ADDENDUM DATE: April 4, 2024

PROJECT: Northwoods Park Middle School Gymnasium & Renovation
904 Sioux Dr.
Jacksonville, NC 28540

OWNER: Onslow County Schools
200 Broadhurst Rd
Jacksonville, NC 28540

ARCHITECT: Smith Sinnett Architecture, P.A.
4600 Lake Boone Trail, Suite 205
Raleigh, North Carolina 27607

BIDS DUE: Thursday, **April 11th, 2024 at 2:00 p.m.**
Onslow County Schools Office
200 Broadhurst Rd.
Jacksonville, NC 28540
Meeting Room # 4

Please note, Project Documents, Addenda, and Contractors list are available at www.smithsinnett.com under the 'Documents' icon on the navigation bar.

Among other items, this Addendum addresses the Clarifications from GCs questions, changes to sheets and specifications.

This Addendum shall be included in the contract for the above-referenced project. All General, Supplementary and Special Conditions, etc., as originally specified or as modified below shall apply to these items.

General

1. Exhibit C – Hazardous Materials Report

Clarifications

1. Building permit and water/sewer tap fees are paid for by the GC. Fee schedule can be found here: https://www.jacksonvillenc.gov/276/City-Finance

2. Specification SECTION 01 02 00 (3.1B) Cleanup is only required within the LIMITS OF CONSTRUCTION. Areas outside of the CONSTRUCTION LIMITS shall be cleaned immediately if the contractor exceeded the limits of construction. This includes any soils that are dropped by construction vehicles onto the public way.

3. As noted in the drawings and specifications, a 2" water meter is required.

4. Hurricane impact doors and windows are not required on this project.

5. Save and provide to owner 50% of the existing gym wood floor that is shown to be removed in the drawings. Also, save and provide to owner 25% of the existing stage wood flooring that is shown to be removed.

6. Door 611D calls for panic hardware, not an exit device. This is an exit egress door for the existing building, the door swing shown on plans is correct.

7. At all doors, sidewalk is to be doweled as shown on 2 and 3 / A5-02.

8. Specification SECTION 101400 For fabricated letters: Size varies, refer to A7-01 FINISH PLAN - GYM ADDITION for sizes. Location is shown on A7-01 FINISH PLAN - GYM ADDITION and A7-02 FINISH PLAN - RENOVATION. With regards to style, sheet A7-01 FINISH PLAN - GYM ADDITION states white & raised letters, font type will be determined during shop drawing submittal.

9. Science Casework is to be Maple Veneer as stated in specifications.

10. Plumbing Contractor is to provide lab casework fixtures as noted on sheet P6-0.1

11. Exposed piping shall be painted or as otherwise noted in the drawings and specifications. Where type C Ceilings are located, Contractor shall paint exposed piping a minimum of 3'-0" beyond the edge of the ceiling.

12. As per specifications, fixture whips not to exceed 6ft length only.

13. See C5.1 Reinforced Sidewalk - City of Jacksonville Detail. Passing block to be constructed to the interior side of the existing sidewalk.

14. Gas Meter and gas line to meter to be provided by utility provider. It is anticipated that the new line will be run from Decatur RD and Utility Provider will repair any concrete or other disturbed area. Contractor to provide all piping beyond meter and to coordinate locations with utility provider Owner and Architect.

15. Pump House Foundation - See Sheet C5.4 Detail noted as 2 -1/2" to 10" DCV, DDCV RPZ Assembly (Above Ground) for general configuration of slab condition.

16. C3.0 contractor is not responsible for restriping the field but must provide perimeter striping to verify proper rotation of field.

17. C3.0 shows a dimension of 267' from the ROW. This dimension is for reference and permitting only. Refer to 1/A1-02 Floor Plan - Gym Addition for dimensions related to the location of new construction.

18. E1-00 indicates reworking the electrical connections for the North Scoreboard, but no additional Scoreboard is required at the south of the field. To be clear, only the existing scoreboard at the north end of the field is required for this project.

19. The contractor is required to ensure the site is safe within the Limit of Disturbance. This may include but is not limited to perimeter fencing, gates, or other signage to instruct individuals of the limits of construction. Depending on the contractors means and methods, emergency egress through the disturbed area may be a requirement. In addition, the contractor is responsible for any debris outside of the Limit of Disturbance that the contractor causes, including any roadway debris or materials.

20. With regards to settlement plates and unit prices and compaction days Earthwork SECTION 312000, refer to the Geotech Report in the specification 023200

21. Owners Special Inspections will take required plate readings.

22. BIM is required Per specifications including all disciplines that are indicated in the drawings and specifications, see spec section 22 05 70, 23 05 70, and 26 05 70.

23. Allowance A-9, A-10, and A11 are for bidding purposes. Drawings E4-01 and E4-02 are included to depict intention and routing. Contractor shall be responsible for all conduit, j-hooks, string, or other support systems required to support the work defined.

24. The contractor is responsible for the BDA survey and is covered by allowance #14 Bi-directional Amplification (BDA)

25. Nyquist is basis of design for base bid and is also a preferred alternate, to be clear, an intercom system is part of the base bid.

26. Disregard all dimming requirements in the drawings and specification SECTION 26 05 19, SECTION 26 27 26, and SECTION 26 51 00. There are no dimming circuits in this project.

27. Realignment of field to be based on the boundary lines being parallel to the existing property fence. Overall field layout shall be based on NCSAA requirements for a Middle School Football / Soccer Field. The Northwest corner of the existing field is the rotation point of the realignment. Dimension of the existing Northwest corner to be verified and confirmed prior to any adjustment to the location of the field and or any equipment realignments.

28. Lighting Contactors are noted on the drawings and specifictions.

Additions

1. Add a total of 25 Ceiling Access Doors in GWB with trim on door and box. Size based on a 2'-0" x 2'-0" door with locking mechanism. Final locations to be determined by Architect and owner prior to installation of any Valves, Electrical Boxes, or other items requiring access. Contractor, Arichtect, and Owner shall review location of all above ceiling items prior to installation of any valve, box, or other above ceiling item that requires access. A coordination meeting is required prior to determining the location of valves, boxes, or other accessed items. Contractor to provide dimensioned drawings of location of all access panel prior to installation of valves, boxes, or other items.

2. Add Painting of existing exterior doors - Contractor shall clean, prime and paint a total of ten (10) 3'-7' exterior doors that are not located on the drawings or specifications. The location of the ten additional doors will be determined by the Owner and Architect in the field.

3. Within the base bid, add a total of $12,000 ($6,000 each side) for purchase and delivery of a new football/soccer goal at the north and a new football/soccer goal at the south end of the field. The replacement of the north and south combo Football / Soccer goals shall be similar in construction and style to the existing posts. Goal Post footings shall be min 3'-0" in diameter and 4'-0" deep. Soccer ends of assembly to be set in 3'-0" diameter footing and 2'-0" deep and align with the diagonal of the goal or as required by the mfg. In all cases a minimum of 6" of topsoil shall remain above the top of footing

Specifications

1. **Replace**: SECTION 042000 UNIT MASONRY
   Subsection 2.6 on page 6 & 7 has been changed to include specifications on Mortar. (changes are in red)

2. **Replace**: SECTION 047200 CAST STONE MASONRY
   Section has changed in its entirety.

3. **Replace:** SECTION 0930000 TILING
   Subsections that have changed: (changes are in red)
   2.2 & 2.3

4. **Replace:** SECTION 096590 RESILIENT WOOD FLOORING SYSTEMS
   Subsections that have changed: (changes are in red)
   2.4 & 3.4

5. **Replace:** SECTION 096623 TERRAZZO FLOOR TILE
   (changes are in red)

6. **Replace:** SECTION 099113 EXTERIOR PAINTING
   Subsections that have changed: (changes are in red)
   2.1, 2.4, 3.2, 3.3, & 3.6

7. **Replace:** SECTION 099123 INTERIOR PAINTING
   Subsections that have changed: (changes are in red)
   2.9, 3.2, 3.3, & 3.8

8. **Replace:** SECTION 099700 SPECIAL COATINGS
   Subsections that have changed: (changes are in red)
   3.2, 3.3, & 3.9

9. **Revision:** SECTION 064023 INTERIOR ARCHITECTURAL WOODWORK
   Casework in Resource room 1007 including base cabinet, pulls, sink and other items can be constructed in a similar way, manner, and manufacturer as the science casework. At this location the countertop shall be solid surface as noted on the drawings.

10. **Revision:** SECTION 083313 COILING COUNTER DOORS
    No graphic image on coiling counter doors.

11. **Revision:** SECTION 084523 TRANSLUCENT WALL AND ROOF ASSEMBLIES Subsection 2.3.6 addition to what is already specified:
    b. Exterior Face Sheet
       6) Flame Spread, ASTM E84: 20 Maximum.
       7) Smoke Development, ASTM E 84: 450 Maximum.
       8) Class of Plastic: CC-1
    c. Interior Face Sheet:
       7) Class of plastic: CC-1

12. **Revision:** SECTION 116643 Price scoreboard with rear lit caption plate option, team names as being HOME and GUEST caption plates, and control type A.

13. **Revision:** SECTION 123553 LABORATORY CASEWORK
    Science Casework counter tops to be either Phenolic or Epoxy resin.

14. **Revision:** SECTION 230800 COMMISIONING OF HVAC
    Revise paragraph 1.01.D read as follows:
    D. The HVAC system for the renovation and addition to be commissioned, including Commissioning activities for the following specific items:
       1. Control system.

2. Major and minor equipment items.
3. Piping systems and Equipment
4. Ductwork and accessories.
5. Terminal units.
6. Variable frequency drives.
7. Alternate 8 – Integration of existing Controls system.
8. Other equipment and systems explicitly identified elsewhere in Contract **Documents as requiring commissioning.**

15. **Revision:** SECTION 230923 DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC
    a. Section 2.01 MANUFACTURERS – Add paragraph D to read: Brady Trane.
    b. Paragraph 2.02 Added paragraph G to read: -All new and existing controls shall be integrated to the existing Schneider Electric or Brady Trane server.
    c. Paragraph 2.03 – Delete paragraph in its entirety.

16. **Revision:** SECTION 233300 AIR DUCT ACCESSORIES
    2.05 Combination Fire and Smoke Dampers; ADD: Louvers & Dampers (a Mestek Company) as an accepted manufacturer for Combination Fire/Smoke & Fire Dampers 2.05 and Fire Dampers 2.09.

17. **Revision:** SECTION 233423 HVAC POWER VENTILATORS
    2.01 Manufacturers; ADD: American Coolair as an accepted manufacturer for HVAC Power Ventilators.

18. **Revision:** SECTION 233700 AIR OUTLETS AND INLETS
    2.01; ADD: Metalaire as an accepted manufacturer for Air Outlets and Inlets.
    2.06; ADD: AWV (a Mestek Company) as an acceptable manufacturer for Louvers.

19. **Revision:** SECTION 238123.13 SMALL CAPACITY SPLIT – SYSTEM AIR CONDITIONERS
    ADD: LG and Daikin as an accepted manufacturer for small capacity split system air conditioners.

20. **Addition:** SECTION 095200 ACOUSTICAL METAL CEILINGS

21. **Addition:** SECTION 096590.01 REFINISHING EXISTING WOOD (MAPLE) FLOORING

22. **Addition:** SECTION 220563 ELECTRICAL WORK

23. **Addition:** SECTION 230512 ELECTRICAL WORK

24. **Delete:** SECTION 230923 DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC

Architectural – Drawings

1. **Replace:** Sheet G0-03 BUILDING CODE SUMMARY
   Updated to show correct UL designs.

2. **Replace:** Sheet G0-05 UL DESIGN
   Updated to show correct UL designs.

3. **Replace:** Sheet A0-01 DEMOLITION PLAN - RENOVATION
   Updated to show new detail.

4. **Replace:** Sheet A1-01 WALL TYPE LEGEND
   Updated to show correct wall types.

5. **Replace:** Sheet A4-03 INTERIOR ELEVATIONS – GYM ADDITION
   Updated to show size and spacing of Sound-Absorbing Wall Units.

6. **Replace:** Sheet A7-01 FINISH PLAN – GYM ADDITION
   Updated to show correct finishes and new gym center court logo.

7. **Replace:** Sheet A7-02 FINISH PLAN – RENOVATION
   Updated to show correct finishes.

8. **Replace**: Sheet A7-20 FINISH DETAILS
   Updated to show correct notes and added detail.

9. **Replace**: Sheet P1-02 WASTE AND VENT PLAN – GYM ADDITION
   Revised FD in room MEP 618 from FD-1A to FD-1B.

10. **Replace**: Sheet P2-01 DOMESTIC WATER PLAN - CLASSROOMS
    Moved EM-1 mixing valve plan east to put in closer proximity to emergency shower.

11. **Replace:** Sheet P5-01 DETAILS
    Removed Typical Electrical Connection Detail from sheet due to added specification section.

12. **Replace**: Sheet P6-01 SCHEDULE
    Removed FD-2A, FD-4, and FS-2 from schedule as there are existing fixtures and not in scope.

13. **Replace:** Sheet M1-01 DUCTWORK PLAN – CLASSROOMS
    Refer to changes to the classroom ducted returns.

14. **Replace:** Sheet M7-01 SCHEDULES
    Refer to changes to various scheduled remark notes.

15. **Replace:** Sheet E0-00 LEAD SHEET
    ADDED: General Note 27

16. **Replace:** Sheet E2-02 LIGHTING PLAN – GYM ADDITION
    DELETED: Miscellaneous Text

17. **Replace:** Sheet E5-01 ELECTRICAL DETAILS
    DELETED: Detail 6

18. **Replace:** Sheet E5-03 MAIN BUILDING FIRE ALARM RISER AND DETAILS
    DELETED: Fixture Type L24
    ADDED: Fixture Type L18

19. **Revise:** Sheet C1.0 OVERALL EXISTING CONDITIONS AND DEMOLITION PLAN
    Delete demolition note 8 on C1.0, this is not required.
    The Scoreboard to the north end of the field does not need to be relocated or reorientated. The Scoreboard to the south of the field does not exist and no further action is required. Since the only scoreboard will not be relocated there are no new footings associated with the scoreboard.

20. **Revise:** Sheet C3.0 NOTES AND DETAILS
    Timber Ties Note: Delete timber piles. To be clear, no timber piles are required in association with the parking and site layout. Driveway entrances shall follow the drawings including C5.1 Commercial Driveway Connection and other details that apply in the drawings and specifications.

21. **Revise:** Sheet C5.0 NOTES AND DETAILS
    Revise note on civil drawings for fence post to be 5' apart to fence post at 10' apart per specifications. Delete note on civil drawings that call for a bottom rail on fencing. Fencing should have top rail only.

22. **Revise:** Sheet C5.4 NOTES AND DETAILS
    CITY OF JACKSONVILLE - Fire Pump House Detail 2 -1/2" to 10" DCV, DDCV RPZ Assembly (Above Ground) - Add a turned down slab around the perimeter of the Fire Pump House a minimum 6" below bottom of 6" slab with a 1'-0" bottom and 45 degree return to the noted slab. Contractor to include 4x4 WWF at centerline of concrete slab.

23. **Revise:** Sheet A1-02 FLOOR PLAN – GYM ADDITION
    South exterior, fire rated wall that connects to exiting building shall be wall type M8D.2 and is 2hr rated. Change wall type M16 to M16D.

24. **Revise:** Sheet L1.1 OVERALL EXISTING CONDITIONS AND DEMOLITION PLAN
    Replace Turf note indicating Princess Bermuda with TifTuf or Blackjack.

25. **Revise:** Sheet A1-03 REFLECTED CEILING PLAN – GYM ADDITION and sheet A1-06 REFLECTED CEILING PLAN – RENOVATION
    Ceiling type C is an open cell acoustical metal ceiling.

26. **Revise:** Sheet A6-01 DOOR SCHEDULE, ELEVATIONS, AND DETAILS
    Change door 1016F hardware set to #11 and door 1016G to set #16.

Attached:

Exhibit C: Hazardous Materials Report
SECTION 042000 UNIT MASONRY
SECTION 047200 CAST STONE MASONRY
SECTION 0930000 TILING
SECTION 095000 ACOUSTICAL METAL CEILINGS
SECTION 096590 RESILIENT WOOD FLOORING SYSTEMS
SECTION 096590.01 REFINISHING EXISTING WOOD (MAPLE) FLOORING
SECTION 096623 TERRAZZO FLOOR TILE
SECTION 099113 EXTERIOR PAINTING
SECTION 099123 INTERIOR PAINTING
SECTION 099700 SPECIAL COATINGS
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Sheet A1-01 WALL TYPE LEGEND
Sheet A4-03 INTERIOR ELEVATIONS – GYM ADDITION

Sheet A7-01 FINISH PLAN – GYM ADDITION
Sheet A7-02 FINISH PLAN – RENOVATION
Sheet A7-20 FINISH DETAILS
Sheet P1-02 WASTE AND VENT PLAN – GYM ADDITION
Sheet P2-01 DOMESTIC WATER PLAN - CLASSROOMS
Sheet P5-01 DETAILS
Sheet P6-01 SCHEDULE
Sheet M1-01 DUCTWORK PLAN – CLASSROOMS
Sheet M7-01 SCHEDULES
Sheet E0-00 LEAD SHEET
Sheet E2-02 LIGHTING PLAN – GYM ADDITION
Sheet E5-01 ELECTRICAL DETAILS
Sheet E5-03 MAIN BUILDING FIRE ALARM RISER AND DETAILS

LEAD-BASED PAINT INSPECTION REPORT
NORTHWOODS PARK MIDDLE SCHOOL
904 Sioux Drive
Jacksonville, North Carolina
Asbestos Inspections, LLC Project # 2023-03-464
Performed in general accordance with HUD
along with OSHA regulation 29 CFR 1926.62

Assessment Completed by:

Asbestos Inspections, LLC
4686 Pee Dee Highway
Conway, South Carolina 29527
(843) 995-5197

Dawn Schoolcraft
Lead Paint Inspector #LBP-R-I162035-2

Assessment Completed For:

Smith Sennett Architecture
4600 Lake Boone Trail, Suite205
Raleigh, North Carolina 27607

Inspection Completed On – November 22, 2023
Report Prepared On – December 8, 2023

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1.0 SIGNATURE PAGE

This report has been performed at the request of Smith Sennett Architecture. The inspection was conducted by Mike Schoolcraft with Asbestos Inspections, LLC on November 22, 2023. The report was prepared and reviewed by the undersigned inspector.

Inspection Performed by:	License#	Signature	Date
Mike Schoolcraft	LBP-I-I241150-1	Mike Schoolcraft	November 22, 2023
Report Prepared by:			
Dawn Schoolcraft	LBP-R-I162035-2	Dawn Schoolcraft	December 8, 2023
Report Reviewed by:			
Dawn Schoolcraft	LBP-R-I162035-2	Dawn Schoolcraft	December 8, 2023

2.0 COVER LETTER

December 8, 2023

Smith Sennett Architecture
4600 Lake Boone Trail, Suite205
Raleigh, North Carolina 27607

Subject: Lead-Based Paint Inspection Report
Northwoods Park Middle School
904 Sioux Drive
Jacksonville, North Carolina
Asbestos Inspections, LLC Project # 2023-03-464

Asbestos Inspections, LLC has completed a Lead-Based Paint Inspection for Northwoods Park Middle School located at 904 Sioux Drive, in Jacksonville, North Carolina. The inspection was completed on November 22, 2023 by a licensed lead paint inspector.

The following report summarizes the project background, assessment procedures, results, and conclusions. The results presented in this report are indicative of conditions during the time of the inspection and of the specific areas outlined. The information provided in this report should not be used as a bidding document and field conditions should be verified. Should suspect paint coated surfaces, not included within this report, be identified or impacted during the destructive activities, samples must be collected and analyzed for lead content.

Disclosure Responsibility: A copy of this summary must be provided to new lessees (tenants), owners and purchasers of this property under Federal Law (24 CFR part 35 and 40 CFR part 745) before they become obligated under a lease or sales contract. The complete report must also be provided to new purchasers and it must be made available to new tenants. Landlords (lessors) and sellers are also required to distribute an educational pamphlet and include standard warning language in their leases or sales contracts to ensure that parents have the information they need to protect their children from lead-based paint hazards.

I appreciate this opportunity to provide my services. Should you have any questions concerning this report, please contact me at (843) 995-5197.

Sincerely,

Dawn Schoolcraft

Dawn Schoolcraft
Lead Paint Inspector (License #LBP-R-I162035-2)

3.0 PROJECT INFORMATION

1.1 Scope and Purpose

Smith Sennett Architecture requested this inspection for Northwoods Park Middle School located at 904 Sioux Drive, in Jacksonville, North Carolina. Based on information obtained from you, the structure is scheduled for renovations. The purpose of this assessment was to identify lead-based paint on building components prior to the scheduled renovations.

The inspection was completed in accordance with procedures specified in the Department of Housing and Urban Development (HUD) 1997 Revision that replaces Chapter 7, Lead-Based Paint Inspection along with Occupational Safety and Health Administration (OSHA) Lead in Construction Standard regulation 29 Code of the Federal Regulations (CFR) 1926.62. The representative bulk samples collected were analyzed by a laboratory recognized under the Environmental Protection Agencies (EPA) National Lead Laboratory Accreditation Program (NLLAP).

2.1 Facility Conditions

At this time, we understand that renovations are scheduled for select areas of the Middle School campus. Based on information provided, renovations are limited to select areas of Building 1 and Building 2. The majority of the painted surfaces inside the subject buildings consists of metal framed windows and doors, concrete masonry block walls, ceramic floor tile, vinyl floor tile, and metal support columns. The painted surfaces were found to be in good condition during our inspection and testing. No other areas outside of the current scope of work were tested.

The possibility exists that paint coated surfaces were undetected in inaccessible areas such as, locked rooms, behind exterior veneer, pipe chases, or wall voids. If additional suspect paint coated surfaces not included in this report are discovered during renovation, samples should be collected and analyzed for lead content.

3.1 Lead-Based Paint Assessment Data

The assessment was performed by identifying paint coated surfaces associated with the structure in accordance with HUD guidelines. One paint chip sample was collected for each painted surface of the structure's building components, which includes but is not limited to shutters, siding, exterior trim, window trim, windowsills, interior and exterior doors, door frames, walls, baseboards, chair rails and floors. The samples collected were approximately 1-4 square inches in size and included all layers of paint, placed inside an appropriate sample container, and labeled accordingly using a unique identification number. A chain of custody was completed for the samples with project specific information and then submitted to *Eurofins/CEI* for analysis. The samples collected were analyzed via EPA Method SW846 3050B/7000B. The following outlines the paint chip samples collected and analyzed:

Sample #	Substrate	Component	Color	Paint Location	Condition	Lead Concentration (% by weight)
P1	Metal	Door	Gray	Building 1 Gym Entrance	Intact	<0.00618
P2	Metal	Door Frame	Gray	Building 1 Gym Entrance	Intact	0.111
P3	Metal	Door	Gray	Building 1 Gym	Intact	0.00715
P4	Metal	Door	Gray	Building 1 Gym	Intact	0.00784
P5	Concrete	Block Wall	Blue	Building 1 Gym	Intact	0.0148
P6	Concrete	Block Wall	White	Building 1 Gym	Intact	0.00713
P7	Concrete	Block Wall	White	Building 1 Gym	Intact	<0.00596
P8	Concrete	Block Wall	Blue	Building 1 Gym	Intact	0.00676
P9	Steel	Column	White	Building 1 Gym	Intact	0.0744
P10	Metal	Door Frame	White	Building 1 Laundry	Intact	0.0247
P11	Concrete	Block Wall	White	Building 1 Gym at Laundry	Intact	0.00923
P12	Metal	Door Frame	White	Building 1 Gym Storage	Intact	0.0225
P13	Metal	Door Frame	Tan	Building 1 Coach's Office	Intact	0.0980
P14	Metal	Column	Gray	Building 1 Storage Room	Intact	0.0567
P15	Metal	Door Frame	White	Building 1 Coach's Office	Intact	0.0351
P16	Metal	Door Frame	White	Building 1 Storage	Intact	0.00495
P17	Concrete	Block Wall	White	Building 1 Gym	Intact	0.00992
P18	Metal	Column	Gray	Building 1 North Side Gym	Intact	0.0790
P19	Concrete	Block Wall	White	Building 1 North Side Gym	Intact	0.0413
P20	Metal	Door	Gray	Building 1 Northwest Side Gym	Intact	<0.00606
P21	Metal	Door Frame	Gray	Building 1 Northwest Side Gym	Intact	0.0540
P22	Metal	Door	Gray	Building 1 Northeast Side Gym	Intact	<0.0058
P23	Metal	Door Frame	Gray	Building 1 Northeast Side Gym	Intact	0.0181
P24	Metal	Door Frame	Gray	Building 1 Girls Locker Room	Intact	<0.00602
P25	Metal	Door	Gray	Building 1 Girls Locker Room	Intact	<0.000581
P26	Concrete	Block Wall	White	Building 1 Girls Locker Room Entrance	Intact	<0.00598
P27	Concrete	Block Wall	White	Building 1 Girls Locker Room	Intact	<0.0062
P28	Ceramic	Tile Floor	Gray	Building 1 Girls Locker Room	Intact	<0.00598
P29	Metal	Door Frame	Gray	Building 1 Boys Locker Room Entrance	Intact	0.0285
P30	Metal	Door	Gray	Building 1 Boys Locker Room	Intact	<0.0062
P31	Ceramic	Tile Floor	Gray	Building 1 Boys Locker Room	Intact	<0.00618
P32	Concrete	Block Wall	White	Building 2 Janitor's Closet	Intact	<0.00608
P33	Metal	Door Frame	Gray	Building 2 Janitor's Closet	Intact	<0.00776
P34	Concrete	Block Wall	Teal	Building 2 Concessions	Intact	0.00627
P35	Concrete	Block Wall	White	Building 2 Concessions	Intact	<0.006

Condition Assessment Key

Type of Bldg. Component	Total Area of Deteriorated Paint on Each Component		
	Intact	Fair[1]	Poor[2]
Exterior components with large surface area	Entire surface area is intact	Less than or equal to 10 square feet	More than 10 square feet
Interior components with large surface area	Entire surface area is intact	Less than or equal to 2 square feet	More than 2 square feet

Interior and exterior components with small surface areas	Entire surface area is intact	Less than or equal to 10% of the total surface area of component	More than 10% of the total surface area or the component

Superscript 1 = surfaces in "fair" condition should be repaired and/or monitored but are not considered to be lead based paint hazards.

Superscript 2 = surfaces in "poor" condition are considered to be lead based paint hazards as defined by Title X and should be addressed through abatement or interim controls.

Site location plan and sample locations are identified as Figures 1 and 2 in Appendix 1 of this report, photographs are in Appendix 2, lead-based paint lab results are in Appendix 3, and licenses are in Appendix 4.

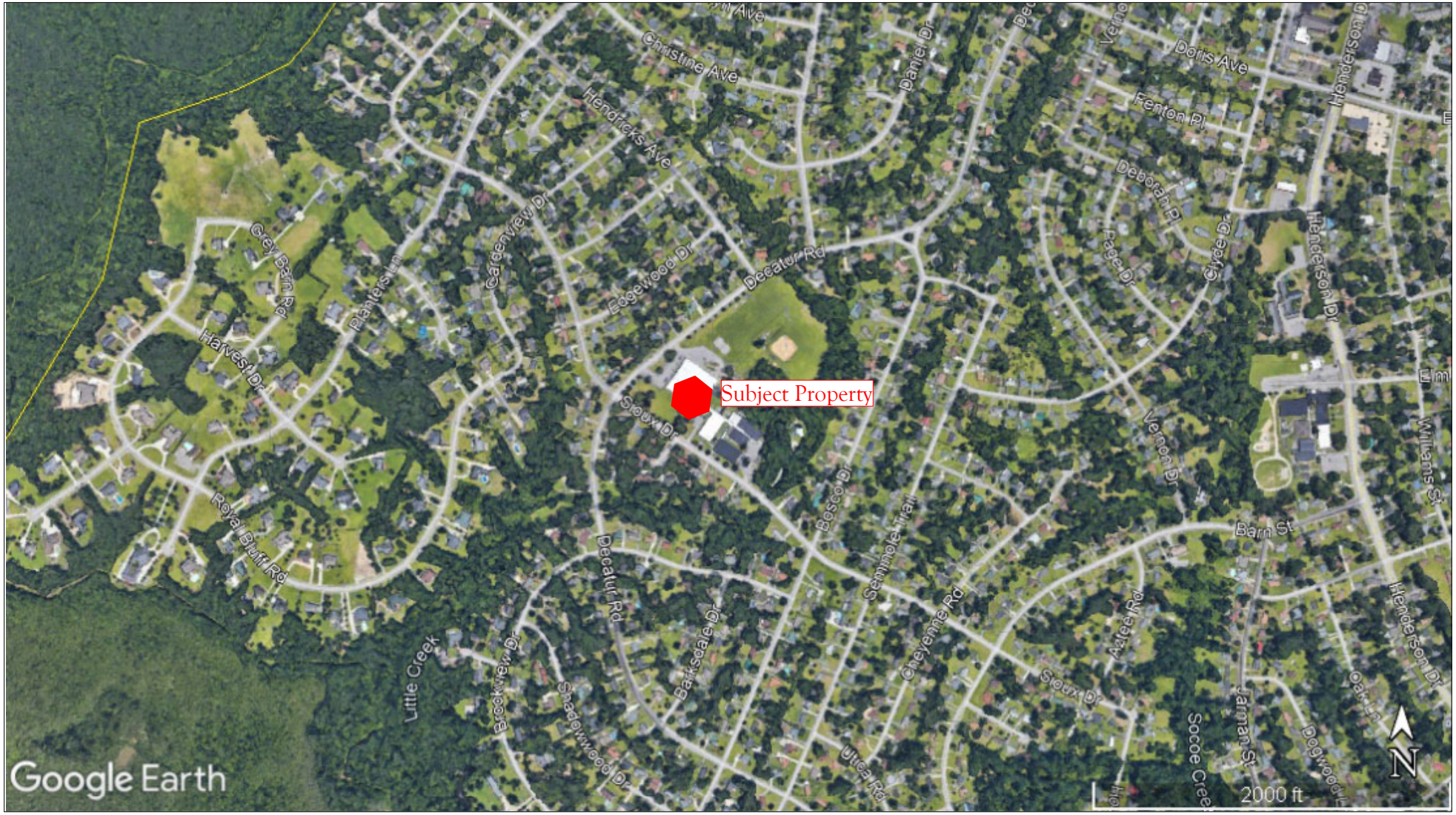
4.1 Conclusions

HUD defines paint as lead-based if an amount greater than 1.0 mg/cm^2 or 0.5 percent by weight is identified in a paint chip sample. The results of this inspection indicate that **no lead** in concentrations greater than or equal to 1.0 mg/cm^2 or 0.5 percent by weight was identified on the building components sampled and analyzed for Northwoods Park Middle School located at 904 Sioux Drive, in Jacksonville, North Carolina.

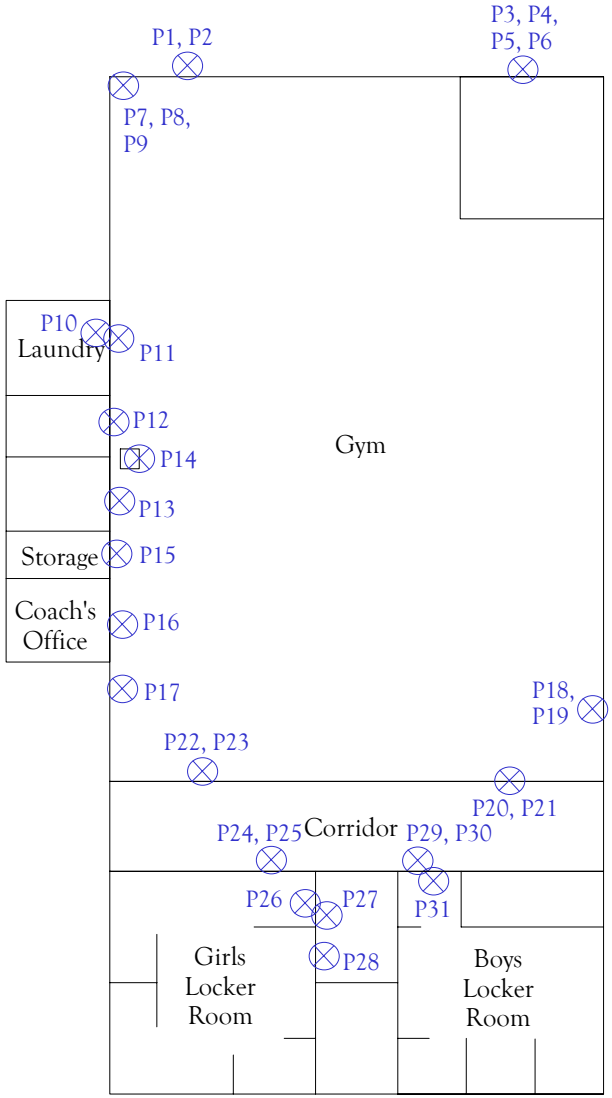
OSHA's Lead in Construction standard does not recognize a threshold for paint, regulations require that employees shall not be exposed above the Permissible Exposure Limit if there are detectable levels of lead in paint being disturbed by construction activities.

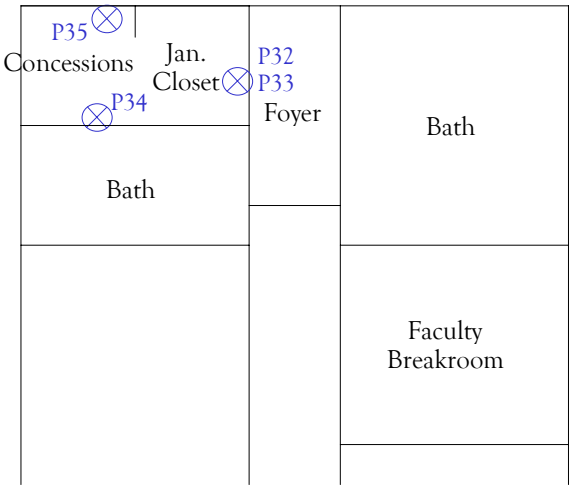
A copy of this report should be provided to the contractors to assist with compliance with applicable State and Federal regulations. Additionally, this report should be kept by the owner and future owners for the life of the dwelling.

Site Location Plan and Sample Location Plan



	Site Location Plan Northwoods Park Middle School 904 Sioux Dr Jacksonville, NC Project # - 2023-03-464	Scale: Not to Scale Reviewed By: DS Date: 11/28/23 Source: N/A	**Figure 1**





	Sample Location Plan Northwoods Park Middle School 904 Sioux Dr Jacksonville, NC Project # - 2023-03-464	Scale: Not to Scale Reviewed By: DS Date: 11/28/23 Source: N/A	**Figure 2**

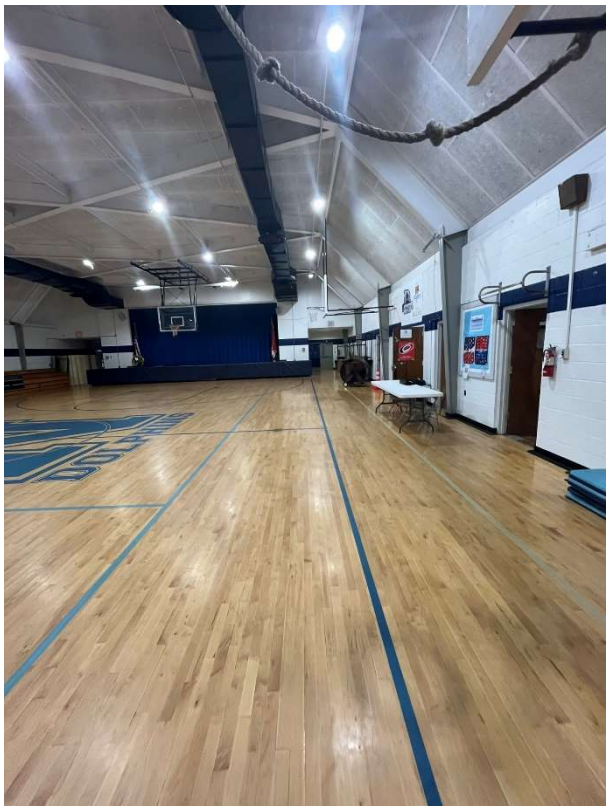
LEGEND

⊗ Sample Location

Photographs

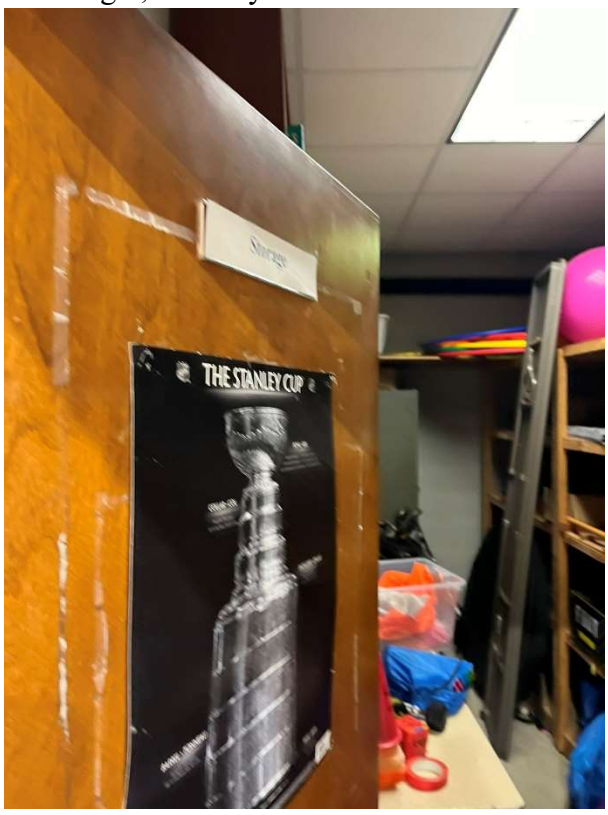
Site Photos

Building 1, Gym


Building 1, Gym

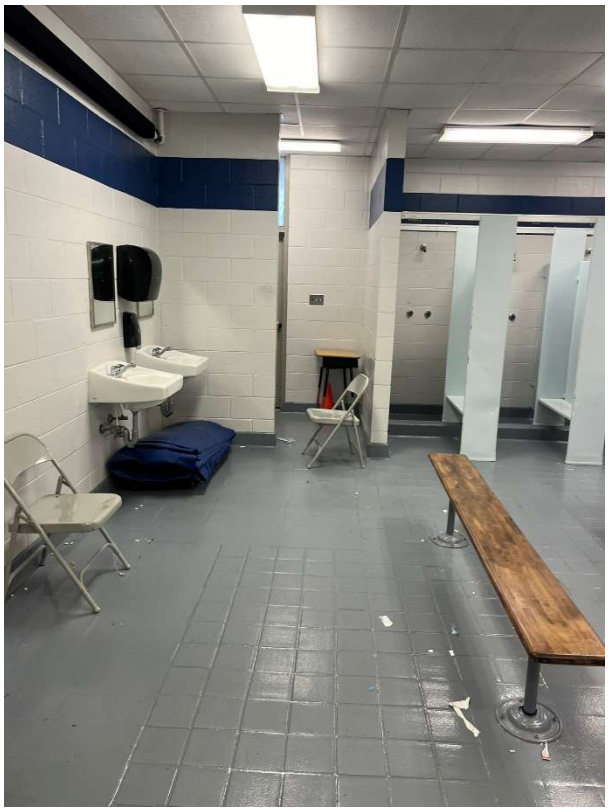
Building 1, Laundry

Building 1, Storage

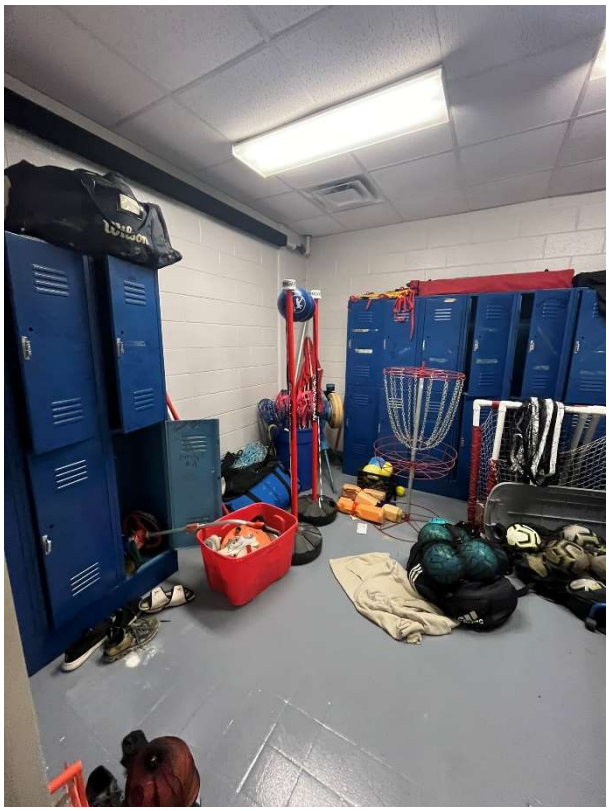


Building 1, Storage

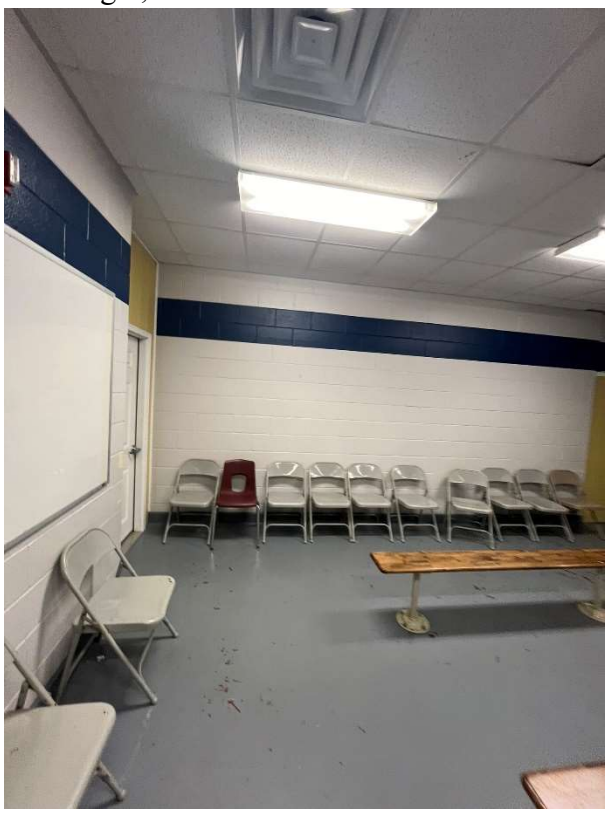
Building 1, Restroom



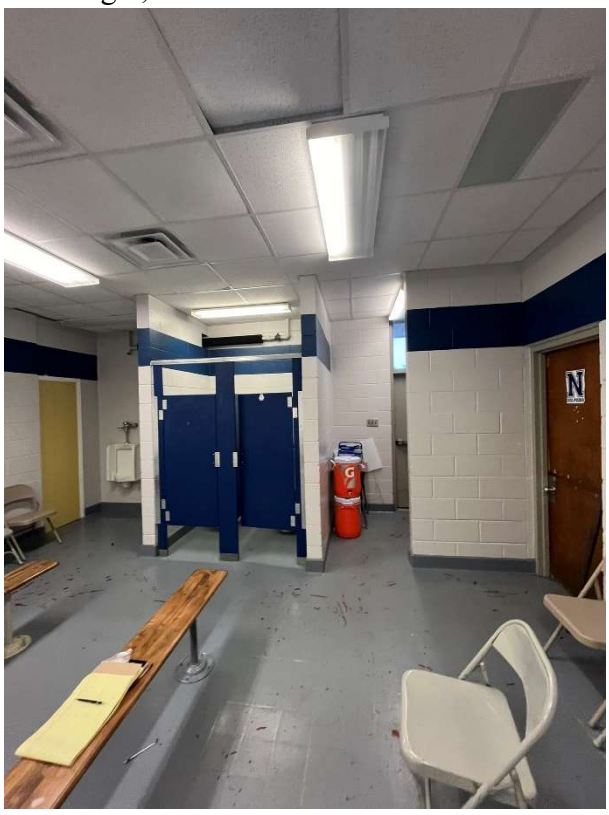
Building 1, Locker Room



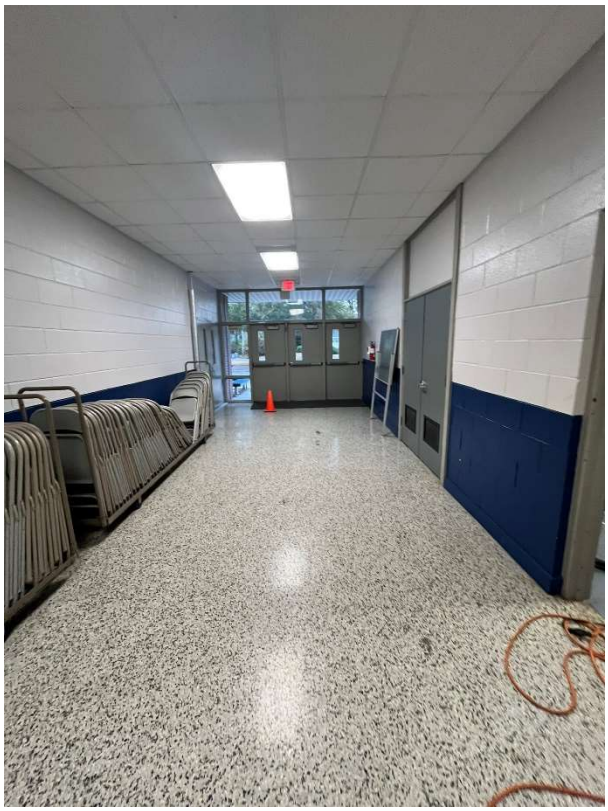
Building 1, Locker Room

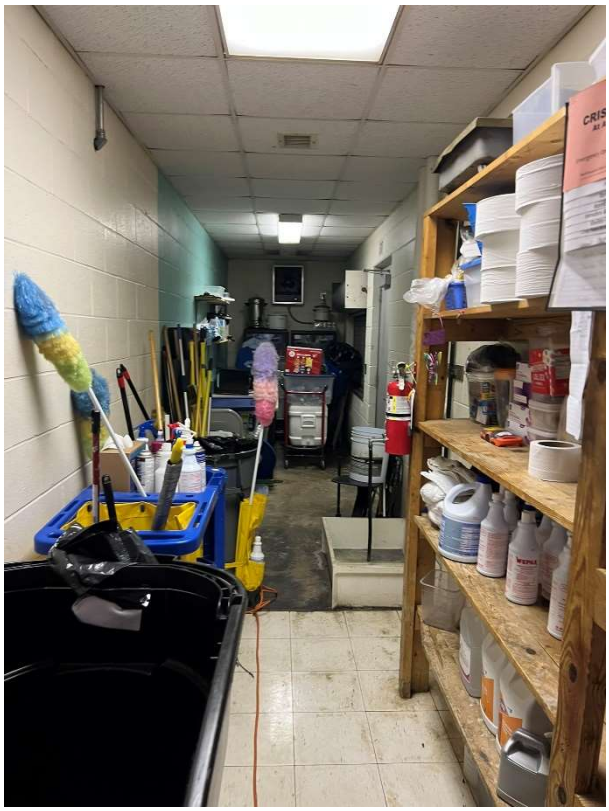


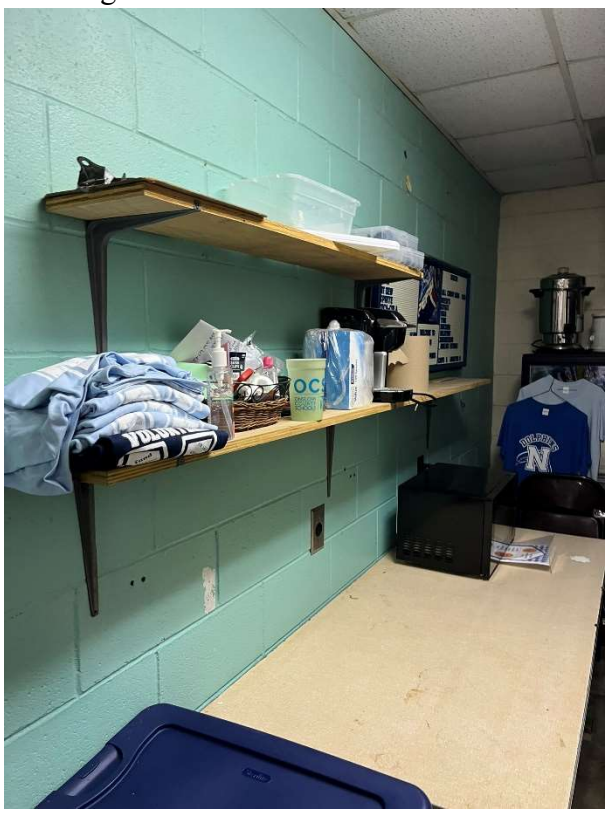
Building 1, Locker Room



Building 1, Locker Room


Building 1


Building 2, Janitor's Closet


Building 2, Concessions


Building 2, Concessions

Laboratory Results

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2752 Pleasant Rd Suite 100A • Fort Mill, SC 29708

TEL: 803-526-5146

LABORATORY REPORT
LEAD IN PAINT

Client: **Asbestos Inspections LLC**
4686 Peedee Hwy
Conway, SC 29527

Lab Code: L230637
Received: 11-28-23
Analyzed: 12-01-23
Reported: 12-01-23

Project: Northwood Park Middle School Bldg 1 and 2

METHOD: EPA SW846 7000B

CLIENT ID	LAB ID	PPM (µg/g)	CONCENTRATION % BY WEIGHT
P1	L3206	<61.8	**<0.00618**
P2	L3207	1110	**0.111**
P3	L3208	71.5	**0.00715**
P4	L3209	78.4	**0.00784**
P5	L3210	148	**0.0148**
P6	L3211	71.3	**0.00713**
P7	L3212	<59.6	**<0.00596**
P8	L3213	67.6	**0.00676**
P9	L3214	744	**0.0744**
P10	L3215	247	**0.0247**

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TEL: 803-526-5146

Project: Northwood Park Middle School Bldg 1 and 2

Lab Code: L230637

METHOD: EPA SW846 7000B

CLIENT ID	LAB ID	PPM (µg/g)	CONCENTRATION % BY WEIGHT
P11	L3216	92.3	**0.00923**
P12	L3217	225	**0.0225**
P13	L3218	980	**0.0980**
P14	L3219	567	**0.0567**
P15	L3220	351	**0.0351**
P16	L3221	495	**0.0495**
P17	L3222	99.2	**0.00992**
P18	L3223	790	**0.0790**
P19	L3224	413	**0.0413**
P20	L3225	<60.6	**<0.00606**
P21	L3226	540	**0.0540**
P22	L3227	<58.0	**<0.0058**
P23	L3228	181	**0.0181**

2752 Pleasant Rd Suite 100A • Fort Mill, SC 29708

TEL: 803-526-5146

Project: Northwood Park Middle School Bldg 1 and 2

Lab Code: L230637

METHOD: EPA SW846 7000B

CLIENT ID	LAB ID	PPM (µg/g)	CONCENTRATION % BY WEIGHT
P24	L3229	<60.2	**<0.00602**
P25	L3230	<58.1	**<0.00581**
P26	L3231	<59.8	**<0.00598**
P27	L3232	<62.0	**<0.0062**
P28	L3233	<59.8	**<0.00598**
P29	L3234	285	**0.0285**
P30	L3235	<62.0	**<0.0062**
P31	L3236	<61.8	**<0.00618**
P32	L3237	<60.8	**<0.00608**
P33 Sample weight below protocol guidelines	L3238	<77.6	**<0.00776**
P34* Sample weight below protocol guidelines	L3239	62.7	**0.00627**
P35*	L3240	<0.006	**<0.006**

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TEL: 803-526-5146

Project: Northwood Park Middle School Bldg 1 and 2

Lab Code: L230637

METHOD: EPA SW846 7000B

CLIENT ID	LAB ID	PPM (µg/g)	CONCENTRATION % BY WEIGHT

Reviewed By:

Tianbao Bai, Ph.D.
Laboratory Director

This method has been validated for sample weights of 0.25g or greater. When samples with a weight of less than that are analyzed those results fall outside of the scope of accreditations.
*** The analysis of composite wipe samples as a single samples is not included under AIHA accreditation.**

Minimum reporting limit is 15 µg total lead. Sample results denoted with a “less than” (<) sign contain less than 15.0 µg total lead, based on a 50ml sample volume.

Lead samples are analyzed by Eurofins CEI, an AIHA ELLAP accredited laboratory for lead analysis of air, soil, wipes, and paint samples.
Laboratory results represent the analysis of samples as submitted by the client. Information regarding sample location, description, area, volume, etc., was provided by the client. Unless notified in writing to return samples, Eurofins CEI discards client samples after 30 days. This report shall not be reproduced, except in full, without the written consent of Eurofins CEI.

Information provided by customer includes customer sample ID, location, volume and area as well as date and time of sampling.

REGULATORY LIMITS

OSHA Standard: No safe limit.
Consumer Products Safety Standard: Greater than 0.009% lead by weight.
Federal Lead Standard / HUD: 0.5% lead by weight.

LEGEND

µg = microgram	ppm = parts per million	g = grams
ml = milliliter	Pb = lead	wt = weight

End of Report

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CHAIN OF CUSTODY

35

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

LAB USE ONLY:	
ECEI Lab Code:	L2301637
ECEI Lab I.D. Range:	L3206 L3240

COMPANY INFORMATION	PROJECT INFORMATION
ECEI CLIENT #:	Job Contact: Dawn Schoolcraft
Company: Asbestos Inspections, LLC	Email / Tel: 843-995-5197
Address: 4686 Pee Dee Hwy., Conway, SC 29527	Project Name:Northwood Park Middle School Bldg 1 and 2
	Project ID#
Email: dschoolcraft1978@gmail.com	PO #:
Tel: 843-995-5197 Fax:	STATE SAMPLES COLLECTED IN: SC

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

Analyte	METHOD	TURN AROUND TIME					
		4 HR**	8 HR**	1 DAY**	2 DAY	3 DAY	5 DAY
LEAD PAINT	EPA SW846 7000B				☐	■	☐
LEAD WIPE	EPA SW846 7000B				☐	☐	☐
LEAD SOIL	EPA SW846 7000B				☐	☐	☐
LEAD AIR	EPA SW846 7000B				☐	☐	☐
LEAD TCLP	EPA SW846 7000B				☐	☐	☐
RCRA 8 METALS	EPA SW846 7000B				☐	☐	☐
RCRA 8 TCLP	EPA SW846 7000B				☐	☐	☐
OTHER:					☐	☐	☐

TAT IS NOT AVAILABLE. LEAD SAMPLES ARE SUBCONTRACTED FOR ANALYSIS TO AN ELLAP ACCREDITED LAB.

REMARKS:	☒ BWB Accept Samples ☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Dawn Schoolcraft	11/22/2023	WF	11/28 10:10

Samples will be disposed of 30 days after analysis
By submitting samples, you are agreeing to ECEI's Terms and Conditions.

eurofins | CEI

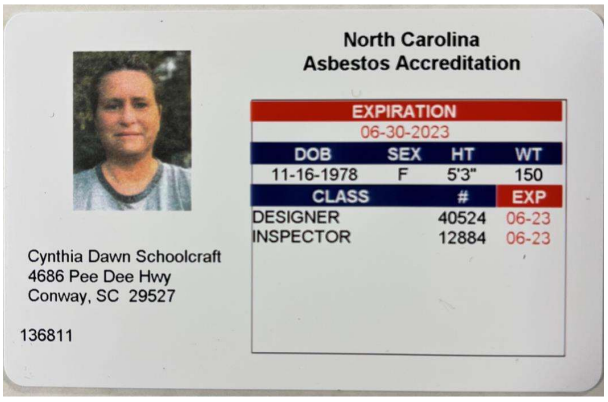
SAMPLING FORM

COMPANY CONTACT INFORMATION	
Company: Asbestos Inspections, LLC	Job Contact: Dawn Schoolcraft
Project Name:Northwood Park Middle School Bldg 1 and 2	
Project ID #:	Tel: 843-995-5197

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/AREA	COMMENTS
P1	Gray Metal Door		
P2	Gray Metal Door Frame		
P3	Gray Metal Door		
P4	Gray Metal Door		
P5	Blue Block Wall		
P6	White Block Wall		
P7	White Block Wall		
P8	Blue Block Wall		
P9	White Steel Column		
P10	White Metal Door Frame		
P11	White Block Wall		
P12	White Metal Door Frame		
P13	Tan Metal Door Frame		
P14	Gray Metal Column		
P15	White Metal Door Frame		
P16	White Metal Door Frame		
P17	White Block Wall		
P18	Gray Metal Column		
P19	White Block Wall		
P20	Gray Metal Door		
P21	Gray Metal Door Frame		
P22	Gray Metal Door		
P23	Gray Metal Door Frame		
P24	Gray Metal Door Frame		
P25	Gray Metal Door		
P26	White Block Wall		
P27	White Block Wall		
P28	Gray Ceramic Tile Floor		
P29	Gray Metal Door Frame		
P30	Gray Metal Door		

P31	Gray Ceramic Tile Floor		
P32	White Block Wall		
P33	Gray Metal Door Frame		
P34	Teal Block Wall		
P35	White Block Wall		

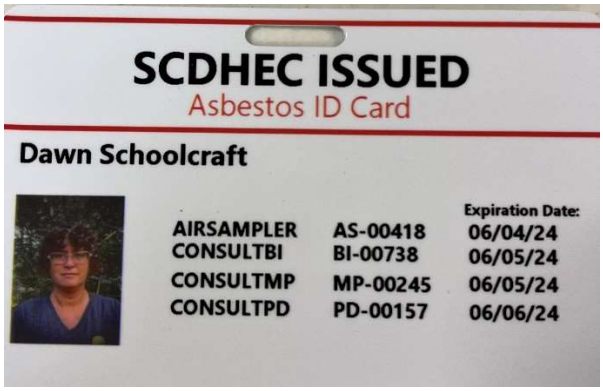
Certifications



12884, 06/30/2023, North Carolina, Dawn Schoolcraft

1909008, 09/30/2023, South Carolina, Dawn Schoolcraft

LBP-R-I162035-2, 03/16/2024, South Carolina, Dawn Schoolcraft



BI-00738, 06/06/2023, South Carolina, Dawn Schoolcraft

SCDHEC ISSUED
Asbestos ID Card

Michael Schoolcraft

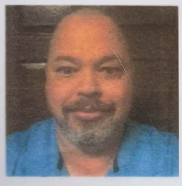
AIRSAMPLER	AS-00535	Expiration Date: 06/04/24
CONSULTBI	BI-01624	06/05/24

Michael A Schoolcraft
4686 Pee Dee Hwy
Conway , SC 29527

140839

North Carolina
Asbestos Accreditation

EXPIRATION 06-30-2024			
DOB	SEX	HT	WT
05-09-1973	M	5'10"	260
CLASS		#	EXP
INSPECTOR		13088	06-24



NORTH CAROLINA
LEAD CERTIFICATION

Michael A Schoolcraft
4686 Pee Dee Hwy
Conway , SC 29527

DOB	SEX	HT	WT
05-09-1973	M	5'10"	250

DISCIPLINE	#	LAST COURSE	EXPIRATION
INSPECTOR	110349	INS 09-21-2022	10-31-2023

United States Environmental Protection Agency
This is to certify that

Michael A Schoolcraft

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Inspector

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires October 25, 2025

LBP-I-I241150-1
Certification #

October 11, 2022
Issued On:

Adrienne Priselac, Manager, Toxics Office
Land Division

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes unit masonry assemblies consisting of the following:
   1. Concrete masonry units (CMUs).
   2. Concrete brick.
   3. Face brick.
   4. Grout.
   5. Reinforcing steel.
   6. Masonry joint reinforcement.
   7. Ties and anchors.
   8. Embedded flashing.
   9. Miscellaneous masonry accessories.

B. Related Sections include the following:
   1. Division 04 Section “Masonry Mortaring” for mortar specifications.
   2. Division 07 Section "Dampproofing" for dampproofing applied to cavity face of backup wythes of cavity walls.
   3. Division 07 Section "Water Repellents" for water repellents applied to unit masonry assemblies.
   4. Division 07 Section "Thermal Insulation" for cavity wall insulation type, thickness, and r value.
   5. Division 07 Section “Foam in Place Insulation for cavity wall insulation at areas indicated.
   6. Division 07 Section "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.
   7. Division 07 Section "Joint Sealants" for sealing control and expansion joints in unit masonry.

C. Products furnished, but not installed, under this Section include the following:
   1. Anchor sections of adjustable masonry anchors for connecting to structural frame, installed under Division 05 Section "Structural Steel Framing."

D. Products installed, but not furnished, under this Section include the following:
   1. Steel lintels and shelf angles for unit masonry, furnished under Division 05 Section "Metal Fabrications."

1.3 DEFINITIONS

A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PERFORMANCE REQUIREMENTS

A. Provide structural unit masonry that develops indicated net-area compressive strengths (f'_m) at 28 days.
   1. Determine net-area compressive strength (f'_m) of masonry by testing masonry prisms according to ASTM C 1314.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Certification:
   1. The producer shall furnish a letter of certification stating the following;
      a. All aggregate used in the manufacture of the units was produced conforming to ASTM C33.
      b. Product has been tested and certificated by ASTM C 90.
C. Shop drawings:
   1. For reinforcing steel detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
   2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
D. Samples for Verification: For each type and color of the following:
   1. Face brick, in the form of straps of five or more bricks.
   2. Decorative concrete masonry units, in the form of small-scale units.
   3. Colored mortar samples showing the full range of colors available.
   4. Weep holes/vents.
   5. Accessories embedded in masonry.
E. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.
B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
   1. Manufacturer shall not have less than 10 years of experience for each type of unit.
C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.
D. Source Limitations for Concrete Masonry Units: Obtain CMU units from a manufacturer with a demonstrated history for providing first quality CMU units suitable for use in exposed work of the type and scope of this project, with units showing dense uniform face texture, square sides, corners, edges and faces, and free of chipped edges and broken corners when delivered to the site. Manufacturers with outdated equipment and worn molds incapable of providing consistently high quality materials will not be considered.
E. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.
F. Sample Panels: Build sample panels to verify selections made under sample submittals and to demonstrate aesthetic effects. Comply with requirements in Division 01 Section "Quality Requirements" for mockups.
   1. Build sample panels for typical exterior wall in sizes approximately **48 inches** long by **48 inches** high by full thickness.
   2. Where masonry is to match existing, erect panels adjacent and parallel to existing surface.
   3. Clean exposed faces of panels with masonry cleaner indicated.
   4. Protect approved sample panels from the elements with weather-resistant membrane.
   5. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of

workmanship; and other material and construction qualities specifically approved by Architect in writing.

a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless such deviations are specifically approved by Architect in writing.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Ordering: Comply with manufacture's ordering instructions and lead time requirements to avoid construction delays.

B. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry. Do not double stack pallets of masonry units.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

E. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

F. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Construction: When the ambient temperature is within the limits indicated, use the following procedures:
   a. 40 to 32 deg F: Heat mixing water or sand to produce mortar temperatures between 40 and 120 deg F .
   b. 32 to 25 deg F: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F. Heat grout materials to produce grout temperatures between 40 and 120 deg F. Maintain mortar and grout above freezing until used in masonry.
   c. 25 to 20 deg F: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F . Heat grout materials to produce grout temperatures between 40 and 120

deg F. Maintain mortar and grout above freezing until used in masonry. Heat masonry units to 40 deg F if grouting. Use heat on both sides of walls under construction.

d. 20 deg F and Below: Heat mixing water and sand to produce mortar temperatures between 40 and 120 deg F. Heat grout materials to produce grout temperatures between 40 and 120 deg F. Maintain mortar and grout above freezing until used in masonry. Heat masonry units to 40 deg F. Provide enclosures and use heat on both sides of walls under construction to maintain temperatures above 32 deg F within the enclosures.

2. Cold-Weather Protection: When the mean daily temperature is within the limits indicated, provide the following protection:
   a. 40 to 25 deg F : Cover masonry with a weather-resistant membrane for 48 hours after construction.
   b. 25 to 20 deg F: Cover masonry with insulating blankets or provide enclosure and heat for 48 hours after construction to prevent freezing. Install wind breaks when wind velocity exceeds 15 mi./h .
   c. 20 deg F and Below: Provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after construction.
3. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
1. Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F and above.

1.9 SPECIAL REQUIREMENTS

A. The work of this section shall be bid and performed by a firm certified as a “North Carolina Masonry Contractors Association Certified Masonry Contractor” as described in the most current version of the NCMCA’s “Guide to Masonry Contractor Certification.” The masonry subcontractor shall at all times when work is in progress, provide an individual from its own staff, acting as superintendent, designated by the North Carolina Masonry Contractors Association Masonry Contractor Certification Program as a “CMP-Certified Masonry Professional” or “CME-Certified Masonry Executive” (as described in the most current version of the NCMCA’s “Guide to Masonry Contractor Certification”) on-site to supervise work in progress.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

2.2 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not uses units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.3 CONCRETE MASONRY UNITS (CMUs)

A. Shapes: Provide shapes indicated and as follows:
   1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
   2. Provide square-edged units for outside corners, unless otherwise indicated.

B. Concrete Masonry Units: **ASTM C 90 (latest edition)**.
   1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2000 psi net average of three units.
   2. Weight Classification: Units shall be lightweight blended with aggregates that comply with ASTM C331 and ASTM C33 with a total mix weight not more than 105 lbs./cuft. and not less than 90lbs/cuft.
   3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
   4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
   5. Aggregates: Do not use aggregates made from pumice, scoria, or tuff. All units will be free of organic impurities that will cause rusting, staining, or popouts and will not contain combustible material. The use of coal cinders, coal ash, bottom ash or other similar waste products are not permitted and shall not be allowed.
   6. CMU used in fire rated walls shall meet UL Design Assembly criteria.
   7. Basis for Design: Oldcastle APG - Adams: Redline
   8. Approved Manufacturers:
      a. Oldcastle APG - Adams
      b. Johnson Concrete
      c. York Building Products
      d. Martinsville Concrete Products
   9. Products offered for substitution shall be pre-approved prior to bidding in accordance with the conditions of the contract documents and shall be so indicated in an addendum prior to bid only. Any other approval shall not be valid.

C. Concrete Building Brick: ASTM C 55.
   1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of **3500 psi**.
   2. Weight Classification: Normal Weight
   3. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.

2.3.1 DECORATIVE CONCRETE MASONRY UNITS

A. Decorative Concrete Masonry Units: **ASTM C 90 (latest edition)**.
   1. Unit Compressive Strength: Average of three units 3000PSI, individual unit 2700 PSI.
   2. Weight Classification: Normal weight.
   3. Size (Width): Size: Nominal 4 x 8 x 16 and 8 x 8 x 16 All exposed faces to be finished. Refer to drawings for locations.
   4. Pattern and Texture: High Polished Face
   5. Special Spaces:
      a. Provide all special shapes as required. This includes but not limited to clipped sills.
   6. Manufacture of Decorative Concrete Masonry Units: Basis of Design:
      a. Oldcastle Echelon 4301 or comparable product by one of the of the following:
         1) York Building Products
         2) Martinsville Concrete Products
         3) Johnson Concrete Company
      b. Products offered for substitution shall be pre-approved prior to bidding in accordance with the conditions of the contract documents and shall be so indicated in an addendum prior to bid only. Any other approval shall not be valid.
      c. Products offered for substitution shall be judged on the variety of colors offered, brightness of colors offered, consistency of color, quality of splitting (four blade

splitter required), weight, ability of manufacturer to offer and/or control color matching of mortars, method for blending water repellent admix into mixing process, and past performance.

7. Maximum Absorption: Low Absorption unit. The unit shall contain specific amounts of the integral water repellent compound so the absorption is less than (7.5%) and/or 10 lbs/CF.
8. Integral Water Repellent: Provide units produced with liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive according to ASTM E 514, with test period extended to 4 hours, show no visible water or leaks on the back of the test specimen. Product: Subject to compliance with requirements, provide units made with Rainbloc by ACM Chemistries, Dry- Block by W.R. Grace & Co, or equal.
9. Aggregates: Do not use aggregates made from pumice, scoria, or tuff. All units will be free of organic impurities that will cause rusting, staining, or popouts and will not contain combustible material. All lightweight material to be manufactured by rotary kiln process. Coal Cinders are not permitted.

2.4 BRICK

A. General: Provide shapes indicated and as follows:
   1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.

B. Face Brick: ASTM C 216, Grade SW Type FBX.
   1. Size (Actual Dimensions): **3 5/8 inches** wide by **2-1/4 inches** high by **7-5/8 inches** long.
   2. Bond Pattern: Unless otherwise indicated, lay exposed masonry in **running bond.**
   3. Basis for Design:
      a. Type 1: Palmetto Brick- Flashed Wirecut
      b. Type 2: Palmetto Brick- Whitestone
   4. Provide for one of the following:
      a. Type 1:
         1) Palmetto Brick: Flashed Wirecut
         2) Palmetto Brick: Flashed Smooth
         3) Triangle Brick: Flashed Common
         4) Approved Equal
      b. Type 2:
         1) Palmetto Brick: Whitestone
         2) Approved Equal

2.5 MASONRY LINTELS

A. General: Provide masonry lintels complying with requirements below.
B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam concrete masonry units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.6 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction.
   1. Provide grey cement as required to produce mortar color indicated for Field, Accent Brick 1 and Accent Brick 2.
B. Hydrated Lime: ASTM C 207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.

D. Masonry Cement: ASTM C 91.
   1. Available Products:
      a. Lehigh-Hanson (Brixment)
      b. Holcim Cement
      c. Argos Cement Company

E. Colored Cement Product: Packaged blend made from masonry cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
   1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
   2. Pigments shall not exceed 10 percent of portland cement by weight.
   3. Available Products:
      a. Lehigh-Hanson (Brixment)
      b. Holcim Cement
      c. Argos Cement Company

F. Aggregate for Mortar: ASTM C 144.
   1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.

G. Aggregate for Grout: ASTM C 404.
   1. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
   2. Available Products:
      a. Addiment Incorporated; Mortar Kick.
      b. Euclid Chemical Company (The); Accelguard 80.
      c. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Morset.
      d. Sonneborn, Div. of ChemRex; Trimix-NCA.

H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with concrete masonry units, containing integral water repellent by same manufacturer.
   1. Available Products:
      a. Rainbloc by ACM Chemistries
      b. Addiment Incorporated; Mortar Tite.
      c. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Dry-Block Mortar Admixture.
      d. Master Builders, Inc.

I. Water: Potable.

2.7 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M, Grade 60.

B. Masonry Joint Reinforcement, General: ASTM A 951.
   1. Interior Walls: galvanized, carbon steel.
   2. Exterior Walls: Hot-dip galvanized, carbon steel.
   3. Wire Size for Side Rods Interior: 0.148-inch diameter.
   4. Wire Size for Side Rods Exterior: ~~0.188-inch~~ 0.148-inch diameter.
   5. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter.
   6. Wire Size for Veneer Ties: 0.148-inch diameter.
   7. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
   8. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

C. Masonry Joint Reinforcement for Single-Wythe Masonry: Truss type with single pair of side rods.

D. Masonry Joint Reinforcement for Multiwythe Masonry:
   1. Adjustable (two-piece) type, truss design, with one side rod at each face shell of backing wythe and with separate ties that extend into facing wythe. Ties have two hooks that engage eyes or slots in reinforcement and resist movement perpendicular to wall. Ties extend at least halfway through

facing wythe but with at least 5/8-inch cover on outside face. Ties have hooks or clips to engage a continuous horizontal wire in the facing wythe.

E. Masonry Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.148-inch- diameter, hot-dip galvanized, carbon-steel continuous wire.

2.8 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with eight subparagraphs below, unless otherwise indicated.
   1. Mill-Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 641/A 641M, Class 1 coating.
   2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.

B. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
   1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch- diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls, unless otherwise indicated.
   2. Tie Section for Steel Frame: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.188-inch- diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls, unless otherwise indicated.

C. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins, unless otherwise indicated.
   1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A 153M.

D. Stone Anchors: Fabricate dowels, cramps, and other stone anchors from stainless steel.

E. Adjustable Masonry-Veneer Anchors
   1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
      a. Structural Performance Characteristics: Capable of withstanding a 100-lbf load in both tension and compression without deforming or developing play in excess of 0.05 inch.
   2. Contractor's Option: Unless otherwise indicated, provide any of the following types of anchors:
   3. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
      a. Anchor Section: Rib-stiffened, sheet metal plate with screw holes top and bottom, 2-3/4 inches wide by 3 inches high; with projecting tabs having slotted holes for inserting vertical legs of wire tie specially formed to fit anchor section.
      b. Anchor Section: Sheet metal plate, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom and with raised rib-stiffened strap, 5/8 inch wide by 3-5/8 inches long, stamped into center to provide a slot between strap and plate for inserting wire tie.
      c. Anchor Section: Gasketed sheet metal plate, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom; top and bottom ends bent to form pronged legs of length to match thickness of insulation or sheathing; and raised rib-stiffened strap, 5/8 inch wide by 6 inches long, stamped into center to provide a slot between strap and plate for inserting wire tie. Provide anchor manufacturer's standard, self-adhering, modified bituminous gaskets manufactured to fit behind anchor plate and extend beyond pronged legs.
      d. Anchor Section: Zinc-alloy barrel section with flanged head with eye and corrosion-resistant, self-drilling screw. Eye designed to receive wire tie and to serve as head for drilling fastener into framing. Barrel length to suit sheathing thickness, allowing screw to seat directly against framing with flanged head covering hole in sheathing.
      e. Fabricate sheet metal anchor sections and other sheet metal parts from 0.067-inch- thick, steel sheet, galvanized after fabrication 0.078-inch- thick,.
      f. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from 0.25-inch-diameter, hot-dip galvanized steel wire.
   4. Available Products:
      a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 213 or D/A 210 with D/A 700-708.

b. Heckmann Building Products Inc.; 315-D with 316 or Pos-I-Tie.
c. Hohmann & Barnard, Inc.; DW-10 DW-10HS or DW-10-X.
d. Wire-Bond; 1004, Type III or RJ-711.

2.9 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide metal flashing where flashing is exposed or partly exposed and where indicated, complying with Division 07 Section "Sheet Metal Flashing and Trim".
B. Cavity Wall Flashing
1. Metal Sub Flashing with integral Drip Edge: Provide continuous under Flexible Flashing. Fabricate from stainless steel. Extend at least 3 inches into wall inner wythe CMU backup and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
a. Stainless Steel: ASTM A 240/A 240M, Type 304, 0.016 inch thick.
b. Metal Flashing Terminations: Fabricate from stainless steel. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 3/8 inch to form a stop for retaining sealant backer rod.
2. Flexible Flashing: For flashing not exposed to the exterior, use one of the following, unless otherwise indicated:
a. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than **0.040 inch**.
1) Available Products:
a) Advanced Building Products Inc.; Peel-N-Seal.
b) Carlisle Coatings & Waterproofing; CCW-705-TWF Thru-Wall Flashing.
c) Dayton Superior Corporation, Dur-O-Wal Division; Dur-O-Barrier-44.
d) Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Perm-A-Barrier Wall Flashing.
e) Heckmann Building Products Inc.; No. 82 Rubberized-Asphalt Thru-Wall Flashing.
f) Henry Company: Blueskin TWF
g) Hohmann & Barnard, Inc.; Textroflash.
h) Polyguard Products, Inc.; Polyguard 300.
i) Polytite Manufacturing Corp.; Poly-Barrier Self-Adhering Wall Flashing.
j) Williams Products, Inc.; Everlastic MF-40.
b. Provide mechanically fastened stainless steel termination bar with continuous sealant at top.

2.10 MISCELLANEOUS MASONRY ACCESSORIES

A. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
B. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
C. Weep/Vent Products: Use the following, unless otherwise indicated:
1. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard.
a. Provide at 32" o.c. unless otherwise noted.
D. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
1. Provide one of the following configurations:

a. Strips, full-depth of cavity and 10 inches wide, with dovetail shaped notches 7 inches deep that prevent mesh from being clogged with mortar droppings.

2. Available Products:
   a. Advanced Building Products Inc.; Mortar Break II.
   b. Archovations, Inc.; CavClear Masonry Mat.
   c. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
   d. Mortar Net USA, Ltd.; Mortar Net.
   e. Hohmann & Barnard, Inc.

2.11 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
   1. Available Manufacturers:
      a. Diedrich Technologies, Inc.
      b. EaCo Chem, Inc.
      c. ProSoCo, Inc.

2.12 SOURCE QUALITY CONTROL

A. Clay Masonry Unit Test: For each type of unit furnished, per ASTM C 67.
B. Concrete Masonry Unit Test: For each type of unit furnished, per ASTM C 140.
C. Grout Test (Compressive Strength): For each mix provided, per ASTM C 1019.
D. Prism Test: For each type of construction provided, per ASTM C 1314 UBC Standard 21-17 at 28 days.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
B. Build chases and recesses to accommodate items specified in this and other Sections.
C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
   1. Mix units from several pallets or cubes as they are placed.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.
G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.
H. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
   1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
   2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
   3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
   4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch , with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
   5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
   6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.
   7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.3 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in **one-third running bond for Brick and running bond for CMU (all types)**; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
E. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
G. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
H. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.
   1. Install compressible filler in joint between top of partition and underside of structure above.
   2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors **48 inches** o.c., unless otherwise indicated.
   3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
   4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section "Fire-Resistive Joint Systems."

3.4 CAVITY WALLS

A. Bond wythes of cavity walls together using one of the following methods:
   1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for **2.67 sq. ft.** of wall area spaced not to exceed **16 inches** o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.
      a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
      b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type ties to allow for differential movement regardless of whether bed joints align.
   2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
      a. Where bed joints of both wythes align, use Truss type reinforcement extending across both wythes
      b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement with continuous horizontal wire in facing wythe attached to ties.
B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.
C. Coat cavity face of backup wythe to comply with Division 07 Section "Bituminous Dampproofing."

3.5 INSTALLATION OF CAVITY WALL INSULATION: RIGID

A. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
   1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry. Tape joints.

3.6 MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
   1. Space reinforcement not more than 16 inches o.c.

   Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.
      a. Reinforcement above is in addition to continuous reinforcement.
B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
C. Provide continuity at wall intersections by using prefabricated T-shaped units.
D. Provide continuity at corners by using prefabricated L-shaped units.
E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 ANCHORING MASONRY TO STRUCTURAL MEMBERS

A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
   1. Provide an open space not less than **1/2 inch** in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar and other rigid materials.

2. Anchor masonry to structural members with anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 24 inches o.c. vertically and horizontally.

3.8 ANCHORING MASONRY VENEERS

A. Anchor masonry veneers to wall framing concrete and masonry backup with seismic masonry-veneer anchors to comply with the following requirements:

3.9 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
B. Form control joints in concrete masonry as follows:
   1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
   2. Install preformed control-joint gaskets designed to fit standard sash block.
   3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
   4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
   5. Where control joints extend from window or door head lintels and shelf angles, install bond breaker of building felt in horizontal joint below lintel and rake horizontal joint at lintel for installation of sealant.
C. Form expansion joints in brick made from clay or shale as follows:
   1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches (100 mm) in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
   2. Build flanges of factory-fabricated, expansion-joint units into masonry.
   3. Build in compressible joint fillers where indicated.
   4. Form open joint full depth of brick wythe and of width indicated, but not less than **3/8 inch** for installation of sealant and backer rod specified in Division 07 Section "Joint Sealants."

3.10 LINTELS

A. Install steel lintels where indicated.
B. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
C. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

3.11 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
B. Install flashing as follows, unless otherwise indicated:
   1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of

mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

2. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of **8 inches**, and through inner wythe to within 1/2 inch of the interior face of wall in exposed masonry. Where interior face of wall is to receive furring or framing, carry flashing completely through inner wythe and turn flashing up approximately 2 inches on interior face.
3. At multiwythe masonry walls, including cavity walls, extend flashing through outer wythe, turned up a minimum of **8 inches**, and 1-1/2 inches into the inner wythe.
4. At masonry-veneer walls, extend flashing through veneer, across air space behind veneer, and up face of sheathing at least 8 inches; with upper edge tucked under building paper or building wrap, lapping at least 4 inches.
5. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
6. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Division 07 Section "Joint Sealants" for application indicated.
7. Install metal drip edges and sealant stops with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Division 07 Section "Joint Sealants" for application indicated.
8. Install metal sub flashing and integral drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall and adhere flexible flashing to metal for the entire length.
9. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.
10. Install flexible flashing with continuous stainless steel termination bar with continuous sealant at top.

C. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article.

D. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products.

3.12 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
   1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
   2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
   1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
   2. Limit height of vertical grout pours to not more than 60 inches.

3.13 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections indicated below and prepare test reports:
   1. Payment for these services may be made by Owner.
   2. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.

B. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.

1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.

C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.If retaining paragraph below, select either or both tests listed; insert others if required. Testing for mortar air content is especially desirable for reinforced masonry. Testing for compressive strength is desirable if the property specification for mortar is used.

3.14 SPECIAL INSPECTIONS

A. Special Inspections and tests shall be performed by the Special Inspector or Special Inspection Agency.
B. Preconstruction Testing: Perform preconstruction testing as follows:
   1. Concrete Masonry Unit Test: For each type of unit required, according to ASTM C 140 for compressive strength.
   2. Mortar Test (Property Specification): For each mix required, according to ASTM C 780 for compressive strength.
   3. Grout Test (Compressive Strength): For each mix required, according to ASTM C 1019.
C. Construction Testing: Perform construction testing as follows:
   1. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
   2. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.
   3. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for compressive strength.
   4. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.
D. Verification and inspection of masonry construction shall be Level 1 in accordance with Table 1704.5.1 of North Carolina State Building Code 2018 and as follows:
   1. Perform periodic inspections of the installed masonry construction to verify compliance with the details shown on the construction documents such as use of proper mortar and grout, construction of mortar joints, size, location, spacing and lapping of reinforcing steel, installation of anchors into masonry construction.
   2. Perform continuous inspections during grout placement to verify use of proper grout mix, locations of grout, cleanliness of grout spaces, cleanouts as required and proper consolidation of grout.
      a. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
      b. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
      c. Place grout only after inspectors have verified proportions of site-prepared grout.
E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
F. Additional testing performed to determine compliance of corrected work with specified requirements shall be at Contractor’s expense.

3.15 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
7. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.
8. Clean stone trim to comply with stone supplier's written instructions.
9. Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

3.16 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
   1. Crush masonry waste to less than 4 inches in each dimension.
   2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 31 Section "Earth Moving."
   3. Do not dispose of masonry waste as fill within 18 inches of finished grade.

C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 04 20 00

SECTION 04 72 00 - CAST STONE MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Cast stone trim including the following:
      a. Exterior seat wall caps.
B. Related Sections include the following:
   1. Division 04 Section "Unit Masonry" for installing cast stone units in unit masonry.

1.3 DEFINITIONS

A. Cast Stone: Highly refined architectural concrete stone product manufactured to simulate fine grain texture of natural cut stone.
B. Vibrant Dry Tamp (VDT) Casting Method: Vibratory ramming of damp, zero-slup concrete against rigid framework until it is densely compacted and ready for immediate removal from form.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for cast stone units.
B. Shop Drawings: Show fabrication and installation details for cast stone units. Include dimensions, details of reinforcement and anchorages if any, and indication of finished faces.
   1. Include building elevations showing layout of units and locations of joints and anchors.
C. Samples for Initial Selection: For colored mortar.
D. Samples for Verification:
   1. For each color and texture of cast stone required, 10 inches square in size.
   2. For colored mortar. Make Samples using same sand and mortar ingredients to be used on Project.
E. Mockup Samples: Furnish sample units for each color, shape and texture of cast stone required, 10 inches long minimum in size for installation in mockups.
F. Qualification Data: For manufacturer.
   1. Include copies of material test reports for completed projects, indicating compliance of cast stone with ASTM C 1364.
G. Quality-Control Plan: Manufacturer's written quality-control plan that includes all elements of the Cast Stone Institute's "Quality Control Procedures Required for Plant Inspection."
   1. Provide copies of documentation showing compliance with quality-control plan as requested by Architect.
H. Material Test Reports: For each mix required to produce cast stone, based on testing according to ASTM C 1364, including test for resistance to freezing and thawing.
   1. Provide test reports based on testing within previous two years.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer with minimum 10 years in producing cast stone units similar to those indicated for this Project, with sufficient production capacity to manufacture required units.
   1. Manufacturer is a producing member of the Cast Stone Institute**.**
   2. Comply with requirements of Cast Stone Institute Technical Manual.
B. Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 for testing indicated, as documented according to ASTM E 548.
C. Source Limitations for Cast Stone: Obtain cast stone units through one source from a single manufacturer.
D. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Coordinate delivery of cast stone with unit masonry work to minimize the need for on-site storage and to avoid delaying the Work.
B. Pack, handle, and ship cast stone units in suitable packs or pallets.
   1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast stone units, if required, using dollies with wood supports.
   2. Store cast stone units on wood skids or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.
C. Store installation materials on elevated platforms, under cover, and in a dry location.
D. Store mortar aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

1.7 PROJECT CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
   1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until cast stone has dried, but not less than 7 days after completing cleaning.
B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include products specified.
      a. Contractor’s Option between 2.3 Cast Stone Units and 2.4 Calcium Silicate Masonry Units
   2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include manufacturers specified.

2.2 CAST STONE MATERIALS

A. General: Comply with ASTM C 1364 and the following:
   1. Casting Method: Vibrant Dry Tamp.
   2. Compressive Strength: ASTM C 1194: 6500 psi minimum at 28 days.
   3. Absorption, ASTM C 642 or C 1195: 6% maximum at 28 days
B. Calcium Silicate Masonry Units: to ASTM C73, Grade SW; solid units having been pressure formed and autoclaved; 3-5/8" bed depth; modular sizes as indicated on drawings; sandblasted finish on exposed faces and exposed ends; special shapes as indicated; color as selected by Architect from full range of standard colors, and having the following typical average properties when tested to the identified standard:
   1. Compressive Strength: 6600 psi, to ASTM C170.
   2. Absorption: 8.8 percent, to ASTM C97.
   3. Density: 129 lbs/ft3, to ASTM C97.
   4. Modulus of Rupture: 770 psi, to ASTM C99.
C. Portland Cement: ASTM C 150, Type I, white or gray as required to match specified color.
D. Coarse Aggregates: Granite, quartz, or limestone complying with ASTM C 33; gradation as needed to produce required textures and colors as needed to produce required cast stone colors.
E. Fine Aggregates: Natural sand or crushed stone complying with ASTM C 33, gradation as needed to produce required textures and colors as needed to produce required cast stone colors.
F. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
G. Admixtures: Do not use admixtures unless specified or approved in writing by Architect.
   1. Do not use admixtures that contain more than 0.1 percent water-soluble chloride ions by mass of cementitious materials. Do not use admixtures containing calcium chloride.
   2. Use only admixtures that are certified by manufacturer to be compatible with cement and other admixtures used.
   3. Air-Entraining Admixture: ASTM C 260. Add to mixes for units exposed to the exterior at manufacturer's prescribed rate to result in an air content of 4 to 6 percent, except do not add to zero-slump concrete mixes.
   4. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
   5. Water-Reducing, Retarding Admixture: ASTM C 494/C 494M, Type D.
   6. Water-Reducing, Accelerating Admixture: ASTM C 494/C 494M, Type E.
H. Reinforcement: Deformed steel bars complying with ASTM A 615/A 615M. Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches of cast stone material.
   1. Epoxy Coating: ASTM A 775/A 775M.
   2. Galvanized Coating: ASTM A 767/A 767M.
I. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666, Type 304.

2.3 CAST STONE UNITS (Contractors Option)

A. Manufacturers: provide basis of design or approved equal by one of the following:
   1. Cast Stone Systems, Inc.
   2. Classic Stone Creations
   3. Southern Castings Inc.
   4. Corbelstone, Inc.
   5. Custom Cast Stone
   6. Advanced Architectural Stone
   7. Arban Precast Stone Co.
   8. Architectural Concrete Company, Inc.
   9. Lucas Concrete Products, Inc.
   10. Miller-Mize Precast, Inc.
   11. P&D Architecture Precast
B. Provide cast stone units complying with ASTM C 1364 using the vibrant dry tamp or wet-cast method.

1. Provide units that are resistant to freezing and thawing as determined by laboratory testing according to ASTM C 666, Procedure A, as modified by ASTM C 1364**.**

C. Fabricate units with sharp arris and details accurately reproduced with indicated texture on all exposed surfaces, unless otherwise indicated.
   1. Slope exposed horizontal surfaces 1:12, unless otherwise indicated.
   2. Provide raised fillets at backs of sills and at ends indicated to be built into jambs.
   3. Provide drips on projecting elements, unless otherwise indicated.

D. Fabrication Tolerances:
   1. Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch.
   2. Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch, whichever is greater, but in no case by more than 1/4 inch.
   3. Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch, whichever is greater.
   4. Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch on formed surfaces of units and 3/8 inch on unformed surfaces.

E. Cure units by one of the following methods:
   1. Cure units with steam in enclosed curing room at temperature of 105 deg F or above and 95 to 100 percent relative humidity for 6 hours.
   2. Cure units with dense fog and water spray in enclosed warm curing room at 95 to 100 percent relative humidity for 24 hours.
   3. Cure units to comply with one of the following:
      a. Not less than 5 days at mean daily temperature of 70 deg F or above.
      b. Not less than 6 days at mean daily temperature of 60 deg F or above.
      c. Not less than 7 days at mean daily temperature of 50 deg F or above.
      d. Not less than 8 days at mean daily temperature of 45 deg F or above.

F. Acid etch units after curing to remove cement film from surfaces to be exposed to view.

G. Colors: As selected by Architect from manufacturer's full range.
   1. Color Variation
      a. Viewing Conditions: Compare in direct daylight at 10 feet, between components of similar age, subjected to comparable weathering conditions
      b. Maximum Variation, ASTM D 2244:
         1) Hue: 2 units
         2) Lightness, Chroma, and hue combined: 6 units.

H. Textures: Fine grained texture similar to natural stone.

I. Size: As indicated in drawings.

J. Profile: As indicated in the drawings.

2.4 CALCIUM SILICATE MASONRY UNITS (Contractor’s Option)

A. Manufacturers:
   1. Arriscraft
   2. Indiana Limestone
   3. Shouldice
   4. Cordova by Oldcastle
   5. Regency Stone

B. Provide Calcium Silicate Masonry units complying with ASTM C-90 and ASTM C73.

C. Fabrication Tolerances:
   1. Unit Length: plus or minus 1/16".
   2. Unit Height: plus or minus 1/16".
   3. Deviation From Square: plus or minus 1/16", with measurement taken using the longest edge as the base.
   4. Bed Depth: plus or minus 1/8".
   5. Custom Dimensions: plus or minus 1/8".
   6. Unit Face Deviations: plus or minus 3/8”.

D. Colors: As selected by Architect from manufacturer's full range.

E. Textures: Fine grained texture similar to natural stone.
F. Size: As indicated in drawings.
G. Profile: As indicated in the drawings.

2.5 MORTAR MATERIALS

A. Masonry Cement: ASTM C 270, Type N or Type S for Calcium Silicate Units.
   1. Products:
      a. Flamingo Color Masonry Cement. Brixment;
      b. Holcim (US) Inc.;
      c. Argos Cement Company
      d. National Cement Company
      e. Lehigh Cement Company
B. Colored Cement Product: Packaged blend made from masonry cement and mortar pigments, all complying with specified requirements and containing no other ingredients.
   1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
   2. Pigments shall not exceed 10 percent of portland cement by weight.
   3. Pigments shall not exceed 5 percent of masonry cement by weight.
   4. Products:
      a. Colored Masonry Cement:
         1) Flamingo Color Masonry Cement. Brixment;
         2) Holcim (US) Inc.;
         3) Argos Cement Company
         4) National Cement Company
         5) Lehigh Cement Company
C. Aggregate for Mortar: ASTM C 144.
   1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
   2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
   3. White-Mortar Aggregates: Natural white sand or crushed white stone.
   4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
D. Water: Potable.

2.6 ACCESSORIES

A. Anchors: Type and size indicated, fabricated from stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666, Type 304.
B. Anchors: Type and size indicated, fabricated from steel complying with ASTM A 36/A 36M, and hot-dip galvanized to comply with ASTM A 123/A 123M.
C. Dowels: Round stainless-steel bars complying with ASTM A 276, Type 304, and 1/2-inch diameter.
D. Dowels: Round steel bars complying with ASTM A 36/A 36M or ASTM A 615/A 615M, 1/2-inch diameter, and hot-dip galvanized to comply with ASTM A 123/A 123M.
E. Proprietary Acidic Cleaner: Manufacturer's standard-strength, general-purpose cleaner designed for removing mortar/grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cast stone manufacturer and expressly approved by cleaner manufacturer for use on cast stone and adjacent masonry materials.
   1. Manufacturers:
      a. Diedrich Technologies, Inc.
      b. EaCo Chem, Inc.
      c. ProSoCo, Inc.

2.7 MORTAR MIXES

A. Comply with requirements in Division 04 Section "Unit Masonry" for mortar mixes.
B. Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
   1. Do not use calcium chloride in mortar.
   2. Limit cementitious materials in mortar to Portland cement, mortar cement, and lime.
C. Comply with ASTM C 270, Proportion Specification.
   1. For setting mortar, use Type N or Type S for Calcium Silicate Units.
   2. For pointing mortar, use Type N or Type S for Calcium Silicate Units.
D. Pigmented Mortar: Use colored cement product.
   1. Pigments shall not exceed 10 percent of Portland cement by weight.
   2. Pigments shall not exceed 5 percent of masonry cement by weight.
   3. Mix to match Architect's sample.
E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
   1. Mix to match Architect's sample.

2.8 SOURCE QUALITY CONTROL

A. Employ an independent testing agency to sample and test cast stone units according to ASTM C 1364.
   1. Include one test for resistance to freezing and thawing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of cast stone.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SETTING CAST STONE IN MORTAR

A. Install cast stone units to comply with requirements in Division 04 Section "Unit Masonry."
B. Set cast stone as indicated on Drawings. Set units accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.
   1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
C. Wet joint surfaces thoroughly before applying mortar or setting in mortar.
D. Set units in full bed of mortar with full head joints, unless otherwise indicated.
   1. If not indicated, set units with joints 3/8 wide.
   2. Build anchors and ties into mortar joints as units are set.
   3. Fill dowel holes and anchor slots with mortar.
   4. Fill collar joints solid as units are set.
   5. Build concealed flashing into mortar joints as units are set.
   6. Keep head joints in coping and other units with exposed horizontal surfaces open to receive sealant.
   7. Keep joints at shelf angles open to receive sealant.
E. Rake out joints for pointing with mortar to depths of not less than 3/4 inch. Rake joints to uniform depths with square bottoms and clean sides. Scrub faces of units to remove excess mortar as joints are raked.

F. Point mortar joints by placing and compacting mortar in layers not greater than 3/8 inch. Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
G. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
H. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated. Keep joints free of mortar and other rigid materials.
   1. Form open joint of width indicated, but not less than 3/8 inch
I. Prepare joints indicated to receive sealant and apply sealant of type and at locations indicated to comply with applicable requirements in Division 07 Section "Joint Sealants."
   1. Prime cast stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant, unless otherwise indicated.

3.3 SETTING ANCHORED CAST STONE WITH SEALANT-FILLED JOINTS

A. Set cast stone as indicated on Drawings. Set units accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.
   1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
   2. Shim and adjust anchors, supports, and accessories to set cast stone in locations indicated with uniform joints.
B. Keep cavities open where unfilled space is indicated between back of cast stone units and backup wall; do not fill cavities with mortar or grout. Unless otherwise indicated
C. Fill anchor holes with sealant.
   1. Where dowel holes occur at pressure-relieving joints, provide compressible material at ends of dowels.
D. Set cast stone supported on clip or continuous angles on resilient setting shims. Use material of thickness required to maintain uniform joint widths. Hold shims back from face of cast stone a distance at least equal to width of joint.
E. Keep joints free of mortar and other rigid materials. Remove temporary shims and spacers from joints after anchors and supports are secured in place and cast stone units are anchored. Do not begin sealant installation until temporary shims and spacers are removed.
   1. Form open joint of width indicated, but not less than 3/8 inch.
F. Prepare joints and apply sealant of type and at locations indicated to comply with applicable requirements in Division 07 Section "Joint Sealants."
   1. Prime cast stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant, unless otherwise indicated.

3.4 INSTALLATION TOLERANCES

A. Variation from Plumb: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
B. Variation from Level: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
C. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 48 inches or one-fourth of nominal joint width, whichever is less.
D. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch, except due to warpage of units within tolerances specified.

3.5 ADJUSTING AND CLEANING

A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Architect.

B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean cast stone as work progresses.
   1. Remove mortar fins and smears before tooling joints.
   2. Remove excess sealant immediately, including spills, smears, and spatter.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone as follows:
   1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
   2. Test cleaning methods on sample; leave one sample uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of cast stone.
   3. Protect adjacent surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
   4. Wet surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
   5. Clean cast stone by bucket-and-brush hand-cleaning method described in BIA Technical Notes No. 20.
   6. Clean cast stone with proprietary acidic cleaner applied according to manufacturer's written instructions.

END OF SECTION 04 72 00

SECTION 09 30 00 - TILING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Porcelain tile (wall and floor).
   2. Waterproof membrane for tile installations.
   3. Crack-suppression membrane for thin-set tile installations.
   4. Cementitious backer units installed as part of tile installations.

1.2 DEFINITIONS

A. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.
B. Facial Dimension: Actual tile size (minor facial dimension as measured per ASTM C 499).
C. Facial Dimension: Nominal tile size as defined in ANSI A137.1.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Shop Drawings: Provide Tile shop drawing layout. Show the following:
   1. Columns, doorways, enclosing walls, or partitions, built-in casework.
   2. Existing flooring materials to be removed.
   3. Type of subfloor.
   4. Type of installation.
   5. Pattern of installation.
   6. Type, color, and location of insets and borders.
   7. Type, color, and location of edge, transition, and other accessory strips.
   8. Type, color, and location of edge, transition, and other accessory strips.
   9. Transition details to other flooring materials.
C. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.
D. Samples for Verification:
   1. Full-size units of each type and composition of tile and for each color and finish required.
E. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
F. Product Certificates: For each type of product, signed by product manufacturer.
G. Qualification Data: For Installer.
H. Material Test Reports: For each tile-setting and -grouting product.

1.4 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.
   1. Obtain time tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.
C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:

1. Waterproofing.
2. Joint sealants.
3. Cementitious backer units.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.
B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
C. Store aggregates where grading and other required characteristics can be maintained, and contamination avoided.
D. Store liquid latexes and emulsion adhesives in unopened containers and protected from freezing.
E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.
B. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during tile installation.
C. Close spaces to traffic during tile application and for not less than 24 hours after application unless manufacturer recommends a longer period.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

1. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
   A. Provide tile complying with Standard grade requirements, unless otherwise indicated.
   B. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.
2. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.
3. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
   A. As selected by Architect from manufacturer's full range.
4. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

5. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless otherwise indicated.

2.2 TILE PRODUCTS

1. Approved Manufacturers:
   A. Daltile International
   B. American Olean
   C. American Marazzi Tile, Inc.
   D. Buchtal Corporation USA.
   E. Cerim-Floor Gres Ceramiche.
   F. Crossville Ceramics Company, L.P.
   G. Florida Tile Industries, Inc.
   H. GranitiFiandre.
   I. Interceramic.
   J. Quarry Tile Company.
   K. Seneca Tiles, Inc.
   L. United States Ceramic Tile Company.

2. Floor Tile: FT-1: ANSI A137.1
   A. Subject to compliance with requirements, Basis of Design: American Olean, Tile Line: Subtle Strands or equal from approved Manufacturers.
   B. Selection from Manufacturers full range of colors.
   C. Finish: Matte.
   D. Composition: Colorbody Porcelain.
   E. Module size: 3 inches by 3 inches mosaic (mesh mount)
   F. Nominal Thickness: 5/16 inch
   G. Grout for Tiling:
      a. Grout color: As selected by Architect from manufacturer's full range.
      b. Grout Joint Size: 1/8 inch.
   H. Tile Base: Only where there is no wall tile use 3x24 bullnose trim as the floor tile base.
   I. Metal Trim and Cove Protection: Refer to Accessories in spec.

3. Floor Tile: FT-2: ANSI A137.1
   A. Subject to compliance with requirements, Basis of Design: American Olean, Tile Line: Subtle Strands or equal from approved Manufacturers.
   B. Selection from Manufacturers full range of colors.
   C. Finish: Matte.
   D. Composition: Colorbody Porcelain.
   E. Module size: 12 inches by 24 inches
   F. Nominal Thickness: 5/16 inch
   G. Grout for Tiling:
      a. Grout color: As selected by Architect from manufacturer's full range.
      b. Grout Joint Size: 1/8 inch.
   H. Tile Base: Only where there is no wall tile use 3x24 bullnose trim as the floor tile base.
   I. Metal Trim and Cove Protection: Refer Accessories products in spec.

4. Floor Tile: FT-3: ANSI A137.1
   A. Subject to compliance with requirements, Basis of Design: Daltile, Tile Line: Continental Slate or equal from approved Manufacturers.
   B. Selection from Manufacturers full range of colors.
   C. Finish: Matte.
   D. Composition: Colorbody Porcelain.
   E. Module size: 6 inches by 6 inches
   F. Nominal Thickness: 5/16 inch
   G. Grout for Tiling:

a. Grout color: As selected by Architect from manufacturer's full range.
b. Grout Joint Size: 3/16 inch.

H. Metal Cove Protection: Refer Accessories products in spec.

5. Wall Tile: WT-1: ANSI A137.1
   A. Subject to compliance with requirements, Basis of Design: Daltile, Tile Line: Linden Point or equal from approved Manufacturers.
   B. Selection from Manufacturers full range of colors.
   C. Finish: Matte.
   D. Composition: Glazed Porcelain with Reveal Imaging.
   E. Module size: 12 inches by 24 inches
   F. Nominal Thickness: 3/8 inch
   G. Tile Trim for top of tile to Gypsum Wall Board: Bullnose 3x12
   H. Tile Trim for vertical tile edges: Bullnose 3x12
   I. Tile Trim Units: Matching characteristics of adjoining flat tile and coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes:
   J. Grout for Tiling:
      a. Grout color: As selected by Architect from manufacturer's full range.
      b. Grout Joint Size: 3/16 inch.

6. Wall Tile: WT-2: ANSI A137.1
   A. Subject to compliance with requirements, provide American Olean, Tile Line: Visual Impressions (Flat) or equal from approved Manufacturers.
   B. Selection from Manufacturers full range of colors.
   C. Finish/Composition: Glazed Ceramic.
   D. Module size: 8 inches by 24 inches.
   E. Nominal Thickness: 5/16 inch
   F. Face: Flat pattern.
   G. Metal Trim for exposed vertical tile edges: Refer Accessories products in spec.
   H. Grout for Tiling:
      a. Grout color: As selected by Architect from manufacturer's full range.
      b. Grout Joint Size: 1/16 inch.

7. Wall Tile: WT-3: ANSI A137.1
   A. Subject to compliance with requirements, provide American Olean, Tile Line: Visual Impressions (Wave) or equal from approved Manufacturers.
   B. Selection from Manufacturers full range of colors.
   C. Finish/Composition: Glazed Ceramic.
   D. Module size: 8 inches by 24 inches.
   E. Nominal Thickness: 5/16 inch
   F. Face: Multi Wave pattern.
   G. Metal Trim for vertical tile edges: Refer Accessories products in spec.
   H. Grout for Tiling:
      a. Grout color: As selected by Architect from manufacturer's full range.
      b. Grout Joint Size: 1/16 inch.

8. Wall Tile: WT-4: ANSI A137.1
   A. Subject to compliance with requirements, Basis of Design: American Olean, Tile Line: Subtle Strands or equal from approved Manufacturers.
   B. Selection from Manufacturers full range of colors.
   C. Finish: Matte.
   D. Composition: Colorbody Porcelain.
   E. Module size: 12 inches by 24 inches
   F. Nominal Thickness: 5/16 inch

G. Metal Trim for exposed vertical tile edges: Refer Accessories products in spec.
H. Metal Trim for outside corners: Refer Accessories products in spec.
I. Grout for Tiling:
   a. Grout color: As selected by Architect from manufacturer's full range.
   b. Grout Joint Size: 1/8 inch.

9. Wall Tile: WT-5: ANSI A137.1
   A. Subject to compliance with requirements, provide Daltile, Tile Line: Multitude (Wave) or equal from approved Manufacturers.
   B. Selection from Manufacturers full range of colors.
   C. Finish/Composition: Glazed Ceramic.
   D. Module size: 12 inches by 24 inches.
   E. Nominal Thickness: 5/16 inch
   F. Face: Wave pattern.
   G. Grout for Tiling:
      a. Grout color: As selected by Architect from manufacturer's full range.
      b. Grout Joint Size: 1/8 inch.

2.3 ACCESSORY PRODUCTS

1. Metal Wall Trim: Basis of Design: QUADEC by Schluter
   A. Description: Profile with square visible surface, integrated trapezoid perforated anchoring leg, and integrated grout joint spacer.
   B. Metal Trim for exposed vertical tile edges.
   C. Corners:
      a. Provide with matching outside corners
      b. Provide with matching end caps
      c. Provide with matching connectors
   D. Material: Stainless Steel TYPE 304
   E. Height: Suitable for thickness of specified tile.

2. Metal Base Trim for Cove Protection (**MT**): Basis of Design: DILEX-EHK by Schluter
   A. Description: Roll-formed stainless-steel profile with integrated trapezoid perforated anchoring legs, connected at a 90-degree angle by a cove shaped section with 23/32” radius that forms the visible surface.
   B. Corners:
      a. Provide with matching inside corners.
      b. Provide with matching outside corners
      c. Provide with matching end caps
      d. Provide with matching connectors
   C. Material: Stainless Steel TYPE 304
   D. Height: Suitable for thickness of specified tile.
   E. Refer to finish floor plan drawings for MT designated room locations. Use metal cove protection around perimeter of room.

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
   a. Bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor. Limit height of bevel to ½ inch or less and finish bevel to match face of threshold.
B. Shower Stall: Basis of Design shall be Aluminum Shower Profile WS by Schluter.
C. Porcelain Tile to Vinyl tile flooring transition: Basis of Design shall be stainless steel Reno-U by Schluter.
D. Use Stainless Steel RENO-U by Schluter if ½” height or less and RENO Ramp if 9/16” height or more.

E. Unless otherwise noted refer to drawings.
F. For additional thresholds transition strips refer to specification Division 096513 Resilient Base and Accessories.

2.5 WATERPROOFING FOR THIN-SET TILE INSTALLATIONS

1. General: Manufacturer's standard product that complies with ANSI A118.10.
2. Fabric-Reinforced, Fluid-Applied Product: System consisting of liquid-latex rubber, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), and fabric reinforcement.
   A. Available Products:
      a. Custom Building Products; Trowel & Seal Waterproofing and Anti-FractureMembrane.
      b. LATICRETE International Inc.; Laticrete 9235 Waterproof Membrane.
      c. MAPEI Corporation; PRP M19.

2.6 SETTING AND GROUTING MATERIALS

1. Manufacturers:
   A. Atlas Minerals & Chemicals, Inc.
   B. Boiardi Products Corporation.
   C. Bonsal, W. R., Company.
   D. Bostik.
   E. C-Cure.
   F. Custom Building Products.
   G. DAP, Inc.
   H. Jamo Inc.
   I. LATICRETE International Inc.
   J. MAPEI Corporation.
   K. Southern Grouts & Mortars, Inc.
   L. TEC Specialty Products Inc.

2.7 LATEX-PORTLAND CEMENT MORTAR (THIN SET): ANSI A118.4, consisting of the following:

A. Prepackaged dry-mortar mix containing dry, redispersible, ethylene vinyl acetate additive to which only water must be added at Project site.
   1. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4.
B. Sand-Portland Cement Grout: ANSI A108.10, composed of white or gray cement and white or colored aggregate as required to produce color indicated.
C. Standard Sanded Cement Grout: ANSI 118.7 Polymer Modified Cement Grouts, color as indicated.
D. Standard Unsanded Cement Grout: ANSI 118.7 Polymer Modified Cement Grouts, color as indicated.
   1. Polymer Type: Either ethylene vinyl acetate, in dry, redispersible form, prepackaged with other dry ingredients, or acrylic resin or styrene-butadiene rubber in liquid-latex form for addition to prepackaged dry-grout mix.
      a. Unsanded grout mixture for joints 3/16 inch and narrower.
      b. Sanded grout mixture for joints 1/8 inch and wider.

2.8 PORTLAND CEMENT MORTAR (THICK SET): ANSI A108.1A and as specified below:

A. Cleavage Membrane: Asphalt felt, ASTM D 226, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils thick.
B. Reinforcing Wire Fabric: Galvanized, welded wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A 185 and ASTM A 82 except for minimum wire size.

C. Expanded Metal Lath: Diamond-mesh lath complying with ASTM C 847.
1. Base Metal and Finish for Interior Applications: Uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.
2. Configuration over Solid Surfaces: Self-furring.
3. Weight: 2.5 lb/sq. yd.
4. Latex Additive: acrylic resin water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.

2.9 ELASTOMERIC SEALANTS

1. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 07 Section "Joint Sealants."
   A. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.
3. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in- service exposures of high humidity and extreme temperatures.
   A. Available Products:
      1. Dow Corning Corporation; Dow Corning 786.
      2. GE Silicones; Sanitary 1700.
      3. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
      4. Tremco, Inc.; Tremsil 600 White.
4. Multipart, Pourable Urethane Sealant for Use T: ASTM C 920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.
   A. Available Products:
      1. Bostik; Chem-Calk 550.
      2. Mameco International, Inc.; Vulkem 245.
      3. Pecora Corporation; NR-200 Urexpan.
      4. Tremco, Inc.; THC-900.

2.10 CEMENTITIOUS BACKER UNITS

1. Provide cementitious backer units complying with ANSI A118.9 in maximum lengths available to minimize end-to-end butt joints.
   A. Thickness: 1/2 inch
   B. Width: 48 inches
2. Available Products:
   A. C-Cure; C-Cure Board 990.
   B. Custom Building Products; Wonderboard.
   C. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
   D. USG Corporation; DUROCK Cement Board.

2.11 MISCELLANEOUS MATERIALS

1. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
2. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications, white zinc alloy exposed-edge material.
3. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufactur-

ers.

4. Grout Sealer: Manufacturer's standard product for sealing grout joints that does not change color or appearance of grout.
   A. Available Products:
      1. Bonsal, W. R., Company; Grout Sealer.
      2. Bostik; CeramaSeal Grout Sealer.
      3. C-Cure; Penetrating Sealer 978.
      4. Custom Building Products; Surfaceguard Grout and Tile Grout Sealer.
      5. Jamo Inc.; Matte FinishPenetrating Sealer.
      6. MAPEI Corporation; KER 003, Silicone Spray Sealer for Cementitious Tile Grout 004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.
      7. Southern Grouts & Mortars, Inc.; Silicone Grout Sealer.
      8. TEC Specialty Products Inc.; TA-256 Penetrating Silicone TA-257 Silicone Grout Sealer.

2.12 MIXING MORTARS AND GROUT

1. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
2. Add materials, water, and additives in accurate proportions.
3. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
   1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
   2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
   3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

B. Provide concrete substrates for tile floors installed with thin-set mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
   1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
   2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. TCNA Installation Guidelines: TCNA's "Handbook for Ceramic Tile Installation." Comply with TCNA installation methods indicated in ceramic tile installation schedules.

C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
   1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.

F. Lay out tile wainscots to next full tile beyond dimensions indicated.

G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
   1. Locate joints in tile surfaces directly above joints in concrete substrates.
   2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

H. Grout tile to comply with requirements of the following tile installation standards:
   1. For ceramic tile grouts (sand-portland cement; dry-set, commercial portland cement; and latex- portland cement grouts), comply with ANSI A108.10.
   2. For 100% solids chemical-resistant epoxy grouts, comply with ANSI A108.6.
   3. For chemical-resistant furan grouts, comply with ANSI A108.8.

I. At showers, tubs, and where indicated, install cementitious backer units and treat joints to comply with ANSI A108.11 and manufacturer's written instructions for type of application indicated.

3.4 FLOOR TILE INSTALLATION

A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCNA installation methods (latest edition) and ANSI A108 Series of tile installation standards.
   1. For installations indicated below, follow procedures in ANSI A108 Series tile installation standards for providing 95 percent mortar coverage.
      a. Tile floors in wet areas.

B. Refer to **TCNA Installation Standard F122 for floor tile installation** for Thin Set Installations as indicated on the drawings.

C. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.

D. Grout Sealer: Apply grout sealer to grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer that has gotten on tile faces by wiping with soft cloth.

3.5 WALL TILE INSTALLATION

A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCNA installation methods (latest edition) and ANSI setting-bed standards.
B. Refer to **TCNA Installation Standard W244C for wall tile installation**. Water proof membrane shall be provided in the wall tile installation for the shower as reference in the noted TCNAstandard.
C. Install metal lath and scratch coat for walls to comply with ANSI A108.1A, Section 4.1.

3.6 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09 30 0

SECTION 09 50 00 - Acoustical Metal Ceilings

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Section Includes

Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section

1.2 SUMMARY

A. Section Includes

1. Acoustical metal ceiling panels
2. Exposed grid suspension system
3. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
4. Perimeter Trim

B. Related Sections:

1. Section 09 51 33.13 Acoustical Snap In Metal Pan Ceiling
2. Section 09 20 00 (09250) - Plaster and Gypsum Board
3. Section 09 51 13 (09500) - Acoustical Fabric-Faced Panel Ceilings
4. Section 09 53 00 (09500) - Acoustical Ceiling Suspension Assemblies
5. Section 01 81 13 - Sustainable Design Requirements
6. Section 01 81 19 - Indoor Air Quality Requirements
7. Section 09 54 00 Specialty Ceilings
8. Divisions 23 - HVAC Air Distribution
9. Division 26 - Electrical

C. Alternates

1. Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products that have not been approved by Addenda, the specified products shall be provided without additional compensation.

2. Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
4. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
5. ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
6. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
9. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint
10. ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems
11. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum
12. ASTM E 1264 Classification for Acoustical Ceiling Products

B. International Building Code

C. ASHRAE Standard 62 1 2004 Ventilation for Acceptable Indoor Air Quality

D. NFPA 70 National Electrical Code

E. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

F. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components

G. International Code Council-Evaluation Services Report - Seismic Engineer Report

1. ESR 1308 - Armstrong Suspension Systems

H. International Association of Plumbing and Mechanical Officials - Seismic Engineer Report

1. 0244 - Armstrong Single Span Suspension System

I. California Department of Public Health CDPH/EHLB Emission Standard Method Version 1.1 2010

J. LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings

K. International Well Building Standard

L. Mindful Materials

M. Living Building Challenge

N. U.S. Department of Agriculture BioPreferred program (USDA BioPreffered).

1.4 SYSTEM DESCRIPTION

Continuous/Wall-to-Wall

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

B. Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

C. Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with, or supported by the ceilings.

D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

E. If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.6 SUSTAINABLE MATERIALS

Transparency: Manufacturers will be given preference when they provide documentation to support sustainable requirements for the following: Material ingredient transparency, Removal of Red List Ingredients per LBCV3, Life Cycle impact information, Low-Emitting Materials, and Clean Air performance.

1. Health Product Declaration. The end use product has a published, complete Health Product Declaration with disclosure at a minimum of 1000ppm of known hazards in compliance with the Health Product Declaration open Standard.

2. Declare Label. The end use product has a published Declare label by the International Living Future Institute with disclosure of 100 ppm with a designation of Red List Free or Compliant (less than 1% proprietary ingredients).

3. Low Emitting products with VOC emissions data. Preference will also be given to manufacturers that can provide emissions data showing their products meet CDHP Standard Method v1.1 (Section 01350).

4. Life cycle analysis. Products that have communicated lifecycle data through Environmental Product Declarations (EPDs) will be preferred.

5. End of Life Programs/Recycling: Where applicable, manufacturers that provide the option for recycling of their products into new products at end-of-life through take-back programs will be preferred.

6. Products meeting LEED V4 requirements including:

Storage & Collection of Recyclables

Construction and Demolition Waste Management Planning

Building Life-Cycle Impact Reduction

Building Product Disclosure and Optimization Environmental Product Declarations

Building Product Disclosure and Optimization Sourcing of Raw Materials

Building Product Disclosure and Optimization Material Ingredients

Construction and Demolition Waste Management

1.7 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

B. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

a. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 Classification.

C. Acoustic Panels: As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection en gineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.

D. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.9 PROJECT CONDITIONS

A. Space Enclosure:

Standard Ceilings: Do not install interior ceilings until space is enclosed and weatherproof; wet work in place is completed and nominally dry; work above ceilings is complete; and ambient conditions of temperature and humidity are continuously maintained at values near those intended for final occupancy. Building areas to receive ceilings shall be free of construction dust and debris.

HumiGuard Plus Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Products with HumiGuard Plus performance and hot dipped galvanized steel, aluminum or stainless steel suspension systems can be installed up to 120°F (49°C) and in spaces before the building is enclosed, where HVAC systems are cycled or not operating. Cannot be used in exterior applications where standing water is present or where moisture will come in direct contact with the ceiling.

HumiGuard Max Ceilings: Building areas to receive ceilings shall be free of construction dust and debris. Ceilings with HumiGuard Max performance can be installed in conditions up to 120°F (49°C) and maximum humidity exposure including outdoor applications, and other standing water applications, so long as they are installed with either SS Prelude Plus, AL Prelude Plus, or Prelude Plus Fire Guard XL suspension systems. Products with Humiguard Max performance can be installed in exterior applications, where standing water is present, or where moisture will come in direct contact with the ceiling. Only Ceramaguard with AL Prelude Plus suspension system can be installed over swimming pools.

1.10 LEED

A. Armstrong Metal Ceilings qualify for the following credits:

a. Category - Material & Resources

i. MR Credit 2.1, 2.2 - Construction Waste Management Divert 50% or 75% from disposal

ii. MR Credit 4.1, 4.2 - Recycled Content

iii. MR Credit 5.1, 5.2 - Regional Materials (dependent on location)

1. LEED NC - 10% Extracted, Processed & Manufactured Regionally LEED CI - 20% Manufactured Regionally

b. Category - Indoor Environmental Quality

i. EQ Credit 4.1 to 4.6 - Low-Emitting Materials

c. Category - Innovation and Design Process

i. ID Credit - Acoustic Performance

1.11 WARRANTY

A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:

1. Acoustical Panels: Sagging and warping

2. Grid System: Rusting and manufacturer's defects

B. Warranty Period:

1. Acoustical Metal panels: One (1) year from date of substantial completion

2. Grid: Ten (10) years from date of substantial completion

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.12 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Acoustical Metal Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.

2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Metal Ceiling Panels:

1. Armstrong World Industries, Inc.

B. Suspension Systems:

1. Armstrong World Industries, Inc.

C. Aluminum Custom Trims:

1. Armstrong World Industries, Inc.

2.2.1 ACOUSTICAL CEILING UNITS

A. Acoustical Panels Type AMP

1. Acoustical Panels Type AMP-1:
    a. Surface Texture: Open Cell
    b. Composition: Metal
    c. Color: White
    d. Size: 24" x 24"
    e. Edge Profile: Square Lay-In 9/16" for interface with SUPRAFINE XL 9/16" Exposed Tee grid.
    f. Perforation Option: Open Cell
    g. Noise Reduction Coefficient (NRC):
    h. Ceiling Attenuation Class (CAC):
    i. Sabin: N/A
    j. Articulation Class (AC):
    k. Flame Spread: ASTM E 1264; Class A (IBC).
    l. Light Reflectance (LR) White Panel: ASTM E 1477; .
    m. Dimensional Stability: Standard
    n. Recycle Content: Post-Consumer - 20% Pre-Consumer - null%
    q. Acceptable Product: METALWORKS Open Cell, 6188M1 No added formaldehyde as manufactured by Armstrong World Industries
2. Metal Panel Accessories:

2.3.1 METAL SUSPENSION SYSTEMS

A. Components:

Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.

a. Structural Classification: ASTM C 635 Intermediate Duty duty

b. Color: Blizzard Whiteand match the actual color of the selected ceiling tile, unless noted otherwise.

c. Recycle Content: Post-Consumer - 23% Pre-Consumer - 7%

d. Sustainability: Environmetal Product Declaration (EPD), Health Product Declaration (HPD)

e. Acceptable Product: SUPRAFINE XL 9/16" Exposed Tee as manufactured by Armstrong World Industries

B. Attachment Devices:

Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties:

ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. Edge Moldings and Trim:

E. Accessories:

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations. (Exception: HumiGuard Max Ceilings)

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

B. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.3 INSTALLATION

A. Follow manufacturer installation instructions

B. Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.

C. Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.

D. For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

E. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

F. Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of ceilings panels, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 50 00

SECTION 09 65 90 – RESILIENT WOOD FLOORING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes flooring system for Gymnasium
B. Related Sections include the following:
   1. Division 03 Section “Cast-in-Place Concrete” for concrete slab.
   2. Division 11 Section "Gymnasium Equipment" for sleeves to be installed within flooring system.

1.3 SUBMITTALS

A. Shop Drawings: Indicate installation details including location and layout of each type of floor assembly and accessory; expansion provisions and trim details; layouts, colors, widths, and dimensions of game lines and markers; and locations of floor inserts for athletic equipment installed through flooring assembly.
B. Product Data: Submit construction details, material descriptions, dimensions of individual components and profiles, and finishes for wood athletic floor assemblies.
C. Samples: Submit two manufacturer’s color charts showing colors and glosses available for floor finish and game-line and marker paint.
D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Source Limitations: For field-finished wood flooring, obtain each species, grade, and cut of wood from one source with resources to provide materials and products of consistent quality in appearance and physical properties.
B. Maple Flooring: Comply with applicable MFMA grading rules for species, grade, and cut.
   1. Certification: Provide flooring that carries MFMA mark on each bundle or piece.
C. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
D. Installer: Company specializing in performing work of this section with minimum five years documented experience and approved by manufacturer.
E. Preinstallation Conference: Conduct conference at Project site.
   1. Review methods and procedures related to athletic flooring.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in manufacturer’s original packaging. Inspect for damage.
B. Protect wood flooring from exposure to moisture. Do not deliver wood flooring until after concrete, masonry, plaster, ceramic tile, and similar wet work is complete and dry.
C. Store wood flooring materials in a dry, warm, ventilated, weathertight location.

1.6 PROJECT CONDITIONS

A. Conditioning period begins not less than seven days before wood flooring installation, is continuous through installation, and continues not less than seven days after wood flooring installation.
   1. Environmental Conditioning: Maintain an ambient temperature between 65 and 75 deg F and relative humidity between 35 and 50 percent.
   2. Wood Flooring Conditioning: Move wood flooring into spaces where it will be installed, no later than the beginning of the conditioning period.
      a. Do not install flooring until it adjusts to relative humidity of, and is at same temperature as, space where it is to be installed.
      b. Open sealed packages to allow wood flooring to acclimatize immediately on moving flooring into spaces in which it will be installed.

B. After conditioning period, maintain relative humidity and ambient temperature planned for building occupants.

C. Install factory-finished wood flooring after other finishing operations, including painting, have been completed.

D. Verify field measurements prior to fabrication.

1.7 WARRANTY

A. Materials:
   1. The flooring shall be covered by the manufacturer against product defects for one (1) years from substantial completion.

B. Installation:
   1. The installation of the flooring shall be covered against poor workmanship and faulty installation by a one (2) year written, limited warranty provided by the contractor performing/overseeing the installation

1.8 EXTRA MATERIALS

A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Wood Flooring: Equal to **1** percent of amount installed for each type of wood flooring indicated.

PART 2 - PRODUCTS

2.1 RESILIENT WOOD FLOORING SYSTEMS: Drawing Symbol **WFL.**

A. Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   1. Basis of Design – “Duracushion I” by Connor Sports Flooring or equal by but not limited too:
      a. Aacer Flooring, LLC
      b. Action Floor Systems
      c. Horner Flooring Company
      d. Robbins, Inc
      e. or equal

B. Product Description:
   1. Gymnasium: Maple flooring over plywood subfloor with resilient pads over vapor retarder on slab-on-grade.
      a. Finishing: One coat sealer and three coats finish. Game lines painted over sealer and under finish coats.

C. Concrete Subfloor
   1. Depress slab 2 1/8". Verify depression with manufacturer.

2.2 COMPONENTS

A. Wood Flooring: Northern Hard Maple.
   1. Grade: Second and better.
   2. Cut: Edge.
   3. Moisture Content: 7 to 9 percent.
   4. Actual Thickness: 25/32 inch.
   5. Actual Width: 2-1/4 inch.
   6. Edge: Tongue and groove.
   7. End: End matched.
   8. Length: Random, minimum of 9 inches.

B. Subfloor: 15/32 inch thick plywood, APA Rated Sheathing with square edges, C-D faces, Exposure 1; unsanded.

C. Underlayment: 15/32 inch thick plywood, APA B-C faces, with square edges, Exposure 1; sanded.

D. Resilient Pads: Rubber material, unsealed air slots for resiliency; 2-1/4 x 3 inch size, 3/8 inch thick.

2.3 ACCESSORIES

A. Vapor Retarder: Polyethylene, 6 mil thick.

B. Vapor Retarder Tape: Type recommended by manufacturer.

C. Vented Wall Base: Molded rubber, 4 inches high with 3 inch toe, ventilated type, with pre-molded outside corners.

D. Flooring Nails: Type recommended by flooring manufacturer.

2.4 FINISH MATERIALS

A. Gymnasium:
   1. Sealer: Water based urethane surface-type seal.
      a. Hillyard Basecoat or equivalents by Betco Corp. or The Sika Corporation.
   2. Wood Stain: Refer to drawings. Provide manufacturers recommended wood stain compatible with sealer and topcoats.
   2. Topcoats: Water based epoxy.
      a. Hillyard Contender Gym Finish or equivalents by Betco Corp. or The Sika Corporation.
   3. Use stain, sealer and finish per manufacturers recommendations and MFMA standards.
   4. Game Lines: Refer to drawings. Provide compatible game lines with sealer and topcoats.
   5. School Sports Logo: Refer to drawings. Provide compatible logo design with sealer and topcoats.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of wood flooring.
   1. Verify that substrates comply with tolerances and other requirements specified in other Sections.
   2. Verify slab-on-grade is ready for installation of flooring system.
   3. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Substrate Moisture Testing, General: Perform tests recommended by manufacturer.
   1. Proceed with installation only after substrates pass testing.

3.2 PREPARATION

A. Grind high spots and fill low spots on concrete substrates to produce a maximum 1/8-inch deviation in any direction when checked with a 10-foot straight edge.
   1. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.

B. Broom or vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Install vapor retarder over the entire slab-on-grade. Lap joints 6 inches minimum and seal joints with tape.

B. Install lower layer of subfloor perpendicular to finish maple flooring, spacing all edges 1/4” and stagger joints 4’. Provide 1-1/2” expansion voids at perimeter and at all vertical obstructions. The underside of first layer shall have resilient pads attached 12” on center (32 per sheet) and 6” from edges on all sides. Install solid blocking at doorways, under bleachers in the stacked position, and below portable goals.

C. The second layer of subfloor shall be laid at a 45-degree angle over the first layer, spacing all edges 1/4” and stagger joints 4’. Provide 1-1/2” expansion voids at perimeter and at all vertical obstructions. Attach second layer of subfloor with fasteners 12” on center.

D. Maintain two inch expansion void at walls and all vertical obstructions.

E. Install solid blocking under bleachers in the stacked position and along the extended position.

F. Install Gymnasium flooring parallel with main playing court. Nail at 12 inches o. c. maximum. Space joints between flooring strips to allow for intermediate expansion, in accordance with local humidity conditions. Maintain 1-1/2” expansion void at walls and all vertical obstructions.

G. Install vented base after all finish work is complete. Miter interior corners and use pre-molded outside corners.

3.4 FINISHING

A. Sanding:
   1. Machine sand with course, medium, and fine grade sandpaper to a smooth, even, uniform surface.
   2. After sanding, buff entire floor using 100 grit screen or equal grit sandpaper, with a heavy-duty buffing machine.
   3. Remove sanding dust from entire surface by tack or vacuum.

B. Staining:
   1. Refer to drawings.
   2. Provide manufacturer’s recommended wood stain compatible with wood finish products.
   3. Provide manufacturer’s recommended number of stain coats.
   4. Follow manufacturer’s recommendations for dry times. Dry times differ, depending on environmental conditions, number of coats and color.

C. Finishing:
   1. Apply two (2) coats sealer to entire floor.
   2. After applying game lines, apply three (3) coats of finish.
   3. After each coat is dry, buff, vacuum and tack between each coat.
   4. Follow manufacturer’s recommendations for dry times. Dry times differ, depending on environmental conditions, number of coats.

D. Game Lines:
   1. Apply game lines in accordance with approved drawings.
   2. Submit any change requests in writing to Architect.
   3. Apply game lines straight and true with crisp edges.
   4. Main court lines are to be continuous. Stop other court lines one inch short of main court lines.
      a. Main basketball court lines are continuous. Main volleyball court lines are secondary and will break at main basketball court lines.
   5. Follow manufacturers recommendations for proper application and drying times. Paint must be completely dry before proceeding. Dry times differ, depending on environmental conditions, number of coats and color.

E. School Sports Logo:
   1. Apply school sports logo in accordance with approved drawings.
   2. Provide manufacturer's recommended wood stain for logo compatible with wood finish products.
   3. Follow manufacturers recommendations for proper install method, application and drying times. Paint must completely dry before proceeding. Dry times differ, depending on environmental conditions, number of coats and color.
   4. Follow manufacturer's recommended number of coats.

3.5 PROTECTION

A. Protect installed wood flooring during remainder of construction period with covering of heavy kraft paper or other suitable material. Do not use plastic sheet or film that might cause condensation.
   1. Do not move heavy and sharp objects directly over kraft-paper-covered wood flooring. Protect flooring with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 09 65 90

SECTION 09 65 90.01 – REFINISHING EXISTING WOOD (MAPLE) FLOORING SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes sanding and repairs of existing flooring system to remain:
B. Related Sections include the following:
   1. Division 03 Section “Cast-in-Place Concrete” for concrete slab.

1.3 SUBMITTALS

A. Shop Drawings: Indicate refinishing wood flooring details including location and layout; expansion provisions and trim details; layouts, floor material, widths, and dimensions to remain.
B. Product Data: Submit construction details, material descriptions, dimensions of floor and profiles, and finish materials for refinishing wood athletic floor assembly.
C. Samples: Submit two manufacturer’s color charts showing colors, glosses, and stains available for floor finishes.
   Include manufacturer's Certificate: Certify refinishing products meet or exceed specified requirements for refinishing wood flooring.

1.4 QUALITY ASSURANCE

A. Maple Flooring: Comply with applicable MFMA grading rules for species, grade, and cut for repair material.
B. Installer: Company specializing in performing work of this section with minimum five years documented experience and approved by manufacturer.
C. Unless otherwise noted existing wood flooring not used or repurposed is to be turned over to Owner.
D. Refinishing of Existing Wood Flooring Conference: Conduct conference at Project site.
   1. Review methods and procedures related to refinishing wood flooring.
   2. Walk-through to examine areas where wood flooring is to remain.
   3. Discuss and maintain climate-controlled storage location for existing wood flooring to be salvaged for the Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Accept new materials on site in manufacturer’s original packaging. Inspect for damage.
B. Protect existing wood flooring from exposure to moisture.
C. Store wood finishing materials in a dry, warm, ventilated, weathertight location.

1.6 PROJECT CONDITIONS

A. Conditioning period begins not less than seven days before wood flooring installation, is continuous through installation, and continues not less than seven days after wood flooring installation.
   1. Environmental Conditioning: Maintain an ambient temperature between 65 and 75 deg F and relative humidity between 35 and 50 percent.
   2. Wood Flooring Conditioning: Move wood flooring for repairs into spaces where it will be installed, no later than the beginning of the conditioning period.
      a. Do not install flooring until it adjusts to relative humidity of, and is at same temperature as, space where it is to be installed.
      b. Open sealed packages to allow wood flooring to acclimatize immediately on moving flooring into spaces in which it will be installed.

B. For repair/replacement, maintain relative humidity and ambient temperature planned for building occupants.
C. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during refinishing of wood flooring.
D. Close spaces to traffic during refinishing of wood flooring application and for not less than 24 hours after application unless manufacturer recommends a longer period.
E. **Control dust to prevent air pollution and comply with environmental protection regulations**.
F. Control and collect dust produced by sanding and cutting operations. Protect adjacent construction from detrimental effects from operations.
   1. Erect and maintain temporary enclosures and other suitable methods to limit dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.
   2. Isolate areas from noise.

G. Protect wood flooring from other finishing operations, including painting.
H. Verify field measurements of existing floor and repaired areas prior to fabrication.

1.7 WARRANTY

A. Materials:
   1. The refinished flooring shall be covered by the Refinishing Subcontractor against product defects for one (1) years from substantial completion.
B. Installation:
   1. The installation of the flooring and its finishes shall be covered against poor workmanship and faulty installation by a one (1) year written, limited warranty provided by the contractor performing/overseeing the installation.

PART 2 - PRODUCTS

2.1 REFINISHED EXISTING WOOD FLOORING SYSTEMS: Drawing Symbol **R-WF**

A. Refer to drawings for refinishing existing wood floor locations.

B. Existing Flooring is “Air – Channel Classic with Subfloor” by Robbins Sports Surfaces.
   1. Use only the manufacturer recommended products for refinishing existing wood flooring.

C. Existing Product Description:
   1. Existing wood flooring: Maple over sleeper sub floor system with resilient pads over vapor retarder on slab-on-grade.
      a. Refinishing: Following manufacturer recommendations.

D. Concrete Subfloor
   1. Refer to drawings.

2.2 COMPONENTS

A. Existing Wood Flooring System: Air-Channel Classic with Subfloor by Robbins is a floating sleeper system:
   1. Continuous Strip XL Finger -Jointed Northern Hard Strip Maple.
   2. Finish: MFMA approved floor finish.
   3. Sealer: MFMA approved floor sealer.
   4. Flooring Fastners: 2” staples or flooring cleats.
   5. Subfloor Panel to System with Sleepers to System and resilient pads.
   6. Grade: Second and better.
   7. Cut: Edge.
   8. Moisture Content: Existing on-site.
   9. Actual Thickness: Adjust thickness to match existing floor.
   10. Actual Width: Match existing.

B. Subfloor Panel to System: 1 layer of nominal 1/2”x48”x96” 12mmx122cmx244cm) Exposure 1 rated subfloor sheathing stapled to sleepers.
C. Sleepers to System: Nominal 2”x3”x4’ long fir or pine.
D. Resilient Pads: 7/16” EPDM Bio-Pad.
E. ACCESSORIES
F. Vapor Retarder: Polyethylene, 6 mil thick.
G. Vapor Retarder Tape: Type recommended by manufacturer.
H. Flooring Nails: Type recommended by flooring manufacturer.
I. Wall Base: Refer to Architectural drawings.

2.3 FINISH MATERIALS FOR EXISTING WOOD FLOORING

A. Use wood filler, prep and touch up materials that are be **NOFMA approved and able to work with high moisture.**

B. Wood Flooring Finish System:
   1. Sealer: Use manufacturer recommended premium waterbase sealer.
   2. Finish: Use manufacturer recommended premium waterbase finish topcoat or stain.
   3. Coats: 2 coats of sealer and 2 coats of finish. Or manufacturer recommended number of coats.
   4. Use stain, sealer and finish per MFMA standards.
   5. Products: Minwax, Bona, or Poloplaz.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of existing wood flooring.
   1. Verify that substrates comply with tolerances and other requirements specified in other Sections.
   2. Proceed with refinishing of floor only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.
B. Broom or vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Refer to Architectural drawings.
B. Follow manufacturer recommendations for refinishing existing wood flooring.
C. Contact Architect if void occurs larger than detail drawings show between existing wood flooring that extends to new walls.
D. Contact Architect if void occurs larger than detail drawings show between existing wood flooring and existing walls to remain.
E. Note: Where new furring walls are being installed on top of existing wood floor perimeter, drill holes in bottom channel at 18" O.C. to provide ventilation of existing wood floor.
F. If any of the maple needs to be repaired run it in the direction of the existing maple. Unless otherwise noted maintain 1-1/2" expansion void at walls and all vertical obstructions.
G. Notify the Architect if existing continuous strip wood flooring needs to be added or replaced.
H. Notify the Architect if the existing sleepers and subfloor need to be repaired or replaced.
I. Where existing wood flooring is required to be replaced or repaired and not otherwise indicated on drawings. Submit photo of condition and written description as a Request for Information (RFI) to Architect for clarification.

3.4 REFINISHING EXISTING STRIP MAPLE FLOORING

A. Sanding and Finishing Maple Flooring:
    1. Sweep floor and remove all debris.
    2. Visually check for and remove all protruding objects such as nails. Also check for any damaged boards, repair as needed.
    3. Sand flooring with floor sander, edger, buffer, and hand scraper.
    4. Sanding floor with floor sander.
        a. Make 1st cut with 36 or 40 grit paper, parallel with the flooring boards. If multiple coats of finish are present, courser grit may be needed.
        b. Cut not more than ½ of drum.
        c. After 1st cut is complete, repeat sanding entire floor with 60 grit with flooring sander.
        d. Mark floor with red crayon every 4 feet across the width of the floor to help keep a straight pattern.
        e. Do any fill-ins at this time (nail holes, voids, etc.) Use a compatible fill material that is approved by the seal and finish manufacturer.
    5. Use edger with 60 grit for perimeter and any other areas that cannot be sanded with floor sander.
        a. Bring perimeter to table top level, free of any sander marks or gouges.
        b. Use a nylon filament broom of 24" and sweep very thoroughly, removing all grit.
    6. Use floor sander with 100 grit or 00 papers for 3nd cut.
        a. Remove tension or weight from drum.
        b. Cut not more than ½ drum.
        c. Watch for burns or shiners.
        d. Be especially careful to lift up drum properly to avoid drum marks along walls.
    7. Use edger with 100 grit for perimeter and any other areas that cannot be sanded with floor sander.
        a. Bring perimeter to table top level, free of any sander marks or gouges.
        b. Use a nylon filament broom of 24" and sweep very thoroughly, removing all grit.
        c. NOTE: Steps #6 and 7 are the most critical sandings.

8. Sweep floor to remove all dust and sanding debris.
9. Use floor buffer (low speed).
    a. Screen the perimeter of floor first before body.
    b. Use 100 or 120 grit screen for smoothing.
    c. Screen floor by walking parallel with flooring boards.
    d. Use a maroon conditioning pad on entire floor to remove any swirl mark left by screen.
10. Vacuum entire floor to remove all sanding lines.
11. Tack towel cleaning
    a. Use 24" push broom with a clean, light colored, pre-washed terry cloth or cotton towel.
    b. When applying applying oil based sealer, use 100% pure mineral spirits to dampen tack cloth. Do not use recycled or reclaimed spirits.
    c. Use water if water based seal and finish is being used.
    d. Pour tacking material into a clean plastic bucket.
    e. Totally submerge tack towel in bucket.
    f. Wiring tack cloth out completely.
    g. Place towel around broom head and tack floor 2 times.
    h. Rinse tack cloth on each up and back pass.
    i. Move head of broom up on towel periodically to provide clean area on towel.
    j. Drying time 1 – 2 hours or until floor is completely dry.
12. Apply Sealer using a lambs wool or synthetic applicator.
    a. Follow finish manufacturers instructions for proper spread rate, application procedures and dry times.
    b. Note: If an E-Z Way Applicator or T-Bar Applicator will be used to apply seal or finish, follow manufacturer's instructions for proper usage.
13. If a second coat of sealer is required, buff entire floor with maroon conditioning pad and repeat step 11.
14. Use floor buffer (low speed).
    a. Use 150 grit screen on entire floor or maroon conditioning pad.
    b. Use care when buffing over newly painted areas.
15. Follow step #10 to clean floor.
16. Applying Finish:
    a. Use same procedures as for sealer when applying finish.
    b. After 24 hours or recommended dry time, repeat step 15, and 16.
17. Keep traffic off for 72 hours.
18. Install perimeter base and thresholds if required.
19. Remove all trash and debris from premises.

3.5 PROTECTION

A. Protect wood flooring during remainder of construction period with covering of heavy kraft paper or other suitable material. Do not use plastic sheet or film that might cause condensation.
    1. Do not move heavy and sharp objects directly over kraft-paper-covered wood flooring. Protect flooring with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 09 65 90

SECTION 09 66 23 – TERRAZZO TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
   1. Terrazzo Floor Tile
   2. Precast, terrazzo accessories.
   3. Related accessories.

B. Setting material, grouts, sealants, and caulks.

C. Installation of terrazzo tiles.

D. Related work not specified under this section:
   1. Concrete Floors: Section: 03 30 00.
   2. Terrazzo Floor Restoration Section 09 01 60 91.

1.2 COORDINATION

A. Note during demolition the General Contractor is to salvage a piece of the existing terrazzo and turn material over to the Architect so that the existing terrazzo thickness can be field verified and new terrazzo tile thickness can be determined by Architect.

B. Coordinate the types of traffic allowed to terrazzo between the following events:
   1. Demo of existing terrazzo for new terrazzo tile.
   2. Demo of other existing finish floor material to receive new terrazzo tile.
   3. Installation of new terrazzo tile.
   4. Completion of grouting and before sealing.

C. Setting material, grouts sealants and caulks

D. Coordinate the preparation for terrazzo work with the installation of plumbing, electrical, communications, and electrical/data work in the floor area to receive terrazzo.

E. Installation of terrazzo tiles

1.3 PREINSTALLATION MEETING

A. Pre-installation Conference: Conduct conference at Project site Review methods and procedures related to terrazzo.
   1. Review methods and procedures related to terrazzo including, but not limited to, the following:
      a. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
      b. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
      c. Review special terrazzo designs and patterns.
      d. Review dust-control procedures.

e. Review plans for concrete curing and site drying to enable timely achievement of suitable slab moisture conditions.

1.4 SUBMITTALS

A. Product Data: Manufacturer's product data for each type of terrazzo and accessory including the following information:

B. Shop Drawings: Include terrazzo installation requirements. Include plans, elevations, sections, component details, and attachments to other work. Show layout of the following:
1. Existing flooring materials to be removed.
2. Type of subfloor.
3. Type of installation.
4. Divider strips.
5. Accessory strips.
6. Type, color, and location of edge, transition, and other accessory strips.
7. Transition details to other flooring materials.
8. Control-joint and expansion-joint strips.
9. Base and Border strips.
10. Terrazzo patterns.

C. Samples for Initial Selection: Provide 6"x6" color samples for Architect review.

D. Samples for Verification: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare samples of same thickness and from same material to be used for the Work in size indicated below:
1. Terrazzo: 6-inch square samples of each color and type.
2. Accessories: 6" length of each kind of divider strip, stop strip, and control joint strip required.

E. Qualification Data: For Installer.

F. Material Certificates: For each type of terrazzo flooring system product, provide supplier or manufacturer's written certificate stating that materials comply with or exceed NTMA specified properties and performance requirements of this section.

G. Material Test Reports: For moisture and / or relative humidity of substrate, by a qualified testing agency.

H. Precast Terrazzo Flooring Test Reports: Provide test reports for precast terrazzo flooring, for the following tests performed by manufacturer and witnessed by a qualified testing agency.:
1. Compressive Strength: ASTM D695.
2. Water Absorption: ASTM C373/ASTM C140
3. Flexural Strength: ASTM D638
4. Tensile Strength: ASTM D638.

I. Provide Information on flexible crack isolation membrane.

J. Sample Warranties: For manufacturer's special warranties.

1.5. CLOSEOUT SUBMITTALS

A. Maintenance Data: NTMA maintenance recommendations and manufacturer's instructions to include in maintenance manuals.

B. Repair Procedures: Provide written procedures for the following.
1. Precast Terrazzo Flooring: Removing individual precast units and replacing them.

1.6 REFERENCES

A. American Society for Testing and Materials (ASTM)
1. ASTM C-140, C-150, C-293, C-373, C-482, C-485, C-499, C-502, C-609, C-648, C-650, C-674, C-1243, C-1378, C-1523
2. ANSI A137.1 9.6 section.

B. Tile Council of America (TCNA)
1. Tile Council of North America (TCNA) Handbook – latest edition

C. American National Standards Institute (ANSI)
1. ANSI A108.1 thru A108.17
2. ANSI A118.1 thru A118.15

1.7 QUALITY ASSURANCE

A. Source Limitations:
1. Setting and Grouting Materials: Provide materials obtained from one source for each type and color of grout and setting materials.
2. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.
3. Manufacturer must provide history of providing primary materials for a minimum of 10 years
4. Obtain divider strips, sealers, cleaners from source recommended by primary materials manufacturer.
5. Obtain aggregates of each color, grade, type, and variety of granular materials from one source with resources to provide materials of consistent quality in appearance and physical properties.

B. Testing shall be conducted according to ASTM F2170 only to determining relative humidity in concrete slabs using in situ probes.

C. Setting and Grouting Materials: Provide materials obtained from one source for each type and color of grout and setting materials.

D. TCNA Standards: Comply with specifications under the current Handbook for Tile Installation.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to Project site in supplier's original unopened packaging, wrappings and containers, labeled with source's or manufacturer's name, material, size, color or product brand name, and lot number if any.

B. Report all damage due to shipment immediately. The customer is required to sign the Bill of Lading slip noting the damaged product. Picture proof is required.

C. Nominal 24” x 24” tiles are banded, palletized and tiles are crated.

D. Store materials in their original, undamaged packages and containers, inside a climate-controlled environment, a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
1. Storage temperatures should be per manufacturer’s recommendations.

2. Do not use materials which have been stored for a longer period of time than the manufacturer's maximum recommended shelf life.
3. Protect from damage by other trades.

1.9 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by the installation materials manufacturer for optimum results. Do not install products under environmental conditions outside the installation material manufacturer's absolute limits.

B. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.

C. Field Measurements: Verify actual dimensions of construction contiguous with precast terrazzo by field measurements before fabrication.

D. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.

E. Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.

F. Control and collect dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.
1. Provide dustproof partitions and temporary enclosures to limit dust migration and to isolate areas from noise.

G. Terrazzo contractor shall, prior to surface preparation:
1. Evaluate slab condition, including slab moisture content and extent of any required repairs.
2. Maintain the ambient room temperature at 60ºF and floor/slab at 50°F or above for a period extending 72 hours before, during, and after floor installation. Concrete to receive terrazzo tile shall have cured for at least 28 days and be free of all curing compounds (unless moisture vapor primer is incorporated into the system). Test concrete substrate to determine acceptable moisture levels prior to installation.

H. Acceptable Substrates:
1. Flatness tolerance: Concrete subfloor shall be flat with a maximum variation from level of 1/4" in any 10 feet. Any irregularity of the surface requiring patching and / or leveling shall be done using the manufacturer recommended patching and leveling compound.
2. Concrete floor shall be prepared mechanically by shot blasting. Grinding of slab is not sufficient surface preparation. Surface preparation results should achieve a CSP3-CSP5 profile according to International Concrete Repair Institute Guideline No. 03732.
3. Concrete floor shall receive a steel trowel finish.
4. Concrete shall be cured a minimum of 28 days. No curing agents are to be used in areas to receive terrazzo.
5. Concrete slab shall have an efficient moisture vapor barrier directly under the concrete slab. Moisture barrier shall NOT be punctured.
6. Saw cutting of control joints must be done between 12 – 24 hours after placement of the structural concrete and at a minimum of 1/2 the concrete thickness.

I. Provide protection from other trades prior to final acceptance by Owner.

1.10 WARRANTY

A. Manufacturer/Installer shall warrant installed terrazzo tile and accessories for a period of 1 year from the date of substantial completion against product defects.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the following:
1. Wausau Tile Inc.
2. Master Terrazzo Technologies
3. Dynamic Terrazzo

B. Source Limitations: Obtain primary Terrazzo Floor Tile materials from a single manufacturer.
1. Obtain aggregates, sealers and cleaners from source recommended by primary materials manufacturer.

2.2. PERFORMANCE REQUIREMENTS

A. NTMA Standards: Comply with NTMA's "Terrazzo Specification and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.

2.3. MATERIALS

A. Terrazzo Tile (**TRZT**): Material terrazzo tile colors and aggregates to be selected by Architect.

B. Portland Cement: ASTM C-150 Specifications for Portland Cement.

C. Aggregates: All aggregates to meet ASTM C-33 specifications, cleaned and properly graded to size. Aggregate shall be blended to meet individual project requirements.

1. The aggregates used have a natural color range and come in a variety of sizes and colors. Therefore, the aesthetic class/shade range as per ASTM test C609 will vary from a V1 rating to a V2 rating.

2. The aggregates used have a natural color range. This can cause slight variances in overall color. Tiles should be blended at the job site from several cartons/pallets during installation.

D. Marble chips, size to conform with NTMA gradation standards.
E. Coloring: Pigments used shall be inorganic, resistant to alkalinity and used per manufacturer's recommendations.
F. Mortar & Grout:
a. Use manufacturer's recommended mortar and grout suitable for substrate.

G. Caulks & Sealants:
a. Urethane or Polyurethane Sealant.
b. Color to be selected by Architect from standard color pallet.

H. Cleaner: Liquid neutral chemical cleaner, with PH factor between 7 and 8, of
a. Use formulation recommended by sealer manufacturer for type of precast terrazzo.
b. Use cleaners that comply with NTMA requirements.

I. Sealer: Scotchgard™ Stone Floor Protector applied to the terrazzo tile prior to packaging.

2.4 MANUFACTURED UNITS

1. Precast Surfaces and Edges:
   a. Chamfered face edges
   b. Surfaces to be uniform in appearance and free of blemishes.

2. Match Master Terrazzo Technologies Matrix with 100% GA WHITE Marble #0s.
   a. Custom Colors or Color Matching prepared by request. It is the responsibility of the Architect, Designer or Owner to approve tile samples and corresponding precast samples prior to manufacturer.

   b. Finish/Texture:
      1. Factory Polish or Honed.
      2. Back of tile will be ground flat and free from protrusions

   c. Terrazzo Tile Size: **24x24**

   d. Thickness: The General Contractor to salvage a piece of the existing terrazzo and turn material over to the Architect so that the existing terrazzo thickness can be field verified and new terrazzo tile thickness can be determined by Architect.

2.5 FABRICATION

A. Mechanically vibrated in molds.
B. Hydraulically pressed by 900-ton/3250 psi press.
C. Steam-cured with 100 precent humidity for 18 hours at 140 degrees F.
D. Factory finish: In-line back and face grinding.
E. Factory applied initial protectant.
F. Packaged and palletized.

2.6 STRIP MATERIALS

A. Threshold/Divider Strips:
   1. L-Type or T-Type or per manufacturer recommendations.
      a. Material: Zinc Alloy.
      b. Location: Existing wood flooring to new terrazzo tile.
      c. Location: Existing terrazzo to new terrazzo tile.
      d. Location: Refer to drawings.

B. Threshold/Divider Strips:
   1. Reno-U or Reno Ramp or per manufacturer recommendations.
      a. Use RENO-U by Schluter if ½” height or less and RENO Ramp if 9/16” height or more.
      b. Material: Refer to manufacturer for recommended material type.
      c. Location: Existing Terrazzo to sealed concrete.
      d. Location: Refer to drawings.

C. Control-Joint Strips: Separate double L-type angles, positioned back to back with minimum 1/8” – 1/4” width between. (Single L-type angle, positioned adjacent to the joint is also acceptable.) Fill joint with 100% solids epoxy joint filler. Fill area between strips with elastomeric joint filler. Match material, thickness, and color of divider strips and depth required for topping thickness indicated. (For buried control joint): Fill saw cut concrete control joint with 100% solids epoxy filler, apply Iso-Crack Membrane 30-40 mils, embed 12" fiberglass fabric reinforcement. Saw cut control joints should be prefilled with hard epoxy and a single "L" divider with the vertical part placed precisely over the cut. If

the saw cut control joint opening is 1/4" or wider, the strip treatment should be as a cold-pour construction below.

D. Construction-Joint (Cold-Joint) Strips: Separate double L-type angles back to back with minimum 1/8" – 1/4" width between. Fill joint and area between strips with elastomeric joint filler. Match material, thickness, and color of divider strips and depth required for topping thickness indicated.

E. Isolation-Joint Strips: Separate double L-type angles, positioned back to back with minimum 1/8" – 1/4" width between. Fill area between strips with elastomeric joint filler. Match material, thickness, and color of divider strips and depth required for topping thickness indicated.

2.7 MISCELLANEOUS ACCESSORIES

A. Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by sealer manufacturer for use on terrazzo type indicated.
B. Sealer: Slip- and stain-resistant penetrating-type sealer that is chemically neutral with pH factor between 7 and 10; does not affect color or physical properties of terrazzo; is recommended by sealer manufacturer; and complies with NTMA's "Terrazzo Specifications and Design Guide" for terrazzo type indicated.
C. Moisture Vapor Barrier and Primer: Where environmental criteria described in specification or drawings cannot be achieved, General Contractor is to provide moisture vapor barrier and primer compatible with the terrazzo tile being installed so as to achieve a warranted installation.

2.8 MIXING MORTORS AND GROUT

1. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
2. Add materials, water, and additives in accurate proportions.
3. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

2.9 THRESHOLDS

A. Refer to drawings for threshold transition strips.
B. For thresholds the maximum height is ½ inch, when beveled with a slope not steeper than 1:2.
C. Note floor finish level greater than ½ inch in height shall be ramped.
D. When the floor finish level is greater than a half inch and a floor leveling compound is required use the manufacturer recommended floor leveling compound to achieve a level floor finish.
E. Threshold Height: Suitable for thickness of specified floor finish material.

PART 3 - EXECUTION

3.1 SOURCE QUALITY CONTROL

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
B. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
C. Verify that substrate is clean and free of materials and debris before installing tile.

D. Prior to install of tile notify Architect if joints or cracks are seen in substrate.

E. Proceed with installation only after unsatisfactory conditions, including levelness tolerances, have been corrected.

F. Inspections: Documented inspection of Terrazzo Tile quality control tests.

G. In-house testing is completed on the first day's production and every 5,000 square feet after for all projects. Testing is performed on the 7th day and the 28th day after the tile has been pressed.
a. Compression - ASTM C140 > 8,000 psi average
b. Absorption - ASTM C140 < 5% average
c. Flexural - ASTM C293 > 1000 psi average
d. Specular Gloss Testing at 60 degrees - ASTM D523
e. Stain testing/initial protection testing.

F. All projects over 10,000 square feet will have one set of tests sent to a third-party test lab.

3.2 TEST RESULTS

A. Independent Test Lab completed and verified the following data:

a. 24 x 24 Terrazzo Tile

1. Traditional Series Cement Terrazzo Tile
2. C373 Water Absorption – Passes (Semi-Vitreous)
3. C482 Bond Strength - > 300 psi.
4. C485 Warpage Edge +/- .001% or .002 in
5. C485 Warpage Diagonal +/- .003% or .010 in.
6. C499 Nominal Size - range of .029 in.
7. C499 Thickness - range of .029 in.
8. C502 Wedging +/- .023% or .028 in.
9. C609 Color Uniformity - V1 – V2
10. C648 Breaking Strength - > 500 lbs
11. C650 Resistance to Chemical Substance- not affected
12. C674 Flexural properties - > 1000 psi. average
13. Dynamic DCOF – Passes at factory
14. ANSI A137.1 Section 9.6.1 "Wet Dynamic Coefficient of Friction (DCOF)"
15. Average Polished Finish = .46 / Average Honed Finish = .54
16. C1243 Deep Abrasion Wear – passes (meets p3 standards)
17. C1378 Resistance to staining - not affected.

3.3 PREPARATION

A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo tile bond. Provide clean, dry, and neutral substrate for terrazzo application.

B. Concrete Slabs:
1. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.
   a. Prepare concrete mechanically by shot-blasting. Grinding of slab is not sufficient surface preparation, except for edges and corners not accessible with shot blasting equipment. Surface preparation results should achieve a CSP3-CSP5 profile according to International Concrete Repair Institute Guideline No. 03732.

b. Repair or flatten damaged and deteriorated concrete according to Terrazzo manufacturer leveling requirements for Thin-Set Terrazzo Tile install.
c. Use manufacturer recommended surface prep (as needed):
    a. Manufacturer recommended Self-Leveling Underlayment.
    b. Manufacturer recommended Skim Coat & Patch Cement Underlayment.
    c. Manufacturer recommended Backerboard.
d. Use manufacturer recommended membrane options.
    a. Manufacturer recommended waterproofing and crack prevention membrane.
    b. Manufacturer recommended crack prevention Mat Underlayment.
    c. Manufacturer recommended uncoupling Mat.
e. Use manufacturer recommended **cementitious** mortar.
f. Use manufacturer recommended grout.
g. Use patching and fill material to fill holes and depressions in substrates according to terrazzo manufacturer's written instructions.

2. Verify that that concrete substrates are visibly dry and free of moisture.

3. Moisture Testing:
    a. Prior to proceeding with install, examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting tile performance. Refer to ASTM 2170 manufacturer's recommendation for relative humidity test for moisture content. Provide test report to Architect, "submit the test report and then submit the tile manufacturer's recommended mortar and products compatible with test results" for Architecture review.

    b. Test for moisture according to ASTM F2170 (determining relative humidity in concrete slabs using in situ probes). Proceed with installation only after substrates meet the manufacturer recommend relative humidity measurement reading. Apply terrazzo tile to substrate in accordance with manufacturer data sheet and installation requirements.

    c. Use only the manufacturer recommended Cementous mortar, grout and setting materials that meets substrate requirements.

C. Protect other work from dust generated by grinding operations. Control dust to prevent air pollution and comply with environmental protection regulations.
1. Erect and maintain temporary enclosures and other suitable methods to limit dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

D. Installation of terrazzo tile indicates acceptance of surfaces and conditions.

3.4 INSTALLATION

A. General:

1. Comply with NTMA’s written recommendations for terrazzo and accessory installation.
2. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Terrazzo Specifications and Design Guide."
3. Ensure that matrix components and fluids from grinding operations do not stain existing terrazzo or terrazzo tile by reacting with divider and control-joint strips.
4. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.

B. Thickness: To be determined by Architect. The General Contractor is to salvage existing terrazzo sample and turn material over to Architect so that material thickness can be determined by Architect.

C. Moisture Vapor Primer (MVP): If required, apply to terrazzo substrates according to moisture vapor primer product data sheet.

D. Repair: Remove and replace terrazzo areas that show evidence of lack of bond with substrate.

E. Repair terrazzo according to NTMA's written recommendations, as approved by Architect.

F. All installations of Terrazzo Tile shall comply with the appropriate Installation method as depicted in the current edition of the Tile Council of North America Handbook for Ceramic, Glass, and Stone Installation.

G. The Architect or other design professional shall select which methods to be specified. All Specifications must also conform to local codes, ordinances, trade practices, and climate conditions.

H. **When setting Cementitious Terrazzo Tile an ANSI A118.4 mortar is required.** The setting materials manufacturer's printed installation instructions are to be followed in every instance.

I. A minimum of 95 percent thin-set coverage is recommended on the back of the tile with no voids exceeding two square inches and no voids with 2" of the edges. All corners and edges must be fully supported and back buttering is required on tiles larger than 12" to reach these requirements.

J. ANSI A-108.5 installation specifications that correspond with the selected TCNA Installation Method are required. This includes substrate and surface inspections, location and frequency of EJ171 Movement Joint Guidelines, Placement Techniques, and grouting procedures.
a. Minimum recommended grout joint width is 1/8"
b. Deflection requirement of L/360
c. The maximum allowable substrate variation can be no more the 1/8" in 10' and 1/16" in 24".

K. Applied Initial Protectant – 3M Scotchgard Stone Floor Protector:

1. When using a heavily pigmented grout, it's recommended to use a grout release prior to grouting. A test area is recommended to ensure the grout release was adequately applied.

2. If a slight grout haze occurs, it can be effectively removed from the tile by using a 3M™ Eraser Pad 3600 Pink pad with water and or 3M™ Neutral Cleaner. A floor buffer is recommended to assist in cleaning.

3. If a more difficult stain occurs, use a Scotch-Brite™ Doodlebug™ Easy Erasing Pad 4610 along with water and or 3M™ Neutral Cleaner. A floor buffer is recommended to assist in cleaning.

4. For additional protectant information and long-term care guidelines, please contact 3M via 1-800-852-9722 or www.3m.com/facility

3.04 CARE & MAINTENANCE

A. Cleaning:

1. Dust mop or vacuum to remove sand, dust and other contaminants off the surface.
2. Clean up spills immediately and damp mop lightly soiled floors with a neutral cleaner.
3. For more aggressive cleaning use a mechanical buffer or auto scrubber along with a 3M™ Re-Buffer Pad 5100 and Neutral Cleaner per the manufacturer's recommendations.
4. For cleaning combined with light polishing, the Scotch-Brite™ Purple Diamond Pad Plus may be

used on an auto scrubber.

5. If a stain occurs, see 3M's technical bulletin titled Repair of Etch or Stained Terrazzo Tiles to assist with the repair.
6. DO NOT use acidic cleaners, cleaners that contain citrus (d-limonene), 2-butoxyethanol (butyl cellusolve), amine-based cleaners, isopropyl alcohol, solvent based cleaners, degreasers, or non-neutral cleaners.
7. DO NOT use spray buff products or chemical dust mop treatments.
8. RESTROOM APPLICATION – If the product is installed in a residential or commercial restroom additional coat of a topical seal will be required to protect the floor. Restroom applications will also require a more stringent care and maintenance program.
9. Apply products per manufactures published instructions. To ensure maximum performance and expected wear of the sealer, use manufacturer recommended cleaners.
10. Use only the terrazzo tile manufacturer recommended sealer.
11. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure that terrazzo tile is without damage or deterioration at time of Substantial Completion. Any damage that does occur shall be the responsibility of the General Contractor to repair or replace to the satisfaction of the Architect.

B. Extended Care and Maintenance:
   a. Terrazzo Tile may be periodically burnished using Scotch-Brite™ Purple Diamond Pad Plus to maintain gloss. No additional Scotchgard™ Stone Floor Protector needs to be applied to restore gloss.
   b. When the terrazzo tile no longer returns to gloss by burnishing, an additional application of Scotchgard™ Stone Floor Protector should be applied.
   c. Scotchgard™ Stone Floor Protector will wear down over time due to floor traffic. On average, high traffic areas should be recoated as needed. Light to moderate traffic areas should be recoated as needed.
   d. Please contact 3M via 1-800-852-9722 or www.3m.com/facility and follow their procedures for reapplication of Scotchgard™ Stone Floor Protector.

END OF SECTION 09 66 23

SECTION 09 91 13 – EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the exterior substrates indicated in the Exterior Painting Schedule at the end of this Section.
B. Related Sections include the following:
   1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.
   2. Division 09 Section "Interior Painting" for surface preparation and the application of paint systems on interior substrates.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Samples for Verification: Labeled sample with stepped coats, for each type of paint system and each color and gloss of topcoat indicated.
C. Coating Maintenance Manual: Upon completion of the Project, the Contractor (or paint manufacturer/supplier) shall furnish a coating maintenance manual, equal to Sherman-Williams “Custodian Project Color and Product Information” report.
   1. The manual shall include an area summary with the finish schedule, area detail designating where each product/color/finish was used, product data pages., material safety data sheets, care and cleaning instructions, touchup procedures, and color samples of each color and finish used.

1.4 QUALITY ASSURANCE

A. The Contractor must ensure that manufacturer’s requirements are followed in preparation of substrates and application of new coatings. The contractor is to perform appropriate tests to verify that substrates are compatible with new coatings. This includes testing surfaces for whether the existing paint is oil-based or water-based.
B. Single-Source Responsibility: For each painting system, use a single manufacturer for primer and topcoats.
C. Coordination of Work: Review other sections in which primers are provided to ensure compatibility of total systems for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
D. Material Quality: Provide products of indicated quality or better for each coating type specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.
   1. Products: Proprietary names used to designate colors or materials are not intended to exclude equal or better products of other manufacturers. Equivalents products may submitted for approval by Architect through Product Requirements process indicated in Division 01, with executed CSI standard Substitution Request Form, complete with point-by-point comparison filled out for each proposed product compared with an MPI listed product. Proposed products must meet or exceed

the test results of the MPI listed product, including abrasion resistance, adhesion, corrosion weathering, salt fog resistance, dry heat resistance, and other requirements of this Section.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F .
   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 PAINT, GENERAL

A. Material Compatibility:
   1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. The contractor is to field verify that the submitted paint products or requested paint products are compatible with the existing substrate prior to proceeding. Any deviation from this should be submitted to the Architect in writing for review and prior to any work commencing.
   3. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
B. Colors: To match existing, unless noted otherwise.

2.2 MANUFACTURERS

A. Subject to compliance with requirements, provide indicated products from the following, or comparable products approved by Design Builder:
   1. **Basis of Design**: The Sherwin-Williams Company (S-W).
   2. Benjamin Moore and Co. (Moore).
   3. PPG Paints (Pittsburgh).

2.3 EXTERIOR LATEX PAINTS

A. Acrylic Latex: 100 percent acrylic satin-finish exterior latex for use over primed, fiber-cement siding.
   1. S-W: A-100 Exterior Latex Satin, A82 Series
   2. Moore: Moorgard Low Lustre Acrylic, 103
   3. PPG: SPEEDHIDE® Exterior Latex

B. Latex: semi-gloss exterior latex house paint for use over wood:
   1. S-W: A-100 Exterior Latex Gloss, A8 Series
   2. Moore: MoorGlo Soft Gloss, N096 01
   3. PPG: SPEEDHIDE® Exterior Latex

C. Acrylic: direct-to-metal waterborne acrylic gloss or semi-gloss enamel for use over structural steel and shop primed steel:
   1. S-W: Pro-Industrial DTM Acrylic Semi-Gloss, B66-1150 Series
   2. Moore: Impervex Enamel #309.
   3. PPG: PITT-TECH PLUS
   4. P & L: Z/F 2900 Series Enducryl Acrylic Maintenance Enamel.

2.4 WATERBASED ALKYD PAINTS:

A. Waterbased Alkyd Urethane: Interior/Exterior waterbased alkyd urethane Semi-Gloss for Metal Handrails, Hollow Metal Frames and Doors:
   1. Sherwin Williams Pro Industrial Waterbased Alkyd Urethane Semi-Gloss, B53-2150 Series or approved equal.

2.5 METAL PRIMERS

A. Synthetic, Rust-Inhibiting Primer: Quick-drying, rust-inhibiting primer for priming ferrous metal (only) on exterior under alkyd enamel:
   1. S-W: Kem Kromik Universal Metal Primer B50W1.
   2. Moore: SuperSpec Alkyd Metal Primer, P06
   3. PPG: Multiprime 94-258

B. Waterborne Rust-Inhibiting Primer: NON-Ferrous Metal
   1. S-W: Pro Industrial Pro Cryl. Universal Metal Primer B66-1300
   2. Or manufacturer approved equal.

2.6 WOOD PRIMERS

A. Exterior Alkyd Wood Primer: Primer used to prime exterior wood trim:
   1. S-W: Exterior Oil-Based Wood Primer, Y24W8020.
   2. Moore: 176-00 Moorcraft Exterior Alkyd Primer.
   3. PPG: SEAL GRIP® Permanizer Plus® Exterior Wood Stabilizer

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
   1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
B. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application.

DO NOT paint surfaces where moisture content exceeds that permitted in manufacturer's printed direction.

C. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
   2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

D. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.

E. Apply field primer to unfinished shop primed surfaces.

F. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
   1. Masonry must be cured a minimum of 28 days.

G. Steel Substrates: If not shop prepared and primed, remove rust and loose mill scale. Clean using Power Tool Cleaning (SSPC-SP3) or other methods recommended in writing by paint manufacturer and approved by Design Builder.

H. Wood Substrates:
   1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
   2. Sand surfaces that will be exposed to view, and dust off.
   3. Prime edges, ends, faces, undersides, and backsides of wood.
   4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 PREPARATION OF EXISTING SURFACES

A. If existing surfaces are to be painted Contractor is to test existing coatings for compatibility and submit in writing the manufacturer's recommended primers and paint for compatibility.

B. The General Contractor is to test existing paint to see if paint is alkyd or waterbased paint. If the existing paint is alkyd General Contractor is to make sure surfaces are sanded and clean, then prime any existing alkyd paints with manufacturer's recommended Primer.

C. Note paint coatings may change based on determination of existing substrate/coatings compatibility.

D. The Contractor must ensure existing substrates/coatings are compatible with new coatings. This is absolutely necessary to achieve proper bond to the existing substrate/coating. Notify Architect in writing if problems are anticipated.

E. The Contractor must properly prepare existing surfaces per manufacturers recommendation.

F. Existing Ferrous Metals to Remain: Blast steel surfaces clean as recommended by the paint system manufacturer and according to requirements of SSPC specification SSPC-SP 10. Grind and sand all loose and peeling paint. Sand and feather all edges smooth. Prime bare metal before painting

G. Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.
   1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
   2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
   3. Use only thinners approved by the paint manufacturer and only within recommended limits.

H. Tinting: Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

I. Upon manufacturer review of existing finish coat a manufacturer recommended primer will be determined prior to finish coating.

3.4 APPLICATION

A. Apply paints according to manufacturer's written instructions.
   1. Use applicators and techniques suited for paint and substrate indicated.
   2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR EXPOSED ACRYLIC COATING SCHEDULE

A. Steel Substrates: Including but not limited to; Exposed Structure, Beams, Purlins, Fascia, Underside of Steel Decking, Door Canopies, and Columns.
   a. Primer Coat: Universal Rust Inhibitive Primer
   b. Intermediate Coat: Direct to Metal Acrylic Semi-Gloss
      Finish Coat: Direct to Metal Acrylic Semi-Gloss
   1. Applied Coating System for Steel
      a. Acrylic primer, @ 2.0-4.0 mils DFT
   2. Field applied coating system for steel
      a. Direct to metal waterborne (Semigloss) @ 2.5-4.0 mils DFT

B. Metal Handrails, Hollow Metal Frames and Doors:
   1. Primer: Unless otherwise noted use manufacturer recommended primer.
   2. Intermediate Coat: S-W Pro Industrial Waterbased Alkyd Urethane Semi-gloss B53-2150.
   3. Topcoat: S-W Pro Industrial Waterbased Alkyd Urethane Semi-gloss B53-2150.

C. Galvanized Substrates:
   a. Spot Prime Coat: Rust Inhibitive Primer, S-W Pro Industrial Pro-Cryl Universal Metal Primer, B66-1300 or approved equal.
   b. Intermediate and Finish Coat: Direct to Metal Acrylic Semi-Gloss, S-W: Pro-Industrial DTM Acrylic Semi-Gloss, B66-1150 Series

D. Exterior Wood Trim:
   1. Satin finish: Two finish coats over primer:
      a. Primer: Alkyd exterior wood primer.
      b. Intermediate and Topcoat Coat: Exterior Latex Satin house paint.

END OF SECTION 09 91 13

SECTION 09 91 23 – INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes surface preparation and the application of paint systems on the following interior substrates:
   1. Concrete.
   2. Concrete Masonry Units Substrates:
   3. Steel.
   4. Galvanized metal.
   5. Wood.
   6. Gypsum board.

B. Related Sections include the following:
   1. Division 05 Sections for shop priming and finishing of metal substrates with primers specified in this Section.
   2. Division 06 Sections for shop priming carpentry with primers specified in this Section.
   3. Division 08 Sections for factory priming and finishing windows and doors not specified in this Section.
   4. Division 09 Section "Exterior Painting" for surface preparation and the application of paint systems on exterior substrates.

1.3 DEFINITIONS

A. MPI: Master Painters Institute. Product listings are available at www.paintinfo.com. MPI Architectural Painting Specification Manual is available at www.specifypaint.com.

B. Gloss Levels: As indicated in MPI Gloss Standards, measured at 60 degree angle. Where manufacturer's gloss descriptions differ from the MPI Gloss Standards, the MPI Gloss Standards shall govern.

C. MPI Gloss Standards

Gloss Level	Description	Gloss At 60 Deg	Sheen At 85 Deg
G1	A traditional matte finish - flat	Max. of 5 units	Max. of 10 units
G2	A high side sheen flat - "a velvetlike" finish	Max. of 10 units	10 - 35 units
G3	A traditional "eggshell-like" finish	10 - 25 units	10 - 35 units
G4	A "satinlike" finish	20 - 35 units	Min. of 35 units
G5	A traditional semigloss	35 - 70 units	-
G6	A traditional gloss	70 - 85 units	-
G7	A high gloss	More than 85 units	-

1.4 SUBMITTALS

A. Designer of Record Approval is required for submittals with a "DA" designation; submittals not having a "DA" designation are for Contractor Quality Control approval. All submittals after DA or Contractor Quality Control approval shall be sent to the Government as For Information Only. Submit in accordance with Division 01 Section "Submittal Procedures".
B. Product Data: For each type of product indicated.
C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
   1. Submit Samples on rigid backing, 8 inches square.
   2. Step coats on Samples to show each coat required for system.
   3. Label each coat of each Sample.
   4. Label each Sample for location and application area.
D. Product List: For each product indicated, include the following:
   1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
   2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
      a. In lieu of MPI Approved Product List, comparable products may be submitted with request for substitution in accordance with Division 01 Section "Product Requirements", and manufacturer's certification of location of manufacturing and origin of products, as indicated below under "Quality Assurance" Article.
E. Coating Maintenance Manual: Upon completion of the Project, the Contractor (or paint manufacturer/supplier) shall furnish a coating maintenance manual, equal to Sherman-Williams “Custodian Project Color and Product Information” report.
   1. The manual shall included an area summary with the finish schedule, area detail designating where each product/color/finish was used, product data pages., material safety data sheets, care and cleaning instructions, touchup procedures, and color samples of each color and finish used.

1.5 QUALITY ASSURANCE

A. The Contractor must ensure that manufacturer’s requirements are followed in preparation of substrates and application of new coatings. The contractor is to perform appropriate tests to verify that substrates are compatible with new coatings. This includes testing surfaces for whether the existing paint is oil-based or water-based.
B. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.
C. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
      a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
      b. Other Items: Architect will designate items or areas required.
   2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
   3. Final approval of color selections will be based on benchmark samples.
      a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.

1.7 PROJECT CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
   1. Quantity: Furnish an additional 2 percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 PAINT, GENERAL

A. Painting Schedule: Refer to end of Part 3 of this Section for listing of applications for each product.
B. Products, General: Refer to Part 2 for specific products. Subject to compliance with requirements, provide the Basis-of-Design products indicated or comparable products from one of the listed manufacturers for each substrate.
C. Colors: As indicated in Finish Schedule.
D. Material Compatibility:
   1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
   2. The contractor is to field verify that the submitted paint products or requested paint products are compatible with the existing substrate prior to proceeding. Any deviation from this should be submitted to the Architect in writing for review and prior to any work commencing.
   3. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
E. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
   1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
   2. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
   3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
   4. Floor Coatings: VOC not more than 100 g/L.
   5. Sealers: waterproofing sealers 250 g/L limit; sanding sealers 275 g/L limit; all other sealers 200 g/L limit.
   6. Shellacs, Clear: VOC not more than 730 g/L.
   7. Shellacs, Pigmented: VOC not more than 550 g/L.
   8. Stains: 250 g/L limit.
   9. Flat Topcoat Paints: VOC content of not more than 50 g/L.
   10. Nonflat Topcoat Paints: VOC content of not more than 150 g/L.
   11. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
   12. Floor Coatings: VOC not more than 100 g/L.
   13. Sealers: waterproofing sealers 250 g/L limit; sanding sealers 275 g/L limit; all other sealers 200 g/L limit.
   14. Shellacs, Clear: VOC not more than 730 g/L.
   15. Shellacs, Pigmented: VOC not more than 550 g/L.

16. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
17. Stains: 250 g/L limit.
18. Dry-Fog Coatings: VOC content of not more than 400 g/L.
19. Zinc-Rich Industrial Maintenance Primers: VOC content of not more than 340 g/L.
20. Pre-Treatment Wash Primers: VOC content of not more than 420 g/L.

F. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
2. Restricted Components: Paints and coatings shall not contain any of the following:
a. Acrolein.
b. Acrylonitrile.
c. Antimony.
d. Benzene.
e. Butyl benzyl phthalate.
f. Cadmium.
g. Di (2-ethylhexyl) phthalate.
h. Di-n-butyl phthalate.
i. Di-n-octyl phthalate.
j. 1,2-dichlorobenzene.
k. Diethyl phthalate.
l. Dimethyl phthalate.
m. Ethylbenzene.
n. Formaldehyde.
o. Hexavalent chromium.
p. Isophorone.
q. Lead.
r. Mercury.
s. Methyl ethyl ketone.
t. Methyl isobutyl ketone.
u. Methylene chloride.
v. Naphthalene.
w. Toluene (methylbenzene).
x. 1,1,1-trichloroethane.
y. Vinyl chloride.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. **Basis of Design:** The Sherwin-Williams Company (S-W).
2. Benjamin Moore & Co.
3. PPG Architectural Finishes, Inc.

2.3 BLOCK FILLERS

A. Filler Coat Materials: Provide the manufacturer's recommended factory-formulated, latex-type concrete masonry block fillers that are compatible with the finish materials indicated.
B. Products: Subject to compliance with requirements, provide one of the following:
1. High-Performance Latex Block Filler:
Sherwin Williams Pro Industrial Heavy Duty Block Filler, B42W150 applied at a dry film thickness of not less than 10 to 14 mils or approved equal by BM, PPG or MAB.

2.4 PRIMERS/SEALERS

A. Concrete, Masonry, and Stucco (Alkali-Resistant Primer):
   1. Sherwin-Williams: Loxon Concrete & Masonry Primer, LX02W50.
   2. Benjamin Moore: Super Spec 100% Acrylic High Build Masonry Primer, N068
   3. PPG: PermaCrete Masonry Systems Interior/Exterior Alkali-Resistant Primer, 4-603xi.
B. Interior Latex Primer/Sealer:
   1. Sherwin-Williams: ProMar 200 Zero-VOC Interior Latex Primer, B28W2600
   2. Benjamin Moore; Fresh Start Natura Interior Latex Primer, 511
   3. PPG: Speedhide Zero Interior Latex Sealer, 6-4900
C. Interior latex-based wood primer
   1. Sherwin-Williams; Multi-Purpose Primer, B51-450
   2. Benjamin Moore Super Spec Undercoater, 253
   3. PPG; Seal Grip Int/Ext Stain Blocking Primer, 17-921xi

2.5 METAL PRIMERS

A. Alkyd Anticorrosive Metal Primer on Steel (only), NOT Galvanized Steel:
   1. Sherwin-Williams: Kem Kromik Universal Alkyd Primer, B50WZ1
   2. Benjamin Moore: Industrial, Alkyd Metal Primer, M06.
   3. PPG: MULTIPRIME | 94-258 SERIES
B. Rust-Inhibitive Primer (Water Based):
   1. Sherwin-Williams: Pro Indusrtial Pro-Cryl Universal Metal Primer, B66-1300
   2. Benjamin Moore; Acrylic Metal Primer, M04
   3. PPG: Pitt-Tech Plus Int/Ext DTM Primer, 90-912.
C. Galvanized-Metal Primer:
   1. Sherwin-Williams: Industrial & Marine DTM Acrylic Primer/Finish B66W1.
   2. Benjamin Moore; Acrylic Metal Primer, M04
   3. PPG: Pitt-Tech Plus Int/Ext DTM Primer, 90-912.
D. Quick-Drying Primer for Aluminum:
   1. Sherwin-Williams: Pro Indusrtial Pro-Cryl Universal Metal Primer, B66-1300
   2. Benjamin Moore; Acrylic Metal Primer, M04
   3. PPG: Pitt-Tech Plus Int/Ext DTM Primer, 90-912.

2.6 WOOD PRIMERS

A. Wood-Knot Sealer: White shellac or other sealer recommended in writing by manufacturer for this purpose and meeting VOC requirements.
B. Interior Stain Blocking Wood Primer:
   1. Sherwin-Williams: Synthetic Shellac Primer, B49W60.
   2. Benjamin Moore: Seal Lock Plus Primer/Sealer IL-6800
   3. PPG: SEAL GRIP® Interior/Exterior Synthetic Stain-Killing Primer 17-931
C. Interior Enamel Undercoat:
   1. Sherwin-Williams: Premium Wall & Wood Primer, B28W8111
   2. Benjamin Moore: Super Spec Alkyd Enamel Undercoater & Primer C245
   3. PPG: SPEEDLINE™ Premium White Lacquer Undercoat 77-9600

2.7 ALKYD PAINTS

A. Interior Alkyd, (Semigloss):
   1. Sherwin-Williams: ProMar 200, Alkyd Semi-Gloss, B34W251
   2. Benjamin Moore: Moorcraft, Super Spec Alkyd Semi-Gloss Enamel, C271

3. PPG: SPEEDHIDE® Interior/Exterior WB Alkyd

2.8 LATEX PAINTS

A. Institutional Low-Odor/VOC Latex, (Flat):
   1. Sherwin-Williams; ProMar 200 Zero VOC Flat, B30W2600 Series
   2. Benjamin Moore; Natura Flat, 512
   3. PPG; Speedhide Zero Interior Latex Flat, 6-4110XI

B. Institutional Low-Odor/VOC Latex, (Eggshell):
   1. Sherwin-Williams; ProMar 200 Eggshell B20W12600 Series
   2. Benjamin Moore; Natura Eggshell, 513 01
   3. PPG; Speedhide Zero Interior Latex Eggshell, 6-4310XI

C. Institutional Low-Odor/VOC Latex, (Semigloss):
   1. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Semi-Gloss, B31W2600 Series
   2. Benjamin Moore; Natura Semi-Gloss, 514
   3. PPG; Speedhide Zero Interior Latex Semi-Gloss

D. Interior Latex Microbicidal (Eggshell):
   1. Sherwin-Williams: Superpaint with Sanitizing Technology, A87W00001

E. Interior Pre-Catalyzed Epoxy, (Semi-gloss):
   1. Sherwin-Williams: Pro Industrial Pre-Catalyzed Epoxy Semi-Gloss, K46-2150 Series
   2. Benjamin Moore:Pre Catalyzed Epoxy Semi-Gloss, V341.
   3. PPG: Pitt-Glaze WB1 Pre-Catalyzed Epoxy Semi-Gloss, 16-510

F. Interior Pre-Catalyzed Epoxy, (Eggshell):
   1. Sherwin-Williams: Pro Industrial Pre-Catalyzed Epoxy Eggshell, K45-2150 Series
   2. Benjamin Moore:Pre Catalyzed Epoxy Eggshell, V342.
   3. PPG: Pitt-Glaze WB1 Pre-Catalyzed Epoxy Eggshell, 16-310

G. Interior Waterborne Dryfall, (Flat):
   1. Sherwin-Williams: Pro Industrial Waterborne Acrylic Dryfall Flat, B42 Series
   2. Benjamin Moore: Latex Dryfall Flat, 395
   3. PPG: Super Tech WB Dry Fall Flat, 6-725XI

2.9 WATERBASED ALKYD PAINTS:

A. Interior/Exterior Waterbased Alkyd Urethane, (Semi-Gloss):
   1. Sherwin Williams Pro Industrial Waterbased Alkyd Urethane Semi-Gloss, B53-2150 Series or approved equal.

2.10 FLOOR COATINGS:

A. Interior/Exterior Clear Concrete Floor Sealer (Water Based):
   1. Sherwin-Williams: H & C Clarishield Waterbased Wet Look Sealer
   2. Or approved equal.

2.11 MISCELLANEOUS WOOD-FINISHING MATERIALS

A. Wood-Finishing Materials: Provide the manufacturer's recommended factory-formulated, wood-finishing materials that are compatible with the substrate and undercoats indicated.

B. Products: Subject to compliance with requirements, provide one of the following:
   1. Oil-Type Interior Wood Stain: Slow-penetrating, oil-type wood stain.
      a. Sherwin-Williams - Minwax Performance Series Tintable Wood Stain
      b. Glidden – “ICI” 1700-XXX Woodpride interior solventborne wood finishing stain.
      c. Approved equal by BM, MAB, PPG.

2. Interior Polyurethane clear satin varnish.
   a. Sherwin-Williams - Minwax Fast Drying Polyurethane for Floors.
   b. Glidden - “ICI” 1902-0000 Woodpride interior satin polyurethane varnish
   c. Approved Equal BM, MAB, PPG.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Concrete: 12 percent.
   2. Wood: 15 percent.
   3. Gypsum Board: 12 percent.
C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
   1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
B. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. DO NOT paint surfaces where moisture content exceeds that permitted in manufacturer's printed direction.
C. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
   2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
D. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
   1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
E. Apply field primer to unfinished shop primed surfaces.
F. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
G. Steel Preparation for Shop Prime and Finish, and for Field Touch-up where damaged: Remove rust and protect damaged areas using methods recommended in writing by coating manufacturer.
   1. Prepared to comply with SSPC-SP 7 Brush-Off Blast Cleaning for all metal areas that are rusted, abraded, bare, or otherwise damaged.
H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
   1. Galvanized-metal substrates should not be chromate passivated (commercially known as "bonderized") if primers are field applied. If galvanized metal is chromate passivated, consult manufacturers for appropriate primers.
I. Aluminum Substrates: Remove surface oxidation.

J. Wood Substrates:
   1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
   2. Sand surfaces that will be exposed to view, and dust off.
   3. Prime edges, ends, faces, undersides, and backsides of wood.
   4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

K. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 PREPARATION OF EXISTING SURFACES

A. If existing surfaces are to be painted Contractor is to test existing coatings for compatibility and submit in writing the manufacturer's recommended primers and paint for compatibility.

B. The General Contractor is to test existing paint to see if paint is alkyd or waterbased paint. If the existing paint is alkyd General Contractor is to make sure surfaces are sanded and clean, then prime any existing alkyd paints with manufacturer's recommended Primer.

C. Note paint coatings may change based on determination of existing substrate/coatings compatibility.

D. The Contractor must ensure existing substrates/coatings are compatible with new coatings. This is absolutely necessary to achieve proper bond to the existing substrate/coating. Notify Architect in writing if problems are anticipated.

E. The Contractor must properly prepare existing surfaces per manufacturers recommendation.

F. Existing Concrete Masonry Units: Touch up all holes, dents, etc with manufacturer recommended patching components approved by the paint manufacturer for the intended purpose. Scrape all loose paint off. Properly sand for uniform CMU wall finish. Provide same number of finish coats.

G. Existing Ferrous Metals to Remain: Blast steel surfaces clean as recommended by the paint system manufacturer and according to requirements of SSPC specification SSPC-SP 10. Grind and sand all loose and peeling paint. Sand and feather all edges smooth. Prime bare metal before painting.

H. Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.
   1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
   2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
   3. Use only thinners approved by the paint manufacturer and only within recommended limits.

I. Tinting: Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

J. Upon manufacturer review of existing finish coat a manufacturer recommended primer will be determined prior to finish coating.

3.4 APPLICATION

A. Apply paints according to manufacturer's written instructions.
   1. Use applicators and techniques suited for paint and substrate indicated.
   2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
   3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Apply primers and finish coats in accordance with manufacturer's recommended dry-film thickness, square foot per gallon, and mil thickness per coat. Do not add solvent or thinner to paint and coating products.

F. Allow adequate curing time before handling and before applying subsequent coats. Low VOC and water-based paint systems require longer drying times. Comply with MPI standards and manufacturer's written instructions. Protect in accordance with "Cleaning and Protection" Article below.

G. Painting Mechanical and Electrical Work: Paint same color as the adjoining substrate items exposed in equipment rooms and occupied spaces including, but not limited to, the following:

2. Mechanical Work:
    a. Uninsulated metal piping.
    b. Uninsulated plastic piping.
    c. Pipe hangers and supports.
    d. Tanks that do not have factory-applied final finishes. Should be prefinished.
    e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
    f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
3. Electrical Work:
    a. Switchgear.
    b. Panelboards.
    c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.5 FIRE RATED ASSEMBLIES

A. Permanently identify corridor partitions, smokestop partitions, horizontal exit partitions, exit enclosures and fire walls. Above decorative ceiling line and in concealed spaces, on both sides of wall, apply a minimum one-inch wide red line interrupted at maximum 12-ft spacing with the wording "X HOUR FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS" in 4-inch high letters with "X" designating the appropriate hourly rating.

3.6 FIELD QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:
1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.7 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.8 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Horizontal Surfaces:
1. Water-Based Clear Sealer System:
   a. First Coat: Interior/exterior clear concrete floor sealer (water based).
   b. Topcoat: Interior/exterior clear concrete floor sealer (water based).

B. Concrete Substrates, Vertical Surfaces:
1. Latex System over bonding primer:
   a. Prime Coat: Primer, bonding, solvent based
   b. Intermediate Coat: Latex, interior, matching topcoat.
   c. Topcoat: Institutional Low-Odor/VOC Latex Semi-Gloss

C. Concrete Masonry Units Substrates:
1. Latex Over Block Filler System:
   a. 1st Coat Block Filler: Latex Block Filler
   b. 2nd Coat Block Filler: Latex Block Filler
   c. Intermediate Coat: Latex, matching top coat.
   d. Topcoat: Institutional Low-Odor/VOC Latex Semi-Gloss or Eggshell

D. Concrete Masonry Units Substrates: Substrates, High Use locations:
1. Refer to Special Coatings.

E. Steel Substrates:
1. Water-Borne, Alkyd:
   a. Prime Coat: Rust-inhibitive primer (water based)
   b. Intermediate Coat: Sherwin-Williams: B53-2150 Series, (Semi-Gloss)
   c. Topcoat: Sherwin-Williams: B53-2150 Series, (Semi-Gloss)

F. Galvanized-Metal Substrates:
1. Water-Borne, Alkyd:
   a. Prime Coat: Waterborne galvanized-metal primer.
   b. Intermediate Coat: Sherwin-Williams: B53-2150 Series, (Semi-Gloss)
   c. Topcoat: Sherwin-Williams: B53-2150 Series, (Semi-Gloss)

G. Aluminum (Not Anodized or Otherwise Coated) Substrates:
1. Water-Borne, Alkyd:
   a. Prime Coat: Quick-drying primer for aluminum,
   b. Intermediate Coat: Sherwin Williams: B53-2150 Series, (Semi-Gloss)
   c. Topcoat: Sherwin-Williams: B53-2150 Series, (Semi-gloss)
2. Note: The Contractor is to verify with Architect aluminum surfaces to be painted.

H. Gypsum Board Substrates:
1. Institutional Low-Odor/VOC Latex System:
   a. Prime Coat: Interior latex primer/sealer.
   b. Intermediate Coat: Institutional low-odor/VOC interior latex matching topcoat.
   c. Topcoat for ceilings: Interior latex (flat),
   d. Topcoat for Walls: Institutional low-odor/VOC interior latex (Eggshell)

I. Gypsum Board Substrates, High Use locations: Refer to Special Coatings.
   1. Refer to Special Coatings.

J. Ceiling deck, bar joist & misc. metal:
   1. Waterborne Acrylic Dryfall
      a. Spot Prime bare or rusted metal: Rust-inhibitive primer (water based)
      b. Topcoat coat: Interior Waterborne Dryfall, (Flat) applied to full opacity

   2. Ceilings and Soffits - Latex System:.
      a. Prime Coat: Interior latex primer/sealer,
      b. Intermediate Coat: Interior latex matching topcoat.
      c. Topcoat: Interior latex (flat)

   3. Walls, unless noted otherwise - Latex System:
      a. Prime Coat: Interior latex primer/sealer,
      b. Intermediate Coat: Interior latex matching topcoat.
      c. Topcoat: Interior latex (Eggshell),

   4. Walls, where indicated – Interior Mildew-Resistant System:
      a. Prime Coat: Interior latex primer/sealer.
      b. Intermediate Coat: Interior latex matching topcoat.
      c. Topcoat: Refer to Special Coatings.

END OF SECTION 09 91 23

SECTION 09 97 00 - SPECIAL COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes applying special coating systems to items and surfaces scheduled, including surface preparation, prime coats, and topcoats.
B. Types of special coating systems required for the Project include the following:
   1. Special coatings for interior use include the following:
      a. High-performance epoxy coating.
C. Related Sections: The following Sections contain requirements that relate to this Section:
   1. General painting is specified in Division 09 Section "Painting."

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 01 Specification Sections.
B. Product data for each coating system specified, including block fillers and primers.
   1. Provide the manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each material proposed for use.
   2. List each material and cross-reference the specific coating, finish system, and application. Identify each material by the manufacturer's catalog number and general classification.
   3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
C. Samples for initial color selection in the form of manufacturer's color charts.
   1. After color selection, the Architect will furnish color chips for surfaces to be coated.
D. Samples for Verification Purposes: Provide samples of each color and material to be applied with texture to simulate actual conditions on representative samples of the actual substrate.
   1. Provide stepped samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing samples for review. Resubmit until the required sheen, color, and texture are achieved.
   2. Provide a list of material and application for each coat of each sample. Label each sample as to location and application.
   3. Submit samples on the following substrates for the Architect's review of color and texture only.
      a. Concrete Masonry: Provide two 8-inch-square samples of masonry, with mortar joint in the center, for each finish and color.
      b. Gypsum Drywall: Provide two 12-inch-square samples of each color and material on drywall.

1.4 QUALITY ASSURANCE

A. The Contractor must ensure that manufacturer's requirements are followed in preparation of substrates and application of new coatings. The contractor is to perform appropriate tests to verify that substrates are compatible with new coatings. This includes testing surfaces for whether the existing paint is oil-based or water-based.

B. Applicator Qualifications: Engage an experienced applicator who has successfully completed coating system applications similar in material and extent to those indicated for the Project.

C. Single-Source Responsibility: Provide primers and undercoat material produced by the same manufacturer as the finish coats for each type of coating. Use only thinners recommended by the manufacturer and only within recommended limits.

D. Field Samples: On wall surfaces and other interior and exterior components, duplicate finishes of prepared samples. Provide full-coat finish samples on at least 100 sq. ft. of surface until the required sheen, color, and texture are obtained; simulate finished lighting conditions for reviewing in-place work.
   1. Final acceptance of colors will be from job-applied samples.
   2. The Architect will select one room, area, or surface to represent surfaces and conditions for each type of coating and substrate to be coated. Apply coatings in this room, area, or surface according to the schedule, or as specified. After finishes are accepted, this room, area or surface will be used for evaluation of coating systems of a similar nature.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, new, unopened packages, and containers bearing manufacturer's name and label, and the following information:
   1. Name or title of material.
   2. Product description (generic classification or binder type).
   3. Manufacturer's name, stock number and date of manufacture.
   4. Contents by volume, for major pigment and vehicle constituents.
   5. Thinning instructions.
   6. Application instructions.
   7. Color name and number.
   8. Handling instructions and precautions.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
   1. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and applying the coatings.

1.6 PROJECT CONDITIONS

A. Apply coatings only when the temperature of surfaces to be coated and surrounding air temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).

B. Do not apply coatings in snow, rain, fog, or mist; when the relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
   1. Allow wet surfaces to dry thoroughly and attain the temperature and conditions specified before proceeding with or continuing the coating operation.
   2. Work may continue during inclement weather only if areas and surfaces to be coated are enclosed and the temperature within the area can be maintained within limits specified by the manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
   1. High-performance epoxy coating.
      a. **Basis of Design:** Sherwin-Williams Company (S-W).
      b. Benjamin Moore & Co. (BM).
      c. Glidden-"ICI" Paint Stores, Inc. (ICI).
      d. M. A. Bruder & Sons, Inc. (MAB).
      e. PPG Industries, Inc. (PPG).

B. Products by other manufacturers must be submitted to the Architect for approval ten (10) days prior to the date of the bid opening. To be considered for approval, products must meet the specifications herein and be acceptable to the Architect and Owner. Products to be approved for use in this project must have PREBID WRITTEN APPROVAL from the Architect. Such approval will only be issued in the form of an Addendum, listing all approved equals. Any other commitments, verbal or otherwise, will not be honored.

2.2 SPECIAL COATING MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, finish coat material, and related materials that are compatible with one another and the substrates indicated under conditions of service and application as demonstrated by the manufacturer based on testing and field experience.
   1. The Contractor is to field verify that the submitted paint products or requested paint products are compatible with the existing substrate prior to proceeding. Any deviation from this should be submitted to the Architect in writing for review and prior to any work commencing.

B. Material Quality: Provide the highest grade of the various coatings as regularly manufactured by acceptable coating manufacturers. Materials not displaying manufacturer's identification as a best-grade product will not be acceptable.
   1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials are not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish the manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: Provide color selections made by the Architect from the manufacturer's full range of standard colors.

2.3 MASONRY-BLOCK FILLERS

A. Masonry Block Fillers: Provide the manufacturer's recommended factory-formulated concrete masonry block fillers that are compatible with the finish materials indicated.

B. Available Products: Subject to compliance with requirements, block fillers that may be incorporated in the Work include:
   1. SW- B42W150 Interior/Exterior Heavy Duty Acrylic Block Filler
   2. Approved equal by BM, PPG, MAB.

2.4 PRIMERS AND SEALERS

A. Primer/Sealers: Provide the manufacturer's recommended factory-formulated primer/sealers that are compatible with the substrate and finish materials indicated.

B. Available Products: Subject to compliance with requirements, primer/sealers that may be incorporated in the Work include, but are not limited to:
   1. SW-Waterbone Catalyzed Epoxy B73W311 or approved equal by BM, MAB, PPG, SW.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions under which coatings will be applied for compliance with requirements on applying coatings. Surfaces to receive coatings must be thoroughly dry before coatings are applied.
   1. Do not proceed with coating application until unsatisfactory conditions have been corrected.
   2. Start of application will be construed as the Applicator's acceptance of surfaces within that particular area.

B. Coordinating Work: Review sections in which other coatings are provided to ensure compatibility of the total systems for various substrates. On request, furnish information on the characteristics of specified finish materials to ensure compatible primers.
   1. Notify the Architect of problems anticipated using the coatings specified over substrates primed by others.

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already in place that are not to be coated, or provide surface-applied protection prior to surface preparation and coating. Remove these items, if necessary, to completely coat the items and adjacent surfaces. Following the coating operations in each space or area, have removed items reinstalled by workers skilled in the trades involved.

B. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. DO NOT paint surfaces where moisture content exceeds that permitted in manufacturer's printed direction.

C. Cleaning: Before applying coatings or other surface treatments, clean the substrates of substances that could impair bond of the various coatings. Remove oil and grease prior to cleaning. Schedule cleaning and coating application so dust and other contaminates from the cleaning process will not fall on wet, newly coated surfaces.

3.3 PREPARATION OF EXISTING SURFACES

A. If existing surfaces are to be painted Contractor is to test existing coatings for compatibility and submit in writing the manufacturer’s recommended primers and paint for compatibility.

B. The General Contractor is to test existing paint to see if paint is alkyd or waterbased paint. If the existing paint is alkyd General Contractor is to make sure surfaces are sanded and clean, then prime any existing alkyd paints with manufacturer’s recommended Primer.

C. Note paint coatings may change based on determination of existing substrate/coatings compatibility.

D. The Contractor must ensure existing substrates/coatings are compatible with new coatings. This is absolutely necessary to achieve proper bond to the existing substrate/coating. Notify Architect in writing if problems are anticipated.

E. The Contractor must properly prepare existing surfaces per manufacturers recommendation.

F. Existing Concrete Masonry Units: Touch up all holes, dents, etc with manufacturer recommended patching components approved by the paint manufacturer for the intended purpose. Scrape all loose paint off. Properly sand for uniform CMU wall finish. Provide same number of finish coats.

G. Existing Ferrous Metals to Remain: Blast steel surfaces clean as recommended by the paint system manufacturer and according to requirements of SSPC specification SSPC-SP 10. Grind and sand all loose and peeling paint. Sand and feather all edges smooth. Prime bare metal before painting

H. Materials Preparation: Carefully mix and prepare paint materials according to manufacturer's directions.
   1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
   2. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
   3. Use only thinners approved by the paint manufacturer and only within recommended limits.

I. Tinting: Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

J. Upon manufacturer review of existing finish coat a manufacturer recommended primer will be determined prior to finish coating.

3.4 SURFACE PREPARATION

A. Clean and prepare surfaces to be coated according to the manufacturer's instructions for each particular substrate condition and as specified.
   1. Provide barrier coats over incompatible primers, or remove and reprime. Notify the Architect in writing of problems anticipated when using the specified finish-coat material with substrates primed by others.
   2. Cementitious Surfaces: Prepare concrete, concrete masonry block, cement plaster, and similar surfaces to receive special coatings. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen, as required, to remove glaze. If hardeners or sealers have been used to improve concrete curing, use mechanical methods to prepare surface.
      a. Use abrasive blast-cleaning methods if recommended by the coating system manufacturer.
      b. Determine alkalinity and moisture content of surfaces to be coated by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish coats to blister and burn, correct this condition before application. Do not apply coatings over surfaces where the moisture content exceeds that permitted in the manufacturer's printed directions.

B. Material Preparation: Carefully mix and prepare materials according to the coating manufacturer's directions.
   1. Maintain containers used in mixing and application of coatings according to the manufacturer's directions.
   2. Stir materials before applying to produce a mixture of uniform density; stir as required during application. Do not stir surface film into the material. Remove film and, if necessary, strain the coating material before using.
   3. Use only the type of thinners approved by the manufacturer and only within recommended limits.

C. Tinting: Tint each undercoat a lighter shade to facilitate identifying each coat where multiple coats of the same material are to be applied. Tint undercoats to match the color of the finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

3.5 APPLICATION

A. General: Apply special coatings by brush, roller, spray, squeegee, or other applicators according to the manufacturer's directions. Use brushes best suited for the material being applied. Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
   1. Do not apply coatings over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable coating film.

2. Coating colors, surface treatments, and finishes are indicated in the Schedules.
3. Provide finish coats compatible with the primers used.
4. The number of coats and film thickness required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Where sanding is required, according to the manufacturer's directions, sand between applications to produce a smooth, even surface.
5. When undercoats or other conditions show through the final coat, apply additional coats until the cured film has a uniform coating finish, color, and appearance. Give special attention to edges, corners, crevices, welds, exposed fasteners, and similar surfaces to ensure that they receive a dry film thickness equivalent to that of flat surfaces.
6. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
    a. Coat surfaces behind movable equipment and furniture the same as similar exposed surfaces.
    b. Coat the back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
    c. Omit primer on metal surfaces that have been shop-primed and touch-up painted.

B. Scheduling Coating: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for coating as soon as practicable after preparation and before subsequent surface deterioration.
1. Allow sufficient drying time between successive coats. Do not recoat until the coating has dried so it feels firm and does not deform or feel sticky under moderate thumb pressure and where applying another coat does not cause the undercoat to lift or lose adhesion.

C. Application Procedures: Apply coatings by brush, roller, spray, or other applicators according to the manufacturer's directions.
1. Brushes: Use brushes best suited for the material applied.
2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
3. Spray Equipment: Use spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

D. Minimum Coating Thickness: Apply each material no thinner than the manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by the manufacturer.

E. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to the material required to be coated or finished that has not been prime-coated by others.
1. Recoat primed and sealed substrates where there is evidence of suction spots or unsealed areas in the first coat to ensure a finish coat with no burn-through or other defects caused by insufficient sealing.

G. Brush Application: Brush-out and work brush coats into surfaces in an even film. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Neatly draw glass lines and color breaks.
1. Apply primers and first coats by brush unless the manufacturer's instructions permit using mechanical applicators.

H. Mechanical Applications: Use mechanical methods to apply coating when permitted by the manufacturer's recommendations and governing regulations.
1. Wherever using spray application, apply each coat to provide the equivalent hiding of brush-applied coats. Do not double-back with spray equipment building-up film thickness of two coats in one pass, unless recommended by the manufacturer.

I. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish, or recoat work not complying with specified requirements.

3.6 FIELD QUALITY CONTROL

A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during coating operations.
   1. The Owner will engage the services of an independent testing agency to sample the coating being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in the presence of the Contractor.
   2. The testing agency will perform appropriate tests for the following characteristics as required by the Owner:
      a. Quantitative materials analysis.
      b. Absorption.
      c. Accelerated weathering.
      d. Accelerated yellowness.
      e. Color retention.
      f. Alkali and mildew resistance.
      g. Abrasion resistance.
      h. Apparent reflectivity.
      i. Washability.
      j. Dry Opacity.
      k. Recoating.
      l. Skinning.
   3. If results show materials being used do not comply with requirements, the Contractor may be directed to stop work and remove noncomplying materials, pay for testing, recoat surfaces coated with rejected materials, or remove rejected materials from previously coated surfaces if, upon recoating with specified materials, the two coatings are not compatible.

3.7 CLEANING

A. At the end of each work day, remove rubbish, empty cans, rags, and other discarded materials from the site. After completing work, clean glass and spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

3.8 PROTECTION

A. Protect work of other trades, whether being coated or not, against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as acceptable to the Architect. Leave in an undamaged condition.
   1. Provide "Wet Paint" signs to protect newly coated finishes. Remove temporary protective wrappings provided by others to protect their work after completing coating operations.
   2. At completion of other trades' construction activities, touch up and restore damaged or defaced coated surfaces.

3.9 SPECIAL COATING SCHEDULE

A. Provide the following coating systems for substrates indicated:
   1. Where undercoats or other conditions show through final coat, apply additional coats until the cured film is of uniform coating finish, color, and appearance.

B. Concrete Masonry Units:
   1. Coating System: Provide two finish coats concrete masonry block filler.
   2. Filler Coat: Concrete masonry block filler.
   3. First and Second Coats: Epoxy coating.

C. Gypsum Drywall:
   1. Primer: Pro Mar 200 Zero VOC Latex Primer B28W2600.
   2. First and Second Coats: High-performance epoxy coating.

D. PT-1A: Epoxy Field Paint Walls
   1. First and Second Coats: Sherwin Williams SW-Waterbone Catalyzed Epoxy B73W311 or equal by BM, PPG, MAB

E. PT-2A, PT-4A, PT-5A, PT-6A, PT-7A and PT-8A: Epoxy Accent Walls
   1. First and Second Coats: Sherwin Williams SW-Waterbone Catalyzed Epoxy B73W311 or equal by BM, PPG, MAB

F. PT-3A: Epoxy Ceilings in Locker Rooms: 619 and 620 and Restrooms: 619A and 620A
   1. First and Second Coats: Sherwin Williams Macropoxy 646 Fast Cure Epoxy or equal by BM, PPG, MAB

END OF SECTION 09 97 00

SECTION 22 05 63
ELECTRICAL WORK

PART 1 GENERAL

1.01 DIVISION OF WORK

A This Contractor shall be responsible for the final electrical and the entire control connections and wiring to all equipment installed as part of his contract.

B Contractor shall review the electrical plans, where applicable, to establish points of connection and the extent of his electrical work to be provided in his contract.

C Unless otherwise noted, this Contractor shall wire from his equipment to disconnect switches, junction boxes, or panelboard circuit breakers as provided by the Electrical Contractor or as required by the existing conditions.

D All power and control wiring shall be in conduits. Refer to Division 26 specifications for conduit and conduit fittings.

E All electrical work shall be performed by a licensed electrician.

F All electrical work shall be in accordance with the State Building Code and all its supplements, the latest adopted edition of the National Electrical Code and the electrical specifications.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A All motor starters, disconnects, switches, relays, conduits, conductors, etc. that are required for a complete electrical power and/or control system shall conform to the requirements set forth by NEC.

B Refer to the plans for the type, size and electrical characteristics of the starters, disconnects, switches, relays, conductor and conduits.

C All conductors and conduits shall be sized as noted on the plans or as required per NEC.

D All individual motor starters for plumbing equipment (i.e., pumps, etc.) shall be furnished and installed under Division 22.

E All relays, actuators, timers, seven-day clocks, alternators, pressure, vacuum, float, flow, aquastats, freezestats, line and low voltage thermostats, thermals, remote selector switches, remote push-button stations, emergency break-glass stations, interlocking, disconnect switches beyond termination point, and other appurtenances associated with equipment under Division 22 shall be furnished, installed and wired under Division 22.

F “Built-in” disconnect switches shall be installed in a NEMA 3R enclosure, it must be appropriately horsepower rated, and it must be third-party listed for the application.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A All motor starters, disconnects, and switches shall be installed on or as close to the equipment they are serving as possible, or where shown on the plans.

B Electrical connection to equipment subject to vibration which develops objectionable noises shall be made from the conduit system with short lengths of flexible "Liquid-Tite" conduit. Connection to other equipment shall be made with rigid conduit.

C Conduits shall be run in a concealed space such as wall cavities, ceiling cavities, etc. except in the mechanical rooms where conduit may be run exposed.

END OF SECTION 22 05 63 22 05 63

SECTION 23 05 12
ELECTRICAL WORK

PART 1 GENERAL

1.01 DIVISION OF WORK

A This Contractor shall be responsible for the final electrical and the entire control connections and wiring to all equipment installed as part of his contract.

B Contractor shall review the electrical plans, where applicable, to establish points of connection and the extent of his electrical work to be provided in his contract.

C Unless otherwise noted, this Contractor shall wire from his equipment to disconnect switches, junction boxes, or panelboard circuit breakers as provided by the Electrical Contractor or as required by the existing conditions.

D All power and control wiring shall be in conduits. Refer to electrical specifications for conduit and conduit fittings.

E All electrical work shall be performed by a licensed electrician.

F All electrical work shall be in accordance with the State Building Code and all its supplements, the latest edition of the National Electrical Code and the electrical specifications.

PART 2 PRODUCT

2.01 GENERAL REQUIREMENTS

A All motor starters, disconnects, switches, relays, conduits, conductors, etc. that are required for a complete electrical power and/or control system shall conform to the requirements set forth by NEC.

B Refer to the plans for the type, size and electrical characteristics of the starters, disconnects, switches, relays, conductor and conduits.

C All conductors and conduits shall be sized as noted on the plans or As required per NEC.

D All individual motor starters for mechanical equipment (i.e., fans, pumps, etc.) shall be furnished and installed under Division 23.

E All relays, actuators, timers, seven-day clocks, alternators, pressure, vacuum, float, flow, pneumatic-electric, and electric-pneumatic switches, aquastats, freezestats, line and low voltage thermostats, thermals, remote selector switches, remote push-button stations, emergency break-glass stations, interlocking, disconnect switches beyond termination point, and other appurtenances associated with equipment under Division 23 shall be furnished, installed and wired under Division 23.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A All motor starters, disconnects, and switches shall be installed on or as close to the equipment they are serving as possible, or where shown on the plans.

B Electrical connection to equipment subject to vibration which develops objectionable noises shall be made from the conduit system with short lengths of flexible "Liquid-Tite" conduit. Connection to other equipment shall be made with rigid conduit.

C Conduits shall be run in a concealed space such as wall cavities, ceiling cavities, etc. except in the mechanical rooms where conduit may be run exposed.

END OF SECTION 23 05 12 23 05 12

RENOVATION

2018 APPENDIX B

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

(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: NORTHWOODS PARK MIDDLE SCHOOL -ADDITION & RENOVATION

Address: 904 SIOUX DR, JACKSONVILLE, NC Zip Code 28540

Owner/Authorized Agent: BRENDAN GARTNER Phone # 910.455.2211 (EXT 71310) E-Mail Brendan.Gartner@onslow.k12.nc.us

Owned By: ONSLOW COUNTY SCHOOLS ■ City/County ONSLOW ☐ Private -- ☐ State --

Code Enforcement Jurisdiction: ■ City JACKSONVILLE ☐ County -- ☐ State --

CONTACT: ED GORDON, SMITH SINNETT ARCHITECTURE

DESIGNER	FIRM	NAME	LICENSE#	TELEPHONE#	E-MAIL
Architectural	SMITH SINNETT ARCHITECTURE, PA	LES PARKER	12353	(919) 781.8582	lparker@smithsinnett.com
Civil	--	--	--	(---) ---.----	-
Electrical	PROGRESSIVE DESIGN COLLABORATIVE	JAMES BUTKOVICH	024651	(919) 790.9989	tbutkovich@pdcengineers.com
Fire Alarm	PROGRESSIVE DESIGN COLLABORATIVE	JAMES BUTKOVICH	024651	(919) 790.9989	tbutkovich@pdcengineers.com
Plumbing	PROGRESSIVE DESIGN COLLABORATIVE	STEVE CAMPBELL	025020	(919) 790.9989	scampbell@pdcengineers.com
Mechanical	PROGRESSIVE DESIGN COLLABORATIVE	STEVE CAMPBELL	025020	(919) 790.9989	scampbell@pdcengineers.com
Sprinkler-Standpipe	---	---	---	(---) ---.----	---
Structural	KAYDOS-DANIELS, PLLC	ANDREW WARNKE	031467	(919) 828.4966	andrew@kaydos-daniels.com
Retaining Walls >5' High				( )	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ☐ New Building ☐ Addition ■ Renovation
☐ 1st Time Interior Completions ☐ Shell/Core* ☐ Phased Construction*
*Contact the local inspection jurisdiction for possibilitional procedures and requirements.

2018 NC EXISTING BUILDING CODE: (check all that apply)
☐ Prescriptive ☐ Alteration Level I ☐ Historic Property
☐ Repair ■ Alteration Level II ☐ Change of Use
☐ Chapter 14 ☐ Alteration Level III

CONSTRUCTED: (date) 1964 **CURRENT OCCUPANCY(S)** (Ch.3): --

RENOVATED: (date) 2020 **PROPOSED OCCUPANCY(S)** (Ch.3): E

RISK CATEGORY (Table 1604.5): **Current:** -- **Proposed:** III

BASIC BUILDING DATA

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

Sprinklers: ■ No ☐ Partial ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D

Standpipes: ■ No Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry

Primary Fire District: ■ No ☐ Yes **Flood Hazard Area:** ■ No ☐ Yes

Special Inspections Required: ☐ Yes ■ No If special inspections are required, contact the local inspection jurisdiction for additional procedures and requirements.

2018 NC Administrative Code and Policies

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	RENOVATION/	NEW(SQ FT)	SUB-TOTAL
3rd Floor	--	--	--	--
2nd Floor	--	--	--	--
Mezzanine	--	--	--	--
1st Foor	40,223	10,385	--	-
Basement	--	--	--	--
TOTAL	40,223	10,385	--	-

ALLOWABLE AREA

Primary Occupancy Classification(s):

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

Accessory Occupancy Classification(s): --

Incidental Uses (Table 509): -- GROUP E- LABORATORIES NOT CLASSIFIED AS H

Special Uses (Chapter 4 - List Code Sections): --

Special Provisions: (Chapter 5 - List Code Sections): --

Mixed Occupancy: ■ No ☐ Yes Separation: -- Hr. Exception: --

■ Non-Separated Use (508.3)
☐ Separated Use (508.4) -See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each area of use divided by the allowable floor area for each use shall not exceed 1.

Actual Area of Occupancy A / Allowable Area of Occupancy A + Actual Area of Occupancy B / Allowable Area of Occupancy B + ... = ____ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,5]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]
1	E(FIRE AREA A)	13,000	14,500	--	--

1 Frontage area increases from Section 506.3 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____(P)
c. Ratio (F/P) = _____(F/P)
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase *I*f = 100[*F*/*P* - 0.25] x *W*/30 = _____(%)
2 Unlimited area applicable under conditions of Section 5.07.
3 Maximum Building Area = total number of stories in the building x E (maximum 3 stories (506.2).)
4 The maximum area of open parking garages must comply with Table 406.5.4 . The maximum area of air traffic control towers must comply with Table 412.3.1
5 Frontage increase is based on the unsprinklered area value in Table 506.2.

2018 NC Administrative Code and Policies

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE
Building Height in Feet (Table 504.3)	--	--	
Building Height in Stories (Table 504.4)	--	--	

1 Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	REQ'D	RATING PROVIDED (W / ____" REDUCTION)	DETAIL # AND SHEET #	DESIGN# FOR RATED ASSEMBLY	DESIGN # FOR RATED PENETRATION	DESIGN # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses	>30	0 (N/C)	0 (N/C)				
Bearing Walls							
Exterior	>30	0 (N/C)	0 (N/C)				
North							
East							
West							
South							
Interior	>30	0 (N/C)	0 (N/C)				
Nonbearing Walls and Partitions	>30	0 (N/C)	0 (N/C)				
Exterior walls							
North							
East							
West							
South							
Interior walls and partitions	>30	0 (N/C)	0 (N/C)				
Floor Construction Including supporting beams and joists		0 (N/C)	0 (N/C)				
Floor Ceiling Assembly		0 (N/C)	0 (N/C)				
Columns Supporting Floors		0 (N/C)	0 (N/C)				
Roof Construction, including supporting beams and joists		0 (N/C)	0 (N/C)				
Roof Ceiling Assembly		0 (N/C)	0 (N/C)				
Columns Supporting Roof		0 (N/C)	0 (N/C)				
Shaft Enclosures - Exit		0 (N/C)	0 (N/C)				
Shaft Enclosures - Other							
Corridor Separation		1	1	G0-04, G0-05 U419, U906	CAJ1044, WL1001		
Occupancy/Fire Barrier Seperation		0 (N/C)	0 (N/C)				
Party/Fire Wall Separation		0 (N/C)	0 (N/C)				
Smoke Barrier Separation		0 (N/C)	0 (N/C)				
Smoke Partition		0 (N/C)	0 (N/C)				
Tenant/Dwelling Unit/ Sleeping Unit Seperation		0 (N/C)	0 (N/C)				
Incidental Use Separation		1	1	G0-04, G0-05 U419, U906	CAJ1044, WL1001		

* Indicate section number permitting reduction

2018 NC Administrative Code and Policies

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
WORK AREA > 30'	NO LIMIT		

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ■ Yes (--)
Exit Signs: ☐ No ■ Yes
Fire Alarm: ☐ No ■ Yes
Smoke Detection Systems: ☐ No ■ Yes Partial (--)
Carbon Monoxide Detection: ☐ No ■ Yes (--)

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: G1-02, G1-03

■ Fire and/or smoke rated wall locations (Chapter 7)
■ Assumed and real property line locations (if not on the site plan)
■ Exterior wall opening area with respect to distance to assumed property lines (705.8)
■ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
■ Occupant loads for each area
■ Exit access travel distances (1017)
■ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
■ Dead end lengths (1020.4)
■ Clear exit widths for each exit door
■ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
■ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
■ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
☐ Location of doors with electromagnetic egress locks (1010.1.10)
☐ Location of doors equipped with hold-open devices
■ Location of emergency escape windows (1030)
■ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

Section/Table/Note	Title
N/A	

2018 NC Administrative Code and Policies

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

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

ACCESSIBLE PARKING
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PAKRING SPACES		# OF ACCESSIBLE SPACES PROVIDED			TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	
	54	64	5			5
TOTAL	54	64	5			5

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATERCLOSETS			URINALS	LAVATORIES			SHOWERS/ TUBS	DRINKING FOUNTAINS	
		M	F	U		MALE	FEMALE	UNISEX		REGULAR	ACCESSIBLE
SPACE	EXIST'G										
	NEW	-	-	2	-	-	-	2	-	1	1
	REQ'D	-	-	-	-	-	-	-	-	-	-

NOTES: 1. SCHEDULED PLUMBING FIXTURES ARE IN ADDITION TO EXISTING PLUMBING FIXTURE QUANTITIES.
2. INCREASED OCCUPANT LOAD OF THE STORY IS LESS THAN 20 PERCENT (NCSBC:EBC §10.1).

SPECIAL APPROVALS

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

CITY OF JACKSONVILLE, NCDPI

2018 NC Administrative Code and Policies

ENERGY SUMMARY

ENERGY REQUIREMENTS:

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

Existing building envelope complies with code: ☐ (If checked the remainder of this section is not applicable.)

Exempt Building: ☐ Provide code or statutory reference:

Climate Zone: ■ 3A ☐ 4A ☐ 5A

Method of Compliance:
Energy Code ☐ Performance ■ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
Other ☐ Performance (specify source) _____

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly: --
U-Value of total assembly: --
R-Value of insulation: --
Skylights in each assembly: --
U-Value of skylight: --
total square footage of skylights in each assembly: --

Exterior Walls (each assembly)
Description of assembly: --
U-Value of total assembly: --
R-Value of insulation: --
Openings (windows or doors with glazing) 2018 NCSBC-EBC: 801.3 EXC 1 - WINDOWS MAY BE ADDED WITHOUT REQUIRING COMPLIANCE WITH THE LIGHT AND VENTILATION REQUIREMENTS OF THE IBC.
U-Value of assembly: --
Solar heat gaincoefficient: --
Projection factor: --
Door R-Values: --

Walls below grade (each assembly)
Description of assembly: --
U-Value of total assembly: --
R-Value of total assembly: --

Floors over unconditioned space (each assembly)
Description of assembly: --
U-Value of total assembly: --
R-Value of total assembly: --

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

2018 NC Administrative Code and Policies

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Wind (I_w) 1.0; Snow (I_s) 1.0; Seismic (I_e) 1.0

Live Loads: Roof 20 psf; Mezzanine -- psf; Floor 100 psf

Ground Snow Load: 15 psf

Wind Load: Basic Wind Speed 146 Vult (113 Nom) mph (ASCE-7); Exposure Category B

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D
Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Accelerations S_s 0.151 %g S_1 0.071 %g
Site Classification (ASCE 7) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data
Basic structural system (check one)
☐ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum
Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☐

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) 2000 psf
Presumptive Bearing capacity _____ psf
Pile size, type, and capacity _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)
MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
Winter dry bulb: 20.0 DEGREES F
Summer dry bulb: 94.6 DEGREES F

Interior design conditions
Winter dry bulb: 70 DEGREES F
Summer dry bulb: 75 DEGREES F
Relative humidity: 55%

Building heating load: 500 MBH

Building cooling load: 39.1 TONS

Mechanical Spacing Conditioning System
Unitary
Description of unit: REFER TO SCHEDULE OF DRAWINGS
Heating efficiency: REFER TO SCHEDULE OF DRAWINGS
Cooling efficiency: REFER TO SCHEDULE OF DRAWINGS
Size category of unit: REFER TO SCHEDULE OF DRAWINGS
Boiler
Size category If oversized, state reason.: N/A
Chiller
Size category If oversized, state reason.: N/A

List equipment efficiencies: REFER TO EQUIPMENT SCHEDULES FOR UNIT EFFICIENCIES.

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)
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 - SEE FIXTURE SCHEDULE.
Number of lamps in fixture - SEE FIXTURE SCHEDULE.
Ballast type used in the fixture - SEE FIXTURE SCHEDULE.
Number of ballasts in fixture - SEE FIXTURE SCHEDULE.
Total wattage per fixture - SEE FIXTURE SCHEDULE.
Total interior wattage specified vs. allowed (whole building or space by space) - 9,038 WATTS VERSUS 11,738 WATTS (WHOLE BUILDING)
Total exterior wattage specified vs. allowed - 412 WATTS VERSUS 900 WATTS

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)

☐ C406.2 More Efficient HVAC Equipment Performance
☐ C406.3 Reduced Lighting Power Density
☐ C406.4 Enhanced Digital Lighting Controls
☐ C406.5 On-Site Renewable Energy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating

2018 NC Administrative Code and Policies

smith sinnett ARCHITECTURE
T 919 781 8582
F 919 781 3979
4600 Lake Boone Trail
Suite 205
Raleigh, NC 27607
info@smithsinnett.com

CONSTRUCTION DOCUMENTS

THIS DRAWING IS FORMATTED TO BE PRINTED ON A 36" X 42" SHEET

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
GYMNASIUM & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

DRAWN BY: AC, MA
CHECKED BY: FJ, LP

BUILDING CODE SUMMARY - RENOVATION

2022035 11 MAR 2024

G0-03

W-L-1001

12" = 1'-0"

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

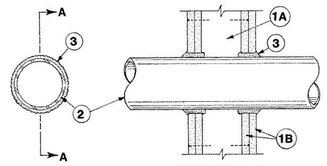
System No. W-L-1001
June 15, 2005

F Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings — 0, 1, 2, 3, and 4 Hr (See Item 3)

L Rating At Ambient — less than 1 CFM/sq ft

L Rating At 400 F — less than 1 CFM/sq ft



SECTION A–A

1. **Wall Assembly —** The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs —** Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

B. **Gypsum Board* —** Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm).

2. **Through-Penetrant —** One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in / (0 mm). (point contact) to max 2 in. (51 mm) Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. **Steel Pipe —** Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in (305 mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

C. **Conduit —** Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in (102 mm) diam (or smaller) steel electrical metallic tubing

D. **Copper Tubing —** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing

E. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

F. **Through Penetrating Product* —** Flexible Metal Piping The following types of steel flexible metal gas piping may be used:

1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
OMEGA FLEX INC

2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
GASTITE, DIV OF TITEFLEX

3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
WARD MFG L L C

3. **Fill, Void or Cavity Material* — Caulk or Sealant —** Min 5/8 , 1-1/4,1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In (mm)	F Rating Hr	T Rating Hr
1 (25)	1 or 2	0+, 1 or 2
1 (25)	3 or 4	3 or 4
4 (102)	1 or 2	0
6 (152)	3 or 4	0
12 (305)	1 or 2	0

+When copper pipe is used, T Rating is 0 h.

3M COMPANY — CP 25WB+ or FB-3000 WT.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2005-06-15

C-AJ-1044

12" = 1'-0"

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

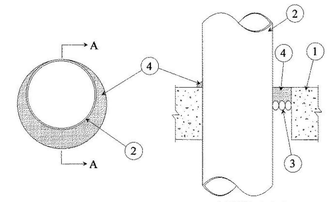
XHEZ - Through-penetration Firestop Systems
XHEZ7 - Through-penetration Firestop Systems Certified for Canada

See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. C-AJ-1044
November 24, 2022

ANSI/UL1479	CAN/ULC S115
Assembly Ratings — 2, 3, and 4 Hr (See Item 2A and 4)	F Ratings — 2, 3, and 4 Hr (See Item 2A and 4)
L Rating at Ambient — Less than 1 CFM/Sq Ft –	FT Ratings — 0 Hr
L Rating at 400°F — Less than 1 CFM/Sq Ft	FH Ratings — 0 Hr
W Rating - Class 1 (See Item 4)	FTH Ratings — 0 Hr
	L Rating at Ambient — Less than 5.1 L/s/m^2
	L Rating at 204°C — Less than 5.1 L/s/m^2
	W Rating – Class 1 (See Item 4)



SECTION A-A

1. **Floor or Wall Assembly —** Lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Except as noted in table under Item 4, min thickness of solid concrete floor or wall assembly as 4-1/2 in. (114 mm). Floor may also be constructed of any min 6 in.(152 mm) thick UL Classified hollow core **Precast Concrete Units***. When floor is constructed of hollow core precast concrete units, packing material (Item 3) and caulk fill material (Item 4) to be installed symmetrically on both sides of floor, flush with floor surface. Wall assembly may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening in solid lightweight or normal weight concrete floor is 32 in. (813 mm). Max diam of opening in floor constructed of hollow-core precast concrete units is 7 in. (178 mm)
See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

1A. **Steel Sleeve —** (Optional, Not Shown) - Nom 16 in. (406 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Sleeve may extend a max of 2 in. (51 mm) above top of floor or beyond either surface of wall. As an alternate, nom 16 in. (406 mm) diam (or smaller) min 0.028 (0.71 mm) thick galvanized sheet steel sleeve cast or grouted into floor or wall assembly flush with floor or wall surfaces.

2. **Through Penetrants —** One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Min annular space between pipe or conduit and edge of through opening is 0 in. (point contact). Max annular space to be as shown in the table in Item 4. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. **Steel Pipe —** Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit —** Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit.

D. **Conduit —** Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.

E. **Copper Tubing —** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tube.

F. **Copper Pipe —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. **Packing Material —** Polyethylene backer rod or nom 1 in. (25 mm) thickness of tightly-packed mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of caulk fill material (Item 4).

3A. **Forming Material* —** As an alternate to the packing material in Item 3, nom 4 in. (102 mm) wide strips of min 1/2 in (13 mm) thick compressible mat to be stacked to a thickness greater than the width of the annular space and compression-fitted, edge-first, to fill the annular space to a min 4 in. (102 mm) depth. As an option, the strips of min 1/2 in. (13mm) thick compressible mat may be folded in half, lengthwise, and stacked to a thickness greater than the width of the annular space and compression-fitted, edge-first, to fill the annular space to a min 2 in. (51 mm) depth. Top of forming material to be recessed from top surface of floor or from both surfaces of wall as necessary to accommodate the required thickness of caulk fill material.
3M COMPANY — Fire Barrier Packing Material

4. **Fill, Void or Cavity Material* — Caulk, Sealant —** Applied to fill the annular space flush with top surface of floor. In wall assemblies, required caulk thickness to be installed symmetrically on both sides of wall, flush with wall surface. At point contact location between penetrant and sleeve or between penetrant and concrete, a min 1/4 in. (6 mm) diam bead of caulk shall be applied at top surface of floor and at both surfaces of wall. The hourly F Ratings and the min required caulk thicknesses are dependent upon a number of parameters, as shown in the following table:

Min Floor or Wall Thkns In.	Nom Pipe Tube or Conduit Diam In.	Max Annular Space In.	Min Caulk Thkns In.	F Rating Hr
2-1/2 (64)	1/2-12 (13-305)	1-3/8 (35)	1/2 (13)	2
2-1/2 (64)	1/2-12 (13-305)	3-1/4 (83)	1 (25)	2
4-1/2 (114)	1/2-6 (13-152)	1-3/8 (35)	1/4 (6) (a)	2
4-1/2 (114)	1/2-12 (13-305)	1-1/4 (32)	1/2 (13)	3
4-1/2 (114)	1/2-20 (13-508)	2 (51)	1 (25)	3
4-1/2 (114)	1/2-20 (13-508)	2 (51)	1 (25)	3
4-1/2 (114)	1/2-12 (13-305)	3-1/4 (83)	1 (25)	3
4-1/2 (114)	22-30 (558-762)	2 (51)	2 (51)	3
5-1/2 (140)	1/2-6 (13-152)	1-3/8 (35)	1 (25) (b)	4

(a)Min 2 in (51 mm) thickness of mineral wool batt insulation or forming material (Item 3A) required in annular space.

(b)Min 1 in. (25 mm) thickness of mineral wool batt insulation required in annular space on both sides of floor or wall assembly. Min 1 in.(25 mm) thickness of caulk to be installed flush with each surface of floor or wall assembly.

3M COMPANY — CP 25WB+ or FB-3000 WT.

(Note - W Rating applies only when FB-3000 WT is used.)

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2022-11-24

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CONSTRUCTION DOCUMENTS

Smith Sinnett Architecture, P.A. 2024

THIS DRAWING IS FORMATTED TO BE PRINTED ON A 36" X 42" SHEET

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
GYMNASIUM & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

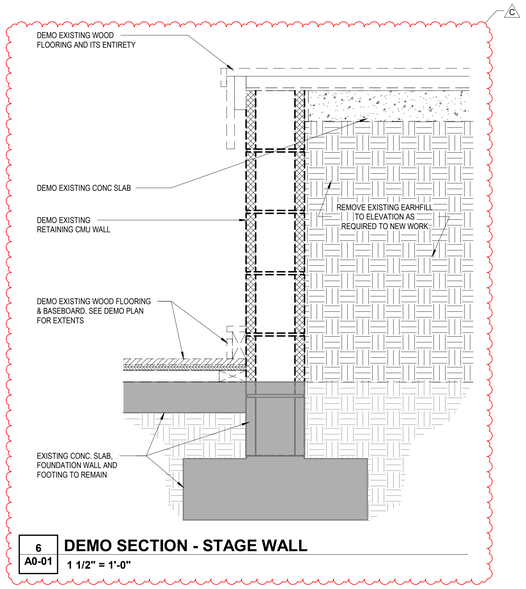
ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

DRAWN BY: AC, MA
CHECKED BY: FJ, LP

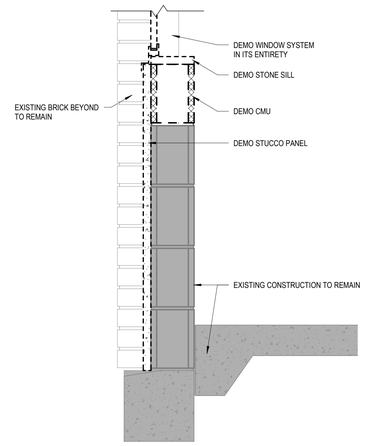
UL DESIGN

2022035 11 MAR 2024

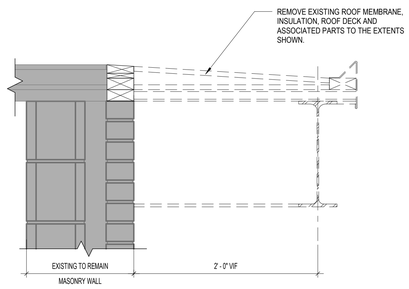
G0-05



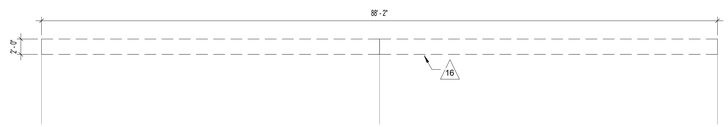
6 / A0-01 DEMO SECTION - STAGE WALL
1 1/2" = 1'-0"



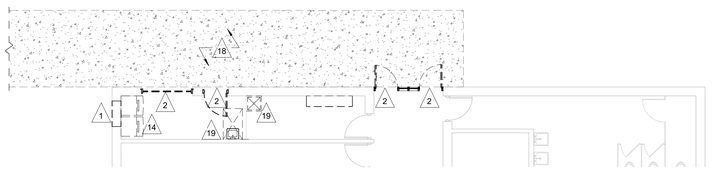
5 / A0-01 DEMO @ EXISTING OPENING FOR NEW SILL
1 1/2" = 1'-0"



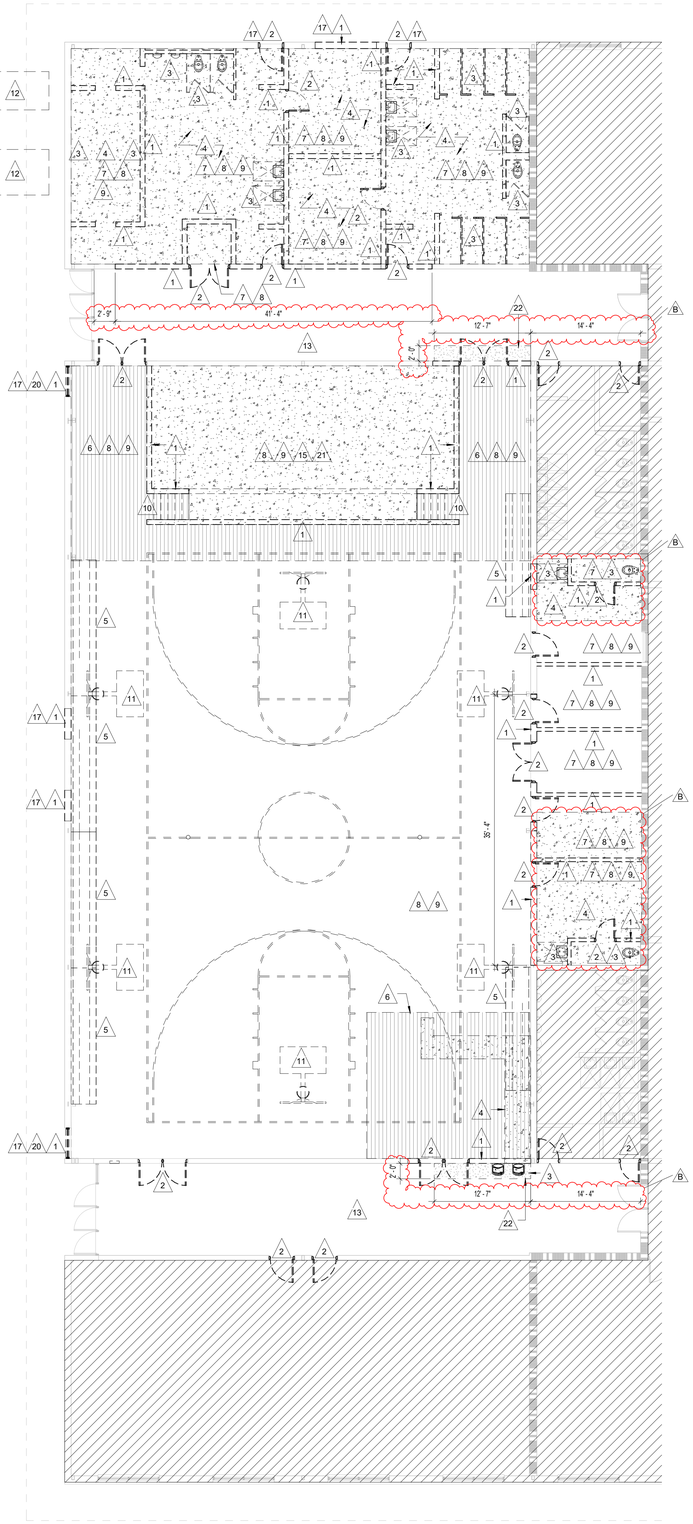
4 / A0-01 DEMO SECTION - GABLE END
1 1/2" = 1'-0"



3 / A0-01 ROOF DEMO PLAN - BLDG 2
1/8" = 1'-0"



2 / A0-01 DEMO PLAN - BUILDING 2
1/8" = 1'-0"



1 / A0-01 DEMO PLAN - EXISTING GYM
1/8" = 1'-0"

GENERAL DEMOLITION NOTES:

1. ALL CONDITIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR WHERE DEMOLITION IS TO OCCUR. THE CONTRACTOR SHALL NOTIFY ARCHITECT OF ANY INCONSISTANCIES IN WRITING PRIOR TO STARTING ANY WORK.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WEEKLY AND/OR DAILY REMOVAL AND PROPER DISPOSAL OF ALL DEBRIS ACCUMULATED DURING DEMOLITION AND CONSTRUCTION.
3. REMOVAL OF HAZARDOUS MATERIAL AND DEBRIS SHALL BE AS FOLLOWS:
   A. ALL HAZARDOUS SHALL BE REMOVED BY THE CONTRACTOR PRIOR TO PROJECT COMPLETION. CONTRACTOR SHALL FOLLOW ALL THE REQUIREMENTS TO LEGALLY DISPOSE OF ALL HAZARDOUS MATERIALS.
   B. THE CONTRACTOR IS REQUIRED TO PERFORM ABATEMENT AND REMEDIATION ACTIVITIES INSIDE NEGATIVEAIR PRESSURIZED ENCLOSURES.
   C. ABATEMENT OF ALL HAZARDOUS MATERIALS SHALL OCCUR PRIOR TO BUILDING DEMOLITION. BOTH ACTIVITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE PROJECT SHALL BE PHASED SUCH THAT DEMOLITION CAN FOLLOW ABATEMENT IN THE FIRST AREA OF THE BUILDING WHILE ABATEMENT IS OCCURING IN THE NEXT AREA OF THE BUILDING.
   ASBESTOS - REFER TO ASBESTOS REMOVAL DESIGN AND SPECIFICATIONS
   LEAD - REFER TO LEAD CLEANING DESIGN AND SPECIFICATIONS
   BULBS - FLUORESCENT, MERCURY VAPOR, SODIUM, ETC. BULBS WILL BE HANDLED AS UNIVERSAL WASTE. UPON REMOVAL FROM LIGHTING DEVICES, THEY IMMEDIATELY MUST BE PUT INTO APPROPRIATE CONTAINERS AND LABELED AS/USED LAMPS. A UNIVERSAL WASTE LABEL WILL BE ATTACHED AND ACCUMULATION DATE FILLED IN ON THE LABEL. BOX MUST BE CLOSED AND TAPED SHUT AT ALL TIMES UNLESS BULBS ARE BEING ADDED. BULBS UNLESS BROKEN SHALL BE RECYCLED. ANY BROKEN OR DAMAGED BULBS WILL BE CONTAINERIZED IN PLASTIC OR METAL CONTAINERS FOR DISPOSAL AS HAZARDOUS WASTE
   BALLAST - ALL BALLAST WILL BE CONTAINERIZED AND RECYCLED
4. ANY FLOOR, CEILING, WALL OR OTHER MATERIALS INCLUDING FINISHES IN AREAS TO REMAIN ARE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT. ANY MATERIALS DAMAGED DURING CONSTRUCTION OR DEMOLITION, SHALL BE RETURNED TO THEIR ORIGINAL STATE, OR IMPROVED AS INDICATED BY THE OWNER OR ARCHITECT, OR REPLACED WITH A NEW MATERIAL TO MATCH ADJACENT MATERIALS, TYPICAL.
5. CONTRACTOR SHALL PATCH AND REPAIR ALL EXISTING SURFACES TO REMAIN AND MATERIALS EXPOSED TO VIEW WHERE OTHER ITEMS OR MATERIALS HAVE BEEN REMOVED.
6. REFER TO PLUMBING, MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL AND COMPLETE SCOPE OF DEMOLITION THAT MAY OR MAY NOT BE NOTED ON THE ARCHITECTURAL DEMOLITION PLAN AND NOTES.
7. CONTRACTOR SHALL REMOVE ALL WALL MOUNTED FIXTURES OR ITEMS UNLESS OTHERWISE NOTED. ALL WALLS SHALL BE REPAIRED, AND VOIDS FILLED AFTER FIXTURE REMOVAL. ALL FINISHES SHALL MATCH ADJACENT SURFACES. REMOVE ALL FOREIGN MATTER, SHELVING, LOOSE DEBRIS INCLUDING TAPE, ADHESIVE, NAILS, SCREWS, ETC. FROM WALLS. SCRAPE, WIRE BRUSH, AND SAND SMOOTH. WASH ALL PAINTED SURFACES TO REMOVE ANY "FILM OR RESIDUE", PREPARE SURFACES TO PROVIDE A MAXIMUM DEGREE OF NEW PAINT ADHESION. PATCH AND REPAIR ALL VOIDS IN PREPARATION FOR NEW FINISHES.
8. ALL FIXTURES, WALLS AND PORTIONS OF WALLS SHOWN AS DASHED LINES OR LABELED SHALL BE DEMOLISHED UNLESS ELEMENTS REMOVED OR REPLACED. CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND BRACING AND IS RESPONSIBLE FOR ANY FAILURE DUE TO LACK OF PROPER BRACING.
9. DURING THE BIDDING PROCESS, CONTRACTORS SHALL TAKE NOTE OF EXISTING PLUMBING MECHANICAL, AND ELECTRICAL ITEMS IN AREAS TO BE RENOVATED. ITEMS INCLUDE BUT ARE NOT LIMITED TO WIRES, CONDUITS, PIPES, THERMOSTATS, FIRE ALARM DEVICES, PANEL CANS, ETC. THESE HAVE BEEN IDENTIFIED IN THE DEMOLITION DRAWINGS FOR ARCHITETURE, PLUMBING, MECHANICAL, AND/OR ELECTRICAL. FOR ITEMS NOT SHOWN, CONTRACTOR SHALL WORK WITH THE ARCHITECT AND OWNER TO DETERMINE IF THE ITEM IS STILL IN USE ITEMS WHICH ARE NOTED TO BE REMOVED AND STORED FOR LATER REINSTALLATION SHALL BE TAGGED AND LISTED ON AN ITEMIZED LIST GIVEN TO THE OWNER AND ARCHITECT.
10. THE GENERAL CONTRACTOR SHALL COORDINATE THE DEMOLITION OF THE EXISTING BUILDING AREAS WITH THE ARCHITECT AND OWNER. THE CONTRACTOR SHALL COORDINATE AFTER HOURS WORK AND OBTAIN WRITTEN OWNER PERMISSION FOR NIGHT AND WEEKEND WORK.
11. CONTRACTOR SHALL ENSURE WATER-TIGHT INTEGRITY OF THE TEMPORARY ENCLOSURE SYSTEMS AND MAINTAIN THEM THROUGH THE ENTIRETY OF CONSTRUCTION TO PREVENT THE INTRUSION OF WATER AND THE ELEMENTS INTO THE BUILDING.
12. ALL EXISTING FIRE EXTINGUISHER AND BRACKETS SHALL REMAIN AND BE INSTALLED IN THEIR CURRENT LOCATION UNLESS SHOWN ON THE PLANS TO RELOCATE.
13. CONTRACTOR SHALL PATCH AND FILL IN ANY VOIDS LEFT FROM THE DEMOLITION OF ANY PLUMBING, MECHANICAL, OR ELECTRICAL ITEMS. REFER TO PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS FOR COMPLETE SCOPE OF DEMOLITION.

DEMOLITION SPECIFIC AREA NOTES:

1	REMOVE EXISTING WALL TO THE EXTENTS SHOWN. DEMOLITION SHALL BE SUFFICIENT ENOUGH TO INSTALL A NEW LINTEL OVER NEW OPENINGS. PATCH AND REPAIR SURROUNDING MASONRY AS NECESSARY FOR NEW WORK. REFER TO STRUCTURAL FOR LINTEL DETAILS. VERIFY ALL OPENING DIMENSIONS IN FIELD CUT SHOWN AS DIAGRAMMATIC. CONTRACTOR SHALL CUT AS REQUIRED FOR NEW WORK. SALVAGE EXTERIOR BRICK FOR RE-USE.
2	REMOVE EXISTING DOOR, FRAME, TRANSOM (IF APPLICABLE) & HARDWARE IN ITS ENTIRETY. . PREPARE EXISTING WALL TO RECEIVE A NEW FRAME AND PREPARE SURROUNDING AREA TO RECEIVE NEW FINISH SPECIFIED OR IF NO FINISH IS SPECIFIED MATCH EXISTING. PROVIDE DEMOLITION MASONRY TOOTHING AS NECESSARY TO INSTALL NEW FRAME AND/OR NEW WALL.
3	REMOVE EXISTING PLUMBING FIXTURE, TOILET PARTITIONS, TOILET ACCESSORIES SHOWER, SINK, TOILETS, URINALS, WATER COOLER, AND ASSOCIATED PARTS IN ITS ENTIRETY. REFER TO PLUMBING FOR COMPLETE SCOPE OF PLUMBING DEMOLITION. THE CONTRACTOR SHALL DISPOSE OF THE ITEMS. CAP ALL UTILITIES BELOW SLAB. PATCH AND REPAIR SLAB AND WALLS. FILL ANY PENETRATIONS FROM PLUMBING PIPES IN THE SLAB.
4	SAW CUT AND REMOVE EXISTING SLAB AS REQUIRED FOR INSTALLATION OF NEW SERVICES AND EQUIPMENT. COORDINATE FULL EXTENT OF SLAB REMOVAL WITH ALL DISCIPLINES PRIOR TO SAW CUTTING. REFER TO 14 / A7-20) FOR SLAB REPAIR DETAIL.
5	REMOVE EXISTING BLEACHERS AND ASSOCIATED PARTS IN THEIR ENTIRETY.
6	REMOVE EXISTING WOOD FLOORING, RUBBER BASE. PAINT STRIPES, LINE, AND BORDERS. REMOVE EXISTING CONCRETE SEALER AS NECESSARY OR REQUIRED. POUR IN NEW CONCRETE SLAB ON TOP OF EXISTING SLAB. LEVEL FLOOR AND FILL ANY ANY VOIDS NECESSARY. CLEAN AND PREP AREA FOR INSTALLATION OF NEW FLOOR FINISHES.
7	REMOVE EXISTING BASE, CARPET, VCT, CERAMIC TILE (RESTROOMS) AND/OR ANY OTHER FLOOR FINISH IN ITS ENTIRETY. PREPARE FLOORING TO RECEIVE NEW FINISHES PER SPECIFICATION AND THESE CONSTRUCTION DRAWINGS.
8	REMOVE EXISTING LAY-IN CEILING TILE, GYPSUM CEILING, TILE CEILING, FRAMING, GRID, HANGERS AND ASSOCIATED PARTS IN ITS ENTIRETY. PREP AREA TO RECEIVE NEW CEILING.
9	REMOVE EXISTING LIGHT FIXTURES AND REPLACE WITH NEW LIGHT FIXTURES. REFER TO ELECTRICAL FOR COMPLETE SCOPE OF DEMOLITION. REFER TO GENERAL DEMO NOTES FOR REQUIREMENTS ON BULB AND BALLAST DISPOSAL.
10	REMOVE EXISTING STAIRS AND ITS ENTIRETY. CLEAN AND PREP ARE TO RECEIVE NEW FLOOR FINISH.
11	REMOVE EXISTING BASKETBALL BACKSTOP UNIT AND RETURN TO OWNER
12	REMOVE EXISTING MECHANICAL
13	REMOVE AND REPLACE CEILING AS NECESSARY TO SEAL ALL PENETRATIONS ALONG FIRE SEPARATION
14	REMOVE EXISTING APPLIANCES AND TURNOVER TO THE OWNER.
15	REMOVE EXISTING EARTHWORK TO ELEVATION AS REQUIRED BY NEW WORK.
16	REMOVE EXISTING ROOF MEMBRANE, INSULATION, ROOF DECK, STRUCTURE AND ASSOCIATED PARTS TO THE EXTENTS SHOWN.
17	REMOVE, PRESERVE, AND REINSTALL EXISTING SOFFIT AS REQUIRED FOR INSTALLATION OF NEW WINDOW.
18	REMOVE EXISTING CONCRETE PAVING, SIDEWALK, CURB, AND GUTTER IN ITS ENTIRETY TO THE EXTENTS SHOWN.
19	REMOVE, SALVAGE AND REINSTALL EXISTING MECHANICAL, ELECTRICAL AND PLUMBING FIXTURES.
20	REMOVE AND REPLACE EXISTING WINDOWS
21	REMOVE EXISTING CONCRETE SLAB AND WOOD FLOORING. POUR IN NEW CONCRETE SLAB. LEVEL FLOOR AND FILL ANY VOIDS NECESSARY. CLEAN AND PREP AREA FOR INSTALLATION OF NEW FLOOR FINISH.
22	REMOVE EXISTING TERRAZO FLOORING TO THE EXTENTS SHOWN. GC TO SALVAGE A PIECE OF EXISTING TERRAZO AND TURN OVER TO ARCHITECT TO VERIFY THICKNESS.

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CONSTRUCTION DOCUMENTS

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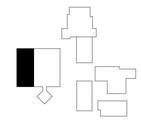
ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
GYMNASIUM & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
B	03/29/2024	ADDENDUM 2
C	04/04/2024	ADDENDUM 3



KEY PLAN: NO SCALE

DRAWN BY: AC, MA
CHECKED BY: FJ, LP

DEMOLITION PLAN - RENOVATION

2022035 11 MAR 2024

A0-01

WALL TYPE LEGEND

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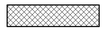
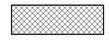
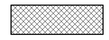
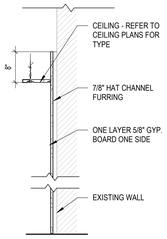
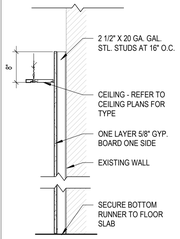
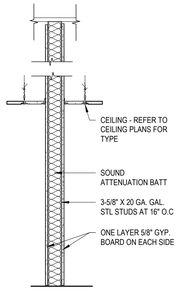
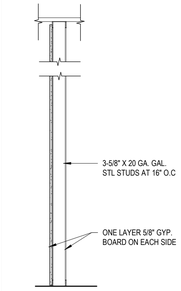
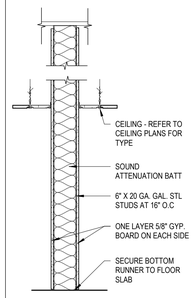
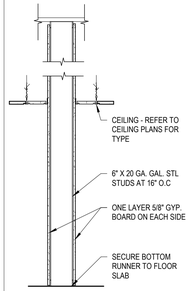
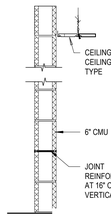
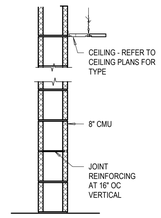
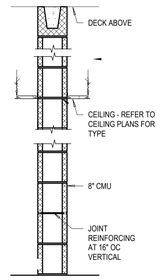
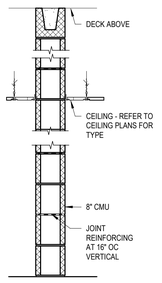
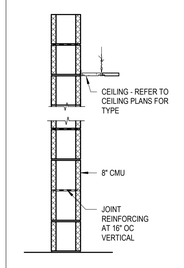
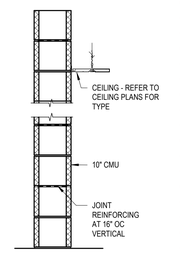
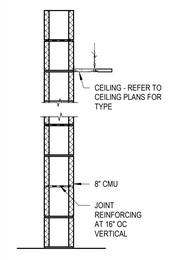
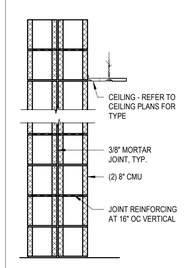
SYMBOL									
									
DESCRIPTION	7/8" HAT CHANNEL FURRING, 8" ABOVE CEILING WITH 5/8" GYP BOARD ON ONE SIDE	2-1/2" METAL STUD, 8" ABOVE CEILING WITH 5/8" GYP BOARD ON ONE SIDE	3 5/8" METAL STUD UP TO BOTTOM OF DECK ABOVE WITH ONE LAYER 5/8" GYP BOARD ON EACH SIDE	3 5/8" METAL STUD UP TO BOTTOM OF DECK ABOVE WITH ONE LAYER 5/8" GYP BOARD ON ONE SIDE	6" METAL STUD UP TO BOTTOM OF DECK ABOVE WITH ONE LAYER 5/8" ABUSE RESISTANT GYP BOARD ON EACH SIDE	1HR FIRE BARRIER - 6" METAL STUD UP TO BOTTOM OF DECK ABOVE WITH ONE LAYER 5/8" GYP BOARD ON EACH SIDE	6" CMU WALL UP TO 8" ABOVE CEILING	8" CMU WALL UP TO 8" ABOVE CEILING	8" [illegible] UP TO BOTTOM OF DECK
UL DESIGN # HEAD	NON-RATED	NON-RATED	NON-RATED	NON-RATED	NON-RATED	HW-D-0001	NON-RATED	NON-RATED	NON-RATED
WALL	NON-RATED	NON-RATED	NON-RATED	NON-RATED	NON-RATED	U419	NON-RATED	NON-RATED	NON-RATED
BASE	NON-RATED	NON-RATED	NON-RATED	NON-RATED	NON-RATED		NON-RATED	NON-RATED	NON-RATED
PENETRATIONS	NON-RATED	NON-RATED	NON-RATED	NON-RATED	NON-RATED	WL1001	NON-RATED	NON-RATED	NON-RATED

NOTES:

1. ALL CMU WALLS GOING UP TO BOTTOM OF DECK ARE TO PROVIDE A 1" GAP FOR DEFLECTION.
2. FILL 1" GAP WITH MINERAL WOOL INSULATION ALONG THE ENTIRE LENGTH OF WALL
3. ON RATED WALLS SEAL ENDS WITH SPRAY APPLIED FIRE SEALANT BOTH SIDES ALONG THE ENTIRE LENGTH OF WALL
4. AT ALL METAL STUD WALLS TERMINATING AT BOTTOM OF DECK PROVIDE A DEFLECTION TRACK SECURED TO THE UNDERSIDE OF THE DECKING, NEST TOP TRACK BUT DO NOT ATTACH TO DEFLECTION TRACK
5. SEE FINISH SCHEDULE FOR WALL, FLOOR BASE AND CEILING TYPES AND FINISHES
6. REFER TO STRUCTURAL DRAWINGS FOR LOCATION OF REINFORCING, BOND BEAMS, BRACING, ETC.

WALL TYPE LEGEND

MARKER	M8U.1	M8D.1	M10D.1	M8D.2	M16D
SYMBOL					
					
DESCRIPTION	1 HOUR FIRE BARRIER - 8" CMU WALL UP TO BOTTOM OF DECK	1HR FIRE PARTITION - 8" CMU WALL , REFER TO DRAWINGS	1HR FIRE PARTITION - 10" CMU WALL, REFER TO DRAWINGS	2 HOUR BARRIER - 8" CMU WALL , REFER TO DRAWINGS	(2) 8" CMU WALL UP TO 16'-8" A.F.F.
UL DESIGN # HEAD	UL DESIGN #U906 - 1 HOUR	U904	U904	U904	NON- RATED
WALL	U906				NON- RATED
BASE	U906				NON- RATED
PENETRATIONS	CAJ1044				NON- RATED

NOTES:

1. ALL CMU WALLS GOING UP TO BOTTOM OF DECK ARE TO PROVIDE A 1" GAP FOR DEFLECTION.
2. FILL 1" GAP WITH MINERAL WOOL INSULATION ALONG THE ENTIRE LENGTH OF WALL
3. ON RATED WALLS SEAL ENDS WITH SPRAY APPLIED FIRE SEALANT BOTH SIDES ALONG THE ENTIRE LENGTH OF WALL
4. AT ALL METAL STUD WALLS TERMINATING AT BOTTOM OF DECK PROVIDE A DEFLECTION TRACK SECURED TO THE UNDERSIDE OF THE DECKING, NEST TOP TRACK BUT DO NOT ATTACH TO DEFLECTION TRACK
5. SEE FINISH SCHEDULE FOR WALL, FLOOR BASE AND CEILING TYPES AND FINISHES
6. REFER TO STRUCTURAL DRAWINGS FOR LOCATION OF REINFORCING, BOND BEAMS, BRACING, ETC.

WALL TYPE NAMING CONVENTION

M8AU.1

TYPE OF CORE
- C CONCRETE
- F FURRING
- M MASONRY
- S METAL STUD
- W WOOD
- E EXISTING

WIDTH OF CORE
- 1 7/8" FURRING CHANNEL
- 4 4" MASONRY, 3 5/8" METAL STUD
- 5 4" METAL STUD
- 6 6" MASONRY, 6" METAL STUD
- 8 8" MASONRY, 8" METAL STUD
- 10 10" MASONRY
- 12 12" MASONRY, 12" MET
- -- VARIES

ITERATION - SEE WALL TYPES LEGEND
- NONE IF NO LAYERS OR FINISHES
- A (EX: 1 LAYER GWB ON EACH SIDE)
- B (EX: 1 LAYER GWB ON ONE SIDE)
- C ...

FIRE RATING
- 1 1 HOUR FIRE RATING
- 2 2 HOUR FIRE RATING
- 3 3 HOUR FIRE RATING

HEIGHT OF WALL
- C UP TO CEILING
- D DETACHED - SEE DRAWINGS FOR HEIGHT
- J UP TO JOIST BEARING
- P 8" ABOVE CEILING
- U UP TO DECK ABOVE

NOTE:
1. SEE WALL SECTIONS FOR EXTERIOR WALL CONSTRUCTION.
2. SEE WALL TYPE LEGEND FOR CONSTRUCTION OF ASSEMBLIES AND FIRE RATINGS UL LISTING.

smith sinnett ARCHITECTURE

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4600 Lake Boone Trail
Suite 205
Raleigh, NC 27607

info@smithsinnett.com

NORTH CAROLINA REGISTERED ARCHITECTURE, P.A. CERT. NO. 5172 RALEIGH, NORTH CAROLINA

NORTH CAROLINA REGISTERED ARCHITECT 7757 WILLIAM ANDREW JOHNSON RALEIGH, NORTH CAROLINA

CONSTRUCTION DOCUMENTS

THIS DRAWING IS FORMATTED TO BE PRINTED ON A 30" X 42" SHEET

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
GYMNASIUM & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

DRAWN BY: AC, MA
CHECKED BY: FJ, LP

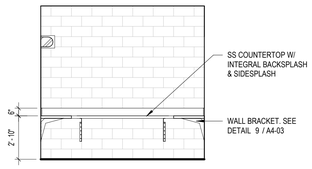
WALL TYPE LEGEND

2022035 11 MAR 2024

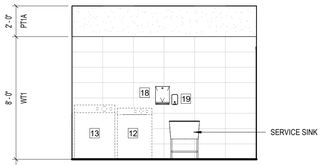
A1-01

EQUIPMENT SCHEDULE- NWPMS

MARK	ITEM	FURNISHED AND INSTALLED BY	REMARKS
1	LOCKER BENCH	CFCI	-
2	LOCKER	CFCI	DOUBLE TIER
3	BLEACHERS (TEAM SIDE)	CFCI	-
4	BLEACHERS (SPECTATOR SIDE)	CFCI	-
5	BASKETBALL HOOP, CEILING SUSPENDED, FORWARD FOLD	CFCI	ELECTRIC, REFER TO ELECTRICAL DRAWINGS
6	VOLLEYBALL/ TENNIS FLOOR SLEEVES	CFCI	-
7	WALL PADS	CFCI	-
8	8'x3' BASKETBALL/VOLLEYBALL/ WRESTLING LED SCOREBOARD	CFCI	WIRELESS RECEIVER W/ CONTROLLERS
9	BEVERAGE COOLER	OFCI	REFER TO ALLOWANCES, APPLIANCES
10	ICE MAKER	OFCI	-
11	REFRIGERATOR	OFCI	-
12	WASHER	OFCI	-
13	DRYER	OFCI	-
14	4'-0" W X 4'-0" H TAC BOARD	CFCI	-
15	8' MARKER BOARD	CFCI	-
16	12' MARKER BOARD	CFCI	-
17	MOBILE TV CART	CFCI	REFER TO ALLOWANCES
18	PAPER TOWEL DISPENSER	OFCI	-
19	SOAP DISPENSER	OFCI	-
20	EMERGENCY SHOWER EYEWASH	CFCI	<varies>
21	DISHWASHER	CFCI	REFER TO ALLOWANCES, APPLIANCES
22	24" HOOK STRIP	CFCI	MOUNT @ 46" AFF
23	36" HOOK STRIP	CFCI	MOUNT @ 46" AFF
26	FIRE BLANKET CABINET	CFCI	-
27	GOGGLE CABINET	CFCI	-
28	SAFETY DATA SHEET BINDER RACK	CFCI	-
29	SCORER'S TABLE	OFOI	-
30	MOTORIZED PROJECTION SCREEN - CEILING MOUNTED	CFCI	-
31	EMERGENCY EYEFACE WASH - COUNTERTOP MOUNTED	CFCI	-
32	MOBILE DEMONSTRATION BENCH	OFOI	-



7 A4-03 601 CONCESSIONS - WEST
1/4" = 1'-0"



8 A4-03 613 LAUNDRY - SOUTH
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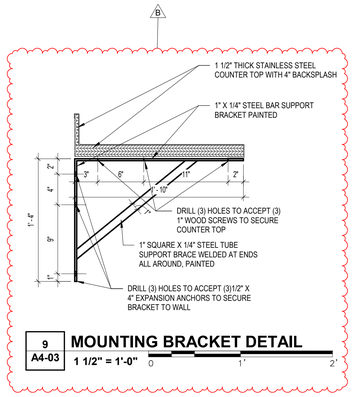
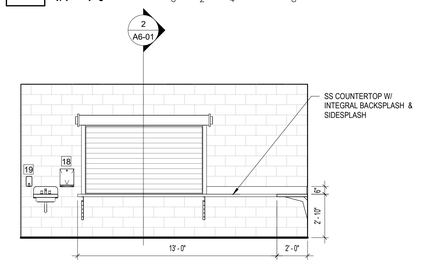


9 A4-03 MOUNTING BRACKET DETAIL
1 1/2" = 1'-0"



6 A4-03 601 CONCESSIONS - SOUTH
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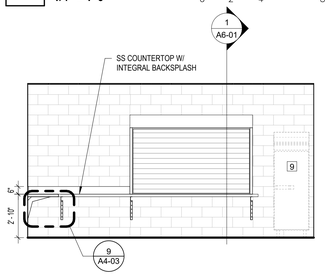

5 A4-03 601 CONCESSIONS - NORTH
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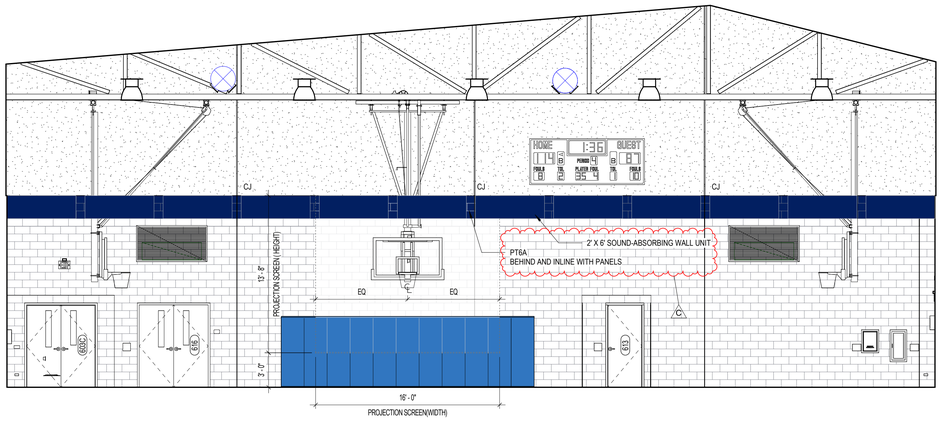
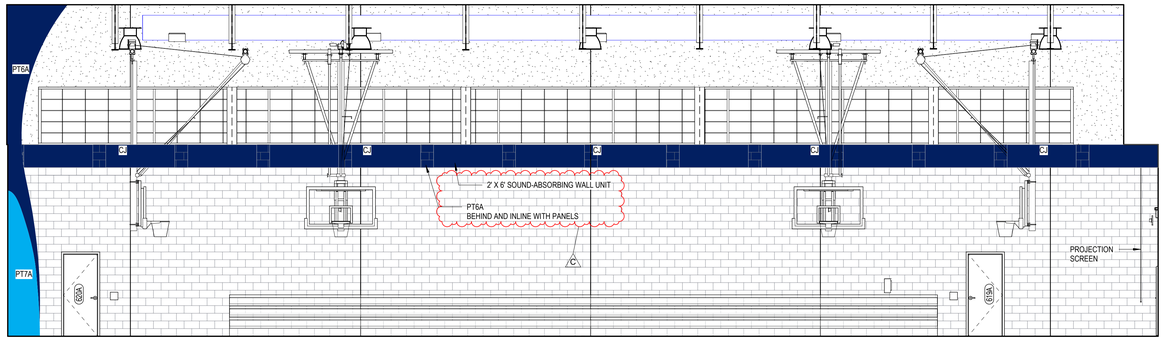
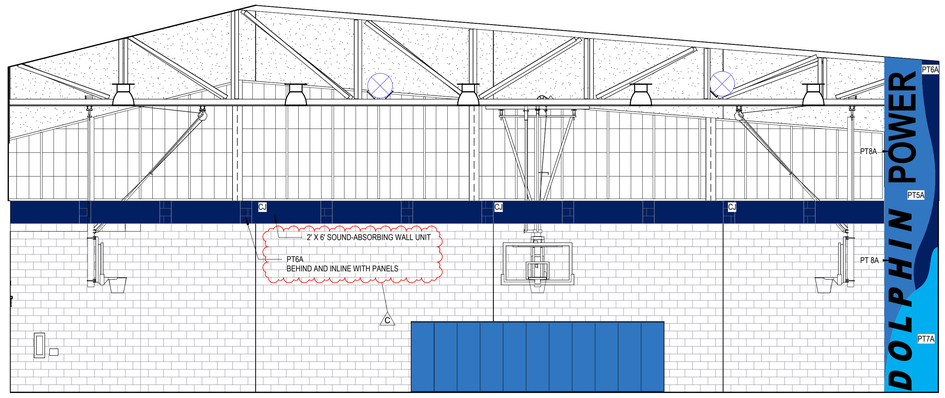


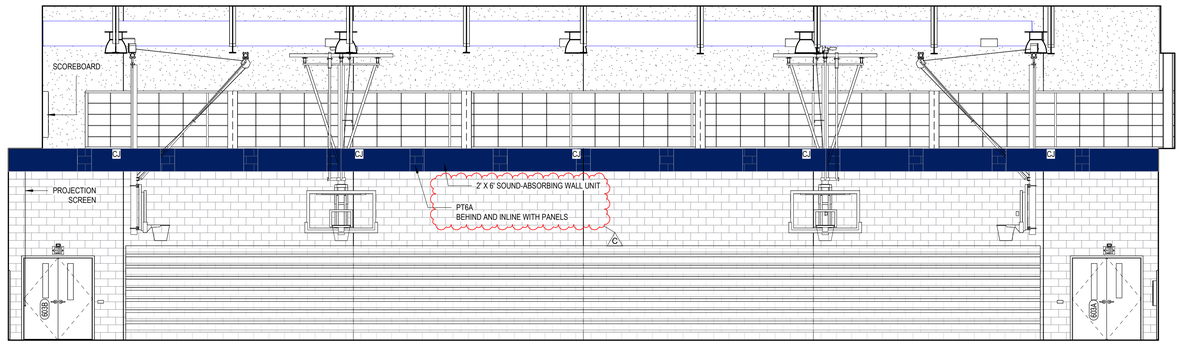
4 A4-03 GYM - EAST
3/16" = 1'-0"



3 A4-03 GYM - NORTH
3/16" = 1'-0"



2 A4-03 GYM - WEST
3/16" = 1'-0"



1 A4-03 GYM - SOUTH
3/16" = 1'-0"

smith sinnett ARCHITECTURE

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4600 Lake Boone Trail
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Raleigh, NC 27607

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CONSTRUCTION DOCUMENTS

THIS DRAWING IS FORMATTED TO BE PRINTED ON A 36" X 42" SHEET

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
GYMNASIUM & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
B	03/29/2024	ADDENDUM 2
C	04/04/2024	ADDENDUM 3

DRAWN BY: AC, MA
CHECKED BY: FJ, LP

INTERIOR ELEVATIONS - GYM ADDITION

2022035 11 MAR 2024

A4-03

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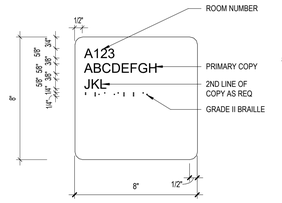

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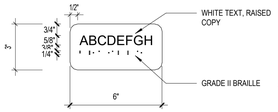

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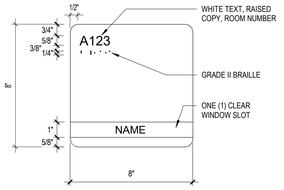

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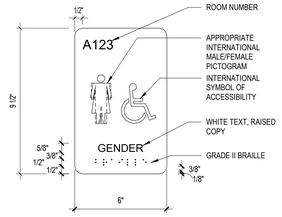

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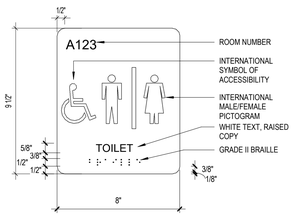

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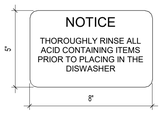

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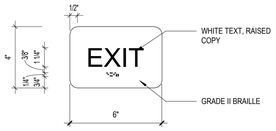

SIGN TYPE H

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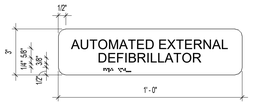
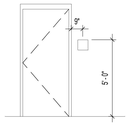


SIGNAGE ELEVATION & NOTES



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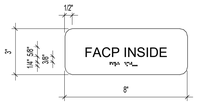

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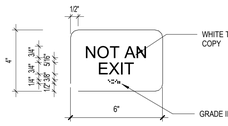
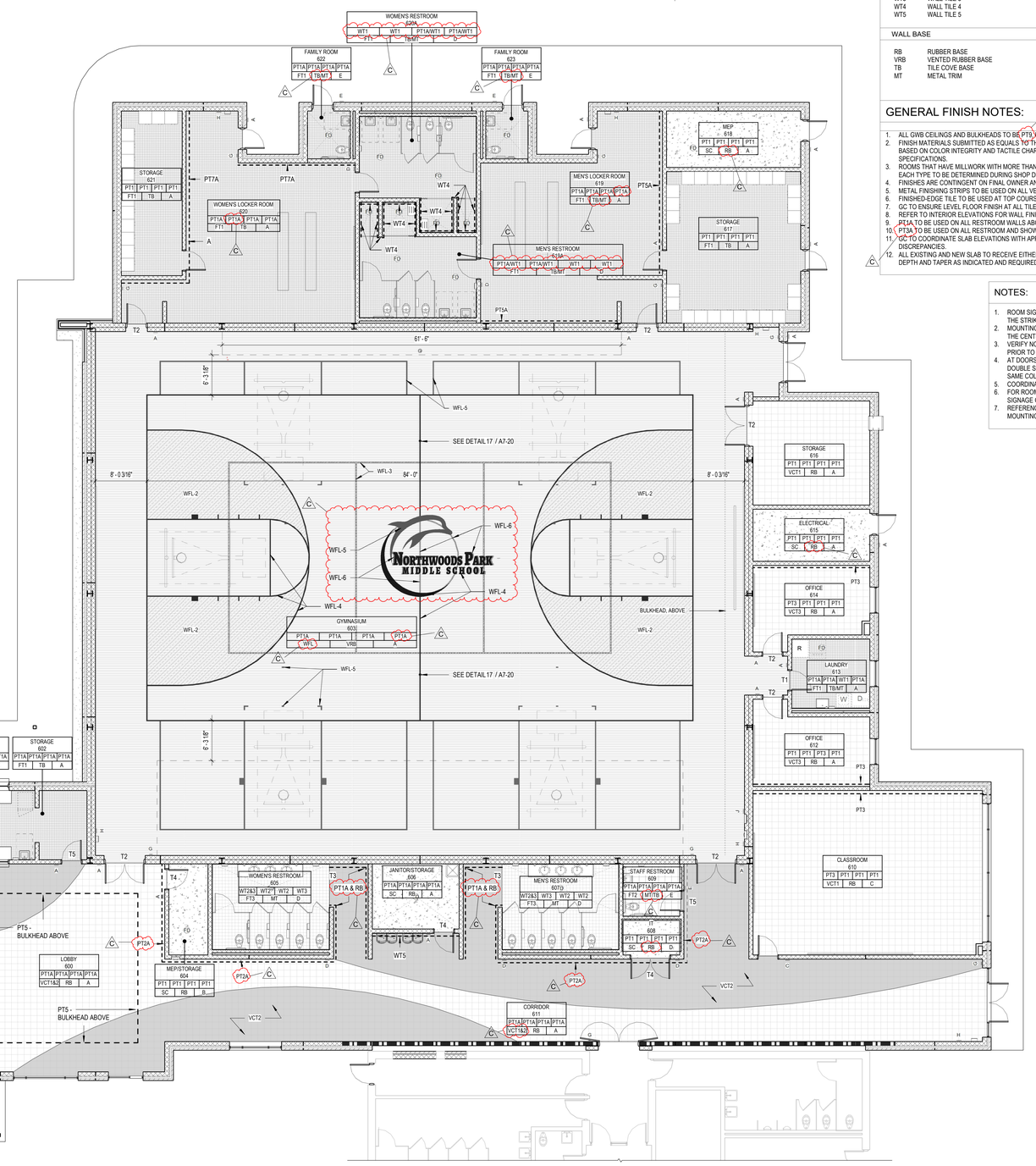


ROOM FINISH SCHEDULE - GYM ADDITION

ROOM NO	ROOM NAME	FLOOR	BASE	WALL FINISH NORTH	WALL FINISH EAST	WALL FINISH SOUTH	WALL FINISH WEST	CEILING FINISH	SIGNAGE	NOTES
600	LOBBY	VCT1&2	RB	PT1A	PT1A	PT1A	PT1A	PT11	A	CEILING FINISH EXTENTS SHOWN ON RCP
600A	VESTIBULE	VCT1	RB	PT1A	PT1A	PT1A	PT1A	--	D	
601	CONCESSIONS	FT1	TB	PT1A	PT1A	PT1A	PT1A	--	A	
602	STORAGE	FT1	TB	PT1A	PT1A	PT1A	PT1A	--	A	
603	GYMNASIUM	WFL	VRB	PT1A	PT1A	PT1A	PT1A	PT12	A	
604	MEP/STORAGE	SC	RB	PT1	PT1	PT1	PT1	PT10	B	
605	WOMEN'S RESTROOM	FT3	MT	WT2&3	WT2	WT2	WT3	PT9	D	
606	JANITOR/STORAGE	SC	RB	PT1A	PT1A	PT1A	PT1A	PT10	A	
607	MEN'S RESTROOM	FT3	MT	WT2&3	WT3	WT2	WT2	PT9	D	
608	IT	SC	RB	PT1	PT1	PT1	PT1	PT10	D	
609	STAFF RESTROOM	FT2	MT/TB	PT1A	PT1A	PT1A	PT1A	PT9	E	
610	CLASSROOM	VCT1	RB	PT3	PT1	PT1	PT1	--	C	
611	CORRIDOR	VCT1&2	RB	PT1A	PT1A	PT1A	PT1A	PT11	A	CEILING FINISH EXTENTS SHOWN ON RCP
612	OFFICE	VCT3	RB	PT1	PT1	PT3	PT1	--	A	
613	LAUNDRY	FT1	TB/MT	PT1A	PT1A	WT1	PT1A	--	A	
614	OFFICE	VCT3	RB	PT3	PT1	PT1	PT1	--	A	
615	ELECTRICAL	SC	RB	PT1	PT1	PT1	PT1	PT10	A	
616	STORAGE	VCT1	RB	PT1	PT1	PT1	PT1	PT10	A	
617	STORAGE	FT1	TB	PT1	PT1	PT1	PT1	PT9	A	
618	MEP	SC	RB	PT1	PT1	PT1	PT1	PT10	A	
619	MEN'S LOCKER ROOM	FT1	TB/MT	PT1A	PT1A	PT1A	PT1A	PT3A	A	
619A	MEN'S RESTROOM	FT1	TB/MT	PT1A/WT1	PT1A/WT1	WT1	WT1	PT3A	D	
620	WOMEN'S LOCKER ROOM	FT1	TB	PT1A	PT1A	PT1A	PT1A	PT3A	A	
620A	WOMEN'S RESTROOM	FT1	TB/MT	WT1	WT1	PT1A/WT1	PT1A/WT1	PT3A	D	
621	STORAGE	FT1	TB	PT1	PT1	PT1	PT1	PT9	A	
622	FAMILY ROOM	FT1	TB/MT	PT1A	PT1A	PT1A	PT1A	PT9	E	



1 A7-01 **FINISH PLAN - GYM ADDITION**

1/8" = 1'-0"

0 4' 8' 16'

FINISH LEGEND

WALL FINISHES BASED ON PLAN LOCATION

ROOM NAME / ROOM NUMBER — NORTH | EAST | SOUTH | WEST / FLOOR | BASE | SIGNAGE

INDICATES ACCENT PAINT OR WALL TILE

WALL FINISH

PT1	INTERIOR FIELD PAINT
PT1A	INTERIOR FIELD EPOXY PAINT
PT2	ACCENT PAINT
PT2A	ACCENT EPOXY PAINT
PT3A	INTERIOR EPOXY CEILING PAINT
PT3	ACCENT PAINT
PT4	ACCENT PAINT
PT4A	ACCENT EPOXY PAINT
PT5	ACCENT PAINT
PT5A	ACCENT EPOXY PAINT
PT6	ACCENT PAINT
PT6A	ACCENT EPOXY PAINT
PT7	ACCENT PAINT
PT7A	ACCENT EPOXY PAINT
PT8	ACCENT PAINT
PT8A	ACCENT EPOXY PAINT
PT9	INTERIOR CEILING PAINT
PT10	INTERIOR CEILING PAINT
PT11	INTERIOR CEILING PAINT
PT12	INTERIOR CEILING PAINT
PT13	INTERIOR COLUMN PAINT
PT14	HM FRAMES/ DOORS PAINT
PT15	EXTERIOR STEEL PAINT (ALTERNATE 3)
WT1	WALL TILE 1
WT2	WALL TILE 2
WT3	WALL TILE 3
WT4	WALL TILE 4
WT5	WALL TILE 5

FLOOR FINISH

SC	SEALED CONCRETE
VCT1	VINYL TILE 1
VCT2	VINYL TILE 2
VCT3	VINYL TILE 3
FT1	FLOOR TILE 1
FT2	FLOOR TILE 2
FT3	FLOOR TILE 3
WFL-1	WOOD FLOORING STAIN 1
WFL-2	WOOD FLOORING STAIN 2
WFL-3	WOOD FLOORING STAIN 3
WFL-4	WOOD FLOORING STAIN 4
WFL-5	WOOD FLOORING STAIN 5
WFL-6	WOOD FLOORING STAIN 6
TRZT	TERRAZO TILE
E-TRZ	EXISTING TERRAZO TO REMAIN
R-WF	REFINISHED WOOD FLOORING
WFL	NEW WOOD FLOORING

WALL BASE

RB	RUBBER BASE
VRB	VENTED RUBBER BASE
TB	TILE COVE BASE
MT	METAL TRIM

SURFACE FINISH

SLS1	SOLID SURFACE 1
SLS2	SOLID SURFACE 2 - WINDOW STOOL
SS	STAINLESS STEEL
PL1	PLASTIC LAMINATE 1
PL2	PLASTIC LAMINATE 2

GENERAL FINISH NOTES:

1. ALL GWB CEILINGS AND BULKHEADS TO BE PT9 U.O.N.
2. FINISH MATERIALS SUBMITTED AS EQUALS TO THE BASIS OF DESIGN WILL BE APPROVED OR REJECTED BASED ON COLOR INTEGRITY AND TACTILE CHARACTERISTICS IN ADDITION TO TECHNICAL SPECIFICATIONS.
3. ROOMS THAT HAVE MILLWORK WITH MORE THAN THREE LAMINATE COLORS. EXACT LOCATION OF EACH TYPE TO BE DETERMINED DURING SHOP DRAWING PHASE.
4. FINISHES ARE CONTINGENT ON FINAL OWNER AND ARCHITECT APPROVAL.
5. METAL FINISHING STRIPS TO BE USED ON ALL VERTICAL OUTSIDE EDGES & CORNERS OF WALL TILE.
6. FINISHED-EDGE TILE TO BE USED AT TOP COURSE OF WALL TILE.
7. GC TO ENSURE LEVEL FLOOR FINISH AT ALL TILE TRANSITIONS.
8. REFER TO INTERIOR ELEVATIONS FOR WALL FINISH LOCATIONS & HEIGHTS.
9. PT1A TO BE USED ON ALL RESTROOM WALLS ABOVE AND ADJACENT TO WALL TILE.
10. PT3A TO BE USED ON ALL RESTROOM AND SHOWER CEILINGS.
11. GC TO COORDINATE SLAB ELEVATIONS WITH APPROVED FLOOR FINISHES. NOTIFY ARCHITECT OF ANY DISCREPANCIES.
12. ALL EXISTING AND NEW SLAB TO RECEIVE EITHER SELF-LEVELING UNDERLAYMENT OR OVERLAY. DEPTH AND TAPER AS INDICATED AND REQUIRED BY NEW FINISHES.

NOTES:

1. ROOM SIGNAGE TO BE LOCATED ON THE WALL ADJACENT TO THE STRIKE SIDE OF THE DOOR.
2. MOUNTING LOCATION AND HEIGHT SHOWN IS TYPICAL AND TO THE CENTERLINE OF THE SIGN.
3. VERIFY NON-TYPICAL SIGN LOCATIONS WITH THE ARCHITECT PRIOR TO INSTALLATION.
4. AT DOORS WITH SIDELIGHTS ON THE STRIKE SIDE OF JAMB, USE DOUBLE SIDED TAPE ONLY. PROVIDE A BLANK SOLID SIGN OF SAME COLOR AND SIZE ON OPPOSITE SIDE.
5. COORDINATE ROOM NAME AND NUMBER WITH OWNER.
6. FOR ROOMS ACCESSED BY A VESTIBULE, LOCATE ROOM SIGNAGE OUTSIDE VESTIBULE.
7. REFERENCE CHAPTER 7, SECTION 703 ICC A117.1-2009 FOR MOUNTING HEIGHTS AND LOCATIONS.

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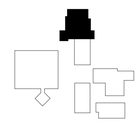
CONSTRUCTION DOCUMENTS

THIS DRAWING IS FORMATTED TO BE PRINTED ON A 30" X 42" SHEET

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
GYMNASIUM & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3



KEY PLAN: NO SCALE

DRAWN BY: AC, MA
CHECKED BY: FJ, LP

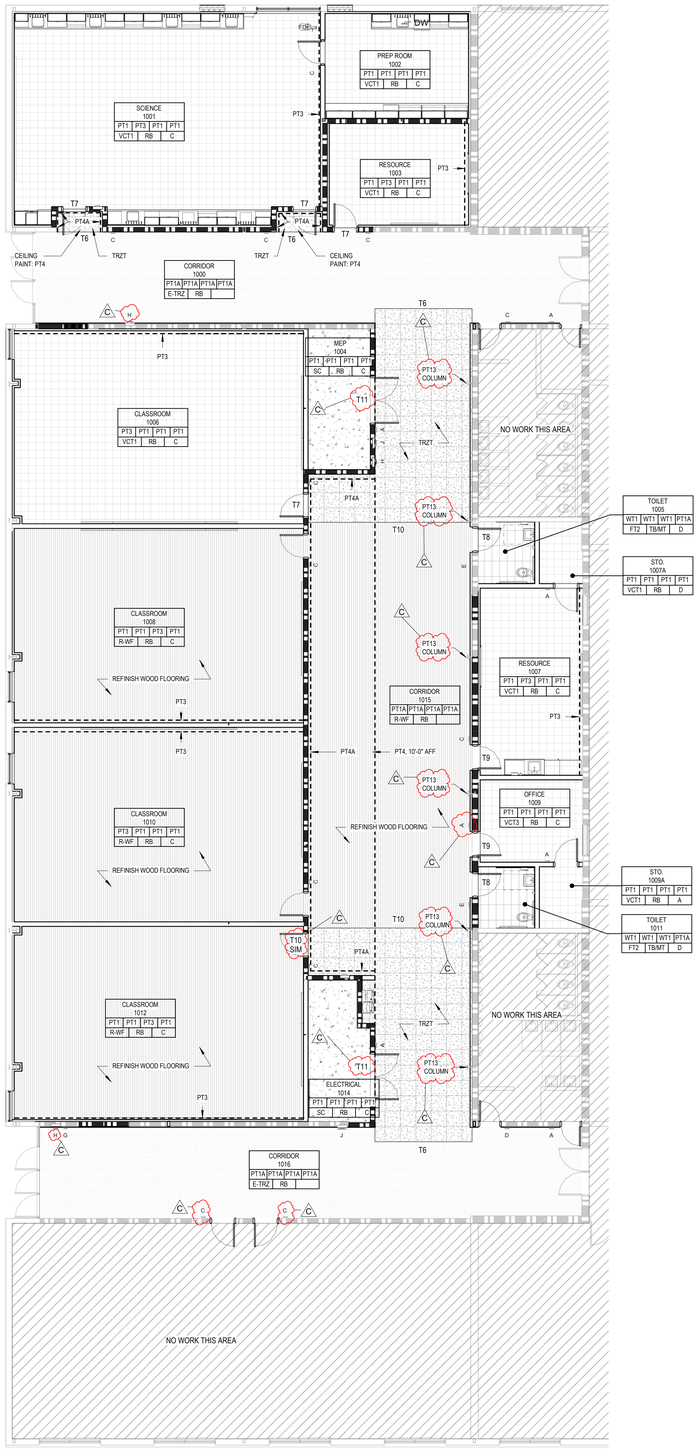
FINISH PLAN - GYM ADDITION

2022035 11 MAR 2024

A7-01

ROOM FINISH SCHEDULE - NEW CLASSROOMS

ROOM NO	ROOM NAME	FLOOR	BASE	WALL FINISH NORTH	WALL FINISH EAST	WALL FINISH SOUTH	WALL FINISH WEST	CEILING FINISH	SIGNAGE	NOTES
1000	CORRIDOR	E-TRZ	RB	PT1A	PT1A	PT1A	PT1A	--		
1001	SCIENCE	VCT1	RB	PT1	PT3	PT1	PT1	--	C	
1002	PREP ROOM	VCT1	RB	PT1	PT1	PT1	PT1	--	C	
1003	RESOURCE	VCT1	RB	PT1	PT3	PT1	PT1	--	C	
1004	MEP	SC	RB	PT1	PT1	PT1	PT1	PT10	C	
1005	TOILET	FT2	TB/MT	WT1	WT1	WT1	PT1A	--	D	
1006	CLASSROOM	VCT1	RB	PT3	PT1	PT1	PT1	PT11	C	CEILING FINISH EXTENTS SHOWN ON RCP
1007	RESOURCE	VCT1	RB	PT1	PT3	PT1	PT1	--	C	
1007A	STO.	VCT1	RB	PT1	PT1	PT1	PT1	--	D	
1008	CLASSROOM	R-WF	RB	PT1	PT1	PT3	PT1	PT11	C	CEILING FINISH EXTENTS SHOWN ON RCP
1009	OFFICE	VCT3	RB	PT1	PT1	PT1	PT1	--	C	
1009A	STO.	VCT1	RB	PT1	PT1	PT1	PT1	--	A	
1010	CLASSROOM	R-WF	RB	PT3	PT1	PT1	PT1	PT11	C	CEILING FINISH EXTENTS SHOWN ON RCP
1011	TOILET	FT2	TB/MT	WT1	WT1	WT1	PT1A	--	D	
1012	CLASSROOM	R-WF	RB	PT1	PT1	PT3	PT1	PT11	C	CEILING FINISH EXTENTS SHOWN ON RCP
1014	ELECTRICAL	SC	RB	PT1	PT1	PT1	PT1	PT10	C	
1015	CORRIDOR	R-WF	RB	PT1A	PT1A	PT1A	PT1A	--		
1016	CORRIDOR	E-TRZ	RB	PT1A	PT1A	PT1A	PT1A	--		



FINISH LEGEND

WALL FINISHES BASED ON PLAN LOCATION

ROOM NAME / ROOM NUMBER (NORTH | EAST | SOUTH | WEST / FLOOR | BASE | SIGNAGE)

INDICATES ACCENT PAINT OR WALL TILE

WALL FINISH

PT1	INTERIOR FIELD PAINT
PT1A	INTERIOR FIELD EPOXY PAINT
PT2	ACCENT PAINT
PT2A	ACCENT EPOXY PAINT
PT3A	INTERIOR EPOXY CEILING PAINT
PT3	ACCENT PAINT
PT4	ACCENT PAINT
PT4A	ACCENT EPOXY PAINT
PT5	ACCENT PAINT
PT5A	ACCENT EPOXY PAINT
PT6	ACCENT PAINT
PT6A	ACCENT EPOXY PAINT
PT7	ACCENT PAINT
PT7A	ACCENT EPOXY PAINT
PT8	ACCENT PAINT
PT8A	ACCENT EPOXY PAINT
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PT15	EXTERIOR STEEL PAINT (ALTERNATE 3)
WT1	WALL TILE 1
WT2	WALL TILE 2
WT3	WALL TILE 3
WT4	WALL TILE 4
WT5	WALL TILE 5

FLOOR FINISH

SC	SEALED CONCRETE
VCT1	VINYL TILE 1
VCT2	VINYL TILE 2
VCT3	VINYL TILE 3
FT1	FLOOR TILE 1
FT2	FLOOR TILE 2
FT3	FLOOR TILE 3
WFL-1	WOOD FLOORING STAIN 1
WFL-2	WOOD FLOORING STAIN 2
WFL-3	WOOD FLOORING STAIN 3
WFL-4	WOOD FLOORING STAIN 4
WFL-5	WOOD FLOORING STAIN 5
WFL-6	WOOD FLOORING STAIN 6
TRZT	TERRAZO TILE
E-TRZ	EXISTING TERRAZO TO REMAIN
R-WF	REFINISHED WOOD FLOORING
WFL	NEW WOOD FLOORING

WALL BASE

RB	RUBBER BASE
VRB	VENTED RUBBER BASE
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SURFACE FINISH

SLS1	SOLID SURFACE 1
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GENERAL FINISH NOTES:

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1 A7-02 **FINISH PLAN - NEW CLASSROOMS**

1/8" = 1'-0"

0 4' 8' 16'

smith sinnett ARCHITECTURE

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4600 Lake Boone Trail
Suite 205
Raleigh, NC 27607

info@smithsinnett.com

CONSTRUCTION DOCUMENTS

THIS DRAWING IS FORMATTED TO BE PRINTED ON A 36" X 42" SHEET

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
GYMNASIUM & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

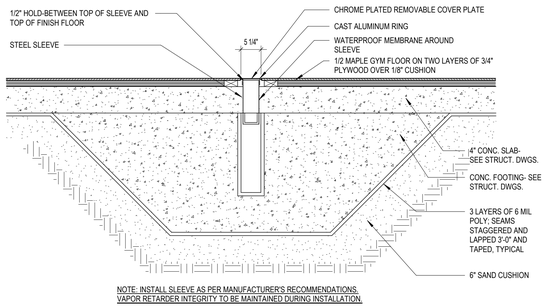
KEY PLAN: NO SCALE

DRAWN BY: AC, MA
CHECKED BY: FJ, LP

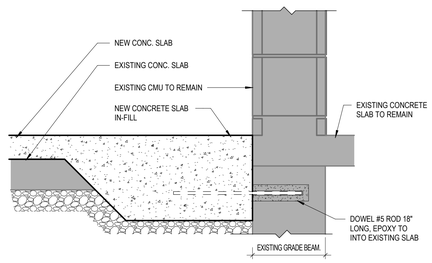
FINISH PLAN - RENOVATION

2022035 11 MAR 2024

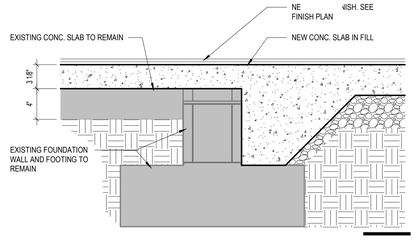
A7-02



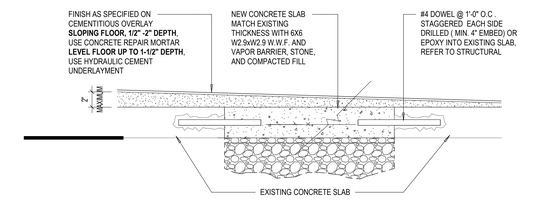
17 / A7-20 FLOOR SLEEVE DETAIL
3/4" = 1'-0"



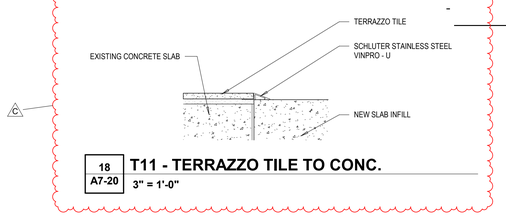
16 / A7-20 NEW CONCRETE SLAB DET
1 1/2" = 1'-0"



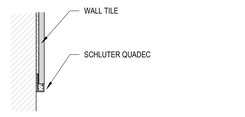
15 / A7-20 NEW CONC. SLAB
1 1/2" = 1'-0"



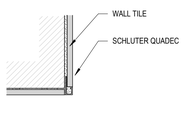
14 / A7-20 DEPRESSED SLAB TYPICAL OVERLAY
1 1/2" = 1'-0"



18 / A7-20 T11 - TERRAZZO TILE TO CONC.
3" = 1'-0"



13 / A7-20 SCHLUTER DETAIL - QUADEC
3" = 1'-0"



12 / A7-20 SCHLUTER DETAIL - QUADEC
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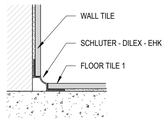
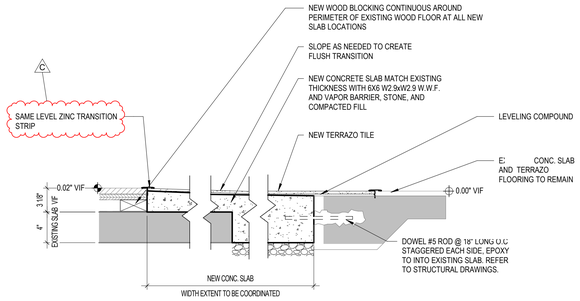
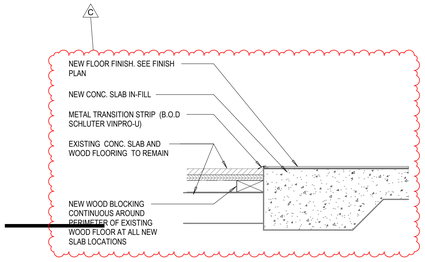


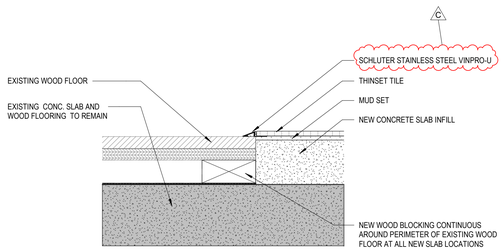
11 / A7-20 SCHLUTER DETAIL - DILEX
3" = 1'-0"



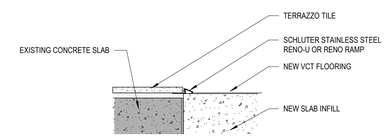
10 / A7-20 T10 - NEW CONC. SLAB IN-FILL W/ LEVELING DETAIL
1 1/2" = 1'-0"



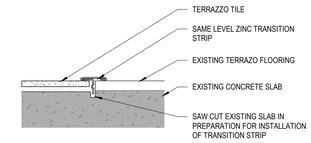
9 / A7-20 T9 - EXISTING WOOD FLOOR TO VCT
1 1/2" = 1'-0"



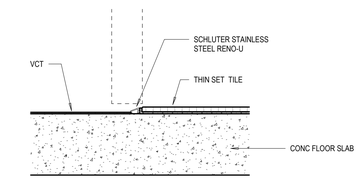
8 / A7-20 T8-EXISTING WOOD FLOOR TO TILE
3" = 1'-0"



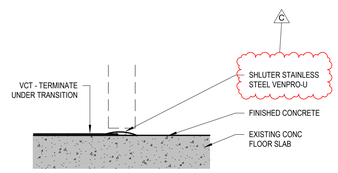
7 / A7-20 T7 - TERRAZZO OR TERRAZZO TILE TO VCT
3" = 1'-0"



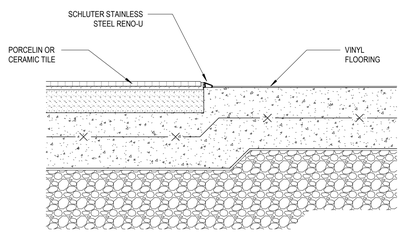
6 / A7-20 T6 - EXISTING TERRAZZO TO TERRAZZO TILE
3" = 1'-0"



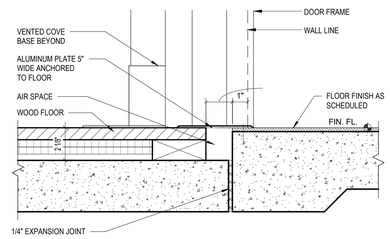
5 / A7-20 T5 - VCT TO THIN SET TILE
3" = 1'-0"



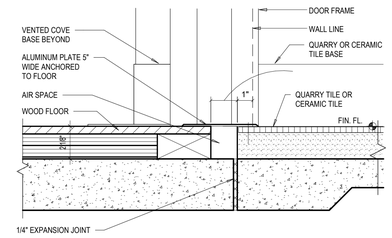
4 / A7-20 T4 - VCT TO CONCRETE
3" = 1'-0"



3 / A7-20 T3 - TILE TRANSITION @ DEPRESSED SLAB
3" = 1'-0"



2 / A7-20 T2 - WOOD FLOOR THRESHOLD
3" = 1'-0"



1 / A7-20 T1 - WOOD FLOOR THRESHOLD @ DEPRESSED SLAB
3" = 1'-0"

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NORTHWOODS PARK MIDDLE SCHOOL
GYMNASIUM & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

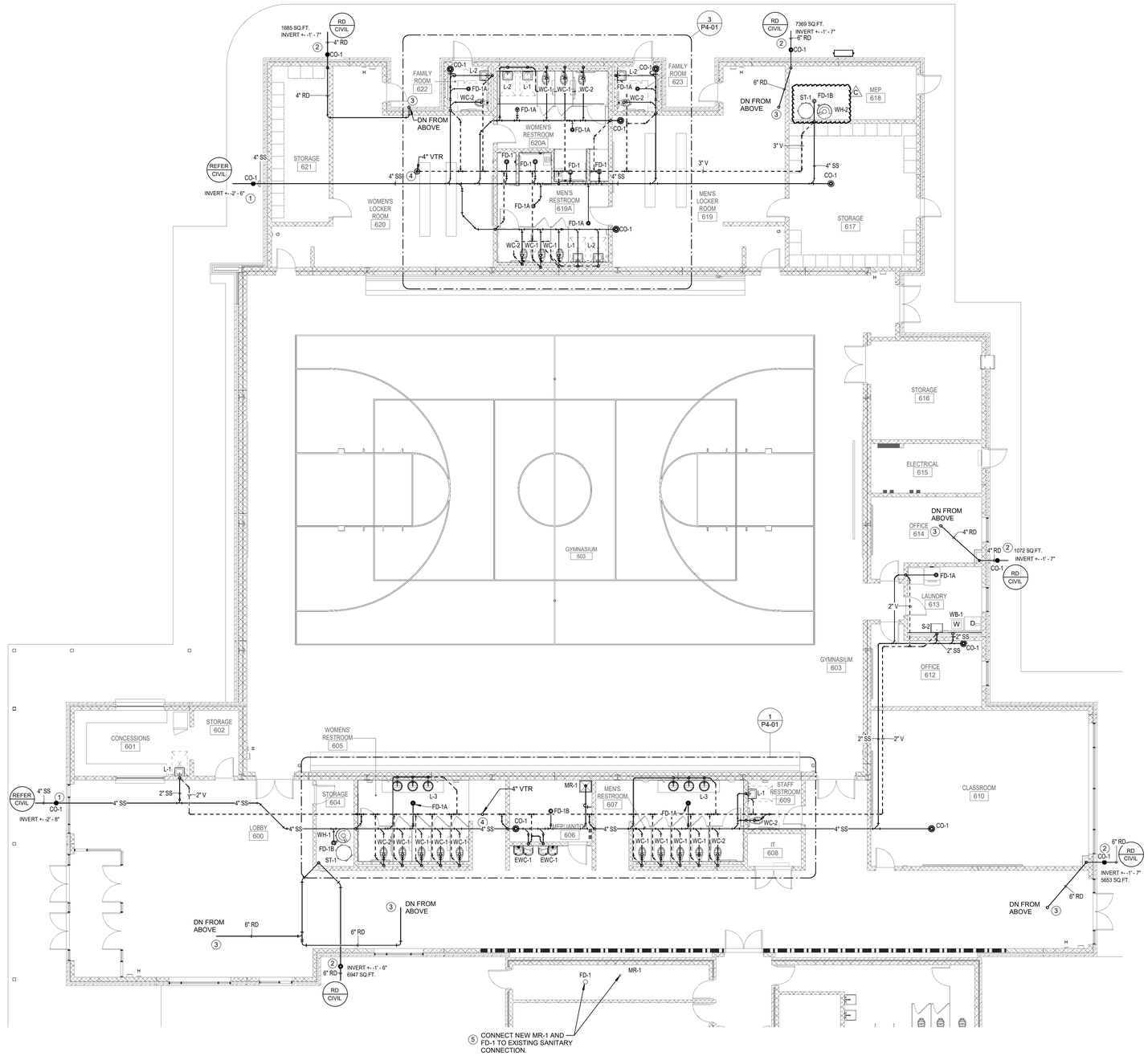
ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

DRAWN BY: AC, MA
CHECKED BY: FJ, LP

FINISH DETAILS

2022035 11 MAR 2024

A7-20



1 LEVEL 1 WASTE AND VENT - GYM

1/8" = 1'-0"

GENERAL NOTES:

A. COORDINATE INSTALLATION OF ROUGH-INS AND FIXTURES WITH CASEWORK/MILLWORK SHOWN IN THE ARCHITECTURE DRAWINGS AND FIELD VERIFY LAYOUT WITH ACCESSIBILITY REQUIREMENTS PRIOR TO START OF WORK AND AFTER ROUGH-IN

B. PIPE HANGERS AND SUPPORTS SHALL BE INSTALLED SO THAT NO PIPING IS SUBJECT TO BENDING AND/OR DEFLECTION

C. PROVIDE NEW WATER HAMMER ARRESTORS ON COLD WATER PIPING JUST UPSTREAM OF THE LAST FLUSH VALVE FIXTURE FOR EACH COLD WATER BRANCH SERVING FLUSH VALVE FIXTURES - SIZED AS NEEDED ACCORDING TO SCHEDULE ON SHEET P-1 AND ACCESSIBLE FOR FUTURE REPLACEMENT - COORDINATE NECESSARY ACCESS PANELS WITH ARCHITECT'S REFLECTED CEILING PLAN AND/OR ELEVATIONS

D. PROVIDE FULL-PORT TWO-PIECE ALL BRONZE BALL VALVES ON DOMESTIC HOT AND COLD WATER PIPING ABOVE CEILING WHERE NECESSARY TO ISOLATE EACH TOILET ROOM INDEPENDENTLY FOR FUTURE REPAIRS OR MAINTENANCE - COORDINATE NECESSARY ACCESS PANELS WITH ARCHITECT'S REFLECTED CEILING PLAN

E. PLUMBING PIPING SHALL BE ACCESSIBLE WHERE POSSIBLE AND INSTALLED SO THAT NORMAL THERMAL EXPANSION OR CONTRACTION DOES NOT AFFECT THE PERFORMANCE OF THE SYSTEM - PLUMBING CONTRACTOR TO INFORM PLUMBING DESIGNER IF CONDITIONS REQUIRE EXPANSION OR CONTRACTION MEASURES BEYOND THAT SHOWN IN THESE DRAWINGS

F. DOMESTIC HOT AND COLD WATER SUPPLY AND/OR RETURN/RECIRC. PIPING SHALL BE INSULATED AS REQUIRED AND AS SPECIFIED AND SHALL INCLUDE BRANCH SHUT-OFF VALVES AS SHOWN - PLUMBING CONTRACTOR TO INFORM PLUMBING DESIGNER IF CONDITIONS CREATE THE NEED FOR ADDITIONAL VALVES BEYOND THAT SHOWN IN THESE DRAWINGS

G. PROVIDE AS-BUILT DRAWINGS THAT INCLUDE FINAL LAYOUTS, DETAILS OF ALL CONNECTION POINTS, AND OTHER PERTINENT DATA. FIELD APPLIED IDENTIFICATION TAGS AND NAMEPLATES MUST MATCH AS-BUILT DRAWINGS

H. ALL VENT PIPING SHALL BE 2" UNLESS NOTED OTHERWISE

I. ROOF DRAIN INVERTS ARE +/- -1'-6" (BFF) UNLESS NOTED OTHERWISE

J. REFER TO CORRESPONDING RISER DIAGRAM DRAWINGS FOR ADDITIONAL PIPE SIZE INFORMATION AND ISOMETRIC VIEWS OF GENERAL PIPING ARRANGEMENTS

K. EXCEPT WHERE SHOWN ON PLANS OR ABSOLUTELY NECESSARY (MUST BE APPROVED BY DESIGN TEAM) ALL CONDUITS, PIPING AND DUCTWORK SHALL BE CONCEALED IN BULKHEADS AND ABOVE CEILINGS AND NOT ROUTED THROUGH OPEN CEILINGS. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR THE LOCATIONS OF OPEN CEILINGS. WHEN CONDUITS ARE REQUIRED TO BE RUN EXPOSED THEY ARE TO RUN TIGHT TO THE STRUCTURE AND BE PAINTED TO MATCH THE STRUCTURE.

KEYNOTES:

1. PROVIDE NECESSARY MATERIALS AND MAKE CONNECTION TO SANITARY SEWER PIPING PROVIDED BY SITE UTILITY CONTRACTOR.
2. PROVIDE NECESSARY MATERIALS AND MAKE CONNECTION TO STORM SEEWER PIPING PROVIDED BY SITE UTILITY CONTRACTOR.
3. ROOF DRAIN LEADER FROM ABOVE.
4. 3" VENT PIPING UP TO VTR.
5. WORK TO BE COMPLETED AFTER CERTIFICATE OF OCCUPANCY FOR GYM RECEIVED.

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919-790-9989
License# C-0185
PROJECT# 23014

NORTH CAROLINA PROFESSIONAL SEAL 025020 ENGINEER STEVEN M. CAMPEN

CONSTRUCTION DOCUMENTS

04/04/2024

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL ADDITION & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

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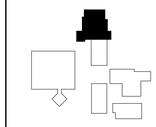


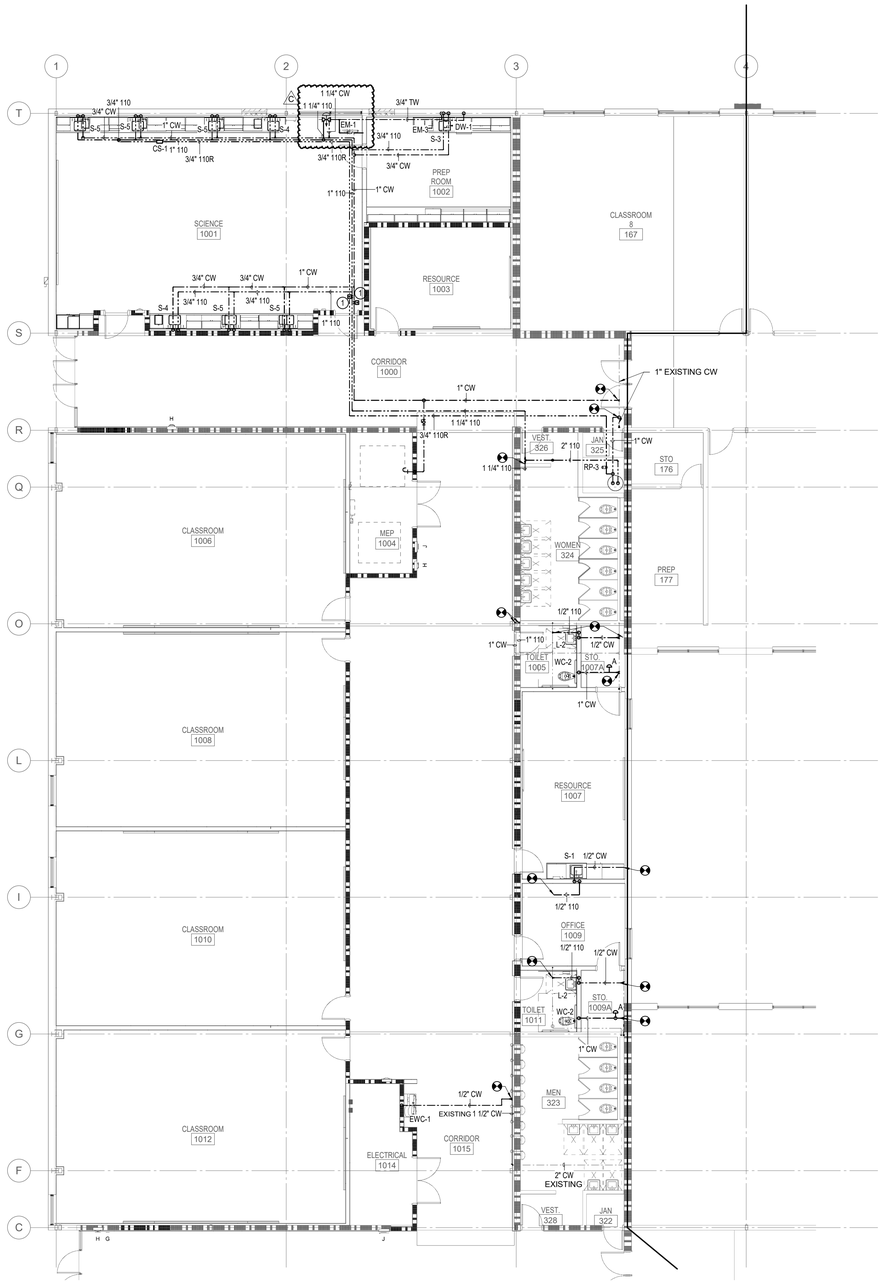
KEY PLAN: NO SCALE

DRAWN BY: DJL
CHECKED BY: SWC

WASTE AND VENT PLAN - GYM ADDITION

2022035 11 MARCH 2024

P1-02



1 LEVEL 1 WATER AND GAS - CLASSROOM

1/8" = 1'-0"

RATED WALLS LEGEND

- 1HR RATED
- 2HR RATED
- 3HR RATED

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KEYNOTES:

1. PLUMBING CONTRACTOR TO PROVIDE ISIMIT SOLENOID VALVE (SV-1) (SERIES 400) WHERE SHOWN FOR EMERGENCY WATER SHUT-OFF TO LAB SINKS. SEE ELECTRICAL FOR CONNECTION.

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DOMESTIC WATER PLAN - CLASSROOMS

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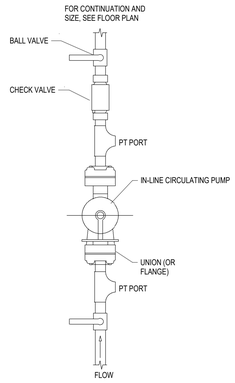
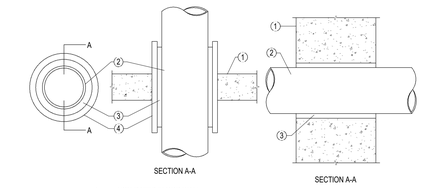
P2-01

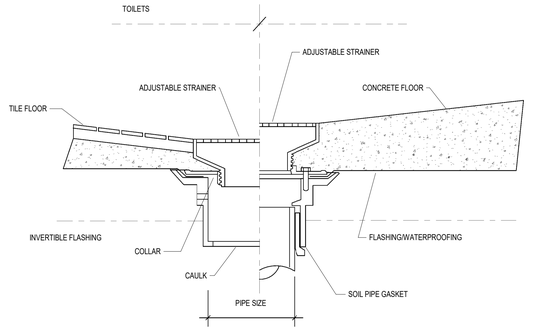


12 DETAIL - CIRCULATING PUMP-BAS
NOT TO SCALE



1. NON-RATED FLOOR/WALL
2. THROUGH PENETRANT: INSULATED PIPE
3. FILL, VOID, OR CAVITY MATERIAL: SILICONE CAULK
4. STEEL PIPE SLEEVE - MIN. 1" LIP AFF

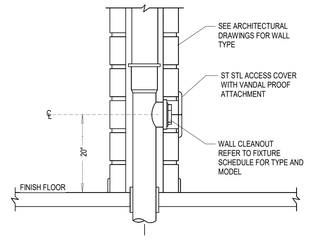
10 DETAIL - NON-RATED FLOOR/WALL PIPE PENETRATION
NOT TO SCALE



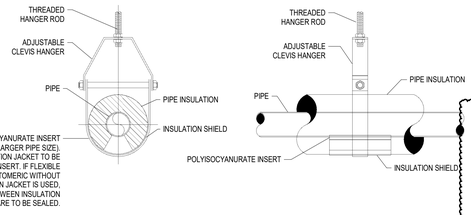
NOTES:
1. THE PLUMBING CONTRACTOR IS TO COORDINATE WITH CONTRACTOR THE DRAIN LOCATIONS AND SETTING HEIGHTS.

2. SEE ARCHITECTURAL PLANS FOR ALL FLOOR FINISHES AND THICKNESSES.

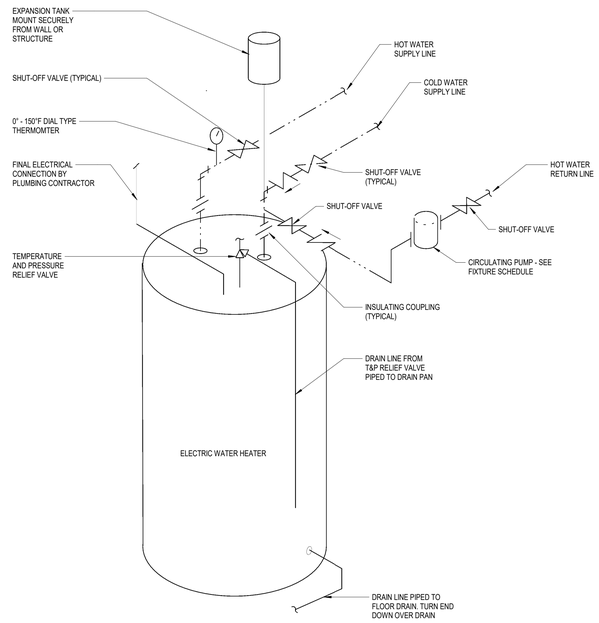
9 DETAIL - FLOOR DRAIN
NOT TO SCALE



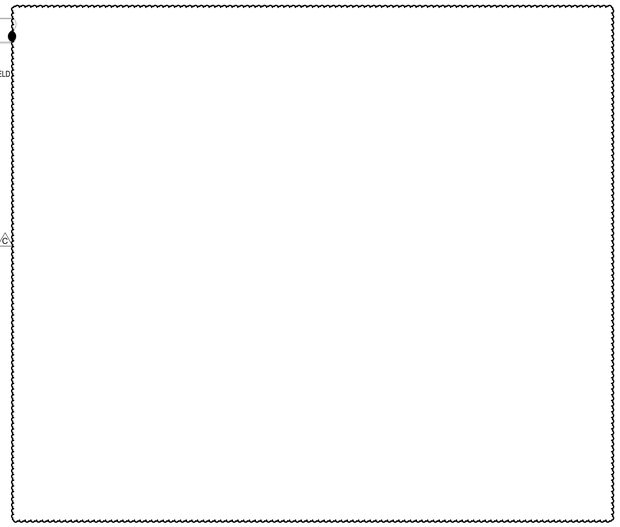
3 DETAIL - CLEANOUT AT WALL
NOT TO SCALE



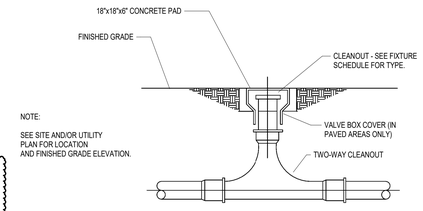
4 CLEVIS PIPE HANGER
NOT TO SCALE



11 DETAIL - ELECTRIC WATER HEATER
NOT TO SCALE

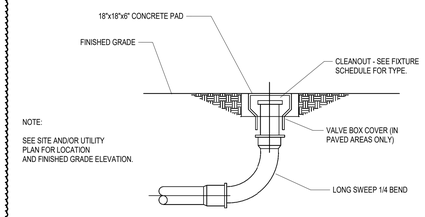


5 DETAIL - INSULATED PIPE VALVE
NOT TO SCALE



NOTE:

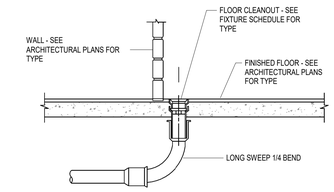
SEE SITE AND/OR UTILITY PLAN FOR LOCATION AND FINISHED GRADE ELEVATION.



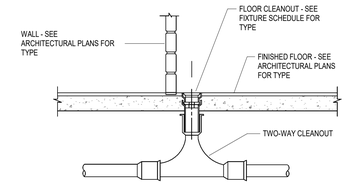
NOTE:

SEE SITE AND/OR UTILITY PLAN FOR LOCATION AND FINISHED GRADE ELEVATION.

2 DETAIL - CLEANOUT AT GRADE - EXTERIOR
NOT TO SCALE



CLEANOUT AT FINISHED FLOOR



1 DETAIL - CLEANOUT AT FINISHED FLOOR
NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL SEAL 025020 ENGINEER STEVE W. CAMPEN

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P5-01

PLUMBING FIXTURE SCHEDULE2

MARK	DESCRIPTION	REMARKS
CO-1	CLEANOUT - FLOOR ZURN MODEL NO. ZN1400-BP WITH NICKEL BRONZE TOP AND BRONZE PLUG, PROVIDE -CM CARPET CLEANOUT MARKER WHERE IN CARPET	
CO-2	CLEANOUT - GRADE ZURN MODEL NO. Z1449-BP CLEANOUT FERRULE WITH BRONZE PLUG AT GRADE, WHERE IN PAVING PROVIDE WITH ZURN MODEL NO. ZN1474-G-VP HEAVY DUTY CLEANOUT HOUSING WITH INTEGRAL ANCHOR FLANGE, SECURED SCORIATED NICKEL BRONZE COVER WITH LIFTING DEVICE AND VANDAL-PROOF SCREW	
CS-1	THERMOSTATIC BALANCING VALVE CIRCUIT SOLVER UNION STRAINER ASSEMBLY WITH INTEGRAL BALL VALVES, CHECK VALVE, STRAINER, AND CIRCUIT SOLVER THERMOMETER ASSEMBLY AT EACH UNIT - SEE PLANS FOR QUANTITY	
DW-1	DISHWASHER CONNECTION DISHWASHER SUPPLIED IN GENERAL CONTRACT. PROVIDE 1/2" HW WITH QUARTER-TURN BALL VALVE UNDER SINK, PROVIDE CHROME PLATED BRASS DISHWASHER TAILPIECE AT SINK, MAKE FINAL CONNECTIONS	
EM-3	EMERGENCY EYEWASH - COUNTER MOUNTED POLISHED CHROME-PLATED BRASS DECK MOUNTED EYEWASH WITH STEADY FLOWING EYEWASH HEADS WITH DUST COVERS THAT AUTOMATICALLY RELEASE WITH WATER PRESSURE. 1/2" STAY-OPEN BALL VALVE IS ACTIVATED BY PULLING SWING ARM DOWN OVER SINK, WATER FLOW IS STOPPED BY RETURNING ARM TO ORIGINAL POSITION	
EWC-1	ELECTRIC WATER COOLER (BI-LEVEL ACCESSIBLE) (MIDDLE SCHOOL) ELKAY MODEL NO. EZSTL8WSLK BARRIER-FREE BI-LEVEL WATER COOLER ****** WITH BOTTLE FILLER ****** SELF-CLOSING EASY-TOUCH CONTROLS ON FRONT AND BOTH SIDES, FLEXIBLE GUARD BUBBLERS, STAINLESS STEEL ANTI-SPLASH TOP DESIGN, STANDARD LIGHT GRAY POWDERCOAT OVER GALVANIZED STEEL FINISH CABINET PROVIDE ELKAY CARRIER MODEL NO. MLP200 FOR FIXTURE SUPPORT PROVIDE MCGUIRE NO. 8912C P-TRAP AND BALL VALVE ON COLD WATER LINE WITHIN CABINET, PROVIDE CANE DETECTION APRON AT UPPER UNIT WHEN COOLER NOT LOCATED WITHIN ACCESSIBLE ALCOVE	30" AFF TO UPPER SPOUT 26" AFF TO LOWER SPOUT
FD-1	FLOOR / TILE SHOWER DRAIN - FLUSH STRAINER (SQUARE) ZURN MODEL NO. ZN415S DURA-COATED CAST IRON DRAIN WITH BOTTOM OUTLET, COMBINATION INVERTABLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS, "TYPE S" POLISHED NICKEL BRONZE LIGHT-DUTY STRAINER	
FD-1A	FLOOR DRAIN - FLUSH STRAINER (SQUARE) ZURN MODEL NO. ZN415S-P DURA-COATED CAST IRON DRAIN WITH BOTTOM OUTLET, COMBINATION INVERTABLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS, "TYPE S" POLISHED NICKEL BRONZE LIGHT-DUTY STRAINER, TRAP PRIMER.	
FD-1B	FLOOR DRAIN - LARGE FLUSH STRAINER (ROUND) ZURN MODEL NO. ZN415B-P DURA-COATED CAST IRON DRAIN WITH BOTTOM OUTLET, COMBINATION INVERTABLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS, "TYPE B" POLISHED NICKEL BRONZE LIGHT-DUTY STRAINER. TRAP PRIMER	
H-1	FREEZELESS WALL HYDRANT EXTERIOR/ENCASED ZURN Z1300 ENCASED ECOLOTROL ANTI-SIPHON AUTOMATIC DRAINING WALL HYDRANT FOR FLUSH INSTALLATION, NON-FREEZE INTEGRAL BACKFLOW PREVENTER, BRONZE CASING, ALL BRONZE INTERNAL PARTS, NON-TURNING OPERATING RODS WITH FREE-FLOATING COMPRESSION CLOSURE VALVES, REPLACEABLE BRONZE SEAT AND SEAT WASHER, AND COMBINATION 3/4" FEMALE OR 1" MALE STRAIGHT IP INLET, NICKEL BRONZE BOX AND HINGED COVER WITH OPERATING KEY LOCK AND "WATER" CAST ONTO COVER	MOUNT 24" AFG
H-2	WALL HYDRANTS - INTERIOR/ENCASED ZURN Z1350 ENCASED MODERATE CLIMATE WALL HYDRANT FOR FLUSH INSTALLATION IN NARROW WALL, BRONZE BODY, ALL BRONZE INTERNAL PARTS, REPLACEABLE SEAT WASHER, SCREWDRIVER OPERATED STOP VALVE IN SUPPLY KEY OPERATED CONTROL VALVE, 3/4" IP FEMALE INLET, 3/4" MALE HOSE CONNECTION, ADJUSTABLE ST STL BOX AND HINGED COVER WITH CYLINDER LOCK AND "WATER" STAMPED ONTO COVER	MOUNT 12" AFF
H-3	HOSE BIBB - INTERIOR/FACILITIES WOODFORD MODEL NO. 24 HYDRANT/HOSE BIBB, CHROME PLATED BRASS, VACUUM BREAKER, 3/4" HOSE THREAD OUTLET, WALL FLANGE, AND OPTIONAL METAL WHEEL HANDLE	MOUNT 12" AFF
IM-1	ICE MAKER - REFRIG. ICE MAKER BOX OATEY MODEL NO. 39152, WITH QUARTER-TURN BALL VALVE AND WATER HAMMER, PROVIDE WATTS 9BD DUAL-CHECK VACUUM BREAKER, COORDINATE MOUNTING HEIGHT WITH REFRIGERATOR OR OTHER EQUIPMENT SUPPLIED IN GENERAL CONTRACT, MAKE FINAL CONNECTIONS	
L-1	LAVATORY (ACCESSIBLE) - FACULTY AMERICAN STANDARD LUCERNE MODEL NO. 0356.041 ENAMELED CAST IRON, WALL HUNG, SINGLE HOLE, 21" x 18" LAVATORY WITH CHICAGO FAUCETS MODEL EVR-A12A-42ABCP CHROME PLATED, SINGLE HOLE MOUNTED FAUCET WITH CERAMIC CARTRIDGE, TEMPERATURE LIMIT STOP, AND VANDAL RESISTANT .5 GPM AERATOR. PROVIDE McGUIRE NO. LF170LKC LOOSE-KEY SUPPLIES WITH ESCUTCHEONS, McGUIRE NO. 155A DRAIN AND TAILPIECE WITH PERFORATED STRAINER, AND McGUIRE NO. 8902C P-TRAP. PROVIDE ZURN CARRIER MODEL NO. Z1231EZ TO FIT INSTALLATION REQUIREMENTS. PROVIDE McGUIRE PROWRAP ON SUPPLIES AND TRAP. TAILPIECE ON SUPPLIES SHALL BE COMPATIBLE WITH TAILPIECE ON FAUCET.	27" AFF TO RIM
L-2	LAVATORY (ACCESSIBLE) - SINGLE LAVATORY SAME AS L-1 EXCEPT FOR MOUNTING HEIGHT. PROVIDE MCGUIRE PROWRAP ON SUPPLIES AND TRAP	30" AFF TO RIM
L-3	LAVATORY (ACCESSIBLE) - GYM SLOAN "SLOANSTONE" MODEL NO. ELC-83000, WALL HUNG, 3 LAVATORY SYSTEM, 90" x 18" LAVATORY WITH EAF-225 SLOAN INFRARED SENSOR FAUCET, POLISHED CHROME FINISH, INTERGRATED SIDE MIXER, .5 GPM AERATOR. PROVIDE McGUIRE NO. LF170LKC LOOSE-KEY SUPPLIES WITH ESCUTCHEONS, PROVIDE McGUIRE PROWRAP ON SUPPLIES AND TRAP. TAILPIECE ON SUPPLIES SHALL BE COMPATIBLE WITH TAILPIECE ON FAUCET. CONTRACTOR TO INSTALL PER MANUFACTURER'S INSTRUCTIONS. IF WALL IS NOT LOAD BEARING, A CARRIER MAY BE NEEDED.	34" AFF TO RIM
MR-1	MOP RECEPTOR - NEO DROP ANGLE TERRAZZO FLORESTONE MODEL 96 32" x 32" x 12" ONE-PIECE PRECAST TERRAZZO NEO ANGLE DROP FRONT MOP RECEPTOR WITH ST STL INTEGRAL CAST PROTECTIVE CAP ON DROPPED FRONT AND TWO ST STL INTEGRAL CAST TILING FLANGES. DRAIN BODY SHALL BE BRASS, CAST INTEGRAL WITH A NON-CAULKED CONNECTION NOT LESS THAN 1" DEEP TO A 3" PIPE AND 18 GAUGE ST STL STRAINER, FLORESTONE NO. MR-371 SERVICE SINK FAUCET WITH INTEGRAL STOPS, VACUUM BREAKER, SPOUT, AND PAIL HOOK WALL BRACE, AND FLORESTONE NO. MR-370 5'-LONG HOSE AND HOSE BRACKET.	
RD	ROOF DRAIN ZURN MODEL NO. Z-100-EA-AC BODY WITH CAST IRON DOME, UNDER-DECK CLAMP, AND COMBINATION MEMBRANE FLASHING CLAMP/GRAVEL GUARD	
S-1	SINGLE SINK (ACCESSIBLE) - RESOURCE JUST, SINGLE BOWL, MODEL NO. SL-ADA-1815-A-GR, 18 GAUGE, TYPE 304 STAINLESS STEEL SELF-RIMMING, SATIN FINISH, FULLY COATED UNDERSIDE SOUND DEADENED, 18" x 15" x 4 1/2" WITH 12" x 12" BOWL, 2-HOLE PUNCHED, 4" CENTERS, CENTER BACK OUTLET, CHICAGO FAUCETS MODEL NO. 895-317FCABCP CAST BRASS FAUCET, 3-1/2" FLOW CONTROL RIGID/SWING GOOSENECK SPOUT, 4" WRIST BLADE HANDLES, QUATURN COMPRESSION CARTRIDGES, 1.5 GPM LAMINAR FLOW CONTROL INSERT IN SPOUT, PROVIDE McGUIRE NO. 170 SUPPLIES WITH ESCUTCHEONS, McGUIRE NO. 151 CRUMB CUP STRAINER, McGUIRE 8902C P-TRAP, SUPPLIES SHALL BE COMPATIBLE WITH TAILPIECE ON FAUCET, PROVIDE McGUIRE PLUMBEREX HANDY-SHILED COVERS ON TRAP AND SUPPLIES	SEE ARCHITECTURE DRAWINGS FOR COUNTER HEIGHT PROVIDE FAUCET FITTING TO RESTRICT SWING TO 180°
S-2	TUB SINK (ACCESSIBLE) - LAUNDRY FIAT MODEL P-1 WHITE POLYPROPYLENE TUB , 22" x 25", WITH 20 GALLON CAPACITY, WITH WHITE ENAMEL LEGS AND LEVELING FEET, INTEGRAL TAILPIECE, AND HOLES ON 4" CENTERS; FAUCET, CHICAGO FAUCETS MODEL NO. 891, WITH 6" SPOUT AND LEVER HANDLES ON 4" CENTERS AND 2.0 GPM AERATOR; McGUIRE NO. 170 SUPPLIES WITH ESCUTCHEONS, McGUIRE NO. 151 CRUMB CUP STRAINER, AND McGUIRE MODEL 8902 P-TRAP. SUPPLIES SHALL BE COMPATIBLE WITH TAILPIECE ON THE FAUCET.	SEE ARCHITECTURE DRAWINGS FOR COUNTER HEIGHT PROVIDE FAUCET FITTING TO RESTRICT SWING TO 180°

PLUMBING FIXTURE SCHEDULE2

MARK	DESCRIPTION	REMARKS
S-3	SINGLE SINK (ACCESSIBLE) - PREP ROOM "DURCON" MODEL SNKD-30C, 18" x 15"x 10.5 DROP-IN SINGLE BOWL SINK AND TRIM. THE PLUMBING CONTRACTOR SHALL PROVIDE CHICAGO FAUCETS NO. 930-VR369CP CHROME PLATED BRASS, RIGID, VANDAL RESISTANT GOOSENECK FAUCET WITH LEVER HANDLES INDEXED FOR HOT AND COLD, VACUUM BREAKER, REMOVABLE SERRATED HOSE NOZZLE, A POLYPROPLENE TAILPIECE WITH INTEGRAL STRAINER AND REMOVABLE PLUG, A ONE GALLON (MINIMUM) DILUTION TANK WITH MECHANICAL JOINTS, AND McGUIRE NO. 170 SUPPLIES WITH ESCUTCHEONS. MAKE ALL FINAL CONNECTIONS. SUPPLIES SHALL BE COMPATIBLE WITH TAILPIECE ON FAUCET. PROVIDE ALL PARTS NECESSARY FOR A COMPLETE INSTALLATION.	SEE ARCHITECTURE DRAWINGS FOR COUNTER HEIGHT PROVIDE FAUCET FITTING TO RESTRICT SWING TO 180°
S-4	SCIENCE SINK - STUDENT ADA "DURCON" MODEL SNKA-25, 18" x 15"x 5 DROP-IN SINGLE BOWL SINK AND TRIM. THE PLUMBING CONTRACTOR SHALL PROVIDE CHICAGO FAUCETS NO. 930-VR369CP CHROME PLATED BRASS, RIGID, VANDAL RESISTANT GOOSENECK FAUCET WITH LEVER HANDLES INDEXED FOR HOT AND COLD, VACUUM BREAKER, REMOVABLE SERRATED HOSE NOZZLE, A POLYPROPLENE TAILPIECE WITH INTEGRAL STRAINER AND REMOVABLE PLUG, A POINT OF USE DILUTION TANK "ORION" T8 POU 1.5 USG TANK MOD. 734002, WITH MECHANICAL JOINTS, AND McGUIRE NO. 170 SUPPLIES WITH ESCUTCHEONS. MAKE ALL FINAL CONNECTIONS "ORION" BLUE PIPE. SUPPLIES SHALL BE COMPATIBLE WITH TAILPIECE ON FAUCET. PROVIDE ALL PARTS NECESSARY FOR A COMPLETE INSTALLATION.	SEE ARCHITECTURE DRAWINGS FOR COUNTER HEIGHT PROVIDE FAUCET FITTING TO RESTRICT SWING TO 180°
S-5	SCIENCE SINK - STUDENT "DURCON" MODEL SNKD-30C, 18" x 15"x 10.5 DROP-IN SINGLE BOWL SINK AND TRIM. THE PLUMBING CONTRACTOR SHALL PROVIDE CHICAGO FAUCETS NO. 930-VR369CP CHROME PLATED BRASS, RIGID, VANDAL RESISTANT GOOSENECK FAUCET WITH LEVER HANDLES INDEXED FOR HOT AND COLD, VACUUM BREAKER, REMOVABLE SERRATED HOSE NOZZLE, A POLYPROPLENE TAILPIECE WITH INTEGRAL STRAINER AND REMOVABLE PLUG, A POINT OF USE DILUTION TANK "ORION" T8 POU 1.5 USG TANK MOD. 734002, WITH MECHANICAL JOINTS, AND McGUIRE NO. 170 SUPPLIES WITH ESCUTCHEONS. MAKE ALL FINAL CONNECTIONS. SUPPLIES SHALL BE COMPATIBLE WITH TAILPIECE ON FAUCET. PROVIDE ALL PARTS NECESSARY FOR A COMPLETE INSTALLATION.	COORDINATE SIZE OF DILUTION TRAP WITH SCIENCE CASEWORK REFER TO ARCHI- TECTURAL PLANS FOR COUNTER HEIGHTS AND LOCATIONS
SH-1	SHOWER (STANDARD) SYMMONS SHOWEROFF SYSTEM MODEL NO. 3-325, SHOWEROFF CONCEALED METERING SHOWER VALVE WITH INTEGRAL STOP AND 1/2" SWEAT CONNECTIONS (NO. 4-420) AND FRE-FLO INSTITUTIONAL SHOWERHEAD WITH ADJUSTABLE SPRAY (NO. 4-295-2.0) (2 GPM) WITH VANDAL RESISTANT MOUNTING HARDWARE. PROVIDE FD-1	
SH-1A	SHOWER (ACCESSIBLE) ROLL-IN/TRANSFER SYMMONS SHOWEROFF SYSTEM MODEL NO. 3-325, SHOWEROFF CONCEALED METERING SHOWER VALVE WITH INTEGRAL STOP AND 1/2" SWEAT CONNECTIONS (NO. 4-420) AND FRE-FLO INSTITUTIONAL SHOWERHEAD WITH ADJUSTABLE SPRAY (NO. 4-295-2.0) (2 GPM) WITH VANDAL RESISTANT MOUNTING HARDWARE, PROVIDE ALSO LEVERTROL LEVER DIVERTER VALVE MODEL NO. 4-458, AND WALL/HAND SHOWER MODEL NO. FSB (2.5 GPM) WITH 5' FLEXIBLE METAL HOSE, IN-LINE VACUUM BREAKER, AND 30" VERTICAL SLIDE BAR. PROVIDE FD-1	
ST-1	A. O. SMITH MODEL NO. T-80 STD, 80 GALLON HORIZONTAL STEEL WATER STORAGE TANK, GLASS-LINED PER ASME HLW PROEDURES, USING NSF- APPROVED GLASS-LINING COMPOUND, 62 1/8" LONG, 20" DIAMETER, WITH PAINTED EXTERIOR AND MAGNESIUM ANODES. TANK SHALL BE RATED FOR 150 PSI WORKING PRESSURE, AND SHALL HAVE A FIVE-YEAR LIMITED WARRANTY. PROVIDE A. O. SMITH FLEXIBLE FOAM INSULATING JACKET, R-12.5 INSULATION VALUE, MEETING REQUIREMENTS OFUL-94 HBF, CALIFORNIA TECHNICAL BULLETIN 117 AND MVSS-302, WITH FLAME RETARDANT PVC VINYL COVERING RATED AT 225°F, FASTENED ON TANK WITH VELCRO FASTENER. SYSTEM MEETS OR EXCEEDS EFFICIENCY REQUIRE- MENTS OF ASHRAE/IES 90.1b - 1992. PROVIDE AMTROL MODEL NO. THERM-X-TROL ST-5 EXPANSION TANK WITH 150 PSI MAXIMUM WORKING PRESSURE AND FACTORY PRE-CHARGED TO 40 PSIG.	
U-1	URINAL (STANDARD) - K-5 STUDENTS AMERICAN STANDARD WASHBROOK MODEL NO. 6590.001 VITREOUS CHINA UNIVERSAL TOP SPUD URINAL, PINT FLUSH/0.125 GPF, 3/4" TOP SPUD, FLUSHING ELONGATED RIM, WITH SLOAN ROYAL MODEL N0. 186-0.125 MANUAL FLUSH VALVE FOR PINT FLUSH OPERATION, PROVIDE ZURN CARRIER MODEL 1221 OR 1222 TO FIT INSTALLATION REQUIREMENTS	17" AFF TO RIM
WB-1	WASHING MACHINE BOX OATEY MODEL 38995 20 GAUGE GALV. STEEL BOX AND FACEPLATE WITH 2" DRAIN PIPE AND (2) 3/4" QUARTER-TURN BRASS HAMMER BALL VALVES WITH 3/4" HOSE THREAD CONNECTIONS AND 2" RUBBER TAILPIECE - PROVIDE OATEY MODEL NO. 38987 PVC TAILPIECE WHERE APPLICABLE, COORDINATE MOUNTING HEIGHT WITH WASHING MACHINE PROVIDED IN GENERAL CONTRACT, MAKE FINAL CONNECTIONS	
WC-1	WATER CLOSET (STANDARD) AMERICAN STANDARD MADERA MODEL NO. 2234.001 FLOOR MOUNTED, BOTTOM OUTLET, 1-1/2" TOP SPUD, VITREOUS CHINA, HIGH EFFICIENCY TOILET WITH ELONGATED BOWL, 1.28 GAL/FLUSH SIPHON JET OPERATION, AND BOLTS AND CAPS, WITH SLOAN REGAL MODEL NO. 111-1.28 FLUSH VALVE, PROVIDE WITH CHURCH PRODUCTS NO. 9500SSCT, EXTRA HEAVY DUTY SOLID PLASTIC, OPEN FRONT, ELONGATED SEAT WITH STAINLESS STEEL POSTS, STAINLESS STEEL SELF-SUSTAINING CHECK HINGES, AND STA-TITE FASTENING NUTS	15" AFF TO RIM COORD. VALVE HANDLE HEIGHT WITH GRAB BARS WHERE APPLIES
WC-2	WATER CLOSET (ACCESSIBLE) AMERICAN STANDARD MADERA MODEL NO. 3461.001 FLOOR MOUNTED, BOTTOM OUTLET, 1-1/2" TOP SPUD, VITREOUS CHINA, HIGH EFFICIENCY TOILET WITH ELONGATED BOWL, 1.28 GAL/FLUSH SIPHON JET OPERATION, AND BOLTS AND CAPS, WITH SLOAN REGAL MODEL NO. 111-1.28 FLUSH VALVE, PROVIDE WITH CHURCH PRODUCTS NO. 9500SSCT, EXTRA HEAVY DUTY SOLID PLASTIC, OPEN FRONT, ELONGATED SEAT WITH STAINLESS STEEL POSTS, STAINLESS STEEL SELF-SUSTAINING CHECK HINGES, AND STA-TITE FASTENING NUTS	17" AFF TO RIM COORD. VALVE HANDLE HEIGHT WITH GRAB BARS WHERE APPLIES
WH-1	WATER HEATER - A. O. SMITH WATER HEATER - AO SMITH, CYCLONE MXi-BTH199, 100 GALLON STORAGE CAPACITY NAT GAS WATER HEATER, POWER DIRECT VENT WITH SEALED COMBUSTION, RATED AT 199,000 BTU NATURAL GAS WITH A RECOVERY RATE OF 233 GALLONS PER HOUR AT 100°F RISE. HEATER STANDARD WITH ASME RATED TANK AND TEMPERATURE AND PRESSURE RELIEF VALVE, RATED FOR 150 PSI WORKING PRESSURE, 97% THERMAL EFFICIENCY FROM 40°F TO 140°F, CONDENSING DESIGN. PROVIDE CONCENTRIC VENTING KIT BY SAME MANUFACTURER WITH SEPARATE INTAKE AND FLUE. HEATER TO BE SET AT 140°F. PROVIDE STATE #ETC-10X EXPANSION TANK, BUTYL LINED. STORAGE TANK - A. O. SMITH MODEL NO. TJV-200A, 200 GALLON VERTICAL, FACTORY JACKETED AND INSULATED, STEEL, WATER STORAGE TANK, GLASS-LINED PER ASME HLW PROEDURES, USING NSF- APPROVED GLASS-LINING COMPOUND, 83" TALL, 36" DIAMETER, WITH PAINTED EXTERIOR AND MAGNESIUM ANODES. TANK SHALL BE RATED FOR 150 PSI WORKING PRESSURE, AND SHALL HAVE A FIVE-YEAR LIMITED WARRANTY. PROVIDE A. O. SMITH FLEXIBLE FOAM INSULATING JACKET, R-12.5 INSULATION VALUE, MEETING REQUIREMENTS OFUL-94 HBF, WITH FLAME RETARDANT PVC VINYL COVERING RATED AT 225°F, FASTENED ON TANK WITH VELCRO FASTENER. SYSTEM MEETS OR EXCEEDS EFFICIENCY REQUIRE- MENTS OF ASHRAE/IES 90.1b - 1992. PROVIDE AMTROL MODEL NO. THERM-X-TROL ST-5 EXPANSION TANK WITH 150 PSI MAXIMUM WORKING PRESSURE AND FACTORY PRE-CHARGED TO 40 PSIG. RECIRCULATING PUMP (RP-1) - SEE DETAIL FOR QUANTITY. B&G SERIES 100, 7 GPM, 8 FEET HEAD, 120/1/60, 1/12 HP, ALL BRONZE CONSTRUCTION AND FLANGE CONNECTION. MAKE CONNECTION TO BUILDING AUTOMATION SYSTEM CONNECTION POINT PROVIDED BY MECHANICAL CONTRACTOR (IF APPLICABLE).	
WH-2	WATER HEATER - A. O. SMITH WATER HEATER - AO SMITH, CYCLONE MXi-BTH199, 100 GALLON STORAGE CAPACITY NAT GAS WATER HEATER, POWER DIRECT VENT WITH SEALED COMBUSTION, RATED AT 199,000 BTU NATURAL GAS WITH A RECOVERY RATE OF 233 GALLONS PER HOUR AT 100°F RISE. HEATER STANDARD WITH ASME RATED TANK AND TEMPERATURE AND PRESSURE RELIEF VALVE, RATED FOR 150 PSI WORKING PRESSURE, 97% THERMAL EFFICIENCY FROM 40°F TO 140°F, CONDENSING DESIGN. PROVIDE CONCENTRIC VENTING KIT BY SAME MANUFACTURER WITH SEPARATE INTAKE AND FLUE. HEATER TO BE SET AT 140°F. PROVIDE STATE #ETC-10X EXPANSION TANK, BUTYL LINED. STORAGE TANK - A. O. SMITH MODEL NO. TJV-200A, 200 GALLON VERTICAL, FACTORY JACKETED AND INSULATED, STEEL, WATER STORAGE TANK, GLASS-LINED PER ASME HLW PROEDURES, USING NSF- APPROVED GLASS-LINING COMPOUND, 83" TALL, 36" DIAMETER, WITH PAINTED EXTERIOR AND MAGNESIUM ANODES. TANK SHALL BE RATED FOR 150 PSI WORKING PRESSURE, AND SHALL HAVE A FIVE-YEAR LIMITED WARRANTY. PROVIDE A. O. SMITH FLEXIBLE FOAM INSULATING JACKET, R-12.5 INSULATION VALUE, MEETING REQUIREMENTS OFUL-94 HBF, CALIFORNIA TECHNICAL BULLETIN 117 AND MVSS-302, WITH FLAME RETARDANT PVC VINYL COVERING RATED AT 225°F, FASTENED ON TANK WITH VELCRO FASTENER. SYSTEM MEETS OR EXCEEDS EFFICIENCY REQUIRE- MENTS OF ASHRAE/IES 90.1b - 1992. PROVIDE AMTROL MODEL NO. THERM-X-TROL ST-5 EXPANSION TANK WITH 150 PSI MAXIMUM WORKING PRESSURE AND FACTORY PRE-CHARGED TO 40 PSIG. RECIRCULATING PUMP (RP-1) - SEE DETAIL FOR QUANTITY. B&G SERIES 100, 7 GPM, 8 FEET HEAD, 120/1/60, 1/12 HP, ALL BRONZE CONSTRUCTION AND FLANGE CONNECTION. MAKE CONNECTION TO BUILDING AUTOMATION SYSTEM CONNECTION POINT PROVIDED BY MECHANICAL CONTRACTOR (IF APPLICABLE).	
WH-3	WATER HEATER - A. O. SMITH A.O. SMITH MODEL NO. DRE-80-18, 80 GALLON TALL ELECTRIC WATER HEATER. ELEMENTS SHALL BE RATED AT 18.0 KW, 208/3/60, WITH NON-SIMULTANEOUS OPERATION. ELEMENTS SHALL BE CONTROLLED BY A MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUTOFF SWITCH. HEATER SHALL BE SET AT 110°F WATER TEMPERATURE. TANK SHALL BE GLASS LINED, RATED FOR 150 PSI WORKING PRESSURE, AND SHALL HAVE A THREE-YEAR WARRANTY. WATER HEATER SHALL MEET ALL REQUIREMENTS OF CURRENT VERSION OF ASHRAE 90. EFFICIENCY STANDARDS. PROVIDE AMTROL MODEL NO. THERM-X-TROL ST-30V EXPANSION TANK WITH 150 PSI MAXIMUM WORKING PRESSURE AND FACTORY PRE-CHARGED TO 40 PSIG.	

C

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PROJECT# 23014

NORTH CAROLINA PROFESSIONAL SEAL 025020 ENGINEER STEVE W. CAMPBELL

CONSTRUCTION DOCUMENTS

04/04/2024

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
ADDITION & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

DRAWN BY: DJL
CHECKED BY: SWC

SCHEDULE

2022035 11 MARCH 2024

P6-01

RATED WALLS LEGEND

	1HR RATED
	2HR RATED
	3HR RATED

GENERAL NOTES:

A. ALL DUCT DIMENSIONS INDICATED ARE INSIDE CLEAR.

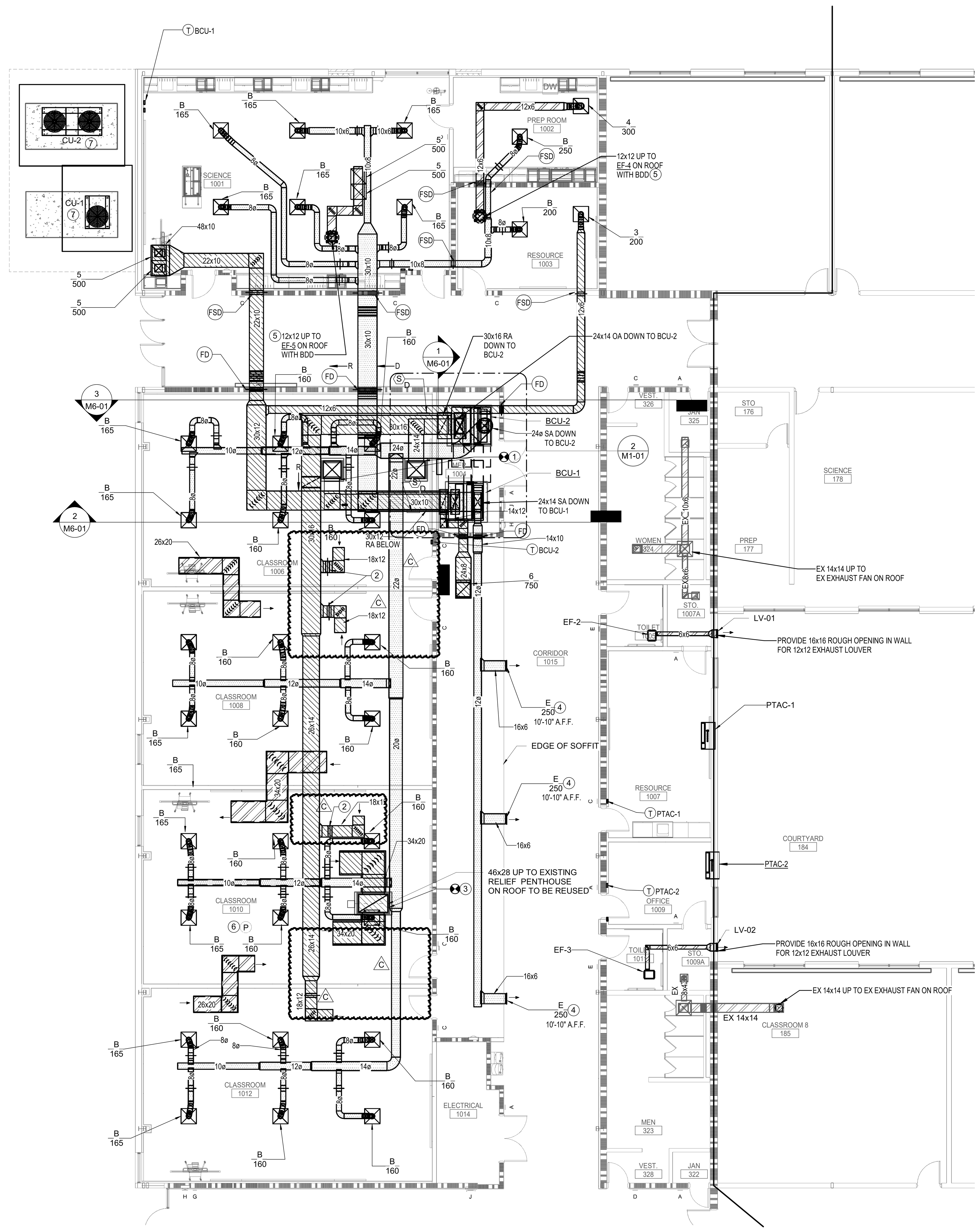
B. ALL EXTERIOR DUCT WORK TO BE INSULATED AND COVED WITH ALUMINUM JACKET. SEE SPECIFICATIONS.

C. EXPOSED DOUBLE WALL DUCT AND DIFFUSERS SHALL HAVE PAINT GRIP FINISH FOR FIELD PAINTING.

D. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL PERFORM A FINAL TEST, ADJUST AND BALANCE (TAB) REPORT

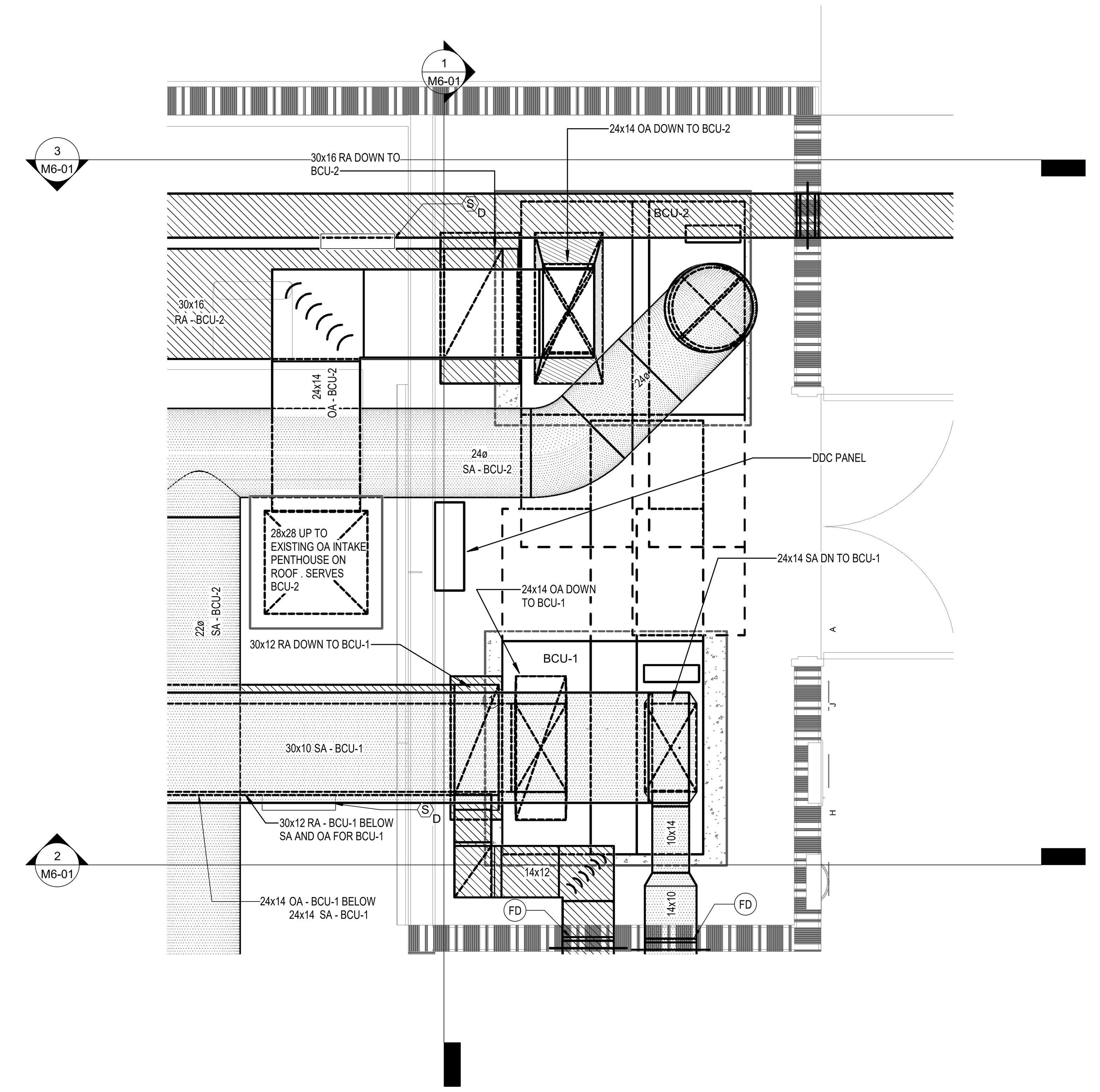
KEYNOTES:

1. CONNECT NEW 28x28 OUTSIDE AIR DUCT TO EXISTING PENTHOUSE ON ROOF AND SEAL AIR TIGHT.
2. BALANCE TO 800 CFM (C)
3. CONNECT 48x28 RELIEF AIR DUCT TO EXISTING RELIEF PENTHOUSE ON ROOF. PROVIDE DAMPER IN THE 48x28 DUCT UP TO THE EXISTING PENTHOUSE
4. PROVIDE SUPPY REGISTER WITH DAMPER FOR BALANCING.
5. MOUNT NEW FAN ON EXISTING FAN ROOF CURB. PROVIDE ROOF ADAPTER AS NECESSARY FOR PROPER FIT.
6. INSTALL PRESSURE SENSOR IN PLENUM SPACE ABOVE THE CEILING.
7. MOUNT NEW CONDESING UNIT ON EXISTING CONCRETE PAD.



1 LEVEL 1 DUCTWORK - Classrooms

1/8" = 1'-0"



2 LEVEL 1 DUCTWORK - MECHANCAL ROOM

1/2" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 025020 ENGINEER STEVE W. CAMPBELL

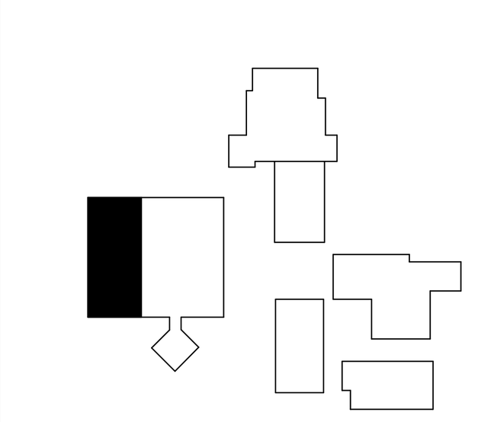
CONSTRUCTION DOCUMENTS

04/04/2024

ONSLOW COUNTY SCHOOLS NORTHWOODS PARK MIDDLE SCHOOL ADDITION & RENOVATION

904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3



KEY PLAN: NO SCALE

DRAWN BY: JAV
CHECKED BY: SWC

DUCTWORK PLAN - CLASSROOMS

2022035 11 MARCH 2024

M1-01

ROOFTOP UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	OA (CFM)	SUPPLY FAN			EXHAUST FAN			WHEEL AIRFLOW		ENTHALPY WHEEL SUMMER PERFORMANCE						ENTHALPY WHEEL WINTER PERFORMANCE						COOLING COIL				GAS HEAT				REHEAT COIL CAPACITY (MBH)	REHEAT COIL LAT DB (°F)	REHEAT COIL LAT WB (°F)	RERIGERATION CIRCUIT			ELECTRICAL				ELECTRICAL		WEIGHT (LBS)	REMARKS
				QTY	CFM	ESP IN. WG	HP	CFM	ESP IN. WG	HP	WHEEL OA (CFM)	WHEEL EA (CFM)	SUM OA DB (°F)	SUM OA WB (°F)	SUM RET DB (°F)	SUM RET WB (°F)	SUM LDB (°F)	SUM LWB (°F)	WIN OA DB (°F)	WIN OA WB (°F)	WIN RET DB (°F)	WIN RET WB (°F)	WIN LDB (°F)	WIN LWB (°F)	EDB (°F)	EWB (°F)	TOTAL COOLING (MBH)	SENSIBLE COOLING (MBH)	LDB (°F)	LWB (°F)	OUTPUT (MBH)	INPUT (MBH))	EDB (°F)	LDB (°F)				COMP. QTY/ RLA (EA)	COND FAN QTY/HP	EER	V	PH	MCA	ELEC MOCP	FLA		
RTU-1	AAON	RN-014-8	900	1	4200	.75	5	---	-----	---	---	-----	-----	-----	------	------	-----	-----	-----	-----	-----	------	-----	-----	-----	-----	150.11	118.1	55	54	218.7	270	52	100	85	74	62	2/17.6	2/1.0	13.6	208	3	65	80	61	2600	1
RTU-2	AAON	RNA-016-C	1000	1	5000	.75	5	---	-----	---	---	-----	-----	-----	------	------	-----	-----	-----	-----	-----	------	-----	-----	-----	-----	190.7	145.30	55	54	218.7	270	56	96	108.2	75	62	2/26.9	2/1.0	11.6	208	3	92	110	85	3010	2
RTU-3	AAON	RNA-016-C	1000	1	5000	.75	5	---	-----	---	---	-----	-----	-----	------	------	-----	-----	-----	-----	-----	------	-----	-----	-----	-----	190.7	145.30	55	54	218.7	270	56	96	108.2	75	62	2/26.9	2 /1.0	11.6	208	3	92	110	85	3010	2
RTU-4	AAON	RN-011-8	2750	1	2700	1.0	3	3230	.5	3	2750	3230	98	78	75	64	82	69	10	9	68	54	49	42	82	67	223.03	128.37	54	53	156	195	10	102	50	70	60	2/16.9	2/.33	14.3	208	3	65	80	61	2500	1

GENERAL NOTES:

A. UNITS WITH ONE COMPRESSOR SHALL BE VARIABLE SPEED 15-100% CAPACITY. UNITS WITH TWO COMPRESSORS SHALL HAVE TWO 0-15% VARIABLE SPEED COMPRESSOR.
B. TOTAL ENTHALPY WHEELS SHALL HAVE AN EATR OF 5% OR LESS
C. PROVIDE ALL DUCT TRANSITIONS FROM UNIT.
D. PROVIDE METAL MESH OUTDOOR AIR MERV 8 PREFILTER AND 2" MERV 13 FILTERS.
E. PROVIDE 0-100% ECONOMIZER WITH LOW LEAKAGE DAMPERS. PROVIDE DRY BULB SENSOR FOR ECONOMIZER OPERATION
F. PROVIDE FACTORY CIRCUIT BREAKER IN NEMA 3R ENCLOSURE, SINGLE POINT POWER CONNECTION, AND 24 VOLT CONTROLS TRANSFORMER. PROVIDE 65 kA SCCR
G. PROVIDE WALL MOUNTED TEMPERATURE SENSOR WITH SETPOINT OVERRIDE ADJUSTMENT. PROVIDE WALL MOUNTED HUMIDITY SENSOR
H. PROVIDE WALL MOUNTED CO2 SENSOR.
I. PROVIDE WITH STAINLESS STEEL DRAIN PAN
J. PROVIDE ROOF CURB DESIGNED FOR THE PROJECT WIND ZONE. BRD HUSHCORE WHISPER E OR APPROVED EQUAL BY PRICE OR KINETICS NOISE. MECHANICAL CONTRACTOR SHALL FIELD CUT OPENINGS IN BOTTOM OF CURB TO ALIGN WITH STRUCTURAL. MECHANICAL CONTRACTOR SHALL COORDINATE CURB WITH UNIT MANUFACTURER'S ACTUAL SOUND DATA.
K. PROVIDE FIELD WIRED 115 VOLT GFI RECEPTACLE
L. PROVIDE DOUBLE-WALL CONSTRUCTION WITH R-13 FOAM INSULATION
M. PROVIDE AUXILIARY GAS HEAT
N. PROVIDE PHASE LOSS AND PROTECTION, HAIL GUARDS, AND ACCESS DOORS
O. PROVIDE INTAKE HOOD EXTENSION FOR MOUNTING AIRFLOW MEASURING STATION.
P. EQUIVALENTS BY GREENHECK OR TRANE OR AS LISTED IN THE SPECIFICATION.
Q. PROVIDE WITH 5,000 HR SEA COAST APPLICATION.

REMARKS:

1. DOWNFLOW ORIENTATION
2. HORIZONTAL SUPPLY AND BOTTOM RETURN ORIENTATION

SPLIT SYSTEM AIR HANDLING UNIT - DX / HW REHEAT

MARK	MANUFACTURER	MODEL	SUPPLY AIR (CFM)	OUTSIDE AIR (CFM)	FAN			SENSIBLE COOLING (MBH)	TOTAL COOLING (MBH)	COOLING COIL MAX VELOCITY FPM	COOLING COIL EAT °F DB/WB	COOLING COIL LAT °F	HEATING TOTAL MBH	HEATING EAT	HEATING LAT	HEATING COIL APD	HEATING COIL ROWS	HEATING COIL GPM	HEATING COIL EWT	HEATING COIL LWT	HEATING COIL PD IN.WG	ELECTRICAL			
					HP	FLA	ESP															MCA	MOP	V	PH
BCU-1	TRANE	BCVE072	2500	350	3	11.2	.8	69.38	147.75	500	81/72	55	116.38	55 °F	98 °F	0.127	1	11.1	180 °F	160 °F	5.38	14	25	208	3
BCU-2	TRANE	BCVE120	4000	800	5	15.8	1	115.48	244.25	500	81/72	55	187.28	54 °F	97 °F	0.131	1	18.0	180 °F	160 °F	6.50	19.75	35	208	3

GENERAL NOTES:

A. UNIT SHALL BE MINIMUM TWO CIRCUITS WITH VARIABLE CAPACITY COMPRESSORS
B. PROVIDE 6" BASE RAIL. PROVIDE STAINLESS STEEL AUXILIARY DRAIN PAN UNDER UNIT.
C. PROVIDE MICROPROCESSOR CONTROLS AND VOLTAGE/PHASE MONITOR
D. PROVIDE FACTORY NON-FUSED DISCONNECT, SINGLE POINT POWER CONNECTION, AND 24V CONTROLS TRANSFORMER.
E. PROVIDE SPACE TEMPERATURE AND HUMIDITY SENSORS. PROVIDE DUCT MOUNTED SUPPLY TEMPERATURE SENSOR.
F. PROVIDE VERTICAL CONFIGURATION
G. MINIMUM 6 ROW DX COOLING COIL WITH 2" 30% PLEATED FILTERS
H. FAN SHALL BE DIRECT DRIVE WITH FACTORY VFD AND SHAFT GROUNDING
I. EQUIVALENTS AS LISTED IN CONDENSING UNIT SECTION BELOW.
J. UNIT SHALL HAVE MIXING BOX WITH RETURN / OUTSIDE AIR DAMPERS AND 100% ECONOMIZER CAPABILITY. PROVIDE OUTSIDE AIR SUCH AIR SENSOR FOR CONTROL.
K. PROVIDE WITH OPTIONAL DOUBLE WALL INSULATED PANELS.
L. ACEPTABLE EQUIVALENT MANUFACTURERS; YORK, ENVIROTEC.

SPLIT SYSTEM AIR COOLED CONDENSING UNIT

MARK	MANUFACTURER	MODEL	TOTAL COOLING TONS	EFFICIENCY	COMPRESSOR		FAN		ELECTRICAL		ELECTRICAL		WEIGHT	DIMENSIONS (HxWxL)
				EER	QTY	RLA	QTY	FLA	MCA	MOP	VOLTAGE	PH		
CU-1	TRANE	TTA150	12.5	11.7	2	20.3	1	4.3	50	70	208	3	459	50.75"x40"x52"
CU-2	TRANE	TTA240	20	12.1	2	35.4	2	4.3	85	110	208	3	771	45"x46"x93"

GENERAL NOTES:

A. PERFORMANCE BASED ON 105 DEG F AMBIENT
B. PROVIDE HAIL GUARDS FOR CONDENSER COILS
C. REFRIGERANT LINE SIZES SHALL BE AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER BASED ON HORIZONTAL AND VERTICAL LINE LENGTH
D. EQUIVALENTS AS LISTED IN THE SPECIFICATIONS
E. PROVIDE CONDENSER COIL WITH 5,000 HR SEA COAST APPLICATION
F. ACCEPTABLE EQUIVALENT MANUFACTURERS: YORK, ENVIROTEC.

FAN SCHEDULE

MARK	MANUFACTURER	MODEL	CFM	ESP	HP	RPM	SONES	ELECTRICAL		WEIGHT (LBS)	REMARKS
								V	PH		
EF-1	GREENHECK	H-G-099-A	900	.82	1/3	1725	12.1	120	1	150	1,2,3,4,7
EF-2	GREENHECK	SP-B110ES	80	.3	1/30	594	2.5	120	1	20	2,4,6
EF-3	GREENHECK	SP-B110ES	80	.3	1/30	594	2.5	120	1	20	2,4,6
EF-4	GREENHECK	H-GB-098	300	.5	1/6	1725	5.7	120	1	55	1,2,4,7
EF-5	GREENHECK	H-G-099-A	1000	.5	1/4	1725	12.1	120	1	55	1,2,4,7,8

GENERAL NOTES:

A. PROVIDE DUCT TRANSITIONS FOR ALL FANS
B. EXTERIOR FAN HOUSINGS SHALL BE CONSTRUCTED OF ALUMINUM. INTERIOR FAN HOUSINGS SHALL BE GALVANIZED STEEL
C. ALL FANS SHALL BE U.L. LISTED
D. PROVIDE WITH UNIT MOUNTED DISCONNECT
E. EXTERNALLY OR INTERNALLY MOUNTED DISCONNECT SWITCH FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26
F. ALL FANS SHALL BE CERTIFIED IN ACCORDANCE WITH AMCA
G. PROVIDE ALL FANS WITH SPEED CONTROLLERS. MOUNT AT ACCESSIBLE LOCATION.
H. EQUIVALENTS BY TWIN CITY, PENN, AMERICAN COOL AIR, OR AS LISTED IN THE SPECIFICATIONS
I. PROVIDE WITH 10,000 HR SALT SPRAY TEST PROTECTION.

REMARKS:

1. FAN SHALL BE CONTROLLED BY DDC SYSTEM.
2. PROVIDE DISCONNECT SWITCH, NEMA 1, TOGGLE, MOUNTED AND WIRED
3. PROVIDE WITH 18" HIGH PRE-FABRICATED INSULATED CURB. CURB SHALL BE COMPATIBLE WITH THE ROOFING SYSTEM.
4. PROVIDE GRAVITY BACKDRAFT DAMPER
5. NOT USED
6. PROVIDE WITH UNIT MOUNTED SPEED CONTROLLER.
7. PROVIDE FAN MODEL FOR HIGH WIND AND HURRICANE UP TO 150 MPH.
8. FAN SHALL OPERATE FOR EMERGENCY EXHAUST WHEN MANUAL WALL SWITCH IS ACTIVATED

PACKAGED TERMINAL AIR CONDITIONING UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	OUTSIDE AIR CFM	COOLING (MBH)	HEATING (MBH)	FAN DATA		ELECTRICAL				COMPRESSOR LRA	COMPRESSOR RLA	WEIGHT (LBS)	REMARKS
						CFM	kW	V	PH	MCA	COP				
PTAC-1	AMANA	DHP12A25A A	60	11.5	11.2	387	1.2	208	1	6.1	2.9	21.50	4.70	120	1,2,3,4,5
PTAC-2	AMANA	DPH093A25 AA	60	9.1	8.6	333	.96	208	1	4.8	3.0	19.50	3.50	115	1,2,3,4,5

REMARKS:

1. PROVIDE WITH WALL SLEEVE.
2. PROVIDE WITH ALUMINUM ARCHITECTURAL GRILLE
3. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT
4. PROVIDE WITH MERV 8 FILTERS.
5. PROVIDE WITH CONDENSATE DRAIN KIT

ELECTRIC UNIT HEATER SCHEDULE

MARK	MODEL	CAPACITY (MBH)	KW	EAT (°F)	LAT (°F)	FAN ELECTRICAL			ELECTRICAL		FAN ELECTRICAL	MOUNTING HEIGHT	REMARKS
						TYPE	CFM	THROW	V	PH	AMPS		
EUH-1	F2F5510SN	17	5	20	60	HORIZ	400	12'	208	1	24	9'	1,2,3

GENERAL NOTES:

A. UNITS BASED ON MARKEL 5100 AND 3420 SERIES.
B. EQUIVALENTS: REZNOR, BERKO, INDEECO.

REMARKS:

1. PROVIDE HANGING BRACKET.
2. PROVIDE WALL MOUNTED THERMOSTAT.
3. PROVIDE DISCONNECT SWITCH

DUCTLESS SPLIT UNIT (OUTDOOR) SCHEDULE

MARK	SERVES	MODEL	TOTAL COOLING (MBH)	SENSIBLE COOLING (MBH)	HEATING (MBH)	SEER	FAN QTY/FLA	ELECTRICAL				WEIGHT (LBS)	REMARKS
								V/PH	WATTS	MCA	MOCP		
ACCU-1	DS-1	MUY GL24-NA	24	22.4	26	16	1	208/1	1800	17.1	20	125	1,2,3
ACCU-2	DS-2	MUY GL24-NA	24	22.4	26	16	1	208/1	1800	17.1	20	125	1,2,3

DUCTLESS SPLIT UNIT (INDOOR) SCHEDULE

MARK	MODEL	SUPPLY CFM	TOTAL COOLING (MBH)	HEATING (MBH)	ELECTRICAL				WEIGHT (LBS)	REMARKS
					V	PH	EER	SEER		
DS-1	MSY-GL24NA	400	22.5	26	208	1	12.5	20.5	30	1,2,3,4,5
DS-2	MSY-GL24NA	400	22.5	26	208	1	12.5	20.5	30	1,2,3,4,5

REMARKS FOR DUCTLESS SPLIT UNIT INDOOR AND OUTDOOR

1. PROVIDE WITH HARDWIRED LOW VOLTAGE THERMOSTAT.
2. PROVIDE INTERCONNECTION REFRIGERANT PIPING AND ELECTRICAL POWER KIT
3. PROVIDE WITH CONDENSATE PUMP
4. PROVIDE EPOXY COATING ON CONDENSER COIL FOR 5000 HR SEA COAST APPLICATION.
5. ALL ROOF CURB/RAILS AND ATTACHMENTS THERE TO SHALL BE THIRD PARTY LISTED FOR THE PROJECT WIND ZONE.
6. EQUIVALENT BY: DAIKIN SAMSUNG, AND LG

AIR DISTRIBUTION SCHEDULE

MARK	MANUFACTURER	MODEL	PURPOSE	MIN CFM	MAX CFM	FACE SIZE	INLET SIZE	REMARKS
1	PRICE	530	RETURN/EXHAUST	50	100	12x12	6	1,2,3,4
3	PRICE	530	RETURN/EXHAUST	105	225	24x24	8	1,2,3,4
4	PRICE	530	RETURN/EXHAUST	226	350	24x24	10	1,2,3,4
5	PRICE	530	RETURN/EXHAUST	351	500	24x24	12	1,2,3,4
6	PRICE	530	RETURN/EXHAUST	750	750	24x24	22x22	1,2,3,4
7	PRICE	96	RETURN	3200	5000	62x18	60x16	1,2
8	PRICE	530	RETURN	105	250	12x12	8	1,2,3
A	PRICE	SCD	SUPPLY	50	110	12x12	6	1,2
B	PRICE	SCD	SUPPLY	110	250	24x24	8	1,2
C	PRICE	SCD	SUPPLY	230	440	24x24	10	1,2
D	PRICE	SCD	SUPPLY	441	620	24x24	12	1,2
E	PRICE	150	SUPPLY	300	525	18x8	16x6	5,6

GENERAL NOTES:

A. EQUIVALENTS BY TITUS, KRUEGER, TUTTLE AND BAILEY, NAILOR, METALAIRE OR AS LISTED IN SPECIFICATIONS
B. PROVIDE VOLUME DAMPERS AT TAKE-OFF FOR EACH GRILLE
C. ALL AIR DISTRIBUTION DEVICES SHALL BE ALUMINUM.
D. THE PRICE MODELS SCHEDULED HERE ARE BASIS OF DESIGN, INCLUDING GENERATED NOISE. PROPOSED SUBSTITUTIONS WILL BE JUDGED BY THOSE CRITERIA ALSO
E. WHERE LOCATED IN HARD CEILINGS, PROVIDE ALUMINUM MOUNT FRAME/PLASTER FRAME FOR HARD CEILING THAT ALLOWS DIFFUSER/GRILLE WITH FLEX CONNECTION TO BE LIFTED OUT OF FRAME TO ACCESS CEILING SPACE. TYPICAL OF ALL HARD CEILING LOCATIONS. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN.
F. FOR SIDE WALL GRILLES, PROVIDE REMOTE CABLE OPERATED, GEAR DRIVEN BALANCING DAMPER OPERABLE FROM FACE OF DIFFUSER

REMARKS:

1. PROVIDE WITH WHITE ENAMEL FINISH
2. PROVIDE WITH TRIM TO MATCH CEILING TYPE. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILINGS. PROVIDE PLASTER FRAME IN HARD CEILINGS.
3. PROVIDE DIFFUSER/GRILLE WITH ROUND NECK OR PROVIDE SQUARE TO ROUND TRANSITION
4. ALL CEILING MOUNTED RETURN GRILLES SHALL BE FULL FACED. NO LAY-IN PANELS ALLOWED
5. PROVIDE FINISH SUITABLE FOR FIELD PAINTING. PROVIDE DUCT ADAPTER FRAME FOR SPIRAL DUCT MOUNTING WITH OPEN CELL FOAM INSULATION. FRONT BLADES PARALLEL TO SHORT DIMENSION.
6. PROVIDE OPPOSED BLADE DAMPER.

LOUVER SCHEDULE

MARK	MANUFACTURER	MODEL	PURPOSE	DESCRIPTION	CFM	SIZE IN.	MIN. FREE AREA %	MAX VELOCITY	REMARKS
LV-01	RUSKIN	HZ-700MH	EXHAUST	EF-2 EXHAUST	80	12x12	53	600	1,2,3,4,5
LV-02	RUSKIN	HZ-700MH	EXHAUST	EF-2 EXHAUST	80	12x12	53	600	1,2,3,4,5

REMARKS

1. PROVIDE FRAMED 1/2"x1/2" ALUMINUM BIRD SCREEN FOR ALL LOUVERS.
2. ALL LOUVERS SHALL BE RATED FOR THE PROJECT WIND ZONE.
3. ALL LOUVERS SHALL BE MIAMI DADE APPROVED AND AMCA 540 AND AMCA 550 LISTED
4. LOUVERS SHALL HAVE 3-COAT 70% KYNAR 500/HYLAR 5000 FINISH WITH A DRY FILM THICKNESS OF 2.0 MIL MINIMUM.
5. EQUIVILANT BY GREENHECK, ARROW, AIROLITE, NAILOR, AVW,ORAS LISTED IN THE SPECIFICATIONS.

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NORTH CAROLINA PROFESSIONAL SEAL 023020 ENGINEER STEVE W. CAMPEN

CONSTRUCTION DOCUMENTS

04/04/2024

THIS DRAWING IS FORMATTED TO BE PRINTED ON A 30" X 42" SHEET

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
ADDITION & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

DRAWN BY: JAV
CHECKED BY: SWC

SCHEDULES

2022035 11 MARCH 2024

M7-01

DEMOLITION GENERAL NOTES:

A. NOTIFY THE OWNER, IN WRITING, AT LEAST 7 DAYS IN ADVANCE OF ALL REQUIRED SHUTDOWNS ELECTRICAL UTILITIES. UPON WRITTEN RECEIPT OF APPROVAL FROM OWNER, SHUTDOWNS SHALL BE PERFORMED AS DIRECTED BY THE OWNER AND SHALL BE CONDUCTED AT NO ADDITIONAL CONTRACT COST. AT THE COMPLETION OF EACH SHUT DOWN, ALL SERVICES SHALL BE RESTORED SO THAT NORMAL OPERATION OF ALL UTILITIES CAN RESUME.

B. WHEN WORKING IN AND AROUND THE EXISTING BUILDING, EXTREME CARE SHALL BE EXERCISED IN REGARDS TO PROTECTION OF THE EXISTING STRUCTURE, MECHANICAL AND ELECTRICAL SERVICES WHICH WILL REMAIN. REPAIR, REPLACE OR RESTORE TO THE SATISFACTION OF THE OWNER/ARCHITECT/ENGINEER ALL EXISTING WORK DAMAGED IN THE PERFORMANCE OF DEMOLITION AND/OR NEW WORK.

C. ALL EXISTING WIRING, EQUIPMENT, CONDUITS AND MATERIALS NOT REQUIRED FOR RE-USE OR RE-INSTALLATION (SHOWN OR OTHERWISE) SHALL BE REMOVED. ALL EXISTING MATERIALS AND EQUIPMENT WHICH ARE REMOVED AND DESIRED BY THE OWNER, OR ARE INDICATED TO REMAIN AS THE PROPERTY OF THE OWNER, SHALL BE DELIVERED TO THE OWNER ON THE PREMISES BY THE CONTRACTOR WHERE DIRECTED BY THE ARCHITECT. ALL OTHER MATERIALS AND EQUIPMENT WHICH ARE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED BY THE CONTRACTOR FROM THE PREMISES.

D. EXISTING CONDITIONS (PRESENCE AND LOCATION OF PANELBOARDS, LIGHTING FIXTURES, RECEPTACLES, EQUIPMENT, MATERIALS AND CIRCUITING) INDICATED ARE BASED ON INFORMATION OBTAINED FROM AVAILABLE RECORD DRAWINGS AND FIELD SURVEYS AND ARE NOT WARRANTED TO BE COMPLETE OR CORRECT. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF ALL CONDUITS, EQUIPMENT AND MATERIALS IN THE FIELD PRIOR TO STARTING ALL WORK.

E. EXISTING EQUIPMENT SIZES NOTED ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND ARE NOT WARRANTED TO BE CORRECT. CONTRACTOR SHALL VERIFY ALL SIZES IN THE FIELD IF EQUIPMENT IS IN PROJECT SCOPE.

F. WHEN EXISTING MECHANICAL AND ELECTRICAL WORK IS REMOVED, ALL CONDUITS, WIRING AND MATERIALS SHALL BE REMOVED TO A POINT BELOW FINISHED FLOORS OR BEHIND FINISHED WALLS AND CAPPED. SUCH POINTS SHALL BE FAR ENOUGH BEHIND FINISHED SURFACES TO ALLOW FOR THE INSTALLATION OF THE NORMAL THICKNESS OF FINISHED MATERIAL.

G. EXISTING MECHANICAL AND ELECTRICAL EQUIPMENT, CONDUIT, WIRING, DEVICES, AND MATERIALS AFFECTED BY DEMOLITION OR NEW WORK INSTALLATION AND REQUIRED TO REMAIN IN SERVICE SHALL BE REINSTALLED OR SUPPORTED AS REQUIRED IN ACCORDANCE WITH NEW WORK SPECIFICATIONS. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE OWNER.

H. IN GENERAL, ON DEMOLITION DRAWINGS, ALL EQUIPMENT AND MATERIALS SHOWN "LIGHT" ARE EXISTING TO REMAIN AND ALL EQUIPMENT AND MATERIALS SHOWN AS "HEAVY AND DASHED" ARE EXISTING TO BE DEMOLISHED.

I. ENSURE THAT ALL ELECTRICAL WORK IS DONE DE-ENERGIZED. SPECIFICALLY WHERE ELECTRICAL EQUIPMENT IS OPENED EXPOSING LIVE PARTS, BREAKERS ARE REMOVED OR INSTALLED OR WHERE ELECTRICAL CONNECTIONS ARE MODIFIED. ALL POWER AT THE PANEL OR ENCLOSURE SHALL BE DE-ENERGIZED AT ITS SOURCE, PRIOR TO WORK BEING DONE.

J. ALL TESTING, TROUBLESHOOTING AND VERIFICATION OF DEENERGIZATION IS TO BE DONE IN ACCORDANCE WITH NFPA 70E INCLUDING ESTABLISHING, ISOLATING IF REQUIRED, SHOCK PROTECTIVE AND ARC FLASH PROTECTIVE APPROACH BOUNDARIES AND WEARING PERSONAL PROTECTIVE EQUIPMENT APPROPRIATE FOR THE HAZARD.

K. PRIOR TO THE REMOVAL OF A CIRCUIT FROM A PANELBOARD, THE CONTRACTOR SHALL VERIFY THAT NO EXISTING LOADS REMAIN ON THAT CIRCUIT. IF UNEXPECTED LOADS REMAIN ON THE CIRCUIT, NOTIFY EOR FOR DIRECTIONS TO PROCEED. ONCE CIRCUITS HAVE BEEN VERIFIED TO BE UNDER NO LOAD, BREAKERS IN THE CORRESPONDING PANELBOARD SHALL BE FLIPPED TO THE 'OFF' POSITION AND MARKED AS SPARE AND READY FOR FUTURE WORK. ALL CONDUIT AND WIRING SHALL BE REMOVED BACK TO SOURCE.

L. UPDATE PANEL SCHEDULES TO REFLECT NEW AND CHANGED LOAD. ALL PANEL SCHEDULES SHALL BE COMPUTER GENERATED.

M. EXISTING FIRE ALARM SYSTEM SHALL BE MAINTAINED AND OPERABLE DURING DEMOLITION. CONTRACTOR SHALL TEMP EXISTING DEVICES TO ALLOW DEMOLITION OF EXISTING CONDUIT AND WIRING.

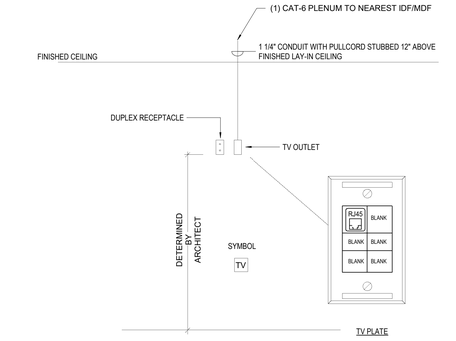
GENERAL NOTES:

1. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR FLOOR PLAN DIMENSIONS. DO NOT SCALE THESE DRAWINGS.
2. THE CONTRACTOR SHALL COORDINATE ANY AND ALL WORK WITH OTHER TRADES INVOLVED IN THE PROJECT, PRIOR TO THE INSTALLATION OF HIS EQUIPMENT SO AS TO AVOID CONFLICTS DURING CONSTRUCTION AND ALLOW FOR OPTIMUM MAINTENANCE AND WORKING SPACE.
3. ALL LIGHT FIXTURES SHALL BE SUPPORTED INDEPENDENTLY OF THE SUSPENDED CEILING SYSTEM. REFER TO THE SPECIFICATIONS FOR MORE DETAILED INFORMATION.
4. USE OF THE CONDUIT SYSTEM FOR EQUIPMENT GROUNDING SHALL NOT BE ACCEPTABLE. A SEPARATE GREEN GROUND WIRE SHALL RUN WITH THE CIRCUIT CONDUCTORS IN EACH CIRCUIT.
5. IN ALL AREAS WHERE FIRE RATED WALLS, FLOORS AND CEILINGS ARE INSTALLED, ALL PENETRATIONS OF ELECTRICAL CONDUITS OR OTHER RELATED ELECTRICAL MATERIAL SHALL BE PROPERLY SEALED WITH APPROVED FIRE RATED MATERIALS TO MAINTAIN THE RATINGS OF THE BUILDING CONSTRUCTION.
6. ALL FUSES, DISCONNECT SWITCHES, AND BREAKER SIZES SHOWN FOR MECHANICAL/PLUMBING/FIRE PROTECTION EQUIPMENT SHALL BE VERIFIED BEFORE THE PURCHASE OR INSTALLATION OF SAID EQUIPMENT, WITH THE EQUIPMENT SUPPLIER AND MECHANICAL/PLUMBING CONTRACTOR.
7. ALL WORK AND MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH STATE, LOCAL AND NATIONAL CODES AND ORDINANCES.
8. THE NEW FIRE ALARM EQUIPMENT SHOWN SHALL BE PROVIDED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. PROVIDE ALL WIRING AS REQUIRED FOR A COMPLETE SYSTEM.
9. THE CONTRACTOR SHALL VERIFY ALL CEILING TYPES AND FINISHES BEFORE PURCHASE OF ANY LIGHT FIXTURES SO THAT THE PROPER TRIM WILL BE PROVIDED FOR THE CEILING TO BE INSTALLED. ANY DIFFERENCES SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
10. THE CONTRACTOR SHALL PROVIDE HIS OWN SUPPORT OF ALL DEVICES AND EQUIPMENT PROVIDED BY HIM AND SHALL SUPPORT SUCH EQUIPMENT PER APPROVED GOVERNING CODES OR PER APPROVAL OF THE ENGINEER. UNACCEPTABLE WORKMANSHIP OR MATERIALS SHALL BE REPLACED AT THE REQUEST OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
11. ALL JUNCTION BOXES AND CONDUIT RUNS (WITH OR WITHOUT WIRES) SHALL BE COLOR CODED WITH PAINT, IN ACCORDANCE WITH ELECTRICAL GENERAL PROVISIONS.
12. THE MOUNTING HEIGHTS AND LOCATIONS OF ALL WALL MOUNTED OUTLETS AND JUNCTION BOXES SHALL BE REVIEWED AND COORDINATED WITH THE ARCHITECT AND OWNER PRIOR TO INSTALLATION, FOR USE WITH THE ACTUAL EQUIPMENT, CASEWORK AND MILLWORK TO BE FURNISHED.
13. ALL WIRE AND CONDUIT SIZES ARE BASED ON 75°C THHN OR THWN WIRE UNLESS OTHERWISE NOTED.
14. ALL DEDICATED BRANCH BREAKERS SERVING EMERGENCY LIGHTS SHALL BE PROVIDED WITH BREAKER LOCKS TO PREVENT TURNING BREAKER OFF ACCIDENTALLY.
15. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY POWER COMPANY THE WORK REQUIRED FOR CONNECTION TO THE UTILITY'S NEW TRANSFORMER METERING, ETC. THE ELECTRICAL CONTRACTOR SHALL PAY ALL NECESSARY CHARGES FOR THE INSTALLATION OF THE UNDERGROUND ELECTRICAL SERVICE, AS SHOWN ON THE PLANS.
16. WHERE MULTIPLE SWITCHES ARE SHOWN IN THE SAME LOCATION THEY SHALL BE GANGED TOGETHER IN ONE MULTIPLE GANG BOX WITH MATCHING COVER AND PARTITION (IF REQUIRED). THE ELECTRICAL CONTRACTOR SHALL LOOK AT BOTH POWER AND LIGHTING PLAN TO DETERMINE WHICH SWITCH IS APPLICABLE.
17. THE LOCATION OF ALL WALL MOUNTED DEVICES, INCLUDING MOUNTING HEIGHTS, SHALL BE FIELD VERIFIED WITH THE ARCHITECT PRIOR TO INSTALLATION.
18. THE CONTRACTOR SHALL COORDINATE WITH THE TELEPHONE AND CABLE TV COMPANIES THE LOCATION AND ROUTING OF THE UNDERGROUND INCOMING SERVICE. THE ELECTRICAL CONTRACTOR SHALL PAY FOR ALL NECESSARY CHARGES FOR INSTALLATION OF UNDERGROUND SERVICE, AS SHOWN ON THE PLANS.
19. WHERE ELECTRICAL EQUIPMENT PENETRATES EXTERIOR WALLS OR THE ROOF, THEY SHALL BE PROPERLY SEALED WITH METHODS APPROVED BY THE ENGINEER. SUBMIT DETAIL OF PROPOSED SEALING METHODS.
20. ALL EXTERIOR BUILDING LIGHTS AND EMERGENCY LIGHTING SHALL BE WIRED WITH #10 AWG.
21. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL CHAIN HUNG FIXTURES LOCATED IN MECHANICAL OR OTHER SPACES WITH OTHER TRADES, SO AS NOT TO CONFLICT WITH OTHER EQUIPMENT.
22. ALL EMERGENCY LIGHTING, EXIT SIGNS AND NIGHT LIGHTS SHALL BE WIRED AHEAD OF ANY SWITCH AND/OR BUILDING AUTOMATION SYSTEM.
23. OUTLET BOXES ON OPPOSITE SIDES OF THE FIRE RESISTANT WALL OR SHAFT ENCLOSURE RATED TWO HOURS OR LESS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24" AS REQUIRED BY NCSBC VOL 1 PARAGRAPH 705.4.3.
24. ALL UNDERGROUND CONDUITS SHALL BE IDENTIFIED ON ASBUILT PLANS WITH DIMENSIONS LOCATING THE CONDUITS AND THEIR RESPECTIVE BURIAL DEPTHS.
25. CONDUCTORS FOR BRANCH CIRCUITS SHALL BE SIZED TO PREVENT VOLTAGE DROP EXCEEDING 3% AT THE FARTHEST OUTLET OF POWER, HEATING AND LIGHTING LOADS, OR ANY COMBINATION OF SUCH LOADS. THE MAXIMUM TOTAL VOLTAGE DROP ON BOTH FEEDERS AND BRANCH CIRCUITS TO THE FARTHEST OUTLET SHALL NOT EXCEED 5%.

    A. WHERE THE CONDUCTOR LENGTH FROM THE PANEL TO THE FIRST OUTLET ON A 120V CIRCUIT EXCEED 50'-0" THE BRANCH CIRCUIT CONDUCTORS FROM THE PANEL TO THE FIRST OUTLET SHALL NOT BE SMALLER THAN #10AWG. INCREASE THE BRANCH CIRCUIT CONDUCTOR SIZE AN ADDITIONAL WIRE SIZE FOR EACH ADDITIONAL 125' FOR THE ENTIRE CIRCUIT. THE GROUND CONDUCTOR SIZE SHALL BE INCREASED PROPORTIONALLY TO THE INCREASED PHASE CONDUCTORS AS PER NEC 2020 250.122 (B).
26. THE MOUNTING HEIGHT AND LOCATIONS OF ALL WIRING DEVICES AT MILLWORK LOCATIONS IN FINISHED SPACES SHALL BE COORDINATED WITH ARCHITECT AND FINAL MILLWORK PLANS SO THAT DEVICES ARE CENTERED WITHIN MILLWORK.

C

27 ELECTRICAL CONTRACTOR SHALL PROVIDE DISCONNECTS, FUSES AND LINE SIDE WIRING CONNECTIONS FOR PLUMBING AND MECHANICAL EQUIPMENT AS INDICATED IN SPECIFICATIONS 220563 AND 230512. ALSO NOTE: OTHER TRADES (i.e. BLEACHERS, BACKBOARDS, ETC.). ELECTRICAL CONTRACTOR SHALL PROVIDE COMPLETE LINE/LOAD AND MAKE FINAL CONNECTIONS, COORDINATING CLOSELY WITH OTHER TRADES.



GENERAL NOTES:

A. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL CONDUIT, BOXES, BLANK FACEPLATES, PULLCORDS AND RECEPTACLES.

B. ELECTRICAL CONTRACTOR SHALL VERIFY LOCATIONS AND MOUNTING HEIGHTS OF TVs WITH ARCHITECT PRIOR TO ROUGH-IN.

1 TV OUTLET LOCATION

NOT TO SCALE

SYMBOL LEGEND (CONTINUED)

SYMBOL	DESCRIPTION	REMARKS
S #CD	CEILING MOUNTED FIRE ALARM STROBE - # CD INDICATES CANDELA RATING OF STROBE	SEE SPECIFICATIONS
F	MANUAL FIRE ALARM PULL STATION - INSTALL AT +48" ABOVE FINISHED FLOOR TO TOP OF BOX (DOUBLE ACTION). (PROVIDE STOPPER LEXAN COVER)	SEE SPECIFICATIONS
SD	PHOTOELECTRIC TYPE SMOKE DETECTOR - CEILING MOUNTED	SEE SPECIFICATIONS
SD D	DUCT TYPE PHOTOELECTRIC SMOKE DETECTOR INSTALLED IN MECHANICAL DUCTWORK. FURNISHED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR WITH FINAL CONNECTION BY ELECTRICAL CONTRACTOR.	SEE SPECIFICATIONS
HD	HEAT DETECTOR - FIXED TEMPERATURE (135°F @ MECHANICAL ROOMS)	SEE SPECIFICATIONS
TP AND FS	TAMPER SWITCH/FLOW SWITCH - BY SPRINKLER SYSTEM CONTRACTOR ELECTRICAL CONTRACTOR SHALL CONNECT TO FIRE ALARM SYSTEM.	SEE SPECIFICATIONS
	SPRINKLER BELL	
	8'x4'x3/4" FIRE RETARDANT PLYWOOD BACK BOARD FOR MDF AND IDF CLOSETS	REFER TO SPECIFICATIONS 271000
AHU-N	REMOTE ALARM ANNUNCIATORS FOR DUCT DETECTORS. MOUNT AT +88" AFF UNLESS OTHERWISE NOTED. MUST BE KEY-OPERATED. "N" DENOTES AIR HANDLING UNIT NUMBER TO BE IDENTIFIED ON FACEPLATE.	SEE SPECIFICATIONS
FACP2	ADDRESSABLE VOICE EVACUATION/FIRE ALARM PANEL BY NOTIFIER.	SEE SPECIFICATIONS
FACP1	EXISTING NOTIFIER NFS-320 ADDRESSABLE CONTROL PANEL	SEE SPECIFICATIONS
RACP	REMOTE ADDRESSABLE ANNUNCIATOR CONTROL PANEL	SEE SPECIFICATIONS
RAAP	ADDRESSABLE LCD ANNUNCIATOR CONTROL PANEL WITH MICROPHONE	SEE SPECIFICATIONS
V #CD	CEILING MOUNTED FIRE ALARM/VOICE EVAC SPEAKER/STROBE	SEE SPECIFICATIONS
V #CD	WALL MOUNTED FIRE ALARM/VOICE EVAC SPEAKER/STROBE	SEE SPECIFICATIONS
V	RECESSED CEILING MOUNTED FIRE ALARM/VOICE EVAC SPEAKER	SEE SPECIFICATIONS
NAC	FIRE ALARM SYSTEM NOTIFICATION APPLIANCE BOOSTER CABINET	SEE SPECIFICATIONS
V	WALL MOUNTED FIRE ALARM SPEAKER	SEE SPECIFICATIONS
⊙	120 VOLT, 20 AMP FACELESS GFI DEVICE	LEVITON, HUBBELL OR EQUAL
WAP	WIRELESS ACCESS POINT, WITH (1) PLENUM RATED CAT-6 DATA DROP. REFER TO PLANS FOR LOCATIONS.	SINGLE GANG BOX WITH 3/4" CONDUIT STUBBED ABOVE CEILING
I	STAFF IP PHONE WITH BASIC LCD DISPLAY, +48" AFF TO TOP OF OUTLET.	BOGEN #NQ-T1000
D	MDF OR IDF DATA RACK PROVIDED BY OWNER INSTALLED BY CONTRACTOR	REFER TO SPECIFICATIONS 270000 & 270001
TGB	IDF ROOM GROUND BAR, REFER TO SPECIFICATIONS AND REFER TO DETAILS	REFER TO SPECIFICATIONS 270000 & 270001
	CABLE TRAY ABOVE CEILING FOR LOW VOLTAGE WIRING - SEE PLANS FOR SIZES	
CO	CARBON MONOXIDE DETECTOR WITH TEMPORAL 4 SOUNDER BASE.	NOTIFIER OR EQUAL
S BT	BEAM DETECTOR TRANSMITTER	NOTIFIER OR EQUAL
S BR	BEAM DETECTOR RECEIVER	NOTIFIER OR EQUAL
EMH	FIRE ALARM ELECTROMAGNETIC DOOR HOLDER	NOTIFIER OR EQUAL
	CONDUIT SLEEVE, REFER TO PLANS FOR SIZE	
HH	HANDHOLE, REFER TO SITE PLAN	
DDC	HVAC CONTROL PANEL, PROVIDED AND INSTALLED BY HVAC CONTROLS CONTRACTOR	
TV #	FLAT PANEL COMM AND POWER OUTLETS	REFER TO DETAIL
S_T	LOW VOLTAGE TIMER SWITCH - INSTALL AT +48" AFF TO TOP OF OUTLET, UNLESS OTHERWISE NOTED	WATTSTOPPER TS400 OR EQUAL BY LEVITON OR P&S
R	FIRE ALARM SHUTDOWN RELAY	
B	SWITCHING AND EPO EMERGENCY SHUT-OFF	REFER TO DETAIL E5-03/2
S_{ES}	EMERGENCY POWER OFF SWITCH (EPO)	REFER TO DETAIL E5-03/4 SQUARE-D #D1Y1RSCO1M41 OR EQUAL
	VIDEO SURVEILLANCE CAMERA - "CAM #" INDICATES CAMERA NUMBER. PROVIDE CAT-6 WIRING TO CAMERA LOCATION. CAMERAS, MOUNTS, AND FINAL CONNECTIONS BY SECURITY CONTRACTOR.	REFER TO DETAIL E6-02/2 FOR INSTALLATION DETAIL
MD	MOTORIZED DAMPER INSTALLED BY MECHANICAL CONTRACTOR WITH FINAL CONNECTIONS BY ELECTRICAL CONTRACTOR	

SHEET INDEX - ELECTRICAL

Sheet Number	Sheet Name	Current Revision	Current Revision Date
E0-00	LEAD SHEET	C	04/04/2024
E0-01	ELECTRICAL DEMOLITION PLAN		
E1-00	SITE PLAN		
E1-01	POWER PLAN - CLASSROOMS		
E1-02	POWER PLAN - GYM ADDITION		
E1-03	ROOF POWER PLAN		
E2-01	LIGHTING PLAN - CLASSROOMS		
E2-02	LIGHTING PLAN - GYM ADDITION	C	04/04/2024
E3-01	FIRE ALARM PLAN - CLASSROOMS		
E3-02	FIRE ALARM PLAN - GYM ADDITION		
E4-01	SPECIAL SYSTEMS PLAN - CLASSROOMS		
E4-02	SPECIAL SYSTEMS PLAN - GYM ADDITION		
E5-01	ELECTRICAL DETAILS	C	04/04/2024
E5-02	GYMNASIUM FIRE ALARM RISER AND DETAILS		
E5-03	MAIN BUILDING FIRE ALARM RISER AND DETAILS	C	04/04/2024
E5-04	ELECTRICAL DETAILS		
E6-01	EXISTING POWER RISER/LOAD SUMMARY/PANELS		
E6-02	NEW PANEL SCHEDULES, POWER RISER AND LOAD SUMMARY		

ELECTRICAL SYSTEM AND EQUIPMENT

METHOD OF COMPLIANCE:

ENERGY CODE: PRESCRIPTIVE__X__ PERFORMANCE_____
ASHRAE 90.1: PRESCRIPTIVE_____ PERFORMANCE_____

LIGHTING SCHEDULE

Lamp type required in fixture - See Fixture Schedule.
Number of lamps in fixture - See Fixture Schedule.
Ballast type used in the fixture - See Specifications.
Number of ballasts in fixture - See Specifications.
Total wattage per fixture - Varies - See Fixture Schedule
Total interior wattage specified versus allowed: 13,950 watts versus 22,632 watts (whole building)
Total exterior wattage specified versus allowed: 412 watts versus 1140 watts

ADDITIONAL PRESCRIPTIVE COMPLIANCE

_ _ 406.2 More Efficient HVAC Performance
_X_ 406.3 Reduced Lighting Power Density
___ 406.4 Enhanced Lighting Controls
___ 406.5 On-Site Supply of Renewable Energy
406.6 Provision of Dedicated Outdoor HVAC Air System
___ 406.7 High Efficiency Service Water Heating

DESIGNER STATEMENT:
To the best of my knowledge and belief, the design of this building complies with the electrical system and equipment requirements of the 2018 North Carolina State Building Code, Energy Conservation Code.

SYMBOL LEGEND

SYMBOL	DESCRIPTION	REMARKS
	EXISTING EXIT SIGN TO BE REMOVED	
OR OR	EXISTING LIGHT FIXTURE TO BE REMOVED	
	EXISTING DOWN LIGHT TO BE REMOVED	
	EXISTING WALL LIGHT TO BE REMOVED	
	EXISTING FLOOD LIGHT TO BE REMOVED	
	EXISTING LIGHT SWITCH TO BE REMOVED	
	EXISTING RECEPTACLE TO BE REMOVED	
	EXISTING DATA OUTLET TO BE REMOVED	
	EXISTING DISCONNECT SWITCH TO BE REMOVED	
J	EXISTING JUNCTION BOX TO BE REMOVED	
M	EXISTING MICROPHONE OUTLET TO BE REMOVED	
GS	EXISTING GYMNASIUM SPEAKER TO BE REMOVED	
LS	EXISTING LOUD SPEAKER TO BE REMOVED	
	EXISTING CAMERA TO BE REMOVED	
	EXISTING FLOOR BOX TO BE REMOVED	
	EXISTING QUAD RECEPTACLE TO BE REMOVED	
VC	EXISTING VOLUME CONTROL TO BE REMOVED	
WAP	EXISTING WIRELESS ACCESS POINT TO BE REMOVED	
K	EXISTING KEYED SWITCH TO BE REMOVED	
OR	LUMINAIRE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHEDULE
	NIGHT LIGHT LED FIXTURE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHEDULE
⊘	LIGHT FIXTURE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHEDULE
	LED EMERGENCY LIGHT FIXTURE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHEDULE
	EXTERIOR EMERGENCY LED LIGHT FIXTURE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHEDULE
	BATTERY POWERED EMERGENCY FIXTURE - WALL MOUNTED	SEE FIXTURE SCHEDULE
⊗	EXIT LIGHT - ARROW INDICATES DIRECTION & SHADING INDICATES ILLUMINATED FACE(S).	SEE FIXTURE SCHEDULE
	COMBINATION EGRESS/EXIT EMERGENCY LED LIGHT FIXTURE	SEE FIXTURE SCHEDULE
LC#	MECHANICALLY HELD LIGHTING CONTACTOR. # INDICATES CONTACTOR NUMBER. PROVIDE NUMBER OF CONTACTS AS REQUIRED. PROVIDE HAND OFF AUTO SWITCH FOR EACH LIGHTING CONTACTOR.	SQUARE D CLXGXXXX PROVIDE # CONTACTS AS NEEDED
OS	CEILING MOUNTED DUAL TECHNOLOGY LINE VOLTAGE OCCUPANCY SENSOR WITH 1000 SQ. FT 360° COVERAGE. TIME DELAY OF NO LESS THAN 15 MINUTES. INSTALL PER MANUFACTURER'S INSTRUCTIONS.	LEVITON OR APPROVED EQUAL BY P&S OR WATTSTOPPER
OS	CORNER MOUNTED DUAL TECHNOLOGY LINE VOLTAGE OCCUPANCY SENSOR WITH 1000 SQ. FT 360° COVERAGE AND WIDE ANGLE LENS. TIME DELAYS OF NO LESS THAN 15 MINUTES. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.	LEVITON OR APPROVED EQUAL BY P&S OR WATTSTOPPER
S	SINGLE POLE TOGGLE SWITCH - 48" ABOVE FINISHED FLOOR TO TOP OF OUTLET, UNLESS OTHERWISE NOTED.	
S_{OS}	DUAL TECHNOLOGY SINGLE BUTTON WALL SWITCH SENSOR - COVERAGE: MAJOR MOTION 35'x30', MINOR MOTION 20'x15'. TIME DELAYS OF NO LESS THAN 15 MINUTES. MOUNT AT +48" TO TOP OF OUTLET BOX. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.	LEVITON OR APPROVED EQUAL BY P&S OR WATTSTOPPER
S_{OR}	LOW VOLTAGE OVERRIDE SWITCH. PROVIDED AND INSTALLED BY HVAC CONTROLS CONTRACTOR.	
S_{BB}	MOTORIZED BASKETBALL GOAL SWITCH, FURNISHED BY GOAL PROVIDER. INSTALLED BY ELECTRICAL CONTRACTOR.	
S_3	3-WAY SWITCH - INSTALL AT 48" ABOVE FINISHED FLOOR TO TOP OF OUTLET. SWITCH COLOR SELECTED BY ARCHITECT.	
S_{3K}	3-WAY KEY SWITCH - INSTALL AT 48" ABOVE FINISHED FLOOR TO TOP OF OUTLET. SWITCH COLOR SELECTED BY ARCHITECT.	
S_4	4-WAY SWITCH - INSTALL AT 48" ABOVE FINISHED FLOOR TO TOP OF OUTLET. SWITCH COLOR SELECTED BY ARCHITECT.	
S_{4K}	4-WAY KEY SWITCH - INSTALL AT 48" ABOVE FINISHED FLOOR TO TOP OF OUTLET. SWITCH COLOR SELECTED BY ARCHITECT.	
S_K	KEY SWITCH - INSTALL AT 48" ABOVE FINISHED FLOOR TO TOP OF OUTLET. SWITCH COLOR SELECTED BY ARCHITECT.	
S_M	120 VOLT, 20 AMP, MOTOR RATED TOGGLE DISCONNECT SWITCH WITH JUNCTION BOX.	
S_{M2}	208 VOLT, 20 AMP, 2 POLE MOTOR RATED TOGGLE DISCONNECT SWITCH WITH JUNCTION BOX.	
	DUPLEX, GROUNDING TYPE, TAMPER RESISTANT RECEPTACLE - AT 16" ABOVE FINISHED FLOOR TO BOTTOM OF OUTLET, UNLESS OTHERWISE NOTED	HUBBELL 5362-XTR WITH 97101 COVER OR EQUAL BY P&S OR LEVITON
GFI	DUPLEX RECEPTACLE - GROUND FAULT INTERRUPTION, TAMPER RESISTANT TYPE - INSTALL AT 16" ABOVE FINISHED FLOOR TO BOTTOM OF OUTLET, UNLESS OTHERWISE NOTED.	HUBBELL GF-5362-XTR WITH STAINLESS STEEL S26 WALLPLATE OR EQUAL BY P&S OR LEVITON
GFI WP	WEATHERPROOF DUPLEX, GROUND FAULT INTERRUPTING, TAMPER RESISTANT TYPE RECEPTACLE - +16" ABOVE GRADE TO BOTTOM OF OUTLET BOX, UNLESS OTHERWISE NOTED.	HUBBELL GF-5362-XTR WITH TAYMAC HEAVY DUTY IN-USE COVER OR EQUAL BY P&S OR LEVTION
	QUADRUPLEX GROUNDING, TAMPER RESISTANT TYPE RECEPTACLES IN A DOUBLE GANG BOX. MOUNT AT 16" AFF TO BOTTOM OF OUTLET UNLESS OTHERWISE NOTED.	HUBBELL 5362-XTR WITH 97101 COVER OR EQUAL BY P&S OR LEVTION
	250 VOLT RATED, SINGLE OR THREE PHASE RECEPTACLE - SIZE TO MATCH EQUIPMENT FURNISHED - MOUNT AT +16" ABOVE FINISHED FLOOR TO TOP OF OUTLET, UNLESS OTHERWISE NOTED	
◁	DATA OUTLET - REFER TO PLANS FOR LOCATIONS. PROVIDE (2) CAT-6 DROPS AT EACH OUTLET, UNLESS OTHERWISE NOTED. SEE DETAIL E5-01/8.	
LS	RECESSED PA SYSTEM CEILING SPEAKER WITH BACK BOX, CONDUIT, WIRING AND ACCESSORIES.	BOGEN #CSD1X2
▬	120/208 OR 120/240 VOLT PANELBOARD WITH NEUTRAL AND GROUND BUS ACCESSORIES.	
SPD	SURGE PROTECTIVE DEVICE	
	DISCONNECT SWITCH, HEAVY DUTY	
	WIRING AND CONDUIT INSTALLED CONCEALED IN WALL SPACE OR ABOVE FINISHED CEILING	
	UNSWITCHED WIRING AND CONDUIT LEG ON LIGHTING PLANS. UNDER FLOOR WIRING AND CONDUIT ON POWER PLANS. UNDER GROUND WIRING AND CONDUIT ON SITE PLANS.	
	HOME RUN CIRCUIT TO PANELBOARD - NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS	
J	JUNCTION BOX WITH REMOVABLE COVER - SIZE PER NATIONAL ELECTRICAL CODE	
M	MICROPHONE OUTLET - OUTLET BOX WITH MICROPHONE JACKS AND WIRING BACK TO SOUND RACK. REFER TO DETAIL E5-04/7. MOUNT +16" AFF. TO BOTTOM OF OUTLET BOX.	
GS	GYM SPEAKER PROVIDED BY GYM SOUND SYSTEM CONTRACTOR	SEE DETAIL E5-04/7
SR	GYM SOUND SYSTEM SOUND RACK PROVIDED BY GYM SOUND SYSTEM CONTRACTOR	SEE DETAIL E5-04/7
RB1	125 WATT LED EMERGENCY LIGHTING INVERTER	IOTA, DUALLITE OR EMERGILITE
LS	WALL MOUNTED LOUD SPEAKER (PAGING SYSTEM) AT +88" AFF. PROVIDE WIRE GUARDS IN GYMNASIUM.	LOWELL #P875X-FW-8-S86 BOGEN HORN SPEAKER FOR GYMNASIUM
KP	NUMERICAL REMOTE SECURITY KEYPAD. LOCATE AT 60" AFF.	
WA LR	MOTION SENSOR - WALL MOUNTED WA = WIDE ANGLE, LR = LONG RANGE	REFER TO SPECIFICATION
CR	CARD READER, REFER TO DOOR DETAILS.	REFER TO SPECIFICATION
H CD#	CEILING FIRE ALARM A/V DEVICE, CONNECTED TO EXISTING NOTIFIER NFS-320 SYSTEM.	MATCH EXISTING
H CD#	WALL FIRE ALARM A/V DEVICE, CONNECTED TO EXISTING NFS-320 SYSTEM	MATCH EXISTING

ABBREVIATIONS

ABBREV.	DEFINITION
A	AMPS, AMPERE, AMPERAGE
AC	ABOVE COUNTER
A/C	ALTERNATING CURRENT
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CURRENT
AL	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
ATSC	AUTOMATIC TRANSFER SWITCH CONTROL
ATS	AUTOMATIC TRANSFER SWITCH
A/V	AUDIO/VISUAL
AWG	AMERICAN WIRE GUAGE
BAS	BUILDING AUOTMATION SYSTEM
BDA	BI-DIRECTIONAL AMPLIFICATION
BFC	BELOW FINISHED CEILING
C	CONDUIT
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CT	CURRENT TRANSFORMER
CU	COPPER
D	DIMMING OR DIMMER
DDC	DIGITAL CONTROLS
DB	DISTRIBUTION BOARD
DC	DIRECT CURRENT
DL	DAY-LIGHTING
DISC	DISCONNECT SWITCH
E	EMERGENCY
ECB	ENCLOSED CIRCUIT BREAKER
EWC	ELECTRIC WATER COOLER
EX	EXISTING
FUT	FUTURE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FATC	FIRE ALARM TERMINAL CABINET
FDR	FEEDER
GAA	GENERATOR ALARM ANNUNCIATOR
GAP	GENERATOR ALARM PANEL
GEN	GENERATOR
GEC	GROUNDING ELECTRODE CONDUCTOR
GFI	GROUND FAULT INTERRUPTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFEP	GROUND FAULT EQUIPMENT PROTECTION
GFP	GROUND FAULT PROTECTION
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HH	HAND HOLE
HOA	HAND-OFF AUTOMATIC
HP	HORSEPOWER
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IG	ISOLATED GROUND
KCMIL	THOUSAND CIRCULAR MILS
KV	KILOVOLT
KVA	KILOVOLT AMPS
KW	KILOWATT
KWH	KILOWATT HOURS
LC	LIGHTING CONTACTOR
LS	LOUD SPEAKER
LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS AND GROUND FAULT PROTECTION
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MIN	MINIMUM
MH	MAN HOLE
MLO	MAIN LUGS ONLY
MTS	MANUAL TRANSFER SWITCH
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
N or NEUT	NEUTRAL
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
O/H	OVER HEAD
P	POLE
PA	PUBLIC ADDRESS
PB	PULL BOX
PC	PHOTOCELL
PH	PHASE POTENTIAL TRANSFORMER
PT	POTENTIAL TRANSFORMER
RC	RECEPTACLE CONTACTOR
RSC	RIGID STEEL CONDUIT
SEC	SECURITY
SMB	SURAFCE MOUNT BOX
SPD	SURGE PROTECTIVE DEVICE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TC	TIME CLOCK
TEMP	TEMPORARY
TGB	TECHNOLOGY GROUND BAR
TGMB	TECHNOLOGY MAIN GROUND BAR
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TYP.	TYPICAL
U/C	UNDER COUNTER
U/G	UNDERGROUND
UGE	UNDERGROUND ELECTRIC
UL	UNDERWRITERS' LABORATORIES
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS, VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
WAP	WIRELESS ACCESS POINT
WG	WIRE GUARD
WP	WEATHERPROOF
XFER	TRANSFER
XFMR	TRANSFORMER

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PROJECT# 23014

SEAL 024651
JAMES T. BUTKOVICH
04/04/2024

CONSTRUCTION DOCUMENTS

THIS DRAWING IS FORMATTED TO BE PRINTED ON A 30" X 42" SHEET

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
ADDITION & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

DRAWN BY: JPT
CHECKED BY: JTB

LEAD SHEET

2022035
11 MARCH 2024

E0-00

Autodesk Docs://2022035 Northwoods Park Middle Add-Ren/22014 Northwoods Park MS_Gym_MEP_R22.rvt
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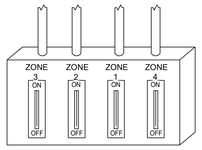
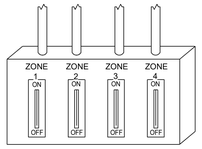


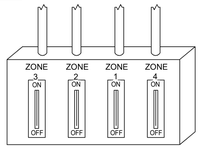
SWITCH BANK '3'

NOTE: ALL SWITCHES SHALL BE 4-WAY KEYED SWITCHES.



SWITCH BANK '2'

NOTE: ALL SWITCHES SHALL BE 3-WAY KEYED SWITCHES.



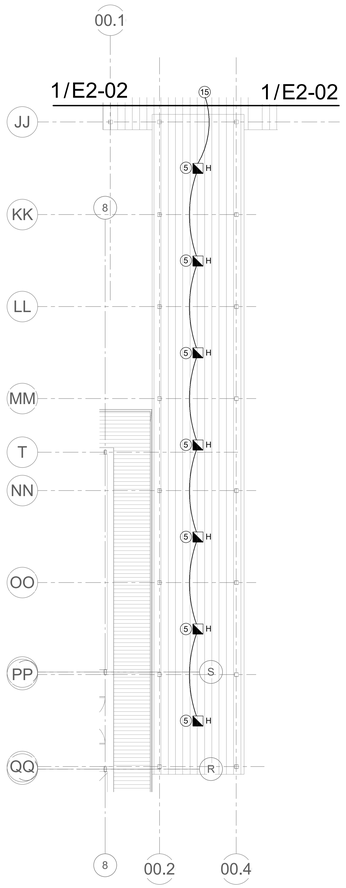
SWITCH BANK '1'

NOTE: ALL SWITCHES SHALL BE 3-WAY KEYED SWITCHES.

ALL SWITCH BANKS SHALL BE FLUSH MOUNTED

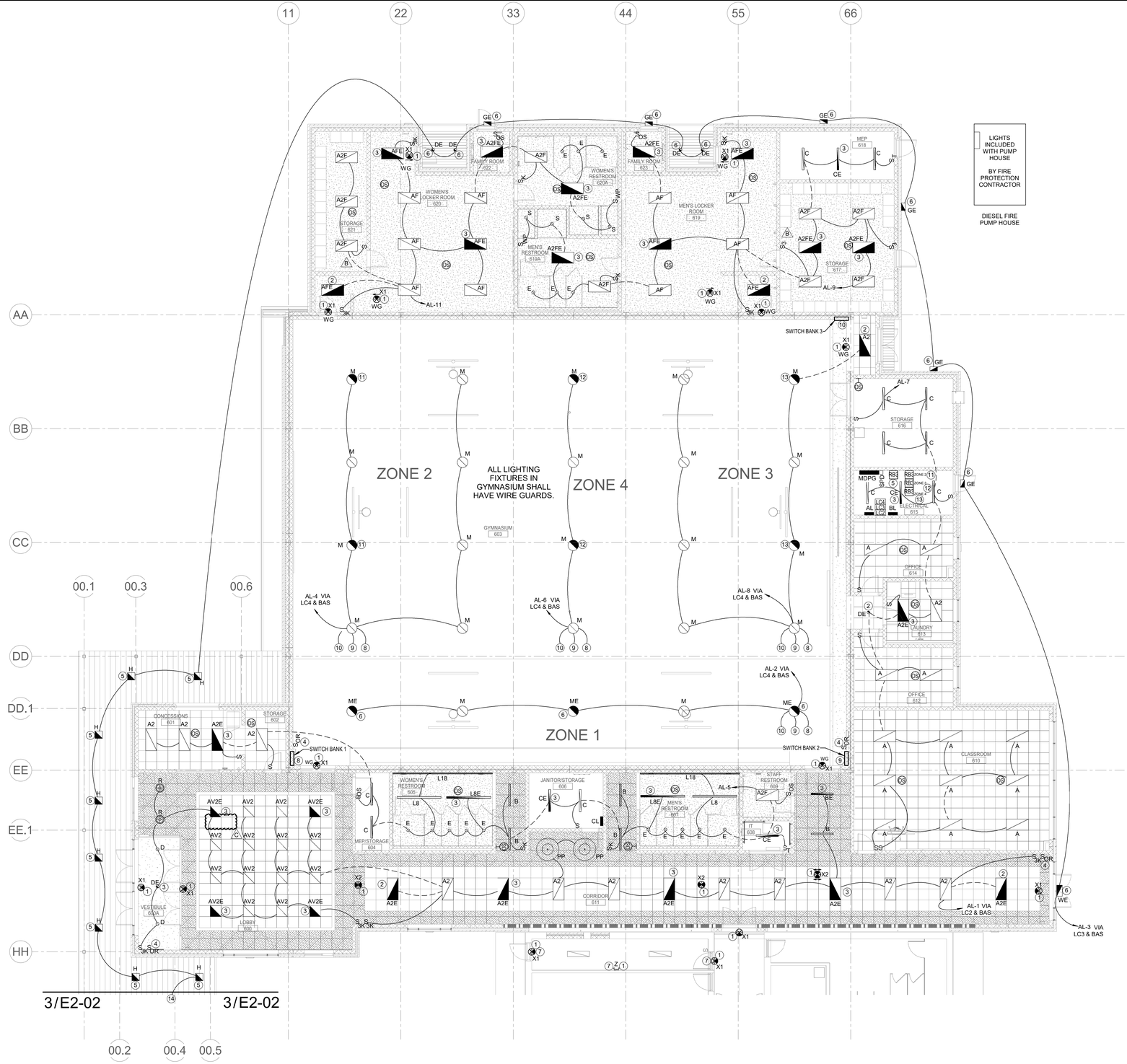
2 GYMNASIUM SWITCH BANKS

NOT TO SCALE



3 GYM CANOPY LIGHTING

1/8" = 1'-0"



1 GYM ADDITION LIGHTING

1/8" = 1'-0"

LIGHTS INCLUDED WITH PUMP HOUSE

BY FIRE PROTECTION CONTRACTOR

DIESEL FIRE PUMP HOUSE

KEYNOTES:

1. EMERGENCY EXIT FIXTURE WITH BATTERY BACK-UP - WIRE AHEAD OF SWITCHES AND OR BAS.
2. NIGHT LIGHT/EMERGENCY LIGHT - WIRE AHEAD OF SWITCHES AND OR BAS.
3. EMERGENCY EGRESS FIXTURE - WIRE FIXTURE SO THAT FIXTURE TURNS ON/OFF WITH OTHER FIXTURES IN AREA, BUT MAINTAINS BATTERY CHARGE. FIXTURE SHALL ILLUMINATE UPON LOSS OF NORMAL POWER.
4. LIGHTING OVERRIDE SWITCH. REFER TO MECHANICAL CONTROLS SEQUENCE OF OPERATION AND SPECIFICATION 260923.
5. PROVIDE 550KW EMERGENCY LIGHTING INVERTER FOR EXTERIOR FIXTURE TYPE H. WIRE TO CIRCUIT AS SHOWN. THESE FIXTURES SHALL TURN ON/OFF WITH OTHER EXTERIOR FIXTURES, BUT UPON LOSS OF NORMAL POWER THESE FIXTURES SHALL ILLUMINATE VIA INVERTER RB3. LOCATE RB3 IN ELECTRICAL ROOM 615.
6. FIXTURE TYPES DE, WE, ME AND GE SHALL HAVE INTERNAL BATTERY BACKUP. THESE FIXTURES SHALL BE WIRED SUCH THAT FIXTURES TURN ON/OFF WITH OTHER EXTERIOR FIXTURES, BUT UPON LOSS OF NORMAL POWER FIXTURES SHALL ILLUMINATE.
7. AS PART OF PHASE 1, PROVIDE EXIT AND EGRESS FIXTURES AS A TEMPORARY EGRESS PATH WHILE CONSTRUCTION IS IN PROGRESS. AS PART OF PHASE 2 CONSTRUCTION, FIXTURES SHALL BE REMOVED.
8. WIRE TO SWITCH BANK 1. REFER TO DETAIL 2 ON THIS DRAWING.
9. WIRE TO SWITCH BANK 2. REFER TO DETAIL 2 ON THIS DRAWING.
10. WIRE TO SWITCH BANK 3. REFER TO DETAIL 2 ON THIS DRAWING.
11. EMERGENCY FIXTURE - WIRE THROUGH 550 WATT EMERGENCY LIGHTING INVERTER RB3 FOR ZONE 2 LOCATED IN ELECTRICAL ROOM 615. FIXTURES SHALL TURN ON/OFF WITH OTHER FIXTURES, BUT UPON LOSS OF NORMAL POWER, FIXTURE SHALL ILLUMINATE.
12. EMERGENCY FIXTURE - WIRE THROUGH 550 WATT EMERGENCY LIGHTING INVERTER RB3 FOR ZONE 4 LOCATED IN ELECTRICAL ROOM 615. FIXTURES SHALL TURN ON/OFF WITH OTHER FIXTURES, BUT UPON LOSS OF NORMAL POWER, FIXTURE SHALL ILLUMINATE.
13. EMERGENCY FIXTURE - WIRE THROUGH 550 WATT EMERGENCY LIGHTING INVERTER RB3 FOR ZONE 3 LOCATED IN ELECTRICAL ROOM 615. FIXTURES SHALL TURN ON/OFF WITH OTHER FIXTURES, BUT UPON LOSS OF NORMAL POWER, FIXTURE SHALL ILLUMINATE.
14. REFER TO GYM CANOPY LIGHTING PLAN E2-02/3 ON THIS DRAWING FOR CONTINUATION.
15. REFER TO GYM ADDITION LIGHTING PLAN E2-02/1 ON THIS DRAWING FOR CONTINUATION.

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PROJECT# 23014

NORTH CAROLINA PROFESSIONAL SEAL 024651 ENGINEER JAMES T. BUTCHER

CONSTRUCTION DOCUMENTS

04/04/2024

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
ADDITION & RENOVATION
1204 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
	04/04/2024	ADDENDUM 3
B	03/29/2024	ADDENDUM 2

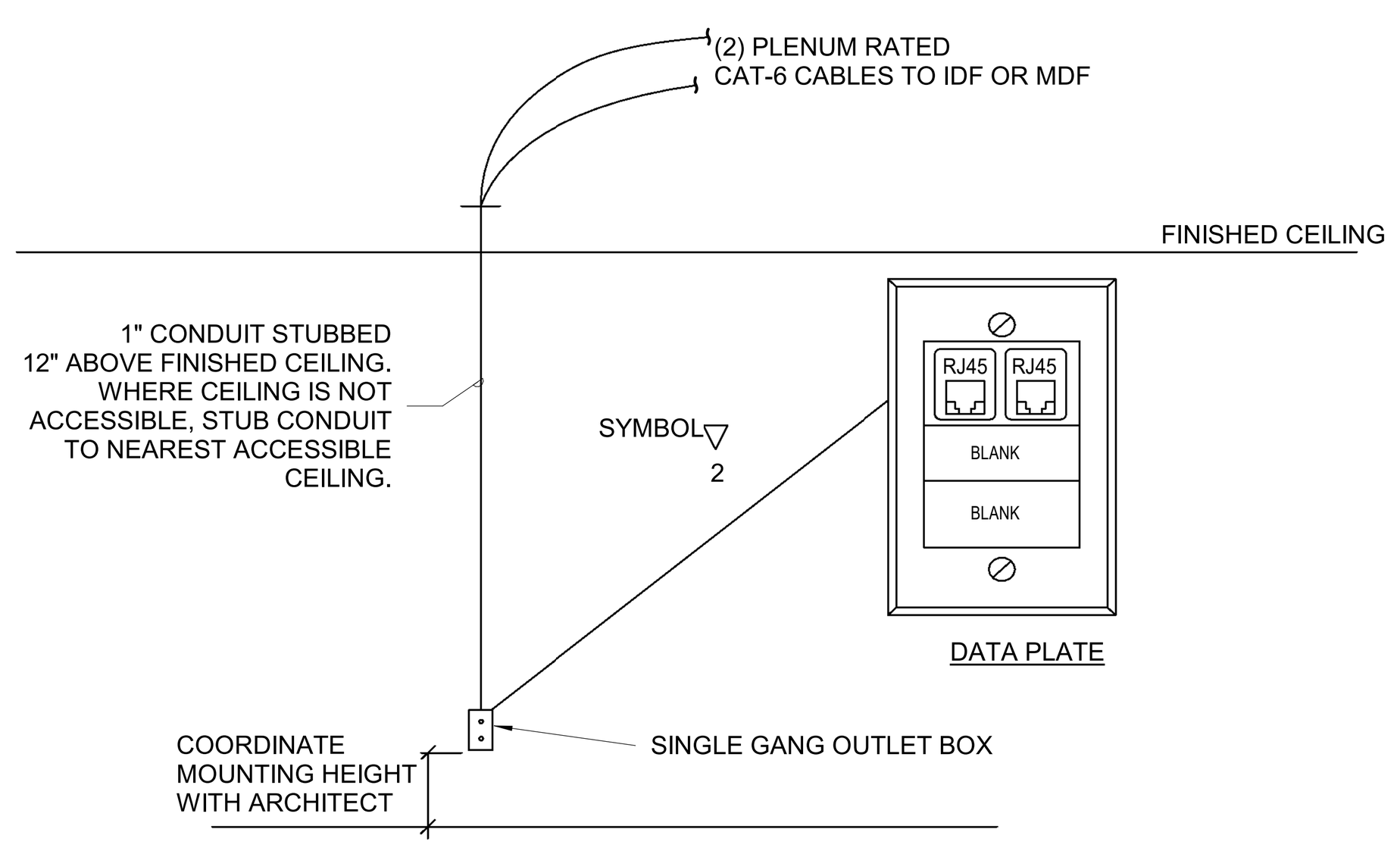
KEY PLAN: NO SCALE

DRAWN BY: JPT
CHECKED BY: JTB

LIGHTING PLAN - GYM ADDITION

2022035 11 MARCH 2024

E2-02



GENERAL NOTES:

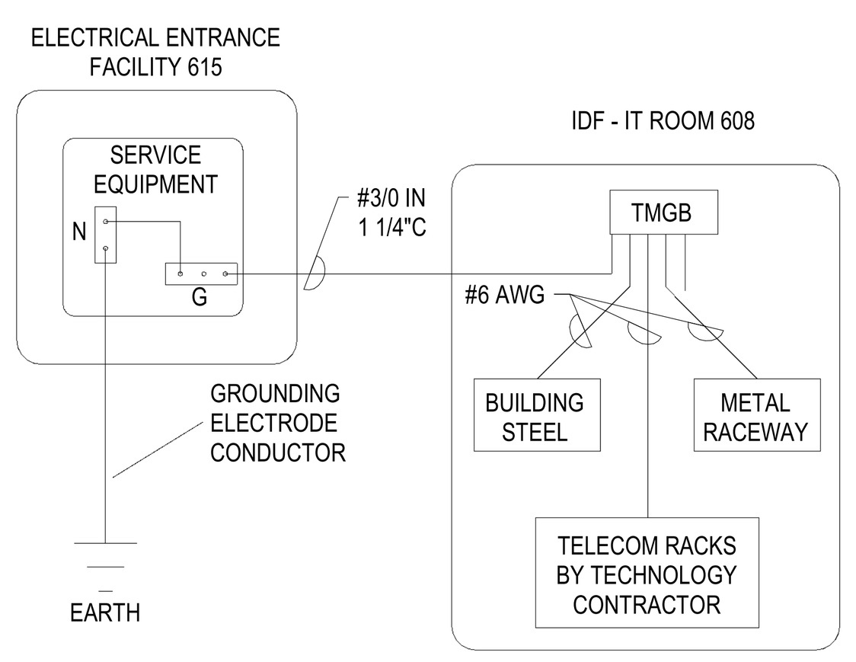
A. ELECTRICAL CONTRACTOR SHALL PROVIDE J-HOOK SUPPORTS FOR SUPPORTING WIRING.

B. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CONDUIT SLEEVES AS NEEDED TO ACCOMMODATE NEW WIRING. AFTER ALL WIRING IS INSTALLED THEN CONTRACTOR SHALL SEAL ACCORDINGLY.

C. ALL CABLING SHALL BE PLENUM RATED CAT-6.

D. NUMBER NEXT TO SYMBOL 2 INDICATES QTY OF CAT-6 DROPS AT THAT LOCATION

8 DATA OUTLET
NOT TO SCALE



GENERAL NOTES:

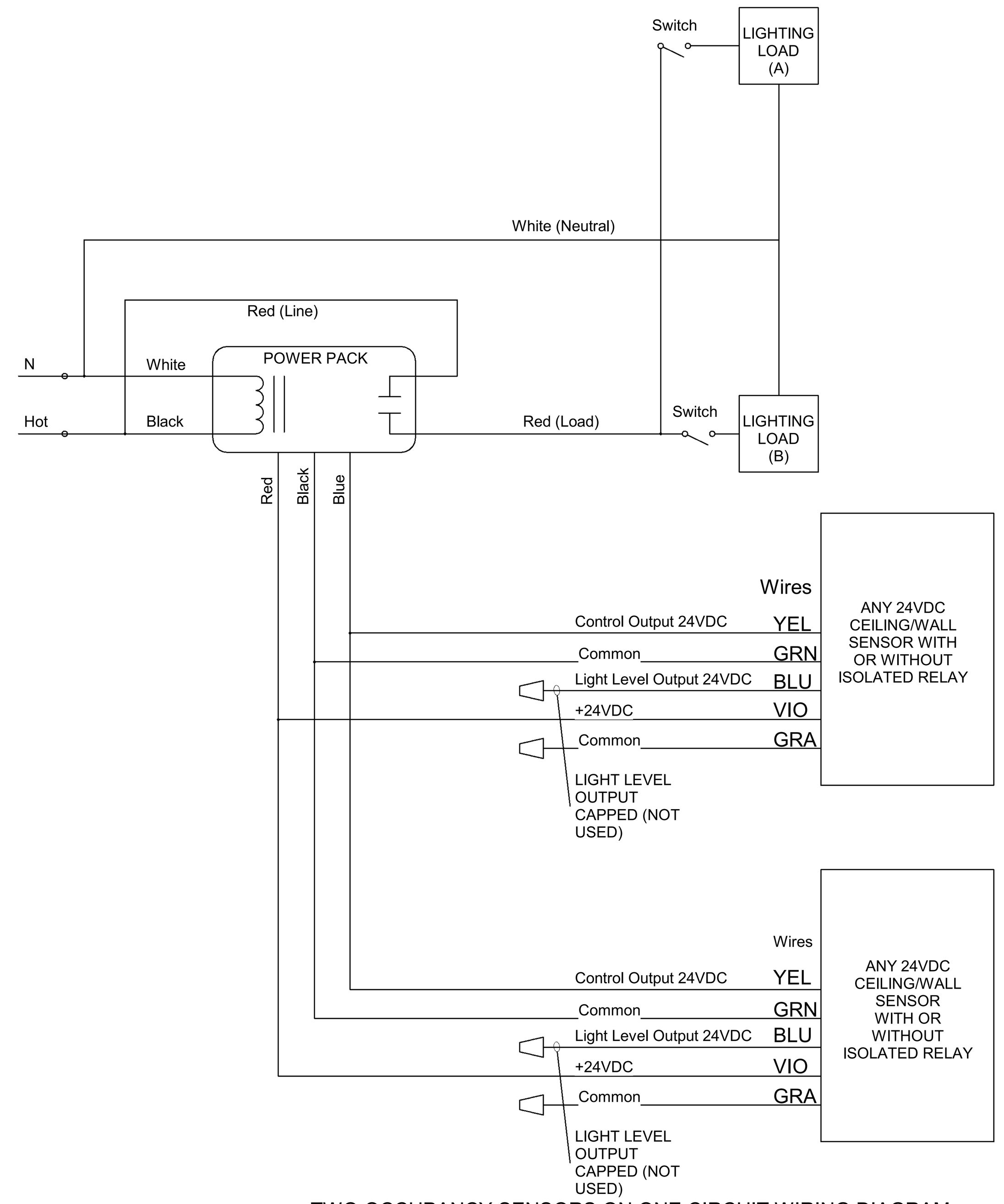
A. IT IS THE INTENT FOR THE TELECOMMUNICATION GROUNDING SYSTEM TO UTILIZE THE "GROUND ELECTRODE CONDUCTOR (GEC)" ASSOCIATED WITH THE ELECTRICAL SERVICE ENTRANCE TO THE PROJECT SITE.

B. FROM THE GEC, THE ELECTRICAL CONTRACTOR WILL INSTALL A BONDING CONDUCTOR WHICH WILL CONNECT THE GEC TO A TELECOMMUNICATIONS MAIN GROUNDING BUS BAR (TMGB) LOCATED IN IT 608. THE BONDING CONDUCTOR WILL BE BONDED TO THE GEC AND THE TMGB. ADDITIONALLY, THE TMGB WILL BE BONDED TO THE CLOSEST PART OF THE BUILDING STEEL AND STEEL CONDUIT RACEWAY OR CABLE TRAY DESIGNATED FOR TELECOMMUNICATIONS USE.

C. COMPONENTS CRITERIA:
1. BUSBARS
A. PREDRILLED ELECTROTIN PLATED COPPER BUSBAR PROVIDED WITH STANDARD NEMA BOLT HOLE SIZING AND SPACING FOR TWO HOLE COMPRESSION CONNECTORS OR EXOTHERMIC TYPE WELDED CONNECTORS.
B. SIZE WILL BE A MINIMUM OF 6mm THICK, 50mm WIDE AND 200mm LONG.
C. THE BUSBAR WILL BE INSULATED FROM ITS SUPPORT. MINIMUM 50mm SEPARATION IS RECOMMENDED.

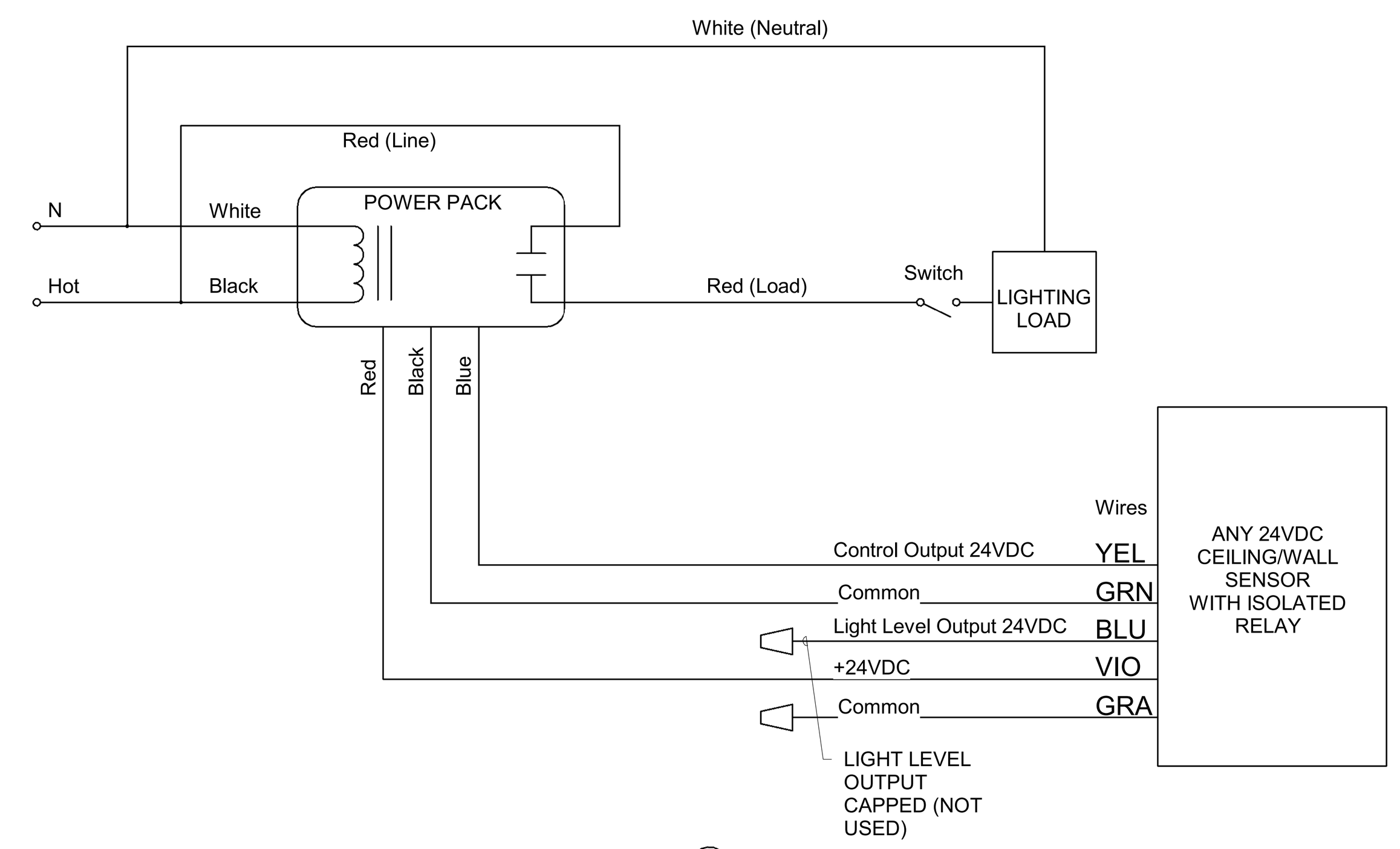
TELECOMMUNICATIONS GROUNDING SYSTEM TO BE INSTALLED BY THE ELECTRICAL CONTRACTOR

9 TELECOMMUNICATIONS GROUNDING SYSTEM
NOT TO SCALE



TWO OCCUPANCY SENSORS ON ONE CIRCUIT WIRING DIAGRAM
(EQUALS: WATTSTOPPER, HUBBELL, PASS & SEYMOUR)

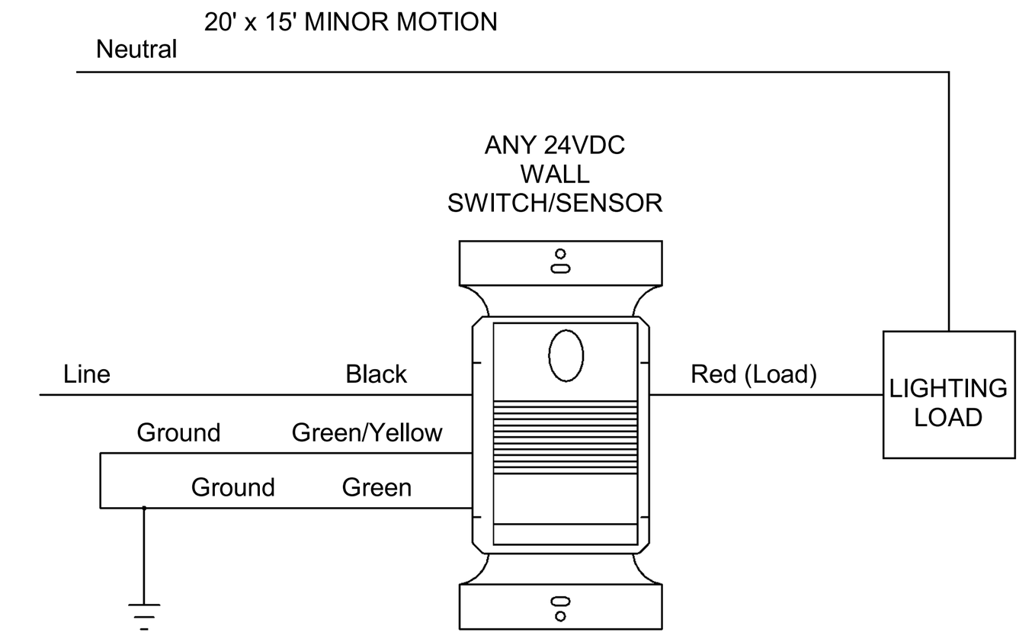
DT-300 (OS)
DUAL TECHNOLOGY OCCUPANCY SENSOR, 1000 SQ. FT. COVERAGE, WITH WIDE ANGLE LENS



DT-300 (OS)
DUAL TECHNOLOGY OCCUPANCY SENSOR, 1000 SQ. FT. COVERAGE, WITH WIDE ANGLE LENS

OCCUPANCY SENSOR WITH ISOLATED RELAY WIRING DIAGRAM
(EQUALS: WATTSTOPPER, HUBBELL, PASS & SEYMOUR, LEVITON)

DSW-100 S_{os}
DUAL TECHNOLOGY WALL SWITCH SENSOR
35' x 30' MAJOR COVERAGE
20' x 15' MINOR MOTION

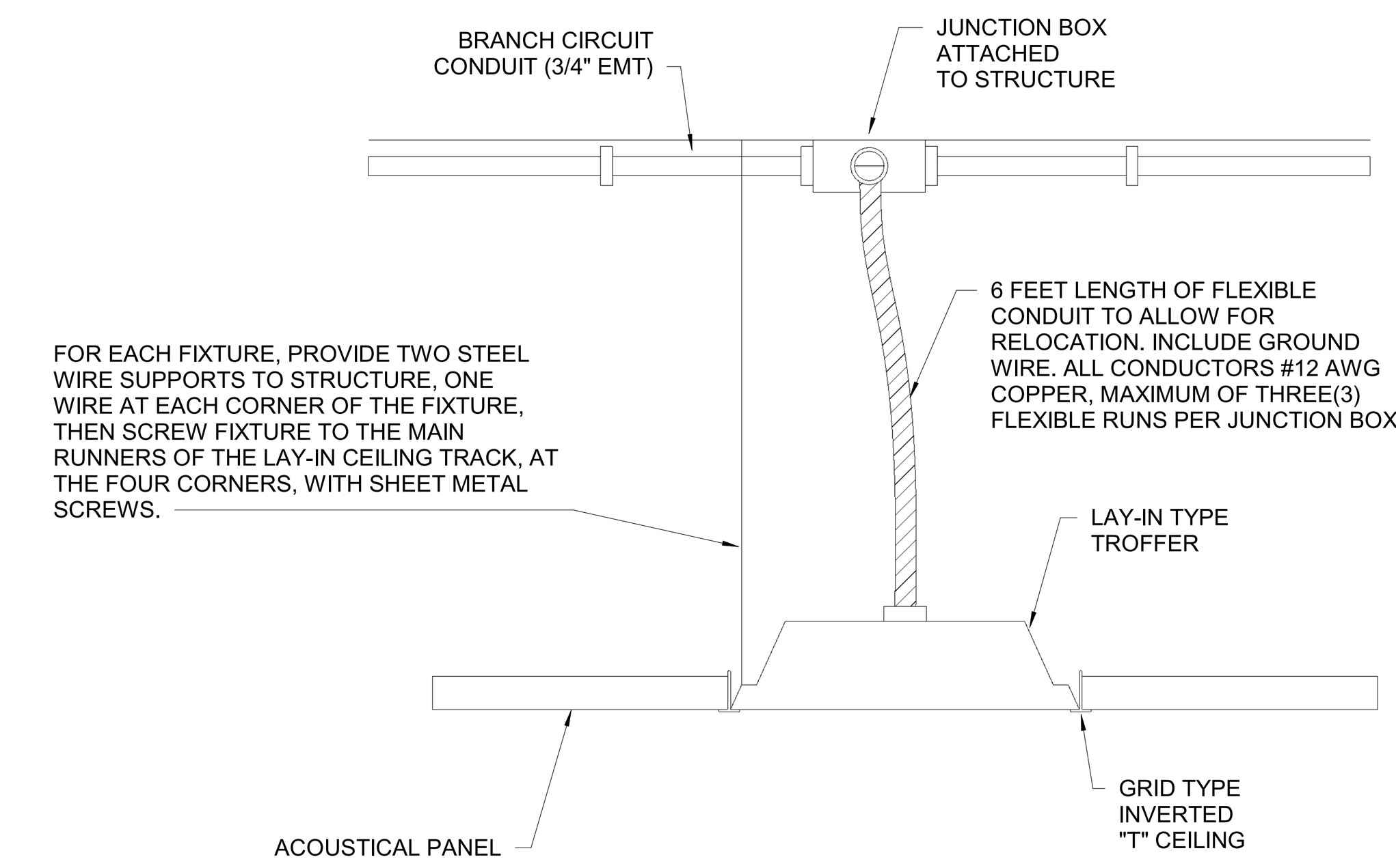


OCCUPANCY SENSOR SINGLE LEVEL WIRING DIAGRAM
(EQUALS: WATTSTOPPER, HUBBELL, SENSOR SWITCH)

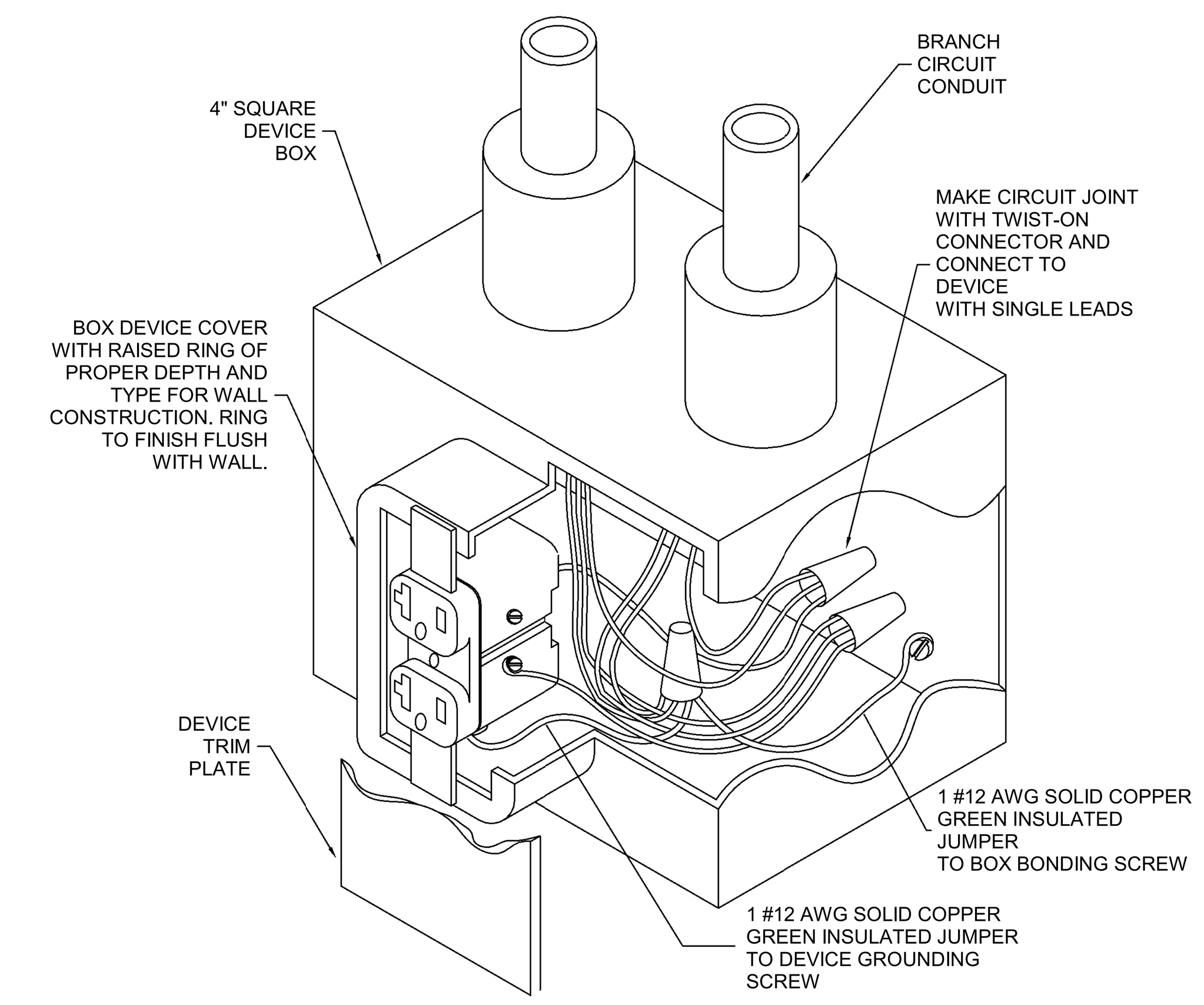
GENERAL NOTES:

1. ALL SENSOR LOCATIONS ARE APPROXIMATE. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS PRIOR TO INSTALLATION.
2. ULTRASONIC AND DUAL TECHNOLOGY CEILING MOUNTED SENSORS SHALL NOT BE LOCATED WITHIN 6'-0" OF SUPPLY/RETURN GRILLES.
3. CONTRACTOR IS RESPONSIBLE FOR PROPER SENSITIVITY AND TIME DELAY SETTINGS, VERIFICATION OF MANUFACTURER'S RECOMMENDED PLACEMENT AND FIELD VERIFICATION OF CIRCUITS WITH RESPECT TO POWER PACK PLACEMENT.
4. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF REQUIRED NUMBER OF POWER PACKS.
5. ONE POWER PACK IS REQUIRED FOR EACH CIRCUIT THAT IS TO BE CONTROLLED.
6. MAXIMUM NUMBER OF SENSORS THAT CAN BE WIRED IN PARALLEL TO A SINGLE POWER PACK IS DEPENDENT ON SENSOR MODEL. (SEE INDIVIDUAL DATA SHEETS FOR mA CONSUMPTION.)
7. SENSOR LAYOUT DRAWINGS AND PRODUCT DATA SHEETS ARE REQUIRED AS PART OF SHOP DRAWING SUBMITTALS.
8. ALL OCCUPANCY SENSOR WIRING SHALL BE WIRED IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS.
9. ALL EXPOSED WIRING SHALL BE PLENUM RATED.

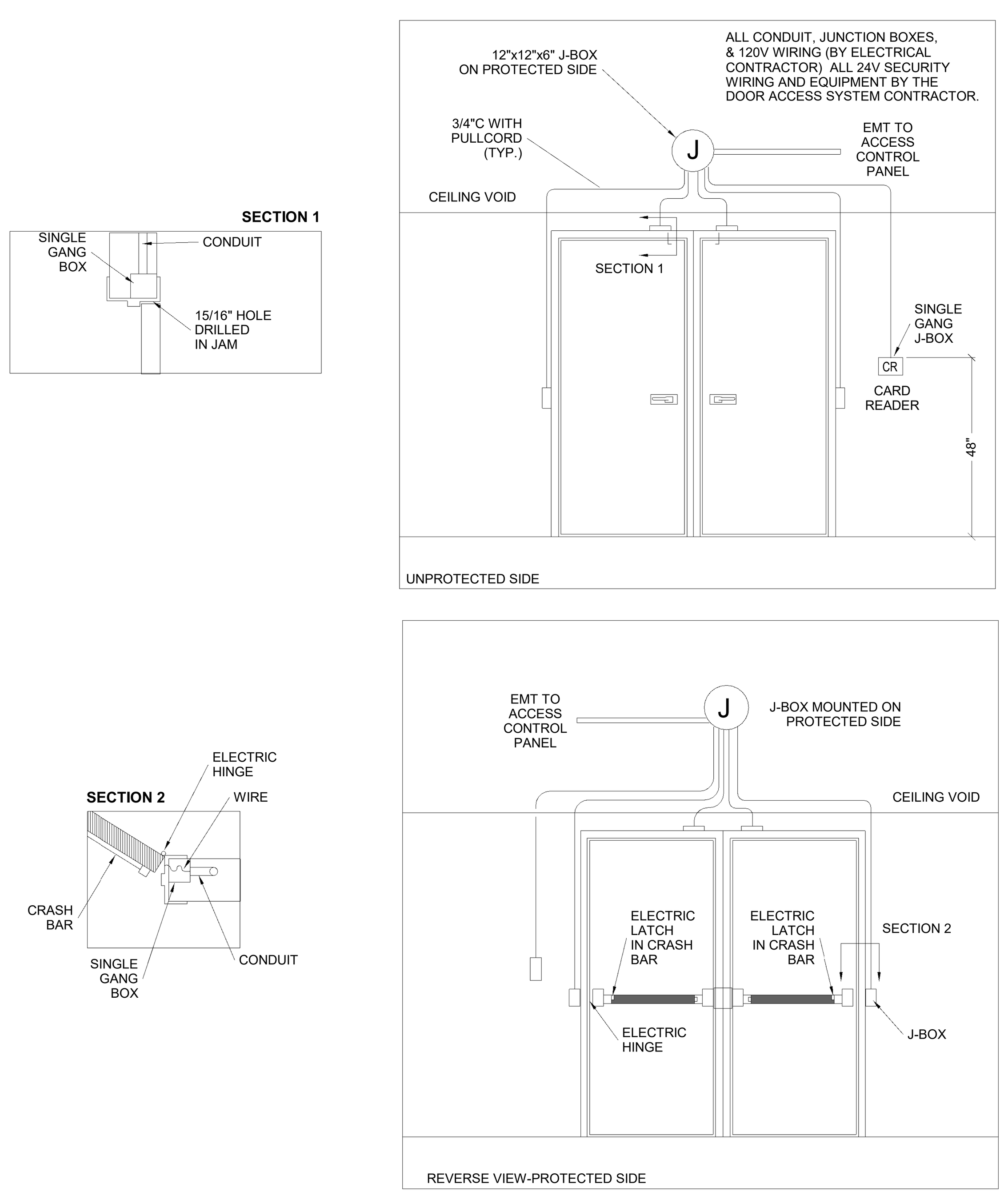
4 OCCUPANCY SENSOR WIRING DIAGRAM
NOT TO SCALE



1 LAY-IN FIXTURE MOUNTING
NOT TO SCALE



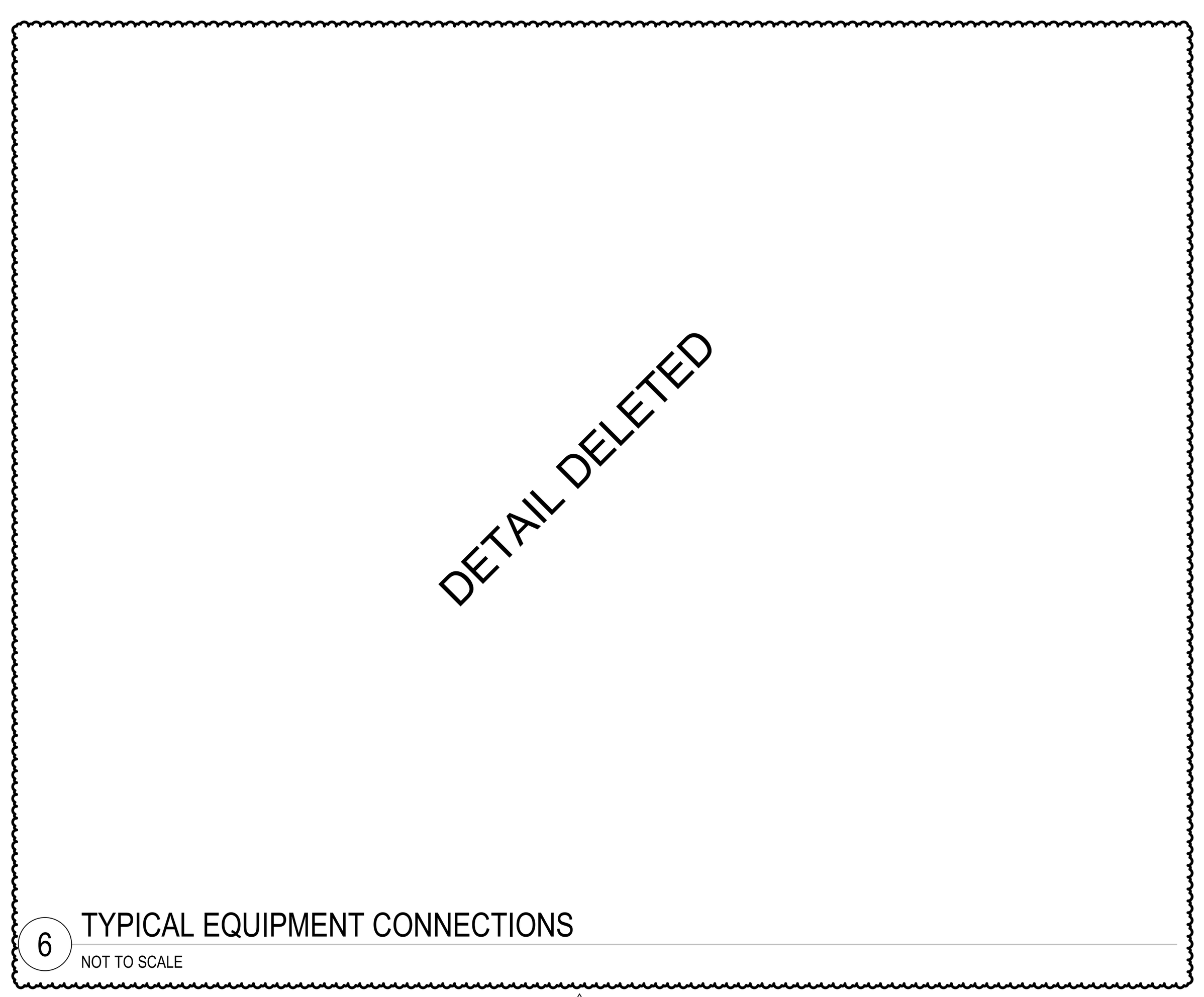
2 RECEPTACLE GROUNDING
NOT TO SCALE



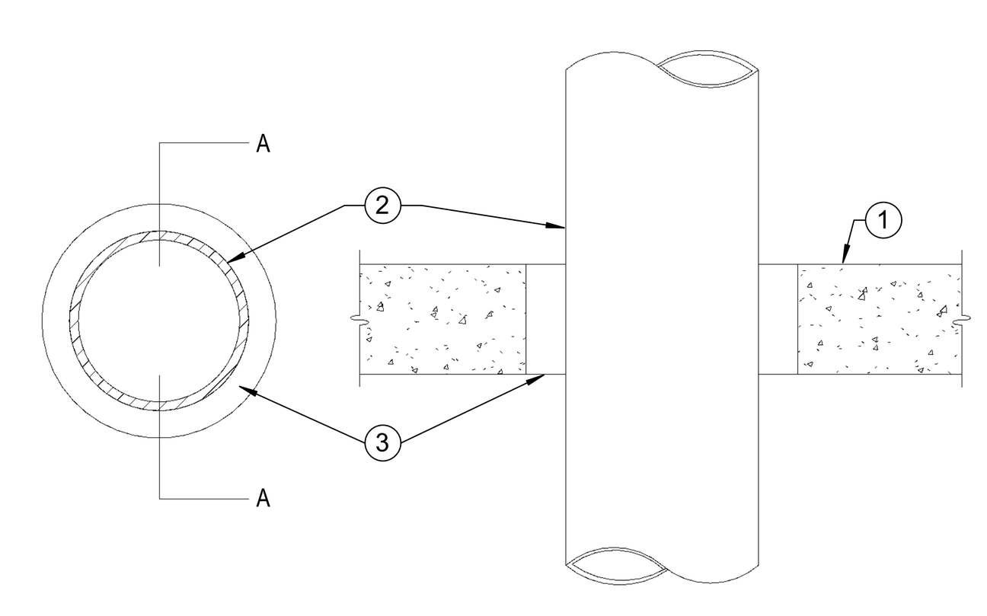
GENERAL NOTES:

A. REFER TO DOOR HARDWARE SPECIFICATION FOR DOOR HARDWARE.
B. THE INSTALLATION OF ALL CONDUIT, WIRING, JUNCTION BOXES, TERMINATIONS, CARD READERS AND S2 SECURITY EQUIPMENT SHALL BE COORDINATED BETWEEN THE ELECTRICAL, SECURITY AND DOOR HARDWARE CONTRACTORS PRIOR TO INSTALLATION.
C. POWER SUPPLIES SHALL BE LOCATED IN READILY ACCESSIBLE LOCATION AT NEAREST NETWORK CLOSET, NOT ABOVE CEILINGS.
D. REFER TO ACCESS CONTROL SYSTEM SPECIFICATION.
E. THIS DOOR DETAIL IS A GENERAL DETAIL AND DOES NOT REFLECT THE ACTUAL DOOR PROVIDED. THE CONTRACTORS SHALL COORDINATE WITH ALL APPLICABLE TRADES AND INCORPORATE ALL REQUIRED ACCESS CONTROLS FOR A COMPLETE AND 100% OPERATIONAL DOOR.

10 EXTERIOR DOUBLE DOORS-CRASH BAR
NOT TO SCALE

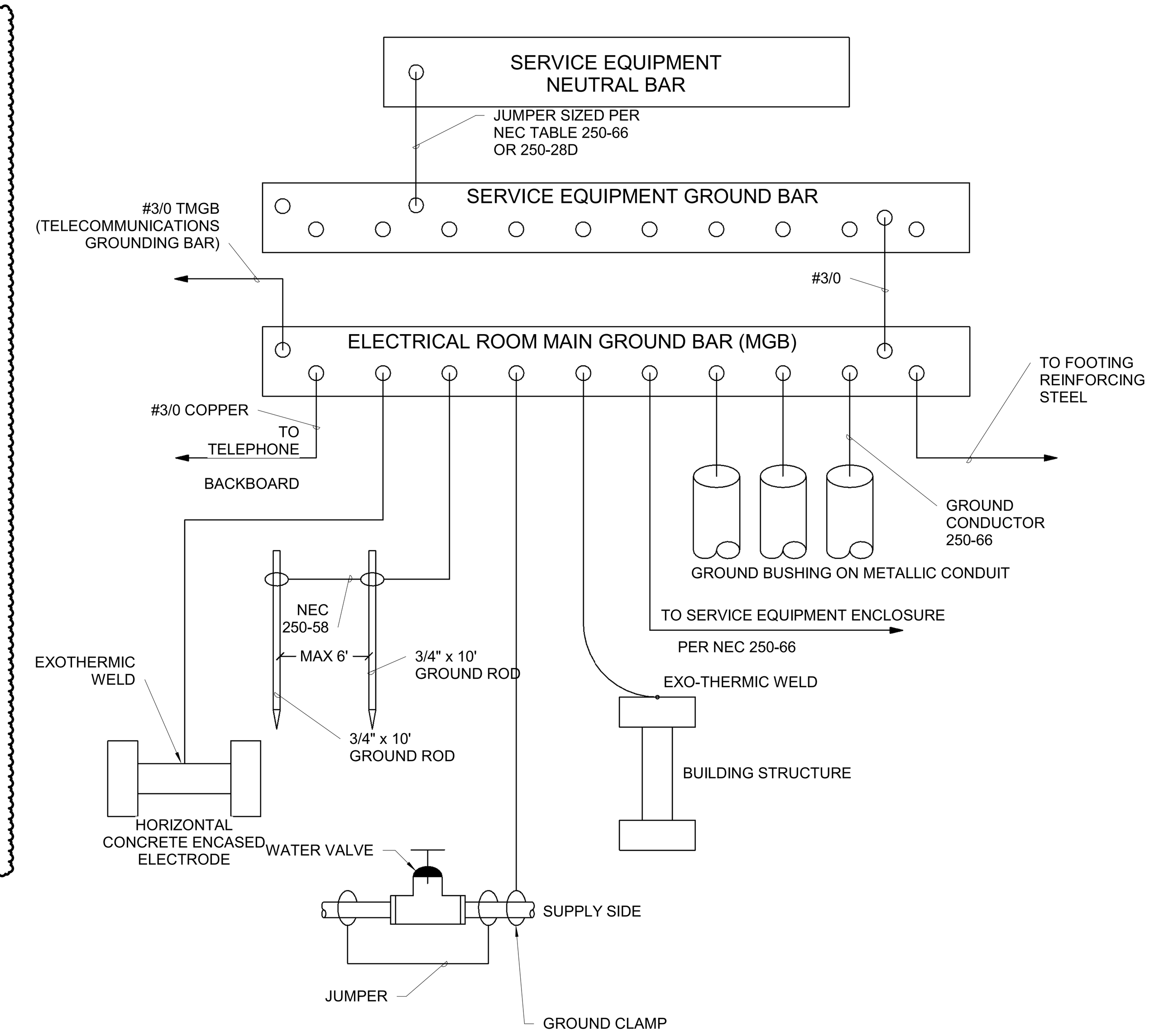


6 TYPICAL EQUIPMENT CONNECTIONS
NOT TO SCALE



NOTES:
1. NON-RATED FLOOR OR WALL.
2. THROUGH PENETRANTS - ONE PIPE, OR CONDUIT.
3. FILL, VOID, OR CAVITY MATERIAL: SILICON CAULK.

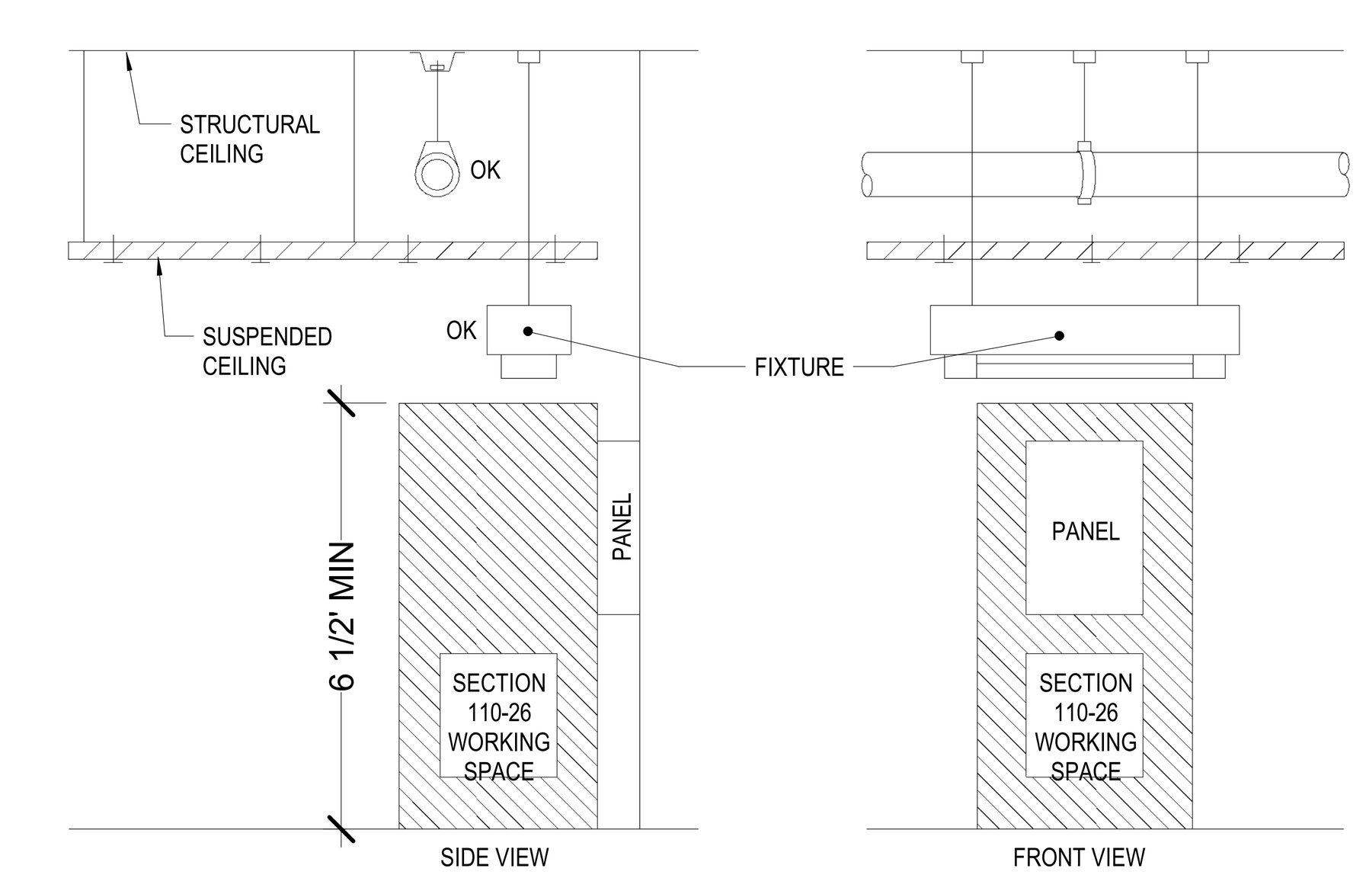
7 NON-RATED WALL PIPE PENETRATION
NOT TO SCALE



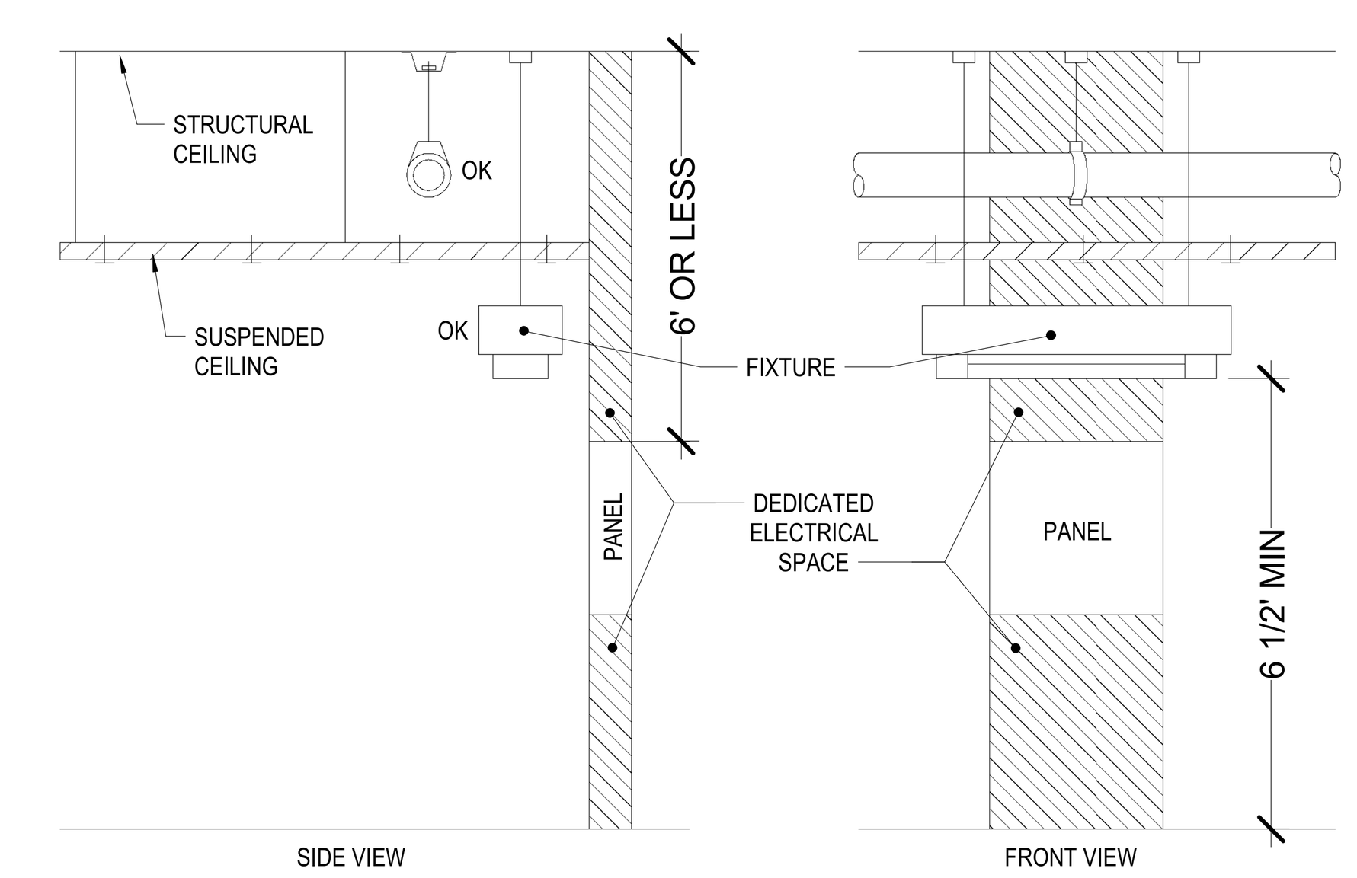
GENERAL NOTES:

A. THIS SCHEMATIC IS NOT INTENDED TO SHOW ALL NEC AND OTHER CODE REQUIRED BONDING AND GROUNDING. RATHER, IT IS INTENDED TO ALERT THE CONTRACTOR TO TYPICAL MISAPPLICATIONS AND/OR OVERSIGHTS THAT OCCUR IN THE FIELD. THE CONTRACTOR IS A LICENSED PROFESSIONAL AND REMAINS RESPONSIBLE FOR ADHERENCE TO ALL INSTALLATION CODES WHETHER SHOWN OR NOT.
B. ALL CONDUCTORS SHOWN ON THIS SCHEMATIC SHALL BE SIZED PER NEC 250-66 UNLESS NOTED OTHERWISE.
C. ALL GROUNDING AND BONDING SHOWN IS REQUIRED TO BE INSTALLED IF PRESENT ON THE PROJECT.
D. SEE OTHER DETAILS FOR ADDITIONAL GROUNDING AND BONDING OF OTHER EQUIPMENT AND/OR SYSTEMS.
E. COORDINATE CONCRETE ENCASED ELECTRODES WITH STRUCTURAL ENGINEER.

5 SERVICE EQUIPMENT GROUNDING DETAIL
NOT TO SCALE



WORKING CLEARANCE FOR ELECTRICAL EQUIPMENT
N.E.C ARTICLE 110-26



DEDICATED SPACE FOR ELECTRICAL EQUIPMENT
N.E.C ARTICLE 110-26

3 ELECTRICAL EQUIPMENT CLEARANCE
NOT TO SCALE

smith sinnett ARCHITECTURE
T 919 781 8582
F 919 781 3979
4600 Lake Boone Trail
Suite 205
Raleigh, NC 27607
info@smithsinnett.com

pdc
Progressive Design Collaborative, ltd.
3101 Poplarwood Court, Suite 320
Raleigh, North Carolina 27604
919-790-9989
License# C.0185
PROJECT# 23014

CONSTRUCTION DOCUMENTS

04/04/2024

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL ADDITION & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

DRAWN BY: JPT
CHECKED BY: JTB

ELECTRICAL DETAILS

2022035 11 MARCH 2024

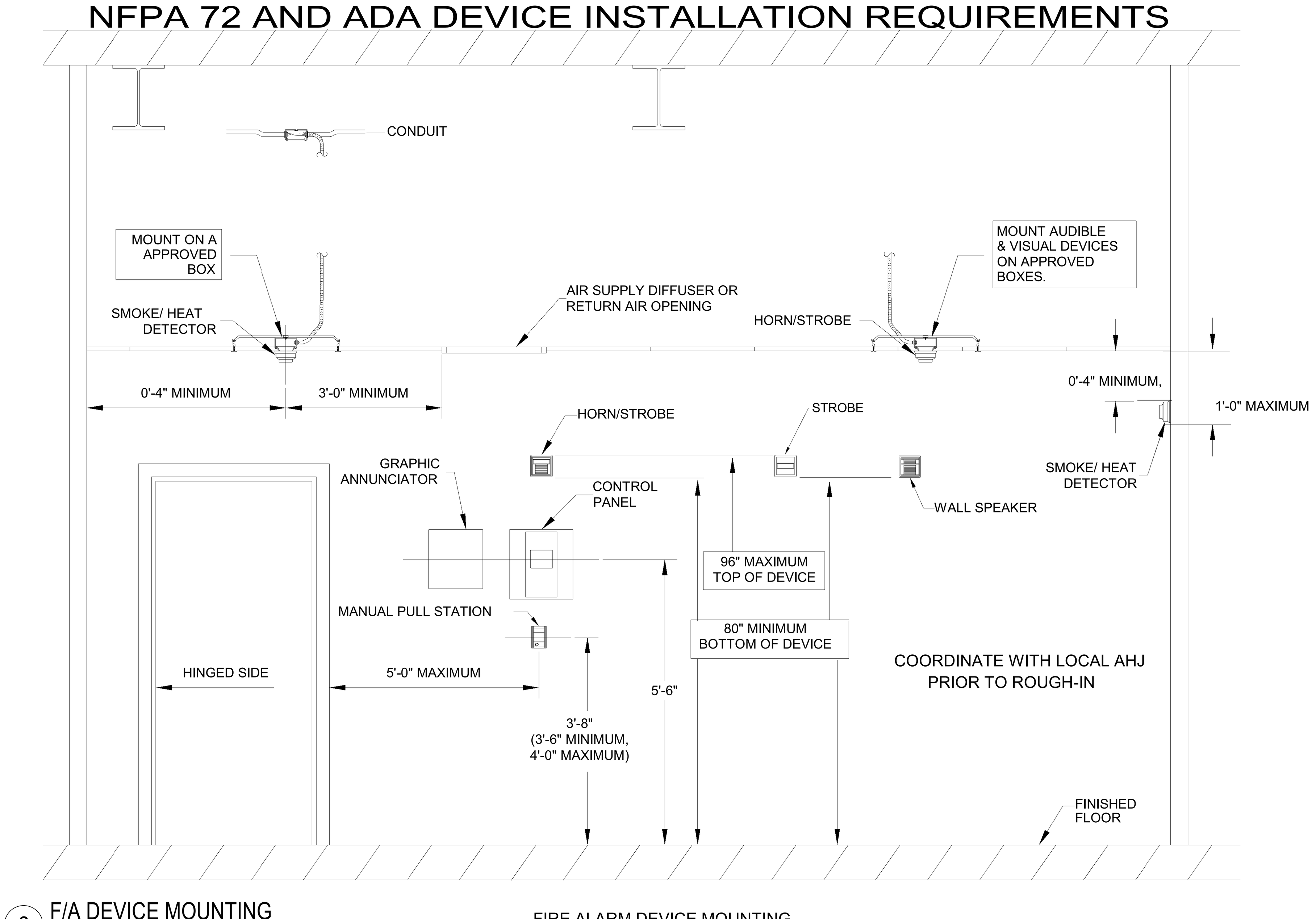
E5-01

NORTHWOODS PARK MS LIGHT FIXTURE SCHEDULE

SYMBOL	SIZE / MOUNTING	VOLT	MANUFACTURER AND MODEL NO.	DESCRIPTION	LAMP	WATTS	MOUNTING HEIGHT
A	RECESSED CEILING	MVOLT	COLUMBIA LJTT24-40-HL-G-EDD-U OR APPROVED EQUAL BY LITHONIA OR WILLIAMS	2' X 4' LAY-IN PRISMATIC LED TROFFER, DLC CERTIFIED, 0-10V DIMMING (DIM TO DARK)	LED 4000K 5526 LUMENS 80 CRI	45	
AE	RECESSED CEILING	MVOLT	COLUMBIA LJTT24-40-HL-G-EDD-U-ELL14 OR APPROVED EQUAL BY LITHONIA OR WILLIAMS	SAME AS TYPE A EXCEPT WITH 1400 LUMEN 90 MINUTE BATTERY BACKUP	LED 4000K 5526 LUMENS 80 CRI	45	
A2	RECESSED CEILING	MVOLT	COLUMBIA LJTT24-40-ML-G-EDD-U OR APPROVED EQUAL BY LITHONIA OR WILLIAMS	2' X 4' LAY-IN PRISMATIC LED TROFFER, DLC CERTIFIED, 0-10V DIMMING (DIM TO DARK)	LED 4000K 4792 LUMENS 80 CRI	38	
A2E	RECESSED CEILING	MVOLT	COLUMBIA LJTT24-40-HL-G-EDD-U-ELL14 OR APPROVED EQUAL BY LITHONIA OR WILLIAMS	SAME AS TYPE A2 EXCEPT WITH 1400 LUMEN 90 MINUTE BATTERY BACKUP	LED 4000K 4792 LUMENS 80 CRI	38	
A2F	RECESSED CEILING	MVOLT	COLUMBIA LJTT24-40-ML-G-ED-U OR APPROVED EQUAL BY LITHONIA OR WILLIAMS	2' X 4' FLANGE PRISMATIC LED TROFFER, DLC CERTIFIED, 0-10V DIMMING (DIM TO 10%)	LED 4000K 4792 LUMENS 80 CRI	38	
A2FE	RECESSED CEILING	MVOLT	COLUMBIA LJTT24-40-ML-G-ED-ELL14-U OR APPROVED EQUAL BY LITHONIA OR WILLIAMS	2' X 4' FLANGE PRISMATIC LED TROFFER, DLC CERTIFIED, 0-10V DIMMING (DIM TO 10%) WITH 90 MINUTE BATTERY BACKUP	LED 4000K 4792 LUMENS 80 CRI	38	
AF	RECESSED CEILING	MVOLT	COLUMBIA LCAT24-40-HL-G-ED-U OR APPROIVED EQUAL BY LITHONA OR WILLIAMS	2' X 2' FLANGE PRISMATIC LED TROFFER, DLC CERTIFIED, 0-10V DIMMING (DIM TO 10%)	LED 4000K 5526 LUMENS 80 CRI	31	
AFE	RECESSED CEILING	MVOLT	COLUMBIA LCAT24-40-HL-G-ED-ELL14-U OR APPROIVED EQUAL BY LITHONA OR WILLIAMS	SAME AS TYPE AF EXCEPT WITH 1400 LUMEN 90 MINUTE BATTERY BACKUP	LED 4000K 5526 LUMENS 80 CRI	31	
AV2	RECESSED CEILING	MVOLT	COLUMBIA LCAT22-40-LW-G-ED-U OR APPROIVED EQUAL BY LITHONA OR WILLIAMS	2' X 2' LAY-IN PRISMATIC LED TROFFER, DLC CERTIFIED, 0-10V DIMMING (DIM TO 10%)	LED 4000K 2903 LUMENS 80 CRI	26	
AV2E	RECESSED CEILING	MVOLT	COLUMBIA LCAT22-40-HL-G-EDD-ELL14ST-U OR APPROIVED EQUAL BY LITHONA OR WILLIAMS	SAME AS "AV" EXCEPT WITH 90 MINUTE BATTERY BACKUP	LED 4000K 2903 LUMENS 80 CRI	26	
B	PENDANT	120V	FINELITE HPO-P-ID-4'-S-S-840-RT-RB-120V-SC-FA100-C4-FE EQUALS BY LEDALITE OR HE WILLIAMS	4' DIRECT/INDIRECT LED PENDANT	LED 4000K 3476 LUMENS 80 CRI	28	
BE	PENDANT	120V	FINELITE HPO-P-ID-4'-S-S-840-RT-RB-120V-SC-FA100-C4-FE-BSL310LP EQUALS BY LEDALITE OR HE WILLIAMS	4' DIRECT/INDIRECT LED PENDANT	LED 4000K 3476 LUMENS 80 CRI	28	
C	CHAIN HUNG	MVOLT	WILLIAMS #82-4-L64/840-VBY-CHAINS-DRV-UNV-WG-8214 APPROVED EQUAL BY LITHONIA OR COLUMBIA	4' INDUSTRIAL LED CHAIN HUNG, WITH WIRE GUARD, 82CRI	LED 4000K 4,600 LUMEN 80 CRI	38	10'-0" AFF.
CE	CHAIN HUNG	MVOLT	WILLIAMS #82-4-L64/840-VBY-CHAINS-DRV-UNV-WG-8214-ELL14 APPROVED EQUAL BY LITHONIA OR COLUMBIA	SAME AS TYPE C EXCEPT WITH 1400 LUMEN 90 MINUTE BATTERY BACKUP	LED 4000K 4,600 LUMEN 80 CRI	38	10'-0" AFF.
D	RECESSED CEILING	MVOLT	PRESCOLITE #LTR-6RD-H-SL-20L-DM1-LTR-6RD-T-SL-40K-8-WD-SS OR APPROVED EQUAL BY GOTHAM OR WILLIAMS	6" OPEN LED DOWNLIGHT WITH 0-10V DIMMING DOWN TO 1%.	LED 4000K 2000 LUMEN 80 CRI	26	
DE	RECESSED CEILING	MVOLT	PRESCOLITE #LTR-6RD-H-SL-20L-DM1-LTR-6RD-T-SL-40K-8-WD-SS-EM OR APPROVED EQUAL BY GOTHAM OR WILLIAMS	SAME AS TYPE DE EXCEPT WITH 1400 LUMEN 90 MINUTE BATTERY BACKUP, WET LABEL LISTED	LED 4000K 2000 LUMEN 80 CRI	26	
E	RECESSED CEILING	120V	PRESCOLITE #LTR-6RD-H-SL-15L-DM1-LTR-6RD-T-SL-40K-8-WD-SS OR APPROVED EQUAL BY GOTHAM OR WILLIAMS	6" OPEN LED DOWNLIGHT WITH 0-10V DIMMING DOWN TO 1%.	LED 4000K 1500 LUMEN 80 CRI	18	
GE	WALL MOUNTED	120V	LITHONIA# WSTLED-P2-40K-VF-MVOLT-EM OR APPROVED EQUAL BY HUBBELL OR PHILLIPS	EXTERIOR LED ARCHITECTURAL WALL SCONCE (TRAPESOIDAL SHAPE) / WITH 90 MINUTE BATTERY BACKUP	LED 4000K 3400 LUMEN 80 CRI	25	10-0" AFG.
H	RECESSED CANOPY	MVOLT	TRACELITE#TLED-RC-20-VS-LG-CC-TP EQUALS BY CREE OR LUMINAIRE	12" SQUARE EXTERIOR LED RECESSED DOWNLIGHT FOR CANOPY, WET LABEL LISTED	LED 4000K 2286 LUMENS 80 CRI	20	
L4	RECESSED CEILING	120V	FINELITE #HP4-R-48-S-840-F-96LG-120-SC-FC-10%-XX-FE-SW EQUALS BY PINNACLE OR LEDALITE	4FT, LED HIGH PERFORMANCE 4" APERTURE RECESSED LINEAR, DLC CERTIFIED, 0-10V DIMMING TO 1%	LED 4000K 1937 LUMENS 80 CRI	20	
L8	RECESSED CEILING	120V	FINELITE #HP4-R-96-B-840-F-96LG-120-SC-FC-1%-XX-FE-SW EQUALS BY PINNACLE OR LEDALITE	8FT, LED HIGH PERFORMANCE 4" APERTURE RECESSED LINEAR, DLC CERTIFIED, 0-10V DIMMING TO 1%	LED 4000K 3940 LUMENS 80 CRI	40	
L8E	RECESSED CEILING	120V	FINELITE #HP4-R-96-B-840-F-96LG-120-SC-FC-1%-XX-FE-SW-EM EQUALS BY PINNACLE OR LEDALITE	SAME AS TYPE L8 EXCEPT WITH 1400 LUMEN 90 MINUTE BATTERY BACKUP / 4FT SECTION	LED 4000K 3940 LUMENS 80 CRI	20	
M	PENDANT	120V	ILP# RB3-25L-U-40-FRL-AD22-WC22-HUB 3/4 EQUALS BY CREE OR HUBBELL	LED HIGHBAY, FROSTED ACRYLIC REFLECTOR, 3/4" IP PENDANT, WIRE GUARD, FROSTED LENSED, 5 YR WARRANTY, DLC LISTED, SAFETY CABLE, IK10 RATED, IP65 RATED	LED 4000K 24000 LUMENS 80 CRI	196	MTD. LEVEL WITH BOT. OF TRUSS
ME	PENDANT	120V	ILP# RB3-25L-U-40-FRL-AD22-WC22-HUB 3/5-LEDBB/D EQUALS BY CREE OR HUBBELL	SAME AS "M" EXCEPT WITH BATTERY BACKUP	LED 4000K 24911 LUMENS 80CRI	196	MTD. LEVEL WITH BOT. OF TRUSS
L18	SURFACE CEILING	120V	INTERLUX #WG-60LD-SW-S-LENGTH PER PLANS-P1-940-L1-OD-Z OR EQUALS BY FINELITE OR PINNACLE	LED SURFACE MOUNT LINEAR DOWNLIGHT, LENGTH PER PLANS	LED 4000K 399 LUMENS/FT	3W/FT	
P8	PENDANT	120V	FINELITE #HP4-P-D-96"-B-840-F-96LG-120-SC-FC-10%-FA50-C4-FE-SW EQUALS BY PINNACLE OR LEDALITE	4FT, LED HIGH PERFORMANCE 4" APERTURE PENDANT DIRECT, LINEAR, DLC CERTIFIED, 0-10V DIMMING TO 10%	LED 4000K 3940 LUMENS 80 CRI	40	
P8E	PENDANT	120V	FINELITE #HP4-P-D-96"-B-840-F-96LG-120-SC-FC-10%-FA50-C4-FE-SW-EM EQUALS BY PINNACLE OR LEDALITE	SAME AS TYPE P4 EXCEPT WITH 1400 LUMEN 90 MINUTE BATTERY BACKUP	LED 4000K 3940 LUMENS 80 CRI	40	
PP	PENDANT	120V	NAL F52-033-9006-IP20-1-840-L1 EQUALS BY BIRCHWOOD OR ACUITY	13" DIAMETER ROUND CIRCULAR LED PENDANT, SUSPENDED ROD, ARCHITECT TO SELECT COLOR	LED 2082 LUMENS 80 CRI	20	
R	PENDANT	120V	LUMENWERX #TOGP-18-ULO-SW-90-1800LM-40-UNV-D1-1-RCD-CF-WAC-XXIN-CF#	DECORATIVE LED PENDANT, 18" DIAMETER	LED 4000K 2500 LUMENS 80 CRI	28	
RE	PENDANT	120V	LUMENWERX #TOGP-18-ULO-SW-90-1800LM-40-UNV-D1-2	DECORATIVE LED PENDANT WITH 90 MINUTE EMERGENCY 35W MINI-INVERTER BATTERY BACKUP	LED 4000K 2500 LUMENS 80 CRI	28	
S	RECESSED CEILING	MVOLT	GOTHAM # EV06SH-40-15-DFFAMF-SMO-120 APPROVED EQUAL BY WILLIAMS OR LITHONIA	6" LED SHOWER FIXTURE, WET LABEL LISTED	LED 4000K 3874 LUMENS 80 CRI	15	
W	WALL MOUNTED	MVOLT	INTERLUX #WG-60LD-SW-S-LENGTH PER PLANS-P1-940-L1-OD-F EQUALS BY FINELITE OR PINNACLE	DIMMABLE, LINEAR, DIRECT WALL LIGHT WITH OPAL DIFFUSER, LENGTH AS PER PLANS	LED 4000K 193 LUMEN/WATT 90+ CRI	3W/FT	
WE	MULLION MOUNTED	MVOLT	LUMINAIRE# AEL-36-PRO-30-2500-40K-MVOLT-DP-CUST-EMB310 EQUALS BY MULE OR EVENLITE	30" LED WALL MULLION MOUNTED FIXTURE WITH 90 MINUTE BATTERY BACKUP	LED 4000K 2500 LUMENS CRI 80	30	MULLION MOUNTED
X1	UNIVERSAL MOUNT	MVOLT	EMERGILITE #DXN-1-R-N APPROVED EQUALS BY DUALITE, LITHONIA	SINGLE FACE LED EXT SIGNAGE 120/277V, WITH 90 MINUTE BATTERY BACKUP	LED	5	6" ABOVE DOOR FRAME
X2	UNIVERSAL MOUNT	MVOLT	EMERGILITE #DXN-2-R-N APPROVED EQUALS BY DUALITE, LITHONIA	DOUBLE FACE LED EXT SIGNAGE 120/277V, WITH 90 MINUTE BATTERY BACKUP	LED	10	6" ABOVE DOOR FRAME

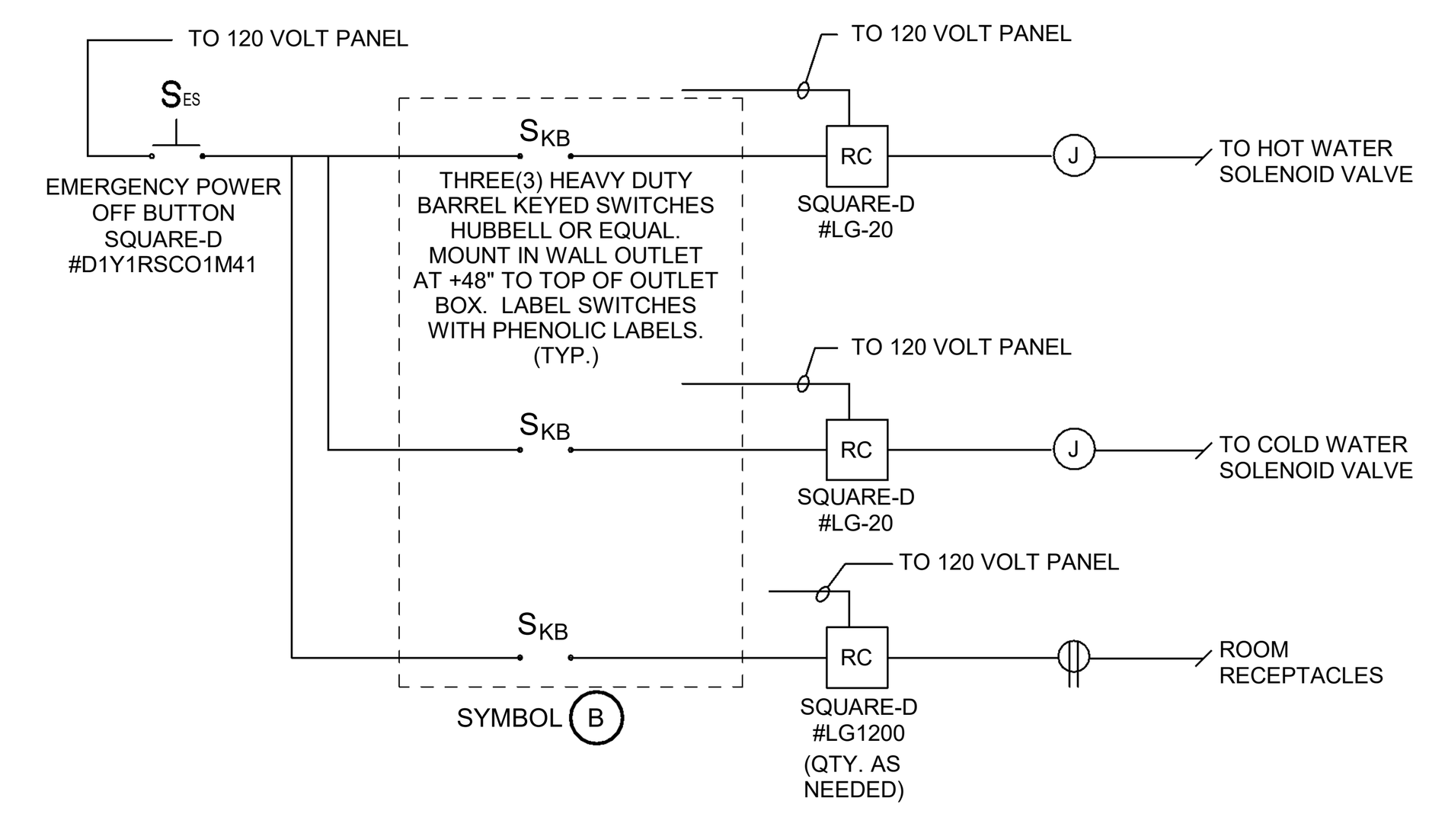
NOTES:
1. ALL FIXTURE COLORS AND FINISHES SHALL BE SELECTED BY ARCHITECT.
2. ALL LED FIXTURES SHALL HAVE MINIMUM 10KA SURGE PROTECTION.
3. ALL MOUNTING HARDWARE, AIRCRAFT CABLE, ETC. SHALL BE PROVDED/INSTALLED FOR A COMPLETE INSTALLATION.

NFPA 72 AND ADA DEVICE INSTALLATION REQUIREMENTS



2 F/A DEVICE MOUNTING
NOT TO SCALE

FIRE ALARM DEVICE MOUNTING



GENERAL NOTES:

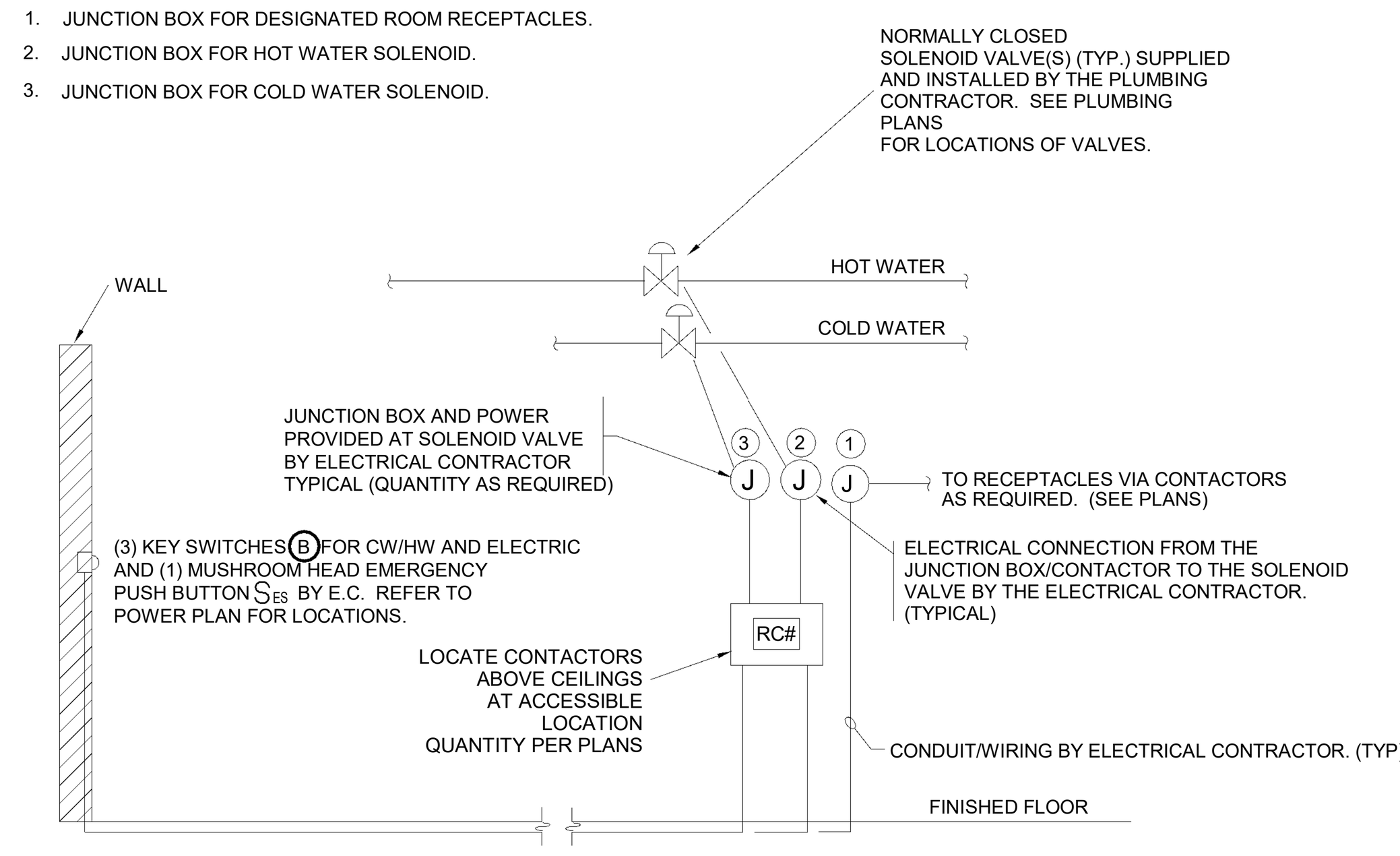
A. LABEL EACH SWITCH FOR ITS OPERATION.

B. CONTACTOR COILS ARE 120 VOLT.

C. ELECTRICAL CONTRACTOR SHALL PROVIDE 120V TO COILS AS NEEDED.

4 KEY SWITCH EMERGENCY SHUT-OFF
NOT TO SCALE

KEYNOTES:
1. JUNCTION BOX FOR DESIGNATED ROOM RECEPTACLES.
2. JUNCTION BOX FOR HOT WATER SOLENOID.
3. JUNCTION BOX FOR COLD WATER SOLENOID.



TYPICAL FOR ALL SCIENCE ROOMS

GENERAL NOTES:
A. LABEL EACH SWITCH FOR ITS OPERATION.
B. CONTACTOR COILS ARE 120 VOLT.
C. COORDINATE ALL DEVICE LOCATIONS TO ENSURE ACCESSIBILITY FOR SERVICING.
D. PRIOR TO TURNOVER, TEST SYSTEM FOR OPERABILITY. CONTACT OWNER AND ENGINEER FOR TEST.
E. EPO BUTTON SHALL BE LABELLED AND HAVE LEXAN COVER.

3 SCIENCE EMERGENCY SHUT-OFF/SWITCHING
NOT TO SCALE

GENERAL FIRE ALARM RISER NOTES:

A. ALL NEW DEVICES SHALL BE COMPATIBLE WITH EXISTING NOTIFIER FACP.

B. SEE PLANS FOR LOCATIONS AND QUANTITIES OF ALL DEVICES.

C. ALL WIRING SHALL BE IN MINIMUM 3/4" CONDUIT.

D. BATTERY CALCULATIONS ARE REQUIRED WITH ALL SUBMITTALS.

E. TEST RESULTS ARE REQUIRED FOR ALL DEVICES.

F. PROVIDE SHUT-DOWN DEVICES FOR NEW ROOF TOP UNITS.

G. VERIFY ROOM NUMBERS WITH ARCHITECT PRIOR TO PROGRAMMING SYSTEM.

H. ALL NAC PANELS AND AMPLIFIER PANELS SHALL HAVE A SMOKE DETECTOR MOUNTED WITHIN 15'-0" OF PANEL.

I. A SMOKE DETECTOR SHALL BE MOUNTED WITHIN 15'-0" OF FACP AND NAC PANELS.

J. IF ANY ARCHITECTURAL CHANGES ARE MADE THAT SHALL AFFECT ANY DEVICE PLACEMENT, THIS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO INSTALLATION.

K. THE MANUFACTURER'S AUTHORIZED REPRESENTATIVE SHALL BE NICET LEVEL 3 CERTIFIED AND HAVE AT LEAST 2 YEARS OF EXPERIENCE INSTALLING FIRE ALARM SYSTEMS.

L. THE PROJECT MANAGER SHALL BE NICET LEVEL 4 CERTIFIED AND HAVE AT LEAST 5 YEARS OF EXPERIENCE INSTALLING FIRE ALARM SYSTEMS.

M. THE SHOP DRAWINGS SUBMITTALS FOR DEVICE LOCATIONS SHALL BE SUBMITTED TO ENGINEER AND LOCAL (AHJ) FIRE MARSHALL PRIOR TO ANY INSTALLATION/ROUGH-IN FOR FIRE ALARM DEVICES.

N. WIRING DIAGRAMS. LOCATION DRAWINGS, DEVICE CUT SHEETS AND VOLTAGE DROP CALCULATIONS ARE REQUIRED WITH ALL SUBMITTALS.

O. THE FIRE ALARM SYSTEM PROVIDER SHALL PROVIDE ALL DOCUMENTATION AS SPECIFIED IN THE INTERNATIONAL FIRE CODE SECTION 907 REQUIREMENTS AS PART OF HIS SHOP DRAWING SUBMITTALS.

THIS INCLUDES:

1. LOCATION DRAWINGS OF ALARM INITIATING AND NOTIFICATION DEVICES.
2. WIRING DIAGRAMS WITH CONDUCTOR TYPE AND SIZES.
3. LOCATIONS OF ALARM CONTROL AND TROUBLE SIGNALING EQUIPMENT.
4. POWER CONNECTION DETAILS AND WIRING SCHEMATICS.
5. BATTERY CALCULATIONS.
6. VOLTAGE DROP CALCULATIONS.
7. MANUFACTURER'S MODEL NUMBERS, LISTING INFORMATION FOR EQUIPMENT, DEVICES AND MATERIALS.
8. THE INTERFACE OF FIRE SAFETY CONTROL FUNCTIONS.

P. REFER TO DIVISION 28 SPECIFICATIONS.

Q. FIRE ALARM SIGNAL LINE CIRCUITS SHALL BE WIRED CLASS "A" AND NOTIFICATION CIRCUITS SHALL BE WIRED CLASS "B" WITH THE END OF LINE RESISTOR CLEARLY AND PERMANENTLY MARKED ON THE LAST DEVICE.

R. PROVIDE SPARE PARTS AS DEFINED IN SPECIFICATIONS.

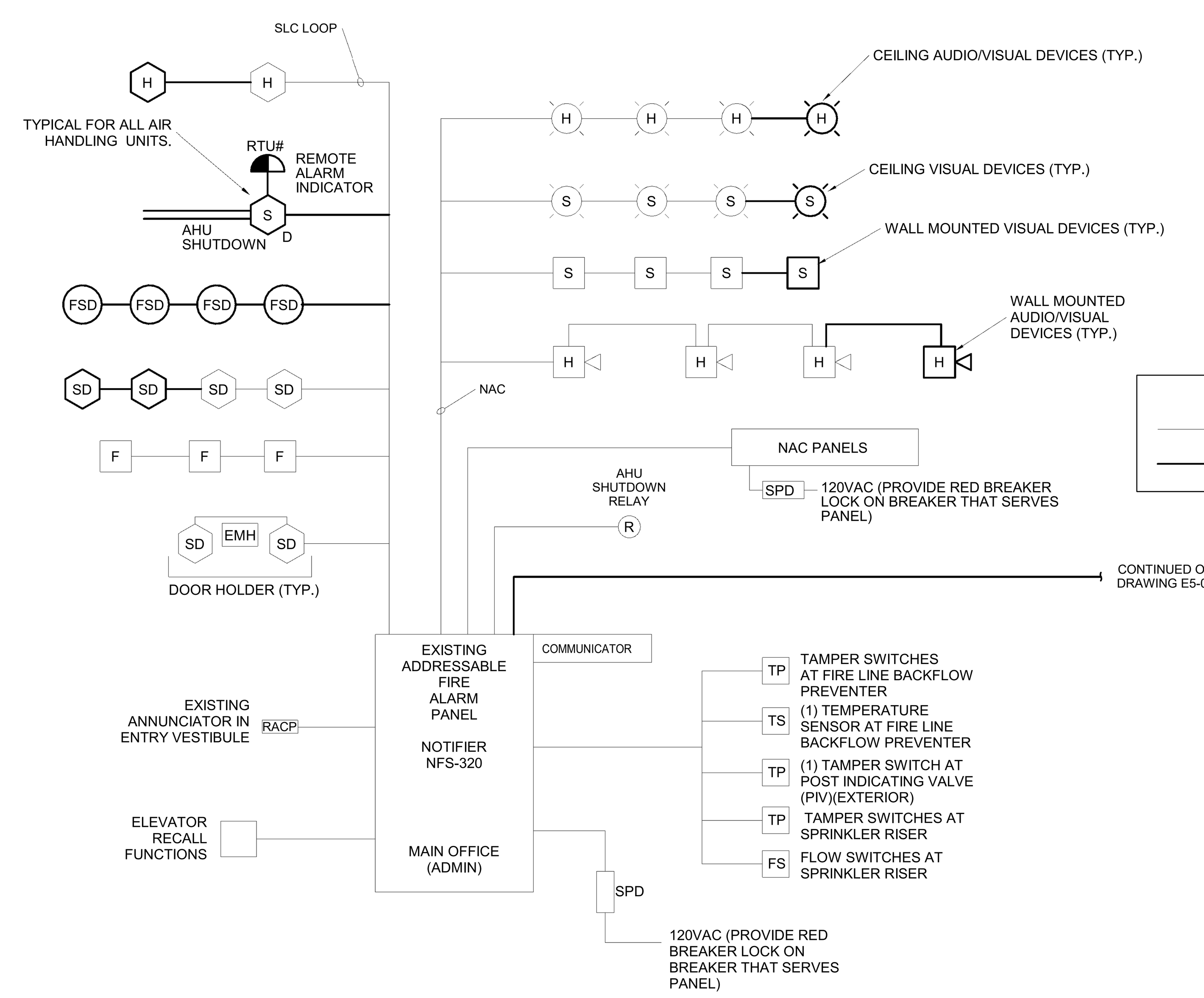
S. ALL FIRE ALARM SYSTEM WORK SHALL BE APPROVED BY THE LOCAL FIRE MARSHAL PRIOR TO COMMENCING ANY FIRE ALARM WORK.

T. FIRE ALARM SYSTEM SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH NFPA 72, 2013.

U. ELECTRICAL CONTRACTOR SHALL COORDINATE CLOSELY WITH FIRE ALARM SUB-CONTRACTOR FOR ALL 120V AC POWER REQUIRED FOR THIS SYSTEM. IF ANY ADDITIONAL CIRCUITS ARE REQUIRED THAT ARE NOT IDENTIFIED ON PLANS THE ELECTRICAL CONTRACTOR SHALL PROVIDE THAT CIRCUIT FROM THE NEAREST 120V PANEL, AS-BUILTS SHALL BE UPDATED TO REFLECT THE INSTALLED CONDITION. THIS SHALL BE DONE AT NO ADDITIONAL COST TO THE PROJECT.

V. ELECTRICAL CONTRACTORS (FIRE ALARM SUB-CONTRACTOR) SHALL COORDINATE CLOSELY WITH THE HVAC CONTROLS CONTRACTOR.

FIRE ALARM SIGNAL LINE CIRCUITS SHALL BE WIRED CLASS "A" AND NOTIFICATION CIRCUITS SHALL BE WIRED CLASS "B" WITH THE END OF LINE RESISTOR CLEARLY AND PERMANENTLY MARKED ON THE LAST DEVICE.



1 DETAIL - FIRE ALARM RISER (EXISTING BUILDING)
NOT TO SCALE

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919-790-9989
License# C-0183
PROJECT# 23014
NORTH CAROLINA PROFESSIONAL SEAL 024651 ENGINEER JAMES T. BUTKOVICH
04/04/2024

CONSTRUCTION DOCUMENTS

ONSLOW COUNTY SCHOOLS
NORTHWOODS PARK MIDDLE SCHOOL
ADDITION & RENOVATION
904 SIOUX DR, JACKSONVILLE, NC 28540

ID	DATE	DESCRIPTION
C	04/04/2024	ADDENDUM 3

DRAWN BY: JPT
CHECKED BY: JTB

MAIN BUILDING FIRE ALARM RISER AND DETAILS

2022035 11 MARCH 2024

E5-03