



### **ADDENDUM NO. 3**

**RE:           UNC-CH Coastal Process Environmental Health Lab**  
SCO ID No: 23-26296-01A  
McKim & Creed No: 01488-0083

DATE:       October 9, 2024

FROM:       McKim & Creed

To:           Prospective Bidders

This Addendum issued prior to receipt of bids shall and does hereby become a part of the Contract Documents for the above Project. This Addendum must be acknowledged on the Form of Proposal.

All Prime contractors shall be responsible for ensuring that their Subcontractors are properly apprised of the contents of this Addendum.

All information contained in this Addendum shall supersede and shall take precedence over any conflicting information in the original Drawings and Specifications.

### **CHANGES TO SPECIFICATION:**

- Advertisement for Bids and Notice to Bidders – Based on no bids being received on Friday, September 13, 2024, the project has been re-advertised for bids. Sealed proposals will be received until **11:00 AM on Wednesday, October 23, 2024** at UNC-CH Institute of Marine Science, in Conference Room 127, Coastal Processes Health Building, 3431 Arendell Street, Morehead City, NC 28557 and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment for the construction of:

University of North Carolina at Chapel Hill  
Coastal Process Environmental Health Lab – Morehead City, NC  
SCO ID No. 23-26296-01A

Electronic plans and specifications for this project for prime contractors can be obtained by contacting McKim & Creed, 4300 Edwards Mill Road, Suite 200, Raleigh NC 27612, by e-mail: (Allison (Ally) Jurgens ([AJurgens@mckimcreed.com](mailto:AJurgens@mckimcreed.com)) or Andy Sigmon ([asigmon@mckimcreed.com](mailto:asigmon@mckimcreed.com)).

The State reserves the unqualified right to reject any and all proposals.

- Table of Contents – Revised to include specification sections 01 21 00 Allowances and 01 22 00 Unit Prices.
- Specification section 01 21 00 Allowances - Added.
- Specification section 01 22 00 Unit Prices - Added.
- Form of Proposal – Revised to remove Alternate M-02A and M-02B; change the wording for M-02C; and include Unit Prices Section and Unit Price No. 1 for Controls Field Technician.
- Based on removal of Alternate M-02A and M-02B from the Form of Proposal noted above, references to any of these alternates in the specifications shall be deleted.

### **CHANGES TO DRAWINGS:**

- M1.0 – Mechanical Demolition – Revised to address controls.
- M1.1 – Mechanical New Work – Revised to address controls.
- M4.0 – Mechanical Controls – Revised to address controls.
- Based on removal of Alternate M-02A and M-02B from the Form of Proposal noted above, references to any of these alternates in the drawings shall be deleted.

### **RESPONSES TO CONTRACTOR QUESTIONS:**

None currently.

### **COMMENTS/CLARIFICATIONS:**

None currently.

### **ATTACHMENTS:**

- Table of Contents
- 01 21 00 – Allowances
- 01 22 00 – Unit Prices
- Form of Proposal
- M1.0 – Mechanical Demolition Revision 1
- M1.1 – Mechanical New Work Revision 1
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**University of North Carolina Chapel Hill  
Coastal Process Environmental Health Lab  
SCO # 23-26296-01A**

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**University of North Carolina Chapel Hill  
Coastal Process Environmental Health Lab  
SCO # 23-26296-01A**

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END

**University of North Carolina Chapel Hill  
Coastal Process Environmental Health Lab  
SCO # 23-26296-01A**

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. The Contractor shall include in the base Contract Sum the following allowances. Unless otherwise indicated, the allowance shall include all costs for labor, material, taxes, overhead, profit, fees and associated costs. The Contract sum shall be adjusted when the actual cost of work is determined by Change Order issued by the Architect/Engineer in accordance with the Supplementary General Conditions. Unit Prices, indicated on the Form of Proposal, shall be used as a basis to calculate adjustments to the contract amount. The unused portion of all allowances shall be credited to the Owner at the completion of the work.
- B. Refer to Section 01 22 00 "Unit Prices" for descriptions of unit prices referenced in this section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Include \$20,000 allowance to provide material and labor to repair existing Siemens Legacy DDC system.
  - 1. Coordinate quantity allowance adjustment with unit-price requirements in Section 01220 "Unit Prices."

END OF SECTION

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SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. See Division 1 Section "Allowances" for procedures for using unit prices to adjust quantity allowances.

1.2 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

- A. Unit Price No. 1: Controls Field Technician Labor Rate
  - 1. Purpose: To adjust the contract sum in case a quantity different from that indicated in the allowance is required.
  - 2. Unit of Measurement: \$ amount per 1 hour of labor
  - 3. Include the following in the unit price:
    - a. Labor.
    - b. Overhead and profit.
  - 4. Include all other related costs in the contract sum.
  - 5. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Section 012100 "Allowances."



END OF SECTION

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**University of North Carolina Chapel Hill  
Coastal Process Environmental Health Lab  
SCO # 23-26296-01A**

# FORM OF PROPOSAL

UNC-CH Coastal Process  
Environmental Health Lab  
University of North Carolina at Chapel  
Hill  
SCO-ID 23-26296-01A

Contract: \_\_\_\_\_  
Bidder: \_\_\_\_\_  
Date: \_\_\_\_\_

The undersigned, as bidder, hereby declares that the only person or persons interested in this proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this proposal or in the contract to be entered into; that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respects fair and in good faith without collusion or fraud. The bidder further declares that he has examined the site of the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed. The bidder further declares that he and his subcontractors have fully complied with NCGS 64, Article 2 in regards to E-Verification as required by Section 2.(c) of Session Law 2013-418, codified as N.C. Gen. Stat. § 143-129(j).

The Bidder proposes and agrees if this proposal is accepted to contract with the State of North Carolina through University of North Carolina in the form of contract specified below, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the construction of University of North Carolina Chapel Hill – Coastal Process Environmental Health Lab – Morehead City, NC in full in complete accordance with the plans, specifications and contract documents, to the full and entire satisfaction of the State of North Carolina, and the University of North Carolina at Chapel Hill with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and the contract documents, for the sum of:

## SINGLE PRIME CONTRACT:

Base Bid: \_\_\_\_\_ Dollars(\$)

General Subcontractor:  
\_\_\_\_\_ Lic \_\_\_\_\_

Plumbing Subcontractor:  
\_\_\_\_\_ Lic \_\_\_\_\_

Mechanical Subcontractor:  
\_\_\_\_\_ Lic \_\_\_\_\_

Electrical Subcontractor:  
\_\_\_\_\_ Lic \_\_\_\_\_

GS143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor's bid is later determined by the contractor to be non-responsible or non-responsive or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.

**ALTERNATES:**

Should any of the alternates as described in the contract documents be accepted, the amount written below shall be the amount to be "added to" or "deducted from" the base bid.

Alternate No. M-01: Provide Annexair Biocomposite as manufacturer for AHU-1.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. M-02C: Furnish and install building automation system work by Siemens.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-01: Electrical feeder from 'MSB' to 'ATS-EM1'.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-02: Electrical feeder from 'MSB' to 'Elevator'.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-03: Electrical feeder from 'MSB' to 'PD & LG'.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-04: Electrical feeder from 'MSB' to 'Chiller'.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-05: Electrical feeder from 'MSB' to 'L1A'.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-06: Electrical feeder from 'MSB' to 'L2A'.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-07: Electrical feeder from 'MSB' to 'L1C'.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-08A: Provide new electrical service from utility transformer to panel 'MSB' per drawings E1.1 and E3.2.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-08B: Same as Alternate E-08A except provide service entrance rated enclosed circuit breaker in NEMA 4X stainless steel enclosure in lieu of fused disconnect.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-09A: Provide new electrical service from utility transformer to panel 'MSB' per drawings E1.2 and E3.3.

(Add) \_\_\_\_\_ Dollars(\$)

Alternate No. E-09B: Same as Alternate E-08A except provide service entrance rated enclosed circuit breaker in NEMA 4X stainless steel enclosure in lieu of fused disconnect.

(Add) \_\_\_\_\_ Dollars(\$)

**UNIT PRICES**

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents.

**HVAC CONTRACT:**

No. 1 Controls Field Technician Labor Cost (\$/hr) Unit Price (\$/hr) \_\_\_\_\_

The bidder further proposes and agrees hereby to commence work under this contract on a date to be specified in a written order of the designer and shall fully complete all work thereunder within the time specified in the Supplementary General Conditions Article 23. Applicable liquidated damages amount is also stated in the Supplementary General Conditions Article 23.

## **MINORITY BUSINESS PARTICIPATION REQUIREMENTS**

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*Provide with the bid* - Under GS 143-128.2(c) the undersigned bidder shall identify **on its bid** (Identification of Minority Business Participation Form) the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. **Also** list the good faith efforts (Affidavit **A**) made to solicit minority participation in the bid effort.

**NOTE:** A contractor that performs all of the work with its own workforce may submit an Affidavit (**B**) to that effect in lieu of Affidavit (**A**) required above. The MB Participation Form must still be submitted even if there is zero participation.

*After the bid opening* - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent low bidder, the bidder shall then file within 72 hours of the notification of being the apparent lowest bidder, the following:

**Affidavit C**, if the portion of work to be performed by minority firms is equal to or greater than 10% of the bidder's total contract price. Affidavit C includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, and lists the participating minority firms with the dollar value of their contracts.

**OR**

**Affidavit D**, if the portion of work to be performed by minority firms is less than 10% of the bidder's total contract price. Affidavit D includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, lists the participating minority firms with the dollar value of their contracts, and must include adequate **documentation of Good Faith Effort**.

**AND**

**Affidavit B** (with bid), if the bidder does not customarily subcontract work on this type project and has all material and supplies required for the project. Bidder may be asked to provide additional documentation in support of the claim of self-performance and regarding the Good Faith Effort to utilize minority suppliers where possible.

**Note:** Bidders must always submit **with their bid** the Identification of Minority Business Participation Form listing all MB contractors, vendors and suppliers that will be used. If there is no MB participation, then enter none or zero on the form. Affidavit A **or** Affidavit B, as applicable, also must be submitted with the bid. Failure to file a required affidavit or documentation with the bid or after being notified apparent low bidder is grounds for rejection of the bid.

## Proposal Signature Page

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The undersigned further agrees that in the case of failure on his part to execute the said contract and the bonds within ten (10) consecutive calendar days after being given written notice of the award of contract, the certified check, cash or bid bond accompanying this bid shall be paid into the funds of the owner's account set aside for the project, as liquidated damages for such failure; otherwise the certified check, cash or bid bond accompanying this proposal shall be returned to the undersigned.

Respectfully submitted this day of \_\_\_\_\_

\_\_\_\_\_  
(Name of firm or corporation making bid)

WITNESS:

\_\_\_\_\_  
(Proprietorship or Partnership)

By: \_\_\_\_\_  
Signature

Name: \_\_\_\_\_  
Print or type

Title \_\_\_\_\_  
(Owner/Partner/Pres./V.Pres)

Address \_\_\_\_\_

ATTEST:

By: \_\_\_\_\_

Title: \_\_\_\_\_  
(Corp. Sec. or Asst. Sec. only)

License No. \_\_\_\_\_

Federal I.D. No. \_\_\_\_\_

Email Address: \_\_\_\_\_

(CORPORATE SEAL)

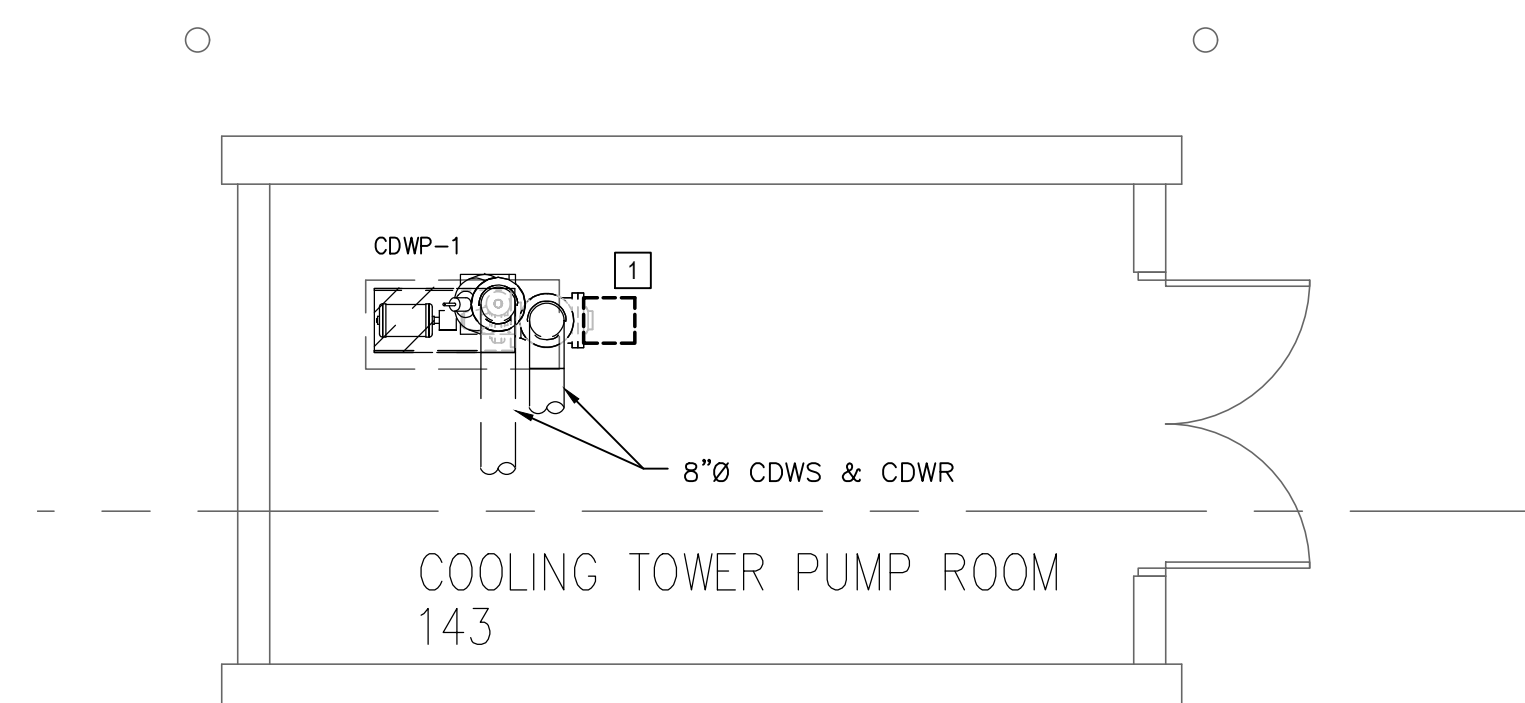
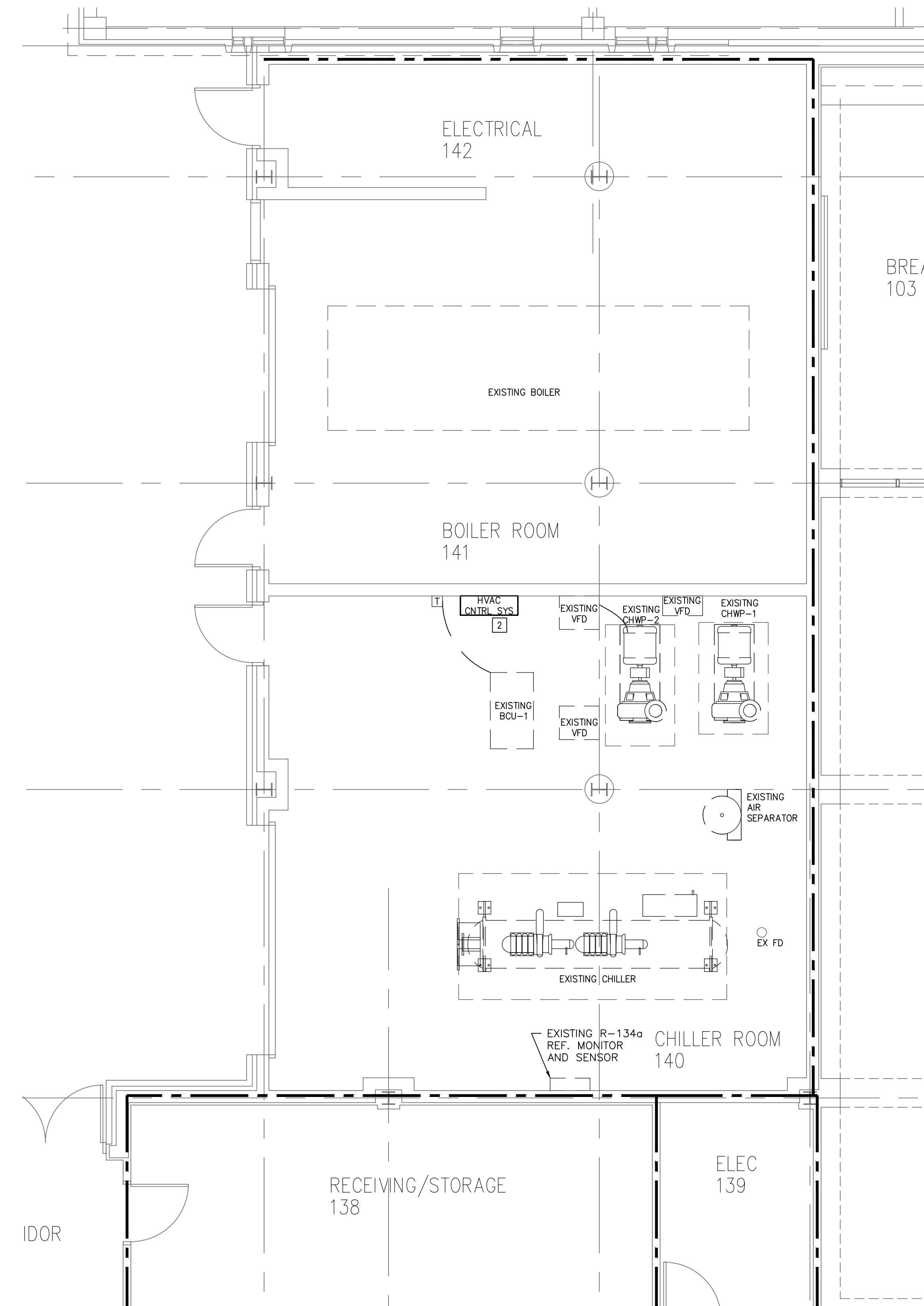
Addendum received and used in computing bid:

Addendum No. 1 \_\_\_\_\_ Addendum No. 3 \_\_\_\_\_ Addendum No. 5 \_\_\_\_\_ Addendum No. 6 \_\_\_\_\_

Addendum No. 2 \_\_\_\_\_ Addendum No. 4 \_\_\_\_\_ Addendum No. 6 \_\_\_\_\_ Addendum No. 7 \_\_\_\_\_

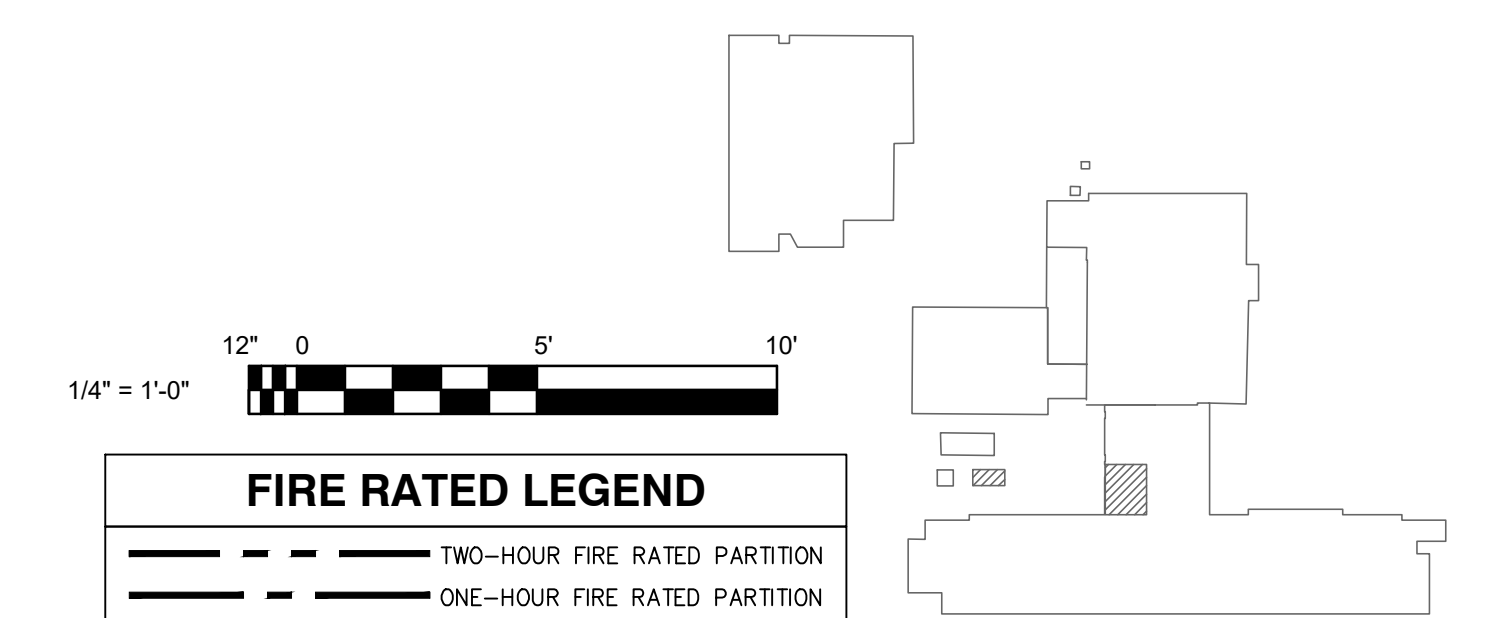
**DEMOLITION KEY NOTES**

1. REMOVE EXISTING CONDENSER WATER BYPASS CONTROL VALVE.
2. EXISTING SIEMENS LEGACY DDC CONTROL PANEL. CONTROL PANEL IS NOT CURRENTLY OPERATIONAL. CONTRACTOR SHALL INCLUDE ALLOWANCE TO DIAGNOSE AND REPAIR EXISTING SYSTEM. REFER TO 012100 ALLOWANCES.



**2 COOLING TOWER PUMP ROOM 143 - DEMOLITION**  
M1.0 SCALE : 1/4" = 1'-0"

**3 COASTAL PROCESS - BOILER ROOM 141 - DEMOLITION**  
M1.0 SCALE : 1/4" = 1'-0"



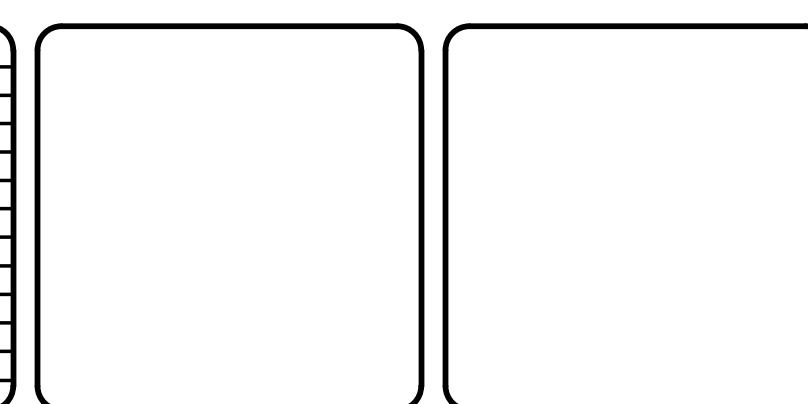
**FIRE RATED LEGEND**

---	TWO-HOUR FIRE RATED PARTITION
- - -	ONE-HOUR FIRE RATED PARTITION

**KEY PLAN**

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	2024-10-07
2	BID SET	2024-08-09

REVISIONS



**MCKIM & CREED**  
4300 Edwards Mill Road  
Suite 200  
Raleigh, North Carolina 27612  
Phone: (919) 233-8091, Fax: (919) 233-8031  
NC License # F-1222  
www.mckimcreed.com

**THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL**

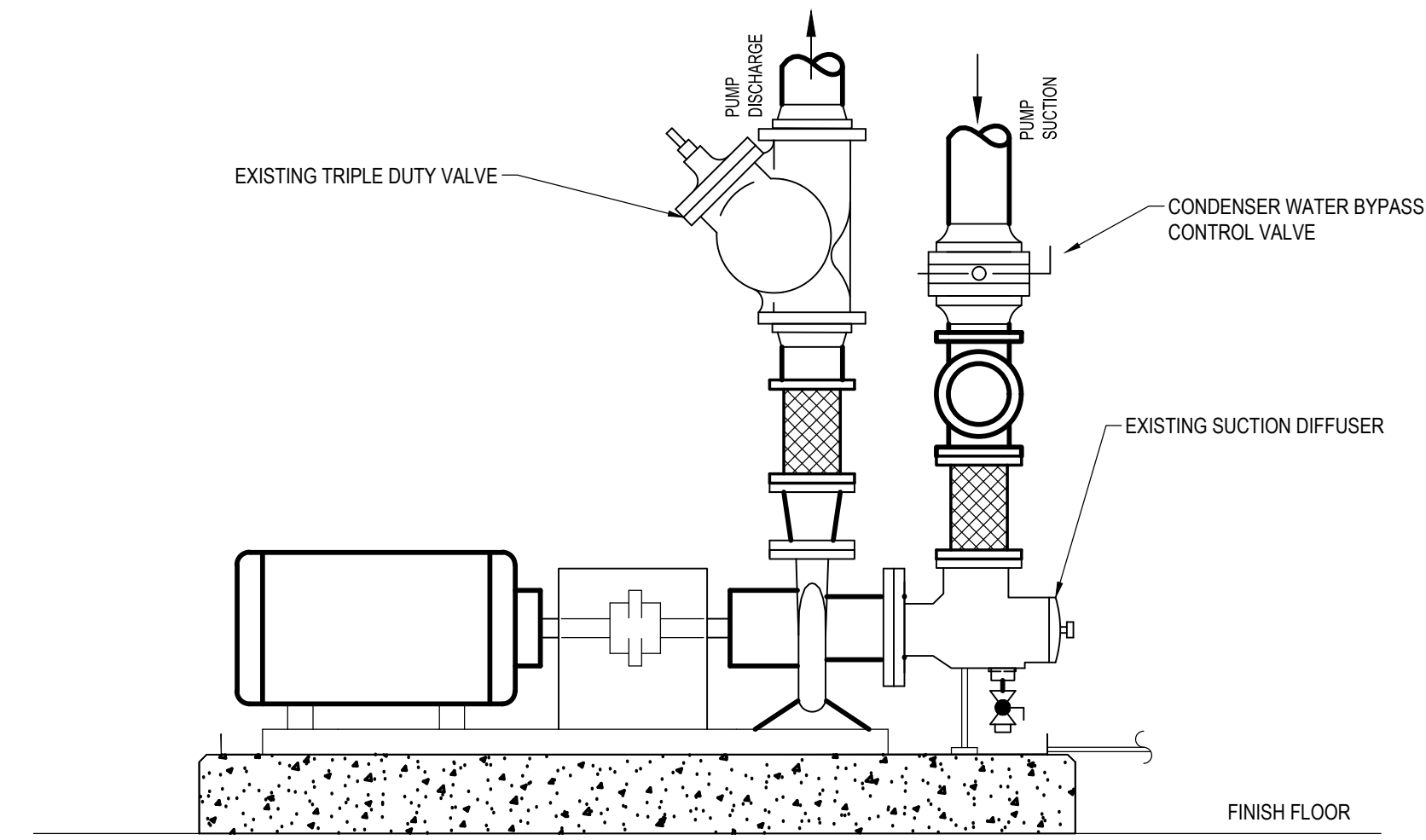
**COASTAL PROCESS ENVIRONMENTAL HEALTH LAB  
SCO ID: 23-26296-01A**

**MECHANICAL DEMOLITION PLANS**

PROJ. START DATE: 2024-08-09	SCALE: M1.0
MCE PROJ. # 01488-0053	HORIZONTAL: AS NOTED
DRAWN: KAS	VERTICAL: N/A
DESIGNED: KAS	DRAWING NUMBER: 0
CHECKED: TBN	REVISION: 0
PROJ. MGR: ADS	

STATUS: **BID SET**

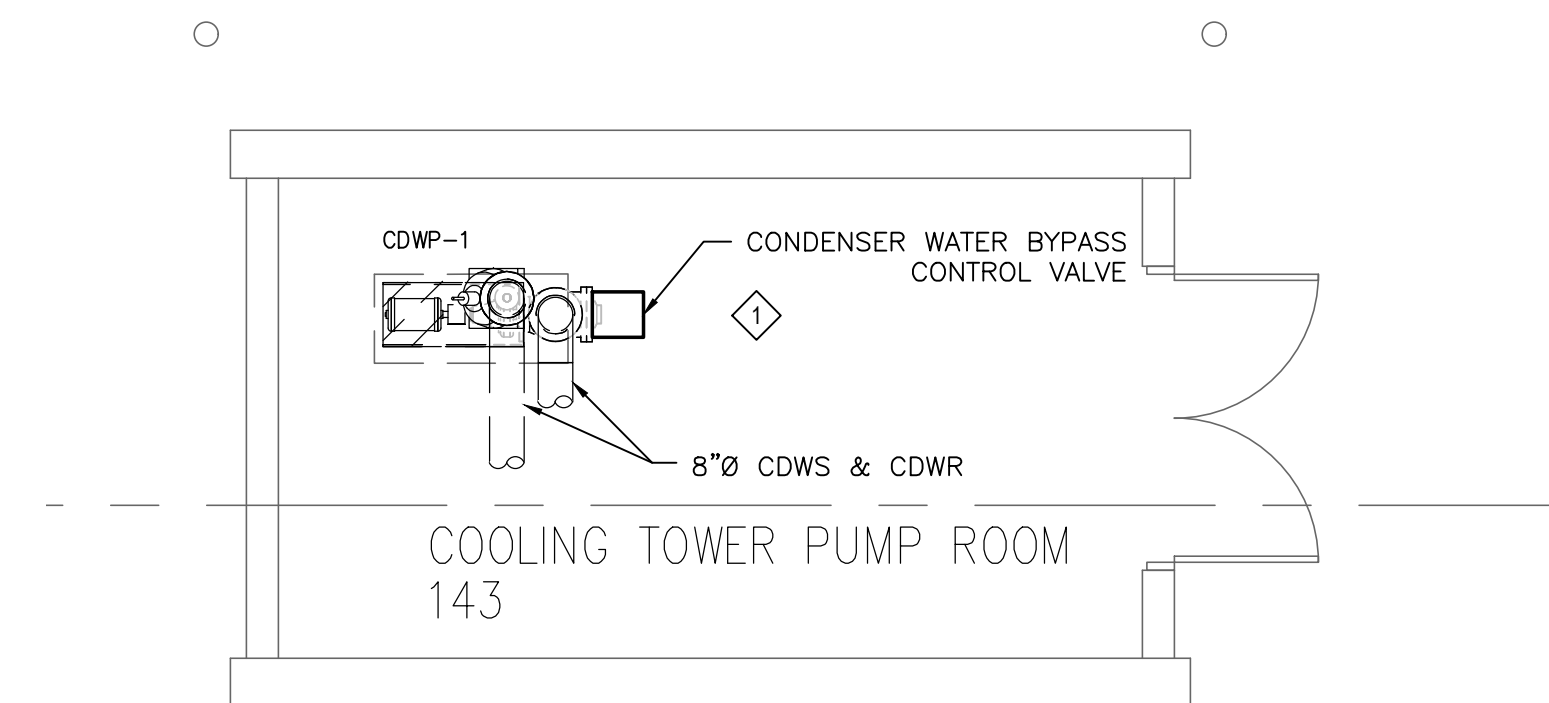




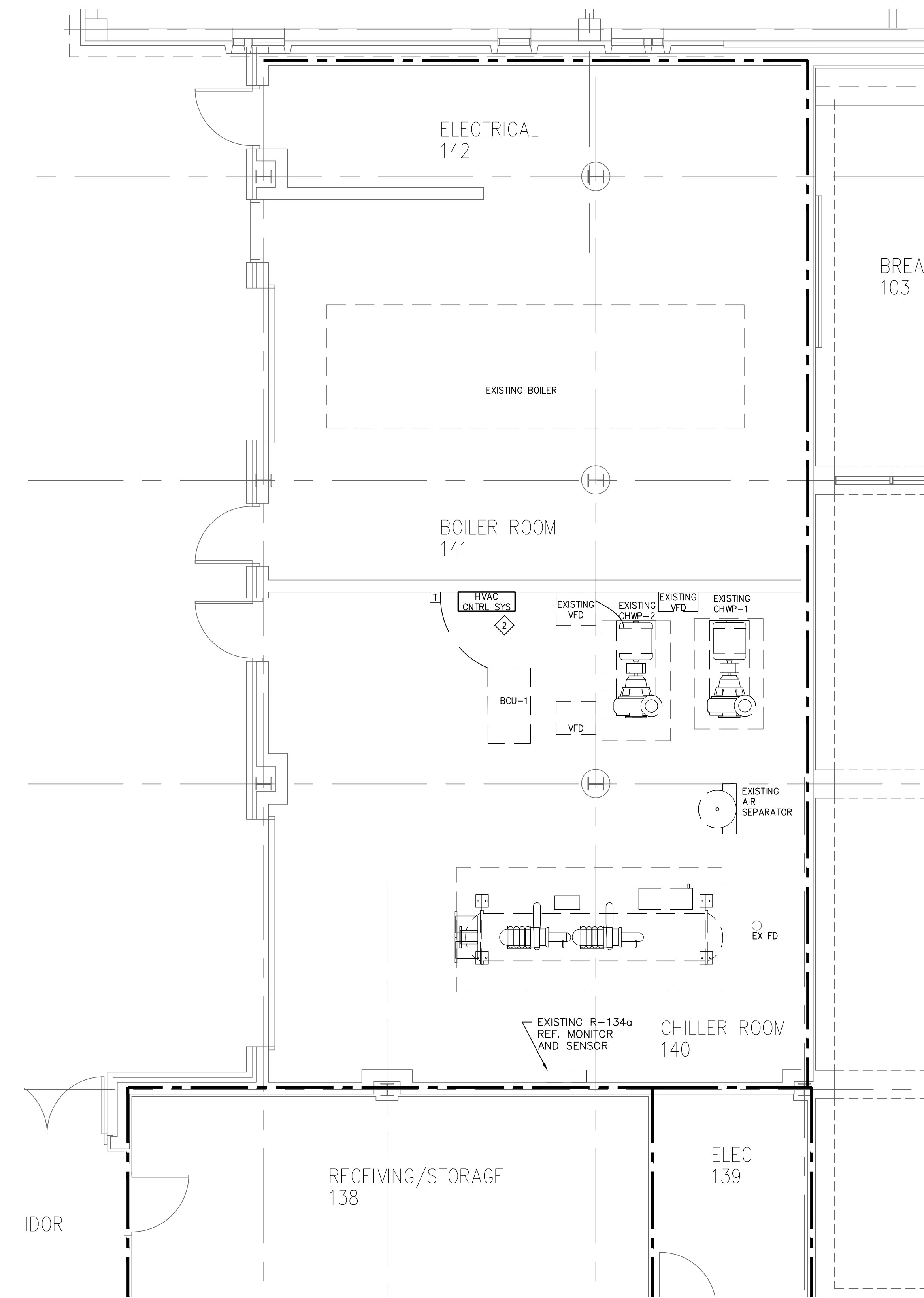
- NOTES
1. DIAGRAMMATIC ONLY DO NOT OBSTRUCT ADJACENT EQUIPMENT
  2. SEE SPECIFICATION FOR VIBRATION ISOLATION AND SEISMIC CONSTRAINT REQUIREMENTS
  3. SUPPORT PIPING INDEPENDENT OF FLEXIBLE PIPE CONNECTION
  4. CHILLED WATER PRIMARY PUMPS TO HAVE TRIPLE DUTY VALVES. FOR REMAINING PUMPS WITH VFD'S, TRIPLE DUTY VALVE IS NOT REQUIRED (SEPARATE CHECK VALVE AND BUTTERFLY ISOLATION VALVE AREA ACCEPTABLE).
  5. CHILLED WATER PUMPS TO HAVE T-304 STAINLESS STEEL CONDENSATION DRAIN PAN WITH DRAIN PIPED TO FLOOR DRAIN

NOT TO SCALE

**1 | BASE MOUNTED PUMP PIPING DETAIL**



**2 | COOLING TOWER PUMP ROOM 143 - NEW WORK**  
M1.1 SCALE : 1/4" = 1'-0"



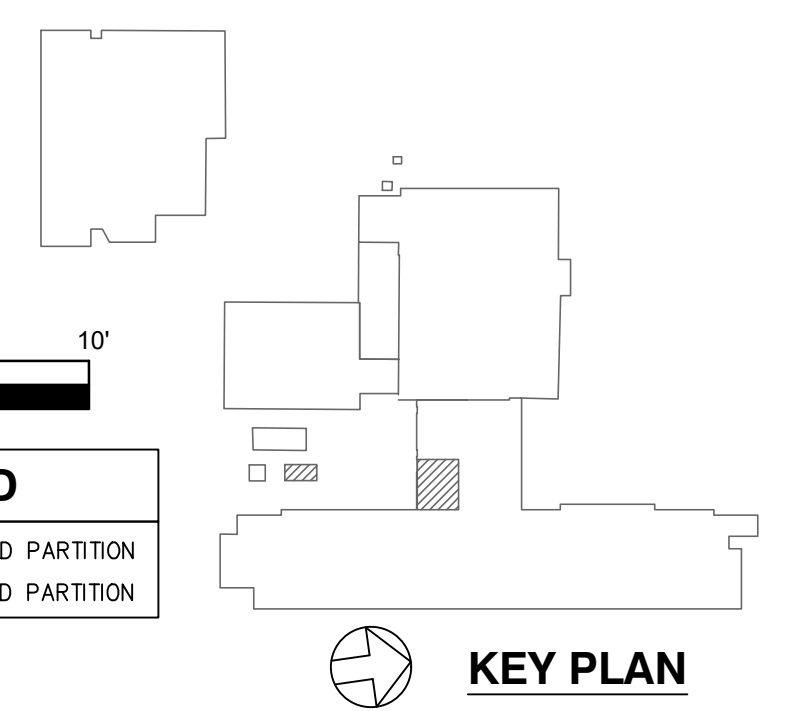
**3 | COASTAL PROCESS - BOILER ROOM 141 - NEW WORK**  
M1.1 SCALE : 1/4" = 1'-0"

**NEW WORK NOTES**

1. PROVIDE NEW 8"Ø CONDENSER WATER BYPASS CONTROL VALVE AT THIS LOCATION. INSTALL PER MANUFACTURERS RECOMMENDATIONS. EXISTING CONTROL SEQUENCE TO REMAIN.
2. EXISTING SIEMENS LEGACY DDC CONTROL PANEL. CONTROL PANEL IS NOT CURRENTLY OPERATIONAL. CONTRACTOR SHALL INCLUDE ALLOWANCE TO DIAGNOSE AND REPAIR EXISTING SYSTEM. REFER TO 012100 ALLOWANCES.

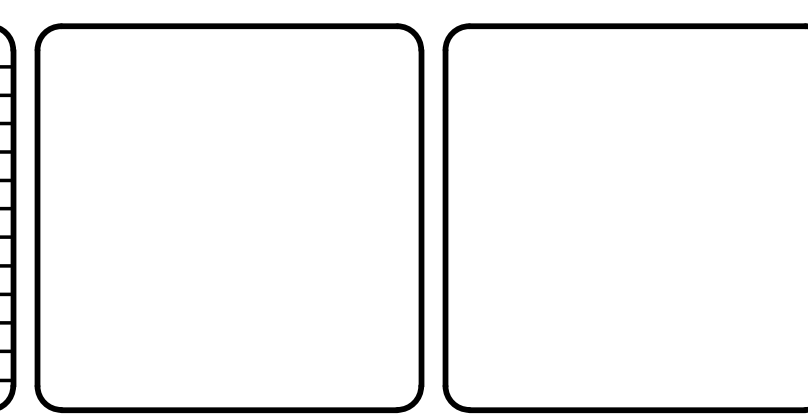


FIRE RATED LEGEND	
	TWO-HOUR FIRE RATED PARTITION
	ONE-HOUR FIRE RATED PARTITION



REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #3	2024-10-07
2	BID SET	2024-08-09

REVISIONS



**MCKIM & CREED**  
4300 Edwards Mill Road  
Suite 200  
Raleigh, North Carolina 27612  
Phone: (919) 233-8091, Fax: (919) 233-8031  
NC License # F-1222  
www.mckimcreed.com

**THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL**

**COASTAL PROCESS ENVIRONMENTAL HEALTH LAB**  
SCO ID: 23-26296-01A

**MECHANICAL NEW WORK PLANS**

PROJ. START DATE: 2024-08-09	SCALE	<b>M1.1</b> DRAWING NUMBER
MCE PROJ. # 01488-0083	HORIZONTAL	
DRAWN: KAS	AS NOTED	
DESIGNED: TBN	VERTICAL:	
CHECKED: ADS	N/A	
PROJ. MGR: ADS	REVISION	0
STATUS:		<b>BID SET</b>

DDC FUNCTION BLOCK LOGIC SYMBOLS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	<b>OUTPUT POINT</b> - TRANSMITS A VALUE FROM THE FB TO A PHYSICAL OUTPUT CHANNEL ON THE CONTROLLER. POINT NAME AO ADDRESS		<b>INPUT POINT</b> - READS A VALUE FROM A PHYSICAL INPUT ON THE CONTROLLER AND CONVERTS FOR USE INSIDE THE FB. ADDRESS AI POINT NAME
	<b>VIRTUAL POINT</b> - ANALOG OR DIGITAL VALUE USED WITHIN A FB OR BROADCAST ACROSS THE LAN. POINT-NAME VP		<b>DIGITAL WIRE</b> - DIGITAL LOGIC CONNECTION BETWEEN FB'S
	<b>ANALOG WIRE</b> - ANALOG LOGIC CONNECTION BETWEEN FB'S		<b>CONSTANT</b> - CONSTANT VALUE INPUTS
	<b>GRAPHIC INTERFACE</b> - VALUE APPEARS ON GRAPHIC SCREEN. WHEN BLOCK PRECEDES (IS TO THE LEFT OF) A CONSTANT BLOCK OR VIRTUAL POINT BLOCK, THE VALUE SHALL BE EDITABLE FROM THE GRAPHIC SCREEN. VALUE DISPLAYED & EDITABLE ON GRAPHIC PAGE		<b>ALARM &amp; PRIORITY</b> - TRANSMITS AN ALARM AND ALARM PRIORITY TO THE ENTERPRISE BUILDING MANAGEMENT SYSTEM (EBMS).
	<b>MESSAGE AND NUMBER</b> - TRANSMITS A MESSAGE AND MESSAGE NUMBER TO THE ENTERPRISE BUILDING MANAGEMENT SYSTEM (EBMS).		<b>TREND</b> - ESTABLISHES TREND IN CONTROLLER.
	<b>RUN TIME MONITOR</b> - ACCUMULATES RUNTIME FOR DIGITAL OUTPUT AND CONVERTS TIME TO HOURS.		<b>REFERENCE FLAG</b> - USED AS CONNECTION TO FB'S BY REFERENCE INSTEAD OF WIRES.
	<b>DIGITAL AND GATE</b> - OUTPUT IS ON IF ALL INPUTS ARE TRUE.		<b>DIGITAL OR GATE</b> - OUTPUT IS ON IF ANY INPUT IS TRUE.
	<b>DIGITAL EXCLUSIVE OR GATE</b> - OUTPUT IS ON IF ONLY ONE INPUT IS TRUE.		<b>INVERSE (NOT)</b> - IF INPUT = ON, OUTPUT = OFF; CONVERSELY IF INPUT = OFF, OUTPUT = ON.
	<b>LATCH OFF</b> - OUTPUT IS OFF WHENEVER INPUT IS ON. OUTPUT REMAINS OFF UNTIL RESET CHANGES FROM OFF TO ON.		<b>LATCH ON</b> - OUTPUT IS ON WHENEVER INPUT IS ON. OUTPUT REMAINS ON UNTIL RESET CHANGES FROM OFF TO ON.
	<b>ON/OFF DELAY TIMER</b> - AFTER INPUT IS ON, OUTPUT IS ON/OFF AFTER A PREDETERMINED TIME (#) HAS ELAPSED.		<b>CYCLE DELAY TIMER</b> - WHEN SET TIME HAS ELAPSED, THE FIRST TIME INPUT IS ON, OUTPUT IS ON AND TIMER RESETS. BEFORE SET TIME HAS ELAPSED, OUTPUT IS OFF WHEN INPUT IS OFF. IF INPUT GOES FROM OFF TO ON BEFORE SET TIME HAS ELAPSED, OUTPUT WILL REMAIN OFF.
	<b>POWER FLAG</b> - ON WHEN CONTROLLER IS INITIALLY POWERED ON AND NO PHASE LOSS IS DETECTED.		<b>FLIP FLOP</b> - CHANGE STATE OF OUTPUT WHEN INPUT CHANGES FROM OFF TO ON; OUTPUT SET TO OFF WHEN RESET (R) GOES CHANGES FROM OFF TO ON.
	<b>SETPOINT OPTIMIZATION</b> - RESET OF OUTPUT FROM A MAXIMUM VALUE TO A MINIMUM VALUE BASED ON VALUES OR REQUESTS. DB - DEAD BAND INC - INCREMENT/DECREMENT VALUE HI - MAXIMUM RESET VALUE LO - MINIMUM RESET VALUE		<b>TIME AVERAGE BLOCK</b> - OUTPUT IS EQUAL TO SUM OF INPUTS FROM USER SPECIFIED PREVIOUS TIME PERIOD (OR NUMBER OF SCANS) TO CURRENT TIME (OR SCAN) DIVIDED BY NUMBER OF DISCRETE POINTS IN THE SUMMATION PERIOD. OUTPUT IS A ROLLING TIME BASED AVERAGE OF THE INPUT VALUE.
	<b>SAMPLE &amp; BUMP</b> - CHANGE IN OUTPUT (WITH DEFINED MINIMUM & MAXIMUM VALUES) BY A DEFINED AMOUNT WHEN INPUT DEVIATES FROM SETPOINT (SP) BY A DEFINED AMOUNT AT A DEFINED INTERVAL. I - INPUT O - OUTPUT MX - MAXIMUM OUTPUT MN - MINIMUM OUTPUT INTVL - INTERVAL > IE, -OA - WHEN INPUT RISES ABOVE SETPOINT BY AMOUNT "IE", OUTPUT IS INCREASED BY AMOUNT "+O" < IE, -OA - WHEN INPUT FALLS BELOW SETPOINT BY AMOUNT "IE", OUTPUT IS REDUCED BY AMOUNT "-O"		<b>STAGER BLOCK</b> - OUTPUT IS EQUAL TO SUM OF REQUESTS FROM USER SPECIFIED INPUTS. ROTATION SHALL BE DETERMINED BY USER DEFINED PARAMETERS. EACH INDIVIDUAL OUTPUT CAN BE LOCKED OUT BY USER DEFINED INDIVIDUAL INPUTS. LOCKED OUT OUTPUTS SHALL BE SKIPPED IN ROTATION. (SEE SEQUENCE OF OPERATION FOR DETAILS)
	<b>LEAD/STANDBY BLOCK</b> - ON RUN COMMAND, LEAD OUTPUT IS SELECTED. LEAD OUTPUT CAN BE SWAPPED MANUALLY OR BY A TIME SCHEDULE. WHEN THE LEAD EQUIPMENT FAILS, THE STANDBY OUTPUT IS SELECTED. (SEE SEQUENCE OF OPERATION FOR DETAILS)		

LEGEND	
	TUBING
	WIRING

### CONTROLS NOTES

- EXISTING BUILDING CONTROLS SYSTEM IS SIEMENS LEGACY SYSTEM AND IS NOT CURRENTLY OPERATIONAL. AN ALLOWANCE HAS BEEN PROVIDED TO DIAGNOSE AND REPAIR EXISTING SYSTEM. REFER TO SPEC SECTION 012100.
- NEW CONTROLLER FOR AHU-1 SHALL BE UPDATED DESIGO SYSTEM AND CAPABLE TO EXPAND AS FRONT END SYSTEM AS SUBSEQUENT PROJECTS WILL UPDATE CONTROLS FOR REMAINING EQUIPMENT SERVING BUILDINGS AT THIS LOCATION.
- PROVIDE NEW CONTROLS FOR AHU-1 AND COOLING TOWER CONDENSER BYPASS VALVE AS INDICATED IN DRAWINGS.

PREFERRED BRAND ALTERNATES:

ALTERNATE #M-02A: FURNISH AND INSTALL A BACnet BASED BUILDING AUTOMATION SYSTEM BY JOHNSON CONTROLS INCORPORATED (JCI)

ALTERNATE #M-02B: FURNISH AND INSTALL A BACnet BASED BUILDING AUTOMATION SYSTEM BY SCHNEIDER ELECTRIC (SE)

ALTERNATE #M-02C: FURNISH AND INSTALL A BACnet BASED BUILDING AUTOMATION SYSTEM BY SIEMENS.

CONTROL SYMBOLS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	DDC POINT DESCRIPTOR WITH NAME AI - ANALOG INPUT DI - DIGITAL INPUT AO - ANALOG OUTPUT DO - DIGITAL OUTPUT		DISCONNECT SWITCH
	TEMPERATURE SENSOR WITH AVERAGING ELEMENT		CONTROL TRANSFORMER
	TEMPERATURE SENSOR WITH SINGLE POINT ELEMENT		RELAY COILS
	TEMPERATURE SENSOR WITH PIPE WELL		FUSE
	SPACE TEMPERATURE SENSOR		THERMAL OVERLOAD
	HUMIDITY SENSOR		NORMALLY OPEN AND NORMALLY CLOSED CONTACTS
	CURRENT SENSOR		HAND-OFF-AUTO SELECTOR SWITCH
	SMOKE DETECTOR		WIRING DESIGNATION, (NO. OF HATCHES INDICATES NO. OF CONDUCTORS)
	DIFFERENTIAL PRESSURE SWITCH		WIRING CONNECTION
	WATER FLOW SWITCH		ON-OFF SELECTOR SWITCH
	TWO WAY CONTROL VALVE		THREE WAY CONTROL VALVE
	DAMPER ACTUATOR		LIMIT SWITCH
	AIR DIFFERENTIAL PRESSURE TRANSMITTER (0 - 5" RANGE)		CONTROL DAMPER
	VARIABLE SPEED DRIVE		HYDRONIC DIFFERENTIAL PRESSURE TRANSMITTER
	FREEZE STAT		HYDRONIC FLOWMETER
	AIRFLOW MEASURING STATION		THERMOSTAT
	FAN INLET AIRFLOW MEASURING STATION		

ABBREVIATIONS			
ALM	ALARM	NC	NORMALLY CLOSED
AH	AIR HANDLER	NO	NORMALLY OPEN
BLOG	BUILDING	OA	OUTSIDE AIR
C	COMMON	OVRD	OVERRIDE
CL	COOL	RA	RETURN AIR
CHPS	CHILLED WATER PUMP, SECONDARY	REQ	REQUEST
CHWP	CHILLED WATER PUMP	RF	RETURN FAN
CHWR	CHILLED WATER RETURN	RLF	RELIEF FAN
CHWS	CHILLED WATER SUPPLY	S/S	START STOP
CW	CONDENSER WATER	SA	SUPPLY AIR
CWP	CONDENSER WATER PUMP	SD	SMOKE DETECTOR
CWR	CONDENSER WATER RETURN	SEC	SECONDARY OR SECONDS
CWS	CONDENSER WATER SUPPLY	SF	SUPPLY FAN
DD	DOWN DUCT	SCHWR	SECONDARY CHILLED WATER RETURN
DP	DIFFERENTIAL PRESSURE	SCHWS	SECONDARY CHILLED WATER SUPPLY
EF	EXHAUST FAN	SHWR	SECONDARY HOT WATER RETURN
FBK	FEEDBACK	SHWS	SECONDARY HOT WATER SUPPLY
FC	FAN COIL	T	TEMPERATURE
HOA	HAND-OFF - AUTOMATIC	TB	TERMINAL BOX
HT	HEAT	TW	TEMPERED WATER
HWP	HOT WATER PUMP	TWP	TEMPERED WATER PUMP
HWS	HOT WATER SUPPLY	TWR	TEMPERED WATER RETURN
HWR	HOT WATER RETURN	TWS	TEMPERED WATER SUPPLY
HWS	HOT WATER SUPPLY	VP	VELOCITY PRESSURE
ISO	ISOLATION	VSD	VARIABLE SPEED DRIVE
MA	MIXED AIR		

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	2024-10-07
2	BID SET	2024-08-09

REVISIONS	



**MCKIM & CREED**  
 4300 Edwards Mill Road  
 Suite 200  
 Raleigh, North Carolina 27612  
 Phone: (919) 233-8091, Fax: (919) 233-8031  
 NC License # F-222  
 www.mckimcreed.com

**THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL**

**COASTAL PROCESS ENVIRONMENTAL HEALTH LAB**  
 SCO ID: 23-26296-01A

**MECHANICAL CONTROLS AND SYMBOLS**

PROJ. START DATE: 2024-08-09	SCALE: M4.0
MCE PROJ. # 01488-0053	HORIZONTAL: AS NOTED
DRAWN: KAS	VERTICAL: N/A
DESIGNED: KAS	REVISION: 0
CHECKED: TBN	
PROJ. MGR: ADS	

STATUS: **BID SET**