ADDENDUM NO. 2

June 2, 2022

Coulston Elementary School & Shelbyville Middle School Renovations Project
121 N. Knightstown Rd.
Shelbyville, IN 46176

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications, and the Drawings dated April 26, 2022, by Lancer+Beebe, LLC. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 2 – 1 through ADD 2 - 5 and attached Specification Section 00 31 00 – Indiana Bid From, Coulston Site Logistics Plan, Coulston Interior Partition Plan, SMS Site Logistics Plan and attached Lancer+Beebe, LLC., Addendum 2 for Coulston Elementary dated May 31, 2022 consisting of 5 pages. Specification Sections 01 22 00 – Unit Prices (remove), 05 40 00 – Cold-Formed Metal Framing, 09 84 10 – Fabric Wall Panels, 23 05 93 – Testing, Adjusting and Balancing, 23 07 19 – HVAC Pipe and Equipment Insulation, 23 34 00 – HVAC Fans, 23 37 23 – HVAC Gravity Ventilators, 23 73 01 – Coils, 23 82 23 – Classroom Unit Ventilators, 23 82 39 – Terminal Heating Units, and Drawings SD-141-L, S-141-L, S-142-L, S-143-L, S-141-C, A001, AD101A, AD101B, A101, A101A, A101B, A102, A103, A113, A721A, A721B, A751, A763, A765, HD101A, HD104A, H-101, H-101A, H101B, H-102, H-103, H-401, H-402, H-501, H-502, H-603, H-604.

This also consists of Lancer + Beebe, LLC., Addendum 2 for Shelbyville Middle School dated May 31, 2022 consisting of 3 pages, Specification Sections 06 10 53 – Rough Carpentry, 09 65 00 – Resilient Flooring, 27 05 01 – Scoreboard, 23 31 15 – Fabric Ductwork, 23 81 00 – Packaged Heating and Cooling Units, 23 31 15 – Fabric Ductwork, 27 05 01 – Scoreboard, and Drawings A720, A751, A752.

Clarifying Note from Construction Manager Regarding this Addendum:
This Addendum has been organized to match the Specification and Drawing Volumes as posted on the Skillman Plan Room. The first section of this Addendum relates to Specification Volume 1. The second section of this Addendum is denoted by Lacer + Beebe cover page and summary and includes changes to Specification Volume 2 & 3 and Drawing Volume 1 as this section relates to work included at Coulston Elementary School. The third section of this Addendum is denoted by Lacer + Beebe

cover page and summary and includes changes to Specification Volume 4 & 5 and Drawing Volume 2 as this section relates to work included at Shelbyville Middle School. Reminder, all Work in the Contract Documents at both buildings is being bid as one lump sum project.

A. SPECIFICATION SECTION 00 20 00 – INFORMATION AVAILABLE TO BIDDERS

Add Paragraph F, G and H.

F. Coulston Elementary School Site Logistics Plan dated May 31, 2022 is being issued as part of this Addendum for reference by all Contractors.

G. Coulston Elementary School Temporary Interior Partition Plan dated June 1, 2022 is being issued as part of this Addendum for reference by all Contractors.

H. Shelbyville Middle School Site Logistics Plan dated May 31, 2022 is being issued as part of this Addendum for reference by all Contractors.

B. SPECIFICATION SECTION 00 31 00 – BID FORM

1. DELETE entirety of this specification section and replace with 00 31 00 – BID FORM section included as part of this Addendum.

C. SPECIFICATION SECTION 01 12 00 – MULTIPLE CONTRACT SUMMARY

1. Paragraph 3.02 General Clarifications

Add the following Project Specific Clarifications Applicable to Both Buildings:

11. Each Contractor is responsible for means and methods used to stock material on upper floors. It is allowable to install ramps at stairs or use lifts from the exterior. All existing structures and finishes are to be protected from damage. Any damage or replacement of materials such as doors, windows, masonry, etc. will be at the cost of the Contractor.

2. Paragraph 3.03 Bid Categories

A. Bid Category No. 1 – General Trades

Coulston Elementary School Volumes 2-3

ADD the Following Specification Sections:

05 40 00 – Cold Formed Metal Framing

Add the following Project Specific Clarifications Applicable to Both Buildings:

16. Regarding chimney demolition and infill at Coulston Elementary School, the General Trades Contractor is responsible for demolition of chimney and infilling structural deck to match existing. The Roofing Contractor is responsible for EPDM roofing to match existing. Both Contractors are to coordinate work to ensure the building remains weather tight during construction activity.
17. All building operations must be maintained for the duration of the Project. Any specialty barricades, fencing, enclosures, or other items necessary for safe travel of students and faculty are the responsibility of this Contractor. These protections should be in place for the duration that overhead Work is occurring above or near building entrances and exits. Note, these specialty barricades are not shown on the Site Logistics Plan(s).
18. The General Trades Contractor is to provide and install all Work related to the Media Circulation Desk, with exception of wall base, paint, electrical, and technology. This Work includes but is not limited to wall framing, gypsum board assemblies, wood blocking and sheathing, plastic laminate, solid surface countertop, angle brackets, drawer assemblies and accessories, etc. Contractor to review drawings A101A and A763 for reference.
19. The General Trades Contractor is NOT responsible for selective demolition of flooring products such as carpet, sheet flooring, etc. that is installed over top of asbestos material. These flooring products are to be removed as part of the asbestos abatement procedure by separate Contract.
20. All free hanging mural / vinyl banners and associated anchors related to Alternate No. 6 are the responsibility of this Contractor. The basis of design is the existing vinyl banner at Loper Elementary School.
21. General Trades Contractor is responsible for corner guards per General Note on Floor Plans #5. Corner guards are to be installed at all outside corners with gypsum board from 1'-6" AFF to 4'-0" AFF.

B. Bid Category No. 2 – Roofing

Add the following Project Specific Clarifications Applicable to Both Buildings:

7. Regarding chimney demolition and infill at Coulston Elementary School, the General Trades Contractor is responsible for demolition of chimney and infilling structural deck to match existing. The Roofing Contractor is responsible for EPDM roofing to match existing. Both Contractors are to coordinate work to ensure the building remains weather tight during construction activity.
8. The Roofing Contractor is responsible for installation of roofing protection per Detail 2 on S100. Roofing protection is to be installed anywhere where Work is occurring on top of new roofing material or roofing material scheduled to remain.
9. All building operations must be maintained for the duration of the Project. Any specialty barricades, fencing, enclosures, or other items necessary for safe travel of students and faculty are the responsibility of this Contractor. These protections should be in place for the duration that overhead Work is occurring above or near building

entrances and exits. Note, these specialty barricades are not shown on the Site Logistics Plan(s).

10. The Roofing Contractor is responsible for installation and maintenance of filter media at all air intakes.

C. Bid Category No. 5 – Acoustical Treatments & Ceilings

Coulston Elementary School Volumes 2-3

ADD the Following Specification Sections:

09 84 10 – Fabric Wall Panels

D. Bid Category No. 7 – Plumbing & Mechanical

Coulston Elementary School Volumes 2-3

ADD the Following Specification Sections:

23 37 23 – HVAC Gravity Ventilators
23 82 23 – Classroom Unit Ventilators
23 82 39 – Terminal Heating Units

DELETE the Following Specification Sections:

23 82 93 – Terminal Heating Units

Shelbyville Middle School Volumes 4-5

ADD the Following Specification Sections:

23 31 15 – Fabric Ductwork

E. Bid Category No. 8 – Electrical & Technology

Shelbyville Middle School Volumes 4-5

ADD the Following Specification Sections:

27 05 01 – Scoreboard

D. SPECIFICATION SECTION 01 23 00 – ALTERNATES

1. REVISE Paragraph 1.04 – Schedule of Alternates, Subparagraph F to read as follows:

F. ALTERNATE NO. 6: Coulston Elementary School HVAC Controls (Mandatory)

Base Bid: No new mural / vinyl wall decal as noted on the Interior Finish Plans.
Alternate: New mural / vinyl wall decal as noted on the Interior Finish Plans. Refer to Plan Note 5 on the Coulston Elementary School Interior Finish Plans for more information. The mural / vinyl wall decal is to be a free hanging banner type material with printed artwork. These banners are to hang from appropriate wall anchors rated for their weight. Artwork to be provided by Construction Manager during submittal process.

2. REVISE Paragraph 1.04 – Schedule of Alternates, Subparagraph H to read as follows:

H. ALTERNATE NO. 8: Coulston Elementary School HVAC Controls (Mandatory)

Base Bid: No Work included in Base Bid.
Alternate 08A: Schneider Electric / EMCOR
Alternate 08B: Alerton / Open Control Systems
Alternate 08C: Distech / ERMCO
Alternate 08D: Distech / Jackson Systems
Alternate 08E: Honeywell International / ERMCO

CONTRACTOR'S BID FOR PUBLIC WORKS FORM NO. 96

Format (Revised 2013)
(Amended for SCS)

Coulston Elementary School & Shelbyville Middle School Renovation

Shelbyville Central Schools
(Shelby)

PART I

(To be completed for all bids. Please type or print)

Date (month, day, year):_____

BIDDER (Firm) _____

Address _____ P.O. Box _____

City/State/Zip ___

Telephone Number: _____ Email Address: _____

Person to contact regarding this Bid_____

Pursuant to notices given, the undersigned offers to furnish labor and/or materials necessary to complete the public works project of:

_____
Insert Category No. (s) and Name(s)

Of public works project, ***Coulston Elementary School & Shelbyville Middle School Renovation***, in accordance with Plans and Specifications prepared by ***Lancer+Beebe, 220 N. College Avenue, Indianapolis, IN 46202***, as follows:

BASE BID

For the sum of _____
(Sum in words)

_____DOLLARS ($_____)
(Sum in figures)

The undersigned acknowledges receipt of the following Addenda:
Receipt of Addenda No. (s) _____

PROPOSAL TIME

Bidder agrees that this Bid shall remain in force for a period of sixty (60) consecutive calendar days from the due date, and Bids may be accepted or rejected during this period. Bids not accepted within said sixty (60) consecutive calendar days shall be deemed rejected.

Attended pre-bid conference YES _____ NO_____

Has visited the jobsite YES _____ NO_____

The Bidder has reviewed the Guideline Schedule in Section 01 32 00 and the intent Of the schedule can be met. YES _____ NO_____

Bidder has included their Written Drug Testing Plan that covers all employees of the bidder who will perform work on the public work project and meets or exceeds the requirements set in IC 4-13-18-5 or IC 4-13-18-6. YES _____ NO_____

The Skillman Corporation's diversity initiative is to create a program to encourage, assist and measure the active participation of Minority- Owned, Women-Owned, Veteran – Owned and Disabled Individual-Owned Businesses. The Program is to ensure that MWVDBEs are provided full and equal opportunity to participate in all Skillman Corporation's Projects.

Bidder has included:
DBE: YES _____% NO _____
MBE: YES _____% NO _____
WBE: YES _____% NO _____
VBE: YES _____% NO _____

The undersigned further agrees to furnish a bond or certified check with this Bid for an amount specified in the Notice to Bidders. If Alternate Bids apply, submit a proposal for each in accordance with the Plans and Specifications.

If additional units of material included in the contract are needed, the cost of units must be the same as that shown in the original contract if accepted by the governmental unit. If the bid is to be awarded on a unit bases, the itemization of the units shall be shown on a separate attachment.

The contractor and his subcontractors, if any, shall not discriminate against or intimidate any employee, or applicant for employment, to be employed in the performance of this contract, with respect to any matter directly or indirectly related to employment because of race, religion, color, sex, national origin, or ancestry. Breach of this covenant may be regarded as a material breach of the contract.

CERTIFICATION OF USE OF UNITED STATES STEEL PRODUCTS
(if applicable)

I, the undersigned bidder, or agent as a contractor on a public works project, understand my statutory obligation to use steel products made in the United States (I.C. 5-16-8-2). I hereby certify that I and all subcontractors employed by me for this project will use U.S. steel on this project if awarded. I understand that violations hereunder may result in forfeiture of contractual payments.

ALTERNATE BIDS

A blank entry or an entry of "No Bid," "N/A", or similar entry on any Alternate will cause the bid to be rejected as non-responsive only if that Alternate is selected. If no change in the bid amount is required, indicate "No Change".

****MARK "ADD" OR "DEDUCT" FOR EACH ALTERNATE****

Alternate Bid No. 1 - Coulston Elementary School Main Entrance Canopy

Change the Base Bid the sum of_____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 2 – Coulston Elementary School Upper Cabinets Above Cubbies

Change the Base Bid the sum of_____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 3 – Coulston Elementary School Tuning Lights in Classrooms

Change the Base Bid the sum of_____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 4 – Coulston Elementary School LED Scoreboard in Gym

Change the Base Bid the sum of_____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT

(sum in figures)

Alternate Bid No. 5- Coulston Elementary School Four Backboard Replacements

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 6 – Coulston Elementary School Secondary Interior Mural / Vinyl Graphics

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 7- Coulston Elementary School Remove and Replace Acoustic Panels in the Cafeteria

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 8- Coulston Elementary School HVAC Controls (Mandatory)

08A – Schneider Electric / EMCOR: Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT

08B – Alerton / Open Control Systems: Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT

08C – Distech / ERMCO: Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT

08D – Distech / Jackson Systems: Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD DEDUCT

08E – Honeywell International / ERMCO: Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 9- Shelbyville Middle School Motorized Divider Curtain

Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 10- Shelbyville Middle School Portable Riser

Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 11- Shelbyville Middle School Corridor D117 Finishes

Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 12- Shelbyville Middle School Pipe Grid Segments at Catwalks and Supplemental Curtains.

Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 13- Shelbyville Middle School Theatrical Lighting

Change the Base Bid the sum of_____
(sum in words)

_____DOLLARS ($_____) ADD DEDUCT
(sum in figures)

Alternate Bid No. 14- Loper Elementary School Partial Standing Seam Roof Repair

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT
(sum in figures)

Alternate Bid No. 15- Loper Elementary School Partial EPDM Roof Repair.

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT
(sum in figures)

PART II

(For projects of $150,000 or more – IC 36-1-12-4)

These statements to be submitted under oath by each bidder with and as a part of his bid. (Attach additional pages for each section as needed.)

SECTION I EXPERIENCE QUESTIONNAIRE

1. What public works projects has your organization completed for the period of one (1) year prior to the date of the current bid?

Contract Amount	Class of Work	Completion Date	Name and Address of Owner

2. What public works projects are now in process of construction by your organization?

Contract Amount	Class of Work	Completion Date	Name and Address of Owner

3. Have you ever failed to complete any work awarded to you?_____If so, where, and why?

_____

_____

_____

4. List references from private firms for which you have performed work.

_____

_____

_____

SECTION II PLAN AND EQUIPMENT QUESTIONNAIRE

1. Explain your plan or layout for performing proposed Work. (Examples could include a narrative of when you could begin, complete the project, number of workers, etc. and any other information which you believe would enable the governmental unit to consider your bid.)

2. Please list the names and addresses of all subcontractors (i.e., persons or firms outside your own firm who have performed part of the work) that you have used on public works projects during the past five (5) years along with a brief description of the work done by each subcontractor.

3. If you intend to sublet any portion of the work, state the name, and addresses of each subcontractor, equipment to be used by the subcontractor, and whether you will require a bond. However, if you are unable to currently provide a listing, please understand a listing must be provided prior to contract approval. Until the completion of the proposed project, you are under a continuing obligation to immediately notify the governmental unit in the event that you subsequently determine that you will use a subcontractor on the proposed project.

4. What equipment do you have available to use for the proposed Project? Any equipment used by subcontractors may also be required to be listed by the governmental unit.

5. Have you into contracts or received offers for all materials which substantiate the prices used in preparing your proposal? If not, please explain the rationale used which corroborate the process listed.

SECTION III CONTRACTOR'S FINANCIAL STATEMENT

Attachment of Bidder's financial statement is mandatory. Any Bid submitted without said financial statement as required by statute shall thereby be rendered invalid. The financial statement provided hereunder to the governing body awarding the Contract must be specific enough in detail so that said governing body can make a proper determination of the Bidder's capability for completing the Project if awarded.

SECTION IV CONTRACTOR NON-COLLUSION AFFIDAVIT

The undersigned Bidder or agent, being duly sworn on oath, says that he has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to induce anyone to refrain from bidding, and that this Bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding.

He further says that no person or persons, firms, or corporations has, have, or will receive directly or indirectly, any rebate, fee, gift, commission, or thing of value on account of such contract.

SECTION V OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT

Dated at _____this _____ day of _____, 20

_____
(Name of Organization)

By
_____

_____
(Title of Person Signing)

ACKNOWLEDGEMENT

STATE OF _____)
) SS:
COUNTY OF _____)

Before me, a Notary Public, personally appeared the above-named
_____

Swore that the statements contained in the foregoing document are true and correct.

Subscribed and sworn to before me this _____ day of _____,
_____
(Title)

_____
Notary Public

My Commission Expires: _____

County of Residence: _____

END OF SECTION 00 31 00

Coulston Elementary School
Site Logistics Plan

May 31, 2022

GENERAL SITE LOGISTICS NOTES:

1. General Trades Contractor is responsible for installation and maintenance of all temporary stone access roads and laydown areas. This includes all locations noted to receive temporary stone.

2. Heavy-Duty Temporary Stone is to be installed with a combination of drainage fill and crushed stone to achieve a sturdy stone base capable of withstanding heavy equipment use, semi-truck deliveries, tri-axle trucks, and/or concrete trucks. Note, this is not an all-inclusive list and is to be used as reference.

3. General Trades Contractor is responsible for all public and private utility locates prior to commencing any form of earthwork, grading, excavation, or post-driven fencing.

4. Contractor Laydown and Trailer Locations are to be coordinated with the Construction Manager Prior to mobilization to jobsite.

5. Contractor Parking is shown for reference purposes. Exact locations of Contractor Parking is to be coordinated with the Construction Manager.

6. General Trades Contractor is responsible for installation and maintenance of tree protection fencing for the duration of the project.

7. Proposed Dumpster Locations are shown to depict possible locations of dumpsters for the duration of the project. Dumpster locations are to be coordinated with the Construction Manager. Dumpsters will likely need repositioned throughout the duration of the Project. It is not required to have five dumpsters on site at one time, these are simply proposed dumpster locations.

8. All Contractors should plan to minimize equipment operation around the jobsite. There will be consistent daily coordination with vehicles, buses, and pedestrians for the duration of the project. Contractors should intend on using trash carts for removal and transportation of debris from building interior. Activities that require equipment are to be planned and coordinated with Construction Manager.

9. It is prohibited to store any material or equipment outside of the Jobsite Construction Fencing for the duration of the project without prior approval of the Construction Manager.

10. Construction traffic, including deliveries, is to be coordinated with Construction Manager. All traffic must adhere to restricted time frames coordinated with student pickup and drop off. Exact times of student pickup and drop off will be provided by Construction Manager.

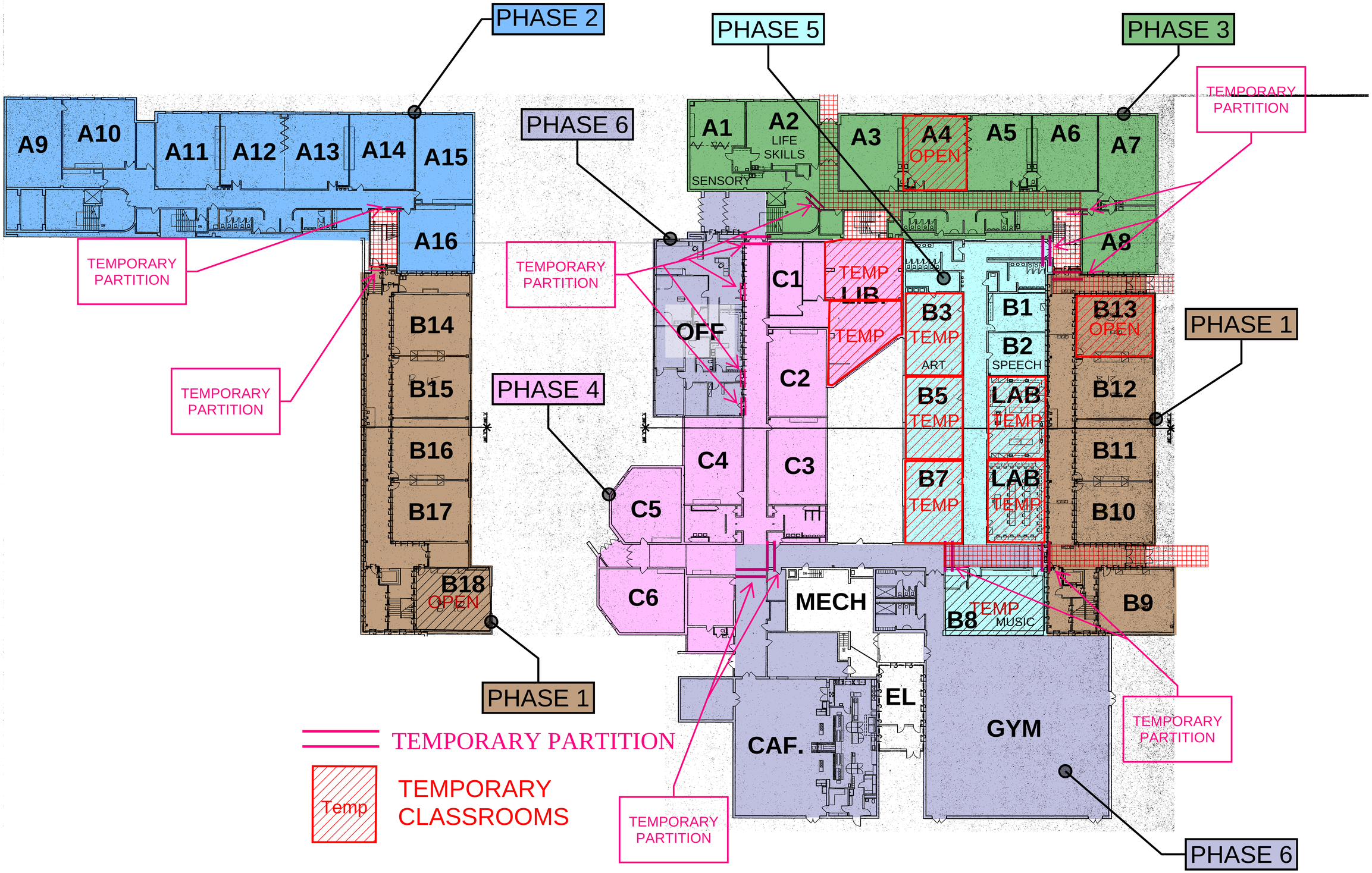
11. General Trades Contractor is responsible for coordination of new utility Work being installed within the construction fencing. General Trades Contractor is responsible to protect new utilities from damage once utility Work is complete. Any repairs to new Work will be the responsibility of the General Trades Contractor. Additionally, any temporary measures for proper installation of laydown and storage areas including but not limited to undercutting, dewatering, pumping, etc. is the responsibility of General Trades Contractor. There is an existing pond in this location so highly saturated soil is to be expected.

12. General Trades Contractor is responsible for removal and hauling of all temporary stone at the conclusion of the Project. General Trades Contractor is to regrade, seed, and landscape area within construction fencing per Construction Documents or to match pre-construction conditions.

13. No material or equipment is to be stored on concrete sidewalk as this may be required for emergency egress from the building.

LEGEND:

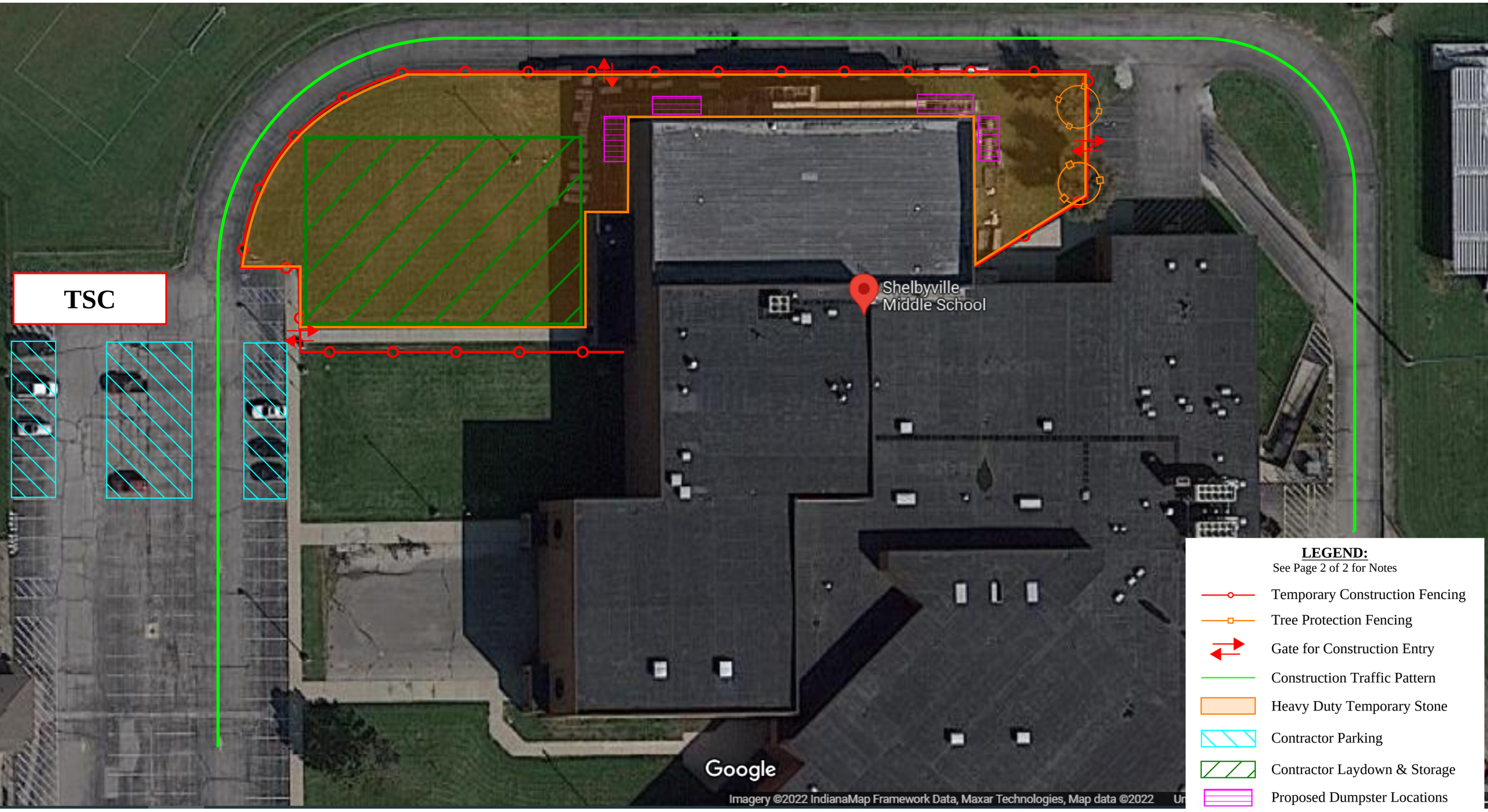
- Temporary Construction Fencing
- Tree Protection Fencing
- Gate for Construction Entry
- Construction Traffic Pattern
- Heavy Duty Temporary Stone
- Contractor Parking
- Contractor Laydown & Storage
- Proposed Dumpster Locations
- New Utility Work in this Location
- TSC — Skillman Jobsite Trailer



COULSTON ELEMENTARY SCHOOL

Temporary Interior Partition Plan

June 1, 2022



Shelbyville Middle School
Site Logistics Plan

May 31, 2022

GENERAL SITE LOGISTICS NOTES:

1. General Trades Contractor is responsible for installation and maintenance of all temporary stone access roads and laydown areas. This includes all locations noted to receive temporary stone.

2. Heavy-Duty Temporary Stone is to be installed with a combination of drainage fill and crushed stone to achieve a sturdy stone base capable of withstanding heavy equipment use, semi-truck deliveries, tri-axle trucks, and/or concrete trucks. Note, this is not an all-inclusive list and is to be used as reference.

3. General Trades Contractor is responsible for all public and private utility locates prior to commencing any form of earthwork, grading, excavation, or post-driven fencing.

4. Contractor Laydown and Trailer Locations are to be coordinated with the Construction Manager Prior to mobilization to jobsite.

5. Contractor Parking is shown for reference purposes. Exact locations of Contractor Parking is to be coordinated with the Construction Manager.

6. General Trades Contractor is responsible for installation and maintenance of tree protection fencing for the duration of the project.

7. Proposed Dumpster Locations are shown to depict possible locations of dumpsters for the duration of the project. Dumpster locations are to be coordinated with the Construction Manager. Dumpsters will likely need repositioned throughout the duration of the Project. It is not required to have four dumpsters on site at one time, these are simply proposed dumpster locations.

8. All Contractors should plan to minimize equipment operation around the jobsite. There will be consistent daily coordination with vehicles, buses, and pedestrians for the duration of the project. Contractors should intend on using trash carts for removal and transportation of debris from building interior. Activities that require equipment are to be planned and coordinated with Construction Manager.

9. It is prohibited to store any material or equipment outside of the Jobsite Construction Fencing for the duration of the project without prior approval of the Construction Manager.

10. Construction traffic, including deliveries, is to be coordinated with Construction Manager. All traffic must adhere to restricted time frames coordinated with student pickup and drop off. Exact times of student pickup and drop off will be provided by Construction Manager.

11. General Trades Contractor is responsible for removal and hauling of all temporary stone at the conclusion of the Project. General Trades Contractor is to regrade, seed, and landscape area within construction fencing per Construction Documents or to match pre-construction conditions.

12. No material or equipment is to be stored on concrete sidewalk as this may be required for emergency egress from the building.

LANCER + BEEBE, LLC
Project # 21139

ADDENDUM NO. TWO

PROJECT: Shelbyville Central Schools – 2022 Coulston Elementary Renovation

PROJECT NUMBER: 21139

DATE OF ADDENDUM: May 31, 2022

THIS ADDENDUM FORMS A PART OF THE CONTRACT DOCUMENTS AND IS ISSUED IN ACCORDANCE WITH THE INSTRUCTIONS TO BIDDERS. ACKNOWLEDGE RECEIPT OF THIS ADDENDUM BY SIGNING THE ADDENDUM ACKNOWLEDGMENT SECTION OF THE BID FORM.

QUESTIONS:

1. Q: Will concrete piers at Coleston Alternate Canopy require any special finishes, stain or colored concrete additives?
    a. No stain or integral color; dark aggregate preferred. Concrete to be ground, polished and sealed.

2. Q: Are there existing controls drawings for the buildings that can be provided for information?
    a. There are full drawing sets for the 2000 addition of Coulston and the original 1989 drawing set for the Middle School as well as a 2011 Boiler Replacement Drawing Set. The drawings could be shared with the selected bidder.

3. Q: We are also seeing that the LED Monument sign has been added to the general trades contract to provide. Can you advise where the requirements of the sign are in the documents. I don't see specified in the signage specifications and the note on the site plan refers us to the electrical drawings, but I did not see anything in the electrical drawings for the sign.
    a. Monumental sign should be like the LED signage at Golden Bear Preschool which was provided by Green Sign.

4. Q: What material countertops are required for room B4?
    a. Solid Surface.

5. Q: Room b7 elevation markers appear to be incorrect. Should they match b5?
    a. Yes, elevation labels corrected in this addendum

6. Q: Is casework adjacent to elevation 3/a763 in room c105 existing to remain?
    a. Yes, existing casework in Clinic to remain

7. Q: Can you clarify the countertop material required by elevation? Are solid surface countertops only required at tops with sinks and as noted on some elevations?
    a. Correct, all "wet" countertops (has sinks) are to be solid surface while "dry" countertops may be plastic laminate.

8. Q: APC-B in the spec is listed as Armstrong clean room VL. This tile can be perforated or unperforated. Please confirm if this is desired to be a perforated or unperforated ceiling tile.
    a. Unperforated preferred.

9. Q: Around stairs A104, A109, B107, B119 AND C121 there are some bulkheads with no tags or notes. Please confirm if these are new bulkheads or if they are existing to remain.
    a. They aren't exactly typical bulkheads, just the underside of the stair which is gypsum finish to remain but painted.

10. Please confirm desired design deflection for studs.
    a. In section 05 40 00 Cold Formed Metal Framing which needs to be added to specifications. Maximum Allowable Deflection listed as: "1: 600 of span for exterior walls and 1:360 of span for interior partitions.

LANCER + BEEBE, LLC
Project # 21139

SPECIFICATIONS:

1. Specification Section: 01 22 00
   Specification Title: UNIT PRICES

   Change: Remove Section

2. Specification Section: 05 40 00
   Specification Title: COLD-FORMED METAL FRAMING

   Change: Add Section

3. Specification Section: 09 84 10
   Specification Title: FABRIC WALL PANELS

   Change: (Alternate) Add Section

DRAWINGS:

1. Drawing Sheet Number: SD-141-L, S-141-L, S-142-L, S-143-L
   Drawing Sheet Title: PARTIAL ROOF DEMO PLANS LOPER, PARTIAL ROOF REPAIR PLANS LOPER, TYPICAL EPDM ROOFING DETAILS LOPER, TYPICAL STANDING SEAM ROOFING DETAILS LOPER

   Change: Add roof drawings and details for Loper Elementary

2. Drawing Sheet Number: S-141-C
   Drawing Sheet Title: SELECTIVE ROOF REPAIR PLAN & DETAILS COULSTON

   Change: Updated notes on chimney removal

3. Drawing Sheet Number: A001, AD101A, A101A
   Drawing Sheet Title: ARCHITECTURAL GENERAL NOTES, DEMOLITION PLAN – GROUND LEVEL – UNIT A, FLOOR PLAN – GROUND LEVEL – UNIT A

   Change:
   - Added items to Responsibility Matrix
   - Add window blind removal and replacement, OFOI
   - Add installation of perforated window graphics, OFOI

4. Drawing Sheet Number: A101, A102

Drawing Sheet Title: FLOOR PLAN – FIRST LEVEL, FLOOR PLAN- SECOND LEVEL

Change: Add surface mounted tack boards to some classrooms.

5. Drawing Sheet Number: A101A, A101B, A103
   Drawing Sheet Title: FLOOR PLAN – GROUND LEVEL – UNIT A, FLOOR PLAN – GROUND LEVEL – UNIT B, FLOOR PLAN – THIRD LEVEL

   Change: Add reinstallation of existing surface mounted markerboards to some classrooms.

6. Drawing Sheet Number: AD101B, A101B, A751
   Drawing Sheet Title: DEMOLITION PLAN -GROUND LEVEL – UNIT B, FLOOR PLAN – GROUND LEVEL – UNIT B, INTERIOR ELEVATIONS

   Change: (Alternate) Remove metal sound diffuser in cafeteria to be replaced with new acoustical panels.

7. Drawing Sheet Number: AD101, A101, A113, A763, A765
   Drawing Sheet Title: DEMOLITION PLAN – FIRST LEVEL, FLOOR PLAN – FIRST LEVEL, ENLARGED PLANS, CASEWORK ELEVATIONS, CASEWORK DETAILS

   Change: Add Casework Changing Table to Restroom A1a and remove existing upper cabinets.

8. Drawing Sheet Number: A751
   Drawing Sheet Title: INTERIOR ELEVATIONS

   Change: Update to wall tile size / appearance at sinks

9. Drawing Sheet Number: A721B
   Drawing Sheet Title: INTERIOR FINISH PLAN – GROUND LEVEL – UNIT B

   Change: Add note to keep existing wall paint graphics

10. Drawing Sheet Number: A721A
    Drawing Sheet Title: INTERIOR FINISH PLAN – GROUND FLOOR – UNIT A

    Change: Reduce size of laser / waterjet cut LVT flooring graphic

11. Drawing Sheet Number: A720, A721A, A721B, A722, A723
    Drawing Sheet Title: INTERIOR FINISH PLAN (ALL)

    Change: Plan Note #1 to say "NEW ANGLE FIT RUBBER STAIR TREADS WITH INTEGRATED MATCHING RISER, MATCHING STRINGERS, CONTRASTING GRIT TAPE EDGE WITH SLIP-RESISTANT TEXTURE. FINAL COLOR SELECTION TBD."

12. Drawing Sheet Number: A101A
    Drawing Sheet Title: FLOOR PLAN – GROUND FLOOR – UNIT A

    Change: Update interior elevation references for casework in B7

Attachments:
(Specs) 05 40 00, 09 84 10
(Drawings) SD-141-L, S-141-L, S-142-L, S-143-L, S-141-C, A001, AD101A, AD101B, A101, A101A, A101B, A102, A103, A113, A721A, A721B, A751, A763, A765

Please see the following Addendum 2 summary for Civil and Mechanical items and attachments from Circle Design Group.

SECTION 05 40 00

COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes load bearing formed steel stud exterior wall and interior wall framing; and formed steel joist, purlin, slotted channel framing and bridging; steel formed.

1.2 REFERENCES

A. American Iron and Steel Institute:
   1. AISI - Cold-Formed Steel Design Manual.

B. ASTM International:
   1. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   2. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   3. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing Members.

C. American Welding Society:
   1. AWS D1.1 - Structural Welding Code - Steel.
   2. AWS D1.3 - Structural Welding Code - Sheet Steel.

D. National Association of Architectural Metal Manufacturers:
   1. NAAMM/EMLA 920-09 – “Guide Specifications for Expanded Metal Lathing and Furring.

E. SSPC: The Society for Protective Coatings:
   1. SSPC Paint 15 - Steel Joist Shop Paint.
   2. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).

F. Steel Framing Industry Association or Steel Stud Manufacturers Association:
   1. SFIA or SSMA - Product Technical Information.

1.3 SYSTEM DESCRIPTION

A. Maximum Allowable Deflection: 1: 600 of span for exterior walls and 1:360 of span for interior partitions.

B. Wall System:
   1. Design to AISI Cold-Formed Steel Design Manual.

2. Design to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
3. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings. Bridging, web stiffeners and blocking shall be included in design.

C. Cold-Formed Steel Framing Standards: Unless more stringent requirements are indicated, framing shall comply with AISI S100 and ASTM C955.

1.4 SUBMITTALS

A. Division 01 - Submittal Procedures: Submittal requirements.

B. Shop Drawings:
1. Provide Shop Drawings prepared by cold-formed metal framing manufacturer.
2. Indicate component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners, and accessories or items required of related Work.
3. Indicate stud, floor joist, ceiling joist, roof joist, roof rafter, and roof truss layout.
4. Describe method for securing studs to tracks and for bolted or welded framing connections.
5. Submit calculations for loadings and stresses of specially fabricated framing under Professional engineer's seal from the State of Indiana.

C. Product Data: Submit data on standard framing members; describe materials and finish, product criteria and limitations.

D. Evaluation Reports: For cold-formed steel framing:
1. Steel framing manufacturer to have a third-party evaluation report for its products that are reviewed to the local building code.

E. Manufacturer's Installation Instructions: Submit special procedures and perimeter conditions requiring special attention.

F. Product Tests: Mill Certifications or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base steel thickness in 0.001 inch (0.025 mm), yield strength, tensile strength, total elongation in 2 inch (50 mm) or 8 inch (200 mm) gauge length, chemical analysis, and metallic coating thickness.

1.5 QUALITY ASSURANCE

A. Calculate structural properties of framing members in accordance with AISI S100 Specification for Design of Cold-Formed Steel Structural Members.

B. Furnish framing materials in accordance with SFIA or SSMA - Product Technical Information.

CIRCLE DESIGN GROUP

ADDENDUM NUMBER: 2

PROJECT NAME: Shelbyville Renovations – Coulston Elementary School
PROJECT NO.: 21102.A

ISSUED FROM	ISSUE DATE	BID DATE
Circle Design Group	May 31, 2022	June 7, 2022

This Addendum No. 2 to the drawings and specification shall supplement, amend, and become a part of the bidding documents, plans, and specifications. All bids and construction contracts shall be based on these modifications to the original contract documents.

PART 1. BIDDING AND CONTRACT DOCUMENTS

1.01

A.

PART 2. SPECIFICATIONS

2.01 SECTION 23 05 93 – TESTING, ADJUSTING AND BALANCING

A. Under 1.02 WORK INCLUDED, added
Duct mounted heating coils
Classroom unit ventilators

B. Under Part 3, add Balancing Procedure for Duct Mounted Heating Coils and Balancing Procedure for Classroom Unit Ventilators.

C. Under Part 3, Operating Test, add Classroom Unit Ventilators.

D. Under Part 3, Performance and Capacity Verification, add Classroom Unit Ventilators.

2.02 SECTION 23 07 19 – HVAC PIPE AND EQUIPMENT INSULATION

A. Change 1.08 to read:

1.08 COOLING SERVICE - PIPE INSULATION
~~Thickness of insulation based upon Table 503.2.8 of 2009 IECC.~~

A. Service

1. For chilled water piping; all locations in conditioned spaces
a. Exposed: Type 1
b. Concealed: Type 1
c. Accessible: Type 1

2. For chilled water piping thru non-air conditioned spaces: Type 1
3. For refrigerant piping; all locations

a. All suction piping: Type 1
b. All hot gas piping: Type 1
c. All liquid piping: Type 1
d. All superheated refrigerant piping: Type 1
e. When refrigerant line sets are utilized, if insulation thickness does not meet the requirements of this specification, insulation shall be installed to meet the requirements of this section.

4. For condensate water piping: All locations indoors Type (1)

B. Materials		***Type (1)***
1.	***Insulation***	***Elastomeric foam***
2.	***Jacket***	***(Not required)***
3.	***Insulation thickness for pipe:***	
a.	***Thru 2-1/2”***	***1-1/2”***
b.	***3” thru 5”***	***1-1/2”***
c.	***6” and above***	***2”***
d.	***Chilled water in non-conditioned spaces***	***2”***
e.	***Refrigerant linesets, pipe size ≤ 5/8”***	***1” each piece***

C. Special conditions

1. All chilled water piping exposed to the outdoors shall be covered with an aluminum jacket.
2. Hard copper refrigerant piping exposed outdoors shall be covered with an aluminum jacket.
3. Annealed soft copper refrigerant piping, lineset, exposed outdoors shall be covered with an aluminum jacket or Airex E-flex guard.
4. ”All” piping is defined such that it includes all ancillary piping, stubs, thermowells, etc. subject to condensation.
5. All steel chilled water piping and fittings shall be prime painted prior to insulating.

2.03 SECTION 23 21 23 HYDRONIC PUMPS

A. Under 2.01 Base Mounted End Suction Centrifugal Pump, add Aurora Pump (Div. of Pentair) to the list of approved manufacturers.

2.04 SECTION 23 34 00 – HVAC FANS

A. Under 2.01 Centrifugal Roof Exhaust Fan (Direct Drive) add Delhi Blowers by Canarm HVAC and Twin City to the list of approved manufacturers.

B. Add 2.02 Cabinet Centrifugal Direct Drive

2.05 SECTION 23 37 23 – HVAC GRAVITY VENTILATORS

A. Add this section to the bidding documents.

2.06 SECTION 23 73 01 – COILS

A. Under 1.01 add E. as follows:
E. Provide duct mounted heating water coils for installation by the Sheetmetal Contractor as scheduled on the drawings.

B. Add 2.05 HEATING WATER COILS (DUCT MOUNTED) as follows:

2.05 HEATING WATER COILS (DUCT MOUNTED)

A. Coils shall be constructed for same end connections for one or two rows.

B. Provide flanges to facilitate duct installation.

C. Duct coils shall be leak tested at 300 psig.

D. Coils shall be selected for a maximum of 80 fins per foot.

2.07 SECTION 23 81 00 – PACKAGED HEATING AND COOLING UNITS

A. Under 2.01 PACKAGED ROOFTOP ENERGY RECOVERY AIR HANDLING UNITS (DOAS), add Annex Air to the list of acceptable manufacturers.

2.08 SECTION 23 81 11 – DUCTLESS SPLIT SYSTEMS

A. Add Daikin and York to the list of acceptable manufacturers.

2.09 SECTION 23 82 19 – FAN AND COIL UNITS

A. Add Daikin and Nailor to the list of approved manufacturers.

2.10 SECTION 23 82 23 – CLASSROOM UNIT VENTILATORS

A. Add this section to the bidding documents.

2.11 SECTION 23 82 39 TERMINAL HEATING UNITS

A. Add VTS “Volcano” to the list of approved manufacturers.

B. Delete Propeller Unit Heaters and Heating Water Radiant Ceiling Panels.

C. Add Sterling and Price to the list of approved manufacturers.

D. Add Fin Tube Radiation.

PART 3. DRAWINGS

3.01 C201 – SITE LAYOUT PLAN

A. Revise Keynote 13 ENCLOSURE FENCING to 6’ High Trex Seclusions (Or Approved Equal) Privacy Fence)

3.02 HD101A – GROUND FLOOR UNIT A HVAC DEMO PLAN

A. Additional ductwork demo in STORAGE as shown.

3.03 HD104A – ROOF UNIT A HVAC DEMO PLAN

A. Sheet note revision.

3.04 H-101 – FIRST FLOOR HVAC PLAN

A. CFM revision to CORRIDOR diffusers as shown.

3.05 H-101A – GROUND FLOOR UNIT A HVAC PLAN

A. FCU-2G01 mark revision

B. CFM revision to CORRIDOR diffusers as shown

C. Sheet note revisions for further clarification

3.06 H-101B – GROUND FLOOR UNIT B HVAC PLAN

A. Realigned new connection to existing ductwork. Ductwork sizing / cfm is not changed.

3.07 H-102 – SECOND FLOOR HVAC PLAN

A. CFM revision to CORRIDOR diffusers as shown.

3.08 H-103 – THIRD FLOOR HVAC PLAN

A. CFM revision to CORRIDOR diffusers as shown.

3.09 H-401 – CHILLED WATER SYSTEM DIAGRAM

A. DOAS-1 mark correction

3.10 H-402 – HEATING WATER SYSTEM DIAGRAM

A. DOAS-1 mark correction

3.11 H-501 – HVAC SCHEDULES

A. Curb height revision in INTAKE/RELIEF HOOD SCH to match HVAC DETAILS

B. Room name revision in FAN SCHEDULE

C. AIR TO AIR ENERGY RECOVERY UNIT SCHEDULE revised for clarification – unit performance is unaffected

3.12 H-502 – HVAC SCHEDULES

A. Room name revisions

3.13 H-603 – HVAC AHU DETAILS

A. Note added for additional information

3.14 H-604 – HVAC AHU DETAILS

A. Note added for additional information

ATTACHMENTS
Specifications: 23 05 93, 23 07 19, 23 34 00, 23 37 23, 23 73 01, 23 82 23, 23 82 39
Drawings: HD101A, HD104A, H-101, H-101A, H-101B, H-102, H-103, H-401, H-402, H-501, H-502, H-603, H-604

END OF ADDENDUM

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
   1. Current member of Steel Framing Industry Association, the Steel Stud Manufacturers Association, or be a part of a similar organization that provides a verifiable code compliance program.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience and approved by manufacturer.

C. Design structural elements under direct supervision of Professional Engineer experienced in design of this Work and qualified to practice in jurisdiction where Project is located.

D. Form, fabricate, provide, and connect components in accordance with NAAMM/EMLA 920-09 – "Guide Specifications for Expanded Metal Lathing and.

1.7 COORDINATION

A. Division 01 -Administrative Requirements: Coordination and project conditions.

B. Coordinate placement of components within stud framing system specified in Division Nine.

PART 2 PRODUCTS

2.1 COLD-FORMED METAL FRAMING

A. Manufacturers:
   1. ClarkDietrich.
   2. Marino\Ware.
   3. MBA Building Supplies

2.2 FRAMING MATERIALS

A. Framing Members, General: Comply with ASTM C955 for conditions indicated.

B. Studs: ASTM A653, Class SS-Structural Steel, ST33H (ST230H), sheet steel, formed to channel shape, punched web, 16 gauge, 1-5/8 inch flange with ½" return, 6 inch depth unless otherwise shown.

C. Track: Formed steel; channel shaped; same width as studs, tight fit; 16 gauge thick, solid web.

D. Framing Materials: Roll from new sheet steel; cold reduction steels not being acceptable.

E. Coating: CP 60: G60 (Z180)

2.3 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined by performance requirements specified.
   1. ClarkDietrich; Spazzer 5400 Bridging Bar (SPZS) or equal product.

B. Plates, Gussets, Clips: Formed sheet steel, thickness determined by performance requirements specified.

C. Touch-Up Primer for Galvanized Surfaces: SSPC Paint 20 Type I Inorganic, zinc rich.

2.4 FASTENERS

A. Self-drilling, Self-tapping Screws, Bolts, Nuts, and Washers: Steel, hot dip galvanized to ASTM A123 1.25 oz/sq ft.

B. Anchorage Devices: Power actuated, drilled expansion bolts, screws with sleeves, and pre-set anchor bolts.

C. Welding: In conformance with AWS D1.1 and AWS D1.3.

2.5 FABRICATION

A. Fabricate assemblies of formed sections of sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

C. Fit and assemble in largest practical sections for delivery to site, ready for installation.

2.6 FINISHES

A. Studs: Galvanize to CP 60: G60 coating class.

B. Tracks and Headers: Galvanize to CP 60: G60 coating class.

C. Bracing, Furring, and Bridging: Same finish as framing members.

D. Plates, Gussets, and Clips: Same finish as framing members.

PART 3 EXECUTION

3.1 EXAMINATION

A. Division 01 -Administrative Requirements: Coordination and project conditions.

B. Verify substrate surfaces and building framing components are ready to receive Work.

C. Verify rough-in utilities are in proper location.

3.2 INSTALLATION, GENERAL

A. Install cold-formed steel framing in accordance with ASTM C1007, AISI S200 "North American Standard for Cold-Formed Steel Framing – General Provisions," and manufacturer's written instructions unless more stringent requirements are indicated.

3.3 ERECTION OF STUDS

A. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches oc. Coordinate installation of acoustic sealant with floor and ceiling tracks.

B. Place studs at 16 inches oc; unless otherwise indicated, not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using fastener method.

C. Construct comers using minimum three studs. Double stud wall openings, door jambs, and window jambs.

D. Coordinate placement of insulation in multiple stud spaces after erection.

E. Install intermediate studs above and below openings to align with wall stud spacing.

F. Install studs with deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.

G. Attach cross studs to studs for attachment of fixtures anchored to walls.

H. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

I. Touch-up field welds and damaged galvanized surfaces with primer.

3.4 ERECTION TOLERANCES

A. Division 01 - Quality Requirements: Tolerances.

B. Maximum Variation from Indicated Position: 1/4 inch.

C. Maximum Variation of Members from Plane: 1/4 inch.

END OF SECTION

SECTION 09 84 10
FABRIC WALL PANELS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Fabric wrapped wall panel system and installation accessories.

1.02 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Product Data: Submit manufacturer's product data and installation instructions.

1. Recommended procedures for normal cleaning and removal of stains including precautions in use of cleaning materials that may be detrimental to surfaces.

C. Samples: Submit selection and verification samples: 6 inch × 6 inch (152 × 152 mm) sample for each wall panel unit required, showing full range of exposed texture to be expected in completed work.

D. Quality Assurance/Control Submittals: Submit the following:

1. Test Reports: Upon request, submit certified test reports from recognized test laboratories.

2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

B. Regulatory Requirements and Approvals:

1. International Code Council (ICC):

a. ICC-ES Evaluation Report ESR-1112.

1.04 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

1. Prevent soiling, physical damage or wetting.

2. Store cartons open at each end to stabilize moisture content and temperature.

1.05 PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Do not install acoustical panels until building is closed in and HVAC system is operational.

2. Locate materials onsite at least 24 hours before beginning installation to allow materials to reach temperature and moisture content equilibrium.

3. Maintain the following conditions in areas where acoustical materials are to be installed 24 hours before, during and after installation:

a. Relative Humidity: 65 - 75%.

b. Uniform Temperature: 55 - 70 degrees F (13 - 21 degrees C).

PART 2 PRODUCTS

2.01 FABRIC WALL PANEL SYSTEM

A. Refer to the Room Finish Schedule on the drawings.

2.02 ACCESSORIES

A. Provide accessories as required for installation.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Comply with the instructions and recommendations of the acoustical wall panel system manufacturer.

B. Install materials in accordance with governing regulations, fire resistance rating requirements and industry standards applicable to work.

3.02 EXAMINATION

A. Site Verification of Conditions:

1. Examine surfaces scheduled to receive suspended or directly attached acoustical units for unevenness, irregularities and dampness that would affect quality and execution of work.

2. Do not proceed with installation of wall panel system until unacceptable conditions are corrected.

3.03 CLEANING

A. Clean exposed surfaces of acoustical panel, trim, moldings and suspension members to comply with manufacturer's instructions for cleaning.

B. Touch up any minor finish damage.

C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.04 PROTECTION

A. Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

END OF SECTION

SECTION 23 05 93

TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Test and Balance Contractor to monitor the job progress to schedule his work in conjunction and cooperation with other trades involved and comply with the project completion date.

B. Test and Balance Contractor shall prepare and submit pencil copies of reports to the Engineer as the work progresses and completes.

C. Provide assistance and cooperation to Engineer as Performance Verification progresses. Provide labor to assist in troubleshooting and fine tuning of the HVAC systems to suit the final building conditions.

D. Provide assistance and cooperation to successfully test and demonstrate all life safety systems (stair pressurization, smoke removal, etc.) This will require multiple demonstrations to satisfy compliance with local inspectors, fire departments, and Owner representatives.

E. Prepare and submit the final report as defined herein.

1.02 WORK INCLUDED

A. General

1. Provide equipment, materials, labor and services necessary for complete testing, balancing and performance verification of all systems in the project, and as specified herein.
2. Operational Testing, Performance Verification, and Capacity Verification are included in the scope, in addition to traditional balance procedures.

B. Test, balance and adjust every system and piece of equipment installed on this project. They shall include:

1. Air handling units
2. Fan coil units
3. Rooftop units
4. Supply, return and outside air distribution systems
5. Exhaust air systems
6. Toilet exhaust systems
7. Ventilation systems
8. Chilled water system
9. Heating water system

10. Variable air volume terminal units
11. Domestic hot water return systems
12. **Duct mounted heating coils (Addendum #2)**
13. **Classroom unit ventilators (Addendum #2)**

C. The Mechanical and/or Sheet Metal Contractor shall furnish to the Test and Balance Contractor a fan curve for each fan serving systems of 2000 cfm or greater and a pump curve for each circulating pump of 50 gpm or greater. A copy of the curves shall be included in the final balance report.

D. Record all test readings on a standard test outlet form which includes room name or number, terminal device designation, manufacturer, model number, size and Ak factor. Include the design conditions, the initial and each follow-up test readings and the final test results.

1.03 WORK INCLUDED BUT SPECIFIED ELSEWHERE

A. General Provisions: Section 23 05 01

B. Completion and Startup: Section 23 05 03

C. Hydronic Pumps: Section 23 21 23

D. HVAC Fans: Section 23 34 00

E. HVAC Ducts and Casings: Section 23 31 00

F. Air Handling Units: Section 23 73 00

1.04 RELATED WORK

A. Sequence of Operation for HVAC Controls: Section 23 09 93

B. Variable-Air-Volume Units: Section 23 36 16

C. Packaged Heating and Cooling Units: Section 23 81 00

D. Fan and Coil Units: Section 23 82 19

E. Classroom Unit Ventilators: Section 23 82 23

1.05 QUALITY ASSURANCE

A. Balancing of the Heating and Air Conditioning Systems: Contractor shall be either

1. Registered in Indiana and a current member of TABB, NEBB or AABC with 5 years' experience, or

2. A registered professional engineer licensed in Indiana that specializes in the adjusting and balancing of systems specified with a minimum of 10 years documented experience.
3. TABIC Certified Contractor

B. Testing, adjusting and balancing shall be performed, in the field, under direct field supervision of a Certified TABB, NEBB Supervisor, a Certified AABC Supervisor. Mechanical Engineer, or TABIC Certified Contractor.

C. Work shall be performed only by a Contractor which employs certified testing and balancing Technicians. If Contractor cannot meet this criterion, then the following information shall be provided for each technician during the bid period. Approval will be by Addenda.

1. Identify each Technician by name.
2. The Technicians shall have successfully completed testing, adjusting and balancing classes and shall present for review their certification of training.
3. The Technician's previous work experiences shall not be less than five years.
4. Technician's references (including contact names and phone numbers) from all jobs during the past 12 months shall be presented.
5. No Technician substitutions will be made without prior approval from the Owner.

D. Instruments shall be in first class state of repair and have been calibrated within a period of six months prior to starting the job.

E. Provide all software and hardware required to interface with the Buildings' DDC temperature control system.

F. Test and Balance Contractor shall not be owned by any of the Contractors on this project which includes the General, Mechanical and Electrical Contractors.

G. Approved Test and Balance Contractors: (Indiana)

1. Fluid Dynamics
2. Fulton Air Balance
3. Gibson
4. Midwest Balance
5. National Test and Balance
6. Thermal Balance, Inc.
7. Total Balance

1.06 SUBMITTALS: BALANCING REPORT

A. Each distribution system shall be schematically drawn (single line diagram) on 8-1/2"x11" sheets of paper. Larger systems may require several sheets. All components and terminal devices shall be shown and labeled. Room names or numbers shall be included.

B. Record operating data for each piece of equipment on 8-1/2"x11" report form. Data shall include pressures, temperatures, amperages, rpm, etc. as outlined below under Part 2 (2.02) and Part 3.

C. Submit report to Contractor of conditions experienced with any piece of equipment or device which did not perform satisfactorily or which required special settings. Include in report, any proposed corrections. Copy the Engineer on all correspondence.

D. All final reports shall be signed and sealed by the certified Test and Balance Engineer.

E. Data Sheets

1. Submit data sheets on each item of testing equipment to be used.
2. Include name of device, manufacturer's name, model number, latest date of calibration, and correction factors.

F. Final Report

1. Upon completion, all information shall be neatly printed and two (2) copies submitted to the Engineer through the Mechanical Contractor with accompanying schematic diagrams of systems tested.
2. All test reports shall be assembled, numbered, indexed, and submitted with project name and Balancing Contractor's name permanently printed thereon.

1.07 BALANCING REQUIREMENT: AIR SYSTEMS

A. The requirement of the air system balance is to direct the specified air quantities as shown on the plans to each of the rooms and zones detailed on the plans. The supply system must be set to provide proper quantities and the return system must be adjusted proportionately for an overall balance of supply air, return air and outside air. A balance of $\pm$ 5% of total design volume shall be the requirement in overall system balance. But beyond this requirement is providing a comfortable, controlled environment of temperature, humidity, noise, ventilation and air motion.

B. Should noise problems develop when obtaining design air flow, the Test and Balance Contractor shall aid the Engineer in determining the cause and assist in determining the solution. If in the opinion of the Test and Balance Contractor, noise occurs due to poor field duct arrangements, the Test and Balance Contractor shall also report suggested solutions to the Engineer and Sheet Metal Contractor.

1.08 BALANCING REQUIREMENT: HYDRONIC SYSTEMS

A. The requirement of the hydronic systems balance is to obtain total specified flow in the system with all control valves fully open to the coils within ±5%.

B. The requirement at each coil or terminal unit is to obtain specified flow while all remaining system valves are fully open to the coils, per the following tolerances:

1. Less than 1 gpm: -5% to +20%
2. Less than 5 gpm: -5% to +10%
3. Over 5 gpm: ±5%

1.09 COORDINATION WITH CONTRACTORS

A. The Test and Balance Contractor shall review the fabrication drawings to verify and coordinate the location of all necessary dampers, access doors and duct arrangements to assure a proper air balance can be obtained.

B. The Test and Balance Contractor shall review the sheet metal fabrication shop drawings and affix his review stamp before drawings are submitted for final approval to the Engineer.

C. The Test and Balance Contractor shall review and coordinate with the Mechanical Contractor the location of all necessary balancing valves and piping arrangements at flow control devices to assure a proper hydronic balance can be achieved.

D. System Operation: Heating, ventilating, air conditioning equipment including filters, shall be completely installed, duct systems tested and passed for leakage, ceilings installed and in continuous operation as required to accomplish the adjusting and balance work specified. Test and Balance Contractor shall submit "Check List" with copy to Engineer, to the Mechanical and/or Sheet Metal Contractors which, when completed, and returned, will assure the systems are ready to be balanced.

E. The Test and Balance Contractor shall visit the job site when each systems' installation are near complete, but prior to the installation of ceilings, to familiarize himself with the installation and to determine any potential problems in achieving a balanced system. This visit shall be scheduled by the Test and Balance Contractor and performed with the Mechanical Contractor. Submit report of each trip to Engineer.

F. The Test and Balance Contractor shall review all duct pressure test reports and comment on the results and methods.

G. The Test and Balance Contractor shall visit the job site when each hydronic loop is near complete, but prior to the installation of ceilings, to familiarize himself with the installation and to determine any potential problems in achieving a balanced system. This visit shall be scheduled by the Test and Balance Contractor and performed with the Mechanical Contractor. Submit report of each trip to Engineer.

H. Readjustments

1. Should corrective measures caused by faulty installation require retesting, adjusting and balancing, such work shall be at no additional expense to the Owner.
2. Corrective measures, other than the above, shall be made only as directed by the Engineer

1.10 SYSTEM STARTUP AND INITIAL DUCT TESTING

A. The Test and Balance Contractor shall attend scheduled pre-startup meetings.

B. The Test and Balance Contractor shall participate in the startup of each system on the project.

C. After successful startup of each air distribution system, perform an initial total air distribution test to determine the system duct leakage. The project requirement is a maximum allowable leakage of 5% total cfm. Should leakage exceed this amount, stop work on that system and notify the Engineer and the contractor. Reference Section HVAC Ducts and Casings, Section 23 31 00.

1.11 RE-INSPECTIONS

A. Make four (4) return re-inspections and testing during one (1) year warranty period. Each re-inspection shall include a check test of all critical balance conditions including correction or adjustment as required on each system. Coordinate these re-inspections with Owner. Two (2) of these shall be during weather extremes. Send written reports to the Owner and Engineer.

PART 2 - PRODUCTS

2.01 INSTRUMENTS

A. Quality

1. The minimum instrumentation for testing, adjusting and balancing shall be the “TABB”, "AABC and/or NEBB Approved Minimum Field Instrumentation".

2. Instruments used for testing and balancing must have been calibrated within a period of six (6) months and checked for accuracy prior to start of work.
3. Instruments must be maintained and carried in such manner to protect them from excessive vibration and moisture conditions.

B. Approval: All products and instrumentation used shall be subject to approval of the Engineer.

2.02 EQUIPMENT DATA CARDS

A. Record operating (typed) data for each piece of equipment on a card, laminated in plastic and attached to the equipment. Operating data should include all final appropriate data such as pressures, temperatures, amperages, revolutions per minute, which are significant to the normal operating points of the equipment.

B. Cards shall be minimum 8-1/2 x 11 and shall include Balancing Contractor's name, address, phone number and date of test.

PART 3 - EXECUTION

3.01 GENERAL PROCEDURES

A. Balance and adjust the systems to obtain the flow quantities shown on the drawings.

B. Maintain coordination and communication with the Engineer, Owner, Suppliers and Contractors.

C. Schedule work so that it may be done while the Contractors are on the job site.

D. If a piece of equipment is not operating in a satisfactory manner, proactively assist the installing contractor in repairing or adjusting. After corrections have been made, proceed with balancing.

E. Submit reports to the Engineer if a system or piece of equipment cannot be adjusted to operate satisfactorily.

3.02 BALANCING PROCEDURE: VAV AIR HANDLING UNITS AND AIR DISTRIBUTION

A. Check air handling unit supply fan:

1. Check motor electric current and voltage supply and rated running amperage.
2. Check initial fan and motor speed.
3. Determine available adjustment tolerance.

B. Drill probe holes for static pressure readings, duct velocity readings and temperature readings.

C. Proceed through entire duct system, opening all dampers and VAV terminal units to full open position. If dampers are missing, notify the Sheet Metal Contractor to add the dampers.

D. Set the outside air and return air dampers to their normal positions (minimum outside air).

E. Perform main system traverse to determine total air flow. Record initial readings including fan rpm, cfm, total static pressure and motor amperage.

F. Adjust fan to obtain specified total air flow (allow for maximum 5% total system duct leakage). Using the sheaves furnished with the unit.

G. Upon obtaining specified air flow, proceed with balancing the air distribution System.

1. Traverse all main zone ducts.
2. Set all terminals at design air flow.
3. Perform as many total system readings until a balance is obtained. Record all readings.

H. Recheck main system traverse to verify total air flow. If the distribution system balance is inadequate, determine probable cause:

1. Check duct system for connection integrity and leakage. Notify Sheet Metal Contractor of deficiencies for correction.
2. If tolerance in the fan is not available, size a new drive and coordinate the installation of new sheaves and belts with the installing contractor.

I. Upon obtaining the design air flow throughout the system, set the variable frequency motor speed controller, to govern this condition. Record the operating point of the controller.

J. Balance the outside air, return air and relief air dampers to the specified minimum outside air quantity. Verify proper indexing and modulation from control signal. Set and record minimum and maximum positions of dampers. Retest with the unit calling for full CO2 control of the maximum-minimum outside air quantity. Record all conditions.

K. Record the final operating conditions of the air handling unit including:

1. Fan rpm, cfm and VFD position
2. Motor run amperes and voltage
3. Fan inlet and discharge static pressure
4. Cooling coil air and water pressure drop
5. Heating coil air and water pressure drop
6. Filter pressure drop
7. Minimum outside air
8. Maximum-minimum outside air

9. Economizer conditions

3.03 FOR VAV AIR HANDLING SYSTEMS WITH RETURN FANS

NOTE: Where drawings indicate return air flows equal to the supply air flows, the return air quantities shown are required only when or if the minimum outside air setting is zero.

A. Check return fan:

1. Check motor electric current and voltage supply and rated running amperage.
2. Check initial fan and motor speed.
3. Determine available adjustment tolerance.

B. Drill probe holes for static pressure readings, duct velocity readings and temperature readings.

C. Proceed through entire return duct system, opening all dampers to full open position. If dampers are missing, notify the Sheet Metal Contractor to add the dampers.

D. Set the outside air, relief air and return air dampers to their normal positions (minimum outside air).

E. Perform main system traverse to determine total air flow. Record initial readings including fan rpm, cfm, total static pressure and motor amperage.

F. Adjust fan to obtain the net return air flow. Subtracting minimum outside air from total supply air (allow for maximum 5% total system duct leakage). Using the adjustable pitched sheaves furnished with the unit.

G. Upon obtaining specified air flow, proceed with balancing the air distribution System.

1. Traverse all main return ducts.
2. Set all return inlets at proportioned amount of design air flow designated on the drawings (to allow for minimum outside air requirements).
3. Perform as many total system readings until a balance is obtained. Record all readings.

H. Recheck main return air traverse to verify total air flow. If the distribution system balance is inadequate, determine probable cause:

1. Check duct system for connection integrity and leakage. Notify Sheet Metal Contractor of deficiencies for correction.
2. If tolerance in the fan is not available, size a new drive and coordinate the installation of new sheaves and belts with the installing contractor.

I. Upon obtaining the design air flow, set the variable frequency motor speed controller to govern this condition. Record the operating point of the controller.

J. Balance the outside air, return air and relief air dampers to the specified minimum outside air quantity. Verify proper indexing and modulation from control signal. Set and record minimum and maximum positions of dampers.

K. Record the final operating conditions of the return fan including:

1. Fan rpm, cfm and VFD position
2. Motor run amperes and voltage
3. Fan inlet and discharge static pressure

3.04 BALANCING PROCEDURE: SINGLE ZONE VAV AIR HANDLING UNITS AND AIR DISTRIBUTION

A. Check air handling unit supply fan:

1. Check motor electric current and voltage supply and rated running amperage.
2. Check initial fan and motor speed.
3. Determine available adjustment tolerance.

B. Drill probe holes for static pressure readings, duct velocity readings and temperature readings.

C. Proceed through entire duct system, opening all dampers to full open position. If dampers are missing, notify the Sheet Metal Contractor to add the dampers.

D. Set the outside air and return air dampers to their normal positions (minimum outside air).

E. Perform main system traverse to determine total air flow. Record initial readings including fan rpm, cfm, total static pressure and motor amperage.

F. Adjust fan to obtain specified total air flow (allow for maximum 5% total system duct leakage). Using the sheaves furnished with the unit.

G. Upon obtaining specified air flow, proceed with balancing the air distribution System.

1. Traverse all main zone ducts.
2. Set all terminals at design air flow.
3. Perform as many total system readings until a balance is obtained. Record all readings.

H. Recheck main system traverse to verify total air flow. If the distribution system balance is inadequate, determine probable cause:

1. Check duct system for connection integrity and leakage. Notify Sheet Metal Contractor of deficiencies for correction.
2. If tolerance in the fan is not available, size a new drive and coordinate the installation of new sheaves and belts with the installing contractor.

I. Upon obtaining the design air flow throughout the system, set the variable frequency motor speed controller, to govern this condition. Record the operating point of the controller.

J. Balance the outside air, return air and relief air dampers to the specified minimum outside air quantity. Verify proper indexing and modulation from control signal. Set and record minimum and maximum positions of dampers.

K. Test the operation of the variable flow in response to space temperature from maximum to minimum. Determine setpoint for minimum airflow for scheduled amount or for stable fan operation if necessary. Record testing procedure and results.

L. Record the final operating conditions of the air handling unit including:

1. Fan rpm, cfm and VFD position
2. Motor run amperes and voltage
3. Fan inlet and discharge static pressure
4. Cooling coil air and water pressure drop
5. Heating coil air and water pressure drop
6. Filter pressure drop
7. Minimum outside air
8. Economizer conditions

3.05 FOR SINGLE ZONE VAV SYSTEMS WITH RETURN FANS

NOTE: Where drawings indicate return air flows equal to the supply air flows, the return air quantities shown are required only when or if the minimum outside air setting is zero.

A. Check return fan:

1. Check motor electric current and voltage supply and rated running amperage.
2. Check initial fan and motor speed.
3. Determine available adjustment tolerance.

B. Drill probe holes for static pressure readings, duct velocity readings and temperature readings.

C. Proceed through entire return duct system, opening all dampers to full open position. If dampers are missing, notify the Sheet Metal Contractor to add the dampers.

D. Perform main system traverse to determine total air flow. Record initial readings including fan rpm, cfm, total static pressure and motor amperage.

E. Adjust fan to obtain the net return air flow. Subtracting minimum outside air from total supply air (allow for maximum 5% total system duct leakage). Using the sheaves furnished with the unit.

F. Upon obtaining specified air flow, proceed with balancing the air distribution System.

1. Traverse all main return ducts.
2. Set all return inlets at proportioned amount of design air flow designated on the drawings (to allow for minimum outside air requirements).
3. Perform as many total system readings until a balance is obtained. Record all readings.

G. Recheck main return air traverse to verify total air flow. If the distribution system balance is inadequate, determine probable cause:

1. Check duct system for connection integrity and leakage. Notify Sheet Metal Contractor of deficiencies for correction.
2. If tolerance in the fan is not available, size a new drive and coordinate the installation of new sheaves and belts with the installing contractor.

H. Upon obtaining the design air flow, set the variable frequency motor speed controller to govern this condition. Record the operating point of the controller.

I. Test the operation of the variable flow in response to space temperature from maximum to minimum. Determine setpoint for minimum airflow for scheduled amount or for stable fan operation if necessary. Record testing procedure and results.

J. Record the final operating conditions of the return fan including:

1. Fan rpm and cfm
2. Motor run amperes and voltage
3. Fan inlet and discharge static pressure

3.06 BALANCING PROCEDURE: CONSTANT AIR VOLUME AIR HANDLING UNITS AND AIR DISTRIBUTION

A. Check air handling unit supply fan:

1. Check motor electric current and voltage supply and rated running amperage.
2. Check initial fan and motor speed.
3. Determine available adjustment tolerance.

B. Drill probe holes for static pressure readings, duct velocity readings and temperature readings.

C. Proceed through entire duct system, opening all dampers to full open position. If dampers are missing, notify the Sheet Metal Contractor to add the dampers.

D. Set the outside air and return air dampers to their normal positions (minimum outside air).

E. Perform main system traverse to determine total air flow. Record initial readings including fan rpm, cfm, total static pressure and motor amperage.

F. Adjust fan to obtain specified total air flow (allow for maximum 5% total system duct leakage), using the adjustable pitched sheaves furnished with the unit.

G. Upon obtaining specified air flow, proceed with balancing the air distribution System.
   1. Traverse all main zone ducts.
   2. Set all terminals at design air flow.
   3. Perform as many total system readings until a balance is obtained. Record all readings.

H. Recheck main system traverse to verify total air flow. If the distribution system balance is inadequate, determine probable cause:

   1. Check duct system for connection integrity and leakage. Notify Sheet Metal Contractor of deficiencies for correction.
   2. If tolerance in the fan is not available, size a new drive and coordinate the installation of new sheaves and belts with the installing contractor.

I. Balance the outside air, return air and relief air dampers to the specified minimum outside air quantity. Verify proper indexing and modulation from control signal. Set and record minimum and maximum positions of dampers.

J. Record the final operating conditions of the air handling unit including:

   1. Fan rpm and cfm
   2. Motor run amperes and voltage
   3. Fan inlet and discharge static pressure
   4. Cooling coil air and water pressure drop
   5. Heating coil air and water pressure drop
   6. Filter pressure drop

3.07 FOR SYSTEMS WITH RETURN FANS

NOTE: Where drawings indicate return air flows equal to the supply air flows, the return air quantities shown are required only when or if the minimum outside air setting is zero.

A. Check return fan:

1. Check motor electric current and voltage supply and rated running amperage.
2. Check initial fan and motor speed.
3. Determine available adjustment tolerance.

B. Drill probe holes for static pressure readings, duct velocity readings and temperature readings.

C. Proceed through entire return duct system, opening all dampers to full open position. If dampers are missing, notify the Sheet Metal Contractor to add the dampers.

D. Set the outside air, relief air and return air dampers to their normal positions (minimum outside air).

E. Perform main system traverse to determine total air flow. Record initial readings including fan rpm, cfm, total static pressure and motor amperage.

F. Adjust fan to obtain the net return air flow. Subtracting minimum outside air from total supply air (allow for maximum 5% total system duct leakage). Using the adjustable pitched sheaves furnished with the unit.

G. Upon obtaining specified air flow, proceed with balancing the air distribution System.

1. Traverse all main return ducts.
2. Set all return inlets at proportioned amount of design air flow designated on the drawings (to allow for minimum outside air requirements).
3. Perform as many total system readings until a balance is obtained. Record all readings.

H. Recheck main return air traverse to verify total air flow. If the distribution system balance is inadequate, determine probable cause:

1. Check duct system for connection integrity and leakage. Notify Sheet Metal Contractor of deficiencies for correction.
2. If tolerance in the fan is not available, size a new drive and coordinate the installation of new sheaves and belts with the installing contractor.

I. Balance the outside air, return air and relief air dampers to the specified minimum outside air quantity. Verify proper indexing and modulation from control signal. Set and record minimum and maximum positions of dampers.

J. Record the final operating conditions of the return fan including:

1. Fan rpm and cfm
2. Motor run amperes and voltage
3. Fan inlet and discharge static pressure

3.08 BALANCING PROCEDURE: VAV TERMINALS UNITS WITH HEAT

A. Drill probe holes and perform traverse readings on discharge of terminal units exceeding 2000 cfm.

1. Set maximum position on cooling actuators for design airflow as determined by traverse.
2. Set minimum position on cooling actuators at design airflow.
3. Confirm maximum minimum position on units under CO2 control.

B. Set maximum and minimum position on actuators for terminal units under 2000 cfm from diffuser totals.

C. Perform and record readings in heating cycles.

D. Test and record heating coil entering and leaving temperatures during full heat cycle.

E. Testing Procedure: Replace terminal unit volume regulators found to be defective during the balancing process. Spare volume regulators shall be furnished by the terminal unit manufacturer for the Test and Balance Contractor's use during the balancing phase of the project. Refer to Specification Section 23 36 16 for quantity. Defective volume regulators shall be returned to the terminal unit manufacturer for replacement and the total quantity of spares will be given to the Owner for his use at the completion of the project. The terminal unit manufacturer shall be required to check, adjust and place all units in proper operating condition if the Test and Balance Contractor finds more that 5% of the units not operating properly.

3.09 BALANCING PROCEDURE: EXHAUST SYSTEMS

A. Check exhaust fan:

1. Check motor electric current supply and rated running amperage and voltage.
2. Check initial fan and motor speed.
3. Determine available adjustment tolerance.

B. Drill probe holes for static pressure duct velocity readings.

C. Proceed through entire duct system, opening all dampers to full open position. If dampers are missing, notify the Sheet Metal Contractor to add the dampers.

D. Perform main system traverse to determine total air flow. Record initial readings including fan rpm, cfm, total static pressure and motor amperage and voltage.

E. Adjust belt drive fans to obtain specified total air flow (allow for maximum 5% total system duct leakage). If adjustment in the fan is not available, size a new drive and coordinate the installation of sheaves and belts with the installing contractor.

F. Upon obtaining specified air flow, proceed with balancing the distribution system.

1. Set all terminal devices at design air flow.
2. Perform as many total system readings until a balance is obtained. Record all readings.

G. Recheck main system traverse to verify total air flow.

H. If the distribution system balance is inadequate, determine probable cause. Check duct system for connection integrity and leakage. Notify Sheet Metal Contractor of deficiencies for correction.

I. Record the final operating conditions of the exhaust fan including:

1. Fan rpm and cfm
2. Motor run amperes
3. Fan inlet and discharge (if applicable) static pressure

3.10 BALANCING PROCEDURE: FAN COIL UNITS

A. Check unit fan: Check motor electric current and voltage supply and rated running amperage.

B. Record initial readings including fan rpm, cfm, total static pressure and motor amperage.

C. Check fan coil unit to verify total air flow. If the airflow is inadequate, determine probable cause. Notify Contractor of deficiencies for correction.

D. Record the final operating conditions of the fan coil unit including:

1. Fan cfm on all activated speeds
2. Motor run amperes and voltage
3. Fan inlet and discharge static pressure
4. Cooling coil pressure drop
5. Cooling coil entering and leaving air temperatures (DB & WB) and flow in full cooling cycle .
6. Heating coil entering and leaving air temperatures (DB & WB) and flow in full heating cycle.

3.11 BALANCING PROCEDURE: FAN COIL UNITS WITH AIR DISTRIBUTION

A. Drill probe holes for static pressure readings, duct velocity readings and temperature readings.

B. Check unit fan: Check motor electric current and voltage supply and rated running amperage.

C. Proceed through duct system, opening all dampers to full open position. If dampers are missing, notify the Sheet Metal Contractor to add the dampers.

D. Where applicable, set the outside air dampers to their normal positions (minimum outside air).

E. Record initial readings including fan rpm, cfm, total static pressure and motor amperage.

F. Adjust fan speed to obtain specified total air flow (allow for maximum 5% leakage).

G. Upon obtaining specified air flow, proceed with balancing the air distribution System.

1. Set all terminals at design air flow.
2. Perform as many total system readings until a balance is obtained. Record all readings.

H. Recheck fan coil unit to verify total air flow. If the distribution system balance is inadequate, determine probable cause. Check duct system for connection integrity and leakage. Notify Sheet Metal Contractor of deficiencies for correction.

I. Balance the outside air dampers to the specified minimum outside air quantity. Verify proper indexing from control signal. Set and record minimum and maximum positions of dampers.

J. Record the final operating conditions of the fan coil unit including:

1. Fan cfm
2. Motor run amperes and voltage
3. Fan inlet and discharge static pressure
4. Cooling coil pressure drop
5. Cooling coil entering and leaving air temperatures (DB & WB) and flow in full cooling cycle (at specified outside air).
6. Heating coil entering and leaving air temperatures (DB & WB) and flow in full heating cycle (at specified outside air)

3.12 BALANCING PROCEDURE: WATER DISTRIBUTION SYSTEM(S)

A. Initial balance procedure

1. A complete air balance must be accomplished before beginning the hydronic water systems test and balance.
2. Verify that the Mechanical Contractor has:
   a. Removed and cleaned all strainers.
   b. Treated and obtained clean water in the system.
   c. Checked pump rotation.
   d. Set automatic fill valves for required system pressure.
   e. Bled the system, checked the expansion tanks, etc. so that it is 2/3 full of water and is not air bound.
   f. Checked air vents at high points of the system for proper air release.
   g. Set operating temperatures of equipment to design requirements.
3. Open all shutoff and balancing valves to full open position.
4. Set temperature controls so all coils are calling for full heating (or cooling, as applicable).

B. Procedure for balance at each terminal unit

1. Adjust balancing valve to specified GPM for coil and mark setpoint on valve body.
2. Check and record pressures (entering and leaving) of each coil.
3. Check and record water temperatures (entering and leaving) and flow of each coil.
4. Check, set and record pressure drop across bypass valve to match coil full flow pressure drop to prevent unbalanced flow conditions when coils are on full bypass.
5. Separately record readings at all flow measuring stations.

C. Procedure for balance and proper system operation

1. Set system relief valve 5 psig above system operating point at its location and test for proper operation.
2. Set automatic makeup water valve to maintain system pressure.

D. Procedure for balance at each manifold valve of the in-slab heat system.

1. Adjust balancing valve to specified GPM and mark setpoint on valve body.
2. Check and record pressures (entering and leaving) of each loop.
3. Check and record water temperatures (entering and leaving) and flow of each loop.

3.13 BALANCING PROCEDURE: HYDRONIC WATER EQUIPMENT

A. Pump(s)

1. Check pump rotation.
2. Establish the appropriate amount of flow control locations representing the design total flow of the system. Include the most remote locations and sum to the nearest locations to the pumps. With all system valves fully open per the above location, determine total flow output of the pumps.
3. If the total flow exceeds or is short of design total flow by more than 10%, change the pump impellers. Do not use the VFD, as the balancing control method. Do not use the pump discharge balance valve as the balance control method beyond 10%.
4. Set pumps to design GPM.
5. Record the running amperes and volts at each pump motor.
6. Check and record suction and discharge pressures and total dynamic head at each pump.
7. List all pump nameplate data.

B. Chiller(s)

1. Adjust water through chiller to obtain specified flow.
2. Check and record entering and leaving water temperatures through chiller and set to correct design temperatures.
3. Check and record pressure drop through chiller.

C. Heat Exchangers

1. Adjust water through heat exchanger to obtain specified flow.
2. Check and record entering and leaving water temperatures through heat exchanger at full heat and set to correct design temperatures.
3. Check and record pressure drop through heat exchangers at design flow.

3.14 DOMESTIC HOT WATER RETURN BALANCING PROCEDURE

A. Verify that the contractor has:

1. Installed all balancing stations
2. Opened all shut-off valves and balance valves to full open position.

B. Test and record flow through each balancing station. See floor plans for flow requirements at each system.

C. Domestic Hot Water Circulating Pumps

1. Check pump rotation.
2. Check and record water temperature leaving the pump.

3. Check and record water temperatures before and after the thermostatic mixing valve.
4. List all pump nameplate data.

3.15 BALANCING PROCEDURE: DUCT MOUNTED HEATING COILS Addendum #2

A. Drill probe holes and perform traverse readings on discharge of duct coils.

B. Perform and record air flow readings in both heating and cooling cycles.

C. After obtaining design airflow, test and record heating coil entering and leaving air temperatures during the full heating cycle.

D. Test and record heating coil entering and leaving water temperatures, and flow during the full heating cycle.

3.16 BALANCING PROCEDURE: CLASSROOM UNIT VENTILATORS Addendum #2

A. Check unit fan:

1. Check motor electric current and voltage supply and rated running amperage.
2. Check initial fan and motor speed.
3. Determine available adjustment tolerance.

B. Set the outside air and return air dampers to their normal positions (minimum outside air).

C. Adjust fan to obtain specified total air.

D. Balance the outside air and return air dampers to the specified minimum outside air quantity. Verify proper indexing and modulation from control signal. Set and record minimum and maximum positions of dampers.

E. Record the final operating conditions of the unit including:

1. Fan rpm and cfm
2. Motor run amperes and voltage
3. Cooling coil pressure drop
4. Heating coil pressure drop
5. Filter pressure drop
6. Cooling coil entering and leaving air temperatures (DB & WB) in full cooling cycle (at minimum outside air).
7. Heating coil entering and leaving air temperatures (DB & WB) in full heating cycle (at minimum outside air)

3.17 TESTING OF CONTROLS

A. Test each thermostat through the cooling range for proper operation. Set the thermostat at 78°F when complete.

B. Test each zone thermostat through the heating range for proper operation. Set the thermostat at 72°F when complete.

C. Test each heating zone fan powered/VAV terminal unit individually upon completion of balance of the system for cooling. Set each heating fan to deliver design CFM.

D. Test each zone humidistat through its control range for proper operation. Set the humidistat at 60% when complete.

3.18 TESTING OF DAMPERS

A. In cooperation with the Temperature Control Contractor's representative, provide setting and adjustments of automatically operated dampers to operate as specified, indicated, and/or noted. The Balance Contractor shall check all controls for proper calibrations and list all controls requiring adjustment by the Temperature Control Contractor.

3.19 OWNER'S INSTRUCTION

A. Balancing Contractor shall arrange with the Commissioning Engineer, a time for the instruction to the Owner as to the unique balanced conditions of the project.

3.20 GENERAL COMPLETION REQUIREMENTS

A. Reinstall belt guards on fan equipment.

B. Install plugs in all holes drilled for traverse readings and static pressure readings.

C. Repair insulation torn or removed as a result of obtaining readings.

D. Upon completion of all water flow readings and adjustments at coils, tag and mark all settings and record data.

3.21 OPERATING TESTS

A. Perform operating tests on all equipment and systems installed in this project at completion of each installation. Upon obtaining proper operation, perform demonstration of system sequences in the presence of the Commissioning Engineer and/or Owner's designated maintenance personnel.

B. Operating tests are required on each system. Following are general tests required of certain systems. Not all equipment is listed which requires testing.

1. Air handling systems
   a. Test each control sequence and safety device associated with each system.
   b. Control valves and dampers shall be observed for proper positioning in each sequence.
   c. Safety shutdown devices (smoke detectors, low limit thermostats, etc.) shall be simulated for proper function.
   d. Observe control interlocks with ancillary system equipment (exhaust fans, etc.) for proper operation.
   e. Test water flow through each cooling and heating coil in full flow and full bypass. Record entering and leaving pressure and temperature.

2. Fan Coil Units
   a. Test each control sequence and safety device associated with each system.
   b. Control valves and dampers shall be observed for proper positioning in each sequence.
   c. Safety shutdown devices (low limit thermostats, etc.) shall be simulated for proper function.
   d. Test all control steps and safeties associated with electric heat coil.
   e. Test water flow through cooling coil in full flow. Record entering and leaving pressure and temperature.

3. Heating Water System
   a. Test the on/off sequence for the circulating pump(s).
   b. Test the system flow with all control valves fully open to the terminal devices. Record pump pressures, amperes and operating point on the curve.
   c. Test the system flow with all two-way control valves fully closed to the coils and all bypasses open and/or three-way control valves open to the coils. Record pump pressures, amperes and operating point on the curve.
   d. Test the output of the boilers with all heating equipment in full operation.

4. Chilled water system
   a. Test the on/off sequence for the circulating pump(s).
   b. Test the system flow with all control valves fully open to the coils. Record pump pressures, amperes and operating point on the curve.
   c. Test the system flow with all two-way control valves fully closed to the coils. Record pump pressures, amperes and operating point on the curve.
   d. Test the output of the chiller with all cooling equipment in full operation. Record inlet and outlet temperatures and pressures and determine total btuh output.

e. Test the output of the cooling towers with all cooling equipment in full operation. Record inlet and outlet water temperatures and pressures. Record inlet air dry bulb and wet bulb temperatures. Determine total btuh output.
f. Test the output of the heat exchanger in full operation.

5. Variable air volume terminal units
   a. Operate the thermostat and unit actuator of each terminal unit through the full operating range.
   b. Assure that absolute full primary air supply shutoff or minimum position is obtained from thermostat operation.
   c. Hydronic Heating Coil
      (i) Operate the thermostat and unit actuator of each terminal unit through the full operating range.
      (ii) Test water flow through each heating coil in full flow. Record entering and leaving pressure and temperature.

6. Packaged rooftop air conditioning unit
   a. Test each control sequence and safety device associated with system.
   b. Control dampers shall be observed for proper positioning in each sequence.
      (i) Safety shutdown devices (smoke detectors, low limit thermostats, etc.) shall be simulated for proper function.
      (ii) Observe control interlocks with ancillary system equipment (exhaust fans, etc.) for proper operation.

7. Gas Fired Heating Equipment
   a. Test each control sequence (stages of heat) and safety device associated with each unit.
   b. Test the performance output of each unit. Record the inlet and outlet temperatures in each stage. Confirm and/or obtain rated output of unit.

8. Boilers
   a. Test each control sequence (stages of heat) and safety device associated with each unit.
   b. Record the inlet and outlet temperatures in each stage.

9. Split System Air Conditioners
   a. Test each control sequence of safety devices associated with each unit.
   b. Test the performance output of each unit. Record the inlet and outlet temperatures in each stage. Confirm and/or obtain rated output of unit.

10. Chillers
    a. Test each control sequence (stages and cooling) and safety device associated with each unit.
    b. Record the inlet and outlet temperatures and pressures in each stage.

11. Classroom Unit Ventilators (Addendum #2)
    a. Test each control sequence and safety device associated with each system.
    b. Control valves and dampers shall be observed for proper positioning in each sequence.
    c. Safety shutdown devices (smoke detectors, low limit thermostats, etc.) shall be simulated for proper function.
    d. Test water flow through each cooling and heating coil in full flow and full bypass. Record entering and leaving pressure and temperature.

3.22 PERFORMANCE AND CAPACITY VERIFICATION

A. Perform tests on all components to obtain and verify specified and scheduled capacities and performance.

B. Submit capacity verifications as a part of the Test and Balance Report. Record the required capacity, capacity obtained, and the parameters used in determining compliance.

C. Include, at least the following:

1. Air Handling Systems
    a. Determine BTUH output of cooling coil including sensible and total capacity.
    b. Determine BTUH output of preheat and or heating coils.

2. Fan Coil Units
    a. Determine BTUH output of cooling coil including sensible and total capacity.
    b. Determine BTUH output of preheat and or heating coils.

3. Propeller Unit Heaters, Cabinet Unit Heaters and Radiation:
    a. Determine BTUH output.

4. Variable Air Volume Terminal Units with Heat:
    a. Determine BTUH output of heating coils.
    b. Record entering and leaving air temperatures at full heating airflow.

5. Chiller(s):
   a. Test the rated output of the chiller(s) in tons.
   b. Test the power usage at rated tonnage and verify manufacturers' rating.
   c. Determine unit efficiency and verify manufacturers' rating.

6. Heat Exchangers
   a. Determine total BTUH transfer between fluids and confirm capacity.

7. Classroom Unit Ventilators: (Addendum #2)
   a. Determine BTUH output of cooling coil including sensible and total capacity.
   b. Determine BTUH output of preheat and or heating coils.

END OF SECTION

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SECTION 23 07 19

HVAC PIPE AND EQUIPMENT INSULATION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Work shall include all labor, equipment, accessories, materials and services required to furnish and install all insulation, fittings and finishes for the following piping systems:

1. Chilled water piping and components
2. Expansion tanks
3. Refrigeration piping
4. Heating water piping
5. Heat exchangers
6. Air separators
7. Chilled water pumps

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. General Provisions: Section 23 05 01

B. Assignment of Misc. Work: Section 23 05 02

C. Basic Piping Requirements: Section 23 05 29

D. Painting: Section 23 05 64

E. Chilled Water Piping System (Aboveground) (125psig): Section 23 21 01

F. Heating Water Piping Systems (Aboveground): Section 23 21 05

G. Refrigerant Piping System: Section 23 23 00

1.03 QUALITY ASSURANCE

A. Insulation shall be installed by skilled workmen regularly engaged in this type of work.

1.04 SUBMITTALS

A. Submit shop drawings in accordance with Specification Sections 23 05 01, HVAC General Provisions.

B. Submit shop drawings which indicate complete material data, a list of materials proposed for this project and thickness of material for individual services.

1.05 JOB CONDITIONS

A. Deliver material to job site in original non-broken factory packaging, labeled with manufacturer's density and thickness.

B. Perform work at ambient and equipment temperatures as recommended by the adhesive manufacturer. Repair separation of joints or cracking of insulation due to thermal movement or poor workmanship.

1.06 SCHEDULING

A. Work shall be scheduled by the Mechanical Contractor.

B. Maintain communication with Construction Manager throughout construction period to assure coordination of the insulation installation with the progress of the piping systems.

1.07 DEFINITION OF TERMS

A. Concealed: shall mean hidden from sight and/or access such as in trenches, chases, furred spaces, pipe shafts, or above suspended ceilings.

B. Exposed: shall mean that piping or equipment is not "concealed" as defined above. Piping and equipment in service tunnels, mechanical equipment rooms, storage areas or unfinished rooms are to be considered as "exposed".

C. Accessible: shall mean above suspended lay-in type ceilings.

D. Inaccessible: shall mean above suspended ceilings not readily accessed from most areas.

1.08 COOLING SERVICE - PIPE INSULATION (ADDENDUM #2)

~~Thickness of insulation based upon Table 503.2.8 of 2009 IECC.~~

~~A.~~ ~~Service~~

~~1.~~ ~~For chilled water piping; all locations in conditioned spaces~~

~~a.~~ ~~Exposed: Type 2~~
~~b.~~ ~~Concealed: Type 2~~
~~c.~~ ~~Accessible: Type 2~~

~~2.~~ ~~For chilled water piping thru non-air conditioned spaces: Type 2~~
~~3.~~ ~~For refrigerant piping; all locations~~

~~a.~~ ~~All suction piping: Type 2~~
~~b.~~ ~~All hot gas piping: Type 2~~

~~4.~~ ~~For condensate water piping: all locations indoors: Type 2~~

~~B. Materials~~

		Type (1)	Type (2)
~~1.~~	~~Insulation~~	~~Heavy density fiberglass~~	~~Elastomeric foam~~
~~2.~~	~~Jacket~~	~~Factory ASJ~~	~~(Not required)~~
~~3.~~	~~Insulation thickness for pipe:~~		
	~~Thru 2-1/2"~~	~~1-1/2"~~	~~1-1/2"~~
	~~3" thru 5"~~	~~1-1/2"~~	~~1-1/2"~~
	~~6" and above~~	~~1-1/2"~~	~~Use Type 1~~

~~C. Special conditions~~

~~1. All chilled water lines exposed to the outdoors shall be covered with an aluminum jacket.~~
~~2. All insulated refrigerant lines exposed outdoors shall be covered with an aluminum jacket.~~
~~3. "All" piping is defined such that it includes all ancillary piping, stubs, thermowells, etc. subject to condensation.~~
~~4. All steel chilled water piping and fittings shall be prime painted prior to insulating.~~

1.08 COOLING SERVICE - PIPE INSULATION

Thickness of insulation based upon Table 503.2.8 of 2009 IECC.

A. Service

1. For chilled water piping; all locations in conditioned spaces
a. Exposed: Type 1
b. Concealed: Type 1
c. Accessible: Type 1

2. For chilled water piping thru non-air conditioned spaces: Type 1
3. For refrigerant piping; all locations
a. All suction piping: Type 1
b. All hot gas piping: Type 1
c. All liquid piping: Type 1
d. All superheated refrigerant piping: Type 1
e. When refrigerant line sets are utilized, if insulation thickness does not meet the requirements of this specification, insulation shall be installed to meet the requirements of this section.

4. For condensate water piping: All locations indoors Type (1)

B. Materials ***Type (1)***

1. Insulation ***Elastomeric foam***
2. Jacket ***(Not required)***
3. Insulation thickness for pipe:
a. Thru 2-1/2” ***1-1/2”***
b. 3” thru 5” ***1-1/2”***
c. 6” and above ***2”***
d. Chilled water in non-conditioned spaces ***2”***
e. Refrigerant linesets, pipe size ≤ 5/8” ***1” each piece***

C. Special conditions

1. All chilled water piping exposed to the outdoors shall be covered with an aluminum jacket.
2. Hard copper refrigerant piping exposed outdoors shall be covered with an aluminum jacket.
3. Annealed soft copper refrigerant piping, lineset, exposed outdoors shall be covered with an aluminum jacket or Airex E-flex guard.
4. ”All” piping is defined such that it includes all ancillary piping, stubs, thermowells, etc. subject to condensation.
5. All steel chilled water piping and fittings shall be prime painted prior to insulating.

1.09 HEATING SERVICE - PIPE INSULATION

Thickness of insulation based upon table 503.2.8 of 2009 IECC.

A. Service

1. For heating water supply and return; all locations: Type 1

B. Materials Type (1)

1. Insulation Heavy density fiberglass
2. Jacket Factory ASJ

3. Insulation Thickness for pipe:

Thru 1-1/2"	1-1/2"
1-1/2" thru 2"	2”
2-1/2" thru 4"	2"
5" and 6"	2"
8" and above	2"

C. Special Conditions: “All” piping is defined that it includes all ancillary piping, stubs, thermowells, etc.

1.10 EQUIPMENT

A. Service - Insulate the following equipment surfaces:

1. Chilled water heat exchanger: Type 2
2. Air separator in heating water system: Type 1
3. Expansion tanks in heating water system: Type 1
4. Chilled water pump volutes: Type 2
5. Air separator in chilled water system: Type 2
6. Expansion tanks in chilled water system: Type 2

B. Materials		Type 1	Type 2
1.	Insulation	Heavy Density Fiberglass	Elastomeric Foam
2.	Jacket	8 oz glass cloth	-
3.	Insulation thickness	2"	1-1/2"

PART 2 - PRODUCTS

2.01 GENERAL

A. All pipe insulation and coverings on pipe shall have a flame spread rating not exceeding twenty five (25) and a smoke developed rating not exceeding fifty (50).

B. Pipe insulation coverings and adhesives on pipes used in chases, shafts or other concealed spaces shall have a flame spread rating not exceeding twenty five (25) and a smoke developed rating not exceeding one hundred fifty (150).

C. Pipe insulation and coverings on pipe used in plenums and shafts serving as supply or return air ducts or exposed in finished areas shall have a flame spread rating not exceeding twenty five (25) and a smoke developed rating not exceeding fifty (50).

2.02 INSULATING MATERIALS: PIPING AND EQUIPMENT

A. Fiberglass

1. Hot piping: a fine inorganic fibrous glass insulation with factory applied general purpose jacket, molded to conform to piping, "K" value at 75°F, maximum 0.25 btu inch/sq.ft./°F/hour.

B. Elastomeric foam: a closed cellular material, odorless, self-extinguishing, UL approved, maximum water vapor transmission of 0.20 perms; "K" value at 75°F, maximum 0.27 btu inch/sq.ft./°F/hour. All exterior elastomeric foam insulation shall include a UV protective coating or covering.

2.03 MISCELLANEOUS JACKET MATERIALS

A. Aluminum jacket: embossed aluminum with factory attached 30-9-30 duplex waterproof asphalt laminated paper as manufactured by Childers (0.010" thickness); Childers Ell-Jacs for fittings.

B. Reinforced foil and paper: FSK (foil-skrim-kraft) aluminum foil reinforced with fiberglass yard mesh and laminated to 40# chemically treated, fire resistant kraft; UL listed.

2.04 ACCEPTABLE INSULATION MANUFACTURERS

A. Owens-Corning

B. Johns-Manville

C. Armstrong

D. Knauf

2.05 ACCEPTABLE INSULATION SUNDRIES/ADHESIVES MANUFACTURERS

A. Benjamin Foster

B. Childers

C. Vimasco

PART 3 - EXECUTION

3.01 PREPARATION

A. Apply insulation only after piping and equipment have been tested and cleaned.

B. Protect furniture, equipment, ducts, pipes, etc. with tarpaulins. Keep premises clean.

C. Insure surface is clean and dry prior to installation. Insure insulation is dry before and during application. Finish with systems at operating condition.

3.02 GENERAL INSTALLATION

A. Application of insulation materials to piping shall be done in accordance with manufacturers' written recommendations.

B. Provide removable sections of insulation or insulation boxes at all points where access is required for servicing of the equipment.

C. All insulation shall be continuous through wall and ceiling openings and sleeves. All covered pipe is to be located a sufficient distance from walls, other pipe, ductwork and other obstacles to permit the application of the full thickness of insulation specified. (If necessary, extra fittings and pipe are to be used.)

D. Vapor barrier jackets shall be applied with a continuous, unbroken vapor seal.

E. Pipe hangers shall be sized large enough to be installed over the outer surface of the insulation. Load distributing corrosion resistant #14 USG metal shields shall be installed around the lower one-third circumference of the insulation. Shields shall be 12 gauge for smaller sizes. Length of the shield shall be 12" and up through 6"; 16" for 6" through 12"; and 20" over 12" IPS. Secure shields to pipe insulation with adhesive.

3.03 APPLICATION OF PIPE INSULATION

A. All pipe insulation shall be installed with joints butted firmly together.

B. Seal all punctures in vapor barrier jacket with vapor barrier adhesive on cold piping.

C. Jackets on pipe insulation shall be vapor sealed using self-sealing lap, lap-seal tape gun or adhesive such as 520.

D. All fiberglass insulation ends are to be tapered at 45° and sealed regardless of service

E. Insulation of valves and fittings

1. Valves and fittings
   a. Provide mitered sections of fiberglass insulation of same thickness and density as adjoining pipe insulation or provide insulating type cement equal to adjoining pipe insulation thickness.
   b. Cover insulation with vapor tight jacket of same jacket as adjoining pipe insulation.
   c. Do not insulate valves and unions on heating water service piping.

2. Elbows
   a. Insulate elbows with fiberglass insulation of same thickness and density as adjoining pipe insulation.
   b. A flexible fiberglass type insulation is not acceptable.
   c. Insulate elbows with high temperature rated fiberglass insulation for steam and condensate piping.
   d. Cover insulated elbows with pre-molded PVC elbow covers.
      (i) PVC covers shall be rated for 25 fire/50 smoke develop maximum.
      (ii) Manufacturer: Zeston; or approved equal

3. Mechanical couplings (mechanical contractor's option): Insulate all mechanical couplings in systems utilizing same (as determined by mechanical contractor) with manufacturer's molded fiberglass insulation sections. Insulation thickness shall be of same density, jacket and thickness as adjoining pipe insulation.

3.04 APPLICATION OF PROTECTIVE JACKETS

A. Apply minimum 0.016 thick aluminum metal rated jackets on all piping, as follows:

1. In public and occupied areas where pipe is subjected to damage from normal traffic.
2. All insulated pipe installed outdoors.
3. All exposed vertical and horizontal piping below 6'-0" AFF in mechanical rooms or occupied non-finished rooms, such as storage, work rooms, etc. This includes elbows and fittings. Not included are valves or strainers.
4. The metal jacket shall be retained with rivets or other suitable method that does not puncture the insulation.

3.05 APPLICATION OF EQUIPMENT INSULATION

A. General: Insulate all manholes, removable heads and access doors so they may be removed.

B. Round equipment: Secure insulation with 2" wide metal bands, 12" on center, or with mechanical pins welded to equipment 12" on center.

C. Flat or irregular equipment (metal partitions, plenums, etc.): Secure insulation with mechanical pins welded to equipment 12" on center each way.

END OF SECTION

SECTION 23 34 00

HVAC FANS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install fans as scheduled on the drawings and specified herein.

B. The fan types used on this project are:

1. Centrifugal Roof Exhaust Fan (Direct Drive)
2. ***Cabinet Centrifugal Direct Drive Fan (Addendum #2)***

1.02 DESIGN BASE

A. The construction drawings indicate a system based on the information available to Engineer by a selected manufacturer of equipment. Electrical services, size, configuration and space allocations are consistent with that manufacturer's information.

B. This manufacturer and other listed or approved manufacturers are encouraged to provide equipment on this project; however, it shall be the Contractor and/or Supplier's responsibility to assure the equipment is consistent with the design base. No extra compensation will be approved for revisions required by the manufacturer for any different services, space, clearances, etc.

1.03 COORDINATION

A. Provide coordination with the project Air Balance Contractor in the final balance of the fans.

B. Fan Speed Adjustment: external resistance (static pressure loss) for each fan system has been estimated and noted on the drawings. Fan speed and fan to motor drive will be selected based on this estimated static pressure loss. The static pressure loss is an estimate; actual loss of completed system may vary above or below estimate. Mechanical Contractor shall change pulleys or sheaves, as required, to suit actual job conditions at no additional cost to the Owner. Refer to Specifications Section 23 05 93, Testing, Adjusting and Balancing, for other requirements.

C. Should corrective work be required after the initial balance, the Contractor shall reimburse the Balancing Contractor for re-balancing. Refer to Specifications Section 23 05 93, Testing, Adjusting and Balancing.

1.04 SPARE PARTS

A. Furnish a spare set of belts for each, belt driven, fan in the project. Store the belts, clearly marked, as to the fan served, in the respective nearest mechanical room to the fan.

1.05 QUALITY ASSURANCE

A. Fans shall bear AMCA Certified Ratings Seal for both air and sound performance.

1.06 RELATED WORK SPECIFIED ELSEWHERE

A. General Provisions: Section 23 05 01

B. Assignment of Misc. Work: Section 23 05 02

C. Completion and Startup: Section 23 05 03

D. Common Motor Requirements: Section 23 05 13

E. Prefabricated Roof Curbs and Supports: Section 23 05 30

F. Vibration & Seismic Controls for Piping and Equipment: Section 23 05 48

G. Identification for Piping and Equipment: Section 23 05 53

H. Painting: Section 23 05 64

I. Sequence of Operations for Controls: Section 23 09 93

J. Temperature Control Dampers: Section 23 09 13.43

K. Variable Frequency Drives: Section 23 10 00

L. Electrical: Division 26

1.07 SUBMITTALS

A. Submit shop drawings for each fan to be furnished on this project in accordance with Specifications Section 23 05 01, General Provisions.

B. Submittals shall include fan curve (graphic) for each fan with the design conditions plotted. (Tables are not acceptable). Forward a copy of each fan curve to the project Balancing Contractor.

C. Submit installation instructions, parts lists and operation/maintenance data for each fan size and type.

PART 2 - PRODUCTS

2.01 CENTRIFUGAL ROOF EXHAUST FAN (DIRECT DRIVE)

A. Provide, where shown on the drawings, roof type, direct drive centrifugal exhaust fan with a spun aluminum housing of the size and capacity shown on the schedule.

B. Fans shall have a backward inclined wheel statically and dynamically balanced, heavy gauge bird-screen and internally mounted, UL approved disconnect switch. Provide a back-draft damper at the fan inlet, if scheduled.

C. Spun aluminum housing shall be secured with stainless steel fasteners.

D. Fan wheel, drive and motor shall be mounted on rubber-in-shear and compression isolators.

E. Motor compartment shall be force cooled type.

F. Fan wheels shall be spark-proof and motors shall be explosion proof when noted on the schedule.

G. Motors shall be continuous duty, heavy ball bearing type. Motor shall be installed on an adjustable base.

H. Manufacturers

1. Greenheck
2. Jenn Air
3. Loren Cook
4. Penn Ventilator
5. ***Delhi Blowers by Canarm HVAC (Addendum #2)***
6. ***Twin City (Addendum #2)***

2.02 CABINET CENTRIFUGAL DIRECT DRIVE FAN (Addendum #2)

A. Duct mounted exhaust fans shall be of the centrifugal, direct drive type. The fan housing shall be constructed of heavy gauge galvanized steel and shall include pre-punched mounting brackets. Fans shall be UL/CUL 507 listed.

B. The housing interior shall be lined with 0.5 in acoustical insulation. The outlet duct collar shall include an aluminum back-draft damper and shall be adaptable for horizontal or vertical discharge.

C. The access for wiring shall be external. The motor disconnect shall be internal and of the plug in type. The motor shall be mounted on vibration isolators.

D. The fan wheel(s) shall be of the forward curved centrifugal type, constructed of calcium carbonate filled propylene, stationary and dynamically balanced in accordance with AMCA Standard 204-05.

E. Manufacturers

1. ***Greenheck Model CSP***
2. ***Penn Ventilator***
3. ***Loren Cook***
4. ***Delhi Blower by Canarm HVAC***
5. ***Twin City***

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. Refer to drawings for location, size, capacity, mounting arrangement, and electrical characteristics for fans.

B. All fans shall be installed, aligned, lubricated, started and balanced all in accordance with the manufacturer's published instructions.

C. Maintain the cleanliness of the fans throughout the construction period, internally and externally. At completion, clean and restore the fans to new condition.

D. Single speed motor starters shall be furnished by Electrical Contractor. Coordinate electrical characteristics with Electrical Contractor.

E. Fans shall be installed with vibration isolators (where suspended from or supported on structure) and leveled.

F. Provide a roof curb of the same manufacturer as the fan. Refer to Specifications Section 23 05 30, Prefabricated Curbs and Equipment Supports, for requirements.

G. Install motorized dampers and actuators. Include all wiring, conduit and control from the fan starter.

3.02 STARTERS

A. Provide starters for exhaust fans scheduled to be two-speed.

B. Starters shall comply with requirements of Division 26 of the Specifications.

END OF SECTION

SECTION 23 37 23

HVAC GRAVITY VENTILATORS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide roof mounted relief and intake ventilators as shown on the drawings and as specified herein.

B. Provide prefabricated curbs as specified in Specifications Section 23 05 30, Prefabricated Curbs and Supports.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. General Provisions: Section 23 05 01

B. Assignment of Misc. Work: Section 23 05 02

C. Prefabricated Curbs and Supports: Section 23 05 30

1.03 SUBMITTALS

A. Submit shop drawings in accordance with Specification Section 23 05 01, General Provisions.

PART 2 - PRODUCTS

2.01 INTAKE AND RELIEF AIR HOODS

A. General: Provide intake and relief air hoods as shown and scheduled on drawings.

B. Construction

1. Constructed of heavy gauge anodized aluminum sheets with interlocking seams.
2. Support members shall be galvanized steel or aluminum.
3. Base construction shall be heavy gauge aluminum.
4. The underside of the hood and throat shall be insulated (1" thick).
5. Provide insect screens on outlets.
6. Provide a factory baked enamel finish to all exterior surfaces. Color to be selected by Architect.

C. Manufacturers:

1. Cook
2. Greenheck "Fabra-Hood"
3. Penn Ventilation
4. Twin City Fans

PART 3 - EXECUTION

3.01 GENERAL

A. Mount units level on prefabricated roof curb.

B. Provide counterflashing on curb. Roof flashing by General Contractor.

END OF SECTION

SECTION 23 73 01

COILS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide heating water coils in air handling units as scheduled on the drawings.

B. Provide chilled water cooling coils in air handling units as scheduled on the drawings.

C. Provide heating water coils in VAV terminal units as scheduled on the drawings.

D. Provide refrigerant cooling coils in air handling units as scheduled on the drawings.

E. Provide duct mounted heating water coils for installation by the Sheetmetal Contractor as scheduled on the drawings. (Addendum #2)

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. General Provisions: Section 23 05 01

B. Completion and Startup: Section 23 05 03

C. Identification for Piping and Equipment: Section 23 05 53

D. Testing, Adjusting and Balancing: Section 23 05 93

E. Chilled Water Piping System (Aboveground) (125psig): Section 23 21 01

F. Heating Water Piping Systems (Aboveground): Section 23 21 05

G. Refrigeration Piping System: Section 23 23 00

H. Air Handling Units: Section 23 73 00

I. HVAC Ducts and Casing: Section 23 31 00

J. VAV Terminal Units: Section 23 36 16

K. Instrumentation and Control Devices: Section 23 09 13

L. Sequence of Operation for Controls: Section 23 09 93

1.03 SUBMITTALS

A. Submit shop drawings on each coil specified herein in accordance with Specification Section 23 05 01, General Provisions.

PART 2 - PRODUCTS

2.01 GENERAL FOR ALL COILS

A. Coil capacities, pressure drops, leaving air temperatures and selection procedures shall be certified and labeled in accordance with ARI Standard 410-84 as applicable.

B. Mark coil entering and leaving connections. The leaving air stream shall contact the warmest fluid in heating coils and the coldest fluid in cooling coils.

2.02 HYDRONIC HEATING AND COOLING COILS IN AIR HANDLING UNITS

A. Coils shall have continuous configurated aluminum plate fin surface and seamless minimum " O.D. copper tubes for chilled water and 5/8" O.D. for heating water coils expanded into the aluminum fin collars for secure bonding. No soldering or tinning shall be used in the bonding process. Tube wall thickness shall be 0.034" minimum. Fin thickness shall be 0.010" minimum.

B. Cooling coils shall have a stainless steel casing with drilled mounting flange. Heating coils shall have minimum 16 gauge galvanized steel casing with drilled mounting flange. The coil shall be mounted in the coil casing with the same end connections to be accessible for service. Coils to have intermediate tube supports to prevent tube sagging.

C. Manufacturers coil headers within the air stream shall be copper.

D. Each coil shall be rated at 150 psig, proof tested at 300 psig, and leak tested at 200 psig.

E. Chilled water coils in air handling units shall be fully drainable with vent and drain connections.

F. When an air handling unit utilizes more than one cooling coil, the upper coil(s) shall be provided with a 4" deep stainless steel drain channel upstream and downstream of the coil to prevent condensate runoff from passing through the air stream of the lower coil. Provide minimum 1 inch copper drain leg from upper channel(s) to bottom drain.

2.03 DIRECT EXPANSION REFRIGERANT COOLING COILS

A. Refrigerant coils shall have an equalizing type vertical distribution to ensure that each coil circuit receives the same amount of refrigerant liquid.

B. Coils shall be proof tested at 450 psig and leak tested at 300 psig with air pressure under water, then cleaned, dehydrated and filled with a holding charge of dry nitrogen to 10 psig for shipment.

C. Coils shall be provided with a minimum of two refrigerant circuits of approximately equal capacity (two liquid and two suction connections). Circuiting shall be arranged for intertwined circuiting to maximum dehumidification at part load conditions.

D. Suction headers shall be seamless copper (round) suitable for sweat connection.

E. Manufacturers

1. Daikin
2. Trane
3. York

2.04 HEATING WATER COILS (VARIABLE AIR VOLUME TERMINAL UNITS)

A. Coils shall have continuous configurated aluminum plate fin surface and seamless minimum 5/8" O.D. for heating water coils expanded into the aluminum fin collars for secure bonding. No soldering or tinning shall be used in the bonding process. Tube wall thickness shall be 0.034" minimum. Fin thickness shall be 0.010" minimum.

B. Coils shall have a minimum 16 gauge galvanized steel casing with drilled mounting flange except where noted otherwise. The coil shall be mounted in the coil casing with the same end connections to be accessible for service. Coils to have intermediate tube supports to prevent tube sagging.

C. Coils shall be rated at 150 psig and leak tested at 300 psig.

D. Coils shall be selected for a maximum of 120 fins per foot.

E. Provide flanges to facilitate duct installation.

F. Manufacturers same as VAV terminal unit manufacturer, see Section 23 36 16

2.05 HEATING WATER COILS (DUCT MOUNTED) (Addendum #2)

A. Coils shall be constructed for same end connections for one or two rows.

B. Provide flanges to facilitate duct installation.

C. Duct coils shall be leak tested at 300 psig.

D. Coils shall be selected for a maximum of 80 fins per foot.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Air handling unit coils shall be set and rigidly supported with angles and fastened to the unit.

B. All coils shall be pitched for proper coil drainage.

END OF SECTION

SECTION 23 82 23

CLASSROOM UNIT VENTILATORS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install classroom unit ventilators as shown and scheduled on the drawings.

B. Classroom unit ventilators shall be furnished complete with controls as specified herein or partial controls compatible with auxiliary control devices as shown on the drawings.

C. Units shall be furnished complete with pre-piped valve package as specified herein.

1.02 DESIGN BASE

A. The construction drawings indicate a system based on the information available to Engineer by a selected manufacturer of equipment. Electrical services, size, configuration and space allocations are consistent with that manufacturer's information.

B. This manufacturer and other listed or approved manufacturers are encouraged to provide equipment on this project; however, it shall be the Contractor and/or Supplier's responsibility to assure the equipment is consistent with the design base. No extra compensation will be approved for revisions required by the manufacturer for any different services, space, clearances, etc.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. General Provisions: Section 23 05 01

B. Identification of Piping and Equipment: Section 23 05 53

C. Testing Adjusting and Balancing: Section 23 05 93

D. Vibration and Seismic Controls: Section 22 05 48

E. Chilled Water Piping System (Aboveground) (125psig): Section 23 21 01

F. Heating Water Piping Systems (Aboveground): Section 23 21 05

1.04 SUBMITTALS

A. Submit shop drawings for each piece of equipment specified herein in accordance with Specifications Section 23 05 01, General Provisions.

PART 2 - PRODUCTS

2.01 CLASSROOM UNIT VENTILATOR

A. Furnish and install classroom unit ventilators as shown and scheduled on the drawings. The units shall be installed in a neat and workmanlike manner in accordance with these specifications.

B. Basic Unit Enclosure

1. Basic unit enclosures shall be of quality construction utilizing heavy gauge steel with exposed edges rounded. Front panels shall be secured by fasteners which will retain the panels snugly after repeated use and shall be operated with a tool not readily available to unauthorized personnel.
2. All steel surfaces shall be cleaned, phosphatized and prime coated with baked enamel. Zinc coated steel shall be used for parts in contact with conditioned air or condensate. Visible surfaces shall then have a final baked enamel finish; color as selected by the Architect.
3. Discharge grilles shall be constructed of heavy steel or extruded aluminum bars.
4. All enclosures shall be acoustically and thermally insulated.

C. The sound power level (10-12 watts) generated when producing the specified CFM shall not exceed the following in any octave band:

Mid-Frequency	Maximum Sound Power Level db*
125	68
250	66
500	60
1000	55
2000	48
4000	43
8000	38

*Data based on ASHRAE RSS calibration effective May 30, 1968.

Sound data for the units shall be based on tests in a sound laboratory reverberant room strictly conforming to ASHRAE Standard 36-62. The test procedures for determining the unit sound level shall be in accordance with ARI Standard 43.

D. Dampers: the units shall be equipped with gasketed and tight sealing mixing dampers to insure modulation and mixing of return and outside air. The arrangement of the dampers must prevent blowing outside air into the classroom. Bypass dampers shall be tight sealing and insulated for sound attenuation, prevention of condensate formation and to minimize heat pickup in bypass.

E. Fan Board: the unit fan board assembly shall be a single, rigid assembly of heavy steel construction and include the fans, fan housings, bearings and fan shaft. This assembly shall be isolated inside the unit. The fan wheels shall be centrifugal forward curved, double width type.

F. Motors: motors shall be permanent split capacitor of multiple speed operation with integral thermal overload protection and be easily accessible and removable without removing the fan board.

G. Hydronic Coils and Drain Pan: coils and drain pans shall be easily removable from the unit. Coils shall have continuous plate fin surface, with seamless copper tubes mechanically expanded into aluminum fin collars for secure, crack free bonding. Water coils shall have a manual air vent located at their high point and a drain plug located at the low point. Leak testing shall be at 250 psig air pressure under water.

H. Filters: filters shall be removable on vertical units without unlocking the front panel. Horizontal units shall have hinged bottom panels for access. Filters shall be permanent frame with replaceable woven glass fiber type media.

I. UL Listing: units shall be listed with Underwriters' Laboratories.

J. Accessories

1. Shelving shall be built so as to conform to the general styling of the unit ventilator. The shelving shall be constructed of heavy gauge finished in the same manner as the unit ventilator.
2. Outdoor air intake louvers shall be aluminum and coated with a methacrylate resin lacquer.
3. End compartments shall be at least 13 inches wide to facilitate access to controls and coil connections.
4. Provide all necessary piping channels, filler pieces, ends, etc. required to obtain continuous and compatible enclosures consistent with each unit location.

K. Manufacturers:

1. American Air Filter
2. Trane
3. Modine

PART 3 - EXECUTION

3.01 GENERAL

A. Location, sizes, mounting arrangement and electrical characteristics shall be as noted on the drawings.

B. Clean and lubricate all units.

C. Test each unit to assure designed performance.

D. Clean filter prior to final inspection.

E. Do not run units without filter.

F. Suspend horizontal units from structure. Unit shall be level to obtain proper drainage.

G. Field measure existing conditions prior to ordering units to obtain adequate filler sections.

END OF SECTION

SECTION 23 82 39

TERMINAL HEATING UNITS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install material, labor and accessories required for the following pieces of equipment as shown on the drawings and specified herein.

~~1.~~ ~~Radiant panels~~
2. Cabinet unit heaters
~~3.~~ ~~Propeller unit heaters~~
4. Finned tube radiation
5. Convectors

1.02 DESIGN BASE

A. The construction drawings indicate a system based on the information available to Engineer by a selected manufacturer of equipment. Electrical services, size, configuration and space allocations are consistent with that manufacturer's information.

B. This manufacturer and other listed or approved manufacturers are encouraged to provide equipment on this project; however, it shall be the Contractor and/or Supplier's responsibility to assure the equipment is consistent with the design base. No extra compensation will be approved for revisions required by the manufacturer for any different services, space, clearances, etc.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. General Provisions: Section 23 05 01

B. Completion and Startup: Section 23 05 03

C. Identification for Piping and Equipment: Section 23 05 53

D. Testing, Adjusting and Balancing: Section 23 05 93

E. Sequence of Operation: Section 23 09 93

1.04 SUBMITTALS

A. Submit shop drawings on each piece of equipment specified herein per Specification Section 23 05 01, General Provisions.

PART 2 - PRODUCTS

2.01 CABINET UNIT HEATERS

A. Capacity, size and cabinet arrangement shall be as hereinafter specified and as shown and scheduled on the drawings.

B. Wall hung unit cabinets shall be constructed of minimum 16 gauge furniture steel with exposed corners rounded. Cabinet fronts shall be removable and be firmly secured with easy opening fasteners.

C. Cabinet types shall be as noted on the drawings or as described below.

1. Surface mounted wall hung units shall be suspended approximately 6" to 8" above the floor and have top outlet grille and open bottom inlet.
2. Horizontal recessed ceiling mounted units shall have front and rear face mounted grilles within a hinged face panel allowing access to all internal components. The unit shall be mounted tight to finished ceiling.
3. Inverted, recessed, and wall-hung units shall be of type with supply air at the bottom of the unit. Care shall be taken to invert bearing and motor oil cups.
4. Horizontal ceiling, surface or suspended mounted units shall have integral bottom, front and rear face grilles as shown on the drawings.

D. Cabinets in non-public areas shall have baked enamel finish. Custom color to be selected by and coordinated with Architect. Cabinets in public areas shall have a primer coat of paint suitable for final paint in the field by the Painting Contractor.

E. Inlet and outlet grilles shall be stamped as integral part of cabinet except where otherwise noted.

F. Fan motors shall be for voltage scheduled and mounted in rubber and shall not transmit vibration to unit cabinet or surrounding construction. Motor controller shall be factory mounted.

G. Provide factory disconnect switch.

H. Filter: Easily accessible and replaceable one inch thick glass fiber throwaway filter located to filter the full air stream before the coil and fan. Vertical cabinet units may allow for filter removal without removing the front panel from the unit. Filter efficiency shall be minimum MERV-8.

I. Coils shall be suitable for the heating water service temperature and medium used on this project as scheduled. Coils shall be constructed of copper tubing with non-ferrous fins securely fastened to tubing and properly tapped for required piping arrangement. Coils shall be reinforced with steel side plates. Coils shall be factory burst tested at 450 psig and air under water leak tested at 100 psig. Copper tubing shall be rated for 300 psig, 200°F. Coils shall be mounted on adjustable clips and pitched to insure proper circulation and drainage.

J. Fans shall be forward curved, squirrel cage type, statically and dynamically balanced. Drive may be either V-belt or direct drive, three speed motors.

K. Manufacturers:

1. AFF
2. Airtherm
3. Reddi
4. Rittling
5. Slant Fin
6. Sterling
7. Trane
8. York
9. ***VTS "Volcano" (Addendum #2)***
10. ***Vulcan (Addendum #2)***

~~2.02 HEATING WATER RADIANT CEILING PANELS~~ ADDENDUM #2

~~A. Unit capacity, heating medium, temperature and size shall be as shown on the drawings and scheduled.~~

~~B. Heating element shall be of " I.D. copper tubing bonded to a 0.04" aluminum face plate. Provide tube ends to accept " O.D. Type L copper pipe connections.~~

~~C. Provide 1" thick, 3/4 pound density fiberglass insulation on the back of the panel.~~

~~D. The panels shall be suitable for installation into a standard ceiling grid system. Panel weight shall not exceed 1.5 pounds per square foot when filled with water.~~

~~E. Panel finish shall be baked enamel in a standard pattern and color as selected by and coordinated with Architect.~~

~~F. Panels, when shown mounted end to end, shall be butt jointed to obtain a clean, broken appearance acceptable to the Architect.~~

~~1. Manufacturer: Airtex Corporation; *or* approved equal~~

~~2.03 PROPELLER UNIT HEATERS~~ ADDENDUM #2

~~A. Unit heater capacity, heating medium, motor size, rpm and mounting type shall be as shown and scheduled on the drawings.~~

~~B. Casings shall be constructed of heavy gauge steel fitted with threaded hanger rod connections, and painted with finished enamel at factory, in a standard gray color.~~

~~C. Coils shall be suitable for heating water service temperature and medium as scheduled and constructed with non-ferrous fins securely bonded to seamless copper tubing. Coils shall be factory leak tested at 450 psig air underwater. Copper tubing shall be rated for 225 psi, 325°F.~~

~~D. Propeller fans shall be statically and dynamically balanced and vibration free. Fan blades shall be of heavy gauge construction.~~

~~E. Fan motors shall be mounted in rubber to prevent vibration transfer. Motors located within the airstream shall be totally enclosed. Open motors may only be used where protected from the airstream.~~

~~F. Horizontal throw unit heaters shall have double deflection discharge louvers. Vertical throw unit heaters shall have adjustable fan discharge louvers.~~

~~G. Manufacturers:~~

~~1. AAF~~
~~2. Airtherm~~
~~3. Reddi~~
~~4. Rittling~~
~~5. Slant Fin~~
~~6. Sterling~~
~~7. Trane~~
~~8. York~~

2.04 CONVECTORS

A. Unit capacity, heating medium, temperature and installed lengths as shown on the drawings and scheduled.

B. Heating element of steel piping or annealed copper tubing having nominal diameter as shown on the drawings and provided with aluminum or copper fins with tubing extended into shoulders of fins to form solid permanent bond.

C. Enclosure constructed of not less than 14 gauge steel with removable cover. Enclosure finish to have baked enamel finish. Color to be selected by and coordinated with Architect. Top outlet shall be integral sloping grille.

D. Manufacturers:

1. Trane
2. York
3. Modine
4. ***VTS "Volcano" (Addendum #2)***
5. ***Vulcan (Addendum #2)***
6. ***Sterling (Addendum #2)***
7. ***Price (Addendum #2)***

2.05 *FIN TUBE RADIATION* (ADDENDUM #2)

A. Unit capacity, heating medium, temperature and installed lengths as shown on the drawings and scheduled.

B. Heating element of steel pipe or annealed copper tubing having nominal diameter as shown on the drawings and provided with aluminum or copper fins with tubing extended into shoulders of fins to form solid permanent bond.

C. Manufacturer to furnish manual valves for each separate fed run of baseboard.

D. Baseboard capacity as rated by IBR.

E. Install radiation type expansion compensator for each straight run of baseboard over 25 feet in length.

F. Manufacturers:

1. AAF
2. Sterling
3. Trane
4. York
5. VTS "Volcano"
6. Vulcan

PART 3 - EXECUTION

3.01 INSTALLATION

A. Coordinate location with trade constructing wall to ensure proper location and mounting. Cabinet heaters when installed in entry vestibules shall be centered on the wall horizontally.

END OF SECTION

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SITE LAYOUT NOTES

1. ALL DIMENSIONS IN CURBED AREAS ARE FACE TO FACE OF CURB.
   ALL DIMENSIONS IN AREAS WITHOUT CURB SHALL BE TO EDGE OF PAVEMENT.
2. ALL EXISTING PAVEMENT SHALL BE SAW CUT TO A CLEAN EDGE WHERE NEW PAVEMENT IS TO BE INSTALLED ADJACENT TO EXISTING PAVEMENT.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD BEFORE STARTING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD DIMENSIONS. IF ANY DISCREPANCIES ARE FOUND IN THESE PLANS FROM ACTUAL FIELD CONDITION, THE CONTRACTOR SHALL CONTACT A/E IMMEDIATELY.
4. SEE DETAIL SHEETS FOR TYPICAL CONSTRUCTION DETAILS.
5. ALL AREAS WHERE THE EXISTING PAVEMENT OR PAVEMENTS ARE DAMAGED DURING CONSTRUCTION FROM TRAFFIC BY THE GENERAL CONTRACTOR, SUBCONTRACTORS, OR SUPPLIERS SHALL BE RESURFACED OR RECONSTRUCTED AT LEAST TO THEIR ORIGINAL CONDITION AFTER CONSTRUCTION WORK IS COMPLETED.
6. ALL RADII INDICATED SHALL BE FORMED AS CIRCULAR ARCS.
7. ALL DIMENSIONS ARE PARALLEL AND PERPENDICULAR TO RIGHT-OF-WAY LINES OR PROPERTY LINES, UNLESS OTHERWISE NOTED.
8. DISABLED RAMPS SHALL BE IN ACCORDANCE WITH FEDERAL, STATE, COUNTY, CITY AND LOCAL CODES. SEE PLAN FOR LOCATION AND DETAIL SHEETS FOR SPECIFICATIONS.
9. SEE DETAIL SHEETS FOR TYPICAL PAVEMENT SECTIONS AND CURB DETAILS.
10. ENDS OF ALL CURBS SHALL BE CHAMFERED.
11. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AT HIS EXPENSE ALL AUTOMOBILE AND PEDESTRIAN TRAFFIC CONTROL DEVICES REQUIRED BY FEDERAL, STATE, COUNTY, CITY OR LOCAL AGENCY. THE AMOUNT, LOCATION AND SIZE SHALL BE PER DIRECTION OF AGENCY,
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ALL MUD, DIRT, GRAVEL, AND ANY OTHER MATERIALS TRACKED ONTO ANY PUBLIC OR PRIVATE STREETS OR SIDEWALKS. THE CONTRACTOR MUST CLEAN THESE DAILY IF NECESSARY. THE CONTRACTOR MUST USE WATER OR OTHER METHODS TO KEEP AIRBORNE DUST TO A REQUIRED MINIMUM.
13. ALL AREAS WHERE PROPOSED ASPHALT PAVEMENT MEETS THE EXISTING PAVEMENT THE EXISTING PAVEMENT EDGE SHALL BE PROPERLY SEALED WITH A TACK COAT MATERIAL.
14. ALL CURB RADIUS TO BE A MINIMUM OF 2'-0" UNLESS NOTED OTHERWISE.

SITE LEGEND

- ASPHALT PAVEMENT =
- ASPHALT OVERLAY =
- CONCRETE SIDEWALK =
- CONCRETE PAVEMENT =
- LANDSCAPE GRAVEL =

KEY NOTES

1. 4" CONCRETE SIDEWALK (SEE DETAIL ON C801)
2. 8" CONCRETE PAVEMENT (SEE DETAIL ON C801)
3A. STANDARD DUTY ASPHALT PAVEMENT (SEE DETAIL ON C801)
3B. HEAVY DUTY ASPHALT PAVEMENT (SEE DETAIL ON C801)
4. ASPHALT OVERLAY (SEE DETAIL ON C801)
5. INTEGRAL WALK & CURB (SEE DETAIL ON C801)
6. 6" PIPE BOLLARD (SEE DETAIL ON C801)
7. 4" PAINTED STRIPE, YELLOW
8. 4" STRIPING, 45°, YELLOW, 3' O.C.
9. 4" STRIPING, 45°, BLUE, 3' O.C.
10. 4" STRIPING, 45°, WHITE, 3' O.C.
11. 4' HIGH BLACK PVC COATED CHAIN LINK FENCE
12. 6' - 10' HIGH TREX SECLUSIONS (OR APPROVED EQUAL) PRIVACY FENCE (COLOR SELECTION BY ARCHITECT)
13. ENCLOSURE FENCING (6' HIGH TREX SECLUSIONS (OR APPROVED EQUAL) PRIVACY FENCE)
14. I.D.O. MONUMENT SIGN (SEE ELECTRICAL PLANS)
15. 1 FT. DIA. CONCRETE BOLLARD (SEE DETAIL ON C801)
16. LANDSCAPE GRAVEL MULCH
17. RELOCATE EXISTING MAILBOXES

SITE LAYOUT PLAN

SCALE: 1" = 30'

LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

CIRCLE DESIGN GROUP

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY RENOVATION
121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

DAVID B. HUFFMAN
REGISTERED
No. 910023
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:	#	Date	Desc.
1	1	5/31/22	Addendum #2

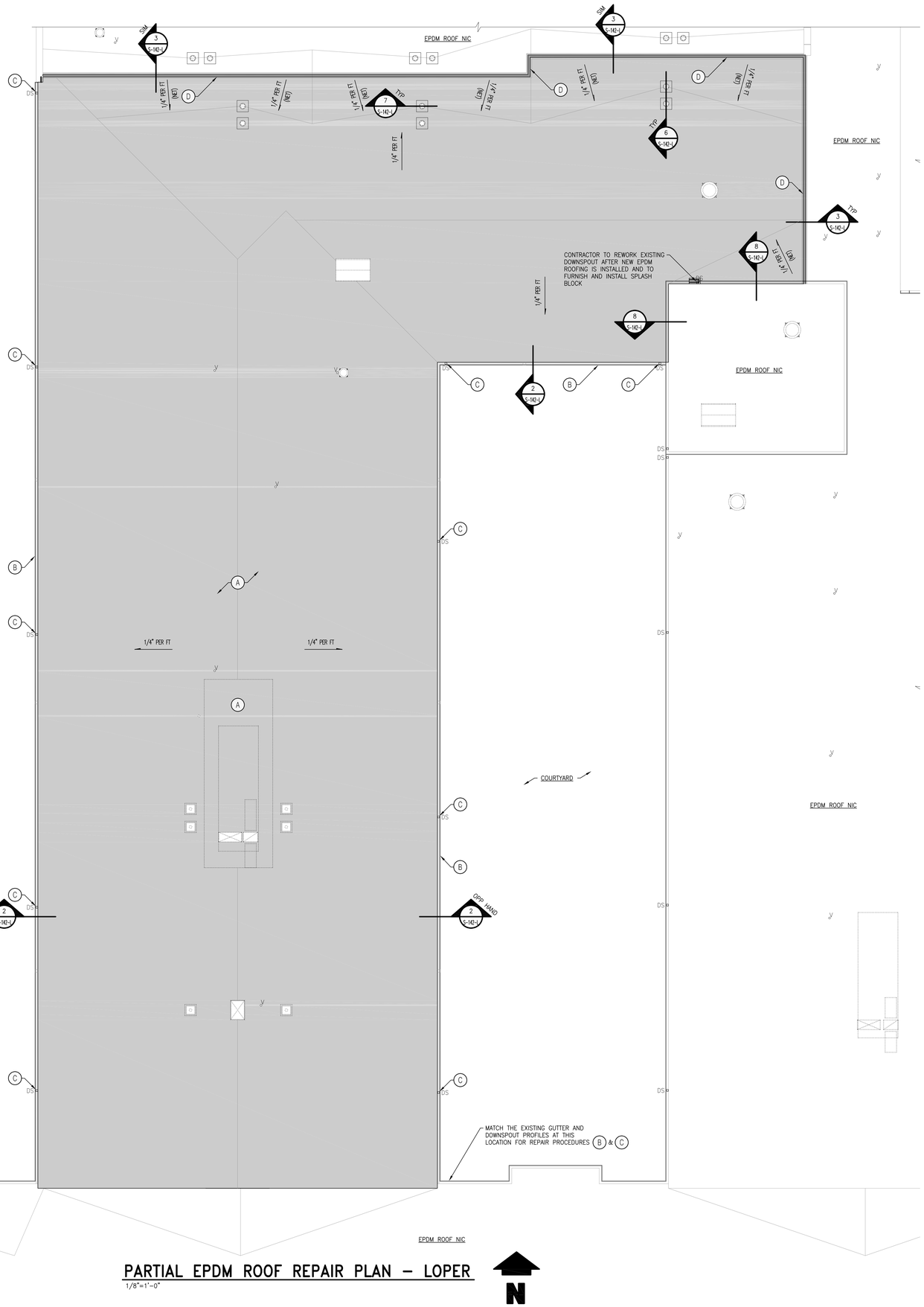
CONSTRUCTION DOCUMENTS

PROJECT: #21139
DATE: 04.26.22
DRAWN BY: DBH

SITE LAYOUT PLAN

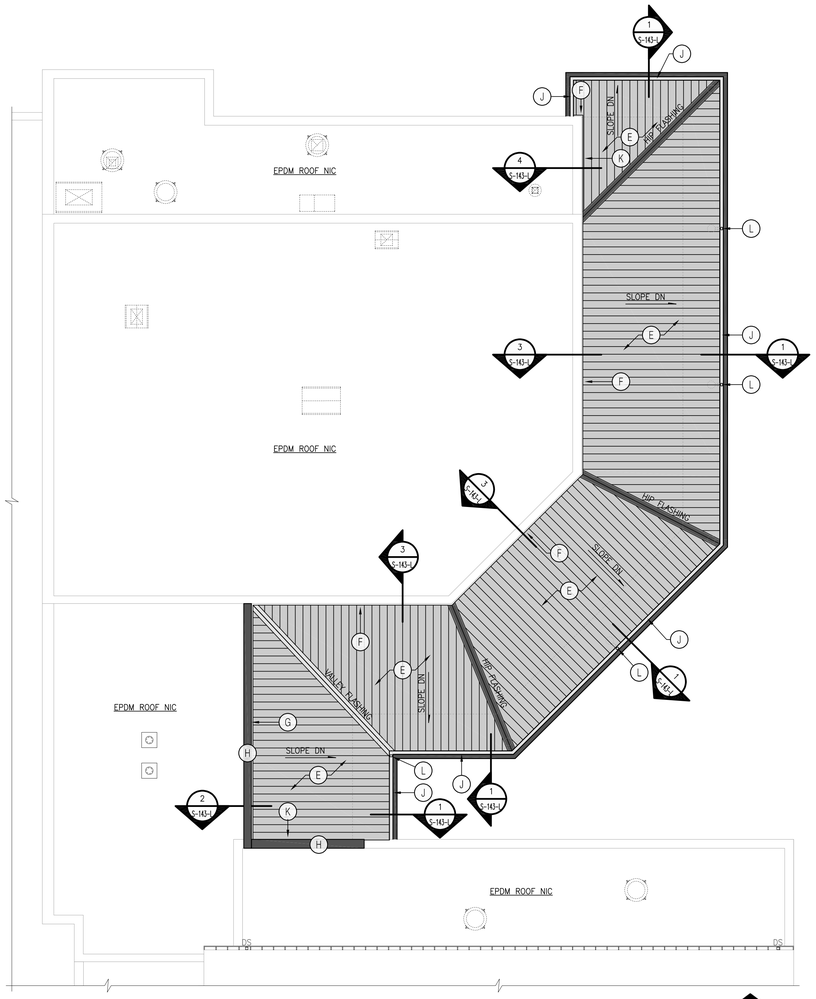
C201

Indiana811 Know what's below. Call before you dig.



PARTIAL EPDM ROOF REPAIR PLAN – LOPER

1/8"=1'-0"



PARTIAL STANDING SEAM ROOF REPAIR PLAN – LOPER

1/8"=1'-0"

GENERAL NOTES

1. CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS SHOWN ON THESE DRAWINGS.
2. CONTRACTOR SHALL PROTECT THE EXISTING STRUCTURE AGAINST THE INTRUSION OF MOISTURE AT ALL TIMES.
3. CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNDESIRABLE CONDITIONS NOT IDENTIFIED ON THESE PLANS. NO WORK SHALL BE PERFORMED IN THESE AREAS UNTIL APPROVED BY THE OWNER'S REPRESENTATIVE.
4. EXTREME CARE SHALL BE TAKEN AT EXISTING BUILDING COMPONENTS SO AS NOT TO DAMAGE EXISTING MATERIALS THAT ARE TO REMAIN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REPORT ANY DAMAGE OF EXISTING MATERIALS TO THE OWNER'S REPRESENTATIVE. THE CONTRACTOR WILL REPAIR OR REPLACE ANY DAMAGED MATERIALS TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL CHARGE.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
6. THE CONTRACTOR SHALL REPAIR ALL DISTURBED CAULK JOINTS NOT INCLUDED IN THE SCOPE OF THE WORK.
7. CLEAN AND SCRAPE CAULKING OFF FACE OF THE MASONRY.
8. IT SHALL BE IMPERATIVE THAT ALL SEALANT JOINTS MATCH EXISTING ADJACENT JOINTS IN COLOR AND TEXTURE WHEN PROPERLY TOOLED IN PLACE.
9. ALL GRINDERS SHALL HAVE VACUUM DUST COLLECTION UNITS ATTACHED TO THEM.

SEE MEP SHEETS FOR ROOF FLASHING SCOPE RELATED TO ROOFTOP EQUIPMENT REPLACEMENT AND/OR MODIFICATIONS

REPAIR PROCEDURES

EPDM ROOFING

- (A) FURNISH AND INSTALL EPDM MEMBRANE ROOFING SYSTEM
- (B) FURNISH AND INSTALL F-STYLE BOX GUTTERS TO MATCH ADJACENT EXISTING SOUTH WING GUTTERS
- (C) FURNISH AND INSTALL DOWNSPOUTS TO MATCH ADJACENT EXISTING SOUTH WING DOWNSPOUTS
- (D) FURNISH AND INSTALL EXPANSION JOINT

STANDING SEAM ROOFING

- (E) FURNISH AND INSTALL STANDING SEAM ROOFING SYSTEM
- (F) FURNISH AND INSTALL HEADWALL FLASHING & REGLET-TYPE COUNTERFLASHING
- (G) FURNISH AND INSTALL HEADWALL FLASHING & STANDING SEAM SIDING
- (H) FURNISH AND INSTALL MANUFACTURED COPING
- (J) FURNISH AND INSTALL GUTTER LINER AND STANDING SEAM FASCIA
- (K) FURNISH AND INSTALL SIDEWALL FLASHING AND REGLET TYPE COUNTERFLASHING
- (L) FURNISH AND INSTALL DOWNSPOUTS TO MATCH THE EXISTING PROFILE

LEGEND

- NEW EPDM ROOFING ASSEMBLY
- NEW STANDING SEAM ROOFING ASSEMBLY
- MECHANICAL EQUIPMENT (SEE MEP SHEETS)
- PIPE VENT (SEE MEP SHEETS)
- NIC – NOT IN CONTRACT
- DS – DOWNSPOUT
- RD ORD – ROOF DRAIN
- ROOF SLOPE

LOPER ELEMENTARY SCHOOL ADDRESS:

901 LOPER DRIVE
SHELBYVILLE, IN 46176

N
TRUE NORTH

LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

ARSEE ENGINEERS | SINCE 1888
CLIENT ORIENTED - BY DESIGN
9715 KINCAID DRIVE, SUITE 100 FISHERS, INDIANA 46037-9459
317.594.6152 PHONE
317.594.6580 FAX

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD. SHELBYVILLE, IN 46176

REVISIONS:

#	Date	Desc.
1	05.24.2022	Addendum 1 (NEW SHT)
2	05.31.2022	Addendum 2

BRYAN R. WILSON
REGISTERED
No. PE11500318
STATE OF INDIANA
PROFESSIONAL ENGINEER

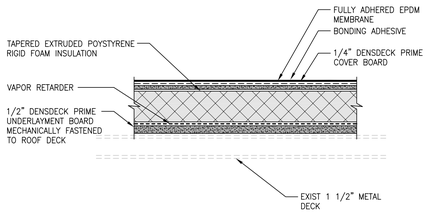
100% CONSTRUCTION DOCUMENTS

PROJECT:	#21139
DATE:	04.27.2022
DRAWN BY:	JND

PARTIAL ROOF REPAIR PLANS LOPER

S-141-L

PLOT DATE/TIME:



PROPOSED TYPICAL EPDM ROOF PROFILE

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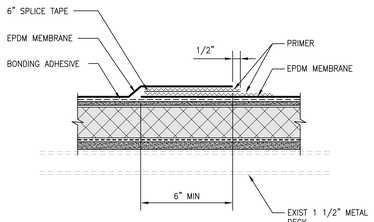

TYPICAL HORIZONTAL LAP SPLICE DETAIL

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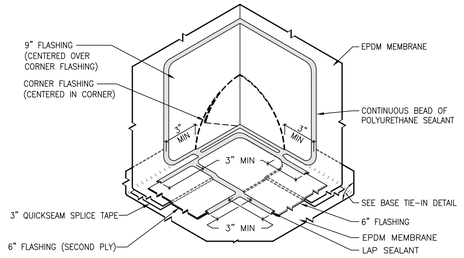

TYPICAL INSIDE CORNER DETAIL

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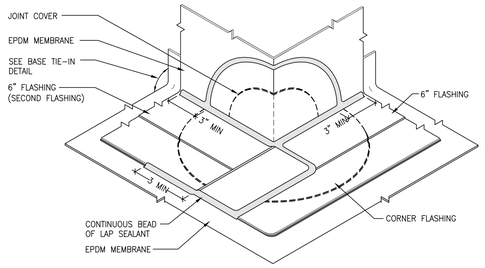

TYPICAL OUTSIDE CORNER DETAIL

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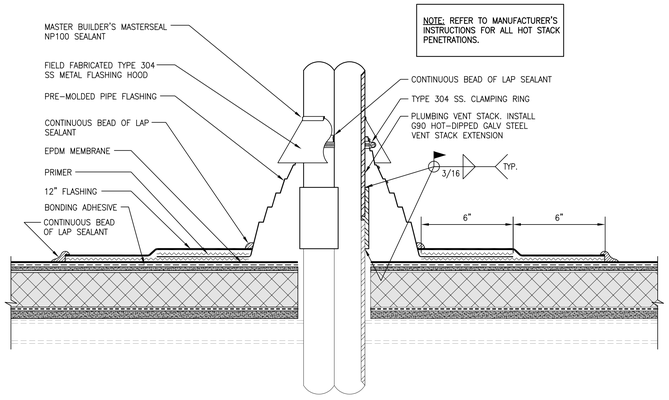

TYPICAL PIPE PENETRATION DETAIL

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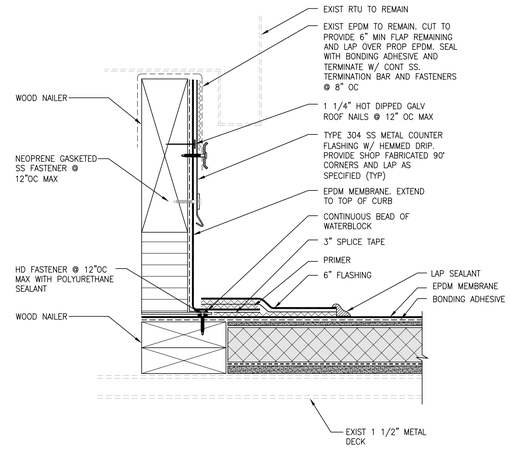

TYPICAL CURB WITH NON-REMOVABLE FLASHING

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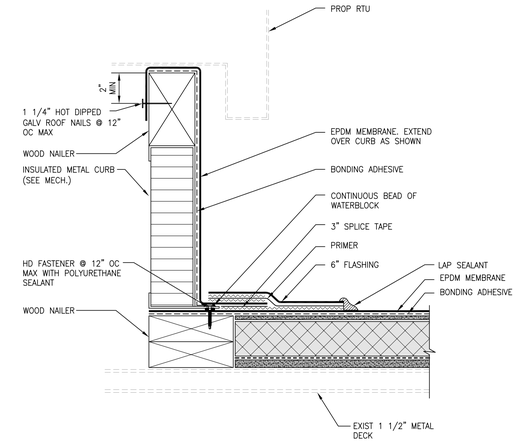

TYPICAL CURB WITH REMOVABLE FLASHING

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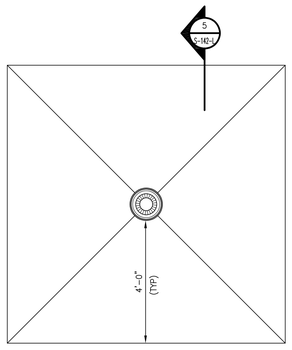
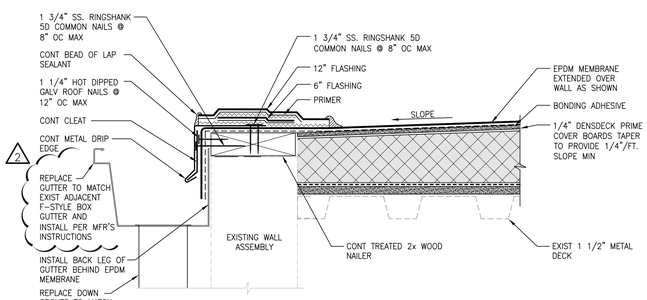


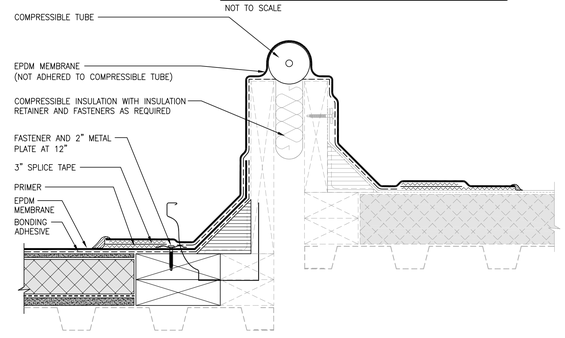
TYP SUMP PLAN 1 S-142-L

1/2"=1'-0"



ROOF DRIP EDGE DETAIL 2 S-142-L

NOT TO SCALE



EXPANSION JOINT DETAIL 3 S-142-L

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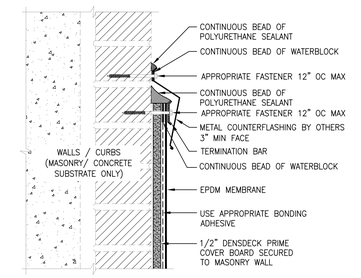
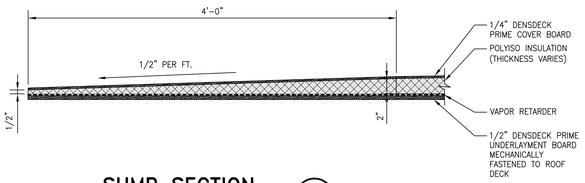


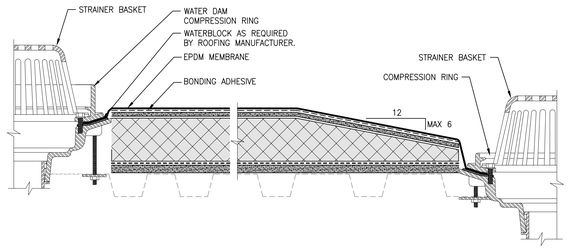
TERMINATION WITH SURFACE MOUNTED COUNTER-FLASHING AND TERMINATION BAR 4 S-142-L

NOT TO SCALE



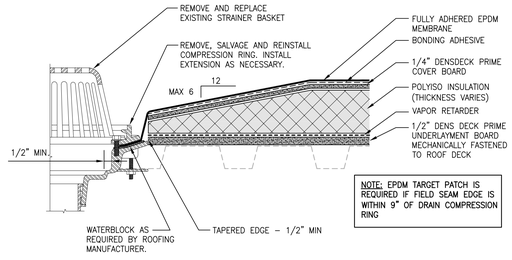
SUMP SECTION 5 S-142-L

1 1/2"=1'-0"



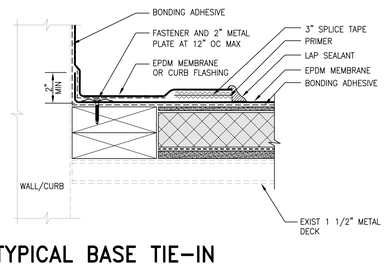
TYPICAL DRAIN WITH OVERFLOW DRAIN DETAIL 6 S-142-L

NOT TO SCALE



TYPICAL DRAIN DETAIL 7 S-142-L

NOT TO SCALE



TYPICAL BASE TIE-IN ROOFING TRANSITION DETAIL 8 S-142-L

NOT TO SCALE

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INDIANAPOLIS, IN 46202

ARSEE ENGINEERS | SINCE 1888
CLIENT ORIENTED - BY DESIGN
9715 KINCAID DRIVE, SUITE 100
FISHERS, INDIANA 46037-9459
317.594.6152 PHONE
317.594.6580 FAX

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD. SHELBYVILLE, IN 46176

BRYAN R. WILSON REGISTERED No. PE11500318 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	05.24.2022	Addendum 1 (NEW SHT)
2	05.31.2022	Addendum 2

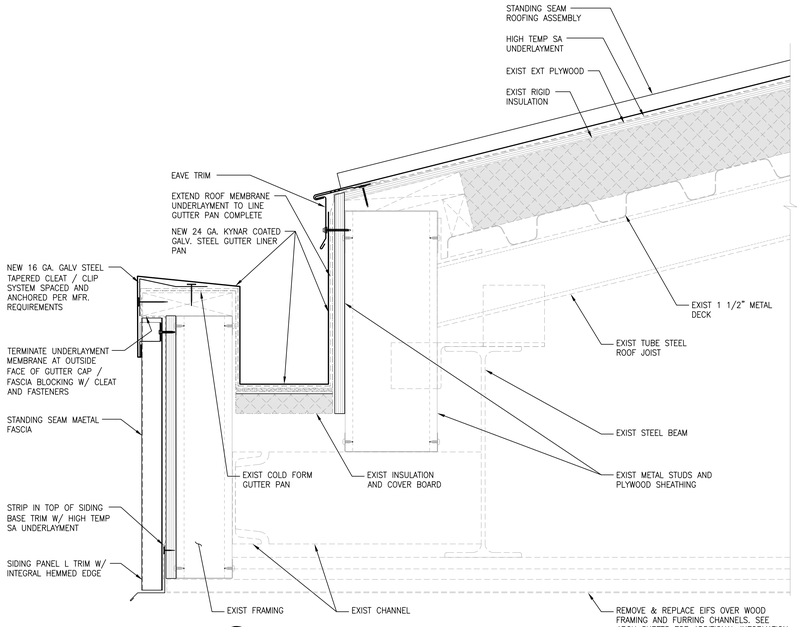
100% CONSTRUCTION DOCUMENTS

PROJECT: #21139
DATE: 04.27.2022
DRAWN BY: JND

TYPICAL EPDM ROOFING DETAILS LOPER

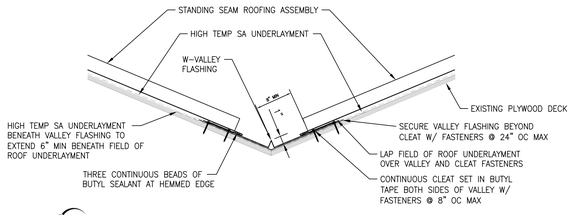
S-142-L

PLOT DATE/TIME:



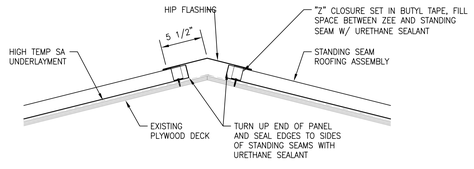
GUTTER LINER / EAVE DETAIL

3"=1'-0" — 1 / S-142-L



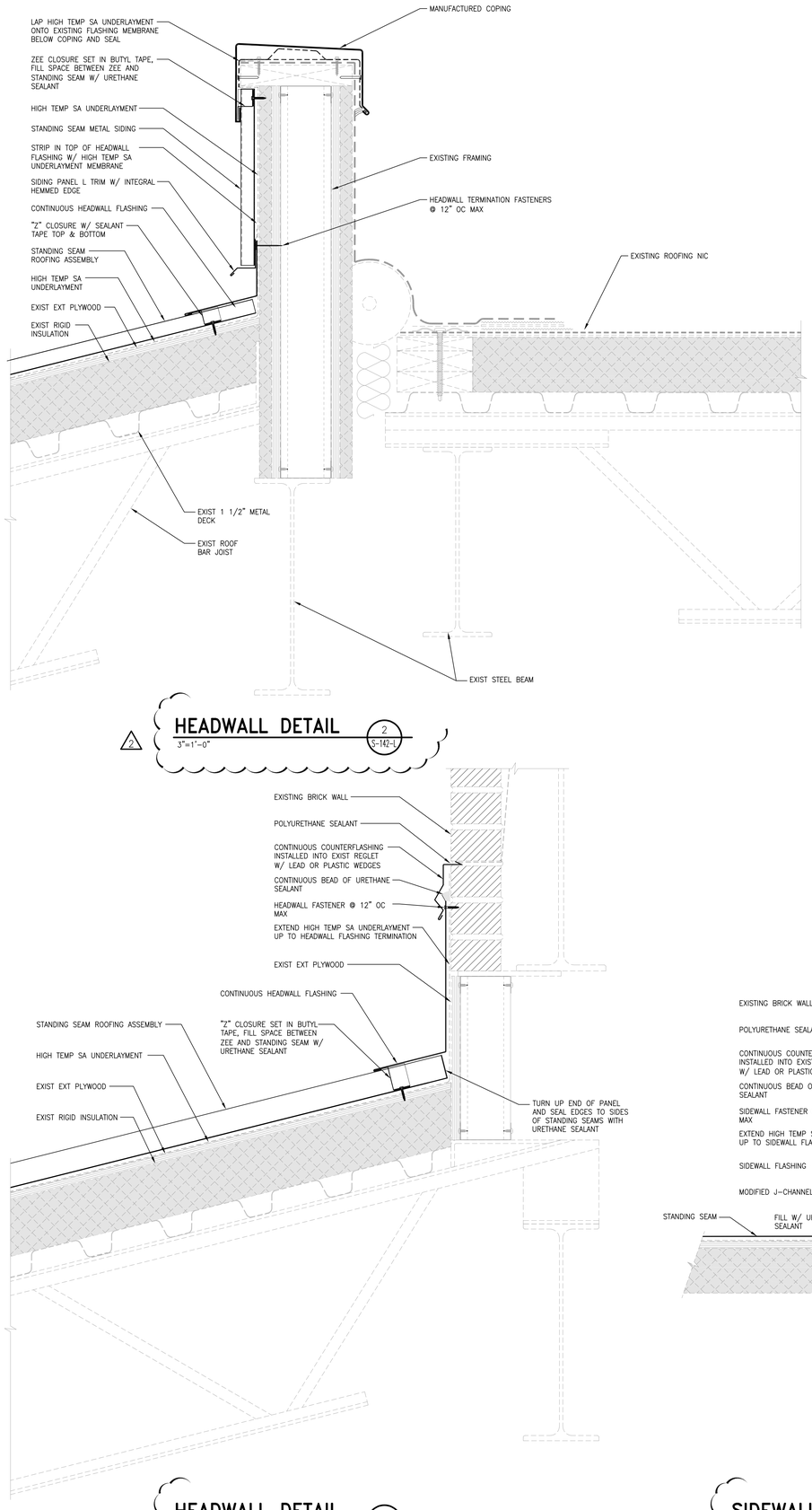
TYPICAL W-VALLEY FLASHING DETAIL

1 1/2"=1'-0"



TYPICAL HIP FLASHING DETAIL

1 1/2"=1'-0"

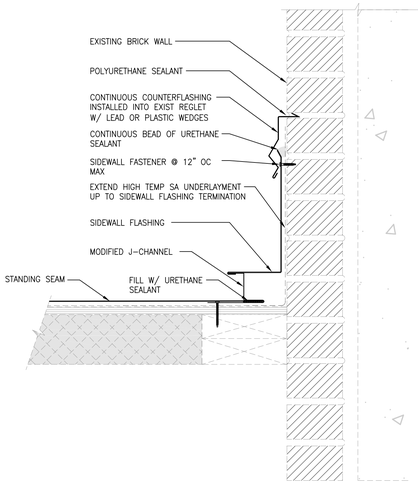


HEADWALL DETAIL

3"=1'-0" — 2 / S-142-L

HEADWALL DETAIL

3"=1'-0" — 3 / S-142-L



SIDEWALL DETAIL

3"=1'-0" — 4 / S-142-L

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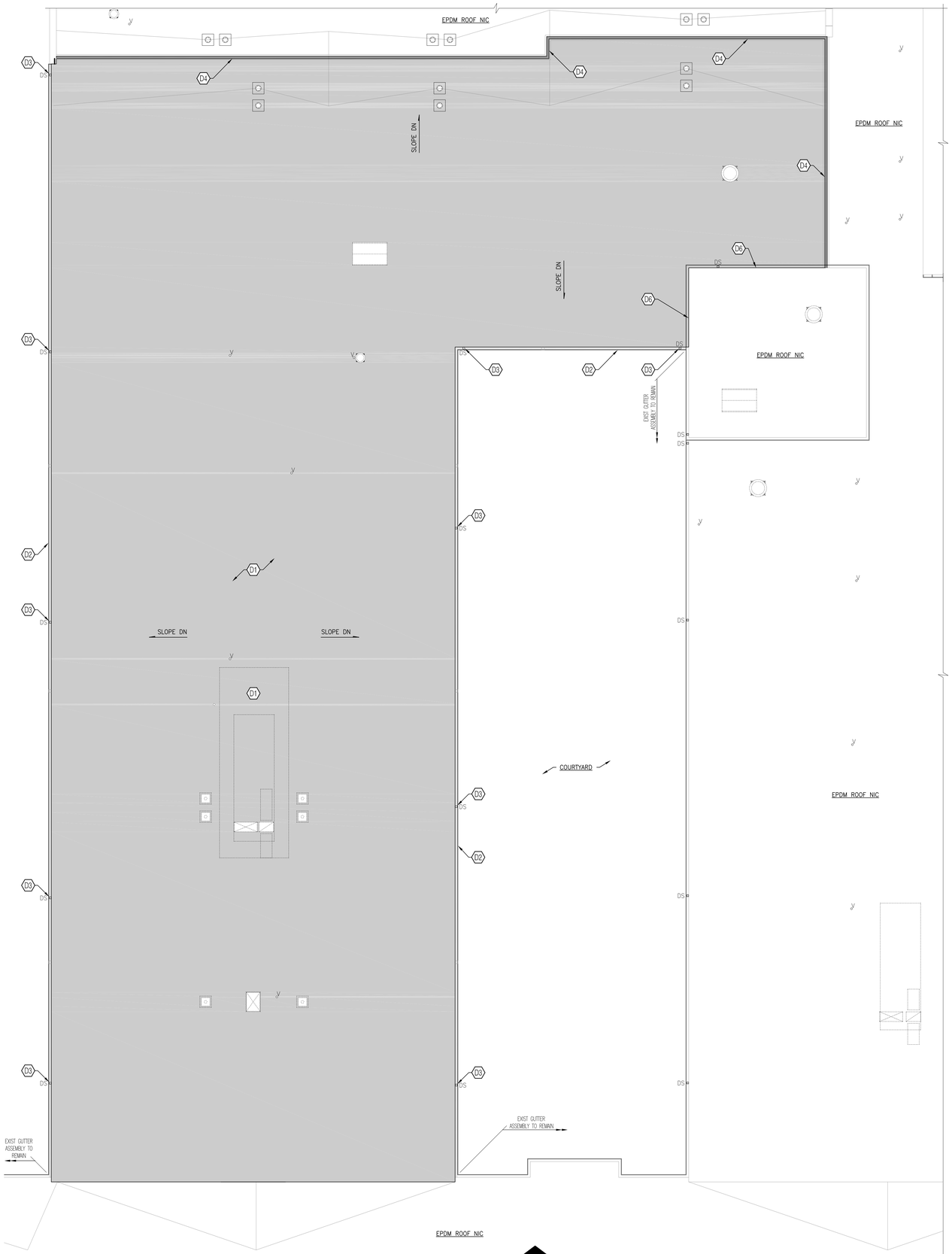
TYPICAL STANDING SEAM ROOFING DETAILS LOPER

S-143-L

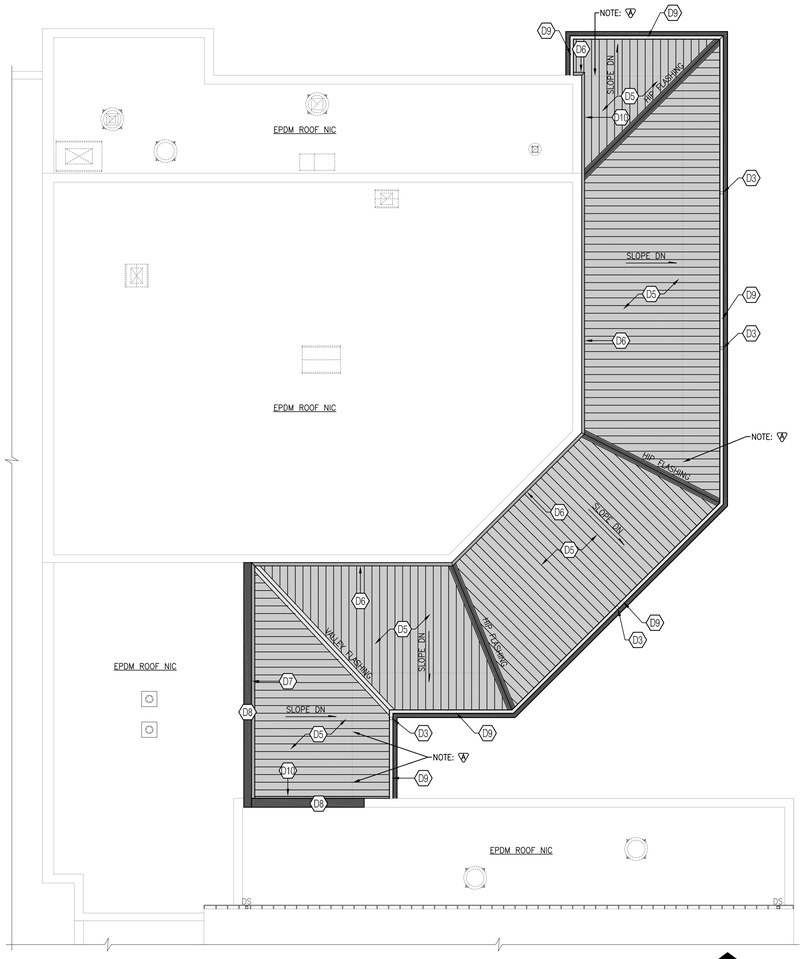
PLOT DATE/TIME:



PARTIAL EPDM ROOF DEMO PLAN – LOPER

1/8"=1'-0"

N



PARTIAL STANDING SEAM ROOF DEMO PLAN – LOPER

1/8"=1'-0"

N

DEMOLITION NOTES

1. WHERE DEMOLITION OF EXISTING ELEMENTS IS INDICATED BY GRAPHIC CONVENTION OR NOTATION, REMOVE ALL PORTIONS OF CONSTRUCTION OF THAT ELEMENT INCLUDING ITEMS MOUNTED TO, HOUSED WITHIN, OR OTHERWISE DEPENDENT UPON ELEMENT, UNLESS NOTED OTHERWISE.
2. EXAMINE THE AREAS AND CONDITIONS UNDER WHICH DEMOLITION WORK WILL BE PERFORMED. CORRECT CONDITIONS DETRIMENTAL TO TIMELY AND PROPER COMPLETION OF THE WORK. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.
3. PERFORM DEMOLITION WORK WITH APPROPRIATE CARE TO PREVENT DAMAGE TO EXISTING ELEMENTS WHICH ARE TO REMAIN IN PLACE. REPAIR DAMAGES TO PRE-CONSTRUCTION CONDITIONS.
4. COORDINATE WITH OWNER TO REVIEW RECORD INFORMATION OF EXISTING CONSTRUCTION / CONDITIONS WHEN NECESSARY. OWNER DOES NOT GUARANTEE ACCURACY OR RELIABILITY OF RECORD INFORMATION PROVIDED.
5. SITE ACCESS AND TEMPORARY CONTROLS: CONDUCT SELECTIVE DEMOLITION AND DEBRIS-REMOVAL OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH PARKING AREAS, WALKS, WALKWAYS, AND OTHER ADJACENT OCCUPIED AND USED FACILITIES.
6. TEMPORARY PROTECTION: PROVIDE TEMPORARY BARRICADES AND OTHER PROTECTION REQUIRED TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDINGS AND FACILITIES TO REMAIN.
   - 6.1. PROVIDE PROTECTION TO ENSURE SAFE PASSAGE OF PEOPLE AROUND SELECTIVE DEMOLITION AREA AND TO AND FROM OCCUPIED PORTIONS OF BUILDING.
   - 6.2. PROVIDE TEMPORARY WEATHER PROTECTION, DURING INTERVAL BETWEEN SELECTIVE DEMOLITION AND NEW CONSTRUCTION, TO PREVENT WATER LEAKAGE AND DAMAGE TO STRUCTURE AND INTERIOR AREAS.
7. DEMOLISH AND REMOVE EXISTING CONSTRUCTION ONLY TO THE EXTENT REQUIRED BY NEW CONSTRUCTION AND AS INDICATED. USE METHODS REQUIRED TO COMPLETE THE WORK WITHIN LIMITATIONS OF GOVERNING REGULATIONS AND AS FOLLOWS:
   - 7.1. USE HAND TOOLS OR SMALL POWER TOOLS DESIGNED FOR SAWING OR GRINDING, NOT HAMMERING AND CHOPPING, TO MINIMIZE DISTURBANCE OF ADJACENT SURFACES.
   - 7.2. LOCATE SELECTIVE DEMOLITION EQUIPMENT AND REMOVE DEBRIS AND MATERIALS SO AS NOT TO IMPOSE EXCESSIVE LOADS ON SUPPORTING STRUCTURES.
   - 7.3. DISPOSE OF DEMOLISHED ITEMS AND MATERIALS PROMPTLY.
8. EXCEPT FOR ITEMS OR MATERIALS INDICATED TO BE REUSED, REINSTALLED OR OTHERWISE INDICATED TO REMAIN OWNER'S PROPERTY, DEMOLISHED MATERIALS SHALL BECOME CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM THE PROJECT SITE.

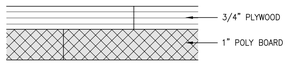
CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN TEMPORARY ROOFING AND DRAINAGE SYSTEMS AS REQUIRED TO PROTECT THE BUILDING AGAINST MOISTURE INFILTRATION AT ALL TIMES THROUGHOUT THE DURATION OF THE PROJECT.

DEMOLITION PROCEDURES

- D1 REMOVE MEMBRANE ROOFING DOWN TO STRUCTURAL DECK
- D2 REMOVE GUTTERS
- D3 REMOVE DOWNSPOUTS
- D4 REMOVE EXPANSION JOINT
- D5 REMOVE STANDING SEAM ROOFING DOWN TO PLYWOOD DECKING
- D6 REMOVE HEADWALL FLASHING & COUNTERFLASHING
- D7 REMOVE HEADWALL FLASHING & METAL SIDING
- D8 REMOVE METAL COPING
- D9 REMOVE GUTTER LINER, METAL COPING AND FASCIA
- D9 REMOVE SIDEWALL FLASHING & COUNTERFLASHING

LEGEND

- REMOVE ROOFING DOWN TO STRUCTURAL DECK
- REMOVE STANDING SEAM ROOFING DOWN TO PLYWOOD
- MECHANICAL EQUIPMENT (SEE MEP SHEETS)
- PIPE VENT
- NIC – NOT IN CONTRACT
- DS – DOWNSPOUT
- RD ORD – ROOF DRAIN
- ROOF SLOPE



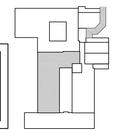
CONTRACTOR WORK AND LAY DOWN AREAS TO BE APPROVED BY OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE EXISTING ROOF MEMBRANE TO REMAIN THROUGHOUT THE DURATION OF THE PROJECT. MINIMUM PROTECTION SHALL BE 1" OF POLY BOARD AND THEN 3/4" PLYWOOD BUTTED TIGHTLY TOGETHER TO PREVENT PUNCTURE OF THE ROOF MEMBRANE. ADDITIONAL ROOF PROTECTION MAY BE DESIGNATED BY THE OWNER'S PROJECT MANAGER. SUCH PROTECTION SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER. AN APPROVED ROOF PROTECTION SYSTEM MUST BE INSTALLED PRIOR TO THE PLACEMENT OF MATERIALS OR EQUIPMENT ON THE ROOF.

TYPICAL ROOF PROTECTION DETAIL

N.T.S.

LOPER ELEMENTARY SCHOOL ADDRESS:

901 LOPER DRIVE
SHELBYVILLE, IN 46176



N
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CLIENT ORIENTED - BY DESIGN
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317.594.4152 PHONE
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1	05.24.2022	Addendum 1 (NEW SHT)
2	05.31.2022	Addendum 2

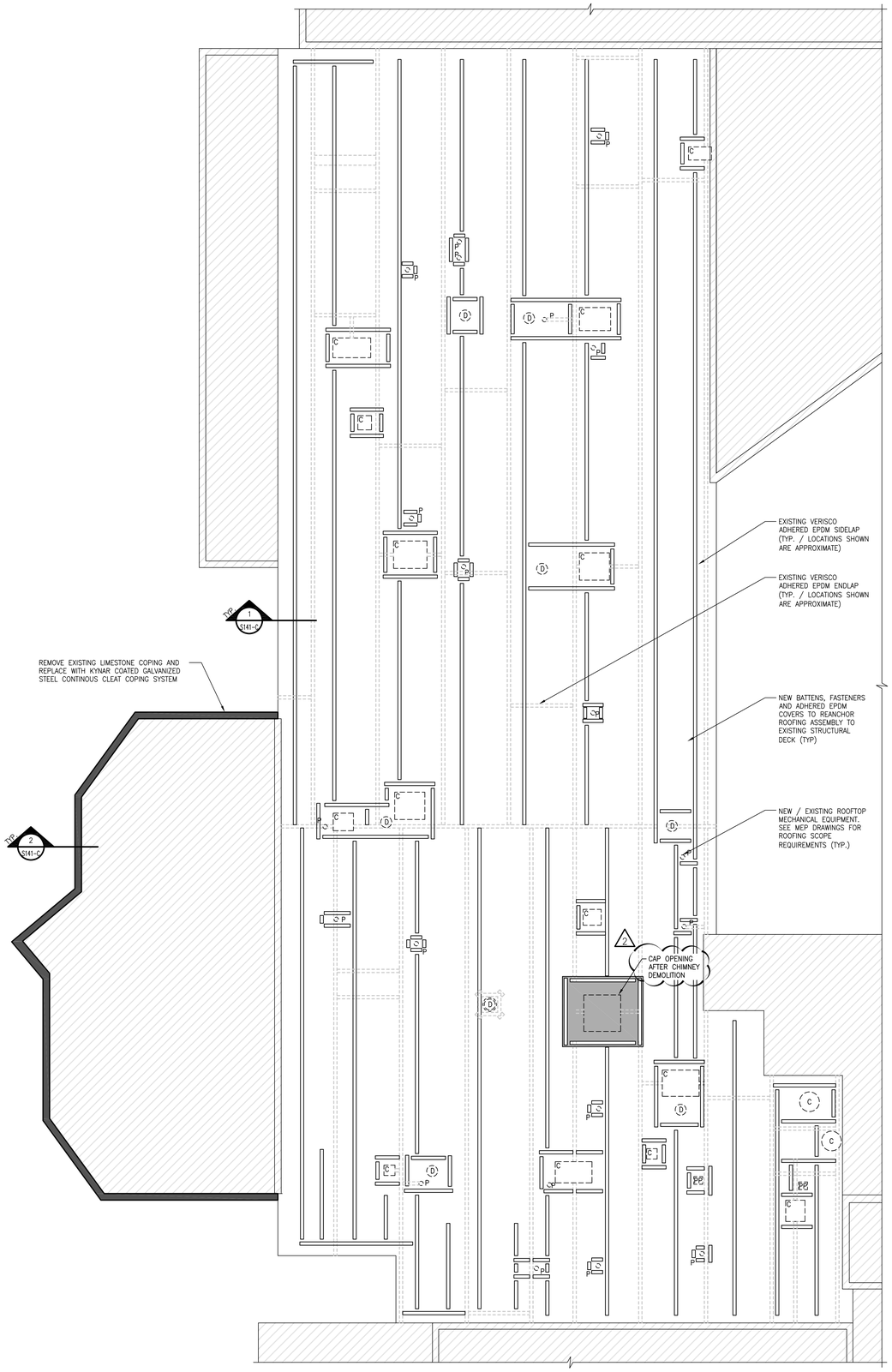
100% CONSTRUCTION DOCUMENTS

PROJECT: #21139
DATE: 04.27.2022
DRAWN BY: JND

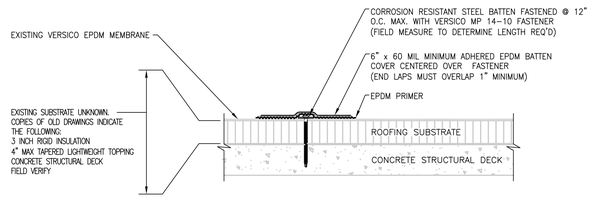
PARTIAL ROOF DEMO PLANS LOPER

SD-141-L

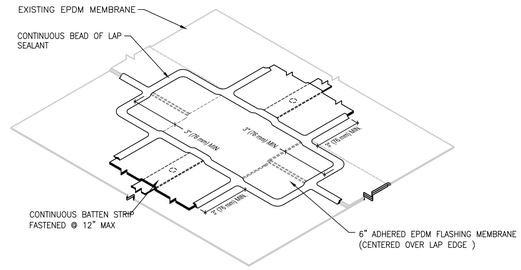
PLOT DATE/TIME:



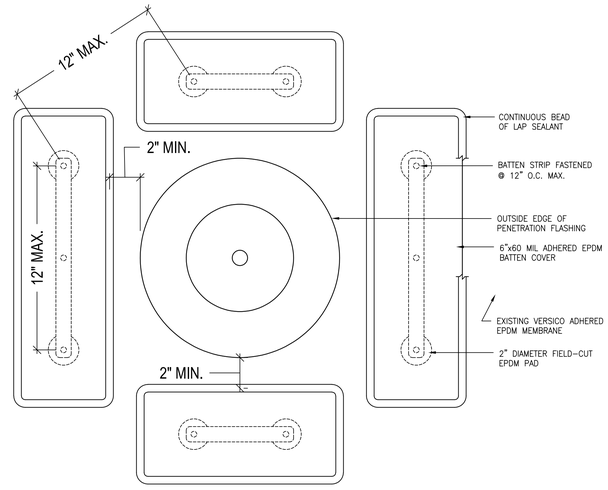
ROOF REPAIR PLAN – COULSTON
1/8" = 1'-0"



TYPICAL BATTEN SEAM REPAIR DETAIL
1 / A141-C
3"=1'-0"



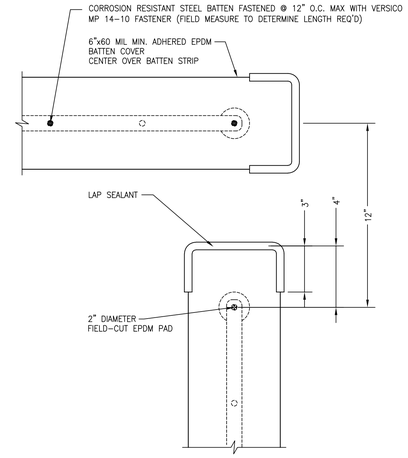
TYPICAL BATTEN SPLICE AT MEMBRANE LAP
3"=1'-0"



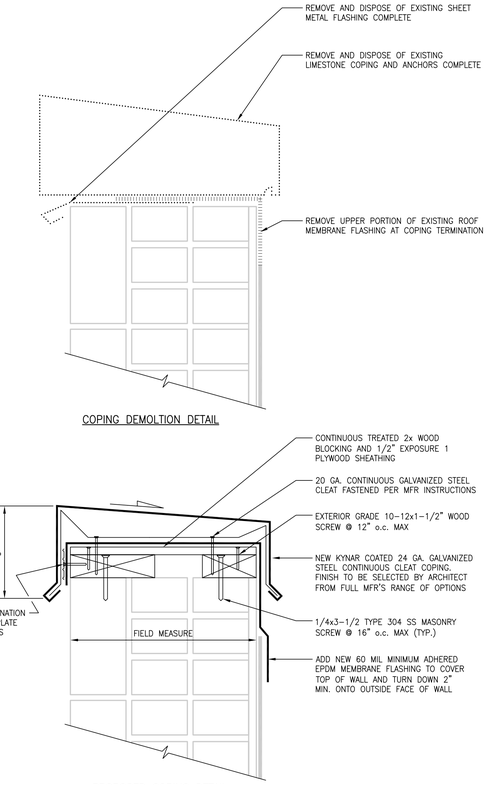
TYPICAL BATTEN DETAIL @ ROOF PENETRATION
3"=1'-0"

REPAIR PLAN LEGEND

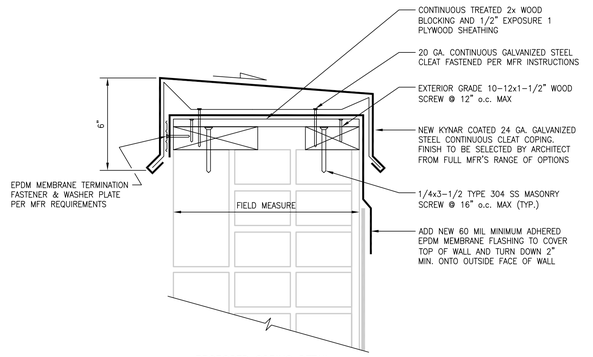
- EXISTING EPDM MEMBRANE LAP SEAMS
- ROOFTOP EQUIPMENT
  - C=EXISTING / NEW CURB DETAIL (SEE MEP SHEETS)
  - P=EXISTING / NEW PIPE PENETRATION (SEE MEP SHEETS)
  - PP=EXISTING PITCH POCKET
  - D=EXISTING ROOF DRAIN
- NEW ROOF BATTENS ANCHORED THROUGH EXISTING EPDM ROOFING ASSEMBLY / SUBSTRATE LAYERS INTO STRUCTURAL DECK @ 12" o.c. MAX BATTENS TO BE STRIPPED IN WITH EPDM FLASHING MEMBRANE AND SEALED (SEE DETAILS)
- INFILL STRUCTURAL DECK AND EPDM ROOFING ASSEMBLY TO MATCH ADJACENT EXISTING WHERE CHIMNEY IS DEMOLISHED (SEE ARCH SHEETS)
- REMOVE EXISTING LIMESTONE COPING, DOWELS AND ROOFING COUNTERFLASHING INSTALL NEW TREATED WOOD BLOCKING, ADD EPDM FLASHING TO LAP OVER TOP OF EXISTING MASONRY PARAPET TO REMAIN AND INSTALL NEW MANUFACTURED COPING ASSEMBLY (SEE DETAILS / FINISH TO BE SELECTED BY ARCH FROM MFR'S FULL RANGE)
- SEE MEP SHEETS FOR ROOF FLASHING SCOPE RELATED TO ROOFTOP EQUIPMENT REPLACEMENT AND/OR MODIFICATIONS



TYPICAL BATTEN CORNER DETAIL
3"=1'-0"

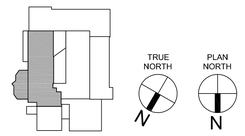


COPING DEMOLTION DETAIL



PROPOSED COPING DETAIL

TYPICAL COPING REPLACEMENT DETAIL
2 / A141-C
3"=1'-0"



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CLIENT ORIENTED – BY DESIGN
8710 KINCAID DRIVE, SUITE 100 FISHERS, INDIANA 46037-0493
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100% CONSTRUCTION DOCUMENTS

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DRAWN BY: BRW

SELECTIVE ROOF REPAIR PLAN & DETAILS COULSTON

S-141-C

RESPONSIBILITY MATRIX

CATEGORY	ITEM	CFCI	OFCI	OFOI	COMMENTS
EQUIPMENT	FIRE EXTINGUISHERS	Y	-		
EQUIPMENT	MARKER BOARDS		Y		
EQUIPMENT	REFRIGERATOR/FREEZERS	-	-	Y	
EQUIPMENT	TACK BOARDS	Y			
EQUIPMENT	TACK STRIPS	Y			
EQUIPMENT	TELEVISION WALL MOUNTED	-	Y	-	MOUNT PROVIDED BY OWNER INSTALLED BY CONTRACTOR
EQUIPMENT	TELEVISIONS ON CARTS	-	-	Y	PROVIDE BLOCKING, OWNER TO PROVIDE MOUNTING BRACKET
EQUIPMENT	WINDOW PERFORATED VINYL GRAPHICS			Y	
EQUIPMENT	WINDOW SHADES			Y	ONLY LOCATION AT MEDIA CENTER
FURNITURE	BOOK SHELVES AND STORAGE CARTS			Y	
FURNITURE	CHAIRS	-	-	Y	
FURNITURE	DESKS	-	-	Y	
FURNITURE	TABLES	-	-	Y	
TECHNOLOGY	ACCESS CONTROL CABLING	Y	-	-	
TECHNOLOGY	ACCESS CONTROL CARD READERS	-	-	Y	
TECHNOLOGY	ACCESS CONTROL DOOR MONITORING	-	-	Y	
TECHNOLOGY	ACCESS CONTROL HEADEND	-	-	Y	
TECHNOLOGY	ACCESS CONTROL SYSTEM	-	-	Y	
TECHNOLOGY	AV CABLING	Y	-	-	
TECHNOLOGY	AV EQUIPMENT - LOCAL SOUND SYSTEM - BOSE	Y	-	-	
TECHNOLOGY	CLOCKS	-	-	Y	BATTERY OPERATED
TECHNOLOGY	DATA/VOICE BACKBONE	Y	-	-	
TECHNOLOGY	DATA/VOICE LAN CABLING	Y	-	-	(2) AT EACH ACCESS CONTROL, POINT LOCATIONS, SECURITY CAMERAS
TECHNOLOGY	DATA/VOICE OUTLETS AND COVER PLATES	Y			
TECHNOLOGY	DATA/VOICE PATHWAY	Y	-	-	EXISTING PATHWAY WILL BE UTILIZED AS WELL TO GET BACK TO MDF ROOM
TECHNOLOGY	DATA/VOICE RACKS	Y	-	-	
TECHNOLOGY	DATA/VOICE SWITCHES	-	-	Y	
TECHNOLOGY	FIBER CABLING	Y	-	-	FROM RACK BACK TO MDF/IDF - (4) CAT6 SAME PATH - J HOOKS ABOVE CEILING
TECHNOLOGY	PAGING SYSTEM	Y	-	-	ANTICIPATED THAT PAGING SYSTEM WILL TIE INTO EXISTING SYSTEM. NEW PAGING CONTROLLERS WILL BE PROVIDED BY THE CONTRACTOR TO TIE INTO EXISTING SYSTEM
TECHNOLOGY	VIDEO SURVEILLANCE CABLING	Y	-	-	ETHERNET TO LOCATIONS
TECHNOLOGY	VIDEO SURVEILLANCE HARDWARE	-	-	Y	OWNER WILL BE RESPONSIBLE FOR ANY NEW STORAGE OR LICENSES REQUIRED FOR NEW CAMERAS
TECHNOLOGY	VIDEO SURVEILLANCE IP CAMERAS	-	-	Y	
TECHNOLOGY	VIDEO SURVEILLANCE OPERATING SYSTEM	-	-	Y	ANTICIPATED THAT VIDEO SURVEILLANCE WILL TIE INTO EXISTING SYSTEM)
TECHNOLOGY	VOICE - DEVICES	-	-	Y	
TECHNOLOGY	VOICE - IP SYSTEM	-	-	Y	ANTICIPATED THAT NEW PHONES WILL TIE INTO EXISTING EQUIPMENT. ANY NEW SERVERS REQUIRED FOR THE ADDITIONS WILL BE OWNER PROVIDED. CAT6 CABLING TO SERVE PHONES WILL BE INCLUDED IN DATA/VOICE LAN CABLING
TECHNOLOGY	WAP - CABLING	Y	-	-	
TECHNOLOGY	WAP - DEVICES	-	-	Y	
TOILET BATH ACCESSORIES	GRAB BARS	Y			
TOILET BATH ACCESSORIES	HAND SOAP DISPENSERS		Y		
TOILET BATH ACCESSORIES	HAND TOWEL DISPENSERS	Y			FLUSH MOUNTED
TOILET BATH ACCESSORIES	MIRRORS	Y	-	-	PROVIDE BLOCKING
TOILET BATH ACCESSORIES	SANITARY NAPKIN DISPOSAL CONTAINERS		Y		
TOILET BATH ACCESSORIES	TOILET PAPER DISPENSERS		Y		
TOILET BATH ACCESSORIES	TOILET PARTITIONS	Y			
TOILET BATH ACCESSORIES	TRASH CAN - LOOSE	-	-	Y	

ABBREVIATIONS

A	
AB	Anchor Bolt
ACP	Acoustical Ceiling Panel
ACT	Acoustical Ceiling Tile
ADJ	Adjustable
AFF	Above Finished Floor
AGG	Aggregate
ALT	Alternate
ALUM/ AL	Aluminum
ANOD	Anodized Finish
AP	Access Panel
APPROX	Approximate
AV	Audio Visual
AWRB	Air/ Water Resistive Barrier
B	
B M	Bench Mark
BATT	Batt Insulation
BCMU	Burnished Concrete Masonry Unit
BD	Board
BFE	Bottom Footing Elevation
BIT	Bituminous
BLDG	Building
BLK	Block
BLKG	Blocking
BM	Beam
BOTT	Bottom
BR	Brick
BRG	Bearing
BUR	Built-Up Roof
C	
CAB	Cabinet
CB	Catch Basin
CBD	Cementious Board
CEM	Cement
CFG	Clear Float Glass
CFM	Cubic Foot Per Minute
CG	Corner Guard
CHBD	Chalk Board
CI	Cast Iron
CIP	Cast In Place
CJ	Control Joint
CL	Center Line
CLG	Ceiling
CLO	Closet
CMU	Concrete Masonry Unit
CO	Cleanout
COL	Column
CONC	Concrete
CONC BLK	Concrete Block
CONF	Conference
CONST	Construction
CONT	Continuous
CORR	Corridor
CP	Cement Plaster
CPT	Carpet
CSWK	Casework
CT	Ceramic Tile
D	
DEMO	Demolition
DEPT	Department
DF	Drinking Fountain
DIA	Diameter
DIM	Dimension
DKG	Decking
DN	Down
DR	Door
DS	Downspout
DWG	Drawing
DWLS	Dowels
E	
E	Existing Material
EA	Each
EDC	Elastometric Deck Coating
EHD	Electric Hand Dryer
EIFS	Exterior Finished Insulation System
EJ	Expansion Joint
ELEC	Electric
ELEV	Elevation or Elevator
ENT	Entrance
EQ	Equal
EQUIP	Equipment
EW	Each Way
EWC	Electric Water Cooler
EXIST	Existing
EXP	Exposed
EXT	Exterior
F	
FBC	Fire Blanket/ Cabinet
FBR	Face Brick
FD	Floor Drain
FDN	Foundation
FE	Fire Extinguisher
FEC	Fire Extinguisher Cabinet
FF	Factory Finish
FFE	Finished Floor Elevation
FG	Fire Glass

ABBREVIATIONS

FIN	Finish
FIXT	Fixture
FLR	Floor
FND	Feminine Napkin Dispenser
FNDISP	Feminine Napkin Dispenser
FOM	Face of Masonry
FR	Fire Rated
FRM	Frame
FRMG	Framing
FRP	Fiberglass Reinforced Paneling
FT	Foot or Feet
FTG	Footing
FURR	Furring
G	
GALV	Galvanized
GB/ GYP. BD	Gypsum Board
GBLK	Glazed Block
GC	General Contractor
GEN	General
GL	Glass or Glazing
GL BLK	Glass Block
GLU-LAM	Glue Laminated
H	
HC	Handicapped
HDW	Hardware
HDWD	Hardwood
HGT	Height
HM	Hollow Metal
HORZ	Horizontal
HR	Hour/ Handrail
HVAC	Heating or Venting or A/C
HYD	Hydrant
I	
ID	Inside Diameter
IG	Insulated Glass
IGT	Insulated Glass Tempered
INSUL	Insulation
INT	Interior
INV	Invert
IRGB	Impact Resistant Gypsum Board
ISSO	Insulated Steel Section Overead
J	
JAN	Janitor
JBE	Joist Bearing Elevation
JST	Joist
JT	Joint
K	
KO	Knock Out
L	
LAB	Laboratory
LAM	Laminated
LAV	Lavatory
LF	Lineal Foot
LLH	Long Leg Horizontal
LLV	Long Leg Vertical
LWCB	Lightweight Concrete Block
M	
MACH	Machine
MAF	Modular Athletic Flooring
MAS	Masonry
MAT	Material
MAX	Maximum
MBD	Marker Board
MCC	Multi-Color Coating
MECH	Mechanical
MEMB	Membrane
MET	Metal
MEZZ	Mezzanine
MFR	Manufacturer
MIN	Minimum or Minutes
MISC	Miscellaneous
MO	Masonry Opening
MR	Mirror
MULL	Mullion
N	
N	North
NIC	Not In Contract
NO	Number
NOM	Nominal
NTS	Not To Scale
O	
OA	Overall
OC	On Center
OD	Outside Diameter
OFF	Office
OHDR	Overhead Door
OPG	Opening
OPP	Opposite
P	
P/C	Precast Concrete
PC-TERR	Pre-Cast Terrazzo
PERF	Perforated
PF	Prefinished
PL	Plate
PLAM	Plastic Laminate
PLAS	Plaster

ABBREVIATIONS

PLBG	Plumbing
PLYWD	Plywood
PNL	Panel or Paneling
PPT	Porcelain Paver Tile
PROJ	Projection
PROP	Property
PT	Paint
PTD	Paper Towel Dispenser
PTDR	Paper Towel Dispenser/ Receptor
Q	
QT	Quarry Tile
R	
R	Riser/ Radius
RAD	Radiation
RB	Rubber Base
RD	Roof Drain
RDS	Roof Drainage Scuppers
REC	Recessed
REF	Refrigerator
REINF	Reinforced or Reinforcing
REQD	Required
REV	Reverse
RM	Room
RO	Rough Opening
ROD	Roof Overflow Drain
ROS	Roof Overflow Scupper
RS	Roof Scupper
RSS	Roof Slope (structural)
RST	Roof Sloped (tapered insulation)
RT	Rubber Tire or Tread
RTU	Roof Top Unit (see mechanical)
RUB	Rubber
RWL	Rain Water Leader
S	
SCHED	Schedule
SD	Soap Dispenser
SEAL	Sealed Concrete
SECT	Section
SGFT	Structural Glazed Facing Tile
SIM	Similar
SLNT	Sealant
SLR	Sealer
SPEC	Specification
SQFT	Square
SRF	Square Foot/ Feet
SRF	Seamless Resilient Floor Section
SST	Stainless Steel
ST	Stain
STL	Steel
STOR	Storage
SUSP	Suspended
SW	Switch
SYM	Symmetry/ Symmetrical
T	
T & G	Tongue & Groove
TB	Towel Bar
TBD	Tackboard
TEL	Telephone
TEMP	Temporary
TERR	Terrazzo
TFE	Top of Footing Elevation
TFG	Tempered Floating Glass
TOM	Top of Masonry
TOS	Top of Steel
TOW	Top of Wall
TPH	Toilet Paper Holder
TV	Television
TYP	Typical
U	
UH	Unit Heater
UNFIN	Unfinished
UNO	Unless Noted Otherwise
UV	Unit Ventilator
V	
VB	Vinyl Base
VCT	Vinyl Composition Tile
VDBD	Visual Display Board
VERT	Vertical
VEST	Vestibule
VP	Veneer Plaster - Smooth Finish
VP-SF	Veneer Plaster - Sand Float Finish
VRB	Vented Rubber Base
VWC	Vinul Wall Covering
W	
WC	Water Closet
WD	Wood
WDPNL	Wood Panel
WF	Wash Fountain
WG	Wire Glass
WGT	Weight
WH	Water Heater
WP	Waterproofing
WRGB	Water Resistant Gypsum Board
WWF	Welded Wire Fabric

SYMBOLS LEGEND

PLAN N — NORTH ARROW

0 — GRID NUMBER / LINE

1 / A101 — SECTION/DETAL REFERENCE TAG (SIM)

Ref / ## / A10.50 — ELEVATION REFERENCE TAG

Name / Elevation — ELEVATION MARKER

BREAK LINE

Room name / 101 — ROOM NAME / NUMBER

101 — DOOR NUMBER

XX — WINDOW / CURTAIN WALL / LOUVER TAG

BB — WALL TAG

1 — REVISION TAG

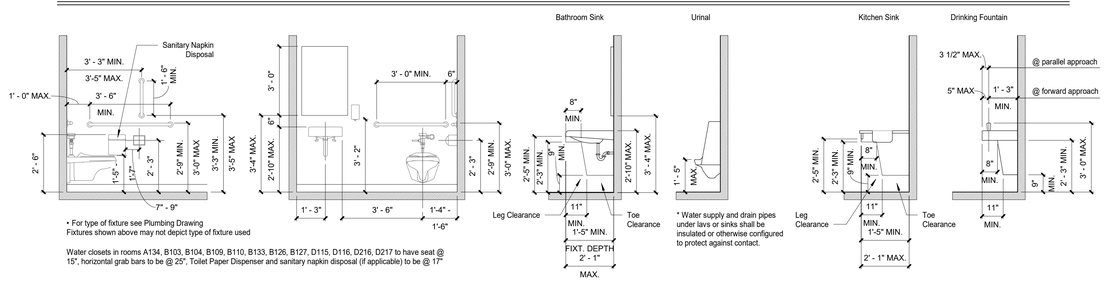
APC-A / 1' - 0" — CEILING TYPE / HEIGHT TAG

IG1 — GLAZING TAG

R1 — ROOF TAG

F1 — FLOOR TAG

PLUMBING FIXTURE AND ACCESSORY LOCATIONS



• For type of fixture see Plumbing Drawing
Fixtures shown above may not depict type of fixture used

Water closets in rooms A134, B103, B104, B109, B110, B133, B126, B127, D115, D116, D216, D217 to have seat @ 15", horizontal grab bars to be @ 25", Toilet Paper Dispenser and sanitary napkin disposal (if applicable) to be @ 17"

* Water supply and drain pipes under lavs or sinks shall be insulated or otherwise configured to protect against contact.

PLUMBING FIXTURE AND ACCESSORY LOCATIONS

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

LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
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SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD. SHELBYVILLE, IN 46176

NOT FOR CONSTRUCTION

REVISIONS:			
	#	Date	Desc.
2.		5/31/22	Addendum 2

100% CONSTRUCTION DOCUMENTS

PROJECT: #21139
DATE: 04.26.2022
DRAWN BY: Author

ARCHITECTURAL GENERAL NOTES

A001

GENERAL NOTES - DEMO

1. COORDINATE DEMOLITION WORK WITH NEW WORK
2. PATCH, CLEAN, AND PREP SURFACES FOR NEW WORK AND LEVEL 5 FINISH
3. MODIFY EXISTING CEILINGS AS NEEDED TO ACCOMODATE NEW WORK
4. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL OF ANY DEMOLISHED DOORS, CASEWORK, MARKERBOARDS, CHALKBOARDS, PROJECTORS, PROJECTOR SCREENS, ETC.
5. SELECTIVELY REMOVE ALL EXISTING WALL HANINGS AND DECORATIONS TO BE RETURNED TO OWNER. ROOM SIGNAGE TO BE REPLACED MAY BE DEMOLISHED.

DEMOLITION KEY

- REMOVE FLOORING AND WALL BASE, REMOVE 2'X4' CEILING GRID, ACOUSTICAL TILE, EXISTING LIGHTING, AND WALL MOUNTED TACK STRIPS
- REMOVE 2'X4' CEILING GRID, ACOUSTICAL TILE, AND EXISTING LIGHTING
- REMOVE FLOORING AND WALL BASE, REMOVE 2'X4' CEILING GRID, ACOUSTICAL TILE, EXISTING LIGHTING, VINYL WALLPAPER (PREP FOR PAINT), AND WALL MOUTNED TACK STRIPS

PLAN NOTES - DEMOLITION

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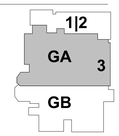
2. REMOVE EXISTING CASEWORK INCLUDING SINKS, COUNTERTOPS, OPEN SHELVING AND HOOKS. PREPARE SURFACES FOR NEW WORK.
3. REMOVE EXISTING TOILET PARTITIONS AND PREP FOR NEW PARTITIONS
4. REMOVE EXISTING DOOR PANEL, LEAVE DOOR FRAMES. PREP DOOR FRAMES FOR PAINT AND NEW DOORS
5. REMOVE EXISTING STOREFRONT DOORS, FRAMES, MULLIONS AND WINDOW PANELS, PREPARE FOR NEW STOREFRONT
6. REMOVE EXISTING DOORS AND FRAMES, PREPAIR FOR NEW WORK.
8. REMOVE EXISTING WALLS AND ANY ATTACHED DOORS OR FIXTURES, PREPARE SURFACES FOR NEW WORKFINISH
9. REMOVE EXISTING PLUMBING FIXTURE(S) AND PREPARE FOR NEW FIXTURES
10. SELECTIVE REMOVAL OF EXISTING BULLETIN, CHALK OR ARKER BOARD AND RAILS TO BE REUSED AND REINSTALLED. IF BULLETIN BOARD BEHIND WRITING BOARD FULL REMOVE AND REPAIR SURFACE BEHIND FOR FINISH QUALITY. COORDINATE STORAGE OF BOARDS AND TRACKS WITH OWNER.
11. REMOVE CARPETED WALL MATERIAL AND REVEALS, SAND AND PREP WALL BEHIND TO FOR FINISH QUALIT
12. SELECTIVE REMOVAL OF TECHNOLOGY PRESENTATION EQUIPMENT TO BE SALVAGED AND RETURNED TO OWNER. REMOVE EXISTING WIRING OR HANGING RELATED TO EQUIPMENT, INCLUDING PROJECTOR DROP SCREENS, AND PREP FOR QUALITY FINISH
13. REMOVE OPERABLE PARTITION WALL AND PREPARE FOR NEW WORK
14. REMOVE WOOD FRAMED CHALK AND BULLETINS AND FRAMES, PREPARE SURFACE BEHIND FOR FINISH QUALITY
15. REMOVE SAFETY WALL PADDING AND PREP FOR NEW WORK
16. REMOVE EXISTING BASKETBALL BACKBOARD AND PREP FOR BACKBOARD REPLACEMENT
17. ALTERNATE BID: REMOVE EXISTING BASKETBALL BACKBOARD AND PREP FOR BACKBOARD REPLACEMENT
18. REMOVE EXISTING VINYL WALL PAPER AND PREPARE SURFACE TO BE LEVEL 5 FINISH QUALITY
19. REMOVE WALL AND ALL INTERGRATED RECEPTICALS, PREPARE WALLS TO BE FINISH QUALITY
20. REMOVE WALL WALLPAPER AND COVER BOARD DOWN TO CMU BEHIND, PREPARE FOR NEW WALL BOARD COVER OR PREP FOR FINISH QUALITY
21. REMOVE DOORS, SHELVING, TRIM AND COVERBOARDS OF TROPHY CASE TO BE OPEN DISPLAY, PREPARE FOR NEW WORK
22. REMOVE DATA / ELECTRICAL DROPS
23. SELECTIVLEY REMOVE EXISTING COUNTERTOPS AND SINKS, PREPARE FOR NEW COUNTERTOPS AND SINKS
24. REMOVE L BULLETIN BOARD OR SURFACE, PREPARE FOR NEW WORK.
25. REMOVE HOOKS AND OPEN SHELVING, PREPARE FOR NEW WORK.
26. REMOVE EXISTING ACCESS DOOR PANEL TO BE REPLACED WITH NEW.
27. SELECTIVELY REMOVE EXISTING CASEWORK TO BE RE-HUNG IN CURRENT ROOM, SEE PLAN NOTES AND CASEWORK DETAILS
28. REMOVE EXISTING SHEET METAL COVER AND PREPARE FOR NEW WORK
29. CUT FLOOR TO ACCOMODATE NEW ELECTRICAL RECEPTACLES. SEE ELECTIRCAL AND CASEWORK DETIALS
30. (ALTERNATE) REMOVE EXISTING METAL SOUND DIFFUSER AND PREPARE FOR NEW ACOUSTICAL PANELS
31. COMPLETELY REMOVE WINDOW BLINDS, PREPARE FOR NEW WINDOW SHADE

1 DEMOLITION PLAN - GROUND FLOOR - UNIT A

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



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ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
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REVISIONS:			
	#	Date	Desc.
2		5/31/22	Addendum 2

100% CONSTRUCTION DOCUMENTS

PROJECT:	#21139
DATE:	04.26.2022
DRAWN BY:	Author

DEMOLITION PLAN - GROUND LEVEL- UNIT A

AD101A

GENERAL NOTES - DEMO

1. COORDINATE DEMOLITION WORK WITH NEW WORK
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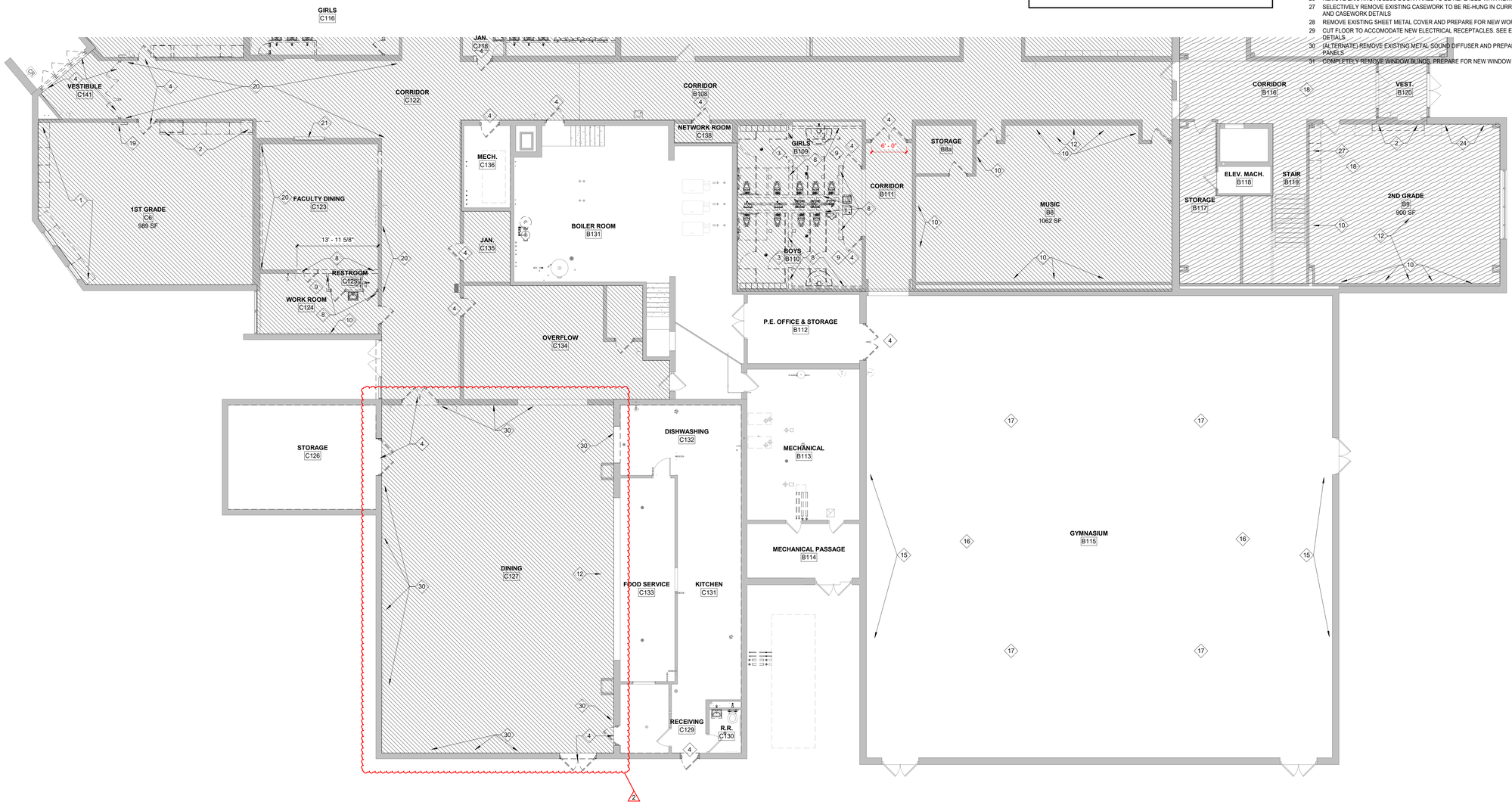
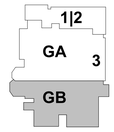


1 DEMOLITION PLAN - GROUND FLOOR - UNIT B

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



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LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

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COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD. SHELBYVILLE, IN 46176

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REVISIONS:

#	Date	Desc.
2.	5/31/22	Addendum 2

100% CONSTRUCTION DOCUMENTS

PROJECT:	#21139
DATE:	04.28.2022
DRAWN BY:	Author

DEMOLITION PLAN - GROUND LEVEL - UNIT B

AD101B

GENERAL NOTES

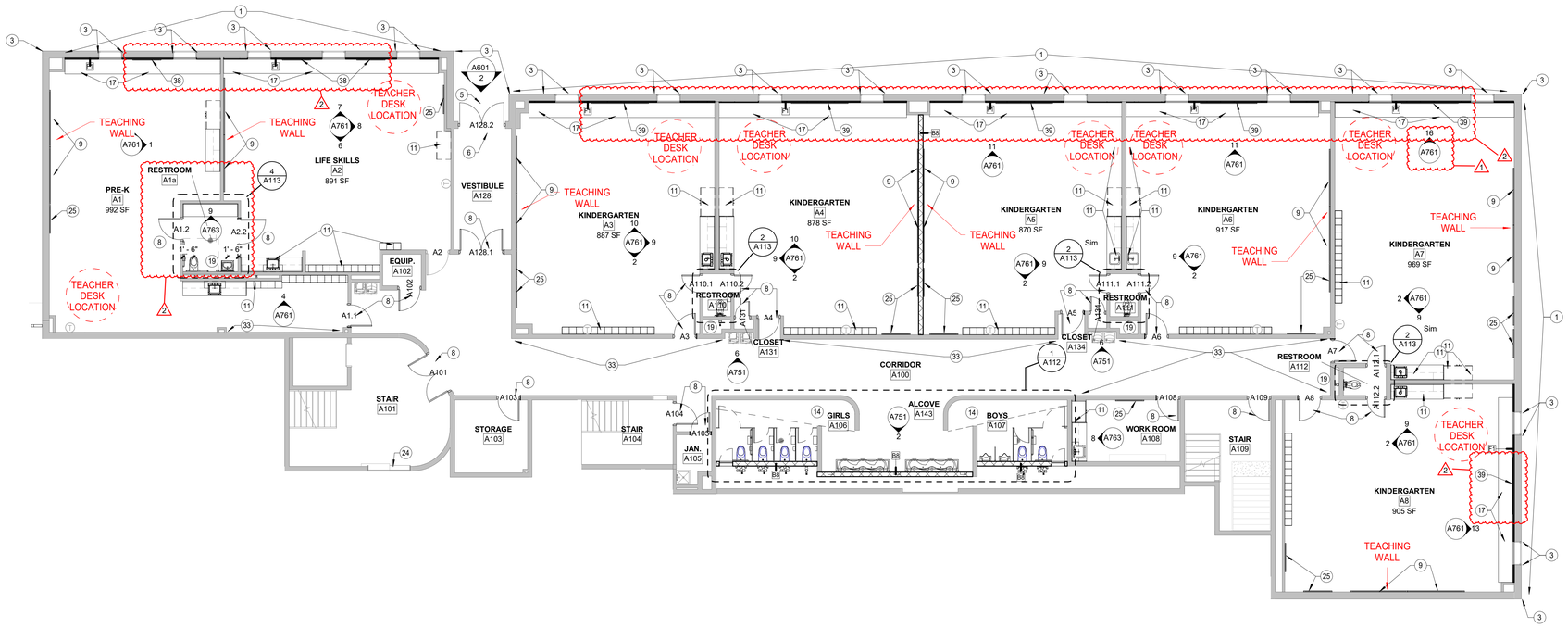
1. VERIFY IN FIELD ALL DIMENSIONS FOR CASEWORK
2. INTERIOR DIMENSIONS ARE TAKEN TO THE FACE OF MASONRY OR STUDS
3. PAINT ALL INTERIOR WALLS AND EXPOSED METALS EXCEPT FOR BRICK MASONRY
4. REPAIR ALL DISTURBED SURFACES AND PREP FOR NEW WORK
5. PROVIDE CORNER GUARDS AT ALL OUTSIDE CORNERS WITH GYPSUM BOARD FROM 1'-6" AFF TO 4'-0" AFF
6. PROVIDE BULL-NOSE FINISH ON ALL OUTSIDE CORNERS OF CMU WALLS
7. SEE A112 AND A113 FOR ENLARGED PLANS
8. DO NOT PAINT OVER PAINTED EXISTING GRAPHICS AT CAFETERIA AND GYMNSIUM

PLAN NOTES - FLOOR PLAN

1 REFER TO MASONRY RESTORATION DRAWINGS. REPAIR EXISTING MASONRY: REPLACE HORIZONTAL AND VERTICAL EXPANSION JOINT SEALANTS, INCREASE SIZE OF VERTICAL EXPANSION JOINTS TO 1/2 INCH
2 REFER TO MASONRY RESTORATION DRAWINGS. REPLACE APPROXIMATLEY 25% OF THE TOP 32 INCHES OF BRICK
3 REFER TO MASONRY RESTORATION DRAWINGS. ADD VERTICAL MASONRY EXPANSIONS JOINTS.
4 EXTERIOR WALL: REPLACE SEALANTS AND RECOAT EIFS PANELS
5 PAINT PLASTER SOFFITS, RECOAT AND RECAULK EFS SOFFITS
6 REPLACE ALUMINUM STOREFRONT DOORS, WINDOWS AND FRAME
8 NEW DOOR PANEL IN EXISTING FRAME. DOOR FRAME TO BE SANDED AND PAINTED. REFER TO DOOR SCHEDULE AND SPECIFICATIONS.
9 RETROFIT EXISTING 8' X 4' CHALKBOARDS WITH NEW DRY-ERASE MARKER SURFACE, REINSTALL EXISTING TRACKS AND PLACE BOARDS. ENSURE EACH HAS A CONTINIOUS TACK STRIP ABOVE THE BOARD. CONFIRM FINAL LOCATION WITH OWNER.
11 NEW CASEWORK REFER TO CASEWORK ELEVATIONS
12 NEW BOOK SHELVING
13 ALTERNATE BID ITEM. CUSTOM COVERED CANOPY
14 COMPLETE RENOVATION OF RESTROOM TO INCLUDE FLOORING AND WALL BASE REPLACEMENT, NEW ADA CONFIGURATION, NEW PLUMBING FIXTURES, EXHAUST REPLACEMENT, NEW TOILET PARTIITIONS AND ACCESSORIES
15 REPLACE BACKBOARDS WITH GLASS BACKBOARDS AND NEW GOALS
16 NEW WALL PADDING TO INCLUDE SCHOOL GRAPHICS
17 NEW SHELVING AND COUNTERTOP, SEE CASEWORK DETAILS
19 NEW PLUMBING ACCESS DOOR. IF NEW, COORDINATE LOCATION WITH ADJACENT EQUIPMENT AND FIXTURES.
20 ALTERNATE BID: REPLACE BACKBOARDS WITH GLASS BACKBOARDS AND NEW GOALS

PLAN NOTES - FLOOR PLAN

21 SAND AND PAINT EXISTING DOOR AND DOOR FRAME
22 BASTEEL PERIMETER SYSTEMS DUMPSTER ENCLOSURE WITH BASTEEL DOUBLE SWING INFINITY GATE, SEE C201 FOR LOCATION
23 ADD WINDOW FILM TINT TO EXISTING A NEW WINDOWS TO REDUCE GLARE AND HEAT GAIN
24 REFURBISH TROPHY CASE TO BE OPEN WITH TACKABLE SURFACE AT BACK AND NEW TRIM
25 RE-HANG EXISTING 4' X 4', REINSTALL EXISTING TRACKS AND PLACE BOARDS. VERIFY LOCATION WITH OWNERS.
26 RE-HANG EXISTING CASEWORK FROM CURRENT ROOM
27 NEW SOAP DISPENSERS. SEE ELEVATIONS FOR ADDITIONAL LOCATIONS.
28 NEW RECESSED PAPER TOWEL DISPENSERS. SEE ELEVATIONS FOR ADDITIONAL LOCATIONS.
29 NEW 3'-0" H x 4'-0" W MIRRORS.
30 NEW SANITARY NAPKIN DISPOSAL CONTAINERS.
31 NEW TOILET PAPER DISPENSERS.
32 ADA GRAB BARS.
33 PROVIDE 2 RAIL STRIPS (14" APART, CONFIRM FINAL HEIGHT WITH OWNER) WITH ALUMINUM FRAMES AT FULL LENGTH OF WALL WITH ALUMINUM END CAPS. SEE INTERIOR ELEVATIONS.
34 AFTER REPLACEMENT OF HVAC UNITS, REPLACE STUD WALL GUARDRAIL
35 REPLACE EXISTING SHEET METAL COVER AT HEIGHT OF WINDOW MULLIONS. FILL CAVITY WITH SOUND BATT INSULATION AND PROVIDE SEALANT AT EDGES OF NEW SHEET MEEDTAL TO REDUCE SOUND TRANSFER BETWEEN CLASSROOMS AND SCENT TRANSFER BETWEEN CLASSROOM AND BOYS RESTROOM.
36 REFURBISH BULLETIN BOARD WITH NEW TACKABLE SURFAC, KEEP EXISTING TRIM
37 LED SCOREBOARD AS ALTERNATE. REFER TO ELECTRICAL.
38 NEW SURFACE MOUNTED TACKBOARD - CLARIDGE SERIES 800 4x4 STANDARD FRAME WITH CLARIDGE CORK. CENTER BETWEEN WINDOWS, VERIFY FINAL MOUNTING HEIGHT WITH OWNER.
39 NEW SURFACE MOUNTED TACKBOARD - CLARIDGE SERIES 800 4x8 STANDARD FRAME WITH CLARIDGE CORK. CENTER BETWEEN WINDOWS, VERIFY FINAL MOUNTING HEIGHT WITH OWNER.
40 NEW WINDOW SHADE, OWNER FURNISHED AND OWNER INSTALLED
41 NEW VINYL FULL COVERAGE PRFORATED GRAPHICS, OWNER FURNISHED AND OWNER INSTALLED
42 RE-INSTALL EXSITING SURFACE MOUNTED 4 X 8 MARKERBOARD



1 FLOOR PLAN - FIRST FLOOR - OVERALL
SCALE: 1/8" = 1'-0"

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ARCHITECTURE | PLANNING | INTERIORS
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REVISIONS:

#	Date	Desc.
1	5/24/22	Addendum 1
2	5/31/22	Addendum 2

100% CONSTRUCTION DOCUMENTS

PROJECT:	#21139
DATE:	04.26.2022
DRAWN BY:	Author

FLOOR PLAN - FIRST LEVEL

1|2 GA 3 GB

TRUE NORTH

PLAN NORTH

A101

GENERAL NOTES

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17 NEW SHELVING AND COUNTERTOP, SEE CASEWORK DETAILS
19 NEW PLUMBING ACCESS DOOR. IF NEW, COORDINATE LOCATION WITH ADJACENT EQUIPMENT AND FIXTURES.
20 ALTERNATE BID: REPLACE BACKBOARDS WITH GLASS BACKBOARDS AND NEW GOALS

PLAN NOTES - FLOOR PLAN

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22 BASTEEL PERIMETER SYSTEMS DUMPSTER ENCLOSURE WITH BASTEEL DOUBLE SWING INFINITY GATE, SEE C201 FOR LOCATION
23 ADD WINDOW FILM TINT TO EXISTING A NEW WINDOWS TO REDUCE GLARE AND HEAT GAIN
24 REFURBISH TROPHY CASE TO BE OPEN WITH TACKABLE SURFACE AT BACK AND NEW TRIM
25 RE-HANG EXISTING 4' X 4', REINSTALL EXISTING TRACKS AND PLACE BOARDS. VERIFY LOCATION WITH OWNERS.
26 RE-HANG EXISTING CASEWORK FROM CURRENT ROOM
27 NEW SOAP DISPENSERS. SEE ELEVATIONS FOR ADDITIONAL LOCATIONS.
28 NEW RECESSED PAPER TOWEL DISPENSERS. SEE ELEVATIONS FOR ADDITIONAL LOCATIONS.
29 NEW 3'-0" H x 4'-0" W MIRRORS.
30 NEW SANITARY NAPKIN DISPOSAL CONTAINERS.
31 NEW TOILET PAPER DISPENSERS.
32 ADA GRAB BARS.
33 PROVIDE 2 RAIL STRIPS (14" APART, CONFIRM FINAL HEIGHT WITH OWNER) WITH ALUMINUM FRAMES AT FULL LENGTH OF WALL WITH ALUMINUM END CAPS. SEE INTERIOR ELEVATIONS.
34 AFTER REPLACEMENT OF HVAC UNITS, REPLACE STUD WALL GUARDRAIL
35 REPLACE EXISTING SHEET METAL COVER AT HEIGHT OF WINDOW MULLIONS. FILL CAVITY WITH SOUND BATT INSULATION AND PROVIDE SEALANT AT EDGES OF NEW SHEET MEEDTAL TO REDUCE SOUND TRANSFER BETWEEN CLASSROOMS AND SCENT TRANSFER BETWEEN CLASSROOM AND BOYS RESTROOM.
36 REFURBISH BULLETIN BOARD WITH NEW TACKABLE SURFAC, KEEP EXISTING TRIM
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41 NEW VINYL FULL COVERAGE PRFORATED GRAPHICS, OWNER FURNISHED AND OWNER INSTALLED
42 RE-INSTALL EXSITING SURFACE MOUNTED 4 X 8 MARKERBOARD

1 FLOOR PLAN - GROUND FLOOR - UNIT A

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

GA 1|2 3 GB

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LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD. SHELBYVILLE, IN 46176

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REVISIONS:

#	Date	Desc.
2	5/31/22	Addendum 2

100% CONSTRUCTION DOCUMENTS

PROJECT:	#21139
DATE:	04.26.2022
DRAWN BY:	Author

FLOOR PLAN - GROUND LEVEL - UNIT A

A101A

GENERAL NOTES

1. VERIFY IN FIELD ALL DIMENSIONS FOR CASEWORK
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6. PROVIDE BULL-NOSE FINISH ON ALL OUTSIDE CORNERS OF CMU WALLS
7. SEE A112 AND A113 FOR ENLARGED PLANS
8. DO NOT PAINT OVER PAINTED EXISTING GRAPHICS AT CAFETERIA AND GYMNSIUM

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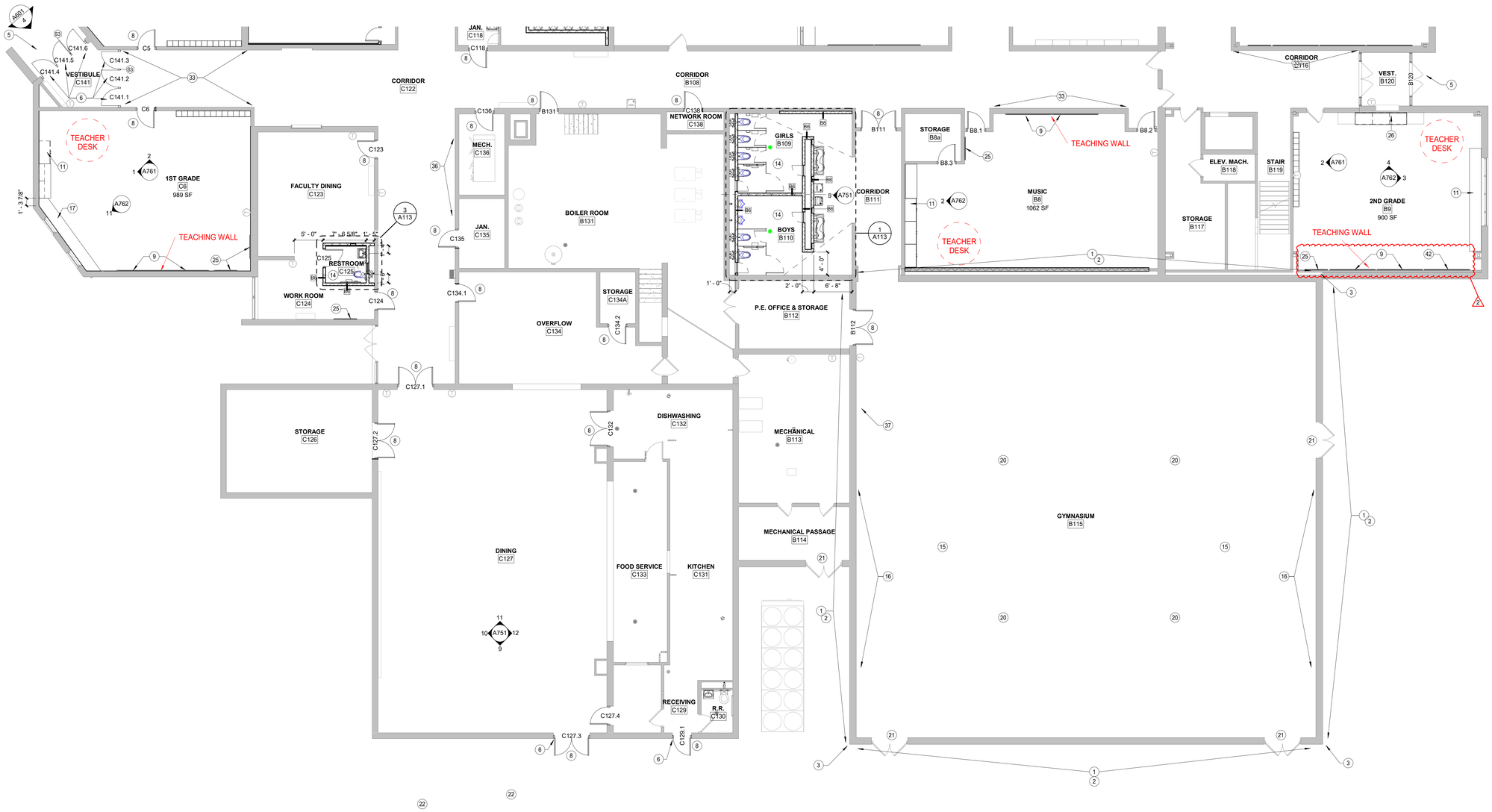
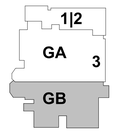


1 FLOOR PLAN - GROUND FLOOR - UNIT B
SCALE: 1/8" = 1'-0"



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REVISIONS:

#	Date	Desc.
2	5/31/22	Addendum 2

100% CONSTRUCTION DOCUMENTS

PROJECT: #21139
DATE: 04.26.2022
DRAWN BY: TARA

FLOOR PLAN - GROUND LEVEL - UNIT B

A101B

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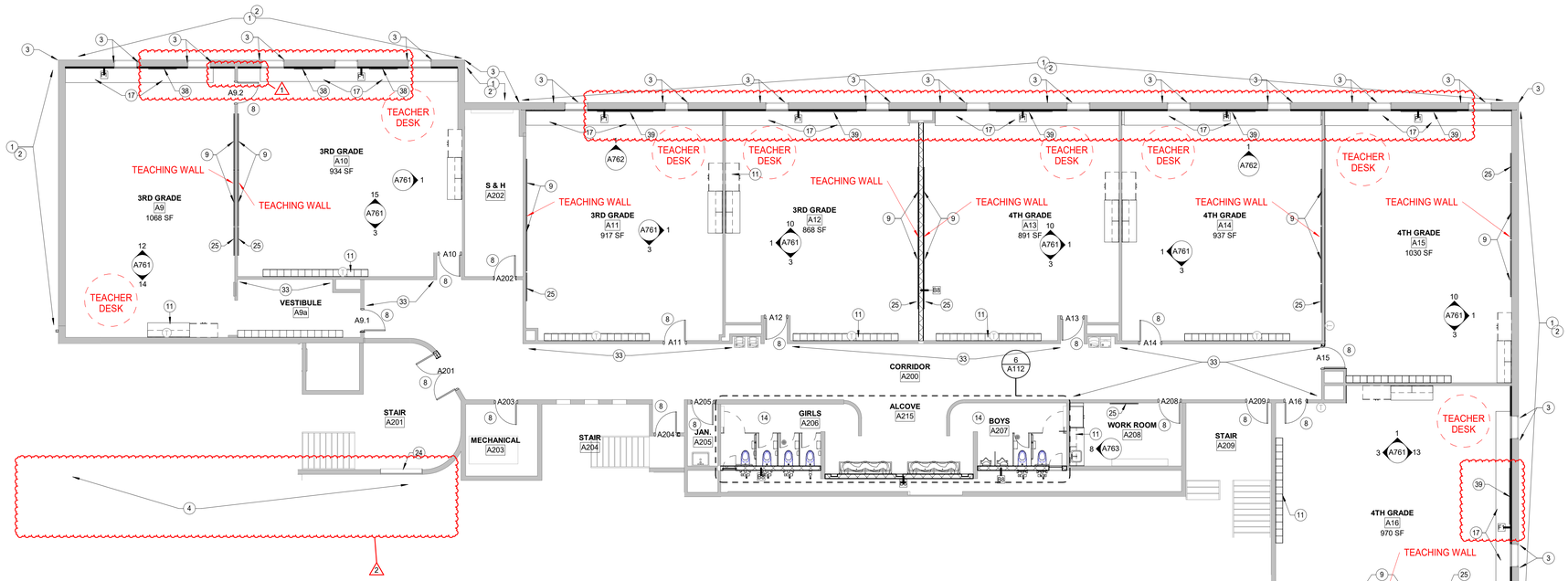

1 FLOOR PLAN - SECOND FLOOR - OVERALL
SCALE: 1/8" = 1'-0"

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REVISIONS:			
#	Date	Desc.	
1	5/24/22	Addendum 1	
2	5/31/22	Addendum 2	

100% CONSTRUCTION DOCUMENTS

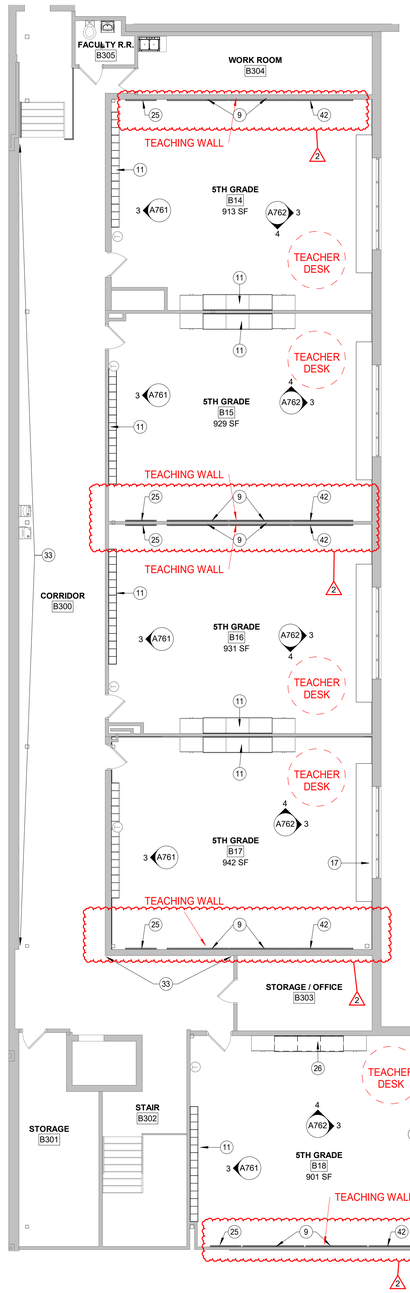
PROJECT:	#21139
DATE:	04.26.2022
DRAWN BY:	Author

FLOOR PLAN - SECOND LEVEL

1|2
GA 3
GB

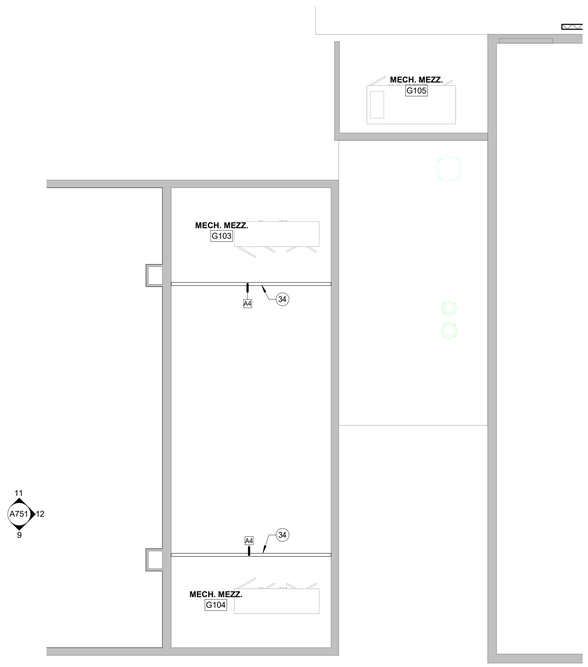
TRUE NORTH
PLAN NORTH
N

A102



1 FLOOR PLAN - THIRD FLOOR - OVERALL

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



2 FLOOR PLAN - THIRD FLOOR - MEZZ

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

PLAN NOTES - FLOOR PLAN

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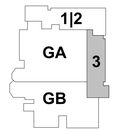
REVISIONS:

#	Date	Desc.
2	5/31/22	Addendum 2

100% CONSTRUCTION DOCUMENTS

PROJECT:	#21139
DATE:	04.26.2022
DRAWN BY:	Author

FLOOR PLAN - THIRD LEVEL



TRUE NORTH

PLAN NORTH

A103

GENERAL NOTES

1. PROVIDE HOOKS ON ALL PARTITION DOORS
2. PROVIDE HOOKS ON ALL DOORS INTO SINGLE OCCUPANCY RESTROOMS
3. MOUNT HOOKS AT 48" AFF MAX IN ALL ACCESSIBLE RESTROOMS

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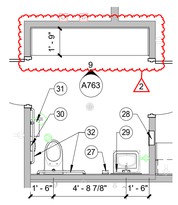
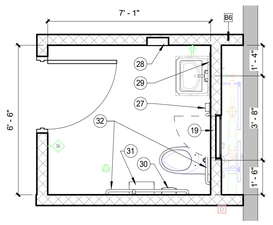
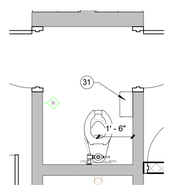
33 PROVIDE 2 RAIL STRIPS (14" APART, CONFIRM FINAL HEIGHT WITH OWNER) WITH ALUMINUM FRAMES AT FULL LENGTH OF WALL WITH ALUMINUM END CAPS. SEE INTERIOR ELEVATIONS.
34 AFTER REPLACEMENT OF HVAC UNITS, REPLACE STUD WALL GUARDRAIL.
35 REPLACE EXISTING SHEET METAL COVER AT HEIGHT OF WINDOW MULLIONS. FILL CAVITY WITH SOUND BATT INSULATION AND PROVIDE SEALANT AT EDGES OF NEW SHEET MEEDTAL TO REDUCE SOUND TRANSFER BETWEEN CLASSROOMS AND SCENT TRANSFER BETWEEN CLASSROOM AND BOYS RESTROOM.
36 REFURBISH BULLETIN BOARD WITH NEW TACKABLE SURFAC, KEEP EXISTING TRIM
37 LED SCOREBOARD AS ALTERNATE. REFER TO ELECTRICAL
38 NEW SURFACE MOUNTED TACKBOARD - CLARIDGE SERIES 800 4x4 STANDARD FRAME WITH CLARIDGE CORK. CENTER BETWEEN WINDOWS, VERIFY FINAL MOUNTING HEIGHT WITH OWNER.
39 NEW SURFACE MOUNTED TACKBOARD - CLARIDGE SERIES 800 4x8 STANDARD FRAME WITH CLARIDGE CORK. CENTER BETWEEN WINDOWS, VERIFY FINAL MOUNTING HEIGHT WITH OWNER.
40 NEW WINDOW SHADE, OWNER FURNISHED AND OWNER INSTALLED
41 NEW VINYL FULL COVERAGE PRFORATED GRAPHICS, OWNER FURNISHED AND OWNER INSTALLED
42 RE-INSTALL EXSIITING SURFACE MOUNTED 4 X 8 MARKERBOARD



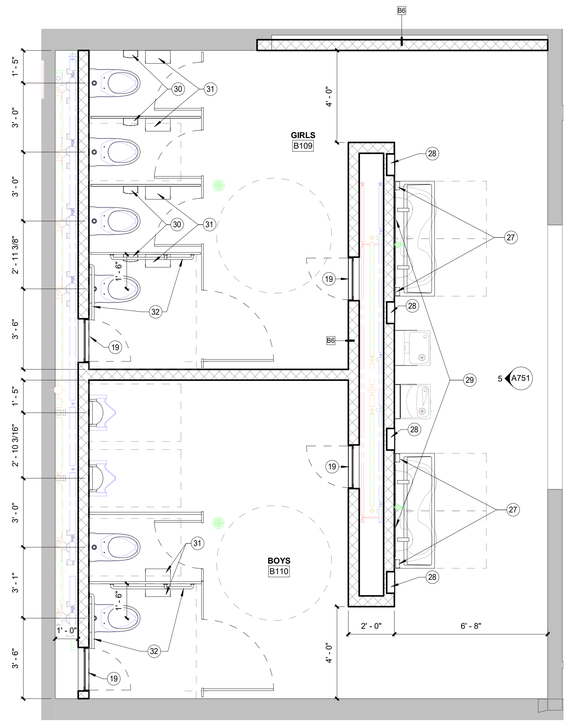
4 ENLARGED FLOOR PLAN - RESTROOM A1a
SCALE: 1/4" = 1'-0"



3 ENLARGED FLOOR PLAN - RESTROOM C125
SCALE: 3/8" = 1'-0"



2 ENLARGED FLOOR PLAN - KINDERGARTEN TYP.
SCALE: 3/8" = 1'-0"



1 ENLARGED FLOOR PLAN - B109 / B110 - GIRLS / BOYS
SCALE: 3/8" = 1'-0"

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INDIANAPOLIS, IN 46202

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD. SHELBYVILLE, IN 46176

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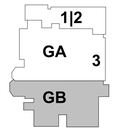
DRAWN BY:	Author

ENLARGED PLANS



TRUE NORTH
PLAN NORTH
N

A113

FINISH FLOOR KEY (FFK)

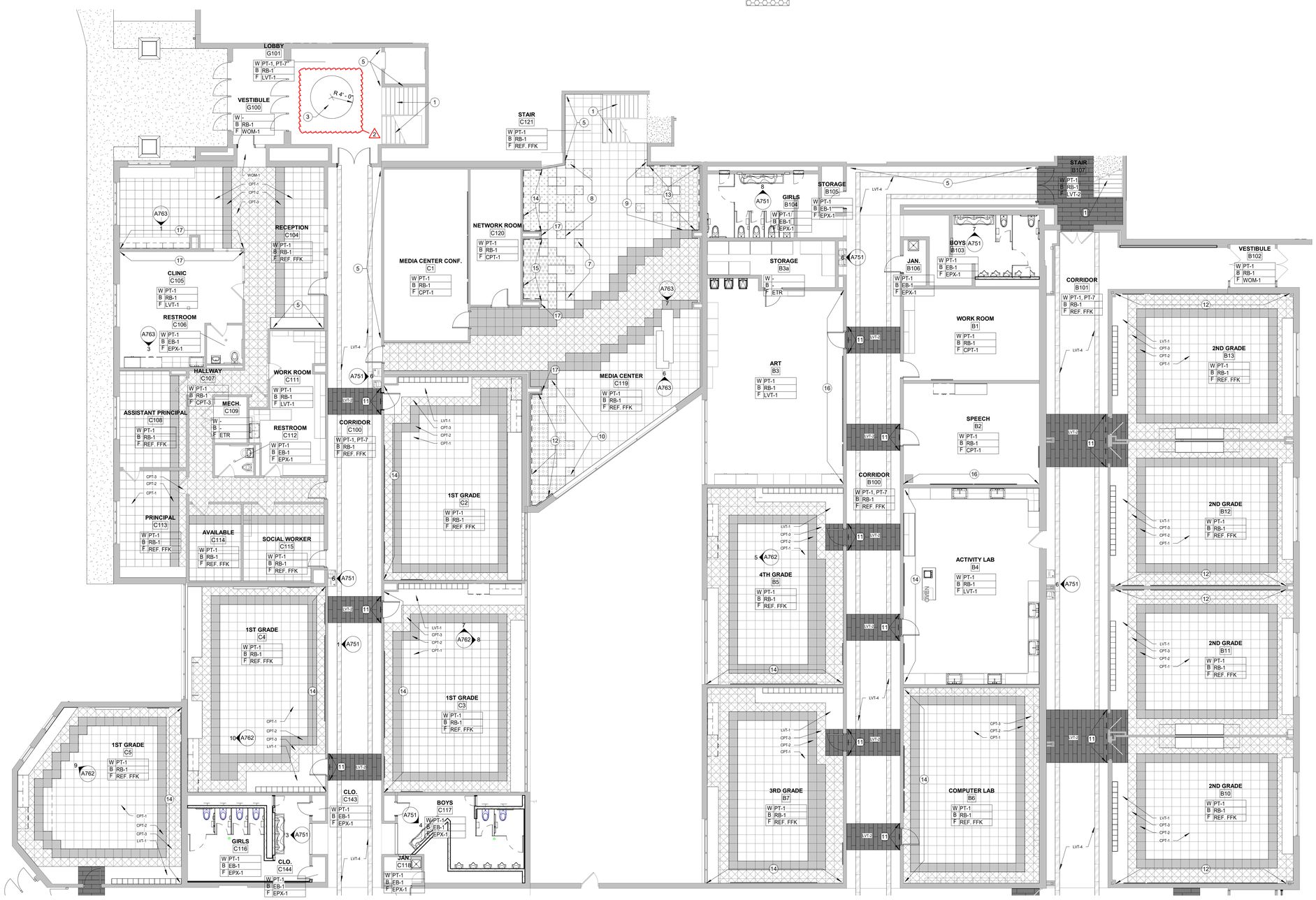
- CPT-1
- CPT-2
- CPT-3
- CPT-4/5
- CPT-6/7
- CPT-8/9
- CPT-10/11
- LVT-1
- LVT-2
- LVT-3
- LVT-4

PLAN NOTES - FINISH PLAN

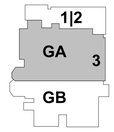
1 NEW ANGLE FIT RUBBER STAIR TREADS WITH INTEGRATED MATCHING RISER, MATCHING STRINGERS, CONTRASTING GRIT TAPE EDGE WITH SLIP-RESISTANT TEXTURE. FINAL COLOR SELECTION TBD.
2 CIRCLE ACCENT CARPET TILE. USE ONLY CPT-8 . REF. FINISH LEGEND.
3 LASER /WATERJET CUT LVT FLOORING WITH 4 COLORS. FINAL DESIGN TBD.
4 FRP (WP-1) AT THIS LOCATION. REF FINISH LEGEND
5 NEW WALL MURAL / VINYL WALL DECAL AT FULL HEIGHT OF AVAILABLE WALL
6 PROVIDE 2 CORK RAIL STRIPS (14" APART, CONFIRM FINAL HEIGHT WITH OWNER) WITH ALUMINUM FRAMES AT FULL LENGTH OF WALL WITH ALUMINUM END CAPS
7 RANDOM MIX OF 50% CPT-4 AND 50% CPT-5 WITHIN HATCH PATTERN.
8 RANDOM MIX OF 50% CPT-6 AND 50% CPT-7 WITHIN HATCH PATTERN.
9 RANDOM MIX OF 50% CPT-8 AND 50% CPT-9 WITHIN HATCH PATTERN.
10 RANDOM MIX OF 50% CPT-10 AND 50% CPT-11 WITHIN HATCH PATTERN.
11 PROVIDE ACCENT PAINT (PT-2) AT THIS LOCATION. PAINT LINES TO BE IN LINE WITH BULKHEAD AND FLOORING. REF. FINISH LEGEND.
12 PROVIDE ACCENT PAINT (PT-3) AT THIS LOCATION. REF. FINISH LEGEND.
13 PROVIDE ACCENT PAINT (PT-4) AT THIS LOCATION. REF. FINISH LEGEND.
14 PROVIDE ACCENT PAINT (PT-5) AT THIS LOCATION. REF. FINISH LEGEND.
15 PROVIDE ACCENT PAINT (PT-6) AT THIS LOCATION. REF. FINISH LEGEND.
16 PROVIDE ACCENT PAINT (PT-7) AT THIS LOCATION. REF. FINISH LEGEND.
17 PROVIDE ACCENT PAINT (PT-2) AT THIS LOCATION. REF. FINISH LEGEND.
18 RED GRAPHIC PAINT "COMETS" TO REMAIN
19 GRAPHIC PAINT "COULSTON COMETS" AND STAR TO REMAIN

FINISH GENERAL NOTES

1. PAINT EXPOSED STEEL PT-2
2. PAINT ALL HM DOOR FRAMES AND ANY HM DOORS NOT BEING REPLACED
3. PAINT EXISTING GUARDRAILS, STAIR STRINGERS AND EXPOSED STEEL ON STAIRS PT-2
4. PAINT GYPSUM BOARD CEILING PT-1 UNLESS OTHERWISE INDICATED ON FINISH PLANS AND REFLECTED CEILING PLANS
5. PROVIDE REVEAL JOINT WHERE ANY MATERIAL MEETS DISSIMILAR MATERIALS
6. PROVIDE SCHLUTER EDGE WHERE TILE MEETS DISSIMILAR MATERIALS
7. WHERE ONLY PAINT IS INDICATED AS A FINISH, REFER TO PLANS FOR SUBSTRATE
8. PAINT HM WINDOW FRAMES AND EXTERIOR HM DOORS AND FRAMES PT-2
9. PAINT INTERIOR HM DOORS AND FRAMES PT-2 UNLESS ORTHERWISE NOTED OTHERWISE ON DOOR SCHEDULE
10. GRIND DOWN THE EDGE OF TERRAZZO WHERE IT MEETS DISSIMILAR FLOORING
11. ALL PAINT INSIDE RESTROOMS, CORRIDORS, AND KITCHEN TO BE EPOXY BASED PAINT
12. IF A ROOM HAS NO FLOORING HATCH PATTERN, SEE ROOM TAG FOR FLOORING.



1 INTERIOR FINISH PLAN - GROUND FLOOR - UNIT A
SCALE: 1/8" = 1'-0"



TRUE NORTH
PLAN NORTH

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INTERIOR FINISH PLAN - GROUND FLOOR - UNIT A

A721A

FINISH FLOOR KEY (FFK)

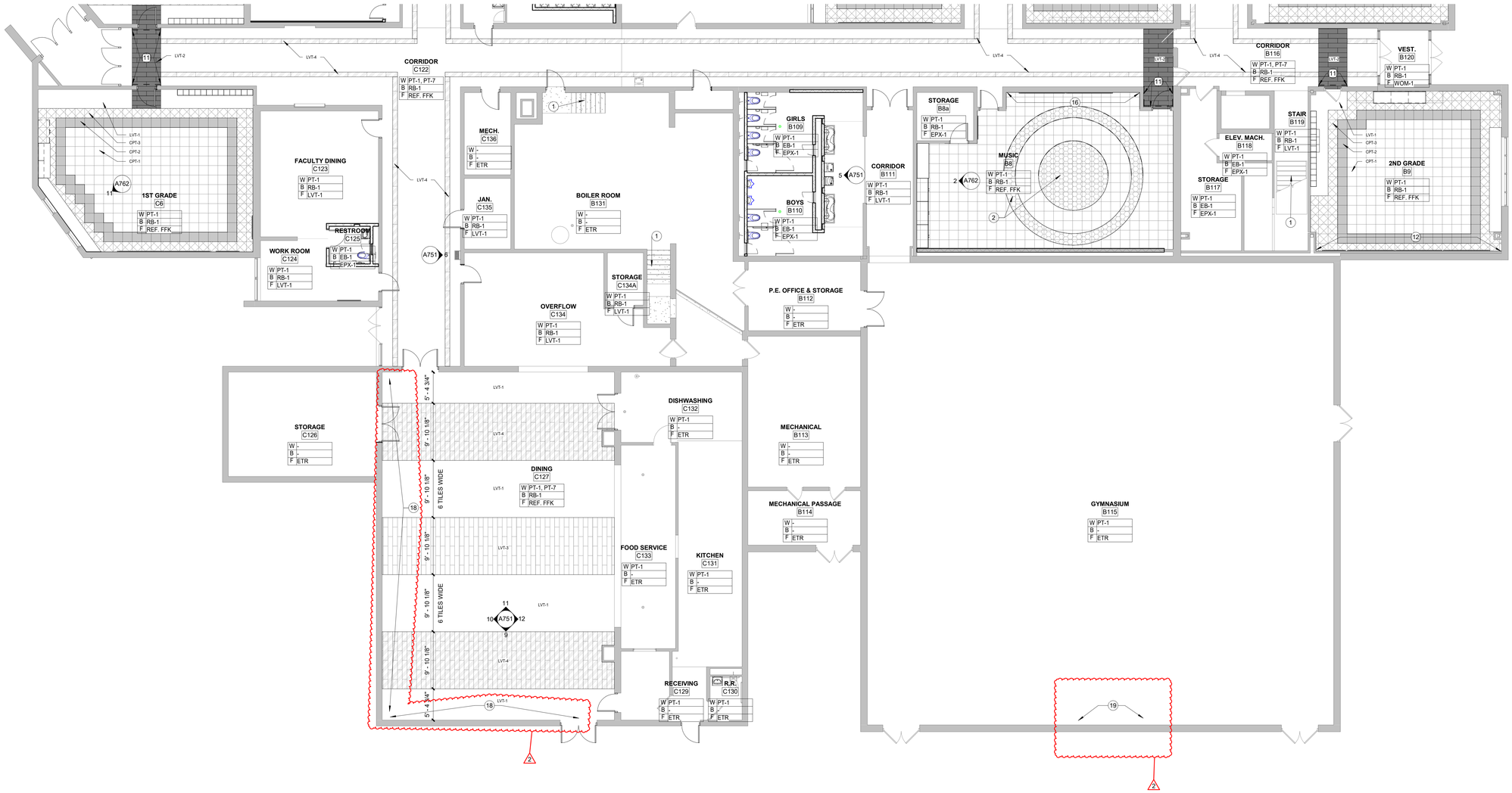
- CPT-1
- CPT-2
- CPT-3
- CPT-4/5
- CPT-6/7
- CPT-8/9
- CPT-10/11
- LVT-1
- LVT-2
- LVT-3
- LVT-4

PLAN NOTES - FINISH PLAN

1. NEW ANGLE FIT RUBBER STAIR TREADS WITH INTEGRATED MATCHING RISER, MATCHING STRINGERS, CONTRASTING GRIT TAPE EDGE WITH SLIP-RESISTANT TEXTURE. FINAL COLOR SELECTION TBD.
2. CIRCLE ACCENT CARPET TILE. USE ONLY CPT-8 . REF. FINISH LEGEND.
3. LASER /WATERJET CUT LVT FLOORING WITH 4 COLORS. FINAL DESIGN TBD.
4. FRP (WP-1) AT THIS LOCATION. REF FINISH LEGEND
5. NEW WALL MURAL / VINYL WALL DECAL AT FULL HEIGHT OF AVAILABLE WALL
6. PROVIDE 2 CORK RAIL STRIPS (14" APART, CONFIRM FINAL HEIGHT WITH OWNER) WITH ALUMINUM FRAMES AT FULL LENGTH OF WALL WITH ALUMINUM END CAPS
7. RANDOM MIX OF 50% CPT-4 AND 50% CPT-5 WITHIN HATCH PATTERN.
8. RANDOM MIX OF 50% CPT-6 AND 50% CPT-7 WITHIN HATCH PATTERN.
9. RANDOM MIX OF 50% CPT-8 AND 50% CPT-9 WITHIN HATCH PATTERN.
10. RANDOM MIX OF 50% CPT-10 AND 50% CPT-11 WITHIN HATCH PATTERN.
11. PROVIDE ACCENT PAINT (PT-2) AT THIS LOCATION. PAINT LINES TO BE IN LINE WITH BULKHEAD AND FLOORING. REF. FINISH LEGEND.
12. PROVIDE ACCENT PAINT (PT-3) AT THIS LOCATION. REF. FINISH LEGEND.
13. PROVIDE ACCENT PAINT (PT-4) AT THIS LOCATION. REF. FINISH LEGEND.
14. PROVIDE ACCENT PAINT (PT-5) AT THIS LOCATION. REF. FINISH LEGEND.
15. PROVIDE ACCENT PAINT (PT-6) AT THIS LOCATION. REF. FINISH LEGEND.
16. PROVIDE ACCENT PAINT (PT-7) AT THIS LOCATION. REF. FINISH LEGEND.
17. PROVIDE ACCENT PAINT (PT-2) AT THIS LOCATION. REF. FINISH LEGEND.
18. RED GRAPHIC PAINT "COMETS" TO REMAIN
19. GRAPHIC PAINT "COULSTON COMETS" AND STAR TO REMAIN

FINISH GENERAL NOTES

1. PAINT EXPOSED STEEL PT-2
2. PAINT ALL HM DOOR FRAMES AND ANY HM DOORS NOT BEING REPLACED
3. PAINT EXISTING GUARDRAILS, STAIR STRINGERS AND EXPOSED STEEL ON STAIRS PT-2
4. PAINT GYPSUM BOARD CEILING PT-1 UNLESS OTHERWISE INDICATED ON FINISH PLANS AND REFLECTED CEILING PLANS
5. PROVIDE REVEAL JOINT WHERE ANY MATERIAL MEETS DISSIMILAR MATERIALS
6. PROVIDE SCHLUTER EDGE WHERE TILE MEETS DISSIMILAR MATERIALS
7. WHERE ONLY PAINT IS INDICATED AS A FINISH, REFER TO PLANS FOR SUBSTRATE
8. PAINT HM WINDOW FRAMES AND EXTERIOR HM DOORS AND FRAMES PT-2
9. PAINT INTERIOR HM DOORS AND FRAMES PT-2 UNLESS ORTHERWISE NOTED OTHERWISE ON DOOR SCHEDULE
10. GRIND DOWN THE EDGE OF TERRAZZO WHERE IT MEETS DISSIMILAR FLOORING
11. ALL PAINT INSIDE RESTROOMS, CORRIDORS, AND KITCHEN TO BE EPOXY BASED PAINT
12. IF A ROOM HAS NO FLOORING HATCH PATTERN, SEE ROOM TAG FOR FLOORING.



1 INTERIOR FINISH PLAN - GROUND FLOOR - UNIT B
SCALE: 1/8" = 1'-0"

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INTERIOR FINISH PLAN - GROUND FLOOR - UNIT B

A721B

1|2 GA 3 GB

TRUE NORTH

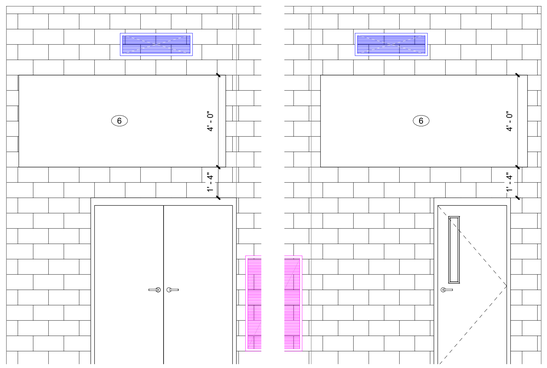
PLAN NORTH

ELEVATION NOTES - INTERIOR

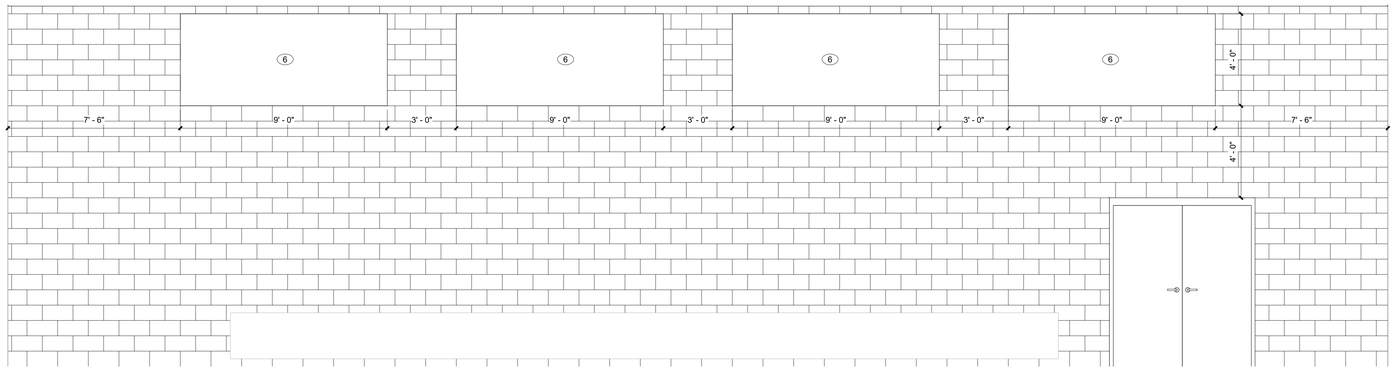
1 WALL TILE 1 (WT-1). REF FINISH LEGEND
2 WALL TILE 2 (WT-2). REF FINISH LEGEND
3 4" EPOXY BASE (EB-1). USE SCHLUTER JOLLY WHERE TILE AND EPOXY BASE MEET. REF FINISH LEGEND
6 (ALTERNATE) ACOUSTICAL PANEL (AP-1). REF FINISH LEGEND

GENERAL NOTES

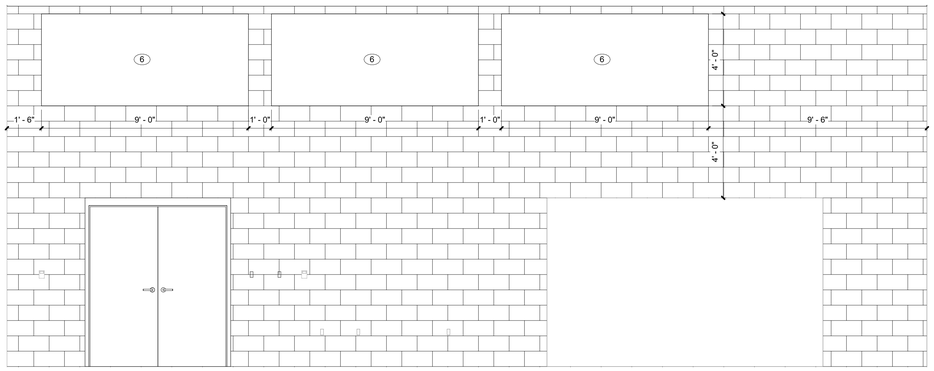
1. PROVIDE SCHLUTER TRIM WHERE TILE MEETS DISSIMILAR MATERIALS
2. DO NOT INSTALL GYPSUM BOARD BEHIND BACKER BOARD WEHRE TILE FINISH IS INDICATED
3. VERIFY ALL WATER FOUNTAIN LOCATIONS IN FEILD



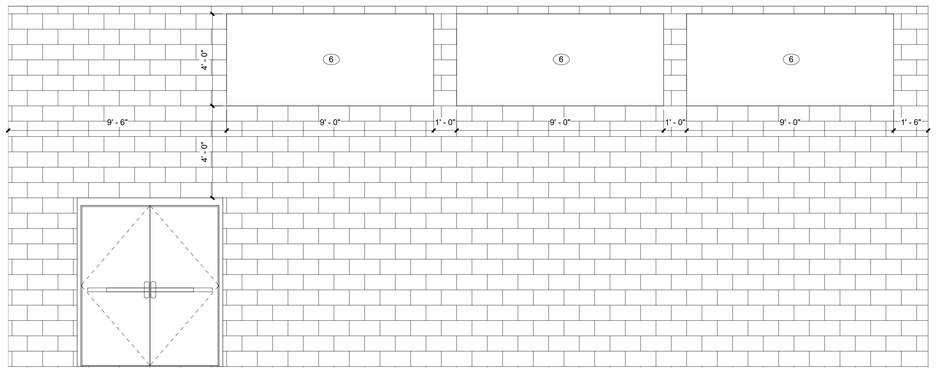
12 CAFETERIA INTERIOR ELEVATION - PLAN EAST
SCALE: 3/8" = 1'-0"



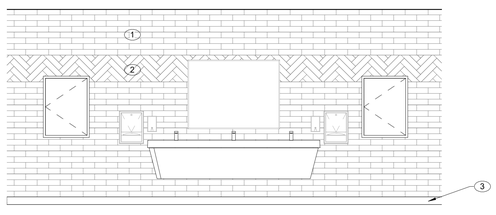
10 CAFETERIA INTERIOR ELEVATION - PLAN WEST
SCALE: 3/8" = 1'-0"



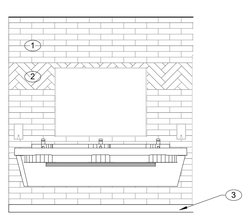
11 CAFETERIA INTERIOR ELEVATION - PLAN NORTH
SCALE: 3/8" = 1'-0"



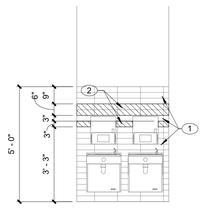
9 CAFETERIA INTERIOR ELEVATION - PLAN SOUTH
SCALE: 3/8" = 1'-0"



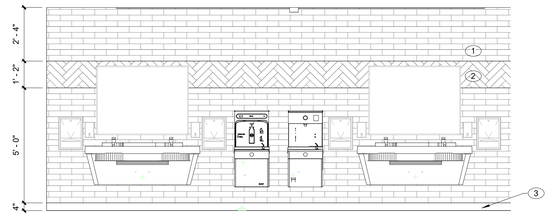
8 B104 RESTROOM ELEVATION
SCALE: 3/8" = 1'-0"



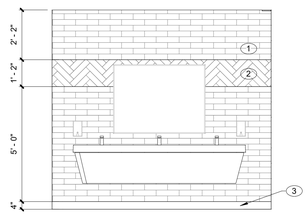
7 B103 RESTROOM ELEVATION
SCALE: 3/8" = 1'-0"



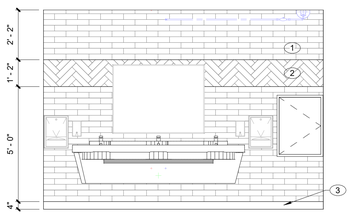
6 TYP. WATER FOUNTAIN ELEVATION
SCALE: 3/8" = 1'-0"



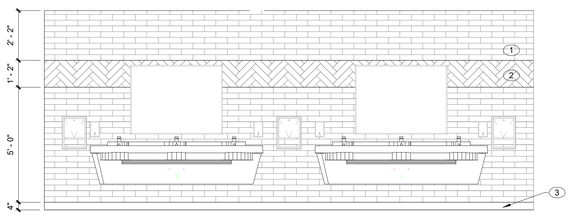
5 B109 / B110 RESTROOM ELEVATION
SCALE: 3/8" = 1'-0"



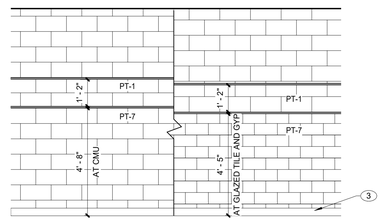
4 C117 RESTROOM ELEVATION
SCALE: 3/8" = 1'-0"



3 C116 RESTROOM ELEVATION
SCALE: 3/8" = 1'-0"



2 A106 / A107 AND A206/A207 RESTROOM ELEVATION
SCALE: 3/8" = 1'-0"



1 CORRIDOR TYP. INTERIOR WALL ELEVATION
SCALE: 3/8" = 1'-0"

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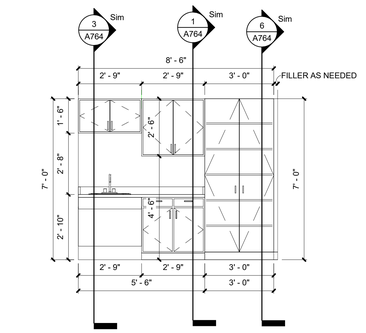
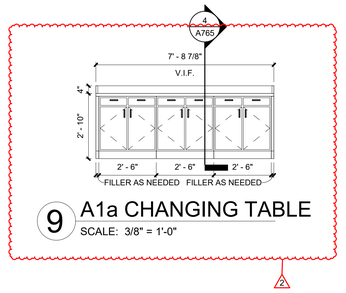
INTERIOR ELEVATIONS

A751

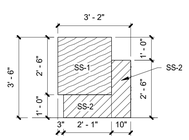
GENERAL CASEWORK NOTES	ALTERNATES
1. FABRICATE WOODWORK/ MILLWORK ITEMS TO ACTUAL FIELD DIMENSIONS. CONTRACTOR SHALL SUBMIT FOR DESIGNERS APPROVALS SHOP DRAWING SAMPLES OR MANUFACTURER'S LITERATURE FOR ALL ITEMS. SHOP DRAWINGS SHALL SHOW SUFFICIENT DETAIL TO DETERMINE COMPLIANCE WITH STANDARDS AND DESIGN INTENT. 2. PROVIDE ALL NECESSARY FURRING AND GROUNDS FOR WOODWORK AND FINISH ITEMS. COORDINATE LOCATION OF BLOCKING WITHIN FRAMED WALLS AS NECESSARY FOR ITMES TO BE SECURED TO SURFACE. ALL FASTENERS SHALL BE CONCEALED. 3. FINISH ALL SIDES AND BACK OF MILLWORK/ CASEWORK 4. PROVIDE GROMMETS IN COUNTERTOPS ABOVE ALL ELECTRICAL RECPETICALS AND TELEPHONE DATA ROUTINGS. 5. ALL PULLS TO BE 4" SATIN NICKEL SOLID WIRE PULL 6. PROVIDE LOCKS FOR ALL SOTAGE CASE CABINETS/ TALL STORAGE CABINETS, ALL DRAWERS AND DOORS, ALL UPPER WALL CABINETS AND ALL DISPLAY CASE SLIDING GLASS PANELS. 7. ALL PLASTIC LAMINATE SURFACES ON EXTERIOR OF CABINETS SHALL BE A STANDARD COLOR AS LISTED ON THE FINISH SCHEDULE 8. ALL INTERIORS BEHIND DOORS/ DRAWERS AND NOT VISIBLE SHALL BE WHITE. ALL SOLID SURFACE COUNTERTOPS SHALL BE A STANDARD COLOR AS SELECTED BY THE ARCHITECT 9. SEE ELEC. DWGS FOR ELECTRICAL DEVICES.	4. ALL UPPER CABINETS ABOVE C___IES



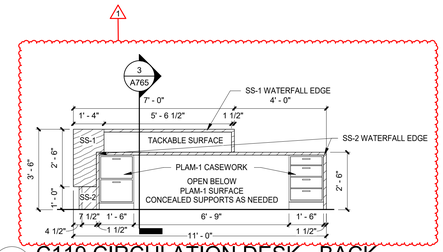
8 A108 & A208 WORKROOM CASEWORK
SCALE: 3/8" = 1'-0"



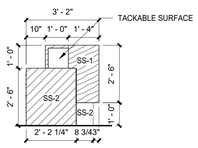
9 A1a CHANGING TABLE
SCALE: 3/8" = 1'-0"



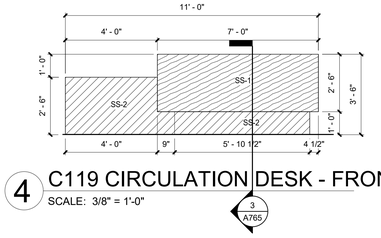
6 C119 CIRCULATION DESK - RIGHT
SCALE: 3/8" = 1'-0"



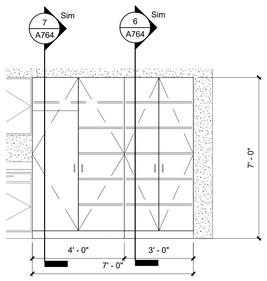
5 C119 CIRCULATION DESK - BACK
SCALE: 3/8" = 1'-0"



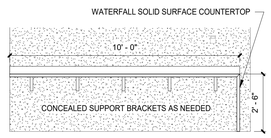
7 C119 CIRULATION DESK - LEFT
SCALE: 3/8" = 1'-0"



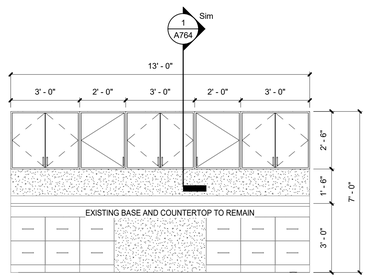
4 C119 CIRCULATION DESK - FRONT
SCALE: 3/8" = 1'-0"



3 C105 CLINIC CASEWORK ELEVATION
SCALE: 3/8" = 1'-0"



2 C104 ISS DESK ELEVATION
SCALE: 3/8" = 1'-0"



1 C104 RECEPTION CASEWORK ELEVATION
SCALE: 3/8" = 1'-0"

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REVISIONS:

#	Date	Desc.
1	5/24/22	Addendum 1
2	5/31/22	Addendum 2

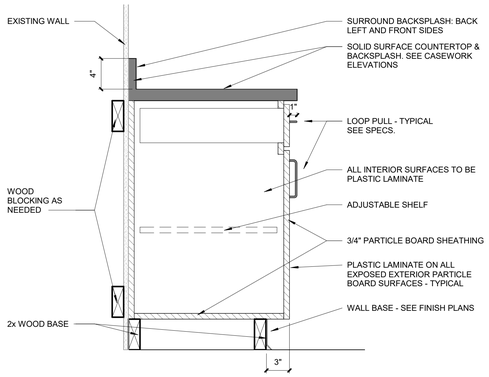
100% CONSTRUCTION DOCUMENTS

PROJECT: #21139
DATE: 04.26.2022
DRAWN BY: Author

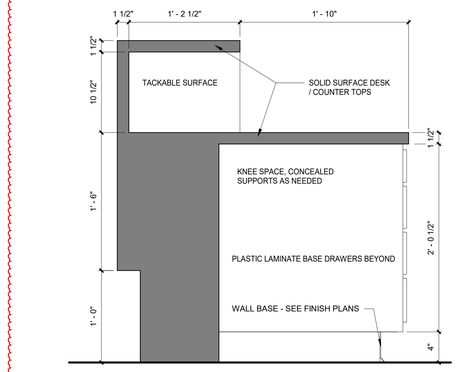
CASEWORK ELEVATIONS

A763

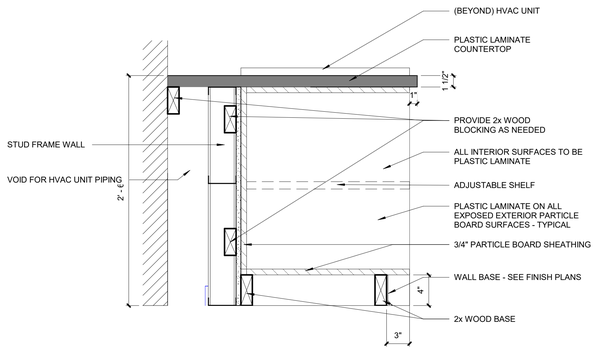
GENERAL CASEWORK NOTES	ALTERNATES
1. FABRICATE WOODWORK/ MILLWORK ITEMS TO ACTUAL FIELD DIMENSIONS. CONTRACTOR SHALL SUBMIT FOR DESIGNERS APPROVALS SHOP DRAWING SAMPLES OR MANUFACTURER'S LITERATURE FOR ALL ITEMS. SHOP DRAWINGS SHALL SHOW SUFFICIENT DETAIL TO DETERMINE COMPLIANCE WITH STANDARDS AND DESIGN INTENT. 2. PROVIDE ALL NECESSARY FURRING AND GROUNDS FOR WOODWORK AND FINISH ITEMS. COORDINATE LOCATION OF BLOCKING WITHIN FRAMED WALLS AS NECESSARY FOR ITMES TO BE SECURED TO SURFACE. ALL FASTENERS SHALL BE CONCEALED. 3. FINISH ALL SIDES AND BACK OF MILLWORK/ CASEWORK 4. PROVIDE GROMMETS IN COUNTERTOPS ABOVE ALL ELECTRICAL RECPETICALS AND TELEPHONE DATA ROUTINGS. 5. ALL PULLS TO BE 4" SATIN NICKEL SOLID WIRE PULL 6. PROVIDE LOCKS FOR ALL SOTAGE CASE CABINETS/ TALL STORAGE CABINETS, ALL DRAWERS AND DOORS, ALL UPPER WALL CABINETS AND ALL DISPLAY CASE SLIDING GLASS PANELS. 7. ALL PLASTIC LAMINATE SURFACES ON EXTERIOR OF CABINETS SHALL BE A STANDARD COLOR AS LISTED ON THE FINISH SCHEDULE 8. ALL INTERIORS BEHIND DOORS/ DRAWERS AND NOT VISIBLE SHALL BE WHITE. ALL SOLID SURFACE COUNTERTOPS SHALL BE A STANDARD COLOR AS SELECTED BY THE ARCHITECT 9. SEE ELEC. DWGS FOR ELECTRICAL DEVICES.	4. ALL UPPER CABINETS ABOVE C___IES



4 CASEWORK SECTION - A1a CHANGING TABLE
SCALE: 1 1/2" = 1'-0"



3 CIRCULATION DESK SECTION
SCALE: 1 1/2" = 1'-0"



2 CASEWORK TYP. SECTION - C2 C3 C4 - HVAC VOID BASE SHELF
SCALE: 1 1/2" = 1'-0"

1 CASEWORK TYP. SECTION - DRAWER BASE & UPPER
SCALE: 1 1/2" = 1'-0"

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#	Date	Desc.	
1	5/24/22	Addendum 1	
2	5/31/22	Addendum 2	

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PROJECT:	#21139
DATE:	04.28.2022
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CASEWORK DETAILS

A765

SHEET DEMO PLAN NOTES

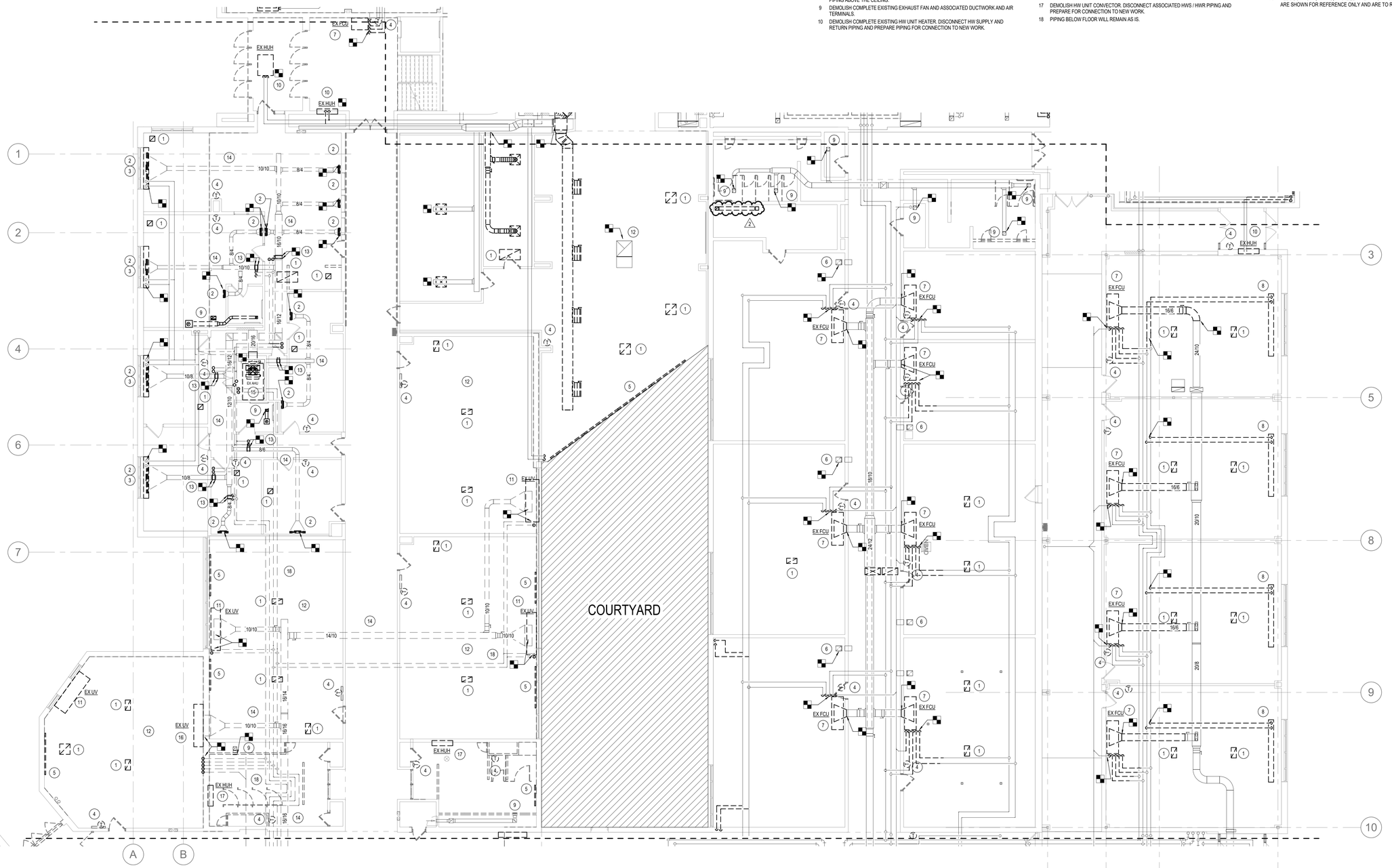
1. DEMOLISH COMPLETE EXISTING TRANSFER AIR GRILLE AND ASSOCIATED DUCTWORK.
2. DEMOLISH COMPLETE FLOOR-MOUNTED SUPPLY AIR GRILLE. PRESERVE DUCTWORK FOR FUTURE CONNECTION.
3. DEMOLISH CEILING-MOUNTED HW RADIANT PANEL COMPLETE. CAP HWS AND HWR PIPING ABOVE THE CEILING.
4. DEMOLISH COMPLETE EXISTING THERMOSTATS AND ASSOCIATED PNEUMATIC TUBING AND/OR WIRING.
5. DEMOLISH COMPLETE FLOOR-MOUNTED RADIANT HEATERS AND ASSOCIATED HWS / HWR PIPING.
6. DEMOLISH TRANSFER AIR GRILLE. RETAIN EXISTING TRANSFER AIR DUCTWORK. INSPECT EXISTING FIRE DAMPER AND REPLACE IF NECESSARY.
7. DEMOLISH COMPLETE EXISTING CEILING-MOUNTED FAN COIL UNIT. DISCONNECT HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING AND PREPARE FOR CONNECTION TO NEW HVAC EQUIPMENT. REMOVE OUTSIDE AIR DUCT CONNECTION TO BACK TO LOCATION SHOWN IN PLANS.
8. DEMOLISH CEILING-MOUNTED HW RADIANT PANEL COMPLETE. CAP HWS AND HWR PIPING ABOVE THE CEILING.
9. DEMOLISH COMPLETE EXISTING EXHAUST FAN AND ASSOCIATED DUCTWORK AND AIR TERMINALS
10. DEMOLISH COMPLETE EXISTING HW UNIT HEATER. DISCONNECT HW SUPPLY AND RETURN PIPING AND PREPARE PIPING FOR CONNECTION TO NEW WORK.

SHEET DEMO PLAN NOTES

11. DEMOLISH COMPLETE EXISTING FLOOR-MOUNTED UNIT VENTILATOR AND DISCONNECT FROM ASSOCIATED HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING. PREPARE PIPING FOR CONNECTION TO NEW WORK. PREPARE BELOW-FLOOR DUCTWORK FOR CONNECTION TO NEW WORK.
12. DEMOLISH COMPLETE ROOF-MOUNTED GRAVITY VENTILATOR. RETAIN DUCTWORK BELOW ROOF IF POSSIBLE. PREPARE EXISTING DUCTWORK FOR CONNECTION TO NEW WORK.
13. DEMOLISH EXISTING DUCT-MOUNTED HYDRONIC HEATING COIL AND DISCONNECT FROM ASSOCIATED DUCTWORK AND HWS / HWR PIPING. PREPARE EXISTING DUCTWORK AND PIPING FOR CONNECTION TO NEW WORK.
14. DUCTWORK BELOW FLOOR WILL REMAIN AS IS.
15. DEMOLISH EXISTING AIR HANDLING UNIT COMPLETE. DISCONNECT ALL HW / CW SUPPLY AND RETURN PIPING. DISCONNECT SUPPLY AIR DUCTWORK BELOW FLOOR. REMOVE COMPLETE OUTSIDE AIR DUCTWORK AND ROOF-MOUNTED GRAVITY VENTILATOR. PREPARE RETAINED PIPING AND DUCTWORK FOR CON
16. DEMOLISH COMPLETE EXISTING FLOOR-MOUNTED UNIT VENTILATOR AND ASSOCIATED PIPING. PREPARE BELOW-FLOOR DUCTWORK FOR CONNECTION TO NEW WORK.
17. DEMOLISH HW UNIT CONVECTOR. DISCONNECT ASSOCIATED HWS / HWR PIPING AND PREPARE FOR CONNECTION TO NEW WORK.
18. PIPING BELOW FLOOR WILL REMAIN AS IS.

GENERAL HVAC DEMO NOTES:

A. REVIEW THE WORK OF ALL OTHER TRADES, COORDINATE AND PLAN WORK WITH STRUCTURAL, ARCHITECTURAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION. ADJUST AS A RESULT OF COORDINATION. REVIEW COORDINATED EFFORTS WITH ENGINEER FOR APPROVAL.
B. PERFORM ALL WORK IN A SKILLED, PROFESSIONAL MANNER, MEETING THE ACCEPTANCE OF THE ENGINEER, ARCHITECT AND OWNER.
C. CLEAN ALL EQUIPMENT TO PRESENT A "LIKE NEW" CONDITION AT PROJECT COMPLETION. VACUUM CLEAN INTERNAL AREAS OF EQUIPMENT AND PANELS.
D. CLEAN ALL MECHANICAL AND ELECTRICAL AREAS AND ROOMS OF DEBRIS AND UNUSED MATERIALS. VACUUM FLOORS.
E. EXISTING CONDITIONS SHOWN ARE BASED ON EXISTING DRAWINGS AND CASUAL SITE OBSERVATIONS. NO DEMOLITION DISCOVERY WAS PERFORMED. NOT ALL FITTINGS AND OFFSETS ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR EXAMINING FIELD CONDITIONS AND NOTIFYING ENGINEER, IN WRITING, OF SIGNIFICANT DISCREPANCIES BETWEEN FIELD CONDITIONS AND CONTRACT DOCUMENTS.
F. ALL DUCTWORK, PIPING, AND EQUIPMENT NOT INDICATED TO BE REMOVED ARE SHOWN FOR REFERENCE ONLY AND ARE TO REMAIN.



1 GROUND FLOOR UNIT A HVAC DEMO PLAN
1/8" = 1'-0"
0 4' 8' 16'

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121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

DAVID M. BARRINGTON
REGISTERED
No. PE10910218
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

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CDG PROJECT: ##21102A
DATE: 04.26.22
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GROUND FLOOR UNIT A HVAC DEMO PLAN

HD101A

1|2
GA 3
GB

TRUE NORTH
PLAN NORTH

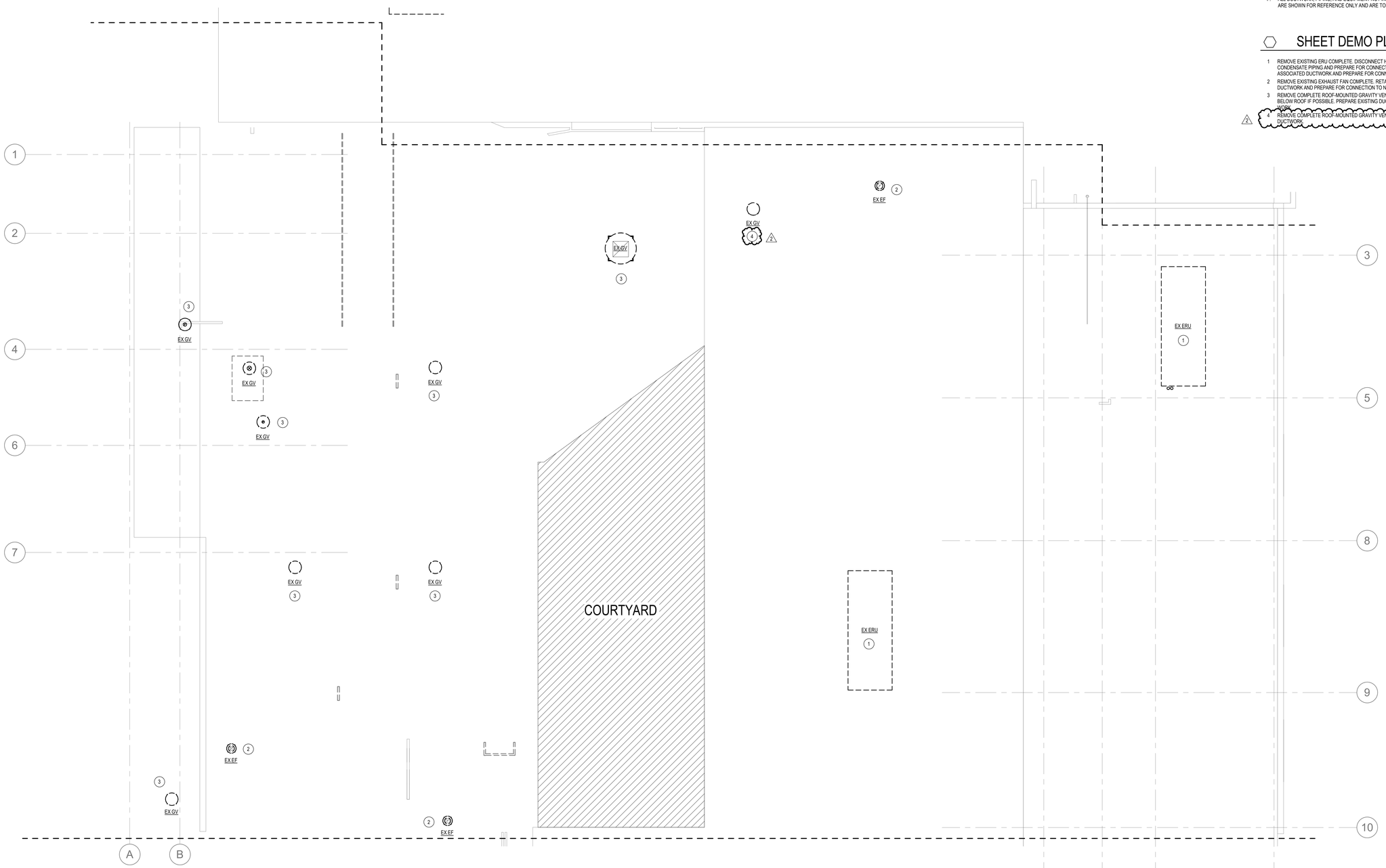
PLOT DATE/TIME: 5/27/2022 12:01:56 PM

GENERAL HVAC DEMO NOTES:

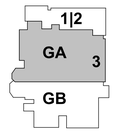
A. REVIEW THE WORK OF ALL OTHER TRADES. COORDINATE AND PLAN WORK WITH STRUCTURAL, ARCHITECTURAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION. ADJUST AS A RESULT OF COORDINATION. REVIEW COORDINATED EFFORTS WITH ENGINEER FOR APPROVAL.
B. PERFORM ALL WORK IN A SKILLED, PROFESSIONAL MANNER, MEETING THE ACCEPTANCE OF THE ENGINEER, ARCHITECT AND OWNER.
C. CLEAN ALL EQUIPMENT TO PRESENT A "LIKE NEW" CONDITION AT PROJECT COMPLETION. VACUUM CLEAN INTERNAL AREAS OF EQUIPMENT AND PANELS.
D. CLEAN ALL MECHANICAL AND ELECTRICAL AREAS AND ROOMS OF DEBRIS AND UNUSED MATERIALS. VACUUM FLOORS.
E. EXISTING CONDITIONS SHOWN ARE BASED ON EXISTING DRAWINGS AND CASUAL SITE OBSERVATIONS. NO DEMOLITION DISCOVERY WAS PERFORMED. NOT ALL FITTINGS AND OFFSETS ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR EXAMINING FIELD CONDITIONS AND NOTIFYING ENGINEER, IN WRITING, OF SIGNIFICANT DISCREPANCIES BETWEEN FIELD CONDITIONS AND CONTRACT DOCUMENTS.
F. ALL DUCTWORK, PIPING, AND EQUIPMENT NOT INDICATED TO BE REMOVED ARE SHOWN FOR REFERENCE ONLY AND ARE TO REMAIN.

SHEET DEMO PLAN NOTES

1 REMOVE EXISTING ERU COMPLETE. DISCONNECT HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING AND PREPARE FOR CONNECTION IN FUTURE WORK. DISCONNECT ASSOCIATED DUCTWORK AND PREPARE FOR CONNECTION IN NEW WORK.
2 REMOVE EXISTING EXHAUST FAN COMPLETE. RETAIN EXISTING EXHAUST AIR DUCTWORK AND PREPARE FOR CONNECTION TO NEW WORK.
3 REMOVE COMPLETE ROOF-MOUNTED GRAVITY VENTILATOR. RETAIN DUCTWORK BELOW ROOF IF POSSIBLE. PREPARE EXISTING DUCTWORK FOR CONNECTION TO NEW WORK.
2 4 REMOVE COMPLETE ROOF-MOUNTED GRAVITY VENTILATOR AND ASSOCIATED DUCTWORK



1 ROOF UNIT A HVAC DEMO PLAN
1/8" = 1'-0"
0 4' 8' 16'



TRUE NORTH
PLAN NORTH

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DAVID M. BARRINGTON
REGISTERED
No. PE10910216
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

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CDG PROJECT: ##21102A
DATE: 04.26.22
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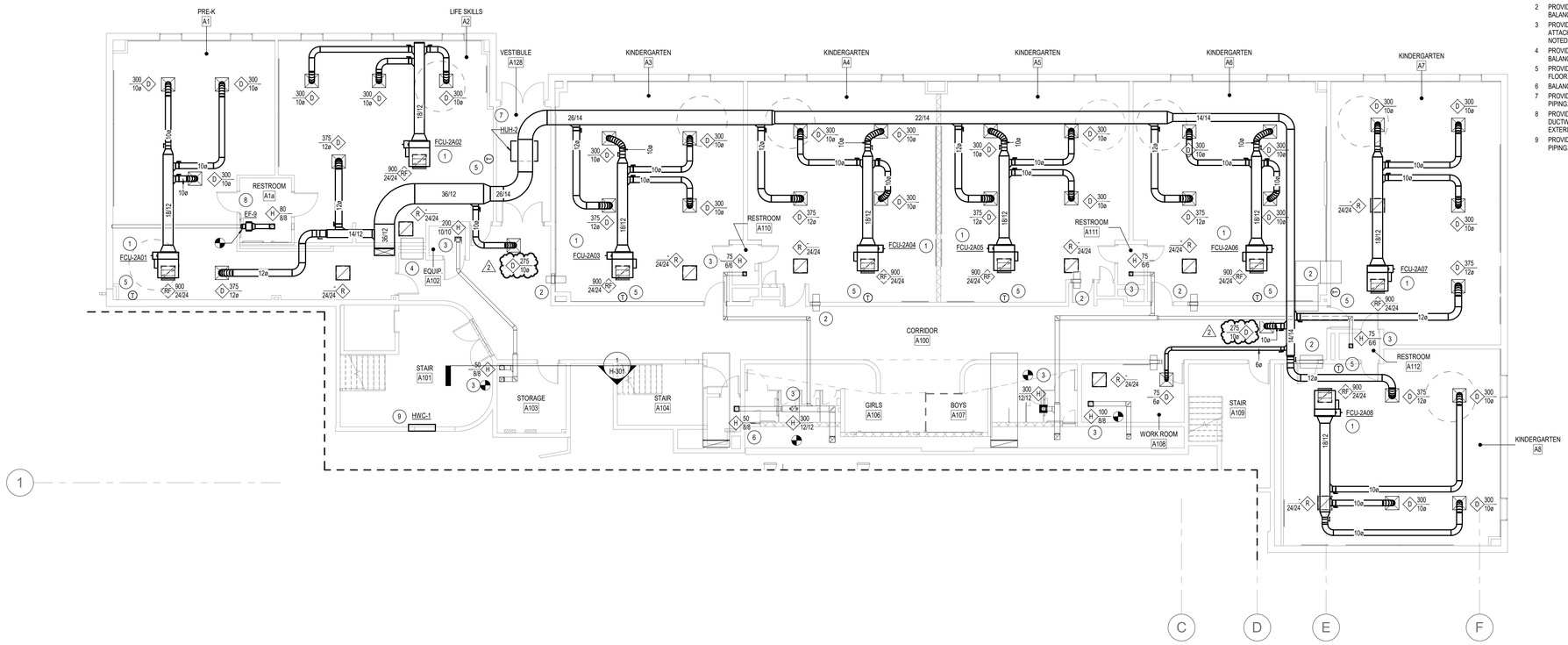
ROOF UNIT A HVAC DEMO PLAN

HD104A

PLOT DATE/TIME: 5/27/2022 12:01:39 PM



1 FIRST FLOOR HVAC PLAN

1/8" = 1'-0"

0 4' 8' 16'

GENERAL HVAC SHEET NOTES:

A. REVIEW THE WORK OF ALL OTHER TRADES. COORDINATE AND PLAN WORK WITH STRUCTURAL, ARCHITECTURAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION. ADJUST AS A RESULT OF COORDINATION. REVIEW COORDINATED EFFORTS WITH ENGINEER.
B. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED ITEMS.
C. STORE EQUIPMENT AND COMPONENTS IN A CLEAN, DRY LOCATION UNTIL READY FOR INSTALLATION. PROTECT FROM WEATHER, THEFT, DIRT, FUMES, WATER CONSTRUCTION DEBRIS, ETC, AT ALL TIMES. ANY DAMAGED EQUIPMENT OR COMPONENT SHALL BE RESTORED AS NEW OR REPLACED.
D. HVAC DRAWINGS SHOW THE INTENDED ARRANGEMENT AND ROUTING OF ALL DUCTWORK, PIPING, EQUIPMENT, AND APPURTENANCES. THEY SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT.
E. PERFORM ALL WORK IN A SKILLED, PROFESSIONAL MANNER, MEETING THE ACCEPTANCE OF THE ENGINEER, ARCHITECT AND OWNER.
F. SMALLEST PIPE SIZE ALLOWABLE IS 3/4" UNLESS SPECIFICALLY NOTED OTHERWISE.
G. CLAN ALL EQUIPMENT TO PRESENT A "LIKE NEW" CONDITION AT PRJECT COMPLETION. VACUUM CLEAN INTERNAL AREAS OF EQUIPMENT AND PANELS.
H. CLEAN ALL MECHANICAL AND ELECTRICAL AREAS AND ROOMS OF DEBRIS AND UNUSED MATERIALS. VACUUM FLOORS.
I. OFFSET DUCTWORK AND PIPING AROUND ELECTRICAL PANELS TO PROVIDE CLEARANCES AS REQUIRED BY NATIONAL ELECTRIC CODE.
J. ALL DUCTWORK AND PIPING TO BE ROUTED ABOVE CEILINGS UNLESS OTHERWISE NOTED.
K. EXISTING CONDITIONS SHOWN ARE BASED ON EXISTING DRAWINGS AND CASUAL SITE OBSERVATIONS. NO DEMOLITION DISCOVERY WAS PERFORMED. NOT ALL FITTINGS AND OFFSETS ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR EXAMINING FIELD CONDITIONS AND NOTIFYING ENGINEER, IN WRITING, OF SIGNIFICANT DISCREPANCIES BETWEEN FIELD CONDITIONS AND CONTRACT DOCUMENTS.
L. LOCATE ALL NEW SIDEWALL RETURN/TRANSFER GRILLES ABOVE THE CEILING/COVE, UNLESS NOTED OTHERWISE.

SHEET PLAN NOTES

1 PROVIDE NEW FAN COIL UNIT ABOVE CEILING. CONNECT TO EXISTING HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING. PROVIDE NEW HW / CW CONTROL VALVES. PROVIDE CONDENSATE PUMP (208V / 1PH) AT FAN COIL AND ROUTE NEW CONDENSATE PIPING BACK TO MAIN. RETURN GRILLE TO FAN COIL UNIT SHOULD INCORPORATE THE REQUIRED AIR FILTER.
2 PROVIDE NEW VOLUME DAMPER IN EXISTING TRANSFER DUCTWORK. BALANCE AIRFLOW TO 335 CFM.
3 PROVIDE NEW EXHAUST AIR GRILLE AND VOLUME DAMPER IF REQUIRED. ATTACH TO EXISTING EXHAUST AIR DUCTWORK AND BALANCE TO CFM NOTED.
4 PROVIDE NEW VOLUME DAMPER IN EXISTING TRANSFER DUCTWORK. BALANCE AIRFLOW TO 870 CFM.
5 PROVIDE THERMOSTAT. INSTALL TOP OF DEVICE AT 48" ABOVE FINISHED FLOOR.
6 BALANCE EXISTING EXHAUST AIR GRILLE TO CFM NOTED.
7 PROVIDE NEW HUH AND CONNECT TO EXISTING HW SUPPLY AND RETURN PIPING. PROVIDE NEW CONTROL VALVES.
8 PROVIDE NEW EXHAUST FAN EF-9, NEW EXHAUST GRILLE, AND ASSOCIATED DUCTWORK AND CONNECT TO EXISTING EXHAUST DUCTWORK ROUTED TO EXTERIOR.
9 PROVIDE NEW HWC AND CONNECT TO EXISTING HW SUPPLY AND RETURN PIPING. PROVIDE NEW CONTROL VALVES.

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DAVID H. BARRINGTON REGISTERED No. PE10910218 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

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CDG PROJECT: ##21102A
DATE: 04.26.22
DRAWN BY: EH

FIRST FLOOR HVAC PLAN

1|2
GA 3
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TRUE NORTH
PLAN NORTH

H-101

PLOT DATE/TIME: 5/27/2022 1:01:21 PM

SHEET PLAN NOTES

1. PROVIDE NEW FLOOR DIFFUSER AND BALANCE TO CFM NOTED.
2. PROVIDE NEW HUV UNIT AND CONNECT TO EXISTING HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING. PROVIDE NEW HW / CW CONTROL VALVES. CONNECT TO EXISTING VENTILATION DUCTWORK BELOW GRADE AND BALANCE AIRFLOW PER THE SCHEDULE.
3. PROVIDE NEW EXHAUST AIR GRILLE. ATTACH TO EXISTING EXHAUST AIR DUCTWORK AND BALANCE TO CFM NOTED.
4. PROVIDE NEW VOLUME DAMPER IN EXISTING TRANSFER DUCTWORK. BALANCE AIRFLOW TO 375 CFM.
5. PROVIDE NEW DUCT-MOUNTED HYDRONIC HEATING COIL. CONNECT TO EXISTING HWS / HWR PIPING AND TO EXISTING DUCTWORK. INSTALL NEW INSULATION TO PIPING AND DUCTWORK PER SPECIFICATIONS, AS NECESSARY. PROVIDE NEW CONTROL VALVES.
6. DUCTWORK THROUGH ROOF TO RELIEF GRAVITY VENTILATOR. SET BACKDRAFT DAMPER TO 0.05" WG.
7. PROVIDE NEW THERMOSTAT. INSTALL TOP OF DEVICE AT 48" ABOVE FINISHED FLOOR.
8. PROVIDE NEW FAN COIL UNIT ABOVE CEILING. CONNECT TO EXISTING HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING. PROVIDE NEW CONTROL VALVES. PROVIDE CONDENSATE PUMP AT FAN COIL (208V / 1PH) AND ROUTE NEW CONDENSATE PIPING BACK TO MAIN. RETURN GRILLE FOR FAN COIL UNIT SHOULD INCORPORATE REQUIRED AIR FILTER.
9. PROVIDE NEW HW RADIANT HEATER. AND CONNECT TO EXISTING HW SUPPLY AND RETURN PIPING. PROVIDE NEW CONTROL VALVES. SEE MECHANICAL SCHEDULES FOR MORE INFORMATION.
10. PROVIDE NEW HUH AND CONNECT TO EXISTING HW SUPPLY AND RETURN PIPING. PROVIDE NEW CONTROL VALVES.
11. PROVIDE NEW DUCTLESS SPLIT INDOOR UNIT. CONNECT TO DUCTLESS SPLIT OUTDOOR UNIT WITH REFRIGERANT PIPING PER MANUFACTURER IOM.
12. COORDINATE WITH ARCHITECTURAL PLANS TO ROUTE OUTSIDE AIR INTO ROOM. BALANCE AIRFLOW AT 375 CFM.

SHEET PLAN NOTES

13. PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING. PROVIDE AIRFLOW DAMPER AND SET TO ALLOW 375 CFM TO TRANSFER.
14. PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING. PROVIDE AIRFLOW DAMPER AND SET TO ALLOW 750 CFM TO TRANSFER.
15. PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING. PROVIDE AIRFLOW DAMPER AND SET TO ALLOW 1125 CFM TO TRANSFER.
16. DUCTWORK CONNECTION TO EXHAUST FAN ON THE ROOF. SEE ROOF PLANS FOR CONNECTION.
17. EXISTING SUPPLY AIR DUCTWORK BELOW FLOOR. MAKE REPAIRS TO INSULATION AS NECESSARY.
18. PROVIDE NEW EXHAUST FAN. NEW EXHAUST GRILLES, AND ASSOCIATED DUCTWORK. ROUTE DUCTWORK THROUGH ROOF TO NEW GRAVITY VENTILATOR. SEE H-104A ROOF PLAN FOR CONNECTION.
19. PROVIDE NEW AHU AND CONNECT TO EXISTING HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING. PROVIDE NEW CONTROL VALVES. CONNECT TO EXISTING DUCTWORK AND BALANCE AIRFLOW PER THE SCHEDULE. PROVIDE NEW OUTSIDE AIR DUCTWORK TO ROOF WITH CONNECTION TO GRAVITY VENTILATOR. PROVIDE NEW RETURN AIR DUCTWORK WITH MECHANICAL DAMPER. SEE X/H-30X.
20. PROVIDE NEW HW UNIT CONVECTOR AND CONNECT TO EXISTING HWS / HWR PIPING. PROVIDE NEW CONTROL VALVES.
21. PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA. NOT INCLUDING LINING.
22. PROVIDE NEW SUPPLY AIR DIFFUSER AND CONNECT TO EXISTING SUPPLY AIR DUCTWORK. BALANCE TO CFM NOTED.
23. PROVIDE NEW TRANSFER AIR DUCTWORK ABOVE CEILINGS. PROVIDE VOLUME DAMPER IN EXISTING TRANSFER DUCTWORK. BALANCE AIRFLOW TO 375 CFM.
24. PROVIDE NEW SUPPLY AND EXHAUST AIR DUCTWORK THROUGH ROOF TO DOAS-2. CONNECT SUPPLY AIR TO EXISTING MAIN DUCTWORK ABOVE CEILING. INCLUDE MOTORIZED DAMPER ON EXHAUST DUCT FOR AIR VOLUME CONTROL.
25. PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING. PROVIDE AIRFLOW DAMPER AND SET TO ALLOW 225 CFM TO TRANSFER.
26. EXISTING DIFFUSER IN JANITOR CLOSET. BALANCE TO 75 CFM EXHAUST.
27. EXISTING DUCTWORK. CAP MAIN SUPPLY DOWNSTREAM OF EXISTING BRANCH DUCT SERVING C1 MEDIA CENTER CONF ROOM.

GENERAL HVAC SHEET NOTES:

A. REVIEW THE WORK OF ALL OTHER TRADES. COORDINATE AND PLAN WORK WITH STRUCTURAL, ARCHITECTURAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION. ADJUST AS A RESULT OF COORDINATION. REVIEW COORDINATED EFFORTS WITH ENGINEER.
B. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED ITEMS.
C. STORE EQUIPMENT AND COMPONENTS IN A CLEAN, DRY LOCATION UNTIL READY FOR INSTALLATION. PROTECT FROM WEATHER, THEFT, DIRT, FUMES, WATER CONSTRUCTION DEBRIS, ETC. AT ALL TIMES. ANY DAMAGED EQUIPMENT OR COMPONENT SHALL BE RESTORED AS NEW OR REPLACED.
D. HVAC DRAWINGS SHOW THE INTENDED ARRANGEMENT AND ROUTING OF ALL DUCTWORK, PIPING, EQUIPMENT, AND APPURTENANCES. THEY SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT.
E. PERFORM ALL WORK IN A SKILLED, PROFESSIONAL MANNER, MEETING THE ACCEPTANCE OF THE ENGINEER, ARCHITECT AND OWNER.
F. SMALLEST PIPE SIZE ALLOWABLE IS 3/4" UNLESS SPECIFICALLY NOTED OTHERWISE.
G. CLAN ALL EQUIPMENT TO PRESENT A "LIKE NEW" CONDITION AT PROJECT COMPLETION. VACUUM CLEAN INTERNAL AREAS OF EQUIPMENT AND PANELS.
H. CLEAN ALL MECHANICAL AND ELECTRICAL AREAS AND ROOMS OF DEBRIS AND UNUSED MATERIALS. VACUUM FLOORS.
I. OFFSET DUCTWORK AND PIPING AROUND ELECTRICAL PANELS TO PROVIDE CLEARANCES AS REQUIRED BY NATIONAL ELECTRIC CODE.
J. ALL DUCTWORK AND PIPING TO BE ROUTED ABOVE CEILINGS UNLESS OTHERWISE NOTED.
K. EXISTING CONDITIONS SHOWN ARE BASED ON EXISTING DRAWINGS AND CASUAL SITE OBSERVATIONS. NO DEMOLITION DISCOVERY WAS PERFORMED. NOT ALL FITTINGS AND OFFSETS ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR EXAMINING FIELD CONDITIONS AND NOTIFYING ENGINEER, IN WRITING, OF SIGNIFICANT DISCREPANCIES BETWEEN FIELD CONDITIONS AND CONTRACT DOCUMENTS.
L. LOCATE ALL NEW SIDEWALL RETURN/TRANSFER GRILLES ABOVE THE CEILING/COVE, UNLESS NOTED OTHERWISE.

1 GROUND FLOOR UNIT A HVAC PLAN
1/8" = 1'-0"
0 4' 8' 16'

LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

CIRCLE DESIGN GROUP
INDIANAPOLIS, IN | 317.781.6200
CIRCLEDESIGNGROUP.COM

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

DAVID M. BARRIENTOS
REGISTERED
No. PE10910218
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:			
#	Date	Desc.	
1	05.24.22	ADDENDUM #1	
2	05.31.22	ADDENDUM #2	

100% CONSTRUCTION DOCUMENTS

CDG PROJECT:	##21102A
DATE:	04.28.22
DRAWN BY:	EH

GROUND FLOOR UNIT A HVAC PLAN

H-101A

1|2 GA 3 GB

TRUE NORTH

PLAN NORTH

PLOT DATE/TIME:5/27/2022 12:01:31 PM

SHEET PLAN NOTES

1 PROVIDE NEW FLOOR-MOUNTED FAN COIL UNIT AND CONNECT TO EXISTING HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING. PROVIDE NEW CONTROL VALVES. CONNECT TO EXISTING VENTILATION DUCTWORK BELOW GRADE AND BALANCE AIRFLOW PER THE SCHEDULE.

2 PROVIDE NEW EXHAUST AIR GRILLES AND NEW EXHAUST AIR DUCTWORK AS SHOWN. ROUTE DUCTWORK THROUGH DECK TO ROOF-MOUNTED EXHAUST FAN. SEE H-104B FOR CONNECTION. BALANCE AIR TERMINALS TO CFM NOTED.

3 PROVIDE NEW SUPPLY AIR GRILLE AND CONNECT TO EXISTING SUPPLY AIR DUCTWORK. BALANCE TO CFM NOTED.

4 PROVIDE NEW RETURN AIR GRILLE AND CONNECT TO EXISTING RETURN AIR DUCTWORK. BALANCE TO CFM NOTED.

5 PROVIDE NEW THERMOSTAT. INSTALL TOP OF DEVICE AT 48" ABOVE FINISHED FLOOR.

6 PROVIDE NEW PACKAGED CHILLED WATER FLOW CONTROL SYSTEM.

7 PROVIDE NEW WALL-MOUNTED VFDS FOR NEW CHILLED WATER PUMPS.

8 EXISTING REFRIGERANT LEAK DETECTION SYSTEM TO BE TIED TO EF-14.

9 TIE EXISTING MOTORIZED DAMPER TO EF-14 AND EF-15. PROVIDE WITH 3 POSITIONS: CLOSED, 250 CFM AND FULLY OPEN. EXISTING DRIP PAN UNDERNEATH OPENING TO REMAIN.

10 PROVIDE NEW AHU AND CONNECT TO EXISTING HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING. PROVIDE NEW CONTROL VALVES. PROVIDE NEW OUTSIDE AIR DUCTWORK ROUTED AS SHOWN AND UP THROUGH ROOF TO NEW GRAVITY VENTILATOR. BALANCE AIRFLOW PER THE SCHEDULE.

11 PROVIDE NEW HW UNIT CONVECTOR AND CONNECT TO EXISTING HWS / HWR PIPING. PROVIDE NEW CONTROL VALVES.

12 PROVIDE NEW FLOOR-MOUNTED DIFFUSER AND MOUNT TO EXISTING BELOW-FLOOR DUCTWORK. BALANCE AIRFLOW AT 375 CFM.

13 PROVIDE NEW FAN COIL UNIT ABOVE CEILING. CONNECT TO EXISTING HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING. PROVIDE NEW CONTROL VALVES. PROVIDE CONDENSATE PUMP (208V / 1PH) AND CONNECT TO EXISTING CONDENSATE PIPING. RETURN GRILLE TO FAN COIL UNIT SHOULD INCORPORATE REQUIRED AIR FILTER.

SHEET PLAN NOTES

14 NEW BRAZED-PLATE HEAT EXCHANGER TO ACCOMPANY SELECTED CHILLER. CONNECT TO EXISTING CW PIPING FROM CW PUMPS. CONNECT TO NEW REFRIGERANT PIPING FROM NEW CHILLER CH-1. MOUNT ON EXISTING CONCRETE HOUSEKEEPING PAD.

15 PROVIDE NEW HW CIRCULATION PUMPS AND CONNECT TO EXISTING HW SUPPLY AND RETURN PIPING. PUMPS ARE VFD CONTROLLED.

16 PROVIDE NEW CW CIRCULATION PUMPS AND CONNECT TO EXISTING CW SUPPLY AND RETURN PIPING. PUMPS ARE VFD CONTROLLED.

17 PROVIDE NEW HUH AND CONNECT TO EXISTING HW SUPPLY AND RETURN PIPING. PROVIDE NEW CONTROL VALVES.

18 PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING.

19 PROVIDE NEW HRH AND CONNECT TO EXISTING HW SUPPLY AND RETURN PIPING. PROVIDE NEW CONTROL VALVES. SEE MECHANICAL SCHEDULES FOR MORE INFORMATION.

20 PROVIDE NEW EXHAUST FAN, NEW EXHAUST GRILLES, AND ASSOCIATED DUCTWORK. ROUTE DUCTWORK THROUGH ROOF TO NEW GRAVITY VENTILATOR. SEE H-104B ROOF PLAN FOR CONNECTION.

21 THREE (3) EXISTING HW BOILERS TO REMAIN AS IS.

22 PROVIDE NEW EXHAUST FAN EF-13, EXHAUST GRILLE, AND ASSOCIATED DUCTWORK THROUGH EXTERIOR WALL. TERMINATE EXHAUST DUCT WITH WALL CAP SIMILAR TO WC-8.

23 EXISTING SUPPLY AIR DUCTWORK BELOW FLOOR. MAKE REPAIRS TO INSULATION AS NECESSARY.

24 DUCTWORK THROUGH ROOF TO RELIEF GRAVITY VENTILATOR. SET BACKDRAFT DAMPER TO 0.05" WG.

GENERAL HVAC SHEET NOTES:

A. REVIEW THE WORK OF ALL OTHER TRADES. COORDINATE AND PLAN WORK WITH STRUCTURAL, ARCHITECTURAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION. ADJUST AS A RESULT OF COORDINATION. REVIEW COORDINATED EFFORTS WITH ENGINEER.

B. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED ITEMS.

C. STORE EQUIPMENT AND COMPONENTS IN A CLEAN, DRY LOCATION UNTIL READY FOR INSTALLATION. PROTECT FROM WEATHER, THEFT, DIRT, FUMES, WATER CONSTRUCTION DEBRIS, ETC. AT ALL TIMES. ANY DAMAGED EQUIPMENT OR COMPONENT SHALL BE RESTORED AS NEW OR REPLACED.

D. HVAC DRAWINGS SHOW THE INTENDED ARRANGEMENT AND ROUTING OF ALL DUCTWORK, PIPING, EQUIPMENT, AND APPURTENANCES. THEY SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT.

E. PERFORM ALL WORK IN A SKILLED, PROFESSIONAL MANNER, MEETING THE ACCEPTANCE OF THE ENGINEER, ARCHITECT AND OWNER.

F. SMALLEST PIPE SIZE ALLOWABLE IS 3/4" UNLESS SPECIFICALLY NOTED OTHERWISE.

G. CLAN ALL EQUIPMENT TO PRESENT A "LIKE NEW" CONDITION AT PRJECT COMPLETION. VACUUM CLEAN INTERNAL AREAS OF EQUIPMENT AND PANELS.

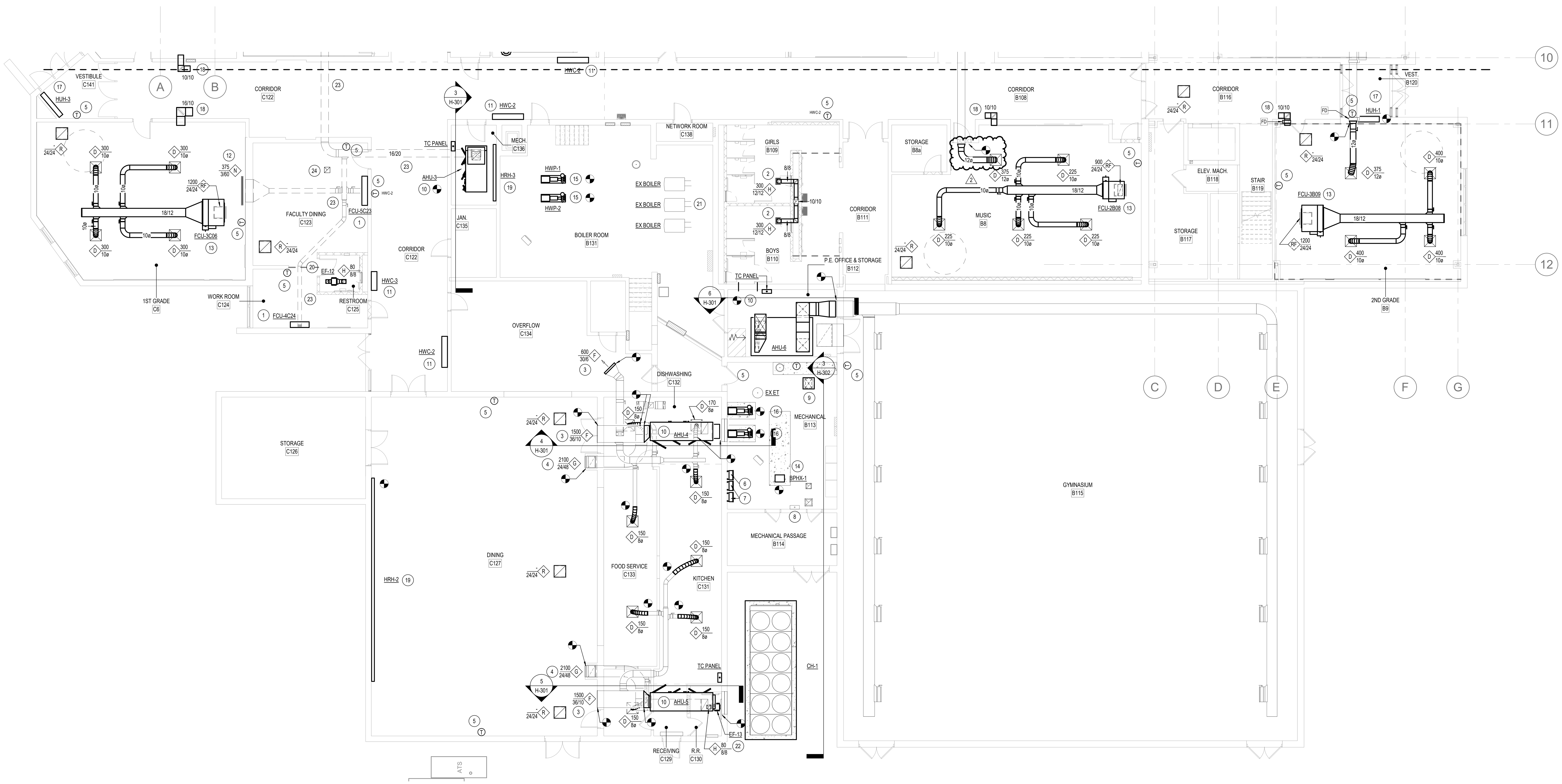
H. CLEAN ALL MECHANICAL AND ELECTRICAL AREAS AND ROOMS OF DEBRIS AND UNUSED MATERIALS. VACUUM FLOORS.

I. OFFSET DUCTWORK AND PIPING AROUND ELECTRICAL PANELS TO PROVIDE CLEARANCES AS REQUIRED BY NATIONAL ELECTRIC CODE.

J. ALL DUCTWORK AND PIPING TO BE ROUTED ABOVE CEILINGS UNLESS OTHERWISE NOTED.

K. EXISTING CONDITIONS SHOWN ARE BASED ON EXISTING DRAWINGS AND CASUAL SITE OBSERVATIONS. NO DEMOLITION DISCOVERY WAS PERFORMED. NOT ALL FITTINGS AND OFFSETS ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR EXAMINING FIELD CONDITIONS AND NOTIFYING ENGINEER, IN WRITING, OF SIGNIFICANT DISCREPANCIES BETWEEN FIELD CONDITIONS AND CONTRACT DOCUMENTS.

L. LOCATE ALL NEW SIDEWALL RETURN/TRANSFER GRILLES ABOVE THE CEILING/COVE, UNLESS NOTED OTHERWISE.



1 GROUND FLOOR UNIT B HVAC PLAN

1/8" = 1'-0"

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ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

CIRCLE DESIGN GROUP

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

REVISIONS:

#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

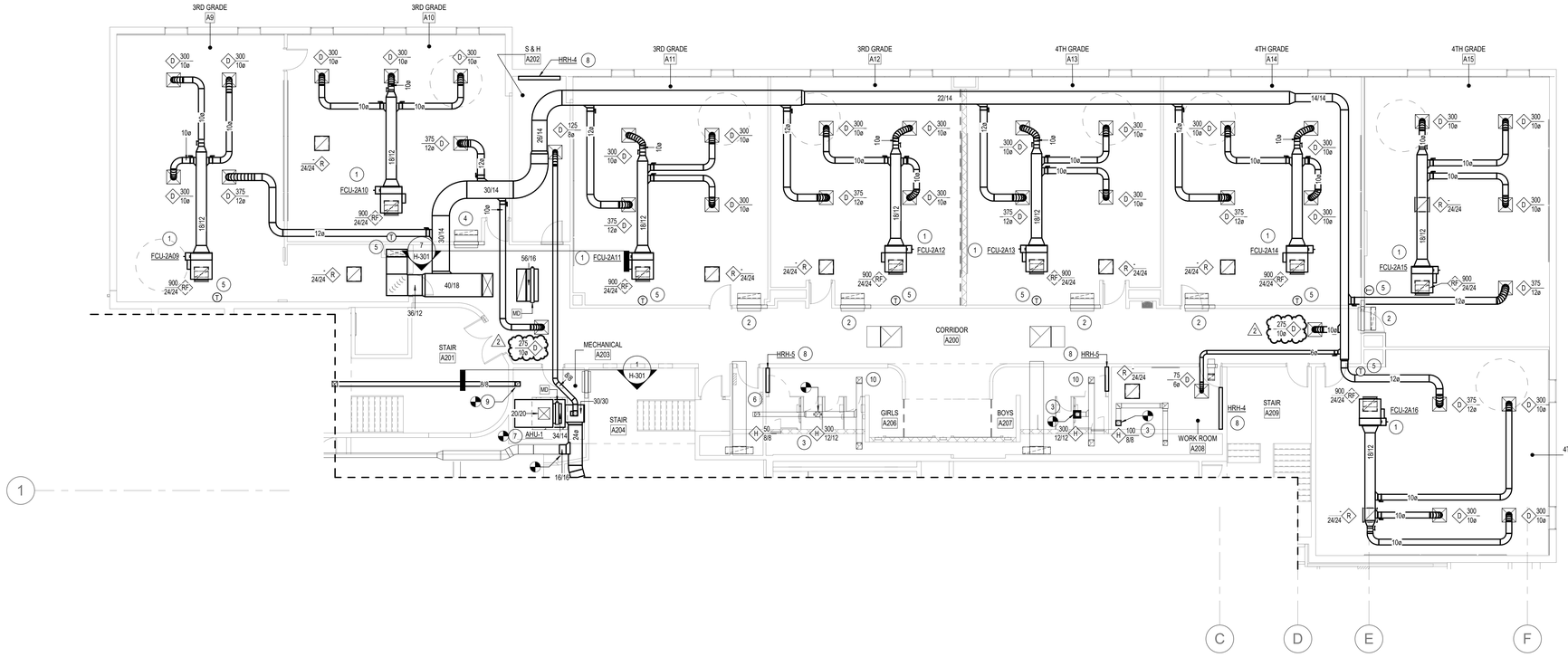
100% CONSTRUCTION DOCUMENTS

CDG PROJECT: ##21102A
DATE: 04.26.22
DRAWN BY: EH

GROUND FLOOR UNIT B HVAC PLAN

TRUE NORTH
PLAN NORTH

H-101B



1 SECOND FLOOR HVAC PLAN

1/8" = 1'-0" 0 4' 8' 16'

GENERAL HVAC SHEET NOTES:

A. REVIEW THE WORK OF ALL OTHER TRADES. COORDINATE AND PLAN WORK WITH STRUCTURAL, ARCHITECTURAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION. ADJUST AS A RESULT OF COORDINATION. REVIEW COORDINATED EFFORTS WITH ENGINEER.
B. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED ITEMS.
C. STORE EQUIPMENT AND COMPONENTS IN A CLEAN, DRY LOCATION UNTIL READY FOR INSTALLATION. PROTECT FROM WEATHER, THEFT, DIRT, FUMES, WATER CONSTRUCTION DEBRIS, ETC. AT ALL TIMES. ANY DAMAGED EQUIPMENT OR COMPONENT SHALL BE RESTORED AS NEW OR REPLACED.
D. HVAC DRAWINGS SHOW THE INTENDED ARRANGEMENT AND ROUTING OF ALL DUCTWORK, PIPING, EQUIPMENT, AND APPURTENANCES. THEY SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT.
E. PERFORM ALL WORK IN A SKILLED, PROFESSIONAL MANNER, MEETING THE ACCEPTANCE OF THE ENGINEER, ARCHITECT AND OWNER.
F. SMALLEST PIPE SIZE ALLOWABLE IS 3/4" UNLESS SPECIFICALLY NOTED OTHERWISE.
G. CLAN ALL EQUIPMENT TO PRESENT A "LIKE NEW" CONDITION AT PRJECT COMPLETION. VACUUM CLEAN INTERNAL AREAS OF EQUIPMENT AND PANELS.
H. CLEAN ALL MECHANICAL AND ELECTRICAL AREAS AND ROOMS OF DEBRIS AND UNUSED MATERIALS. VACUUM FLOORS.
I. OFFSET DUCTWORK AND PIPING AROUND ELECTRICAL PANELS TO PROVIDE CLEARANCES AS REQUIRED BY NATIONAL ELECTRIC CODE.
J. ALL DUCTWORK AND PIPING TO BE ROUTED ABOVE CEILINGS UNLESS OTHERWISE NOTED.
K. EXISTING CONDITIONS SHOWN ARE BASED ON EXISTING DRAWINGS AND CASUAL SITE OBSERVATIONS. NO DEMOLITION DISCOVERY WAS PERFORMED. NOT ALL FITTINGS AND OFFSETS ARE SHOWN. CONTRACTOR IS RESPONSIBLE FOR EXAMINING FIELD CONDITIONS AND NOTIFYING ENGINEER, IN WRITING, OF SIGNIFICANT DISCREPANCIES BETWEEN FIELD CONDITIONS AND CONTRACT DOCUMENTS.
L. LOCATE ALL NEW SIDEWALL RETURN/TRANSFER GRILLES ABOVE THE CEILING/COVE, UNLESS NOTED OTHERWISE.

SHEET PLAN NOTES

1 PROVIDE NEW FAN COIL UNIT ABOVE CEILING. CONNECT TO EXISTING HW / CW SUPPLY AND RETURN PIPING. PROVIDE NEW CONTROL VALVES. PROVIDE CONDENSATE PUMP 208V, 1 PH) AT FAN COIL AND NEW CONDENSATE PIPING BACK TO MAIN. RETURN GRILLE TO FAN COIL UNIT SHOULD INCORPORATE REQUIRED AIR FILTER.
2 PROVIDE NEW VOLUME DAMPER IN EXISTING TRANSFER DUCTWORK. BALANCE AIRFLOW TO 375 CFM.
3 PROVIDE NEW EXHAUST AIR GRILLE. ATTACH TO EXISITNG EXHAUST AIR DUCTWORK AND BALANCE TO CFM NOTED.
4 PROVIDE NEW VOLUME DAMPER IN EXISTING TRANSFER DUCTWORK. BALANCE AIRFLOW TO 750 CFM.
5 PROVIDE THERMOSTAT. INSTALL TOP OF DEVICE AT 48" ABOVE FINISHED FLOOR.
6 BALANCE EXISTING EXHAUST AIR GRILLE TO CFM NOTED.
7 PROVIDE NEW AHU AND CONNECT TO EXISTING HW / CW SUPPLY AND RETURN AND CONDENSATE PIPING. PROVIDE NEW CONTROL VALVES.
8 PROVIDE NEW HW RADIANT HEATER AND CONNECT TO EXISTING HW SUPPLY AND RETURN PIPING. PROVIDE NEW CONTROL VALVES. SEE MECHANICAL SCHEDULES FOR MORE INFORMATION.
9 PROVIDE NEW EXHAUST AIR DUCTWORK AND CONNECT TO EXISTING EXHAUST AIR RISER FROM FIRST FLOOR. ROUTE NEW DUCTWORK AS SHOWN AND THROUGH ROOF TO NEW EXHAUST FAN. SEE H-101 AND H-104 FOR DUCTWORK CONTINUATION.
10 EXISTING EXHAUST AIR DUCTWORK RISER TO ROOF AND CONNECTION TO NEW NEW EXHAUST FAN. SEE H-104 FOR DUCTWORK CONTINUATION.

LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

CIRCLE DESIGN GROUP
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CIRCLEDESIGNGROUP.COM

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

DAVID M. BARRIENTOS
REGISTERED
No. PE10901021B
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

100% CONSTRUCTION DOCUMENTS

CDG PROJECT: ##21102A
DATE: 04.26.22
DRAWN BY: EH

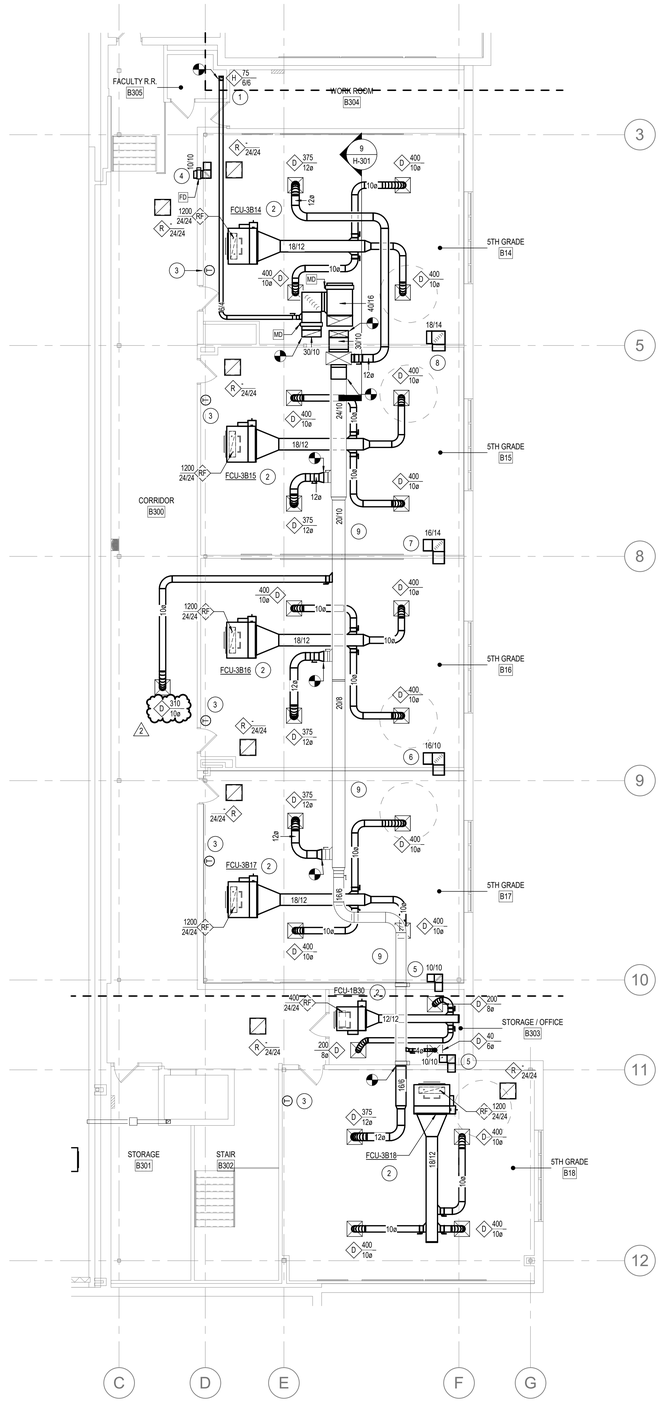
SECOND FLOOR HVAC PLAN

1|2
GA 3
GB

TRUE NORTH
PLAN NORTH

H-102

PLOT DATE/TIME:5/27/2022 12:01:41 PM



1 THIRD FLOOR HVAC PLAN

1/8" = 1'-0"

0 4' 8' 16'

GENERAL HVAC SHEET NOTES:

A. REVIEW THE WORK OF ALL OTHER TRADES. COORDINATE AND PLAN WORK WITH STRUCTURAL, ARCHITECTURAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION. ADJUST AS A RESULT OF COORDINATION. REVIEW COORDINATED EFFORTS WITH ENGINEER.
B. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED ITEMS.
C. STORE EQUIPMENT AND COMPONENTS IN A CLEAN, DRY LOCATION UNTIL READY FOR INSTALLATION. PROTECT FROM WEATHER, THEFT, DIRT, FUMES, WATER CONSTRUCTION DEBRIS, ETC. AT ALL TIMES. ANY DAMAGED EQUIPMENT OR COMPONENT SHALL BE RESTORED AS NEW OR REPLACED.
D. HVAC DRAWINGS SHOW THE INTENDED ARRANGEMENT AND ROUTING OF ALL DUCTWORK, PIPING, EQUIPMENT, AND APPURTENANCES. THEY SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT.
E. PERFORM ALL WORK IN A SKILLED, PROFESSIONAL MANNER, MEETING THE ACCEPTANCE OF THE ENGINEER, ARCHITECT AND OWNER.
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G. CLAN ALL EQUIPMENT TO PRESENT A "LIKE NEW" CONDITION AT PRJECT COMPLETION. VACUUM CLEAN INTERNAL AREAS OF EQUIPMENT AND PANELS.
H. CLEAN ALL MECHANICAL AND ELECTRICAL AREAS AND ROOMS OF DEBRIS AND UNUSED MATERIALS. VACUUM FLOORS.
I. OFFSET DUCTWORK AND PIPING AROUND ELECTRICAL PANELS TO PROVIDE CLEARANCES AS REQUIRED BY NATIONAL ELECTRIC CODE.
J. ALL DUCTWORK AND PIPING TO BE ROUTED ABOVE CEILINGS UNLESS OTHERWISE NOTED.
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L. LOCATE ALL NEW SIDEWALL RETURN/TRANSFER GRILLES ABOVE THE CEILING/COVE, UNLESS NOTED OTHERWISE.

SHEET PLAN NOTES

1 PROVIDE NEW EXHAUST AIR GRILLE AND NEW DUCTWORK BACK TO DOAS-3 DUCTWORK.
2 PROVIDE NEW FAN COIL UNIT ABOVE CEILING. CONNECT TO EXISTING HW / CW SUPPLY AND RETURN PIPING. PROVIDE NEW CONTROL VALVES. PROVIDE CONDENSATE PUMP (208V, 1 PH) AT FAN COIL AND NEW CONDENSATE PIPING BACK TO MAIN. RETURN AIR GRILLE TO FAN COIL UNIT SHOULD INCORPORATE REQUIRED AIR FILTER.
3 PROVIDE NEW THERMOSTAT. INSTALL TOP OF DEVICE AT 48" ABOVE FINISHED FLOOR.
4 PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING. PROVIDE AIRFLOW DAMPER AND SET TO ALLOW 250 CFM TO TRANSFER.
5 PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING. PROVIDE AIRFLOW DAMPER AND SET TO ALLOW 375 CFM TO TRANSFER.
6 PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING. PROVIDE AIRFLOW DAMPER AND SET TO ALLOW 750 CFM TO TRANSFER.
7 PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING. PROVIDE AIRFLOW DAMPER AND SET TO ALLOW 1125 CFM TO TRANSFER.
8 PROVIDE 1" LINED TRANSFER DUCTWORK ABOVE CEILINGS. SIZING SHOWN IS FREE AREA, NOT INCLUDING LINING. PROVIDE AIRFLOW DAMPER AND SET TO ALLOW 1500 CFM TO TRANSFER.
9 EXISTING DUCTWORK TO REMAIN AS IS. REPAIR INSULATION TO SPECIFICATIONS, WHERE NECESSARY.

LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
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INDIANAPOLIS, IN 46202

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COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

DAVID M. BARRINGER
REGISTERED
No. PE10910218
STATE OF INDIANA
PROFESSIONAL ENGINEER

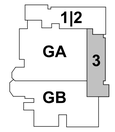
REVISIONS:

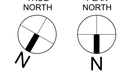
#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

100% CONSTRUCTION DOCUMENTS

CDG PROJECT: ##21102A
DATE: 04.26.22
DRAWN BY: EH

THIRD FLOOR HVAC PLAN





H-103

PLOT DATE/TIME: 5/27/2022 12:01:43 PM

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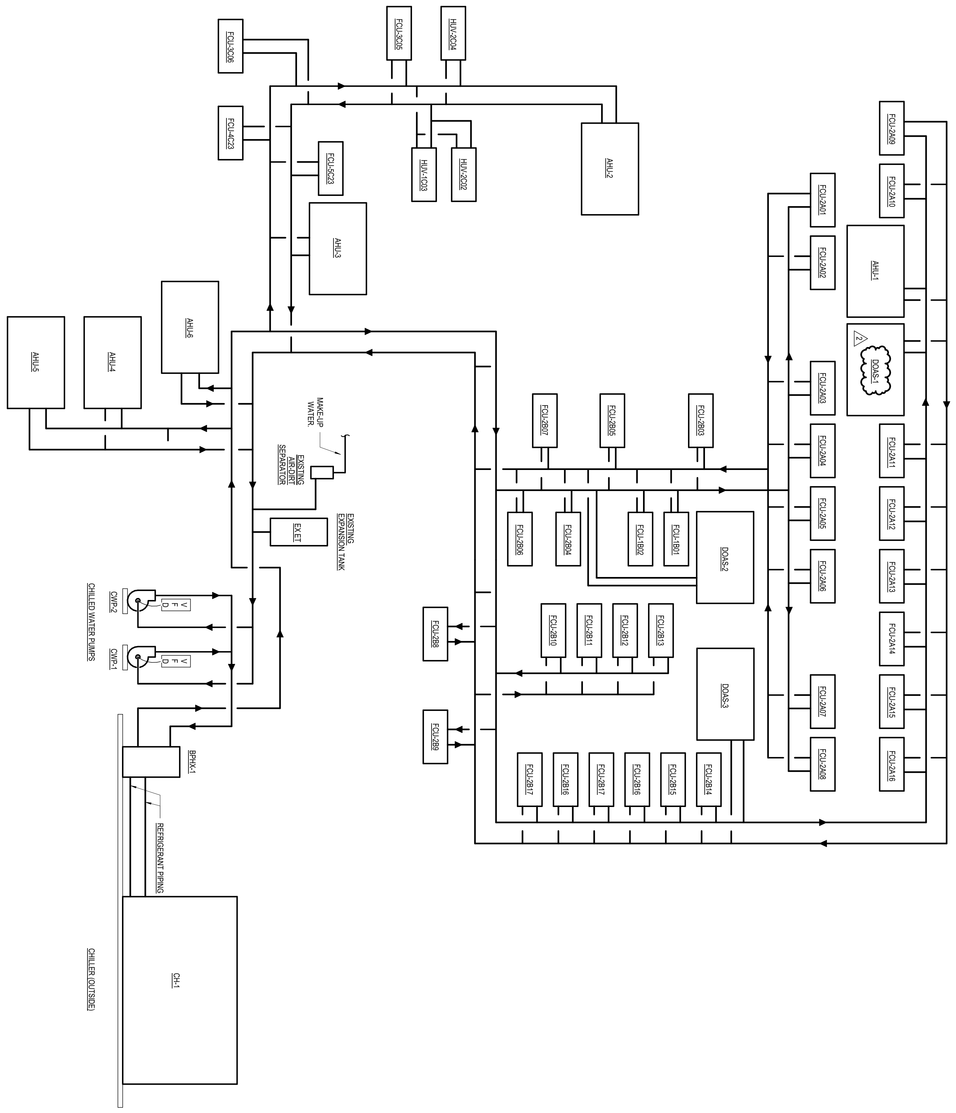

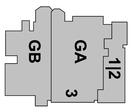

H-401

CHILLED WATER SYSTEM DIAGRAMS

CDG PROJECT:	##21102A
DRAWN BY:	EH

100% CONSTRUCTION DOCUMENTS

REVISIONS:

#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

SHELBYVILLE CENTRAL SCHOOLS
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121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

CIRCLE DESIGN GROUP
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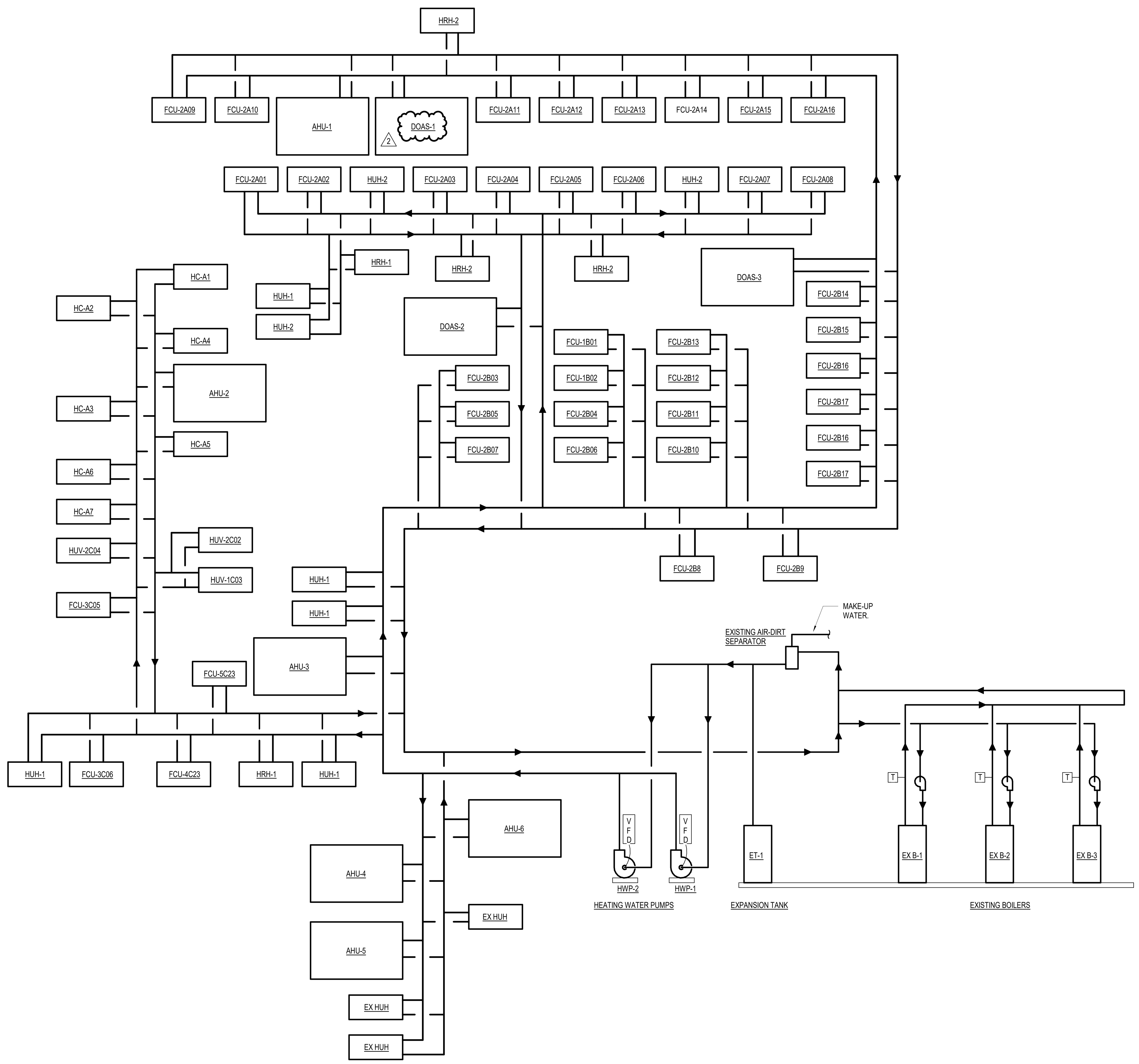
INDIANAPOLIS, IN 46202



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220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

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100% CONSTRUCTION DOCUMENTS

CDG PROJECT: ##21102A
DATE: 04.26.22
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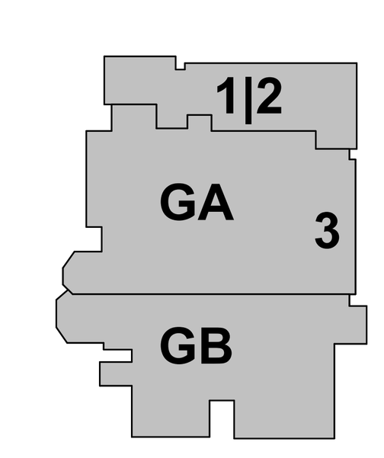
HEATING WATER SYSTEM DIAGRAM



TRUE NORTH

PLAN NORTH

H-402

AIR HANDLING UNIT SCHEDULE

MARK	LOCATION	AIR CAPACITY		SUPPLY FAN DATA							RETURN FAN DATA							FILTER DATA		HYDRONIC COOLING COIL SELECTION DATA												HYDRONIC HEATING COIL SELECTION DATA										ELECTRICAL DATA				UNIT WEIGHT (LBS.)	MANUFACTURER WITH MODEL NUMBER	NOTES
		SUPPLY CFM	EXHAUST CFM	TYPE	ESP	TSP	BHP	RPM	MOTOR HP	MOTOR VOLTS	MOTOR PH	TYPE	ESP	TSP	BHP	RPM	MOTOR HP	MOTOR VOLTS	MOTOR PH	TYPE	MERV	TOTAL MBH	SENS MBH	EAT DB	EAT WB	LAT DB	LAT WB	ROWS	FINS/ INCH	MAX APD	MAX VEL	EWT	GPM	MAX WPD	MIN MBH	EAT	LAT	ROWS	FINS/ INCH	MAX APD	MAX VEL	EWT	GPM	MAX WPD	MCA	MOCP	VOLTS	PH			
DOAS-1	ROOF	7250	4900	PLENUM - DIR DRV	2.0	4.6	8.5	1998	10	208	3	PLENUM - DIR DRV	2.0	3.0	3.95	1548	5	208	3	PLEATED	8	414	262	84.4	69.7	51.5	51.4	6	10	0.646	387	42	58.8	15.5	311	33.5	73.2	2	10	0.087	418	130	21.0	1.2	102.7	110	208	3	4200	VALENT VXE-212-58-40H	1, 2, 3, 4
DOAS-2	ROOF	3450	1950	PLENUM - DIR DRV	2.0	4.1	3.58	2192	5	208	3	PLENUM - DIR DRV	2.0	2.9	1.60	1719	2	208	3	PLEATED	8	209	131	86.0	70.7	51.6	51.5	6	10	0.498	320	42	29.8	4.8	166	32.0	77.3	2	10	0.062	336	130	11.1	0.6	76.6	80	208	3	3000	VALENT VXE-112-41-40H	1, 2, 3, 4, 5
DOAS-3	ROOF	4400	3350	PLENUM - DIR DRV	2.0	3.2	3.48	1493	5	208	3	PLENUM - DIR DRV	2.0	2.7	2.32	1329	5	208	3	PLEATED	8	208	140	82.7	68.5	53.7	53.4	4	10	0.217	235	42	29.6	3.3	207	38.0	81.4	2	10	0.042	253	130	13.9	0.6	69.8	70	208	3	4000	VALENT VXE-212-58-40H	1, 2, 3, 4, 5

NOTES:

1. FACTORY-PROVIDED DDC CONTROLLER.
2. FACTORY-PROVIDED DISCONNECT FOR SINGLE-POINT POWER AND INTEGRAL VFDs FOR THE SUPPLY FAN, EXHAUST FAN, AND ENERGY RECOVERY WHEEL.
3. CONTROLS CONTRACTOR TO PROVIDE HW AND CW VALVES AND WIRE TO UNIT DDC CONTROLLER.
4. UNIT PROVIDED WITH ALUMINUM 3A WHEEL, ELECTRIC PRE-HEATER UPSTREAM OF WHEEL FOR DEFROST, AND TEMPERATURE SENSOR BETWEEN ENERGY RECOVERY WHEEL AND COOLING COIL.
5. PROVIDE SOLID BOTTOM ROOF CURB ADAPTOR WITH SEPARATE SUPPLY AND RETURN PLENUMS TO ALLOW EXISTING SUPPLY AND RETURN DUCTWORK TO BE REUSED.

GRILLE AND DIFFUSER SCHEDULE

DRAWING LEGEND

DIFFUSER: TYPE / CFM / NECK SIZE
GRILLE: TYPE / CFM / SIZE
SLOT/LINEAR DIFFUSER: TYPE / CFM / NO. OF SLOTS - LENGTH
LINEAR BAR DIFFUSER: TYPE / CFM / WIDTH - LENGTH

TYPE ◇	DESCRIPTION	SPECIAL NOTES & FINISHES
D	24" X 24" SQUARE PLAQUE CEILING DIFFUSER	ROUND NECK
F	DOUBLE DEFLECTION SUPPLY GRILLE	
FS	DOUBLE DEFLECTION SPIRAL DUCT SUPPLY GRILLE	
G	LOUVERED RETURN GRILLE	
H	LOUVERED EXHAUST GRILLE	OPPOSED BLADE DAMPER
N	LINEAR BAR FLOOR DIFFUSER	
R	PERFORATED FACE CEILING DIFFUSER	
RF	PERFORATED FACE CEILING DIFFUSER WITH FILTER	BALANCE TO CFM LISTED

AIR TO AIR ENERGY RECOVERY UNIT SCHEDULE

MARK	LOCATION	AIR CAPACITY		ENTHALPY RECOVERY RATION (%)	TOTAL EA WHEEL EFFECTIVE	SUMMER DESIGN CONDITIONS						ENTHALPY RECOVERY RATION (%)	TOTAL EA WHEEL EFFECTIVE	SENSIBLE EFFECTIVENESS	WINTER DESIGN CONDITIONS						ENERGY RECOVERY PERFORMANCE					MANUFACTURER WITH MODEL NUMBER	NOTES
		SUPPLY CFM	EXHAUST CFM			EAT DB	EAT WB	MAT DB	MAT WB	LAT DB	LAT WB				EAT DB	EAT WB	MAT DB	MAT WB	LAT DB	LAT WB	CFM LEAVE	CFM ENTER	CFM NET	OACF	EATR (%)		
DOAS-1	SECOND FLOOR ROOF	7250	4900	56.7	78.8	95.0	76.0	75.0	63.0	84.4	69.7	51.8	78.8	78.8	-3.6	-5.3	68.0	54.2	33.5	31.2	4900	7250	7250	1.00	--	SEMCO	1
DOAS-2	GROUND FLOOR A ROOF	3450	1950	49.3	80	95.0	76.0	75.0	63.0	86.0	70.7	44.1	80	80	3.6	0.8	68.0	54.2	32.0	29.2	1950	3450	3450	1.00	--	SEMCO	1
DOAS-3	THIRD FLOOR ROOF	4400	3350	65.4	80.8	95.0	76.0	75.0	63.0	82.7	68.5	60.3	80.8	80.8	-3.0	-4.8	68.0	54.2	39.8	36.0	3350	4400	4400	1.00	--	SEMCO	1

NOTES:

1. THIS UNIT IS INTEGRAL TO DOAS. WHEEL CAPACITY SHOWN HERE FOR CLARITY.

AIR HANDLING UNIT SCHEDULE

MARK	LOCATION	AIR CAPACITY		SUPPLY FAN DATA							FILTER DATA		HYDRONIC COOLING COIL SELECTION DATA												HYDRONIC HEATING COIL SELECTION DATA										ELECTRICAL			UNIT WEIGHT (LBS.)	MANUFACTURER WITH MODEL NUMBER	NOTES
		SUPPLY CFM	MIN OA CFM	TYPE	ESP	TSP	BHP	RPM	MOTOR HP	MOTOR VOLTS	MOTOR PH	TYPE	MERV	TOTAL MBH	SENS MBH	EAT DB	EAT WB	LAT DB	LAT WB	ROWS	FINS/ INCH	MAX APD	MAX VEL	EWT	GPM	MAX WPD	MIN MBH	EAT	LAT	ROWS	FINS/ INCH	MAX APD	MAX VEL	EWT	GPM	MAX WPD	VOLTS	PH			
AHU-1	MECH A203	4000	800	PLENUM - DIR DRV	1.0	3.3	3.3	2690	5	208	3	PLEATED	8	137	98	79.0	65.6	54.5	53.3	4	10	0.63	494	42	18.6	11.2	184	52.4	96.8	3	10	0.33	494	130	11.9	3.4	208	3	2750	PACE PAI	1, 2, 3
AHU-2	MECH C109	2700	275	PLENUM - DIR DRV	1.0	3.2	2.38	3320	3	208	3	PLEATED	8	77	59	77.0	64.0	55.1	53.5	4	9	0.51	482	42	9.9	8.2	75	68.0	95.6	3	9	0.26	482	130	4.6	1.3	208	3	2500	PACE PAI	1, 2, 3
AHU-3	MECH C136	2210	2210	PLENUM - DIR DRV	1.0	4.1	2.67	4415	3	208	3	PLEATED	8	155	92	95	76	54.7	54.2	5	10	0.77	470	42	22.1	6.8	211	-10	71.6	3	9	0.35	470	130	12.9	8.1	208	3	2750	PACE PAI	1, 2, 3
AHU-4	KITCHEN C132	2100	1200	PLENUM - DIR DRV	1.0	3.6	1.87	3026	3	208	3	PLEATED	8	108	70	86.5	70.5	54.6	53.6	4	11	0.75	477	42	15.5	11.6	224	2.0	90.8	3	12	0.44	477	130	15.2	7.8	208	3	2100	PACE PAI	1, 2, 3
AHU-5	KITCHEN C129	2100	1200	PLENUM - DIR DRV	1.0	3.6	1.87	3026	3	208	3	PLEATED	8	108	70	86.5	70.5	54.6	53.6	4	11	0.75	477	42	15.5	11.6	224	2.0	90.8	3	12	0.44	477	130	15.2	7.8	208	3	2100	PACE PAI	1, 2, 3
AHU-6	MEZZ B112	7400	1950	PLENUM - DIR DRV	1.0	3.5	7.24	2680	10	208	3	PLEATED	8	312	206	80.3	67.1	53.5	52.6	6	11	0.62	474	42	44.3	9.8	293	47.0	85.0	2	10	0.21	471	130	19.9	5.1	208	3	3250	PACE PAI	1, 2, 3

NOTES:

1. VFD CONTROLS, FIELD-PROVIDED
2. 100% ECONOMIZER MODE OPTION.
3. FACTORY-PROVIDED FUSED DISCONNECT SWITCH TO BE INSTALLED BY EC

PUMP SCHEDULE

MARK	LOCATION	SYSTEM	TYPE	DESIGN CAPACITY (GPM)	DESIGN CAPACITY (FT. HD)	MIN EFF.	PUMP SUCT. (IN)	PUMP DISCH (IN)	MOTOR DATA HP	MOTOR DATA RPM	MOTOR DATA VOLTS	MOTOR DATA PH	MANUFACTURER WITH MODEL NUMBER	NOTES
HWP-1	MECH C137	HW CIRCULATING	CENTRIFUGAL	310	100	75	4	3	15	1800	208	3	B & G e-1510	1
HWP-2	MECH C137	HW CIRCULATING	CENTRIFUGAL	310	100	75	4	3	15	1800	208	3	B & G e-1510	1
CWP-1	MECH B113	CW CIRCULATING	CENTRIFUGAL	410	100	75	4	3	20	1800	208	3	B & G e-1510	1
CWP-2	MECH B113	CW CIRCULATING	CENTRIFUGAL	410	100	75	4	3	20	1800	208	3	B & G e-1510	1

NOTES

1. VFD CONTROLS

AIR-COOLED CHILLER SCHEDULE

MARK	CAPACITY DATA										COMPRESSOR	CONDENSER DATA		ELECTRICAL DATA					UNIT WEIGHT (LBS)	MANUFACTURER WITH MODEL NUMBER	NOTES
	NOM. TONS	DESIGN KW	DESIGN EER	DESIGN AMB TEMP	EWT	LWT	GPM	MAX WPD	CAPACITY STEPS	FLUID	QTY	TONS EACH	QTY FANS	FAN HP	DESIGN KW	MCA	MOCP	VOLTS	PH		
CH-1	218	240	10.10	95	56	42	372	9.39	7	H2O	6		12	27	260	959	1000	208	3	10000	QUANTECH QTC3225THE	1 - 6

NOTES

1. MOUNT REMOTE EVAPORATOR ON EXISTING CONCRETE HOUSEKEEPING PAD IN MECHANICAL ROOM.
2. SINGLE-POINT POWER CONNECTION. COORDINATE POWER REQUIREMENTS WITH DIV. 26.
3. CHILLED WATER SYSTEM CONTAINS WATER ONLY.
4. UNIT SHALL HAVE FACTORY-MOUNTED DDC CONTROLLER, NEOPRENE ISOLATION PADS, FLOW SWITCHES, CONTROL TRANSFORMER, LOW-SOUND FANS WITH VFD CONTROLS, COMPRESSOR SOUND BLANKETS, LOUVERED COIL GUARD, SCROLL-HERMETIC COMPRESSOR TYPE.
5. ADDITIONAL CHARGE BY CONTRACTOR PER MANUFACTURER'S RECOMMENDATIONS. INSULATE PIPING BETWEEN CHILLER AND REMOTE EVAPORATOR.
6. BACnet MS/TP CONTROLS INTERFACE CARD.

INTAKE/RELIEF HOOD SCHEDULE

MARK	DESIGN CFM	HOOD SIZE L	HOOD SIZE W	HOOD SIZE H	THROAT SIZE L	THROAT SIZE W	CURB CAP L	CURB CAP W	CURB HEIGHT	THROAT VELOCITY	PRESSURE DROP (IN WC)	BACKDRAFT DAMPER	UNIT WEIGHT (LBS)	MANUFACTURER WITH MODEL NUMBER	NOTES
GVI-1	4000	57	57	34	-	36	46	46	16	549	0.075	Y	60	GREENHECK GRSI-36	1
GVI-2	2700	48	48	31	-	30	40	40	16	477	0.057	Y	55	GREENHECK GRSI-30	1
GVI-3	2210	48	48	31	-	30	40	40	16	439	0.048	Y	55	GREENHECK GRSI-30	1
GVI-4	7400	72	72	39	-	48	58	58	16	577	0.083	Y	80	GREENHECK GRSI-48	1
GVI-5	1600	39	39	23	-	24	34	34	16	494	0.043	Y	40	GREENHECK GRSI-24	1
GVR-1	4000	57	57	34	-	36	46	46	16	549	0.075	Y	60	GREENHECK GRSR-36	1
GVR-2	2700	48	48	31	-	30	40	40	16	477	0.057	Y	55	GREENHECK GRSR-30	1
GVR-3	4200	57	57	34	-	36	46	46	16	576	0.066	Y	60	GREENHECK GRSR-36	1
GVR-4	375	29	29	22	-	12	22	22	16	457	0.026	Y	10	GREENHECK GRSR-12	1
GVR-5	80	20.5	20.5	19.25	-	8	19	19	16	216	0.005	Y	7	GREENHECK GRSR-8	1

NOTES

1. PROVIDE ROOF CURB, BIRD SCREEN, AND BACKDRAFT DAMPER. (2)

HYDRONIC UNIT VENTILATOR SCHEDULE

MARK	LOCATION	CONFIGURATION	SUPPLY FAN DATA							HYDRONIC HEATING COIL DATA								HYDRONIC COOLING COIL DATA										ELECTRICAL DATA			FILTER DATA		UNIT WEIGHT (LBS)	MANUFACTURER WITH MODEL NUMBER	NOTES
			SUPPLY CFM	MIN OA CFM	ESP	DRIVE TYPE	HP	VOLTS	PH	MIN MBH	EAT	LAT	ROWS	EWT	LWT	GPM	MAX WPD	TOTAL MBH	SENS MBH	EAT DB	EAT WB	LAT DB	LAT WB	ROWS	FINS/ INCH	EWT	LWT	GPM	MAX WPD	MCA	MOP	VOLTS	TYPE	EFF			
HUV-1	SEE PLANS	BELOW SILL	1500	375	0.25	ECM	1/4 (4)	208	1	70	68	95+	2	130		10	7.71	34	25	75	63			2		42		10	8.3			208 / 1	MERV8	--	700	MODINE VSV	1
HUV-2	SEE PLANS	BELOW SILL	1500	375	0.25	ECM	1/4 (4)	208	1	82	68	95+	2	130		10	7.71	40	27	75	63			3		42		10	4.1			208 / 1	MERV8	--	700	MODINE VSV	1

NOTES:

1. PROVIDE UNIT WITH BAR GRILLE AND SCREEN, XYZ COIL ACCESS, STANDARD OA DAMPER, CONTROLS BY MECH CONTRACTOR. DISCONNECT TO BE PROVIDED BY MFG / EC.

FAN SCHEDULE

MARK	LOCATION	FAN DATA							MOTOR DATA					ACCESSORIES					UNIT WEIGHT (LBS)	MANUFACTURER WITH MODEL NUMBER	NOTES
		DESCRIPTION	DRIVE TYPE	CFM	TSP	BHP	RPM	SONES	HP	MCA	MOCP	VOLTS	PH	ROOF CURB	DISCONNECT SWITCH	GRAVITY BACKDRAFT DAMPER	VIBRATION ISOLATORS	BIRD SCREEN			
EF-1	ROOF - A206	DOWN BLAST	DIRECT	775	0.5	0.12	1289	6.5	1/4	3.8	15	120	1	YES	YES	YES	-	YES	50	GREENHECK G-100-VG	1, 2
EF-2	ROOF - A207	DOWN BLAST	DIRECT	750	0.5	0.12	1271	6.2	1/4	3.8	15	120	1	YES	YES	YES	-	YES	50	GREENHECK G-100-VG	1, 2
EF-3	ROOF - A208	DOWN BLAST	DIRECT	200	0.25	0.02	1153	4.6	1/10	1.5	15	120	1	YES	YES	YES	-	YES	40	GREENHECK G-080-VG	1, 2
EF-4	ROOF - A200	DOWN BLAST	DIRECT	250	0.5	0.06	1571	7.6	1/10	1.5	15	120	1	YES	YES	YES	-	YES	35	GREENHECK G-080-VG	1, 2
EF-5	ROOF - B100	DOWN BLAST	DIRECT	850	0.5	0.14	1350	7.3	1/4	3.8	15	120	1	YES	YES	YES	-	YES	50	GREENHECK G-100-VG	1, 2
EF-6	ROOF - C116	DOWN BLAST	DIRECT	300	0.25	0.03	1631	5.4	1/15	1.3	15	120	1	YES	YES	YES	-	YES	35	GREENHECK G-070-VG	1, 2
EF-7	ROOF - C117	DOWN BLAST	DIRECT	600	0.5	0.11	1529	9.0	1/6	2.8	15	120	1	YES	YES	YES	-	YES	40	GREENHECK G-095-VG	1, 2
EF-8	ROOF - B110	DOWN BLAST	DIRECT	600	0.5	0.11	1529	9.0	1/6	2.8	15	120	1	YES	YES	YES	-	YES	40	GREENHECK G-090-VG	1, 2
EF-9	RESTROOM A1a	CABINET	DIRECT	80	0.27	0.02	950	--	0.05	0.19	15	120	1	--	YES	YES	YES	--	25	GREENHECK CSP-A110	1
EF-10	RESTROOM C112 (2)	CABINET	DIRECT	80	0.27	0.02	950	--	0.05	0.19	15	120	1	--	YES	YES	YES	--	25	GREENHECK CSP-A110	1
EF-11	CLINIC C105	CABINET	DIRECT	320	0.38	0.09	1294	1.2	1/10	1.5	15	120	1	--	YES	YES	YES	--	30	GREENHECK CSP-A390-VG	1
EF-12	RESTROOM C125	CABINET	DIRECT	80	0.27	0.02	950	--	0.05	0.19	15	120	1	--	YES	YES	YES	--	25	GREENHECK CSP-A110	1
EF-13	RESTROOM C130	CABINET	DIRECT	80	0.27	0.02	950	--	0.05	0.19	15	120	1	--	YES	YES	YES	--	25	GREENHECK CSP-A110	1
EF-14	MECHANICAL B113	DOWNBLAST	DIRECT	1600	0.25	0.20	993	8.3	1/2	6.6	15	120	1	YES	YES	YES	YES	YES	60	GREENHECK G-140-VG	1,2,3
EF-15	MECHANICAL B113	DOWNBLAST	DIRECT	250	0.5	0.06	1586	7.7	1/10	1.5	15	120	1	YES	YES	YES	YES	YES	28	GREENHECK G-080-VG	1,2

NOTES:

1. FAN OPERATION IS CONTINUOUS DURING BUILDING OCCUPIED HOURS. PROVIDE BACnet CONTROLLER FOR INTEGRATION INTO BMS. PROVIDE UNIT-MOUNTED SPEED CONTROLLER OPTION.
2. PROVIDE FAN CURB, BIRD SCREEN, AND BACKDRAFT DAMPER.
3. PROVIDE CONTROL INTERLOCK TO REFRIGERANT SENSOR

DUCTLESS SPLIT AIR CONDITIONER SCHEDULE

MARK	LOCATION	CFM HIGH	CFM LOW	COOLING MBH	HEATING MBH	ELECTRICAL DATA MCA	MOCP	VOLTS	PH	SEER	REFRIG.	WEIGHT (LBS)	MANUFACTURER WITH MODEL NUMBER	NOTES
DS-1I	MDF C120	537	371	24	26	1	15	208	1	-	R410A	65	LG ARNU243SKA4	1,3,4,5,6
DS-1O	ROOF	-	-	24	27	20	30	208	1	23	R410A	175	LG ARUN024GSS4	1,2,3,4,5,6,7

NOTES:

1. INDOOR UNIT POWERED FROM OUTDOOR UNIT.
2. WIND BAFFLE FOR LOW AMBIENT COOLING, WB-PA4, WB-SD4, AND WB-RE4.
3. INDOOR AND OUTDOOR UNITS TO BE FACTORY MATCHED.
4. UNIT MOUNTED 3 POLE DISCONNECT SWITCH.
5. MANUFACTURER TO SIZE RS/RL PIPING LINE SET. RS/RL PIPING TO BOTH BE INSULATED.
6. PROVIDE SIMPLE MA CONTROLLER.
7. PROVIDE WALL MOUNTING BRACKET AND MOUNT ON WALL IN LOCATION SHOWN.

LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

CIRCLE DESIGN GROUP
INDIANAPOLIS, IN | 317.781.6200
CIRCLEDESIGNGROUP.COM

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

DAVID M. BARRENTINE
REGISTERED
No. PE10911218
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

100% CONSTRUCTION DOCUMENTS

CDG PROJECT: ##21102A
DATE: 04.26.22
DRAWN BY: EH

HVAC SCHEDULES

H-501

PLOT DATE/TIME:5/31/2022 2:44:00 PM

FAN COIL UNIT SCHEDULE (4-PIPE)

MARK	LOCATION	CONFIGURATION	SUPPLY FAN DATA							HYDRONIC HEATING COIL SELECTION DATA								HYDRONIC COOLING COIL SELECTION DATA											FILTER DATA		ELECTRICAL DATA			UNIT WEIGHT (LBS)	MANUFACTURER WITH MODEL NUMBER	NOTES
			SUPPLY CFM	ESP	RPM	DRIVE TYPE	HP	VOLTS	PH	MIN MBH	EAT	LAT	ROWS	FINS/ INCH	EWT	LWT	GPM	MAX WPD	TOTAL MBH	SENS MBH	EAT		LAT		ROWS	FINS/INCH	EWT	LWT	GPM	MAX WPD							
																					DB	WB	DB	WB							TYPE	EFF	MCA	MOP	VOLTS			
FCU-2A01	CLASSROOM A01	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A02	CLASSROOM A02	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A03	CLASSROOM A03	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A04	CLASSROOM A04	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A05	CLASSROOM A05	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A06	CLASSROOM A06	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A07	CLASSROOM A07	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A08	CLASSROOM A08	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A09	CLASSROOM A09	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A10	CLASSROOM A10	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A11	CLASSROOM A11	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A12	CLASSROOM A12	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A13	CLASSROOM A13	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A14	CLASSROOM A14	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A15	CLASSROOM A15	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2A16	CLASSROOM A16	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-1B01	CLASSROOM B01	HORIZONTAL	400	0.48	1050	DIRECT	1/4 (2)	208	1	13.5	68	99	2	10	130	100	0.9	0.30	11.8	9.5	75	63	55	53	3	10	42	56	1.9	1.86	MERV8	--	4.50	15	208 / 1	220	KRUEGER KHGP12	1
FCU-1B02	CLASSROOM B02	HORIZONTAL	400	0.48	1050	DIRECT	1/4 (2)	208	1	13.5	68	99	2	10	130	100	0.9	0.30	11.8	9.5	75	63	55	53	3	10	42	56	1.9	1.86	MERV8	--	4.50	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2B03	CLASSROOM B03	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2B04	CLASSROOM B04	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2B05	CLASSROOM B05	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2B06	CLASSROOM B06	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2B07	CLASSROOM B07	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2B08	CLASSROOM B08	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-3B09	CLASSROOM B09	HORIZONTAL	1200	0.59	1050	DIRECT	1/3 (2)	208	1	35.8	68	96	2	10	130	100	2.3	1.37	27.3	22.3	75	63	58	55	4	10	42	56	4.1	4.38	MERV8	--	6.75	15	208 / 1	225	KRUEGER KHGP20	1
FCU-2B10	CLASSROOM B10	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2B11	CLASSROOM B11	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2B12	CLASSROOM B12	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-2B13	CLASSROOM B13	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-3B14	CLASSROOM B14	HORIZONTAL	1200	0.59	1050	DIRECT	1/3 (2)	208	1	35.8	68	96	2	10	130	100	2.3	1.37	27.3	22.3	75	63	58	55	4	10	42	56	4.1	4.38	MERV8	--	6.75	15	208 / 1	225	KRUEGER KHGP20	1
FCU-3B15	CLASSROOM B15	HORIZONTAL	1200	0.59	1050	DIRECT	1/3 (2)	208	1	35.8	68	96	2	10	130	100	2.3	1.37	27.3	22.3	75	63	58	55	4	10	42	56	4.1	4.38	MERV8	--	6.75	15	208 / 1	225	KRUEGER KHGP20	1
FCU-3B16	CLASSROOM B16	HORIZONTAL	1200	0.59	1050	DIRECT	1/3 (2)	208	1	35.8	68	96	2	10	130	100	2.3	1.37	27.3	22.3	75	63	58	55	4	10	42	56	4.1	4.38	MERV8	--	6.75	15	208 / 1	225	KRUEGER KHGP20	1
FCU-3B17	CLASSROOM B17	HORIZONTAL	1200	0.59	1050	DIRECT	1/3 (2)	208	1	35.8	68	96	2	10	130	100	2.3	1.37	27.3	22.3	75	63	58	55	4	10	42	56	4.1	4.38	MERV8	--	6.75	15	208 / 1	225	KRUEGER KHGP20	1
FCU-3B18	CLASSROOM B18	HORIZONTAL	1200	0.59	1050	DIRECT	1/3 (2)	208	1	35.8	68	96	2	10	130	100	2.3	1.37	27.3	22.3	75	63	58	55	4	10	42	56	4.1	4.38	MERV8	--	6.75	15	208 / 1	225	KRUEGER KHGP20	1
FCU-1B30	STORAGE B303	HORIZONTAL	400	0.48	1050	DIRECT	1/4 (2)	208	1	13.5	68	99	2	10	130	100	0.9	0.30	11.8	9.5	75	63	55	53	3	10	42	56	1.9	1.86	MERV8	--	4.50	15	208 / 1	220	KRUEGER KHGP12	1
FCU-3C05	CLASSROOM C05	HORIZONTAL	1200	0.59	1050	DIRECT	1/3 (2)	208	1	35.8	68	96	2	10	130	100	2.3	1.37	27.3	22.3	75	63	58	55	4	10	42	56	4.1	4.38	MERV8	--	6.75	15	208 / 1	225	KRUEGER KHGP20	1
FCU-3C06	CLASSROOM C06	HORIZONTAL	1200	0.59	1050	DIRECT	1/3 (2)	208	1	35.8	68	96	2	10	130	100	2.3	1.37	27.3	22.3	75	63	58	55	4	10	42	56	4.1	4.38	MERV8	--	6.75	15	208 / 1	225	KRUEGER KHGP20	1
FCU-2G01	LOBBY G101 (2) / WORK ROOM C124 / FACULTY DINING C123	HORIZONTAL	900	1.16	1500	DIRECT	1/2	208	1	30.0	68	99	3	10	130	100	1.9	0.54	20.7	16.8	75	63	58	55	4	10	42	56	3.3	4.82	MERV8	--	5.37	15	208 / 1	220	KRUEGER KHGP12	1
FCU-4C24		VERTICAL	300	2.20	1600	DIRECT	1/4 (2)	208	1	8.8	68	95	1	10	130	100	0.5	1.63	7.9	6.4	75	63	56	54	2	10	42	56	1.3	2.65	MERV8	--	2.47	15	208 / 1	150	KRUEGER KVFS10	
FCU-5C23		VERTICAL	1100	2.60	1600	DIRECT	1/4 (2)	208	1	15.1	68	88	1	10	130	100	0.9	0.74	18.6	14.5	75	63	56	54	3	10	42	56	2.8	7.42	MERV8	--	2.92	15	208 / 1	270	KRUEGER KVFS12	

NOTES:
1. CONTROLS CONTRACTOR TO PROVIDE NEW HW AND CW VALVES.
2. SINGLE-POINT POWER CONNECTION. DISCONNECT TO BE PROVIDED BY MFG AND INSTALLED BY EC. PROVIDE EC MOTOR OPTION.

HYDRONIC CONVECTOR SCHEDULE

MARK	LOCATION	CABINET TYPE	HEATING ELEMENT SELECTION DATA						MANUFACTURER WITH MODEL NUMBER	NOTES
			MIN MBH	EAT	AVG EWT	ROWS	GPM	MAX WPD		
HWC-1	STAIR A101	FLAT-TOP, SEMI-RECESSED	2.2	55	130	1	0.80	0.60	VULCAN PW-A 448-28	
HWC-2	SEE PLANS	FLAT-TOP, SEMI-RECESSED	7.5	55	130	1	1.75	0.61	VULCAN PW-A 864-28	
HWC-3	SEE PLANS	FLAT-TOP, SEMI-RECESSED	4.5	55	130	1	1.00	0.17	VULCAN PW-A 840-28	

NOTES:
1. FINAL COLOR TO BE CHOSEN BY ARCHITECT.
2. PROVIDE WALL-MOUNTED THERMOSTAT.

HYDRONIC UNIT HEATER SCHEDULE

MARK	LOCATION	TYPE	FAN DATA		HYDRONIC HEATING COIL SELECTION DATA								ELECTRICAL DATA			ACCESSORIES		MANUFACTURER WITH MODEL NUMBER	NOTES
			CFM	RPM	MIN MBH	EAT	LAT	ROWS	MAX APD	EWT	GPM	MAX WPD	HP	VOLTS	PH	DISCONNECT SWITCH	WALL BRACKET		
HUH-1	SEE PLANS	WALL MOUNTED	280	LOW	12	50	90	2	--	130	0.80	0.10	0.1	120	1	YES	NO	VULCAN RW04	1, 2, 4
HUH-2	SEE PLANS	CEILING MOUNT	280	LOW	12	50	90	2	--	130	0.80	0.10	0.1	120	1	YES	NO	VULCAN RC04	1, 3, 4
HUH-3	VESTIBULE C141	WALL MOUNTED	560	LOW	24	50	90	2	--	130	1.75	0.75	0.1 (x2)	120	1	YES	NO	VULCAN RW10	1, 2, 4

NOTES
1. PROVIDE EC MOTOR OPTION WITH THREE-SPEED SWITCH OPTION.
2. MOUNT IN LOCATION OF PREVIOUS HEATER AND PATCH WALL IN KIND.
3. COORDINATE MOUNTING LOCATION WITH DROP CEILING GRID AND LIGHTING REQUIREMENTS TO CENTER IN ROOM AS CLOSELY AS IS POSSIBLE.
4. DISCONNECT TO BE PROVIDED BY MFG AND INSTALLED BY EC.

HYDRONIC DUCT COIL SCHEDULE

MARK	LOCATION	DUCT CONNECTION SIZE	MAX CFM	HYDRONIC HEATING COIL SELECTION DATA								MANUFACTURER WITH MODEL NUMBER	NOTES
				MIN MBH	EAT	LAT	ROWS	FINS/INCH	MAX APD	EWT	GPM	MAX WPD	
HC-A1	BELOW FLOOR	16/10 (VIF)	765	33.05	55	90	3	6	0.42	130	1.96	3.6	AEROFIN	1,2
HC-A2	BELOW FLOOR	10/10 (VIF)	425	18.36	55	90	3	6.5	0.37	130	1.09	1.0	AEROFIN	1,2
HC-A3	BELOW FLOOR	10/8 (VIF)	310	13.39	55	90	3	8	0.59	130	0.80	0.4	AEROFIN	1,2
HC-A4	BELOW FLOOR	8/8 (VIF)	300	12.96	55	90	3	8.5	0.60	130	0.77	0.4	AEROFIN	1,2
HC-A5	BELOW FLOOR	8/6 (VIF)	200	8.64	55	90	2	5	0.41	130	1.03	0.6	AEROFIN	1,2
HC-A6	BELOW FLOOR	10/8 (VIF)	360	15.55	55	90	3	6.5	0.46	130	0.92	1.0	AEROFIN	1,2
HC-A7	BELOW FLOOR	8/4 (VIF)	125	5.40	55	90	3	5	0.14	130	0.32	0.1	AEROFIN	1,2

NOTES:
1. CONNECT TO EXISTING HW SYSTEM. EXISTING HW SYSTEM CONTAINS 100% WATER AND DOES NOT CONTAIN GLYCOL.
2. CONTROLS CONTRACTOR TO PROVIDE HW VALVES AND WIRE TO AHU-2 DDC CONTROLLER.

FINNED TUBE RADIATION SCHEDULE

MARK	TUBE SIZE	FIN SIZE	MATERIAL	I-B-R RATING CAPACITY BUTH/LIN. FT.	FINS PER FT.	ENCLOSURE HEIGHT (IN.)	ENCLOSURE STYLE	ROWS OF ELEMENT	AVERAGE WATER TEMP. °F	GPM	TUBE VELOCITY (FT/SEC)	ELEMENT LENGTH (FT.)	COVER LENGTH (FT.)	MANUFACTURER WITH MODEL NUMBER	NOTES
HRH-1	1-1/4"	3-1/4" x 3-1/4"	CU/AL	310	50	11	SLOPE-TOP	1	120	12	3	31	32	VULCAN JV3-ARS	
HRH-2	1"	3-5/8" x 4-1/4"	CU/AL	860	50	24	SLOPE-TOP	3	120	22.5	3	35	36	VULCAN JV4-ARS	
HRH-3	1"	3-1/4" x 3-1/4"	CU/AL	330	50	11	SLOPE-TOP	1	120	7.5	3	9	10	VULCAN JV3-ARS	
HRH-4	1"	3-1/4 x 3-1/4"	CU/AL	330	50	11	SLOPE-TOP	1	120	7.5	3	5	6	VULCAN JV3-ARS	
HRH-5	1"	3-1/4" x 3-1/4"	CU/AL	330	50	11	SLOPE-TOP	1	120	7.5	3	2.5	3.5	VULCAN JV3-ARS	

NOTES:
1. FINAL COLOR TO BE SELECTED BY ARCHITECT.
2. CONTROLS CONTRACTOR TO PROVIDE NEW HW AND CW VALVES. PROVIDE WALL-MOUNTED THERMOSTAT.

LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

CIRCLE DESIGN GROUP
INDIANAPOLIS, IN | 317.781.6200
CIRCLEDESIGNGROUP.COM

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

DAVID M. BARRINGTON REGISTERED No. PE10910216 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

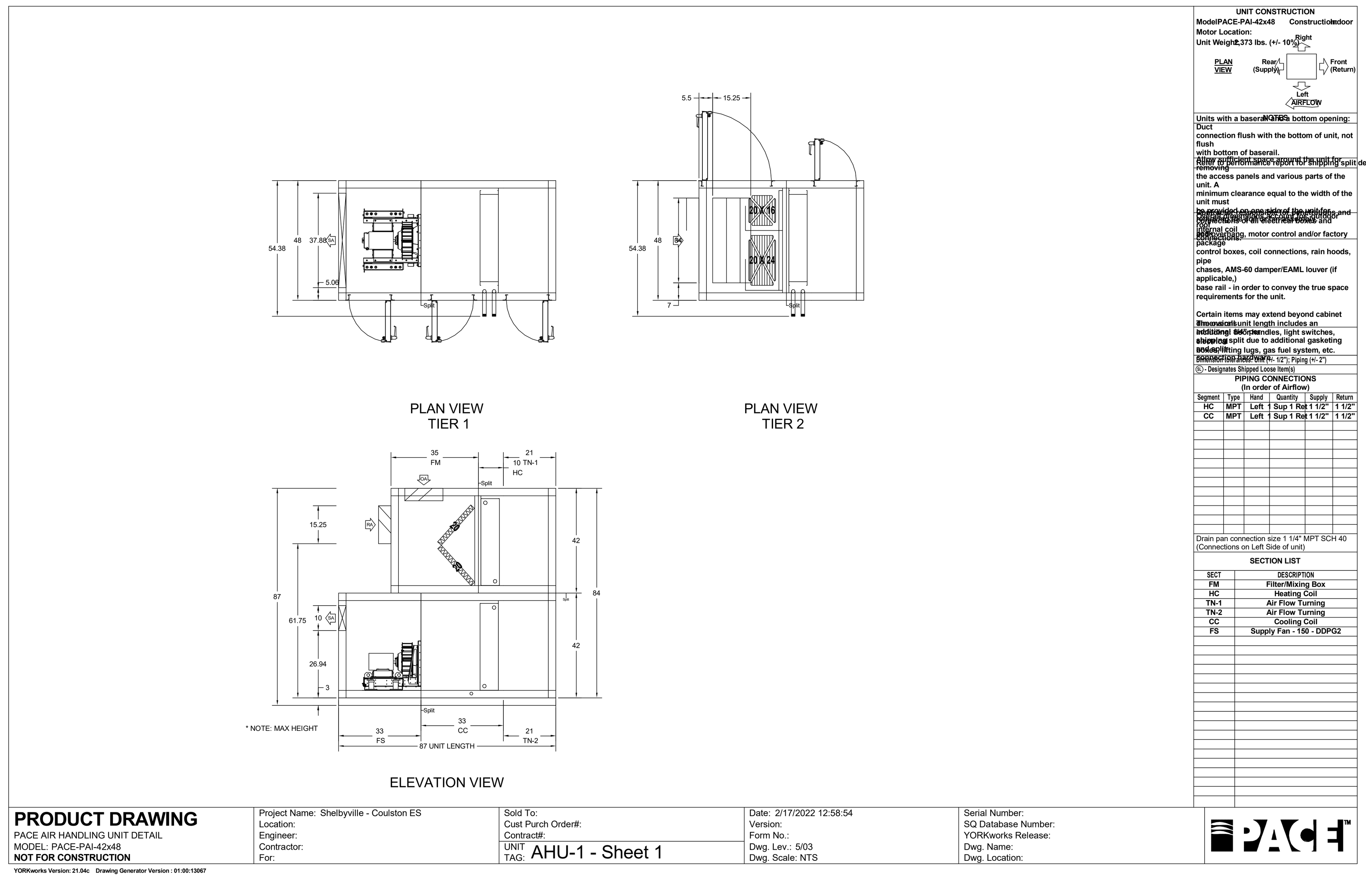
100% CONSTRUCTION DOCUMENTS

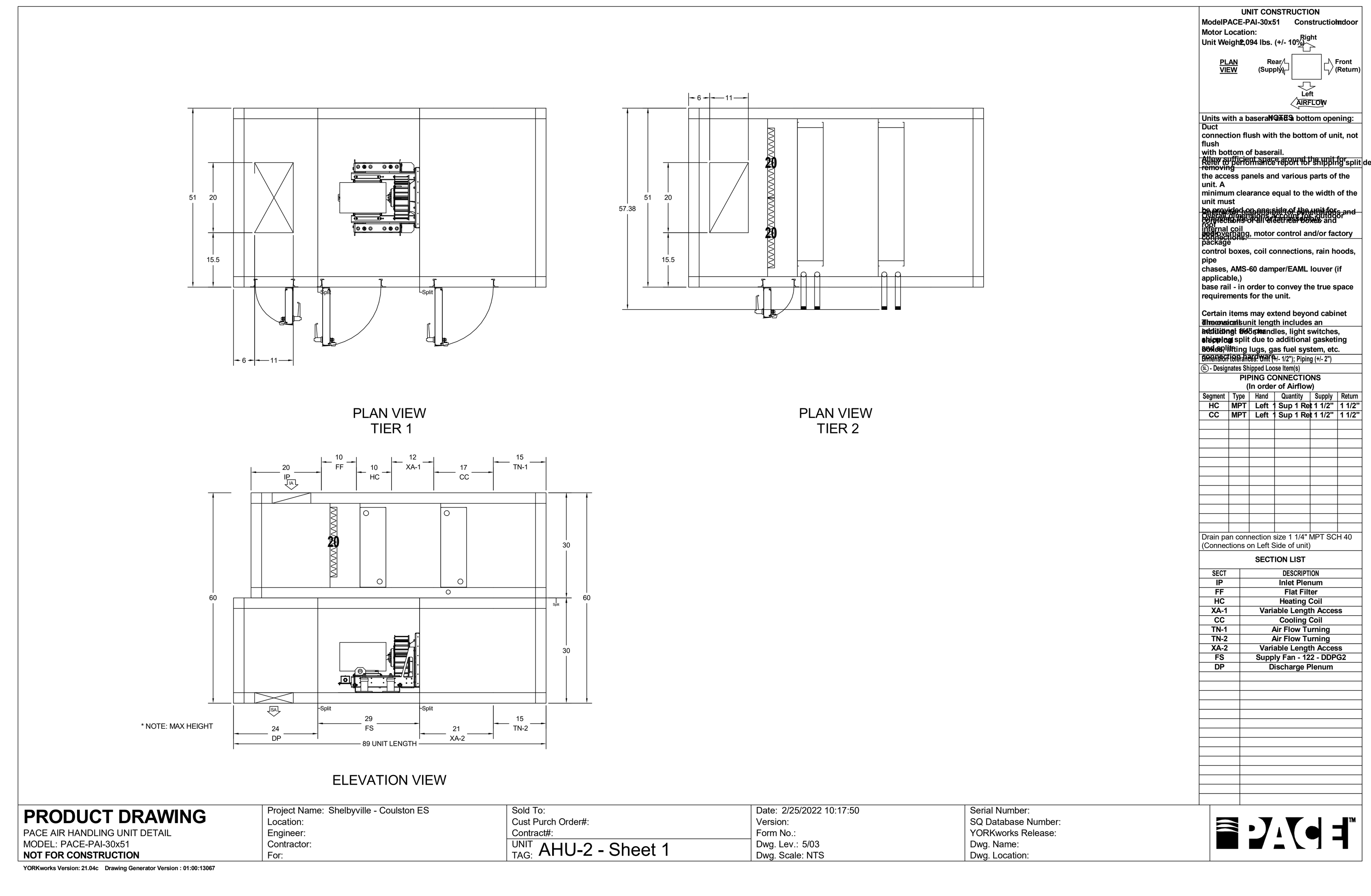
CDG PROJECT: ##21102A
DATE: 04.26.22
DRAWN BY: EH

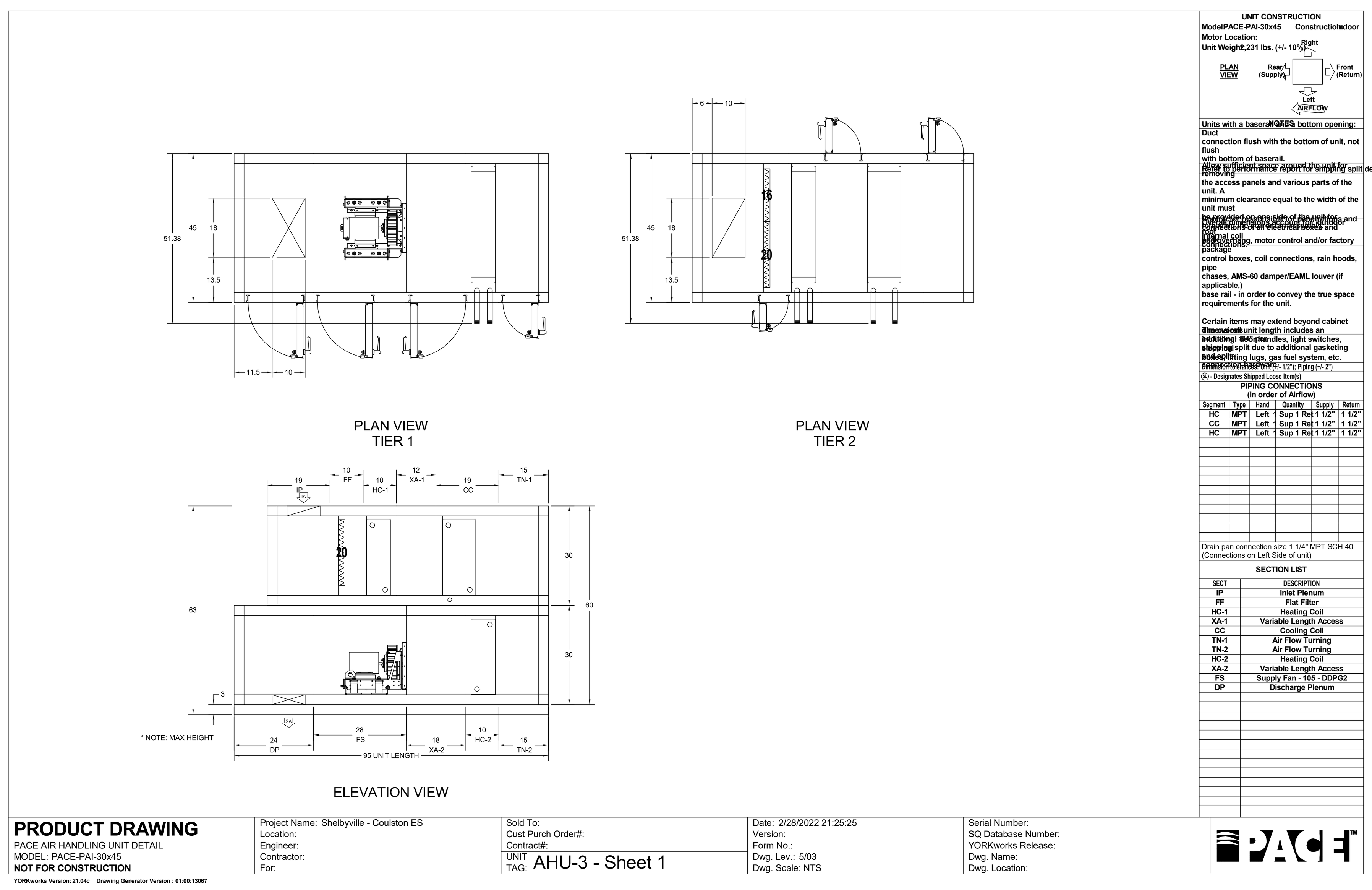
HVAC SCHEDULES

H-502

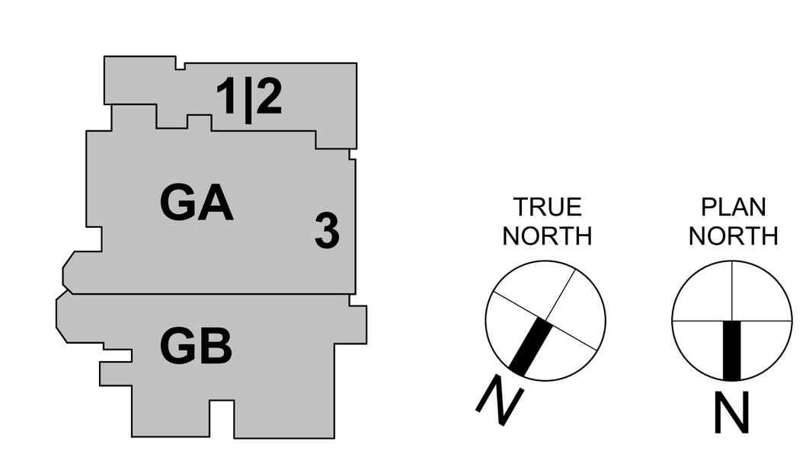
PLOT DATE/TIME: 5/27/2022 12:01:49 PM







MECHANICAL CONTRACTOR IS RESPONSIBLE FOR MEANS AND METHODS ENSURING ALL MECHANICAL EQUIPMENT FITS IN THE SPACE ALLOCATED FOR IT. SOME MEANS AND METHODS TO BE EXECUTED INCLUDE BUT ARE NOT LIMITED TO; ORDERING THE UNITS WITH APPROPRIATE SHIPPING SPLITS, KNOCKING DOWN UNITS AND REASSEMBLING THEM ONCE IN THE SPACE, AND DEMOLITION AND PUT-BACK OF ARCHITECTURAL COMPONENTS SUCH AS WALLS AND DOORS. NO ADDITIONAL COSTS SHALL BE BORNE BY THE OWNER FOR LACK OF CONTRACTOR COORDINATION BETWEEN TRADES AND/OR EQUIPMENT MANUFACTURERS. (1)



LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

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121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

DAVID M. BARRIENTOS — REGISTERED — 4/26/22 — No. PE10910218 — STATE OF INDIANA — PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	05.31.22	ADDENDUM #2

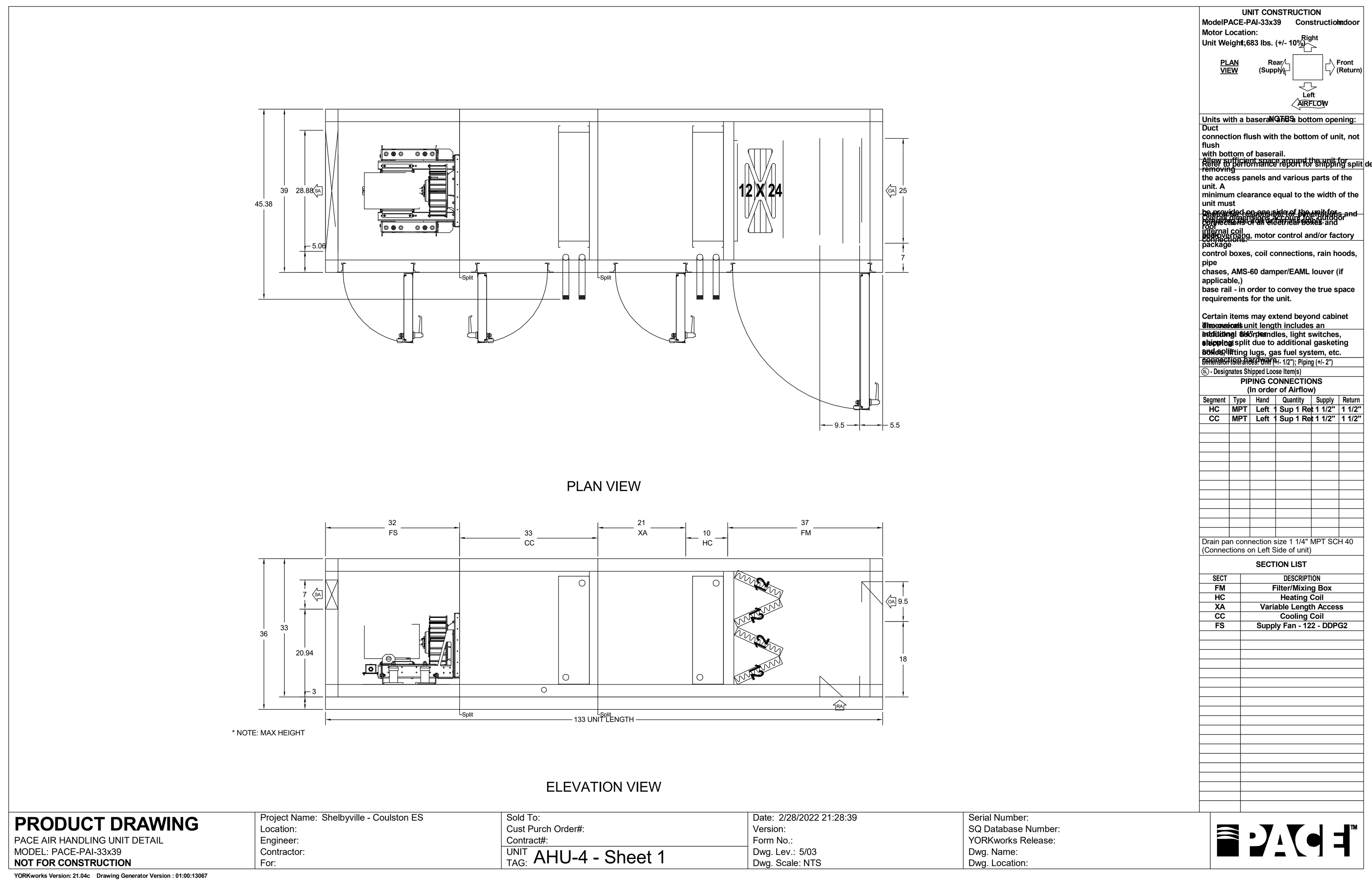
100% CONSTRUCTION DOCUMENTS

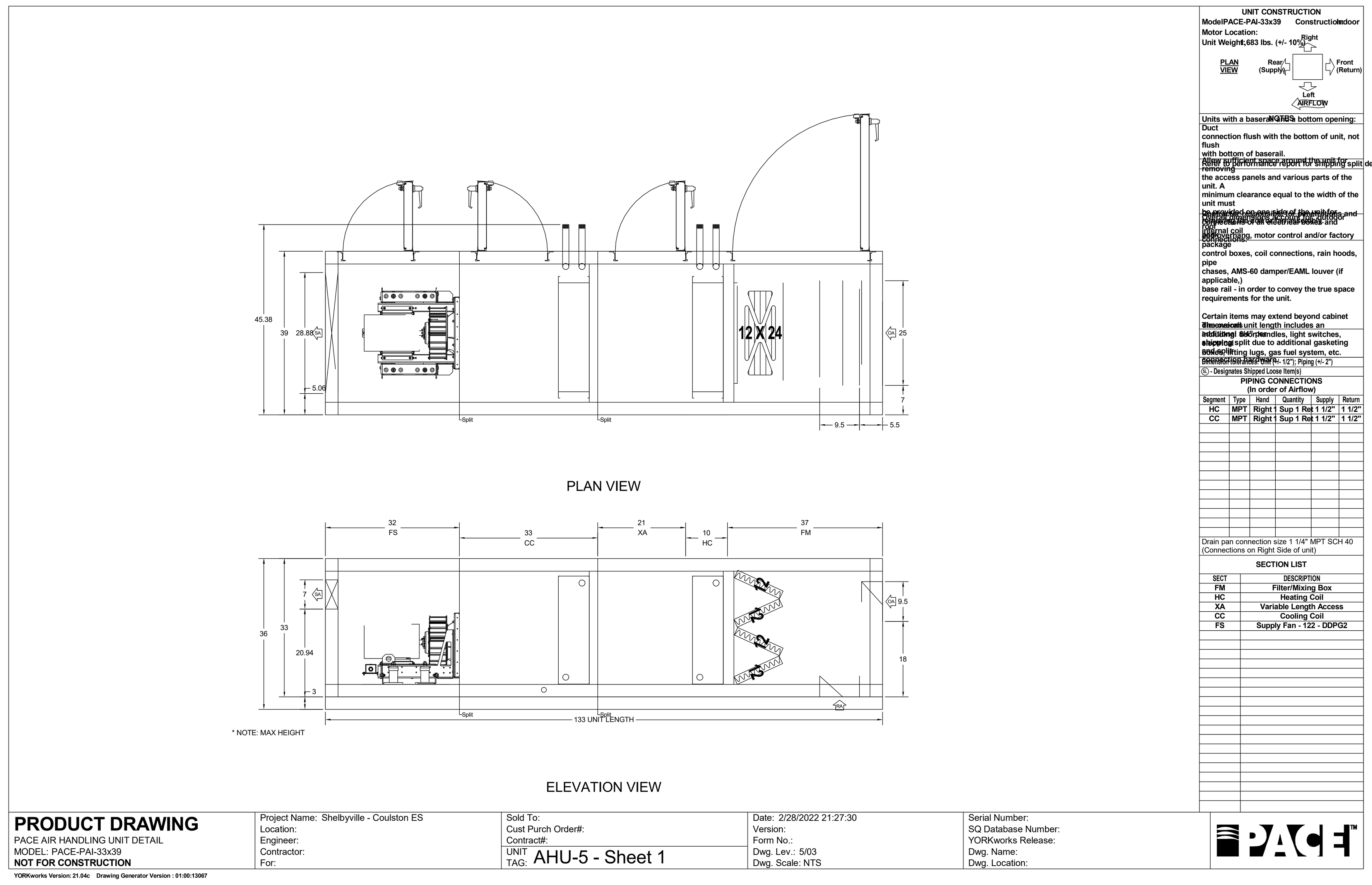
CDG PROJECT: ##21102A
DATE: 04.26.22
DRAWN BY: MAS

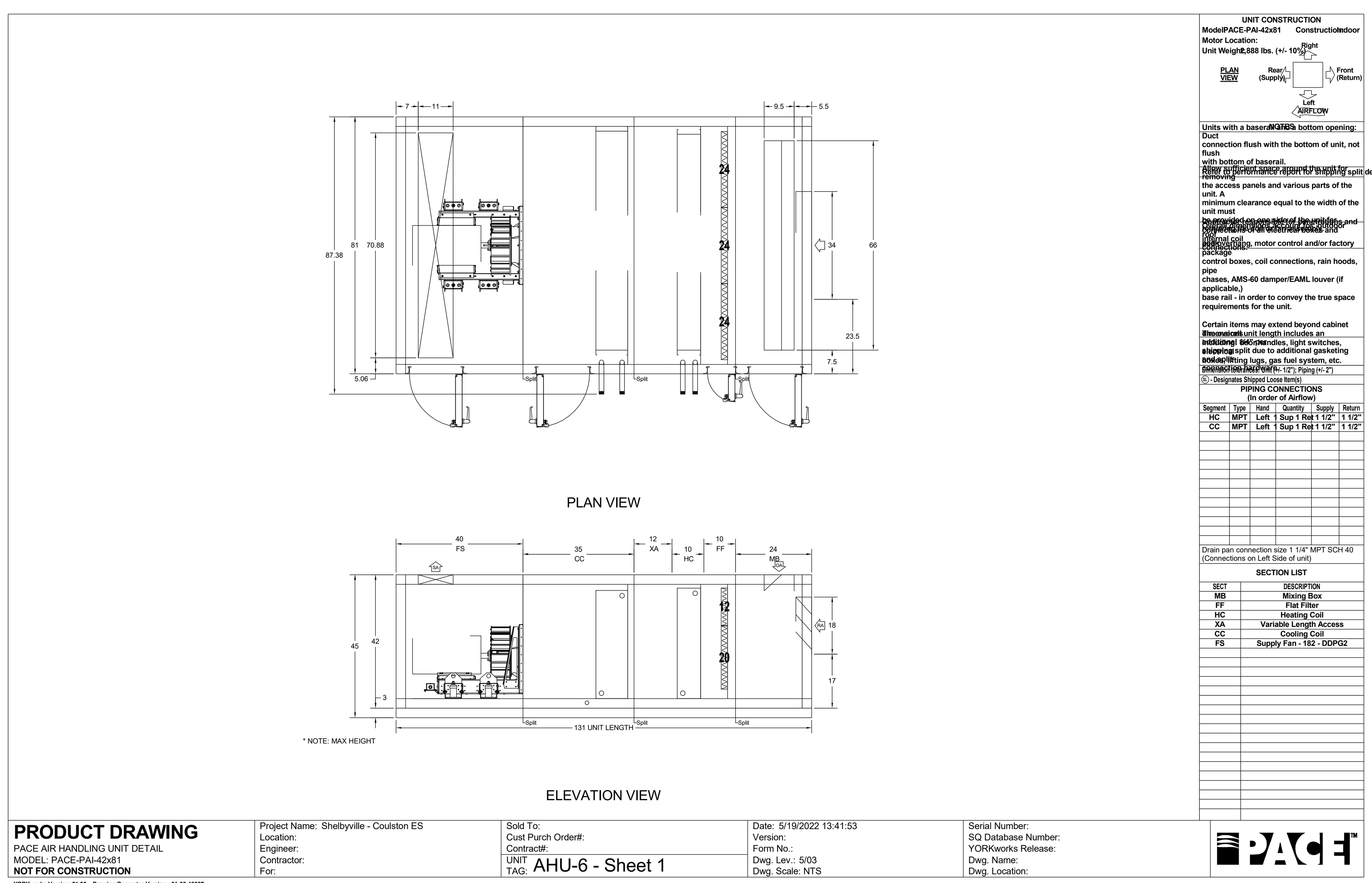
HVAC AHU DETAILS

H-603

PLOT DATE/TIME: 5/31/2022 2:44:01 PM







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LANCER + BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

CIRCLE DESIGN GROUP
INDIANAPOLIS, IN | 317.781.6200
CIRCLEDESIGNGROUP.COM

SHELBYVILLE CENTRAL SCHOOLS
COULSTON ELEMENTARY SCHOOL RENOVATION
121 N. KNIGHTSTOWN RD.
SHELBYVILLE, IN 46176

DAVID M. BARRIENTOS, REGISTERED, 4/26/22, No. PE10910218, STATE OF INDIANA, PROFESSIONAL ENGINEER

REVISIONS:

#	Date	Desc.
1	05.24.22	ADDENDUM #1
2	05.31.22	ADDENDUM #2

100% CONSTRUCTION DOCUMENTS

CDG PROJECT: ##21102A
DATE: 04.26.22
DRAWN BY: EH

HVAC AHU DETAILS

H-604

LANCER + BEEBE, LLC
Project # 21141

ADDENDUM NO. TWO

PROJECT: Shelbyville Central Schools – 2022 Shelbyville Middle School Renovation

PROJECT NUMBER: 21141

DATE OF ADDENDUM: May 31, 2022

THIS ADDENDUM FORMS A PART OF THE CONTRACT DOCUMENTS AND IS ISSUED IN ACCORDANCE WITH THE INSTRUCTIONS TO BIDDERS. ACKNOWLEDGE RECEIPT OF THIS ADDENDUM BY SIGNING THE ADDENDUM ACKNOWLEDGMENT SECTION OF THE BID FORM.

QUESTIONS:

1. Q: Are there existing controls drawings for the buildings that can be provided for information?
    a. There are full drawing sets for the 2000 addition of Coulston and the original 1989 drawing set for the Middle School as well as a 2011 Boiler Replacement Drawing Set. The drawings could be shared with the selected bidder.

2. Q: On Shelbyville Central Demo Plan note 3 indicates to remove pool liner. Can more information on the liner be provided? Please confirm if pool walls and floor are to be demolished or if they are to only be removed to below slab elevation with slab left in place?.

   a. Removal of gutter and deck slabs. Pool walls may remain. Section 1/S301 shows the extent of the gutter removal.

3. Q: On Shelbyville MS the flooring shown on A720 and A721D for the Black Box Theatre is indicated to be PLY-1 specified as Rosco-Roscoleum with a detail that shows vapor barrier, sleepers, insulation and plywood subfloor. We are not finding a specification for this flooring and would like it confirmed which bid package is responsible for installing the Roscoleum flooring and associated plywood, sleepers, insulation and vapor barrier.
   a. Flooring system under Roscoleum finish to be like Robbins bio channel system. See notes added to specifications sections 06 10 53 and 09 65 00 below.

4. Q: I have noticed there are some acoustical wall panels in the middle school although I do not see this spec anywhere listed or what BP this will be under. Please confirm what BP this will be under and provide spec for these wall panels.
   a. There is a generic spec 09 84 10 Fabric Wall Panels with more detail included in the Finish Legend updated in Addendum 2

SPECIFICATIONS:

1. Specification Section: 06 10 53
   Specification Title: ROUGH CARPENTRY

   Change:
   1.1, C.
   Add:

   C. This section includes Black Box Theater Floor Assembly. Provide two layers APA Rated Interior Plywood, Grade B-C fire-retardant treated, 2x4 fire-retardant treated sleepers, fiberglass insulation and vapor barrier.

2. Specification Section: 09 65 00
   Specification Title: RESILIENT FLOORING

   Change: 1.1, A. 4.]

   Change: This section includes Black Box Theater Flooring. Prepare surface to receive new flooring. Install Rosco

Roscoleum with Roscoleum adhesive, all-purpose cleaner, heavy duty tape and welding thread per the Manufacturer's instructions.

3. Spec Section: 27 05 01
   Spec Title: SCOREBOARD

   Change: Add Section

DRAWINGS:

1. Drawing Sheet Number: A720, A751, A752
   Drawing Sheet Title: FINISH LEGEND, INTERIOR ELEVATIONS

   Change: Updated details for acoustical panels

Attachments:
(Specs) 27 05 01
(Drawings) A720, A751, A752

Please see the following Addendum 2 summary for Mechanical items and attachments from Circle Design Group.

CIRCLE DESIGN GROUP

ADDENDUM NUMBER: 2

PROJECT NAME: Shelbyville Middle School Renovations

PROJECT NO.: 21102.C

ISSUED FROM	ISSUE DATE	BID DATE
Circle Design Group	May 31,2022	June 7, 2022

This Addendum No. 2 to the drawings and specification shall supplement, amend, and become a part of the bidding documents, plans, and specifications. All bids and construction contracts shall be based on these modifications to the original contract documents.

PART 1. BIDDING AND CONTRACT DOCUMENTS

1.01

A.

PART 2. SPECIFICATIONS

2.01 SECTION 23 07 19 HVAC PIPE AND EQUIPMENT INSULATION

A. Under 1.08.A.1 add "c. All liquid piping: Type 2"

2.02 SECTION 23 09 93 SEQUENCE OF OPERATION

A. Revise 4.02 – INDOOR AIR HANDLING UNIT WITH REMOTE CONDENSING UNIT to read:

A. The systems are single zone, variable air volume, utilizing an ECM fan array direct drive on the supply fan(s).

B. Provide a standalone equipment room controller for the air handling unit to obtain the following sequence:

1. The unit is started and stopped from the BMS. Operation is planned for continuous supply during occupied hours and cycled supply during unoccupied hours. Coordinate occupied time schedule with Owner/ Engineer during commissioning.

2. When under "occupied" schedule, the supply fan shall start and the minimum outside air damper shall open to its balanced position. Coordinate this setting with the Balance Contractor under 100% airflow.

3. A modulating minimum outside air damper shall be a separate control output. An airflow measuring station (AFMS) shall read the minimum outside air flow and adjust the damper position to obtain the designated minimum flow. The return air damper shall then modulate to maintain the minimum outside air quantity.

4. CO_2 outdoor air control: Modulate outside air damper from minimum to maximum flow to maintain the space CO_2 sensor setpoint of 1000 ppm (adjustable).

5. The unit shall run in economizer when conditions allow and there is a call for cooling. During economizer operation, the maximum outside air damper shall modulate with the return air damper to maintain a mixed air

temperature setpoint of 55°F.
When the economizer is used, the minimum outside air/AFMS control is off. The outside air damper shall modulate with the return air, damper to maintain discharge air temperature setpoint.

6. *Economizer operation shall cease above 65°F outside air temperature.*
7. *When the unit is stopped or when the outdoor temperature drops below 0 degrees, the outside air dampers shall fully close and the return air damper shall fully open.*
8. *The chilled water coil control valve and heating water coil control valve shall modulate in sequence to maintain a unit discharge temperature of 55°F on a call for cooling.*
9. *Provide a Discharge air Reset Schedule as follows (adjustable):*
   35°F and below OAT = 65°F supply
   55°F and above OAT = 55°F supply
10. *The controller shall monitor the space temperature and vary the speed of the supply fan, through the ECM motor drive, from minimum airflow 25% to 100% on an increasing call for cooling. At no call for cooling, the fan remains at 25% airflow and the chilled water coil valve shall close.*
11. *Upon a call for heating, increase the airflow from the minimum up to 100% while simultaneously modulating the heat coil two-way valve from closed to full open.*
12. *When the unit is in "unoccupied", schedule the unit shall cycle only on a call for heating in response to the space temperature sensor, the fan and heating coil valve shall vary as described in the occupied sequence. Setback temperature to be 60°F. The outside air damper shall remain fully closed.*
13. *An independent relief air damper shall modulate open to maintain a positive pressure of 0.03" w.g. to the outdoors.*
14. *Should the space humidity sensor exceed at setpoint of 60% RH, open the chilled water valve to maintain a 55° discharge air temperature. Modulate the two-way control valve on the reheat coil to not allow the space temperature to drop below setpoint.*

C. *Safeties*
   1. *Electric low limit thermostats shall stop the unit supply fan should the device sense an average cooling coil inlet temperature below 35°F. Provide a separate thermostat for every twenty (20) square feet of coil face with a minimum of two per air handing unit.*
   2. *A duct mounted smoke detector (provided by Electrical Contractor) shall stop the air handling unit fan and alarm the controller.*

D. *A current sensing relay shall be provided to prove supply fan operation.*

B. Revise 4.04 – BLOWER COIL UNIT to read:

A. Wired space temperature thermostat shall cycle fan and associated condensing unit and heating hot water coil as required to maintain space temperature setpoint (adjustable).

2.03 SECTION 23 31 15 FABRIC DUCTWORK
A. ADD section, see attached.
2.04 SECTION 23 34 00 HVAC
A. Under 2.01 Centrifugal Roof Exhaust Fan (Direct Drive) add Delhi Blowers by Canarm HVAC and Twin City to the list of acceptable manufacturers.
2.05 SECTION 23 73 01 – COILS
A. Delete 2.04 Heating Water Coils (Variable Air Volume Terminal Units)
2.06 SECTION 23 81 00 PACKAGED HEATING AND COOLING UNITS
A. Revise section, see attached.
2.07 SECTION 23 81 11 DUCTLESS SPLIT SYSTEM
A. Add Add Daikin and York to the list of acceptable manufacturers.
2.08 SECTION 23 82 19 FAN AND COIL UNITS
A. Add Daikin and Nailor to the list of acceptable manufacturers.

PART 3. DRAWINGS

3.01

ATTACHMENTS
Specification Section: 23 31 15, 23 81 00
Drawings: N/A

END OF ADDENDUM

C. Submit complete dimensioned layout drawings of fabric ductwork showing both the accurately scaled ductwork and its relation of space enclosure. At a minimum, the following items will be required to be indicated on the duct layout submittals:

1. Drawings shall be submitted in CAD format. Hand drawn documents are not acceptable.
2. Ductwork layout to 1/4" = 1'-0" scale.
3. All field seams, connections and the proper method of joint shall be indicated.
4. Adjustable flow device locations shall be indicated.
5. Included hanging and supporting details for review by engineer and owner.

1.05 WARRANTY:

A. Manufacturer must provide a 5 Year Product Warranty for products supplied for the fabric portion of this system as well as a Design and Performance Warranty.

1.06 RECORD DRAWINGS:

A. Submit Record Drawings in accordance with Division 1 requirements.

1.07 DELIVERY, STORAGE AND HANDLING:

A. Protect fabric air dispersion systems from damage during shipping, storage and handling.

B. Where possible, store ductwork inside and protect from the weather. Where necessary to store outside, store above grade and enclosed with waterproof wrapping.

PART 2 - PRODUCTS

2.01 MANUFACTURER:

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

1. DuctSox® Corporation
2. FabricAir
3. Soft Duct

2.02 FABRIC AIR DISPERSION SYSTEM:

A. Fabric: Air diffusers shall be constructed of a woven fire retardant fabric polyester complying with the following physical characteristics:

1. Fabric Construction: 100% Flame Retardant
2. Weight: minimum 5.5 oz. /yd2 per ASTM D3776
3. Color: Blue or Silver/Gray as indicated on plans.

4. Air Permeability: 0 cfm/ft2 per ASTM D737 Frazier.
5. Temperature Range: 0 degrees F to 180 degrees F
6. Fire Retardancy: Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90-A and AC-167 (noted above).
7. Basis of Design: DuctSox “Duratex”
8. Alternate Bid: FabricAir “Combi”

B. Systems fabrication requirements:

1. Design air volume and diffuser lengths shall be as defined on the mechanical plans. Air dispersion shall be accomplished by high-throw vent orifices as defined on the mechanical drawings to generate positive velocity down center of each aisle. Size of nozzle orifices specified on plans shall be confirmed by manufacturer based upon product test data to produce air volume specified.
2. Inlet connection to metal duct via fabric draw band with anchor patches as supplied by manufacturer. Anchor patches to be secured to metal duct via zip screw fastener – supplied by contractor.
3. Inlet connection shall include zipper for easy removal / maintenance. Lengths to include required zippers as specified by manufacturer.
4. System shall include Adjustable Flow Devices to balance turbulence, airflow and distribution as needed. Flow restriction device shall include ability to adjust the airflow resistance from 0.06 – 0.60 in w.g. static pressure.
5. Fabric system shall include connectors to accommodate suspension system listed below.
6. Any deviation from a straight run shall be made using a gored elbow or an efficiency tee. Normal 90 degree elbows are 5 gores and the radius of the elbow is 1.5 times the diameter of the fabric ductwork.

C. Design parameters:

1. Fabric air diffusers shall be designed from 0.25” water gage minimum to 3.0” maximum, with 0.5” as the standard.
2. Fabric air diffusers shall be limited to design temperatures between 0 degrees F and 180 degrees F (-17.8 degrees C and 82 degrees C).

D. Suspension hardware:

1. Provide with both internal retention and external tensioning. Basis of Design; DuctSox SkeleCore Pull-Tight System.
2. System shall consist of internal tensioning baskets with cable or track stops that externally tension the system off of the suspension system selected below along with 360 degree internal retention hoops that are spaced 5’ on center between tensioning baskets.
3. Tensioning baskets are designed to self-lock when tension is applied to the system.
4. All straight sections utilize both internal retention hoops and external tensioning with the use of the tension baskets, all fittings (crosses, elbows, reducers, and tees) utilize internal retention hoops.

5. Distance between consecutive tensioning baskets should not be more than 40'.
6. System shall be installed with a one row suspension system located 1.5" above top-dead-center of the textile system.
7. System attachment to cable or U-Track shall be made using Gliders spaced no further than 12 inches apart.
8. Available for diameters from 8" – 60".
9. Not available for natatorium applications.
10. One row suspension option (must specify if multiple on same project)
    a. Cable suspension hardware to include cable, eye bolts, thimbles, cable clamps, and turnbuckle(s) as required.
        (1) Cable suspension options
        (2) Galvanized steel cable
        (3) Support lengths available in 5'(standard), 10', 15', & 30'.

PART 3 - INSTALLATION

3.01 INSTALLATION OF FABRIC AIR DISPERSION SYSTEM:

A. Install chosen suspension system in accordance with the requirements of the manufacturer. Instructions for installation shall be provided by the manufacturer with product.

3.02 CLEANING AND PROTECTION:

A. Clean air handling unit and ductwork prior to the fabric duct dispersion system unit-by-unit as it is installed. Clean external surfaces of foreign substance which may cause corrosive deterioration of facing.

B. Temporary Closure: At ends of ducts which are not connected to equipment or distribution devices at time of ductwork installation, cover with polyethylene film or other covering which will keep the system clean until installation is completed.

C. If fabric duct dispersion systems become soiled during installation, they should be removed and cleaned following the manufacturer's standard terms of laundry.

END OF SECTION

SECTION 23 81 00

PACKAGED HEATING AND COOLING UNITS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install equipment and accessories to provide complete packaged heating and cooling units as shown on the drawings and herein specified.

B. Furnish and install temperature controls as specified herein.

C. Equipment includes:

1. Gas DX Packaged Rooftop Unit

1.02 DESIGN BASE

A. The construction drawings indicate a system based on the information available to Engineer by a selected manufacturer of equipment. Electrical services, size, configuration and space allocations are consistent with that manufacturer's information.

B. This manufacturer and other listed or approved manufacturers are encouraged to provide equipment on this project; however, it shall be the Contractor and/or Supplier's responsibility to assure the equipment is consistent with the design base. No extra compensation will be approved for revisions required by the manufacturer for any different services, space, clearances, etc.

1.03 COORDINATION

A. Provide coordination with the project Air Balance Contractor in the final balance of the fans.

B. Fan Speed Adjustment: external resistance (static pressure loss) for each fan system has been estimated and noted on the drawings. Fan speed and fan to motor drive will be selected based on this estimated static pressure loss. The static pressure loss is an estimate; actual loss of completed system may vary above or below estimate. Mechanical Contractor shall change pulleys or sheaves, as required, to suit actual job conditions at no additional cost to the Owner. Refer to Specification Section 23 05 93, Testing, Adjusting and Balancing, for other requirements.

C. Should corrective work be required after the initial balance, the Mechanical Contractor shall reimburse the Balancing Contractor for rebalancing. Refer to Specification Section 23 05 93, Testing, Adjusting and Balancing, Item 1.08F.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. General Provisions: Section 23 05 01

B. Completion and Startup: Section 23 05 03

C. Identification for Piping and Equipment: Section 23 05 53

D. Testing, Adjusting and Balancing: Section 23 05 93

E. Common Motor Requirements: Section 23 05 13

F. Prefabricated Curbs and Equipment Supports: Section 23 05 30

G. Raceways and Boxes for Electrical Systems: Section 26 05 33

H. Wiring Devices: Section 26 27 26

1.05 SUBMITTALS

A. Submit shop drawings on each unit specified herein in accordance with Specifications Section 23 05 01, General Provisions.

B. Submit shop drawings for each thermostat type specified herein in accordance with Specification Section 23 0501, General Provisions.

PART 2 - PRODUCTS

2.01 PACKAGE ROOFTOP AIR CONDITIONING UNIT (GAS FIRED)

A. General: Furnish and install a self-contained electric cooling/gas heating rooftop unit, with supply and return air connections off bottom of unit mounted on a full perimeter factory supplied roof curb. Rooftop units shall be completely factory assembled and tested and shall include compressor, condenser coils, condenser fans and motor, evaporator coil, evaporator blower and motor, heat exchanger and burner, interconnecting wiring, prewired control panel, filters and other necessary components mounted in corrosion resistant, all weather cabinetry. Units shall be shipped with lifting angles and fully charged with oil and refrigerant.

B. Cabinet: The cabinet shall be constructed of heavy gauge, zinc coated, galvanized steel with baked enamel finish. The cabinet shall be constructed such that a one piece top is used over the entire air handling section to insure watertightness. The base of the unit shall provide access for the necessary utility connections. The conditioned air sections shall be insulated with one inch, one pound density fiberglass.

C. Compressors: The compressors shall be of the welded shell, fully hermetic type. The compressor shall be fitted with service valves, and crankcase

heater. Compressor motors shall be protected by overloads, anti-short cycle lockout time (5 min.) and a low pressure stat. The compressors shall be mounted on vibration isolators. Provide a five year warranty.

D. Condenser Section: The condenser coils shall be constructed of aluminum plate fins mechanically bonded to seamless copper tubes. Condenser fans shall be direct driven, propeller type and shall be mounted for vertical discharge. The condenser motors shall be protected as required by N.E.C. and be supplied with rain shields. The condensing unit shall be equipped with ambient controls to allow operation of system to 32°F. Provide factory installed baffles between condenser fan sections.

E. Evaporator Section: Evaporator coil shall be constructed of aluminum plate fins mechanically bonded to seamless copper tubes. Evaporator fans shall be of the centrifugal type, forward curved. The fans shall be belt driven with an adjustable pitch pulley. Fan motor shall be electrically protected as required by N.E.C. Fan motors shall be mounted on ad adjustable base allowing for proper belt alignment and tension. The fan shaft shall rotate in prelubricated ball bearings. Fan shall be statically and dynamically balanced and shall be mounted on vibration isolators.

F. Gas Fired Heating Section: Unit shall include a completely assembled, wired and piped gas fired heating system. Design and assembly shall be certified by the American Gas Association (AGA) specifically for outdoor application.

- ***1. Heat exchanger shall be constructed of minimum 18 gauge corrosion resistant, aluminized steel and shall be factory tested for gas leaks. Furnish a ten year warranty on the heat exchanger.***
- ***2. Burners shall be constructed of minimum 20 gauge stainless steel.***
- ***3. Provide force combustion blower (not in air stream).***
- ***4. Furnish a threaded gas connection at the unit.***
- ***5. Furnish the following heating controls:***
  - ***a. Redundant two stage gas valve (50% to 100%)***
  - ***b. Electronic ignition system***
  - ***c. Limit switches***
  - ***d. Centrifugal switch and rollout switch***

G. Control Circuit: The unit control panel shall be prewired in the unit casing furnished with a 24 volt control transformer, high and low pressure compressor protection, compressor, condenser and evaporator fan motor contactors, as well as other protective devices.

H. Provide a full perimeter, vibration isolated type, roof mounting curb approved by the National Roof Contractors Association. Refer to Specification Section 23 05 48 Vibration and Seismic Controls for Piping and Equipment.

I. A low leakage, outside air damper, complete with birdscreen and rain hood, shall be provided. An economizer shall be shipped fully factory assembled and installed in unit. The economizer control shall maintain a fixed supply air temperature during the "free" cooling operation by providing for full range modulation of the operable outside and return air dampers thru 100% outside air. (100% positive return air shall be vented outside the system by means of relief dampers.) The package shall be complete with necessary dampers, linkage and spring return modulating damper motors. Low leakage dampers shall have neoprene edges and end seals with maximum leakage of 10 CFM/square foot at 2" W.G.

J. Refer to Dampers Specifications Section 23 09 13.43.for requirements.

K. Approvals: Unit shall be UL listed as an electric cooling/gas heating outdoor unit. All wiring shall be in compliance with N.E.C. Unit shall be rated in accordance with ARI standard 360-75. Heating section shall be certified by AGA.

L. Filters: Provide three (3) complete sets of 2" thick throwaway filters.

M. Unit Manufacturers
- ***1. Aaon***
- ***2. Carrier***
- ***3. Daikin***
- ***4. Lennox***
- ***5. Trane***
- ***6. York/Johnson Controls, Inc.***

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Location, size, capacity, mounting arrangement and electrical characteristics for equipment shall be as shown and scheduled on the drawings.

B. Clean and lubricate all equipment.

C. Motor starter for all motors shall be furnished by unit manufacturer.

D. Unit shall be mounted level.

E. Control wiring shall be provided as follows:

1. Control wiring and conduit to all remote thermostats and ancillary controls shall be provided by Electrical Contractor. Final connections by Mechanical Contractor.

2. Notify Electrical Contractor of wire sizes and quantities.

3.02 ANCHORAGE

A. Anchor all condensing units to a grade level concrete pad, in a manner to deter theft.

B. Submit, manufacturer approved, anchorage method to owner for final approval.

END OF SECTION

SECTION 23 31 15
Fabric Ductwork

PART 1 - GENERAL

1.01 RELATED SECTIONS:

A. Drawings, general provisions of the Contract, including General and Supplementary Conditions, and Division-1 Specification Sections and Division 20 Specification Sections, apply to work of this Section.

1.02 WORK DESCRIPTION:

A. Extent of non-metal ductwork is indicated on drawings and by requirements of this section.

B. Types of non-metal ductwork required for this project include the following:

1. Fabric Air Dispersion Products.

1.03 QUALITY ASSURANCE:

A. Building Codes and Standards:

1. Product must be Classified by Underwriters Laboratories in accordance with the 25/50 flame spread / smoke developed requirements of NFPA 90-A and are also classified in accordance with ICC Evaluation Service AC167 and UL 2518. Product must meet UL-C (Canada), BS 5867, part 2, 1980 and GB8624-2006 B-s1, d0, t1 level.
2. All product sections must be labeled with the logo and classification marking of Underwriters Laboratories.

B. Design & Quality Control

1. Manufacturer must have documented design support information including duct sizing, vent and orifice location, vent and orifice sizing, length, and suspension. Parameters for design, including maximum air temperature, velocity, pressure and fabric permeability, shall be considered and documented.

1.04 SUBMITTALS:

A. Product Data: Submit manufacturer's specifications on materials and manufactured products used for work of this section.

B. Building Code Data: Submit UL file number under which product is Classified by Underwriters Laboratories NFPA 90, ICC AC167 and UL 2518.

SECTION 27 05 01

SCOREBOARD

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes: Interior, electronic, multi-sport scoreboard[s] including control center, and other accessories for complete functional installation.

1.02 REFERENCES

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

1. ASTM B221- Aluminum Alloy Extruded Bar, Rod, Wire, Shape and Tube

B. National Electrical Code

C. Federal Communications Commission, Part 15 Rules & Regulations

D. UL and C-UL Standard for Electric Signs

1.03 SUBMITTALS

A. Provide in accordance with Section 27 05 00 Submittal Procedures
1. To minimize the environmental impact of multiple paper copies, product installation prints, instructions and diagrams of manufacturer will be submitted in a paperless fashion. The end user shall receive all pertinent hard-copy documentation at delivery.
2. Product data for scoreboards, controls, and accessories shall include descriptions of control functions etc.
3. Installation drawings, face layout, dimensions, construction, electrical wiring diagrams, and method of anchorage. (Paperless when applicable).
4. Copy of guarantee required by Paragraph 1.5 for review by Architect. (Paperless when applicable).
5. Manufacturer's installation instructions. (Paperless when applicable).
6. Finish Samples.

1.04 QUALITY ASSURANCE

A. Source limitation: All components including scoreboard, control center, control cable, and other accessories and installation hardware shall be products of a single manufacturer.

B. Manufacturer qualifications: Company specializing in manufacturing electronic scoreboards with 10 years minimum successful world-wide experience.

C. Scoreboards and other electrical components shall be certified for use in United States and Canada by Underwriter Laboratories, (UL), Inc. and shall bear either UL or C-UL label only.

D. Scoreboards and other electrical components shall be electrically grounded in accordance with National Electrical Code (NEC), Article 600.

1.05 GUARANTEE

A. Provide under provisions of Close Out Submittals; guarantee to cover defects in materials and workmanship.

1. Scoreboards, scoring tables, marquees, message centers, video boards* and Stadium Pro loudspeaker enclosures are guaranteed for a period of five (5) years from the date of invoice against defects in workmanship or materials.

**Video Board exclusions include 8815, 8825, 8835, 8845.

2. Wireless components, portable scoreboards and solar power kit carry a two (2) year guarantee from date of invoice. Hand-held controls and switches carry a one (1) year guarantee from date of invoice. The Stadium Pro loudspeaker front printed scrim is guaranteed for one (1) year from the date of invoice. Video Board Models 8815, 8825, 8835, and 8845 are guaranteed for one (1) year from date of invoice, unless additional years of warranty is purchased. For products supplied by third-party suppliers (i.e. cameras, computers, computer monitors, radar guns, loudspeakers, amplifiers and associated electronics), Purchaser agrees to accept the manufacturer’s warranty, if any, in lieu of any warranty by Nevco.

3. Lifetime telephone support.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Nevco Inc. 301 East Harris Avenue, Greenville, Illinois 62246; 800-851-4040; www.nevco.com

B. Daktronics

C. Request to use equivalent products of other manufacturers shall be submitted in accordance with Section 01 25 00 -Product Substitution Procedures.

2.02 MATERIALS

A. Aluminum Aluminum face and perimeter frame: Fabricated from 0.050 inch1.3 mm minimum thickness, ASTM B221 aluminum sheet.

B. Finish: Acrylic polyurethane paint. Color as selected by Architect from manufacturer's standard range.

C. Electronics: Low voltage, solid state, 2-wire cable, multiplex system, quartz crystal controlled.

D. LED (light emitting diode) units: Seven-bar, segmented digits in protective aluminum cover, rated typical life 100,000 hours, and designed to provide excellent visibility from all angles and sides.

E. Provide location specific universal power cord with plug for world-wide installation.

F. Control cable where required shall be UL listed, 2-wire, type RG-58/U, coaxial cable, [1/4 inch] [6 mm] diameter.

G. Junction boxes where required: Sheet metal box and cover, 4-1/2 x 2-1/8 x 2-1/8 inches 114 x 54 x 54 mm min. complying with NEMA standards.

2.03 SCOREBOARD

A. Type: Interior, multi-purpose basketball/volleyball/wrestling electronic scoreboard with two integral horns, changeable captions, LED displays for time, scores, period, number of player fouling with personal fouls, team fouls, bonus and double bonus indicators, and next possession arrows; Model 2700-NL (base) as manufactured by Nevco Inc. All caption plates will be changeable and made of polyvinylchloride with vinyl lettering applied.

1. Size (8 feet long x 3 feet high x 8 inches deep)
2. Approximate hanging weight (71 lbs)
3. Captions
   a. (6 inches) (152 mm) high:
      (1) Basic: “Home”, “Guests” and “Period”
4. LED Displays:
   a. Timing: Super Bright Red (13 inches) (330 mm) high digits with lit colon.
   b. Team scores: Super Bright Amber (13 inches) (330 mm) high digits.
   c. Period: Super Bright Amber (9 inches) (229 mm) high digits.
6. Suspension mounting attachments will be included.
7. Power requirements: 120 volt, 0.72 amps

B. Quantity Needed (2)

2.04 CONTROL CENTER

A. Type: Wireless, microprocessor based, operator’s control center with receiver unit mounted at scoreboard and designed to operate different models of scoreboard by interchange of keyboard overlay; Model MPCW as manufactured by Nevco Inc. Console will operate earlier scoreboards from Nevco, Inc.

1. Unit shall comply with Part 15 of FCC Rules regarding interference.
2. Console: high impact, break resistant gray plastic (11 x 9-1/2” x 4-1/8” inches) (279 x 241 x 105 mm)
3. Features:
   a. Control can be used to operate both wireless and wired scoreboards.
   b. Power on-off switch.
   c. Split and raised 40 key keyboards, internal beeper acknowledging each entry, and bookmark capabilities.
   d. Keyboard overlays for scoreboard or accessory.

e. Remote hand-held main time switch with integral horn button.
f. Provide with LED displays, lithium cell battery backup to maintain scoreboard memory and time of day, self test mode, power on-off switch, alternate time control, and multiple scoreboard operation.
g. Timer features: time of day display, multiple time out timers with warning, interval horn, upcount auto stop with horn, and 1/10” second display during last minute.
h. Dimmer control for scoreboard.

4. Receiver: sturdy impact resistant construction (6 x 4 x 1.5 inches) (152 x 102 x 38mm) with (4 inch) (102 mm) antenna and mounted at scoreboard.
5. Maximum range: (1,000 feet) (305 m) from control center to receiver.
6. Power adapters: provide for each control center.
   a. Input: 120 volts, 0.4 amps, 50/60 Hz.
   b. Output: 9 volts, 1.67 amps, 15 watts
7. Provide option of battery supply for control operation if utility power not available.
8. Provide carrying case for control center and hand held switch; Model CC-3 as manufactured by Nevco Inc.
   a. Size (18-1/2” x 14-1/2” x 6”) (470 x 368 x 152 mm)
   b. Construction: double wall high density black polyethylene with padded interior mechanical latches and hinges.

B. Quantity: Needed (1)

PART 3 - EXECUTION

3.01 PREPARATION

A. Very exact scoreboard and control center quantities and junction box locations with Architect.

B. Coordinate requirements for electrical power, wall blocking, auxiliary framing and supports, suspension cables, and other components to be provided under other Specification Sections to ensure adequate provisions are made for complete, functional installation of scoreboards. (Ensure that building roof structure has been designed for loads of suspended scoreboards.)

C. Coordinate scoreboard electrical requirements to ensure proper power source, conduit, wiring and boxes are provided. Prior to installation, verify type and location of power supply.

3.02 INSTALLATION

A. Install scoreboards and accessories in accordance with manufacturer's instructions and approved installation drawings.

B. Before installation, field test scoreboards, and accessories for operating functions. Ensure that scoreboards accurately perform all operations. Correct deficiencies.

C. Rigidly mount scoreboards and accessories level and plumb with brackets and fasteners.

D. Clean exposed surfaces.

E. Protect scoreboards and finishes from other construction operations.

3.03 DEMONSTRATING AND TRAINING

A. In accordance with Section 01 75 00 – Starting, Adjusting, and Demonstrating, provide demonstration and training session for Owner's representative covering operation and maintenance of electronic scoreboard.

END OF SECTION

CIRCLE DESIGN GROUP

ADDENDUM NUMBER: 2

PROJECT NAME: Shelbyville Middle School Renovations

PROJECT NO.: 21102.C

ISSUED FROM	ISSUE DATE	BID DATE
Circle Design Group	May 31,2022	June 7, 2022

This Addendum No. 2 to the drawings and specification shall supplement, amend, and become a part of the bidding documents, plans, and specifications. All bids and construction contracts shall be based on these modifications to the original contract documents.

PART 1. BIDDING AND CONTRACT DOCUMENTS

1.01

A.

PART 2. SPECIFICATIONS

2.01 SECTION 23 07 19 HVAC PIPE AND EQUIPMENT INSULATION

A. Under 1.08.A.1 add "c. All liquid piping: Type 2"

2.02 SECTION 23 09 93 SEQUENCE OF OPERATION

A. Revise 4.02 – INDOOR AIR HANDLING UNIT WITH REMOTE CONDENSING UNIT to read:

A. The systems are single zone, variable air volume, utilizing an ECM fan array direct drive on the supply fan(s).

B. Provide a standalone equipment room controller for the air handling unit to obtain the following sequence:

1. The unit is started and stopped from the BMS. Operation is planned for continuous supply during occupied hours and cycled supply during unoccupied hours. Coordinate occupied time schedule with Owner/ Engineer during commissioning.

2. When under "occupied" schedule, the supply fan shall start and the minimum outside air damper shall open to its balanced position. Coordinate this setting with the Balance Contractor under 100% airflow.

3. A modulating minimum outside air damper shall be a separate control output. An airflow measuring station (AFMS) shall read the minimum outside air flow and adjust the damper position to obtain the designated minimum flow. The return air damper shall then modulate to maintain the minimum outside air quantity.

4. CO_2 outdoor air control: Modulate outside air damper from minimum to maximum flow to maintain the space CO_2 sensor setpoint of 1000 ppm (adjustable).

5. The unit shall run in economizer when conditions allow and there is a call for cooling. During economizer operation, the maximum outside air damper shall modulate with the return air damper to maintain a mixed air

temperature setpoint of 55°F.
When the economizer is used, the minimum outside air/AFMS control is off. The outside air damper shall modulate with the return air, damper to maintain discharge air temperature setpoint.

6. *Economizer operation shall cease above 65°F outside air temperature.*
7. *When the unit is stopped or when the outdoor temperature drops below 0 degrees, the outside air dampers shall fully close and the return air damper shall fully open.*
8. *The chilled water coil control valve and heating water coil control valve shall modulate in sequence to maintain a unit discharge temperature of 55°F on a call for cooling.*
9. *Provide a Discharge air Reset Schedule as follows (adjustable):*
   35°F and below OAT = 65°F supply
   55°F and above OAT = 55°F supply
10. *The controller shall monitor the space temperature and vary the speed of the supply fan, through the ECM motor drive, from minimum airflow 25% to 100% on an increasing call for cooling. At no call for cooling, the fan remains at 25% airflow and the chilled water coil valve shall close.*
11. *Upon a call for heating, increase the airflow from the minimum up to 100% while simultaneously modulating the heat coil two-way valve from closed to full open.*
12. *When the unit is in "unoccupied", schedule the unit shall cycle only on a call for heating in response to the space temperature sensor, the fan and heating coil valve shall vary as described in the occupied sequence. Setback temperature to be 60°F. The outside air damper shall remain fully closed.*
13. *An independent relief air damper shall modulate open to maintain a positive pressure of 0.03" w.g. to the outdoors.*
14. *Should the space humidity sensor exceed at setpoint of 60% RH, open the chilled water valve to maintain a 55° discharge air temperature. Modulate the two-way control valve on the reheat coil to not allow the space temperature to drop below setpoint.*

C. *Safeties*
   1. *Electric low limit thermostats shall stop the unit supply fan should the device sense an average cooling coil inlet temperature below 35°F. Provide a separate thermostat for every twenty (20) square feet of coil face with a minimum of two per air handing unit.*
   2. *A duct mounted smoke detector (provided by Electrical Contractor) shall stop the air handling unit fan and alarm the controller.*

D. *A current sensing relay shall be provided to prove supply fan operation.*

B. Revise 4.04 – BLOWER COIL UNIT to read:

A. Wired space temperature thermostat shall cycle fan and associated condensing unit and heating hot water coil as required to maintain space temperature setpoint (adjustable).

2.03 SECTION 23 31 15 FABRIC DUCTWORK
A. ADD section, see attached.
2.04 SECTION 23 34 00 HVAC
A. Under 2.01 Centrifugal Roof Exhaust Fan (Direct Drive) add Delhi Blowers by Canarm HVAC and Twin City to the list of acceptable manufacturers.
2.05 SECTION 23 73 01 – COILS
A. Delete 2.04 Heating Water Coils (Variable Air Volume Terminal Units)
2.06 SECTION 23 81 00 PACKAGED HEATING AND COOLING UNITS
A. Revise section, see attached.
2.07 SECTION 23 81 11 DUCTLESS SPLIT SYSTEM
A. Add Add Daikin and York to the list of acceptable manufacturers.
2.08 SECTION 23 82 19 FAN AND COIL UNITS
A. Add Daikin and Nailor to the list of acceptable manufacturers.

PART 3. DRAWINGS

3.01

ATTACHMENTS
Specification Section: 23 31 15, 23 81 00
Drawings: N/A

END OF ADDENDUM

SECTION 23 31 15
Fabric Ductwork

PART 1 - GENERAL

1.01 RELATED SECTIONS:

A. Drawings, general provisions of the Contract, including General and Supplementary Conditions, and Division-1 Specification Sections and Division 20 Specification Sections, apply to work of this Section.

1.02 WORK DESCRIPTION:

A. Extent of non-metal ductwork is indicated on drawings and by requirements of this section.

B. Types of non-metal ductwork required for this project include the following:

1. Fabric Air Dispersion Products.

1.03 QUALITY ASSURANCE:

A. Building Codes and Standards:

1. Product must be Classified by Underwriters Laboratories in accordance with the 25/50 flame spread / smoke developed requirements of NFPA 90-A and are also classified in accordance with ICC Evaluation Service AC167 and UL 2518. Product must meet UL-C (Canada), BS 5867, part 2, 1980 and GB8624-2006 B-s1, d0, t1 level.
2. All product sections must be labeled with the logo and classification marking of Underwriters Laboratories.

B. Design & Quality Control

1. Manufacturer must have documented design support information including duct sizing, vent and orifice location, vent and orifice sizing, length, and suspension. Parameters for design, including maximum air temperature, velocity, pressure and fabric permeability, shall be considered and documented.

1.04 SUBMITTALS:

A. Product Data: Submit manufacturer's specifications on materials and manufactured products used for work of this section.

B. Building Code Data: Submit UL file number under which product is Classified by Underwriters Laboratories NFPA 90, ICC AC167 and UL 2518.

C. Submit complete dimensioned layout drawings of fabric ductwork showing both the accurately scaled ductwork and its relation of space enclosure. At a minimum, the following items will be required to be indicated on the duct layout submittals:

1. Drawings shall be submitted in CAD format. Hand drawn documents are not acceptable.
2. Ductwork layout to 1/4" = 1'-0" scale.
3. All field seams, connections and the proper method of joint shall be indicated.
4. Adjustable flow device locations shall be indicated.
5. Included hanging and supporting details for review by engineer and owner.

1.05 WARRANTY:

A. Manufacturer must provide a 5 Year Product Warranty for products supplied for the fabric portion of this system as well as a Design and Performance Warranty.

1.06 RECORD DRAWINGS:

A. Submit Record Drawings in accordance with Division 1 requirements.

1.07 DELIVERY, STORAGE AND HANDLING:

A. Protect fabric air dispersion systems from damage during shipping, storage and handling.

B. Where possible, store ductwork inside and protect from the weather. Where necessary to store outside, store above grade and enclosed with waterproof wrapping.

PART 2 - PRODUCTS

2.01 MANUFACTURER:

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

1. DuctSox® Corporation
2. FabricAir
3. Soft Duct

2.02 FABRIC AIR DISPERSION SYSTEM:

A. Fabric: Air diffusers shall be constructed of a woven fire retardant fabric polyester complying with the following physical characteristics:

1. Fabric Construction: 100% Flame Retardant
2. Weight: minimum 5.5 oz. /yd2 per ASTM D3776
3. Color: Blue or Silver/Gray as indicated on plans.

4. Air Permeability: 0 cfm/ft2 per ASTM D737 Frazier.
5. Temperature Range: 0 degrees F to 180 degrees F
6. Fire Retardancy: Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90-A and AC-167 (noted above).
7. Basis of Design: DuctSox “Duratex”
8. Alternate Bid: FabricAir “Combi”

B. Systems fabrication requirements:

1. Design air volume and diffuser lengths shall be as defined on the mechanical plans. Air dispersion shall be accomplished by high-throw vent orifices as defined on the mechanical drawings to generate positive velocity down center of each aisle. Size of nozzle orifices specified on plans shall be confirmed by manufacturer based upon product test data to produce air volume specified.
2. Inlet connection to metal duct via fabric draw band with anchor patches as supplied by manufacturer. Anchor patches to be secured to metal duct via zip screw fastener – supplied by contractor.
3. Inlet connection shall include zipper for easy removal / maintenance. Lengths to include required zippers as specified by manufacturer.
4. System shall include Adjustable Flow Devices to balance turbulence, airflow and distribution as needed. Flow restriction device shall include ability to adjust the airflow resistance from 0.06 – 0.60 in w.g. static pressure.
5. Fabric system shall include connectors to accommodate suspension system listed below.
6. Any deviation from a straight run shall be made using a gored elbow or an efficiency tee. Normal 90 degree elbows are 5 gores and the radius of the elbow is 1.5 times the diameter of the fabric ductwork.

C. Design parameters:

1. Fabric air diffusers shall be designed from 0.25” water gage minimum to 3.0” maximum, with 0.5” as the standard.
2. Fabric air diffusers shall be limited to design temperatures between 0 degrees F and 180 degrees F (-17.8 degrees C and 82 degrees C).

D. Suspension hardware:

1. Provide with both internal retention and external tensioning. Basis of Design; DuctSox SkeleCore Pull-Tight System.
2. System shall consist of internal tensioning baskets with cable or track stops that externally tension the system off of the suspension system selected below along with 360 degree internal retention hoops that are spaced 5’ on center between tensioning baskets.
3. Tensioning baskets are designed to self-lock when tension is applied to the system.
4. All straight sections utilize both internal retention hoops and external tensioning with the use of the tension baskets, all fittings (crosses, elbows, reducers, and tees) utilize internal retention hoops.

5. Distance between consecutive tensioning baskets should not be more than 40'.
6. System shall be installed with a one row suspension system located 1.5" above top-dead-center of the textile system.
7. System attachment to cable or U-Track shall be made using Gliders spaced no further than 12 inches apart.
8. Available for diameters from 8" – 60".
9. Not available for natatorium applications.
10. One row suspension option (must specify if multiple on same project)
    a. Cable suspension hardware to include cable, eye bolts, thimbles, cable clamps, and turnbuckle(s) as required.
        (1) Cable suspension options
        (2) Galvanized steel cable
        (3) Support lengths available in 5'(standard), 10', 15', & 30'.

PART 3 - INSTALLATION

3.01 INSTALLATION OF FABRIC AIR DISPERSION SYSTEM:

A. Install chosen suspension system in accordance with the requirements of the manufacturer. Instructions for installation shall be provided by the manufacturer with product.

3.02 CLEANING AND PROTECTION:

A. Clean air handling unit and ductwork prior to the fabric duct dispersion system unit-by-unit as it is installed. Clean external surfaces of foreign substance which may cause corrosive deterioration of facing.

B. Temporary Closure: At ends of ducts which are not connected to equipment or distribution devices at time of ductwork installation, cover with polyethylene film or other covering which will keep the system clean until installation is completed.

C. If fabric duct dispersion systems become soiled during installation, they should be removed and cleaned following the manufacturer's standard terms of laundry.

END OF SECTION

SECTION 23 81 00

PACKAGED HEATING AND COOLING UNITS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish and install equipment and accessories to provide complete packaged heating and cooling units as shown on the drawings and herein specified.

B. Furnish and install temperature controls as specified herein.

C. Equipment includes:

1. Gas DX Packaged Rooftop Unit

1.02 DESIGN BASE

A. The construction drawings indicate a system based on the information available to Engineer by a selected manufacturer of equipment. Electrical services, size, configuration and space allocations are consistent with that manufacturer's information.

B. This manufacturer and other listed or approved manufacturers are encouraged to provide equipment on this project; however, it shall be the Contractor and/or Supplier's responsibility to assure the equipment is consistent with the design base. No extra compensation will be approved for revisions required by the manufacturer for any different services, space, clearances, etc.

1.03 COORDINATION

A. Provide coordination with the project Air Balance Contractor in the final balance of the fans.

B. Fan Speed Adjustment: external resistance (static pressure loss) for each fan system has been estimated and noted on the drawings. Fan speed and fan to motor drive will be selected based on this estimated static pressure loss. The static pressure loss is an estimate; actual loss of completed system may vary above or below estimate. Mechanical Contractor shall change pulleys or sheaves, as required, to suit actual job conditions at no additional cost to the Owner. Refer to Specification Section 23 05 93, Testing, Adjusting and Balancing, for other requirements.

C. Should corrective work be required after the initial balance, the Mechanical Contractor shall reimburse the Balancing Contractor for rebalancing. Refer to Specification Section 23 05 93, Testing, Adjusting and Balancing, Item 1.08F.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. General Provisions: Section 23 05 01

B. Completion and Startup: Section 23 05 03

C. Identification for Piping and Equipment: Section 23 05 53

D. Testing, Adjusting and Balancing: Section 23 05 93

E. Common Motor Requirements: Section 23 05 13

F. Prefabricated Curbs and Equipment Supports: Section 23 05 30

G. Raceways and Boxes for Electrical Systems: Section 26 05 33

H. Wiring Devices: Section 26 27 26

1.05 SUBMITTALS

A. Submit shop drawings on each unit specified herein in accordance with Specifications Section 23 05 01, General Provisions.

B. Submit shop drawings for each thermostat type specified herein in accordance with Specification Section 23 0501, General Provisions.

PART 2 - PRODUCTS

2.01 PACKAGE ROOFTOP AIR CONDITIONING UNIT (GAS FIRED)

A. General: Furnish and install a self-contained electric cooling/gas heating rooftop unit, with supply and return air connections off bottom of unit mounted on a full perimeter factory supplied roof curb. Rooftop units shall be completely factory assembled and tested and shall include compressor, condenser coils, condenser fans and motor, evaporator coil, evaporator blower and motor, heat exchanger and burner, interconnecting wiring, prewired control panel, filters and other necessary components mounted in corrosion resistant, all weather cabinetry. Units shall be shipped with lifting angles and fully charged with oil and refrigerant.

B. Cabinet: The cabinet shall be constructed of heavy gauge, zinc coated, galvanized steel with baked enamel finish. The cabinet shall be constructed such that a one piece top is used over the entire air handling section to insure watertightness. The base of the unit shall provide access for the necessary utility connections. The conditioned air sections shall be insulated with one inch, one pound density fiberglass.

C. Compressors: The compressors shall be of the welded shell, fully hermetic type. The compressor shall be fitted with service valves, and crankcase

heater. Compressor motors shall be protected by overloads, anti-short cycle lockout time (5 min.) and a low pressure stat. The compressors shall be mounted on vibration isolators. Provide a five year warranty.

D. Condenser Section: The condenser coils shall be constructed of aluminum plate fins mechanically bonded to seamless copper tubes. Condenser fans shall be direct driven, propeller type and shall be mounted for vertical discharge. The condenser motors shall be protected as required by N.E.C. and be supplied with rain shields. The condensing unit shall be equipped with ambient controls to allow operation of system to 32°F. Provide factory installed baffles between condenser fan sections.

E. Evaporator Section: Evaporator coil shall be constructed of aluminum plate fins mechanically bonded to seamless copper tubes. Evaporator fans shall be of the centrifugal type, forward curved. The fans shall be belt driven with an adjustable pitch pulley. Fan motor shall be electrically protected as required by N.E.C. Fan motors shall be mounted on ad adjustable base allowing for proper belt alignment and tension. The fan shaft shall rotate in prelubricated ball bearings. Fan shall be statically and dynamically balanced and shall be mounted on vibration isolators.

F. Gas Fired Heating Section: Unit shall include a completely assembled, wired and piped gas fired heating system. Design and assembly shall be certified by the American Gas Association (AGA) specifically for outdoor application.

- ***1. Heat exchanger shall be constructed of minimum 18 gauge corrosion resistant, aluminized steel and shall be factory tested for gas leaks. Furnish a ten year warranty on the heat exchanger.***
- ***2. Burners shall be constructed of minimum 20 gauge stainless steel.***
- ***3. Provide force combustion blower (not in air stream).***
- ***4. Furnish a threaded gas connection at the unit.***
- ***5. Furnish the following heating controls:***
  - ***a. Redundant two stage gas valve (50% to 100%)***
  - ***b. Electronic ignition system***
  - ***c. Limit switches***
  - ***d. Centrifugal switch and rollout switch***

G. Control Circuit: The unit control panel shall be prewired in the unit casing furnished with a 24 volt control transformer, high and low pressure compressor protection, compressor, condenser and evaporator fan motor contactors, as well as other protective devices.

H. Provide a full perimeter, vibration isolated type, roof mounting curb approved by the National Roof Contractors Association. Refer to Specification Section 23 05 48 Vibration and Seismic Controls for Piping and Equipment.

I. A low leakage, outside air damper, complete with birdscreen and rain hood, shall be provided. An economizer shall be shipped fully factory assembled and installed in unit. The economizer control shall maintain a fixed supply air temperature during the "free" cooling operation by providing for full range modulation of the operable outside and return air dampers thru 100% outside air. (100% positive return air shall be vented outside the system by means of relief dampers.) The package shall be complete with necessary dampers, linkage and spring return modulating damper motors. Low leakage dampers shall have neoprene edges and end seals with maximum leakage of 10 CFM/square foot at 2" W.G.

J. Refer to Dampers Specifications Section 23 09 13.43.for requirements.

K. Approvals: Unit shall be UL listed as an electric cooling/gas heating outdoor unit. All wiring shall be in compliance with N.E.C. Unit shall be rated in accordance with ARI standard 360-75. Heating section shall be certified by AGA.

L. Filters: Provide three (3) complete sets of 2" thick throwaway filters.

M. Unit Manufacturers
- ***1. Aaon***
- ***2. Carrier***
- ***3. Daikin***
- ***4. Lennox***
- ***5. Trane***
- ***6. York/Johnson Controls, Inc.***

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Location, size, capacity, mounting arrangement and electrical characteristics for equipment shall be as shown and scheduled on the drawings.

B. Clean and lubricate all equipment.

C. Motor starter for all motors shall be furnished by unit manufacturer.

D. Unit shall be mounted level.

E. Control wiring shall be provided as follows:

1. Control wiring and conduit to all remote thermostats and ancillary controls shall be provided by Electrical Contractor. Final connections by Mechanical Contractor.

2. Notify Electrical Contractor of wire sizes and quantities.

3.02 ANCHORAGE

A. Anchor all condensing units to a grade level concrete pad, in a manner to deter theft.

B. Submit, manufacturer approved, anchorage method to owner for final approval.

END OF SECTION

SECTION 27 05 01

SCOREBOARD

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes: Interior, electronic, multi-sport scoreboard[s] including control center, and other accessories for complete functional installation.

1.02 REFERENCES

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

1. ASTM B221- Aluminum Alloy Extruded Bar, Rod, Wire, Shape and Tube

B. National Electrical Code

C. Federal Communications Commission, Part 15 Rules & Regulations

D. UL and C-UL Standard for Electric Signs

1.03 SUBMITTALS

A. Provide in accordance with Section 27 05 00 Submittal Procedures
1. To minimize the environmental impact of multiple paper copies, product installation prints, instructions and diagrams of manufacturer will be submitted in a paperless fashion. The end user shall receive all pertinent hard-copy documentation at delivery.
2. Product data for scoreboards, controls, and accessories shall include descriptions of control functions etc.
3. Installation drawings, face layout, dimensions, construction, electrical wiring diagrams, and method of anchorage. (Paperless when applicable).
4. Copy of guarantee required by Paragraph 1.5 for review by Architect. (Paperless when applicable).
5. Manufacturer's installation instructions. (Paperless when applicable).
6. Finish Samples.

1.04 QUALITY ASSURANCE

A. Source limitation: All components including scoreboard, control center, control cable, and other accessories and installation hardware shall be products of a single manufacturer.

B. Manufacturer qualifications: Company specializing in manufacturing electronic scoreboards with 10 years minimum successful world-wide experience.

C. Scoreboards and other electrical components shall be certified for use in United States and Canada by Underwriter Laboratories, (UL), Inc. and shall bear either UL or C-UL label only.

D. Scoreboards and other electrical components shall be electrically grounded in accordance with National Electrical Code (NEC), Article 600.

1.05 GUARANTEE

A. Provide under provisions of Close Out Submittals; guarantee to cover defects in materials and workmanship.

1. Scoreboards, scoring tables, marquees, message centers, video boards* and Stadium Pro loudspeaker enclosures are guaranteed for a period of five (5) years from the date of invoice against defects in workmanship or materials.

**Video Board exclusions include 8815, 8825, 8835, 8845.

2. Wireless components, portable scoreboards and solar power kit carry a two (2) year guarantee from date of invoice. Hand-held controls and switches carry a one (1) year guarantee from date of invoice. The Stadium Pro loudspeaker front printed scrim is guaranteed for one (1) year from the date of invoice. Video Board Models 8815, 8825, 8835, and 8845 are guaranteed for one (1) year from date of invoice, unless additional years of warranty is purchased. For products supplied by third-party suppliers (i.e. cameras, computers, computer monitors, radar guns, loudspeakers, amplifiers and associated electronics), Purchaser agrees to accept the manufacturer’s warranty, if any, in lieu of any warranty by Nevco.

3. Lifetime telephone support.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Nevco Inc. 301 East Harris Avenue, Greenville, Illinois 62246; 800-851-4040; www.nevco.com

B. Daktronics

C. Request to use equivalent products of other manufacturers shall be submitted in accordance with Section 01 25 00 -Product Substitution Procedures.

2.02 MATERIALS

A. Aluminum Aluminum face and perimeter frame: Fabricated from 0.050 inch1.3 mm minimum thickness, ASTM B221 aluminum sheet.

B. Finish: Acrylic polyurethane paint. Color as selected by Architect from manufacturer's standard range.

C. Electronics: Low voltage, solid state, 2-wire cable, multiplex system, quartz crystal controlled.

D. LED (light emitting diode) units: Seven-bar, segmented digits in protective aluminum cover, rated typical life 100,000 hours, and designed to provide excellent visibility from all angles and sides.

E. Provide location specific universal power cord with plug for world-wide installation.

F. Control cable where required shall be UL listed, 2-wire, type RG-58/U, coaxial cable, [1/4 inch] [6 mm] diameter.

G. Junction boxes where required: Sheet metal box and cover, 4-1/2 x 2-1/8 x 2-1/8 inches 114 x 54 x 54 mm min. complying with NEMA standards.

2.03 SCOREBOARD

A. Type: Interior, multi-purpose basketball/volleyball/wrestling electronic scoreboard with two integral horns, changeable captions, LED displays for time, scores, period, number of player fouling with personal fouls, team fouls, bonus and double bonus indicators, and next possession arrows; Model 2700-NL (base) as manufactured by Nevco Inc. All caption plates will be changeable and made of polyvinylchloride with vinyl lettering applied.

1. Size (8 feet long x 3 feet high x 8 inches deep)
2. Approximate hanging weight (71 lbs)
3. Captions
   a. (6 inches) (152 mm) high:
      (1) Basic: “Home”, “Guests” and “Period”
4. LED Displays:
   a. Timing: Super Bright Red (13 inches) (330 mm) high digits with lit colon.
   b. Team scores: Super Bright Amber (13 inches) (330 mm) high digits.
   c. Period: Super Bright Amber (9 inches) (229 mm) high digits.
6. Suspension mounting attachments will be included.
7. Power requirements: 120 volt, 0.72 amps

B. Quantity Needed (2)

2.04 CONTROL CENTER

A. Type: Wireless, microprocessor based, operator’s control center with receiver unit mounted at scoreboard and designed to operate different models of scoreboard by interchange of keyboard overlay; Model MPCW as manufactured by Nevco Inc. Console will operate earlier scoreboards from Nevco, Inc.

1. Unit shall comply with Part 15 of FCC Rules regarding interference.
2. Console: high impact, break resistant gray plastic (11 x 9-1/2” x 4-1/8” inches) (279 x 241 x 105 mm)
3. Features:
   a. Control can be used to operate both wireless and wired scoreboards.
   b. Power on-off switch.
   c. Split and raised 40 key keyboards, internal beeper acknowledging each entry, and bookmark capabilities.
   d. Keyboard overlays for scoreboard or accessory.

e. Remote hand-held main time switch with integral horn button.
f. Provide with LED displays, lithium cell battery backup to maintain scoreboard memory and time of day, self test mode, power on-off switch, alternate time control, and multiple scoreboard operation.
g. Timer features: time of day display, multiple time out timers with warning, interval horn, upcount auto stop with horn, and 1/10” second display during last minute.
h. Dimmer control for scoreboard.

4. Receiver: sturdy impact resistant construction (6 x 4 x 1.5 inches) (152 x 102 x 38mm) with (4 inch) (102 mm) antenna and mounted at scoreboard.
5. Maximum range: (1,000 feet) (305 m) from control center to receiver.
6. Power adapters: provide for each control center.
   a. Input: 120 volts, 0.4 amps, 50/60 Hz.
   b. Output: 9 volts, 1.67 amps, 15 watts
7. Provide option of battery supply for control operation if utility power not available.
8. Provide carrying case for control center and hand held switch; Model CC-3 as manufactured by Nevco Inc.
   a. Size (18-1/2” x 14-1/2” x 6”) (470 x 368 x 152 mm)
   b. Construction: double wall high density black polyethylene with padded interior mechanical latches and hinges.

B. Quantity: Needed (1)

PART 3 - EXECUTION

3.01 PREPARATION

A. Very exact scoreboard and control center quantities and junction box locations with Architect.

B. Coordinate requirements for electrical power, wall blocking, auxiliary framing and supports, suspension cables, and other components to be provided under other Specification Sections to ensure adequate provisions are made for complete, functional installation of scoreboards. (Ensure that building roof structure has been designed for loads of suspended scoreboards.)

C. Coordinate scoreboard electrical requirements to ensure proper power source, conduit, wiring and boxes are provided. Prior to installation, verify type and location of power supply.

3.02 INSTALLATION

A. Install scoreboards and accessories in accordance with manufacturer's instructions and approved installation drawings.

B. Before installation, field test scoreboards, and accessories for operating functions. Ensure that scoreboards accurately perform all operations. Correct deficiencies.

C. Rigidly mount scoreboards and accessories level and plumb with brackets and fasteners.

D. Clean exposed surfaces.

E. Protect scoreboards and finishes from other construction operations.

3.03 DEMONSTRATING AND TRAINING

A. In accordance with Section 01 75 00 – Starting, Adjusting, and Demonstrating, provide demonstration and training session for Owner's representative covering operation and maintenance of electronic scoreboard.

END OF SECTION

FINISH LEGEND

NOTES

ETR EXISTING TO REMAIN

FLOOR COVERING

CARPET TILE

CPT-1: MFG: INTERFACE
TYPE: 50CM X 50CM CARPET TILE
PATTERN: HUMAN CONNECTIONS, FLAGSTONE
COLOR: 105578 FLINT
INSTALL: QUARTER TURN
LOCATION: OFFICE

WOM-1: MFG: INTERFACE
TYPE: 50CM X 50CM WALK-OFF CARPET
PATTERN: STEP REPEAT, SR899
COLOR: 104940 IRON
INSTALL: QUARTER TURN
LOCATION: VESTIBULE, CORRIDOR

RESILIENT FLOOR

VCT-1: MFG: ARMSTRONG FLOORING
TYPE: 12" X 24" VINYL COMPOSITION FLOORING
PATTERN: RAFFIA STREAM DIAMOND 10
COLOR: Z5901 RAIN
INSTALL: ASHLAR, REF. PLAN FOR DIRECTION

2 RUB-1: MFG: ROBBINS
TYPE: ATHLETIC FLOORING, RUBBER SHEET
PATTERN: PULASTIC CLASSIC 110
COLOR: MANF STANDARD COLOR RANGE - FINAL COLOR TBD
INSTALL: MONOLITHIC
LOCATION: GYM

PLY-1: MFG: ROSCO - ROSCOLEUM
TYPE: REF. DETAIL 2/A002
COLOR: BLACK
LOCATION: BLACKBOX THEATRE

EPX-1: MFG: SHERWIN WILLIAMS GENERAL POLYMERS
TYPE: DECO FLAKES MOSAIC EPOXY
COLOR: 1/8" FLAKES, CRESCENT MOON
INSTALL: 4" INTEGRAL COVE BASE REF. SPECS
LOCATION: CHANGING ROOMS, RESTROOMS

CONCRETE

CON-1 TYPE: SEALED CONCRETE, REF. SPECS

WALL BASE

RUBBER BASE

RB-1: MFG: JOHNSONITE
TYPE: 4" VINYL WALL BASE
COLOR: 63 BURNT UMBER
LOCATION: STANDARD

RB-2: MFG: JOHNSONITE
TYPE: 4" VINYL WALL BASE
COLOR: BLACK
LOCATION: STANDARD

EB-1: MFG: SHERWIN WILLIAMS GENERAL POLYMERS
TYPE: 4" DECORATIVE MOSAIC EPOXY WALL BASE
COLOR: 1/8" FLAKES, CRESCENT MOON
INSTALL: INTEGRAL BASE, REF. SPECS
LOCATION: CHANGING ROOMS, RESTROOMS

PAINT/WALL FINISH

PAINT

PT-1: MFG: SHERWIN WILLIAMS
TYPE: REF. SPECS
COLOR: SW7570 EGRET WHITE
LOCATION: STANDARD

PT-2: MFG: SHERWIN WILLIAMS
TYPE: REF. SPECS
COLOR: SW 7069IRON ORE
LOCATION: ACCENT AND HM DOOR FRAMES (EXCEPT @BBT)

PT-3: MFG: SHERWIN WILLIAMS
TYPE: REF. SPECS
COLOR: SW 6258 TRICORN BLACK
LOCATION: BLACKBOX THEATER (AND BBT DOOR FRAMES)

MISCELLANEOUS

ACOUSTICAL PANELS:

AP-1 MFG: KINETICS
TYPE: HIGH IMPACT HARDSIDE 2" PANEL
SIZE: 4' X 4' AND 4' X 8'. REF ELEVATIONS
FABRIC: TBD
COLOR: TBD
LOCATION: GYMNASIUM

AP-2 MFG: KINETICS
TYPE: HARDSIDE 2" PANEL
SIZE: 2' X 2', 2' X 8', AND 4' X 8'. REF ELEVATIONS
FABRIC: GUILFORD OF MAINE FR701 2100
COLOR: 408 BLACK
LOCATION: BLACK BOX THEATER

AP-3 MFG: KINETICS
TYPE: TAD 2" PANEL
SIZE: 4' X 4', 2' X 6', 2' X 8', AND 4' X 8'. REF ELEVATIONS
FABRIC: GUILFORD OF MAINE FR701 2100
COLOR: 408 BLACK
LOCATION: BLACK BOX THEATER

2

LANCER+BEEBE, LLC
ARCHITECTURE | PLANNING | INTERIORS
220 N. COLLEGE AVE
INDIANAPOLIS, IN 46202

SHELBYVILLE CENTRAL SCHOOLS
SHELBYVILLE MIDDLE SCHOOL RENOVATION
1200 W McKAY RD.
SHELBYVILLE, IN 46176

REVISIONS:

#	Date	Desc.
2	5/31/2022	Revision 2

100% CONSTRUCTION DOCUMENTS

PROJECT:	#21141
DATE:	04/26/2022
DRAWN BY:	HO

FINISH LEGEND

A720

PLOT DATE/TIME:5/27/2022 10:36:16 AM

ELEVATION NOTES - INTERIOR

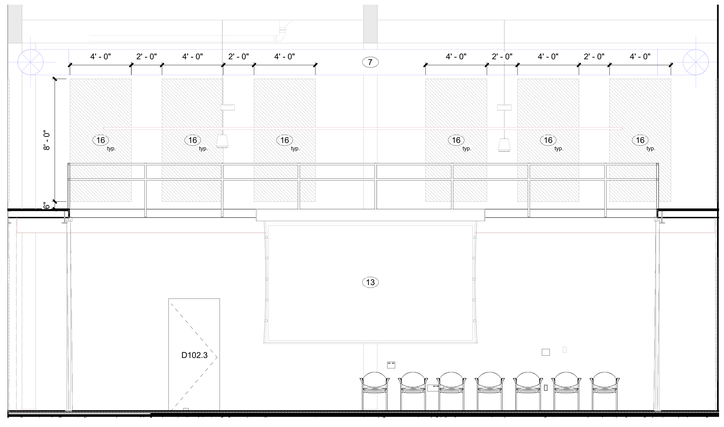
1 NOT USED.
2 CONTINUOUS HANDRAIL. SEE S SERIES FOR ADDITIONAL INFO.
3 CONFIDENCE MONITOR. SEE T SERIES FOR MORE INFO.
4 FRAMELESS MIRROR
5 ATHLETIC CRASH PADS
6 VINYL WALL GRAPHIC - REFER TO RESPONSIBILITY MATRIX
7 DUCT SOCK - REFERENCE HVAC SERIES
8 SCOREBOARD - REFER TO E SERIES
9 PAINT GRILL. COLOR TO BE CHOSEN BY ARCHITECT.
10 MIRROR 18" x 30". SEE SPECIFICATIONS
11 FIXED BENCH. REFER TO SPECIFICATIONS.
12 LOCKERS - 12" X 12" X 72" - SINGLE TIER. REFER TO SPECIFICAITONS.
13 MOTORIZED PROJECTION SCREEN. REFER TO T AND E SERIES.
14 ACOUSTIC WALL PANEL (AP-1) SPACE EVENLY WHEN POSSIBLE. SUBMIT SHOP DRAWING PRIOR TO INSTALLATION. REF FINISH LEGEND
15 ACOUSTIC WALL PANEL (AP-2) SPACE EVENLY WHEN POSSIBLE. SUBMIT SHOP DRAWING PRIOR TO INSTALLATION. REF FINISH LEGEND
16 ACOUSTIC WALL PANEL (AP-3) SPACE EVENLY WHEN POSSIBLE. SUBMIT SHOP DRAWING PRIOR TO INSTALLATION. REF FINISH LEGEND
17 VINYL GRAPHIC. FINAL DESIGN AND LOCATION TBD.

GENERAL NOTES - INTERIOR ELEVATIONS

1. PROVIDE SCHLUTER TRIM WHERE TILE MEETS DISSIMILAR MATERIALS.
2. REFERENCE FLOOR PLANS AND ENLARGED FLOOR PLANS FOR INTERIOR ELEVATION CALLOUTS.
3. REFERENCE SHEET A601 FOR DOOR SCHEDULE AND DOOR DETAILS.

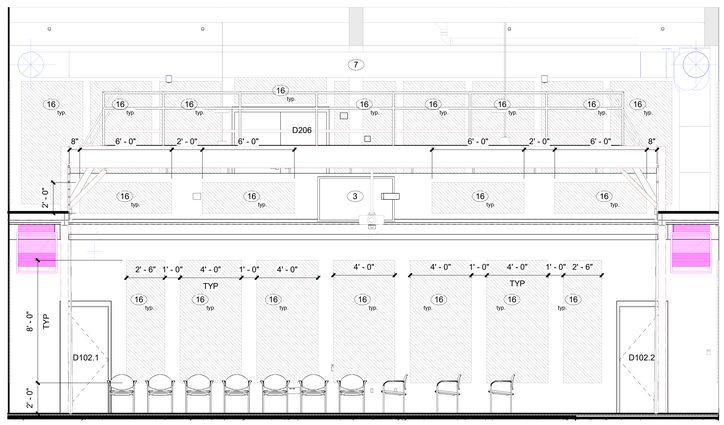
5 IE_CONTROL BOOTH_N

SCALE: 1/4" = 1'-0" REF. 1 / A101D



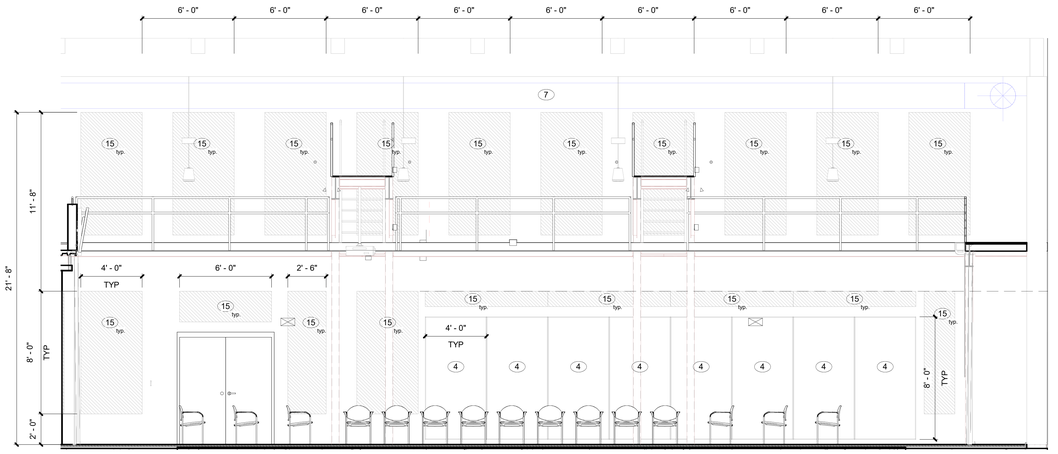
4 INTERIOR ELEVATION - BLACK BOX THEATER

SCALE: 1/4" = 1'-0" REF. 1 / A101D



3 INTERIOR ELEVATION - BLACK BOX THEATER

SCALE: 1/4" = 1'-0" REF. 1 / A101D



2 INTERIOR ELEVATION - BLACK BOX THEATER

SCALE: 1/4" = 1'-0" REF. 1 / A101D

1 INTERIOR ELEVATION - BLACK BOX THEATER

SCALE: 1/4" = 1'-0" REF. 1 / A101D

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100% CONSTRUCTION DOCUMENTS

PROJECT: #21141
DATE: 04/26/2022
DRAWN BY: TF

INTERIOR ELEVATIONS

A751

PLOT DATE/TIME:5/27/2022 10:26:55 AM

GENERAL NOTES - INTERIOR ELEVATIONS

1. PROVIDE SCHLUTER TRIM WHERE TILE MEETS DISSIMILAR MATERIALS.
2. REFERENCE FLOOR PLANS AND ENLARGED FLOOR PLANS FOR INTERIOR ELEVATION CALLOUTS.
3. REFERENCE SHEET A601 FOR DOOR SCHEDULE AND DOOR DETAILS.

ELEVATION NOTES - INTERIOR

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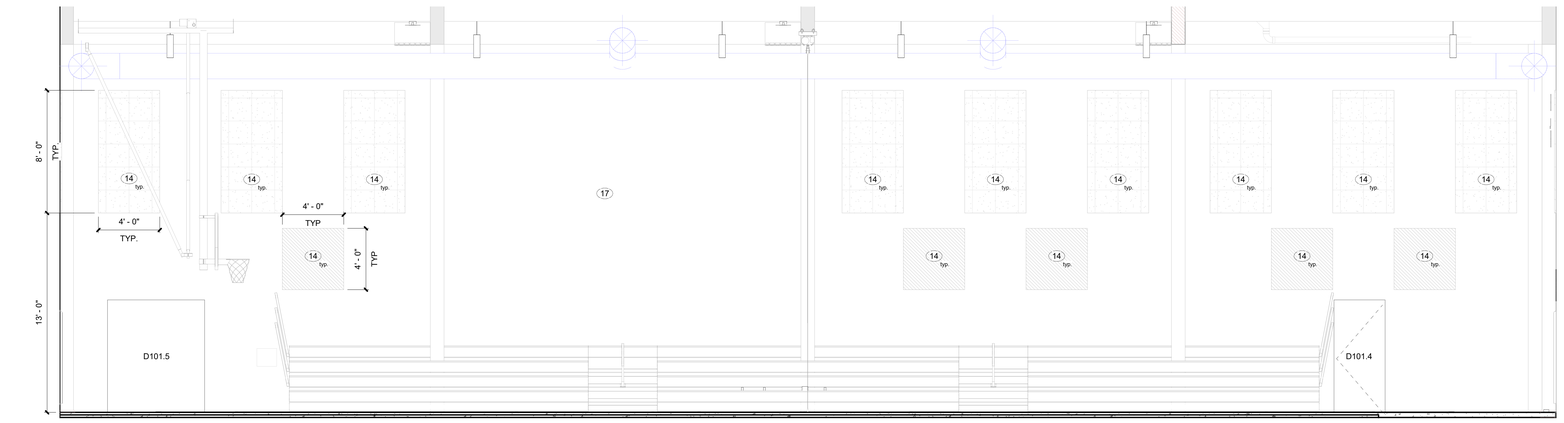
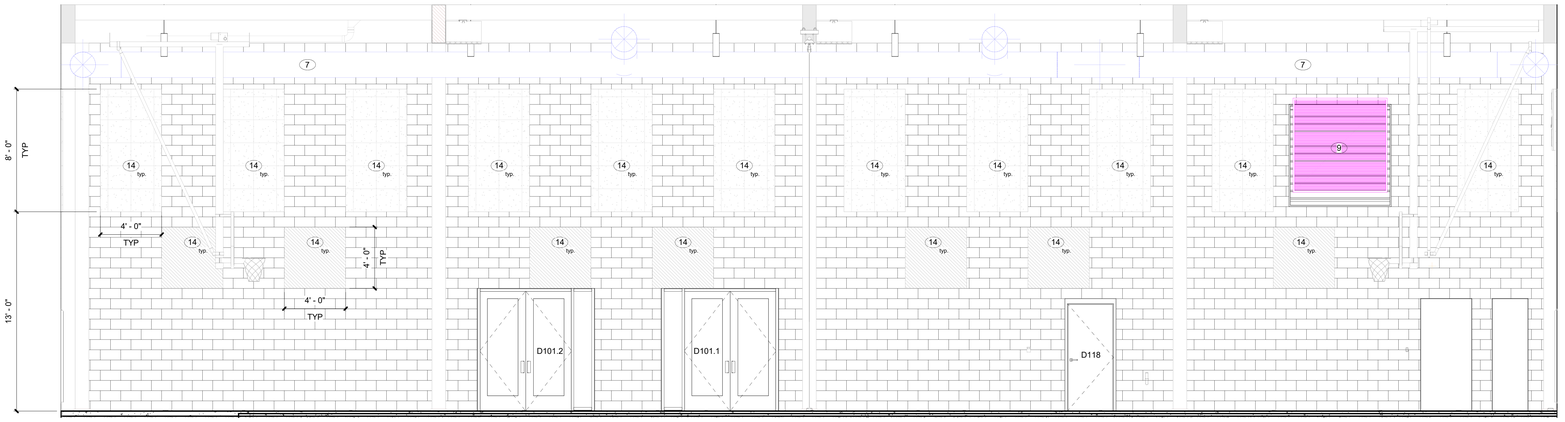
17 VINYL GRAPHIC. FINAL DESIGN AND LOCATION TBD.



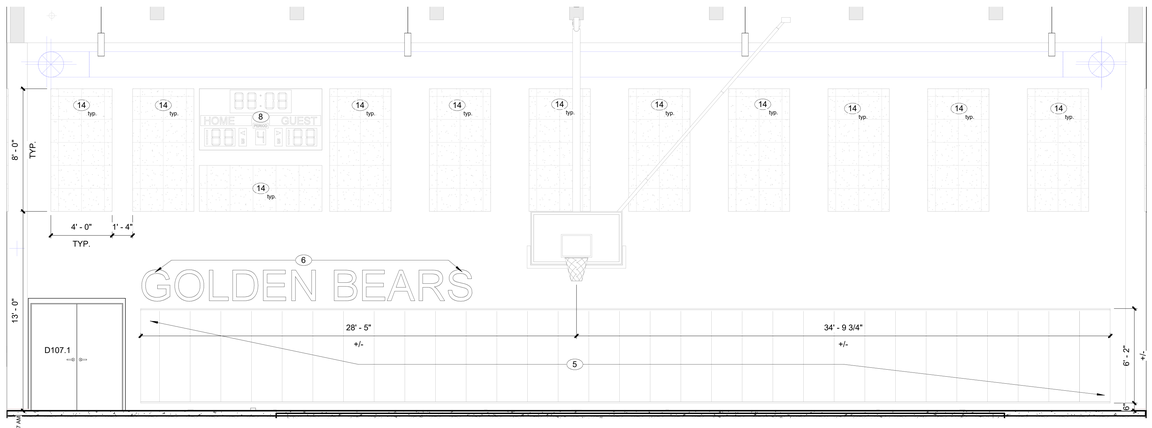
4 INTERIOR ELEVATION - NEW GYMNASIUIM

SCALE: 1/4" = 1'-0" REF. 1 / A101D



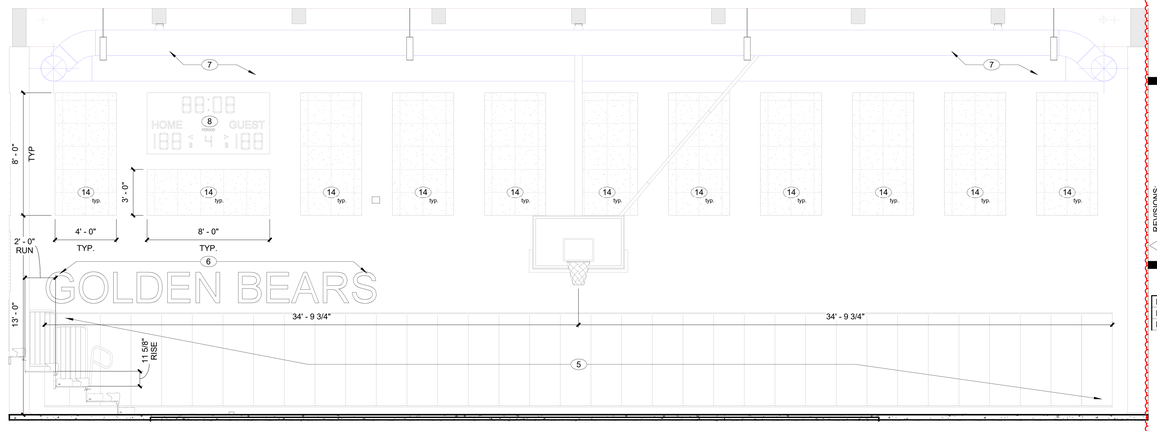
3 INTERIOR ELEVATION - NEW GYMNASIUIM

SCALE: 1/4" = 1'-0" REF. 1 / A101D



2 INTERIOR ELEVATION - NEW GYMNASIUIM

SCALE: 1/4" = 1'-0" REF. 1 / A101D



1 INTERIOR ELEVATION - NEW GYMNASIUIM

SCALE: 1/4" = 1'-0" REF. 1 / A101D

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DRAWN BY:	TF

INTERIOR ELEVATIONS

A752

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