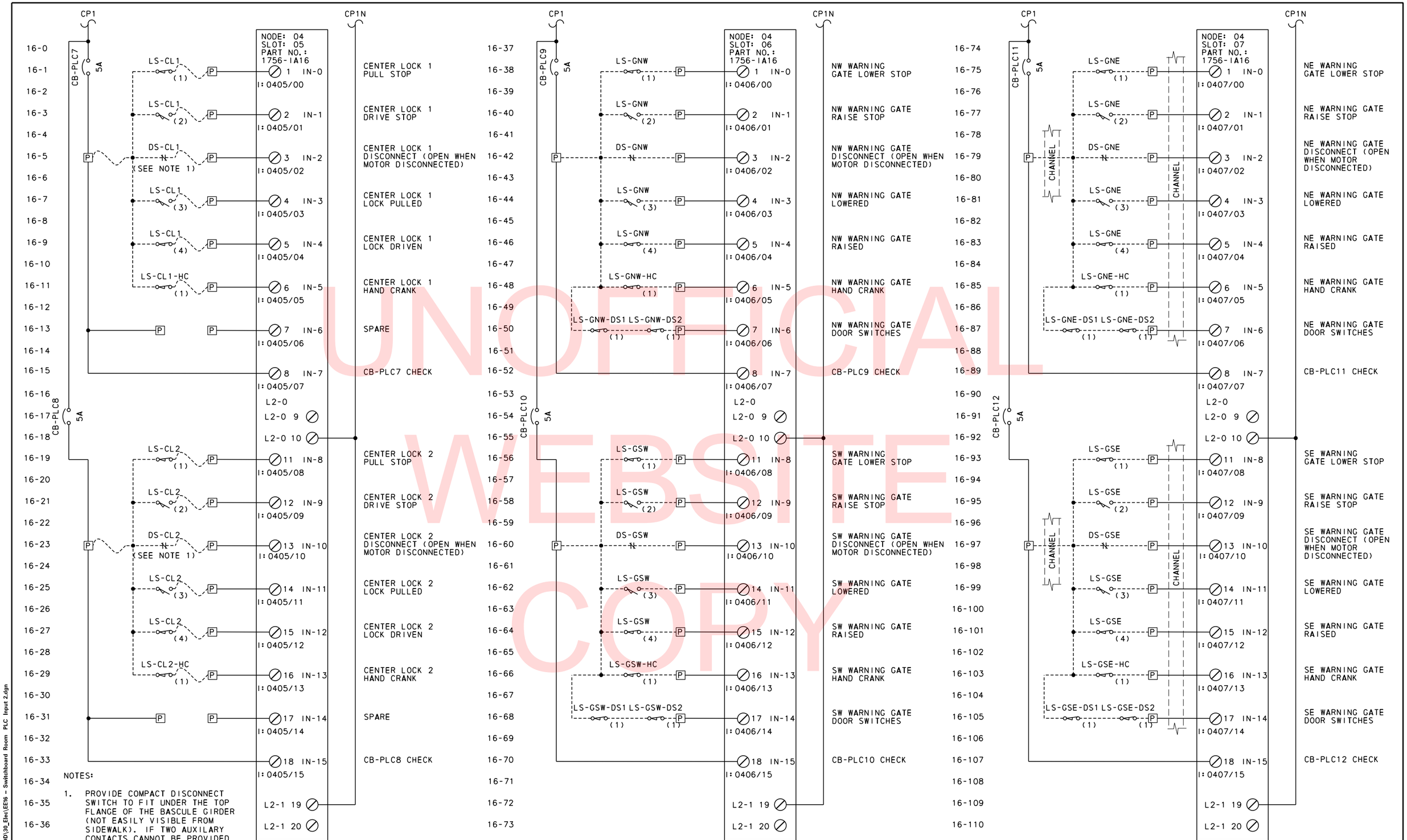

NOTES:

1. PROVIDE COMPACT DISCONNECT SWITCH TO FIT UNDER THE TOP FLANGE OF THE BASCULE GIRDER (NOT EASILY VISIBLE FROM SIDEWALK). IF TWO AUXILARY CONTACTS CANNOT BE PROVIDED FOR THIS UNIT PROVIDE A RELAY AND CONNECT PLC INPUT AND HEATER CIRCUIT TO RELAY.

8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

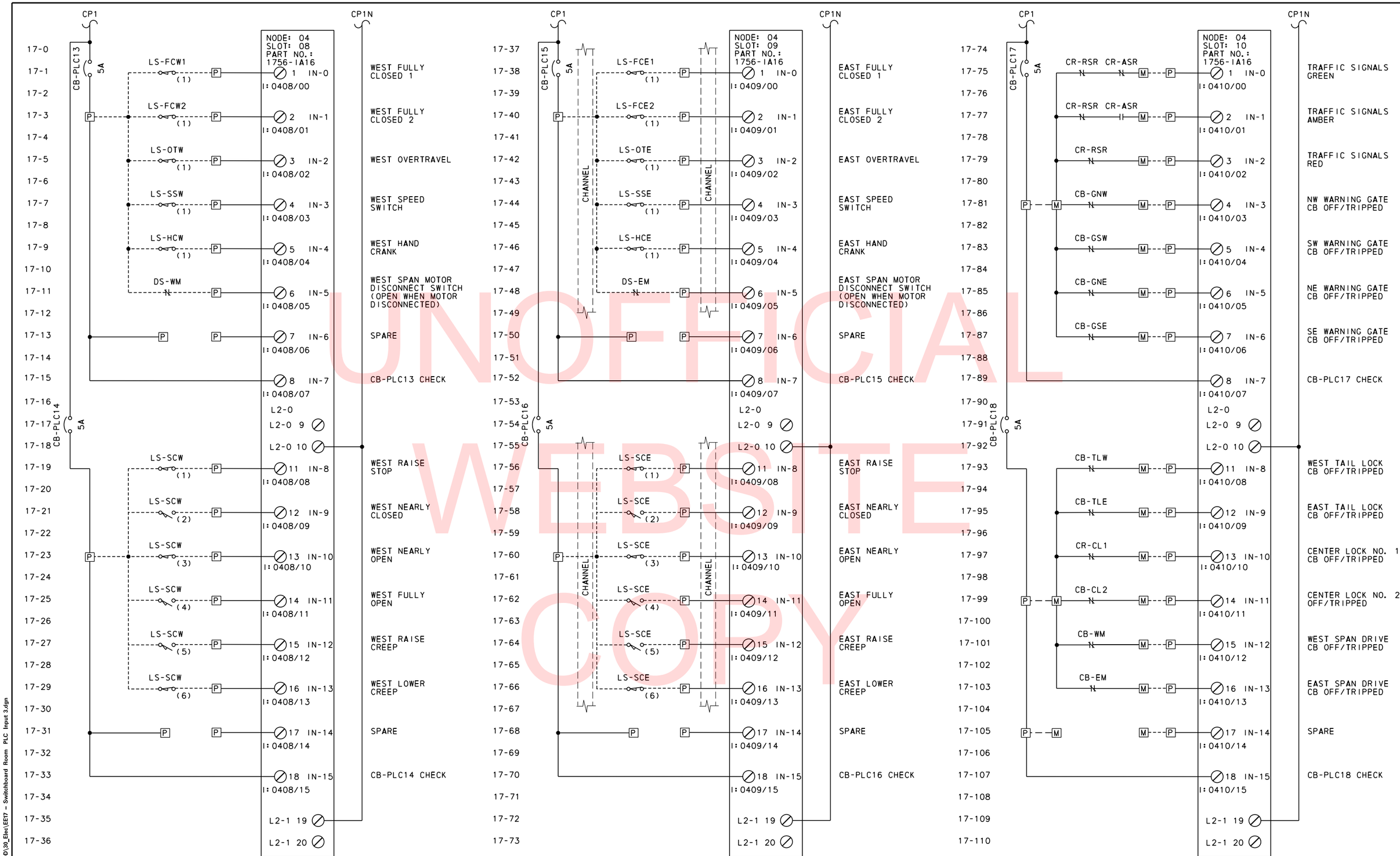
NOT TO SCALE

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	

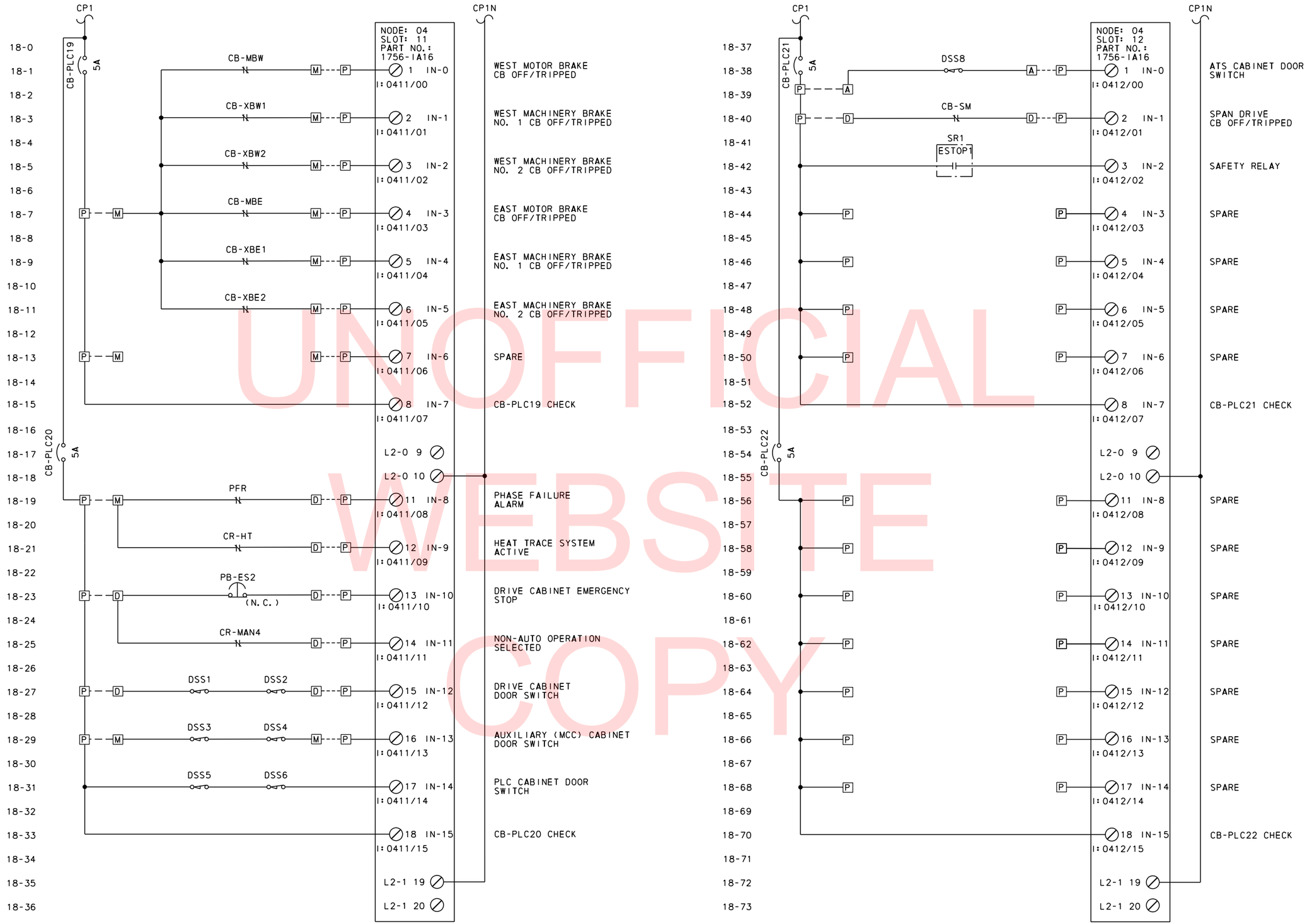
SWITCHBOARD ROOM: PLC INPUT II

SE-16
SHEET NO. 130
TOTAL SHTS. 180



8/9/2018
M:\02889.04C\4000_Fin_Des\CADD\30_Elec\EE17 - Switchboard Room PLC Input 3.dgn

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SWITCHBOARD ROOM: PLC INPUT III
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-17
					CHECKED BY: AHN	SHEET NO. 131
						TOTAL SHTS. 180



DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SWITCHBOARD ROOM: PLC INPUT IV
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-18
					CHECKED BY: AHN	SHEET NO. 132
						TOTAL SHTS. 180

8/2/2018
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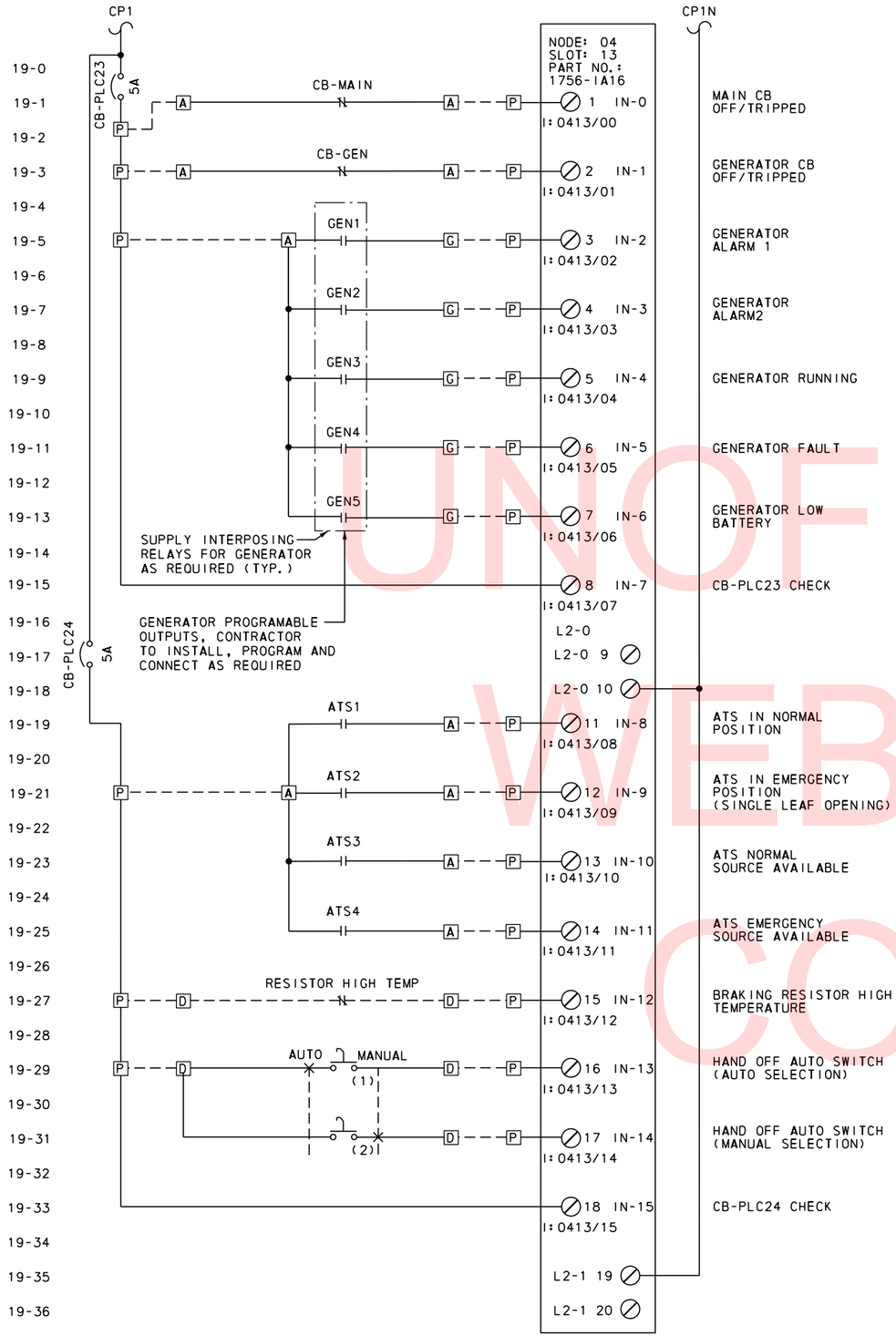

NOTES:

1. GENERATOR CONTROLS ARE RATED 24/12VDC, CONTRACTOR SHALL SUPPLY INTERPOSING RELAYS AS REQUIRED TO INTERCONNECT WITH THE 120VAC CIRCUITS.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

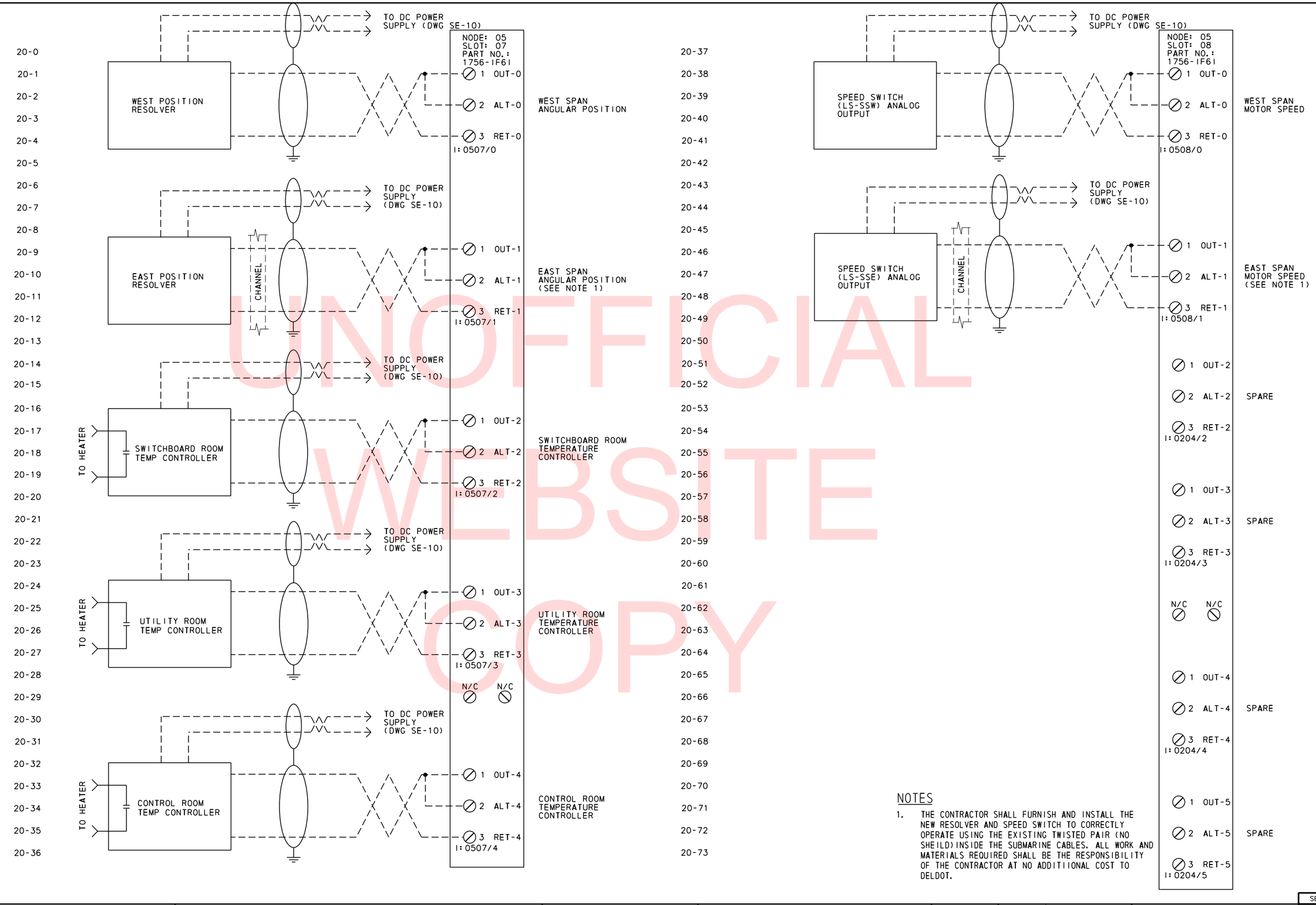
NOT TO SCALE

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		
SUSSEX	CHECKED BY: AHN	

SWITCHBOARD ROOM:
PLC INPUT V

	SE-19
SHEET NO.	133
TOTAL SHTS.	180



NOTES

1. THE CONTRACTOR SHALL FURNISH AND INSTALL THE NEW RESOLVER AND SPEED SWITCH TO CORRECTLY OPERATE USING THE EXISTING TWISTED PAIR (NO SHEILD) INSIDE THE SUBMARINE CABLES. ALL WORK AND MATERIALS REQUIRED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AT NO ADDITIIONAL COST TO DELDOT.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

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	

SWITCHBOARD ROOM:
PLC INPUT VI

SE-20
SHEET NO. 134
TOTAL SHTS. 180

NODE: 05 SLOT: 02 PART NO.: 1756-OX8I

21-0	OUT-0 NC		
21-1			
21-2	L1-0		
21-3	OUT-0 NO O:0502/00	→	TO NW GATE RAISE CONTACTOR
21-4	L1-0		
21-5	OUT-1 NC		
21-6	L1-1		
21-7	OUT-1 NO O:0502/01	→	TO NW GATE LOWER CONTACTOR
21-8	L1-1		
21-9	OUT-2 NC		
21-10	L1-2		
21-11	OUT-2 NO O:0502/02	→	TO SW GATE RAISE CONTACTOR
21-12	L1-2		
21-13	OUT-3 NC		
21-14	L1-3		
21-15	OUT-3 NO O:0502/03	→	TO SW GATE LOWER CONTACTOR
21-16	L1-3		
21-17	OUT-4 NC		
21-18	L1-4		
21-19	OUT-4 NO O:0502/04	→	TO NE GATE RAISE CONTACTOR
21-20	L1-4		
21-21	OUT-5 NC		
21-22	L1-5		
21-23	OUT-5 NO O:0502/05	→	TO NE GATE LOWER CONTACTOR
21-24	L1-5		
21-25	OUT-6 NC		
21-26	L1-6		
21-27	OUT-6 NO O:0502/06	→	TO SE GATE RAISE CONTACTOR
21-28	L1-6		
21-29	OUT-7 NC		
21-30	L1-7		
21-31	OUT-7 NO O:0502/07	→	TO SE GATE LOWER CONTACTOR
21-32	L1-7		
21-33			
21-34	L1-7		
21-35	NC NC		
21-36			

SEE DWG SE-11

NODE: 05 SLOT: 03 PART NO.: 1756-OX8I

21-37	OUT-0 NC		
21-38			
21-39	L1-0		
21-40	OUT-0 NO O:0503/00	→	TO WEST TL DRIVE CONTACTOR
21-41	L1-0		
21-42	OUT-1 NC		
21-43	L1-1		
21-44	OUT-1 NO O:0503/01	→	TO WEST TL PULL CONTACTOR
21-45	L1-1		
21-46	OUT-2 NC		
21-47	L1-2		
21-48	OUT-2 NO O:0503/02	→	TO EAST TL DRIVE CONTACTOR
21-49	L1-2		
21-50	OUT-3 NC		
21-51	L1-3		
21-52	OUT-3 NO O:0503/03	→	TO EAST TL PULL CONTACTOR
21-53	L1-3		
21-54	OUT-4 NC		
21-55	L1-4		
21-56	OUT-4 NO O:0503/04	→	TO CL #1 DRIVE CONTACTOR
21-57	L1-4		
21-58	OUT-5 NC		
21-59	L1-5		
21-60	OUT-5 NO O:0503/05	→	TO CL #1 PULL CONTACTOR
21-61	L1-5		
21-62	OUT-6 NC		
21-63	L1-6		
21-64	OUT-6 NO O:0503/06	→	TO CL #2 DRIVE CONTACTOR
21-65	L1-6		
21-66	OUT-7 NC		
21-67	L1-7		
21-68	OUT-7 NO O:0503/07	→	TO CL #2 PULL CONTACTOR
21-69	L1-7		
21-70			
21-71	L1-7		
21-72	NC NC		
21-73			

SEE DWGS SE-11 AND SE-12

NODE: 05 SLOT: 04 PART NO.: 1756-OX8I

21-74	OUT-0 NC		
21-75			
21-76	L1-0		
21-77	OUT-0 NO O:0504/00	→	TO WEST MB RELEASE CONTACTOR
21-78	L1-0		
21-79	OUT-1 NC		
21-80	L1-1		
21-81	OUT-1 NO O:0504/01	→	TO EAST MB RELEASE CONTACTOR
21-82	L1-1		
21-83	OUT-2 NC		
21-84	L1-2		
21-85	OUT-2 NO O:0504/02	→	TO WEST XB #1 RELEASE CONTACTOR
21-86	L1-2		
21-87	OUT-3 NC		
21-88	L1-3		
21-89	OUT-3 NO O:0504/03	→	TO WEST XB #2 RELEASE CONTACTOR
21-90	L1-3		
21-91	OUT-4 NC		
21-92	L1-4		
21-93	OUT-4 NO O:0504/04	→	TO EAST XB #1 RELEASE CONTACTOR
21-94	L1-4		
21-95	OUT-5 NC		
21-96	L1-5		
21-97	OUT-5 NO O:0504/05	→	TO EAST XB #2 RELEASE CONTACTOR
21-98	L1-5		
21-99	OUT-6 NC		
21-100	L1-6		
21-101	OUT-6 NO O:0504/06	→	SPARE
21-102	L1-6		
21-103	OUT-7 NC		
21-104	L1-7		
21-105	OUT-7 NO O:0504/07	→	SPARE
21-106	L1-7		
21-107			
21-108	L1-7		
21-109	NC NC		
21-110			

SEE DWG SE-12

NODE: 05 SLOT: 05 PART NO.: 1756-OX8I

21-111	OUT-0 NC		
21-112			
21-113	L1-0		
21-114	OUT-0 NO O:0505/00	→	START GENERATOR
21-115	L1-0		
21-115	OUT-1 NC		
21-116	L1-1		
21-117	OUT-1 NO O:0505/01	→	TRANSFER TO EMERGENCY
21-118	L1-1		
21-119	OUT-2 NC		
21-120	L1-2		
21-121	OUT-2 NO O:0505/02	→	TRANSFER TO NORMAL
21-122	L1-2		
21-123	OUT-3 NC		
21-124	L1-3		
21-125	OUT-3 NO O:0505/03	→	PREVENT RE-TRANSFER
21-126	L1-3		
21-127	OUT-4 NC		
21-128	L1-4		
21-129	OUT-4 NO O:0505/04	→	SPARE
21-130	L1-4		
21-131	OUT-5 NC		
21-132	L1-5		
21-133	OUT-5 NO O:0505/05	→	SPARE
21-134	L1-5		
21-135	OUT-6 NC		
21-136	L1-6		
21-137	OUT-6 NO O:0505/06	→	SPARE
21-138	L1-6		
21-140	OUT-7 NC		
21-141	L1-7		
21-145	OUT-7 NO O:0505/07	→	SPARE
21-146	L1-7		
21-147			
21-148	L1-7		
21-149	NC NC		
21-150			

SEE DWG SE-05

FROM CP CB-PLC25 5A

CP-N

NODE: 05 SLOT: 06 PART NO.: 1756-OA16

21-111			
21-112	OUT-0 1 O:02015/00	CR-NL	FENDER NAV LIGHT RELAY 10-69
21-113			
21-114	OUT-1 2 O:02015/01	CR-UVC	MAIN CB UV CONTROL 5-01
21-115			
21-115	OUT-2 3 O:02015/02	CR-HT	HEAT RELAY 10-52, 18-23
21-116			
21-117	OUT-3 4 O:02015/03	CR-GG	GONGS 10-40
21-118			
21-119	OUT-4 5 O:02015/04	SPARE	SPARE
21-120			
21-121	OUT-5 6 O:02015/05	CR-NLR	NAV LIGHTS RED 10-44
21-122			
21-123	OUT-6 7 I:02015/06	CR-NLG	NAV LIGHTS GREEN 10-45
21-124			
21-125	OUT-7 8 O:02015/07		SPARE
21-126			
21-127	9 L2-0		
21-128	10 L2-0		
21-129	OUT-8 11 O:02015/08	CR-WDF	WEST SPAN DRIVE FAN RELAY
21-130			
21-131	OUT-9 12 I:02015/09	CR-WDC	DECEL CHECK 12-59
21-132			
21-133	OUT-1013 O:02015/10		SPARE
21-134			
21-135	OUT-1114 I:02015/11	CR-WEN	SPAN DRIVE ENABLE 12-59
21-136			
21-137	OUT-1215 O:02015/12	CR-EDF	EAST SPAN DRIVE FAN RELAY
21-138			
21-140	OUT-1316 O:02015/13	CR-EDC	DECEL CHECK 12-63
21-141			
21-145	OUT-1417 O:02015/14		SPARE
21-146			
21-147	OUT-1518 O:02015/15	CR-EEN	SPAN DRIVE ENABLE 12-63
21-148			
21-149	19 L2-1		
21-150	20 L2-1		

SEE DWG SE-21

8/9/2018
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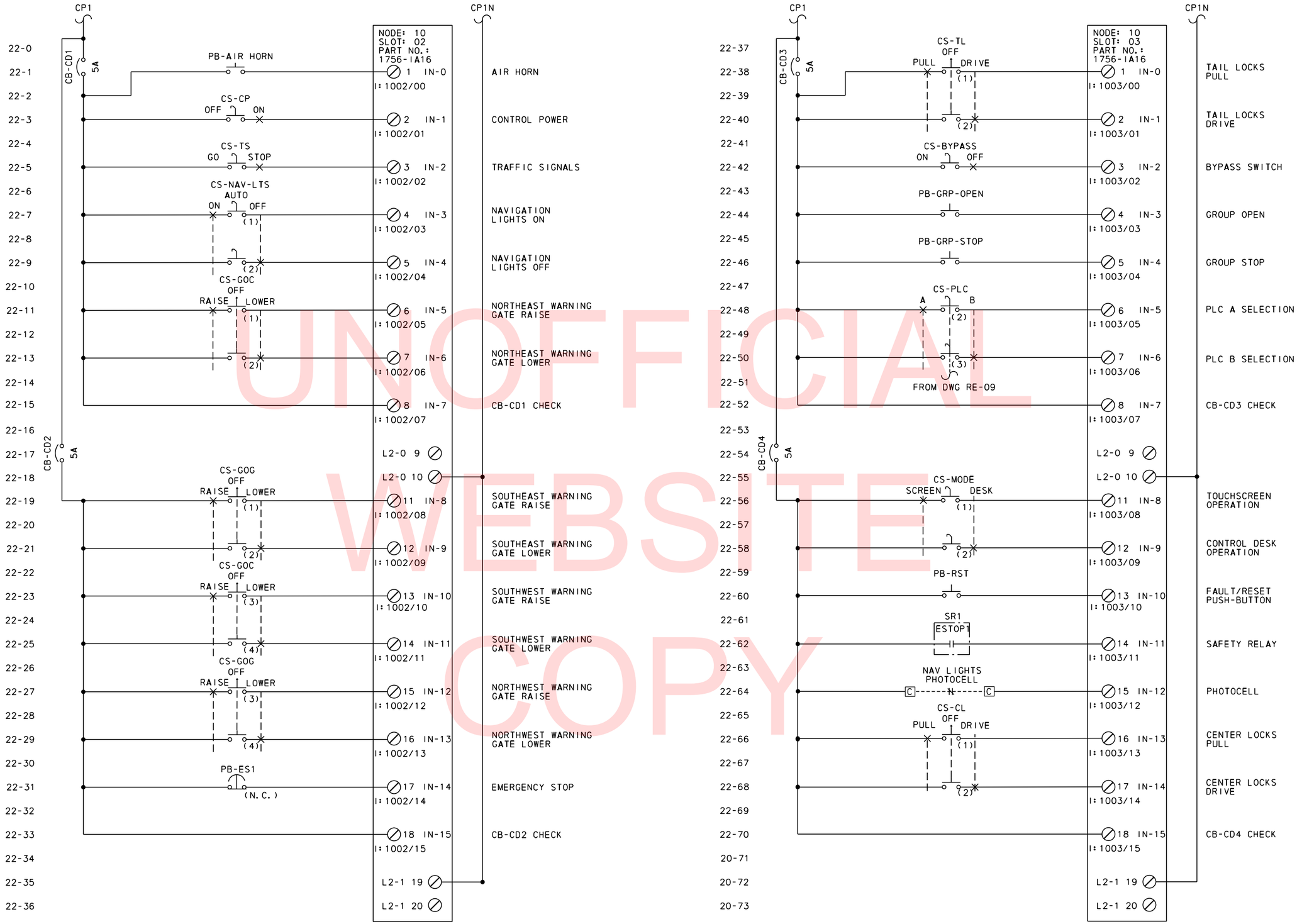
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-154	SWITCHBOARD ROOM: PLC OUTPUT I
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-21
					CHECKED BY: AHN	SHEET NO. 135
						TOTAL SHTS. 180



DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	CONTROL DESK PLC INPUT I

SE-22 | SHEET NO. 136 | TOTAL SHTS. 180

8/9/2018
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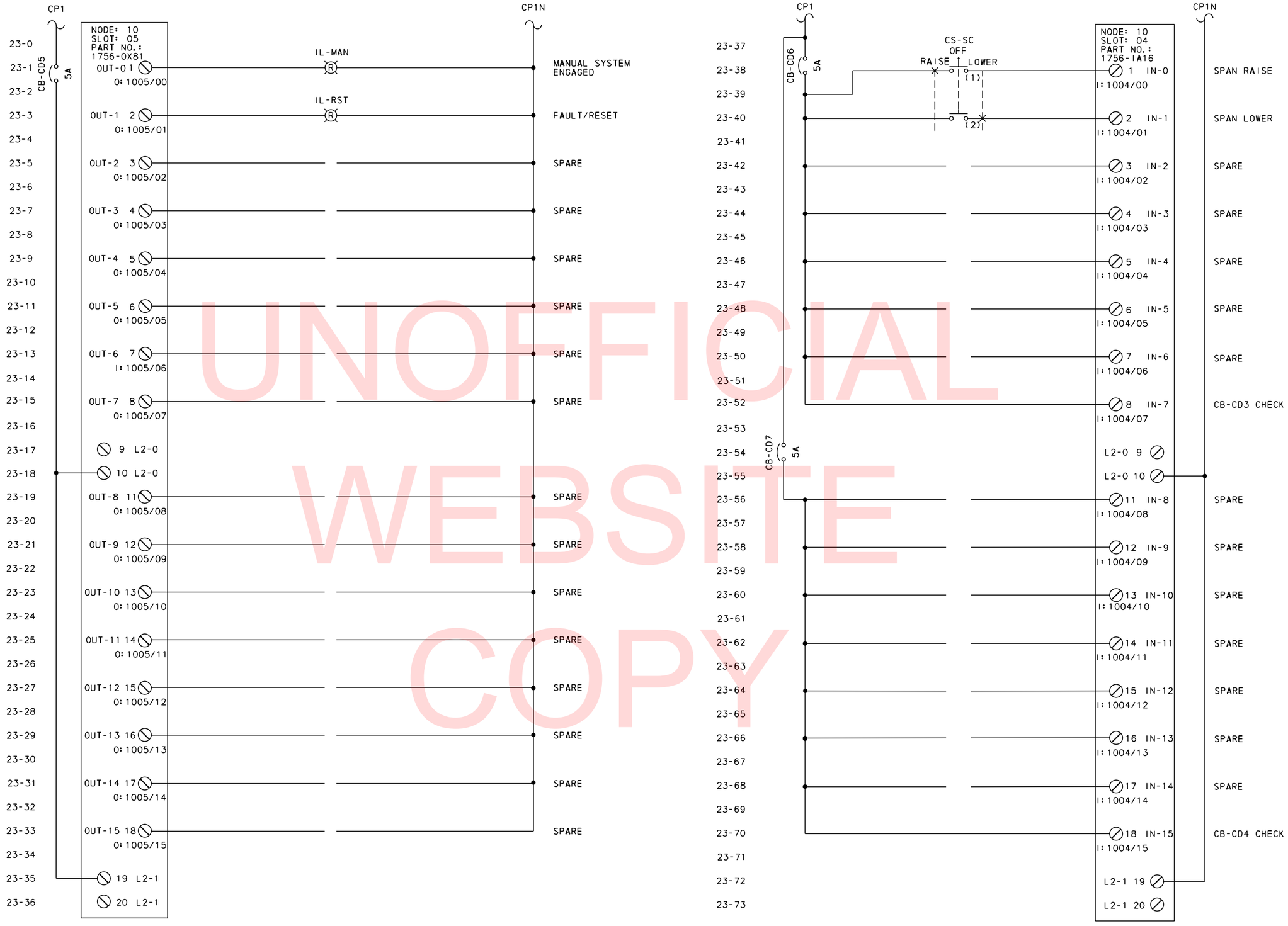


8/92018
M:\02889.04C\4000_Fin_Des\CADD\30_Elec\EE23 - Control Desk PLC Output 1.dgn

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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

CONTROL DESK PLC OUTPUT I

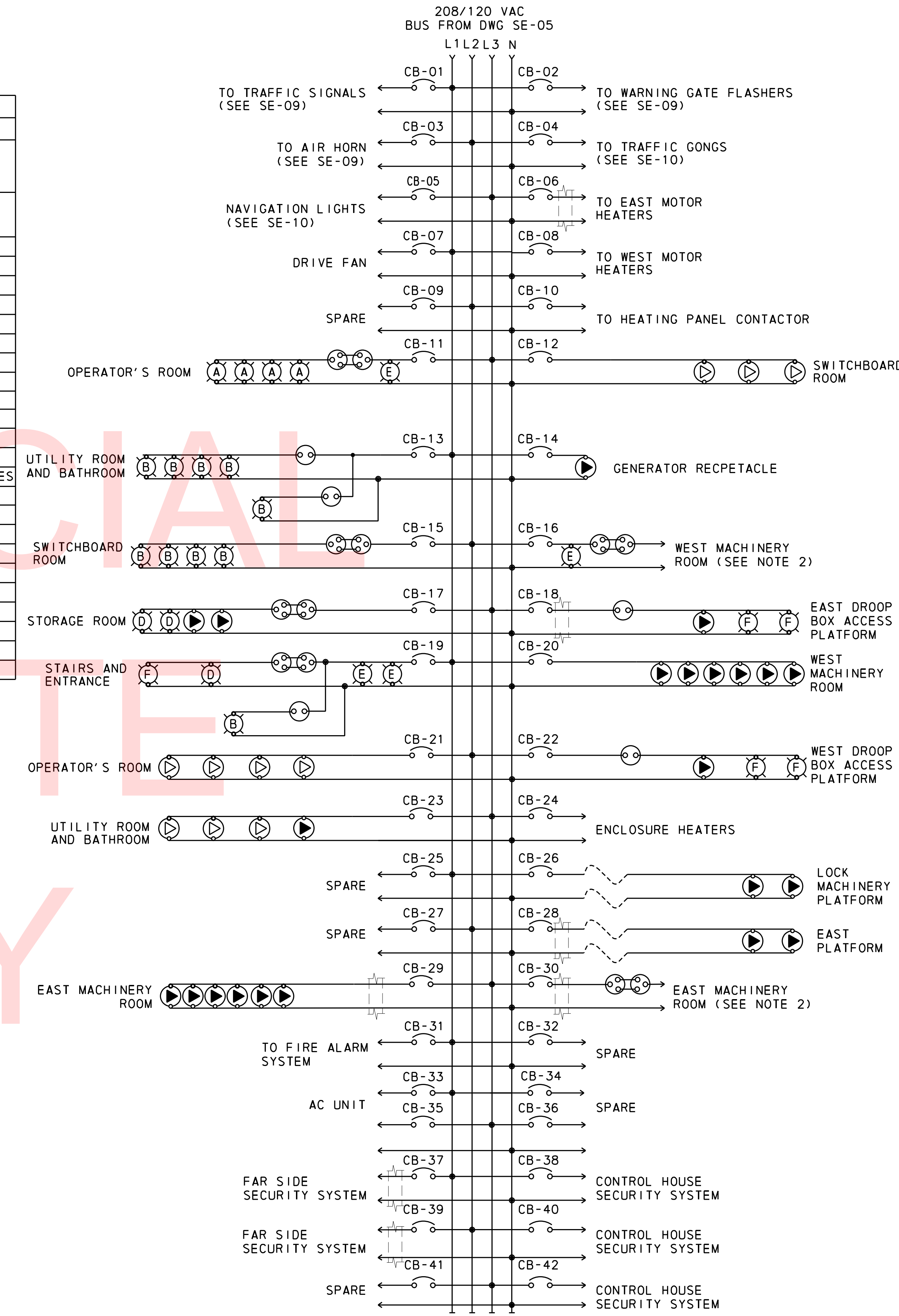
SE-23 | SHEET NO. 137 | TOTAL SHTS. 180

NAME/RATINGS: 208/120 VOLT, 42 SPACES, 100 A-PANELBOARD

DESIGNATION	LOCATION	PANEL TYPE & SERVICE
LIGHTING PANEL	SWITCHBOARD ROOM	BUS: 120/208 VOLT 3-PHASE, 4-WIRE MAIN BREAKER: 100A, 3-POLE

CIRCUIT DESCRIPTION	KVA/PHASE *A	KVA/PHASE *B	KVA/PHASE *C	TRIP	WIRE SIZE	CKT	CKT	WIRE SIZE	TRIP	KVA/PHASE *A	KVA/PHASE *B	KVA/PHASE *C	CIRCUIT DESCRIPTION
TRAFFIC SIGNALS	0.6			15	10	1	2	12	15	0.6			WARNING GATE FLASHERS
AIR HORN		1		15	10	3	4	12	15		0.4		TRAFFIC GONGS
NAVIGATION LIGHTS			0.4	15	12	5	6	12	15			0.2	EAST MOTOR HEATER
DRIVE FAN	0.1			15	12	7	8	12	15	0.2			WEST MOTOR HEATER
SPARE		0		15	12	9	10	12	15		0.1		HEATING PANEL CONTACTOR
OPERATOR'S ROOM LIGHTING			0.4	15	12	11	12	12	15			0.7	SWITCHBOARD ROOM RECEPS
UTILITY ROOM AND BATHROOM LIGHTING	0.4			10	12	13	14	12	20	0.2			SPARE
SWITCHBOARD ROOM LIGHTING		0.4		15	12	15	16	12	15		0.8		WEST MACHINERY ROOM LIGHTING
STORAGE ROOM LIGHTING AND RECEPS			0.6	15	12	17	18	12	15			0.4	EAST PLATFORM LIGHTING
LIGHTING FOR STAIRS AND ENTRANCE	0.2			15	12	19	20	12	15	0.8			WEST MACHINERY ROOM RECEPS
OPERATOR'S ROOM RECEPS		0.8		15	12	21	22	12	20		0.4		LOCK MACHINERY PLATFORM LIGHTING
UTILITY ROOM AND BATHROOM RECEPS			0.8	20	12	23	24	12	20			0.1	ENCLOSURE HEATERS
SPARE	0			20	12	25	26	12	20	0.4			LOCK MACHINERY PLATFORM RECEPTACLES
SPARE		0		20	12	27	28	12	20		0.4		EAST PLATFORM RECEPTACLES
EAST MACHINERY ROOM RECEPS			0.8	20	12	29	30	12	20			0.8	EAST MACHINERY ROOM LIGHTING
FIRE ALARM SYSTEM	0.6			20	12	31	32	12	20	0			SPARE
AIR CONDITIONER		1.5		20	12	33	34	12	20		0		SPARE
AIR CONDITIONER			1.5	20	12	35	36	12	20			0	SPARE
SECURITY	1.2			20	12	37	38	12	20	0.4			CONTROL HOUSE SECURITY
SECURITY		0.4		20	12	39	40	12	20		1.2		CONTROL HOUSE SECURITY
SPARE			0	20	12	41	42	12	20			2.0	CONTROL HOUSE SECURITY
SUB TOTAL LOAD	3.1	4.1	4.5							2.6	2.9	4.2	SUB TOTAL LOAD
TOTAL CONNECTED LOAD	21.4												

NEUTRAL BUS
GROUNDING BUS



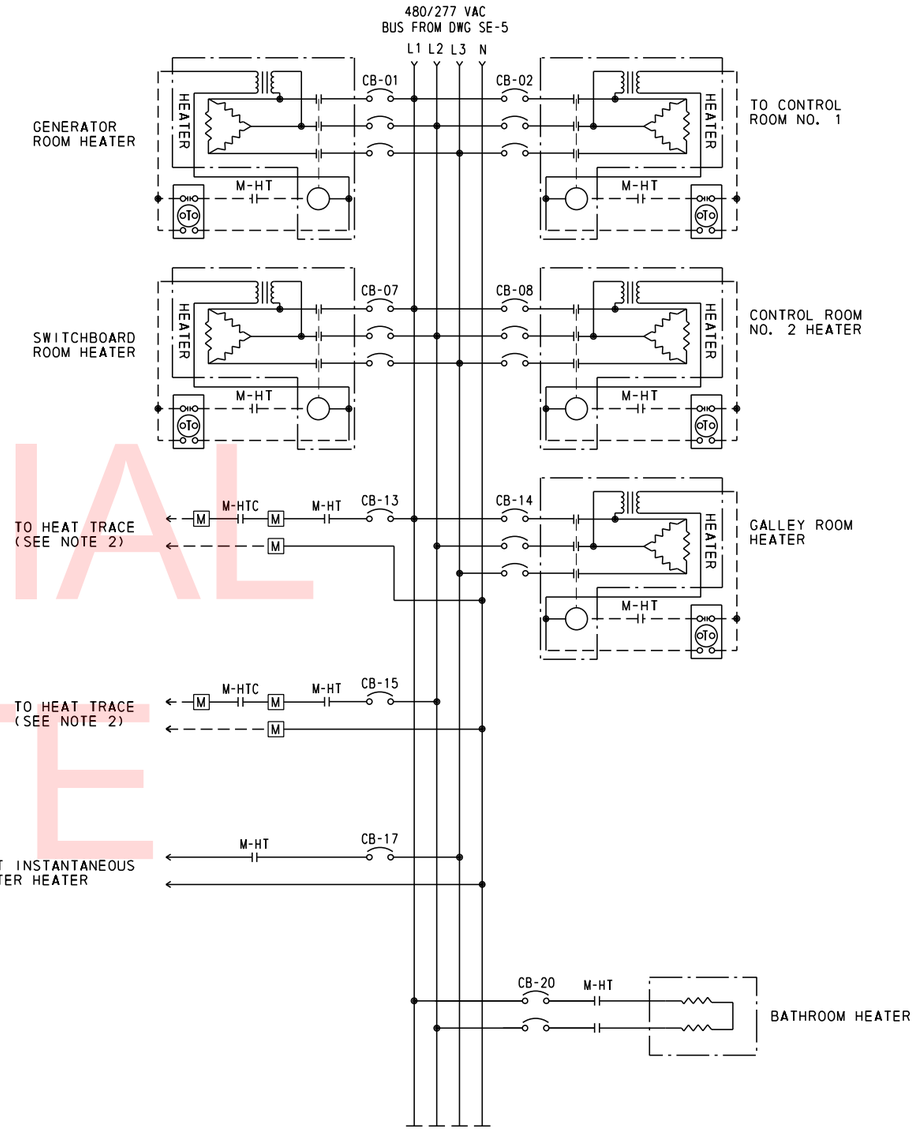
LEGEND

- LIGHT TUMBLER SWITCH 4-WAY
- LIGHT TUMBLER SWITCH 3-WAY
- LIGHT TUMBLER SWITCH 2-WAY
- LIGHT TUMBLER SWITCH WITH DIMMER
- LIGHT FIXTURE A = FIXTURE TYPE (SEE SPECIAL PROVISIONS FOR INFORMATION ON FIXTURE TYPES)
- DUPLEX RECEPTACLE
- GFI DUPLEX RECEPTACLE

NOTES:

1. FURNISH NEW WALL MOUNTED AC UNIT AND RECEPTACLE IN THE CONTROL ROOM TO OPERATE FROM THE 208VAC 2 POLE CIRCUIT BREAKER (CKT 33/35).
2. FURNISH AND INSTALL NEW CONDUIT AND WIRE TO EXISTING MACHINERY ROOM LIGHT FIXTURES.

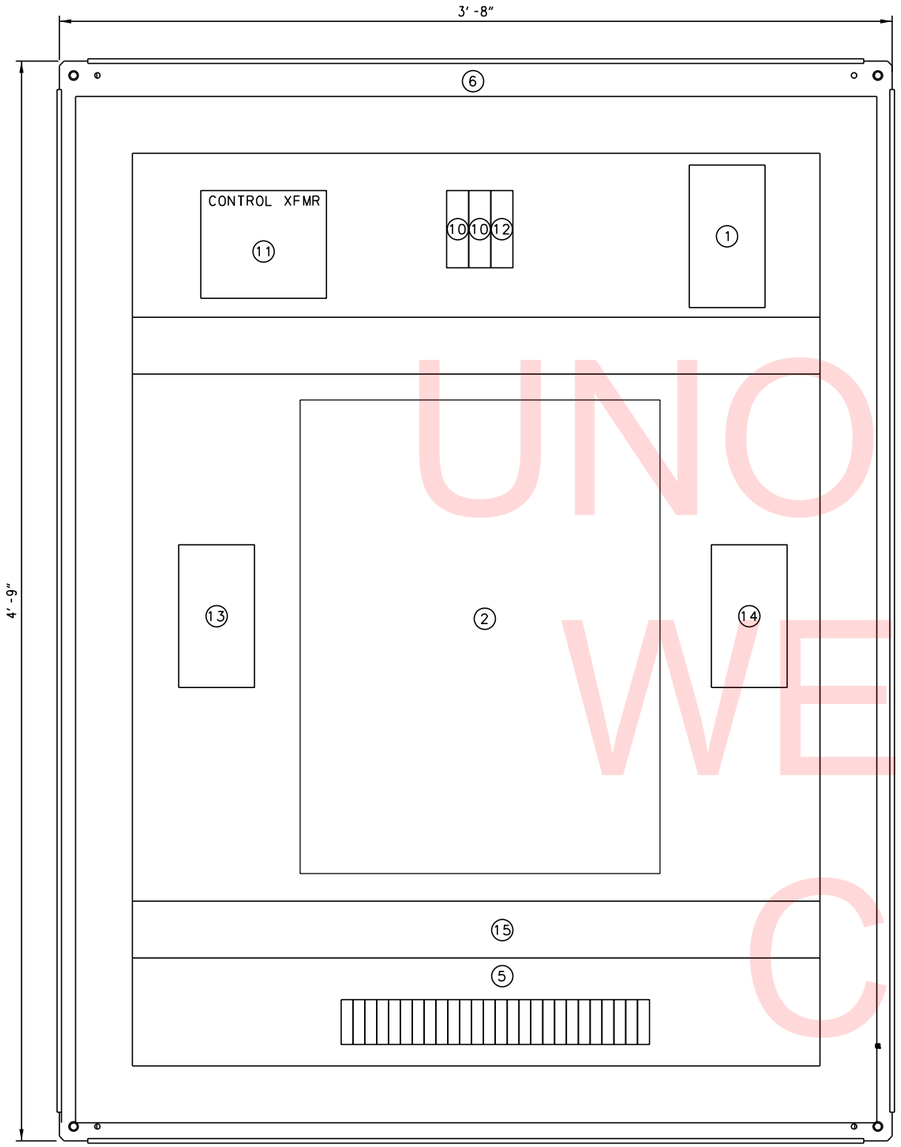
NAME/RATINGS: 480/277 VOLT, 18 SPACES, 100 A-PANELBOARD												
DESIGNATION				LOCATION					PANEL TYPE & SERVICE			
HEATING PANEL WITH CONTACTOR				SWITCHBOARD ROOM					BUS: 480/277 VOLT 3-PHASE, 4-WIRE MAIN BREAKER: 50A, 3-POLE			
CIRCUIT DESCRIPTION	KVA/PHASE			TRIP	WIRE SIZE	*A *B *C	WIRE SIZE	TRIP	KVA/PHASE			CIRCUIT DESCRIPTION
	*A	*B	*C						*A	*B	*C	
GENERATOR ROOM	1.67			15	10	1 2	12	15	1.67			CONTROL ROOM HEATER 1
		1.67		15	10	3 4	12	15		1.67		
			1.67	15	12	5 6	12	15			1.67	
SWITCHBOARD ROOM	1.67			15	12	7 8	12	15	1.67			CONTROL ROOM HEATER 2
		1.67		15	12	9 10	12	15		1.67		
			1.67	15	12	11 12	12	15			1.67	
HEAT TRACE (SEE NOTE 2)	2.0			15	12	13 14	12	20	1.67			GALLEY ROOM HEATER
HEAT TRACE (SEE NOTE 2)		2.0		15	12	15 16	12	15		1.67		
WATER HEATER			4	15	12	17 18	12	15			1.67	
				15	12	19 20	12	15	0.5			BATHROOM HEATER
				15	12	21 22	12	15		0.5		
				15	12	23 24	12	15				
				15	12	25 26	12	15				
				15	12	27 28	12	15				
				15	12	29 30	12	15				
SUB TOTAL LOAD	5.34	5.34	7.34			NEUTRAL BUS GROUNDING BUS			5.50	5.50	5.00	SUB TOTAL LOAD
TOTAL CONNECTED LOAD	34.02											



NOTES:

1. CONTRACTOR TO PROVIDE MULTIPOLE LIGHTING CONTACTORS/RELAYS IN PANELBOARD TO DE-ENERGIZE HEATING CIRCUITS WHEN THE BRIDGE IS IN OPERATION.
2. EXISTING HEAT TRACE OPERATING VOLTAGE SHALL BE VERIFIED BY THE CONTRACTOR AND A NEW TRANSFORMER SHALL BE FURNISHED AND INSTALLED AS REQUIRED.
3. THE NEW HEATERS SHALL BE FURNISHED AND INSTALLED WITH INTERNAL 120VAC POWER SUPPLY AS SHOWN. IF A 120VAC SOURCE IS NOT AVAILABLE IN THE PROPOSED UNIT THE CONTRACTOR SHALL PROVIDE A 120VAC SOURCE THROUGH A TRANSFORMER.

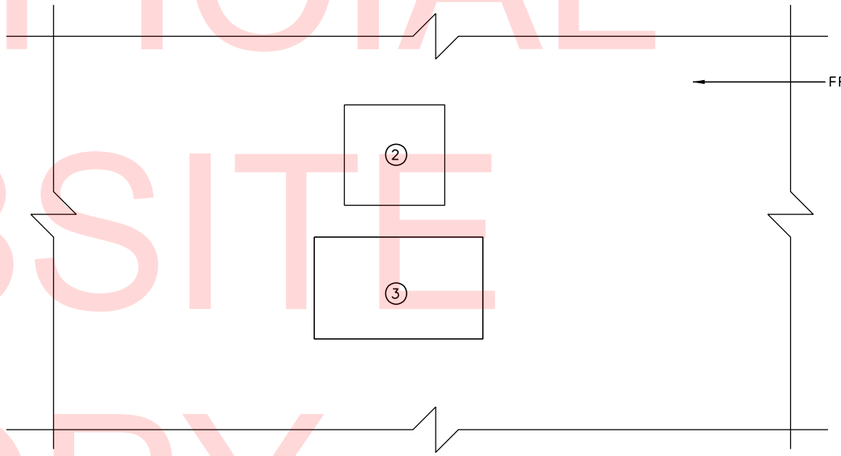
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-154	HEATING PANELBOARD SCHEDULE	SE-25
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 139
					CHECKED BY: AHN		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	POWERPACT	MAIN CIRCUIT BREAKER	3P, 600V, 250AF/150AT, 35KAIC (MIN.)
		1	SQUARE D	-	DOOR DISCONNECT HANDLE	-
		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
5	[A]	ARQ	PHOENIX CONTACT	UT4	TERMINAL BLOCKS	SCREW TYPE, 690V, 32A
					DIN RAIL	-
					END PLATE	-
					CROSS CONNECTORS	-
					TERMINAL MARKER	-
					GROUND TERMINAL	-
6	-	1	CUSTOM	CUSTOM	10 GAUGE STEEL BACK PANEL	-
					NEMA 4X S.S. ENCLOSURE	48" X 60" X 20"
7	DSS8	1	SQUARE D	XCP	DOOR LIMIT SWITCH*	300V, 10A, 1NO/1NC
8	-	1	PHOENIX CONTACT	-	DIN RAIL GFI OUTLET*	125V, 15A
9	-	1	HOFFMAN	DAH	ENCLOSURE HEATER*	115V, 100W
10	FU-BC	2	LITTLEFUSE	KLDR	CONTROL TRANSFORMER FUSE	600V, 5A
		1	LITTLEFUSE	-	FUSE HOLDER	2P, 30A
11	TF-BC	1	SQUARE D	9070T	CONTROL TRANSFORMER	2KVA,480V PRI, 120V SEC
12	CB-RL	1	SQUARE D	POWERPACT	ROADWAY LIGHTING CB	1P, 600A, 125AF, 15AT, 35KAIC
13	CB-LP1	1	SQUARE D	POWERPACT	LIGHTING CB	3P, 600V, 125AF/60AT, 35KAIC (MIN.)
14	CB-H1	1	SQUARE D	POWERPACT	HEATING CB	3P, 600V, 125AF/75AT, 35KAIC (MIN.)
15	-	1	PANDUIT	-	WIRING DUCTS, AS REQUIRED	

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



FRONT DOOR MODIFICATIONS

NOTES:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL.
2. THE CONTRACTOR SHALL ARRANGE FOR THE EXISTING ATS TO BE DELIVERED AND SHIPPED TO THE CONTROL SYSTEM VENDOR FOR USE IN THE NEW ENCLOSURE.
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.
4. 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.

8/2/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

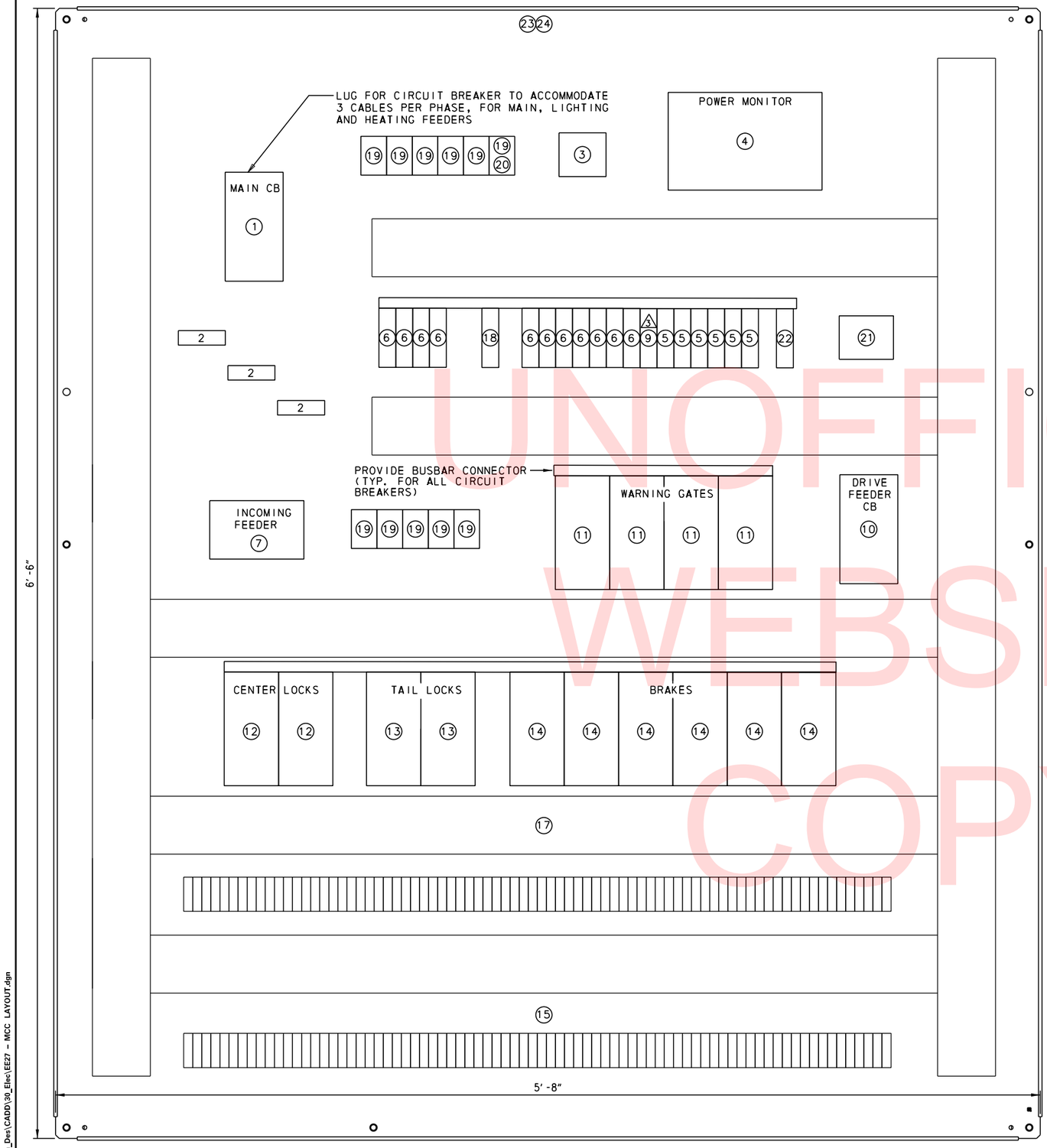
NOT TO SCALE

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	POWERPACT	MAIN CIRCUIT BREAKER	3P,600V,250AF/125AT,35KAIC (MIN.)
					DOOR DISCONNECT HANDLE	-
					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	MULTI9	CIRCUIT BREAKER	1P, 240V, 20A
10	CB-SM1	1	SQUARE D	POWERPACT	DRIVE FEEDER CB	3P,600V,250AF/125AT,35KAIC
11	CB-G**	4	SQUARE D	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	-
12	CB-CL1,2	2	SQUARE D	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	-
13	CB-TLW,E	2	SQUARE D	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	-
14	CB-MB,XB	6	SQUARE D	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	MULI 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:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL.
2. 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.
3. THE CONTRACTOR SHALL SUPPLY AN ENCLOSURE LIGHT, HEATER AND RECEPTACLE INSIDE EACH AUXILARY CABINET.
4. 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.

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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	

MOTOR CONTROL CABINET: BACKPANEL DETAILS

SE-27	
SHEET NO.	141
TOTAL SHTS.	180

8/2/2018
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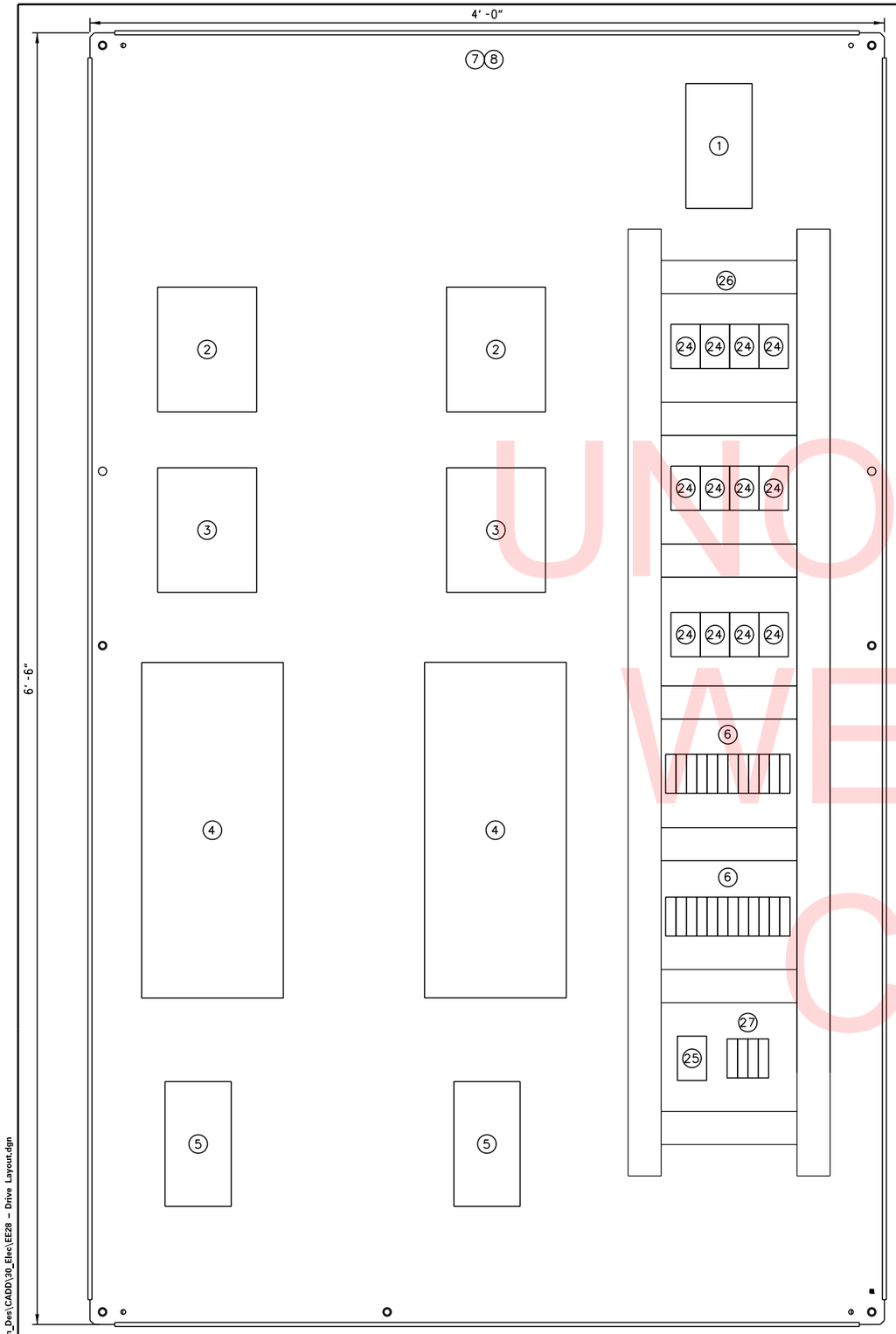
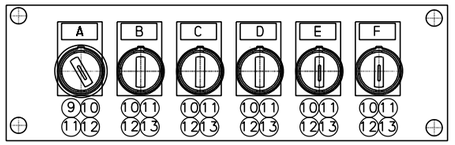


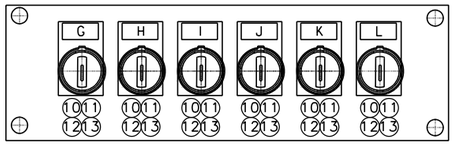
PROPOSED BILL OF MATERIALS

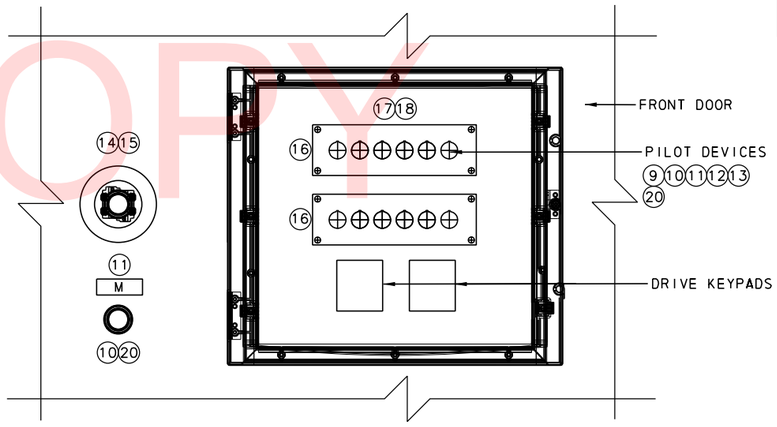
ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	PART NO.	DESCRIPTION 1	DESCRIPTION 2
1	CB-SM2	1	SQUARE D	POWERPACT	MAIN CIRCUIT BREAKER	3P, 600V, 150AF/100AT, 35KAIC
					DISCONNECT HANDLE	
					CIRCUIT BREAKER TERMINAL LUG	
2	FU-WM,EM	2	MERSEN	HSJ	FAST TRIP FUSE	3P, 600VAC, 60A
		2	MERSEN	-	3 POLE FUSE HOLDER	
3	LINE RTR	2	MTE CORP	RL SERIES	5% LINE FILTER	
4	VFD	2	ALLEN BRADLEY	POWER FLEX 753	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	SCREW TYPE, 690V, 32A
					DIN RAIL	
					END PLATE	
					CROSS CONNECTORS	
					TERMINAL MARKER	
					GROUND TERMINAL	
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	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







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.

MANUAL OPERATION CONTROL STATION

SCALE: NTS

NOTES:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL.
2. 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.
3. THE DRIVES SHALL BE ALLEN BRADLEY POWER FLEX UNITS OR EMERSON M700 UNITS. NO OTHER SUBSTITUTES ARE PERMITTED.
4. THE CONTRACTOR SHALL SUPPLY A FAN AS REQUIRED BY THE DRIVE MANUFACTURER INSIDE EACH DRIVE CABINET.
5. THE VFD SHALL BE SIZED TO OPERATE IN SENSORLESS VECTOR MODE AND MEET THE MOTOR REQUIREMENTS FOR BREAKWAY TORQUE.
6. 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.

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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		

SPAN DRIVE CABINET
BACKPANEL DETAILS

SE-28
SHEET NO.
142
TOTAL SHTS.
180

8/2018
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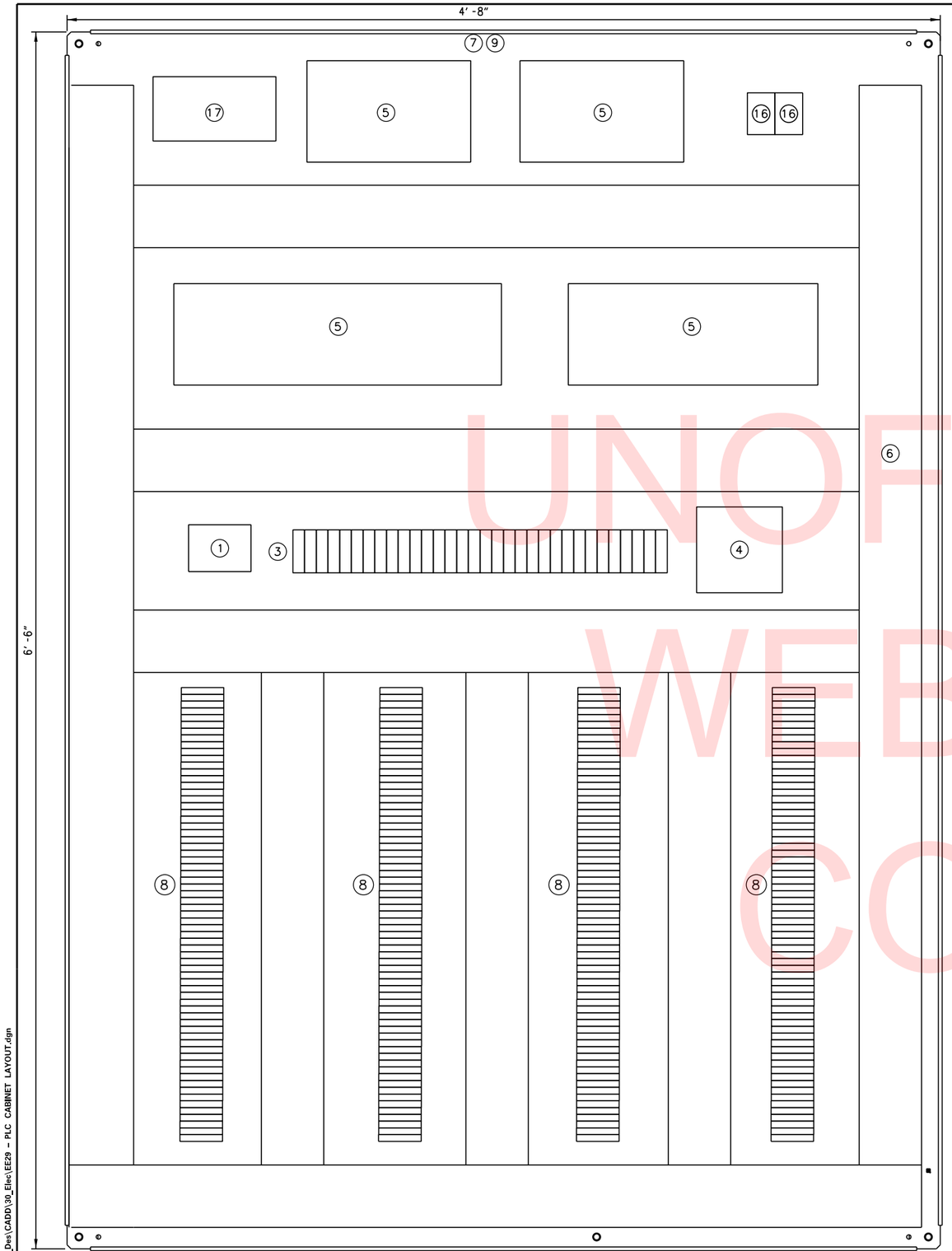
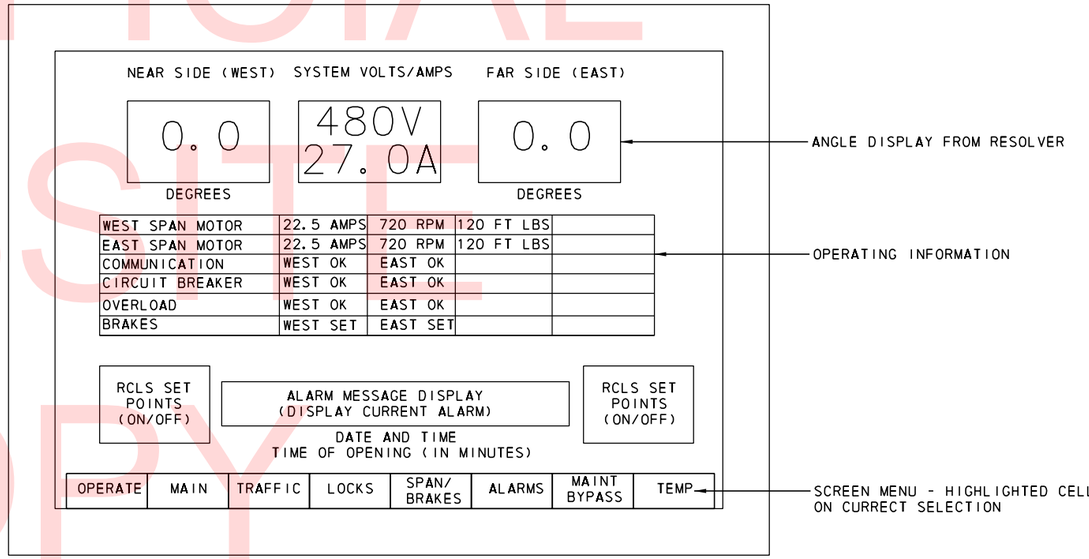


PROPOSED BILL OF MATERIALS

ITEM NO.	DWG ID	QTY	PROPOSED MANUFACTURER	PART NO.	DESCRIPTION	DESCRIPTION 2
1	-	1	ISLATROL	IE	LINE FILTER	
2	-	-	-	-	-	-
3	CB-**	32	SQUARE D	MULTI 9	CIRCUIT BREAKER	1P, 240V, 5A
4	-	1	REDLION	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 DIN RAIL END PLATE CROSS CONNECTORS TERMINAL MARKER GROUND TERMINAL	SCREW TYPE, 690V, 32A
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



HMI TOUCH SCREEN LAYOUT

OTHER SCREENS SIMILAR
OPERATION SCREEN LOCKED OUT FROM SWITCHBOARD ROOM
SEE SPECIAL PROVISIONS FOR REQUIREMNETS ON EACH SCREEN

NOTES:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL.
2. 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.
3. THE CONTRACTOR SHALL FURNISH AN ADDITIONAL SIDE PANELS AS MAY BE REQUIRED TO INSTALL ADDITIONAL EQUIPMENT.
4. 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.

8/2/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

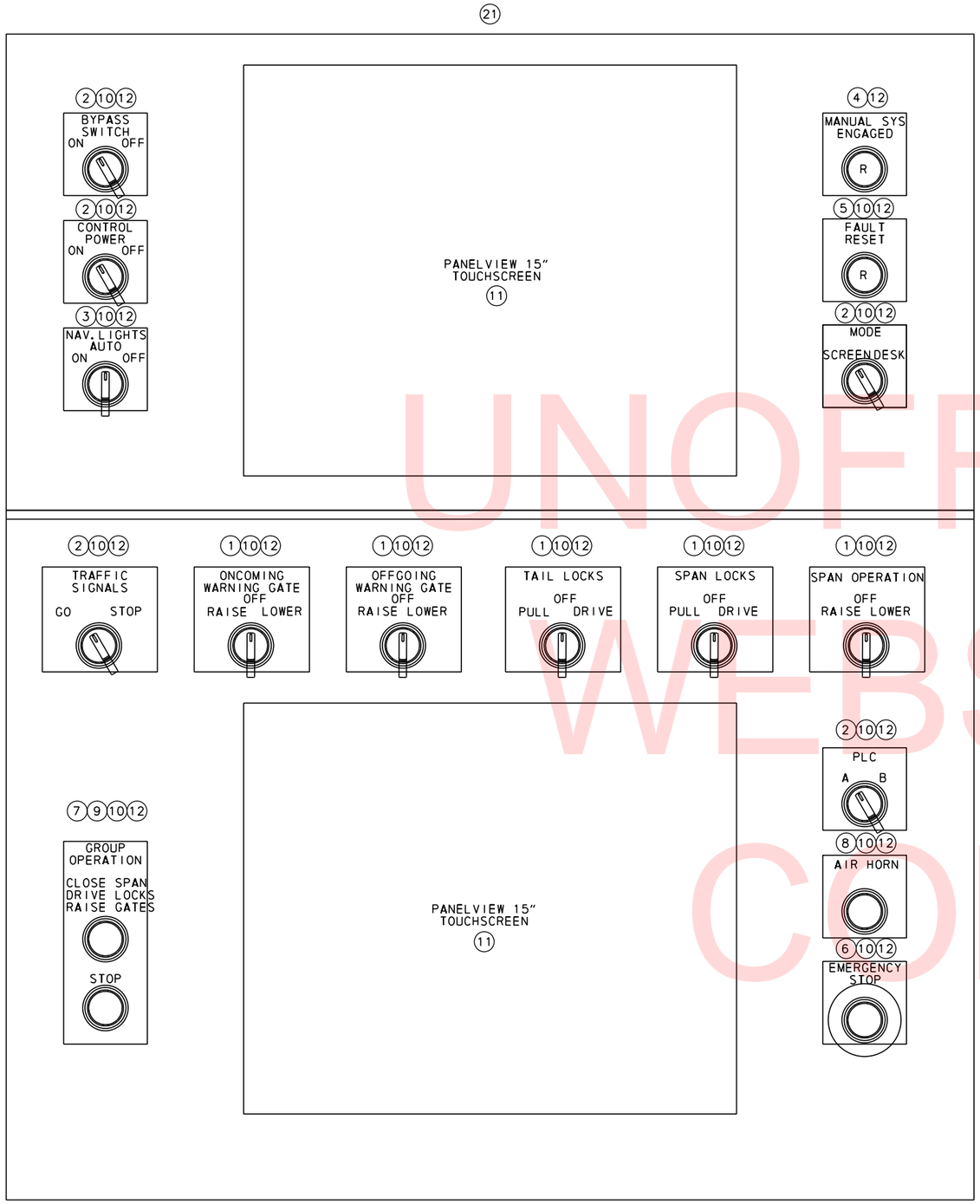
NOT TO SCALE

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		

PLC CABINET
BACKPANEL DETAILS

SE-29
SHEET NO.
143
TOTAL SHTS.
180



PROPOSED BILL OF MATERIALS

ITEM NO.	QTY	PROPOSED MANUFACTURER	PART NO.	DESCRIPTION	DESCRIPTION 2
1	5	SQUARE D	9001K	SPRING RETURN SELECTOR SWITCH	3 POSITION
2	5	SQUARE D	9001K	MAINTAINED SELECTOR SWITCH	2 POSITION
3	1	SQUARE D	9001K	MAINTAINED SELECTOR SWITCH	3 POSITION
4	1	SQUARE D	9001K	PILOT LIGHT	RED LED
5	1	SQUARE D	9001K	ILLUMINATED PUSHBUTTON	RED LED
6	1	SQUARE D	9001K	EMERGENCY PUSHBUTTON	RED
7	1	SQUARE D	9001K	PUSHBUTTON	GREEN
8	1	SQUARE D	9001K	PUSHBUTTON	BLACK
9	1	SQUARE D	9001K	PUSHBUTTON	RED
10	19	SQUARE D	9001K	CONTACT BLOCK	NO/NC
11	2	ALLEN BRADLEY	PANEL VIEW	TOUCHSCREEN	15"
12	16	CUSTOM	DETAILS AS NOTED	ENGRAVED NAME PLATES	
13	1	HOFFMAN	LF120V	ENCLOSURE LIGHT*	
14	1	HOFFMAN	DAH	ENCLOSURE HEATER*	
15	1	SQUARE D	EM-DUO	DIN RAIL OUTLET*	
16	1	ALLEN BRADLEY	SEE DWG SE-32	AB CONTROL LOGIX PLC RACKS	
17	7	SQUARE D	ACTI	CIRCUIT BREAKERS	1P, 240V, 5A
18	1	REDLION	N-TRON 700	NETWORK SWITCH	
19	1	ISATROL	IE	FILTER	
20	1	PANDUIT	-	WIRING DUCTS, SIZE AS REQUIRED	
21	1	CUSTOM	CUSTOM	CONTROL DESK ENCLOSURE AND BACK PANEL	10 GAUGE S.S
22	-	PHOENIX CONTACT	UT4	TERMINAL BLOCKS	SCREW TYPE, 690V, 32A
				DIN RAIL	
				END PLATE	
				CROSS CONNECTOR	
				TERMINAL MARKER	
				GROUND TERMINAL	
23	1	-	-	FIBER OPTIC SPLICE BOX	

*NOT SHOWN IN LAYOUT

CONTROL DESK PLAN VIEW

SCALE: 6"=1'-0"

NOTES:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT.
2. THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE CONTROL DESK SHOWN CAN BE BROUGHT INTO THE CONTROL 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.
3. SEE DWG SE-31 FOR COMPONENTS ON CONTROL DESK BACKPANEL.

8/2/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

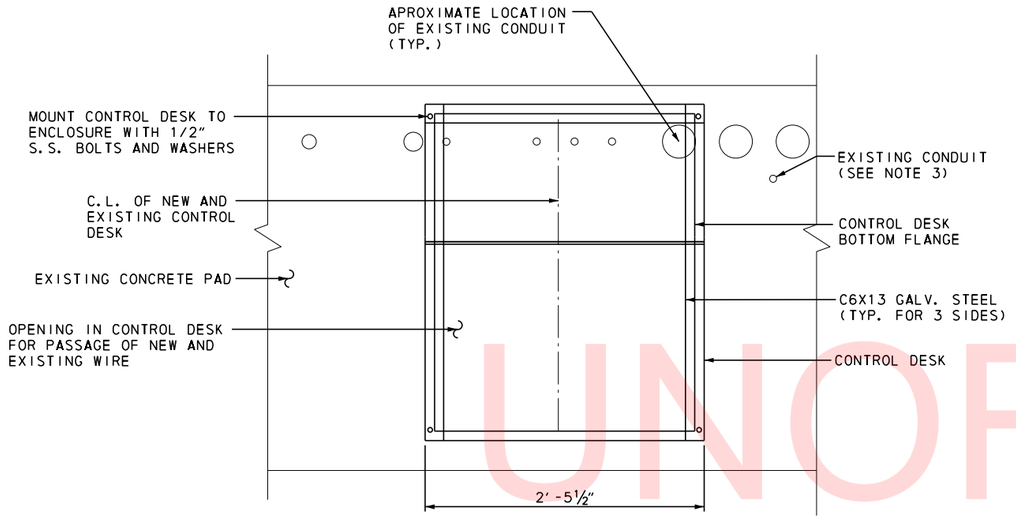
SCALE AS NOTED

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

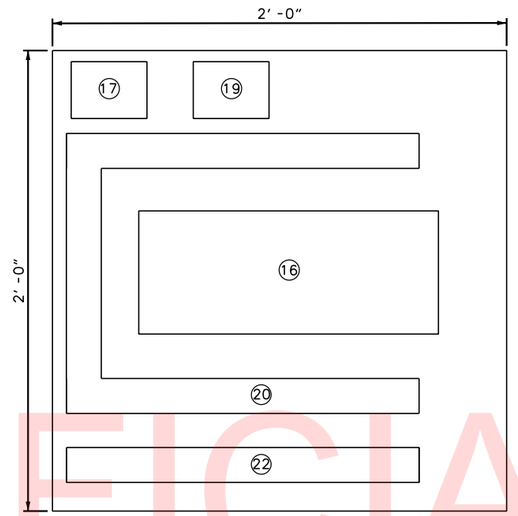
CONTRACT	BRIDGE NO.	3-154
T201507602	DESIGNED BY: MJT	
COUNTY	CHECKED BY: AHN	
SUSSEX		

CONTROL DESK LAYOUT

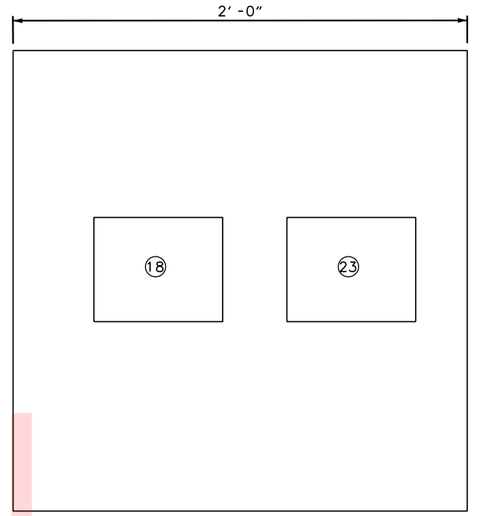
SE-30	
SHEET NO.	144
TOTAL SHTS.	180



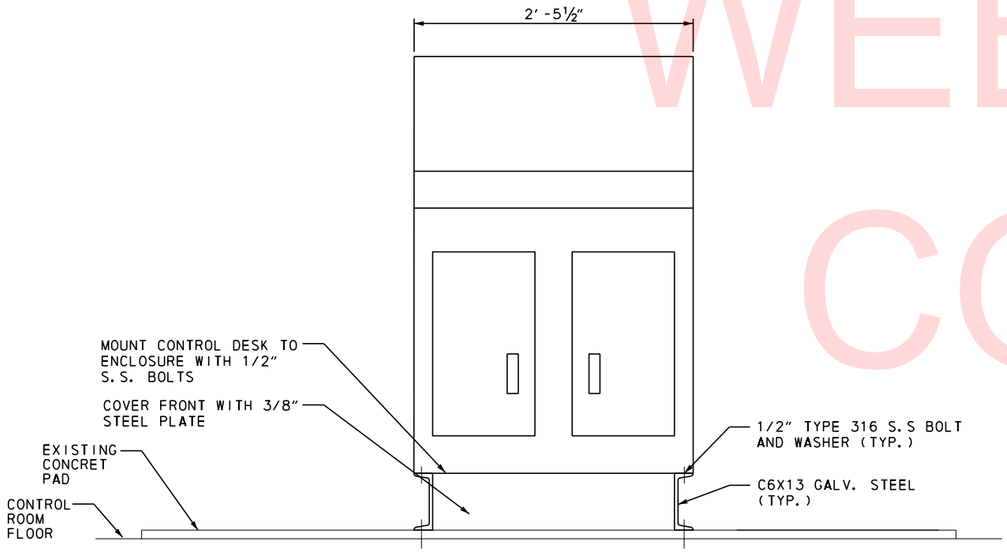
PLAN VIEW
SCALE: 1½" = 1'-0"



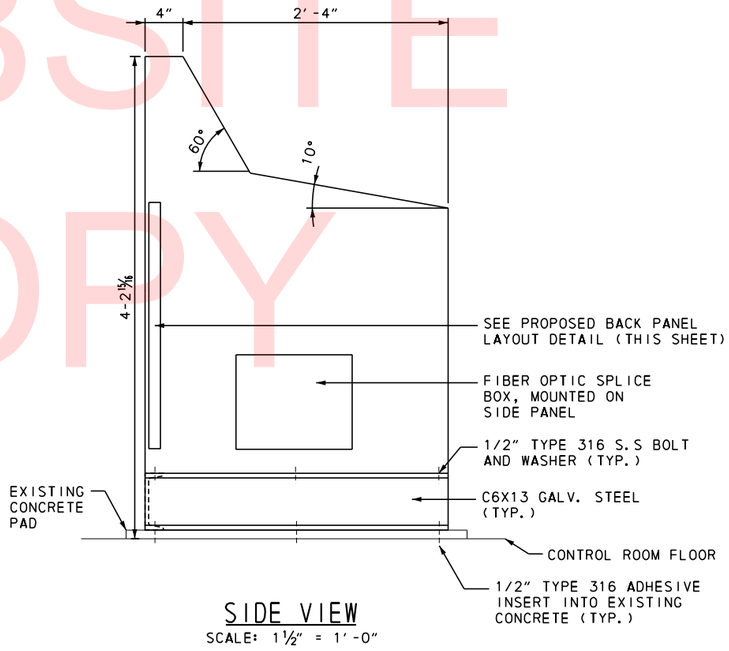
BACK PANEL LAYOUT
SCALE: NTS



SIDE PANEL LAYOUT
SCALE: NTS



FRONT VIEW
SCALE: 1½" = 1'-0"



SIDE VIEW
SCALE: 1½" = 1'-0"

NOTES:

1. CONTRACTOR SHALL REARRANGE COMPONENTS AS REQUIRED FOR PROPER FIT ON THE BACKPANEL AND WITHIN THE ENCLOSURE.
2. THE CONTRACTOR SHALL CONFIRM THAT THE SIZE OF THE CONTROL DESK SHOWN CAN BE BROUGHT INTO THE CONTROL 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.
3. CUT ANY USED CONDUIT FLUSH WITH THE FLOOR.
4. CONTRACTOR SHALL SEAL AND ABANDON CONDUIT LOCATED OUTSIDE OF THE FRAME OF THE NEW CONTROL DESK NOT TO BE REUSED AND ROUTE NEW CONDUIT AND WIRE USING EXPOSED CONDUIT AS MAY BE REQUIRED.
5. NOT ALL CONDUIT MAY BE SHOWN, CONTRACTOR SHALL REFER TO AS-BUILT DRAWINGS AND FIELD CONDITIONS FOR CONDUIT WITHIN THE FRAME OF THE EXISTING CONTROL DESK.
6. REFER TO RE-28 FOR BILL OF MATERIAL REFERENCES
7. ADJUST CONTROL DESK LOCATION TO ACCOMMODATE LOCATION OF EXISTING CONDUIT.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	CONTROL DESK DETAILS
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-31
					CHECKED BY: AHN	SHEET NO. 145
						TOTAL SHTS. 180

8/2/2018
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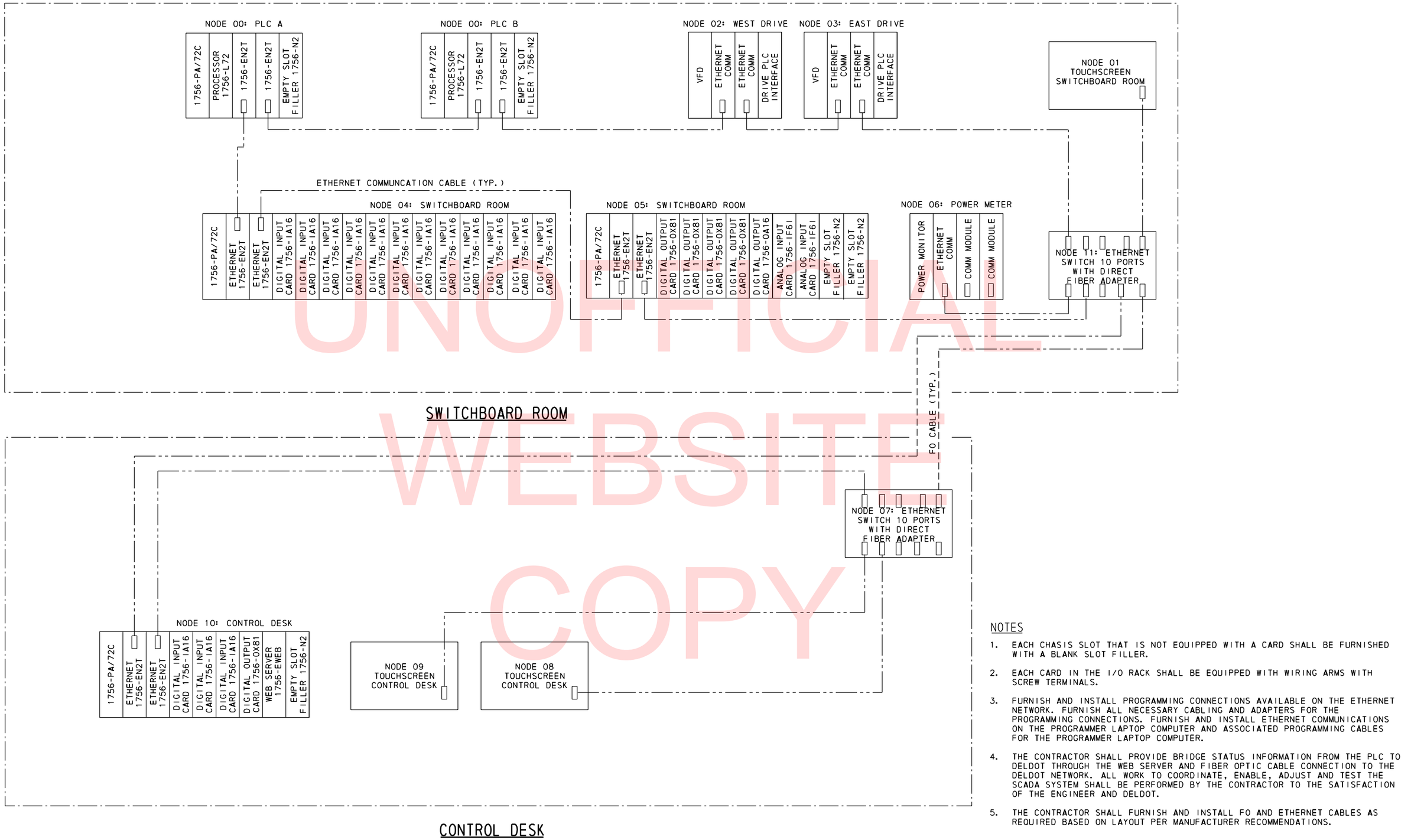

NOTES

1. EACH CHASIS SLOT THAT IS NOT EQUIPPED WITH A CARD SHALL BE FURNISHED WITH A BLANK SLOT FILLER.
2. EACH CARD IN THE I/O RACK SHALL BE EQUIPPED WITH WIRING ARMS WITH SCREW TERMINALS.
3. FURNISH AND INSTALL PROGRAMMING CONNECTIONS AVAILABLE ON THE ETHERNET NETWORK. FURNISH ALL NECESSARY CABLING AND ADAPTERS FOR THE PROGRAMMING CONNECTIONS. FURNISH AND INSTALL ETHERNET COMMUNICATIONS ON THE PROGRAMMER LAPTOP COMPUTER AND ASSOCIATED PROGRAMMING CABLES FOR THE PROGRAMMER LAPTOP COMPUTER.
4. THE CONTRACTOR SHALL PROVIDE BRIDGE STATUS INFORMATION FROM THE PLC TO DELDOT THROUGH THE WEB SERVER AND FIBER OPTIC CABLE CONNECTION TO THE DELDOT NETWORK. ALL WORK TO COORDINATE, ENABLE, ADJUST AND TEST THE SCADA SYSTEM SHALL BE PERFORMED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER AND DELDOT.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL FO AND ETHERNET CABLES AS REQUIRED BASED ON LAYOUT PER MANUFACTURER RECOMMENDATIONS.

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

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		

PLC BLOCK DIAGRAM

SE-32
SHEET NO. 146
TOTAL SHTS. 180

8/2018
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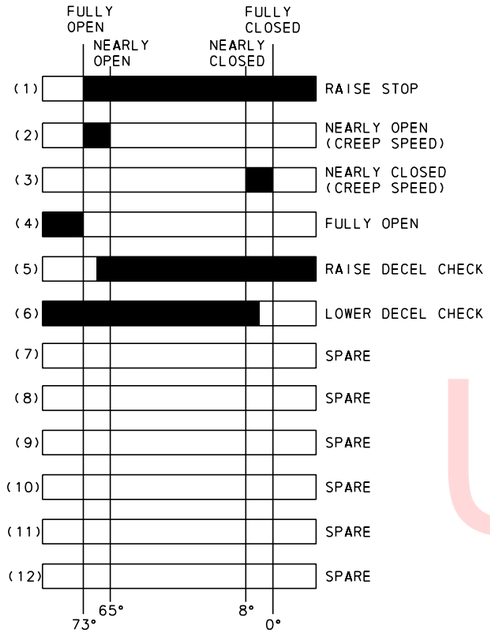
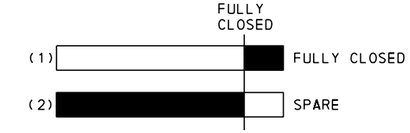
DEVELOPMENT: SPAN ROTARY LIMIT SWITCH

(LS-SCW, LS-SCE)



DEVELOPMENT: SPAN FULLY CLOSED PROXIMITY LIMIT SWITCH

(LS-FC1W, LS-FC2W, LS-FC1E, LS-FC2E)

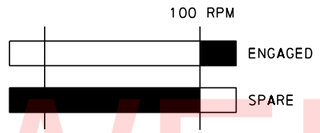


DEVELOPMENT: SPAN FULLY OPEN OVERTRAVEL PROXIMITY LIMIT SWITCH

(LS-OTW, LS-OTE)

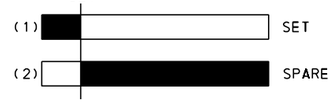
DEVELOPMENT: SPAN SPEED SWITCHES

(LS-SSW, LS-SSE)



DEVELOPMENT: BRAKE SET LEVER ARM LIMIT SWITCHES

(LS-MBE-S, LS-XBE1-S, LS-XBE2-S, LS-MBW-S, LS-XBW1-S, LS-XBW2-S)



DEVELOPMENT: BRAKE RELEASED LEVER ARM LIMIT SWITCHES

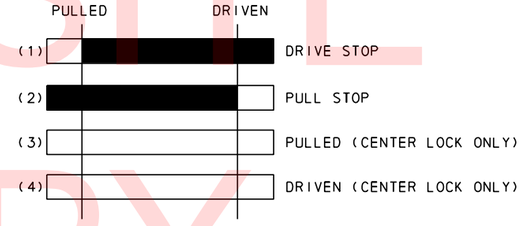
(LS-MBE-R, LS-XBE1-R, LS-XBE2-R, LS-MBW-R, LS-XBW1-R, LS-XBW2-R)

DEVELOPMENT: BRAKE HAND RELEASED LEVER ARM LIMIT SWITCHES

(LS-MBE-H, LS-XBE1-H, LS-XBE2-H, LS-MBW-H, LS-XBW1-H, LS-XBW2-H)

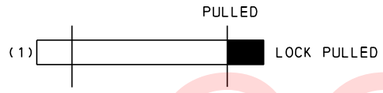
DEVELOPMENT: TAIL & CENTER LOCK ROTARY LIMIT (MOTOR) SWITCHES

(LS-TLW, LS-TLE, LS-CL1, LS-CL2)



DEVELOPMENT: TAIL PULLED PROXIMITY SWITCHES

(LS-TLW-P1,P2, LS-TLE-P1,P2)

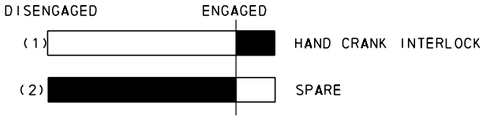


DEVELOPMENT: TAIL DRIVEN PROXIMITY SWITCHES

(LS-TLW-D1, LS-TLE-D2)

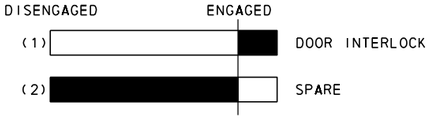
DEVELOPMENT: TYPICAL MOTOR HAND CRANK LIMIT SWITCH

(LS-TLW-HC, LS-TLE-HC, LS-CL1-HC LS-CL2-HC, LS-GNW-HC, LS-GSW-HC LS-GNE-HC, LS-GSE-HC, LS-HCW, LS-HCE)



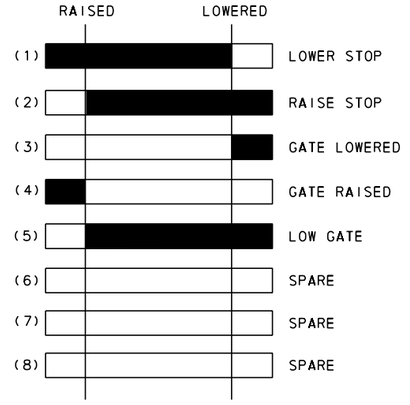
DEVELOPMENT: TYPICAL DOOR INTERLOCK LIMIT SWITCH

(LS-GNW-DS1, LS-GNW-DS2, LS-GSW-DS1, LS-GSW-DS2, LS-GNE-DS1, LS-GNE-DS2, LS-GSE-DS1, LS-GSE-DS2 DSS1, DSS2, DSS3, DSS4, DSS5, DSS6, DSS7)

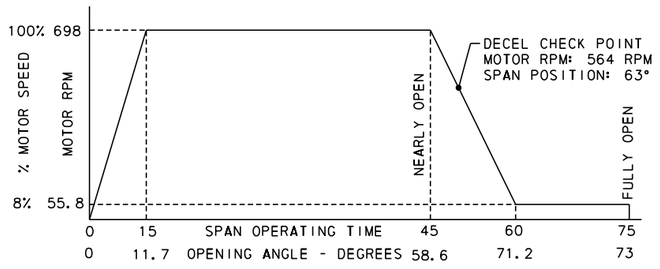


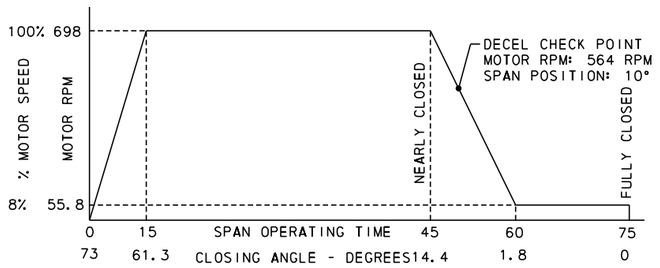
DEVELOPMENT: TRAFFIC GATE ROTARY LIMIT SWITCH (EXISTING)

(LS-GNE, LS-GSE, LS-GSW, LS-GNW)



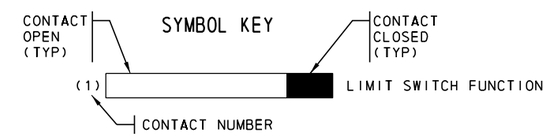
DEVELOPMENT: LEAF SPEED VERSUS POSITION





NOTES:

1. ALL LIMIT SWITCHES SHALL BE NEW



8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

NOT TO SCALE

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

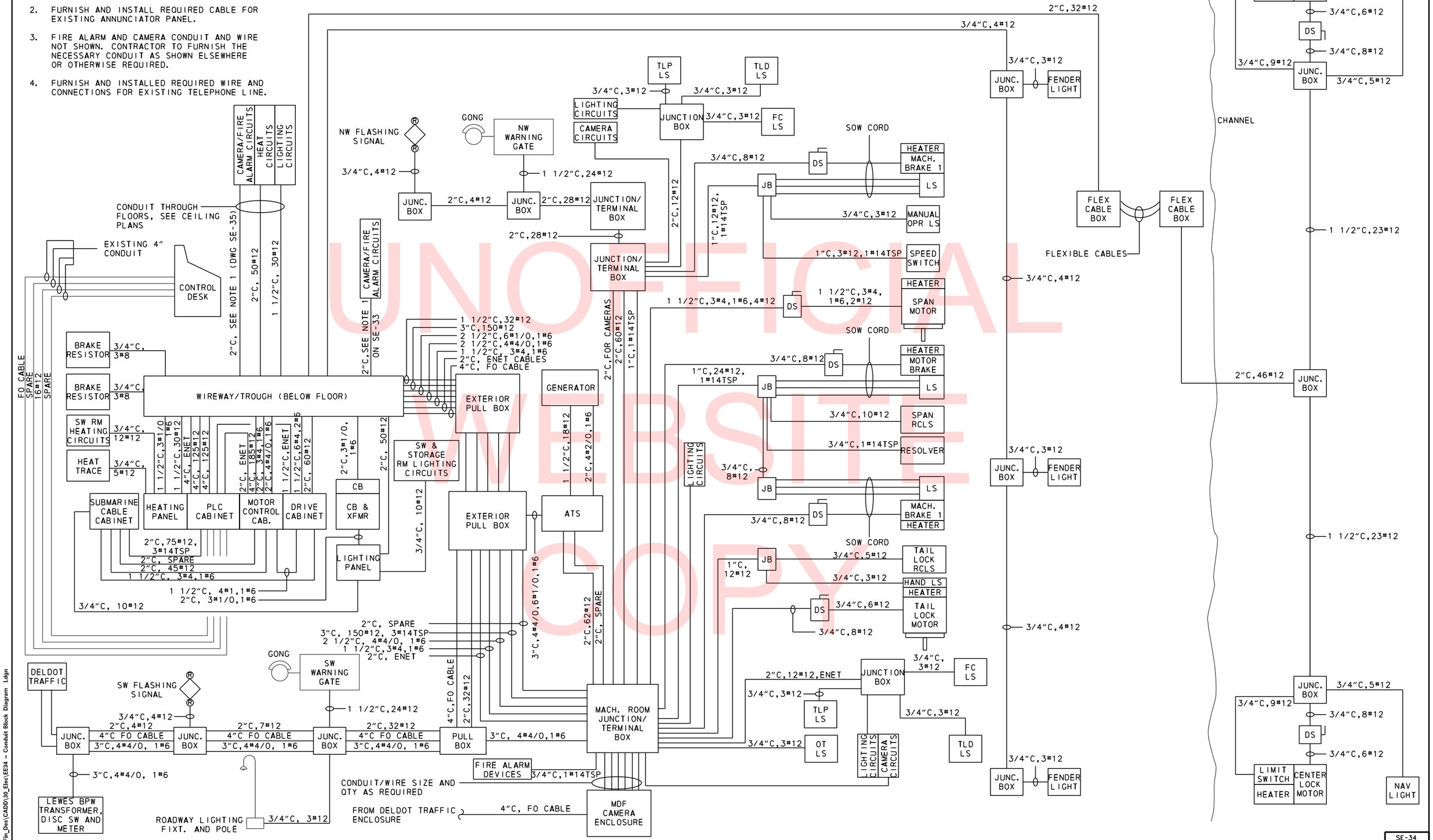
CONTRACT	BRIDGE NO. 3-154
T201507602	DESIGNED BY: MJT
COUNTY	CHECKED BY: AHN
SUSSEX	

LIMIT SWITCH DEVELOPMENT

SE-33
SHEET NO. 147
TOTAL SHTS. 180

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.



DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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

CONDUIT BLOCK DIAGRAM – WEST

SE-34	
SHEET NO.	148
TOTAL SHTS.	180

8/9/2018
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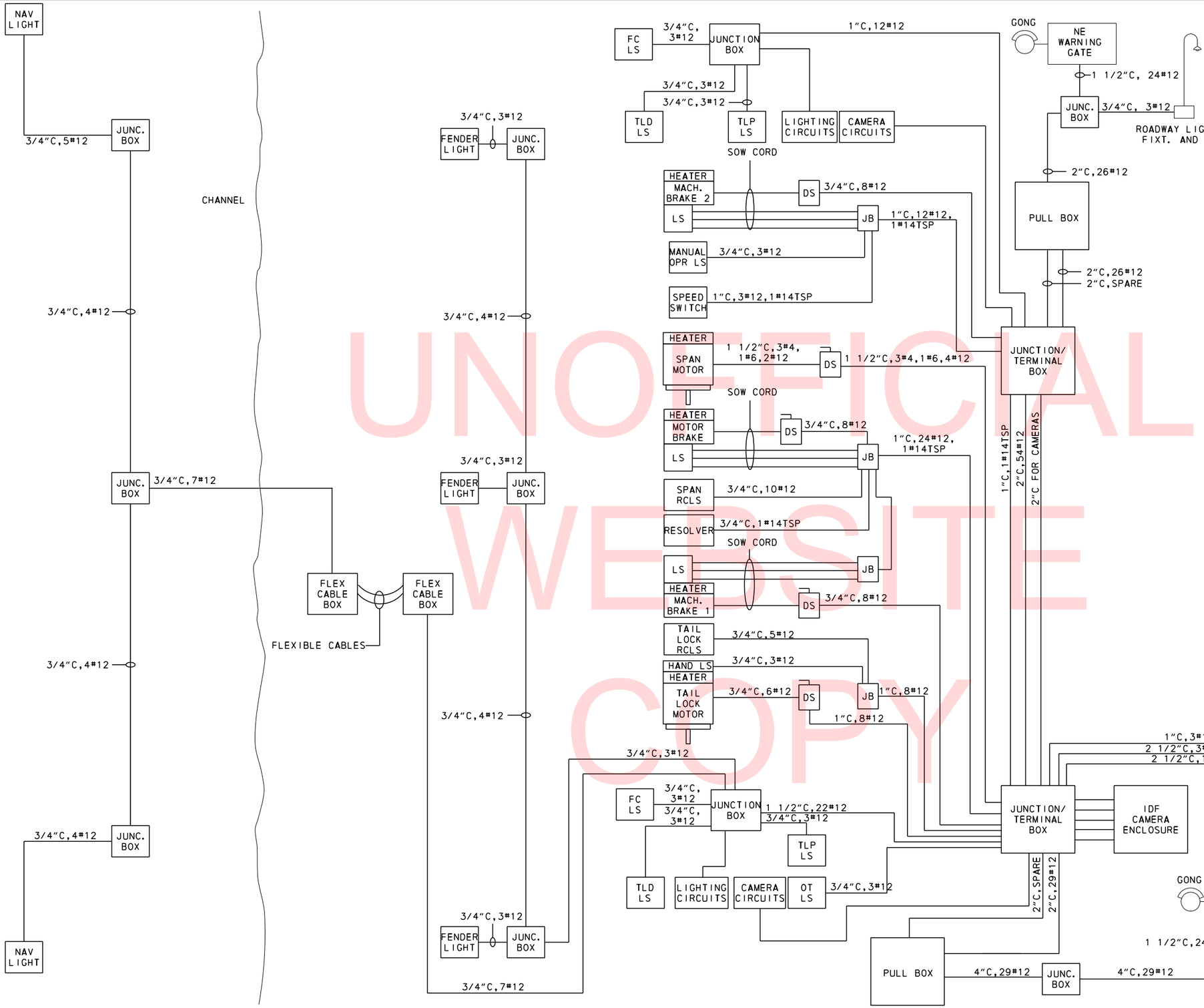

NOTES: SE-34 AND SE-35

1. CONTRACTOR SHALL FURNISH AND INSTALL SPECIFIED CONDUIT AND THE FIRE ALARM CABLES. THE SECURITY SYSTEM CABLE(S) SHALL BE FURNSIHED BY OTHERS BUT INSTALLED BY THE CONTRACTOR IN COORDINATION WITH DELDOT'S SECURITY CONTRACTOR.
2. THE SCHEMATIC CONDUIT DIAGRAMS SHOW MINIMUM DESIGN QUANTITIES OF PULL, TERMINAL AND JUNCTION BOXES THAT MAY BE REQUIRED FOR THE PROPOSED INSTALLATION. THE CONTRACTOR SHALL FURNISH AND INSTALL. ANY ADDITIONAL NECESSARY BOXES REQUIRED FOR THE ACTUAL LAYOUT AT NO ADDTIONAL COST TO DELDOT.
3. THE NUMBER OF WIRES AND SIZES OF CONDUCTORS SHOWN IN CONDUITS AND CABLES ARE BASED ON THE CONTRACT WIRING DIAGRAMS AND ARE THE MINIMUM PERMISSIBLE. THE CONTRACTOR SHALL PROVIDE CONDUCTORS OF SUFFICIENT NUMBER AND SIZE, INCLUDING SPARES, AS MAY BE REQUIRED FOR THE INSTALLATION IN ACCORDANCE WITH THE FINAL WIRING DIAGRAMS ON HIS APPROVED WORKING DRAWINGS.
4. CONDUIT AND WIRE REQUIREMENTS FOR SERVICE LIGHTING, RECEPTACLES, FIRE ALARM SYSTEM, SECURITY CAMERAS ARE NOT SHOWN. THE CONTRACTOR SHALL PROVIDE AS REQUIRED.
5. BOND THE EXISTING #4 AWG SUBMARINECABLE IN ONE CABLE AS THE MAIN GROUND CONDUCTOR FOR THE EAST SIDE WITH EACH SUBMARINE CABLE TERMINATION ENCLOSURE. THE REMAINING TWO SUBMARINE CABLES SHALL HAVE ONE #10 DESIGNATED AS A GROUND AND TERMINATE TO THE SAME GROUND LUG.
6. SPARE CONDUCTORS SHALL BE COILED UP AND LEFT IN THE LOCAL TERMINATION OR JUNCTION BOXES.
7. ALL CONDUCTOR QUANTITIES INCLUDE SPARE AND GROUND CONDUCTORS.
8. CONTRACTOR SHALL PROVIDE NEW CONDUIT AND WIRE TO THE TRAFFIC CONTROL EQUIPMENT AS SHOWN. THE NEW CONDUIT SHALL BE CORE DRILLED THROUGH THE EXISTING CONCRETE PLATFORMS. JUNCTION BOXES SHALL BE SURFACE MOUNTED ON THE EXISTING STRUCTURE. CONDUIT TO THE TRAFFIC SIGNALS SHALL BE EMBEDED IN A TRENCH FROM THE EXISTING WARNING GATE LOCATIONS. ALL WORK REQUIRED TO FURNISH AND INSTALL THE NEW CONDUIT AND WIRE SHALL BE PROVIDED BY THE CONTRACTOR, INCLUDING REMOVAL AND RE-INSTALLATION OF THE EXISTING WARNING AND BARRIER GATES, AT NO ADDITIONAL COST TO DELDOT.
9. THE SECURITY CAMERAS SHALL BE FURNISHED AND INSTALLED BY DELDOT AND SHALL BE POE UNITS. 120VAC POWER FOR THE CAMERAS SHALL BE ROUTED TO THE RACK MOUNTED EQUIPMENT AND CONDUIT SHALL BE ROUTED FROM THE RACK TO THE CAMERA LOCATIONS SHOWN ON THE PLANS.
10. CONDUIT AND WIRE DESIGNATED AS LIGHTING SHALL ALSO BE FOR RECEPTACLES AND OTHER LIGHTING PANELBOARD LOADS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING THE PROPOSED INSTALLATION DETAILS, CONDUIT ROUTING, CONDUIT BLOCK DIAGRAMS, INTERCONNECT DWGS/SPREADSHEET, LAYOUT AND OTHER REQUIRED DETAILED SHOP DRAWINGS USING THE INFORMATION PROVIDED IN THESE PLANS, EXISTING AS-BUILT DWGS. AND FIELD CONDITIONS. THESE SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO THE START OF THE WORK.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

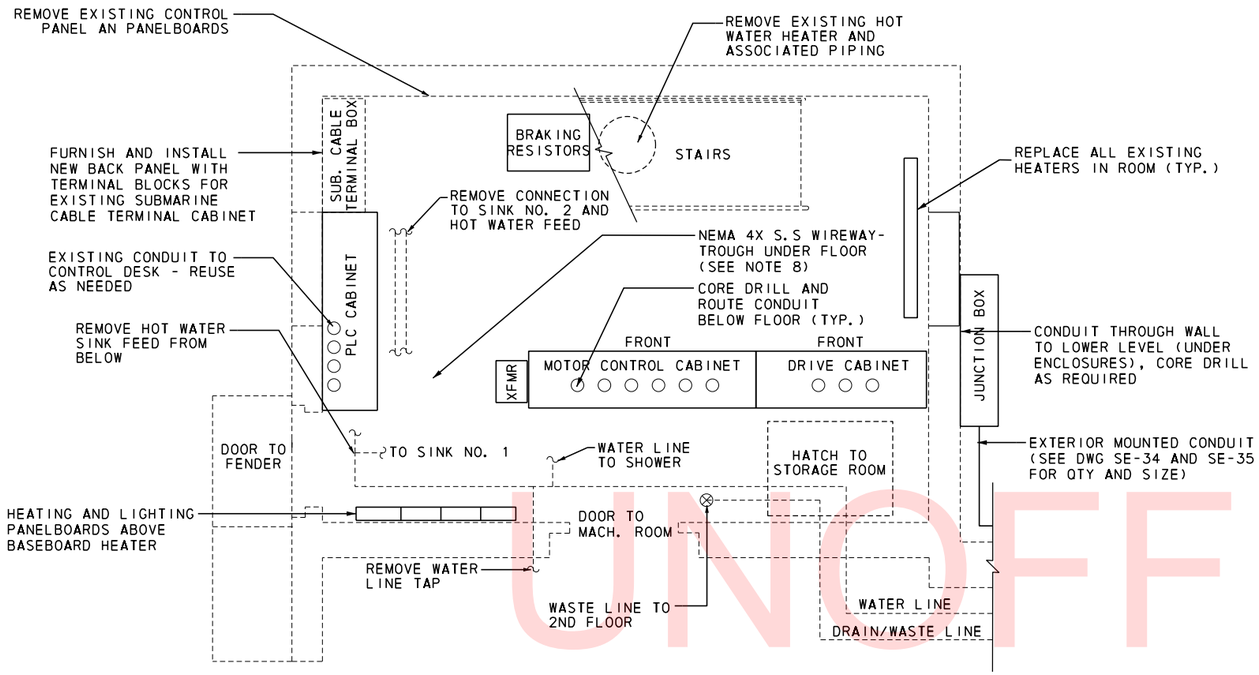
NOT TO SCALE

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		

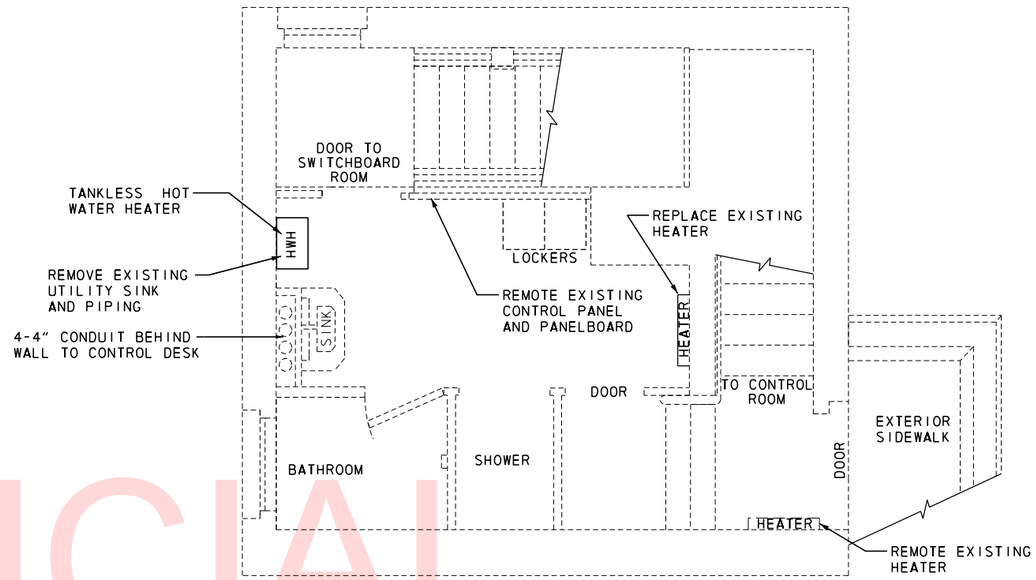
CONDUIT BLOCK DIAGRAM - EAST

SE-35
SHEET NO. 149
TOTAL SHTS. 180



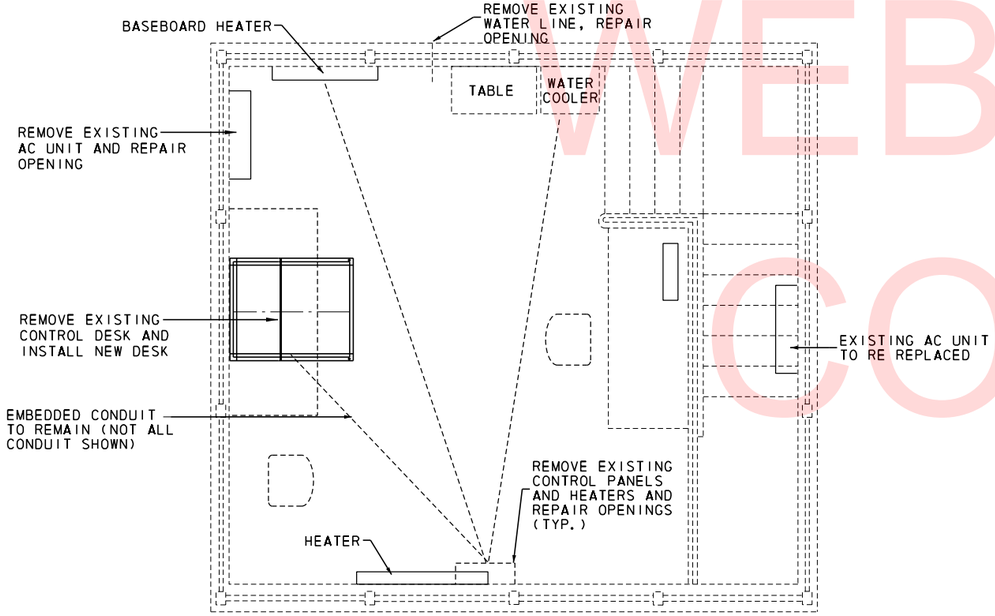
SWITCHBOARD ROOM PLAN

SCALE: 1/2"=1'-0"



UTILITY ROOM PLAN

SCALE: 1/2"=1'-0"



CONTROL ROOM PLAN

SCALE: 1/2"=1'-0"

NOTES

1. FOR SECURITY CAMERA, FIRE ALARM, LIGHTING, AND HEATING LAYOUTS SEE DWGS SE-38 TO SE-41.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINAL LAYOUT OF THE SWITCHBOARD ROOM. IF THE LAYOUT SHOWN REQUIRES ADJUSTMENT FOR PROPER FIT, TO MEET CODE REQUIREMENTS OR AS DIRECTED BY DELDOT THE CONTRACTOR SHALL MAKE SUCH ADJUSTMENTS AT NO ADDTIONAL COST.
3. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
4. ALL EXISTING CONDUIT EMBEDED IN FLOOR, WALLS AND CEILING INSIDE THE CONTROL HOUSE SHALL BE ABANDON UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL FURNISH AND INSTALL SURFACE MOUNTED CONDUIT TO NEW AND EXISTING EQUIPMENT.
5. CONTRACTOR TO FURNISH NEW BACK PANEL WITH NEW TERMINALS FOR EXISTING SUBMARINE CABLE TERMINATION BOXES (2 IN TOTAL).
6. THE NEW ENCLOSURES AND EQUIPMENT SHALL BE INSTALLED BY THE CONTRACTOR THROUGH THE EXISTING CONTROL HOUSE AND/OR MACHINERY ROOM DOORS. ANY MODIFICATIONS OR ADJUSTMENTS TO THE ENCLOSURES OR SURROUNDING EQUIPMENT INCLUDING THE REMOVAL OF DOORS AND RAILINGS SHALL BE MADE BY THE CONTRACTOR AT NO ADDITIONAL COST.
7. FURNISH AND INSTALL WIREWAY/TROUGH IN STORAGE ROOM TO ROUTE CONDUIT INTO SWITCHBOARD ROOM ELECTRICAL EQUIPMENT.
8. CONTRACTOR SHALL REMOVE THE EXISTING TROUGH BELOW THE SWITCHBOARD ROOM AND FURNISH AND INSTALL A NEW NEMA 4X S.S WIREWAY/TROUGH SYSTEM WITH SUPPORTS UNDERNEATH THE FLOOR AND MOUNTED TO CEILING OF LOWER LEVEL. ALL CONFINED SPACE SAFETY REQUIREMENTS SHALL BE FOLLOWED IN ACCORDANCE WITH OSHA.

1. THE CONTRACTOR SHALL REMOVE PORTIONS OF THE EXISTING WATER AND WASTE PIPING AND EQUIPMENT AS MAY BE REQUIRED TO PERFORM ALL REQUIRED WORK AS SPECIFIED. THE REMOVAL OF THE WATER AND WASTE LINES SHALL NOT CAUSE THE EXISTING SINKS AND/OR BATHROOM TO BE BECOME INOPERABLE EXCEPT TEMPORARILY DURING CONSTRUCTION.

8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

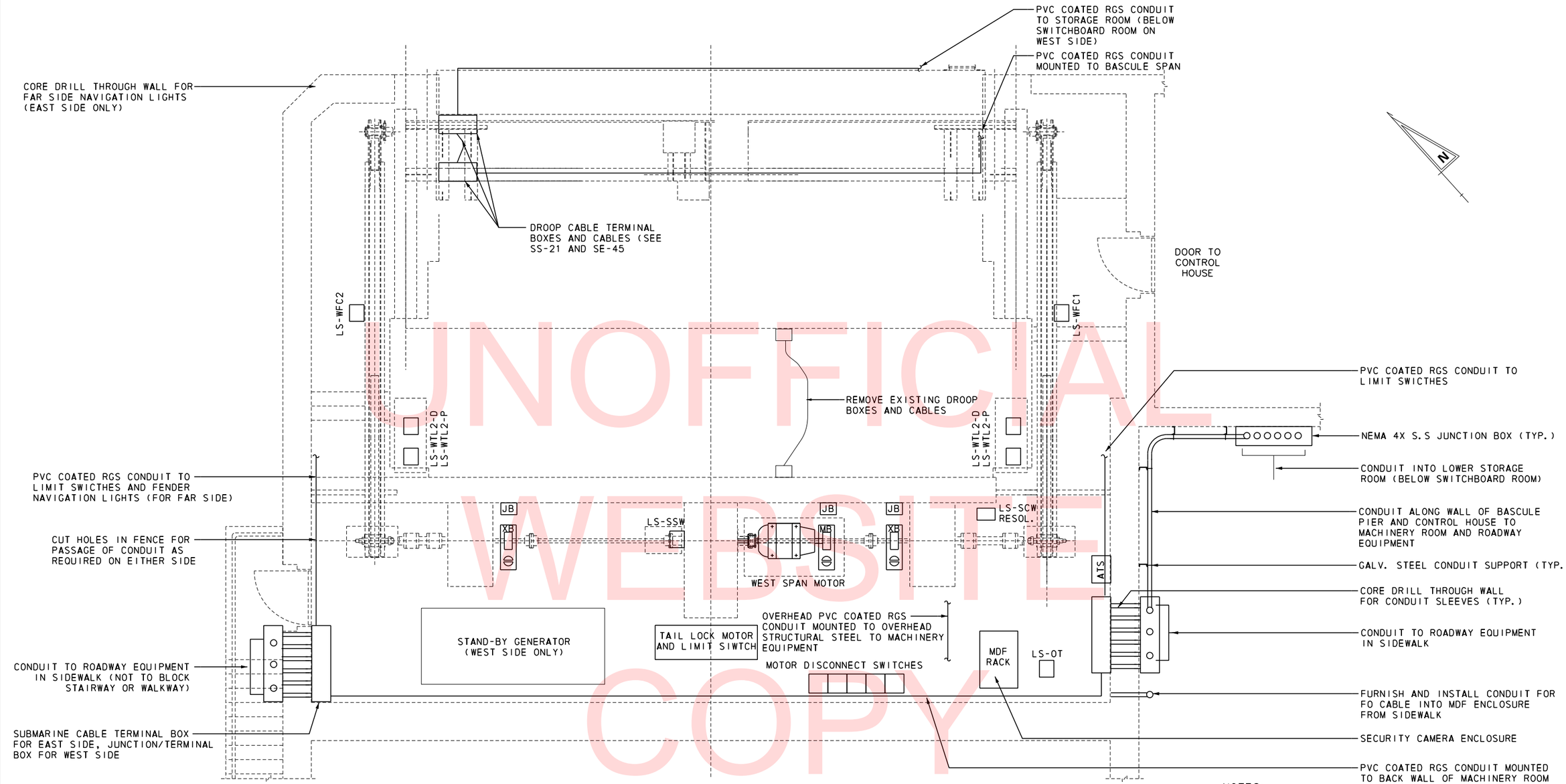
SCALE AS NOTED

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

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

CONTROL HOUSE LAYOUT

	SE-36
SHEET NO.	150
TOTAL SHTS.	180



PROPOSED WEST MACHINERY ROOM ELECTRICAL EQUIPMENT LAYOUT

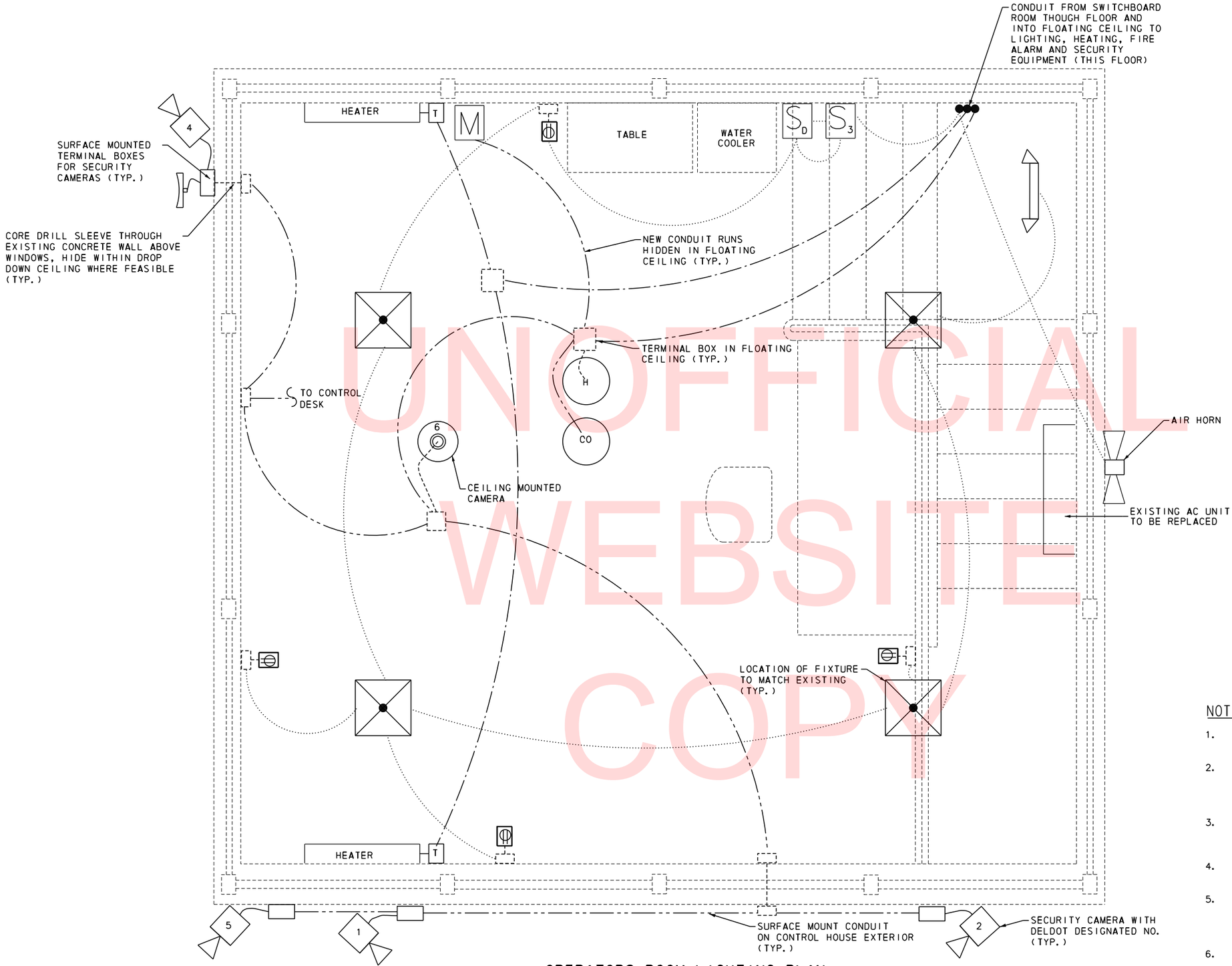
EAST SIDE SIMILAR

NOTES:

1. THE CONTRACTOR SHALL FURNISH AND INSTALL NEW FLEXIBLE CONDUIT FOR FINAL CONNECTIONS TO NEW EQUIPMENT SUCH AS SPAN MOTOR, LIMIT SWITCHES, SENSORS, ETC. AS MAY BE REQUIRED.
2. THE CONTRACTOR SHALL CUT ALL THE EXISTING CONDUIT IN MACHINERY ROOM FLUSH WITH THE FLOOR. ALL NEW CONDUIT ROUTED WITHIN THE MACHINERY ROOM SHALL BE ROUTED ABOVE AND SUPPORTED ON THE OVERHEAD STRUCTURAL STRINGERS AND FLOOR BEAMS.
3. LIGHTING, SECURITY AND FIRE ALARM SYSTEM SHOWN ON DWG SE-41.
4. CONTRACTOR SHALL FURNISH AND INSTALL A NEW SUBMARINE CABLE TERMINAL BOX FOR THE EAST SIDE TO REPLACE THE EXISTING UNIT.
5. FURNISH AND INSTALL INCOMING POWER WIRE AND CONDUIT FOR GENERATOR AND LEWES BPW SERVICE OUTSIDE ALL OTHER RACEWAYS. ADJUST LAYOUT SHOWN TO ACCOMINDATE.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	MACHINERY ROOM ELECTRICAL LAYOUT
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-37
					CHECKED BY: AHN	SHEET NO. 151
						TOTAL SHTS. 180

8/9/2018
M:\02889.04C\4000_Fin_Des\CADD\30_Elec\EE37 - Machinery Room Layout.dgn



OPERATORS ROOM LIGHTING PLAN

NOTES

1. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
2. SURFACE MOUNT ALL CONDUIT FROM FLOATING CEILING ALONG WINDOW FRAME FOR LIGHTING, HEATING, FIRE ALARM, AND SECURITY CAMERA SYSTEM. FURNISH AND INSTALL JUNCTION BOXES AS REQUIRED TO ROUTE CONDUIT TO EACH DEVICE.
3. SMOKE DETECTORS SHOWN ON THIS LAYOUT DRAWING SHALL BE RELOCATED AS REQUIRED TO AVOID OTHER WATERLINES, LIGHTING, ETC.
4. CONTRACTOR TO FURNISH AND INSTALL COMPRESSOR FOR THE AIR HORN (NOT SHOWN HERE).
5. CONTRACTOR SHALL MAKE ALL NECESSARY CORE DRILL OPENINGS THROUGH THE FLOOR AND WALL TO ACCOMMODATE NEW CONDUIT TO LIGHTING, HEATING, FIRE ALARM AND SECURITY SYSTEMS.
6. CONTRACTOR SHALL ADJUST CONDUIT LOCATIONS AS REQUIRED BASED ON EQUIPMENT LAYOUT.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

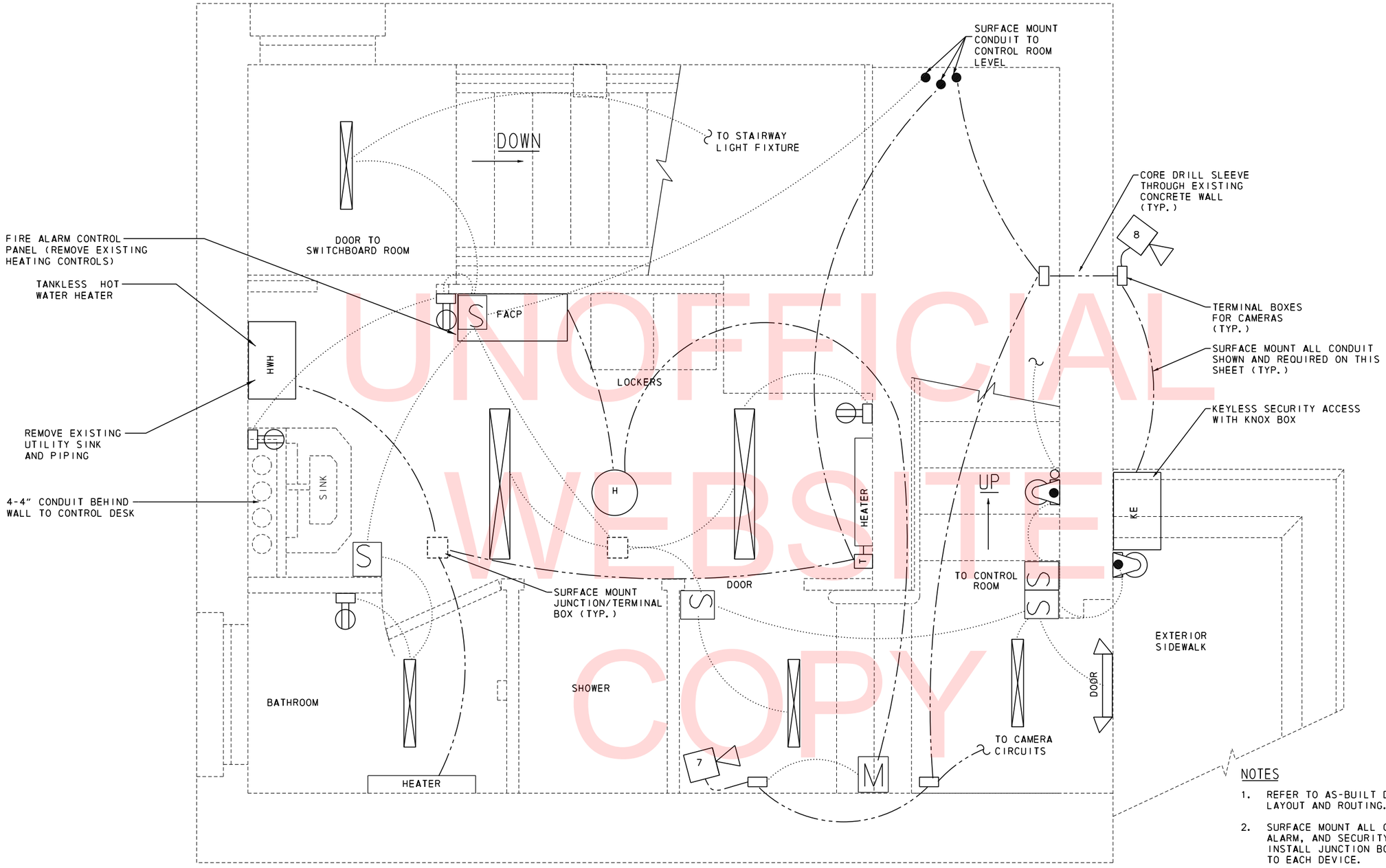
NOT TO SCALE

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		

OPERATOR ROOM'S REFLECTED CEILING PLAN

SE-38
SHEET NO.
152
TOTAL SHTS.
180



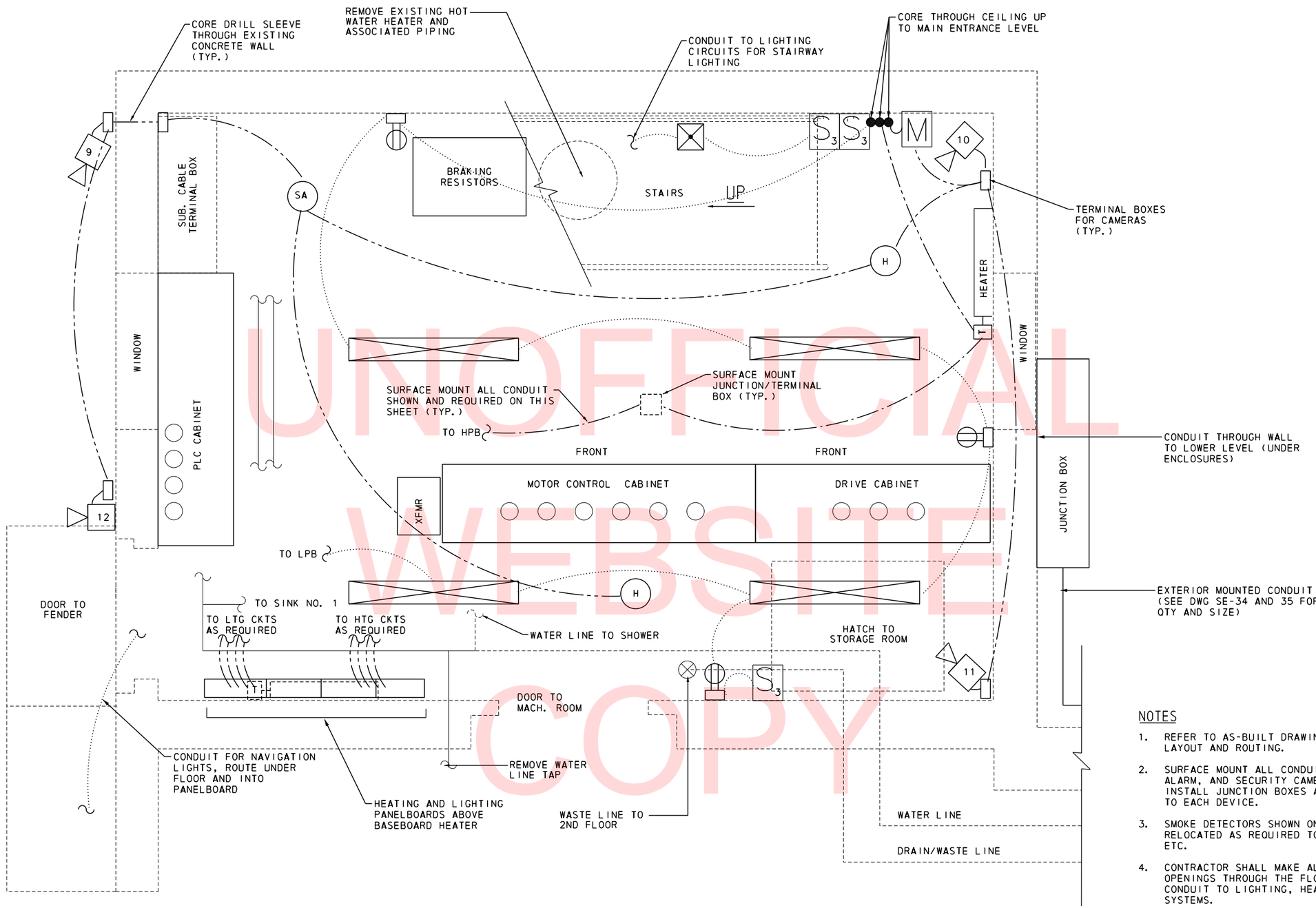
UTILITY ROOM LIGHTING PLAN

NOTES

1. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
2. SURFACE MOUNT ALL CONDUIT FOR LIGHTING, HEATING, FIRE ALARM, AND SECURITY CAMERA SYSTEM. FURNISH AND INSTALL JUNCTION BOXES AS REQUIRED TO ROUTE CONDUIT TO EACH DEVICE.
3. SMOKE DETECTORS SHOWN ON THIS LAYOUT DRAWING SHALL BE RELOCATED AS REQUIRED TO AVOID OTHER WATERLINES, LIGHTING, ETC.
4. CONTRACTOR SHALL MAKE ALL NECESSARY CORE DRILL OPENINGS THROUGH THE FLOOR AND WALL TO ACCOMMODATE NEW CONDUIT TO LIGHTING, HEATING, FIRE ALARM AND SECURITY SYSTEMS.
5. CONTRACTOR SHALL ADJUST CONDUIT LOCATIONS AS REQUIRED BASED ON EQUIPMENT LAYOUT.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	UTILITY ROOM REFLECTED CEILING PLAN	SE-39
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 153
					CHECKED BY: AHN		TOTAL SHTS. 180

8/2/2018
M:\02889.04C\4000_Fin_Des\CADD\30_Elec\EE39 - Reflected Ceiling Utility Room.dgn



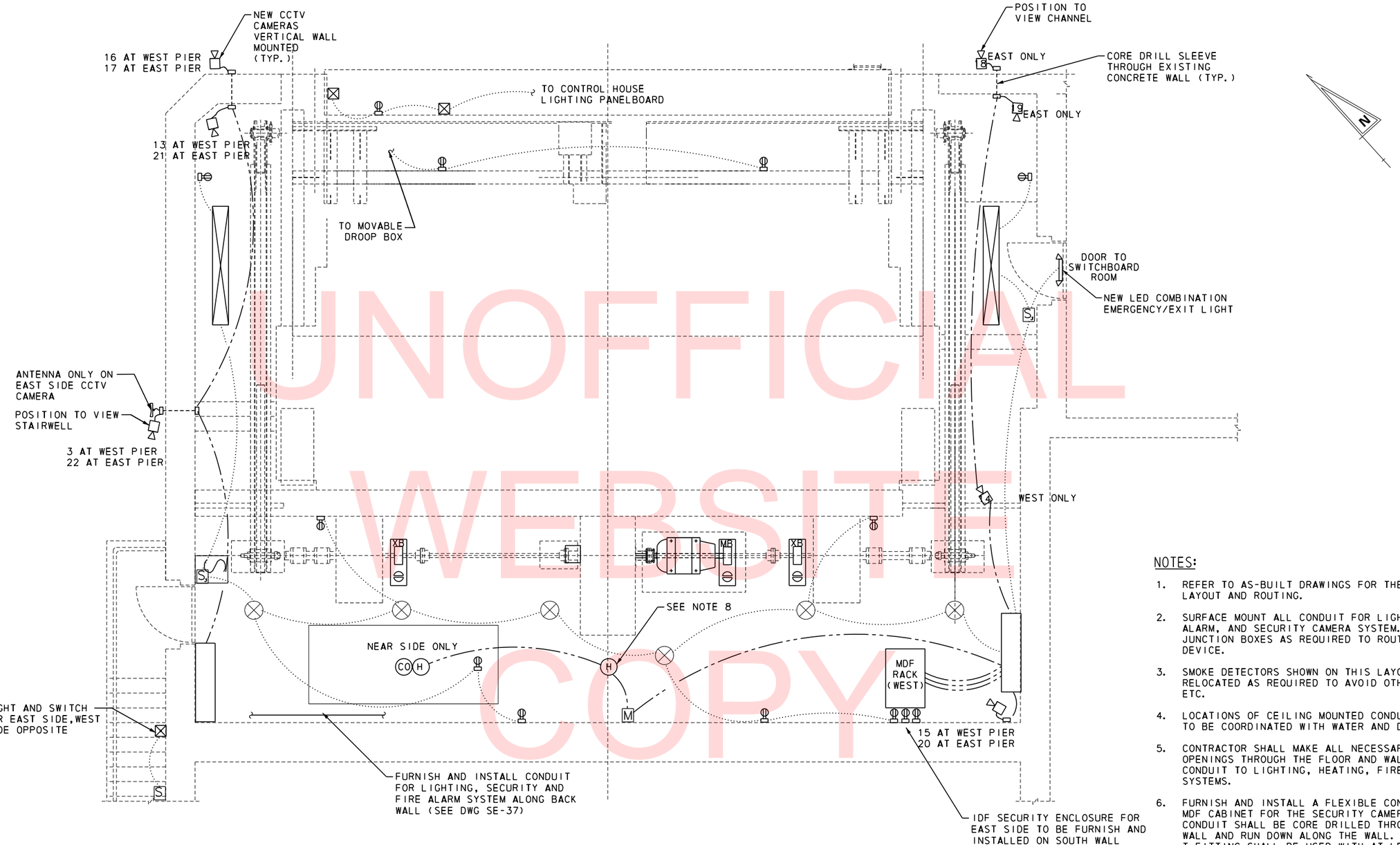
SWITCHBOARD LIGHTING PLAN

NOTES

1. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
2. SURFACE MOUNT ALL CONDUIT FOR LIGHTING, HEATING, FIRE ALARM, AND SECURITY CAMERA SYSTEM. FURNISH AND INSTALL JUNCTION BOXES AS REQUIRED TO ROUTE CONDUIT TO EACH DEVICE.
3. SMOKE DETECTORS SHOWN ON THIS LAYOUT DRAWING SHALL BE RELOCATED AS REQUIRED TO AVOID OTHER WATERLINES, LIGHTING, ETC.
4. CONTRACTOR SHALL MAKE ALL NECESSARY CORE DRILL OPENINGS THROUGH THE FLOOR AND WALL TO ACCOMMODATE NEW CONDUIT TO LIGHTING, HEATING, FIRE ALARM AND SECURITY SYSTEMS.
5. CONTRACTOR SHALL ADJUST WATER AND WASTE PIPING TO ACCOMIDATE NEW ELECTRICAL EQUIPMENT AS REQUIRED.
6. CONTRACTOR SHALL ADJUST CONDUIT LOCATIONS AS REQUIRED BASED ON EQUIPMENT LAYOUT.
7. NEW LIGHTING FOR STORAGE ROOM NOT SHOWN.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SWITCHBOARD ROOM REFLECTED CEILING PLAN
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-40
					CHECKED BY: AHN	SHEET NO. 154
						TOTAL SHTS. 180

8/2/2018
M:\02889.04C\4000_Fin_Des\CADD\30_Elec\EE40 - Reflected Ceiling Switchboard Room.dgn



PROPOSED WESTMACHINERY ROOM LIGHTING, FIRE ALARM AND CAMERA PLAN

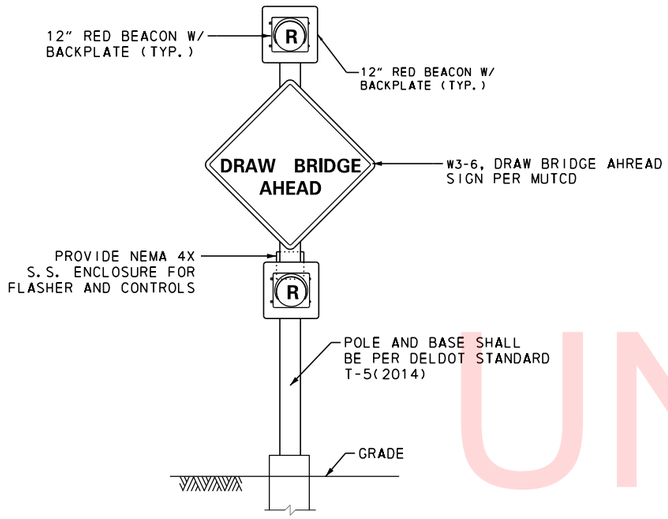
EAST SIDE SIMILAR

NOTES:

1. REFER TO AS-BUILT DRAWINGS FOR THE EXISTING CONDUIT LAYOUT AND ROUTING.
2. SURFACE MOUNT ALL CONDUIT FOR LIGHTING, HEATING, FIRE ALARM, AND SECURITY CAMERA SYSTEM. FURNISH AND INSTALL JUNCTION BOXES AS REQUIRED TO ROUTE CONDUIT TO EACH DEVICE.
3. SMOKE DETECTORS SHOWN ON THIS LAYOUT DRAWING SHALL BE RELOCATED AS REQUIRED TO AVOID OTHER WATERLINES, LIGHTING, ETC.
4. LOCATIONS OF CEILING MOUNTED CONDUIT AND EQUIPMENT TO BE COORDINATED WITH WATER AND DRAIN PIPING.
5. CONTRACTOR SHALL MAKE ALL NECESSARY CORE DRILL OPENINGS THROUGH THE FLOOR AND WALL TO ACOMINATE NEW CONDUIT TO LIGHTING, HEATING, FIRE ALARM AND SECURITY SYSTEMS.
6. FURNISH AND INSTALL A FLEXIBLE CONNECTION TO THE MDF CABINET FOR THE SECURITY CAMERA SYSTEM. THE CONDUIT SHALL BE CORE DRILLED THROUGH THE EXISTING WALL AND RUN DOWN ALONG THE WALL. A CONDUIT BODY T FITTING SHALL BE USED WITH AT LEAST 12" CLEARANCE FROM THE FLOOR. AT THE BOTTOM OF THE T FITTING A NEMA 4X S.S. DRAIN FITTING SHALL BE INSTALLED.
7. CONTRACTOR SHALL ADJUST CONDUIT LOCATIONS AS REQUIRED BASED ON EQUIPMENT LAYOUT.
8. FURNISH AND INSTALL A HEAT DETECTOR IN THE SPECIFIED LOCATION FOR THE FAR SIDE ONLY. THE HEAT DETECTOR SHALL COMMINICATE VIA A WIRELESS CONNECTION. THE CONTRACTOR SHALL FURNISH ANY EQUIPMENT REQUIRED FOR PROPER OPERATION TO ALLOW THE WIRELESS SYSTEM TO COMMINICATE WITH THE HARD-WIRED FIRE ALARM PANEL ON THE NEAR SIDE.

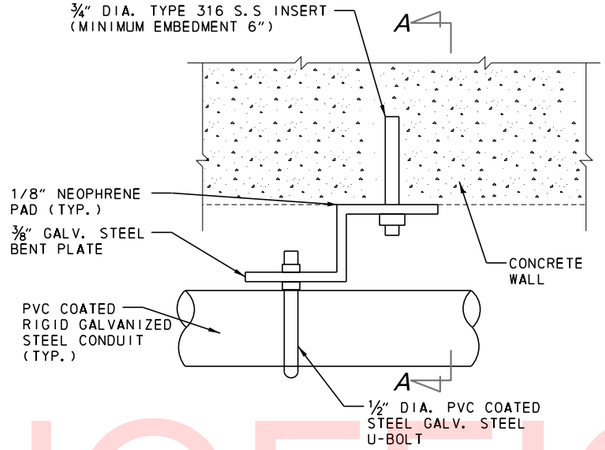
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-154	MACHINERY ROOM LIGHTING, FIRE ALARM AND CAMERA PLAN	SE-41
				COUNTY SUSSEX	DESIGNED BY: MJT		SHEET NO. 155
					CHECKED BY: AHN		TOTAL SHTS. 180

8/2018
M:\02889.04C\4000_Fin_Des\CADD\30_Elec\EE41 - Machinery Room Layout.dgn

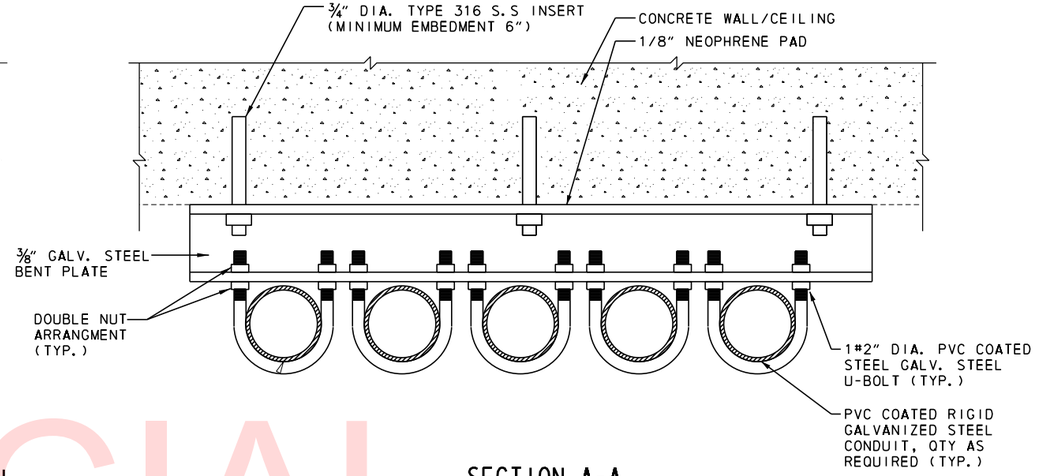


ADVANCE WARNING SIGN

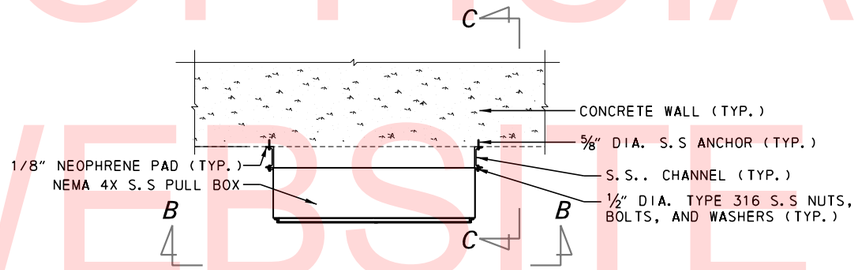
SCALE: NTS
QTY: 2 REQUIRED



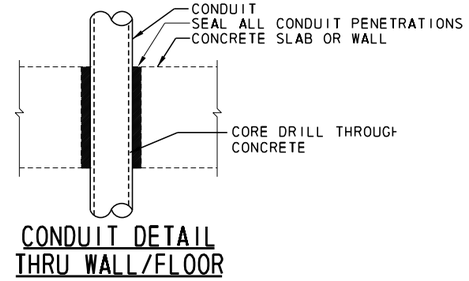
TYPICAL CONDUIT SUPPORT DETAIL



SECTION A-A

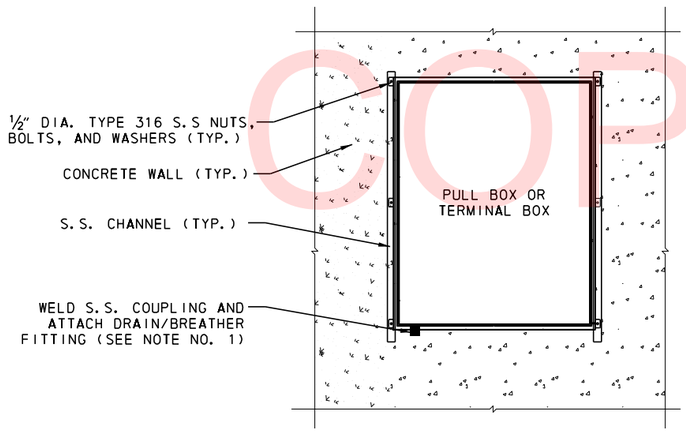


TYPICAL PULL BOX DETAIL

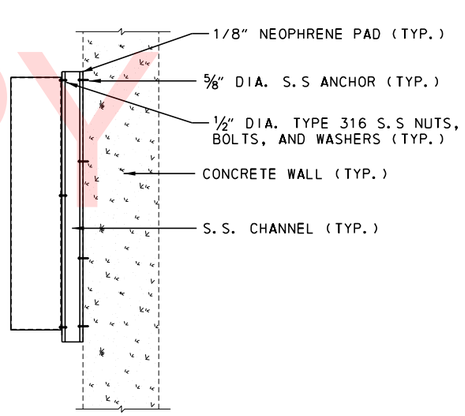


CONDUIT DETAIL THRU WALL/FLOOR

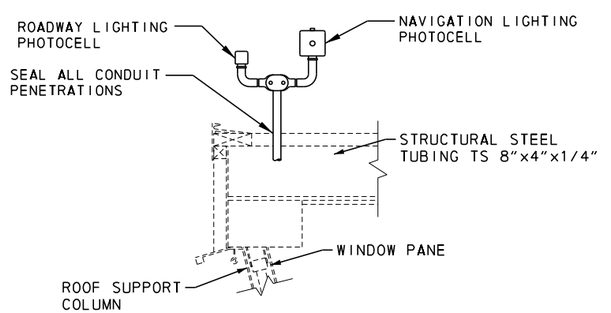
TYPICAL FOR ALL CONDUIT UNLESS NOTED OTHERWISE



SECTION B-B



SECTION C-C



PHOTOCELL MOUNTING DETAIL

NOTES:

1. WELD S.S. COUPLING TO BASE OF ALL PULL, JUNCTION AND TERMINAL ENCLOSURES MOUNTED OUTSIDE THE CONTROL HOUSE AND MACHINERY ROOM. FURNISH AND INSTALL A DRAIN/BREATHER FITTING TO THE WELDED COUPLING. THE COUPLING SHALL NOT PROTRUDE INTO THE BOX AND SHOULD BE FLUSH WITH THE BASE.
2. THE WEST SIDE FLASHING TRAFFIC SIGNALS INCLUDING THE POLE, SINAGE, LIGHT AND BASE SHALL BE PAID FOR ELSEWHERE. THE NEMA 4X ENCLOSURE, FLASHERS AND CONTROLS SHALL BE PAID FOR UNDER THE ITEM "615504 BRIDGE ELECTRICAL SYSTEM."

8/2/2018
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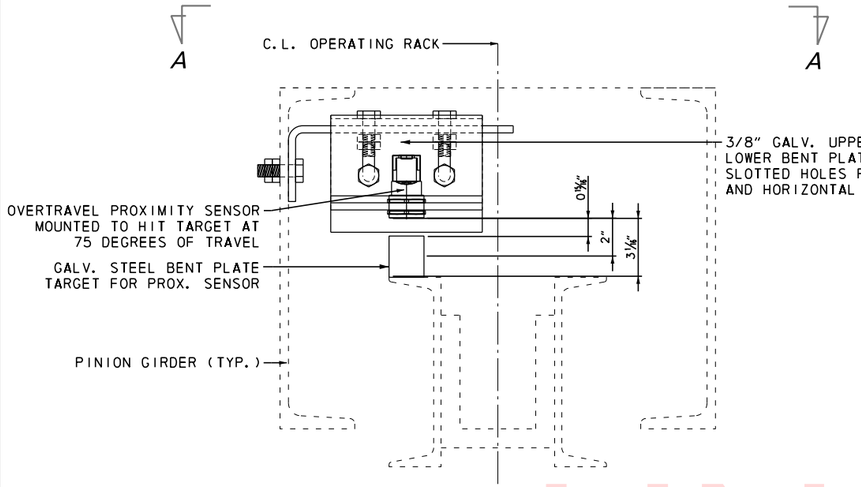
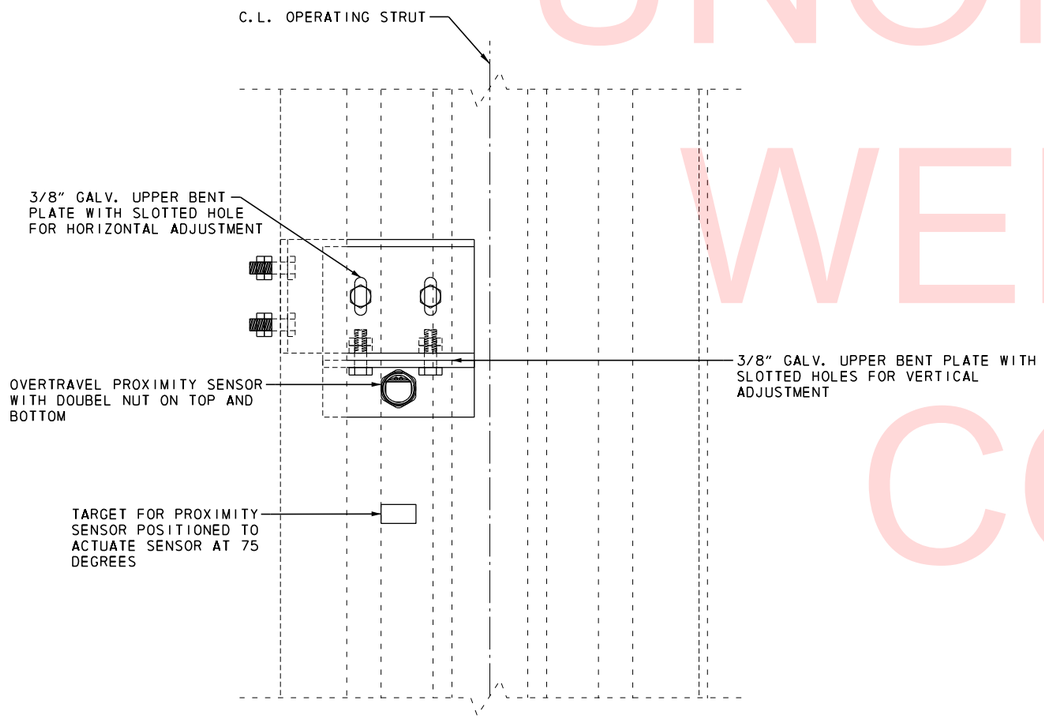
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602 / COUNTY SUSSEX	BRIDGE NO. 3-154 / DESIGNED BY: MJT / CHECKED BY: AHN

ELECTRICAL DETAILS I
MISC. DETAILS

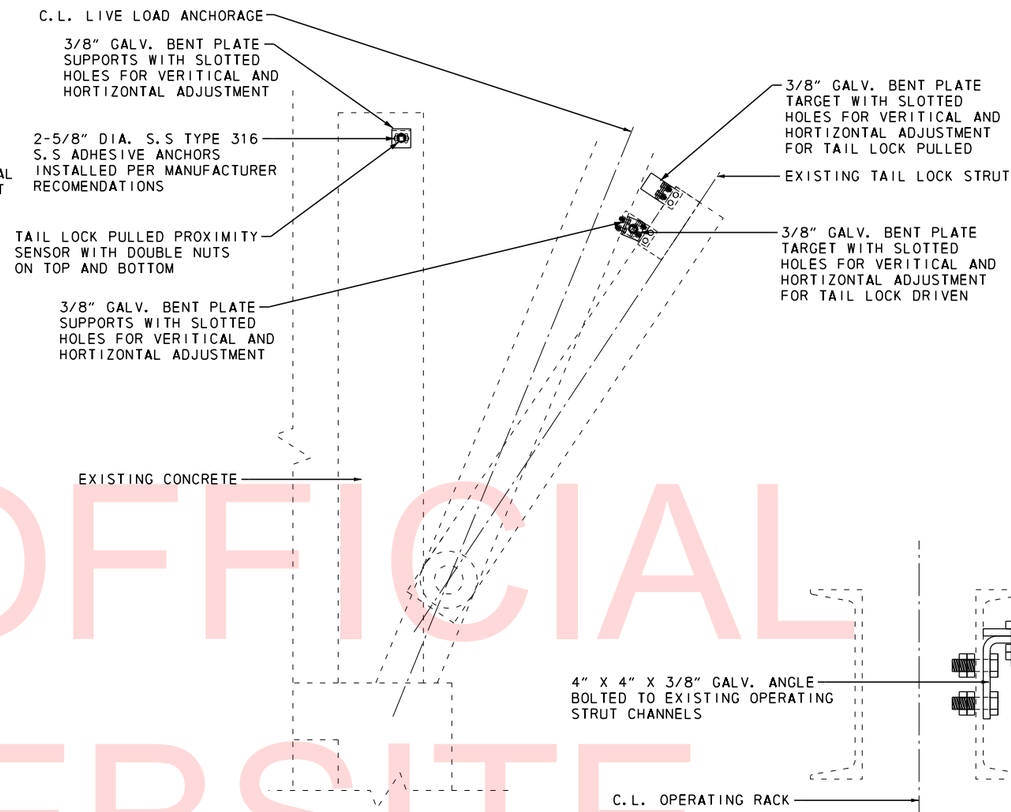
SE-42
SHEET NO. 156
TOTAL SHTS. 180



OVERTRAVEL PROXIMITY SENSOR MOUNTING - ELEVATION

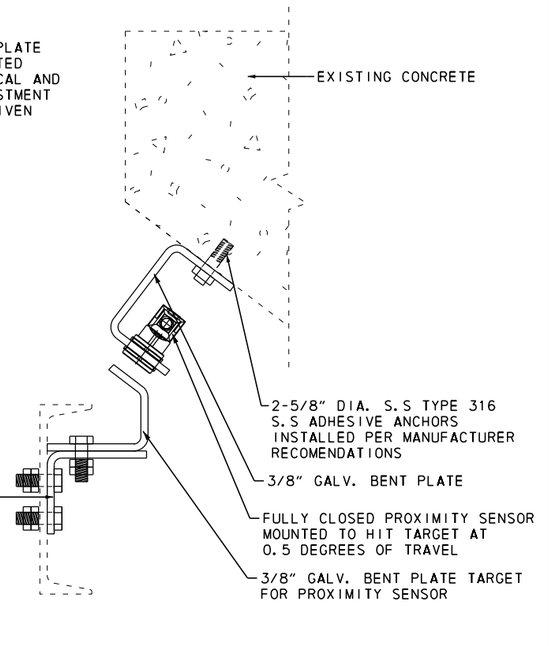


SECTION A-A



TAIL LOCK DRIVEN AND PULLED PROXIMITY SENSOR MOUNTING - ELEVATION

(SEE NOTE 8)



FULLY CLOSED PROXIMITY SENSOR MOUNTING - ELEVATION

NOTES:

1. ALL NEW INDUCTIVE PROXIMITY SENSORS SHALL BE BY TURCK, MODEL NUMBER NI40-G47SR-FZ3X2 W/M16X1.5, OR ENGINEER APPROVED EQUAL.
2. THE DIMENSIONS SHOWN ARE APPROXIAMATE AND MAY VARY BY LOCATION DUE TO EXISTING CONDITIONS.
3. THE CONTRACTOR IS RESPONSIBLE TO ADJUST THESE DIMENSION BY USING THE PROXIMITY SWITCH BARREL ADJUSTMENT IN CONBIMATION WITH THE BENT PLATE DEPTH SIZES. THE PROXIMITY SWITCH SENSING RANGE IS 1.575" (40 MM) AND SHOULD BE SET TO 65% OF THIS OR 1" (26 MM) AT THE OVERTRAVEL AND FULLY CLOSED LOCATIONS FOR REPEATABLE ACCURACY.
4. THE PROXIMITY SWITCH SENSING RANGE IS 1.575" (40 MM) AND SHOULD BE SET TO 16% OF THIS OR 1/4" (6 MM) AT THE THE TAIL LOCK LOCATIONS AT MINIMUM FOR REPEATABLE ACCURACY.
5. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY ALL DIMENSIONS BEFORE ORDERING AND INSTALLING MATERIALS.
6. ALL BOLTS USED SHALL BE 5/8" MECHANICALLY GALVANIZED HIGH STRENGTH BOLT A325, WITH WASHERS AND DOUBLE NUTS.
7. ALL MOUNTING EQUIPMENT AND TARGETS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
8. QUANTITIES GIVEN ARE PER LIMIT SWITCH ASSEMBLY.

8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

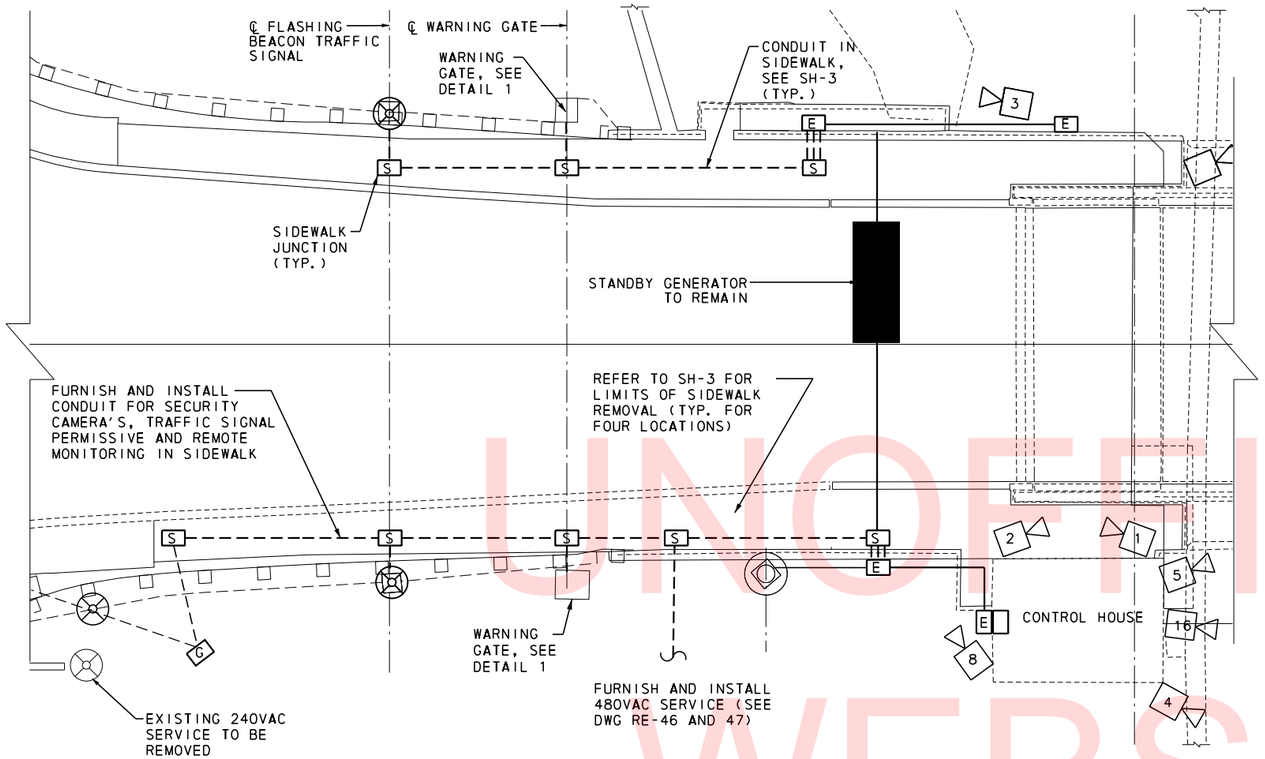
NOT TO SCALE

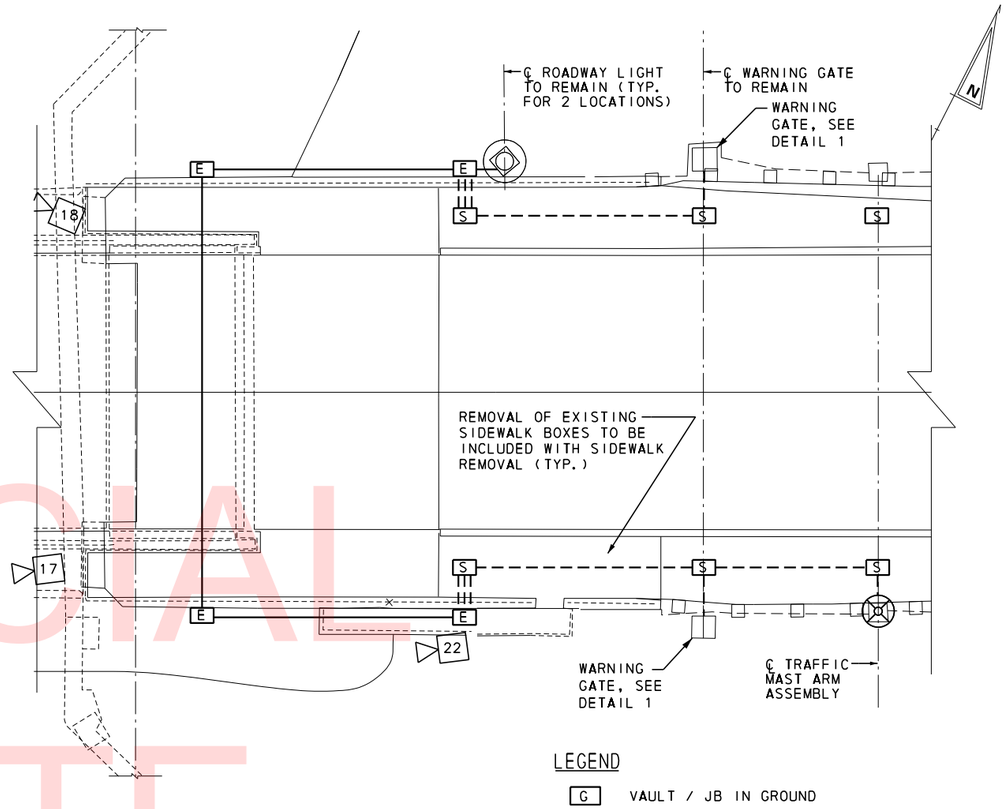
BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

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

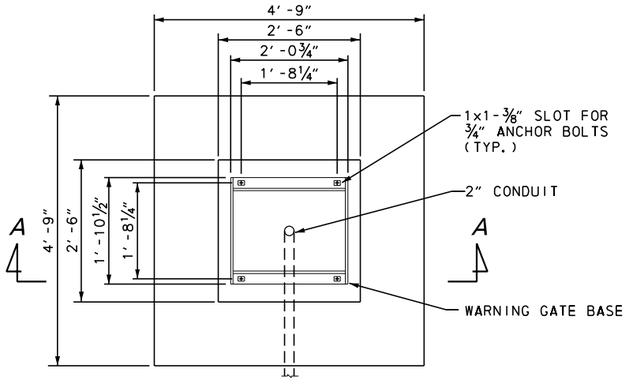
ELECTRICAL DETAILS II
LIMIT SWITCH DETAILS

SE-43
SHEET NO. 157
TOTAL SHTS. 180



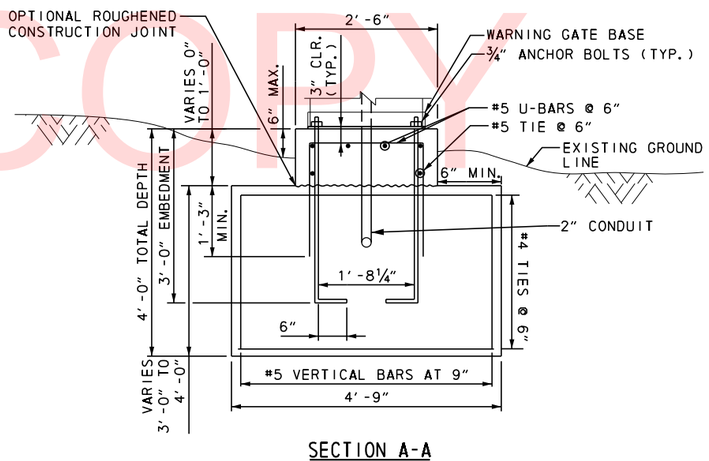


ROADWAY ELECTRICAL PLAN
SCALE: NTS



DETAIL 1
WARNING GATE FOUNDATION PLAN
¾" = 1'-0"

NOTE: FOUNDATION AT ALL FOUR WARNING GATE LOCATIONS



SECTION A-A
WARNING GATE FOUNDATION ELEVATION
¾" = 1'-0"

LEGEND

- G — VAULT / JB IN GROUND
- S — VAULT / JB IN SIDEWALK
- E — VAULT / JB ON STRUCTURE
- – – CONDUIT IN TRENCH
- —— EXPOSED CONDUIT
- —— CONDUIT UNDER DECK

NOTES:

1. CONDUIT TRENCHES SHALL BE PER DELDOT STANDARD DETAIL P-4(2013)AND CONDUIT VAULTS / JUNCTION BOXES SHALL BE PER DELDOT STANDARD DETAIL T-1 (2013). THESE SHALL NOT BE MEASURED FOR PAYMENT BUT INCLUDED IN THE LUMP SUM PRICE FOR 615504 BRIDGE ELECTRICAL SYSTEM.

2. REMOVAL OF THE EXISTING ROADWAY CONDUIT SHALL NOT BE MEASURED FOR PAYMENT BUT INCLUDED IN THE LUMP SUM PRICE FOR 615504 BRIDGE ELECTRICAL SYSTEM.

3. REMOVAL OF THE EXISTING JUNCTION VAULTS IN THE SIDEWALK SHALL BE PAID FOR UNDER THE ITEM 211001 REMOVAL OF PORTLAND CEMENT CONCRETE PAVEMENT, CURB AND SIDEWALK.

4. SECURITY CAMERA CONDUIT TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR. WIRE AND CABLE FOR THE SECURITY CAMERA FURNISHED AND INSTALLED BY DELDOT.

5. REQUIREMENTS FOR BRIDGE POWER AND CONTROL SHALL BE AS SHOWN ELSEWHERE.

6. CONDUIT FOR FIBER OPTIC CABLES SHALL BE 4", ALL OTHER SECURITY CAMERA SHALL BE 1" UNLESS OTHERWISE SPECIFIED.

7. FOR ADDITIONAL CAMERA LOCATIONS SEE CONTROL HOUSE AND MACHINERY ROOM PLANS.

7. ALL JUNCTION WELLS IN THE SIDEWALK SHALL BE REPLACED AND RESET FLUSH WITH SIDEWALK UNLESS OTHERWISE NOTED.

8. ALL WORK INVOLVING WARNING GATE FOUNDATIONS SHALL BE INCIDENTAL TO "MODIFICATIONS TO WARNING AND BARRIER GATES" AND PAID UNDER "ITEM 615504 - BRIDGE ELECTRICAL SYSTEM".

8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

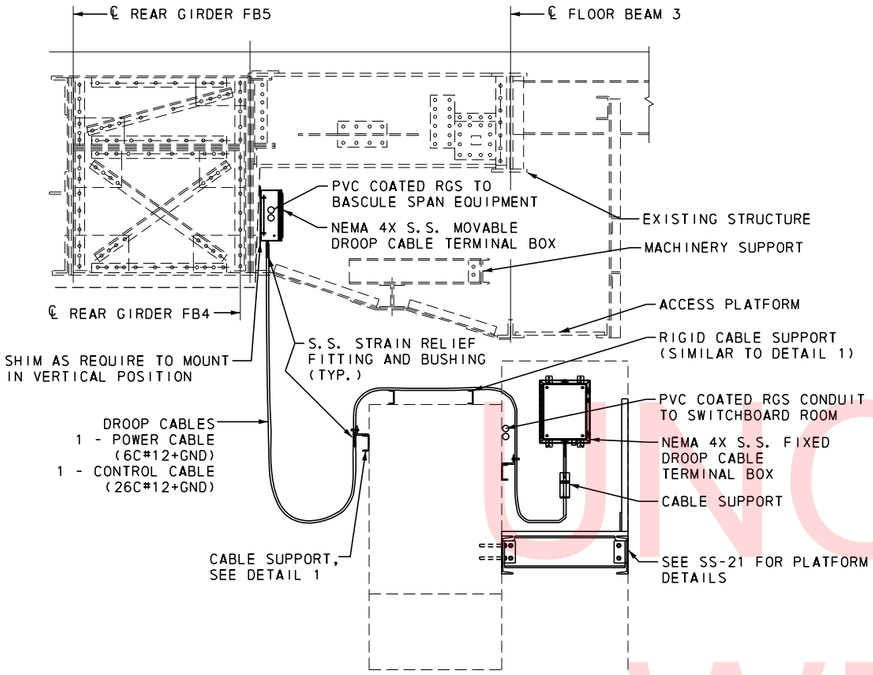
SCALE AS NOTED

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

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

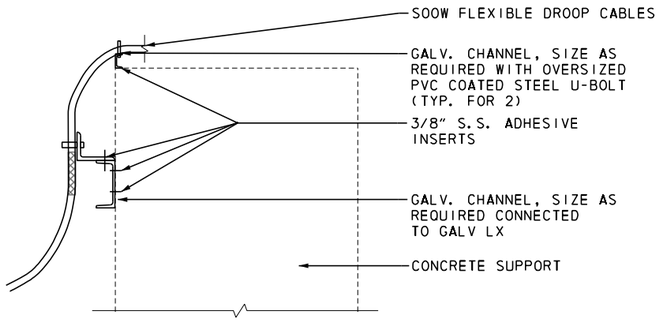
ELECTRICAL DETAILS III
MISC. DETAILS

SE-44
SHEET NO. 158
TOTAL SHTS. 180



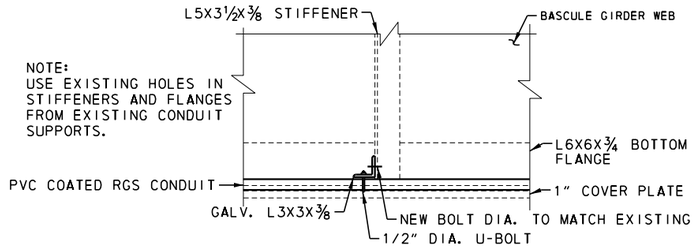
DROOP CABLE TERMINAL BOXES MOUNTING DETAIL

WEST SHOWN, EAST SIMILAR



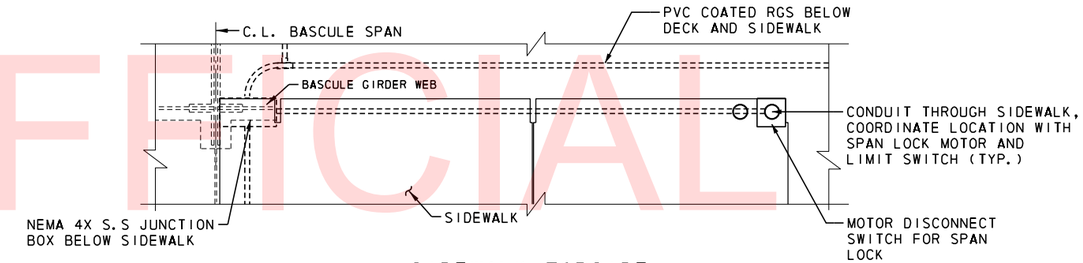
DETAIL 1 - DROOP CABLE SUPPORT

SCALE: NTS



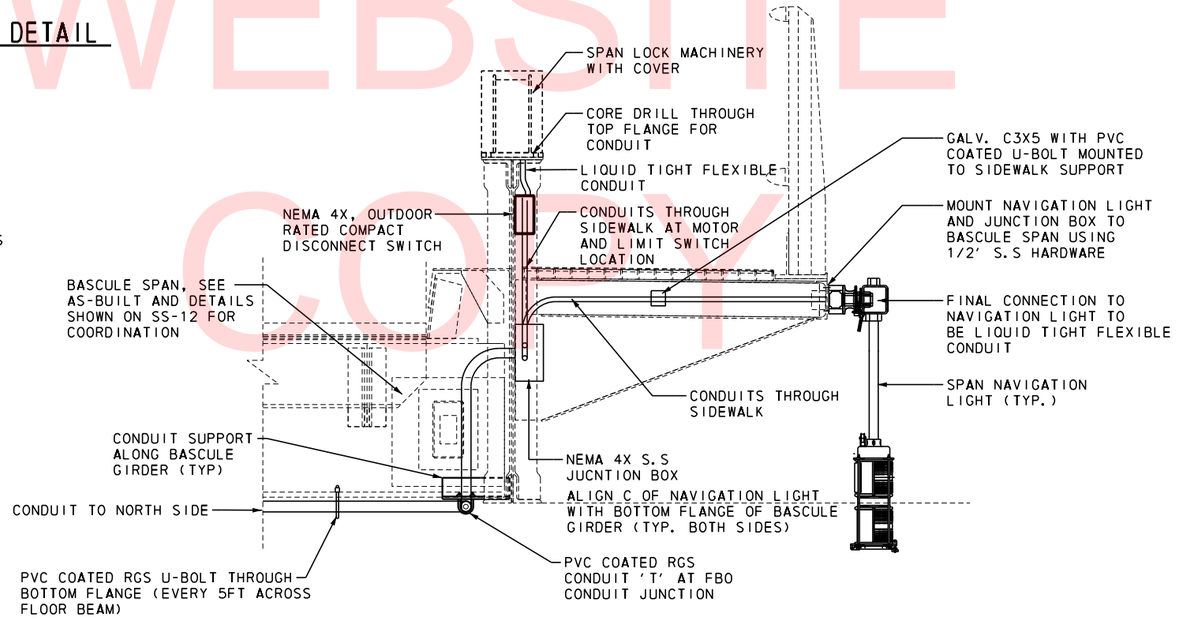
CONDUIT SUPPORT ON BASCULE GIRDER

SCALE: 3/4" = 1'-0"



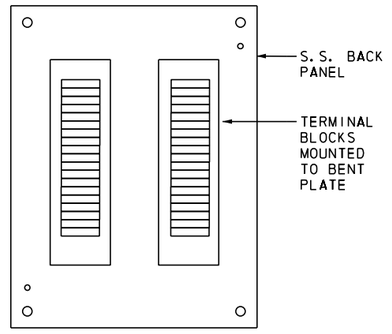
SIDEWALK TOPSIDE

SCALE: 3/4" = 1'-0"



SPAN LOCK CONDUIT AT FBO

SCALE: 3/4" = 1'-0"

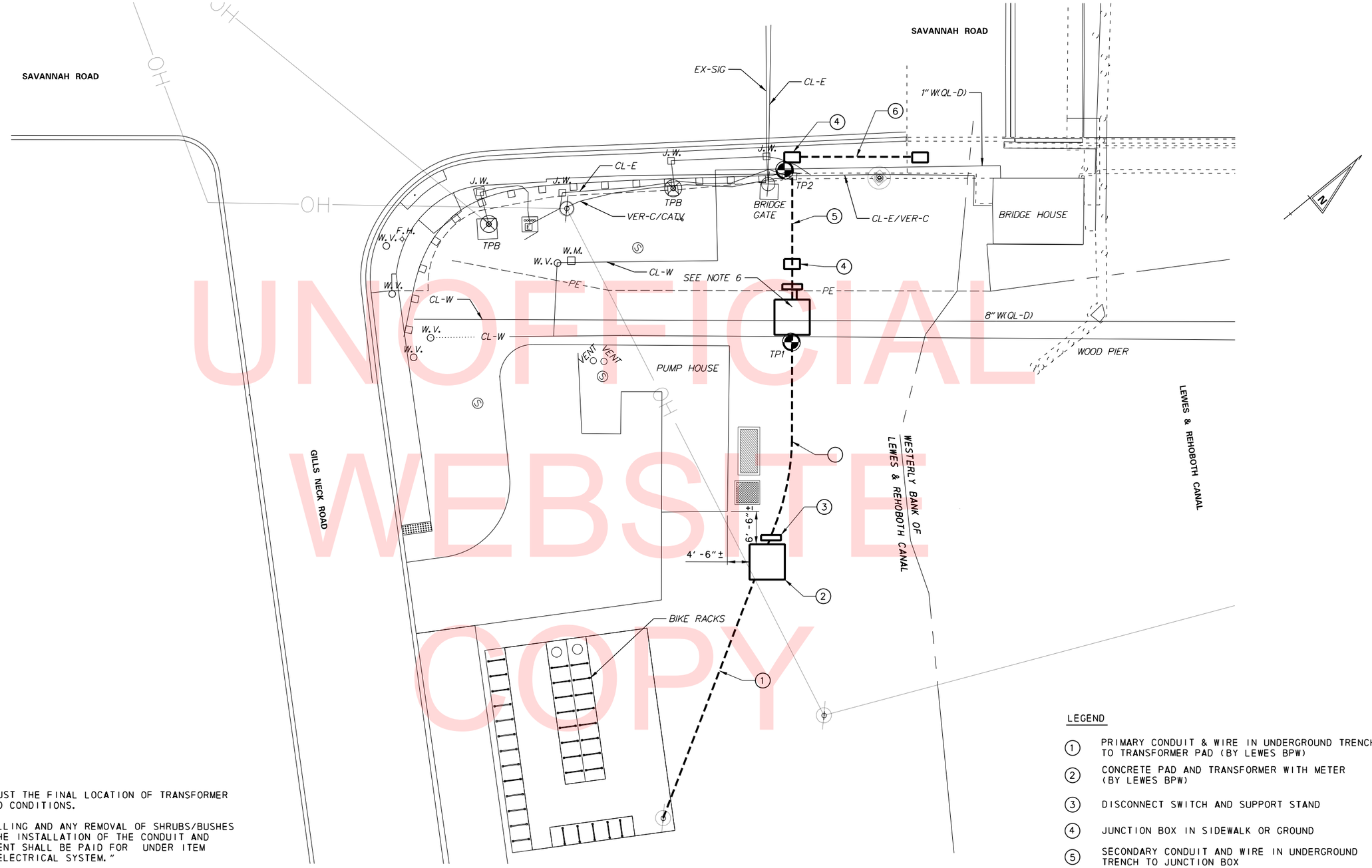


DETAIL 2 - DROOP CABLE BOX BACKPANEL

SCALE: NTS

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SPAN LOCK CONDUIT LOCATION
				COUNTY SUSSEX	DESIGNED BY: MJT	SE-45
					CHECKED BY: AHN	SHEET NO. 159
						TOTAL SHTS. 180

8/9/2018
M:\02889.04C\4000_Fin_Des\CADD\30_Elec\EE45 - Spanlock Conduit Location.dgn



ELECTRICAL UTILITY LOCATION PLAN

ELECTRICAL NOTES

1. LEWES BPW MAY ADJUST THE FINAL LOCATION OF TRANSFORMER PAD BASED ON FIELD CONDITIONS.
2. TRENCHING, BACKFILLING AND ANY REMOVAL OF SHRUBS/BUSHES AS REQUIRED FOR THE INSTALLATION OF THE CONDUIT AND ASSOCIATED EQUIPMENT SHALL BE PAID FOR UNDER ITEM "615504 - BRIDGE ELECTRICAL SYSTEM."
3. CONTRACTOR TO NOTIFY BPW AND VERIZON PRIOR TO THE START OF WORK.
4. CONDUIT TRENCH SHALL MEET DELDOT AND LEWES BPW STANDARDS.
5. SEE DWG SE-44 FOR CONDUIT ROUTING IN SIDEWALK.
6. CONTRACTOR TO TRENCH CONDUIT TO AVOID EXISTING WATER LINE.

LEGEND

1. PRIMARY CONDUIT & WIRE IN UNDERGROUND TRENCH TO TRANSFORMER PAD (BY LEWES BPW)
2. CONCRETE PAD AND TRANSFORMER WITH METER (BY LEWES BPW)
3. DISCONNECT SWITCH AND SUPPORT STAND
4. JUNCTION BOX IN SIDEWALK OR GROUND
5. SECONDARY CONDUIT AND WIRE IN UNDERGROUND TRENCH TO JUNCTION BOX
6. SECONDARY CONDUIT AND WIRE PLACED UNDER SIDEWALK

TP# TEST POINTS (2) COMPLETED BY SO-DEEP ON JUNE 22, 2017

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SAVANNAH ROAD ELECTRICAL INCOMING SERVICE PLAN	SE-46
				COUNTY SUSSEX	DESIGNED BY: M.TINE		SHEET NO. 160
					CHECKED BY: AHN		TOTAL SHTS. 180

8/2/2018
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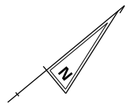
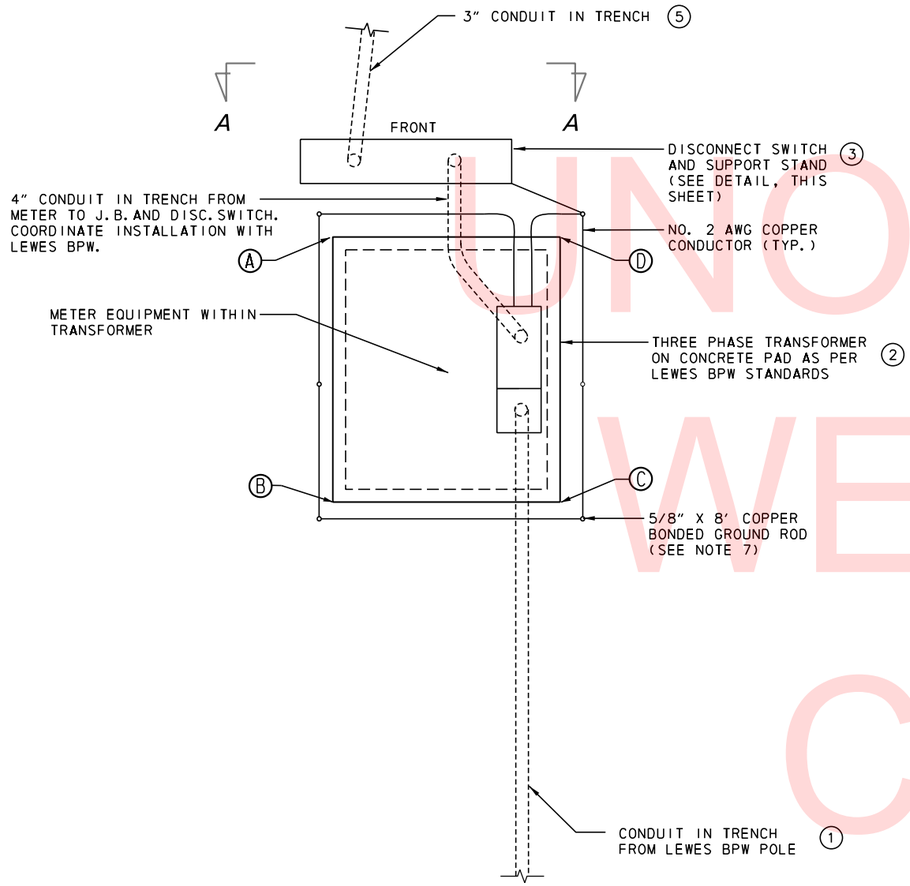
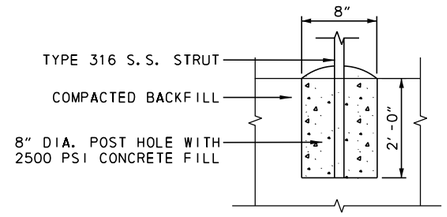
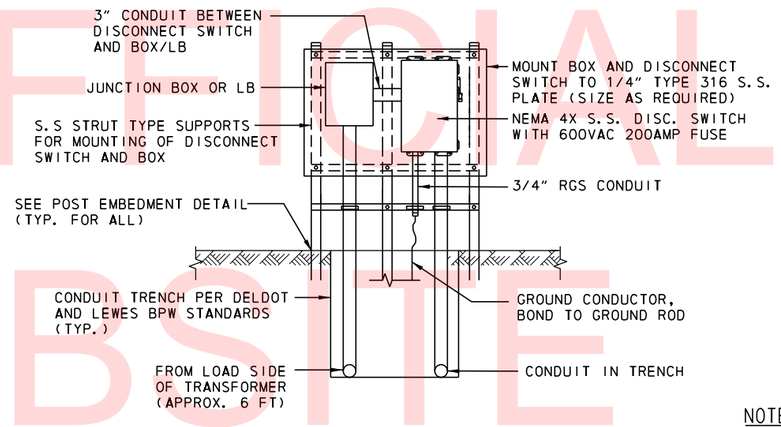




TRANSFORMER PAD LAYOUT
ALL DIMENSIONS ARE APPROXIMATE



POST EMBDEMENT DETAIL



SECTION A-A
DISCONNECT SWITCH AND SUPPORT STAND

NOTES

1. SUPPORT STRUCTURE SHALL BE FABRICATED FROM TYPE 316 S.S. 1 5/8" STRUT CHANNEL SYSTEM. THE CONDUIT SHALL BE SUPPORTED ON SUPPORT STRUICTURE WITH S.S. PIPE CLAMPS, SPRING NUTS, ETC.
2. EQUIPMENT SHALL BE INSTALLED PER NEC, LEWES BPW, AND AASHTO REQUIREMENTS.
3. LOCATIONS OF TRANSFORMER, SUPPORT STRUCTURE AND JUNCTION BOX SHALL BE ADJUSTED AS REQUIRED BASED ON SITE CONDITIONS.
4. WORK SHALL BE COORDINATED WITH THE EXISTING MANHOLES LOCATION, EXISTING LEWES BPW SERVCIES, DRAINAGE, AND VERIZON UTILITIES.
5. THE NEW SERVICE EQUIPMENT SHALL BE SERVICE RATED AND SHALL HAVE A MINIMUM SHORT CIRCUIT CURRENT RATING AT THE A.T.S. MAIN CIRCUIT BREAKER OF 35KAIC.
6. THE NEUTRAL AND GROUND CONDUCTORS SHALL BE BONDED ON THE GROUNDING LUG ONLY INSIDE THE DISCONNECT SWITCH.
7. GROUND ROD TYPE, QUANTITY, DEPTH AND LOCATION PER LEWES BPW.

ABBREVIATIONS AND LEGEND

DISC. - DISCONNECT
S.S. - STAINLESS STEEL

(1) SEE LEGEND REFERENCE ON SHEET SE-46

8/9/2018
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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SAVANNAH ROAD UTILITY DETAILS
				COUNTY SUSSEX	DESIGNED BY: M.TINE	SE-47 SHEET NO. 161
					CHECKED BY: AHN	TOTAL SHTS. 180

ENVIRONMENTAL COMPLIANCE NOTES (BRIDGES 3-153 AND 3-154)

1. GENERAL NOTES

   A. THE PURPOSE OF THESE SHEETS ARE TO IDENTIFY THOSE ITEMS ASSOCIATED WITH ENVIRONMENTAL COMPLIANCE. IMPACT CALCULATIONS ARE FOR THE AGENCY PERMIT REPORTING PURPOSES ONLY AND ARE NOT TO BE USED FOR BIDDING PURPOSES.

   B. IF A DEPARTURE FROM THE APPROVED PLANS (WHICH COULD AFFECT ANY NATURAL AND/OR CULTURAL RESOURCES) IS NECESSARY, THE ENVIRONMENTAL STUDIES SECTION SHALL BE CONTACTED AT (302)760-2264 TO ALLOW FOR COORDINATION WITH THE APPROPRIATE RESOURCE AGENCIES AND APPROVAL.

   C. USE OF THIS SHEET DOES NOT ALLEVIATE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL CONDITIONS SET FORTH IN THE ENVIRONMENTAL STATEMENT AND PERMITS.

2. NATURAL RESOURCE ISSUES:

   A. PERMIT REQUIREMENTS/APPROVALS:*

      U.S. ARMY CORPS OF ENGINEERS (COE): NATIONWIDE PERMIT #3(a) AND (c) (NO PCN)

      DNREC - WETLANDS & SUBAQUEOUS LANDS (WLSL): PROJECT IS CONSISTENT WITH DEL CODE CH. 72, SECTION 7217, SPECIAL EXEMPTION(b)

      DNREC - WATER QUALITY (WQC) & COASTAL ZONE CONSISTENCY (CZM): ISSUED (PROJECT NOT LOCATED IN CRW)

      U.S. COAST GUARD (USCG) : LETTER OF APPROVAL**; ADVANCE NOTIFICATION.***

      NOTE: THE ABSENCE OF ASTERISKS AFTER A PERMIT (COE, WLSL, WQC, CZM) INDICATES THAT COORDINATION HAS BEEN DONE WITH THAT AGENCY BUT NO WRITTEN AUTHORIZATION WAS REQUIRED. AS SUCH, NO PAPERWORK FROM THAT AGENCY SHOULD BE ANTICIPATED.

   * - THE PERMITS/APPROVALS LISTED ARE THOSE REQUIRED FOR THIS PROJECT.

   ** - THE CONTRACTOR MUST ENSURE THAT THESE PERMITS/APPROVALS (USCG) ARE IN POSSESSION PRIOR TO BEGINNING CONSTRUCTION IN THE PERMITTED AREA(S) AND ENSURE THEY ARE DISPLAYED DURING THE ENTIRE CONSTRUCTION PERIOD.

   *** -THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE U.S. COAST GUARD PRIOR TO CONSTRUCTION (SEE ITEM 4A FOR FURTHER DETAILS).

   B. CONSTRUCTION RESTRICTIONS:

      FISHERIES - NONE

      ENDANGERED SPECIES - NONE

      MIGRATORY BIRDS - NONE

3. CULTURAL RESOURCE ISSUES:

   DISPOSAL OF MATERIALS MUST BE IN AN UPLAND, NON-ARCHAEOGICAL SENSITIVE SITE(S), REVIEWED AND APPROVED BY THE STATE HISTORIC PRESERVATION OFFICE (SHPO) AND DELDOT ENVIRONMENTAL STUDIES STAFF (HEIDI CROFT). DELDOT ENVIRONMENTAL STUDIES STAFF WILL LEAD THAT EFFORT BASED ON THE CONTRACTOR'S INITIAL SUBMISSION AND OUTREACH THAT MUST OCCUR PRIOR TO PHYSICAL CONSTRUCTION MOVEMENT. THE DEPARTMENT WILL NOT CONSIDER ANY DELAYS OR MONETARY CLAIMS OF ANY NATURE RESULTING FROM THE CONTRACTOR'S FAILURE OR DIFFICULTY IN FINDING NECESSARY DISPOSAL SITES TO MEET THE TIME FRAMES AND CAPACITIES REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PLANS, PERMITS, EROSION AND SEDIMENTATION CONTROL MEASURES, ETC. REQUIRED BY THE APPROPRIATE REGULATORY AGENCY FOR UTILIZING OFF-SITE SPOIL AREAS.

4. U.S. COAST GUARD ADVANCED COORDINATION/APPROVAL:

   A. THE WATERWAYS ARE USED FOR RECREATIONAL PURPOSES. THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE THROUGH THE WORK AREAS FOR THE WATERWAY USERS AND SHALL HAVE THE PASSAGEWAY CLEARLY MARKED. PAYMENT IS INCLUDED UNDER PAY ITEM 763522,"COAST GUARD SPECIFIC CONDITIONS". ANY CONTRACTOR ACTIVITY,WHICH WILL RESULT IN THE SHORT-TERM RESTRICTION OF THE WATERWAYS TO THOSE INDIVIDUALS, IS TO BE COORDINATED WITH THE ENGINEER AND THE U.S. COAST GUARD 5TH COAST GUARD DISTRICT 30 DAYS IN ADVANCE, AND WITH U.S. COAST GUARD SECTOR DELAWARE BAY 60 DAYS IN ADVANCE.

   B. IF ANY IN-WATER WORK IS NEEDED, IT MUST BE COORDINATED WITH U.S. COAST GUARD PRIOR TO BEGINNING WORK AND BE IN CONFORMANCE WITH ITEM 763522, "COAST GUARD SPECIFIC CONDITIONS", CONTACT CAPT. HAL PITTS, AS WELL AS SUBMIT A WRITTEN NOTICE WHICH INCLUDES A SKETCH DEPICTING THE LOCATION AND DURATION OF ALL RESTRICTIONS TO THE COMMANDING OFFICER (AOWB), COAST GUARD DISTRICT, FEDERAL BUILDING 431 CRAWFORD ST., PORTSMOUTH, VA 23704 FOR APPROVAL 30 DAYS IN ADVANCE. CONTACT MS. AMANDA BOONE, AS WELL AS SUBMIT A WRITTEN NOTICE (WHICH INCLUDES THE LOCATION OF THE PROJECT,THE TYPE OF WORK AND MEANS AND METHODS USED, AND DATES, TIMES, AND DURATION OF WATERWAYS CLOSURE) TO THE SECTOR DELAWARE BAY USCG WWM DEPARTMENT, WASHINGTON AVE, PHILADELPHIA, PA 19147 FOR COORDINATION AND APPROVAL 60 DAYS IN ADVANCE.

   C. PER THE CURRENT REGULATION IN 33 CFR 117.239, BR3-154 SHALL OPEN AT SIGNAL IF AT LEAST FOUR HOURS NOTICE IS GIVEN. BR3-153 SHALL OPEN AT SIGNAL IF AT LEAST TWENTY-FOUR HOURS NOTICE IS GIVEN.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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 /3-154	ENVIRONMENTAL COMPLIANCE NOTES	EC-1
				COUNTY SUSSEX	DESIGNED BY: KK		G-4
					CHECKED BY: JW		SHEET NO. 162
							TOTAL SHTS. 180

8/9/2018
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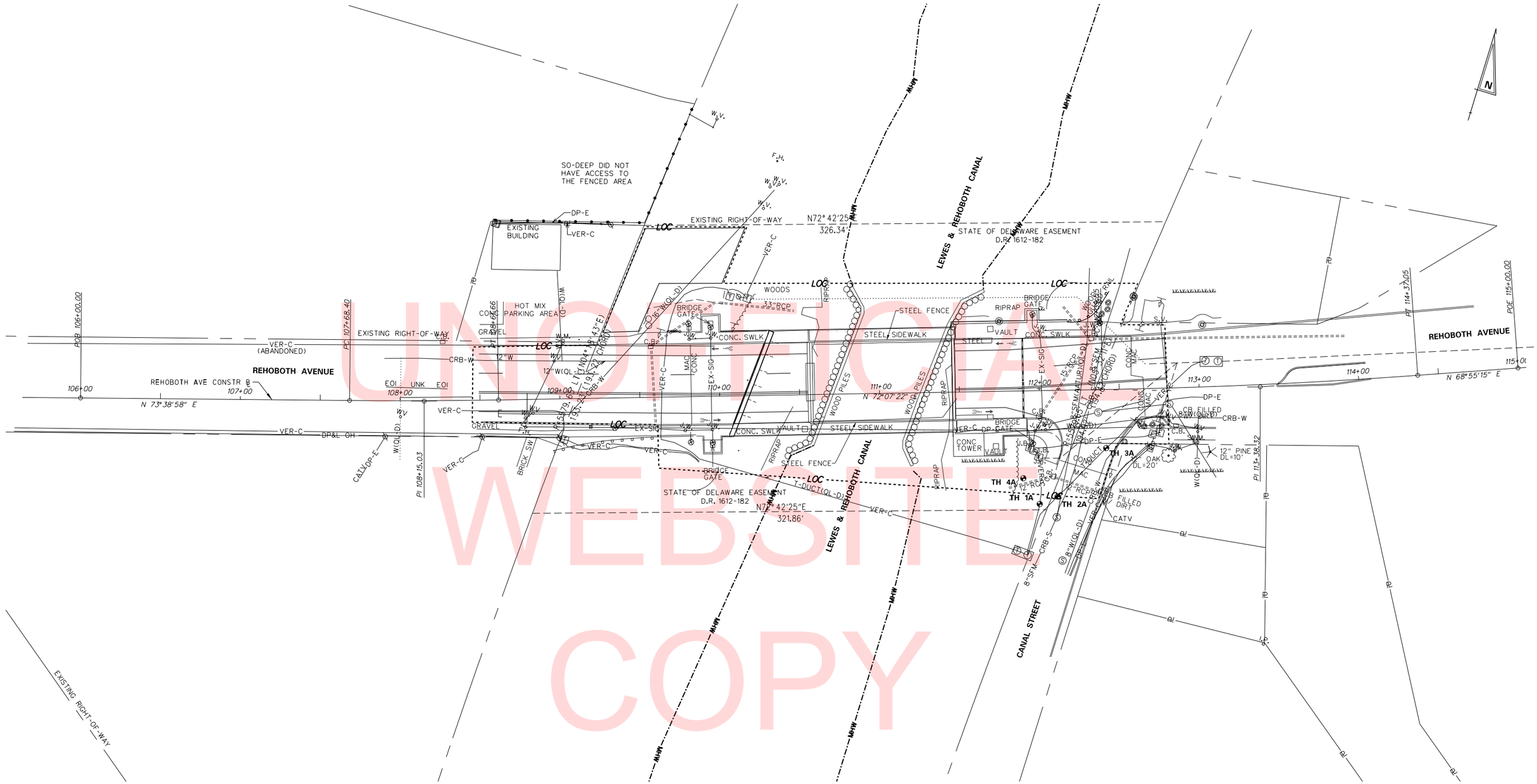

BR 3-153 OVER LEWES AND REHOBOTH CANAL

LEGEND

MHW CANAL LIMITS

NOTE:

1. A 240 SF BARGE WILL BE USED TO ACCESS THE STRUCTURE.

8/9/2018
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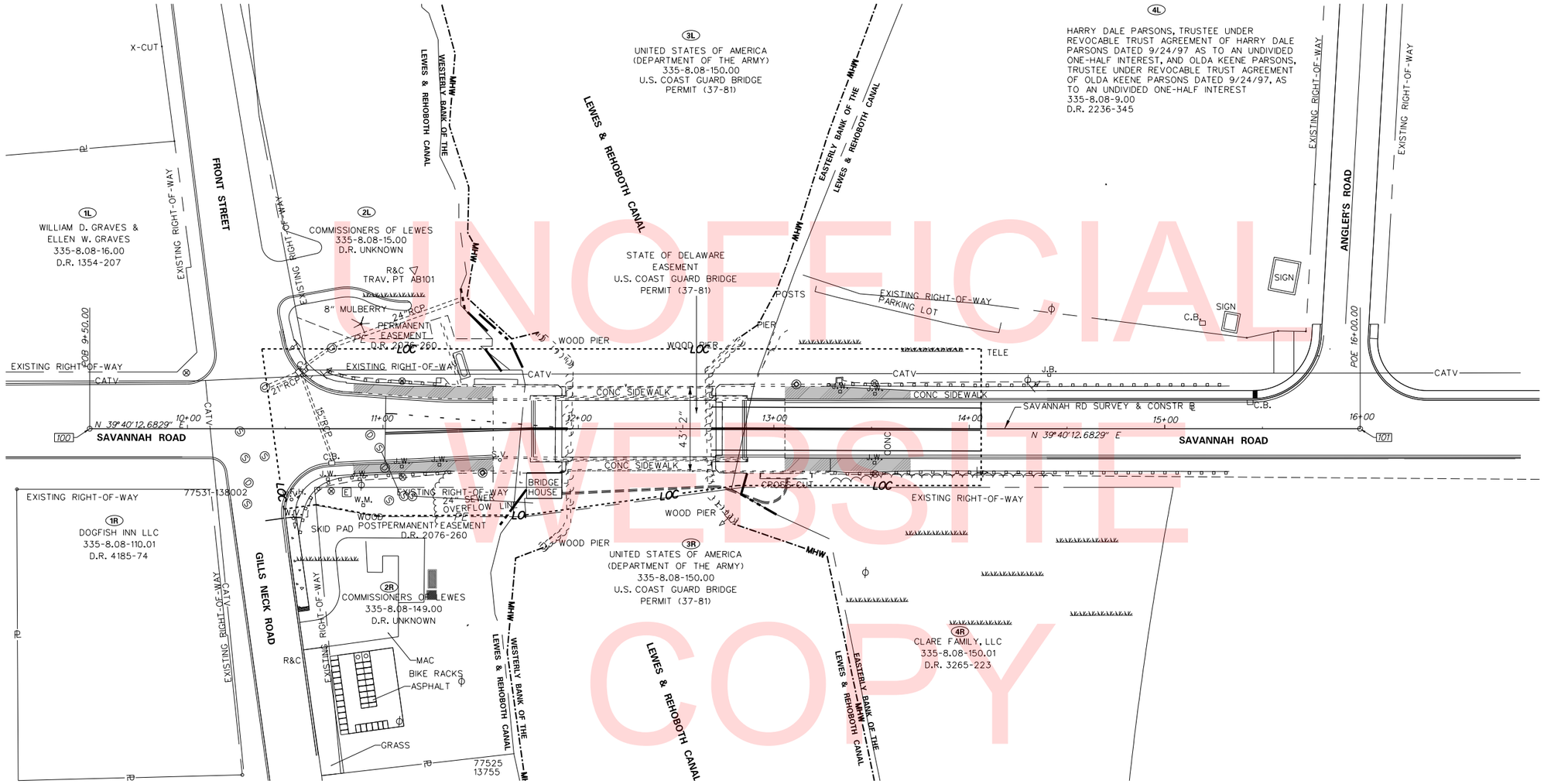
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	SCALE 0 30 60 90 FEET	BR 3-154 ON US9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL	CONTRACT T201507602	BRIDGE NO. 3-153	REHOBOTH AVENUE BRIDGE ENVIRONMENTAL COMPLIANCE PLAN	EC-2
				COUNTY SUSSEX	DESIGNED BY: KK		RH-3
					CHECKED BY: JW		SHEET NO. 163
							TOTAL SHTS. 180



BR 3-154 OVER LEWES AND REHOBOTH CANAL

LEGEND	
-·-·-MHW-·-·-·-	CANAL LIMITS

NOTE:

1. A 240 SF BARGE WILL BE USED TO ACCESS THE STRUCTURE.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

SCALE
0 30 60 90
FEET

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:	KK
CHECKED BY:	JW

SAVANNAH ROAD BRIDGE ENVIRONMENTAL COMPLIANCE PLAN

EC-3	
SH-4	SHEET NO.
164	TOTAL SHTS.
180	

ALLOWABLE LANE CLOSURES TIMES - REHOBOTH AVENUE
SUMMER TIME PERIOD MAY 1 THROUGH SEPTEMBER 30 (PHASES 1-3)
NON-SUMMER TIME PERIOD OCTOBER 1 THROUGH APRIL 30 (PHASE 3)

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
SUNDAY																								
MONDAY																					■	■	■	■
TUESDAY	■	■	■	■	■	■															■	■	■	■
WEDNESDAY	■	■	■	■	■	■															■	■	■	■
THURSDAY	■	■	■	■	■	■																		
FRIDAY																								
SATURDAY																								

■ ONE THROUGH LANE AND/OR TURN LANE PERMITTED TO BE CLOSED
□ NO TRAVEL OR TURN LANE CLOSURES PERMITTED

ALLOWABLE LANE CLOSURES TIMES - REHOBOTH AVENUE
NON-SUMMER TIME PERIOD OCTOBER 1 THROUGH APRIL 30 (PHASES 1 AND 2 ONLY)

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
SUNDAY																					■	■	■	■
MONDAY	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■
TUESDAY	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■
WEDNESDAY	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■
THURSDAY	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■
FRIDAY	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■
SATURDAY	■	■	■	■	■	■																		

■ ONE THROUGH LANE AND/OR TURN LANE PERMITTED TO BE CLOSED
□ NO TRAVEL OR TURN LANE CLOSURES PERMITTED

ALLOWABLE LANE CLOSURES TIMES - SAVANNAH ROAD
SUMMER TIME PERIOD MAY 1 THROUGH SEPTEMBER 30 (ALL PHASES)

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
SUNDAY																								
MONDAY																					■	■	■	■
TUESDAY	■	■	■	■	■	■															■	■	■	■
WEDNESDAY	■	■	■	■	■	■															■	■	■	■
THURSDAY	■	■	■	■	■	■																		
FRIDAY																								
SATURDAY																								

■ ONE THROUGH LANE AND/OR TURN LANE PERMITTED TO BE CLOSED
□ NO TRAVEL OR TURN LANE CLOSURES PERMITTED

ALLOWABLE LANE CLOSURES TIMES - SAVANNAH ROAD
NON-SUMMER TIME PERIOD OCTOBER 1 THROUGH APRIL 30 (ALL PHASES)

	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
SUNDAY																								
MONDAY																					■	■	■	■
TUESDAY	■	■	■	■	■	■															■	■	■	■
WEDNESDAY	■	■	■	■	■	■															■	■	■	■
THURSDAY	■	■	■	■	■	■															■	■	■	■
FRIDAY	■	■	■	■	■	■																		
SATURDAY																								

■ ONE THROUGH LANE AND/OR TURN LANE PERMITTED TO BE CLOSED
□ NO TRAVEL OR TURN LANE CLOSURES PERMITTED

MAINTENANCE OF TRAFFIC GENERAL NOTES (BR3-153 AND BR3-154)

1. THIS PROJECT IS CONSIDERED A SIGNIFICANT PROJECT AS DEFINED BY DELDOT'S WORK ZONE MOBILITY PROCEDURES AND GUIDELINES. A TYPE B TRANSPORTATION MANAGEMENT PLAN (TMP) HAS BEEN PREPARED AND IS AVAILABLE FOR VIEWING BY CONTACTING THE DEPARTMENT'S SAFETY PROGRAMS MANAGER. ALL MONITORING REQUIREMENTS OF THE TMP SHALL BE CONDUCTED BY DELDOT FORCES UNLESS OTHERWISE DIRECTED BY THE ENGINEER. MODIFICATIONS TO THE TMP SHALL BE COMPLETED BY THE CONTRACTOR IF CHANGES TO THE TIME RESTRICTIONS OR THE TRAFFIC CONTROL PLAN ARE DESIRED. THE MODIFIED TMP SHALL BE PREPARED BY A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF DELAWARE.

2. AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION (ATSSA) CERTIFIED TRAFFIC CONTROL SUPERVISOR REQUIREMENT FOR THIS PROJECT.

(X)	THE CONTRACTOR SHALL NOT BE REQUIRED TO HAVE AN ATSSA SUPERVISOR ASSIGNED TO THIS PROJECT.
( )	THE CONTRACTOR SHALL HAVE AN ATSSA SUPERVISOR ASSIGNED TO THIS PROJECT. THE CONTRACTOR'S GENERAL SUPERINTENDENT FOR THIS PROJECT OR ANOTHER ATSSA CERTIFIED MEMBER OF THE CONTRACTOR'S PROJECT STAFF MAY BE THE ATSSA SUPERVISOR. PAYMENT FOR ATSSA SUPERVISOR IS INCIDENTAL TO ITEM 801000.
( )	THE CONTRACTOR SHALL HAVE AN ATSSA SUPERVISOR ASSIGNED TO THIS PROJECT. THE ATSSA SUPERVISOR'S SOLE JOB SHALL BE SUPERVISION OF THE INSTALLATION, OPERATION AND MAINTENANCE OF TRAFFIC CONTROL DEVICES FOR THIS PROJECT. THE CONTRACTOR'S GENERAL SUPERINTENDENT FOR THIS PROJECT SHALL NOT BE THE ATSSA SUPERVISOR. PAYMENT FOR ATSSA SUPERVISOR SHALL BE PAID FOR UNDER ITEM 801000.

3. THE CONTRACTOR SHALL PROVIDE ONE (1) TRAFFIC OFFCER FOR ANY OPERATION WHERE AN EXISTING SIGNALIZED INTERSECTION IS PLACED IN FLASH-MODE. THE TRAFFIC OFFICER IS THE ONLY INDIVIDUAL THAT CAN PLACE A TRAFFIC SIGNAL IN FLASH-MODE AND THE TRAFFIC OFFICER MUST STAY ON LOCATION UNTIL THE SIGNAL IS PLACED BACK IN STOP-AND-GO OPERATION IN ACCORDANCE WITH DELDOT'S TEMPORARY TRAFFIC CONTROL WITHIN INTERSECTIONS MEMORANDUM (WWW.MUTCD.DELDOT.GOV).

4. MAINTENANCE OF TRAFFIC DURING LANE CLOSURES AND LANE SHIFTS SHALL CONFORM TO TYPICAL APPLICATIONS TA-10, TA-11B, TA-21, TA-23, TA-28, TA-29, TA-30 OF THE DE MUTCD.

5. LANE CLOSURES ARE ONLY PERMITTED FOR ACTIVE CONSTRUCTION ACTIVITIES. IF ACTIVE CONSTRUCTION ACTIVITIES ARE NOT OCCURING, ALL LANES SHALL BE OPEN. ONE (1) HOUR LANE CLOSURES FOR MATERIAL DELIVERY AND EQUIPMENT DROP-OFF ARE PERMITTED YEAR AROUND AND REQUIRE THE USE OF A SHADOW VEHICLE. NO ROADWORK SHALL OCCUR.

6. LANE CLOSURES ARE NOT PERMITTED DURING SPECIAL EVENTS ON SAVANNAH ROAD OR REHOBOTH AVENUE. A LIST OF ANTICIPATED EVENTS ARE LISTED BELOW AND PROVIDED IN THE TRANSPORTATION MANAGEMENT PLAN. THE DEPARTMENT WILL PROVIDE DATES FOR EACH EVENT TWO (2) WEEKS PRIOR TO OCCURENCE. DELDOT RESERVES THE RIGHT TO IMPOSE ADDITIONAL LANE CLOSURE RESTRICTIONS AS WARRANTED BY UNKNOWN PLANNED SPECIAL EVENTS.

7. ROADWAY CLOSURE WITH DETOUR ROUTE FOR REHOBOTH AVENUE SHALL BE PERMITTED DURING THE OFF-SEASON (OCTOBER 1 TO APRIL 30) BETWEEN THE HOURS OF 11PM AND 5AM. DETOUR ROUTE SHALL BE IN PLACE FOR ROADWAY CLOSURES THAT EXCEED TWO (2) HOURS. SHUTTLE BUS SERVICES SHALL BE PROVIDED FOR PEDESTRIANS AND BICYCLISTS WHO WISH TO CROSS THE BRIDGE. THE CONTRACTOR SHALL SUBMIT SHUTTLE BUS SUBCONSULTANT CONTRACT AND PLAN TO THE ENGINEER FOUR (4) WEEKS PRIOR TO ROAD CLOSURE. SHUTTLE BUS SHALL BE ADA COMPLIANT. PAYMENT FOR SHUTTLE BUS SERVICE SHALL BE INCIDENTAL TO THE MAINTENANCE OF TRAFFIC (ITEM NO. 801000).

8. FULL ROADWAY CLOSURE WITH DETOUR ARE PERMITTED ON SAVANNAH ROAD DURING THE OFF-SEASON (OCTOBER 1 TO APRIL 30) BETWEEN THE HOURS OF 11PM AND 5AM. SHOULD THE CONTRACTOR REQUEST THAT ANY DETOUR STAY IN PLACE LONGER, IT WILL REQUIRE APPROVAL AND ADVANCE NOTICE OF FOUR (4) WEEKS TO THE ENGINEER AND MUST BE COORDINATED WITH DELDOT AND THE CITY OF LEWES. SHUTTLE BUS SERVICES SHALL BE PROVIDED FOR PEDESTRIANS AND BICYCLISTS WHO WISH TO CROSS THE BRIDGE. THE CONTRACTOR SHALL SUBMIT SHUTTLE BUS SUBCONSULTANT CONTRACT AND PLAN TO THE ENGINEER FOUR (4) WEEKS PRIOR TO ROAD CLOSURE. SHUTTLE BUS SHALL BE ADA COMPLIANT. PAYMENT FOR SHUTTLE BUS SERVICE SHALL BE INCIDENTAL TO THE MAINTENANCE OF TRAFFIC (ITEM NO. 801000).

9. PAYMENT FOR PEDESTRIAN DETOUR MAINTENANCE OF TRAFFIC TO BE INCLUDED UNDER PAY ITEM NO. 801000. DETOUR DEVICES SUCH AS SIGNS, DRUMS, BARRICADES, FLAGGERS AND CURB RAMPS WILL BE PAID UNDER INDIVIDUAL ITEM NUMBERS.

10. PAINTING ACTIVITIES SHALL BE PERFORMED AT NIGHT BETWEEN THE HOURS OF 8PM AND 6AM. THE DETOUR SHALL BE IN PLACE DURING THIS PERIOD.

11. MESSAGE BOARD LOCATIONS AND MESSAGE SHALL BE COORDINATED AND APPROVED BY THE DISTRICT TRAFFIC SAFETY OFFICER.

12. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES AND MOT WITH THE ADJACENT RAIL REMOVAL PROJECT IN LEWES DURING THE SUMMER AND FALL OF 2018.

13. WORK HOURS (XX PM - XX AM) TO BE DISPLAYED WITH START DATE ON PCMS-1 FOR DETOUR ROUTES. PCMS-2 TO BE DISPLAYED FOR ENTIRE DURATION OF DETOUR. SPECIAL SIGNS "ROUTE XX CLOSED AT DRAWBRIDGE" TO BE BLACK ON RETROREFLECTIVE FLOURESCENT ORANGE FOR DETOUR ROUTES.

LANE CLOSURES ARE NOT PERMITTED DURING THE FOLLWING EVENTS:

1. POLAR BEAR PLUNGE; REHOBOTH (EARLY FEBRUARY)
2. SEASHORE CLASSIC HALF MARATHON; LEWES (EARLY APRIL)
3. COASTAL DELAWARE MARATHON; REHOBOTH & LEWES (APRIL)
4. TOMMY 10K; LEWES (LATE APRIL)
5. REVELATION 4 MILER; REHOBOTH (EARLY MAY)
6. LEWES MEMORIAL DAY PARADE; LEWES (LATE MAY)
7. LAW ENFORCEMENT TORCH RUN; REHOBOTH (EARLY JUNE)
8. CAPE HENLOPEN TRIATHLON; LEWES (MID-JUNE)
9. REHOBOTH FIREWORKS; REHOBOTH (EARLY JULY)
10. LEWES DRAGONBOAT FESTIVAL; LEWES (MID-SEPTEMBER)
11. GREEN TURTLE 5K; REHOBOTH (EARLY OCTOBER)
12. SEA WITCH; REHOBOTH (LATE OCTOBER)
13. REHOBOTH SEASHORE MARATHON; REHOBOTH (EARLY DECEMBER)
14. REHOBOTH CHRISTMAS PARADE (EARLY DECEMBER)

THE ACTUAL DATES FOR THESE EVENTS ARE TO BE DETERMINED AND MUST BE COORDINATED WITH THE DEPARTMENT AND CITY OF LEWES AND REHOBOTH.

8/9/2018
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DELAWARE
DEPARTMENT OF TRANSPORTATION

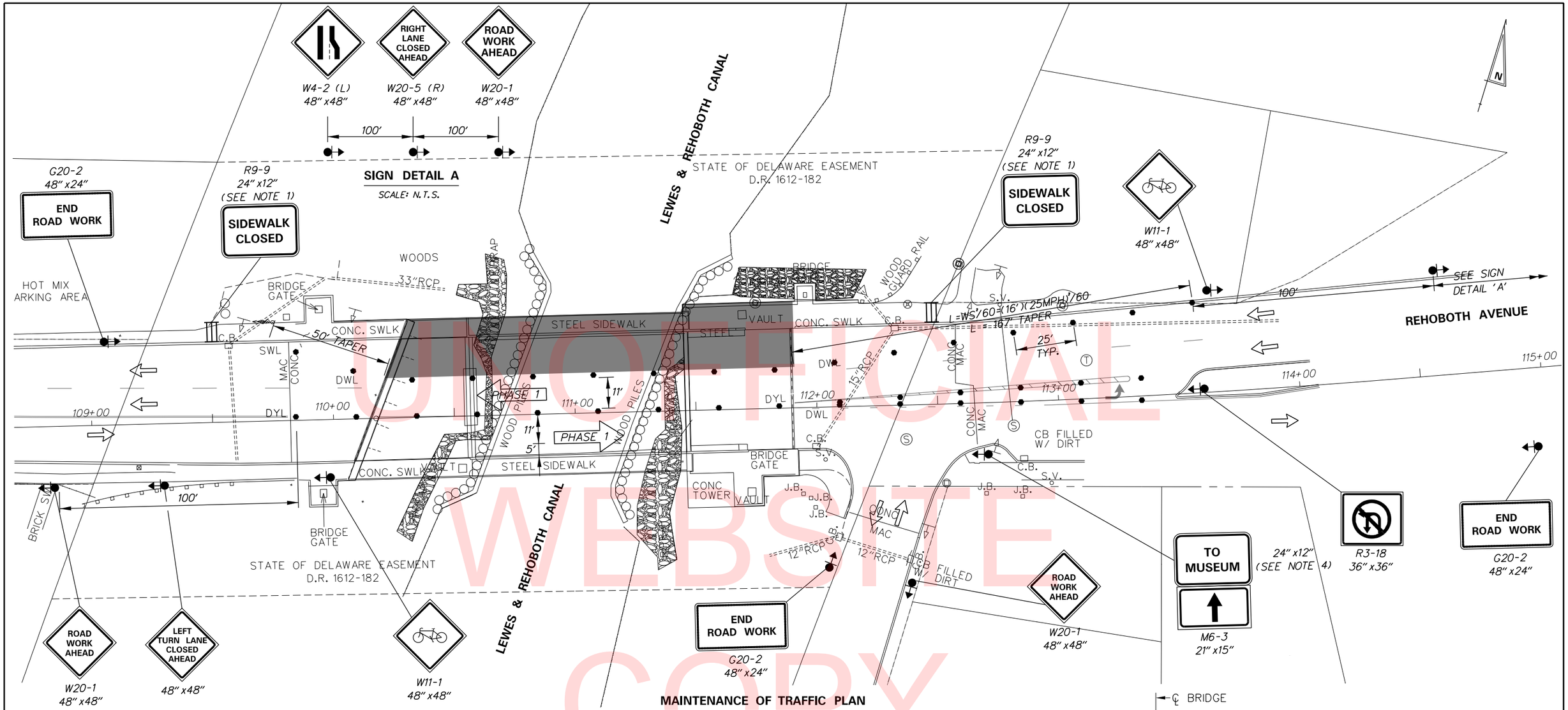
ADDENDUMS / REVISIONS	

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 /3-154
DESIGNED BY:	KK
CHECKED BY:	JW

CONSTRUCTION PHASING
MOT NOTES

	G-5
SHEET NO.	165
TOTAL SHTS.	180



MAINTENANCE OF TRAFFIC PLAN

SCALE: 1" = 20'

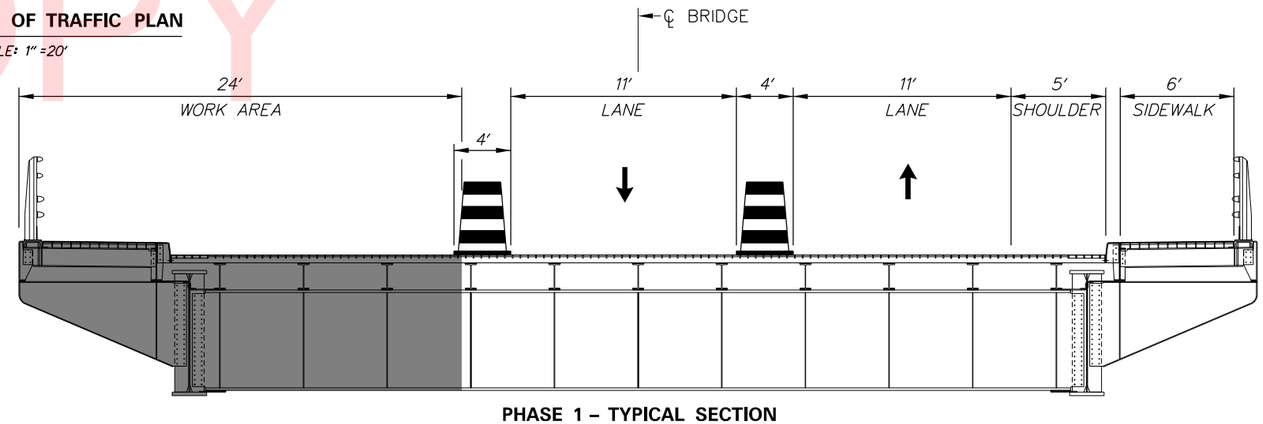
CONSTRUCTION PHASING & M.O.T	
	BARRICADE, TYPE 3
	CONSTRUCTION WARNING SIGN LOCATION
END ROAD WORK	CONSTRUCTION WARNING SIGN
	EXISTING TRAFFIC FLOW
	DRUM - TRAFFIC CONTROL
	FLAGGER LOCATION
PHASE	PHASING TRAFFIC FLOW ARROW
	TEMPORARY CONSTRUCTION
	WORK AREA - ACTIVE PHASE

SEQUENCE OF CONSTRUCTION

1. INSTALL PHASE 1 TRAFFIC CONTROL DEVICES. LANE CLOSURES MUST ADHERE TO THE SCHEDULE PROVIDED IN THE LANE CLOSURE MATRIX (SHEET G-5).
2. INSTALL PEDESTRIAN DETOURS ACCORDING TO TA-28 AND TA-29 OF THE DELAWARE MUTCD. PEDESTRIAN DETOUR MUST REMAIN IN PLACE FOR THE DURATION OF PHASE 1.
3. REMOVE NORTH BASCULE SPAN SIDEWALK AND INSTALL NEW SIDEWALK.
4. PERFORM EPOXY, PAINT, JOINT, CONTROL HOUSE, OPERATOR ROOM AND OTHER MISCELLANEOUS BRIDGE REPAIRS, AS SPECIFIED ON BRIDGE PLANS.
5. REMOVE TRAFFIC CONTROL DEVICES AND REOPEN ROAD TO TRAFFIC.

NOTES:

1. SEE SHEET RH-7 FOR PEDESTRIAN DETOUR ROUTE AND DEVICES.
2. SEE SHEET RH-9A FOR MUSEUM DETOUR ROUTE AND DEVICES.
3. SEE NOTE 7 ON SHEET G-5 FOR BRIDGE CLOSURE AND DETOUR INFORMATION.
4. SPECIAL SIGN "TO MUSEUM" TO BE BLACK ON RETROFLECTIVE FLOURESCENT ORANGE. SEE SHEET RH-9A FOR SIGN DETAIL.



PHASE 1 – TYPICAL SECTION

N.T.S.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	REHOBOTH AVENUE BRIDGE CONSTRUCTION PHASING MOT & EROSION CONTROL PHASE 1	RH-4
				COUNTY SUSSEX	DESIGNED BY: KK		SHEET NO. 166
					CHECKED BY: JW		TOTAL SHTS. 180

8/9/2018
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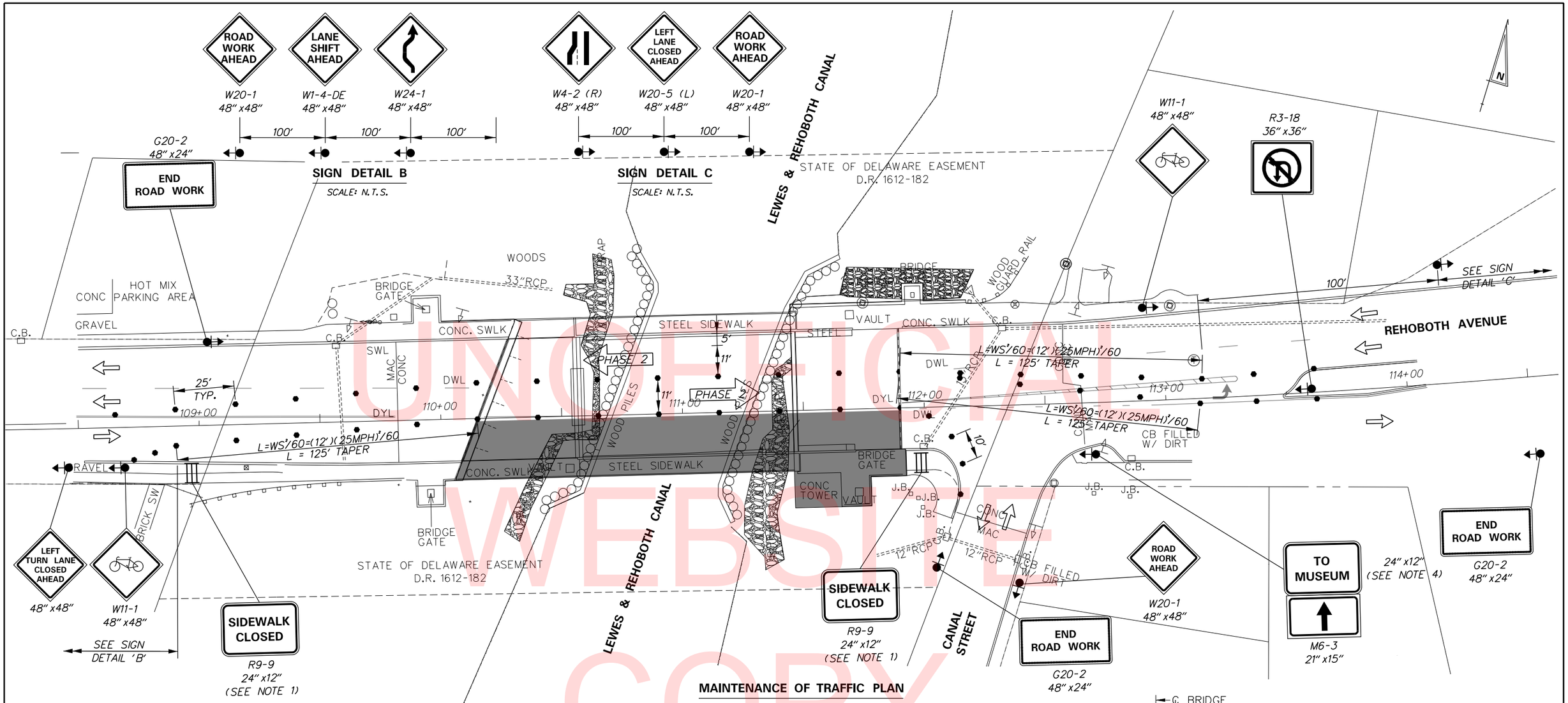


MAINTENANCE OF TRAFFIC PLAN

SCALE: 1" = 20'

CONSTRUCTION PHASING & M.O.T

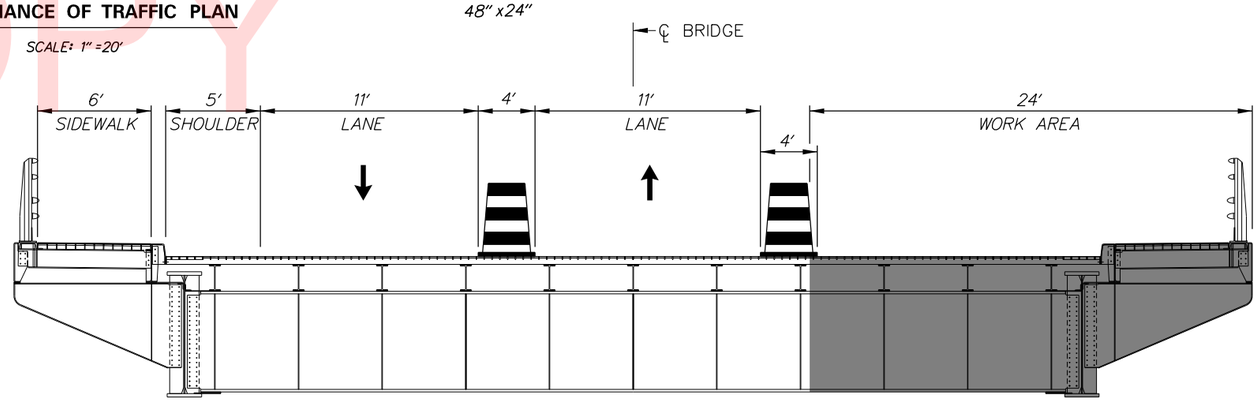
	BARRICADE, TYPE 3
	CONSTRUCTION WARNING SIGN LOCATION
END ROAD WORK	CONSTRUCTION WARNING SIGN
	EXISTING TRAFFIC FLOW
	DRUM - TRAFFIC CONTROL
	FLAGGER LOCATION
PHASE	PHASING TRAFFIC FLOW ARROW
	TEMPORARY CONSTRUCTION
	WORK AREA - ACTIVE PHASE

SEQUENCE OF CONSTRUCTION

1. INSTALL PHASE 2 TRAFFIC CONTROL DEVICES. LANE CLOSURES MUST ADHERE TO THE SCHEDULE PROVIDED IN THE LANE CLOSURE MATRIX (SHEET G-5).
2. INSTALL PEDESTRIAN DETOURS ACCORDING TO TA-28 AND TA-29 OF THE DELAWARE MUTCD. PEDESTRIAN DETOUR MUST REMAIN IN PLACE FOR THE DURATION OF PHASE 2.
3. REMOVE SOUTH BASCULE SPAN SIDEWALK AND INSTALL NEW SIDEWALK.
4. PERFORM EPOXY, PAINT, JOINT, CONTROL HOUSE, OPERATOR ROOM AND OTHER MISCELLANEOUS BRIDGE REPAIRS, AS SPECIFIED ON BRIDGE PLANS.
5. REMOVE TRAFFIC CONTROL DEVICES AND REOPEN ROAD TO TRAFFIC.

NOTES:

1. SEE SHEET RH-8 FOR PEDESTRIAN DETOUR ROUTE AND DEVICES.
2. SEE SHEET RH-9A FOR MUSEUM DETOUR ROUTE AND DEVICES.
3. SEE NOTE 7 ON SHEET G-5 FOR BRIDGE CLOSURE AND DETOUR INFORMATION.
4. SPECIAL SIGN "TO MUSEUM" TO BE BLACK ON RETROFLECTIVE FLOURESCENT ORANGE. SEE SHEET RH-9A FOR SIGN DETAIL.



PHASE 2 – TYPICAL SECTION

N.T.S.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	REHOBOTH AVENUE BRIDGE CONSTRUCTION PHASING MOT & EROSION CONTROL PHASE 2	RH-5
				COUNTY SUSSEX	DESIGNED BY: KK		SHEET NO. 167
					CHECKED BY: JW		TOTAL SHTS. 180

8/9/2018
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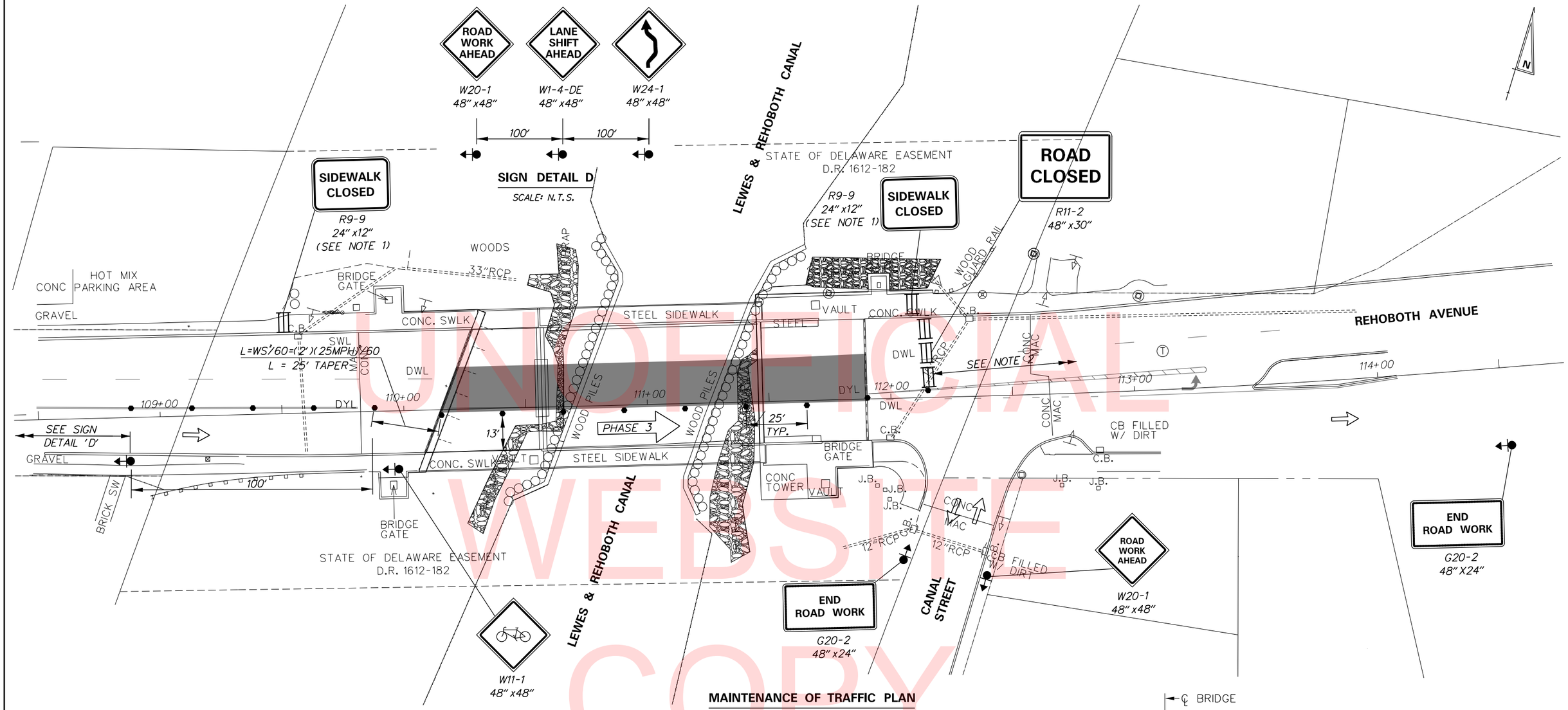


MAINTENANCE OF TRAFFIC PLAN

SCALE: 1" =20'

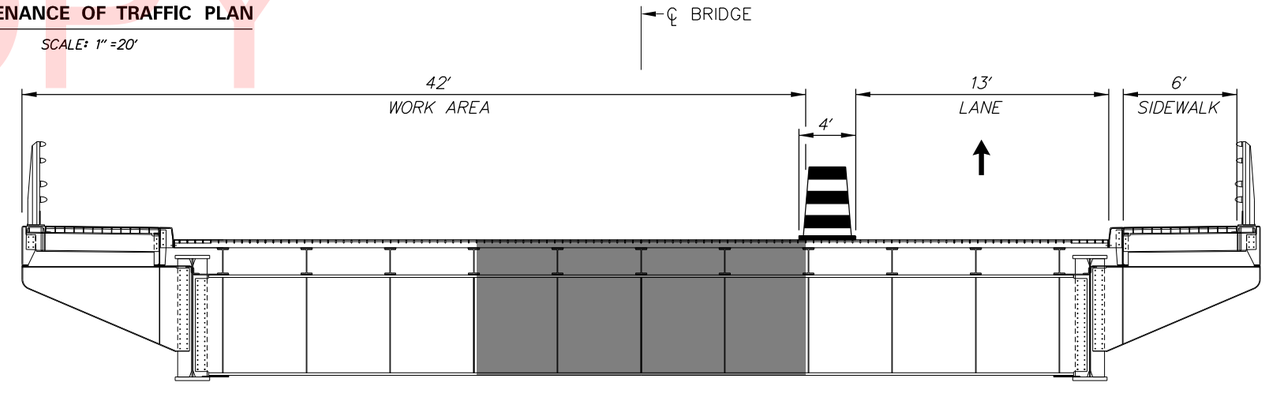
CONSTRUCTION PHASING & M.O.T	
	BARRICADE, TYPE 3
	CONSTRUCTION WARNING SIGN LOCATION
END ROAD WORK	CONSTRUCTION WARNING SIGN
	EXISTING TRAFFIC FLOW
	DRUM - TRAFFIC CONTROL
	FLAGGER LOCATION
PHASE	PHASING TRAFFIC FLOW ARROW
	TEMPORARY CONSTRUCTION
	WORK AREA - ACTIVE PHASE

SEQUENCE OF CONSTRUCTION

1. INSTALL PHASE 3 TRAFFIC CONTROL DEVICES. LANE CLOSURES MUST ADHERE TO THE SCHEDULE PROVIDED IN THE LANE CLOSURE MATRIX (SHEET G-5).
2. INSTALL PEDESTRIAN DETOURS ACCORDING TO TA-28 AND TA-29 OF THE DELAWARE MUTCD. PEDESTRIAN DETOUR MUST REMAIN IN PLACE FOR THE DURATION OF PHASE 3.
3. PERFORM EPOXY, PAINT, JOINT, CONTROL HOUSE, OPERATOR ROOM AND OTHER MISCELLANEOUS BRIDGE REPAIRS, AS SPECIFIED ON BRIDGE PLANS.
4. REMOVE TRAFFIC CONTROL DEVICES AND REOPEN ROAD TO TRAFFIC.

NOTES:

1. SEE SHEET RH-7 FOR PEDESTRIAN DETOUR ROUTE AND DEVICES.
2. WESTBOUND REHOBOTH AVENUE TO BE CLOSED TO TRAFFIC FOR THE DURATION OF PHASE 3. SEE SHEET RH-9A FOR DETOUR ROUTE AND DEVICES.
3. SEE NOTE 7 ON SHEET G-5 FOR BRIDGE CLOSURE AND DETOUR INFORMATION.



PHASE 3 – TYPICAL SECTION

N.T.S.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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. 3-153	REHOBOTH AVENUE BRIDGE CONSTRUCTION PHASING MOT & EROSION CONTROL PHASE 3	RH-6
				COUNTY SUSSEX	DESIGNED BY: KK		SHEET NO. 168
					CHECKED BY: JW		TOTAL SHTS. 180

8/9/2018
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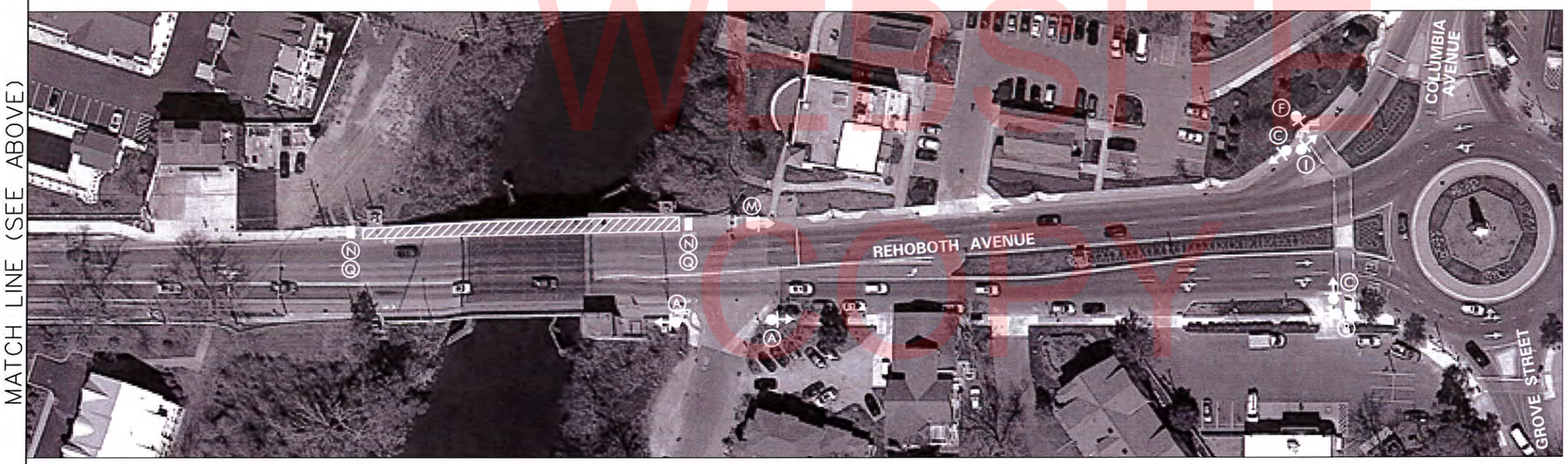
MATCH LINE (SEE BELOW)



MATCH LINE (SEE ABOVE)

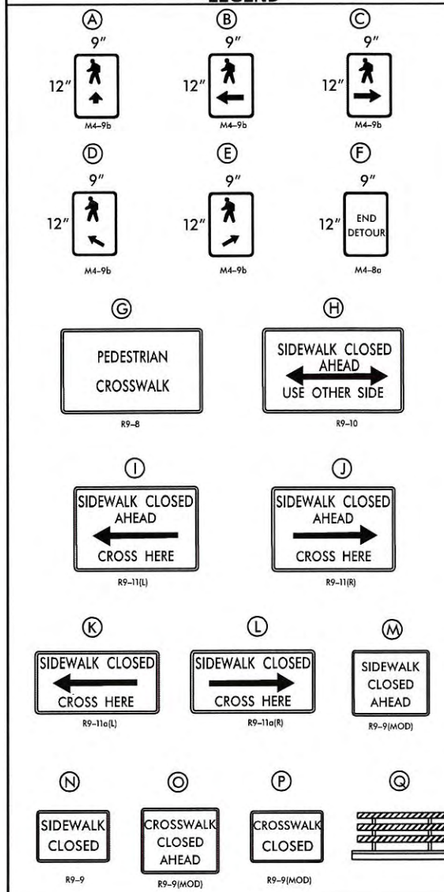
LEGEND:

WORK ZONE

NOTE:

PEDESTRIAN DETOUR SHOWN ON THIS SHEET TO BE IMPLEMENTED DURING PHASES 1 AND 3 OF THE PROJECT.

LEGEND



GENERAL NOTES

1. ALL DETOUR SIGNING, INCLUDING TRAILBLAZERS, ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR IN COMPLIANCE WITH "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD.)
2. THE CONTRACTOR SHALL COMPLY WITH GUIDELINES IN "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD PART 6) FOR BARRICADES AND SIGNS (AS PER LATEST REVISION.)
3. DESIGN OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FHWA STANDARD HIGHWAY SIGNS BOOK.
4. SIZES OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD.) SIZE OF SIGN SHALL BE BASED ON TYPE OF ROADWAY ON WHICH THE SIGN IS INSTALLED.
5. SIGNS NO LONGER IN USE SHALL BE COMPLETELY COVERED WITH NO RETROREFLECTIVE MATERIAL SHOWING, OR SHALL BE REMOVED, AS DIRECTED BY THE ENGINEER.
6. FIELD CONDITIONS MAY DICTATE CHANGES AT SOME TIME DURING THE LIFE OF THE CONTRACT. IN THE EVENT OF OMISSIONS OR CORRECTIONS, THE SIGNING PROVISIONS OF "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD) WILL PREVAIL.
7. WARNING SIGNS AND DETOUR TRAILBLAZERS SHALL BE MOUNTED ON BREAKAWAY POSTS AND HAVE RETROREFLECTIVE FLUORESCENT ORANGE SHEETING.
8. "O" BARRICADE SHALL COMPLETELY RUN THE FULL WIDTH OF SIDEWALK OR PEDESTRIAN PATH.
9. BARRICADES SHALL BE A MINIMUM OF 6 FEET WIDE UNLESS DIRECTED BY THE ENGINEER.
10. PEDESTRIAN DETOUR TRAILBLAZERS NOT ATTACHED TO BARRICADES ARE TO EITHER BE GROUND MOUNTED OR ATTACHED TO AN EXISTING SIGN POST AT THE LOCATION SHOWN ON THE PLAN.

RH-7

RECOMMENDED _____ DATE:_____

RECOMMENDED _____ DATE:_____

RECOMMENDED _____ DATE:_____

APPROVED CHIEF SAFETY OFFICER _____ DATE: 4-26-18

APPROVED TRAFFIC ENGINEER _____ DATE: 4/26/18

DELAWARE
DEPARTMENT OF TRANSPORTATION

ADDENDUM / REVISIONS

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
ROAD NO.	SR1A
DESIGNED BY:	KK
CHECKED BY:	JW

PEDESTRIAN DETOUR PLAN
REHOBOTH AVENUE
NORTH SIDEWALK CLOSURE

SHEET NO.	169
TOTAL SHTS.	180

4/20/2018
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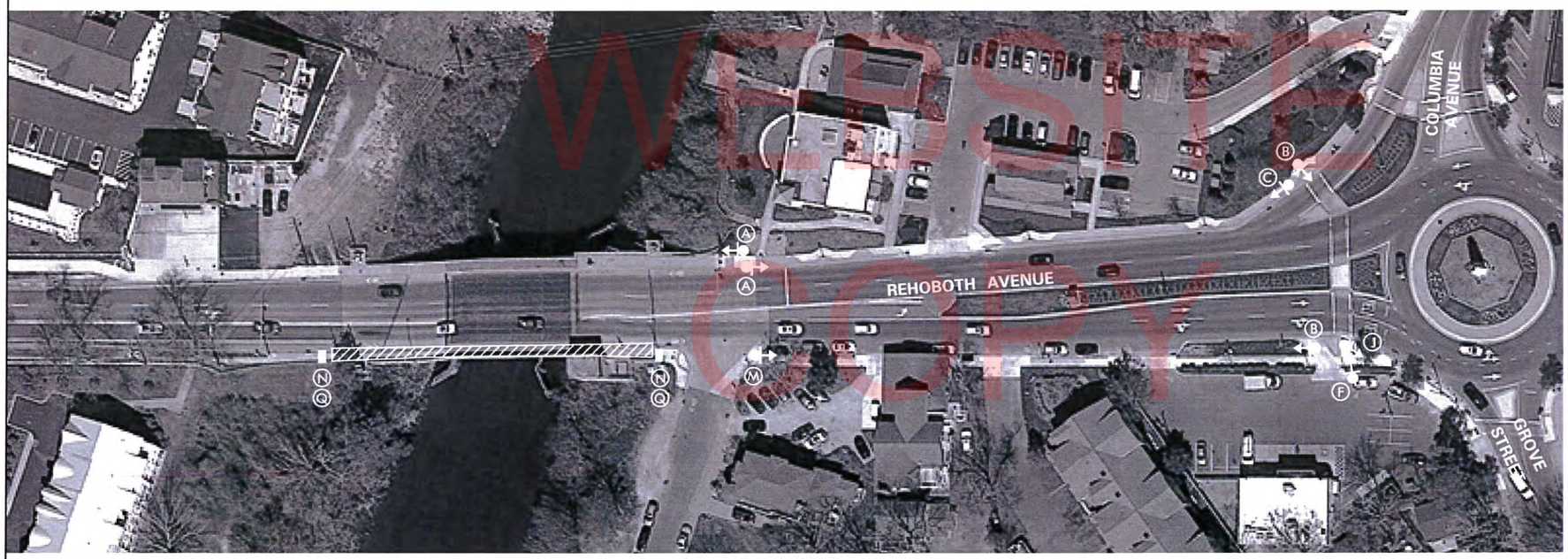
MATCH LINE (SEE BELOW)



MATCH LINE (SEE ABOVE)

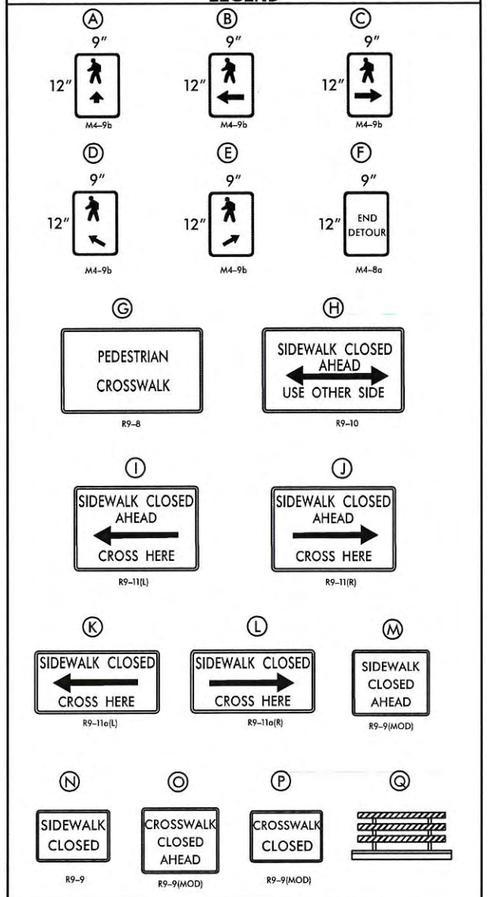
LEGEND:

WORK ZONE

NOTE:

PEDESTRIAN DETOUR SHOWN ON THIS SHEET TO BE IMPLEMENTED DURING PHASE 2 OF THE PROJECT.

LEGEND



GENERAL NOTES

1. ALL DETOUR SIGNING, INCLUDING TRAILBLAZERS, ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR IN COMPLIANCE WITH "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD.)
2. THE CONTRACTOR SHALL COMPLY WITH GUIDELINES IN "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD PART 6) FOR BARRICADES AND SIGNS (AS PER LATEST REVISION.)
3. DESIGN OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FHWA STANDARD HIGHWAY SIGNS BOOK.
4. SIZES OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD.) SIZE OF SIGN SHALL BE BASED ON TYPE OF ROADWAY ON WHICH THE SIGN IS INSTALLED.
5. SIGNS NO LONGER IN USE SHALL BE COMPLETELY COVERED WITH NO RETROREFLECTIVE MATERIAL SHOWING, OR SHALL BE REMOVED, AS DIRECTED BY THE ENGINEER.
6. FIELD CONDITIONS MAY DICTATE CHANGES AT SOME TIME DURING THE LIFE OF THE CONTRACT. IN THE EVENT OF OMISSIONS OR CORRECTIONS, THE SIGNING PROVISIONS OF "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD) WILL PREVAIL.
7. WARNING SIGNS AND DETOUR TRAILBLAZERS SHALL BE MOUNTED ON BREAKAWAY POSTS AND HAVE RETROREFLECTIVE FLUORESCENT ORANGE SHEETING.
8. "O" BARRICADE SHALL COMPLETELY RUN THE FULL WIDTH OF SIDEWALK OR PEDESTRIAN PATH.
9. BARRICADES SHALL BE A MINIMUM OF 6 FEET WIDE UNLESS DIRECTED BY THE ENGINEER.
10. PEDESTRIAN DETOUR TRAILBLAZERS NOT ATTACHED TO BARRICADES ARE TO EITHER BE GROUND MOUNTED OR ATTACHED TO AN EXISTING SIGN POST AT THE LOCATION SHOWN ON THE PLAN.

RH-8

RECOMMENDED _____ DATE:_____

RECOMMENDED _____ DATE:_____

RECOMMENDED _____ DATE:_____

APPROVED CHIEF SAFETY OFFICER _____ DATE: 4-19-18

APPROVED TRAFFIC ENGINEER _____ DATE: 4/19/18

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUM / REVISIONS	

NOT TO SCALE

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

CONTRACT	ROAD NO.	SR1A
T201507602	DESIGNED BY:	KK
COUNTY	CHECKED BY:	JW
SUSSEX		

PEDESTRIAN DETOUR PLAN REHOBOTH AVENUE SOUTH SIDEWALK CLOSURE

SHEET NO.	
170	
TOTAL SHTS.	
180	

4/3/2018
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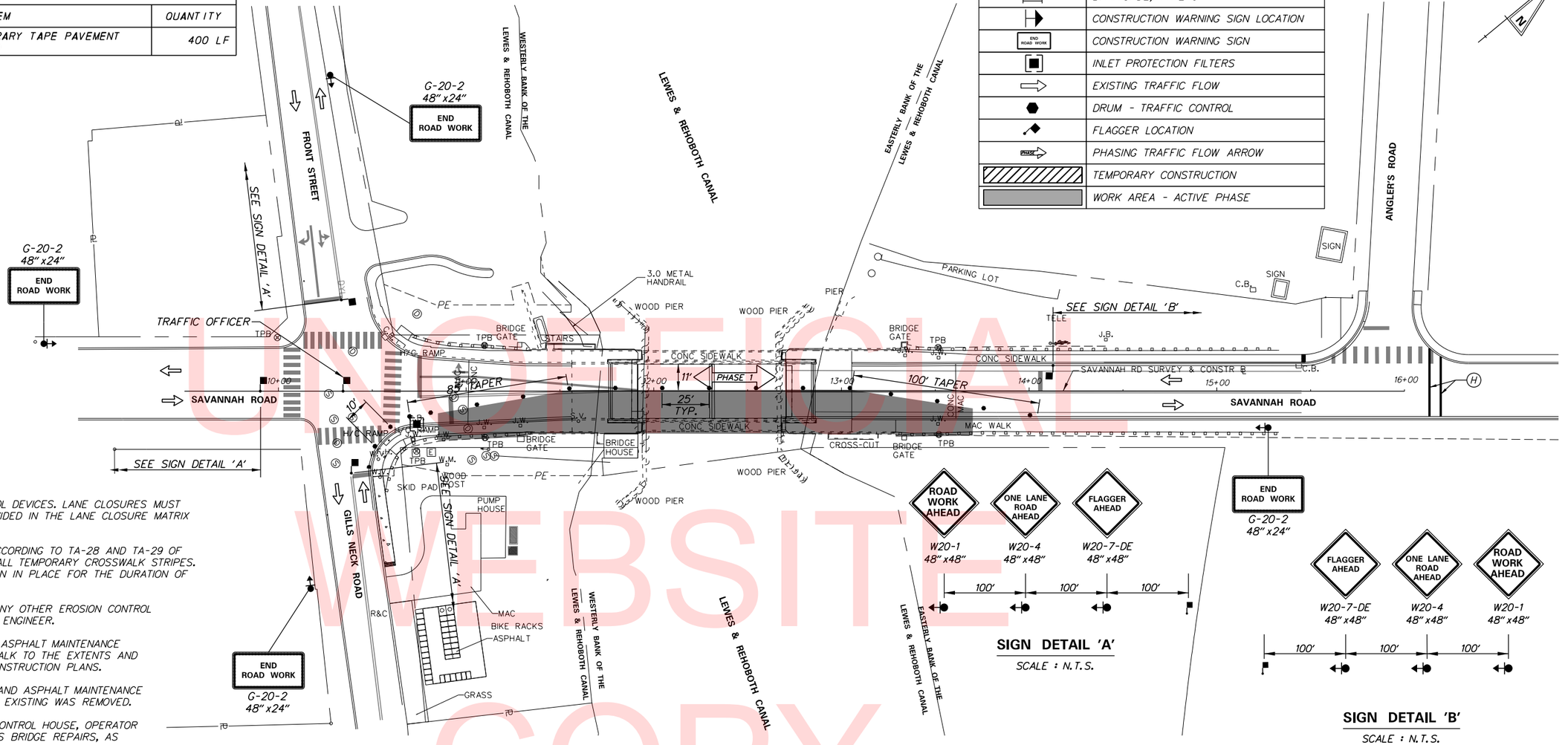
TEMPORARY PAVEMENT MARKINGS LEGEND		
SYMBOL	ITEM	QUANTITY
(H)	12" SOLID WHITE TEMPORARY TAPE PAVEMENT STRIPING (ITEM 817009)	400 LF

CONSTRUCTION PHASING & M.O.T	
	BARRICADE, TYPE 3
	CONSTRUCTION WARNING SIGN LOCATION
END ROAD WORK	CONSTRUCTION WARNING SIGN
	INLET PROTECTION FILTERS
	EXISTING TRAFFIC FLOW
	DRUM - TRAFFIC CONTROL
	FLAGGER LOCATION
PHASE	PHASING TRAFFIC FLOW ARROW
	TEMPORARY CONSTRUCTION
	WORK AREA - ACTIVE PHASE



MAINTENANCE OF TRAFFIC PLAN

SCALE : 1" =30'

SIGN DETAIL 'A'

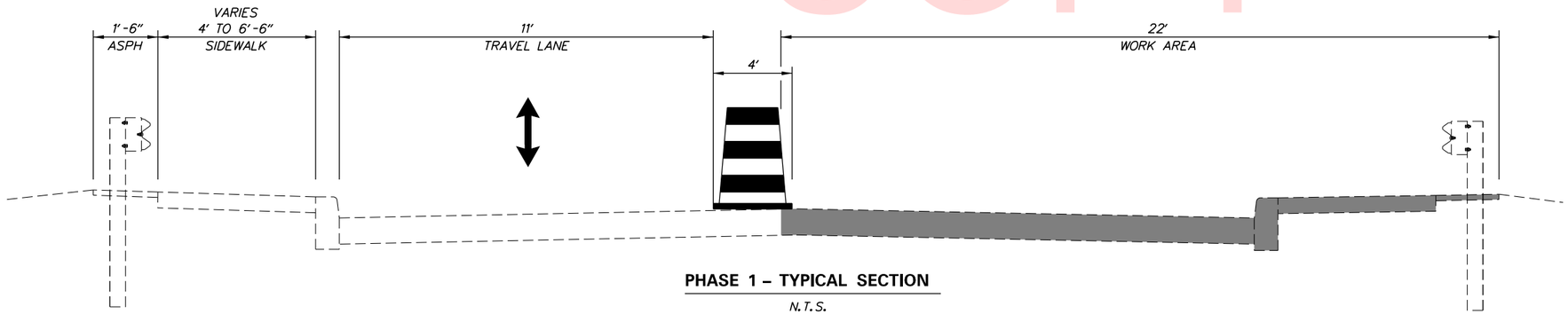
SCALE : N.T.S.

SIGN DETAIL 'B'

SCALE : N.T.S.

SEQUENCE OF CONSTRUCTION

1. INSTALL PHASE 1 TRAFFIC CONTROL DEVICES. LANE CLOSURES MUST ADHERE TO THE SCHEDULE PROVIDED IN THE LANE CLOSURE MATRIX (SHEET G-5).
2. INSTALL PEDESTRIAN DETOURS ACCORDING TO TA-28 AND TA-29 OF THE DELAWARE MUTCD AND INSTALL TEMPORARY CROSSWALK STRIPES. PEDESTRIAN DETOUR MUST REMAIN IN PLACE FOR THE DURATION OF PHASE 1.
3. INSTALL INLET PROTECTION AND ANY OTHER EROSION CONTROL MEASURES AS ORDERED BY THE ENGINEER.
4. REMOVE EXISTING SIDEWALK AND ASPHALT MAINTENANCE PAVEMENT ON THE SOUTH SIDEWALK TO THE EXTENTS AND LOCATIONS SPECIFIED ON THE CONSTRUCTION PLANS.
5. CONSTRUCT NEW PCC SIDEWALK AND ASPHALT MAINTENANCE PAVEMENT IN THE AREAS WHERE EXISTING WAS REMOVED.
6. PERFORM EPOXY, PAINT, JOINT, CONTROL HOUSE, OPERATOR ROOM AND OTHER MISCELLANEOUS BRIDGE REPAIRS, AS SPECIFIED ON BRIDGE PLANS.
7. REMOVE TRAFFIC CONTROL DEVICES, WITH THE EXCEPTION OF TEMPORARY CROSSWALK STRIPES, AND REOPEN ROAD TO TRAFFIC.



PHASE 1 – TYPICAL SECTION

N.T.S.

NOTES:

1. THE BACK OF THE NEW SIDEWALK MAY BE SIGNIFICANTLY LOWER THAN THE EXISTING ASPHALT MAINTENANCE PAVEMENT. THE CONTRACTOR SHALL ADJUST THE ASPHALT PAVEMENT TO MATCH THE NEW SIDEWALK AS REQUIRED AT NO ADDITIONAL COST TO DELDOT.
2. SEE SHEET SH-6A FOR PEDESTRIAN DETOUR ROUTE AND DEVICES.
3. SEE NOTE 8 ON SHEET G-5 FOR BRIDGE CLOSURE AND DETOUR INFORMATION.

DELAWARE DEPARTMENT OF TRANSPORTATION

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
T201507602	DESIGNED BY:	KK
COUNTY	CHECKED BY:	JW
SUSSEX		

SAVANNAH ROAD BRIDGE CONSTRUCTION PHASING, MOT & EROSION CONTROL PHASE 1

SH-5
SHEET NO. 171
TOTAL SHTS. 180

8/2018
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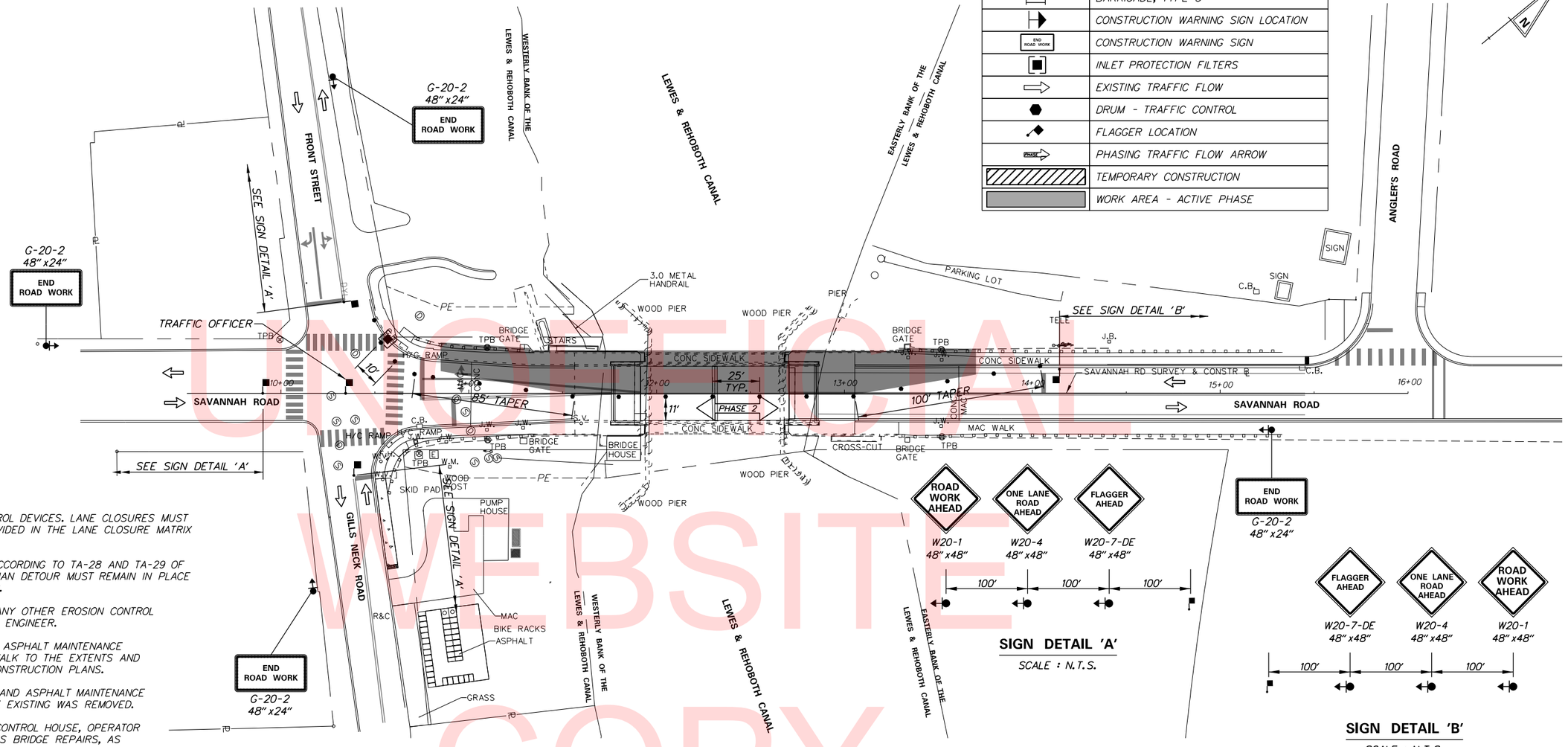
CONSTRUCTION PHASING & M.O.T	
	BARRICADE, TYPE 3
	CONSTRUCTION WARNING SIGN LOCATION
END ROAD WORK	CONSTRUCTION WARNING SIGN
	INLET PROTECTION FILTERS
	EXISTING TRAFFIC FLOW
	DRUM - TRAFFIC CONTROL
	FLAGGER LOCATION
PHASE	PHASING TRAFFIC FLOW ARROW
	TEMPORARY CONSTRUCTION
	WORK AREA - ACTIVE PHASE

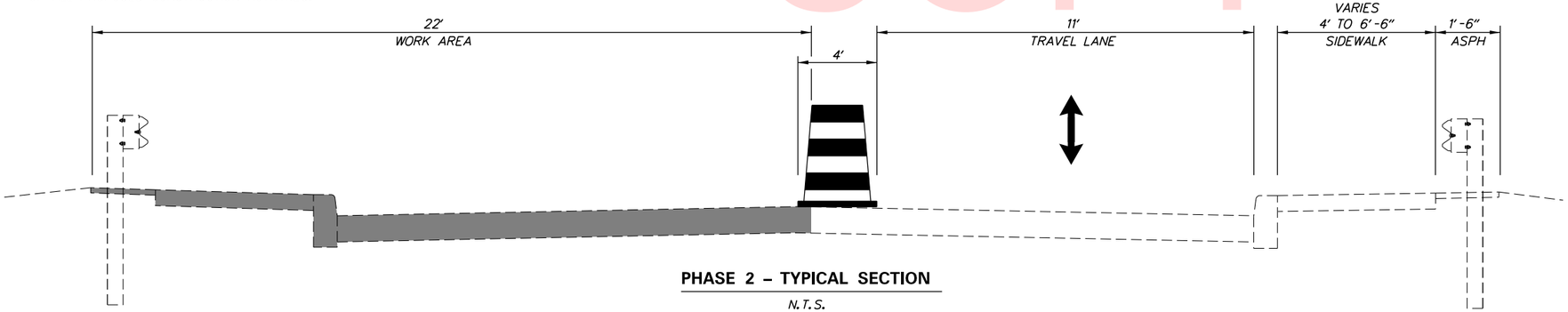


MAINTENANCE OF TRAFFIC PLAN

SCALE : 1" =30'

SEQUENCE OF CONSTRUCTION

1. INSTALL PHASE 2 TRAFFIC CONTROL DEVICES. LANE CLOSURES MUST ADHERE TO THE SCHEDULE PROVIDED IN THE LANE CLOSURE MATRIX (SHEET G-5).
2. INSTALL PEDESTRIAN DETOURS ACCORDING TO TA-28 AND TA-29 OF THE DELAWARE MUTCD. PEDESTRIAN DETOUR MUST REMAIN IN PLACE FOR THE DURATION OF PHASE 2.
3. INSTALL INLET PROTECTION AND ANY OTHER EROSION CONTROL MEASURES AS ORDERED BY THE ENGINEER.
4. REMOVE EXISTING SIDEWALK AND ASPHALT MAINTENANCE PAVEMENT ON THE NORTH SIDEWALK TO THE EXTENTS AND LOCATIONS SPECIFIED ON THE CONSTRUCTION PLANS.
5. CONSTRUCT NEW PCC SIDEWALK AND ASPHALT MAINTENANCE PAVEMENT IN THE AREAS WHERE EXISTING WAS REMOVED.
6. PERFORM EPOXY, PAINT, JOINT, CONTROL HOUSE, OPERATOR ROOM AND OTHER MISCELLANEOUS BRIDGE REPAIRS, AS SPECIFIED ON BRIDGE PLANS.
7. REMOVE TRAFFIC CONTROL DEVICES, WITH THE EXCEPTION OF TEMPORARY CROSSWALK STRIPES, AND REOPEN ROAD TO TRAFFIC. TEMPORARY CROSSWALK STRIPES TO BE REMOVED AFTER COMPLETION OF ALL PROPOSED CONSTRUCTION ACTIVITIES.



PHASE 2 – TYPICAL SECTION

N.T.S.

SIGN DETAIL 'A'

SCALE : N.T.S.

SIGN DETAIL 'B'

SCALE : N.T.S.

NOTES:

1. THE BACK OF THE NEW SIDEWALK MAY BE SIGNIFICANTLY LOWER THAN THE EXISTING ASPHALT MAINTENANCE PAVEMENT. THE CONTRACTOR SHALL ADJUST THE ASPHALT PAVEMENT TO MATCH THE NEW SIDEWALK AS REQUIRED AT NO ADDITIONAL COST TO DELDOT.
2. SEE SHEET SH-6B FOR PEDESTRIAN DETOUR ROUTE AND DEVICES.
3. SEE NOTE 8 ON SHEET G-5 FOR BRIDGE CLOSURE AND DETOUR INFORMATION.

DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	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	SAVANNAH ROAD BRIDGE CONSTRUCTION PHASING, MOT & EROSION CONTROL PHASE 2	SH-6
				COUNTY SUSSEX	DESIGNED BY: KK		SHEET NO. 172
					CHECKED BY: JW		TOTAL SHTS. 180

8/2/2018
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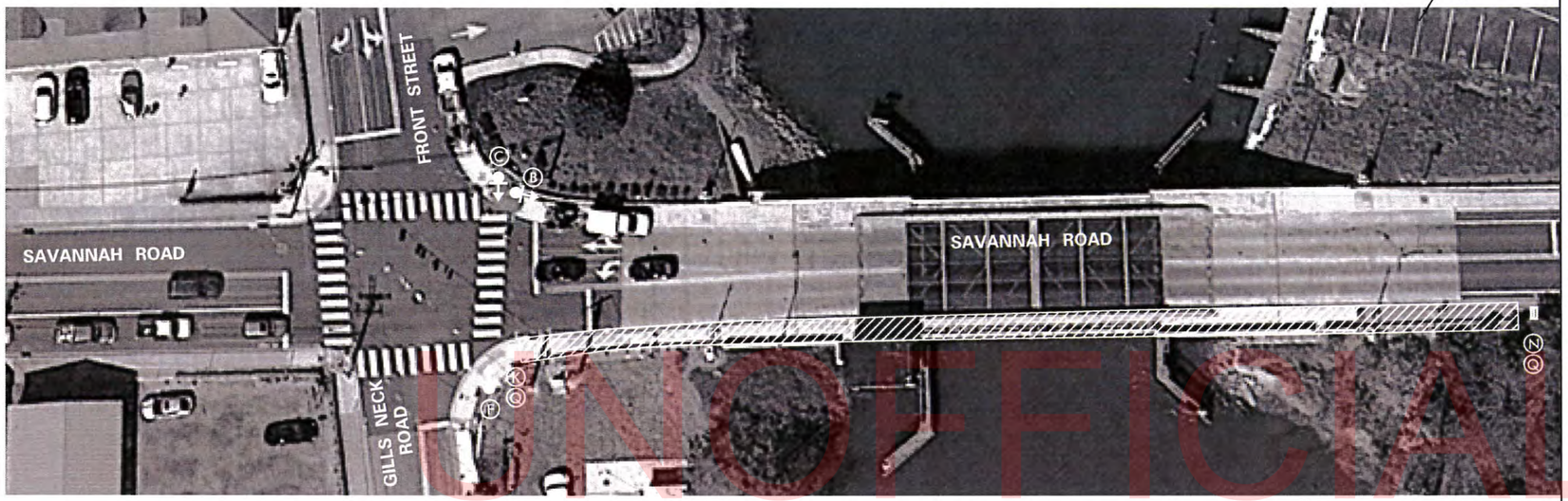


MATCH LINE (SEE BELOW)

MATCH LINE (SEE ABOVE)

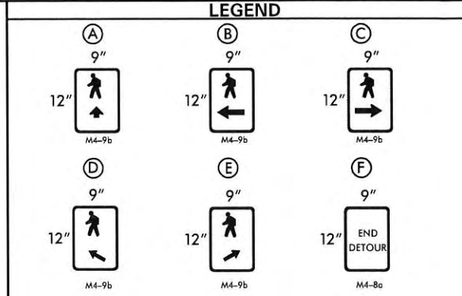
LEGEND:

WORK ZONE

NOTE:

PEDESTRIAN DETOUR SHOWN ON THIS SHEET TO BE IMPLEMENTED DURING PHASE 1 OF THE PROJECT.

LEGEND



GENERAL NOTES

1. ALL DETOUR SIGNING, INCLUDING TRAILBLAZERS, ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR IN COMPLIANCE WITH "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD.)
2. THE CONTRACTOR SHALL COMPLY WITH GUIDELINES IN "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD PART 6) FOR BARRICADES AND SIGNS (AS PER LATEST REVISION.)
3. DESIGN OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FHWA STANDARD HIGHWAY SIGNS BOOK.
4. SIZES OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD.) SIZE OF SIGN SHALL BE BASED ON TYPE OF ROADWAY ON WHICH THE SIGN IS INSTALLED.
5. SIGNS NO LONGER IN USE SHALL BE COMPLETELY COVERED WITH NO RETROREFLECTIVE MATERIAL SHOWING, OR SHALL BE REMOVED, AS DIRECTED BY THE ENGINEER.
6. FIELD CONDITIONS MAY DICTATE CHANGES AT SOME TIME DURING THE LIFE OF THE CONTRACT. IN THE EVENT OF OMISSIONS OR CORRECTIONS, THE SIGNING PROVISIONS OF "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD) WILL PREVAIL.
7. WARNING SIGNS AND DETOUR TRAILBLAZERS SHALL BE MOUNTED ON BREAKAWAY POSTS AND HAVE RETROREFLECTIVE FLUORESCENT ORANGE SHEETING.
8. "O" BARRICADE SHALL COMPLETELY RUN THE FULL WIDTH OF SIDEWALK OR PEDESTRIAN PATH.
9. BARRICADES SHALL BE A MINIMUM OF 6 FEET WIDE UNLESS DIRECTED BY THE ENGINEER.
10. PEDESTRIAN DETOUR TRAILBLAZERS NOT ATTACHED TO BARRICADES ARE TO EITHER BE GROUND MOUNTED OR ATTACHED TO AN EXISTING SIGN POST AT THE LOCATION SHOWN ON THE PLAN.

SH-6A

RECOMMENDED _____ DATE: _____

RECOMMENDED _____ DATE: _____

RECOMMENDED _____ DATE: 1/4/18

APPROVED CHIEF SAFETY OFFICER _____ DATE: 5-2-18

APPROVED TRAFFIC ENGINEER _____ DATE: 5/2/18

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUM / REVISIONS

NOT TO SCALE

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

CONTRACT	ROAD NO.	S018
T201507602	DESIGNED BY:	KK
COUNTY	CHECKED BY:	JW
SUSSEX		

PEDESTRIAN DETOUR PLAN
SAVANNAH ROAD
SOUTH SIDEWALK CLOSURE

SHEET NO.	
173	
TOTAL SHTS.	
180	

5/2018
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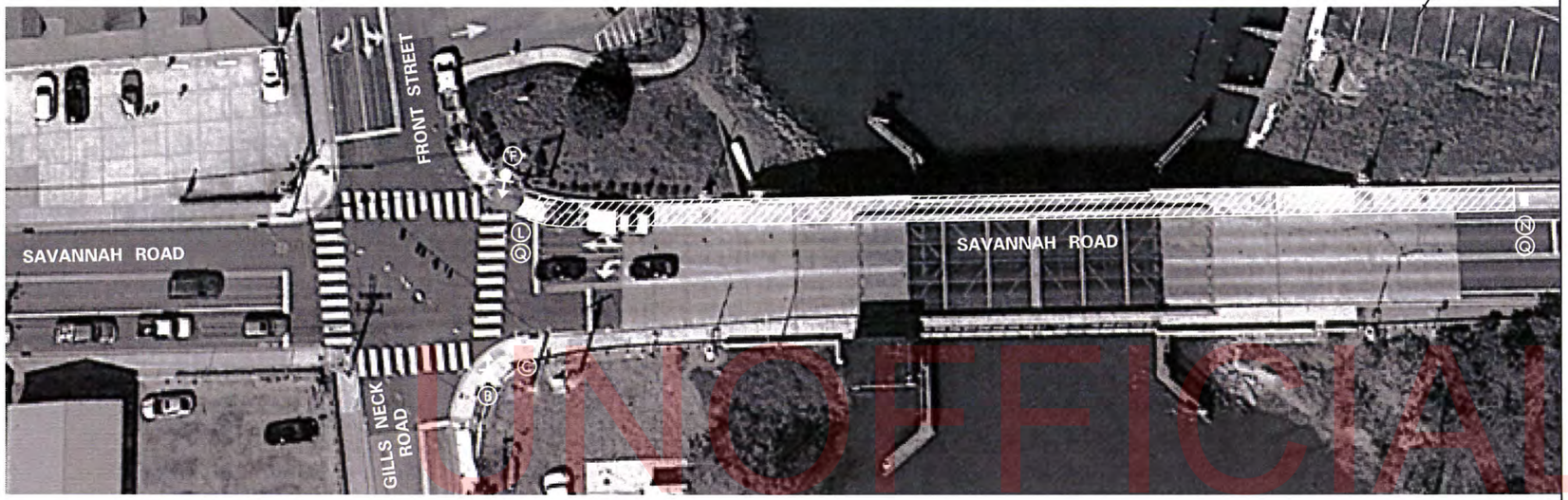
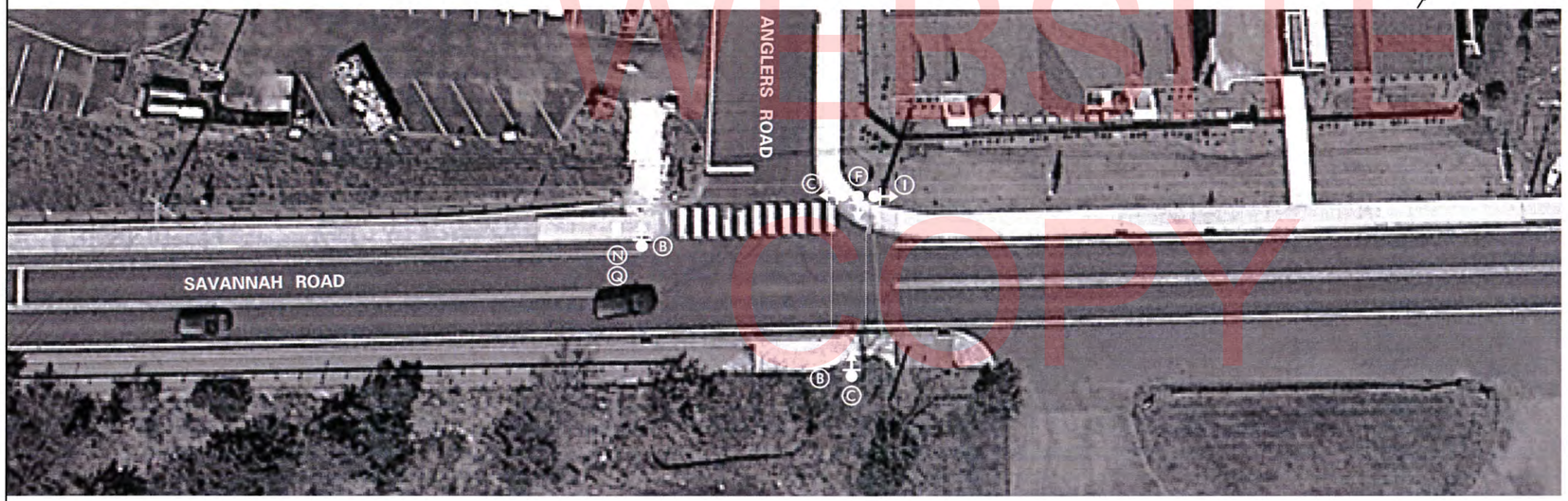


MATCH LINE (SEE BELOW)

MATCH LINE (SEE ABOVE)

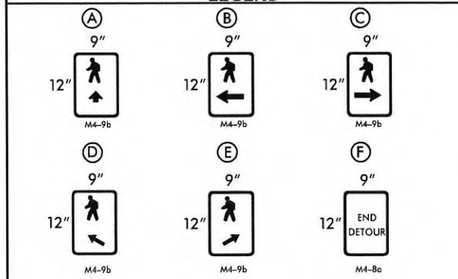


LEGEND:

WORK ZONE

NOTE:
PEDESTRIAN DETOUR SHOWN ON THIS SHEET TO BE IMPLEMENTED DURING PHASE 2 OF THE PROJECT.

LEGEND



GENERAL NOTES

1. ALL DETOUR SIGNING, INCLUDING TRAILBLAZERS, ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR IN COMPLIANCE WITH "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD.)
2. THE CONTRACTOR SHALL COMPLY WITH GUIDELINES IN "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD PART 6) FOR BARRICADES AND SIGNS (AS PER LATEST REVISION.)
3. DESIGN OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FHWA STANDARD HIGHWAY SIGNS BOOK.
4. SIZES OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD.) SIZE OF SIGN SHALL BE BASED ON TYPE OF ROADWAY ON WHICH THE SIGN IS INSTALLED.
5. SIGNS NO LONGER IN USE SHALL BE COMPLETELY COVERED WITH NO RETROREFLECTIVE MATERIAL SHOWING, OR SHALL BE REMOVED, AS DIRECTED BY THE ENGINEER.
6. FIELD CONDITIONS MAY DICTATE CHANGES AT SOME TIME DURING THE LIFE OF THE CONTRACT. IN THE EVENT OF OMISSIONS OR CORRECTIONS, THE SIGNING PROVISIONS OF "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD) WILL PREVAIL.
7. WARNING SIGNS AND DETOUR TRAILBLAZERS SHALL BE MOUNTED ON BREAKAWAY POSTS AND HAVE RETROREFLECTIVE FLUORESCENT ORANGE SHEETING.
8. "Q" BARRICADE SHALL COMPLETELY RUN THE FULL WIDTH OF SIDEWALK OR PEDESTRIAN PATH.
9. BARRICADES SHALL BE A MINIMUM OF 6 FEET WIDE UNLESS DIRECTED BY THE ENGINEER.
10. PEDESTRIAN DETOUR TRAILBLAZERS NOT ATTACHED TO BARRICADES ARE TO EITHER BE GROUND MOUNTED OR ATTACHED TO AN EXISTING SIGN POST AT THE LOCATION SHOWN ON THE PLAN.

SH-6B

RECOMMENDED _____ DATE:_____

RECOMMENDED _____ DATE:_____

RECOMMENDED _____ DATE: 5/1/18

APPROVED CHIEF SAFETY OFFICER _____ DATE: 5-2-18

APPROVED TRAFFIC ENGINEER _____ DATE: 5/2/18

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUM / REVISIONS

NOT TO SCALE

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

CONTRACT	ROAD NO.	S018
T201507602	DESIGNED BY:	KK
COUNTY	CHECKED BY:	JW
SUSSEX		

PEDESTRIAN DETOUR PLAN
SAVANNAH ROAD
NORTH SIDEWALK CLOSURE

SHEET NO.
174
TOTAL SHTS.
180

5/2018
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PORTABLE CHANGEABLE MESSAGE SIGNS

PRIOR TO DETOUR
(10 DAYS PRIOR TO BEGINNING OF DETOUR)

PCMS-1

REHOBOTH AVENUE TO CLOSE

STARTING XX/XX/XX

DURING DETOUR
(DISPLAY FOR 5 DAYS AFTER IMPLEMENTATION OF DETOUR)

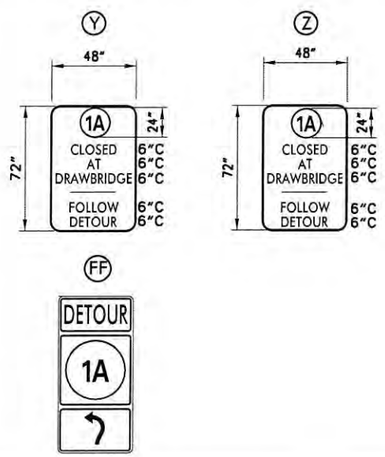
PCMS-2

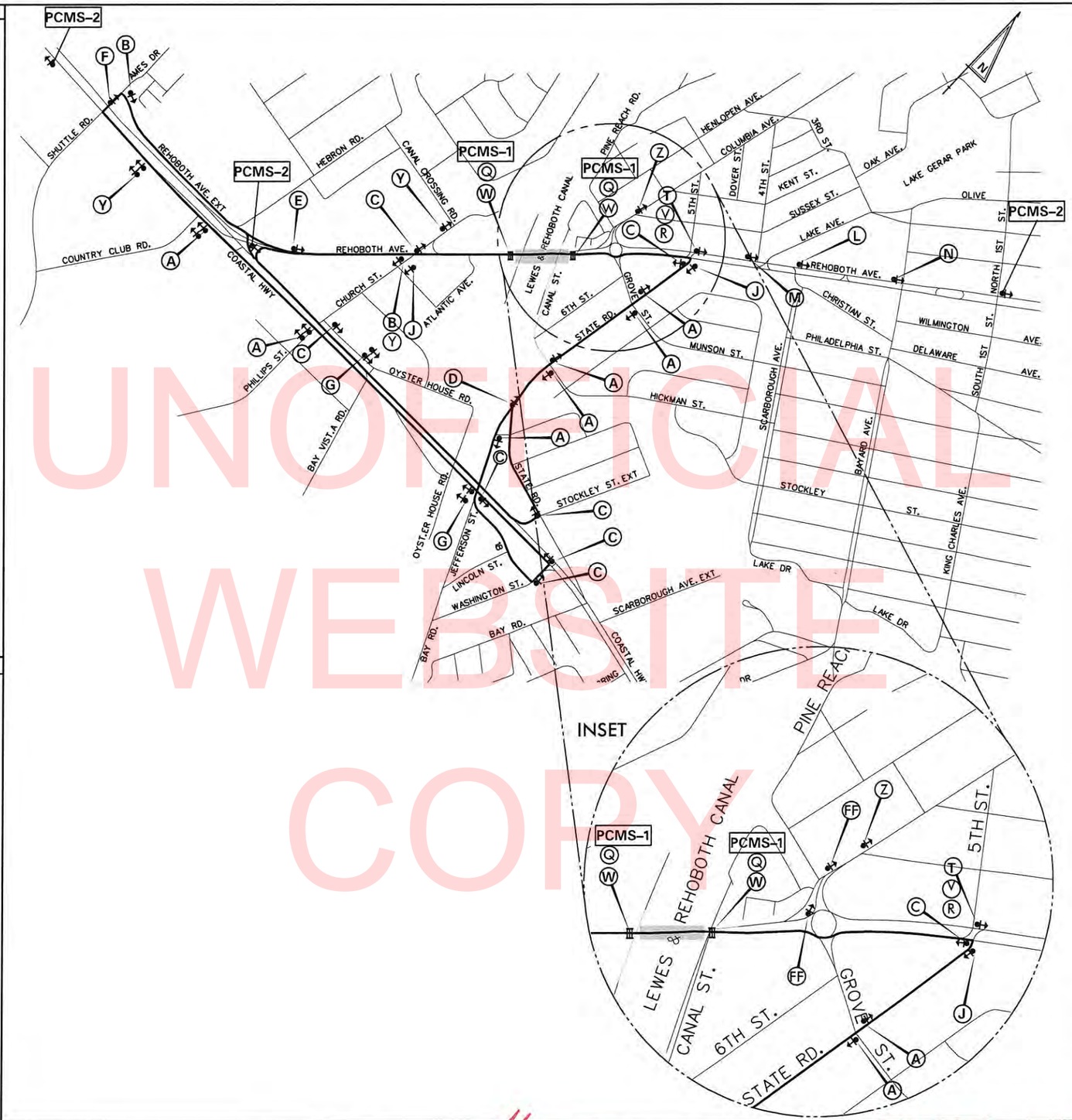
REHOBOTH AVENUE CLOSED

FOLLOW DETOUR

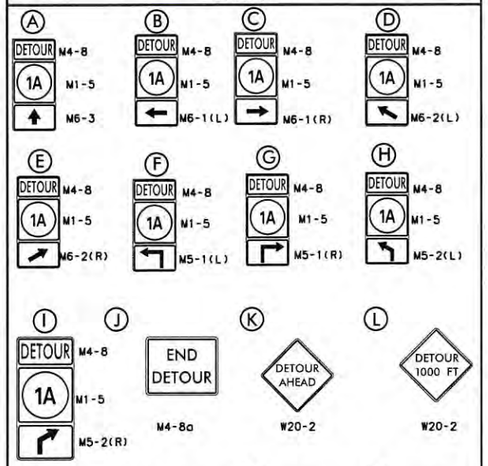
SPECIAL SIGNS

SPECIAL SIGN TO BE BLACK ON RETROREFLECTIVE FLOURESCENT ORANGE
SIZE AND COLOR OF ROUTE SHIELD SHALL CONFORM TO THE DE-MUTCD





LEGEND



GENERAL NOTES

1. ALL DETOUR SIGNING, INCLUDING TRAILBLAZERS ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR IN COMPLIANCE WITH THE "DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD).
2. THE CONTRACTOR SHALL COMPLY WITH ALL THE GUIDELINES IN THE "DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD PART 6) FOR BARRICADES AND SIGNS (AS PER LATEST REVISION).
3. DESIGN OF ALL SIGNS SHALL BE IN ACCORDANCE WITH THE FHWA STANDARD HIGHWAY SIGNS BOOK.
4. SIZES OF ALL SIGNS SHALL BE IN ACCORDANCE WITH "THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (DE MUTCD). SIZE OF SIGN SHALL BE BASED ON THE TYPE OF ROADWAY ON WHICH THE SIGN IS INSTALLED.
5. SIGNS NO LONGER IN USE SHALL BE COMPLETELY COVERED WITH NO RETROREFLECTIVE MATERIAL SHOWING, OR SHALL BE REMOVED, AS DIRECTED BY THE ENGINEER.
6. FIELD CONDITIONS MAY DICTATE CHANGES AT SOME TIME DURING THE LIFE OF THE CONTRACT. IN THE EVENT OF OMMISIONS AND CORRECTIONS, THE SIGNING PROVISIONS OF THE "DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD) WILL PREVAIL.
7. SIGNS "N" THROUGH "Q" AND "T" AND "V", THE WORD "ROAD" SHOULD BE CHANGED TO "RAMP","RR XING", OR "BRIDGE" WHERE APPLICABLE.
8. WARNING SIGNS AND DETOUR TRIALBLAZERS SHALL BE MOUNTED ON BREAKAWAY POSTS AND HAVE RETROREFLECTIVE FLOURESCENT ORANGE SHEETING.
9. "W" BARRICADES SHALL COMPLETELY RUN THE WIDTH OFTHE ROADWAY.
10. BARRICADES SHALL BE A MINIMUM OF 6 FEET WIDE UNLESS DIRECTED BY THE ENGINEER.

RH-9

RECOMMENDED _____ DATE: _____

RECOMMENDED _____ DATE: _____

RECOMMENDED _____ DATE: _____

APPROVED CHIEF SAFETY OFFICER _____ DATE: 1-27-18

APPROVED TRAFFIC ENGINEER _____ DATE: 1/23/18

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUM / REVISIONS

NOT TO SCALE

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

CONTRACT	ROAD NO.	SR1A
T201507602	DESIGNED BY:	KK
COUNTY	CHECKED BY:	JW
SUSSEX		

REHOBOTH AVENUE
DETOUR PLAN

SHEET NO.	175
TOTAL SHTS.	180

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PORTABLE CHANGEABLE MESSAGE SIGNS

PRIOR TO DETOUR
(10 DAYS PRIOR TO BEGINNING OF DETOUR)

PCMS-1

REHOBOTH AVENUE TO CLOSE

STARTING XXPM-XXAM

DURING DETOUR
(DISPLAY DURING DETOUR)

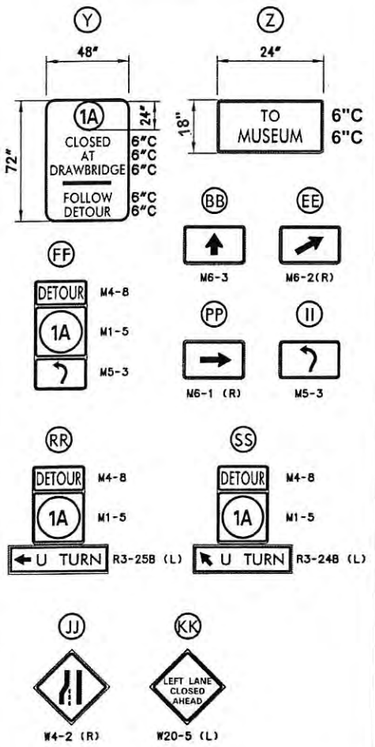
PCMS-2

REHOBOTH AVENUE CLOSED

FOLLOW DETOUR

SPECIAL SIGNS

SIZE AND COLOR OF ROUTE SHIELD SHALL CONFORM TO THE DE-MUTCD



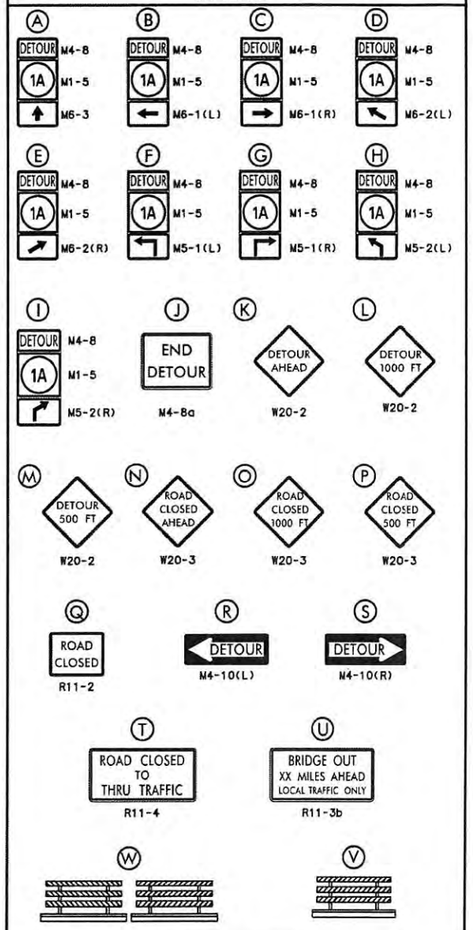
NOTES:

1. MUSEUM DETOUR TO BE IN PLACE DURING CONSTRUCTION PHASE 1 AND PHASE 2 ONLY.
2. SEE PHASE 3 TRAFFIC CONTROL DETAIL FOR PHASE 3 DRUM AND BARRICADE LAYOUT.
3. SEE INSET FOR PHASE 3 DETOUR SIGN LAYOUT AND PHASE 1 & PHASE 2 MUSEUM DETOUR SIGN LAYOUT.

PHASE 3 TRAFFIC CONTROL DETAIL

INSET

LEGEND



GENERAL NOTES

1. ALL DETOUR SIGNING, INCLUDING TRAILBLAZERS ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR IN COMPLIANCE WITH THE "DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD).
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8. WARNING SIGNS AND DETOUR TRAILBLAZERS SHALL BE MOUNTED ON BREAKAWAY POSTS AND HAVE RETROREFLECTIVE FLOURESCENT ORANGE SHEETING.
9. "W" BARRICADES SHALL COMPLETELY RUN THE WIDTH OFTHE ROADWAY.
10. BARRICADES SHALL BE A MINIMUM OF 8 FEET WIDE UNLESS DIRECTED BY THE ENGINEER.

RH-9A

RECOMMENDED _____ DATE: _____

RECOMMENDED _____ DATE: _____

RECOMMENDED _____ DATE: 5/23/18

APPROVED CHIEF SAFETY OFFICER _____ DATE: 5-8-18

APPROVED TRAFFIC ENGINEER _____ DATE: 5/4/18

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUM / REVISIONS

NOT TO SCALE

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

CONTRACT	ROAD NO.	SR1A
T201507602	DESIGNED BY:	KK
COUNTY	CHECKED BY:	JW
SUSSEX		

REHOBOTH AVENUE DETOUR PLAN

SHEET NO. 176
TOTAL SHTS. 180

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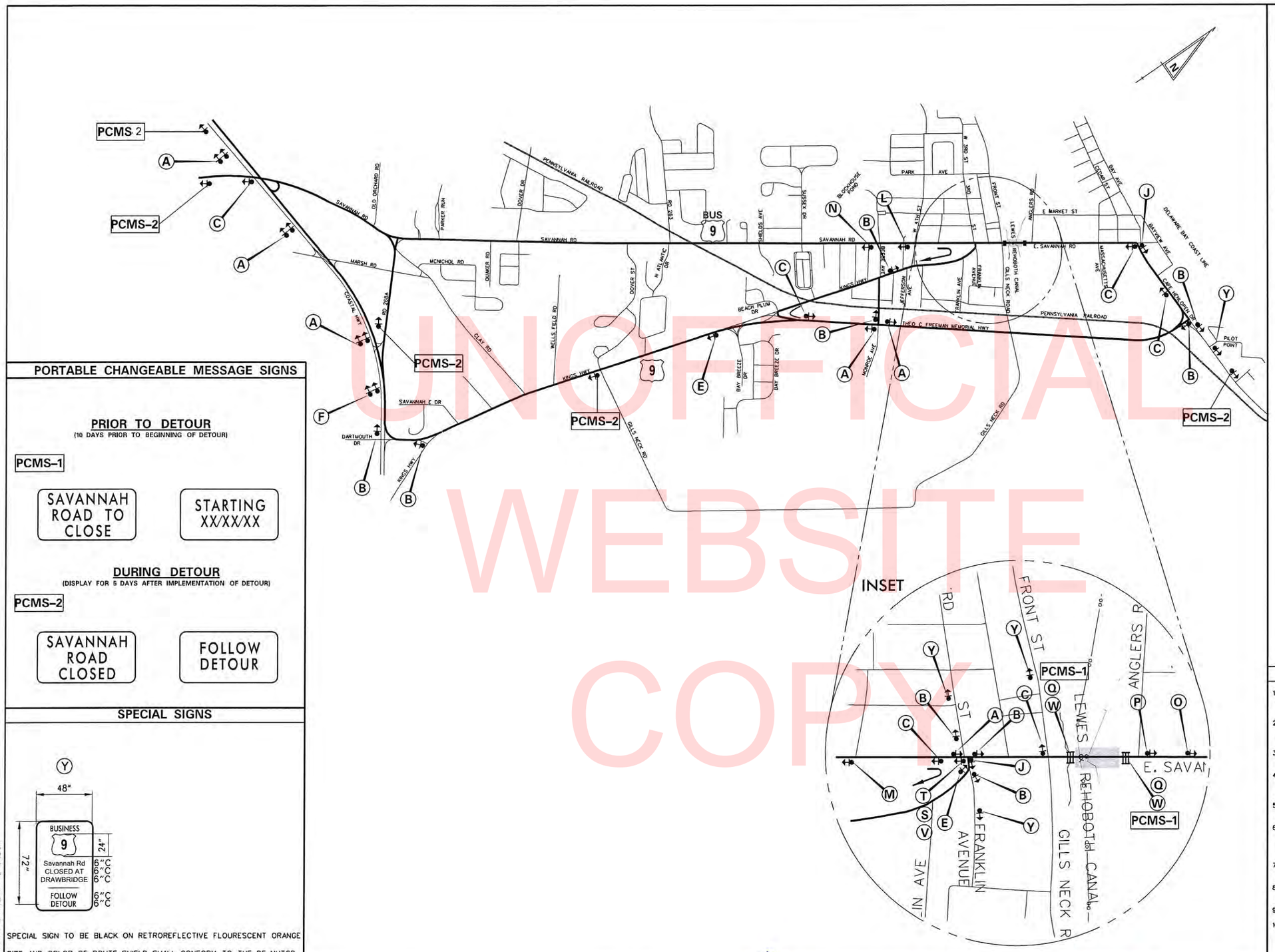

PORTABLE CHANGEABLE MESSAGE SIGNS

PRIOR TO DETOUR
(10 DAYS PRIOR TO BEGINNING OF DETOUR)

PCMS-1

SAVANNAH ROAD TO CLOSE	STARTING XX/XX/XX

DURING DETOUR
(DISPLAY FOR 5 DAYS AFTER IMPLEMENTATION OF DETOUR)

PCMS-2

SAVANNAH ROAD CLOSED	FOLLOW DETOUR

SPECIAL SIGNS

(Y)

SPECIAL SIGN TO BE BLACK ON RETROREFLECTIVE FLOURESCENT ORANGE
SIZE AND COLOR OF ROUTE SHIELD SHALL CONFORM TO THE DE-MUTCD

(A) BUSINESS / DETOUR M4-8 / 9 M1-5 / M6-3

(B) BUSINESS / DETOUR M4-8 / 9 M1-5 / M6-1(L)

(C) BUSINESS / DETOUR M4-8 / 9 M1-5 / M6-1(R)

(D) BUSINESS / DETOUR M4-8 / 9 M1-5 / M6-2(L)

(E) BUSINESS / DETOUR M4-8 / 9 M1-5 / M6-2(R)

(F) BUSINESS / DETOUR M4-8 / 9 M1-5 / M5-1(L)

(G) BUSINESS / DETOUR M4-8 / 9 M1-5 / M5-1(R)

(H) BUSINESS / DETOUR M4-8 / 9 M1-5 / M5-2(L)

(I) BUSINESS / DETOUR M4-8 / 9 M1-5 / M5-2(R)

(J) END DETOUR M4-8a

(K) DETOUR AHEAD W20-2

(L) DETOUR 1000 FT W20-2

(M) DETOUR 500 FT W20-2

(N) ROAD CLOSED AHEAD W20-3

(O) ROAD CLOSED 1000 FT W20-3

(P) ROAD CLOSED 500 FT W20-3

(Q) ROAD CLOSED R11-2

(R) DETOUR M4-10(L)

(S) DETOUR M4-10(R)

(T) ROAD CLOSED TO THRU TRAFFIC R11-4

(U) BRIDGE OUT XX MILES AHEAD LOCAL TRAFFIC ONLY R11-3b

(W)

(V)

GENERAL NOTES

1. ALL DETOUR SIGNING, INCLUDING TRAILBLAZERS ARE TO BE SUPPLIED AND MAINTAINED BY THE GENERAL CONTRACTOR IN COMPLIANCE WITH THE "DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (DE MUTCD).
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8. WARNING SIGNS AND DETOUR TRIALBLAZERS SHALL BE MOUNTED ON BREAKAWAY POSTS AND HAVE RETROREFLECTIVE FLOURESCENT ORANGE SHEETING.
9. "W" BARRICADES SHALL COMPLETELY RUN THE WIDTH OF THE ROADWAY.
10. BARRICADES SHALL BE A MINIMUM OF 8 FEET WIDE UNLESS DIRECTED BY THE ENGINEER.

SH-7

RECOMMENDED _____ DATE: _____	RECOMMENDED _____ DATE: _____	RECOMMENDED _____ DATE: 1/26/18
APPROVED CHIEF SAFETY OFFICER _____ DATE: 1-24-18	APPROVED TRAFFIC ENGINEER _____ DATE: 1/25/18	

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUM / REVISIONS

NOT TO SCALE

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

CONTRACT	ROAD NO.	S018
T201507602	DESIGNED BY:	KK
COUNTY	CHECKED BY:	JW
SUSSEX		

SAVANNAH ROAD BRIDGE DETOUR PLAN

SHEET NO.	177
TOTAL SHTS.	180

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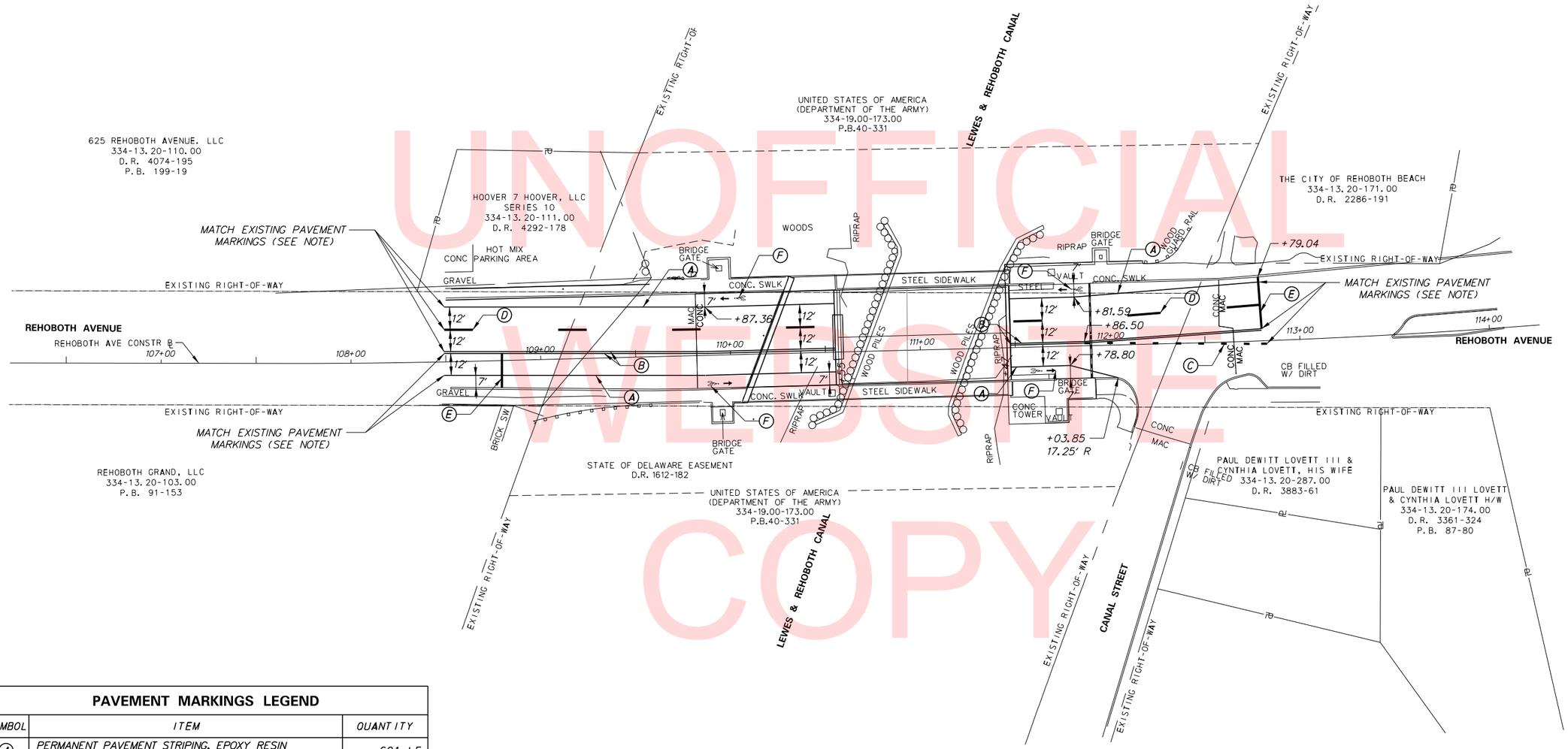

PAVEMENT MARKINGS LEGEND		
SYMBOL	ITEM	QUANTITY
(A)	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE, 5" (ITEM 817013)	601 LF
(B)	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, YELLOW, 5" (ITEM 817013)	677 LF
(C)	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE, 5" (2' LINE 6' GAP) (ITEM 817013)	27 LF
(D)	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE, 5" (10' LINE 30' GAP) (ITEM 817013)	110 LF
(E)	PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD THERMOPLASTIC (ITEM 817002)	92 SF
(F)	PREFORMED RETROREFLECTIVE THERMOPLASTIC MARKINGS, BIKE SYMBOL (ITEM 817015)	4 EACH

NOTE:

ADDITIONAL STRIPING BEYOND CONTRACT LIMITS MAY BE REQUIRED TO REPLACE THE EXISTING STRIPING REMOVED FOR MAINTENANCE OF TRAFFIC. ACTUAL LIMITS TO BE DETERMINED BY THE ENGINEER.

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE 0 30 60 90 FEET

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:	KK
CHECKED BY:	JW

REHOBOTH AVENUE BRIDGE SIGNING, STRIPING AND CONDUIT PLAN

RH-10	
SHEET NO.	178
TOTAL SHTS.	180

8/9/2018
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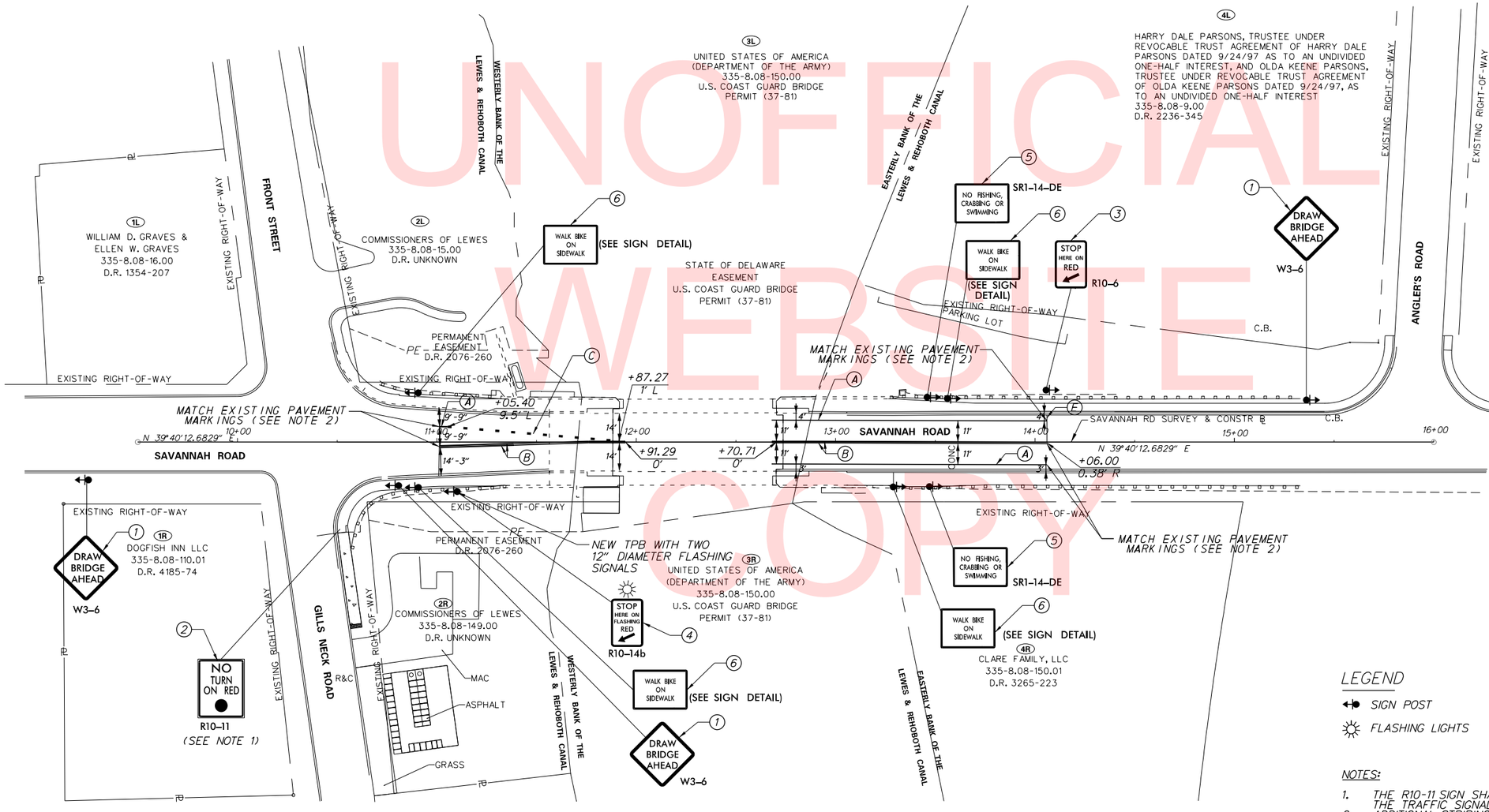
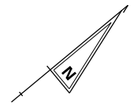
PAVEMENT MARKINGS LEGEND

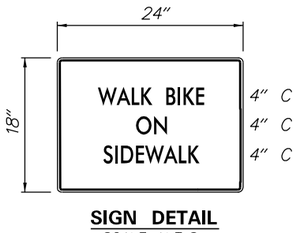
SYMBOL	ITEM	QUANTITY
(A)	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE, 5" (ITEM 817013)	282 LF
(B)	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, YELLOW, 5" (ITEM 817013)	464 LF
(C)	PERMANENT PAVEMENT STRIPING, EPOXY RESIN PAINT, WHITE, 5" (2' LINE 6' GAP) (ITEM 817013)	20 LF
(E)	PERMANENT PAVEMENT STRIPING, SYMBOL/LEGEND, ALKYD THERMOPLASTIC (ITEM 817002)	28 SF

PERMANENT SIGN SCHEDULE

SHEET NO.	PLAN INDICATOR	CODE	QTY.	DESCRIPTION	ASSEMBLY NO.	SIGN WIDTH (IN)	SIGN HEIGHT (IN)	SIGN AREA (SF)	ITEM 819018 SINGLE POST (EACH)			REMARKS
									SIGN DISPOSITION	REMOVE	INSTALL	
SH-8	1	W3-6	3	DRAW BRIDGE AHEAD	2, 3, 4	36	36	9	NEW		3	
SH-8	2	R10-11	1	NO TURN ON RED	5	24	30	5	NEW		1	
SH-8	3	R10-6	1	STOP HERE ON RED	6	24	30	5	NEW		1	
SH-8	4	R10-14b	1	STOP HERE ON FLASHING RED	7	24	36	6	NEW		1	
SH-8	5	SR1-14-DE	2	NO FISHING, CRABBING OR SWIMMING	8, 9	24	18	3	NEW		2	
SH-8	6	SEE SIGN DETAIL	4	WALK BIKE ON SIDEWALK	10, 11, 12, 13	24	18	3	NEW		4	







SIGN DETAIL
SCALE: N.T.S.

LEGEND

- SIGN POST
- FLASHING LIGHTS

NOTES:

1. THE R10-11 SIGN SHALL BE INSTALLED ON THE SPAN WIRE OF THE TRAFFIC SIGNAL.
2. ADDITIONAL STRIPING BEYOND CONTRACT LIMITS MAY BE REQUIRED TO REPLACE THE EXISTING STRIPING REMOVED FOR MAINTENANCE OF TRAFFIC. ACTUAL LIMITS TO BE DETERMINED BY THE ENGINEER.

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

SCALE 0 30 60 90 FEET

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

CONTRACT	BRIDGE NO.	BR 3-154
T201507602	DESIGNED BY:	KK
COUNTY	CHECKED BY:	JW
SUSSEX		

SAVANNAH ROAD BRIDGE SIGNING, STRIPING AND CONDUIT PLAN

SH-8
SHEET NO. 179
TOTAL SHTS. 180

ADDITIONAL NOTES:

5. REMOVE EXISTING PEDESTAL MOUNTED SIGNAL POLES AND FOUNDATIONS ON EAST SIDE AND BOTH FLASHING SIGNALS AND FOUNDATIONS ON WEST SIDE.

6. REMOVE EXISTING PEDESTAL MOUNTED SIGNAL POLE AND FOUNDATION. PLACE TYPE 1 JUNCTION WELL IN ITS PLACE.

7. TIE PROPOSED CONDUIT RUN INTO EXISTING TYPE 1 JUNCTION WELL ADJUST OR REPAIR AS NEEDED (ITEM 744544). TIE NEW #14/9 SIGNAL CABLE INTO EXISTING BRIDGE PATHWAY ELECTRICAL SYSTEM.

8. BRIDGE CONTRACTOR SHALL CONTACT DELDOT SIGNAL CONSTRUCTION MANAGER AT 302-222-5920 (10) TEN DAYS PRIOR TO BRIDGE WARNING SYSTEM PATHWAY TIE IN TO EXISTING TPYE 1 JW ADJUST OR REPAIR AS NEEDED (ITEM 744544) DELDOT FORCES SHALL BE PRESENT TO INSPECT TIE IN.

9. BRIDGE CONTRACTOR SHALL CONTACT DELDOT SIGNAL MAINTENANCE MANAGER AT 302-222-5971 (10) TEN DAYS PRIOR TO BRIDGE WARNING SYSTEM PATHWAY TIE IN. TIE IN OF BRIDGE WARNING SYSTEM AND DELDOT SIGNAL S159 SHALL BE COMPLETED BY DELDOT FORCES. EXISTING TIE SHALL REMAIN IN PLACE UNTIL NEW CONNECTION IS COMPLETED AND ACCEPTED.

10. FINAL CONDUIT AND WIRE CONNECTION TO EXISTING WARNING GATES, TRAFFIC SIGNALS, ROADWAY LIGHTS NOT SHOWN.

11. REFER TO DWGS SE-34 AND SE-35 FOR REQUIREMENTS FOR BRIDGE CONTROL CONDUIT AND WIRE.

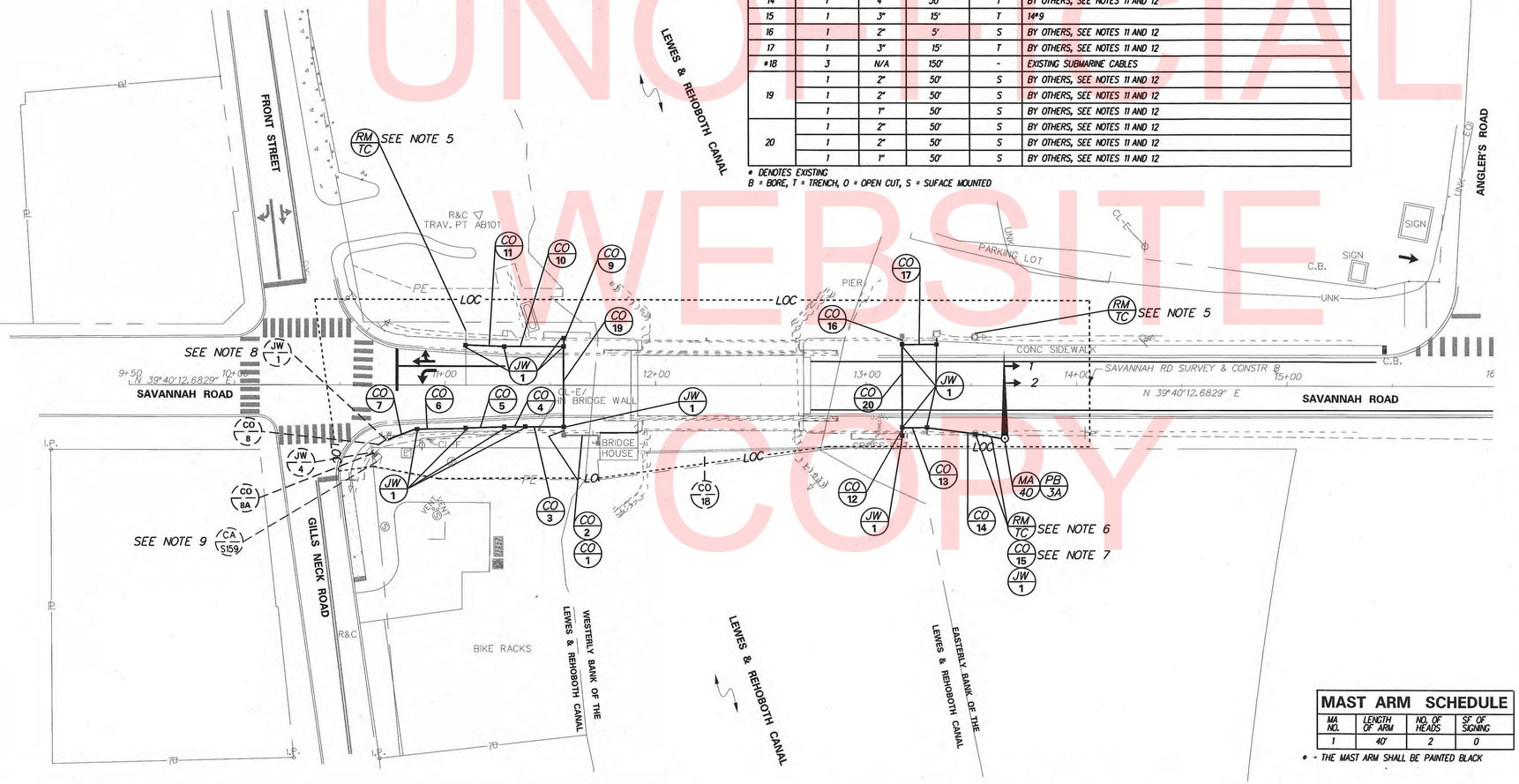
12. REFER TO DWG SE-44 FOR ADDITIONAL INFORMTAION ON ROADWAY CONDUIT AND BOXES.

13. REMOVE AND REPLACE EXISTING JUNCTION WELLS WITHIN SIDEWALK SECTIONS BEING REPLACED (TYP).

CONDUIT RUN SCHEDULE

CR NO.	NO. OF CONDUITS	SIZE	LENGTH	B/T/O/S	AMOUNT AND TYPE OF CABLE / WIRE
1	1	4"	25'	S	FO CABLE (NEW CABLES BY TC)
	1	3"	25'	S	BY OTHERS, SEE NOTES 11 AND 12
	1	2"	25'	S	BY OTHERS, SEE NOTES 11 AND 12
2	1	4"	5'	S	FO CABLE (NEW CABLES BY TC)
	1	3"	5'	S	BY OTHERS, SEE NOTES 11 AND 12
	1	2"	5'	S	BY OTHERS, SEE NOTES 11 AND 12
3	1	4"	35'	T	FO CABLE (NEW CABLES BY TC)
	1	3"	35'	T	BY OTHERS, SEE NOTES 11 AND 12
	1	2"	35'	T	BY OTHERS, SEE NOTES 11 AND 12
4	1	4"	25'	T	FO CABLE (NEW CABLES BY TC)
	1	2"	25'	T	BY OTHERS, SEE NOTES 11 AND 12
5	1	4"	15'	T	FO CABLE (NEW CABLES BY TC)
	1	2"	15'	T	BY OTHERS, SEE NOTES 11 AND 12
6	1	4"	15'	T	FO CABLE (NEW CABLES BY TC)
	1	2"	15'	T	BY OTHERS, SEE NOTES 11 AND 12
7	1	4"	10'	T	FO CABLE (NEW CABLES BY TC)
	1	2"	10'	T	BY OTHERS, SEE NOTES 11 AND 12
*8	1	4"	10'	-	4#12 (BY OTHERS, SEE NOTES 11 AND 12), FO CABLE (NEW CABLES BY TC)
*8A	4	4"	5'	-	4#12 (BY OTHERS, SEE NOTES 11 AND 12), FO CABLE (NEW CABLES BY TC)
9	1	2"	10'	T	BY OTHERS, SEE NOTES 11 AND 12
10	1	2"	10'	T	BY OTHERS, SEE NOTES 11 AND 12
11	1	2"	10'	T	BY OTHERS, SEE NOTES 11 AND 12
12	1	4"	5'	S	BY OTHERS, SEE NOTES 11 AND 12
13	1	4"	15'	T	BY OTHERS, SEE NOTES 11 AND 12
14	1	4"	50'	T	BY OTHERS, SEE NOTES 11 AND 12
15	1	3"	15'	T	14#9
16	1	2"	5'	S	BY OTHERS, SEE NOTES 11 AND 12
17	1	3"	15'	T	BY OTHERS, SEE NOTES 11 AND 12
*18	3	N/A	150'	-	EXISTING SUBMARINE CABLES
19	1	2"	50'	S	BY OTHERS, SEE NOTES 11 AND 12
	1	2"	50'	S	BY OTHERS, SEE NOTES 11 AND 12
	1	1"	50'	S	BY OTHERS, SEE NOTES 11 AND 12
20	1	2"	50'	S	BY OTHERS, SEE NOTES 11 AND 12
	1	2"	50'	S	BY OTHERS, SEE NOTES 11 AND 12
	1	1"	50'	S	BY OTHERS, SEE NOTES 11 AND 12

* DENOTES EXISTING
B = BORE, T = TRENCH, O = OPEN CUT, S = SUFACE MOUNTED



MAST ARM SCHEDULE

MA NO.	LENGTH OF ARM	NO. OF HEADS	SF OF SIGNING
1	40'	2	0

* - THE MAST ARM SHALL BE PAINTED BLACK

SIGNAL PHASING

THE GREEN SIGNAL INDICATION SHALL BE ILLUMINATED AT ALL TIMES BETWEEN BRIDGE OPENINGS, EXCEPT THAT IF THE BRIDGE IS NOT EXPECTED TO OPEN DURING CONTINUOUS PERIODS IN EXCESS OF FIVE HOURS, A FLASHING YELLOW INDICATION MAY BE USED. THE SIGNAL SHALL DISPLAY A STEADY RED SIGNAL INDICATION WHEN TRAFFIC IS EXPECTED TO STOP. THE DURATION OF THE YELLOW CHANGE INTERVAL BETWEEN THE DISPLAY OF THE STEADY GREEN AND STEADY RED SIGNAL INDICATIONS, OR FLASHING YELLOW AND RED STEADY RED SIGNAL INDICATIONS SHALL BE THREE SECONDS.

SIGNAL HEAD DIAGRAM

LEGEND

AB	ABANDON	OH *	EXISTING OVERHEAD RUN IDENTIFIER (* OF OVERHEAD RUN)
CA X	EXISTING CABINET IDENTIFIER (TYPE OF CABINET)	OH *	PROPOSED OVERHEAD RUN IDENTIFIER (* OF OVERHEAD RUN)
CA X	PROPOSED CABINET IDENTIFIER (TYPE OF CABINET)	PB X	EXISTING POLE BASE IDENTIFIER (TYPE OF POLE BASE)
CO *	EXISTING CONDUIT RUN IDENTIFIER (* OF CONDUIT RUN)	PB X	PROPOSED POLE BASE IDENTIFIER (TYPE OF POLE BASE)
CO *	PROPOSED CONDUIT RUN IDENTIFIER (* OF CONDUIT RUN)	PL X	EXISTING POLE IDENTIFIER (* OF POLE)
JW X	EXISTING JUNCTION WELL IDENTIFIER (TYPE OF JUNCTION WELL)	PL X	PROPOSED POLE IDENTIFIER (* OF POLE)
JW X	PROPOSED JUNCTION WELL IDENTIFIER (TYPE OF JUNCTION WELL)	RM C	REMOVE BY CONTRACTOR
MA XX	EXISTING MAST ARM IDENTIFIER (LENGTH OF ARM)	RM O	REMOVE BY OTHERS
MA XX	PROPOSED MAST ARM IDENTIFIER (LENGTH OF ARM)	RM TC	REMOVE BY TRAFFIC CONTRACTOR

	EXISTING SYMBOL	PROPOSED SYMBOL
JUNCTION WELL	J.W.	■
LOOP DETECTOR, TYPE 1		□
LOOP DETECTOR, TYPE 2		▭
LUMINAIRE	—◇	—◆
MAST ARM	▷	▶
MICROWAVE DETECTION	—◁	—◀
OPTICOM RECEIVER	—○	—●
OVERHEAD SIGNING		—⊣
PEDESTRIAN POLE/BASE	○	◉
PEDESTRIAN PUSHBUTTON	—D	—▶
PEDESTRIAN SIGNAL HEAD	—┌	—┏
RIGHT-OF-WAY	———	—R/W—
SERVICE PEDESTAL		P
SIGNAL CABINET		▮
SIGNAL HEAD	—▷	—▶
SIGNAL POLE/BASE	⊗	⊙
SPAN INSULATOR	—◇—	—◆—
SPAN WIRE	—XX—	—◇—
UTILITY POLE	⊘	◥
VIDEO DETECTION	—◐	—◤

GENERAL SIGNAL NOTES

1. ALL SIGNAL EQUIPMENT REMOVED FROM A PROJECT IS TO BE RETURNED TO DELDOT TRAFFIC-DOVER, DELAWARE.
2. POLE BASES, CABINET BASE AND CONDUIT JUNCTION WELLS TO BE REMOVED IN ACCORDANCE WITH SECTION 201 AND 202 OF THE STANDARD SPECIFICATIONS OR AS DIRECTED BY ENGINEER. EXISTING CONDUIT IS TO BE ABANDONED.
3. ALL GALVANIZED CONDUIT (GRC) SHALL BE REAMED AND THREADED. ALL GRC SHALL BE THREADED TOGETHER WITH APPROVED COUPLINGS.SET SCREW, BOLTED, AND COMPRESSION FITTING ARE NOT ACCEPTABLE.
4. ALL UNDERGROUND AND OVERHEAD UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING MISS UTILITY, AND/OR THE APPROPRIATE UTILITY PRIOR TO THE BEGINNING OF CONSTRUCTION FOR THE UTILITY MARKOUTS. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN UTILITIES AND THE TRAFFIC SIGNAL WILL OCCUR, THE CONTRACTOR SHALL NOTIFY DELDOT TRAFFIC IMMEDIATELY BEFORE CONSTRUCTION.

SH-9

RECOMMENDED _____ DATE: 5.30.18

RECOMMENDED Rodney A. Jarrett DATE: 05/23/18

RECOMMENDED _____ DATE: _____

APPROVED TRAFFIC ENGINEER _____ DATE: 05/31/2018

APPROVED FOR INSTALLATION CHIEF TRAFFIC ENGINEER _____ DATE: 5/31/18

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUM / REVISIONS

SCALE 0 30 60 90 FEET

BR 3-154 ON US 9 SAVANNAH ROAD & BR 3-153 ON SR1A REHOBOTH AVENUE OVER LEWES-REHOBOTH CANAL

CONTRACT	T201507602
COUNTY	SUSSEX
ROAD NO.	S018
DESIGNED BY:	KK
CHECKED BY:	JW

SAVANNAH ROAD BRIDGE SIGNALIZATION PLAN

SHEET NO.	180
TOTAL SHTS.	180

5/23/2018
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