

DIVISION 00

SECTION 00 91 14: SUPPLEMENTAL SHEETS

Goldsboro High School – HVAC Renovations & Window Replacement
Goldsboro, North Carolina

00 91 14.01: GENERAL

1. These supplemental sheets are a part of the Specifications and are intended to give additional information on items which may or may not be noted in the specifications or on the drawings. It is suggested that the Contractor carefully read these sheets and note changes, additions, etc., in the corresponding section of these specifications.
2. The specifications are typical and only those parts applicable to this project will be considered.

00 91 14.02: MODIFICATION

Revise the following:

- A. SECTION 00 11 13: Advertisement for Bid

Sealed proposals will be received by the Architect on behalf of the **Wayne County Board of Education in the Administrative Office, Board of Conference Room, located at 2001 E. Royall Avenue, Goldsboro, NC on Tuesday, June 15, 2023. All bids will be publicly opened and read for the construction at 2:00 p.m. on this date.**

00 91 14.03: ADDITIONAL SPECIFICATION

Add the following:

- A. 00 91 14: Supplemental Sheets – Addendum #1 dated May 30, 2023.

00 91 14.04: DRAWINGS

Add the following:

- A. SHEET ME106 – 1ST & 2ND FLOOR PLANS – AUDITORIUM DEMOLITION

Delete this sheet in its entirety and replace with SHEET ME106 – 1ST & 2ND FLOOR PLANS – AUDITORIUM DEMOLITION – Addendum #1 dated May 30, 2023

B. SHEET E301 – 1ST FLOOR PLAN – AREA B POWER

Delete this sheet in its entirety and replace with SHEET E301 - 1ST FLOOR PLAN - AREA B POWER- Addendum #1 dated May 30, 2023

C. SHEET E303 – 1ST FLOOR PLAN – AREA D POWER

Delete this sheet in its entirety and replace with SHEET E303 – 1ST FLOOR PLAN – AREA D POWER – Addendum #1 dated May 30, 2023

D. SHEET E305 – 2ND FLOOR PLAN AREA B – POWER

Delete this sheet in its entirety and replace with SHEET E305 – 2ND FLOOR PLAN AREA B – POWER – Addendum #1 dated May 30, 2023

E. SHEET E600 - SPECIFICATIONS –

Delete this sheet in its entirety and replace with SHEET E600 – SPECIFICATIONS – Addendum #1 dated May 30, 2023.

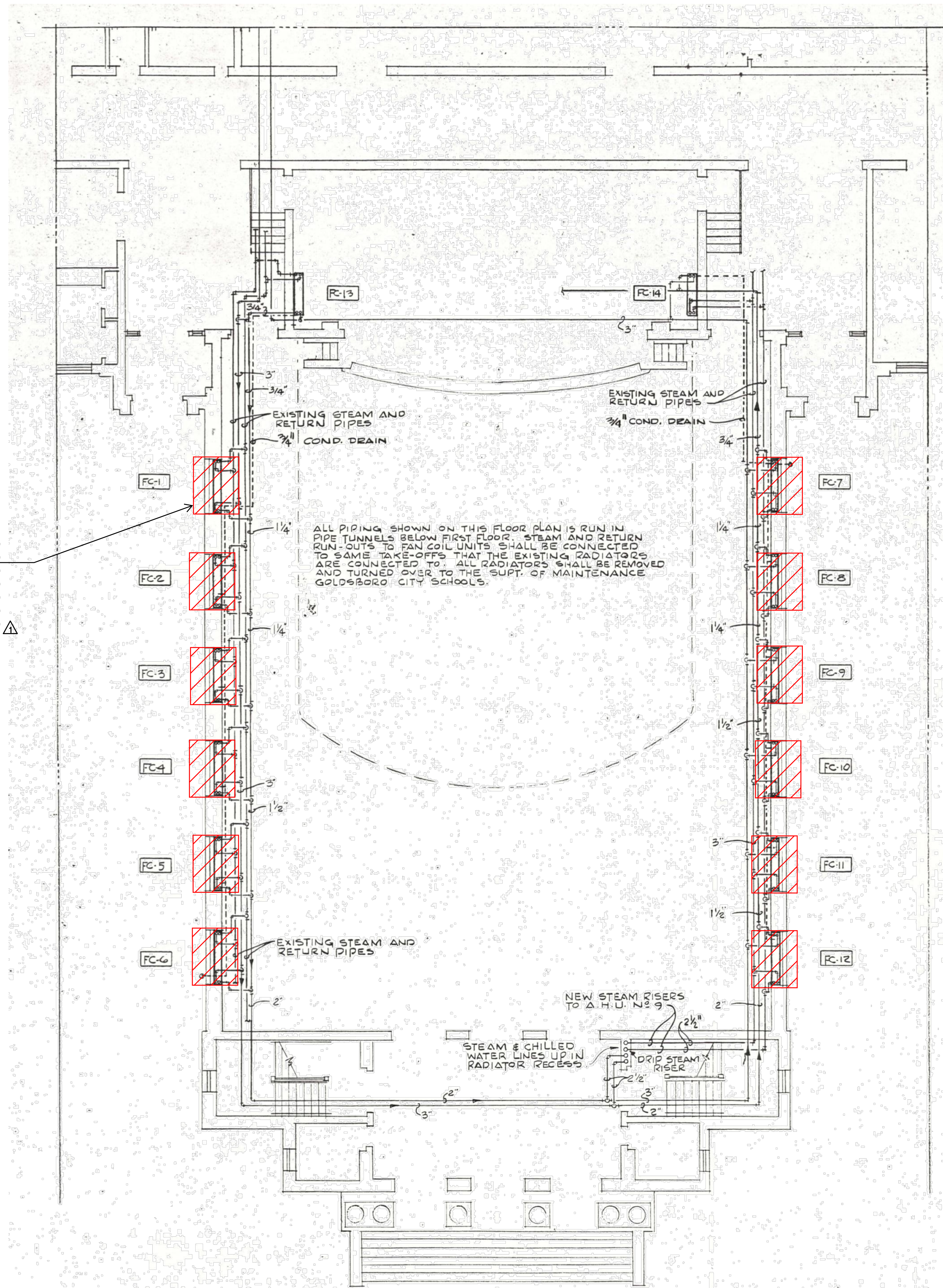
00 91 14.05: PRIOR APPROVAL

RESERVED FOR FUTURE MODIFICATIONS AND CLARIFICATIONS PER ADDENDUM

End of Addendum #1
Issued: May 30, 2023

REMOVE EXISTING WINDOW UNIT AND ALL ASSOCIATED STEAM PIPING AND CONDENSATE PIPING EXPOSED IN CLASSROOM. CAP AT FLOOR/WALL/CEILING DISCONNECT EXISTING ELECTRICAL CONNECTION AND REMOVE DISCONNECT SWITCH. EXISTING CONDUIT AND WIRING TO REMAIN. REUSE EXISTING CIRCUIT FOR REPLACEMENT MECHANICAL UNIT.

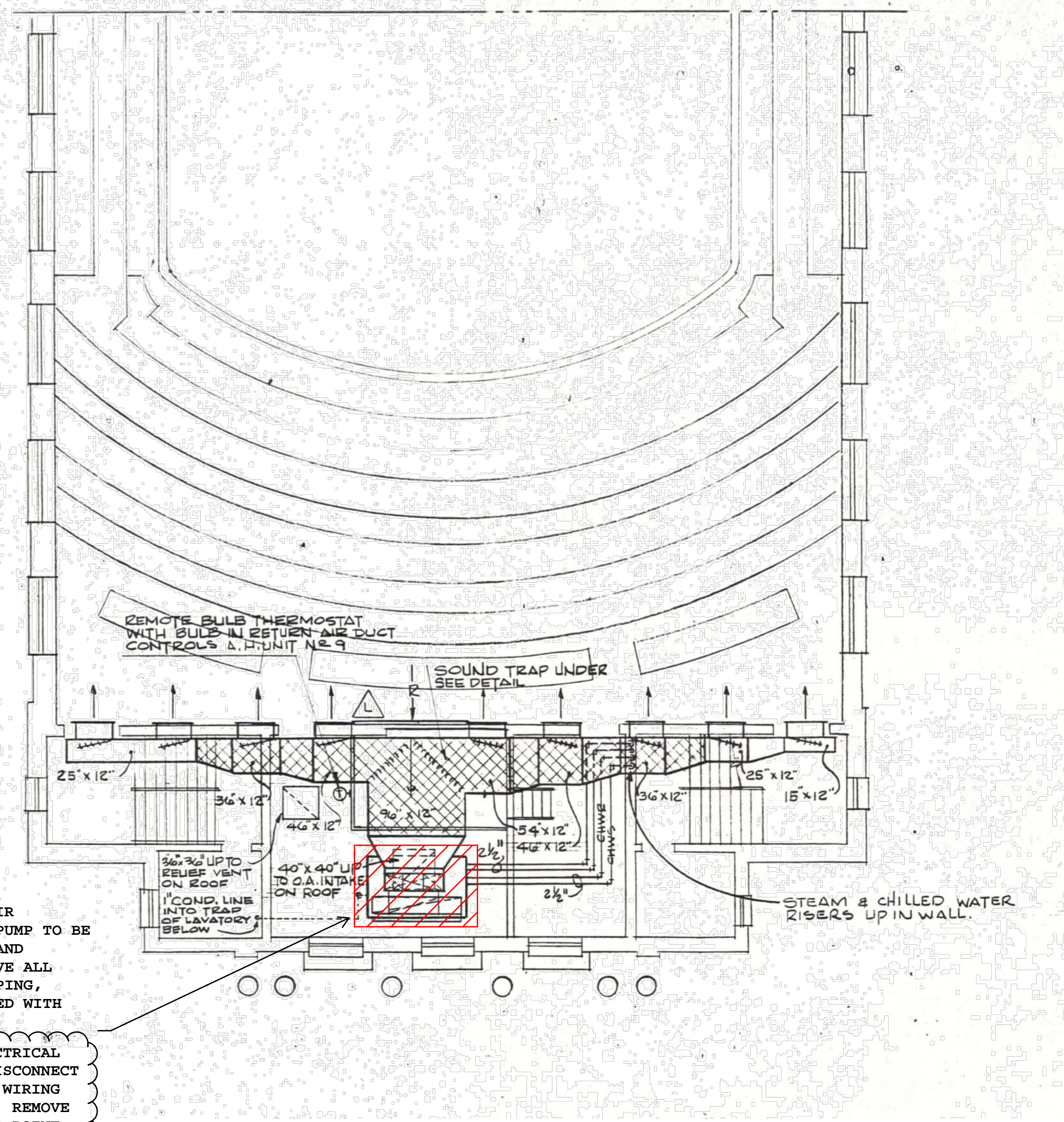
TYPICAL FOR ALL WAC UNITS



1 1st FLOOR PLAN - AUDITORIUM - DEMOLITION
ME106 SCALE: 1/8" = 1'-0"

EXISTING SPLIT SYSTEM AIR HANDLING UNIT AND HEAT PUMP TO BE REMOVED FROM THIS AREA AND REPLACED WITH NEW. REMOVE ALL ASSOCIATED DUCTWORK, PIPING, CONTROLS, ETC. ASSOCIATED WITH THE UNIT.

DISCONNECT EXISTING ELECTRICAL CONNECTION AND REMOVE DISCONNECT SWITCH. REMOVE EXISTING WIRING BACK TO POINT OF SUPPLY. REMOVE EXISTING CONDUIT BACK TO POINT OF CONCEALMENT.



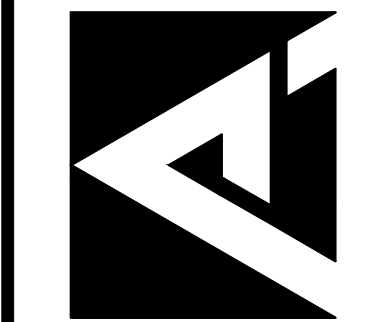
2 2nd FLOOR PLAN - AUDITORIUM - DEMOLITION
ME106 SCALE: 1/8" = 1'-0"

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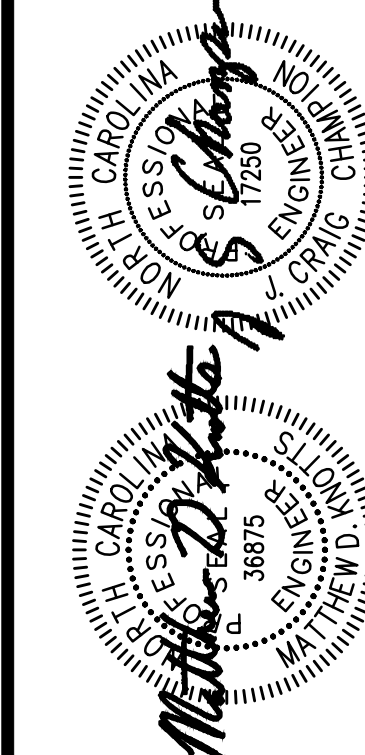
GOLDSBORO HIGH SCHOOL
RENOVATIONS
GOLDSBORO, NORTH CAROLINA
1st & 2nd FLOOR PLANS - AUDITORIUM
DEMOLITION

REVISION SCHEDULE		
DATE	REFERENCE	
5/30/23	ADDENDUM #1	

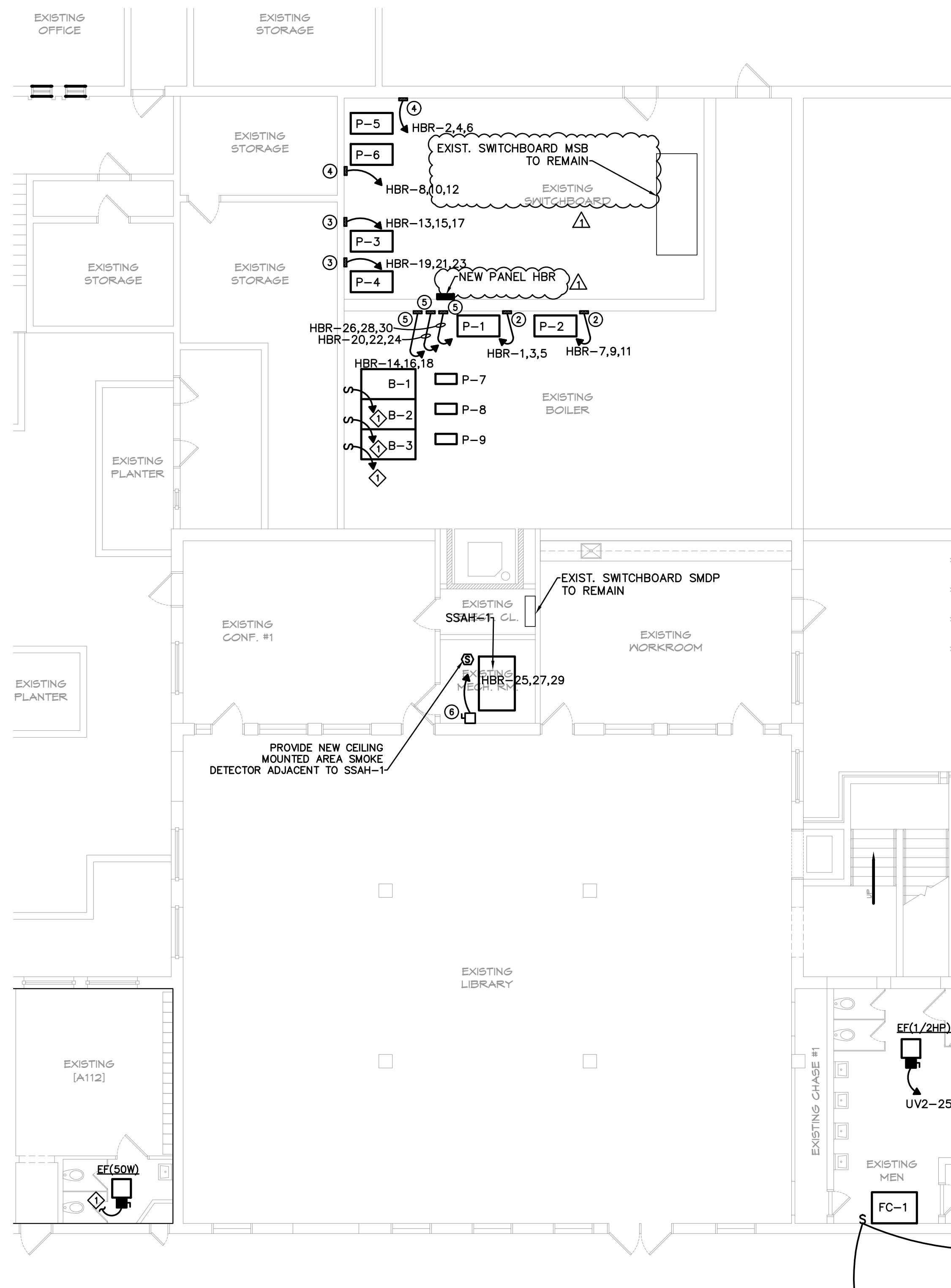
ME106



PINNACLE ARCHITECTURE
PROFESSIONAL ASSOCIATION
P.O. BOX 187, 630 TEAR ROAD, SUITE 200
MATTHEWS, NORTH CAROLINA 28106
PH: (704) 847-9851 FAX: (704) 847-9853



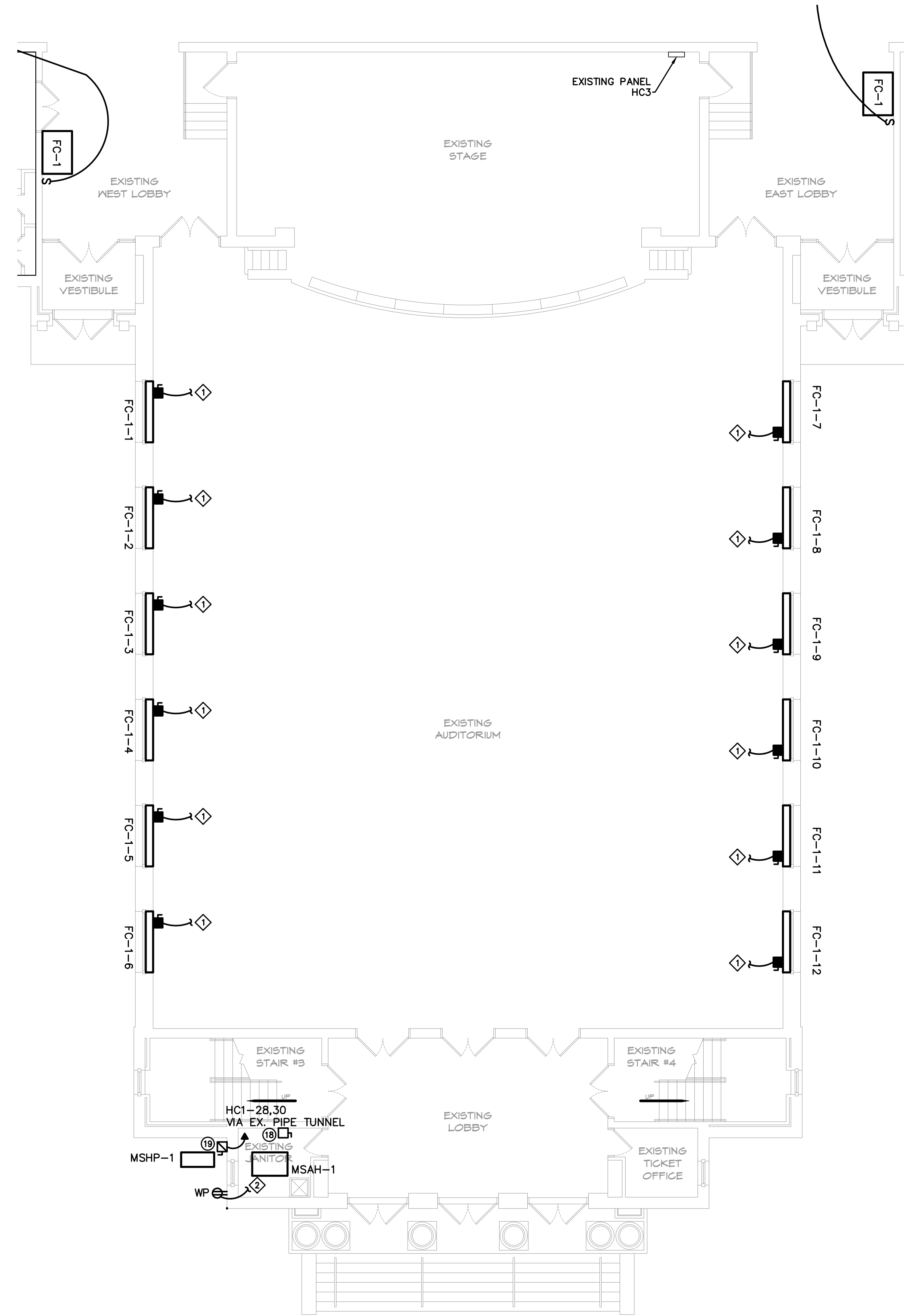
CONTRACTOR TO VERIFY ALL DIMENSIONS
MCKNIGHT-SMITH
WARD - GRIFFIN
ENGINEERS, INCORPORATED
PO Box 787692 Charlotte, NC 28271
704/527-2112
NC LICENSE
F-0895



2 1st FLOOR PLAN - AREA B - POWER
SCALE: 1/8" = 1'-0"

NOTES:

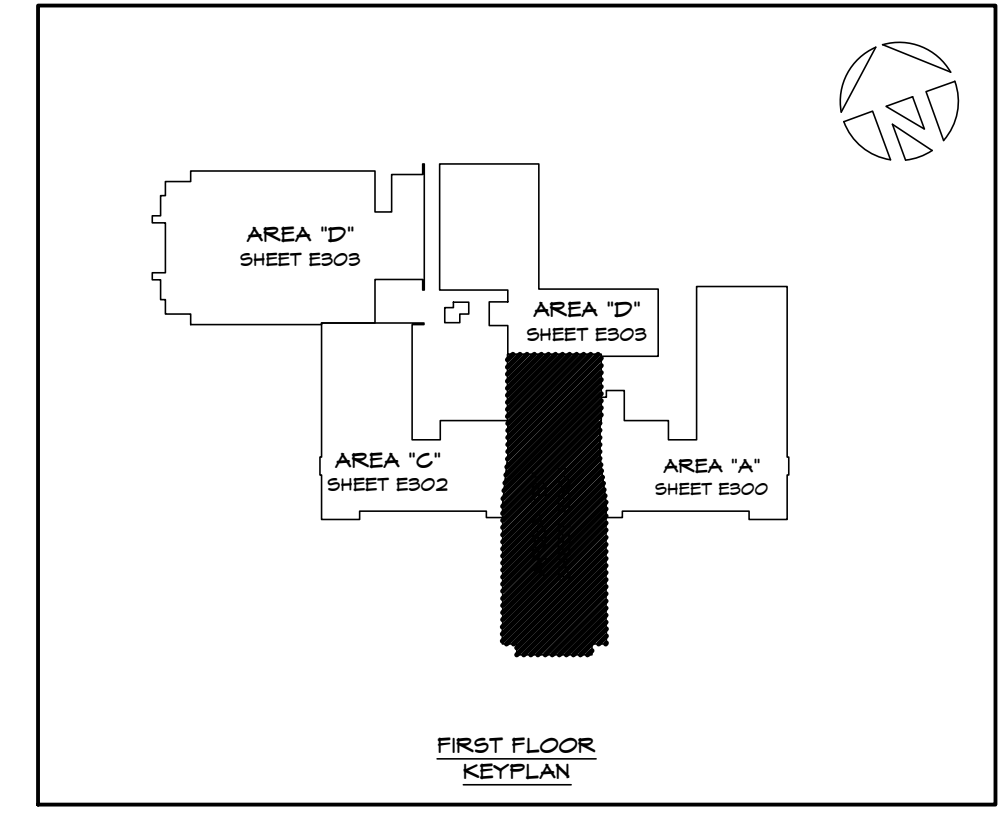
- ◇ CONNECT TO NEAREST SPARE 120V 20/1 CIRCUIT BREAKER WITH 2#12,1#12G,1/2"C.
- ◇ CONNECT TO LOCAL 120V LIGHTING CIRCUIT IN THIS AREA WITH 2#12,1#12G,1/2"C.



1 1st FLOOR PLAN - AREA B - POWER
SCALE: 1/8" = 1'-0"

NOTES:

- ◇ CONNECT TO EXISTING 120V FCU CIRCUIT IN THIS CIRCUIT WITH 2#12,1#12G,1/2"C.
- ◇ CONNECT TO NEAREST 120V RECEPTACLE CIRCUIT IN THIS AREA WITH 2#12,1#12G,1/2"C.

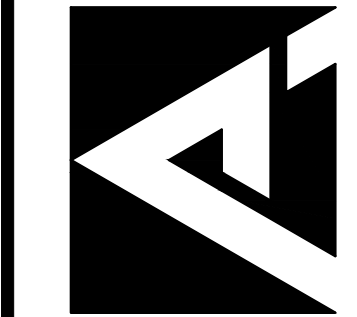


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**GOLDSBORO HIGH SCHOOL
RENOVATIONS
GOLDSBORO, NORTH CAROLINA**
**1st FLOOR PLAN - AREA B
POWER**

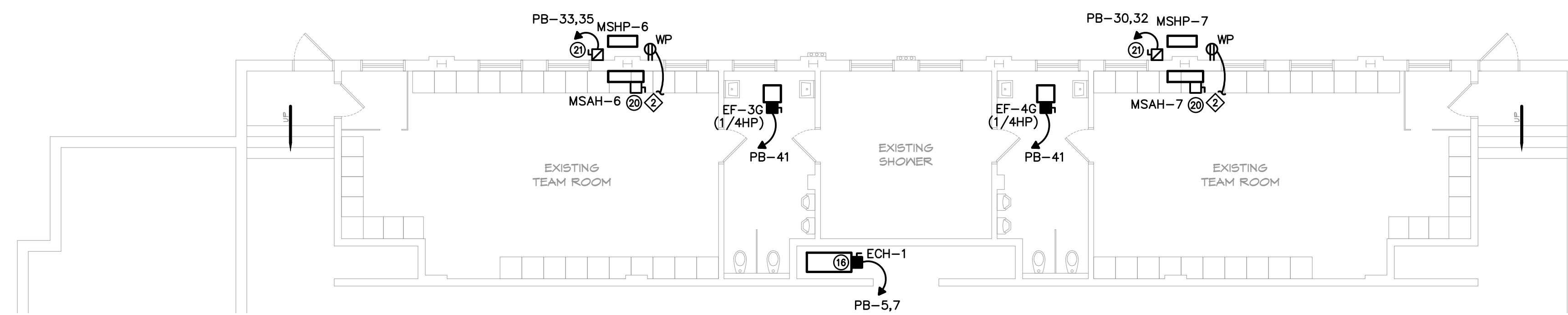
REVISION SCHEDULE		
DATE	REFERENCE	
5/30/23	ADDENDUM #1	

E301

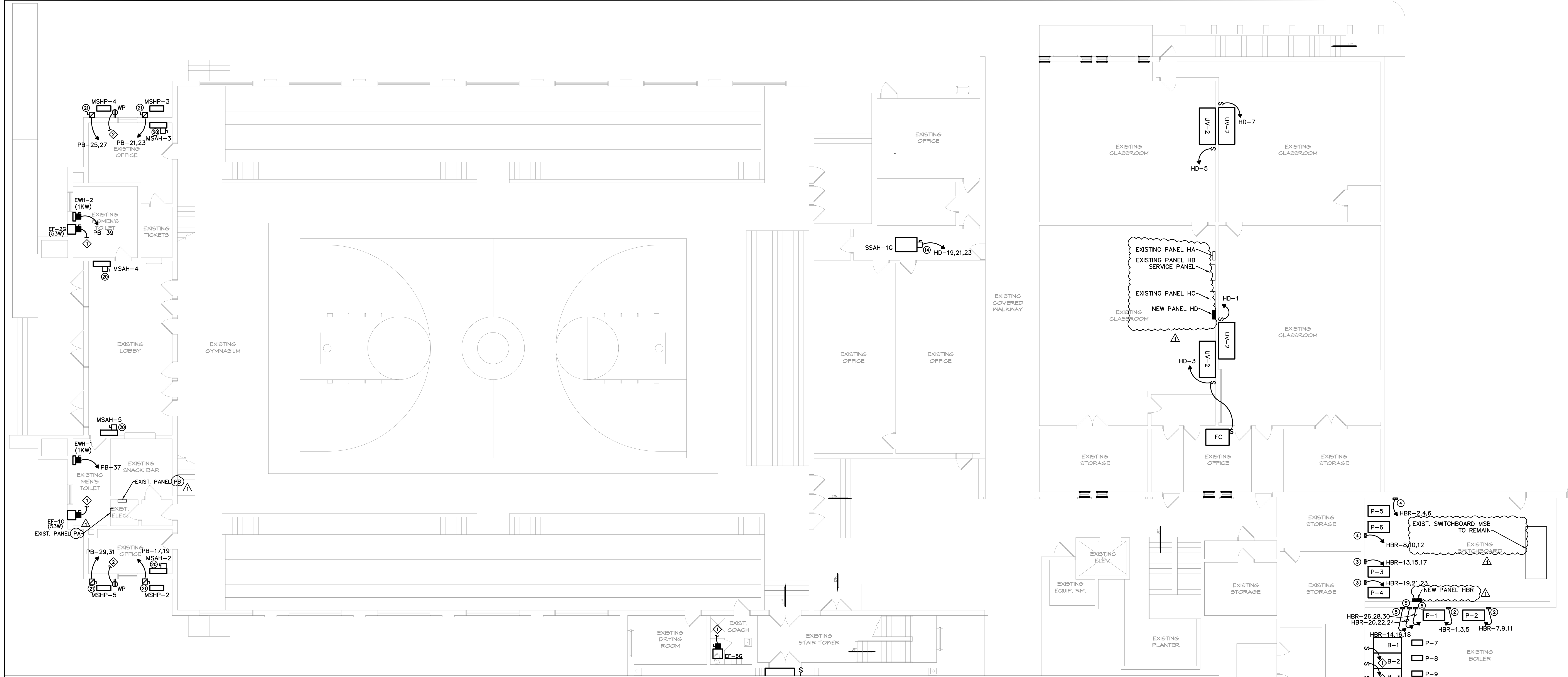
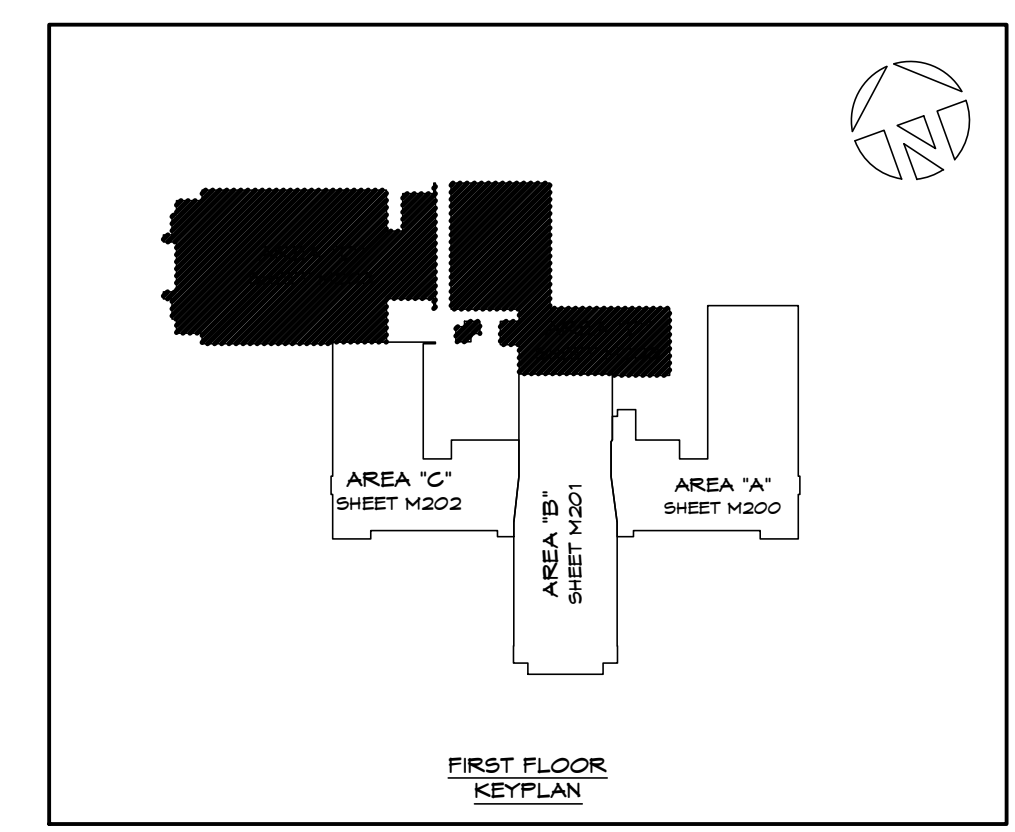


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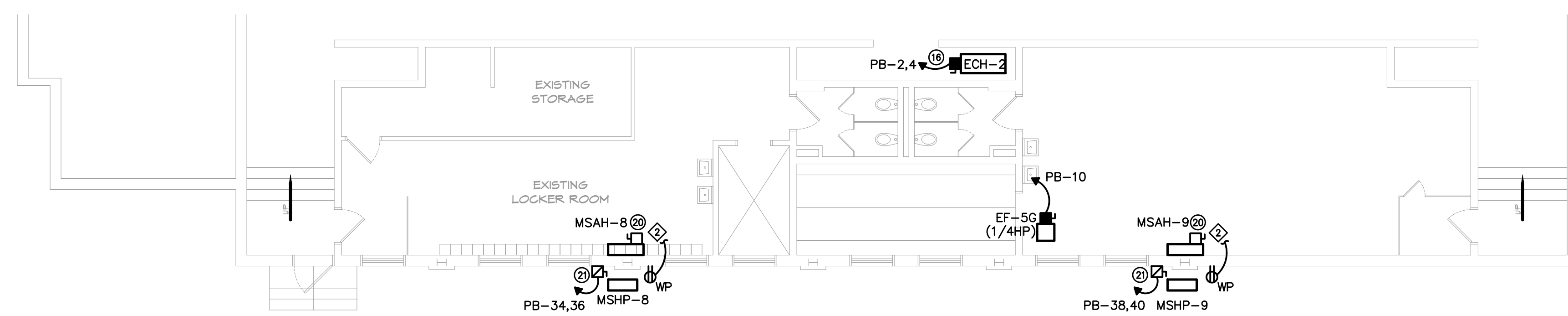
**McKnight-Smith
Ward & Griffin**
ENGINEERS, INCORPORATED
P.O. Box 787692, Charlotte, NC 28271
704/527-2112
NC LICENSE F-0895



2 UNDER BLEACHERS FLOOR PLAN - AREA D - POWER
E303 SCALE: 1/8" = 1'-0"



1 1st FLOOR PLAN - AREA D - POWER
E303 SCALE: 1/8" = 1'-0"



2 UNDER BLEACHERS FLOOR PLAN - AREA D - POWER
E303 SCALE: 1/8" = 1'-0"

- NOTES (APPLY TO ALL PLANS, THIS SHEET):
- ◇ CONNECT TO LOCAL 120V LIGHTING CIRCUIT IN THIS AREA WITH 2#12,1#12G,1/2"C.
 - ◇ CONNECT TO NEAREST 120V RECEPTACLE CIRCUIT IN THIS AREA WITH 2#12,1#12G,1/2"C.

CONTRACTOR'S VERIFICATION

McKnight-Smith
WARD • GRIFIN
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**PINNACLE ARCHITECTURE
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CHARLOTTE, SOUTH CAROLINA 29403
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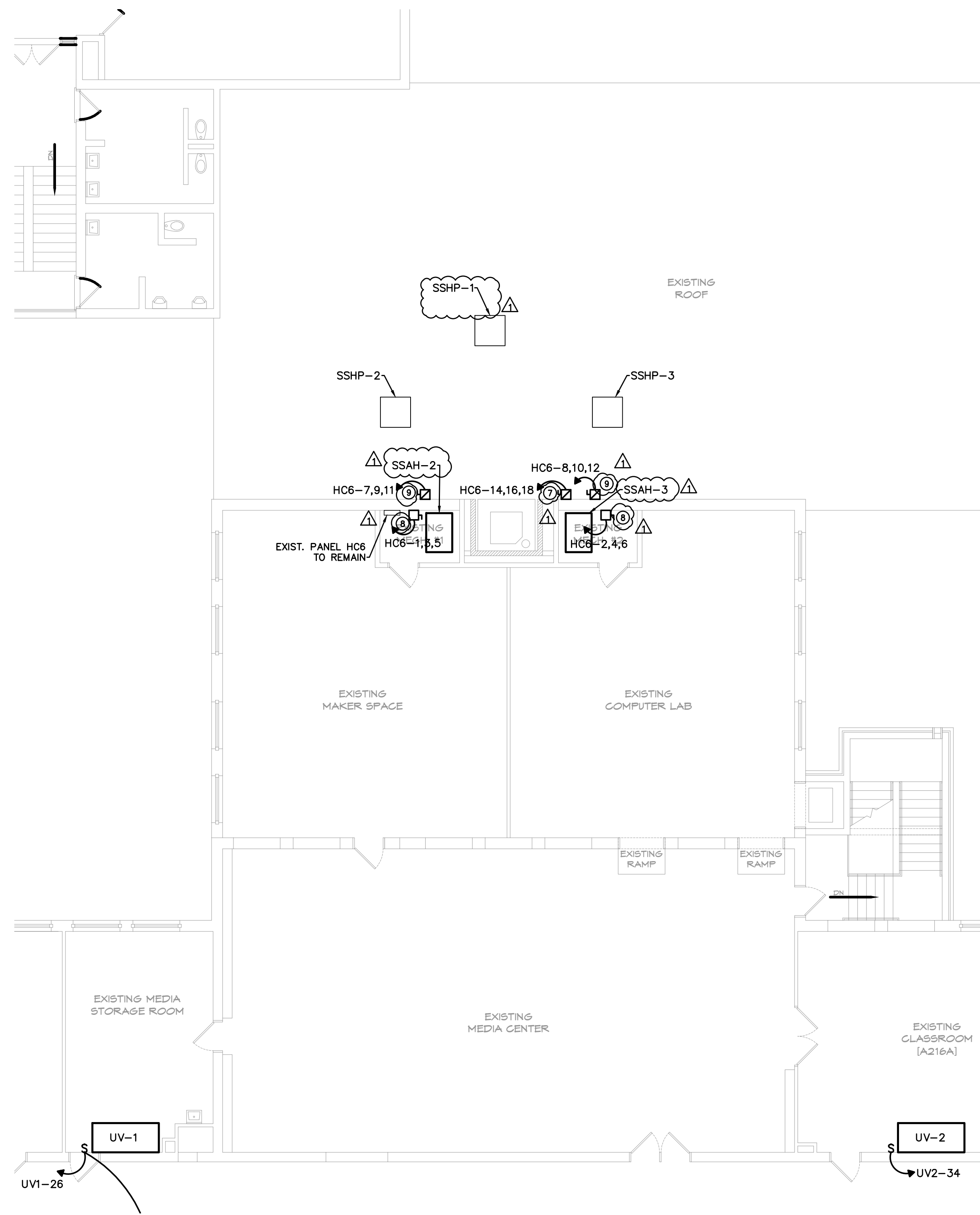
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DATE: 01/23/2023
DRAWN BY: WDK
CHECKED BY: WDK
PROJECT:

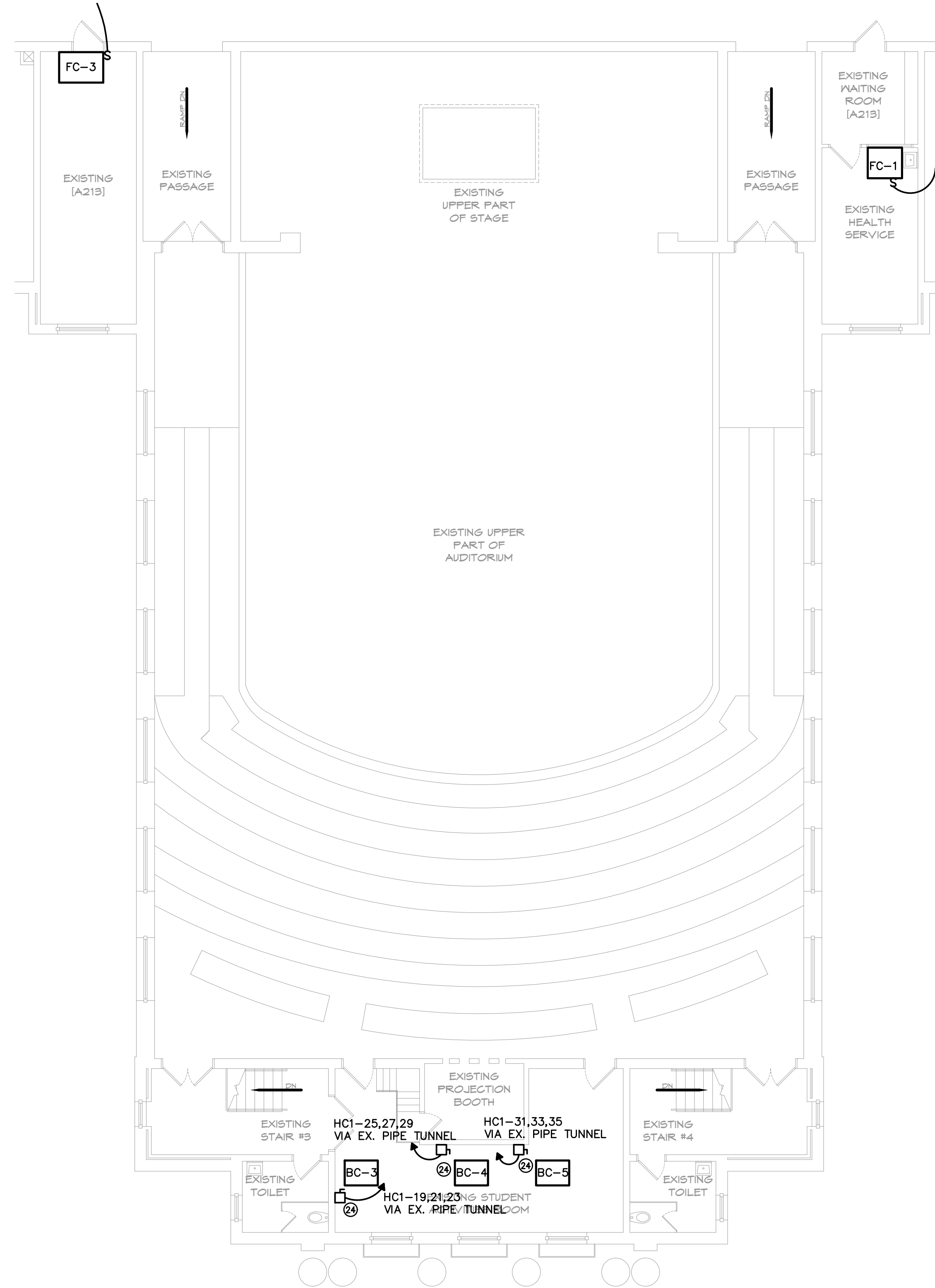
**GOLDSBORO HIGH SCHOOL
RENOVATIONS
GOLDSBORO, NORTH CAROLINA**

**1st FLOOR PLAN - AREA D
POWER**

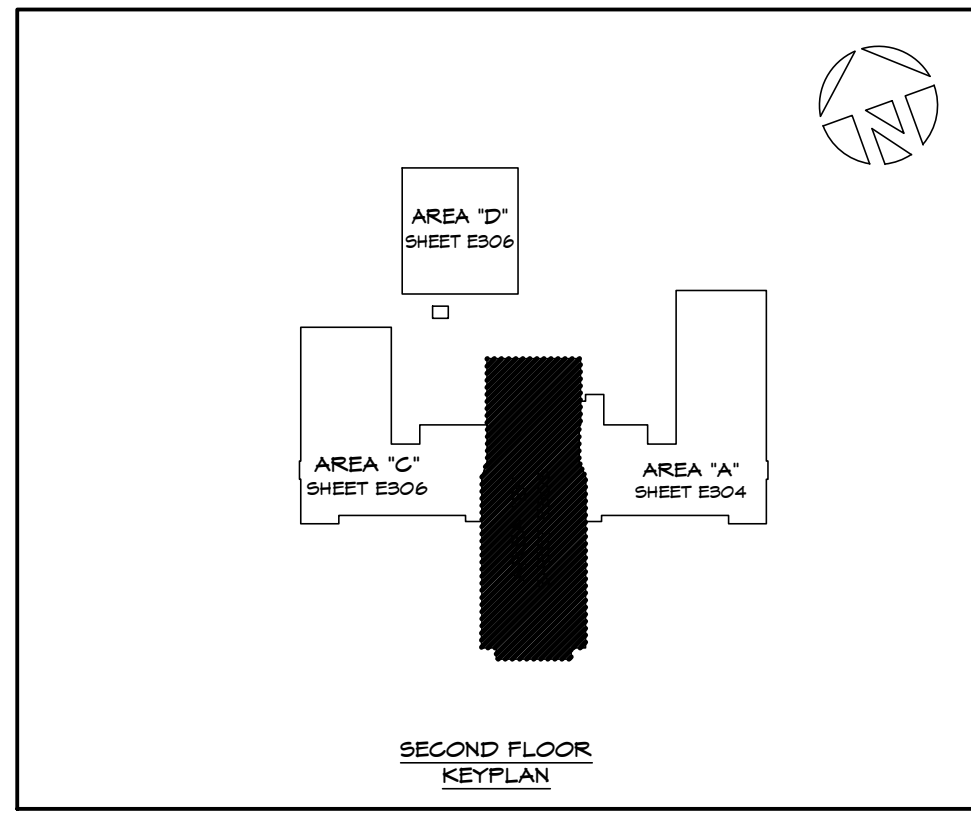
REVISION SCHEDULE	
DATE	REFERENCE
5/30/23	ADDENDUM #1



2 2nd FLOOR PLAN - AREA B - POWER
E305 SCALE: 1/8" = 1'-0"



1 2nd FLOOR PLAN - AREA B - POWER
E305 SCALE: 1/8" = 1'-0"

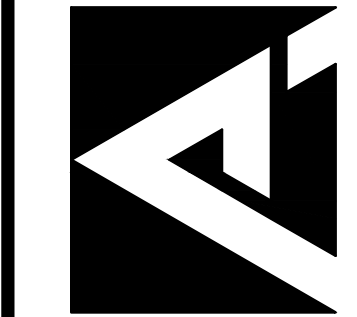


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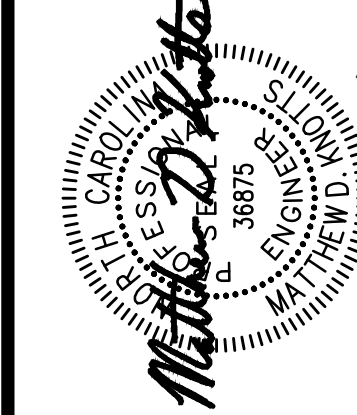
**GOLDSBORO HIGH SCHOOL
RENOVATIONS
GOLDSBORO, NORTH CAROLINA**
2nd FLOOR PLAN - AREA B
POWER

REVISION SCHEDULE		
DATE	REFERENCE	
5/30/23	ADDENDUM #1	

E305

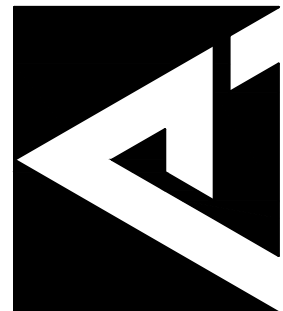


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CONTRACTOR IS VERIFIED ALL DIMENSIONS



ELECTRICAL GENERAL REQUIREMENTS

1.1 SCOPE:

a. Applicable requirements of the General Conditions of the Contract, Amendments, Supplementary General Conditions, and Special Conditions govern work under this Division.

b. Work covered by this Division consists of providing all labor, equipment, supplies, and materials; and performing all operations, including trenching, backfilling, cutting, patching, and chasing necessary for the installation of complete electrical systems in strict accordance with these specifications and the applicable drawings.

c. Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the work, the same as if herein specified or shown.

d. This Contractor is referred to the General and Special Conditions of the contract which shall form a part and be included in this section of the specification and shall be binding on this Contractor.

e. Some items of equipment are specified in the singular; however, the Contractor shall provide and install the number of items or equipment as indicated on the drawings, and as required for complete systems.

1.2 DEFINITION:

a. The word "Contractor" as used in this section of the specification refers to the Electrical Contractor unless specifically noted otherwise. The word "provide" means furnish, fabricated, complete, install, erect, including labor and incidental materials necessary to complete in place and ready for operation or use the item referred to or described herein and/or referred to on the Contract Drawings.

1.3 CONTRACTOR'S QUALIFICATIONS:

a. It is assumed that the Contractor has had sufficient general knowledge and experience to anticipate the needs of a construction of this nature. The Contractor shall furnish all items required to complete the construction in accordance with reasonable interpretation of the intent of the Drawings and Specifications. Any minor items required by code, law or regulations shall be provided even if not specified or specifically shown, where it is part of a major system.

1.4 CONTRACT DOCUMENTS:

a. The contract drawings are diagrammatic and are not intended to indicate every detail of construction, or every item of material or equipment required, or exact locations. Indicated locations of outlets, equipment, and connections are approximate and shall be verified by reference to related documents.

b. The Contractor shall procure complete drawings and specifications on all coincident construction and fit the Electrical work in with it. He shall cooperate with other trades to achieve well-coordinated progress and results; and avoid conflicts with other trades. He shall make minor moves and changes necessary to accommodate other equipment and/or preserve symmetry without claim for extra payment. Should there be any doubt as to the spacing intent, or location of equipment, the Contractor shall have the point clarified by the Architect/Engineer before proceeding with the installation.

1.5 RECORD DRAWINGS:

a. During construction of this project, the Contractor shall maintain one complete set of electrical contract drawings, on which shall be recorded all significant changes. This set of drawings shall be used for no other purpose. Upon completion of the work, the Contractor shall submit these drawings to the Architect/Engineer for approval and presentation to the Owner.

b. Upon completion of the project, the Contractor shall prepare an Operation and Maintenance Manual, which shall include catalog data, equipment information, wiring diagrams, and warranty information for the electrical installation. Submit three copies to the Architect/Engineer for approval and presentation to the Owner.

1.6 REGULATIONS AND COMPLIANCE:

a. The requirements of the North Carolina State Building Code, the National Electrical Code, and of all other State and Local codes, ordinances, regulations, and interpretations by authorities having jurisdiction are binding upon this Contractor, and nothing contained in, or inferred by, these specifications or the applicable drawings may be construed as waiving those requirements. The latest edition of the National Electrical Code, referred to herein and on the drawings as "N.E.C.", forms a part of these specifications; and under no circumstances may the installation fail to meet the minimum requirements therein.

b. This Contractor shall secure and pay for all permits, fees, inspections, and licenses required. Upon completion of the project and prior to his request for final payment he shall present to the Architect/Engineer a certificate of inspection and approval from the inspection authorities.

c. The Contractor shall include in his work, without extra cost to the Owner, any labor, materials, service, apparatus, drawings, to comply with all applicable laws, ordinances, rules, and regulations, whether shown on drawings and/or specified.

d. All materials furnished, and all work installed shall comply with the National Fire Codes of the National Fire Protection Association, and with the requirements of all governmental departments having jurisdiction.

e. All materials and equipment shall bear the approval label, and shall be listed by the Underwriters' Laboratories, Inc., or any other third-party listing organization acceptable to the North Carolina Building Code Council. Refer to the list of acceptable testing agencies on the NC OSFM website under "Code Enforcement Resources".

f. It is the responsibility of the Contractor to notify the local electrical inspector to schedule the required inspections.

1.7 ELECTRICAL TESTING:

a. Conduct full-scale tests with all lights, equipment and appliances in operation and prove the electrical system satisfactory for operation and free from defects. Pay attention to the balancing of the single-phase loads on the three-phase system. Promptly remedy all defects.

b. All feeder phase conductors and neutrals shall be tested as installed, and before connections are made, for insulation resistance, continuity, and accidental grounds. This shall be done with a 500-volt megger. The procedures listed below shall be followed:

1. Minimum readings shall be one million or more ohms for #6 AWG wire and smaller, 250,000 ohms or more for #4 AWG wire or larger, between conductors and between conductor and the grounding conductor.

2. After all fixtures, devices and equipment are installed and all connections completed to each panel, the contractor shall disconnect the neutral feeder conductor from the neutral bar and take a megger reading between the neutral bar and the grounded enclosure. If this reading is less than 250,000 ohms, the contractor shall disconnect the branch circuit neutral wires from this neutral bar. He shall then test each one separately on the panel until the low reading is found. The contractor shall correct troubles, reconnect, and retest until at least 250,000 ohms from the neutral bar to the grounded panel can be achieved with only the neutral feeder disconnected.

3. At final inspection, the contractor shall furnish a megger and show that the panels comply with the above requirements. He shall also furnish an ammeter (hook-on type) and voltmeter to take current and voltage readings as directed.

c. All tests specified shall be completely documented indicating time of day, date, temperature, and all pertinent test information.

d. All required documentation of readings indicated above shall be submitted to Engineer prior to, and as one of the prerequisites for, final acceptance of the project.

e. All elements of the electrical system provided, furnished, installed, or otherwise altered under this contract shall be subjected to testing required under this contract. Where test results indicate failure, the contractor shall repair, adjust, or replace as required and repeat the testing at no extra cost.

f. Testing shall be performed by qualified testing agencies and field services companies as necessary to augment the contractor's own capabilities. Testing and reporting methods shall comply with published standards. All test results shall be published on the Contractor's or testing company's letterhead or test forms bearing the legal name and address of the company.

1.8 GUARANTEE:

a. The Contractor shall guarantee that the work done has been done in accordance with the Contract Documents, free of imperfect materials and defective workmanship. For a period of one year after acceptance by the Owner, the Contractor shall repair or replace, at no additional expense to the Owner, any imperfect materials or defective workmanship.

2.1 GENERAL:

a. Except where reuse of existing items is specifically indicated or permitted, all materials and equipment shall be new and shall conform to the standards of the National Electrical Manufacturer's Association and Underwriter's Laboratories,

Inc. in every instance where such a standard has been established for the item involved.

b. Catalog numbers and trade names in these specifications and drawings are intended only to set forth and convey to bidders the general style, type, character, and quality of product desired. Similar products of other manufacturers; of equal quality, size, capacity, character, and appearance may be substituted on the written approval of the Architect/Engineer. Requests for approval of substitutions shall be made after the award of the contract in accordance with the bidding requirements of these specifications.

c. It is the intent of the drawings and specifications that the installation be complete, of finished appearance, and ready for operation. Manufacturers' catalog numbers as used herein and on the drawings are indicative of the type of product to be installed, and do not necessarily identify all parts and accessories required for the proper assembly, installation, and utilization of the product. All required parts and accessories shall be provided.

d. Materials shall be inspected by the Contractor upon their arrival at the site to be sure they are correct. Material and equipment stored on the site shall be protected against physical damage, dirt and damage caused by precipitation, wind, condensation, excessive humidity, and extremes of temperature. Materials shall be stored in their original cartons within substantial, clean, and dry storage facilities provided under this Contract. Conduit, large, galvanized boxes, and lighting poles may be stored outdoors on suitable blocks or racks clear of the earth and undergrowth and pitched to drain. Large electrical equipment intended for ultimate installation outdoors may be stored in the weather on suitable blocks or platforms clear of the earth and undergrowth, and with interior lamps or space heaters continuously energized to prevent condensation. Alternate storage provisions may be submitted to the Architect/Engineer for approval prior to the arrival of the material. Under no circumstances shall equipment be stored in the weather under a cover of polyethylene or tarpaulin. The Architect/Engineer will be the sole judge as to the acceptability of storage facilities, and when directed by the Architect/Engineer, improperly stored or damaged material shall be removed from the site and replaced with new material.

2.2 SUBMITTALS:

a. Submittal data shall be thoroughly reviewed and approved by the Contractor prior to being forwarded to the Architect/Engineer. Submittal data received from the Contractor will be considered to have been reviewed and approved by the Contractor as suitable for the application and for installation in the space allotted.

b. The submittal of shop drawings shall be with the Contractor stamp affixed. This stamp indicates that the Contractor, by approving and submitting shop drawings, represents that he has determined and verified all field measurements and quantities, field construction criteria, material, catalog material, and similar data that he has reviewed and coordinated information in the shop drawings with the requirements of the work and the Contract Documents. It, also, indicates that any deviation from the Contract Documents has been shown on the submittal and clearly defines the deviations from the specifications.

c. Approval rendered on shop drawings shall not be considered as a guarantee of quantities, measurements, or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail. Said approval does not in any way relieve the Contractor from his responsibilities or necessity of furnishing material or performing work as required by the contract drawings and specifications.

d. Failure of the Contractor to submit shop drawings in ample time for checking shall not entitle him to an extension of Contract time, and no claim for extension by reason of default will be allowed.

e. Contractor shall keep on the job at all times copies of all approved shop drawings.

2.3 EQUIPMENT DEVIATIONS:

a. Where the Contractor proposes to use an item of equipment other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundations, piping, wiring or any other part of the mechanical, electrical, or architectural layout, all such redesign, and all new drawings and detailing required therefore, shall be prepared by the Contractor at his own expense and submitted for approval by the Architect/Engineer.

b. Where such approved deviation requires a different quantity and arrangement of wiring, conduit, and equipment from that specified or indicated on the drawings, the Contractor shall furnish and install any such structural supports, electrical wiring and conduit, and any other additional equipment required by the system, at no additional cost to the Owner.

3.1 GENERAL:

a. The Contractor shall coordinate the work and equipment of this Division with the work and equipment specified elsewhere to assure a complete and satisfactory installation. Work such as excavation, backfill, concrete, flashing, wiring, etc., which is required by the work of this section shall be performed in accordance with the requirements of the applicable section of the specifications.

b. It is the intention of these specifications and drawings to call for finished work, tested and ready for operation. Whenever the word "provide" is used, it shall mean "furnish and install complete and ready for use".

3.2 DUTIES OF CONTRACTOR:

a. Contractor shall furnish and install all materials called for in these Specifications and accompanying drawings and must furnish the apparatus complete in every respect. Anything called for in the specifications and not shown on the drawings or shown on the drawings and not called for in the specifications must be furnished by the Contractor.

b. Contractor is responsible for familiarizing himself with the details of the construction of the building. Work under these specifications installed improperly or which requires changing due to improper reading or interpretation of building plans shall be corrected and changed as directed by the Architect/Engineer without additional cost to the Owner.

c. The Contractor shall follow drawings in laying out work and check drawings or other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. Where headroom or space conditions appear inadequate, the Architect/Engineer shall be notified before proceeding with installation.

d. While every effort has been made to accommodate the equipment necessary for the work of this contract, it is the responsibility of the Contractor to ensure that equipment supplied as a part of this contract will fit in the spaces provided for by the drawings. Any concern by the contractor regarding the adequacy of a space for the equipment supplied, shall be brought to the attention of the Architect/Engineer in a written form prior to the approval of the related equipment submittals and prior to any rough-in associated with this equipment.

e. The plans are diagrammatic and are not intended to show each fitting or a complete detail of all the work to be done; but are for illustrating the type of system, etc., and special conditions considered necessary for the experienced mechanic to take off his materials and lay out his work. This Contractor shall be responsible for taking such measurements as may be necessary at the job and adapting his work to local conditions.

f. Conditions sometimes occur which require certain changes in drawings and specifications. If such changes in drawing and specifications are necessary, the same are to be made by the Contractor without expense to the Owner, providing such changes do not require furnishing more materials, or performing more labor than the true intent of the drawings and specifications demands. It is understood that while the drawings are to be followed as closely as circumstances will permit, the Contractor is held responsible for the installation of the system according to the true intent and meaning of the drawings. Anything not entirely clear in the drawings and specification will be fully explained if application is made to the Architect/Engineer. Should, however, conditions arise where in the judgment of the Contractor certain changes will be advisable, the Contractor will communicate with the Architect/Engineer and secure his approval of these changes before going ahead with the work.

g. The right to make any responsible change in location of apparatus, equipment, routing of conduit up to the time of roughing in, is reserved by the Architect without involving any additional expense to the Owner.

h. It shall be the duty of prospective Contractors to visit the job site and familiarize themselves with job conditions. No extras will be allowed because of additional work necessitated by, or changes in plans required because of evident job conditions, that are not indicated in the drawings.

i. Contractor shall leave the premises in a clean and orderly manner upon completion of the work and shall remove from the premises all debris that has accumulated during the progress of the work.

3.3 COORDINATION:

a. This Contractor shall coordinate the work of all subs and shall furnish any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.

b. Where the work will be installed near, or may interfere with the work of other trades, the Contractor shall assist in working out space conditions to make a satisfactory adjustment. If directed by the Engineer, the Contractor shall prepare composite working drawings and sections at a suitable scale not less than 3/8" = 1'-0", clearly showing how his work is to be installed in relation to the work of other trades. If the Contractor installs his work before coordination, or to cause any interference with work of any subs, he shall make the necessary changes in his work to correct the condition without extra charge.

c. The Contractor shall furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for coordinating adjacent work.

3.4 EXCAVATION:

a. Required excavation for installation of all electrical work shall be provided by the Electrical Contractor. Care shall be taken not to disturb or damage the work of other trades.

b. Trenching and shoring shall comply with requirements of North Carolina State Department of Labor's regulations entitled "Safeguards during Construction", and "Trenching and Shoring".

c. In backfilling pipe trenches, approved fill shall first be compacted firmly and evenly on both sides of pipe in 6" layers to a depth of 12" over the top of the pipe. The remainder of trench shall be backfilled to established grade in 6" layers. The Contractor shall compact between each layer with a high-frequency vibrator tamper such as Wacker Neuson Soil Compactor or equals by Multiquip or Weber. Fill shall be compacted to density specified in Earthwork Section for the area through which trench is cut. Where compaction requirements are not established for an area, the Contractor shall compact fill to 95% maximum density at optimum moisture content.

d. Excess earth shall be deposited on the site as directed by the Architect/Engineer.

e. Where ditches occur outside of the building, the surface shall be finished to match existing surfaces. Any existing work, or work of other trades, which is damaged or disturbed shall be repaired or replaced and left in good order.

3.5 SLEEVES, CUTTING, AND PATCHING:

a. Contractor shall place his own sleeves and advise other trades of required chases and openings, so they can be properly built in. Sleeves provided under this division shall be formed out of no less than schedule 40 galvanized rigid steel conduits. Where any raceway supports installed under this Contract pierce the roof, suitable pitch pockets shall be provided and coordinated with the roofing contractor as necessary to be acceptable to the Architect/Engineer. Provide suitable fittings where any raceways or equipment cross expansion joints.

b. Permitted cutting or patching necessary shall be done by Contractor. Structural members shall not be cut except by written permission of Architect/Engineer.

3.6 PROTECTION AND CLEAN-UP:

a. Protect all material and work from damage during construction. Equipment installed in the building prior to its being closed in and dried out shall be protected from the elements in the same manner as previously specified for stored materials. Protect finished surfaces from splattering mortar, paint, plaster, etc. Do not install device plates, face plates, canopies, flush cabinet trims, or fixtures on walls or ceilings until after painting or cleaning of the surface has been completed and arrange for such items that are required to be field painted to be painted before being mounted. Repair, clean and touch-up or replace all damaged material. At the completion of the project, remove all dust from finished surfaces, including lighting fixtures, lenses and lamps.

b. The Contractor shall keep premises free of debris resulting from his work.

3.7 PAINTING AND FINISHING:

a. Suitable finishes shall be provided on all items of electrical equipment and materials which are exposed. This shall consist of either an acceptable finish as manufactured and supplied to the job or application of suitable finishes after installation.

b. When installed in finished areas, exposed equipment and materials shall be supplied with prime coat and shall be professionally painted or enameled as directed to match or blend with adjacent surfaces.

c. In unfinished areas such as equipment rooms, exposed equipment shall be furnished with suitable factory applied finishes (e.g., standard gray enamel finish for panelboards, etc.).

d. Equipment furnished in finishes such as stainless steel and brushed aluminum shall not be painted.

e. All finishing shall be as directed by, and shall be satisfactory to, the Architect/Engineer.

f. Paint material shall be selected from the products listed below and, insofar as practical, products of only one manufacturer shall be used. Contractor shall submit to the Architect/Engineer the listed manufacturer he proposes to use in the work. Should the Contractor desire to use products of a manufacturer not listed below, or products made by a listed manufacturer but not scheduled herein, Contractor shall submit complete technical information on the proposed products to the Architect/Engineer for approval. Only products approved by the Architect/Engineer shall be used.

3.8 OBSERVATION:

a. The project will be observed periodically as construction progresses. The Contractor will be responsible for notifying the Architect/Engineer at least 72 hours in advance when any work to be covered up is ready for inspection. No work shall be covered up until after observation has been completed.

SEISMIC RESTRAINT REQUIREMENTS FOR ELECTRICAL SYSTEMS

1.1 GENERAL:

a. All seismic restraint materials specified herein shall be provided by a single manufacturer to assure a single responsibility for their proper performance. Installation of all seismic restraint materials specified herein shall be accomplished following the manufacturer's written instructions.

b. The Contractor shall furnish to the seismic restraint materials contractor a complete set of shop drawings and other necessary information for all electrical equipment and components that receive seismic devices. The information to be furnished shall include operating weight of the equipment to be restrained, distribution of weight to support points and dynamic characteristics along with any internal isolation systems to be analyzed. The Contractor shall also furnish a complete layout of conduit, components and equipment to be restrained, including vertical risers, showing size or weight and support points, to the seismic restraint materials contractor for selection and layout of mountings.

c. The seismic restraint materials contractor shall use the above listed information to design a complete system of seismic mounts in accordance with the contract documents along with the ASCE 7 Standard and the North Carolina State Building Code. The seismic restraint materials Contractor shall analyze all "multiple degree of freedom" systems and provide properly designed restraint systems avoiding all resonance frequencies. To accomplish this, the seismic restraint materials contractor shall employ an Engineer registered in the State of North Carolina to design all restraint systems and prepare a complete set of calculations and shop drawing submittals with his professional Engineer's seal certifying that the design meets all requirements of these contract documents. A seismic design "errors and omissions" insurance certificate must accompany submittals from the Seismic Engineer. Manufacturer's product liability insurance certificates are not acceptable.

d. The Seismic Engineer or his designated representative shall inspect the project upon completion of the applicable work and provide written certification that the installation is in compliance with the approved shop drawing submittals. This certification shall also bear the professional Engineer's seal and shall become part of the contract closeout documents. All seals shall be signed and dated appropriately.

2.1 SEISMIC RESTRAINT:

a. All required equipment shall be bolted to the structure to allow for seismic acceleration with no failure or displacement. All connections shall be positive bolted type; no friction clamps of any kind are allowed.

b. Provide cable and connection sets for suspended equipment at each of four corners secured to the building structure.

c. Floor mounted equipment shall be provided with seismically housed springs or springs with seismic snubbers as determined by the equipment to be restrained.

d. Seismic restraint systems shall be provided by The VMC Group, Mason Industries, Consolidated Kinetics, or prior approved equal.

2.2 WIND RESTRAINT:

a. All electrical equipment exposed to wind must be evaluated and restrained for wind loading per the requirements of the N.C. Mechanical Code.

EQUIPMENT CONNECTIONS AND COORDINATION

1.1 SCOPE:

a. The connection of all equipment provided under any Division of these specifications or by the owner requiring electrical connection shall be provided as part of this Division, unless otherwise indicated or specified. A special outlet, where

indicated, is the electrical connection to the equipment.

b. Drawings indicate approximate equipment capacity (including motor horsepower) and approximate location of connection. It is the responsibility of this Contractor to determine the exact characteristics of equipment being supplied; and to provide proper branch circuit connections, conductor protection, and grounding.

2.1 GENERAL:

a. Heating, Ventilating, Air Conditioning, and Plumbing Equipment: Unless otherwise indicated, provide all power wiring, including feeders and branch circuits, to the terminals of the equipment, including mounting of motor starters; feeder and branch circuit over-current protection; disconnecting means within sight of each motor and each starter, whether specifically indicated on drawings.

b. Individually mounted motor starters: Unless otherwise indicated, individually mounted motor starters will be furnished as part of the Division furnishing the driven equipment. Unless otherwise indicated, remote control wiring for Heating, Ventilating, Air Conditioning, and Plumbing equipment will be provided as part of those respective Divisions.

BASIC MATERIALS AND METHODS

1.1 WIRING METHODS:

a. Unless otherwise indicated or specified, the Wiring Method for this project shall consist of copper conductors with 600-volt insulation installed in metal raceways.

b. The word "Raceway" and the word "Conduit" (or abbreviation "C") used herein or on the drawings indicate Rigid Metal Conduit, and where permitted, Intermediate Metal Conduit, Electrical Metallic Tubing, Rigid Nonmetallic Conduit, Flexible Metal Conduit, or Liquidtight Flexible Metal Conduit.

c. Reference to "Rigid Conduit" or "RMC" indicates heavy-wall Rigid Metal Conduit only.

d. Reference to "IMC" indicates Intermediate Metal Conduit.

e. Reference to "PVC" indicates Rigid Nonmetallic Conduit.

f. Reference to "EMT" or "Tubing" indicates Electrical Metallic Tubing.

g. Reference to "Flex" or "Flexible Conduit" indicates Flexible Metal Conduit, or, where required, Liquidtight Flexible Metal Conduit.

1.2 FASTENING METHODS:

a. Acceptable fastening methods include wood screws and nails on wood construction, toggle bolts on hollow masonry, expansion bolts and lead anchors on brick and concrete, and machine screws on metal surfaces.

b. Explosive fasteners may be used in steel and concrete in accordance with the manufacturer's recommendations.

c. Wire, perforated metal strap, and wooden plugs are not acceptable as fastening material.

d. Materials used shall be good quality, made of zinc or cadmium coated steel or other non-corroding material.

e. Materials, whether exposed or concealed, shall be firmly and adequately held in place. Fastening and support shall afford safety factor of three or higher and shall be in full compliance with the seismic protection requirements of the N.C. State Building Code.

f. Fixtures, raceways, and equipment shall be supported from the structure. Nothing may be supported on suspended ceiling unless noted so on the Drawings or specifically permitted by the Architect/Engineer.

g. Equipment and raceways attached to outside walls, or interior walls subject to permanent moisture, shall be shimmed out with non-corrodible material to provide 1/4" air space between wall and equipment or raceway.

1.3 EQUIPMENT IDENTIFICATION:

a. Suitable nameplates shall be provided for the identification of electrical equipment including panelboards, motor starters, safety switches and circuit breakers.

b. Nameplates shall be of engraved white core plastic laminate, not less than 1/16" thick. Nameplate identification shall include equipment name, source of power supply and voltage.

c. Nameplate engraving shall be of professional quality, with block style letters, minimum 1/4" high.

d. Nameplates shall be attached with sheet metal screws. They shall be sized to allow for installation of screws without obscuring text.

e. All empty conduit runs and conduit with conductors for future use shall be identified for use and shall indicate where they terminate. Identification shall be by tags with string or wire attached to conduit or outlet.

1.4 SLEEVES AND PENETRATIONS:

a. The Electrical Contractor shall provide sleeves and openings for his penetrations through exterior walls, interior walls and partitions, floors, and roofs. Provisions for all such penetrations shall be as approved by the Architect/Engineer.

b. For any raceway passing through an exterior wall, above or below grade, provide appropriate sleeve and water proofing. Center the conduit in the sleeve and fill the space between conduit and sleeve with appropriate compound such as lead and oakum, and then apply caulking compound - Thiocaulk or approved equal - flush with the wall surfaces.

c. For raceways penetrating floor slabs, smoke partitions, and fire-rated walls, provide steel pipe sleeves and seal with high-temperature non-shrink grout or other material as approved by the Architect/Engineer. Materials and installation methods shall be UL listed as a Through-Penetration Firestop System suitable for use with the UL Fire Resistance Design encountered. Refer to the UL fire protection details shown on the drawings. Refer to the UL fire penetration details shown in the drawings.

d. Conduits penetrating roof surfaces for the purpose of connecting to roof-top mechanical equipment shall utilize openings and curbs provided for the equipment where possible.

e. For other raceway penetrations through the roof the Contractor shall provide appropriate prefabricated roof curb assemblies - "Pipe Portal System" as manufactured by Roof Products and System Corp., Addison, Illinois, or equal method as approved by Architect/Engineer and Roofing Subcontractor.

1.5 SUBMITTALS:

a. Submit for approval manufacturer's data sheets for all basic materials.

RACEWAYS AND FITTINGS

1.1 SCOPE:

a. Provide complete raceway systems as indicated on the drawings, as specified herein, and as required by applicable codes.

b. All wiring shall be installed in raceways unless specifically noted otherwise.

1.2 SUBMITTALS:

a. Submit for approval manufacturer's data sheets for all raceway system components.

2.1 MANUFACTURERS:

a. Metal raceway and components shall be manufactured by Allied, Triangle, Wheatland, Thomas & Betts, or other approved manufacturers.

b. Non-metallic raceway system components shall be manufactured by Carlon, Queen City Plastics, Ipex or other approved manufacturers.

2.2 MATERIALS AND APPLICATIONS:

a. Rigid Metal Conduit shall be zinc-coated Schedule 40 steel or alloy 6063-T42 aluminum with threaded couplings