

Gipe Associates, Inc.
CONSULTING ENGINEERS

W.O. #: 24008.B

ADDENDUM NO. 2 – April 21, 2025

RE: **CAESAR RODNEY SCHOOL DISTRICT – MAGNOLIA MIDDLE SCHOOL – HVAC RENOVATIONS (CONTRACT NO. SRS2503)**

TO: All Plan Holders, William James Pennewell (Caesar Rodney School District), and David Hoffman (Gipe Associates, Inc.)

GAI #: 24008.B

FROM: Gipe Associates, Inc.
8719 Brooks Drive
Easton, MD 21601

This addendum forms a part of the contract documents and modifies the original bidding documents dated March 5, 2025 as noted below. Acknowledge receipt of this Addendum on the Bid Form. Failure to do so may subject bidder to disqualification.

This Addendum consists of five (5) pages, the attached revised Drawing A201 – Wall Sections and Elevations, and the attached revised Drawing M402 – Automatic Temperature Controls HVAC.

CHANGES TO THE DRAWINGS

1. Drawing A201 – Wall Sections and Elevations
REPLACE with the attached revised Drawing A201 – Wall Sections and Elevations.
2. Drawing M402 - Automatic Temperature Controls HVAC
REPLACE with the attached revised Drawing A201 – Wall Sections and Elevations

CHANGES TO THE PROJECT MANUAL

None at this time.

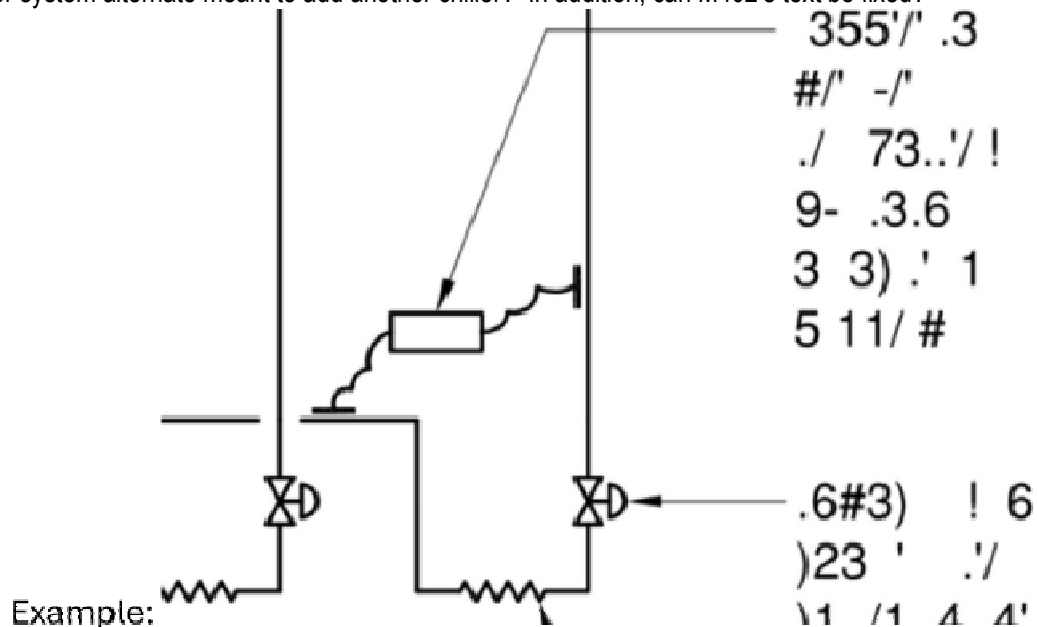
CLARIFICATIONS BASED ON CONTRACTOR QUESTIONS

1. Question: Drawing A201 detail C1 where new EIFS is required what type of wall structure is behind the EIFS?
Response: Existing building is a pre-engineered building. Exterior wall in area of question is EIFS over exterior sheathing attached to girts.
2. Question: Drawing MD201 note 9 patch & repair asphalt can a detail be issued for repairs of the asphalt?
Response: Typical paving and paving tie-in details added to revised drawing A201.

3. Question: Will the asphalt be removed at new chiller pads? If so, can details be provided?
Response: Asphalt will be removed. Refer to Pad Detail H3 on Drawing M306.
4. Question: Drawing M301 are the house keeping pads new or existing?
Response: New. See Detail #5 on Drawing M308.
5. Question: Drawing MD201 concrete pad at condensing unit: Will this pad be demo-ed for new chiller pads?
Response: Yes. Refer to Note #4 on Drawing MD201.
6. Question: It appears there are numerous pipe holes that need to be patched and material needed.
Response: Patch to match existing adjacent construction.
7. Question: At new chiller pads can a detail be given showing sizes and thickness of pad?
Response: See Detail #3 on Drawing M306 and Specifications which require pads to extend 6 inches beyond equipment.
8. Question: Can details be given on equipment pads?
Response: Refer to Detail #5 on Drawing M308.
9. Question: Will the school be closed for the 25th and 26th school year, opening October of 2026?
Response: No, work in occupied areas will occur in the summer and work in unoccupied areas will occur throughout the year.
10. Question: Please clarify where the steel columns with beams shown in detail 1/M305 are required vs just the single steel column support marked as typical exterior piping support shown in the same detail. Plan M201 only indicates 'vertical pipe supports', and the structural plans do not show the mechanical yard area.
Response: The multi-pipe rack/beam shall be provided for the stacked piping that is indicated as 8 feet above grade. See Drawing M201.
11. Question: Please provide specifications for existing flooring to be matched per Note 3 on A101B, or advise if there is sufficient attic stock on-site to use for this patch.
Response: Contractor to own material. VCT to match existing.
12. Question: Please confirm all wall patching and new chases noted on the new work plans are drywall construction unless otherwise noted
Response: Existing partitions shall be patched with similar materials. Verify in field. Patching of walls could be changed to studs and drywall as long as walls are not exposed in view.
13. Question: Please provide a specification for the EIFS indicated on A201.
Response: EIFS is cutting and patching of existing system. Contractor to match existing system – verify in field.
14. Question: At the Area B Mezzanine, the architectural plans show one masonry opening being enlarged with a new precast lintel, whereas the structural plans show new steel lintels at three openings. Please clarify which is correct.
Response: Coordinate lintel sizes and locations with mechanical. Provide lintel as detail per structural.

15. Question: Drawing A201 detail C1 calls to enlarge opening which sends to detail G4/A20 which shows existing girts. This is not shown on the structural drawings. Please issue details on how to address enlarging the steel opening.
Response: Enlarged openings to occur between existing girts. Rough openings to be sized for louver. Provide 6" 16 ga galv steel studs to frame rough openings. Secure to existing girts. No girts should be cut or modified.
16. Question: Drawing A101B Note 1 Patch & Repair Walls. Are these walls masonry or drywall or metal stud? Please clarify for all walls that get patched & repaired.
Response: Response: Existing partitions shall be patched with similar materials. Verify in field.
17. Question: Drawing A101B Note 6 remove existing mechanical grills. What size are the grills as the wall gets patched?
Response: Reference mechanical drawings – verify material in field.
18. Question: Where notes call to remove & store light fixtures, is there an area in the school to store the fixtures? Please advise.
Response: Location to store fixtures on site shall be coordinated with Owner
19. Question: Drawing A101B Note 1 says to patch wall at mechanical ductwork penetration, can you provide size of opening to be patched?
Response: Reference mechanical – verify material in field.
20. Question: Drawing S002 steel note 3 sprayed on fire proofing, these areas are not noted on drawings. Please advise
Response: Fire proofing on steel – not required.
21. Question: Are the new chase walls metal stud framed with drywall? #1 on sheet A101A, #4 on sheet A101B
Response: Chases metal stud and drywall: Reference Drawing A201 for details.
22. Question: Notes 1, 2 on sheet A101B. Do we know if the walls are drywall or CMU?
Response: Existing partitions shall be patched with similar materials. Verify in field. Patching of walls could be changed to studs and drywall as long as walls are not exposed in view.
23. Question: Request to add Delta Controls to the specification as an equal to the already specified Alerton, Honeywell, Siemens, Schneider Electric et al.
Response: We have reviewed the requested Substitution Request for adding Delta Controls to the approved ATC vendors list. We reviewed the substitution with the Owner and are NOT going to add Delta Controls to the approved list based on not having prior experience with them on past projects.
24. Question: Seiberlich Trane Energy Services request to be named as an approved manufacturer for Energy Recovery Ventilators.
Response: For substitution to be reviewed we will need a performance submittal based on the contract documents for the ERV unit. Also, please submit substitution request form with all differences/exceptions noted between proposed unit and the basis of design.

25. Question: Please clarify, are we replacing the existing sprinkler heads with new heads at all the new ceilings?
Response: Per sheet FP-101 new sprinkler heads shall be provided for all areas with new ceilings or bulkheads or where impacted by demolition/new work.
26. Question: Can Type L copper be used for Heating & Chilled Water for pipe size 2" and below instead of recommended, Type F ASTM A53 for 1 1/2" and below?
Response: Yes, Type L copper is acceptable per Specification Section 23 05 05, Article 2.1A, Paragraph 1, Subparagraph A.
27. Question: Should we go for State Approved Water Treatment Suppliers – Klenzoid, Tustin & Syntec?
Response: Klenzoid, Tustin & Syntec are acceptable water treatment vendors.
28. Question: Shall we use Victaulic Coupling in the Mechanical Room only or elsewhere also?
Response: Victaulic is acceptable in all areas per Specification Section 23 05 05.
29. M402 of Bid Drawings package 1 of 2 has text errors in the control diagram and points list. Is the chilled water system alternate meant to add another chiller? In addition, can M402's text be fixed?



Response: Drawing M402 shall be replaced with the attached revised Drawing M402 which corrects the text. Yes, alternate for 2nd chiller shall be provided.

30. On Drawing MP101B, fan coil units are shown with space temperature sensors in the room as well as CO2 labeled as "ERV-01". Where CO2 and/or humidity (H) is seen adjacent to a FCU temperature sensor, is the BAS contractor to provide a combination space temperature sensor wired back to the FCU controller providing sensing capabilities as described?
Response: Sensors shall be independent devices, not combination sensors.
31. Specification 26 09 23-1 1.2 Summary A. Mentions "The system shall support third party integration with the building management system through BACnet/IP". Additionally, BACnet/IP integration capabilities

are mentioned on 26 09 43-3 and 26 09 43-6. Please confirm that the lighting system is to be integrated into the BAS system.

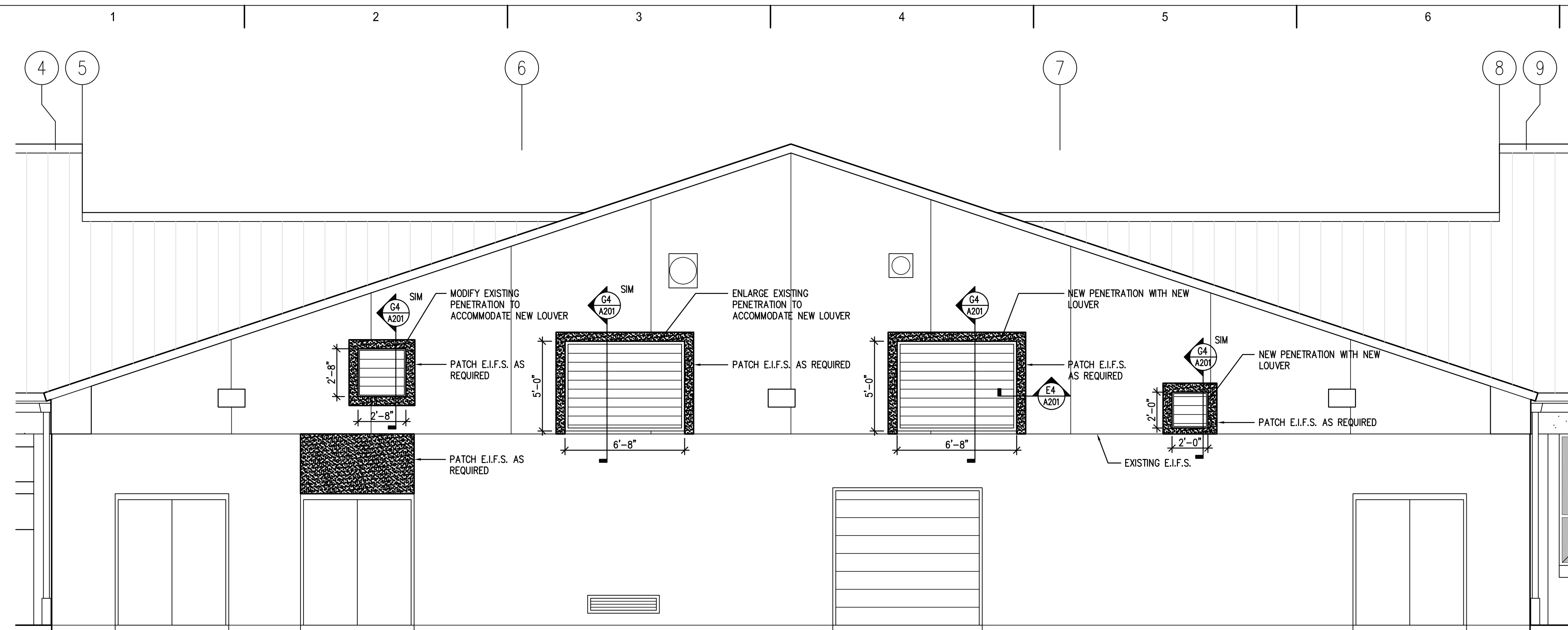
Response: The lighting control system shall be capable of supporting third party integration as specified, but is a standalone system that is not integrated with the BAS system under this project.

Enclosures:

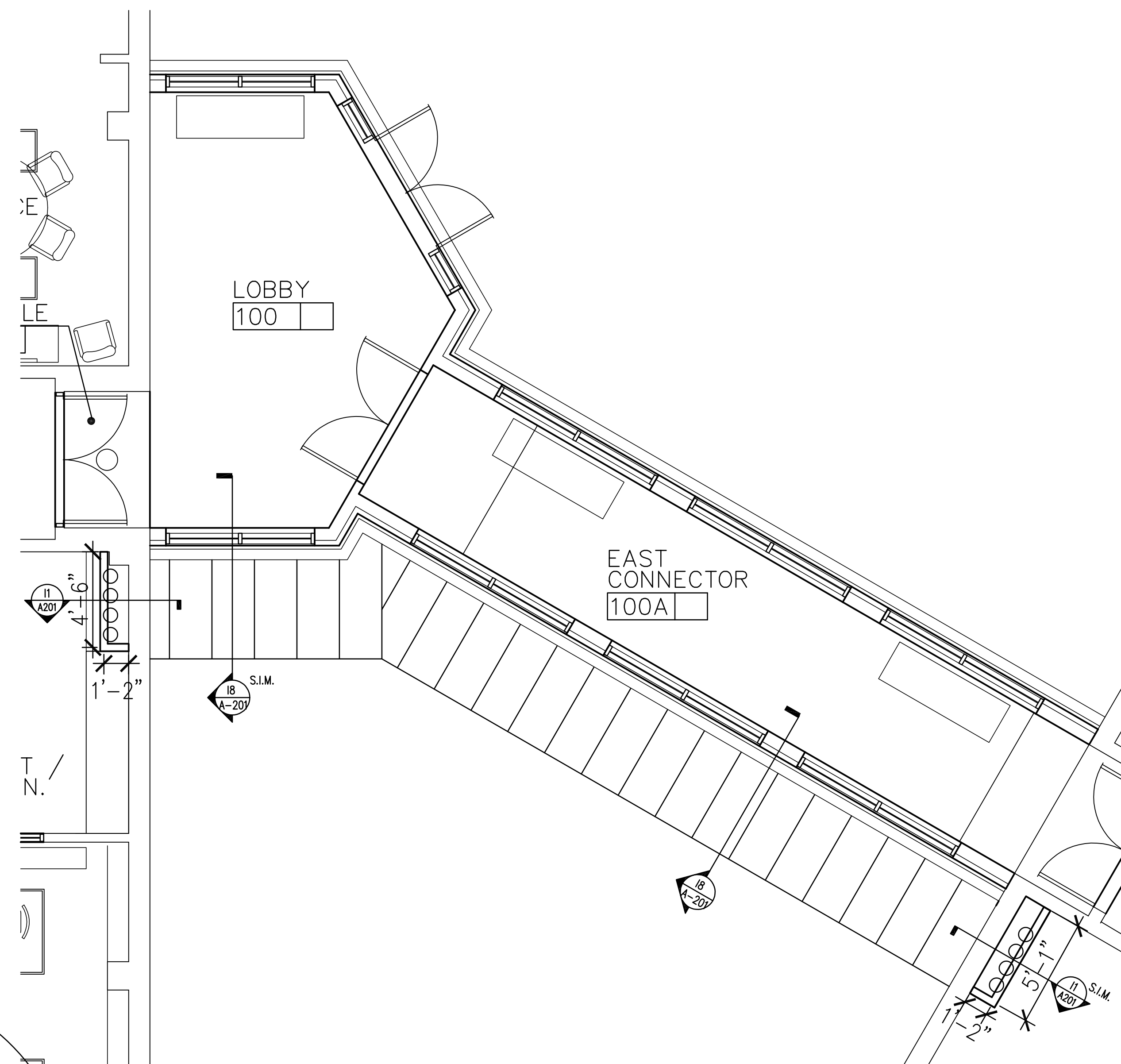
Revised Drawing A201 – Wall Sections and Elevations

Revised Drawing M402 – Automatic Temperature Controls HVAC

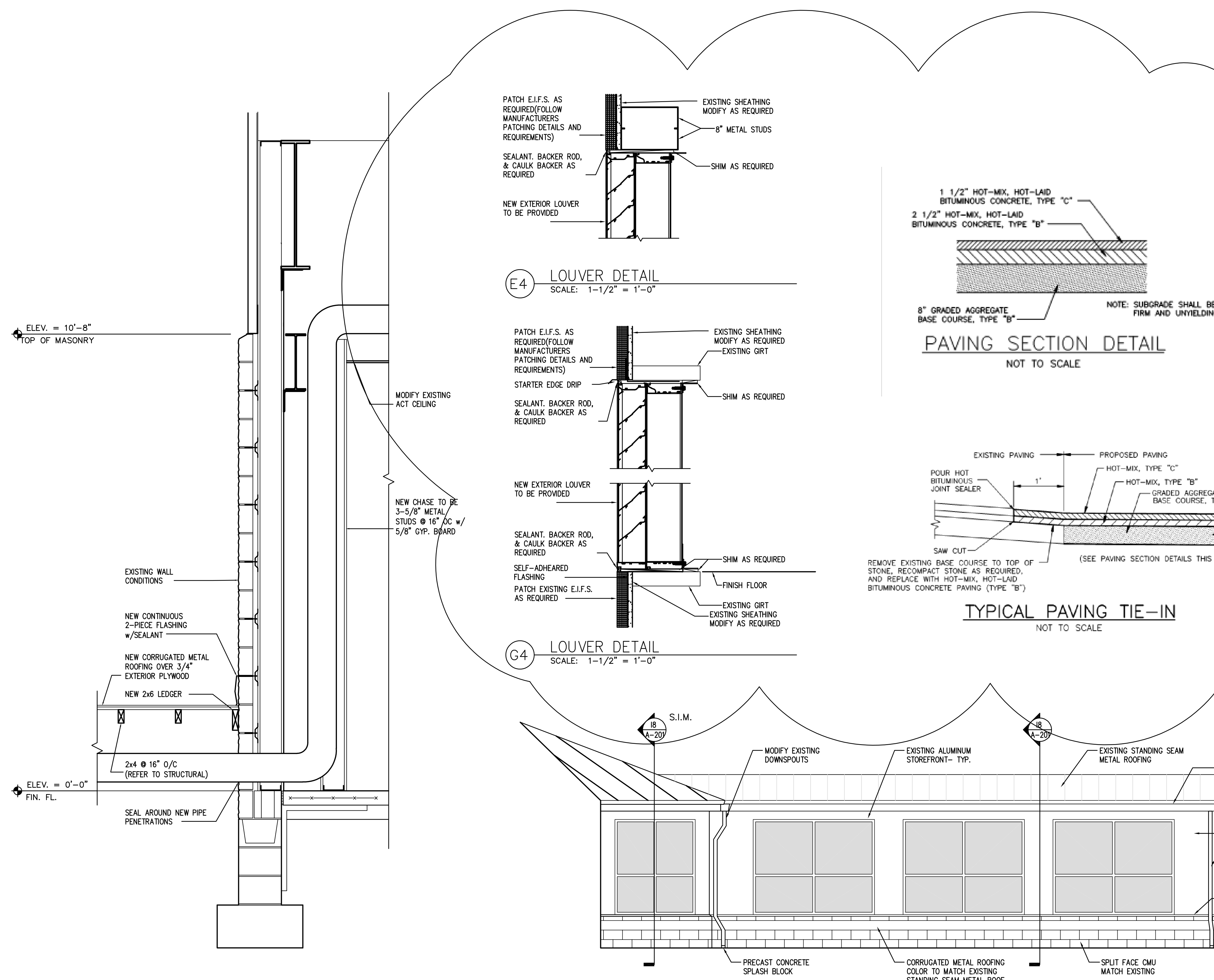
END OF ADDENDUM NO. 2



C1 SOUTH ELEVATION
SCALE: 1/4" = 1'-0"

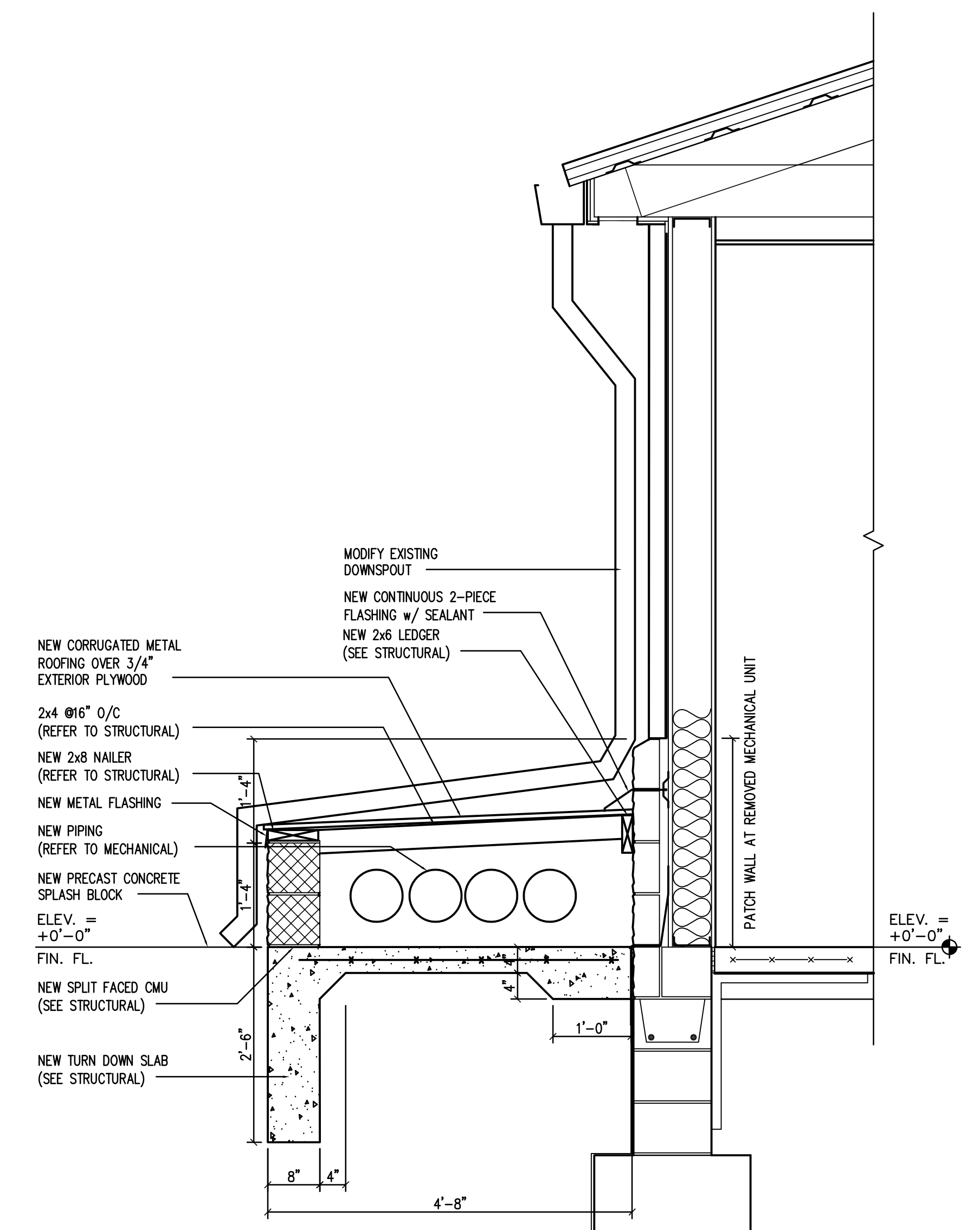


DX ENLARGED FLOOR PLAN
SCALE: 1/4" = 1'-0"



I1 WALL SECTION
SCALE: 3/4" = 1'-0"

I4 ELEVATION
SCALE: 1/4" = 1'-0"



I8 WALL SECTION
SCALE: 3/4" = 1'-0"

REVISIONS		
no.	date	comments
1	4/10/25	ADDENDUM

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SEAL

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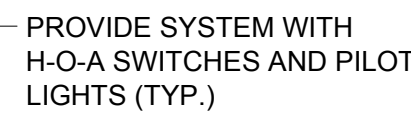
SUBMISSION

BID DOCUMENTS

WALL SECTIONS & ELEVATIONS

DESIGN BY	NBB
CHECKED BY	DB
SCALE	AS NOTED
JOB NO.	24008B
DATE	03/05/2025

A201



SECONDARY CHILLED WATER PUMP - PARALLEL PUMP OPERATION (EXAMPLE)		
1.	SINGLE LEAD CHILLED WATER SECONDARY PUMP MIN. AND MAX. FLOW RATE:	110 GPM TO 352 GPM (MAX. GPM IS 110% OF PEAK DESIGN FLOWRATE)
2.	PARALLEL LAG CHILLED WATER SECONDARY PUMP ENERGIZE FLOW RATE (AS MEASURED BY SECONDARY FLOW MEASURING STATION):	352.1 GPM (>110% OF SINGLE SECONDARY CHILLED WATER PUMP MAX. FLOW RATE)
3.	PARALLEL LAG CHILLED WATER SECONDARY PUMP DE-ENERGIZE FLOW RATE (AS MEASURED BY SECONDARY FLOW MEASURING STATION):	220 GPM (<66% OF SINGLE SECONDARY CHILLED WATER PUMP MAX. FLOW RATE - ALSO MIN. FLOW RATE FOR SECONDARY PUMPS (110 GPM X 2 PUMPS))
4.	PARALLEL LEAD/LAG CHILLED WATER SECONDARY PUMP(S) MIN. AND MAX. FLOW RATE:	352.1 GPM TO 640 GPM (MAX. GPM IS COMBINED FLOW RATE FOR LEAD / LAG SECONDARY CHILLED WATER PUMPS)

The diagram illustrates a complex chilled water system with the following components and connections:

- Primary Loop:**
 - Two **AIR COOLED CHILLER** units (#1 and #2, with #2 as an alternate).
 - CHILLED WATER PIPING (TYPICAL)** connecting chillers to the primary loop.
 - EVAPORATOR THERMAL DISPERSION FLOW SWITCH** and **CHILLER #1 SUPPLY TEMP. SENSOR** on the supply line.
 - CHILLER #2 RETURN TEMP. SENSOR** and **CHILLER #1 RETURN TEMP. SENSOR** on the return line.
 - DIFFERENTIAL PRESSURE SENSOR (TYP.)** across the chiller bank.
 - PRIMARY CHILLER PUMP #1 (CONSTANT SPEED)** and **PRIMARY CHILLER PUMP #2 (CONSTANT SPEED)**.
 - PRIMARY LOOP RETURN WATER TEMP. SENSOR** on the return line.
- Secondary Loop:**
 - CHILLED WATER EXPANSION TANK** and **CHILLED WATER SYSTEM AIR SEPARATOR**.
 - MAKE-UP WATER FLOW METER ALARM** and **GLYCOL FEEDER LOW FLUID ALARM**.
 - AUTOMATIC GLYCOL FEEDER #1** with a **2-WAY DIFFERENTIAL PRESSURE BY-PASS VALVE** to maintain constant minimum flow.
 - DIFFERENTIAL PRESSURE BY-PASS SENSOR** and **SECONDARY LOOP SUPPLY WATER TEMP. SENSOR**.
 - SECONDARY LOOP RETURN TEMP. SENSOR**.
 - SECONDARY LOOP CHILLED WATER PUMP #4 (LAG)** and **SECONDARY LOOP CHILLED WATER PUMP #3 (LEAD)** with **VARIABLE FREQUENCY DRIVE (TYPICAL)**.
 - VFD ALARM (TYP.)** for pump #3.
 - SECONDARY LOOP CHILLED WATER PUMP #3 (LEAD)** and **SECONDARY LOOP CHILLED WATER PUMP #4 (LAG)**.
- Other Components:**
 - CHILLED WATER SEPARATOR #1** (HYDRAULIC).
 - EXTERIOR PIPING AND ELECTRIC HEAT TAPE (INTERLOCK WITH ATC SYSTEM)** with heat tape symbols.
 - LOCATE TANK TEMPERATURE SENSOR HIGH WITHIN TANK** on the separator.
 - DIFFERENTIAL PRESSURE TRANSMITTER - QUANTITY AS INDICATED ON FLOOR PLANS** and **TYPICAL 2-WAY CHILLED WATER CONTROL VALVE (PRESSURE INDEPENDENT)** on the distribution lines.
 - TYPICAL CHILLED WATER COIL** connected to the secondary loop.
 - BAC** (Building Automation Control) points for monitoring.
 - BMS** (Building Management System) interface for various sensors and pumps.

1. THE CHILLED WATER SYSTEM SHALL BE STARTED AND STOPPED BY A SIGNAL FROM THE CCMS. PROVIDE A PANEL MOUNTED HAND-OFF-AUTO (H-O-A) SWITCH THAT OVERRIDES THE CCMS TO MANUALLY START OR STOP THE CHILLED WATER SYSTEM. THE CCMS SHALL HAVE CONTROL OF THE CHILLED WATER SYSTEM OPERATION WHEN THE PANEL MOUNTED H-O-A SWITCH IS IN THE "AUTO" POSITION ONLY. TO MANUALLY ENERGIZE HEATING SYSTEM FOR AQUACULTURE OPERATIONS (TO SERVE HEAT EXCHANGERS) SWITCH PANEL MOUNTED H-O-A SWITCH TO "HAND" POSITION.
2. PROVIDE AN OUTSIDE TEMPERATURE SENSOR THAT SHALL AUTOMATICALLY ENERGIZE THE CHILLED WATER SYSTEM WHEN THE AMBIENT TEMPERATURE IS 50 DEGREES F (ADJUSTABLE) OR ABOVE. OUTSIDE TEMPERATURE SENSOR SHALL BE GLOBAL UNIT MOUNTED OUTSIDE UNDER SUN SHIELD.
3. PROVIDE AUTOMATIC ALTERNATOR FOR LEAD/LAG PUMP CONTROL OF THE SECONDARY PUMPS. ONLY ONE SECONDARY PUMP SHALL RUN AT ONE TIME. IF THE LEAD PUMP FAILS AS SENSORED BY DIFFERENTIAL PRESSURE SENSOR, THE LAG PUMP SHALL ENERGIZE AFTER A 15 SECOND TIME DELAY AND AN AUDIBLE AND VISUAL ALARM WITH SILENCE SWITCH SHALL SOUND "ON" THE EMS. THE SYSTEM SHALL AUTOMATICALLY ROTATE LEAD/LAG ASSIGNMENT EVERY WEEK, ADJUSTABLE THROUGH SOFTWARE.
4. IN ADDITION TO AUTOMATIC ALTERNATOR PROVIDE A PANEL MOUNTED PUMP SELECTOR SWITCH THAT SHALL ALLOW MANUAL OVERRIDE OF THE PRIMARY (LEAD) AND LAG STATUS OF EACH PUMP AND INTERLOCKS TO THE SELECTED PUMPS. PROVIDE A POLE ON THE H-O-A SWITCH FOR THE EXCLUSIVE USE OF THE CCMS FOR REMOTE MONITORING OF THE SWITCH POSITION. ALL INPUT AND OUTPUT POINTS LISTED ON THE CCMS POINT SCHEDULE THAT ARE CONNECTED THROUGH A CONTROL PANEL PROVIDED BY THE ATC SUBCONTRACTOR, SHALL BE WIRED THROUGH DEDICATED TERMINAL STRIPS. DIGITAL OUTPUT (DO) CONTROL POINTS SHALL BE A 24 VAC MAX SIGNAL PROVIDED BY THE CCMS TO THE ATC CONTROL PANEL TO DRIVE A PILOT RELAY. THE PILOT RELAY, THE H-O-A SWITCH, AND ALL CONTROL PANEL AND EQUIPMENT INTERLOCK WIRING SHALL BE PROVIDED BY THE ATC SUBCONTRACTOR. THE 24 VAC SIGNAL AND ALL WIRING BETWEEN THE ATC CONTROL PANEL AND THE CCMS SHALL BE PROVIDED BY THE ATC SUBCONTRACTOR.
5. CHILLERS SHALL BE OPERATED THROUGH THE BMS SYSTEM TO ACHIEVE ROTATIONAL SEQUENCING TO FACILITATE EVEN RUN TIMES, AS WELL AS LEAD/LAG ENABLE AND DISABLE. EACH CHILLER WHEN ENABLED SHALL OPERATE UNDER ITS PACKAGED CONTROLS TO MAINTAIN A CONSTANT LEAVING WATER TEMPERATURE OF 42 DEGREES F (ADJUSTABLE). WHENEVER A CHILLER IS ENABLED ITS DEDICATED (CONSTANT SPEED) PRIMARY PUMP SHALL ENERGIZE AND RUN CONTINUOUSLY. LEAD CHILLER SHALL BE ALTERNATED EVERY SEVEN (7) DAYS OR BASED ON RUN TIME HOURS (ADJUSTABLE).
6. PROVIDE AUTOMATIC ALTERNATOR FOR LEAD/LAG PUMP CONTROL OF THE SECONDARY PUMPS. ONLY ONE SECONDARY PUMP SHALL RUN AT ONE TIME. IF THE LEAD PUMP FAILS AS SENSORED BY DIFFERENTIAL PRESSURE SENSOR, THE LAG PUMP SHALL ENERGIZE AFTER A 15 SECOND TIME DELAY AND AN AUDIBLE AND VISUAL ALARM WITH SILENCE SWITCH SHALL SOUND "ON" THE EMS. THE SYSTEM SHALL AUTOMATICALLY ROTATE LEAD/STANDBY ASSIGNMENT EVERY WEEK, ADJUSTABLE THROUGH SOFTWARE.
7. THE DIFFERENTIAL PRESSURE SENSOR SET POINT FOR THE VARIABLE SPEED DRIVEN PUMPS SHALL BE FIELD DETERMINED. SET POINT SHALL BE BASED ON MAINTAINING MINIMUM PRESSURE TO OVERCOME RESISTANCE OF ANY COILS, CONTROL VALVE, AND RUNOUT PIPEFITTINGS. THE FINAL DIFFERENTIAL PRESSURE SENSOR SET POINT VALUE SHALL BE DOCUMENTED ON THE AS-BUILT AC DRAWINGS.
8. FURNISH AND INSTALL HIGH TEMPERATURE AND LOW TEMPERATURE ALARM PROGRAM ON THE SECONDARY LOOP SUPPLY TEMPERATURE SENSOR. SHOULD THE SECONDARY LOOP TEMPERATURE EXCEED 60 DEGREES F (ADJUSTABLE) OR DROP BELOW 38 DEGREES F (ADJUSTABLE) DURING NORMAL SYSTEM OPERATION AND ALARM SHOULD ANNUNCIATE ON THE ATC SYSTEM AN AUDIBLE AND VISUAL ALARM WITH SILENCE SWITCH SHALL ANNUNCIATE UPON ACTIVATION OF THE ALARM CONDITION.
9. WHEN THE CHILLED WATER SYSTEM IS STARTED (MANUALLY OR AUTOMATICALLY), EITHER LOCALLY OR REMOTELY THROUGH THE CCMS, THE ATC SYSTEM SHALL START THE LEAD PRIMARY (CONSTANT SPEED) CHILLED WATER PUMP AND LEAD CHILLER THROUGH THE ATC PANEL MOUNTED PUMP SELECTOR SWITCH. THE LEAD PRIMARY CHILLED WATER PUMP SHALL THEN RUN CONTINUOUSLY. UPON PROOF OF FLOW VIA DISCHARGE FLOW SWITCH, (FS), THE LEAD CHILLER SHALL BE ENERGIZED. THE LEAD CHILLER SYSTEM PACKAGED CONTROLS SHALL MAINTAIN A LEAVING WATER TEMPERATURE OF 42 DEGREES F (ADJUSTABLE) AS SENSED BY CHILLED WATER SUPPLY TEMPERATURE SENSOR, TS-1. A CHILLER RETURN TEMPERATURE SENSORS, TS-3 & TS-4, SHALL BE PROVIDED TO MONITOR CHILLER RETURN TEMPERATURE. THE LEAD CHILLER AND ITS ASSOCIATED PUMP SHALL MAINTAIN CHILLED WATER BUFFER TANK TEMPERATURE BY LOADING/UNLOADING COMPRESSORS AS REQUIRED.
10. THE SECONDARY LOOP FLOW MEASURING STATION, FMS) SHALL ENABLE THE LAG CHILLED WATER SECONDARY PUMP WHENEVER THE FLOW RATE MEASURED AT THE SECONDARY LOOP FLOW MEASURING STATION, FMS) REACHES 110 PERCENT (ADJUSTABLE) OF THE FLOW RATE OF A SINGLE SECONDARY CHILLED WATER PUMP MEASURED AT THE SECONDARY LOOP FLOW MEASURING STATION, FMP). PROVIDE TIME DELAY OF 15 MINUTES (ADJUSTABLE) TO AVOID CYCLING ON/OFF OF LAG SECONDARY CHILLED WATER PUMP. THE LAG CHILLED WATER SECONDARY PUMP AND SHALL THEN OPERATE IN PARALLEL WITH THE LEAD SECONDARY PUMP UNTIL THE SECONDARY LOOP FLOW RATE MEASURED AT FMS) DROPS TO 86 PERCENT OF THE DESIGN FLOW RATE OF A SINGLE SECONDARY CHILLED WATER PUMP. PROVIDE TIME DELAY OF 15 MINUTES (ADJUSTABLE) TO AVOID CYCLING ON/OFF OF LAG SECONDARY CHILLED WATER PUMP.
11. CHILLER(S) AND ASSOCIATED PRIMARY PUMP(S) SHALL BE SEQUENCED TO MAINTAIN HYDRAULIC SEPARATOR VARIABLE TEMPERATURE (ADJUSTABLE) AS SENSED BY HYDRAULIC SEPARATOR TEMPERATURE SENSOR TS-7. WHEN THE BUILDING LOAD CAN BE DELIVERED BY A SINGLE CHILLER AS DETERMINED BY HYDRAULIC SEPARATOR TEMPERATURE SENSORS THEN THE LAG CHILLER AND ITS ASSOCIATED PRIMARY PUMP SHALL BE DE-ENERGIZED. SHOULD THE LEAD PRIMARY CHILLER PUMP OR ITS ASSOCIATED CHILLER FAIL, THEN THE LAG PRIMARY CHILLER PUMP AND ITS ASSOCIATED CHILLER SHALL BE ENERGIZED. IF THE LEAD PRIMARY CHILLER OR PRIMARY CHILLER PUMP FAIL THEN AN AUDIBLE AND VISUAL ALARM WITH SILENCE SWITCH SHALL SEND AN ALARM ON THE ATC/EMS SYSTEM PANEL. PROVIDE ALL INTERLOCK WIRING REQUIRED BY THE CHILLER MANUFACTURER, INCLUDING STARTER INTERLOCKS, FLOW SWITCHES, AND PUMP STARTER AUXILIARY CONTROL WIRING TO INSURE A COMPLETE AND AUTOMATED SYSTEM.
12. TANK TEMPERATURE SENSOR (TS-7) SHALL ENERGIZE AIR COOLED CHILLERS IN SEQUENCE AS REQUIRED TO MAINTAIN TANK TEMPERATURE SET POINT 42 DEGREES F (ADJUSTABLE).
13. THE FACTORY FURNISHED CHILLER CONTROLS SHALL BE ARRANGED TO PREVENT SHORT CYCLING OF COMPRESSORS DUE TO RAPID CHANGES IN CHILLER RETURN TEMPERATURE. THE CHILLER COMPRESSORS SHALL BE BROUGHT ON AND DE-ENERGIZED IN SUFFICIENT NUMBER OF STAGES TO PREVENT SHORT CYCLING.
14. THROUGH INTERLOCK WIRING THE LEAD SECONDARY CHILLED WATER PUMP SHALL BE ENERGIZED WHENEVER A PRIMARY CHILLED WATER PUMP AND CHILLER IS ENERGIZED. THE LEAD SECONDARY CHILLED WATER PUMP SYSTEM SHALL VARY SYSTEM FLOW THROUGH PUMP VARIABLE SPEED DRIVE TO MAINTAIN DIFFERENTIAL PRESSURE SET POINT. DIFFERENTIAL PRESSURE SENSOR/TRANSMITTER SHALL BE COMMERICAL GRADE QUALITY. INTELLIGENT TYPE, ROSEMOUNT MODEL 1151 DP, FOXBORO, OR APPROVED EQUIV. DIFFERENTIAL PRESSURE SET POINT SHALL BE ADJUSTABLE THROUGH THE ENERGY MANAGEMENT SYSTEM. THE DIFFERENTIAL PRESSURE SENSOR/TRANSMITTER SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. THE LEAD SECONDARY CHILLED WATER PUMP SHALL ONLY ENERGIZE WHEN PRIMARY SYSTEM IS ON.
15. WHEN THE CHILLED WATER SYSTEM IS STOPPED, EITHER MANUALLY OR AUTOMATICALLY, THE ATC CONTRACTOR SHALL PROVIDE A "TIME DELAY OFF" FUNCTION TO KEEP BOTH THE SECONDARY LEAD CHILLED WATER PUMP AND THE PRIMARY LEAD CHILLED WATER PUMP RUNNING FOR AN ADDITIONAL 2 MINUTES (ADJUSTABLE) AFTER THE CHILLER HAS BEEN DE-ENERGIZED TO ENSURE THAT RESIDUAL REFRIGERANT WILL PASS OUT OF THE EVAPORATOR.
16. PROVIDE A DIFFERENTIAL PRESSURE SENSOR TO DETERMINE STATUS OF EACH CHILLER. THE DDC SYSTEM AND LOCAL ATC PANEL SHALL BE ALARMED FOR CHILLER FAILURE.
17. THE PRIMARY CHILLED WATER PLANT LOOP SHALL BE PROVIDED WITH CHILLER SUPPLY TEMPERATURE SENSORS (TS-1) CHILLER RETURN TEMPERATURE SENSORS (TS-3, TS-4), PRIMARY LOOP SUPPLY TEMPERATURE SENSOR, TS-5, PRIMARY LOOP RETURN TEMPERATURE SENSOR, TS-6 AND A PRIMARY LOOP FLOW MEASURING STATION FMP. ALL CONTROL DEVICES SHALL BE MONITORED AND FULLY ADJUSTABLE.
18. THE SECONDARY CHILLED WATER PLANT LOOP SHALL BE PROVIDED WITH SECONDARY LOOP SUPPLY WATER TEMPERATURE SENSOR, TS-7, SECONDARY LOOP RETURN WATER TEMPERATURE SENSOR TS-8, SECONDARY LOOP FLOW MEASURING STATION FMS AND DIFFERENTIAL PRESSURE TRANSMITTERS. ALL CONTROL DEVICES SHALL BE MONITORED AND FULLY ADJUSTABLE.
19. ATC SYSTEM SHALL INCLUDE ALL ALGORITHMS AND DEVICES REQUIRED FOR CHILLER SEQUENCING, PUMP SEQUENCING, BTU MEASUREMENT, AND CHILLED WATER RESET.
20. PROVIDE A MAKE-UP WATER FLOW METER/ALARM THAT SHALL, UPON DETECTION OF FLOW (FIELD DETERMINED) SEND AN ALARM TO THE CENTRAL STATION MONITORING SYSTEM NOTIFYING THE OWNER THAT FLOW IS BEING PRODUCED THROUGH THE METER. UPON MANUAL RESET AT THE FLOW METER THE ALARM SHALL CEASE AND THE SYSTEM RETURN TO NORMAL STATUS. THE CCMS SHALL KEEP RECORD OF TOTAL NUMBER OF GALLONS THAT HAVE PASSED THROUGH THE MAKE-UP WATER FLOW METER/ALARM.
21. PROVIDE ALL INTERLOCK AND CONTROL WIRING FOR AUTOMATIC GLYCOL FEEDER. INTERLOCK STATUS AND LOW FLUID ALARM ON GLYCOL FEEDER WITH ATC SYSTEM.
22. THE PRIMARY AND SECONDARY CHILLED WATER LOOPS SHALL BE PROVIDED WITH FLOW MEASURING STATION (FMS). THE FLOW MEASURING STATIONS SHALL MONITOR THE SECONDARY CHILLED WATER FLOW RATES IN GALLONS PER MINUTE AND SHALL DISPLAY THE VALUE ON THE ATC SYSTEM COMPUTER.
23. FURNISH AND INSTALL A FLOW SWITCH (FS) IN DISCHARGE PIPE OF EACH CHILLER. CHILLERS SHALL NOT BE ENABLED TO ENERGIZE UNTIL FLOW SWITCH PROVES FLOW. INTERLOCK FLOW SWITCHES TO ATC SYSTEM.
24. MINIMUM FLOWRATE BYPASS VALVE: PROVIDE A MINIMUM SECONDARY FLOW RATE BYPASS VALVE, DIFFERENTIAL PRESSURE TRANSMITTER AND INTERLOCK WITH SECONDARY LOOP FLOW MEASUREMENT TO MAINTAIN MINIMUM SECONDARY CHILLED WATER FLOW RATE REGARDLESS OF TERMINAL EQUIPMENT TWO-INCH VALVE POSITIONS). THE MINIMUM SECONDARY FLOW RATE BYPASS VALVE SHALL MODULATE TO MAINTAIN MINIMUM SCHEDULED FLOW RATE ON THE CHILLED WATER SECONDARY PUMPS AS SCHEDULED. THE DIFFERENTIAL PRESSURE AT THE MINIMUM FLOW BYPASS SHALL ALSO BE MONITORED ON THE ATC SYSTEM.
25. THE DIFFERENTIAL PRESSURE SET POINT SHALL BE DETERMINED BASED ON FIELD MEASUREMENTS OF DIFFERENTIAL PRESSURE ACROSS THE MAINS AND FIELD MEASUREMENT OF THE CHILLED WATER SECONDARY PUMP FLOW RATES TO VERIFY A MINIMUM FLOW AS SCHEDULED ON THE CHILLED WATER SECONDARY PUMP SCHEDULE. DIFFERENTIAL PRESSURE SHALL BE INDICATED IN ATC GRAPHIC AS SECONDARY INDICATOR OF MINIMUM FLOW AS MEASURED AT THE FLOW MEASUREMENT STATION.
26. HARDWIRE INTERLOCK EACH CHILLER PRIMARY PUMP WITH ITS ASSOCIATED CHILLER.
27. MAP OVER BOTH CHILLERS BACNET POINTS DESIRED BY OWNER TO THE BMS.
28. INTERLOCK AND MONITOR STATUS OF ELECTRIC HEAT TAPE FOR ALL EXTERIOR PIPING. REFER TO ELECTRICAL DRAWINGS FOR LOCATION.
29. EACH CHILLER'S PRIMARY CHILLED WATER PUMP SHALL BE HARDWIRED INTERLOCKED WITH ITS ASSOCIATED CHILLER. CHILLER CONTROL PANEL SHALL AUTOMATICALLY ENERGIZE PRIMARY CHILLED WATER PUMP FOR FREEZE PROTECTION PER MANUFACTURER'S REQUIREMENTS. UPON A SIGNAL FROM THE AIR COOLED CHILLER FREEZE PROTECTION PUMP CONTROL OUTPUT FOR PROTECTION PUMP OPERATION THE LEAD PRIMARY CHILLED WATER PUMP SHALL ENERGIZE AND RUN CONTINUOUSLY. FREEZE PROTECTION MODE SHALL ONLY BE ENABLED WHEN THE CHILLED WATER SYSTEM IS "OFF" DUE TO AMBIENT CONDITIONS AND THE AMBIENT TEMPERATURE IS BELOW 37°F (ADJUSTABLE).

DESIGN BY	RAK
CHECKED BY	DRH
SCALE	AS NOTED
JOB NO.	24008B
DATE	03/05/2025