ADDENDUM NO. 01

February 14, 2024

Addition and Renovations to Franklin Central High School Phase 2A
6215 S. Franklin Rd
Indianapolis, IN, 46259

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 January 29, 2024, by VPS Architecture. 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 1 – 1 through ADD 1 -5, Guideline Schedule and attached VPS Architecture Addendum No. 1 dated February 14, 2024, consisting of 2 pages, Specification Section 08 71 00 – Door Hardware, 23 82 39.16 Propeller Unit Heaters and 8 Addendum Drawings.

Below is the link for the Optional Virtual Bid Opening, which Bids are due February 27, at 2:00PM (local time)

Microsoft Teams meeting
Join on your computer, mobile app or room device
Click here to join the meeting
Meeting ID: 242 057 440 199
Passcode: Ypm62f
Download Teams | Join on the web
Or call in (audio only)
+1 317-762-3960,,894369146# United States, Indianapolis
Phone Conference ID: 894 369 146#
Find a local number | Reset PIN

BUILDING TOURS

Building Tours will be conducted on:

Monday February 19, 2024 at 10:00 AM and 1:00 PM.

(Contact Joel Markiewicz - jmarkiewicz@skillman.com – 317-409-8985 to schedule building tours)

A. SPECIFICATION SECTION 00 00 20 TABLE OF CONTENTS

ADD SECTIONS

00 00 12	Project Directory
23 82 39.16	Propeller Unit Heaters

DELETE SECTIONS

07 84 13	Penetration Fire Stopping
11 61 43	Stage Curtains
23 11 23	Facility Natural Gas Piping
23 51 23	Gas Vents
32 17 23	Pavement Marking

B. SPECIFICATION SECTION 00 31 00 BID FORM

Bid Form is attached to this addendum.

C. SPECIFICATION SECTION 01 12 00 MULTIPLE CONTRACT SUMMARY

A. BID CATEGORY NO. 1 - GENERAL TRADES

Delete the following Specification Section:

11 61 43 - Stage Curtains
32 17 23 – Pavement Markings

Add the following Clarifications:

4. Should read “Bid Category No. 11 Contractor”.
13. Provide foundation 2” rigid insulation.
14. Ensure that all exterior school doors and/or temporary doors are secure at the end of each workday for the entire project duration.

C. BID CATEGORY NO. 3 ROOFING

Add the following Specification Section:

02 41 19 – Selective Structural Demolition (as applicable to your work)

Add the following Clarifications:

4. Provide temporary weather protection to maintain water-tight condition for the existing building roof.

D. BID CATEGORY NO. 4 – METAL STUDS, DRYWALL & ACOUSTICAL

Delete the following Specification Section:

07 84 13 – Penetration Fire Stopping

Add the following Clarifications:

5. **BC #4 Contractor** to include removing and reinstalling ceiling tile and grid as shown on Sheet A107 Note 1. Assume (10) ten foot wide for grid and tile. Coordinate with Mechanical Contractor.

F. BID CATEGORY NO. 6 – FLOORING

Add the following Clarifications:

1. Include 80 hours of additional floor preparation above requirements noted in the drawings and specifications to be used at the discretion of the Construction Manager.

H. BID CATEGORY NO. 9 – FIRE PROTECTION

Delete the following Specification Sections:

07 84 13 Penetration Fire Stopping

Add the following Clarification:

4. Provide selective demolition and re-work of fire protection system in existing areas to accommodate new layouts. Provide cutting and capping of existing system to separate it from portions of building, while maintaining a functioning system in building.

5. Remove and reinstall ceiling tile and grid as needed to run the FPW as shown on Sheet FP2.

Delete Clarification #3.

I. BID CATEGORY NO. 10 – PLUMBING and HVAC

Add the following Specification Section:

02 41 19 – Selective Structural Demolition (as applicable to your work)
23 82 39.16 Propeller Unit Heaters

Delete the following Specification Section:

07 84 13 – Penetration Fire Stopping
23 11 23 – Facility Natural-Gas Piping
23 51 23 – Gas Vents

Add the following Clarifications:

7. **BC #4 Contractor** to include removing and reinstalling ceiling tile and grid as shown on Sheet A107 Note 1. Assume (10) ten foot wide for grid and tile. Coordinate with Mechanical Contractor.
8. Include removal of demolished items from jobsite, including furnishing dumpsters if needed.

Delete Clarification #4.

J. BID CATEGORY NO. 11 – ELECTRICAL AND TECHNOLOGY

Add the following Specification Section:

02 41 19 – Selective Structural Demolition (as applicable to your work)

Delete the following Specification Section:

07 84 13 – Penetration Fire Stopping

Add the following Clarifications:

5. Provide lighting circuit with junction box and 6’ long light fixture whip for all fixtures indicated in Alternate No. 2a as part of the base bid.
6. Provide pricing to furnish and install Fixture Types A, AX, B, BX, C, CX, D, DX per the manufacturers specified on Drawing E-801 for Bid Alternate No. 2a.

7. Include removal of demolished items from jobsite, including furnishing dumpsters if needed.

Delete Clarification #4.

K. ADD BID CATEGORY NO. 12 - LIGHTING

General Requirements in Paragraph 3.02.B above.

Section	26 51 19	LED Interior Lighting
Section	26 52 13	Emergency and Exit Lighting

Project Specific Clarifications:

1. There is NO BASE BID WORK for Bid Category 12; Bid Category No. 12 shall be bid via Bid Alternate No. 2b ONLY.
2. Bid Category No. 12 is the equivalent of Bid Alternate No. 2b using Energy Harness fixtures. Energy Harness shall furnish and install fixture types A, AX, B, BX, C, CX, D, DX. Work shall include supporting fixtures to the structure and final terminations. Match the fixture counts indicated in the bid documents and lumen output to provide the lighting levels in each type of room.
3. Bid Category No. 11 Contractor shall provide lighting circuit with junction box and 6' long light fixture whip for all fixtures indicated in the bid documents.

D. SPECIFICATION SECTION 01 23 00 ALTERNATES

Add Alternates:

C. ALTERNATE NO. 2a: **Base Bid**: Provide lighting circuit with junction box and 6' long light fixture whip for all fixtures indicated in Alternate No. 2a as part of the base bid.
Alternate Bid: Provide fixture types A, AX, B, BX, C, CX, D, DX. Work shall include support to structure and final terminations of these light fixtures using the specified manufacturers as indicated on Drawing E-801.

D **ALTERNATE NO. 2b**: **Base Bid**: No Work.
Alternate Bid: Provide fixture types A, AX, B, BX, C, CX, D, DX. Work shall include support to structure and final terminations of these light fixtures using the specified manufacturers as indicated on Drawing E-801.

E. SPECIFICATION SECTION 01 32 00 SCHEDULES AND REPORTS

A. Insert the attached Guideline Schedule.

END OF ADDENDUM

CONTRACTOR'S BID FOR PUBLIC WORKS FORM NO. 96

Format (Revised 2013)
(Amended for FTCSC)

Additions and Renovations to Franklin Central High School Phase 2A

Franklin Township Community School Corporation
(Marion County, Indiana)

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, **Additions and Renovations to *Franklin Central High School Phase 2A***, in accordance with Plans and Specifications prepared by ***VPS Architecture, 905 N. Capital Ave., Suite 100, Indianapolis, IN 46204***, 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. 1A – 230900 Controls by Automated Logic Local Carrier Branch

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

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

Alternate Bid No. 1B – 230900 Controls by Havel

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

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

Alternate Bid No. 2A – Light Fixtures BC#11

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

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

Alternate Bid No. 2B – Light Fixtures BC#12

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 required 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 corroborates 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)

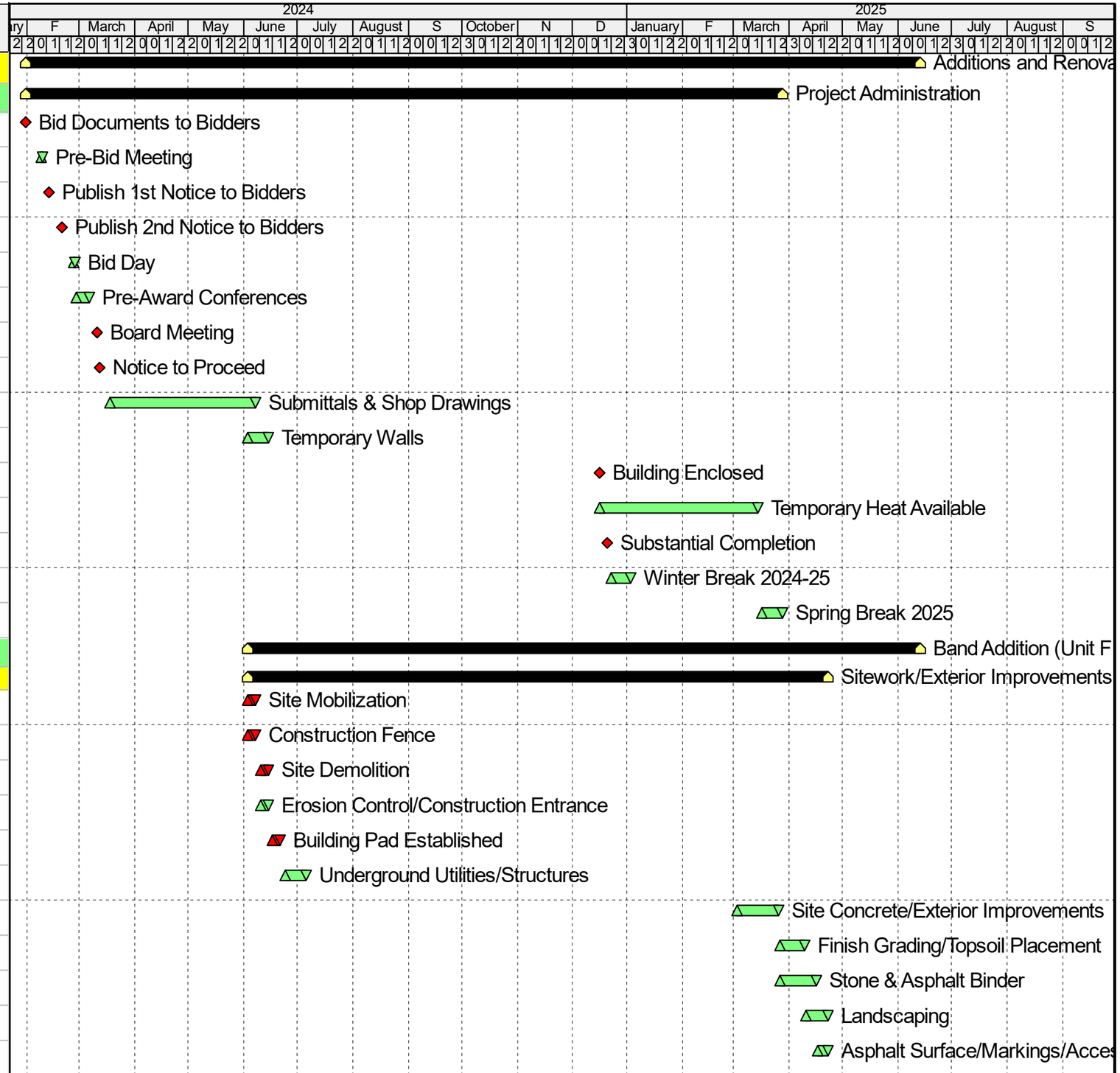
_____
Notary Public

My Commission Expires: _____

County of Residence: _____

END OF SECTION 00 31 00

Activity Name	Original Duration	Start	Finish
Additions and Renovations to Franklin Cen	358	31-Jan-24	13-Jun-25
Project Administration	303	31-Jan-24	28-Mar-25
Bid Documents to Bidders	0	31-Jan-24	
Pre-Bid Meeting	1	09-Feb-24	09-Feb-24
Publish 1st Notice to Bidders	0	13-Feb-24	
Publish 2nd Notice to Bidders	0	20-Feb-24	
Bid Day	1	27-Feb-24	27-Feb-24
Pre-Award Conferences	6	28-Feb-24	06-Mar-24
Board Meeting	0	11-Mar-24	
Notice to Proceed	0	12-Mar-24	
Submittals & Shop Drawings	60	18-Mar-24	07-Jun-24
Temporary Walls	10	03-Jun-24	14-Jun-24
Building Enclosed	0	16-Dec-24	
Temporary Heat Available	65	16-Dec-24	14-Mar-25
Substantial Completion	0		20-Dec-24
Winter Break 2024-25	9	23-Dec-24	02-Jan-25
Spring Break 2025	10	17-Mar-25	28-Mar-25
Band Addition (Unit F & J)	270	03-Jun-24	13-Jun-25
Sitework/Exterior Improvements	232	03-Jun-24	22-Apr-25
Site Mobilization	5	03-Jun-24	07-Jun-24
Construction Fence	5	03-Jun-24	07-Jun-24
Site Demolition	5	10-Jun-24	14-Jun-24
Erosion Control/Construction Entrance	5	10-Jun-24	14-Jun-24
Building Pad Established	5	17-Jun-24	21-Jun-24
Underground Utilities/Structures	10	24-Jun-24	05-Jul-24
Site Concrete/Exterior Improvements	18	03-Mar-25	26-Mar-25
Finish Grading/Topsoil Placement	10	27-Mar-25	09-Apr-25
Stone & Asphalt Binder	15	27-Mar-25	16-Apr-25
Landscaping	9	10-Apr-25	22-Apr-25
Asphalt Surface/Markings/Accessories	4	17-Apr-25	22-Apr-25

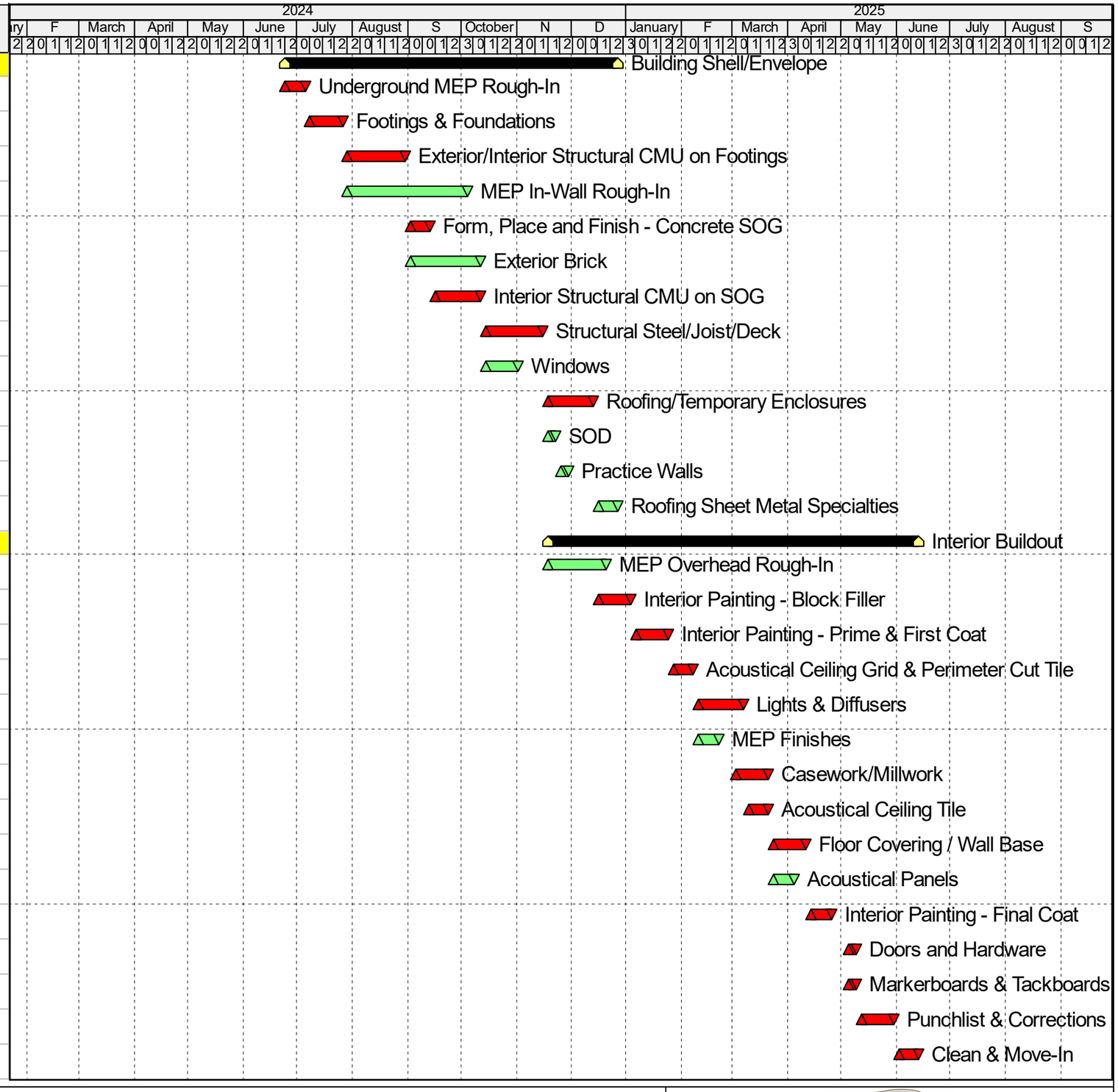


Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

223080 Additions and Renovations to Franklin Central High School Phase 2A
Guideline Schedule
1 of 3

SKILLMAN

Activity Name	Original Duration	Start	Finish
Building Shell/Envelope	135	24-Jun-24	27-Dec-24
Underground MEP Rough-In	10	24-Jun-24	05-Jul-24
Footings & Foundations	15	08-Jul-24	26-Jul-24
Exterior/Interior Structural CMU on Footi	25	29-Jul-24	30-Aug-24
MEP In-Wall Rough-In	50	29-Jul-24	04-Oct-24
Form, Place and Finish - Concrete SOG	10	02-Sep-2	13-Sep-24
Exterior Brick	30	02-Sep-2	11-Oct-24
Interior Structural CMU on SOG	20	16-Sep-2	11-Oct-24
Structural Steel/Joist/Deck	25	14-Oct-24	15-Nov-24
Windows	15	14-Oct-24	01-Nov-24
Roofing/Temporary Enclosures	20	18-Nov-2	13-Dec-24
SOD	5	18-Nov-2	22-Nov-24
Practice Walls	5	25-Nov-2	29-Nov-24
Roofing Sheet Metal Specialties	10	16-Dec-2	27-Dec-24
Interior Buildout	150	18-Nov-2	13-Jun-25
MEP Overhead Rough-In	25	18-Nov-2	20-Dec-24
Interior Painting - Block Filler	15	16-Dec-2	03-Jan-25
Interior Painting - Prime & First Coat	15	06-Jan-25	24-Jan-25
Acoustical Ceiling Grid & Perimeter Cut	10	27-Jan-25	07-Feb-25
Lights & Diffusers	20	10-Feb-25	07-Mar-25
MEP Finishes	10	10-Feb-25	21-Feb-25
Casework/Millwork	15	03-Mar-25	21-Mar-25
Acoustical Ceiling Tile	10	10-Mar-25	21-Mar-25
Floor Covering / Wall Base	15	24-Mar-25	11-Apr-25
Acoustical Panels	10	24-Mar-25	04-Apr-25
Interior Painting - Final Coat	10	14-Apr-25	25-Apr-25
Doors and Hardware	5	05-May-2	09-May-25
Markerboards & Tackboards	5	05-May-2	09-May-25
Punchlist & Corrections	15	12-May-2	30-May-25
Clean & Move-In	10	02-Jun-25	13-Jun-25

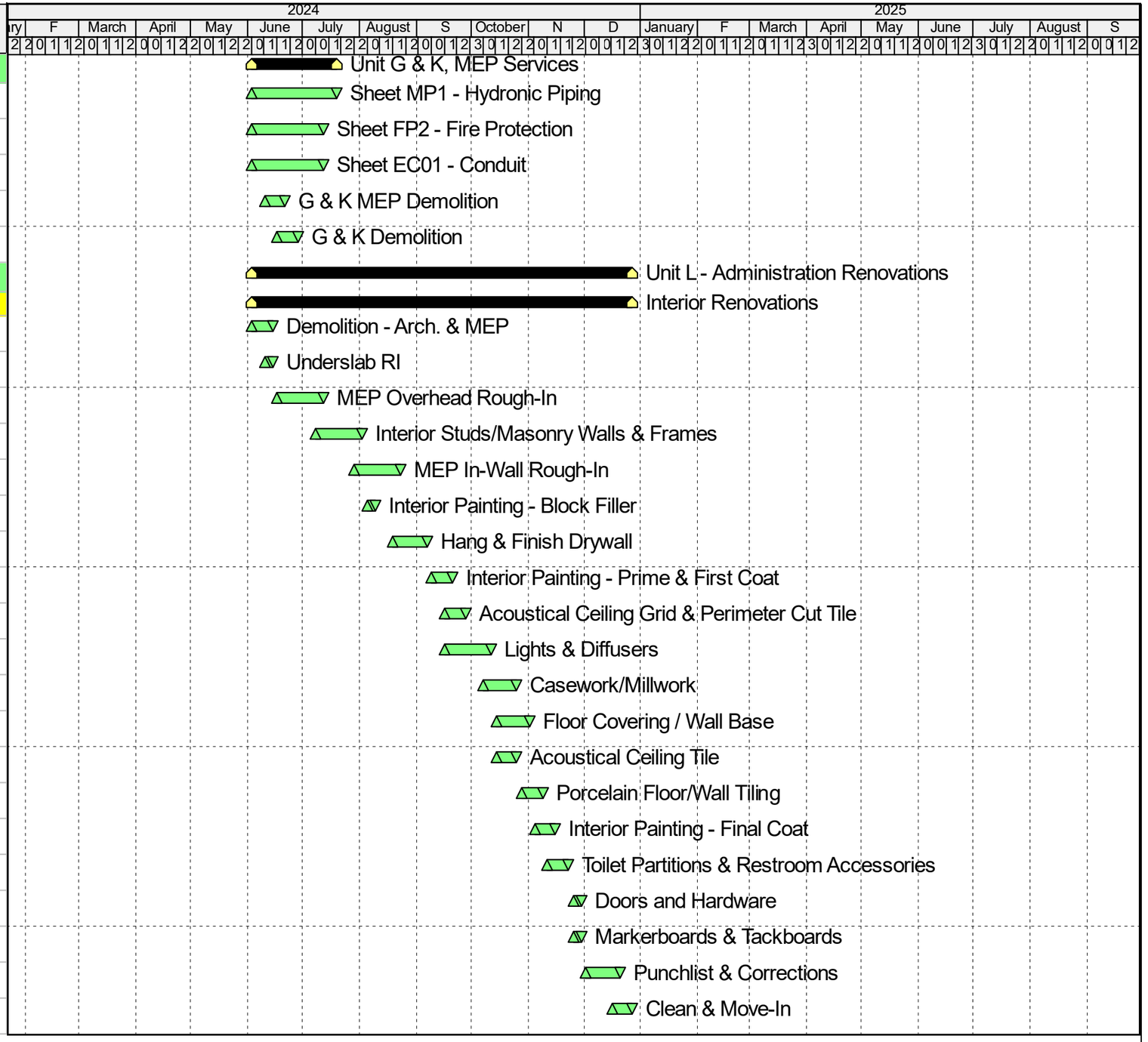


Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

223080 Additions and Renovations to Franklin Central High School Phase 2A
Guideline Schedule
2 of 3

SKILLMAN

Activity Name	Original Duration	Start	Finish
Unit G & K, MEP Services	35	03-Jun-24	19-Jul-24
Sheet MP1 - Hydronic Piping	35	03-Jun-24	19-Jul-24
Sheet FP2 - Fire Protection	30	03-Jun-24	12-Jul-24
Sheet EC01 - Conduit	30	03-Jun-24	12-Jul-24
G & K MEP Demolition	10	10-Jun-24	21-Jun-24
G & K Demolition	10	17-Jun-24	28-Jun-24
Unit L - Administration Renovations	150	03-Jun-24	27-Dec-24
Interior Renovations	150	03-Jun-24	27-Dec-24
Demolition - Arch. & MEP	10	03-Jun-24	14-Jun-24
Underslab RI	5	10-Jun-24	14-Jun-24
MEP Overhead Rough-In	20	17-Jun-24	12-Jul-24
Interior Studs/Masonry Walls & Frames	20	08-Jul-24	02-Aug-24
MEP In-Wall Rough-In	20	29-Jul-24	23-Aug-24
Interior Painting - Block Filler	5	05-Aug-24	09-Aug-24
Hang & Finish Drywall	15	19-Aug-24	06-Sep-24
Interior Painting - Prime & First Coat	10	09-Sep-24	20-Sep-24
Acoustical Ceiling Grid & Perimeter Cut	10	16-Sep-24	27-Sep-24
Lights & Diffusers	20	16-Sep-24	11-Oct-24
Casework/Millwork	15	07-Oct-24	25-Oct-24
Floor Covering / Wall Base	15	14-Oct-24	01-Nov-24
Acoustical Ceiling Tile	10	14-Oct-24	25-Oct-24
Porcelain Floor/Wall Tiling	10	28-Oct-24	08-Nov-24
Interior Painting - Final Coat	10	04-Nov-24	15-Nov-24
Toilet Partitions & Restroom Accessories	10	11-Nov-24	22-Nov-24
Doors and Hardware	5	25-Nov-24	29-Nov-24
Markerboards & Tackboards	5	25-Nov-24	29-Nov-24
Punchlist & Corrections	15	02-Dec-24	20-Dec-24
Clean & Move-In	10	16-Dec-24	27-Dec-24



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

223080 Additions and Renovations to Franklin Central High School Phase 2A
Guideline Schedule
3 of 3

SKILLMAN

VPS ARCHITECTURE

528 Main Street – Suite 400 Evansville Indiana 47708
P (812) 423-7729 F (812) 425-4561
www.vpsarch.com

Distribution: To all Planholders

ADDENDUM NO. 1 (ONE)

DATE: **February 14, 2024**
PROJECT: **Additions & Renovations to Franklin Central High School Phase 2A**
OWNER: **Franklin Township Community School Corporation**
PROJECT NO.: **2022063.00**

The original Specifications and Drawings dated January 2024 for the project referenced above, are amended as noted in this Addendum No. 1 (One). Receipt of this Addendum and any subsequent Addenda must be acknowledged on the Proposal Form. This section of the Addendum consists of 13 (Thirteen) items and 10 (Ten) attachments.

ITEM **DESCRIPTION**

Specification Items:

1-1 Section 087100 Door Hardware: Replace section in its entirety with attached revision.

1-2 Section 116413 Stage Curtains: Delete section in its entirety.

1-3 Section 231123 Facility Natural-Gas Piping: Delete section in its entirety.

1-4 Section 235123 Gas Vents: Delete section in its entirety.

1-5 Section 238239.16 Propeller Unit Heaters: Add attached section in its entirety.

VPS ARCHITECTURE

Drawing Items:

1-6 C120: Replace drawing in its entirety with attached revision.

1-7 C140: Replace drawing in its entirety with attached revision.

1-8 C150: Replace drawing in its entirety with attached revision.

1-9 C151: Replace drawing in its entirety with attached revision.

1-10 C165: Replace drawing in its entirety with attached revision.

1-11 MH1J: Replace drawing in its entirety with attached revision.

1-12 M601: Replace drawing in its entirety with attached revision.

1-13 M701: Replace drawing in its entirety with attached revision.

PREPARED BY: _____
George S. Link, AIA

Attachments:
Section 087100 Door Hardware
Section 238239.16 Propeller Unit Heaters
C120
C140
C150
C151
C165
MH1J
M601
M701

OWNER: Address: Phone: Fax:	Franklin Township Community School Corporation 6141 S. Franklin Road Indianapolis, Indiana 46259 (317) 862-2411 (317) 862-7238
ARCHITECT Address: Phone:	VPS Architecture 905 N. Capitol Avenue | Suite 100 Indianapolis, Indiana 46204 (317) 353-3281
CIVIL ENGINEER Address: Phone:	JPS Consulting Engineers 9365 Counselors Row | Suite 116 Indianapolis, Indiana 46240 (317) 617-4270
MECHANICAL/ELECTRICAL ENGINEER Address: Phone:	Creative Engineering Solutions 201 S. Rural St. | Suite 210 Indianapolis, Indiana 46201 (317) 748-5252
STRUCTURAL ENGINEER Address: Phone:	Wilkie Structural Engineering, Inc. 20 NW 3rd Street | Suite 1220 Evansville, Indiana 47708 (812) 423-6347

END OF DOCUMENT 000012

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 "General Requirements" sections for Allowances, Alternates, Owner Furnished Contractor Installed, Project Management and Coordination.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:

   a. "Metal Doors and Frames"
   b. "Flush Wood Doors"
   c. "Stile and Rail Wood Doors"

6. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
7. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.02 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 70 – National Electric Code
2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
3. NFPA 101 – Life Safety Code
4. NFPA 105 – Smoke and Draft Control Door Assemblies
5. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
2. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
3. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
4. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:

   a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
   b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
   a. Wiring Diagrams: For power, signal, and control wiring and including:

      1) Details of interface of electrified door hardware and building safety and security systems.
      2) Schematic diagram of systems that interface with electrified door hardware.
      3) Point-to-point wiring.
      4) Risers.

3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.

    a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. Door Hardware Schedule:

    a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
    b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
    c. Indicate complete designations of each item required for each opening, include:

        1) Door Index: door number, heading number, and Architect's hardware set number.
        2) Quantity, type, style, function, size, and finish of each hardware item.
        3) Name and manufacturer of each item.
        4) Fastenings and other pertinent information.
        5) Location of each hardware set cross-referenced to indications on Drawings.
        6) Explanation of all abbreviations, symbols, and codes contained in schedule.
        7) Mounting locations for hardware.
        8) Door and frame sizes and materials.
        9) Degree of door swing and handing.
        10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.

5. Key Schedule:

    a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
    b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
    c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
    d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
    e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
    f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.

C. Informational Submittals:

1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
2. Provide Product Data:

    a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
    b. Include warranties for specified door hardware.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
    a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
    b. Catalog pages for each product.
    c. Final approved hardware schedule edited to reflect conditions as installed.
    d. Final keying schedule
    e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
    f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:

    a. Fire door assemblies, in compliance with NFPA 80.
    b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:

    a. For door hardware: DHI certified AHC or DHC.
    b. Can provide installation and technical data to Architect and other related subcontractors.

c. Can inspect and verify components are in working order upon completion of installation.
d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.

4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:

a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

2. Smoke and Draft Control Door Assemblies:

a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

3. Electrified Door Hardware

a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

4. Accessibility Requirements:

a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

C. Pre-Installation Meetings

1. Keying Conference

a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2) Preliminary key system schematic diagram.
3) Requirements for key control system.
4) Requirements for access control.
5) Address for delivery of keys.

2. Pre-installation Conference

    a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
    b. Inspect and discuss preparatory work performed by other trades.
    c. Inspect and discuss electrical roughing-in for electrified door hardware.
    d. Review sequence of operation for each type of electrified door hardware.
    e. Review required testing, inspecting, and certifying procedures.
    f. Review questions or concerns related to proper installation and adjustment of door hardware.

3. Electrified Hardware Coordination Conference:

    a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.

C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

1.06 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

1.07 WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.

1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.

a. Mechanical Warranty

1) Locks

a) Schlage ND Series: 10 years

2) Exit Devices

a) Von Duprin: 3 years

3) Closers

a) LCN 4000 Series: 30 years

b. Electrical Warranty

1) Exit Devices

a) Von Duprin: 1 year

1.08 MAINTENANCE

A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."

1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.

B. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.

C. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.

D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Fabrication

1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.

B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.03 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Ives 5BB series

2. Acceptable Manufacturers and Products:

    a. Hager BB1191/1279 series
    b. McKinney TB series

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. Provide five knuckle, ball bearing hinges.
3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:

    a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
    b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:

    a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
    b. Interior: Heavy weight, steel, 5 inches (127 mm) high

5. 2 inches or thicker doors:

    a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
    b. Interior: Heavy weight, steel, 5 inches (127 mm) high

6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
8. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

    a. Steel Hinges: Steel pins
    b. Non-Ferrous Hinges: Stainless steel pins
    c. Out-Swinging Exterior Doors: Non-removable pins
    d. Out-Swinging Interior Lockable Doors: Non-removable pins
    e. Interior Non-lockable Doors: Non-rising pins

9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component. Provide mortar guard for each electrified hinge specified.

2.04 CONTINUOUS HINGES

A. Manufacturers:

1. Scheduled Manufacturer:

    a. Ives

2. Acceptable Manufacturers:

    a. Hager

b. Pemko

B. Requirements:

1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05 ELECTRIC POWER TRANSFER

A. Manufacturers:

1. Scheduled Manufacturer and Product:

a. Von Duprin EPT-10

2. Acceptable Manufacturers and Products:

a. No Substitute

B. Requirements:

1. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
2. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.06 FLUSH BOLTS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Hager

B. Requirements:

1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.07 COORDINATORS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Hager

B. Requirements:

1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers, surface vertical rod exit device strikes, or other stop mounted hardware. Factory-prepared coordinators for vertical rod devices as specified.

2.08 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Schlage ND series

2. Acceptable Manufacturers and Products:

a. No Substitute

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
2. Cylinders: Refer to "KEYING" article, herein.

3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
7. Provide electrified options as scheduled in the hardware sets.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.

    a. Lever Design Sparta.

2.09 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

    a. Von Duprin 99/33A series

2. Acceptable Manufacturers and Products:

    a. No Substitute

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide grooved touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
7. Provide flush end caps for exit devices.
8. Provide exit devices with manufacturer's approved strikes.
9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
10. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
12. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
13. Provide electrified options as scheduled.
14. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
15. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

16. Special Options:

    a. SI

        1) Provide dogging indicators for visible indication of dogging status.

    b. CVC

        1) Provide cable-actuated concealed vertical latch system in two-point for non-rated or fire rated wood doors up to a 90 minute rating and less bottom latch (LBL) configuration for non-rated or fire rated wood doors up to 20 minute rating. Vertical rods not permitted.

            a) Cable: Stainless steel with abrasive resistant coating. Conduit and core wire ends snap into latch and center slides without use of tools.
            b) Wood Door Prep: Maximum 1 inch x 1.1875 inch x 3.875 inches top latch pocket and 1 inch x 1.1875 inch x 5 inches bottom latch pocket which does not require the use of a metal wrap or edge for non-rated or fire rated wood doors up to a 45 minute rating.
            c) Latchbolts and Blocking Cams: Manufactured from sintered metal low carbon copper- infiltrated steel, with molybdenum disulfide low friction coating.
            d) Top Latchbolt: Minimum 0.38 inch (10 mm) and greater than 90-degree engagement with strike to prevent door and frame separation under high static load.
            e) Bottom Latchbolt: Minimum of 0.44-inch (11 mm) engagement with strike.
            f) Product Cycle Life: 1,000,000 cycles.
            g) Latch Operation: Top and bottom latch operate independently of each other. Top latch fully engages top strike even when bottom latch is compromised. Separate trigger mechanisms not permitted.
            h) Latch release does not require separate trigger mechanism.
            i) Cable and latching system characteristics:

                i. Installed independently of exit device installation, and capable of functioning on door prior to device and trim installation.
                ii. Connected to exit device at single point in steel and aluminum doors, and two points for top and bottom latches in wood doors.
                iii. Bottom latch height adjusted, from single point for steel and aluminum doors and two points for wood doors, after system is installed and connected to exit device, while door is hanging
                iv. Bottom latch position altered up and down minimum of 2 inches (51 mm) in steel and aluminum doors without additional adjustment. Bottom latch deadlocks in every adjustment position in wood doors.
                v. Top and bottom latches in steel and aluminum doors and top latch in wood doors may be removed while door is hanging.

2.10 ACCESS CONTROL READER

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Schlage MT Series

2. Acceptable Manufacturers and Products:

a. No Substitute

B. Requirements:

1. Provide access control card readers manufactured by a global company who is a recognized leader in the production of access control devices. Card reader manufactured for non-access control applications are not acceptable
2. Provide multi-technology contactless readers complying with ISO 14443.
3. Provide access control card readers capable of reading the following technologies:

a. CSN - DESFire® CSN, HID iCLASS® CSN, Inside Contactless PicoTag® CSN, ST Microelectronics® CSN, Texas Instruments Tag-It®, CSN, Phillips I-Code® CSN
b. 125 KHz proximity - Schlage® Proximity, HID® Proximity, GE/CASI® Proximity, AWID® Proximity, LenelProx®
c. 13.56 MHz Smart card - Schlage smart cards using MIFARE Classic® EV1, Schlage smart cards using MIFARE Plus®, Schlage smart cards using MIFARE® DESFire® EV1, Schlage smart cards using MIFARE® DESFire® EV2/EV3

2.11 ELECTRIC STRIKES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Von Duprin 6000 Series

2. Acceptable Manufacturers and Products:

a. No Substitute

B. Requirements:

1. Provide electric strikes designed for use with type of locks shown at each opening.
2. Provide electric strikes UL Listed as burglary resistant that are tested to a minimum endurance test of 1,000,000 cycles.
3. Where required, provide electric strikes UL Listed for fire doors and frames.
4. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.

2.12 PUSHBUTTONS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Schlage 660 Series

2. Acceptable Manufacturers and Products:

a. No Substitute

B. Requirements:

1. Provide push buttons as specified in hardware groups.

2.13 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Schlage/Von Duprin PS900 Series

2. Acceptable Manufacturers and Products:

a. No Substitute

B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
4. Provide power supplies with the following features:

a. 12/24 VDC Output, field selectable.
b. Class 2 Rated power limited output.
c. Universal 120-240 VAC input.
d. Low voltage DC, regulated and filtered.
e. Polarized connector for distribution boards.
f. Fused primary input.
g. AC input and DC output monitoring circuit w/LED indicators.
h. Cover mounted AC Input indication.
i. Tested and certified to meet UL294.
j. NEMA 1 enclosure.
k. Hinged cover w/lock down screws.
l. High voltage protective cover.

2.14 CYLINDERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

    a. Existing Schlage Everest 29 Primus XP for exterior doors.

2. Acceptable Manufacturers and Products:

    a. No Substitute

B. Requirements:

1. Provide cylinders/cores, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.

    a. High Security: dual-locking cylinder with permanent core requiring restricted, patented keyway. Dual-locking mechanism with interlocking finger pin(s) to check for patented features on keys.

3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.15 CYLINDERS

A. Manufacturers:

1. Scheduled Manufacturer and Product:

    a. Existing Best key system for interior doors.

2. Acceptable Manufacturers and Products:

    a. No Substitute

B. Requirements:

1. Provide cylinders/cores to match Owner's existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.

2.16 KEYING

A. Scheduled System:

1. Existing factory registered system:

a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Construction Keying:

a. Replaceable Construction Cores.

1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.

a) 3 construction control keys
b) 12 construction change (day) keys.

2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2. Permanent Keying:

a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.

1) Master Keying system as directed by the Owner.

b. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.

c. Provide keys with the following features:

1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)

d. Identification:

1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
2) Identification stamping provisions must be approved by the Architect and Owner.
3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.

e. Quantity: Furnish in the following quantities.

1) Permanent Control Keys: 3.
2) Master Keys: 6.

3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
4) Key Blanks: Quantity as determined in the keying meeting.

2.17 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. LCN 4040XP series

2. Acceptable Manufacturers and Products:

a. No Substitute

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2-inch (38 mm) diameter piston with 5/8-inch (16 mm) diameter double heat-treated pinion journal. QR code with a direct link to maintenance instructions.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards. Provide snap-on cover clip, with plastic covers, that secures cover to spring tube.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck. Provide graphically labelled instructions on the closer body adjacent to each adjustment valve. Provide positive stop on reg valve that prevents reg screw from being backed out.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.18 ELECTRO-HYDRAULIC AUTOMATIC OPERATORS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. LCN 4600 series

2. Acceptable Manufacturers and Products:

    a. No Substitute

B. Requirements:

1. Provide low energy automatic operator units with hydraulic closer complying with ANSI/BHMA A156.19.
2. Provide automatic operator units complying with 2022 California Building Code Section 11B-404.2.9, Exception 2.
3. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
4. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check, and opening and closing speed adjustment valves to control door
5. Provide units with on/off switch for manual operation, motor start up delay, vestibule interface delay, electric lock delay, and door hold open delay.
6. Provide drop plates, brackets, and adapters for arms as required for details.
7. Provide actuator switches and receivers for operation as specified.
8. Provide weather-resistant actuators at exterior applications.
9. Provide key switches with LED's, recommended and approved by manufacturer of automatic operator as required for function described in operation description of hardware group below. Cylinders: Refer to "KEYING" article, herein.
10. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.
11. Provide units with vestibule inputs that allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.

2.19 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:

    a. Ives

2. Acceptable Manufacturers:

    a. Hager

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.20 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Hager

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes plates 1-1/2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.21 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers:

a. Glynn-Johnson

2. Acceptable Manufacturers:

a. Hager
b. ABH

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.22 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Hager

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.23 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer:

a. Zero International

2. Acceptable Manufacturers:

a. National Guard
b. Pemko

B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.24 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer:

a. Ives

2. Acceptable Manufacturers:

a. Burns
b. Trimco

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.

2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.25 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer:

a. Schlage

2. Acceptable Manufacturers:

a. GE-Interlogix
b. Sargent

B. Requirements:

1. Provide recessed or surface mounted type door position switches as specified.
2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches (102 mm) between switch and magnetic locking device.

2.26 FINISHES

A. FINISH: BHMA 626/652 (US26D); EXCEPT:

1. Aluminum Geared Continuous Hinges: BHMA 628 (US28)
2. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
3. Protection Plates: BHMA 630 (US32D)
4. Overhead Stops and Holders: BHMA 630 (US32D)
5. Door Closers: Powder Coat to Match
6. Weatherstripping: Clear Anodized Aluminum
7. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
4. Installation Guide for Doors and Hardware: DHI TDH-007-20

B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.

C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

I. Lock Cylinders:

1. Install construction cores to secure building and areas during construction period.
2. Replace construction cores with permanent cores as indicated in keying section.
3. Furnish permanent cores to Owner for installation.

J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:

1. Conduit, junction boxes and wire pulls.
2. Connections to and from power supplies to electrified hardware.
3. Connections to fire/smoke alarm system and smoke evacuation system.
4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
5. Connections to panel interface modules, controllers, and gateways.

6. Testing and labeling wires with Architect's opening number.

K. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.

L. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

M. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

N. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

O. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

P. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

Q. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

R. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

S. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.04 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets:

105372 OPT0357077 Version 5

Legend:
Link to catalog cut sheet
Electrified Opening

Hardware Group No. 01

For use on Door #(s):
F101 F102 F108 J101

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	224XY		628	IVE
1	EA	CONT. HINGE	224XY EPT		628	IVE
2	EA	POWER TRANSFER	EPT10	✓	689	VON
1	EA	ELEC PANIC HARDWARE	LD-RX-9949-EO-SNB	✓	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9949-NL-SNB 24 VDC	✓	626	VON
1	EA	MORTISE CYLINDER	20-059		626	SCH
1	EA	RIM HOUSING	20-079		626	SCH
2	EA	PRIMUS CORE	20-740-XP		626	SCH
2	EA	SURFACE CLOSER	4040XP SHCUSH ST-1595 TBSRT		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142AA		AA	ZER
1	SET	MEETING STILE	328AA-S		AA	ZER
1	EA	GASKETING	429AA		AA	ZER
2	EA	DOOR SWEEP, BRUSH W/ DRIP	8198AA		AA	ZER
1	EA	THRESHOLD	655A		A	ZER
1	EA	CREDENTIAL READER	MT11/MT15 AS REQ'D (BY ACCESS CONTROL PROVIDER)	✓	BLK	SCE
2	EA	DOOR CONTACT	7764	✓	628	SCE
1	EA	POWER SUPPLY	PS902 900-2RS 120/240 VAC (COORDINATE WITH ACCESS CONTROL)	✓	LGR	SCE
1	EA	WIRING DIAGRAM	ELEVATION			DLR
1	EA	WIRING DIAGRAM	POINT TO POINT			DLR

INSTALL WEATHERSTRIPPING BEFORE INSTALLING THE DOOR CLOSER.

OPERATION: DOOR NORMALLY CLOSED AND LOCKED. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY RETRACT THE PANIC DEVICE LATCH ALLOWING ACCESS. DOOR TO REMAIN LOCKED UPON LOSS OF POWER. THE REQUEST (RX) TO EXIT FEATURE OF THE LOCK TO SHUNT THE ALARM OUTPUT OF THE DOOR CONTACT DURING VALID EGRESS. DOOR CONTACT MONITORS THE POSITION OF THE DOOR. FREE EGRESS AT ALL TIMES.

Hardware Group No. 02

For use on Door #(s):
F101A F101B

Provide each RU door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
1	EA	MORTISE CYLINDER	20-059 AS REQ'D			626	SCH
1	EA	PRIMUS CORE	20-740-XP			626	SCH
1	EA	DOOR CONTACT	674-OH			628	SCE
1		NOTE	BALANCE OF HARDWARE BY DOOR MFG				

OPERATION: DOOR CONTACT MONITORS THE POSITION OF THE DOOR.

Hardware Group No. 03

For use on Door #(s):
F102A F108A J103

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
2	EA	PANIC HARDWARE	LD-9949-L-2SI-17-SNB		626	VON
2	EA	SFIC RIM CYLINDER	80-116		626	SCH
2	EA	TTURN RIM CYLINDER	XB13-379		626	SCH
2	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
2	EA	SURFACE CLOSER	4040XP SHCUSH TBSRT		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
2	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 04

For use on Door #(s):
F103 F104 F106 F107 J112

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	WALL STOP	WS401/402CVX		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 05

For use on Door #(s):

F105 F109 F109A F110 F110A F110B
J113

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CONST LATCHING BOLT	FB51T/FB61T AS REQ'D		630	IVE
1	EA	STOREROOM LOCK	ND80BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
2	EA	OH STOP	100S		630	GLY
2	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 06

For use on Door #(s):

J101A L139 L139A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	ND80BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	SURFACE CLOSER	4040XP SCUSH TBSRT		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 07

For use on Door #(s):

J102

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	ENTRANCE LOCK	ND53BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	FLOOR STOP	FS436/FS438 (AS REQ'D)		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 08

For use on Door #(s):
J104

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	ND80BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 09

For use on Door #(s):
J105 L105 L120 L125 L137 L164

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PASSAGE SET	ND10S SPA		626	SCH
1	EA	WALL STOP	WS401/402CVX		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 09A

For use on Door #(s):
L105A L125A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	ND80BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	ELECTRIC STRIKE	6210 FSE 12/16/24/28 VAC/VDC		630	VON
1	EA	SURF. AUTO OPERATOR	4631 WMS 120 VAC		689	LCN
2	EA	ACTUATOR, TOUCHLESS	8310-810DA		630	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS401/402CVX		626	IVE
3	EA	SILENCER	SR64		GRY	IVE
1	EA	CREDENTIAL READER	MT11/MT15 AS REQ'D (BY ACCESS CONTROL PROVIDER)		BLK	SCE

OPERATION: DOOR NORMALLY CLOSED AND LOCKED. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE ALLOWING ACCESS AND MOMENTARILY ENABLE THE EXTERIOR ACTUATOR BUTTON. ACTIVATING THE EXTERIOR ACTUATOR BUTTON WILL CAUSE THE AUTOMATIC OPERATOR TO CYCLE THE DOOR. ACTIVATING THE INTERIOR ACTUATOR BUTTON WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE AND CAUSE THE AUTOMATIC OPERATOR TO CYCLE THE DOOR. DOOR TO REMAIN LOCKED UPON LOSS OF POWER. FREE EGRESS AT ALL TIMES.

Hardware Group No. 09B

For use on Door #(s):

L102 L108 L113 L117 L118 L154 L159

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	POWER TRANSFER	EPT10		689	VON
1	EA	EU STOREROOM LOCK	ND80BDCEU SPA CON 12V/24V DC		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS401/402CVX		626	IVE
3	EA	SILENCER	SR64		GRY	IVE
1	EA	CREDENTIAL READER	MT11/MT15 AS REQ'D (BY ACCESS CONTROL PROVIDER)		BLK	SCE
1	EA	POWER SUPPLY	PS902 120/240 VAC (COORDINATE WITH ACCESS CONTROL)		LGR	SCE
1	EA	WIRING DIAGRAM	ELEVATION			DLR
1	EA	WIRING DIAGRAM	POINT TO POINT			DLR

OPERATION: DOOR NORMALLY CLOSED AND LOCKED. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY UNLOCK THE LOCK ALLOWING ACCESS. DOOR TO REMAIN LOCKED UPON LOSS OF POWER. FREE EGRESS AT ALL TIMES.

Hardware Group No. 10

For use on Door #(s):

J106	J107	J109	J110	L106	L107
L109	L110	L114	L115	L116	L123
L126	L128	L129	L134	L135	L140
L141	L142	L142A	L149	L150	L151
L152	L153	L156	L157	L158	L160
L161	L162	L163	L165	L166	

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	ENTRANCE LOCK	ND53BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	WALL STOP	WS401/402CCV		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 11

For use on Door #(s):

J108

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	ND80BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	OH STOP	100S		630	GLY
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 12

For use on Door #(s):

J111

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	OH STOP	100S		630	GLY
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 13

For use on Door #(s):

J201 J202 J203 J204 J205 J206
J207

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	WALL STOP	WS401/402CVX		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 14

For use on Door #(s):

J208

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CONST LATCHING BOLT	FB51T/FB61T AS REQ'D		630	IVE
1	EA	STOREROOM LOCK	ND80BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	COORDINATOR	COR X FL (MB/MBF AS REQ'D)		628	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH TBSRT		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
2	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 15

For use on Door #(s):
L112

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	ENTRANCE LOCK	ND53BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630 TBSRT		689	LCN
1	EA	TOP JAMB MTG PLATE	4040XP-18TJ TBSRT		691	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 15A

For use on Door #(s):
L103

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	ND80BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	ELECTRIC STRIKE	6210 FSE 12/16/24/28 VAC/VDC	✓	630	VON
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630 TBSRT		689	LCN
1	EA	MOUNTING PLATE	4040XP-18TJ		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
3	EA	SILENCER	SR64		GRY	IVE
1	EA	DESK MOUNT BUTTON	660-PB	✓	628	SCE
1	EA	POWER SUPPLY	PS902 120/240 VAC (COORDINATE WITH ACCESS CONTROL)	✓	LGR	SCE
1	EA	WIRING DIAGRAM	ELEVATION			DLR
1	EA	WIRING DIAGRAM	POINT TO POINT			DLR

OPERATION: DOOR NORMALLY CLOSED AND LOCKED. PUSHING REMOTE BUTTON WILL MOMENTARILY UNLOCK THE LOCK ALLOWING ACCESS. DOOR TO REMAIN LOCKED UPON LOSS OF POWER. FREE EGRESS AT ALL TIMES.

Hardware Group No. 15B

For use on Door #(s):
L103A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	DBL CYL COMM LOCK	ND72BDC SPA XN12-002		626	SCH
2	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	ELECTRIC STRIKE	6210 FSE 12/16/24/28 VAC/VDC	✓	630	VON
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630 TBSRT		689	LCN
1	EA	MOUNTING PLATE	4040XP-18TJ		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
3	EA	SILENCER	SR64		GRY	IVE
1	EA	DESK MOUNT BUTTON	660-PB	✓	628	SCE
1	EA	POWER SUPPLY	PS902 120/240 VAC (COORDINATE WITH ACCESS CONTROL)	✓	LGR	SCE
1	EA	WIRING DIAGRAM	ELEVATION			DLR
1	EA	WIRING DIAGRAM	POINT TO POINT			DLR

OPERATION:
BUSINESS HOURS - UNLOCK CORRIDOR SIDE WITH KEY. DOOR LOCKED FROM WAITING ROOM. PUSHING REMOTE BUTTON WILL MOMENTARILY UNLOCK THE LOCK ALLOWING ACCESS INTO CORRIDOR. DOOR TO REMAIN LOCKED FROM WAITING ROOM UPON LOSS OF POWER. NO FREE EGRESS FROM WAITING ROOM.

AFTER HOURS - RELOCK CORRIDOR SIDE WITH KEY. DOOR LOCKED FROM BOTH SIDES. PUSHING REMOTE BUTTON WILL MOMENTARILY UNLOCK THE LOCK ALLOWING ACCESS INTO CORRIDOR. DOOR TO REMAIN LOCKED FROM BOTH SIDES UPON LOSS OF POWER. NO FREE EGRESS FROM WAITING ROOM.

Hardware Group No. 15C

For use on Door #(s):
L104 L104A L104B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	POWER TRANSFER	EPT10		689	VON
1	EA	EU STOREROOM LOCK	ND80BDCEU SPA CON 12V/24V DC		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630 TBSRT		689	LCN
1	EA	MOUNTING PLATE	4040XP-18TJ		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
3	EA	SILENCER	SR64		GRY	IVE
1	EA	CREDENTIAL READER	MT11/MT15 AS REQ'D (BY ACCESS CONTROL PROVIDER)		BLK	SCE
1	EA	POWER SUPPLY	PS902 120/240 VAC (COORDINATE WITH ACCESS CONTROL)		LGR	SCE
1	EA	WIRING DIAGRAM	ELEVATION			DLR
1	EA	WIRING DIAGRAM	POINT TO POINT			DLR

OPERATION: DOOR NORMALLY CLOSED AND LOCKED. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY UNLOCK THE LOCK ALLOWING ACCESS. DOOR TO REMAIN LOCKED UPON LOSS OF POWER. FREE EGRESS AT ALL TIMES.

Hardware Group No. 16 - Not Used

Hardware Group No. 17

For use on Door #(s):
L124 L159A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	ENTRANCE LOCK	ND53BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS401/402CCV		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 18

For use on Door #(s):
L111

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 5 X 4.5		652	IVE
1	EA	ENTRANCE LOCK	ND53BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	WALL STOP	WS401/402CCV		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 19

For use on Door #(s):
L119 L147

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	ND80BDC SPA		626	SCH
1	EA	PERMANENT CORE	KEYED TO/MATCH EXISTING SYSTEM		626	BES
1	EA	WALL STOP	WS401/402CVX		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 20

For use on Door #(s):
L121 L122 L144 L146

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY LOCK	ND40S SPA		626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS		630	IVE
1	EA	WALL STOP	WS401/402CCV		626	IVE
1	EA	GASKETING	488SCL PSA		CL	ZER

Hardware Group No. 21

For use on Door #(s):
L131

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	PUSH PLATE	8200 4" X 16"		630	IVE
1	EA	PULL PLATE	8303 10" 4" X 16"		630	IVE
1	EA	SURFACE CLOSER	4040XP H TBSRT		689	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS401/402CVX		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

Hardware Group No. 22

For use on Door #(s):
L132

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	PUSH PLATE	8200 4" X 16"		630	IVE
1	EA	PULL PLATE	8303 10" 4" X 16"		630	IVE
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630 TBSRT		689	LCN
1	EA	TOP JAMB MTG PLATE	4040XP-18TJ TBSRT		691	LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS401/402CVX		626	IVE
3	EA	SILENCER	SR64		GRY	IVE

END OF SECTION 087100

This page intentionally left blank.

SECTION 238239.16 - PROPELLER UNIT HEATERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes propeller unit heaters with hot-water coils.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. PTFE: Polytetrafluoroethylene plastic.

C. TFE: Tetrafluoroethylene plastic.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, furnished specialties, and accessories.

B. Shop Drawings:

1. Include plans, elevations, sections, and details.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include location and size of each field connection.
4. Include details of anchorages and attachments to structure and to supported equipment.
5. Include equipment schedules to indicate rated capacities, operating characteristics, furnished specialties, and accessories.
6. Indicate location and arrangement of piping valves and specialties.
7. Indicate location and arrangement of integral controls.
8. Wiring Diagrams: Power, signal, and control wiring.

C. Seismic Qualification Data: Submit certification that propeller unit heaters, accessories, and components will withstand seismic forces defined in Section 230548 "Vibration and Seismic Controls for HVAC." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Include detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

D. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For propeller unit heaters to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Airtherm; a Mestek company.
2. Trane.
3. Zehnder-Rittling

2.2 DESCRIPTION

A. Assembly including casing, coil, fan, and motor in horizontal discharge configuration with adjustable discharge louvers.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with UL 2021.

D. Comply with UL 823.

2.3 PERFORMANCE REQUIREMENTS

A. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."

B. ASHRAE/IESNA 90.1 Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6 - "Heating, Ventilating, and Air-Conditioning."

2.4 HOUSINGS

A. Finish: Manufacturer's standard baked enamel applied to factory-assembled and tested propeller unit heaters before shipping.

B. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

C. Discharge Louver: Adjustable fin diffuser for horizontal units and conical diffuser for vertical units.

2.5 COILS

A. General Coil Requirements: Test and rate hot-water propeller unit-heater coils according to ASHRAE 33.

B. Hot-Water Coil: Copper tube, minimum 0.025-inch wall thickness, with mechanically bonded aluminum fins spaced no closer than 0.1 inch and rated for a minimum working pressure of 200 psig and a maximum entering-water temperature of 325 deg F, with manual air vent. Test for leaks to 350 psig underwater.

2.6 FAN AND MOTOR

A. Fan: Propeller type with aluminum wheel directly mounted on motor shaft in the fan venturi.

B. Motor: Permanently lubricated, multispeed. Comply with requirements in Section 230513 "Common Motor Requirements for HVAC Equipment."

2.7 CONTROLS

A. Control Devices:

1. Wall-mounted, by TCC.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive propeller unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for piping and electrical connections to verify actual locations before unit-heater installation.

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

3.2 INSTALLATION

A. Install propeller unit heaters to comply with NFPA 90A.

B. Install propeller unit heaters level and plumb.

C. Suspend propeller unit heaters from structure with all-thread hanger rods and spring hangers. Hanger rods and attachments to structure are specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment." Vibration hangers are specified in Section 230548.13 "Vibration Controls for HVAC."

D. Install wall-mounted thermostats and switch controls in electrical outlet boxes at heights to match lighting controls. Verify location of thermostats and other exposed control sensors with Drawings and room details before installation.

3.3 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties. Piping installation requirements are specified in the following Sections:

1. Section 232113 "Hydronic Piping."
2. Section 232116 "Hydronic Piping Specialties."
3. Section 232213 "Steam and Condensate Heating Piping."
4. Section 232216 "Steam and Condensate Heating Piping Specialties."

B. Install piping adjacent to machine to allow service and maintenance.

C. Connect piping to propeller unit heater's factory, hot-water piping package. Install the piping package if shipped loose.

D. Comply with safety requirements in UL 1995.

E. Unless otherwise indicated, install union and gate or ball valve on supply-water connection and union and calibrated balancing valve on return-water connection of propeller unit heater. Hydronic specialties are specified in Section 232113 "Hydronic Piping" and Section 232116 "Hydronic Piping Specialties."

F. Unless otherwise indicated, install union and gate or ball valve on steam-supply connection and union, strainer, steam trap, and gate or ball valve on condensate-return connection of propeller unit heater. Steam specialties are specified in Section 232216 "Steam and Condensate Piping Specialties."

G. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

H. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.4 FIELD QUALITY CONTROL

A. Perform the following tests and:

1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
2. Operate electric heating elements through each stage to verify proper operation and electrical connections.
3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

B. Units will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.5 ADJUSTING

A. Adjust initial temperature set points.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain propeller unit heaters.

END OF SECTION 238239.16

This page intentionally left blank.

REFERENCE SYMBOLS:

ROOM NAME 122 — ROOM NUMBER

122 — DOOR OPENING NUMBER

W1 — WINDOW TYPE

1 / A301 — DETAIL NUMBER (TYPICAL) / SHEET WHERE DRAWN (TYPICAL) — WALL SECTION/SECTION/DETAIL

1 / A501 — DETAIL NUMBER (TYPICAL) / SHEET WHERE DRAWN (TYPICAL) — DETAIL

2 / 3 A701 1 / 4 — ELEVATION NUMBER / SHEET WHERE DRAWN (TYPICAL) — INTERIOR ELEVATION

ELEVATION REFERENCE

1 — REFERENCE NOTE

1 — DEMOLITION REFERENCE NOTE

1 — WALL TYPE
SEE SHEET A002

M1 — MARKER/TACK BOARD TYPE
ELEVATION, SEE SHEET A602

– FIRE EXTINGUISHER CABINET
F.E.C.

(B.S.) – BOTH SIDES
U.N.O. – UNLESS NOTED OTHERWISE
NOM. – NOMINAL
A.F.F. – ABOVE FINISHED FLOOR
N.I.C. – NOT IN CONTRACT, PROVIDED BY OWNER
E.J. – EXPANSION JOINT
B.E.J. – BRICK EXPANSION JOINT

DRAWING INDEX:

COVER SHEET

CIVIL

1	TOPOGRAPHIC SURVEY
2	TOPOGRAPHIC SURVEY
3	TOPOGRAPHIC SURVEY
4	TOPOGRAPHIC SURVEY
C100	PROJECT INFORMATION SHEET
C110	STORMWATER POLLUTION PREVENTION PLAN
C111	STORMWATER POLLUTION PREVENTION DETAILS
C120	SITE DEMOLITION PLAN
C130	SITE GRADING & DRAINAGE PLAN
C131	BMP DETAIL
C140	SITE UTILITY PLAN
C150	SITE IMPROVEMENT PLAN
C151	SIDEWALK LOCATION PLAN
C160	SITE DETAILS
C161	SITE DETAILS
C165	CITIZENS ENERGY DETAILS

ARCHITECTURAL

A001	FIRST FLOOR LIFE SAFETY PLAN - SOUTH & DETAILS
A002	FIRST FLOOR LIFE SAFETY PLAN - NORTH & WALL TYPES
A003	SECOND FLOOR LIFE SAFETY PLAN - SOUTH
A004	SECOND FLOOR LIFE SAFETY PLAN - NORTH
AD101	DEMOLITION PLANS - UNITS F & J
AD102	DEMOLITION PLAN - UNIT L
AD103	DEMOLITION PLANS - UNITS G & K
A101	FIRST FLOOR PLAN - UNIT F & DETAILS
A102	FIRST FLOOR PLAN & MEZZANINE PLAN - UNIT J
A103	FIRST FLOOR PLAN - UNIT L
A104	FIRST FLOOR REFLECTED CEILING PLAN - UNIT F
A105	FIRST FLOOR & MEZZANINE REFLECTED CEILING PLANS - UNIT J
A106	FIRST FLOOR REFLECTED CEILING PLAN - UNIT L
A107	FIRST FLOOR EXISTING CEILING REWORK PLAN
A201	ROOF PLAN & DETAILS
A301	BUILDING ELEVATIONS
A401	BUILDING SECTIONS
A402	WALL SECTIONS & DETAILS
A403	WALL SECTIONS & DETAILS
A404	WALL SECTIONS & DETAILS
A405	WALL SECTIONS & DETAILS
A501	ENLARGED TOILET ROOM PLANS, ENLARGED STAIR PLANS & DETAILS
A601	DOOR SCHEDULE, DOOR & FRAME ELEVATIONS & DETAILS
A602	ROOM FINISH SCHEDULE & DETAILS
A701	CASEWORK ELEVATIONS & INTERIOR ELEVATIONS
A702	ENLARGED PLANS & CASEWORK ELEVATIONS
A703	ENLARGED PLAN, CASEWORK ELEVATIONS & SECTIONS

STRUCTURAL

S101	GENERAL NOTES
S201	FOUNDATION PLAN - UNITS F, J & L
S202	ROOF FRAMING PLAN - UNIT F
S203	MEZZANINE & ROOF FRAMING PLAN - UNIT J & 'CAP' PLAN - UNIT L
S301	SECTIONS
S302	SECTIONS
S401	DETAILS

PLUMBING

P001	PLUMBING SYMBOLS & ABBREVIATIONS
PFD1F	DEMOLITION FOUNDATION PLUMBING PLAN - UNIT F
PFD1J	DEMOLITION FOUNDATION PLUMBING PLAN - UNIT J
PFD1L	DEMOLITION FOUNDATION PLUMBING PLAN - UNIT L
PD1F	DEMOLITION FIRST FLOOR PLUMBING PLAN - UNIT F
PD1J	DEMOLITION FIRST FLOOR PLUMBING PLAN - UNIT J
PD1L	DEMOLITION FIRST FLOOR PLUMBING PLAN - UNIT L
PFD1	DEMOLITION FIRST FLOOR FIRE PROTECTION PLANS
FP1	FIRST FLOOR FIRE PROTECTION PLAN
FP2	FIRST FLOOR FIRE PROTECTION PIPE ROUTING PLAN & DETAIL
PF1F	FOUNDATION PLUMBING PLAN - UNIT F
PF1J	FOUNDATION PLUMBING PLAN - UNIT J
PF1L	FOUNDATION PLUMBING PLAN - UNIT L
PP1F	FIRST FLOOR PLUMBING PLAN - UNIT F
PP1J	FIRST FLOOR & MEZZANINE PLUMBING PLAN - UNIT J
PP1L	FIRST FLOOR PLUMBING PLAN - UNIT L
PRF	ROOF PLUMBING PLAN
P601	PLUMBING DETAILS & SCHEDULES
P901	PLUMBING ISOMETRICS

MECHANICAL

M001	MECHANICAL SYMBOLS & ABBREVIATIONS
MD1F	FIRST FLOOR MECHANICAL DEMOLITION PLANS - UNITS F & J
MD1G	FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT G
MD1L	FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT L
MD1R	FIRST FLOOR MECHANICAL DEMOLITION PLANS - UNITS R & N
MH1F	FIRST FLOOR HVAC PLAN - UNIT F
MH1G	FIRST FLOOR HVAC PLAN - UNIT G
MH1J	FIRST FLOOR & MEZZANINE HVAC PLANS - UNIT J
MH1L	FIRST FLOOR HVAC PLAN - UNIT L
MRJ	MECHANICAL ROOF PLAN - UNITS F & J
MRL	MECHANICAL ROOF PLAN - UNIT L
MP1	FIRST FLOOR PIPING OVERALL PLAN
MP1F	FIRST FLOOR PIPING PLAN - UNIT F
MP1J	FIRST FLOOR & MEZZANINE PIPING PLANS - UNIT J
MP1L	FIRST FLOOR PIPING PLAN - UNIT L
M401	ENLARGED MECHANICAL PLANS
M501	MECHANICAL DETAILS
M502	MECHANICAL DETAILS
M601	MECHANICAL SCHEDULES
M701	TEMPERATURE CONTROLS SCHEMATICS
M702	TEMPERATURE CONTROLS SCHEMATICS

ELECTRICAL

E001	ELECTRICAL SYMBOLS & ABBREVIATIONS
ED501	ELECTRICAL SITE DEMOLITION PLAN
ED1F	FIRST FLOOR DEMOLITION PLAN - UNIT F
ED1G	FIRST FLOOR DEMOLITION PLAN - UNIT G
ED1J	FIRST FLOOR DEMOLITION PLAN - UNIT J
ED1K	FIRST FLOOR DEMOLITION PLAN - UNIT K
ED1L	FIRST FLOOR DEMOLITION PLAN - UNIT L
ED602	DEMOLITION ONE-LINE DIAGRAM MSB-1
EL1F	FIRST FLOOR LIGHTING PLAN - UNIT F
EL1G	FIRST FLOOR LIGHTING PLAN - UNIT G
EL1J	FIRST FLOOR LIGHTING PLAN - UNIT J
EL1K	FIRST FLOOR LIGHTING PLAN - UNIT K
EL1L	FIRST FLOOR LIGHTING PLAN - UNIT L
EL2F	MEZZANINE FLOOR LIGHTING PLAN - UNIT F
EL2J	MEZZANINE FLOOR LIGHTING PLAN - UNIT J
EC01	FIRST FLOOR CONDUIT ROUTING PLAN
ES01	SITE PLAN
EP1F	FIRST FLOOR POWER PLAN - UNIT F
EP1G	FIRST FLOOR POWER PLAN - UNIT G
EP1H	FIRST FLOOR POWER PLAN - UNIT H
EP1J	FIRST FLOOR POWER PLAN - UNIT J
EP1K	FIRST FLOOR POWER PLAN - UNIT K
EP1L	FIRST FLOOR POWER PLAN - UNIT L
EP2J	MEZZANINE FLOOR POWER PLAN - UNIT J
EPRJ	ROOF POWER PLAN - UNIT J
EPRL	ROOF POWER PLAN - UNIT L
EF1F	FIRST FLOOR FIRE ALARM PLAN - UNIT F
EF1G	FIRST FLOOR FIRE ALARM PLAN - UNIT G
EF1H	FIRST FLOOR FIRE ALARM PLAN - UNIT H
EF1J	FIRST FLOOR FIRE ALARM PLAN - UNIT J
EF1K	FIRST FLOOR FIRE ALARM PLAN - UNIT K
EF1L	FIRST FLOOR FIRE ALARM PLAN - UNIT L
EF2F	MEZZANINE FLOOR FIRE ALARM PLAN - UNIT F
EF2J	MEZZANINE FLOOR FIRE ALARM PLAN - UNIT J
E501	GROUNDING DETAILS
E502	LIGHTING DETAILS
E503	LIGHTING DETAILS
E504	GENERAL DETAILS
E601	OVERALL ONE-LINE DIAGRAM
E602	ONE-LINE DIAGRAM MSB-1
E801	LIGHTING SCHEDULES
E802	EQUIPMENT SCHEDULES
E803	PANELBOARD SCHEDULES
E804	PANELBOARD SCHEDULES

TECHNOLOGY

T001	TECHNOLOGY SCOPE MATRIX
T101	FIRST FLOOR OVERALL DISTRIBUTION PLAN
T101F	FIRST FLOOR DISTRIBUTION PLAN - UNIT F
T101J	FIRST FLOOR DISTRIBUTION PLAN - UNIT J
T101L	FIRST FLOOR/MEZZANINE DISTRIBUTION PLAN - UNIT L
T201F	FIRST FLOOR TECHNOLOGY PLAN - UNIT F
T201H	FIRST FLOOR TECHNOLOGY PLAN - UNIT H
T201J	FIRST FLOOR/MEZZANINE TECHNOLOGY PLAN - UNIT J
T201L	FIRST FLOOR TECHNOLOGY PLAN - UNIT L
T211F	FIRST FLOOR REFLECTED CEILING PLAN - UNIT F
T211J	FIRST FLOOR/MEZZANINE REFLECTED CEILING PLAN - UNIT J
T211L	FIRST FLOOR REFLECTED CEILING PLAN - UNIT L
T300	TELECOM DIAGRAMS
T301	TELECOM/SECURITY DIAGRAMS
T302	ENLARGED TELECOM ROOM LAYOUTS/ELEVATIONS
T303	TELECOM RACK ELEVATIONS
T304	AUDIO VISUAL ELEVATIONS
T305	AUDIO VISUAL ELEVATIONS
T306	AUDIO VISUAL DIAGRAMS/RACK ELEVATIONS
T400	TECHNOLOGY DETAILS
T401	TECHNOLOGY DETAILS
T402	SECURITY DETAILS
T500	TELECOM/SECURITY SCHEDULES

ADDITION & RENOVATIONS TO :

FRANKLIN CENTRAL HIGH SCHOOL

PHASE 2A

FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION
INDIANAPOLIS, INDIANA

OWNER'S ADDRESS:

FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION
6141 S. FRANKLIN RD.
INDIANAPOLIS, IN 46259
PH. 317-862-2411

PROJECT ADDRESS:

FRANKLIN CENTRAL HIGH SCHOOL
6215 S. FRANKLIN RD.
INDIANAPOLIS, IN 46259
PH. 317-862-6649

DATE: JANUARY 29, 2024
PROJECT NO. 2022063.00

CONSTRUCTION DOCUMENTS

ARCHITECT

VPS ARCHITECTURE
905 N. CAPITAL AVE., SUITE 100
INDIANAPOLIS, IN. 46204
PHONE 317-353-3281

CONSTRUCTION MANAGER

THE SKILLMAN CORPORATION
3834 S. EMERSON AVENUE, BUILDING A
INDIANAPOLIS, INDIANA 46203
PHONE 317-783-6151

CIVIL ENGINEER

JPS CONSULTING ENGINEERS
9365 COUNSELORS ROW, SUITE 116
INDIANAPOLIS, IN 46240
PH: 317-617-4270

STRUCTURAL ENGINEER

WILKIE STRUCTURAL ENGINEERING, INC.
20 NW 3RD ST., SUITE 1220
EVANSVILLE, IN 47708
PH: 812-423-6347

MEP ENGINEER

CREATIVE ENGINEERING SOLUTIONS
201 S. RURAL ST., SUITE 106
INDIANAPOLIS, IN 46201
PH: 317-748-5252

TECHNOLOGY ENGINEER

DESIGN 27/TECHNOLOGY & ACOUSTICS
1650 EAST 49TH STREET
INDIANAPOLIS, IN 46205
PH: 317-536-8000

SCHOOL BOARD OF TRUSTEES

ZACHARY SMITH HOWARD	PRESIDENT
DAWN A. DOWNER	VICE-PRESIDENT
DORIS L. GOWAN	SECRETARY
KELLY L. FAULK	MEMBER
LARRY J. WALKER	MEMBER

ADMINISTRATION

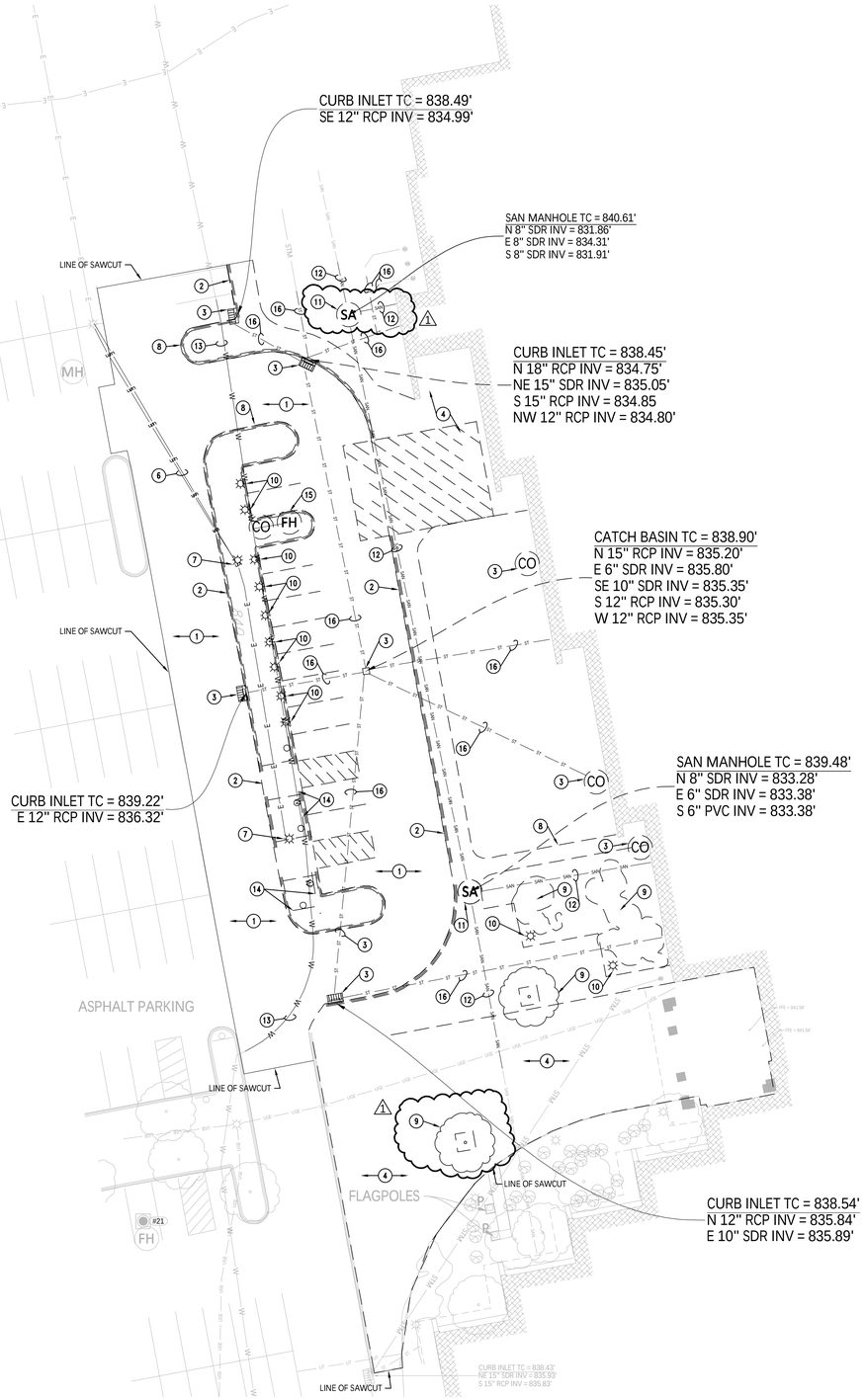
BRUCE HIBBARD	SUPERINTENDENT
FRED McWHORTER II	CHIEF OPERATING OFFICER
RICK HUNTER	DIRECTOR OF FACILITIES
JODY MELADY	ASST. DIRECTOR OF FACILITIES

GEORGE SNYDER LINK — REGISTERED No. 9600157 — STATE OF INDIANA — ARCHITECT

VPS ARCHITECTURE

905 N. Capital Ave. – Suite 100 Indianapolis, Indiana 46204
P (317) 353–3281

www.VPSARCH.com



GENERAL NOTES

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING, AND VERIFYING, THAT ALL PERMITS AND APPROVALS ARE OBTAINED FROM THE RESPECTIVE CITY, COUNTY, STATE AND FEDERAL AGENCIES PRIOR TO STARTING CONSTRUCTION.

B. CONTRACTOR SHALL VERIFY LOCATION AND INVERT ELEVATIONS OF EXISTING SEWERS PRIOR TO START OF CONSTRUCTION.

C. CONTRACTOR SHALL MAINTAIN A COMPLETE AND OPERABLE UTILITY SYSTEM AT ALL TIMES.

D. CONTRACTOR SHALL INCLUDE COSTS FOR CUTTING AND PATCHING AS REQUIRED IN THEIR BID PROPOSAL TO COMPLETELY INSTALL THE WORK INDICATED.

E. CONTRACTOR SHALL INCLUDE ALL TAP FEES, PERMIT FEES AND APPLICATION FEES IN THEIR BID PROPOSAL AS NECESSARY TO COMPLETELY INSTALL THE WORK INDICATED.

F. INFORMATION SHOWN WAS OBTAINED FROM AN OWNER FURNISHED SITE SURVEY OF EXISTING CONDITIONS AND IS UNCONFIRMED. CONTRACTOR IS REQUIRED TO FIELD VERIFY THIS INFORMATION AND NOTIFY ARCHITECT OF ANY DISCREPANCIES SO MODIFICATION CAN BE MADE.

G. CONTRACTOR SHALL COORDINATE EXACT UTILITY LOCATIONS WITH THE OWNER AND LOCAL UTILITY COMPANIES PRIOR TO COMMENCING ANY WORK. UTILIZE THE INDIANA UNDERGROUND UTILITY LOCATION SERVICE AT 811 OR 800-382-5544 PRIOR TO ANY EXCAVATION ON THE SITE.

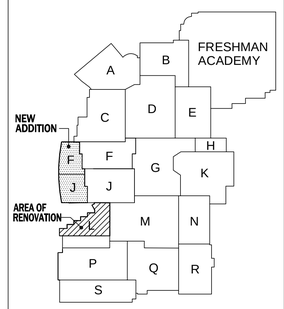
○ PLAN NOTES

1. REMOVE EXISTING ASPHALT PAVEMENT COMPLETE. MAKE STRAIGHT SAW-CUT AT TERMINATION.
2. REMOVE EXISTING CONCRETE WALK AND CURB COMPLETE. MAKE STRAIGHT SAW-CUT AT NEXT ADJACENT JOINT.
3. REMOVE EXISTING STORM STRUCTURE COMPLETE.
4. REMOVE EXISTING CONCRETE WALK COMPLETE.
5. REMOVE EXISTING CONCRETE COMPLETE.
6. REMOVE EXISTING ELECTRIC LINE COMPLETE. RE-FEED EXISTING CIRCUIT & LIGHTS.
7. REMOVE EXISTING LIGHT POLE BASE AND MAINTAIN CIRCUIT CONTINUITY. REMOVE AND STORE POLES AND FIXTURES PER OWNER DIRECTION.
8. REMOVE EXISTING CONCRETE CURB COMPLETE.
9. REMOVE EXISTING PLANTINGS COMPLETE.
10. REMOVE EXISTING LIGHTED BOLLARD COMPLETE.
11. REMOVE EXISTING SANITARY MANHOLE COMPLETE. MAINTAIN OPERABLE UTILITY SYSTEM AT ALL TIMES.
12. REMOVE EXISTING SEWER PIPE COMPLETE. MAINTAIN OPERABLE UTILITY SYSTEM AT ALL TIMES.
13. REMOVE EXISTING WATER LINE COMPLETE. MAINTAIN OPERABLE FIRE PROTECTION SYSTEM AT ALL TIMES.
14. REMOVE EXISTING SIGNS COMPLETE.
15. REMOVE EXISTING FIRE HYDRANT COMPLETE.
16. REMOVE EXISTING STORM SEWER PIPE COMPLETE.

0 20 40 FEET
SCALE 1" = 20'

#	Revision	Date
1	ADDENDUM #1	02.09.2024

JPS CONSULTING ENGINEERS, LLC
9365 Counselors Row, Suite 116
Indianapolis, IN 46240
ph 317.617.4270
www.jpsconsultingengineers.com



KEY PLAN

NORTH

VPS ARCHITECTURE
905 N. Capital Ave. – Suite 100 Indianapolis, Indiana 46204
P (317) 353–3281
www.VPSARCH.com

ADDITION & RENOVATIONS TO:

FRANKLIN CENTRAL HIGH SCHOOL PHASE 2A

FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION
INDIANAPOLIS, INDIANA

Drawing Title: SITE DEMOLITION PLAN

NICHOLAS BRIAN VENTRESS REGISTERED No. PE11500269 STATE OF INDIANA PROFESSIONAL ENGINEER

Project No: 2022063.00
Project Date: JANUARY 29, 2024
Drawing No: C120

Nicholas Brian Ventress

0 20 40 FEET

SCALE:1" = 20'

GENERAL NOTES

A. REFER TO UTILITY DETAILS FOR NOTE REFERENCES.
B. ALL CASTINGS SHALL HAVE THE WORDS "NO DUMPING DRAINS TO STREAM" CAST IN RAISED OR RECESSED LETTERS AT A MINIMUM OF 1" HEIGHT. A SYMBOL OF A FISH SHALL ALSO BE CAST WITH THE LETTERS.
C. CASTINGS TO BE NEENAH TYPE OR APPROVED EQUAL.
D. CONTRACTOR TO VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION.
E. SANITARY AND WATER LINES MUST BE SEPARATED BY AT-MINIMUM TEN (10) HORIZONTAL FEET WHEN PARALLEL AND WHEN CROSSING BY AT-MINIMUM EIGHTEEN (18) VERTICAL INCHES. (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE).

○ PLAN NOTES

1. REFER TO PLUMBING DRAWINGS FOR LOCATION, INVERT, SIZE AND CONTINUATION INTO BUILDING.
2. BUILDING CLEANOUT PER CITIZENS ENERGY DETAIL.
3. WATER AND SEWER CROSSING, MINIMUM 18" CLEARANCE OR USE CONCRETE CRADLE.
4. 6" WATER MAIN (PVC C900).
5. FIRE HYDRANT WITH 6" SERVICE LINE AND VALVE.
6. RIGHT OF WAY CLEANOUT PER CITIZENS ENERGY DETAIL.
7. SEWER SERVICE CONNECTION PER CITIZENS ENERGY DETAIL.
8. INSTALL GREEN 10-GUAGE TRACER WIRE FROM BUILDING CLEANOUTS TO CONNECTION POINT.
9. BACKFILL ALL PARTS OF THE SANITARY LATERAL PIPE TRENCH LOCATED UNDER OR WITHIN 5FT FROM A CONCRETE OR PAVED AREA WITH GRANULAR MATERIAL.
10. LATERAL CONNECTION TO MANHOLE TO BE VIA AN INTERNAL DROP. REFER TO CITIZENS ENERGY DETAIL. (1)

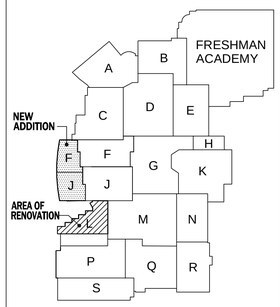
STRUCTURE SCHEDULE

MARK	INVERT		CASTING		STRUCTURE	
	INLET	OUTLET	ELEVATION	TYPE	TYPE	DETAIL
STR-101	833.92	833.27	839.45	R1772	SANITARY INTERNAL DROP MANHOLE	165
STR-102	832.17	832.17	839.40	R1772	SANITARY MANHOLE	C165
STR-103	831.86	EX. 831.86±	840.80	R1772	SANITARY MANHOLE	C165

(1)

#	Revision	Date
1	ADDENDUM #1	02.09.2024

JPS CONSULTING ENGINEERS, LLC
9365 Counselors Row, Suite 116
Indianapolis, IN 46240
ph 317.617.4270
www.jpsconsultingengineers.com



KEY PLAN

NORTH

VPS ARCHITECTURE
905 N. Capital Ave. – Suite 100 Indianapolis, Indiana 46204
P (317) 353–3281
www.VPSARCH.com

ADDITION & RENOVATIONS TO:

FRANKLIN CENTRAL HIGH SCHOOL PHASE 2A

FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION
INDIANAPOLIS, INDIANA

Drawing Title: SITE UTILITY PLAN

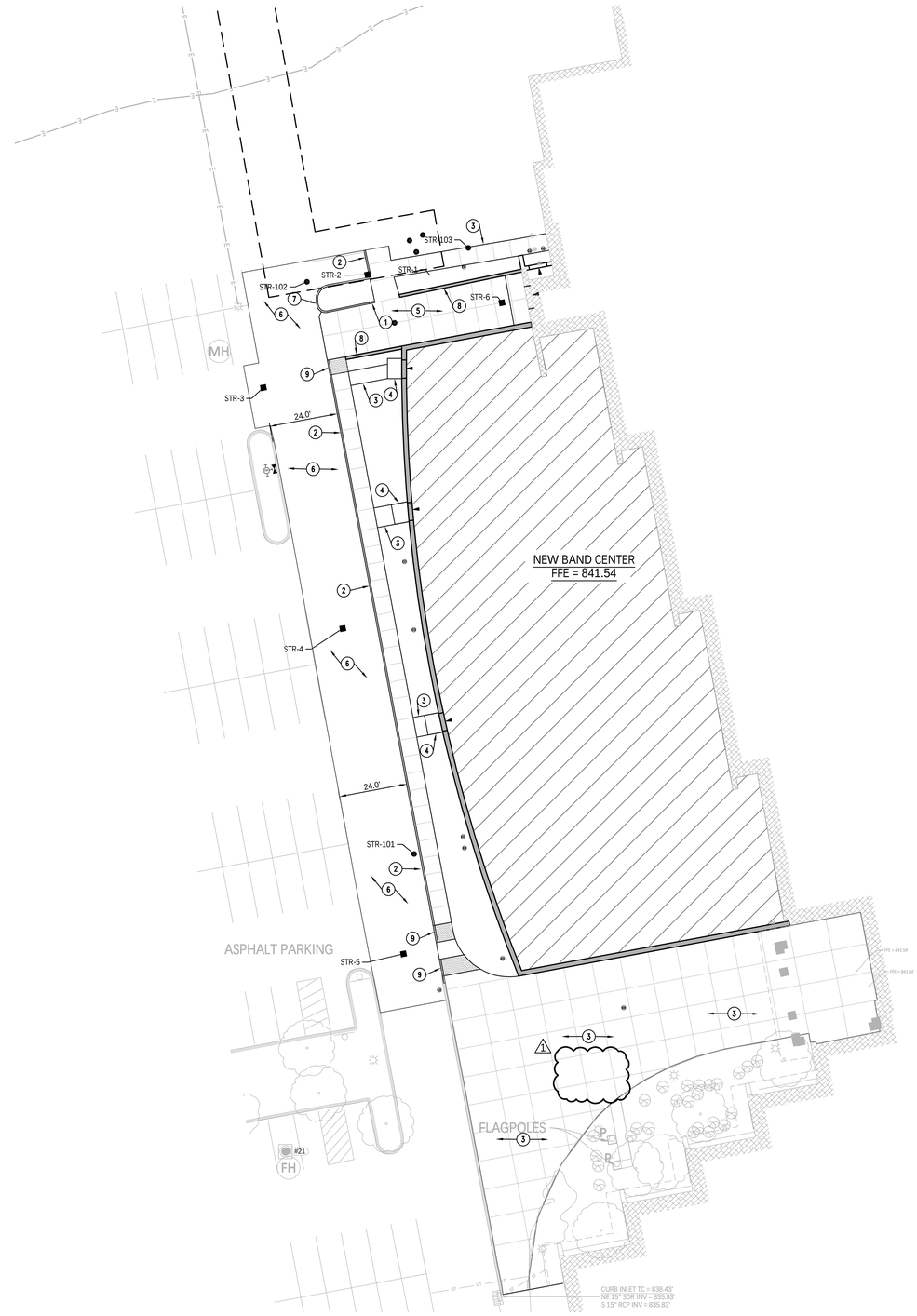
NICHOLAS BIJAN VIRGATAR REGISTERED No. PE11500269 STATE OF INDIANA PROFESSIONAL ENGINEER

Project No: 2022063.00

Project Date: JANUARY 29, 2024

Drawing No: C140

Nicholas Bijan Virgatar



GENERAL NOTES

A. REFER TO SITE DETAILS FOR NOTE REFERENCES.

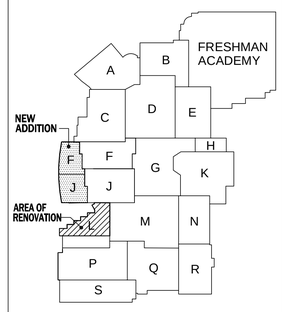
○ PLAN NOTES

1. 2FT CURB TAPPER.
2. CONCRETE CURB AND WALK.
3. CONCRETE WALK.
4. FLUSH CONCRETE STOOP. REFER TO STRUCTURAL DRAWINGS.
5. 6" THICK CONCRETE PAVEMENT.
6. ASPHALT PAVEMENT.
7. CONCRETE CURB.
8. ALUMINUM HANDRAIL MOUNTED ON RETAINING WALL.
9. ACCESSIBLE CURB RAMP.

0 20 40 FEET
SCALE:1" = 20'

#	Revision	Date
1	ADDENDUM #1	02.09.2024

JPS CONSULTING ENGINEERS, LLC
9365 Counselors Row, Suite 116
Indianapolis, IN 46240
ph 317.617.4270
www.jpsconsultingengineers.com



KEY PLAN

NORTH

VPS ARCHITECTURE
905 N. Capital Ave. – Suite 100 Indianapolis, Indiana 46204
P (317) 353-3281
www.VPSARCH.com

ADDITION & RENOVATIONS TO:

FRANKLIN CENTRAL HIGH SCHOOL PHASE 2A

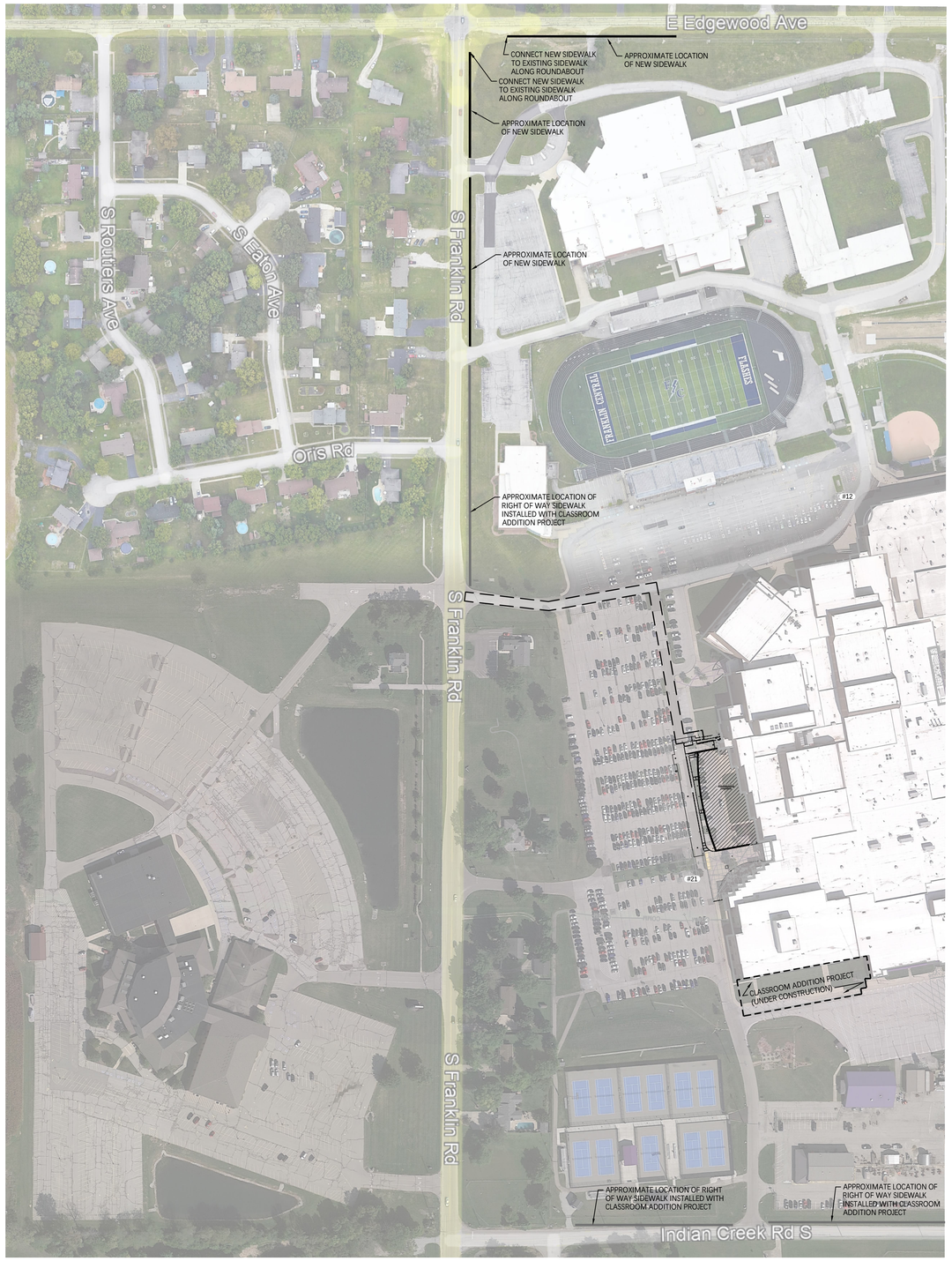
FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION
INDIANAPOLIS, INDIANA

Drawing Title: SITE IMPROVEMENT PLAN

NICHOLAS BRIAN VIRGINIA REGISTERED No. PE11500269 STATE OF INDIANA PROFESSIONAL ENGINEER

Project No: 2022063.00
Project Date: JANUARY 29, 2024
Drawing No: C150

Nicholas Brian Virginia



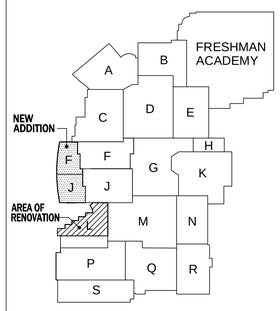
SIDEWALK REQUIRMENT

AS PART OF THIS PROJECT CONTRACTOR TO CONSTRUCT A MINIMUM OF 984 LF OF 6' WIDE SIDEWALK IN THE RIGHT OF WAY ALONG THE SOUTH FRANKLIN ROAD OR E EDGEWOOD AVE FRONTAGE ON PROPERTY OWNED BY FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION PER SECTION 744-304 OF THE MARION COUNTY CODE OF ORDINANCES. EXACT LOCATION OF SIDEWALK TO BE COORDINATED WITH THE OWNER. APPROXIMATE LOCATION OF SIDEWALK IS SHOWN ON THE PLAN. CONTRACTOR TO FIELD VERIFY LOCATION AND ROUTING WITH EXISTING CONDITIONS ALONG FRANKLIN ROAD AND INDIAN CREEK RD S. CONTRACTOR TO PROVIDE ACCESSIBLE RAMPS COMPLYING WITH INDIANAPOLIS DPW STANDARDS AT EACH INTERSECTION AND DRIVEWAY.

0 120 240 FEET
SCALE:1" = 120'

#	Revision	Date
1	ADDENDUM #1	02.09.2024

JPS CONSULTING ENGINEERS, LLC
9365 Counselors Row, Suite 116
Indianapolis, IN 46240
ph 317.617.4270
www.jpsconsultingengineers.com



KEY PLAN

NORTH

VPS ARCHITECTURE
905 N. Capital Ave. – Suite 100 Indianapolis, Indiana 46204
P (317) 353–3281
www.VPSARCH.com

ADDITION & RENOVATIONS TO:

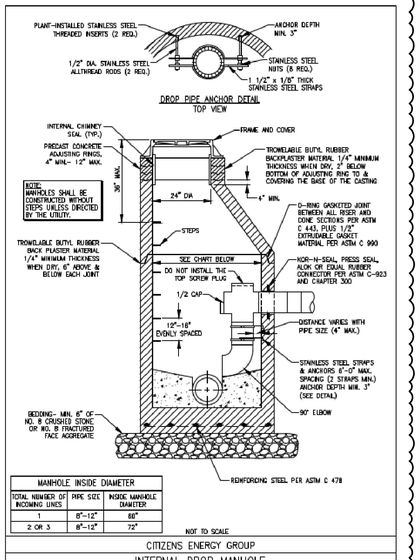
FRANKLIN CENTRAL HIGH SCHOOL PHASE 2A

FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION INDIANAPOLIS, INDIANA

Drawing Title: SIDEWALK LOCATION PLAN

NICHOLAS BRIAN VIRGINIA REGISTERED No. PE11500269 STATE OF INDIANA PROFESSIONAL ENGINEER

Project No: 2022063.00
Project Date: JANUARY 29, 2024
Drawing No: C151



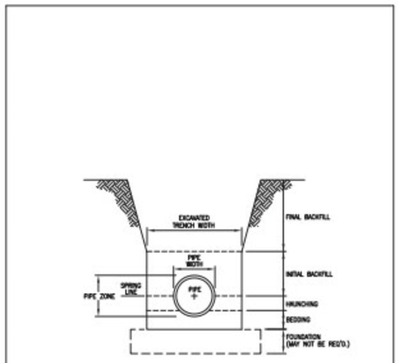
MANHOLE INSIDE DIAMETER		
TOTAL NUMBER OF INCOMING LINES	PIPE SIZE	INSIDE MANHOLE DIAMETER
1	8"-12"	60"
2 OR 3	8"-12"	72"

NOT TO SCALE

CITIZENS ENERGY GROUP

INTERNAL DROP MANHOLE

FIGURE 300.04

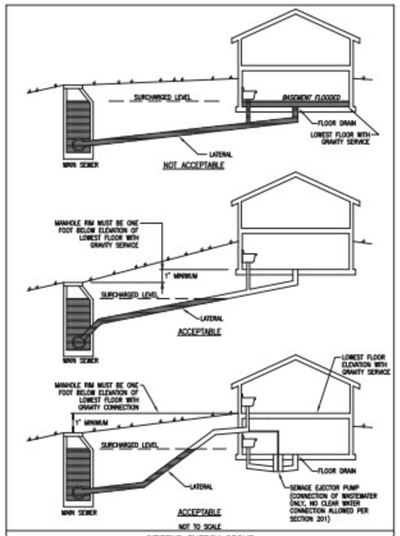


NOT TO SCALE

CITIZENS ENERGY GROUP

TERMS USED IN TRENCH DETAILS

FIGURE 100.01

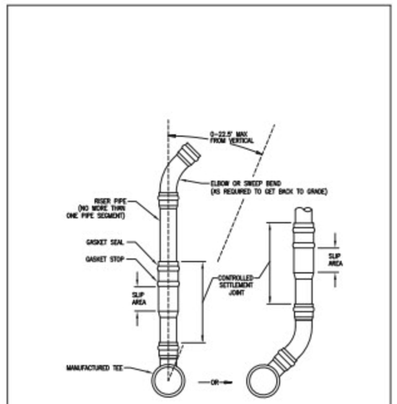


NOT TO SCALE

CITIZENS ENERGY GROUP

MINIMUM ELEVATIONS FOR GRAVITY CONNECTION

FIGURE 200.01

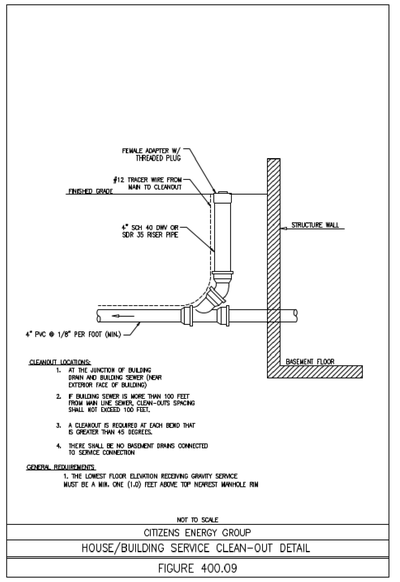


NOT TO SCALE

CITIZENS ENERGY GROUP

CONTROLLED SETTLEMENT JOINT INSTALLATION

FIGURE 400.07

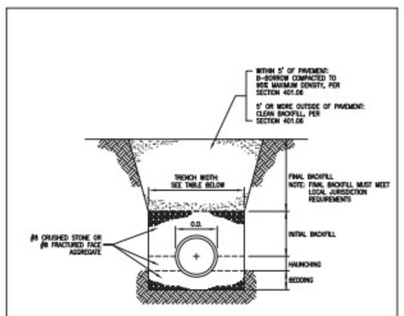


NOT TO SCALE

CITIZENS ENERGY GROUP

HOUSE/BUILDING SERVICE CLEAN-OUT DETAIL

FIGURE 400.09



MINIMUM BEDDING, HAUNCHING, AND INITIAL BACKFILL DEPTHS		
PIPE SIZE	BEDDING (BELOW PIPE BARREL)	HAUNCHING AND INITIAL BACKFILL (ABOVE TOP OF PIPE)
UNDER 8"	4" MIN.	4" MIN.
8" TO 15"	4" MIN.	12" MIN.
18" & OVER	6" MIN.	12" MIN.

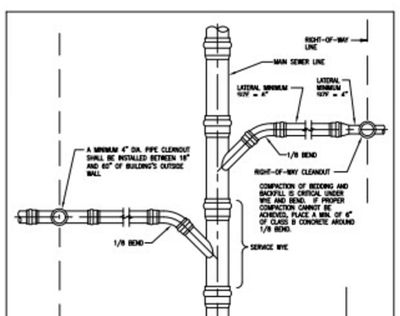
MINIMUM TRENCH WIDTHS	
PIPE SIZE	MINIMUM WIDTH
UP TO 18"	O.D. + 16"
18" & OVER	(O.D. x 1.25) + 12"

NOT TO SCALE

CITIZENS ENERGY GROUP

FLEXIBLE PIPE BEDDING & BACKFILL REQUIREMENTS

FIGURE 400.01

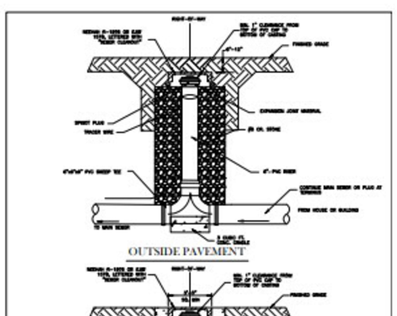


NOT TO SCALE

CITIZENS ENERGY GROUP

SERVICE CONNECTION FOR SHALLOW SEWERS (Less than 15' deep)

FIGURE 400.05



NOT TO SCALE

CITIZENS ENERGY GROUP

RIGHT-OF-WAY CLEAN-OUT DETAIL

FIGURE 400.10

CITIZENS WATER

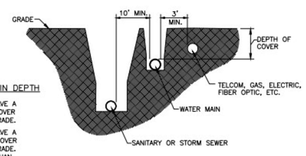
STANDARD PRACTICE

A

REVISION DATE: 09/29/2021 ISSUE DATE: 6/8/2009

WATER MAIN SEPARATION FROM OTHER UTILITIES

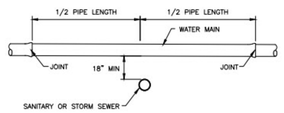
NOTE: WATER MAIN AND SANITARY SEWERS SHALL BE PLACED IN SEPARATE TRENCHES.



TYPICAL WATER MAIN DEPTH

1. ALL PIPE SHALL HAVE A MINIMUM OF 54" COVER BELOW FINISHED GRADE.
2. ALL PIPE SHALL HAVE A MAXIMUM OF 82" COVER BELOW FINISHED GRADE. DEPTHS GREATER THAN 82" COVER WILL REQUIRE A LOWERING

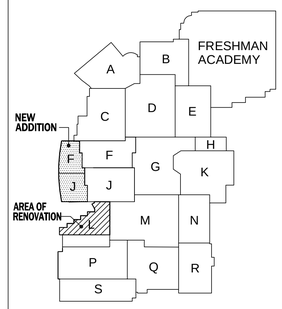
WATER MAIN LAYING PARALLEL TO OTHER UTILITIES SECTION VIEW



WATER MAIN CROSSING SEWER SECTION VIEW

#	Revision	Date
1	ADDENDUM #1	02.09.2024

JPS CONSULTING ENGINEERS, LLC
9365 Counselors Row, Suite 116
Indianapolis, IN 46240
ph 317.617.4270
www.jpsconsultingengineers.com



KEY PLAN

NORTH

VPS ARCHITECTURE
905 N. Capital Ave. – Suite 100 Indianapolis, Indiana 46204
P (317) 353-3281
www.VPSARCH.com

ADDITION & RENOVATIONS TO:

FRANKLIN CENTRAL HIGH SCHOOL PHASE 2A

FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION
INDIANAPOLIS, INDIANA

Drawing Title: CITIZENS ENERGY DETAILS

NICHOLAS BRIAN VIRGINIA REGISTERED No. PE11500269 STATE OF INDIANA PROFESSIONAL ENGINEER

Project No: 2022063.00

Project Date: JANUARY 29, 2024

Drawing No: C165

#	Revision	Date
A1	ADDENDUM #1	02.09.2024

AHU SCHEDULE

IDENTITY DATA					DIMENSIONS				SUPPLY FAN DATA			MOTOR			SUPPLY FAN ELECTRICAL DATA			
MARK	MANUFACTURER	MODEL	LOCATION	AREA SERVED	L	W	H	WEIGHT (LBS)	AIRFLOW (CFM)	ESP/TSP (IN-WG)	RPM	QTY	HP EA.	BHP EA.	VOLT/PH/HZ	FLA (A)	MCA (A)	MOCP (A)
AHU-J1	TRANE	CSAA035	CHOIR MEZZANINE	CHOIR ADDITION	241.6"	100"	70.8"	7,016	18,115	2.5/4.7	1,765	2	10.0	8.2	460/3/60	14.3	-	20

AHU SCHEDULE (CONTINUED)

	PREHEAT COIL DATA												COOLING COIL DATA													
MARK	AIRFLOW (CFM)	CAPACITY (BTUH)	FLOW (GPM)	EAT (°F) DB	LAT (°F) DB	EWT/LWT °F	WPD (FT-WG)	FACE VEL. (FPM)	APD (IN-WG)	ROWS	FPI	FLUID TYPE	TOTAL CAP. (BTUH)	SENSIBLE CAP. (BTUH)	FLOW (GPM)	EAT (°F) DB/WB	LAT (°F) DB/WB	EWT/LWT (°F)	WPD (FT-WG)	FACE VEL. (FPM)	APD (IN-WG)	ROWS	FPI	FLUID TYPE	MIN OA (CFM)	NOTES
AHU-J1	9,058	492,370	53	2.5	56	140/120	1.53	417	0.09	2	6.7	WATER	904,360	609,920	163	84/69	53/53	42/54	12	540	0.84	8	8.7	30% PG	7,335	1-7

AIR HANDLING UNIT SCHEDULE NOTES

1. PROVIDE WITH 6" BASE RAIL.
2. SINGLE POINT POWER CONNECTION WITH FACTORY MOUNTED DISCONNECT.
3. 5kA SCCR RATING.
4. TCC TO PROVIDE VFD FOR EACH FAN. EC TO INSTALL.
5. PROVIDE MAXIMUM MODULE SIZE OF 60"x72"x100".
6. IFBP PREHEAT COIL.
7. PROVIDE WITH FACTORY INSTALLED SUPPLY FAN PIEZOMETER MOUNTED TO INLET CONE OF FAN.

DUCT SILENCER SCHEDULE - 23 33 00

IDENTITY DATA						DIMENSIONS			AIRFLOW DATA			MIN INSERTION LOSSES (BY OCTAVE BAND)								
MARK	MANUFACTURER	MODEL	EQUIPMENT SERVED	DUCT SYSTEM	WEIGHT (LBS)	L	W	H	CFM	APD (IN-WG)	FACE VEL. (FPM)	1	2	3	4	5	6	7	8	NOTES
SA-SIL	PRICE INDUSTRIES	ERM40/7A	RTU-J1	SUPPLY	230	32.5	25"	65"	18,115	0.12	1,605	5.0	8.0	11.0	13.0	14.0	14.0	14.0	13.0	1-4,6
RA-SIL	PRICE INDUSTRIES	ERM60/6B	RTU-J1	RETURN	303	45	45	52.5"	18,115	0.14	1,288	6.0	9.0	11.0	16.0	18.0	18.0	15.0	13.0	3-6

DUCT SILENCER SCHEDULE NOTES:

1. (2) MODULES AT 25"x32.5".
2. 22 GA. GALVANIZED CASING, 22 GA. GALVANIZED PERFORATED LINER.
3. GLASS FIBER ACOUSTIC MEDIA.
4. INLET/OUTLET CONNECTION: 2" SLIP
5. 18GA. GALVANIZED CASING, 22 GA. GALVANIZED PERFORATED LINER.
6. ELBOW CONFIGURATION. HEIGHT DESIGNATES INLET AND OUTLET LEG IN INCHES.

FAN SCHEDULE - 23 34 10

IDENTITY DATA					FAN DATA							SOUND CRITERIA		ELECTRICAL DATA	
MARK	MANUFACTURER	MODEL	SERVICES	WEIGHT (LBS)	FAN TYPE	WHEEL TYPE	DRIVE TYPE	AIRFLOW (CFM)	ESP (IN-WG)	RPM	HP/BHP	SONES	DBA	VOLT/PH/HZ	NOTES
RF-J1	GREENHECK	SQ-33	CHOIR ADDITION	735	IN-LINE	MIXED	DIRECT	16300	1.84	860	7.40	24	75	460/60/3	1-4

FAN SCHEDULE NOTES:

1. DISCONNECT BY EC.
2. SEE M-700 SERIES SHEETS FOR TEMPERATURE CONTROL INFORMATION.
3. VFD PROVIDED BY TCC.
4. PROVIDE WITH INLET AIRFLOW PROBE.

SPLIT SYSTEM SCHEDULE - 23 81 26

INDOOR UNIT: IDENTITY DATA				DIMENSIONS			COOLING CAPACITY			AIRFLOW DATA				OUTDOOR UNIT: IDENTITY DATA				COOLING DATA		HEATING DATA					ELECTRICAL DATA						
MARK	MANUFACTURER	MODEL	WEIGHT (LBS)	L	W	H	TOTAL (BTUH)	SENSIBLE (BTUH)	CAPACITY (BTUH)	MIN (CFM)	MAX (CFM)	DESIGN (CFM)	EXT. STATIC (IN-WG)	MARK	MODEL	SERVES	WEIGHT (LBS)	NOMINAL (BTUH)	AMBIENT (°F)	CAPACITY (BTUH)	AMBIENT (°F)	EER	SEER	REF. TYPE	VOLTS (V)	PH	FREQ (HZ)	MCA (A)	MOCP (A)	NOTES
SS-1	MITSUBISHI	TPKA0A0121LA00A	28	9"	35"	1'-0"	12,000	4,400	12,000	265	455	350	0.00	CU-1	TRUYA0121KA70NA	SS-1	92	12,000.0	95	-	-	13.3	21.0	R-410A	208	1	60	11.0	28.0	1-4
SS-2	MITSUBISHI	TPKA0A0121LA00A	28	9"	35"	1'-0"	12,000	4,400	12,000	265	455	350	0.00	CU-2	TRUYA0121KA70NA	SS-2	92	12,000.0	95	-	-	13.3	21.0	R-410A	208	1	60	11.0	28.0	1-4

SPLIT SYSTEMS UNIT SCHEDULE NOTES:

1. DISCONNECT BY DIVISION 26.
2. COOLING ONLY, SUPPLY WITH WIND BAFFLES FOR LOW AMBIENT COOLING.
3. SUPPLY WITH BACNET INTERFACE CARD.
4. SUPPLY WITH CONDENSATE PUMP.

EXHAUST FAN SCHEDULE - 23 34 23

IDENTITY DATA					FAN DATA						SOUND CRITERIA			ELECTRICAL DATA	
MARK	MANUFACTURER	MODEL	SERVICES	WEIGHT (LBS)	FAN TYPE	DRIVE TYPE	AIRFLOW (CFM)	ESP (IN-WG)	RPM	HP	SONES	DBA	UNIT CONTROL	VOLT/PH/HZ	NOTES
EF-L1	GREENHECK	G-070-G	RR	47	DOWNBLAST CENTIFUGAL	DIRECT	150	0.25	1272	0.02	2.6	40	BAS	120/1/60	1-5
EF-L2	GREENHECK	G-070-D	RR	47	DOWNBLAST CENTIFUGAL	DIRECT	225	0.30	1522.00	0.02	4.2	46	BAS	120/1/60	1-5

EXHAUST FAN SCHEDULE NOTES:

1. DISCONNECT BY MANUFACTURER.
2. SEE M-700 SERIES SHEETS FOR TEMPERATURE CONTROL INFORMATION.
3. FAN SPEED CONTROLLER FOR BALANCING.
4. PROVIDE WITH 16" CURB.
5. PROVIDE GRAVITY BACKDRAFT DAMPER.

VAV BOX WITH HOT WATER REHEAT SCHEDULE - 23 36 00

A1

IDENTITY DATA				AIRFLOW DATA				NOISE DATA (NC)		REHEAT COIL DATA								
MARK	MANUFACTURER	MODEL	INLET DIAMETER	COOLING MAX (CFM)	HEATING MAX (CFM)	OCC. MIN. (CFM)	SPI (IN-WG)	MAX DISCH.	MAX RAD.	CAPACITY (BTUH)	EAT/LAT (°F)	APD (IN-WG)	FLOW (GPM)	EWT/LWT (°F)	WPD (FT-WG)	ROWS	VALVE TYPE	NOTES
VAV-F102	PRICE	SDV	14"	2,650	1,325	1,020	1.0	30	30	52,800	55/91.8	0.7	5.4	140/120	3.5	2	2-WAY	1-4
VAV-F103	PRICE	SDV	8"	550	275	165	1.0	30	30	12,600	55/96.9	0.3	1.3	140/120	0.4	2	2-WAY	1-4
VAV-F106	PRICE	SDV	8"	710	355	340	1.0	30	30	14,900	55/93.5	0.5	1.5	140/120	0.5	2	2-WAY	1-4
VAV-F108	PRICE	SDV	16"	2,850	1,525	1,525	1.0	30	30	62,500	55/92.8	0.6	6.3	140/120	5.1	2	2-WAY	1-4
VAV-F109	PRICE	SDV	12"	1,775	890	535	1.0	30	30	40,900	55/97.5	0.4	4.2	140/120	2.0	2	2-WAY	1-4
VAV-J101A	PRICE	SDV	24"x16"	3,175	2,115	2115	1.0	30	30	97,300	55/97.5	0.4	9.9	140/120	13.6	2	2-WAY	1-4
VAV-J101B	PRICE	SDV	16"	2,400	1,600	1600	1.0	30	30	73,100	55/97.2	0.6	7.4	140/120	6.7	2	2-WAY	1-4
VAV-J101C	PRICE	SDV	12"	1,225	950	950	1.0	30	30	41,200	55/95	0.5	4.2	140/120	5.1	2	2-WAY	1-4
VAV-J105	PRICE	SDV	8"	595	300	160	1.0	30	30	13,300	55/95.8	0.3	1.4	140/120	0.4	2	2-WAY	1-4
VAV-J106	PRICE	SDV	8"	500	300	150	1.0	30	30	13,300	55/95.7	0.3	1.4	140/120	0.4	2	2-WAY	1-4
VAV-J112	PRICE	SDV	6"	400	200	150	1.0	30	30	9,100	55/96.6	0.2	0.9	140/120	0.2	2	2-WAY	1-4
VAV-J202	PRICE	SDV	8"	500	300	150	1.0	30	30	13,300	55/95.7	0.3	1.4	140/120	0.4	2	2-WAY	1-4
VAV-J208	PRICE	SDV	8"	585	330	330	1.0	30	30	14,200	55/94.6	0.3	1.4	140/120	0.5	2	2-WAY	1-4
VAV-L102	PRICE	SDV	12"	1,160	580	350	1.0	30	30	26,500	55/97.1	0.3	2.7	140/120	2.1	2	2-WAY	1-4
VAV-L104	PRICE	SDV	10"	850	425	255	1.0	30	30	18,800	55/97.1	0.3	1.9	140/120	0.9	2	2-WAY	1-4
VAV-L106	PRICE	SDV	8"	625	315	180	1.0	30	30	13,700	55/95.2	0.4	1.4	140/120	0.4	2	2-WAY	1-4
VAV-L112	PRICE	SDV	8"	550	275	165	1.0	30	30	12,600	55/96.9	0.3	1.3	140/120	0.4	2	2-WAY	1-4
VAV-L116	PRICE	SDV	12"	1,105	555	335	1.0	30	30	25,700	55/97.8	0.3	2.6	140/120	2.0	2	2-WAY	1-4
VAV-L126	PRICE	SDV	12"	1,560	780	470	1.0	30	30	32,100	55/92.9	0.6	3.3	140/120	2.9	2	2-WAY	1-4
VAV-L129	PRICE	SDV	8"	630	415	415	1.0	30	30	16,400	55/91.3	0.4	1.7	140/120	0.6	2	2-WAY	1-4
VAV-L135	PRICE	SDV	8"	630	415	415	1.0	30	30	16,400	55/91.3	0.4	1.7	140/120	0.6	2	2-WAY	1-4
VAV-L137	PRICE	SDV	12"	1,445	725	435	1.0	30	30	30,700	55/93.9	0.5	3.1	140/120	3.0	2	2-WAY	1-4
VAV-L141	PRICE	SDV	10"	1,215	610	455	1.0	30	30	24,200	55/91.6	0.6	2.5	140/120	1.6	2	2-WAY	1-4
VAV-L142	PRICE	SDV	8"	780	390	370	1.0	30	30	15,800	55/92.2	0.5	1.6	140/120	0.5	2	2-WAY	1-4
VAV-L152	PRICE	SDV	10"	1,040	520	315	1.0	30	30	22,000	55/93.8	0.5	2.2	140/120	1.2	2	2-WAY	1-4
VAV-L157	PRICE	SDV	8"	675	340	205	1.0	30	30	14,400	55/94.1	0.4	1.5	140/120	0.4	2	2-WAY	1-4
VAV-L161	PRICE	SDV	10"	925	465	395	1.0	30	30	20,300	55/95.5	0.4	2.1	140/120	1.2	2	2-WAY	1-4
VAV-L177	PRICE	SDV	12"	1,360	680	410	1.0	30	30	29,500	55/94.9	0.4	3.0	140/120	2.5	2	2-WAY	1-4

VAV BOX WITH HOT WATER REHEAT SCHEDULE NOTES:

1. COORDINATE LOCATION OF BOX A BOVE CEILING WITH LIGHT FIXTURES, FIRE PROTECTION, HEATING AND COOLING SYSTEM PIPING, PLUMBING SYSTEMS, AND WIRE TRAYS.
2. SEE M-700 SERIES DRAWINGS FOR TEMPERATURE CONTROLS INFORMATION.
3. INSULATED BOTTOM ACCESS DOOR UPSTREAM OF COIL WITH SNAP LATCH FASTENERS.
4. MINIMUM 3/4" ELASTOMERIC LINER.

HYDRONIC PROP UNIT HEATER SCHEDULE - 23 82 39.16

IDENTITY DATA				HEATING DATA					FAN DATA					ELECTRICAL DATA			
MARK	MANUFACTURER	MODEL	WEIGHT (LBS)	CAPACITY (BTUH)	EWT/LWT (°F)	WPD (FT-WG)	FLOW (GPM)	EAT/LAT (°F)	AIRFLOW (CFM)	FAN TYPE	DRIVE	HP	RPM	VOLT/PH/HZ	MCA (A)	MOCP (A)	NOTES
PUH-J1	TRANE	S-018	25	8,936	140	0.5	1.0	60/80	420	PROP	DIRECT	16 W	900	120	1.0	15.0	1-2

HYDRONIC PROP UNIT HEATER SCHEDULE NOTES:

1. PROVIDE WITH SPEED CONTROLLER
2. MC TO PROVIDE ALL REQUIRED HANGERS AND SUPPORTS.

GRAVITY VENTILATOR SCHEDULE - 23 37 23

IDENTITY DATA					THROAT DATA: DIMENSIONS				HOOD DATA	
MARK	MANUFACTURER	MODEL	SYSTEM SERVED	WEIGHT (LBS)	L	W	Ø	AIRFLOW (CFM)	TSP (IN-WG)	NOTES
RH-1	GREENHECK	FGR	AHU-J1	176	45"	35"	-	16,300	0.3	1-3, 5
IH-1	GREENHECK	FGI	AHU-J1	248	45"	45"	-	16,300	0.3	1-4

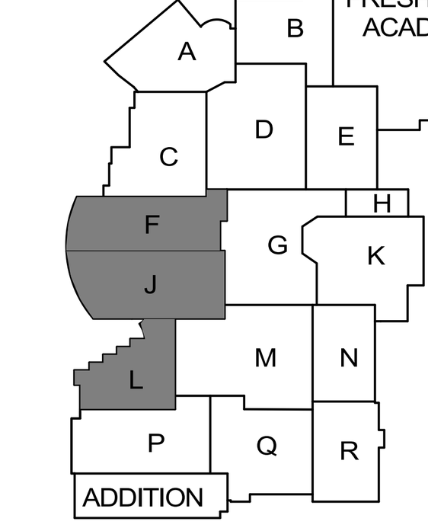
GRAVITY VENTILATOR SCHEDULE NOTES:

1. SEE DETAIL 12 ON M501.
2. MOTORIZED DAMPER FURNISHED BY TCC INSTALLED BY SHEETMETAL CONTRACTOR.
3. GALVANIZED STEEL CONSTRUCTION.
4. PROVIDE 36" ROOF CURB.
5. PROVIDE 18" ROOF CURB.

233713 DIFFUSERS, REGISTERS, AND GRILLES

IDENTITY DATA				NECK SIZE (IN)	MODULE SIZE			
MARK	DESCRIPTION	MANUFACTURER	MODEL	Ø	W	L	MATERIAL	NOTES
EC24/12	EGG CRATE FACE RETURN	PRICE	80		24"	12"		
EC24/24	EGG CRATE FACE RETURN	PRICE	80		24"	24"		
LS48-6-2S	LINEAR SLOT DIFFUSER	PRICE	SDS-2 Slot	6"		48"		3/4" SLOT, PROVIDE WITH SDB PLENUM
LS48-8-3S	LINEAR SLOT DIFFUSER	PRICE	SDS-2 Slot	8"		48"		3/4" SLOT, PROVIDE WITH SDA PLENUM
LS48-10-3S	LINEAR SLOT DIFFUSER	PRICE	SDS-3 Slot	10"		48"		1" SLOT, PROVIDE WITH SDB PLENUM
SD24-6	SQUARE CONE DIFFUSER	PRICE	ASCDA	6"	24"	24"		
SD24-8	SQUARE CONE DIFFUSER	PRICE	ASCDA	8"	24"	24"		
SD24-10	SQUARE CONE DIFFUSER	PRICE	ASCDA	10"	24"	24"		
SD24-12	SQUARE CONE DIFFUSER	PRICE	ASCDA	12"	24"	24"		

creative engineering solutions
mechanical • electrical • plumbing
201 S Rural St., Suite 210
Indianapolis, IN 46201• 463-777-8182
www.creativeng.net



KEY PLAN

NORTH

VPS ARCHITECTURE
905 N. Capital Ave. - Suite 100 Indianapolis, Indiana 46204
P (317) 353-3281
www.VPSARCH.com

ADDITION & RENOVATIONS TO:

FRANKLIN CENTRAL HIGH SCHOOL PHASE 2A

FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION
INDIANAPOLIS, INDIANA

Drawing Title:

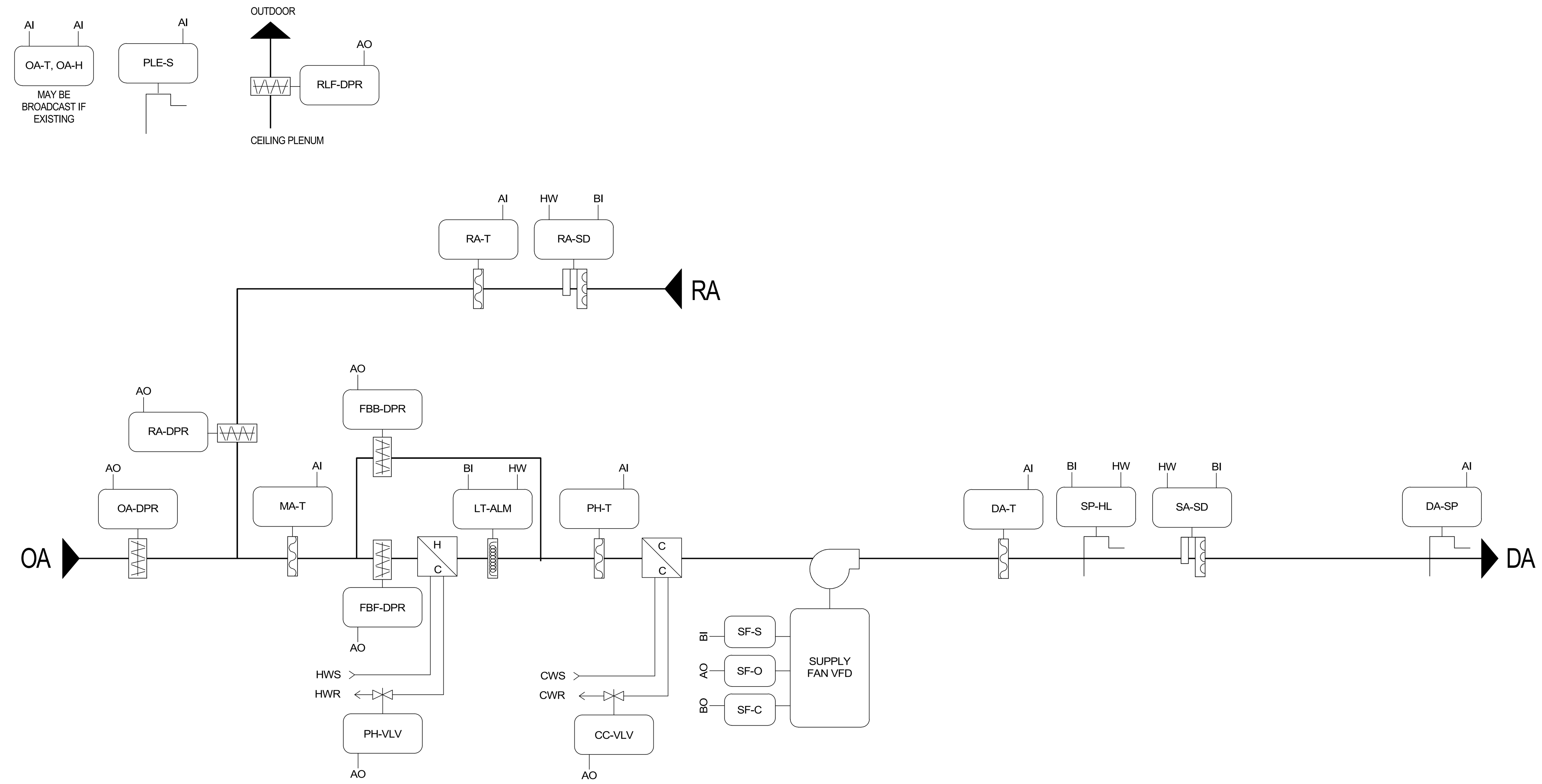
MECHANICAL SCHEDULES

GABRIEL S. CURRIER REGISTERED NO. PE10808972 STATE OF INDIANA PROFESSIONAL ENGINEER

Project No: 2022043.00

Project Date: February 14, 2024

Drawing No: M601



AHU-32 SEQUENCE OF OPERATION

TCC SHALL PROVIDE THE ACTUATORS FOR THE DAMPERS AND VFDs. THE DAMPERS SHALL BE PROVIDED BY THE AIR HANDLER MANUFACTURER.

SUPPLY FAN START/STOP: THE SUPPLY FAN (SF-C) WILL BE STARTED ACCORDING TO THE SCHEDULE OR MANUALLY AS SELECTED BY THE OPERATOR. MINIMUM RUN TIME SHALL BE 30 MINUTES (ADJ). IF THE SUPPLY FAN STATUS (SF-S) DOES NOT MATCH THE COMMANDED VALUE, AN ALARM SHALL BE GENERATED. WHEN THE SUPPLY FAN STATUS INDICATES THE FAN IS ENERGIZED, THE CONTROL SEQUENCE WILL BE ENABLED.

RETURN FAN START/STOP: WHEN SUPPLY FAN STATUS IS PROVEN, A COMMAND TO THE RETURN FAN (RF-C) WILL BE SENT. IF THE RETURN FAN STATUS (RF-S) DOES NOT MATCH THE COMMAND VALUE, AN ALARM WILL BE GENERATED.

SUPPLY FAN SPEED CONTROL: THE SUPPLY FAN SPEED (SF-O) WILL VARY TO MAINTAIN THE DUCT STATIC PRESSURE (SA-SP) SETPOINT OF 1.5" WG MAXIMUM (ADJ) AND 0.5" WG MINIMUM (ADJ). SETPOINT DETERMINED BY TAB CONTRACTOR AT THE TIME OF BALANCING. SENSOR SHALL BE LOCATED 2/3 OF THE WAY DOWN THE MAIN DUCT RUN.

THE SYSTEM WILL SAMPLE THE VAV BOX DAMPER POSITIONS EVERY TWO MINUTES AND THE FAN SPEED WILL BE RESET AS FOLLOWS:
THE SUPPLY FAN STATIC WILL BE INCREASED IN INCREMENTS OF .1" IF THE SECOND HIGHEST BOX DAMPER POSITION IS GREATER THAN 80% OPEN.
THE SUPPLY FAN STATIC WILL REMAIN AS IS IF THE SECOND HIGHEST DAMPER POSITION IS BETWEEN 60% AND 80% OPEN.
THE SUPPLY FAN STATIC WILL BE DECREASED IN INCREMENTS OF .1" IF THE SECOND HIGHEST DAMPER POSITION IS LESS THAT 60% OPEN.

RETURN FAN SPEED CONTROL: THE RETURN FAN SPEED (RF-O) WILL VARY TO MAINTIEN THE DUCT STATIC PRESSURE SETPOINT OF 0.5" WG (ADJ), AS SENSED BY RETURN DUCT STATIC PRESSURE SENSOR (RA-SP). SETPOINT DETERMINED BY TAB CONTRACTOR AT TIME OF SYSTEM BALANCING. DETERMINE SETPOINT AT FULL ECONOMIZER MODE WITH RELIEF AIR DAMPER (RLF-DPR) FULLY OPEN. ADJUST SETPOINT UNTIL BUILDING SPACE PRESSURE REACHES SETPOINT.

DISCHARGE TEMPERATURE CONTROL: THE MIXED AIR DAMPERS (OA-DPR,RA-DPR), PREHEAT VALVE (PH-VLV) AND COOLING VALVE (CLG-VLV) SHALL MODULATE TO MAINTAIN THE FOLLOWING DISCHARGE AIR TEMPERATURE SCHEDULE:

OUTSIDE AIR TEMPERATURE	DISCHARGE TEMPERATURE
0F	62F
70F	55F

PREHEAT CONTROL: WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 40F, THE PREHEAT COIL TEMPERATURE CONTROL VALVE (PH-VLV) OPENS FULLY AND PREHEAT COIL FACE AND BYPASS DAMPERS (FBB-DPR, FBF-DPR) MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE (DA-T) SETPOINT. WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 40F, THE PREHEAT COIL BYPASS DAMPER (FBB-DPR) CLOSES TO 0%, THE PREHEAT COIL FACE DAMPER (FBF-DPR) OPENS TO 100%, AND PREHEAT COIL TEMPERATURE CONTROL VALVE (PH-VLV) MODULATES TO MAINTAIN DISCHARGE AIR TEMPERATURE (DA-T) SET POINT.

A1

SPACE PRESSURE CONTROL: ~~RELIEF AIR DAMPER (RLF-DPR) SHALL MODULATE TO MAINTAIN BUILDING STATIC PRESSURE SETPOINT OF + 0.05" WC (ADJ.) WITH RESPECT TO OUTDOOR AMBIENT CONDITIONS~~, AS SENSED BY DIFFERENTIAL PRESSURE TRANSMITTER (PLE-S). PROVIDE AN ENDSWITCH AT RELIEF AIR DAMPER (RLF-DPR) IF THE ENDSWITCH POSITION DOES NOT MATCH THE COMMAND VALUE OF THE DAMPER , AN ALARM WILL BE GENERATED.

ECONOMIZER SWITCHOVER: WHEN THE OUTSIDE AIR ENTHALPY (OA-T, OA-H) IS BELOW THE RETURN AIR ENTHALPY (RA-T, RA-H), THE ECONOMIZER MODE SHALL BE ENABLED.

MORNING WARM-UP: A MORNING WARMUP CYCLE SHALL BE IMPLEMENTED, UPON TRANSITION FROM UNOCCUPIED TO OCCUPIED MODE. FANS TURN ON, OUTSIDE AIR DAMPER REMAINS CLOSED, RETURN AIR DAMPER REMAINS OPEN AND THE PREHEAT COIL VALVE SHALL MODULATE TO MAINTAIN A DISCHARGE OF 90F (ADJ). UNIT REMAINS IN THIS MODE UNTIL THE RETURN AIR TEMPERATURE (RA-T) REACHES THE MORNING WARMUP CYCLE TERMINATION SETPOINT OF 70F (ADJ). UPON REACHING THIS SETPOINT, THE AIR HANDLING UNIT ENTERS ITS NORMAL OCCUPIED MODE OF OPERATION (DISCHARGE TEMPERATURE CONTROL).

SAFETY: ALL OF THE SAFETY DEVICES ARE MANUAL RESET; THE DEVICE THAT HAS TRIPPED MUST BE MANUALLY RESET BEFORE RESTARTING THE AIR HANDLING UNIT. THE SUPPLY FAN WILL BE SHUTDOWN IF ANY OF THE FOLLOWING OCCUR:
-IF A TEMPERATURE LOW LIMIT (LT-ALM) SWITCH SENSES A TEMPERATURE BELOW 38F (ADJ). LOW LIMIT TO BE LOCATED ON THE DISCHARGE SIDE OF THE PREHEAT COIL.
-IF A FIRE ALARM (DA-SD, RA-SD) SHUTDOWN CONTACT IS PROVIDED,
-IF A HIGH STATIC PRESSURE SWITCH (SP-HL) LOCATED AFTER THE SUPPLY FAN SENSES A DISCHARGE PRESSURE THAT IS GREATER THAN 5" W.C. (ADJ)

SHUTDOWN: WHEN THE UNIT IS SHUTDOWN BY EITHER A STOP COMMAND OR SYSTEM SAFETY THE UNIT WILL BE SET AS FOLLOWS:
SUPPLY FAN WILL BE OFF
OUTSIDE AIR DAMPER WILL CLOSE
RETURN AIR DAMPER WILL OPEN
CHILLED WATER VALVE SHALL CLOSE
PREHEAT VALVE SHALL OPEN

POINTS LIST: THE FOLLOWING REPRESENTS THE MINIMUM POINTS TO BE PROVIDED AND DISPLAYED IN THE SYSTEM GRAPHICS. ADDITIONAL POINTS REQUIRED TO MEET THE SEQUENCE SHALL BE PROVIDED AND ALSO SHOWN.

BINARY INPUTS
- SUPPLY FAN STATUS (SF-S)
- DISCHARGE PRESSURE HIGH STATIC LIMIT (SP-HL)
- LOW LIMIT (LT-ALM)
- SMOKE DETECTORS (RA-SD) (SA-SD)

BINARY OUTPUTS
- SUPPLY FAN START/STOP (SF-C)
- RETURN FAN START/STOP (RF-C)

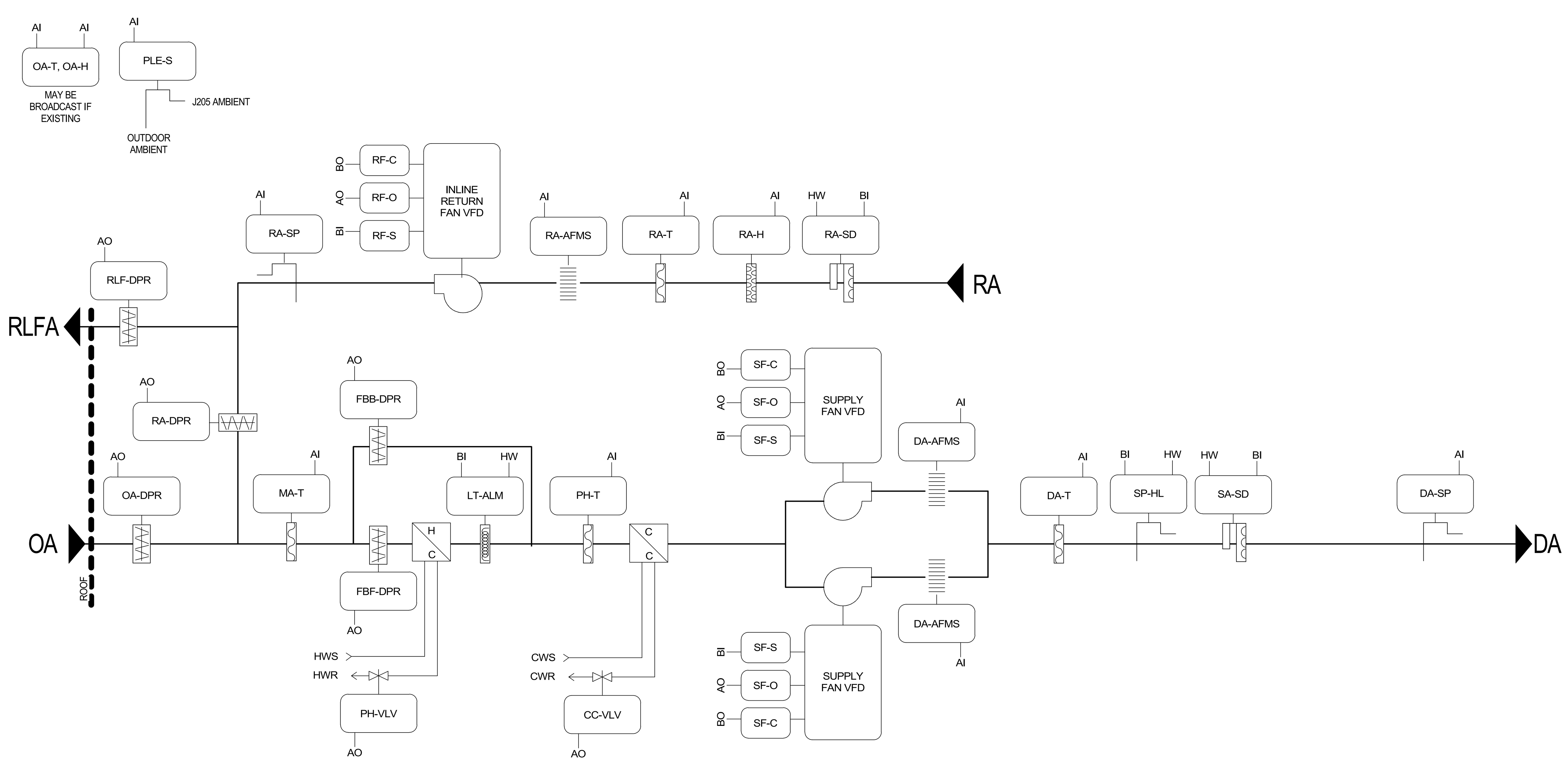
ANALOG INPUTS
- MIXED AIR TEMPERATURE (MA-T)
- PREHEAT DISCHARGE TEMPERATURE (PH-T)
- RETURN AIR TEMPERATURE (RA-T)
- DISCHARGE TEMPERATURE (DA-T)
- SUPPLY DUCT STATIC PRESSURE (SA-SP)
- PLENUM STATIC PRESSURE (PLE-S)
- OUTSIDE AIR TEMPERATURE (OA-T, MAY BE BROADCAST)
- OUTSIDE AIR HUMIDITY (OA-H, MAY BE BROADCAST)
- RETURN AIR TEMPERATURE (RA-T)
- RETURN AIR HUMIDITY (RA-H)

ANALOG OUTPUTS
- SUPPLY FAN SPEED (SF-O)
- RETURN FAN SPEED (RF-O)
- PREHEAT VALVE (PH-VLV)
- COOLING VALVE (CLG-VLV)
- OUTDOOR AIR DAMPER (OA-DPR)
- RETURN AIR DAMPER (RA-DPR)
- FACE & BYPASS, FACE DAMPER (FBF-DPR)
- FACE & BYPASS, BYPASS DAMPER (FBB-DPR)
- RELIEF AIR DAMPER (RLF-DPR)

ANALOG/MULTI-STATE VALUES:
- DISCHARGE TEMPERATURE SETPOINT
  - SUPPLY DUCT STATIC PRESSURE SETPOINT
- OCCUPANCY MODE

CALCULATED (SHOWN ON GRAPHICS)
- OUTSIDE AND RETURN AIR ENTHAPY

2 AHU-32
1/8" = 1'-0"



AHU-J1 SEQUENCE OF OPERATION

TCC SHALL PROVIDE THE ACTUATORS FOR THE DAMPERS AND VFDs. THE DAMPERS SHALL BE PROVIDED BY THE AIR HANDLER MANUFACTURER.

SUPPLY FAN START/STOP: THE SUPPLY FAN (SF-C) WILL BE STARTED ACCORDING TO THE SCHEDULE OR MANUALLY AS SELECTED BY THE OPERATOR. MINIMUM RUN TIME SHALL BE 30 MINUTES (ADJ). IF THE SUPPLY FAN STATUS (SF-S) DOES NOT MATCH THE COMMANDED VALUE, AN ALARM SHALL BE GENERATED. WHEN THE SUPPLY FAN STATUS INDICATES THE FAN IS ENERGIZED, THE CONTROL SEQUENCE WILL BE ENABLED.

RETURN FAN START/STOP: WHEN SUPPLY FAN STATUS IS PROVEN, A COMMAND TO THE RETURN FAN (RF-C) WILL BE SENT. IF THE RETURN FAN STATUS (RF-S) DOES NOT MATCH THE COMMAND VALUE, AN ALARM WILL BE GENERATED.

SUPPLY FAN SPEED CONTROL: THE SUPPLY FAN SPEED (SF-O) WILL VARY TO MAINTAIN THE DUCT STATIC PRESSURE (SA-SP) SETPOINT OF 1.5" WG MAXIMUM (ADJ) AND 0.5" WG MINIMUM (ADJ). SETPOINT DETERMINED BY TAB CONTRACTOR AT THE TIME OF BALANCING. SENSOR SHALL BE LOCATED 2/3 OF THE WAY DOWN THE MAIN DUCT RUN.

THE SYSTEM WILL SAMPLE THE VAV BOX DAMPER POSITIONS EVERY TWO MINUTES AND THE FAN SPEED WILL BE RESET AS FOLLOWS:
THE SUPPLY FAN STATIC WILL BE INCREASED IN INCREMENTS OF .1" IF THE SECOND HIGHEST BOX DAMPER POSITION IS GREATER THAN 80% OPEN.
THE SUPPLY FAN STATIC WILL REMAIN AS IS IF THE SECOND HIGHEST DAMPER POSITION IS BETWEEN 60% AND 80% OPEN.
THE SUPPLY FAN STATIC WILL BE DECREASED IN INCREMENTS OF .1" IF THE SECOND HIGHEST DAMPER POSITION IS LESS THAT 60% OPEN.

RETURN FAN SPEED CONTROL: THE RETURN FAN SPEED (RF-O) WILL VARY TO MAINTIEN THE DUCT STATIC PRESSURE SETPOINT OF 0.5" WG (ADJ), AS SENSED BY RETURN DUCT STATIC PRESSURE SENSOR (RA-SP). SETPOINT DETERMINED BY TAB CONTRACTOR AT TIME OF SYSTEM BALANCING. DETERMINE SETPOINT AT FULL ECONOMIZER MODE WITH RELIEF AIR DAMPER (RLF-DPR) FULLY OPEN. ADJUST SETPOINT UNTIL BUILDING SPACE PRESSURE REACHES SETPOINT.

DISCHARGE TEMPERATURE CONTROL: THE MIXED AIR DAMPERS (OA-DPR,RA-DPR), PREHEAT VALVE (PH-VLV) AND COOLING VALVE (CLG-VLV) SHALL MODULATE TO MAINTAIN THE FOLLOWING DISCHARGE AIR TEMPERATURE SCHEDULE:

OUTSIDE AIR TEMPERATURE	DISCHARGE TEMPERATURE
0F	62F
70F	55F

PREHEAT CONTROL: WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 40F, THE PREHEAT COIL TEMPERATURE CONTROL VALVE (PH-VLV) OPENS FULLY AND PREHEAT COIL FACE AND BYPASS DAMPERS (FBB-DPR, FBF-DPR) MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE (DA-T) SETPOINT. WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 40F, THE PREHEAT COIL BYPASS DAMPER (FBB-DPR) CLOSES TO 0%, THE PREHEAT COIL FACE DAMPER (FBF-DPR) OPENS TO 100%, AND PREHEAT COIL TEMPERATURE CONTROL VALVE (PH-VLV) MODULATES TO MAINTAIN DISCHARGE AIR TEMPERATURE (DA-T) SET POINT.

RELIEF AIR DAMPER CONTROL: RELIEF AIR DAMPER (RLF-DPR) SHALL MODULATE TO MAINTAIN BUILDING STATIC PRESSURE SETPOINT OF + 0.05" WC (ADJ.) WITH RESPECT TO OUTDOOR AMBIENT CONDITIONS, AS SENSED BY DIFFERENTIAL PRESSURE TRANSMITTER (PLE-S).

ECONOMIZER SWITCHOVER: WHEN THE OUTSIDE AIR ENTHALPY (OA-T, OA-H) IS BELOW THE RETURN AIR ENTHALPY (RA-T, RA-H), THE ECONOMIZER MODE SHALL BE ENABLED.

MORNING WARM-UP: A MORNING WARMUP CYCLE SHALL BE IMPLEMENTED, UPON TRANSITION FROM UNOCCUPIED TO OCCUPIED MODE. FANS TURN ON, OUTSIDE AIR DAMPER REMAINS CLOSED, RETURN AIR DAMPER REMAINS OPEN AND THE PREHEAT COIL VALVE SHALL MODULATE TO MAINTAIN A DISCHARGE OF 90F (ADJ). UNIT REMAINS IN THIS MODE UNTIL THE RETURN AIR TEMPERATURE (RA-T) REACHES THE MORNING WARMUP CYCLE TERMINATION SETPOINT OF 70F (ADJ). UPON REACHING THIS SETPOINT, THE AIR HANDLING UNIT ENTERS ITS NORMAL OCCUPIED MODE OF OPERATION (DISCHARGE TEMPERATURE CONTROL).

SAFETY: ALL OF THE SAFETY DEVICES ARE MANUAL RESET; THE DEVICE THAT HAS TRIPPED MUST BE MANUALLY RESET BEFORE RESTARTING THE AIR HANDLING UNIT. THE SUPPLY FAN WILL BE SHUTDOWN IF ANY OF THE FOLLOWING OCCUR:
-IF A TEMPERATURE LOW LIMIT (LT-ALM) SWITCH SENSES A TEMPERATURE BELOW 38F (ADJ). LOW LIMIT TO BE LOCATED ON THE DISCHARGE SIDE OF THE PREHEAT COIL.
-IF A FIRE ALARM (DA-SD, RA-SD) SHUTDOWN CONTACT IS PROVIDED,
-IF A HIGH STATIC PRESSURE SWITCH (SP-HL) LOCATED AFTER THE SUPPLY FAN SENSES A DISCHARGE PRESSURE THAT IS GREATER THAN 5" W.C. (ADJ)

SHUTDOWN: WHEN THE UNIT IS SHUTDOWN BY EITHER A STOP COMMAND OR SYSTEM SAFETY THE UNIT WILL BE SET AS FOLLOWS:
SUPPLY FAN WILL BE OFF
OUTSIDE AIR DAMPER WILL CLOSE
RETURN AIR DAMPER WILL OPEN
CHILLED WATER VALVE SHALL CLOSE
PREHEAT VALVE SHALL OPEN

POINTS LIST: THE FOLLOWING REPRESENTS THE MINIMUM POINTS TO BE PROVIDED AND DISPLAYED IN THE SYSTEM GRAPHICS. ADDITIONAL POINTS REQUIRED TO MEET THE SEQUENCE SHALL BE PROVIDED AND ALSO SHOWN.

BINARY INPUTS
- SUPPLY FAN STATUS (SF-S)
- DISCHARGE PRESSURE HIGH STATIC LIMIT (SP-HL)
- LOW LIMIT (LT-ALM)
- SMOKE DETECTORS (RA-SD) (SA-SD)

BINARY OUTPUTS
- SUPPLY FAN START/STOP (SF-C)
- RETURN FAN START/STOP (RF-C)

ANALOG INPUTS
- MIXED AIR TEMPERATURE (MA-T)
- PREHEAT DISCHARGE TEMPERATURE (PH-T)
- RETURN AIR TEMPERATURE (RA-T)
- DISCHARGE TEMPERATURE (DA-T)
- SUPPLY DUCT STATIC PRESSURE (SA-SP)
- RETURN DUCT STATIC PRESSURE (RA-SP)
- OUTSIDE AIR TEMPERATURE (OA-T, MAY BE BROADCAST)
- OUTSIDE AIR HUMIDITY (OA-H, MAY BE BROADCAST)
- RETURN AIR TEMPERATURE (RA-T)
- RETURN AIR HUMIDITY (RA-H)
- PLENUM STATIC PRESSURE (PLE-SP)
- RETURN AIR FLOW MONITORING STATION (RA-AFMS)
- SUPPLY AIR FLOW MONITORING STATION (SA-AFMS)

ANALOG OUTPUTS
- SUPPLY FAN SPEED (SF-O)
- RETURN FAN SPEED (RF-O)
- PREHEAT VALVE (PH-VLV)
- COOLING VALVE (CLG-VLV)
- OUTDOOR AIR DAMPER (OA-DPR)
- RETURN AIR DAMPER (RA-DPR)
- RELIEF AIR DAMPER (RLF-DPR)
- FACE & BYPASS, BYPASS DAMPER (FBB-DPR)
- FACE & BYPASS, FACE DAMPER (FBF-DPR)

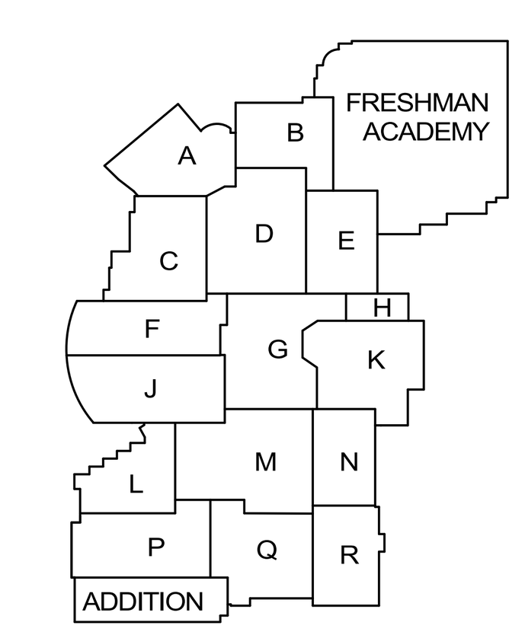
ANALOG/MULTI-STATE VALUES:
- DISCHARGE TEMPERATURE SETPOINT
- SUPPLY DUCT STATIC PRESSURE SETPOINT
- RETURN DUCT STATIC PRESSURE SETPOINT
- OCCUPANCY MODE

CALCULATED (SHOWN ON GRAPHICS)
- OUTSIDE AND RETURN AIR ENTHAPY

1 AHU-J1
1/8" = 1'-0"

#	Revision	Date
A1	ADDENDUM #1	02.09.2024

creative engineering solutions
mechanical • electrical • plumbing
201 S Rural St., Suite 210
Indianapolis, IN 46201• 463-777-8182
www.creativeng.net



KEY PLAN

NORTH

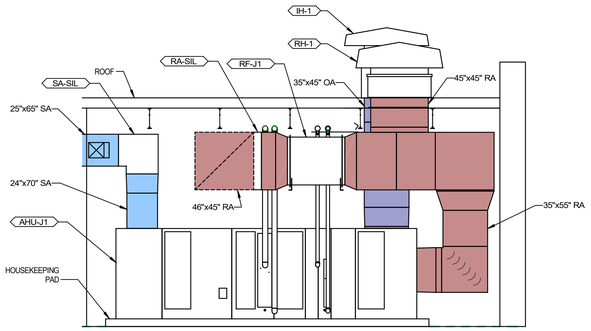
VPS ARCHITECTURE
905 N. Capital Ave. - Suite 100 Indianapolis, Indiana 46204
P (317) 353-3281
www.VPSARCH.com

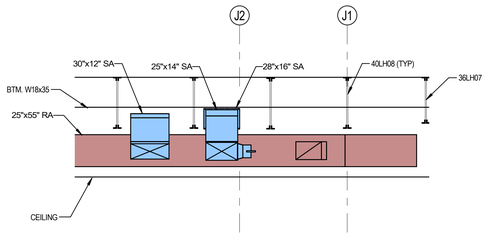
ADDITION & RENOVATIONS TO:
FRANKLIN CENTRAL HIGH SCHOOL PHASE 2A
FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION
INDIANAPOLIS, INDIANA

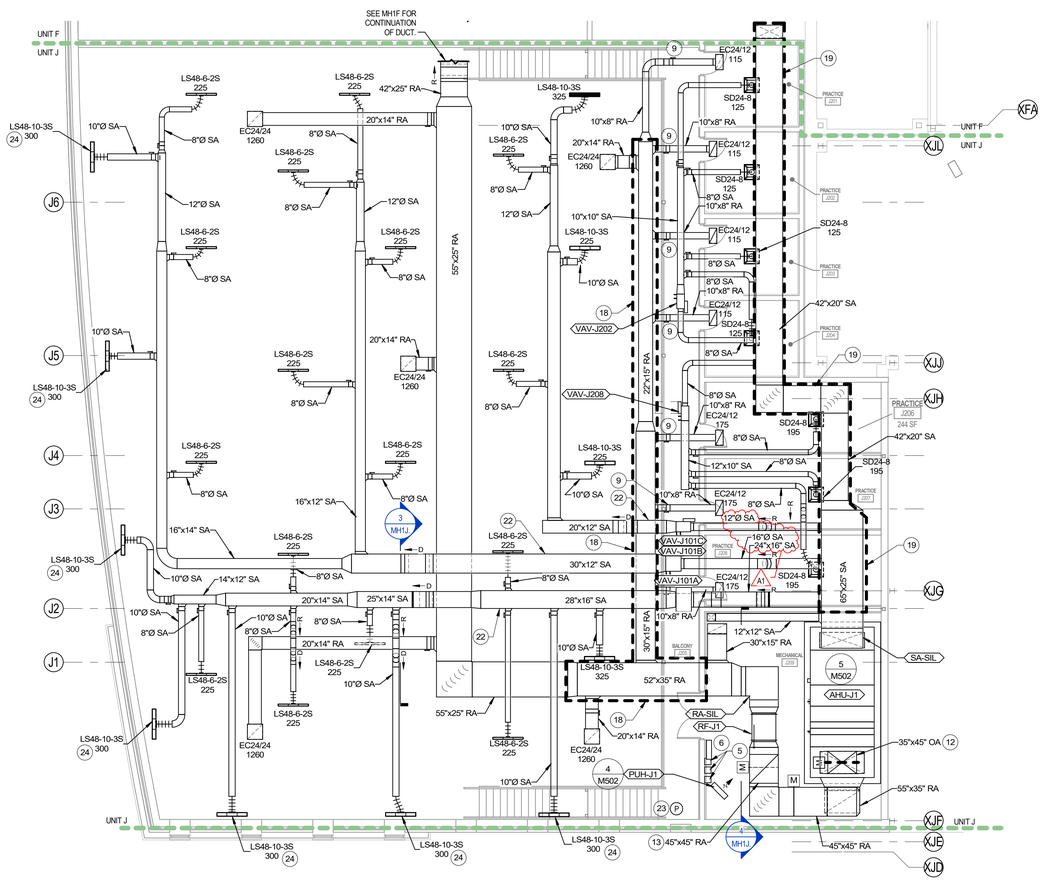
Drawing Title:
TEMPERATURE CONTROLS SCHEMATICS

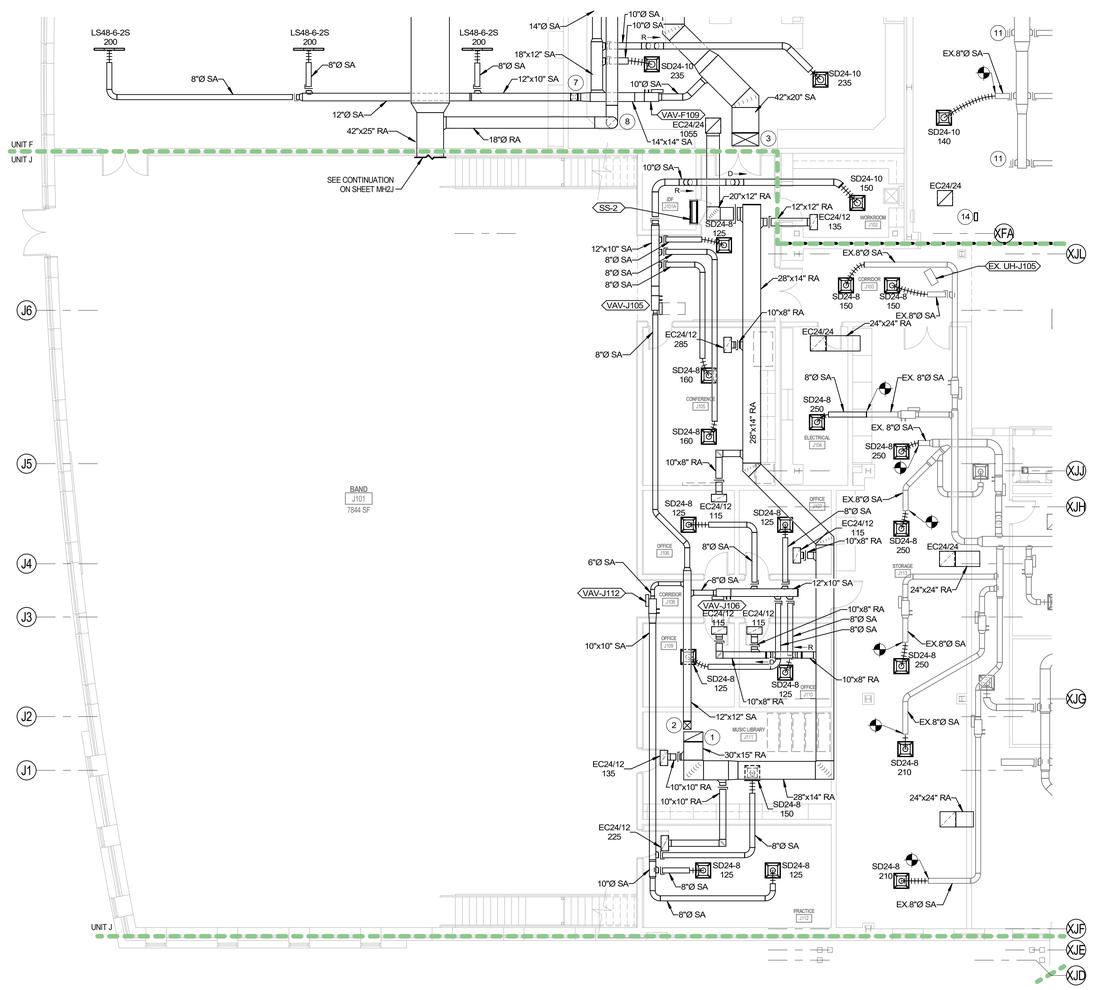
GABRIEL S. CURRIER
REGISTERED
NO. PE10808972
STATE OF INDIANA
PROFESSIONAL ENGINEER

Project No: 2022043.00
Project Date: January 29, 2024
Drawing No: M701









○ MECHANICAL HVAC PLAN NOTES

MECHANICAL GENERAL NOTES

A DARK LINES INDICATE NEW WORK.

B LIGHT SOLID LINES INDICATE EXISTING MECHANICAL EQUIPMENT, DUCTWORK, PIPING AND/OR MECHANICAL ACCESSORIES TO REMAIN AS-IS. CONTRACTOR TO FIELD VERIFY ACTUAL EXISTING CONDITIONS PRIOR TO BIDDING.

C MARK ALL LOCATIONS OF MECHANICAL EQUIPMENT ABOVE CEILING WITH ENGRAVED PLASTIC TAGS ON CEILING GRID BELOW.

D RETURN AIR VALUES FOR AHU-J1 TO BE DETERMINED DURING SYSTEM BALANCING BY TEST AND BALANCE CONTRACTOR AND TCC TO ACHIEVE DESIGN SEQUENCE OF OPERATION.

#	Revision	Date
A1	ADDENDUM #1	02.09.2024

④ **MECHANICAL ROOM DUCT SECTION**
1/4" = 1'-0"

③ **BAND ROOM DUCT SECTION**
1/4" = 1'-0"

② **CHOIR MEZZANINE HVAC PLAN - UNIT J**
1/8" = 1'-0"

① **FIRST FLOOR HVAC PLAN - UNIT J**
1/8" = 1'-0"

creative engineering solutions
mechanical • electrical • plumbing
201 S Rural St., Suite 210
Indianapolis, IN 46201 • 463-777-8182
www.creativeng.net

KEY PLAN

NORTH

VPS ARCHITECTURE
905 N. Capital Ave. - Suite 100 Indianapolis, Indiana 46204
P (317) 353-3281

www.VPSARCH.com

ADDITION & RENOVATIONS TO:
FRANKLIN CENTRAL HIGH SCHOOL
PHASE 2A
FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION
INDIANAPOLIS, INDIANA

Drawing Title:
FIRST FLOOR & MEZZANINE
HVAC PLANS - UNIT J

GABRIEL S. CURRIER
NO. PE10808972

Project No: 2022043.00

Project Date: February 14, 2024

Drawing No: MH1J