Cheatham and Associates, P.A.
Consulting Engineers

GENERATOR PROJECT AGRICULTURE BUILDING, HEALTH DEPARTMENT, AND FUEL DEPOT
PENDER COUNTY GOVERNMENT

Addendum #1 Items:

A. Specification 262200-2.3.C.2.: Eliminate “painted stainless steel”.
B. Add Section 262416 Panelboards.
C. Specification 263600: Add 2.2.J.3. “Health Department Building: NEMA 250, Type 3R.”
D. Specification 263600: Add 2.3.A.3. “Health Department Building: Closed transition type.”
E. Drawing revisions:
   E-001 Revision 1
   E-011 Revision 1
   E-103 Revision 1
   E-104 Revision 1
   E-502 Revision 1

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SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Distribution panelboards.
   2. Lighting and appliance branch-circuit panelboards.

1.3 DEFINITIONS

A. GFCI: Ground-fault circuit interrupter.

B. RMS: Root mean square.

1.4 SUBMITTALS

A. Product Data: For each type of panelboard, overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.
   1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings. Include the following:
      a. Enclosure types and details for types other than NEMA 250, Type 1.
      b. Trim types and details.
      c. Bus configuration, current, and voltage ratings.
      d. Short-circuit current rating of panelboards and overcurrent protective devices.
      e. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

C. Panelboard Schedules: For installation in panelboards.

D. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories through one source from a single manufacturer.

B. Product Options: Drawings indicate size, profiles, and dimensional requirements of panelboards and are typically based on Square D products. Products of other manufacturers are acceptable if they can be installed in the space indicated.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with NEMA PB 1.

E. Comply with NFPA 70.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:
   1. Notify Architect/Engineer/Owner no fewer than two weeks in advance of proposed interruption of electrical service.
   2. Do not proceed with interruption of electrical service without Owner's written permission.

1.7 COORDINATION

A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, and encumbrances to workspace clearance requirements.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Keys: Six spares for each type of panelboard cabinet lock.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Panelboards, Overcurrent Protective Devices, and Accessories:
      a. Eaton Corporation; Cutler-Hammer Products.
      b. General Electric Co.; Electrical Distribution & Protection Div.
      c. Siemens Energy & Automation, Inc.
      d. Square D.

2.2 MANUFACTURED UNITS

A. Enclosures: Flush- and surface-mounted cabinets, as scheduled in the drawings. NEMA PB 1, Type 1.
   1. Rated for environmental conditions at installed location.
      a. Outdoor Locations: NEMA 250, Type 3R
      b. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
   2. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.
   3. Directory Card: With transparent protective cover, mounted in metal frame, inside panelboard door.

B. Phase Buses:
   1. Material: Hard-drawn copper, 98 percent conductivity.

C. Ground and Neutral Bars:
   1. Material: Copper.
   2. Equipment Ground Bar: Adequate for feeder and branch-circuit equipment ground conductors; bonded to box.
   3. Neutral Bar: Adequate for feeder and branch-circuit neutral conductors.

D. Conductor Connectors: Suitable for use with conductor material.
   1. Main and Neutral Lugs: Mechanical type.
   2. Ground Lugs and Bus Configured Terminators: Mechanical or compression type.
   3. .

E. Service Equipment Label: UL labeled for use as service equipment for panelboards with main service disconnect switches.

F. Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices. These locations will be indicated as SPACE on the panel schedules in the drawings.

2.3 PANELBOARD SHORT-CIRCUIT RATING

A. Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.4 DISTRIBUTION PANELBOARDS

A. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

B. Main Overcurrent Protective Devices: Circuit breaker.

C. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

2.5 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

B. Main Overcurrent Protective Devices: Circuit breaker, where scheduled.

C. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

2.6 OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker: UL 489, with interrupting capacity to meet available fault currents.
   1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits.
   2. GFCI Circuit Breakers: Single- and two-pole configurations
      a. 5-mA trip sensitivity for personnel protection.
      b. 30-mA trip sensitivity for equipment protection.

B. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.
   1. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
   2. Multipole units enclosed in a single housing or factory-assembled to operate as a single unit.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install panelboards and accessories according to NEMA PB 1.1.

B. Mount top of trim 74 inches above finished floor, unless otherwise indicated.

C. Mount plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish.

D. Install overcurrent protective devices and controllers. Set field-adjustable circuit-breaker trip ranges.

E. Panel breaker configurations shall be installed as indicated on the panel schedules or as noted. Breaker position revisions will not be accepted unless approved in writing by the Engineer.

F. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

G. Install filler plates in unused spaces.

H. Install overcurrent protective devices and instrumentation.

3.2 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Section "Electrical Identification".

B. Create a directory to indicate installed circuit loads. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

C. Panelboard Nameplates: Label each panelboard with laminated-plastic nameplate mounted as specified in Section "Electrical Identification".

3.3 CONNECTIONS

A. Ground equipment according to Section "Grounding and Bonding."

B. Connect wiring according to Section "Conductors and Cables."

3.4 FIELD QUALITY CONTROL

A. Prepare for acceptance tests as follows:
   1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
   2. Test continuity of each circuit. .
   3. Neutral–ground bond testing: After all fixtures, devices and equipment are installed and all connections completed to each panel, the CONTRACTOR shall disconnect the neutral feeder conductor from the neutral bar and take a megger reading between the neutral bar and grounded enclosure. If this reading is less than 25 mega-ohms, the CONTRACTOR shall disconnect the branch circuit neutral wires from the neutral bar. The CONTRACTOR shall then test each one separately to the panel until the low reading ones are found. The CONTRACTOR shall correct troubles, re-connect, and re-test until at least 25 mega-ohms from the neutral bar to the grounded panel can be achieved with only the neutral feeder disconnected.

B. Perform the following field tests and inspections and prepare test reports:
   1. Perform each electrical test and visual and mechanical inspection stated in manufacturer's installation instructions for molded-case circuit breakers. Certify compliance with test parameters.
   2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3.5 CLEANING

A. On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

END OF SECTION 26 24 16

ELECTRICAL NOTES

1. ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
2. PERMITS FOR ELECTRICAL WORK SHALL BE OBTAINED BY AND PAID BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL PAY FOR ANY ADDITIONAL FEES FOR INSPECTIONS, TESTS, AND OTHER SERVICES AS REQUIRED FOR THE COMPLETION OF THE WORK.
3. THE ELECTRICAL CONTRACTOR AND ANY OF HIS SUBCONTRACTORS SHALL VISIT THE PROJECT SITE TO WITNESS EXISTING CONDITIONS AND BECOME FAMILIAR WITH THE SCOPE OF THE WORK REQUIRED PRIOR TO SUBMITTING PROPOSALS. WORK REQUIRED BY EXISTING JOB CONDITIONS NOT INDICATED ON DRAWINGS SHALL BE INCLUDED IN THE BID.
4. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO RESULT IN THE PRODUCTION OF A COMPLETE AND FUNCTIONAL ELECTRICAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR, EQUIPMENT, AND OTHER SERVICES AS NECESSARY TO COMPLETE THE WORK.
5. DISCREPANCIES IN THE DRAWINGS AND SPECIFICATIONS THAT WILL AFFECT THE WORK SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER, AND/OR OWNER PRIOR TO SUBMITTING PROPOSALS.
6. UNLESS NOTED OTHERWISE, ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND INCLUDE A 3RD PARTY LABEL (I.E.: UL, CSA, ETL, ETC.) LISTING APPROVAL FOR ITS INSTALLED APPLICATION.
7. PENETRATIONS OF FIRE-RATED WALLS, FLOORS, CEILINGS, AND PARTITIONS SHALL BE FIRE STOPPED IN ACCORDANCE WITH REQUIREMENTS OF THE STATE BUILDING CODE. COORDINATE WORK TO INSURE THAT FIRE STOPPING IS COMPLETED.
8. PENETRATIONS OF SMOKE PARTITIONS SHALL BE SEALED IN ACCORDANCE WITH REQUIREMENTS OF THE STATE BUILDING CODE. COORDINATE WORK TO INSURE THAT SMOKE PARTITION SEALING IS COMPLETED.
9. PENETRATIONS OF EXTERIOR BUILDING WALLS, FLOORS, OR ROOFS SHALL BE SEALED WATERTIGHT. INTERIORS OF RACEWAY PENETRATIONS THROUGH EXTERIOR WALLS SHALL BE SEALED WITH NON-HARDENING ELECTRICAL PUTTY.
10. CUTTING AND PATCHING TO INSTALL DEVICES AND EQUIPMENT SHALL BE PERFORMED WITH FINISHES RESTORED TO THEIR ORIGINAL CONDITION. SUCH WORK SHALL BE COMPLETED TO A DEGREE THAT IS ACCEPTABLE TO THE ENGINEER, AND/OR OWNER..
11. VERIFY PROPER SIZING OF OVERLOAD DEVICES IN STARTERS BASED ON EQUIPMENT NAMEPLATE DATA.
12. WHERE WORKING IN EXISTING BUILDINGS, FACILITIES, OR STRUCTURES; PROTECT AND MAINTAIN IN OPERATION EXISTING LIFE SAFETY SYSTEMS, PUBLIC ADDRESS SYSTEMS, ELECTRICAL SYSTEMS, ETC. IF SHUTDOWNS ARE REQUIRED, NOTIFY THE ENGINEER, AND OWNER FOR COORDINATION WELL IN ADVANCE OF ANY SYSTEM SHUTDOWN. WHERE AN OUTAGE OF EXTENDED DURATION IS NOT ACCEPTABLE TO THE OWNER, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED TO MAINTAIN SERVICE.
13. WHERE WORKING IN EXISTING BUILDINGS, FACILITIES, OR STRUCTURES; WORK MAY BE REQUIRED TO BE PERFORMED WHILE REMAINING OCCUPIED BY OWNER STAFF. WORK SHALL BE COORDINATED WITH THE OWNER TO MINIMIZE DISRUPTION TO THE OWNER.
14. WHERE WORKING IN EXISTING BUILDINGS, FACILITIES, OR STRUCTURES; EXISTING ABANDONED CIRCUITS USED TO CONNECT NEW LOADS IN THE SAME AREA SHALL BE CLEARLY IDENTIFIED ON AS-BUILT MARK-UP DRAWINGS WITH REGARD TO PANEL-CIRCUIT AND CIRCUITRY ROUTING CONFIGURATION.
15. ABANDONED CIRCUITRY (RACEWAY & CONDUCTORS) SHALL BE REMOVED IN ITS ENTIRETY FROM ITS SOURCE. ABANDONED LOW VOLTAGE CABLING SHALL BE REMOVED IN ITS ENTIRETY UNLESS OTHERWISE NOTED.
16. LOAD CIRCUITS SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS. CIRCUITRY REVISIONS WILL NOT BE ACCEPTED UNLESS APPROVED IN WRITING BY THE ENGINEER.

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPS INTERRUPTING CAPABILITY
ATS	AUTOMATIC TRANSFER SWITCH
BKR	BREAKER
C	CONDUIT
C/B	CIRCUIT BREAKER
CKT	CIRCUIT
CMU	CONCRETE MASONARY UNIT
CU	COPPER
DAHU	DUCTLESS AIR HANDLER UNIT
DHP	DUCTLESS HEAT PUMP
DTSS	DOUBLE THROW SAFETY SWITCH
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EXIST.	EXISTING
G	EQUIPMENT GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTERT
HP	HEAT PUMP
HTR	HEATER
K	KILO (THOUSAND)
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MLO	MAIN LUG ONLY
MTS	MANUAL TRANSFER SWITCH
N	NEUTRAL
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
NTS	NOT TO SCALE
ODU	OUTDOOR UNIT
P	PHASE OR POLE
PH	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
REC	RECEPTACLE
RECPT	RECEPTACLE
REQ.	REQUIRED
SYS	SYSTEM
S/N	SOLID NEUTRAL
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT-AMPS
W	WATTS
W	WIRE
W/	WITH
WP	WEATHERPROOF
XFMR	TRANSFORMER

LOAD SUMMARY AG BUILDING	EXISTING DMDP SERVICE		EXISTING MDP SERVICE		COMBINED SERVICE	
12 Month Recorded Peak Demand (kW)	76.0	kW	23.0	kW	99.0	kW
25% Additional Load (NEC 220.87)	19.0		5.8		24.8	
Total (kW)	95.0	kW	28.8	kW	123.8	kW
Estimated Power Factor	85%		85%		85%	
kVA	111.8	kVA	33.8	kVA	145.6	kVA
Additional Connected Load (kVA)	0.0	kVA	0.0	kVA	0.0	kVA
Total Load (kVA)	111.8	kVA	33.8	kVA	145.6	kVA
Service Voltage					480	Volts
Amps @ Service Voltage					175.1	Amps

1

2HD

ROOM: EQUIPMENT RACK-HEALTH DEPT. VOLTS: 208Y/120V 3P 4W AIC: 10,000
MOUNTING: SURFACE BUS AMPS: 100 MAIN BKR: 100
FED FROM: T2HD NEUTRAL: 100% LUGS: STANDARD
NOTE: NEMA-3R

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C
1	20/1	REC, REC-TV	0.94			2	20/1	EXH FAN, REC	0.66		
3	20/1	(*) REC-VENDING		1		4	20/1	REC		0.54	
5	20/1	(*) REC-VENDING			1	6	20/1	(*) REC-REFRIGERATOR			1
7	20/1	(*) REC-VENDING	1			8	20/1	EXH FAN, REC	0.84		
9	20/1	REC		0.54		10	20/1	(*) REC-REFRIGERATOR		1	
11	20/1	(*) REC-REFRIGERATOR			1	12	20/1	(*) REC-REFRIGERATOR			1
13	20/1	REC	0.54			14	20/1	REC	0.54		
15	20/1	REC, WIREMOLD		0.54		16	20/1	REC		0.72	
17	20/1	REC			0.9	18	20/1	REC			0.9
19	20/1	REC	0.54			20	20/1	REC, REC-TV	0.94		
21	20/1	REC		0.54		22	20/1	SPARE		0	
23	20/1	EXH FAN, REC			0.51	24	20/1	SPARE			0
25	20/1	SPARE	0			26	20/1	SPARE	0		
27	20/1	(*) REC-REFRIGERATOR, REC		1.18		28	20/2	EXISTING DHP		1.43	
29	20/1	SPARE			0	30	|				1.43
31	20/1	SPARE	0			32	25/2	EXISTING IT DHP	2.05		
33	20/1	SPARE		0		34	|			2.05	
35	20/1	SPARE			0	36	20/1	REC			0.36
37	20/1	SPARE	0			38	20/1	REC	0.18		
39	20/1	SPARE		0		40	20/1	SPARE		0	
41	20/1	SPARE			0	42	20/1	SPARE			0
								TOTAL CONNECTED KVA BY PHASE	8.23	9.54	8.1
								TOTAL CONNECTED AMPS BY PHASE	69.3	79.6	67.9

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LARGEST MOTOR	4	1	(25%)	NONCONTINUOUS	8	8	(100%)
MOTORS	1.71	1.71	(100%)	HEATING	6	6	(100%)
RECEPTACLES	10.2	10.1	(50%>10)	COOLING	6	0	(0%)
				TOTAL LOAD		26.8	
				BALANCED 3-PHASE AMPS		74.4	

(*) PROVIDE GFCI C/B.

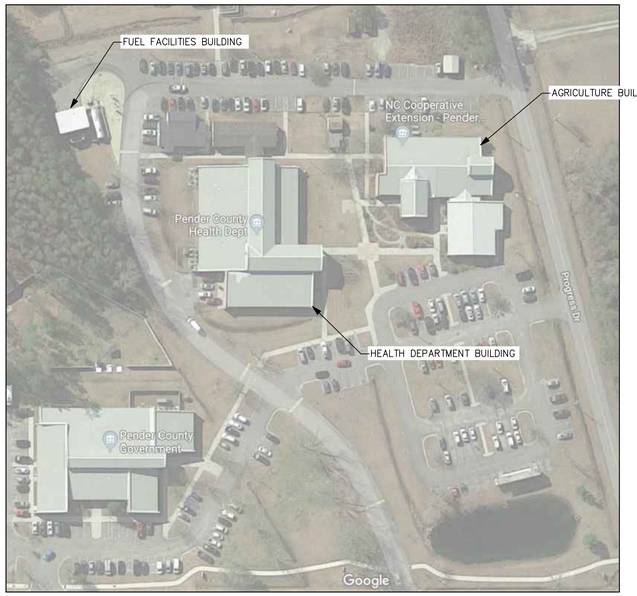
4HD

ROOM: EQUIPMENT RACK-HEALTH DEPT. VOLTS: 480Y/277V 3P 4W AIC: 10,000
MOUNTING: SURFACE BUS AMPS: 150 MAIN BKR: 150
FED FROM: UTILITY NEUTRAL: 100% LUGS: STANDARD
NOTE: NEMA-3R

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C
1	20/3	AHU #11	5.1			2	50/3	XFMR T2HD	8.17		
3	|			5.1		4	|			8.89	
5	|				5.1	6	|				8.82
7	35/3	AHU #15	5.38			8	15/3	ODU #11	2.23		
9	|			5.38		10	|			2.23	
11	|				5.38	12	|				2.23
13	25/3	AHU #17	5.1			14	15/3	ODU #15	2.77		
15	|			5.1		16	|			2.77	
17	|				5.1	18	|				2.77
19	20/1	LTS. LAB 148,168,171,173,174	0.7			20	15/3	ODU #17	2.23		
21	20/1	LTS. 101 & 134		0.5		22	|			2.23	
23	20/1	SPACE			0	24	|				2.23
25	20/1	SPACE	0			26	20/1	SPACE	0		
27	20/1	SPACE		0		28	20/1	SPACE		0	
29	20/1	SPACE			0	30	20/1	SPACE			0
31	20/1	SPACE	0			32	20/1	SPACE	0		
33	20/1	SPACE		0		34	20/1	SPACE		0	
35	20/1	SPACE			0	36	20/1	SPACE			0
37	20/1	SPACE	0			38	20/1	SPARE	0		
39	20/1	SPACE		0		40	20/1	SPARE		0	
41	20/1	SPACE			0	42	20/1	SPARE			0
								TOTAL CONNECTED KVA BY PHASE	31.7	32.2	31.6
								TOTAL CONNECTED AMPS BY PHASE	114	116	114

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	1.2	1.5	(125%)	NONCONTINUOUS	8	8	(100%)
LARGEST MOTOR	4	1	(25%)	HEATING	49.2	49.2	(100%)
MOTORS	10.1	10.1	(100%)	COOLING	6	0	(0%)
RECEPTACLES	10.2	10.1	(50%>10)	DIVERSE	16.9	11.8	(70%)
				TOTAL LOAD		91.7	
				BALANCED 3-PHASE AMPS		110	

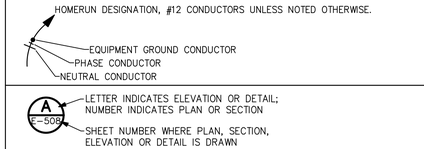
ELECTRICAL DRAWING LIST



A E-001 LOCATION MAP
SCALE: N/A

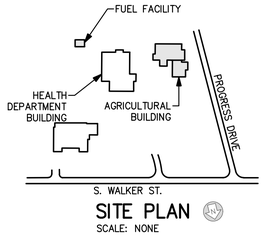
MISC. ELECTRICAL SYMBOL LEGEND

- ENCLOSED CIRCUIT BREAKER, NEMA 1 (UNO), AMPERAGE AS INDICATED OR BASED ON SUPPLY CIRCUIT RATING.
- DOUBLE THROW SAFETY SWITCH , HEAVY-DUTY, FUSED. NEMA 1 INSIDE, NEMA 3R OUTSIDE (UNO), AMPERAGE AS INDICATED OR BASED ON SUPPLY CIRCUIT BREAKER RATING.
- PANELBOARD
- T TRANSFORMER, DRY TYPE, RATINGS INDICATED, NEMA 3R (PAINTED STAINLESS STEEL) ENCLOSURE (UNO). PROVIDE 18" HIGH CONCRETE HOUSE KEEPING PAD.
- GROUND ROD, 3/4" X 10' COPPER CLAD. WHERE TWO RODS ARE INDICATED, SPACE A MINIMUM OF 20' APART.



RECEPTACLE LEGEND

SYMBOL	NEMA	VOLTS	DESCRIPTION
BLK HTR	5-20R	120V 1P 2W	POWER FOR GENERATOR BLOCK HEATER
W/G	5-20R	120V 1P 2W	DUPLEX GFCI, MTD 18" AFG UNO; LISTED WEATHER-RESISTANT TYPE; PROVIDE CAST ALUMINUM WEATHERPROOF IN-USE COVER WITH CAST ALUMINUM FD WEATHERPROOF BOX
BATT CHG	5-20R	120V 1P 2W	POWER FOR GENERATOR BATTERY CHARGER, BATTERY HEATER, & WINDING HEATER



SITE PLAN
SCALE: NONE

REVISION		
	DATE	DESCRIPTION
1	01/07/20	ADDENDUM #1

PENDER COUNTY GOVERNMENT GENERATORS

ELECTRICAL RENOVATIONS

NOTES, LEGENDS, LOADS, SCHEDULES & LOCATION MAP

BURGAW, NORTH CAROLINA

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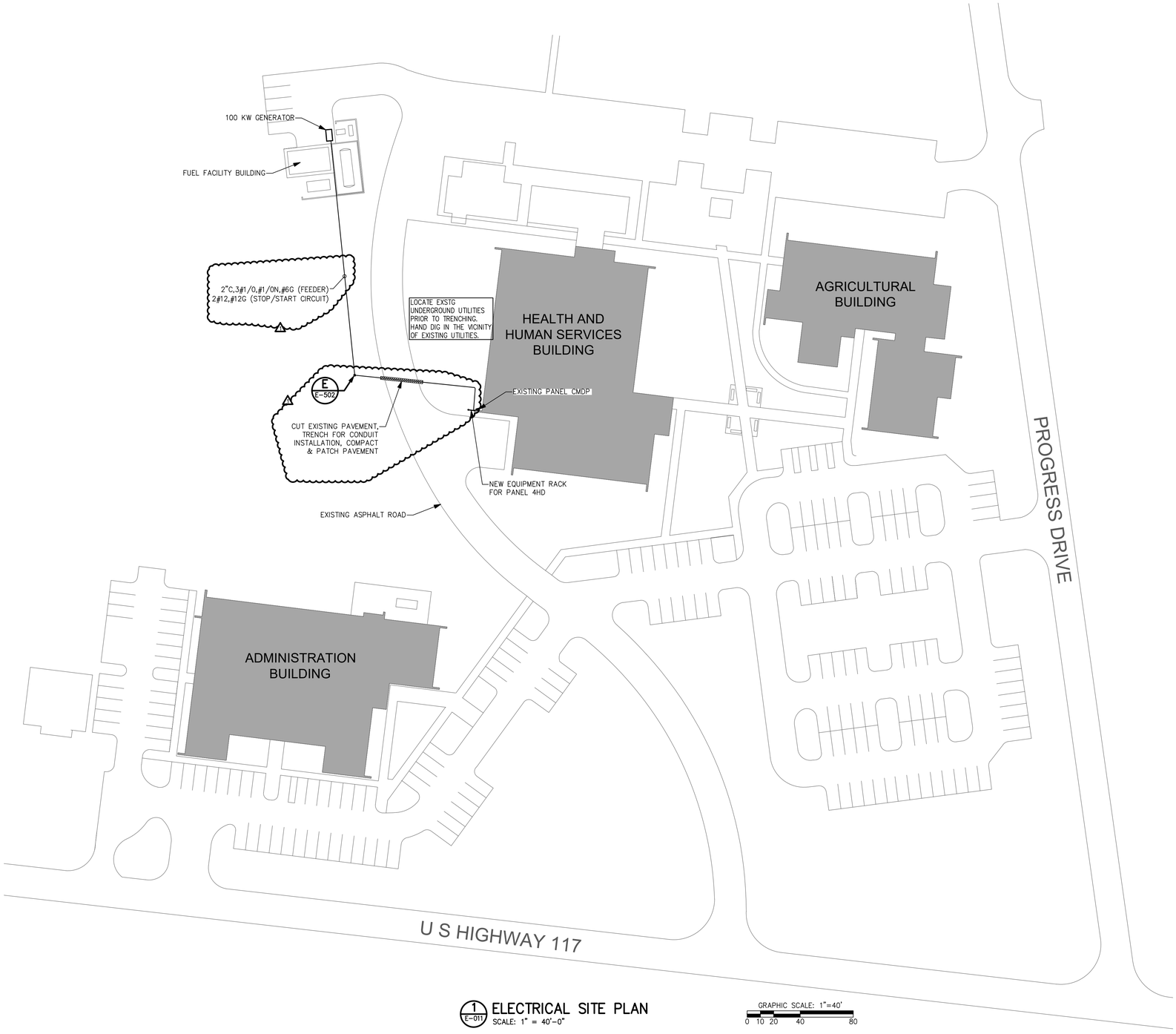
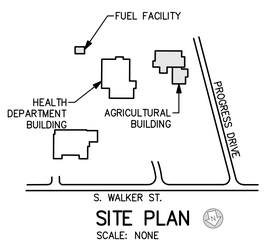
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17593 ENGINEER MARK A. CIARROCCA
07 Jul 2020

DESIGNED BY	K. FORTIER
DRAWN BY	K. FORTIER
CHECKED BY	M. CIARROCCA
JOB NUMBER	19064
SHEET	E-001
DATE	NOVEMBER 18, 2019



1 E-011 ELECTRICAL SITE PLAN
SCALE: 1" = 40'-0"

GRAPHIC SCALE: 1"=40'
0 10 20 40 80



SITE PLAN
SCALE: NONE

REVISION	
DATE	DESCRIPTION
01/07/20	ADDENDUM #1

PENDER COUNTY GOVERNMENT GENERATORS

ELECTRICAL RENOVATIONS

SITE PLAN

BURGAW, NORTH CAROLINA

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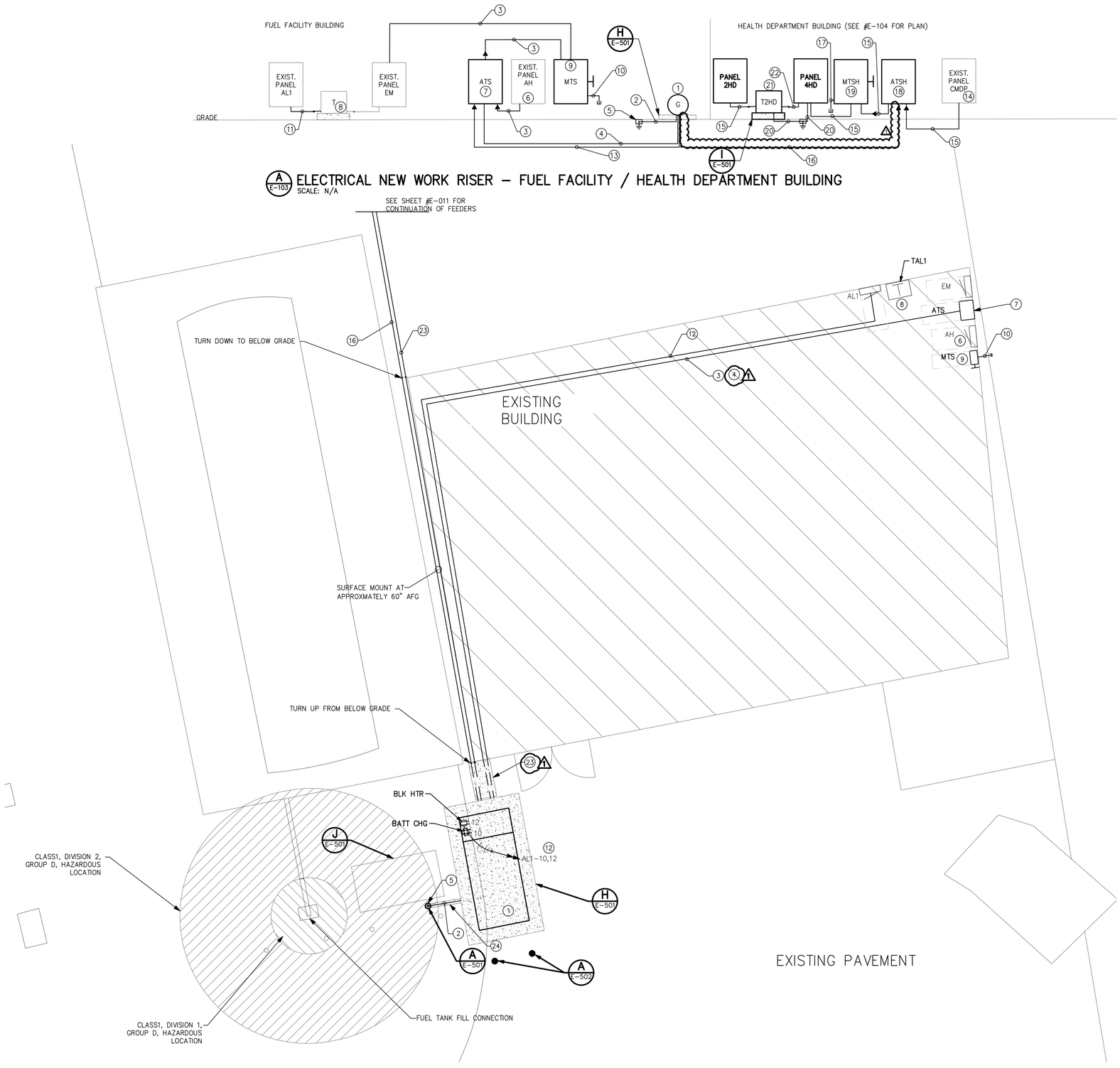
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17593 MARK A. CIARROCCA
01 JAN 2020

DESIGNED BY	K. FORTIER
DRAWN BY	K. FORTIER
CHECKED BY	M. CIARROCCA
JOB NUMBER	19064
SHEET	E-011
DATE	NOVEMBER 18, 2019



A E-103 ELECTRICAL NEW WORK RISER – FUEL FACILITY / HEALTH DEPARTMENT BUILDING
SCALE: N/A

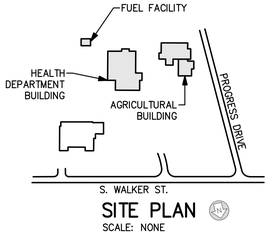
1 E-103 ELECTRICAL NEW WORK PLAN – FUELING FACILITY
SCALE: 1/4" = 1'-0"

PLAN NORTH / TRUE NORTH

GRAPHIC SCALE: 1"=1'-0"
0 1 2 4 8

KEYED NOTES (NEW WORK):

1. NEW GENERATOR 100KW, 480/277V,3PH,4W, PROVIDE (1) 60/3P & (1) 150A/3P CIRCUIT BREAKER. 1
2. 3/4"C,#4GEC. EXOTHERMIC WELD TO THE EXISTING GROUND ROD.
3. 1"C,3#6,#6N,#10G.
4. 3/4"C,2#14,#14G (STOP/START CIRCUIT).
5. PROVIDE GEC INSPECTION WELL FOR THE EXISTING GROUND ROD.
6. EXISTING PANEL AH. CONNECT ATS NORMAL FEEDER TO EXISTING 3P/50A CIRCUIT BREAKER IN SPACES #18,20,22.
7. ATS 480/277V, 4P, 4W, 70A.
8. EXISTING 30 KVA TRANSFORMER 480V, 3PH TO 208/120V, 3PH, 4W.
9. MANUAL TRANSFER SWITCH. 600V, 4P, FUSED AT 60A.
10. 2"C CONDUIT THROUGH THE EXISTING WALL (BRICK/CMU) FOR PORTABLE GENERATOR CONNECTION. INSTALL THREADED CAP ON CONDUIT END.
11. 1 1/2"C,3#3,#3N,#8G.
12. 3/4"C,2#12,2#12N,#12G BATTERY CHARGER & BLOCK HEATER CIRCUITS CONNECT TO EXISTING CIRCUIT BREAKERS (#10 & #12) IN PANEL AL1.
13. 1"C,3#6,#6N,#10G.
14. EXISTING PANEL CMDP MANUFACTURED BY CUTLER HAMMER (TYPE PA) 480/277V,3PH,4W,600A,25KAIC. PROVIDE (1) 150A/3P CIRCUIT BREAKER IN AVAILABLE SPACES #37,39,41. 1
15. 1 1/2"C,3#2,#2N,#8G.
16. 2"C,3#1/0,#1/0N,2#12 (STOP/START CIRCUIT),#6G. 1
17. 2"C CONDUIT FOR PORTABLE GENERATOR CONNECTION. INSTALL THREADED CAP ON CONDUIT END.
18. ATSH 480/277V, 4P, 4W, 200A. 1
19. MANUAL TRANSFER SWITCH. 600V, 4P, FUSED AT 200A. 1
20. 3/4"C,#6GEC FROM THE EXISTING INSPECTION WELL.
21. 30 KVA TRANSFORMER 480V, 3PH TO 208/120V, 3PH, 4W. NEMA-3R.
22. 3/4"C,3#6,#10G
23. CUT & PATCH EXISTING CONCRETE TO MATCH EXISTING AFTER INSTALLING NEW RACEWAYS AS INDICATED FOR NEW GENERATOR.



SITE PLAN
SCALE: NONE

REVISION

DATE	DESCRIPTION
1 01/07/20	ADDENDUM #1

PENDER COUNTY GOVERNMENT GENERATORS
ELECTRICAL RENOVATIONS
FUELING FACILITY NEW WORK
BURGAW, NORTH CAROLINA

CHEATHAM AND ASSOCIATES, P.A.
CONSULTING ENGINEERS
3412 ENTERPRISE DRIVE
WILMINGTON, NORTH CAROLINA 28405
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NC LICENSE #C-1073
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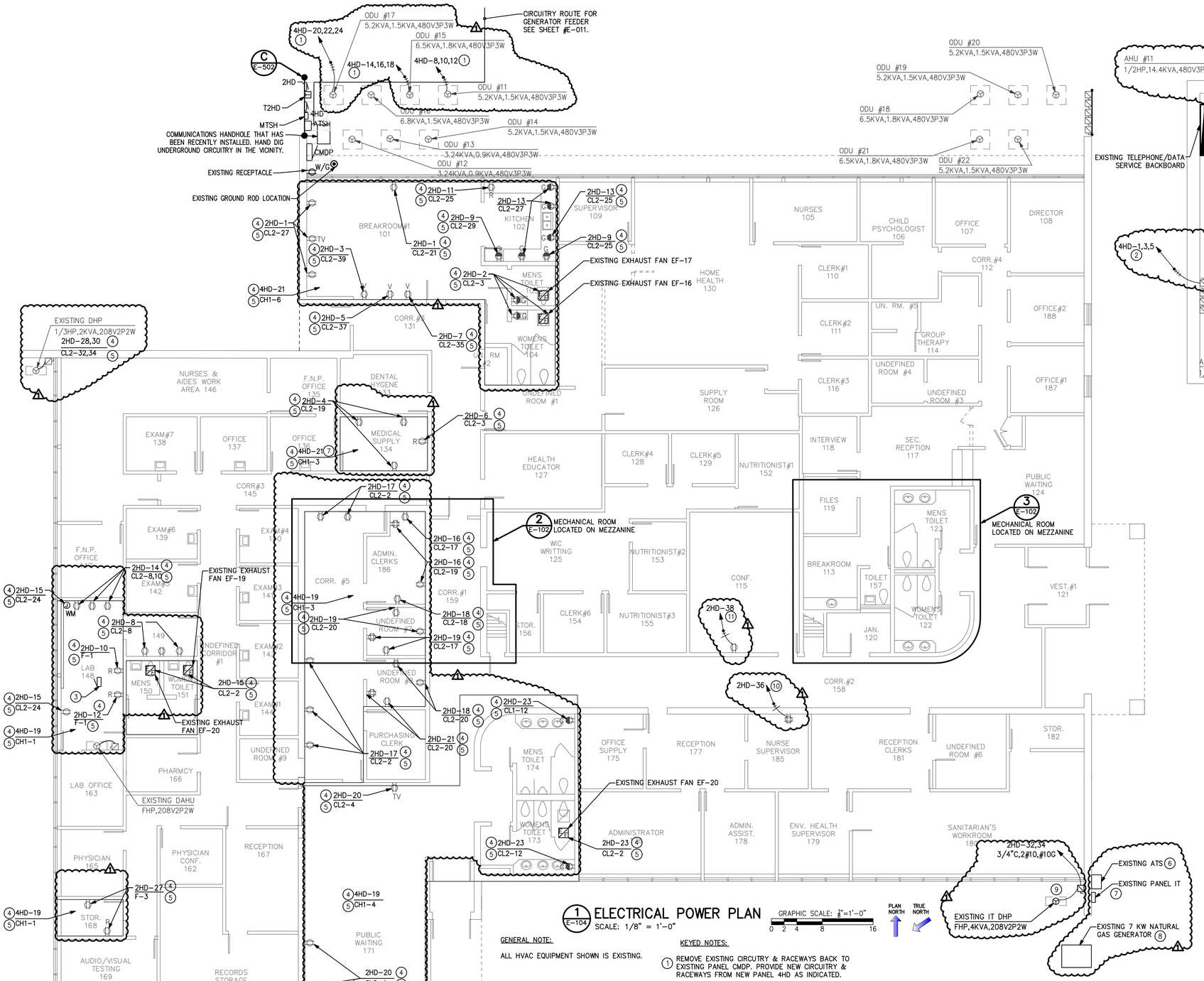
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17593 MARK A. CIARROCCA 12/19/2019

DESIGNED BY	K. FORTIER
DRAWN BY	K. FORTIER
CHECKED BY	M. CIARROCCA
JOB NUMBER	19064
SHEET	E-103
DATE	NOVEMBER 18, 2019



1 E-104 ELECTRICAL POWER PLAN

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

GRAPHIC SCALE: 1/8"=1'-0" (0 2 4 8 16)

PLAN NORTH / TRUE NORTH

GENERAL NOTE:

ALL HVAC EQUIPMENT SHOWN IS EXISTING.

KEYED NOTES:

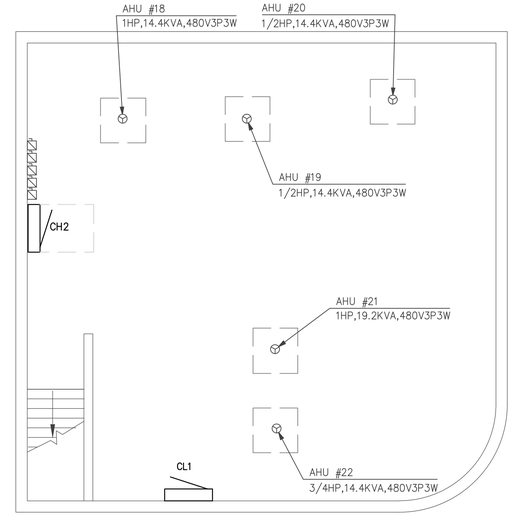
1. REMOVE EXISTING CIRCUITRY & RACEWAYS BACK TO EXISTING PANEL CMDP. PROVIDE NEW CIRCUITRY & RACEWAYS FROM NEW PANEL 4HD AS INDICATED.
2. REMOVE EXISTING CIRCUITRY & RACEWAYS BACK TO EXISTING PANEL CH1. PROVIDE NEW CIRCUITRY & RACEWAYS FROM NEW PANEL 4HD AS INDICATED.
3. EXISTING PANEL F IS LOCATED ABOVE THE CEILING.
4. NEW CIRCUIT FOR THE EXISTING LIGHT FIXTURE, DEVICE OR EQUIPMENT INDICATED.
5. EXISTING CIRCUIT FOR THE EXISTING LIGHT FIXTURE, DEVICE OR EQUIPMENT INDICATED. REMOVE ABANDON CIRCUITRY BACK TO IT'S SOURCE.
6. REMOVE EXISTING ATS & NORMAL FEEDER BACK TO PANEL CL1 (#32 & 34).
7. REMOVE EXISTING PANEL IT ASSOCIATED CIRCUITRY TO EQUIPMENT & DEVICES INDICATED.
8. REMOVE 7 KW NATURAL GAS GENERATOR, STANDBY FEEDER, CIRCUITRY & GAS PIPING.
9. EXISTING DUCTLESS HEAT PUMP TO REMAIN. REMOVE EXISTING CIRCUITRY TO PANEL IT. RECONNECT TO FEEDER INDICATED & PROVIDE NEW SAFETY SWITCH-240V,2P,30A,FUSED AT NP,NEMA-3R.
10. EXISTING QUAD RECEPTACLE TO REMAIN. REMOVE CIRCUITRY TO PANEL IT. PROVIDE NEW CIRCUITRY INDICATED.
11. EXISTING RECEPTACLE TO REMAIN. REMOVE CIRCUITRY TO PANEL IT. PROVIDE NEW CIRCUITRY INDICATED.

2 E-104 ENLARGED MECH. RM 184 ELECTRICAL PLAN

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

GRAPHIC SCALE: 1/4"=1'-0" (0 1 2 4 8)

PLAN NORTH / TRUE NORTH

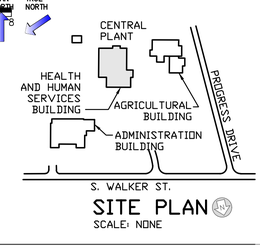


3 E-104 ENLARGED MECH. RM 183 ELECTRICAL PLAN

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

GRAPHIC SCALE: 1/4"=1'-0" (0 1 2 4 8)

PLAN NORTH / TRUE NORTH



SITE PLAN

SCALE: NONE

REVISION	
DATE	DESCRIPTION
01/07/20	ADDENDUM #1

PENDER COUNTY GOVERNMENT GENERATORS

ELECTRICAL RENOVATIONS

HEALTH DEPARTMENT BUILDING

BURGAW, NORTH CAROLINA

CHEATHAM AND ASSOCIATES, P.A.

CONSULTING ENGINEERS

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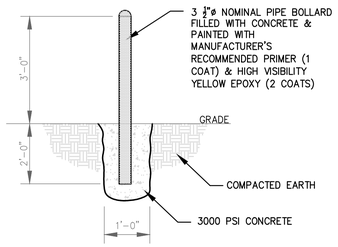
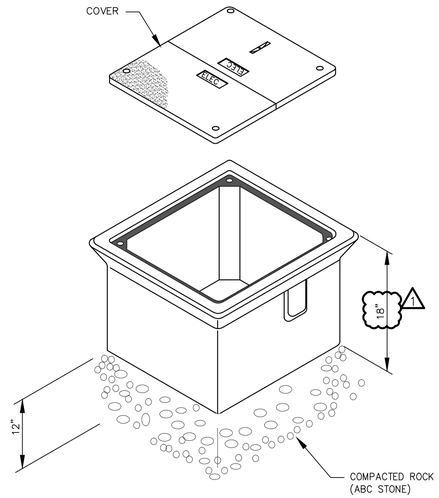
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 21593 MARK A. CIARROCCA

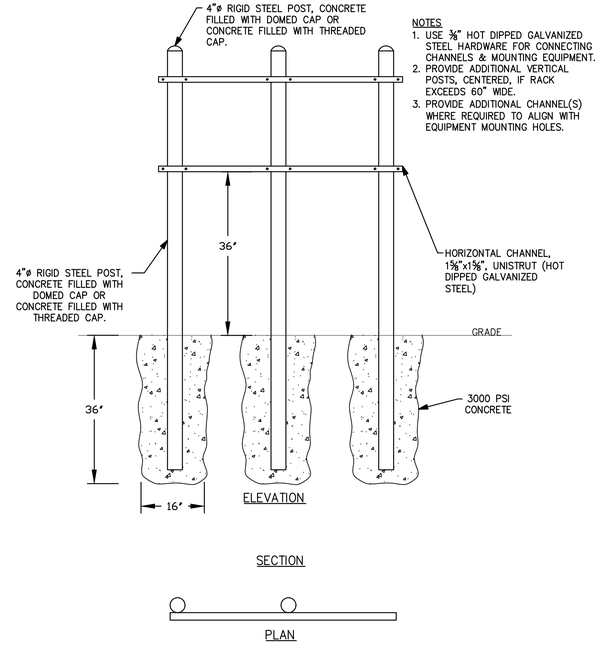
DESIGNED BY	K. FORTIER
DRAWN BY	K. FORTIER
CHECKED BY	M. CIARROCCA
JOB NUMBER	19064
SHEET	E-104
DATE	NOVEMBER 18, 2019



A E-502 PIPE BOLLARD DETAIL
NO SCALE



B E-502 TYPICAL HANDHOLE DETAIL
NO SCALE
DESIGN BASIS: QUAZITE 11" X 18/20" BOX #PG1118BA18 COVER #PG1120HA00 1



C E-502 EQUIPMENT RACK DETAIL
NO SCALE

REVISION	
DATE	DESCRIPTION
1 01/07/20	ADDENDUM #1

PENDER COUNTY GOVERNMENT GENERATORS
ELECTRICAL RENOVATIONS
DETAILS
BURGAW, NORTH CAROLINA

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17593 MARK A. CIARROCCA 11/18/2019

DESIGNED BY	K. FORTIER
DRAWN BY	K. FORTIER
CHECKED BY	M. CIARROCCA
JOB NUMBER	19064
SHEET	E-502
DATE	NOVEMBER 18, 2019