

September 11, 2023

Whiteland Community High School Phase 1 300 E. Main Street Whiteland, IN 46184

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 August 11, 2023, by Lancer Associates 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 2-1 through ADD 2-3 and attached Specification Sections 00 31 00 – Revised Indiana Bid Form, 01 21 00 Allowance, 01 23 00 Alternates, P6 Schedule, and Lancer Associates Architecture Addendum No. 2, dated September 6, 2023, consisting of 9 Pages, A002, AD122D, AD122E, A112, A122J, A122K, A141, A142, A201, A203, A301, A501, A611, A612, A720, A732, A753, Crossroad Engineers Addendum 2 Narrative, 207, 301, 400, 500, 901, Context Design Addendum 2 Narrative, L101, L102, L602, Primary Engineering Addendum 2 Narrative, Specification 077000 Roof Specialties and Accessories, FP201, P001, P100L, P100M, P101AGH, P101L, P102J, P102K, P103J, P103KLM, P501, M001E, M003, M101A, M101GH, M101J, M101K, M101L, M101M, M102J, M102L, M103J, M103K, M301, M501, M502, M503, M504, E000, E102E, E301M, E401M, E501, E601, E602, E701, E703, ES201, Desig27 Addendum 2 Narrative, Specification 27 05 28 Pathways for Communications Systems, 27 41 16 Integrated Audio Video Systems and Equipment, T201J, T201K, T202J, T202K, T202L, T202M, T203J, T203K, T203L, T203M, T300, T306, T307, T308, T310, T311, T400.

A. <u>SPECIFICATION SECTION 00 02 00 – INDIANA NOTICE TO BIDDERS</u>

The Bid date and location are revised as follows:

October 5, 2023 @ 2:00PM Clark-Pleasant Community Schools Administration Building 50 Center Street Whiteland, IN 46184 Final Day for RFIs – September 19, 2023 Anticipated Addendum #3 – September 26, 2023

B. <u>SPECIFICATION SECTION 00 20 00 – INFORMATION AVAILABLE TO</u> <u>BIDDERS</u>

Add Paragraph D.

D. WCHS Phase 1 Project Schedule dated September 7, 2023 is being issued as part of this addendum for reference by all contractors.

C. SPECIFICATION SECTION 00 31 00 BID FORM

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

D. <u>SPECIFICATION SECTION 01 12 00 - MULTIPLE CONTRACT SUMMARY</u>

A. BID CATEGORY NO. 1 – GENERAL TRADES

Add the following Clarification:

19. Bid Category No. 1 – General Trades Contractor is to provide, install, and remove all temporary plywood window and door protection.

C. BID CATEGORY NO. 3 – STRUCTURAL STEEL/MISC METALS

Add the following Clarifications:

- 1. Bid Category No. 3 Structural Steel/Misc Metals Contractor is to provide and install Astro Metal Panels and Steel Posts shown in detail 1/A501.
- Bid Category No. 3 Structural Steel/Misc Metals Contractor is to provide and install the metal pan only for the stair systems. Bid Category No. 1 – General Trades Contractor is responsible for the concrete in the metal pan stairs.

D. BID CATEGORY NO. 4 – ROOFING

Add the following specification section:

077000 - Roof Specialties and Accessories

Add the following clarification:

9. Note #11 on A-141 Walkover shall be provided and installed by the **Bid Category** No. 4 – Roofing Contractor.

E. BID CATEGORY NO. 5 - METAL STUDS, DRYWALL, AND ACOUSTICAL

Add the following specification section:

072113 - Board Insulation

Add the following clarifications:

- 7. Bid Category No. 5 Metal Studs, Drywall, and Acoustical Contractor is responsible for any board insulation behind metal panels that include Z-Girt installation.
- 8. Bid Category No. 5 Metal Studs, Drywall, and Acoustical Contractor is responsible for Drawing S102L Note 2 and detail 3/A503 Ramp overbuild framing, sheathing, insulation, and gypcrete. Including the required delegated design.

I. BID CATEGORY NO. 9 – EPOXY TERRAZZO

Add the following clarification:

1. Bid Category No. 9 – Epoxy Terrazzo Contractor is responsible for providing and installing the terrazzo finish stair treads.

K. BID CATEGORY NO. 11 – AQUATIC CONSTRUCTION

Add the following clarification:

1. Bid Category No. 11 – Aquatic Construction Contractor is responsible for providing and installing the tile on the pool deck as well as the associated wall base.

N. BID CATEGORY NO. 15 – ELECTRICAL & TECHNOLOGY

Add the following clarification:

- 5. TV monitors and stands shall be provided by the owner.
- Lights PL1 (NAT Light) shall be removed from the lighting package. Bid Category No. 15 – Electrical & Technology Contractor shall include an allowance of \$130,000 for these light fixtures. See attached revised SPECIFICATION SECTION 01 21 00 ALLOWANCES.

E. SPECIFICATION SECTION 01 21 00 ALLOWANCES

DELETE in its entirety of this specification section and replace with 01 21 00 – ALLOWANCES section included as part of this Addendum.

F. SPECIFICATION SECTION 01 23 00 – ALTERNATES

DELETE entirety of this specification section and replace with $01\,23\,00 - ALTERNATES$ section included as part of this Addendum.

CONTRACTOR'S BID FOR PUBLIC WORKS FORM NO. 96

Format (Revised 2013) (Amended for CPCSC)

Whiteland Community High School Addition Phase 1: 3-Story and Natatorium Additions

(Clark-Pleasant Community School Corporation)

(Johnson 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, Whiteland Community High School Addition Phase 1: 3-Story and Natatorium Additions, in accordance with Plans and Specifications prepared by Lancer Associates Architecture, 427 South College Ave., Suite 103, Indianapolis, IN 46203, 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 conferenceYES _____NO_____Has visited the jobsiteYES _____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".

<u>MARK ''ADD'' OR ''DEDUCT'' FOR EACH ALTERNATE</u>

<u>Alternate Bid No. 1 – SUN SHADES</u>: Provide Sun Shades above windows on the south side of the academic wing as shown on elevations along with any associated blocking and flashing elements. Base bid: no sun shades on the south side of the south side of the building

Change the Base Bid the sum of			
(sum in words)			
			ADD
	DOLLARS (\$)	DEDUCT
	(sum in figur	res)	
<u>Alternate Bid No. 2 – VIDEO BOARD:</u> Provide v	ideo board on the north wal	ll of the	pool. Base
bid: no video board on the north side of the board, j	provide conduit and wiring.		
Change the Base Bid the sum of			
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<u>Alternate Bid No. 3 – TEMPERATURE CONTRO</u> controls contractors in your base bid. If your base b installed by Jackson Systems and Supply , please	DLS: You may use any of the id doesn't include Distech provide the cost for you to	ne accep with N provide	otable iagara 4, e Distech
with Niagara 4, installed by Jackson Systems an that you have included in your base bid.	d Supply in lieu of the con	trols co	ntractor

Change the Base Bid the sum of			
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			ADD
	DOLLARS (\$)	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 corroborate the process listed.

SECTION III CONTRACTOR'S FINANCIAL STATEMENT

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

SECTION IV CONTRACTOR NON-COLLUSION AFFIDAVIT

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

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

SECTION V OATH AND AFFIRMATION

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

Dated at	this	day of	, 20
			(Name of Organization)
	Ву		
			(Title of Person Signing)
	ACKNO		
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STATE OF)	1	
COUNTY OF) 55.		
Before me, a Notary Pub	lic, personally appe	eared the above	/e-named
Swore that the statement	s contained in the fo	oregoing docu	ament are true and correct.
Subscribed and sworn to	before me this	0	day of,
(Title)			
	Notary Public		
My Commission Expires	:		
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County of Residence:			
	END OF S	SECTION 00	31.00

SECTION 01 21 00 – ALLOWANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 REQUIREMENTS INCLUDED

- A. The Specifications contain Allowances for particular items, methods of construction, quantities of materials, labor for certain items and these stated Allowances shall be included in the total lump sum bid price.
 - 1. Should the final amounts as determined from actual costs vary from these stated Allowances, the Contract price will be adjusted by Change Order as stated in the Conditions of the Contract.
 - 2. Under no circumstances shall work exceeding the stated Allowance amounts, proceed without a properly executed Change Order.
- B. A "Schedule of Allowances" showing amounts included in each prime Contract Sum, is included at the end of this Section.
- C. <u>Product/Materials Allowance</u>: At the earliest feasible date after award of Contract, advise the Architect and Construction Manager of scheduled date when final selection and purchase of each product or system described by each Allowance must be accomplished in order to avoid delays in performance of the Work.
 - 1. As requested by the Architect, obtain and submit proposals for the work of each Allowance for use in making final selection; include recommendations for selection which are relevant to the proper performance of the Work.
 - 2. Purchase products and systems as specifically selected (in writing) by the Architect.
 - 3. Submit proposals and recommendations, for purchase of products or systems of Allowances, in form specified for Change Orders.
 - 4. When requested, submit a substantiated survey of quantities of materials, as shown in the "Schedule of Values", revised where necessary, and corresponding with Change Order quantities.
 - 5. Amount of Allowance includes:
 - a. Net cost of product
 - b. Delivery to the site
 - c. Applicable taxes
 - 6. In addition to amount of Allowance, include in Bid, for inclusion in Contract Sum, Contractor's costs for:
 - a. Handling at site, including unloading, uncrating and storage
 - b. Protection from elements, from damage
 - c. Labor, installation and finishing

- d. Other expenses (e.g., testing, adjusting and balancing) required to complete installation
- e. Overhead and profit
- D. Contingency Allowance: Contingency allowance shall be used only as directed for Owner's purposes. Proposal shall be submitted by Contractor for work requested in format similar to that required for Change Orders. Compensation to the Contractor for work requested utilizing this Allowance shall be for <u>only</u> Contractor's costs as defined by Paragraph 7.3.7 of the General Conditions, except no compensation shall be allowed for overhead and profit. At time of Project closeout, unused amounts remaining in contingency allowance shall be credited to Owner by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 **PRODUCT ALLOWANCE – Not Applicable**

3.02 CONTINGENCY ALLOWANCES

Allow a lump sum additional work required but not indicated on Drawings or reasonably anticipated.

A.	Bid Category No. 01 – General Trades (Undercut Unsuitable Soils)	\$150,000
	Bid Category No. 01 – General Trades (Project Signage)	\$300,000
	Bid Category No. 01 - General Trades	\$120,000
B.	Bid Category No. 02 – Masonry	\$25,000
C.	Bid Category No. 03 – Structural Steel/Misc Metals	\$25,000
D.	Bid Category No. 04 - Roofing	\$25,000
E.	Bid Category No. 05 – Metal Studs, Drywall & Acoustical	\$25,000
F.	Bid Category No. 06 – Curtainwall, Storefront & Glazing	\$20,000
G.	Bid Category No. 07 – Casework/Millwork	\$20,000
H.	Bid Category No. 08 - Flooring	\$20,000
I.	Bid Category No. 09 – Epoxy Terrazzo	\$20,000
J.	Bid Category No. 10 – Painting	\$20,000
K.	Bid Category No. 11 – Aquatic Construction	\$50,000
L.	Bid Category No. 12 – Fire Protection	\$10,000
M.	Bid Category No. 13 – Plumbing	\$40,000
N.	Bid Category No. 14 - HVAC	\$100,000
N.	Bid Category No. 15 – Electrical & Technology	\$100,000
0.	Bid Category No. 15 – Electrical & Technology (PL1 NAT Light)	\$130,000

END OF SECTION 01 21 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 PURPOSE

A. The Bids for the Alternates described herein are required in order for the Owner to obtain information necessary for the proper consideration of the Project in its entirety.

1.03 ALTERNATES

A. Definitions: Alternates are defined as alternate products, materials, equipment, installations or systems for the Work, which may, at Owner's option and under terms established by Instructions to Bidders, be selected and recorded in the Owner-Contractor Agreement to either supplement or displace corresponding basic requirements of Contract Documents. Alternates may or may not substantially change scope and general character of the Work; and must not be confused with "allowances", "unit prices", "change orders", "substitutions", and other similar provisions.

1.04 SCHEDULE OF ALTERNATES

- A. <u>ALTERNATE NO. 1: SUN SHADES:</u> Provide Sun Shades above windows on the south side of the academic wing as shown on elevations along with any associated blocking and flashing elements. Base bid: no sun shades on the south side of the south side of the building.
- B. <u>ALTERNATE NO. 2: VIDEO BOARD:</u> Provide video board on the north wall of the pool. Base bid: no video board on the north side of the board, provide conduit and wiring.
- C. <u>ALTERNATE NO. 3: AUTOMATED LOGIC CORPORATION DDC SYSTEM:</u> <u>BASE BID: Include any of the approved manufacturers.</u> <u>Alternate 03: If your base bid doesn't include **Distech with Niagara 4, installed** <u>by Jackson Systems and Supply, please provide the cost for you to provide</u> <u>Distech with Niagara 4, installed by Jackson Systems and Supply in lieu of the</u> <u>controls contractor that you have included in your base bid.</u>
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PART 2 - PRODUCTS, PART 3 - EXECUTION (Not Used)

END OF SECTION 01 23 00



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	Ceiling Pads	15 17-Dec-25	06-Jan-26	+	·					-} 	;	+ 	÷	;						
	MEP Finishes	20 31-Dec-25	27-Jan-26	_						-										
	Casework	15 28-Jan-26	17-Feb-26	_						1 1										
					1 1		1	1 1	1	1	1	1	1			1	1	1	1	1

N Remaining Work

Critical Remaining Work

♦ ♦ Milestone

Summary

Clark-Pleasant WCHS Phase 1 - 221170.01 16-Aug-23 Guideline Schedule Page 2 of 3



Duration Oct Nov Dec Jan Feb Mar Apr May Jun Jun Doors and Hardware 30 11-Feb-26 24-Mar-26 24-Mar-26 </th <th>ul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun 0 11 12 13 14 15 16 17 18 19 20 21</th>	ul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun 0 11 12 13 14 15 16 17 18 19 20 21
Doors and Hardware 30 11-Feb-26 24-Mar-26	
Ioliet Partitions 10 18-Feb-26 03-Mar-26	
Misc. Specialties 15 18-Feb-26 10-Mar-26	
Final Paint 15 25-Mar-26 14-Apr-26	
Flooring 20 15-Apr-26 12-May-26	
Pool Area 290 29-Jan-25 10-Mar-26	
Excavation 20 29-Jan-25 25-Feb-25	Excavation
Footings 15 26-Feb-25 18-Mar-25	∠ Footings
Underground MEP 30 19-Mar-25 29-Apr-25	∠ Undergrou
Pool Slab and Walls 15 30-Apr-25 20-May-25	A Pool
Underwater Lights 10 07-May-25 20-May-25	/▲▼ Unde
Backfill Around Pool 10 21-May-25 03-Jun-25	🕰 Ba
Pool Gutter System & Underslab Plumbing 10 04-Jun-25 17-Jun-25	
Pool Deck 10 18-Jun-25 01-Jul-25	Δ
MEP Rough-in 30 02-Jul-25 12-Aug-25	
Paint Structural Steel and Deck 15 13-Aug-25 02-Sep-25	
Install Cloth Supply Duct 15 03-Sep-25 23-Sep-25	
Tiling 40 24-Sep-25 18-Nov-25	
Pool Accessories 40 19-Nov-25 13-Jan-26	
Acoustical Wall Panels 15 14-Jan-26 03-Feb-26	
Wall Coverings 15 04-Feb-26 24-Feb-26	
Locker rooms, Offices, Mech Rooms, Etc. 250 26-Mar-25 10-Mar-26	
Interior CMU 60 26-Mar-25 17-Jun-25	
MEP Wal/Underground Rough-ins 20 09-Apr-25 06-May-25	MEP Wa
MEP Overhead Rough-in 30 07-May-25 17-Jun-25	
Block Filler/First Coat of Paint 30 18-Jun-25 29-Jul-25	
Pool Equipment 45 18-Jun-25 19-Aug-25	
Pool Seating Geo Foam and Concrete 30 18-Jun-25 29-Jul-25	
Ceiling Grid 20 30-Jul-25 26-Aug-25	
Lighting and Other Electrical Devices 30 27-Aug-25 07-Oct-25	
Epoxy Flooring 30 08-Oct-25 18-Nov-25	
Ceiling Pads 10 19-Nov-25 02-Dec-25	
Doors and Hardware 20 26-Nov-25 23-Dec-25	
Bathroom Fixtures 15 03-Dec-25 23-Dec-25	
Lockers 15 24-Dec-25 13-Jan-26	
MEP Finishes 15 24-Dec-25 13-Jan-26	
Toilet Partitions and Shower Items 15 14-Jan-26 03-Feb-26	
Misc. Specialties 10 04-Feb-26 17-Feb-26	
Final Painting 15 18-Feb-26 10-Mar-26	
Boiler Room/Mechanical Room Expansion 150 16-Apr-24 14-Nov-24	14-Nov-24, Boiler Room/Mechanical Room Ex
Footing and Foundations 15 16-Apr-24 06-May-24	Foundations
Underground MEP 15 07-May-24 28-May-24	bund MEP
Structural Steel/Roof-Framing 20 29-May-24 25-Jun-24	ructural Steel/Roof-Framing
CMU 20 26-Jun-24 24-Jul-24	CMU
Painting 15 25-Jul-24 14-Aug-24	A Painting
Equipment 30 15-Aug-24 26-Sep-24	Equipment
Removal of Ceiling 30 27-Sep-24 07-Nov-24	✓ ✓ Removal of Ceiling
Above Ceiling Pipes 30 04-Oct-24 14-Nov-24	Above Ceiling Pipes

Actual Work	Clark-Pleasant WCHS Phase 1 - 221170.01	
Remaining Work	16-Aug-23 Guideline Schedule	
Critical Remaining Work	Page 3 of 3	
♦♦ Milestone		
Summary		





ADDENDUM NO. TWO

PROJECT: CLARK-PLEASANT COMMUNITY SCHOOL CORP. WHITELAND COMM. HIGH SCHOOL ADDITION PHASE 1: 3-STORY AND NATATORIUM ADDITION

PROJECT NUMBER:

22130

DATE OF ADDENDUM: September 06th, 2023



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

QUESTIONS

Q1: What is the edge detail on the atrium cloud ceilings? The ones on the 3rd floor RCP's.

A: See ceiling detail 4/A124

Q2: APC-C calls for 2x4 on the interior types, but on the floor plans, it shows 2x2. Please confirm. **A:** Provide 2x2 for APC-C.

Q3: Please clarify that there are no walls that receive insulation or sound caulking as no modifier is called out in wall types.

A: All interior walls will have sound insulation and sound caulking as shown in the sketches wall types.

LANCER ASSOCIATES ARCHITECTURE

Q4: The exterior soffit on 2nd floor M and L RCP's show EIFS, but there is a note (1) that says metal panels. Please confirm which is intended at this location. **A:** flat metal panel soffit similar to citadel soffit panels.

Q5: Single interior aluminum doors type D6 are full glass no mid rail. Pairs of interior doors type D5 have a 6" mid rail. Is this correct? **A:** Yes

Q6: Doors M105, M106.1, and M106.2 show door type D1 flush. They are scheduled aluminum. There is not a flush aluminum door specification. Please advise correct door type.

A: Doors M105, M106.1, and M106.2 are FRP door and frame

Q7: Doors K102.1, K104.1, K106.1, K108.1, and K110.1 are scheduled as HM frames with wood doors. Sheet A101K at door K104.1 shows elevation to be 8 on A612. 8 on A 612 calls for storefront frame SF29. Based on the floor plan layout. They look like storefront. Please advise.

A: Change these doors to be aluminum storefront

Q8: Sheet A002 shows the Ax, Ax.1 and Ax.4 walls only getting sound insulation at walls called out as insulative and then says to ca002heck the wall naming convention. The wall naming convention does not give any indication of how insulative walls are labeled. Some blowup details show sound insulation, but by wall type nothing would be sound insulated. Please verify there is no sound insulation required or provide which walls are sound insulative.

A: Provide sound batt to Ax, Ax.1 and Ax.4 walls.

Q9: There is not a detail showing the wall on the west side of Flex J2000. Is there a drywall partition and bulkhead running down to the first-floor acoustical ceiling? **A:** Yes, see drawing 3/A301

Q10: Is the type B acoustical ceiling tile Clean Room VL unperforated or perforated? **A:** Unperforated

Q11: Is the type C acoustical ceiling tile Ceramaguard perforated or unperforated? **A:** Ceramaguard perforated 24x24x5/8"

Q12: Which bid package is responsible for the Astro Metal Panels and Steel Posts shown in detail 1/A501? **A:** Skillman to response

LANCER ASSOCIATES ARCHITECTURE

Q13: Per SPEC Section 271119-4 2.4.E.1, it states that the Work Area patch cords shall be Owner Furnished and Owner Installed. Can you confirm that this is correct? **A:** Confirmed, work area patch cords shall be OFOI.

Q14: Per SPEC Section 271119-4 2.4.E.2, it states that the MDF/IDF patch cords shall be Contractor Furnished and Owner Installed and shall be 1ft in length. Can you confirm that this is correct?

A: Confirmed, telecommunication room patch cords shall be CFOI in 1ft lengths. Patch cords shall match horizontal cable and jack color.

Q15: The drawing notes indicate steel for custom steel railings, but the specs indicate aluminum.

A: Steel railings throughout the new construction except aluminum railing in the Natatorium space.

Q16: Can you clarify which stairs and areas are to have the custom steel railings with Astro Metal Craft? Also, can you share what the perforation pattern is for the infill panels?

A: All the railing in the Atrium space and the infill panels is perforated metal sheet.

Q17: Detail 11/A142 shows a roof to wall expansion joint. Spec Section 079513, 3.5 Schedules does not list roof expansion joints. Roof expansion joints are not listed in our Scope of Work.

A: Roofing contractor to provide typical 2 inches roof expansion joint.

Q18: Drawing 2/A141, clarify keynote 13 "Patch Existing Roof, Slope to Drain". **A:** Demolishing existing rooftop louvers per MEP drawings. Patch existing deck, clean, and install new insulation and roofing membranes to match adjacent roof.

Q19: Drawing 1/A141, scope/define "Build Up Roof with Insulation Over Stair Tower Flat Roof. Slope To Drain"

A: Building up flat roof and 6 inches minimum rigid insulation and slope to drain.

Q20: CORRECTION TO ADDEDUNDUM ONE QUESTION: "Railings Per OSHA Requirements" is not shown or stated as in Detail 5 on same page. Is Railing required? **A:** Yes, railing by roof hatch manufacturers.

Q21: In addendum 1 Q/A question 12 regarding the interior vestibules being thermally broken and having insulated glass. The answer in the addendum is no. I assumed that to mean the vestibules are non-thermal storefront with $\frac{1}{4}$ " glass. Addendum 1 also re-issued sheet A611. The new sheet still shows the vestibules as thermally broken. We need clarification please.

A: updated window schedule, see addendum 02.



Q22: Clarification on brick Color C selection, this has been left blank in spec section 042100.

A: No brick color C.

Q23: Also please provide clarification for each locations of the different color brick on elevations 4 & 5/A201. Brick type 2 (color B) and Brick type 3 (color C) are shown with same symbol and shading, and it is not possible to distinguish between the two different brick. Many of the brick locations are not even labeled on the elevations so it is not clear where brick colors A, B & C start and stop. Also, Unit A elevations 2 & 3/A203 do not have labels for brick type as well as elevation 1/A203 @ typical window surrounds. Could color renderings showing different color brick be provided? **A:** No brick color C. See updated sheet A201 & A203 in addendum 02.

Q25: Please confirm that building wrap listed in spec section 04 21 00.2.3.O will be required in addition to the AVB called for in Spec section 07 27 26. 04 21 00.2.3.O says to provided, whether shown on plans or not.

A: No, only provide building wrap when there is no air water barrier.

Q26: Spec section 033001 calls for exposed concrete surfaces to receive a smooth-formed finish. The exterior seat walls and other exposed concrete items will be formed smooth. They will not receive any rubbed material or coating. Please confirm.
A:. Regarding the site concrete wall finish, the expectation was for a smooth-form finish and not a rubbed finish. We've had inconsistent results with rubbed finish that has been prone to flaking and cracking in short order. Unless Skillman has a guaranteed method for making it perfect and last, we'd prefer to stick to the spec as written.

SPECIFICATIONS

- 1. Spec Section 04 21 00 Unit Masonry
 - a. Remove 2.1 A.3. "Color C:"
- 2. Spec Section 07 21 19 Spray Foam Insulation:
 - a. Add Xcelus XLS-2000 to 2.1.A as an approved equal manufacturer.
- 3. Spec Section 07 27 26 Air-Water Resistive Barrier:
 - a. Add Prosoco R-Guard Spray Wrap MVP to 2.1.A as an approved equal.
- 4. Spec Section 08 43 29 Sliding Glass Doors:
 - a. Add Kawneer 1010 to 2.1.A as an approved equal if the product meets the 2.4 B.5.
 - b. Change 2.4 B.5. to "ADA Round Designer Pull Handle."
- 5. Spec Section 09 77 13 Site Fabricated Stretched Fabric Systems:
 - a. Add FabriTRAK Systems Inc to 2.1.A as an approved equal manufacturer.



- 6. Spec Section 10 50 00 Solid Plastic Lockers:
 - a. Add Scranton Products Tufftec Plastic Lockers to 2.1.A as an approved equal.
 - b. Add Columbia/PSiSC Solid Plastic Lockers to 2.1.A as an approved equal.
- 7. Spec Section 12 24 00 HYDRAULIC ELEVATORS:
 - a. Change 2.9 A. 1 to "Rated Load: 5000 lb, to be sized per AIA Hospital design".
 - b. Change 2.9 A. 5. E. to "Provide downlight type ceiling in stainless steel #4 with LED lights."
 - c. Change 2.9 A. 5. g. to "Flooring: by others to match building."
- 8. Spec Section 12 24 13 Window Shades:
 - a. Add Hunter Douglas Architectural and Lutron to 2.1.A as an approved equal manufacturer.
- 9. Spec Section 12 53 00 Science Casework:
 - a. Add Case Systems Science Casework and Latitude Student Table to 2.1.A as an approved equal.

DRAWINGS REVISIONS:

1. Drawing Number: A002 Drawing Title: INTERIOR TYPES Revision:

Drawing 1/A002, changed APC-C note to "2x2 Grid System" Removed wall detail "Ax.4" Changed "Ax" and "Ax.1" STC Table

 Drawing Number: AD122D Drawing Title: DEMOLITION REFLECTED CEILING PLAN - SECOND FLOOR - UNIT D Revision:

Added demo ceiling to scope of work. Added Plan Notes/Keynote 7 "DEMO SUSPENDED CEILING TILE PER STRUCTURAL DRAWINGS. PATCH, CLEAN, AND PREPARE SURFACES FOR NEW WORK."



 Drawing Number: AD122E Drawing Title: DEMOLITION REFLECTED CEILING PLAN - SECOND FLOOR - UNIT E Revision:

Added demo ceiling to scope of work. Added Plan Notes/Keynote 7 "DEMO SUSPENDED CEILING TILE PER STRUCTURAL DRAWINGS. PATCH, CLEAN, AND PREPARE SURFACES FOR NEW WORK."

 Drawing Number: A112 Drawing Title: ENLARGED PLANS Revision:

Drawing 1/A112, added elevator underline and clear-inside dimension for the hoistway plan.

 Drawing Number: A122J Drawing Title: REFLECTED CEILING PLAN - SECOND FLOOR - UNIT J Revision:

Added new ceiling to scope of work. Changed Plan Notes/Keynote 4 "NEW CEILING AS NEEDED AFTER STRUCTURE REINFORCEMENT."

 Drawing Number: A122K Drawing Title: REFLECTED CEILING PLAN - SECOND FLOOR - UNIT K Revision:

Added new ceiling to scope of work. Changed Plan Notes/Keynote 4 "NEW CEILING AS NEEDED AFTER STRUCTURE REINFORCEMENT."

7. Drawing Number: A141 Drawing Title: ROOF PLAN Revision:

> Drawing 2/A141, extended roof scope of work above BOILER ROOM. Changed keynote 13 to "DEMO EXISTING ROOFTOP LOUVERS, PATCH, CLEAN, AND NEW ROOF SLOPE TO DRAIN"

LANCER ASSOCIATES

 Drawing Number: A142 Drawing Title: ROOF DETAILS Revision:

Changed detail 3/A142 title to "DRAIN DETAIL" Changed detail 4/A142 title to "ROOF HATCH DETAIL" Changed detail 5/A142 title to "ROOF HATCH AND LADDER" Detail 7/A142 added treated wood blockings. Detail 7/A142 added note "PRESERVATIVE TREATED WOOD BLOCKING AS NEEDED"

 Drawing Number: A201 Drawing Title: EXTERIOR ELEVATIONS Revision:

Removed keynote 5 in Elevation Notes - Exterior Removed keynote 5 to 2/A201, 4/A201, 5/A201

10. Drawing Number: A203 Drawing Title: EXTERIOR ELEVATIONS Revision:

Added note "BRICK COLOR A" and "BRICK COLOR B" to 1/A203 Added note "BRICK COLOR A" to 2/A203 & 3/A203

11. Drawing Number: A301 Drawing Title: BUILDING SECTIONS Revision:

Drawing 4/A301, added dimension from the top landing to the bottom of the hoist beam.

12. Drawing Number: A501 Drawing Title: DETAILS Revision:

> Changed 8/A501 note to "3/4" TONGUE AND GROOVE WOOD PLANK" Changed 10/A501 note to "3/4" TONGUE AND GROOVE WOOD PLANK"



13. Drawing Number: A601 Drawing Title: DOOR SCHEDULE Revision:

Changed M105, M106.1, and M106.2 door and door frame to FRP. Changed K102.1, K104.1, K106.1, K108.1, and K110.1 to Aluminum.

14. Drawing Number: A611 Drawing Title: WINDOW SCHEDULE Revision:

Changed 10/A611 note to "4 1/2" ALUMINUM STOREFRONT" Changed 16/A611 note to "4 1/2" ALUMINUM STOREFRONT" Changed 18/A611 note to "4 1/2" ALUMINUM STOREFRONT"

15. Drawing Number: A612 Drawing Title: WINDOW SCHEDULE Revision:

Changed 2/A612 note to "4 1/2" ALUMINUM STOREFRONT"

16. Drawing Number: A720 Drawing Title: FINISH LEGEND Revision:

Changed WT-1 note to "RUN TILE TO TOP OF EB-1. USE SCHLUTER TRIM FOR TRANSITION." Changed WT-2 note to "RUN TILE TO TOP OF EB-1. USE SCHLUTER TRIM FOR TRANSITION."

17. Drawing Number: A732 Drawing Title: INTERIOR DETAILS Revision:

Added Detail 7/A732, Natatorium Video Board Housing

18. Drawing Number: A753 Drawing Title: INTERIOR ELEVATIONS Revision:

Added Detail 7/A732 on Elevation 3, Pool Deck M100 – West for Natatorium Video Board Housing



Attachments: A002, AD122D, AD122E, A112, A122J, A122K, A141, A142, A201, A203, A301, A501, A611, A612, A720, A732, A753, Crossroad Engineers Addendum 2 Narrative, 207, 301, 400, 500, 901, Context Design Addendum 2 Narrative, L101, L102, L602, Primary Engineering Addendum 2 Narrative, Specification 077000 Roof Specialties and Accessories, FP201, P001, P100L, P100M, P101AGH, P101L, P102J, P102K, P103J, P103KLM, P501, M001E, M003, M101A, M101GH, M101J, M101K, M101L, M101M, M102J, M102L, M103J, M103K, M301, M501, M502, M503, M504, E000, E102E, E301M, E401M, E501, E601, E602, E701, E703, ES201, Desig27 Addendum 2 Narrative, Specification 27 05 28 Pathways for Communications Systems, 27 41 16 Integrated Audio Video Systems and Equipment, T201J, T201K, T202J, T202K, T202L, T202M, T203J, T203K, T203L, T203M, T300, T306, T307, T308, T310, T311, T400.

End of Addendum 2

















REFER TO SCHEDULE

BELOW FOR

CONTINUOUS SEALANT BEAD AT JUNCTURE OF CMU AND FLOOR/CEILING ASSEMBLY - BOND BEAM - REFER TO S-SERIES

- WALL BASE. REFER TO ROOM FINISH REFER TO ROOM FINISH SCHEDULE - FLOOR CONSTRUCTION VARIES -

ULC-U905

 H
 WIDTH
 UL

 VIDTH
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 VIDTH
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 VIDTH

 VIDTH
 VID

B4 3 5/8" 3 5/8"

B6 5 5/8" 5 5/8"

B8 7 5/8" 7 5/8"

B10 9 5/8" 9 5/8"

B12 11 5/8" 11 5/8"

ELEGATED DESIGN BY CFMF JRER	
GYPSUM WALLBOARD	

6" COLD FORMED METAL STUD

MASONRY VENEER WALL TIE







- .2 WALL STOPS 6" MIN. ABOVE CEIILING 3 - BOTH LINE ITEMS .1 AND .2
- .4 DOUBLE LAYER OF GYP. BOTH SIDES .5 - "PONY" WALL, REF. PLANS FOR HEIGH



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- GENERAL NOTES
- 1. COORDINATE DEMOLITION WORK WITH NEW WORK.
- 2. CLEAN AND PREP SURFACES FOR NEW WORK. 3. COORDINATE DEMOLITION WORK WITH MEP WORK.
- 4. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL OF ANY DEMOLISHED DOORS, CASEWORK, MARKERBOARDS, CHALKBOARDS, ETC.

1. OUTSIDE OF SCOPE OF WORK

PLAN NOTES - DEMO RCP

- 1 DEMO SUSPENDED CEILING TILE TO THE EXTENT INDICATED. PATCH, CLEAN, AND PREPARE SURFACES FOR NEW WORK.
- DEMO GYPSUM CEILING TO THE EXTENT INDICATED. PATCH, CLEAN AND PREPARE SURFACES FOR NEW WORK
- 3 DEMO EXISTING CEILING AND SOFFIT.
- 4 DEMO ALL EXISTING CANOPY AND STRUCTURE. 5 DEMO EXISTING CEILING AS NEEDED TO ACCOMMODATE MEP WORK.
- PUT BACK CEILINGS, LIGHTS, ETC. AFTER MEP WORK IS COMPLETE 6 PRESERVE EXISTING CEILING 7 DEMO SUSPENDED CEILING TILE PER STRUCTURAL DRAWINGS. PATCH,
- CLEAN, AND PREPARE SURFACES FOR NEW WORK.











DATE: 08-11-2023 DRAWN BY: Author DEMOLITION REFLECTED CEILING PLAN -SECOND FLOOR - UNIT D

AD122D





















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DATE: 08-11-2023 DRAWN BY: Author

REFLECTED

CEILING PLAN -SECOND FLOOR - UNIT J

A122J



















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GENERAL NOTES

- 1. PROVIDE SPLASH BLOCKS WHERE DOWNSPOUTS OR EXTENDERS COME INTO CONTACT WITH ROOF SURFACE
- 2. PROVIDE 2X2 PROTECTIVE ROOF PADS OUTSIDE EVERY ROOF ACCESS POINT, ON TOP AND BOTTOM OF ROOF LADDERS, AROUND ALL ROOF MEP EQUIPMENT

PLAN NOTES - ROOF PLAN \bigcirc

- 1 NEW PVC ROOF
- 2 ROOF DRAIN WITH OVERFLOW 3 BUILT-UP ROOF CRICKET TO DRAIN
- 4 ELEVATOR SHAFT POP-UP 5 EXPANSION JOINT
- 6 12" METAL GUTTER WITH DOWNSPOUTS 7 REFLASH EXISTING ROOF
- 8 RE-ROOF EXISTING BUILDING AFTER ROOF DECK REINFORCEMENT
- 9 PROVIDE FALL PROTECTION SYSTEM PER OSHA STANDARDS 10 NEW ROOF DRAIN WITH OVERFLOW IN THE EXISTING ROOF. REMOVE EXISTING SCUPPER. RE-ROOF AND REFLASH AS NEEDED
- 11 WALKOVER. SEE MEP FOR DETAIL
- 12 BREAK METAL TRIM SLOPED TO DRAIN 13 DEMO EXISTING ROOFTOP LOUVERS, PATCH, CLEAN, AND NEW ROOF SLOPE TO DRAIN 14 6" METLAD DOWNSPOUT WITH SCUPPER
- 15 4'-0" X 4'-0" ROOF ACCESS HATCH WITH OSHA-RATED RAILINGS
- 16 16_BUILD UP ROOF WITH INSULATION OVER STAIR TOWER FLAT ROOF. SLOPE TO DRAIN
- 17 ROOF SLOPED TO DRAIN WITH INSULATION OVER FLAT STRUCTURE 18 ROOF EXPANSION JOINT













A141







CONTINUOUS BEAD OF AP SEALANT OR HIGH GRADE SEALANT
CONTINUOUS BEAD OF WATERBLOCK
APPROPRIATE FASTENER 12" O.C. MAX.
 CONTINUOUS BEAD OF AP SEALANT
 TERMINATION BAR (SEE NOTE #3)
 APPROPRIATE FASTENER 12" O.C. MAX.
 CONTINUOUS BEAD OF











A142





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1 TYPICAL WINDOW SURROUND SCALE: 1/4" = 1'-0"









AD.3 AD.2

				KB				KA		
A315	WRAPPED PANEL,		<u>M</u>					<u> </u>		
\$F32	\$F30	\$F31			\$F30	\$F31		\$F30	 \$F31	
			6- 8 6- 7			4 (A501	Sim I			
\$F32	\$F30	\$F31	7 - 4		\$F30	\$F31		\$F30	\$F31	
SECURITY GLAZING	3' - 4" - 6' - 0"=	6' - 4"	12'	- 4"	IG					
			3520		3520					
	Color "B"									Ű.
N ML.6 L	(KJ)	H	(F E.4	E	D	(C	В	
	ST-WES E: 1/16" = 1'-0"	ST SE	CTIO	N						


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

































	2-	SF23B 4	- 1/2" ALUN	- SECUR MINUM S ⁻	ITY GLAZ TOREFRO	
2	STOF	REFF	RON	IT S	SF2	3B

GENERAL FINISH PLAN NOTES
A. PRIOR TO INSTALLATION OF NEW FINISHES CONTRACTOR SHALL INSPECT ALL SUBSTRATES. IF A SUBSTRATE IS DEEMED UNACCEPTABLE, THE CONTRACTOR SHALL REPAIR AS NECESSARY FOR SUBSTRATE TO ACCEPT NEW MATERIALS.
B. CONTRACTOR TO VERIFY EXISTING CONDITIONS AND REPAIR ALL EXISTING WALLS, SLAB, AND CEILINGS TO A CONDITION SUITABLE FOR ACCEPTING NEW FINISHES AS PER MANUFACTURER'S RECOMMENDED INSTALLATION METHODS. MINIMUM LEVEL 4 FINISH ON EXISTING AND NEW WALLS, UNLESS NOTED OTHERWISE.
C. ALL FLOORING TRANSITIONS TO COMPLY WITH ADA GUIDELINES AND TO OCCUR UNDER CENTOR OF DOORWAYS, AND OR AT CENTERLINE OF WALL. UNLESS INDICATED DIFFERENTLY ON FINISH PLANS.
D. CONTRACTOR TO PROVIDE PROTECTION AS NEEDED DURING CONSTRUCTION, IF ANY TO PRESERVE NEW FINISHES WHILE COMPLETING CONSTRUCTION.
E. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFACTION OF DIMENSIONS AND JOB CONDITIONS. ANY DEVIATION FROM WHAT IS INDICATED ON THE FINISH PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECTS AND DESIGNERS.
F. ALL DIMENSIONS SHOWN ARE TO FACE OF FINISH MATERIAL, UNLESS INDICATED OTHERWISE ON PLANS.
G. WHERE WALLS ARE INDICATED TO RECEIVE PAINT FINISH, PAINT ALL PRIMED GRILLES, FIRE EXTINGUISHER CABINERS, AND OTHER ITEMS EMBEDDED IN WALL CONSTRUCTION TO MATCH SURFACE ON WHICH THEY OCCUR UNLESS NOTED OTHERWISE.
H. CONTRACTOR TO PROVIDE DRYWALL REVEAL JOINT WHERE DRYWALL MEETS DISSIMILAR MATERIALS.
I. CONTRACTOR TO PROVIDE SCHLUTER EDGE WHERE TILE MEETS DISSIMILAR MATERIALS. REFER TO FINISH MATERIAL LEGEND AND INTERIOR ELEVATIONS FOR FURTHER DETAILS.
J. DO NOT INSTALL GYPSUM BOARD BEHIND TILE BACKER BOARD LOCATIONS.
K. IF ONLY PAINT IS INDICATED AS THE FINISH, REFER TO ARCHITECTURAL FLOOR PLANS FOR SUBSTRATE INFORMATION.
L. ALL TERRAZZO EDGES ARE TO BE SANDED AND FINISHED TO WHERE TERRAZZO MEETS DISSIMILAR FLOORING.
M. REFER TO INTERIOR TRANSITION DETALS SHEET A731 FOR TRANSITION STRIP PRODUCT DETAILS.
N. ALL MECHANICAL CLOSETS TO HAVE A SEALED CONCRETE FLOOR FINISH. PROVIDE RESILIENT REDUCER TO MATCH RB-1 UNDER CENTER OF DOORWAY.
O. ALL WALLS AND CEILINGS TO BE PAINTED PT-1, UNLESS NOTED OTHERWISE.
P. METAL DIVIDER STRIPS TO BE PROVIDED AT EACH TERRAZZO COLOR CHANGE. DESIGNER TO APPROVE COLOR.
Q. ALL WINDOWS TO RECEIVE SOLID SURFACE SILL, SS-3.
R. ALL HM DOOR FRAMES ARE TO BE PAINTED PT-6 UNLESS NOTED OTHERWISE.
S. REFERENCE ELEVATIONS FOR CUSTOM WALL GRAPHICS.
T. WHERE FLOORING PATTERN GRAIN CHANGES AT CORRIDORS, INSTALLER MUST HAVE A DESIGNER PRESENT FOR REVIEW MEETING PRIOR TO INSTALLATION OF ANY FLOORING.
U. ALL GYPSUM BOARD CEILING AND BULKHEADS TO BE PAINTED PT-1, UNLESS NOTED OTHERWISE.
V. ALL EXPOSED STEEL COLUMNS THAT ARE IN ATRIUM J1000 AND K1000 TO BE PAINTED PT-1. ALL OTHERS TO MATCH ADJACENT WALL COLOR.

FINISH LEGEND

FLOOR COVERING

		TERRA	ZZO	
CARPET TILE CPT-1: MFG: TYPE: PATTE COLOF INSTAL LOCAT CONTA	INTERFACE 25CM X 1M CARPET PLANK IN: STREAMING COLLECTION - BITRATE 106305 DARK BLUE :: ASHLAR, REF. PLAN FOR DIRECTION ON: CLASSROOMS CT: JAE PARK 317-459-8762	TER-1:	MFG: TYPE: COLOR:	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO GRAY BUTTON (MATRIX), 5% DARK BLUE GLASS #1, 5% DARK BLUE GLASS #0, 10% GEORGIA WHITE #0, 50% GEORGIA WHITE #1, 10% BEIGE BLEND #1, 20% CHINA WHITE #1, DESIGNER TO APPROVE
CPT-2: MFG: TYPE: PATTE COLOF	INTERFACE 25CM X 1M CARPET PLANK IN: NIGHT LIGHTS COLLECTION - LUMINESCENT IRON AZURE		LOCATION: CONTACT:	REF. SPECS. METAL TRANSITION STRIP TO BE USED AT ALL TRANSITIONS, REF. FINISH PLAN. ATRIUM, NATATORIUM CORRIDOR ERIC SANTAROSSA 317-632-5567
LOCAT CONTA	2: 90% ASHLAR, REF. PLAN FOR DIRECTION ON: FLEX SPACE CT: JAE PARK 317-459-8762	TER-2:	MFG: TYPE: COLOB [:]	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO ERMINE WHITE (MATRIX), 5% DARK
CPT-3: MFG: TYPE: PATTE	INTERFACE 25CM X 1CM CARPET PLANK N: NIGHT LIGHTS COLLECTION - LUMINESCENT		oolon.	BLUE GLASS #1, 5% DARK BLUE GLASS #0, 10% GEORGIA WHITE #0, 50% GEORGIA WHITE #1, 10% BEIGE BLEND #1, 20% CHINA WHITE #1,
COLOF INSTAL LOCAT	NICKEL PERSIMMON 10% RANDOM ASHLAR, REF. PLAN FOR DIRECTION ON: FLEX SPACE		INSTALL:	DESIGNER TO APPROVE. REF. SPECS. METAL TRANSITION STRIP TO BE USED AT ALL TRANSITIONS, REF. FINISH
CONTA WOC-1: MFG:	CT: JAE PARK 317-459-8762		LOCATION: CONTACT:	ATRIUM, NATATORIUM CORRIDOR ERIC SANTAROSSA 317-632-5567
TYPE: PATTE COLOF INSTAL LOCAT CONTA	50CM X 50CM WALK-OFF N: STEP REPEAT SR799 104936 IRON :: QUARTER-TURN ON: VESTIBULES CT: JAE PARK 317-459-8762	TER-3:	MFG: TYPE: Color:	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO GREAT SMOKIES(MATRIX), 5% DARK BLUE GLASS #1, 5% DARK BLUE GLASS #0, 10% GEORGIA WHITE #0, 50% GEORGIA WHITE #1, 10% BEIGE
RESILIENT FLO LVT-1: MFG: TYPE:	NR INTERFACE 25CM X 1CM LUXURY VINYL TILE		INSTALL:	BLEND #1, 20% CHINA WHITE #1, DESIGNER TO APPROVE. REF. SPECS. METAL TRANSITION STRIP TO BE USED AT
PATTE COLOF INSTAL LOCAT	N: A007 STUDIO SET A00702 PEWTER .: ASHLAR, REF. PLAN FOR DIRECTION ON: HALLWAYS		LOCATION: CONTACT:	ALL TRANSTITIONS, REF. FINISH PLAN ATRIUM, NATATORIUM CORRIDOR ERIC SANTAROSSA 317-632-5567
LVT-2: MFG: TYPE:	INTERFACE 25CM X 1CM LUXURY VINYL TILE	TER-4:	MFG: Type: Color:	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO LEGENDARY BLUE (MATRIX), 25% MIRROR #1, 37.5% SKY BLUE GLASS #1, 37.5% CLEAR GLASS #1 -
COLOF INSTAL LOCAT	A007 STUDIO SET A00720 ROYAL BLUE ASHLAR, REF. PLAN FOR DIRECTION ON: HALLWAYS, ALCOVES		INSTALL:	DESIGNER TO APPROVE REFER TO ENLARGED FLOOR FINISH PLAN ATRIUM LOGO/EMBLEM - FINAL
EPX-1: MFG:	SHERWIN WILLIAMS HIGH		MEO	
TYPE: COLOF INSTAL	PERFORMANCE FLOORING RESUFLOR 1/4" DECO FLAKE BC EPOXY SYSTEM REBEL BLUE .: MONOLITHIC, 4" INTEGRAL	TER-J.	TYPE: COLOR:	VITRIFIED EPOXY TERRAZZO REALLY ORANGE (MATRIX), 25% CHUNKY ORANGE #1, 65% CRYSTAL CLEAR GLASS #1, 10% ONE SIDED MIRBOR #1 - DESIGNER
LOCAT CONTA	ONE LOCKER ROOMS, RESTROOMS, CT: SCOTT KAISER 503-319-5209		INSTALL:	TO APPROVE REFER TO ENLARGED FLOOR FINISH
EPX-2: MFG:	SHERWIN WILLIAMS HIGH PERFORMANCE FLOORING		LOCATION	ATRIUM LOGO/EMBLEM - FINAL LOGO DESIGN TO BE DETERMINED
TYPE: COLOF INSTAL	RESUFLOR 1/8" DECO FLAKE BC EPOXY SYSTEM WITH CLEAR CHEMICAL RESISTANT TOPCOAT REBEL BLUE .: MONOLITHIC, 4" INTEGRAL COVE BASE REF. SPECS	TER-6:	MFG: TYPE: COLOR:	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO ERMINE WHITE (MATRIX), 30% POLAR WHITE #1, 15% MIRROR #1, 50% GEORGIA WHITE #1, 5% CHINA
LOCAT CONTA	ON: SCIENCE LABS CT: SCOTT KAISER 503-319-5209		INSTALL:	WHITE #1 REFER TO ENLARGED FLOOR FINISH PLAN
EPX-3: MFG: TYPE: COLOF INSTAL	SHERWIN WILLIAMS HIGH PERFORMANCE FLOORING FASTOP MULTI TOPFLOOR SL23 DARK GRAY .: MONOLITHIC, 4" INTEGRAL		LOCATION	ATRIUM LOGO/EMBLEM - FINAL LOGO DESIGN TO BE DETERMINED
LOCAT	COVE BASE REF. SPECS ON: POOL MECHANICAL/CHEMICAL			

CONTACT: SCOTT KAISER 503-319-5209

	BLUE GLASS #1, 5% DARK BLUE GLASS #0, 10% GEORGIA WHITE #0, 50% GEORGIA WHITE #1, 10% BEIGE BLEND #1, 20% CHINA WHITE #1, DESIGNER TO APPROVE
INSTALL:	REF. SPECS. METAL TRANSITION STRIP TO BE USED AT ALL TRANSITIONS, REF. FINISH PLAN
LOCATION CONTACT:	ATRIUM, NATATORIUM CORRIDOR ERIC SANTAROSSA 317-632-5567
MFG: TYPE: COLOR:	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO ERMINE WHITE (MATRIX), 5% DARK BLUE GLASS #1, 5% DARK BLUE GLASS #0, 10% GEORGIA WHITE #0, 50% GEORGIA WHITE #1, 10% BEIGE
INSTALL:	BLEND #1, 20% CHINA WHITE #1, DESIGNER TO APPROVE. REF. SPECS. METAL TRANSITION STRIP TO BE USED AT ALL TRANSITIONS, REF. FINISH PLAN
LOCATION CONTACT:	: ATRIUM, NATATORIUM CORRIDOR ERIC SANTAROSSA 317-632-5567
MFG: TYPE: COLOR:	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO GREAT SMOKIES(MATRIX), 5% DARK BLUE GLASS #1, 5% DARK BLUE GLASS #0, 10% GEORGIA WHITE #0, 50% GEORGIA WHITE #1, 10% BEIGE BLEND #1, 20% CHINA WHITE #1,
INSTALL:	REF. SPECS. METAL TRANSITION STRIP TO BE USED AT ALL TRANSITIONS, REF. FINISH
LOCATION CONTACT:	ELAN : ATRIUM, NATATORIUM CORRIDOR : ERIC SANTAROSSA 317-632-5567
MFG: TYPE: COLOR:	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO LEGENDARY BLUE (MATRIX), 25% MIRROR #1, 37.5% SKY BLUE GLASS #1, 37.5% CLEAR GLASS #1 -
INSTALL:	DESIGNER TO APPROVE REFER TO ENLARGED FLOOR FINISH PLAN
LOCATION	: ATRIUM LOGO/EMBLEM - FINAL LOGO DESIGN TO BE DETERMINED
MFG: Type: Color:	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO REALLY ORANGE (MATRIX), 25% CHUNKY ORANGE #1, 65% CRYSTAL CLEAR GLASS #1, 10% ONE SIDED MIRROR #1 - DESIGNER
INSTALL:	REFER TO ENLARGED FLOOR FINISH
LOCATION	: ATRIUM LOGO/EMBLEM - FINAL LOGO DESIGN TO BE DETERMINED
MFG: TYPE: COLOR:	SANTAROSSA TILE VITRIFIED EPOXY TERRAZZO ERMINE WHITE (MATRIX), 30%

FLOOR COVERING (CONT.)

FLOOF	R COVER	ING (CONT.)	WALL	BASE	
FLOOR 1	ΓILE		EPOXY	BASE	
FT-1:	MFG:		EB-1:	MFG:	SHE
	ITPE.	MOSAIC		TYPE:	RES
	PATTERN:	KEYSTONES			EPO
	COLOR:	ARTIC WHITE D617		INSTALL:	MON
	GROUT:	MAPEI, PEWTER 02			COV
	LOCATION:	DRAIN, REF. PLAN.		LOCATION: CONTACT:	LOC SCO
	CONTACT:	ROBIN BRADFORD 317-946-0823			
FT-2.	MEG		EB-2:	MFG:	SHE
1 1-2.	TYPE:	COLOR-BODY PORCELAIN		TYPE:	RES
		MOSAIC			EPO
	SIZE:	2"X2"		COLOR:	REB
	COLOR:	NAUTICAL BLUE D621		INSTALL:	MON
	LOCATION:	POOL DECK, ADJACENT TO		LOCATION:	SCIE
		TRENCH DRAIN, REF. PLAN.		CONTACT:	SCO
	CONTACT:	ROBIN BRADFORD 317-946-0823	EB-3:	MFG:	SHE
FT-3:	MFG:	DALTILE			PER
	TYPE:	COLOR-BODY PORCELAIN		TYPE:	FAS
	PATTERN:	KEYSTONES		INSTALL:	MON
	SIZE:				COV
	GROUT:	MAPEI, PEWTER 02		CONTACT:	SCO
	LOCATION:	FROM TRENCH DRAIN TO REST			
	CONTACT:	ROBIN BRADFORD 317-946-0823	RB-1:	MFG:	TA
				TYPE:	4" \
S-CON	TE TYPF	SEALED CONCRETE		LOCATION:	48 ST/
0.0011		REF. SPECS		REMARKS:	CO
SS-CON		STAINED AND SEALED		CONTACT	ALI
00-0014		CONCRETE,		SONTAOL.	
		REF. SPECS	TILE BA	SE	^ ٦
			1D-1.	TYPE:	PO

PAINT/WALL FINISH

SE ⁼G:	SHERWIN WILLIAMS HIGH
PE:	PERFORMANCE FLOORING RESUFLOR 1/4" DECO FLAKE BC
DLOR: STALL:	REBEL BLUE MONOLITHIC, 4" INTEGRAL
OCATION: DNTACT:	COVE BASE REF. SPECS LOCKER ROOMS, RESTROOMS, SCOTT KAISER 503-319-5209
=G:	SHERWIN WILLIAMS HIGH
PE:	RESUFLOR 1/8" DECO FLAKE BC EPOXY SYSTEM WITH CLEAR
DLOR: STALL:	CHEMICAL RESISTANT TOPCOAT REBEL BLUE MONOLITHIC, 4" INTEGRAL
OCATION: DNTACT:	SCIENCE LABS SCOTT KAISER 503-319-5209
=G: ′PE: DLOR: STALL:	SHERWIN WILLIAMS HIGH PERFORMANCE FLOORING FASTOP MULTI TOPFLOOR SL23 DARK GRAY MONOLITHIC, 4" INTEGRAL
CATION: DNTACT:	COVE BASE REF. SPECS POOL MECHANICAL/CHEMICAL SCOTT KAISER 503-319-5209
BASE FG: (PE: DLOR: DCATION:	TARKETT JOHNSONITE 4" VINYL WALL BASE 48 GREY STANDARD

EMARKS: COLOR TO ALSO BE USED WITH ALL VINYL TRANSITION STRIPS CONTACT: JEN MAYNARD 765-480-3266

BASEMFG:DALTILETYPE:PORCELAIN BUILD-UP COVE BASEPATTERN:KEYSTONESSIZE:6" H/MB5ACOLOR:DESERT GRAY SPECKLE D200GROUT:MAPEI, PEWTER 02LOCATION:POOL DECKCONTACT:ROBIN BRADFORD 317-946-0823

TERRAZZO BASETERB-1: MFG:SANTAROSSA TILETYPE:4" INTEGRAL WALL BASECOLOR:MATCH TER-1 MIXINSTALL:INTEGRAL BASE, REF. SPECSLOCATION:1ST LEVEL

PAIN	WALL FI	NISH	PLAS	TIC LAMIN	A
PAINT PT-1:	MFG: COLOR: LOCATION: CONTACT:	PPG SHADED WHISPER PPG0995-1 STANDARD/ATRIUM/CORRIDORS/ COLUMNS/ NATATORIUM/ HM DOORS AND FRAMES MIKE WAGGONER 502-263-9371	PLASTI PL-1:	C LAMINATE MFG: TYPE: COLOR: INSTALL: LOCATION:	N P N M D N v
PT-2:	MFG: COLOR: LOCATION: CONTACT:	PPG STEELY GAZE PPG0996-2 CLASSROOMS/RESTROOMS MIKE WAGGONER 502-263-9371	PL-2:	CONTACT: MFG: TYPE:	C F P
PT-3:	MFG: COLOR: LOCATION: CONTACT:	PPG STATUE GARDEN PPG0996-3 POOL AREA ACCENT MIKE WAGGONER 502-263-9371		LOCATION: CONTACT:	S M S K
PT-4:	MFG: COLOR: LOCATION: CONTACT:	PPG FLORENTINE LAPIS PPG1244-7 ACCENT WALLS MIKE WAGGONER 502-263-9371	PL-3:	MFG: TYPE: COLOR: INSTALL: LOCATION: CONTACT:	F P S M S K
PT-5:	MFG: COLOR: LOCATION: CONTACT:	PPG SEASAME CRUNCH PPG1198-7 ACCENT WALLS MIKE WAGGONER 502-263-9371	Solid S SS-1:	SURFACE MFG: TYPE: COLOR:	C 1 LI
PT-6:	MFG: Color: Location: Contact:	PPG CITY SKYLINE PPG0995-6 HM DOORS FRAMES MIKE WAGGONER 502-263-9371	SS-2:	INSTALL: LOCATION: TYPE:	M W E
WALL T WT-1:	TILE MFG: TYPE:	DALTILE 4"X12" GLAZED CERAMIC WALL TILE		Color: Install: Location:	B M S C
~~~	GROUT:	ARCTIC WHITE 0190 MAPEI, COBBLESTONE 103 VERTICAL STACKED, REF.	SS-3:	MFG: TYPE: COLOR: INSTALL:	C 1 A M
E	REMARKS:	RUN TILE TO TOP OF EB-1. USE SCHLUTER TRIM FOR TRANSITION.	2	LOCATION:	L( S S
WT-2:	MFG: TYPE:	DALTILE 4"X12" GLAZED CERAMIC WALL TILE			
~	PATTERN: COLOR: GROUT: INSTALL:	COLOR WHEEL - LINEAR SEA BREEZE 1174 MAPEI, COBBLESTONE 103 VERTICAL STACKED, REF.			
E.	REMARKS:	RUN TILE TO TOP OF EB-1. USE SCHLUTER TRIM FOR TRANSITION.			

PLASTIC LAMINATE/SOLID SURFACE WILSONART

PLASTIC LAMINATE NATURAL RECON 7996-38 MONOLITHIC, DISPLAY CASE AREAS, WORKROOM, CLASSROOMS, SCIENCE LAB CASEWORK CASSIE BEAMAN 317-910-0801 FORMICA PLASTIC LAMINATE STAINLESS 9319-BH

MONOLITHIC SCIENCE LAB CASEWORK KYLIE LEYBA 317-869-8717

FORMICA PLASTIC LAMINATE SPECTRUM BLUE 851-58 MONOLITHIC SPIRIT SHOP CASEWORK KYLIE LEYBA 317-869-8717

CORIAN 1 1/2" SOLID SURFACE LIMESTONE PRIMA MONOLITHIC WORKROOMS, DISPLAY AREAS

> EPOXY SOLID SURFACE BLACK, REF. SPECS MONOLITHIC SCIENCE LABS CASEWORK

CORIAN 1 1/2" SOLID SURFACE ARTISTA GRAY MONOLITHIC LOCKER ROOM COUNTERTOPS SCIENCE CLASSROOMS, WINDOW SILLS

## MISCELLANEOUS

CORNEI CG-1:	<b>R GUARDS</b> MFG:	CS ACROVYN
	TYPE: COLOR:	REFER TO SPECS TO MATCH PT-1, UNLESS NOTED OTHERWISE, DESIGNER TO
	LOCATION:	APPROVE PROVIDE AT ALL EXTERIOR
	CONTACT:	DRYWALL CORNERS AMY FEHRIBACH 317-407-2534
ACOUST	ΓΙCΔΙ	
AWP-1:	MFG: TYPE:	NOVAWALL FABRIC WRAPPED ACOUSTICAL
	PATTERN:	SYSTEM GUILFORD OF MAINE, ANCHORAGE 2335
	SIZE: COLOR: BACKING:	CUSTOM, REFER TO ELEVATION
	LOCATION:	APPROVE ATRIUM WALLS MARCO CAPONI 317-561-1141
AWP-2:	MFG:	
		SYSTEM
		ANCHORAGE, 2335
	SIZE: COLOR: BACKING:	CUSTOM, REFER TO ELEVATION WHITE 2664 ARCHITECT TO
	LOCATION:	APPROVE ATRIUM WALLS
	CONTACT:	MARCO CAPONI 317-561-1141
AWP-3:	MFG: TYPE:	ARMSTRONG ACOUSTICAL PANEL
	PATTERN: SIZE:	TECTUM DIRECT ATTACH 1 1/2" T, 23 3/4" X 96"
	FINISH:	PAINT GRADE, REFER TO ELEVATIONS
	BACKING:	ARCHITECT TO APPROVE
	LOCATION:	POOL DECK WALLS, REFER TO ELEVATIONS
	CONTACT:	PHIL CATTO 317-519-2829
AWP-4:	MFG: TYPE:	ARMSTRONG ACOUSTICAL PANEL
	PATTERN: SIZE:	TECTUM DIRECT ATTACH 1 1/2" T, 23 3/4" X 96"
	Color: Backing:	PAINT GRADE, PAINTED PT-1 ARCHITECT TO
	LOCATION:	APPROVE POLL DECK WALLS, REFER TO ELEVATIONS
	CONTACT:	PHIL CAITO 317-519-2829
MKBD-1	TYPE:	GLARIDGE GLASS WHITEBOARD
	COLOR: SIZE:	SIGNAL BLUE RAL5005 4' X 6' OR CUSTOM
	LOCATION:	BACK WALLS OF HALLWAY ALCOVES
	CONTACT:	ELDON WATSON 870-416-5834
MKBD-2	TYPE:	CLARIDGE LCS DELUXE PROCELAIN WHITEBOARD
	COLOR: SIZE:	WHITE 4' x 12'
	LOCATION: CONTACT:	CLASSROOM TEACHING WALL ELDON WATSON 870-416-5834
TOILET	PARTITIONS	5
TP-1	MFG:	
	PRODUCT:	DURALINE SERIES
	COLOR: LOCATION:	CHARCOAL 0077-FH LOCKER ROOMS, RESTROOMS
	CONTACT:	AMY FEHRIBACH 317-407-2534
WOOD WD-1:	MFG:	SURFACE MATERIALS
	TYPE: COLOR:	STAINED & SEALED WOOD FINISI TO MATCH PL-1, DESIGNER TO
	LOCATION:	APPROVE NEW DOORS, HALLWAY ALCOVE ATRIUM RISERS
WD-2:	MFG:	CUSTOM BUTCHERBLOCK
	TYPE:	COUNTERTOP EDGE GRAIN CONSTRUCTION
	COLOR:	STAIN TO MATCH PL-1, DESIGNE TO APPROVE
	LOCATION:	2ND FLOOR CATWALK, 3RD FLOO ATRIUM FLEX SPACE
WALL P	ANEL	
WP-1:	MFG: TYPE:	MARLITE MDF SLATWALL W/ 7000 SERIES
		ALLIMINUM INSERTS

ALUMINUM INSERTS COLOR: GOSHEN WHITE 750 SIZE: 4' X 8' PANELS LOCATION: SPIRIT SHOP CONTACT: DAN EGBERS 320-260-7633

# S NOTED -2534

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D FINISH IER TO ALCOVES,

TION ESIGNER RD FLOOR









A720









# 4 VERTICAL MONITOR FRAME SECTION SCALE: 1" = 1'-0"

DISPLAY CASE WITH SHELVES SECTION SCALE: 1" = 1'-0"

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100% CONSTRUCTION DOCUMENT PROJECT: #22130 DATE: 08-11-2023 DRAWN BY: Author INTERIOR

DETAILS





EQ	EQ	34' - 0"	7 A732	EQ	EQ	EQ	EQ		
	•					<u>(33)</u>		L( <u>33</u> )	L(3

# **GENERAL NOTES - INTERIOR ELEVATIONS**

- A. CONTRACTOR TO PROVIDE SCHLUTER EDGE WHERE TILE MEETS DISSIMILAR MATERIALS. REFER TO FINISH MATERIAL LEGEND AND INTERIOR ELEVATIONS FOR FURTHER DETAILS.LS
- B. DO NOT INSTALL GYPSUM BOARD BEHIND TILE BACKER BOARD LOCATIONS.
- C. CONTRACTOR TO PROVIDE DRYWALL REVEAL JOINT WHERE DRYWALL MEETS DISSIMILAR MATERIALS.
- D. CONTRACTOR TO PROVIDE SCHLUTER EDGE WHERE TILE MEETS DISSIMILAR MATERIALS. REFER TO FINISH MATERIAL LEGEND AND INTERIOR ELEVATIONS FOR FURTHER DETAILS.
- E. IF ONLY PAINT IS INDICATED AS THE FINISH, REFER TO ARCHITECTURAL FLOOR PLANS FOR SUBSTRATE INFORMATION.
- F. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFACTION OF DIMENSIONS AND JOB CONDITIONS. ANY DEVIATION FROM WHAT IS INDICATED ON THE FINISH PLANS SHALL BE
- BROUGHT TO THE ATTENTION OF THE ARCHITECTS AND DESIGNERS. G. ALL DIMENSIONS SHOWN ARE TO FACE OF FINISH MATERIAL, UNLESS INDICATED OTHERWISE ON PLANS.

H. ALL EXPOSED METAL SURFACES, SUCH AS GRILLES, FIRE EXTINGUISHER CABINETS, ETC., THAT ARE NOTED TO BE PAINTED ARE TO BE PAINTED MATCH WALL COLOR. I. ALL WALLS TO BE PAINTED PT-1, UNLESS NOTED OTHERWISE.

# **DELEVATION NOTES - INTERIOR**

- 2 1/4" SATIN ANODIZED ALUMINUM FINISH, SCHLUTER DILEX-AHKA TRIM FLOOR/WALL
- 3 1/4" SATIN ANODIZED ALUMINUM FINISH, SCHLUTER JOLLY TRIM WALL/CEILING
- 6 1/4" SATIN ANODIZED ALUMINUM FINISH, SCHLUTER DILEX-AHK TRIM WALL/WALL

- 15 FURRING STRIPS TO BE PROVIDED FOR VIDEO BOARD HOUSING. EXACT DIMENSIONS TO BE FIELD VERIFIED. VIDEO BOARD HOUSING TO ALSO INCLUDE 1/2" LETTERING
- 16 BUILT-OUT MONITOR FRAME WITH PLASTIC LAMINATE, PL-1 FRONT. REFER TO
- 18 CUSTOM 3D ACRYLIC SIGNAGE ELEMENT AT THIS LOCATION. COORDINATE FINAL

- 25 NATATORIUM COLUMNS TO HAVE WALL TILE, WT-1 WRAPPED AROUND ALL SIDES. ALL OUTSIDE CORNERS TO BE FINISHED WITH SCHLUTER SATIN ANODIZED ALUMINUM

- 32 ALL EXPOSED STRUCTURAL STEEL COLUMNS, BEAMS, AND TRUSSES, ALONG WITH ALL CEILING AND CEILING MECHANICAL EQUIPMENT IN NATATORIUM TO BE PAINTED PT-2 -



# S O C I A T E S HITECTURE 427 S. COLLEGE / DIANAPOLIS, IN 46 S S S C $\overline{A}$ $\alpha$ $\overline{}$ <











September 6, 2023

Mr. Misha Belyayev Lancer Associates Architecture 145 N. East Street Indianapolis, IN 46204



RE: Whiteland Community High School Campus Improvements Phase 1 Summary of Civil Revisions – Addendum No. 002

Misha:

Please see below for a summary of the plan revisions, dated September 6, 2023, which are associated with Addendum No. 002 for the above referenced project:

- **Demolition Plan (sheet 207)** revised pavement and curb removal limits to match revised threephase electric transformer location.
- **Site Dimension Plan (sheet 301)** revised pavement and curb replacement limits to match revised three-phase electric transformer location.
- **Utility Plan (sheet 400)** revised three-phase electric transformer location per design team coordination with Owner and Johnson Co. REMC.
- **Grading Plan (sheet 500)** revised pavement and curb replacement grades to match revised three-phase electric transformer location.
- **Erosion Control Plan (sheet 901)** revised mulched seeding hatch and construction limits to match revised three-phase electric transformer location.

Please find the revised construction plans enclosed. Please feel free to contact me at 317-780-1555 ext. 135 or <u>dsnyder@crossroadengineers.com</u> if you have any questions or need additional information on these subjects.

Sincerely, CrossRoad Engineers, P.C.

Jule M. Singen

Derek M. Snyder, P.E. Project Engineer













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SHEET

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C LATERA HERWISE	AL. BELOW.	
SLOPE	U.S. INV.	
2.05%	798.28	Y
2.02%	795.20	$\mathbf{k}$
1.13%	790.70	7)
2.00%	798.20	K
2.00%	796.70	ᡝ
		≁ ∕₁

## **EXISTING LEGEND**

{[]]	POWERPOLE			800				CONTOURS
-[]])	POWERPOLE W/RISER							PROPERTY LINE
0-0-	POWERPOLE W/LIGHT							SECTION LINE
ÌC	LIGHT POLE							RIGHT-OF-WAY
Ô	ELECTRIC METER							EASEMENT
EB	ELECTRIC BOX							ADJOINER LINE
-¥-	YARD LIGHT							PAVEMENT LINE
€-	GUIDE WIRE	-~~~	~~~~~	~~~~~~~~~	~~~~~	~~~~~	~~~~~~	FIELD LINE
$(\overline{U})$	TELEPHONE MANHOLE			0		- 🗆		PRIVACY FENCE
TR	TELEPHONE RISER					—С	)	CHAINLINK FENCE
¥><\	WATER VALVE		/	_ /	- /		/	SPLIT RAIL FENCE
`б	FIRE HYDRANT		· · · —				· · <u> </u>	DITCH
$(\mathbb{V})$	WATER MANHOLE		FD —	— FD —	— FO -	F	·	FIBER OPTIC LINE
$\bigcirc$	WATER METER		G —	— G —	— G		G —	GAS LINE
<u>G</u> > <v< td=""><td>GAS VALVE</td><td></td><td>т —</td><td>— т —</td><td>— т</td><td></td><td>т —</td><td>TELEPHONE LINE</td></v<>	GAS VALVE		т —	— т —	— т		т —	TELEPHONE LINE
$\bigcirc$	GAS METER		\	/		- w -		WATER LINE
TVR	CABLE TV RISER	(	ctv —	CTV	— CTV		сту —	CABLE TV LINE
FD	FIBER OPTIC BOX		E —	— E —	— E		E ——	ELECTRIC LINE
$(\bigcirc)$	CLEANOUT		– DHU	——— Онц	J	— DHU		OVERHEAD UTILITY LINE
0	SIGN	$\sim$	$\sim$	$\sim$	$\sim$	$\sim$	$\frown$	TREE LINE
	STORM ROUND INLET	۵-						SANITARY SEWER
1999999	STORM CURB INLET	-						W/MANHOLE
$\boxtimes$	RIGHT-OF-WAY MARKER	(5)						STORM SEWER W/
}#@	TREE, BUSH & STUMP							MANHOLE & END SECTION
			(D)	DEED	(M)	MEASU	JRE	(PS) PLAT SURVEY
Ψ	IEMP. DENCHMARK			ASPHALT	$\square$		BUILDI	NG CONCRETE
		4	<u> </u>	GRAVEL				

## **UTILITIES NOTES**

- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND PROVIDING ALL NECESSARY FLAGMAN, BARRELS, SIGNAGE, ETC. DURING CONSTRUCTION. ALL APPLICABLE M.U.T.C.D. STANDARDS SHALL GOVERN THIS WORK. CONTRACTOR SHALL REFER TO THE ELECTRICAL SITE PLAN PREPARED BY PRIMARY ENGINEERING, INC. FOR PARKING LOT LIGHTING AND SPECIFICATIONS. ALL STORM SEWER CASTINGS SHALL BE NPDES PHASE II COMPLIANT. CASTINGS SHALL BE MANUFACTURED WITH A STATEMENT SAYING: "DUMP NO WASTE, DRAINS TO RIVER" IN  $\frac{1}{2}$ " RAISED LETTERS. ALL FIELD TILES DISTURBED DURING CONSTRUCTION MUST BE REPAIRED/CONNECTED TO NEW STORMWATER FACILITIES. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING UNDERGROUND STORMWATER DETENTION CHAMBERS DURING THE ENTIRE DURATION OF THE PROJECT. CONTRACTOR SHALL COORDINATE WITH ADVANCED DRAINAGE SOLUTIONS, INC. (ADS) TO DETERMINE THE MINIMUM COVER REQUIRED OVER THE EXISTING CHAMBERS DURING CONSTRUCTION, AS WELL
- AS, THE APPROPRIATE EQUIPMENT AND OPERATIONS TO PROTECT THE CHAMBERS. WATER MAIN INSTALLATION AND MATERIALS SHALL CONFORM TO THE TOWN OF WHITELAND TYPICAL CONSTRUCTION GUIDELINES AND DETAILS. TAPPING SLEEVES AND VALVES SHALL BE EJP OR MUELLER H-615, H-616 OR STAINLESS STEEL SLEEVES. TAPPING VALVES SHALL BE 2360 SERIES BY MEULLER OR AFC 2500. FIRE HYDRANT ASSEMBLIES SHALL BE SUPER CENTURION 250 HYDRANT BY MEULLER CO.
- WITH STORZ FITTING ON STEAMER WITH 5'-6" MIN. BURIAL DEPTH. ALL FITTINGS SHALL BE DUCTILE IRON (D.I.) WITH MECHANICAL JOINTS (M.J.) CONFORMING TO AWWA C-110, C-111, C-153, AND NSF-61. ALL WATER MAIN FITTINGS SHALL BE RESTRAINED IN ACCORDANCE WITH THE TOWN OF WHITELAND TYPICAL CONSTRUCTION
- GUIDELINES AND DETAILS. MEG-A-LUG RETAINER GLANDS BY EBBA IRON, INC. , FIELD-LOK GASKETS, OR ONE BOLT RESTRAINED FITTINGS SHALL BE USED ON EACH SIDE OF FITTINGS WHERE THE WATER MAIN CHANGES DIRECTION.
- CONTRACTOR SHALL COORDINATE CONSTRUCTION SEQUENCE WITH THE OWNER AND SKILLMAN CORPORATION AND MAINTAIN ACTIVE UTILITY SERVICES AT ALL TIMES. ALL TEMPORARY UTILITY SERVICE INTERRUPTIONS MUST BE APPROVED BY THE OWNER AND SKILLMAN CORPORATION PRIOR TO INSTALLATION OF IMPROVEMENTS. EXISTING UTILITY SIZE AND MATERIAL INFORMATION SHOWN ON THESE PLANS ARE PER THE
- BEST GRAPHICAL AND VISIBLE INFORMATION AVAILABLE. CONFLICTS MAY EXIST AND 17 SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL SIZING AND MATERIAL INFORMATION PROVIDED. IF ACTUAL CONDITIONS DIFFER FROM THAT INFORMATION SHOWN ON THE PLANS, THE CONTRACTOR SHALL, PRIOR TO THE INSTALLATION OF ANY PROPOSED INFRASTRUCTURE, NOTIFY THE DESIGN ENGINEER IMMEDIATELY. CONTRACTOR SHALL CONNECT ROOF DRAINS TO STR. NO. 38, 44, 49, 51, AND 58 AS
- SHOWN. CONFIRM ROOF DRAIN LOCATIONS, DIAMETERS, AND INVERT ELEVATIONS EXITING THE BUILDING WITH THE MEP PLANS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONFIRM SANITARY LATERAL LOCATIONS, DIAMETERS, AND INVERT ELEVATIONS EXITING THE BUILDING WITH THE MEP PLANS PRIOR TO CONSTRUCTION.







EROSION	CONTROL LE
	MULCHED SEEDING
	EROSION CONTROL BLANKET (NC AMERICAN GREEN SC-150 OR EC AND MULCHED SEEDING
	TEMPORARY CONSTRUCTION ENTI (SEE DETAIL-SHEET 901)
800	EXISTING CONTOURS
800	PROPOSED CONTOURS
	SILT FENCE SLOPE CHECK (NUTEC 3 NWS-6 OR APPROVED
	CONSTRUCTION LIMITS
$(\overline{A})$	CURB INLET PROTECTION (SEE D
B	CONCRETE WASHOUT AREA (SEE
$\odot$	FABRIC DROP INLET PROTECTION
$\bigcirc$	COIR LOG/FILTER SOCK (SEE DE

## ADDENDUM

ADDENDUM NO: 2

PROJECT: Whiteland HS Phase 1b

PROJECT NO: 21-1437

DATE: September 6, 202

BY: Cameron Hull

This Addendum is issued in accordance with the provisions of "The General Conditions of the Contract for Construction," Article 1, "Contract Documents" and becomes a part of the Contract Documents as provided therein. This Addendum includes:

Addendum Pages: ADD 1 of 2 through ADD 2 of 2

Attached Documents: Quote Form (Addendum 1); 11 68 00 PLAYGROUND EQUIPMENT; BREAK-O-DAY ES L101 MATERIALS AND NOTES PLAN

#### **PART 0 - GENERAL INFORMATION**

#### PART 1 - BIDDING REQUIREMENTS

#### PART 2 - SPECIFICATIONS

#### PART 3 - DRAWINGS

- 3.1 L101 MATERIALS PLAN
  - A. Materials Keynotes updated to clarify detail references.
- 3.2 L102 MATERIALS PLAN
  - A. Materials Keynotes updated to clarify detail references.

#### 3.3 <u>L602 SITE DETAILS</u>

- A. Detail 2 updated to clarify riser height,
- B. Detail 3 updated to clarify riser height.

#### PART 4 - QUESTION AND ANSWER

#### END ADDENDUM

Addendum



ADD 1 of 1





	MATERIAL KEYNOTES	
KEY	DESCRIPTION / REFERENCE	
(P01)	CONCRETE, TYPE 01 REFER TO SITE DETAILS 1,2,3,4/L601	
(P02)	MAINTENANCE EDGE, 1'-0" REFER TO TO SITE DETAILS 7/L601	
(P03)	CONCRETE, HEAVY DUTY, 6", WITH REBAR REFER TO SITE DETAILS 6/L601	
<b>S01</b>	STAIR & RAILING; 1 STEP REFER TO SITE DETAILS 1,4,5/L602	
<b>S02</b>	STAIR & RAILING; 3 STEPS REFER TO SITE DETAILS 3,4,5/L602	•
<ul><li>(S03)</li></ul>	STAIR & RAILING; 4 STEPS REFER TO SITE DETAILS 2,4,5/L602	$\sum \sqrt{1}$
	WALL, 2'-0" WIDE SEAT WALL, TYPE 01 REFER TO SITE DETAIL 6/L602	
(W02)	WALL, 2'-0" WIDE SEAT WALL, TYPE 02 REFER TO SITE DETAIL 7/L602	
(R01)	ADA RAMP, TYPE 01 SIDEWALK RAMP WITH CURB REFER TO CIVIL ENGINEERING PLAN	
(R02)	ADA RAMP, TYPE 02 FLUSH CONDITION REFER TO CIVIL ENGINEERING PLAN	•
(F01)	FLAG POLE, REFER TO SITE DETAIL 5/L601	$\sum \sqrt{1}$
(F02)	DECORATIVE BOLLARD PER MANUFACTURER	

NOTE: REFER TO CIVIL ENGINEERING PLANS FOR VEHICULAR PAVING









LIOI





















L102





2% Slope

¾" Chamfer ——

Finish Grade;—

Dowels to Match

Vertical

Plantings

MANAN

-Canopy Support

to Architecture and Structural Drawings

Structure Beyond, Refer

-#5 @ 12" O.C. Each

Material Varies

Way, Each Face, Typ.

— Finish Grade; Pavement 🚡













STAIR AND HANDRAIL - I RISER









PROJECT: #22130 DATE: 07-28-2023 DRAWN BY: KK / CCH Site Details







**Primary Engineering, Inc.** 9785 Crosspoint Blvd., Ste. 103 Indianapolis, Indiana 46256 317-324-1221 ph www.primary-eng.com

Addendum:2Date:09/06/23Project:Clark-Pleasant Community School Corp.<br/>Whiteland Comm. High School Addition

Comm #: 22417

The following items shall be incorporated into the specifications and drawings and are considered to be integral to the bid documents for the project. Acknowledgement of receipt of this addendum is required on the bid form.

### Item #1: General Clarifications

- A. Louvers L-1 through L-21 are not required to be rated for wind-driven rain. Louver depths shall be based on dimensions listed in the Louver Schedule on Drawing Sheet M504 and not based on dimensions listed in Specification Section 089119 Fixed Louvers.
- B. Grate locks are not required on trench drains.
- C. Natatorium pool perimeter trench drain TD-2 overall center-line dimensions shall be 192' x 80'.
- D. Boiler room trench drain TD-3 shall be 14'0" long and shall consist of whole sections and minimum 8" deep.
- E. Science Lab utility controllers: American Gas Safety is an allowable manufacturer.
- F. Specification Section 238146 Water Source Unitary Heat Pumps applies to water-towater heat pumps HP-1 through HP-6.

#### Item #2: Specification Section 077000, "Roof Specialties and Accessories".

A. Add specification in its entirety. Refer to attached specification.

## Item #3: Specification Section 089119, "Fixed Louvers".

- A. Add Part 2.3 A.f Construction Specialties
- B. Add Part 2.3 B.f Construction Specialties
- C. Add Part 2.3 C.f Construction Specialties

#### Item #4: Specification Section 224223, "Commercial Showers".

- A. Add Part 2.2 A.1.e Acorn Engineering Company
- B. Add Part 2.2 B.1.d Acorn Engineering Company

#### Item #5: Specification Section 230900, "Instrumentation and Control for HVAC".

- A. Revise Part 2.2 A as follows:
  - 1. Distech with Niagara 4, installed by Jackson Systems and Supply.
  - 2. Honeywell with Niagara 4, installed by local factory authorized branch.

- 3. Automated Logic Corporation with WebCntrl, installed by local factory authorized branch.
- 4. Alerton Controls with Niagara 4, installed by Open Control Systems.
- 5. Delta Controls with Niagara 4, installed by local factory authorized branch.
- 6. Schneider Controls with Niagara 4, installed by local factory authorized branch.

#### Item #6: Specification Section 231123, "Facility Natural Gas Piping".

A. Add Part 2.3 A.3.a.2) NIBCO Bench Press

#### Item #7: Specification Section 236513.13, "Open-Circuit Forced-Draft Cooling Towers".

- A. Delete Part 2.13 and replace with "NOT USED".
- B. Delete Part 2.14 and replace with "NOT USED".

#### Item #8: Specification Section 238416.13, "Outdoor, Mechanical Dehumidification Units".

- A. Delete Part 2.6.D and replace with "NOT USED".
- B. Delete Part 2.7.E and replace with "NOT USED".
- C. Delete Part 2.11.A and replace with "NOT USED".

#### Item #9: Drawing Sheet FP201.

A. Revise all Plan Notes. Refer to attached drawing revision.

#### Item #10: Drawing Sheet P001.

A. Revise Controls Responsibility Chart. Refer to attached drawing revision.

#### Item #11: Drawing Sheet P100L.

A. Revise Plan Note #3 to add medium duty stainless steel frame for trench drain TD-2. Refer to attached drawing revision.

#### Item #12: Drawing Sheet P100M.

A. Revise Plan Note #3 to add medium duty stainless steel frame for trench drain TD-2. Refer to attached drawing revision.

#### Item #13: Drawing Sheet P101AGH.

A. Add DET-1. Refer to attached drawing revision.

#### Item #14: Drawing Sheet P101L.

A. Add TMV-3 and Plan Note #6. Revise hot water piping to locker room wash fountains. Refer to attached drawing revision.

#### Item #15: Drawing Sheet P102J.

A. Add domestic hot water, cold water, and acid waste piping to fume hood. Refer to attached drawing revision.

#### Item #16: Drawing Sheet P102K.

Add domestic hot water, cold water, and acid waste piping to fume hood. Refer to attached drawing revision.

#### Item #17: Drawing Sheet P103J.

A. Add plumbing fixtures GT-1H and GT-2H to teacher demonstration table. Add plumbing fixtures SK-5H, GT-3H, and GT-4H to fume hoods. Add vent piping to fume hoods. Refer to attached drawing revision.

## Item #18: Drawing Sheet P103KLM.

A. Add plumbing fixtures GT-1H and GT-2H to teacher demonstration table. Add plumbing fixtures SK-5H, GT-3H, and GT-4H to fume hoods. Refer to attached drawing revision.

### Item #19: Drawing Sheet P501.

- A. Add Plumbing Thermal Expansion Tank Schedule. Refer to attached drawing revision.
- B. Plumbing Fixture Schedule: add plumbing fixtures SK-5H, GT-1H, GT-2H, GT-3H, and GT-4H. Refer to attached drawing revision.

### Item #20: Drawing Sheet M001.

A. Revise Controls Responsibility Chart. Refer to attached drawing revision.

### Item #21: Drawing Sheet M003.

- A. Add disconnect and salvage of existing dust collector system. Refer to attached drawing revision.
- B. Revise Demolition Plan Note #8. Refer to attached drawing revision.

#### Item #22: Drawing Sheet M101A.

A. Add reinstallation of existing dust collection system. Revise Plan Note #1. Refer to attached drawing revision.

#### Item #23: Drawing Sheet M101GH.

A. Revise Plan Note #1. Refer to attached drawing revision.

#### Item #24: Drawing Sheet M101J.

A. Add thermostat for HP-J1.06, HP-J1.08, HP-J1.18, HP-J3.16, and HP-J3.17. Refer to attached drawing revision.

#### Item #25: Drawing Sheet M101K.

A. Revise thermostat location for HP-K1.15. Refer to attached drawing revision.

#### Item #26: Drawing Sheet M101L.

A. Add piping to HP-L2.06. Add condensate piping up to HP-L3.02. Refer to attached drawing revision.

#### Item #27: Drawing Sheet M101M.

A. Apply Plan Note #12 to HP-M1.01. Refer to attached drawing revision.

#### Item #28: Drawing Sheet M102J.

A. Add piping to HP-J2.13 and HP-J2.14. Revise HP-J2.15 thermostat location. Refer to attached drawing revision.

#### Item #29: Drawing Sheet M102L.

A. Add piping up to HP-L3.02. Revise pipe size up to HP-L3.03. Refer to attached drawing revision.

#### Item #30: Drawing Sheet M103J.

A. Revise diffuser airflows for HP-J3.16. Revise HP-J3.01 and HP-J3.06 thermostat tags. Refer to attached drawing revision.

#### Item #31: Drawing Sheet M103K.

A. Revise diffuser airflows for HP-J3.17. Revise HP-K3.11 thermostat tag. Add piping to HP-L3.01. Revise dual-temp pipe size to DOAS-1. Refer to attached drawing revision.

#### Item #32: Drawing Sheet M301.

A. Revise ET-1 tag to be ET-1.1. Add expansion tank ET-1.2. Add piping to HP-J3.07 and HP-J3.18. Revise Plan Note #18. Revise 3" piping to be 4" for DOAS-1 reheat coil system. Refer to attached drawing revision.

#### Item #33: Drawing Sheet M501.

A. Water Source Heat Pump Schedule: revise heat pumps HP-J3.16 and HP-J3.17. Add "WaterFurnace" as HP-L2.06 manufacturer. Add Remark #10 and apply to all heat pumps except HP-J1.08, HP-L2.06, HP-J3.08, HP-L3.02, and HP-M3.02. Refer to attached drawing revision.

#### Item #34: Drawing Sheet M502.

- A. Cooling Tower Schedule: revise cooling tower selection information. Refer to attached drawing revision.
- B. Air Handler Schedule: revise Dual-Temp Reheat Coil flow rate to be 290 GPM. Refer to attached drawing revision.
- C. Air and Sediment Separator: revise ADS-3. Refer to attached drawing revision.

#### Item #35: Drawing Sheet M503.

A. Water Flow / Energy Meter Schedule: revise FM-3. Refer to attached drawing revision.

#### Item #36: Drawing Sheet M504.

- A. Expansion Tank Schedule: revise ET-1 to be ET-1.1. Add ET-1.2. Revise ET-2. Add system volume and pre-charge information. Refer to attached drawing revision.
- B. Variable Speed Drive Schedule: revise cooling tower fan VSD motor HP ratings. Refer to attached drawing revision.
- C. Hydronic Pump Schedule: revise P-10 and P-11 selection. Add Remark #8. Refer to attached drawing revision.

#### Item #37: Drawing Sheet E000.

A. Added Carbon monoxide sensor to symbol schedule. Refer to supplemental information drawing E000 for additional information.

#### Item #38: Drawing Sheet E102E

A. Demolish Smoke Damper. Refer to supplemental information drawing E102E for additional information.

#### Item #39: Drawing Sheet E301M.

A. Rm. M104: Added Track lighting in display case. Refer to supplemental information drawing E301M for additional information.

#### Item #40: Drawing Sheet E401A

A. Rm. A114a & A114b: Added Carbon Monoxide sensors to room. Refer to supplemental information drawing E401A for additional information.

#### Item #41: Drawing Sheet E401M

A. Rm. M101: Added Carbon Monoxide sensors to room. Refer to supplemental information drawing E401M for additional information.

#### Item #42: Drawing Sheet E501

A. Detail #13 revision. Refer to supplemental information drawing E501 for additional information.

#### Item #43: Drawing Sheet E601.

A. Revised electrical information for CT-1 and CT-2 motors. Refer to supplemental information drawing E601 for additional information.

#### Item #44: Drawing Sheet E602.

A. Revised electrical information for HP-J3.16 & HP-J3.17. Refer to supplemental information drawing E602 for additional information.

#### Item #45: Drawing Sheet E701.

A. Equipment Schedule revisions. Refer to supplemental information drawing E701 for additional information.

#### Item #46: Drawing Sheet E703

A. Exterior Light schedule and Replay Panel Schedule revisions. Refer to supplemental information drawing E201M for additional information.

#### Item #47: Drawing Sheet ES201

A. Revised location of utility transformer. Refer to supplemental information drawing ES201 for additional information.

PART 1 GENERAL

- 1.1 SECTION INCLUDES
  - A. Rooftop support products including:
    - 1. Access products.
    - 2. Accessories.

#### 1.2 RELATED SECTIONS

- A. Section 05 50 00 Metal Fabrications.
- B. Division 07 Thermal and Moisture Protection.
- C. Section 21 05 29 Hangers and Supports for Fire Suppression Pipe.
- D. Section 22 05 29 Hangers and Supports for Plumbing Pipe and Equipment.
- E. Section 23 05 29 Hangers and Supports for HVAC Piping and Equipment.
- F. Section 26 05 29 Hangers and Supports for Electrical Systems

#### 1.3 REFERENCES

- A. ASTM International (ASTM):
  - 1. ASTM A1011 SS GR33 Standard Specification for hot rolled carbon steel sheet and strip, structural quality. (Hot Rolled Channel Hot-Dipped Galvanized Finish).
  - 2. ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 3. ASTM A153 Standard Specification for zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 4. ASTM A525 Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
  - 5. ASTM D1929 Standard Test Method for Determining Ignition Temperature of Plastics.
- B. American National Standards Institute (ANSI):
  - 1. ANSI / MSS SP-58 Pipe Hangers and Supports Materials, Design, Manufacture, Selection, Application and Installation.
  - 2. ANSI / MSS SP-69 Pipe Hangers and Supports Selection and Application.
  - 3. ANSI / MSS SP-127 Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection and Application.
- C. American Iron and Steel Institute (AISI):
  - 1. AISI Specifications for the Design of Cold-Formed Steel Structural Members, 2007 Edition.
- D. American Institute of Steel Construction (AISC):
  - 1. Steel Construction Manual, 14th Edition.
- E. American Society of Civil Engineers (ASCE):

- 1. ASCE 7 Minimum Design Loads for Buildings and Other Structures.
- F. International Code Council (ICC):
  - 1. International Building Code.
  - 2. International Mechanical Code.
  - 3. International Fuel and Gas Code.
- G. Occupational Safety and Health Administration (OSHA):
  - 1. Safety and Health Regulations for Construction, Fall Protection.
  - 2. OSHA 1910, Subpart D, Walking and Working Surfaces.

#### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings:
  - 1. Provide project specific, engineered stamped shop drawings and calculations including extents of installation, load bearing capacity and structural requirements.
  - 2. Show installation layout, indicating product type and spacing. Coordinate with manufacturer's take off evaluations, measurements, control dimensions, and rooftop requirements analysis.
  - 3. Show details of each roofing system including material layers and thicknesses, flashing, terminations, and penetrations with each rooftop support system to be installed.
  - 4. All supports shall be pre-assembled and shipped for turnkey installation. Indicate all steps and preparation required by others.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification, product model names and catalog numbers, and related information until ready for installation.
- B. Store materials off the ground under ventilated covers until ready for installation.
- C. Handle materials to avoid damage.

#### 1.6 PROJECT CONDITIONS

- A. Quantity Take Off: A manufacturer certified technician shall perform on-site quantity take-off including the following:
  - 1. Field measurements.
    - a. Where field measurements are not possible during design or construction, show control dimensions and project specific information on shop drawings.
  - 2. Design and layout.
  - 3. Product designation and tagging.

- B. Do not install products under environmental conditions outside manufacturer's recommended limits.
- C. Coordinate with roofing, mechanical, electrical and other related trades as required.

#### 1.7 WARRANTY

- A. Provide manufacturers standard product warranty against defects in manufacturing, proper operation, and against damaging roofing membrane when products are installed in accordance with engineered shop drawings and manufacturer's instructions. Warranty is not a maintenance agreement, insurance policy or obligation to repair leaks determined to be a result of the building design, installation, construction error, misuse of system, failure to inspect or maintain system or other limitations in manufacturer's standard warranty.
  - 1. Warranty Period: 20 years.

#### PART 2 PRODUCTS

- 2.1 GENERAL
  - A. Unique design absorbs thermal expansion and contraction of pipes to prevent damage to roofing membranes using non-corrosive bases that rest on roofing membranes including:
    - 1. Gently rounded edges to prevent damage to roofing membrane.
    - 2. Drainage ports to prevent ponding.
    - 3. Carbon black additive in polycarbonate for UV stabilization, stainless steel and hot-dipped galvanized bases are available as specified below.
  - B. Loading and Design Constraints:
    - 1. Design values are based on rooftop applications only. For other applications contact manufacture for allowable loading.
    - 2. Maximum loading from any type of base to finished roof surface not to exceed 3.0 psi (0.021 Mpa) unless specifically indicated in project specifications.
    - 3. Horizontal deflection not to exceed the span length divided by 360 (*l/360*) or 1/8 inch (3.175 mm).
  - C. Include manufacturers pipe guides, spacers, clamps, support pads, 2-sided tape and other recommended accessories.

#### 2.2 ACCESS PRODUCTS

- A. Crossover Bridges: Custom designed to meet project specific requirements, OSHA 1910 Subpart D standards including handrails, and the following:
  - 1. Deck Bases: Polycarbonate, 16 by 18 inch (406 by 457 mm).
  - 2. Deck Bases: Stainless steel, 12 by 16 inch (305 by 406 mm).
  - 3. Deck Bases: Hot-dipped galvanized steel, 12 by 16 inch (305 by 406 mm).
  - 4. Metal Components: Hot-dipped galvanized steel.
  - 5. Metal Components: Stainless steel.
  - 6. Walking Surfaces: 12 inch (305 mm) Punched Interlock Grating with anti-skid surface.
  - 7. Walking Surfaces: Bar Grating with serrated surface.
  - 8. Walking Surfaces: Fiberglass Grating.
  - 9. Railings: Standard railings shall be provided on all stairways having 4 or more

risers and platforms 4 feet (1.22 m) or more above adjacent level.

- 10. Toeboards: 4 inch (102 mm) Toeboards shall be provided whenever, beneath the open side:
  - a. A person can pass;
  - b. There is moving machinery;
  - c. Where falling material could create a hazard.
- 11. Structural Design Criteria in accordance with Structural Documents
- 12. Crossover structures that are exposed to wind shall be designed and installed to resist wind pressures determined in accordance with ASCE 7 chapter 29.
- 13. When earthquake loads are applicable in accordance with ASCE 7 chapter 13, crossover structures shall be designed and installed accordingly.
- 14. The design requirements for crossover structures, components, supports and attachments shall be supported by one of the following methods:
  - a. Project-specific design and documentation submitted for approval to the authority having jurisdiction after review and acceptance by a registered design professional.
  - b. Submittal of manufacturer's certification that the component is qualified by an independent third party via either analysis or testing in accordance with industry standards.

#### 2.3 ACCESSORIES

- A. Fitted Support Pads: Designed specifically to fit non-penetrating rooftop supports for additional protection of the rooftop envelope. Slip resistant pads are heat molded with a small lip to hold the support pad and reduce movement on the rooftop. Holes in the pad save weight and allow for venting and drainage.
  - 1. Support Pad Material: 100 percent recycled rubber.
  - 2. Dimensions: Fitted 19 by 23 inch (483 by 584 mm).
  - 3. Dimensions: Fitted 16 by 18 inch (406 by 457 mm).
  - 4. Dimensions: Fitted 9 by 15 inch (230 by 381 mm).
  - 5. Dimensions: Fitted 7 by 10 inch (178 by 254 mm).
  - 6. Dimensions: 12 by 12 inch (304.8 by 305 mm).
  - 7. Dimensions: Custom size as recommended by the manufacturer.
- B. Flat Support Pads: Designed specifically to fit non-penetrating rooftop supports for additional protection of the rooftop envelope. Slip resistant pads are heat molded.
  - 1. Support Pad Material: 100 percent recycled rubber.
  - 2. Dimensions: 12 by 12 inch (305 by 305 mm).
  - 3. Dimensions: Custom size as recommended by the manufacturer.

#### PART 3 EXECUTION

- 3.1 EXAMINATION
  - A. Do not begin installation until substrates have been properly prepared.
  - B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
  - C. Field Measurements and Quantity Take Off: A manufacturer certified technician shall perform on-site field measurements, coordinate design and layout, designate and tag products based on project conditions.

#### 3.2 PREPARATION

- A. Clean roofing surfaces in accordance with the roofing manufacturer's instructions prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for each substrate under the project conditions.
  - 1. For ballasted or built-up roofs, all loose aggregate shall be removed from an area 2 inch (51 mm) outside each base footprint.

#### 3.3 INSTALLATION

- A. Install an additional sheet of roofing material, a support pad, or a deck plate beneath the base of each stand.
- B. Place the supports:
  - 1. Center each stand beneath the component so supports are aligned.
  - 2. If more than one pipe is being supported, adjust for even weight distribution.
  - 3. Set pipe in support without dropping or causing undue impact.
- C. Adjustable Supports: Adjust height of each support to achieve proper height and level before installing supported item.
  - 1. Level hangers, rollers or struts before installing component.
  - 2. Make final height adjustments to provide even distribution of load on all supports.

#### 3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

#### END OF SECTION

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## **CONTROLS RESPONSIBILITY CHART**

	ITEM
	FURNISH PIPE WELLS FOR SENSORS
	INSTALL PIPE WELLS FOR SENSORS
	PROVIDE 120 VOLT POWER FOR CONTROL PANELS
	PROVIDE INTERLOCK WIRING BETWEEN DEVICES, PANELS
	FURNISH VARIABLE SPEED DRIVES
	INSTALL VARIABLE SPEED DRIVES
	PROVIDE LINE AND LOAD WIRING TO VARIABLE SPEED DR
	PROVIDE CONTROL WIRING TO VSD
	PROGRAM AND STARTUP VSD
	PROVIDE 120 VOLT POWER TO CONTROLS
	PROVIDE LOW VOLTAGE CABLING TO CONTROLS
	FURNISH CONTROL DAMPERS
	INSTALL CONTROL DAMPERS
	FURNISH DAMPER ACTUATORS
	INSTALL DAMPER ACTUATORS
$\Delta$	WIRE LOW VOLTAGE DAMPER ACTUATORS
<u> </u>	WIRELINE VOLTAGE DAMPER ACTUATORS
$\setminus \int$	FURNISH CONTROL VALVES
6	
	FURNISH CONTROL VALVE ACTUATORS
(	INSTALL CONTROL VAVLE ACTUATORS
Ţ	
	COORDINATE PROJECT SCHEDULE WITH ALL TRADES
	PROVIDE SHOP DRAWINGS TO ALL TRADES
	PROVIDE 120 VOLT POWER TO SOLENOID VALVES
	PROVIDE LOW VOLTAGE CABLING TO SOLENOID VALVES
	PROVIDE AND INSTALL BEERIGERANT MONITORING SYSTE
	SALVAGE OF EXISTING CONTROLS
	DEMOLITION OF EXISTING CONTROLS
	REMARKS:
	1. MECHANICAL CONTRACTOR/MANUFACTURER SHALL PI
	FOR A COMPLETE UNIT.
	2. PACKAGED VSD'S INTERNAL TO HVAC EQUIPMENT SHA
	EQUIPMENT SCHEDULES FOR VSD'S TO BE FURNISHED
	3. PACKAGED CONTROL DAMPERS INTEGRAL TO HVAC EC
	REFER TO EQUIPMENT SCHEDULES AND DETAILS FOR
	4. PACKAGED CONTROL VALVES INTEGRAL TO HVAC EQU
	REFER TO EQUIPMENT SCHEDULES AND DETAILS FOR

- 5. COORDINATE WITH GC FOR ROOF PENETRATIONS. 6. COORDINATE WITH OWNER.
- 7. COORDINATE WITH TCC PRIOR TO CONTROLS DEMOLITION.

## PLUMBING SYMBOL SCHEDULE

PIPING	SYMBOLS		PLUM	BING LINE TYPES		ABBREVIATIONS
IATIC FLOW CONTROL VALVE ALVE RFLY VALVE VALVE		PIPE CAP PIPE DROP PIPE RISE PIPE THERMOMETER		COLD WATER HOT WATER HOT WATER RECIRC HOT WATER AT TEMPERATURE	AC AFF AW BFF CO CW DBP	AIR COMPRESSOR ABOVE FINISHED FLOOR ACID WASTE BELOW FINISHED FLOOR CLEAN OUT COLD WATER DOMESTIC BOOSTER PUMP
RESSED AIR OUTLET E CHECK BACKFLOW PREVENTER JTLET TURRET		PRESSURE GAUGE PRESSURE REDUCING VALVE ROOF DRAIN OR OVERFLOW ROOF DRAIN	SOFT RAW NP	SOFTENED WATER RAW WATER NON POTABLE WATER	DF DSN EDS EEW ET EWC EWH	DRINKING FOUNTAIN DOWNSPOUT NOZZLE EMERGENCY DRENCH SHOWER EMERGENCY EYE WASH EXPANSION TANK ELECTRIC WATER COOLER ELECTRIC WATER HEATER
DCK /ALVE VALVE		REDUCED PRESSURE BACKFLOW PREVENTER W/ RISING STEMS REDUCED PRESSURE BACKFLOW PREVENTER	G A V	NATURAL GAS COMPRESSED AIR VACUUM	FD FFE FS G G-SAN GI	FLOOR DRAIN FINISHED FLOOR ELEVATION FLOOR SINK GAS GREASE SANITARY WASTE GREASE INTERCEPTOR
"HREAD END WITH CAP PIPE DROP PUMP	●   co + ↓ 	SIDEWALL CLEANOUT STRAINER STRAINER WITH BLOWDOWN	COND SAN G-SAN	CONDENSATE DRAIN SANITARY PIPING ABOVE GRADE GREASE SANITARY PIPING ABOVE GRADE	GD GWH -H HB HW HWR	GREASE INTERCEPTOR GARBAGE DISPOSER GAS WATER HEATER HANDICAP/ACCESSIBLE FIXTURE HOSE BIBB HOT WATER
PIPE RISE L FLOW CONTROL VALVE		TEMPERATURE SENSOR THERMOSTATIC MIXING VALVE	— — — SAN— — — — — — G-SAN— — —	SANITARY PIPING BELOW GRADE GREASE SANITARY PIPING BELOW GRADE SANITARY VENT	IE L LT MB OI	INVERT ELEVATION LAVATORY LAUNDRY TRAY MOP BASIN OIL INTERCEPTOR
LIEF VALVE	み ↓	2-WAY CONTROL VALVE 3-WAY CONTROL VALVE UNION WALL HYDRANT ( HOSE BIBB	ST ST	STORM PIPING ABOVE GRADE STORM PIPING BELOW GRADE ACID WASTE SANITARY PIPING BELOW GRADE	ORD P RD RPBP SAN SE	OVERFLOW ROOF DRAIN PUMP ROOF DRAIN RED. PRESS. BACKFLOW PREV. SANITARY WASTE SEWAGE EJECTOR
	NG SYMBOLS		— — AV— — — N2 02	ACID VENT NITROGEN GAS OXYGEN GAS	SHR SI SK SOI SP SS	SHOWER SOLIDS INTERCEPTOR SINK SAND/OIL INTERCEPTOR SUMP PUMP SERVICE SINK
RIC WATER COOLER/ NG FOUNTAIN DRAIN		WATER CLOSET	CO2 DT	CARBON DIOXIDE GAS PERIMETER DRAIN TILE	ST TD TMV UR V	STORM TRENCH DRAIN THERMOSTATIC MIXING VALVE URINAL VENT
SINK		WASH FOUNTAIN WASH FOUNTAIN	GENE	RAL LINE TYPES STING TO REMAIN LINE WEIGHT	VP VTR WB WC WH WS YH	VACUUM PUMP VENT THRU ROOF WALL BOX WATER CLOSET WALL HYDRANT WATER SOFTENER
ER HEAD GENERA T OF DEMOLITION	NL SYMBOLS	URINAL TIE-IN OF NEW TO EXISTING	NE\	V PIPING LINE WEIGHT		



PROVIDE AND INSTALL ALL ASSOCIATED INTERLOCK WIRING AND DEVICES

HALL BE FURNISHED BY EQUIPMENT MANUFACTURER UNLESS NOTED OTHERWISE. REFER TO ED BY EQUIPMENT MANUFACTURER. EQUIPMENT SHALL BE FURNISHED BY EQUIPMENT MANUFACTURER UNLESS NOTED OTHERWISE. R MORE INFORMATION. QUIPMENT SHALL BE FURNISHED BY EQUIPMENT MANUFACTURER UNLESS NOTED OTHERWISE. R MORE INFORMATION.

## **GENERAL DEMOLITION NOTES**

- ALL EXISTING PENETRATIONS FROM DUCT/ PIPE/ WIRE/ CONDUIT THAT IS REMOVED SHALL BE PATCHED BY PROPER TRADES TO MATCH SURROUNDINGS UNLESS PENETRATION IS TO BE REUSED. PATCH ALL FLOOR AND WALL PENETRATIONS TO MAINTAIN FIRE RATED CONSTRUCTION.
- ALL ROOF PENETRATIONS NOT BEING REUSED SHALL BE PATCHED TO MAINTAIN EXISTING ROOF WARRANTY. EXISTING CURBS TO BE ABANDONED SHALL BE CAPPED WITH ALUMINUM HOOD PAINTED WITH "N.I.S." (NOT IN SERVICE). INSULATE CAVITY
- BELOW CAP WITH TIGHT FITTING 3" FOAM BOARD WRAPPED WITH SHEET METAL. ALL PIPE SHALL BE REMOVED TO WITHIN AREAS THAT ARE INACCESSIBLE SUCH AS WALL CAVITIES AND BELOW SLAB. IN FINISHED SPACES REMOVE BELOW SURFACE, CAP WATER TIGHT, AND PATCH SURFACE TO MATCH SURROUNDINGS.
- ALL PATCHING OF WALLS SHALL MATCH MATERIALS AND WHEN COMPLETE SHALL NOT LOOK LIKE A PATCH. TOOTH-IN NEW BRICK/ BLOCK WITH FULL UNITS, DO NOT CUT FILLER PIECES.
- PRIOR TO CUTTING EXISTING SLAB ON GRADE, CONTRACTOR SHALL VERIFY EXISTENCE OF EXISTING UTILITIES SUCH AS PIPING, CONDUIT, WIRE, ETC, BY MEANS OF GROUND PENETRATING RADAR TO LOCATE AND DETERMINE DEPTH OF BURY. TAKE PRECAUTIONS TO DE-ENERGIZE POWER TO CIRCUITS AND CAREFULLY CUT AND REMOVE SLAB. ANY UTILITIES THAT WERE LOCATED AND SUBSEQUENTLY DAMAGED SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDED COST TO THE OWNER.

## **GENERAL PLUMBING NOTES**

- PIPING LAYOUTS ARE SCHEMATIC IN NATURE. ADDITIONAL ELBOWS, OFFSETS, AND FITTINGS SHALL BE ADDED AS REQUIRED TO
- COORDINATE WITH OBSTRUCTIONS AND OTHER TRADES. . COORDINATE ALL WORK WITH OTHERS TRADES AND EXISTING WORK TO PERMIT ACCESS AND SERVICE CLEARANCES TO ALL
- SYSTEMS. COORDINATE DUCT WITH ELECTRICAL J-BOXES TO PREVENT OBSTRUCTIONS.

ALL WORK SHALL COMPLY WITH ALL LOCAL/STATE CODES AND ORDINANCES.

- 4. DO NOT SCALE DRAWINGS FOR DIMENSIONS. REFER TO DIMENSIONED DRAWINGS. 5. ALL DOMESTIC PIPING BELOW SLAB SHALL BE TYPE K SOFT COPPER WITH NO FITTINGS WITHIN OR BELOW SLAB.
- 6. REFER TO DETAIL SHEETS FOR ADDITIONAL INFORMATION ON INSTALLATION METHODS.
- DEVIATIONS FROM BASIS OF DESIGN THAT AFFECT OTHER TRADES ARE THE RESPONSIBILITY OF THIS CONTRACTOR. ADDITIONAL COSTS TO PROVIDE LARGER ELECTRICAL CIRCUITS, MORE FLOOR SPACE, ADDITIONAL SUPPORTS, ADDITIONAL MATERIALS, ETC.
- SHALL BE BORNE BY THIS CONTRACTOR. COORDINATE WITH OTHER TRADES. 8. ALL VALVE HANDLES SHALL BE INSTALLED TO ALLOW A FULL RANGE OF MOTION.
- 9. INSTALL ALL ACCESSIBLE FIXTURES ACCORDING TO ADA STANDARDS AND LOCAL REQUIREMENTS.
- 10. ALL PVC DRAIN/VENT PIPE LOCATED IN A PLENUM OR ABOVE CEILING SHALL BE COVERED WITH 1/2" ELASTOMERIC FOAM INSULATION.

## **CUTTING AND PATCHING NOTES**

CUTTING AND PATCHING: WHERE DRAWINGS INDICATE PATCHING, CONTRACTORS SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING UNLESS NOTED OTHERWISE. 1. ALL PENETRATIONS INTO EXISTING SURFACES WHERE EXISTING EQUIPMENT, DUCTWORK, PIPING, CONDUIT, WIRING, WIRE MOLD, ETC. IS TO BE REMOVED SHALL BE PATCHED BY PROPER TRADES USING MATERIALS THAT ARE IDENTICAL TO EXISTING MATERIALS.

REFER TO CUTTING AND PATCHING SPECIFICATIONS FOR MORE INFORMATION. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS. 2. PATCHING OF EXISTING PAINTED SURFACES SHALL INCLUDE PATCHING AS REQUIRED AND PAINTING TO MATCH EXISTING. 3. EXISTING PENETRATIONS OF CMU BLOCK AND BRICK WALLS LARGER THAN 2" DIAMETER SHALL BE PATCHED WITH FULL TOOTHED-IN MATCHING CMU BLOCK OR BRICK UNITS WITH COLOR MATCHING GROUT. PENETRATIONS 2" DIAMTER AND LESS SHALL BE PATCHED WITH COLOR MATCHING GROUT. PROVIDE PHYSICAL SAMPLES OF COLOR MATCHING GROUT FOR REVIEW BY OWNER AT EACH LOCATION.

4. EXISTING PENETRATIONS OF GLASZED BLOCK AND BRICK WALLS LARGER THAN 2" DIAMETER SHALL BE PATCHED WITH FULL TOOTHED-IN MATCHING GLAZED BLOCK OR BRICK UNITS WITH COLOR MATCHING GROUT. PENETRATIONS 2" DIAMETER AND LESS SHALL BE PATCHED WITH STAINLESS STEEL COVERPLATE. PROVIDE PHYSICAL SAMPLES OF GLAZED BLOCK, BRICK, AND COLOR MATCHING GROUT FOR REVIEW BY OWNER AT EACH LOCATION.

5. EXISTING PENETRATIONS OF PLASTER OR GYPSUM SURFACES SHALL BE PATCHED WITH (2) LAYERS 5/8" USG FIBERROCK AQUA TOUGH DRYWALL, FINISHED AND PAINTED TO MATCH EXISTING.

6. PENETRATIONS OF EXISTING CARPET FLOOR TILE AND VINYL FLOOR TILE SHALL BE PATCHED BY REMOVING AND REPLACING FULL TILES TO MATCH EXISTING.

7. EXISTING PENETRATIONS OF TERRAZZO SURFACES SHALL INCLUDE PATCHING AS REQUIRED FOR TERRAZZO REPAIR BY OTHERS.

# _____ OR PUMP

SHOWER IFR

FIXTURE JLATION

RAIN OW PREV.





100% CONSTRUCTION DOCUMENT

PROJECT: #22130 DATE: 07-28-2023 DRAWN BY: ASL PLUMBING INFORMATION SHEET

# P001

PRIMARY JOB # 22417





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







SCALE: 1" = 1'-0"





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SCALE: 3/32" = 1'-0"

32

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

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

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

SCALE: 3/4" = 1'-0"

SCALE: 1" = 1'-0"





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PRIMARY JOB # 22417

В

С

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TRUE NORTH

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J







# **PLAN NOTES** 1. PROVIDE AND INSTALL NEW 4" TALL CONCRETE HOUSEKEEPING PAD. 2. COORDINATE WITH GC TO CAREFULLY TAKE DOWN, SALVAGE, AND REINSTALL EXISTING CEILING GRID AND TILE AS REQUIRED TO GAIN ACCESS FOR PLUMBING WORK. 3. RECONNECT TO EXISTING PIPING. 5. REFER TO DOMESTIC WATER FLOW DIAGRAMS FOR MORE INFORMATION. INFORMATION. NEW WATER METER BY LOCAL UTILITY PROVIDER. COORDINATE WITH LOCAL UTILITY PROVIDER FOR EXACT REQUIREMENTS. CONTRACTOR SHALL COORDINATE WITH UTILITY PROVIDER TO SCHEDULE INSTALLATION OF NEW SERVICE.

- 9. ROUTE NEW POLYPROPYLENE VENT PIPING AND PVC INTAKE UP TO ROOF. CUT AND PATCH ROOF AS
- REQUIRED. MAINTAIN EXISTING ROOF WARRANTY. 10 PROVIDE NEW SUPPORTS FOR EXISTING WATER HEATER FLUES.



# 2 MECHANICAL ROOM - PLUMBING PLAN - UNIT G SCALE: 1/4" = 1'-0"



- PROVIDE AND INSTALL NEW GAS-FIRED WATER HEATER AND TIE-IN TO EXISTING STORAGE TANK SUPPLY AND RETURN PIPING. ROUTE CONDENSATE DRAIN PIPING ON FLOOR AND DISCHARGE INTO NEAREST FLOOR SINK. CUT GRATE TO RECEIVE CONDENSATE.
- TIE-IN TO EXSTING WATER SERVICE PIPING AND PROVIDE AND INSTALL NEW DOMESTIC WATER AND FIRE PROTECTION WATER ENTRANCE. REFER TO DETAILS ON PLUMBING SHEET P401 FOR MORE
- PROVIDE AND INSTALL NEW DUPLEX WATER SOFTENER PER MANUFACTURER'S INSTALLATION REQUIREMENTS. ROUTE WATER SOFTENER DRAIN ON FLOOR AND DISCHARGE DIRECTLY INTO NEAREST FLOOR SINK. CUT GRATE TO RECEIVE WASTE.



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SCALE: 3/4" = 1'-0"







2

SCALE: 1" = 1'-0"



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SCALE: 3/32" = 1'-0"

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

$\mathbf{X}$	PLAN NOTES
1.	PROVIDE AND INSTALL DOMESTIC HOT WATER BALANCING STATION. ADJUST FLOW TO GPM SHOWN. REFER TO MANUAL HOT WATER RETURN BALANCING STATION DETAIL ON DRAWING SHEET P401 FOR MORE INFORMATION.
2.	ROUTE FULL SIZE DOMESTIC, SANITARY, AND VENT PIPING ENTIRE LENGTH OF CHASE AND DISTRIBUTE TO NEW PLUMBING FIXTURES. REFER TO PLUMBING FIXTURE SCHEDULE ON PLUMBING SHEET P501 FOR CONNECTION SIZES.
3.	COORDINATE WITH GC TO CAREFULLY TAKE DOWN, SALVAGE, AND REINSTALL EXISTING CEILING GRID AND TILE AS REQUIRED TO GAIN ACCESS FOR PLUMBING WORK.
4.	PROVIDE AND INSTALL PVC JACKETING ON EXPOSED PIPING IN FINISHED SPACE.
5.	LOW VOLTAGE CONTROL VALVE FOR ISIMET UTILITY CONTROLLER SHOWN HERE FOR VISIBILITY. VALVE SHALL BE INSTALLED IN CASEWORK OF LAB TABLE ON THIRD FLOOR.
6.	ROUTE PIPING UP TO SCIENCE LAB TEACHER DEMOSTRATION TABLE. REFER TO SCIENCE DEMONSTRATION DOMESTIC PIPING DETAIL AND SCIENCE ROOM GAS SERVICE PIPING DETAIL ON DRAWING SHEET P402 FOR MORE INFORMATION.
1	

## O GPM SHOWN. SHEET P401 FOR



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16 SCALE: 1/16" = 1'-0"

SCALE: 3/32" = 1'-0"

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



SCALE: 1" = 1'-0" SCALE: 1/4" = 1'-0" SCALE: 1/2" = 1'-0" SCALE: 3/4" = 1'-0"





## **PLAN NOTES** $(\mathbf{x})$

- PROVIDE AND INSTALL DOMESTIC HOT WATER BALANCING STATION. ADJUST FLOW TO GPM SHOWN. REFER TO MANUAL HOT WATER RETURN BALANCING STATION DETAIL ON DRAWING SHEET P401 FOR MORE INFORMATION.
- LOW VOLTAGE CONTROL VALVE FOR ISIMET UTILITY CONTROLLER SHOWN HERE FOR VISIBILITY. VALVE SHALL BE INSTALLED IN CASEWORK OF LAB TABLE ON THIRD FLOOR.
- ROUTE PIPING UP TO SCIENCE LAB TEACHER DEMOSTRATION TABLE. REFER TO SCIENCE DEMONSTRATION TABLE DOMESTIC PIPING DETAIL AND SCIENCE ROOM GAS SERVICE PIPING DETAIL ON DRAWING SHEET P402 FOR MORE INFORMATION.



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SCALE: 1/16" = 1[']-0"

SCALE: 3/32" = 1'-0"

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

$(\mathbf{X})$	

## **PLAN NOTES**

- ROUTE FULL SIZE DOMESTIC, SANITARY, AND VENT PIPING ENTIRE LENGTH OF CHASE AND DISTRIBUTE TO NEW PLUMBING FIXTURES. REFER TO PLUMBING FIXTURE SCHEDULE ON PLUMBING 1 SHEET P501 FOR CONNECTION SIZES.
- PROVIDE AND INSTALL ISIMET UTILITY CONTROLLER WITH REMOTE PLUNGER AT EACH DOOR TO SCIENCE LAB.
- PROVIDE AND INSTALL AIR ADMITTANCE VALVE IN ACCESSIBLE LOCATION WITHIN CASEWORK FOR ISLAND FIXTURES. TYPICAL. COORDINATE EXACT PLUMBING ROUGH-IN LOCATION AND REQUIREMENTS WITH GC. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.







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

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

### UNLESS NOTED OTHERWISE, IN SPACES WITH NO CEILINGS OR WITH CEILING CLOUDS, PROVIDE AND INSTALL WHITE PAPER ASJ ON ALL PIPING INSULATION FOR FIELD PAINTING BY GENERAL CONTRACTOR. COORDINATE WITH GENERAL CONTRACTOR. COLOR SELECTION BY ARCHITECT. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.

## $\mathbf{X}$

## **PLAN NOTES**

PROVIDE AND INSTALL ISIMET UTILITY CONTROLLER WITH REMOTE PLUNGER AT EACH DOOR TO SCIENCE LAB. PROVIDE AND INSTALL AIR ADMITTANCE VALVE IN ACCESSIBLE LOCATION WITHIN CASEWORK FOR ISLAND FIXTURES. TYPICAL. COORDINATE EXACT PLUMBING ROUGH-IN LOCATION AND REQUIREMENTS WITH GC. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.

THIRD FLOOR -PLUMBING PLAN - UNITS K, L, AND M SCALE: 1/8" = 1'-0"





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		-	THER	MOST	<b>TATI</b>		XING	i VALV	E SO	CHED	ULE	
TAG	MFR.	MODEL	MIN FLOW (GPM)	MAX FLOW (GPM)	P.D. (PSI)	INLETS (IN)	OUTLET (IN)	SETPOINT (DEG F)	ASSE CERT.	CABINET	SERVICE	REMARKS
TMV-1	LAWLER	802	2	39	10	1	1 1/4	120	1017	NA	DOMESTIC HOT WATER	1, 2
TMV-2	LAWLER	802	2	39	10	1	1 1/4	120	1017	NA	DOMESTIC HOT WATER	1, 2
TMV-3	LAWLER	6625	3.75	12	10	3/4	3/4	110	1017	SS	LOCKER ROOM SHOWERS	1, 2, 3
TMV-4	LAWLER	911 - 84708	25	35	10	1 1/4	1 1/4	85	1071	NA	MECH M101	4
TMV-5	LAWLER	911 - 84708	25	35	10	1 1/4	1 1/4	85	1071	NA	BOILER ROOM	4
TMV-6	LAWLER	911 - 84708	25	35	10	1 1/4	1 1/4	85	1071	NA	PREP J313	4
TMV-7	LAWLER	911 - 84708	25	35	10	1 1/4	1 1/4	85	1071	NA	PREP K305	4
TMV-8	LAWLER	911 - 84708	25	35	10	1 1/4	1 1/4	85	1071	NA	SCIENCE LAB K303	4
TMV-9	LAWLER	911 - 84708	25	35	10	1 1/4	1 1/4	85	1071	NA	SCIENCE LAB K301	4
TMV-10	LAWLER	911 - 84708	25	35	10	1 1/4	1 1/4	85	1071	NA	SCIENCE LAB J317	4
REMARKS 1. MAINTA 2. PROVIE 3. PROVIE 4. SHALL	S: AIN SETPOINT DE AND INSTAL DE AND INSTAL COMPLY WITH	TEMPERATURE T L WITH INTEGRA L WITH INTEGRA ANSI Z358.1, FAI	O WITHIN 3 I L CHECK ST L BALL VALV	Deg F, down Ops. 'es, pipe Uni' Old Flow, N	I TO A M ONS, TH /AINTAIN	INIMUM FL ERMOMET I +/- 3 DEG	OW RATE ( ER, AND S  à.	DF 0.5 GPM	EEL CABIN	IET.		

		PLUI	MBI	NG	PUN	IP S	SCHE	EDUI	LE		
TAG	MFR.	MODEL	FLOW (GPM)	HEAD (FT)	MOTOR (HP)	MOTO R (BHP)	EFF (+/- 5%)	RPM	ELEC (V/PH)	SERVICE	REMARKS
HWRP-1	BELL & GOSSETT	ECOCIRC XL 110-180	6	55	3.0	-	-	2880	460/3	DOM HW 140 RECIRC	1, 2, 3
HWRP-2	BELL & GOSSETT	E-90 1AAB	30	100	3	1.54	-	3360	460/3	DOM HW 110 RECIRC	1, 2, 3
REMARKS	S:										
1. ALL LE	AD-FREE BRONZE OI	R STAINLESS STEEL COM	NSTRUC	ΓION.							
2. PROVIE	DE AND INSTALL WIT	H STRAP-ON AQUASTAT	SENSOF		TO CON	TROL PU	MP, ON A	T 100 DEC	G F/OFF AT	120 DEG F.	
3. PROVID	DE AND INSTALL WIT	H ISOLATION BALL VALV	es, disc	HARGE	CHECK V	/ALVE, M	ANUAL BA	ALANCE V	ALVE, AND	PRESSURE TAPS IN AN	D OUT.

		<b>I Г</b>	NIERCE	PIOF	SCHE	DULE		
TAG	MFR.	MODEL	SERVICE	LIQ CAP (GAL)	MAX WATER TEMP (DEG F)	SIZE LxWxH (IN)	PIPE CONN (IN)	REMARKS
ANT-1	STRIEM	LB-275	SCIENCE LABS	250	140	68 x 33 x 51-1/2	4	1, 2
ANT-2	STRIEM	LB-15	BOILERS	15	140	25 x 19 x 14-1/4	2	1, 2
ANT-3	STRIEM	LB-15	POOL HEATER	15	140	25 x 19 x 14-1/4	2	1, 2
REMARKS	<b>S:</b> IE AND INSTAL	L WITH FULL		M 90% CALCI			IA.	

	BA	CKFLO	W PREV	<b>ENTER SC</b>	HED	JLE	
TAG	MFR.	MODEL	SERVICE	TYPE	SIZE (IN)	STRAINER	REMARKS
RPBP-1	WILKINS	375-FSC-OSY	DOMESTIC	REDUCED PRESSURE	4	YES	1, 2, 3
RPBP-2	WILKINS	375-FSC-OSY	DOMESTIC	REDUCED PRESSURE	4	YES	1, 2, 3
	(0.						
1. SHAL 2. PROV 3. PROV	L MEET REQUIRE IDE WITH AIR GA IDE WITH EXPOX	EMENTS OF NSF/A NP DRAIN CUP ASS YY COATED WATEF	NSI 61 FOR LEAD EMBLY, PIPED TO R WAY.	FREE POTABLE SERVIC	E.		

				PLUMBING FIXT	URE SC	HEDULE					
TAG	MFR.	MODEL	TRIM MFR.	TRIM MODEL	FLOW RATE (GPF OR GPM)	TRIM TYPE	WASTE	VENT	cw	нw	COLOR
WC-1	AMERICAN STD.	2257.101	SLOAN	ROYAL 111	1.6	MANUAL FLUSH VALVE	3"	2"	1"	-	WHITE
WC-1H	AMERICAN STD.	2257.101	SLOAN	ROYAL 111	1.6	MANUAL FLUSH VALVE	3"	2"	1"	-	WHITE
UR-1	AMERICAN STD.	6590.001	SLOAN	ROYAL 186	0.5	MANUAL FLUSH VALVE	2"	1-1/4"	1"	-	WHITE
UR-1H	AMERICAN STD.	6590.001	SLOAN	ROYAL 186	0.5	MANUAL FLUSH VALVE	2"	1-1/4"	1"	-	WHITE
L-1H	AMERICAN STD.	0355.012	CHICAGO	802-E34-1000XKABCP	1.5	2" WING HANDLES	1-1/4"	1-1/4"	1/2"	1/2"	WHITE
L-2H	AMERICAN STD.	0355.012	CHICAGO	802-665ABCP	2.2	METERING PUSH HANDLE	1-1/4"	1-1/4"	1/2"	1/2"	WHITE
SK-1H	ELKAY	LRAD331955	CHICAGO	1100-317XKABCP	2.2	4" WRISTBLADE	2"	1-1/2"	3/4"	3/4"	STAINLESS
SK-2H	- ELKAY-	ELUHAD 14 1445	C CHICAGO	526XKABCP	22	2/3/8" LEVER HANDLES	2"	11/2"	3/4-	3/4"	STAINLESS,
SK-3H	ELKAY	FLUHAD211545PD		LWM2-B11-F	Υ _{2.2}	Y 2-1/2" CROSS HANDLES Y	2"	1-1/2"	3/4"	3/4"	STAINLESS
SK-4H	-	-	-	-	-	-	2"	1-1/2"	3/4"	3/4"	-
SK-5H	-	-	CHICAGO	943-317CP	2.2	4" WRISTBLADE	2"	1-1/2"	3/4"	3/4"	CHROME
WE-1HA	BRADLEY	لل LVRD	λ chicago	$\lambda$ (2) 802 665 ABCP $\lambda$	λ 2.2 ·		1-1/2"	1-1/2"	3/(4"	3/4"	λ - Λ
WF-2H	BRADIE	URD3		() (3) 802-065ABCP		METPRING PUSHLHANDI F	1/2"	1/2 1/2	3/4	3/4"	
EWC-1H	FLKAY	EMABEDWSSK	-	SINGLE W/ BOTTLE FILL	-	MECH VALVE	1-1/4"	1-1/4"	1/2"	- 0,1	STAINI ESS
EWC-2H	FLKAY	EMABETI 8WSSK		HIGH-LOW W/ BOTTLE FILL		MECH VALVE	1_1/4"	1_1/4"	1/2"	<u> </u>	STAINI ESS
SH-1			SYMMONS		20		2"	1_1/2"	1/2	1/2"	STAINI ESS
SH-1H			SYMMONS	H002S	2.0		2"	1_1/2"	1/2	1/2"	STAINI ESS
SH-2H			SYMMONS	H0025	2.0		2	1-1/2	1/2	1/2	STAINLESS
MSB-1	FIAT	 MSB2424		(1) 807-CP & (1) 908-BCF	1.5		2"	1-1/2	1/2	1/2	WHITE
		SE1W/	CHICAGO	526 YKABCD	1.5		0"	1 1/2	2/4"	2/4"	WHITE
					2.2		2	1 1/2	2/4	2/4	
		8226	CHICAGO	J20-ANADOF	2.2	2-3/6 ELVERTIANDLES	2	1-1/2	3/4	1 1 / / "	
		8330	-	-	20		-		- 0/4"	1-1/4	
	WOODFORD		-	-	-		-		3/4	-	
			-	-	-	ROOF HTDRANT	-	-	3/4	-	
		998-RCF	-	-	-	-	-	-	3/4"	-	
VVB-1	IPS CORP	AB1200HA	82930	-	-	-	-	-	1/2"	-	WHITE
WB-2	IPS CORP	MB1200HA	82914		-		2"	-	1/2"	1/2"	WHITE
FD-1	JR SMITH	2005Y-A05	CASTIRON	2692 TRAP SEAL	-	ROUND TOP	-	-	-	-	NIKALOY
FD-2	JR SMITH	2005Y-F37	CASTIRON	2692 TRAP SEAL	-	EXTENDED RIM	-	-	-	-	NIKALOY
FS-1	JR SMITH	3100Y	CAST IRON	2692 TRAP SEAL	-	-	-	-	-	-	NIKALOY
FS-2	JR SMITH	305	PLASTIC	2692 TRAP SEAL	-	-	-	-	-	-	PVC
CO-1	JR SMITH	4024S	CAST IRON	-	-	FLOOR ROUND	-	-	-	-	NIKALOY
CO-2	JR SMITH	4254S	CAST IRON	-	-	EXTERIOR	-		-	-	CAST IRON
CO-3	JR SMITH	4532Y-SS	CAST IRON	-	-	WALL W/COVER	-	-	-	-	STAINLESS
CO-4	JR SMITH	4422-SS	CAST IRON	-	-	END FERRULE	-	-	-	-	CAST IRON
RD-1	JR SMITH	1010Y-AD-RDP	ALUM	-	-	-	-	-	-	-	CAST IRON
ORD-1	JR SMITH	1080Y-AD-RDP	ALUM	-		-	-	-	-	-	CAST IRON
	DURA TRENCH	DTPP2	SHOWER	ADA STANILESS HEELPROOP GRATE			2"	$\checkmark$		<u> </u>	STAINLESS
TD-2 Y	DURA TRENCH	Y DTPF2Y	Y NATATORIUM	Y ADA VASTIC Y	Υ -	Ý Ý- Ý	2"	(	<u>Υ-</u>	-	Y GRAY Y
TD-3	DURA TRENCH	DTPF18	COOLING TOWER	DUCTILE IRON SLOTTED	-	-	4"		-	-	DUCTILE IRO
GT-1H	-	-	CHICAGO	981-909-957-3KAGV	-	NATURAL GAS	-	-	-	-	CHROME
GT-2H	-	-	CHICAGO	981-909-957-3KAGV	-	COMPRESSED AIR	-	-	-	-	CHROME
GT-3H	-	-	CHICAGO	986-WSV909AGVSAM	-	NATURAL GAS	-	-	-	-	CHROME
GT-4H	-	-	CHICAGO	986-WSV909AGVSAM	-	COMPRESSED AIR	-	-	-	-	CHROME
4	Å				4				٨		
REMARKS		$\sim$ $\sim$ $\sim$ $\sim$	$\sim$	$\nearrow$	$\sim$ $\sim$			くフ	$\sim$	$\mathcal{I}$	
1. PROVIDI	E AND INSTALL WITH F	LOOR MOUNTED FIXTURE			$\smile$	$\rightarrow$ $\rightarrow$ $\rightarrow$	$\smile$	$\smile$		~	$\smile$
2. PROVIDI	E AND INSTALL WITH F	HEAVTY DUTY, WHITE, ELON	IGATED, SOLID PLASTIC C	PEN FRONT SEAT.							
3. PROVIDI	E AND INSTALL WITH C	CHICAGO LOOSE KEY ANGLI	E STOP AND SUPPLY RISE	ER.							
4. PROVIDI	E AND INSTALL WITH C	OFFSET DRAIN AND INSULAT	TION KIT ON ALL WASTE A	ND SUPPLY PIPING. TRUEBRO OR APPVD I	EQUAL.						

5. PROVIDE AND INSTALL WITH 17 GA. CAST BRASS P-TRAP W/ CO AND GRID STRAINER.

6. PROVIDE AND INSTALL WITH CERAMIC CARTRIDGES. 7. PROVIDE AND INSTALL WITH ORION BLUELINE POLYPROPYLENE P-TRAP W/ CO AND GRID STRAINER.

8. INTEGRAL FIXTURE PROVIDED WITH CASEWORK. COORDINATE WITH GC. 9. COLOR SELECTION BY ARCHITECT.

10. PROVIDE WATER COOLER WITHOUT ANY INLINE FILTERS. 11. PROVIDE AND INSTALL WITH SINGLE SUPPLY METERING SHUTOFF.

12. PROVIDE AND INSTALL WITH SINGLE SUPPLY MANUAL SHUTOFF, 13. PROVIDE AND INSTALL WITH PRESSURE BALANCING DUAL SUPPLY MANUAL SHUTOFF,

14. PROVIDE AND INSTALL WITH 60" HOSE AND HAND SHOWER, FIXED HEAD SHOWER, DIVERTING VALVE, INTEGRAL SERVICE STOPS, AND 30" SLIDEBAR.

15. PROVIDE AND INSTALL WITH STAINLESS STEEL STRAINER, STAINLESS STEEL BUMPER GUARDS, STAINLESS STEEL WALL GUARD, MOP BRACKET, HOSE, AND CHICAGO SILLCOCK 998-XKRCF. REFER TO DRAWING DETAILS FOR MORE INFORMATION. 16. PROVIDE AND INSTALL WITH INTEGRAL PISTON TYPE WATER HAMMER ARRESTOR(S). 17. REFER TO PLANS FOR SIZES.

NOTES: 1. "-H" DESIGNATES HANDICAP ACCESSIBLE FIXTURES.

## GAS WATER HEATER SCHEDULE

AG	MFR.	MODEL	TANK MODEL	TANK VOL (GAL)	TANK DIM (DIA x HT)	EFF (%)	GAS INPUT (MBH)	RECOVERY (GPH)	BURNER TURNDOW N	NAT GAS PRES	GAS CONN (IN)	WATER CONN (IN)	FLUE CONN (IN)	FLUE MATL.	WT. (LB)	ELEC (V/PH)	ELEC (AMPS)	R
/H-3	LOCHINVAR	AWH0800NPM	-	-	-	98	800	950	10:1	4 - 11	1-1/4	2	6	POLYPROPYLENE	433	120/1	9.4	1, 2,

1. PROVIDE AND INSTALL WITH T&P RELIEF VALVE. 2. ALL TANKS SHALL BE ASME STAMPED.

3. PROVIDE WITH CONDENSATE NEUTRALIZATION KIT.

4. PROVIDE WITH CON-X-US REMOTE CONNECTIVITY KIT.

5. PROVIDE WITH TANK RECIRCULATION PUMP SELECTED FOR 12 TO 15 GRAINS RANGE FROM MFR, WIRED TO PUMP CONTROL RELAY ON WATER HEATER. 6. INSTANTANEOUS FLOW RATE AT 67 DEG TEMP RISE.

7. PROVIDE WITH DESCALING/FLUSHING KIT WITH 5 GAL BUCKET, SUMP PUMP, (2) STAINLESS BRAIDED HOSES WITH HOSE CONNECTIONS, (1) GALLON DESCALER SOLUTION.

## 8. PROVIDE WITH FLUSHING PIPE CONNECTION FITTINGS AT INLET AND OUTLET OF HEATER TO ALLOW DESCALING WITHOUT BREAKING PIPE CONNECTIONS.

						WATER	SOF	TENER S	CHEDUL	.E				
TAG	MFR.	MODEL	ТҮРЕ	MAX FLOW (GPM)	NOM. FLOW (GPM)	DAILY WATER USAGE (GPD)	MAX WPD (PSI)	RESIN CAPACITY (GRAINS/TANK)	RESIN VOLUME (CU.FT./TANK)	SALT STORAGE (LBS)	INCOMING HARDNESS (GRAINS)	INCOMING IRON (PPM)	REGEN. EFF.	ELEC (V/PH)
WS-1	CULLIGAN	CSM 600-3 PF	DUPLEX ALT.	600	400	15,000	15	600,000	20	300	22	0.08	2	120/1
REMAR	RKS:													

1. PROVIDE AND INSTALL WITH DEMAND USE REGENERATION WITH ULTRASONIC FLOW METERS AND FULLY ELECTRONIC CONTROLS. 2. FLOW METERS SHALL BE ULTRASONIC STYLE WITH MINIMUM PIPE DIAMETER REQUIREMENTS. DO NOT USE TURBINE WHEELS.

3. PROVIDE WITH FULL TANK OF SALT WITH AN ADDITIONAL 100% IN BAGS STORED ON PALLET FOR OWNER.

**REMARKS:** 

				GAS RI	EGUL	ATOR	SCH	EDULE		
TAC	MED	MODEL	CAPACITY		INLET	INLET SIZE	OUTLET	OUTLET SIZE		REGULATOR
TAG	IVIEN.	MODEL	(CFH)		(PSI)	(IN)	(IN WC)	(IN)	EQUIP SERVED	LOCATION
GR-1	PIETRO FIORENTINI	31155OPD	6000	500:1	5	2	14	2	B-1	INTERIOR
GR-2	PIETRO FIORENTINI	31155OPD	6000	500:1	5	2	14	2	B-2	INTERIOR
GR-3	PIETRO FIORENTINI	31155OPD	6000	500:1	5	2	14	2	B-3	INTERIOR
GR-4	PIETRO FIORENTINI	31155OPD	6000	500:1	5	2	14	2	B-4	INTERIOR
GR-5	PIETRO FIORENTINI	31153OPD	2500	500:1	5	1 1/4	14	1 1/4	EXISTING KITCHEN	INTERIOR
GR-6	PIETRO FIORENTINI	31153OPD	2400	500:1	5	1 1/4	14	1 1/4	NEW AND EXISTING GWH	INTERIOR
GR-7	PIETRO FIORENTINI	31051OPD	320	500:1	5	1/2	14	1/2	EXISTING UNIT A SCIENCE LAB	INTERIOR
GR-8	PIETRO FIORENTINI	31152OPD	1200	500:1	5	1	14	1	DHU-1	EXTERIOR
GR-9	PIETRO FIORENTINI	31152OPD	1200	500:1	5	1	14	1	DHU-2	EXTERIOR
GR-10	PIETRO FIORENTINI	31051OPD	400	500:1	5	1/2	14	1/2	DOAS-2	EXTERIOR
GR-11	PIETRO FIORENTINI	31051OPD	450	500:1	5	1/2	14	1/2	UNIT J AND K SCIENCE LABS	EXTERIOR

1. PROVIDE AND INSTALL WITH VENT PIPED TO EXTERIOR. 2. VERIFY EXACT REGULATOR SIZE BASED ON ACTUAL EQUIPMENT INSTALLED PRIOR TO ORDERING. 3. PROVIDE WITH EXTERNAL DOWNSTREAM CONTROL LINE, FIELD INSTALLED.

 $\sim$ 

		DON	<b>IESTIC</b>	BOO	STER	PUMP	SCH	IEDU	ILE			
TAG	MFR.	MODEL	TOTAL FLOW (GPM)	TOTAL HEAD (FT)	ENTERING PRESS. (PSI)	LEAVING PRESS. (PSI)	PUMP QTY	MOTOR (HP, EA)	PUMP RPM	ELEC (V/PH)	FLA	R
DBP-1	BELL & GOSSETT	e-SV	400	138	25	80	4	15.0	3600	460/3	85	1,
REMARKS: 1. PROVIDE 2. PROVIDE 3. PROVIDE 4. PANEL SI 5. PROVIDE	AND INSTALL WITH SKID INDIVIDUAL ISOLATION \ AND INSTALL WITH FACT HALL BE WIRED FOR A SI AND INSTALL WITH WES	MOUNTED PREP /ALVES AND PRV'S FORY WIRED CON NGLE POINT ELEC SELS FXA-200 PRI	PED AND FACT S FOR EACH PL TROL PANEL W CTRICAL CONNI ESSURE TANK.	ORY WIRED : JMP. ITH PRESSU ECTION.	SYSTEM. RE SENSORS, I	PRESSURE GA	JGES, ST	ARTERS, S	TATUS LIC	AHTS, AND	DISCONN	ECT SW



 $\sim$ 



![](_page_74_Figure_0.jpeg)

![](_page_74_Picture_1.jpeg)

![](_page_75_Picture_0.jpeg)

![](_page_75_Picture_1.jpeg)

SCALE: 1/16" = 1'-0"

SCALE: 3/32" = 1'-0"

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

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

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

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

SCALE: 3/4" = 1'-0"

SCALE: 1" = 1'-0"

![](_page_75_Figure_15.jpeg)

![](_page_75_Figure_16.jpeg)

![](_page_75_Figure_17.jpeg)

![](_page_75_Figure_19.jpeg)

![](_page_75_Figure_20.jpeg)

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![](_page_75_Figure_21.jpeg)

PRIMARY JOB # 22417

![](_page_76_Figure_0.jpeg)

![](_page_76_Picture_1.jpeg)

24	0	4	8	12	0	2	4	6	0	2	4	0	1
	SCALE: 1/4"	= 1'-0"			SCALE: 1/2	2" = 1'-0"			SCALE: 3/4" = 1'-0"	•		SCALE: 1" :	= 1'-0"

![](_page_76_Picture_8.jpeg)

![](_page_76_Figure_9.jpeg)

2 3

![](_page_76_Figure_11.jpeg)

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![](_page_76_Figure_12.jpeg)

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![](_page_76_Figure_14.jpeg)

![](_page_77_Picture_0.jpeg)

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

![](_page_77_Figure_6.jpeg)

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

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

SCALE: 3/4" = 1'-0"

TRUE NORTH

![](_page_77_Figure_13.jpeg)

![](_page_77_Figure_14.jpeg)

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![](_page_77_Figure_16.jpeg)

![](_page_78_Figure_0.jpeg)

![](_page_78_Picture_1.jpeg)

 $(\mathbf{x})$ 

## **PLAN NOTES**

- PROVIDE AND INSTALL LINED RETURN AIR BOOT ON RELIEF AIR PLENUM EGGCRATE GRILLES RG-1 AND RG-2. REFER TO SOUND ATTENUATOR RETURN GRILLE DETAIL ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL.
- PROVIDE AND INSTALL RELIEF AIR OPENING ABOVE CEILING. MAINTAIN CLEARANCE EQUAL TO MINOR DUCT DIMENSION OR 12" MINIMUM EACH SIDE FOR AIRFLOW. COORDINATE WITH ALL TRADES. TYPICAL.
- 3. REFER TO HEAT PUMP DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL.
- PROVIDE AND INSTALL CEILING MOUNTED FILTER GRILLE(S) FOR HORIZONTAL HEAT PUMPS. TYPICAL.
- 5. ROUTE COOLING COIL CONDENSATE PIPING ON FLOOR AND DISCHARGE DIRECTLY INTO FLOOR SINK. CUT GRATE TO RECEIVE CONDENSATE. COOLING COIL CONDENSATE PIPING SHALL BE COPPER WITH 1/2" THICK ELASTOMERIC RUBBER INSULATION. TYPICAL.
- 6. ROUTE DUCTWORK UP TO FLOOR MOUNTED SUPPLY GRILLE ABOVE.
- 7. TIE-IN TO EXISTING DUCTWORK AND EXTEND NEW AS SHOWN.
- 8. PROVIDE AND INSTALL FIRE DAMPERS AT ALL PENETRATIONS OF THREE STORY DUCT SHAFT.
- 9. PUMPED CONDENSATE FROM FLOOR MOUNTED HEAT PUMP.
- 10. ROUTE CONDENSATE PIPING DOWN WITHIN WALL TO WALL BOX. REFER TO CONDENSATE WALL BOX DETAIL ON DRAWING SHEET P401 FOR MORE INFORMATION.

FIRST FLOOR -1 MECHANICAL PLAN - UNIT J SCALE: 1/8" = 1'-0"

![](_page_78_Figure_23.jpeg)

![](_page_78_Figure_28.jpeg)

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![](_page_78_Figure_30.jpeg)

![](_page_79_Figure_0.jpeg)

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

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

![](_page_79_Picture_1.jpeg)

SCALE: 1/16" = 1[']-0"

SCALE: 3/32" = 1'-0"

![](_page_79_Figure_4.jpeg)

SCALE: 1" = 1'-0"

SCALE: 3/4" = 1'-0"

![](_page_79_Figure_5.jpeg)

- **PLAN NOTES**  $(\mathbf{x})$ PROVIDE AND INSTALL LINED RETURN AIR BOOT ON RELIEF AIR PLENUM EGGCRATE GRILLES RG-1 AND RG-2. REFER TO SOUND ATTENUATOR RETURN GRILLE DETAIL ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL. 1 PROVIDE AND INSTALL RELIEF AIR OPENING ABOVE CEILING. MAINTAIN CLEARANCE EQUAL TO MINOR DUCT DIMENSION OR 12" MINIMUM EACH SIDE FOR AIRFLOW. COORDINATE WITH ALL TRADES. TYPICAL. 3. REFER TO HEAT PUMP DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL. PROVIDE AND INSTALL CEILING MOUNTED FILTER GRILLE(S) FOR HORIZONTAL HEAT PUMPS. 4. TYPICAL.
- 5. ROUTE COOLING COIL CONDENSATE PIPING ON FLOOR AND DISCHARGE DIRECTLY INTO FLOOR SINK. CUT GRATE TO RECEIVE CONDENSATE. COOLING COIL CONDENSATE PIPING SHALL BE COPPER WITH 1/2" THICK ELASTOMERIC RUBBER INSULATION. TYPICAL. 6. PROVIDE AND INSTALL FIRE DAMPERS AT ALL PENETRATIONS OF ELEVATOR MACHINE ROOM.
- ROUTE CONDENSATE PIPING DOWN WITHIN WALL TO WALL BOX. REFER TO CONDENSATE WALL BOX DETAIL ON DRAWING SHEET P401 FOR MORE INFORMATION.

![](_page_79_Figure_10.jpeg)

![](_page_79_Figure_16.jpeg)

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![](_page_79_Figure_18.jpeg)

PRIMARY JOB # 22417

![](_page_80_Figure_0.jpeg)

![](_page_80_Picture_1.jpeg)

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

## UNLESS NOTED OTHERWISE, IN SPACES WITH NO CEILINGS OR WITH CEILING CLOUDS, ALL DUCTWORK SHALL BE PAINTGRIP GALVANIZED FOR FIELD PAINTING BY GENERAL CONTRACTOR. COORDINATE WITH GENERAL CONTRACTOR. COLOR SELECTION BY ARCHITECT. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION. SUPPLY AIR AND RETURN AIR DUCTWORK SHALL BE DOUBLE WALL WITH INTERSTITIAL INSULATION. RELIEF AIR AND EXHAUST AIR DUCTWORK SHALL BE SINGLE WALL WITH INTERNAL LINER WITHIN 10'-0" OF FAN CONNECTION. UNLESS NOTED OTHERWISE, IN SPACES WITH NO CEILINGS OR WITH CEILING CLOUDS, PROVIDE AND INSTALL WHITE PAPER ASJ ON ALL PIPING INSULATION FOR FIELD PAINTING BY GENERAL CONTRACTOR. COORDINATE WITH GENERAL CONTRACTOR. COLOR SELECTION BY ARCHITECT. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.

### **PLAN NOTES**

- ROUTE DUCT THROUGH FACTORY OPENING IN STRUCTURAL BEAM. REFER TO STRUCTURAL DRAWINGS.
- ROUTE CONDENSATE PIPING DOWN WITHIN WALL TO WALL BOX. REFER TO CONDENSATE WALL BOX DETAIL ON DRAWING SHEET P401 FOR MORE INFORMATION. 3. REFER TO HEAT PUMP DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL.
- PROVIDE AND INSTALL CEILING MOUNTED FILTER GRILLE(S) FOR HORIZONTAL HEAT PUMPS.
- TYPICAL. PROVIDE AND INSTALL FIRE DAMPERS AT ALL PENETRATIONS OF ELECTRICAL ROOM. 5.
- BOTTOM OF LOUVER ELEVATION SHALL BE AT TOP OF FIRST MASONRY COURSE. RETURN AIR CHASE OPEN TO LOUVER AND RETURN AIR DUCTWORK UP TO AIR HANDLER. MAINTAIN CLEARANCES FOR RETURN AIR PATH AND PREVENT OBSTRUCTIONS BY OTHER TRADES. COORDINATE WITH OTHER TRADES. 6
- ALL MATERIALS FOR HVAC THIS ROOM SHALL BE CORROSION RESISTANT. REFER TO
- SPECIFICATIONS. PROVIDE AND INSTALL DEWPOINT TEMPERATURE RESET SENSOR ON METAL WINDOW OR DOOR 8.
- FRAME. COORDINATE EXACT LOCATION WITH OWNER, ARCHITECT, AND ENGINEER. 9. DUCT SHALL HAVE INTERGRAL DUCT LINER.
- 10. DUCT SHALL BE DOUBLE WALL.

 $(\mathbf{x})$ 

![](_page_80_Figure_25.jpeg)

![](_page_80_Figure_26.jpeg)

TRUE NORTH

![](_page_80_Figure_30.jpeg)

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![](_page_80_Figure_32.jpeg)

![](_page_81_Figure_0.jpeg)

![](_page_81_Picture_1.jpeg)

SCALE: 3/32" = 1'-0"

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

![](_page_81_Figure_10.jpeg)

![](_page_81_Figure_14.jpeg)

## **PLAN NOTES**

 $(\mathbf{x})$ 

- ROUTE DUCT THROUGH FACTORY OPENING IN STRUCTURAL BEAM. REFER TO STRUCTURAL DRAWINGS ROUTE CONDENSATE PIPING DOWN WITHIN WALL TO WALL BOX. REFER TO CONDENSATE WALL BOX DETAIL ON DRAWING SHEET P401 FOR MORE INFORMATION. 3. REFER TO HEAT PUMP DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL. PROVIDE AND INSTALL CEILING MOUNTED FILTER GRILLE(S) FOR HORIZONTAL HEAT PUMPS. TYPICAL. PROVIDE AND INSTALL FIRE DAMPERS AT ALL PENETRATIONS OF ELECTRICAL ROOM. 5. BOTTOM OF LOUVER ELEVATION SHALL BE AT TOP OF FIRST MASONRY COURSE. RETURN AIR CHASE OPEN TO LOUVER AND RETURN AIR DUCTWORK UP TO AIR HANDLER. MAINTAIN CLEARANCES FOR RETURN AIR PATH AND PREVENT OBSTRUCTIONS BY OTHER TRADES. COORDINATE WITH OTHER 6. TRADES. ALL MATERIALS FOR HVAC THIS ROOM SHALL BE CORROSION RESISTANT. REFER TO SPECIFICATIONS. CONNECT POOL HEATING SUPPLY AND RETURN TO TEES ON POOL SYSTEM PIPING. POOL SYSTEM PIPING AND TEES BY POOL CONTRACTOR. COORDINATE EXACT LOCATION WITH POOL CONTRACTOR. PIPING SHALL BE SCH 40 CPVC. 9. PROVIDE AND INSTALL EQUIPMENT ON 4" TALL CONCRETE HOUSEKEEPING PAD. 10. PROVIDE AND INSTALL MODULAR CONDENSING BOILER PACKAGED POOL HEATING SYSTEM. REFER TO DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR CLEARANCE, PIPING, AND VENTING.
- 11. ROUTE BOILER FLUE CONDENSATE DRAIN TO NEW FLOOR MOUNTED CONDENSATE NEUTRALIZATION TANK CT-2. MODIFY CT-2 INLET AND OUTLET CONNECTIONS AS REQUIRED FOR TRAP DEPTH AND CONDENSATE PIPE FALL. DISCHARGE DIRECTLY INTO NEAREST FLOOR DRAIN. BOILER CONDENSATE PIPE SHALL BE SCHEDULE 80 CPVC. CUT FLOOR SINK GRATE TO RECEIVE CONDENSATE.
- 12. ROUTE CONDENSATE PIPING EXPOSED ON WALL AND FLOOR TO NEAREST FLOOR DRAIN. CUT FLOOR DRAIN GRATE TO RECEIVE CONDENSATE. 13. DUCTWORK SHALL BE ALUMINUM.
- 14. BOTTOM OF TRANSFER GRILLE ELEVATION SHALL BE 6" AFF.
- 15. SUPPORT FAN FROM STRUCTURE. ELEVATION APPROXIMATELY 7'0" AFF.

![](_page_81_Picture_27.jpeg)

permitted to retain copies for information

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![](_page_81_Figure_28.jpeg)

![](_page_82_Figure_0.jpeg)

![](_page_82_Picture_1.jpeg)

SECOND FLOOR -MECHANICAL PLAN - UNIT J SCALE: 1/8" = 1'-0" 1 

![](_page_82_Figure_14.jpeg)

![](_page_82_Picture_17.jpeg)

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![](_page_82_Figure_19.jpeg)

PRIMARY JOB # 22417

- TYPICAL.
- TYPICAL.

![](_page_83_Picture_5.jpeg)

![](_page_83_Figure_6.jpeg)

![](_page_83_Picture_7.jpeg)

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

SCALE: 1" = 1'-0"

SECOND FLOOR -1 MECHANICAL PLAN - UNIT L SCALE: 1/8" = 1'-0"

![](_page_83_Picture_22.jpeg)

PROVIDE FLASHED PENETRATION WITH TOP DRIP CAP FOR WATER TIGHT

![](_page_83_Figure_24.jpeg)

![](_page_83_Picture_25.jpeg)

![](_page_83_Picture_26.jpeg)

- MECHANICAL PLAN - UNIT L

![](_page_84_Figure_0.jpeg)

![](_page_84_Picture_1.jpeg)

SCALE: 3/32" = 1'-0"

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

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

## UNLESS NOTED OTHERWISE, IN SPACES WITH NO CEILINGS OR WITH CEILING CLOUDS, ALL DUCTWORK SHALL BE PAINTGRIP GALVANIZED FOR FIELD PAINTING BY GENERAL CONTRACTOR. COORDINATE WITH GENERAL CONTRACTOR. COLOR SELECTION BY ARCHITECT. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION. SUPPLY AIR AND RETURN AIR DUCTWORK SHALL BE DOUBLE WALL WITH INTERSTITIAL INSULATION. RELIEF AIR AND EXHAUST AIR DUCTWORK SHALL BE SINGLE WALL WITH INTERNAL LINER WITHIN 10'-0" OF FAN CONNECTION. UNLESS NOTED OTHERWISE, IN SPACES WITH NO CEILINGS OR WITH CEILING CLOUDS, PROVIDE AND INSTALL WHITE PAPER ASJ ON ALL PIPING INSULATION FOR FIELD PAINTING BY GENERAL CONTRACTOR. COORDINATE WITH GENERAL CONTRACTOR. COLOR SELECTION BY ARCHITECT. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.

### $(\mathbf{x})$

### **PLAN NOTES**

- PROVIDE AND INSTALL LINED RETURN AIR BOOT ON RELIEF AIR PLENUM EGGCRATE GRILLES RG-1 AND RG-2. REFER TO SOUND ATTENUATOR RETURN GRILLE DETAIL ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL.
- PROVIDE AND INSTALL RELIEF AIR OPENING ABOVE CEILING. MAINTAIN CLEARANCE EQUAL TO MINOR DUCT DIMENSION OR 12" MINIMUM EACH SIDE FOR AIRFLOW. COORDINATE WITH ALL TRADES. TYPICAL.
- REFER TO HEAT PUMP DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL.
- PROVIDE AND INSTALL CEILING MOUNTED FILTER GRILLE(S) FOR HORIZONTAL HEAT PUMPS. TYPICAL.
- ROUTE COOLING COIL CONDENSATE PIPING TO RISER FROM THIRD FLOOR TO FLOOR DRAIN ON FIRST FLOOR. COOLING COIL CONDENSATE PIPING SHALL BE COPPER WITH 1/2" THICK ELASTOMERIC RUBBER INSULATION. TYPICAL.
- CONTROL DAMPERS FOR THROUGH-ROOF DUCT PENETRATIONS SHALL BE LOCATED BELOW ROOF DECK AND SHALL BE ACCESSIBLE FROM ROOF. REFER TO EQUIPMENT SCHEDULES AND DETAILS
- FOR MORE INFORMATION. 7. PUMPED CONDENSATE FROM FLOOR MOUNTED HEAT PUMP.
- 8. CONNECT EXHAUST DUCT TO FUME HOOD OUTLET.
- 9. SCIENCE LAB AND FUME HOOD EXHAUST DUCT SHALL BE PVC COATED.
- 10. PROVIDE AND INSTALL 3/4"x3/4" GALVANIZED STEEL W.W.M. ON RETURN AIR OPENING.
- 11. ROUTE 2" SCH 40 DWV PVC PIPE DOWN WALL TO ACID STORAGE CABINET AND UP THROUGH ROOF TO GOOSNECK. WRAP PIPE WITH 1/2" THICK FLEXIBLE ELASTOMERIC INSULATION.

THIRD FLOOR -MECHANICAL PLAN - UNIT J SCALE: 1/8" = 1'-0" 

![](_page_84_Figure_30.jpeg)

![](_page_84_Picture_31.jpeg)

![](_page_84_Figure_32.jpeg)

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![](_page_84_Figure_34.jpeg)

PRIMARY JOB # 22417

![](_page_85_Figure_0.jpeg)

![](_page_85_Picture_1.jpeg)

## **PLAN NOTES**

- PROVIDE AND INSTALL LINED RETURN AIR BOOT ON RELIEF AIR PLENUM EGGCRATE GRILLES RG-1 AND RG-2. REFER TO SOUND ATTENUATOR RETURN GRILLE DETAIL ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL.
- PROVIDE AND INSTALL RELIEF AIR OPENING ABOVE CEILING. MAINTAIN CLEARANCE EQUAL TO MINOR DUCT DIMENSION OR 12" MINIMUM EACH SIDE FOR AIRFLOW. COORDINATE WITH ALL TRADES.
- REFER TO HEAT PUMP DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. TYPICAL.
- PROVIDE AND INSTALL CEILING MOUNTED FILTER GRILLE(S) FOR HORIZONTAL HEAT PUMPS. TYPICAL.
- ROUTE COOLING COIL CONDENSATE PIPING TO RISER FROM THIRD FLOOR TO FLOOR DRAIN ON FIRST FLOOR. COOLING COIL CONDENSATE PIPING SHALL BE COPPER WITH 1/2" THICK ELASTOMERIC RUBBER INSULATION. TYPICAL.
- CONTROL DAMPERS FOR THROUGH-ROOF DUCT PENETRATIONS SHALL BE LOCATED BELOW ROOF DECK AND SHALL BE ACCESSIBLE FROM ROOF. REFER TO EQUIPMENT SCHEDULES AND DETAILS FOR MORE INFORMATION.
- 7. DOWN TO DHU-1 ON LOW ROOF BELOW.
- 8. CONNECT EXHAUST DUCT TO FUME HOOD OUTLET.
- 9. SCIENCE LAB AND FUME HOOD EXHAUST DUCT SHALL BE PVC COATED.
- 10. PROVIDE AND INSTALL UNIT ON 24" TALL INSULATED METAL ROOF CURB. MAINTAIN MANUFACTURER'S REQUIRED CLEARANCES FOR SERVICE AND AIRFLOW. 11. ALL EXPOSED EXTERIOR DUCTWORK SHALL BE INSULATED WITH R-6 MINIMUM 1-1/2" FLEXIBLE
- ELASTOMERIC SHEET AND JACKETED WITH ALUMINUM. REFER TO SPECIFICATIONS. CROWN JACKETING TO SHED WATER. INSTALL DUCTWORK MINIMUM 18" ABOVE ROOF.
- 12. DISCHARGE COOLING COIL CONDENSATE PIPING DIRECTLY ONTO SLOPED ROOF.
- 13. SUPPORT DUCT AND PIPE FROM ROOF USING B-LINE DURA-BLOCK ROOF SUPPORTS WITH ALL STAINLESS STEEL HARDWARE.
- 14. ROUTE 2" SCH 40 DWV PVC PIPE DOWN WALL TO ACID STORAGE CABINET AND UP THROUGH ROOF TO GOOSNECK. WRAP PIPE WITH 1/2" THICK FLEXIBLE ELASTOMERIC INSULATION.
- 16. ROUTE PIPING UP TO DOAS-1 THROUGH INSULATED METAL PIPE CURB.

![](_page_85_Figure_20.jpeg)

![](_page_85_Figure_21.jpeg)

![](_page_85_Figure_24.jpeg)

and reference purposes. 2023 © Primary Engineering, Inc.

![](_page_85_Figure_25.jpeg)

![](_page_85_Picture_26.jpeg)

![](_page_86_Figure_0.jpeg)

![](_page_86_Figure_1.jpeg)

![](_page_86_Picture_2.jpeg)

SCALE: 1/16" = 1[']-0"

SCALE: 3/32" = 1'-0"

$\times$	PLAN NOTES
1.	PROVIDE AND INSTALL EQUIPMENT ON 4" TALL CONCRETE HOUSEKEEPING PAD.
2.	PROVIDE AND INSTALL EQUIPMENT ON 12" TALL CONCRETE HOUSEKEEPING PAD. REFER TO STRUCTURAL DRAWINGS.
3.	PROVIDE AND INSTALL MODULAR CONDENSING BOILER. REFER TO DETAILS ON DRAWING SHEET M401 FOR MORE INFORMATION. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR CLEARANCE, PIPING, AND VENTING.
4.	ROUTE BOILER FLUE CONDENSATE DRAIN TO NEW FLOOR MOUNTED CONDENSATE NEUTRALIZATIC TANK CT-1. MODIFY CT-1 INLET AND OUTLET CONNECTIONS AS REQUIRED FOR TRAP DEPTH AND CONDENSATE PIPE FALL. DISCHARGE DIRECTLY INTO NEAREST FLOOR DRAIN. BOILER CONDENSA PIPE SHALL BE SCHEDULE 80 CPVC. CUT FLOOR SINK GRATE TO RECEIVE CONDENSATE.
5.	ROUTE COMBUSTION AIR INTAKES AND FLUES UP TO ROOF. VERIFY VENTING REQUIREMENTS WITH BOILER MANUFACTURER AND VENTING MANUFACTURER. FLUES SHALL BE POLYPROPYLENE. COMBUSTION AIR INTAKES SHALL BE PVC PIPE OR GALVANIZED SHEET METAL.
6.	CUT EXISTING ROOF AS REQUIRED FOR NEW MECHANICAL PENETRATION. PATCH ROOF TO MAINTAWARRANTY. COORDINATE WITH GC.
7.	CONTROL DAMPERS FOR THROUGH-ROOF DUCT PENETRATIONS SHALL BE LOCATED BELOW ROOF DECK AND SHALL BE ACCESSIBLE FROM ROOF. REFER TO EQUIPMENT SCHEDULES AND DETAILS FOR MORE INFORMATION.
8.	SIDE TAP MAIN FOR BRANCH PIPING TO EXPANSION TANK.
9.	REFER TO SYSTEM FILL STATION DETAIL ON DRAWING SHEET M403 FOR MORE INFORMATION.
10.	PROVIDE AND INSTALL NEW BYPASS FILTER FEEDER, FURNISHED BY CHEMICAL TREATMENT PROVIDER. REFER TO WATER TREATMENT SPECIFICATIONS AND CHEMICAL SHOT FEEDER DETAIL DRAWING SHEET M402 FOR MORE INFORMATION.
11.	PROVIDE AND INSTALL NEW FLOW METER. INSTALL PER MANUFACTURER'S INSTALLATION REQUIREMENTS.
12.	PROVIDE AND INSTALL FIELD FABRICATED METAL CHANNEL EQUIPMENT RACK ANCHORED TO CONCRETE FLOOR SLAB. REFER TO DETAILS ON ELECTRICAL DRAWINGS.
13.	NEW CHEMICAL TREATMENT SYSTEM CONTROLLER.
14.	NEW CHEMICAL SOLUTION TANKS WITH CONTAINMENT.
15.	NEW 3-WAY AUTOMATIC CONTROL VALVE.
16.	ROUTE HYDROCYCLONE SEPARATOR AUTOMATIC PURGE DRAIN PIPING ON FLOOR TO NEW TRENCI DRAIN. CUT TRENCH DRAIN GRATE TO RECEIVE DRAINAGE FLOW.
17.	PROVIDE AND INSTALL CONCRETE CURB ENTIRE PERIMETER OF COOLING TOWER INTAKE PLENUM. PLENUM SHALL BE WALKABLE WITH INSULATED ACCESS DOORS EACH SHE, SLOPED TO DRAIN, AN SEALED AIR AND WATER YIGHT. PLENUM WALL CONSTRUCTION SHALL BE GALVANIZED STEEL.
18.	PROVIDE AND INSTALL STRUCTURAL SUPPORT FOR MULTI-PANEL INTAKE LOUVER.
19	COOLING TOWER RETURN RIPING TO COOLING TOWER PUMP SHALL BE INSTALLED ON FLOOR, BELOW COOLING TOWER BASIN WATER LEVEL ELEVATION, AND WITH MINIMAL FITTINGS.
20.	CT-2 RETURN PIPING TO CTP-2 SHALL PENETRATE THROUGH CT-1 INATKE PLENUM CURB. SEAL PENETRATION WITH LINK SEAL. PIPING WITHIN INTAKE PLENUM SHALL BE WELDED STAINLESS STE WITH ALL STAINLESS STEEL HARDWARE AND SUPPORTS.
21.	ROUTE COOLING TOWER DISCHARGE DUCT UP THROUGH ROOF. PROVIDE AND INSTALL NEW 24" TALL DOUBLE WALL INSULATED METAL ROOF CURB. PROVIDE AND INSTALL 16 GA 1"x1" WELDED STAINLESS STEEL WOVEN WIRE MESH ATTACHED TO 4'x4' METAL CHANNEL SUPPORT GRID, ANCHORED TO ROOF CURB. ALL STAINLESS STEEL CONSTRUCTION. REFER TO COOLING TOWER DETAILS FOR MORE INFORMATION.

# R TO

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JTRALIZATION EPTH AND CONDENSATE

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TO MAINTAIN ELOW ROOF D DETAILS

IENT ER DETAIL ON

EW TRENCH KE PLENUM. D DRAIN, AND STEEL.

LOOR,

B. SEAL

NEW 24" WELDED G TOWER

![](_page_86_Picture_24.jpeg)

ORP <u>O</u>  $\bigcirc$ О Δ Ŏ SC C Q . IZ N 20 R X 1  $\bigcirc$ 30 VI PE11700017 STATE OF 100% CONSTRUCTION DOCUMENT PROJECT: #22130 DATE: 07-28-2023 DRAWN BY: ASL ENLARGED MECHANICAL PLANS

![](_page_86_Picture_26.jpeg)

![](_page_86_Picture_27.jpeg)

![](_page_87_Picture_0.jpeg)

TAG           HP-J1.01         W/           HP-J1.02         W/           HP-J1.03         W/           HP-J1.04         W/           HP-J1.05         W/           HP-J1.06         W/           HP-J1.07         W/           HP-J1.08         W/           HP-J1.09         W/           HP-J1.10         W/           HP-J1.11         W/           HP-J1.12         W/           HP-J1.13         W/           HP-J1.14         W/           HP-J1.15         W/           HP-J1.18         W/           HP-J1.19         W/	MFR. ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE	MODEL           UVH           UVV           UVV           UVV           UVV           UVV           UVH           UVV           UVV	SIZE         024         036         036         036         024         036         024         036         024         036         024         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         036         024	SERVICE VESTIBULE J1100A CLASSROOM J101 CLASSROOM J103 CM/WKR J102 WORK ROOM J104 CORRIDOR J1100 IDF J120 STAIR ST101 VESTIBULE J1000A ATRIUM J1000 CLASSROOM J105 CLASSROOM J105 CLASSROOM J107 CLASSROOM J114 CLASSROOM J116 CLASSROOM J116	AIRFLOW (CFM) 400 1000 1000 500 800 400 500 1400 1000 1000 1000 1000 1000	MIN O.A. (CFM) 0 415 415 415 100 - - - - - 415 415 415 415 415 415 415 415 415 415	ESP (IN W.C.) 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	MOTOR (HP) 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2	FLOW (GPM)           4.0           9.0           9.0           9.0           5.0           7.0           4.0           3.0           10.0           8.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0	WPD (FT)           0.6           4.0           4.0           4.0           3.3           4.0           4.2           3.3           4.0           4.0           4.2           3.3           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           1.6           1.6	<b>TOT. CAP.</b> (MBH) 8.0 30.7 30.7 11.6 21.1 8.0 15.5 42.9 30.3 30.7 30.7 30.7 30.7 30.7 30.7 30.7	SENS. CAP. (MBH) 5.9 22.9 22.9 22.9 8.6 14.5 5.9 11.4 31.7 22.2 22.9 22.9 22.9 22.9 22.9 22.9 22	HEAT OF         9.5         37.5         37.5         37.5         37.5         37.5         25.7         9.5         20.1         52.6         37.1         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         20.8         20.8	EDB / EWB (DEG F) 75 / 63 75 / 63	LAT (DEG F) 61.8 55.7 55.7 55.7 59.7 59.7 58.7 61.8 51.5 54.0 55.3 55.7 55.7 55.7 55.7 55.7 55.7 55.7	EWT (DEG F) 90 90 90 90 90 90 90 90 90 90 90 90 90	EER 18.1 15.4 15.4 15.4 15.4 15.7 18.1 11.4 15.2 15.1 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.2 15.1 15.4 15.2 15.1 15.4 15.2 15.1 15.4 15.2 15.1 15.4 15.2 15.1 15.4 15.4 15.2 15.1 15.4 15.4 15.4 15.2 15.1 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 1	TOT. CAP. (MBH)           11.2           42.2           42.2           42.2           16.5           29.7           11.2           21.1           63.1           41.8           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.4           42.2           42.2           42.4           42.2           42.4           42.2           42.4           42.2           42.4           42.4           42.4           42.4           42.4           42.4           42.4           42.4           42.4           42.	HEAT OF EXTRC (MBH)           9.3           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           33.5           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           34.0           20.6	EAT (DEG F) 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.	LAT (DEG F) 95.0 105.5 105.5 99.0 103.3 95.0 113.3 111.7 107.0 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5	EWT (DEG F) 70 70 70 70 70 70 70 70 70 70 70 70 70	COP 6.0 5.1 5.1 5.1 5.6 5.0 6.0 4.6 5.6 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1	REFRIG.         ELE (V/P           R410A         460           R410A         460	C         FLA           '3         7.1           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         7.1           '3         8.7           '3         7.1           '3         8.7           '3         7.1           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         8.7           '3         7.1           '3         7.1           '3         7.1	MCA 7.9 9.8 9.8 9.8 7.9 9.8 7.9 10.9 13 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8
HP-K1.01         W/           HP-K1.02         W/           HP-K1.03         W/           HP-K1.04         W/           HP-K1.05         W/           HP-K1.06         W/           HP-K1.07         W/           HP-K1.08         W/           HP-K1.09         W/           HP-K1.10         W/           HP-K1.11         W/           HP-K1.12         W/           HP-K1.13         W/           HP-K1.14         W/           HP-K1.15         W/	ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE	UVV UVV UVH UVH UVV UVV UVV UVV UVV UVV	036 036 036 036 036 036 036 036 036 036	CLASSROOM K101 CLASSROOM K102 CLASSROOM K104 CORRIDOR K1100 CORRIDOR K1100 CLASSROOM K103 CLASSROOM K105 CLASSROOM K106 CLASSROOM K108 CLASSROOM K109 CLASSROOM K109 CLASSROOM K110 CLASSROOM K111 CONCESSIONS K114	1000 1000 800 800 1000 1000 1000 1000 1	415 415 415 - - 415 415 415 415 415 415 415 415 415 415	0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5	1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2	9.0 9.0 9.0 7.0 7.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9.0 9	4.0         4.0         4.0         2.4         2.4         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         2.4	30.7           30.7           21.1           21.1           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7           30.7	22.9 22.9 22.9 14.5 14.5 22.9 22.9 22.9 22.9 22.9 22.9 22.9 22	37.5         37.5         37.5         25.7         25.7         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5	75 / 63 75 / 63	55.7           55.7           55.7           58.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           58.7           58.7           58.7           58.7	90 90 90 90 90 90 90 90 90 90 90 90 90 9	15.4           15.4           15.7           15.7           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.7	42.2 42.2 29.7 29.7 42.2 42.2 42.2 42.2 42.2 42.2 42.2 42	34.0         34.0         34.0         23.7         23.7         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0	70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0	105.5 105.5 103.3 103.3 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5 105.5	70 70 70 70 70 70 70 70 70 70 70 70 70 7	5.1 5.1 5.0 5.0 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1	R410A         460	3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7           3         8.7	9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8
HP-L1.01 W/ HP-L1.02 W/ HP-L1.03 W/ HP-M1.01 W/ HP-M1.02 W/ HP-M1.03 W/	ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE	UVH UVH UVH UVH UVH	036 048 024 048 048 036 048	VESTIBULE L1000A LOBBY L1000 IDF L117 MECH M101 VESTIBULE M1000A COBBIDOB M1000	800 1600 400 1600 800 1600	- - - - - - -	0.5 0.5 0.5 0.5 0.5 0.5 0.5	1/2 1.0 1/2 1.0 1.0 1/2 1.0	7.0 10.0 4.0 10.0 7.0 10.0	2.4 4.2 0.6 4.2 2.4 4.2	21.1 43.9 8.0 43.9 21.1 43.9	14.5 34.8 5.9 34.8 14.5 34.8	25.7 54.0 9.5 54.0 25.7 54.0	75 / 63 75 / 63 75 / 63 75 / 63 75 / 63 75 / 63	58.7 55.5 61.8 55.5 55.5 58.7 55.5	90 90 90 90 90 90	15.7 14.8 18.1 14.8 15.7 14.8	29.7 64.2 11.2 64.2 29.7 64.2	23.7 53.4 9.3 53.4 23.7 53.4	70.0 70.0 70.0 70.0 70.0 70.0 70.0	103.3 106.0 95.0 106.0 103.3 106.0	70 70 70 70 70 70 70	5.0 6.0 6.0 6.0 5.0 6.0	R410A         460	/3         8.7           /3         11.6           /3         7.1           /3         11.6           /3         8.7           /3         11.6           /3         11.6           /3         11.6	9.8 13 7.9 ( 13 9.8 13
HP-J2.01         W/           HP-J2.02         W/           HP-J2.03         W/           HP-J2.04         W/           HP-J2.05         W/           HP-J2.06         W/           HP-J2.07         W/           HP-J2.08         W/           HP-J2.10         W/	ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE	UVH UVV UVV UVV UVV UVV UVH UVH UVH UVV UVV	024           036           036           036           036           024           036           024           036           024           036           024           036           024           036           024           036           036           036           036           036           036	SM GROUP J200 CLASSROOM J201 CLASSROOM J203 CLASSROOM J204 WORKROOM J204 CORRIDOR J2200 IDF J220 CLASSROOM J205 CLASSROOM J207 CLASSROOM J214 CLASSROOM J216	400 1000 1000 500 800 400 1000 1000 1000	40 415 415 415 100 - - 415 415 415 415 415	0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5	1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2	4.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0           9.0	0.6           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0           4.0	8.0 30.7 30.7 11.6 21.1 8.0 30.7 30.7 30.7 30.7 30.7 30.7	5.9 22.9 22.9 22.9 8.6 14.5 5.9 22.9 22.9 22.9 22.9 22.9 22.9 22.	9.5 37.5 37.5 37.5 14.0 25.7 9.5 37.5 37.5 37.5 37.5 37.5 37.5	75 / 63 75 / 63	61.8           55.7           55.7           55.7           55.7           59.7           58.7           61.8           55.7           55.7           55.7           59.7           58.7           61.8           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7	90 90 90 90 90 90 90 90 90 90 90 90 90	18.1         15.4         15.4         15.7         18.1         15.4         15.7         18.1         15.4         15.4         15.7         18.1         15.4         15.4         15.4         15.7         18.1         15.4         15.4         15.4         15.4	11.2           42.2           42.2           42.2           16.5           29.7           11.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2           42.2	9.3 9.3 34.0 34.0 13.4 23.7 9.3 34.0 34.0 34.0 34.0 34.0 34.0	70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0           70.0	95.0 105.5 105.5 105.5 99.0 103.3 95.0 105.5 105.5 105.5 105.5	70 70 70 70 70 70 70 70 70 70 70 70 70 7	6.0 5.1 5.1 5.1 5.6 5.0 6.0 5.1 5.1 5.1 5.1 5.1	R410A         460	11.0           /3         7.1           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         7.1           /3         8.7           /3         7.1           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7	7.9 9.8 9.8 9.8 7.9 9.8 7.9 9.8 7.9 9.8 9.8 9.8 9.8 9.8
HP-J2.12 W/ HP-J2.13 W/ HP-J2.14 W/ HP-J2.15 W/	ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE	UVV UVV UVV UVV	036 036 036 024	CLASSROOM J209 LGI J211 LGI J211 SM GROUP J226	1000 1000 1000 600	415 415 415 415 100	0.5 0.5 0.5 0.5 0.5	1/2 1/2 1/2 1/2 1/2 1/2	9.0 9.0 9.0 6.0	4.0       4.0       4.0       1.6	30.7 30.7 30.7 17.5	22.9 22.9 22.9 13.6	37.5 37.5 37.5 20.8	75 / 63 75 / 63 75 / 63 75 / 63	55.7 55.7 55.7 55.7 55.1	90 90 90 90 90	15.4 15.4 15.4 15.4 18.0	42.2 42.2 42.2 42.2 24.6	34.0 34.0 34.0 20.6	70.0 70.0 70.0 70.0 70.0	105.5 105.5 105.5 105.5 106.0	70 70 70 70 70	5.1 5.1 5.1 6.2	R410A         460           R410A         460           R410A         460           R410A         460           R410A         460	-         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -	9.8 9.8 9.8 9.8 7.9
нг-к2.01         W/           НР-К2.02         W/           НР-К2.03         W/           НР-К2.03         W/           НР-К2.03         W/           НР-К2.04         W/           НР-К2.05         W/           НР-К2.06         W/           НР-К2.07         W/           НР-К2.08         W/           НР-К2.09         W/           НР-К2.10         W/           НР-К2.11         W/           НР-К2.12         W/           НР-К2.13         W/           НР-К2.14         W/           НР-К2.15         W/	ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE	UVV UVV UVH UVV UVV UVV UVV UVV UVV UVV	036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036	CLASSHOOM K201 CLASSROOM K202 CLASSROOM K204 CORRIDOR K2000 CLASSROOM K203 CLASSROOM K203 CLASSROOM K205 CLASSROOM K206 CLASSROOM K208 CLASSROOM K207 CLASSROOM K209 CLASSROOM K210 CLASSROOM K211 CORRIDOR M2000	1000 1000 1000 800 800 1000 1000 1000 1	415 415 - - 415 415 415 415 415 415 415 415 415 415	0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5	1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2	9.0         9.0         9.0         7.0         7.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0         9.0	4.0         4.0         4.0         2.4         2.4         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0         4.0	30.7         30.7         30.7         21.1         21.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         30.7         22.0	22.9 22.9 22.9 14.5 14.5 22.9 22.9 22.9 22.9 22.9 22.9 22.9 22	37.5         37.5         37.5         25.7         25.7         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5         37.5	75 / 63 75 / 63	55.7           55.7           55.7           58.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           53.5	90 90 90 90 90 90 90 90 90 90 90 90 90 9	15.4         15.4         15.7         15.7         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         16.4	42.2 42.2 29.7 29.7 42.2 42.2 42.2 42.2 42.2 42.2 42.2 42	34.0         34.0         34.0         23.7         23.7         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0	70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0	105.5         105.5         103.3         103.3         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5         105.5	70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70         70          70          70          70	5.1         5.1         5.0         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         5.1         6.2	H410A         460           R410A         460	3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         8.7           (3         7.1	9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8
HP-L2.01 WA HP-L2.02 WA HP-L2.03 WA HP-L2.04 WA HP-L2.05 WA HP-L2.06 WA	ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE		024 024 024 036 036 18	CORRIDOR L2100 IDF L208 RR L209 CLASSROOM L203 CLASSROOM L204 AV L201	800 400 800 1000 1000 500	- - 415 415 -	0.5 0.5 0.5 0.5 0.5 0.5 0.1	1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2	6.0 4.0 6.0 9.0 9.0 3.0	2.4 0.6 2.4 4.0 3.2	22.0 8.0 22.0 30.7 30.7 15.5	19.0 5.9 19.0 22.9 22.9 11.4	26.5 9.5 26.5 37.5 37.5 20.1	75 / 63 75 / 63 75 / 63 75 / 63 75 / 63 75 / 63 75 / 63	53.5 61.8 53.5 55.7 55.7 51.5 51.5	90 90 90 90 90 90 90	16.4 18.1 16.4 15.4 15.4 11.4	30.9           11.2           30.9           42.2           42.2           21.1	25.9 9.3 25.9 34.0 34.0 16.5	70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0	105.1 95.0 105.1 105.5 105.5 113.3	70 70 70 70 70 70 70	6.2 6.0 6.2 5.1 5.1 4.6	R410A         460           R410A         208-2:           R410A         208-2:	73         7.1           73         7.1           73         7.1           73         8.7           73         8.7           30/1         9.3	7.9 7.9 9.8 9.8 10.9
HP-J3.01       W/A         HP-J3.02       W/A         HP-J3.03       W/A         HP-J3.04       W/A         HP-J3.05       W/A         HP-J3.06       W/A         HP-J3.07       W/A         HP-J3.08       W/A         HP-J3.10       W/A         HP-J3.11       W/A         HP-J3.15       W/A         HP-J3.16       W/A         HP-J3.18       W/A         HP-J3.19       W/A	ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE	UVH UVV UVV UVV UVV UVV UVV UVV UVV UVH UVV UVV	036       024       036       024       036       036       036       024       036       024       036       024       18       036       036       036       036       036       036       036       024       120       120       024       036       036	FLEX M201 FLEX M201 SM GROUP J300 SCIENCE CLASSROOM J301 SCIENCE CLASSROOM J303 SCIENCE CLASSROOM J302 WORK ROOM J304 CORRIDOR J3200 IDF J322 STAIR ST301 SCIENCE CLASSROOM J305 SCIENCE CLASSROOM J307 SCIENCE CLASSROOM J316 SCIENCE CLASSROOM J309 PREP J313 GROUP RR J318 ATRIUM J1000 ATRIUM J1000 SM GROUP J325 SCIENCE LAB J315	1000 1000 400 1000 1000 1000 500 800 400 500 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 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        53.4           53.4           55.1           54.8           54.8</td><td>90 90 90 90 90 90 90 90 90 90 90 90 90 9</td><td>13.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.7         18.1         11.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         16.4         11.6         18.0         15.6         15.5</td><td>42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         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   70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0</td><td>105.5           95.0           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.1           109.4           109.4           105.5           105.5</td><td>70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70 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55.7           55.7           53.5           53.4           53.4           55.1           54.8           54.8	90 90 90 90 90 90 90 90 90 90 90 90 90 9	13.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.7         18.1         11.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         15.4         16.4         11.6         18.0         15.6         15.5	42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.2         42.4.6         30.9         141.6         141.6         46.7         46.7	34.0         9.3         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         34.0         38.0         38.0         38.0	70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0         70.0	105.5           95.0           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.5           105.1           109.4           109.4           105.5           105.5	70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70 <td>5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1</td> <td>HITOA         460           R410A         460</td> <td>-         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -</td> <td>9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 7.9 10.9 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9</td>	5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1	HITOA         460           R410A         460	-         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -	9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 7.9 10.9 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9
HP-K3.01         W/           HP-K3.02         W/           HP-K3.03         W/           HP-K3.04         W/           HP-K3.05         W/           HP-K3.06         W/           HP-K3.07         W/           HP-K3.08         W/           HP-K3.10         W/           HP-K3.11         W/	ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE	UVV UVH UVH UVV UVV UVV UVV UVV UVV UVV	036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036           036	SCIENCE CLASSROOM K302 CORRIDOR K3000 CORRIDOR K3000 SCIENCE LAB K301 SCIENCE CLASSROOM K304 SCIENCE CLASSROOM K306 PREP K305 SCIENCE CLASSROOM K308 SCIENCE CLASSROOM K307 SCIENCE CLASSROOM K307	1000 800 800 1200 1200 1000 600 1000 1000 1000 800	415           -           550           550           415           415           415           415           415           415           415           415           415           415           415           415           415           415           415	0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5           0.5	1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2           1/2	9.0 7.0 7.0 9.0 9.0 9.0 9.0 6.0 9.0 9.0 9.0 9.0 7.0	4.0       2.4       2.4       4.6       4.6       4.6       4.0       4.0       4.0       4.0       4.0       2.4	30.7           21.1           21.1           34.3           30.7           17.5           30.7           30.7           21.1	22.9 14.5 14.5 26.6 26.6 22.9 22.9 13.6 22.9 22.9 22.9 13.6 22.9 22.9 13.6 22.9 14.5	37.5 25.7 25.7 41.8 41.8 37.5 37.5 20.8 37.5 37.5 37.5 37.5 25.7	75 / 63 75 / 63	55.7           58.7           58.7           54.8           54.8           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7           55.7	90 90 90 90 90 90 90 90 90 90 90 90 90 9	15.4           15.7           15.7           15.5           15.5           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.4           15.7	42.2 29.7 29.7 46.7 46.7 42.2 42.2 24.6 42.2 42.2 42.2 42.2 42.2	34.0 23.7 23.7 38.0 38.0 34.0 20.6 34.0 34.0 34.0 34.0 34.0 34.0 34.0 34.0	70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0       70.0	105.5 103.3 103.3 105.5 105.5 105.5 105.5 106.0 105.5 105.5 105.5 105.5 105.5 105.5	70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70       70	5.0 5.0 5.0 5.3 5.3 5.1 5.1 6.2 5.1 5.1 5.1 5.1 5.1 5.1 5.0	R410A         460	3.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7           /3         8.7	9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8 9.8
HP-L3.01 WA HP-L3.02 WA HP-L3.03 WA	ATERFURNACE ATERFURNACE ATERFURNACE ATERFURNACE	UVH NCS UVV UVV UVV NCS	024 18 048 048 048 18 060	IDF L302 ROOF ACCESS L303 COMPUTER LAB L301 COMPUTER LAB M302 STAIR ST302	800 500 1600 1600 500	- - 450 450 - 800	0.5 0.1 0.5 0.5 0.5 0.1 0.5	1/2 1/4 1.0 1.0 1.0 1/4 1.0	6.0 3.0 12.0 12.0 3.0 16.0	2.4 3.2 5.5 5.5 3.2 11.8	22.0 15.5 44.4 44.4 15.5 54.1	19.0 11.4 35.2 35.2 11.4 42.6	26.5 20.1 54.4 54.4 20.1 68.0	75 / 63 75 / 63 75 / 63 75 / 63 75 / 63 75 / 63	53.5 51.5 55.2 55.2 55.2 51.5	90 90 90 90 90 90	16.4 11.4 15.2 15.2 15.2 11.4	30.9 21.1 65.3 65.3 21.1 76.4	25.9 16.5 54.5 54.5 16.5 61.4	70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0	105.1 113.3 106.7 106.7 113.3 105.2	70 70 70 70 70 70 70	6.2 4.6 6.0 6.0 4.6	R410A         460           R410A         208-2:           R410A         460	'3         7.1           30/1         9.3           '3         11.6           '3         11.6           30/1         9.3	7.9 10.9 13 13 13 10.9 14.7

![](_page_87_Figure_4.jpeg)

![](_page_88_Figure_0.jpeg)

12. REFER TO PLANS FOR MORE INFORMATION.

![](_page_88_Picture_1.jpeg)

E	<b>30IL</b>	ER S	SCHE	EDUL	E

BURNER RNDOWN	T&P RELIEF PRESS	FUEL PRESS. (IN W.C.)	GAS CONN (IN)	WATER CONN (IN)	FLUE OUTLET (IN)	FLUE MATERIAL	DESIGN FLOW (GPM)	MIN FLOW (GPM)	WATER PD (FT)	EWT (DEG F)	LWT (DEG F)	ELEC (V/PH)	FLA	МСА	AMPS (PUMP)	AMPS (BOILER )	REMARKS
15:1	50	8 - 28	2	6	14	POLYPROPYLENE	580	75	13.84	60	80	460/3	22	28	-	-	1, 2, 3, 4, 5, 6, 7
15:1	50	8 - 28	2	6	14	POLYPROPYLENE	580	75	13.84	60	80	460/3	22	28	-	-	1, 2, 3, 4, 5, 6, 7
15:1	50	8 - 28	2	6	14	POLYPROPYLENE	580	75	13.84	60	80	460/3	22	28	-	-	1, 2, 3, 4, 5, 6, 7
15:1	50	8 - 28	2	6	14	POLYPROPYLENE	580	75	13.84	60	80	460/3	22	28	-	-	1, 2, 3, 4, 5, 6, 7
															-		
25:1	50	4 - 14	1-1/2	3	8	POLYPROPYLENE	225	-	4.3	80	100	120/1	-	-	9	13	1, 2, 3, 4, 5, 6, 8

3. PROVIDE AND INSTALL WITH INTEGRAL SEQUENCER TO CONNECT ALL BOILERS INTO A COMMON TEAM. PROVIDE ALL ASSOCIATED CONTROLLERS, WIRING, PROGRAMMING, SETUP, ETC. FOR A FULLY FUNCITONAL SYSTEM IN EVERY RESPECT.

		C	DOLI	NG T	OWE	R SC	HEDU	LE					
			EVAP								$\frown$		
FLOW (GPM)	(MBH)	WPD (PSI)	(GPM)	AIRFLOW (CEM)	ESP (IN. W.C.)	FAN OTY	FAN MOTOR	FAN MOTOR	DRIVE '	BASIN HEATER (kW)	ELEC' (V/PH)	OPERATING WEIGHT (LBS)	REMARKS
		()				GII	(11)			()	(1/11)		ILMAIINS
2,400	12,300	3.5	19.2	163,600	0.25	6	(2) 60.0	68.3	BELT	(2) 10 KW	460/3	29,490	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 1
2,400 2,400	12,300 12,300	3.5 3.5	19.2 19.2	163,600 163,600	0.25	6 6	(2) 60.0 (2) 60.0	68.3 68.3	BELT	(2) 10 KW (2) 10 KW	460/3 460/3	29,490 29,490	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 1 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 1
2,400 2,400	12,300 12,300	3.5 3.5	19.2 19.2	163,600 163,600	0.25	6 6	(111) (2) 60.0 (2) 60.0	68.3 68.3	BELT BELT	(2) 10 KW (2) 10 KW	460/3 460/3	29,490 29,490	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 1 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 1

1. PROVIDE AND INSTALL WITH BASIN HEATER'S SIZED TO MAINTAIN 40 DEGREE BASIN WATER TEMPERATURE AT 20 DEGREE AMBIENT TEMPERATURE.

7. PROVIDE AND INSTALL WITH ALL STAINLESS STEEL PANEL CONSTRUCTION AND STAINLESS STEEL BASIN.

8. PROVIDE AND INSTALL WITH CONTACTOR WITH TRANSFORMER AND DISCONNECT FOR HEATER PACKAGE. 9. PROVIDE AND INSTALL WITH DRIFT ELIMINATORS TO 0.001% OF WATER RECIRCULATION RATE.

10. PROVIDE AND INSTALL WITH (2) 8" INLET WATER CONNECTIONS AND (1) 12" OUTLET WATER CONNECTION. 11. INTAKE AND DISCHARGE CONTROL DAMPERS SHALL BE FURNISHED BY TCC.

	TAG	MFR.	MODEL		PIPE	MAX FLOW	TANK DIA	TANK /HEIGHT (IN)	WATER VOL (GAL)	EMPTY/FLOODED	REMARKS
$\square$	ADS-1	BELL & GOSSETT	CRS-147-HV	HEAT PUMP	<u> 14</u>	4,625	28	114	304	1,764 4,171	1,2
Γ	ADS-2	BELL & GOSSETT	CRS-6F	DOAS-1	6	550	12	39	19	304 / 499	1, 2
	ADS-3	BELL & GOSSETT	CRS-4F-HV	DOAS-1	4	405	8	43	9	174 / 261	1, 2
	<b>REMARK</b> 1. PROVII 2. PROVII	SE DE WITH REMOVABLE DE WITH INTEGRAL	LE BOTTOMELA NEODYMIUM M	NGE, SKIMMEB ALV AGNETIC INSERT RO	VE, DRAIN PO	DRT, AND HIE	TH CAPACIT W REMOVA	Y AUTOMATIC L OF IRON FLA	AIR VENT EQ KES USING B	UAL TO B&G MODEL LOW DOWN PORT.	107A

TAG	MFR.	MODEL	SERVICE	TANK VOL (GAL)	DIA. (IN)	HEIGHT (IN)	CONN. SIZE (IN)	SHIP WT (LBS)	TANK FULL WT (LBS)	REMAR
BT-1	AMTROL	CWBT300-6-125	DOAS-1	300	36	80.375	6	772	3280	1, 2, 3
BT-2	AMTROL	CWBT300-6-125	DOAS-1	300	36	80.375	6	772	3280	1, 2, 3
BT-3	AMTROL	CWBT300-6-125	DOAS-1	300	36	80.375	6	772	3280	1, 2, 3
BT-4	AMTROL	CWBT300-6-125	DOAS-1	300	36	80.375	6	772	3280	1, 2, 3
BT-5	AMTROL	CWBT300-4-125	DOAS-1	300	36	80.375	4	753	3261	1, 2, 3
BT-6	AMTROL	CWBT300-4-125	DOAS-1	300	36	80.375	4	753	3261	1, 2, 3
REMAR 1. PRO 2. BAFF 3. TANK	KS: /IDE AND INS EL PLATE SH	TALL WITH AUTOMA ALL BE WELDED IN F	TIC AIR VENT C PLACE.	DN TOP OF TA	NK AND	DRAIN PO	RT ON BO	ГТОМ.	<u>                                     </u>	

![](_page_88_Picture_15.jpeg)

A	R HANDI	LER SO	CHED	ULE	
TAG	DOAS-1				
MFR.	INNOVENT				
MODEL	ERU-OU-PL-40000				
SERVICE	3-STORY DOAS				
	542 x 220 x 120				
	30,300				
AIRFLOW (CFM)	40000				
TSP (IN W.C.)	5.58				
ESP (IN W.C.)	2.00				
FILTER SP (IN W.C.)	0.38				
FILTER TYPE	2" MERV 8				
	1815				
	PI				
WHEEL DIAMETER (IN)	25				
FAN QUANTITY	4				
DRIVE TYPE	DIRECT				
MOTOR (HP, EA)	15.0				
MOTOR (BHP, EA)	12.0				
ELECTRICAL (V / PH)	460/3 VSD				
FXHAUST FAN	V3D				
AIRFLOW (CFM)	40000				
TSP (IN W.C.)	3.18				
ESP (IN W.C.)	1.25				
FILTER SP (IN W.C.)	0.38				
FILTER TYPE	2" MERV 8				
	1560				
FAN TYPE	PI				
WHEEL DIAMETER (IN)	25				
FAN QUANTITY	4				
DRIVE TYPE	DIRECT				
MOTOR (HP, EA)	10.0				
	7.2				
	460/3				
DUAL TEMP PRIMARY COIL	100				
AIRFLOW (CFM)	40000				
TOTAL CAP (MBH)	2458				
SENS CAP (MBH)	1177				
EAT DB/WB (DEG F)	82 / 73				
EWT/I WT (DEG F)	55 / 55 45 / 55				
COIL FLOW (GPM)	485				
FLUID VELOCITY (FPS)	-				
FLUID	30% PG				
WPD (FT)	13.1				
APD (IN W.C.)	1.47				
FINS/FT	96				
CONTROL VALVE	-				
DUAL TEMP REHEAT COIL					
AIRFLOW (CFM)	40000				
TOTAL CAP (MBH)	891				
SENS CAP (MBH)					
	75/62	<u>L</u>			
EWT/LWT (DEG F)	110 / 100				
COIL FLOW (GPM)	290				
FLUID VELOCITY (FPS)	-				
FLUID	30% PG	$ \downarrow \checkmark $			
	₹.7 → 1000	$\checkmark$			
APD (IN W.S). DOWO	2	$\vdash$			
FINS/FT	84	2	<u> </u>		
CONTROL VALVE	-				
ELECTRICAL					
ELECTRICAL (V / PH)	460/3				
MOP	150				
MCA	129.1				
B81/1-5//0					

9, 10, 11, 12, 13

1. ALL SECTIONS SHALL BE DOUBLE WALL CONSTRUCTION WITH MINIMUM R-13 INSULATION, SMACNA LEAKAGE CLASS 5.0, MAXIMUM L/250 PANEL DEFLECTION, AND DESIGNED FOR

2. PROVIDE AND INSTALL WITH ENERGY RECOVERY UNIT. REFER TO ENERGY RECOVERY UNIT

3. HYDRONIC COILS SHALL BE STAINLESS STEEL CASING WITH COPPER OR RED BRASS HEADER AND WITH STAINLESS STEEL INSULATED IAQ DRAIN PAN. 4. PROVIDE AND INSTALL WITH SINGLE POINT ELECTRICAL POWER CONNECTION. 5. PROVIDE AND INSTALL INDIVIDUAL PACKAGED VARIABLE SPEED DRIVES FOR ALL SUPPLY AND

EXHAUST FANS. FANS SHALL BE CONFIGURED TO OPERATE INDEPENDENTLY ON FAILURE OF 6. PROVIDE AND INSTALL WITH (2) MANUAL BLANK-OFF PLATES TO ISOLATE FAILED FANS.

7. PROVIDE AND INSTALL WITH EXTERNAL HEATED AND VENTILATED VSD PLENUM CABINET. 8. REFER TO DRAWING PLANS AND DETAILS FOR MODULE CONFIGURATIONS. 9. MOTOR SHALL BE MULTI-TAP 460/240/208 BALDOR SUPER-E WITH INTEGRAL SHAFT GROUNDING RING AND COMPLY WITH NEMA MG1 FOR VARIABLE SPEED OPERATION. 10. MOTOR SHALL HAVE CLASS F INSULATION FOR USE WITH VARIABLE SPEED DRIVE. 1. PROVIDE AND INSTALL WITH 12" TALL INSULATED METAL ROOF CURB WITH KINETICS NOISE

CONTROL KIP-RT ISOLATION STRIPS AND RT-7 MINIMUM STC 37 PANELS. 12. PROVIDE AND INSTALL WITH OUTSIDE AIR AND EXHAUST AIR WEATHER HOOD WITH

3. PROVIDE AND INSTALL WITH OUTSIDE AIR AND EXHAUST AIR INSULATED LOW LEAKAGE CONTROL DAMPERS. ACTUATORS FURNISHED AND INSTALLED BY TCC.

PL=PLENUM, AF=AIRFOIL, FC=FORARD CURVE, BI=BACKWARD INCLINED TPFT=TOP FRONT, TPBK=TOP BACK, FTTP=FRONT TOP, FTBT=FRONT BOTTOM BTFT=BOTTOM FRONT, BTBK=BOTTOM BACK, SD=SIDE

NA	TATORIUM AIR H	IANDLER SCHED	JLE
TAG	DHU-1	DHU-2	
MFR.	INNOVENT	INNOVENT	
MODEL	NDHU-OU-PL-41500-AC-HG-IF-460	NDHU-OU-PL-41500-AC-HG-IF-460	
UNIT DIM LxWxH (IN)	360 x 126 x 135	360 x 126 x 135	
UNIT WIEGHT (LBS)	19,700	19,700	
	41 500	41 500	
	15500	15500	
TSP (IN W C )	3 71	3 71	
ESP (IN W.C.)	1.0	1.0	
FILTER SP (IN W.C.)	0.24	0.24	
FILTER TYPE	2" MERV 8	2" MERV 8	
FAN RPM	1595	1595	
MOTOR SYNCH RPM	1800	1800	
	PL	PL	
EAN QUANTITY	30	30	
DRIVE TYPE	DIBECT	DIBECT	
MOTOR (HP, EA)	25	25	
MOTOR (BHP, EA)	18.9	18.9	
ELECTRICAL (V / PH)	460/3	460/3	
MODULATION	VSD	VSD	
EXHAUST FAN			
	19,600	19,600	
	2.0	2.0	
	1	<u> </u>	
FILTER SP (IN W.C.)	0.43	0.43	
FILTER TYPE	2" MERV 8	2" MERV 8	
FAN RPM	1835	1835	
MOTOR SYNCH RPM	1800	1800	
FAN TYPE	PL	PL	
WHEEL DIAMETER (IN)	22	22	
FAN QUANTITY	2	2	
		DIRECT	
	74	74	
ELECTRICAL (V / PH)	460/3	460/3	
MODULATION	VSD	VSD	
DX COIL			
AIRFLOW (CFM)	15500	15500	
TOTAL CAP (MBH)	1047.9	1047.9	
SENS CAP (MBH)	438.5	438.5	
LAT DB/WB (DEG F)		65.2 / 77.5 56 7 / 59 7	
BOWS	6	6	
FPI	10	10	
PD (IN W.C.)	0.69	0.69	
REFRIGERANT	R-410A	R-410A	
CIRCUITS	2	2	
HOT GAS REHEAT			
	41500	41500	
	75.0 / 68.5	75.0 / 68.5	
LAT DB/WB (DEG F)	86.9 / 72.1	86.9 / 72.1	
ROWS	2	2	
FPI	10	10	
PD (IN W.C.)	0.45	0.45	
REFRIGERANT	R-410A	R-410A	
	2	2	
	41500	41500	
	41500	41500	
INPUT CAP (MBH)	600	600	
OUTPUT CAP (MBH)	480	480	
FUEL	NATURAL GAS	NATURAL GAS	
FUEL PRESSURE	6-14" W.C.	6-14" W.C.	
PD (IN W.C.)	0.33	0.33	
AIR-COOLED REFRIGERATION	07.0	07.0	
	<u> </u>	<u>۲.3</u>	
	లు ?	2	
STAGES	4	4	
EER	11.4	11.4	
ELECTRICAL			
VOLTAGE/PHASE	460/3	460/3	
МСА	247.8	247.8	
MOP	400	400	
REMARKS:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	
REMARKS:		I	1

1. ALL SECTIONS SHALL BE DOUBLE WALL ALUMINUM CONSTRUCTION WITH MINIMUM R-13 INSULATION, SMACNA LEAKAGE CLASS 5.0, MAXIMUM L/250 PANEL DEFLECTION, AND DESIGNED FOR OUTDOOR INSTALLATION.

2. PROVIDE AND INSTALL WITH ENERGY RECOVERY UNIT. REFER TO ENERGY RECOVERY UNIT SHEDULE FOR MORE INFORMATION. 3. REFRIGERANT COILS SHALL BE STAINLESS STEEL CASING WITH COPPER AND WITH STAINLESS STEEL INSULATED IAQ DRAIN PAN.

4. PROVIDE AND INSTALL WITH SINGLE POINT ELECTRICAL POWER CONNECTION. 5. PROVIDE AND INSTALL INDIVIDUAL PACKAGED VARIABLE SPEED DRIVES FOR ALL SUPPLY AND EXHAUST FANS. FANS SHALL BE CONFIGURED TO

OPERATE INDEPENDENTLY ON FAILURE OF OTHER FANS. 6. PROVIDE AND INSTALL WITH (2) MANUAL BLANK-OFF PLATES TO ISOLATE FAILED FANS.

7. PROVIDE AND INSTALL WITH PACKAGED CONTROLS AND ALL ASSOCIATED ACTUATORS, DAMPERS, SENSORS, CONTROLERS, CABLING ETC. FOR A COMPLETE AND FULLY FUNCTIONING UNIT IN EVERY RESPECT. PROVIDE AND INSTALL WITH BACNET INTERFACE. 8. PROVIDE AND INSTALL WITH BACNET INTERFACE.

9. PROVIDE AND INSTALL WITH EXTERNAL HEATED AND VENTILATED VSD PLENUM CABINET. 10. PROVIDE AND INSTALL WITH FACTORY WIRED ELECTRICAL DISCONNECT

11. REFER TO DRAWING PLANS AND DETAILS FOR MODULE CONFIGURATIONS. 12. MOTOR SHALL BE MULTI-TAP 460/240/208 BALDOR SUPER-E WITH INTEGRAL SHAFT GROUNDING RING AND COMPLY WITH NEMA MG1 FOR VARIABLE

SPEED OPERATION.

11. PROVIDE AND INSTALL WITH 12" TALL INSULATED METAL ROOF CURB WITH KINETICS NOISE CONTROL KIP-RT ISOLATION STRIPS AND RT-7 MINIMUM STC 37 PANELS.

12. PROVIDE AND INSTALL WITH OUTSIDE AIR AND EXHAUST AIR WEATHER HOOD WITH ALUMINUM BIRD SCREEN. 13. PROVIDE AND INSTALL WITH OUTSIDE AIR AND EXHAUST AIR INSULATED LOW LEAKAGE CONTROL DAMPERS.

14. PROVIDE AND INSTALL WITH MODULATING STAINLESS STEEL GAS FIRED HEAT EXCHANGER.

		D	IFFUS	ER AN	ID GRIL	LE.	SCH	IEDL	JLE	
			NECK SIZE	FACE SIZE	THROW	MAX	MAX APD	THROW	МАХ	
TAG	MFR.	MODEL	(IN)	(IN)	PATTERN	CFM	(IN)	(FT)	NC	MATERIAL
D-1	TITUS	TMS	6	12x12	4-WAY	100	0.03	6	20	STEEL
D-2	TITUS	TMS	8	24x24	4-WAY	245	0.05	9	15	STEEL
D-3	TITUS	TMS	10	24x24	4-WAY	400	0.06	19	13	STEEL
D-4	TITUS	TMS	12	24x24	4-WAY	700	0.08	28	19	STEEL
D-5	TITUS	TBDI-80	10	48x10	(4) 1-1/2" SLOT	460	0.1	27	32	STEEL
D-6	TITUS	300RL	12x10	14x12	DBL DEFL	430	0.11	12	21	STEEL
D-7	TITUS	CT 481	24x4	26x6	FLOOR GRILLE	200	0.04	17	18	ALUMINUM
D-8	TITUS	TBDI-80	10	48x8	(3) 1-1/2" SLOT	330	0.1	23	28	STEEL
D-9	TITUS	TND-AA	8	10	NOZZLE	200	0.48	35	28	ALUMINUM
D-10	TITUS	TND-AA	12	14	NOZZLE	600	0.51	58	29	ALUMINUM
D-11	TITUS	300FL	12x6	14x8	DBL DEFL	250	0.07	9	19	ALUMINUM
D-12	TITUS	TMS-AA	10	24x24	4-WAY	440	0.07	7	22	ALUMINUM
D-13	TITUS	TMS	6	12x12	4-WAY	100	0.03	6	20	STEEL
RG-1	TITUS	45F	-	12x12	45 DEG EGG	400	0.04	-	15	ALUMINUM
RG-2	TITUS	45F	-	24x24	45 DEG EGG	1600	0.04	-	15	ALUMINUM
RG-3	TITUS	50FF	20x20	24x24	EGG/FILTER	800	0.2	-	30	ALUMINUM
RG-4	TITUS	50FF	20x20	24x24	EGG/FILTER	800	0.2	-	30	ALUMINUM
RG-5	TITUS	350RLF1	24x14	26x16	35 DEG DEFL	855	0.03	-	10	STEEL
RG-6	TITUS	271FL	46x34	48x36	35 DEG DEFL	5250	0.03	-	20	ALUMINUM
FG-1	TITUS	45F	-	12x12	45 DEG EGG	400	0.04	-	15	
FG-2	TITUS	45F	-	24x24	45 DEG EGG	1600	0.04	-	15	AI UMINUM
FG-3	TITUS	TBB-80			(2) 1-1/2" SLOT	720	0.09	-	22	STEFL
EG-4	TITUS	350FI	12x6	14x8	35 DEG DEEL	165	0.03	_	10	
EG-5	TITUS	350BL-SS	20x20	22x22	45 DEG DEFL	1030	0.00	-	10	STAINI ESS
EG-6	TITUS	45F	-	12x12	45 DEG EGG	400	0.04	-	15	
Lao	11100			TEXTE	40 DEG EGG		0.04		10	/ LONIN CON
TG-1		45E	-	12v12	45 DEG EGG	400	0.04	-	15	
		45	_	24224		1600	0.04		15	
TG-2	тпоз	350EI	24v16	27724		085	0.04	-	10	QTEEI
TG-3		350FL	19,10	20x10		540	0.03	-	10	
TC 5	TITUE	350FL	19-40	20814		1090	0.03	-	10	
16-5	11105	JOUL	10X42	20X44	35 DEG DEFL	1900	0.03	-	10	ALUMINUM
REMAR	RKS:									<u> </u>

1. COLOR SHALL BE WHITE. 2. PROVIDE AND INSTALL WITH FRAME FOR SURFACE INSTALLATION

3. PROVIDE AND INSTALL WITH FRAME FOR LAY-IN INSTALLATION. 4. PROVIDE AND INSTALL WITH INSULATED DISTRIBUTION PLENUM.

5. PROVIDE AND INSTALL WITH FACE OPERATED BUTTERFLY VOLUME DAMPER. 6. HINGED FILTER GRILLE, PROVIDE WITH 1" THICK MERV 8 FILTER AND (1) ADDITIONAL SPARE.

7. PROVIDE AND INSTALL WITH FACE OPERATED APERTURE VOLUME DAMPER. 8. STANDARD COLOR SELECTION BY ARCHITECT.

![](_page_88_Figure_44.jpeg)

TAG	N
DUA3-2	VA
REMARKS	S:
. PROVID	DE AN
2. ALL SE	OITO
B. PROVIE	E AN
. PROVID	E AN
	F AN
2. MOTO	RSH
3. PROVI	DE A

![](_page_89_Picture_1.jpeg)

## **ROOFTOP UNIT SCHEDULE**

			SUPPLY									EXHAUST								HEATING				COOLING													
																												AMBIENT	REHEAT	REHEAT					OP.	1	
			AIRFLOW	TSP	ESP	MIN. O.A		DRIVE	MOTOR	MOTOR		AIRFLOW	TSP	ESP		DRIVE	MOTOR	MOTOR		INPUT	OUTPUT	EAT/LAT		TOTAL	SENS.	EDB/EWB	LDB/LWB	TEMP	TOTAL	EAT/LAT	ELEC			.	WEIGHT	1	
R.	MODEL	SERVICE	(CFM)	(IN WC)	(IN WC)	(CFM)	FILTER	TYPE	(HP)	(BHP)	RPM	(CFM)	(IN WC)	(IN WC)	FILTER	TYPE	(HP)	(BHP)	RPM	(MBH)	(MBH)	(DEG F)	TURNDOWN	(MBH)	(MBH)	(DEG F)	(DEG F)	(DEG F)	(MBH)	(DEG F)	(V/PH)	MCA	FLA	MOCP	(LBS)	REFRIGERANT	REMARKS
ENT	VXC-212-58E	LOCKER ROOM	5100	3.16	1.50	5100	2" MERV 8	DIRECT	5.0	3.88	1545	5100	2.55	1.50	2" MERV 8	DIRECT	5.0	3.56	1495	400	320	44.5 / 102.6	15:1	221.2	139.2	79.4 / 67.9	54.6 / 54.4	95	169.8	54.6 / 85.4	460/3	58.9	50.9	90	4133	R410A	1, 2, 3, 4, 5, 6, 7, 8, 9, 1

AND INSTALL WITH SINGLE POINT POWER AND FACTORY WIRED NON-FUSED ELECTRICAL DISCONNECT. ONS SHALL BE DOUBLE WALL CONSTRUCTION WITH MINIMUM R-13 INSULATION DESIGNED FOR OUTDOOR INSTALLATION.

AND INSTALL WITH 24" TALL INSULATED METAL ROOF CURB. AND INSTALL WITH ELECTRICAL POWER PHASE LOSS PROTECTION.

ND INSTALL WITH MODULATING STAINLESS STEEL GAS FIRED HEAT EXCHANGER. ND INSTALL WITH OUTSIDE AIR AND EXHAUST AIR INSULATED LOW LEAKAGE CONTROL DAMPERS.

ND INSTALL WITH OUTSIDE AIR AND EXHAUST AIR WEATHER HOOD WITH ALUMINUM BIRD SCREEN.

ND INSTALL WITH PACKAGED CONTROLS AND ALL ASSOCIATED ACTUATORS, DAMPERS, SENSORS, CONTROLERS, CABLING ETC. FOR A COMPLETE AND FULLY FUNCTIONING UNIT IN EVERY RESPECT. PROVIDE AND INSTALL WITH BACNET INTERFACE. AND INSTALL WITH PACKAGED VARIABLE SPEED DRIVES. AND INSTALL WITH ENERGY RECOVERY UNIT. REFER TO ENERGY RECOVERY UNIT SHEDULE FOR MORE INFORMATION.

AND INSTALL WITH STAINLESS STEEL IAQ DRAIN PAN WITH OVERFLOW SWITCH. HALL BE MULTI-TAP 460/240/208 BALDOR SUPER-E WITH INTEGRAL SHAFT GROUNDING RING AND COMPLY WITH NEMA MG1 FOR VARIABLE SPEED OPERATION. AND INSTALL WITH LOUVERED HAIL GUARDS.

								WAT	ER SC	OURCE	E HEA	T PU	MP	REV	/ERSIE		HILLI		СНЕ	DULE										
				COOLING											HEATING						·									
				LOAD					SOURCE						LOAD					SOURCE										
TAG	MFR.	MODEL	SERVICE	TOTAL COOL (MBH)	EWT / LWT (DEG F)	FLUID	FLOW (GPM)	WPD (FT)	HEAT REJECT (MBH)	EWT / LWT (DEG F)	FLUID	FLOW (GPM)	WPD (FT)	EER	TOTAL HEAT (MBH)	EWT / LWT (DEG F)	FLUID	FLOW (GPM)	WPD (FT)	HEAT EXTRACT (MBH)	EWT / LWT (DEG F)	FLUID	FLOW (GPM)	WPD (FT)	СОР	ELEC (V/PH)	FLA	MAX. CIR. AMPS	MAX FUSE SIZE	R
HP-1	WATERFURNACE	NXW600	DOAS-1 PRIMARY COIL	586.5	55 / 45	30% PG	121	10.9	735.3	86 / 96	WATER	150	9.5	13.5	695.4	100 / 110	30% PG	143	10.2	523.1	60 / 70	WATER	150	10.2	4	460/3	79.4	89.3	125	1, 2,
HP-2	WATERFURNACE	NXW600	DOAS-1 PRIMARY COIL	586.5	55 / 45	30% PG	121	10.9	735.3	86 / 96	WATER	150	9.5	13.5	695.4	100 / 110	30% PG	143	10.2	523.1	60 / 70	WATER	150	10.2	4	460/3	79.4	89.3	125	1, 2,
HP-3	WATERFURNACE	NXW600	DOAS-1 PRIMARY COIL	586.5	55 / 45	30% PG	121	10.9	735.3	86 / 96	WATER	150	9.5	13.5	695.4	100 / 110	30% PG	143	10.2	523.1	60 / 70	WATER	150	10.2	4	460/3	79.4	89.3	125	1, 2,
HP-4	WATERFURNACE	NXW600	DOAS-1 PRIMARY COIL	586.5	55 / 45	30% PG	121	10.9	735.3	86 / 96	WATER	150	9.5	13.5	695.4	100 / 110	30% PG	143	10.2	523.1	60 / 70	WATER	150	10.2	4	460/3	79.4	89.3	125	1, 2,
HP-5	WATERFURNACE	NXW600	DOAS-1 REHEAT COIL	586.5	55 / 45	30% PG	121	10.9	735.3	86 / 96	WATER	150	9.5	13.5	695.4	100 / 110	30% PG	143	10.2	523.1	60 / 70	WATER	150	10.2	4	460/3	79.4	89.3	125	1, 2,
HP-6	WATERFURNACE	NXW600	DOAS-1 REHEAT COIL	586.5	55 / 45	30% PG	121	10.9	735.3	86 / 96	WATER	150	9.5	13.5	695.4	100 / 110	30% PG	143	10.2	523.1	60 / 70	WATER	150	10.2	4	460/3	79.4	89.3	125	1, 2,
REMAR           1. PRO           2. PRO           3. PRO           4. PRO           5. PRO           6. PRO           7. PRO	KS: /IDE AND INSTALL WI /IDE AND INSTALL WI	TH FACTORY TH PACKAGEI TH ELECTRIC/ TH NEOPREN TH COMPRES TH FLOW PRC TH FLOW PRC TH (2) TWO-P(	WIRED FUSED ELECTRICAL D CONTROLS WITH BACNET AL PHASE LOSS PROTECTIO E VIBRATION ISOLATION MO SOR SOUND BLANKETS. DVING SWITCH. DSITION AUTOMATIC CONTF	DISCONNECT. MSTP INTERF DN. DUNTS.	ACE.	I TORS TO IS(	DLATE LO	AD AND S	OURCE SIDE	5. CONTROL			FURNISH	IED BY T	rcc.		<u> </u>		<u> </u>	<u> </u>		<u> </u>		1	<u> </u>	<u> </u>				

## PLATE AND FRAME HEAT EXCHANGER SCHEDULE

			1	1					FLUID 1 -	HEAT PU	MP LOOP		FLUID 2 -	COOLING	TOWER LO	OP	
TAG	MFR.	MODEL	LMTD (DEG F)	EFF SURF AREA (SF)	PLATES	SIZE WxHxL (IN)	EMPTY/FLOODED WEIGHT (LBS)	CAPACITY (MBH)	FLUID TYPE	FLOW (GPM)	EWT/LWT (DEG F)	PD (PSI)	FLUID TYPE	FLOW (GPM)	EWT/LWT (DEG F)	PD (PSI)	R
HX-1.1	BELL & GOSSETT	GPX AP86	5.01	1,385.32	145	25.75 x 94.86 x 44.40	3,964 / 4,821	5,975	WATER	1200	100 / 90	9.42	WATER	1200	85 / 95	9.53	1,
HX-1.2	<b>BELL &amp; GOSSETT</b>	GPX AP86	5.01	1,385.32	145	25.75 x 94.86 x 44.40	3,964 / 4,821	5,975	WATER	1200	100 / 90	9.42	WATER	1200	85 / 95	9.53	1,
HX-2.1	BELL & GOSSETT	GPX AP86	5.01	1,385.32	145	25.75 x 94.86 x 44.40	3,964 / 4,821	5,975	WATER	1200	100 / 90	9.42	WATER	1200	85 / 95	9.53	1,
HX-2.2	BELL & GOSSETT	GPX AP86	5.01	1,385.32	145	25.75 x 94.86 x 44.40	3,964 / 4,821	5,975	WATER	1200	100 / 90	9.42	WATER	1200	85 / 95	9.53	1,

1. FOULING FACTOR OF 0.001 2. PLATES SHALL BE 304 STAINLESS STEEL, 0.4MM.

3. GASKETS SHALL BE NITRILE HT

4. WATER CONNECTIONS SHALL BE 6" PORT STUDDED FOR 150# ANSI FLANGE. 5. PROVIDE AND INSTALL WITH (2) TWO-POSITION AUTOMATIC CONTROL VALVES AND 120V ACTUATORS TO ISOLATE HEAT PUMP LOOP AND COOLING TOWER LOOP SIDES. CONTROL VALVE AND ACTUATOR FURNISHED BY TCC.

	EXHAUST FAN SCHEDULE														
TAG	AREA SERVED	MFR.	MODEL	CFM	TSP (IN W.C.)	MOTOR (HP)	MOTOR (BHP)	MOTOR (W)	RPM	DRIVE TYPE	IN/OUT/RAD DBA	SONES	ELEC (V/PH)	CONTROL	
EF-A1	BOILER ROOM	GREENHECK	G-140-VG	2000	1.00	1.0	0.68	-	1495	DIRECT	65 / - / -	13.9	115/1	TCC	
FF-J1	1ST FLB J BESTBOOMS	GREENHECK	SQ-160-VG	1600	1.00	3/4	0.46	-	1130	DIBECT	62 / - / 55	-	115/1	TCC	╞
EF-J2	2ND FLR J RESTROOMS	GREENHECK	SQ-160-VG	1600	1.00	3/4	0.46	-	1130	DIRECT	62 / - / 55	-	115/1	TCC	+
EF-J3	3RD FLR J RESTROOMS	GREENHECK	SQ-160-VG	1600	1.00	3/4	0.46	-	1130	DIRECT	62 / - / 55	-	115/1	тсс	t
EF-J4	PREP J313 HOOD	GREENHECK	CUE-140-VG	800	0.75	1/2	0.19	-	1100	DIRECT	57 / - / -	9.6	115/1	тсс	t
EF-J5	SCIENCE LAB J315/317	GREENHECK	CUE-140-VG	1000	0.75	1/2	0.23	-	1120	DIRECT	57 / - / -	9.7	115/1	тсс	T
EF-J6	SCIENCE LAB J317 HOOD	GREENHECK	CUE-140-VG	800	0.75	1/2	0.19	-	1100	DIRECT	57 / - / -	9.6	115/1	тсс	T
EF-J7	PREP J313 ACID CABINET	FANTECH	FR 100	75	0.5	-	-	28	2880	DIRECT	-	-	115/1	EC	T
EF-K1	SCIENCE LAB K301 HOOD	GREENHECK	CUE-140-VG	800	0.75	1/2	0.19	-	1100	DIRECT	57 / - / -	9.6	115/1	TCC	
EF-K2	SCIENCE LAB K303 HOOD	GREENHECK	CUE-140-VG	800	0.75	1/2	0.19	-	1100	DIRECT	57 / - / -	9.6	115/1	TCC	
EF-K3	SCIENCE LAB K301/K303	GREENHECK	CUE-140-VG	1000	0.75	1/2	0.23	-	1120	DIRECT	57 / - / -	9.7	115/1	TCC	
EF-K4	PREP K305 HOOD	GREENHECK	CUE-140-VG	800	0.75	1/2	0.19	-	1100	DIRECT	57 / - / -	9.6	115/1	TCC	
EF-K5	PREP K305 ACID CABINET	FANTECH	FR 100	75	0.5	-	-	28	2880	DIRECT	-	-	115/1	EC	
EF-M1	CHEM M101A	PLASTEC	P15-2	500	1.0	1/2	-	-	3150	DIRECT	-	-	115/1	EC	
EF-M2	MECH M101	PLASTEC	P25-4	1700	1.0	3/4	-	-	1800	DIRECT	-	-	115/1	EC	
TF-J1	STORAGE J138	GREENHECK	SQ-99-VG	400	0.5	1/4	0.1	-	1275	DIRECT	56 / - / 56	-	115/1	EC	
TF-J2	SCIENCE LAB J317 AV CLOSET	GREENHECK	SQ-99-VG	400	0.5	1/4	0.1	-	1275	DIRECT	56 / - / 56	-	115/1	EC	Γ
TF-K1	MACHINE K113	GREENHECK	SQ-100-VG	1000	0.5	1/4	0.16	-	1525	DIRECT	58 / - / 54	-	115/1	TCC	
TF-L1	ELEC L113	GREENHECK	SQ-100-VG	1000	0.5	1/4	0.16	-	1525	DIRECT	58 / - / 54	-	115/1	TCC	
TF-M1	TECH M201A	GREENHECK	SQ-100-VG	1000	0.5	1/4	0.16	-	1525	DIRECT	58 / - / 54	-	115/1	TCC	
REMARKS	S.														_

1. PROVIDE AND INSTALL WITH FACTORY WIRED NEMA-3R ELECTRICAL DISCONNECT SWITCH. 2. PROVIDE AND INSTALL WITH FACTORY WIRED NEMA-1 ELECTRICAL DISCONNECT SWITCH.

3. PROVIDE AND INSTALL WITH 24" TALL INSULATED METAL ROOF CURB WITH HINGED BASE KIT, RESTRAINING CABLES, AND SOUND ATTENUATING BAFFLES.

4. CONTROL DAMPER SHALL BE ACCESSIBLE FROM ROOF. DAMPER AND ACTUATOR FURNISHED BY TCC. 5. PROVIDE AND INSTALL WITH ELECTRONICALLY COMMUTATED MOTOR WITH SPEED ADJUSTMENT DIAL ON MOTOR AND WIRING PIGTAIL FOR SPEED CONTROL BY TCC.

6. PROVIDE AND INSTALL WITH ALUMINUM BIRDSCREEN. 7. PROVIDE AND INSTALL WITH NEOPRENE VIBRATION ISOLATION HANGERS.

8. PROVIDE AND INSTALL WITH GRAVITY BACKDRAFT DAMPER ON FAN OUTLET. 9. PROVIDE AND INSTALL WITH HI-PRO POLYESTER COATING.

NOTES: TCC = TEMPERATURE CONTROL CONTRACTOR.

EC = ELECTRICAL CONTRACTOR.

			EXHAUST /	AIR				OUTSIDE V	ENTILATIO	N AIR		
TAG	MFR.	ТҮРЕ	AIRLFOW (CFM)	ESP (IN W.C.)	MODE	EDB/EWB (DEG F)	LDB/LWB (DEG F)	AIRLFOW (CFM)	ESP (IN W.C.)	MODE	EDB/EWB (DEG F)	LDB/LWB (DEG F)
DOAS-1	INNOVENT	SENSIBLE FIXED PLATE	40000	1.01	SUMMER	75 / 63	85.1 / 66.0	40000	1.03	SUMMER	92 / 76	81.9 / 73.3
			40000	0.92	WINTER	70 / 53	28.8 / 28.8	40000	0.82	WINTER	-10 / -10	38.8 / 26.7
DOAS-2	VALENT	ENERGY WHEEL	5100	0.49	SUMMER	75 / 63	79.4 / 67.9	5100	0.47	SUMMER	92 / 76	86.6 / 72.7
			5100	0.49	WINTER	70 / 53	44.5 / 38.6	5100	0.47	WINTER	-10 / -10	13.4 / 13.4
DHU-1	INNOVENT	SENSIBLE FIXED PLATE	19600	1.04	SUMMER	84 / 74	85.7 / 73.0	15500	0.7	SUMMER	87.3 / 78.0	85.2 / 77.5
			11900	0.43	WINTER	84 / 68	51.5 / 51.5	7800	0.2	WINTER	-10 / -10	59.9 / 38.6
DHU-2	INNOVENT	SENSIBLE FIXED PLATE	19600	1.04	SUMMER	84 / 74	85.7 / 73.0	15500	0.7	SUMMER	92 / 76	89.9 / 75.5
11900 0.43 WINTER 84/68 51.5/51.5 7800 0.2 WINTER -10/-10 59.9/38.6												59.9 / 38.6

PROVIDE AND INSTALL WITH ALUMINUM ENERGY WHEEL WITH MOLECULAR SIEVE DESICCANT.
 PROVIDE AND INSTALL WITH ALUMINUM SENSIBLE CROSS FLOW HEAT EXCHANGER WITH ALUMINUM FRAME, END PLATES, AND DRAIN PAN.

				WATER FLC	OW/EN	IERGY	METER	SCH	EDULE	3		
			FLOW			SYSTEM		PIPE SIZE	DESIGN NOMINAL	ACCURACY (% OF FLOW	ELEC	
	TAG	MFR.	METER	SENSOR TYPE	DISPLAY	SERVED	FLUID	(IN)	FLOW	RATE)	<b>→(</b> ₩/PH)	
ſ	FM-1 Y	ONICON	F-3500 Y	ELECTROMAG / INSERTION	SYSTEM 10	HEAT PUMP	WATER	Y12	4600	1,0 %	24 VDC	_
(	FM-2	ONICON	F-3500	ELECTROMAG / INSERTION	SYSTEM 10	DOAS-1	WATER	6	520	1.0 %	24 VDC	
	FM-3	ONICON	F-3500	ELECTROMAG / INSERTION	SYSTEM 10	DOAS-1	WATER	4	290	1.0 %	24 VDC	
(	FM-4	ONICON	F-3500	ELECTROMAG / INSERTION	SYSTEM 10	DOAS-1	WATER	8	900	1.0 %	24 VDC	
$\lambda$	REMARKS:	$\checkmark$									$\checkmark$	7
<u> </u>	1. 316 STA	INLESS STEEL	CONSTRUCT	ION.								
	2. PROVIDE	E AND INSTALL	WITH DISPL	AY UNIT.								
	3. CONTRA	CTOR SHALL	VERIFY REQL	IRED UPSTREAM AND DOWN	STREAM MINI	NUM STRAIGHT	PIPE REQUIREM	IENTS DURIN	G INSTALL.			
	4. PROVIDE	E FACTORY AU	THORIZED TI	ECHNICIAN TO CALIBRATE AN	ID CONFIGUR	E METER FOR S	PECIFIC PIPE/FL		TERS.			

5. PROVIDE AND INSTALL WITH HOT TAP ADAPTER. 6. TCC SHALL FURNISH POWER TRANSFORMER DEDICATED TO POWER FLOWMETER. TRANSFORMER INSTALLED BY EC. COORDINATE WITH EC.

![](_page_89_Figure_42.jpeg)

![](_page_90_Picture_0.jpeg)

GLYCOL FILL STATION SCHEDULE											
TAG	MFR.	MODEL	CAPACITY (GAL)	MAX. PRESSURE (PSI)	FLOW RATE (GPM)	MOTOR SIZE (HP)	ELEC (V/PH)				
GFS-1	ADVANTAGE CONTROLS	GF-1A1A0	55	60	5	1/3	120/1				
GFS-2	ADVANTAGE CONTROLS	GF-1A1A0	55	60	5	1/3	120/1				
REMARKS:         1. PROVIDE AND INSTALL WITH FULLY PIPED PRESSURE SWITCH, PRESSURE GAUGE, AND LOW LEVEL ALARM SYSTEM.         2. PROVIDE WITH AUXILLARY ALARM CONTACT FOR LOW LEVEL FOR BMS INTEGRATION.											

3. FURNISHED BY CHEMICAL TREATMENT PROVIDER, INSTALLED BY MC. COORDINATE WITH CHEMICAL TREATMENT PROVIDER.

ELECTRIC UNIT HEATER SCHEDUL										
TAG	MFR.	MODEL	TYPE	CAPACITY (KW)	AIRFLOW (CFM)	ELEC (V/PH				
UH-M1	QMARK	QWD02	HORIZONTAL	2.0	700	208/1				
REMARKS:       1. PROVIDE AND INSTALL WITH FACTORY WIRED ELECTRICAL DISCONNECT.										

DEMARKS	
1, 2, 3	
1, 2, 3	

	VARIABLE AIR VOLUME TERMINAL SCHEDULE																
TAG	MFR.	MODEL	TYPE	SERVICE	MIN COOLING AIR (CFM)	MAX COOLING AI	MIN HEATING AIR (CFM)	MAX HEATING AIR (CFM)	INLET S.P.	DOWNSTRM S.P.	INLET SIZE (IN)	HEATING (KW)	AIR P.D. (IN)	ELEC (V/PH)	МСА	МОР	
VAV-1	TITUS	DESV 04	SO	OFFICE L102	70	200	70	135	1"	0.25"	4	1.0	0.04	120/1	10.4	15	1
VAV-2	TITUS	DESV 04	SO	CONTROLS	50	150	50	100	1"	0.25"	4	1.0	0.04	120/1	10.4	15	
REMARKS	:																
1. PROVID	. PROVIDE AND INSTALL WITH LINED DISCHARGE PLENUM SAME SIZE AS COIL DICHARGE, 3' LONG (MIN).																
2. PROVIDE AND INSTALL WITH FACTORY WIRED CONTROL TRANSFORMER (120 VAC TO 24 VDC).																	
3. PROVID	PROVIDE AND INSTALL WITH LINED INLET SOUND ATTENUATOR AND FILTER ON RETURN CONNECTION.																

4. COILS RATED WITH 55 DEG EAT AND 75 DEG LAT.

5. PROVIDE AND INSTALL WITH SCR ELECTRIC HEATER WITH AUTO RESET THERMAL CUTOUTS, MANUAL RESET, FLOW SWITCH, AND MAGNETIC CONTACTORS. 6. PROVIDE AND INSTALL WITH FACTORY WIRED ELECTRICAL DISCONNECT.

REMARKS

SO = SHUTOFF SFP = SERIES FAN POWERED PFP = PARALLEL FAN POWERED

NOTES:

![](_page_90_Figure_19.jpeg)

## GENERAL MECHANICAL EQUIPMENT SCHEDULE

TAG: HS-1.1, HS-1.2, HS-2.1, HS-2.2 TYPE: HYDROCYCLONE SEPARATOR MFR: PUROFLUX MODEL: PF-61-060 PERFORMANCE: 620 GPM 3.0 PSI MINIMUM FLOW, 1245 GPM 12 PSI MAXIMUM FLOW, 6" FLNG SUPPLY AND RETURN CONNECTION, 1-1/2" FPT PURGE CONNECTION, 32 GALLON VOLUMN, 650 LBS OPERATING WEIGHT, MINIMUM 95% SINGLE PASS REMOVAL EFFICIENCY RATE. REMARKS: PROVIDE AND INSTALL WITH PACKAGED AUTOMATIC ADJUSTABLE PURGE CONTROLS IN NEMA 4X ENCLOSURE. PROVIDE AND INSTALL WITH PACKAGED AUTOMATIC CONTROL VALVE.

	LOUVER SCHEDULE											
TAG	MFR.	MODEL	FACE SIZE (IN)	FREE AREA (SF)	AIRFLOW (CFM)	FACE VELOCITY (FPM)	THICKNESS (IN)	FINISH	SERVICE			
L-1	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE	Γ		
L-2	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE	Г		
L-3	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE	Г		
L-4	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE	Γ		
L-5	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE	Γ		
L-6	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE	Γ		
L-7	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE			
L-8	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE	Γ		
L-9	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE	Γ		
L-10	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE			
L-11	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE			
L-12	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE			
L-13	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE			
L-14	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE			
L-15	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE			
L-16	GREENHECK	ESD-603	78x90	27.64	20450	740	6	2.0 mil 70% KYNAR	INTAKE			
L-17	GREENHECK	SED-501	48x96	19.1	10500	548	5	2.0 mil 70% KYNAR	RETURN			
L-18	GREENHECK	SED-501	48x96	19.1	10500	548	5	2.0 mil 70% KYNAR	RETURN			
L-19	GREENHECK	SED-501	48x96	19.1	10500	548	5	2.0 mil 70% KYNAR	RETURN			
L-20	GREENHECK	SED-501	48x96	19.1	10500	548	5	2.0 mil 70% KYNAR	RETURN	Γ		
L-21	GREENHECK	ESD-403	72x24	5.7	2300	406	4	2.0 mil 70% KYNAR	EXHAUST			

PROVIDE AND INSTALL WITH ALUMINUM BIRD SCREEN 2. PROVIDE AND INSTALL WITH CHANNEL FRAME.

3. COLOR SELECTION BY ARCHITECT.

NOTE: PRIOR TO ORDERING ANY LOUVER, CONTRACTOR SHALL FIELD VERIFY ANY EXISTING OPENINGS THAT LOUVERS MUST BE INSTALLED IN.

## VARIABLE SPEED DRIVE SCHEDULE

TAG	MFR.	MODEL		MOTOR	ELEC (V/PH)	MAX HARMONIC	BYPASS	ENCLOSUR
				¥ (	5			
VSD-CT-1.1	ABB	ACH580	CT-1 FAN	60.0	460/3	5%	NONE	NEMA 1
VSD-CT-1.2	ABB	ACH580	CT-1 FAN	60.0	<b>A</b> 60/3	5%	NONE	NEMA 1
VSD-CT-2.1	ABB	ACH580	CT-2 FAN	60.0	<b>)</b> 460/3	5%	NONE	NEMA 1
VSD-CT-2.2	ABB	ACH580	CT-2 FAN	60.0	460/3	5%	NONE	NEMA 1
				_	$\mathcal{I}$			
VSD-P-1	ABB	ACH580	2 P-1	~250~	460/3	5%	NONE	NEMA 1
VSD-P-2	ABB	ACH580	P-2	25.0	460/3	5%	NONE	NEMA 1
VSD-P-3	ABB	ACH580	P-3	25.0	460/3	5%	NONE	NEMA 1
VSD-P-4	ABB	ACH580	P-4	25.0	460/3	5%	NONE	NEMA 1
VSD-P-5	ABB	ACH580	P-5	40.0	460/3	5%	NONE	NEMA 1
VSD-P-6	ABB	ACH580	P-6	40.0	460/3	5%	NONE	NEMA 1
VSD-P-7	ABB	ACH580	P-7	40.0	460/3	5%	NONE	NEMA 1
VSD-P-8	ABB	ACH580	P-8	10.0	460/3	5%	NONE	NEMA 1
VSD-P-9	ABB	ACH580	P-9	10.0	460/3	5%	NONE	NEMA 1
VSD-P-10	ABB	ACH580	P-10	5.0	460/3	5%	NONE	NEMA 1
VSD-P-11	ABB	ACH580	P-11	5.0	460/3	5%	NONE	NEMA 1
VSD-CTP-1	ABB	ACH580	CTP-1	60.0	460/3	5%	NONE	NEMA 1
VSD-CTP-2	ABB	ACH580	CTP-2	60.0	460/3	5%	NONE	NEMA 1

1. REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS AND INFORMATION. 2. COORDINATE EXACT MOTOR DATA WITH EQUIPMENT BEING SERVED BY THIS DRIVE. 3. PROVIDE WITH MANUAL LOCKABLE DISCONNECT SWITCH INTEGRAL TO DRIVE.

4. PROVIDE WITH BACNET INTERFACE FOR FULL INTEGRATION INTO BMS. 5. STARTUP AND OWNER TRAINING SHALL BE PROVIDED BY THE FACTORY AUTHORIZED REPRESENTATIVE TO ENABLE FULL FACTORY WARRANTY.

![](_page_90_Figure_30.jpeg)

![](_page_91_Picture_0.jpeg)

GENERAL ELECTRICAL DEMOLITION NOTES	ELECTRICAL ABBREVIATIONS SCHEDULE									
1. REMOVE ALL EXPOSED RACEWAY AND WIRE THAT ARE NO LONGER TO BE USED.	A OR AMP		EWH	ELEC	TRICAL WATER HEATER	MH I	METAL HALIDE	UNO		
2. BLANK OFF OR REMOVE ALL ABANDONED JUNCTION AND OUTLET BOXES IN WALLS, FLOORS, AND CEILINGS THAT ARE TO REMAIN	A/E		EXT	EXTE		MIN MISC MO			VOLTAGE VARIABLE AIR VOLUME	
3 REMOVE ALL ELECTRICAL OUTLETS DEVICES AND RACEWAYS FROM WALL THAT ARE TO BE REMOVED	AFG	ABOVE FINISHED GRADE	FA FA	FIRE	ALARM ALARM ANNUNCIATOR	# 1			VERTICAL VARIABLE EREQUENCY DRIVE	
4. REMOVE ALL FLOOR MOUNTED RACEWAYS	ALT	ALTERNATE APPROXIMATELY	FACP	FIRE / FAN (		NIC I		W W/	WATT WITH	
5. ALL EXISTING EQUIPMENT THAT IS TO REMAIN IS INTENDED TO BE OPERATIONAL AT THE COMPLETION OF THE PROJECT.	AWG	AMERICAN WIRE GAUGE BUILDING	FDN FIN	FOUN	DATION	NO I NOM	NORMALLY OPEN NOMINAL	WG W/O	WIRE GUARD WITHOUT	
RECIRCUIT WHERE NECESSARY TO INSURE THIS CONTINUED OPERATION.	BLKG BTM	BLOCKING BOTTOM	FL FT	FLUO FOOT	RESCENT	NTS I OAC	NOT TO SCALE OPENING ABOVE CEILING	WP G XFRMR	WATERPROOF TRANSFORMER	
6. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT THAT IS TO BE REMOVED.	C CB	CONDUIT CIRCUIT BREAKER	FT-C G OR EGC	FOOT GROL	CANDLE	OC OD OC	ON CENTER OUTSIDE DIAMETER	YD YR	YARD YEAR	
<ol> <li>ALL EXISTING RECEPTACLES AND LIGHT SWITCHES THAT ARE TO REMAIN WITHIN A REMODELED AREA SHALL BE REPLACED WITH NEW DEVICES AND COVER PLATES.</li> </ol>	CL CFM	CENTERLINE CUBIC FEET PER MINUTE	GA GFCI OR GFI	GAUG GROL	GE IND FAULT CIRCUIT INTERRUPTE	OP OP	OVERHEAD POWER LINES	S		
8. THE EXISTING EQUIPMENT SHOWN ON THE DRAWINGS IS BELIEVED TO BE A REASONABLE INDICATION OF THE EXISTING	CUH CLG		GRC GWH	GALV GAS \	ANIZED RIGID CONDUIT WATER HEATER	PH F	PHASE PLUMBING CONTRACTOR	R		
LAYOUT. EXACT QUANTITY AND LOCATION SHALL BE FIELD VERIFIED BY CONTRACTOR.	COL		HORIZ	HORIZ	11 ZONTAL PRESSURE SODIUM	PVC F				
CENERAL ELECTRICAL NATES	CONC BLK CONST	CONCRETE BLOCK CONSTRUCTION	HR ID	HOUF		REQ OR REQ'D	REQUIRED			
	CONTR Cu	CONTRACTOR COPPER	IG IMC	ISOLA INTEF	TED GROUND RMEDIATE METAL CONDUIT	RO I RTU I	Rough opening Roof top unit			
1. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS.	DC DIA	DIRECT CURRENT DIAMETER	INSUL INT	INSUL INTEF	ATION RIOR	SCHED SIM S	SCHEDULE SIMILAR			
2. DIMENSIONS SHOWN ON OUTLET BOXES AND DEVICES SHALL BE TO THE BUTTOM OF THE BOX.	DEG DET	DEGREE DETAIL	INFO KCMIL		RMATION ISAND CIRCULAR MILLS	SPEC SQ				
OR EXACT LOCATION OF WIRING AND/OR CONDUIT.	DWG	DIMENSION DRAWING ELECTRICAL CONTRACTOR	KWH KW	KILOV	VATT-AMPERE	STD STI	STAINLESS STEEL STANDARD STEEL			
<ol> <li>COORDINATE LOCATION OF LIGHT FIXTURES IN AREAS OF MECHANICAL DUCTWORK AND PIPING WITH MECHANICAL CONTRACTOR. RELOCATE LIGHT FIXTURES, WIRING, AND CONDUIT IF NECESSARY AND AS DIRECTED BY THE</li> </ol>	EF	EXHAUST FAN ELECTRICAL	LP MAU	LIGHT	POLE	SUSP SUSP SUSP SUSP SUSP SUSP SUSP SUSP	SUSPEND TEMPERATURE CONTROL			
ARCHITECT/ENGINEER.	ELEV EM	ELEVATION EMERGENCY	MAX MC	MAXIM	IUM IANICAL CONTRACTOR	TS TTB	TEACHER'S STATION TELEPHONE TERMINAL B	BOARD		
<ol> <li>VERIFY LOCATION OF ALL BACKBOXES IN LABORATORY EQUIPMENT AND BUILT-IN FURNITURE WITH EQUIPMENT SUPPLIER AND INSTALLER PRIOR TO ROUGH-IN.</li> </ol>	EMT EQ	ELECTRICAL METALLIC TUBING EQUAL	MCC MCM	MOTO THOU	OR CONTROL CENTER ISAND CIRCULAR MILLS	TYP - UH U	TYPICAL UNIT HEATER			
6. PROVIDE AND INSTALL PLASTER RINGS, DRYWALL FRAMING KITS, OR SURFACE MOUNT KITS FOR LIGHT FIXTURES	EWC	ELECTRIC WATER COOLER	MFR	MANU	IFACTURER	UL	UNDERWRITERS LABORA	ATORIES		
7 VERIEV HEIGHT AND LOCATION OF RECEPTACIES BEHIND FLECTRIC WATER COOLERS WITH THE MECHANICAL										
CONTRACTOR PRIOR TO ROUGH-IN.					ELECTRICAL SYN	IBOLS SCHEDULE				
<ol> <li>THE ELECTRICAL LAYOUT DRAWINGS ARE DIAGRAMMATIC IN NATURE. REFER TO ENTIRE CONSTRUCTION DRAWING SET AND SPECIFICATIONS FOR GUIDANCE ON DIMENSIONS, CEILING HEIGHTS, DOOR SWINGS, ROOM FINISHES,</li> </ol>		RECESSED PANELBOARD			CIRCUIT HOME RUN TO PANEI	LBOARD	Ê	FIRE ALARM SPEAKER/VISUAL		
STRUCTURAL DETAILS, LOCATIONS OF PIPING, DUCTWORK, STRUCTURAL MEMBERS, AND OTHER OBSTRUCTIONS. INSTALL THE ELECTRICAL SYSTEMS SO AS NOT TO INTERFERE WITH THE INSTALLATION OR FUNCTION OF ANY WORK	MCC-X	SURFACE MOUNTED PANELBOARD		PC	PHOTO CELL; AS NOTED ON D	DRAWING OR SPECIFICATIONS	€ V €			
BY ANOTHER DISCIPLINE.		MOTOR CONTROL CENTER; "X" DENOTES EQ	UIPMENT TAG.		LIGHTING CONTACTOR "X" DE	ENOTES NUMBER OF CONTACTOR	(F)	FIRE ALARM CEILING MOUNTE	D SMOKE DETECTOR	
<ol> <li>ALL DIMENSIONS OF EXISTING DEVICES AND EQUIPMENT ARE APPROXIMATE. CONTRACTOR SHALL MAKE ALL NECESSARY FIELD MEASUREMENTS OF EXISTING STRUCTURES AND EQUIPMENT TO VERIFY DIMENSIONS SHOWN ON THE DIANS. ALL ADDED COSTS TO MODIFY NEW CONSTRUCTION DUE TO A LACK OF COORDINATION AND FIELD.</li> </ol>		TRANSFORMER: "XX" INDICATES TRANSFORM	MER TAG. REFER TO	SCX	SITE LIGHTING CONTACTOR, '	"X" DENOTES NUMBER OF CONTACTOR		FIRE ALARM CEILING MOUNTE	D CARNON MONOXIDE SENSOR	
MEASUREMENTS SHALL BE BORNE BY THE CONTRACTOR.	T-XX	SCHEDULES AND/OK RISER DIAGRAM		\$ ^X	SWITCH, "X" DENOTES SWITC	H TYPE. SEE SWITCH TYPES BELOW.	Cupith T	FIRE ALARM CEILING MOUNTE	D HEAT DETECTOR	
10. PROVIDE ADDITIONAL SUPPORT FOR SWITCHES, STARTERS, RACEWAY, GROUNDING SYSTEMS, AND OTHER ELECTRICAL EQUIPMENT WHEREVER THE BUILDING CONSTRUCTION IS NOT SUITABLE FOR DIRECT MOUNTING.		FUSIBLE DISCONNECT: "XXA" DENOTES MAX.	AMPACITY OF DISCONNECT	\$ <b>x</b>	SWITCH, "x" DENOTES SWITCI	HING FOR LIGHTS.	(F)	FIRE ALARM DUCT MOUNTED WITH DUCT CONFIGURATION	SMOKE DETECTOR, VERIFY QUANTITY	
11. ALL PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, AND CEILINGS SHALL BE SEALED WITH FIRE STOPPING		NON-FUSIBLE DISCONNECT: "XXA" DENOTES OF DISCONNECT	MAX. AMPACITY		SWITCH TYPES		Н	FIRE ALARM MAGNETIC OR SE	INTRONIC DOOR HOLD OPEN	
MATERIAL EQUAL TO THOMAS AND BETTS U.L. LISTED FLAME-SAFE FIRE STOP SYSTEM.	CB _□ XXA	ENCLOSED CIRCUIT BREAKER, SIZE INDICATE FRAME SIZE.	ES BY "XXA" DENOTES	"2"	120/277 V, DOUBLE POLE 20 A	MP AC SWITCH		FIRE ALARM BELL		
12. COORDINATE ALL EQUIPMENT WIRING WITH MFR'S REQUIREMENTS. CHANGES REQUIRED FROM THE USE OF PRODUCTS THAT ARE OTHER THAN THE BASIS OF DESIGN SHALL BE BORNE BY THE CONTRACTOR.	⊠⊦MS-XX	COMBINATION MOTOR STARTER AND FUSED	DISCONNECT SWITCH:	"3" "4"	120/277 V, THREE WAY 20 AMF	P AC SWITCH AC SWITCH	F	FIRE ALARM SPEAKER/VISUAL	., 80" A.F.F., UNO.	
13. SIZING OF BRANCH CIRCUITS AND FEEDERS FOR EQUIPMENT IS BASED ON DESIGN LOADS. PRIOR TO INSTALLATION, CONFIRM EXACT LOADS WITH RELEASED SHOP DRAWINGS. BRING ANY DISCREPANCIES TO THE ATTENTION OF THE		VARIABLE FREQUENCY/SPEED DRIVE. PROVI	DED BY MECHANICAL	"D"	120/277 V, 0-10V DIMMER SWIT	тсн	WG FV	FIRE ALARM VISUAL, 80" A.F.F	., UNO. "WG" DENOTES WIRE GUARD	
ENGINEER PRIOR TO ROUGH-IN.		CONTRACTOR: INSTALLED BY ELECTRICAL C	ONTRACTOR.	"DSX" "K"	LOW VOLTAGE PROGRAMMAE	BLE SWITCH. "X" DENOTES SWITCH TY	(PE. WP	FIRE ALARM SPEAKER. 80" A.F	.F., UNO. "WP" DENOTES WEATHER PROOF.	
<ol> <li>BRANCH CIRCUITS SHALL BE WIRED WITH 3/4"C, 2-#12, 1-#12G, UNLESS NOTED OTHERWISE.NEUTRAL CONDUCTORS SHALL NOT BE SHARED ON BRANCH CIRCUITS.</li> </ol>	\$xxaf	COOPER INDUSTRIES MOTOR GUARD WITH 1 AND EDISON BASE FUSE HOLDER. "XXAF" DEI	5A TOGGLE SWITCH NOTES THE	"LV"	LOW VOLTAGE TOGGLE SWIT	CH		,		
15. WHERE CONDUIT AND WIRING HAS NOT BEEN SHOWN ON THE DRAWINGS, THE ARRANGEMENT AND ROUTING OF	<b>P</b>	RED MUSHROOM HEAD EMERGENCY POWER		"M"	120/277 V, MOMENTARY CONT	FACT 20 AMP AC SWITCH	F		ATION, 44" A.F.F., UNO	
LIGHTING AND RECEPTACLE BRANCH CIRCUITS SHALL BE AT THE DISCRETION OF CONTRACTOR IN ACCORDANCE WITH GENERALLY ACCEPTED GOOD PRACTICE, N.E.C. REQUIREMENTS, AND THE FOLLOWING LIMITATIONS:		LINE VOLTAGE THERMOSTAT; THERMOSTAT	PROVIDED BY	"OX"	120/277 V, SWITCH MOUNTED SWITCH TYPE.	OCCUPANCY SENSOR. "X" DENOTES	Ĕ	FIRE ALARM MANUAL PULL ST SPEAKER/VISUAL AT 80" A.F.F	ation at 44" a.f.f. and ., uno.	
16. EXCEPT WHERE NOTED OTHERWISE, SIZE BRANCH CIRCUIT CONDUCTORS WITHIN THE FOLLOWING MAXIMUMLENGTH		ELECTRICAL CONTRACTOR, ROUGH-IN AND	INSTALLATION BY	"P"	120/277 V, 20 AMP AC SWITCH	I WITH PILOT LIGHT	₹, sd	FIRE ALARM SMOKE DAMPER, WITH SET OF NORMALLY OPE	MOUNTED DETECTOR NEAR DAMPER, N CONTACTS	
CIRCUITS.)	0 0	"ON/OFF" OR "UP/DOWN" PUSH BUTTON WITH	H PILOT LIGHT	"S" "T"	120/277 V, SPECIAL PURPOSE	SWITCH	ŢĘ	FIRE SUDDRESSION TAMPER/		
CIRCUIT BREAKER CIRCUIT LENGTH CONDUCTOR SIZE 120V, 20 A 100 FEET #12	M	MOTOR CONNECTION.		"ТD"	120/277 V, MANUAL MOTOR ST	TARTER SWITCH WITH PILOT LIGHT				
150 FEET #10 200 FEET #8	(J) X	JUNCTION BOX; "X" DENOTES LOCATION (CLC	G = CEILING MOUNTED)	"\/"	AND THERMAL OVERLOAD PR	OTECTION				
17. PROVIDE #12 AWG MINIMUM FOR BRANCH CIRCUITS. PROVIDE ADDITIONAL DERATING PER N.E.C. TABLES 310-16 THROUGH 310-31 FOR ALL HOME RUNS WITH MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A RACEWAY	EE			"VX"	120/277 V, SWITCH MOUNTED	VACANCY SENSOR. "X" DENOTES	FAA		ANFI	
18. CONDUITS SHALL BE LIMITED TO A MAXIMUM OF NINE BRANCH CIRCUIT CONDUCTORS OF WHICH A MAXIMUM OF FOUR	<ul> <li></li> </ul>	GROUNDING ROD; REFER TO SPECIFICATION SIZE REQUIREMENTS	FOR MIN.		SWITCH TYPE.		BTS	FIRE ALARM REMOTE TEST ST	TATION	
PHASE CONDUCTORS SHALL BE PERMITTED. GROUNDING CONDUCTORS SHALL NOT BE INCLUDED IN THE COUNT.	HD	ELECTRIC HAND DRYER; MOUNTED AT +44" A TO SPECIFICATIONS	FF. REFER		CEILING FAN		NAC	FIRE ALARM NOTIFICATION AF	PLIANCE CIRCUIT PANEL	
<ol> <li>FOR EQUIPMENT THAT IS TO BE FURNISHED BY OTHERS AND WIRED BY THIS CONTRACTOR, REVIEW ALL SPECIFICATION SECTIONS, EQUIPMENT SCHEDULES, AND/OR DRAWING DETAILS THAT PERTAIN TO THIS EQUIPMENT</li> </ol>	φ	120 V, 20 AMP SIMPLEX RECEPTACLE 16" A.F.	F., UNO	xx			PIV	FIRE SUPPRESSION POST IND	ICATOR VALVE	
AND INCLUDE ALL WIRING AND DEVICES REFERENCED. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF THIS EQUIPMENT WITH EQUIPMENT INSTALLER PRIOR TO ROUGH-IN/ INSTALLATION.	Ø	120 V, 20 AMP SIMPLEX RECEPTACLE AT 44"A	A.F.F. OR 6" ABOVE	ab			CR	FIRE ALARM CONTROL RELAY		
20. CONDUIT, BOXES, AND WIRING DEVICES IN ALL AREAS SHALL BE INSTALLED IN CONCEALED SPACES OR RECESSED IN WALLS UNLESS IN MECHANICAL/ELECTRICAL FOURDMENT ROOMS OR AS DIRECTED BY THE ARCHTECT/ENGINEER	φx	120 V, 20 AMP DUPLEX RECEPTACLE 16" A.F.F	, UNO. "X" DENOTES	ab	LIGHT FIXTURE, "XX" DENOTE	S FIXTURE TYPE, ab DENOTES SWITC	HING B _X	FIRE ALARM BEAM DETECTOR	R. X DENOTES (S= SENDING UNIT, R= RECIEVE	
21. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ROUGH-IN OF TEMPERATURE CONTROL DEVICES.	Π	RECEPTACLE TYPE. SEE RECEPTACLE TYPE	S BELOW.	ab						
CONTRACTOR SHALL PROVIDE AND INSTALL BACK BOXES AND CONDUIT WITH BUSHING TO NEAREST ACCESSIBLE CEILING. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS. COORDINATE WITH MECHANICAL CONTRACTOR.	¢x	120 V, 20 AMP DUPLEX RECEPTACLE AT 44"A. CASEWORK SURFACE, UNO. "X" DENOTES RE RECEPTACLE TYPES BELOW	ECEPTACLE TYPE. SEE	XX [@] ab						
22. ELECTRIC WATER COOLERS (EWC DUPLEX RECEPTACLE ON SYMBOL SCHEDULE) SHALL BE PROTECTED BY GFCI	¢	120 V, 20 AMP DUPLEX RECEPTACLE WITH 2 I	PORT USB, 16" A.F.F., UNO	XXA		"XX" DENOTES FIXTURE TYPE "A"				
PROTECTED CIRCUIT BREAKER IN PANEL BOARD UNLESS OTHERWISE NOTED. PROVIDE AT ALL LOCATIONS.	-	120 V, 20 AMP 4 PORT USB RECEPTACLE AND	DUPLEX RECEPTACLE	ab XX	DENOTES GENERATOR TRANS INVERTER, ab DENOTES SWI	SFER DEVICE OR EMERGENCY BATTER	RY			
	-#*-			ab						
		2 USB PORTS, AT 44"A.F.F. OR 6" ABOVE CAS	SEWORK SURFACE, UNO	XXA						
		120 V, 20 AMP SPLIT WIRED DUPLEX RECEPTA	ACLE, 16" A.F.F., UNO	XXA	EMERGENCY NIGHT LIGHT FIX	ATURE, "XX" DENOTES FIXTURE TYPE,				
	}	DENOTES RECEPTACLE TYPE. SEE RECEPTA	ACLE TYPES BELOW.		UNSWITCHED					
	{ }	120 V, 20 AMP DOUBLE DUPLEX RECEPTACLE ABOVE CASEWORK SURFACE, UNO. "X" DENC	E AT 44"A.F.F. OR 6" DTES RECEPTACLE							
		120 V 20 AMP HORIZONTAL DUPLEX RECEPT.	ACLE AT 16" ABOVE		EXTERIOR WALL MOUNTED FI	XTURE, "XX" DENOTES FIXTURE TYPE				
	}	WORK SURFACE."X" DENOTES RECEPTACLE RECEPTACLE TYPES BELOW.	TYPE. SEE		EXTERIOR POLE MOUNTED FIL	XTURE, "XX" DENOTES FIXTURE TYPE				
NEW LIGHTING DEVICE LINE WEIGHT		120 V, 20 AMP HORIZONTAL DUPLEX RECEPT.	ACLE AT 44" A.F.F.	EM	WALL MOUNTED EMERGENCY	LIGHT FIXTURE				
Image: Second End Deliver       Image: Second End Deliver	<b>\$</b>   [₩] ^x	SEE RECEPTACLE TYPES BELOW.	NEVERIAULE ITPE.	EM © D	CEILING MOUNTED EMERGEN	ICY LIGHT FIXTURE				
NEW COMMUNICATION DEVICE LINE WEIGHT	}  ⊅]⇔	ELECTRIC CORD AND CABLE REEL WITH 25 F DOUBLE DUPLEX PORTABLE OUTLET BOX WI	T CORD AND TH STRAIN RELIEF	$\otimes$	UNIVERSAL CEILING MOUNT E	EXIT LIGHT WITH DIRECTIONAL ARROW	ı			
EXISTING TO REMAIN LINE WEIGHT	}	RECEPTACLE TYPES		ĔX	UNIVERSAL CEILING MOUNT F		/S			
EXISTING TO BE DEMOLISHED LINE TYPE AND WEIGHT	}   "C"	RECEPTACLE MOUNTED IN CEILING		EX <		2 LIGHT WITT DIRECTIONAL ARROW	-			
↓	ן אר הרביים אין	CEILING CORD DROP (SO)			UNIVERSAL CEILING MOUNT E	EXIT LIGHT WITHOUT DIRECTIONAL AR	ROWS			
	"E"	RECEPTACLE ON GENERATOR. COLOR OF D	UPLEX TO BE RED.		UNIVERSAL CEILING MOUNT E	EXIT LIGHT WITH EMERGENCY LIGHTIN ARROWS	NG			
	"EWC"		R, MOUNT PER EWC	EXM	UNIVERSAL CEILING MOUNT E	EXIT LIGHT WITH EMERGENCY LIGHTIN	G AND			

* NOT ALL SYMBOLS USED ON THIS PROJECT

	SURFACE MOUNTED PANELBOARD	PC	CIRCUIT HOME RUN TO PANELBOARD PHOTO CELL: AS NOTED ON DRAWING OR SPECIFICATIONS
MCC-X		TC	TIME CLOCK; AS NOTED ON DRAWINGS OR SPECIFICATIONS.
	MOTOR CONTROL CENTER; "X" DENOTES EQUIPMENT TAG.	Cx	LIGHTING CONTACTOR, "X" DENOTES NUMBER OF CONTACTOR
	TRANSFORMER: "XX" INDICATES TRANSFORMER TAG. REFER TO SCHEDULES AND/OR RISER DIAGRAM	SCX	SITE LIGHTING CONTACTOR, "X" DENOTES NUMBER OF CONTACTOR
T-XX		\$ ^x	SWITCH, "X" DENOTES SWITCH TYPE. SEE SWITCH TYPES BELOW.
L <b>_</b> ⊢XXA		\$ <b>x</b>	SWITCH, "x" DENOTES SWITCHING FOR LIGHTS.
	OF DISCONNECT		SWITCH TYPES
CB _□ XXA	ENCLOSED CIRCUIT BREAKER, SIZE INDICATES BY "XXA" DENOTES	"2"	120/277 V, DOUBLE POLE 20 AMP AC SWITCH
	COMBINATION MOTOR STARTER AND FUSED DISCONNECT SWITCH:	"3"	120/277 V, THREE WAY 20 AMP AC SWITCH
I⊠⊦MS-XX	MS-XX DENOTES STARTER TAG, REFER TO MOTOR STARTER SCHEDULE.	"4" "D"	120/277 V, FOUR WAY 20 AMP AC SWITCH 120/277 V, 0-10V DIMMER SWITCH
VFD	VARIABLE FREQUENCY/SPEED DRIVE. PROVIDED BY MECHANICAL CONTRACTOR: INSTALLED BY ELECTRICAL CONTRACTOR.	"DSX"	LOW VOLTAGE PROGRAMMABLE SWITCH. "X" DENOTES SWITCH TYPE.
\$T \$XXAF	COOPER INDUSTRIES MOTOR GUARD WITH 15A TOGGLE SWITCH	"K"	120/277 V, KEY OPERATED 20 AMP AC SWITCH
	OVERCURRENT PROTECTION FOR FUSEHOLDER	"LV"	LOW VOLTAGE TOGGLE SWITCH
T	RED MUSHROOM HEAD EMERGENCY POWER OFF BUTTON	IVI	120/277 V, SWITCH MOUNTED OCCUPANCY SENSOR. "X" DENOTES
T	LINE VOLTAGE THERMOSTAT; THERMOSTAT PROVIDED BY MECHANICAL CONTRACTOR, ROUGH-IN AND INSTALLATION BY		
0		г "S"	120/277 V, SPECIAL PURPOSE SWITCH
	ON/OFF OR OP/DOWN POSH BUTTON WITH PILOT LIGHT	"Т"	120/277 V, TIMER SWITCH
(M)		"TP"	120/277 V, MANUAL MOTOR STARTER SWITCH WITH PILOT LIGHT
(J) X	JUNCTION BOX; "X" DENOTES LOCATION (CLG = CEILING MOUNTED)	"V"	AND THERMAL OVERLOAD PROTECTION 120/277 V. LINE VOLTAGE DIMMER. 1500 WATT OR AS SPECIFIED.
EE	ELECTRIC EYE REFLECTOR	"VX"	120/277 V, SWITCH MOUNTED VACANCY SENSOR. "X" DENOTES
$\langle \bullet \rangle$	GROUNDING ROD; REFER TO SPECIFICATION FOR MIN. SIZE REQUIREMENTS		SWITCH TYPE.
HD	ELECTRIC HAND DRYER; MOUNTED AT +44" AFF. REFER		CEILING FAN
ш <u>е</u>	TO SPECIFICATIONS	V	
Ŷ	$120 \vee 20  AMD SIMDLEY DECEDTACLE AT 44"A E E OD 6" ABOVE$	XX oab	
Ø	CASEWORK SURFACE, UNO	XX	
$\phi x$	120 V, 20 AMP DUPLEX RECEPTACLE 16" A.F.F., UNO. "X" DENOTES RECEPTACLE TYPE. SEE RECEPTACLE TYPES BELOW.	ab XX	LIGHT FIXTURE, "XX" DENOTES FIXTURE TYPE, ab DENOTES SWITCHING
	120 V, 20 AMP DUPLEX RECEPTACLE AT 44"A.F.F. OR 6" ABOVE	ab	
<b>∅ x</b>	CASEWORK SURFACE, UNO. "X" DENOTES RECEPTACLE TYPE. SEE RECEPTACLE TYPES BELOW.	ab	
۵	120 V, 20 AMP DUPLEX RECEPTACLE WITH 2 PORT USB, 16" A.F.F., UNO	XXA	EMERGENCY LIGHT FIXTURE, "XX" DENOTES FIXTURE TYPE, "A"
+	120 V, 20 AMP 4 PORT USB RECEPTACLE AND DUPLEX RECEPTACLE		DENOTES GENERATOR TRANSFER DEVICE OR EMERGENCY BATTERY INVERTER, ab DENOTES SWITCHING.
	WITH 2 USB PORTS, 16" A.F.F., UNO	ab	
	2 USB PORTS, AT 44"A.F.F. OR 6" ABOVE CASEWORK SURFACE, UNO	XXA	
Ф	120 V, 20 AMP SPLIT WIRED DUPLEX RECEPTACLE, 16" A.F.F., UNO	ХХА	EMERGENCY NIGHT LIGHT FIXTURE, "XX" DENOTES FIXTURE TYPE,
⊕x	120V, 20 AMP DOUBLE DUPLEX RECEPTACLE, 16" A.A.F, UNO. "X" DENOTES RECEPTACLE TYPE. SEE RECEPTACLE TYPES BELOW.	XXA	"A" DENOTES EMERGENCY BATTERY INVERTER, FIXTURE IS UNSWITCHED
-#X-V	120 V, 20 AMP DOUBLE DUPLEX RECEPTACLE AT 44"A.F.F. OR 6"		
****	TYPE. SEE RECEPTACLE TYPES BELOW.	XX	EXTERIOR WALL MOUNTED FIXTURE, "XX" DENOTES FIXTURE TYPE
⊕x	120 V, 20 AMP HORIZONTAL DUPLEX RECEPTACLE AT 16" ABOVE WORK SURFACE."X" DENOTES RECEPTACLE TYPE. SEE		EXTERIOR POLE MOUNTED FIXTURE, "XX" DENOTES FIXTURE TYPE
	RECEPTACLE TYPES BELOW.	EM	
÷∯-X	120 V, 20 AMP HORIZONTAL DUPLEX RECEPTACLE AT 44" A.F.F. OR 6" ABOVE WORK SURFACE."X" DENOTES RECEPTACLE TYPE.	EM	WALL MOUNTED EMERGENCY LIGHT FIXTURE
	ELECTRIC CORD AND CABLE REEL WITH 25 FT CORD AND		CEILING MOUNTED EMERGENCY LIGHT FIXTURE
Alta	DOUBLE DUPLEX PORTABLE OUTLET BOX WITH STRAIN RELIEF	EX	UNIVERSAL CEILING MOUNT EXIT LIGHT WITH DIRECTIONAL ARROW
	RECEPTACLE TYPES	$\otimes$	UNIVERSAL CEILING MOUNT EXIT LIGHT WITH DIRECTIONAL ARROWS
"C"	RECEPTACLE MOUNTED IN CEILING	EX (X)	
"CD"	CEILING CORD DROP (SO)	EX	
"E"	RECEPTACLE ON GENERATOR. COLOR OF DUPLEX TO BE RED.		UNIVERSAL CEILING MOUNT EXIT LIGHT WITH EMERGENCY LIGHTING AND WITHOUT DIRECTIONAL ARROWS
"EWC"	RECEPTACLE FOR ELECTRIC WATER COOLER, MOUNT PER EWC		UNIVERSAL CEILING MOUNT EXIT LIGHT WITH EMERGENCY LIGHTING AND
		EXM	WITH DIRECTIONAL ARROW
"G"	RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER	EX	UNIVERSAL WALL MOUNT EXIT LIGHT WITH DIRECTIONAL ARROW
"IG"	ISOLATED GROUND DUPLEX RECEPTACLE. COLOR OF DUPLEX RECEPTACLE TO BE ORANGE WITH ISOLATED GROUND SYMBOL	- A	UNIVERSAL WALL MOUNT EXIT LIGHT WITH DIRECTIONAL ARROWS
"M"	RECEPTACLE FOR MICROWAVE.	ĔX T	
"R"	RECEPTACLE FOR REFRIGERATOR, 54" A.F.F.		UNIVERSAL WALL MOUNT EXIT LIGHT WITHOUT DIRECTIONAL ARROWS
"S"	RECEPTACLE WITH SURGE PROTECTION, UNO. COLOR OF DUPLEX		UNIVERSAL WALL MOUNT EXIT LIGHT WITH EMERGENCY LIGHTING AND
"ТР"		EXM	WITHOUT DIRECTIONAL ARROWS
	RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER AND	EXM	UNIVERSAL WALL MOUNT EXIT LIGHT WITH EMERGENCY LIGHTING AND WITH DIRECTIONAL ARROW
"WP"	"WHILE-IN-USE" WEATHER RESISTANT COVERPLATE MOUNTED HORIZONTAL AT 24" A.F.F.,		CEILING MOUNTED INFRARED RECEIVER
"P"	PLUG LOAD CONTROLLABLE DUPLEX RECEPTACLE		
ØXXA	SPECIAL PURPOSE RECEPTACLE; "XXA" DENOTES AMPACITY		
æ	TWIST LOCK RECEPTACLE		TYPE, 9'-0" A.F.F., UNO
FBX		(vx)	CEILING MOUNTED VACANCY SENSOR. "X" DENOTES SENSOR TYPE.
<u>، مر</u> (ه)PTX	POKE THRU; "X" DENOTES FLOOR BOX ID TAG, REFER TO SCHEDULES.		WALL MOUNTED VACANCY SENSOR. "X" DENOTES SENSOR
(R)	RELAY		POWER PACK FOR 24V OCCLIPANCY / VACANCY SENSORS "Y"
	HORIZONTALLY MOUNTED SURFACE RACEWAY	PPx	DENOTES SWITCH TYPE
	VERTICALLY MOUNTED SURFACE RACEWAY	EPx	EMERGENCY POWER PACK FOR 24V OCCUPANCY / VACANCY SENSORS. "X" DENOTES SWITCH TYPE
	MULTI-OUTLET ASSEMBLY WITH OUTLETS ON CENTER AS INDICATED ON THE DRAWING OR SPECIFICATIONS, MOUNTED 6" ABOVE COUNTER,	RC -	ROOM CONTROLLER. "X" DENOTES SWITCH TYPE
TOD	UNO. TEMPERATURE CONTROL PANEL; PROVIDED AND INSTALLED BY		DIMMING ROOM CONTROLLER. "X" DENOTES SWITCH TYPF
	MECHANICAL CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR		
7r 	NORMALLY OPEN CONTACTOR	$\left \begin{array}{c} \begin{pmatrix} \mathbf{A} \\ \mathbf{Y} \end{array}\right\rangle$	CALL OUT; "X" DENOTES DETAIL NUMBER, "Y" DENOTES DRAWING SHEET NUMBER

![](_page_91_Figure_6.jpeg)

E000

![](_page_92_Figure_0.jpeg)

![](_page_92_Picture_1.jpeg)

 $1 = \frac{ELECTRICAL DEMOLITION PLAN - SECOND FLOOR - UNIT E}{\frac{1}{8''} = \frac{1}{2} - 0''}$ 

4

![](_page_92_Figure_14.jpeg)

![](_page_92_Figure_15.jpeg)

![](_page_93_Figure_0.jpeg)

![](_page_93_Picture_1.jpeg)

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

# $1 \frac{\text{LIGHTING PLAN - FIRST FLOOR - UNIT M}}{\frac{1}{8^{\text{H}} = 1^{\text{H}} - 0^{\text{H}}}}$

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

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

SCALE: 3/4" = 1'-0"

4

SCALE: 1" = 1'-0"

- 1. MOUNT FIXTURE AT +10'-0" ABOVE FINISHED FLOOR TO BOTTOM OF FIXTURE.
- 2. MOUNT FIXTURE AT +9'-0" ABOVE FINISHED FLOOR TO BOTTOM OF FIXTURE.
- 3. CONNECT BUILDING MOUNTED LIGHT TO 1HL1-45 THRU CONTACTOR BC2 LOCATED IN ROOM L113. FIXTURE SHALL BE MOUNTED AT 12'-6" ABOVE FINISHED GRADE TO BOTTOM OF FIXTURE. REFER TO DETAIL #2 ON SHEET E504 FOR ADDITIONAL INFORMATION.
- 4. ROUTE BRANCH CIRCUIT THRU UL924 TRANSFER DEVICE TO CONTACTOR BC1 LOCATED IN ROOM L113. REFER TO DETAIL #2 ON SHEET E504 FOR ADDITIONAL INFORMATION.
- 5. CONNECT BUILDING MOUNTED LIGHT TO 1HL1-45 THRU UL924 TRANSFER DEVICE TO CONTACTOR BC1 LOCATED IN ROOM L113. FIXTURE SHALL BE MOUNTED AT 12'-6" ABOVE FINISHED GRADE TO BOTTOM OF FIXTURE. REFER TO DETAIL #2 ON SHEET E504 FOR ADDITIONAL INFORMATION.
- 6. ROUTE BRANCH CIRCUIT THROUGH RELAY PANEL 1RPL1 LOCATED IN RM. L113. REFER TO DETAIL #3 ON SHEET E504 FOR ADDITIONAL INFORMATION.
- 7. CONNECT SENSOR IN THIS SPACE TO RELAY NUMBER(S) AS INDICATED IN RELAY PANEL 1RPL1 LOCATED IN ROOM L113. REFER TO DETAIL #3 ON SHEET E504 FOR ADDITIONAL INFORMATION. TYPICAL OF OCCUPANCY SENSOR TYPE THIS SPACE UNLESS NOTED OTHERWISE.
- PROVIDE AND INSTALL DRYWALL FRAME KIT TO RECESS FIXTURE IN CEILING. TYPICAL OF FIXTURES IN THIS SPACE UNLESS NOTED OTHERWISE.

WALL MOUNTED EMERGENCY LIGHTS, NIGHTLIGHTS, AND/OR EXIT SIGNS SHALL BE CONNECT TO THE UNSWITCHED SIDE OF BRANCH CIRCUIT THE FIXTURE IS SERVING. TYPICAL OF ALL UNLESS NOTED OTHERWISE.

![](_page_93_Figure_25.jpeg)

![](_page_93_Figure_28.jpeg)

![](_page_93_Figure_29.jpeg)

![](_page_93_Figure_30.jpeg)

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![](_page_93_Figure_32.jpeg)

![](_page_93_Picture_33.jpeg)

![](_page_94_Figure_0.jpeg)

![](_page_94_Picture_1.jpeg)

![](_page_94_Figure_13.jpeg)

![](_page_95_Figure_0.jpeg)

![](_page_95_Picture_1.jpeg)

0 8 16 SCALE: 3/32" = 1'-0"

# $1 \frac{FIRE ALARM - FIRST FLOOR - UNIT M}{\frac{1}{8''} = 1'-0''}$

4

![](_page_95_Figure_14.jpeg)

![](_page_95_Figure_15.jpeg)

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![](_page_95_Figure_17.jpeg)

![](_page_96_Figure_0.jpeg)

![](_page_96_Figure_2.jpeg)

![](_page_96_Figure_3.jpeg)

![](_page_96_Figure_4.jpeg)

![](_page_96_Figure_5.jpeg)

![](_page_96_Picture_7.jpeg)

![](_page_97_Figure_0.jpeg)

![](_page_97_Figure_1.jpeg)

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![](_page_97_Figure_4.jpeg)

![](_page_98_Figure_0.jpeg)

![](_page_98_Picture_1.jpeg)

	)TOR STARTER
	INNECT H SIZE RATING FNCLOSURE
No.         o.         No.         No.	DISCO SWITC FUSE F
No.         o.        No.         No.	
No.         No. <td></td>	
No.         o.         No.         No.	
No.         No. <td></td>	
No.         o.         No.         No.	
No. 1         No. 1         No. 2         No. 2 <th< td=""><td></td></th<>	
No.         No. <td></td>	
Prod	
Image: state in the	
No.         No. <td></td>	
Photo         Number         Numer         Numer         Numer	
Image:         Image:<	
Fills         No.         Solution         Sol	
No.         No. <td></td>	
Incom         Intern         Number         umber        Number <td></td>	
Phane         Phane <th< td=""><td></td></th<>	
Philo         Philo <th< td=""><td></td></th<>	
Physic         hysic </td <td></td>	
h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h         h	
Interplane <td></td>	
Interna         NALCON         AUDIC         UDIC         AUDIC         <	
P1         RX.AT4         25.4PP         400/20P         1.14/C3-442,4*960         1.96/1.3         1.5         1.0         1.0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0       0          0	
PA         PRIA14         95.99         400/394         1.14/C.3.49.1.480         HPA (10.5)         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1        1         1         1	
PA         HRA.114         40 P         480/3PH         1-14/C3-84.1-86.0         HPA-14[16,18]         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C         C       C        C         C	
P-9       RM.324       10 HP       480/3PH       3/4/C,3#12,1#12G       3/4/C,3#12,1#12G       3/4/C,3#12,1#12G       1/H-3/G,3#1,1#1G       1/H       <	
Image: Note of the original state original state original state of the original	
PHP-1       RM. M010       3.0 HP       480V/3PH       3/4°C,3#12,1#12G       1HM1-02(2,2)       E       NF       4X       30       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I	
PP2       RM. M101       40 HP       480V/3PH       1-1/4"C,3-#3,1-#8G       1HM1-14(16,18)       IHM1-14(16,18)       IHM	
HP-12.04 RM 1202 9.8 MCA 480V/3PH (1 3/4"C 4-#12.1-#12.G § 2H.12-8(10.12) INT	
Image: Normal and the second	
TF-J1       RM. J138       1/4 HP       120V/1PH       3/4"C,2-#12,1-#12G       LS-26       INT       INT <td></td>	
IF-M1       RM. K2001       1/4 HP       1/20V/1PH       3/4*C,2=#12,1=#12G       2LK1-58       INI	
UH-M1       RM. 101A       2.0 KW       208V/1PH       3/4"C,2-#12,1-#12G       1 LK1-49(51)       INT	
VAL         Mail Life         Mail	
AAMPACITYHLHIGH/LOW SWITCHMCAMIN CIRCUIT AMPACITYWWATTSECELECTRICAL CONTRACTORHLOHIGH/LOW/OFF SWITCHMLMOMENTARY HIGH/LOW SWITCHXA/YPX AMP CIRCUIT BREAKER, Y POLEEXEXISTING EQUIPMENTHOAHAND/OFF/AUTOMHLOMOMENTARY HIGH/LOW/OFF SWITCHXA/YPX AMP CIRCUIT BREAKER, Y POLE	
FFUSEDHPHORSE POWERNFNON-FUSEDFLAFULL LOAD AMPSINTINTEGRAL WITH EQUIPMENTPECPOOL EQUIPMENT CONTRACTORFUNDFULL VOL TAGE NON-REVERSING LORLOCAL/OFE REMOTE SWITCHOOWNER EURNISHED AND INSTALLEDFUNDFULL VOL TAGE NON-REVERSING LORLOCAL/OFE REMOTE SWITCHOOWNER EURNISHED AND INSTALLED	
FVRFULL VOLTAGE REVERSINGMMOMENTARY ON/OFF SWITCHRLARUNNING LOAD AMPSGGENERAL CONTRACTORMCMCMCHANICAL CONTRACTORSON/OFF SWITCHA. REMOVE EXISTING TWIN 60A/3P FUSIBLE SWITCH IN EXISTING MDP1 AND PROVIDE NEW 100A/3P TWIN TO SERVE NEW COOLING TOWER PUMPS. REFER TO DRAWING E601 FOR ADDITIONAL INFORMATION.SON/OFF SWITCH	
5. PROVIDE AND INSTALL NEW 70A/3P CIRCUIT BREAKER TO REPLACE EXISTING CIRCUIT BREAKER IN EXISTING SIEMENS PANEL         REMARKS         6. CONTRACTOR SHALL PROVIDE CONDUCTORS IN CONDUIT FROM VSD TO MOTOR.         7. PROVIDE AND INSTALL NEW 30A/3P CIRCUIT BREAKER TO REPLACE EXISTING CIRCUIT BREAKER IN EXISTING SIEMENS PANEL	
<ul> <li>8. CIRCUIT SHALL BE ROUTED THROUGH CONTACTORS FOR EMERGENCY SHUT-OFF. REFER TO DETAIL #1 ON SHEET E501 FOR ADDITIONAL INFORMATION.</li> <li>9. CONNECT CONDESNATE PUMP ON LINE SIDE OF DISCONNECT ON UNIT.</li> <li>10. PROVIDE AND INSTALL NEW 20A/1P CIRCUIT BREAKER IN EXISTING SIEMENS PANEL</li> </ul>	
11. CHEMICAL FEEDER CIRCUIT SHALL BE ROUTED THROUGH CHEMICAL CONTROLLER. REFER TO AQ600 FOR ADDITIONAL INFORMATION.	

![](_page_99_Picture_1.jpeg)

![](_page_99_Figure_11.jpeg)

![](_page_99_Picture_12.jpeg)

						KEL	AT PANEL SU		-							FIXTURE SCHEDULI			
PANEL NAME: 1RPL1 LOCATION: RM. L113 MOUNTING: SURFACE PANEL REMARKS:										SUPPL MANU MODE	LY CIRCUIT: 1  FACTER: GRE  L: CK48-120/2	1LL1-46 EENGATE 277-4-1-CKT	-LB		TAG     MANUFACTURER'S CATALOG NUMBER     MAX. WATTS	MOUNT MIN. LUMEN OUTPUT *(D/I) CCT CRI			
															STREETWORKS #VERD-M-CA3-160-740-HV-T4-A15-XX-MS/DIM-L40 WITH #SSA4T30W-XX-1-FGV       SL1     163	POLE 24,394 4000 70 HAVE CAPA			
															STREETWORKS #VERD-M-CA3-160-740-HV-T4-A15-XX-HSS-MS/DIM-L40 WITH #SSA4T30W-XX-1-FGV	480V, DIE C			
			POWER SOU	RCF							SL1-HS         163         POLE         24,394         4000         70								
	V DO VER SOURCE       POWER SOURCE       EXTERIOR CONTROLS       OCUPIED       EXTERIOR CONTROLS       OCUPIED       STREETWORKS #VERD-M-CA3-160-740-HV-T5-A15-XX-MS/DIM-L40 WITH         0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0 <t< td=""><td>STREETWORKS #VERD-M-CA3-160-740-HV-T5-A15-XX-MS/DIM-L40 WITH #SSA4T30W-XX-1-FGV         163</td><td colspan="3">WITH #SSA4T30W-XX-1-FGV  163 POLE 24 011 4000 70 SHALL HAVE CA</td></t<>									STREETWORKS #VERD-M-CA3-160-740-HV-T5-A15-XX-MS/DIM-L40 WITH #SSA4T30W-XX-1-FGV         163	WITH #SSA4T30W-XX-1-FGV  163 POLE 24 011 4000 70 SHALL HAVE CA								
DESCRIPTION				F	C		LIGHT OUTPUT CONTROL			LIGHT OUTPUT C		LIGHT O	UTPUT						
	RE	NORMAL	EMERGEMCY	RANCH CIRCUI DESIGNATION	ASTRONOMICAI TIMECLOCK	DIGITAL SWITCH OCCUPANCY SENSOR ON	OFF ASTRONOMICAL TIMECLOCK DIGITAL SWITCH OCCUPANCY SENSOR	OFF ON	ASTRONOMICAL TIMECLOCK DIGITAL SWITCH	OCCUPANCY SENSOR ON OFF OFF TIMECLOCK	DIGITAL SWITCH OCCUPANCY SENSOR	NO	OFF ASTRONOMICAL TIMECLOCK	PHOTOCELL IGITAL SWITCH	SIREE I WORKS #VERD-M-CA3-160-740-HV-15-A15-XX-MS/DIM-L40 WITH #SSA4130W-XX-1-FGV	POLE 48,022 4000 70 INFRARED. DEGREE HE PROVIDE TI			
LIGHT TRUSS - RM. L100 & M100	20A N	I X	277V	1HL1-7		X 100%		0%		100% X			0%	1,2	1. PROVIDE TWO (2) WIRELESS CONFIGURATIONS TOOLS TO OWNER AFTER COMPLETION OF PROJECT.				
LIGHT TRUSS - RM. L100 & M100	20A N	X	277V	1HL1-9		X 100%	X	0%	X	100% X			0%	1,2	2. FIXTURE SHALL WATTSTOPPER #FSP-211 UTILIZING FSIR-100 CONFIGURATION TOOL.				
LIGHT TRUSS - RM. L100 & M100	20A N		277V	1HL1-11		X 100%		0%	X	100% X		_	0%	1,2	1. MOTION SENSOR SHALL BE SET UP WITH HIGH SETTING TO BE 100% AND LOW SETTING TO BE 15% .				
LIGHT TRUSS - KM. L100 & M100	20A N 20A N		277V 277V	1HL1-13		N         100%           X         100%		0%		100% X 100% X			0%	1,2	2. CONTRACTOR SHALL PROVIDE AN ALLOWANCE OF \$3,300.00 FOR FIXTURE AND POLE THIS INCLUDES FREIGHT AND SHIPPING	COSTS.			
LIGHT TRUSS - RM. L100 & M100	20A N		277V	1HL1-17		X 100%	X	0%	X	100% X			0%	1,2	4. CONTRACTOR SHALL PROVIDE AN ALLOWANCE OF \$3,850.00 FOR FIXTURE AND POLE THIS INCLUDES FREIGHT AND SHIPPING				
LIGHT TRUSS - RM. L100 & M100	20A N	X	277V	1HL1-19		X 100%	X	0%	X	100% X			0%	1,2		······			
LIGHT TRUSS - RM. L100 & M100	20A N		277V	1HL1-21 1HL 1-23		X 100%		0%	X	100% X			0%	1,2	LIGHTING SENSOR SCHED	JLE			
LIGHT TRUSS - RM. L100 & M100	20A N	X	277V	1HL1-25		X 100%	X	0%	X	100% X			0%	1,2	TAG MANUFACTURER'S CATALOG NUMBER INPUT MOUNT	REMARKS			
LIGHT TRUSS - RM. L100 & M100	20A N	X	277V	1HL1-27		X 100%	X	0%	X	100% X			0%	1,2	WATTSTOPPER #DT-300 DUAL TECHNOLOGY CEILING	ENSOR WITH A COMBINATION OF ULTRASONIC A			
LIGHT TRUSS - RM. L100 & M100	20A N		277V	1HL1-29		X 100%	X	0%	X	100% X			0%	1,2	SENSOR SWITCH #CM-PDT-9-R PASSIVE INFRARED. SENSOR AND ISOLATED RELAY OUTPUT	O BE EQUIPPED WITH SELF ADJUSTING TECHNOI S. SENSOR SHALL OPERATE AS AUTOMATIC "ON"			
LIGHT TRUSS - RM. L100 & M100	20A N 20A N		277V 277V	1HL1-31		X 100%		0%		100% X			0%	1,2	O1 GREENGATE #OAC-DT-R 24V CEILING AUTOMATIC "OFF" WITH A 15 M HUBBELL #OMNI-DT-XXXX-RP	INOTE TIME DELAY.			
LIGHT TRUSS - RM. L100 & M100	20A N	X	277V	1HL1-35		X 100%	X	0%	X	100% X			0%	1,2					
LIGHT TRUSS - RM. L100 & M100	20A N	X	277V	1HL1-37		X 100%	X	0%	X	100% X			0%	1,2	WATTSTOPPER #DT-200 DUAL TECHNOLOGY CEILING SENSOR SWITCH #WV-PDT-16-R AND ISOLATED BELAY OUTPUT	ENSOR WITH A COMBINATION OF ULTRASONIC A TO BE EQUIPPED WITH SELF ADJUSTING TECHNOL			
LIGHT - RM. L100 & M100	20A N		277V	1HL1-39		X 100%	X	0%	X	100% X			0%	1,2	O2     GREENGATE #OAWC-DT-120W-R     24V     WALL     AUTOMATIC "OFF" WITH A 15 M	S. SENSOR SHALL OPERATE AS AUTOMATIC "UN" IINUTE TIME DELAY.			
LIGHTS - RMS. L1000 & M10	20A N 000 20A N		277V 277V	1HL1-1	X	100%	× ×	0%		X 100% X	X		0%	3,4	HUBBELL #LO-DT-RP LUTRON #LOS-CDT-2000				
LIGHTS - RM. L101	20A N	X	277V	1HL1-1	Х	100%	X	0%		X 100% X	X		0%	3,4	WATTSTOPPER #DW-100 DUAL TECHNOLOGY WALL SW AND PASSIVE INFRARED. SEN	TCH SENSOR WITH A COMBINATION OF ULTRASC			
LIGHTS - RM. M104	20A N		277V	1HL1-1	X	100%	X	0%		X 100% X	X		0%	3,4	SENSOR SWITCH #WSD-PDT     TECHNOLOGY. SENSOR SHAL       O3     GREENGATE #ONW-D-1001-MV     120/277V     WALL     WITH A 15 MINUTE TIME DELAX	OPERATE AS AUTOMATIC "ON" AND AUTOMATIC COLOR TO BE SELECTED BY ARCHITECT.			
LIGHTS - K1000 ATRIUM	20A N 20A N		277V 277V	1HL1-1 1HL1-1	X	100%		0%		X 100% X X 100% X	X		0%	3,4	HUBBELL #LH-MT-S-1				
LIGHTS - RM. K1000, L2200, L3000	20A N	X	277V	1HL1-2	X	100%	X	0%		X 100% X	X		0%	3,4	LUTRON #MS-B102     DUAL TECHNOLOGY CEILING       WATTSTOPPER #DT-300     DUAL TECHNOLOGY CEILING	SENSOR. SENSOR TO BE EQUIPPED WITH SELF			
LOBBY LIGHTS - RMS. L2000 & M20	000 20A N	X	277V	1HL1-4	X	100%	X	0%		X 100% X	X		0%	3,4	ADJUSTING TECHNOLOGY AN SENSOR SWITCH #CM-PDT-9-R IN CONJUNCTION WITH RELAY	D ISOLATED RELAY OUTPUTS. SENSOR SHALL OP PANEL			
LIGHTS - RM. L202	20A N		277V	1HL1-4	X	100%	X	0%		X 100% X	X		0%	3,4	O4 GREENGATE #OAC-DT-R 24V CEILING HUBBELL #OMNI-DT-XXXX-BP				
LIGHTS - RM. M204	20A N 20A N		277V 277V	1HL1-4 1HL1-2	X X	100%		0%		X         100%         X           X         100%         X			0%	3,4	LUTRON #LOS-CDT-2000				
LIGHTS - RM. K1000, L2200, L3000	20A N		277V	1HL1-2	X	100%		0%		X 100% X			0%	3,4	WATTSTOPPER #DT-200     DUAL TECHNOLOGY WALL SEI       SENSOR SWITCH #WV-PDT-16-R     TECHNOLOGY AND ISOLATED	NSOR. SENSOR TO BE EQUIPPED WITH SELF ADJU RELAY OUTPUTS. SENSOR SHALL OPERATE IN			
LIGHTS - RM. K1000/J1000	20A N	X	277V	1HL1-6	X	100%	X	0%		X 100% X	X		0%	3,4	O5     CONJUNCTION WITH RELAY P.       GREENGATE #OAWC-DT-120W-R     24V				
LIGHTS - RM. K1000/J1000	20A N		277V	1HL1-8	X	100%		0%		X 100% X X 100% V	X V		0%	3,4	HUBBELL #LO-DT-RP     POWER PACK TO OPERATE LC       WATTSTOPPER #BZ150     POWER PACK TO OPERATE LC	W VOLTAGE (24VDC) OCCUPANCY SENSORS. REL			
LIGHTS - RM. K1000/J1000	20A N 20A N		277V	1HL1-12	X	100%		0%		X         100%         X           X         100%         X			0%	3,4	SENSOR SWITCH #PP20 4 SQUARE BOX				
EMERGENCY LIGHTS - RM	20A N	X	277V	1HL1-14	X	100%	x	0%		X 100% X	x		0%	5	PP     GREENGATE #SP20-MV     120/277V     ABOVE ACCESSIBLE       HUBBELI     CEILING				
															REMARKS:				
		_													2. 120/277V SENSOR IN LIEU OF POWER PACK IS ACCEPTABLE.				
															GENERAL NOTES: 1. CEILING MOUNTED OCCUPANCY SENSORS SHALL BE INSTALLED 6'-0" AWAY FROM ANY SUPPLY DIFFUSERS, COORDINATE WITH I	IECHANICAL CONTRACTOR.			
															FLOOR BOX AND POKE-THRU SC	FLOOR BOX AND POKE-THRU SCHEDULE			
,																POWER INSERT DATA INSER			
	m		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	· · · · · · · · · · · · · · · · · · ·						man			<u> </u>			TYPE QTY TYP			
TRACK LIGHTS - RM. M104	20A N		120V	1LL1-50	X	X 0%	X	0%		X 0% X X 100% X	X x		0%	3,1	PI1     HUBBELL #S1R10PTFIT WITH TWO (2) S1R10CBF200     HUBBELL #S1R10CVRALU     2       NOTES:     0	S1R10SPI 1 S1R10			
	20/7 N		1200	· ∟∟ I -4∠				070		···· ··· · · · · · · · · · · · · · · ·			- , .	0,7					

4. RELAYS SHALL BE CONTROLLED BY THE "ATRIUM ON", "ATRIUM OFF", "EVENT ON", AND "EVENT OFF" BUTTONS ON DIGITAL SWITCH "DS1". THE TIME PERIOD SHALL OPERATE LIGHTS FOR MINIMUM 4 HOURS. 5. RELAY SHALL BE CONTROLLABLE THROUGH RELAY PANEL. FIXTURE ARE USED FOR EMERGENCY EGRESS LIGHTING IN ATRIUM J1000 & K1000

GENERAL NOTES

![](_page_100_Picture_3.jpeg)

A. CONTRL SEQUENCE IS FOR BIDDING PURPOSES ONLY THE CONTRACTOR SHALL SCHEDULE TIME WITH OWNER TO VERIFY PROGRAMING REQIUIREMENTS AND BUTTON NOMENCLATURE.

### 

DESCRIPTION

URE WITH TYPE IV. POLE MOUNT ARM. MOTION ASSIVE INFRARED MOTION SENSING. SENOR SHALL RAMMED THROUGH HAND HELD DEVICE USING 0 TALL, 4" SQUARE ALUMINUM POLE WITH SINGLE HEAD OUND LUG AND VIBRATION DAMPENER

URE WITH TYPE IV. POLE MOUNT ARM AND HOUSE SIDE STAND-ALONE PASSIVE INFRARED MOTION SENSING. IES TO BE PROGRAMMED THROUGH HAND HELD SHALL BE 30'-0 TALL, 4" SQUARE ALUMINUM POLE /IBRATION PAD, GROUND LUG AND VIBRATION

UMINUM FIXTURE WITH TYPE V. POLE MOUNT ARM. LONE PASSIVE INFRARED MOTION SENSING. SENOR E PROGRAMMED THROUGH HAND HELD DEVICE USING TALL, 4" SQUARE ALUMINUM POLE WITH SINGLE HEAD OUND LUG AND VIBRATION DAMPENER.

MINUM FIXTURE WITH TYPE V. POLE MOUNT ARM. ALONE PASSIVE INFRARED MOTION SENSING. SENOR E PROGRAMMED THROUGH HAND HELD DEVICE USING 0 TALL, 4" SQUARE ALUMINUM POLE WITH 2 AT 180 RATION PAD, GROUND LUG AND VIBRATION DAMPENER. TO MOUNT FL2 FIXTURE.

![](_page_100_Figure_25.jpeg)

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![](_page_100_Figure_27.jpeg)

![](_page_100_Picture_28.jpeg)

![](_page_101_Figure_0.jpeg)

![](_page_102_Picture_0.jpeg)

### SPECIFICATIONS:

- 1) Specification 27 05 28 Pathways for Communications Systems
  - a) Deleted part 1.1.B.7 "Wire Mesh Cable Tray".
  - **b)** Deleted part 2.7 "WIRE MESH CABLE TRAY, SUPPORTS, AND ACCESSORIES". Wire mesh cable tray is not utilized within the project.
  - c) Deleted part 3.2 "CORRIDOR CABLE TRAY SYSTEM"
- 2) Specification 27 41 16 Integrated Audio Video Systems and Equipment
  - a) Deleted part 1.1.D.17 "Flat Panel Display Mobile Cart"
  - **b)** Deleted part 2.17 "FLAT PANEL DISPLAY MOBILE CART". Flat panel display mobile carts will be owner furnished and owner installed.

### **DRAWINGS**:

- 1) Sheet T201J FIRST FLOOR TECHNOLOGY PLAN UNIT J
  - a) Updated sheet note number 4 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- 2) Sheet T201K FIRST FLOOR TECHNOLOGY PLAN UNIT K
  - a) Updated sheet note number 3 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- 3) Sheet T202J SECOND FLOOR TECHNOLOGY PLAN UNIT J
  - a) Updated sheet note number 3 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- 4) Sheet T202K SECOND FLOOR TECHNOLOGY PLAN UNIT K
  - a) Updated sheet note number 1 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- 5) Sheet T202L SECOND FLOOR TECHNOLOGY PLAN UNIT L

- a) Updated sheet note number 3 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- 6) Sheet T202M SECOND FLOOR TECHNOLOGY PLAN UNIT M
  - a) Updated sheet note number 1 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- 7) Sheet T203 J THIRD FLOOR TECHNOLOGY PLAN UNIT J
  - a) Updated sheet note number 2 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- 8) Sheet T203K THIRD FLOOR TECHNOLOGY PLAN UNIT K
  - a) Updated sheet note number 1 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- 9) Sheet T203L THIRD FLOOR TECHNOLOGY PLAN UNIT L
  - a) Updated sheet note number 2 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- 10) Sheet T203M THIRD FLOOR TECHNOLOGY PLAN UNIT M
  - a) Updated sheet note number 1 to indicate flat panel display mobile carts and the flat panel displays mounted to flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.)
- **11)** Sheet T300 TELECOM DIAGRAMS
  - a) Revised detail #3 "TELECOM DISTRIBUTION DIAGRAM" to utilize new corridor J-hooks in lieu of new corridor cable tray. Corridor cable tray is not utilized within the project.
- 12) Sheet T306 AUDIO VISUAL DIAGRAMS
  - a) Added audio annotation symbols to the input side of both Office/Controls L102 and Cont M102 audio connection locations.
  - B) Reduced the number of XLR audio outputs from two to one at both Office/Controls L102 and Cont M102 audio connection locations to match the audio connection location detail on sheet T400.
  - c) Moved the rack mounted HDMI video output locations from the left side of the diagram to the right side of the diagram in order to accurately represent the connection point as an output
  - d) Added two additional rack mounted SDI video inputs.

- e) Reduced the number of SDI video outputs from two to one at both Office/Controls L102 and Cont M102 video connection locations to match the video connection location detail on sheet T400.
- f) Reduced the number of SDI video inputs from two to one at both Office/Controls L102 and Cont M102 video connection locations to match the video connection location detail on sheet T400.

13) Sheet T307 – AUDIO VISUAL DIAGRAMS

- **a)** Revised all monitor location labels to indicate wall mounted flat panel displays shall be contractor furnished and contractor installed (C.F.C.I.).
- **b)** Revised all flat panel display mobile cart labels to indicate flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.).
- c) Revised all flat panel display labels located within a flat panel display mobile cart box to indicate flat panel displays mounted to a flat panel display mobile cart shall be owner furnished and owner installed (O.F.O.I.).

14) Sheet T308 – AUDIO VISUAL DIAGRAMS

- a) Revised all monitor location labels on the Office L104 AV Diagram, Flex J140 and J234, Small Group, Conference J126 AV Diagram, and Atrium AV Diagram to indicate wall mounted flat panel displays shall be contractor furnished and contractor installed (C.F.C.I).
- **b)** Revised all flat panel display mobile cart labels on the Typical Classroom AV Diagram to indicate flat panel display mobile carts shall be owner furnished and owner installed (O.F.O.I.).
- c) Revised the flat panel display label located within the flat panel display mobile cart box on the Typical Classroom AV Diagram to indicate flat panel displays mounted to a flat panel display mobile cart shall be owner furnished and owner installed (O.F.O.I.).

### 15) Sheet T310 – AUDIO VISUAL RACK ELEVATIONS

- a) Revised the "Pool AV Rack Elevation" to reflect the addition of two rack mounted SDI video inputs.
- **b)** Updated the title of the "Atrium AV Rack Elevation" to "STOR J138 AV Rack Elevation" to indicate where the AV rack shall be installed.
- c) Updated the title of the "Pool AV Rack Elevation" to "AV L201 AV Rack Elevation" to indicate where the rack shall be installed.
- 16) Sheet T311 AUDIO VISUAL ELEVATIONS
  - a) Updated the title of the "55" Flat Panel Display Typical Sm Group AV Elevation" to "43" Flat Panel Display Typical Sm Group J200 and J300 AV Elevation"
- 17) Sheet T400 TECHNOLOGY DETAILS
  - a) Revised the video connection location detail from a double gang backbox and faceplate to a single gang backbox and faceplate. The video connection location now has one SDI video input and one SDI video output instead of two SDI video inputs

### **SHEET INDEX:**

- T201J FIRST FLOOR TECHNOLOGY PLAN UNIT J
- T201K FIRST FLOOR TECHNOLOGY PLAN UNIT K

- T202J SECOND FLOOR TECHNOLOGY PLAN UNIT J T202K – SECOND FLOOR TECHNOLOGY PLAN – UNIT K T202L – SECOND FLOOR TECHNOLOGY PLAN – UNIT L T203M – SECOND FLOOR TECHNOLOGY PLAN – UNIT M T203J – THIRD FLOOR TECHNOLOGY PLAN – UNIT J T203K – THIRD FLOOR TECHNOLOGY PLAN – UNIT K T203L – THIRD FLOOR TECHNOLOGY PLAN – UNIT K T203M – THIRD FLOOR TECHNOLOGY PLAN – UNIT L T203M – THIRD FLOOR TECHNOLOGY PLAN – UNIT M T300 – TELECOM DIAGRAMS T306 – AUDIO VISUAL DIAGRAMS T307 – AUDIO VISUAL DIAGRAMS T310 – AUDIO VISUAL DIAGRAMS T310 – AUDIO VISUAL RACK ELEVATIONS T311 – AUDIO VISUAL ELEVATIONS
- T400 TECHNOLOGY DETAILS

### SECTION 27 05 28 - PATHWAYS FOR COMMUNICATIONS SYSTEMS

### PART 1 - GENERAL

### 1.1 DESCRIPTION

- A. This section includes minimum requirements for the following:
  - 1. Interior Horizontal Cabling Communication Pathways.
  - 2. Exterior Backbone Cabling Communication Pathways
- B. Minimum requirements and installation methods for the following pathways:
  - 1. Conduit
  - 2. Underground Ducts and Raceways
  - 3. Telecommunications Outlet Boxes
  - 4. Wall Mounted Monitor Outlet Boxes
  - 5. Poke-Thru Devices
  - 6. Floor Boxes
  - 7. Cable Hangers
  - 8. Related work specified elsewhere:
    - a. Division 26 Electrical

### 1.2 QUALITY ASSURANCE

- A. All pathways and associated equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the architect and Owner's Project Manager. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where "approved equal" is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.
- B. Materials and work specified herein shall comply with the applicable requirements of:
  - 1. National Electric Code (NFPA 70) including the following Articles:
    - a. 318 Cable Trays
    - b. 331 Electrical Nonmetallic tubing
    - c. 348 Electrical metallic tubing
    - d. 349 Flexible metallic tubing
    - e. 350 Flexible metal conduit
    - f. 351 Liquid-Tight Flexible metal conduit and Liquid-Tight flexible nonmetallic conduit
    - g. 352A Surface Metal Raceways
    - h. 352B Surface Nonmetallic raceways
    - i. 353 Multi-outlet Assembly
    - j. 354 Underfloor raceways
    - k. 362 Metal Wireways and nonmetallic Wireways
    - I. 370 Outlet, Device, Pull and Junction Boxes, Conduit Bodies and Fittings
    - m. 645 Information Technology Equipment
    - n. 770 Optical Fiber Cables and Raceways
    - o. 800 Communications Circuits
  - 2. The following American National Standards Institute (ANSI) standards:

- a. ANSI-C80.3 Specification for Electrical Metallic Tubing, Zinc-coated
- 3. The following Telecommunication Industry Association (TIA) standards:
  - a. ANSI/TIA 568-B Commercial Building Telecommunications Cabling Standard
  - b. ANSI/TIA 569-A Commercial Building Standard for Telecommunications Pathway and Spaces
  - c. ANSI/TIA-606-B Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
  - d. ANSI/TIA-607 Commercial Building Grounding and Bonding requirements for Telecommunications
- 4. The following BICSI guidelines:
  - a. BICSI Telecommunications Distribution Design Manual (Most Recent Edition)
  - b. BICSI Telecommunications Cabling Installation Manual (Most Recent Edition)
- 5. The following UL standards:
  - a. UL 1, 2000 Flexible Metal Electrical Conduit
  - b. UL 3, 1999 Flexible Nonmetallic Tubing for Electric Wiring
  - c. UL 5, 1996 Surface Metal Electrical Raceways and Fittings
  - d. UL 360, 1996 Liquid-Tight Flexible Steel Conduit, Electrical
  - e. UL 514B, 1996 Fittings for Conduit and Outlet Boxes
  - f. UL 797, 1997 Electrical Metallic Tubing
  - g. UL 870, 1995 Electrical Wireways, Auxiliary Gutters and Associated Fittings

### 1.3 SUBMITTALS

A. Contractors shall provide product data for the all the equipment specified herein.

### PART 2 - PRODUCTS

- 2.1 CONDUIT
  - A. All telecommunications conduits and boxes are provided for under Division 26. All infrastructure requirements shall at a minimum meet the details and pathways illustrated within the T-series sheets.
- 2.2 UNDERGROUND DUCTS AND RACEWAY
  - A. Ducts shall be HDPE or Schedule 40 PVC, 3" minimum ID nominal trade size, unless noted otherwise.
  - B. All telecommunications underground ducts and raceways are provided for under Division 26. All infrastructure requirements shall at a minimum meet the details and pathways illustrated within the T-series sheets.
- 2.3 TELECOMMUNICATIONS OUTLET BOXES
  - A. Boxes shall be a minimum of 4 11/16" W x 4 11/16"" L x 2 1/8" D.
  - B. Each box shall include the properly sized device rings as required by the contract drawings.
- C. All infrastructure requirements shall at a minimum meet the details and pathways illustrated within the T-series sheets.
- D. Acceptable Manufacturers:
  - 1. Raco
  - 2. Steel City
  - 3. Or Approved Equal

#### 2.4 WALL MOUNTED MONITOR OUTLET BOXES

- A. Boxes shall be FSR PBW-250-2KO-BX back boxes and provided for under Division 26
- B. Each box shall be provided with required cover to conceal the opening.
- C. All infrastructure requirements shall at a minimum meet the details and pathways illustrated within the T-series sheets.
- D. Acceptable Manufacturers:
  - 1. Raco
  - 2. Steel City
  - 3. Or Approved Equal

#### 2.5 POKE-THRU DEVICES

- A. All poke thru devices are provided for under Division 26. All infrastructure requirements shall at a minimum meet the details and pathways illustrated within the T-series sheets.
- 2.6 FLOOR BOXES
  - A. All floor boxes are provided for under Division 26. All infrastructure requirements shall at a minimum meet the details and pathways illustrated within the T-series sheets.

#### 2.7 CABLE HANGERS

- A. Provide prefabricated, zinc coated, carbon steel wide base hangers designed specifically for data communications and audio visual cable installations.
- B. Hanger and supports must be NRTL (Nationally Recognized Testing Laboratories) labeled for support of Category 6 and Category 6a cabling.
- C. Hangers shall have open top, rolled edges and a 2" to 4" minimum diameter loop as required.
- D. Provide beam clamps, rod fasteners, flange clips and brackets as job conditions require.
- E. Acceptable Manufacturers:
  - 1. Cooper B-Line
  - 2. Erico
  - 3. Panduit
  - 4. Or Equal

#### PART 3 - EXECUTION

#### 3.1 GENERAL REQUIREMENTS

- A. The intention of the telecommunications conduits is to provide a route between ER and TR rooms, routes from the TR's throughout building floors to hallways, hand routes from hallway distribution systems into rooms to individual drop locations for telecommunications cabling.
- B. Support raceways from building construction. Do not support raceways from ductwork piping, or equipment hangers.
- C. Support outlet, pull, and junction boxes independently from building construction. Do not support from raceways.
- D. Coordinate all raceway runs with other trades.
- E. All open raceways shall be installed away from any light fixture or other source of EMI (Electromagnetic interference).
  - 1. Open cables and cables in nonmetallic raceways and unshielded power:
    - a. Electrical less than 2 kVa 5 inch minimum
    - b. Electrical 2 to 5 kVa 12 inch minimum
    - c. Electrical greater than 5 kVa 24 inch minimum
  - 2. Cables in grounded metallic raceways and unshielded power:
    - a. Electrical less than 2 kVa 2-1/2 inch minimum
    - b. Electrical 2 to 5 kVa 6 inch minimum
    - c. Electrical greater than 5 kVa 12 inch minimum
  - 3. Cables in grounded metallic raceways and shielded power:
    - a. Electrical less than 2 kVa 1 inch minimum
    - b. Electrical 2 to 5 kVa 3 inch minimum
    - c. Electrical greater than 5 kVa 6 inch minimum
  - 4. Cables and electrical motors and transformers 5 kVa or larger 48 inches
  - 5. Cables and fluorescent fixtures 5 inches
- F. All horizontal pathways shall be bonded and grounded per the NEC Article 250.
- G. In all cases, horizontal pathways shall be sized for a minimum of 60% future growth.
- H. Horizontal distribution cables shall be bundled in groups of no more than 50 cables. Cable bundle quantities in excess of 50 cables may cause deformation of the bottom cables within the bundle and degrade cable performance.
- 3.2 CONDUIT
  - A. All telecommunications conduit shall be installed as required under Division 26 and detailed on the T-series sheets.

#### 3.3 CONDUIT SLEEVES

A. Install an appropriately sized Conduit Waterfall on all conduit sleeves containing cables that transition more than 6" vertically from the sleeve down to another raceway (conduit or cable tray).

- B. Install Nylon Cable Protectors in conduits where large amounts of cables enter/exit the conduit system creating pressure on the cables on the leading conduit edge. These protectors would not be used on conduits where Conduit Waterfall is required (more than 6" of vertical drop).
- C. Install EZ Path or similar sleeves where cables must penetrate fire-rated walls between sections of skeletal conduit or cable tray sections.

#### 3.4 CABLE HANGERS

- A. J-hooks shall be installed per ANSI/EIA/TIA 569 Commercial Building Standards for Telecommunications Pathways and Spaces.
- B. Provide cable hangers a maximum of 3' on center wherever cable tray or conduit is not present.
- C. Load hangers as recommended by the manufacturer. Provide hangers side by side on a common bracket where cable quantities require.
- D. Do not install cables loose above lock-in type, drywall or plaster ceilings.
- E. Cables shall be installed at least six (6) inches above the ceiling tiles and shall not touch the ceiling.
- F. Do not support cable from ceiling system tie wires or grid in fire rated systems.

#### 3.5 TELECOMMUNCATIONS OUTLET BOXES

- A. All boxes shall be flush mounted within walls unless otherwise noted.
- B. Contractor shall install all boxes and device rings according the manufacturer recommendations and requirements.
- C. Boxes shall be installed at the height as shown on the contract drawings or at the same height as all other electrical outlet locations within the space.

#### 3.6 SUPPORTING DEVICES

- A. Provide steel angles, channels and other materials necessary for the proper support of wallmounted cabinets, racks, panels, etc.
- B. Cabinets, large pull boxes, and cable support boxes shall be secured to ceiling and floor slab and not supported from conduits. Small equipment boxes, etc., as approved by the Architect and Project Manager, may be supported on walls.
- C. Racks for support of conduit and heavy equipment shall be secured to building construction by substantial structural supports.

#### 3.7 FIRE STOPS

- A. In all buildings, floor/ceiling assemblies, stairs, and elevator penetrations must be sealed with a 2-hour fire stop assembly at a minimum, unless otherwise noted.
- B. Contact Architect to identify walls which are fire-rated construction. Walls must be sealed with a 2-hour fire stop assembly at a minimum.

- C. Communication pathways requiring fire stopping shall utilize removable/re-usable fire stopping putties for ease of Moves, Adds, and Changes.
- D. All fire stopping penetrations shall conform to the recommended practices listed in UL1479 or ASTM E814 and must be labeled with the UL1479 or ASTM E814 reference number, dated, and signed by the technician who installed the fire stopping material.

## 3.8 UNDERGROUND DUCTS AND RACEWAYS

- A. Ducts shall be trenched or directional bored and installed with a minimum of 36" of cover.
- B. Ducts shall be installed a minimum of 12" from electrical conduits.
- C. Corners and bends of duct runs shall be installed with long radius sweeps.
- D. Ducts shall be installed with a minimum of 3" of fall per 100' toward maintenance holes and away from buildings.
- E. If necessary, orange magnetically detectable warning tape shall be installed above the top of the duct bank, no less than 18" below ground level and no more than 5 feet below ground level.
- F. Ducts shall be terminated into precast cutout locations.
- G. Ducts penetrating manholes, precast handholes, and building entrance wall penetrations which do not land in a pull box, must be terminated flush to the wall(s) using bell ends.
- H. Building entrance ducts which penetrate the floor must extend high enough up for installation of a bushing to protect the cable sheath from the edges of the conduits, but not much higher in order to allow for routing of cables leaving the conduits.
- I. Duct shall be sealed around their outer edges with hydraulic cement to prevent leakage into manholes and handholes.
- J. Unused ducts shall be plugged at both ends using compression type fittings.
- K. Seal maintenance hole penetrations using hydraulic cement.
- L. Installed Duct Penetration
  - 1. Pull round wood or steel test mandrel of recommended size through each duct from both directions to remove obstructions.
  - 2. Pass a wire brush mandrel and/or a rubber duct swab of appropriate size through each duct until all foreign materials and water are removed.
  - 3. Locate wire shall be integrated in the fabric sub duct in one duct of each conduit run and terminate on collar of manholes for easy access.

END OF SECTION 27 05 28

#### SECTION 27 41 16 - INTEGRATED AUDIO VIDEO SYSTEMS AND EQUIPMENT

#### PART 1 - GENERAL

- 1.1 SCOPE OF WORK
- A. This section includes the minimum requirements for the installation, configuration, and training of the audio visual components as depicted on the Drawings and required by these specifications.
- B. These Specifications, together with the Drawings accompanying them, are intended to depict the installation requirements necessary to support this Project. Contractor shall furnish materials shown and/or called for on the Drawings but not mentioned in the Specifications, or vice versa, that are necessary for the installation and support of communications cabling, whether or not specifically called for in both. In addition, Contractor shall provide incidental equipment and materials required for the completion of systems included in this contract whether or not specified or shown on the drawings.
- C. All required cabling infrastructure including back boxes and conduit to support the AV systems are provided and installed by others. Contractor is required to provide, install, test, and configure all cabling, equipment, and AV systems as described within this specification and as shown on the T-series drawings.
- D. This section includes minimum requirements for the following:
  - 1. Matrix Transmitter
  - 2. Matrix Receiver Type 1
  - 3. Matrix Receiver Type 2
  - 4. HDMI to SDI Converter
  - 5. Wireless Presentation Receiver
  - 6. AV Matrix Switcher Type 1
  - 7. AV Matrix Switcher Type 2
  - 8. Video Router
  - 9. AV Network Switch
  - 10. Control Panel
  - 11. Touch Panel Type 1
  - 12. Touch Panel Type 2
  - 13. Wireless Controller
  - 14. Partition Sensor
  - 15. Flat Panel Display
  - 16. Flat Panel Display Mount
  - 17. Bluetooth Receiver
  - 18. Bluetooth Audio Expander
  - 19. Network Audio Input Expander
  - 20. Network Audio Output Expander
  - 21. Wireless Microphone Receiver
  - 22. Antenna Distribution System
  - 23. Digital Signal Processor Type 1
  - 24. Digital Signal Processor Type 2
  - 25. Hearing Assistance System
  - 26. Power Amplifier Type 1
  - 27. Power Amplifier Type 2
  - 28. Loudspeaker Type 1
  - 29. Loudspeaker Type 2
  - 30. Loudspeaker Type 3
  - 31. Speaker Rigging Components
  - 32. Power Conditioner
  - 33. AV Equipment Rack Type 1

- 34. AV Equipment Rack Type 2
- 35. AV Equipment Rack Type 3
- 36. AV Equipment Rack Blanks
- 37. AV Equipment Rack Vents

#### 1.2 QUALITY ASSURANCE

- A. The following industry Standards are the basis for the audio-visual system described herein. The list is incorporated by this reference to them.
  - 1. ANSI American National Safety Institute
  - 2. ASTM American Society of Testing and Materials
  - 3. EIA Electronics Industries Association
  - 4. FCC Federal Communications Commission
  - 5. NEMA National Electrical Manufacturer's Association
  - 6. OSHA Occupational Safety and Health Administration
  - 7. NEC National Electric Code.
  - 8. NFPA National Fire Protection Association.
  - 9. IEEE Institute of Electrical and Electronics Engineers.
  - 10. ISO International Standards Organization.
  - 11. UL Underwriters Laboratories
  - 12. Davis and Davis, Sound System Engineering (2nd Edition), Howard W. Sams, 1987
  - 13. Giddings, Audio System Design and Installation (ASDI), Howard W. Sams, 1990
- B. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Design 27 Project Manager. Equipment and materials shall be of the quality and manufacturer indicated. The equipment specified is based upon the acceptable manufacturers listed. Where "Or equal" is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.
- C. Materials and work specified herein shall comply with the requirements of the local Authority Having Jurisdiction.
- D. Contractor should have the following qualifications:
  - 1. Experienced in the installation of systems similar in complexity and scale to those included within the scope of work. If requested, the Contractor shall provide the names, locations, and points of contact for at least three installations of the type and complexity specified herein.
  - 2. Within the last two (2) years, installed an audio-visual system with similar equipment and functionality.
  - 3. Have at least one (1) person on staff with CTS-I certification.

#### 1.3 SUBMITTALS

- A. Within 15 days after notice to proceed, submit manufacturers' catalog sheets, specifications and installation instructions for all products to be installed within the scope of work to verify that submitted components comply with Contract Documents.
- B. Within 30 days after notice to proceed, submit one (1) set of electronic shop drawings for approval.
  - 1. Provide the following within the shop drawings:

- a. Floor plans, RCPs, section views, and details illustrating equipment location including, but not limited to, equipment racks, projection screens, connection panels, flat panel displays, and loudspeakers. Drawings should be at no less than 1/8"=1'-0" scale.
- b. Detail wiring diagrams showing interconnection between equipment devices. Include cable labeling, cable types, connector types and termination details, wiring color codes, and equipment manufacturer and models.
- c. Loudspeaker, video projector, projection screen, and flat panel mounting details including hardware type, material, and load capacity. For all equipment mounted overhead, mounting details and design calculations shall be signed and sealed by a professional structural engineer licensed to practice in the State of Indiana.
- d. Dimensioned plate and panel details that are custom for the project. Details to include dimensioned locations of components, component type, engraving information, bill of materials, and plate finish and color.
- e. Rack elevations showing equipment layout within racks with dimensions.
- f. Wiring schedule showing source and destination of wiring and indicating whether wire is in conduit or cable tray.
- g. Refer to section 27 05 00 part 1.6.B for additional requirements and clarification.

#### 1.4 CLOSE-OUT DOCUMENTS

- A. Provide close-out documents in accordance with the General Conditions unless otherwise indicated:
  - 1. Provide the following for products incorporated into the final installation:
    - a. Manufacturer's data for each type of product. Include manufacturer's serial numbers within the list of product.
    - b. Each products Owner/Instruction Manual. Provide high quality copies where necessary, with all text legible and illustrations of equal resolution and sharpness as the original manual. Faxed copies or copies with portions of the information missing or smeared not acceptable.
  - 2. Provide as-built drawings depicting what is actually incorporated within the project delivered as electronic files. All text within drawings shall be legible.
  - 3. Provide recorded test reports of Contractor commissioning.
  - 4. Prepare and provide a complete and typical procedure for the operation of the equipment as a system including:
    - a. Describe the operation of system capabilities.
    - b. Assume the intended reader of the manual to be technically inexperienced and unfamiliar with this facility.
  - 5. Any other pertinent data generated during the project or required for future service.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Equipment and components shall arrive onsite properly protected and undamaged with containers, packaging and labels intact.
- B. Store, handle and protect materials and equipment in accordance with Manufacturer's recommendations.

- C. Store materials and equipment in dry, environmentally controlled space. Do not install equipment and materials until spaces are enclosed, watertight, and dry. Protect equipment from dust and other airborne materials.
- D. Provide additional protection during handling as necessary to prevent breaking, scraping, marring, or otherwise damaging products or surrounding areas.
- E. Protect all equipment and components that are to be installed within this project from theft, vandalism, and exposure to rain, freezing temperatures and direct sunlight.
- F. Protect installed equipment and components from damage and prevent use by unauthorized persons.

#### 1.6 WARRANTY

- A. The Contractor shall warrantee the completed work for a period of one (1) year, from the date of acceptance of the work, to be free of defect in design, workmanship, or material.
- B. Contractor shall repair, adjust, and/or replace, whichever the Owner determines to be in its best interests, any defective equipment, materials, or workmanship, as well as such parts of the work damaged or destroyed by such defect, during the warranty period, at the Contractor's sole cost and expense. If parts or components need to be repaired, then a loaner will be supplied and installed until the part or component can be repaired and reinstalled.
- C. All service work shall be performed by manufacturer certified technicians.
- D. Contractor to provide Owner a phone number for technical support. All support calls shall be answered within twenty-four (24) hours. All repairs shall be underway within forty-eight (48) hours and completed (or loaner supplied) within seven (7) days.
- E. At the end of the warranty period, the Contractor shall complete one (1) site visit to evaluate the status of the audio-visual systems. All equipment within this scope of work found to be defective shall be replaced at no cost to the Owner.
- F. Guarantees of material, equipment, and workmanship running in favor of the Contractor shall be transferred and assigned to the Owner on completion of the work and acceptance of said work by the Owner.

#### PART 2 - PRODUCTS

#### 2.1 MATRIX TRANSMITTER

- A. Shall meet or exceed the following specifications:
  - 1. Shall be capable of accepting digital video input.
  - 2. Shall be capable of transmitting audio and video over STP cabling.
  - 3. Shall have a minimum of one (1) HDMI input.
  - 4. Shall have a minimum of one (1) STP output.
  - 5. Shall support resolutions up to and including 1920x1200 or higher.
  - 6. Shall be HDCP compliant.
  - 7. Shall be single-gang decora.
  - 8. Coordinate color with architect.
  - 9. Acceptable Manufacturers:
    - a. Crestron DM-TX-4KZ-100-C-1G-B-T

b. Or Equal

#### 2.2 MATRIX RECEIVER TYPE 1

- A. Shall meet or exceed the following specifications:
  - 1. Shall be capable of distributing digital video.
  - 2. Shall have a STP cabling input.
  - 3. Shall have a minimum of one (1) HDMI output with RS-232 control.
  - 4. Shall support resolutions of up to and including 1920x1200 or higher.
  - 5. Shall be HDCP compliant.
  - 6. Acceptable Manufacturers:
    - a. Crestron DM-RMC-4KZ-100-C
    - b. Or Equal

#### 2.3 MATRIX RECEIVER TYPE 2

- A. Shall meet or exceed the following specifications:
  - 1. Shall be capable of distributing digital video.
  - 2. Shall have a HDBaseT cabling input.
  - 3. Shall have a minimum of one (1) HDMI output with RS-232 control.
  - 4. Shall support resolutions of up to and including 1920x1200 or higher.
  - 5. Shall be HDCP compliant.
  - 6. Acceptable Manufacturers:
    - a. AVPro Edge AC-EX70-444-RNE
    - b. Or Equal

## 2.4 HDMI TO SDI CONVERTER

- A. Shall meet or exceed the following specifications:
  - 1. Shall have at least one (1) HDMI input.
  - 2. Shall have at least one (1) minimum 3G-SDI output.
  - 3. Shall have an AC power supply.
  - 4. Shall support resolutions of up to and including 1920x1200 or higher.
  - 5. Shall be HDCP compliant.
  - 6. Acceptable Manufacturers:
    - a. Blackmagic Design
    - b. Decimator Design
    - c. AJA
    - d. Or Equal

#### 2.5 WIRELESS PRESENTATION RECEIVER

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of one (1) RJ-45 LAN connection.
  - 2. Shall have a minimum of one (1) HDMI output.
  - 3. Shall have a minimum of one (1) USB 2.0 host type A.
  - 4. Shall support resolutions of up to and including 1920x1080 or higher.
  - 5. Shall support Miracast.

- 6. Shall be capable of a minimum of two (2) simultaneous users at once.
- 7. Provide necessary adapters and accessories as required.
- 8. Acceptable Manufacturers:
  - a. Airtame 2
  - b. AirCord
  - c. Airtame Ethernet Adapter

#### 2.6 AV MATRIX SWITCHER TYPE 1

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of two (2) HDMI inputs.
  - 2. Shall have a minimum of twelve (12) STP inputs.
  - 3. Shall have a minimum of twelve (12) STP outputs.
  - 4. Shall have a minimum of two (2) balanced stereo audio outputs.
  - 5. Shall support resolutions up to and including 1920x1200 or higher.
  - 6. Shall have a minimum of one (1) RJ-45 LAN or RS-232 connection for control.
  - 7. Shall be HDCP compliant.
  - 8. Acceptable Manufacturers:
    - a. Crestron DM-MD16X16-CPU3 with required input and output cards
    - b. Or Equal
- 2.7 AV MATRIX SWITCHER TYPE 2
- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of two (2) HDMI inputs.
  - 2. Shall have a minimum of three (3) HDBaseT outputs.
  - 3. Shall have a minimum of one (1) HDMI output.
  - 4. Shall have a minimum of one (1) balanced stereo audio output.
  - 5. Shall support resolutions up to and including 1920x1200 or higher.
  - 6. Shall have a minimum of one (1) RJ-45 LAN or RS-232 connection for control.
  - 7. Shall be HDCP compliant.
  - 8. Acceptable Manufacturers:
    - a. AVPro Edge AC-MX-44HDBT
    - b. Or Equal

#### 2.8 VIDEO ROUTER

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of twelve (12) 3G-SDI inputs.
  - 2. Shall have a minimum of twelve (12) 3G-SDI outputs.
  - 3. Shall support formats up to and including 1080p at 60 Hz
  - 4. SDI connections shall support 24 bit 48kHz audio sampling
  - 5. Shall have a minimum of one (1) reference input and one (1) reference output
  - 6. Shall have a minimum of one (1) RJ-45 LAN
  - 7. Acceptable Manufacturers:
    - a. Blackmagic Design Videohub 20x20 12G
    - b. AJA KUMO 1616
    - c. Or Equal

#### 2.9 AV NETWORK SWITCH

- A. Shall meet or exceed the following specifications:
  - 1. Shall have quantity of Ethernet ports required to support audio-visual systems as shown on the T-series drawings.
  - 2. Shall be manageable.
  - 3. Shall be 1RU rack mountable.
  - 4. Acceptable Manufacturers:
    - a. Q-SYS NS Series Gen 2
    - b. Or Equal
- 2.10 CONTROL PANEL
- A. Shall meet the following specifications:
  - 1. Shall have one (1) RS-232 connection.
  - 2. Shall be able to control the following functionality: volume up/down, source selection, and system power on/off.
  - 3. Shall have a minimum of eight (8) programmable buttons.
  - 4. Provide power supply as required.
  - 5. Acceptable Manufacturers:
    - a. Crestron BPC-8
    - b. Or Equal

#### 2.11 TOUCH PANEL TYPE 1

- A. Shall meet the following specifications:
  - 1. Shall have ethernet monitoring and control.
  - 2. Shall have a capacitive touch screen interface.
  - 3. Shall have a resolution of 1920x1200.
  - 4. Shall be 10.1" diagonal.
  - 5. Shall have a contrast ratio of 800:1
  - 6. Provide all necessary hardware and brackets required for installation as shown on the Tseries drawings.
  - 7. Confirm color with architect.
  - 8. Acceptable Manufacturers:
    - a. Q-SYS TSC-101-G3
    - b. Or Equal

#### 2.12 TOUCH PANEL TYPE 2

- A. Shall meet the following specifications:
  - 1. Shall have ethernet monitoring and control.
  - 2. Shall have a capacitive touch screen interface.
  - 3. Shall have a resolution of 1280x800.
  - 4. Shall be 7" diagonal.
  - 5. Shall have a contrast ratio of 850:1
  - 6. Provide all necessary hardware and brackets required for installation as shown on the T-series drawings.

- 7. Confirm color with architect.
- 8. Acceptable Manufacturers:
  - a. Q-SYS TSC-70-G3
  - b. Or Equal

## 2.13 WIRELESS CONTROLLER

- A. Shall meet the following specifications:
  - 1. Shall have a minimum 10" diagonal screen.
  - 2. Shall have a minimum resolution of 1920 x 1080.
  - 3. Shall support capacitive touch interface.
  - 4. Shall support Q-SYS control application. Contractor shall be responsible for providing and configuring control applications.
  - 5. Shall communicate wirelessly with AV control system.
  - 6. Acceptable Manufacturers:
    - a. Apple
    - b. iPort Luxeport Base
    - c. iPort Luxeport Sleeve compatible with wireless controller
    - d. Or Equal

#### 2.14 PARTITION SENSOR

- A. Shall meet the following specifications:
  - 1. Provide all hardware and mounting brackets to monitor overhead garage door.
  - 2. Shall utilize diffuse reflective beaming.
  - 3. Shall have adjustable IR sensitivity.
  - 4. Shall utilize GPIO connectivity.
  - 5. Include transmitter and receiver for partition sensor.
  - 6. Acceptable manufacturers:
    - a. Lutron GrafikEye GRX-IRPS-WH
    - b. Or Equal

#### 2.15 FLAT PANEL DISPLAY

- A. Shall meet or exceed the following specifications:
  - 1. Shall support resolutions up to and including 1920x1080p, 60 Hz.
  - 2. Shall be LED Backlit.
  - 3. Shall have a minimum contrast ratio of 5000:1.
  - 4. Shall have a minimum brightness of 350 cd/m²
  - 5. Shall be RS-232 controllable.
  - 6. Shall be commercial grade. Consumer grade displays are not acceptable.
  - 7. Shall have integrated smart TV app compatibility (i.e. youtube app).
  - 8. "MON" (Monitor locations within the T-series drawings) displays shall be 18/5 rated.
  - 9. "DS" (Digital Signage locations within the T-series drawings) displays shall be 24/7 rated.
  - 10. Reference T-series drawings for display sizes.
  - 11. Reference AV diagrams for locations where panels are to be installed.
  - 12. Acceptable Manufacturers:
    - a. Samsung

- b. LG
- c. Sony
- d. Panasonic
- e. Or equal

## 2.16 FLAT PANEL DISPLAY MOUNT

- A. Shall meet or exceed the following specifications:
  - 1. Shall support weight of associated display.
  - 2. Shall be non-articulating mount.
  - 3. Shall have an adjustable tilt of +5 or -20 degrees.
  - 4. Shall provide access to backbox without removing mount.
  - 5. Mount shall be selected to ensure total depth of flat panel display and mount does not exceed 4" from the wall.
  - 6. Acceptable Manufacturers:
    - a. Chief
    - b. Peerless-AV
    - c. AvTeq
    - d. Or equal

#### 2.17 BLUETOOTH RECEIVER

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of one (1) STP output.
  - 2. Shall support playback of WAV, MP3, and AAC files.
  - 3. Shall provide Bluetooth capability.
  - 4. Shall provide push button to sync device to Bluetooth.
  - 5. Shall come in a wall plate form factor.
  - 6. Confirm color/finish with architect.
  - 7. Acceptable Manufacturers:
    - a. Q-SYS Axiom BT1
    - b. Or Equal

#### 2.18 BLUETOOTH AUDIO EXPANDER

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of one (1) STP input.
  - 2. Shall have a minimum of one (1) balanced stereo analog audio output.
  - 3. Shall support playback of WAV, MP3, and AAC files.
  - 4. Acceptable Manufacturers:
    - a. Q-SYS Axiom AXPio
    - b. Or Equal

### 2.19 NETWORK AUDIO INPUT EXPANDER

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of four (4) line level inputs.
  - 2. Shall convert analog audio to networked audio.

- 3. Shall be daisy-chainable to other modules.
- 4. Shall be rack mountable.
- 5. Acceptable Manufacturers:
  - a. Q-SYS QIO-ML4i
  - b. Or Equal

#### 2.20 NETWORK AUDIO OUTPUT EXPANDER

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of four (4) line level outputs.
  - 2. Shall convert networked audio to analog audio.
  - 3. Shall be daisy-chainable to other modules.
  - 4. Shall be rack mountable.
  - 5. Acceptable Manufacturers:
    - a. Q-SYS QIO-L4o
    - b. Or Equal

#### 2.21 WIRELESS MICROPHONE RECEIVER

- A. Shall meet or exceed the following specifications:
  - 1. Shall utilize a 64 MHz bandwidth
  - 2. Shall provide digital predictive switching for true diversity.
  - 3. Shall have up to 60 frequency presets available.
  - 4. Shall provide automatic frequency scanning.
  - 5. Transmitters and receivers shall utilize a metal housing.
  - 6. Coordinate operating frequency with local RF environment.
  - 7. Acceptable Manufacturers:
    - a. Shure QLXD4
    - b. Shure QLXD2/SM58 (Quantity: 2 per receiver)
    - c. Shure SB900B Rechargeable Battery (Quantity: 1 per device)
    - d. Shure SBC200 Dual Charging Case (Quantity: 1 per every 2 handheld mics)
    - e. Shure QLXD1 (Quantity: 1 per receiver)
    - f. Shure WH20 (Quantity: 1 per receiver)
    - g. Shure UA8 (Quantity: 2 per receiver)
    - h. Or Equal

#### 2.22 ANTENNA DISTRIBUTION SYSTEM

- A. Shall meet or exceed the following specifications:
  - 1. Shall operate in the 470 MHz to 690 MHz radio frequency range
  - 2. Shall have a minimum of one (1) BNC RF input per channel
  - 3. Shall have a minimum of four (4) BNC RF outputs per channel
  - 4. Shall have a minimum of four (4) DC power outputs for compatible wireless audio transmitters or receivers
  - 5. All BNC RF outputs and inputs shall have 50 ohm impedance
  - 6. Shall have a metal housing.
  - 7. Provide necessary adapters and accessories as required. Refer to the T-series drawings.
  - 8. Acceptable Manufacturers:

- 1) Shure UA844+SWB/LC
- 2) Shure UA834WB in-line antenna amplifier
- 3) Shure UA8 omni antenna
- 4) Shure U874US directional antenna
- 5) Or equal

#### 2.23 DIGITAL SIGNAL PROCESSOR TYPE 1

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of eight (8) channels of balanced inputs, and eight (8) channels of balanced outputs with AEC.
  - 2. Shall provide an open architecture for signal routing.
  - 3. Shall support a minimum of 32x32 channels of Dante audio capability.
  - 4. Shall have VoIP interface.
  - 5. Shall have a maximum input level of +24dBu and maximum output level of +20 dBU
  - 6. Shall have a minimum dynamic range of 108dB
  - 7. Shall have a minimum frequency response range of 20Hz 20000Hz
  - 8. Control software to include, but not limited to: matrix mixers, limiters, gain adjustment, delay, parametric equalizers, crossovers, and compressors.
  - 9. Provide Dante licensing as required.
  - 10. Acceptable Manufacturers:
    - a. QSC Core 110f
    - b. Or Equal

### 2.24 DIGITAL SIGNAL PROCESSOR TYPE 2

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of eight (8) balanced flex channels (input or output) with AEC.
  - 2. Shall provide an open architecture for signal routing.
  - 3. Shall support a minimum of 32x32 channels of Dante audio capability.
  - 4. Shall have VoIP interface.
  - 5. Shall have a maximum input level of +24dBu and maximum output level of +20 dBU
  - 6. Shall have a minimum dynamic range of 108dB, 20Hz 20000Hz
  - 7. Control software to include, but not limited to: matrix mixers, limiters, gain adjustment, delay, parametric equalizers, crossovers, and compressors.
  - 8. Provide Dante licensing as required.
  - 9. Acceptable Manufacturers:
    - a. QSC Core 8 Flex
    - b. Or Equal

#### 2.25 HEARING ASSSITANCE SYSTEM

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum of one (1) balanced XLR audio input and one (1) unbalanced stereo RCA input.
  - 2. Shall have an internal audio compressor.
  - 3. Shall have an operating frequency of 216MHz.
  - 4. Shall have a maximum output power of 100mW.
  - 5. Provide remote antenna as shown on the T-series drawings.
  - 6. Provide quantity and type of receivers to meet ADA requirements.

- 7. Provide charging carrying case to accommodate all receivers.
- 8. Acceptable Manufacturers:
  - 1) Listen Tech LT-800-216
  - 2) Listen Tech LA-122
  - 3) Listen Tech LR-4200-216 (Quantity: 8)
  - 4) Listen Tech LA-164 (Quantity: 8)
  - 5) Listen Tech LA-165 (Quantity: 8)
  - 6) Listen Tech LA-438 (Quantity: 8)
  - 7) Listen Tech LA-311 (Quantity: 1)
  - 8) Listen Tech LA-362 (Quantity: 8)
  - 9) Or equal

## 2.26 POWER AMPLIFIER TYPE 1

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a minimum continuous power rating of 200 watts into 70 volts per channel.
  - 2. Shall provide two channels of high impedance amplification in bridged mono.
  - 3. Shall provide protection of circuit components in the event of over-drive, output overload, or short circuits.
  - 4. Shall have a maximum of 0.1% THD from 20Hz 20000Hz.
  - 5. Shall have a signal to noise ratio of at least 100dB.
  - 6. Shall have a maximum input level of +20dBu.
  - 7. Acceptable Manufacturers:
    - a. Extron XPA U 1004 SB
    - b. Or equal

#### 2.27 POWER AMPLIFIER TYPE 2

- A. Shall meet or exceed the following specifications:
  - 1. Shall have a continuous power rating of a minimum of 1250 watts into an 8 ohm or 70V load per channel.
  - 2. Shall provide four channels of amplification.
  - 3. Shall provide protection of circuit components in the event of over-drive, output overload, or short circuits.
  - 4. Shall have a maximum of 0.05% THD from 20Hz 20000Hz.
  - 5. Shall have a signal to noise ratio of at least 106dB.
  - 6. Shall have a maximum input level of +27dBu.
  - 7. Acceptable Manufacturers:
    - a. QSYS CX-Q 4K4
    - b. Or equal

#### 2.28 LOUDSPEAKER TYPE 1

- A. Shall meet or exceed the following specifications:
  - 1. Shall be a two-way configuration with an 8" LF driver and 32mm dome tweeter.
  - 2. Shall have a coverage pattern of 115° conical.
  - 3. Shall have a nominal continuous power handling of no less than 175W at 7 ohms.
  - 4. Shall have a sensitivity of no less than 94dB.
  - 5. Shall have a frequency response of 75Hz 20000Hz ±10dB.

- 6. Shall have 70V tap. Tap loudspeaker as shown on T-series drawings.
- 7. Provide all necessary hardware and brackets required for installation.
- 8. Verify color with Architect.
- 9. Acceptable Manufacturers:
  - a. Biamp DX-IC8
  - b. Or equal

#### 2.29 LOUDSPEAKER TYPE 2

- A. Shall meet or exceed the following specifications:
  - 1. Shall be a two-way coaxial configuration with a 5.25" LF driver and two 0.75" splayed dome tweeters.
  - 2. Shall have a coverage pattern of 180° conical.
  - 3. Shall have a power rating of no less than 100W.
  - 4. Shall have a sensitivity of no less than 88dB.
  - 5. Shall have a frequency response of 68Hz 18000Hz ±3dB.
  - 6. Shall have 70V tap. Tap loudspeaker as shown on T-series drawings.
  - 7. Provide all necessary hardware and brackets required for installation.
  - 8. Coordinate color and finish with the architect.
  - 9. Acceptable Manufacturers:
    - a. JBL Control HST
    - b. Or equal
- 2.30 LOUDSPEAKER TYPE 3
- A. Shall meet or exceed the following specifications:
  - 1. Shall be a two-way coaxial configuration with a 12" LF driver and a 1.4" HF driver.
  - 2. Shall have a coverage pattern of 90° H x 90° V.
  - 3. Shall have a power rating of no less than 600W.
  - 4. Shall have a sensitivity of no less than 94dB.
  - 5. Shall have a frequency response of 36Hz 19000Hz ±3dB.
  - 6. Shall be IP55 outdoor rated.
  - 7. Provide all necessary hardware and brackets required for installation.
  - 8. Coordinate color and finish with the architect.
  - 9. Acceptable Manufacturers:
    - a. Biamp IP6-1122WR/99
    - b. Or equal

## 2.31 SPEAKER RIGGING COMPONENTS

- A. Contractor shall provide and install speaker rigging components as necessary to mount main loudspeakers as shown on the T-series drawings.
- B. Structural support members to have a safety factor of at least 5. Mounting hardware and wire rope to have a safety factor of 8. All fasteners to be graded and certified for use in the intended applications. Overhead suspension hardware shall comply with ASME B30.20 standards and all applicable local building and safety codes.
- C. Overhead suspension hardware must be of a type that includes product traceability controls.

- D. Rigging, mounting and support systems for loudspeakers shall be designed and sealed by a registered professional engineer licensed to practice in the State of Indiana. Once the systems are installed, the engineer shall physically inspect the methods and means used to verify compliance with the original design.
- E. Loudspeaker Rigging Components shall meet or exceed the following specifications:
  - 1. Loudspeaker Rigging Components shall be made of quenched or tempered forged steel.
  - 2. Loudspeaker Rigging Components shall meet or exceed all the requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements
  - 3. Loudspeaker Rigging Components shall be hot dip galvanized or self-colored.
  - 4. Shackles shall meet the performance requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class1.
  - 5. Turnbuckles shall meet the performance requirements of Federal Specifications FF-T-791b, Type 1 Form 1 - CLASS 4, and ASTM F-1145.
  - 6. Wire rope thimble shall meet the performance requirements of Federal Specification FF-T-276b Type II.
  - 7. Wire rope shall be sized as 7x19 utility cable.
  - 8. Provide all screw pin type shackles with mouse wire.
  - 9. All end fittings shall be moused to the body with mousing cable.
  - 10. Select size of product based working load limits required.
  - 11. Confirm final product selection with architect.
  - 12. Acceptable product:
    - a. Chicago Hardware Company
    - b. Crosby Group
    - c. Wire Rope Corporation of America (WRCA)
    - d. Or Equal

#### 2.32 POWER CONDITIONER

- A. Shall meet or exceed the following specifications:
  - 1. Shall include nine (9) outlets.
  - 2. Shall be capable of handling 20A circuits.
  - 3. Shall be rack-mountable.
  - 4. Reference AV diagrams for the required amount of power conditioners per AV equipment rack.
  - 5. Acceptable Manufacturers:
    - a. Furman PL-PRO DMC
    - b. Or equal

#### 2.33 AV EQUIPMENT RACK TYPE 1

- A. Shall meet or exceed the following specifications:
  - 1. Shall have 35 units of available rack space.
  - 2. Shall have 16-gauge steel construction with black textured powder coat finish.
  - 3. Shall have locking, vented doors, side panels, and fans.
  - 4. Shall have an overall depth of 22" and useable depth of 20".
  - 5. Shall be constructed to swing open for cabling access.
  - 6. Shall have a large 12.5" x 12.5" knockout at the rear along with additional knockouts in the sides of the racks.

- 7. Acceptable Manufacturers:
  - a. Middle Atlantic DWR-35-22
  - b. Or Equal

#### 2.34 AV EQUIPMENT RACK TYPE 2

- A. Shall meet or exceed the following specifications:
  - 1. Shall have 37 units of available rack space.
  - 2. Shall have 16-gauge steel construction with black textured powder coat finish.
  - 3. Shall have locking, vented doors, side panels, and fans.
  - 4. Shall have an overall depth of 32.875" and useable depth of 26".
  - 5. Shall be constructed to rotate and roll out.
  - 6. Shall slide out a minimum of 26" and rotate a minimum of 60 degrees
  - 7. Acceptable Manufacturers:
    - a. Middle Atlantic WR-37-32
    - b. Or Equal

#### 2.35 AV EQUIPMENT RACK TYPE 3

- A. Shall meet or exceed the following specifications:
  - 1. Shall have 44 units of available rack space.
  - 2. Shall have 16-gauge steel construction with black textured powder coat finish.
  - 3. Minimum overall height of 83.125" with a minimum open rack mounting space of 77.125"
  - 4. Shall have an overall depth of 26.4" and useable depth of 24".
  - 5. Shall have locking, vented doors, side panels, and fans.
  - 6. Shall be mounted to the floor.
  - 7. Acceptable Manufacturers:
    - a. Middle Atlantic MRK 4426
    - b. Or Equal

#### 2.36 EQUIPMENT RACK BLANKS

- A. Contractor to provide equipment rack blanks where required as shown on T-series drawings.
- B. Shall meet or exceed the following specifications:
  - 1. Shall have a flanged construction.
  - 2. Shall be made of 1/16" thick aluminum.
  - 3. Shall have a black brushed and anodized finish.
  - 4. Provide rack blank sizes as required.
  - 5. Acceptable Manufacturers:
    - a. Middle Atlantic BL Series
    - b. Or Equal

#### 2.37 EQUIPMENT RACK VENTS

A. Contractor to provide equipment rack vents where required as shown on T-series drawings.

- B. Equipment rack vents shall meet or exceed the following specifications:
  - 1. Shall have a flanged construction.
  - 2. Shall be made of 1/16" thick aluminum.
  - 3. Shall have a black brushed and anodized finish.
  - 4. Provide rack vent sizes as required.
  - 5. Acceptable Manufacturers:
    - a. Middle Atlantic VTP Series
    - b. Or Equal

#### PART 3 - EXECUTION

- 3.1 GENERAL
- A. Coordinate incorporation of the Work specified herein with other project work to facilitate a cohesive final product.
- B. The installation recommendations contained within ANSI and Telecommunications Distribution Methods Manual are mandatory minimum standards and requirements.
- C. Mount equipment and enclosures plumb and level.
- D. Permanently installed equipment to be firmly and safely held in place. Design equipment supports to support loads imposed with a safety factor of at least five. Seismic bracing shall be installed on appropriate equipment where local codes require such installation.
- E. Verify all locations of equipment in all rooms with Owner's Representative, Owner, and Consultant.
- F. Follow all manufacturer requirements and recommendations for the installation of all AV equipment.
- 3.2 TESTING
- A. Prior to turning on the system, verify all electronic devices are properly grounded and each audio video AC receptacle has the proper hot, neutral, and ground connections.
- B. Audio Testing:
  - 1. Verify each amplifier channel is correctly wired by providing a test signal to each channel and verify the correct speakers are operating.
  - 2. Adjust the input and output gain of each device to properly set the system gain.
  - Adjust the output level of each amplifier channel and/or speaker tap settings to achieve 85 dB ± 2 dB in the area covered by the respective speaker zone when the output of the sound reinforcement system is set to 0 dBu.
  - 4. Equalize all loudspeakers to provide an acceptable frequency response based on the specifications of the provided loudspeakers.
  - 5. Verify no hum or buzz is present in the system at all operating levels. If present, propose a resolution and correct the issue at no cost to the Owner.
- C. Video Testing:

- 1. Using a video signal generator, verify performance of all equipment meets manufacturer's specifications.
- 2. Verify correct operation of all inputs and outputs
- 3. Flat panel displays shall be set up by the contractor for immediate usage by the Owner once system is commissioned.

#### 3.3 AUDIO VIDEO CONTROL SYSTEM

- A. Control system shall be programmed to at a minimum switch between available AV sources, power on/off video displays, raise/lower projection screen, control system volume, and control zone selection of audio where applicable.
- B. Contractor to provide a minimum of three iterations of the touchscreen layout and programming for review by the Owner and Consultant. The first phase will involve only the layout and proposed operation. Once reviewed, the Contractor will utilize this information to begin programing the touch panels. The touch panels will be reviewed again after the programming has been implemented in the field. Any changes from this phase shall be incorporated into the work. Final review will occur at the one year walk-through.
- C. Control system and room type functionality shall be programmed at a minimum as described below:
  - 1. NATATORIUM
    - a. All natatorium loudspeakers were designed to be wired from a dedicated amplifier channel to comply with Manufacturer specifications.
    - b. A minimum five (5) foot service loop shall be provided and secured above each speaker.
    - c. Confirm all rigging with structural engineer as required.
    - d. Control system shall be programmed to at a minimum switch between available audio sources, control system volume, and control zone selection of audio.
    - e. Contractor shall be required to program and set up audio controls with the Q-SYS software to control the audio system.
    - f. Shall include two (2) custom programmed wireless controllers
    - g. Shall include two (2) custom programmed touch panels, one (1) wall mounted in the south control room and one (1) wall mounted in the north control room.
    - h. Video and audio shall be routed into or out of the AV equipment room via SDI and XLR connections found in the south control room, the north control room, and the four (4) AV floor boxes installed throughout the pool seating area. SDI connections are routed through a SDI video router installed in the AV equipment room, and XLR connections are routed over the AV network via the AV network switch installed in the AV equipment room AV rack.
    - i. One HDMI input in the south control room and one HDMI input in the north control room are routed up to the AV equipment room and terminated in the AV rack. An HDMI patch cable will need to be provided by the owner to route any input plugged in at these locations into the natatorium video displays provided by others.
    - j. Shall include four (4) wireless microphones for voice reinforcement.
    - k. Audio extracted from either Bluetooth audio expander will be routed to the DSP along with any active wireless microphones. All audio will be summed, mixed, and processed. The audio mix from the DSP will be routed out of the DSP in two zones. Audio will be fed to all three (3) power amplifiers via the AV network. Zone 1 will feed the six (6) loudspeakers covering the north side swimming area of the natatorium, and zone 2 will feed the four (4) loudspeakers covering the south side diving portion of the natatorium.

- I. Shall tie into the paging system to automatically mute audio and play the page as it comes in.
- m. The DSP, amplifiers, video router, network audio input and output expanders, and touch panels shall all be connected to the AV switch installed in the AV rack, and the AV switch shall be connected to the building network.

#### 2. SCIENCE LABS

- a. Shall include two (2) custom programmed wireless controllers, one for each science lab.
- b. Shall include one (1) custom programmed touch panel installed in the AV rack.
- c. When both divisible garage doors between science labs are open, audio visual functionality shall be programmed to switch between all eight student workstation HDMI inputs, the four teacher station HDMI inputs, and both wireless presentation receivers via the touch panel or wireless controllers. The desired input shall be sent to the student workstation flat panel displays as well as the teacher workstation flat panel displays on mobile carts or a combination of displays available to the user in both science labs.
- d. When both divisible garage doors between science labs are open, all loudspeakers in both science labs will be combined and amplify audio content from any active HDMI input in either science lab
- e. When one or both of the divisible garage doors between science labs are closed, audio visual functionality shall be programmed to only switch between the four student workstation HDMI inputs, the two teacher station HDMI inputs, and the wireless presentation receiver in each science lab via the touch panel or wireless controllers. The desired input shall be sent to the student workstation flat panel displays as well as the teacher workstation flat panel displays on mobile carts or a combination of displays available to the user in each science lab.
- f. When one or both divisible garage doors between science labs are closed, each set of loudspeakers will unlink, and will only amplify audio content from the active input in the lab in which they are installed.
- g. Shall include two (2) wireless microphones per science lab for voice reinforcement.
- h. Audio shall be extracted from the AV matrix switcher, dependent on the active input in each lab, and then routed to the DSP. Any active wireless microphones will also be routed to the DSP, and then summed, mixed, and processed. There shall either be one audio mix or two audio mixes sent to the power amplifier depending on the state of the garage door partition sensors. The audio mix from each science lab shall be routed out of the DSP and injected into separate power amplifier channels which in turn will feed the eight (8) loudspeakers installed in each lab.
- i. Shall tie into the paging system to automatically mute audio and play the page as it comes in.
- j. The AV matrix switcher, DSP, wireless presentation receivers, network audio input expander, and touch panel shall all be connected to the AV switch installed in the AV rack, and the AV switch shall be connected to the building network.
- k. All wall mounted flat panel displays in each science lab shall be connected to the building network.

## 3. ATRIUM

- a. Shall include two (2) custom programmed wireless controllers.
- b. Shall include one (1) custom programmed touch panel installed in the AV rack.
- c. Video inputs shall be programmed to switch between the terminated HDMI input mounted in the rack and the wireless presentation receiver via the touch panel or the wireless controllers. The desired input shall be sent to the three wall mounted

flat panel displays or a combination of those three displays located on the west side of the atrium

- d. SDI output connector shall be terminated and mounted in the J138 AV rack for broadcast applications as determined by the Owner.
- e. Shall include four (4) wireless microphones for voice reinforcement.
- f. XLR input and output connectors shall be terminated and mounted in the J138 AV rack for music playback, voice reinforcement, recording, and broadcast applications as determined by the Owner.
- g. Audio shall be extracted from the AV matrix switcher, dependent on the active input, and then routed to the DSP. Any active wireless microphones will also be routed to the DSP, and then summed, mixed, and processed. The audio mix will be routed out of the DSP and into the power amplifier feeding two zones. The four (4) speakers located on the west side of the atrium will be zone one and the five (5) speakers on the east side of the atrium will be zone two.
- h. Shall tie into the paging system to automatically mute audio and play the page as it comes in.
- i. The AV matrix switcher, DSP, wireless presentation receiver, network audio input expander, and touch panel shall all be connected to the AV switch installed in the AV rack, and the AV switch shall be connected to the building network.
- j. All wall mounted flat panel displays throughout the atrium shall be connected to the building network.
- 4. TYPICAL FLEX J140 AND J234, SMALL GROUP ROOMS, CONFERENCE ROOM J126
  - a. Shall include one (1) control panel to be connected to the flat panel display via RS-232
  - b. Shall include one (1) wireless presentation receiver to be connected to the flat panel display via a USB-C to HDMI cable provided by the manufacturer
  - c. The wireless presentation receiver and the flat panel display shall be connected to the building network
- 5. TYPICAL CLASSROOM
  - a. Shall include one (1) wireless presentation receiver to be connected to the flat panel display via a USB-C to HDMI cable provided by the manufacturer
  - b. The wireless presentation receiver shall be connected to the building network. Provide a minimum 15' category 6 patch cord for Owner connection to the building network.
- 6. OFFICE L104
  - a. Shall include one (1) wireless presentation receiver to be connected to the flat panel display via a USB-C to HDMI cable provided by the manufacturer
  - b. The wireless presentation receiver and the flat panel display shall be connected to the building network
- 3.4 TRAINING
- A. After final completion, provide instruction to Owner designated personnel.
- B. Provide a minimum of ten (10) hours of training to the Owner. Training session(s) shall cover the following topics at a minimum:
  - 1. System Equipment Connectivity

- 2. Device Configurations
- 3. Operation, maintenance, and upgrade procedures.
- C. Training to be arranged with Owner personnel. Training schedule shall be coordinated with Owner personnel and their needs.
- D. Training to occur in maximum of 2-hour increments per personnel or groups of personnel.
- E. Training plan, timeline, and agenda shall be provided to Owner and signed off by Owner and Contractor.
- F. Warranty certificate and agreement shall be provided to Owner at initial training session.
- G. Provide a digital video copy of the training sessions.
- 3.5 SYSTEM ACCEPTANCE
- A. Contractor shall demonstrate to the Owner and Architect that all systems have been installed per the plans and specifications and that all programming functions, display functions, control functions and all interfaced equipment operate as expected.
- B. Contractor shall demonstrate to the Owner and Architect that all the end user staff has a working knowledge of how to operate the installed equipment and that the facilities staff also has a working knowledge of the troubleshooting methods for non-critical service problems.
- C. Contractor shall have a Delivery and Acceptance form signed by the Owner representative, agreeing that the installation is complete and its operation is acceptable except as noted on the Delivery and Acceptance form. This will also serve as the start of the warranty period.
- D. Contractor shall work with the General Contractor to complete all punch lists and work required to allow the General Contractor to close out the project in a timely manner. This will include but not limited to any work that would impact any final inspection for turnover of the building.

END OF SECTION 27 41 16



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

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	GENERAL HORIZONTAL CABLING NO
Ą	MINIMUM CATEGORY 6 (6A FOR WAPS) COMPLIANT UNSHIELDED TWISTED PAIR (UTP). ALL HORIZONTA CABLING MUST BE PLENUM RATED.
В	CONTRACTOR SHALL PROVIDE A DOCUMENTED MANUFACTURER CERTIFIED SOLUTION INCLUDING MINIMUM PERFORMANCE AND APPLICATIONS WARI
С	PAINTING OF THE STRUCTURED CABLING WILL VOI WARRANTY. ENSURE PROPER COORDINATION WIT PAINTING CONTRACTOR SO THAT ALL STRUCTURE IS PROTECTED PRIOR TO ANY PAINTING.
D	PROVIDE A MINIMUM 10 FOOT MAINTENANCE LOOP HORIZONTAL CABLING RUN. MAINTENANCE LOOPS STORED ABOVE ACCESIBLE CEILINGS, IN CABLE TR IN TELECOMMUNICATION ROOM CABLE TRAY. CAB ABOVE CEILING SHALL BE SUSPENDED FROM APPF SUPPORTS AND SHALL NOT TOUCH THE CEILING.
E	ALL PIN/PAIR ASSIGNMENTS SHALL BE T568B.
F	REFER TO SPECIFICATION SECTION 27 15 13 FOR C JACKET COLOR REQUIREMENTS
G	LABELING SHALL BE COMPLETED AS DEFINED IN TH CONTRACT DOCUMENTS AND SHALL BE COORDINA THE OWNER.
H	PROVIDE ALL TELECOMMUNICATION OUTLETS AS S THE DRAWINGS AND AS REQUIRED TO PROVIDE CONNECTIONS FOR EACH DEVICE SHOWN ON THE DRAWINGS.
I	ALL TESTING OF HORIZONTAL CABLING SHALL BE COMPLETED AS DIRECTED BY THE PROJECT SPECIFICATIONS. ALL CABLING MUST BE TESTED A CERTIFIED TO THE APPLICABLE STANDARDS.

	DATA LOCATION
-\$-	ABOVE CEILING DATA LOCATION
₩	AV INPUT LOCATION
AV	AV FLOOR BOX LOCATION
BR	BLUETOOTH RECEIVER LOCATION
AUD	AUDIO CONNECTION LOCATION
	VIDEO CONNECTION LOCATION
MC	MOBLE CART CONNECTION
	AV CONTROL LOCATION
TP	TOUCH PANEL LOCATION
	MONITOR LOCATION
	DIGITAL SIGNAGE LOCATION
Ċ	CLOCK LOCATION
CC	DUAL SIDED CLOCK LOCATION
AW V	WIRELESS MICROPHONE ANTENNA LOCATI
HA	HEARING ASSISTANCE ANTENNA LOCATION
	LOUDSPEAKER JUNCTION BOX LOCATION
S	CEILING MOUNTED LOUDSPEAKER LOCATION
S	CEILING SPEAKER - PAGING LOCATION
<u>SPK</u>	WALL MOUNTED LOUDSPEAKER LOCATION
SPK	WALL MOUNTED SPEAKER - PAGING LOCAT
- (AP)-	WIRELESS ACCESS POINT - CEILING MOUN
AP	WIRELESS ACCESS POINT - WALL MOUNTE
A/V RACK	AV EQUIPMENT RACK LOCATION
D	DOOR POSITION SENSOR LOCATION
CR	CARD READER LOCATION
AC	ACCESS CONTROL SYSTEM HOLD-OPENS
SC	SECURITY CAMERA - CEILING MOUNTED
SC	SECURITY CAMERA - WALL MOUNTED

- 1 DATA LOCATION INSTALLED ADJACENT TO ACCESS CONTROL ENCLOSURE. CONTRACTOR SHALL PROVIDE AND INSTALL PATCH CORD(S) FROM DATA LOCATION TO ENCLOSURE AS REQUIRED. 2 ADD EXISTING 2.4mm LENS MODULE TO EXISTING CAMERA. 3 DEVICES SHOWN WITHIN OUTLINE SHALL BE STUBBED DIRECTLY THROUGH EXISTING WALL ABOVE CEILING HEIGHT ON OTHER SIDE OF WALL. CABLING SHALL CONTINUE TO DESIGNATED POINT OF TERMINATION VIA J-HOOKS AND CONDUCT AS REQUIRED. igg(4 O.F.O.I. 75" FLAT PANEL DISPLAY MOUNTED TO O.F.O.I.  $igg\}$ MOBILE CART. 5 AV EQUIPMENT RACK SERVING ATRIUM. DATA LOCATION SERVING RACK SHALL BE INSTALLED BEHIND RACK WITHIN RACK KNOCKOUT AT 46" AFF. 6 EXISTING SECURITY CAMERA TO REMAIN.
- 7 INSTALL EXISTING HANWHA XNP-6321H PTZ CAMERA AT THIS LOCATION.
- LOCATION WITH THREE (3) 2.4mm LENS MODULES.
- 9 INSTALL EXISTING HANWHA PNM-9000VQ CAMERA AT THIS LOCATION WITH ONE (1) 2.4mm LENS MODULES IN NORTH POSITION AND TWO (2) 6mm LENS MODULES IN EAST/WEST
- POSITIONS. 10 MOUNT CAMERA AT 12' 10" ABOVE STAIR LANDING.





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100% CONSTRUCTION DOCUMENT PROJECT: #22130 DATE: 07-28-2023

T201J





	GENERAL HORIZONTAL CABLING NO
A	MINIMUM CATEGORY 6 (6A FOR WAPS) COMPLIANT UNSHIELDED TWISTED PAIR (UTP). ALL HORIZONT CABLING MUST BE PLENUM RATED.
В	CONTRACTOR SHALL PROVIDE A DOCUMENTED MANUFACTURER CERTIFIED SOLUTION INCLUDING MINIMUM PERFORMANCE AND APPLICATIONS WAR
С	PAINTING OF THE STRUCTURED CABLING WILL VO WARRANTY. ENSURE PROPER COORDINATION WI PAINTING CONTRACTOR SO THAT ALL STRUCTURE IS PROTECTED PRIOR TO ANY PAINTING.
D	PROVIDE A MINIMUM 10 FOOT MAINTENANCE LOOD HORIZONTAL CABLING RUN. MAINTENANCE LOOPS STORED ABOVE ACCESIBLE CEILINGS, IN CABLE T IN TELECOMMUNICATION ROOM CABLE TRAY. CAN ABOVE CEILING SHALL BE SUSPENDED FROM APP SUPPORTS AND SHALL NOT TOUCH THE CEILING.
Е	ALL PIN/PAIR ASSIGNMENTS SHALL BE T568B.
F	REFER TO SPECIFICATION SECTION 27 15 13 FOR ( JACKET COLOR REQUIREMENTS
G	LABELING SHALL BE COMPLETED AS DEFINED IN T CONTRACT DOCUMENTS AND SHALL BE COORDIN, THE OWNER.
Η	PROVIDE ALL TELECOMMUNICATION OUTLETS AS THE DRAWINGS AND AS REQUIRED TO PROVIDE CONNECTIONS FOR EACH DEVICE SHOWN ON THE DRAWINGS.
I	ALL TESTING OF HORIZONTAL CABLING SHALL BE COMPLETED AS DIRECTED BY THE PROJECT SPECIFICATIONS. ALL CABLING MUST BE TESTED CERTIFIED TO THE APPLICABLE STANDARDS.
	TELECOM LEGEND

$\mathbf{V}$	DATA LOCATION
	ABOVE CEILING DATA LOCATION
AV	AV INPUT LOCATION
AV	AV FLOOR BOX LOCATION
BR	BLUETOOTH RECEIVER LOCATION
AUD	AUDIO CONNECTION LOCATION
	VIDEO CONNECTION LOCATION
MC V	MOBLE CART CONNECTION
	AV CONTROL LOCATION
	TOUCH PANEL LOCATION
	MONITOR LOCATION
	DIGITAL SIGNAGE LOCATION
Ċ	CLOCK LOCATION
CC	DUAL SIDED CLOCK LOCATION
WA	WIRELESS MICROPHONE ANTENNA LOCAT
HA	HEARING ASSISTANCE ANTENNA LOCATION
LS	LOUDSPEAKER JUNCTION BOX LOCATION
S	CEILING MOUNTED LOUDSPEAKER LOCATI
S	CEILING SPEAKER - PAGING LOCATION
SPK	WALL MOUNTED LOUDSPEAKER LOCATION
SPK	WALL MOUNTED SPEAKER - PAGING LOCA
-(AP)-	WIRELESS ACCESS POINT - CEILING MOUN
	WIRELESS ACCESS POINT - WALL MOUNTE
A/V RACK	AV EQUIPMENT RACK LOCATION
D	DOOR POSITION SENSOR LOCATION
CR	CARD READER LOCATION
AC	ACCESS CONTROL SYSTEM HOLD-OPENS
SC	SECURITY CAMERA - CEILING MOUNTED
sc	SECURITY CAMERA - WALL MOUNTED

1	DATA LOCATION TO SERVE ELEVATOR CONTROLS TELEPHONE LINE. CONTRACTOR SHALL PROVIDE A INSTALL CAT 6 PATCH CORD(S) FROM OUTLET TO E REQUIRED.
2	DEVICES SHOWN WITHIN OUTLINE SHALL BE STUB
	ON OTHER SIDE OF WALL, CABLING SHALL CONTIN
	DESIGNATED POINT OF TERMINATION VIA J-HOOKS
	CONDULT AS REQUIRED.
3	O.F.O.I. 75" FLAT PANEL DISPLAY MOUNTED TO O.F.
2	MOBILE CART.
4	-INSTALL EXISTING HANWHA PNF-9010RV/CAMERA A





SECOND FLOOR TECHNOLOGY PLAN -UNIT J 1/8" = 1'-0"

	GE	NERAL	HORIZO	ONTAL	CABLING	NOTES
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DOOR POSITION SENSOR LOCATION  $\bigcirc$ CR CARD READER LOCATION ACCESS CONTROL SYSTEM HOLD-OPENS SECURITY CAMERA - CEILING MOUNTED sc SECURITY CAMERA - WALL MOUNTED

# SHEET NOTES

- 1 DATA LOCATION INSTALLED ADJACENT TO ACCESS CONTROL ENCLOSURE. CONTRACTOR SHALL PROVIDE AND INSTALL PATCH CORD(S) FROM DATA LOCATION TO ENCLOSURE AS REQUIRED. 2 EXISTING DUAL SENSOR SECURITY CAMERA TO BE REMOVED FOR INSTALLATION ELSEWHERE. INSTALL NEW
- MULTI-SENSOR CAMERA AT THIS LOCATION. EXISTING ~ CABLING SHALL REMAIN FOR REUSE WITH NEW CAMERA. (3 O.F.O.I. 75" FLAT PANEL DISPLAY MOUNTED TO O.F.O.I
- MOBILE CART. 4 EXISTING SECURITY CAMERA TO REMAIN.
- 5 MOUNT CAMERA AT 13' 6" ABOVE STAIR LANDING.







	GENERAL HORIZONTAL CABLING NOT
A	MINIMUM CATEGORY 6 (6A FOR WAPS) COMPLIANT 4 UNSHIELDED TWISTED PAIR (UTP). ALL HORIZONTAL CABLING MUST BE PLENUM RATED.
В	CONTRACTOR SHALL PROVIDE A DOCUMENTED MANUFACTURER CERTIFIED SOLUTION INCLUDING T MINIMUM PERFORMANCE AND APPLICATIONS WARR
С	PAINTING OF THE STRUCTURED CABLING WILL VOID WARRANTY. ENSURE PROPER COORDINATION WITH PAINTING CONTRACTOR SO THAT ALL STRUCTURED IS PROTECTED PRIOR TO ANY PAINTING.
D	PROVIDE A MINIMUM 10 FOOT MAINTENANCE LOOP O HORIZONTAL CABLING RUN. MAINTENANCE LOOPS S STORED ABOVE ACCESIBLE CEILINGS, IN CABLE TRA IN TELECOMMUNICATION ROOM CABLE TRAY. CABL ABOVE CEILING SHALL BE SUSPENDED FROM APPRO SUPPORTS AND SHALL NOT TOUCH THE CEILING.
E	ALL PIN/PAIR ASSIGNMENTS SHALL BE T568B.
F	REFER TO SPECIFICATION SECTION 27 15 13 FOR CA JACKET COLOR REQUIREMENTS
G	LABELING SHALL BE COMPLETED AS DEFINED IN THE CONTRACT DOCUMENTS AND SHALL BE COORDINAT THE OWNER.
Η	PROVIDE ALL TELECOMMUNICATION OUTLETS AS SH THE DRAWINGS AND AS REQUIRED TO PROVIDE CONNECTIONS FOR EACH DEVICE SHOWN ON THE DRAWINGS.
I	ALL TESTING OF HORIZONTAL CABLING SHALL BE COMPLETED AS DIRECTED BY THE PROJECT SPECIFICATIONS. ALL CABLING MUST BE TESTED AN CERTIFIED TO THE APPLICABLE STANDARDS.
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	MOBLE CART CONNECTION

	AV CONTROL LOCATION
	TOUCH PANEL LOCATION
	MONITOR LOCATION
	DIGITAL SIGNAGE LOCATION
Ċ	CLOCK LOCATION
CC	DUAL SIDED CLOCK LOCATION
AW A	WIRELESS MICROPHONE ANTENNA LOCATION
HA	HEARING ASSISTANCE ANTENNA LOCATION
	LOUDSPEAKER JUNCTION BOX LOCATION
S	CEILING MOUNTED LOUDSPEAKER LOCATION
S	CEILING SPEAKER - PAGING LOCATION
SPK	WALL MOUNTED LOUDSPEAKER LOCATION
SPK	WALL MOUNTED SPEAKER - PAGING LOCATIO
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	WIRELESS ACCESS POINT - WALL MOUNTED
A/V RACK	AV EQUIPMENT RACK LOCATION
D	DOOR POSITION SENSOR LOCATION
CR	CARD READER LOCATION
AC	ACCESS CONTROL SYSTEM HOLD-OPENS
SC	SECURITY CAMERA - CEILING MOUNTED
SC	SECURITY CAMERA - WALL MOUNTED

SHEET NOTES

1 O.F.O.I. 75" FLAT PANEL DISPLAY MOUNTED TO O.F.O.I. MOBILE CART. 2 EXISTING SECURITY CAMERA TO REMAIN.

3 INSTALL EXISTING HANWHA PNM-7000VD CAMERA AT THIS LOCATION WITH LENSES IN HALLWAY VIEW ORIENTATION.









	GE	NERAL HORIZONTAL CABLING NOTE
A	MININ UNSF CABL	/IUM CATEGORY 6 (6A FOR WAPS) COMPLIANT 4- HELDED TWISTED PAIR (UTP). ALL HORIZONTAL ING MUST BE PLENUM RATED.
В		TRACTOR SHALL PROVIDE A DOCUMENTED JFACTURER CERTIFIED SOLUTION INCLUDING TH JUM PERFORMANCE AND APPLICATIONS WARRA
С	PAIN WAR PAIN IS PR	TING OF THE STRUCTURED CABLING WILL VOID RANTY. ENSURE PROPER COORDINATION WITH TING CONTRACTOR SO THAT ALL STRUCTURED COTECTED PRIOR TO ANY PAINTING
D	PROV HORI STOF IN TE ABOV SUPF	VIDE A MINIMUM 10 FOOT MAINTENANCE LOOP O ZONTAL CABLING RUN. MAINTENANCE LOOPS SI RED ABOVE ACCESIBLE CEILINGS, IN CABLE TRAY LECOMMUNICATION ROOM CABLE TRAY. CABLIN /E CEILING SHALL BE SUSPENDED FROM APPRO PORTS AND SHALL NOT TOUCH THE CEILING.
E	ALL F	PIN/PAIR ASSIGNMENTS SHALL BE T568B.
F	REFE JACK	R TO SPECIFICATION SECTION 27 15 13 FOR CAE ET COLOR REQUIREMENTS
G	LABE CONT THE (	LING SHALL BE COMPLETED AS DEFINED IN THE IRACT DOCUMENTS AND SHALL BE COORDINATE OWNER.
Η	PROV THE I CONI DRAV	/IDE ALL TELECOMMUNICATION OUTLETS AS SHO DRAWINGS AND AS REQUIRED TO PROVIDE NECTIONS FOR EACH DEVICE SHOWN ON THE VINGS.
I	ALL T COMI SPEC CERT	ESTING OF HORIZONTAL CABLING SHALL BE PLETED AS DIRECTED BY THE PROJECT CIFICATIONS. ALL CABLING MUST BE TESTED AN TIFIED TO THE APPLICABLE STANDARDS.
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AV EQUIPMENT RACK LOCATION

CARD READER LOCATION

DOOR POSITION SENSOR LOCATION

ACCESS CONTROL SYSTEM HOLD-OPENS

SECURITY CAMERA - CEILING MOUNTED

SHEET NOTES

SECURITY CAMERA - WALL MOUNTED

A/V RACK

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SECOND FLOOR TECHNOLOGY PLAN -UNIT M 1/8" = 1'-0"

IDF L208

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IDF M201A

	GENERAL HORIZONTAL CABLING NOT
A	MINIMUM CATEGORY 6 (6A FOR WAPS) COMPLIANT 4 UNSHIELDED TWISTED PAIR (UTP). ALL HORIZONTAL CABLING MUST BE PLENUM RATED.
В	CONTRACTOR SHALL PROVIDE A DOCUMENTED MANUFACTURER CERTIFIED SOLUTION INCLUDING T
С	PAINTING OF THE STRUCTURED CABLING WILL VOID WARRANTY. ENSURE PROPER COORDINATION WITH PAINTING CONTRACTOR SO THAT ALL STRUCTURED
D	IS PROTECTED PRIOR TO ANY PAINTING. PROVIDE A MINIMUM 10 FOOT MAINTENANCE LOOP HORIZONTAL CABLING RUN. MAINTENANCE LOOPS S
	IN TELECOMMUNICATION ROOM CABLE TRAY. CABLE ABOVE CEILING SHALL BE SUSPENDED FROM APPRO SUPPORTS AND SHALL NOT TOUCH THE CEILING.
E	ALL PIN/PAIR ASSIGNMENTS SHALL BE T568B.
F	REFER TO SPECIFICATION SECTION 27 15 13 FOR CA JACKET COLOR REQUIREMENTS
G	LABELING SHALL BE COMPLETED AS DEFINED IN TH CONTRACT DOCUMENTS AND SHALL BE COORDINAT THE OWNER.
Н	PROVIDE ALL TELECOMMUNICATION OUTLETS AS SH THE DRAWINGS AND AS REQUIRED TO PROVIDE CONNECTIONS FOR EACH DEVICE SHOWN ON THE DRAWINGS.
I	ALL TESTING OF HORIZONTAL CABLING SHALL BE
	SPECIFICATIONS. ALL CABLING MUST BE TESTED AI
	CERTIFIED TO THE AFFLICABLE STAINDARDS.
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-(	ABOVE CEILING DATA LOCATION
A	AV INPUT LOCATION
A	V AV FLOOR BOX LOCATION
B	BLUETOOTH RECEIVER LOCATION
AL	AUDIO CONNECTION LOCATION
VI	VIDEO CONNECTION LOCATION
M	MOBLE CART CONNECTION
C.	AV CONTROL LOCATION
T	TOUCH PANEL LOCATION
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<u>ка</u> ([	DOOR POSITION SENSOR LOCATION
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A	C ACCESS CONTROL SYSTEM HOLD-OPENS
(s	c) SECURITY CAMERA - CEILING MOUNTED
ر ۹	c SECURITY CAMERA - WALL MOUNTED

SHEET NOTES 1 O.F.O.I. 75" FLAT PANEL DISPLAY MOUNTED TO O.F.O.I. MOBILE CART. 2 MOUNT CAMERA AT 13' 6" ABOVE STAIR LANDING.











100% CONSTRUCTION<br/>DOCUMENTPROJECT: #22130DATE: 07-28-2023DRAWN BY: MRF





T202M



THIRD FLOOR TECHNOLOGY PLAN -1 UNIT J 1/8" = 1'-0"

A	MINI	MUM CATEGORY 6 (6A FOR WAPS) COMPLIANT 4				
	UNSI	HIELDED TWISTED PAIR (UTP). ALL HORIZONTAL				
3	CON MAN	RACTOR SHALL PROVIDE A DOCUMENTED FACTURER CERTIFIED SOLUTION INCLUDING T				
С	PAIN WAR PAIN	TING OF THE STRUCTURED CABLING WILL VOID RANTY. ENSURE PROPER COORDINATION WITH TING CONTRACTOR SO THAT ALL STRUCTURED				
<u> </u>		ROTECTED PRIOR TO ANY PAINTING.				
D	HORI STOF IN TE ABOV	VIDE A MINIMUM TO FOOT MAINTENANCE LOOP C IZONTAL CABLING RUN. MAINTENANCE LOOPS S RED ABOVE ACCESIBLE CEILINGS, IN CABLE TRA ELECOMMUNICATION ROOM CABLE TRAY. CABLI VE CEILING SHALL BE SUSPENDED FROM APPRO PORTS AND SHALL NOT TOUCH THE CEILING.				
E	ALL F	PIN/PAIR ASSIGNMENTS SHALL BE T568B.				
F	REFE JACK	ER TO SPECIFICATION SECTION 27 15 13 FOR CA ET COLOR REQUIREMENTS				
G	LABE CON THE	LABELING SHALL BE COMPLETED AS DEFINED IN THE CONTRACT DOCUMENTS AND SHALL BE COORDINAT THE OWNER. PROVIDE ALL TELECOMMUNICATION OUTLETS AS SH THE DRAWINGS AND AS REQUIRED TO PROVIDE CONNECTIONS FOR EACH DEVICE SHOWN ON THE DRAWINGS.				
Η	PROV THE CONI DRAV					
I	ALL T COM SPEC CERT	TESTING OF HORIZONTAL CABLING SHALL BE PLETED AS DIRECTED BY THE PROJECT CIFICATIONS. ALL CABLING MUST BE TESTED AN TIFIED TO THE APPLICABLE STANDARDS.				
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F	CR	CARD READER LOCATION				
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- SECURITY CAMERA CEILING MOUNTED (sc)
- sc SECURITY CAMERA - WALL MOUNTED

- 1 DATA LOCATION INSTALLED ADJACENT TO ACCESS CONTROL ENCLOSURE. CONTRACTOR SHALL PROVIDE AND INSTALL PATCH CORD(S) FROM DATA LOCATION TO ENCLOSURE AS REQUIRED.
- 2 O.F.O.I. 75" FLAT PANEL DISPLAY MOUNTED TO O.F.O.I. MOBILE CART, 3 DATA LOCATION TO SERVE BUILDING AUTOMATION SYSTEM / CONTROLS CONNECTIVITY. CONTRACTOR SHALL PROVIDE AND INSTALL CAT 6 PATCH CORD(S) FROM OUTLET TO DEVICE AS REQUIRED.
- 4 AV EQUIPMENT RACK SERVING DIVISIBLE SCIENCE LABS. DATA LOCATION SERVING RACK SHALL BE INSTALLED
- BEHIND RACK WIHIN RACK KNOCKOUT AT 46" A.F.F.
- TO T400 SERIES DRAWINGS FOR ADDITIONAL INFORMATION. 6 MOUNT CAMERA AT 23' ABOVE STAIR LANDING.





THIRD FLOOR TECHNOLOGY PLAN -1 UNIT K 1/8" = 1'-0"











L117-B-38 MULTIPURPOSE ROOM L301 17 /18 CORREN L302-D-03 L302-D-03 L302-D-03 L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C L302-D-03 C	DOR 00 10 -19/20	L303.2-DPS L302-D-01 ROOF ACCESS L303

A	MINIMUM CATEGORY 6 (6A FOR WAPS) COMPLIANT 4- UNSHIELDED TWISTED PAIR (UTP). ALL HORIZONTAL CABLING MUST BE PLENUM RATED
В	CONTRACTOR SHALL PROVIDE A DOCUMENTED
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С	WARRANTY. ENSURE PROPER COORDINATION WITH
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	STORED ABOVE ACCESIBLE CEILINGS, IN CABLE TRA' IN TELECOMMUNICATION ROOM CABLE TRAY. CABLIN
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C	R CARD READER LOCATION
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1 DATA LOCATION INSTALLED ADJACENT TO ACCESS CONTROL ENCLOSURE. CONTRACTOR SHALL PROVIDE AND INSTALL PATCH CORD(S) FOR DATA LOCATION TO ENCLOSURE AS REQURIED. 2 O.F.O.I. 75" FLAT PANEL DISPLAY MOUNTED TO O.F.O.I. MOBILE CART.



427 S. COLLEGE AV VDIANAPOLIS, IN 4620

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THIRD FLOOR TECHNOLOGY PLAN -1 <u>UNIT M</u> 1/8" = 1'-0"





# SHEET NOTES

1 O.F.O.I. 75" FLAT PANEL DISPLAY MOUNTED TO O.F.O.I. MOBILE CART, 2 INSTALL EXISTING HANWHA PNM-7000VD CAMERA AT THIS LOCATION.

SECURITY CAMERA - WALL MOUNTED

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## (#) RISER LEGEND: (THIS DETAIL) EXISTING CABLING TO REMAIN.

NEW 25-PAIR CATEGORY 5E COPPER RISER CABLING. NEW 12 STRAND OM4 MULTIMODE FIBER OPTIC CABLING.

## RISER NOTES (THIS DETAIL) 1. UNLESS OTHERWISE NOTED, RISER TERMINATIONS SHALL BE AS FOLLOWS:

A] MULTI MODE FIBER OPTIC CABLE WILL BE TERMINATED WITH LC CONNECTORS IN FIBER ENCLOSURE IN THE RACKS AT EACH END.

B] UTP COPPER (VOICE) BACKBONE CABLES SHALL BE TERMINATED IN PATCH PANELS IN RACKS ON BOTH ENDS. 2. RISER CABLES ENTERING MDF AND TELECOMMUNICATIONS ROOM(S)

SHALL CONTINUE WITHIN EACH ROOM TO THEIR SPECIFIED TERMINATION POINT WITH ADEQUATE SERVICE LOOP.

3. CONTRACTOR SHALL CONFIRM RISER CABLE LABELING WITH OWNER PRIOR TO INSTALLATION. LABELING SHALL BE CLEARLY PRINTED ON FIBER ENCLOSURE AND CABLING.

4. FIBER LABELING AT A MINIMUM SHALL CLARIFY THE TYPE OF FIBER OPTIC CABLE, THE STRAND QUANTITY, AND THE LOCATION (ROOM #, RACK #, AND

ENCLOSURE LABEL). 5. FIBER CABLING UTILIZED SHALL BE ARMORED. NON-ARMORED FIBER RAN WITHIN INNERDUCT IS NOT ACCEPTABLE. INNERDUCT IS NOT REQUIRED WITH ARMORED CABLING AND SHALL NOT BE UTILIZED.

R PLANS OR IRT CABLING NEW (2) - 4" CONDUITS NEW (2) - 4" CONDUITS NEW IDF J322
R PLANS OR IRT CABLING IRT CABLING NEW (2) - 4" CONDUITS NEW (2) - 4" CONDUITS
NEW IDF J220
RRIDOR J-HOOKS AS -LOOR PLANS OR AS ) SUPPORT CABLING NEW (2) - 4" C. NEW (2) - 4" C. NEW (2) - 4" CONDUITS NEW (2) - 4" CONDUITS NEW (2) - 4" CONDUITS NEW (2) - 4" CONDUITS NEW (2) - 4" CONDUITS
FIRST FLOOR

# _____ _____ C.F.C.I. TR RACK AWG

4 TELECOM TYPICAL GROUND DETAIL N.T.S.



5 TYPICAL DEVICE LABELING DETAIL N.T.S.









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REMOTE ANTENNA	WA	8 <b>O</b>	A 8	-( <u> </u>	8	– B



1 POOL AV DIAGRAM N.T.S.

## AV CABLING LEGEND

- 1 BALANCED MICROPHONE / LINE LEVEL CABLING
- 2 12AWG LOUDSPEAKER CABLING
- 3 16AWG LOUDSPEAKER CABLING 4 UTP CABLING

ZONE 1 - DIVING (PLAN SOUTH 4

- 5 STP CABLING
- 6 HDMI CABLING
- 7 SDI CABLING
- 8 RF CABLING
- 9 RS-232 CABLING
- 10 MANUFACTURER RECOMMENDED CABLING





T306






1 SCIENCE LABS AV DIAGRAM N.T.S.



- 1 BALANCED MICROPHONE / LINE LEVEL CABLING
- 2 12AWG LOUDSPEAKER CABLING 3 16AWG LOUDSPEAKER CABLING
- 4 UTP CABLING
- 5 STP CABLING
- 6 HDMI CABLING 7 SDI CABLING
- 8 RF CABLING
- 9 RS-232 CABLING

10 MANUFACTURER RECOMMENDED CABLING

PROVIDE 15' NEUTRIK ETHERCON PATCH CORD COILED BEHIND DISPLAY FOR CONNECTION OF MATRIX RECEIVER TO MOBILE MONITOR CART CONNECTION

PROVIDE 15' NEUTRIK ETHERCON PATCH CORD COILED BEHIND DISPLAY FOR CONNECTION OF MATRIX RECEIVER TO MOBILE MONITOR CART CONNECTION

3						
					LOUDSPEAKER TYPE TAP @ 15W	1 S
3				_		
					LOUDSPEAKER TYPE TAP @ 15W	1 s





## WIRELESS PRESENTATION RECEIVER

	4	LAN	U
1 OFFICE L104 A	AV DIA	AGRAM	



### 4 ATRIUM AV DIAGRAM N.T.S.

OT DATE/TIME:9/6/2023 4:41:04 PI







# AV CABLING LEGEND

- 1 BALANCED MICROPHONE / LINE LEVEL CABLING
- 2 12AWG LOUDSPEAKER CABLING
- 3 16AWG LOUDSPEAKER CABLING4 UTP CABLING
- 5 STP CABLING
- 6 HDMI CABLING 7 SDI CABLING
- 8 RF CABLING
- 9 RS-232 CABLING10 MANUFACTURER RECOMMENDED CABLING







PLOT DATE/TIME:9/6/2023 4:41:05 PM











TRUE NORTH





43" FLAT PANEL DISPLAY -MINIMUM IN-WALL BLOCKING REQUIRED FOR FLAT PANEL -DISPLAY MOUNT





# 7 FLEX K1000 ELEVATION 3/8" = 1'-0"

















10 POOL LOUDSPEAKER ELEVATION - SIDE 1/8" = 1'-0"



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