U.S. CUSTOMARY UNITS

THE STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION

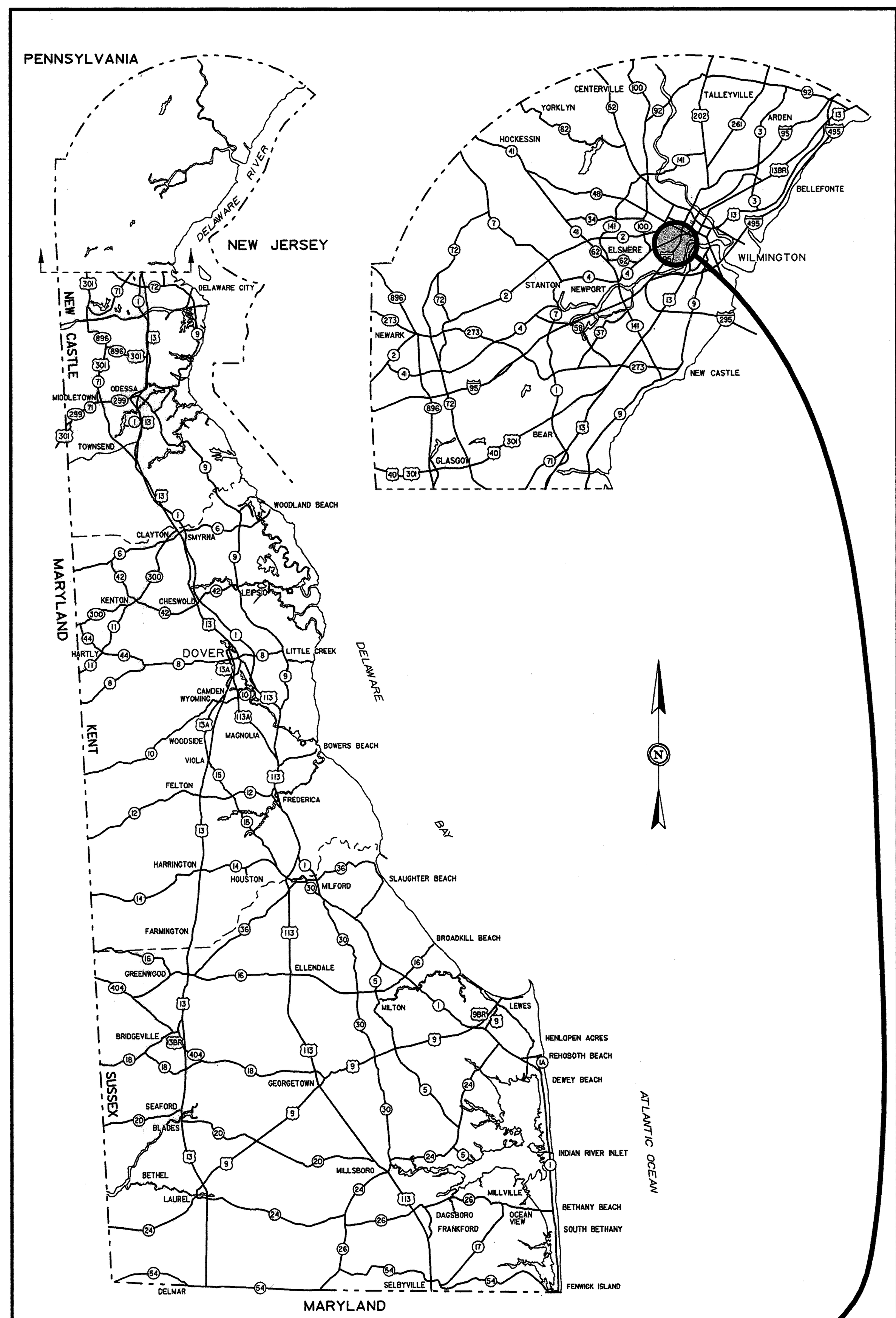
CONSTRUCTION PLANS FOR:

DELAWARE TRANSIT CORPORATION, BEECH STREET GENERATORS BUILDINGS NO. 15 & 16

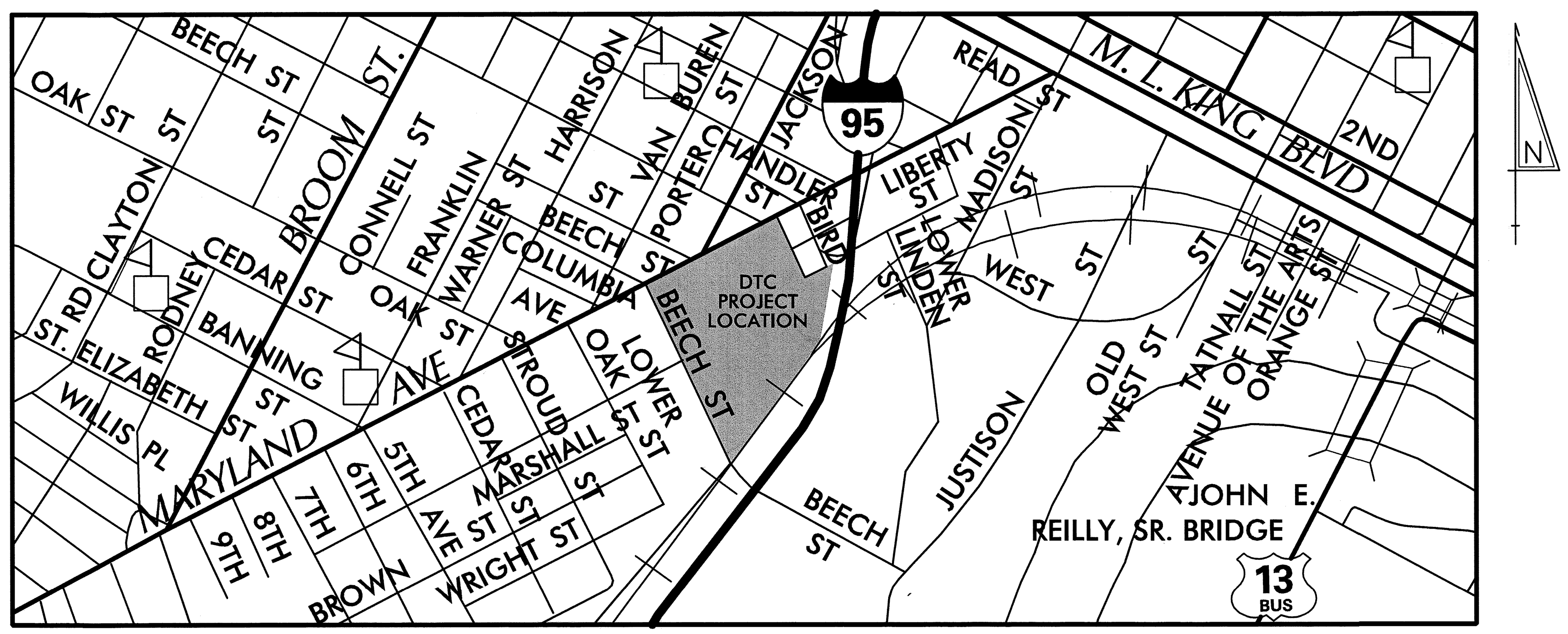
CONTRACT NUMBER: T201453103

FEDERAL AID PROJECT NUMBER: FTC NCC 5307

COUNTY: NEW CASTLE **M.R. #: - - - -**



GENERAL LOCATION OF CONTRACT



LOCATION MAP

NOT TO SCALE

PREPARED BY
THE CONSULTING FIRM OF

WRA
Whitman, Requardt & Associates, LLP
Three Mill Road, Suite 309, Wilmington, Delaware 19806

AMITAVA PODDER
REGISTERED
No. 13438
PROFESSIONAL ENGINEER
DELAWARE

SEAL

RECOMMENDED ______ DATE ______

RECOMMENDED	
SQUAD MANAGER, CONSTRUCTION	DATE
GROUP ENGINEER, CONSTRUCTION	DATE
ASSISTANT DIRECTOR, TRANSPORTATION SOLUTIONS (CONSTRUCTION)	DATE

DESIGN DESIGNATION

FUNCTIONAL CLASS:	D.H.V. PROJECTED: N/A	YEAR: N/A
TYPE OF CONSTRUCTION: SITE	DESIGN SPEED: N/A	
A.A.D.T. CURRENT: N/A — YEAR: N/A	TRUCKS: N/A	
A.A.D.T. PROJECTED: N/A — YEAR: N/A	DIRECTION OF DISTRIBUTION: N/A	

INDEX OF SHEETS

TOTAL SHEETS: 11

APPROVED DESIGN EXCEPTIONS

DESIGN PARAMETER	REQUIRED	PROVIDED	DATE

ADDENDA & REVISIONS

DESCRIPTION	NAME & DATE

ASSOCIATED CONTRACTS

CONTRACT NO.	CONTRACT NAME

G-100

RECOMMENDED	RECOMMENDED	RECOMMENDED	RECOMMENDED	RECOMMENDED	APPROVED
STORMWATER ENGINEER	SQUAD MANAGER, TRANSPORTATION SOLUTIONS (PROJECT DEVELOPMENT OR BRIDGE DESIGN)	BRIDGE DESIGN ENGINEER	GROUP ENGINEER, PROJECT DEVELOPMENT	ASSISTANT DIRECTOR, TRANSPORTATION SOLUTIONS	CHIEF ENGINEER
DATE ______ SEAL	DATE ______ SEAL	DATE ______ SEAL	DATE ______ SEAL	DATE ______ SEAL	DATE ______ SEAL

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ELECTRICAL LEGEND, ABBREVIATIONS & GENERAL NOTES

SAFETY SWITCHED/BREAKERS/STARTERS

- NON-FUSED DISCONNECT SWITCH, SUBSCRIPT INDICATES AMPACITY AND NUMBER OF POLES (600V)
- 1 MAGNETIC COMBINATION MOTOR STARTER. 30 AMP, 3 POLE SWITCH WITH NEMA SIZE 1 STARTER UON.
- ENCLOSED BREAKER

EQUIPMENT CONNECTION

- MOTOR, NUMBER INDICATES HORSEPOWER
- JUNCTION BOX
- EQUIPMENT CONNECTION AS NOTED
- UNIT HEATER
- TRANSFORMER
- GROUND ROD 3/4" DIAMETER 10'-0" LONG UON

WIRING

- HPA-1,3,5 — BRANCH CIRCUIT HOMERUN TO PANELBOARD. HPA DENOTES TO PANEL HPA AND NUMERALS IDENTIFY CIRCUIT NUMBERS. ARROWS DENOTE NO. OF CIRCUITS.
- CONDUIT WITH WIRES, #12 AWG IN 3/4" C. UNLESS OTHERWISE NOTED. NUMBER OF CONDUCTORS AS REQUIRED. PROVIDE SEPARATE NEUTRALS FOR ALL SINGLE PHASE CIRCUITS.

OR

- BRANCH CIRCUIT OR FEEDER WIRING IN CONDUIT. NO TICK MARKS INDICATES 2#12 CONDUCTORS AND 1#12 GROUND IN A 3/4"C (UON)
- INDICATES A CONDUIT RUN CONCEALED IN CEILING WALL, FLOOR, OR ABOVE SUSPENDED CEILING (UON)
- EXPOSED CONDUIT RUN AS INDICATED.
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN

PANELBOARDS

- ELECTRICAL PANELBOARD (240/120V, 3W+G)
- ELECTRICAL PANELBOARD (480/277V, 4W+G)

MISCELLANEOUS

- 1 — SPECIFIC NOTE NUMBER
- 1 — FEEDER SIZE
- SECTION NUMBER / DRAWING NUMBER WHERE SHOWN
- DETAIL NUMBER / DRAWING NUMBER WHERE SHOWN

EMERGENCY SYSTEM

- G — GENERATOR
- ATS — AUTOMATIC TRANSFER SWITCH

ABBREV.	DESCRIPTION
A	AMPERES
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERES INTERRUPTING CAPACITY, (SYM, RMS AMPS)
ATC	AUTOMATIC TEMPERATURE CONTROL
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BCSD	BARE COPPER SOFT DRAWN
BLDG	BUILDING
BKR	BREAKER
C	CONDUIT
CB	CIRCUIT BREAKER
CC1	POWER/CONTROL/INSTRUMENTATION CABLE RUN NUMBER AS INDICATED.
CKT	CIRCUIT
COMB	COMBINATION
CLG	CEILING
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CU	COPPER
CX	CONNECT TO EXISTING
O/D	OUTDOOR
DISC	DISCONNECT
DN	DOWN
DP	DISTRIBUTION PANEL
DWG	DRAWING
EA	EACH
EC	EMPTY CONDUIT
ECD	ELEMENTARY CONTROL DIAGRAM
EF	EXHAUST FAN
EH	ELECTRIC HEATER
ELEV	ELEVATION
EMERG.	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
ENCL	ENCLOSURE
E/O	ELECTRICALLY/OPERATED
EQUIP	EQUIPMENT
ER	EXISTING RELOCATED
ETR	EXISTING TO REMAIN
EUH	ELECTRIC UNIT HEATER
EX, EXIST	EXISTING
F	FUSE
FA	FRAME AMPS
FBO	FURNISHED BY OTHERS UNDER SEPARATE CONTRACT
FC	FAN COIL UNIT
FDR	FEEDER
FL	FLOOR
FLEX	FLEXIBLE
FMC	FLEXIBLE METAL CONDUIT
FS	FLOW SWITCH
FSS	FUSED SAFETY SWITCH
FT	FOOT OR FEET
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
G	GROUND
GFI	GROUND FAULT INTERRUPTER
GFCI	GOVERNMENT FURNISHED CONTRACTOR INSTALLED
GFGI	GOVERNMENT FURNISHED GOVERNMENT INSTALLED
GFP	GROUND FAULT PROTECTION
HID	HIGH INTENSITY DISCHARGE
HOA	HAND OFF AUTOMATIC
HP	HEATER
HTR	HORSEPOWER
HZ	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT
JB	JUNCTION BOX
KAIC	THOUSAND AMPERES INTERRUPTING CAPACITY
KV	KILOVOLT
KVA	KILOVOLT AMPERE
LTG	LIGHTING
LT/FMC	LIQUID TIGHT/FLEXIBLE METAL CONDUIT

ABBREV.	DESCRIPTION
MAFC	MAKE ALL FINAL CONNECTIONS
M/C	MULTI/CONDUCTOR
MCB	MAIN CIRCUIT BREAKER
MCCB	MOLDED CASE CIRCUIT BREAKER
MH	MOUNTING HEIGHT
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOD	MOTOR OPERATED DAMPER
MTD	MOUNTED
MTG	MOUNTING
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NFSS	NON FUSED SAFETY SWITCH
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OL	OVERLOAD
P	POLE OR POLES
PB	PUSH BUTTON
PH	PHASE
PL	PILOT LIGHT
PNL	PANELBOARD
RC	REMOTE CONTROL
RE	RELOCATE EXISTING
RECEPT	RECEPTACLE
REQ'D	REQUIRED
RGS	RIGID GALVANIZED STEEL
RM	ROOM
RMS	ROOT MEAN SQUARE
RX	REMOVE EXISTING
SER.	SERVICE
SF	SUPPLY FAN
SG1-1A/P	SWGR POWER WIRE RUN NUMBER - SWGR NUMBER AND UNIT NUMBER AS INDICATED
SIC	SYMMETRICAL INTERRUPTING CURRENT
SS	SAFETY SWITCH
ST	SHUNT TRIP
STA	STATION
STP	SHIELDED TWISTED PAIR
STPS	SHIELDED TWISTED PAIR OVER ALL SHIELD
STR	STARTER
STT	SHIELDED TWISTED TRIPLE
S/N	SOLID NEUTRAL
SW	SWITCH
SYM	SYMMETRICAL
SYS	SYSTEM
TA	TRIP AMPS
TDD	TIME DELAY DE-ENERGIZED (OFF)
TDE	TIME DELAY ENERGIZED (ON)
TDC	TIME DELAY CLOSE
TDO	TIME DELAY OPEN
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS OR VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
W	WIRE
W/	WITH
WP	WEATHERPROOF
XFMR	TRANSFORMER
℄	CENTER LINE
ø	PHASE
@	AT
#	NUMBER

GENERAL NOTES

1. INSTALLATION OF ALL ELECTRICAL WORK SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70), AND ALL APPLICABLE LOCAL CODES.
2. CONDUIT RUNS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. EXPOSED CONDUITS ABOVE SUSPENDED CEILING AND INFURRED WALLS SHALL BE INSTALLED PARALLEL TO THE BEAMS AND WALLS.
3. PROVIDE ALL REQUIRED PULL BOXES AND JUNCTION BOXES FOR INSTALLATION OF THE WIRING IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS THOUGH THE BOXES MAY NOT BE INDICATED ON THE DRAWINGS.
4. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUITS ARE BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS, APPROVED BY THE ENGINEER, MAY BE MADE BY THE CONTRACTOR AT HIS EXPENSE TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED.
5. PROVIDE ALL NECESSARY COMPONENTS REQUIRED FOR MAKING FINAL CONNECTION OF ALL EQUIPMENT INSTALLED AS PART OF THIS CONTRACT.
6. ALL INDICATION AND CONTROL WIRING IN JUNCTION BOXES SHALL BE WIRED TO NUMBERED TERMINAL STRIPS AND IDENTIFIED AS TO START AND END OF RUN.
7. ALL ELECTRICAL EQUIPMENT INSTALLED AGAINST CONCRETE OR MASONRY WALLS SHALL BE INSTALLED WITH IN A 1/4" SPACE BETWEEN THE EQUIPMENT AND THE MOUNTING SURFACE. SPACERS SHALL BE STAINLESS STEEL, PVC OR NYLON.
8. ALL JUNCTION AND PULL BOXES SHALL BE LABELED WITH THEIR VOLTAGE AND USAGE.
9. DRAWINGS ARE DIAGRAMMATIC, ACTUAL LOCATION OF EQUIPMENT TO BE DETERMINED IN THE FIELD. NEW EQUIPMENT SHALL FIT INTO AVAILABLE SPACE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE EQUIPMENT WHICH MEETS THE SPACE REQUIREMENT.
10. COORDINATE WORK SCHEDULE WITH OWNER. WORK WILL BE ALLOWED IN CERTAIN AREAS AND GOVERNED BY EXISTING SECURITY REGULATIONS AT THE FACILITY. WORK SHALL ALLOW FOR DAILY OPERATION OF THE FACILITY WITHOUT INTERRUPTION.
11. CONTRACTOR SHALL SUBMIT A LIST OF ALL MAJOR EQUIPMENT TO THE ENGINEER FOR REVIEW AND APPROVAL. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT THE PERMISSION OF THE PROJECT ENGINEER IN WRITING. ALL EQUIPMENT SHALL BE NEW AND BEAR THE MANUFACTURER'S NAME AND TRADE NAME. ALL EQUIPMENT SHALL BE UL LISTED.
12. THE CIRCUIT NUMBERS ARE FOR IDENTIFICATION PURPOSE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR BALANCING LOADS AND CORRECTLY PHASING THE CIRCUITS IN PANELBOARDS.
13. ELECTRICAL REQUIREMENTS FOR EQUIPMENT ARE BASED ON EQUIPMENT SPECIFIED. COORDINATE EXACT REQUIREMENTS WITH SHOP DRAWINGS PRIOR TO ORDERING AND INSTALLING EQUIPMENT.
14. ALL 120 VOLT BRANCH CIRCUITS LONGER THAN 100 FEET FROM PANELBOARD TO LAST EQUIPMENT SHALL UTILIZE #10AWG OR LARGER WIRES.
15. CONTRACTOR SHALL VISIT THE JOB SITE AND EXAMINE THE EXISTING CONDITIONS THAT MAY AFFECT HIS WORK.
16. CONTRACTOR SHALL OBTAIN A WRITTEN PERMISSION FROM THE OWNER TO DEENERGIZE ANY ENERGIZED BUILDING EQUIPMENT.
17. OPENINGS AND PASSAGE OF CONDUITS OR WIREWAYS THROUGH FLOOR SLABS AND FIRE RATED WALLS OR PARTITIONS SHALL BE PROVIDED WITH UL LISTED FIRE RATED SLEEVING SYSTEMS AS MANUFACTURED BY PROSET SYSTEMS INC.
18. DO NOT INSTALL MORE THAN THREE 120V CIRCUITS IN ONE HOMERUN UON.
19. SERIES RATING OF CIRCUIT BREAKERS SHALL NOT BE ALLOWED UNLESS SPECIFICALLY INDICATED ON CONTRACT DRAWINGS.
20. ALL WORK SHOWN ON THE DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED.
21. ALL 120V CIRCUITS SHALL HAVE SEPARATE NEUTRALS.
22. MINIMUM CONDUIT SIZE SHALL BE 3/4".
23. MINIMUM WIRE SIZE SHALL BE #12 AWG.
24. PROVIDE SYSTEM GROUNDING CONDUCTORS AND EQUIPMENT GROUNDING CONDUCTORS IN ACCORDANCE WITH NEC-250, UON.

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E-001

DELAWARE DEPARTMENT OF TRANSPORTATION

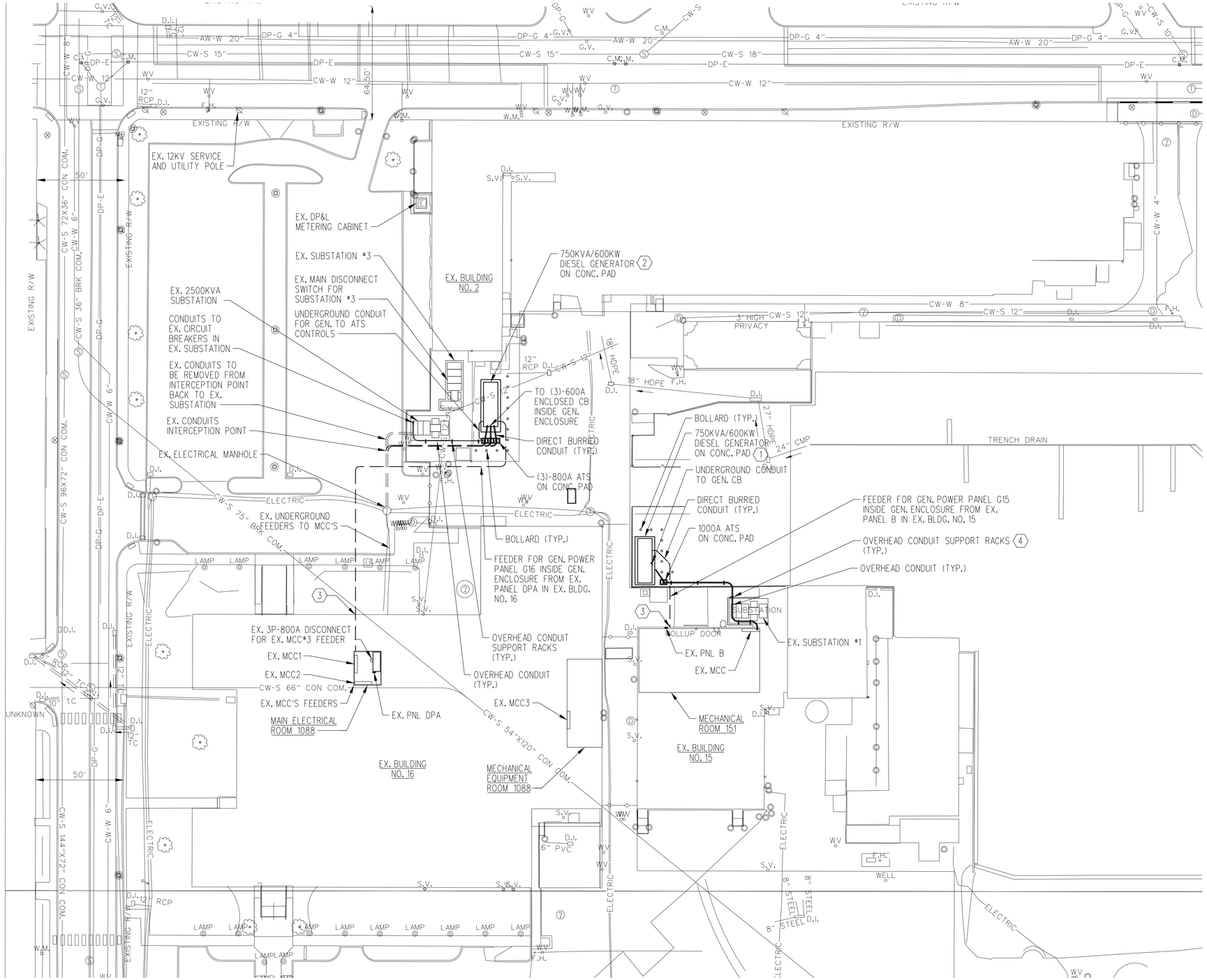
ADDENDUMS / REVISIONS

DELAWARE TRANSIT CORPORATION
BEECH STREET GENERATORS
BUILDINGS NO. 15 & 16

CONTRACT T201453103
COUNTY NEW CASTLE
BRIDGE NO.
DESIGNED BY: RJK
CHECKED BY: AP

ELECTRICAL LEGEND, ABBREVIATIONS AND GENERAL NOTES

SHEET NO. 2
TOTAL SHTS. 11



DRAWING NOTES:

1. SEE DRAWING E-001 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. SEE DRAWING E-501 FOR BUILDING NO. 15 EXISTING SINGLE LINE DIAGRAM.
3. SEE DRAWING E-502 FOR BUILDING NO. 15 REVISED SINGLE LINE DIAGRAM FOR EQUIPMENT, CONDUIT AND CONDUCTOR REQUIREMENTS FOR BUILDING NO. 15 NEW GENERATOR SYSTEM REQUIREMENTS.
4. SEE DRAWING E-503 FOR BUILDING NO. 16 EXISTING SINGLE LINE DIAGRAM.
5. SEE DRAWING E-504 FOR BUILDING NO. 16 REVISED SINGLE LINE DIAGRAM FOR EQUIPMENT, CONDUIT AND CONDUCTOR REQUIREMENTS FOR BUILDING NO. 16 NEW GENERATOR SYSTEM REQUIREMENTS.

SPECIFIC NOTES:

(1) FOR BUILDING NO. 15 GENERATOR PLAN, SEE ENLARGEMENT PLAN 1/E-301.

(2) FOR BUILDING NO. 16 GENERATOR PLAN, SEE ENLARGEMENT PLAN 1/E-302.

(3) PROVIDE PULLBOX TO FACILITATE NEW CONDUIT ENTRY INTO BUILDING.

(4) PROVIDE GALVANIZED FINISHED STRUCTURAL STEEL CONDUIT SUPPORT FRAME SIMILAR TO EXISTING SUPPORTS.

1 / E-100 ELECTRICAL SITE PLAN
SCALE: 1" =30'-0"

0 15' 30' 60'
SCALE: 1" = 30'-0"

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DELAWARE DEPARTMENT OF TRANSPORTATION

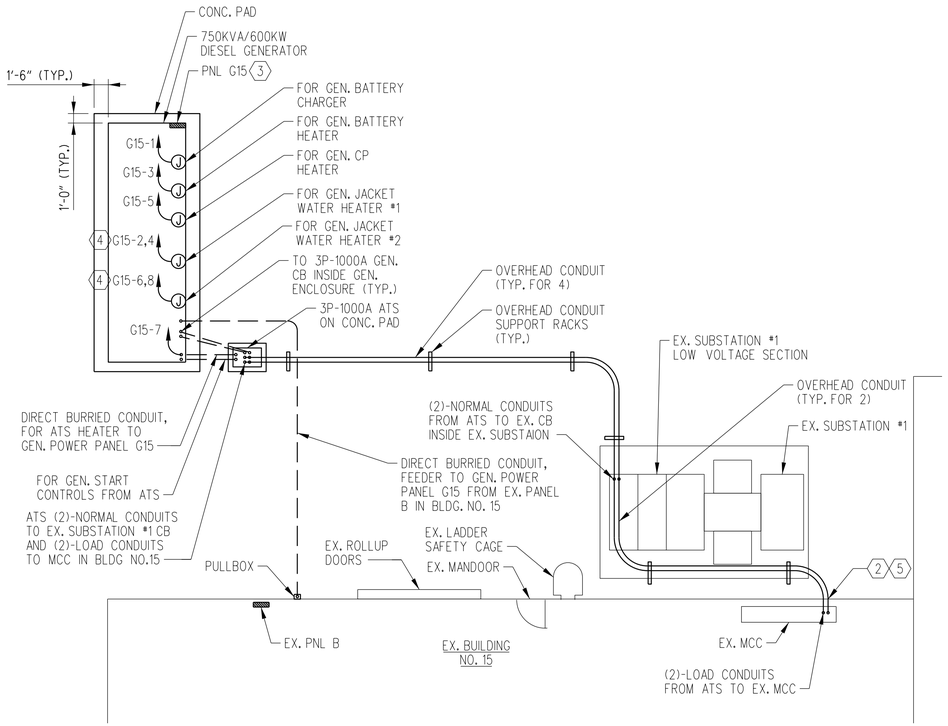
ADDENDUMS / REVISIONS

DELAWARE TRANSIT CORPORATION
BEECH STREET GENERATORS
BUILDINGS NO. 15 & 16

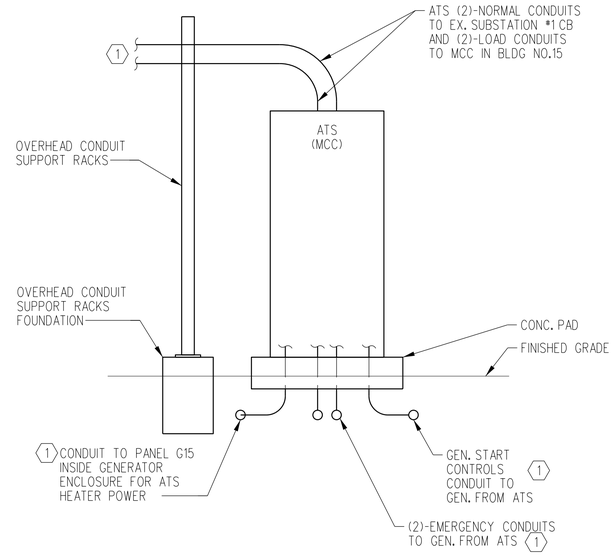
CONTRACT	BRIDGE NO.	
T201453103	DESIGNED BY: RJK	
COUNTY	CHECKED BY: AP	
NEW CASTLE		

ELECTRICAL SITE PLAN

	E-100
SHEET NO.	3
TOTAL SHTS.	11



1 / E-301 BUILDING NO. 15 GENERATOR PLAN
SCALE: 1/8" =1'-0"



2 / E-301 BUILDING NO. 15 ATS ELEVATION
NTS

DRAWING NOTES:

1. SEE DRAWING E-001 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. SEE DRAWING E-501 FOR BUILDING NO. 15 EXISTING PARTIAL SINGLE LINE DIAGRAM.
3. SEE DRAWING E-502 FOR BUILDING NO. 15 REVISED PARTIAL SINGLE LINE DIAGRAM FOR EQUIPMENT, CONDUIT AND CONDUCTOR REQUIREMENTS FOR BUILDING NO. 15 NEW GENERATOR SYSTEM REQUIREMENTS.
4. SEE DRAWING E-100 FOR ELECTRICAL SITE PLAN.
5. SEE DRAWING E-601 FOR PANEL SCHEDULES.

SPECIFIC NOTES:

(1) FOR CONTINUATION SEE BUILDING NO. 15 GENERATOR PLAN ON THIS DRAWING.

(2) UTILITIZE EXISTING WALL PENETRATION FOR NEW CONDUITS AFTER REMOVAL OF EXISTING MCC FEEDER'S CONDUCTORS AND CONDUITS.

(3) LOCATION OF GENERATOR POWER PANEL TO BE COORDINATED WITH GENERATOR MANUFACTURER.

(4) PROVIDE 2*8, 1*10G - 1"C.

(5) CONTRACTOR MAY REUSE EXISTING CONDUITS AT HIS OPTION.

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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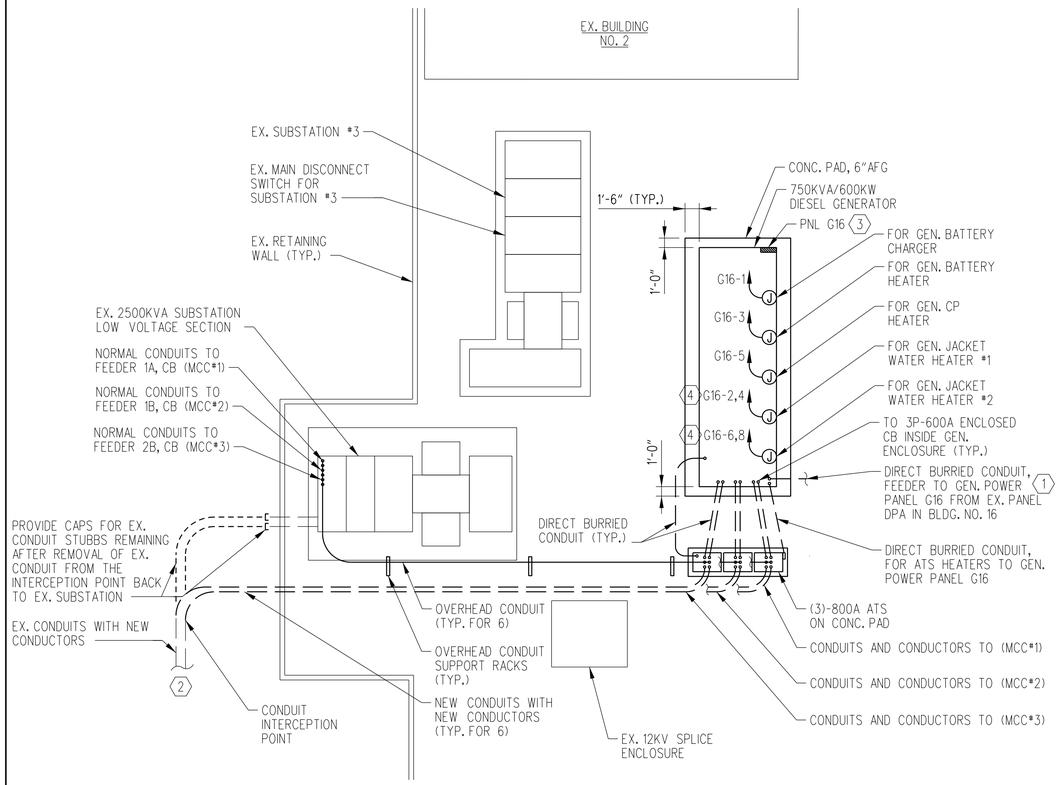
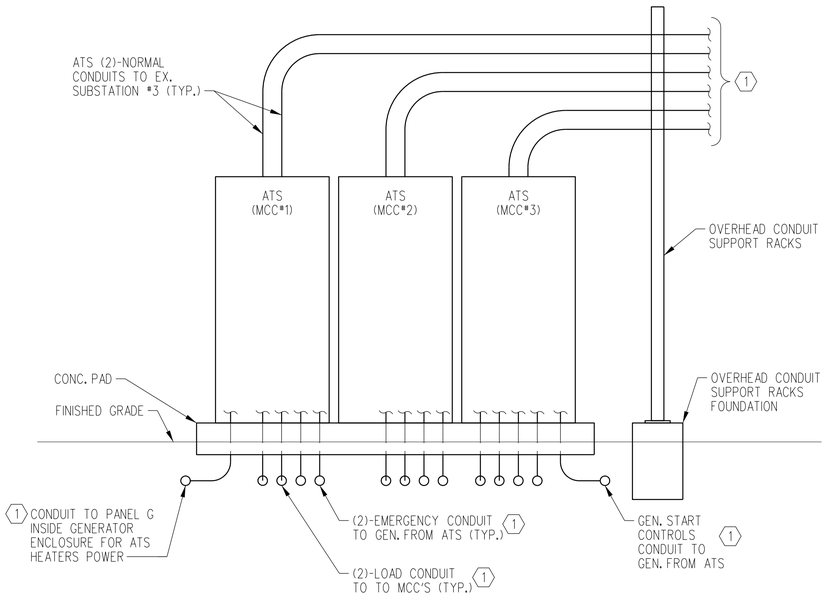
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	DELAWARE TRANSIT CORPORATION BEECH STREET GENERATORS BUILDINGS NO. 15 & 16	CONTRACT T201453103	BRIDGE NO.	BUILDING NO. 15 GENERATOR PLAN AND ATS ELEVATION	E-301
			COUNTY NEW CASTLE	DESIGNED BY: RJK		SHEET NO. 4
				CHECKED BY: AP		TOTAL SHTS. 11



1 / E-302 BUILDING NO. 16 GENERATOR PLAN
SCALE: 1/8" =1'-0"



2 / E-302 BUILDING NO. 16 ATS ELEVATION
NTS

DRAWING NOTES:

1. SEE DRAWING E-001 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. SEE DRAWING E-503 FOR BUILDING NO. 16 EXISTING PARTIAL SINGLE LINE DIAGRAM.
3. SEE DRAWING E-504 FOR BUILDING NO. 16 REVISED PARTIAL SINGLE LINE DIAGRAM FOR EQUIPMENT, CONDUIT AND CONDUCTOR REQUIREMENTS FOR BUILDING NO. 16. NEW GENERATOR SYSTEM REQUIREMENTS.
4. SEE DRAWING E-100 FOR ELECTRICAL SITE PLAN.
5. SEE DRAWING E-601 FOR PANEL SCHEDULES.

SPECIFIC NOTES:

1. FOR CONTINUATION SEE BUILDING NO. 16 GENERATOR PLAN ON THIS DRAWING.
2. CODUITS TO EXISTING BUILDING FOR CONTINUATION SEE SITE PLAN ON E-100.
3. LOCATION OF GENERATOR POWER PANEL TO BE COORDINATED WITH GENERATOR MANUFACTURER.
4. PROVIDE 2*8, 1*10G - 1"C

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

DELAWARE TRANSIT CORPORATION
BEECH STREET GENERATORS
BUILDINGS NO. 15 & 16

CONTRACT T201453103
COUNTY NEW CASTLE
BRIDGE NO.
DESIGNED BY: RJK
CHECKED BY: AP

BUILDING NO. 16 GENERATOR PLAN AND ATS ELEVATION

E-302
SHEET NO. 5
TOTAL SHTS. 11

DRAWING NOTES:

1. SEE DRAWING E-001 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. SEE DRAWING E-502 FOR BUILDING NO.15 REVISED PARTIAL SINGLE LINE DIAGRAM FOR NEW GENERATOR.

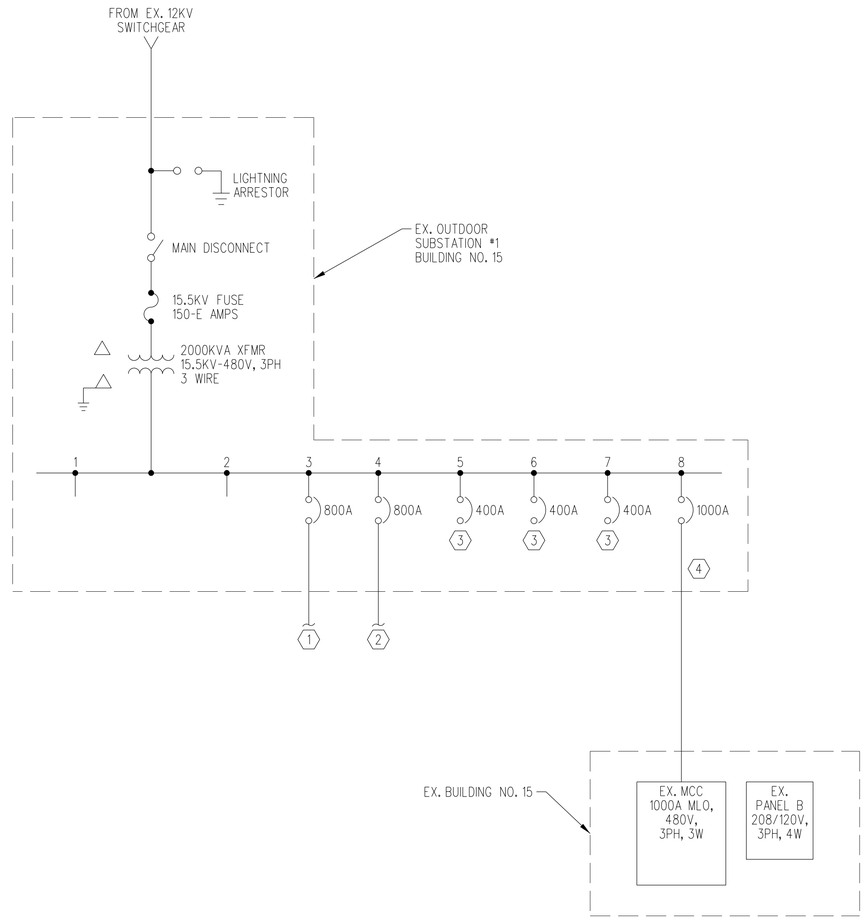
SPECIFIC NOTES:

(1) FEEDS POWER RACK BUILDING 5 - MOLD ROOM.

(2) FEEDS POWER PANEL BUILDING 5 - HEAT TREAT.

(3) TURNED OFF - TAGGED - NO WIRES ATTACHED.

(4) EXISTING FEEDER TO BE REMOVED AND REPLCED WITH NEW FEEDER, SEE DRAWING E-502 FOR NEW WORK.



BUILDING NO. 15
PARTIAL SINGLE LINE DIAGRAM - EXISTING

1 / E-501 SCALE: NTS

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DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS		DELAWARE TRANSIT CORPORATION BEECH STREET GENERATORS BUILDINGS NO. 15 & 16	CONTRACT T201453103	BRIDGE NO.	BUILDING NO.15 SINGLE LINE DIAGRAM EXISTING
				COUNTY NEW CASTLE	DESIGNED BY: RJK	
					CHECKED BY: AP	

E-501

SHEET NO. 6

TOTAL SHTS. 11

DRAWING NOTES:

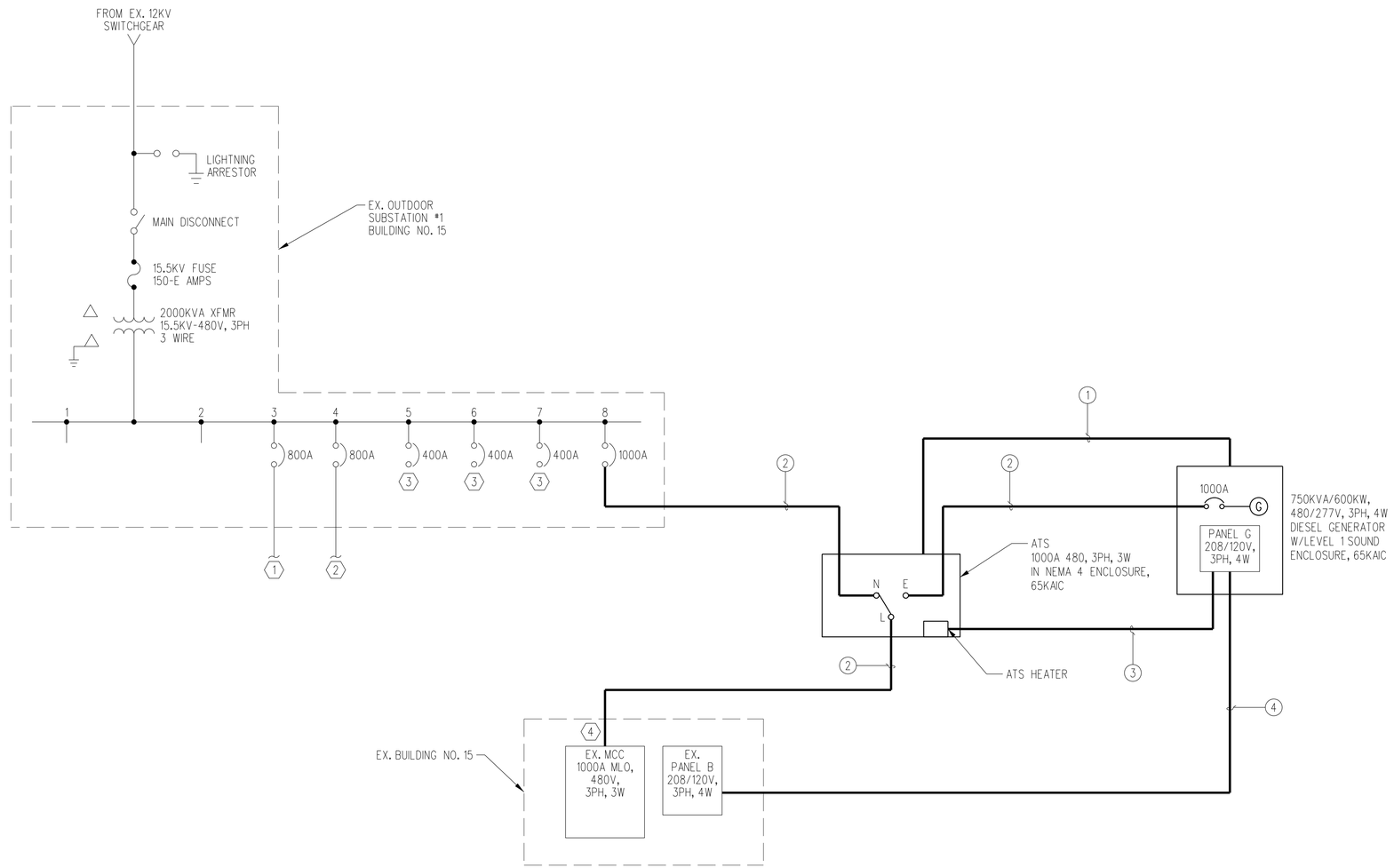
1. SEE DRAWING E-001 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. SEE DRAWING E-501 FOR BUILDING NO.15 EXISTING PARTIAL SINGLE LINE DIAGRAM.
3. SEE DRAWING E-601 FOR PANEL SCHEDULES.

SPECIFIC NOTES:

(1) FEEDS POWER RACK BUILDING 5 - MOLD ROOM.
(2) FEEDS POWER PANEL BUILDING 5 - HEAT TREAT.
(3) TURNED OFF - TAGGED - NO WIRES ATTACHED.
(4) EXISTING FEEDER TO BE REMOVED AND REPLCED WITH NEW FEEDER AS INDICATED.

FEEDER SCHEDULE:

(1) 3*12 - 3/4"C FOR CONTROLS - GENERATOR START
(2) 3 SETS (3*500KCMIL, 1*3/0G-3"C)
(3) 3*12, 1*12G - 1"C FOR ATS HEATER POWER FROM GENERATOR PANEL G15.
(4) 4*4, 1*8G - 2"C FEEDER FOR GENERATOR POWER PANEL G15.



BUILDING NO. 15
PARTIAL SINGLE LINE DIAGRAM - REVISED FOR NEW GENERATOR

1 / E-502 SCALE: NTS

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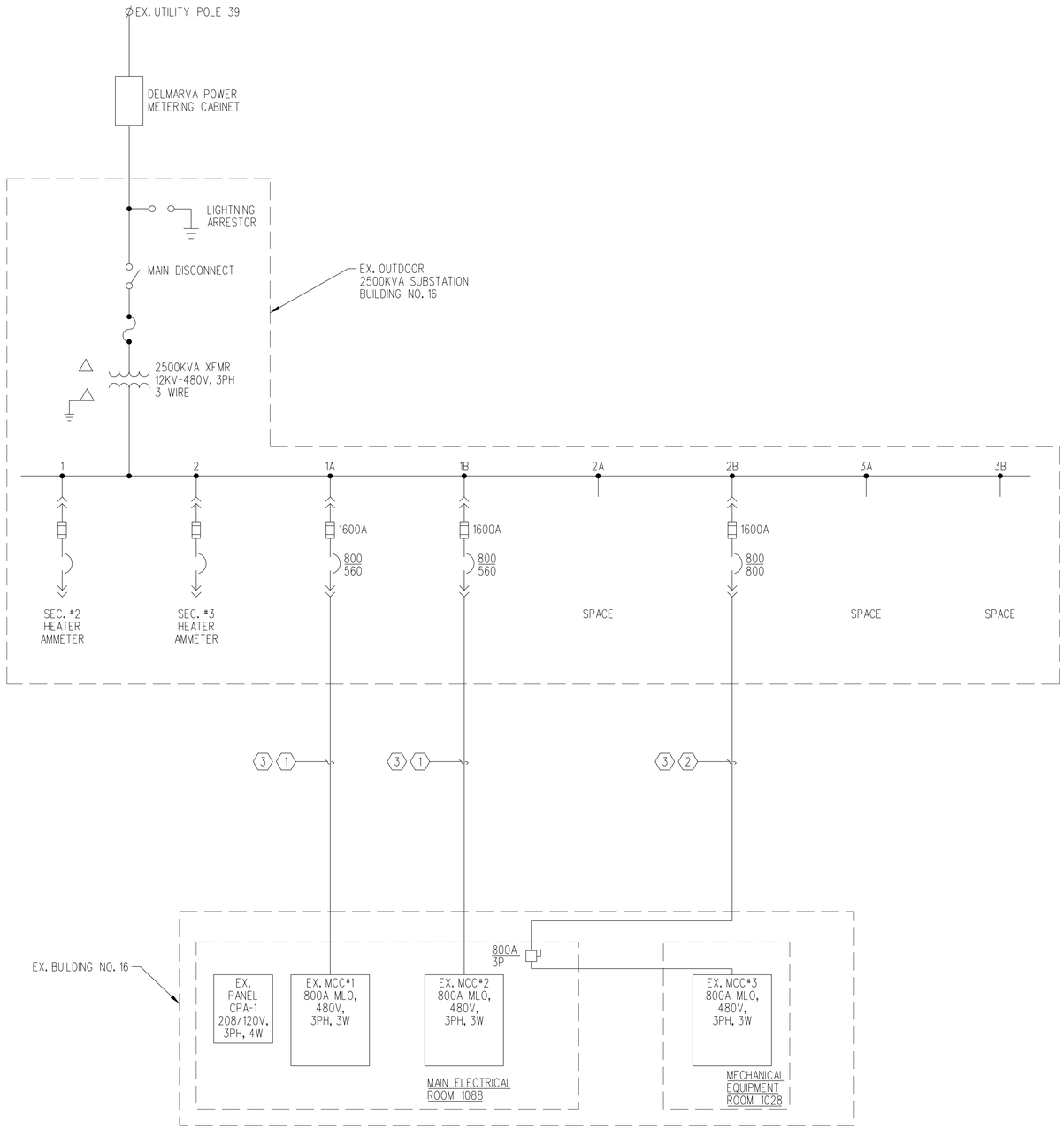
DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	DELAWARE TRANSIT CORPORATION BEECH STREET GENERATORS BUILDINGS NO. 15 & 16	CONTRACT T201453103	BRIDGE NO.	BUILDING NO. 15 SINGLE LINE DIAGRAM REVISED FOR NEW GEN.	E-502
			COUNTY NEW CASTLE	DESIGNED BY: RJK		SHEET NO. 7
				CHECKED BY: AP		TOTAL SHTS. 11



BUILDING NO. 16
PARTIAL SINGLE LINE DIAGRAM - EXISTING

1 / E-503 SCALE: NTS

DRAWING NOTES:

1. SEE DRAWING E-001 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. SEE DRAWING E-503 FOR BUILDING NO.16 REVISED PARTIAL SINGLE LINE DIAGRAM FOR NEW GENERATOR.
3. SEE DRAWING E-601 FOR BUILDING NO.16 EXISTING PANEL CPA-1 SCHEDULE.

SPECIFIC NOTES:

(1) EXISTING FEEDER 3 SETS [3*300MCM (165') - 4"C (150')]

(2) EXISTING FEEDER 3 SETS [3*350MCM (145') - 4"C (130')]

(3) EXISTING FEEDER TO BE REPLACED, SEE DRAWING E-504.

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	

DELAWARE TRANSIT CORPORATION
BEECH STREET GENERATORS
BUILDINGS NO. 15 & 16

CONTRACT	BRIDGE NO.
T201453103	
COUNTY	DESIGNED BY: RJK
NEW CASTLE	CHECKED BY: AP

BUILDING NO. 16
SINGLE LINE DIAGRAM
EXISTING

E-503
SHEET NO. 8
TOTAL SHTS. 11

DRAWING NOTES:

1. SEE DRAWING E-001 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. SEE DRAWING E-503 FOR BUILDING NO.16 EXISTING PARTIAL SINGLE LINE DIAGRAM.
3. SEE DRAWING E-601 FOR PANEL SCHEDULES.

SPECIFIC NOTES:

(1) EXISTING FEEDER 3 SETS [3*300MCM (165') - 4"C (150')], REMOVE EXISTING CONDUCTORS AND RETAIN THE EXISTING CONDUIT FOR NEW CONDUCTORS. REFER TO FEEDER SCHEDULE FOR CONDUCTOR REQUIREMENTS.

(2) EXISTING FEEDER 3 SETS [3*350MCM (145') - 4"C (130')], REMOVE EXISTING CONDUCTORS AND RETAIN THE EXISTING CONDUIT FOR NEW CONDUCTORS. REFER TO FEEDER SCHEDULE FOR CONDUCTOR REQUIREMENTS.

(3) 100% RATED CIRCUIT BREAKER, 65KAIC.

(4) INTERCEPT EXIST FEEDER UNDERGROUND CONDUIT. REMOVE EXISTING CONDUCTORS. REMOVE EXISTING CONDUIT FROM INTERCEPTION POINT BACK TO EXISTING SUBSTATION. CONNECT NEW CONDUIT TO EXISTING CONDUIT. CONNECT NEW CONDUCTORS FROM LOAD SIDE TERMINALS OF ATS AND EXTEND TO EXISTING MCC IN NEW CONDUIT FROM ATS TO INTERCEPTION POINT AND IN EXISTING CONDUIT FROM INTERCEPTION POINT TO EXISTING MCC.

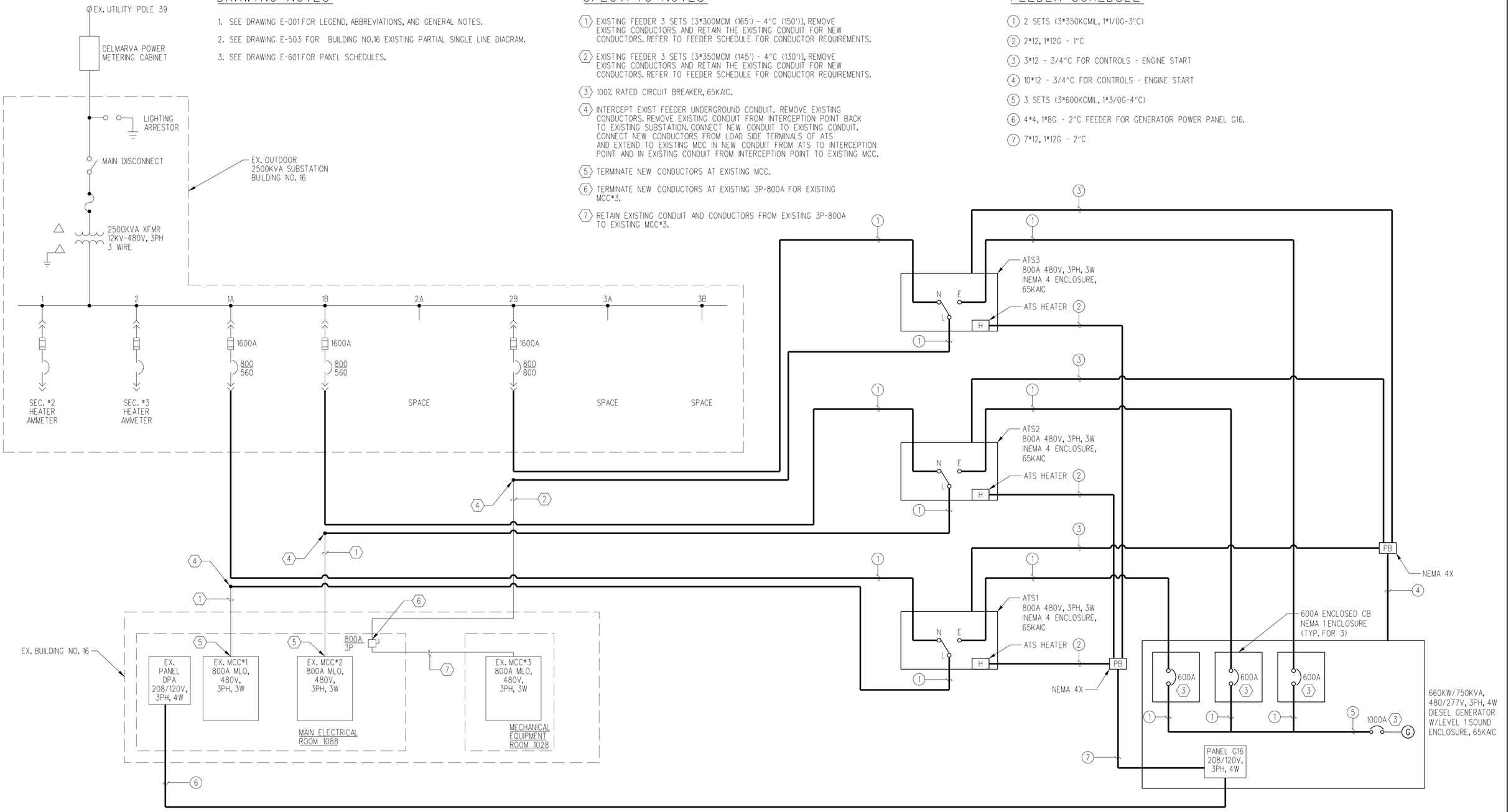
(5) TERMINATE NEW CONDUCTORS AT EXISTING MCC.

(6) TERMINATE NEW CONDUCTORS AT EXISTING 3P-800A FOR EXISTING MCC*3.

(7) RETAIN EXISTING CONDUIT AND CONDUCTORS FROM EXISTING 3P-800A TO EXISTING MCC*3.

FEEDER SCHEDULE:

(1) 2 SETS (3*350KCMIL, 1*1/0G-3"C)
(2) 2*12, 1*12G - 1"C
(3) 3*12 - 3/4"C FOR CONTROLS - ENGINE START
(4) 10*12 - 3/4"C FOR CONTROLS - ENGINE START
(5) 3 SETS (3*600KCMIL, 1*3/0G-4"C)
(6) 4*4, 1*8G - 2"C FEEDER FOR GENERATOR POWER PANEL G16.
(7) 7*12, 1*12G - 2"C



BUILDING NO. 16
PARTIAL SINGLE LINE DIAGRAM - REVISED FOR NEW GENERATOR

1 / E-504 SCALE: NTS

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

DELAWARE TRANSIT CORPORATION
BEECH STREET GENERATORS
BUILDINGS NO. 15 & 16

CONTRACT	BRIDGE NO.
T201453103	
COUNTY	DESIGNED BY: RJK
NEW CASTLE	CHECKED BY: AP

BUILDING NO. 16
SINGLE LINE DIAGRAM
REVISED FOR NEW GEN.

E-504

SHEET NO.	TOTAL SHTS.
9	11

BUILDING NO.15 EXISTING PANEL B SCHEDULE

VOLTAGE: 208/120 | BUS RATING: 100 | NEMA ENCLOSURE TYPE: 1
PHASES: 3-PH, 4-W + G | NEUTRAL BUS RATING: 100 | LOCATION: MECHANICAL ROOM
KAIC: - | MOUNTING: SURFACE | ACCESSORIES: -
MAINS: 100A | FED FROM: MCC, BLDG 15 | ACCESSORIES: -

KVA	BREAKER POLE	BREAKER TRIP	CODE	ROOM # - LOAD DESCRIPTION	POLE	POLE	ROOM # - LOAD DESCRIPTION	CODE	BREAKER POLE	BREAKER TRIP	KVA
	1	20		CHEMICAL FEED SYSTEM RECEPTACLE	1	2	UH-1 & UH-2		1	20	
	1	20		CHEMICAL FEED SYSTEM RECEPTACLE	3	4	CONDENSER WATER VALVE ACTUATORS		1	20	
	1	20		MOD 1 & MOD 2 (DAMPERS)	5	6	AIR CONDITION SYSTEM TRACER CONTROL PANEL		1	20	
	1	20		SUMP PUMP	7	8		H			**8.1**
	1	20		SPARE	9	10	**GENERATOR PANEL G15**	H	**3**	**75**	**4.4** ⟨1⟩
	1	20		SPARE	11	12		H			**3.7**
	2	20		ELECTRIC HOT WATER HEATER	13	14	SPARE		**2**	20	
					15	16					
	1	20		OUTSIDE SERVICE PIT & WELL OUTLET	17	18	PRESSURE VALVE CHILLER 3		1	20	
	1	20		HORN & STOP RELAYS TRANE	19	20	LIGHT OVER CHILLER 1		1	20	
	1	20		SCANNER & MONITOR TRANE	21	22	LIGHT OVER CHILLER 3 & PIT		1	20	
	1	20		SPARE	23	24	SPARE		1		
	1	20		SPARE	25	26	SPARE		1	20	
				SPACE	27	28	BARREL HEATER		1	20	
				SPACE	29	30	SPACE				

CODE DESCRIPTION:	CONNECTED LOAD KVA:	*DEMAND:	PHASE SUMMARY:	KVA	AMPS
L = LIGHTING	0.0	0.0	A-PHASE:	8.1	67.7
R = RECEPTS	0.0	0.0	B-PHASE:	4.4	36.8
M = MOTORS	0.0	0.0	C-PHASE:	3.7	30.9
H = HEATING	16.2	16.2	THREE-PHASE:	16.2	45.1
K = KITCHEN	0.0	0.0	25% FUTURE GROWTH:	4.1	11.3
	16.2	16.2	TOTAL CONNECTED LOAD:	20.3	56.4
* DEMAND VALUES ARE BASED ON THE LATEST NEC - ARTICLE 220			MAIN BUS SIZING @125% CONNECTED LOAD:	25.4	70.5
ENCLOSURE DIMENSIONS:			TOP FED / BOTTOM FED:	-	
			DOOR-IN-DOOR COVER:	-	

BUILDING NO.16 EXISTING PANEL DPA SCHEDULE

VOLTAGE: 208/120 | BUS RATING: 250 | NEMA ENCLOSURE TYPE: 1
PHASES: 3-PH, 4-W + G | NEUTRAL BUS RATING: 100 | LOCATION: ROOM 1088
KAIC: - | MOUNTING: SURFACE | ACCESSORIES: -
MAINS: 225A | FED FROM: PNL XXX | ACCESSORIES: -

KVA	BREAKER POLE	BREAKER TRIP	CODE	ROOM # - LOAD DESCRIPTION	POLE	POLE	ROOM # - LOAD DESCRIPTION	CODE	BREAKER POLE	BREAKER TRIP	KVA
					1	2					
	3	20		ACTIVE	3	4	ACTVIE		3	60	
					5	6					
					7	8					
	3	60		ACTIVE	9	10	ACTIVE		3	100	
					11	12					
					13	14					
	1	100		ACTIVE	15	16	PANEL G16 ⟨3⟩		3	70	17.0
					17	18					
					19	20					
					21	22					
					23	24					
					25	26					
					27	28					
					29	30					

CODE DESCRIPTION:	CONNECTED LOAD KVA:	*DEMAND:	PHASE SUMMARY:	KVA	AMPS
L = LIGHTING	0.0	0.0	A-PHASE:	0.0	0.0
R = RECEPTS	0.0	0.0	B-PHASE:	17.0	141.7
M = MOTORS	0.0	0.0	C-PHASE:	0.0	0.0
H = HEATING	0.0	0.0	THREE-PHASE:	17.0	47.2
K = KITCHEN	0.0	0.0	25% FUTURE GROWTH:	4.3	11.8
	0.0	0.0	TOTAL CONNECTED LOAD:	21.3	59.0
* DEMAND VALUES ARE BASED ON THE LATEST NEC - ARTICLE 220			MAIN BUS SIZING @125% CONNECTED LOAD:	26.6	73.8
ENCLOSURE DIMENSIONS:			TOP FED / BOTTOM FED:	-	
			DOOR-IN-DOOR COVER:	-	

DRAWING NOTES:

1. SEE DRAWING E-001 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. SEE DRAWING E-502 FOR BUILDING NO. 15 REVISED SINGLE LINE DIAGRAM.
3. SEE DRAWING E-504 FOR BUILDING NO. 16 REVISED SINGLE LINE DIAGRAM.
4. NEW LOADS ARE SHOWN IN BOLD TEXT FOR IN EXISTING PANEL SCHEDULES, ALL OTHER LOADS ARE EXISTING.

SPECIFIC NOTES:

⟨1⟩ REMOVE EXISTING (3)-20A 1-POLE BREAKERS AND REPLACE WITH NEW 75A 3-POLE BREAKER WITH AIC RATING TO MATCH EXISTING PANEL.

⟨2⟩ NEW PANEL, PROVIDE CIRCUITS AS INDICATED IN SCHEDULE.

⟨3⟩ PROVIDE A NEW 3P70A CIRCUIT BREAKER IN EXISTING SPACE. MATCH MANUFACTURER AND AIC RATING.

⟨2⟩

BUILDING NO.15 GENERATOR PANEL G15 SCHEDULE

VOLTAGE: 208/120 | BUS RATING: 100 | NEMA ENCLOSURE TYPE: 1
PHASES: 3-PH, 4-W + G | NEUTRAL BUS RATING: 100 | LOCATION: BLDG NO. 15 GEN. ENCL
KAIC: 10 | MOUNTING: SURFACE | ACCESSORIES: -
MAINS: 75A | FED FROM: EX. PNL B | ACCESSORIES: -

KVA	BREAKER POLE	BREAKER TRIP	CODE	ROOM # - LOAD DESCRIPTION	POLE	POLE	ROOM # - LOAD DESCRIPTION	CODE	BREAKER POLE	BREAKER TRIP	KVA
1.2	1	20	H	GENERATOR BATTERY CHARGER	1	2	GENERATOR JACKET WATER HEATER #1	H	2	40	3.2
1.2	1	20	H	GENERATOR BATTERY HEATER	3	4		H			3.2
0.5	1	20	H	GENERATOR CONTROL PANEL HEATER	5	6	GENERATOR JACKET WATER HEATER #2	H	2	40	3.2
0.5	1	20	H	ATS HEATER (MCC)	7	8		H			3.2
	1	20		SPARE	9	10	SPARE		1	20	
				SPACE	11	12	SPACE				

CODE DESCRIPTION:	CONNECTED LOAD KVA:	*DEMAND:	PHASE SUMMARY:	KVA	AMPS
L = LIGHTING	0.0	0.0	A-PHASE:	8.1	67.7
R = RECEPTS	0.0	0.0	B-PHASE:	4.4	36.8
M = MOTORS	0.0	0.0	C-PHASE:	3.7	30.9
H = HEATING	16.2	16.2	THREE-PHASE:	16.2	45.1
K = KITCHEN	0.0	0.0	25% FUTURE GROWTH:	4.1	11.3
	16.2	16.2	TOTAL CONNECTED LOAD:	20.3	56.4
* DEMAND VALUES ARE BASED ON THE LATEST NEC - ARTICLE 220			MAIN BUS SIZING @125% CONNECTED LOAD:	25.4	70.5
ENCLOSURE DIMENSIONS:			TOP FED / BOTTOM FED:	-	
			DOOR-IN-DOOR COVER:	-	

⟨2⟩

BUILDING NO.16 GENERATOR PANEL G16 SCHEDULE

VOLTAGE: 208/120 | BUS RATING: 100 | NEMA ENCLOSURE TYPE: 1
PHASES: 3-PH, 4-W + G | NEUTRAL BUS RATING: 100 | LOCATION: BLDG NO. 16 GEN. ENCL
KAIC: 10 | MOUNTING: SURFACE | ACCESSORIES: -
MAINS: 75A | FED FROM: EX. PANEL DP, | ACCESSORIES: -

KVA	BREAKER POLE	BREAKER TRIP	CODE	ROOM # - LOAD DESCRIPTION	POLE	POLE	ROOM # - LOAD DESCRIPTION	CODE	BREAKER POLE	BREAKER TRIP	KVA
1.2	1	20	H	GENERATOR BATTERY CHARGER	1	2	GENERATOR JACKET WATER HEATER #1	H	2	40	3.2
1.2	1	20	H	GENERATOR BATTERY HEATER	3	4		H			3.2
0.5	1	20	H	GENERATOR CONTROL PANEL HEATER	5	6	GENERATOR JACKET WATER HEATER #2	H	2	40	3.2
0.5	1	20	H	ATS HEATER (MCC#1)	7	8		H			3.2
0.5	1	20	H	ATS HEATER (MCC#2)	9	10	SPARE		1	20	
0.5	1	20	H	ATS HEATER (MCC#3)	11	12	SPACE				

CODE DESCRIPTION:	CONNECTED LOAD KVA:	*DEMAND:	PHASE SUMMARY:	KVA	AMPS
L = LIGHTING	0.0	0.0	A-PHASE:	8.1	67.7
R = RECEPTS	0.0	0.0	B-PHASE:	4.9	40.9
M = MOTORS	0.0	0.0	C-PHASE:	4.2	35.1
H = HEATING	17.2	17.2	THREE-PHASE:	17.2	47.9
K = KITCHEN	0.0	0.0	25% FUTURE GROWTH:	4.3	12.0
	17.2	17.2	TOTAL CONNECTED LOAD:	21.6	59.9
* DEMAND VALUES ARE BASED ON THE LATEST NEC - ARTICLE 220			MAIN BUS SIZING @125% CONNECTED LOAD:	26.9	74.8
ENCLOSURE DIMENSIONS:			TOP FED / BOTTOM FED:	-	
			DOOR-IN-DOOR COVER:	-	

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DELAWARE DEPARTMENT OF TRANSPORTATION

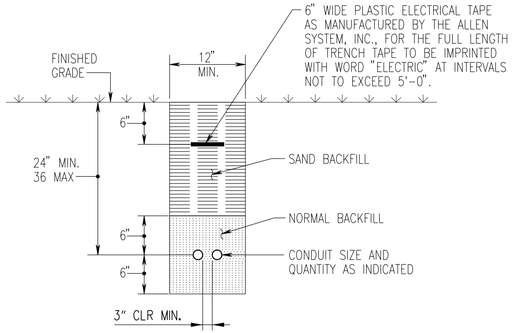
ADDENDUMS / REVISIONS

DELAWARE TRANSIT CORPORATION
BEECH STREET GENERATORS
BUILDINGS NO. 15 & 16

CONTRACT T201453103 | BRIDGE NO.
COUNTY NEW CASTLE | DESIGNED BY: RJK | CHECKED BY: AP

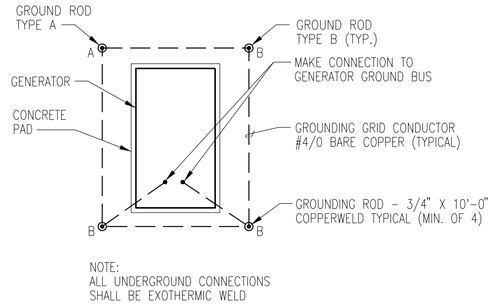
ELECTRICAL PANEL SCHEDULES

E-601
SHEET NO. 10
TOTAL SHTS. 11



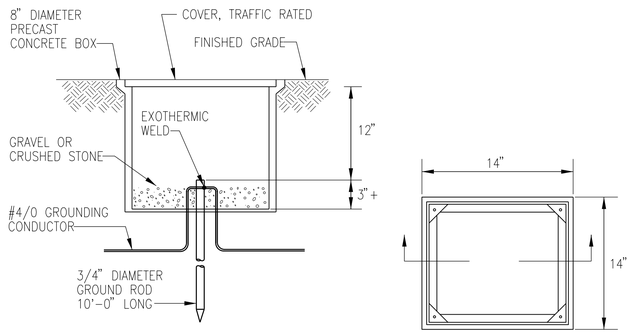
UNDERGROUND CONDUIT INSTALLATION DETAIL

1 / E-602 SCALE: NTS



EMERGENCY GENERATOR GROUNDING GRID DETAIL

2 / E-602 SCALE: NTS

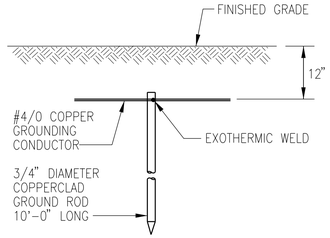


GROUND ROD TYPE "B" DETAIL

3 / E-602 SCALE: NTS

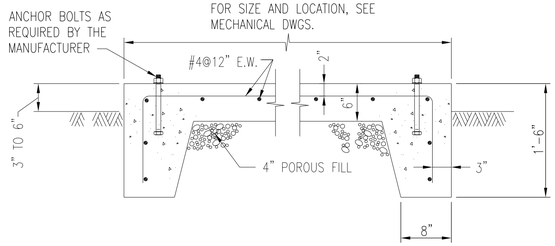
DRAWING NOTES:

1. SEE DRAWING E-001 FOR LEGEND, ABBREVIATIONS, AND GENERAL NOTES.
2. PROVIDE EXISTING PAVEMENT REPAIR AS REQUIRED PER DETAIL 7/E-602 THIS DRAWING.



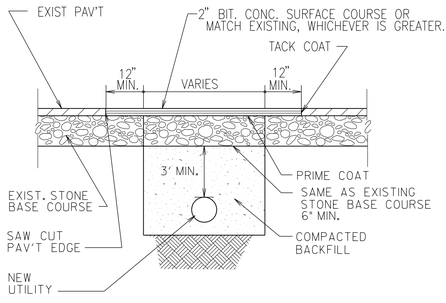
GROUND ROD TYPE "B" DETAIL

4 / E-602 SCALE: NTS



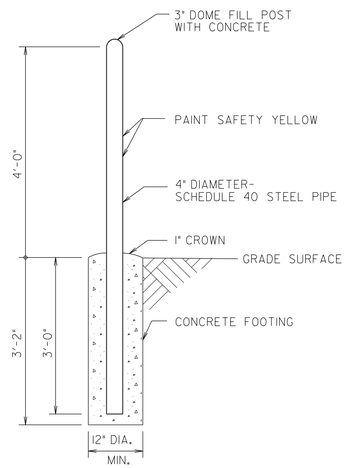
TYPICAL EXTERIOR EQUIPMENT PAD DETAIL

5 / E-602 SCALE: NTS



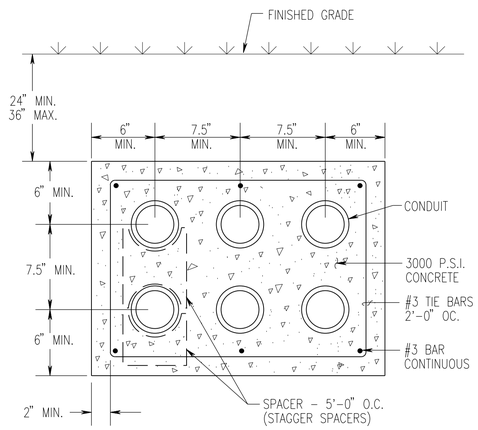
BITUMINOUS PAVEMENT PATCHING DETAIL

6 / E-602 SCALE: NTS



BOLLARD DETAIL

7 / E-602 SCALE: NTS



6-WAY CONCRETE ENCASED UNDERGROUND DUCTBANK

8 / E-602 SCALE: NTS

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DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

DELAWARE TRANSIT CORPORATION
BEECH STREET GENERATORS
BUILDINGS NO. 15 & 16

CONTRACT	BRIDGE NO.
T201453103	
COUNTY	DESIGNED BY: RJK
NEW CASTLE	CHECKED BY: AP

ELECTRICAL DETAILS

	E-602
SHEET NO.	11
TOTAL SHTS.	11