SAMPSON CORRECTIONAL INSTITUTION
DORMITORY HVAC RENOVATIONS

SCO ID NUMBER: 22-25436-01

BID DOCUMENTS

DRAWING INDEX

PROJECT CONTACTS

SITE:

Sampson Correctional Institution
421 NW Boulevard
Clinton, NC 28328

OWNER:

Taylor Oldham
Project Manager
NC Department of Adult Correction
Central Engineering
2020 Yonkers Road (4216 MSC)
Raleigh, NC 27699-4216
(919) 324-1272
taylor.oldham@dac.nc.gov

PROJECT ENGINEER

Bradley Felts, PE
Atlatnec Engineers, PA
3221 Blue Ridge Road
Suite 113,
Raleigh, NC 27612
919-571-1111
brad@atlantecengineers.com

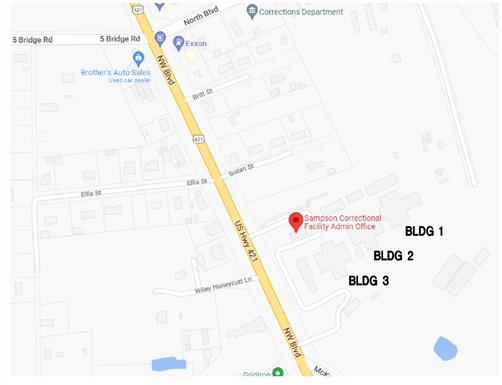
CONTRACTOR RESPONSIBILITIES

1. Contractor MUST visit job sites prior to submitting a bid. Bids submitted shall be considered verification of the contractor's knowledge of project conditions. The intent of the project as described herein (plans and/or specifications) is for the Contractor to provide the Owner with safe, code conforming, fully operational, and properly functioning equipment, systems and/or new construction as required to perform Owner's/User's task.
2. Contractor shall be responsible for the means, methods, techniques, sequences, procedures and material supply for construction and installation, verification of dimensions at the site, the verification of existence and location of utility services (underground and above ground), and the verification of quantities.
3. The Contractor shall be responsible for scheduling all trades work in complete coordination with the owner. Contractor shall meet with the owner to discuss scheduling prior to construction. Contractor shall make accommodations to minimize disruption to activities.
4. Contractor shall, wherever possible, adhere to the drawings and specifications. Any variation from the drawings and specifications shall be approved in writing by the Engineer before Contractor proceeds with work. In an emergency, oral approval from the Engineer is sufficient but this must be followed with written approval. No claim for adjustment to the contract price shall be valid unless the procedure is followed.
5. Contractor shall, under no circumstance, make any alteration to the existing building structure or utilities that will in any way jeopardize the structural stability or interrupt the building's operation without prior written permission from the Engineer.
6. Successful bidder on the project (prior to construction) shall submit cut sheets/shop drawings for approval by the designer, detailing the devices and equipment he proposes to use.
7. Contractor shall be responsible for removal of all debris and waste materials of construction off site unless specifically directed otherwise on the drawing or by the Engineer.
8. Contractor shall be responsible for the acceptable closure and repair of all areas disturbed during construction, including, but not limited to, wall, floor, and ceiling penetrations, disturbed ceiling(s) and floor(s), fastening of supports, etc. Repair work shall utilize like materials where possible or materials compatible to the existing construction and shall restore the disturbed surface to original condition. Unless required otherwise, all repaired areas shall be finished to match adjacent existing surfaces, and exposed piping, duct work, conduit, and hanger assemblies shall be painted to match the existing features.
9. Contractor shall consult with the Engineer prior to making any penetration or alteration of roof deck or existing roofing application, and shall obtain concurrence prior to, during, and upon completion of the work. All roof work must be performed by a licensed roof contractor and approved in writing by the Engineer. All damage to roof structure and waterproof membrane resulting from Contractor's activity shall be repaired (during the period of this contract, and as soon as possible) by the Contractor, at the expense of the Contractor, in a manner to meet any and all warranty that may be in effect.
10. Building Utility Shutdown - The contractor shall notify the owner 10 working days before any unavoidable utility shutdown is to occur. ULOCO requires 48 hours notice. These include but not limited to such utilities as electrical, domestic, water, sewer, HVAC system, etc. Contractor shall keep down time to an absolute minimum.
11. Contractor shall notify the Engineer immediately upon encountering any suspected asbestos product. Any removal must be coordinated through the Engineer's Office by approved contractors. The owner is not responsible for compensation due to delays for asbestos removal.
12. Contractor shall be responsible for the restoration of all landscape areas damaged during construction, including but not limited to, lawn areas, plant beds, trees and shrubs, sidewalks, patios and courtyards. Damaged plant material shall be replaced in kind. Any desire by contractor for pruning, removal of plant material, changes in tree protection, etc., not described in the drawings must be approved by the Engineer prior to any such actions. The Contractor shall be responsible for the actions of his subcontractors with regard to protection of the landscape.
13. Contractor shall be responsible for keeping all construction activity within the project limits and staging areas. Any changes in staging areas or site access must have prior approval by the Engineer. Parking is allowed in approved spaces ONLY. No parking is allowed on lawn areas, sidewalks, or courtyards.
14. Contractor shall bridge all access and staging areas including but not limited to brick paving, planting beds, grass areas, sidewalks, curbs, etc. Contractor will provide bridging materials, min. 3/4"x 4'x 8' sheet plywood for up to 9,000 lbs. and loads over 9,000 lbs. two layers of 3/4" sheet are required. An inspection of existing conditions will be made prior to installation and documented. It shall be the contractor's responsibility to return all damaged areas to preconstruction conditions at the completion of the project.
15. Contractor is responsible for obtaining all permits and inspections and associated fees.
16. Contractor to provide 24 hour contact to responsible project manager during entire construction period and throughout 1-year warranty period.
17. The contractor shall provide fans to ventilate the welding fumes during construction. Welding will be allowed when the building is occupied.
18. Contractor to provide proposed work schedule including numbers of personnel and expected hours of construction for each day of construction. Schedule to be reviewed at pre-construction conference.

PROJECT SCOPE

1. ADD NEW COILING COILS IN EXISTING HEATING AND VENTILATION AIR HANDLING UNITS.
2. EXISTING UNITS HAVE TWO SPEED MOTORS AND FACE/BYPASS DAMPERS FOR PURGE OPERATION. REMOVE EXISTING TWO SPEED STARTER AND MOTOR AND PROVIDE NEW VFD, MOTOR, BELTS AND PULLEYS. REMOVE FACE DAMPER LINKAGE AND ACTUATOR AND LOCK IN OPEN POSITION. PROVIDE NEW BYPASS DAMPER ACTUATOR.
3. PROVIDE POST-WORK TEST AND BALANCE TO VERIFY TOTAL SUPPLY AIRFLOW AT PURGE MODE AND GRILLE AIRFLOW AT "NORMAL MODE". NORMAL MODE AIRFLOW SHOWN ON THESE PLANS. SEE SCHEDULE FOR OTHER AIRFLOW SETPOINTS.
4. BALANCE AIR DISTRIBUTION AND OUTSIDE AIR AT "NORMAL" MODE OF OPERATION.
5. REMOVE EXISTING SUPPLY DUCT AND AIR DISTRIBUTION IN DORM AREA. DUCTWORK IN MECHANICAL ROOM TO REMAIN AS IS.
6. PROVIDE NEW INSULATED DUCT AND AIR DISTRIBUTION IN SAME ROUTE AS EXISTING DUCT. RELOCATE CONDUIT, MOUNTING ANGLE AS REQUIRED. NEW DUCT SIZES ARE OUTSIDE SHEET METAL. OUTSIDE DIMENSION WILL INCLUDE 1.0" OF LINER ON ALL SIDES. DUCT SIZES ARE BASED ON ORIGINAL PLANS. WALL PENETRATIONS SHOULD MATCH EXISTING. FIELD VERIFY ALL DUCT SIZES AND DIMENSIONS PRIOR TO FABRICATION.
7. BALANCE EXISTING TOILET EXHAUST TO 600 CFM PER POD, 1200 CFM PER FAN.
8. PROVIDE NEW BUILDING AUTOMATION SYSTEM COMPLETE WITH ALL NEW SENSORS, ACTUATOR, VFD'S, WIRING, CONDUIT FOR A COMPLETE AND OPERATIONAL SYSTEM. ALL CONTROLLERS AND VFD'S TO BE BACNET AND COMMUNICATE TO EXISTING JACE OVER CAMPUS INTRANET.

VICINITY MAPS



N

2203

REVISIONS

NORTH CAROLINA ATLANTEC ENGINEERS PA No. C-951 PROFESSIONAL CORPORATION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025036 BRADLEY W. FELTS

3/31/23

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1505 ST. JAMES PLACE
KINSTON, NC 28504
(252) 527-3336

PREPARED FOR:
NORTH CAROLINA
DEPARTMENT OF
PUBLIC SAFETY

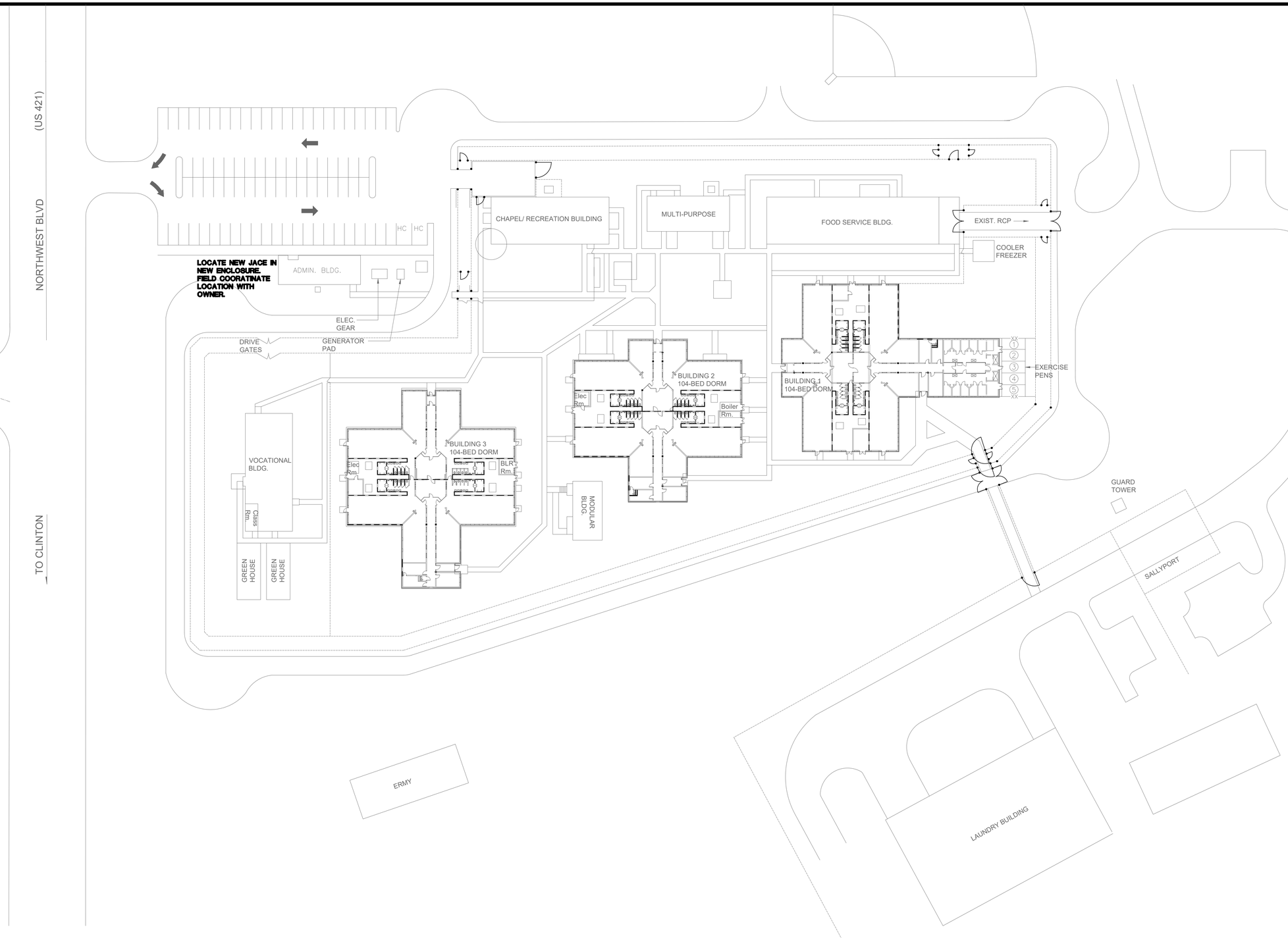
SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC NORTH CAROLINA

CONTENTS:
TITLE SHEET

DATE:
MARCH 31, 2023

DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
T-1



1 SITE PLAN

SCALE: 1" = 40'-0"

N

2023

REVISIONS

NORTH CAROLINA ATLANTEC ENGINEERS PA No. C-961 PROFESSIONAL CORPORATION

NORTH CAROLINA PROFESSIONAL SEAL 025036 ENGINEER BRADLEY W. FELTS

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NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

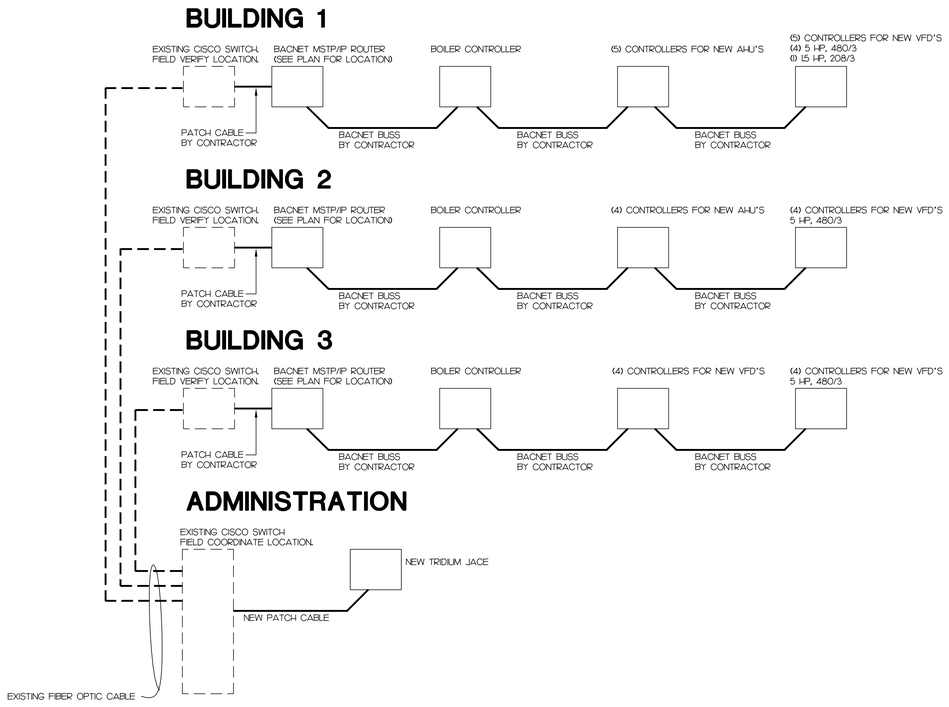
SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC NORTH CAROLINA

CONTENTS:
OVERALL SITE PLAN

DATE:
MARCH 31, 2023

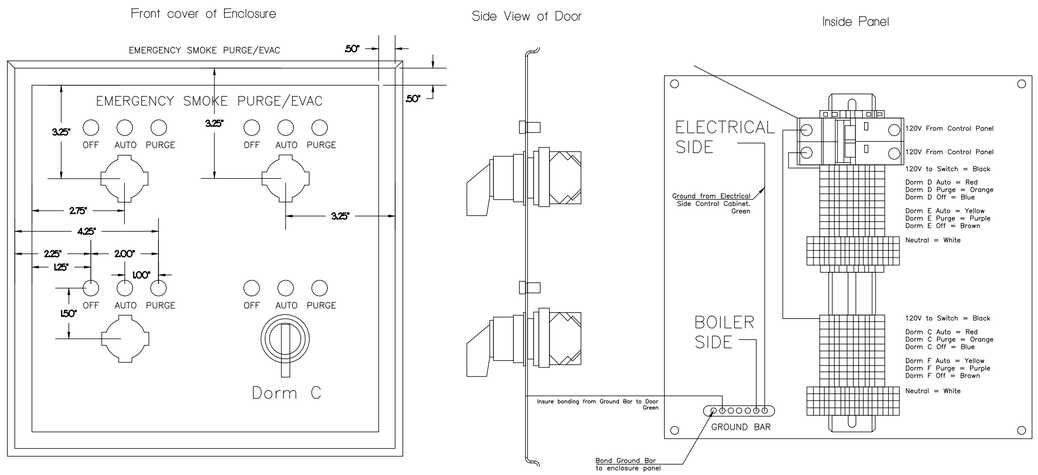
DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
M-1



3 SYSTEM ARCHITECTURE

NOT TO SCALE

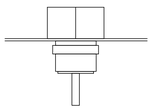


Use Greenlee knockout Punch 60242 Typical for all 4 holes

Uxcell LED Indicator Light AC/DC 110V 8mm Panel Mount Red & Green LED Signal Lamp Metal Shell

Overlays were purchased from: Custom Engraving & Trophy, Inc. www.customengravingandtrophy.com 312 North Person St, Raleigh, NC 27604 919-834-3240

Looking down on switch



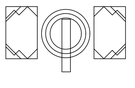
Schneider 9001SKS46B Switch F cam Grainger 6B326 Typical for all 4

Schneider KA1, Contact Block Grainger 5B537 Typical for all 4

Schneider KA5, Contact Block Grainger 5B533 Typical for all 4

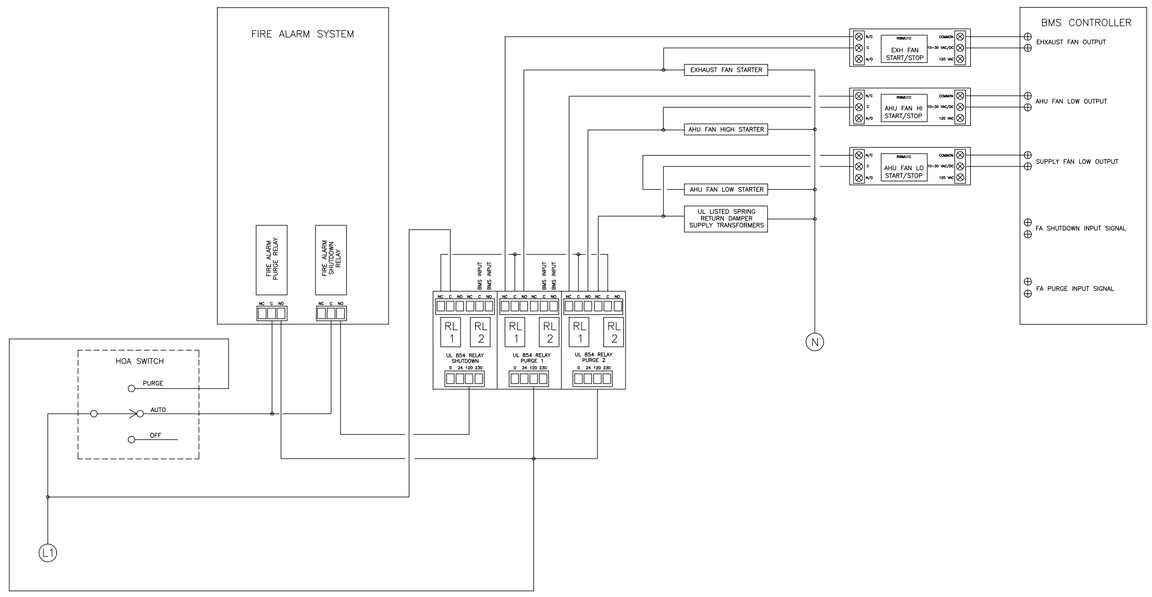
EECO 1440 Diggs Dr. Raleigh, NC 27603 Enclosure – H0A1212CH Panel – H0A12P12

Switches placement to knob



2 PURGE CONTROL PANEL DIAGRAM

NOT TO SCALE



1 SMOKE PURGE WIRING DETAIL - SIMPLIFIED

NOT TO SCALE

REVISIONS

ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL CORPORATION
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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

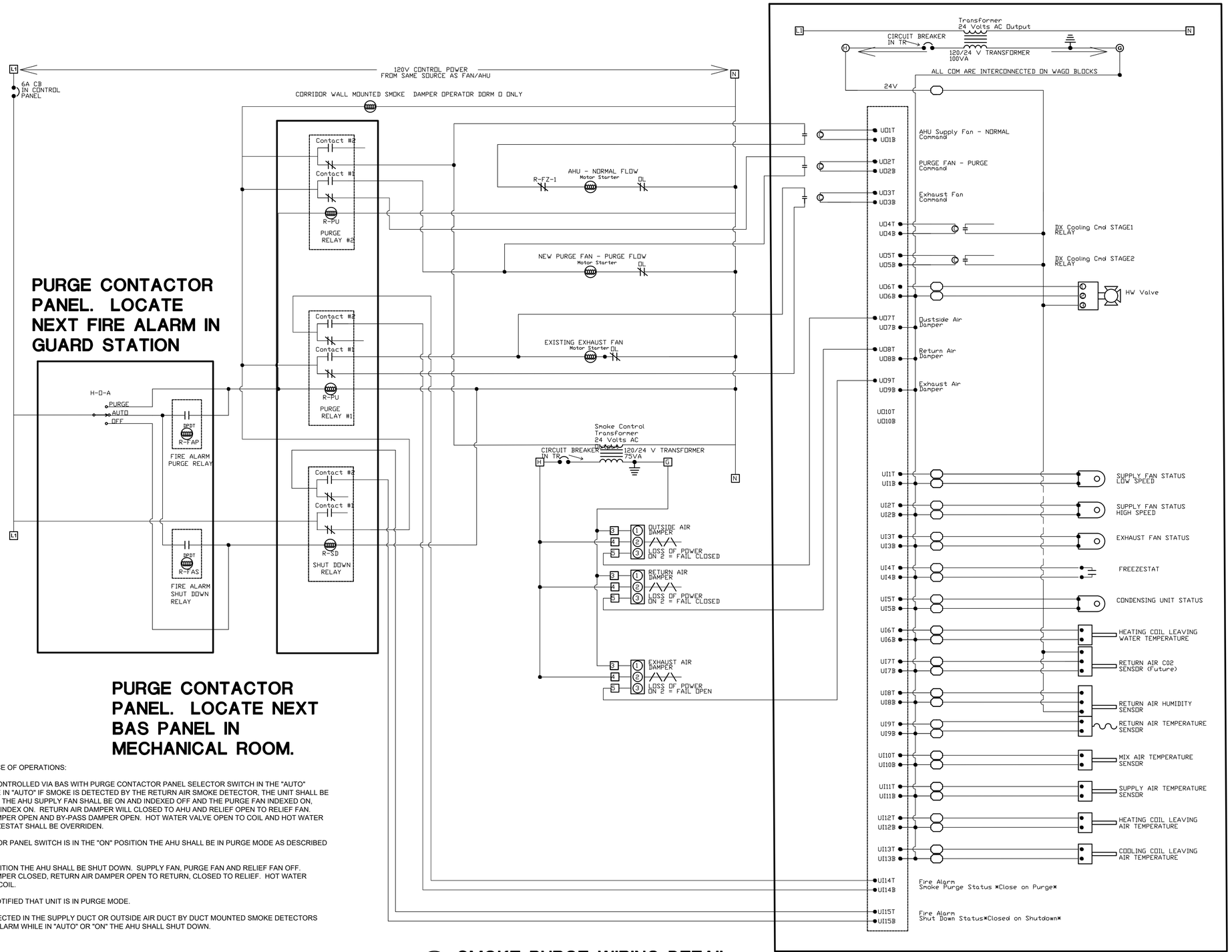
CONTENTS:
BAS WIRING DETAILS

DATE:
MARCH 31, 2023

DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
M-2

22103



PURGE CONTACTOR PANEL. LOCATE NEXT FIRE ALARM IN GUARD STATION

PURGE CONTACTOR PANEL. LOCATE NEXT BAS PANEL IN MECHANICAL ROOM.

BAS PANEL. LOCATE IN MECHANICAL ROOM NEXT TO AHU.

PURGE SEQUENCE OF OPERATIONS:

AHU SHALL BE CONTROLLED VIA BAS WITH PURGE CONTACTOR PANEL SELECTOR SWITCH IN THE "AUTO" POSITION. WHILE IN "AUTO" IF SMOKE IS DETECTED BY THE RETURN AIR SMOKE DETECTOR, THE UNIT SHALL BE IN PURGE MODE. THE AHU SUPPLY FAN SHALL BE ON AND INDEXED OFF AND THE PURGE FAN INDEXED ON, RELIEF FAN WILL INDEX ON. RETURN AIR DAMPER WILL CLOSED TO AHU AND RELIEF OPEN TO RELIEF FAN. OUTSIDE AIR DAMPER OPEN AND BY-PASS DAMPER OPEN. HOT WATER VALVE OPEN TO COIL AND HOT WATER PUMP ON. FREEZESTAT SHALL BE OVERRIDEN.

IF THE CONTACTOR PANEL SWITCH IS IN THE "ON" POSITION THE AHU SHALL BE IN PURGE MODE AS DESCRIBED ABOVE.

IN THE "OFF" POSITION THE AHU SHALL BE SHUT DOWN. SUPPLY FAN, PURGE FAN AND RELIEF FAN OFF. OUTSIDE AIR DAMPER CLOSED, RETURN AIR DAMPER OPEN TO RETURN, CLOSED TO RELIEF. HOT WATER VALVE OPEN TO COIL.

BAS SHALL BE NOTIFIED THAT UNIT IS IN PURGE MODE.

IF SMOKE IS DETECTED IN THE SUPPLY DUCT OR OUTSIDE AIR DUCT BY DUCT MOUNTED SMOKE DETECTORS THRU THE FIRE ALARM WHILE IN "AUTO" OR "ON" THE AHU SHALL SHUT DOWN.

NOTES:

THIS WORK IS MAINTENANCE TO RESTORE AND PRESERVE THE ORIGINAL SEQUENCE OF OPERATION AFTER AIR CONDITIONING IS ADDED. THIS ARRANGEMENT IS TYPICAL FOR ALL AIR HANDLERS. THE MANUAL SWITCH HAS PRIORITY OVER THE AUTOMATIC FIRE ALARM PANEL RESPONSE. THE PURGE AND SHUT DOWN RELAYS ARE MR 201 UL 864 LISTED RELAYS BY AIR PRODUCTS INC. THE NEW DAMPER OPERATORS, BELIMO FSAFB24-SR, ARE UL 555S LISTED (WHEN INSTALLED ON A NEW SMOKE DAMPER) AND SPRING TO THE SMOKE PURGE POSITION BASED ON THEIR INSTALLATION ORIENTATION ON A LOSS OF 24 VAC POWER.

THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE ELECTRICAL CODE AND BE INSPECTED BY THE ELECTRICAL INSPECTOR PRIOR TO ACCEPTANCE. A FUNCTIONAL TEST WILL BE PERFORMED TO VERIFY THE SEQUENCE AT COMPLETION.

1 SMOKE PURGE WIRING DETAIL

NOT TO SCALE

2203

REVISIONS

NORTH CAROLINA PROFESSIONAL CORPORATION
ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL SEAL 025036 ENGINEER BRADLEY W. FELTS
3/31/23

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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC NORTH CAROLINA

CONTENTS:
PURGE PANEL WIRING DETAIL

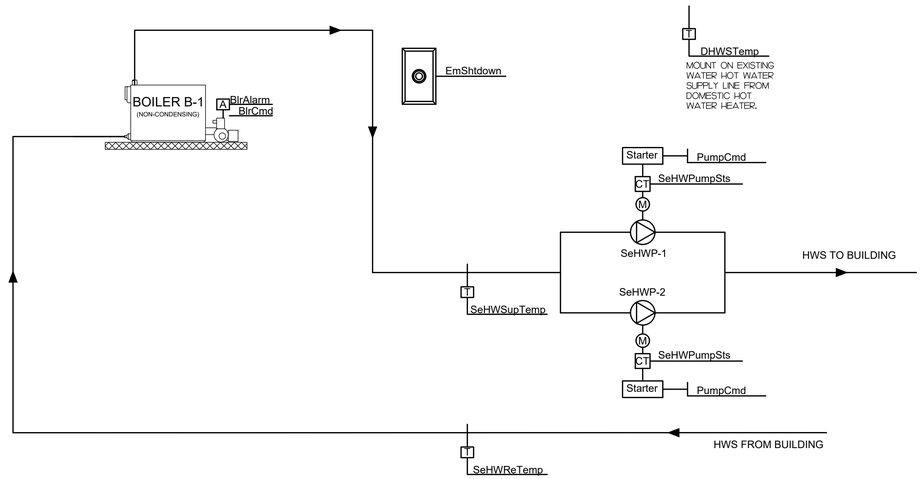
DATE:
MARCH 31, 2023

DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
M-3

TYPICAL HOT WATER PLANT

SINGLE BOILERS, CONSTANT PRIMARY ONLY PUMPING



Equipment						Equipment Name	EquipmentTags	
Primary / Secondary Hot Water System						N/A	dis, id, siteRef, equip, hotWaterPlant,	
Points	**AI**	**AO**	**DI**	**DO**	**VP**	**Point Name**	**Point Tags**	**Trending**
Hot Water Supply Temperature	x					PrHWSupTemp	primaryLoop, hot, water, leaving, temp, sensor	Int, 10min
Hot Water Return Temperature	x					PrHWReTemp	primaryLoop, hot, water, leaving, temp, sensor	Int, 10min
Emergency Shutdown			x			EmShtdown		COV, 24hr

Equipment						Equipment Name	EquipmentTags	
Boiler						Boiler B-#	dis, id, siteRef, equip, boiler atmospheric, condensing oil, gas	
Points	**AI**	**AO**	**DI**	**DO**	**VP**	**Point Name**	**Point Tags**	**Trending**
Gas Meter			X			GasMeter	gas meter	COV, 24hr
Boiler				X		BlrCmd	boiler, run, cmd	COV, 24hr
Boiler Alarm			x			BlrAlarm		COV, 24hr

Equipment						Equipment Name	EquipmentTags	
Pump						BlrP-#, SeHWP-#	dis, id, siteRef, equip, pump, hot primaryLoop, secondaryLoop	
Points	**AI**	**AO**	**DI**	**DO**	**VP**	**Point Name**	**Point Tags**	**Trending**
Boiler Pump Status			x			BlrPumpSts	pump, run, sensor	COV, 24hr
Boiler Pump Start/Stop				x		BlrPumpCmd	pump, run, cmd	COV, 24hr

Alarms	Possible Indication
Boiler alarm from Boiler contact	Boiler malfunction
Boiler supply water temperature varies from set point by more than 2°F	Boiler not performing
Pump commanded on, pump status off	Pump not running when commanded on

SCOPE OF WORK:

BAS CONTRACTOR SHALL PROVIDE THE FOLLOWING:
1. NEW TEMPERATURE SENSORS IN EXISTING WELLS
2. ALL NEW WIRING IN EXISTING RACEWAYS
3. NEW CURRENT SENSORS FOR MOTORS
4. NEW GAS METER

EXISTING PUMP STARTERS AND BOILER INTERNAL CONTROLS TO BE REUSED.

Sequence

HW Boiler Plant

General Notes
All schedules and temperatures, supply and return water set points, etc. shall be adjustable by facility personnel. No such parameters, which may need adjustment, may be imbedded in the programming.

Boiler Plant
The Boiler Water System consists of one cast iron or other non-condensing boilers, and two constant speed boiler pumps (HWP-1 and HWP-2).

Normal operation is to use boiler pump 1 with the boiler. Boiler water pumps are on a common header so either pump could supply either boiler but normal operation will use pump 1 with boiler 1. The pumps operate lead lag. Rotate the lead pump every two weeks.

Boiler pumps are controlled by the DDC system and run along with the boiler.

Boiler Plant Control
The boiler plant is to be on if there is a call for heating to the plant from a critical load (establish during start up) and outside air is below (65°F). Multiple calls for heat could be required to start the boilers.

The hot water to the building will have a reset schedule to reduce energy use. The initial HW temperature set point is to be varied based on the following schedule: 140°F at 50°F OAT to 160°F at 20°F OAT and below. Once operating, the HW temperature set point can be further lowered by 1 degree every 5 minutes.

BAS to control index burner firing on/off to maintain setpoint.

Alarms

Alarms	Possible Indication
Boiler alarm from Boiler contact	Boiler malfunction
Boiler supply water temperature varies from set point by more than 2°F	Boiler not performing
Pump commanded on, pump status off	Pump not running when commanded on

Analytics

1. Check for Manual Operation: Check frequency and amount of time equipment is put into manual mode (pumps, boiler).

2023

REVISIONS

ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025036 BRADLEY W. WELLS
NORTH CAROLINA PROFESSIONAL CORPORATION

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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
BOILER BAS SCHEMATIC AND SEQUENCE

DATE:
MARCH 31, 2023

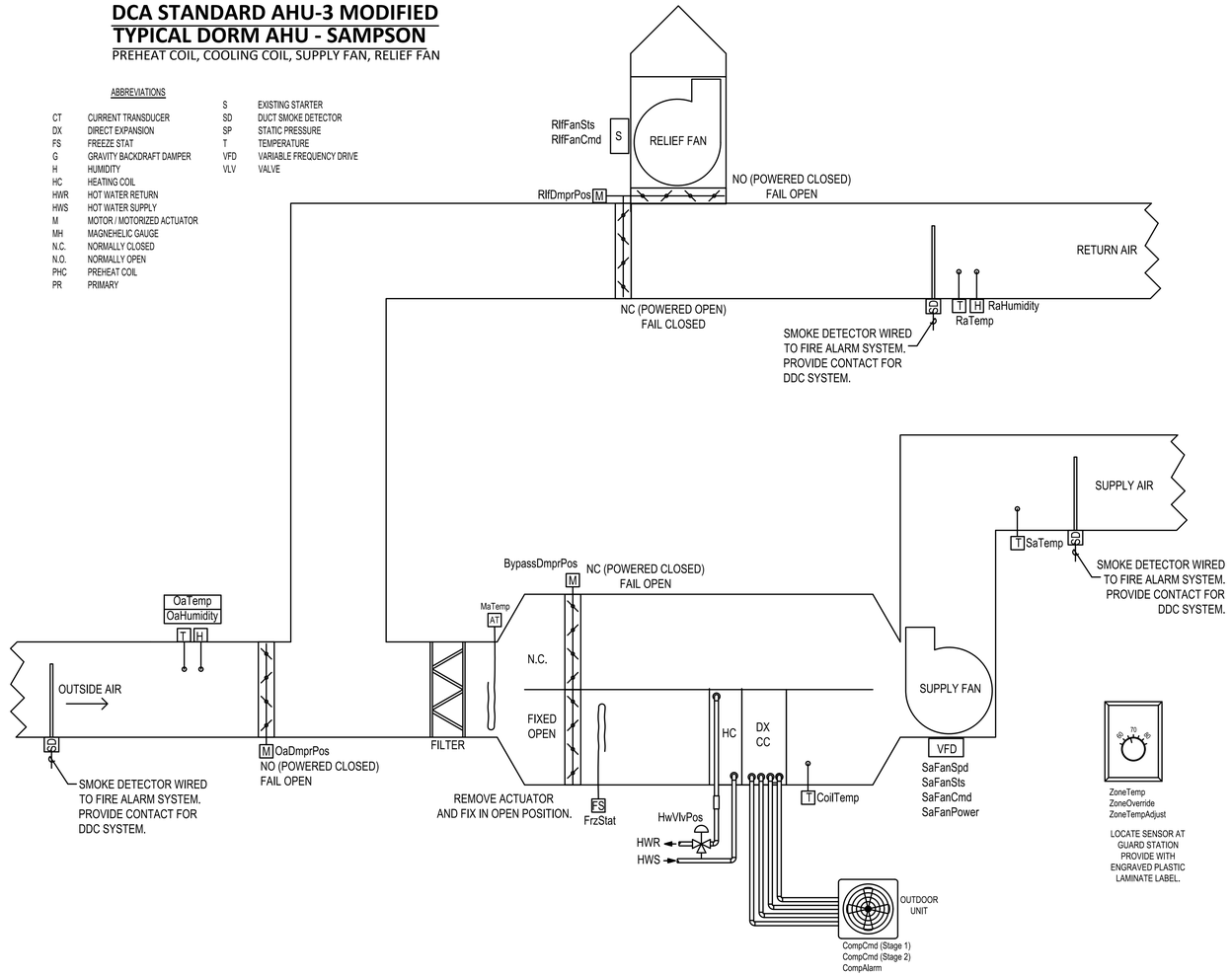
DESIGNER: NQB
ENGINEER: BWF

SHEET NO.
M-4

DCA STANDARD AHU-3 MODIFIED
TYPICAL DORM AHU - SAMPSON
PREHEAT COIL, COOLING COIL, SUPPLY FAN, RELIEF FAN

ABBREVIATIONS

CT	CURRENT TRANSDUCER	S	EXISTING STARTER
DX	DIRECT EXPANSION	SD	DUCT SMOKE DETECTOR
FS	FREEZE STAT	SP	STATIC PRESSURE
G	GRAVITY BACKDRAFT DAMPER	T	TEMPERATURE
H	HUMIDITY	VFD	VARIABLE FREQUENCY DRIVE
HC	HEATING COIL	VLV	VALVE
HWR	HOT WATER RETURN		
HWS	HOT WATER SUPPLY		
M	MOTOR / MOTORIZED ACTUATOR		
MH	MAGNEHELIC GAUGE		
N.C.	NORMALLY CLOSED		
N.O.	NORMALLY OPEN		
PHC	PREHEAT COIL		
PR	PRIMARY		



SCOPE OF WORK:

BAS CONTRACTOR SHALL PROVIDE THE FOLLOWING:
1. NEW TEMPERATURE/HUMIDITY SENSORS
2. NEW FREEZESTAT
3. NEW MIXED AIR SENSOR
4. NEW HOT WATER VALVE ACTUATOR
5. NEW DAMPER ACTUATORS
6. CONTROL WIRING TO NEW CONDENSING UNITS.
7. NEW VARIABLE SPEED DRIVE FOR AHU SUPPLY FAN.

EXISTING RELIEF FAN CONTACTOR TO REMAIN.

Equipment						Equipment Name	EquipmentTags	
Single Zone Face and Bypass VAV AHU (cooling coil, reheat coil, supply fan, relief fan)							dis, id, siteRef, equip, hvac, ahu hotWaterHeat, chilledWaterCool directZone, singleDuct, faceBypass, variableVolume	
Points	**AI**	**AO**	**DI**	**DO**	**VP**	**Point Name**	**Point Tags**	**Trending**
Supply Fan Speed		x				SaFanSpd	discharge, air, fan, speed, cmd	Int, 10min
Supply Fan Status			x			SaFanSts	discharge, air, fan, run, sensor	COV, 24
Supply Fan Command				x		SaFanCmd	discharge, air, fan, run, cmd	COV, 24
Supply Fan Power	x					SaFanPower	discharge, air, fan, power, sensor	Int, 10min
Relief Fan Status			x			RlfFanSts	relief, air, fan, run, sensor	COV, 24
Relief Fan Command				x		RlfFanCmd	relief, air, fan, run, cmd	COV, 24
DX Cooling Stage 1				X		DxClgStage1	dx, chilled water, run, cmd	Int, 10min
DX Cooling Stage 2				X		DxClgStage2	dx, chilled water, run, cmd	Int, 10min
DX cooling Alarm			X			DxCompAlarm	dx, status	COV, 24
Hot Water Valve Position		x				HWVlvPos	hot, water, valve, cmd	Int, 10min
~~Coolin Coil Leaving Water Temperature~~	~~x~~					~~CCLWTemp~~	~~chilled, water, temp, sensor~~	~~Int, 10min~~
~~Heating Coil Leaving Water Temperature~~	~~x~~					~~HCLWTemp~~	~~hot, water, temp, sensor~~	~~Int, 10min~~
Freezestat	x					FrzStat	freezeStat	COV, 24
Supply Air Temperature	x					SaTemp	discharge, air, temp, sensor	Int, 10min
Coil Leaving Air Temperature	x					CLATemp	air, temp, sensor	Int, 10min
~~Heating Coil Leaving Air Temperature~~	~~x~~					~~HCLATemp~~	~~air, temp, sensor~~	~~Int, 10min~~
Return Air Temperature	x					RaTemp	return, air, temp, sensor	Int, 10min
Return Air Humidity	x					RaHumidity	return, air, humid, sensor	Int, 10min
Outside Air Temperature	x					OaTemp	outside, air, temp, sensor	Int, 10min
Outside Air Humidity	x					OaHumidity	outside, air, humidity, sensor	Int, 10min
Mixed Air Temperature	x					MaTemp	mixed, air, temp, sensor	Int, 10min
Return Air Damper Position		x				RaDmprPos	return, air, damper, cmd	Int, 10min
Outside Air Damper Position		x				OaDmprPos	outside, air, damper, cmd	Int, 10min
Bypass Damper		x				BypassDmprPos	Bypass, air, damper, cmd	Int, 10min
Relief Air Damper Position		x				RlfDmprPos	relief, air, damper, cmd	Int, 10min
Zone Temperature	x					ZoneTemp	zone, air, temperature, sensor	Int, 10min
Zone Temperature Setpoint Adjust		x				ZoneTempAdjust	zone, air, temperature, cmd	Int, 10min
Zone Unoccupied Mode Override				x		ZoneOverride	zone, air, temperature, cmd	COV, 24

Alarms	Indication
Fan command on, fan speed zero	Fan not running when commanded on
Fan command on, fan status off	Fan not running when commanded on
Hot water valve position zero, discharge air temperature > mixed air temperature	Preheat valve malfunction
Freezestat temperature below set point	Cooling coil at risk of freezing
Supply Temperature varies from set point by more than 3°F	Bypass damper malfunction, or heating/cooling valve malfunction
Mixed Air Temperature below 55°F	Damper malfunction

General Control Strategies and Safeties

1. Unoccupied Mode: OA dampers to remain fully closed. Supply air fan shall cycle on when there is a call for heating. Otherwise the fan is to remain off.

2. Warmup: OA dampers remain fully closed. The morning warm_up periods shall be optimized depending on the outdoor and indoor air conditions.

3. Cooldown: OA dampers remain fully closed except when economizing. The morning cool down periods shall be optimized depending on the outdoor and indoor air conditions.

4. **Supply** Air Temperature Reset: There are to be separate heating and cooling temperature set points for the space. Initial space temperature set points are 70°F heating and 74°F cooling. If the space is above cooling set point the discharge air temperature set point is to be 55°F. If the space is below heating set point the discharge air temperature is to be 100°F. If the space is at or between cooling and heating temperature set points the discharge air temperature set point is to be determined based on a PID loop with a minimum of 55°F and a maximum of 100°F. Between outside air temperature of 65 degrees and 40 degrees adjustable the supply shall be reset from minimum cooling to maximum heating.

5. Dehumidification control: If the return air relative humidity is above 65%, index on both cooling stages to maintain a cooling coil leaving air temperature of 55°F or less, and slow fan speed to 67% of nominal cooling value. If space temperature falls below heating setpoint, open bypass damper to control space temperature. Outside air damper shall be at minimum open position. Once humidity has reduced below 60% index off one stage. When humidity is below 55% unit shall return to normal space temperature control with by-pass damper closed and cooling stages indexed on/off to maintain space temperature.

6. Economizing: When the outdoor air enthalpy is lower than 27.5 BTU/lb and the outdoor air temperature is lower than (65 °F), the OA and return dampers shall modulate together to maintain the desired discharge air set point. Once the outside air damper is above 50% open, the relief fan shall run. Supply fan shall modulate from minimum to maximum speed when economizing. Unit will return to normal operation when space temperature is no longer satisfied by fan speed and damper position.

7. ~~Demand Control Ventilation: Ventilation rate set point shall be based on zone CO_2. Ventilation shall be reduced when zone CO_2 levels are below the established threshold, initially 1000 ppm. A minimum allowable ventilation rate shall be established based on the minimum required to meet low- or no-occupancy ventilation requirements or makeup air requirements, whichever is greater. The maximum allowable ventilation rate shall be equal to the scheduled design ventilation rate. Not showing CO2 sensor on schematic or points list.~~

8. ~~Delayed Ventilation: When transitioning from warmup or cooldown mode to occupied mode, ventilation rate set point shall initially be (x)% of the minimum allowable ventilation rate. After (x) hours increase ventilation rate set point to the minimum allowable ventilation rate.~~

9. Freeze Protection: A manual reset low limit controller with sensor located upstream of the cooling coil shall de-energize the supply and exhaust fans and close the outdoor air dampers if the temperature falls below 40°F. {Note this should be overridden if smoke purge is activated.} In addition, the hot water valve actuators shall be de-energized and the valves will spring return to the open to coil position. De-energizing shall be accomplished via a hard-wired safety, not through the DDC system. Notify the operator via graphic. {On systems with smoke purge, failure modes may not provide freeze protection. Attention should be given to failure modes to ensure power is cutoff or supplied to dampers and valves as needed provide freeze protection.}

10. Smoke Shutdown/Purge: Smoke detectors as indicated on the drawings shall send a direct signal to the fire alarm system. Activation of the fire alarm or manual activation of the purge system; shall energize the supply fan to high speed and open/close dampers thru a series of listed relays not related to the building DDC system. An auxiliary contact on the smoke detectors shall alarm the DDC system for informational purposes. Upon a signal from the fire alarm system or purge panel for purge a set of listed relays will cut power to dampers causing all dampers to go to the fail position, cut power to hot water valves so they fail open in for freeze protection, and send a start signal to the fan motor starters to run the supply and relief/exhaust fans at 100%. DDC system to start both building hot water pumps. Freeze stat is bypassed.

Sequence

Single Zone Face and Bypass VAV AHU (cooling coil, reheat coil, supply fan, relief fan)

General Operation
The system shall be scheduled to follow occupied and unoccupied modes. When a manual override signal is received from the space thermostat, the system shall switch from unoccupied mode to occupied mode for a programmable length of time.

Control Strategies:
1. Unoccupied
2. Warmup
3. Cooldown
4. Supply Air Temperature Reset
5. Dehumidification Control
6. Economizing
7. ~~Delayed Ventilation~~
8. ~~Demand Control Ventilation~~
9. Freeze Protection
10. Smoke Purge

Occupied Mode Parameters
The supply fan shall be energized and OA damper allowed to open when in occupied mode.

Supply Fan Speed Control
The supply fan shall remain at a minimum speed (50%) until the space cooling or heating set point cannot be satisfied by resetting discharge air temperature (i.e., when the discharge air temperature has reached its minimum for cooling or its maximum for heating). When the maximum heating or minimum cooling discharge air temperature set point has been reached, increase the fan speed if the space is below heating set point or above cooling set point. Reset fan speed to the following schedule: if in deadband or within 0.5 degrees from set point, run fan at min speed (50%). Using a linear reset schedule increase fan speed to 100% at 1.5 degrees. When economizing the supply fan speed shall modulate as needed to meet the space load.

Relief Fan Speed Control
The relief fan shall come on during economizing when the outdoor air damper is open more than (50)% and the supply fan speed is above (50)%.

Cooling Control
If the space temperature is above setpoint the first stage of cooling shall index on. Upon further rise in space temperature second stage shall index on. Cooling stage 2 shall index off after space temperature falls below setpoint. Stage one shall index off when space temperature fall below setpoint by 2°F (adj.) Stages shall be run for minimum of five minutes.

HW Valve Control
If the discharge air temperature set point is equal to or lower than the space heating temperature set point the heating valve should be closed ~~unless commanded open by dehumidification control mode.~~ If the bypass damper is closed to the coil the heating valve should be closed. Otherwise the heating coil valve modulates to maintain a heating coil leaving air temperature of 100°F.

Bypass Damper Control
The bypass damper is to modulate as needed to maintain the discharge air temperature set point in dehumidification mode. When in full economizing (dx off) the bypass damper should be 50% open to the coil and the bypass to reduce pressure drop.

Outdoor Air, Return air, and Relief Air Damper Control
The outdoor air damper shall modulate based on supply fan speed. At minimum supply fan speed the OA damper should be at its maximum open position for ventilation. At maximum supply fan speed the OA damper should be at its minimum position. The minimum and maximum OA damper positions shall be determined during TAB. The return air and relief air dampers shall track the OA damper based on relationships established during TAB. At the minimum ventilation rate set point the relief air damper should be closed.

Failure Modes
HW valve fail open; OA damper fail open; RA damper fail closed; Relief damper fail open.

Safeties
Safeties override all other control modes/strategies.

Safeties:
1. Smoke Shutdown/Purge
2. Freeze Protection

System Balancing and Setup
The minimum OA damper position for ventilation shall be determined when the supply fan is operating at normal speed with by-pass damper closed. The maximum OA damper position for ventilation shall be determined when the supply fan is operating at normal speed. Supply fan speeds shall be set at VFD for heating, cooling stage 1, cooling stage 2, dehumidification and purge.

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REVISIONS

NORTH CAROLINA PROFESSIONAL CORPORATION
ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025036
ENGINEER BRADLEY W. FELTS
3/31/23

ATLANTEC ENGINEERS, PA
320 BLUE ROSE ROAD, SUITE 103
CARY, NC 27562
(919) 557-1400

FOR ST. JAMES PLACE
KINSTON, NC 28504
(252) 527-3336

PREPARED FOR:
NORTH CAROLINA
DEPARTMENT OF
PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
AHU BAS SCHEMATIC AND SEQUENCE

DATE:
MARCH 31, 2023

DESIGNER: NQB
ENGINEER: BWF

SHEET NO.
M-5

APPENDIX B
2018 BUILDING CODE SUMMARY
FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2 FAMILY DWELLINGS AND TOWNHOUSES)

Name of Project: SAMPSON CORRECTIONAL INSTITUTION
Address: 421 NW BOULEVARD, CLINTON, NC – BUILDING 1 **Zip Code** 28328
Proposed Use: PRISON DORMITORIES
Owner or Auth. Agent: TAYLOR OLDHAM **Phone #** 919-324-1272 **Email** taylor.oldham@ncdps.gov
Owned By: ☐ City/County ☐ Private ☒ State
Code Enforcement Jurisdiction: ☐ City ☐ County ☒ State

LEAD DESIGN PROFESSIONAL: BRADLEY W. FELTS, PE

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	EMAIL
Architectural					
Civil					
Electrical	ATLANTEC ENG	D. WHITNEY	017382	919.571.1111	DAVID@ATLANTECENGINEERS.COM
Fire Alarm					
Plumbing					
Mechanical	ATLANTEC ENG	B. FELTS	025036	919.571.1111	BRAD@ATLANTECENGINEERS.COM
Spr.-Stand.					
Structural					
Ret. Walls >5' High					
Other					

2018 EDITION OF NC CODE FOR: ☐ New Construction ☐ Addition ☒ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core – Contact the local inspection jurisdiction for possible additional procedures & requirements
☐ Phased Construction – Contact the local inspection jurisdiction for possible additional procedures & requirements

2018 NC EXISTING BUILDING CODE: ☐ Prescriptive ☐ Repair ☐ Chapter 14
ALTERATION: ☐ Level I ☒ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: 1989 ORIGINAL OCCUPANCY(S) (Ch. 3): PRISON DORMITORY
RENOVATED: – CURRENT OCCUPANCY(S) (Ch. 3): PRISON DORMITORY
PROPOSED OCCUPANCY(S) (Ch. 3): PRISON DORMITORY
RISK CATEGORY (Table 1604.5): CURRENT: ☐ I ☐ II ☒ III ☐ IV
PROPOSED: ☐ I ☐ II ☒ III ☐ IV

BUILDING DATA

Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
☐ I-B ☒ II-B ☐ III-B ☐ V-B

Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes Flood Hazard Area: ☐ No ☐ Yes
Special Instructions Required: ☒ No ☐ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)
Building Height: 16'-0" Feet

Gross Building Area:

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
7th Floor			
6th Floor			
5th Floor			
4th Floor			
3rd Floor			
2nd Floor			
1st Floor		12,383 SQFT	
Basement			
TOTAL		12,383 SQFT	

ALLOWABLE AREA

Occupancy:
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☒ I-3 ☐ I-4
I-3 Condition ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled ☐ Parking Garage
☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Misc. ☐

Accessory Occupancies:
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled ☐ Parking Garage
☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Misc. ☐

N/A

☐ Furnace room where any piece of equipment is over 400,000 Btu per hour input
☐ Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower
☐ Refrigerant machine room
☐ Hydrogen cutoff rooms, not classified as Group H
☐ Incinerator rooms
☐ Paint shops, not classified as Group H, located in occupancies other than Group F
☐ Laboratories and vocational shops, not classified as Group H, located in a Group E or I-2 occupancy
☐ Laundry rooms over 100 square feet
☐ Group I-3 cells equipped with padded surfaces
☐ Group I-2 waste and linen collection rooms
☐ Waste and linen collection rooms over 100 square feet
☐ Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons, or a lithium-ion capacity of 1,000 pounds used for facility standby power, emergency power, or uninterrupted power supplies
☐ Rooms containing fire pumps
☐ Group I-2 storage rooms over 100 square feet
☐ Group I-2 commercial kitchens
☐ Group I-2 laundries equal to or less than 100 square feet
☐ Group I-2 rooms or spaces that contain fuel-fired heating equipment

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ALLOWABLE AREA (continued)

Special Uses: ☐ 402 ☐ 403 ☐ 404 ☐ 405 ☐ 406 ☐ 407 ☐ 408 ☐ 409 ☐ 410 ☐ 411 ☐ 412 ☐ 413 ☐ 414 ☐ 415 ☐ 416 ☐ 417 ☐ 418 ☐ 419 ☐ 420 ☐ 421 ☐ 422 ☐ 423 ☐ 424 ☐ 425 ☐ 426 ☐ 427
Special Provisions: ☐ 509.2 ☐ 509.3 ☐ 509.4 ☐ 509.5 ☐ 509.6 ☐ 509.7 ☐ 508.8 ☐ 509.9

N/A

Mixed Occupancy: ☒ No ☐ Yes Separation: ___ Hr. Exception ___

☐ Incidental Use Separation (508.2.5)
This separation is not exempt as a Nonseparated Use (see exceptions).

☐ Nonseparated Use (508.3.2)
The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined shall apply to the entire building.

☐ Separated Use (508.3.3) – See below for area calculations For each story, the area of occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} + \ldots = \leq 1.00$$

N/A + N/A + ... = N/A ≤1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 503[5] AREA	(C) AREA FOR OPEN SPACE INCREASE[1,6]	(D) AREA FOR SPRINKLER INCREASE[2]	(E) ALLOWABLE AREA OR UNLIMITED[3,4]	(F) MAXIMUM BUILDING AREA[4]
4th Floor							
3rd Floor							
2nd Floor							
1st Floor							

1. Frontage area increases from Section 506.2 are computed thus:
   a. Perimeter which fronts a public way or open space having 20 feet minimum width = ___ (F)
   b. Total Building Perimeter = ___ (P)
   c. Ratio (F/P) = ___ (F/P)
   d. W = Minimum width of public way = ___ (W)
   e. Percent of frontage increase I_f = 100 [F/P – 0.25] x W/30 = ___ (%)
2. The sprinkler increase per section 506.3 is as follows:
   a. Multi-story building I_s = N/A
   b. Single story building I_s = N/A
3. Unlimited area applicable under conditions of Sections 507.
4. Maximum Building Area = total number of stories in the building x E (506.2).
5. The maximum area of open parking garages must comply with Table 406.3.5. The maximum area of air traffic control towers must comply with Table 412.3.1.
6. Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE (TABLE 503)	INCREASE FOR SPRINKLERS	SHOWN ON PLANS	CODE REFERENCE
Type of Construction	Type ___		Type ___	
Building Height in Feet (Table 504.3)	75'-0"	Feet=H+20'= N/A	16'-0"	504.3
Building Height in Stories	UL	Stories+1= N/A	1 STORY	504.4

N/A

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ ___ REDUCTION)	DETAIL# AND SHEET#	DESIGN# FOR RATED ASSEMBLY	DESIGN# FOR RATED PENETRATION	DESIGN# FOR RATED JOINTS
Structural frame, including columns, girders, trusses	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Bearing walls	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
Exterior	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
North	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
East	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
West	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
South	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
Interior	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Nonbearing walls and partitions	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Exterior	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
North	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
East	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
West	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
South	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Interior walls and partitions	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Floor construction including supporting beams and joists	–	0 HR	0 HR	N/A	N/A	N/A	N/A
Roof construction including supporting beams and joists	–	0 HR	0 HR	N/A	N/A	N/A	N/A
Roof Ceiling Assembly	–	0 HR	0 HR	N/A	N/A	N/A	N/A
Columns Supporting Roof	–	N/A	N/A	N/A	N/A	N/A	N/A
Shaft Enclosures – Exit	–	N/A	N/A	N/A	N/A	N/A	N/A
Shaft Enclosures – Other	–	N/A	N/A	N/A	N/A	N/A	N/A
Corridor Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Occupancy/Fire Barrier Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Party/Fire Wall Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Smoke Barrier Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Tenant/Dwelling Unit/ Sleeping Unit Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Incidental Use Separation	–	N/A	N/A	N/A	N/A	N/A	N/A

#indicate section number permitting reduction

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting:	☒ No	☒ Yes
Exit Signs:	☒ No	☒ Yes
Fire Alarm:	☐ No	☒ Yes
Smoke Detection Systems:	☐ No	☒ Yes ☒ Partial DUCT SMOKE DETECTION
Panic Hardware:	☒ No	☐ Yes
Carbon Monoxide Detection:	☒ No	☐ Yes

PERCENTAGE OF WALL OPENING CALCULATIONS

N/A

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTIONS (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
00'-0	00'	00	00
00'-0	00'	00	00
00'-0	00'	00	00

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: –

N/A

☐ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☐ Existing structures within 30 feet of the proposed building
☐ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
☐ Occupant loads for each area
☐ Exit access travel distances (1017)
☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
☐ Dead end lengths (1020.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7.)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS (SECTION 1107)

N/A

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED
00	00	00	00	00	00	00	00

ACCESSIBLE PARKING (SECTION 1106)

N/A

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED			
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	TOTAL # ACCESSIBLE PROVIDED
NAME	00	00	00	00	00	00
NAME	00	00	00	00	00	00
TOTAL	00	00	00	00	00	00

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

USE		WATER CLOSETS MALE	WATER CLOSETS FEMALE	WATER CLOSETS UNISEX	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS /TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXISTING	5	5	2	0	4	4	2	14	0	1
	NEW	5	5	3	0	4	4	3	14	0	2
	REQUIRED	NCBC 2902.7 – ADJUSTMENT OF PLUMBING FIXTURES IS IN ACCORDANCE TO OWNER – PROVIDED USE PATTERNS OF PROFESSIONAL AND SEMI-PROFESSIONAL SOCCER TEAMS UTILIZING THE FACILITY. RENOVATIONS ONLY AFFECT PLUMBING FIXTURES IN TEAM AREAS; PLUMBING FIXTURES IN PUBLIC / STADIUM VISITORS AREAS ARE NOT AFFECTED BY THIS PROJECT'S SCOPE.								

ENERGY SUMMARY

N/A

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☒ No ☐ Yes (The remainder is then N/A)
Exempt Building: ☐ No ☒ Yes (Provide code or summary reference): 2018 NCEBC 811
Climate Zone: ☐ 3A ☒ 4A ☐ 5A

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
If "Other" specify here) ___

THERMAL ENVELOPE (Prescriptive method only)

Roof/Ceiling Assembly (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A
Skylights in each assembly N/A
U-Value of skylight N/A
Total square footage of skylights in each assembly N/A

Exterior Walls (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A
Openings (windows or doors with glazing) N/A
U-Value of assembly N/A
Solar heat gain coefficient N/A
Projection factor N/A
Door R-Values N/A

Walls below grade (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A

Floors over unconditioned space (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A

Floors slab on grade
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A
Horizontal/vertical requirement N/A
Slab heated N/A

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc., describe below)

N/A

N/A

STRUCTURAL DESIGN

DESIGN LOADS:
Importance Factors: Wind (I_w) ___ Snow (I_s) ___ Seismic (I_E) ___
Live Loads: Roof ___ psf Mezzanine ___ psf Floor ___ psf
Ground Snow Load: ___ psf
Wind Load: Basic Wind Speed ___ mph (ASCE-7) Exposure Category ___
Wind Base Shears (for MWFRS) Vx = ___ Vy = ___

N/A

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D

Provide the following Seismic Design Parameters:
Occupancy Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration S_S ___ %g S_1 ___ %g
Site Classification (Table 1613.5.2) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
☐ Field Test ☐ Presumptive ☐ Historical Data

Basic structural system (check one)
☐ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum

Seismic base shear: Vx = ___ Vy = ___
Analysis Procedure: ☐ Simplified Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes No

LATERAL DESIGN CONTROL: ☐ Earthquake Wind

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) ___ psf
Presumptive Bearing capacity ___ psf
Pile size, type, and capacity ___

SPECIAL INSPECTIONS REQUIRED: ☐ Yes ☐ No

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone 4A
Winter dry bulb 16°F
Summer dry bulb 93°F 46%

Interior design conditions
Winter dry bulb 70°F
Summer dry bulb 74°F
Relative humidity 50%

Building heating load 349.1 MBH
Building cooling load 436.7 MBH

Mechanical Spacing Conditioning System
Unitary
Description of unit SPLIT SYSTEM COOLING AIR-COOLED WITH HOT WATER HEAT
Heating efficiency –
Cooling efficiency 10.3 EER
Size category of unit 92 MBH
Boiler
Size category. If oversized, state reason. 460 MBH
Chiller
Size category. If oversized, state reason. N/A
List equipment efficiencies SEE M-2

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance
Energy Code: ☐ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)
Lamp type required in fixture
Number of lamps in fixture
Ballast type used in the fixture
Number of ballasts in the fixture
Total wattage per fixture
Total interior wattage specified vs. allowed
Total exterior wattage specified vs. allowed

NO NEW LIGHTING

Additional Prescriptive Compliance
☐ C406.2 More Efficient Mechanical Equipment Performance
☐ C406.3 Reduced Lighting Power Density
☐ C406.4 Enhanced Digital Lighting Controls
☐ C406.5 On-Site Renewable Energy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating
☐ 506.2.3 Energy Recovery Ventilation Systems
☐ 506.2.6 Automatic Daylighting Control Systems

REVISIONS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025036 BRADLEY W. FELTS
3/31/23

ATLANTEC ENGINEERS, PA
322 BLUE RIDGE ROAD, SUITE 103
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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

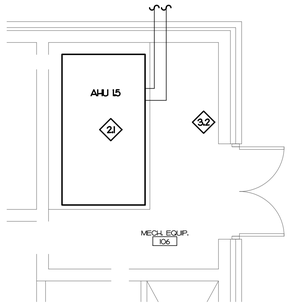
SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
BUILDING 1
APPENDIX B

DATE:
MARCH 31, 2023

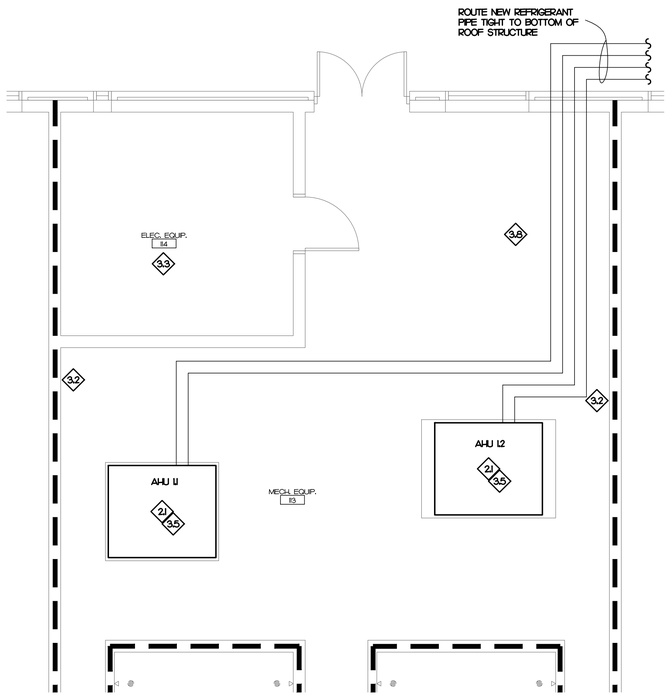
DESIGNER: BWF
ENGINEER: BWF

SHEET NO.
1T-1



4 MECHANICAL ROOM RENOVATION

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



3 MECHANICAL ROOM RENOVATION

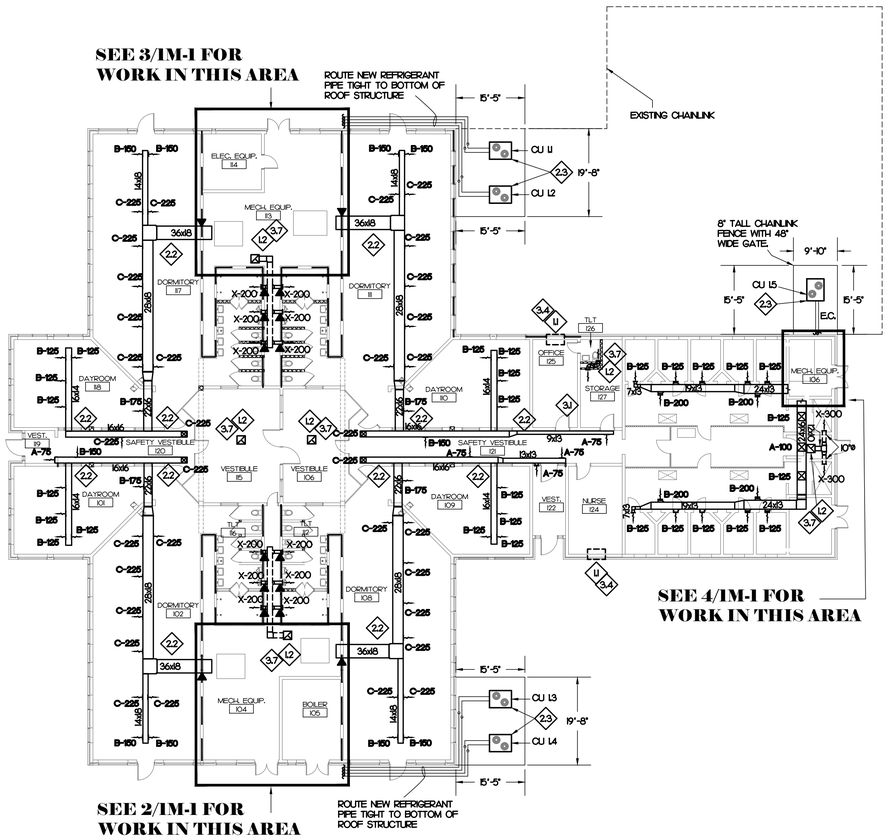
SCALE: 1/4" = 1'-0"

MECHANICAL KEY NOTES

- U — EXISTING HEAT PUMP TO REMAIN.
- L2 — EXISTING EXHAUST FAN TO REMAIN.
- 2.1 — INSTALL NEW DX COOLING COIL IN EXISTING AHU. PROVIDE CONDENSATE TRAP AND DRAIN TO EXISTING NEARBY FLOOR DRAIN. PROVIDE STAINLESS STEEL COIL CASING TO DIRECT AIR THROUGH COIL. SEE 4/1M-2 FOR DETAIL.
- 2.2 — NEW DUCT IN EXISTING DUCT LOCATION. FIELD VERIFY SIZE OF MOUNTING ANGLE PRIOR TO DUCT FABRICATION. DUCT SIZES LISTED ARE OUTSIDE SHEET METAL. REMOVE AND REINSTALL CONDUIT AS REQUIRED THAT IS SECURED TO DUCT.
- 2.3 — NEW CONDENSING UNIT ON NEW CONCRETE PAD. SEE 1/M-2 FOR DETAIL.
- 2.4 — 8' TALL CHAIN LINK BY CONTRACTOR WITH 4' GATE. COORDINATE GATE LOCATION WITH OWNER.
- 3.1 — EXISTING FIRE ALARM CONTROL PANEL AND NEW PURGE CONTROL PANEL.
- 3.2 — NEW BUILDING AUTOMATION CONTROL FOR AHU AND PURGE FAN CONTROL. EXISTING FIRE ALARM RELAYS TO REMAIN. REPLACE EXISTING TWO SPEED STARTER WITH NEW VFD.
- 3.3 — NEW IP ROUTER FOR CAMPUS INTEGRATION OF BAS.
- 3.4 — EXISTING THRU WALL UNIT. NO BAS INTEGRATION OR CONTROL.
- 3.5 — DX COOLING/AHU. SEE SHEET M-5 FOR CONTROL SCHEMATIC, POINTS LIST AND SEQUENCE OF OPERATIONS.
- 3.6 — EXISTING BOILER PLANT. SEE SHEET M-4 FOR CONTROL SCHEMATIC, POINTS LIST AND SEQUENCE OF OPERATIONS.
- 3.7 — EXISTING FAN TO REMAIN. NO BAS INTEGRATION OR CONTROL.
- 3.8 — EXISTING HOT WATER UNIT HEATER TO REMAIN. CONTROL VIA LOCAL THERMOSTAT. NO BAS INTEGRATION.
- 3.9 — EXISTING DOMESTIC HOT WATER HEATER TO REMAIN. MONITOR HOT WATER SUPPLY TEMPERATURE WITH BOILER CONTROLLER. NO OTHER BAS INTEGRATION OR CONTROL.

SCOPE OF WORK

1. ADD NEW COILING COILS IN EXISTING HEATING AND VENTILATION AIR HANDLING UNITS.
2. EXISTING UNITS HAVE TWO SPEED MOTORS AND FACE/BYPASS DAMPERS FOR PURGE OPERATION. REMOVE EXISTING TWO SPEED STARTER AND MOTOR AND PROVIDE NEW VFD, MOTOR, BELTS AND PULLEYS. REMOVE FACE DAMPER LINKAGE AND ACTUATOR AND LOCK IN OPEN POSITION. PROVIDE NEW BYPASS DAMPER ACTUATOR.
3. PROVIDE POST-WORK TEST AND BALANCE TO VERIFY TOTAL SUPPLY AIRFLOW AT PURGE MODE AND GRILLE AIRFLOW AT "NORMAL MODE". NORMAL MODE AIRFLOW SHOWN ON THESE PLANS. SEE SCHEDULE FOR OTHER AIRFLOW SETPOINTS.
4. BALANCE AIR DISTRIBUTION AND OUTSIDE AIR AT "NORMAL" MODE OF OPERATION.
5. REMOVE EXISTING SUPPLY DUCT AND AIR DISTRIBUTION IN DORM AREA. DUCTWORK IN MECHANICAL ROOM TO REMAIN AS IS.
6. PROVIDE NEW INSULATED DUCT AND AIR DISTRIBUTION IN SAME ROUTE AS EXISTING DUCT. RELOCATE CONDUIT, MOUNTING ANGLE AS REQUIRED. NEW DUCT SIZES ARE OUTSIDE SHEET METAL. OUTSIDE DIMENSION WILL INCLUDE 1.0" OF LINER ON ALL SIDES. DUCT SIZES ARE BASED ON ORIGINAL PLANS. WALL PENETRATIONS SHOULD MATCH EXISTING. FIELD VERIFY ALL DUCT SIZES AND DIMENSIONS PRIOR TO FABRICATION.
7. BALANCE EXISTING TOILET EXHAUST TO 600 CFM PER POD, 1200 CFM PER FAN.
8. PROVIDE NEW BUILDING AUTOMATION SYSTEM COMPLETE WITH ALL NEW SENSORS, ACTUATOR, VFD'S, WIRING, CONDUIT FOR A COMPLETE AND OPERATIONAL SYSTEM. ALL CONTROLLERS AND VFD'S TO BE BACNET AND COMMUNICATE TO EXISTING JACE OVER CAMPUS INTRANET.



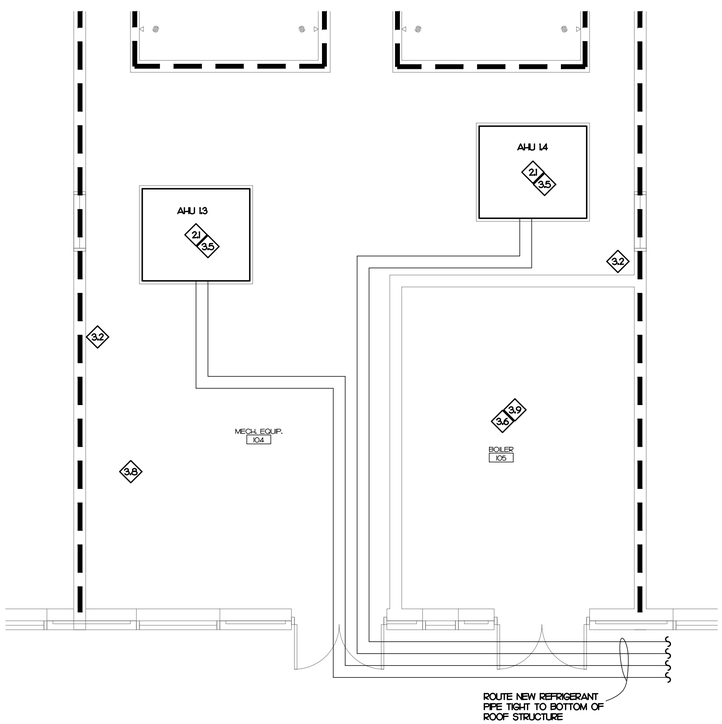
1 MECHANICAL RENOVATION PLAN

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

WALL TYPE LEGEND	
SYMBOL	DESCRIPTION
— — — —	SMOKE PARTITION

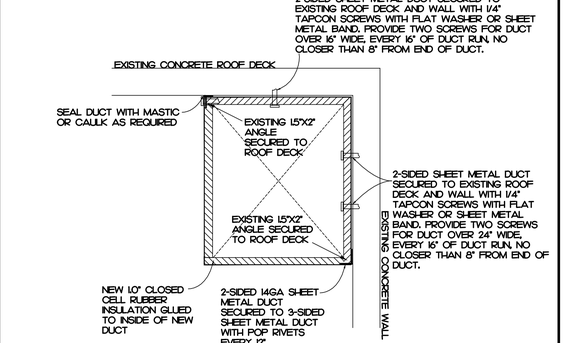
0 1'-2" 4'-8" 12'

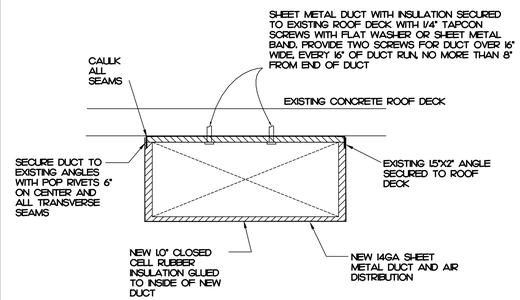
N



2 MECHANICAL ROOM RENOVATION

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





4 DUCT INSULATION SECTION

NOT TO SCALE

REVISIONS

ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL CORPORATION
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SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

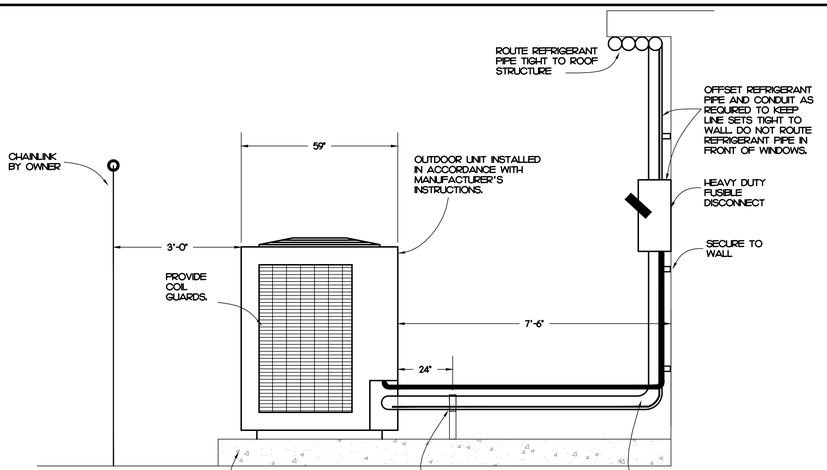
CONTENTS:
BUILDING 1 MECHANICAL RENOVATION PLAN

DATE:
MARCH 31, 2023

DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
1M-1

2203



1 GROUND MTD OUTDOOR UNIT

NOT TO SCALE

AIR COOLED CONDENSING UNIT

MARK	BASIS OF DESIGN	MODEL	SYSTEM CAPACITY (MBH)	REFRIG. TYPE	ELECTRICAL (V/Ø)	(MCA)	(MOCP)	EFFICIENCY (EER)	NOTES
CU-1	CARRIER	38AUD08	92.0	410A	208/3	42.0	60	11.2	1-6
CU-2	CARRIER	38AUD08	92.0	410A	208/3	42.0	60	11.2	1-6
CU-3	CARRIER	38AUD08	92.0	410A	208/3	42.0	60	11.2	1-6
CU-4	CARRIER	38AUD08	92.0	410A	208/3	42.0	60	11.2	1-6
CU-5	CARRIER	38AUD08	92.0	410A	208/3	42.0	60	11.2	1-6

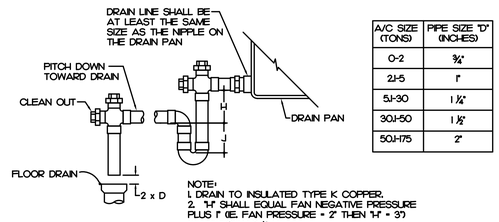
NOTES:

1. PROVIDE WITH COIL GUARDS.
2. PROVIDE WITH SINGLE POINT ELECTRICAL CONNECTION.
3. UNIT TO HAVE A MINIMUM OF 2 STAGES COOLING.
4. PROVIDE WITH HEAVY DUTY FUSIBLE DISCONNECT.
5. CONTROL VIA BUILDING AUTOMATION SYSTEM.
6. PROVIDE 5 YEAR COMPRESSOR WARRANTY, PARTS, AND LABOR.

EQUALS BY TRANE, JCI, AND DAIKIN

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE 2018 EDITION OF THE NC STATE CODES.
2. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMAN. THE M.C. SHALL COORDINATE ALL OF HIS WORK WITH ALL OTHER CONTRACTORS.
3. THE MECHANICAL PLANS AND SPECIFICATIONS SHALL BE THOROUGHLY REVIEWED PRIOR TO PURCHASING MATERIALS AND INSTALLATION. ALL DISCREPANCIES OR INTERFERENCES SHALL BE BROUGHT TO THE ENGINEERS' ATTENTION.
4. THE M.C. SHALL INSURE THAT ALL MECHANICAL EQUIPMENT INSTALLED UNDER HIS CONTRACT SHALL OPERATE FREE OF OBJECTIONABLE NOISE AND VIBRATION.
5. THE M.C. SHALL KEEP THE PREMISES CLEAR OF DEBRIS FROM THE CONTRACTOR'S WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT THE COMPLETION OF THE CONTRACTOR'S WORK. THE CONTRACTOR SHALL ALSO LEAVE CLEAN ALL EXPOSED EQUIPMENT IN THE CONTRACTOR'S CONTRACT.
6. ALL DUCTWORK SIZES SHOWN ARE OUTSIDE DIMENSIONS UNLESS OTHERWISE NOTED. LINE DUCTWORK WITH 1.0" CLOSED CELL FOAM INSULATION WITH FLAME/SMOKE RATING OF 25/50. INSIDE CLEAR DIMENSIONS TO BE LISTED SIZE LESS 2" IN BOTH DIRECTIONS.
7. MECHANICAL CONTRACTOR SHALL WORK WITH TEST AND BALANCE CONTRACTOR TO REMEDY ANY DIFFERENCES TO INCLUDE FAN DRIVE CHANGES, INSTALLATION OF DAMPERS OR OTHER MINOR DUCT MODIFICATIONS TO PROVIDE AIRFLOW TO WITHIN +/- 10% OF THE DESIGN VALUES LISTED ON THESE PLANS.
8. HOT WATER PIPING SHALL BE SCHEDULE 40 BLACK STEEL WITH MALLEABLE IRON THREADED FITTINGS. INSULATE PIPING WITH MIN. 1-1/2" THICK PRE-MOLDED CELLULAR GLASS PIPE INSULATION WITH VAPOR BARRIER JACKET. APPLY HEAT TAPE TO ALL EXTERIOR PIPING PRIOR TO APPLYING INSULATION.
9. ALL EQUIPMENT PADS SHALL BE PAINTED YELLOW.
10. THE AIR HANDLING UNIT SHALL OPERATE AT ALL TIMES DURING OCCUPIED HOURS.
11. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A SET OF AS-BUILT DRAWINGS UPON COMPLETION OF JOB.
12. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A BALANCE REPORT BY A CERTIFIED TEST AND BALANCE COMPANY.
13. PROVIDE PERMIT LABEL ENGRAVED PLASTIC LAMINATE MECHANICALLY FASTENED TO OUTDOOR UNITS.
14. LABEL CEILING GRID WHERE EQUIPMENT IS LOCATED ABOVE LAY-IN CEILING. WITH EQUIPMENT IDENTIFIER. ALSO LABEL ALL TEMPERATURE SENSORS AND THERMOSTATS WITH EQUIPMENT IDENTIFIER.



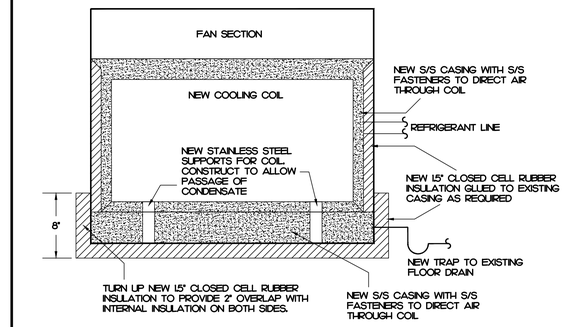
A/C SIZE (TONS)	PIPE SIZE "D" (INCHES)
0-2	¾"
2.1-5	1"
5.1-30	1 ¼"
30.1-50	1 ½"
50.1-175	2"

NOTE:

1. DRAIN TO INSULATED TYPE K COPPER.
2. "H" SHALL EQUAL FAN NEGATIVE PRESSURE PLUS 1" (IE. FAN PRESSURE = 2" THEN "H" = 3")
3. "L" EQUALS ½ H.
4. SEE CHART FOR MINIMUM PIPE SIZE OR "D".
5. MANUFACTURERS RECOMMENDATIONS SHALL OVERRIDE ITEMS 2 AND 3.

2 CONDENSATE TRAP DETAIL

NOT TO SCALE



4 AHU INSULATION SECTION

NOT TO SCALE

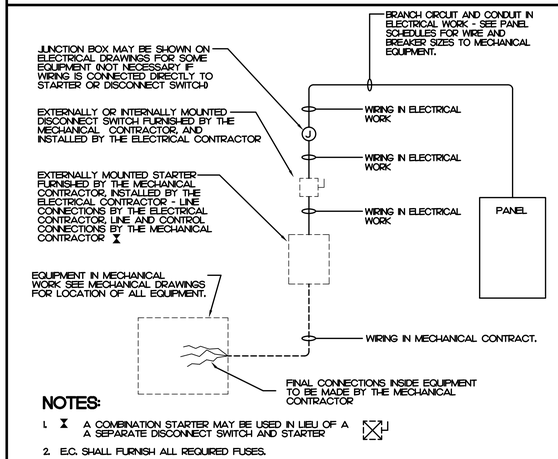
DX COOLING COIL SCHEDULE

MARK	AREA SERVED	HTG AIR FLOW (cfm)	CLG 1 AIR FLOW (cfm)	CLG 2 AIR FLOW (cfm)	PURGE AIR FLOW (cfm)	CLG 2 VELOCITY (fpm)	COOLING TOT. CAP. (MBH)	COOLING SEN. CAP. (MBH)	AIR SIDE APD (in. w.g.)	AIR SIDE EDB (°F)	AIR SIDE EWB (°F)	AIR SIDE LDB (°F)	AIR SIDE LWB (°F)	NOTES	EXISTING AHU MODEL NO.
AHU-1	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV
AHU-2	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV
AHU-3	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV
AHU-4	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV
AHU-5	DORMITORY	1935	2010	2400	2905	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU08CV

NOTE:

1. PROVIDE WITH STAINLESS STEEL COIL CASING AND SUPPORTS FOR NEW COIL.
2. FIELD VERIFY AVAILABLE SPACE IN EXISTING AHU AND HAND OF COIL.
3. COILS TO BE 3-ROW MINIMUM.
4. AIRFLOW LISTED SHALL BE BALANCED WITH VFD AND BAS FOR PROGRAMMED MODES OF OPERATION. PURGE AIRFLOW IS IN COMBINATION WITH BY-PASS AND FLOW THRU COIL. COIL VELOCITY, PRESSURE DROP AND CAPACITY IS FOR COOLING STAGE 2 AIRFLOW. NEW MOTORS TO BE 5.0 HP, 480/3 EXCEPT FOR AHU-5 WILL BE 1.5 HP 208/3.

EQUALS BY CAPITAL COIL, TRANE, DAIKIN, JCI, AND CARRIER

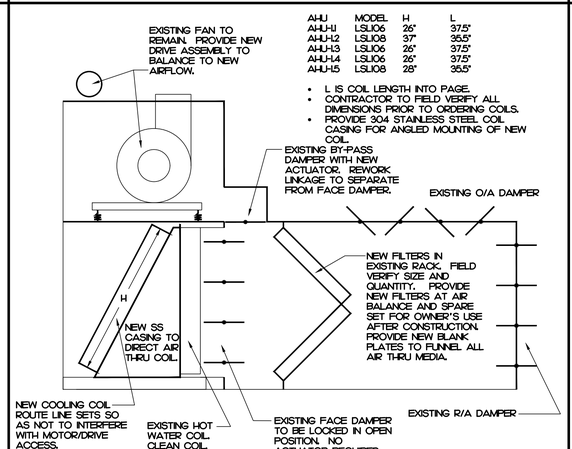


NOTES:

1. ⧗ A COMBINATION STARTER MAY BE USED IN LIEU OF A A SEPARATE DISCONNECT SWITCH AND STARTER ⊠
2. E.C. SHALL FURNISH ALL REQUIRED FUSES.

3 TYPICAL WIRING DETAIL

NOT TO SCALE



AHU	MODEL	H	L
AHU-1	LSU06	26"	37.5"
AHU-2	LSU08	37"	35.5"
AHU-3	LSU06	26"	37.5"
AHU-4	LSU06	26"	37.5"
AHU-5	LSU08	28"	35.5"

- L IS COIL LENGTH INTO PAGE.
- CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING COILS.
- PROVIDE 304 STAINLESS STEEL COIL CASING FOR ANGLED MOUNTING OF NEW COIL.

5 AHU WORK DETAIL

NOT TO SCALE

GRILLE & DIFFUSER SCHEDULE

MARK	BASIS OF DESIGN	SERVICE	TYPE	MAX. CFM	FACE SIZE	NECK SIZE	NOTES
A	KEES SEG4P3	SUPPLY	DUCT MOUNTED	200	9.75X9.75	8X8	1-4
B	KEES SEG4P3	SUPPLY	DUCT MOUNTED	375	11.75X11.75	10X10	1-4
C	KEES SEG4P3	SUPPLY	DUCT MOUNTED	400	13.75X13.75	12X12	1-4

NOTES:

1. PROVIDE WITH WHITE FINISH.
2. PROVIDE WITH FRAME FOR DUCT MOUNTING.
3. PROVIDE WITH FACE OPERATED OPPOSED BLADE DAMPER.
4. 12GA STEEL WITH PERFORATED FACE(3/16" HOLES). SECURE WITH #10 TORX SECURITY SHEET METAL SCREWS.

EQUALS BY NAILOR, METALAIRE, PRICE

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	INSULATED SHEET METAL DUCT
⊠	SUPPLY DIFFUSER - LETTER & NUMBER INDICATES TYPE & CFM
	SIDEWALL SUPPLY GRILLE - LETTER & NUMBER INDICATES TYPE & CFM
▲	EXISTING FIRE DAMPER

OUTSIDE AIR SUMMARY

REQUIRED:

MAIN BLDG: (5 CFM/PER X 108 PER) + (0.12 CFM/SQFT X 10,735 SQFT) = 1830 CFM
ISOLATION: (5 CFM/PER X 11 PER) + (0.12 CFM/SQFT X 1,648 SQFT) = 255 CFM

TOTAL REQUIRED = 1830 CFM + 255 CFM = 2085 CFM

PROVIDED:

NOTE: O/A SET TO MATCH TOILET EXHAUST

AHU 1 = 600 CFM
AHU 2 = 600 CFM
AHU 3 = 600 CFM
AHU 4 = 600 CFM
AHU 5 = 700 CFM

TOTAL PROVIDED = 3100 CFM

2203

REVISIONS

NORTH CAROLINA PROFESSIONAL CORPORATION
ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025036 BRADLEY W. FELTS
3/31/23

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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

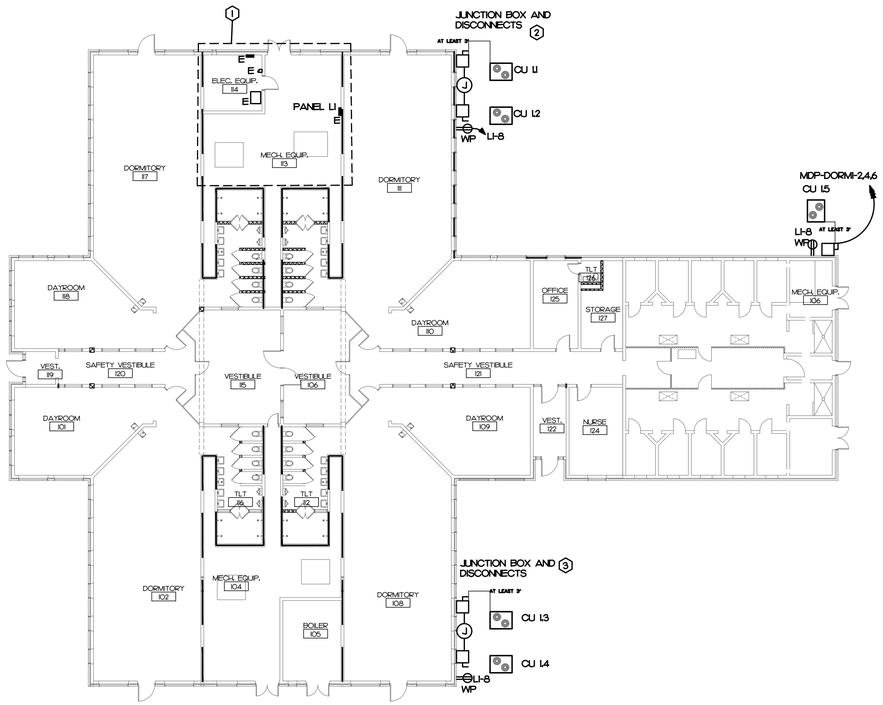
SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
BUILDING 1 MECHANICAL NOTES, LEGEND, AND DETAILS

DATE: MARCH 31, 2023

DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
1M-2



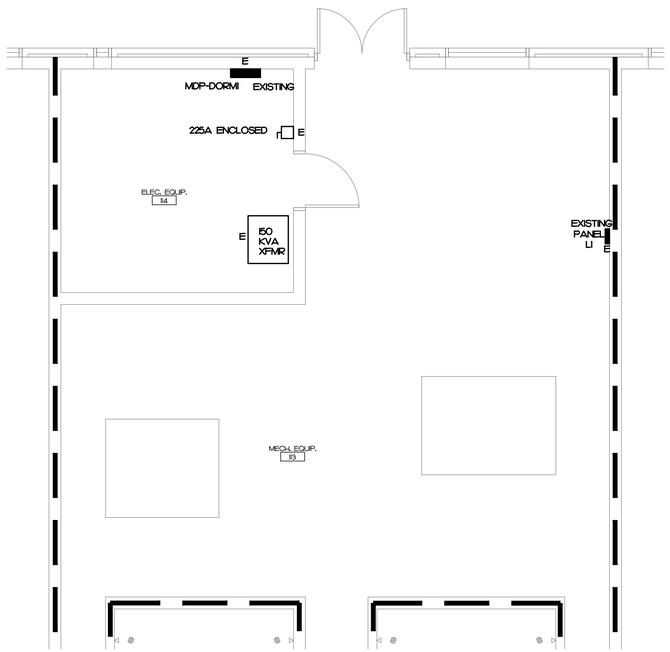
1 ELECTRICAL RENOVATION PLAN

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

WALL TYPE LEGEND	
SYMBOL	DESCRIPTION
– – – – –	SMOKE PARTITION

1' 2' 4' 8' 12'

N



2 MECHANICAL ROOM RENOVATION

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

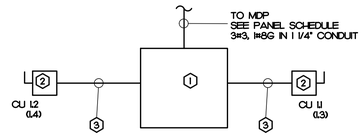
KEY NOTES

1. SEE ENLARGED PLAN 1E-1/2
2. USE CIRCUIT MDP-DORMI-8,10,12 FOR THE JUNCTION BOX AT THIS LOCATION. E.C TO PROVIDE TAPS AND DISCONNECTS TO FEED CU L1 AND L2. SEE DETAIL.
3. USE CIRCUIT MDP-DORMI-14,16,18 FOR JUNCTION BOX AT THIS LOCATION. E.C TO PROVIDE TAPS AND DISCONNECTS TO FEED CU L3 AND L4. SEE DETAIL.

NOTES

1. PER THE NC DEPARTMENT OF PUBLIC SAFETY, THE PREFERRED ROUTING METHOD FOR BRANCH CIRCUITS WIRING IS EXPOSED ON THE BUILDING EXTERIOR WALLS. THE DEPARTMENT WILL BE FURNISHING IN HOUSE LABOR FOR THIS WORK. THE EXACT CONDUIT ROUTING WILL BE FIELD DETERMINED. THE CONDUIT ROUTING SHOULD FOLLOW THE NEW REFRIGERANT PIPING.

MULTIPLE CONDENSING UNIT CONNECTION DETAIL



KEY NOTES

1. JUNCTION BOX SIZED PER NEC WITH APPROVED TERMINAL BLOCKS FOR LINE VOLTAGE CONDUCTORS AND GROUND WIRES. GROUND BOX TO GROUND TERMINAL.
2. NEMA 3R 60 AMP DISCONNECT. PROVIDED BY THE MECHANICAL CONTRACTOR. FUSED AT 60 AMPS. LABEL DISCONNECT TO INDICATED UNIT SERVED AND IDENTIFY THE CIRCUIT FEEDING THE DISCONNECT.
3. TAP CONDUCTORS TO THE LINE SIDE OF THE DISCONNECT. 3#6, 1#8G IN 3/4" CONDUIT.

REVISIONS

ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL CORPORATION

4.3.23

NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID J. WHITNEY

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SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC NORTH CAROLINA

CONTENTS:
BUILDING 1 ELECTRICAL RENOVATION

DATE:
MARCH 31, 2023

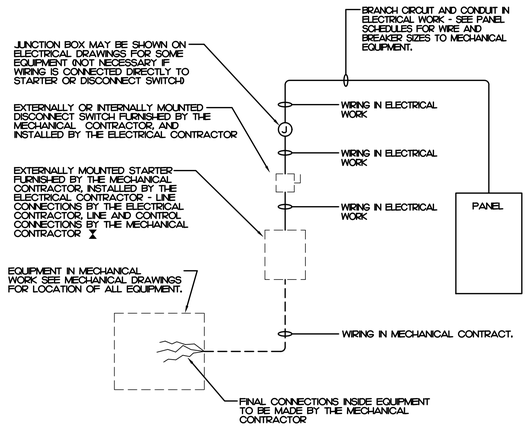
DESIGNER: AB
ENGINEER: DW

SHEET NO.
1E-1

2203

SYMBOL LEGEND

SYMBOL	DESCRIPTION	REMARKS
J	JUNCTION BOX SIZED PER N.E.C.	
D	DISCONNECT SWITCH SEE PLANS FOR SIZE AND TYPE	SEE SPECIFICATIONS
	NEW CONCEALED WIRING	PER N.E.C.
	HOME RUN TO PANEL BOARD NUMBERS OF ARROW INDICATE CIRCUITS	PER N.E.C.
E	EXISTING 120/208V 3Ø, 4W PANEL BOARD - SEE PANEL SCHEDULES	SEE SPECIFICATIONS
S	SINGLE POLE TOGGLE SWITCH, MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE.	SEE SPECIFICATIONS
WP	SPECIFICATION GRADE, WEATHER RESISTANT AND GFCI DUPLEX RECEPTACLE WITH IN-USE WEATHER PROOF COVER. MOUNT 16" A.F.F. UNLESS OTHERWISE NOTED.	SEE SPECIFICATIONS
E	EXISTING	



NOTES:

1. A COMBINATION STARTER MAY BE USED IN LIEU OF A A SEPARATE DISCONNECT SWITCH AND STARTER
2. E.C. SHALL FURNISH ALL REQUIRED FUSES.

WIRING TO MECHANICAL EQUIPMENT

NOT TO SCALE

GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL FLOOR PLAN DIMENSIONS.
2. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ANY AND ALL WORK WITH OTHER TRADES INVOLVED IN THE PROJECT, PRIOR TO THE INSTALLATION OF HIS EQUIPMENT SO AS TO AVOID CONFLICTS DURING CONSTRUCTION AND TO ALLOW FOR OPTIMUM MAINTENANCE AND WORKING SPACE.
3. USE OF THE CONDUIT SYSTEM FOR EQUIPMENT GROUNDING SHALL NOT BE ACCEPTABLE. A SEPARATE GREEN GROUND WIRE SHALL BE RUN WITH THE CIRCUIT CONDUCTORS IN EACH CONDUIT.
4. ALL BREAKER SIZES, SHOWN FOR MECHANICAL EQUIPMENT, SHALL BE VERIFIED BEFORE THE PURCHASE OR INSTALLATION OF SAID EQUIPMENT, WITH THE EQUIPMENT SUPPLIER AND THE MECHANICAL CONTRACTOR.
5. ALL WORK AND MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH THE STATE, LOCAL AND NATIONAL CODES, ORDINANCES AND 2020 NATIONAL ELECTRICAL CODE (NFPA 70).
6. EACH CONTRACTOR SHALL PROVIDE HIS OWN SUPPORT OF ALL DEVICES AND EQUIPMENT PROVIDED BY HIM AND SHALL SUPPORT SUCH EQUIPMENT PER APPROVED GOVERNING CODES OR PER APPROVAL OF THE ENGINEER. UNACCEPTABLE WORKMANSHIP OR MATERIALS SHALL BE REPLACED AT THE REQUEST OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
7. THE MOUNTING HEIGHTS AND LOCATIONS OF ALL WALL MOUNTED OUTLETS AND JUNCTION BOXES SHALL BE REVIEWED AND COORDINATED WITH THE OWNER, PRIOR TO INSTALLATION FOR USE WITH THE ACTUAL EQUIPMENT, CASEWORK, AND MILLWORK TO BE FURNISHED.
8. EQUIPMENT CONNECTIONS:
   - MECHANICAL EQUIPMENT:
     SEE DETAIL ON THIS SHEET
9. PENETRATION:
   - WHERE ELECTRICAL EQUIPMENT PENETRATES RATED WALLS AND CEILINGS, EXTERIOR WALLS, THEY SHALL BE PROPERLY SEALED PER APPROVED UL METHODS.
   - WHERE ELECTRICAL EQUIPMENT PENETRATES EXTERIOR WALLS, THEY SHALL BE PROPERLY SEALED WITH METHODS APPROVED BY THE ENGINEER. SUBMIT DETAIL OF PROPOSED SEALING METHODS.
10. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR.
11. THE CONTRACTOR SHALL PROVIDE COMPLETE UPDATED TYPEWRITTEN PANEL SCHEDULES FOR ALL PANELBOARDS AFFECTED BY THIS WORK.
12. AS BUILT DRAWINGS SHALL BE GIVEN TO THE OWNER AT THE COMPLETION OF THE PROJECT.
13. ALL WIRE SIZES INDICATED ON THE PANEL SCHEDULES ARE BASED ON 75 DEGREE COPPER THHN/THWN WIRE. ALL WIRE TERMINALS AND EQUIPMENT SHALL BE LISTED AND APPROVED FOR 75°C. ONLY THWN-2 WIRE SHALL BE INSTALLED IN WET AND EXTERIOR LOCATION.
14. MINIMUM WIRE SIZE SHALL BE #12 AWG.
    MINIMUM CONDUIT SIZE INSIDE BUILDING SHALL BE 3/4".
    MINIMUM CONDUIT SIZE OUTSIDE BUILDING SHALL BE 3/4".
    MINIMUM CONDUIT SIZE UNDER GROUND SHALL BE 1".
15. METAL-CLAD CABLE (TYPE MC) AND ARMORED CABLE (TYPE AC) ARE NOT ALLOWED IN THIS PROJECT.
16. THE MAXIMUM NUMBER OF HOMERUNS IN A CONDUIT SHALL NOT EXCEED THREE (3). MULTI-WIRE CIRCUITS WITH SHARED NEUTRAL CONDUCTORS ARE NOT ALLOWED. PROVIDE INDIVIDUAL NEUTRAL FOR EACH SINGLE POLE CIRCUIT.
17. WHERE OUTLETS ARE SHOWN BACK TO BACK ON RATED WALLS, STAGGER OUTLETS SO THAT THEY ARE SEPARATED BY A MINIMUM OF 24".
18. ALL DISCONNECTS SHALL HAVE SEPARATE NEUTRAL AND GROUND BARS.
19. BOXES AND CONDUITS SHALL NOT BE INSTALLED RECESSED IN A 3-HOUR OR HIGHER RATED WALL. WHEN OUTLETS ARE INDICATED ON THESE WALLS, FIELD COORDINATE CONDUIT AND BOX INSTALLATION.
20. IT IS THE RESPONSIBILITY OF E.C. TO NOTIFY NORTH CAROLINA DEPARTMENT OF ADMINISTRATION ELECTRICAL INSPECTOR TO SCHEDULE REQUIRED INSPECTIONS. INSPECTION AVAILABILITY IS MONDAY THRU FRIDAY SUBJECT TO THE AHJ SCHEDULE.
21. UNDERGROUND RACEWAY
    A. RACEWAYS RUN EXTERNAL TO BUILDING FOUNDATION WALLS, WITH THE EXCEPTION OF BRANCH CIRCUIT RACEWAYS, SHALL BE ENCASED WITH A MINIMUM OF THREE (3) INCHES OF CONCRETE ON ALL SIDES.
       - ENCASED RACEWAYS MUST HAVE A MINIMUM COVER OF EIGHTEEN (18) INCHES, EXCEPT FOR RACEWAY CONTAINING CIRCUITS WITH VOLTAGES ABOVE 600V, WHICH MUST HAVE A MINIMUM COVER OF THIRTY (30) INCHES.
       - ENCASED RACEWAYS SHALL BE OF A TYPE APPROVED BY THE NEC AS "SUITABLE FOR CONCRETE ENCASEMENT".
    B. BRANCH CIRCUIT RACEWAYS RUN UNDERGROUND EXTERNAL TO BUILDING FOUNDATION WALLS SHALL BE RUN IN RACEWAYS INSTALLED IN ACCORDANCE WITH THE NEC, AND SHALL BE OF A TYPE APPROVED BY THE NEC AS "SUITABLE FOR DIRECT BURIAL." MINIMUM RACEWAY SIZE SHALL BE 1".
    C. ALL UNDERGROUND RACEWAYS SHALL BE IDENTIFIED BY UNDERGROUND LINE MARKING TAPE LOCATED DIRECTLY ABOVE THE RACEWAY AT 6 TO 8 INCHES BELOW FINISHED GRADE. TAPE SHALL BE PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED, PLASTIC TAPE COMPOUNDED FOR DIRECT BURIAL NOT LESS THAN 6 INCHES WIDE AND 4 MILS THICK. PRINTED LEGEND SHALL BE INDICATIVE OF GENERAL TYPE UNDERGROUND LINE BELOW.
    D. RACEWAYS RUN UNDERGROUND INTERNAL TO BUILDING FOUNDATION WALLS SHALL BE OF A TYPE AND INSTALLED BY A METHOD APPROVED BY THE NEC.
    E. WHERE UNDERGROUND RACEWAYS ARE REQUIRED TO TURN UP INTO CABINETS, EQUIPMENT, ETC., AND ON TO POLES, THE ELBOW REQUIRED AND THE STUB-UP OUT OF THE SLAB OR EARTH SHALL BE OF RIGID STEEL.
    F. THE RACEWAY SYSTEM SHALL NOT BE RELIED ON FOR GROUNDING CONTINUITY.
    G. WHERE PASSING THROUGH A "BELOW GRADE" WALL FROM A CONDITIONED INTERIOR BUILDING SPACE, RACEWAYS SHALL BE SEALED UTILIZING FITTINGS SIMILAR AND EQUAL TO OZ/GEDNEY TYPE "FSK" THRU-WALL FITTING WITH "FSKA" MEMBRANE CLAMP ADAPTER IF REQUIRED.

PANEL MDP-DORM1

120/208V, 3 PHASE, 4 WIRE

CKT	DESCRIPTION	KVA	C	G	W	CB	CKT	CKT	CB	W	G	C	KVA	DESCRIPTION	CKT
1	L1 PANEL	12.1	E	E	E	225	1	2	60	6	10	1	5.0	NOTE 2 CU1.5	2
3		12.7			E	3P	3	4	3P	6			5.0		4
5		13.4			E		5	6		6			5.0		6
7	L2 PANEL	5.8	E	E	E	225	7	8	100	3	8	1 1/4	10.1	NOTE 2 CU1.1,1.2	8
9		5.8			E	3P	9	10	3P	3			10.1		10
11		5.8			E		11	12		3			10.1		12
13	L3 PANEL	5.8	E	E	E	150	13	14	100	1	8	1 1/4	10.1	NOTE 2 CU 1.3,1.4	14
15		5.8			E	3P	15	16	3P	1			10.1		16
17		5.8			E		17	18		1			10.1		18
19	SPACE ONLY	0.0					19	20					0.0	SPACE ONLY	20
21		0.0					21	22					0.0		22
23		0.0					23	24					0.0		24
25	NA	0.0					25	26					0.0	NA	26
27	NA	0.0					27	28					0.0	NA	28
29	NA	0.0					29	30					0.0	NA	30
31	NA	0.0					31	32					0.0	NA	32
33	NA	0.0					33	34					0.0	NA	34
35	NA	0.0					35	36					0.0	NA	36
37	NA	0.0					37	38					0.0	NA	38
39	NA	0.0					39	40					0.0	NA	40
41	NA	0.0					41	42					0.0	NA	42

DESCRIPTION	CONNECTED KVA	DEMAND FACTOR	DEMAND KVA
CONT. LOAD	12.23	125%	15.28
RECEPTACLE	11.40	100%/50%	10.70
MTRS/COOLS	1.00	100%	1.00
HEATS	0.00	125%	0.00
WATER HEATER	0.00	125%	0.00
EQUIPMENT	124.28	90%	111.85
KITCHEN EQUIP.	0.00	65%	0.00
SPECIAL EQ.	0.00	100%	0.00
25% OF LARGEST HVAC/MOTOR			2.00
TOTAL DEMAND			140.83

600 A MINIMUM BUS SIZE
600 A MAIN CIRCUIT BREAKER
22 K MINIMUM AIC RATING

SURFACE MOUNTING
NEMA 1 ENCLOSURE
GROUND BAR

NOTES
1. EXISTING SQUARE D: I LINE. 'E' INDICATES EXISTING BRANCH CIRCUIT TO REMAIN
2. PROVIDE NEW BREAKER
3. NEW HVAC LOADS ARE CALCULATED AT MCA.
4.
5.

CONNECTED LOADS	
PHASE A:	49 KVA
PHASE B:	49.6 KVA
PHASE C:	50.3 KVA
TOTAL:	148.9 KVA
DEMAND	391 AMP

PANEL L1

120/208V, 3 PHASE, 4 WIRE

CKT	DESCRIPTION	KVA	C	G	W	CB	CKT	CKT	CB	W	G	C	KVA	DESCRIPTION	CKT
1	FAN B WING	0.5	E	E	E	20	1	2		--	--	--	0.0	SPACE ONLY	2
3	MW A WING	1.0	E	E	E	20	3	4	20	E	E	E	1.7	OUTSIDE WALKIN COOLER	4
5	SPARE	0.0	E	E	E	20	5	6	2P	E	--	--	1.7		6
7	SPARE	0.0	E	E	E	20	7	8	20	12	12	1/2	0.5	NOTE 2 REC EXTERIOR	8
9	SPARE	0.0	E	E	E	20	9	10	--	--	--	--	0.0	SPACE ONLY	10
11	SPARE	0.0	E	E	E	20	11	12	--	--	--	--	0.0	SPACE ONLY	12
13	NIGHT LIGHTS	1.0	E	E	E	20	13	14	20	E	E	E	1.0	FAN DAYRM A WING	14
15	DN WARD A&B	0.0	E	E	E	20	15	16	20	E	E	E	1.0	FAN DAYRM C WING	16
17	D FIXTURES A&B	2.0	E	E	E	20	17	18	20	E	E	E	1.0	FAN DAYRM B WING	18
19	BATH/DAYRM A&B LTS	1.0	E	E	E	20	19	20	20	E	E	E	1.0	FAN DAYRM D WING	20
21	MECH RM LTS	1.0	E	E	E	20	21	22	20	E	E	E	1.5	REC MECH RM AND CHASE	22
23	SPARE	0.0	E	E	E	20	23	24	20	E	E	E	0.5	REC MECH RM AND CHASE	24
25	SPARE	0.0	E	E	E	20	25	26	20	E	E	E	0.5	WATER COOLER CTRL	26
27	SPARE	0.0	E	E	E	20	27	28	20	E	E	E	0.0	SPARE	28
29	REC DAYRM A WING	0.5	E	E	E	20	29	30	20	E	E	E	0.5	REC B WING	30
31	WATER COOLER	1.0	E	E	E	20	31	32	20	E	E	E	1.0	EWC B WING	32
33	UNIT HEATER	1.0	E	E	E	20	33	34	20	E	E	E	1.0	BATH EX FAN 2	34
35	FAN 5	1.7	E	E	E	20	35	36	20	E	E	E	1.0	EX FAN 9	36
37		1.7	--	--	E	2P	37	38	30	E	E	E	2.9	EX FAN CNTRL AREA	38
39	FAN 6	1.7	E	E	E	20	39	40	3P	E	--	--	2.9		40
41		1.7	--	--	E	2P	41	42	--	E	--	--	2.9		42

DESCRIPTION	CONNECTED KVA	DEMAND FACTOR	DEMAND KVA
CONT. LOAD	4.00	125%	5.00
RECEPTACLE	4.54	100%/50%	4.54
MTRS/COOLS	1.00	100%	1.00
HEATS	0.00	125%	0.00
WATER HEATER	0.00	125%	0.00
EQUIPMENT	28.63	100%	28.63
KITCHEN EQUIP.	0.00	65%	0.00
SPECIAL EQ.	0.00	100%	0.00
25% OF LARGEST HVAC/MOTOR			2.00
TOTAL DEMAND			41.17

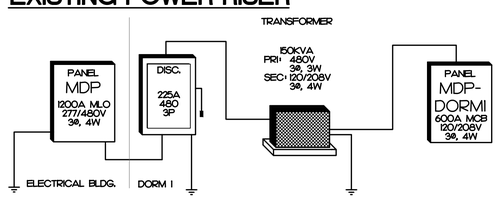
225 A MINIMUM BUS SIZE
MAIN LUGS ONLY
10 K MINIMUM AIC RATING

SURFACE MOUNTING
NEMA 1 ENCLOSURE
GROUND BAR

NOTES
1. EXISTING SQUARE D: NQOD. 'E' INDICATES EXISTING BRANCH CIRCUIT TO REMAIN
2. PROVIDE NEW BREAKER
3.
4.
5.

CONNECTED LOADS	
PHASE A:	12.1 KVA
PHASE B:	12.7 KVA
PHASE C:	13.4 KVA
TOTAL:	38.2 KVA
DEMAND	114 AMP

EXISTING POWER RISER



NOTE:

1. POWER RISER IS EXISTING TO REMAIN. SHOWN FOR REFERENCE ONLY.

MDP LOAD STATEMENT:

EXISTING LOAD AT MDP AND ATS PER UTILITY RECORDS
- 214 KW WITH AN ASSUMED POWER FACTOR OF 0.85 AND A DEMAND FACTOR OF 1.25 THE DEMAND LOAD IS 344.71 KVA
- ADDED LOAD OF 200.61 KVA (TOTAL OF ALL BUILDINGS)
- NEW DEMAND LOAD 545.32 KVA (659.83 AMPS)

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REVISIONS

ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL CORPORATION
4/13/23
NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID J. WHITNEY

ATLANTEC ENGINEERS, PA
320 BLUE RIDGE ROAD, SUITE 113
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(919) 571-4111
805 ST. JAMES PLACE
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(252) 527-3336

PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
BUILDING 1
ELECTRICAL NOTES, LEGEND, AND DETAILS

DATE:
MARCH 31, 2023

DESIGNER: AB
ENGINEER: DW

SHEET NO.
1E-2

APPENDIX B
2018 BUILDING CODE SUMMARY
FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2 FAMILY DWELLINGS AND TOWNHOUSES)

Name of Project: SAMPSON CORRECTIONAL INSTITUTION
Address: 421 NW BOULEVARD, CLINTON, NC – BUILDING 2 **Zip Code** 28328
Proposed Use: PRISON DORMITORIES
Owner or Auth. Agent: TAYLOR OLDHAM **Phone #** 919-324-1272 **Email** taylor.oldham@ncdps.gov
Owned By: ☐ City/County ☐ Private ☒ State
Code Enforcement Jurisdiction: ☐ City ☐ County ☒ State

LEAD DESIGN PROFESSIONAL: BRADLEY W. FELTS, PE

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	EMAIL
Architectural					
Civil					
Electrical	ATLANTEC ENG	D. WHITNEY	017382	919.571.1111	DAVID@ATLANTECENGINEERS.COM
Fire Alarm					
Plumbing					
Mechanical	ATLANTEC ENG	B. FELTS	025036	919.571.1111	BRAD@ATLANTECENGINEERS.COM
Spr.-Stand.					
Structural					
Ret. Walls >5' High					
Other					

2018 EDITION OF NC CODE FOR: ☐ New Construction ☐ Addition ☒ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core – Contact the local inspection jurisdiction for possible additional procedures & requirements
☐ Phased Construction – Contact the local inspection jurisdiction for possible additional procedures & requirements

2018 NC EXISTING BUILDING CODE: ☐ Prescriptive ☐ Repair ☐ Chapter 14
ALTERATION: ☐ Level I ☒ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: 1989 ORIGINAL OCCUPANCY(S) (Ch. 3): PRISON DORMITORY
RENOVATED: – CURRENT OCCUPANCY(S) (Ch. 3): PRISON DORMITORY
PROPOSED OCCUPANCY(S) (Ch. 3): PRISON DORMITORY

RISK CATEGORY (Table 1604.5): CURRENT: ☐ I ☐ II ☒ III ☐ IV
PROPOSED: ☐ I ☐ II ☒ III ☐ IV

BUILDING DATA

Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
☐ I-B ☒ II-B ☐ III-B ☐ V-B

Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes Flood Hazard Area: ☐ No ☐ Yes
Special Instructions Required: ☒ No ☐ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)
Building Height: 16'-0" Feet

Gross Building Area:

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
7th Floor			
6th Floor			
5th Floor			
4th Floor			
3rd Floor			
2nd Floor			
1st Floor		10,735 SQFT	
Basement			
TOTAL		10,735 SQFT	

ALLOWABLE AREA

Occupancy:
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☒ I-3 ☐ I-4
I-3 Condition ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled ☐ Parking Garage
☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Misc. ☐

Accessory Occupancies:
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled ☐ Parking Garage
☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Misc. ☐

N/A

☐ Furnace room where any piece of equipment is over 400,000 Btu per hour input
☐ Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower
☐ Refrigerant machine room
☐ Hydrogen cutoff rooms, not classified as Group H
☐ Incinerator rooms
☐ Paint shops, not classified as Group H, located in occupancies other than Group F
☐ Laboratories and vocational shops, not classified as Group H, located in a Group E or I-2 occupancy
☐ Laundry rooms over 100 square feet
☐ Group I-3 cells equipped with padded surfaces
☐ Group I-2 waste and linen collection rooms
☐ Waste and linen collection rooms over 100 square feet
☐ Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons, or a lithium-ion capacity of 1,000 pounds used for facility standby power, emergency power, or uninterrupted power supplies
☐ Rooms containing fire pumps
☐ Group I-2 storage rooms over 100 square feet
☐ Group I-2 commercial kitchens
☐ Group I-2 laundries equal to or less than 100 square feet
☐ Group I-2 rooms or spaces that contain fuel-fired heating equipment

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ALLOWABLE AREA (continued)

Special Uses: ☐ 402 ☐ 403 ☐ 404 ☐ 405 ☐ 406 ☐ 407 ☐ 408 ☐ 409 ☐ 410 ☐ 411 ☐ 412 ☐ 413 ☐ 414 ☐ 415 ☐ 416 ☐ 417 ☐ 418 ☐ 419 ☐ 420 ☐ 421 ☐ 422 ☐ 423 ☐ 424 ☐ 425 ☐ 426 ☐ 427
Special Provisions: ☐ 509.2 ☐ 509.3 ☐ 509.4 ☐ 509.5 ☐ 509.6 ☐ 509.7 ☐ 508.8 ☐ 509.9

N/A

Mixed Occupancy: ☒ No ☐ Yes Separation: ___ Hr. Exception ___

☐ Incidental Use Separation (508.2.5)
This separation is not exempt as a Nonseparated Use (see exceptions).

☐ Nonseparated Use (508.3.2)
The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined shall apply to the entire building.

☐ Separated Use (508.3.3) – See below for area calculations For each story, the area of occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

$$\frac{\text{N/A}}{\text{N/A}} + \frac{\text{N/A}}{\text{N/A}} + \ldots = \frac{\text{N/A}}{\text{N/A}} \leq 1.00$$

STORY NO.	DESCRIPTION AND USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 503[5] AREA	(C) AREA FOR OPEN SPACE INCREASE[1,6]	(D) AREA FOR SPRINKLER INCREASE[2]	(E) ALLOWABLE AREA OR UNLIMITED[3,4]	(F) MAXIMUM BUILDING AREA[4]
4th Floor							
3rd Floor							
2nd Floor							
1st Floor							

1. Frontage area increases from Section 506.2 are computed thus:
   a. Perimeter which fronts a public way or open space having 20 feet minimum width = ___ (F)
   b. Total Building Perimeter = ___ (P)
   c. Ratio (F/P) = ___ (F/P)
   d. W = Minimum width of public way = ___ (W)
   e. Percent of frontage increase $I_f = 100\ [F/P - 0.25] \times W/30$ = ___ (%)
2. The sprinkler increase per section 506.3 is as follows:
   a. Multi-story building I_s = N/A
   b. Single story building I_s = N/A
3. Unlimited area applicable under conditions of Sections 507.
4. Maximum Building Area = total number of stories in the building x E (506.2).
5. The maximum area of open parking garages must comply with Table 406.3.5. The maximum area of air traffic control towers must comply with Table 412.3.1.
6. Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE (TABLE 503)	INCREASE FOR SPRINKLERS	SHOWN ON PLANS	CODE REFERENCE
Type of Construction	Type ___		Type ___	
Building Height in Feet (Table 504.3)	75'-0"	Feet=H+20'= N/A	16'-0"	504.3
Building Height in Stories	UL	Stories+1= N/A	1 STORY	504.4

N/A

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ ___ REDUCTION)	DETAIL# AND SHEET#	DESIGN# FOR RATED ASSEMBLY	DESIGN# FOR RATED PENETRATION	DESIGN# FOR RATED JOINTS
Structural frame, including columns, girders, trusses	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Bearing walls	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
Exterior	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
North	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
East	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
West	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
South	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
Interior	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Nonbearing walls and partitions	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Exterior	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
North	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
East	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
West	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
South	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Interior walls and partitions	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Floor construction including supporting beams and joists	–	0 HR	0 HR	N/A	N/A	N/A	N/A
Roof construction including supporting beams and joists	–	0 HR	0 HR	N/A	N/A	N/A	N/A
Roof Ceiling Assembly	–	0 HR	0 HR	N/A	N/A	N/A	N/A
Columns Supporting Roof	–	N/A	N/A	N/A	N/A	N/A	N/A
Shaft Enclosures – Exit	–	N/A	N/A	N/A	N/A	N/A	N/A
Shaft Enclosures – Other	–	N/A	N/A	N/A	N/A	N/A	N/A
Corridor Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Occupancy/Fire Barrier Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Party/Fire Wall Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Smoke Barrier Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Tenant/Dwelling Unit/ Sleeping Unit Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Incidental Use Separation	–	N/A	N/A	N/A	N/A	N/A	N/A

#indicate section number permitting reduction

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting:	☒ No	☒ Yes
Exit Signs:	☒ No	☒ Yes
Fire Alarm:	☐ No	☒ Yes
Smoke Detection Systems:	☐ No	☒ Yes ☒ Partial DUCT SMOKE DETECTION
Panic Hardware:	☒ No	☐ Yes
Carbon Monoxide Detection:	☒ No	☐ Yes

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTIONS (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
00'-0	00'	00	00
00'-0	00'	00	00
00'-0	00'	00	00

N/A

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: –

N/A

☐ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☐ Existing structures within 30 feet of the proposed building
☐ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
☐ Occupant loads for each area
☐ Exit access travel distances (1017)
☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
☐ Dead end lengths (1020.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7.)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS (SECTION 1107)

N/A

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED
00	00	00	00	00	00	00	00

ACCESSIBLE PARKING (SECTION 1106)

N/A

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED			
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	TOTAL # ACCESSIBLE PROVIDED
NAME	00	00	00	00	00	00
NAME	00	00	00	00	00	00
TOTAL	00	00	00	00	00	00

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

USE		WATER CLOSETS MALE	WATER CLOSETS FEMALE	WATER CLOSETS UNISEX	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS /TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXISTING	5	5	2	0	4	4	2	14	0	1
	NEW	5	5	3	0	4	4	3	14	0	2
	REQUIRED	NCBC 2902.7 – ADJUSTMENT OF PLUMBING FIXTURES IS IN ACCORDANCE TO OWNER – PROVIDED USE PATTERNS OF PROFESSIONAL AND SEMI-PROFESSIONAL SOCCER TEAMS UTILIZING THE FACILITY. RENOVATIONS ONLY AFFECT PLUMBING FIXTURES IN TEAM AREAS; PLUMBING FIXTURES IN PUBLIC / STADIUM VISITORS AREAS ARE NOT AFFECTED BY THIS PROJECT'S SCOPE.								

ENERGY SUMMARY

N/A

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☒ No ☐ Yes (The remainder is then N/A)
Exempt Building: ☐ No ☒ Yes (Provide code or summary reference): 2018 NCEBC 811
Climate Zone: ☐ 3A ☒ 4A ☐ 5A

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
If "Other" specify here) ___

THERMAL ENVELOPE (Prescriptive method only)

Roof/Ceiling Assembly (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A
Skylights in each assembly N/A
U-Value of skylight N/A
Total square footage of skylights in each assembly N/A

Exterior Walls (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A
Openings (windows or doors with glazing) N/A
U-Value of assembly N/A
Solar heat gain coefficient N/A
Projection factor N/A
Door R-Values N/A

Walls below grade (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A

Floors over unconditioned space (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A

Floors slab on grade
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A
Horizontal/vertical requirement N/A
Slab heated N/A

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc., describe below)

N/A

N/A

STRUCTURAL DESIGN

DESIGN LOADS:

Importance Factors: Wind (I_w) ___ Snow (I_s) ___ Seismic (I_E) ___
Live Loads: Roof ___ psf Mezzanine ___ psf Floor ___ psf
Ground Snow Load: ___ psf
Wind Load: Basic Wind Speed ___ mph (ASCE-7) Exposure Category ___
Wind Base Shears (for MWFRS) Vx = ___ Vy = ___

N/A

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D

Provide the following Seismic Design Parameters:
Occupancy Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration S_S ___ %g S_1 ___ %g
Site Classification (Table 1613.5.2) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
☐ Field Test ☐ Presumptive ☐ Historical Data

Basic structural system (check one)
☐ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum

Seismic base shear: V_X = ___ V_Y = ___
Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: ☐ Earthquake ☐ Wind

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) ___ psf
Presumptive Bearing capacity ___ psf
Pile size, type, and capacity ___

SPECIAL INSPECTIONS REQUIRED: ☐ Yes ☐ No

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone 4A
Winter dry bulb 16°F
Summer dry bulb 93°F 46%

Interior design conditions
Winter dry bulb 70°F
Summer dry bulb 74°F
Relative humidity 50%

Building heating load 296.8 MBH
Building cooling load 374.6 MBH

Mechanical Spacing Conditioning System
Unitary
Description of unit SPLIT SYSTEM COOLING AIR-COOLED WITH HOT WATER HEAT
Heating efficiency –
Cooling efficiency 10.3 EER
Size category of unit 92 MBH
Boiler
Size category. If oversized, state reason. 368 MBH
Chiller
Size category. If oversized, state reason. N/A
List equipment efficiencies SEE 2M-1

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance
Energy Code: ☐ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)
Lamp type required in fixture
Number of lamps in fixture
Ballast type used in the fixture
Number of ballasts in the fixture
Total wattage per fixture
Total interior wattage specified vs. allowed
Total exterior wattage specified vs. allowed

NEW LIGHTING

Additional Prescriptive Compliance
☐ C406.2 More Efficient Mechanical Equipment Performance
☐ C406.3 Reduced Lighting Power Density
☐ C406.4 Enhanced Digital Lighting Controls
☐ C406.5 On-Site Renewable Energy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating
☐ 506.2.3 Energy Recovery Ventilation Systems
☐ 506.2.6 Automatic Daylighting Control Systems

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3/31/23

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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
BUILDING 2
APPENDIX B

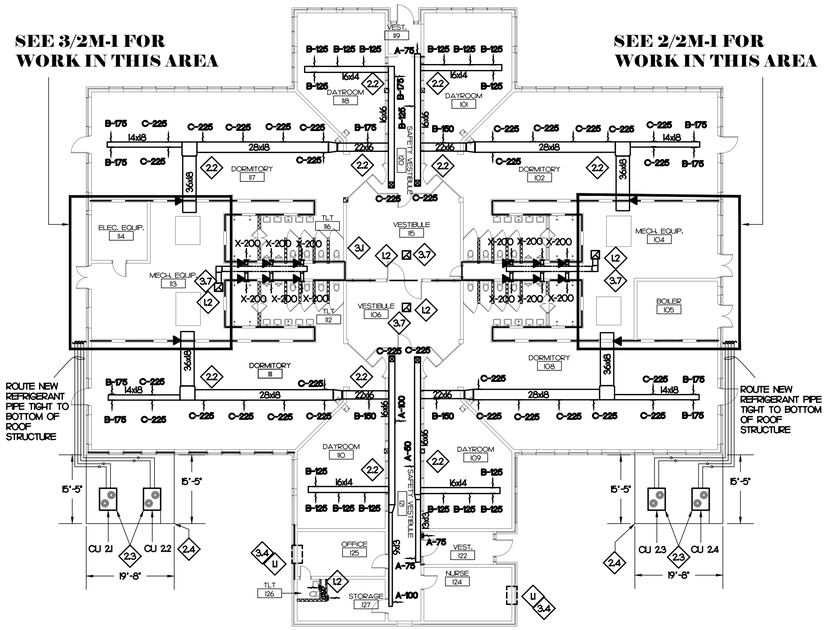
DATE:
MARCH 31, 2023

DESIGNER: BWF
ENGINEER: BWF

SHEET NO.
2T-1

SEE 3/2M-1 FOR WORK IN THIS AREA

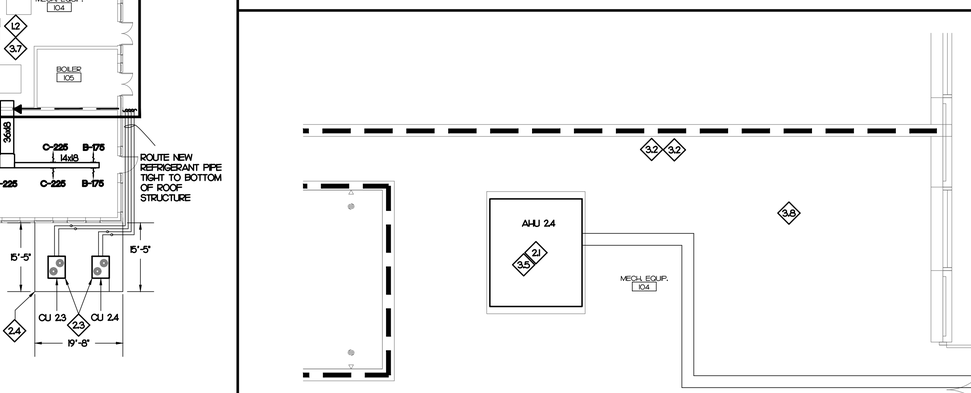
SEE 2/2M-1 FOR WORK IN THIS AREA



1 MECHANICAL RENOVATION PLAN

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

WALL TYPE LEGEND	
SYMBOL	DESCRIPTION
– – – –	SMOKE PARTITION



3 MECHANICAL ROOM RENOVATION

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

2 MECHANICAL ROOM RENOVATION

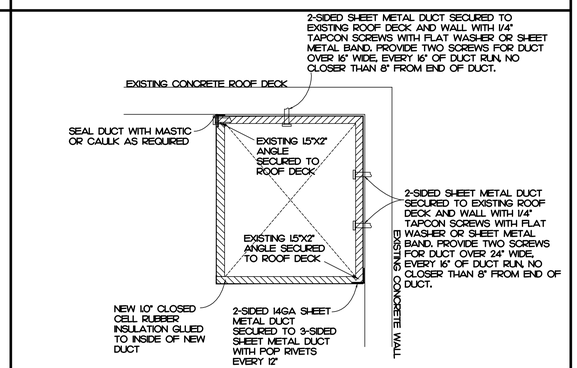
SCALE: 1/4" = 1'-0"

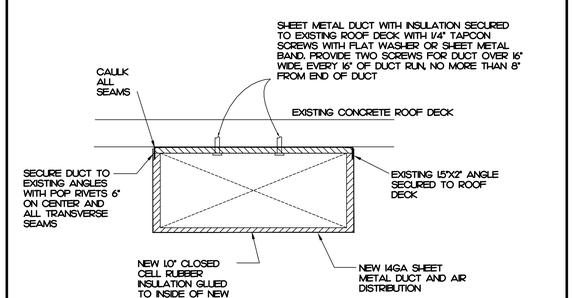
MECHANICAL KEY NOTES

- U — EXISTING HEAT PUMP TO REMAIN.
- L2 — EXISTING EXHAUST FAN TO REMAIN.
- 2.1 — INSTALL NEW DX COOLING COIL IN EXISTING AHU. PROVIDE CONDENSATE TRAP AND DRAIN TO EXISTING NEARBY FLOOR DRAIN. PROVIDE STAINLESS STEEL COIL CASING TO DIRECT AIR THROUGH COIL. SEE 4/2M-2 FOR DETAIL.
- 2.2 — NEW DUCT IN EXISTING DUCT LOCATION. FIELD VERIFY SIZE OF MOUNTING ANGLE PRIOR TO DUCT FABRICATION. DUCT SIZES LISTED ARE OUTSIDE SHEET METAL. REMOVE AND REINSTALL CONDUIT AS REQUIRED THAT IS SECURED TO DUCT.
- 2.3 — NEW CONDENSING UNIT ON NEW CONCRETE PAD. SEE 1/2M-2 FOR DETAIL.
- 2.4 — 8' TALL CHAIN LINK BY CONTRACTOR WITH 4' GATE. COORDINATE GATE LOCATION WITH OWNER.
- 3.1 — EXISTING FIRE ALARM CONTROL PANEL AND NEW PURGE CONTROL PANEL.
- 3.2 — NEW BUILDING AUTOMATION CONTROL FOR AHU AND PURGE FAN CONTROL. EXISTING FIRE ALARM RELAYS TO REMAIN. REPLACE EXISTING TWO SPEED STARTER WITH NEW VFD.
- 3.3 — NEW IP ROUTER FOR CAMPUS INTEGRATION OF BAS.
- 3.4 — EXISTING THRU WALL UNIT. NO BAS INTEGRATION OR CONTROL.
- 3.5 — DX COOLING/AHU. SEE SHEET M-5 FOR CONTROL SCHEMATIC, POINTS LIST AND SEQUENCE OF OPERATIONS.
- 3.6 — EXISTING BOILER PLANT. SEE SHEET M-4 FOR CONTROL SCHEMATIC, POINTS LIST AND SEQUENCE OF OPERATIONS.
- 3.7 — EXISTING FAN TO REMAIN. NO BAS INTEGRATION OR CONTROL.
- 3.8 — EXISTING HOT WATER UNIT HEATER TO REMAIN. CONTROL VIA LOCAL THERMOSTAT. NO BAS INTEGRATION.
- 3.9 — EXISTING DOMESTIC HOT WATER HEATER TO REMAIN. MONITOR HOT WATER SUPPLY TEMPERATURE WITH BOILER CONTROLLER. NO OTHER BAS INTEGRATION OR CONTROL.

SCOPE OF WORK

1. ADD NEW COILING COILS IN EXISTING HEATING AND VENTILATION AIR HANDLING UNITS.
2. EXISTING UNITS HAVE TWO SPEED MOTORS AND FACE/BYPASS DAMPERS FOR PURGE OPERATION. REMOVE EXISTING TWO SPEED STARTER AND MOTOR AND PROVIDE NEW VFD, MOTOR, BELTS AND PULLEYS. REMOVE FACE DAMPER LINKAGE AND ACTUATOR AND LOCK IN OPEN POSITION. PROVIDE NEW BYPASS DAMPER ACTUATOR.
3. PROVIDE POST-WORK TEST AND BALANCE TO VERIFY TOTAL SUPPLY AIRFLOW AT PURGE MODE AND GRILLE AIRFLOW AT "NORMAL MODE". NORMAL MODE AIRFLOW SHOWN ON THESE PLANS. SEE SCHEDULE FOR OTHER AIRFLOW SETPOINTS.
4. BALANCE AIR DISTRIBUTION AND OUTSIDE AIR AT "NORMAL" MODE OF OPERATION.
5. REMOVE EXISTING SUPPLY DUCT AND AIR DISTRIBUTION IN DORM AREA. DUCTWORK IN MECHANICAL ROOM TO REMAIN AS IS.
6. PROVIDE NEW INSULATED DUCT AND AIR DISTRIBUTION IN SAME ROUTE AS EXISTING DUCT. RELOCATE CONDUIT, MOUNTING ANGLE AS REQUIRED. NEW DUCT SIZES ARE OUTSIDE SHEET METAL. OUTSIDE DIMENSION WILL INCLUDE 1.0" OF LINER ON ALL SIDES. DUCT SIZES ARE BASED ON ORIGINAL PLANS. WALL PENETRATIONS SHOULD MATCH EXISTING. FIELD VERIFY ALL DUCT SIZES AND DIMENSIONS PRIOR TO FABRICATION.
7. BALANCE EXISTING TOILET EXHAUST TO 600 CFM PER POD, 1200 CFM PER FAN.
8. PROVIDE NEW BUILDING AUTOMATION SYSTEM COMPLETE WITH ALL NEW SENSORS, ACTUATOR, VFD'S, WIRING, CONDUIT FOR A COMPLETE AND OPERATIONAL SYSTEM. ALL CONTROLLERS AND VFD'S TO BE BACNET AND COMMUNICATE TO EXISTING JACE OVER CAMPUS INTRANET.





4 DUCT INSULATION SECTION

NOT TO SCALE

REVISIONS

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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

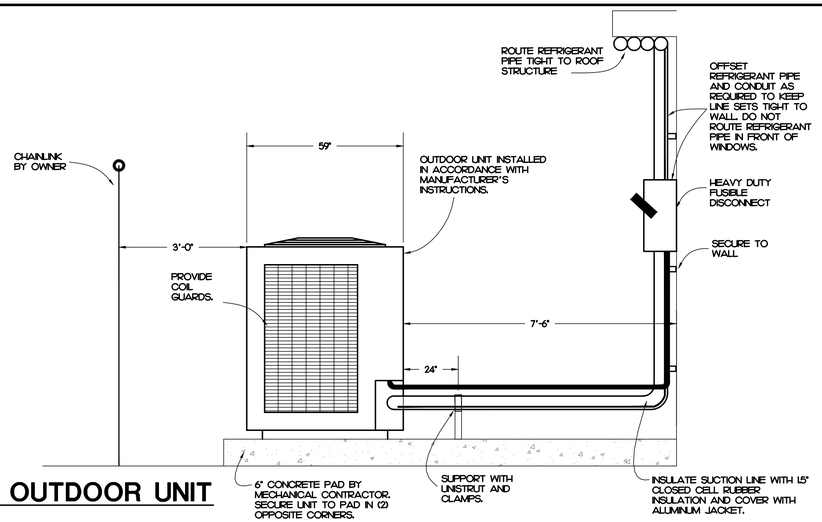
CONTENTS:
BUILDING 2 MECHANICAL RENOVATION PLAN

DATE:
MARCH 31, 2023

DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
2M-1

2023



1 GROUND MTD OUTDOOR UNIT

NOT TO SCALE

AIR COOLED CONDENSING UNIT

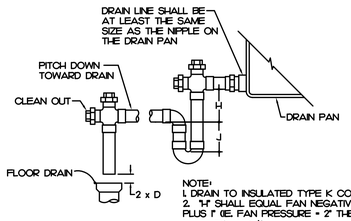
MARK	BASIS OF DESIGN	MODEL	SYSTEM CAPACITY (MBH)	REFRIG. TYPE	ELECTRICAL (V/Ø)	(MCA)	(MOCP)	EFFICIENCY (EER)	NOTES
CU-2.1	CARRIER	38AUD08	92.0	410A	208/3	42.0	60	11.2	1-6
CU-2.2	CARRIER	38AUD08	92.0	410A	208/3	42.0	60	11.2	1-6
CU-2.3	CARRIER	38AUD08	92.0	410A	208/3	42.0	60	11.2	1-6
CU-2.4	CARRIER	38AUD08	92.0	410A	208/3	42.0	60	11.2	1-6

NOTES:
1. PROVIDE WITH COIL GUARDS.
2. PROVIDE WITH SINGLE POINT ELECTRICAL CONNECTION.
3. UNIT TO HAVE A MINIMUM OF 2 STAGES COOLING.
4. PROVIDE WITH HEAVY DUTY FUSIBLE DISCONNECT.
5. CONTROL VIA BUILDING AUTOMATION SYSTEM.
6. PROVIDE 5 YEAR COMPRESSOR WARRANTY, PARTS, AND LABOR.

EQUALS BY TRANE, JCI, AND DAIKIN

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE 2018 EDITION OF THE NC STATE CODES.
2. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMAN. THE M.C. SHALL COORDINATE ALL OF HIS WORK WITH ALL OTHER CONTRACTORS.
3. THE MECHANICAL PLANS AND SPECIFICATIONS SHALL BE THOROUGHLY REVIEWED PRIOR TO PURCHASING MATERIALS AND INSTALLATION. ALL DISCREPANCIES OR INTERFERENCES SHALL BE BROUGHT TO THE ENGINEERS' ATTENTION.
4. THE M.C. SHALL INSURE THAT ALL MECHANICAL EQUIPMENT INSTALLED UNDER HIS CONTRACT SHALL OPERATE FREE OF OBJECTIONABLE NOISE AND VIBRATION.
5. THE M.C. SHALL KEEP THE PREMISES CLEAR OF DEBRIS FROM THE CONTRACTOR'S WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT THE COMPLETION OF THE CONTRACTOR'S WORK. THE CONTRACTOR SHALL ALSO LEAVE CLEAN ALL EXPOSED EQUIPMENT IN THE CONTRACTOR'S CONTRACT.
6. ALL DUCTWORK SIZES SHOWN ARE OUTSIDE DIMENSIONS UNLESS OTHERWISE NOTED. LINE DUCTWORK WITH 1.0" CLOSED CELL FOAM INSULATION WITH FLAME/SMOKE RATING OF 25/50. INSIDE CLEAR DIMENSIONS TO BE LISTED SIZE LESS 2" IN BOTH DIRECTIONS.
7. MECHANICAL CONTRACTOR SHALL WORK WITH TEST AND BALANCE CONTRACTOR TO REMEDY ANY DIFFERENCES TO INCLUDE FAN DRIVE CHANGES, INSTALLATION OF DAMPERS OR OTHER MINOR DUCT MODIFICATIONS TO PROVIDE AIRFLOW TO WITHIN +/- 10% OF THE DESIGN VALUES LISTED ON THESE PLANS.
8. HOT WATER PIPING SHALL BE SCHEDULE 40 BLACK STEEL WITH MALLEABLE IRON THREADED FITTINGS. INSULATE PIPING WITH MIN. 1-1/2" THICK PRE-MOLDED CELLULAR GLASS PIPE INSULATION WITH VAPOR BARRIER JACKET. APPLY HEAT TAPE TO ALL EXTERIOR PIPING PRIOR TO APPLYING INSULATION.
9. ALL EQUIPMENT PADS SHALL BE PAINTED YELLOW.
10. THE AIR HANDLING UNIT SHALL OPERATE AT ALL TIMES DURING OCCUPIED HOURS.
11. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A SET OF AS-BUILT DRAWINGS UPON COMPLETION OF JOB.
12. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A BALANCE REPORT BY A CERTIFIED TEST AND BALANCE COMPANY.
13. PROVIDE PERMIT LABEL ENGRAVED PLASTIC LAMINATE MECHANICALLY FASTENED TO OUTDOOR UNITS.
14. LABEL CEILING GRID WHERE EQUIPMENT IS LOCATED ABOVE LAY-IN CEILING. WITH EQUIPMENT IDENTIFIER. ALSO LABEL ALL TEMPERATURE SENSORS AND THERMOSTATS WITH EQUIPMENT IDENTIFIER.

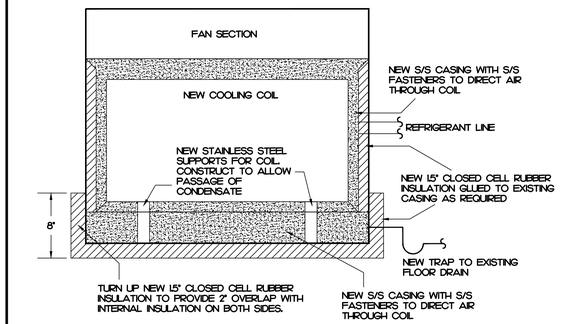


A/C SIZE (TONS)	PIPE SIZE "D" (INCHES)
0-2	¾"
2.1-5	1"
5.1-30	1 ½"
30.1-50	1 ½"
50.1-175	2"

NOTE:
1. DRAIN TO INSULATED TYPE K COPPER.
2. "H" SHALL EQUAL FAN NEGATIVE PRESSURE PLUS 1" (IE. FAN PRESSURE = 2" THEN "H" = 3")
3. "L" EQUALS ½ H.
4. SEE CHART FOR MINIMUM PIPE SIZE OR "D".
5. MANUFACTURERS RECOMMENDATIONS SHALL OVERRIDE ITEMS 2 AND 3.

2 CONDENSATE TRAP DETAIL

NOT TO SCALE



4 AHU INSULATION SECTION

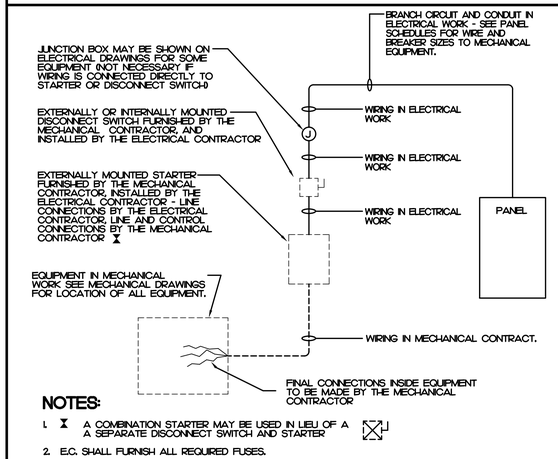
NOT TO SCALE

DX COOLING COIL SCHEDULE

MARK	AREA SERVED	HTG AIR FLOW (cfm)	CLG 1 AIR FLOW (cfm)	CLG 2 AIR FLOW (cfm)	PURGE AIR FLOW (cfm)	CLG 2 VELOCITY (fpm)	COOLING TOT. CAP. (MBH)	COOLING SEN. CAP. (MBH)	AIR SIDE APD (in. w.g.)	AIR SIDE EDB (°F)	AIR SIDE EWB (°F)	AIR SIDE LDB (°F)	AIR SIDE LWB (°F)	NOTES	EXISTING AHU MODEL NO.
AHU-2.1	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV
AHU-2.2	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV
AHU-2.3	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV
AHU-2.4	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV

NOTE:
1. PROVIDE WITH STAINLESS STEEL COIL CASING AND SUPPORTS FOR NEW COIL.
2. FIELD VERIFY AVAILABLE SPACE IN EXISTING AHU AND HAND OF COIL.
3. COILS TO BE 3-ROW MINIMUM.
4. AIRFLOW LISTED SHALL BE BALANCED WITH VFD AND BAS FOR PROGRAMMED MODES OF OPERATION. PURGE AIRFLOW IS IN COMBINATION WITH BY-PASS AND FLOW THRU COIL. COIL VELOCITY, PRESSURE DROP AND CAPACITY IS FOR COOLING STAGE 2 AIRFLOW. NEW MOTORS TO BE 5.0 HP, 480/3

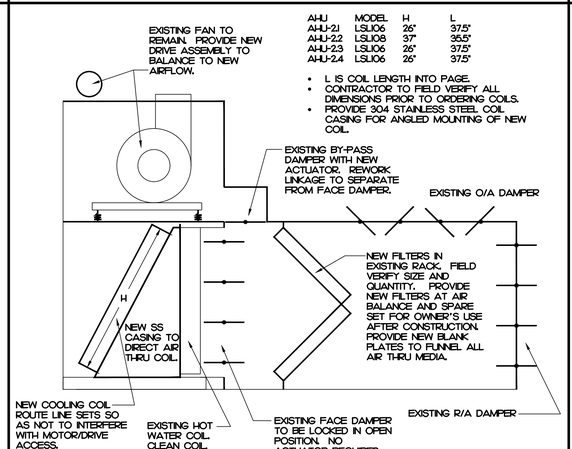
EQUALS BY CAPITAL COIL, TRANE, DAIKIN, JCI, AND CARRIER



NOTES:
1. ⧗ A COMBINATION STARTER MAY BE USED IN LIEU OF A A SEPARATE DISCONNECT SWITCH AND STARTER ⊠
2. E.C. SHALL FURNISH ALL REQUIRED FUSES.

3 TYPICAL WIRING DETAIL

NOT TO SCALE



AHU	MODEL	H	L
AHU-2.1	LSU06	26"	37.5"
AHU-2.2	LSU06	37"	35.5"
AHU-2.3	LSU06	26"	37.5"
AHU-2.4	LSU06	26"	37.5"

- L IS COIL LENGTH INTO PAGE.
- CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING COILS.
- PROVIDE 304 STAINLESS STEEL COIL CASING FOR ANGLED MOUNTING OF NEW COIL.

5 AHU WORK DETAIL

NOT TO SCALE

GRILLE & DIFFUSER SCHEDULE

MARK	BASIS OF DESIGN	SERVICE	TYPE	MAX. CFM	FACE SIZE	NECK SIZE	NOTES
A	KEES SEG4P3	SUPPLY	DUCT MOUNTED	200	9.75X9.75	8X8	1-4
B	KEES SEG4P3	SUPPLY	DUCT MOUNTED	375	11.75X11.75	10X10	1-4
C	KEES SEG4P3	SUPPLY	DUCT MOUNTED	400	13.75X13.75	12X12	1-4

NOTES:
1. PROVIDE WITH WHITE FINISH.
2. PROVIDE WITH FRAME FOR DUCT MOUNTING.
3. PROVIDE WITH FACE OPERATED OPPOSED BLADE DAMPER.
4. 12GA STEEL WITH PERFORATED FACE(3/16" HOLES). SECURE WITH #10 TORX SECURITY SHEET METAL SCREWS.

EQUALS BY NAILOR, METALAIRE, PRICE

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	INSULATED SHEET METAL DUCT
⊠	SUPPLY DIFFUSER - LETTER & NUMBER INDICATES TYPE & CFM
	SIDEWALL SUPPLY GRILLE - LETTER & NUMBER INDICATES TYPE & CFM
▲	EXISTING FIRE DAMPER

OUTSIDE AIR SUMMARY

REQUIRED:

(5 CFM/PER X 108 PER) + (0.12 CFM/SQFT X 10,735 SQFT) = 1830 CFM

TOTAL REQUIRED = 1830 CFM

PROVIDED:

AHU 2.1 = 600 CFM
AHU 2.2 = 600 CFM
AHU 2.3 = 600 CFM
AHU 2.4 = 600 CFM

NOTE: O/A SET TO MATCH TOILET EXHAUST

TOTAL PROVIDED = 2400 CFM

REVISIONS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025036 BRADLEY W. FELTS — ATLANTEC ENGINEERS PA No. C-961 — 3/31/23

ATLANTEC ENGINEERS, P.A.
3201 BLUE RIDGE ROAD, SUITE 113
RALEIGH, NC 27612
(919) 571-1111
105 ST. JAMES PLACE
KINSTON, NC 28504
(252) 527-3336

PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC — NORTH CAROLINA

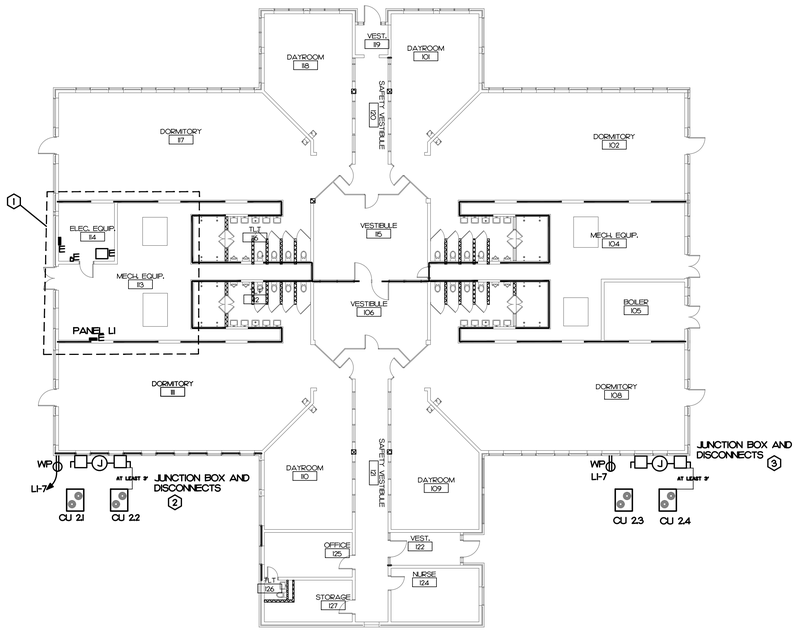
CONTENTS:
BUILDING 2 MECHANICAL NOTES, LEGEND, AND DETAILS

DATE: MARCH 31, 2023

DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
2M-2

22103

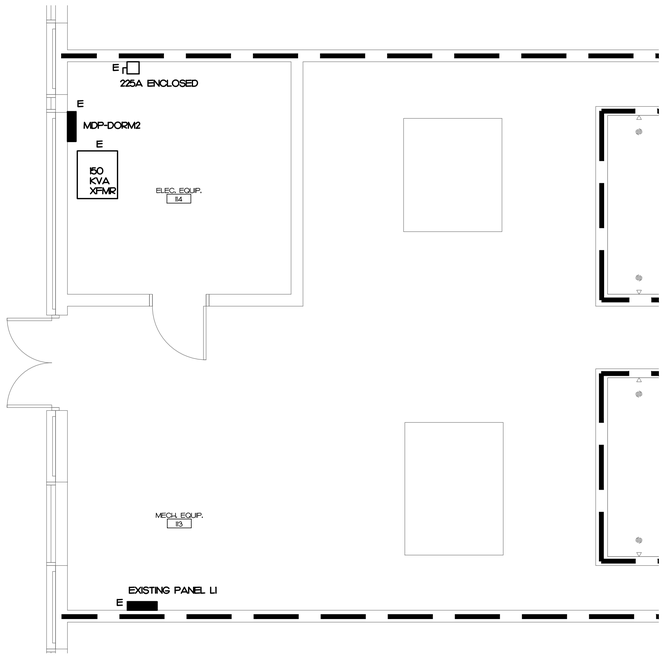


1 ELECTRICAL RENOVATION PLAN

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

WALL TYPE LEGEND	
SYMBOL	DESCRIPTION
– – – – –	SMOKE PARTITION

0 1' 2' 4' 8' 12'



2 MECHANICAL ROOM RENOVATION

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

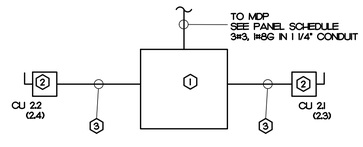
KEY NOTES

1. SEE ENLARGED PLAN 2E-1/2.
2. USE CIRCUIT MDP-DORM2-8,10,12 FOR THE JUNCTION BOX AT THIS LOCATION. E.C TO PROVIDE TAPS AND DISCONNECTS TO FEED CU 2.1 AND 2.2.
3. USE CIRCUIT MDP-DORM2-14,16,18 FOR THE JUNCTION BOX AT THIS LOCATION. E.C TO PROVIDE TAPS AND DISCONNECTS TO FEED CU 2.3 AND 2.4.

NOTES

L PER THE NC DEPARTMENT OF PUBLIC SAFETY, THE PREFERRED ROUTING METHOD FOR BRANCH CIRCUITS WIRING IS EXPOSED ON THE BUILDING EXTERIOR WALLS. THE DEPARTMENT WILL BE FURNISHING IN HOUSE LABOR FOR THIS WORK. THE EXACT CONDUIT ROUTING WILL BE FIELD DETERMINED. THE CONDUIT ROUTING SHOULD FOLLOW THE NEW REFRIGERANT PIPING.

MULTIPLE CONDENSING UNIT CONNECTION DETAIL



KEY NOTES

1. JUNCTION BOX SIZED PER NEC WITH APPROVED TERMINAL BLOCKS FOR LINE VOLTAGE CONDUCTORS AND GROUND WIRES. GROUND BOX TO GROUND TERMINAL.
2. NEMA 3R 60 AMP DISCONNECT. PROVIDED BY THE MECHANICAL CONTRACTOR. FUSED AT 60 AMPS. LABEL DISCONNECT TO INDICATED UNIT SERVED AND IDENTIFY THE CIRCUIT FEEDING THE DISCONNECT.
3. TAP CONDUCTORS TO THE LINE SIDE OF THE DISCONNECT. 3#6, 1#8G IN 3/4" CONDUIT.

REVISIONS

ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL CORPORATION
NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID J. WHITNEY
ATLANTEC ENGINEERS, P.A.
3221 BLUE RIDGE ROAD, SUITE 113
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SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
BUILDING 2 ELECTRICAL RENOVATION

DATE:
MARCH 31, 2023

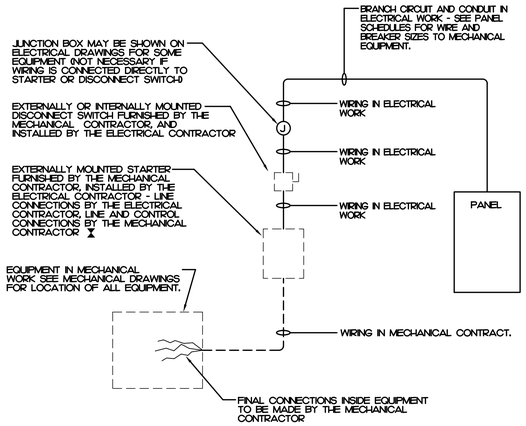
DESIGNER: AB
ENGINEER: DW

SHEET NO.
2E-1

2203

SYMBOL LEGEND

SYMBOL	DESCRIPTION	REMARKS
J	JUNCTION BOX SIZED PER N.E.C.	
DS	DISCONNECT SWITCH SEE PLANS FOR SIZE AND TYPE	SEE SPECIFICATIONS
	NEW CONCEALED WIRING	PER N.E.C.
	HOME RUN TO PANEL BOARD NUMBERS OF ARROW INDICATE CIRCUITS	PER N.E.C.
E	EXISTING 120/208V 3Φ, 4W PANEL BOARD - SEE PANEL SCHEDULES	SEE SPECIFICATIONS
S	SINGLE POLE TOGGLE SWITCH MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE.	SEE SPECIFICATIONS
WP	SPECIFICATION GRADE, WEATHER RESISTANT AND GFCI DUPLEX RECEPTACLE WITH IN-USE WEATHER PROOF COVER. MOUNT 16" A.F.F. UNLESS OTHERWISE NOTED.	SEE SPECIFICATIONS
E	EXISTING	



NOTES:

1. A COMBINATION STARTER MAY BE USED IN LIEU OF A SEPARATE DISCONNECT SWITCH AND STARTER
2. E.C. SHALL FURNISH ALL REQUIRED FUSES.

WIRING TO MECHANICAL EQUIPMENT

NOT TO SCALE

GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL FLOOR PLAN DIMENSIONS.
2. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ANY AND ALL WORK WITH OTHER TRADES INVOLVED IN THE PROJECT, PRIOR TO THE INSTALLATION OF HIS EQUIPMENT SO AS TO AVOID CONFLICTS DURING CONSTRUCTION AND TO ALLOW FOR OPTIMUM MAINTENANCE AND WORKING SPACE.
3. USE OF THE CONDUIT SYSTEM FOR EQUIPMENT GROUNDING SHALL NOT BE ACCEPTABLE. A SEPARATE GREEN GROUND WIRE SHALL BE RUN WITH THE CIRCUIT CONDUCTORS IN EACH CONDUIT.
4. ALL BREAKER SIZES, SHOWN FOR MECHANICAL EQUIPMENT, SHALL BE VERIFIED BEFORE THE PURCHASE OR INSTALLATION OF SAID EQUIPMENT, WITH THE EQUIPMENT SUPPLIER AND THE MECHANICAL CONTRACTOR.
5. ALL WORK AND MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH THE STATE, LOCAL AND NATIONAL CODES, ORDINANCES AND 2020 NATIONAL ELECTRICAL CODE (NFPA 70).
6. EACH CONTRACTOR SHALL PROVIDE HIS OWN SUPPORT OF ALL DEVICES AND EQUIPMENT PROVIDED BY HIM AND SHALL SUPPORT SUCH EQUIPMENT PER APPROVED GOVERNING CODES OR PER APPROVAL OF THE ENGINEER. UNACCEPTABLE WORKMANSHIP OR MATERIALS SHALL BE REPLACED AT THE REQUEST OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
7. THE MOUNTING HEIGHTS AND LOCATIONS OF ALL WALL MOUNTED OUTLETS AND JUNCTION BOXES SHALL BE REVIEWED AND COORDINATED WITH THE OWNER, PRIOR TO INSTALLATION FOR USE WITH THE ACTUAL EQUIPMENT, CASEWORK, AND MILLWORK TO BE FURNISHED.
8. EQUIPMENT CONNECTIONS:
   - MECHANICAL EQUIPMENT:
     SEE DETAIL ON THIS SHEET
9. PENETRATION:
   - WHERE ELECTRICAL EQUIPMENT PENETRATES RATED WALLS AND CEILINGS, EXTERIOR WALLS, THEY SHALL BE PROPERLY SEALED PER APPROVED UL METHODS.
   - WHERE ELECTRICAL EQUIPMENT PENETRATES EXTERIOR WALLS, THEY SHALL BE PROPERLY SEALED WITH METHODS APPROVED BY THE ENGINEER. SUBMIT DETAIL OF PROPOSED SEALING METHODS.
10. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR.
11. THE CONTRACTOR SHALL PROVIDE COMPLETE UPDATED TYPEWRITTEN PANEL SCHEDULES FOR ALL PANELBOARDS AFFECTED BY THIS WORK.
12. AS BUILT DRAWINGS SHALL BE GIVEN TO THE OWNER AT THE COMPLETION OF THE PROJECT.
13. ALL WIRE SIZES INDICATED ON THE PANEL SCHEDULES ARE BASED ON 75 DEGREE COPPER THHN/THWN WIRES. ALL WIRE TERMINALS AND EQUIPMENT SHALL BE LISTED AND APPROVED FOR 75°C. ONLY THHN-2 WIRE SHALL BE INSTALLED IN WET AND EXTERIOR LOCATION.
14. MINIMUM WIRE SIZE SHALL BE #12 AWG.
    MINIMUM CONDUIT SIZE INSIDE BUILDING SHALL BE 3/4".
    MINIMUM CONDUIT SIZE OUTSIDE BULDING SHALL BE 3/4".
    MINIMUM CONDUIT SIZE UNDER GROUND SHALL BE 1".
15. METAL-CLAD CABLE (TYPE MC) AND ARMORED CABLE (TYPE AC) ARE NOT ALLOWED IN THIS PROJECT.
16. THE MAXIMUM NUMBER OF HOMERUNS IN A CONDUIT SHALL NOT EXCEED THREE (3).
    MULTI-WIRE CIRCUITS WITH SHARED NEUTRAL CONDUCTORS ARE NOT ALLOWED.
    PROVIDE INDIVIDUAL NEUTRAL FOR EACH SINGLE POLE CIRCUIT.
17. WHERE OUTLETS ARE SHOWN BACK TO BACK ON RATED WALLS, STAGGER OUTLETS SO THAT THEY ARE SEPARATED BY A MINIMUM OF 24".
18. ALL DISCONNECTS SHALL HAVE SEPARATE NEUTRAL AND GROUND BARS.
19. BOXES AND CONDUITS SHALL NOT BE INSTALLED RECESSED IN A 3-HOUR OR HIGHER RATED WALL. WHEN OUTLETS ARE INDICATED ON THESE WALLS, FIELD COORDINATE CONDUIT AND BOX INSTALLATION.
20. IT IS THE RESPONSIBILITY OF E.C. TO NOTIFY NORTH CAROLINA DEPARTMENT OF ADMINISTRATION ELECTRICAL INSPECTOR TO SCHEDULE REQUIRED INSPECTIONS. INSPECTION AVAILABILITY IS MONDAY THRU FRIDAY SUBJECT TO THE AHJ SCHEDULE.
21. UNDERGROUND RACEWAY
    A. RACEWAYS RUN EXTERNAL TO BUILDING FOUNDATION WALLS, WITH THE EXCEPTION OF BRANCH CIRCUIT RACEWAYS, SHALL BE ENCASED WITH A MINIMUM OF THREE (3) INCHES OF CONCRETE ON ALL SIDES.
       - ENCASED RACEWAYS MUST HAVE A MINIMUM COVER OF EIGHTEEN (18) INCHES, EXCEPT FOR RACEWAY CONTAINING CIRCUITS WITH VOLTAGES ABOVE 600V, WHICH MUST HAVE A MINIMUM COVER OF THIRTY (30) INCHES.
       - ENCASED RACEWAYS SHALL BE OF A TYPE APPROVED BY THE NEC AS "SUITABLE FOR CONCRETE ENCASEMENT".
    B. BRANCH CIRCUIT RACEWAYS RUN UNDERGROUND EXTERNAL TO BUILDING FOUNDATION WALLS SHALL BE RUN IN RACEWAYS INSTALLED IN ACCORDANCE WITH THE NEC, AND SHALL BE OF A TYPE APPROVED BY THE NEC AS "SUITABLE FOR DIRECT BURIAL". MINIMUM RACEWAY SIZE SHALL BE 1".
    C. ALL UNDERGROUND RACEWAYS SHALL BE IDENTIFIED BY UNDERGROUND LINE MARKING TAPE LOCATED DIRECTLY ABOVE THE RACEWAY AT 6 TO 8 INCHES BELOW FINISHED GRADE. TAPE SHALL BE PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED, PLASTIC TAPE COMPOUNDED FOR DIRECT BURIAL NOT LESS THAN 6 INCHES WIDE AND 4 MILS THICK. PRINTED LEGEND SHALL BE INDICATIVE OF GENERAL TYPE UNDERGROUND LINE BELOW.
    D. RACEWAYS RUN UNDERGROUND INTERNAL TO BUILDING FOUNDATION WALLS SHALL BE OF A TYPE AND INSTALLED BY A METHOD APPROVED BY THE NEC.
    E. WHERE UNDERGROUND RACEWAYS ARE REQUIRED TO TURN UP INTO CABINETS, EQUIPMENT, ETC., AND ON TO POLES, THE ELBOW REQUIRED AND THE STUB-UP OUT OF THE SLAB OR EARTH SHALL BE OF RIGID STEEL.
    F. THE RACEWAY SYSTEM SHALL NOT BE RELIED ON FOR GROUNDING CONTINUITY.
    G. WHERE PASSING THROUGH A "BELOW GRADE" WALL FROM A CONDITIONED INTERIOR BUILDING SPACE, RACEWAYS SHALL BE SEALED UTILIZING FITTINGS SIMILAR AND EQUAL TO OZ/GEDNEY TYPE "FSK" THRU-WALL FITTING WITH "FSKA" MEMBRANE CLAMP ADAPTER IF REQUIRED.

PANEL MDP-DORM2

120/208V, 3 PHASE, 4 WIRE

CKT	DESCRIPTION	KVA	C	G	W	CB	CKT	CKT	CB	W	G	C	KVA	DESCRIPTION	CKT
1	L1 PANEL	10.4	E	E	E	225	1	2	200	E	E	E	11.1	MEDICAL TRAILER	2
3		9.0			E	3P	3	4	3P	E	--	--	11.1		4
5		9.7			E		5	6	--	E	--	--	11.1		6
7	L2 PANEL	5.9	E	E	E	225	7	8	100	3	8	1 1/4	10.1	NOTE 2 CU2.1,2,2	8
9		5.9			E	3P	9	10	3P	3	--	--	10.1		10
11		5.9			E		11	12	--	3	--	--	10.1		12
13	L3 PANEL	5.9	E	E	E	150	13	14	100	1	8	1 1/4	10.1	NOTE 2 CU2.3,2,4	14
15		5.9			E	3P	15	16	3P	1	--	--	10.1		16
17		5.9			E		17	18	--	1	--	--	10.1		18
19	SPACE ONLY	0.0					19	20	--	--	--	--	0.0	SPACE ONLY	20
21		0.0					21	22	--	--	--	--	0.0		22
23		0.0					23	24	--	--	--	--	0.0		24
25	SPACE ONLY	0.0	--	--	--	--	25	26	--	--	--	--	0.0	SPACE ONLY	26
27	SPACE ONLY	0.0	--	--	--	--	27	28	--	--	--	--	0.0	SPACE ONLY	28
29	SPACE ONLY	0.0	--	--	--	--	29	30	--	--	--	--	0.0	SPACE ONLY	30
31	SPACE ONLY	0.0	--	--	--	--	31	32	--	--	--	--	0.0	SPACE ONLY	32
33	SPACE ONLY	0.0	--	--	--	--	33	34	--	--	--	--	0.0	SPACE ONLY	34
35	SPACE ONLY	0.0	--	--	--	--	35	36	--	--	--	--	0.0	SPACE ONLY	36
37	SPACE ONLY	0.0	--	--	--	--	37	38	--	--	--	--	0.0	SPACE ONLY	38
39	SPACE ONLY	0.0	--	--	--	--	39	40	--	--	--	--	0.0	SPACE ONLY	40
41	SPACE ONLY	0.0	--	--	--	--	41	42	--	--	--	--	0.0	SPACE ONLY	42

DESCRIPTION	CONNECTED KVA	DEMAND FACTOR	DEMAND KVA
CONT. LOAD	12.08	125%	15.10
RECEPTACLE	10.76	100%/50%	10.38
MTRS/COOLS	0.00	100%	0.00
HEATS	0.00	125%	0.00
WATER HEATER	0.00	125%	0.00
EQUIPMENT	135.79	90%	122.21
KITCHEN EQUIP.	0.00	65%	0.00
SPECIAL EQ.	0.00	100%	0.00
25% OF LARGEST HVAC/MOTOR			2.00
TOTAL DEMAND			149.69

600 A MINIMUM BUS SIZE
600 A MAIN CIRCUIT BREAKER
22 K MINIMUM AIC RATING

SURFACE MOUNTING
NEMA 1 ENCLOSURE
GROUND BAR

NOTES
1. SQUARE D: I LINE. 'E' INDICATEDS EXISTING BRANCH CIRCUIT TO REMAIN
2. PROVIDE NEW BREAKER
3. NEW HVAC LOADS ARE CALCULATED AT MCA
4.
5.

CONNECTED LOADS	
PHASE A:	53.6 KVA
PHASE B:	52.2 KVA
PHASE C:	52.9 KVA
TOTAL:	158.6 KVA
DEMAND	415 AMP

PANEL L1

120/208V, 3 PHASE, 4 WIRE

CKT	DESCRIPTION	KVA	C	G	W	CB	CKT	CKT	CB	W	G	C	KVA	DESCRIPTION	CKT
1	SPARE	0.0	--	--	--	20	1	2	20	E	E	E	1.0	FAN OUTLET B WING	2
3	SPARE	0.0	--	--	--	20	3	4	20	--	--	--	0.0	SPARE	4
5	SPARE	0.0	--	--	--	20	5	6	20	--	--	--	0.0	SPARE	6
7	REC EXTERIOR NOTE 2	0.4	1/2	12	12	20	7	8	20	--	--	--	0.0	SPARE	8
9	SPARE	0.0	--	--	--	20	9	10	20	--	--	--	0.0	SPARE	10
11	SPARE	0.0	--	--	--	20	11	12	20	--	--	--	0.0	SPARE	12
13	NIGHT LIGHTS	1.0	E	E	E	20	13	14	20	--	--	--	0.0	SPARE	14
15	LTS	1.0	E	E	E	20	15	16	20	--	--	--	0.0	SPARE	16
17	LTS	1.0	E	E	E	20	17	18	20	--	--	--	0.0	SPARE	18
19	LTS	1.0	E	E	E	20	19	20	20	--	--	--	0.0	SPARE	20
21	LTS(MECH RM)	1.0	E	E	E	20	21	22	20	E	E	E	0.5	REC	22
23	SPACE ONLY	0.0	--	--	--		23	24	20	E	E	E	0.5	REC	24
25	SPACE ONLY	0.0	--	--	--		25	26	20	E	E	E	0.5	REC	26
27	SPACE ONLY	0.0	--	--	--	20	27	28	20	E	E	E	0.0	SPARE	28
29	REC	0.5	E	E	E	20	29	30	20	E	E	E	0.5	REC	30
31	EWC	1.0	E	E	E	20	31	32	20	E	E	E	1.0	EWC	32
33	UNIT HEATER	1.0	E	E	E	20	33	34	20	E	E	E	1.0	TOILET EX FAN 2	34
35	VENT FAN 5	1.7	E	E	E	20	35	36	20	E	E	E	1.0	ELEC RM FAN 9	36
37		1.7	--	--	E	2P	37	38	30	E	E	E	2.9	VENT FAN 12	38
39	VENT FAN 6	1.7	E	E	E	20	39	40	3P	E	--	--	2.9		40
41		1.7	--	--	E	2P	41	42	--	E	--	--	2.9		42

DESCRIPTION	CONNECTED KVA	DEMAND FACTOR	DEMAND KVA
CONT. LOAD	5.00	125%	6.25
RECEPTACLE	4.86	100%/50%	4.86
MTRS/COOLS	0.00	100%	0.00
HEATS	0.00	125%	0.00
WATER HEATER	0.00	125%	0.00
EQUIPMENT	19.30	100%	19.30
KITCHEN EQUIP.	0.00	65%	0.00
SPECIAL EQ.	0.00	100%	0.00
25% OF LARGEST HVAC/MOTOR			2.00
TOTAL DEMAND			32.41

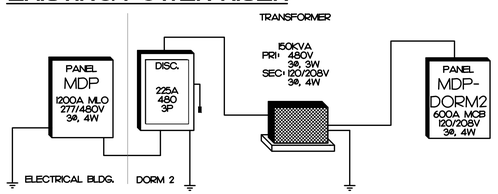
225 A MINIMUM BUS SIZE
MAIN LUGS ONLY
10 K MINIMUM AIC RATING

SURFACE MOUNTING
NEMA 1 ENCLOSURE
GROUND BAR

NOTES
1. EXISTING SQUARE D: NQOD. 'E' INDICATES EXISTING BRANCH CIRCUIT TO REMAIN
2. EXISTING SPARE CIRCUIT BREAKER
3.
4.
5.

CONNECTED LOADS	
PHASE A:	10.4 KVA
PHASE B:	9 KVA
PHASE C:	9.7 KVA
TOTAL:	29.2 KVA
DEMAND	90 AMP

EXISTING POWER RISER



NOTE:
1. POWER RISER IS EXISTING TO REMAIN. SHOWN FOR REFERENCE ONLY.

MDP LOAD STATEMENT:

EXISTING LOAD AT MDP AND ATS PER UTILITY RECORDS
- 214 KW WITH AN ASSUMED POWER FACTOR OF 0.85 AND A DEMAND FACTOR OF 1.25, THE DEMAND LOAD IS 314.71 KVA
- ADDED LOAD OF 200.61 KVA (TOTAL OF ALL BUILDINGS)
- NEW DEMAND LOAD 515.32 KVA (619.83 AMPS)

2203

REVISIONS

ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL CORPORATION
NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID J. WHITNEY
ATLANTEC ENGINEERS, PA
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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
BUILDING 2
ELECTRICAL NOTES, LEGEND, AND DETAILS

DATE:
MARCH 31, 2023

DESIGNER: AB
ENGINEER: DW

SHEET NO.
2E-2

APPENDIX B
2018 BUILDING CODE SUMMARY
FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2 FAMILY DWELLINGS AND TOWNHOUSES)

Name of Project: SAMPSON CORRECTIONAL INSTITUTION
Address: 421 NW BOULEVARD, CLINTON, NC – BUILDING 3 **Zip Code** 28328
Proposed Use: PRISON DORMITORIES
Owner or Auth. Agent: TAYLOR OLDHAM **Phone #** 919-324-1272 **Email** taylor.oldham@ncdps.gov
Owned By: ☐ City/County ☐ Private ☒ State
Code Enforcement Jurisdiction: ☐ City ☐ County ☒ State

LEAD DESIGN PROFESSIONAL: BRADLEY W. FELTS, PE

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	EMAIL
Architectural					
Civil					
Electrical	ATLANTEC ENG	D. WHITNEY	017382	919.571.1111	DAVID@ATLANTECENGINEERS.COM
Fire Alarm					
Plumbing					
Mechanical	ATLANTEC ENG	B. FELTS	025036	919.571.1111	BRAD@ATLANTECENGINEERS.COM
Spr.-Stand.					
Structural					
Ret. Walls >5' High					
Other					

2018 EDITION OF NC CODE FOR: ☐ New Construction ☐ Addition ☒ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core – Contact the local inspection jurisdiction for possible additional procedures & requirements
☐ Phased Construction – Contact the local inspection jurisdiction for possible additional procedures & requirements

2018 NC EXISTING BUILDING CODE: ☐ Prescriptive ☐ Repair ☐ Chapter 14
ALTERATION: ☐ Level I ☒ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: 1989 ORIGINAL OCCUPANCY(S) (Ch. 3): PRISON DORMITORY
RENOVATED: – CURRENT OCCUPANCY(S) (Ch. 3): PRISON DORMITORY
PROPOSED OCCUPANCY(S) (Ch. 3): PRISON DORMITORY
RISK CATEGORY (Table 1604.5): CURRENT: ☐ I ☐ II ☒ III ☐ IV
PROPOSED: ☐ I ☐ II ☒ III ☐ IV

BUILDING DATA

Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
☐ I-B ☒ II-B ☐ III-B ☐ V-B

Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes Flood Hazard Area: ☐ No ☐ Yes
Special Instructions Required: ☒ No ☐ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)
Building Height: 16'-0" Feet

Gross Building Area:

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
7th Floor			
6th Floor			
5th Floor			
4th Floor			
3rd Floor			
2nd Floor			
1st Floor		12,375 SQFT	
Basement			
TOTAL		12,375 SQFT	

ALLOWABLE AREA

Occupancy:
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☒ I-3 ☐ I-4
I-3 Condition ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled ☐ Parking Garage
☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Misc. ☐

Accessory Occupancies:
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled ☐ Parking Garage
☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Misc. ☐

N/A

☐ Furnace room where any piece of equipment is over 400,000 Btu per hour input
☐ Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower
☐ Refrigerant machine room
☐ Hydrogen cutoff rooms, not classified as Group H
☐ Incinerator rooms
☐ Paint shops, not classified as Group H, located in occupancies other than Group F
☐ Laboratories and vocational shops, not classified as Group H, located in a Group E or I-2 occupancy
☐ Laundry rooms over 100 square feet
☐ Group I-3 cells equipped with padded surfaces
☐ Group I-2 waste and linen collection rooms
☐ Waste and linen collection rooms over 100 square feet
☐ Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons, or a lithium-ion capacity of 1,000 pounds used for facility standby power, emergency power, or uninterrupted power supplies
☐ Rooms containing fire pumps
☐ Group I-2 storage rooms over 100 square feet
☐ Group I-2 commercial kitchens
☐ Group I-2 laundries equal to or less than 100 square feet
☐ Group I-2 rooms or spaces that contain fuel-fired heating equipment

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ALLOWABLE AREA (continued)

Special Uses: ☐ 402 ☐ 403 ☐ 404 ☐ 405 ☐ 406 ☐ 407 ☐ 408 ☐ 409 ☐ 410 ☐ 411 ☐ 412 ☐ 413 ☐ 414 ☐ 415 ☐ 416 ☐ 417 ☐ 418 ☐ 419 ☐ 420 ☐ 421 ☐ 422 ☐ 423 ☐ 424 ☐ 425 ☐ 426 ☐ 427
Special Provisions: ☐ 509.2 ☐ 509.3 ☐ 509.4 ☐ 509.5 ☐ 509.6 ☐ 509.7 ☐ 508.8 ☐ 509.9
Mixed Occupancy: ☒ No ☐ Yes Separation: ___ Hr. Exception ___

N/A

☐ Incidental Use Separation (508.2.5)
This separation is not exempt as a Nonseparated Use (see exceptions).

☐ Nonseparated Use (508.3.2)
The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined shall apply to the entire building.

☐ Separated Use (508.3.3) – See below for area calculations For each story, the area of occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \le 1$$

N/A + N/A + ... = N/A ≤1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 503[5] AREA	(C) AREA FOR OPEN SPACE INCREASE[1,6]	(D) AREA FOR SPRINKLER INCREASE[2]	(E) ALLOWABLE AREA OR UNLIMITED[3,4]	(F) MAXIMUM BUILDING AREA[4]
4th Floor							
3rd Floor							
2nd Floor							
1st Floor							

1. Frontage area increases from Section 506.2 are computed thus:
   a. Perimeter which fronts a public way or open space having 20 feet minimum width = ___ (F)
   b. Total Building Perimeter = ___ (P)
   c. Ratio (F/P) = ___ (F/P)
   d. W = Minimum width of public way = ___ (W)
   e. Percent of frontage increase I_f = 100 [F/P – 0.25] x W/30 = ___ (%)
2. The sprinkler increase per section 506.3 is as follows:
   a. Multi-story building I_s = N/A
   b. Single story building I_s = N/A
3. Unlimited area applicable under conditions of Sections 507.
4. Maximum Building Area = total number of stories in the building x E (506.2).
5. The maximum area of open parking garages must comply with Table 406.3.5. The maximum area of air traffic control towers must comply with Table 412.3.1.
6. Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE (TABLE 503)	INCREASE FOR SPRINKLERS	SHOWN ON PLANS	CODE REFERENCE
Type of Construction	Type ___		Type ___	
Building Height in Feet (Table 504.3)	75'-0"	Feet=H+20'= N/A	16'-0"	504.3
Building Height in Stories	UL	Stories+1= N/A	1 STORY	504.4

N/A

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ – REDUCTION)	DETAIL# AND SHEET#	DESIGN# FOR RATED ASSEMBLY	DESIGN# FOR RATED PENETRATION	DESIGN# FOR RATED JOINTS
Structural frame, including columns, girders, trusses	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Bearing walls	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
Exterior	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
North	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
East	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
West	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
South	>30'	0 HR	0 HR	N/A	N/A	N/A	N/A
Interior	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Nonbearing walls and partitions	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Exterior	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
North	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
East	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
West	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
South	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Interior walls and partitions	N/A	0 HR	0 HR	N/A	N/A	N/A	N/A
Floor construction including supporting beams and joists	–	0 HR	0 HR	N/A	N/A	N/A	N/A
Roof construction including supporting beams and joists	–	0 HR	0 HR	N/A	N/A	N/A	N/A
Roof Ceiling Assembly	–	0 HR	0 HR	N/A	N/A	N/A	N/A
Columns Supporting Roof	–	N/A	N/A	N/A	N/A	N/A	N/A
Shaft Enclosures – Exit	–	N/A	N/A	N/A	N/A	N/A	N/A
Shaft Enclosures – Other	–	N/A	N/A	N/A	N/A	N/A	N/A
Corridor Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Occupancy/Fire Barrier Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Party/Fire Wall Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Smoke Barrier Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Tenant/Dwelling Unit/ Sleeping Unit Separation	–	N/A	N/A	N/A	N/A	N/A	N/A
Incidental Use Separation	–	N/A	N/A	N/A	N/A	N/A	N/A

#indicate section number permitting reduction

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting:	☒ No	☒ Yes
Exit Signs:	☒ No	☒ Yes
Fire Alarm:	☐ No	☒ Yes
Smoke Detection Systems:	☐ No	☒ Yes ☒ Partial DUCT SMOKE DETECTION
Panic Hardware:	☒ No	☐ Yes
Carbon Monoxide Detection:	☒ No	☐ Yes

PERCENTAGE OF WALL OPENING CALCULATIONS

N/A

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTIONS (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
00'-0	00'	00	00
00'-0	00'	00	00
00'-0	00'	00	00

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: –

N/A

☐ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☐ Existing structures within 30 feet of the proposed building
☐ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
☐ Occupant loads for each area
☐ Exit access travel distances (1017)
☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
☐ Dead end lengths (1020.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7.)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS (SECTION 1107)

N/A

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED
00	00	00	00	00	00	00	00

ACCESSIBLE PARKING (SECTION 1106)

N/A

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED			
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	TOTAL # ACCESSIBLE PROVIDED
NAME	00	00	00	00	00	00
NAME	00	00	00	00	00	00
TOTAL	00	00	00	00	00	00

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

USE		WATER CLOSETS MALE	WATER CLOSETS FEMALE	WATER CLOSETS UNISEX	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS /TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXISTING	5	5	2	0	4	4	2	14	0	1
	NEW	5	5	3	0	4	4	3	14	0	2
	REQUIRED	NCBC 2902.7 – ADJUSTMENT OF PLUMBING FIXTURES IS IN ACCORDANCE TO OWNER – PROVIDED USE PATTERNS OF PROFESSIONAL AND SEMI-PROFESSIONAL SOCCER TEAMS UTILIZING THE FACILITY. RENOVATIONS ONLY AFFECT PLUMBING FIXTURES IN TEAM AREAS; PLUMBING FIXTURES IN PUBLIC / STADIUM VISITORS AREAS ARE NOT AFFECTED BY THIS PROJECT'S SCOPE.								

ENERGY SUMMARY

N/A

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☒ No ☐ Yes (The remainder is then N/A)
Exempt Building: ☐ No ☒ Yes (Provide code or summary reference): 2018 NCEBC 811
Climate Zone: ☐ 3A ☒ 4A ☐ 5A

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
If "Other" specify here) ___

THERMAL ENVELOPE (Prescriptive method only)

Roof/Ceiling Assembly (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A
Skylights in each assembly N/A
U-Value of skylight N/A
Total square footage of skylights in each assembly N/A

Exterior Walls (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A
Openings (windows or doors with glazing) N/A
U-Value of assembly N/A
Solar heat gain coefficient N/A
Projection factor N/A
Door R-Values N/A

Walls below grade (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A

Floors over unconditioned space (each assembly)
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A

Floors slab on grade
Description of assembly N/A
U-Value of total assembly N/A
R-Value of insulation N/A
Horizontal/vertical requirement N/A
Slab heated N/A

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc., describe below)

N/A

N/A

STRUCTURAL DESIGN

DESIGN LOADS:
Importance Factors: Wind (I_w) ___ Snow (I_s) ___ Seismic (I_E) ___
Live Loads: Roof ___ psf Mezzanine ___ psf Floor ___ psf
Ground Snow Load: ___ psf
Wind Load: Basic Wind Speed ___ mph (ASCE-7) Exposure Category ___
Wind Base Shears (for MWFRS) Vx = ___ Vy = ___

N/A

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D

Provide the following Seismic Design Parameters:
Occupancy Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration S_S ___ %g S_1 ___ %g
Site Classification (Table 1613.5.2) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
☐ Field Test ☐ Presumptive ☐ Historical Data

Basic structural system (check one)
☐ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum

Seismic base shear: Vx = ___ Vy = ___
Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: ☐ Earthquake ☐ Wind

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) ___ psf
Presumptive Bearing capacity ___ psf
Pile size, type, and capacity ___

SPECIAL INSPECTIONS REQUIRED: ☐ Yes ☐ No

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone 4A
Winter dry bulb 16°F
Summer dry bulb 93°F 46%

Interior design conditions
Winter dry bulb 70°F
Summer dry bulb 74°F
Relative humidity 50%

Building heating load 320.0 MBH
Building cooling load 404.4 MBH

Mechanical Spacing Conditioning System
Unitary
Description of unit SPLIT SYSTEM COOLING AIR-COOLED WITH HOT WATER HEAT
Heating efficiency –
Cooling efficiency 10.3 EER
Size category of unit 117 MBH
Boiler
Size category. If oversized, state reason. 468 MBH
Chiller
Size category. If oversized, state reason. N/A
List equipment efficiencies SEE 3M-1

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance
Energy Code: ☐ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)
Lamp type required in fixture
Number of lamps in fixture
Ballast type used in the fixture
Number of ballasts in the fixture
Total wattage per fixture
Total interior wattage specified vs. allowed
Total exterior wattage specified vs. allowed

NO LIGHTING

Additional Prescriptive Compliance
☐ C406.2 More Efficient Mechanical Equipment Performance
☐ C406.3 Reduced Lighting Power Density
☐ C406.4 Enhanced Digital Lighting Controls
☐ C406.5 On-Site Renewable Energy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating
☐ 506.2.3 Energy Recovery Ventilation Systems
☐ 506.2.6 Automatic Daylighting Control Systems

REVISIONS

NORTH CAROLINA PROFESSIONAL CORPORATION
ATLANTEC ENGINEERS PA No. C-951
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025036 BRADLEY W. FELTS
3/31/23

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(252) 527-3336

PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC NORTH CAROLINA

CONTENTS:
BUILDING 3
APPENDIX B

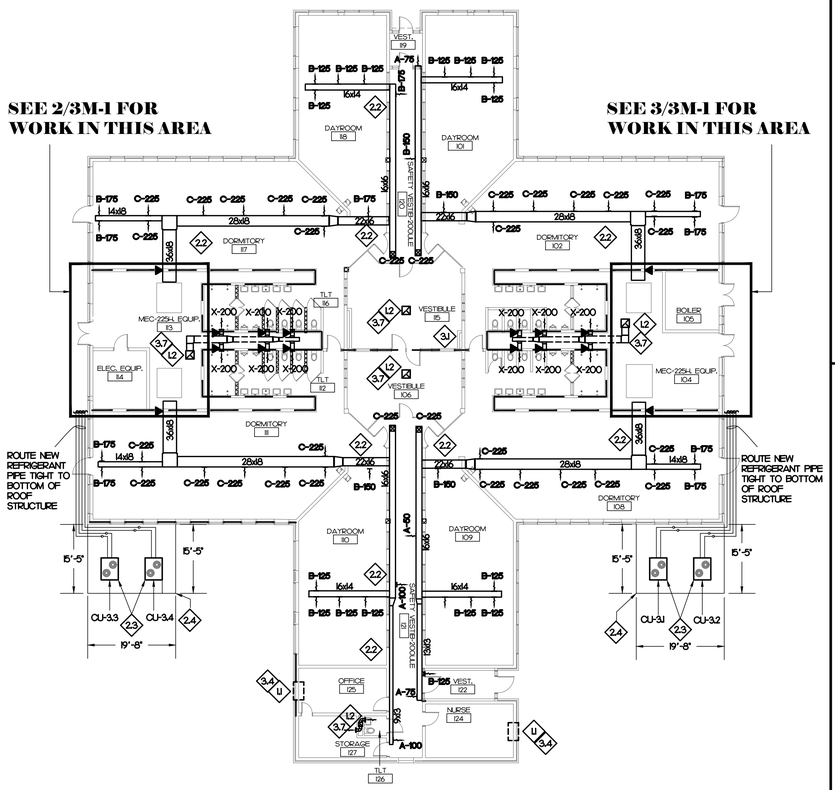
DATE:
MARCH 31, 2023

DESIGNER: BWF
ENGINEER: BWF

SHEET NO.
3T-1

SEE 2/3M-1 FOR WORK IN THIS AREA

SEE 3/3M-1 FOR WORK IN THIS AREA

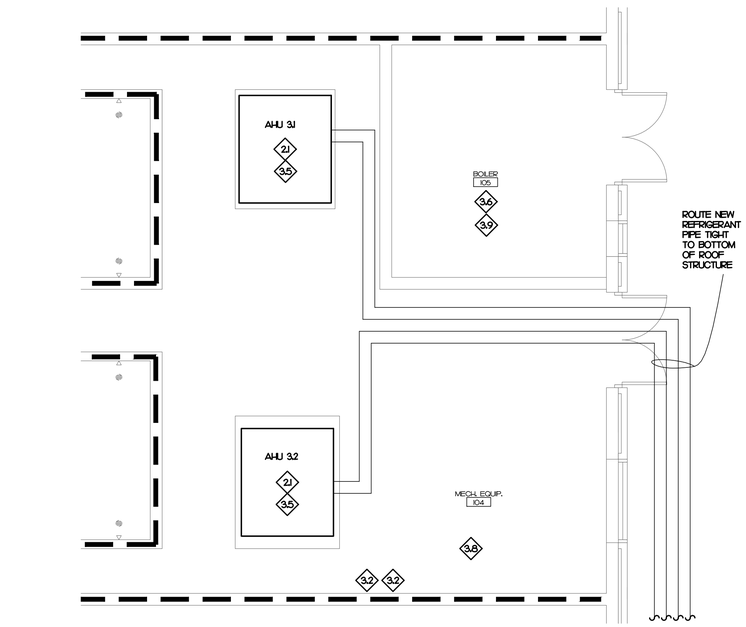


1 MECHANICAL RENOVATION PLAN

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

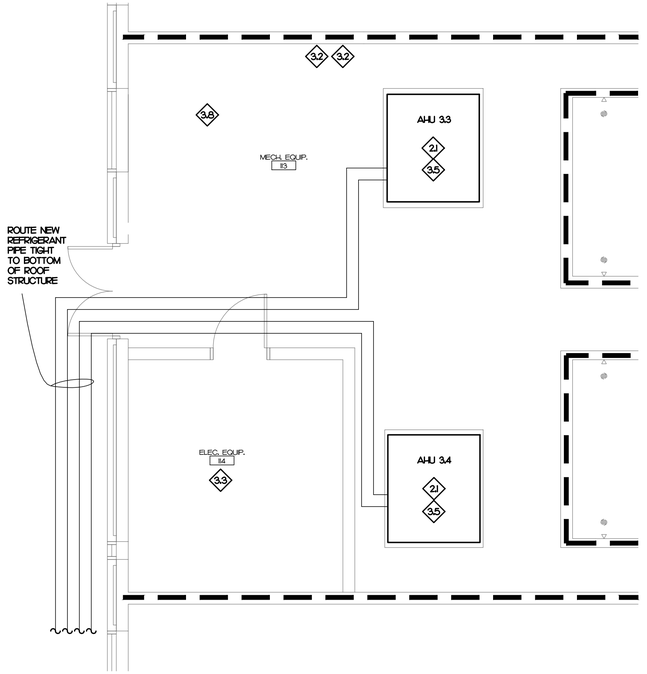
WALL TYPE LEGEND	
SYMBOL	DESCRIPTION
--------	SMOKE PARTITION

0' 2' 4' 8' 12'



3 MECHANICAL ROOM RENOVATION

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



2 MECHANICAL ROOM RENOVATION

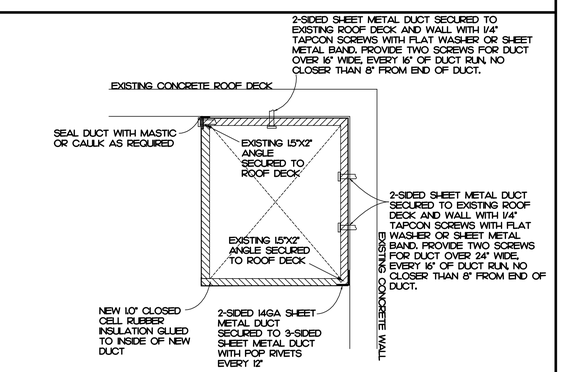
SCALE: 1/4" = 1'-0"

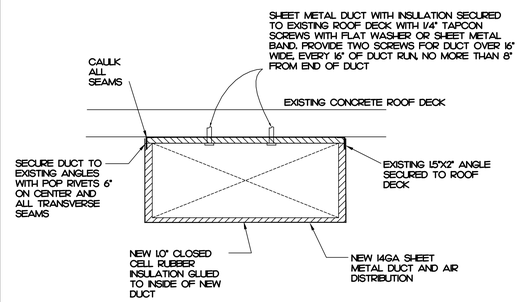
MECHANICAL KEY NOTES

- U — EXISTING HEAT PUMP TO REMAIN.
- L2 — EXISTING EXHAUST FAN TO REMAIN.
- 2J — INSTALL NEW DX COOLING COIL IN EXISTING AHU. PROVIDE CONDENSATE TRAP AND DRAIN TO EXISTING NEARBY FLOOR DRAIN. PROVIDE STAINLESS STEEL COIL CASING TO DIRECT AIR THROUGH COIL. SEE 4 AND 5/3M-2 FOR DETAIL.
- 2.2 — NEW DUCT IN EXISTING DUCT LOCATION. FIELD VERIFY SIZE OF MOUNTING ANGLE PRIOR TO DUCT FABRICATION. DUCT SIZES LISTED ARE OUTSIDE SHEET METAL. REMOVE AND REINSTALL CONDUIT AS REQUIRED THAT IS SECURED TO DUCT.
- 2.3 — NEW CONDENSING UNIT ON NEW CONCRETE PAD. SEE 1/3M-2 FOR DETAIL.
- 2.4 — 8' TALL CHAIN LINK BY CONTRACTOR WITH 4' GATE. COORDINATE GATE LOCATION WITH OWNER.
- 3J — EXISTING FIRE ALARM CONTROL PANEL AND NEW PURGE CONTROL PANEL.
- 3.2 — NEW BUILDING AUTOMATION CONTROL FOR AHU AND PURGE FAN CONTROL. EXISTING FIRE ALARM RELAYS TO REMAIN. REPLACE EXISTING TWO SPEED STARTER WITH NEW VFD.
- 3.3 — NEW IP ROUTER FOR CAMPUS INTEGRATION OF BAS.
- 3.4 — EXISTING THRU WALL UNIT. NO BAS INTEGRATION OR CONTROL.
- 3.5 — DX COOLING/AHU. SEE SHEET M-5 FOR CONTROL SCHEMATIC, POINTS LIST AND SEQUENCE OF OPERATIONS.
- 3.6 — EXISTING BOILER PLANT. SEE SHEET M-4 FOR CONTROL SCHEMATIC, POINTS LIST AND SEQUENCE OF OPERATIONS.
- 3.7 — EXISTING FAN TO REMAIN. NO BAS INTEGRATION OR CONTROL.
- 3.8 — EXISTING HOT WATER UNIT HEATER TO REMAIN. CONTROL VIA LOCAL THERMOSTAT. NO BAS INTEGRATION.
- 3.9 — EXISTING DOMESTIC HOT WATER HEATER TO REMAIN. MONITOR HOT WATER SUPPLY TEMPERATURE WITH BOILER CONTROLLER. NO OTHER BAS INTEGRATION OR CONTROL.

SCOPE OF WORK

1. ADD NEW COILING COILS IN EXISTING HEATING AND VENTILATION AIR HANDLING UNITS.
2. EXISTING UNITS HAVE TWO SPEED MOTORS AND FACE/BYPASS DAMPERS FOR PURGE OPERATION. REMOVE EXISTING TWO SPEED STARTER AND MOTOR AND PROVIDE NEW VFD, MOTOR, BELTS AND PULLEYS. REMOVE FACE DAMPER LINKAGE AND ACTUATOR AND LOCK IN OPEN POSITION. PROVIDE NEW BYPASS DAMPER ACTUATOR.
3. PROVIDE POST-WORK TEST AND BALANCE TO VERIFY TOTAL SUPPLY AIRFLOW AT PURGE MODE AND GRILLE AIRFLOW AT "NORMAL MODE". NORMAL MODE AIRFLOW SHOWN ON THESE PLANS. SEE SCHEDULE FOR OTHER AIRFLOW SETPOINTS.
4. BALANCE AIR DISTRIBUTION AND OUTSIDE AIR AT "NORMAL" MODE OF OPERATION.
5. REMOVE EXISTING SUPPLY DUCT AND AIR DISTRIBUTION IN DORM AREA. DUCTWORK IN MECHANICAL ROOM TO REMAIN AS IS.
6. PROVIDE NEW INSULATED DUCT AND AIR DISTRIBUTION IN SAME ROUTE AS EXISTING DUCT. RELOCATE CONDUIT, MOUNTING ANGLE AS REQUIRED. NEW DUCT SIZES ARE OUTSIDE SHEET METAL. OUTSIDE DIMENSION WILL INCLUDE 1.0" OF LINER ON ALL SIDES. DUCT SIZES ARE BASED ON ORIGINAL PLANS. WALL PENETRATIONS SHOULD MATCH EXISTING. FIELD VERIFY ALL DUCT SIZES AND DIMENSIONS PRIOR TO FABRICATION.
7. BALANCE EXISTING TOILET EXHAUST TO 600 CFM PER POD, 1200 CFM PER FAN.
8. PROVIDE NEW BUILDING AUTOMATION SYSTEM COMPLETE WITH ALL NEW SENSORS, ACTUATOR, VFD'S, WIRING, CONDUIT FOR A COMPLETE AND OPERATIONAL SYSTEM. ALL CONTROLLERS AND VFD'S TO BE BACNET AND COMMUNICATE TO EXISTING JACE OVER CAMPUS INTRANET.





4 DUCT INSULATION SECTION

NOT TO SCALE

2203

REVISIONS

NORTH CAROLINA PROFESSIONAL ENGINEER CORPORATION — ATLANTEC ENGINEERS PA No. C-961 — SEAL 025036 — ENGINEER BRADLEY W. FELTS — 3/31/23

ATLANTEC ENGINEERS, PA
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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

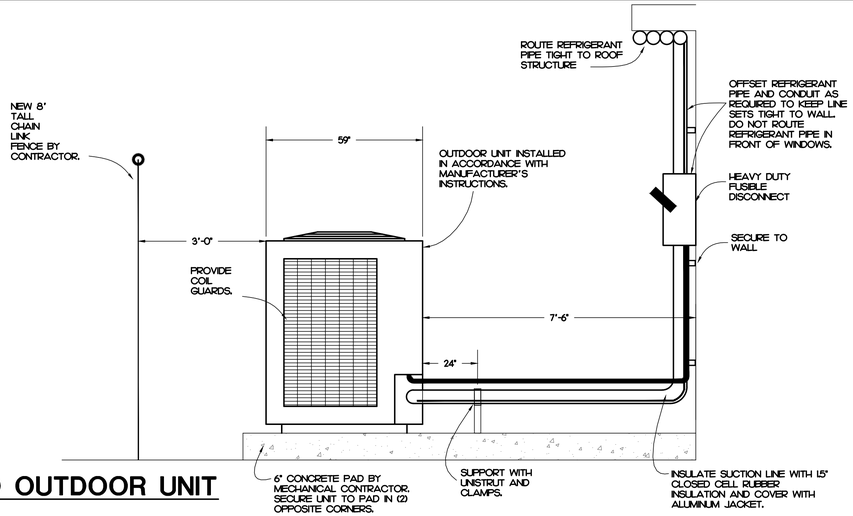
SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC — NORTH CAROLINA

CONTENTS: BUILDING 3 MECHANICAL RENOVATION PLAN

DATE: MARCH 31, 2023

DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
3M-1



1 GROUND MTD OUTDOOR UNIT

NOT TO SCALE

AIR COOLED CONDENSING UNIT

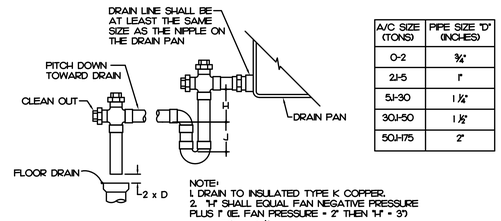
MARK	BASIS OF DESIGN	MODEL	SYSTEM CAPACITY (MBH)	REFRIG. TYPE	ELECTRICAL (V/Ø)	(MCA)	(MOCP)	EFFICIENCY (EER)	NOTES
CU-3.1	CARRIER	38AUD08	92.0	410A	480/3	18.0	25	11.2	1-6
CU-3.2	CARRIER	38AUD08	92.0	410A	480/3	18.0	25	11.2	1-6
CU-3.3	CARRIER	38AUD08	92.0	410A	480/3	18.0	25	11.2	1-6
CU-3.4	CARRIER	38AUD08	92.0	410A	480/3	18.0	25	11.2	1-6

EQUALS BY TRANE, JCI, AND DAIKIN

NOTES:
1. PROVIDE WITH COIL GUARDS.
2. PROVIDE WITH SINGLE POINT ELECTRICAL CONNECTION.
3. UNIT TO HAVE A MINIMUM OF 2 STAGES COOLING.
4. PROVIDE WITH HEAVY DUTY FUSIBLE DISCONNECT.
5. CONTROL VIA BUILDING AUTOMATION SYSTEM.
6. PROVIDE 5 YEAR COMPRESSOR WARRANTY, PARTS, AND LABOR.

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE 2018 EDITION OF THE NC STATE CODES.
2. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMAN. THE M.C. SHALL COORDINATE ALL OF HIS WORK WITH ALL OTHER CONTRACTORS.
3. THE MECHANICAL PLANS AND SPECIFICATIONS SHALL BE THOROUGHLY REVIEWED PRIOR TO PURCHASING MATERIALS AND INSTALLATION. ALL DISCREPANCIES OR INTERFERENCES SHALL BE BROUGHT TO THE ENGINEERS' ATTENTION.
4. THE M.C. SHALL INSURE THAT ALL MECHANICAL EQUIPMENT INSTALLED UNDER HIS CONTRACT SHALL OPERATE FREE OF OBJECTIONABLE NOISE AND VIBRATION.
5. THE M.C. SHALL KEEP THE PREMISES CLEAR OF DEBRIS FROM THE CONTRACTOR'S WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT THE COMPLETION OF THE CONTRACTOR'S WORK. THE CONTRACTOR SHALL ALSO LEAVE CLEAN ALL EXPOSED EQUIPMENT IN THE CONTRACTOR'S CONTRACT.
6. ALL DUCTWORK SIZES SHOWN ARE OUTSIDE DIMENSIONS UNLESS OTHERWISE NOTED. LINE DUCTWORK WITH 1.0" CLOSED CELL FOAM INSULATION WITH FLAME/SMOKE RATING OF 25/50. INSIDE CLEAR DIMENSIONS TO BE LISTED SIZE LESS 2" IN BOTH DIRECTIONS.
7. MECHANICAL CONTRACTOR SHALL WORK WITH TEST AND BALANCE CONTRACTOR TO REMEDY ANY DIFFERENCES TO INCLUDE FAN DRIVE CHANGES, INSTALLATION OF DAMPERS OR OTHER MINOR DUCT MODIFICATIONS TO PROVIDE AIRFLOW TO WITHIN +/- 10% OF THE DESIGN VALUES LISTED ON THESE PLANS.
8. HOT WATER PIPING SHALL BE SCHEDULE 40 BLACK STEEL WITH MALLEABLE IRON THREADED FITTINGS. INSULATE PIPING WITH MIN. 1-1/2" THICK PRE-MOLDED CELLULAR GLASS PIPE INSULATION WITH VAPOR BARRIER JACKET. APPLY HEAT TAPE TO ALL EXTERIOR PIPING PRIOR TO APPLYING INSULATION.
9. ALL EQUIPMENT PADS SHALL BE PAINTED YELLOW.
10. THE AIR HANDLING UNIT SHALL OPERATE AT ALL TIMES DURING OCCUPIED HOURS.
11. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A SET OF AS-BUILT DRAWINGS UPON COMPLETION OF JOB.
12. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A BALANCE REPORT BY A CERTIFIED TEST AND BALANCE COMPANY.
13. PROVIDE PERMIT LABEL ENGRAVED PLASTIC LAMINATE MECHANICALLY FASTENED TO OUTDOOR UNITS.
14. LABEL CEILING GRID WHERE EQUIPMENT IS LOCATED ABOVE LAY-IN CEILING. WITH EQUIPMENT IDENTIFIER. ALSO LABEL ALL TEMPERATURE SENSORS AND THERMOSTATS WITH EQUIPMENT IDENTIFIER.

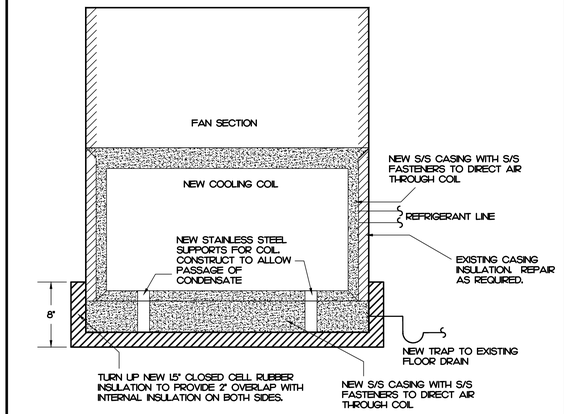


A/C SIZE (TONS)	PIPE SIZE "D" (INCHES)
0-2	¾"
2.1-5	1"
5.1-30	1 ¼"
30.1-50	1 ½"
50.1-175	2"

NOTE:
1. DRAIN TO INSULATED TYPE K COPPER.
2. "H" SHALL EQUAL FAN NEGATIVE PRESSURE PLUS 1" (IE. FAN PRESSURE = 2" THEN "H" = 3")
3. "I" EQUALS ½ H.
4. SEE CHART FOR MINIMUM PIPE SIZE OR "D".
5. MANUFACTURERS RECOMMENDATIONS SHALL OVERRIDE ITEMS 2 AND 3.

2 CONDENSATE TRAP DETAIL

NOT TO SCALE



4 AHU INSULATION SECTION

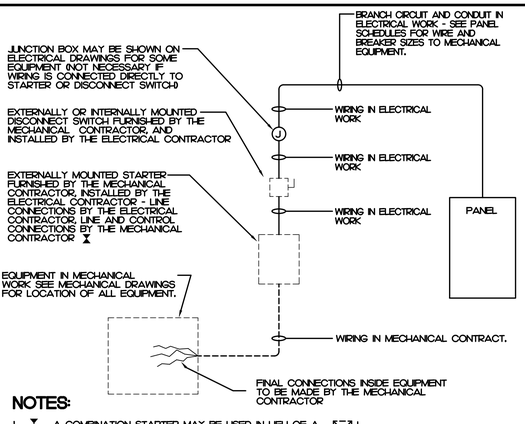
NOT TO SCALE

DX COOLING COIL SCHEDULE

MARK	AREA SERVED	HTG AIR FLOW (cfm)	CLG 1 AIR FLOW (cfm)	CLG 2 AIR FLOW (cfm)	PURGE AIR FLOW (cfm)	CLG 2 VELOCITY (fpm)	COOLING TOT. CAP. (MBH)	COOLING SEN. CAP. (MBH)	COOLING AIR SIDE APD (in. w.g.)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	NOTES	EXISTING AHU MODEL NO.
AHU-3.1	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV
AHU-3.2	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU08CV
AHU-3.3	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV
AHU-3.4	DORMITORY	2400	2010	3000	5300	500	92.8	67.1	0.5"	80	67	57.0	56.0	1-4	SNYDER GENERAL LSU06CV

NOTE:
1. PROVIDE WITH STAINLESS STEEL COIL CASING AND SUPPORTS FOR NEW COIL.
2. FIELD VERIFY AVAILABLE SPACE IN EXISTING AHU AND HAND OF COIL.
3. COILS TO BE 3-ROW MINIMUM.
4. AIRFLOW LISTED SHALL BE BALANCED WITH VFD AND BAS FOR PROGRAMMED MODES OF OPERATION. PURGE AIRFLOW IS IN COMBINATION WITH BY-PASS AND FLOW THRU COIL. COIL VELOCITY, PRESSURE DROP AND CAPACITY IS FOR COOLING STAGE 2 AIRFLOW. NEW MOTORS TO BE 5.0 HP, 480/3

EQUALS BY CAPITAL COIL, TRANE, DAIKIN, JCI, AND CARRIER

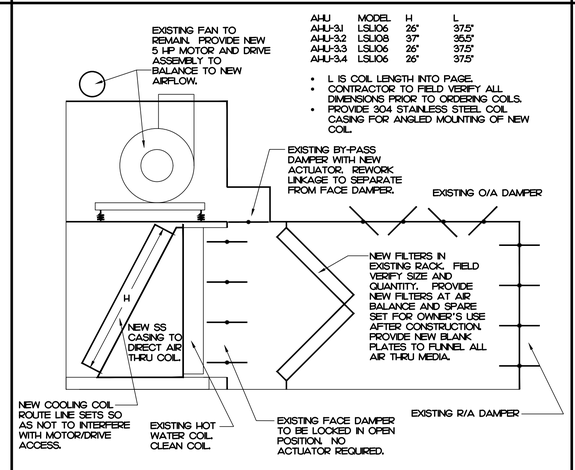


NOTES:

1. I A COMBINATION STARTER MAY BE USED IN LIEU OF A A SEPARATE DISCONNECT SWITCH AND STARTER
2. E.C. SHALL FURNISH ALL REQUIRED FUSES.

3 TYPICAL WIRING DETAIL

NOT TO SCALE



5 AHU WORK DETAIL

NOT TO SCALE

GRILLE & DIFFUSER SCHEDULE

MARK	BASIS OF DESIGN	SERVICE	TYPE	MAX. CFM	FACE SIZE	NECK SIZE	NOTES
A	KEES SEG4P3	SUPPLY	DUCT MOUNTED	200	9.75X9.75	8X8	1-4
B	KEES SEG4P3	SUPPLY	DUCT MOUNTED	375	11.75X11.75	10X10	1-4
C	KEES SEG4P3	SUPPLY	DUCT MOUNTED	400	13.75X13.75	12X12	1-4

EQUALS BY NAILOR, METALAIRE, PRICE

NOTES:
1. PROVIDE WITH WHITE FINISH.
2. PROVIDE WITH FRAME FOR DUCT MOUNTING.
3. PROVIDE WITH FACE OPERATED OPPOSED BLADE DAMPER.
4. 12GA STEEL WITH PERFORATED FACE(3/16" HOLES). SECURE WITH #10 TORX SECURITY SHEET METAL SCREWS.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	INSULATED SHEET METAL DUCT
	SUPPLY DIFFUSER - LETTER & NUMBER INDICATES TYPE & CFM
	SIDEWALL SUPPLY GRILLE - LETTER & NUMBER INDICATES TYPE & CFM
	EXISTING FIRE DAMPER

OUTSIDE AIR SUMMARY

REQUIRED:

(5 CFM/PER X 108 PER) + (0.12 CFM/SQFT X 12,375 SQFT) = 2025 CFM

TOTAL REQUIRED = 2025 CFM

PROVIDED:

AHU 3.1 = 600 CFM
AHU 3.2 = 600 CFM
AHU 3.3 = 600 CFM
AHU 3.4 = 600 CFM

NOTE: O/A SET TO MATCH TOILET EXHAUST

TOTAL PROVIDED = 2400 CFM

REVISIONS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025036 BRADLEY W. FELTS
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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

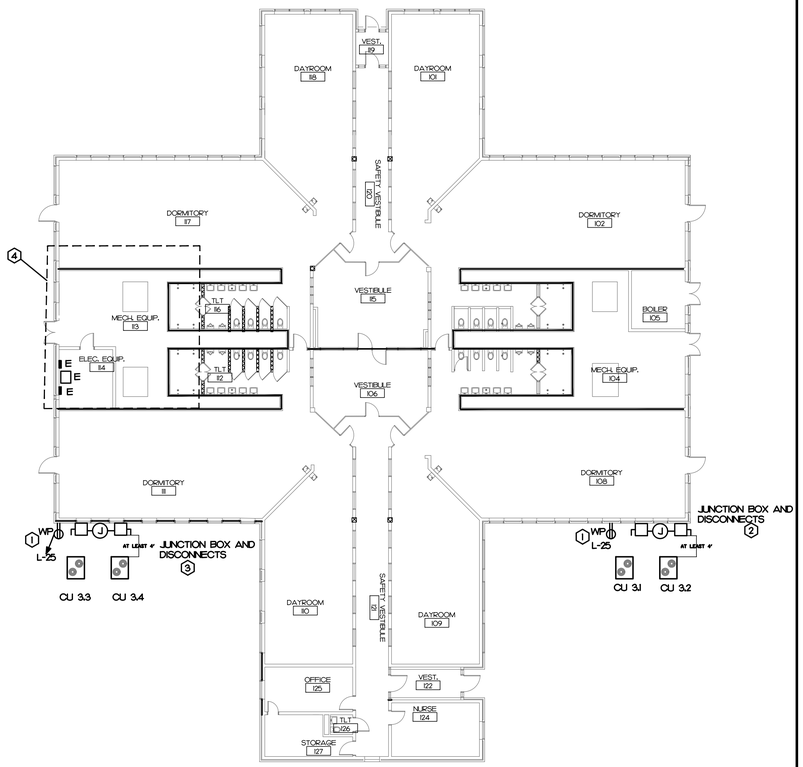
CONTENTS:
BUILDING 3
MECHANICAL NOTES, LEGEND, AND DETAILS

DATE:
MARCH 31, 2023

DESIGNER: NGB
ENGINEER: BWF

SHEET NO.
3M-2

22103

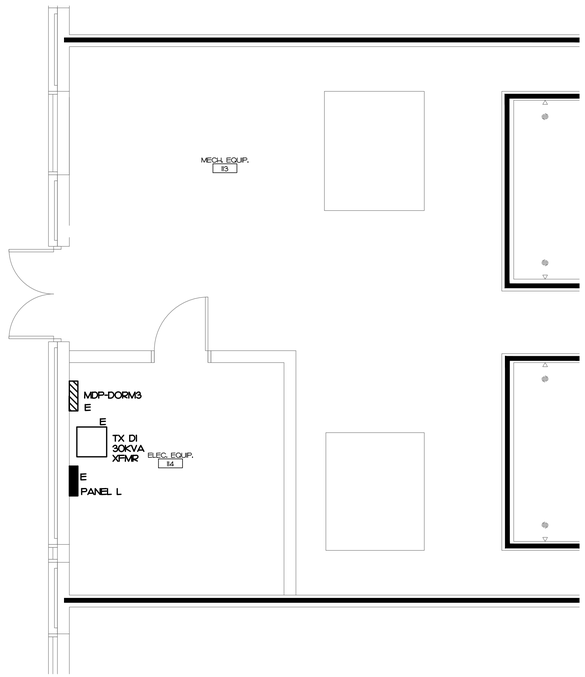


1 ELECTRICAL RENOVATION PLAN

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

WALL TYPE LEGEND	
SYMBOL	DESCRIPTION
– – – – –	SMOKE PARTITION

1' 2' 4' 8' 12'



2 MECHANICAL ROOM RENOVATION

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

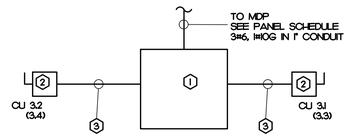
KEY NOTES

1. CONNECT TO EXISTING RECEPTACLE CIRCUIT L-25 CONTRACTOR TO VERIFY CIRCUIT IS NOT OVERLOADED. PER THE EXISTING PLANS, ONLY A FRACTIONAL HORSEPOWER UNIT HEATER IS ON THIS CIRCUIT.
2. USE CIRCUIT MDP-DORM3-L3,5 FOR THE JUNCTION BOX AT THIS LOCATION. E.C TO PROVIDE TAPS AND DISCONNECTS TO FEED CU 3.1 AND 3.2.
3. USE CIRCUIT MDP-DORM3-2,4,6 FOR THE JUNCTION BOX AT THIS LOCATION. E.C TO PROVIDE TAPS AND DISCONNECTS TO FEED CU 3.3 AND 3.2.
4. SEE ENLARGED PLAN 3E-V2

NOTES

1. PER THE NC DEPARTMENT OF PUBLIC SAFETY, THE PREFERRED ROUTING METHOD FOR BRANCH CIRCUITS WIRING IS EXPOSED ON THE BUILDING EXTERIOR WALLS. THE DEPARTMENT WILL BE FURNISHING IN HOUSE LABOR FOR THIS WORK. THE EXACT CONDUIT ROUTING WILL BE FIELD DETERMINED. THE CONDUIT ROUTING SHOULD FOLLOW THE NEW REFRIGERANT PIPING.

MULTIPLE CONDENSING UNIT CONNECTION DETAIL



KEY NOTES

1. JUNCTION BOX SIZED PER NEC WITH APPROVED TERMINAL BLOCKS FOR LINE VOLTAGE CONDUCTORS AND GROUND WIRES. GROUND BOX TO GROUND TERMINAL.
2. NEMA 3R 30 AMP DISCONNECT. PROVIDED BY THE MECHANICAL CONTRACTOR. FUSE 25 AMPS. LABEL THE DISCONNECT TO INDICATE THE UNIT SERVED AND THE CIRCUIT POWERING THE DISCONNECT.
3. TAP CONDUCTORS TO THE LINE SIDE OF THE DISCONNECT. 3#10, 1#10G IN 3/4" CONDUIT.

REVISIONS

NORTH CAROLINA PROFESSIONAL CORPORATION
ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID J. WHITNEY

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PREPARED FOR:
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SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
BUILDING 3 ELECTRICAL RENOVATION

DATE:
MARCH 31, 2023

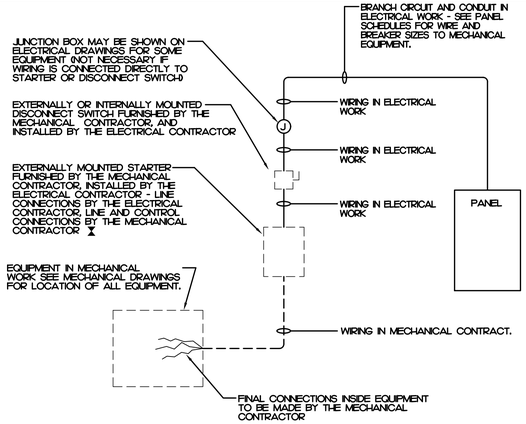
DESIGNER: AB
ENGINEER: DW

SHEET NO.
3E-1

22103

SYMBOL LEGEND

SYMBOL	DESCRIPTION	REMARKS
J	JUNCTION BOX SIZED PER N.E.C.	
	DISCONNECT SWITCH SEE PLANS FOR SIZE AND TYPE	SEE SPECIFICATIONS
	NEW CONCEALED WIRING	PER N.E.C.
	HOME RUN TO PANEL BOARD NUMBERS OF ARROW INDICATE CIRCUITS	PER N.E.C.
E	EXISTING 277/480V 3Φ, 4W PANEL BOARD - SEE PANEL SCHEDULES	SEE SPECIFICATIONS
E	EXISTING 120/208V 3Φ, 4W PANEL BOARD - SEE PANEL SCHEDULES	SEE SPECIFICATIONS
S	SINGLE POLE TOGGLE SWITCH. MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE.	SEE SPECIFICATIONS
WP	SPECIFICATION GRADE, WEATHER RESISTANT AND GFCI DUPLEX RECEPTACLE WITH IN-USE WEATHER PROOF COVER. MOUNT 18" A.F.F. UNLESS OTHERWISE NOTED.	SEE SPECIFICATIONS
E	EXISTING	



NOTES:

1. 1 A COMBINATION STARTER MAY BE USED IN LIEU OF A A SEPARATE DISCONNECT SWITCH AND STARTER
2. E.C. SHALL FURNISH ALL REQUIRED FUSES.

WIRING TO MECHANICAL EQUIPMENT

NOT TO SCALE

GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL FLOOR PLAN DIMENSIONS.
2. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ANY AND ALL WORK WITH OTHER TRADES INVOLVED IN THE PROJECT, PRIOR TO THE INSTALLATION OF HIS EQUIPMENT SO AS TO AVOID CONFLICTS DURING CONSTRUCTION AND TO ALLOW FOR OPTIMUM MAINTENANCE AND WORKING SPACE.
3. USE OF THE CONDUIT SYSTEM FOR EQUIPMENT GROUNDING SHALL NOT BE ACCEPTABLE. A SEPARATE GREEN GROUND WIRE SHALL BE RUN WITH THE CIRCUIT CONDUCTORS IN EACH CONDUIT.
4. ALL BREAKER SIZES, SHOWN FOR MECHANICAL EQUIPMENT, SHALL BE VERIFIED BEFORE THE PURCHASE OR INSTALLATION OF SAID EQUIPMENT, WITH THE EQUIPMENT SUPPLIER AND THE MECHANICAL CONTRACTOR.
5. ALL WORK AND MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH THE STATE, LOCAL AND NATIONAL CODES, ORDINANCES AND 2020 NATIONAL ELECTRICAL CODE (NFPA 70).
6. EACH CONTRACTOR SHALL PROVIDE HIS OWN SUPPORT OF ALL DEVICES AND EQUIPMENT PROVIDED BY HIM AND SHALL SUPPORT SUCH EQUIPMENT PER APPROVED GOVERNING CODES OR PER APPROVAL OF THE ENGINEER. UNACCEPTABLE WORKMANSHIP OR MATERIALS SHALL BE REPLACED AT THE REQUEST OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
7. THE MOUNTING HEIGHTS AND LOCATIONS OF ALL WALL MOUNTED OUTLETS AND JUNCTION BOXES SHALL BE REVIEWED AND COORDINATED WITH THE OWNER PRIOR TO INSTALLATION FOR USE WITH THE ACTUAL EQUIPMENT, CASEWORK, AND MILLWORK TO BE FURNISHED.
8. EQUIPMENT CONNECTIONS:
   - MECHANICAL EQUIPMENT:
     SEE DETAIL ON THIS SHEET
9. PENETRATION:
   - WHERE ELECTRICAL EQUIPMENT PENETRATES RATED WALLS AND CEILINGS, EXTERIOR WALLS, THEY SHALL BE PROPERLY SEALED PER APPROVED UL METHODS.
   - WHERE ELECTRICAL EQUIPMENT PENETRATES EXTERIOR WALLS, THEY SHALL BE PROPERLY SEALED WITH METHODS APPROVED BY THE ENGINEER. SUBMIT DETAIL OF PROPOSED SEALING METHODS.
10. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR.
11. THE CONTRACTOR SHALL PROVIDE COMPLETE UPDATED TYPEWRITTEN PANEL SCHEDULES FOR ALL PANELBOARDS AFFECTED BY THIS WORK.
12. AS BUILT DRAWINGS SHALL BE GIVEN TO THE OWNER AT THE COMPLETION OF THE PROJECT.
13. ALL WIRE SIZES INDICATED ON THE PANEL SCHEDULES ARE BASED ON 75 DEGREE COPPER THWN/THWN WIRE. ALL WIRE TERMINALS AND EQUIPMENT SHALL BE LISTED AND APPROVED FOR 75°C. ONLY THWN-2 WIRE SHALL BE INSTALLED IN WET AND EXTERIOR LOCATION.
14. MINIMUM WIRE SIZE SHALL BE #12 AWG.
    MINIMUM CONDUIT SIZE INSIDE BUILDING SHALL BE 3/4".
    MINIMUM CONDUIT SIZE OUTSIDE BUILDING SHALL BE 3/4".
    MINIMUM CONDUIT SIZE UNDER GROUND SHALL BE 1".
15. METAL-CLAD CABLE (TYPE MC) AND ARMORED CABLE (TYPE AC) ARE NOT ALLOWED IN THIS PROJECT.
16. THE MAXIMUM NUMBER OF HOMERUNS IN A CONDUIT SHALL NOT EXCEED THREE (3). MULTIWIRE CIRCUITS WITH SHARED NEUTRAL CONDUCTORS ARE NOT ALLOWED. PROVIDE INDIVIDUAL NEUTRAL FOR EACH SINGLE POLE CIRCUIT.
17. WHERE OUTLETS ARE SHOWN BACK TO BACK ON RATED WALLS, STAGGER OUTLETS SO THAT THEY ARE SEPARATED BY A MINIMUM OF 24".
18. ALL DISCONNECTS SHALL HAVE SEPARATE NEUTRAL AND GROUND BARS.
19. BOXES AND CONDUITS SHALL NOT BE INSTALLED RECESSED IN A 3-HOUR OR HIGHER RATED WALL. WHEN OUTLETS ARE INDICATED ON THESE WALLS, FIELD COORDINATE CONDUIT AND BOX INSTALLATION.
20. IT IS THE RESPONSIBILITY OF E.C. TO NOTIFY NORTH CAROLINA DEPARTMENT OF ADMINISTRATION ELECTRICAL INSPECTOR TO SCHEDULE REQUIRED INSPECTIONS. INSPECTION AVAILABILITY IS MONDAY THRU FRIDAY SUBJECT TO THE AHJ SCHEDULE.
21. UNDERGROUND RACEWAY
    A. RACEWAYS RUN EXTERNAL TO BUILDING FOUNDATION WALLS, WITH THE EXCEPTION OF BRANCH CIRCUIT RACEWAYS, SHALL BE ENCASED WITH A MINIMUM OF THREE (3) INCHES OF CONCRETE ON ALL SIDES.
       - ENCASED RACEWAYS MUST HAVE A MINIMUM COVER OF EIGHTEEN (18) INCHES, EXCEPT FOR RACEWAY CONTAINING CIRCUITS WITH VOLTAGES ABOVE 600V, WHICH MUST HAVE A MINIMUM COVER OF THIRTY (30) INCHES.
       - ENCASED RACEWAYS SHALL BE OF A TYPE APPROVED BY THE NEC AS "SUITABLE FOR CONCRETE ENCASEMENT".
    B. BRANCH CIRCUIT RACEWAYS RUN UNDERGROUND EXTERNAL TO BUILDING FOUNDATION WALLS SHALL BE RUN IN RACEWAYS INSTALLED IN ACCORDANCE WITH THE NEC, AND SHALL BE OF A TYPE APPROVED BY THE NEC AS "SUITABLE FOR DIRECT BURIAL." MINIMUM RACEWAY SIZE SHALL BE 1".
    C. ALL UNDERGROUND RACEWAYS SHALL BE IDENTIFIED BY UNDERGROUND LINE MARKING TAPE LOCATED DIRECTLY ABOVE THE RACEWAY AT 6 TO 8 INCHES BELOW FINISHED GRADE. TAPE SHALL BE PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED, PLASTIC TAPE COMPOUNDED FOR DIRECT BURIAL NOT LESS THAN 6 INCHES WIDE AND 4 MILS THICK. PRINTED LEGEND SHALL BE INDICATIVE OF GENERAL TYPE UNDERGROUND LINE BELOW.
    D. RACEWAYS RUN UNDERGROUND INTERNAL TO BUILDING FOUNDATION WALLS SHALL BE OF A TYPE AND INSTALLED BY A METHOD APPROVED BY THE NEC.
    E. WHERE UNDERGROUND RACEWAYS ARE REQUIRED TO TURN UP INTO CABINETS, EQUIPMENT, ETC., AND ON TO POLES, THE ELBOW REQUIRED AND THE STUB-UP OUT OF THE SLAB OR EARTH SHALL BE OF RIGID STEEL.
    F. THE RACEWAY SYSTEM SHALL NOT BE RELIED ON FOR GROUNDING CONTINUITY.
    G. WHERE PASSING THROUGH A "BELOW GRADE" WALL FROM A CONDITIONED INTERIOR BUILDING SPACE, RACEWAYS SHALL BE SEALED UTILIZING FITTINGS SIMILAR AND EQUAL TO OZ/GEDNEY TYPE "FSK" THRU-WALL FITTING WITH "FSKA" MEMBRANE CLAMP ADAPTER IF REQUIRED.

PANEL MDP-DORM3

277/480V, 3 PHASE, 4 WIRE

CKT	DESCRIPTION	KVA	C	G	W	CB	CKT	CKT	CB	W	G	C	KVA	DESCRIPTION	CKT
1	CU3.1,3.2 NOTE 2	10.5	1	10	6	60	1	2	60	6	10	1	10.5	NOTE 2 CU3.3,3.4	2
3		10.5	--	--	6	3P	3	4	3P	6	--	--	10.5		4
5		10.5	--	--	6	--	5	6	--	6	--	--	10.5		6
7	XFMR D1	11.1	E	E	E	50	7	8	100	E	E	E	14.7	PANEL H	8
9		11.1	--	--	E	3P	9	10	3P	E	--	--	14.7		10
11		11.1	--	--	E	--	11	12	--	E	--	--	14.7		12
13	SPACE ONLY	0.0	--	--	--	--	13	14	--	--	--	--	0.0	SPACE ONLY	14
15	SPACE ONLY	0.0	--	--	--	--	15	16	--	--	--	--	0.0	SPACE ONLY	16
17	SPACE ONLY	0.0	--	--	--	--	17	18	--	--	--	--	0.0	SPACE ONLY	18
19	SPACE ONLY	0.0	--	--	--	--	19	20	--	--	--	--	0.0	SPACE ONLY	20
21	SPACE ONLY	0.0	--	--	--	--	21	22	--	--	--	--	0.0	SPACE ONLY	22
23	SPACE ONLY	0.0	--	--	--	--	23	24	--	--	--	--	0.0	SPACE ONLY	24
25	SPACE ONLY	0.0	--	--	--	--	25	26	--	--	--	--	0.0	SPACE ONLY	26
27	SPACE ONLY	0.0	--	--	--	--	27	28	--	--	--	--	0.0	SPACE ONLY	28
29	SPACE ONLY	0.0	--	--	--	--	29	30	--	--	--	--	0.0	SPACE ONLY	30
31	SPACE ONLY	0.0	--	--	--	--	31	32	--	--	--	--	0.0	SPACE ONLY	32
33	SPACE ONLY	0.0	--	--	--	--	33	34	--	--	--	--	0.0	SPACE ONLY	34
35	SPACE ONLY	0.0	--	--	--	--	35	36	--	--	--	--	0.0	SPACE ONLY	36
37	SPACE ONLY	0.0	--	--	--	--	37	38	--	--	--	--	0.0	SPACE ONLY	38
39	SPACE ONLY	0.0	--	--	--	--	39	40	--	--	--	--	0.0	SPACE ONLY	40
41	SPACE ONLY	0.0	--	--	--	--	41	42	--	--	--	--	0.0	SPACE ONLY	42

DESCRIPTION	CONNECTED KVA	DEMAND FACTOR	DEMAND KVA
CONT. LOAD	11.72	125%	14.65
RECEPTACLE	19.00	100%/50%	14.50
MTRS/COOLS	32.42	90%	29.18
HEATS	10.00	125%	12.50
WATER HEATER	0.00	125%	0.00
EQUIPMENT	102.44	80%	81.95
KITCHEN EQUIP.	0.00	65%	0.00
SPECIAL EQ.	0.00	100%	0.00
25% OF LARGEST HVAC/MOTOR			1.25
TOTAL DEMAND			154.03

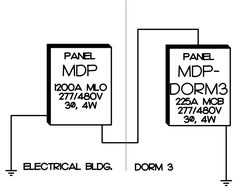
225 A MINIMUM BUS SIZE
225 A MAIN CIRCUIT BREAKER
22 K MINIMUM AIC RATING

SURFACE MOUNTING
NEMA 1 ENCLOSURE
GROUND BAR

NOTES
1. SQUARE D: I LINE. 'E' INDICATES EXISTING BRANCH CIRCUIT TO REMAIN
2. PROVIDE NEW BREAKER
3. NEW HVAC LOADS ARE CALCULATED AT MCA
4.
5.

CONNECTED LOADS	
PHASE A:	61.9 KVA
PHASE B:	56.9 KVA
PHASE C:	56.9 KVA
TOTAL:	175.6 KVA
DEMAND	185 AMP

EXISTING POWER RISER



NOTE:

1. POWER RISER IS EXISTING TO REMAIN. SHOWN FOR REFERENCE ONLY.

MDP LOAD STATEMENT:

EXISTING LOAD AT MDP AND ATS PER UTILITY RECORDS
- 214 KW WITH AN ASSUMED POWER FACTOR OF 0.85 AND A DEMAND FACTOR OF 1.25 THE DEMAND LOAD IS 314.71 KVA
- ADDED LOAD OF 200.61 KVA (TOTAL OF ALL BUILDINGS)
- NEW DEMAND LOAD 515.32 KVA (699.83 AMPS)

REVISIONS

NORTH CAROLINA PROFESSIONAL CORPORATION
ATLANTEC ENGINEERS PA No. C-961
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 17382 DAVID J. WHITNEY
4/13/23

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PREPARED FOR:
NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

SAMPSON CORRECTIONAL INSTITUTION
SCO #: 22-25436-01
CLINTON, NC
NORTH CAROLINA

CONTENTS:
BUILDING 3
ELECTRICAL NOTES, LEGEND, AND DETAILS

DATE:
MARCH 31, 2023

DESIGNER: AB
ENGINEER: DW

SHEET NO.
3E-2

2203