MONTEITH



Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, NC 28409

Addendum No. 1

Owner: New Hanover County Schools
6410 Carolina Beach Road
Wilmington, NC 28412

Architect: Bowman Murray Hemingway Architects, PC
514 Market Street
Wilmington, NC 28401

Construction Manager: Monteith Construction Corp.
32 N. Front Street
Wilmington, NC 28401

MONTEITH

Addendum # 1

February 15, 2018

Renovations to Myrtle Grove Middle School
901 Piner Road
Wilmington, NC 28409

Item 1 – The following scopes have been revised and are included in this addendum.

BP 220 – Interior Demolition
BP 2600 – Electrical
BP – 2100 – Fire Suppression

Item 2 – revised project schedule attached.

Bid Package # BP 220 – 02 20 00 Interior Demolition

Bid Package #BP 220 – 02 20 00 Interior Demolition
Description of Work

The following information is provided to define and describe the scope of work required of the successful Bidder and is intended to be complementary with the requirements of all other Contract Documents.

The scope of the work shall include, but not necessarily be limited to, providing the following:

Interior Demolition

1. See drawing CS-08 for phasing plan.
2. All tipping fees will be waived by local landfill.
3. Include for all floor finish and adhesive, ACT, interior doors, interior wall, exterior walls, window blinds, millwork, drywall ceilings and interior glass demolition.
4. Include for all concrete flooring cutting and removal for plumbing or shown on drawings.
5. Include student locker removal and base.
6. Exterior windows and storefront will be removed by glass contractor.
7. All site demolition on drawings by C1-01 is by site contractor.
8. All roof demolition will be by roofing contractor.
9. Include Ramboard floor protection for all of Phase 1 except Media Center, Admin. And Gym. Include for removal at end of construction.
10. All plumbing, HVAC and electrical demolition will be by others.
11. Include floor protection to gym floor room 301. Floor protection is foam board insulation with layered ¾" plywood. Include for 56 – 4 x 8 sheets of both materials.
12. Demolition work to existing soffits by drywall contractor. Detail 2/A-400.
13. Include for the demolition of all Mechanical loft steel ladders and guardrails.
14. Include $10,000.00 for un-attributable damages incurred during construction. This Subcontractor shall submit daily work tickets to Monteith Constructions Superintendent to sign when this work is being performed. Any portion of the money that is not used by the end of project shall be credited back to Monteith Construction.
15. Provide all tools, equipment, hoisting, lifting, etc. as required to perform the work under this bid package:
    a. Erection, dismantle, maintenance, and inspections are included.
    b. Maintenance and inspection requirements remain the responsibility of this Bid Package for the entire duration.

c. Multiple deliveries and mobilizations of erection equipment required to fully erect scaffolding as the work of this Bid Package progresses are included.
d. Provide safe, controlled access under / through scaffolding into and out of the buildings at exterior door locations.

16. See General Instructions and information item 18 Temporary Offsite Parking.

GENERAL

1. Off-site disposal of materials shall be done in full compliance with all applicable laws and regulations.
2. Submittals, samples, and shop drawings shall be provided by this Subcontractor for all materials being furnished and/or installed for this scope of work. They are to be submitted within sixty (60) from Notice to Proceed or sooner if required so that they will enable all affected parties to meet the Project Schedule.
3. Provide project specific shop drawings for all flashing details.
4. This Subcontractor is responsible for the quality of all work associated with this Bid Package and is responsible for any and all costs associated with any non-conformance with specified requirements.
5. It is understood by this Subcontractor that multiple mobilizations will be required to perform this scope of work and that all costs to perform the work in accordance with the Project Schedule are included.
6. It is the responsibility of this Subcontractor to review the other Bid Packages to ensure that the work scope included herein is not duplicated in other Bid Packages. If it is included in other Bid Packages, notify the Construction Manager immediately so that this work can be removed from one of the Bid Packages. If no notification is made, this Subcontractor will be responsible for the duplicated work.
7. Review architectural details with civil and structural details to ensure coordination has been made. Report any design discrepancies discovered to the Construction Manager immediately.
8. Field dimensions, layout, measurements, and engineering required for this scope of work shall be provided by this Subcontractor.
9. Must follow Monteith Constructions Waste Management Policy.

SPECIAL CONDITIONS

1. All deliveries must be coordinated and scheduled with the Construction Manager's project superintendent prior to delivery on site.

2. This Subcontractor shall return site conditions to the same condition it was turned over to this Subcontractor after the completion of the work of this Bid Package.
3. Reference the Special Conditions to the Contract section for temporary measures, hoisting, clean-up, and other requirements under this Bid Package.
4. This Subcontractor shall return site conditions to the same condition it was turned over to this Subcontractor after the completion of the work of this Bid Package.
5. Reference all sections of the Special Conditions of the Contract for additional requirements.

SAFETY

1. This Subcontractor is fully responsible and accountable for safely performing this Bid Package scope of work. The following items are typical safety requirements that shall be included in the scope of work, but are not intended to exclude any safety related item that may be required: personal protective equipment, traffic control, material handling and equipment safety, hazardous material safety, etc.
2. Subcontractors and their lower tier subcontractors will be required to comply with Temporary Facilities and Controls, all applicable OSHA standards, and other local, state, and federal regulations. The more stringent of these will apply.
3. This Subcontractor is fully responsible and accountable for safely performing this Bid Packages scope of work. The following items are typical safety requirements that shall be included in the scope of work, but is not intended to exclude any safety related item that may be required: personal protective equipment, fall arrest systems, fall protection barricades, scaffolding and ladder safety, electrical safety, hoist way and machine room safety, material handling and equipment safety, etc. and other required safety provisions.
4. All scaffolding, erection, dismantling, access and use of scaffolding are to be in full compliance with local and state regulations
5. Provide all traffic control (barricades, fences, flagmen, temporary signage, etc.) as required by the City of Wilmington, NCDOT, etc. to complete all work under this Bid Package.
6. Subcontractor is responsible to comply with Monteith Construction Safety Manual. Items include, but are not limited to the follow:
    a. New employee training
    b. Weekly toolbox talks
    c. Task specific training
    d. Drug and alcohol screening
    e. Injury management

Alternates:

Alternate #1: State the amount to be added to the base bid to replace existing electrical switchgear and surge suppression system as shown on the electrical document.

Alternate #2: State the amount to be added to the base bid to add the two toilet rooms in the Main Lobby.

Alternate #3: State the amount to be added to the base bid to renovate the front desk, waiting area and file room.

Alternate #4: State the amount to be added to the base bid to replace mechanical loft ladders as shown.

Alternate #5: State the amount to be added to the base bid to add duct cleaning services as indicated on the mechanical documents.

Alternate #6: State the amount to be added to the base bid to replace the kitchen exhaust hood, fan, and make up air mechanical unit as indicated on the documents.

Alternate #7: State the amount to be added to the base bid to repair and service exterior mechanical boilers as indicated on the mechanical documents.

Preferred Brand Alternates:

Alternate #8: State the amount to be added to the base bid to provide Johnson DDC controls as specified in section 23 09 23. No substitutions permitted.

Alternate #9: State the amount to be added to the base bid to provide a Notifier fire alarm system as specified in section 28 31 10. No substitutions permitted.

Alternate #10: State the amount to be added the base bid to provide VCT floor repair (PS 205), two coat floor sealing system (PU 280), and floor tile adhesive (D 3320) as manufactured by Wakol. The composite installation shall be warranted by Wakol for adhesion as specified. No substitutions permitted.

Alternate #11: State the amount to be added to the base bid to provide Palmetto Brick face and specialty brick as specified in section 04 20 00. No substitutions permitted.

Alternate #12: State the amount to be added to the base bid to provide Wenger Musical Instrument Cabinets. No substitutions permitted.

Alternate #13: State the amount to be added to the base bid to provide Owner preferred hardware in Division 087100 as follows:

A. Hinges as manufactured by Ives. No substitutions permitted.

B. Cylinders and keying and mortise locksets by Yale. No substitutions permitted.

C. Closers by LCN. No substitutions permitted.

D. Exit devices by Von Duprin. No substitutions permitted.

E. Access control locks by Schlage. No substitutions permitted.

Bid Package #BP 2600

Bid Package #BP 2600 – 26 00 00 Electrical
27 00 00 Communications
28 00 00 Electronic Safety and Security
Description of Work

The following information is provided to define and describe the scope of work required of the successful Bidder and is intended to be complementary with the requirements of all other Contract Documents.

The scope of the work shall include, but not necessarily be limited to, providing the following:

ELECTRICAL

1. Provide electrical systems complete and operable per applicable codes and as indicated on the drawings, specifications and bid scope of work.
2. See drawing CS-08 for phasing plan.
3. All tipping fees are waived by the local landfill.
4. Include for all wall and ceiling cutting and patching to complete this work.
5. Removal, storage, and reinstallation of all electrical devices to be reused.
6. 56 – 4 X 8 sheets of plywood & foam board will be provided by others for the floor protection at gym. This contractor to use this product to protect gym floor as required.
7. Ensure working condition of all occupied areas while making safe construction areas per phasing plan.
8. Disconnection and demolition and removal of existing electrical systems (including lighting, boxes, receptacles, hangers & supports, etc.) as indicated and as required for the installation of the new electrical work. Include all necessary items to make the system safe for demolition.
9. Provide all site electrical, power to lift stations, and low voltage demolition, and relocation as shown on the Contract Documents. This includes backfill and compaction to required subgrades.
10. Provide site lighting that is not noted as being provided by the utility company. This work includes poles, engineering and design of new poles, drilling and installation of poles, concrete bases, backfill of poles and removal of spoils, installation of lighting, conduit, wiring, terminations, lighting controls, etc.
11. Provide underground conduit / sleeves as shown on the Contract Documents for lights at the parking lots that are provided by the local utility company.

12. The work of this Bid Package shall include patching and repairs required for existing roadways, paving, walks, and landscaping that are disturbed outside of the construction fencing limits solely for the installation of site electrical work. At a minimum, provide orange construction fencing around all site utility work.
13. Motor starters and disconnects where not integral with mechanical, plumbing, or fire protection equipment.
14. Install all variable frequency drives specified for mechanical and plumbing equipment.
15. Power rough-in, wiring and final connection of all owner-furnished equipment and equipment furnished by others. Coordinate new electrical services with the local utilities, local authorities, Engineer, Owner, and Construction Manager.
16. Disconnection, demolition and removal of existing electrical and low voltage systems (including devices, cover plates, conduit, raceways, wiring, panels, disconnects, transformers, equipment, equipment curbs / pads, etc.) as indicated and as required for the installation of the new electrical work. Coordinate demolition of energized equipment with the Mechanical Subcontractor to ensure items are safe for demolition prior to removal.
17. Review all contract documents for systems and items that must remain in operation throughout demolition and construction including, but not necessarily limited to, systems in all other buildings on campus where no work is performed; fire alarm, telecomm, security, CATV head-end equipment. All costs associated with maintaining continuous power is the responsibility of this Bid Package including, but not limited to, temporary conduit, wiring, panels, breakers, generators, fuel, etc.
18. Coordinate any shutdowns with Construction Manager.
19. Provide fire alarm system complete including rough-in, cabling, devices and equipment.
20. Wire sprinkler flow and tamper switches, including wiring, conduit, tie-into the fire alarm system. Provide and wire tamper switch at backflow.
21. Telephone / data systems complete including rough-in, cabling, devices and equipment.
22. Provided CATV system complete including rough-in, cabling, devices and equipment.
23. Provide cable support system.
24. Provide excavation, trenching, trench shoring, backfill, compaction and spoils removal necessary for the work within this package.
25. Provide dewatering necessary for the work within this package.
26. Provide pads, light pole bases, encasement and other concrete work necessary for the installation of the work within this package. Provide all interior and exterior housekeeping pads as required and provide chamfered edges. Interior pads are to be painted yellow.
27. Provide support as required for electrical panels and telephone equipment, including backboards, independent supports, etc. Include fire-retardant paint as indicated on plywood provided by this Bid Package.

28. In-wall blocking / backing is provided by the Drywall Subcontractor. Submit blocking / backing requirements and location drawings to the Drywall Subcontractor. Blocking / backing that is not submitted will be the responsibility of this Bid Package.
29. Provide caulking, sealants, fire-stopping, putty pads for all work installed under this Bid Package.
30. Provide color coding and labeling of conduit, boxes, systems, and equipment as required for work within this Bid Package.
31. Provide access doors as necessary or specified for work within this package.
32. Provide sleeves, block-outs, coring and supports necessary for the work within this package.
33. Furnish sleeves for all masonry wall penetrations in new masonry construction. The Masonry Subcontractor is to install. The Electrical Subcontractor is to clearly indicate the exact location for the sleeves and verify location. This contractor is responsible for all cutting and patching Of this trade.
34. Furnish embeds, sleeves, block-outs, back boxes, etc. to be cast in concrete floors and walls to the Cast-In-Place Subcontractor.
1. Attachment to roof deck is not allowed. Attachments must be made to roof joists and main structural framing members. This applies to all work installed by this Bid Package, including hanger wires for light fixtures. Provide hanger wires where required to support light fixtures, devices, etc.
35. All raceways and sleeves shall be coordinated with adjacent walls to ensure that all penetrations enter and exit walls at 90 degree angles.
36. Provided authorized factory start up and owner training.
37. Provide testing and system certifications as required.
38. Provide extended warranties as required for use of electrical items during construction.
39. Provide temporary power, wiring, lighting and distribution in accordance with current OSHA requirements. Includes installation, maintenance, and removal. Include temporary power and removal of temporary Power to CM trailer.
40. The Electrical Subcontractor is to provide 120V temporary power service at one location at each building phase for use by all Subcontractors.
41. Attendance at weekly subcontractor meetings by all low voltage, second-tier subcontractors under this Bid Package is required at least two weeks prior to and during their work onsite.
42. During the priming and finish painting process, provide temporary cover plates over all junction boxes and devices. These plates shall be installed backwards to allow trimming around boxes. Upon completion, remove temporary plates and install permanent cover and device plates.
43. Coordination Drawings include a $ 3,000.00-dollar allowance for this requirement.
44. Include $10,000.00 for un-attributable damages incurred during construction. This Subcontractor shall submit daily work tickets to Monteith Constructions Superintendent to sign

when this work is being performed. Any portion of the money that is not used by the end of project shall be credited back to Monteith Construction.

GENERAL

1. Provide dewatering in order to properly maintain and complete the work of this bid package.
2. Submittals, samples, and shop drawings shall be provided by this Subcontractor for all materials being furnished and/or installed for this scope of work. They are to be submitted within sixty (60) from Notice to Proceed or sooner if required so that they will enable all affected parties to meet the Project Schedule.
3. This Subcontractor is responsible for the quality of all work associated with this Bid Package and is responsible for any and all costs associated with any non-conformance with specified requirements.
4. It is understood by this Subcontractor that multiple mobilizations will be required to perform this scope of work and that all costs to perform the work in accordance with the Project Schedule are included.
5. It is the responsibility of this Subcontractor to review the other Bid Packages to ensure that the work scope included herein is not duplicated in other Bid Packages. If it is included in other Bid Packages, notify the Construction Manager immediately so that this work can be removed from one of the Bid Packages. If no notification is made, this Subcontractor will be responsible for the duplicated work.
6. Review electrical details with structural, mechanical, architectural, plumbing, and fire protection details to ensure coordination has been made. Report any design discrepancies discovered to the Construction Manager immediately.
7. Provide layout and engineering as required for all work in this Bid Package.
8. Must follow Monteith Constructions Waste Management Policy.

SPECIAL CONDITIONS

1. Field dimensions, layout, measurements, and engineering required for this scope of work shall be provided by this Subcontractor.
2. Reference the Special Conditions to the Contract section for temporary measures, hoisting, clean-up, and other requirements under this Bid Package.
3. Install access panels/doors furnished by other Bid Packages at all wall and ceiling assemblies provided under this Bid Package.
4. Layout and engineering as required for work in this Bid Package.
5. Reference all sections of the Special Conditions to the Contract for additional requirements.

SAFETY

1. This Subcontractor is fully responsible and accountable for safely performing this Bid Package scope of work. The following items are typical safety requirements that shall be included in the scope of work, but are not intended to exclude any safety related item that may be required: personal protective equipment, traffic control, material handling and equipment safety, hazardous material safety, etc.
2. Subcontractors and their lower tier subcontractors will be required to comply with Temporary Facilities and Controls, all applicable OSHA standards, and other local, state, and federal regulations. The more stringent of these will apply.
3. This Subcontractor is fully responsible and accountable for safely performing this Bid Packages scope of work. The following items are typical safety requirements that shall be included in the scope of work, but is not intended to exclude any safety related item that may be required: personal protective equipment, fall arrest systems, fall protection barricades, scaffolding and ladder safety, electrical safety, hoist way and machine room safety, material handling and equipment safety, etc. and other required safety provisions.
4. Any slab block-outs or conduit stubs in floor slabs shall be covered, barricaded, or otherwise protected from being a fall or trip hazard.
5. Contractor must do their due-diligence in locating all underground utilities, both known and unknown, prior to any excavation work deeper than 6" (six inches). Methods shall include professional locating service, ground penetrating radar and potholing all utilities to verify location and depth before equipment is used within 5' of known utility.
6. Subcontractor is responsible to comply with Monteith Construction Safety Manual. Items include, but are not limited to the follow:
    a. New employee training
    b. Weekly toolbox talks
    c. Task specific training
    d. Drug and alcohol screening
    e. Injury management

Alternates:

Alternate #1: State the amount to be added to the base bid to replace existing electrical switchgear and surge suppression system as shown on the electrical document.

Alternate #2: State the amount to be added to the base bid to add the two toilet rooms in the Main Lobby.

Alternate #3: State the amount to be added to the base bid to renovate the front desk, waiting area and file room.

Alternate #4: State the amount to be added to the base bid to replace mechanical loft ladders as shown.

Alternate #5: State the amount to be added to the base bid to add duct cleaning services as indicated on the mechanical documents.

Alternate #6: State the amount to be added to the base bid to replace the kitchen exhaust hood, fan, and make up air mechanical unit as indicated on the documents.

Alternate #7: State the amount to be added to the base bid to repair and service exterior mechanical boilers as indicated on the mechanical documents.

Preferred Brand Alternates:

Alternate #8: State the amount to be added to the base bid to provide Johnson DDC controls as specified in section 23 09 23. No substitutions permitted.

Alternate #9: State the amount to be added to the base bid to provide a Notifier fire alarm system as specified in section 28 31 10. No substitutions permitted.

Alternate #10: State the amount to be added the base bid to provide VCT floor repair (PS 205), two coat floor sealing system (PU 280), and floor tile adhesive (D 3320) as manufactured by Wakol. The composite installation shall be warranted by Wakol for adhesion as specified. No substitutions permitted.

Alternate #11: State the amount to be added to the base bid to provide Palmetto Brick face and specialty brick as specified in section 04 20 00. No substitutions permitted.

Alternate #12: State the amount to be added to the base bid to provide Wenger Musical Instrument Cabinets. No substitutions permitted.

Alternate #13: State the amount to be added to the base bid to provide Owner preferred hardware in Division 087100 as follows:

A. Hinges as manufactured by Ives. No substitutions permitted.

B. Cylinders and keying and mortise locksets by Yale. No substitutions permitted.

C. Closers by LCN. No substitutions permitted.

D. Exit devices by Von Duprin. No substitutions permitted.

E. Access control locks by Schlage. No substitutions permitted.

Bid Package #BP 2100 – 21 00 00 Fire Suppression
Description of Work

The following information is provided to define and describe the scope of work required of the successful Bidder and is intended to be complementary with the requirements of all other Contract Documents.

The scope of the work shall include, but not necessarily be limited to, providing the following:

FIRE PROTECTION

1. Provide a complete and operational fire protection system. Include all sprinkler piping, heads, valves, caps, control valve assemblies, and fire department connections according to the contract documents and the NC DOI Requirements for Automatic Fire Sprinkler Systems. Fire protection system complete from 1' above finish floor where fire service water lines enter building, including final service connections.
2. See drawing CS-08 for phasing plan.
3. 56 – 4 X 8 sheets of plywood & foam board will be provided by others for the floor protection at gym. This contractor to use this product to protect gym floor as required.
4. This contractor to include a $15,000 allowance for fireproof patching at Gym steel.
5. Controls and switches and all associated control wiring (regardless of voltage) as required.
6. Motor starters, fuses and disconnects integral with fire protection equipment.
7. Review electrical drawings to verify that power shown to be provided for equipment furnished by this Bid Package is adequate. If equipment furnished requires different power than that shown on the electrical drawings, the cost to revise the power is the responsibility of this Bid Package.
8. Design and submit all shop drawings, calculations, catalog cuts, etc. as required to appropriate state and local authorities and insurance company to obtain all approvals as required.
9. Perform flow tests prior to starting design of fire protection system. Submit report to Construction Manager.
10. Pads, curbs, inertia bases and other concrete work necessary for the installation of the work within this package. All interior pads are to be painted yellow.
11. Vibration isolation and seismic control devices and calculations required by regulations for seismic site class as indicated on the contract documents.
12. Blocking / backing is provided by the Drywall Subcontractor. Submit blocking / backing requirements and location drawings in drywall partitions to the Drywall Subcontractor. Blocking

/ backing that is not submitted prior to the commencement of wall framing will be the responsibility of this Bid Package.

13. Coordinate installation of sprinkler heads such that the heads are located in the center of acoustical ceiling tiles and symmetrically installed.
14. Coordination of sprinkler head layout prior to installation with other overhead work.
15. The Acoustical Ceilings Subcontractor is responsible for cutting holes in ceiling tiles for sprinkler heads. The cut tiles will be installed in the grid in each room. This Bid Package is responsible for installing the sprinkler head in the cut tiles. This includes removing the tile from the grid and reinstalling in the correct location if necessary. The cost to repair or replace any tiles damaged by this Bid Package will be the responsibility of this Bid Package.
16. Provide cages on sprinkler heads in rooms with exposed ceilings (mechanical, electrical, etc.).
17. Provide caulking, sealants, and fire-stopping for all work installed under this Bid Package.
18. Provide and locate access doors as necessary or specified for work within this package.
19. Provide sleeves, block-outs, coring, and supports necessary for the work within this Bid Package.
20. Furnish sleeves for all masonry wall penetrations in new masonry construction. Masonry Subcontractor to install. Fire Protection Subcontractor to clearly indicate the exact location for the sleeves and verify location.
21. Provide coding of piping, systems, and equipment as necessary for work within this Bid Package.
22. Painting of exposed piping is by the Painting Subcontractor. This contractor to protect sprinkler heads prior to painting.
23. Install all piping and sleeves parallel to or at right angles to the building structure.
24. Install hangers prior to fireproofing when possible and patch otherwise at the expense of this Bid Package.
25. Testing and Inspections, and system certifications/verification at conclusion of project. Provide personnel to conduct tests of the fire suppression systems. Include testing and inspections on a per phase basis.

GENERAL

1. Submittals and shop drawings shall be provided by this Subcontractor for all materials being furnished and/or installed for this scope of work. They are to be provided in a timely manner so that it will enable all affected parties to meet the Project Schedule.
2. The Owner will employ an independent testing agency (ITA) to perform all testing and inspection services required. This Subcontractor will be required to cooperate with ITA during all inspections. This Subcontractor will be responsible to notify the Construction Manager twenty-four (24) hours in advance of any required inspections. The Construction Manager will be responsible for scheduling all inspections by the ITA. All results are to be reported in a field

report issued by the ITA to the Construction Manager for distribution to this Subcontractor, the A/E, the Owner, and the Building Inspector.

3. This Subcontractor is responsible for the quality of all work associated with this Bid Package and is responsible for any and all costs associated with any non-conformance with specified requirements.
4. It is understood by this Subcontractor that multiple mobilizations will be required to perform this scope of work and that all costs to perform the work in accordance with the Project Schedule are included.
5. It is the responsibility of this Subcontractor to review the other Bid Packages to ensure that the work scope included herein is not duplicated in other Bid Packages. If it is included in other Bid Packages, notify the Construction Manager immediately so that this work can be removed from one of the Bid Packages. If no notification is made, this Subcontractor will be responsible for the duplicated work.
6. Review structural details with architectural details to ensure coordination has been made. Report any design discrepancies discovered to the Construction Manager immediately.
7. Provide layout and engineering as required for all work in this Bid Package.
8. Must follow Monteith Constructions Waste Management Policy.

GENERAL

1. Submittals, samples, and shop drawings shall be provided by this Subcontractor for all materials being furnished and/or installed for this scope of work. They are to be submitted within sixty (60) from Notice to Proceed or sooner if required so that they will enable all affected parties to meet the Project Schedule.
2. The Owner will employ an independent testing agency (ITA) to perform all testing and inspection services required. This Subcontractor will be required to cooperate with ITA during all inspections. This Subcontractor will be responsible to notify the Construction Manager twenty-four (24) hours in advance of any required inspections. The Construction Manager will be responsible for scheduling all inspections by the ITA. All results are to be reported in a field report issued by the ITA to the Construction Manager for distribution to this Subcontractor, the A/E, the Owner, and the Building Inspector.
3. This Subcontractor is responsible for the quality of all work associated with this Bid Package and is responsible for any and all costs associated with any non-conformance with specified requirements.
4. It is understood by this Subcontractor that multiple mobilizations will be required to perform this scope of work and that all costs to perform the work in accordance with the Project Schedule are included.

5. It is the responsibility of this Subcontractor to review the other Bid Packages to ensure that the work scope included herein is not duplicated in other Bid Packages. If it is included in other Bid Packages, notify the Construction Manager immediately so that this work can be removed from one of the Bid Packages. If no notification is made, this Subcontractor will be responsible for the duplicated work.
6. Review fire protection details with structural, mechanical, electrical, plumbing, and architectural details to ensure coordination has been made. Report any design discrepancies discovered to the Construction Manager immediately.
7. Provide layout and engineering as required for all work in this Bid Package.

SPECIAL CONDITIONS

1. Reference the Special Conditions of the Contract for Building Information Modeling (BIM) requirements.
2. Reference all sections of the Special Conditions of the Contract for additional requirements.
3. This project is being completed in multiple phases in accordance with the Project Construction Schedule included in Exhibit S. This Subcontractor is to include expected durations for delivery and installation of fire protection work with this CPM schedule.
4. Field dimensions, layout, measurements, and engineering required for this scope of work shall be provided by this Subcontractor.
5. Reference the Special Conditions to the Contract section for temporary measures, hoisting, clean-up, and other requirements under this Bid Package.

SAFETY

1. This Subcontractor is fully responsible and accountable for safely performing this Bid Package scope of work. The following items are typical safety requirements that shall be included in the scope of work, but are not intended to exclude any safety related item that may be required: personal protective equipment, traffic control, material handling and equipment safety, hazardous material safety, etc.
2. Subcontractors and their lower tier subcontractors will be required to comply with Temporary Facilities and Controls, all applicable OSHA standards, and other local, state, and federal regulations. The more stringent of these will apply.
3. This Subcontractor is fully responsible and accountable for safely performing this Bid Packages scope of work. The following items are typical safety requirements that shall be included in the scope of work, but is not intended to exclude any safety related item that may be required: personal protective equipment, fall arrest systems, fall protection barricades, scaffolding and

ladder safety, electrical safety, hoist way and machine room safety, material handling and equipment safety, etc. and other required safety provisions.

4. Subcontractor is responsible to comply with Monteith Construction Safety Manual. Items include, but are not limited to the follow:
    a. New employee training
    b. Weekly toolbox talks
    c. Task specific training
    d. Drug and alcohol screening
    e. Injury management
    f.

Coordination Drawings

This project will utilize Building Information Modeling (BIM) to coordinate the locations of all Mechanical, Electrical, Plumbing, Fire Suppression, and Telecommunications (MEPFS & T) systems included in this project. Monteith Construction Co (MCC) will lead the coordination effort with input from all of the MEPFS & T trades. Coordination drawings shall be prepared and submitted by the MEPFS & T subcontractors to MCC and the Design Team. This coordination effort is to minimize conflicts and delays during the procurement and installation processes before and during construction, as well as documenting accurate installed conditions of all MEPFS & T systems as As-Built drawings. This subcontractor is specifically required to participate in the coordination process for this project. The coordination process will be based on electronic 3D and 2D files that will be imported into the Construction Manager-produced building model. The end result of this process is to identify and resolve areas of conflict with Architect and Engineer designed components as well as conflicts with other trades. The coordination process does not relieve the subcontractor from the responsibility of submitting work specific shop drawings to the Design Team for review. The subcontractor is to fully understand the BIM requirements as related to their scope of work, and make adequate provisions in the base bid amount to participate in the coordination process from inception to completion.

1. This coordination effort will be led by the Construction Manager with input from all MEPFS & T trades as follows:

    a. The Construction Manager will provide baseline 3D models and 2D CAD files to all subcontractors for coordination. The models and CAD files will be produced either by the Design Team, or by the Construction Manager following the Contract Construction Documents.

    b. This Subcontractor shall be responsible for creating 3D models and 2D dimensioned drawings of all of their contract work, both horizontal and vertical. The 3D models should include any and all systems and components pertaining to this subcontractor's scope of work.

    c. An initial "BIM Coordination Kickoff Meeting" will be held prior to Construction Manager-led BIM Coordination activities. This meeting is to establish milestone dates per the Construction Schedule, system sequencing and precedence, model and coordination drawing submittal process,

and to introduce all parties involved in coordination. The kickoff meeting will be mandatory for the Project Manager, BIM Detailer, and Superintendent / Foreman of all trades involved in the coordination process.

d. Weekly Coordination Meetings will be held after the BIM Kickoff Meeting, and will continue until the coordination process is complete for all areas of the project. Weekly meetings will be scheduled by MCC. These meetings will be mandatory for the BIM Detailer and Project Manager of all trades involved in the coordination process. Superintendent / Foreman participation is highly suggested.

e. Areas of the project will be fully coordinated in the order set in the BIM Coordination Kickoff Meeting. As areas are coordinated, each subcontractor is to produce scaled, fully dimensioned drawings of their respective system within that area. Dimensioned Drawings are to include elevations, dimensions, isometrics, etc of systems and components in order to accurately install the systems. Dimensions and elevations are to be set by the subcontractor. Project Control Lines, when available, will be provided by MCC.

f. Dimensioned Drawings will be sent out to each subcontractors Project Manager via DocuSign. Each Project Manager is to promptly review these dimensioned drawings to assure accordance with the contract. Once reviewed, the Project Manager is to sign the dimensioned drawings on DocuSign. All cost attributable to failure of a subcontractor to provide its timely approval of the dimensioned drawings or failure to cooperate in the production or assembly of input for said drawings shall be borne by such subcontractor.

g. When the Coordination process is complete, monthly As-Built Meetings will be scheduled by MCC. The intent of these meetings is to record any changes to the coordination drawings that occurred in the field. Each subcontractor is responsible for relaying any drawings and markups to their BIM Detailer before this meeting so that the models accurately reflect what is installed. The As-built models will be converted to dimensioned drawings at the end of the project, and submitted to the Design Team for record.

2. The Construction Manager shall publish a list of all the required 3D dimensioned drawings with due dates for each.

3. Coordination efforts are not to take place solely at the date and time of the weekly scheduled meetings. Each subcontractor is responsible for communicating with other trades involved in the coordination process to ensure all milestone dates are reached. The intent of the weekly scheduled meetings is to evaluate areas with major conflicts, and determine the best course of action for clash resolution in these areas.

4. The subcontractor is responsible for identifying all potential conflicts with the building as designed by the Design Team. The Subcontractor shall include all required piping / duct modifications, fittings, etc to comply with the final system layouts. The Subcontractor shall include all required piping / duct

modifications, fittings, etc to comply with field conditions for connections into existing utilities or systems.

5. All systems in the building are to be coordinated with accurate representations of the access spaces needed to properly use and maintain the systems. This subcontractor shall include all necessary offsets, etc to provide access to all devices and equipment for access. All cost associated with relocating aforementioned devices and equipment to more accessible locations due to improper coordination efforts shall be borne by this subcontractor.

6. The Construction Manager shall be responsible for merging the dimensioned drawings into a single coordinated drawing set for submittal to the Design Team for review.

7. Each subcontractor that has stake in the coordination process will be required to sign off on acceptance of the coordinated dimensioned drawings prior to installation of systems in the given area.

8. The coordination activities include below and above ground work of HVAC, Electrical, Plumbing, Fire Suppression / Protection, Telecommunications, Fire Alarm, etc within five feet (5') of the building line.

9. If the Subcontractor does not have in-house modeling capabilities, if the Subcontractor needs contact information to price out BIM Detailing and Coordination, or if the Subcontractor has any questions about these requirements, please contact Will McLawhorn at wmclawhorn@monteithco.com.

ALTERNATE

Alternate #1: State the amount to be added to the base bid to replace existing electrical switchgear and surge suppression system as shown on the electrical document.

Alternate #2: State the amount to be added to the base bid to add the two toilet rooms in the Main Lobby.

Alternate #3: State the amount to be added to the base bid to renovate the front desk, waiting area and file room.

Alternate #4: State the amount to be added to the base bid to replace mechanical loft ladders as shown.

Alternate #5: State the amount to be added to the base bid to add duct cleaning services as indicated on the mechanical documents.

Alternate #6: State the amount to be added to the base bid to replace the kitchen exhaust hood, fan, and make up air mechanical unit as indicated on the documents.

Alternate #7: State the amount to be added to the base bid to repair and service exterior mechanical boilers as indicated on the mechanical documents.

Preferred Brand Alternates:

Alternate #8: State the amount to be added to the base bid to provide Johnson DDC controls as specified in section 23 09 23. No substitutions permitted.

Alternate #9: State the amount to be added to the base bid to provide a Notifier fire alarm system as specified in section 28 31 10. No substitutions permitted.

Alternate #10: State the amount to be added the base bid to provide VCT floor repair (PS 205), two coat floor sealing system (PU 280), and floor tile adhesive (D 3320) as manufactured by Wakol. The composite installation shall be warranted by Wakol for adhesion as specified. No substitutions permitted.

Alternate #11: State the amount to be added to the base bid to provide Palmetto Brick face and specialty brick as specified in section 04 20 00. No substitutions permitted.

Alternate #12: State the amount to be added to the base bid to provide Wenger Musical Instrument Cabinets. No substitutions permitted.

Alternate #13: State the amount to be added to the base bid to provide Owner preferred hardware in Division 087100 as follows:

A. Hinges as manufactured by Ives. No substitutions permitted.

B. Cylinders and keying and mortise locksets by Yale. No substitutions permitted.

C. Closers by LCN. No substitutions permitted.

D. Exit devices by Von Duprin. No substitutions permitted.

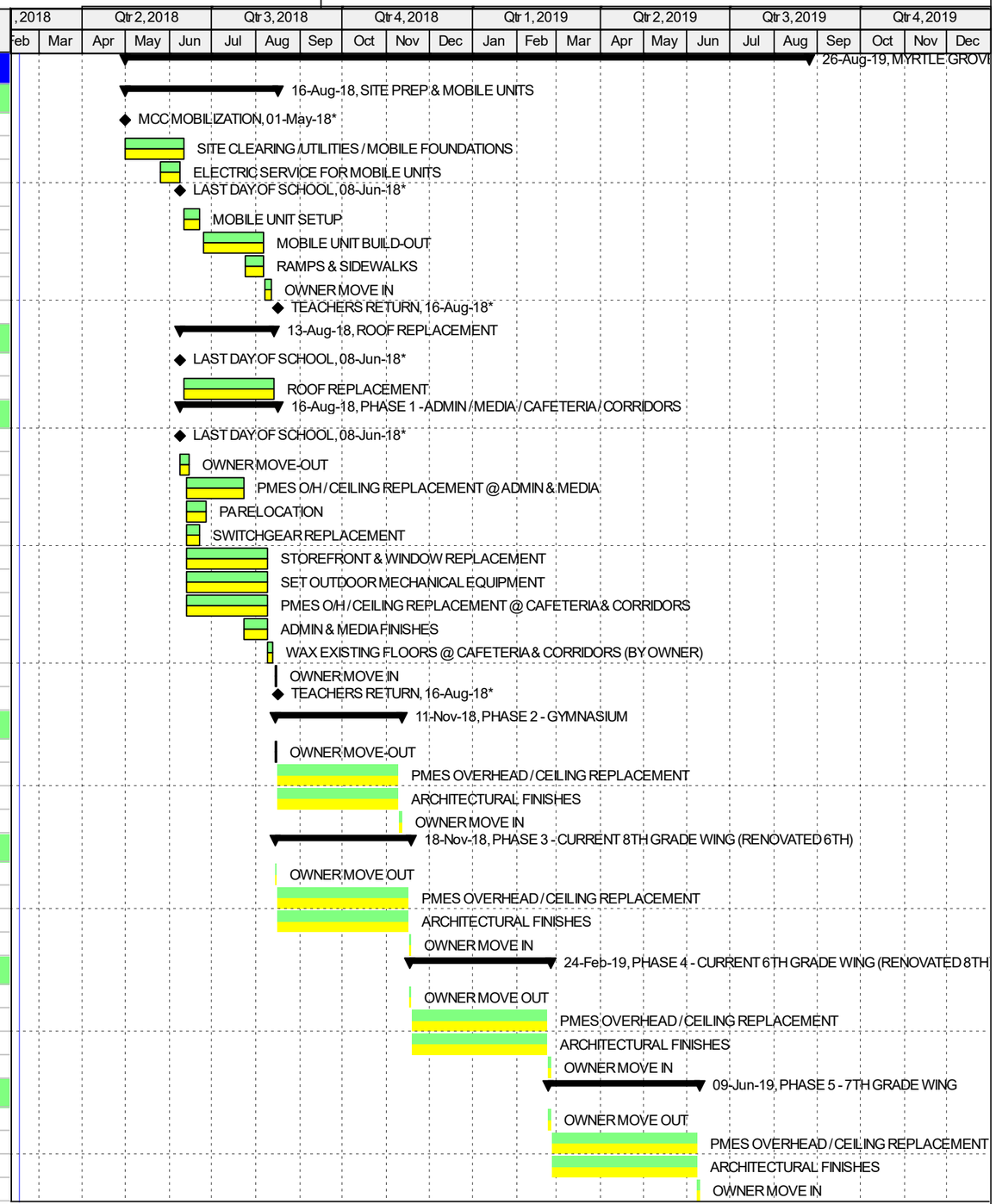
E. Access control locks by Schlage. No substitutions permitted.

MONTEITH

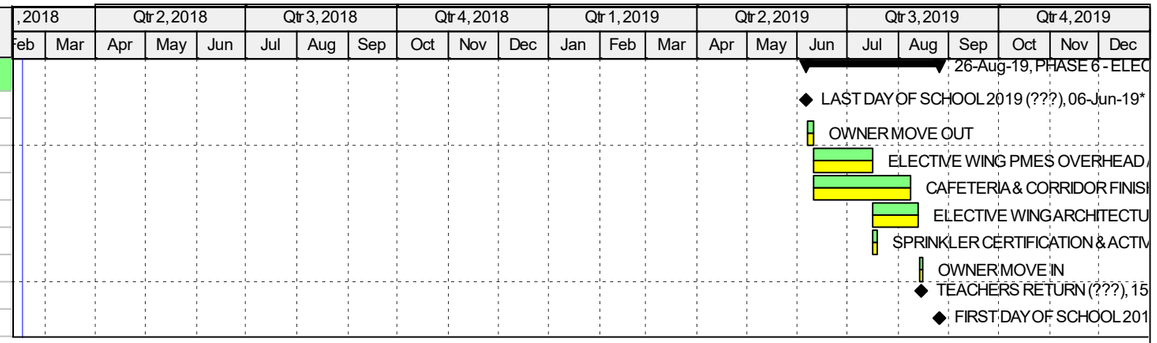
MYRTLE GROVE MIDDLE SCHOOL - PHASING SCHEDULE

MONTEITH
WE. BUILD. RELATIONSHIPS.

Activity ID	Activity Name	Original Duration	Remaining Duration	% Comp.	Start	Finish
MYRTLE GROVE MIDDLE SCHOOL - PHASING SCHEDULE		332	332		01-May-18	26-Aug-19
SITE PREP & MOBILE UNITS		75	75		01-May-18	16-Aug-18
SP1080	MCC MOBILIZATION	0	0	0%	01-May-18	
SP1010	SITE CLEARING /UTILITIES / MOBILE FOUNDATIONS	28	28	0%	01-May-18	11-Jun-18
SP1020	ELECTRIC SERVICE FOR MOBILE UNITS	10	10	0%	25-May-18	08-Jun-18
SP1050	LAST DAY OF SCHOOL	0	0	0%	08-Jun-18*	
SP1030	MOBILE UNIT SETUP	10	10	0%	11-Jun-18	22-Jun-18
SP1090	MOBILE UNIT BUILD-OUT	30	30	0%	25-Jun-18	06-Aug-18
SP1040	RAMPS & SIDEWALKS	10	10	0%	24-Jul-18	06-Aug-18
SP1060	OWNER MOVE IN	5	5	0%	07-Aug-18	11-Aug-18
SP1070	TEACHERS RETURN	0	0	0%	16-Aug-18*	
ROOF REPLACEMENT		46	46		08-Jun-18	13-Aug-18
RR1020	LAST DAY OF SCHOOL	0	0	0%	08-Jun-18*	
RR1010	ROOF REPLACEMENT	45	45	0%	11-Jun-18	13-Aug-18
PHASE 1 - ADMIN / MEDIA / CAFETERIA / CORRIDORS		48	48		08-Jun-18	16-Aug-18
P11100	LAST DAY OF SCHOOL	0	0	0%	08-Jun-18*	
P11090	OWNER MOVE-OUT	7	7	0%	08-Jun-18	15-Jun-18
P11010	PMES O/H / CEILING REPLACEMENT @ ADMIN & MEDIA	27	27	0%	13-Jun-18	23-Jul-18
P11030	PA RELOCATION	10	10	0%	13-Jun-18	27-Jun-18
P11040	SWITCHGEAR REPLACEMENT	7	7	0%	13-Jun-18	22-Jun-18
P11050	STOREFRONT & WINDOW REPLACEMENT	40	40	0%	13-Jun-18	09-Aug-18
P11060	SET OUTDOOR MECHANICAL EQUIPMENT	40	40	0%	13-Jun-18	09-Aug-18
P11120	PMES O/H / CEILING REPLACEMENT @ CAFETERIA & CORRIDORS	40	40	0%	13-Jun-18	09-Aug-18
P11020	ADMIN & MEDIA FINISHES	13	13	0%	23-Jul-18	09-Aug-18
P11070	WAX EXISTING FLOORS @ CAFETERIA & CORRIDORS (BY OWNER)	4	4	0%	09-Aug-18	13-Aug-18
P11080	OWNER MOVE IN	2	2	0%	14-Aug-18	15-Aug-18
P11110	TEACHERS RETURN	0	0	0%	16-Aug-18*	
PHASE 2 - GYMNASIUM		63	63		14-Aug-18	11-Nov-18
P21040	OWNER MOVE-OUT	2	2	0%	14-Aug-18	15-Aug-18
P21010	PMES OVERHEAD / CEILING REPLACEMENT	60	60	0%	16-Aug-18	09-Nov-18
P21020	ARCHITECTURAL FINISHES	60	60	0%	16-Aug-18	09-Nov-18
P21030	OWNER MOVE IN	2	2	0%	10-Nov-18	11-Nov-18
PHASE 3 - CURRENT 8TH GRADE WING (RENOVATED 6TH)		68	68		14-Aug-18	18-Nov-18
P31010	OWNER MOVE OUT	2	2	0%	14-Aug-18	15-Aug-18
P31020	PMES OVERHEAD / CEILING REPLACEMENT	65	65	0%	16-Aug-18	16-Nov-18
P31030	ARCHITECTURAL FINISHES	65	65	0%	16-Aug-18	16-Nov-18
P31040	OWNER MOVE IN	2	2	0%	17-Nov-18	18-Nov-18
PHASE 4 - CURRENT 6TH GRADE WING (RENOVATED 8TH)		64	64		17-Nov-18	24-Feb-19
P41010	OWNER MOVE OUT	2	2	0%	17-Nov-18	18-Nov-18
P41020	PMES OVERHEAD / CEILING REPLACEMENT	63	63	0%	19-Nov-18	22-Feb-19
P41030	ARCHITECTURAL FINISHES	63	63	0%	19-Nov-18	22-Feb-19
P41040	OWNER MOVE IN	2	2	0%	23-Feb-19	24-Feb-19
PHASE 5 - 7TH GRADE WING		73	73		23-Feb-19	09-Jun-19
P51010	OWNER MOVE OUT	2	2	0%	23-Feb-19	24-Feb-19
P51020	PMES OVERHEAD / CEILING REPLACEMENT	72	72	0%	25-Feb-19	07-Jun-19
P51030	ARCHITECTURAL FINISHES	72	72	0%	25-Feb-19	07-Jun-19
P51040	OWNER MOVE IN	2	2	0%	08-Jun-19	09-Jun-19



Activity ID	Activity Name	Original Duration	Remaining Duration	% Comp.	Start	Finish
PHASE 6 - ELECTIVES / CAFETERIA / CORRIDOR		56	56		06-Jun-19	26-Aug-19
P61070	LAST DAY OF SCHOOL 2019 (???)	0	0	0%	06-Jun-19*	
P61080	OWNER MOVE OUT	4	4	0%	07-Jun-19	10-Jun-19
P61010	ELECTIVE WING PMES OVERHEAD / CEILING REPLACEMENT	25	25	0%	10-Jun-19	16-Jul-19
P61030	CAFETERIA & CORRIDOR FINISHES	42	42	0%	10-Jun-19	08-Aug-19
P61020	ELECTIVE WING ARCHITECTURAL FINISHES	20	20	0%	16-Jul-19	13-Aug-19
P61040	SPRINKLER CERTIFICATION & ACTIVATION	3	3	0%	16-Jul-19	19-Jul-19
P61050	OWNER MOVE IN	2	2	0%	14-Aug-19	15-Aug-19
P61090	TEACHERS RETURN (???)	0	0	0%	15-Aug-19*	
P61060	FIRST DAY OF SCHOOL 2019 (???)	0	0	0%	26-Aug-19*	



Actual Level of Effort | Actual Work | Critical Remaining Work
Primary Baseline | Remaining Work | Milestone

TASK filter: Remaining Activities.

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February 15, 2018

ADDENDUM #1

Renovations to Myrtle Grove Middle School
901 Piner Road
Wilmington NC 28409

Project ID: 900-9010

This addendum forms a part of the contract documents and modifies the original drawings and project manual dated January 2018. The enclosed additions, deletions, corrections, and changes shall be as binding as if incorporated in the original documents. All General Conditions, Special Conditions, etc. as originally specified shall apply to these items. Acknowledgement of receipt of this addendum will be required as part of the contract agreement.

Item 1 The construction managers, bid date, time and place remain unchanged from the published public notice as follows:

Sealed proposals will be received at the New Hanover County School Board Office, 6410 Carolina Beach Road, Wilmington, NC 28412 by **Monteith Construction Corp.** for the **Renovations to the Myrtle Grove Middle School** project on the following date and time for the following packages: **February 27, 2018 @ 3:00 PM:**

BP-740 Roofing; BP-840 – Glass & Glazing; BP-925 Drywall; BP-930 Ceramic Tile; BP-950 Acoustic Panel Ceiling; BP-960 Flooring; BP-990 Painting; BP-2100 Sprinklers; BP-2200 Plumbing; BP-2300 HVAC; BP-2600 Electrical; BP-3100 Turnkey Sitework

Item 2 **Pre-bid Meeting:** A pre-bid conference was conducted at 3:45 PM on February 14, 2018, at the Myrtle Grove Middle School Media Center. See **Attachment #1** for minutes of the pre-bid meeting with attendance list.

Item 3 **Specifications Section 101400**
Replace signage schedule and graphics from the bid package with **Attachment #2** from this addendum.
The signage contractor shall include in their bid, temporary smooth plastic signage with corrugated core and adhesive backing for relabeling the entire school prior to Phase Two at the beginning of the 2018/2019 school year, and shall include the removal of the existing signs. Permanent signs are to replace the temporary signs at the conclusion of wall finishes on a per Phase basis. Temporary signage is not required at the modular classrooms.

Item 4 **Drawings Sheet CS-08 Phasing Plan**
Temporary dust partition walls shall be sealed to control infiltration and insulated with minimun R-13 fiberglass batts to provide thermal separation during Phasing. The sprinkler system will be energized in its entirety during Phase Six, Summer 2019. Electrical switchgear replacement may shift to the winter break 2018/2019 in lieu of Phase One. Switchgear replacement shall not require more than a seven-day shut down.

Item 5 **Civil Scope Revisions**

See **Attachment #3** for revised civil engineering scope including modification of the sanitary grinder pumps serving the modular classrooms. Civil and sitework related to the demobilization of the modular classrooms will include a full restoration of the site including the restoration of VB volleyball court.

Item 6 **Drawing sheets A-103**

Drama Room 125 shall have the two wood frame floor lifts demolished from the back of the room. The entire floor shall be prepped for new black VCT as identified on the revised interiors sheets.

Item 7 **Access Control Door Hardware Scope Clarification**

Owner Preferred Slage AD 400 Electric Network Lockset/Reader or base bid lockset/reader coupled with Owner Preferred Von Duprin 99 series, 996 series lever trim, 990 series pull trim rim mounted exit device or base bid exit devices shall be furnished at the following door locations. These devices are battery powered, shall have integral electric latch retraction of the rim panic device and shall report wirelessly to a coordinating PIM antenna.

Door #114	New aluminum egress door at elective wing serving modular units – base bid
Door #111	Relocated aluminum door and existing door access hardware in Main Lobby at new toilet rooms – Add Alternate #2
Door #112	New wood staff access door to rear of administrative suite – Add Alternate #3
Door #113	New aluminum door at 8th grade wing – base bid

Base bid shall use base bid hardware unless there is no premium required for owner preferred hardware. Owner preferred hardware bid with premium shall include all doors affected whether in base bid or Add Alternate scope.

One existing owner PIM reporting station shall be relocated to be proximate to new hardware signals. One new PIM antenna will be required as shown on sheet A-100 utilizing Allegion Ant400 or equal model.

Item 8 **Acoustical Panel Ceilings Section 095113**

Paragraph 2.3 Add ceiling tile selection EGAP #2

Basis of Design product shall be: Halcyon 2' x 2" x ¾"

Square edge drop in panels as manufactured by USG or equal by Armstrong or CertainTeed. All panels shall be furnished by one manufacturer. Color shall be white, NRC rating shall be 0.90 minimum, CAC rating shall be 20 minimum.

EGAP #2 will only be used in the Cafeteria Room 201, Band Room 409, and Orchestra Room 402. All other spaces shall receive EGAP #1.

Item 9 **Engineering Documents, Specifications Section 012300**

Alternates – Alternate #7

See attached engineering **Attachment #4** the replacement of the existing kitchen exhaust hood and make-up air system.

Item 10 **Gypsum Ceiling Scope Related to Installation of Kitchen Hood and Sprinkler Mains and Miscellaneous Work Above Gypsum Openings**

Demolition and repair of gypsum ceilings other than that shown on the documents that relates to accessing the work of other trades shall be considered cut and patch and shall be the responsibility of the trade cutting the ceilings. All patch work must satisfy the specification requirements for quality of work for the finish work being cut.

Item 11 **Architectural Drawings, Media Center**

Interior wood bookcases affixed to walls are to be removed in the contract and turned over to the owner with the exception of the bookcases in Room 502. Walls are to be patched and painted as scheduled. The wall between the Media Center and Room 502 shall be infilled with gypsum patch

once the bookcase has been removed from the wall construction. The bookcase will be cut back to the first vertical support inside Room 502. Carpet tile in Room 502 is to be installed up to the base of the existing bookcases that will remain.

Item 12 **Architectural Drawings, Media Center**

Exterior natural grade shall be cut down below the floor line outside of the Media Center windows and mulch restored with positive drainage away from building. Brick fascia and walls shall be powerwashed to remove moss and stains around flat roof area only.

Item 13 **Architectural Drawings Window Elevations, Specifications Section 122113**

Window blinds as specified shall only be furnished at new replacement windows. The existing blinds shall remain and be protected during construction at all other windows with blinds.

Item 14 **Specifications Section 014000 Paragraph 1.5A3**

Floor substrate moisture testing and adhesion testing shall be contractor arranged and contractor paid.

Item 15 **Specifications Section 096519 Paragraph 3.4D1**

Floor polish material: Shall be preservation high gloss finish #1890190 by Brame or approved equal.

Item 16 **Specifications Section 105116**

Paragraph numbering shall adjust to 1.1 to 1.7 for Part 1 and 2.1 to 2.3 for Part 2. Part 3 shall remain execution.
Paragraph 2.2D construction style shall be changed to: Box style with 3/16" powder coated straight grill compartment doors.
Paragraph 2.2J2 shall read hook and latch: Powder coated steel.

Item 17 **Interior Design Drawings**

See **Attachment #5** for schedule of revised interior design drawings.
Painting scope is further clarified as follows:

1. All hollow metal doorframes shall be painted PT.8.
2. Classrooms shall have the instruction wall painted the accent color scheduled. Instruction walls can be identified on the architectural reflected ceiling plans by orientation of ceiling projector. All other classroom walls will be light gray.
3. Corridor walls shall have three colors typical including a dark lower portion horizontal band that will periodically slope and an upper portion. The exact placement and width of the band will be furnished when available.
4. Bulkheads at corridor intersection will receive accent paint color to assist in wayfinding.

Bowman Murray Hemingway Architects, PC

Bruce Bowman, AIA

Attachments:
1. Pre-bid Meeting Minutes
2. Specifications Section 101400 – Signage
3. Civil Engineering Scope
4. PME/FP Engineering Attachments
5. Schedule of revised full sized sheets

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MEETING NOTES & ACTION ITEMS

Myrtle Grove Middle School Pre-Bid Meeting
Meeting #14 – Myrtle Grove Middle School Media Center
February 14, 2018, 3:45 pm – 5:30 pm

Attending:

Brian Stamp – Monteith
Graham Smith - Monteith
Drew Hardin - Monteith
Tommy Norby – Stanford White
Matt Johnson – Stanford White
Irene Sotiriou - NHCS
Leanne Lawrence – NHCS
Bruce Bowman - BMH
Kristin Hawk - BMH

Handouts

- Conference Agenda from Monteith
- Owner Preferred Alternates from New Hanover County Schools

Agenda Items

- Introductions
- Present summary of work, Bidding Procedures, Add Alternates and Brand Alternates
- Answer any questions & site walk-through

A. Upcoming Schedule

- Addendum due 02/15/2018
- Final Addendum changes 02/20/2018 (7 days prior to Bid)
- Bids due 02/27/2018 by 3:00 p.m.

B. Summary of work

- Review Phasing Plan as Addendum
  - In Phase 1, the sprinkler mains will be installed to the beginning of each Phase line. Each section will be tested at the end of the construction phase, and the entire system will be activated at the end of Phase 6.
  - Roofing is on its own schedule and does not run with the Phasing schedule.
  - All OAI units will be placed in Phase 1.
  - PA tower and associated cabling will be relocated in Phase 1.
  - All new windows will have new window blinds.
- New phasing plan will be issued with the upcoming Addendum.

- Phasing schedule provided during bid process will define construction parameters considering owner-related time items.
- Phasing schedule to be issued next week.

- Monteith has created a site logistics plan.

C. Bids

- Bids due February 27th, 2018 at 3:00 p.m.
  - See handout from Monteith for details
  - Bid form and MBE form submitted with bid, and shall be included and filled out as applicable.
- Bids based on scope of work in spec sections, in addition to plans and specs
- Send all questions during bid in writing to Brian Stamp at Monteith. Written answers will go out to all.
- Bid package scope determined by General Contractor.
- Bid package has seven (7) Add Alternates, and 6 Owner-Preferred Brand Alternates.
  - Write in cost of Alternate: 0 or N/A if not applicable to your scope of work. Do not leave blank.
  - Leanne Lawrence read owner-preferred brand alternates and justifications.

D. Questions / Comments

- It was noted that Bid Bond is not required
- It was noted that the protection of gym floor was not in scope of work. Monteith will clarify the scope of floor protection in future addenda.
- Mechanical scope of work included repair to hard ceilings.
- What will be the equipment warranty?
  - NHCS want all warranties to have the same ending date.
    - Tommy Norby with Stanford White will have a narrative in the Addendum.
  - The scope of work should figure in some maintenance during the warranty time that is not covered by the warranty (such as filters, belts)
- The project will be covered by New Hanover County Inspections, and is NHC Zoning.
- What is seismic design category? Not provided in drawings.
  - It is assumed as C.
- Are there as-builts available for the building? Especially structural drawings.
  - Yes, the original construction drawings will be available via Brian Stamp on requested basis only.
  - These are <u>For Reference Only</u> and not part of construction documents.

E. Walk Though

- Walk through of a mechanical loft and electrical room at back of gym.

Renovations to Myrtle Grove Middle School

PREBID SIGN IN SHEET

COMPANY NAME	CONTACT PERSON	PHONE NUMBER	EMAIL
BMH ARCHITECTS	BRUCE BOWMAN	910 762 2621	BOWMAN@BMHARCH.COM
DIV 9	MIKE GARRISON	910-392-0882	MGARRISON@DIV9INC.COM
Pleasant Air	David Crawford	9105470975	david@pleasantair.com
MUTER CONSTRUCTION	JOHN MUTER	919-404-8530	JMUTER@MUTERCONSTRUCTION.COM
ALLIED FIRE	MICHAEL NEWMAN	919 772 9200	MNEWMAN@ALLIEDFIRE.NET
Benton Roofing	Chris Anderson Anthony Waters	828-216-2283 828-438-0552	Chris Anderson@bentonroofing inc.com AnthonyW@bentonroofing.com
T.A. WOODS	ANDREW YOCUM	910-452-7900	AYOCUM@TAWOODS.COM
TA Woods	CHRIS LATHAM	910 452 7900	Clatham@TAWOODS.com
~~Ryan Moore~~			
~~Mark Fergus~~			
Moore's Glass	Ryan Moore	910-231-8500	RYANmoorsglass@outlook.com
Moore's Glass	Mark Fergus	910-616-1929	
P.H ELECTRIC	GREG PHILLIGIN	910-431-3644	GPhilligin@PHELECTRIC.com
Harrelson Mechanical	Buddy Watts	910-799-6969	bwatts@hmc.com

Renovations to Myrtle Grove Middle School

PREBID SIGN IN SHEET

COMPANY NAME	CONTACT PERSON	PHONE NUMBER	EMAIL
Flores/Foley Roof	Shawn Morton	910 599-5972	SMorton@FloresandFoley.com
Hanover Coatings	Jill Edmonds	910-313-0866	Jill@hanovercoatingsinc.com
D.H. Griffin Wrecking	Spencer Clark	336-707-8268	Saclark@dhgriffin.com
D.H. Griffin Wrecking	Kenny Burgess	910-443-5357	Kburgess@dhgriffin.com
D.H. Griffin Wrecking	Jenny Radford	910-443-2616	jradford@dhgriffin.com

Renovations to Myrtle Grove Middle School

PREBID SIGN IN SHEET

COMPANY NAME	CONTACT PERSON	PHONE NUMBER	EMAIL
FIRE TECHNOLOGIES	JAMES MILLS	910 637-0033	JAMES.MILLS@FIRETECHNOLOGIES.COM INC.
Branch Acoustical	Michael Branch	910-740-2831	branchacoustical@bellsouth.net
Stanford White	Tony Norby	919-832-8118	tbnorby@stanfordwhite.com
Stanford White	Matt Johnson	919 832 8118	mjohnson@stanfordwhite.com
BMH	KRISTIN HAWK	910 762 2621	hawk@bmharch.com
NHCS	Irene Sotirion	910-254-4398	irene.sotirion@NHCS.net
NHCS	Lezlie Lawrence	910. 254-4281	lezlie.lawrence@nhcs.net

SECTION 101400 - SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Panel Signs.

1.2 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for signs.

1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
2. Provide message list, typestyles, graphic elements including tactile characters and Braille, and layout for each sign.

a. Prior to the installation, the contractor shall supply in duplicate the signage finish schedule and shop drawings showing the colors, words, number and other information to be included on the signage as it is to be installed.

C. Samples: Submit sample of each type of sign in the specified color and size, and a sample of the message holder grip-strip showing its attachment to the appropriate sign type.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

PART 2 - PRODUCTS

2.1 PANEL SIGNS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. ASI Sign Systems, Inc.
2. Best Sign Systems Inc.
3. Corum Signs, Inc.
4. Signature Signs, Incorporated.
5. 2/90 Sign Systems.

B. Interior Panel Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner, complying with the following requirements:

1. Laminated, Photomechanical etched: Raised graphics with Braille 1/32 inch above surface finished with a professional coat of acrylic polyurethane enamel in the specified color and laminated to a 1/8" opaque acrylic back.
2. Edge Condition: Beveled.
3. Corner Condition: Square with no border.
4. Finished sign thickness: ¼".
5. Mounting: Unframed.

    a. Wall mounted with two-faced tape.

        1) Mounting tape must allow easy removal of sign without damage to wall material or finish.

    b. Exterior Wall mounted: Use exterior rated adhesive recommended by manufacturer.

6. Color: Specified color shall be available within the manufacturers full range.
7. Tactile Characters: Characters and Grade 2 Braille raised 1/32 inch above surface with contrasting colors as specified.

C. Graphic Content and Style:

1. Graphic content and layout shall be as shown on drawings.

    a. Letter Style is to be: Standard Bold Condensed – Upper Case Letters
    b. Room Numbers are to be 1" high
    c. Text is to be 3/4" high
    d. Paper insert text in Type 1 Sign slides to be determined by owner during construction.

        1) Paper shall be matte finish white card stock.
        2) Print shall be applied by a laser printer.

D. Changeable Message Inserts: Fabricate signs to allow insertion of changeable messages. Insert to be polyurethane enamel in the specified color and laminated to a 1/8" opaque acrylic back.

1. Furnish insert material cut-to-size for changeable message insert.

a. Text in Type 1 sign inserts to be determined by owner during construction.
b. Pre-cut and printed inserts to be provided by contractor.

E. Tactile and Braille Sign: Manufacturer's standard process for producing text and symbols complying with ADA-ABA Accessibility Guidelines and with ICC/ANSI A117.1. Text shall be accompanied by Grade 2 Braille. Produce precisely formed characters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.

1. Raised-Copy Thickness: Not less than 1/32 inch.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.

1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of door.

B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.

1. Two-Face Tape: Mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered rough surfaces or exterior conditions.

a. Installation accessories shall be furnished by the signage manufacturer. Do not use installation materials from any other source.

1) Mounting tape must allow easy removal of sign without damage to wall material or finish.

2. Exterior Conditions: Use adhesive approved by manufacturer for exterior conditions.

2. Signs Mounted on Glass: Provide matching opaque plate on opposite side of glass to conceal mounting materials.

a. The color of the blank plate is to match the sign color. The size of the blank plate is to match the size of the sign.

3. Graphic Inserts: The contractor shall supply and install all the graphic inserts (pre-cut and printed) for the Type 1 signs. The inserts are to be on paper.

C. Signage Schedule:

Existing Room Number	New Room Number	Permanent Text	Insert Text	Type	Qty
403	100	RECEPTION		B	1
N/A	101A			A	1
412	101			A	2
413	102		Treasurer	C	1
414	103		Multi-Tiered System Of Support	C	2
422	104		Nurse	C	1
421	104A	EXAM ROOM		B	1
419	104B	EXAM ROOM		B	1
420	104C	TOILET		B	2
418	105		Principal	C	1
410	106	FACULTY LOUNGE		B	2
409	106A			A	1
408	107	WOMEN		E	1
407	108	MEN		E	1
406	109	CONFERENCE ROOM		B	2
405	110		Data Manager	C	1
516	201	CAFETERIA		B	1
505	202		Kitchen Manager	C	1
504	C203			D	1
504	E203A			D	1
502	S204			D	1
501	M205			D	1
507	206	LOCKER ROOM		B	1
507	206A	TOILET		B	1
509	207			A	3
511	208			A	1
512	209			A	2
513	209A			A	1
320	S210			D	3
318	S210A	TOILET		B	1
319	E210B			D	1
317	211	STUDENT STORE		B	1
310	301	GYMNASIUM		B	4
321	S302			D	2
N/A	E302A			D	1
N/A	S302B			D	2

306	303			A	1
308	304	GIRLS		E	1
322	305	OFFICE		B	1
305	305A			A	1
323	306	OFFICE		B	1
304	306A			A	1
302	307	BOYS		E	1
303	308			A	1
N/A	309	BOYS		E	1
313	310	BOYS		E	1
314	311	GIRLS		E	1
N/A	312	GIRLS		E	1
307	E033			D	1
N/A	SR032			D	1
N/A	M001			D	1
309	M031			D	1
301	S030			D	1
312	401			A	1
311	T401A			D	1
129	402			A	1
125	403			A	2
124	S403A			D	1
123	S403B			D	1
113	M404			D	1
114	404-ML			D	1
115	E405			D	1
122	406	TESTING		B	1
116	C407			D	1
118	408			A	1
121	408A			A	1
120	S408B			D	1
119	408C	KILN		B	1
101	409	BAND		B	1
104	409A			A	1
103	S409B			D	1
102	S409C			D	1
105	410			A	1
108	S410A			D	1
107	S410B			D	1
106	S410C			D	1
111	411			A	1
109	411A			A	2
110	S411B			D	1
107	S040			D	1

127	412			A	1
128	413			A	1
401	501	MEDIA CENTER		B	4
N/A	502			A	1
430	503			A	1
431	S503A			D	1
428	504			A	1
423	M505			D	1
424	505-ML			D	1
425	E506			D	1
427	507			A	2
432	508			A	1
433	509			A	1
434	E510			D	1
435	511	MEN		B	1
449	512	WOMEN		B	1
450	S513			D	1
451	514			A	1
452	515			A	1
223	601			A	1
220	601A			A	1
221	601B	TOILET		B	1
219	602			A	1
215	603			A	2
214	604			A	2
201	605			A	2
212	E606			D	1
211	C607			D	1
209	M608			D	1
220	608-ML			D	1
202	609			A	2
203	610		Assistant Principal	C	1
204	611			A	2
206	612			A	2
207	613		Guidance Counselor	C	1
217	614			A	2
216	615			A	2
218	616	BOYS		E	1
224	617	GIRLS		E	1
437	M701			D	1
438	701-ML			D	1
439	702			A	2
440	703			A	2
441	704			A	1

N/A	704A			A	1
464	705	GIRLS		E	1
453	706			A	2
454	707			A	2
455	708			A	1
456	709		Social Worker	C	1
459	710		Assistant Principal	C	1
460	711			A	1
461	712			A	2
465	M713			D	1
466	713-ML			D	1
462	714			A	2
463	715	BOYS		E	1
443	T716			D	1
444	717			A	2
445	718			A	2
446	C719			D	1
601	801			A	1
603	802			A	1
606	803			A	2
607	804			A	2
617	805			A	2
615	E806			D	1
614	C807			D	1
612	M808			D	1
613	808-ML			D	1
618	809			A	2
619	810		Guidance Counselor	C	1
622	811			A	2
621	812			A	2
610	813		Psychologist	C	1
609	814			A	2
608	815			A	2
602	816	BOYS		E	1
604	817	GIRLS		E	1

ANNEX – Moble Classroom Signage

Existing Room Number	New Room Number	Permanent Text	Insert Text	Type	Qty
N/A	A01			A	1
N/A	A02	GIRLS		E	1
N/A	A03	FACULTY		E	1
N/A	A-S04			D	1
N/A	A05			A	1
N/A	A06			A	1
N/A	A07			A	1
N/A	A08			A	1
N/A	A-S09			D	1
N/A	A-S10			D	1
N/A	A-C11			D	1
N/A	A12	BOYS		E	1
N/A	A13			A	1
N/A	A-S14			D	1
N/A	A-C15			D	1
N/A	A16	BOYS		E	1
N/A	A17			A	1
N/A	AI8			A	1
N/A	A19			A	1
N/A	A20			A	1
N/A	A21	GIRLS		E	1
N/A	A22	FACULTY		E	1
N/A	A-S23			D	1
N/A	A-S24			D	1
N/A	A-S25			D	1

D. Signage Schedule Notes:

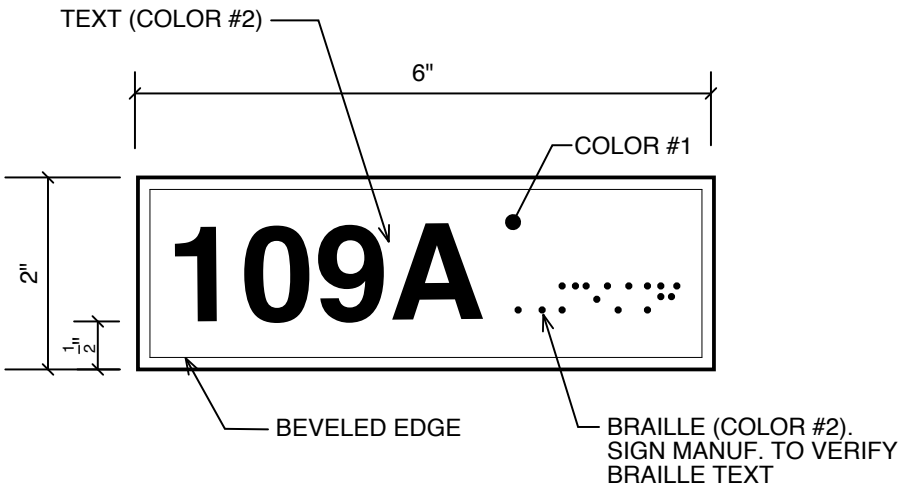
1. Allow for a minimum of 12 signs installed on glass.
2. All signage on the project that falls under the jurisdiction of the American with Disabilities Act is to be provided as required to comply with all applicable requirements of ADA. It is the responsibility of the contractor and the signage manufacturer to ensure that all signage complies with ADA.
3. Text in Type C Sign slides to be determined by owner during construction.

PART 4 - GUARANTEE

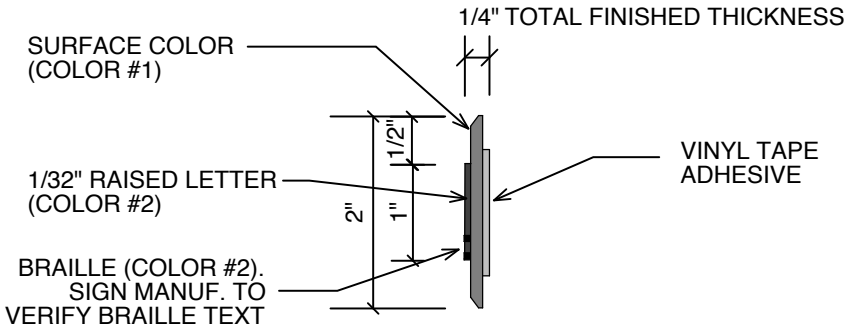
4.1 Any signs that do no remain securely bonded to the substrate for a period of 1 year after acceptance of the project shall be removed and properly reinstalled by the contractor at no additional cost to the owner.

A. Signage Drawings: Attached.

END OF SECTION 101400



GENERAL SIGNAGE
(TYPE A)



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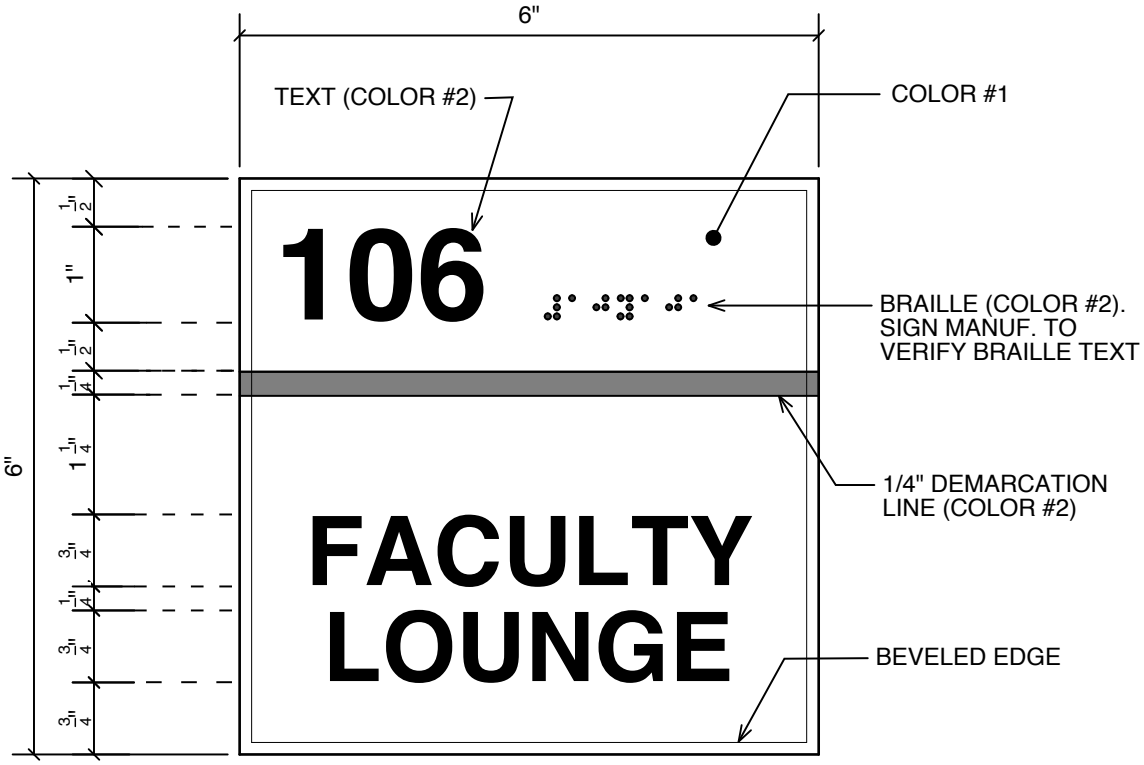

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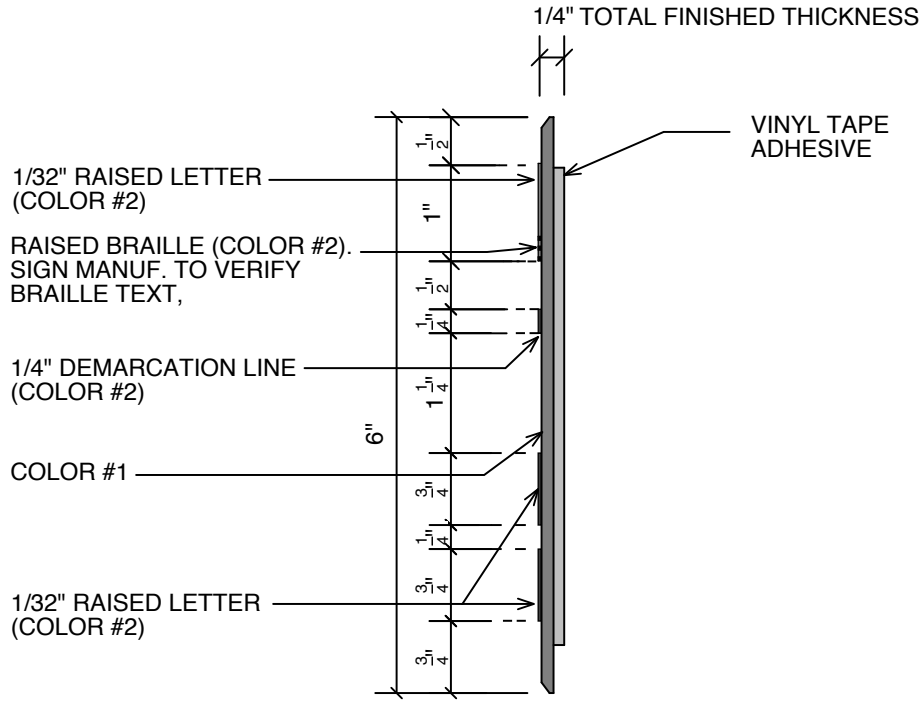

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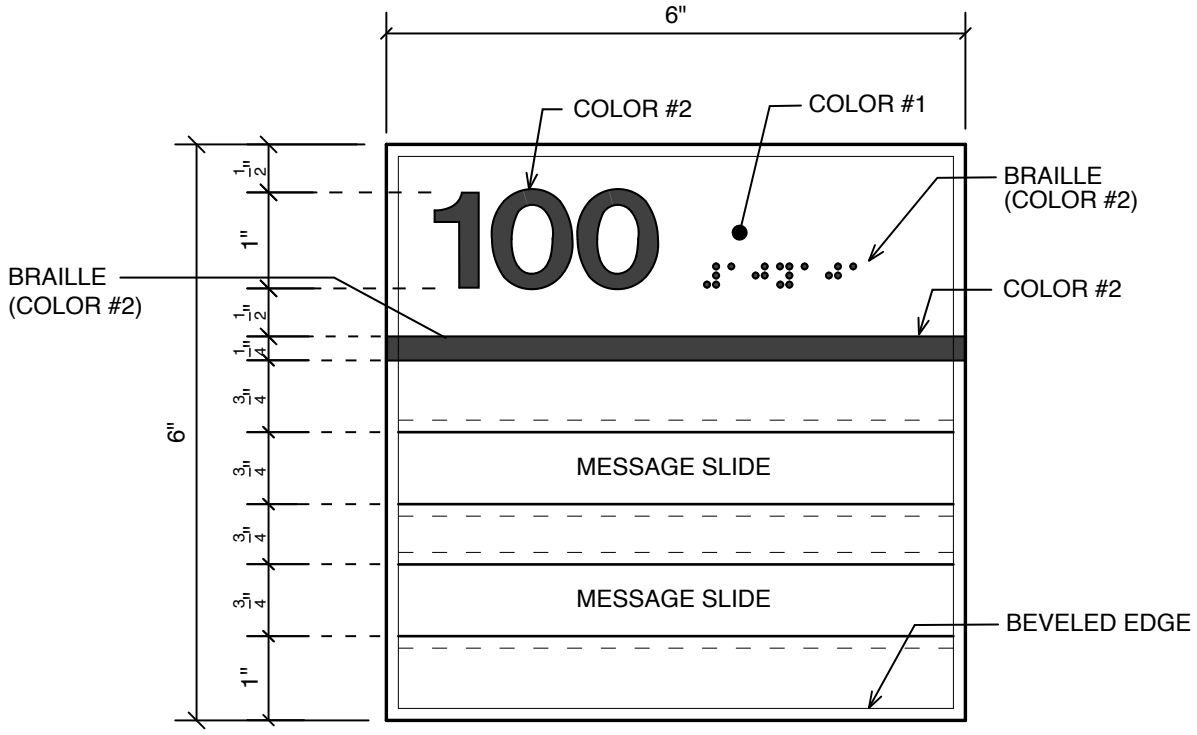

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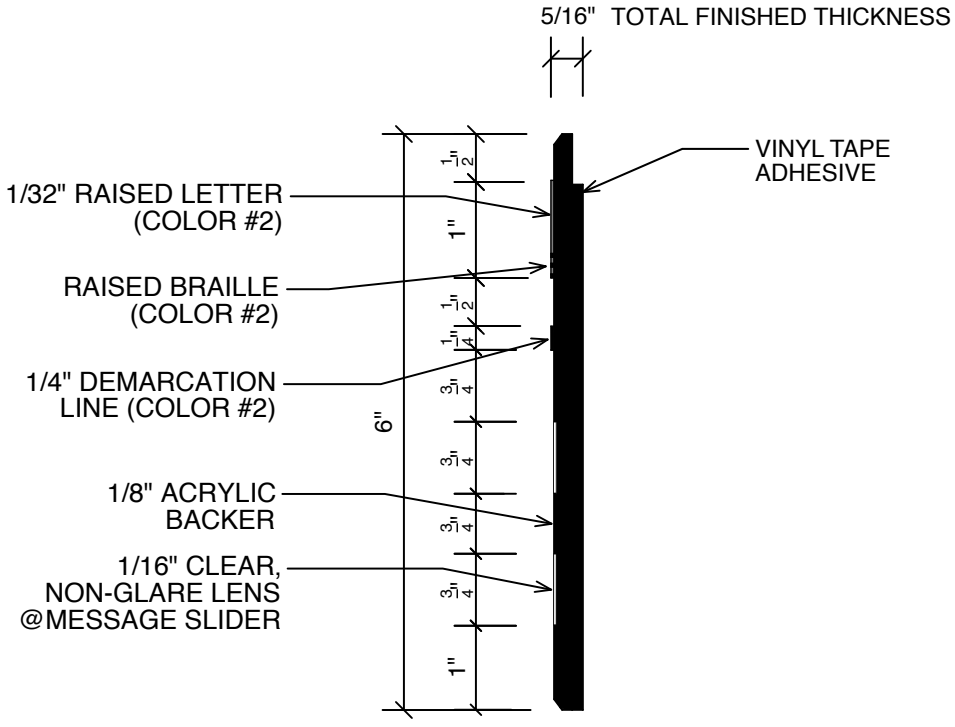

CHANGEABLE COPY SIGN SECTION
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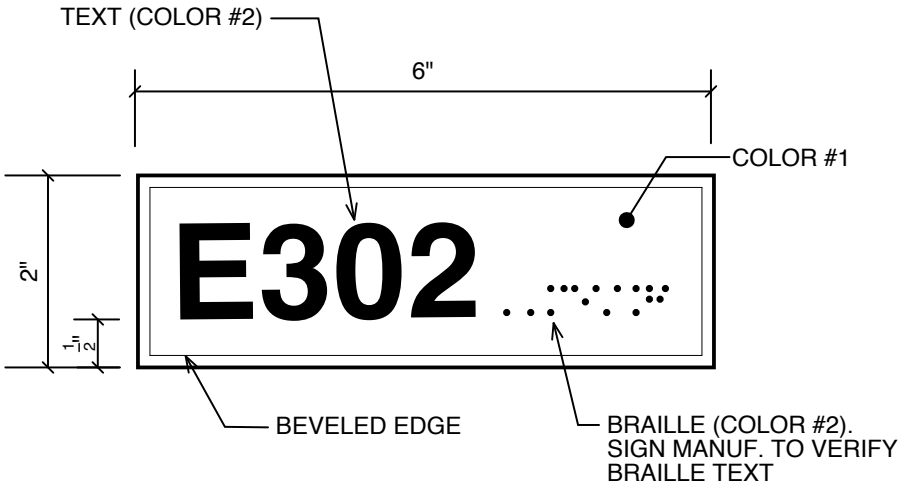
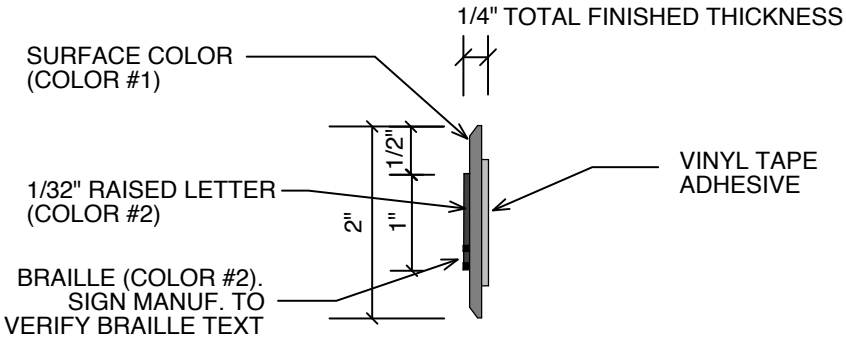


GENERAL SIGNAGE
(TYPE D)



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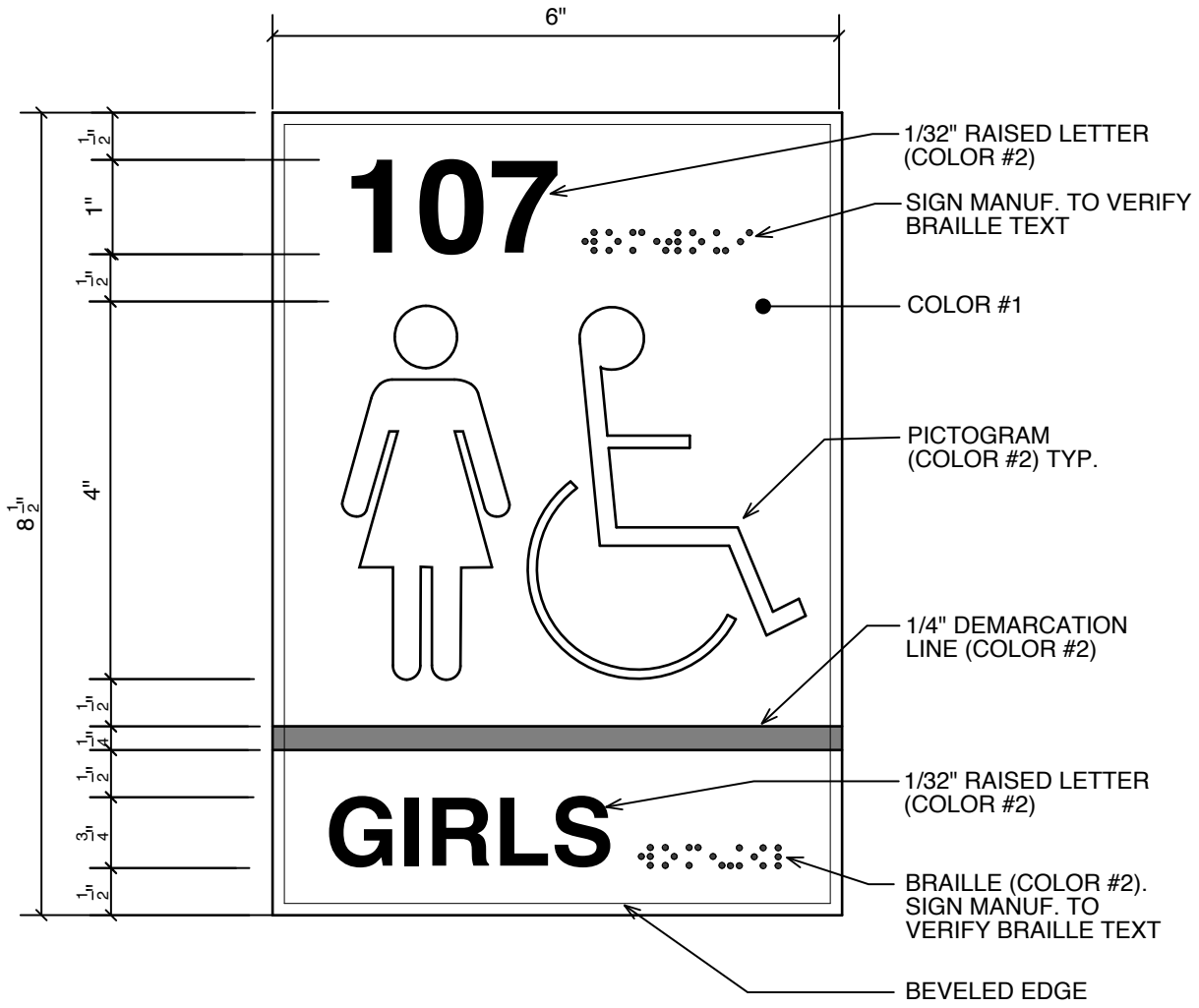
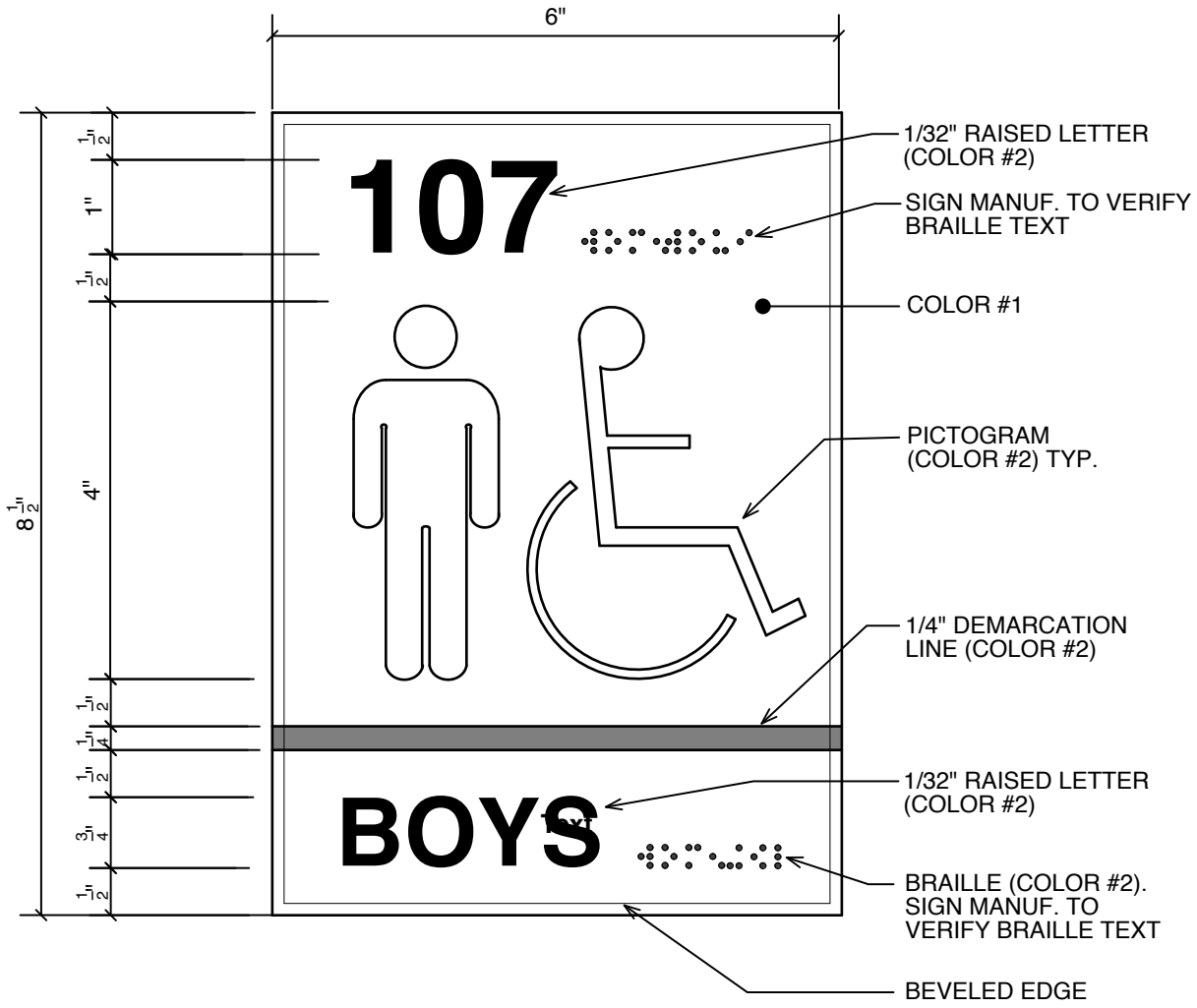


RESTROOM SIGN
(TYPE E)



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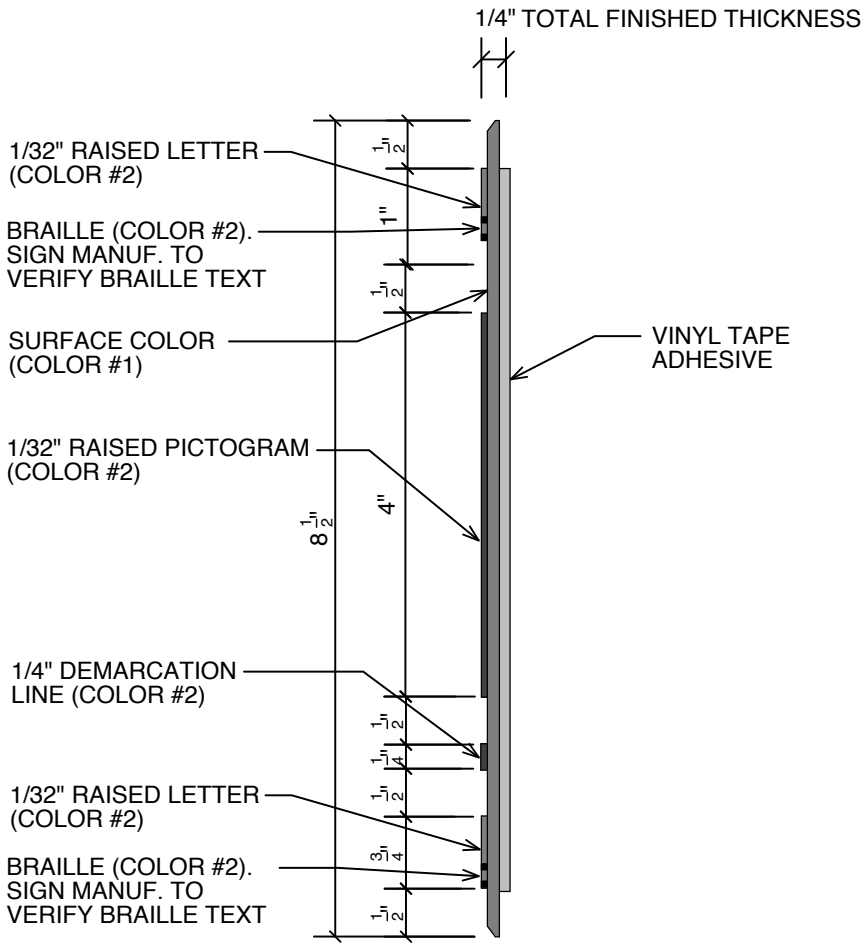
(TYPE E)



RESTROOM SIGN SECTION
(TYPE E)

Renovations to Myrtle Grove MS

CLH Project No: 17-114

Wilmington, North Carolina

CLH design, PA
400 Regency Forest Drive, Suite 120
Cary, NC 27518

Addendum #1 February 15, 2018

Where any article, division or subparagraph of the original contract documents or other addenda is supplemented herein, the provisions of the original documents shall remain in effect. All the supplemental provisions shall be considered as added thereto. Where any such article, division or subparagraphs are amended, voided or superseded thereby, the provisions of such article, division or subparagraph not so specifically amended, voided or superseded shall remain in effect.

The attention of the Contractor is called to the following clarifications, additions to and changes in the plans and specifications dated **January 22, 2018** on the above job. It will be the responsibility of each Contractor to call such clarifications, additions to and changes in the plans and specifications to the attention of subcontractors concerned. The Engineer in no way assumes any responsibility for notifying any subcontractor, material dealers or others not having received the original contract documents.

ITEM 1. GENERAL CONTRACT

Refer to Plan Sheets C-1.01 Existing Conditions & Demolition Plan

REPLACE sheet C-1.01 with revised drawings C-1.01 Addendum No. 1 dated February 15, 2018, attached hereto.

Revisions:

1. Revised Keynote 'G'.

ITEM 2. GENERAL CONTRACT

Refer to Plan Sheets C2-01: Staking & Landscaping Plan

REPLACE sheet C2-01 with revised drawings C2-01 Addendum No. 1 dated February 15, 2018, attached hereto.

Revisions:

1. Added block note referencing new volleyball court.

ITEM 3. GENERAL CONTRACT

Refer to Plan Sheets C4-01: Site Utility Plan

REPLACE sheet C4-01 with revised drawings C4-01 Addendum No. 1 dated February 15, 2018, attached hereto.

Revisions:

1. Revised sanitary sewer layout and grinder pumps.
2. Revised domestic water layout.

ITEM 4. GENERAL CONTRACT
Refer to Plan Sheets C5-02: Site Details

REPLACE sheet C5-02 with revised drawings C5-02 Addendum No. 1 dated February 15, 2018, attached hereto.

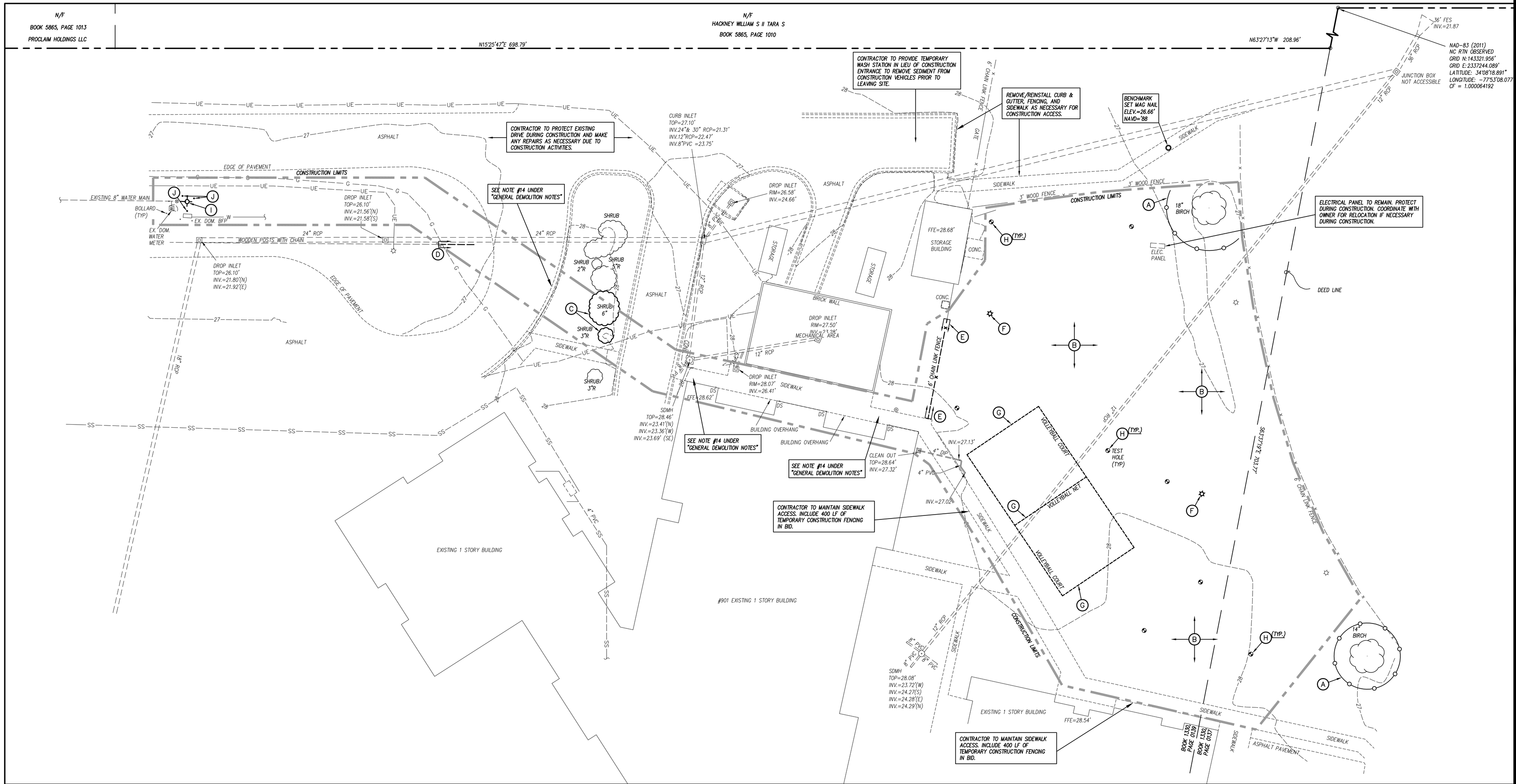
Revisions:
1. Added sand volleyball detail.

ITEM 5. GENERAL CONTRACT
Refer to Plan Sheets C5-04: Site Details

REPLACE sheet C5-04 with revised drawings C5-04 Addendum No. 1 dated February 15, 2018, attached hereto.

Revisions:
1. Revised Pump Station Detail.

END OF SITE/CIVIL ITEMS FOR THIS ADDENDUM



LEGEND

STRUCTURES/UTILITIES TO BE REMOVED		STRUCTURES/UTILITIES TO REMAIN	
OVERHEAD ELECTRICAL	E	OVERHEAD ELECTRICAL	E
UNDERGROUND ELECTRICAL	UE	UNDERGROUND ELECTRICAL	UE
FIRE PROTECTION	FP	FIRE PROTECTION	FP
GAS	G	GAS	G
SANITARY SEWER	SS	SANITARY SEWER	SS
TELEPHONE	T	TELEPHONE	T
UNDERGROUND TELEPHONE	UT	UNDERGROUND TELEPHONE	UT
FIBER OPTIC	FO	FIBER OPTIC	FO
WATER	W	WATER	W
FORCE MAIN	FM	FORCE MAIN	FM
STORM DRAIN		STORM DRAIN	
INDIVIDUAL TREE TO BE REMOVED.		INDIVIDUAL TREE TO REMAIN.	
LIGHT POLE	LP	LIGHT POLE	LP
UTILITY POLE	PP	UTILITY POLE	PP
MANHOLE	MH	MANHOLE	MH
CLEAN OUT	CO	CLEAN OUT	CO
DROP INLET,CATCH BASIN	DI, CB	DROP INLET,CATCH BASIN	DI, CB
FIRE HYDRANT	FH	FIRE HYDRANT	FH
WATER VALVE	WV	WATER VALVE	WV

KEY NOTES

- (A) TEMPORARY TREE PROTECTION FENCE, SEE DETAIL SHEET C5-01.
- (B) CLEAR AND GRUB, STRIP TOPSOIL WITHIN CONSTRUCTION LIMITS.
- (C) SHRUBS TO BE REMOVED.
- (D) REMOVE WOODEN POSTS AND CHAIN. SEE STAKING PLAN.
- (E) REMOVE AND RELOCATE FENCE. SEE STAKING PLAN.
- (F) REMOVE AND RELOCATE LIGHT POLE. SEE UTILITY PLAN. COORDINATE SCHEDULE AND WORK WITH LOCAL UTILITY COMPANY AND ARCHITECT/OWNER.
- (G) REMOVE VOLLEYBALL COURT. RETURN NETTING AND POSTS TO OWNER DURING CONSTRUCTION. REPAIR/RE-INSTALL ENTIRE VOLLEYBALL COURT UPON COMPLETION OF PROJECT WHEN MODULARS ARE REMOVED. SEE STAKING PLAN FOR ADD'L INFO.
- (H) ~~COORDINATE WITH GEOTECH TO DETERMINE PROCEDURE TO CAP/FILL/ABANDON TEST HOLES.~~ 1
- (I) REMOVE AND RELOCATE FIRE HYDRANT. SEE UTILITY PLAN.
- (J) REMOVE EXISTING BOLLARDS. SEE STAKING PLAN.

CONSTR./CLEARING LIMITS — PAVEMENT, S/W, C&G TO BE REMOVED.

TREE PROTECTION FENCE

GENERAL DEMOLITION NOTES

1. ALL EXISTING STRUCTURES AND UTILITIES SHALL BE REMOVED AS NEEDED TO ALLOW NEW CONSTRUCTION. IN GENERAL, FEATURES INDICATED IN BOLD ON THIS PLAN SHALL BE REMOVED.
2. ALL PAVEMENT OR CONCRETE TO BE REMOVED SHALL BE SAW CUT TO PROVIDE A STRAIGHT AND UNIFORM JOINT FOR NEW PAVEMENT, SIDEWALK, OR CURB AND GUTTER, ETC. ANY EXISTING PAVEMENT, SIDEWALK, CURB AND GUTTER, ETC. THAT MUST BE REMOVED TO ALLOW NEW CONSTRUCTION SHALL BE REMOVED AND REPAIRED PER THE SPECIFICATIONS AND DETAILS OR TO MATCH PRE-CONSTRUCTION CONDITIONS (WHETHER OR NOT SHOWN ON THE DRAWINGS TO BE REMOVED).
3. ALL UTILITIES OR STRUCTURES NOT INDICATED FOR REMOVAL OR MODIFICATION ARE TO REMAIN AND BE PROTECTED FROM DAMAGE.
4. ALL WASTE MATERIAL GENERATED FROM DEMOLITION ACTIVITIES SHALL BE DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL APPLICABLE RULES AND REGULATIONS.
5. EXISTING SITE BOUNDARY AND TOPOGRAPHIC SURVEY INFORMATION WAS TAKEN FROM SURVEY BY BATEMAN CIVIL SURVEY COMPANY, PERFORMED DECEMBER 12, 2017. THESE PLANS DO NOT ASSUME ANY LIABILITY FOR ANY EXISTING INFORMATION BOTH SHOWN AND NOT SHOWN ON THE SURVEY AND ANY CHANGES TO THE EXISTING CONDITIONS THAT MAY HAVE OCCURRED AFTER THE SURVEY WAS ISSUED. CONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION.
6. INSTALL TREE PROTECTION FENCING PRIOR TO BEGINNING CLEARING OPERATIONS. CLEAR AND GRUB ALL AREAS AS SHOWN AND REQUIRED TO PERMIT INSTALLATION OF NEW CONSTRUCTION PER SPECIFICATIONS AND DRAWINGS. EXISTING TREES, SHRUBS OR OTHER LANDSCAPE MATERIAL WHICH WILL CONFLICT WITH NEW CONSTRUCTION SHALL BE REMOVED (WHETHER OR NOT SHOWN ON THE DRAWINGS). ALL CONTRACTORS SHALL VISIT THE SITE AND OBSERVE EXISTING CONDITIONS PRIOR TO BIDDING.
7. TO MINIMIZE DAMAGE TO EXISTING TREES NEAR THE INTERIOR EDGE OF CLEARING LIMITS, THE CONTRACTOR SHALL CUT 2-FT DEEP TRENCHES ALONG THE LIMITS OF DISTURBANCE, SO AS TO CUT, RATHER THAN TEAR ROOTS.
8. PRIOR TO DEMOLISHING EXISTING STRUCTURES, MAKE AN INSPECTION FOR ANY HAZARDOUS MATERIALS. CONTACT ARCHITECT IMMEDIATELY IF ANY HAZARDOUS MATERIALS ARE DISCOVERED. CAP AND REMOVE UTILITY SERVICES, FUEL TANKS AND SEPTIC SYSTEMS. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
9. VERIFY ALL ILLUSTRATED UNDERGROUND ELEMENTS/UTILITIES. EXERCISE REASONABLE EFFORTS TO PROTECT ANY UNKNOWN UNDERGROUND ELEMENTS/UTILITIES. NOTIFY THE ARCHITECT IMMEDIATELY IF UNKNOWN ELEMENTS/UTILITIES ARE DISCOVERED THAT WOULD NECESSITATE MODIFICATION TO THE PROPOSED DESIGN.
10. CONTACT UTILITY LOCATING SERVICE AT LEAST 48-HRS PRIOR TO EXCAVATION.
11. PROTECT ALL ADJACENT PROPERTIES, THE GENERAL PUBLIC AND ALL OF THE OWNER'S FACILITIES. SHOULD DAMAGES OCCUR, REPAIR IMMEDIATELY AS DIRECTED BY THE ARCHITECT.
12. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL NEW HANOVER COUNTY AND CFPUA STANDARDS AND SPECIFICATIONS.
13. ALL EXISTING VAULTS, MANHOLES, STORM DRAIN STRUCTURES, CLEANOUTS, ETC. SHALL BE ADJUSTED AS NEEDED TO MATCH FINISH GRADE.
14. DEMOLITION AND PATCHING OF PAVEMENT, SIDEWALK, CURB AND GUTTER AND OTHER EXISTING PAVED SURFACES IN ADDITION TO THAT INDICATED ON THIS PLAN SHALL BE PERFORMED AS REQUIRED TO CONSTRUCT AND INSTALL NEW UTILITIES. ALL SUCH DEMOLITION AND PATCHING SHALL BE INCLUDED IN THE BASE BID SCOPE OF WORK. SEE SHEET C5-03 FOR PAVEMENT REPAIR DETAILS.
15. THIS SITE IS LOCATED WITHIN ZONE "X" AS DETERMINED BY FEMA AND DEPICTED ON F.I.R.M. MAP NUMBER 3720313400J, DATED 4/3/2006.
16. NO WORK SHALL BE PERFORMED ON RIGHT-OF-WAYS OR ADJACENT PROPERTIES UNTIL THE OWNER NOTIFIES CONTRACTOR IN WRITING OF PROCUREMENT OF APPROPRIATE PERMITS, EASEMENTS, AGREEMENTS, OR RIGHTS-OF-WAY.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

BOWMAN MURRAY HEMINGWAY ARCHITECTS
514 Market Street
Wilmington, NC 28401
Tel - (910) 762-2621
Fax - (910) 762-8506

CLH DESIGN, PA
400 Regency Forest Dr.
Suite 120
Cary, NC 27518
Phone: 919.319.6716
Fax: 919.319.7516
LA: C-106 PE: C-1505

NORTH CAROLINA LANDSCAPE ARCHITECT 1861 GLENN MEDLIN 1/22/18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

EXISTING CONDITIONS AND DEMOLITION PLAN

JOB NUMBER 17-114

DRAWN BY JGM/HBR

CHECKED BY JGM

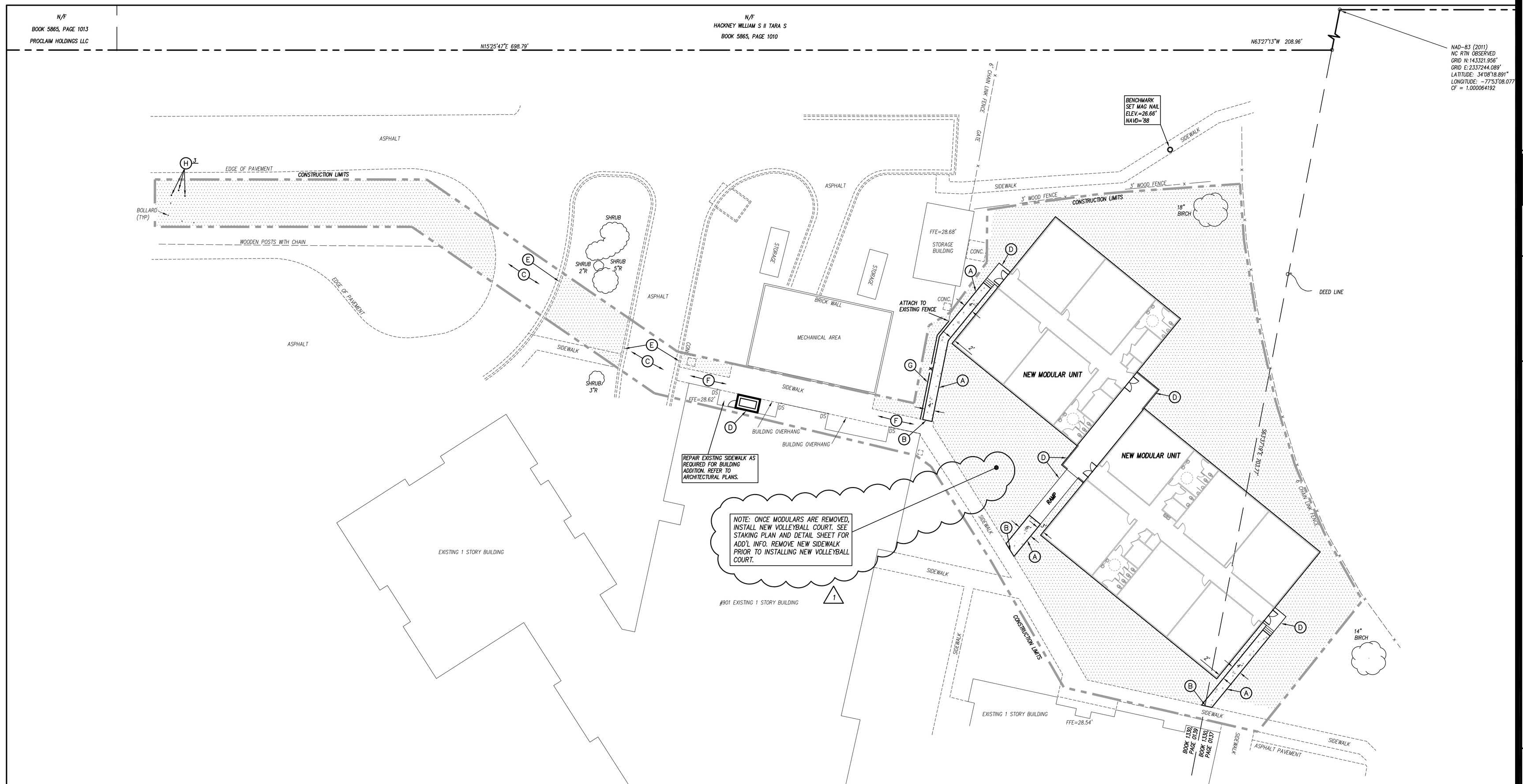
DATE 1/22/2018

REVISIONS

1 ADDENDUM #1 2-15-18

SHEET NUMBER

C1-01



SITE DATA

PROJECT:	RENOVATIONS TO MYRTLE GROVE MIDDLE SCHOOL
OWNER:	NEW HANOVER COUNTY BOARD OF EDUCATION
OWNER CONTACT:	NEW HANOVER COUNTY BOARD OF EDUCATION 6410 CAROLINA BEACH ROAD WILMINGTON, NC 28412
CIVIL CONSULTANT:	CLH DESIGN, PA
CIVIL CONSULTANT CONTACT:	GLENN MEDLIN REGENCY PARK 400 REGENCY FOREST DR., STE. 120 CARY, NC 27518 PHONE: 919-319-6716 FAX: 919-319-7516
PROJECT ADDRESS:	901 PINER ROAD WILMINGTON, NC 28409
PIN:	R07600-002-021-000
ZONING:	R-15: RESIDENTIAL
PROPOSED USE:	INSTITUTIONAL/EDUCATIONAL
TRACT AREA:	25.96 ACRES
FLOODPLAIN:	SITE IS IN ZONE 'X' (REF: FIRM 3720313000J, APRIL 3, 2006)

GENERAL NOTES–LANDSCAPING

1. LOCATE ALL EXISTING UTILITIES PRIOR TO INSTALLATION OF PLANT MATERIAL. NOTIFY OWNER OF ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THOSE SHOWN ON THE PLAN.
2. VERIFICATION OF TOTAL QUANTITIES AS SHOWN ON THE PLANT LIST SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE TOTAL QUANTITIES SHALL BE AS SHOWN ON THE PLAN.
3. ALL PLANT MATERIAL SHALL CONFORM WITH THE STANDARDS SET FORTH BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND THE WRITTEN SPECIFICATIONS.
4. ALL PLANT MATERIAL (SHRUBS/TREES) SHALL BE A MINIMUM DISTANCE OF 4 1/2 FEET FROM BACK OF CURB, EXCEPT ALONG ANY NEW WALLS ADJACENT TO PARKING WHERE CURB STOPS WILL BE USED. ALL PLANTING BEDS TO BE MULCHED WITH A MINIMUM OF 3" OF MULCH
5. ALL PLANT GROUPINGS SHALL BE MULCHED AS ONE BED. 3" OF TRIPLE SHREDDED HARDWOOD MULCH SHALL BE USED AROUND ALL PLANTINGS.
6. APPLY PRE-EMERGENT HERBICIDE TO ALL NEW PLANTING BEDS AT MANUFACTURER'S RECOMMENDED RATE PRIOR TO INSTALLATION OF MULCH.
7. ESTABLISH POSITIVE DRAINAGE IN ALL PLANTING BEDS AND AWAY FROM BUILDINGS.
8. DO NOT INSTALL PLANT MATERIAL IN IMPERVIOUS SOILS, (i.e. HOLES WHICH, WHEN FILLED WITH WATER, DO NOT COMPLETELY DRAIN WITHIN TWO HOURS.) SEE SPECIFICATIONS FOR TOPSOIL REQUIREMENTS.
9. LAWN AREAS SHALL BE SEEDED WITH RIVIERA OR SUNSTAR BERMUDA GRASS 95% COVERAGE (BASED ON A PER SQUARE YARD SAMPLE) SHALL BE ATTAINED PRIOR TO FINAL INSPECTION. SEE DETAIL SHEET C5-02 FOR RATES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
10. CONTACT THE LANDSCAPE ARCHITECT FOR INSPECTION 48 HOURS IN ADVANCE OF THE SCHEDULED SITE VISIT AND AT THE FOLLOWING INTERVALS:
    - 10.1. REVIEW OF GRADING PRIOR TO PLANT AND LAWN INSTALLATION
    - 10.2. REVIEW OF PLANT MATERIAL PRIOR TO INSTALLATION.
    - 10.3. ONE SUBSTANTIAL COMPLETION MEETING FOR PLANT INSTALLATION.
    - 10.4. ONE FINAL INSPECTION FOR ALL SEEDING/PLANTING OPERATIONS.
11. THE TREE PROTECTION FENCE SHALL BE MAINTAINED ON THE SITE UNTIL ALL SITE WORK IS COMPLETED AND THE FINAL SITE INSPECTION PRIOR TO THE CERTIFICATE OF OCCUPANCY (CO) IS SCHEDULED. THE FENCING SHALL BE REMOVED PRIOR TO FINAL SITE INSPECTION FOR THE CO.
12. LANDSCAPE SUB-CONTRACTOR (UNDER GC CONTRACT) SHALL BE RESPONSIBLE FOR WATERING ALL PLANTS AND LAWN AREAS AT HIS COST FROM HIS OWN WATER SOURCE INCLUDING DURING PERIODS OF DROUGHT UNTIL THE PLANTS AND LAWN ARE DECLARED SUBSTANTIALLY COMPLETE. PLANT MATERIALS OR AREAS OF GRASS WHICH PERISH SHALL BE RE-ESTABLISHED BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
13. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ALL EQUIPMENT & SUBCONTRACTORS AWAY FROM SEEDED AREAS. IF DAMAGE OCCURS, THROUGH NO FAULT OF THE OWNER, AREAS SHALL BE REGRADED AND RESEEDED IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL WATER AND MAINTAIN THOSE AREAS UNTIL THEY ARE AT 95% COVERAGE AT SUBSTANTIAL COMPLETION.
14. SUBSTITUTIONS OF PLANT MATERIAL SHALL ONLY BE ACCEPTED 60 DAYS PRIOR TO COMMENCEMENT OF PLANTING OPERATIONS. SUBSTITUTION REQUESTS MUST BE IN WRITING AND WILL ONLY BE ACCEPTED FOR LACK OF AVAILABILITY REASONS WHICH CAN BE SUBSTANTIATED OR FOR SUPERIOR STOCK SUBSTITUTIONS.
15. LANDSCAPE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT TO REVIEW GRADING ONE WEEK PRIOR TO SEEDING, IF THE LANDSCAPE CONTRACTOR AND LANDSCAPE ARCHITECT FIND GRADING UNACCEPTABLE FOR FINAL SEEDING, LANDSCAPE CONTRACTOR SHALL BRING IT TO THE ATTENTION OF THE GENERAL CONTRACTOR. LANDSCAPE CONTRACTOR SHALL NOT PROCEED WITHOUT APPROVAL BY LANDSCAPE ARCHITECT.
16. IF CONFLICTS OCCUR BETWEEN WRITTEN SPECIFICATIONS AND THE DRAWINGS, THE WRITTEN SPECIFICATIONS SHALL PREVAIL.
17. ALL 3:1 SLOPES SHALL BE STABILIZED WITH 'NO-MOW' NATURALIZED SEED MIX AND EROSION CONTROL MATTING.
18. ALL FOUNDATION SHRUBS AND TREES TO BE PLANTED A MINIMUM OF 5-FT FROM BUILDING WALL. NOTIFY LANDSCAPE ARCHITECT FOR ANY DISCREPANCIES.

GENERAL STAKING NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL NEW HANOVER COUNTY STANDARDS AND SPECIFICATIONS.
2. ALL DIMENSIONS SHOWN ARE TO FACE OF CURB AND FACE OF BUILDING WALL, UNLESS OTHERWISE SHOWN.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS SHOWN AND CONTACT THE ARCHITECT IF ANY DISCREPANCIES OCCUR.
4. CONSTRUCTION STAKE OUT IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL PAVEMENT MARKINGS AND SIGNAGE SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
6. ALL FACE OF RADIUS' ARE 4 FT UNLESS OTHERWISE SHOWN.
7. ANY AND ALL LANDSCAPING, EXISTING TREES OR SHRUBS TO REMAIN WHICH ARE DAMAGED DURING DEMOLITION OR CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR UTILIZING A LICENSED LANDSCAPE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
8. CONTRACTOR SHALL SUBMIT SCALED PLANS OF ALL SCORING/JOINTS FOR APPROVAL BY ARCHITECT 30 DAYS MINIMUM PRIOR TO INSTALLATION.
9. THE CROSS-SLOPE ON ALL SIDEWALKS SHALL BE A MAXIMUM OF 2.0%
10. NO WORK SHALL BE PERFORMED ON RIGHT-OF-WAYS OR ADJACENT PROPERTIES UNTIL THE OWNER NOTIFIES CONTRACTOR IN WRITING OF PROCUREMENT OF APPROPRIATE PERMITS, EASEMENTS, AGREEMENTS, OR RIGHTS-OF-WAY.
11. MOBILE UNITS SHALL BE PLACED 15' MINIMUM AWAY FROM FACE OF SCHOOL BUILDING.
12. SITE SHALL BE RESTORED WITHIN 30 DAYS OF PROJECT COMPLETION.

STAKING KEY NOTES

- (A) CONCRETE SIDEWALK, SEE DETAIL SHEET C5-02.
- (B) SIDEWALK FLUSH WITH EXISTING PAVEMENT.
- (C) ASPHALT PATCH, REFER TO UTILITY SHEET FOR ADDITIONAL INFORMATION AND DETAIL SHEET C5-03.
- (D) SEE ARCHITECTURAL PLANS FOR MODULARS, RAMP, STEPS, DECKING, ETC.
- (E) 24" CURB AND GUTTER AS REQUIRED FOR UTILITY WORK. REFER TO UTILITY PLANS FOR MORE INFORMATION. SEE DETAIL SHEET C5-02.
- (F) CONCRETE SIDEWALK AS REQUIRED FOR UTILITY WORK. REFER TO UTILITY PLANS FOR MORE INFORMATION. SEE DETAIL SHEET C5-02.
- (G) RELOCATED CHAINLINK FENCE. INSTALL NEW POSTS AND UTILIZE EXISTING FABRIC. INCLUDE 15-LF OF ADDITIONAL FABRIC (NEW FABRIC TO MATCH EXISTING MATERIAL AND HEIGHT). SEE DETAIL SHEET C5-02.
- (H) NEW BOLLARD, SEE DETAIL SHEET C5-02.

LAWN – SEE DETAIL SHEET C5-02.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1861 JAMES GLENN MEDLIN 1/22/18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

STAKING AND LANDSCAPING PLAN

JOB NUMBER 17-114
DRAWN BY JGM/HBR
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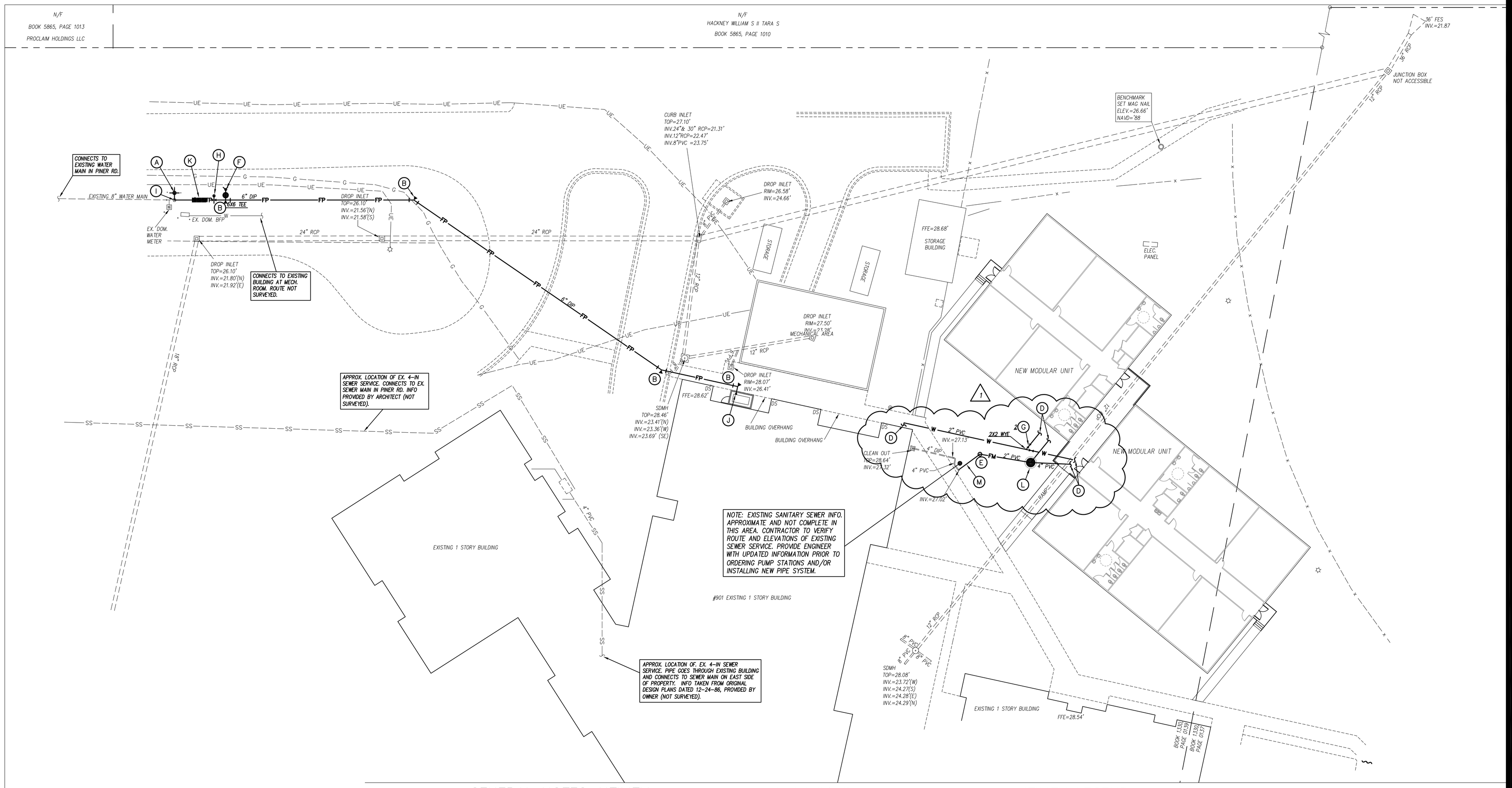

GENERAL NOTES–UTILITY

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL NEW HANOVER COUNTY AND CFPUA STANDARDS, SPECIFICATIONS AND DETAILS.
2. INSTALL WATERMAINS WITH A COVER OF NO LESS THAN 3–FT.
3. INSTALL SEWER MAINS WITH A COVER OF NO LESS THAN 3–FT TO FINISH GRADE IN NON–TRAFFIC AREAS, 4–FT TO FINISH GRADE IN TRAFFIC AREAS..
4. INSTALL ALL UTILITIES TO PROVIDE REQUIRED CLEARANCES AS INDICATED IN THE SPECIFICATIONS.
5. WATERLINES AND SEWER MAINS SHALL BE INSTALLED WITH A MINIMUM HORIZONTAL CLEARANCE OF 10–FT.
6. SEWER MAINS SHALL BE INSTALLED WITH A MINIMUM VERTICAL CLEARANCE OF 24–IN TO STORM DRAINAGE PIPES.
7. COORDINATE AND SCHEDULE INSTALLATION OF ALL UTILITIES WITH OTHER PRIME CONTRACTORS, UTILITY COMPANIES AND OTHER TRADES INCLUDING BUT NOT LIMITED TO: NATURAL GAS, ELECTRICITY, TELEPHONE AND CATV.
8. VERIFY EXISTING CONDITIONS AND CONNECTIONS TO EXISTING UTILITIES PRIOR TO CONSTRUCTION. NOTIFY ARCHITECT IF ANY DISCREPANCIES ARE DISCOVERED.
9. CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES DURING CONSTRUCTION AND SHALL MAKE REPAIRS AT NO EXPENSE TO THE OWNER.
10. ALL CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE NCSBC AND OSHA REQUIREMENTS.
11. THE CONTRACTOR SHALL PROVIDE AN AS–BUILT SURVEY OF ALL UTILITY AND STORM DRAINAGE IMPROVEMENTS FOLLOWING CONSTRUCTION.
12. CONTRACTOR SHALL PHASE DEMOLITION AND NEW CONSTRUCTION TO ENSURE UNINTERRUPTED ACCESS AND UTILITY SERVICE TO ADJACENT FACILITIES. COORDINATE SHORT–TERM, OFF–HOUR, TEMPORARY SHUT– DOWNS WITH THE OWNER.
13. SEE GENERAL NOTES ON EXISTING CONDITIONS AND DEMOLITION PLAN FOR REQUIREMENTS FOR REMOVAL AND PATCHING OF PAVEMENT FOR UTILITY INSTALLATION.
14. ALL ROOF DRAINS SHALL BE 6" PVC (SCH 40) @ 1.04% MIN. SLOPE UNLESS INDICATED OTHERWISE. USE DUCTILE IRON WHEN COVER IS LESS THAN 24–IN.
15. ALL SANITARY SEWER SERVICES SHALL BE 4" PVC (SCH 40) @1.04% MIN. SLOPE UNLESS INDICATED OTHERWISE. USE DUCTILE IRON WHEN COVER IS LESS THAN 24–IN.
16. ALL CONDENSATE LINES SHALL BE CONNECTED TO STORM DRAINAGE SYSTEM.
17. NO WORK SHALL BE PERFORMED ON RIGHT–OF–WAYS OR ADJACENT PROPERTIES UNTIL THE OWNER NOTIFIES CONTRACTOR IN WRITING OF PROCUREMENT OF APPROPRIATE PERMITS, EASEMENTS, AGREEMENTS, OR RIGHTS–OF–WAY.

KEY NOTES

- (A) FIRE HYDRANT ASSEMBLY, TYP, SEE DETAIL SHEET C5–03.
- (B) THRUST BLOCKING, TYP, SEE DETAIL SHEET C5–03.
- (C) SANITARY SEWER CONNECTION, SEE DETAIL SHEETS C5–03 AND C5–04.
- (D) EXTEND UTILITY TO WITHIN 5'–0" OF BUILDING WALL OR AS INDICATED ON PLUMBING PLANS. REFER TO PLUMBING PLANS FOR LOCATION AND INVERTS.
- (E) SANITARY SEWER CLEANOUT, TYP. SEE DETAIL SHEET C5–03.
- (F) FIRE DEPARTMENT CONNECTION, SEE DETAIL SHEET C5–04.
- (G) 2" GATE VALVE AND VALVE BOX, SEE DETAIL SHEET C5–03.
- (H) POST INDICATOR VALVE W/ TAMPER SWITCH, SEE DETAIL SHEET C5–04 AND SPECS. SEE ELECTRICAL PLANS FOR MORE INFORMATION.
- (I) CONNECT NEW 8–IN WATER MAIN TO EXISTING GATE VALVE.
- (J) EXTEND WATER MAIN TO 12–IN ABOVE FINISH FLOOR FOR FIRE PROTECTION/PLUMBING CONNECTION, SEE DETAIL SHEET C5–04. REFER TO TO FIRE PROTECTION/PLUMBING PLANS FOR EXACT LOCATION.
- (K) DOUBLE CHECK VALVE ASSEMBLY (DCVA) WITHIN HEATED ENCLOSURE, SEE DETAIL SHEET C5–03 FOR CFPUA STANDARD DETAIL. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
- (L) GRINDER PUMP. SEE DETAIL SHEET C5–04.
- (M) NEW 2" PVC SEWER FORCE MAIN. SEE SPECIFICATIONS.

UTILITY LEGEND

	EXISTING	PROPOSED
CHILLED WATER	------CW------	CW
ELECTRICAL (OVERHEAD)	------ E ------	E
ELECTRICAL (UNDERGROUND)	------UE------	UE
FOUNDATION DRAIN	------FD------	FD
GAS	------ G ------	G
SANITARY SEWER	------SS------	SS
TELEPHONE (OVERHEAD)	------ T ------	T
TELEPHONE (UNDERGROUND)	------UT------	UT
WATER	------ W ------	W
ROOF DRAIN	------RD------	RD
FIRE PROTECTION	------FP------	FP
STORM DRAIN	==========	
TREE PROTECTION FENCING, SEE EROSION CONTROL PLANS		
LIGHT POLE	LP	
UTILITY POLE	PP	
MANHOLE	MH	
CLEAN OUT	CO	
DROP INLET,CATCH BASIN	DI, CB	
FIRE HYDRANT	FH	
WATER VALVE	WV	
POST INDICATOR VALVE (PIV)		
FIRE DEPARTMENT CONNECTION (FDC)		
THRUST BLOCKING		
SANITARY SEWER STRUCTURE IDENTIFICATION		1

GRAPHIC SCALE

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(IN FEET)

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022625 ENGINEER STEVEN J. MILLER 1-22-18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

SITE UTILITY PLAN

JOB NUMBER 17-114

DRAWN BY JGM/HBR

CHECKED BY JGM

DATE 1/22/2018

REVISIONS

1 ADDENDUM #1 2–15–18

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SAND SHALL BE STERILE, SILICA SAND, FREE OF CLAY, SILT & OTHER FOREIGN MATERIALS AND MEETING THE FOLLOWING REQUIREMENTS:

Name	Particle Size	Spec (% Retained on Sieves)
Fine gravel	2.0 mm	0%
Very Course sand	1.0 mm - 2.0 mm	0%-6%
Coarse sand	0.5 mm - 1.0 mm	min of 80%
Medium sand	0.25 mm - 0.5 mm	max of 92%
Fine sand	0.15 mm - 0.25 mm	7%- 18%
Very fine sand	0.05 mm - 0.15 mm	not greater than 2.0%
Silt and Clay	below 0.05 mm	not greater than 0.15%

These requirements related to the particle sizes allow for excellent drainage and must absolutely be considered in order to successfuily face all different weather conditions. The sand must also be free of any organic material.

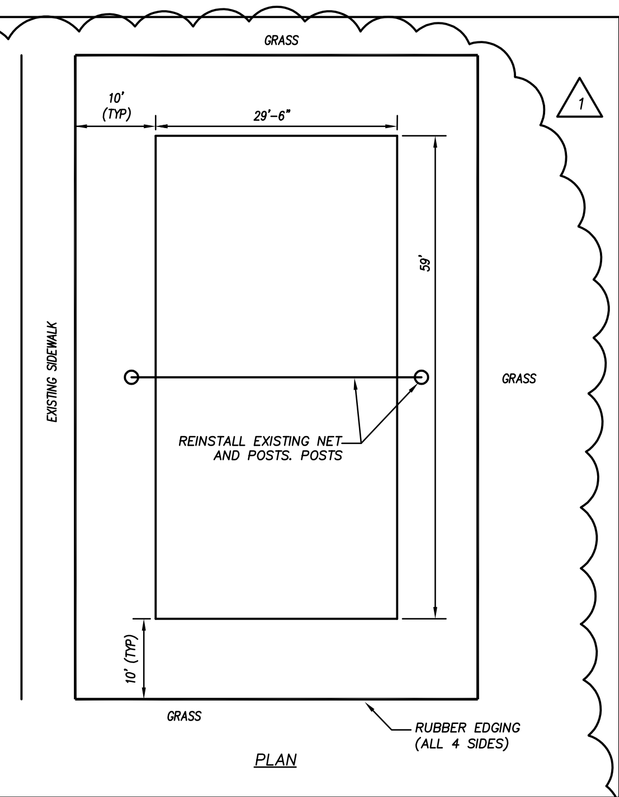
Particle Shape: The recommended sand requirements for Beach Volleyball court installations have the following: physical properties:

- be naturally weathered;
- be sub angular/rounded;
- not be acquired from a crushed rock source.

1

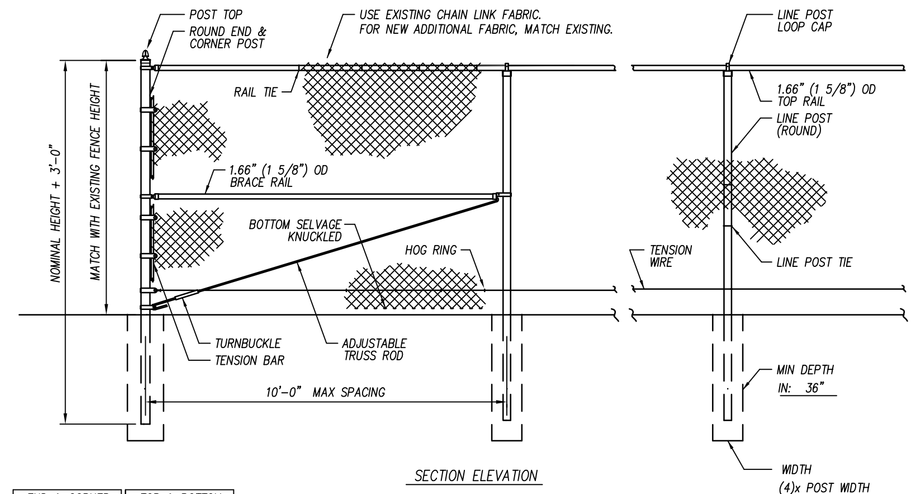
NOTES:

1. POSTS SHALL BE INSTALLED IN 18"x36" 3,000-PSI CONCRETE FOOTING.
2. SAND SHALL BE MINIMUM 18-IN DEEP.
3. RUBBER EDGING TO BE FLEXEDGE BEACH VOLLEYBALL CURB BY SPORTSEDGE, OR APPROVED EQUAL.



PLAN

SAND VOLLEYBALL N.T.S.



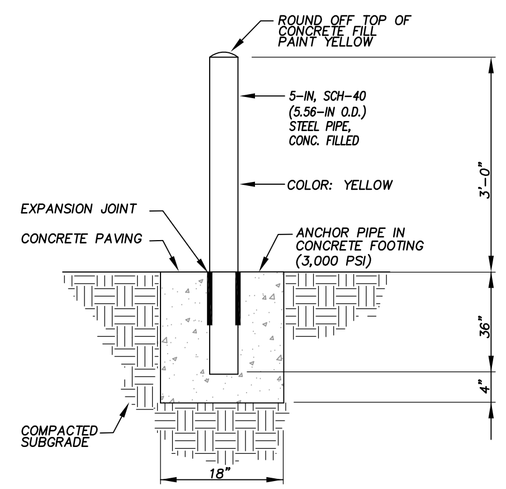
SECTION ELEVATION

END & CORNER POST TOP	TOP & BOTTOM FABRIC
DOME	KNUCKLE

BOLTS ON ALL FENCING SHALL BE CUT FLUSH WITH NUT. NO SHARP PROTRUDING EDGES ALLOWED. FENCING TO BE STANDARD GALVANIZED FENCING.

REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

CHAIN LINK FENCE N.T.S.



STEEL BOLLARD N.T.S.

DATE	TYPE	PLANTING RATE
APR 15 – JULY 15 **	HULLED SUNSTAR OR RIVIERA BERMUDA	85 LBS/ACRE *
JULY 15 – AUG 15	SUNSTAR OR RIVIERA BERMUDA SPRIGS	5 BUSHELS/1,000 SF
AUG 15 – APR 15	TEMPORARY SEEDING APPLIES**	

* OR AS REQUIRED TO ACHIEVE 95% COVERAGE AS DETERMINED ON A PER SQUARE YARD BASIS PRIOR TO SUBSTANTIAL COMPLETION.

** WHEN SEEDING MUST TAKE PLACE OUT-OF- SEASON FOR PERMANENT GRASS, APPROPRIATE TEMPORARY SEEDING SHALL BE DONE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERMANENT SEEDING AS SPECIFIED IN SEASON AT NO ADDITIONAL COST TO OWNER.

LAWN MAINTENANCE NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR LAWN MAINTENANCE UNTIL FINAL COMPLETION.
2. LAWN MUST BE AT 95% COVERAGE AT SUBSTANTIAL COMPLETION REVIEW TO BE ACCEPTED.
3. IF NOT AT 95% SUBSTANTIAL COMPLETION WILL BE DELAYED UNTIL THE FOLLOWING GROWING SEASON.

SUBSTANTIAL COMPLETION (GRASS):

CONTRACTOR SHALL BE RESPONSIBLE FOR LAWN MAINTENANCE AND WATERING UNTIL SUBSTANTIAL COMPLETION. LAWN/TURF SHALL BE CONSIDERED SUBSTANTIALLY COMPLETE WHEN GRASS ESTABLISHMENT IS AT A MIN. 95% COVERAGE AND THE SURFACE COMPLIES WITH THE SLOPE, SMOOTHNESS AND OTHER SPECIFIED TOLERANCES. IF THE MINIMUM REQUIREMENTS ARE NOT MET, SUBSTANTIAL COMPLETION WILL BE DELAYED UNTIL THE MINIMUM REQUIREMENTS ARE MET (POSSIBLY INTO THE FOLLOWING GROWING SEASON). THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR WATERING AND MAINTENANCE OF THE GRASS UNTIL SUBSTANTIAL COMPLETION IS REACHED. SEE SPECIFICATIONS FOR FURTHER INFORMATION.

TEMPORARY SEEDING SCHEDULE

PERMANENT SEEDING SCHEDULE– BERMUDA SEED

PERMANENT OR TEMPORARY GROUND COVER SHALL BE PROVIDED OVER ALL DISTURBED AREAS OF THE SITE AS SOON AS POSSIBLE, HOWEVER, NO LATER 30 DAYS AFTER CONSTRUCTION ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED DURING ANY PHASE OF WORK.

TEMPORARY OR PERMANENT GROUND COVER SHALL BE PROVIDED ON ALL SLOPES WITHIN 15 WORKING DAYS OR 30 CALENDAR DAYS AFTER CONSTRUCTION ACTIVITIES PERMANENTLY OR TEMPORARILY CEASED.

DATE	TYPE	PLANTING RATE
AUG 15 – FEB 1	TALL FESCUE AND	70 LBS/ACRE
	WINTER RYE (GRAIN)	25 LBS/ACRE
APR 1 – AUG 15	TALL FESCUE AND	120 LBS/ACRE
	GERMAN MILLET ***	25 LBS/ACRE
	OR SUDANGRASS (SMALL-STEMMED VAR.) ***	30 LBS/ACRE

CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

***TEMPORARY – RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING.

SURFACE STABILIZATION REQUIREMENTS

1. LOCATE ALL EXISTING UTILITIES PRIOR TO INSTALLATION OF PLANT MATERIAL. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THOSE SHOWN ON THE PLAN.
2. VERIFICATION OF TOTAL QUANTITIES AS SHOWN ON THE PLANT LIST SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND THE TOTAL QUANTITIES SHALL BE AS SHOWN ON THE PLAN.
3. CONTACT THE LANDSCAPE ARCHITECT FOR INSPECTION 48 HOURS IN ADVANCE OF THE SCHEDULED SITE VISIT AND AT THE FOLLOWING INTERVALS:
   - REVIEW OF GRADING PRIOR TO PLANT AND LAWN INSTALLATION
   - REVIEW OF PLANT MATERIAL PRIOR TO INSTALLATION.
   - ONE SUBSTANTIAL COMPLETION MEETING FOR PLANT INSTALLATION.
   - ONE FINAL INSPECTION FOR ALL SEEDING/PLANTING OPERATIONS.
4. ALL PLANT MATERIAL SHALL CONFORM WITH THE STANDARDS SET FORTH BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND THE WRITTEN SPECIFICATIONS.
5. ESTABLISH POSITIVE DRAINAGE IN ALL PLANTING BEDS AND AWAY FROM BUILDING.
6. APPLY PRE-EMERGENT HERBICIDE TO ALL NEW PLANTING BEDS AT MANUFACTURER'S RECOMMENDED RATE PRIOR TO INSTALLATION OF PLANT MATERIAL.
7. DO NOT INSTALL PLANT MATERIAL IN IMPERVIOUS SOILS (i.e. HOLES WHICH WHEN FILLED WITH WATER, DO NOT COMPLETELY DRAIN WITHIN TWO HOURS).
8. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING ALL PLANTS AND LAWN AREAS AT HIS COST FROM HIS OWN WATER SOURCE INCLUDING DURING PERIODS OF DROUGHT UNTIL FINAL COMPLETION. ANY WATERING OR MAINTENANCE REQUIRED AFTER FINAL COMPLETION SHALL BE AT OWNER'S COST.
9. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ALL EQUIPMENT & SUBCONTRACTORS AWAY FROM SEEDED AREAS. IF DAMAGE OCCURS, THROUGH NO FAULT OF THE OWNER, AREAS SHALL BE REGRADED AND RESEEDED IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL WATER AND MAINTAIN THOSE AREAS UNTIL THEY ARE AT 95% COVERAGE AT SUBSTANTIAL COMPLETION.
10. SUBSTITUTIONS OF PLANT MATERIAL SHALL ONLY BE ACCEPTED 60 DAYS PRIOR TO COMMENCEMENT OF PLANTING OPERATIONS. SUBSTITUTION REQUESTS MUST BE IN WRITING AND WILL ONLY BE ACCEPTED FOR LACK OF AVAILABILITY REASONS WHICH CAN BE SUBSTANTIATED OR FOR SUPERIOR STOCK SUBSTITUTIONS.

SEEDING

11. GENERAL LAWN AREAS SHALL BE SEEDED WITH SUNSTAR OR RIVERIA BERMUDAGRASS OR APPROVED EQUAL.
12. LANDSCAPE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT TO REVIEW GRADING ONE WEEK PRIOR TO SEEDING, IF THE LANDSCAPE CONTRACTOR AND LANDSCAPE ARCHITECT FIND GRADING UNACCEPTABLE FOR FINAL SEEDING, LANDSCAPE CONTRACTOR SHALL BRING IT TO THE ATTENTION OF THE GENERAL CONTRACTOR. LANDSCAPE CONTRACTOR SHALL NOT PROCEED WITHOUT APPROVAL BY LANDSCAPE ARCHITECT.

LANDSCAPE NOTES

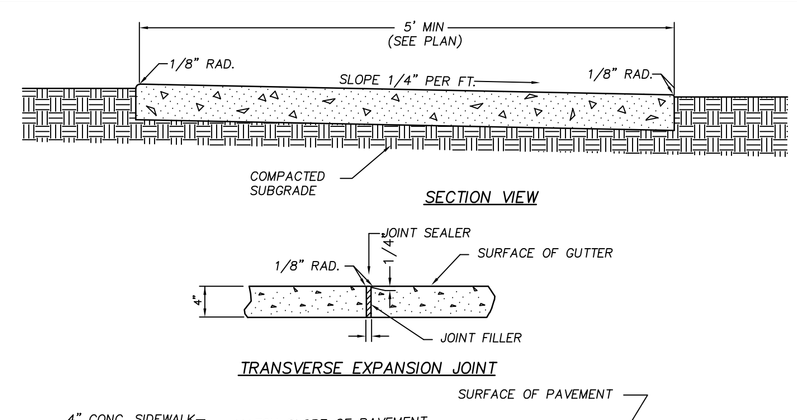
1. CHISEL ALL CUT GRADED OR COMPACTED AREAS TO A MINIMUM DEPTH OF 8".
2. DISC ALL AREAS TO RECEIVE GRASS TO A MINIMUM OF 8 INCHES, MIX AND AMEND WITH 3 INCHES OF WELL SCREENED TOPSOIL. ON-SITE TOPSOIL MAY BE USED IN PLACE OF IMPORTED TOPSOIL, IF WELL-SCREENED AND DRY PRIOR TO APPLICATION IN ACCORDANCE WITH SPECIFICATION SECTION 329000.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND PHOSPHATE UNIFORMLY AS PER SPECIFICATIONS AND MIX WELL WITH SOIL.
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED TO A 6 INCHES DEPTH.
6. SEED AT RATE SPECIFIED OR AS NEEDED TO ACHIEVE AND MAINTAIN A THICK HEALTHY GROUND COVERAGE.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH. BEGIN THOROUGH WATERING OF GRASSED AREAS IMMEDIATELY UPON INSTALLATION. DO NOT ALLOW GRASSED AREAS TO BECOME EXCESSIVELY DRY.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS AS NEEDED.
9. IF CONFLICTS OCCUR BETWEEN WRITTEN SPECIFICATIONS AND THE DRAWINGS, THE WRITTEN SPECIFICATIONS SHALL PREVAIL.

SEEDBED PREPARATION

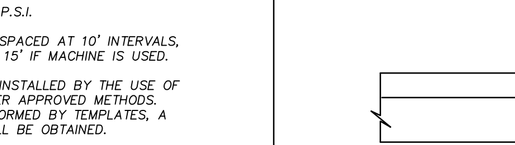
APPLY LIME AND FERTILIZER ACCORDING TO SOIL TESTS, OR APPLY A MINIMUM 3,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND A MINIMUM 500 LB/ACRE 10-10-10 FERTILIZER, AS NEEDED TO ESTABLISH 95% COVERAGE (AS DETERMINED ON A PER SQUARE YARD BASIS) PRIOR TO SUBSTANTIAL COMPLETION. CONTRACTOR TO SUBMIT A COPY OF ALL SOIL REPORTS TO OWNER UPON RECEIPT.

LIME & FERTILIZATION SCHEDULE

1. DURING ALL PHASES OF CONSTRUCTION, GROUNDCOVER ON EXPOSED SLOPES SHALL BE PROVIDED WITHIN 14 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING.
2. FINAL PERMANENT GROUNDCOVER FOR ALL DISTURBED AREAS SHALL BE PROVIDED ON ALL DISTURBED AREAS WITHIN 14 CALENDAR DAYS FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT.
3. USE EXCELSIOR MATTING OR OTHER APPROVED CHANNEL LINING MATERIAL TO COVER THE BOTTOM OF CHANNELS.
4. APPLY 4000 LB/ACRE(2 TONS LB/AC) GRAIN STRAW OVER SEEDED AREAS AND ANCHOR STRAW CRIMPING WITH HAND OR MECHANICAL CRIMPER 8" MAX. SPACING, ASPHALT TACKING OR OTHER APPROVED METHOD. ASPHALT TACKING SHALL BE 400 GAL/ACRE (9 GAL/1000 SF).
5. MULCH AND ANCHORING MATERIALS MUST NOT BE ALLOWED TO WASH DOWN SLOPES AND CLOG DRAINAGE DEVICES.



SECTION VIEW



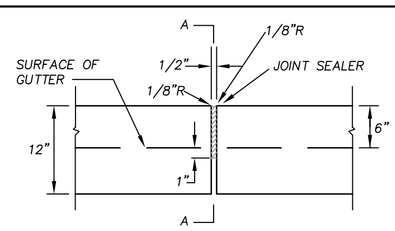
TRANSVERSE EXPANSION JOINT

SECTION OF SIDEWALK ABUTTING PAVEMENT

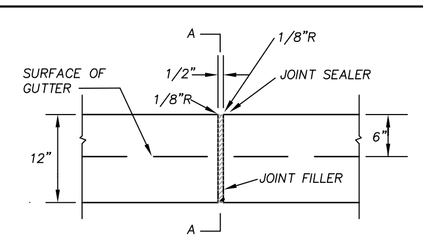
GENERAL NOTES:

1. A GROOVE JOINT 1" DEEP WITH 1/8" RADII SHALL BE REQUIRED IN THE CONCRETE SIDEWALK AT 5' INTERVALS UNLESS INDICATED OTHERWISE. SEE SPECS FOR ADDITIONAL JOINT SPACING REQUIREMENTS.
2. ONE 1/2" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS.
3. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.
4. ALL CONCRETE SHALL BE 3,000 P.S.I.

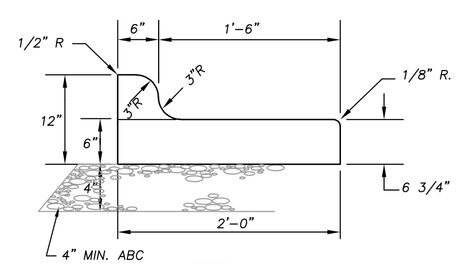
CONCRETE SIDEWALK N.T.S.



CONTRACTION JOINT



TRANSVERSE EXPANSION JOINT

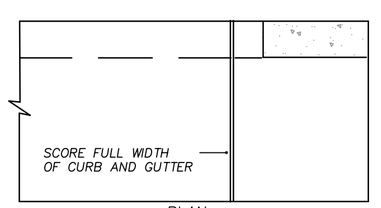


SECTION A-A

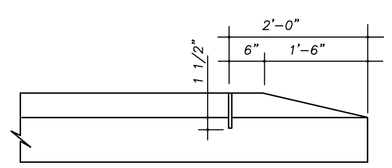
24" CURB & GUTTER

NOTES:

1. ALL CONCRETE SHALL BE 3,000 P.S.I.
2. CONTRACTION JOINTS SHALL BE SPACED AT 10' INTERVALS, SPACING MAY BE INCREASED TO 15' IF MACHINE IS USED.
3. CONTRACTION JOINTS SHALL BE INSTALLED BY THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. WHERE SUCH JOINTS ARE NOT FORMED BY TEMPLATES, A MINIMUM DEPTH OF 1-1/2" SHALL BE OBTAINED.
4. EXPANSION JOINTS SHALL BE SPACED AT 90' MAX INTERVALS, AND ADJACENT TO ALL RIGID OBJECTS.
5. ALL JOINTS SHALL BE FILLED WITH JOINT FILLER AND SEALER.



PLAN



FRONT

STANDARD METHOD OF ENDING CURB AND GUTTER

24" CONCRETE CURB AND GUTTER N.T.S.

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Cary, NC 27518
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Fax: 919.319.7516
LA: C-1306 PE: C-1505

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 1861 JAMES GLENN MEDLIN 1/22/18

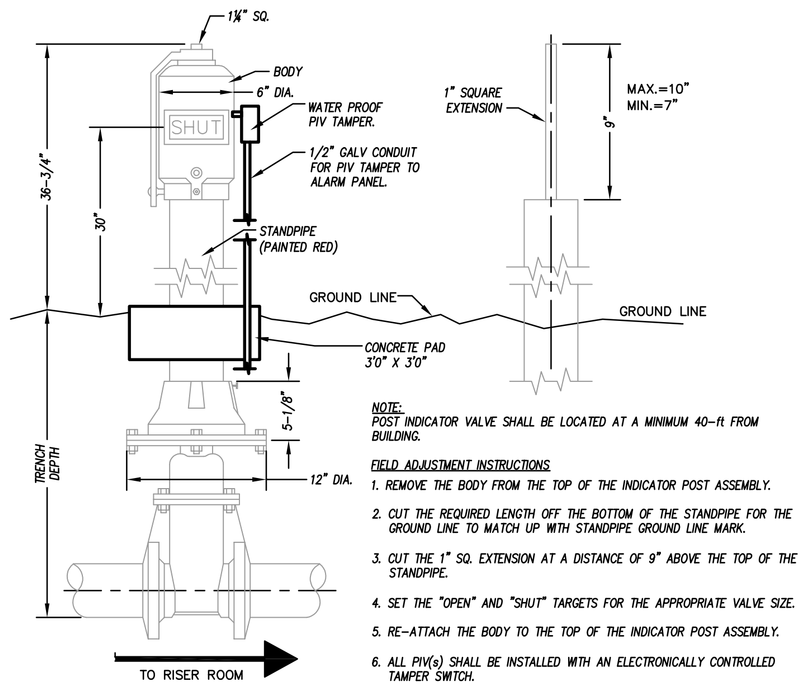
Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

SITE DETAILS

JOB NUMBER 17-114
DRAWN BY JGM/HBR
CHECKED BY JGM
DATE 1/22/2018
REVISIONS
1 ADDENDUM #1 2-15-18

SHEET NUMBER
C5-02

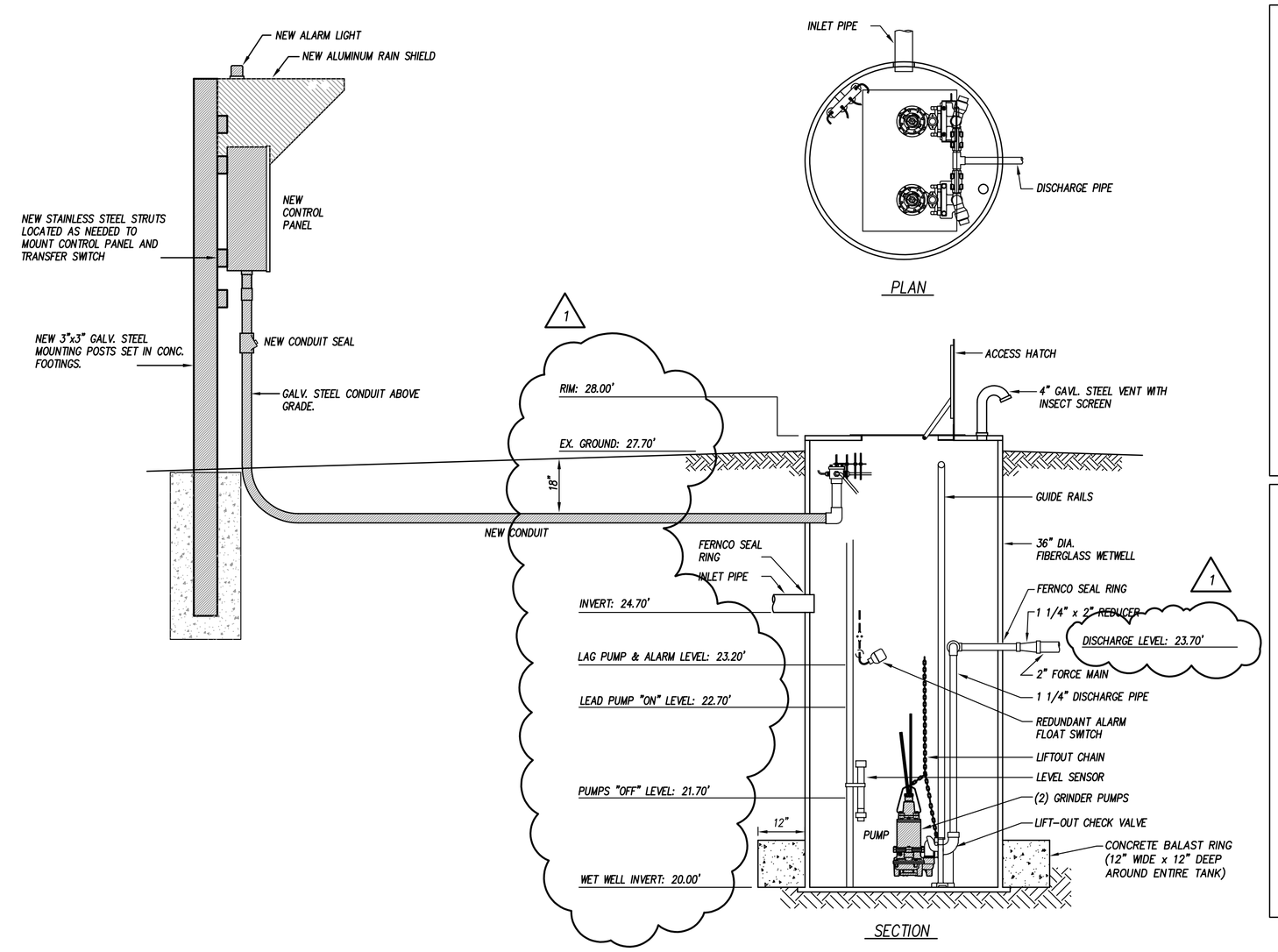


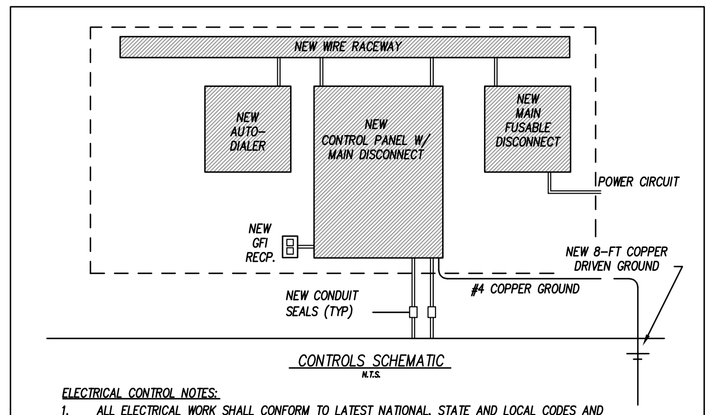
NOTE:
POST INDICATOR VALVE SHALL BE LOCATED AT A MINIMUM 40-ft FROM BUILDING.

FIELD ADJUSTMENT INSTRUCTIONS:

1. REMOVE THE BODY FROM THE TOP OF THE INDICATOR POST ASSEMBLY.
2. CUT THE REQUIRED LENGTH OFF THE BOTTOM OF THE STANDPIPE FOR THE GROUND LINE TO MATCH UP WITH STANDPIPE GROUND LINE MARK.
3. CUT THE 1" SQ. EXTENSION AT A DISTANCE OF 9" ABOVE THE TOP OF THE STANDPIPE.
4. SET THE "OPEN" AND "SHUT" TARGETS FOR THE APPROPRIATE VALVE SIZE.
5. RE-ATTACH THE BODY TO THE TOP OF THE INDICATOR POST ASSEMBLY.
6. ALL PIV(s) SHALL BE INSTALLED WITH AN ELECTRONICALLY CONTROLLED TAMPER SWITCH.

POST INDICATOR VALVE — N.T.S.





ELECTRICAL CONTROL NOTES:

1. ALL ELECTRICAL WORK SHALL CONFORM TO LATEST NATIONAL, STATE AND LOCAL CODES AND REQUIREMENTS.
2. PANEL LAYOUT IS SCHEMATIC ONLY. ADJUST AS NEEDED TO ACCOMODATE EQUIPMENT.
3. ALL ENCLOSURES SHALL BE NEMA 4 RATED AND LOCKABLE.
4. ALL CONDUITS SHALL BE SEALED TO PREVENT MOISTURE, SEWER GASES, ETC. FROM ENTERING EQUIPMENT ENCLOSURES.
5. NO EQUIPMENT SHALL BE MOUNTED LESS THAN 36-IN ABOVE GRADE.

CONTROL FEATURES:

ENCLOSURE:	NEMA 4X
AUTO DIALER:	YES
ALARM HORN:	YES
ALARM STROBE:	YES
GFI DUPLEX RECEP.:	YES

ALTERNATE POWER SOURCE:

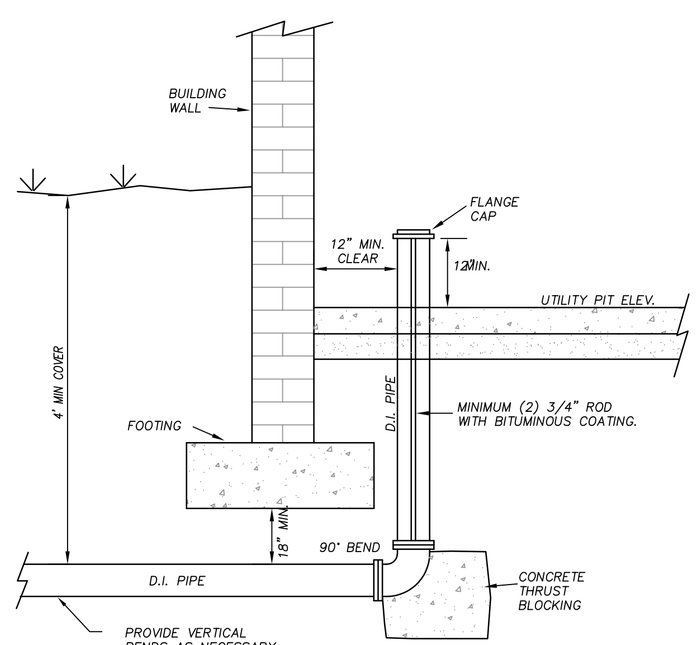
GENERATOR:	NO, NOT REQUIRED
MANUAL TRANS. SWITCH:	N/A

PUMP SPECIFICATION:

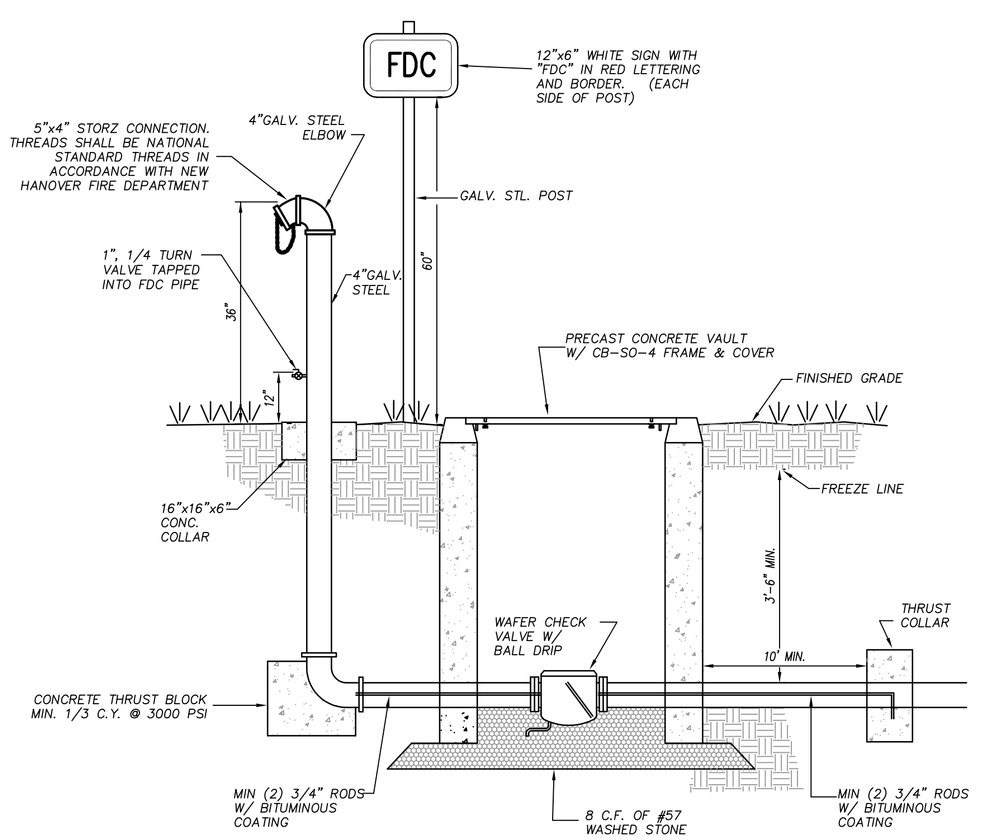
MANUFACTURER:	LIBERTY PUMPS
MODEL:	OMNIVORE D3693 LSG 203
PUMP TYPE:	SUBMERSIBLE GRINDER
SOLIDS HANDLING:	GRINDER
DISCHARGE:	1.25-IN
NO. OF PUMPS:	3 (2 INSTALL, 1 SPARE)
PRIMARY DESIGN FLOW:	30-50 GPM
PRIMARY DESIGN HEAD:	25-40 FT
MIN. SHUT-OFF HEAD:	80-FT
MOTOR HORSEPOWER:	2-HP
MOTOR SPEED:	3,450-RPM
ELECTRICAL:	208-V, 3-PH, 60-HZ

* DESIGN OF PUMP STATION BASED ON THE PUMP SPECIFIED ABOVE. PUMPS SHALL BE MANUFACTURED BY LIBERTY, MEYERS, ABS, HYDROMATIC OR APPROVED EQUAL MEETING THE REQUIRMENTS OF THE WRITTEN SPECIFICATIONS AND THE PERFORMANCE REQUIREMENTS LISTED ABOVE.

PUMP STATION



STANDARD FIRE SERVICE INSTALLATION AT BUILDING — N.T.S.



FIRE DEPARTMENT CONNECTION — N.T.S.

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LA: C-106 PE: C-1505

NORTH CAROLINA REGISTERED PROFESSIONAL SEAL 032625 ENGINEER STEVEN J. MILLER 1-22-18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

SITE DETAILS

JOB NUMBER 17-114
DRAWN BY JGM/HBR
CHECKED BY JGM
DATE 1/22/2018
REVISIONS
1 ADDENDUM #1 2-15-18

SHEET NUMBER
C5-04

PHASE 1: CAFETERIA, MEDIA CENTER, LOBBY, ADMINISTRATIVE AREA, AND (4) FOUR CLASSROOMS - SUMMER 2018
- MECHANICAL, SPRINKLERS, WINDOWS, CEILING GRID & LIGHTING, SET UP OF MODULAR CLASSROOMS.
- ELECTRIC SWITCHGEAR REPLACEMENT (SUBJECT TO RESCHEDULING DURING WINTER BREAK '18/'19) 7 DAY MAXIMUM.
- ✱ ADDITION OF SPRINKLER RISER ROOM, CEILING DEMO AND EXTENSION OF MAINS.
- RELOCATION OF PA SYSTEM.
- TEMPORARY ROOM SIGNAGE THROUGHOUT BUILDING
- FLOORING & PAINTING IN MEDIA CENTER
- RENOVATION OF ADMINISTRATION AREA

PHASE 2: GYMNASIUM
- MECHANICAL, SPRINKLERS, WINDOWS, CEILING & LIGHTING, FLOORING (IN LOCKER ROOMS), AND PAINTING.

PHASE 3: RENOVATED 6TH GRADE WING (Existing 8th Grade Wing)
- MECHANICAL, SPRINKLERS, WINDOWS, CEILING & LIGHTING, FLOORING, AND PAINTING.

PHASE 4: 8TH GRADE WING (Existing 6th Grade Wing)
- MECHANICAL, SPRINKLERS, WINDOWS, CEILING & LIGHTING, FLOORING, AND PAINTING.

PHASE 5: 7TH GRADE WING
- MECHANICAL, SPRINKLERS, WINDOWS, CEILING & LIGHTING, FLOORING, AND PAINTING

PHASE 6: ELECTIVE WING, CAFETERIA, LOBBY, AND (4) FOUR CLASSROOMS - SUMMER 2019
- IN ELECTIVE WING: MECHANICAL, SPRINKLERS, WINDOWS, CEILING GRID & LIGHTING, FLOORING AND PAINTING.
- FLOORING & PAINTING IN CAFETERIA, LOBBY AND (4) CLASSROOMS.
- ORCHESTRA LOCKERS IN ELECTIVE WING, NEW SIGNAGE THROUGHOUT SCHOOL.
- SELECTED ADD ALTERNATES: NEW LOBBY TOILET ROOMS / MECHANICAL LADDERS / TOILET ROOM UPDATES.
- REMOVAL OF MOBILE CLASSROOMS AND SELCTIVE SITE RESTORATION.

ROOF REPLACEMENT WILL OCCUR FROM JUNE 2018 - NOVEMBER 2018

SEPARATE PERMIT SCOPE
TEMPORARY MODULAR CLASSROOMS
SEE SHEET CS-04 FOR SITE PLAN.
PLACE IN PHASE ONE.
REMOVE AND RESTORE SITE IN PHASE SIX.

EXISTING PAVED PLAY AREA

PHASE 1 & 6

PHASE 6
ELECTIVE WING

PHASE 3
RENOVATED
6TH GRADE WING

8TH GRADE WING
PRIOR TO RENOVATION

O.A.I.

STUDENT LOCKERS TO BE REPLACED WITH ORCHESTRA INSTRUMENT STORAGE LOCKERS IN THIS LOCATION.

ACCESSIBILITY RENOVATION OF LOBBY TOILET ROOMS

NEW 3-HOUR FIRE DOORS WITH VISION LITES

O.A.I. SERVES TWO (2) MECH. LOFTS

EXISTING CHAIN LINK FENCE

STORAGE

C.W.
U.E.

PH. 1&2

PHASE 2
GYMNASIUM

PHASE 1
MEDIA CTR.

LOBBY

PHASE 1
ADMIN.

PHASE 1&6

7TH GRADE WING

PHASE 5

ST.

MECH. EQUIP.

ST.

C.W.
OVERHEAD

PHASE ONE:
NEW SPRINKLER RISER ROOM UNDER EAVE, DEMO PORTION OF LOCKER ROOM CEILING, AND INSTALL SPRINKLER MAINS

MAIN ENTRY

ACCESSIBILITY RENOVATION OF FRONT DESK AND RECEPTION

RELOCATE PA SYSTEM AND RUN NEW CABLE TO PHASING BARRIERS IN PHASE ONE.

PROPERTY LINE

CAFETERIA
PHASE 1 & 6

6 GRADE WING
PRIOR TO RENOVATION

PHASE 4
RENOVATED
8TH GRADE WING

REMOTE FDC CONNECTION, TO BE LOCATED WITHIN 150 FEET OF HYDRANT

BUS DROP-OFF AND PICK UP

EXISTING HYDRANT

BACKFLOW PREVENTOR

EXISTING DOMESTIC WATER METER

EXISTING 8" WATER MAIN

✱ **SPRINKLER RISER NOTE:**
SPRINKLER DESIGNER SHALL IDENTIFY PIPE LOADS FOR REVIEW BY DESIGN TEAM PRIOR TO INSTALLATION, TO DETERMINE IF ADDITIONAL BRACING IS REQUIRED.

DUST BARRIER:
INSTALL DUST BARRIERS AND WALK OFF MATS AT LOCATIONS INDICATED WHEN APPLICABLE TO PHASE OF WORK.

SITE RESTORATION:
MODULAR SITE AND ALL OTHER PORTIONS OF DISTURBED SITE SHALL BE RESTORED TO PRE-EXISTING CONDITION AT CONCLUSION OF PROJECT.

0' 30' 60' 120'

TRUE
PLAN NORTH

1 / CS-08 **Construction Phasing**
Scale 1" = 30'-0"

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REGISTERED ARCHITECTURAL CORPORATION
CERT. NO. 50424
NORTH CAROLINA
WILMINGTON, N.C.

BRUCE F. BOWMAN
REGISTERED ARCHITECT
5951
NORTH CAROLINA
WILMINGTON, N.C.
2·15·18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

CONSTRUCTION PHASING PLANS

JOB NUMBER

DRAWN BY: Hawk
CHECKED BY: Bowman
DATE: 01/24/2018
REVISIONS: 1 - 02/15/18 - PHASING CHANGE

SHEET NUMBER
CS-08

SEPARATE PERMIT SCOPE
MOBILE CLASSROOM LOCATION.
CM TO INSTALL BUILDINGS, UTILITIES, RAMPS, SIDEWALKS IN CONTRACT.
SEE SITE PLAN CS-04.
SEE ALLOWANCES FOR FOUNDATION WORK.

REMOVE CARPET THOUGHOUT BAND ROOMS, SCARIFY SLAB & REMOVE GLUE. INSTALL NEW VCT FLOORING ON SLAB AND RUBBER FLOOR FINISH ON ALL ELEVATED FLOORS/RISERS.

EXISTING PAVED PLAY AREA

ALUMINUM STEPS

NEW CONCRETE WALK

TOILETS

ALUM. LANDING

ALUMINUM RAMP

NEW CONCRETE WALK

ALUMINUM STEPS

MOVE FENCE TO ACCOMODATE SIDEWALK

NEW CONCRETE WALK

DASHED LINE INDICATES ROOF OVERHANG, TYP.

NEW ALUMINUM STOREFRONT DOORS.

LOCATION OF NEW ACCESS CONTROL LOCK

INTAKE

O.A.I.

REMOVE EXISTING LOCKERS AND REPLACE WITH INSTRUMENT LOCKERS FOR ORCHESTRA, ROOM 402.

EXTEND PERIMETER WALLS OF ORCHESTRA ROOM TO ROOF DECK FOR SOUND CONTROL, GYP BRD CONSTRUCTION.

ADD NEW ANTENNA TO PIM ELECTRONIC LOCK MONITORING SYSTEM FOR MODULARS

FIRE BARRIER

SEE SHEET A-103
SEE SHEET A-105

BLEACHERS (CLOSED POSITION)

PIM 1 TO BE RELOCATED TO IDF IN ROOM T401A

PROJECTOR MOUNT TO BE REMOVED IN ROOM 401

1" BLDG. EXPANSION JOINT

GYMNASIUM

BLEACHERS (CLOSED POSITION)

NEW SPRINKLER RISER ROOM, 6' X 6' SEE FIRE PROTECTION DWGS

DASHED LINE INDICATES ROOF OVERHANG

PROJECT MOUNT TO BE REMOVED IN ROOM 303

CAFETERIA OUTSIDE AIR INTAKE UNIT SHALL BE LOCATED OUTSIDE THE BUILDING, WITH CHAIN LINK FENCE WITH PRIVACY SLATS , TYP. **ADD ALTERNATE #6**
SEE SHEET A-501 FOR FENCE DETAIL.

REMOTE FDC CONNECTION, TO BE LOCATED WITHIN 150 FEET OF HYDRANT

REMOVE EXISTING WOOD RISERS IN DRAMA CLASSROOM PRIOR TO INSTALLATION OF BLACK VCT FLOORING

ELECTIVE WING

APPROXIMATE LOCATION OF EXISTING PIM MONITORING DEVICE

REMOVE FIXED WINDOWS AND REPLACE WITH 3'-0" DOOR AND STOREFRONT SURROUND. **ADD ALTERNATE #2**

REMOVE DOOR & GLAZING ASSEMBLY AND INFILL EXTERIOR WALL ASSEMBLY TO ENCLOSE OPENING. **ADD ALTERNATE #2.**

REMOVE EXISTING WHITE BOARD & ENTIRE BOOKCASE. INSTALL NEW 70" RECORDEX MONITOR. MONITOR BY OWNER, INSTALLED BY CONTRACTOR.

3-HOUR FIREWALL TO REMAIN

FIRE BARRIER

LOCATION OF TWO (2) ACCESSIBLE TOILETS. **ADD ALTERNATE #2**

REVERSE DOOR SWING ON E506

3 HR RATED FIREWALL

3 HR RATED FIREWALL

SEE DEMOLITION & RENOVATION IN WORKROOM ON SHEET A-507.

NEW CASEWORK, FINISHES AND FILE ROOM ADDED IN RECEPTION. SEE SHEET A-505 & A-506. **ADD ALT #3.**

PA TOWER FROM RECEPTION TO BE RELOCATED TO NEW MDF ROOM (T715), PHASE 1.

MAIN ENTRY

BUILDING 1

BUILDING 2

DASHED LINE INDICATES ROOF OVERHANG, TYP.

6TH GRADE WING (previously 8th Grade Wing)

OUTSIDE AIR INTAKE UNITS (PRECONDITIONED AIR) SHALL BE LOCATED OUTSIDE THE BUILDING, WITH CHAIN LINK FENCE WITH PRIVACY SLATS , TYP.
SEE SHEET A-501 FOR FENCE DETAIL.

NOTE:
IN FINAL RENOVATED ROOM NUMBERING, THE 6TH & 8TH GRADE WINGS WILL SWITCH.

7TH GRADE WING

8TH GRADE WING
(previously 6th Grade Wing)

NOTE:
IN FINAL RENOVATED ROOM NUMBERING, THE 6TH & 8TH GRADE WINGS WILL SWITCH.

SERVES TWO (2) MECH. LOFTS

NEW ALUMINUM STOREFRONT DOOR W/ACCESS HARDWARE

NO FLOORING WORK - FLOORING INSTALLED DECEMBER 2017

FLOOR REPLACEMENT

- ALL CORRIDOR FLOORS - VCT * 12,920 SF TOTAL.
- CLASSROOM & GRADE LEVEL OFFICE FLOORS - VCT * 42,650 SF TOTAL.
- BAND: REMOVE CARPET, INSTALL VCT FLOORING* 2,000 SF TOTAL.

** INSTALL WAKOL PU 280 MOISTURE BARRIER WITH SCARIFYING SURFACE AND GLUE REMOVAL.*

- CARPET FLOORING REPLACED - CARPET TILE. 4,500 SF TOTAL.
- LOCKER ROOM PORCELAIN TILE - STRIP, CLEAN AND SEAL. 1,060 SF TOTAL.

PROTECT AND CLEAN EXISTING FLOORING THAT IS TO REMAIN - UNSHADED AREAS - TYP.

NOTE:

THIS RENOVATED FLOOR PLAN SHOWS THE **NEW** ROOM NUMBERS, AND GRADE ASSIGNMENT BY WING, IN THE SCHOOL.

SEE SHEET CS-07 FOR EXISTING ROOM NUMBERS.

1 / A-100 **Complete Renovated Floor Plan**
Scale 1" = 20'-0"

0' 20' 40' 80'

TRUE PLAN NORTH

bmh
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BOWMAN MURRAY HEMINGWAY ARCHITECTS, PC REGISTERED ARCHITECTURAL CORPORATION NORTH CAROLINA CERT. NO. 50424 WILMINGTON, N. C.

BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA
2.15.18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

COMPLETE RENOVATED FLOOR PLAN

JOB NUMBER

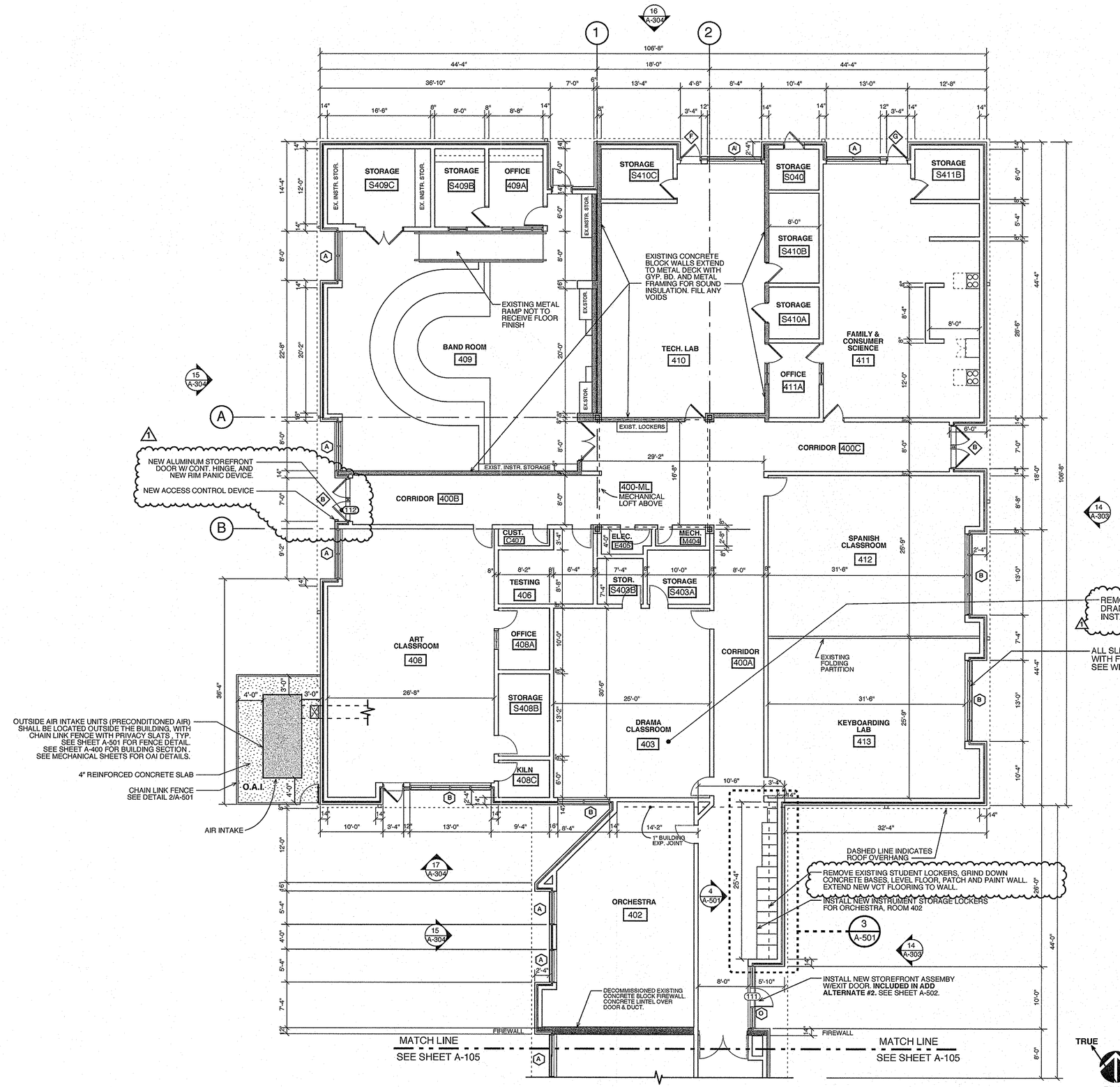
DRAWN BY Hawk

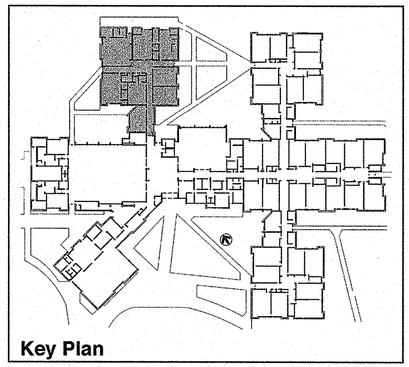
CHECKED BY Bowman

DATE 01/24/2018

REVISIONS
1 - 02/15/18 - FLOORING/DOOR CHANGES, MOVE PIM,

SHEET NUMBER **A-100**





1 / A-103 **Renovated Floor Plan - Elective Wing**
Scale 1/8" = 1'-0"

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BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA WILMINGTON, N.C. 2.15.18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

RENOVATED FLOOR PLAN - ELECTIVE WING

JOB NUMBER

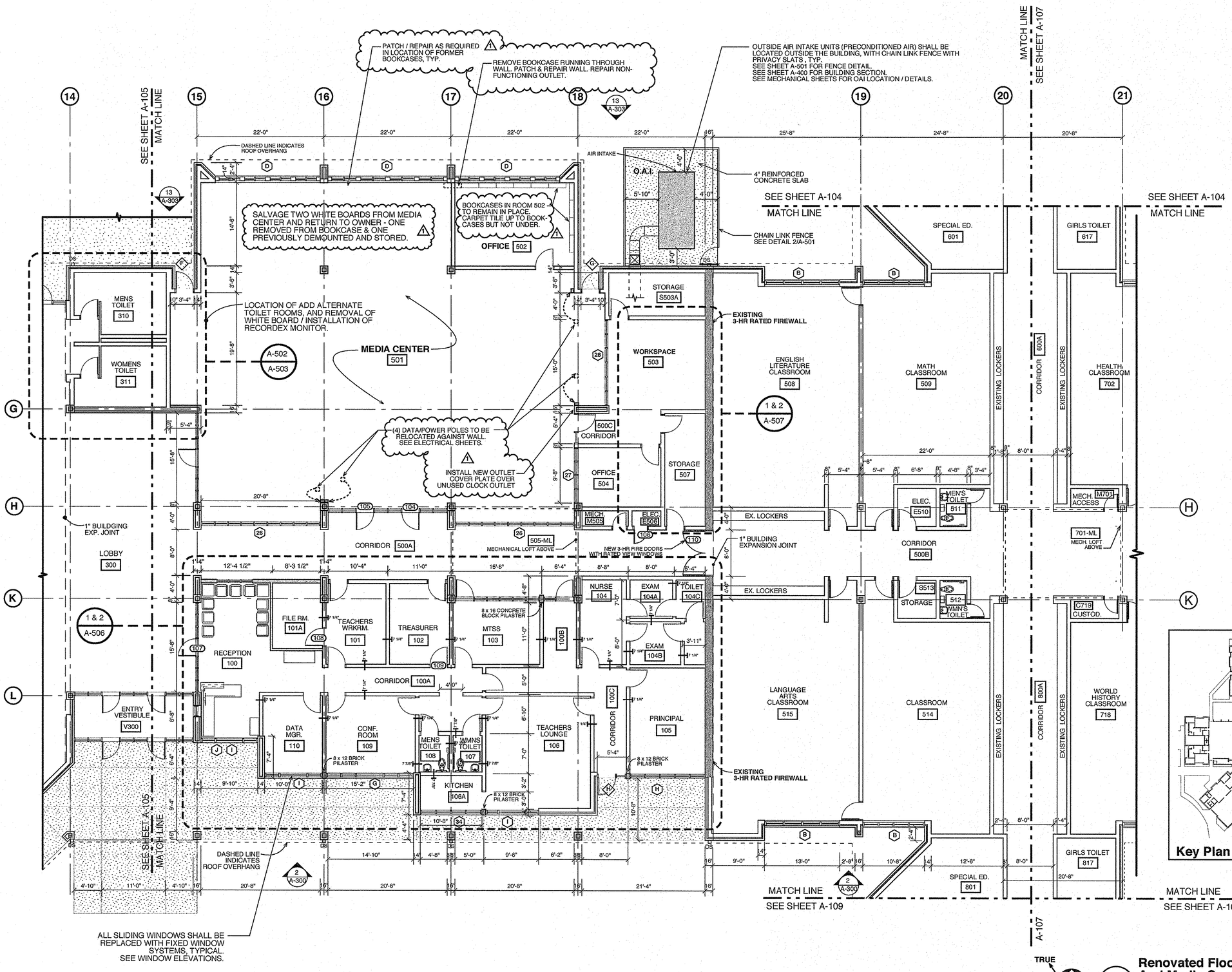
DRAWN BY: AP / KH

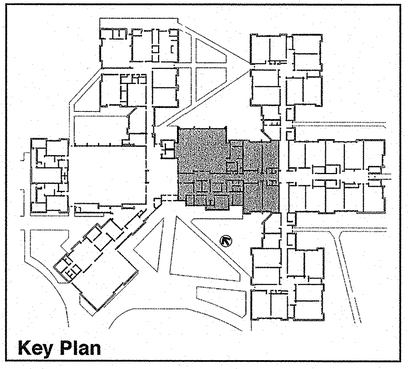
CHECKED BY: Bowman

DATE: 01/24/2018

REVISIONS
1 - 02/15/18 -NEW DOOR, ORCHEST. LOCKERS

SHEET NUMBER
A-103





TRUE
PLAN NORTH

1 / A-106 **Renovated Floor Plan - Administration And Media Center**

Scale 1/8" = 1'-0"

bmh
BOWMAN MURRAY HEMINGWAY
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Fax - (910) 762-8506

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS, PC
REGISTERED ARCHITECTURAL CORPORATION
CERT. NO. 50424
NORTH CAROLINA
WILMINGTON, N.C.

BRUCE F. BOWMAN
REGISTERED ARCHITECT
5951
NORTH CAROLINA
2-15-18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

RENOVATED FLOOR PLAN - ADMINISTRATION AND MEDIA CENTER

JOB NUMBER

DRAWN BY Hawk

CHECKED BY Bowman

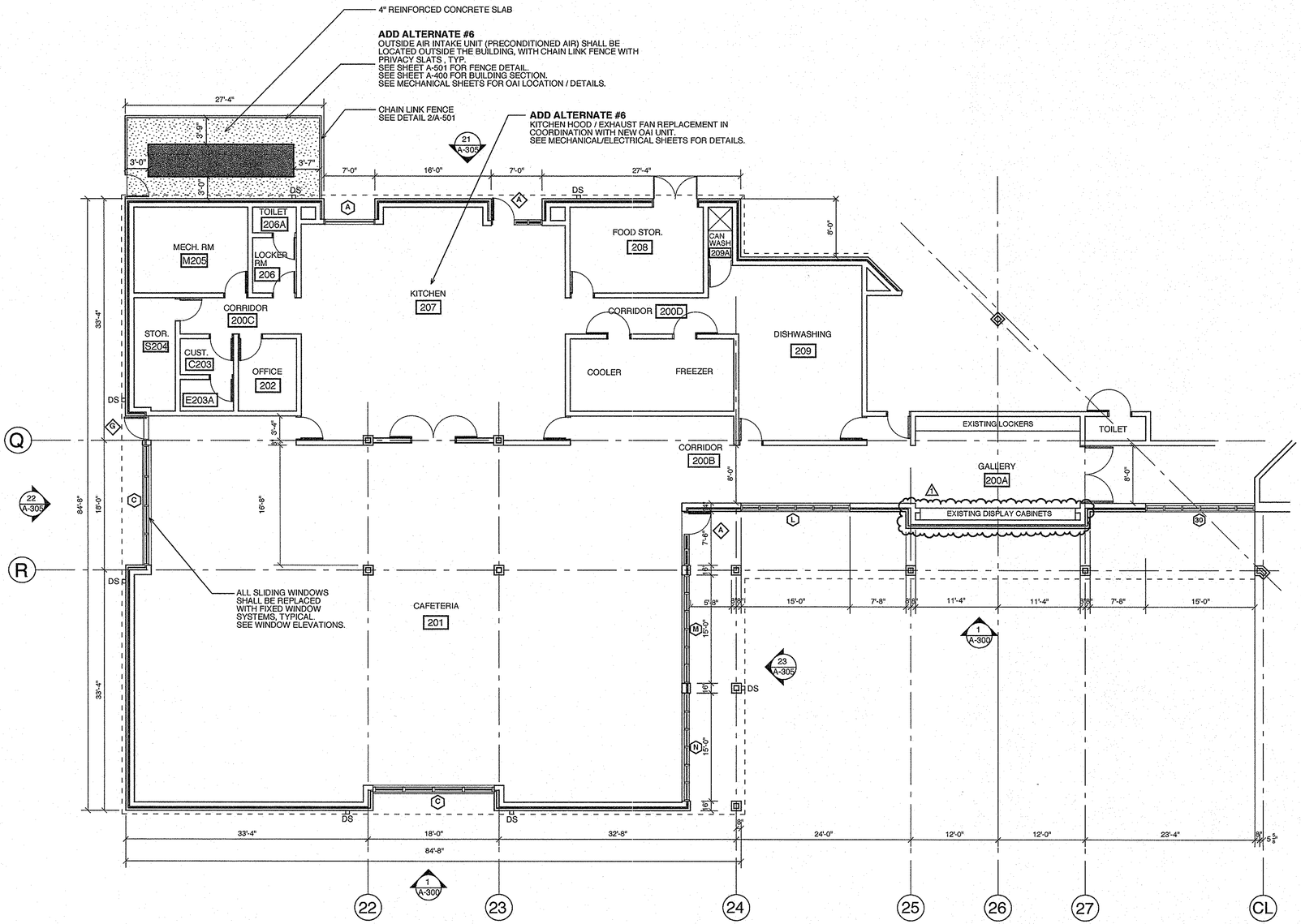
DATE 01/24/2018

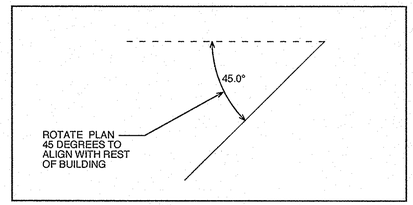
REVISIONS

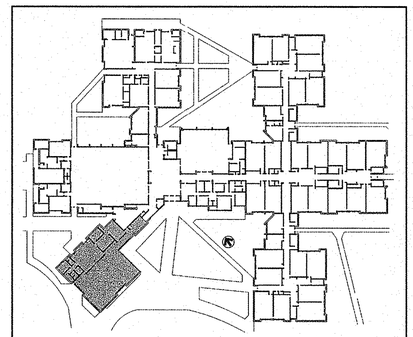
1 - 02/15/18 - MEDIA CTR: POWER POLES MOVED, SALVAGE WHITE B WALL REPAIR

SHEET NUMBER

A-106







TRUE PLAN NORTH

1 A-108 **Renovated Floor Plan - Cafeteria**
Scale 1/8" = 1'-0"

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BRUCE F. BOWMAN
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5951
NORTH CAROLINA
WILMINGTON, N.C.
2-15-18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

RENOVATED FLOOR PLAN - CAFETERIA

JOB NUMBER

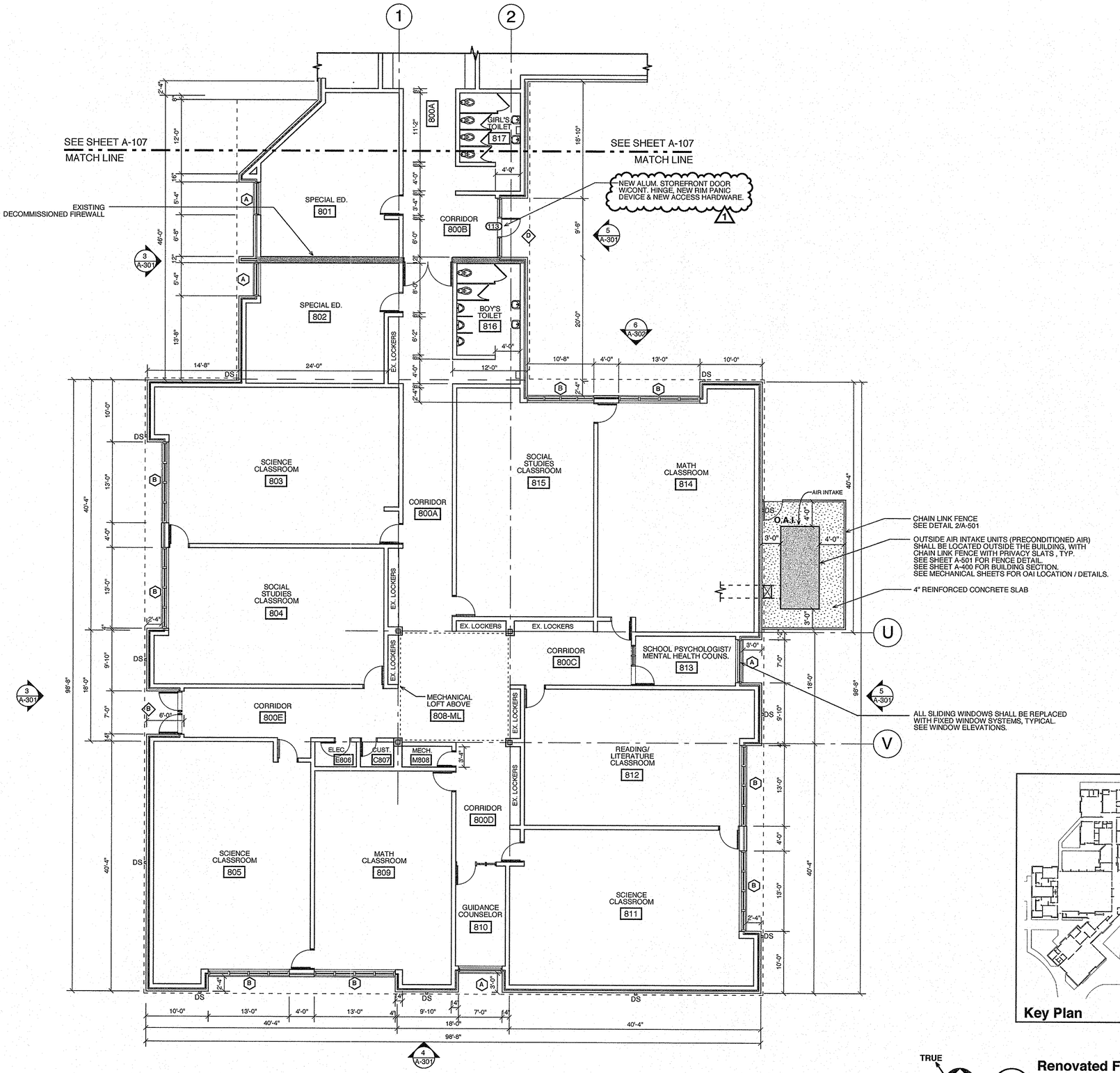
DRAWN BY
AP / KH

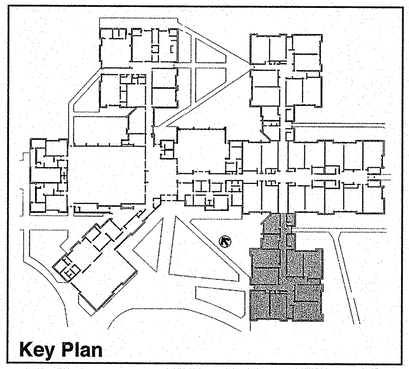
CHECKED BY
Bowman

DATE
01/24/2018

REVISIONS
2/15/18 - Exst. Display Cabine

SHEET NUMBER
A-108





TRUE
PLAN
NORTH

1 / A-109 **Renovated Floor Plan - 8th Grade Wing**
- Formerly 6th Grade Wing

Scale 1/8" = 1'-0"

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BRUCE F. BOWMAN
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WILMINGTON, N.C.
2.15.18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

RENOVATED FLOOR PLAN - 8TH GRADE WING

JOB NUMBER

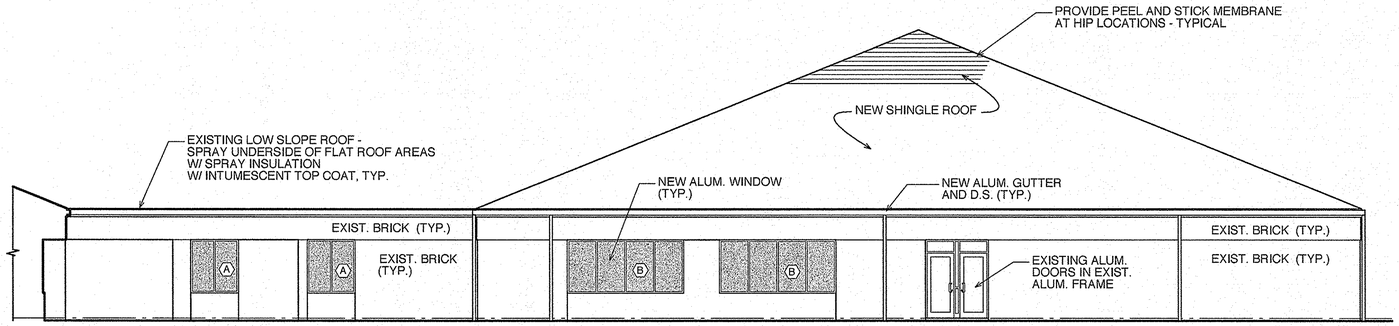
DRAWN BY
AP / KH

CHECKED BY
Bowman

DATE
01/24/2018

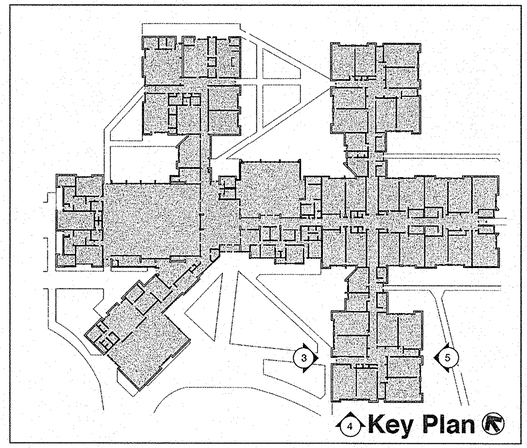
REVISIONS
1 - 02/15/18 - NEW DOOR

SHEET NUMBER
A-109

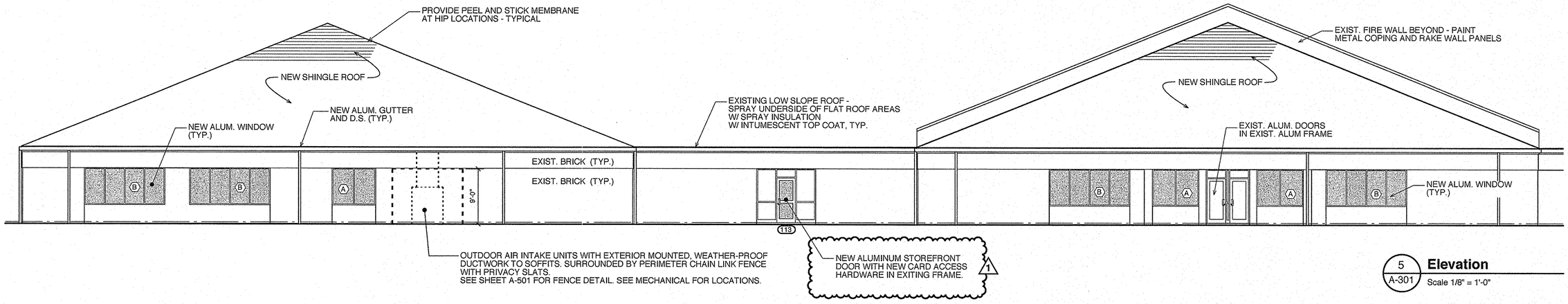


3 A-301 **Elevation**
Scale 1/8" = 1'-0"

NOTE: SHADING IN ELEVATIONS INDICATE WINDOWS TO BE REPLACED



4 A-301 **Elevation**
Scale 1/8" = 1'-0"



5 A-301 **Elevation**
Scale 1/8" = 1'-0"

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WILMINGTON, N.C.
2-12-18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

ELEVATIONS 3 - 5

JOB NUMBER

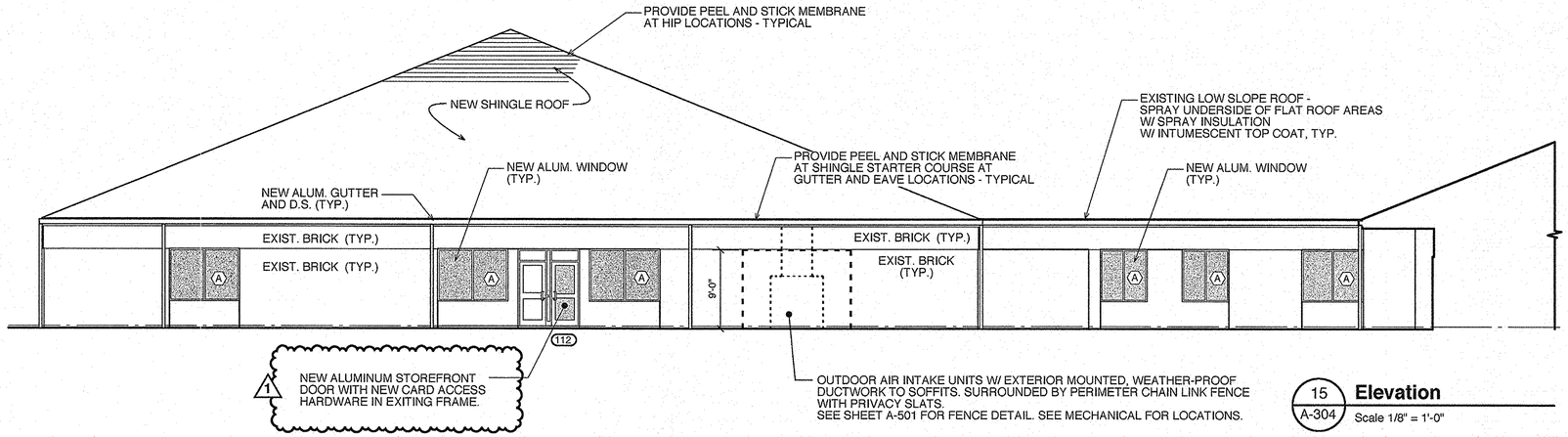
DRAWN BY
Watson / Hawk

CHECKED BY
Bowman

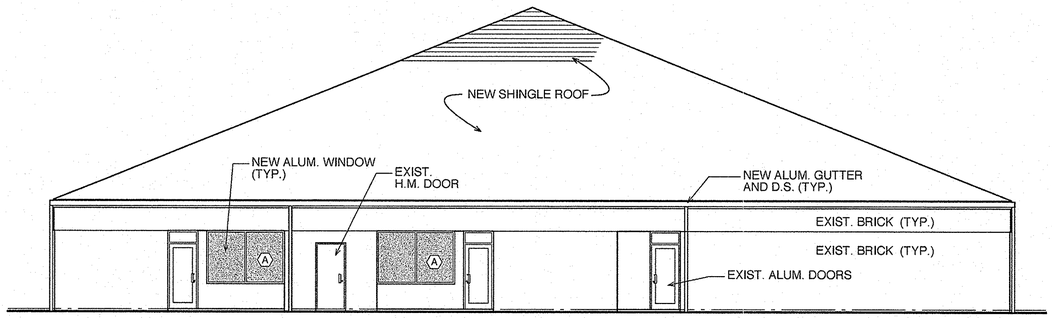
DATE
01/24/2018

REVISIONS
1 - 02/15/18 - NEW DOOR

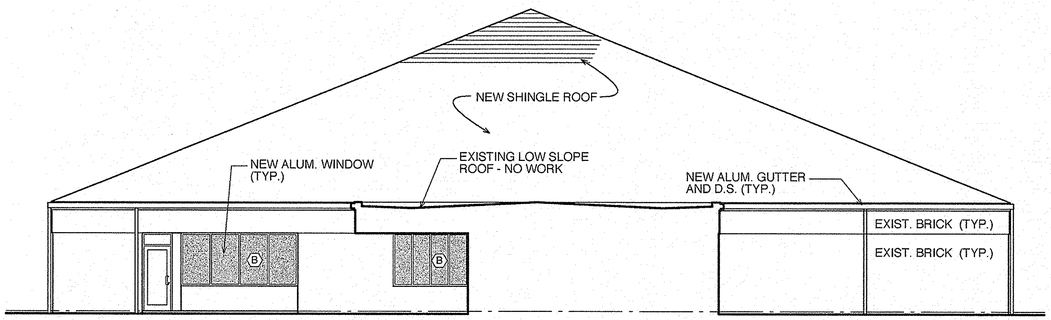
SHEET NUMBER
A-301



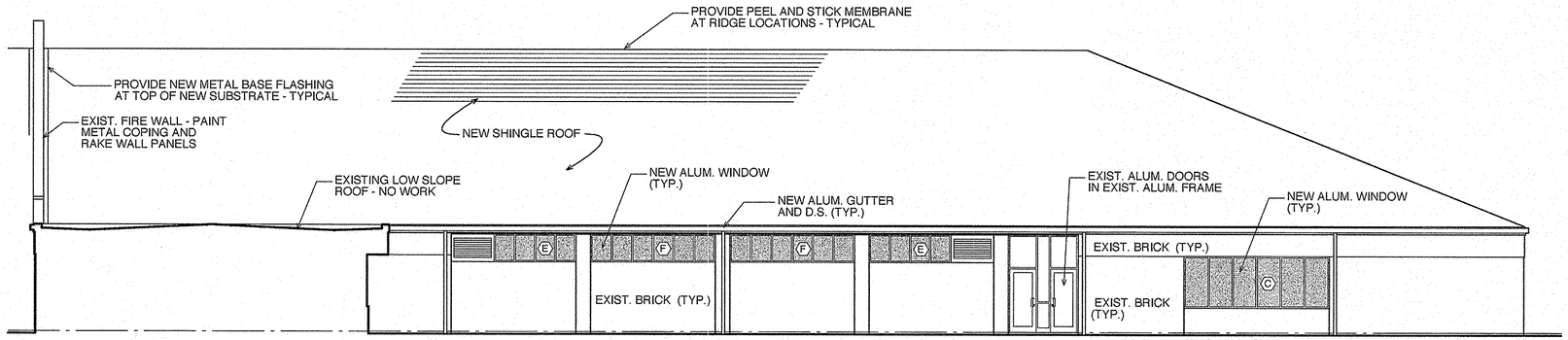
15 A-304 **Elevation**
Scale 1/8" = 1'-0"



16 A-304 **Elevation**
Scale 1/8" = 1'-0"

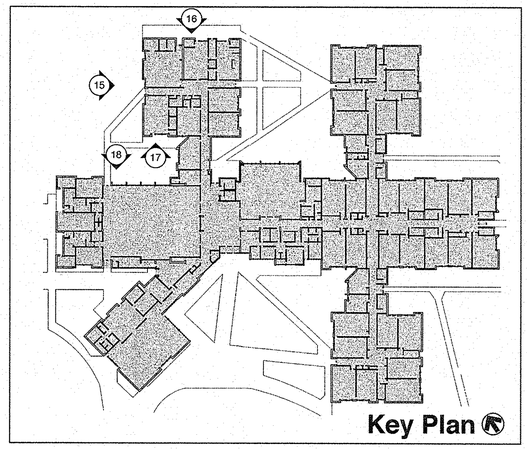


17 A-304 **Elevation**
Scale 1/8" = 1'-0"



18 A-304 **Elevation**
Scale 1/8" = 1'-0"

NOTE: SHADING IN ELEVATIONS INDICATE WINDOWS TO BE REPLACED



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WILMINGTON, N. C.

BRUCE F. BOWMAN
REGISTERED ARCHITECT
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NORTH CAROLINA
WILMINGTON, N.C.
2-15-18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

ELEVATIONS 15 - 18

JOB NUMBER

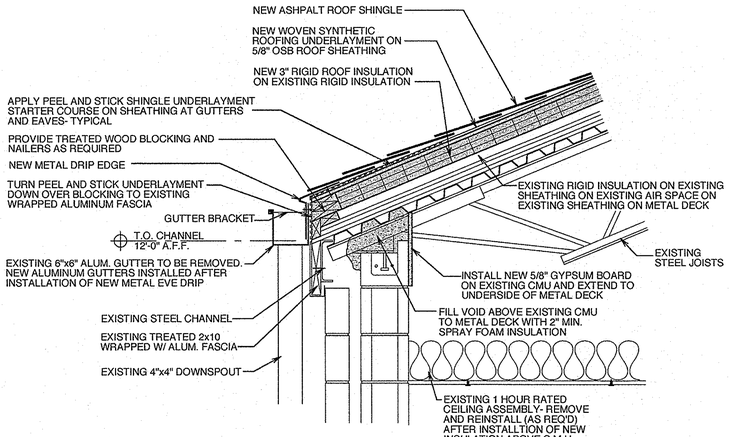
DRAWN BY
Watson / Hawk

CHECKED BY
Bowman

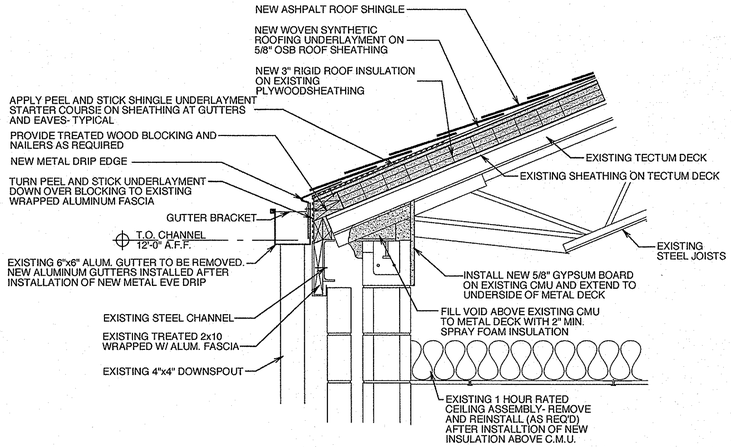
DATE
01/24/2018

REVISIONS
1 - 02/15/18 - New door

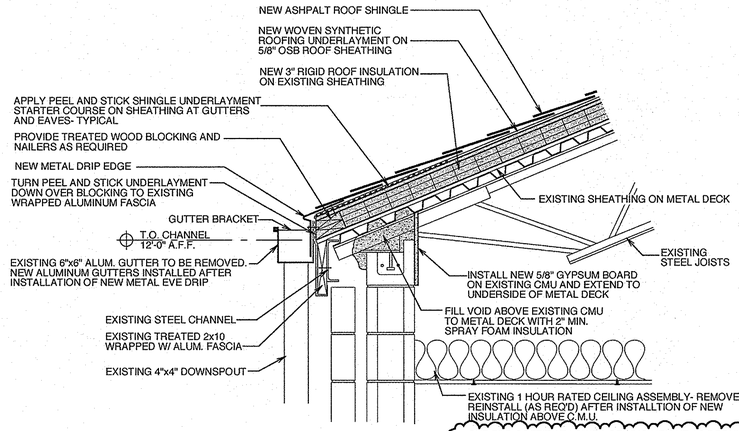
SHEET NUMBER
A-304



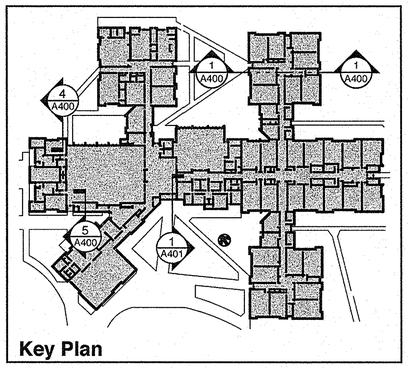
4 A-400 DETAIL @ EXISTING ROOF
SCALE: 1" = 1'-0"

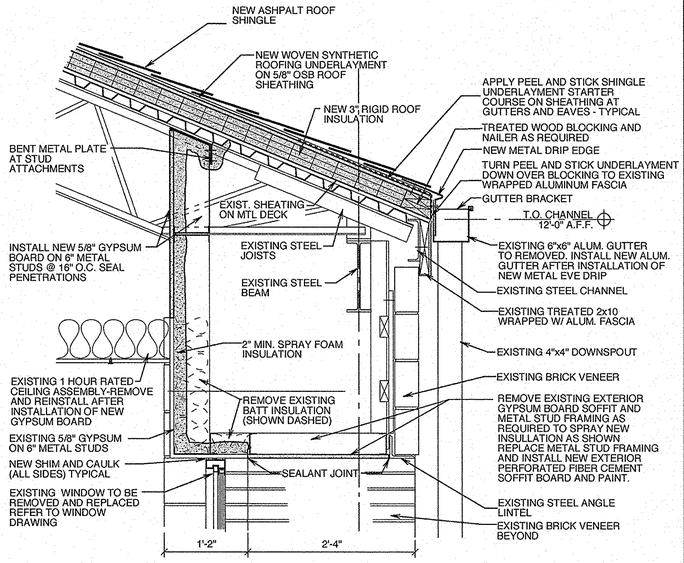


5 A-400 DETAIL @ EXISTING ROOF
SCALE: 1" = 1'-0"

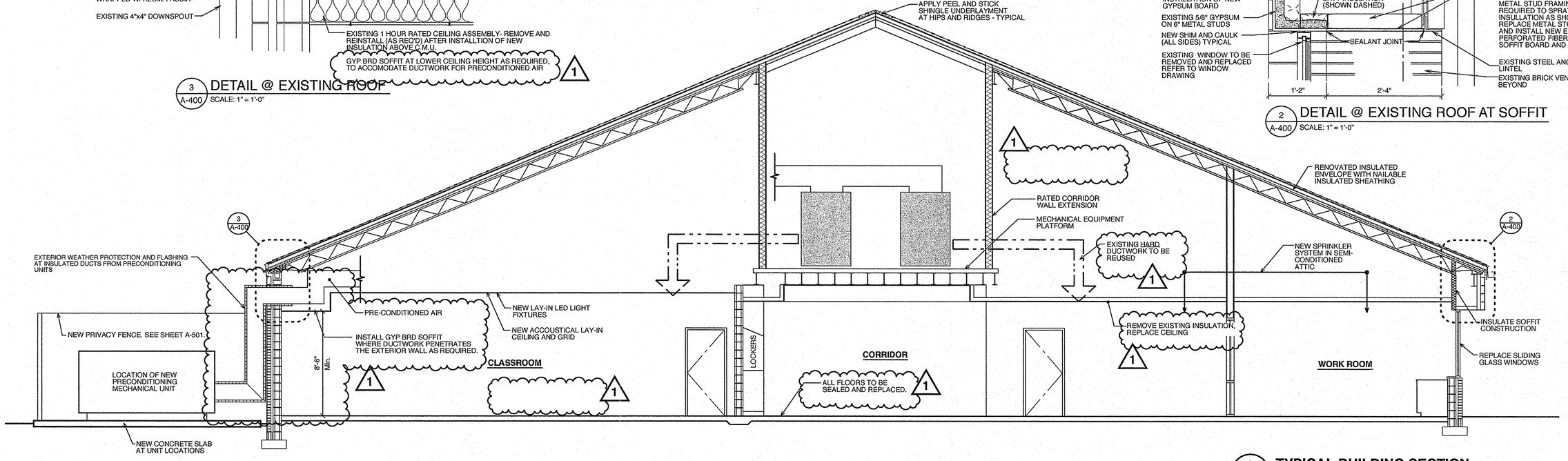


3 A-400 DETAIL @ EXISTING ROOF
SCALE: 1" = 1'-0"





2 A-400 DETAIL @ EXISTING ROOF AT SOFFIT
SCALE: 1" = 1'-0"



1 A-400 TYPICAL BUILDING SECTION
Scale 1/4" = 1'-0"

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BRUCE E. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA WILMINGTON, N.C.
2.15.18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

BUILDING SECTIONS

JOB NUMBER

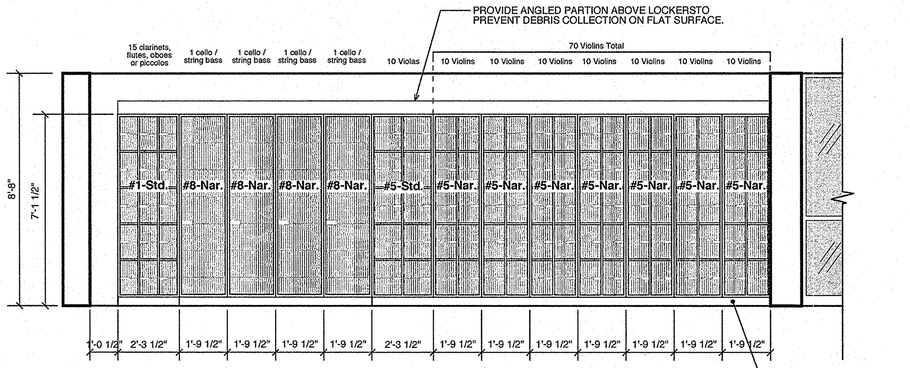
DRAWN BY
DP

CHECKED BY
Bowman

DATE
01/24/2018

REVISIONS
1 - 02/14/18 - SOFFIT AT OAI DUCTWORK, REMOVE INSULATION FROM ABOVEEGAP, CLARIFY DUCTWORK

SHEET NUMBER
A-400

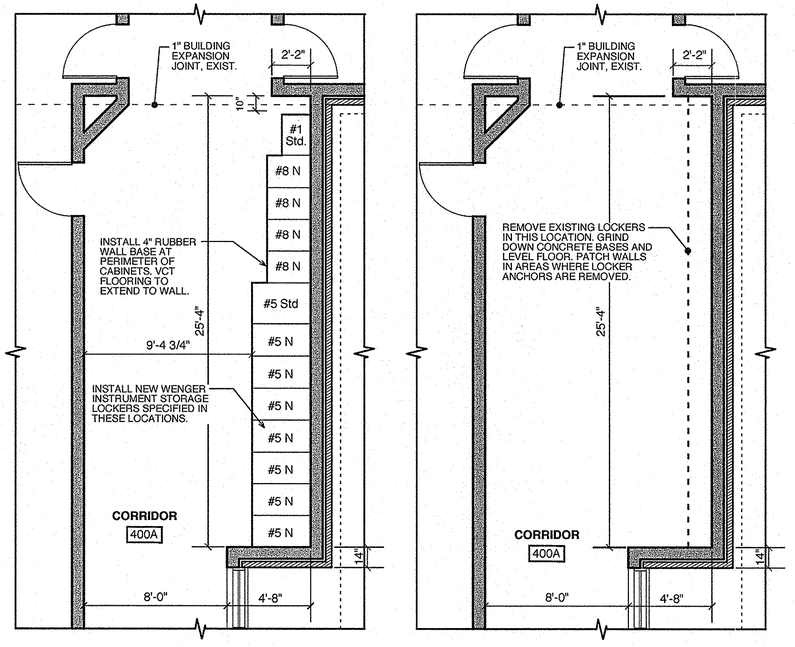


4 A-501 **Elevation of Orchestra Lockers,** Renovated Corridor 400A

scale: 3/8" = 1'-0"

STORAGE LEGEND - Wenger UltraStor Storage Cabinet, Sizes

#1-Std.	WILL HOLD 15 CLARINETS, FLUTES, OBOES, OR PICCOLOS, STANDARD COMPARMENT WIDTH
#5-Std.	WILL HOLD 10 VIOLAS, STANDARD COMPARTMENT WIDTH
#5-Nar.	WILL HOLD 10 VIOLINS, NARROW COMPARTMENT WIDTH
#8-Nar.	WILL HOLD 1 STRING BASS OR CELLO, NARROW COMPARTMENT WIDTH

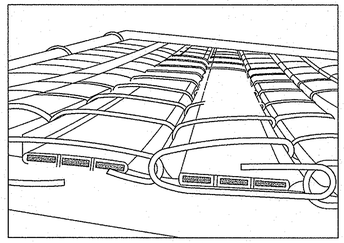


RENOVATION PLAN **DEMOLITION PLAN**

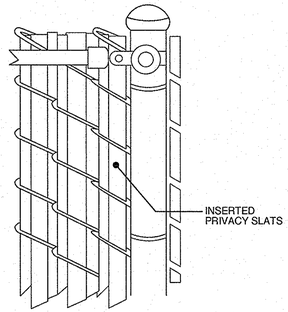
3 A-501 **Orchestra Lockers,** Demolition and Renovation Plans

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

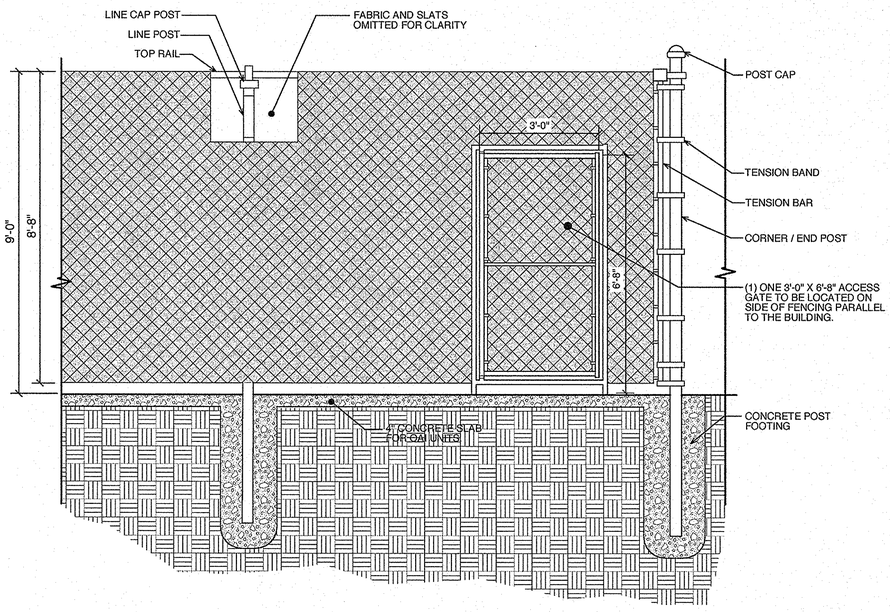
BASIS OF DESIGN:
WENGER ULTRASTOR STORAGE CABINETS. VENTED COMPARTMENT DOORS W/ STRAIGHT GRILLE.



TYPICAL SLAT KNUCKLED SELVEGES DETAIL



TYPICAL CORNER POST DETAIL

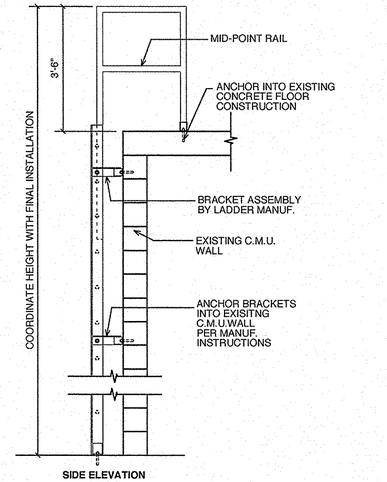


2 A-501 **Privacy Fence Detail** at Outdoor Mechanical Units

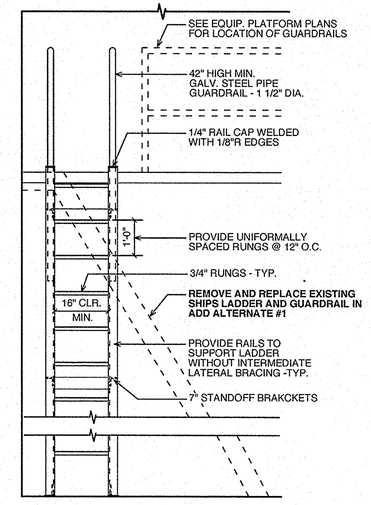
scale: 1/2" = 1'-0"

FENCE NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. THIS DRAWING IS INTENDED FOR PLANNING PURPOSES ONLY.
3. BASIS OF DESIGN: "PRIVACY LINK" - FIN2000 SLATS, 3 1/2" X 5" MESH W/ SUPREME (PRE-INSERTED) PRIVACY SLATS WITH APPROXIMATELY 98% PRIVACY.



SIDE ELEVATION



FRONT ELEVATION

1 A-501 **Access Ladder Detail**

scale: 1/2" = 1'-0" **ADD ALTERNATE #4**

LADDER NOTES:

1. LADDER DESIGN SHALL CONFORM TO THE LATEST OSHA STANDARDS.
2. THE MINIMUM CONCENTRATED LIVE LOAD OF 300 LBS. SHALL BE USED.
3. LADDER SHALL BE GALVANIZED STEEL.
4. LADDER MANUFACTURER SHALL PROVIDE REQUIRED ANCHORING LOADS AND INSTRUCTIONS.

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BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA
2.15.18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

LADDER DETAIL AND PRIVACY FENCE DETAILS

JOB NUMBER

DRAWN BY
DP / Hawk

CHECKED BY
Bowman

DATE
01/24/2018

REVISIONS
1 - 02/15/18- Update Orchestra Locker

SHEET NUMBER
A-501

ALL WORK THIS SHEET SHALL BE
ADD ALTERNATE #3

LEGEND: ROOM NUMBERS

(###) INDICATES EXISTING ROOM NUMBER

[###] INDICATES NEW ROOM NUMBER

DEMOLITION NOTES:

(A) P.A. SYSTEM SHALL BE RELOCATED IN PHASE ONE TO 7TH GRADE WING.

(B) REMOVE AND RELOCATE EXISTING DEFFIBRILLATOR. REPAIR WALL AS REQUIRED.

(C) REMOVE EXISTING GYP. BD. WALL AND DOOR. REPAIR WALLS AND FLOOR WHERE REQUIRED.

(D) REMOVE EXISTING BRICK AND CMU MASONRY WALL. PREPARE FOR NEW LINTEL WINDOW.

(E) REMOVE EXISTING STOREFRONT ASSEMBLY AND DOOR. WALL AS IT EXTENDS ABOVE THE CEILING TO BE REMOVED ENTIRELY. REPAIR WALLS AND FLOOR WHERE REQUIRED. PATCH AND REPAIR WALLS AS REQUIRED.

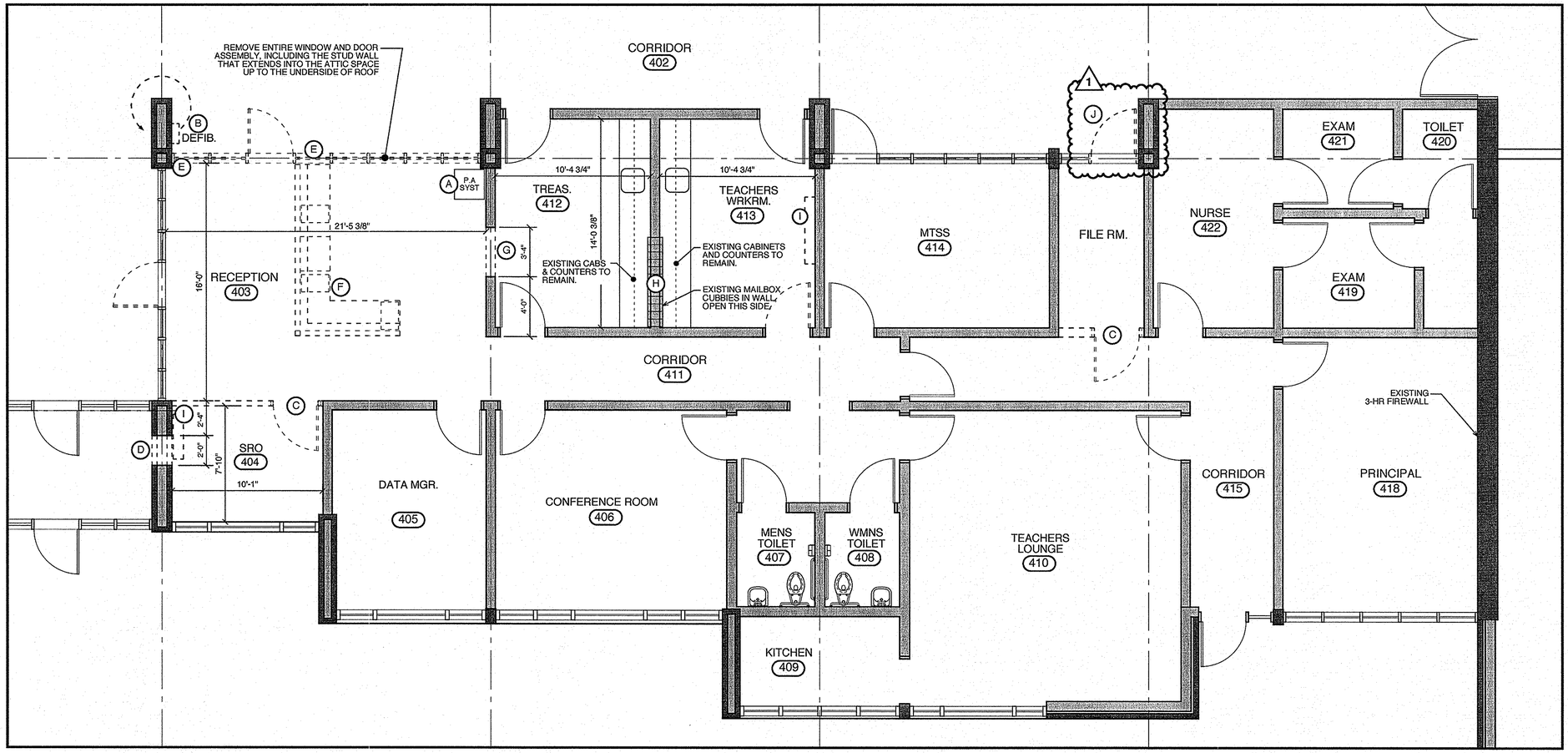
(F) REMOVE BUILT IN RECEPTION DESK. SEE ELECTRICAL SHEETS FOR RELOCATATION OF MASTER SECURITY ALARM AND DOORBELL. REPAIR FLOOR WHERE REQUIRED.

(G) REMOVE EXISTING GYP. BD. WALL . REPAIR WALLS AND FLOOR WHERE REQUIRED. PREPARE FOR INSTALLATION OF NEW DOOR.

(H) REVERSE MAILBOX OPENINGS IN ROOM 413 TO OPEN IN ROOM 412. CLOSE OPENINGS IN ROOM 413 AND REPAIR AS NEEDED.

(I) REMOVE SHELVING. PATCH AND REPAIR WALL AS NECESSARY.

(J) REMOVE EXISTING FILE ROOM DOOR. 1



1 / A-505 **Enlarged Administrative Plan, Demolition**
SCALE: 1/4" = 1'-0"

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BRUCE F. BOWMAN
REGISTERED ARCHITECT
5951
NORTH CAROLINA
WILMINGTON, N.C.
2.13.18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

ENLARGED ADMINISTRATIVE PLAN - DEMOLITION

JOB NUMBER

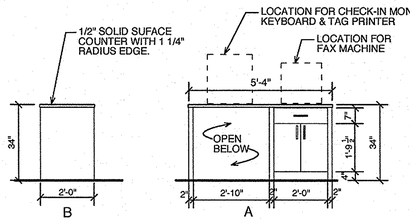
DRAWN BY
Wilson, Hawk

CHECKED BY
Bowman

DATE
01/24/2018

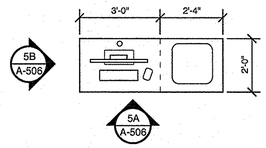
REVISIONS
1 - 02/15/18 - demo door at exst. file m

SHEET NUMBER
A-505



5 A-506 **CHECK IN STATION ELEVATIONS**

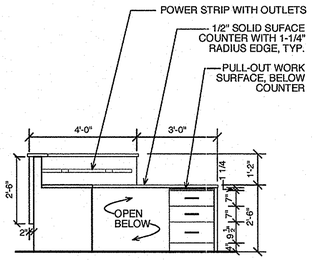
SCALE: 3/8" = 1'-0"

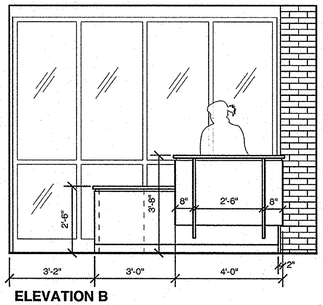


4 A-506 **CHECK IN STATION PLAN**

SCALE: 3/8" = 1'-0"

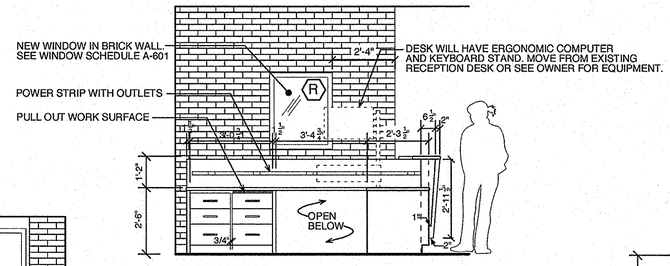
ALL WORK THIS SHEET SHALL BE **ADD ALTERNATE #3**

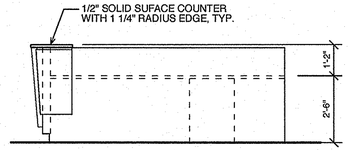


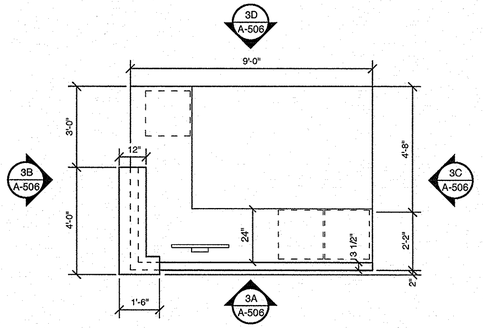


3 A-506 **RECEPTION DESK ELEVATIONS**

SCALE: 3/8" = 1'-0"







2 A-506 **RECEPTION DESK PLAN**

SCALE: 3/8" = 1'-0"

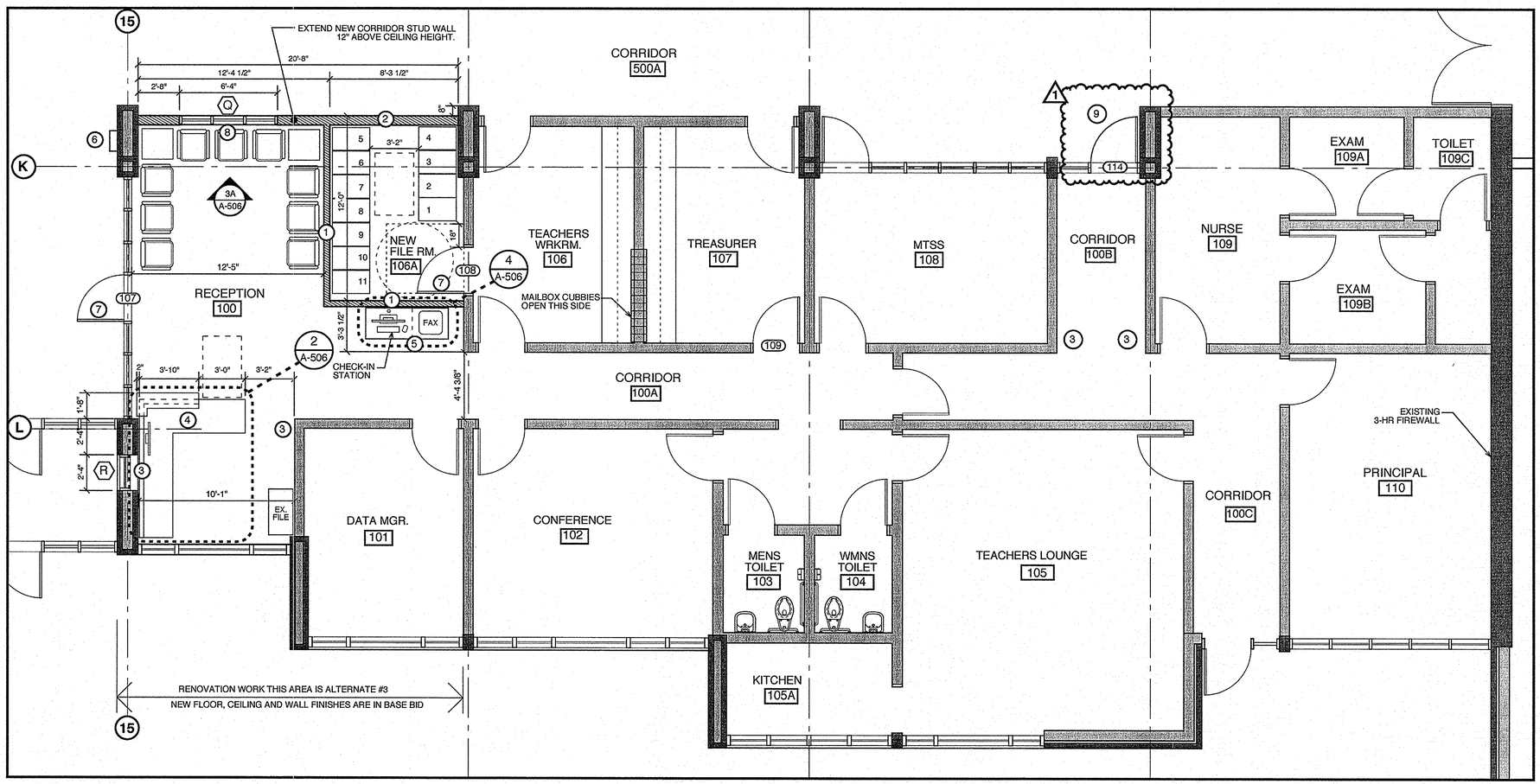
RENOVATION NOTES:

1. NEW 3 5/8" METAL STUD WALL WITH 5/8" IMPACT RESISTANT GYP. BD. BOTH SIDES. WALL SHALL EXTEND 8" ABOVE CEILING HEIGHT
2. NEW 6" METAL STUD WALL WITH 5/8" IMPACT RESISTANT GYP. BD. BOTH SIDES. WALL SHALL EXTEND 12" ABOVE CEILING HEIGHT.
3. NEW LINTEL AND WINDOW. PATCH AND REPAIR BRICK AS REQUIRED. SEE WINDOW SCHEDULE FOR SIZE AND ELEVATION.
4. NEW RECEPTION DESK. SEE 2/A-506 AND 3/A-506 FOR DETAILS.
5. NEW CHECK IN DESK. SEE 4/A-506 AND 5/A FOR DETAILS.
6. RELOCATED DEFIBRILLATOR
7. NEW DOOR WITH LOCKSET. SEE SCHEDULE FOR HARDWARE.
8. NEW INTERIOR GLAZING. SEE WINDOW SCHEDULE FOR LOCATION AND SIZE.
1. 9. NEW SOLID CORE WOOD DOOR AND CARD ACCESS HARDWARE. HM FRAME EXISTING.

LEGEND: ROOM NUMBERS

(###) INDICATES EXISTING ROOM NUMBER

[###] INDICATES NEW ROOM NUMBER



1 A-506 **Enlarged Administrative Plan, Renovated**

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

BOWMAN MURRAY HEMINGWAY
ARCHITECT
514 Market Street
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Fax - (910) 762-8506

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS, PC REGISTERED ARCHITECTURAL CORPORATION CERT. NO. 50424 NORTH CAROLINA WILMINGTON, N. C.

BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA WILMINGTON, N. C.

2·15·18

Renovations to:

Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

ENLARGED ADMINISTRATIVE PLAN - RENOVATED

JOB NUMBER

DRAWN BY: Wilson, Hawk

CHECKED BY: Bowman

DATE: 01/24/2018

REVISIONS

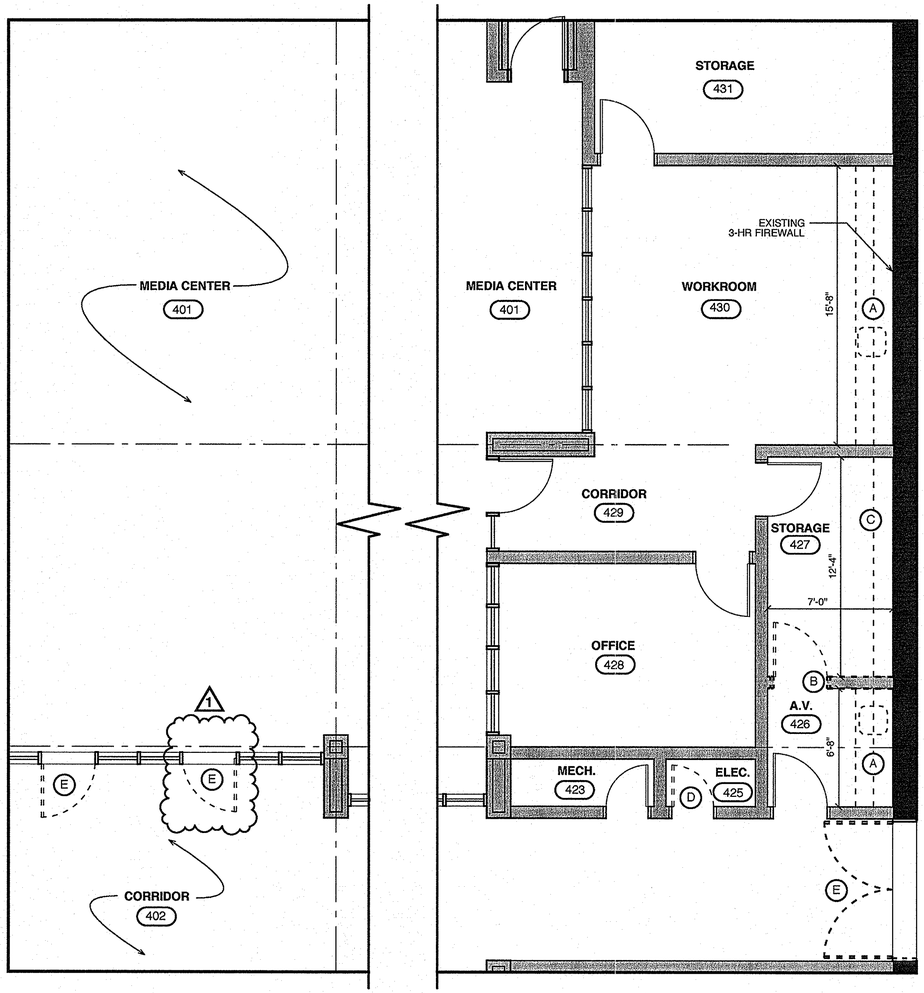
1 - 02/15/18 - New door w/ access hdw

SHEET NUMBER

A-506

DEMOLITION NOTES:

- (A) REMOVE EXISTING UPPER AND LOWER CABINETS, LAVATORY, PAPER TOWEL AND SOAP DISPENSER AND CAP PLUMBING. PATCH / REPAIR WALLS AND FLOOR AS REQUIRED.
- (B) REMOVE EXISTING CMU WALL AND DOOR. REPAIR WALLS AND FLOOR AS REQUIRED.
- (C) REMOVE EXISTING WALL SHELVING UNITS. PATCH AND REPAIR WALL AS REQUIRED.
- (D) REMOVE DOOR AND PREPARE TO INSTALL NEW DOOR WITH REVESE SWING.
- (E) REMOVE DOOR AND PREPARE TO INSTALL NEW DOOR. SEE DOOR SCHEDULE FOR TYPE.



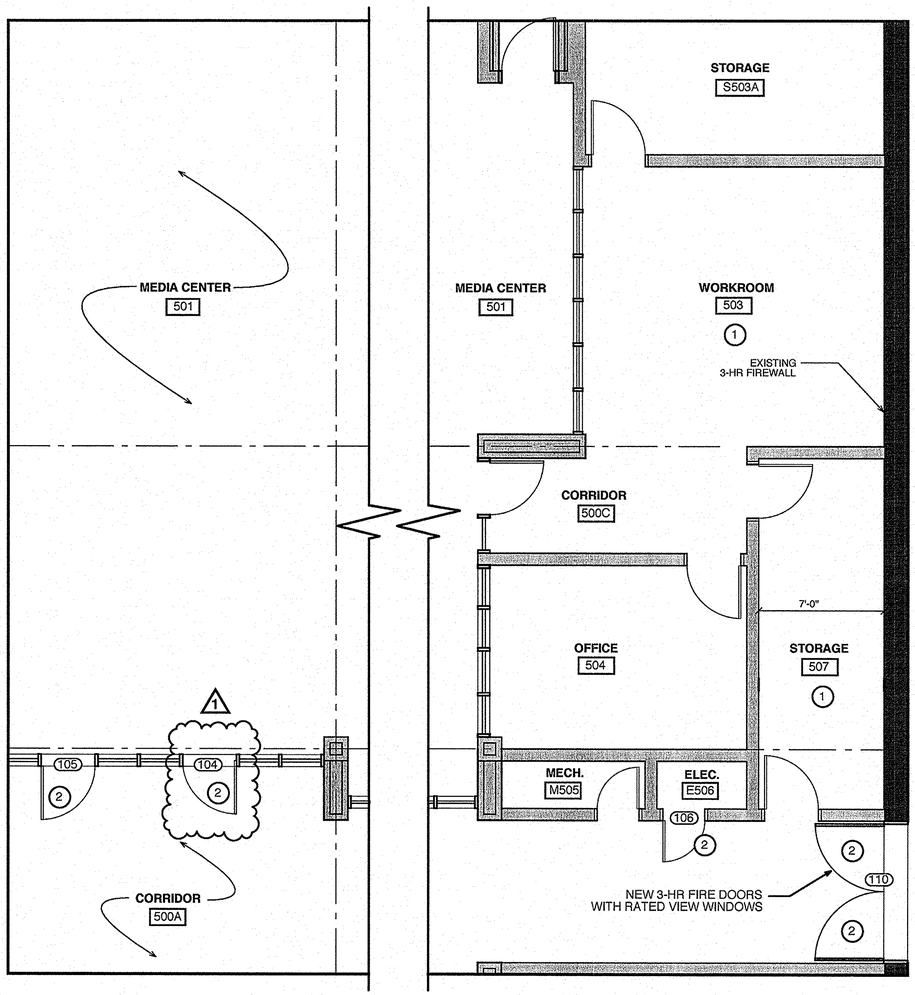
1 A-507 **Enlarged Media Center Plan, Demolition**
SCALE: 1/4" = 1'-0"

LEGEND: ROOM NUMBERS

- (###) INDICATES EXISTING ROOM NUMBER
- [###] INDICATES NEW ROOM NUMBER

RENOVATION NOTES:

1. FINAL PATCH/ REPAIRS TO ROOM PRIOR TO PAINTING & FLOORING INSTALLATION.
2. NEW DOOR WITH LOCKSET. SEE SCHEDULE FOR HARDWARE.



2 A-507 **Enlarged Media Center Plan, Renovated**
SCALE: 1/4" = 1'-0"

NOTE: NEW ROOM NUMBERS FOR ALL ROOMS

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REGISTERED ARCHITECTURAL CORPORATION
CERT. NO. 50424
NORTH CAROLINA
WILMINGTON, N. C.

SPRUCE F. BOWMAN
REGISTERED ARCHITECT
5951
NORTH CAROLINA
WILMINGTON, N.C.
2.15.18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

ENLARGED MEDIA CENTER PLAN - DEMOLITION AND RENOVATED

JOB NUMBER

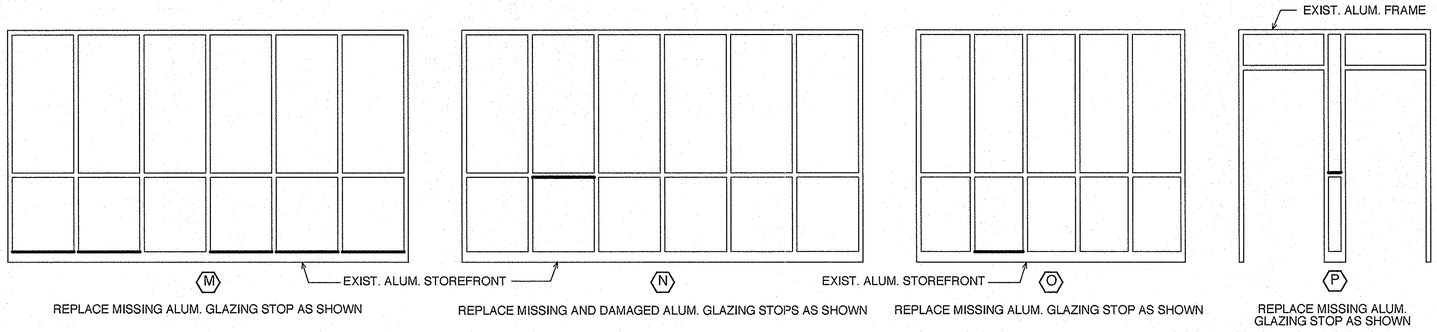
DRAWN BY
Hawk

CHECKED BY
Bowman

DATE
01/24/2018

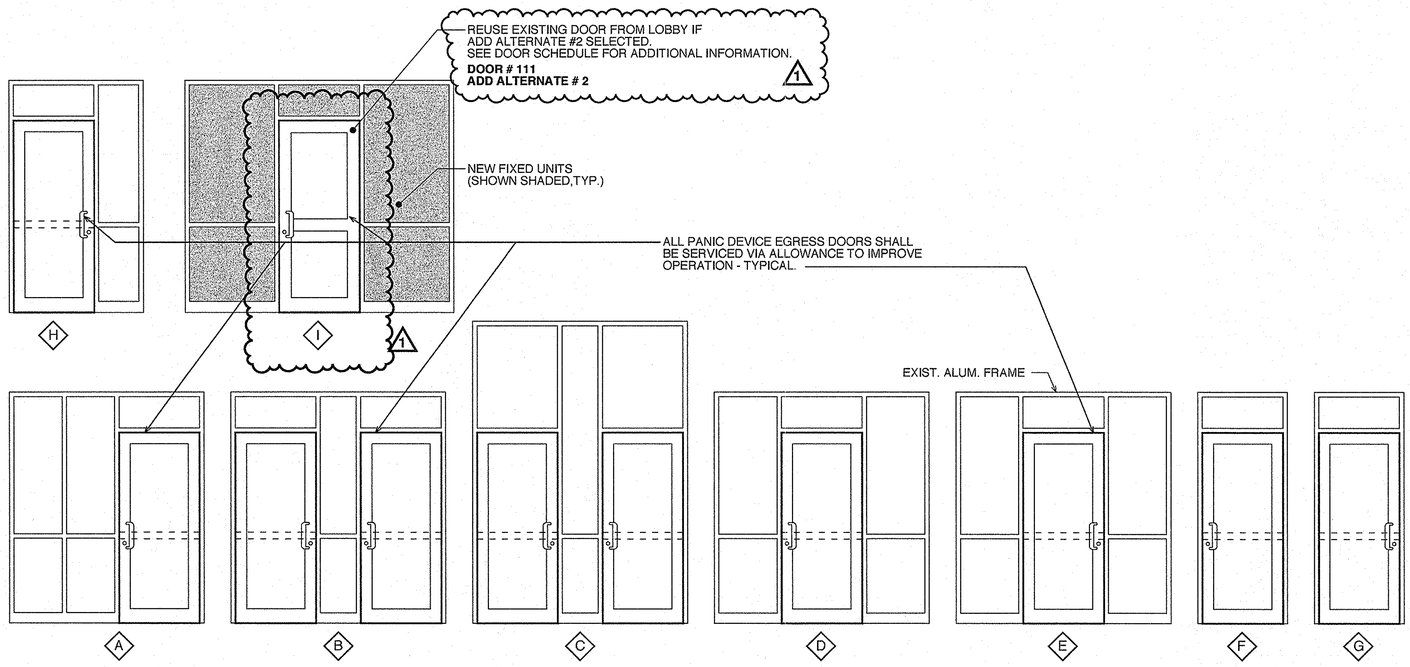
REVISIONS
1 - 02/15/18 - Corrected door swing

SHEET NUMBER
A-507



2 A-601 **Existing Aluminum Storefront Elevations With New Aluminum Glazing Stop Replacements For Missing Stops**

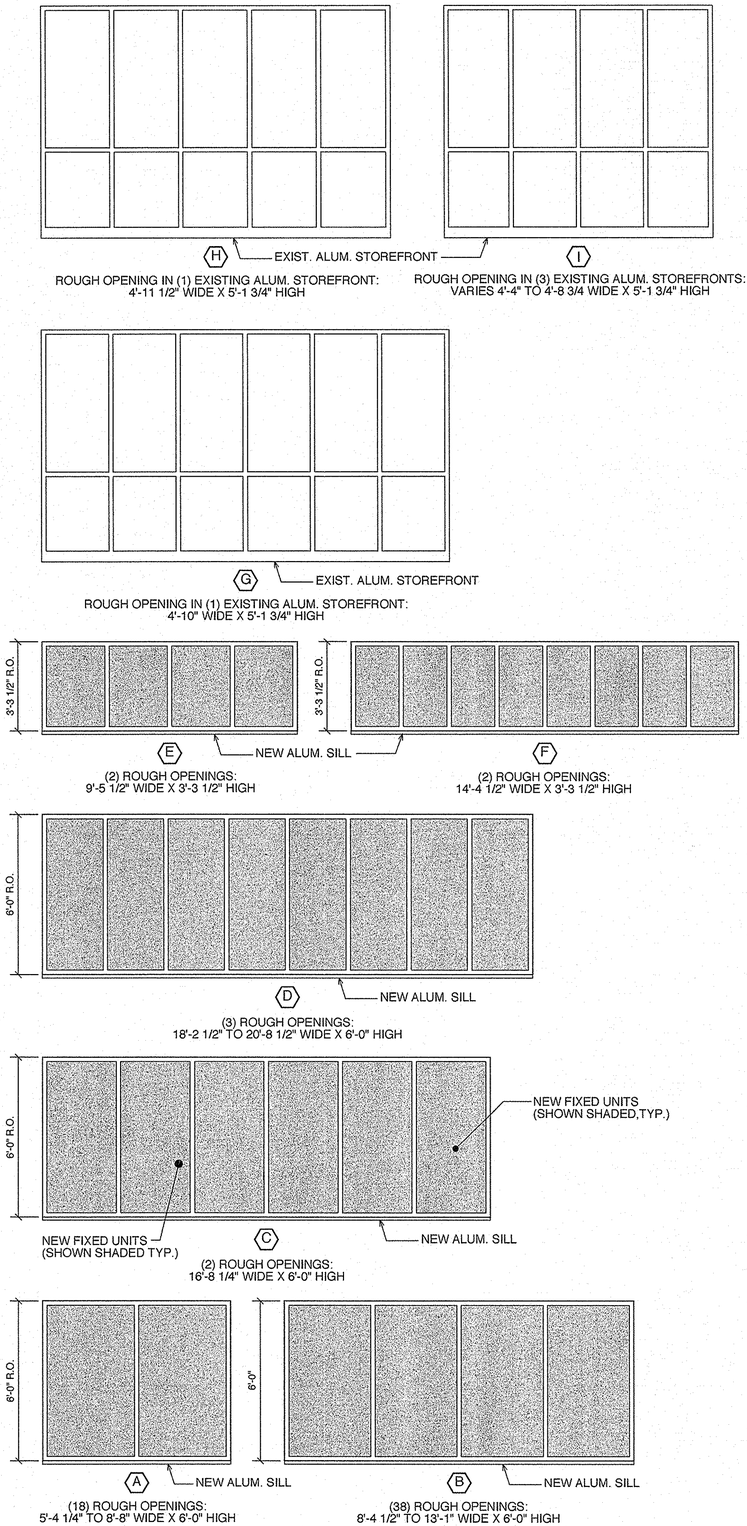
Scale 3/8" = 1'-0"



TYPICAL DOOR: 3'-0" X 7'-2" X 1 3/4"

3 A-601 **New Aluminum Replacement Door Elevations With Existing Aluminum Frames**

Scale 3/8" = 1'-0"



1 A-601 **New Aluminum Window Elevations (Existing Slider Replacements)**

Scale 3/8" = 1'-0"

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BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA WILMINGTON, N.C. 2·15·18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

WINDOW & DOOR ELEVATIONS

JOB NUMBER

DRAWN BY: Watson

CHECKED BY: Bowman

DATE: 01/24/2018

REVISIONS: 1 - 02/15/18 - REUSE DOOR

SHEET NUMBER

A-601

HARDWARE SCHEDULE

HW 1 Exterior HM Door, Sprinkler Riser Door 101
1 1/2 Pair hinges
1 Closer
1 Mortise lockset-storeroom function
1 Threshold and weatherstrip set
1 Doorstop

HW 2 Interior Single, Toilet Doors 102, 103
1 1/2 Pair hinges
1 Mortise lockset - privacy function
1 Wall stop
1 Mop plate

HW 3 Pair, 3-Hour Fire Doors 110
4 Pair hinges
2 Vertical rod panic devices - passage function
2 Closers
Remove and remount existing magnetic hold open pads

HW 4 Electrical Room 106
1 Continuous hinge
1 Mortise lockset - storeroom function
1 Wall stop
1 Set hinge and strike filler plates

HW 5 New File Room, Door 108
1 1/2 Pair hinges
1 Mortise lockset - storeroom function
1 Wall stop

HW6 Treasurer's Office, Door 109
1 1/2 Pair hinges
1 Mortise lockset - entrance function
1 Wall stop

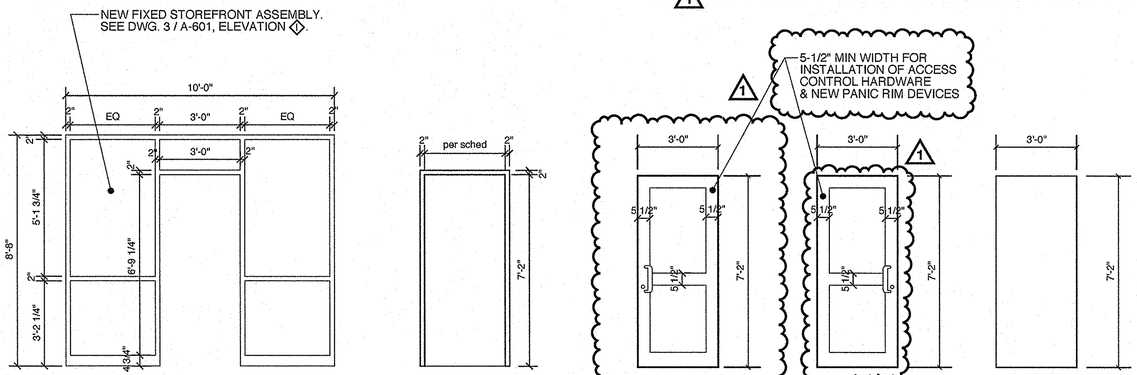
HW7 Reception/Media, Doors 104, 105, 107
1 1/2 Pair hinges
1 Push/pull set
1 Twist bolt cylinder
1 Closer with hold open feature

HW8 Aluminum Lobby Door 111
1 Set pivot hinges by door manufacturer
1 Concealed closer by door manufacturer
1 Threshold by door manufacturer
1 RIM panic device by door manufacturer
1 Weatherstrip set by door manufacturer

HW9 Aluminum Door 111 To Modular Units
Existing hardware to be repaired and adjusted under allowance #2
1 New electronic proximity reader to be added for access control.

DOOR SCHEDULE

	NO.	SIZE WxHxT	DOOR TYPE	DOOR ELEV.	FRAME ELEV.	FRAME TYPE / FIN.	HEAD/JAMB/SILL	HDW	DOOR FINISH	RATING	GLAZING	REMARKS
sprinkler riser room	101	3'-0" x 7'-2" x 1 3/4"	HM/PT	D-4	F-1	HM/PT		1	PAINT	——	————	
new lobby toilet	102	3'-0" x 7'-2" x 1 3/8"	SCW	D-2	F-1	HM/PT		2	STAIN	——	————	**Add Alternate # 2**
new lobby toilet	103	3'-0" x 7'-2" x 1 3/8"	SCW	D-2	F-1	HM/PT		2	STAIN	——	————	**Add Alternate # 2**
media center entry	104	3'-0" x 7'-2" x 1 3/4"	SCW	D-1	Existing	HM/PT		7	STAIN	——	1/4" TEMP. GLASS	Verify existing opening dimensions & hardware
media center exit	105	3'-6" x 7'-2" x 1 3/4"	SCW	D-1	Existing	HM/PT		7	STAIN	——	1/4" TEMP. GLASS	Verify Existing Opening dimensions
electrical room (rev swing)	106	2'-4" x 7'-2" x 1 3/4"	SCW	D-2	Existing	HM/PT		4	STAIN	——	————	Cont' hinge, Cut in strike, verify existing dimensions
reception entry	107	3'-0" x 7'-2" x 1 3/4"	SCW	D-1	Existing	HM/PT		7	STAIN	——	1/4" TEMP. GLASS	Verify existing opening dimensions & hardware
new file room	108	3'-0" x 7'-2" x 1 3/4"	SCW	D-1	F-1	HM/PT		5	STAIN	——	————	**Add Alternate # 3**
new treasurers office	109	3'-0" x 7'-2" x 1 3/4"	SCW	D-1	Existing	HM/PT		6	STAIN	——	————	**Add Alternate # 3**
(2) new 3-hr fire doors	110	7'-8" x 7'-2" x 1 3/4"	HM/PT	D-3	Existing	HM/PT		3	PAINT	3 HR.	1/4" FIRE GLASS	Verify existing opening dimensions & hardware
alum. lobby door - elective corridor	111	3'-0" x 7'-2" x 1 3/4"	ALUM	D-5	F-2	ALUM.		8	ALUM.	——	1/4" TEMP. GLASS	**Add Alternate # 2** - Verify existing opening dimensions
alum. door - elective corridor	112	3'-0" x 7'-2" x 1 3/4"	ALUM	D-6	Existing	ALUM. EXIST.		9	ALUM.	——	1/4" TEMP. GLASS	New door in existing frame. New card access hardware.
alum. door - 6th grade corridor	113	3'-0" x 7'-2" x 1 3/4"	ALUM	D-6	Existing	ALUM. EXIST.			ALUM.	——	1/4" TEMP. GLASS	New door in existing frame, New card access hardware.
admin access door from hallway - add alt 1	114	3'-0" x 7'-2" x 1 3/4"	SCW	D-1	Existing	H.M. EXIST.			STAIN	——	1/4" TEMP. GLASS	New door in existing frame, New card access hardware.

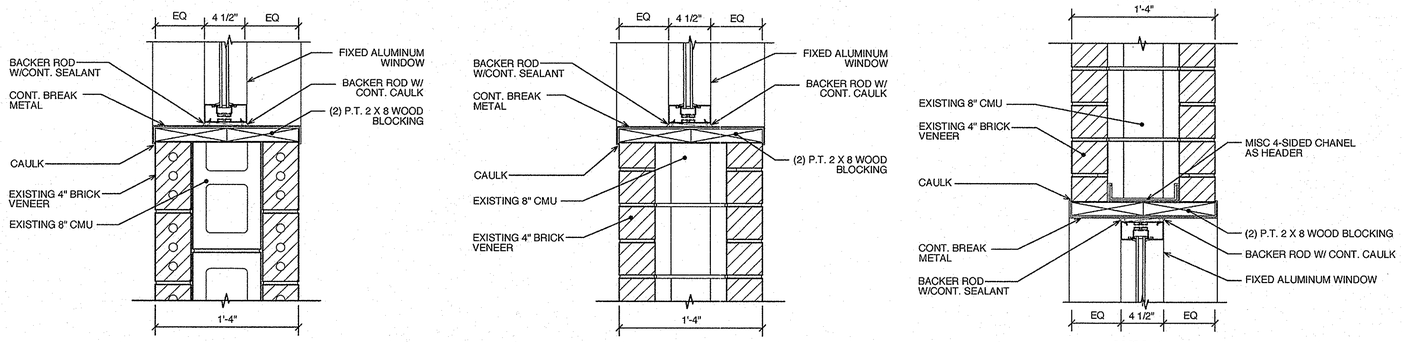


F-2 *ALUMINUM STOREFRONT* | F-1 *HOLLOW METAL* | D-6 *ALUMINUM* | D-5 *ALUMINUM* | D-4 *HOLLOW METAL* | D-3 *HOLLOW METAL 3 HOUR A LABEL* | D-2 *SOLID CORE WOOD* | D-1 *SOLID CORE WOOD*

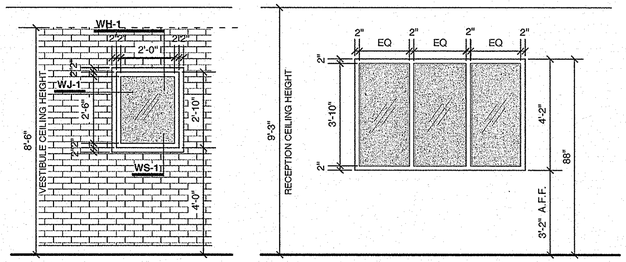
5 A-602 **Doors Frame** Scale 3/8" = 1'-0"

4 A-602 **New Exterior Doors** Scale 3/8" = 1'-0"

3 A-602 **New Interior Doors** Scale 3/8" = 1'-0"



2 A-602 **Window Details** - 4 1/2" x 2" Aluminum Storefront with 1" insulated glass in Reception / Entry vestibule
Scale 1 1/2" = 1'-0"
ADD ALTERNATE #3



R ALUMINUM FIXED STOREFRONT WINDOW

Q INTERIOR ALUMINUM FIXED STOREFRONT WINDOW

1 A-602 **New Aluminum Window Elevations** - Reception
Scale 3/8" = 1'-0"
ADD ALTERNATE #3

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BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA 2-15-18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

WINDOW AND DOOR ELEVATIONS AND DETAILS

JOB NUMBER

DRAWN BY: Hawk
CHECKED BY: Bowman
DATE: 01/24/2018
REVISIONS: 1 - 02/15/18 - NEW DOORS

SHEET NUMBER
A-602

HARDWARE SCHEDULE

HW 1 Exterior HM Door, Sprinkler Riser Door 101
1 1/2 Pair hinges
1 Closer
1 Mortise lockset-storeroom function
1 Threshold and weatherstrip set
1 Doorstop

HW 2 Interior Single, Toilet Doors 102, 103
1 1/2 Pair hinges
1 Mortise lockset - privacy function
1 Wall stop
1 Mop plate
1 Closer

HW 3 Pair, 3-Hour Fire Doors 110
4 Pair hinges
2 Vertical rod panic devices - passage function
2 Closers
Remove & remount existing magnetic hold open pads

HW 4 Electrical Room 106
1 Continuous hinge
1 Mortise lockset - storeroom function
1 Wall stop
1 Set hinge and strike filler plates

HW 5 New File Room, Door 108
1 1/2 Pair hinges
1 Mortise lockset - storeroom function
1 Wall stop

HW6 Treasurer's Office, Door 109
1 1/2 Pair hinges
1 Mortise lockset - entrance function
1 Wall stop

HW7 Reception/Media, Doors 104, 105, 107
1 1/2 Pair hinges
1 Mortise Lockset - Classroom function
1 Closer with hold open feature

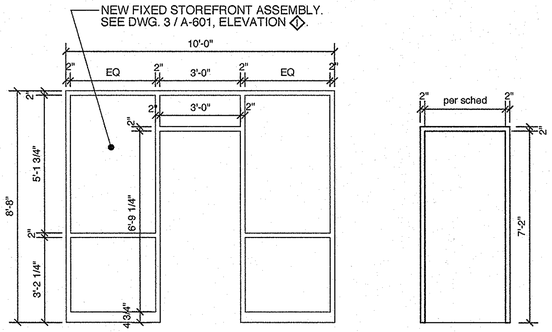
HW8 Aluminum Lobby Door 111
Hardware and door to be relocated

HW9 Aluminum Access Control Doors 112, 113
1 Continuous Hinge
1 Closer
1 Rim Panic Device with Latch Retraction
1 Access Control Device (Battery Operated)

HW10 New Corridor Administrative Access Door 114
1 1/2 Pair Hinges
1 Rim Panic Device with Latch Retraction
1 Access Control Device (Battery Operated)
1 Wall Stop
1 Closer
1 Strike Filler Plate

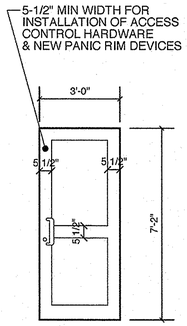
DOOR SCHEDULE

	NO.	SIZE WxHxT	DOOR TYPE	DOOR ELEV.	FRAME ELEV.	FRAME TYPE / FIN.	HEAD/JAMB/SILL	HDW	DOOR FINISH	RATING	GLAZING	REMARKS
Sprinkler Riser Room	101	3'-0" x 7'-2" x 1 3/4"	HM/PT	D-4	F-1	HM/PT		1	PAINT	——	————	
New Lobby Toilet	102	3'-0" x 7'-2" x 1 3/4"	SCW	D-2	F-1	HM/PT		2	STAIN/SEAL	——	————	**Add Alternate # 2**
New Lobby Toilet	103	3'-0" x 7'-2" x 1 3/4"	SCW	D-2	F-1	HM/PT		2	STAIN/SEAL	——	————	**Add Alternate # 2**
Media Center Entry	104	3'-0" x 7'-2" x 1 3/4"	SCW	D-1	Existing	HM/PT		7	STAIN/SEAL	——	1/4" TEMP. GLASS	Verify existing opening dimensions & hardware
Media Center Exit	105	3'-0" x 7'-2" x 1 3/4"	SCW	D-1	Existing	HM/PT		7	STAIN/SEAL	——	1/4" TEMP. GLASS	Verify Existing Opening dimensions
Electrical Room (rev. swing)	106	2'-4" x 7'-2" x 1 3/4"	SCW	D-2	Existing	HM/PT		4	STAIN/SEAL	——	————	Cont' hinge, Cut in strike, verify existing dimensions
Reception Entry	107	3'-0" x 7'-2" x 1 3/4"	SCW	D-1	Existing	HM/PT		7	STAIN/SEAL	——	1/4" TEMP. GLASS	Verify existing opening dimensions & hardware
New File Room	108	3'-0" x 7'-2" x 1 3/4"	SCW	D-2	F-1	HM/PT		5	STAIN/SEAL	——	————	**Add Alternate # 3**
New Treasurer's Office	109	3'-0" x 7'-2" x 1 3/4"	SCW	D-2	Existing	HM/PT		6	STAIN/SEAL	——	————	**Add Alternate # 3**
(2) New 3-hr Fire Doors	110	7'-8" x 7'-2" x 1 3/4"	HM/PT	D-3	Existing	HM/PT		3	PAINT	3 HR.	1/4" FIRE GLASS	Verify existing opening dimensions & hardware
Alum. Lobby Door - Elective Corridor	111	3'-0" x 7'-2" x 1 3/4"	ALUM	D-5	F-2	ALUM.		8	ALUM.	——	1/4" TEMP. GLASS	**Add Alternate # 2** - Hardware & door to be relocated.
Alum. Door - Elective Corridor	112	3'-0" x 7'-2" x 1 3/4"	ALUM	D-5	Existing	ALUM.		9	ALUM.	——	1/4" TEMP. GLASS	New door in existing frame, New card access hardware.
Alum. Door - 8th Grade Corridor	113	3'-0" x 7'-2" x 1 3/4"	ALUM	D-5	Existing	ALUM.		9	ALUM.	——	1/4" TEMP. GLASS	New door in existing frame, New card access hardware.
Corridor Admin Access Door - Add Alt	114	3'-0" x 7'-2" x 1 3/4"	SCW	D-1	Existing	HM/PT		10	STAIN	——	1/4" TEMP. GLASS	New door in existing frame, New card access hardware.

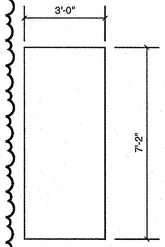


F-2
ALUMINUM STOREFRONT

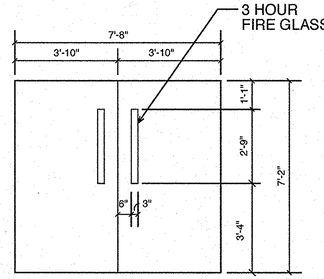
F-1
HOLLOW METAL



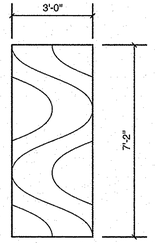
D-5
ALUMINUM



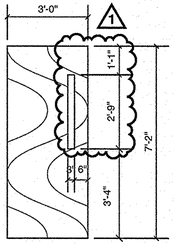
D-4
HOLLOW METAL



D-3
HOLLOW METAL
3 HOUR A LABEL



D-2
SOLID CORE WOOD

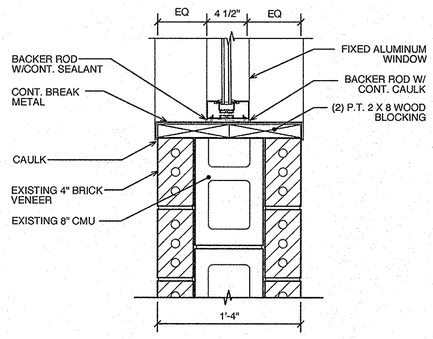


D-1
SOLID CORE WOOD

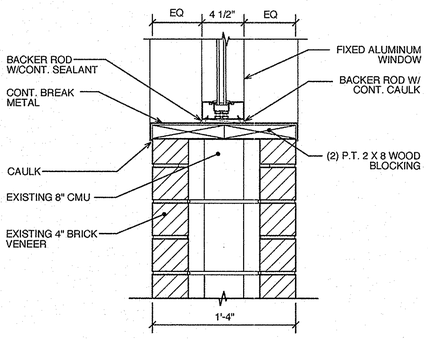
5 A-602 **Doors Frame**
Scale 3/8" = 1'-0"

4 A-602 **New Exterior Doors**
Scale 3/8" = 1'-0"

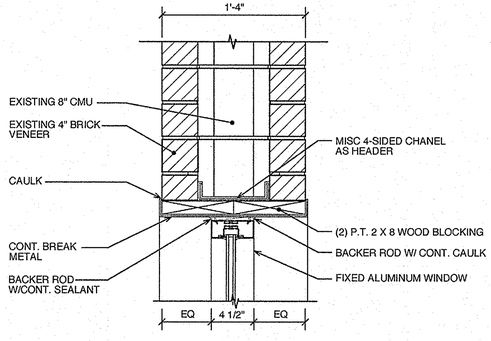
3 A-602 **New Interior Doors**
Scale 3/8" = 1'-0"



WJ-1



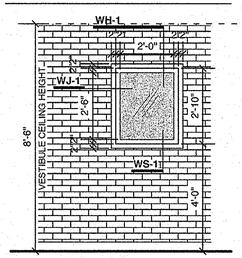
WS-1



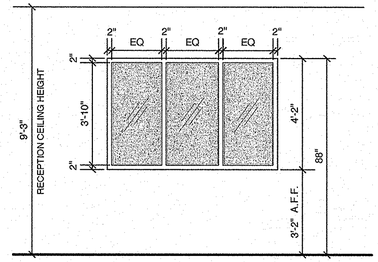
WH-1

2 A-602 **Window Details** - 4 1/2" x 2" Aluminum Storefront with 1" insulated glass in Reception / Entry vestibule
Scale 1 1/2" = 1'-0"

ADD ALTERNATE #3



R
ALUMINUM FIXED STOREFRONT WINDOW



Q
INTERIOR ALUMINUM FIXED STOREFRONT WINDOW

1 A-602 **New Aluminum Window Elevations** - Reception
Scale 3/8" = 1'-0"

ADD ALTERNATE #3

BOWMAN MURRAY HEMINGWAY ARCHITECT
514 Market Street
Wilmington, NC 28401
Tel - (910) 762-2621
Fax - (910) 762-8506

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS, P.C. REGISTERED ARCHITECTURAL CORPORATION CERT. NO. 50424 NORTH CAROLINA WILMINGTON, N.C.

BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA WILMINGTON, N.C.
2.15.18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

WINDOW AND DOOR ELEVATIONS AND DETAILS

JOB NUMBER

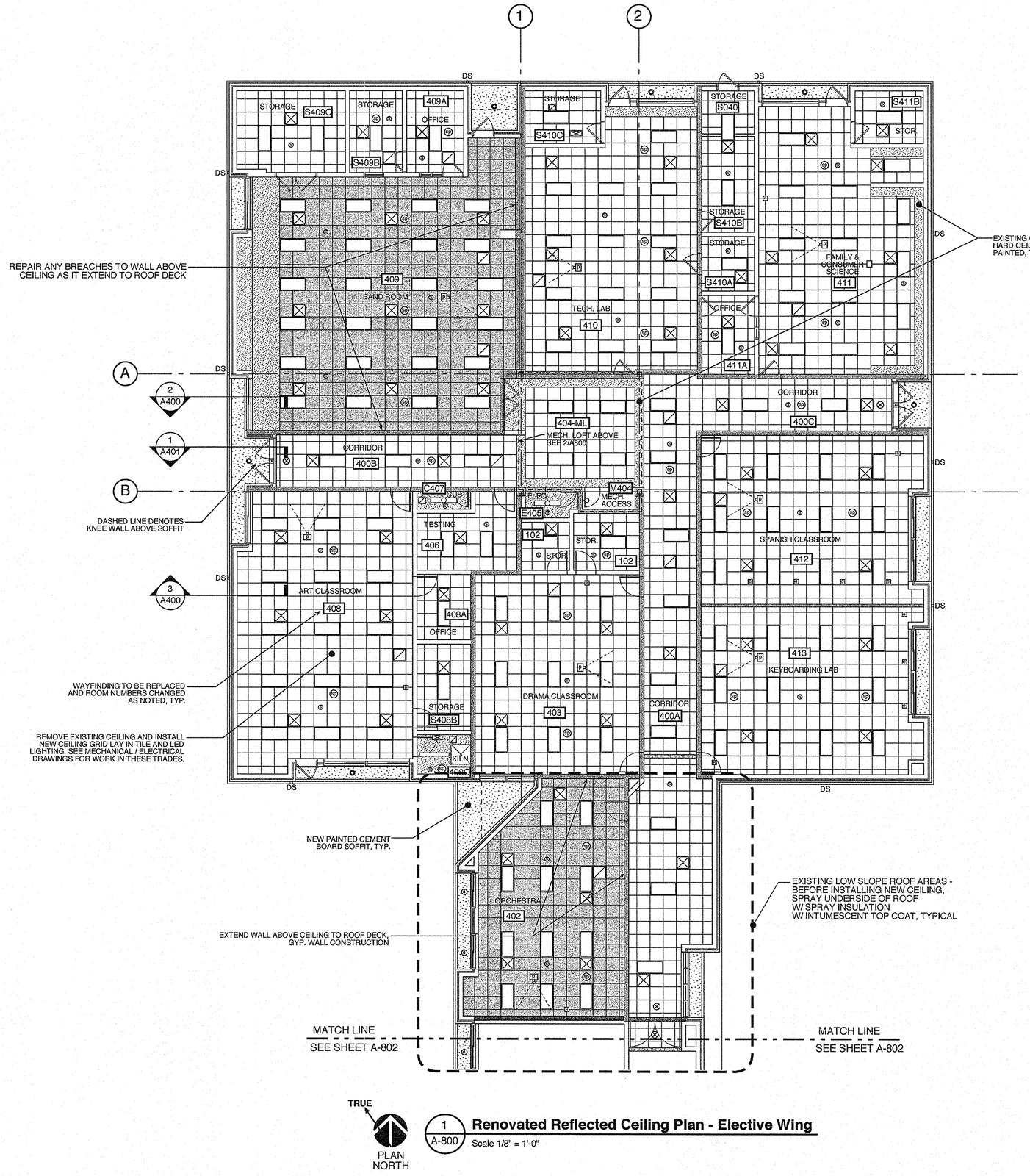
DRAWN BY
Hawk

CHECKED BY
Bowman

DATE
01/24/2018

REVISIONS
1 - 02/15/18 - NEW DOORS

SHEET NUMBER
A-602



1 / A-800 **Renovated Reflected Ceiling Plan - Elective Wing**

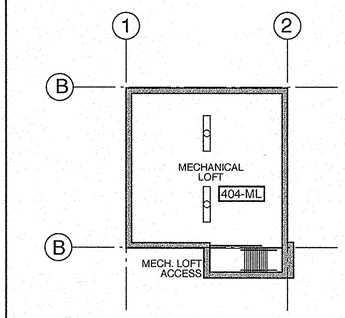
Scale 1/8" = 1'-0"

LEGEND

- 1 — ACOUSTICAL CEILING TILE AND GRID - EGAP #2
- ACOUSTICAL CEILING TILE AND GRID - EGAP #1
- GYPSUM BOARD
- EXIT LIGHT - SEE ELECTRICAL
- LAY-IN 24x48 LIGHT FIXTURE - SEE ELECTRICAL
- RECESSED CAN LIGHT
- HVAC SUPPLY DIFFUSER - SEE MECHANICAL
- HVAC RETURN DIFFUSER - SEE MECHANICAL
- SMOKE DETECTOR
- SPEAKER - SEE ELECTRICAL
- PROJECTOR
- PROWER POLE
- ROUTER
- WALL THAT TERMINATES ABOVE CEILING
- WALL THAT EXTENDS TO STRUCTURE

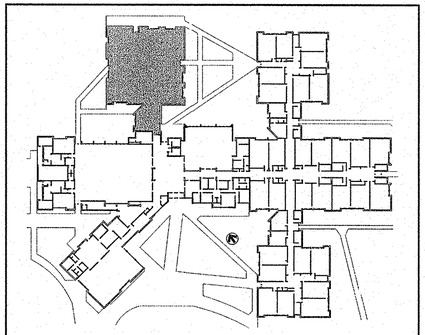
REFLECTED CEILING PLAN NOTES:

1. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL MECHANICAL, ELECTRICAL, AND PLUMBING ITEMS.
2. VERIFY CELING CLEARANCES PRIOR TO BEGINNING GRID AND FIXTURE PLACEMENT.
3. CENTER GRID AND DEVICES WHEREEVER POSSIBLE.
4. LAY-IN TILE TO HAVE 6" MINIMUM TILE WIDTH AT WALL EDGE.



2 / A-800 **Mechanical Loft 404-ML, Renovated Reflected Ceiling Plan**

Scale 1/8" = 1'-0"



Key Plan

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS
A R C H I T E C T
514 Market Street
Wilmington, NC 28401
Tel - (910) 762-2621
Fax - (910) 762-8506

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS, P.C. REGISTERED ARCHITECTURAL CORPORATION CERT. NO. 50424 NORTH CAROLINA WILMINGTON, N. C.

BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA WILMINGTON, N.C. 2.15.18

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

RENOVATED REFLECTED CEILING PLAN - ELECTIVE WING

JOB NUMBER

DRAWN BY
Hawk / Watson

CHECKED BY
Bowman

DATE
01/24/2018

REVISIONS
1 - 02/15/18 - EGAP #2 IN BAND ROOM

SHEET NUMBER
A-800

REMOVE WHITE BOARD AND BOOKCASE. REPAIR WALL AS REQUIRED. PREPARE FOR INSTALLATION OF MONITOR

REUSE PROJECTOR (IF POSSIBLE) IN ROOM 109 (CEILING MOUNT).

EXISTING LOW SLOPE ROOF AREAS - BEFORE INSTALLING NEW CEILING, SPRAY UNDERSIDE OF ROOF W/ SPRAY INSULATION W/ INTUMESCENT TOP COAT, TYPICAL

REVISED REFLECTED CEILING PLAN. SEE SHEET A-507 FOR DEMO AND RENO PLANS FOR THIS AREA.

REMOVE EXISTING CEILING AND INSTALL NEW CEILING GRID LAY IN TILE AND LED LIGHTING. SEE MECHANICAL / ELECTRICAL DRAWINGS FOR WORK IN THESE TRADES.

EXISTING GYPSUM BULKHEADS AND HARD CEILINGS TO REMAIN AND BE PAINTED. ADD SPRINKLERS

REVISED REFLECTED CEILING PLAN. SEE SHEET A-505 AND A-506 FOR DEMOLITION/RENOVATION WORK IN THIS AREA.

DASHED LINE DENOTES KNEE WALL ABOVE SOFFIT

NEW PAINTED CEMENT BOARD SOFFIT, TYP.

CEILING LAYOUT ALTERNATE #2 SHOWN FOR RECEPTION AND FILES ROOMS

INSTALL NEW WHITE BOARD IN RM 109. IF PROJECTOR FROM MEDIA CENTER CANNOT BE REUSED, CEILING MOUNT TABLE PROJECTOR CURRENTLY IN ROOM 109 OR BUY A NEW PROJECTOR.

SEE SHEET A-802 MATCH LINE

SEE SHEET A-801 MATCH LINE

MATCH LINE SHEET A-804

SEE SHEET A-806 MATCH LINE

MATCH LINE SHEET A-804

SEE SHEET A-806 MATCH LINE

MEDIA CENTER 501
CONFERENCE 502
STORAGE S503A
WORKROOM 503
CORR. 500C
OFFICE 504
STORAGE 507
CLASSROOM 508
CLASSROOM 509
CORRIDOR 600A
SPECIAL ED. 601
GIRLS TOILET 617
CLASSROOM 702
MECH. ACCESS M701
MENS TOILET 310
WOMENS TOILET 311
LOBBY 300
CORRIDOR 500A
MECHANICAL LOFT ABOVE SEE 2/A803
505-ML
M505A M505
ELEC. E508
ELEC. E510
MENS TOILET 511
CORRIDOR 500B
701-ML
MECH. LOFT ABOVE SEE 3/A804
TEACHERS WRKRM. 101
TREASURER 102
FILES 101A
MTSS 103
CORR. 100B
EXAM 104A
TOILET 104C
NURSE 104
EXAM 104B
TOILET
STORAGE S513
512
WMN'S TOILET
C719 CUSTOD.
RECEPTION 100
CORR. 100A
DATA MGR. 110
CONF. ROOM 109
V300 ENTRY VESTIBULE
TEACHERS LOUNGE 106
MENS TOILET 108
WMN'S TOILET 107
KITCHEN 106A
CORR. 100C
PRINCIPAL 105
CLASSROOM 515
CLASSROOM 514
CORRIDOR 800A
CLASSROOM 718
801 SPECIAL ED.
GIRLS TOILET 817

REFLECTED CEILING PLAN NOTES:

1. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL MECHANICAL, ELECTRICAL, AND PLUMBING ITEMS.
2. VERIFY CELING CLEARANCES PRIOR TO BEGINNING GRID AND FIXTURE PLACEMENT.
3. CENTER GRID AND DEVICES WHEREEVER POSSIBLE.
4. LAY-IN TILE TO HAVE 6" MINIMUM TILE WIDTH AT WALL EDGE.

LEGEND

- ACOUSTICAL CEILING TILE AND GRID
- GYPSUM BOARD
- EXIT LIGHT - SEE ELECTRICAL
- LAY-IN 24x48 LIGHT FIXTURE - SEE ELECTRICAL
- RECESSED CAN LIGHT
- HVAC SUPPLY DIFFUSER - SEE MECHANICAL
- HVAC RETURN DIFFUSER - SEE MECHANICAL
- SMOKE DETECTOR
- SPEAKER - SEE ELECTRICAL
- PROJECTOR
- PROWER POLE
- ROUTER
- WALL THAT TERMINATES ABOVE CEILING
- WALL THAT EXTENDS TO STRUCTURE

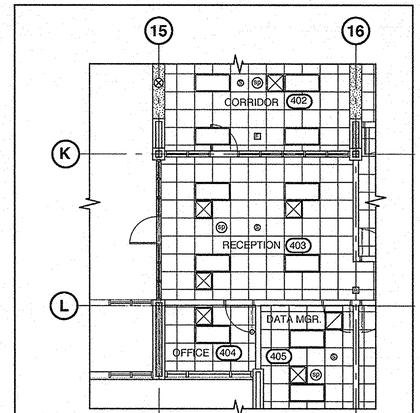
LEGEND: ROOM NUMBERS

- ### INDICATES EXISTING ROOM NUMBER
- ### INDICATES NEW ROOM NUMBER

TRUE PLAN NORTH

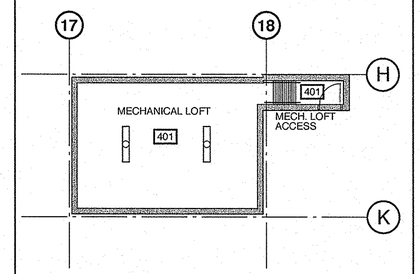
1 / A-803 Renovated Reflected Ceiling Plan - Administration & Media Center

Scale 1/8" = 1'-0"



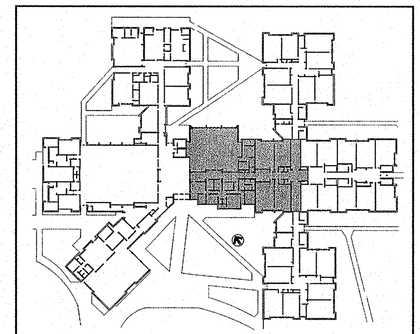
3 / A-803 Existing Reflected Ceiling Plan - Reception Area

Scale 1/8" = 1'-0" BASE BID LAYOUT



2 / A-803 Renovated Reflected Ceiling Plan - Mechanical Loft 424

Scale 1/8" = 1'-0"



Key Plan

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS, PA
ARCHITECT
514 Market Street
Wilmington, NC 28401
Tel - (910) 762-2621
Fax - (910) 762-8506

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS, PA REGISTERED ARCHITECTURAL CORPORATION CERT. NO. 50424 NORTH CAROLINA WILMINGTON, N. C.

BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA WILMINGTON, N.C. 2.15.18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

RENOVATED REFLECTED CEILING PLAN - ADMINISTRATION & MEDIA CENTER

JOB NUMBER

DRAWN BY Hawk / Watson

CHECKED BY Bowman

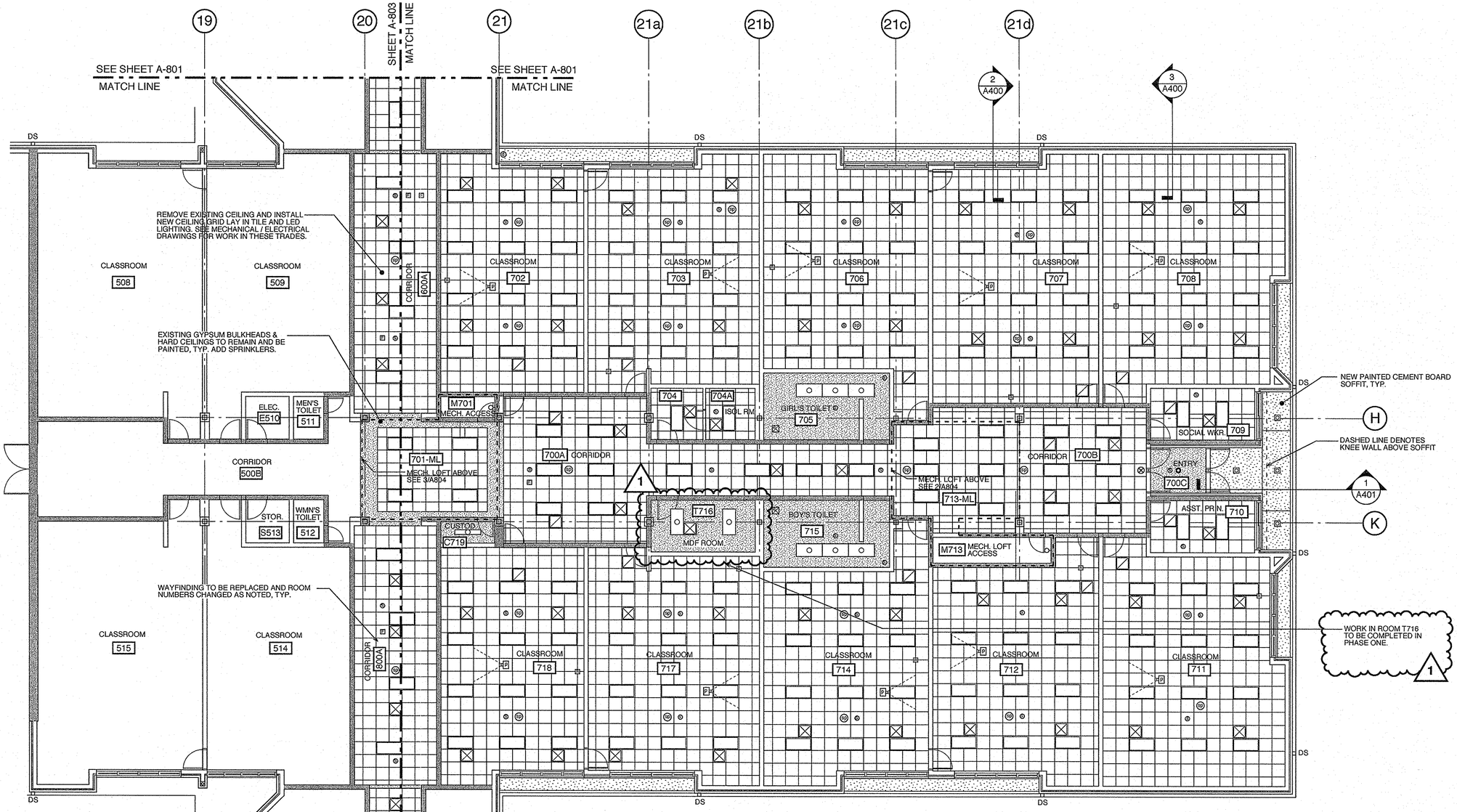
DATE 01/24/2018

REVISIONS

1 - 02/15/18 - REMOVE ALL OF BOOI CASE AT NEW MONITOR LOCATIO

SHEET NUMBER

A-803



TRUE PLAN NORTH

1 A-804 **Renovated Reflected Ceiling Plan - 7th Grade Wing**

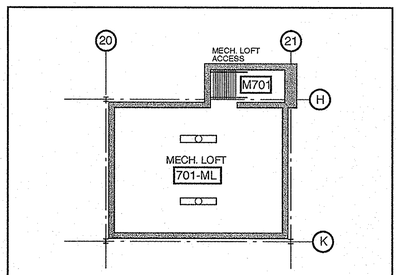
Scale 1/8" = 1'-0"

LEGEND

- ACOUSTICAL CEILING TILE AND GRID
- GYPSUM BOARD
- EXIT LIGHT - SEE ELECTRICAL
- LAY-IN 24x48 LIGHT FIXTURE - SEE ELECTRICAL
- RECESSED CAN LIGHT
- HVAC SUPPLY DIFFUSER - SEE MECHANICAL
- HVAC RETURN DIFFUSER - SEE MECHANICAL
- SMOKE DETECTOR
- SPEAKER - SEE ELECTRICAL
- PROJECTOR
- PROWER POLE
- ROUTER
- WALL THAT TERMINATES ABOVE CEILING
- WALL THAT EXTENDS TO STRUCTURE

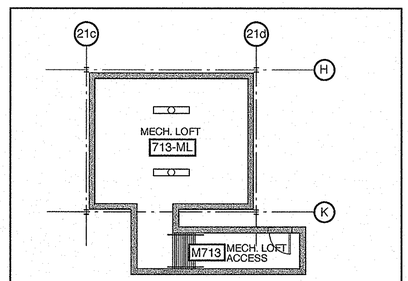
REFLECTED CEILING PLAN NOTES:

1. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL MECHANICAL, ELECTRICAL, AND PLUMBING ITEMS.
2. VERIFY CELING CLEARANCES PRIOR TO BEGINNING GRID AND FIXTURE PLACEMENT.
3. CENTER GRID AND DEVICES WHEREEVER POSSIBLE.
4. LAY-IN TILE TO HAVE 6" MINIMUM TILE WIDTH AT WALL EDGE.



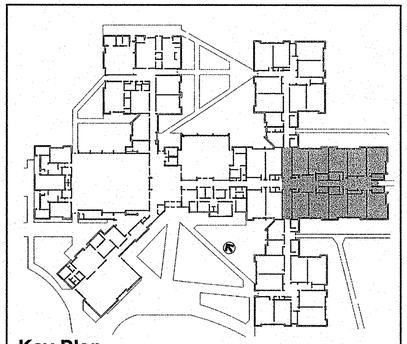
3 A-804 **Renovated Reflected Ceiling Plan - Mechanical Loft 701-ML**

Scale 1/8" = 1'-0"



2 A-804 **Renovated Reflected Ceiling Plan - Mechanical Loft 466**

Scale 1/8" = 1'-0"



Key Plan

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS
A R C H I T E C T
514 Market Street
Wilmington, NC 28401
Tel - (910) 762-2621
Fax - (910) 762-8506

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS, PC REGISTERED ARCHITECTURAL CORPORATION CERT. NO. 50424 NORTH CAROLINA WILMINGTON, N.C.

BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA WILMINGTON, N.C. 2-15-18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

RENOVATED REFLECTED CEILING PLAN - 7TH GRADE WING

JOB NUMBER

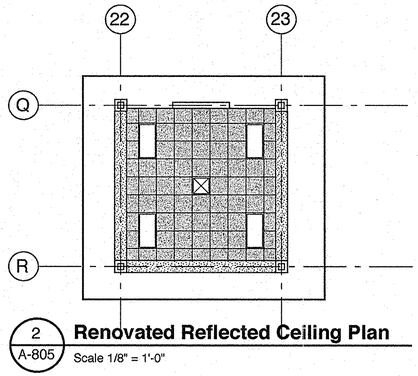
DRAWN BY: Hawk / Watson

CHECKED BY: Bowman

DATE: 01/24/2018

REVISIONS: 1 - 02/15/18 - RCP CHANGE IN ROOM T716

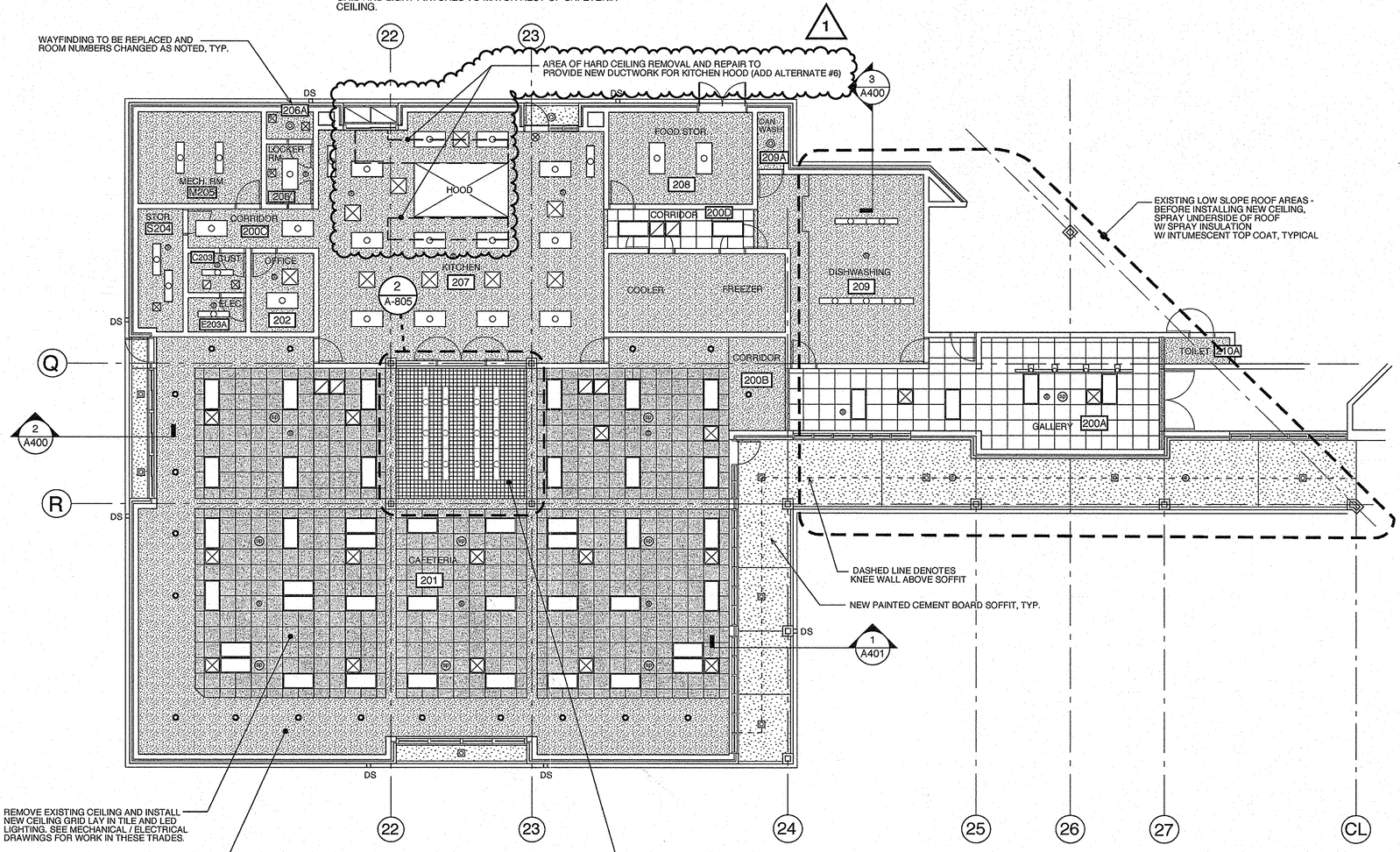
SHEET NUMBER: **A-804**



2 A-805 **Renovated Reflected Ceiling Plan**

Scale 1/8" = 1'-0"

NOTE: REMOVE EXISTING PARABOLIC LIGHTING IN CEILING, BETWEEN GRID LINES Q - R, AND 22 - 23, AND REPLACE WITH CEILING GRID AND LIGHT FIXTURES TO MATCH REST OF CAFETERIA CEILING.



TRUE PLAN NORTH

1 A-805 **Renovated Reflected Ceiling Plan - Cafeteria**

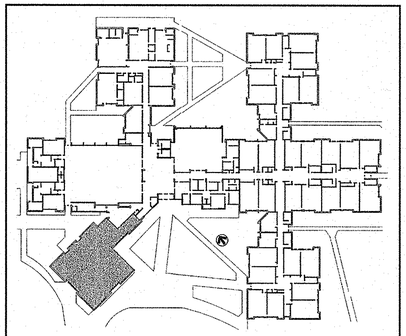
Scale 1/8" = 1'-0"

LEGEND

- ACOUSTICAL CEILING TILE AND GRID - EGAP #2
- ACOUSTICAL CEILING TILE AND GRID - EGAP #1
- GYPSUM BOARD
- EXIT LIGHT - SEE ELECTRICAL
- LAY-IN 24x48 LIGHT FIXTURE - SEE ELECTRICAL
- RECESSED CAN LIGHT
- HVAC SUPPLY DIFFUSER - SEE MECHANICAL
- HVAC RETURN DIFFUSER - SEE MECHANICAL
- SMOKE DETECTOR
- SPEAKER - SEE ELECTRICAL
- PROJECTOR
- PROWER POLE
- ROUTER
- WALL THAT TERMINATES ABOVE CEILING
- WALL THAT EXTENDS TO STRUCTURE

REFLECTED CEILING PLAN NOTES:

1. THE CONTRACTOR SHALL CONFIRM AND COORDINATE ALL MECHANICAL, ELECTRICAL, AND PLUMBING ITEMS.
2. VERIFY CELING CLEARANCES PRIOR TO BEGINNING GRID AND FIXTURE PLACEMENT.
3. CENTER GRID AND DEVICES WHERE EVER POSSIBLE.
4. LAY-IN TILE TO HAVE 6" MINIMUM TILE WIDTH AT WALL EDGE.



Key Plan

BOWMAN MURRAY HEMINGWAY
ARCHITECT
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Wilmington, NC 28401
Tel - (910) 762-2621
Fax - (910) 762-8506

BOWMAN, MURRAY, HEMINGWAY ARCHITECTS, P.C. REGISTERED ARCHITECTURAL CORPORATION CERT. NO. 50424 NORTH CAROLINA WILMINGTON, N.C.

BRUCE F. BOWMAN REGISTERED ARCHITECT 5951 NORTH CAROLINA WILMINGTON, N.C. 2.15.18

Renovations to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

RENOVATED REFLECTED CEILING PLAN - CAFETERIA

JOB NUMBER

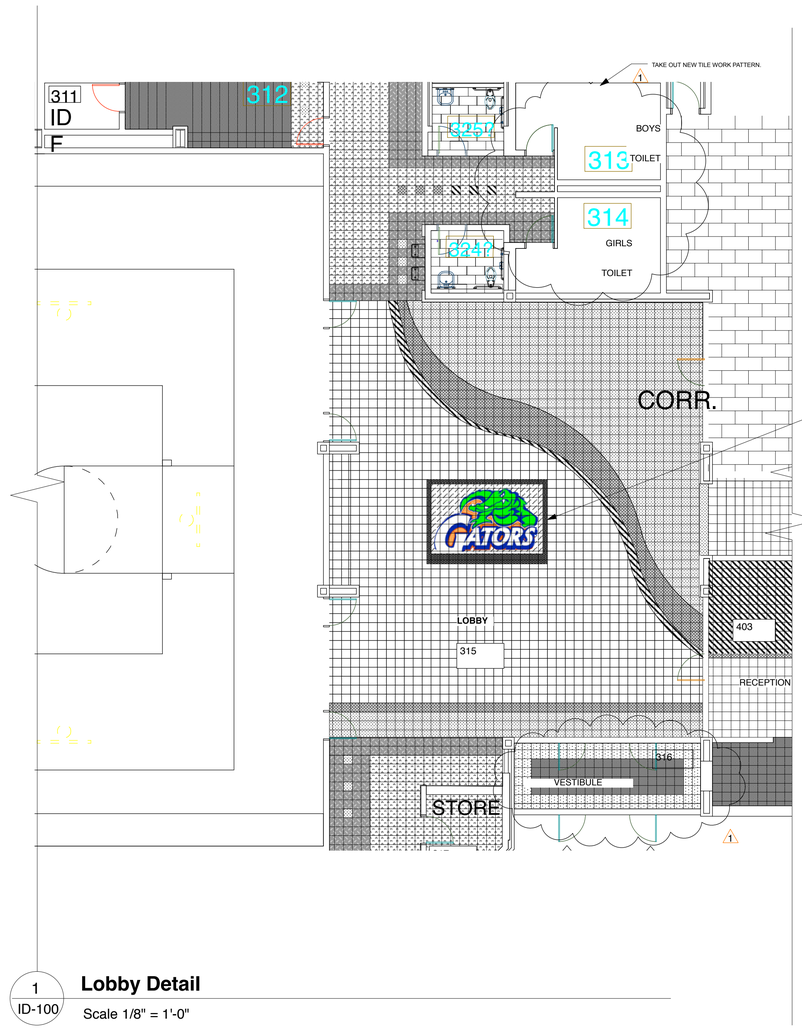
DRAWN BY: Hawk / Watson

CHECKED BY: Bowman

DATE: 01/24/2018

REVISIONS: 1 - 02/15/18 - CHANGE TO EGAP & CEILING REPAIR

SHEET NUMBER: **A-805**



1 ID-100

Lobby Detail

Scale 1/8" = 1'-0"

MGMS - FINISH LEGEND		
ID	DESCRIPTION	NOTES
PT-1	SHERWIN WILLIAMS RESERVED WHITE SW7056	
PT-2	SHERWIN WILLIAMS FRONT PORCH SW7651	
PT-3	SHERWIN WILLIAMS ELLIE GRAY SW7650	
PT-4	SHERWIN WILLIAMS FLYWAY SW6794	
PT-5	SHERWIN WILLIAMS SNOWBOUND SW7004	
PT-6	SHERWIN WILLIAMS BLUE PLATE SW6796	
PT-7	SHERWIN WILLIAMS CARNIVAL SW6892	
PT-8	SHERWIN WILLIAMS JAY BLUE SW6797	
RB-1	JOHNSONITE, 4" TRADITIONAL WALL BASE, 70 BLUEST	
RB-2	JOHNSONITE, 4" TRADITIONAL WALL BASE, 38 PEWTER	
VCT-1	ARMSTRONG, STANDARD EXCELON IMPERIAL TEXTURE, 12"X12" BLUE CLOUD 51933	
VCT-2	ARMSTRONG, STANDARD EXCELON IMPERIAL TEXTURE, 12"X12" CARIBBEAN BLUE 51821	
VCT-3	ARMSTRONG, STANDARD EXCELON IMPERIAL TEXTURE, 12"X12" SCREAMIN' PUMPKIN 57516	
VCT-4	ARMSTRONG, STANDARD EXCELON IMPERIAL TEXTURE, 12"X12" BIKINI BLUE 57512	
VCT-5	ARMSTRONG, STANDARD EXCELON IMPERIAL TEXTURE, 12"X12" SEA GREEN 51824	
VCT-6	ARMSTRONG, STANDARD EXCELON IMPERIAL TEXTURE, 12"X12" SOFT WARM GRAY 51861	
VCT-7	ARMSTRONG, STANDARD EXCELON IMPERIAL TEXTURE, 12"X12" STERLING 51904	
VCT-8	ARMSTRONG, STANDARD EXCELON IMPERIAL TEXTURE, 12"X12" CHARCOAL 51915	
VCT-9	ARMSTRONG, STANDARD EXCELON IMPERIAL TEXTURE, 12"X12" CLASSIC BLACK 51910	
CPT-1	SHAW, DUOTONE TILE, COLOR AT WORK 18"X36", 5T108 CHARCOAL CYAN 07436	
CPT-2	SHAW, COLOR FORM TILE, 9"X36", 5T112 BLAZE 81668	
CPT-3	SHAW, VALUE TILE, 9"X36", COLOR AT WORK 5T110 CHARCOAL CYAN 07436	
CPT-4	SHAW, SATURATE TILE, 9"X36", 5T109 SILVER 07518	
CPT-5	SHAW, SATURATE TILE, 9"X36", 5T109 CHARCOAL 07555	
RBF-1	RUBBER FLOORING TBD	
TL-1	AMERICAN OLEAN, MERIT, 12"X24" LIGHT GRAY ME08 GLAZED PORCELAIN	
TL-2	AMERICAN OLEAN, MERIT, 2"X2" LIGHT GRAY ME08 GLAZED PORCELAIN	
WLTL-1	AMERICAN OLEAN, THEORETICAL BLEND, 12"X24" AUTHENTIC ORANGE TH88 COLORBODY PORCELAIN	
WLTL-2	AMERICAN OLEAN, THEORETICAL BLEND, 12"X24" FORMULA BLUE TH86 COLORBODY PORCELAIN	
WLTL-3	AMERICAN OLEAN, THEORETICAL BLEND, 3"X12" AUTHENTIC ORANGE TH88 P-43C9 BULLNOSE	
WLTL-4	AMERICAN OLEAN, THEORETICAL BLEND, 3"X12" FORMULA BLUE TH86 P-43C9 BULLNOSE	
QTZ-1	QUARTZ TBD	
QTZ-2	QUARTZ TBD	

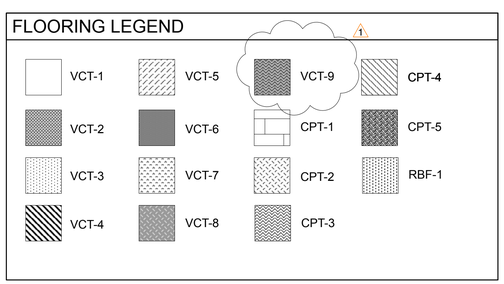
NOTES:

1. FOR ANY QUESTIONS OR CLARIFICATIONS OF THESE DRAWINGS, PLEASE CONTACT BIG SKY DESIGN DIRECTLY. DESIGNER NOT RESPONSIBLE FOR OTHER'S MISINPTERPRETATIONS OF DRAWINGS. (910)793-3992
2. FLOOR PATTERNS ARE DRAWN FOR INSTALLATION REFERENCE. DESIGN INTENT IS TO NOT HAVE ANY SMALL PIECES OF VCT TILE. NO LESS THAN 4". ADJUST LAYOUT ACCORDINGLY.
3. IF ANY ADDITIONAL INSTRUCTIONS NEEDED FOR FLOORING INSTALLATION PLEASE CONTACT DESIGNER.
4. USE TL-1 & TL-2 FOR RENOVATED TOILET ROOMS. USE 12"X24" ALL OVER UNLESS A SLOPE TO DRAIN CONDITION EXISTS. IF SO COORDINATE WITH DESIGNER TO DETERMINE AN AREA OF 2"X2" TILES WITHIN OVERALL PATTERN.
5. THE GATOR EMBLEM SHOWN IN THE FLOOR IS TO BE A LASER CUT FABRICATION. IF THERE ARE QUESTIONS CONTACT DESIGNER.
6. FOR BATHROOMS WHERE WALL TILE IS APPLICABLE, USE WLTL-1, 3 AND WLTL-2,4 WITH BULLNOSE AT TOP EDGE OF WALLTILE. BELOW THE BULNOSE PIECE, WE WILL USE BAND OF WALL TILE IN ALTERNATE COLOR AS AN ACCENT. IF THERE ARE QUESTIONS CONTACT DESIGNER.
7. PAINT COLORS ABOVE LISTED AS PLACEHOLDERS FOR NOW. PAINTERS SHOULD BE PREPARED TO PAINT 60 PERCENT OF THE WALLS IN ACCENT COLORS WITH DIAGONAL OR HORIZONTAL TAPED BANDING. PLEASE ALLOW FOR THIS ADDITIONAL WORK AND COLOR APPLICATION DUE TO THE NATURE OF THIS PROJECT. ELEVATIONS TO FOLLOW.
8. QTZ SELECTIONS SHOWN ABOVE AS PLACEHOLDERS FOR NEW VANITY COUNTERS AT BATHROOMS BEING RENOVATED.

2 ID-100

Finish Legend

Not to Scale



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1
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WILMINGTON, N.C.

Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington North Carolina 28409

FINISH LEGEND AND DETAILS

JOB NUMBER

DRAWN BY NL&JK

CHECKED BY NL&JK

DATE 1.24.2018

REVISIONS
1 2/15/18 - VCT

SHEET NUMBER
ID-100



Floor Pattern Plan Elective Wing

1 / ID-103

Scale 1/8" = 1'-0"

FLOORING LEGEND

VCT-1	VCT-5	VCT-9	CPT-4
VCT-2	VCT-6	CPT-1	CPT-5
VCT-3	VCT-7	CPT-2	RBF-1
VCT-4	VCT-8	CPT-3	

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Carolina 28409

FLOOR PATTERN PLAN
ELECTIVE WING

JOB NUMBER

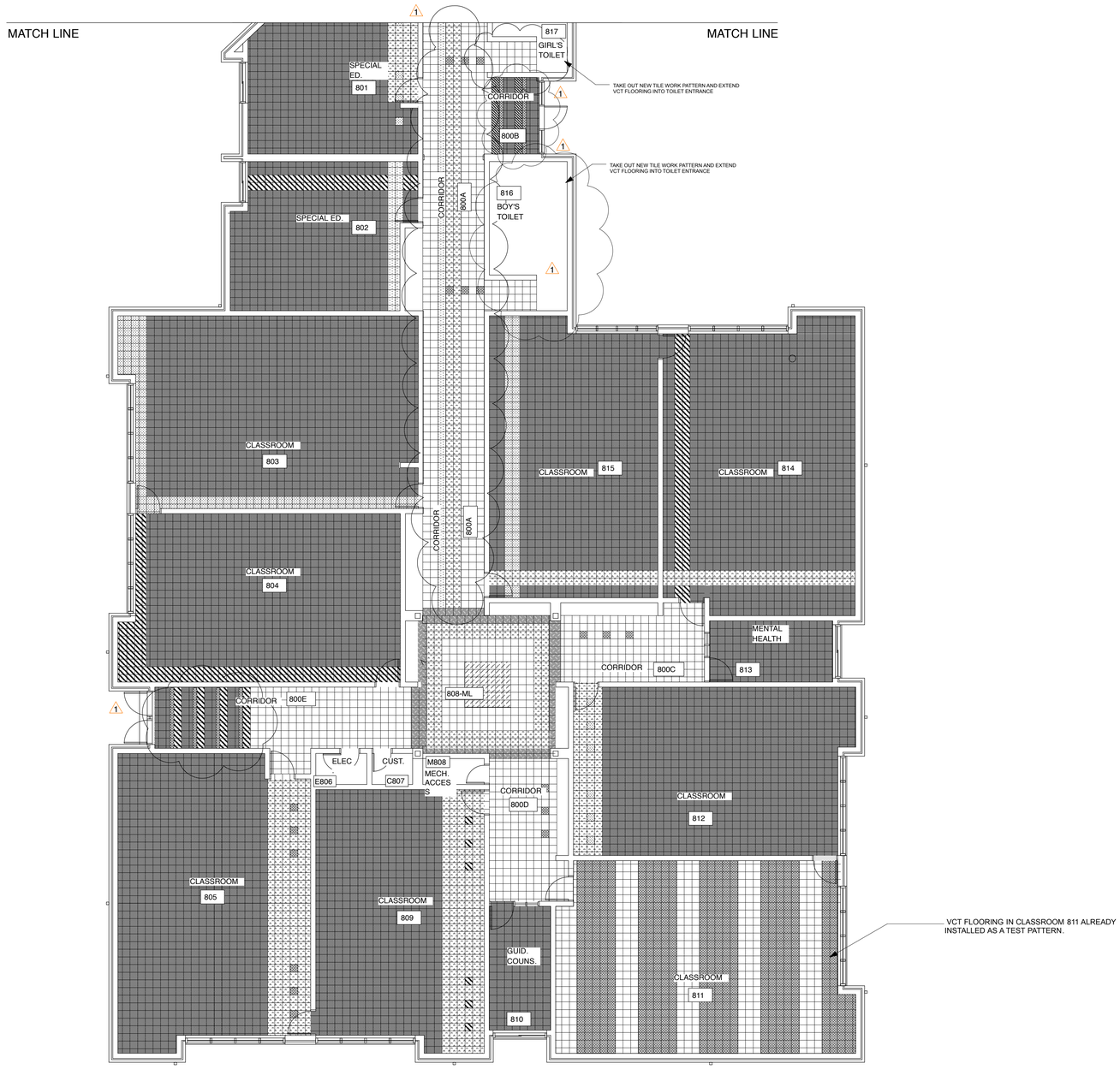
DRAWN BY NL&JK

CHECKED BY NL&JK

DATE 1.24.2018

REVISIONS
1 2/15/18

SHEET NUMBER
ID-103



FLOORING LEGEND

VCT-1	VCT-5	VCT-9	CPT-4
VCT-2	VCT-6	CPT-1	CPT-5
VCT-3	VCT-7	CPT-2	RBF-1
VCT-4	VCT-8	CPT-3	

1
ID-104

Floor Pattern Plan 8th Grade Wing

Scale 1/8" = 1'-0"

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WILMINGTON, NC

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901 Piner Road, Wilmington North Carolina 28409

FLOOR PATTERN PLAN 8TH GRADE WING

JOB NUMBER

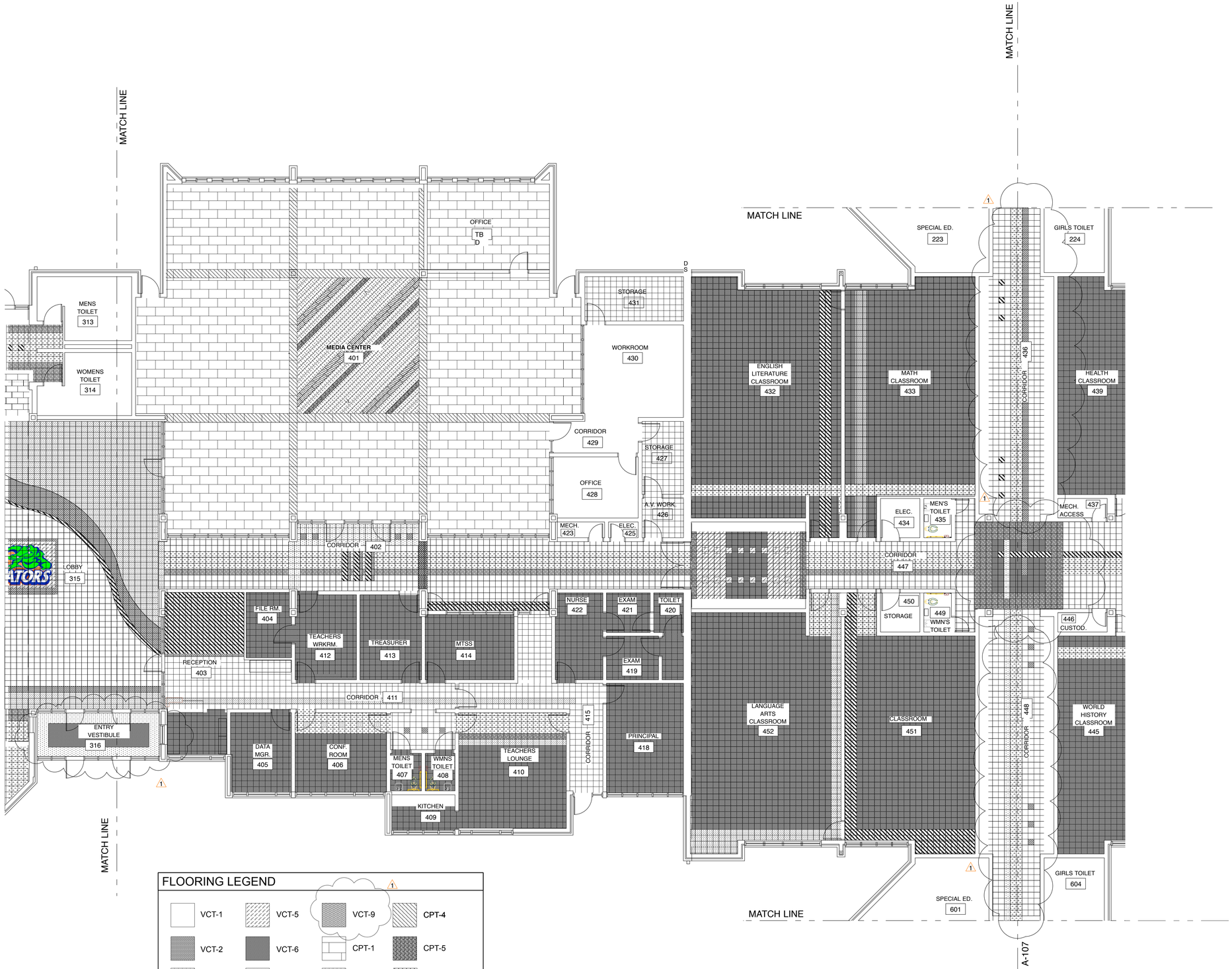
DRAWN BY NL&JK

CHECKED BY NL&JK

DATE 1.24.2018

REVISIONS
1 2/15/18 - VCT

SHEET NUMBER
ID-104



FLOORING LEGEND

VCT-1	VCT-5	VCT-9	CPT-4
VCT-2	VCT-6	CPT-1	CPT-5
VCT-3	VCT-7	CPT-2	RBF-1
VCT-4	VCT-8	CPT-3	

1 / ID-106 **Floor Pattern Plan Administration & Media Center**

Scale 1/8" = 1'-0"

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Renovations to:
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FLOOR PATTER PLAN ADMINISTRATION & MEDIA CENTER

JOB NUMBER

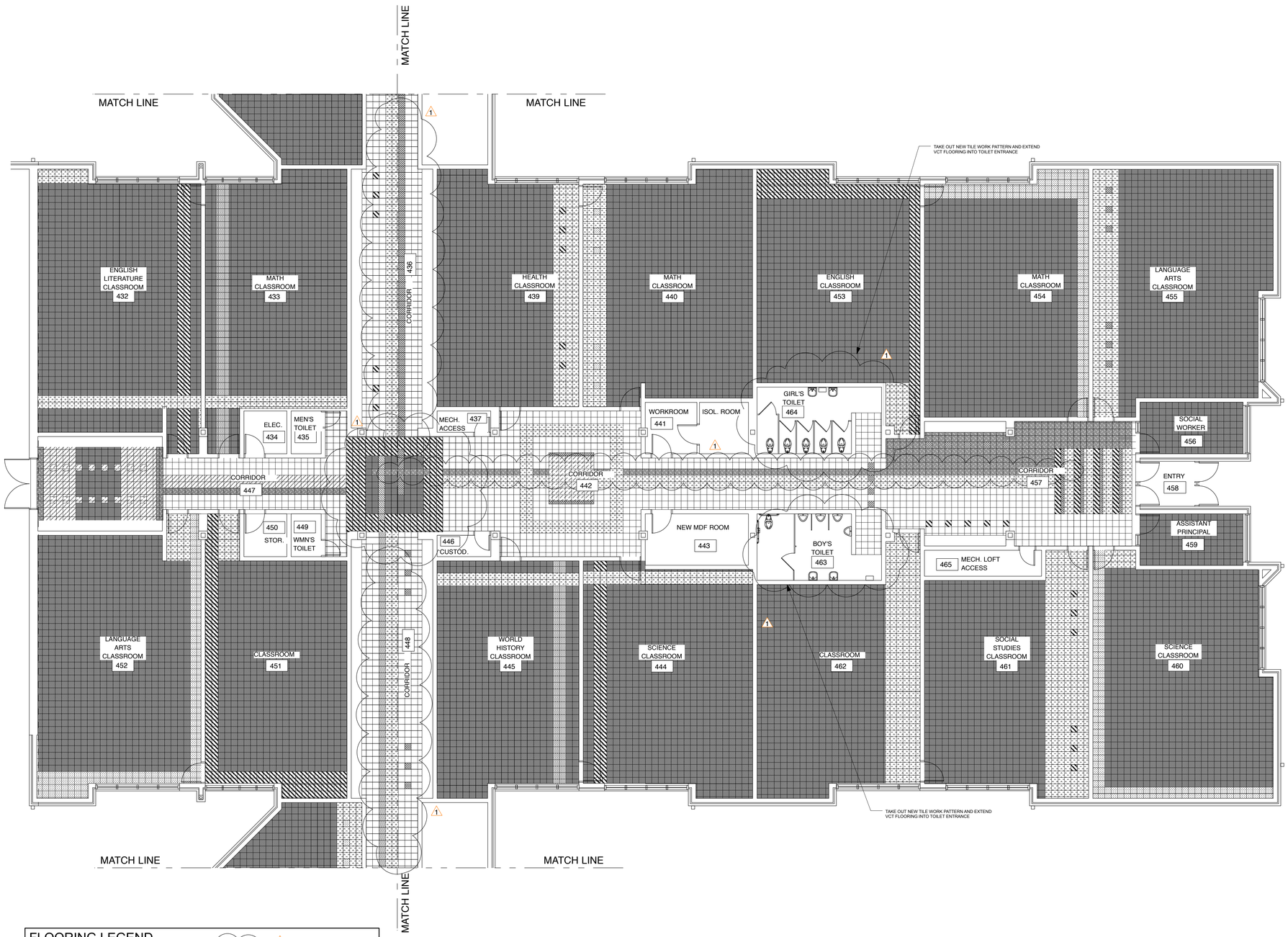
DRAWN BY NL&JK

CHECKED BY NL&JK

DATE 1.24.2018

REVISIONS
1 2/15/18 - VCT

SHEET NUMBER
ID-106



FLOORING LEGEND

VCT-1	VCT-5	VCT-9	CPT-4
VCT-2	VCT-6	CPT-1	CPT-5
VCT-3	VCT-7	CPT-2	RBF-1
VCT-4	VCT-8	CPT-3	

1 ID-107 **Floor Pattern Plan 7th Grade Wing**

Scale 1/8" = 1'-0"

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Renovations to:
Myrtle Grove Middle School
901 Piner Road, Wilmington North Carolina 28409

FLOOR PATTERN PLAN 7TH GRADE WING

JOB NUMBER

DRAWN BY NL&JK

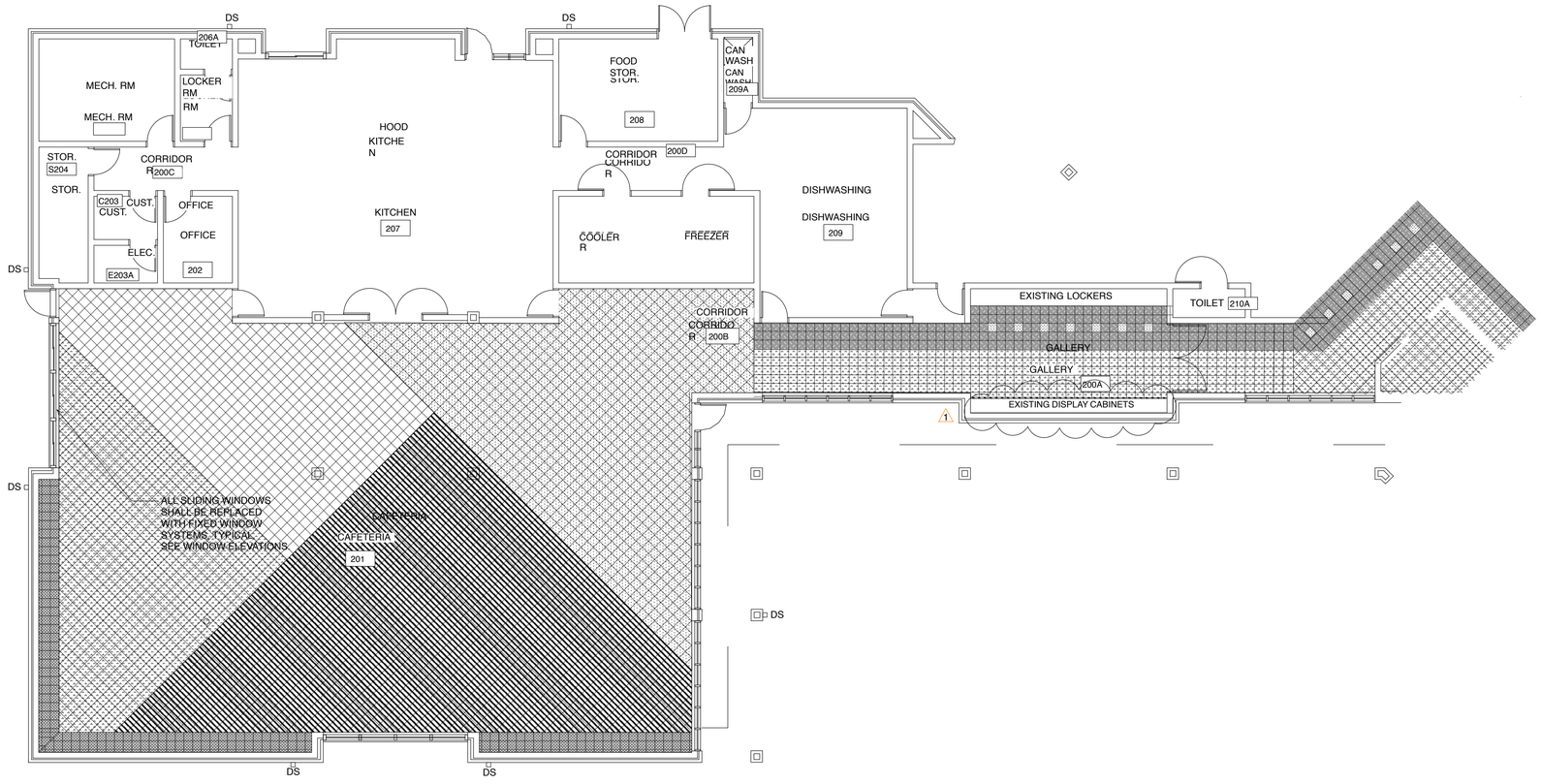
CHECKED BY NL&JK

DATE 1.24.2018

REVISIONS
1 2/15/18 - VCT color

SHEET NUMBER

ID-107



FLOORING LEGEND

VCT-1	VCT-5	VCT-9	CPT-4
VCT-2	VCT-6	CPT-1	CPT-5
VCT-3	VCT-7	CPT-2	RBF-1
VCT-4	VCT-8	CPT-3	

1 / ID-108 **Floor Pattern Plan Cafeteria**

Scale 1/8" = 1'-0"

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FLOOR PATTERN PLAN CAFETERIA

JOB NUMBER

DRAWN BY NL&JK

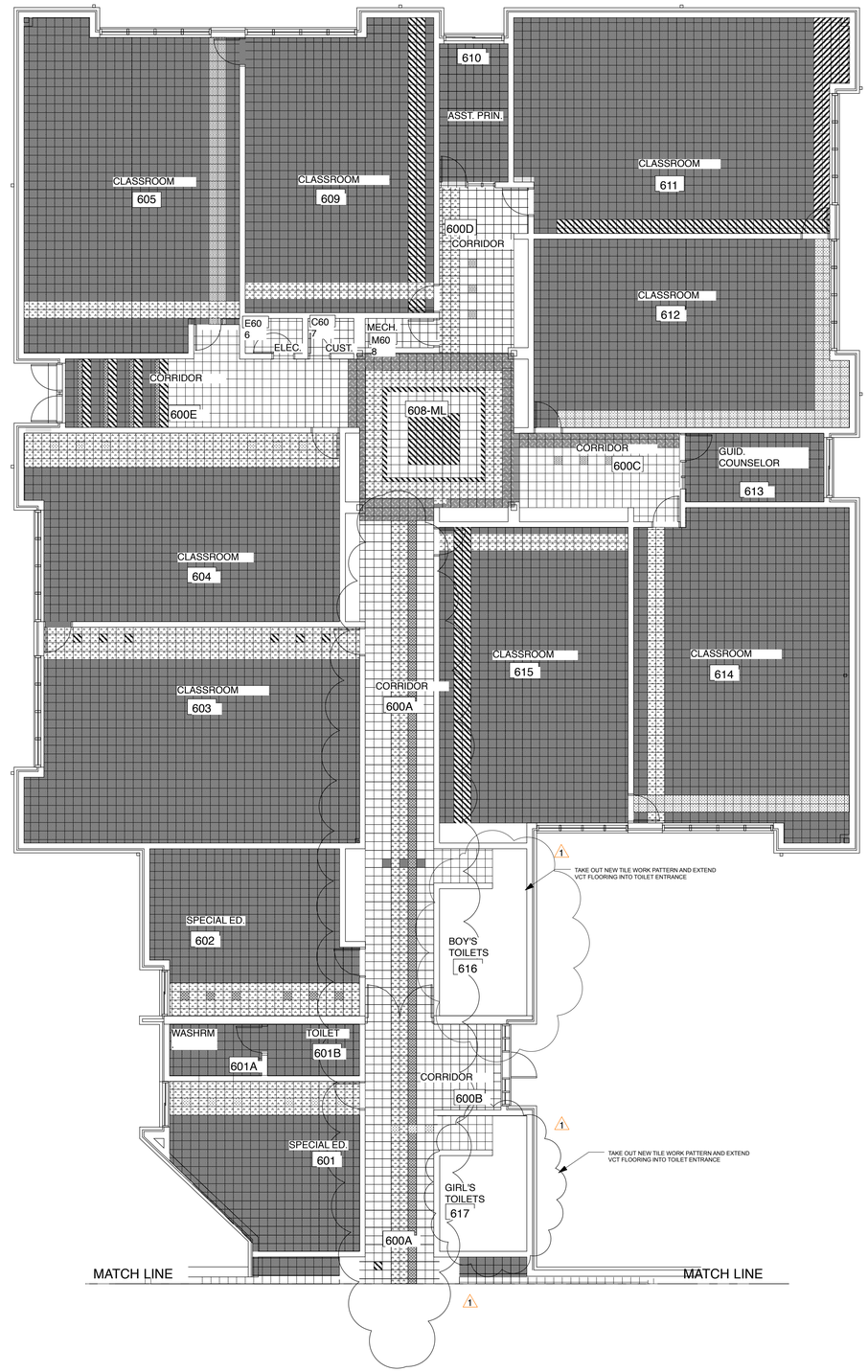
CHECKED BY NL&JK

DATE 1.24.2018

REVISIONS
1 2/15/18 - Exst. Floor

SHEET NUMBER

ID-108



FLOORING LEGEND

VCT-1	VCT-5	VCT-9	CPT-4
VCT-2	VCT-6	CPT-1	CPT-5
VCT-3	VCT-7	CPT-2	RBF-1
VCT-4	VCT-8	CPT-3	

1 / ID-109 **Floor Pattern Plan 6th Grade Wing**

Scale 1/8" = 1'-0"

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BRUCE F. BOWMAN REGISTERED ARCHITECT 595 1 NORTH CAROLINA WILMINGTON, N.C.

Renovations to:
Myrtle Grove Middle School
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FLOOR PATTERN PLAN 6TH GRADE WING

JOB NUMBER

DRAWN BY NL&JK

CHECKED BY NL&JK

DATE 1.24.2018

REVISIONS
1 2/15/18 - VCT

SHEET NUMBER
ID-109

Division 23

230593 HVAC Testing, Adjusting, and Balancing:

Page 3, Line 4: Replace word “Dedication” with “Dedicated”

Boiler Section on Page 4 has been removed.

230596 HVAC Systems Verification: Eliminate Lines 1-53 on Page 8 dealing with Boilers.

230993 Sequences of Operation:

Page 4: Section 1.26.2. Lead/Lag Sequence has been removed.

Section 4.12.1 and Section 4.14.3 indicate sequence only applies to AC-24.

Page 12: Space Temperature and Humidity Control Setpoints have been updated.

Page 14: Section 5.15: Sequence for WSHPs has been revised.

Page 16: Section 5.30: Sequence for DVA units has been revised.

238116 Ductless Split System Air-Conditioning Units: Remove Specification.

237433: Packaged Dedicated Outdoor Air Water Source Heat Pump Units: Extended Warranty has been edited.

Extended Warranty: **Contractor shall provide a parts and labor manufacturer's warranty for entire unit, including refrigerant.** This warranty shall be directly from the manufacturer to the Owner and shall be in addition to guarantees and warranties required under the General Conditions to the Construction Contract. This warranty shall provide for repair or replacement of the entire unit that becomes inoperative as a result of defects in materials or workmanship within 4 years after the date of Substantial Completion. Warranty shall cover time between beneficial occupancy in each phase and Substantial Completion.

238416 Packaged Water Source Heat Pump Units: Extended Warranty has been edited.

Extended Warranty: **The Contractor shall provide an extended parts and labor warranty on each unit in addition to guarantees and warranties required under the General Conditions to the Construction Contract.**

The *parts* portion of the warranty shall be directly from the manufacturer to the Owner.

The *labor* portion of the warranty shall also be provided directly from the manufacturer to the Owner.

Exception: Where a manufacturer labor warranty is not available, the Contractor shall provide a labor warranty directly to the Owner.

This warranty shall provide for repair or replacement of the entire unit**, including removal and/or replacement of refrigerant,** that becomes inoperative as a result of defects in materials or workmanship within 4 years after the date of Substantial Completion. Warranty shall cover time between beneficial occupancy in each phase and Substantial Completion.

Division 27

275123 Educational Intercommunications and Program Systems:

New Specification added.

SECTION 230993 - SEQUENCES OF OPERATION

PART 1 - GENERAL

SCOPE

This section includes basic requirements for sequences of operation for Division 23 equipment, as well for equipment furnished under other Divisions.

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to the work of this section.

The requirements of Sections 230913, 230923, 230924, and 230933 apply to the work of this section.

SUBMITTALS

General: Submittals shall demonstrate compliance with technical requirements by reference to each subsection of this specification. Where a submitted item does not **comply fully** with each and every requirement of the Specifications, the submittal shall clearly indicate such deviations. Identification requirements for non-complying features of items are very specific. See Section 019913 for exact requirements.

Sequences of Operation: Provide complete documentation of the sequences of operation required by this project, as hereinafter specified:

Include narrative sequence of operation for each HVAC system, subsystem, and component as defined herein, within other specification sections referenced herein, and/or defined on the project Drawings.

Narratives shall not be verbatim copies of the sequences provided herein, but shall reflect the actual sequence of operation as applied by the contractor.

Sequences of operation must include setpoints and/or control ranges, digital alarms, analog alarm setpoints (both high and low), time delays, I/O point names, hardware/software interlocks, analog control mode (e.g., proportional [P] or proportional plus integral [PI]), and any other specifics needed for the user to fully understand and utilize the DDC system for operation of each HVAC system and its individual components in compliance with the design intent.

Sequences of operation for each item of equipment that is controlled by integral original equipment manufacturer (OEM)controls, with or without control logic through the DDC system, shall be incorporated in the applicable narrative.

Control Schematics: Provide schematic diagrams of each HVAC system/subsystem sufficient to define the location of all control sensors, final control devices, etc. that are utilized as part of any sequence of operation and that confirm all input and output points required by any sequence of operation.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

GENERAL REQUIREMENTS

Sequences of operation specified herein, which indicate the functional intent of HVAC systems, subsystems, and/or components operation, are general in nature and may not fully define every aspect of programming that may be required to fulfill the design intent. **Contractor shall provide all programming necessary to obtain the sequences/system operation indicated, resulting in stable HVAC system operation in accordance with the design intent.**

The following standard abbreviations, along with abbreviations defined on the Drawings, shall apply to all control schematics and sequences:

Abbreviation	Definition	Abbreviation	Definition
I/O Points		*HVAC Components/Conditions*	
AI	Analog Input	ACWS, ACWR	Air-Conditioning Water Supply, Return
AO	Analog Output	AHU	Air-Handling Unit
AV	Analog Value	BCU	Blower Coil Unit
DI	Digital (Binary) Input	CAV	Constant Air Volume
DO	Digital (Binary) Output	CC	Cooling Coil
DV	Digital (Binary) Value	CDWS, CDWR	Condenser Water Supply, Return
Control Conditions/Actions		CHWS, CHWR	Chilled Water Supply, Return
BP	Barometric Pressure	FCU	Fan Coil Unit
BTU	British Thermal Unit	HC	Heating Coil
DA	Direct Acting	HX	Heat Exchanger
DB	Dry Bulb	HWS, HWR	Hot Water Supply, Return
DP	Differential Pressure	OA	Outdoor Air
DPT	Dew Point Temperature	OEM	Original Equipment Manufacturer
DT	Differential Temperature (Range)	PHC	Preheat Coil
NC	Normally Closed	RA	Return Air
NO	Normally Open	RF	Return Air Fan
P	Pressure; Proportional	SA	Supply Air
RA	Reverse Acting	SF	Supply Fan
SP	Static Pressure	VA	Ventilation Air
T	Temperature	VAV	Variable Air Volume
TP	Total Pressure	XA	Relief Air
VP	Velocity Pressure	XF	Relief Air Fan
WB	Wet Bulb		

Sequences of operation shall incorporate the following control point/object requirements, as applicable:

Point Description	Hardware Point				Software Point				GRAPHIC
	AI	AO	DI	BI	AV	DV	SCHED	TREND	
BTU	X							X	X
Damper End Switch			X						X
DP	X							X	X
DPT					X			X	X
DT					X			X	X
Drain Pan Water Level Sensor			X						X
Electrical Power	X							X	X
Enthalpy					X			X	X
Flow (Air, Water, Steam, etc.)	X							X	X
Gas Concentration	X							X	X
Humidity	X							X	X
Occupancy/Vacancy			X					X	X
Occupied/Unoccupied				X			x	X	X
On/Off				X			x	X	X
Open/Close				X				X	X
Output (Percent)		X						X	X
Position (Percent from Normal)					X			X	X
P	X							X	X
Speed (%, setpoint)		X						X	
Speed (%, feedback)	X							X	X
Status			X					X	X
T	X							X	X

All sequences of operation are based on one or more sensed variables, with an associated controlled variable, changing in one direction. **Each sequence shall operate in reverse when the sensed variable(s) changes in the opposite direction.**

HVAC control setpoints are defined or implied within the sequences of operation specified hereinafter and/or elsewhere on the Drawings.

Where a setpoint is not explicitly defined or implied, determine the appropriate setpoint based on scheduled performance data for HVAC equipment. **Confirm setpoint with A-E**.

Defined or implied setpoints and setpoint reset requirements shall, as necessary, be adjusted based on test data provided by the testing/adjusting/balancing (TAB) subcontractor and control system calibration and verification testing as required by Section 230923 to provide stable, satisfactory HVAC systems operation in compliance with the design intent.

AO setpoints and control ranges shall be user-adjustable.

DO points that depend on a specific analog value to change shall be user-adjustable.

The minimum speed setting for each pump and fan under VFD control shall be as low as possible, while avoiding inertial stalling. Adjust each VFD minimum speed and ramp-up and -down times based on test data provided by the TAB subcontractor. Default times for acceleration/deceleration shall be 30 seconds for motors less than 40 hp and 60 seconds for motors 40 hp and larger.

Two independent schedules for HVAC system operation and control are required by Sequence 1.14, established as follows:

"ON/OFF" schedule(s) shall determine HVAC systems and/or equipment start/stop times, define applicable operating setpoints, and define when specific sequences of operation are to be utilized.

"ON" hour is defined as the estimated latest hour at which the HVAC system/equipment may be "ENABLED" and commanded "ON" so that setpoint conditions are maintained within the space(s) served at the "OCCUPIED" start hour. This "ON" hour shall be adjusted by the "Optimum Start" application specified in Section 230923.

"OFF" hour is defined as the hour at which the HVAC system/equipment shall be "DISABLED."

"OCCUPIED/UNOCCUPIED" schedule(s) shall determine ventilation modes.

These schedules define 5 specific operating periods for the HVAC systems to which they are applied:

"On" period is the elapsed time between the scheduled "On" hour, defined as the latest allowable hour at which the HVAC system must be "On," and the "Off" hour, during which the HVAC operates to maintain the spaces served at the defined "On" period temperature and/or humidity setpoints.

"Off" period is the elapsed time between the scheduled "Off" and "On" hours during which the HVAC system does not operate unless it is required to cycle "On" to maintain the spaces served at the defined "Off" period high and low limit temperature and/or humidity setpoints.

"Occupied" period is the elapsed time between the scheduled "Occupied" start and end hours during which people, to a greater or lesser extent, are expected to be present and required ventilation air.

"Unoccupied" period is the elapsed time between the scheduled "Occupied" end and start hours during which people, except at *de minimis* levels, are not expected to be present and, therefore, no ventilation air is required.

"Pre-Occupied" period is the elapsed time between the scheduled "On" hour and the actual "On" hour computed by the Optimum Start algorithm so that setpoint conditions are maintained within the space(s) served at the beginning of the "Occupied" period. (This period typically overlaps the "Unoccupied" period by 1-3 hours depending on input schedules.)

Provide operator-defined maintenance "lockout" for each HVAC component. When initiated, any component defined to be locked out for maintenance shall be deleted from any applicable control sequence of operation.

SEQUENCES OF OPERATION

Index to Sequences of Operation

Section	ID	Description
		GENERAL
	1.10	Emergency Stop Control
	1.14	Schedules of Operation
	1.18	Input Point Monitoring and Alarm Initiation
	1.20	Output Point Control
	1.21	Constant Speed Single-Phase or Polyphase Motor Control
	1.22	Two-Speed Polyphase Motor Control
	1.23	Variable Speed Single-Phase Motor Control
	1.24	Variable Speed Polyphase Motor Control
	1.25	Single-Phase and Polyphase Motor Status Monitoring
	1.27	Exhaust Air Fan Start/Stop
	1.30	Outdoor Piping/Equipment Trace Heating Cable
	1.33	Final Control Element Operators (Valves and Dampers)
		CENTRAL PLANTS
3.4		**Closed Loop Water Source Heat Pump Systems**
	3.41	Heat Pump Water Loop, Variable flow
		AIR-HANDLING SYSTEMS
4.0		**Air-Handling Systems Operations and Monitoring**
	4.00	Start/Stop Control
	4.01	Space Temperature/Humidity Setpoints and Monitoring
	4.05	Drain Pan Condensate Level Alarm
	4.06	Filter Differential Pressure Alarm
4.1		**Single Zone Air-Handling Systems**
	4.12	Minimum Outdoor Air Control, Single Zone System
	4.12.1	CAV (AC-24)
	4.14	Demand Control Ventilation Control (DCV) Enable/Disable, Single Zone System
	4.14.3	DCV Based on Occupancy Schedule + CO_2 Sensing (AC-24)
		PACKAGED DX COOLING SYSTEMS
	5.10	Packaged/Split Air-Cooled DX Unit, CAV or VAV Single Zone System
	5.15	Space Temperature and Humidity Control, Single Zone Water Source Heat Pump System
	5.30	Packaged Water Source Heat Pump Unit, Outdoor Air Preconditioning System
		SPECIAL EXHAUST SYSTEMS
	7.10	Type I Kitchen Hood Interface
	7.11	Type II Kitchen Hood

GENERAL DDC SEQUENCES

1.10 **Emergency Stop Control:**

The following elements shall be incorporated into sequences of operation, **whether specifically defined in individual sequences of operation hereinafter or not**, and shall initiate an alarm upon occurrence of any emergency stop:

Application	Configuration	Emergency Stop Requirements

Application	Configuration	Emergency Stop Requirements	
WSHPs			
	Unit serves multiple spaces and is capable of spreading smoke beyond the space in which smoke is generated.	Unit airflow ≤ 2,000 cfm	No duct smoke detectors required. Emergency stop by fire alarm system shutdown relay/ software interlock not required.
		Unit airflow > 2,000 cfm	Duct smoke detectors required in unit return air. Emergency stop of all unit fans shall be initiated by auxiliary contacts of duct smoke detectors or by fire alarm system shutdown relay/software interlock.
		Low limit thermostat not required.	

1.14. **Schedules of Operation**:

System(s)	Period	Hours (1-24) Each Day of The Week							Weeks to Apply (1-52)
		MON	TUE	WED	THR	FRI	SAT	SUN	
All Systems (School Year)	"ON" Hour for Latest System Start	7	7	7	7	7			1-23, 33-52
	"OFF" Hour to Stop System	17	17	17	17	17			1-23, 33-52
	Occupied Period Start Hour	8	8	8	8	8			1-23, 33-52
	Occupied Period End Hour	16	16	16	16	16			1-23, 33-52
All Systems (Summer)	"ON" Hour for Latest System Start	UNOCCUPIED							24-32
	"OFF" Hour to Stop System								24-32
	Occupied Period Start Hour								24-32
	Occupied Period End Hour								24-32

1.18 **Input Point Monitoring and Alarm Initiation**

Digital inputs (DI or DV):

MONITOR each DI and DV point for alarm condition.

MONITOR each motor status and initiate alarms in accordance with Sequence 1.25.

Set digital point alarm condition the basis of field adjusted differential setpoints.

Where start/stop or other two-position control sequence is based on a digital input status condition or input sensed variable value(s) (AI or AV), set time delays or digital filters to prevent any equipment item or final control element from "short-cycling" in response to small changes of the sensed variable(s).

Incorporate user-adjustable time inhibit alarm(s) to prevent nuisance alarms and/or "tripping" under normal operation and during equipment start-up and shut-down.

For devices that have Form "C" relay contacts available for alarm monitoring, use NC contacts for the "Off" or "Normal" condition and NO contacts on "Alarm" condition.

Analog inputs (AI or AV):

Set high and/or low alarm setpoints for each point.

The following default values shall be used if alarm setpoints are not defined within a specific sequence operation or indicated on the Drawings:

Space temperature	5ºF below low setpoint of comfort zone or 5ºF above high setpoint of comfort zone
Space humidity	≥70% RH
AHU mixed air low limit	≤38ºF
Cooling coil leaving air	≥60ºF

Heating coil leaving air	≤90ºF
CHW supply	≥48ºF
HW supply	≤120ºF
Low pressure steam supply	5 psig below setpoint
High pressure steam supply	15 psig below setpoint

1.20 **Output Point Control**

Set each control loop to utilize one of the following control modes:

Digital (binary) output: Two position (e.g., on-off, slow-fast)

Analog output: Proportional (P) or proportional + integral (PI) function control, as follows:

Controlled Variable	Control Mode
Space Temperature	P
Mixed Air Temperature	PI
Coil Discharge Temperature	PI (cooling), P (heating)
Chilled Water Supply Temperature	PI
Hot Water Supply Temperature	P
Airflow	PI (with wide proportional band and fast reset rate)
Fan Static Pressure (Fan Speed)	PI
Humidity	P
Dewpoint Temperature	P
Other (not listed above or indicated on the Drawings)	**Consult A-E**

Analog output proportional band and gain setpoints:

Set on basis of actual sensor span, zero bias, and minimum proportional bands/throttling ranges, as follows, for all analog control loops to prevent "hunting:"

Set proportional bands/throttling ranges to provide stable control around setpoints and as determined on an individual point basis **based on test data provided by the TAB subcontractor**.

Default deadbands/throttling ranges are as follows

Space temperature (cooling)	± 1.5°F
Space temperature (heating)	± 2.0°F
Space humidity	± 5% RH
Mixed/discharge air temperature	± 0.25°F
CHWS/CDWS temperature	± 0.50°F
HWS/ACWS temperature	± 2.0°F
Duct/plenum static pressure	± 0.05” wg
Building static pressure	± 0.01” wg
Airflow (cfm) and water flow (gpm)	± 2% of design flow
Water pressure	± 0.25 psi

Analog output integral gain setpoint:

Set to bring the measured variable to its setpoint without abrupt changes to HVAC equipment operation and, with the exception of condenser water bypass valve control, to limit every control loop output signal to a maximum rate of change of 25% per minute.

Only if this found to be impossible, may the proportional gain, as determined above, be adjusted.

Analog output derivative gain setpoint:

Derivative function for any control loop is prohibited unless reviewed by the A-E for each specific point. Set derivative gain to 0.

Setpoint reset: For air or water systems in which the sequence of operation requires temperature, pressure, etc. setpoint to be reset based on valve or damper position of the zone(s) requiring cooling or heating, the following method shall be employed:

A floating reset algorithm shall be used that increments the secondary variable (e.g., temperature, pipe or duct pressure) setpoint on a periodic basis to maintain primary variable (e.g. cooling valve, heating valve, damper position) setpoint of 85% open. The reset increment shall be calculated based on the average position of the quantity of the worst (most open valve/damper) zone(s) as specified. **The recalculation time, reset increment and control device position influence shall be chosen to maintain the primary variable within the specified maximum allowable variance while minimizing overshoot and settling time.**

Final control element operation:

Normally open/normally closed: Two-way final control element position in response to 0% control loop output signal. Except as otherwise specified herein or indicated on the Drawings, "OFF" or "NORMAL" position of final control elements shall be as follows:

Final Control Element	Off/Normal Position
Reheating coil control valve	closed
Heating/Preheating coil control valve	open
Cooling coil control valve	open
Outside air damper	closed
Return air damper	open
Exhaust/relief air damper	closed

Direct acting/response: 0% to 100% change of final control element state or position in response to 0% to 100% control loop output signal.

Reverse acting/response: 100% to 0% change of final control element state or position in response to 0% to 100% control loop output signal.

1.21 **Constant Speed Single-Phase or Polyphase Motor Control**:

Motor shall be commanded "ON/OFF" via DO point.

MONITOR motor status as DI point in accordance with Sequence 1.25.

Emergency stop:

Hard-wired contact(s) shall "STOP" motor in accordance with motor emergency stop requirements defined hereinbefore.

Initiate alarm upon emergency stop.

1.22 **Two-Speed Polyphase Motor Control**:

Motor shall be commanded "ON" at low speed, commanded to switch from one speed to the other (high to low or low to high), and commanded "OFF" via two (2) DO points.

MONITOR motor status as DI point in accordance with Sequence 1.25.

Emergency stop:

Hard-wired contact(s) shall "STOP" motor in accordance with motor emergency stop requirements defined by Sequence 1.10.

Initiate alarm upon emergency stop.

1.23 **Variable Speed Single-Phase Motor Control**:

Provide interface between DDC system and manufacturer-provided electronically commutated motor (ECM) integral speed controller.

Command motor "ON/OFF" via DO point.

MONITOR motor status as DI point in accordance with Sequence 1.25.

Emergency stop:

Hard-wired contact(s) shall "STOP" motor in accordance with motor emergency stop requirements defined by Sequence 1.10.

Initiate alarm upon emergency stop.

Modulate motor speed from minimum speed to 100% speed in direct response to AO point.

Adjust minimum speed setpoint to value, as reviewed by A-E, using the following procedure:

Manually set ECM controller minimum speed output to 6 Hz (10% of maximum) unless (1) dictated otherwise by the equipment manufacturer or (2) defined otherwise by sequence(s) of operation.

Observe driven equipment to ensure that it is visibly rotating.

If not, increase controller minimum speed output in increments of 2 Hz until the unit driven equipment is visibly rotating.

Ensure that the current sensing relay required by Sequence 1.25 confirms operation at the minimum speed setting.

Initiate alarm via DI point if ECM controller status/fault contact closes.

1.24 **Variable Speed Polyphase Motor Control**:

Provide interface between DDC system and manufacturer-provided variable frequency drive (VFD) for motor speed control.

Command motor "ON/OFF" via DO point.

MONITOR motor status in accordance with Sequence 1.25.

Emergency stop:

Hard-wired contact(s) shall "STOP" motor in accordance with motor emergency stop requirements defined by Sequence 1.10.

Initiate alarm upon emergency stop.

Modulate motor speed from minimum speed to maximum speed in direct response to AO point.

Set minimum speed setpoint to value, as reviewed by A-E, using the following procedure:

Manually set VFD minimum speed output to 6 Hz (10% of maximum) unless (1) dictated otherwise by the equipment manufacturer or (2) defined otherwise by sequence(s) of operation herein defined.

Observe driven equipment to ensure that it is visibly rotating. If not, increase controller minimum speed output in increments of 2 Hz until the unit driven equipment is visibly rotating.

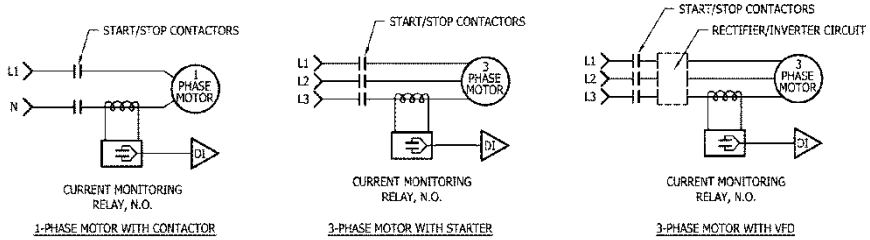
Ensure that the current sensing relay required by Sequence 1.25 confirms operation at the minimum speed setting.

Set maximum speed setpoint to value determined during TAB operations in order to obtain design flow.

MONITOR motor speed feedback from VFD via AI point.

Initiate alarm via DI point if VFD status/fault contact closes.

1.25 **Single-Phase and Polyphase Motor Status Monitoring**:



Motor "ON" or "OFF" status shall be determined via DI point contact closure by current monitoring relay as illustrated above.

Adjust current monitoring relay “trip” setpoint to 5% above the minimum operating motor amperage.

For variable speed motors, coordinate “trip” setpoint with minimum motor speed.

Monitor motor status anytime motor has been commanded “ON.”

Inhibit motor status monitoring for the first 10 seconds after motor is commanded “ON.”

If motor status DI point indicates motor failure:

For single pump or fan configurations, command motor “OFF,” terminate associated start sequence, and initiate pump/fan failure alarm.

For dual pumps or fans operating in lead/standby configuration in accordance with Sequence 1.26.2, command operating pump/fan “OFF,” command standby pump/fan “ON,” and initiate pump/fan failure alarm.

If standby pump/fan motor status DI point indicates motor failure, terminate associated start sequence and initiate pump/fan failure alarm.

For multiple pumps or fans operating in parallel lead/lag/cascade configuration in accordance with Sequence 1.26.1, command failed pump/fan “OFF,” initiate pump/fan failure alarm, and continue associated start sequence with remaining pump(s)/fan(s) in operation.

If two or more motor status DI points indicate motor failure, command all motors “OFF,” terminate associated start sequence, and initiate pump/fan failure alarm.

1.27 **Exhaust Fan Start/Stop**: Exhaust fan start/stop control methods shall be as indicated on the Drawings, in accordance with the following:

Indicated Control Method	Exhaust Fan Start/Stop Control Method
DDC (Interlock)	Start/stop exhaust fan(s) in accordance with (1) associated air-handling system "OCCUPIED/UNOCCUPIED" schedule or (2) operator command in compliance with Sequence 1.21.
DDC (Temperature)	Start and stop exhaust fan(s) based on (1) space temperature or (2) operator command in compliance with Sequence 1.21. On a rise in space temperature to above setpoint, exhaust fan shall be energized to maintain space temperature at setpoint. Space temperature setpoint shall be 80°F //VERIFY/EDIT AS NEEDED//.. MONITOR space temperature as AI point.
Independent Thermostat	Start/stop exhaust fan(s) based on stand-alone, wall-mounted line-voltage thermostat; no DDC connection required. On a rise in space temperature to above setpoint, exhaust fan shall be energized to maintain space temperature at setpoint.
Manual	Start/stop exhaust fan(s) via manual switches or breakers. See Division 26 Drawings, as applicable.

1.30 **Outdoor Piping/Equipment Trace Heating Cable**: On a fall in liquid temperature to below setpoint, trace heating cable, where indicated on the Drawings, shall be energized by pipe surface mounted line voltage thermostat ("aquastat") to maintain liquid temperature at setpoint.

1.33 **Final Control Element Operators (Valves and Dampers)**:

Two-position control operator shall "OPEN" or "CLOSE" final control element (valve/damper), as indicated on the Drawings, in direct response to DO point.

MONITOR final control element position as DI point equal to the DO point.

Final control element position shall be confirmed by visual inspection during the calibration and verification procedures required by Section 230923.

Modulating control operator shall modulate 0% to 100% from its Normal state, as indicated on the Drawings, in direct response to AO point.

MONITOR final control element position as AI point whose value (percent) is equal to the AO point value (percent).

Final control element position shall be confirmed as equal to the AO point value (percent) during the calibration and verification procedures required by Section 230923.

CENTRAL PLANTS

3.4 CLOSED LOOP WATER SOURCE HEAT PUMP SYSTEM

3.41 **Heat Pump Water Loop, Variable Flow**:

Existing pump system is constant volume. Existing pumps are equipped with VFDs. Test existing VFDs for full functionality. Alert Owner and A/E if there are any deficiencies. Heat pump Water Loop shall operate under variable flow based on the following sequence.

"ENABLE/DISABLE" system in accordance with (1) "ON/OFF" schedule defined by Sequence 1.14, (2) demand for heating or cooling indicated by 5% of water source heat pumps being commanded "ON", or (3) operator command, as follows:

Command ACWS pump(s) "ON" via DO points in accordance with Sequence 1.24.

Confirm pump(s) operation based on motor status as DI point(s) in accordance with Sequence 1.25.

Confirm water flow via differential pressure flow switch via DI point.

If differential pressure flow switch indicates flow failure, command ACWS pump(s) “OFF” and initiate alarm.

Loop water temperature control:

MONITOR ACWS temperature as AI point.

MONITOR ACWR temperature as AI point.

Maintain **low limit** ACWR setpoint temperature range as follows:

When ACWR temperature falls to 60ºF, ENABLE boiler system.

When ACWR temperature rises to 70ºF, DISABLE boiler system.

Maintain **high limit** ACWR setpoint temperature range as follows:

When ACWR temperature rises to 90ºF, ENABLE evaporative cooler system.

When ACWR temperature falls to 80ºF, DISABLE evaporative cooler system.

Boiler system control:

Existing hot water boilers shall operate under existing sequence of operation. .

Evaporative cooler system control:

When “ENABLED”, command evaporative cooler isolation valve(s) “OPEN” via DO point(s).

On a rise of ACWR temperature above the high limit setpoint range, command evaporative cooling spray pump(s) "ON" via DO point(s) in accordance with Sequence 1.21.

Confirm each pump operation based on motor status as DI point in accordance with Sequence 1.25.

On a continued rise of ACWR water temperature to above the high limit setpoint range, command cooler fan(s) "ON" at low speed via DO point(s) in accordance with Sequence 1.22.

Confirm each fan operation based on motor status as DI point in accordance with Sequence 1.25.

On a continued rise of ACWR temperature to above the high limit setpoint range, command cooler fan(s) "ON" at high speed via DO point(s) in accordance with Sequence 1.22.

Confirm each fan operation based on motor status as DI point in accordance with Sequence 1.25.

AIR-HANDLING SYSEMS

4.0 GENERAL AIR-HANDLING SYSTEMS OPERATIONS AND MONITORING

4.00 **Start/Stop Control**:

Start/stop air-handling system supply air fan(s), in accordance with Sequence 1.21, 1.22, 1.23, or 1.24, as applicable, based on (1) user-defined "ON/OFF" schedule defined by Sequence 1.14, or (2) operator command.

During "ON" periods, command air-handling system "ON" (start) unless inhibited, operator command, or an emergency stop interlock in accordance with Sequence 1.13.

During "OFF" periods, command air-handling system "OFF" via DO point

Each exhaust fan associated with an air-handling system, as tabulated below, shall be commanded "ON" via DO point when the air-handling system is "ON" and commanded "OFF" via DO point when the air-handling system is "OFF," in accordance with Sequence 1.27:

Air-Handling System Tag	Exhaust Fan Tag	Area(s) Served
DVA-1	F-1,2	Elective Wing
DVA-2	F-4,5,6,7	8th Grade Wing
DVA-3	F-10,11,12	Admin/Media Wing
DVA-4	F-13,23	7th Grade Wing
DVA-5	F-19,20,21	6th Grade Wing
AC-24	F-16,18	Cafeteria

MONITOR fan motors(s) status via DI point(s) in accordance with Sequence 1.25.

4.01 **Space Temperature/Humidity Setpoints and Monitoring**:

Space temperature and humidity control setpoints:

"ON" Period:	Temperature Range:	70-75ºF Comfort Zone
	Max. Humidity:	60% RH High Limit
	Min. Humidity:	30% RH Low Limit
"OFF" Period:	Max. Temperature:	85ºF High Limit
	Min. Temperature:	55ºF Low Limit
	Max. Humidity:	65% RH High Limit

Space temperature setpoints shall **not** be adjustable by space occupants.

Space humidity setpoints shall **not** be adjustable by space occupants.

MONITOR each space temperature and humidity as individual AI point.

4.05 **Drain Pan Condensate Level Alarm (All WSHPs and DVA-1,2,3,4,5)**:

MONITOR drain pan condensate level sensor integral NO dry contact as a DI point.

Upon sensor detection of drain pan moisture, and after user-defined time delay (default = 3 minutes), stop air-handling system via DO point and initiate an alarm.

4.06 **Filter Differential Pressure Alarm (DVA-1,2,3,4,5 Only)**:

MONITOR filter differential pressure gauge integral NO dry contact as DI point.
Upon filter differential pressure exceeding setpoint, initiate maintenance alarm for filter replacement.

4.12.1 **Minimum Outdoor Airflow Control, CAV Single Zone System, AC-24 (Cafeteria)**:

Set the minimum outdoor airflow to 1,000 CFM

Set the maximum outdoor airflow to 2,750 CFM

During “OCCUPIED” periods and during “UNOCCUPIED” periods prior to the air-handling system being commanded “OFF,” “ENABLE” minimum outdoor airflow and modulate outdoor air damper to preset “OPEN” positions to maintain **OA** at setpoint. ***Outdoor air damper positions [percent “OPEN”] for each outdoor airflow required by this sequence shall be determined by the TAB subcontractor.***

Anytime the air-handling system is “OFF,” modulate air damper 0% “OPEN” via AO point.

AC-24 shall start “OCCUPIED” period at maximum outdoor airflow. Outside air damper can modulate down to minimum outdoor airflow based on the following:

1. Demand control ventilation as outlined in 4.14.3 below.

2. If kitchen hood exhaust fan is energized, and unit is in “UNOCCUPIED” mode, energize AC-24 and open outdoor air damper to minimum outdoor airflow.

4.14 **Demand Control Ventilation (DCV) Enable/Disable, Single Zone System AC-24 (Cafeteria)**:

During “OCCUPIED” periods, ENABLE demand control ventilation, as follows:

Inhibit Sequence 4.14.3 during the first hour after beginning of each "OCCUPIED" period.

During “UNOCCUPIED” periods and anytime the air-handling system is “OFF,” DISABLE demand control ventilation.

4.14.3 **Demand Control Ventilation (DCV) Based on Occupancy Schedule + CO_2 Sensing, Single Zone System**:

MONITOR carbon dioxide (CO_2) indoor and outdoor concentration levels (ppm), as indicated on the Drawings, and average monitored levels over a sliding 5 minute period to establish input values for computation below:

Minimum outdoor airflow **VA** for Sequence 4.12.1 or 4.12.2, as applicable, shall be reduced in response to monitored CO_2 concentration levels, as follows:

Modulate the outdoor air damper to maintain the maximum **differentia**l between indoor and outdoor CO_2 levels in any space not to exceed 700 ppm.

Inhibit sequence if ventilation airflow, **VA,** is reduced to the greater of (**EA + PA**) or to the sum of zone area component of the minimum design ventilation airflows, **Va,** dictated by ASHRAE *Standard 62.1*.

Modulate the outdoor air damper to maintain the maximum indoor CO_2 level in any space not to exceed 1000 ppm.

Initiate alarm if indoor CO_2 level exceeds 1200 ppm for 30 minutes or more.

PACKAGED AIR-COOLED AND WATER-COOLED DX SYSTEMS

5.10 **Packaged/Split Air-Cooled DX Unit, CAV or VAV Single Zone System:**

PRIMARY UNIT CONTROL IS PROVIDED BY OEM CONTROLLER INTERFACED WITH DDC SYSTEM.

Thermostatic interface between the DDC system and each single zone packaged unit OEM controller shall be based on the following:

Packaged/Split Single Zone HVAC System		
DDC I/O Point	**Control Sequence Function**	**OEM Controller Thermostatic Interface Terminals**
L1	24v power	R, RC, RH
C	24v neutral	C
DO	Indoor fan start/stop	G
DO	First stage of cooling on/off	Y or Y1
DO	Second stage of cooling on/off	Y2
DO	First stage of heating on/off	W or W1
DO	Second stage of heating on/off	W2
DO	Third stage of heating on/off	W3
DO	Heat pump reversing valve actuation	O, B
DO	Hot gas reheat valve	HGV (on/off)
AO	Hot gas reheat valve	HGV (modulating)
DO	Auxiliary/back-up heating on/off	E
DI	Packaged unit internal fault/failure/alarm	Varies

5.15 **Space Temperature and Humidity Control, Single Zone CAV or VAV Water Source Heat Pump System**:

PRIMARY UNIT CONTROL IS PROVIDED BY OEM CONTROLLER INTERFACED WITH DDC SYSTEM.

Space temperature and humidity setpoints shall be in accordance with Sequence 4.01.

MULTIPLE SPACES: Where a single water source heat pump serves multiple classrooms or offices, provide temperature and humidity sensors for each space served and control the water source heat pump as defined below.

"On" period temperature and humidity control:

When the space temperature is within the limits of the minimum and maximum comfort zone temperature setpoints, neither cooling nor heating shall be initiated.

If either cooling or heating is initiated, command the N.C. ACWS control valve OPEN. When cooling or heating is no longer required, command the N.C. ACWS control valve CLOSED..

Cooling:

On a rise in space temperature to above the maximum comfort zone temperature setpoint, initiate stage 1 of cooling via DO point.

On a continued rise in space temperature to above the maximum comfort zone temperature setpoint, initiate stage 2 of cooling to maintain space at maximum comfort zone temperature setpoint.

Heating: At any ACWS temperature, on a fall in space temperature to below the minimum comfort zone temperature setpoint, initiate stage 1 of heating via DO point to maintain space at minimum comfort zone temperature setpoint.

On a continued fall in space temperature to below the minimum comfort zone temperature setpoint, initiate stage 2 of heating via DO point to maintain space at minimum comfort zone temperature setpoint.

Humidity: On a rise in any space humidity to above the high limit humidity setpoint, initiate stage 1 of cooling via DO point to maintain space humidity at high limit setpoint.

On a continued rise in any space humidity to above the high limit humidity setpoint, initiate stage 2 of cooling via DO point to maintain space humidity at high limit setpoint.

Modulate hot gas reheat valve via AO point to maintain space temperature at the maximum comfort zone temperature setpoint.

Where terminal unit serves multiple spaces, routinely (at least every 5 minutes) monitor and sort inputs from all space temperature sensors to determine which sensors are within the comfort temperature range.

For each sensor indicating a temperature not within the comfort range, minimize discomfort as follows:

If all sensors are above the maximum comfort space temperature, operate cooling mode until the highest sensor temperature is decreased to the maximum comfort space temperature setpoint.

If all sensors are below the minimum comfort space temperature, operate heating mode until the lowest sensor temperature is increased to the minimum comfort space temperature setpoint.

If at least 1 sensor is above the maximum comfort space temperature while 1 (or more) sensor is below the minimum comfort space temperature, compute the "percentage dissatisfied factor" (pdf) for each sensor as follows:

$$R = [-8.6479 + (0.2431 \times C)] + [0.3442 - (0.0073 \times C)] \times T$$

Where C = month of year (1-12)

T = sensor temperature, °c

$$PD = 100 - \{95 \, EXP \, [-(0.03353 \times R^4 + 0.2179 \times R^2)]\}$$

$$PDF = 0.9 \times (PD - 0.1)$$

Water source heat pump shall operate in heating/cooling mode to minimize the pdf at each sensor.

"OFF" period temperature and humidity limit control:

On a rise in space temperature to above the high limit setpoint temperature, command ACWS pump(s) “ON” via DO point(s), command unit fan "ON" via DO point, and initiate stage 1 of cooling via DO point to maintain space at high limit setpoint temperature **minus 5°F**.

On a continued rise in space temperature above the high limit setpoint temperature, initiate stage 2 of cooling to maintain space at high limit setpoint temperature **minus 5°F**.

If space humidity rises above high limit humidity setpoint, command ACWS pump(s) “ON” via DO point(s), command unit fan "ON" via DO point, on a rise in any space humidity to above the high limit humidity setpoint, initiate stage 1 of cooling via DO point to maintain space humidity at high limit setpoint **minus 5% RH**.

On a continued rise in any space humidity to above the high limit humidity setpoint, initiate stage 2 of cooling via DO point to maintain space humidity at high limit setpoint **minus 5% RH**.

Modulate hot gas reheat control valve via AO point to maintain space at minimum temperature setpoint.

On a fall in space temperature to below the low limit setpoint temperature, command ACWS pump(s) “ON” via DO point(s), command unit fan "ON" via DO point, and initiate stage 1 of heating via DO point to maintain space at the low limit setpoint temperature **plus 5°F**.

On a continued fall in space temperature to below the low limit setpoint temperature, initiate stage 2 of heating via DO point to maintain space at the low limit setpoint temperature **plus 5°F**.

Once space conditions return to within limit conditions, ± **5°F and/or minus 5% RH as above,** for 5 minutes, command unit "OFF".

5.30 **Packaged Water Source Heat Pump Unit, Outdoor Air Preconditioning System (DVA-1,2,3,4,5)**:

PRIMARY UNIT CONTROL IS PROVIDED BY OEM CONTROLLER INTERFACED WITH DDC SYSTEM.

Command unit and associated exhaust fans “ON/OFF,” as defined by Sequence 4.00, as defined below or upon operator command.

Where ventilation air is supplied directly to occupied spaces, unit shall start/stop in accordance with user-defined “ON/OFF” schedule defined by Sequence 1.14 or upon operator command.

MONITOR HVAC unit OEM controller fault/failure/alarm as DI point.

MONITOR fan motors(s) status as AI point(s) in accordance with Sequence 1.25.

Ventilation air temperature and humidity control:

MONITOR discharge air dry bulb temperature and discharge air dewpoint temperature as AI points.

Discharge air dry bulb temperature setpoint for OEM controller shall be input via AO point from the DDC system as follows:

Outdoor Air Temperature (ºF)	**Discharge Air Dry Bulb Temperature (ºF)**
≤ 50ºF	72ºF
≥ 85ºF	55ºF

OEM controller shall maintain discharge air dry bulb and dewpoint temperatures as follows:

Discharge air dry bulb temperature shall be maintained at setpoint temperature input to OEM controller from the DDC system.

Discharge air dewpoint temperature shall be maintained at or below 53ºF.

If either cooling or heating is initiated, command the N.C. ACWS control valve OPEN. When cooling or heating is no longer required, command the N.C. ACWS control valve CLOSED.

Cooling Mode:

If the outdoor air temperature is above the Outdoor Air Heating Setpoint (OAHS) and the controller is not calling for dehumidification then Cooling Mode shall be enabled. Compressor staging is identical to dehumidification however the control temperature is the Discharge Air Cooling Setpoint. Should the discharge temperature begin to fall too low the hot gas reheat shall be enabled and modulate to maintain the Discharge Air Cooling Setpoint

Dehumidification Mode:

Dehumidification Mode is enabled on Outdoor Air Dewpoint Setpoint (OADS). If there is no call for Heating Mode and the outdoor air dewpoint is above or equal to the OADS then Dehumidification Mode shall be enabled. Dehumidification Mode will remain active until the space or outdoor air dewpoints rise above the setpoints by 2°F, or if Heating Mode is enabled. Compressor control is based on Evaporator Leaving Air Temperature Setpoint. With dehumidification enabled, if evaporator leaving air temperature is above setpoint first stage dehumidification (Compressor 1) will start. If after a 3-minute minimum delay the evaporator leaving air temperature is still above the setpoint, the second, third, and fourth stages of dehumidification (Compressor 2, 3, and 4) will be staged on sequentially following individual 3-minute minimum delays between each call. During operation in Dehumidification Mode, the main unit controller shall enable hot gas reheat and it will modulate to maintain the Discharge Air Cooling Setpoint.

Hot Gas Reheat Purge:

Following continuous 30-minute hot gas reheat operation at less than 100 percent reheat capacity a purge cycle will Sequence of Operation OAU-SVX004C-EN 43 be initiated. During the purge cycle, the hot gas reheat signal is set and held at 100 percent for a period of 3 minutes. Following the purge cycle, normal operation resumes.

Heating Mode.

Heating mode is enabled based on Outdoor Air Heating Setpoint (OAHS). If the outdoor air temperature is lower than the OAHS then Heating Mode shall be enabled. During Heating Mode Compressor 1 will be staged on. If after a 3-minute minimum delay the discharge temperature is still below the setpoint, the second, third, and fourth stages of heating (Compressors 2, 3, and 4) will be staged on sequentially following individual 3-minute minimum delays between each call. During operation in heating mode, the main unit controller will enable hot gas reheat at 100 percent.

Ventilation Airflow Control:

When DVA unit is "ON":

MONITOR supply airflow as AI point, computed on the basis of velocity pressure input and supply duct cross sectional area.
MONITOR ventilation supply air duct static pressure as AI input.

When unit is "OFF", bypass damper shall be modulated “CLOSED” via AO point.

SPECIAL EXHAUST SYSTEMS

7.10 **Type I Kitchen Hood Interface:**

Kitchen hood shall be interlocked with kitchen hood exhaust fan, kitchen make up air unit, and Cafeteria Unit AC-24. Local switch on kitchen hood shall energize kitchen hood exhaust fan and kitchen make up air unit. If

AC-24 is not already on, AC-24 shall energize on. BAS shall monitor fan status on kitchen hood exhaust fan, kitchen make up air unit.

END OF SECTION 230993

SECTION 275123

EDUCATIONAL INTERCOMMUNICATIONS AND PROGRAM SYSTEMS

PART 1 - GENERAL

1.1 SCOPE OF WORK:

A. Furnish and install all equipment accessories and materials in accordance with these specifications to provide a complete and operational system. The paging system shall generate building wide announcements, bell schedule tones, and life safety warnings.

1.2 RELATED WORK/SECTIONS:

A. In addition to this section, the Contractor shall refer to other specification sections and drawings to ascertain the extent of work included. This shall include, but not be limited to, the following:

1. Division 1.

2. All other Division 260000 sections.

B. See section on Substitutions.

1.3 WORK INCLUDED:

A. The contractor shall furnish all equipment, accessories, and material required for the relocation of existing communication system and installation of new system cabling in strict compliance with these specifications and applicable contract drawings. Any material and/or equipment necessary for the proper operation of the system, which is not specified or described herein, shall be deemed part of this specification.

1.4 SUBMITTALS:

A. Submit catalog cuts, layout drawings, diagrams, and calculations for approval in accordance with Section 260000, GENERAL PROVISIONS.

B. Shop Drawings: Submit accurately scaled (1/8"=1'0") layout drawings of system components and accessories. Layout drawings, diagrams and calculations shall be completed by the manufacturer and presented in CAD format. Manual drafting is not acceptable.

C. The specific item proposed and its area of application shall be marked on the catalog cuts.

D. Wiring Diagrams: Submit interconnection wiring diagrams for systems including connection diagrams for signal cabling. Clearly differentiate between portions of wiring that are manufacturer installed and portions that are field installed.

E. Submit a detailed phasing plan detailing how work will be completed in conjunction with the phasing plan. All areas of the building shall remain operational while the Owner occupies said area.

F. Submit results of the system test prior to any work being performed.

1.5 QUALIFICATIONS:

A. Work shall be performed by the manufacturer's authorized contractor who is qualified in the proper installation, operation, and service of the system. Certification shall be submitted verifying that the contractor is the manufacturer's authorized.

B. Contractor shall hold and run a preinstallation meeting. During this meeting contractor shall describe the phasing plan and how the work is scheduled to be performed to maintain operational ability to all occupied areas in the building.

1.7 EQUIPMENT WARRANTY:

A. The contractor shall warrant the new equipment to be new and free from defects in material and workmanship, and will, within one year from date of installation, repair or replace any equipment found to be defective. This warranty shall not apply to any equipment that has been subject to misuse, abuse, negligence, accident, or unauthorized modification.

1.8 EXISTING EQUIPMENT TESTING:

A. The contractor shall, prior to any work being performed, perform a complete system test and document any deficiencies. At the completion of the project, contractor shall perform a final complete system test to ensure the existing system has not been damaged through the course of work. The system is expected to be operational to the same extents as the pre-work test indicates. Notify the Owner and Engineer, immediately and in writing, upon the pre-test results.

1.9 SERVICE FACILITIES:

A. The contractor shall make available, and maintain a satisfactory service department capable of furnishing equipment inspection and service. The contractor shall be prepared to offer a service contract for the maintenance of the system beyond the warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURER:

A. The existing equipment described herein, is a Bogen Quantum Multicom IP, manufactured by Bogen Communications, Inc.

2.2 CONDUCTORS:

A. Selected vendor shall provide the appropriate conductor to replace the existing conductor. Options are: West Penn 2 conductor 291-GY-1000, West Penn 4 conductor 357-GY-1000, 25 pair shielded Comtran 3589.

PART 3 - EXECUTION

3.1 DIVISION OF WORK:

A. While all work included under this specification is the complete responsibility of the contractor, the division of actual work listed following shall occur.

B. The conduit, outlets, terminal cabinets, etc., which form part of the rough-in work shall be furnished and installed completely by the electrical contractor. The balance of the system, including installation of speakers and equipment, making all connections, etc., shall be performed by the manufacturer's authorized representative. The entire responsibility of the system, its operation, function, testing and complete maintenance for one (1) year after final acceptance of the project by the owner, shall also be the responsibility of the manufacturer's authorized representative.

3.2 EQUIPMENT MANUFACTURER'S REPRESENTATIVE:

A. All work described herein to be done by the manufacturer's authorized representative shall be provided by a documented factory authorized representative of the basic line of equipment to be utilized.

B. The manufacturer's representative shall have completed at least ten (10) projects of equal scope, giving satisfactory performance and have been in the business of furnishing and installing sound systems of this type for at least five (5) years. The manufacturer's representative shall be capable of being bonded to assure the owner of performance and satisfactory service during the guarantee period.

C. The manufacturer's representative shall provide a letter with submittals from the manufacturer of all major equipment stating that the manufacturer's representative is an authorized distributor. This letter shall also state the manufacturer guarantees service performance for the life of the equipment, and that there will always be an authorized distributor assigned to service the area in which the system has been installed.

D. The contractor shall furnish a letter from the manufacturer of the equipment, which certifies that the equipment has been installed according to factory intended practices, that all the components used in the system are compatible and that all new portions of the systems are operating satisfactorily. Further, the contractor shall furnish a written unconditional guarantee, guaranteeing all parts and all labor for a period of one (1) year after final acceptance of the project by the owner.

3.3 INSTALLATION:

A. Cabling shall be routed as high as possible and above other building facilities in the path with the least obstructions in the ceiling space while maintaining the separation requirements of TIA/EIA 568B1,2,3, TIA/EIA 569A, and NFPA 70 (NEC). There shall be a minimum distance of three inches between the cable and ceiling grid and cable pathways shall be clear of all possible EMF and RFI interference. Specifically cables shall be at least 2 feet away from all fluorescent lights and other potential EMF sources. Any violations of this shall be corrected at the contractor’s expense. Cables shall not be run parallel with electrical conduits or strapped to them. Cinch plastic cable ties shall not be used during any part of the installation process. All cabling required to support the system shall be terminated in an approved manner and not be “cut back” to the cabling sheath or

"wrapped" around the cabling sheath. Interconnect between the system and the station cabling shall be terminated in a cross connect method.

B. Cabling installed through "holes, cracks, HVAC duct spaces, etc." is not acceptable and shall be properly sleeved.

C. Cabling shall be installed appropriately within a sleeve when wall penetrations are required. If using an existing sleeve, contractor is responsible for maintaining any fire stopping system and requirements for fill ratio of sleeve. If existing sleeve is not fire stopped, contractor shall notify owner for direction or install the appropriate sleeve for the installation of the contractor's cable.

D. Cable Identification:

1. All wires shall be permanently identified at each wire end utilizing a self-laminated wire or cable marker comprised of a white label with black lettering and clear laminate area, in a manner approved by the Owner.

E. Splicing:

1. Splicing of cables is not permitted between terminations.

F. Wall and Floor Penetrations:

1. All penetrations through floors and walls shall be sleeved. All sleeves shall have permanently installed bushings.

2. Sleeves shall be sized to accept 50% growth.

3. All sleeves shall installed per manufacturer's instructions and shall protrude 3 inches on each side of the penetration.

4. Sleeves through floors shall be supported with conduit riser clamp.

5. Existing sleeves can be used with the following exceptions:

a. Use of any sleeve containing emergency signaling cable is prohibited

b. Using any sleeve, when doing so would exceed 40% fill ratio, is prohibited.

D. Firestopping:

1. Firestopping material shall be installed inside all riser conduit sleeves to form smoke barriers after installation of the cabling is completed. Malleable foam-type bricks cut to fit should be used where possible (Hilti FS-fire block, or equal). Intumescent putty shall be used in an UL approved assembly when fire bricks are not feasible.

E. Cable Installation:

1. Do not pull wire or cable through any box fitting or enclosure where change of raceway alignment or direction occurs; do not bend conductors to less than recommended radius. Employ temporary guides, sheaves, rollers, and other necessary items to protect cables from excess tension, abrasion, or damaging bending during installation. Care shall be taken not to bend, crush or kink cables.

2. All cable shall be installed in a complete, neat, and orderly fashion. Cables shall not be twisted or have any damage to the cable jacket.

3. Cables shall be installed parallel or at 90 degree angles to the building walls. Diagonal, beeline, or non-supported cable routing is unacceptable.

F. Equipment Cabinets or Racks:

1. Comb straight and form in a neat and orderly manner all conductors located within equipment cabinets in the head end room or remote locations, and wiring harnesses in the head end room. Tie as required using Velcro cable ties of appropriate type and size.

2. Service Loops:

a. Provide 10 foot service loops at each termination so that plates, panels, and equipment can be dismounted for service and inspection.

G. Plug disconnect: All major equipment components shall be fully pluggable by means of multi-pin receptacles and matching plugs to provide for ease of maintenance and service.

H. Protection of cables: Cables within terminal cabinets, equipment racks, etc., shall be grouped and bundled (harnessed) as to type and laced with No. 12 cord waxed linen lacing twine or velcro. Edge protection material ("cat-track") shall be installed on edges of holes, lips of ducts or any other point where cables or harnesses cross metallic edge.

I. Cable identification: Cable conductors shall be color-coded and individual cables shall be individually identified. Each cable identification shall be a unique number located approximately 1-1/2" from cable connection at both ends of cable. Numbers shall be approximately 1/4" in height. These unique numbers shall appear on the As-Built Drawings provided by the installer and these drawings shall be mounted in each equipment room used to support any part of the entire system.

J. Shielding: Cable shielding shall be connected to common ground at point of lowest audio level and shall be free from ground at any other point. Cable shields shall be terminated in same manner as conductors.

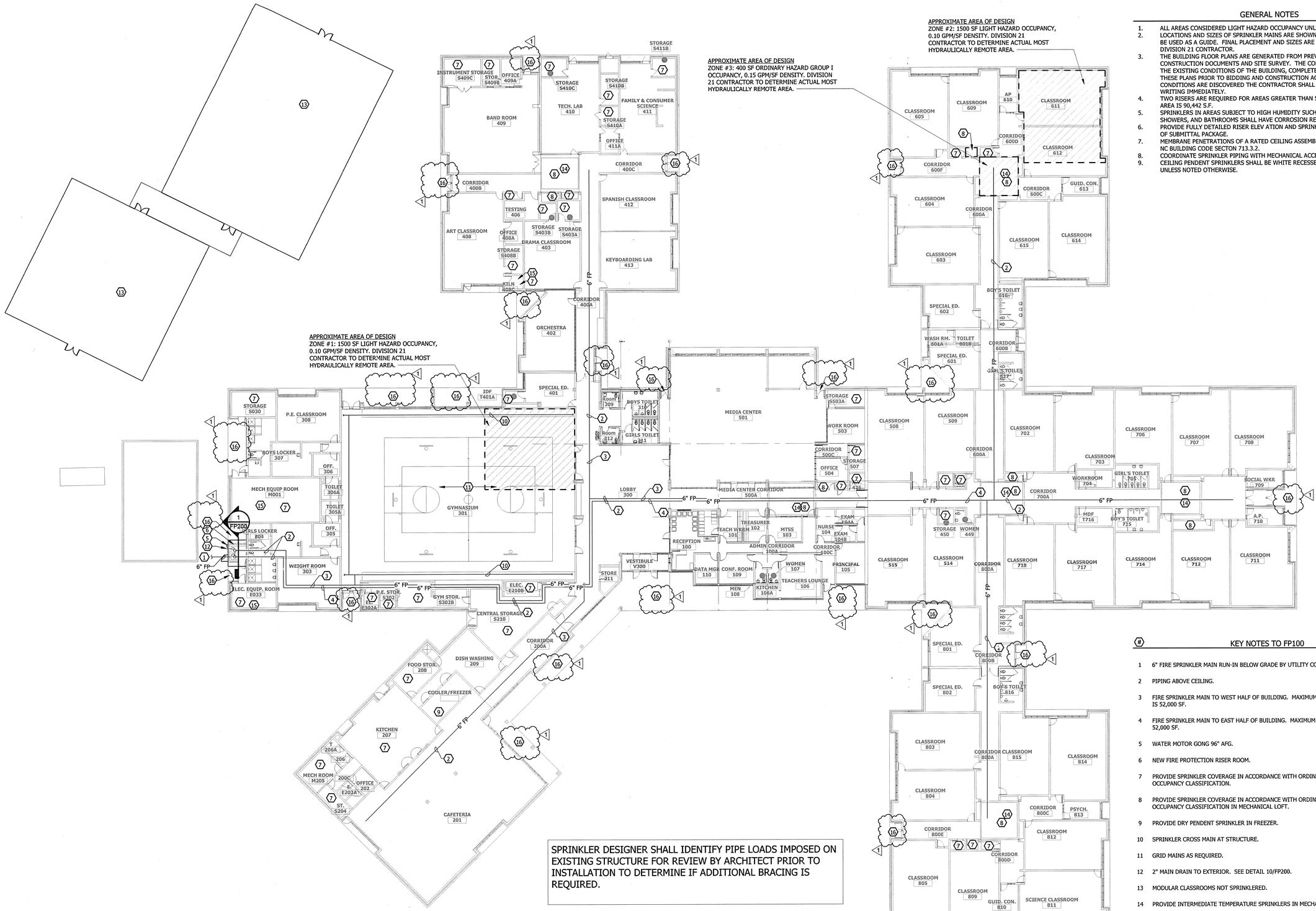
K. Cable Demolition: All existing cabling shall be removed in its entirety.

3.4 TRAINING:

A. Provide a minimum of eight (8) hours of complete "in service" instructions of system operation to school personnel. Assist in programming of telephone system.

B. Installer shall provide programming documentation that reflects the relation to each port, station identifier, and physical location of station.

END OF SECTION



SPRINKLER DESIGNER SHALL IDENTIFY PIPE LOADS IMPOSED ON EXISTING STRUCTURE FOR REVIEW BY ARCHITECT PRIOR TO INSTALLATION TO DETERMINE IF ADDITIONAL BRACING IS REQUIRED.

1 FP100 **FIRE PROTECTION PLAN**
SCALE: 1" = 20'-0"

20' 10' 0 20' 40'

GENERAL NOTES

1. ALL AREAS CONSIDERED LIGHT HAZARD OCCUPANCY UNLESS NOTED OTHERWISE.
2. LOCATIONS AND SIZES OF SPRINKLER MAINS ARE SHOWN FOR REFERENCE ONLY TO BE USED AS A GUIDE. FINAL PLACEMENT AND SIZES ARE TO BE DETERMINED BY DIVISION 21 CONTRACTOR.
3. THE BUILDING FLOOR PLANS ARE GENERATED FROM PREVIOUS BUILDING CONSTRUCTION DOCUMENTS AND SITE SURVEY. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS OF THE BUILDING, COMPLETENESS AND ACCURACY OF THESE PLANS PRIOR TO BIDDING AND CONSTRUCTION ACTIVITIES. IF ALTERNATE CONDITIONS ARE DISCOVERED THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING IMMEDIATELY.
4. TWO RISERS ARE REQUIRED FOR AREAS GREATER THAN 52,000 S.F. TOTAL FLOOR AREA IS 90,442 S.F.
5. SPRINKLERS IN AREAS SUBJECT TO HIGH HUMIDITY SUCH AS LOCKER ROOMS, SHOWERS, AND BATHROOMS SHALL HAVE CORROSION RESISTANT FINISH.
6. PROVIDE FULLY DETAILED RISER ELEV ATION AND SPRINKLER ROOM PIPING AS PART OF SUBMITTAL PACKAGE.
7. MEMBRANE PENETRATIONS OF A RATED CEILING ASSEMBLY MUST COMPLY WITH 2012 NC BUILDING CODE SECTON 713.3.2.
8. COORDINATE SPRINKLER PIPING WITH MECHANICAL ACCESS AREAS.
9. CEILING PENDENT SPRINKLERS SHALL BE WHITE RECESSED PENDENT SPRINKLERS UNLESS NOTED OTHERWISE.

KEY NOTES TO FP100

1. 6" FIRE SPRINKLER MAIN RUN-IN BELOW GRADE BY UTILITY CONTRACTOR TO 12" AFF.
2. PIPING ABOVE CEILING.
3. FIRE SPRINKLER MAIN TO WEST HALF OF BUILDING. MAXIMUM SPRINKLERED AREA PER RISER IS 52,000 SF.
4. FIRE SPRINKLER MAIN TO EAST HALF OF BUILDING. MAXIMUM SPRINKLERED AREA PER RISER IS 52,000 SF.
5. WATER MOTOR GONG 96" AFG.
6. NEW FIRE PROTECTION RISER ROOM.
7. PROVIDE SPRINKLER COVERAGE IN ACCORDANCE WITH ORDINARY HAZARD GROUP 1 OCCUPANCY CLASSIFICATION.
8. PROVIDE SPRINKLER COVERAGE IN ACCORDANCE WITH ORDINARY HAZARD GROUP 1 OCCUPANCY CLASSIFICATION IN MECHANICAL LOFT.
9. PROVIDE DRY PENDENT SPRINKLER IN FREEZER.
10. SPRINKLER CROSS MAIN AT STRUCTURE.
11. GRID MAINS AS REQUIRED.
12. 2" MAIN DRAIN TO EXTERIOR. SEE DETAIL 10/FP200.
13. MODULAR CLASSROOMS NOT SPRINKLERED.
14. PROVIDE INTERMEDIATE TEMPERATURE SPRINKLERS IN MECHANICAL LOFT.
15. PROVIDE INTERMEDIATE TEMPERATURE SPRINKLERS.
16. PROVIDE DRY PENDENT SPRINKLERS IN COMBUSTIBLE SOFFIT OVER 4' IN WIDTH. SEE ARCHITECT PLANS, SHEETS A-101 FOR SOFFITS AND A-401 FOR DETAIL.

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NORTH CAROLINA PROFESSIONAL 032567 ENGINEER KEVIN R. ALLEN
2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

FLOOR PLAN

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER
FP100

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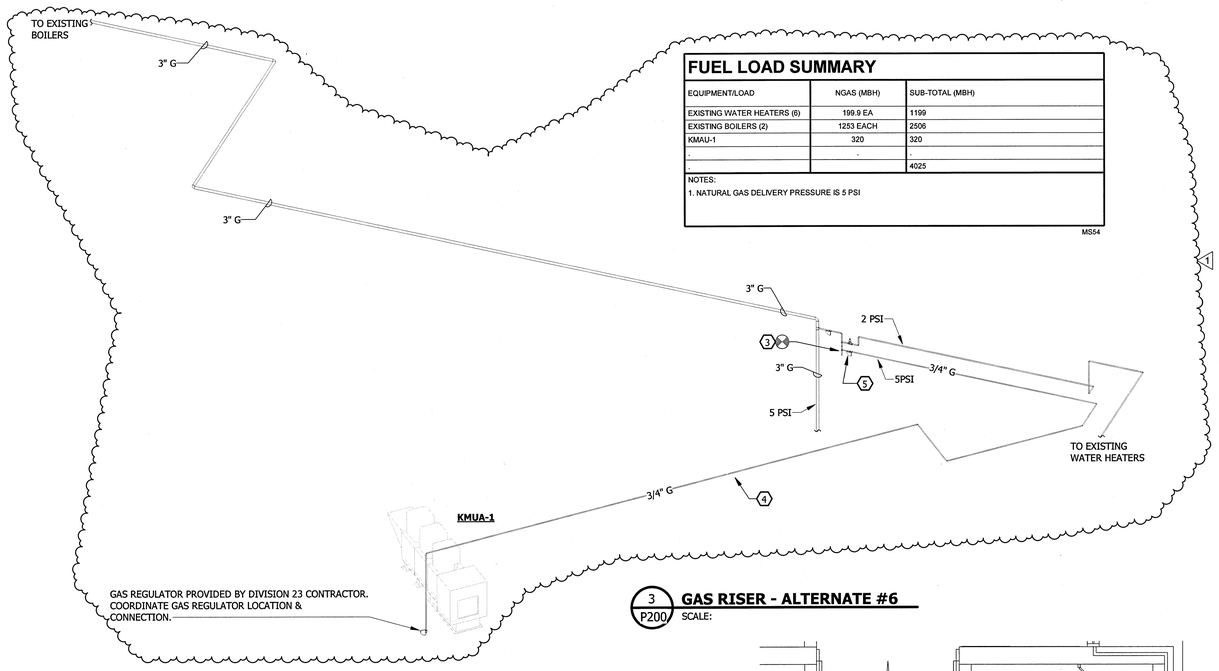
SW Project No: 0594-13-00-17



FUEL LOAD SUMMARY

EQUIPMENT/LOAD	NGAS (MBH)	SUB-TOTAL (MBH)
EXISTING WATER HEATERS (6)	199.9 EA	1199
EXISTING BOILERS (2)	1253 EACH	2506
KMAU-1	320	320
-	-	-
-	-	4025

NOTES:
1. NATURAL GAS DELIVERY PRESSURE IS 5 PSI

MS54

3 P200 GAS RISER - ALTERNATE #6
SCALE:

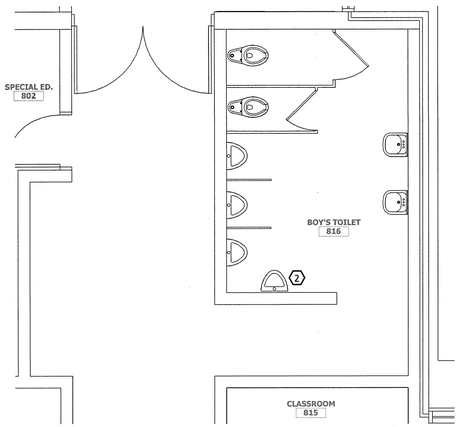
LEAD BASE PAINT WARNING

LEAD BASE PAINT MAY EXIST ON BUILD STRUCTURE(S) OR OTHER ITEMS IN THE CONSTRUCTION AREA. THE CONTRACTOR IS HEREBY ADVISED OF THE NEED FOR COMPLIANCE WITH OSHA STANDARD 1926.62, SUBPART D, TITLED "LEAD", [29 CFR 1910] DURING WORK WITH LEAD CONTAINING MATERIALS.

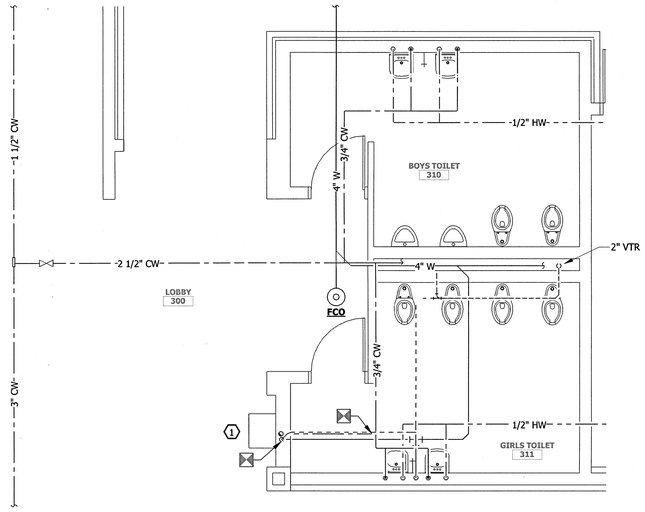
ALL TESTING AND/OR OTHER COMPLIANCE ACTIVITIES ARE THE COMPLETE RESPONSIBILITY OF THE CONTRACTOR.

ASBESTOS WARNING

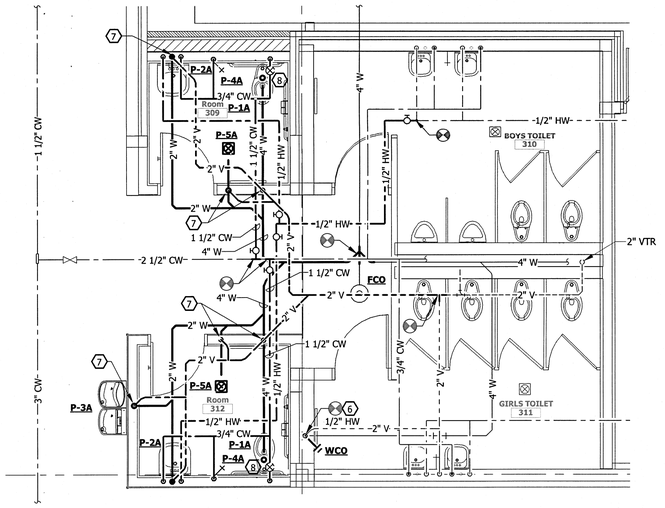
MATERIALS CONTAINING ASBESTOS ARE OFTEN ENCOUNTERED IN BUILDING RENOVATIONS PROJECTS. IN THE EVENT ASBESTOS CONTAINING MATERIALS ARE ENCOUNTERED THE CONTRACTOR WILL IMMEDIATELY CEASE WORK IN THE INVOLVED AREA, SECURE THE AREA TO PREVENT INADVERTENT CONTAMINATION OR EXPOSURE, AND NOTIFY OWNER. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR DISTURB ASBESTOS OR ASBESTOS CONTAINING MATERIALS.



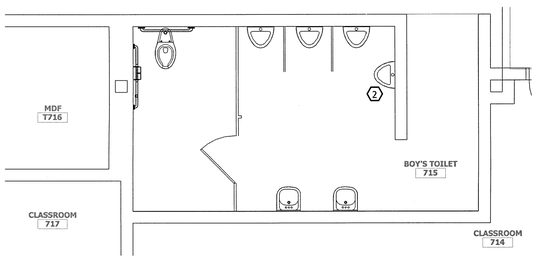
4 P200 ENLARGED FLOOR PLAN - 8TH GRADE BOYS & GIRLS
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



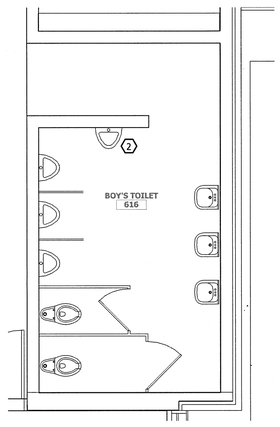
1 P200 ENLARGED FLOOR PLAN - DEMOLITION - ALTERNATE #2
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



2 P200 ENLARGED FLOOR PLAN - NEW WORK - ALTERNATE #2
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



6 P200 ENLARGED FLOOR PLAN - 7TH GRADE BOYS & GIRLS
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



5 P200 ENLARGED FLOOR PLAN - 6TH GRADE BOYS & GIRLS
SCALE: 1/4" = 1'-0"
4' 0 4' 8'

GENERAL NOTES

1. THE EXISTING PLANS ARE GENERATED FROM ORIGINAL BUILDING CONSTRUCTION DOCUMENTS AND SITE SURVEY. THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS OF THE BUILDING AND COMPLETENESS AND ACCURACY OF THESE PLANS PRIOR TO BIDDING AND CONSTRUCTION ACTIVITIES. IF ALTERNATE CONDITIONS ARE DISCOVERED THE CONTRATOR SHALL NOTIFY THE ENGINEER IN WRITING IMMEDIATELY.
2. GENERAL CONTRACTOR TO CUT AND PATCH EXISTING CONSTRUCTION AS NECESSARY TO ACCOMMODATE NEW WORK. PATCH HOLES IN WALLS OR FLOORS WHERE PIPE HAS BEEN REMOVED TO MATCH NEW OR EXISTING CONSTRUCTION AS REQUIRED. PATCH TO MAINTAIN FIRE PROTECTION RATING OF WALLS AND FLOORS. DIVISION 22 CONTRACTOR TO COORDINATE WORK WITH GENERAL CONTRACTOR.
3. DEMOLISH ALL HOT WATER, COLD WATER, VENT, SANITARY AND STORM WATER PIPING TO ACTIVE MAINS. DO NOT LEAVE DEAD ENDS AND DO NOT ABANDON PRESSURIZED PIPING.
4. COMPLY WITH THE PURGING REQUIREMENTS FOR GAS PIPING SECTION 406.7 OF THE N.C. FUEL GAS CODE.

KEY NOTES TO P200

#	
1	DEMOLISH WATER COOLER. DEMOLISH SANITARY WASTE PIPING BACK TO WITHIN WALL. DEMOLISH COLD WATER PIPING TO ACTIVE MAIN ABOVE CEILING AND PLUG OR CAP.
2	DEMOLISH URINAL. DEMOLISH ASSOCIATED WASTE AND VENT PIPING BACK TO ACTIVE MAIN AND PLUG OR CAP. DEMOLISH COLD WATER PIPING TO ABOVE CEILING AT ACTIVE MAIN AND PLUG OR CAP.
3	NEW GAS CONNECTION FOR KMAU-1. CONNECT TO EXISTING DIRT LEG AND EXTEND DIRT LEG DOWN TO BELOW NEW CONNECTION.
4	NEW GAS PIPING TO KMAU-1.
5	NEW GAS RATED BALL VALVE.
6	INSTALL NEW WCO IN DEMOLISHED WATER COOLER WASTE PIPING.
7	2" VENT UP.
8	BELLOWS TYPE WATER HAMMER ARRESTOR.

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NORTH CAROLINA PROFESSIONAL 032567 ENGINEER KEVIN R. ALLEN
2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

ENLARGED PLANS

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER P200

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SW Project No: 0594-13-00-17

HVAC ABBREVIATIONS

Ø	ROUND; DIAMETER; PHASE	HVAC	HEATING, VENTILATION AND AIR CONDITIONING
#	POUNDS; NUMBER	HWR	HEATING WATER RETURN
A	COMPRESSED AIR	HWS	HEATING WATER SUPPLY
ACFM	ACTUAL CUBIC FEET PER MINUTE	HX	HEAT EXCHANGER
ACH	AIR CHANGES PER HOUR	ID	INDIRECT DRAIN; INSIDE DIAMETER
AD	ACCESS DOOR	IN	INCH
AFC	ABOVE FINISHED CEILING	INV	INVERT
AFF	ABOVE FINISHED FLOOR	ISP	INTERNAL STATIC PRESSURE
AFG	ABOVE FINISHED GRADE	KW	KILOWATT
AHU	AIR HANDLING UNIT	KWH	KILOWATT HOUR
ALT	ALTERNATE	LAT	LEAVING AIR TEMPERATURE
ARCH	ARCHITECTURAL; ARCHITECT	LB/HR	POUNDS PER HOUR
AS	AIR SEPERATOR	LP	LOW PRESSURE
AUTO	AUTOMATIC	LPG	LIQUID PETROLEUM GAS
AV	ACID VENT	LPR	LOW PRESSURE CONDENSATE RETURN
AW	ACID WASTE	LPS	LOW PRESSURE CONDENSATE SUPPLY
BAS	BUILDING AUTOMATION SYSTEM	LWT	LEAVING WATER TEMPERATURE
BBD	BOILER BLOWDOWN	MAX	MAXIMUM
BFF	BELOW FINISHED FLOOR	MBH	1000 BRITISH THEMAL UNITS PER HOUR
BFW	BOILER FEED WATER	MFR	MANUFACTURER
BHP	BRAKE HORSEPOWER	MH	MANHOLE
BOD	BOTTOM OF DUCT	MIN	MINIMUM
BOP	BOTTOM OF PIPE	MP	MEDIUM PRESSURE
BOT	BOTTOM	MRT	MOTOR RATED TOGGLE SWITCH
BP	BACKFLOW PREVENTER	MS	MOTOR STARTER
BTU	BRITISH THERMAL UNIT	MS/D	COMBINATION MOTOR STARTER AND DISCONNECT
BTUH	BRITISH THERMAL UNIT PER HOUR	MTD	MOUNTED
C	CELSIUS; COMMON PORT	MUA	MAKE UP AIR
CD	CONDENSATE DRAIN	MVD	MANUAL VOLUME DAMPER
CDWP	CONDENSER WATER PUMP	N	NITROGEN
CDWR	CONDENSER WATER RETURN	N.C.	NORMALLY CLOSED
CDWS	CONSENSER WATER SUPPLY	NIC	NOT IN CONTRACT
CF	CHEMICAL FEED	NO	NITROUS OXIDE; NUMBER
CFH	CUBIC FEET PER HOUR	N.O.	NORMALLY OPEN
CFM	CUBIC FEET PER MINUTE	NPSH	NET POSITIVE SUCTION HEAD
CHWP	CHILLED WATER PUMP	NTS	NOT TO SCALE
CHWR	CHILLED WATER RETURN	O	OXYGEN
CHWS	CHILLED WATER SUPPLY	OA	OUTSIDE AIR
CI	CAST IRON	OBD	OPPOSED BLADE DAMPER
CLG	CEILING	OC	ON CENTER
CO	CLEAN OUT; CARBON MONOXIDE	OD	OUTSIDE DIAMETER
CO2	CARBON DIOXIDE	P	PUMP
CONC	CONCRETE	PC	PLUMBING CONTRACTOR
COP	COEFFICIENT OF PERFORMANCE	PCHWP	PRIMARY CHILLED WATER PUMP
CPVC	CHLORINATED POLYVINYL CHLORIDE	PD	PRESSURE DROP
CT	COOLING TOWER	PHWP	PRIMARY HOT WATER PUMP
CTR	CENTER	PI	PRESSURE INDEPENDENT
CU	COPPER; CONDENSING UNIT	PICV	PRESSURE INDEPENDENT CONTROL VALVE
CUFT	CUBIC FOOT; CUBIC FEET	PR	PUMPED CONDENSATE RETURN
CUH	CABINET UNIT HEATER	PNL	PANEL
CUYD	CUBIC YARD	PPH	POUNDS PER HOUR
CW	COLD WATER	PRV	PRESSURE REDUCING VALVE
DB	DRY BULB	PSI	POUNDS PER SQUARE INCH
DD	DUCT MOUNTED SMOKE DETECTOR	PSIA	POUNDS PER SQUARE INCE ABSOLUTE
DDC	DIRECT DIGITAL CONTROLS	PSIG	POUNDS PER SQUARE INCH GAUGE
DI	DUCTILE IRON	PT	POINT
DIA	DIAMETER	PVC	POLYVINYL CHLORIDE
DN	DOWN	QTY	QUANTITY
DP	DIFFERENTIAL PRESSURE	RA	RETURN AIR
DTWR	DUAL TEMPERATURE WATER RETURN	RD	ROUND
DTWS	DUAL TEMPERATURE WATER SUPPLY	RECIRC	RECIRCULATING
DWG	DRAWING	REINF	REINFORCING
DX	DIRECT EXPANSION	REL	RELIEF; RELIEF AIR
EA	EACH	REV	REVISION
EAT	ENTERING AIR TEMPERATURE	RF	RETURN FAN
EFF	EFFICIENCY	RH	RELATIVE HUMIDITY
EL	ELEVATION	RL	REFRIGERANT LIQUID
ELEC	ELECTRICAL	RM	ROOM
EQUIP	EQUIPMENT	RPM	REVOLUTIONS PER MINUTE
ESP	EXTERNAL STATIC PRESSURE	RPZ	REDUCED PRESSURE ZONE
ESS	EMERGENCY STOP SWITCH	RS	REFRIGERANT SUCTION
EWT	ENTERING WATER TEMPERATURE	SA	SUPPLY AIR
EXH	EXHAUST; EXHAUST AIR; EXHAUST FAN	SCFM	STANDARD CUBIC FEET MER MINUTE
EXIST	EXISTING	SCHWP	SECONDARY CHILLED WATER PUMP
EXP	EXPANSION	SD	SMOKE DAMPER
F	FAHRENHEIT	SECT	SECTION
FCU	FAN COIL UNIT	SF	SUPPLY FAN; SQUARE FEET
FD	FIRE DAMPER	SHWP	SECONDARY HOT WATER PUMP
FFE	FINISHED FLOOR ELEVATION	SP	STATIC PRESSURE
FL	FLOOR	SPEC	SPECIFICATION
FLEX	FLEXIBLE	SPL	STATIC PRESSURE LOSS
FOB	FLAT ON BOTTOM	SF	SQUARE FEET
FOT	FLAT ON TOP	SS	STAINLESS STEEL; SANITARY SEWER
FOR	FUEL OIL RETURN	STM	STEAM
FOS	FUEL OIL SUPPLY	TA	TRANSFER AIR
FOV	FUEL OIL VENT	TAB	TEST AND BALANCE
FPM	FEET PER MINUTE	TOD	TOP OF DUCT
FPS	FEET PER SECOND	TOP	TOP OF PIPE
FSD	FIRE/SMOKE DAMPER	TOS	TOP OF STEEL
FT	FEET; FOOT	TSP	TOTAL STATIC FRESSURE
G	NATURAL GAS	T'STAT	THERMOSTAT
GA	GAUGE	TU	TERMINAL UNIT
GAL	GALLON	TYP	TYPICAL
GC	GENERAL CONTRACTOR	UH	UNIT HEATER
GEX	GREASE EXHAUST AIR	UL	UNDERWRITERS LABORATORIES INC.
GPH	GALLONS PER HOUR	V	VENT
GPM	GALLONS PER MINUTE	VA	VENTILATION AIR
HD	HUB DRAIN; HEAT DETECTOR	VAC	VACUUM (SUCTION)
HEX	HAZARDOUS EXHAUST	VERT	VERTICAL
HOA	HAND-OFF-AUTOMATIC	VFD	VARIABLE FREQUENCY DRIVE
HORIZ	HORIZONTAL	W/	WITH
HP	HIGH PRESSURE	WB	WET BULB
HPR	HIGH PRESSURE CONDENSATE RETURN	WG	WATER GAUGE
HPS	HIGH PRESSURE STEAM	W/O	WITHOUT
HSTAT	HUMIDISTAT	XT	EXPANSION TANK
HT	HEIGHT		
HTG	HEATING		

GENERAL SYMBOLS

- PLAN OR DETAIL NUMBER / SHEET NUMBER
- ELEVATION LETTER / SHOWN ON SHEET NUMBER
- SECTION NUMBER / SHOWN ON SHEET NUMBER
- DIMENSION LINE
- DETAIL NUMBER WITH SHEET NO.
- COLUMN NUMBER OR LETTER
- DRAWING REVISION NUMBER
- KEYED NOTE NUMBER
- CONNECT TO EXISTING
- REMOVE TO THIS POINT
- NORTH ARROW

ELECTRICAL SYMBOLS

- VFD — VARIABLE FREQUENCY DRIVE
- MOTOR STARTER
- COMBINATION MOTOR STARTER/DISCONNECT
- FUSED DISCONNECT
- NF — NON-FUSED DISCONNECT
- DISCONNECT, EXISTING OR BY OTHERS
- PNL — POWER PANEL, EXISTING OR BY OTHERS
- S — TOGGLE SWITCH

PIPING SYMBOLS

- #" SYSTEM — PIPE SIZE AND SYSTEM IDENTIFICATION (SEE ABBREVIATIONS FOR SYSTEM TYPES)
- VALVE (REFER TO SPECIFICATIONS)
- BALANCING VALVE (REFER TO SPECIFICATIONS)
- CALIBRATED BALANCING VALVE
- BUTTERFLY VALVE
- GATE VALVE
- GLOBE VALVE
- CHECK VALVE
- PLUG VALVE
- BALL VALVE
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- PRESSURE REDUCING VALVE
- PRESSURE RELIEF VALVE
- GAS COCK
- Y-TYPE STRAINER
- BASKET STRAINER
- PIPE TURNING UP
- PIPE TURNING DOWN
- PIPE CONNECTION AT BOTTOM OF MAIN
- PIPE CAP
- PIPE UNION
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- PIPE ALIGNMENT GUIDE
- PIPE ANCHOR
- FLEXIBLE PIPE CONNECTION
- PRESSURE GAUGE
- THERMOMETER
- STEAM TRAP
- DIRECTION OF FLOW IN PIPE
- SLOPE PIPE IN DIRECTION OF ARROW
- PUMP
- PETES PLUG (P & T PORT)
- BACKFLOW PREVENTER
- EXISTING PIPING
- PIPING TO BE DEMOLISHED
- NEW PIPING

DUCTWORK SYMBOLS

- SUPPLY, VENTILATION, OUTSIDE AIR DUCT SECTION
- RETURN AIR DUCT SECTION
- EXHAUST OR RELIEF AIR DUCT SECTION
- 24x24 — RECTANGULAR DUCT DIMENSIONS (IN PLAN WIDTH x HEIGHT INCHES)
- 24/12 — FLAT OVAL DUCT DIMENSIONS
- 24Ø — ROUND DUCT DIMENSIONS
- EXISTING DUCT
- DUCT TO BE DEMOLISHED
- NEW DUCT
- #/1'-0" — SLOPE DUCT IN DIRECTION OF ARROW
- BELL MOUTH TAP FOR MEDIUM PRESSURE
- CONICAL TAP WITH BALANCING DAMPER WITH LOCKING QUADRANT OPERATOR FOR LOW PRESSURE TAKEOFFS
- 45° TAP WITH BALANCING DAMPER WITH LOCKING QUADRANT OPERATOR
- SUPPLY DIFFUSER
- RETURN GRILLE
- EXHAUST GRILLE
- MITERED ELBOW
- RADIUS ELBOW
- FLEXIBLE DUCT
- VOLUME DAMPER WITH MANUAL OPERATOR AND LOCKING QUADRANT
- D — DUCT MOUNTED MOTORIZED DAMPER
- H — DUCT MOUNTED STEAM HUMIDIFIER
- DD — DUCT MOUNTED SMOKE DETECTOR
- FD / FD ▲ FD — FIRE DAMPER, DAMPER TO MATCH WALL RATING
- SD / SD ▲ SD — SMOKE DAMPER, DAMPER TO MATCH WALL RATING
- FSD / FSD ▲ FSD — COMBINATION FIRE/SMOKE DAMPER, DAMPER TO MATCH WALL RATING
- R — CEILING RADIATION DAMPER, DAMPER TO MATCH CEILING RATING
- A | 100 — AIR DISTRIBUTION SYMBOL, LETTER(S) DENOTES TYPE, NUMBER INDICATES CFM
- T — THERMOSTAT OR ROOM SENSOR
- H — HUMIDISTAT OR ROOM SENSOR

HVAC GENERAL NOTES :

1. COORDINATE WORK WITH OTHER TRADES PRIOR TO PURCHASE AND INSTALLATION OF ANY PIPING, DUCTWORK OR EQUIPMENT. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO INSTALLATION.
2. REFER TO THE ARCHITECTURAL PLANS FOR DIMENSIONS. DO NOT SCALE THESE DRAWINGS.
3. ALL DUCT AND PIPING LAYOUTS AND LOCATIONS SHOWN ARE DIAGRAMMATIC AND DO NOT INDICATE ALL FITTINGS REQUIRED TO COMPLETE WORK. COORDINATE THE DUCT AND PIPING LAYOUT WITH ALL CONTRACTORS PRIOR TO INSTALLATION, INCLUDING CONDUITS AND CABLE TRAYS. PROVIDE ALL DUCT AND/OR PIPING OFFSETS REQUIRED FOR THE COMPLETE INSTALLATION OF THE SYSTEM WHETHER OR NOT THE OFFSETS ARE INDICATED ON THE PLANS. INSTALL DUCTWORK AND PIPING HIGH ENOUGH TO AVOID LIGHTS, CONDUIT AND MISCELLANEOUS PIPING, BUT LOW ENOUGH TO ALLOW FOR EASY ACCESS TO SYSTEM BALANCING DEVICES. DO NOT BLOCK ACCESS TO DEVICES.
4. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS AND ARCHITECTURAL DETAILS FOR EXACT LOCATION OF ALL CEILING AND SIDEWALL AIR DISTRIBUTION AND DEVICES.
5. LOCATE UNITS SUCH THAT ACCESS PANELS MAY BE FULLY OPENED (VIA TILE CEILING) FOR SERVICING UNIT. COORDINATE LOCATION WITH LIGHTING FIXTURES OR ANY OTHER EQUIPMENT.
6. ROUND DUCT RUN-OUTS TO DIFFUSERS SHALL BE SAME SIZE AS INLET DIAMETER SCHEDULED, UNLESS NOTED OTHERWISE.
7. ALL DUCT DIMENSIONS ARE INSIDE CLEAR. SEE DETAILS AND SPECIFICATIONS FOR INSULATION REQUIREMENTS.
8. COORDINATE WORK WITH OTHER TRADES PRIOR TO PURCHASE AND INSTALLATION OF EQUIPMENT AND MATERIALS. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES IMMEDIATELY.
9. PROVIDE BALANCING DAMPERS WHERE INDICATED ON THE PLANS AND WHERE REQUIRED FOR SYSTEM BALANCING.
10. INSTALL ALL EQUIPMENT WITH THE MANUFACTURER'S RECOMMENDATION AND CODE REQUIRED CLEARANCES. INSURE ALL ITEMS FURNISHED WILL FIT IN THE SPACE AVAILABLE. MAKE NECESSARY FIELD MEASUREMENTS TO ASCERTAIN SPACE REQUIREMENTS AND FURNISH AND INSTALL SUCH SIZES AND SHAPES OF EQUIPMENT THAT ARE THE TRUE INTENT AND MEANING OF THE PLANS AND SPECIFICATIONS. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO PURCHASE AND INSTALLATION.
11. COORDINATE EXACT SIZE AND LOCATION OF ALL PENETRATIONS THROUGH THE ROOF WITH ALL TRADES.
12. COORDINATE LOCATIONS AND ELEVATIONS OF ALL EXPOSED MECHANICAL ITEMS WITH ARCHITECTURAL PLANS, ELEVATIONS, AND DETAILS. THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING: SENSORS, WALL DEVICES, SIDEWALL GRILLES, CONTROL PANELS, AND ALARMS.
13. FURNISH 24"x24" ACCESS DOORS (UNLESS OTHERWISE INDICATED) AT ALL MAINTENANCE ITEMS THAT ARE CONCEALED; SUCH AS EQUIPMENT, VALVES, DAMPERS, SENSORS, ETC. COORDINATE EXACT LOCATIONS WITH ARCHITECT/ENGINEER PRIOR TO INSTALLATION.

HVAC DEMOLITION NOTES :

1. SEE REQUIREMENTS OF SECTION 019916 OF THE SPECIFICATION.
2. THIS DEMOLITION PLAN MAY OR MAY NOT REFLECT ALL EXISTING HVAC COMPONENTS AND SYSTEMS. THIS DRAWING IS BASED ON AVAILABLE DRAWINGS AND/OR VISUAL OBSERVATIONS AND IS INTENDED TO INDICATE THE MAGNITUDE OF DEMOLITION WORK REQUIRED BUT NOT TO EXCLUDE WORK NOT SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO SUBMISSION OF BID.
3. THE SCOPE OF THE DEMOLITION WORK REQUIRED INCLUDES REMOVAL OF ITEMS THAT MUST BE REINSTALLED OR REPLACED IN ORDER TO REMOVE ANOTHER ITEM OR INSTALL NEW WORK.
4. ALL EXISTING EQUIPMENT REMOVED SHALL BE DISPOSED OF BY THIS CONTRACTOR (UNLESS NOTED OTHERWISE).
5. CONTRACTOR TO PATCH BUILDING CONSTRUCTION (WALLS, FLOORS, CEILINGS, ROOF, ETC.) DISTURBED BY HVAC DEMOLITION TO MATCH EXISTING. HVAC CONTRACTOR TO MINIMIZE DISTURBANCE OF REMAINING CONSTRUCTION AND SHALL COORDINATE DEMOLITION AND REPAIR WITH GENERAL CONTRACTOR.
6. CAPTURE REFRIGERANT FOR RECYCLING FROM ALL HVAC EQUIPMENT TO BE REMOVED OR RELOCATED. WORK SHALL BE CONDUCTED UNDER THE SUPERVISION OF EPA CERTIFIED TECHNICIAN AND PERFORMED IN ACCORDANCE WITH SECTION 608 F THE EPA CLEAN AIR ACT.
7. THERMOSTATS AND SENSORS CONTAINING MERCURY SHALL BE DISPOSED IN ACCORDANCE WITH THE EPA RESOURCE CONSERVATION ANS RECOVERY ACT (RCRA). CONTRACTORS SHALL REFER TO EPA WEBSITE FOR HANDLING PROCEDURES FOR DISPOSAL AND SPILL MANAGMENT OF PRODUCTS CONTAINING MERCURY.

HVAC DRAWING LIST

NO.	TITLE
H001	STANDARDS, SYMBOLS & ABBREVIATIONS
H010	ELECTIVE WING - DEMOLITION PLAN
H011	8TH GRADE WING - DEMOLITION PLAN
H012	GYMNASIUM - DEMOLITION PLAN
H013	ADMIN & MEDIA CENTER - DEMOLITION PLAN
H014	7TH GRADE WING - DEMOLITION PLAN
H015	CAFETERIA - DEMOLITION PLAN
H016	6TH GRADE WING - DEMOLITION PLAN
H100	ELECTIVE WING PLAN - DUCT
H101	6TH GRADE WING PLAN - DUCT
H102	GYMNASIUM PLAN - DUCT
H103	ADMIN & MEDIA CENTER PLAN - DUCT
H104	7TH GRADE WING PLAN - DUCT
H105	CAFETERIA PLAN - DUCT
H106	8TH GRADE WING PLAN - DUCT
H110	ELECTIVE WING PLAN - PIPING
H111	6TH GRADE WING PLAN - PIPING
H112	GYMNASIUM PLAN - PIPING
H113	ADMIN & MEDIA CENTER PLAN - PIPING
H114	7TH GRADE WING PLAN - PIPING
H115	CAFETERIA PLAN - PIPING
H116	8TH GRADE WING PLAN - PIPING
H201	ALTERNATES
H300	DETAILS
H301	DETAILS
H302	DETAILS
H303	DETAILS
H304	DETAILS
H305	DETAILS
H400	CONTROLS
H401	CONTROLS
H402	CONTROLS
H500	SCHEDULES

1 H200 - REMOVED FROM SET; H303, H304, H305 - ADDED TO SET

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

THERMAL ZONE: 2009 ASHRAE FUNDAMENTALS, WILMINGTON, N.C., HEATING 99.6% / COOLING 1%

- winter dry bulb: 23°F
- summer dry bulb: 93°F
- summer wet bulb: 79°F

INTERIOR DESIGN CONDITIONS

- winter dry bulb: 70°F (EXCEPT AS NOTED)
- summer dry bulb: 75°F (EXCEPT AS NOTED)
- relative humidity: 60% MAXIMUM

BUILDING HEATING LOAD: _____

BUILDING COOLING LOAD: _____

MECHANICAL SPACING CONDITIONING SYSTEM

UNITARY — SEE PLANS AND SPECIFICATIONS
- description of unit:
- heating efficiency:
- cooling efficiency:
- size category of unit:

BOILER
Size category. If oversized, state reason.: _____

CHILLER
Size category. If oversized, state reason.: _____

LIST EQUIPMENT EFFICIENCIES: SEE PLANS AND SPECIFICATIONS

Ventilation Air Summary

System Name and Number	System Type	All zones included in the VRP calculation?	Condition Analyzed	System Floor Area *As* (sq ft)	System Population *Ps* (people)	Outdoor Air Intake Flow (required by 62.1) *Vot* (cfm)	Outdoor Air Intake Flow Provided (measured or design) (cfm)	Outdoor air intake flow provided meets or exceeds Vot?	Zone outdoor airflow provided meets or exceeds Voz for all zones?
100% Outdoor Air Systems									
DVA-1 - Elective Wing	100% Outdoor air	n/a	Heating	11,363	216.89	3,023	3,100	Yes	Yes
DVA-2 - 8th Grade Wing	100% Outdoor air	n/a	Heating	10,554	235.98	2,824	2,900	Yes	Yes
DVA-3 - 7th Grade Wing	100% Outdoor air	n/a	Heating	16,702	342.43	4,450	4,500	Yes	Yes
DVA-4 - Admin & Media	100% Outdoor air	n/a	Heating	13,288	235.39	2,854	2,900	Yes	Yes
DVA-5 - 6th Grade Wing	100% Outdoor air	n/a	Heating	10,583	233.85	3,028	3,100	Yes	Yes
AC-24 - Cafeteria	100% Outdoor air	n/a	Heating	3500	250	2,500	2,500	Yes	Yes
Totals				66,165	1,514.54	19,583	20,185		

1

ALTERNATE #5 NOTES:

CLEAN ALL EXISTING SUPPLY, RETURN, AND EXHAUST DUCTWORK IN BUILDING. REFER TO SPECIFICATIONS.

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Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

STANDARDS, SYMBOLS & ABBREVIATIONS

JOB NUMBER 0594-01-00-13
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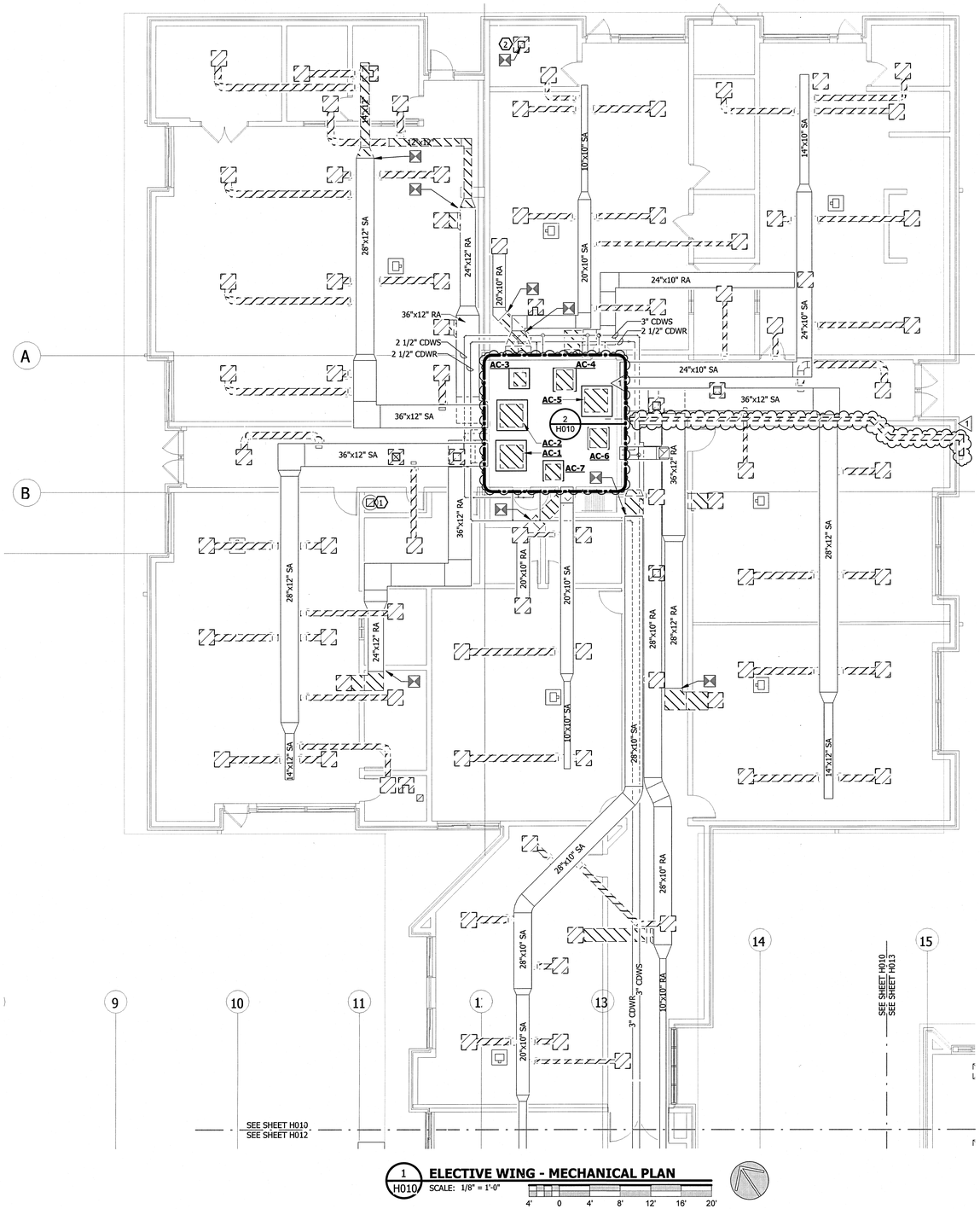
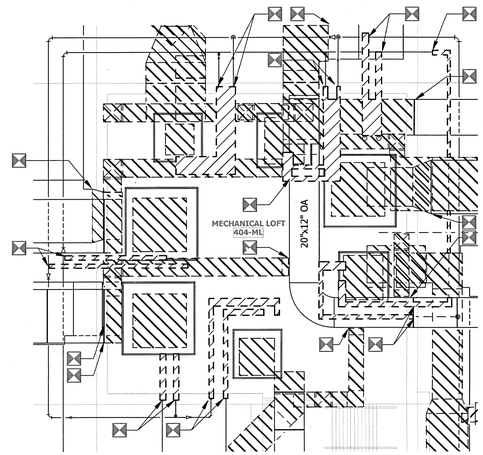


1 H010 **ELECTIVE WING - MECHANICAL PLAN**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



2 H010 **ELECTIVE WING - MECHANICAL LOFT DEMOLITION PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'

GENERAL DEMOLITION NOTES

1. REMOVE EXISTING WSHP UNITS IN MECHANICAL LOFTS SERVING CLASSROOMS AND ASSOCIATED THERMOSTATS.
2. REMOVE EXISTING LINED SUPPLY AND RETURN DUCTWORK IN MECHANICAL LOFTS.
3. REMOVE EXISTING OUTSIDE AIR DUCTWORK RUN OUTS TO WSHPs. MAIN OA TRUNK TO REMAIN. ROOF HOOD SHALL REMAIN FOR RELIEF AIR. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.
4. REMOVE EXISTING CEILING SUPPLY AND RETURN DIFFUSERS AND DUCTWORK BACK TO MAIN TRUNK. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.
5. REMOVE ALL EXISTING CONDENSATE PIPING FROM WSHPS TO EXTERIOR OF BUILDING.
6. DISCONNECT EXISTING CONDENSER WATER PIPING AND PIPING SPECIALTIES FROM WSHPS.

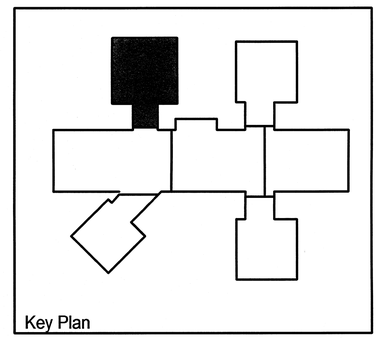
1 NOTE #7 DELETED

KEY NOTES TO H010

(#)

1 REMOVE GRILLE CONNECTED TO 12" X 12" EXHAUST DUCT UP TO EXISTING EXHAUST FAN ON ROOF. DUCT AND FAN TO REMAIN.

2 REMOVE GRILLE CONNECTED TO 10" X 10" EXHAUST DUCT UP TO EXISTING EXHAUST FAN ON ROOF. DUCT AND FAN TO REMAIN.


Key Plan

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ELECTIVE WING - DEMOLITION PLAN

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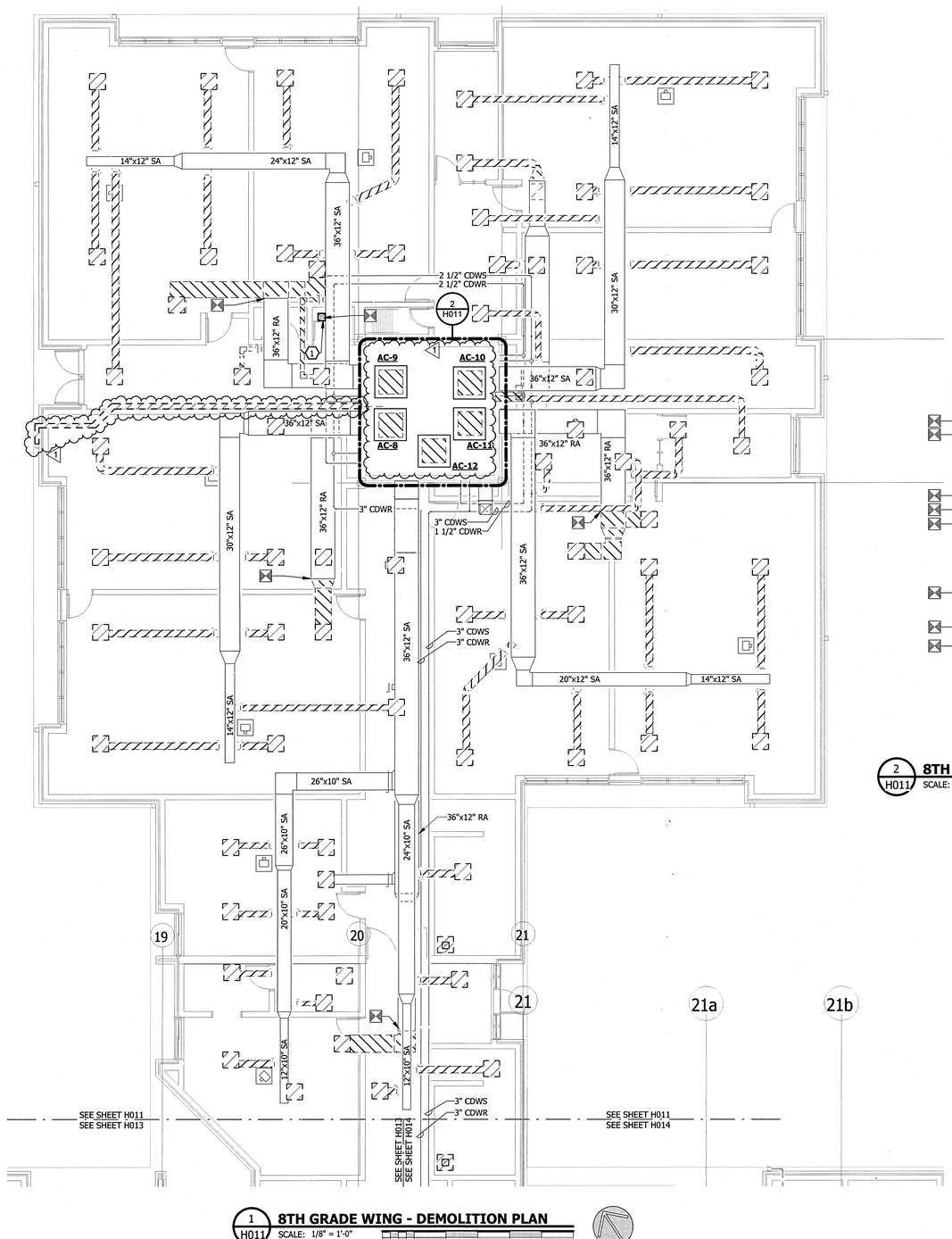
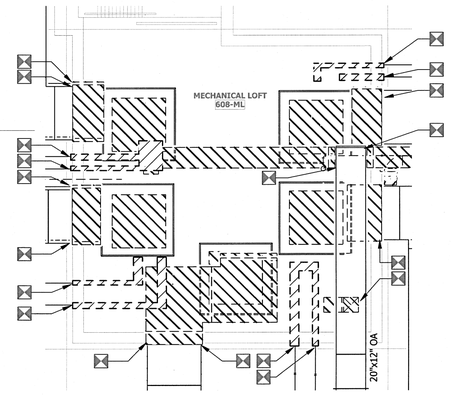


1 H011 **8TH GRADE WING - DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



2 H011 **8TH GRADE WING - MECHANICAL LOFT DEMOLITON PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'

GENERAL DEMOLITION NOTES

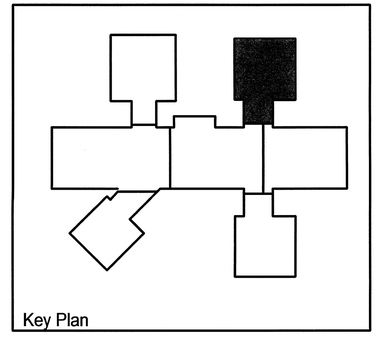
1. REMOVE EXISTING WSHP UNITS IN MECHANICAL LOFTS SERVING CLASSROOMS AND ASSOCIATED THERMOSTATS.
2. REMOVE EXISTING LINED SUPPLY AND RETURN DUCTWORK IN MECHANICAL LOFTS.
3. REMOVE EXISTING OUTSIDE AIR DUCTWORK RUN OUTS TO WSHPs. MAIN OA TRUNK TO REMAIN. ROOF HOOD SHALL REMAIN FOR RELIEF AIR. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.
4. REMOVE EXISTING CEILING SUPPLY AND RETURN DIFFUSERS AND DUCTWORK BACK TO MAIN TRUNK. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.
5. REMOVE ALL EXISTING CONDENSATE PIPING FROM WSHPS TO EXTERIOR OF BUILDING.
6. DISCONNECT EXISTING CONDENSER WATER PIPING AND PIPING SPECIALTIES FROM WSHPS.

1 NOTE #7 DELETED

KEY NOTES TO H011

(#)

1 REMOVE GRILLE CONNECTED TO 10" X 10" EXHAUST DUCT UP TO EXISTING EXHAUST FAN ON ROOF. DUCT AND FAN TO REMAIN.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8TH GRADE WING - DEMOLITION PLAN

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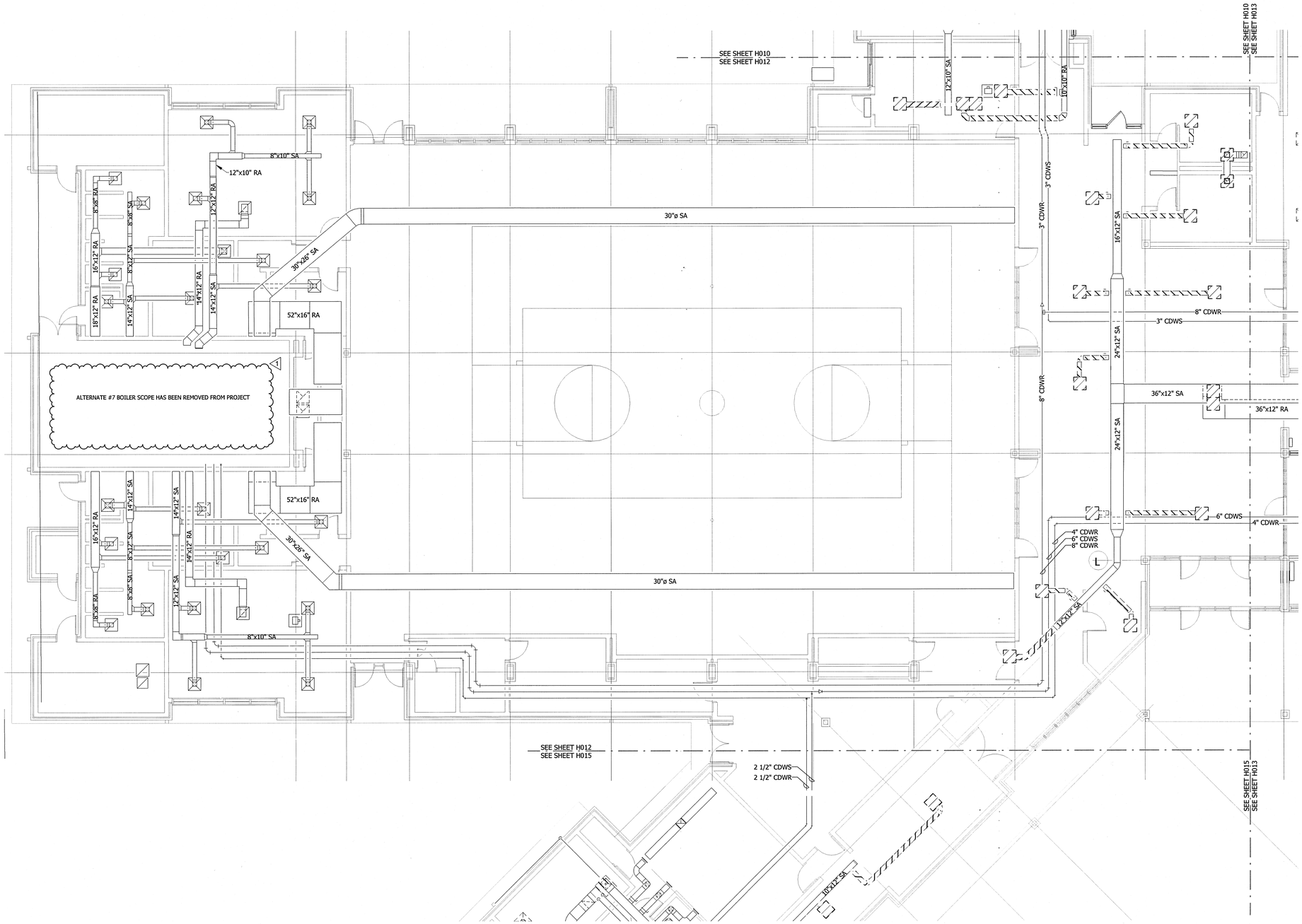
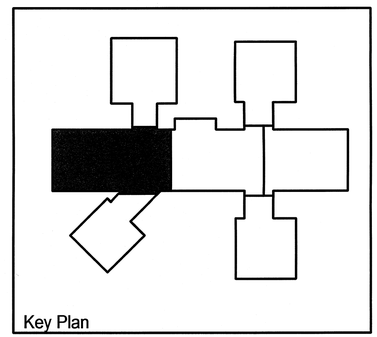
GENERAL DEMOLITION NOTES

1. REMOVE EXISTING CEILING SUPPLY AND RETURN DIFFUSERS AND DUCTWORK BACK TO MAIN TRUNK AS SHOWN. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.





1 H012 **GYMNASIUM - DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"

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GYMNASIUM - DEMOLITION PLAN

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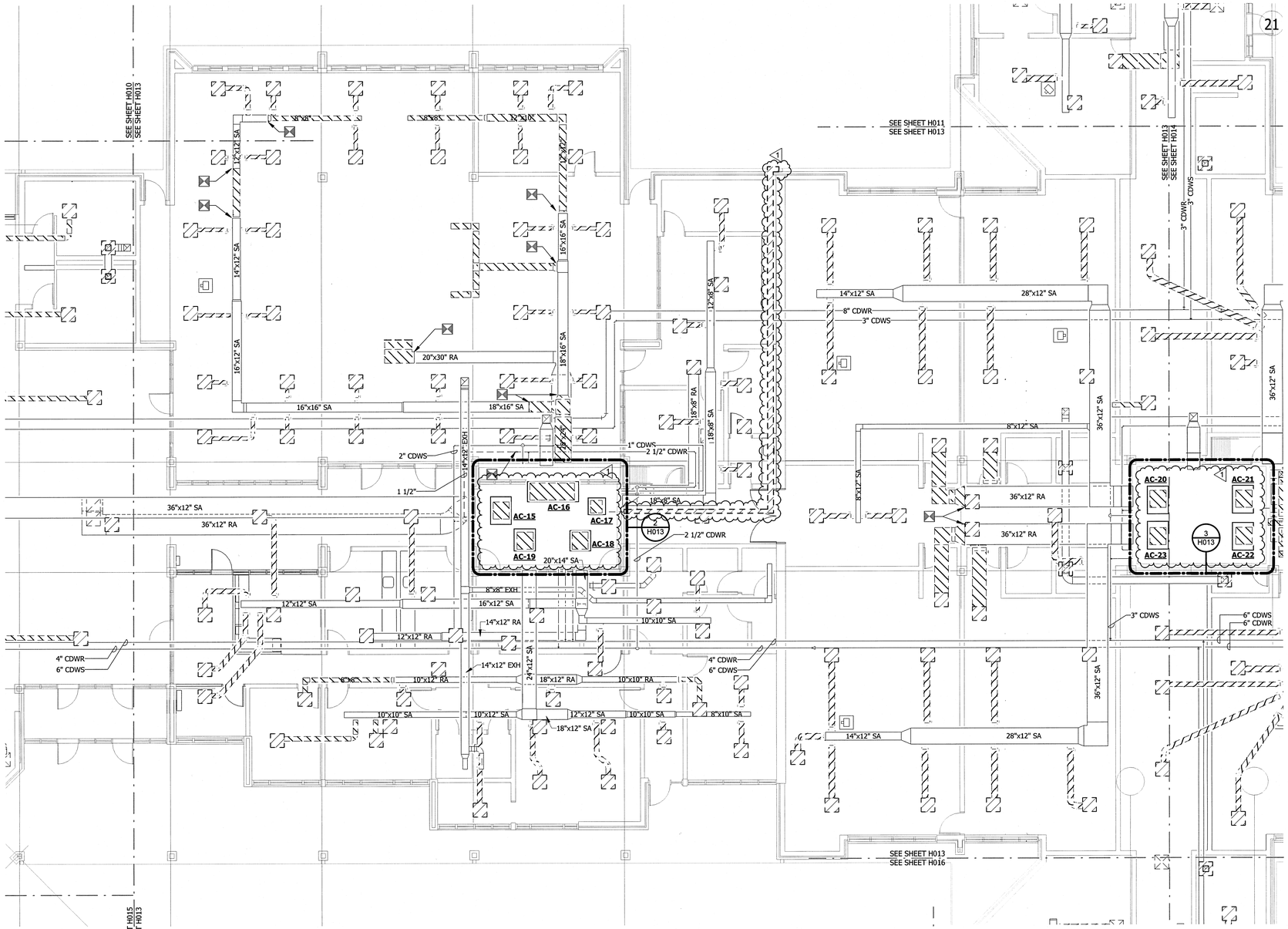
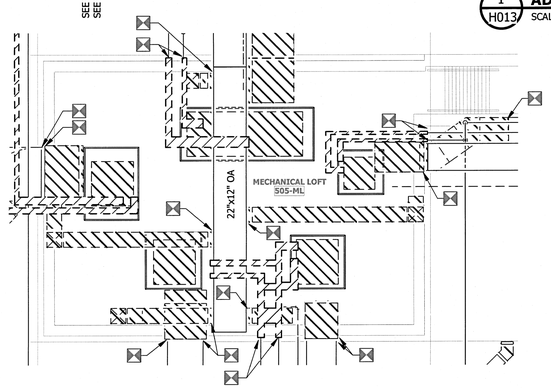
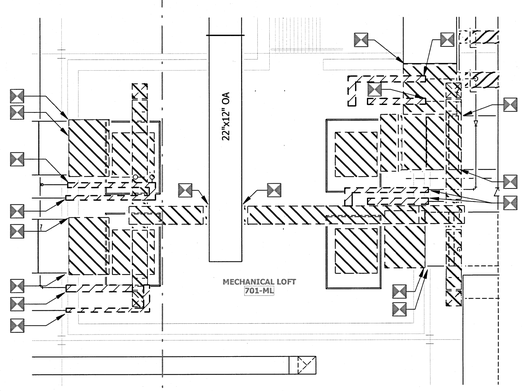


1 H013 **ADMIN & MEDIA CENTER - DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



2 H013 **ADMIN & MEDIA CENTER - WEST MECH LOFT DEMOLITION PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'

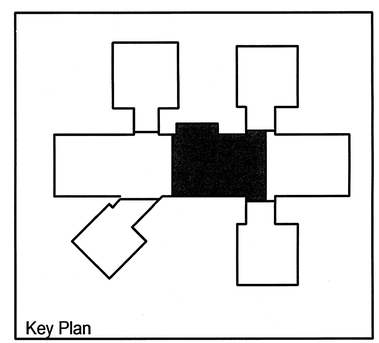


3 H013 **ADMIN & MEDIA CENTER - EAST MECH LOFT DEMOLITION PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'

GENERAL DEMOLITION NOTES

1. REMOVE EXISTING WSHP UNITS IN MECHANICAL LOFTS SERVING CLASSROOMS AND ASSOCIATED THERMOSTATS.
2. REMOVE EXISTING LINED SUPPLY AND RETURN DUCTWORK IN MECHANICAL LOFTS.
3. REMOVE EXISTING OUTSIDE AIR DUCTWORK RUN OUTS TO WSHPs. MAIN OA TRUNK TO REMAIN. ROOF HOOD SHALL REMAIN FOR RELIEF AIR. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.
4. REMOVE EXISTING CEILING SUPPLY AND RETURN DIFFUSERS AND DUCTWORK BACK TO MAIN TRUNK. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.
5. REMOVE ALL EXISTING CONDENSATE PIPING FROM WSHPS TO EXTERIOR OF BUILDING.
6. DISCONNECT EXISTING CONDENSER WATER PIPING AND PIPING SPECIALTIES FROM WSHPS.

1 NOTE #7 DELETED



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ADMIN & MEDIA CENTER - DEMOLITION PLAN

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GENERAL DEMOLITION NOTES

1. REMOVE EXISTING WSHP UNITS IN MECHANICAL LOFTS SERVING CLASSROOMS AND ASSOCIATED THERMOSTATS.
2. REMOVE EXISTING LINED SUPPLY AND RETURN DUCTWORK IN MECHANICAL LOFTS.
3. REMOVE EXISTING OUTSIDE AIR DUCTWORK RUN OUTS TO WSHPs. MAIN OA TRUNK TO REMAIN. ROOF HOOD SHALL REMAIN FOR RELIEF AIR. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.
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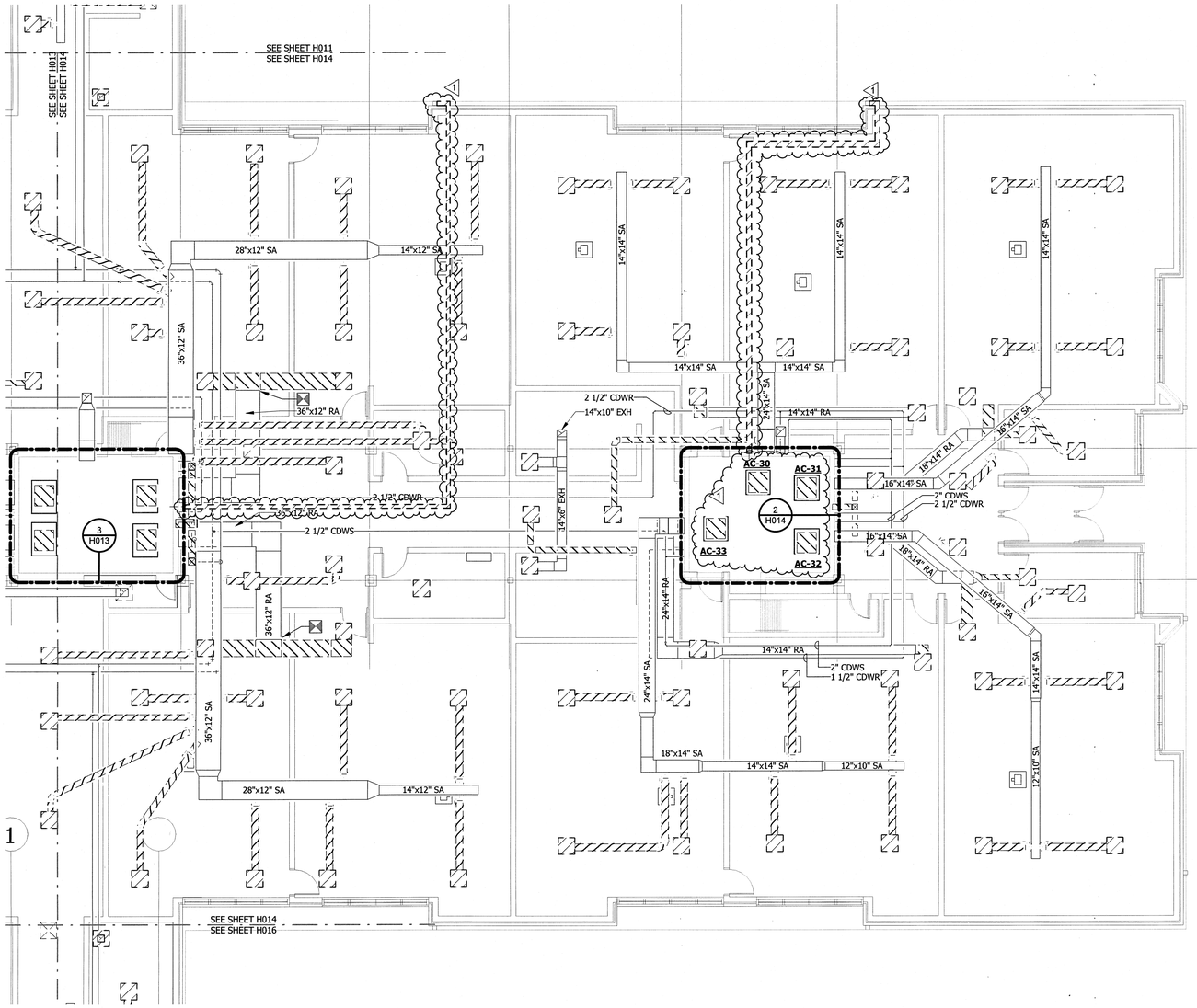
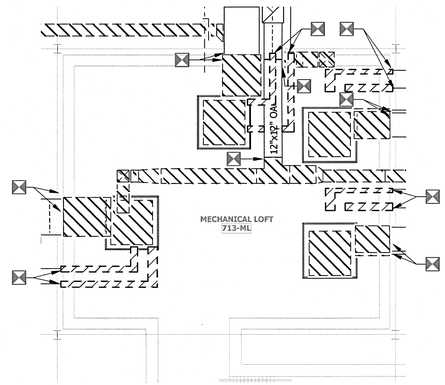
5. REMOVE ALL EXISTING CONDENSATE PIPING FROM WSHPS TO EXTERIOR OF BUILDING.
6. DISCONNECT EXISTING CONDENSER WATER PIPING AND PIPING SPECIALTIES FROM WSHPS.

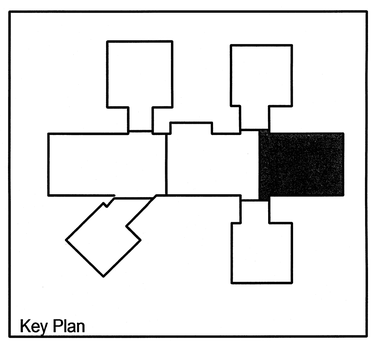
1 NOTE #7 DELETED



1 H014 **7TH GRADE WING - DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



2 H014 **7TH GRADE WING - MECHANICAL LOFT DEMOLITION PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



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Renovations and Additions to: Myrtle Grove Middle School

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7TH GRADE WING - DEMOLITION PLAN

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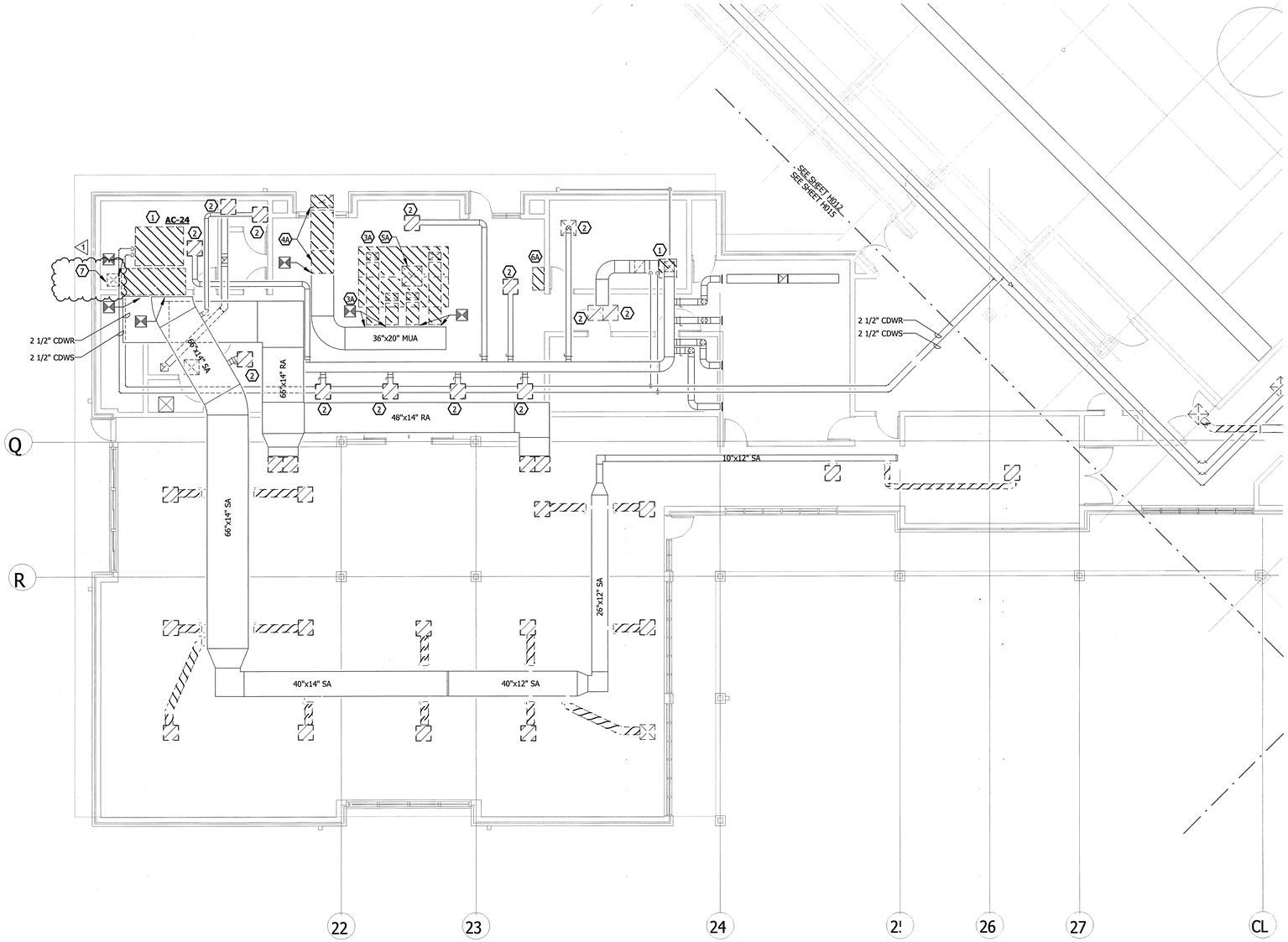


1 H015 **CAFETERIA - DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL DEMOLITION NOTES

1. REMOVE EXISTING WSHP UNIT SERVING CAFETERIA AND THERMOSTAT.
2. REMOVE EXISTING CEILING SUPPLY AND RETURN DIFFUSERS AND DUCT BACK TO MAIN TRUNK. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.

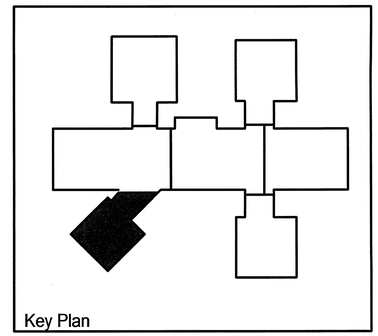
KEY NOTES TO H015

#	
1	REMOVE EXISTING WSHP, DISCONNECT FROM EXISTING DUCTWORK AND PIPING.
2	REMOVE AND REPLACE EXISTING CEILING GRILLE
3A	REMOVE EXISTING KITCHEN HOOD AND MAKEUP AIR DUCTWORK BACK TO MAIN TRUNK. PATCH MAIN TRUNK AS REQUIRED.
4A	REMOVE EXISTING HOOD MAKEUP AIR FAN. REMOVE UPSTREAM MAKE UP AIR DUCT BACK TO SOFFIT. REMOVE EXISTING INTAKE GRILLES
5A	REMOVE EXISTING ROOF-MOUNTED GREASE EXAUST FAN AND GREASE DUCT BACK TO HOOD.
6A	REMOVE EXISTING ANSUL FIRE SUPPRESSION SYSTEM AND PULL STATION.
7	REMOVE EXISTING OUTSIDE AIR ROOF HOOD AND OUTSIDE AIR DUCT.

ALTERNATE #6 - KITCHEN HOOD

BASE BID: EXISTING KITCHEN HOOD, KITCHEN HOOD EXHAUST FAN, GREASE EXHAUST DUCTWORK, AND ANSUL FIRE SUPPRESSION SYSTEM TO REMAIN.

ALTERNATE: SEE KEYNOTES DESIGNATED #A ON THIS SHEET.



#1, Attachment #

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CAFETERIA - DEMOLITION PLAN

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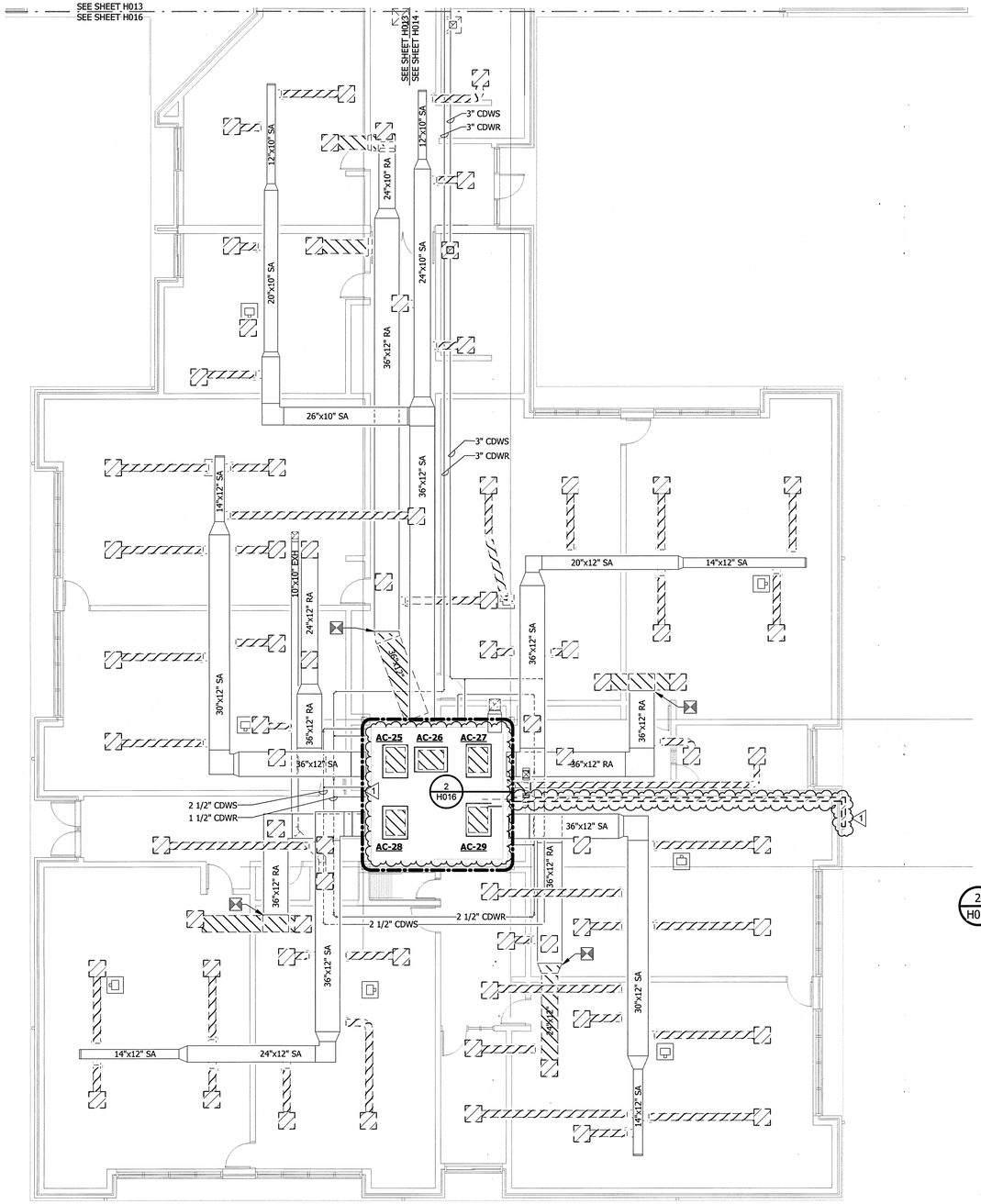
GENERAL DEMOLITION NOTES

1. REMOVE EXISTING WSHP UNITS IN MECHANICAL LOFTS SERVING CLASSROOMS AND ASSOCIATED THERMOSTATS.
2. REMOVE EXISTING LINED SUPPLY AND RETURN DUCTWORK IN MECHANICAL LOFTS.
3. REMOVE EXISTING OUTSIDE AIR DUCTWORK RUN OUTS TO WSHPs. MAIN OA TRUNK TO REMAIN. ROOF HOOD SHALL REMAIN FOR RELIEF AIR. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.
4. REMOVE EXISTING CEILING SUPPLY AND RETURN DIFFUSERS AND DUCTWORK BACK TO MAIN TRUNK. PATCH, SEAL, AND INSULATE ANY DUCT TAPS NOT REUSED IN NEW CONSTRUCTION.
5. REMOVE ALL EXISTING CONDENSATE PIPING FROM WSHPS TO EXTERIOR OF BUILDING.
6. DISCONNECT EXISTING CONDENSER WATER PIPING AND PIPING SPECIALTIES FROM WSHPS.

1 NOTE #7 DELETED



1 H016 **6TH GRADE WING - DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"
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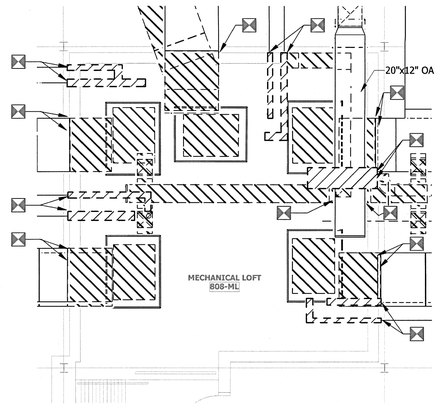

2 H016 **6TH GRADE WING - MECHANICAL LOFT DEMOLITION PLAN**
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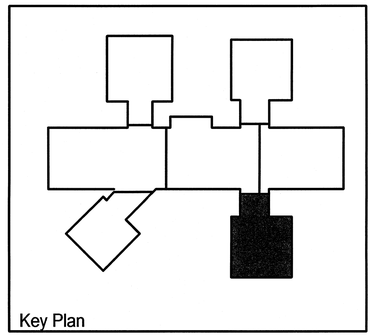

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6TH GRADE WING - DEMOLITION PLAN

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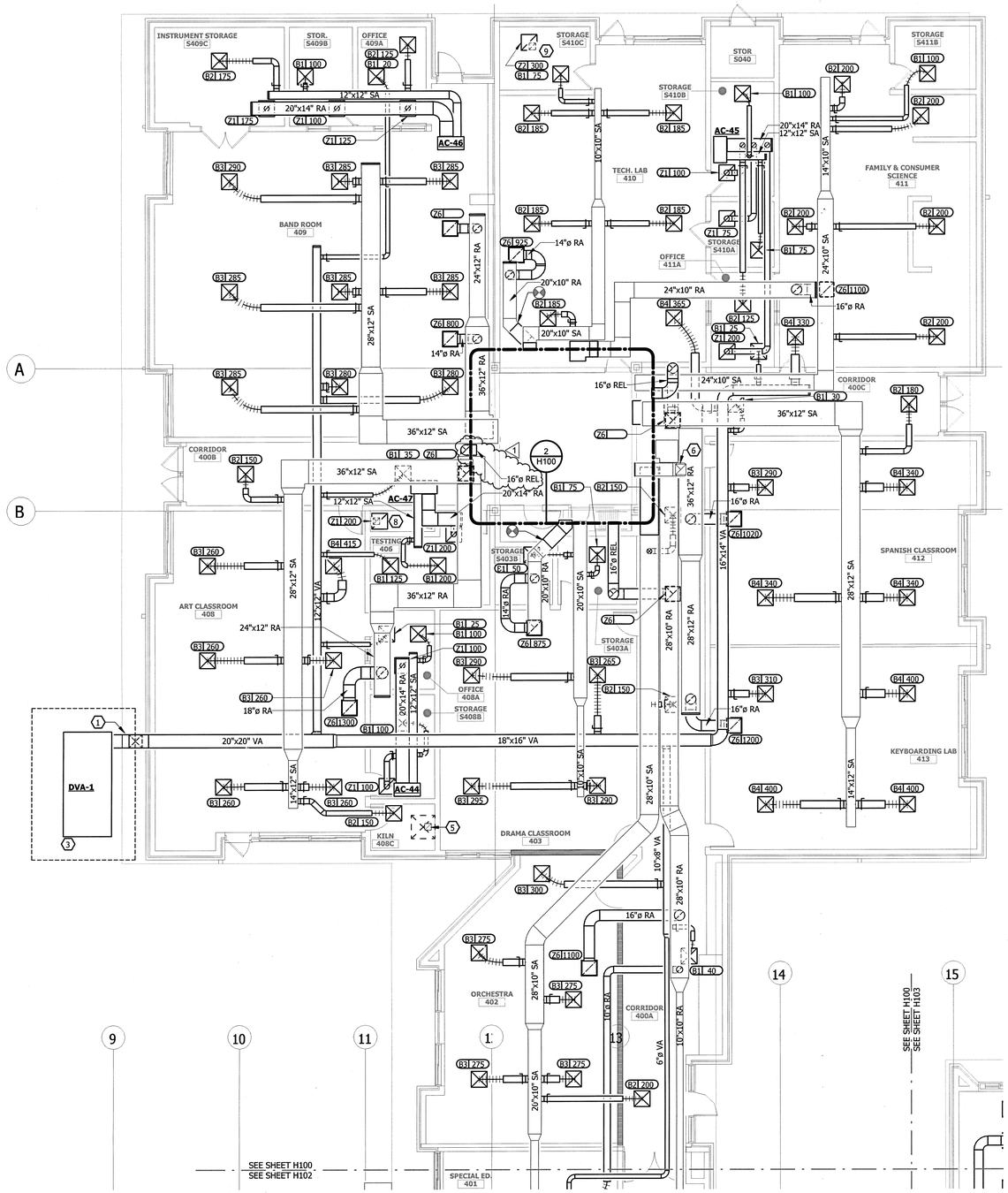

1 H100 **ELECTIVE WING - MECHANICAL PLAN**
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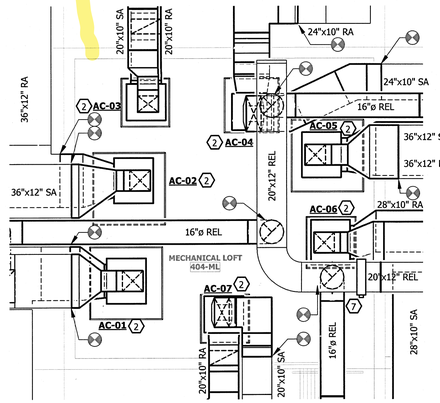


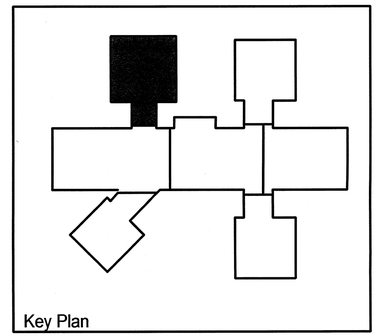
2 H100 **ELECTIVE WING MECHANICAL LOFT - DUCT**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'

GENERAL NEW CONSTRUCTION NOTES

1. PROVIDE NEW CEILING SUPPLY AND RETURN DIFFUSERS AND RECONNECT TO MAIN TRUNK.
2. FOR NEW WSHPs LOCATED IN MECHANICAL LOFT, EXISTING DUCT DETECTOR LOCATED IN EXISTING RETURN AIR DUCT TO REMAIN. CONTRACTOR SHALL TEST EXISTING DUCT DETECTOR AND REPORT ANY DEFICIENCIES TO OWNER AND A/E.

KEY NOTES TO H100

#	
1	ROUTE DUCTWORK UP EXTERIOR WALL AND PENETRATE BUILDING ABOVE CEILING.
2	INSTALL NEW WSHP UNITS ON EXISTING CONCRETE PAD. CONNECT TO EXISTING DUCTWORK.
3	MOUNT EQUIPMENT ON CONCRETE PAD. PAD AND SCREENING PROVIDED BY G.C. COORDINATE EQUIPMENT SIZE AND CLEARANCE DIMENSIONS WITH G.C. PRIOR TO INSTALLATION.
5	EXISTING 10"X10" EXHAUST DUCT FROM KILN HOOD UP TO EXISTING EXHAUST FAN F-3.
6	EXISTING 16"X16" RELIEF DUCT UP TO EXISTING INTAKE HOOD.
7	PROVIDE BAROMETRIC RELIEF DAMPER IN EXISTING DUCTWORK.
8	EXISTING 10"X10" EXHAUST DUCT UP TO EXISTING EXHAUST FAN F-2.
9	EXISTING 10"X10" EXHAUST DUCT UP TO EXISTING EXHAUST FAN F-1.



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ELECTIVE WING PLAN - DUCT

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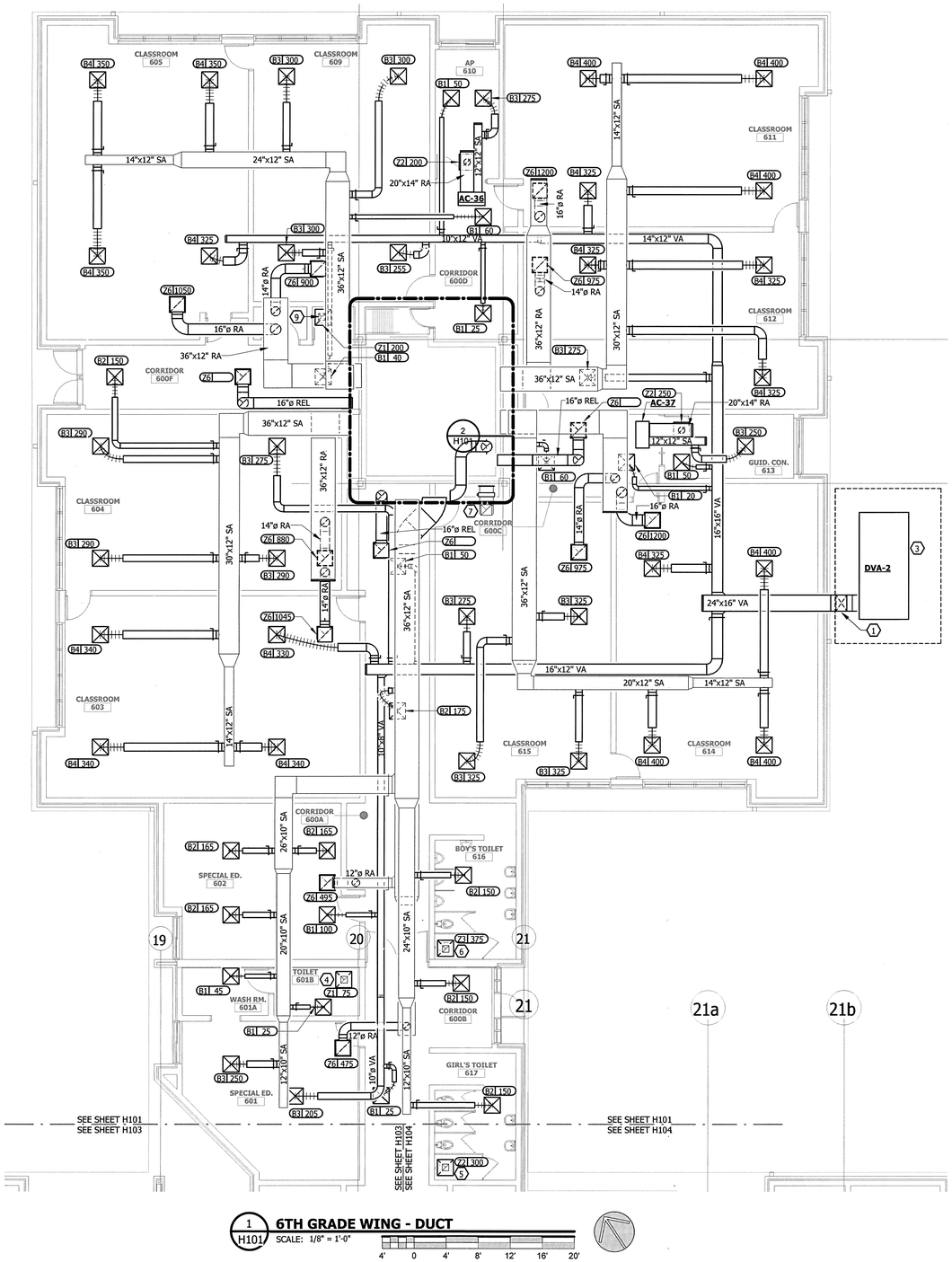

1 H101 **6TH GRADE WING - DUCT**
SCALE: 1/8" = 1'-0"
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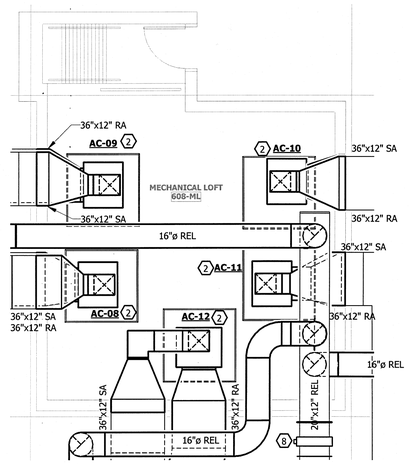


2 H101 **6TH GRADE WING MECHANICAL LOFT - DUCT**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'

GENERAL NEW CONSTRUCTION NOTES

1. PROVIDE NEW CEILING SUPPLY AND RETURN DIFFUSERS AND RECONNECT TO MAIN TRUNK.
2. FOR NEW WSHPs LOCATED IN MECHANICAL LOFT, EXISTING DUCT DETECTOR LOCATED IN EXISTING RETURN AIR DUCT TO REMAIN. CONTRACTOR SHALL TEST EXISTING DUCT DETECTOR AND REPORT ANY DEFICIENCIES TO OWNER AND A/E.

(#) KEY NOTES TO H101

1 ROUTE DUCTWORK UP EXTERIOR WALL AND PENETRATE BUILDING ABOVE CEILING.

2 INSTALL NEW WSHP UNITS ON EXISTING CONCRETE PAD. CONNECT TO EXISTING DUCTWORK.

3 MOUNT EQUIPMENT ON CONCRETE PAD. PAD AND SCREENING PROVIDED BY G.C. COORDINATE EQUIPMENT SIZE AND CLEARANCE DIMENSIONS WITH G.C. PRIOR TO INSTALLATION.

4 EXISTING 10"X10" UP TO EXISTING EXHAUST FAN F-7.

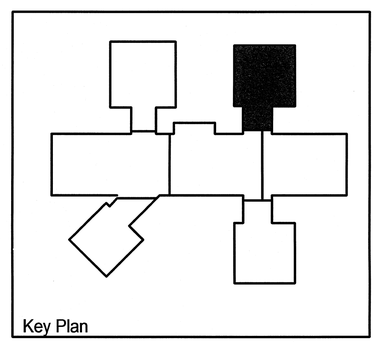
5 EXISTING 10"X10" UP TO EXISTING EXHAUST FAN F-6.

6 EXISTING 10"X10" UP TO EXISTING EXHAUST FAN F-5.

7 EXISTING 16"X16" RELIEF DUCT UP TO EXISTING INTAKE HOOD.

8 PROVIDE BAROMETRIC RELIEF DAMPER IN EXISTING DUCTWORK.

9 EXISTING 10"X10" UP TO EXISTING EXHAUST FAN F-4.



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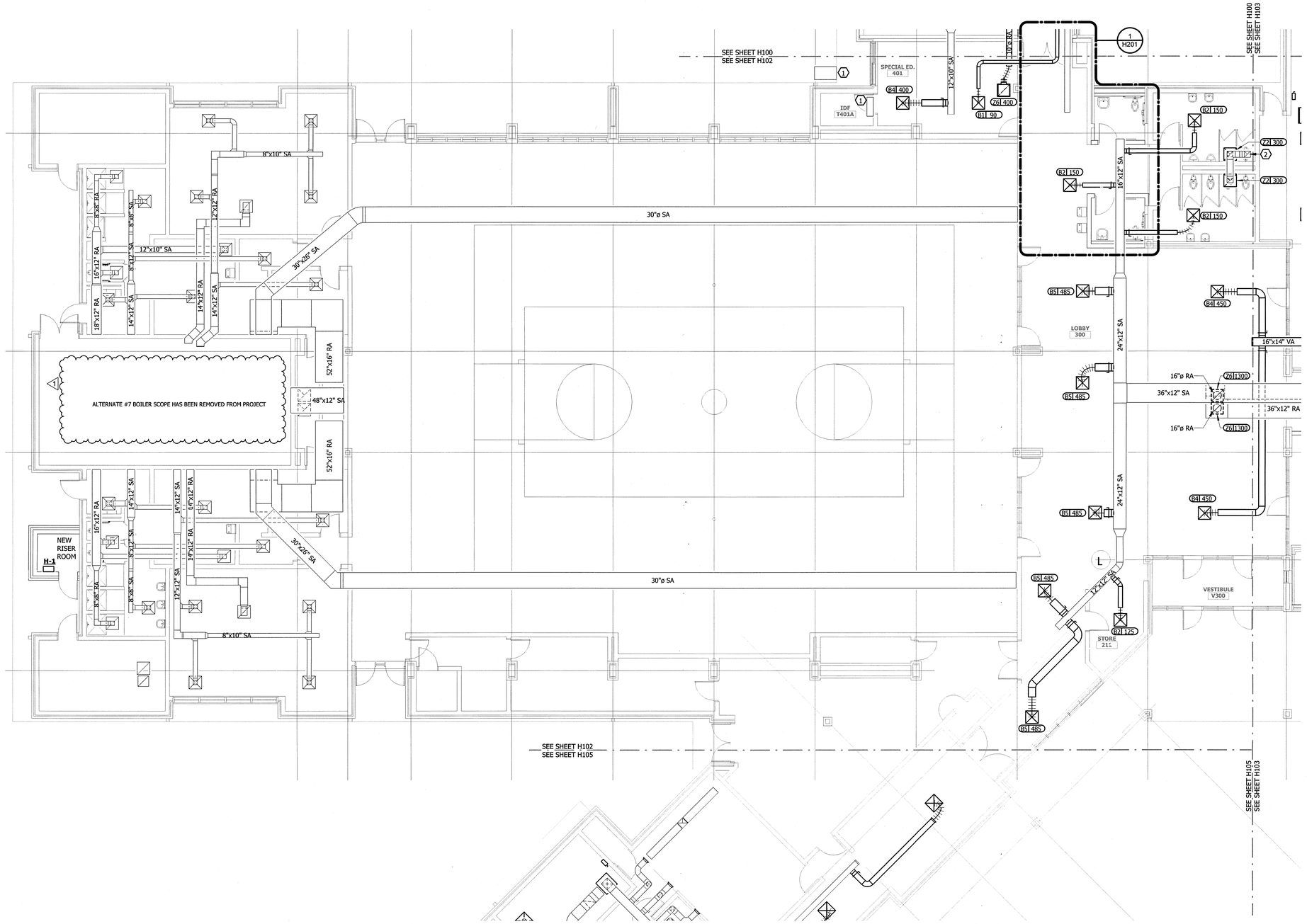
GENERAL NEW CONSTRUCTION NOTES

1. PROVIDE NEW CEILING SUPPLY AND RETURN DIFFUSERS AND RECONNECT TO MAIN TRUNK.

(#) KEY NOTES TO H102

1 EXISTING DUCTLESS SPLIT SYSTEM TO REMAIN.

2 EXISTING 12"X12" UP TO EXISTING EXHAUST FAN F-11.



1 H102 **GYMNASIUM - DUCT**
SCALE: 1/8" = 1'-0"
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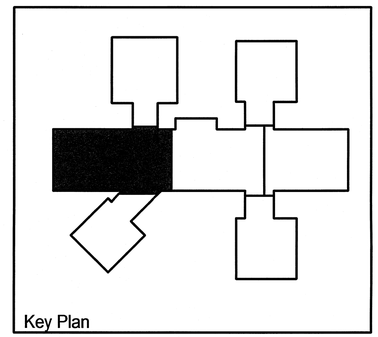
Key Plan

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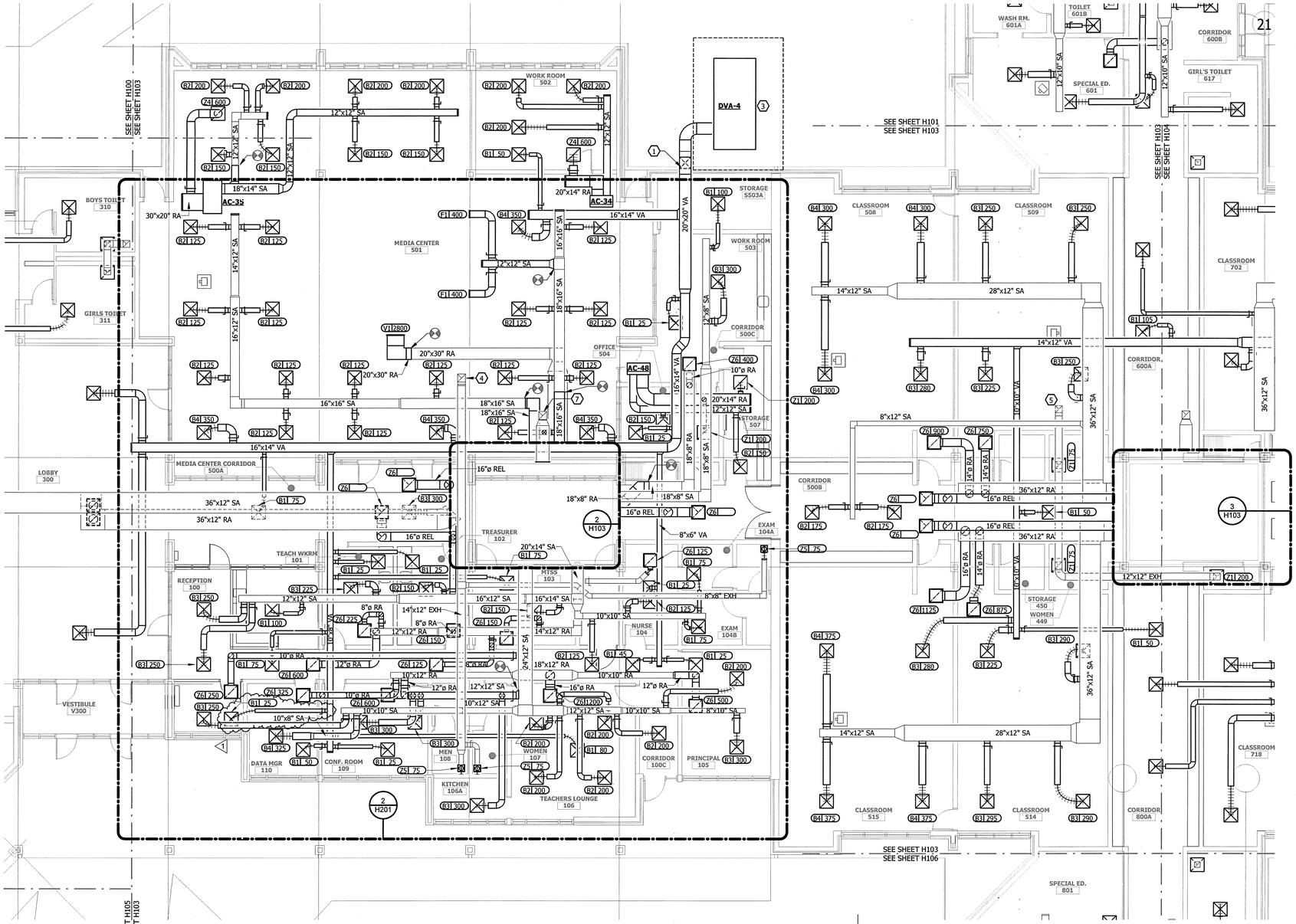

1 H103 ADMIN & MEDIA CENTER - DUCT

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

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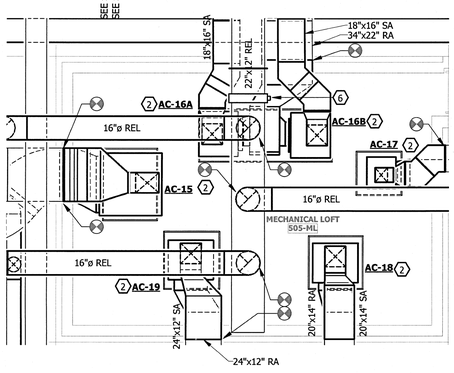
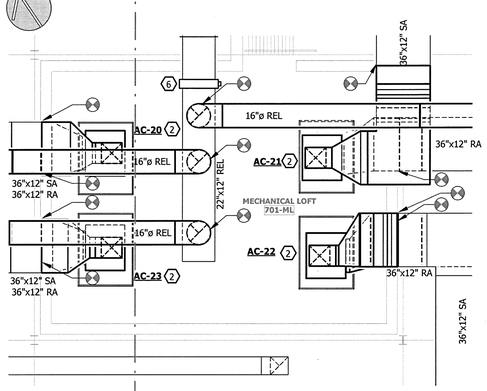


2 H103 ADMIN & MEDIA CENTER WEST MECH LOFT - DUCT

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

4' 0 4' 8'



3 H103 ADMIN & MEDIA CENTER EAST MECH LOFT - DUCT

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

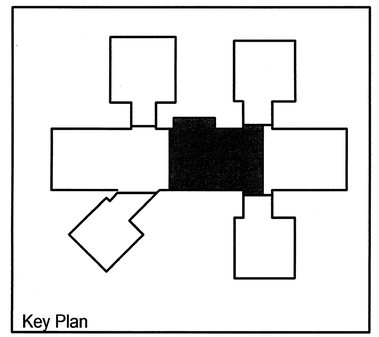
4' 0 4' 8'

GENERAL NEW CONSTRUCTION NOTES

1. PROVIDE NEW CEILING SUPPLY AND RETURN DIFFUSERS AND RECONNECT TO MAIN TRUNK.
2. FOR NEW WSHPs LOCATED IN MECHANICAL LOFT, EXISTING DUCT DETECTOR LOCATED IN EXISTING RETURN AIR DUCT TO REMAIN. CONTRACTOR SHALL TEST EXISTING DUCT DETECTOR AND REPORT ANY DEFICIENCIES TO OWNER AND A/E.

KEY NOTES TO H103

#	
1	ROUTE DUCTWORK UP EXTERIOR WALL AND PENETRATE BUILDING ABOVE CEILING.
2	INSTALL NEW WSHP UNITS ON EXISTING CONCRETE PAD. CONNECT TO EXISTING DUCTWORK.
3	MOUNT EQUIPMENT ON CONCRETE PAD. PAD AND SCREENING PROVIDED BY G.C. COORDINATE EQUIPMENT SIZE AND CLEARANCE DIMENSIONS WITH G.C. PRIOR TO INSTALLATION.
4	EXISTING 14"X14" UP TO EXISTING EXHAUST FAN F-12.
5	EXISTING 12"X12" UP TO EXISTING EXHAUST FAN F-13 TO REMAIN.
6	PROVIDE BAROMETRIC RELIEF DAMPER IN EXISTING DUCTWORK.
7	EXISTING 14"X14" RELIEF DUCT UP TO EXISTING INTAKE HOOD.



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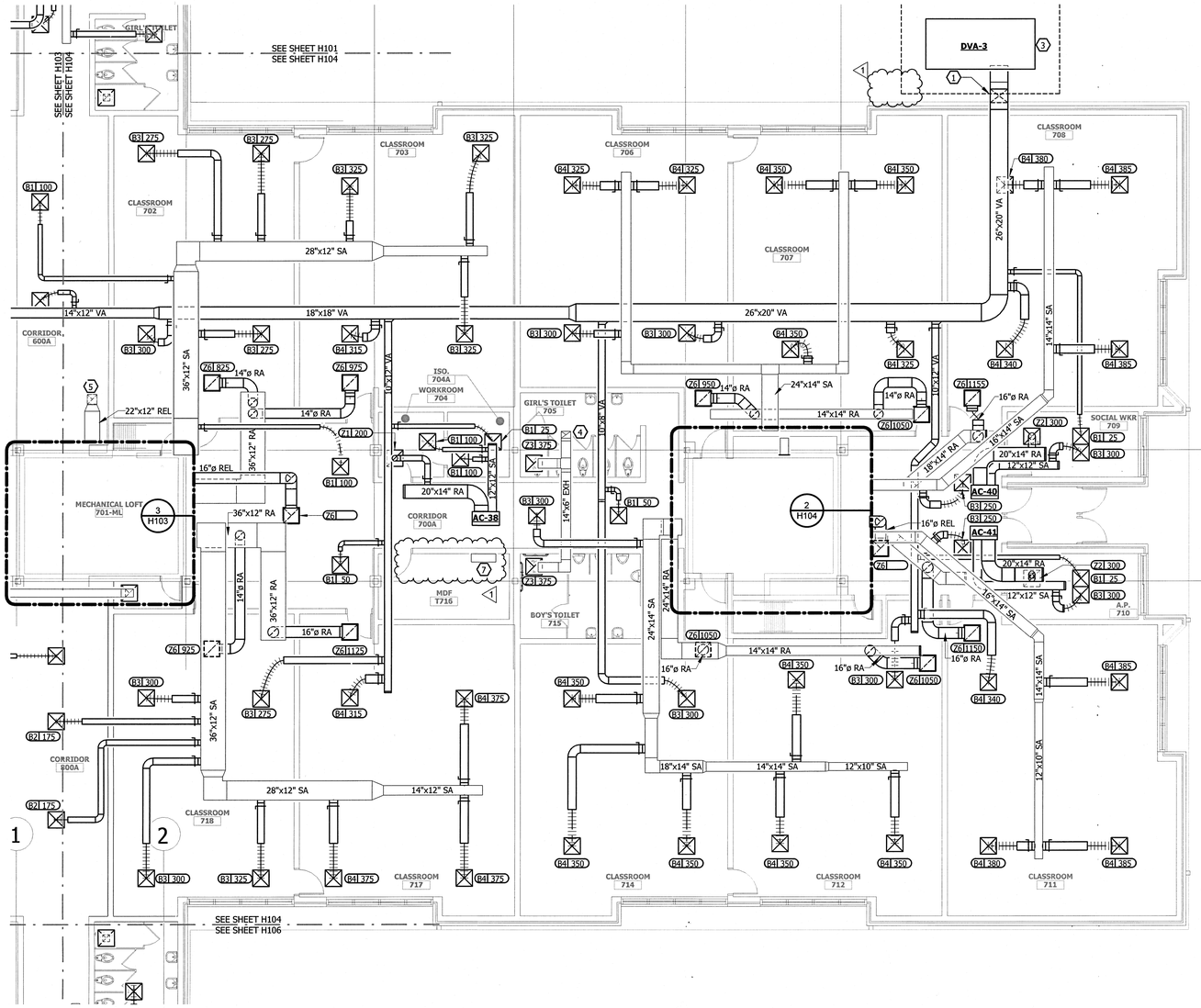


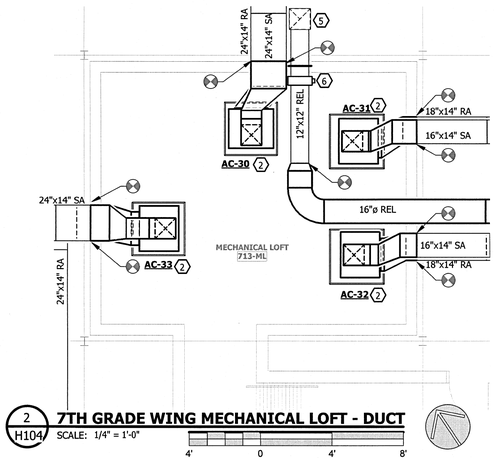
1 H104 **7TH GRADE WING - DUCT**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NEW CONSTRUCTION NOTES

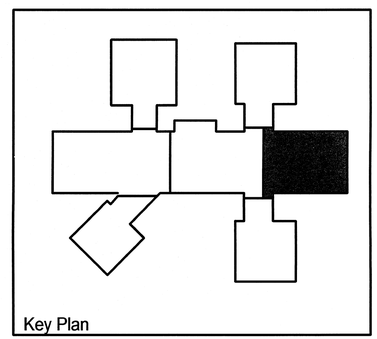
1. PROVIDE NEW CEILING SUPPLY AND RETURN DIFFUSERS AND RECONNECT TO MAIN TRUNK.
2. FOR NEW WSHPs LOCATED IN MECHANICAL LOFT, EXISTING DUCT DETECTOR LOCATED IN EXISTING RETURN AIR DUCT TO REMAIN. CONTRACTOR SHALL TEST EXISTING DUCT DETECTOR AND REPORT ANY DEFICIENCIES TO OWNER AND A/E.

KEY NOTES TO H104

#	
1	ROUTE DUCTWORK UP EXTERIOR WALL AND PENETRATE BUILDING ABOVE CEILING.
2	INSTALL NEW WSHP UNITS ON EXISTING CONCRETE PAD. CONNECT TO EXISTING DUCTWORK.
3	MOUNT EQUIPMENT ON CONCRETE PAD. PAD AND SCREENING PROVIDED BY G.C. COORDINATE EQUIPMENT SIZE AND CLEARANCE DIMENSIONS WITH G.C. PRIOR TO INSTALLATION.
4	EXISTING 14"X14" UP TO EXISTING EXHAUST FAN F-23.
5	EXISTING 12"X12" RELIEF DUCT UP TO EXISTING INTAKE HOOD.
6	PROVIDE BAROMETRIC RELIEF DAMPER IN EXISTING DUCTWORK.
7	EXISTING DUCTLESS SPLIT SYSTEM UNIT SERVING ROOM TO REMAIN.



2 H104 **7TH GRADE WING MECHANICAL LOFT - DUCT**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



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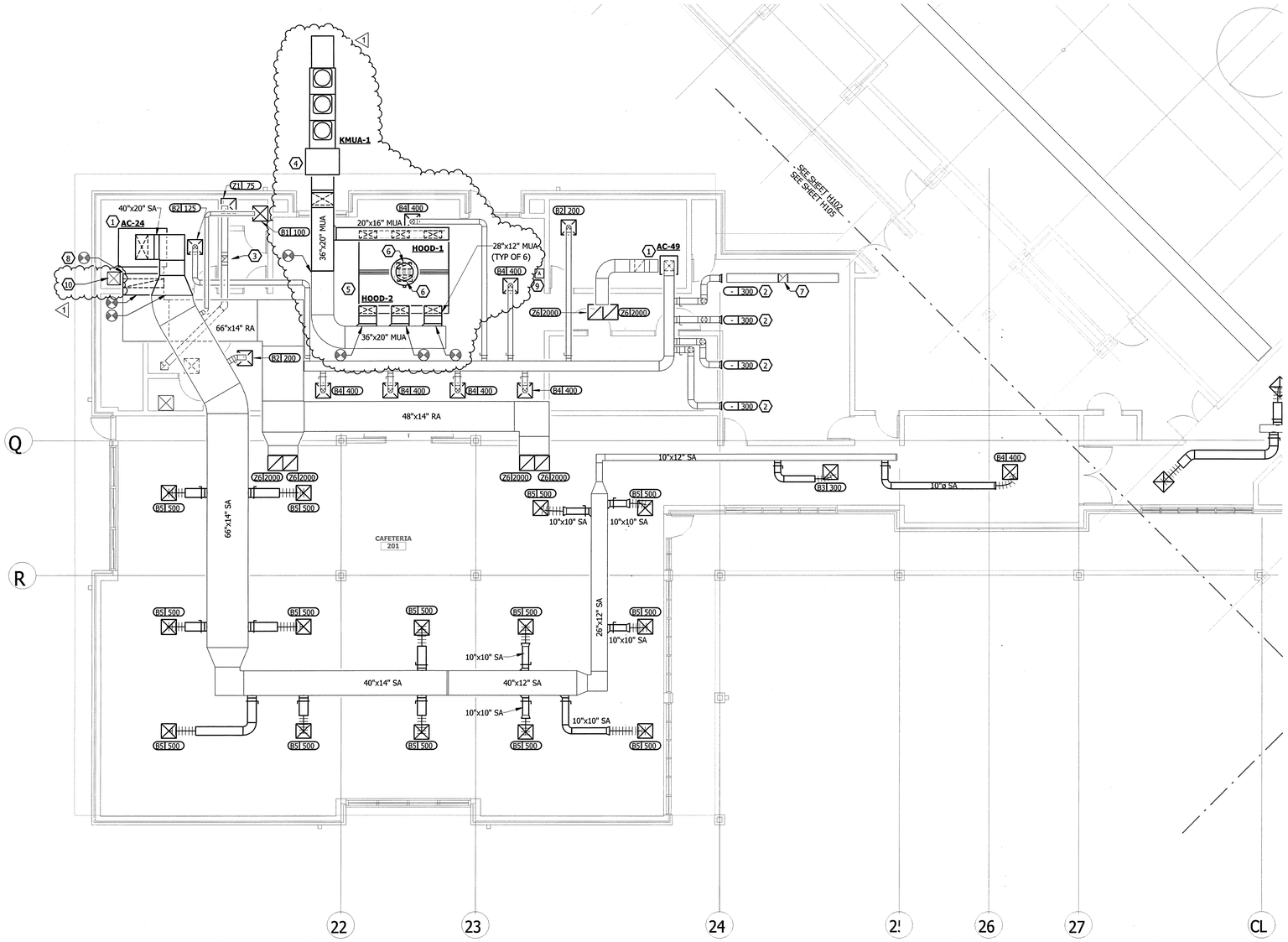


1 H105 **CAFETERIA - DUCT**
SCALE: 1/8" = 1'-0"

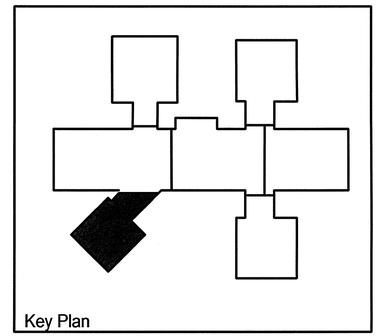
4' 0 4' 8' 12' 16' 20'

GENERAL NEW CONSTRUCTION NOTES

1. PROVIDE NEW CEILING SUPPLY AND RETURN DIFFUSERS AND RECONNECT TO MAIN TRUNK.

KEY NOTES TO H105

#	
1	INSTALL NEW WSHP UNIT ON EXISTING CONCRETE PAD.
2	BALANCE EXISTING GRILLE TO CFM INDICATED. M.C. TO CLEAN GRILLE.
3	EXISTING 10"X10" UP TO EXISTING EXHAUST FAN F-18.
1 4	ALTERNATE #6: MOUNT NEW KITCHEN HOOD MAKE UP AIR UNIT ON CONCRETE PAD. DUCT SHALL RISE UP WALL AND ENTER BUILDING ABOVE CEILING. CONNECT TO NEW KITCHEN HOOD. INSULATE MAKEUP AIR DUCT. M.C. TO MAKE FINAL GAS CONNECTION TO UNIT.
5	ALTERNATE #6: M.C. TO PROVIDE AND INSTALL NEW KITCHEN EXHAUST HOOD. CONNECT NEW MAKE UP AIR DUCTWORK TO HOOD.
6	ALTERNATE #6: PROVIDE NEW KITCHEN HOOD GREASE EXHAUST FAN ON ROOF. PROVIDE NEW GREASE EXHAUST DUCT BETWEEN HOOD AND FAN AND WRAP WITH 2 HOUR FIRE WRAP. SEE SPECIFICATIONS.
7	EXISTING 12"X12" UP TO EXISTING EXHAUST FAN F-24.
8	CONNECT TO EXISTING OUTSIDE AIR DUCT
9	ALTERNATE #6: PROVIDE NEW ANSUL PULL STATION.
1 10	PROVIDE NEW SPUN ALUMINUM HOOD ON ROOF FOR OUTSIDE AIR INTAKE. SIZE FOR 2,750 CFM, 0.10 IN. WG. PRESSURE DROP, AND 1,000 FPM MAX VELOCITY. BASIS OF DESIGN IS GREENHECK GRSI 30. PROVIDE NEW ROOF CURB. PROVIDE 20x20 OUTSIDE AIR DUCT DOWN TO AC-24.



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Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

CAFETERIA PLAN - DUCT

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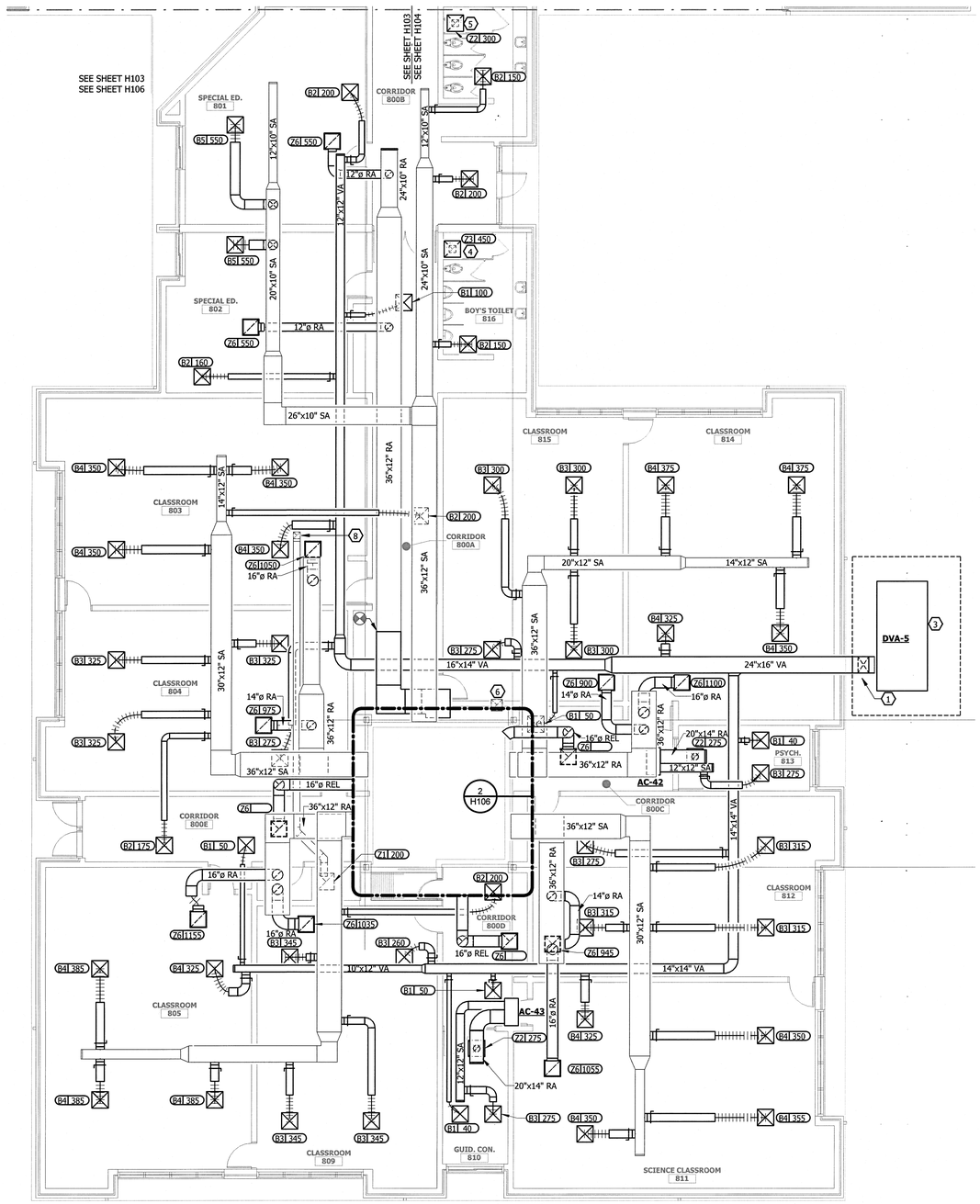


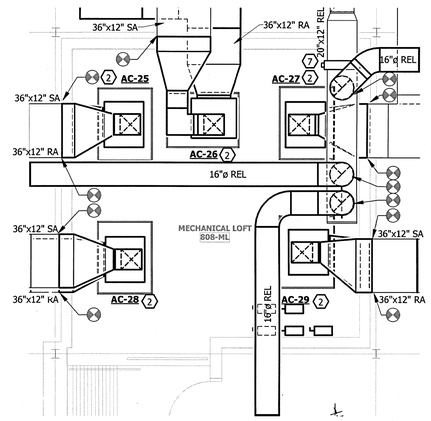
1 H106 **8TH GRADE WING - DUCT**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NEW CONSTRUCTION NOTES

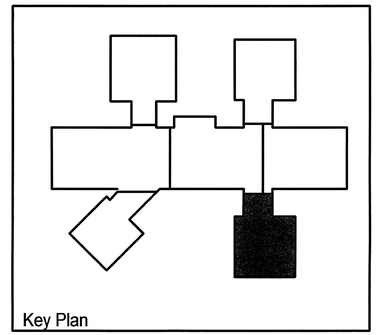
1. PROVIDE NEW CEILING SUPPLY AND RETURN DIFFUSERS AND RECONNECT TO MAIN TRUNK.
2. FOR NEW WSHPs LOCATED IN MECHANICAL LOFT, EXISTING DUCT DETECTOR LOCATED IN EXISTING RETURN AIR DUCT TO REMAIN. CONTRACTOR SHALL TEST EXISTING DUCT DETECTOR AND REPORT ANY DEFICIENCIES TO OWNER AND A/E.

KEY NOTES TO H106

#	
1	ROUTE DUCTWORK UP EXTERIOR WALL AND PENETRATE BUILDING ABOVE CEILING.
2	INSTALL NEW WSHP UNITS ON EXISTING CONCRETE PAD. CONNECT TO EXISTING DUCTWORK.
3	MOUNT EQUIPMENT ON CONCRETE PAD. PAD AND SCREENING PROVIDED BY G.C. COORDINATE EQUIPMENT SIZE AND CLEARANCE DIMENSIONS WITH G.C. PRIOR TO INSTALLATION.
4	EXISTING 10"X10" UP TO EXISTING EXHAUST FAN F-20.
5	EXISTING 10"X10" UP TO EXISTING EXHAUST FAN F-19.
6	EXISTING 16"X16" UP TO EXISTING ROOF HOOD.
7	PROVIDE BAROMETRIC RELIEF DAMPER IN EXISTING DUCTWORK.
8	EXISTING 10"X10" EXHAUST DUCT UP TO EXISTING EXHAUST FAN F-21.



2 H106 **8TH GRADE WING MECHANICAL LOFT - DUCT**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



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8TH GRADE WING PLAN - DUCT

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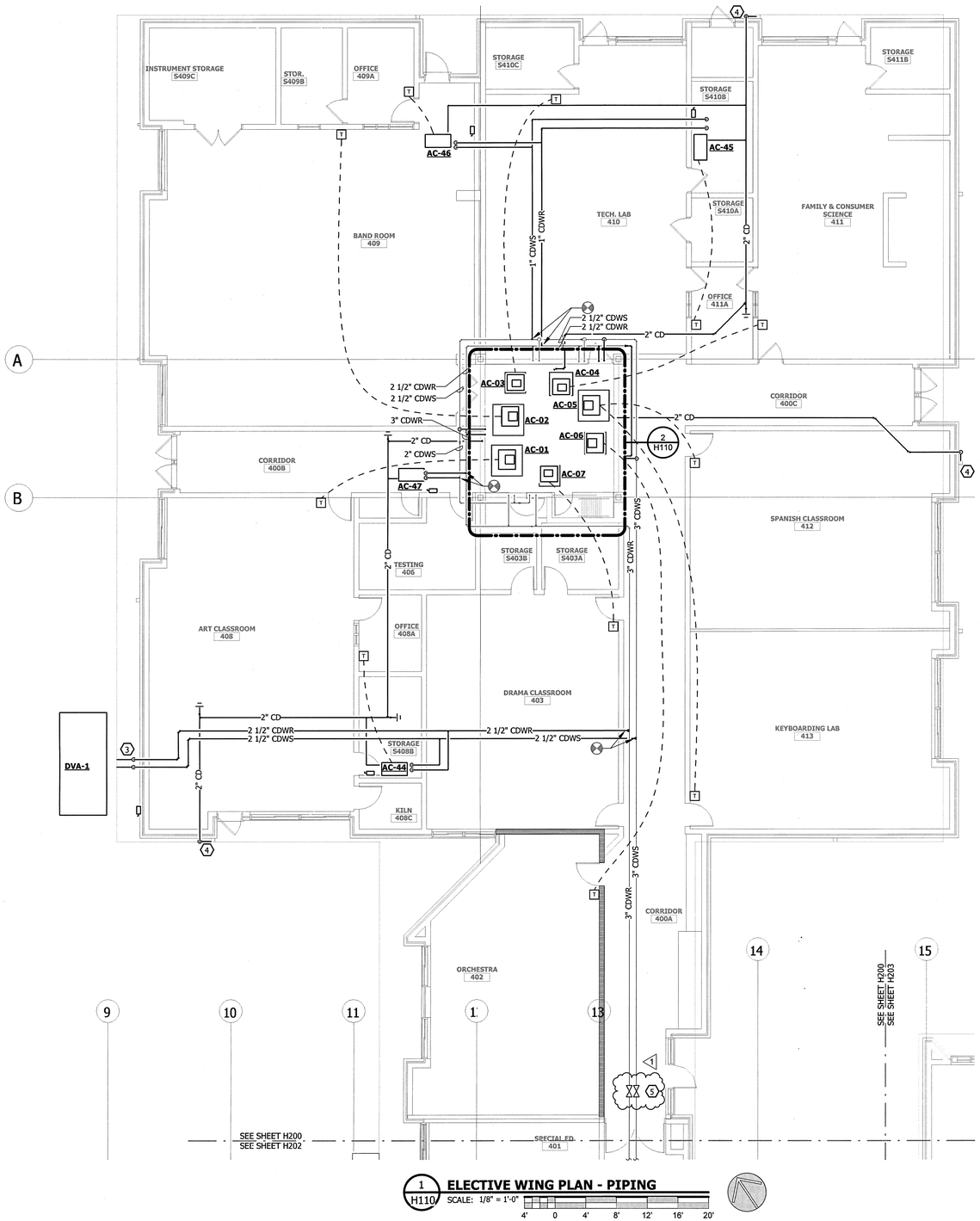
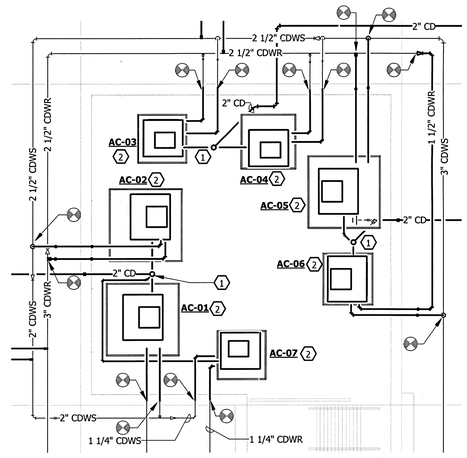


1 H110 **ELECTIVE WING PLAN - PIPING**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



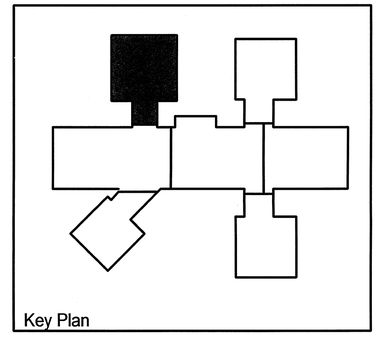
2 H110 **ELECTIVE WING MECHANICAL LOFT - PIPING**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'

GENERAL NEW CONSTRUCTION NOTES

1. FOR NEW HORIZONTAL WSHPs ABOVE CEILING, MOUNT UNIT HIGH ENOUGH TO TIE IN TO CONDENSATE DRAIN.

KEY NOTES TO H110

#	
1	DISCHARGE CONDENSATE FROM WSHPs IN LOFT TO NEW HUB DRAIN, SEE DETAIL 3/H302. SEE DETAIL 1/H300 FOR CONDENSATE DRAIN SIZE.
2	CONNECT TO EXISTING CONDENSER WATER PIPING. PROVIDE NEW HOSE CONNECTION KITS.
3	PROVIDE NEW CONDENSER WATER PIPING TO DEDICATED VENTILATION AIR UNIT. OUTSIDE PIPING SHALL HAVE HEAT TRACE.
4	ROUTE NEW CONDENSATE PIPING FROM HUB DRAIN TO EXTERIOR DOWNSPOUT, SEE DETAIL 4/H302.
5	PROVIDE NEW ISOLATION VALVES IN ACCESSIBLE LOCATION. PROVIDE LABEL ON CEILING GRID.


Key Plan

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ELECTIVE WING PLAN - PIPING

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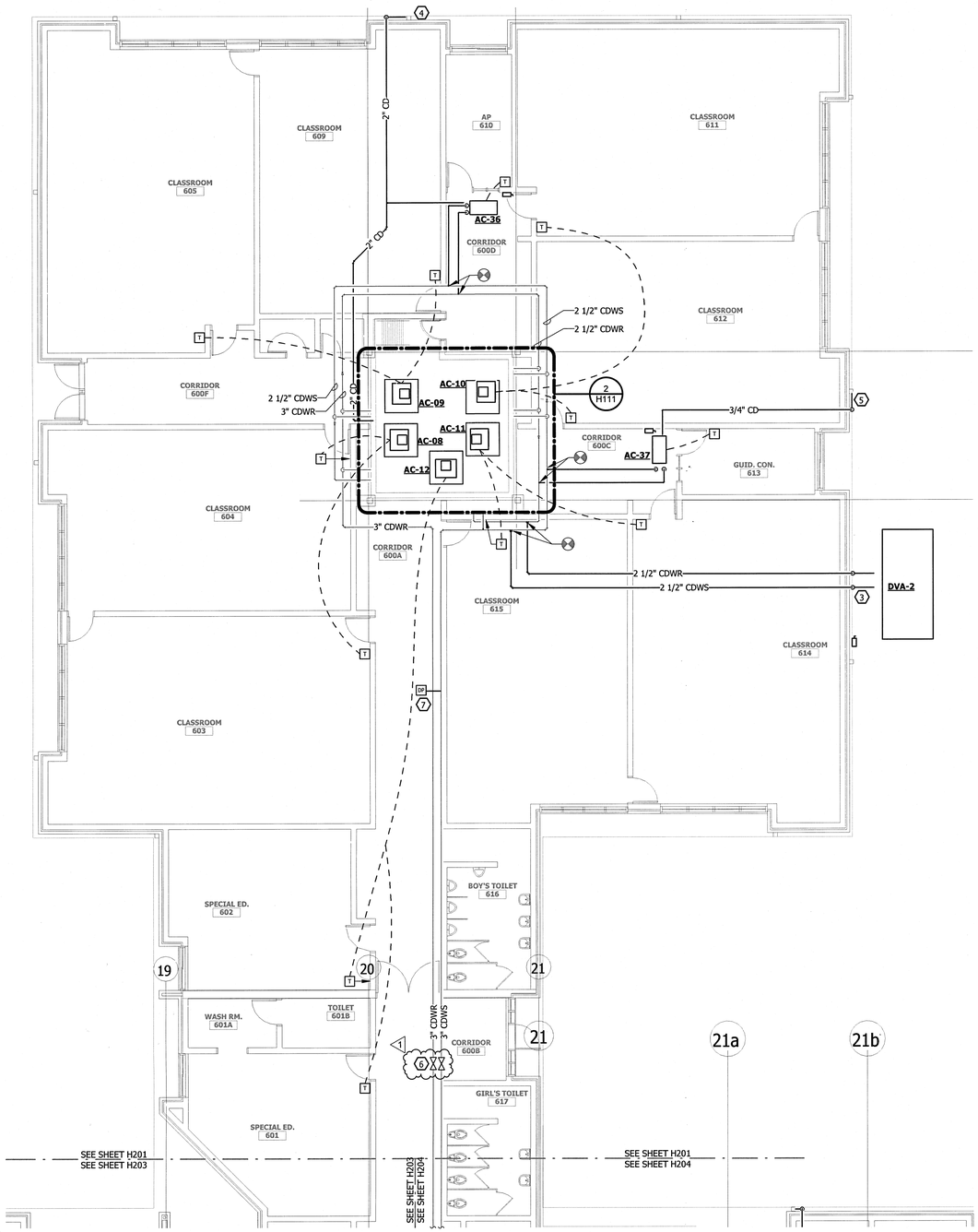
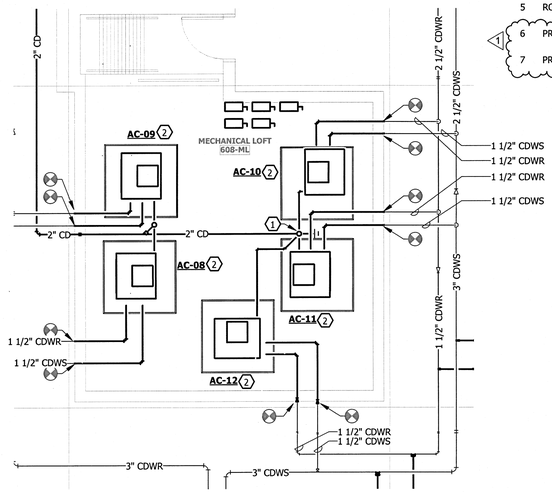


1 H111 **6TH GRADE WING - PIPING**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



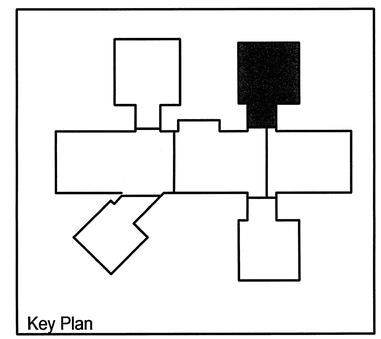
2 H111 **6TH GRADE WING MECHANICAL LOFT - PIPING**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'

GENERAL NEW CONSTRUCTION NOTES

1. FOR NEW HORIZONTAL WSHPs ABOVE CEILING, MOUNT UNIT HIGH ENOUGH TO TIE IN TO CONDENSATE DRAIN.

KEY NOTES TO H111

#	
1	DISCHARGE CONDENSATE FROM WSHPs IN LOFT TO NEW HUB DRAIN, SEE DETAIL 3/H302. SEE DETAIL 1/H300 FOR CONDENSATE DRAIN SIZE.
2	CONNECT TO EXISTING CONDENSER WATER PIPING. PROVIDE NEW HOSE CONNECTION KITS.
3	PROVIDE NEW CONDENSER WATER PIPING TO DEDICATED VENTILATION AIR UNIT. OUTSIDE PIPING SHALL HAVE HEAT TRACE.
4	ROUTE NEW CONDENSATE PIPING FROM HUB DRAIN TO EXTERIOR DOWNSPOUT, SEE DETAIL 4/H302.
5	ROUTE NEW CONDENSATE PIPING FROM WSHP TO EXTERIOR DOWNSPOUT, SEE DETAIL 4/H302.
6	PROVIDE NEW ISOLATION VALVES IN ACCESSIBLE LOCATION. PROVIDE LABEL ON CEILING GRID.
7	PROVIDE DIFFERENTIAL PRESSURE TRANSMITTER



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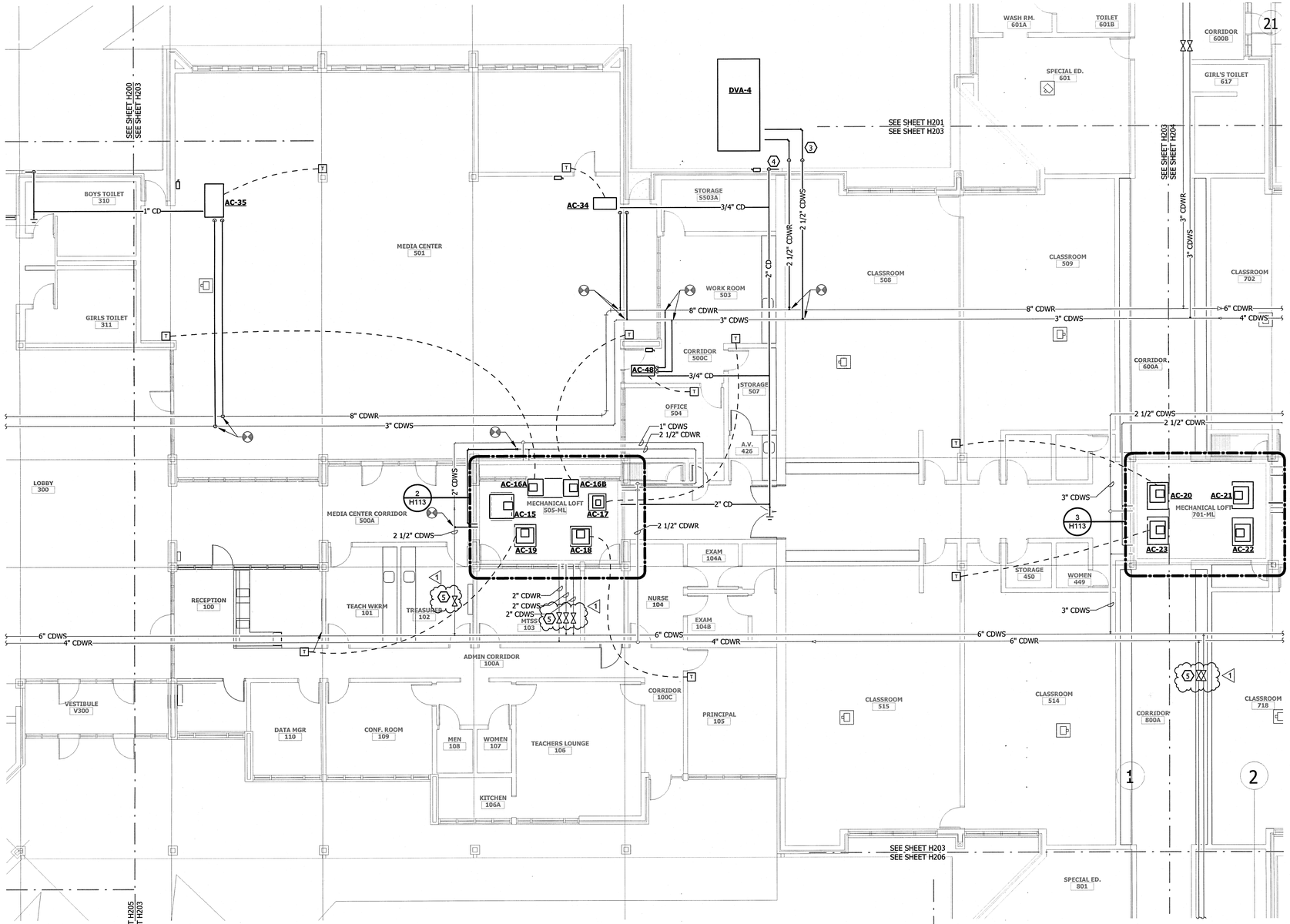


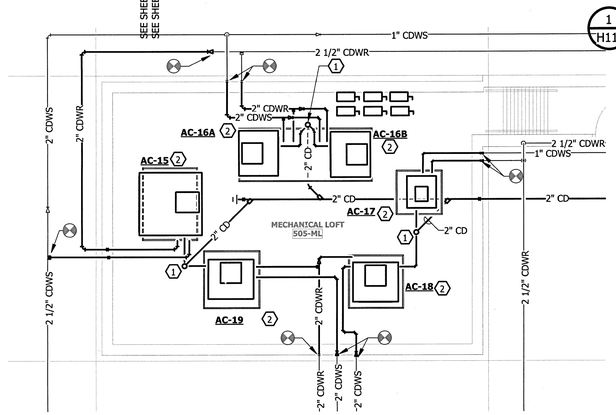
GENERAL NEW CONSTRUCTION NOTES

1. FOR NEW HORIZONTAL WSHPs ABOVE CEILING, MOUNT UNIT HIGH ENOUGH TO TIE IN TO CONDENSATE DRAIN.

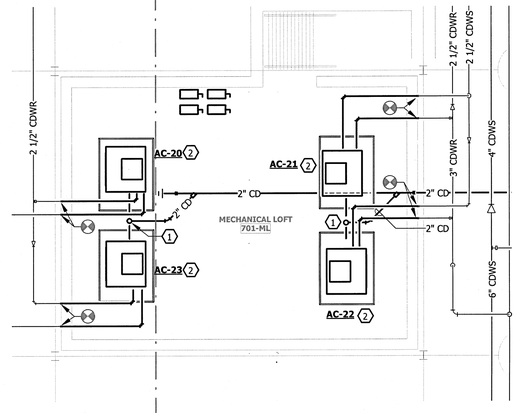
KEY NOTES TO H113

#	
1	DISCHARGE CONDENSATE FROM WSHPs IN LOFT TO NEW HUB DRAIN, SEE DETAIL 3/H302. SEE DETAIL 1/H300 FOR CONDENSATE DRAIN SIZE.
2	CONNECT TO EXISTING CONDENSER WATER PIPING. PROVIDE NEW HOSE CONNECTION KITS.
3	PROVIDE NEW CONDENSER WATER PIPING TO DEDICATED VENTILATION AIR UNIT. OUTSIDE PIPING SHALL HAVE HEAT TRACE.
4	ROUTE NEW CONDENSATE PIPING FROM HUB DRAIN TO EXTERIOR DOWNSPOUT, SEE DETAIL 4/H302.
5	PROVIDE NEW ISOLATION VALVES IN ACCESSIBLE LOCATION. PROVIDE LABEL ON CEILING GRID.

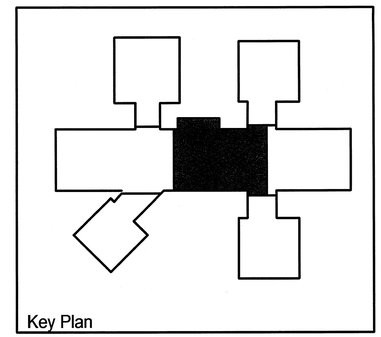
1 H113 **ADMIN & MEDIA CENTER - PIPING**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



2 H113 **ADMIN & MEDIA CENTER WEST MECH LOFT - PIPING**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



3 H113 **ADMIN & MEDIA CENTER EAST MECH LOFT - PIPING**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



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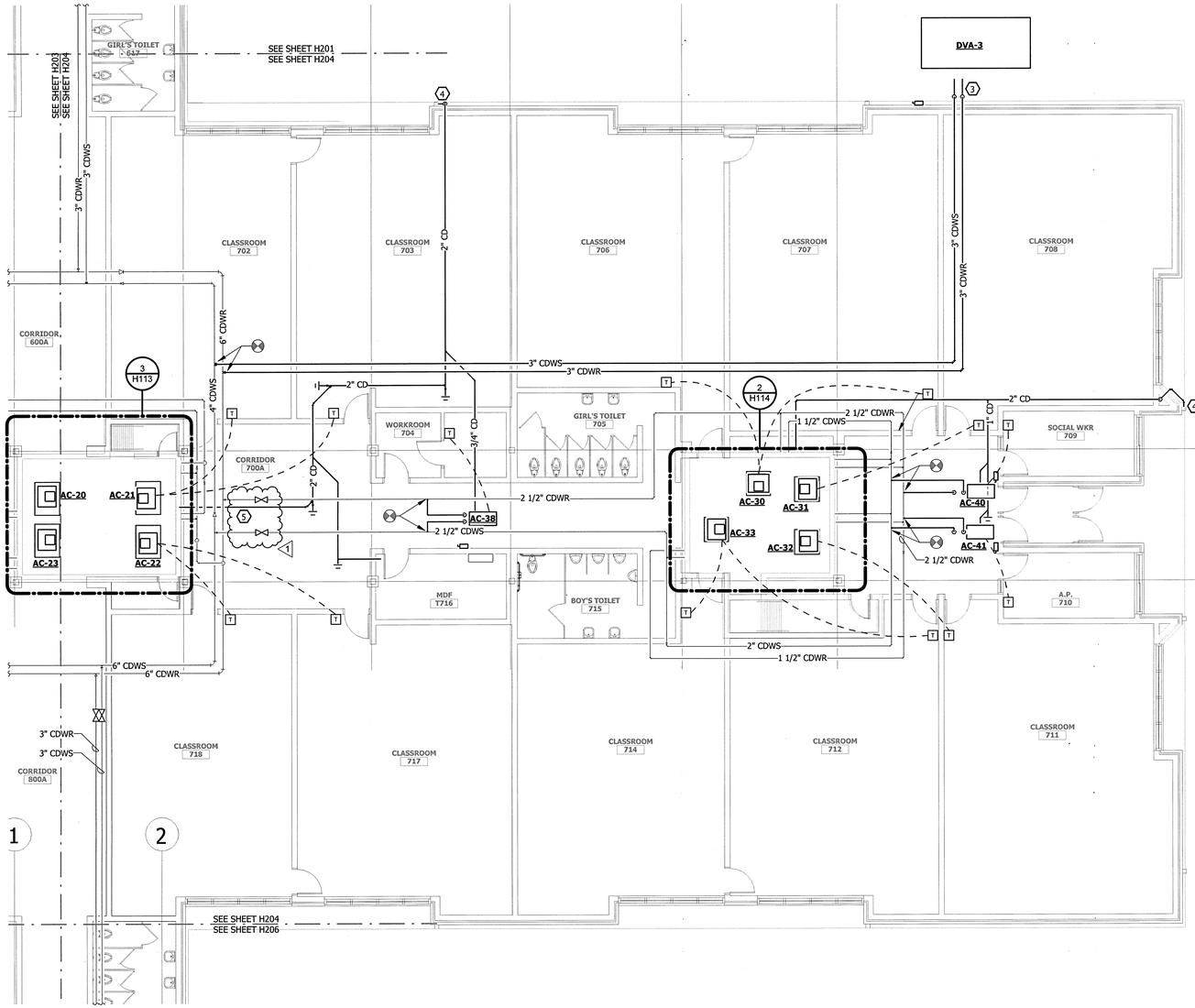


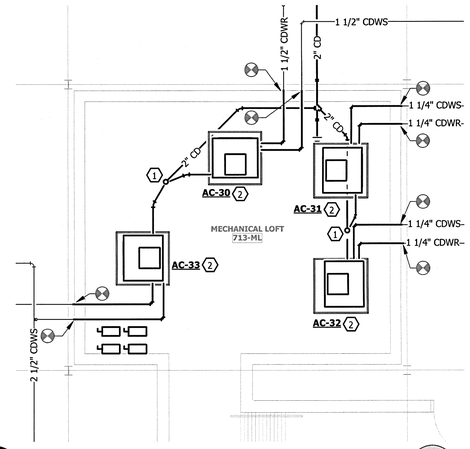
1 H114 **7TH GRADE WING - PIPING**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NEW CONSTRUCTION NOTES

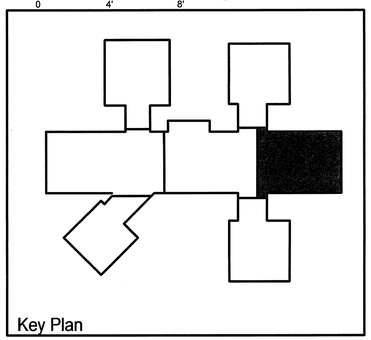
1. FOR NEW HORIZONTAL WSHPs ABOVE CEILING, MOUNT UNIT HIGH ENOUGH TO TIE IN TO CONDENSATE DRAIN.

KEY NOTES TO H114

#	
1	DISCHARGE CONDENSATE FROM WSHPs IN LOFT TO NEW HUB DRAIN, SEE DETAIL 3/H302. SEE DETAIL 1/H300 FOR CONDENSATE DRAIN SIZE.
2	CONNECT TO EXISTING CONDENSER WATER PIPING. PROVIDE NEW HOSE CONNECTION KITS.
3	PROVIDE NEW CONDENSER WATER PIPING TO DEDICATED VENTILATION AIR UNIT. OUTSIDE PIPING SHALL HAVE HEAT TRACE.
4	ROUTE NEW CONDENSATE PIPING FROM HUB DRAIN TO EXTERIOR DOWNSPOUT, SEE DETAIL 4/H302.
1 5	PROVIDE NEW ISOLATION VALVES IN ACCESSIBLE LOCATION. PROVIDE LABEL ON CEILING GRID.



2 H114 **7TH GRADE WING MECHANICAL LOFT - PIPING**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



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7TH GRADE WING PLAN - PIPING

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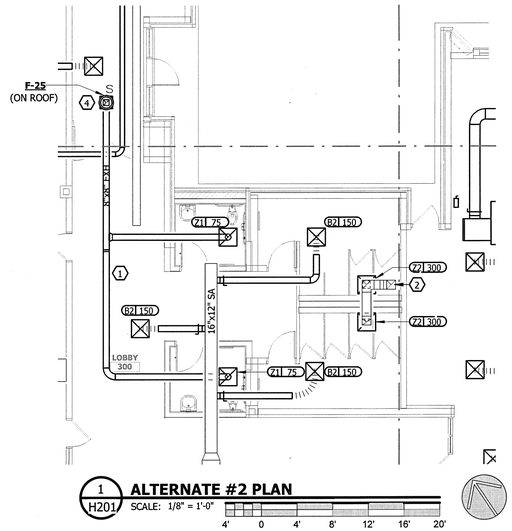
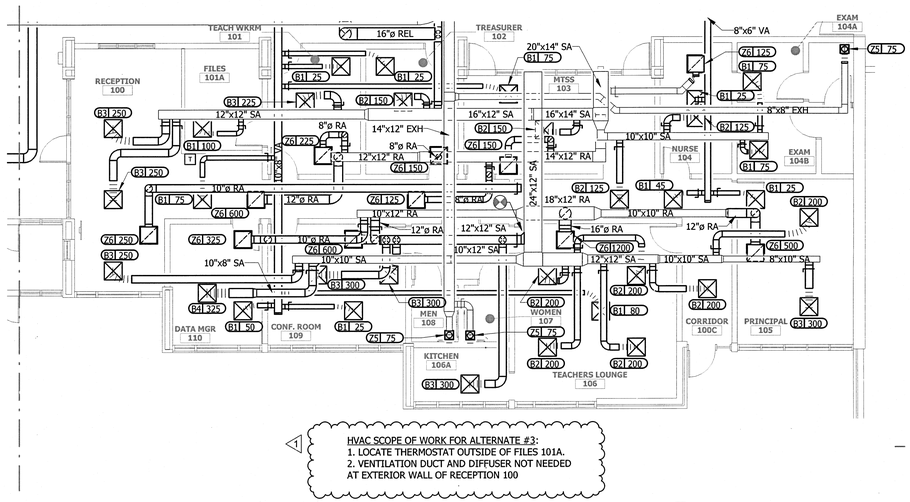


1 H201 **ALTERNATE #2 PLAN**

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

4' 0 4' 8' 12' 16' 20'

#	KEY NOTES TO H201
1	ALTERNATE #2: PROVIDE EXHAUST FAN, DUCTWORK AND GRILLES FOR NEW SINGLE TOILET ROOMS.
2	EXISTING 12"X12" UP TO EXISTING EXHAUST FAN F-11.
3	EXISTING 14"X14" UP TO EXISTING EXHAUST FAN F-12.
4	8"X8" EXH UP TO F-25 ON ROOF.



HVAC SCOPE OF WORK FOR ALTERNATE #3:
1. LOCATE THERMOSTAT OUTSIDE OF FILES 101A.
2. VENTILATION DUCT AND DIFFUSER NOT NEEDED AT EXTERIOR WALL OF RECEPTION 100

2 H201 **ALTERNATE #3 - ADMIN & MEDIA CENTER**

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

4' 0 4' 8' 12' 16' 20'

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ALTERNATES

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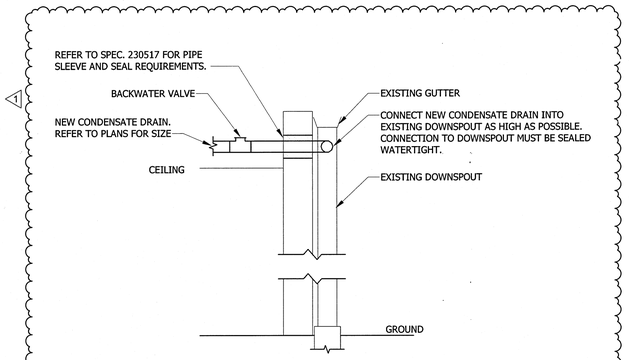
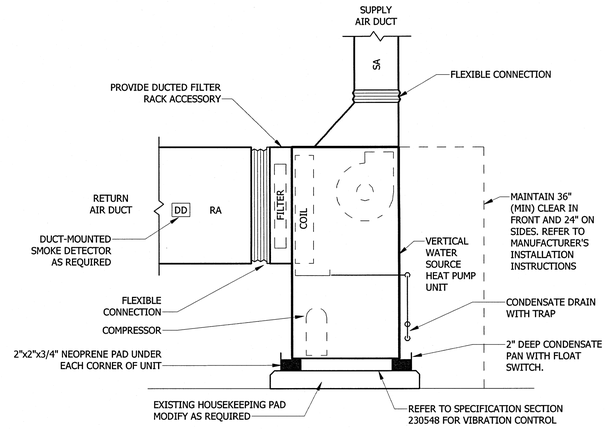
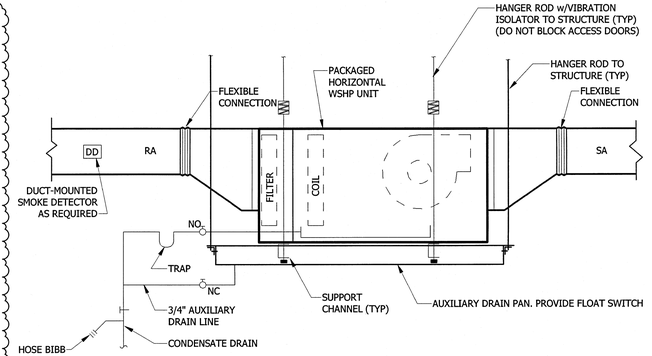


4 H302 **STORM LEADER CONDENSATE DRAIN DETAIL**
SCALE: NTS

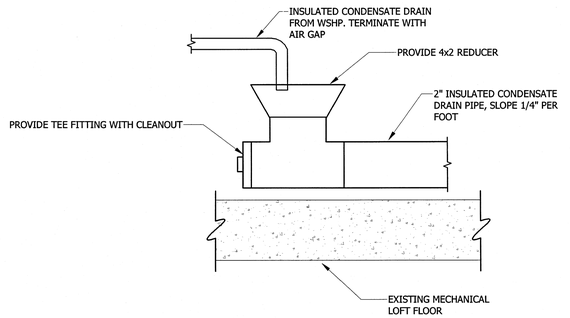
DETAIL DELETED



1 H302 **VERTICAL PACKAGED WSHP DETAIL**
SCALE: NTS



2 H302 **HORIZONTAL PACKAGED WSHP DETAIL**
SCALE: NTS



3 H302 **MECHANICAL PIPING THRU FLOOR**
SCALE: NTS

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NORTH CAROLINA PROFESSIONAL SEAL 027462 ENGINEER THOMAS B. NORRIS
2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

DETAILS

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER H302

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SW Project No: 0594-13-00-17

HOOD INFORMATION –

HOOD SYSTEM NO.	TAG	MODEL	LENGTH	MAX. HANGING WEIGHT	EXHAUST PLENUM TOTAL EXH. CFM	WIDTH	LENG.	HEIGHT	DIA.	CFM	VEL.	S.P.	TOTAL EXHAUST CFM	HOOD CONSTRUCTION	HOOD COVERS END TO END	ROW
1		5424 NO.2-PSP-F	12' 0"	450 Deg.	2566	10"	24"	4"		2566	1546	-0.371"	2064	430 SS Where Exposed	ALONE	FRONT
2		5424 NO.2-PSP-F	12' 0"	450 Deg.	2566	10"	24"	4"		2566	1546	-0.371"	2064	430 SS Where Exposed	ALONE	BACK

PATENT NUMBERS
AC-PSP (United States) - US Patent 7963630 B2
AC-PSP Wall (Canada) - CA Patent 2630599
AC-PSP Island (Canada) - CA Patent 2529330

HOOD INFORMATION –

HOOD SYSTEM NO.	TAG	TYPE	QTY	HEIGHT	LENGTH	FILTERS EFFICIENCY @ 7 MICRONS	QTY	LIGHTS TYPE	WIRE GUARD	LOCATION	SIZE	UTILITY CABINETS FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WGHT
1		SS Baffle with Handles	9	20"	10"	30%	3	12" x 12" LED	NO	Left	12"x5'4"x24"					YES	250 LBS
2		SS Baffle with Handles	9	20"	10"	30%	3	12" x 12" LED	NO	Right	12"x5'4"x24"	Ansul R102	3-0	DCV-1111	1 Light 1 Fan	YES	150 LBS

HOOD EXPLOSION VIEW

HOOD SYSTEM NO.	OPTION
1	FIELD WRAPPER 17.00" High Fixed, Left, Right
	BACK STANDOFF (LAV) 6" White 150" Long
2	FIELD WRAPPER 17.00" High Fixed, Left, Right

PERFORATED SUPPLY

HOOD SYSTEM NO.	TAG	POS.	LENGTH	WIDTH	HEIGHT	TYPE	PLENUM WIDTH	PLENUM LENG.	PLENUM DIA.	CFM	S.P.
1		Front	156"	14"	9"	MUA	12"	28"		588	0.170"
						MUA	12"	28"		589	0.170"
						MUA	12"	28"		588	0.170"
						MUA	12"	28"		589	0.170"
2		Front	156"	14"	9"	MUA	12"	28"		588	0.170"
						MUA	12"	28"		589	0.170"

NOTE: Additional hanging angles provided for hoods 12' and longer

PLAN VIEW – Hood
12' 0" LONG
5424NO-2-PSP-F

PLAN VIEW – Hood
12' 0" LONG
NOTE: Additional hanging angles provided for hoods 12' and longer

HOOD CORNER HANGING ANGLE (HARDWARE BY INSTALLER)

ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 STH GRADE 5 (MINIMUM) STEEL HEX NUTS ON HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 STH GRADE 5 (MINIMUM) HEX NUTS AS SHOWN IN DETAIL ABOVE. TORQUE ALL HEX NUTS TO 50 FT-LBS. HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. 1"MINIMUM 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

CAPTIVEAIRE Engineered Systems Carolina
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3/4" = 1'-0"
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EXHAUST FAN INFORMATION –

FAN SYSTEM UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	V	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS.)	SONES
1	KEF-1	DUI240XFA	5160	1.000	839	5.000	1.9258	3	460	7.2	1173 FPM	301	15.9

CONDENSER FANS –

FAN SYSTEM UNIT NO.	TAG	FAN UNIT MODEL #	CONDENSER NO.	TONNAGE	VOLTAGE	PHASE	FREQUENCY	MCA	RLA	MAX. FUSE SIZE	MIN. WIRE SIZE	SEER
2	KMUA-1	A3-D.500-G18-MPU	1	5	460	3 PHASE	60 Hz	10.0 Amps	8.5 Amps	15 Amps	14 AWG	14
			2	5	460	3 PHASE	60 Hz	10.0 Amps	8.5 Amps	15 Amps	14 AWG	14
			3	5	460	3 PHASE	60 Hz	10.0 Amps	8.5 Amps	15 Amps	14 AWG	14

MUA FAN INFORMATION –

FAN SYSTEM UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP.	RPM	H.P.	B.H.P.	V	VOLT	FLA	COOLING COIL ENTERING DB TEMP.	COOLING COIL ENTERING WB TEMP.	COOLING COIL LEAVING DB TEMP.	COOLING COIL LEAVING WB TEMP.	COOLING COIL TOTAL CAPACITY	COOLING COIL SENSIBLE CAPACITY	COOLING COIL LATENT CAPACITY	WEIGHT (LBS.)	SONES	BURNER EFFICIENCY(%)
2	KMUA-1	A3-D.500-G18-MPU	G18-PB	A3-D.500	3000	4128	0.500	897	5.000	2.8160	3	460	8.8	91.0°F	78.0°F	74.4°F	67.1°F	180.0 MBH	73.8 MBH	106.2 MBH	2473	16.8	82

GAS FIRED MAKE-UP AIR

FAN SYSTEM UNIT NO.	TAG	INPUT BTUh	OUTPUT BTUh	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE
2	KMUA-1	227750	209537	47 deg F	7 in. w.c. - 14 in. w.c.	Natural

FAN CONTROLS –

FAN SYSTEM UNIT NO.	TAG	OPTION (Qty. - Descr.)
1	KEF-1	1 - Grease Box
2	KMUA-1	1 - Motorized Backdraft Damper for A3-D Housing
		1 - Low Fire Start
		1 - Inlet Pressure Gauge, 0-30"
		1 - Manifold Pressure Gauge, -5 to 15" wc
		1 - Cooling Thermostat and Fridley (Not req. for evap)
		1 - Separate 120V Wiring Package (Required and used only for DCV or Prewire with VFD) - Flame Prove Only
		1 - Condenser Support for Size 3, 15 Ton Mod Package Unit
		1** 15 Ton 3 Circuit (DCV) Modular Package DX Cooling Option for Size 3 MUA (2250 to 4500 cfm), 460V, 3 Phase, Field Mounted Sensor or Programmable Stat (Supplied by Prism Controls)
		1 - Downturn Plenum For Size 3 DX Coil Module

FAN ACCESSORIES –

FAN SYSTEM UNIT NO.	TAG	EXHAUST GREASE CUP	EXHAUST GRAVITY DAMPER	EXHAUST WALL MOUNT	SUPPLY SIDE DISCHARGE	SUPPLY GRAVITY DAMPER	SUPPLY MOTORIZED DAMPER	SUPPLY WALL MOUNT
1	KEF-1	YES						
2	KMUA-1						YES	

CURB FACILITIES –

CURB NO.	FOR FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF-1	48 LBS	Curb	31.500"W x 31.500"L x 22.000"H Vented Hinged
2	# 2	KMUA-1	821 LBS	Curb	30.000"W x 84.000"L x 15.000"H Insulated
	# 2			Rail	6.000"W x 30.000"L x 15.000"H
	# 2			Rail	6.000"W x 30.000"L x 15.000"H
	# 2			Rail	6.000"W x 30.000"L x 15.000"H

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INLET DIAMETER A. EXHAUST FAN SIZE D

FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- 115 VOLT/1 PH/60 HZ
- UL705 LISTED & NSF
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION (400°F (149°C)
- GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE RISE
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE COOKING AREA AT 300°F (149°C)
UNTIL ALL FAN PARTS HAVE REACHED
STEADY STATE CONDITIONS, AND WITHOUT ANY
TEMPERATURE RISE ABOVE 300°F (149°C) AS MEASURED
WHERE GREASE LADEN VAPORS EXHAUST.

ABNORMAL FLARE UP RISE
EXHAUST FAN MUST OPERATE CONTINUOUSLY
WHILE COOKING AREA AT 700°F (371°C) FOR 15 MINUTES
AT PART (OFF) DUTY A PERIOD OF
15 MINUTES WITHOUT THE FAN BECOMING
ENGAGED TO ANY EXTENT THAT CAUSES GREASE
AN UNSAFE CONDITION.

OPTIONS
- GREASE BOX

PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH
EXAMPLE: 7/12 PITCH = 30° SLOPE

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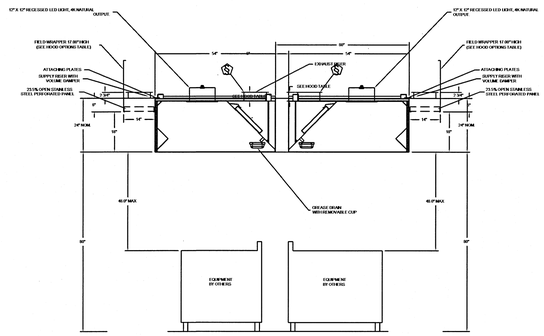


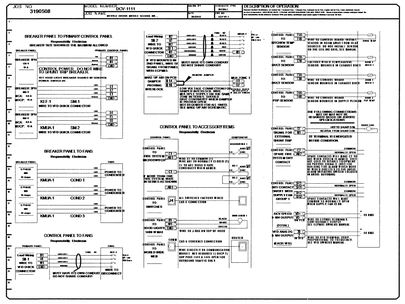
SECTION VIEW – MODEL 5424ND-2-PSP-HOOD – #1

SECTION VIEW – MODEL 5424ND-2-PSP-HOOD – #2

ELECTRICAL PACKAGES – 3PH/575VOLTS

No.	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		TAG NO.	TYPE	#	HP	FLA
1		DCV 1111	Utility Cabinet Right	"In" Unit Control Cabinet	1 Light	Smart Controls DCV	KEX-1	Exhaust	3	3.000	4.60
				Hood #2	1 Fan		KMUA-1	Supply	3	3.000	4.60





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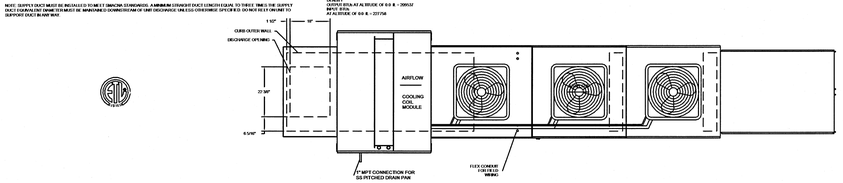
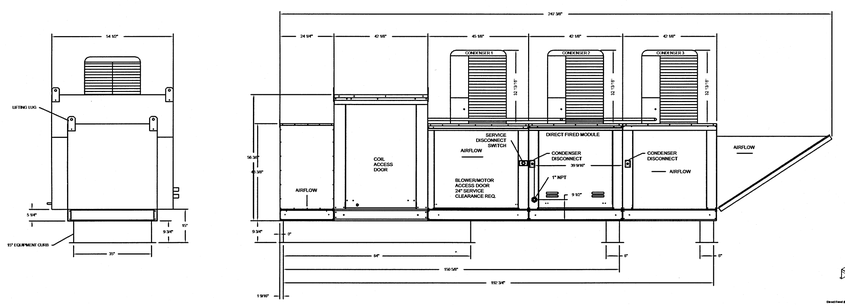


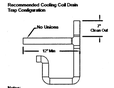




Typical Drain Trap Install



Recommended Cooling Coil Drain Trap Configuration



Notes:
1) 1" diameter PVC Pipe only
2) Use only low profile couplings
3) Add clean out as shown

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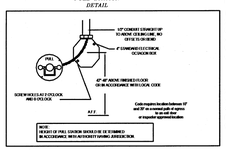
UL 300 HOOD FIRE SUPPRESSION SYSTEM

PULL STATION DETAIL



FIRE SYSTEM OPERATION

1. Kitchen hood shall be constructed and installed per NFPA 96.
2. Hood Electrical Control Panel and Fire Control System shall shut down kitchen hood make up fan upon activation of fire extinguishing system. Kitchen hood exhaust fan shall continue to operate on upon activation. The hood electrical panel and fire system will provide interlock for automatic operation of fire suppression system
with: a. Mechanical gas valve (installed by mechanical/plumbing contractor, if gas used)
b. Hood supply and exhaust fan (wiring by elec)
c. Remote manual pull station (by hood fire system distr)
d. Fire alarm system notification (if Bldg Fire Alarm present, by Fire alarm Contractor)
2. See Hood details for drawings
3. All exposed piping with fire suppression system shall be covered with a a chrome sleeve.
4. Mechanical contractor shall install conduit in wall for manual pull station. Pull Station shall located at or near a means of egress from the cooking
5. Fire suppression system shall be in accordance with UL 300.

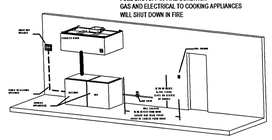
All Fire System Piping will be 3/8" schedule 40 black iron.

NC FIRE CODE 904.11.2

System Interconnection:
The Actuation of the fire extinguishing system shall automatically shut down the fuel or electrical power supply to the cooking equipment. The Fuel and electrical supply reset shall be manual.

MOV1-1/2

FUEL SHUTOFF IN FIRE CONDITION
GAS AND ELECTRICAL TO COOKING APPLIANCES WILL SHUT DOWN IN FIRE.



CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH

NFPA #96
NSF
UL 710 & ULC710 STANDARDS
E.T.L. LISTED 3054804-001

FOR QUESTIONS
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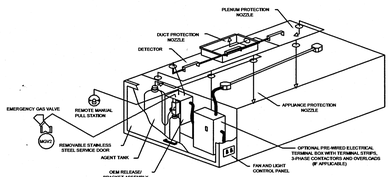
LEGEND – FIRE CABINET ANSUL SYSTEM

1A	1.5 GALLON TANK
1B	3 GALLON TANK
2	OEM AUTOMAN RELEASE
3	OEM REGULATED RELEASE
4	OEM REGULATED ACTUATOR
5	ANSULEX LIQUID AGENT (3 GAL.)
6	ANSULEX LIQUID AGENT (1.5 GAL.)
7	CARTRIDGE (101-20)
8	CARTRIDGE (101-10)
9	CARTRIDGE (101-30)
9A	CARTRIDGE (LT-A-101-30)
9B	DOUBLE TANK CARTRIDGE
10	TEST LINK
11	DOUBLE MICROSWITCH
12	HOSE ASSEMBLY
1100	DUCT NOZZLE (430913)
2W	DUCT NOZZLE (419337)
1W	NOZZLE ASSEMBLY (419336)
1F	NOZZLE ASSEMBLY (419333)
1N	NOZZLE ASSEMBLY (419335)
1/2N	NOZZLE ASSEMBLY (419334)
3N	NOZZLE ASSEMBLY (419338)
245	NOZZLE ASSEMBLY (419340)
230	NOZZLE ASSEMBLY (419339)
2120	NOZZLE ASSEMBLY (419343)
290	NOZZLE ASSEMBLY (419342)
260	NOZZLE ASSEMBLY (419341)
28	DETECTOR BRACKET
29	LOW TEMP FUSIBLE LINK
30	HIGH TEMP FUSIBLE LINK
MGV	MECHANICAL GAS VALVE
EGV	ELECTRICAL GAS VALVE
34	REMOTE MANUAL PULL STATION
S	SWIVEL ADAPTOR



TYPICAL ANSUL R–102 SYSTEM LAYOUT

SPECIFICATIONS

THE RESTAURANT FIRE SUPPRESSION SYSTEM SHALL BE THE PRE-ENGINEERED ANSULEX LIQUID AGENT SYSTEM AS MANUFACTURED BY ANSUL INCORPORATED, MARINETTE, WISCONSIN. IT SHALL BE LISTED WITH UNDERWRITERS LABORATORIES, INC. (UL).

THE SYSTEM SHALL BE CAPABLE OF AUTOMATIC DETECTION AND ACTUATION WITH LOCAL OR REMOTE MANUAL ACTUATION. ACCESSORIES SHALL BE AVAILABLE FOR MECHANICAL OR ELECTRICAL GAS LINE SHUT-OFF APPLICATIONS.

THE EXTINGUISHING AGENT SHALL BE A POTASSIUM CARBONATE BASED LIQUID AGENT WITH A 6% MAXIMUM CONCENTRATE. THE AMOUNT AND DISTRIBUTION OF GREASE RELATED PIPING SHALL BE AVAILABLE IN PLASTIC CONTAINERS WITH INSTRUCTIONS FOR LIQUID AGENT HANDLING AND USAGE.

THE REGULATED RELEASE MECHANISM SHALL BE COMPATIBLE WITH A FUSIBLE LINK DETECTION SYSTEM. THE FUSIBLE LINK SHALL BE SELECTED AND INSTALLED ACCORDING TO THE OPERATING TEMPERATURE IN THE VENTILATING SYSTEM. THE FUSIBLE LINK SHALL BE SUPPORTED BY A DETECTOR BRACKET/ LINKAGE ASSEMBLY.

Text

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STANDARD CONTROL SYMBOLS

CONTROLLERS / SENSORS

- T — SPACE THERMOSTAT OR TEMPERATURE SENSOR
- T — THERMOSTAT OR TEMPERATURE SENSOR WITH AIRFLOW AVERAGING ELEMENT
- T — THERMOSTAT OR TEMPERATURE SENSOR WITH SENSING BULB IN HYDRONIC PIPE WELL
- T — THERMOSTAT OR TEMPERATURE SENSOR WITH SENSING BULB AND PROTECTIVE SHIELD
- H — SPACE HUMIDISTAT OR HUMIDITY SENSOR
- H — DUCT-MOUNTED HUMIDISTAT OR HUMIDITY SENSOR
- P — PRESSURE SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- SP — AIR STATIC PRESSURE SENSOR
- VP — AIR VELOCITY PRESSURE SENSOR
- O — SPACE OCCUPANCY/VACANCY SENSOR
- CO_2 — CARBON DIOXIDE CONCENTRATION SENSOR
- CL — DRAIN PAN CONDENSATE LEVEL SENSOR
- DD — DUCT SMOKE DETECTOR
- R — REFRIGERANT CONCENTRATION SENSOR
- FM — FLOW METER

DDC I/O SYMBOLS

- DI — DIGITAL (BINARY) INPUT POINT
- AI — ANALOG INPUT POINT
- DO — DIGITAL (BINARY) OUTPUT POINT
- AO — ANALOG OUTPUT POINT

SWITCHES

- DS — DAMPER END SWITCH
- ES — EMERGENCY START OR STOP SWITCH
- M — MOTOR STARTER HOLDING COIL
- C — CONTACTOR HOLDING COIL
- R — CONTROL RELAY HOLDING COIL

FINAL CONTROL ELEMENTS

- V — TWO-WAY CONTROL VALVE, HYDRONIC OR STEAM
- V — THREE-WAY CONTROL VALVE, HYDRONIC
- M — ELECTRIC MOTOR
- M — FAN AND MOTOR
- M — PUMP AND MOTOR
- D — ELECTRIC / ELECTRONIC DAMPER ACTUATOR
- V — ELECTRIC / ELECTRONIC VALVE ACTUATOR
- VFD — VARIABLE FREQUENCY DRIVE
- AFMS — AIR FLOW MONITORING STATION

PNEUMATIC COMPONENTS

- AS_{20} — MAIN AIR SUPPLY, 20 PSIG
- AS_{80} — MAIN AIR SUPPLY, 80 PSIG
- P D — DAMPER VALVE ACTUATOR WITH PILOT POSITIONER
- P V — CONTROL VALVE OPERATOR WITH PILOT POSITIONER
- E/P — ELECTRONIC-TO-PNEUMATIC TRANSDUCER

STANDARD ELECTRICAL SWITCH SYMBOLS

PRESSURE AND VACUUM SWITCHES		LIQUID LEVEL SWITCH		TEMPERATURE ACTUATED SWITCH		FLOW SWITCH (AIR, WATER, ETC.)	
N.O.	N.C.	N.O.	N.C.	N.O.	N.C.	N.O.	N.C.

CONTACTS						OVERLOAD RELAY
INSTANT OPERATING		TIMED CONTACTS; CONTACT ACTION RETARDED AFTER COIL IS:				
N.O.	N.C.	ENERGIZED		DE-ENERGIZED		
		N.O.T.C.	N.C.T.O.	N.O.T.C.	N.C.T.O.	

SCHEDULES OF OPERATION

SYSTEM(S)	PERIOD	HOUR (1-24) EACH DAY OF THE WEEK							WEEKS TO APPLY (1-52)
		MON	TUE	WED	THU	FRI	SAT	SUN	
ALL SYSTEMS (SCHOOL YEAR)	ON TIME	700	700	700	700	700	.	.	1-23, 33-52
	OFF TIME	1700	1700	1700	1700	1700	.	.	1-23, 33-52
	OCCUPANCY START	800	800	800	800	800	.	.	1-23, 33-52
	OCCUPANCY END	1430	1430	1430	1430	1430	.	.	1-23, 33-52
ALL SYSTEMS (SUMMER)	ON TIME								24-32
	OFF TIME								24-32
	OCCUPANCY START								24-32
	OCCUPANCY END								24-32
.	ON TIME	.	.	.	.	.	.	.	.
	OFF TIME	.	.	.	.	.	.	.	.
	OCCUPANCY START	.	.	.	.	.	.	.	.
	OCCUPANCY END	.	.	.	.	.	.	.	.
.	ON TIME	.	.	.	.	.	.	.	.
	OFF TIME	.	.	.	.	.	.	.	.
	OCCUPANCY START	.	.	.	.	.	.	.	.
	OCCUPANCY END	.	.	.	.	.	.	.	.

UNOCCUPIED

ALTERNATE #8:

1. PREFERRED BRAND ALTERNATE:

   EXISTING CONTROLS IN BUILDING ARE JOHNSON CONTROLS.

GENERAL CONTROLS REQUIREMENT

1. EXISTING CONTROLS IN BUILDING ARE JCI. EXISTING WSHP CONTROLLERS ARE TO BE RECOMMISSIONED FOR NEW WSHPs INSTALLED IN SAME LOCATION. PROVIDE NEW WSHP CONTROLLERS FOR ALL ADDITIONAL NEW WSHPs.
2. ALL CONTROL SEQUENCES ARE BASED ON ONE OR MORE SENSED VARIABLES WITH AN ASSOCIATED CONTROLLED VARIABLE CHANGING IN ONE DIRECTION. EACH SEQUENCE SHALL OPERATE IN REVERSE WHEN THE SENSED VARIABLE(S) CHANGES IN THE OPPOSITE DIRECTION.
3. HVAC CONTROL SETPOINTS ARE DEFINED WITHIN CONTROL SEQUENCES AND/OR ELSEWHERE ON THE DRAWINGS. WHERE A SETPOINT IS NOT EXPLICITLY DEFINED, DETERMINE THE APPROPRIATE SETPOINT BASE ON SCHEDULED PERFORMANCE DATA FOR HVAC EQUIPMENT. ***DEFINED OR IMPLIED SETPOINTS AND SETPOINT RESET REQUIREMENTS SHALL, AS NECESSARY, BE ADJUSTED BASED ON TEST DATA PROVIDED BY THE TAB SUBCONTRACTOR AND CONTROL SYSTEM VERIFICATION TESTING TO PROVIDE STABLE, SATISFACTORY HVAC SYSTEMS OPERATION.*** ALL AO OR DO SETPOINTS SHALL BE USER-ADJUSTABLE.
4. WHERE START/STOP OR OTHER TWO-POSITION CONTROL SEQUENCE IS BASED ON AN INPUT STATUS CONDITION (DI) OR INPUT SENSED VARIABLE(S) VALUE (AI), FIELD ADJUST DIFFERENTIAL SETPOINTS TO PREVENT ANY EQUIPMENT ITEM OR FINAL CONTROL ELEMENT FROM "SHORT-CYCLING" IN RESPONSE TO SMALL CHANGES OF THE SENSED VARIABLE(S).
5. FIELD ADJUST EACH OUTPUT POINT'S USER-ADJUSTABLE TIME DELAY TO PREVENT NUISANCE "TRIPPING" UNDER NORMAL OPERATION AND DURING EQUIPMENT START-UP AND SHUT-DOWN.
6. ***ENSURE THAT STATUS ALARM CONDITIONS ARE IMPLEMENTED FOR EACH DI POINT AND HIGH AND/OR LOW ALARM SETPOINTS ARE DEFINED FOR ALL AI POINTS.*** SEE SECTION 230923 FOR DEFAULT VALUES IF NOT INDICATED ON THE DRAWINGS.
7. THE MINIMUM SPEED SETTING FOR EACH FAN UNDER VFD CONTROL SHALL BE OPTIMIZED DURING SYSTEM TAB TO BE AS LOW AS POSSIBLE WHILE AVOIDING INERTIAL STALLING OF FAN, TYPICALLY ABOUT 5% ABOVE THE MEASURED STALL SPEED OF THE FAN.
8. AS APPLICABLE, FIELD ADJUST EACH VFD MINIMUM SPEED AND RAMP-UP AND -DOWN TIMES ***BASED ON TEST DATA PROVIDED BY THE TAB SUBCONTRACTOR.*** DEFAULT TIMES FOR ACCELERATION/DECELERATION SHALL BE 30 SECONDS FOR MOTORS LESS THAN 40 HP AND 60 SECONDS FOR MOTORS 40 HP AND LARGER.
9. PROVIDE DEADBANDS FOR ALL AO CONTROL LOOPS TO PREVENT "HUNTING". DEADBANDS SHALL BE SET TO PROVIDE ADEQUATE CONTROL AROUND SETPOINTS AND SHALL BE DETERMINED ON AN INDIVIDUAL AO POINT BASIS ***BASED ON TEST DATA PROVIDED BY THE TAB SUBCONTRACTOR.*** DEFAULT DEADBANDS SHALL BE AS FOLLOWS:

SENSED VARIABLE	DEFAULT DEADBAND
TEMPERATURE	+/- 0.5° F
HUMIDITY	+/- 1.0 RH
AIRFLOW	+/- 2% OF SPAN
STATIC PRESSURE	+/- 0.01 IN. W.G.

10. CONTROL SEQUENCES ARE BASED ON THE FOLLOWING DEFINITIONS FOR FINAL CONTROL ELEMENT OPERATION:

    NORMALLY OPEN/NORMALLY CLOSED: TWO-WAY FINAL CONTROL ELEMENT POSITION IN RESPONSE TO 0% CONTROL LOOP OUTPUT SIGNAL.

    DIRECT RESPONSE: 0% TO 100% CHANGE OF FINAL CONTROL ELEMENT STATE OR POSITION IN RESPONSE TO 0% TO 100% CONTROL LOOP OUTPUT SIGNAL.

    REVERSE RESPONSE: 100% TO 0% CHANGE OF FINAL CONTROL ELEMENT STATE OR POSITION IN RESPONSE TO 0% TO 100% CONTROL LOOP OUTPUT SIGNAL.

11. WHERE SEQUENCES CALL FOR "LEAD/LAG" OR "ROTATING START/STOP" FOR EQUIPMENT, PROVIDE CONTROL ALGORITHM SO THAT EACH EQUIPMENT MODULE IS COMMANDED "ON" IN SEQUENCE IN REVERSE RELATIONSHIP TO THE MODULES' RUNTIMES (I.E., THE MODULE WITH THE LEAST NUMBER OF RUN HOURS IS THE FIRST ONE STARTED, ETC.) EACH EQUIPMENT MODULE SHALL BE COMMANDED "OFF" OR "STOP" IN SEQUENCE IN DIRECT RELATIONSHIP TO THE MODULES' RUNTIMES (I.E., THE MODULE WITH THE GREATEST NUMBER OF RUN HOURS IS THE FIRST ONE STOPPED, ETC.)
12. TWO, INDEPENDENT SCHEDULES FOR HVAC SYSTEM OPERATION AND CONTROL ARE DEFINED AS FOLLOWS:

    "ON/OFF" SCHEDULES SHALL DETERMINE HVAC SYSTEMS AND/OR EQUIPMENT START/STOP TIMES, DEFINE APPLICABLE OPERATING

    SETPOINTS, AND DEFINE WHEN SPECIFIC SEQUENCES OF OPERATION ARE TO BE UTILIZED.

    "OCCUPIED/UNOCCUPIED" SCHEDULES SHALL DETERMINE VENTILATION MODES.

    SEE "SCHEDULES OF OPERATION" FOR DAILY "ON/OFF" HOURS AND "OCCUPIED" HOURS FOR EACH SYSTEM, ALONG WITH THE MONTHS OF THE YEAR FOR WHICH EACH SCHEDULE APPLIES.

13. CONTROL SEQUENCES SHALL INCORPORATE MOTOR EMERGENCY STOP ELEMENTS AS FOLLOWS, WHETHER SPECIFICALLY DEFINED IN INDIVIDUAL CONTROL SEQUENCES OR NOT, AND SHALL INITIATE AN ALARM UPON OCCURRENCE OF ANY EMERGENCY STOP:

1

REFER TO SPECIFICATIONS 230993 SECTION 1.10

DESCRIPTION

FAN, PUMP, OR OTHER DIVISION 23 SINGLE- OR VARIABLE-SPEED MOTOR REQUIRED TO BE STARTED/STOPPED BY DDC SYSTEM.

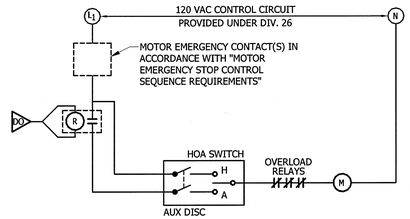
SEQUENCE OF OPERATION

MOTOR SHALL START/STOP BASED ON BINARY CONTROL OUTPUT SIGNAL.

EMERGENCY STOP:

EMERGENCY CONTACT(S) IN ACCORDANCE WITH "GENERAL CONTROL REQUIREMENTS" SHALL STOP THE MOTOR.

INITIATE ALARM.



5/H100 | START/STOP CONTROL, SINGLE SPEED OR VARIABLE SPEED MOTOR

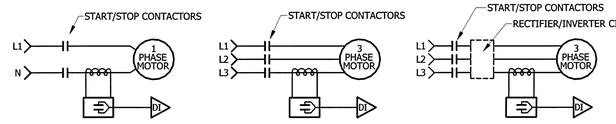
DESCRIPTION

OPERATING STATUS OF DIVISION 23 MOTOR REQUIRED TO BE STARTED/STOPPED BY DDC SYSTEM.

SEQUENCE OF OPERATION

MOTOR "ON" OR "OFF" STATUS SHALL BE DETERMINED ON THE BASIS OF BINARY CONTACT CLOSURE IF AMPERAGE DRAWN BY MOTOR IS EQUAL TO OR GREATER THAN SETPOINT VALUE.

MOTOR STATUS MAY BE UTILIZED AS AN INPUT POINT FOR OTHER CONTROL SEQUENCES DEFINED FOR THIS PROJECT.



1/H400 | MOTOR STATUS

DESCRIPTION

EXHAUST FAN, AS SCHEDULED OR OTHERWISE INDICATED ON THE DRAWINGS.

SEQUENCE OF OPERATION

EXHAUST FAN START/STOP CONTROL SHALL BE AS INDICATED ON THE DRAWINGS, IN ACCORDANCE WITH THE FOLLOWING:

WHERE EXHAUST FAN CONTROL IS INDICATED TO "LOCAL," PROVIDE MANUAL START/STOP CONTROL ONLY (WALL SWITCH, INTERLOCK WITH LIGHTING, ETC.) NO DDC CONNECTION REQUIRED.

WHERE EXHAUST FAN CONTROL IS INDICATED TO "DDC," START/STOP EXHAUST FAN(S) AS REQUIRED BY (1) ASSOCIATED FCU/BCU/AHU OR DVA OPERATION OR (2) OPERATOR COMMAND AND MONITOR FAN STATUS.

WHERE EXHAUST FAN CONTROL IS INDICATED TO "INDEPENDENT THERMOSTAT," START/STOP EXHAUST FAN BASED ON STAND-ALONE LINE-VOLTAGE THERMOSTAT. NO DDC CONNECTION REQUIRED.

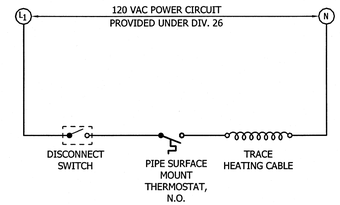
2/H400 | EXHAUST FANS START/STOP CONTROL

DESCRIPTION

ELECTRIC TRACE HEATING CABLE, AS SCHEDULED OR OTHERWISE INDICATED ON THE DRAWINGS.

SEQUENCE OF OPERATION

ON A FALL IN LIQUID TEMPERATURE TO SETPOINT, TRACE HEATING CABLE SHALL BE ENERGIZED BY PIPE SURFACE-MOUNT THERMOSTAT ("AQUASTAT") TO MAINTAIN LIQUID TEMPERATURE AT SETPOINT.



3/H400 | TRACE HEATING CABLE FOR PIPING

DESCRIPTION

ELECTRONICALLY OR PNEUMATICALLY OPERATED HYDRONIC CONTROL VALVE, TWO-WAY OR THREE-WAY CONFIGURATION (DEFAULT IS TWO-WAY CONFIGURATION).

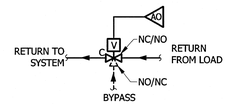
SEQUENCE OF OPERATION

TWO-WAY TWO-POSITION CONTROL VALVE SHALL OPEN OR CLOSE, AS INDICATED ON THE DRAWINGS, IN DIRECT RESPONSE TO BINARY CONTROL OUTPUT SIGNAL.

TWO-WAY MODULATING CONTROL VALVE SHALL MODULATE 0% TO 100% FROM ITS NORMALLY CLOSED OR NORMALLY OPEN POSITION, AS INDICATED ON THE DRAWINGS, IN DIRECT RESPONSE TO CONTROL LOOP OUTPUT SIGNAL.

THREE-WAY TWO-POSITION CONTROL VALVE SHALL SWITCH FROM ITS NORMAL STATE, AS INDICATED ON THE DRAWINGS, IN DIRECT RESPONSE TO BINARY CONTROL OUTPUT SIGNAL.

THREE-WAY MODULATING CONTROL VALVE SHALL MODULATE 0% TO 100% FROM ITS NORMAL STATE, AS INDICATED ON THE DRAWINGS, IN DIRECT RESPONSE TO CONTROL LOOP OUTPUT SIGNAL.



ELECTRONIC VALVE OPERATOR

4/H400 | HYDRONIC CONTROL VALVE

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NORTH CAROLINA PROFESSIONAL SEAL 037462 ENGINEER THOMAS B. NORWOOD 2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

CONTROLS

JOB NUMBER 0594-01-00-13
DRAWN BY SW
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DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER H400

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DESCRIPTION

SENSORS TO MONITOR AMBIENT OUTDOOR AIR CONDITIONS, LOCATED, IF POSSIBLE, ON THE NORTH SIDE OF THE BUILDING, SHELTERED FROM BOTH DIRECT SUNLIGHT AND PREVAILING WIND(S).

SEQUENCE OF OPERATION

MONITOR OUTDOOR AIR CONDITIONS AS AI POINTS, AS FOLLOWS:

DRY BULB TEMPERATURE [DB] (°F)
RELATIVE HUMIDITY [RH] (%)
CARBON DIOXIDE [CO2] (PPM)
ATMOSPHERIC PRESSURE (IN WG)

COMPUTE ENTHALPY [ENTH] (BTU/LBM) AS AN AV POINT UTILIZING THE FOLLOWING EQUATION:

ENTH = 8 + 0.27 * (DB - 35.0) + ((DB - 35.0) * (RH/100))

AI VALUES SHALL SERVE AS GLOBAL INPUTS TO ANY DIGITAL OR ANALOG CONTROL LOOP REQUIRING AN OUTDOOR AIR CONDITION VALUE AS A CONTROL OR COMPUTATIONAL VARIABLE.

TREND LOG AND ARCHIVE MONITORED DATA EVERY 15 MINUTES.

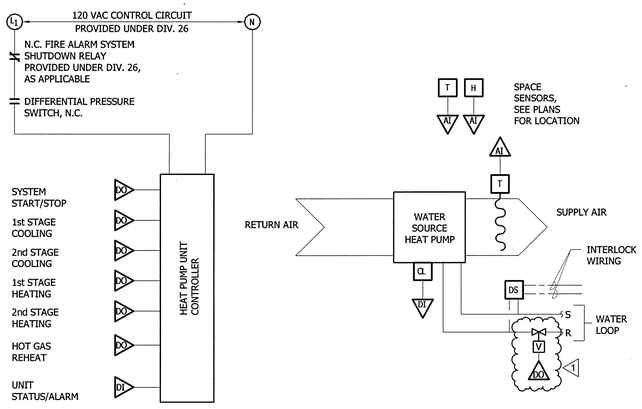
5/H401 | **OUTDOOR AIR CONDITIONS**

DESCRIPTION:

PACKAGED WATER-SOURCE HEAT PUMPS, CONSISTING OF CONSTANT AIR VOLUME FAN, TWO STAGES OF COOLING/HEATING CAPACITY, (TWO COMPRESSORS OR ONE TWO-SPEED COMPRESSOR), AND HOT GAS REHEAT, CONFIGURED TO UTILIZE CLOSED-LOOP WATER CIRCUIT AS A HEAT SOURCE/SINK. ***PRIMARY UNIT CONTROL SHALL BE PROVIDED BY FACTORY CONTROLLER INTERFACED WITH DDC SYSTEM.***

SEQUENCE OF OPERATION (OVERVIEW):

WHERE ONE UNIT SERVES TWO CLASSROOMS, EACH CLASSROOM SHALL HAVE A TEMPERATURE SENSOR AND UTILIZE THE MULTI-SENSOR SPACE TEMPERATURE CONTROL SEQUENCE (PERCENT DISSATISFACTION) AS DESCRIBED IN THE DESIGN GUIDELINES.



6/H401 | **WATER SOURCE HEAT PUMP UNIT WITH HOT GAS REHEAT**

DESCRIPTION

INTERFACE BETWEEN DDC SYSTEM AND MANUFACTURER-PROVIDED VARIABLE FREQUENCY CONTROLLER (VFD) FOR MOTOR SPEED CONTROL FOR HVAC FAN OR PUMP.

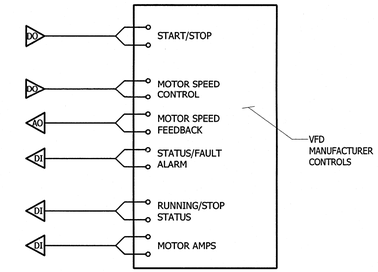
SEQUENCE OF OPERATION

MOTOR SHALL START/STOP BASED ON BINARY CONTROL OUTPUT SIGNAL.

MODULATE MOTOR SPEED FROM MINIMUM SPEED TO 100% SPEED IN DIRECT RESPONSE TO CONTROL LOOP OUTPUT SIGNAL. ***DURING TEST AND BALANCE OF FAN OR PUMP, ADJUST MINIMUM SPEED SETPOINT TO VALUE RECOMMENDED BY TAB SUBCONTRACTOR, AS APPROVED BY A/E.***

MONITOR MOTOR SPEED.

INITIATE ALARM IF CONTROLLER STATUS/FAULT CONTACT CLOSES.



1/H401 | **VARIABLE FREQUENCY CONTROLLER INTERFACE**

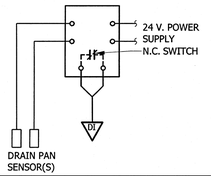
DESCRIPTION

CONDENSATE LEVEL DETECTION DEVICE, WITH REMOTE SENSOR(S).

SEQUENCE OF OPERATION

UPON DETECTION OF DRAIN PAIN MOISTURE AT SENSOR(S), AND AFTER PROGRAMMED TIME DELAY (DEFAULT = 3 MINUTES), DEVICE SHALL INITIATE AN ALARM TO THE DDC SYSTEM BY OPENING N.C. DRY CONTACT.

UPON ALARM, DDC SYSTEM SHALL STOP UNIT.



2/H401 | **DRAIN PAN CONDENSATE LEVEL**

DESCRIPTION

WHERE INDICATED ON THE DRAWINGS, LOCATE ROOM CONTROLLER (S) (THERMOSTATS, HUMIDISTATS, ETC.) OR ROOM SENSORS (TEMPERATURE, HUMIDITY, CARBON DIOXIDE, AND/OR OCCUPANCY) **ADJACENT TO AND AT SAME HEIGHT AS SPACE LIGHT SWITCH(ES)**. WHERE FEASIBLE, MULTIPLE CONTROLLERS/SENSORS SHALL BE INCORPORATED WITHIN A COMMON DEVICE OR ENCLOSURE.

SEQUENCE OF OPERATION

CONTROLLER(S) SHALL MONITOR SPACE CONDITION(S) AND MAINTAIN REQUIRED SPACE CONDITION(S) AT SETPOINT.

SENSORS SHALL MONITOR SPACE CONDITION(S) TO PROVIDE DI OR AO INPUT(S), AS REQUIRED BY APPLICABLE CONTROL OUTPUT LOOP, TO MAINTAIN SPACE CONDITION(S) AT SETPOINT.

3/H401 | **SPACE CONDITION CONTROLLER/SENSOR**

DESCRIPTION

MEDIUM OR HIGH EFFICIENCY AIR FILTER DIFFERENTIAL PRESSURE MAINTENANCE ALARM.

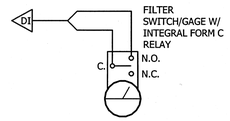
SEQUENCE OF OPERATION

FILTER DIFFERENTIAL PRESSURE GAGE/SWITCH IS REQUIRED FOR THE EACH OF THE FOLLOWING AIR-HANDLING SYSTEMS:

DVA-1 THRU DVA-5

UPON FILTER DIFFERENTIAL PRESSURE EXCEEDING MANUAL SETPOINT, FILTER DIFFERENTIAL PRESSURE GAGE/SWITCH SHALL INITIATE A MAINTENANCE ALARM TO THE DDC SYSTEM BY CLOSING N.O. DRY CONTACT.

UPON ALARM, DDC SYSTEM SHALL ISSUE OPERATOR MAINTENANCE MESSAGE FOR FILTER REPLACEMENT.



4/H401 | **FILTER DIFFERENTIAL PRESSURE ALARM**

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NORTH CAROLINA PROFESSIONAL SEAL 037462 ENGINEER THOMAS B. NORDAN
2/15/19

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

CONTROLS

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0594-01-00-13

DRAWN BY
SW

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DATE
01/24/18

REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER
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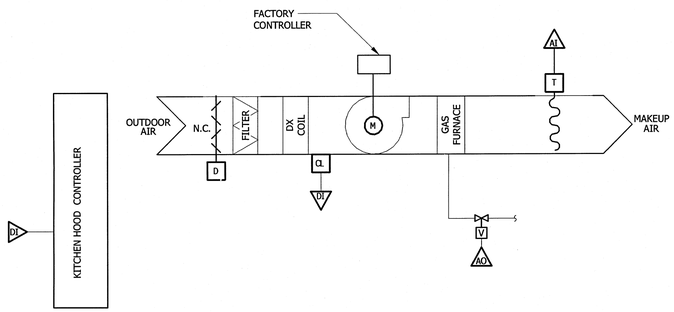
DESCRIPTION

PACKAGED MAKE UP AIR UNIT WITH DX COOLING AND DIRECT FIRED GAS FURNACE.

SEQUENCE OF OPERATIONS (OVERVIEW):

INTERLOCK WITH EXISTING KITCHEN HOOD CONTROL PANEL AND GREASE EXHAUST FAN. INTERLOCK WITH CAFETERIA WSHP, AC-24. WHEN KITCHEN HOOD IS TURNED ON, EXISTING GREASE EXHAUST FAN SHALL ENERGIZE AND KMUA-1 SHALL ENERGIZE AND FACTORY CONTROLLER SHALL PROVIDE TEMPERED MAKEUP AIR TO KITCHEN HOOD. DISCHARGE AIR TEMPERATURE SHALL BE NEUTRAL 70°F (ADJ.)



2/H402 | PACKAGED KITCHEN HOOD MAKE UP AIR UNI (KMUA-1)

DESCRIPTION

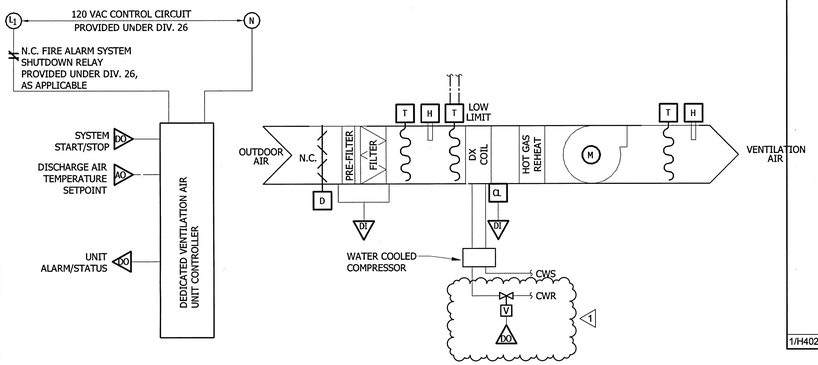
PACKAGED WATER COOLED DX 100% OUTSIDE AIR VENTILATION HEAT PUMP UNIT WITH MODULATING HOT GAS REHEAT. FACTORY CONTROLLER SHALL CONTROL INTERNAL OPERATION OF UNIT. BAS SHALL BE CAPABLE OF START/STOP, DISCHARGE AIR TEMPERATURE SETPOINT AND UNIT ALARMS/STATUS.

SEQUENCE OF OPERATIONS (OVERVIEW):

COOLING MODE: UNIT SHALL COOL AND DEHUMIDIFY AIR DOWN TO 55°F. HOT GAS REHEAT SHALL MODULATE TO MAINTAIN NEUTRAL AIR TEMPERATURE OF 72 °F (ADJ.)

HEATING MODE: UNIT SHALL HEAT AIR TO MAINTAIN A NEUTRAL AIR TEMPERATURE OF 70°F (ADJ.)

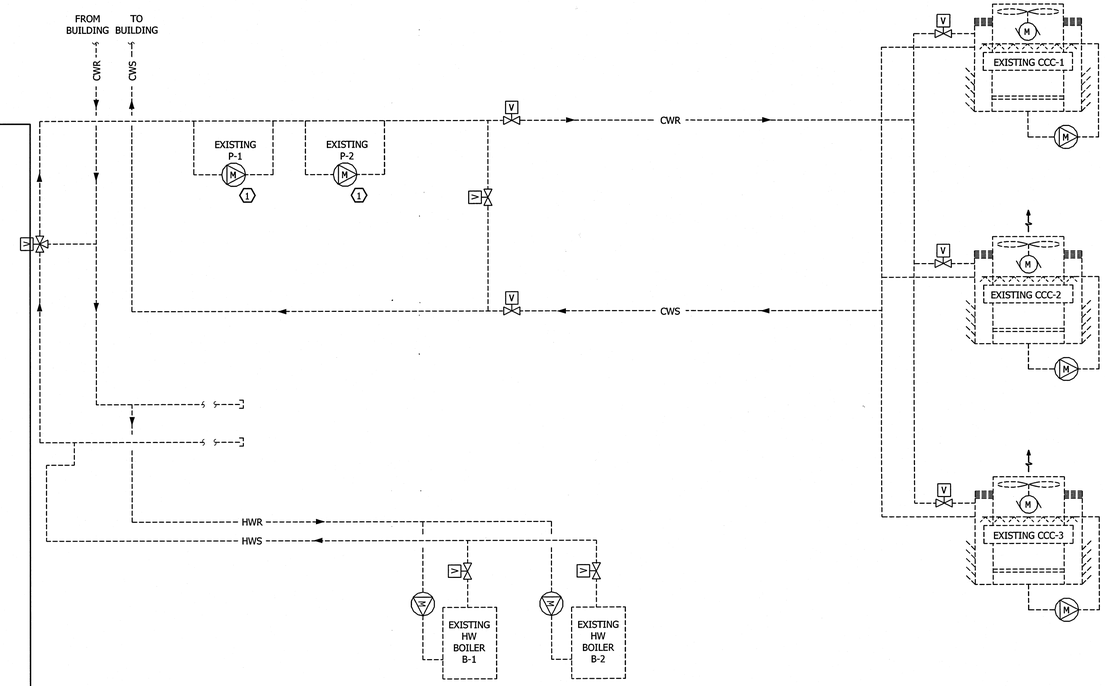
EXHAUST FAN INTERLOCK: ALL EXHAUST FANS ON BAS SHALL STAGE ON WHEN DVA UNITS STAGE ON AT BEGINNING OF DAY. ALL EXHAUST FANS ON BAS SHALL STAGE OFF WHEN DVA UNITS STAGE OFF AT END CF DAY.



3/H402 | DEDICATED VENTILATION AIR (DVA) UNIT WITHOUT EXHAUST AIR HEAT RECOVERY (DVA-1 THRU DVA-5)

DESCRIPTION

CONSTANT FLOW CLOSED LOOP WATER SYSTEM THAT SERVES AS HEAT SOURCE/SINK FOR WATER SOURCE HEAT PUMPS. LOOP ELEMENTS CONSIST OF CIRCULATING PUMPS, BOILER (SUPPLEMENT HEAT SOURCE), AND EVAPORATIVE COOLER (HEAT SINK). BOILER AND EVAPORATIVE COOLER ARE PIPED WITH INDIVIDUAL PRIMARY/SECONDARY LOOP CONFIGURATIONS, EACH WITH ITS OWN PRIMARY PUMP. COOLER FAN IS TWO-SPEED. ***PRIMARY BOILER CONTROL IS PROVIDED BY FACTORY CONTROLLER INTERFACED WITH DDC SYSTEM.***



1/H402 | WATER SOURCE HEAT PUMP SYSTEM, WATER LOOP

KEY NOTES TO H402

1 EXISTING SECONDARY PUMPS ARE EQUIPPED WITH VFDs, BUT RUN AT CONSTANT SPEED. NEW CONTROL SEQUENCE SHALL INCORPORATE VARIABLE SPEED CONTROL, REFER TO SPECIFICATIONS 230993.

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NORTH CAROLINA PROFESSIONAL SEAL 037462 ENGINEER THOMAS B. NORDSTROM 2/15/19

Renovations and Additions to:
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901 Piner Road, Wilmington, North Carolina 28409

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DATE 01/24/18
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1	REVISION # 1	2/15/18

SHEET NUMBER
H402

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UNIT HEATER SCHEDULE

DESIGNATION	SERVICE	TYPE	ELEC COIL CAPACITY (kW)	ELEC COIL VOLTAGE/PHASE
H-1	RISER ROOM	SURFACE MOUNT	2	208/3

NOTES:

1. PROVIDE INTEGRAL DISCONNECT. BASIS OF DESIGN: MARKEL 3422
2. PROVIDE UNIT-MOUNTED THERMOSTAT.

DEDICATED VENTILATION UNIT SCHEDULE

DESIGNATION	SERVICE	TYPE	SUPPLY FAN: TOTAL SA AIRFLOW (CFM)	SUPPLY FAN: OA AIRFLOW (CFM)	SUPPLY FAN: ESP (IN)	SUPPLY FAN: MOTOR SIZE (HP)	COOLING: TOTAL CAPACITY (MBH)	COOLING: SENSIBLE CAPACITY (MBH)	COOLING: EAT (FDB/FWB)	COOLING: LAT (FDB/FWB)	COOLING: EFFICIENCY (EER/SEER)	COOLING: AMBIENT TEMP (F)	COOLING: No. OF COMPRESSORS	COOLING: No. OF CIRCUITS	COOLING: REFRIGERANT	HEATING: EAT (F)	HEATING: LAT (F)	HEATING: HEAT PUMP CAPACITY (MBH)	HEATING: HEAT PUMP EFFICIENCY (COP)	HEATING: HEAT PUMP AMBIENT TEMP (F)	CDW FLOW (GPM)	CDW MAX WPD (F)	CDW BRANCH PIPING SIZE (IN)	CDW CONTROL VALVE TYPE	ELECTRIC: MCA	ELECTRIC: MOCP	ELECTRIC: VOLTAGE/ PHASE
DVA-1	ELECTIVE WING	100 % OA DX WATER COOLED	3100	3100	0.75	2	250	117	93/79	54/53	14 / -	95	2	2	R-410A	23	80	280	4.9	45	53	10	2 1/2"	2A	71	80	480/3
DVA-2	6TH GRADE WING	100 % OA DX WATER COOLED	2900	2900	0.75	2	244	113	93/79	54/53	14 / -	95	2	2	R-410A	23	80	280	4.9	45	53	10	2 1/2"	2A	71	80	480/3
DVA-3	7TH GRADE WING	100 % OA DX WATER COOLED	4500	4500	0.75	2	430	197	93/79	54/53	14 / -	95	4	2	R-410A	23	80	480	4.9	45	70	10	3"	2A	86	100	480/3
DVA-4	ADMIN/MEDIA WING	100 % OA DX WATER COOLED	2900	2900	0.75	2	244	113	93/79	54/53	14 / -	95	2	2	R-410A	23	80	280	4.9	45	53	10	2 1/2"	2A	71	80	480/3
DVA-5	8TH GRADE WING	100 % OA DX WATER COOLED	3100	3100	0.75	2	250	117	93/79	54/53	14 / -	95	2	2	R-410A	23	80	280	4.9	45	53	10	2 1/2"	2A	71	80	480/3

NOTES:

1. PROVIDE EXTERNAL DISCONNECT FOR SINGLE POINT ELECTRICAL CONNECTION.
2. PROVIDE MODULATING HOT GAS REHEAT ON ALL REFRIGERANT CIRCUITS.
3. PROVIDE VFD OR ECM MOTOR FOR SUPPLY FAN.
4. PROVIDE VARIABLE SPEED COMPRESSOR.
5. PROVIDE MERV 8 PRE FILTER AND MERV 13 MAIN FILTER.
6. PROVIDE EXTERNAL DISCONNECT SWITCH FOR PIPING HEAT TAPE. (120/1).

BASIS OF DESIGN: TRANE. ACCEPTABLE MANUFACTURERS: VALENT, AAON.

AIR SEPARATOR SCHEDULE DELETED

EXPANSION TANK SCHEDULE DELTED

WATER SOURCE HEAT PUMP SCHEDULE

DESIGNATION	TYPE	SERVICE	FAN: SA AIRFLOW (CFM)	FAN: OA AIRFLOW (CFM)	FAN: ESP (IN)	FAN: MOTOR SIZE (HP)	COOLING: EAT (FDB/FWB)	COOLING: LAT (FDB/FWB)	COOLING: TOTAL CAPACITY (MBH)	COOLING: SENSIBLE CAPACITY (MBH)	COOLING: EWT (F)	COOLING: LWT (F)	COOLING: MIN. EFFICIENCY (EER)	HEATING: EAT (FDB)	HEATING: LAT (FDB)	HEATING: CAPACITY (MBH)	HEATING: EWT (F)	HEATING: LWT (F)	HEATING: MIN EFFICIENCY (COP)	CDW: FLOW (GPM)	CDW: MAX WPD (FT)	CDW: BRANCH PIPING SIZE (IN)	CDW: CONTROL VALVE TYPE	ELEC: MCA	ELEC: MOCP	ELEC: VOLTAGE /PHASE	FILTER: THICKNESS (IN) & TYPE	FILTER: EFFICIENCY (MERV)
AC-01	VERTICAL	ART CLASSROOM 408	1600	-	0.35	3/4	75/63	55/54	48	36	85	98	14	70	95	46	70	62	4.5	11.2	10	1 1/4"	2A	9.28	15	480/3	2" FLAT	MERV 8
AC-02	VERTICAL	BAND ROOM 409	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-03	VERTICAL	TECH LAB 410	1000	-	0.35	3/4	75/63	55/54	30	22.5	85	98	14	70	95	30	70	62	4.5	7	10	1 1/4"	2A	6.2	15	480/3	2" FLAT	MERV 8
AC-04	VERTICAL	FAM & CONSUMER SCIENCE 411	1200	-	0.35	3/4	75/63	55/54	36	27	85	98	14	70	95	36	70	62	4.5	8.4	10	1 1/4"	2A	8.95	15	480/3	2" FLAT	MERV 8
AC-05	VERTICAL	CLASSROOM 412, 413	2400	-	0.35	1	75/63	55/54	72	54	85	98	14	70	95	72	70	62	4.5	18	10	1 1/2"	2A	17.5	25	480/3	2" FLAT	MERV 8
AC-06	VERTICAL	SPECIAL ED 401, ORCHESTRA 402	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-07	VERTICAL	DRAMA CLASSROOM 403	1000	-	0.35	3/4	75/63	55/54	30	22.5	85	98	14	70	95	30	70	62	4.5	7	10	1 1/4"	2A	6.2	15	480/3	2" FLAT	MERV 8
AC-08	VERTICAL	CLASSROOM 603, 604	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-09	VERTICAL	CLASSROOM 605, 609	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-10	VERTICAL	CLASSROOM 611, 612	2400	-	0.35	1	75/63	55/54	72	54	85	98	14	70	95	72	70	62	4.5	18	10	1 1/2"	2A	17.5	25	480/3	2" FLAT	MERV 8
AC-11	VERTICAL	CLASSROOM 614, 615	2400	-	0.35	1	75/63	55/54	72	54	85	98	14	70	95	72	70	62	4.5	18	10	1 1/2"	2A	17.5	25	480/3	2" FLAT	MERV 8
AC-12	VERTICAL	SPECIAL ED 601, 602	1600	-	0.35	3/4	75/63	55/54	48	36	85	98	14	70	95	48	70	62	4.5	11.2	10	1 1/4"	2A	9.28	15	480/3	2" FLAT	MERV 8
AC-15	VERTICAL	LOBBY 315	3000	-	0.35	1.5	75/63	55/54	90	67.5	85	98	14	70	95	90	70	62	4.5	22.5	10	2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-16A	VERTICAL	MEDIA CENTER 401	1400	-	0.35	3/4	75/63	55/54	42	31.5	85	98	14	70	95	42	70	62	4.5	14	10	1 1/4"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-16B	VERTICAL	MEDIA CENTER 401	1400	-	0.35	3/4	75/63	55/54	42	31.5	85	98	14	70	95	42	70	62	4.5	14	10	1 1/4"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-17	VERTICAL	WORKROOM 503	400	-	0.35	1/3	75/63	55/54	12	9	85	98	14	70	95	12	70	62	4.5	2.8	10	3/4"	2A	8.5	15	208/1	2" FLAT	MERV 8
AC-18	VERTICAL	ADMIN INTERIOR	1600	-	0.35	3/4	75/63	55/54	48	36	85	98	14	70	95	48	70	62	4.5	11.2	10	1 1/4"	2A	9.28	15	480/3	2" FLAT	MERV 8
AC-19	VERTICAL	ADMIN EXTERIOR	2800	-	0.35	1	75/63	55/54	72	45	85	98	14	70	95	72	70	62	4.5	18	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-20	VERTICAL	CLASSROOM 508, 509	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-21	VERTICAL	CLASSROOM 702, 703	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-22	VERTICAL	CLASSROOM 717, 718	2400	-	0.35	1	75/63	55/54	72	54	85	98	14	70	95	72	70	62	4.5	18	10	1 1/2"	2A	17.5	25	480/3	2" FLAT	MERV 8
AC-23	VERTICAL	CLASSROOM 514, 515	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-24	VERTICAL	CAFETERIA	8000	2750	0.9	10	83.6/71.9	55/54	365	195	85	98	14	44	95	365	70	62	4.5	60	10	2 1/2"	2A	58.4	70	480/3	2" FLAT	MERV 8
AC-25	VERTICAL	CLASSROOM 803, 804	2400	-	0.35	1	75/63	55/54	72	54	85	98	14	70	95	72	70	62	4.5	18	10	1 1/2"	2A	17.5	25	480/3	2" FLAT	MERV 8
AC-26	VERTICAL	SPECIAL ED 801, 802	1600	-	0.35	3/4	75/63	55/54	48	36	85	98	14	70	95	48	70	62	4.5	11.2	10	1 1/4"	2A	9.28	15	480/3	2" FLAT	MERV 8
AC-27	VERTICAL	CLASSROOM 814, 815	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-28	VERTICAL	CLASSROOM 805, 809	2400	-	0.35	1	75/63	55/54	72	54	85	98	14	70	95	72	70	62	4.5	18	10	1 1/2"	2A	17.5	25	480/3	2" FLAT	MERV 8
AC-29	VERTICAL	CLASSROOM 811, 812	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-30	VERTICAL	CLASSROOM 706, 707	2000	-	0.35	1	75/63	55/54	60	45	85	98	14	70	95	60	70	62	4.5	14	10	1 1/2"	2A	12.45	20	480/3	2" FLAT	MERV 8
AC-31	VERTICAL	CLASSROOM 708	1400	-	0.35	3/4	75/63	55/54	42	31.5	85	98	14	70	95	42	70	62	4.5	9.8	10	1 1/4"	2A	9.2	15	480/3	2" FLAT	MERV 8
AC-32	VERTICAL	CLASSROOM 711	1400	-	0.35	3/4	75/63	55/54	42	31.5	85	98	14	70	95	42	70	62	4.5	9.8	10	1 1/4"	2A	9.2	15	480/3	2" FLAT	MERV 8
AC-33	VERTICAL	CLASSROOM 712, 714	2400	-	0.35	1	75/63	55/54	72	54	85	98	14	70	95	72	70	62	4.5	18	10	1 1/2"	2A	17.5	25	480/3	2" FLAT	MERV 8
AC-34	HORIZONTAL	WORKROOM 502	600	-	0.35	1/3	75/63	55/54	18	13.5	85	98	14	70	95	18	70	62	4.5	4.2	10	1"	2A	4.53	15	208/1	2" FLAT	MERV 8
AC-35	HORIZONTAL	MEDIA CENTER EXTERIOR	1400	-	0.35	1/2	75/63	55/54	42	31.5	85	98	14	70	95	42	70	65	4.5	9.8	10	1 1/4"	2A	20.48	30	480/3	2" FLAT	MERV 8
AC-36	HORIZONTAL	AP 610	300	-	0.35	1/3	75/63	55/54	9	6.75	85	98	14	70	95	9	70	62	4.5	2.1	10	3/4"	2A	5.23	15	208/1	2" FLAT	MERV 8
AC-37	HORIZONTAL	GUIDANCE COUNSELOR 613	300	-	0.35	1/3	75/63	55/54	9	6.75	85	98	14	70	95	5	70	62	4.5	2.1	10	3/4"	2A	5.23	15	208/1	2" FLAT	MERV 8
AC-38	HORIZONTAL	WORKROOM 704	200	-	0.35	1/3	75/63	55/54	6	4.5	85	98	14	70	95	6	70	62	4.5	1.8	10	3/4"	2A	4.53	15	208/1	2" FLAT	MERV 8
AC-40	HORIZONTAL	SOCIAL WORKER 709	300	-	0.35	1/3	75/63	55/54	9	6.75	85	98	14	70	95	9	70	62	4.5	2.1	10	3/4"	2A	5.23	15	208/1	2" FLAT	MERV 8
AC-41	HORIZONTAL	AP 710	300	-	0.35	1/3	75/63	55/54	9	6.75	85	98	14	70	95	9	70	62	4.5	2.1	10	3/4"	2A	5.23	15	208/1	2" FLAT	MERV 8
AC-42	HORIZONTAL	PSYCH 813	300	-	0.35	1/3	75/63	55/54	9	6.75	85	98	14	70	95	9	70	62	4.5	2.1	10	3/4"	2A	5.23	15	208/1	2" FLAT	MERV 8
AC-43	HORIZONTAL	GUIDANCE COUNSELOR 810	300	-	0.35	1/3	75/63	55/54	9	6.75	85	98	14	70	95	9	70	62	4.5	2.1	10	3/4"	2A	5.23	15	208/1	2" FLAT	MERV 8
AC-44	HORIZONTAL	OFFICE 408A	200	-	0.35	1/3	75/63	55/54	6	4.5	85	98	14	70	95	6	70	62	4.5	1.8	10	3/4"	2A	4.53	15	208/1	2" FLAT	MERV 8
AC-45	HORIZONTAL	OFFICE 411A	300	-	0.35	1/3	75/63	55/54	9	6.75	85	98	14	70	95	9	70	62	4.5	2.1	10	3/4"	2A	5.23	15	208/1	2" FLAT	MERV 8
AC-46	HORIZONTAL	OFFICE 409A	400	-	0.35	1/3	75/63	55/54	12	9	85	98	14	70	95	12	70	62	4.5	2.8	10	3/4"	2A	4.53	15	208/1	2" FLAT	MERV 8
AC-47	HORIZONTAL	TESTING 406	200	-	0.335	1/3	75/63	55/54	6	4.5	85	98	14	70	95	6	70	62	4.5	1.8	10	3/4"	2A	4.53	15	208/1	2" FLAT	MERV 8
AC-48	HORIZONTAL	OFFICE 504	300	-	0.35	1/3	75/63	55/54	9	4.5	85	98	14	70	95	9	70	62	4.5	2.1	10	3/4"	2A	4.53	15	208/1	2" FLAT	MERV 8
AC-49	VERTICAL	KITCHEN	4000	-	0.35	1.5	75/63	55/54	120	90	85	98	14	70	95	120	70	62	4.5	37.5	10	2"	2A	24.15	30	480/3	2" FLAT	MERV 8

NOTES:

1. PROVIDE DISCONNECT FOR SINGLE POINT ELECTRICAL CONNECTION.
2. PROVIDE ECM SUPPLY FAN MOTOR.
3. PROVIDE HOT GAS REHEAT.
4. REFER TO DETAIL 7/H301 FOR CONTROL VALVE AND PIPING SCHEMATIC.

BASIS OF DESIGN: TRANE ACCEPTABLE MANUFACTURERS: WATER FURNACE, CLIMATEMASTER.

FAN SCHEDULE

DESIGNATION	SERVICE	TYPE	AIRFLOW (CFM)	FAN ESP (IN)	DRIVE TYPE	FAN SPEED (RPM)	BRAKE MOTOR SIZE (BHP)	MOTOR SIZE (HP)	VOLTAGE/PHASE	EXT START/DISCONNECT MEANS	MAX SOUND LEVEL (SONES)	DAMPER TYPE
(ALTERNATE #2) F-25	RESTROOM ADDITION	CENTRIFUGAL ROOF DOWNBLAST	150	0.5	DIRECT	1,300	0.01	1/60	120/1	MRT	-	GRAVITY BACKDRAFT
(ALTERNATE #6) GHE-1	GREASE EXHAUST	CENTRIFUGAL ROOF UPBLAST	5160	1	DIRECT	839	1.925	5	480/3	INTEGRAL DISCONNECT	-	-

NOTES:

1. F-25: PROVIDE WITH ECM MOTOR. START/STOP VIA BAS SYSTEM.
2. GHE-1: PROVIDE UL762 RATING. PROVIDE INTERNAL WIRING, WEATHERPOOF DISCONNECT, HIGH HEAT OPERATION 300°F. PROVIDE GREASE BOX.

DUCTLESS SPLIT SYSTEM
SCHEDULE DELETED.

KITCHEN HOOD SCHEDULE

DESIGNATION	SERVICE	TYPE	LENGTH	WIDTH	HEIGHT	CONTROL PANEL DIMENSIONS	PERFORATED SUPPLY PLENUM DIMENSIONS	TOTAL EXHAUST CFM	TOTAL SUPPLY CFM	FIRE SYSTEM: SIZE	FIRE SYSTEM: TYPE
HOOD-1	KITCHEN COOKING EQUIP.	TYPE 1 ISLAND	12'-0"	4'-6"	2'-0"	12" x 4'-6"	13'-0" x 1'-2"	2580	2064	-	-
HOOD-2	KITCHEN COOKING EQUIP.	TYPE 1 ISLAND	12'-0"	4'-6"	2'-0"	12" x 4'-6"	13'-0" x 1'-2"	2580	2064	3.0	ANSUL R102

NOTES:

1. PROVIDE FRONT, LEFT, RIGHT FIELD WRAPPER PANEL 17" HIGH.
2. PROVIDE BACK STANDOFF (FLAT) 6" WIDE 156" LONG.

BASIS OF DESIGN: CAPTIVE AIRE.

KITCHEN MAKEUP AIR UNIT SCHEDULE

DESIGNATION	SERVICE	TYPE	SUPPLY FAN: TOTAL AIRFLOW (CFM)	SUPPLY FAN: ESP (IN)	SUPPLY FAN: MOTOR SIZE (HP)	DX COOLING: # OF CONDENSERS	DX COOLING: TOTAL CAPACITY (TONS)	DX COOLING: MCA	DX COOLING: MOCP	DX COOLING: VOLTAGE/ PHASE	GAS HEAT: GAS INPUT (MBH)	GAS HEAT: GAS OUTPUT (MBH)	GAS HEAT: TEMP RISE (F)	GAS HEAT: FUEL TYPE	ELECTRICAL: MCA	ELECTRICAL: MOCP	ELECTRICAL: VOLTAGE/ PHASE
KMUA-1	KITCHEN HOOD MAKE UP AIR	MODULAR PACKAGED UNIT	5760	0.5	5	3	15	10.5	15	480/3	320	290	47	NATURAL GAS	6.8	15	480/3

NOTES:

1. PROVIDE 4 SEPARATE POWER CONNECTIONS. (1 FOR EACH CONDENSER, AND 1 FOR THE FAN MOTOR).
2. PROVIDE MODULATING GAS CONTROL WITH SUPPLY AIR TEMPERATURE CONTROLLER.
3. PROVIDE COOLING THERMOSTAT AND RELAY.
4. PROVIDE HORIZONTAL DISCHARGE.
5. PROVIDE LOW FIRE START.
6. PROVIDE INLET PRESSURE GAUGE, (0-35")
7. PROVIDE MANIFOLD PRESSURE GAUGE, (-5 TO 15" WC).
8. PROVIDE MOTORIZED BACKDRAFT DAMPER.
9. PROVIDE INTAKE BIRDSCREEN.
10. BASIS OF DESIGN IS CAPTIVEAIRE.

AIR DISTRIBUTION SCHEDULE

TYPE	B1	B2	B3	B4	B5	F1	V1	Z1	Z2	Z3	Z4	Z5	Z6
SERVICE	SUPPLY	SUPPLY	SUPPLY	SUPPLY	SUPPLY	SUPPLY	RETURN/EXHAUST	RETURN/EXHAUST	RETURN/EXHAUST	RETURN/EXHAUST	RETURN/EXHAUST	RETURN/EXHAUST	RETURN/EXHAUST
TYPE	LOUVERED	LOUVERED	LOUVERED	LOUVERED	LOUVERED	STD BLADE SIDEWALL	STD BLADE SIDEWALL	PERFORATED	PERFORATED	PERFORATED	PERFORATED	PERFORATED	PERFORATED
MAX. AIRFLOW (CFM)	125	200	300	450	600	400	2800	200	325	450	600	800	1300
FACE SIZE (INxIN, ø IN)	24x24	24x24	24x24	24x24	24x24	14x12	32x32	12x12	24x24	24x24	24x24	24x12	24x24
NECK SIZE (INxIN, ø IN)	6	8	10	12	14	12x10	30x30	10x10	10	12	14	22x10	22x22
APD (IN)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MAX. NC	20	20	20	20	20	20	20	20	20	20	20	20	20
VOL. CONTROL DAMPER (Y/N)	N	N	N	N	N	N	N	N	N	N	N	N	N

NOTES:

1. VERIFY MOUNTING FRAME STYLE WITH ARCHITECTURAL REFLECTED CEILING PLAN & FINISH SCHEDULE.
2. PROVIDE CEILING DIFFUSERS WITH UL RADIATION DAMPER ASSEMBLIES IN ALL RATED CEILINGS. DIFFUSER NECK, RADIATION DAMPER AND ELBOW SHALL BE 2" GREATER THAN SIZE INDICATED.

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NORTH CAROLINA PROFESSIONAL SEAL 037462 ENGINEER THOMAS B. NORRIS 2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

SCHEDULES

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS
1 REVISION # 1 2/15/18

SHEET NUMBER H500

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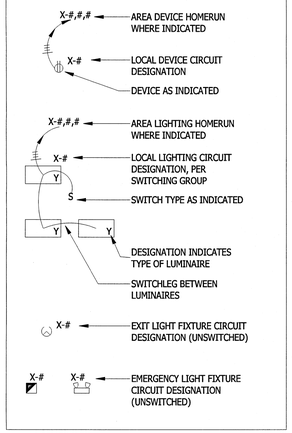
ELECTRICAL ABBREVIATIONS

Ø	ROUND; DIAMETER; PHASE	LS	LIFE SAFETY
A	AMPERES OR AMP METER	LTG	LIGHTING
AC	ALTERNATING CURRENT	M	MOTOR; METERING
AF	AMP FRAME	MC	METAL CLAD
AFC	ABOVE FINISHED CEILING	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISHED FLOOR	MCC	MOTOR CONTROL CENTER
AFG	ABOVE FINISHED GRADE	MCP	MOTOR CONTROL PROTECTOR
AIC	AMPERE INTERRUPTING CAPACITY	MCS	MOLDED CASE SWITCH
ALT	ALTERNATE	MH	MANHOLE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MIN	MINIMUM
ARCH	ARCHITECTURAL	MLO	MAIN LUG ONLY
AT	AMP TRIP	N, NEU	NEUTRAL
ATS	AUTOMATIC TRANSFER SWITCH	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAGE	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
BFC	BELOW FINISHED CEILING		
BFG	BELOW FINISHED GRADE	NF	NON-FUSED
C	CELSIUS; COIL	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CB	CIRCUIT BREAKER	NIC	NOT IN CONTRACT
CCTV	CLOSED CIRCUIT TELEVISION SYSTEM	NL	NIGHT LIGHT
CD/Cd	CANDELA	NO	NORMALLY OPEN; NUMBER
CLG	CEILING	NOM	NOMINAL
COAX	COAXIAL CABLE	NTS	NOT TO SCALE
CONTR	CONTRACTOR	OC	ON CENTER
CT	CURRENT TRANSFORMER	OL	OVERLOAD
CTV	CABLE TELEVISION	P	POLE
CU	COPPER	PB	PULL BOX
DWG	DRAWING	PC	PHOTOCELL
EC	ELECTRICAL CONTRACTOR	PF	POWER FACTOR
ECB	ENCLOSED CIRCUIT BREAKER	PH	PHASE
EF	EXHAUST FAN	PNL	PANEL
EGC	EQUIPMENT GRAOUNDING CONDUCTOR	PT	POINT; POTENTIAL TRANSFORMER
ELEC	ELECTRICAL	PUN	PER UNIT NAMEPLATE
EM	EMERGENCY	PVC	POLYVINYL CHLORIDE (CONDUIT)
EMT	ELECTRICAL METALLIC TUBING	RD	ROUND
EPO	EMERGENCY POWER OFF	REV	REVISION
ETR	EXISTING TO REMAIN	RLA	RATED LOAD AMPS
EWC	ELECTRIC WATER COOLER	RMC	RIDGID METAL CONDUIT
FACP	FIRE ALARM CONTROL PANEL	SN	SOLID NEUTRAL
FATC	FIRE ALARM TERMINATION CABINET	SNAC	SIGNAL NOTIFICATION APPLIANCE CIRCUIT
FFE	FINISHED FLOOR ELEVATION	SP	SURGE PROTECTED
FL	FLOOR	SPD	SURGE PROTECTED DEVICE
FLA	FULL LOAD AMPS	SPDT	SINGLE POLE DOUBLE THROW
FLC	FLEXIBLE LIQUIDTIGHT CONDUIT	SPST	SINGLE POLE SINGLE THROW
FLEX	FLEXIBLE	SPEC	SPECIFICATION
FMC	FLEXIBLE METAL CONDUIT	SQ	SQUARE
FT	FEET; FOOT	SWGR	SWITCHGEAR
FU	FUSE	SWBD	SWITCHBOARD
GA	GAUGE; GAGE	TBB	TELEPHONE BACK BOARD
GB	GROUND BUS	TELECOM	TELECOMMUNICATIONS
GC	GENERAL CONTRACTOR	TEMP	TEMPERATURE
GEC	GROUNDING ELECTRODE CONDUCTOR	THD	TOTAL HARMONIC DISTORTION
GFI, GFCI	GROUND FAULT (CIRCUIT) INTERRUPTER	TYP	TYPICAL
GND	GROUND	TV	TELEVISION
HD	HEAVY DUTY	UL	UNDERWRITERS LABORATORIES INC.
HOA	HANDS-OFF-AUTOMATIC	UNO	UNLESS NOTED OTHERWISE
HP	HORSEPOWER	V	VOLTAGE; VOLT
HVAC	HEATING, VENTILATING & AIR CONDITIONING	VAC	VOLTS ALTERNATING CURRENT
HZ	HERTZ	VDC	VOLTS DIRECT CURRENT
IG	ISOLATED GROUND	VFD	VARIABLE FREQUENCY DRIVE
IMC	INTERMEDIATE METAL CONDUIT	VOL	VOLUME
JB	JUNCTION BOX	W/	WITH
KV	KILOVOLT	W	WIRE
KVA	KILOVOLT AMPERE	WP	WEATHERPROOF
KW	KILOWATT	WG	WIREGUARD
KWH	KILOWATT HOUR	XFMR	TRANSFORMER
LED	LIGHT EMMITING DIODE	XP	EXPLOSION PROOF
LRA	LOCKED ROTOR AMPS	Z	IMPEDANCE

ELECTRICAL CIRCUITING KEY



ELECTRICAL SYMBOLS

	WALL MTD LIGHTING FIXTURE AND OUTLET
	PENDENT LIGHTING FIXTURE AND OUTLET
	DOWNLIGHT LIGHTING FIXTURE AND OUTLET
	WALL MTD LIGHTING FIXTURE AND OUTLET
	CEILING MTD LIGHTING FIXTURE AND OUTLET
	WALL MTD EXIT SIGN AND OUTLET, SINGLE FACE. ARROW INDICATES DIRECTION.
	CEILING MTD EXIT SIGN AND OUTLET, DUAL FACE. ARROWS INDICATE DIRECTION.
	EMERGENCY LIGHT BATTERY PACK - TWO HEAD UNIT.
	CEILING MOUNTED EMERGENCY BATTERY LIGHT
	EMERGENCY LIGHT REMOTE HEAD
	GROUND MOUNTED FLOODLIGHT AND OUTLET
	AREA LUMINAIR AND STANDARD
S	FLUSH MTD TOGGLE SWITCH, SPST, 20A, 120/277V
S_2	FLUSH MTD TOGGLE SWITCH, DPST, 20A, 120/277V
S_3	FLUSH MTD 3-WAY TOGGLE SWITCH, 20A, 120/277V
S_4	FLUSH MTD 4-WAY TOGGLE SWITCH, 20A, 120/277V
S_D	FLUSH MTD DIMMER SWITCH, 20A, 120/277V
S_K	FLUSH MTD KEY SWITCH, 20A, 120/277V
S_{OS}	FLUSH MOUNTED OCCUPANCY SENSOR SWITCH, 20A, 120/277V
S_I	FLUSH MTD LIGHTED HANDLE TOGGLE SWITCH, SPST, 20A, 120V. LIGHT ON WITH OPEN SWITCH
S_P	FLUSH MTD TOGGLE SWITCH WITH PILOT LIGHT. LIGHT ON WITH CLOSED SWITCH.
S_T	TIMED SWITCH
OS IR	CEILING MTD INFRA-RED OCCUPANCY SENSOR SWITCH, 20A, 120/277V
OS U	CEILING MTD ULTRASONIC OCCUPANCY SENSOR SWITCH, 20A, 120/277V
OS DT	CEILING MTD DUAL TECHNOLOGY (IR, U) OCCUPANCY SENSOR SWITCH, 20A, 120/277V
PC	PHOTOCELL, 120/277V, 2000W, 1800VA, 600VA LED, UNO
	FLUSH MTD DUPLEX RECEPTACLE AND OUTLET, 20A, 125V, 3W
	FLUSH MTD SINGLE RECEPTACLE AND OUTLET, 20A, 125V, 3W
	FLUSH MTD QUADRUPLEX RECEPTACLE AND OUTLET, 20A, 125V, 3W
	FLUSH MTD DUPLEX RECEPTACLE AND OUTLET, 20A, 125V, 3W, SPLIT WIRED WITH TOP OUTLET SWITCHED.
	FLUSH MTD DUPLEX RECEPTACLE AND OUTLET, 20A, 125V, 3W, INSTALLED VERTICALLY 4" ABOVE BACKSPASH OR COUNTERTOP IF NO BACKSPASH EXISTS.
	FLUSH MTD QUADRUPLEX RECEPTACLE AND OUTLET, 20A, 125V, 3W, INSTALLED VERTICALLY 4" ABOVE BACKSPASH OR COUNTERTOP IF NO BACKSPASH EXISTS.
	FLOOR MTD OUTLET WITH DUPLEX RECEPTACLE AND FITTING, 20A, 125V, 3W
X	WALL MOUNTED POWER DEVICE, REFER TO SCHEDULES FOR MARK
FB X	FLOOR BOX WITH DEVICE(S). REFER TO SCHEDULES FOR MARK
	WALL MTD TELECOM OUTLET, REFER TO SCHEDULES FOR MARK
	FLOOR MTD TELECOM OUTLET, REFER TO SCHEDULES FOR MARK
	CEILING MTD DUPLEX RECEPTACLE AND OUTLET, 20A, 125V, 3W
	CEILING MTD TELECOM OUTLET, REFER TO SCHEDULES FOR MARK
	CEILING MTD DUPLEX RECEPTACLE & TELECOM OUTLET, REFER TO SCHEDULES FOR MARK
S	CEILING MTD PUBLIC ADDRESS SPEAKER
V	FLUSH MTD VOLUME CONTROL FOR SPEAKER
TV	WALL MTD TELEVISION ANTENNA/ELECTRICAL OUTLET
TV	CEILING MTD TELEVISION ANTENNA/ELECTRICAL OUTLET
	WALL MTD CLOCK AND OUTLET
2	CEILING MTD DOUBLE FACE CLOCK AND OUTLET
	WALL MTD ELAPSED TIME CLOCK AND OUTLETWITH SEPARATE START/STOP RESET CONTROL MOUNTED BELOW
	PANELBOARD, 250V LEVEL
	PANELBOARD, 600V LEVEL
X-#,#,#	HOMERUN; ARROW HEADS INDICATE NUMBER OF CIRCUITS, LETTERS AND NUMBERS DESIGNATE PANEL AND CIRCUITS. SHORT TICK MARKS INDICATE NUMBER OF CURRENT CARRYING PHASE CONDUCTORS. LONG TICK MARK(S) INDICATE NEUTRAL(S). GROUNDING CONDUCTORS REQUIRED BY SPECIFICATIONS ARE NOT SHOWN. CONDUCTOR SIZES SPECIFIED ON THE PANEL SCHEDULES ARE MANDATORY FOR THE ENTIRE CIRCUIT EXCEPT WHERE SPECIFICATIONS REQUIRE A SIZE INCREASE FOR VOLTAGE DROP.
X	SURFACE METAL RACEWAY WITH DEVICES, LETTER DESIGNATES TYPE
	PENDENT MTD, PLUG-IN BUS DUCT WITH PLUG-IN CIRCUIT BREAKER OR FUSIBLE SWITCH AND TAP BOX. DUCT AND SWITCH RATING AS NOTED.
#A #A	TOP # - DEVICE MAXIMUM RATING OR FRAME SIZE BOTTOM # - FUSE SIZE OR DEVICE SETTING
	DISCONNECT SWITCH. TOP NUMBER IS DISCONNECT RATING; LOWER NUMBER IS FUSE SIZE. SINGLE NO REPRESENTS UNFUSED DISCONNECT.
	COMBINATION DISCONNECT SWITCH AND MAGNETIC MOTOR STARTER. SEE SCHEDULE OR NOTE.
S^M	FLUSH MTD MANUAL MOTOR STARTER SWITCH WITHOUT OVERLOAD HEATERS
	MAGNETIC MOTOR STARTER
##	3 POLE CIRCUIT BREAKER IN ENCLOSURE. NO INDICATES CB RATING.
VFD #	VARIABLE FREQUENCY DRIVE CONTROLLER, 40" AFF, PROVIDED BY HVAC OR PLUMBING CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR
C	MAGNETIC CONTACTOR, SIZE PER SCHEDULE
J	JUNCTION, PULL, TAP OR OUTLET BOX (CODE SIZE)
TS	TIME SWITCH
R	MAGNETIC RE.AY, SIZE PER SCHEDULE
	FLUSH MOUNTED MUSHROOM HEAD PUSH BUTTON
	FLUSH MOUNTED PUSH BUTTON
	SUPPLEMENTAL GROUND BAR
	GROUND PER NEC
	GROUND TO STRUCTURAL STEEL
M	ELECTRICAL DEMAND METER
SP	SURGE PROTECTOR
F	WALL MTD FIRE ALARM PULL STATION
SD	SMOKE DETECTOR, CEILING MTD
SD SB	SMOKE DETECTOR WITH SOUNDER BASE, CEILING MTD
SD MS	SMOKE DETECTOR, CEILING MTD, MULTI SENSOR
L	CEILING MTD REMOTE ALARM INDICATOR LAMP
DD	SMOKE DETECTOR, DUCT MTD (WITH RAIL)
HD	HEAT DETECTOR, CEILING MTD
SD	SMOKE DETECTOR, WALL MTD
SB SD	SMOKE DETECTOR WITH SOUNDER BASE, WALL MTD
HD	WALL MTD HEAT DETECTOR
L	WALL MTD REMOTE ALARM INDICATOR LAMP (RAIL)
H #	WALL MTD HORN TYPE AUDIO/VISUAL APPLIANCE
S #	WALL MTD SPEAKER TYPE AUDIO/VISUAL APPLIANCE
C #	WALL MTD CHIME TYPE AUDIO/VISUAL APPLIANCE
#	WALL MTD VISUAL ALARM APPLIANCE
H #	CEILING MTD HORN TYPE AUDIO/VISUAL ALARM APPLIANCE
S #	CEILING MTD SPEAKER TYPE AUDIO/VISUAL ALARM APPLIANCE
C #	CEILING MTD CHIME TYPE AUDIO/VISUAL ALARM APPLIANCE
#	CEILING MTD FIRE ALARM VISUAL DEVICE
DH	DOOR HOLDER
M	FIRE ALARM MONITOR MODULE
FS M	MONITOR MODULE FOR FLOW SWITCH, SWITCH PROVIDED BY OTHERS
TS M	MONITOR MODULE FOR TAMPER SWITCH, SWITCH PROVIDED BY OTHERS
PV M	MONITOR MODULE FOR POST INDICATOR VALVE, VALVE PROVIDED BY OTHERS
R	FIRE ALARM CONTROL MODULE OR RELAY
S	CEILING MTD FIRE ALARM SPEAKER
H	RECESSED CEILING MTD AUDIBLE ALARM APPLIANCE
H	WALL MTD FIRE ALARM AUDIBLE DEVICE
B	WALL MTD BUZZER
#	FIRE ALARM BELL; # INDICATED DIAMETER IN INCHES
BT	LINEAR BEAM TRANSMITTER
BR	LINEAR BEAM RECEIVER
S	FIRE ALARM WALL MTD SPEAKER
EL	WALL MTD "DO NOT USE ELEVATOR" LIGHT
H	WALL MTD AUDIBLE ALARM APPLIANCE
P	FIREMAN'S 2-WAY TELEPHONE
ISO	FIRE ALARM ISOLATION MODULE
DACT	DIGITAL ALARM COMMUNICATIONS TRANSMITTER
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FATC	FIRE ALARM TERMINAL CABINET
SNAC	SUPPLEMENTAL NOTIFICATION APPLIANCE CABINET
DC E KP	DOOR CONTROL ID TAG SECURITY SYSTEM KEYPAD, 60" AFF
CR	ACCESS CONTROL CARD READER
PB	SECURITY PANIC BUTTON
C	CCTV CAMERA WITH PTZ FEATURES
C F	CCTV CAMERA WITH FIXED MOUNT
C	CCTV CAMERA DOME CEILING MOUNT ARROW INDICATES DIRECTION
RM	MASTER RESCUE ASSISTANCE STATION
RA	RESCUE ASSISTANCE STATION
RL	RESCUE ASSISTANCE LIGHT
	NEW WORK
	EXISTING TO REMAIN
	EXISTING TO BE DEMOLISHED

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 fixture
number of ballasts in fixture
total wattage per fixture
} See fixture Schedule on Drawing Sheet

total interior wattage specified vs. allowed: (whole building or space by space)	47382 W	vs.	93378 W
total exterior wattage specified vs. allowed:	840 W	vs.	2430 W

Additional Prescriptive Compliance

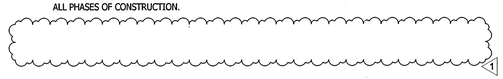
- ☐ 506.2.1 More Efficient Mechanical Equipment
- ☒ 506.2.2 Reduced Lighting Power Density
- ☐ 506.2.3 Energy Recovery Ventilation Systems
- ☐ 506.2.4 Higher Efficiency Service Water Heating
- ☐ 506.2.5 On-Site Supply of Renewable Energy
- ☐ 506.2.6 Automatic Daylighting Control Systems

ELECTRICAL GENERAL NOTES :

1. ALL SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED FOR THIS PROJECT.
2. SYMBOLS NOT SHOWN ON THIS ELECTRICAL SYMBOL LEGEND ARE IDENTIFIED ON THE DRAWINGS WHERE THEY OCCUR.
3. UNLESS OTHERWISE INDICATED IN THE SPECIFICATIONS OR ON THE DRAWINGS, MOUNTING HEIGHT OF DEVICES IS TO BE THE CENTERLINE OF THE DEVICE.
4. UNLESS OTHERWISE INDICATED, SWITCHES AND SIMILAR DEVICES ARE TO BE LOCATED 48" AFF; RECEPTACLES ARE TO BE VERTICALLY MOUNTED AT 18" AFF WITH THE GROUNDING TERMINAL ON THE BOTTOM.
5. TELEPHONE & DATA OUTLETS ARE TO BE MOUNTED AT 18" AFF UNLESS OTHERWISEINDICATED. "W" INDICATES MOUNTING AT 48" AFF; "C" INDICATES MOUNTING ABOVECOUNTERTOP WITH ALIGNMENT AND HEIGHT AS INDICATED FOR RECEPTACLES SIMILARLY MOUNTED.
6. FIRE ALARM PULL STATIONS ARE TO BE VERTICALLY MOUNTED AT 48" AFF.
7. FIRE ALARM INDICATING APPLIANCES SHALL BE 15 Cd RATING, UNLESS NOTED OTHERWISE ON THE PLANS.
8. FIRE ALARM INDICATING APPLIANCES ARE TO BE MOUNTED WITH THE LOWER EDGE OF THE VISUAL ELEMENT AT 6'-8" AFF OR 6" BFC, WHICHEVER IS LOWER. WHERE DUCTWORK, CONDUIT, OR OTHER OBSTRUCTIONS BLOCK DIRECT VIEW OF APPLIANCE, MOUNT 6" BELOW SUCH OBSTRUCTIONS.
9. CEILING MOUNTED SMOKE DETECTORS ARE SHOWN IN APPROXIMATE LOCATION. COORDINATE EXACT LOCATION WITH CEILING FEATURES. WALL MOUNTED SMOKE DETECTECTORS ARE TO BE MOUNTED 10" BELOW FINISHED CEILING TO THE CENTER OF DEVICE AND A MINIMUM OF 12" FROM ADJACENT WALLS OR OTHER OBSTRUCTIONS.
10. COORDINATE SMOKE DETECTOR AND HEAT DETECTOR LOCATIONS WITH HVAC SUPPLY AND RETURN GRILLES. MAINTAIN 3'-0" CLEARANCE BETWEEN EDGE OF SUPPLY GRILL AND EDGE OF SMOKE DETECTOR.
11. UPPER CASE LETTER (OR LETTER/NUMBER COMBINATION) ADJACENT TO FIXTURE OR SWITCH DESIGNATES TYPE. SEE FIXTURE SCHEDULE FOR DETAILS.
12. LOWER CASE LETTER ADJACENT TO FIXTURE OR SWITCH DESIGNATES CONTROL RELATIONSHIP.
13. NUMBER ADJACENT TO FIXTURE, SWITCH, OR RECEPTACLE DESIGNATES CIRCUIT CONNECTION.
14. SINGLE DIAGONAL LINE ACROSS A FIXTURE INDICATES FIXTURE IS UNSWITCHED FOR 24 HOUR OPERATION.

ELECTRICAL DEMOLITTION NOTES :

1. ALL DEMOLITION WORK IS TO BE COORDINATED WITH PHASING OF CONSTRUCTION AND BID ALTERNATES AS OUTLINED ON ARCHITECTURAL SHEETS.
2. REMOVE ALL ELECTRICAL CONDUIT, CABLE, WIRING, DEVICES, JUNCTION BOXES, FITTINGS, AND RELATED ITEMS FROM ALL WALLS, CEILINGS, FLOORS, AND/OR PORTIONS OF SAME INDICATED AS BEING DEMOLISHED BY ANY DIVISION OF THE CONTRACT DOCUMENT SET OR INDICATED ELSEWHERE IN THE CONTRACT DOCUMENT SET AS REQUIRING ELECTRICAL DEMOLITION.
3. REMOVE ALL LIGHTING FIXTURES AND RELATED ITEMS FROM THE DEMOLITION AREA OR OTHER AREAS WHERE NEW LIGHTING FIXTURES ARE TO BE INSTALLED. EXISTING CONDUIT OR CABLE SERVING ITEMS OUTSIDE THE DEMOLITION AREA MAY REMAIN IF THEY ARE CONCEALED BY THE NEW CONSTRUCTION AND MEET THE SPECIFICATIONS REQUIREMENTS OF THE PRESENT PROJECT. NEW FIXTURES ARE TO BE SUPPLIED BY NEW (OR REUSED) CIRCUITS AS INDICATED.
4. EXTEND OR RELOCATE ALL EXISTING CIRCUITS AND RELATED ITEMS SERVING EXISTING UTILIZATION OR OTHER EQUIPMENT WHERE SUCH CIRCUITS OR ITEMS ARE DISRUPTED DUE TO DEMOLITION ACTIVITIES OF ANY DIVISION OF THIS PROJECT. RELOCATE ALL EXISTING JUNCTION BOXES OR SIMILAR ITEMS THAT WILL BE RENDERED INACCESSIBLE BY NEW CONSTRUCTION FURNISHED UNDER ANY DIVISION OF THIS PROJECT. PROVIDE ANY AND ALL TEMPORARY ELECTRICAL SUPPLY (SUPPLIES) AS NEEDED TO MEET THIS REQUIREMENT.
5. REMOVE ALL ABANDONED CIRCUITS BACK TO THE POINT OF SUPPLY OR BACK TO THE POINT WHERE OTHER REMAINING LOADS ARE CONNECTED. LABEL ANY UNUSED OVERCURRENT DEVICES AS "SPARE".
6. WHERE EQUIPMENT OR DEVICES ARE REMOVED AND NOT REPLACED BY A SIMILAR ITEM OR EQUIPMENT, REPAIR WALL SURFACES TO MATCH EXISTING SURROUNDING SURFACE. PAINT AS REQUIRED TO MATCH EXISTING FINISHES.
7. PROVIDE NEW SUPPORT(S) OR RE-SUPPORT AS REQUIRED ALL EXISTING CONDUIT, JUNCTION BOXES, CABLES, AND/OR OTHER ELECTRICAL ITEMS AS REQUIRED TO MEET THE SUPPORT REQUIREMENTS OF THE PRESENT PROJECT.
8. PROVIDE NEW, OR REWORK EXISTING, FIRE STOPPING AT ALL THROUGH-PENETRATIONS OF CONDUIT OR OTHER ELECTRICAL ITEMS THAT WILL REMAIN AT THE CONCLUSION OF THE PROJECT. FIRE STOPPING PROVIDED FOR EXISTING ITEMS MUST MEET THE REQUIREMENTS OF THE PRESENT PROJECT.
9. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING ALL PHASES OF CONSTRUCTION.



ELECTRICAL DRAWING LIST

NO.	TITLE
E001	STANDARDS, SYMBOLS & ABBREVIATIONS
E002	ELECTRICAL SITE PLAN
E100	ELECTIVE WING - POWER PLAN
E101	8TH GRADE WING - POWER PLAN
E102	GYMNASIUM - POWER PLAN
E103	ADMIN & MEDIA CENTER - POWER PLAN
E104	7TH GRADE WING - POWER PLAN
E105	CAFETERIA - POWER PLAN
E106	6TH GRADE WING - POWER PLAN
E200	ELECTIVE WING - LIGHTING AND FIRE ALARM
E201	8TH GRADE WING - LIGHTING AND FIRE ALARM PLAN
E202	GYMNASIUM - LIGHTING PLAN
E203	ADMIN & MEDIA CENTER - LIGHTING AND FIRE ALARM PLAN
E204	7TH GRADE WING - LIGHTING AND FIRE ALARM PLAN
E205	CAFETERIA - LIGHTING AND FIRE ALARM PLAN
E206	6TH GRADE WING - LIGHTING AND FIRE ALARM PLAN
E300	ALTERNATES
E401	ELECTRICAL DISTRIBUTION
E402	ELECTRICAL DISTRIBUTION & PANEL SCHEDULES
E403	PANEL SCHEDULES
E501	LIGHTING AND FIRE ALARM DETAILS
E601	ELECTRICAL GENERAL DETAILS

LEAD BASE PAINT WARNING

LEAD BASE PAINT MAY EXIST ON BUILD STRUCTURE(S) OR OTHER ITEMS IN THE CONSTRUCTION AREA. THE CONTRACTOR IS HEREBY ADVISED OF THE NEED FOR COMPLIANCE WITH OSHA STANDARD 1926.62, SUBPART D, TITLED "LEAD", [29 CFR 1910] DURING WORK WITH LEAD CONTAINING MATERIALS.

ALL TESTING AND/OR OTHER COMPLIANCE ACTIVITIES ARE THE COMPLETE RESPONSIBILITY OF THE CONTRACTOR.

ASBESTOS WARNING

MATERIALS CONTAINING ASBESTOS ARE OFTEN ENCOUNTERED IN BUILDING RENOVATIONS PROJECTS. IN THE EVENT ASBESTOS CONTAINING MATERIALS ARE ENCOUNTERED THE CONTRACTOR WILL IMMEDIATELY CEASE WORK IN THE INVOLVED AREA, SECURE THE AREA TO PREVENT INADVERTENT CONTAMINATION OR EXPOSURE, AND NOTIFY OWNER. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR DISTURB ASBESTOS OR ASBESTOS CONTAINING MATERIALS.

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NORTH CAROLINA PROFESSIONAL SEAL 039503 ENGINEER MATTHEW J. WOLFE

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

STANDARDS, SYMBOLS & ABBREVIATIONS

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER E001

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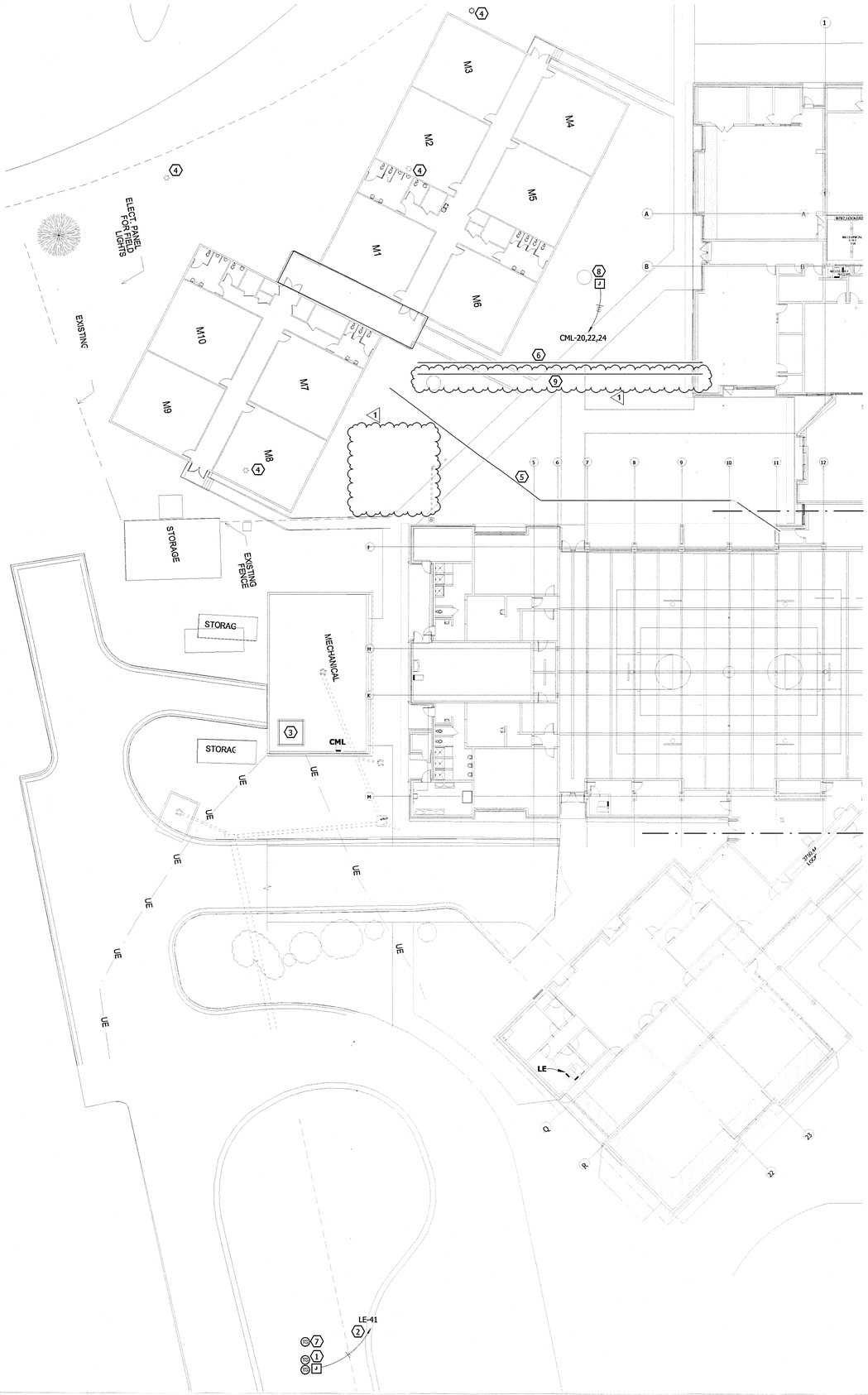

KEY NOTES TO E002

#	
1	POWER AND TAMPER SWITCHES FOR HOT BOX. TAMPER SWITCH MONITOR MODULES SHALL BE LOCATED ABOVE CAFETERIA CEILING. MAKE CONNECTIONS AS REQUIRED. COORDINATE EXACT LOCATIONS WITH CIVIL.
2	PROVIDE NEW 20A/1P CIRCUIT BREAKER IN EXISTING SPACE INDICATED. MATCH EXISTING PANEL MANUFACTURER AND AIC RATING. CIRCUIT SHALL BE (2) #10, #10 GRD, 1"C.
3	APPROXIMATE LOCATION OF EXISTING UTILITY TRANSFORMER.
4	TEMPORARILY REMOVE EXISTING LIGHT POLE. STORE AND PROTECT DURING CONSTRUCTION. REINSTALL IN SAME LOCATION AND RECONNECT TO EXISTING CIRCUIT AFTER MODULAR BUILDINGS ARE REMOVED.
5	4" CONDUIT ROUTED UNDERGROUND TO EXISTING IDF ROOM.
6	2"C FOR FIRE ALARM CONNECTION TO MODULAR BUILDINGS.
7	TAMPER SWITCH FOR PIV. MONITOR MODULES SHALL BE LOCATED ABOVE CAFETERIA CEILING. MAKE CONNECTIONS AS REQUIRED. COORDINATE EXACT LOCATION OF PIV WITH CIVIL.
8	CONNECT TO GRINDER PUMP DISCONNECTING MEANS PROVIDED BY CIVIL. COORDINATE EXACT LOCATION WITH CIVIL. PROVIDE NEW 20A/3P CIRCUIT BREAKER IN EXISTING SPACE NOTED. CIRCUIT SHALL BE (4) #10, #10 GRD, 1"C. PROVIDE CONDUIT SEAL WHERE CONDUIT STUBS OUT OF GROUND.
9	2"C FOR P/A CONNECTION TO MODULAR BUILDINGS.

1 E002 **ELECTRICAL SITE PLAN**
SCALE: 1" = 20'-0"

20' 10' 0 20' 40'

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NORTH CAROLINA PROFESSIONAL SEAL 039503 ENGINEER MATTHEW J. JOHNSON 2/15/18

Renovations and Additions to: Myrtle Grove Middle School

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ELECTRICAL SITE PLAN

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER E002

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GENERAL NOTES

1. COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF ALL HVAC AND PLUMBING EQUIPMENT WITH RESPECTIVE CONTRACTORS. NOTIFY ENGINEER IMMEDIATELY, IN WRITING, OF ANY DISCREPANCIES.
2. ALL CEILING MOUNTED POWER AND DATA DEVICES SHALL BE PROTECTED DURING DEMOLITION AND REINSTALLED IN NEW CEILING IN SAME LOCATION.
3. PROTECT ALL EXISTING SECURITY AND ACCESS CONTROL DEVICES, WIRING, EQUIPMENT, ETC.

KEY NOTES TO E100

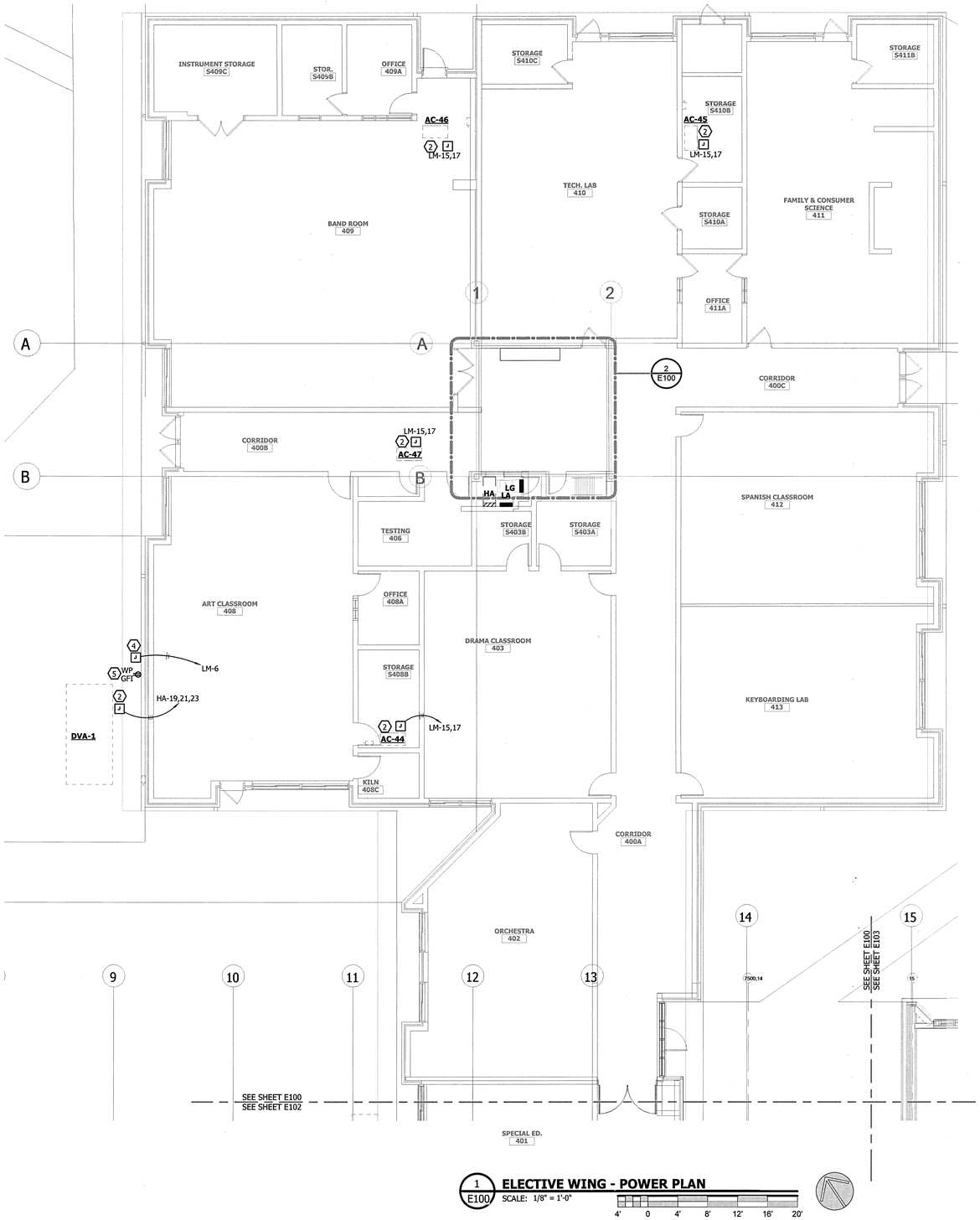
1 DISCONNECT ELECTRICAL CONNECTION TO EXSTING DISCONNECT. RECONNECT TO NEW DISCONNECT SWITCH PROVIDED BY HVAC CONTRACTOR. (TYP)

2 MAKE CONNECTION TO DISCONNECT PROVIDED BY TRADE PROVIDING EQUIPMENT.

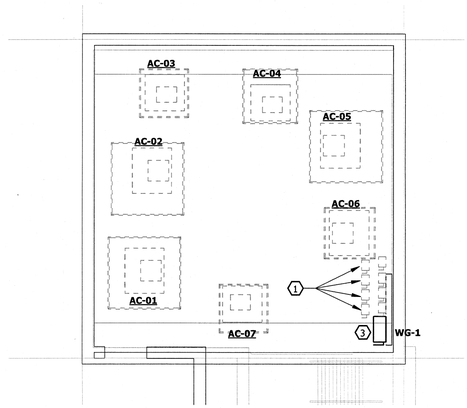
3 REPLACE EXISTING DISCONNECT SWITCH WITH NEW.

4 MAKE CONNECTION TO HEAT TAPE DISCONNECTING MEANS.

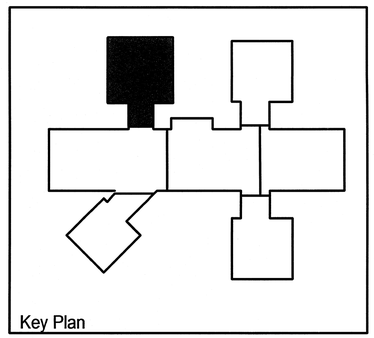
5 CONNECT TO NEAREST RECEPTACLE CIRCUIT.



1 E100 **ELECTIVE WING - POWER PLAN**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



2 E100 **ELECTIVE WING - MECHANICAL LOFT PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



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Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

ELECTIVE WING - POWER PLAN

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

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SW Project No: 0594-13-00-17

SHEET NUMBER
E100

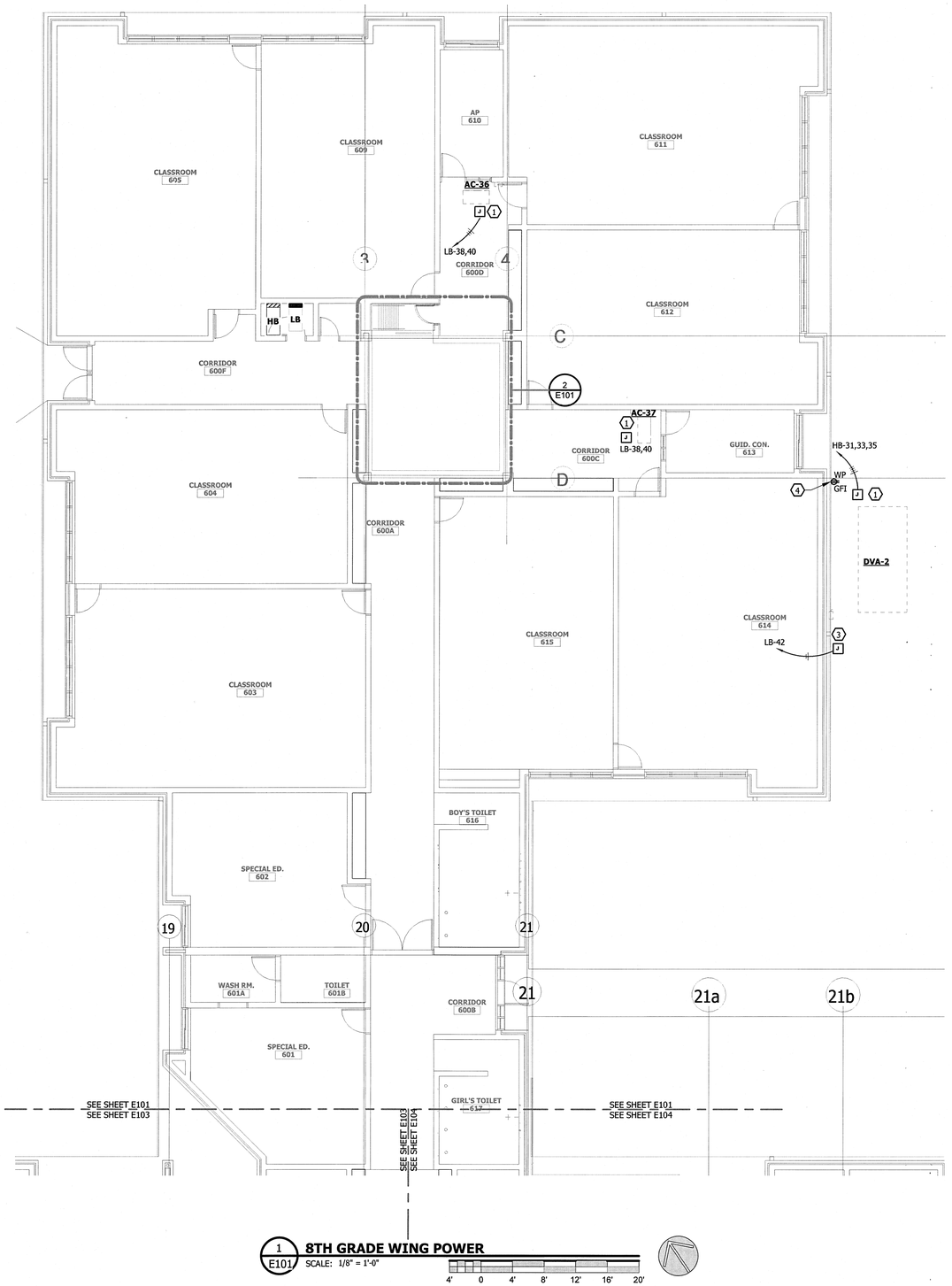
GENERAL NOTES

1. COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF ALL HVAC AND PLUMBING EQUIPMENT WITH RESPECTIVE CONTRACTORS. NOTIFY ENGINEER IMMEDIATELY, IN WRITING, OF ANY DISCREPANCIES.
2. ALL CEILING MOUNTED POWER AND DATA DEVICES SHALL BE PROTECTED DURING DEMOLITION AND REINSTALLED IN NEW CEILING IN SAME LOCATION.
3. PROTECT ALL EXISTING SECURITY AND ACCESS CONTROL DEVICES, WIRING, EQUIPMENT, ETC.

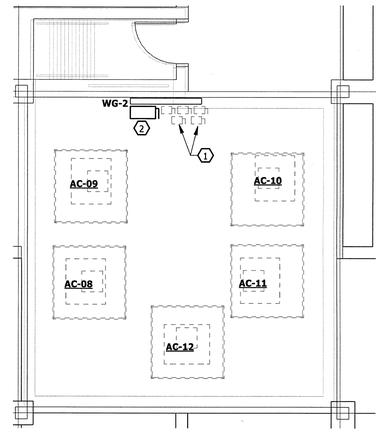
1

KEY NOTES TO E101

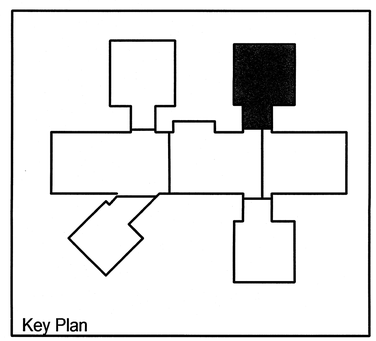
#	
1	MAKE CONNECTION TO DISCONNECT PROVIDED BY TRADE PROVIDING EQUIPMENT.
2	REPLACE EXISTING DISCONNECT SWITCH WITH NEW.
3	MAKE CONNECTION TO HEAT TAPE DISCONNECTING MEANS.
4	CONNECT TO NEAREST CORRIDOR RECEPTACLE.



1 E101 **8TH GRADE WING POWER**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



2 E101 **8TH GRADE WING - MECHANICAL LOFT PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8'



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8TH GRADE WING - POWER PLAN

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E101

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GENERAL NOTES

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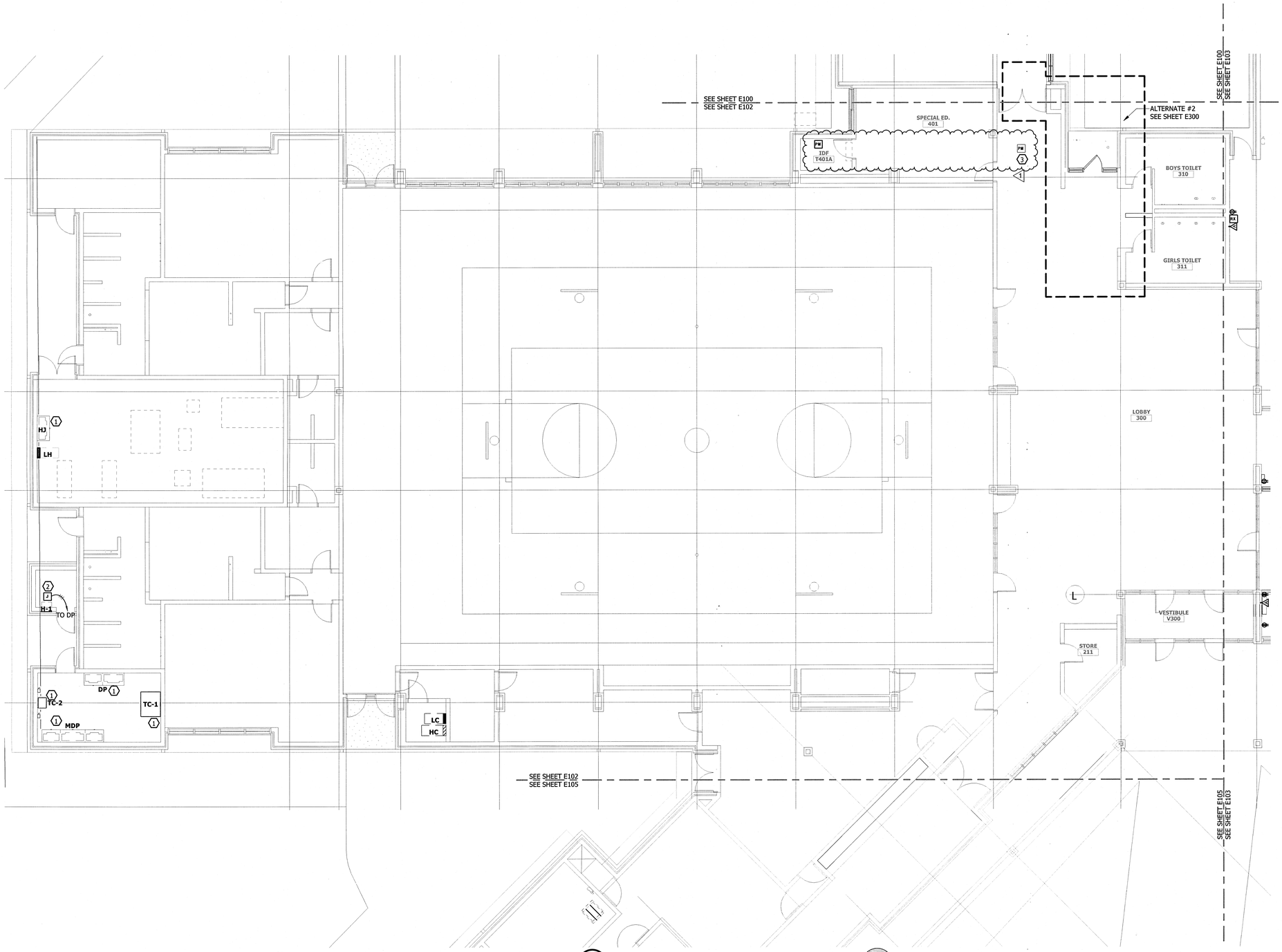
2. ALL CEILING MOUNTED POWER AND DATA DEVICES SHALL BE PROTECTED DURING DEMOLITION AND REINSTALLED IN NEW CEILING IN SAME LOCATION.
3. PROTECT ALL EXISTING SECURITY AND ACCESS CONTROL DEVICES, WIRING, EQUIPMENT, ETC.

KEY NOTES TO E102

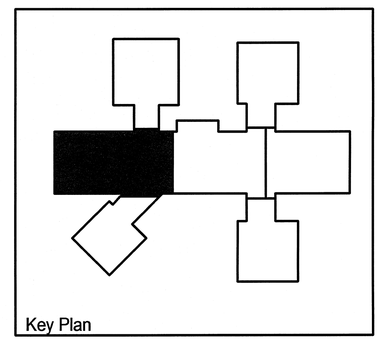
1 ALTERNATE BID #1 - REPLACE EXISTING EQUIPMENT IN PLACE. RECONNECT EXISTING CONDUITS AND CONDUCTORS TO NEW CABINET AS REQUIRED. EXTEND CONDUCTORS TO NEW CIRCUIT BREAKERS AS REQUIRED.

2 MAKE CONNECTION TO DISCONNECT PROVIDED BY TRADE PROVIDING EQUIPMENT.

3 EXISTING ACCESS CONTROL PIM. RELOCATE TO IDF T401A. DEMOLISH EXISTING DATA CABLE. PROVIDE NEW CAT 6 DATA CABLE TO NEW LOCATION.



1 E102 **GYMNASIUM - POWER**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'


Key Plan

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Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

GYMNASIUM - POWER PLAN

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1	REVISION # 1	2/15/18

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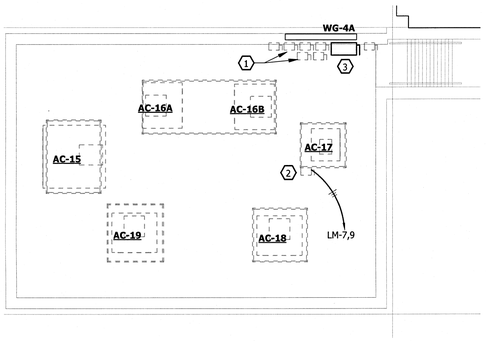
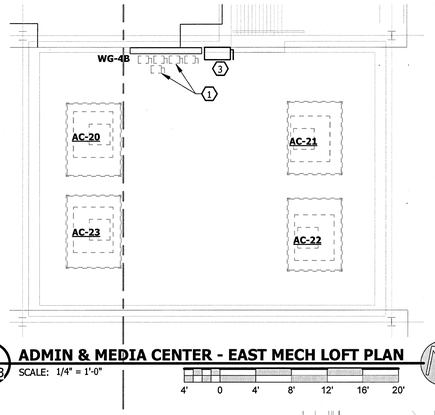




3 E103 **ADMIN & MEDIA CENTER - WEST MECH LOFT PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8' 12' 16' 20'

2 E103 **ADMIN & MEDIA CENTER - EAST MECH LOFT PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NOTES

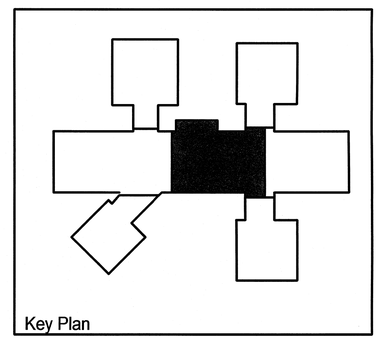
1. COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF ALL HVAC AND PLUMBING EQUIPMENT WITH RESPECTIVE CONTRACTORS. NOTIFY ENGINEER IMMEDIATELY, IN WRITING, OF ANY DISCREPANCIES.
2. ALL CEILING MOUNTED POWER AND DATA DEVICES SHALL BE PROTECTED DURING DEMOLITION AND REINSTALLED IN NEW CEILING IN SAME LOCATION.
3. PROTECT ALL EXISTING SECURITY AND ACCESS CONTROL DEVICES, WIRING, EQUIPMENT, ETC.

KEY NOTES TO E103

1 DISCONNECT ELECTRICAL CONNECTION TO EXSTING DISCONNECT. RECONNECT TO NEW DISCONNECT SWITCH PROVIDED BY HVAC CONTRACTOR. (TYP)
2 MAKE CONNECTION TO DISCONNECT PROVIDED BY TRADE PROVIDING EQUIPMENT.
3 REPLACE EXISTING DISCONNECT SWITCH WITH NEW.
4 EXISTING CEILING MOUNTED RECEPTACLE SHALL REMAIN FOR SPEAKER POWER. EXTEND CIRCUIT TO NEW RECORDEX RECEPTACLE.
5 CONNECT TO EXISTING RECEPTACLE CIRCUIT WITHIN ROOM.
6 NEW RECORDEX BOARD, PROVIDED BY OWNER. REFERENCE A/V SCHEDULE FOR CONNECTIONS, COORDINATE MOUNTING HEIGHT WITH OWNER.
7 MAKE CONNECTION TO HEAT TAPE DISCONNECTING MEANS.
8 CONNECT TO NEAREST RECEPTACLE CIRCUIT.
9 DEMOLISH EXISTING POWER POLE. EXTEND CIRCUIT TO NEW SURFACE WALL MOUNTED RECEPTACLE.
10 DEMOLISH EXISITING SIMPLEX OUTLET. DEMOLISH CONDUCTORS BACK TO PREVIOIUS RECEPTACLE/SOURCE. PROVIDE BLANK COVER PLATE OVER EXISTING BOX.
11 DEMOLISH EXISTING SURFACE MOUNTED RACEWAY. CONNECT EXISTING CIRCUIT TO NEW RECEPTACLE. PROVIDE RECEPTACLE, DATA, AND TEACHERS STATION.
12 EXTEND EXISTING CIRCUIT TO NEW RECEPTACLE.
13 WITHIN MEDIA CENTER, ON ALL MASONRY SURFACES, PROVIDE PLASTIC SURFACE MOUNTED ENCLOSED RACEWAY WITH SNAP ON COVER SIMILAR TO WIREMOLD. PROVIDE MULTICHANNEL RACEWAY OF SIZE REQUIRED FOR TYPE AND QUANTITY OF CABLES IDENTIFIED. MAINTAIN ALL NEC REQUIRED RACEWAY FILL AND SEPARATION REQUIREMENTS.
14 EXISTING RECEPTACLE. EXTEND CIRCUIT AS REQUIRED TO NEW RECEPTACLES. FIELD VERIFY EXACT LOCATION.
15 EXISTING PA RACK. MOVE TO NEW LOCATION.
16 RECABLE EXISTING ADMINISTRATIVE INTERCOM PHONE. COORDINATE EXACT LOCAITON WITH OWNER.

A/V SCHEDULE

SYMBOL	DESCRIPTION	CONNECTIONS		CONDUIT
TS	TEACHER STATION OUTLET	1 - DIGITAL RAPID RUN PC/VIDEO 1 - DIGITAL RAPID RUN MULTI-MEDIA 1 - USB S	TS TO RX (YELLOW) TS TO RX (BLUE) TS TO RX	1-1/4" C
RX	RECORDEX MONITOR (OWNER FURNISHED)	1 - DIGITAL RAPID RUN PC/VIDEO 1 - DIGITAL RAPID RUN MULTI-MEDIA 1 - USB S	TS TO RX (YELLOW) TS TO RX (BLUE) TS TO RX	1-1/4" C
SP	CEILING MOUNTED A/V SPEAKER - OWI 2X2FG-R2S61	1 - BELDEN 5500FE	SP TO RX	3/4" C



1 E103 **ADMIN & MEDIA CENTER POWER**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

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Renovations and Additions to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

ADMIN & MEDIA CENTER - POWER PLAN

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3. PROTECT ALL EXISTING SECURITY AND ACCESS CONTROL DEVICES, WIRING, EQUIPMENT, ETC.

(#) KEY NOTES TO E104

1 DISCONNECT ELECTRICAL CONNECTION TO EXSTING DISCONNECT. RECONNECT TO NEW DISCONNECT SWITCH PROVIDED BY HVAC CONTRACTOR. (TYP)

2 MAKE CONNECTION TO DISCONNECT PROVIDED BY TRADE PROVIDING EQUIPMENT.

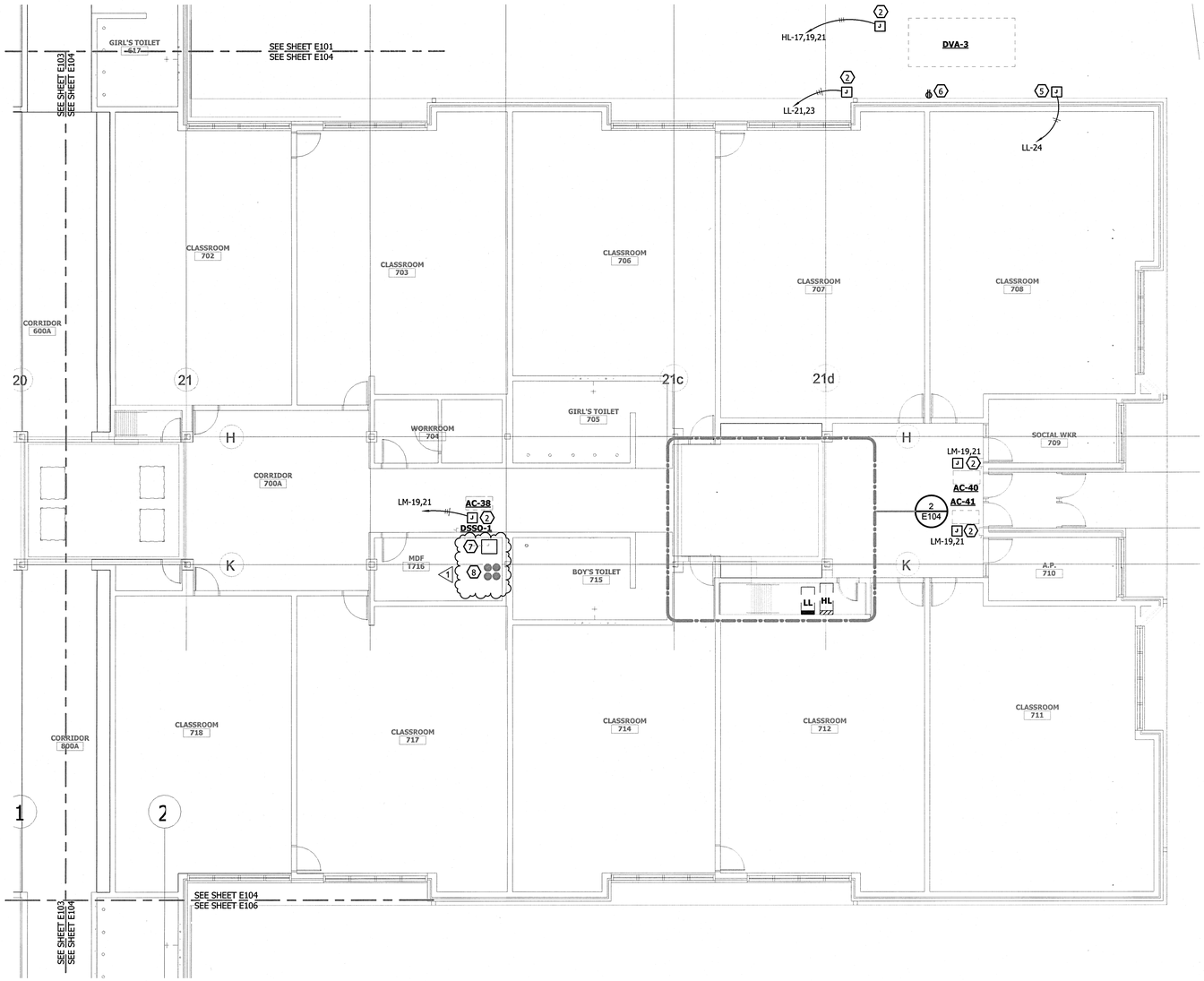
3 REPLACE EXISTING DISCONNECT SWITCH WITH NEW.

5 MAKE CONNECTION TO HEAT TAPE DISCONNECTING MEANS.

6 CONNECT TO NEAREST RECEPTACLE CIRCUIT.

7 LOCATE EXISTING PA RACK WITHIN THIS ROOM. COORDINATE EXACT LOCATION WITH OWNER.

8 PROVIDE (4) 4" CONDUITS THROUGH NEW CEILING FOR FUTURE CABLING. FIRESTOP CONDUITS.



1 E104 **7TH GRADE WING POWER**
SCALE: 1/8" = 1'-0"
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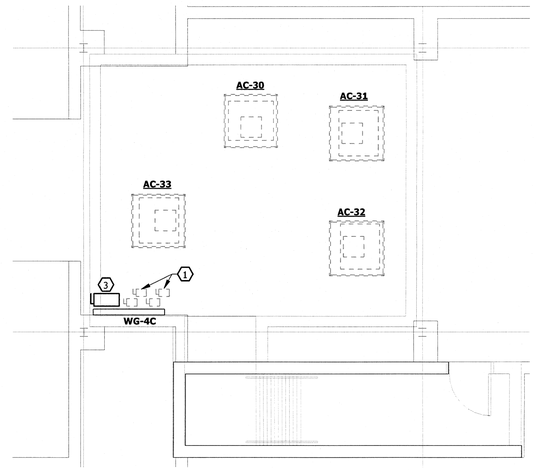
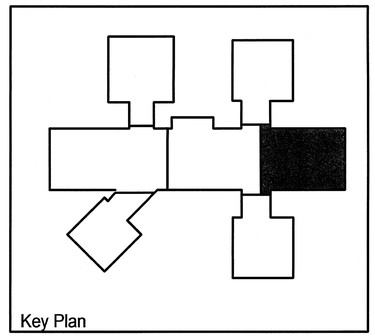


2 E104 **7TH GRADE WING - MECHANICAL LOFT PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8' 12' 16' 20'



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NORTH CAROLINA REGISTERED PROFESSIONAL SEAL 039503 ENGINEER MATTHEW J JOHNSON

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

7TH GRADE WING - POWER PLAN

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GENERAL NOTES

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3. PROTECT ALL EXISTING SECURITY AND ACCESS CONTROL DEVICES, WIRING, EQUIPMENT, ETC.

KEY NOTES TO E105

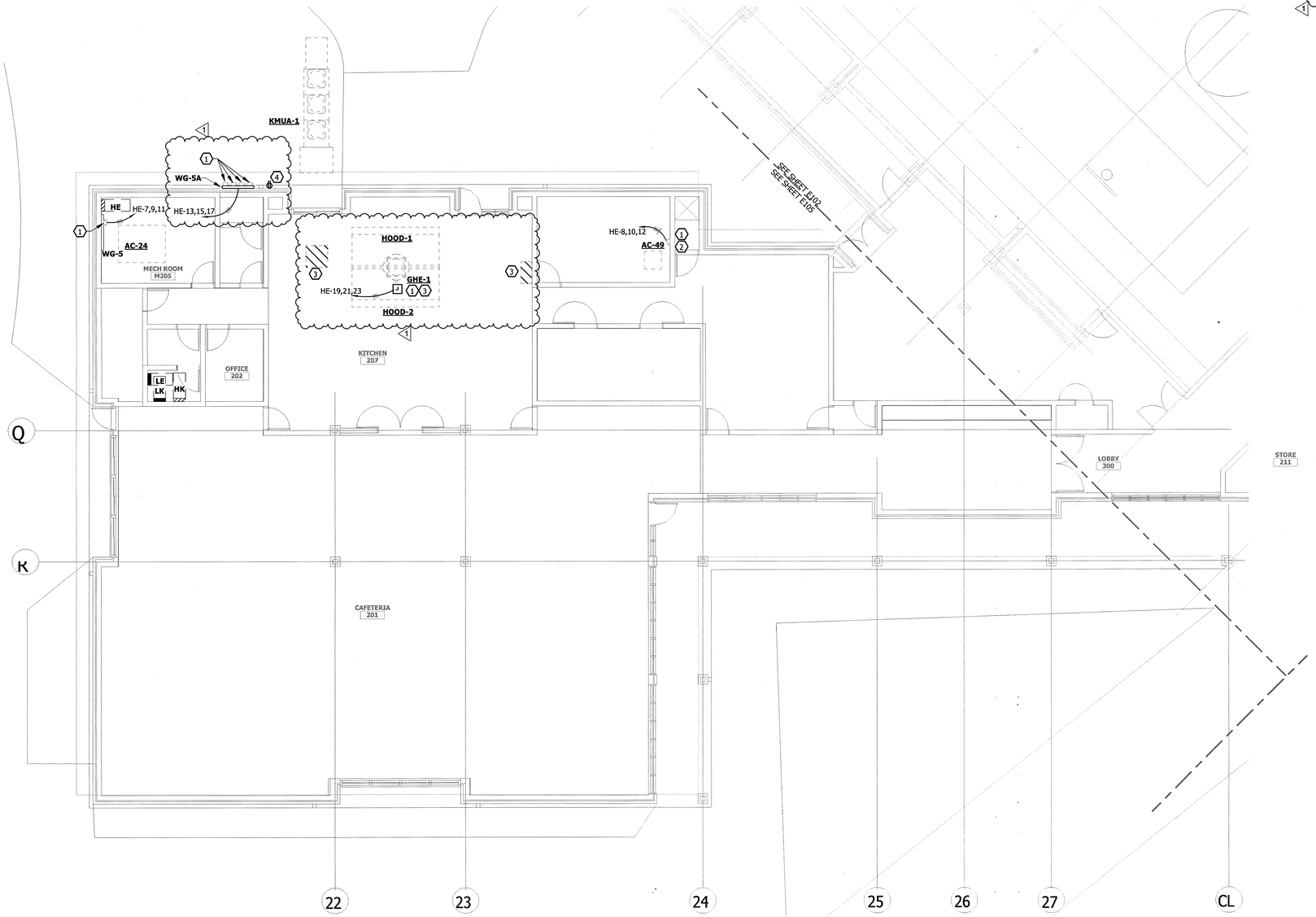
(#)

1 MAKE CONNECTION TO DISCONNECT PROVIDED BY TRADE PROVIDING EQUIPMENT.

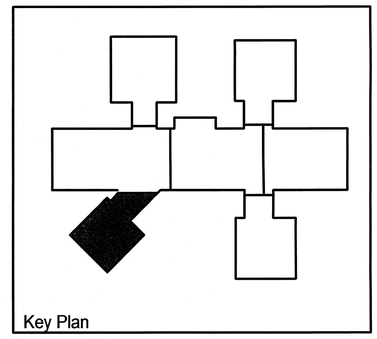
2 CONNECT EXISTING CIRCUIT TO NEW DISCONNECTING MEANS.

3 DEMOLISH ELECTRICAL CONNECTION TO EXISTING EQUIPMENT SCHEDULE FOR DEMOLITION.

4 CONNECT TO NEAREST GENERAL RECEPTACLE CIRCUIT.



1 E105 **CAFETERIA POWER**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



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CAFETERIA - POWER PLAN

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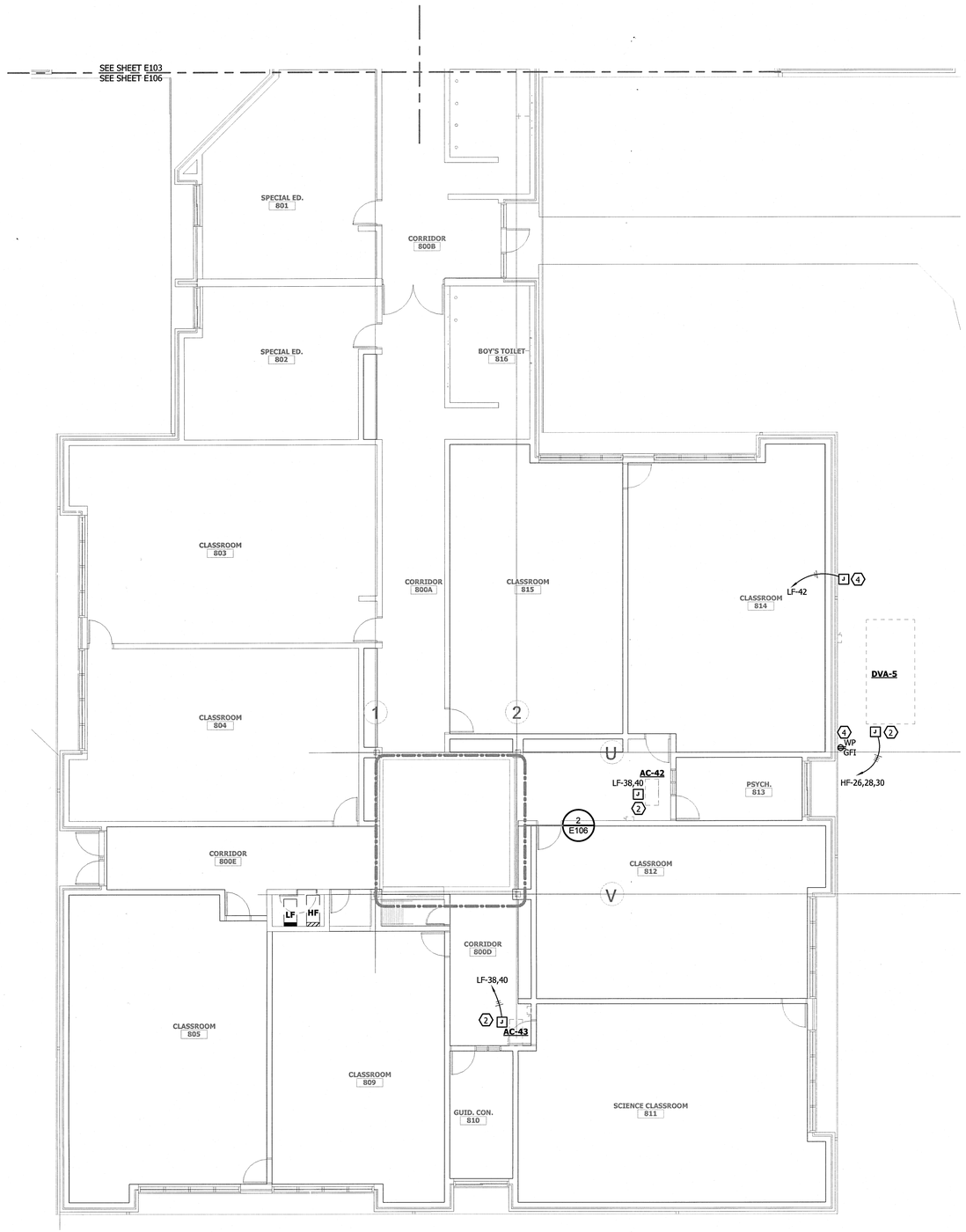

1 E106 **6TH GRADE WING POWER**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NOTES

1. COORDINATE EXACT LOCATION AND ELECTRICAL REQUIREMENTS OF ALL HVAC AND PLUMBING EQUIPMENT WITH RESPECTIVE CONTRACTORS. NOTIFY ENGINEER IMMEDIATELY, IN WRITING, OF ANY DISCREPANCIES.
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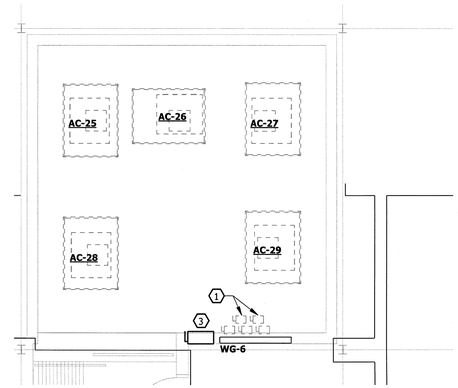
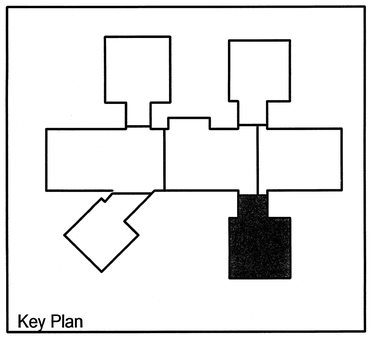
3. PROTECT ALL EXISTING SECURITY AND ACCESS CONTROL DEVICES, WIRING, EQUIPMENT, ETC.

KEY NOTES TO E106

#	
1	MAKE CONNECTION TO DISCONNECT PROVIDED BY TRADE PROVIDING EQUIPMENT.
2	CONNECT EXISTING CIRCUIT TO NEW DISCONNECTING MEANS.
3	DEMOLISH ELECTRICAL CONNECTION TO EXISTING EQUIPMENT SCHEDULE FOR DEMOLITION.
4	CONNECT TO NEAREST GENERAL RECEPTACLE CIRCUIT.



2 E106 **6TH GRADE WING - MECHANICAL LOFT PLAN**
SCALE: 1/4" = 1'-0"
4' 0 4' 8' 12' 16' 20'



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6TH GRADE WING - POWER PLAN

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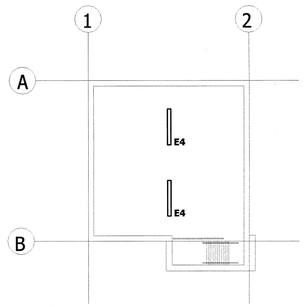
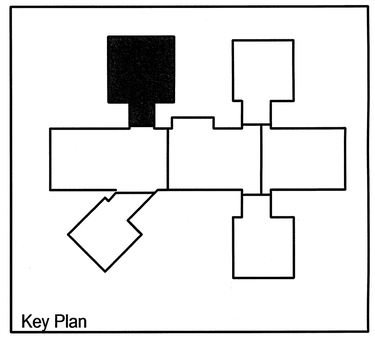
1 E200 **ELECTIVE WING - LIGHTING AND FIRE ALARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NOTES

1. COORDINATE EXACT LOCATION AND MOUNTING OF ALL CEILING MOUNTED DEVICES WITH REFLECTED CEILING PLAN PRIOR TO ROUGH IN.
2. ALL OCCUPANCY SENSORS WITHOUT INTEGRAL ON/OFF SWITCHES SHALL BE LOW VOLTAGE. PROVIDE POWER PACKS (NOT SHOWN) AS REQUIRED FOR SWITCHING INDICATED.
3. COORDINATE LOCATIONS AND QUANTITIES OF FLOW AND TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR.
4. ALL LIGHT FIXTURES SHALL REPLACED ONE FOR ONE. NEW LIGHT FIXTURES SHALL BE INSTALLED IN SAME LOCATION AS EXISTING LIGHT FIXTURES. WHERE INDICATED, REPLACE EXISTING SWITCHES WITH NEW 0-10V DIMMER SWITCHES. WHERE INDICATED, PROVIDE NEW OCCUPANCY SENSORS AND DIMMING CONTROL WIRING. MODIFY ALL WIRING AS REQUIRED.
5. ALL CEILING MOUNTED DEVICES (SPEAKERS, ETC.) SHALL BE PROTECTED DURING DEMOLITION AND INSTALLED IN NEW CEILING IN THE SAME LOCATION.
6. REPLACE ALL SMOKE DETECTORS WITH NEW. PROVIDE ALL HARDWARE, LABOR, AND PROGRAMMING REQUIRED.
7. PROTECT ALL EXISTING EQUIPMENT, CABLING, ETC ABOVE CEILING.
8. TEST, LABEL, REMOVE, STORE, REINSTALL, AND RETEST ALL PROJECTORS, WIRELESS ACCESS POINTS, ETC. ALL WORK SHALL BE DONE BY FACTORY TRAINED AND LISCENSED PERSONEL.
ALL EQUIPMENT SHALL BE TESTED PRIOR TO REMOVAL. SUBMIT TEST RESULTS FOR EACH PIECE OF EQUIPMENT TO OWNER AND ENGINEER. PROVIDE A UNIQUE LABEL FOR EACH PIECE OF EQUIPMENT. CAREFULLY REMOVE EACH DEVICE AND PROTECT FOR STORAGE AND REINSTALLATION OF EACH DEVICE. UPON COMPLETION OF CEILING WORK, REINSTALL EQUIPMENT IN SAME LOCATION EQUIPMENT WAS REMOVED FROM. TEST AND RECOMMISSION EQUIPMENT TO ENSURE PROPER FUNCTIONALITY. SUBMIT TEST RESULTS FOR EACH PIECE OF EQUIPMENT TO OWNER AND ENGINEER.



2 E200 **LOFT - ELECTIVE WING LIGHTING AND FIRE ALARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039503 MATTHEW J. JOHNSTON

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ELECTIVE WING - LIGHTING AND FIRE ALARM

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1 E201 **8TH GRADE WING - LIGHTING AND FIRE ALARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NOTES

1. COORDINATE EXACT LOCATION AND MOUNTING OF ALL CEILING MOUNTED DEVICES WITH REFLECTED CEILING PLAN PRIOR TO ROUGH IN.
2. ALL OCCUPANCY SENSORS WITHOUT INTEGRAL ON/OFF SWITCHES SHALL BE LOW VOLTAGE. PROVIDE POWER PACKS (NOT SHOWN) AS REQUIRED FOR SWITCHING INDICATED.
3. COORDINATE LOCATIONS AND QUANTITIES OF FLOW AND TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR.
4. ALL LIGHT FIXTURES SHALL REPLACED ONE FOR ONE. NEW LIGHT FIXTURES SHALL BE INSTALLED IN SAME LOCATION AS EXISTING LIGHT FIXTURES. WHERE INDICATED, REPLACE EXISTING SWITCHES WITH NEW 0-10V DIMMER SWITCHES. WHERE INDICATED, PROVIDE NEW OCCUPANCY SENSORS AND DIMMING CONTROL WIRING. MODIFY ALL WIRING AS REQUIRED.
5. ALL CEILING MOUNTED DEVICES (SPEAKERS, ETC.) SHALL BE PROTECTED DURING DEMOLITION AND INSTALLED IN NEW CEILING IN THE SAME LOCATION.
6. REPLACE ALL SMOKE DETECTORS WITH NEW. PROVIDE ALL HARDWARE, LABOR, AND PROGRAMMING REQUIRED.
7. PROTECT ALL EXISTING EQUIPMENT, CABLING, ETC ABOVE CEILING.
8. TEST, LABEL, REMOVE, STORE, REINSTALL, AND RETEST ALL PROJECTORS, WIRELESS ACCESS POINTS, ETC. ALL WORK SHALL BE DONE BY FACTORY TRAINED AND LISCENSED PERSONEL.
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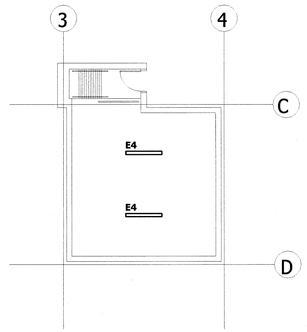
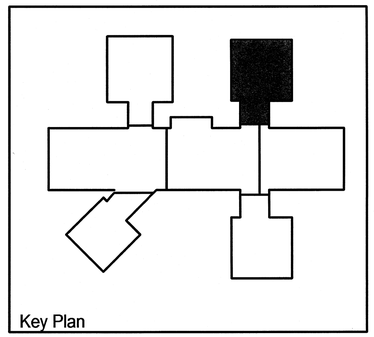


2 E201 **LOFT - 8TH GRADE WING - LIGHTING AND FIRE ALARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



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NORTH CAROLINA PROFESSIONAL SEAL 039503 ENGINEER MATTHEW J. JOHNSON
2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

8TH GRADE WING - LIGHTING AND FIRE ALARM PLAN

JOB NUMBER 0594-01-00-13
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1	REVISION # 1	2/15/18

SHEET NUMBER E201

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1 E202 **GYMNASIUM - LIGHTING AND FIRE ALARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NOTES

1. COORDINATE EXACT LOCATION AND MOUNTING OF ALL CEILING MOUNTED DEVICES WITH REFLECTED CEILING PLAN PRIOR TO ROUGH IN.
2. ALL OCCUPANCY SENSORS WITHOUT INTEGRAL ON/OFF SWITCHES SHALL BE LOW VOLTAGE. PROVIDE POWER PACKS (NOT SHOWN) AS REQUIRED FOR SWITCHING INDICATED.
3. COORDINATE LOCATIONS AND QUANTITIES OF FLOW AND TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR.
4. ALL LIGHT FIXTURES SHALL REPLACED ONE FOR ONE. NEW LIGHT FIXTURES SHALL BE INSTALLED IN SAME LOCATION AS EXISTING LIGHT FIXTURES. WHERE INDICATED, REPLACE EXISTING SWITCHES WITH NEW 0-10V DIMMER SWITCHES. WHERE INDICATED, PROVIDE NEW OCCUPANCY SENSORS AND DIMMING CONTROL WIRING. MODIFY ALL WIRING AS REQUIRED.
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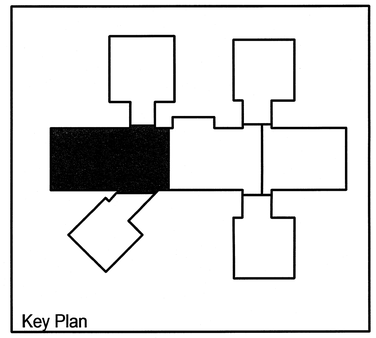
KEY NOTES TO E202

1. PROTECT ANY AND ALL LINEAR BEAM SMOKE DETECTORS DURING CONSTRUCTION. CLEAN, REALIGN, AND TEST LINEAR BEAM DETECTORS TO INSURE THEY ARE IN PROPER WORKING ORDER FOR A FULLY FUNCTIONAL SYSTEM.
2. CONNECT EMERGENCY LIGHTING TO LOCAL LIGHTING CIRCUIT UNSWITCHED.
3. CONNECT NEW LIGHTING TO EXISTING LOCAL LIGHTING CIRCUIT AS INDICATED.


Key Plan

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Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Caroiina 28409

GYMNASIUM - LIGHTING PLAN

JOB NUMBER
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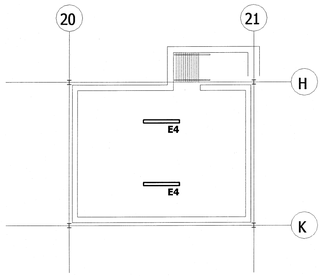

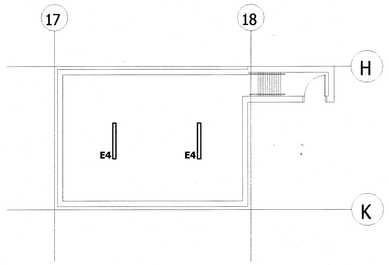

2 E203 LOFT - ADMIN EAST LIGHTING AND FIRE ALARM

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

4' 0 4' 8' 12' 16' 20'

3 E203 LOFT - ADMIN WEST LIGHTING AND FIRE ALARM

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

4' 0 4' 8' 12' 16' 20'

SEE SHEET E200
SEE SHEET E203

SEE SHEET E201
SEE SHEET E203

SEE SHEET E203
SEE SHEET E204

Room 309
BOYS TOILET 310
GIRLS TOILET 311
Room 312
MEDIA CENTER 501
STORAGE 502A
WORK ROOM 503
CORRIDOR 500C
STORAGE 507
OFFICE 504
A.V. 426
WASH RM. 601A
CLASSROOM 508
CLASSROOM 509
CORRIDOR 600A
CLASSROOM 702
LOBBY 300
MEDIA CENTER CORRIDOR 500A
TEACH WKRM 101
TREASURER 102
MTSS 103
NURSE 104
EXAM 104A
EXAM 104B
RECEPTION 100
ADMIN CORRIDOR 100A
TEACHERS LOUNGE 106
CORRIDOR 100C
PRINCIPAL 105
VESTIBULE 200
DATA MGR 110
CONF. ROOM 109
MEN 108
WOMEN 107
KITCHEN 106A
STORE 211
CLASSROOM 515
CLASSROOM 514
CORRIDOR 600A
CLASSROOM 718
STORAGE 450
WOMEN 449
SPECIAL ED. 801

ALTERNATE #3
SEE SHEET E300

SEE SHEET E203
SEE SHEET E206

SEE SHEET E205
SEE SHEET E203

SEE SHEET E203
SEE SHEET E204

1 E203 ADMIN & MEDIA CENTER - LIGHTING AND FIRE ALARM

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

GENERAL NOTES

1. COORDINATE EXACT LOCATION AND MOUNTING OF ALL CEILING MOUNTED DEVICES WITH REFLECTED CEILING PLAN PRIOR TO ROUGH IN.
2. ALL OCCUPANCY SENSORS WITHOUT INTEGRAL ON/OFF SWITCHES SHALL BE LOW VOLTAGE. PROVIDE POWER PACKS (NOT SHOWN) AS REQUIRED FOR SWITCHING INDICATED.
3. COORDINATE LOCATIONS AND QUANTITIES OF FLOW AND TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR.
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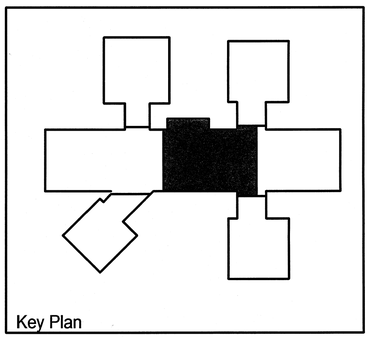
KEY NOTES TO E203

1 CONNECT TYPE J FIXTURES TO EXISTING 120V CIRCUIT IN MEDIA CENTER DAYLIGHTING MONITOR. PROVIDE SEPARATE DIMMER SWITCHES TO CONTROL UPLIGHT SEPARATELY FROM DOWNLIGHT.



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Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

ADMIN & MEDIA CENTER - LIGHTING AND FIRE ALARM PLAN

JOB NUMBER 0594-01-00-13
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DATE 01/24/18
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SHEET NUMBER E203

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1 E204 **7TH GRADE WING LIGHTING AND FIRE ALARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NOTES

1. COORDINATE EXACT LOCATION AND MOUNTING OF ALL CEILING MOUNTED DEVICES WITH REFLECTED CEILING PLAN PRIOR TO ROUGH IN.
2. ALL OCCUPANCY SENSORS WITHOUT INTEGRAL ON/OFF SWITCHES SHALL BE LOW VOLTAGE. PROVIDE POWER PACKS (NOT SHOWN) AS REQUIRED FOR SWITCHING INDICATED.
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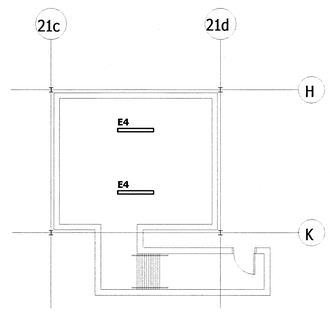
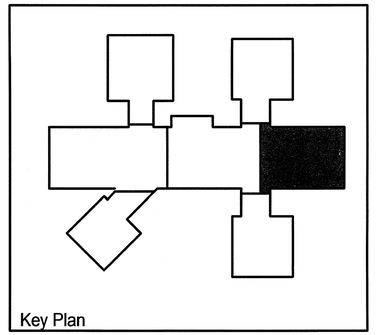
KEY NOTES TO E204

1 REPLACE EXISTING LAY-IN TROFFER LIGHTING WITH NEW SURFACE MOUNTED STRIP FIXTURES. RECONNECT POWER AND SWITCHING.



2 E204 **LOFT - 7TH GRADE WING LIGHTING AND FIRE ALARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



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Renovations and Additions to: Myrtle Grove Middle School

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7TH GRADE WING - LIGHTING AND FIRE ALARM PLAN

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REVISIONS

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SHEET NUMBER E204

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1 E205 **CAFETERIA - LIGHTING AND FIRE ALARM**
SCALE: 1/8" = 1'-0"

4' 0 4' 8' 12' 16' 20'

GENERAL NOTES

1. COORDINATE EXACT LOCATION AND MOUNTING OF ALL CEILING MOUNTED DEVICES WITH REFLECTED CEILING PLAN PRIOR TO ROUGH IN.
2. ALL OCCUPANCY SENSORS WITHOUT INTEGRAL ON/OFF SWITCHES SHALL BE LOW VOLTAGE. PROVIDE POWER PACKS (NOT SHOWN) AS REQUIRED FOR SWITCHING INDICATED.
3. COORDINATE LOCATIONS AND QUANTITIES OF FLOW AND TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR.
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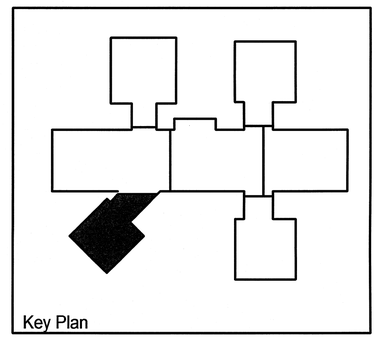
KEY NOTES TO E205

1 TYPE H FIXTURES LOCATED IN DISPLAY CABINET. QUANTITY TO BE DETERMINED. CONNECT TO EXISTING 120V CIRCUIT SERVING DISPLAY CASE.

2 TAMPER SWITCHES LOCATED ON PIV AND IN HEATED BACKFLOW PREVENTOR ENCLOSURE. COORDINATE EXACT LOCATIONS WITH CIVIL ENGINEER. MONITOR MODULES (3) FOR TAMPER SWITCHES AND (1) FOR TEMPERATURE MONITORING SHALL BE LOCATED ABOVE CEILING. PROVIDE SURGE SUPPRESSION ON EACH CONDUCTOR ENTERING/LEAVING THE BUILDING.



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CAFETERIA - LIGHTING AND FIRE ALARM PLAN

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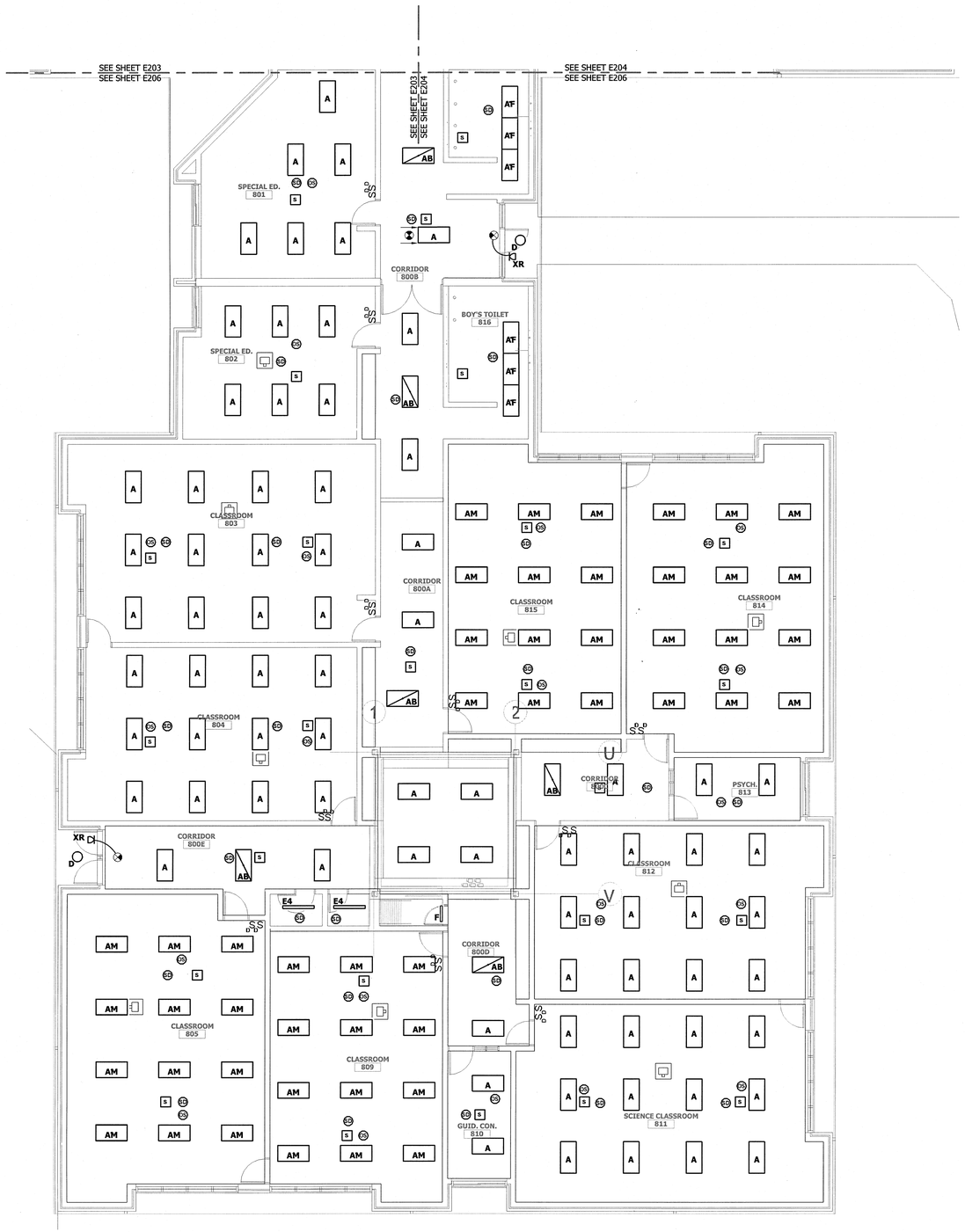

1 E206 **6TH GRADE WING LIGHTING AND FIRE ALARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NOTES

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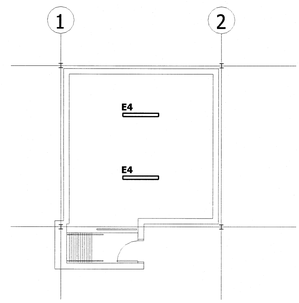

2 E206 **LOFT - 6TH GRADE WING LIGHTING AND FIRE ALARM**
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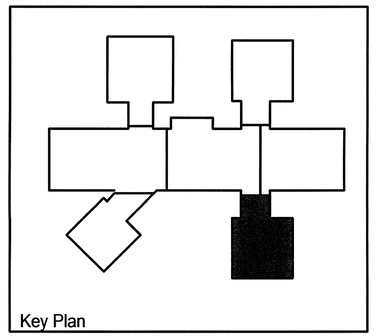
4' 0 4' 8' 12' 16' 20'



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SHEET NUMBER E206

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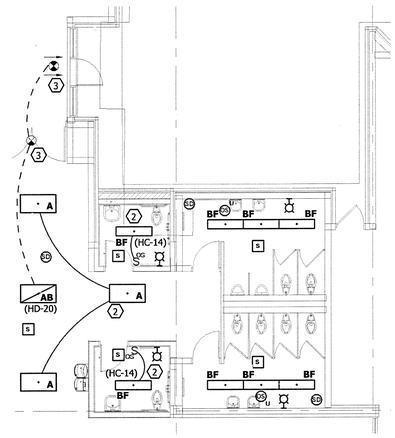
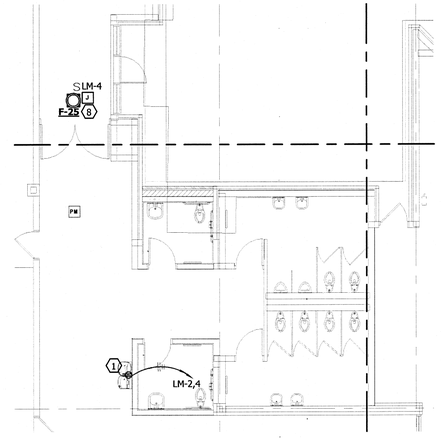
SW Project No: 0594-13-00-17



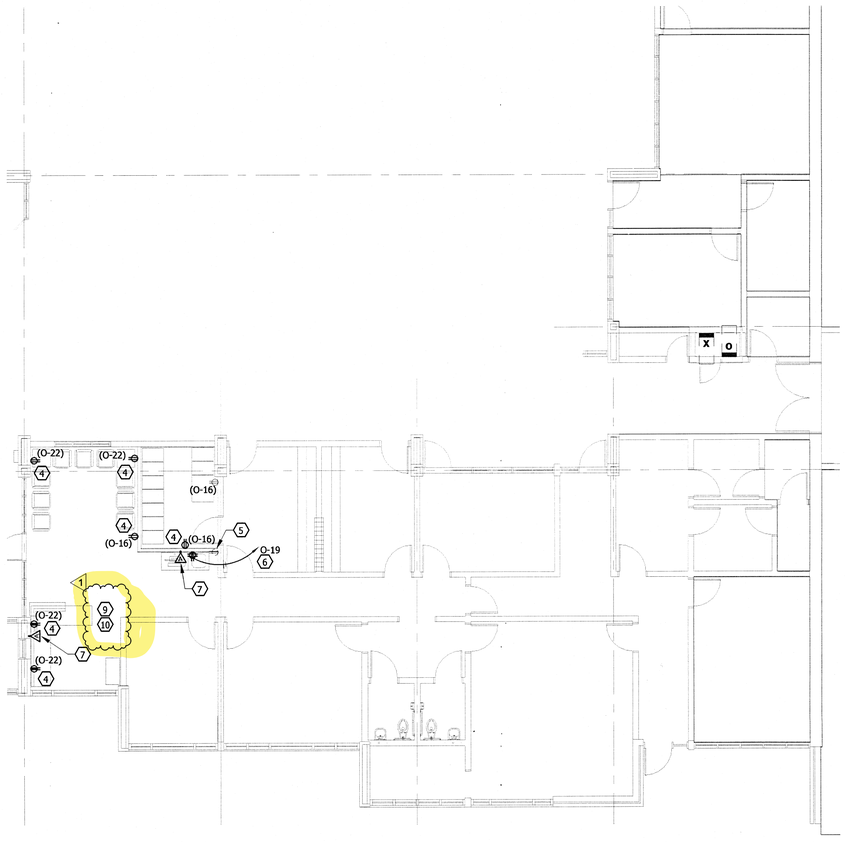
3 E300 **ALTERNATE #2 - LIGHTING & FIRE ALARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



1 E300 **ALTERNATE #2 - POWER**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



4 E300 **ALTERNATE #3 - LIGHTING & FIRE ALAARM**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'



2 E300 **ALTERNATE #3 - POWER**
SCALE: 1/8" = 1'-0"
4' 0 4' 8' 12' 16' 20'

GENERAL NOTES

1. COORDINATE EXACT LOCATION AND MOUNTING OF ALL CEILING MOUNTED DEVICES WITH REFLECTED CEILING PLAN PRIOR TO ROUGH IN.
2. ALL OCCUPANCY SENSORS WITHOUT INTEGRAL ON/OFF SWITCHES SHALL BE LOW VOLTAGE. PROVIDE POWER PACKS (NOT SHOWN) AS REQUIRED FOR SWITCHING INDICATED.
3. COORDINATE LOCATIONS AND QUANTITIES OF FLOW AND TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR.
4. ALL LIGHT FIXTURES SHALL REPLACED ONE FOR ONE. NEW LIGHT FIXTURES SHALL BE INSTALLED IN SAME LOCATION AS EXISTING LIGHT FIXTURES. WHERE INDICATED, REPLACE EXISTING SWITCHES WITH NEW 0-10V DIMMER SWITCHES. WHERE INDICATED, PROVIDE NEW OCCUPANCY SENSORS AND DIMMING CONTROL WIRING. MODIFY ALL WIRING AS REQUIRED.
5. ALL CEILING MOUNTED DEVICES (SPEAKERS, ETC.) SHALL BE PROTECTED DURING DEMOLITION AND INSTALLED IN NEW CEILING IN THE SAME LOCATION.
6. REPLACE ALL SMOKE DETECTORS WITH NEW. PROVIDE ALL HARDWARE, LABOR, AND PROGRAMMING REQUIRED.

(#) KEY NOTES TO E300

1 RECEPTACLE FOR ELECTRIC WATER COOLER WITH EXTERNAL GFI TRIP UNIT. SEE DETAIL. PROVIDE #12 PHASE, #12 NEUTRAL & #12 GROUND IN 3/4" C TO PANEL/CIRCUIT INDICATED.

2 CONNECT NEW LIGHTING TO EXISTING LOCAL LIGHTING CIRCUIT AS INDICATED.

3 CONNECT NEW EXIT SIGN TO EXISTING LOCAL 24-HR LIGHTING CIRCUIT AS INDICATED.

4 PROVIDE NEW RECEPTACLE, CONNECT TO LOCAL RECEPTACLE CIRCUIT SERVING AREA. UTILIZE #12 PHASE, #12 NEUTRAL & #12 GROUND IN 3/4" C.

5 UNDER ALTERNATE BID #3, DEMOLISH RECEPTALCE, BOX AND WIRING BACK TO JUNCTION BOX ABOVE CEILING. EXTEND CIRCUTI AS REQUIRED TO NEW DEVICES INDICATED.

6 RECEPTACLE FOR CHECK IN COMPUTER. COORDINATE LOCATION WITH ARCHITECT. PROVIDE #12 PHASE, #12 NEUTRAL & #12 GROUND IN 3/4" C TO PANEL/CIRCUIT INDICATED.

7 NEW TELECOM OUTLET BOX. EXTEND 1 1/4" C WITH PULL-STRING UP TO ABOVE ACCESSIBLE CEILING. WIRING AND OUTLET BY OWNER.

8 MAKE CONNECTION TO DISCONNECT PROVIDED BY TRADE PROVIDING EQUIPMENT.

9 RELOCATE EXISTING EMERGENCY PUSH BUTTON. FIELD VERIFY EXISTING LOCATION. COORDINATE NEW LOCATION WITH OWNER. PROVIDE NEW CABLING AS REQUIRED BY MANUFACTURER.

10 RECABLE EXISTING ADMINISTRATIVE INTERCOM PHONE. COORDINATE EXACT LOCAITON WITH OWNER.

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NORTH CAROLINA PROFESSIONAL SEAL 039503 ENGINEER MATTHEW V. JOHNSON
2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

ALTERNATES

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER
E300

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FEEDER SCHEDULE		
Mark	Ampacity	Description
20G	20A	3-#12 PHASE & 1-#12 GND IN 3/4" C.
30G	35A	3-#10 PHASE & 1-#10 GND IN 3/4" C.
50G	50A	3-#8 PHASE & 1-#10 GND IN 1" C.
100G	100A	3-#3 PHASE & 1-#8 GND IN 1 1/4" C.
150NG	150A	3-#1/0 PHASE, 1-#1/0 NEU, & 1-#6 GND IN 2" C.
150G	150A	3-#1/0 PHASE & 1-#6 GND IN 1 1/2" C.
200G	200A	3-#3/0 PHASE & 1-#6 GND IN 2" C.

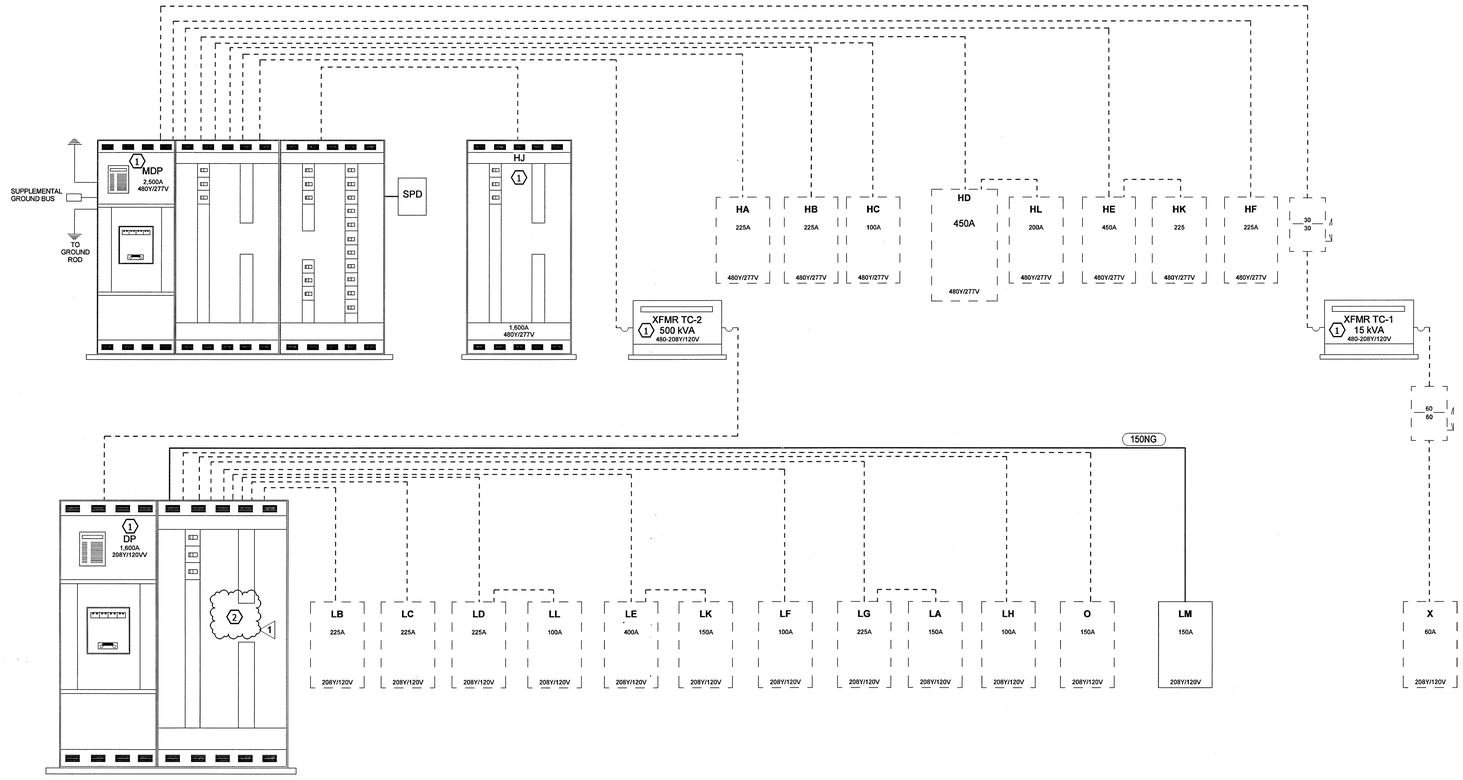
NOTES TO FEEDER SCHEDULE:

1. ALL AMPACITIES ARE BASED ON 75° C. RATING. CONTRACTOR IS RESPONSIBLE FOR THE MODIFICATION OF CONDUCTOR SIZES AS NECESSARY TO MEET THE REQUIREMENTS OF NEC 110-14(C) WHERE TERMINATIONS ARE NOT LISTED AND LABELED FOR USE AT 75° C. THIS REQUIREMENT APPLIES TO TERMINATIONS IN BOTH NEW EQUIPMENT AND IN EXISTING EQUIPMENT TO WHICH TERMINATIONS ARE MADE AS A PART OF THIS PROJECT.
2. DESIGNATION "C" IN THE ABOVE TABLE REFERS TO "CONDUIT". SEE SPECIFICATIONS FOR EXACT TYPE OF RACEWAY REQUIRED. TYPE OF RACEWAY, UNLESS INDICATED IN TABLE OR ELSEWHERE IN THE DRAWINGS, IS TO BE DETERMINED BY USE CONDITIONS.
3. PROVIDE A BONDING BUSHING AT THE EQUIPMENT END OF THIS CONDUIT RUN AND A BONDING HUB AT THE CONNECTION TO THE GROUNDING ELECTRODE.

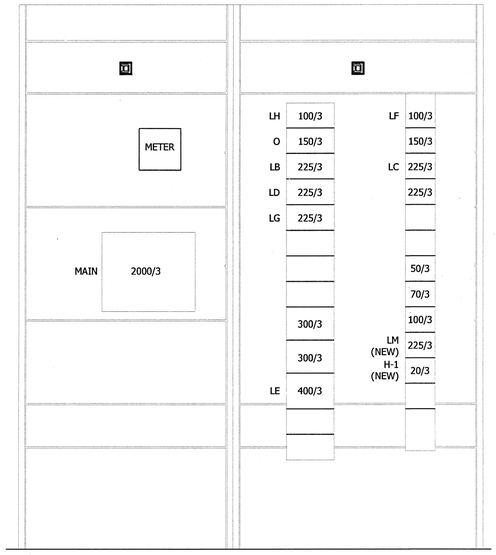
KEY NOTES TO E401

1 ALTERNATE BID #1 - REPLACE EXISTING EQUIPMENT IN PLACE. RECONNECT EXISTING CONDUITS TO NEW CABINET AS REQUIRED. EXTEND CONDUCTORS TO NEW CIRCUIT BREAKERS AS REQUIRED.

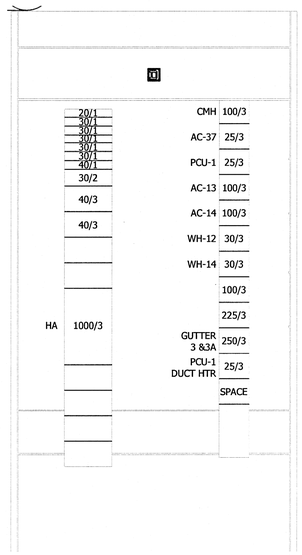
2 BASE BID: PROVIDE NEW 225A/3P AND 20A/3P CIRCUIT BREAKERS IN EXISTING SPACES TO FEED PANEL LM AND H-1 RESPECTIVELY.



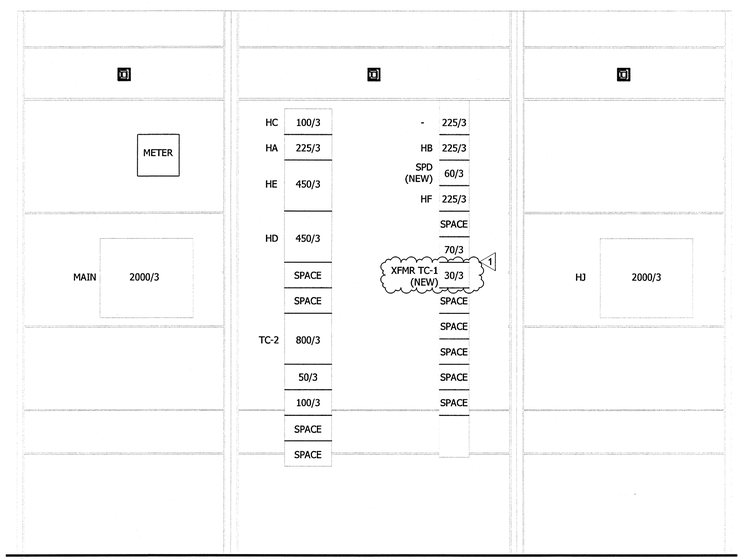
1 E401 **ELECTRICAL RISER**
SCALE: NTS



4 E401 **DP ELEVATION**
SCALE: NO SCALE



3 E401 **HJ ELEVATION**
SCALE: NO SCALE



2 E401 **MDP ELEVATION**
SCALE: NO SCALE

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039503 MATTHEW JASON JOHNSON 2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

ELECTRICAL DISTRIBUTION

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER
E401

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SW Project No. 0594-13-00-17

PANEL ID: HA

VOLTAGE: 480Y/277 | LOCATION: ELECTRICAL 405 | MOUNTING: SURFACE
AMPS: 200 | SOURCE: MDP | TYPE: EXIST SQD NEHB

LOAD	NOTE	COND SIZE	GND SIZE	NEU SIZE	Ø	POLE	BKR SIZE	CKT NO.	A	B	C	CKT NO.	BKR SIZE	POLE	Ø	NEU SIZE	GND SIZE	COND SIZE	NOTE	LOAD
EXIST CKT		--	--	--	--	1	20	1	0	0		2	20	1	--	--	--	--		EXIST CKT
EXIST CKT		--	--	--	--	1	20	3	0	0		4	20	1	--	--	--	--		EXIST CKT
EXIST CKT		--	--	--	--	1	20	5			0 0	6	20	1	--	--	--	--		EXIST CKT
EXIST CKT		--	--	--	--	1	20	7	0	0		8	20	1	--	--	--	--		EXIST CKT
EXIST CKT		--	--	--	--	1	20	9		0	0	10	20	1	--	--	--	--		EXIST CKT
EXIST CKT		--	--	--	--	1	20	11			0 0	12	20	1	--	--	--	--		EXIST CKT
EXIST CKT		--	--	--	--	1	20	13	0	0		14	20	1	--	--	--	--		EXIST CKT
EXIST CKT		--	--	--	--	1	20	15		0	0	16	20	1	--	--	--	--		EXIST CKT
EXIST CKT		--	--	--	--	1	20	17			0 0	18	20	1	--	--	--	--		EXIST CKT
								19	19676	0		20	--	--	--	--	--	--	--	SPACE
DVA-1	1	1	8	-	4	3	80	21			19676 0	22	--	--	--	--	--	--	--	SPACE
								23			19676 0	24	--	--	--	--	--	--	--	SPACE
								25	0	0		26	--	--	--	--	--	--	--	SPACE
EXIST CKT		--	--	--	--	3	100	27		0	0	28	--	--	--	--	--	--	--	SPACE
								29			0 0	30	--	--	--	--	--	--	--	SPACE
								31	0	0		32								
EXIST WG-1						3	200	33		0	0	34	100	3	--	--	--	--		EXIST CKT
								35			0 0	36								

MAIN BKR: N/A | PANEL AIC: EXIST
BUS: 225 | SERVICE EQPT: No
LUGS: EXIST | SUBFEED: No
APPROX. DIM. EXIST

TOTALS	PHASE A	PHASE B	PHASE C	
TOTAL (kVA)	19.7	19.7	19.7	59027 W PANEL TOTAL
AMPS/PHASE	71 A	71 A	71 A	

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER SIZED AS INDICATED. MATCH EXISTING MANUFACTURER AND AIC RATING.

PANEL ID: HB

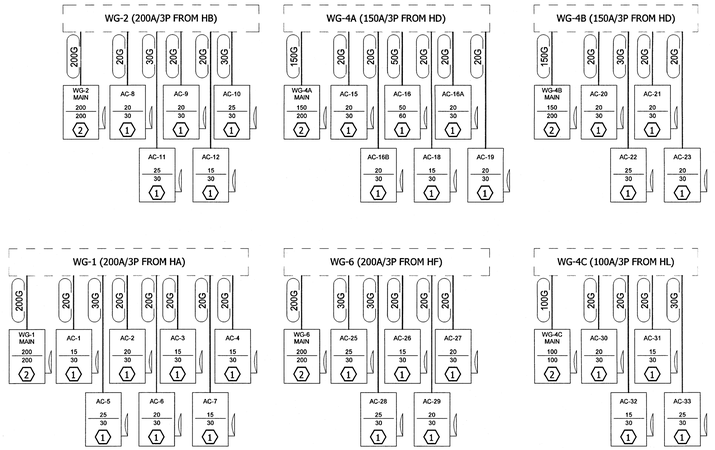
VOLTAGE: 480Y/277 | LOCATION: ELECTRICAL 606 | MOUNTING: SURFACE
AMPS: 225 | SOURCE: MDP | TYPE: EXIST SQD NEHB

LOAD	NOTE	COND SIZE	GND SIZE	NEU SIZE	Ø	POLE	BKR SIZE	CKT NO.	A	B	C	CKT NO.	BKR SIZE	POLE	Ø	NEU SIZE	GND SIZE	COND SIZE	NOTE	LOAD
EXIST LTG CORR		--	--	--	--	1	20	1	1000	1000		2	20	1	--	--	--	--		EXIST LTG 206
EXIST LTG 201		--	--	--	--	1	20	3			1000 1000	4	20	1	--	--	--	--		EXIST LTG 204
EXIST LTG 202		--	--	--	--	1	20	5			1000 1000	6	20	1	--	--	--	--		EXIST LTG 214
EXIST LTG 216		--	--	--	--	1	20	7	1000	1000		8	20	1	--	--	--	--		EXIST LTG 215
EXIST LTG 217		--	--	--	--	1	20	9			1000 1000	10	20	1	--	--	--	--		EXIST LTG 219-223
SPARE		--	--	--	--	1	20	11			0 1000	12	20	1	--	--	--	--		EXIST LTG RESTROOMS
SPARE		--	--	--	--	1	20	13	0	0		14	20	1	--	--	--	--		SPARE
SPARE		--	--	--	--	1	20	15		0	0	16	20	1	--	--	--	--		SPARE
SPARE		--	--	--	--	1	20	17			0 0	18	20	1	--	--	--	--		SPARE
								19	0	0		20	--	--	--	--	--	--	--	SPACE
SPARE		--	--	--	--	3	50	21		0	0	22	--	--	--	--	--	--	--	SPACE
								23			0 0	24	--	--	--	--	--	--	--	SPACE
SPACE	--	--	--	--	--	--	--	25	0	0		26								
SPACE	--	--	--	--	--	--	--	27		0	0	28	70	3	--	--	--	--		SPARE
SPACE	--	--	--	--	--	--	--	29			0 0	30								
								31	19676	0		32	--	--	--	--	--	--	--	SPACE
DVA-2	1	1	8	-	4	3	80	33		19676	0	34	--	--	--	--	--	--	--	SPACE
								35			19676 0	36	--	--	--	--	--	--	--	SPACE
UNUSABLE	--	--	--	--	--	--	--	37	0	22031		38								
UNUSABLE	--	--	--	--	--	--	--	39		0	22031	40	200	3						EXIST WG-2 VIA FEED THRU BREAKER
UNUSABLE	--	--	--	--	--	--	--	41			0 22031	42								

MAIN BKR: N/A | PANEL AIC: EXIST
BUS: 225 | SERVICE EQPT: No
LUGS: EXIST | SUBFEED: No
APPROX. DIM. EXIST

TOTALS	PHASE A	PHASE B	PHASE C	
TOTAL (kVA)	45.7	45.7	44.7	136120 W PANEL TOTAL
AMPS/PHASE	166 A	166 A	161 A	

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER SIZED AS INDICATED. MATCH EXISTING MANUFACTURER AND AIC RATING.



PANEL ID: HD

VOLTAGE: 480Y/277 | LOCATION: ELECTRICAL 510 | MOUNTING: SURFACE
AMPS: 450 | SOURCE: MDP | TYPE: EXIST SQD I-LINE

LOAD	NOTE	COND SIZE	GND SIZE	NEU SIZE	Ø	POLE	BKR SIZE	CKT NO.	A (VA)	B (VA)	C (VA)	CKT NO.	BKR SIZE	POLE	Ø	NEU SIZE	GND SIZE	COND SIZE	NOTE	LOAD
EXIST LTG LIBRARY		--	--	--	--	1	20	1	1000 1000			2	20	1	--	--	--	--		EXIST LTG 452
EXIST HALLWAY AREA 3		--	--	--	--	1	20	3		1000 1000		4	20	1	--	--	--	--		EXIST LTG 451
EXIST LTG 440		--	--	--	--	1	20	5			1000 1000	6	20	1	--	--	--	--		EXIST LTG 444
EXIST LTG 439		--	--	--	--	1	20	7	1000 1000			8	20	1	--	--	--	--		EXIST LTG 445
EXIST LTG 433		--	--	--	--	1	20	9		1000 1000		10	20	1	--	--	--	--		EXIST LTG 434, 450
EXIST LTG 432		--	--	--	--	1	20	11			1000 1000	12	20	1	--	--	--	--		EXIST CKT
EXIST LTG 401		--	--	--	--	1	20	13	1000 1000			14	20	1	--	--	--	--		EXIST LTG 412-414
EXIST LTG 401		--	--	--	--	1	20	15		1000 1000		16	20	1	--	--	--	--		EXIST EM LTG AREA 1
EXIST LTG 427,8, 31		--	--	--	--	1	20	17			1000 1000	18	20	1	--	--	--	--		EXIST EM LTG AREA 2
EXIST LTG 422, 418		--	--	--	--	1	20	19	1000 1000			20	20	1	--	--	--	--		EXIST LTG CORR
EXIST LTG 405,6 10		--	--	--	--	1	20	21		1000 1000		22	20	1	--	--	--	--		EXIST EM LTG AREA 411
SPARE		--	--	--	--	1	20	23			0 1000	24	20	1	--	--	--	--		EXIST EM LTG AREA 5
EXIST LTG MECH RM 424		--	--	--	--	1	20	25	1000 19676			26								
SPARE		--	--	--	--	1	20	27		0 19676		28	80	3	4	-	8	1	1	DVA-4
								29			26105 19676	30								
WG-4A						3	150	31	26105 22068			32								
								33		26105 22068		34	150	3						WG-4B
								35			27832 22068	36								
HL						3	200	37	25832 15713			38								
								39		25832 15713		40	150	3						WG-4C
SPACE	--	--	--	--	--	--	--	41			0 15713	42								

MAIN BKR: N/A | PANEL AIC: EXIST
BUS: 600 | SERVICE EQPT: No
LUGS: EXIST | SUBFEED: No
APPROX. DIM. EXIST

TOTALS	PHASE A	PHASE B	PHASE C	
TOTAL (kVA)	118.4	117.4	118.4	354180 W PANEL TOTAL
AMPS/PHASE	428 A	424 A	428 A	

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER SIZED AS INDICATED. MATCH EXISTING MANUFACTURER AND AIC RATING.

PANEL ID: HE

VOLTAGE: 480Y/277 | LOCATION: MECH ROOM M205 | MOUNTING: SURFACE
AMPS: 450 | SOURCE: MDP | TYPE: EXIST SQD NEHB

LOAD	NOTE	COND SIZE	GND SIZE	NEU SIZE	Ø	POLE	BKR SIZE	CKT NO.	A	B	C	CKT NO.	BKR SIZE	POLE	Ø	NEU SIZE	GND SIZE	COND SIZE	NOTE	LOAD
SPARE		--	--	--	--	1	20	1	0	0		2	20	1	--	--	--	--		SPARE
SPARE		--	--	--	--	1	20	3		0 0		4	20	1	--	--	--	--		SPARE
SPARE		--	--	--	--	1	20	5			0 0	6	20	1	--	--	--	--		SPARE
								7	10253	4927		8								
AC-24	1	1	10	-	6	3	60	9		10253	4927	10	25	3	10	-	10	3/4		AC-49
								11			10253 4927	12								
WG-5A (K-MUA)		1	10	-	8	3	50	13	10614	5000		14								
								15		10614	5000	16	30	3	--	--	--	--		EXIST UNIT HEATER
								17			10614 5000	18								
								19	2106	5000		20								
GHE-1		3/4	10	-	10	3	30	21		2106	5000	22	30	3	--	--	--	--		EXIST UNIT HEATER
								23			2106 5000	24								
SPACE	--	--	--	--	--	--	--	25	0	10000		26								
SPACE	--	--	--	--	--	--	--	27		0	10000	28	60	3	--	--	--	--		EXIST WATER HEATER
SPACE	--	--	--	--	--	--	--	29			0 10000	30								
SPACE	--	--	--	--	--	--	--	31	0	10000		32								
SPACE	--	--	--	--	--	--	--	33		0	10000	34	60	3	--	--	--	--		EXIST WATER HEATER
SPACE	--	--	--	--	--	--	--	35			0 10000	36								
								37	50000	0		38	--	--	--	--	--	--	--	UNUSABLE
HK						3	225	39		50000	0	40	--	--	--	--	--	--	--	UNUSABLE
								41			50000 0	42	--	--	--	--	--	--	--	UNUSABLE

MAIN BKR: N/A | PANEL AIC: EXIST
BUS: 600 | SERVICE EQPT: No
LUGS: EXIST | SUBFEED: No
APPROX. DIM. EXIST

TOTALS	PHASE A	PHASE B	PHASE C	
TOTAL (kVA)	107.9	107.9	107.9	323701 W PANEL TOTAL
AMPS/PHASE	390 A	390 A	390 A	

NOTES:

PANEL ID: HF

VOLTAGE: 480Y/277 | LOCATION: ELECTRICAL 806 | MOUNTING: SURFACE
AMPS: 225 | SOURCE: MDP | TYPE: EXIST SQD NEHB

LOAD	NOTE	COND SIZE	GND SIZE	NEU SIZE	Ø	POLE	BKR SIZE	CKT NO.	A (VA)	B (VA)	C (VA)	CKT NO.	BKR SIZE	POLE	Ø	NEU SIZE	GND SIZE	COND SIZE	NOTE	LOAD
EXIST LTG CORRIDOR		--	--	--	--	1	20	1	1000 1000			2	20	1	--	--	--	--		EXIST LTG 618
EXIST LTG 621		--	--	--	--	1	20	3		1000 1000		4	20	1	--	--	--	--		EXIST LTG 617
EXIST LTG 622		--	--	--	--	1	20	5			1000 1000	6	20	1	--	--	--	--		EXIST LTG 608
EXIST LTG 607		--	--	--	--	1	20	7	1000 1000			8	20	1	--	--	--	--		EXIST LTG 609
EXIST LTG 606		--	--	--	--	1	20	9		1000 1000		10	20	1	--	--	--	--		EXIST LTG 601-603
EXIST CKT		--	--	--	--	1	20	11			1000 0	12	20	1	--	--	--	--		SPARE
SPARE		--	--	--	--	1	20	13	0 0			14	20	1	--	--	--	--		SPARE
EXIST LTG RESTROOMS		--	--	--	--	1	20	15		1000 0		16	20	1	--	--	--	--		SPARE
SPARE		--	--	--	--	1	20	17			0 0	18	20	1	--	--	--	--		SPARE
								19	0	0		20	--	--	--	--	--	--	--	SPACE
SPARE		--	--	--	--	3	70	21		0	0	22	--	--	--	--	--	--	--	SPACE
								23			0 0	24	--	--	--	--	--	--	--	SPACE
SPACE	--	--	--	--	--	--	--	25	0	19676		26								
SPACE	--	--	--	--	--	--	--	27		0	19676	28	80	3	4	-	8	1	1	DVA-5
SPACE	--	--	--	--	--	--	--	29			0 19676	30								
SPACE	--	--	--	--	--	--	--	31	0	0		32	--	--	--	--	--	--	--	SPACE
SPACE	--	--	--	--	--	--	--	33		0	0	34	--	--	--	--	--	--	--	SPACE
SPACE	--	--	--	--	--	--	--	35			0 0	36	--	--	--	--	--	--	--	SPACE
UNUSABLE	--	--	--	--	--	--	--	37	0	22031		38								
UNUSABLE	--	--	--	--	--	--	--	39		0	22031	40	200	3						WG-6 (VIA FEED THRU BREAKER)
UNUSABLE	--	--	--	--	--	--	--	41			0 22031	42								

MAIN BKR: N/A | PANEL AIC: EXIST
BUS: 225 | SERVICE EQPT: No
LUGS: EXIST | SUBFEED: No
APPROX. DIM. EXIST

TOTALS	PHASE A	PHASE B	PHASE C	
TOTAL (kVA)	45.7	46.7	44.7	137120 W PANEL TOTAL
AMPS/PHASE	166 A	169 A	161 A	

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER SIZED AS INDICATED. MATCH EXISTING MANUFACTURER AND AIC RATING.

PANEL ID: HL

VOLTAGE: 480Y/277 | LOCATION: MECH ACCESS M713 | MOUNTING: SURFACE
AMPS: 200 | SOURCE: HD | TYPE: EXIST SQD NEHB

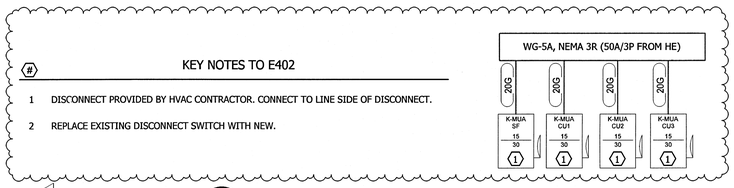
LOAD	NOTE	COND SIZE	GND SIZE	NEU SIZE	Ø	POLE	BKR SIZE	CKT NO.	A (VA)	B (VA)	C (VA)	CKT NO.	BKR SIZE	POLE	Ø	NEU SIZE	GND SIZE	COND SIZE	NOTE	LOAD
EXIST LTG RESTROOM		--	--	--	--	1	20	1	1000 1000			2	20	1	--	--	--	--		EXIST LTG 461
EXIST LTG 460		--	--	--	--	1	20	3		1000 1000		4	20	1	--	--	--	--		EXIST LTG ENTRANCE
EXIST LTG 464		--	--	--	--	1	20	5			1000 1000	6	20	1	--	--	--	--		EXIST LTG RESTROOM
EXIST LTG HALL 457		--	--	--	--	1	20	7	1000 1000			8	20	1	--	--	--	--		EXIST LTG 455
SPARE		--	--	--	--	1	20	9		0 0		10	20	1	--	--	--	--		SPARE
SPARE		--	--	--	--	1	20	11			0 0	12								
SPARE		--	--	--	--	1	20	13	0 0			14	50	3	--	--	--	--		SPARE
SPACE	--	--	--	--	--	--	--	15		0 0		16								
								17			23832 0	18	--	--	--	--	--	--	--	SPACE
DVA-3	1	1 1/4	8	-	3	3	100	19	23832	0		20	--	--	--	--	--	--	--	SPACE
								21			23832 0	22	--	--	--	--	--	--	--	SPACE
SPACE	--	--	--	--	--	--	--	23			0 0	24	--	--	--	--	--	--	--	SPACE
SPACE	--	--	--	--	--	--	--	25	0	0		26	--	--	--	--	--	--	--	SPACE
SPACE	--	--	--	--	--	--	--	27		0	0	28	--	--	--	--	--	--	--	SPACE
SPACE	--	--	--	--	--	--	--	29			0 0	30	--	--	--	--	--	--	--	SPACE

MAIN BKR: N/A | PANEL AIC: EXIST
BUS: 200 | SERVICE EQPT: No
LUGS: EXIST | SUBFEED: No
APPROX. DIM. EXIST

TOTALS	PHASE A	PHASE B	PHASE C	
TOTAL (kVA)	27.8	25.8	25.8	79497 W PANEL TOTAL
AMPS/PHASE	100 A	93 A	93 A	

NOTES:
1. PROVIDE NEW CIRCUIT BREAKER SIZED AS INDICATED. MATCH EXISTING MANUFACTURER AND AIC RATING.

PANEL KEY	
HA	HB
HD	HE
HF	HL



1 E402 **ELECTRICAL HVAC WIREWAY RISERS**
SCALE: NTS

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NORTH CAROLINA REGISTERED PROFESSIONAL SEAL 039503 ENGINEER MATTHEW J. JOHNSON 2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

ELECTRICAL DISTRIBUTION & PANEL SCHEDULES

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER E402

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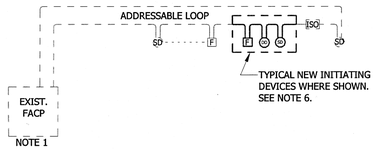
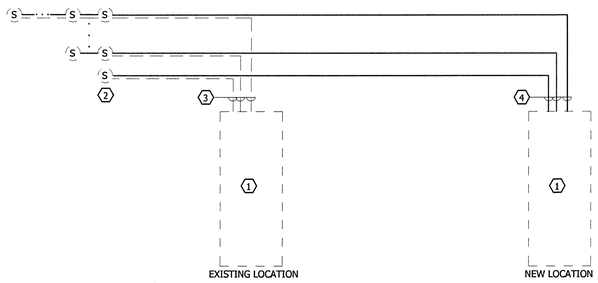


GENERAL NOTES TO :

1. EXISTING FIRE ALARM CONTROL PANEL IS A FULLY ADDRESSABLE NOTIFIER NFS 2020. DEVICES INSTALLED SHALL BE COMPATIBLE WITH EXISTING SYSTEM.
2. ALL FIRE ALARM SYSTEM MODIFICATIONS TO BE PERFORMED BY A FACTORY TRAINED AND APPROVED VENDOR AND TECHNICIANS.
3. PROVIDE PROGRAMMING AT BEGINNING AND END OF EACH PHASE TO REMOVE DEVICES WHITHIN THE AREA OF WORK ASSOCIATED WITH THE NEXT PHASE AND TO ADD THE DEVICES WITHIN THE COMPLETED AREA. NEW ROOM NUMBERING SHALL BE INCLUDED WITH THIS PROGRAMMING.
4. VERIFY PROPER OPERATION OF FIRE ALARM SYSTEM AND COMPONENTS PRIOR TO STARTING WORK AND NOTIFY ENGINEER OF ANY IDENTIFIED PROBLEMS.
5. PROVIDE SEPARATE CONDUITS FOR OPPOSITE ENDS OF LOOP CONDUCTORS. DO NOT COMBINE LOOP CONDUCTORS INTO SINGLE CONDUIT RUNS EXCEPT AS PERMITTED BY THE SPECIFICATIONS.
6. RISER DIAGRAM SHOWS FUNCTIONAL CONNECTIONS. WORK REQUIRED ON FLOORS TO RELOCATE DEVICES, AS REQUIRED TO PERMIT FIRE PROTECTION WORK, IS NOT SHOWN. EXACT WIRING AND CONNECTIONS FOR ALL DEVICES (NEW AND REWORKED/RELOCATED) ARE TO BE PROVIDED AS A PART OF THE FIRE ALARM SHOW DRAWING SUBMITTAL PACKAGE SUPPLIED BY THE CONTRACTOR.
7. CONNECT NEW INITIATING DEVICES TO EXISTING ADDRESSABLE LOOP (IF AVAILABLE). PROVIDE ADDITIONAL ISOLATION MODULES AS NECESSARY FOR NEW EQUIPMENT SUCH THAT 20 DEVICES (MAX) ARE ISOLATED ALONG THE ENTIRE LOOP. PROVIDE ALL PROGRAMMING REQUIRED TO ACTUATE NEW DEVICES.
8. PROTECT ALL LINEAR BEAM DETECTORS WITHIN THE BUILDING DURING CONSTRUCTION.
9. AT END OF EACH PHASE AND END OF PROJECT, COMPLETELY TEST SYSTEM INCLUDING 100% OF ALL NEW AND REWORKED DEVICES. IN ADDITION, TEST 10% OF ALL DEVICES ON EACH ADDRESSABLE LOOP IN SYSTEM. PROVIDE A PRINT OUT SHOWING RESULTS OF TEST AND SENSITIVITIES OF ALL SMOKE DETECTORS.
10. REPROGRAM SYSTEM TO ACCOUNT FOR NEW ROOM NUMBERS.

1

1 E501 FIRE ALARM RISER DIAGRAM
SCALE: NTS



KEY NOTES TO E501

1 EXISTING PUBLIC ADDRESS TOWER. RELOCATE PER PLANS.
2 EXISTING PUBLIC ADDRESS SPEAKER. PROTECT DURING CEILING WORK. (TYP)
3 DEMOLISH ALL EXISTING P/A CABLING.
4 PROVIDE NEW P/A SPEAKER CABLING TO ALL SPEAKERS WITHIN AND EXTERIOR TO THE BUILDING.

PUBLIC ADDRESS SYSTEM NOTES:

1. THE PUBLIC ADDRESS DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE EXACT DESIGN, CONSTRUCTION PLAN METHODS, ETC SHALL BE DETERMINED BY THE PUBLIC ADDRESS VENDOR. THE PUBLIC ADDRESS VENDOR SHALL PROVIDE WORKING DRAWINGS IN ACCORDANCE WITH SPECIFICATIONS FOR APPROVAL BY THE ENGINEER AND OWNER.
2. ALL WORK SHALL BE COMPLETED AND PERFORMED BY A FACTORY TRAINED AND AUTHORIZED VENDOR.
3. ALL EXISTING ZONING SHALL BE MAINTAINED.
4. ALL EXISTING SPEAKERS (INTERIOR, GYMNASIUM, AND EXTERIOR) SHALL HAVE NEW CABLE PROVIDED.
5. ALL EXISTING INTERCOM PHONES SHALL HAVE NEW CABLE PROVIDED.

3 E501 PUBLIC ADDRESS DETAIL
SCALE: NTS

1

LIGHT FIXTURE SCHEDULE

TYPE MARK	DESCRIPTION	MANUFACTURER	SERIES/MODEL	LUMENS	MOUNTING	FINISH	VOLTAGE	WATTAGE	CONTROL	COMMENTS	ICON
A	2X4 LED TROFFER	COLUMBIA	LCAT24-40MWG-EDU	3518	RECESSED, GRID		MVOLT	31 VA	0-10V		
AB	2X4 LED TROFFER	COLUMBIA	LCAT24-40MWG-EDU-ELL14	3518	RECESSED, GRID		MVOLT	31 VA	0-10V		
AF	2X4 LED TROFFER	COLUMBIA	LCAT24-40MLG-EDU	4990	RECESSED, FLANGE		MVOLT	39 VA	0-10V	PROVIDE FK24 FLANGE KIT	
AM	2X4 LED TROFFER	COLUMBIA	LCAT24-40MLG-EDU	4990	RECESSED, GRID		MVOLT	39 VA	0-10V		
AMB	2X4 LED TROFFER	COLUMBIA	LCAT24-40MLG-EDU-ELL14	4990	RECESSED, GRID		MVOLT	39 VA	0-10V		
BF	1X4 LED TROFFER	COLUMBIA	LCAT14-40MLG-EDU	4905	RECESSED, GRID		MVOLT	38 VA	0-10V		
C	6" RECESSED DOWNLIGHT	GOTHAM	EVO 40/25 6AR MWD LSS MVOLT EZ1 TRW	2500	RECESSED	WHITE PAINTED TRIM	MVOLT	30 VA	0-10V		
D	15" SURFACE DOWNLIGHT	KENALL	RHR15 -W-PP-25L40K-DV	3093	SURFACE	WHITE	MVOLT	29 VA			
E4	4' STRIP	COLUMBIA	LCS4-40ML-EU					48 VA			
F	2' STRIP	COLUMBIA	LCS2-40ML-EU	3000	WALL MOUNT ABOVE DOOR		MVOLT	26 VA			
G	LED HIGHBAY	LITHONIA	JHBL 24000LM PCL WD MVOLT GZ10 40K 80CRI	21,276	PENDANT		MVOLT	197 VA	0-10V	PROVIDE SAFETY CABLE	
H	LED DISPLAY CASE LIGHTING	ECOSENSE	SCIS-48-40-120-CL	1392	SURFACE, DISPLAY CASE		120	16 VA			
J	DECORATIVE PENDANT	Delray Lighting Inc.	UCD4 S W40 CS SS	16350	PENDANT	SILVER	120	94 VA	0-10V	CONTROL UPLIGHT SEPARATELY FROM DOWNLIGHT	
X	EXIT SIGN	LITHONIA	LHQM LED R HO RO		UNIVERSAL MOUNT, SINGLE OR DOUBLE FACE AS INDICATED ON DRAWINGS.	WHITE. RED LETTERS	MVOLT	5 VA		PROVIDE WIREGUARD FOR EXIT LIGHTS MOUNTED IN GYM	EXIT
X-BAT	EMERGENCY LIGHTING UNIT	LITHONIA	ELMLT W LP06VS LPT		WALL	WHITE	MVOLT	5 VA		PROVIDE ELA VS VANDAL SHIELD. MOUNT 9'-0" AFF	
XR	REMOTE EMERGENCY HEAD	LITHONIA	ELA LED T WP M12		UNIVERSAL MOUNT	GRAY	9.6-VOLT REMOTE	5 VA			

FIXTURE SCHEDULE NOTES:

1. PROVIDE DRIVERS WITH CURRENT TOTAL HARMONIC DISTORTION (THD) OF <10% AND A POWER FACTOR >0.90. IN ADDITION, DRIVERS MUST BE RF SUPPRESSED FOR MINIMUM INJECTION OF OF FEEDBACK INTO SUPPLY LINES. MAXIMUM CURRENT THD AND MINIMUM POWER FACTOR MUST BE SUBMITTED AS A PART OF THE FIXTURE SUBMITTAL DATA.
2. PROVIDE MOUNTING FRAME AND RELATED ACCESSORIES FOR ALL FIXTURES AS REQUIRED TO MATCH CEILING CONSTRUCTION. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT CEILING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MODIFICATION OF FIXTURE SCHEDULE MANUFACTURER'S PART NUMBERS FOR PURPOSES OF MATCHING CEILING CONSTRUCTION.
3. EQUIVALENT FIXTURES BY MANUFACTURERS OTHER THAN THOSE LISTED MAY BE SUBMITTED FOR CONSIDERATION.
4. PROVIDE 0-10V DIMMING WHERE DIMMING CONTROLS ARE INDICATED ON THE PLANS.
5. ALL FIXTURES TO HAVE A COLOR TEMPERATURE OF 4000°K UNLESS NOTED OTHERWISE.
6. UNLESS NOTED OTHERWISE, ALL FIXTURES SHALL INCLUDE INTEGRAL DRIVER.
7. ALL FIXTURES SHALL BE UL OR THIRD PARTY LISTED AS COMPLETE ASSEMBLY.

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NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 039503 MATTHEW J. HOWINGTON 2/15/18

Renovations and Additions to: Myrtle Grove Middle School

901 Piner Road, Wilmington, North Carolina 28409

LIGHTING AND FIRE ALARM DETAILS

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

SHEET NUMBER
E501

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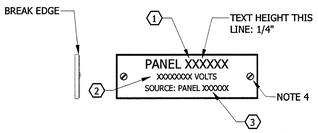
SW Project No: 0594-13-00-17

KEYED NOTES:

1. INSERT PANEL DESIGNATION WHERE X'S ARE INDICATED.
2. INSERT VOLTAGE WHERE X'S ARE INDICATED. POSSIBLE CHOICES ARE:

   "480Y/277"
   "208Y/120"
   "120/240, 1Ø"

3. INSERT SUPPLYING PANEL DESIGNATION HERE.

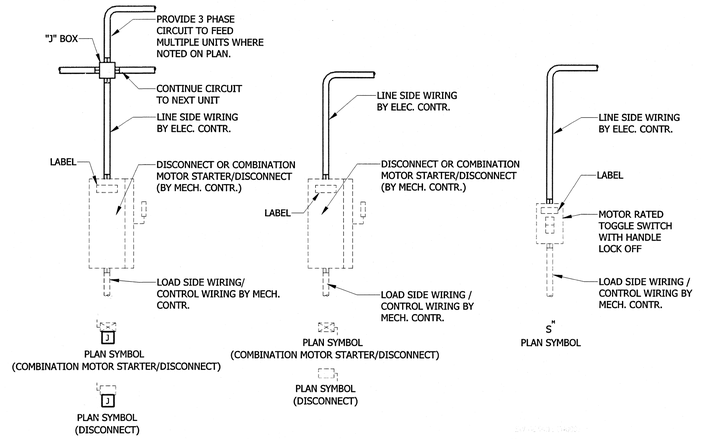


GENERAL NOTES:

1. INSTALL NEW LABELS ON ALL PROJECT PANELBOARDS.
2. CONSTRUCT LABELS FROM 2 COLOR PLASTIC LAMINATE. DIMENSIONS ARE 5" WIDE x 1 1/2" HIGH. TEXT HEIGHT IS 3/16", EXCEPT AS NOTED OTHERWISE.
3. LABEL COLORS ARE TO BE WHITE LETTERS WITH BLUE BACKGROUND FOR 120/240 V AND 208Y/120 V PANELBOARDS. LABEL COLORS ARE TO BE WHITE LETTERS WITH BLACK BACKGROUND FOR 480Y/277 V PANELS.
4. SECURE TO TOP CENTER OF PANELBOARD COVER USING #4-40 STAINLESS STEEL SCREWS WITH NUTS AND LOCKWASHERS. USE OF ADHESIVES TO SECURE LABEL TO PANELBOARD IS NOT ACCEPTABLE.

4 E601 PANELBOARD LABEL

SCALE: NTS

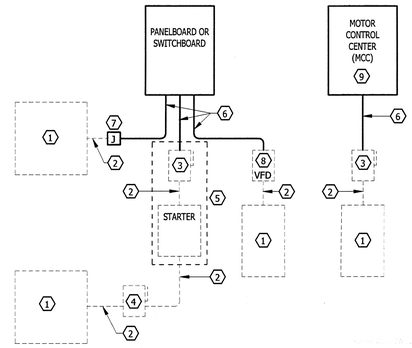


1 E601 MECHANICAL UNIT WIRING DETAILS

SCALE: NTS

KEYED NOTES:

1. EQUIPMENT PROVIDED AND INSTALLED BY OTHER CONTRACTOR. CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS, START UP AND TEST EQUIPMENT.
2. CONDUIT & WIRING BY OTHER CONTRACTOR PROVIDING EQUIPMENT.
3. DISCONNECT PROVIDED AND INSTALLED BY CONTRACTOR PROVIDING EQUIPMENT.
4. IF AN ADDITIONAL DISCONNECT IS REQUIRED BY NEC, IT SHALL BE PROVIDED AND INSTALLED BY CONTRACTOR PROVIDING EQUIPMENT.
5. A COMBINATION STARTER MAY BE USED IN LIEU OF A SEPARATE DISCONNECT SWITCH AND STARTER. A COMBINATION STARTER SHALL BE PROVIDED AND INSTALLED BY THE OTHER CONTRACTOR PROVIDING THE EQUIPMENT.
6. FEEDER AND CONDUIT BY ELECTRICAL CONTRACTOR. SEE PANELBOARD SCHEDULES FOR WIRE AND BREAKER SIZES TO OTHER EQUIPMENT. TERMINATE FEEDER AT LINE SIDE OF DISCONNECTING MEANS.
7. JUNCTION BOX MAY BE SHOWN ON ELECTRICAL PLANS FOR SOME EQUIPMENT IF NO STARTER IS REQUIRED. INSTALL JUNCTION BOX ADJACENT TO THE EQUIPMENT AND PROVIDE LINE SIDE WIRING TO THE JUNCTION BOX. MOTOR RATED DISCONNECT SHALL BE PROVIDED BY CONTRACTOR PROVIDING EQUIPMENT WHERE REQUIRED BY CODE.
8. VARIABLE FREQUENCY DRIVE (VFD) PROVIDED AND INSTALLED BY OTHER CONTRACTOR PROVIDING EQUIPMENT. VFD IS SUPPLIED WITH INTEGRAL DISCONNECTING MEANS.
9. FOR PROJECTS UTILIZING A MOTOR CONTROL CENTER (MCC), THE STARTER, CIRCUIT BREAKER OR VFD IN THE MCC ARE PROVIDED BY THE ELECTRICAL CONTRACTOR.



2 E601 ELECTRICAL CONNECTIONS TO EQUIPEMENT OF OTHER TRADES

SCALE: NTS

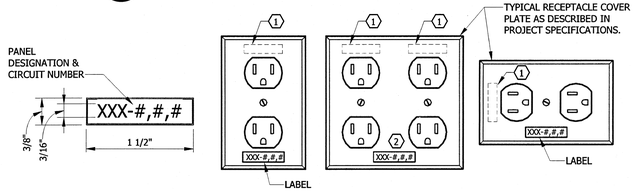


FIG. 1 - LABEL DIMENSIONS

FIG. 2 - LABEL LOCATION ON DEVICE PLATE

GENERAL NOTES TO:

1. LABELS ARE TO BE MACHINE PRODUCED USING A THERMAL TRANSFER PROCESS WITH DIMENSIONS AS SHOWN ABOVE. LABELS ARE TO BE SUITABLE FOR EITHER INDOOR OR OUTDOOR USE.
2. LABEL COLOR TO BE CLEAR WITH BLACK LETTERING.
3. LABELS ARE TO BE ATTACHED AS INDICATED ABOVE TO ALL PROJECT RECEPTACLE COVER PLATES.

KEYED NOTES:

1. WRITE PANEL DESIGNATION NUMBER ON DEVICE YOKE WITH A FINE TIP, PERMANENT MARKER AS AN AID TO PROPER FACEPLATE LOCATION. ALL MARKING ON DEVICES MUST BE COVERED BY FACEPLATE.
2. FOR DUPLEX RECEPTACLES CENTER LABEL IF BOTH DEVICES ARE SUPPLIED BY THE SAME CIRCUIT. IF DEVICES ARE SUPPLIED BY DIFFERENT CIRCUITS PROVIDE A LABEL BELOW EACH RECEPTACLE.

3 E601 DEVICE LABELS

SCALE: NTS

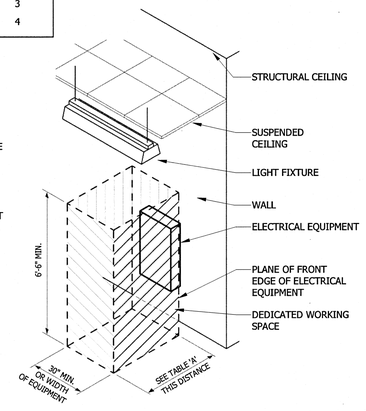
TABLE A - WORKING CLEARANCES			
NOMINAL VOLTAGE TO GROUND	MINIMUM CLEAR DISTANCE (FEET) CONDITION 1	CONDITION 2	CONDITION 3
0-150	3	3	3
151-600	3	3 1/2	4

WHERE THE CONDITIONS ARE AS FOLLOWS:

1. EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR UNGROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR OTHER INSULATING MATERIALS. INSULATED WIRE OR INSULATED BUSBARS OPERATING AT NOT OVER 300V SHALL NOT BE CONSIDERED LIVE PARTS.
2. EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE.
3. EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

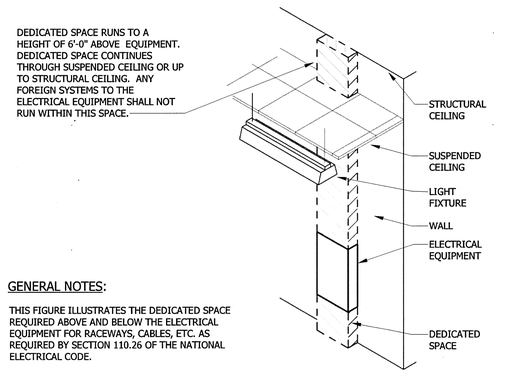
GENERAL NOTES:

1. THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF ELECTRICAL EQUIPMENT AS REQUIRED BY SECTION 110.26 OF THE NATIONAL ELECTRICAL CODE.



5 E601 WORKING CLEARANCES FOR ELECTRICAL EQUIPMENT

SCALE: NTS

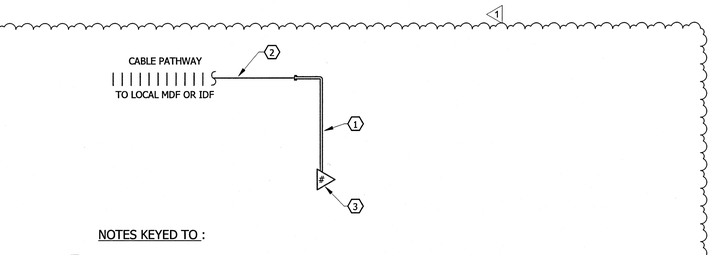


GENERAL NOTES:

1. THIS FIGURE ILLUSTRATES THE DEDICATED SPACE REQUIRED ABOVE AND BELOW THE ELECTRICAL EQUIPMENT FOR RACEWAYS, CABLES, ETC. AS REQUIRED BY SECTION 110.26 OF THE NATIONAL ELECTRICAL CODE.

6 E601 DEDICATED SPACE FOR ELECTRICAL EQUIPMENT

SCALE: NTS

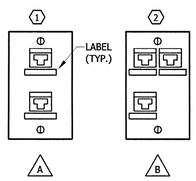


NOTES KEYED TO :

1. 1" CONDUIT TO 90° ELBOW ABOVE ACCESSIBLE CEILING - BUSH ENDS OF PIPE.
2. ROUTE VOICE/DATA CABLE(S) EXPOSED ABOVE CEILING USING D-RINGS MOUNTED TO CORRIDOR WALL 3'-0" ON CENTER. PROVIDE ADDITIONAL RINGS AS REQUIRED TO AVOID SHARP CABLE BENDS. PROVIDE J-HOOKS WHERE CABLES LEAVE THE CORRIDOR WALLS TO CROSS CORRIDOR. VOICE/DATA CABLES SHALL NOT SHARE HANGERS WITH OTHER SYSTEM CABLES. CONDUCTOR FILL ON ALL HANGERS SHALL NOT EXCEED 70%.
3. REFER TO THE TELECOMMUNICATIONS OUTLET SCHEDULE.

7 E601 TYPICAL TELECOM OUTLET

SCALE: NTS



TELECOMMUNICATIONS OUTLET SCHEDULE			
SYMBOL	PORTS	FUNCTION	CABLE
A	2	DATA/DATA	(2) CAT. 6
B	3	DATA/DATA/VOICE	(3) CAT. 6

NOTES KEYED TO :

1. ROUTE CAT 6 CABLES (2 DATA) TO DESIGNATED TERMINATION POINT.
2. ROUTE CAT 6 CABLES (2 DATA, 1 VOICE) TO DESIGNATED TERMINATION POINT.

8 E601 TYPICAL TELECOM OUTLETS SCHEDULE

SCALE: NTS

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Renovations and Additions to:
Myrtle Grove Middle School
901 Piner Road, Wilmington, North Carolina 28409

ELECTRICAL GENERAL DETAILS

JOB NUMBER 0594-01-00-13
DRAWN BY SW
CHECKED BY
DATE 01/24/18
REVISIONS

1	REVISION # 1	2/15/18

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SW Project No: 0594-13-00-17

SHEET NUMBER E601

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phone 910.762.2621 *fax* 910.762.8506
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Myrtle Grove Middle School
Addendum #1 – 02/15/2018
Revised Sheet List

C1-01 – Existing Conditions and Demolition Plan
C2-01 – Staking and Landscaping Plan
C4-01 – Site Utility Plan
C5-02 – Site Details
C5-04 – Site Details

CS-08 Construction Phasing
A-100 Complete Renovated Floor Plan
A-103 Floor Plan, Elective Wing
A-106 Floor Plan, Admin. & Media Center
A-108 Floor Plan, Cafeteria
A-109 Floor Plan, 8th Grade Wing
A-301 Elevations 3-5
A-304 Elevations 15-18
A-400 Building Sections
A-501 Detail sheet
A-505 Enlarged Plans & Details – Reception (Add Alt #3)
A-506 Enlarged Plans, Reception Renovation (Add Alt #3)
A-507 Enlarged Plans – Media Center
A-601 Window and Door Elevations
A-602 Window and Door Elevations
A-800 RCP - Elective Wing
A-803 RCP - Media Center and Admin
A-804 RCP - 7th Grade Wing
A-805 RCP – Cafeteria

ID-100 Finish Legend and Details
ID-103 Floor Pattern Plan, Elective Wing
ID-104 Floor Pattern Plan, 8th Grade Wing
ID-106 Floor Pattern Plan, Admin/Media
ID-107 Floor Pattern Plan, 7th Grade Wing
ID-108 Floor Pattern Plan, Cafeteria

ID-109 Floor Pattern Plan, 6th Grade Wing

FP100 Fire Protection Plan
P200 Enlarged Plans

H001 Standards, Symbols and Abbreviations
H010 Demolition Plan, Elective Wing
H011 Demolition Plan, 8th Grade Wing
H012 Demolition Plan, Gymnasium
H013 Demolition Plan, Admin/Media Center
H014 Demolition Plan, 7th Grade Wing
H015 Demolition Plan, Cafeteria
H016 Demolition Plan, 6th Grade Wing
H100 Duct Plan, Elective Wing
H101 Duct Plan, 8th Grade Wing
H102 Duct Plan, Gymnasium
H103 Duct Plan, Admin/Media Center
H104 Duct Plan, 7th Grade Wing
H105 Duct Plan, Cafeteria
H106 Duct Plan, 8th Grade Wing
H110 Piping Plan, 8th Grade Wing
H111 Piping Plan, 6th Grade Wing
H113 Piping Plan, Admin/Media Center
H114 Piping Plan, 7th Grade Wing
H200 – Enlarged Mechanical Room Plans – REMOVED
H201 Alternates
H302 Details
H303 Details (NEW SHEET)
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H400 Controls
H401 Controls
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E001 Standards, Symbols and Abbreviations
E002 Electrical Site Plan
E100 Power Plan, Electrical Wing
E101 Power Plan, 8th Grade Wing
E102 Power Plan, Gymnasium
E103 Power Plan, Admin / Media Center
E104 Power Plan, 7th Grade Wing
E105 Power Plan, Cafeteria
E106 Power Plan, 6th Grade Wing

E200 Lighting and Fire Alarm, Elective Wing
E201 Lighting and Fire Alarm, 8th Grade Wing
E202 Lighting Plan, Gymnasium
E203 Lighting and Fire Alarm, Admin / Media Center
E204 Lighting and Fire Alarm, 7th Grade Wing
E205 Lighting and Fire Alarm, Cafeteria
E206 Lighting and Fire Alarm, 6th Grade Wing
E300 Alternates
E401 Electrical Distribution
E402 Electrical Distribution and Panel Schedule
E501 Lighting and Fire Alarm Details
E601 Electrical General Details