

# **Brownsville Independent School District**

Agenda Category:	General Function	Board of Education Meetin	g:11-05-2025
Phase I	-155 Aiken E.S. HVAC Up Package 2) Project tial Completion	grades, X	Action Information Discussion
Completion acceptance Contractor and, BISD Facuation Punch List. As a result, project.	by the Brownsville ISD Boacilities Department Administration recomm	I (Package 2) Project, is read ard of Trustees. The Project stration staff conducted a wall stends substantial completion a	Engineer, General k-thru to provide a
	nd the following document(sades, Phase I (Package 2) Pro		
<ul> <li>AIA Document G</li> <li>Punch List</li> <li>Commissioning R</li> <li>CSP #23-155</li> </ul>			
FISCAL IMPLICAT	IONS:		
RECOMMENDATION Recommend approval to CSP # 23-155, as substant	authorize the Aiken E.S. HV	AC Upgrades, Phase I (Packa	ge 2) Project, under
Alonso Guerrero	- cu	Approved for Submission	to Board of Education:
	Services & Operations		
	alth Services & Operations	Dr. Jesus H. Chave	ez, Superintendent
Mary D Garza			-

When Necessary, Additional Background May Follow This.

Approved by: Interim-Chief Financial Officer



### **Certificate of Substantial Completion**

PROJECT: (name and address) BISD ESSER HVAC Upgrades at Aiken

OWNER: (name and address) Brownsville ISD 1900 E. Price Rd., Brownsville, TX 78521

**CONTRACT INFORMATION:** 

Contract For: Central Air Heating Services Date: 05/23/2024

ARCHITECT: (name and address) Halff Associates, Inc. (as Consultant not Architect) 5000 West Military Highway Suite 100.

McAllen, Texas

**CERTIFICATE INFORMATION:** 

Certificate Number: 001 Date: 05/23/2024

CONTRACTOR: (name and address) Centrail Air Heating Services 3028 Wilson Rd., Harlingen, TX, 78552

The Work identified below has been reviewed and found, to the Architect's best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate. (Identify the Work, or portion thereof, that is substantially complete.)

Halff Associates, Inc. (as

Consultant not Architecti ARCHITECT (Firm Name) Gabriel Benavides, PE Vice President

Director of MEP PRINTED NAME AND TITLE 05/23/2024

DATE OF SUBSTANTIAL COMPLETION

The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)

#### **WORK TO BE COMPLETED OR CORRECTED**

A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows: (Identify the list of Work to be completed or corrected.)

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within thirty (30) days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: \$10,000

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:

(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

CAHS CONTRACTOR (Firm

Name)

Brownsville I.S.D

OWNER (Firm Name)

Colin Eubanks (PM) PRINTED NAME AND TITLE

Manuel Hinojosa, FAIA PRINTED NAME AND TITLE

May 14 2025

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User Notes:



## **Punch List**

To:

Manuel Hinojosa

Date:

5/31/2024

From:

Luis E Hernandez Nava

AVQ:

45813.001

Email:

lhernandeznava@halff.com

Project:

ESSER HVAC Upgrades at Aiken

Contract for:

BISD ESSER HVAC Upgrades at Alken Elementary

The following items require the attention of the Contractor for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

ITEM NO.	LOCATION (AREA)	DESCRIPTION	COMPLETION DATE	A/E CHECK DATE
1.	Mechanical Room	New chilled water lines (supply and return) are missing labels.		
2.	Mechanical Room	New chilled water lines connecting to existing appear to be leaking on top of relocated pumps' VFDs.  VFDs are missing covers.  General Contractor shall relocate VFD to avoid water leakages on top of electrical equipment and repair chilled water lines leaking.		
3.	Mechanical Room	Secondary pump not working and missing labels.		
4.	OUA	Typical of ALL OAUs:  Outside air lover penetration is not sealed properly. The General Contractor shall properly seal all penetrations through the exterior wall.		
		Pipe penetration through the exterior is not properly capped or sealed. Unconditioned air can infiltrate into the space through these penetrations.		

ITEM NO.	LOCATION (AREA)	DESCRIPTION	COMPLETION DATE	A/E CHECK DATE
		The ductwork connecting the louver to OAU is not sealed properly.		
		The actuator controlling the motorized damper has not been installed.		
		All OAU were down at the time of the site visit.		
		The condensate pump is not installed properly or is missing. The condensate line is not connected to the pump. If a condensate pump is not required, the General Contractor shall provide credit to the Owner.		
		Duct hangers not attached to ductwork.		
5.	OAU	OAU disconnect is installed, but the work appears to be in progress since the box is open with wires exposed.		
		Air Flow Monitor Stations (AFMS) are not installed on OAUs.		
		Typical of ALL BCUs:		
6.	BCU	The filter installed is not the adequate size for the BCU.		
0.	600	BCU labels installed do not match the rooms' numbers on the second floor.		
	A 444	Typical of all T-Stats:		
7.	T-STAT	The thermostat does not provide RH setpoint or current levels.		
8.	Lobby	Condensate pipe not insulated/installed properly to the BCU. The ceiling tile shows visible water stains due to condensation.		



ITEM NO.	LOCATION (AREA)	DESCRIPTION	COMPLETION DATE	A/E CHECK DATE
9.	Classroom C107	Lights not working after equipment installation.		
10.	Classroom C108	Lights not working after equipment installation.		
11.	A101	The room feels humid. The T-stat does not show RH%.		2 22 222
12.	A102	The room feels humid. The T-stat does not show RH%.		
13.	A103	The room feels humid. The T-stat does not show RH%.		
14.	A104	The room feels humid. The T-stat does not show RH%.		
15.	A105	The room feels humid. The T-stat does not show RH%.		
16.	A106	The room feels humid. The T-stat does not show RH%.		-5 20071000000
17.	A107	The room feels humid. The T-stat does not show RH%.		
18.	A108	The room feels humid. The T-stat does not show RH%.		
19.	B214	The room feels humid. The T-stat does not show RH%.		
20.	B216	The room feels humid. The T-stat does not show RH%.		
21.	B218	The room feels humid. The T-stat does not show RH%.	0	
22.	Controls	New OAU, Pumps, Exhaust Fans and BCUs have not been integrated into existing controls system.		
23.	Classrooms	The General Contractor shall replace all ceiling tiles in poor shape.		
		The General Contractor shall remove any material no longer		



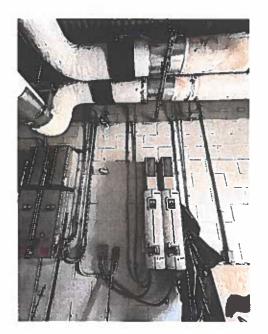
ITEM NO.	LOCATION (AREA)	DESCRIPTION	COMPLETION DATE	A/E CHECK DATE
		used and keep all classrooms ready to be occupied.		
☐ Attachn	nonte	Opening to the control of the contro		
- Attachn	nents			
SIGNED: I	uis Hernandez Na	va, PE, CPD		
COPIES: [	☐ Owner ☐ Co	ontractor		

## **H** halff









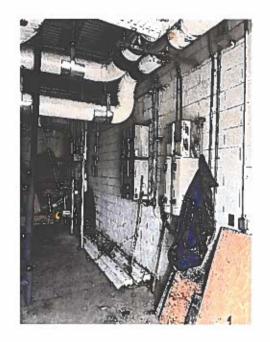








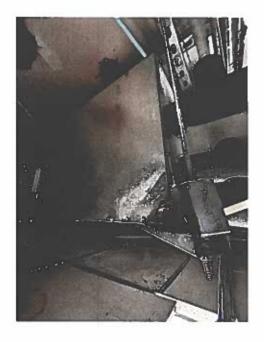












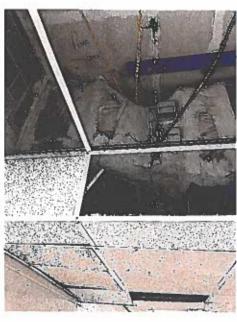




# **H** halff













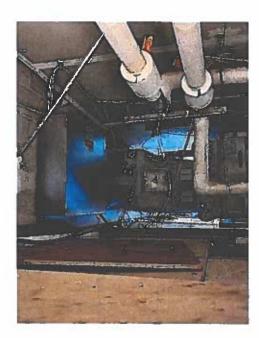












# **# halff**



# Final Commissioning Report

#### Prepared for:

BISD - Aiken Elementary School



Friday, March 14, 2025 1025 Morningside Rd, Brownsville, Tx 78521

Texas Board of Professional Engineers

Registered Firm #F-312



#### Scope of Services for BISD - Commissioning

#### **SCOPE OF WORK**

Commissioning shall be provided by the Commissioning Agent (CxA), Halff Associates, Inc., to confirm the installed system's compliance with the Construction Documents for operation capacity and compliance with the project's Sequences of Operations (SOO).

- Confirmation of Owner-Provided-Requirements (OPR)
- Establishing communication between CxA and contractors
- Verification of integration between the DDC system and the connected equipment
- Graphics review of the BAS system for accuracy and usefulness
- Periodic sampling of the Test, Adjust, and Balance (TAB)
- Construction Document's SOO review
- Trend comparison between BAS and CxA's independent readings
- Witness Manufacturer's required startup of equipment
- Observe functional testing of equipment in compliance with the SOO



## **Commissioning Team Contact Information**

Team Member	Company	Contact Person	Office #	Mobile #	Email Address
Owner	Brownsville Independent School District	Manuel Hinojosa	956-698-2400		Mhinojosa1@bisd.us
Engineer of Record	Haiff	Luis Hernandez Nava	956-664-0286		lhernandeznava@halff.com
Commissioning Agent	Halff	Dean Lizzotte	956-664-0286	956-369-9253	Dlizzotte@halff.com
General Contractor	Central Air and Heating	Colin Eubanks	926-428-4509	956-572-1738	colin.eubanks@cahsinc.com
Mechanical SubCon	Central Air and Heating	Colin Eubanks	926-428-4509	956-572-1738	colin.eubanks@cahsinc.com
Electrical SubCon	Pete's Electric LLC		956-230-8340		PETESELECTRICCO@AOL.COM
Controls SubCon	Automated Logic	Raul Gonzalez	210-825-9354		raul.gonzalez@carrier.com
Test and Balance SubCon	Testing & CX Service	Art Olivares	956-874-5889		art@testandcx.com



## **Commissioning Communications Log**

Description	Date	Form of Communication	Sent To	Sent By	
Initial Cx Plan		Email	Fernando Villarreal	Dean Lizzotte	
Graphics Comments	8/13/24	Email	Coling Eubanks	Dean Lizzotte	
Graphics Comments	9/9/24	Email	Coling Eubanks	Dean Lizzotte	
Prefunctional Testing Attempt	9/11/24	Site Visit	_	Dean Lizzotte	
Project Status Update	9/19/24	Email	Coling Eubanks	Dean Lizzotte	
Controls Meeting	9/19/24	Teams Meeting	Colin Eubanks	Dean Lizzotte	
Prefunctional Testing Attempt	10/11/24	Site Visit	****	Dean Lizzotte	
Prefunctional Testing Attempt	10/16/24	Site Visit	_	Dean Lizzotte	
Prefunctional Testing Attempt	10/17/24	Site Visit	-	Dean Lizzotte	
Status Meeting	11/1/24	Teams Meeting	Colin Eubanks	Dean Lizzotte	
BAS Status Update	10/8/24	Email	Coling Eubanks	Luis Hernandez Nava	
TAB Report Follow Up	12/19/24	Email	Coling Eubanks	Luis Hernandez Nava	
Graphics Status Update	12/4/24	Email	Coling Eubanks	Dean Lizzotte	
TAB Report Follow Up	1/8/24	Email	Coling Eubanks	Luis Hernandez Nava	
Final Cx Report	3/14/25	Email	Manuel Hinojosa	Dean Lizzotte	
				110-111-11	
		0 100000			
	-		-		



#### **Pre-functional Startup Testing**

#### Introduction

The purpose of the pre-functional start-up testing is to verify that installation checklists and proper start-up protocols are followed. This allows for an alignment of the Owner's project requirements with the contractor's work. Any identified issues shall be documented in the issues and resolutions log for either the commissioning progress report or the final commissioning report. The pre-functional start-up scripts shall be provided by the equipment manufacturer.

#### Communication

Documentation for pre-functional startup checklists is attached and represents manufacturers recommended practices for start-up. The documents shall be signed by the Cx agent, owner's representative, and contractor representative. An example of an Issues and Resolutions Log is also attached.

#### **Procedures**

- 1. The Contractor shall perform the startup while the CxA witnesses and observes the operation.
- 2. If any issues occur, they shall be promptly documented into the Issues and Resolution Log.
- 3. The potential resolution shall be submitted.
- 4. After the issue has been resolved the process shall be re-attempted.
- 5. If startup completes without any reported issues then the document shall be signed by witnessing parties: the CxA, the Contractor's representative, and the Owner's representative.

Notes: Any equipment started without witnessing by the CxA shall be documented.

Multiple communication attempts and site visits were attempted for the Aiken Elementary HVAC Renovation process pre-functional testing. Units in scope appear to be functioning. However, the commissioning process could not be performed due to the contractor being unable to provide sufficient documentation regarding testing and balance in order to observe operation.



#### Introduction

The purpose of the graphics review is to align the Controls Subcontractor with the Owner's project requirements. The review shall examine the general aesthetics of the BAS system, verification that all the equipment is readily available, and reporting accuracy. The graphics review requires the CxA to receive access to the BAS during and after installation.

#### Communication

Documentation for pre-graphics review is attached. The documents after the competition shall be signed by the CxA, Owner's representative, and Contractor representative. An example of a Issues and Resolutions Log is also attached.

#### **Procedures**

- 1. Access to the project's BAS
- 2. Analysis shall be performed for any graphical glitches or major issues.
- The individual views shall be compared against the installed schedules to verify if all the proper equipment is on the screen.
- 4. The information on the BAS shall be compared to the information from the installed equipment itself or if available testing instrumentation.
- 5. The alarms shall then be tested to verify proper setup.
- 6. Any identified issues shall be documented in the Issues and Resolutions Log.
- 7. If resolved the building automation system shall be reviewed once more.
- 8. When the review has been completed the document shall be signed by the witnessing parties including up to the CxA, the Owner's representative, and the Contractor's representative.

Notes: The CxA shall need remote access to the BAS during and after the graphics review.



## **Graphics Review**

	Yes	No	Initials
Are all the VFD's displayed on the screen?	= = "	Х	DL
Are all dedicated outside air systems displayed on the screen?	Х		DL
Are all pumps displayed on the screen?	X		DL
Are all chillers displayed on the screen?	Х		DL
Are the all the fan arrays displayed on the screen?	X		DL
Are all roof-top units displayed?	Х		DL
Are all boilers displayed on the screen?		X	TDL
Are all water coils displayed on the screen?	X		DL
Are all flow rates displayed on the screen?	X		DL
Are all pressures displayed on the screen?	X		DL
Are all maintenance reminders displayed on the screen?	X		
Do the graphics make sense for the general user?	X		D
Do all the alarms display accurately and prominently?	х		DL

Haiff Cx Agent	ti l	General Contractors Representative	Owners Representative
Halff Cx Agent Signed*:	Mus Jens	Signed:	Signed:
Name:	Dean 4286HE	Name:	Name:
Company:	Halft	Company:	Company:
Date:	368625	Date:	Date:
Phone/Emails:	dizzotta@halton	Phone/Emails:	Phone/Emails:
Proitining Authority			



#### Sequence of Operations Review and Verification

#### Introduction

The purpose of the sequence of operations review is to verify that the equipment functions normally during intended conditions. The SOO review and data logger confirmation must be performed after TAB and controls subcontractors have concluded their work.

#### Communication

The documents after the completion shall be signed by the CxA, the Owner's representative, and the Contractor representative. The Issues and Resolution Log is attached.

#### **Procedures**

- 1. First, a sample of equipment is taken from the schedule.
- 2. The controls sequences for the selected sample are tested and verified per the Construction Documents.
- 3. The data collected shall span a month after the completion of the SOO review.
- The CxA shall review the data from the BAS and the CxA data loggers for the same areas to ensure the HVAC system stability.

Note: Multiple communication attempts and site visits were attempted for the Aiken Elementary HVAC Renovation commissioning process. Units in scope appear to be functioning. However, the commissioning process could not be performed due to the contractor being unable to provide sufficient documentation regarding testing and balance in order to observe operation.





## **Deficiency Report**

BISD Aikens Elementary School HVAC Upgrades BROWNSVILLE, TX DATE: 5/28/2024 LOCATION: PROJECT#: CONTACT: **Art Olivares** 3220151 AUTHOR: Arturo Olivares

0001 Issue ID: Status: Issue Priority: Equipment: EDH-B102 Created Date: 14-May-24 Issue Description: The disconnect is off. Not Operable Issue Type: Mechanical Contractor Role Assignment: User Assignment: Juan Coronado Comments / Signature:

Issue ID: 0002 Status: Issue Priority: Equipment: EDH-B100 Created Date: 14-May-24 Issue Description: Heaters not responding. Issue Type: Not Operable Controls Contractor Role Assignment: User Assignment: Juan Coronado Comments / Signature:

Issue ID: 0004 Status: Issue Priority: EDH-A108 Equipment: Created Date: 14-May-24 Issue Description: Heaters not responding. Issue Type: Not Operable Role Assignment: **Controls Contractor** User Assignment: Juan Coronado Comments / Signature:

Issue ID: 0006 Status: Issue Priority: EDH-A102 Equipment: Created Date: 15-May-24 Issue Description: Heaters not responding Issue Type: Not Operable Role Assignment: **Controls Contractor** User Assignment: Juan Coronado Comments / Signature:

Issue ID:	0007	Status:	Open	Issue Priority:	High
Equipment:	BCU-A105				Created Date: 15-May-24
Issue Description	):				
Missing insulat	ion				
Issue Type:	Observation				
Role Assignment:	Mechanical Contractor				
User Assignment:	Juan Coronado				
Comments / Signa	ture:				





## Deficiency Report

PROJECT: LOCATION: PROJECT #: BISD - Aikens Elementary School HVAC Upgrades BROWNSVILLE, TX 3220151 DATE: 5/28/2024 CONTACT: Art Olivares **AUTHOR:** Arturo Olivares

Issue ID:	0009	Status:	Open	Issue Priority:	High
Equipment:	BCU-Admin		_		Created Date: 20-May-24
Issue Description:			-		
Missing insulation	on				
Issue Type:	Observation				
Role Assignment:	Mechanical Contractor				
User Assignment: Comments / Signate	Juan Coronado ure:				
Issue Photos:		2722 19			
					8
Name: .jpg					
Captured: 5/20/2	024 7:02 PM		100		

Issue ID:	0010	Status:	Open	Issue Priority:	High
Equipment:	EDH-B212				Created Date: 22-May-24
issue Description	):				
Heaters are sh	attering				
Issue Type:	Observation				
Role Assignment:	Mechanical Contractor				
User Assignment:	Juan Coronado				
Comments / Signa	iture:				

Issue ID:	0011	Status:	Open	Issue Priority:	High
Equipment:	EDH-B217				Created Date: 22-May-24
Issue Description:					
Heaters not res	ponding.				
Issue Type:	Not Operable				
Role Assignment:	Controls Contractor				
User Assignment:	Juan Coronado				
Comments / Signati	ure:				





Deficiency Report
PROJECT: BISD - Aikens Elementary School HVAC Upgrades
BROWNSVILLE, TX
PROJECT #: 3220151

DATE: 5/28/2024 CONTACT: Art Olivares AUTHOR: Arturo Olivares

Issue ID:	0012	Status:	Open	Issue Priority:	High
Equipment:	BCU-Asst/Outlet-04			issac i tionty.	Created Date: 23-May-24
Issue Description:					Oldalos Dale. 20-May-24
Has a broken vo					
Issue Type:	Incorrect Operation				
Role Assignment:	Mechanical Contractor				
User Assignment:	Juan Coronado				
Comments / Signatu	ire:				
Issue Photos: 12°9  3  112°9  445 CO	3				
proken vo	lume damper				
Name: picture Captured: 5/23/2	es.png 024 7:30 PM				Transition of the state of the





### WARRANTY

Installed at:

Aiken Elementary School 6290 Southmost Rd Brownsville, Texas 78521

Dates of Substantial Completion: June 02, 2024

Central Air & Heating Service will provide a 1-year comprehensive warranty on all products and equipment installation services provided under this contract from the dates above for each area as indicated. This warranty is restricted and governed by the Warranty Coverage Guideline (see reverse) and by the warranty certificates provided by the manufacturer enclosed.

- Daikin Applied, warranty included in closeout documentation.
- Bell & Gossett, warranty included in closeout documentation.

Warranty Service will only be performed during normal working hours 8:00-5:00 Monday thru Friday.

Warranty Service calls must be phoned in to: Central Air & Heating Service, Inc. Commercial Service Department 956-428-4509

Signature

Title

PRISTORINT

Date

Title

PRISTORINT

STATE OF Texas

COUNTY OF Cameron

Acknowledged before me this 1th day of April 2024, by Jeff D. Matz (name)

President (job title), of CAHS (company name).

ELIUD BANDA

Notary Public, State of Texas

Comm. Expires 04-24-2027

Notary ID 126053928

NOTARY PUBLIC, STATE OF TEXAS



#### **Warranty Coverage Guidelines**

This document is to be utilized as a guideline for customers to clarify what labor and material costs are covered by the warranty and subsequently when a customer can expect to be billed for labor and material during a warranty period.

Warranty labor and parts are for equipment failure due to faulty parts or components or failure due to the installation technique of Central Air & Heating Service.

Not covered by warranty labor: Calls for repair or service after normal working hours and during holidays. All warranty is to be performed during normal working hours.

Not covered by warranty labor or parts:

- 1. ACTS OF GOD: Damages and or repairs necessary to equipment or devices as a result of natural disasters, Rainstorms, electrical storms, hurricanes, etc...
- 2. ELECTRICAL: Surges, Power outages, tripped breakers after power outages or surges. Damaged Equipment or components due to aforementioned.
- MAINTENANCE ITEMS: Equipment failure or component failure due to lack of maintenance, Dirty Coils, Loose belts, loose connections, dirty filters, stopped up drains, missing covers, missing caps, rust and corrosion due to exposure to chemicals and gases.
- 4. Misuse and abuse: stripped screws, broken access levers and hinges, etc. are not covered under warranty and any equipment failure or malfunction resulting from these items is not covered.
- 5. Failure due to owner repairs and or maintenance: rewiring or wiring around safeties, improper belts, filters, etc.
- Failures due to owner programming or scheduling which would change or alter initial commissioning of equipment.
- 7. Service Charges: CAHS will charge for dispatching a technician and his/her associated labor for all time incurred for responding to call (Service charge), Travel time, diagnosing problem and advising customer of corrective action taken or necessary repairs resulting from any of the items above 1-6.

It is in the Customer's best interest to perform a preliminary investigation and visual diagnostic of equipment and controls to verify that equipment is turned on, thermostat is set correctly, controls are asking equipment to run, filters, belts and drains are all in maintained condition, panels are all on, electrical voltages are correct and that there is no obvious reason for the unit not performing prior to requesting a call for service. Firstly, all this information would help in diagnosis and secondly, it may prevent unnecessary charges to the customer.

# Final Commissioning Report

Prepared for:

BISD - ESSER AIKEN Elementary



Tuesday, September 23, 2025 6290 Southmost Rd., Brownsville, Tx 785421

Texas Board of Professional Engineers

Registered Firm #F-312

Colin Cubanks
CAHS



#### Scope of Services for BISD - Commissioning

#### **SCOPE OF WORK**

Commissioning shall be provided by the Commissioning Agent (CxA), Haiff Associates, Inc., to confirm the installed system's compliance with the Construction Documents for operation capacity and compliance with the project's Sequences of Operations (SOO).

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- Construction Document's SOO review
- Trend comparison between BAS and CxA's independent readings
- Witness Manufacturer's required startup of equipment
- Observe functional testing of equipment in compliance with the SOO



## Commissioning Team Contact Information

Team Member	Company	Contact Person	Office #	Mobile #	Email Address
Owner	Brownsville Independent School District	Manuel Hinojosa	956-698-2400		Mhinojosa1@bisd.us
Engineer of Record	Halff	Luis Hernandez Nava	956-664-0286		lhernandeznava@halff.com
Commissioning Agent	Halff	Dean Lizzotte	956-664-0286	956-369-9253	Dlizzotte@halff.com
General Contractor	Central Air and Heating	Colin Eubanks	926-428-4509	956-572-1738	colin.eubanks@cahsinc.com
Mechanical SubCon	Central Air and Heating	Colin Eubanks	926-428-4509	956-572-1738	colin.eubanks@cahsinc.com
Electrical SubCon	Pete's Electric LLC		956-230-8340		PETESELECTRICCO@AOL.COM
Controls SubCon	Automated Logic	Raul Gonzalez	210-825-9354		raul.gonzalez@carrier.com
Test and Balance SubCon	Testing & CX Service	Art Olivares	956-874-5889		art@testandcx.com



## Commissioning Communications Log

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Prefunctional Testing Attempt	10/11/24	Site Visit		Dean Lizzotte	
Prefunctional Testing Attempt	10/16/24	Site Visit		Dean Lizzotte	
Prefunctional Testing Attempt	10/17/24	Site Visit		Dean Lizzotte	
Status Meeting	11/1/24	Teams Meeting	Colin Eubanks	Dean Lizzotte	
BAS Status Update	10/8/24	Email	Coling Eubanks	Luis Hernandez Nava	
TAB Report Follow Up	12/19/24	Email	Coling Eubanks	Luis Hernandez Nava	
Graphics Status Update	12/4/24	Email	Coling Eubanks	Dean Lizzotte	
TAB Report Follow Up	1/8/24	Email	Coling Eubanks	Luis Hernandez Nava	
Final Commissioning Report	3/14/25	Email	Miguel Hinojosa	Dean Lizzotte	
Prefunctional Testing	5/20/25	Site Visit		Dean Lizzotte	
Final Commissioning Report	9/223/25	Email	Miguel Hinojosa	Dean Lizzotte	
		100 - 200			



#### **Pre-functional Startup Testing**

#### Introduction

The purpose of the pre-functional start-up testing is to verify that installation checklists and proper start-up protocols are followed. This allows for an alignment of the Owner's project requirements with the contractor's work. Any identified issues shall be documented in the issues and resolutions log for either the commissioning progress report or the final commissioning report. The pre-functional start-up scripts shall be provided by the equipment manufacturer.

#### Communication

Documentation for pre-functional startup checklists is attached and represents manufacturers recommended practices for start-up. The documents shall be signed by the Cx agent, owner's representative, and contractor representative. An example of an Issues and Resolutions Log is also attached.

#### **Procedures**

- 1. The Contractor shall perform the startup while the CxA witnesses and observes the operation.
- 2. If any issues occur, they shall be promptly documented into the Issues and Resolution Log.
- 3. The potential resolution shall be submitted.
- 4. After the issue has been resolved the process shall be re-attempted.
- 5. If startup completes without any reported issues then the document shall be signed by witnessing parties: the CxA, the Contractor's representative, and the Owner's representative.

Notes: Any equipment started without witnessing by the CxA shall be documented.

Multiple communication attempts and site visits were attempted for the Aiken Elementary HVAC Renovation process pre-functional testing. Units in scope appear to be functioning. However, the commissioning process could not be performed due to the contractor being unable to provide sufficient documentation regarding testing and balance in order to observe operation.



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Pre-Functional Checklist – Blower Coil Unit				
Job Name (SISD) Alten - HVAC Renov	ations			
Installation BCY-CIO8				
AVO 45813.006				
Serial Number = 0 3 495 0 30 1 400				
Model Number(s) BC. FI.P. 010				v
Fan Coil Unit	Witnessed	N/A	Initials	See Notes
Verify inlet and outlet duct lengths are approximately two- or three-wheel diameters long before and after the fan.	V		DL	
Verify discharge is orientated in the same direction as originally ordered.			DL	
Check all fasteners for tightness. Check the setscrews in the wheel hub (and pulleys, if applicable).			DL	
Start the fan and shut it off immediately to check the rotation of the wheel	V.	<u>_</u>	DL	
Vibration Isolators: Make certain all connectors are tight and that all washers are in.			DL	
Check pulley for proper alignment for BSQ-M Fans.			DL	
Notes:				
alff Cx Agent, General Contigactors Representative	Owners f	Representati	ve	
ened*: Signed: My half	Signed:			
		Representati	ive	

Company: Date:

Phone/Emails:

Company:

Phone/Emails:

Date:



Pre-Functional Checklist - Chilled Water Dedicated Outdoor Air System Unit Ailten-HVAC Renovations Job Name Installation Location CAH 0056 VCM = 034950 302300 Serial Number Model Number(s) A.V.O. Number(s) See Witnessed N/A Initials Chilled Water Outdoor Air Unit **Notes** Verify voltage is present and landed at equipment. Verify gas piping is complete and landed at each component. Inlet gas pressure to be between 7 in. wg and 14 in. wg. Verify field installed sensors installed. Verify control wiring installed and landed. Verify accessories installed. Check ductwork installed (all runs in place, final tie in complete). Check that drain lines are installed and properly terminated. Verify Phase Monitor: Verify voltage on phase monitor. Check UC600 Setpoints: Verify Duct Static Pressure setpoint Verify Minimum OA Damper position rify Maximum OA Damper position Verify Supply Air Flow Setpoint. Verify Exhaust Air Flow Setpoint. Identify Airflow Monitoring: to provide FA wiring & controls; Condensate pump missing on light. Halff Cx Agent General Contractors Representative **Owners Representative** Signed\*: Signed: Signed: Name: Name: Name: Company: Company: Company: Date: Date: Date: Phone/Emails: Phone/Emails: Phone/Emails: \*Initialing Authority



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Pre-Functional Checklist - Chilled Water Dedicated Outdoor Air System Unit Job Name Ken Renovation Installation Location Serial Number Model Number(s) A.V.O. Number(s) See Witnessed N/A Initials Chilled Water Outdoor Air Unit Notes Verify voltage is present and landed at equipment. Verify gas piping is complete and landed at each component. Inlet gas pressure to be between 7 in, wg and 14 in, wg. Verify field installed sensors installed. Verify control wiring installed and landed. Verify accessories installed. Check ductwork installed (all runs in place, final tie in complete). Check that drain lines are installed and properly terminated. Verify Phase Monitor: Verify voltage on phase monitor. Check UC600 Setpoints: Verify Duct Static Pressure setpoint Verify Minimum OA Damper position rify Maximum OA Damper position Verify Supply Air Flow Setpoint. Verify Exhaust Air Flow Setpoint. Identify Airflow Monitoring: Drain pan pooling+ leakins; BISD to provide FA wiring & (ontol) Halff Cx Agent **General Contractors** Owners Representative Signed\*: Signed: Signed: Name: Name: Name: Company: Company: Company: Date: Date: Date: Phone/Emails: Phone/Emails: Phone/Emails: \*Initialing Authority



Pre-Functional Checklist - Chilled Water Dedicated Outdoor Air System Unit HIVAC Renovation Job Name RISD Aiken Installation Location Serial Number CAHODSEV Model Number(s) A.V.O. Number(s) See Witnessed N/A **Initials** Chilled Water Outdoor Air Unit **Notes** Verify voltage is present and landed at equipment. Verify gas piping is complete and landed at each component. Inlet gas pressure to be between 7 in. wg and 14 in. wg. Verify field installed sensors installed. Verify control wiring installed and landed. Verify accessories installed. Check ductwork installed (all runs in place, final tie in complete). Check that drain lines are installed and properly terminated. Verify Phase Monitor: Verify voltage on phase monitor. Check UC600 Setpoints: Verify Duct Static Pressure setpoint Verify Minimum OA Damper position rify Maximum OA Damper position Verify Supply Air Flow Setpoint. Verify Exhaust Air Flow Setpoint. dentify Airflow Monitoring: BISD to provide Ft wiring & Contrals Halff Cx Agent General Contractors Bépi **Owners Representative** Signed\*: Signed: Signed: Name: Name: Name: Company: Company: Company: Date: Date: Date: Phone/Emails: Phone/Emails: Phone/Emails: "Initialing Authority



Pre-Functional Checklist - Chilled				it	i
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Installation DAU - 9					
	702564				
Model Number(s) CAHOOS 6V	CM			· · · · · · · · · · · · · · · · · · ·	
A.V.O. Number(s)					
Chilled Water Outdoor Air Unit	3-7-17-31	Witnessed	N/A	Initials	See Nates
Verify voltage is present and landed at equipment					Notes
Verify gas piping is complete and landed at each of to be between 7 in. wg and 14 in. wg.	omponent. Inlet gas pressure				
Verify field installed sensors installed.					
Verify control wiring installed and landed.					
Verify accessories installed.					
Check ductwork installed (all runs in place, final ti	e in complete).				
Check that drain lines are installed and properly to	erminated.				-
Verify Phase Monitor:					
Verify voltage on phase monitor.					
Check UC600 Setpoints:					
Verify Duct Static Pressure setpoint					
Verify Minimum OA Damper position					
rify Maximum OA Damper position			· ·		
Verify Supply Air Flow Setpoint.					
Verify Exhaust Air Flow Setpoint.					
Identify Airflow Monitoring:					
Notes: Rheat Contuctor Clicki	ing; missing Acc	ess parel +	for O	A damp	
<u> </u>	al Contractors Representative		Represent	ative	
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Job Name BISD ATREA HVAC REPLACEMENT		tem on		
Installation 6ACL 7				
Serial Number F13 Q U 23 0 7 Q 2 S 1 7				<u> </u>
Model Number(s) (AH 00 66 V/V)  A.V.O. Number(s) 45813.60 6				
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Chilled Water Outdoor Air Unit	Witnessed	N/A	Initials	Notes
Verify voltage is present and landed at equipment.			DL	
Verify gas piping is complete and landed at each component. Inlet gas pressure to be between 7 in, wg and 14 in, wg.			DL	
Verify field installed sensors installed.	<i>\\</i>		DL	
Verify control wiring installed and landed.	V		DL	
Verify accessories installed.	V	_	DL	
Check ductwork installed (all runs in place, final tie in complete).	V.		DL	
Check that drain lines are installed and properly terminated.			DL	
Verify Phase Monitor:		111	DL	
Verlfy voltage on phase monitor.		9	DL	
Check UC600 Setpoints:			DL	
Verify Duct Static Pressure setpoint	V		DL	
Verify Minimum OA Damper position	V		DL	
rify Maximum OA Damper position			DL	
Verify Supply Air Flow Setpoint.			DL	
Verify Exhaust Air Flow Setpoint.			QL	
Identify Airflow Monitoring:			UL	
Notes: Missing Pre-filter				
General Contractors Representative  Signed:  Name:  Representative  Signed:  Name:  Company:  te:  One/Emails:  Signed:  Name:  Company:  Date:  One/Emails:  Signed:  Name:  Phone/Emails:	Owners Signed: Name: Company Date: Phone/En		ative	



Verify inlet and outlet duct lengths are approximately two- or three-wheel diameters long before and after the fan.  Verify discharge is orientated in the same direction as originally ordered.  Check all fasteners for tightness. Check the setscrews in the wheel hub (and pulleys, if applicable).  Start the fan and shut it off immediately to check the rotation of the wheel  Vibration Isolators: Make certain all connectors are tight and that all washers are in.  Check pulley for proper alignment for BSQ-M Fans.  Notes:    Check pulley for proper alignment for BSQ-M Fans.   Owners Representative		hecklist - Blower Coll Unit	528			
Location AVO USBUG-006  Serial Number Model Number(s)  Fan Coil Unit  Witnessed  N/A Initials  See Notes  Verify inlet and outlet duct lengths are approximately two- or three-wheel diameters long before and after the fan.  Verify discharge is orientated in the same direction as originally ordered.  Check all fasteners for tightness. Check the setscrews in the wheel hub (and pulleys, if applicable).  Start the fan and shut it off immediately to check the rotation of the wheel  Vibration isolators: Make certain all connectors are tight and that all washers are in.  Check pulley for proper alignment for BSQ-M Fans.  Notes:  Signed:  Name:  Signed:  Name:  Signed:  Name:  Date:  Date	Job Name	1315D diken tWAC Renova-	40M			
Serial Number  Model Number(s)  Fan Coil Unit  Verify inlet and outlet duct lengths are approximately two- or three-wheel diameters long before and after the fan.  Verify discharge is orientated in the same direction as originally ordered.  Check all fasteners for tightness. Check the setscrews in the wheel hub (and pulleys, if applicable).  Start the fan and shut it off immediately to check the rotation of the wheel  Vibration isolators: Make certain all connectors are tight and that all washers are in.  Check pulley for proper alignment for BSQ-M Fans.  Notes:    Aliff Cx Agent		BCU-CLOB			· · · · · · · · · · · · · · · · · · ·	
Serial Number  Model Number(s)  Fan Coil Unit  Verify inlet and outlet duct lengths are approximately two- or three-wheel diameters long before and after the fan.  Verify discharge is orientated in the same direction as originally ordered.  Check all fasteners for tightness. Check the setscrews in the wheel hub (and pulleys, if applicable).  Start the fan and shut it off immediately to check the rotation of the wheel  Vibration isolators: Make certain all connectors are tight and that all washers are in.  Check pulley for proper alignment for BSQ-M Fans.  Notes:    Aliff Cx Agent	AVO	45816.006				
Verify inlet and outlet duct lengths are approximately two- or three-wheel diameters long before and after the fan.  Verify discharge is orientated in the same direction as originally ordered.  Check all fasteners for tightness. Check the setscrews in the wheel hub (and pulleys, if applicable).  Start the fan and shut it off immediately to check the rotation of the wheel  Vibration Isolators: Make certain all connectors are tight and that all washers are in.  Check pulley for proper alignment for BSQ-M Fans.  Notes:    General Contractors Representative   Signed:   Sign	Serial Number					
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diameters long before and after the fan.  Verify discharge is orientated in the same direction as originally ordered.  Check all fasteners for tightness. Check the setscrews in the wheel hub (and pulleys, if applicable).  Start the fan and shut it off immediately to check the rotation of the wheel  Vibration Isolators: Make certain all connectors are tight and that all washers are in.  Check pulley for proper alignment for BSQ-M Fans.  Notes:    Check pulley for proper alignment for BSQ-M Fans.   Owners Representative igned*:   Signed:   Si			Witnessed	N/A	Initials	See Notes
Check all fasteners for tightness. Check the setscrews in the wheel hub (and pulleys, if applicable).  Start the fan and shut it off immediately to check the rotation of the wheel vibration isolators: Make certain all connectors are tight and that all washers are in.  Check pulley for proper alignment for BSQ-M Fans.  Notes:    Company:	diameters long before an	d after the fan.				
bulleys, if applicable).  Start the fan and shut it off immediately to check the rotation of the wheel  Vibration Isolators: Make certain all connectors are tight and that all washers are in.  Check pulley for proper alignment for BSQ-M Fans.  Notes:    Check pulley for proper alignment for BSQ-M Fans.   Check pulley for proper	Verify discharge is orienta	ated in the same direction as originally ordered.		,		
Start the fan and shut it off immediately to check the rotation of the wheel  Vibration Isolators: Make certain all connectors are tight and that all washers are in.  Check pulley for proper alignment for BSQ-M Fans.  Notes:    Company:	- T	htness. Check the setscrews in the wheel hub (and				
In. Check pulley for proper alignment for BSQ-M Fans.  Notes:    Company:	Start the fan and shut it o	off immediately to check the rotation of the wheel				
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Pre-Functional Checklist – Blower Coil Unit Aiken-HVAC Renovation Job Name Installation Location AVO Serial Number Model Number(s) Witnessed N/A Fan Coil Unit **Initials** See Notes Verify inlet and outlet duct lengths are approximately two- or three-wheel diameters long before and after the fan. Verify discharge is orientated in the same direction as originally ordered. Check all fasteners for tightness. Check the setscrews in the wheel hub (and pulleys, if applicable). Start the fan and shut it off immediately to check the rotation of the wheel Vibration Isolators: Make certain all connectors are tight and that all washers are Check pulley for proper alignment for BSQ-M Fans. Notes: Halff Cx Agent **General Contractors Representative Owners Representative** Signed\*: Signed: Signed: Mirrae: Name: Name:

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Installation Location 2 218 100				
Customer Order Number		57,000		
Model Number(s) E03 495 030 2008				
G.O. Number(s)	30.77.00	37-27	T	
	Yes	No	N/A	Initials
1.) Make sure the unit is level to the pad and all shims are under each section correctly.	1/	-		
2.) Disconnect all 469/208 voltage and perform lock-out / tag-out.	1			
3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside			-	
trim; check for damage, inspect paint, and that all doors open properly.				
4-) Check external power outlets for correct polarity.				
5.) Ensure supply-air and return-air ducts have been connected.	1		~	
6.) On steam supplied 'Wing coils' inspect adjustment on clam shells to 2mm gap or less,				
make sure damper linkage IA installed properly Review if damper fail open or close, if it goes			1	
of on a safety.	1		P	
7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists	-		-	
check motor winding by verifying a winding resistance of >6 meg-ohms (if lower, dry out	V	2	10.	
winding and re-test).	-			
8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.				
Measure for correct incoming voltage on all three legs, check for phasing.			1 1	
9.) Varify all the unit wiring connections are tight at the motor, disconnect, and VFDS.		_	-	
Measure for correct incoming voltage on all three legs, check for phasing.	V			
10.) Verify damper operation; make sure damper move freely and do not bind and linkage			-	
alignment moves freely.			V	
11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned		_		
within the unit and tight using the correct filter retainers and the filters air flow is in the right			1 1	
direction.				
				55 - 611 - 5
12.) Verify the freeze stat is operational by placing in an ice bath or use of a compatible method for bringing the temp, down.				
			-	
13.) All unit drain lines and traps properly installed; (review trap size and static) also check for operation and leaks.	V			
14.) Check drain pans, opening, and condensate line for obstructions, check upper drain pan piping so it is hitting lower dan pan.			N	
15.) Visually inspect all piping and valves for any apparent signs of leakage.		e		
16.) When applicable for steam coils, turn steam on full for a minimum of 10 minutes prior to				
opening the fresh air.				-
17.) All coil fins inspected and straightened.			-	
18.) Verify hold down bolts and channels from fan sections are removed if internally isolated				
(if not, notify contractor to correct) Review isolation spring and adjust as needed. Inspect for	130			
tears and loose screw on the flex connection.				
19.) Inspect all fan wheels to confirm proper rotation direction and move freely by gaining				
access through removal of wire.	-			
20.) Verify proper torque to the shaft bearings, fan wheel, and drive sheave set screws.			-	
21.) Verify all fan belts are properly tensioned after confirming the sheaves are in proper			-	
alignment (see O.M.).			V	
22.) Inspect the fan motor bearings and blower bearings for proper lubrication ensuring no			-	
meisture is present.			V	
23.) If excessive vibration exists ensure unit vibration is tested to not exceed 6% of original	-		-	
designed speed.			V	
24.) Prior to start-up, bump-start the unit to confirm fan wheel rotates as indicated by the	-			
arrow located on fan housing.				
25.) Verify Incoming voltage imbalance is <2%.	1		-	
26.) Close and secure all access doors.	-	_		
27.) Check mechanical drawing for static operating pressure (if not available, confirm with			1	
associated sales engineer).			Y	
28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).	-			



Job Name	
Installation Location	B218 1-4 + W/
Customer Order Number	
Model Number(s)	003445 000000
G.O. Number(s)	

	Yes	No N/	A Initials
Disconnect and lock-out all power switches			
Remove any foreign objects that are located in the unit			
Check all fasteners, set screws, and locking collars on the fans, bearing			
Botate the fan wheels and energy recovery wheels (if applicable) by hand and			
ensure no part are rubbing.		<i>V</i>	
Verify that non-motorized dampers open and close properly.			
Check the tightness of all factory wiring connections.			
Verify control wire gauge			
Werify diameter seal settings on the energy recovery wheel		L	
Verify proper drain tap installation	V		
Prieck condensing fans for any damage or misalignment.		V	
Inspect all coils within the unit.	V		
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with		, ,	T
the unit for prestart-up information.		V	
The unit contains a crankcase heater for each compressor which needs power			
supplied to it 24 hours prior to start-up/			
Supply air temperature sensor is installed in ductwork and wired back to unit			
controller.	V		
Room temperature and humidity sensor is installed and wired back to unit controller			

Halff Cx Agent Signed*: Name: Company: Date: Phone/Emails:	General Contractors Representative Signed: Name: Company: Date: Phone/Emails:	Owners Representative Signed: Name: Company: Date: Phone/Emails:
*Initiating Authority	1 Hotel Ellians.	PHONE/CHIBRS.



29.) Start unit.	-	-		
30.) Fan amperages within nameplate specs.		/		
31.) Inspect for all installing hardware and trim pieces.				
32.) Verify linkage operation on Wing coils along with piping and piping components.	-			
33. Verify sequence of operation on Humidifiers and compare existing piping to			1/	
ecommendations in IOM.				
34 Check operation of High Static limit switch and/or relief doors/dampers during startup.			V	
35.) Recheck safety grating over floor opening for correct installation and being secured		50		
properly.	-			
36.) Complete operating log and obtain required signature	-	/		
37.) Record all model, serial, and sales number from unit. Record all numbers from motors,				
wing coils. Record all filter sizes and total numbers				
Notes:			-510	
			W 1 X X X	77

Halff Cx Agent Signed*:	wight a gu	<b>G</b> e Sig
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Company: Date:	5/20/25	Co Da
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iigned:	Mari
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Company:	CAHS
Date:	5/20/25
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Owners Repr	esentative
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Job Name				
Installation Location 3217 2 flour				
Customer Order Number		0.000		
Model Number(s) 6034950301760				
G.O. Number(s)	_			
G.O. Natiliber(3)				
	Yes	No	N/A	Initials
1.) Make sure the unit is level to the pad and all shims are under each section correctly.				
2.) Disconnect all 469/208 voltage and perform lock-out / tag-out.			100	
3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside	-			
trim; check for damage, inspect paint, and that all doors open properly.	V			
4.) Check external power outlets for correct polarity.		-		-
5.) Ensure supply-air and return-air ducts have been connected.	-			
6.) On steam supplied 'Wing coils' inspect adjustment on clam shells to 2mm gap or less,			-	
make sure damper linkage IA installed properly Review if damper fail open or close, if it goes				
off on a safety.			100	
7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists	7		-	
check motor winding by verifying a winding resistance of >6 meg-ohms (if lower, dry out	V			
winding and re-test).				
8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.	_			-
Mossure for correct incoming connections are tight at the motor, disconnect, and VFDS.	V			
Measure for correct incoming voltage on all three legs, check for phasing.				
9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.	-			
Measure for correct incoming voltage on all three legs, check for phasing.				
10.) Verify damper operation; make sure damper move freely and do not bind and linkage		S. 1 (/	1	
afignment moves freely.				
11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned	V			
within the unit and tight using the correct filter retainers and the filters air flow is in the right			1 5	
direction.				
12.) Verify the freeze stat is operational by placing in an ice bath or use of a compatible				
method for bringing the temp. down.			V	
13.) All unit drain lines and traps properly installed; (review trap size and static) also check for	V			
operation and leaks.	10000			
14.) Check drain pans, opening, and condensate line for obstructions, check upper drain pan				
alping so it is hitting lower dan pan.		/	V	
15.) Visually inspect all piping and valves for any apparent signs of leakage.	V			
16.) When applicable for steam coils, turn steam on full for a minimum of 10 minutes prior to			,	
opening the fresh air.		1901		
17.) All coil fins inspected and straightened.	V			
18.) Verify hold down bolts and channels from fan sections are removed if internally isolated	-/			
(if not, notify contractor to correct) Review isolation spring and adjust as needed. Inspect for		- 2		2
tears and loose screw on the flex connection.				
19.) Inspect all fan wheels to confirm proper rotation direction and move freely by gaining	/			
access through removal of wire.	V			8
20.) Verify proper torque to the shaft bearings, fan wheel, and drive sheave set screws.	V		-	
20.) Verify proper torque to the shart bearings, ran wheel, and drive sneave set screws.	_			
21.) Verify all fan belts are properly tensioned after confirming the sheaves are in proper alignment (see O.M.).			V	
			-	
22.) Inspect the fan motor bearings and blower bearings for proper lubrication ensuring no			1/	1
moisture is present.		_		
23.) If excessive vibration exists ensure unit vibration is tested to not exceed 6% of original			V	
designed speed.			,	
24.) Prior to start-up, bump-start the unit to confirm fan wheel rotates as indicated by the	V			
arrow located on fan housing.				- 6.00
25.) Verify incoming voltage imbalance is <2%.	V	/		
26.) Close and secure all access doors.	V			
27.) Check mechanical drawing for static operating pressure (if not available, confirm with		8	1/	
associated sales engineer).			V	
28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).		7 - 1		



Job Name	
Installation Location	B217 7-1600
Customer Order Number	
Model Number(s)	E034950362300
G.O. Number(s)	

	Yes	No	N/A	Initials
Disconnect and lock-out all power switches				
Remove any foreign objects that are located in the unit		_		
Check all fasteners, set screws, and locking collars on the fans, bearing				
Rotate the fan wheels and energy recovery wheels (if applicable) by hand and				
ønsure no part are rubbing.			🗸	
Verify that non-motorized dampers open and close properly.				
Check the tightness of all factory wiring connections.		_		
Verify control wire gauge				
Verify diameter seal settings on the energy recovery wheel				
Verify proper drain tap installation				
Check condensing fans for any damage or misalignment.				
Inspect all coils within the unit.			- · -	
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with				
the unit for prestart-up information.				
The unit contains a crankcase heater for each compressor which needs power			$\nu$	
supplied to it 24 hours prior to start-up/				
Supply air temperature sensor is installed in ductwork and wired back to unit controller.				
Room temperature and humidity sensor is installed and wired back to unit controller			<b>—</b>	

Halff Cx Agent Signed*: Name: Company: Date:  Halff Cx Agent  Higher Cy  High	General Contractors Representative Signed: Name: Company: Date:	Owners Representative Signed: Name: Company: Date:
Phone/Emails:	Phone/Emails:	Phone/Emails:
*Institution Authority		



		_		
29.) Start unit.	10	/		
30.) Fan amperages within nameplate specs.	V			
31.) Inspect for all installing hardware and trim pieces.	V	<u>.</u>		
32.) Verify linkage operation on Wing coils along with piping and piping components.	V			
33.) Verify sequence of operation on Humidifiers and compare existing piping to ecommendations in IOM.			V	
34 Check operation of High Static limit switch and/or relief doors/dampers during startup.			V	
35.) Recheck safety grating over floor opening for correct installation and being secured properly.	V			
36.) Complete operating log and obtain required signature	V			
37.) Record all model, serial, and sales number from unit. Record all numbers from motors, wing coils. Record all filter sizes and total numbers	0			
Notes:				

Halff Cx Agent Signed*: Name: Company: Date: Phone/Emails:	Wind Cy- High India Half 5/20/25	General Contractors Represe Signed: Name: Company: Date: Phone/Emails:	Owners Reprising Signed: Name: Company: Date: Phone/Emails:	
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Job Name				
Installation Location 3 202 7rd flex				
Customer Order Number	7/2			
Model Number(s) 50 5 495 030 1200				
G.O. Number(s)			15000	
	Yes	No	N/A	Initials
1.) Make sure the unit is level to the pad and all shims are under each section correctly.	-			
2.) Disconnect all 460/208 voltage and perform lock-out / tag-out.	V			
3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside		/		
trim; check for damage, inspect paint, and that all doors open properly.	1			
At Check external power outlets for correct polarity.				
5.) Ensure supply-air and return-air ducts have been connected.				
6.) On steem supplied 'Wing coils' inspect adjustment on clam shells to 2mm gap or less,				
make sure damper linkage IA installed properly Review if damper fail open or close, if it goes				
off on a safety.				
7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists				-000
check motor winding by verifying a winding resistance of >6 meg-ohms (if lower, dry out				
winding and re-test).				
8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.				
Measure for correct incoming voltage on all three legs, check for phasing.	V			1
9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.	1000	/		
Measure for correct incoming voltage on all three legs, check for phasing.	V			
10.) Verify damper operation; make sure damper move freely and do not bind and linkage			1	
alignment moves freely.			V	
11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned				
within the unit and tight using the correct filter retainers and the filters air flow is in the right				ì
direction.	1/			
12. Verify the freeze stat is operational by placing in an ice bath or use of a compatible	_		/	-
method for bringing the temp. down.			V	
13.) All unit drain lines and traps properly installed; (review trap size and static) also check for				
operation and leaks.	1/			
14.) Check drain pans, opening, and condensate line for obstructions, check upper drain pan				
piping so it is hitting lower dan pan.				
15.) Visually inspect all piping and valves for any apparent signs of leakage.				
16.) When applicable for steam coils, turn steam on full for a minimum of 10 minutes prior to	_			
opening the fresh air.	9		V	
17.) All coil fins inspected and straightened.	1			
18.) Verify hold down bolts and channels from fan sections are removed if internally isolated		1200		
(if not, notify contractor to correct) Review isolation spring and adjust as needed. Inspect for				
tears and loose screw on the flex connection.	1			
19.) Inspect all fan wheels to confirm proper rotation direction and move freely by gaining		-		
access through removal of wire.	V			
20.) Verify proper torque to the shaft bearings, fan wheel, and drive sheave set screws.	V			
21.) Verify all fan belts are properly tensioned after confirming the sheaves are in proper			/	
alignment (see O.M.).			-	
22.) Impect the fan motor bearings and blower bearings for proper lubrication ensuring no	<i>2</i>		V	
consture is present.			V .	
23. Excessive vibration exists ensure unit vibration is tested to not exceed 6% of original		8 5	/	20
signed speed.				
24.) Prior to start-up, bump-start the unit to confirm fan wheel rotates as indicated by the				
arrow located on fan housing.	V	9		
25.) Verify incoming voltage imbalance is <2%.	V			
26.) Close and secure all access doors.	V			
27.) Check mechanical drawing for static operating pressure (if not available, confirm with		- 47	V	
			V	
associated sales engineer).  28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).			1000	



Job Name	
Installation Location	3202 20 flows
Customer Order Number	
Model Number(s)	4034950302600
G.O. Number(s)	

	Yes	No N/A	Initials
Disconnect and lock-out all power switches	V		
Remove any foreign objects that are located in the unit	V		
Check all fasteners, set screws, and locking collars on the fans, bearing	0		
Rotate the fan wheels and energy recovery wheels (if applicable) by hand and			
ensure no part are rubbing.			
Verify that non-motorized dampers open and close properly.			
Check the tightness of all factory wiring connections.	V		
Verify control wire gauge	V		
Verify diameter seal settings on the energy recovery wheel			
Verify proper drain tap installation			
Check condensing fans for any damage or misalignment.			
Inspect all coils within the unit.	1		
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with			
the unit for prestart-up information.		V	
The unit contains a crankcase heater for each compressor which needs power		1/	
supplied to it 24 hours prior to start-up/	L	.	
Supply air temperature sensor is installed in ductwork and wired back to unit			
controller.			_
Room temperature and humidity sensor is installed and wired back to unit controller	V		

Halff Cx Agent Signed*: Name: Company: Date: S/20/25	General Contractors Representative Signed: Name: Company: Date: S/2013	Owners Representative Signed: Name: Company: Date:
Phone/Emails:	Phone/Emails.	Phone/Emails:



29.) Start unit.			
30.) Fan amperages within nameplate specs.	V		
31.) Inspect for all installing hardware and trim pieces.	V		
32.) Verify linkage operation on Wing coils along with piping and piping components.			
33.) Verify sequence of operation on Humidifiers and compare existing piping to recommendations in IOM.		V	
34 Check operation of High Static limit switch and/or relief doors/dampers during startup.		V	-
35.) Recheck safety grating over floor opening for correct installation and being secured properly.	1		
36.) Complete operating log and obtain required signature	V		
37.) Record all model, serial, and sales number from unit. Record all numbers from motors, wing coils. Record all filter sizes and total numbers	1/		
Notes:			

Haiff Cx Agent Signed*: Name: Company: Date: Phone/Emails:	General Contractors Representative Signed: Name: Company: Date: Phone/Emails:	Owners Representative Signed: Name: Company: Date: Phone/Emails:
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Job Name		1000		
Installation Location \$201 200 floor	-			
Customer Order Number				
				- 9185 d
Model Number(s) E63 495 030 2000				
G.O. Number(s)			-	_ *********
	Yes	No	N/A	Initials
1.) Make sure the unit is level to the pad and all shims are under each section correctly.				
2.) Disconnect all-460/208 voltage and perform lock-out / tag-out.				
3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside				
trim; check for damage, inspect paint, and that all doors open properly.				
Check external power outlets for correct polarity.		_	V	
5.) Ensure supply-air and return-air ducts have been connected.				
6.) On steam supplied 'Wing coils' inspect adjustment on clam shells to 2mm gap or less,			/	
make sure damper linkage IA installed properly Review if damper fail open or close, if it goes	1 1		V	
off on a safety.				
7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists	/			
check motor winding by verifying a winding resistance of >6 meg-ohms (if lower, dry out	V			
winding and re-test).				
8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.				
Measure for correct incoming voltage on all three legs, check for phasing.	V			
9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.				
Measure for correct incoming voltage on all three legs, check for phasing.	V			3.
10.) Verify damper operation; make sure damper move freely and do not bind and linkage				100
Inment moves freely.			-	
11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned				
within the unit and tight using the correct filter retainers and the filters air flow is in the right		V.		
direction.	V			
12.) Verify the freeze stat is operational by placing in an ice bath or use of a compatible			.7	
method for bringing the temp. down.			V	
13.) All unit drain lines and traps properly installed; (review trap size and static) also check for				
operation and leaks.	V			88
14.) Check drain pans, opening, and condensate line for obstructions, check upper drain pan	1			
pleting so it is hitting lower dan pan.			V	
15.) Visually inspect all piping and valves for any apparent signs of leakage.				
16.) When applicable for steam coils, turn steam on full for a minimum of 10 minutes prior to			,	
opening the fresh air.			V	
17.) All coil fins inspected and straightened.			_	
18.) Verify hold down bolts and channels from fan sections are removed if internally isolated		-	-	
(if not, notify contractor to correct) Review isolation spring and adjust as needed. Inspect for				
tears and loose screw on the flex connection.	1./			
19.) Inspect all fan wheels to confirm proper rotation direction and move freely by gaining				_
access through removal of wire.	11/			
20.) Verify proper torque to the shaft bearings, fan wheel, and drive sheave set screws.			-	_
21.) Yerriy all fan belts are properly tensioned after confirming the sheaves are in proper				
alignment (see O.M.).	l		V	1
22.) Inspect the fan motor bearings and blower bearings for proper lubrication ensuring no			/	
poisture is present.			V	
23.) Sexcessive vibration exists ensure unit vibration is tested to not exceed 6% of original			1	
designed speed.			V	
24.) Prior to start-up, bump-start the unit to confirm fan wheel rotates as indicated by the	<del>                                     </del>			
arrow located on fan housing.	1			
25.) Verify incoming voltage imbalance is <2%.				
26.) Close and secure all access doors.	Y		-	
27.) Check mechanical drawing for static operating pressure (if not available, confirm with	-			
associated sales engineer).		/		
28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).		_		
201) Esternio, vibration, moise, or signs or overneating (bearings may run not during break-in).		_		



Job Name	
Installation Location	B201 20 floor
Customer Order Number	
Model Number(s)	E034950302100
G.O. Number(s)	

	Yes	No N/A	A Initials
Disconnect and lock-out all power switches	V	/	
Remove any foreign objects that are located in the unit			
Check all fasteners, set screws, and locking collars on the fans, bearing			
Rotate the fan wheels and energy recovery wheels (if applicable) by hand and			
ensure no part are rubbing.			
Verify that non-motorized dampers open and close properly.			
Check the tightness of all factory wiring connections.			
Verify control wire gauge	V		
Verify diameter seal settings on the energy recovery wheel		V	
Verify proper drain tap installation			1
Check condensing fans for any damage or misalignment.		V	
Inspect all coils within the unit.	U		1
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with		1.7	,
the unit for prestart-up information.			
The unit contains a crankcase heater for each compressor which needs power			
supplied to it 24 hours prior to start-up/			
Supply air temperature sensor is installed in ductwork and wired back to unit	V		
controller.			1
Room temperature and humidity sensor is installed and wired back to unit controller	17		

Halff Cx Agent Signed*: Name: Company:	Minter Garage	General Contractors Representative Signed: Name: FRANK MOTHUZ Company:	Owners Representative Signed: Name: Company:
Date:	5/20/25	Date: 5/20/27	Date:
Phone/Emails:		Phone/Emails:	Phone/Emails:
*Antitioting Authority			



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Haiff Cx Agent Signed*:	Winds gr=	Signed:	tractors Representative	Owners Repressigned:	esentative	
Name:	Miguel Goldson	Name:	HANY MOITING	Name:		
Company:	Halft	Company:	CAHS	Company:		_
Date:	6/20/85	Date:	5/20/25	Date:		
hone/Emails:		Phone/Emails:		Phone/Emails:		



Job Name			150	
Installation Location B 101				
Customer Order Number				
Model Number(s) E03495030 1600				
G.O. Number(s)				
G.O. Number(s)	-			
	Yes	No	N/A	Initials
1.) Make sure the unit is level to the pad and all shims are under each section correctly.	/	12272703		
2.) Disconnect all 460/208 voltage and perform lock-out / tag-out.	~			
3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside				
trim; check for damage, inspect paint, and that all doors open properly.				
At Check external power outlets for correct polarity.	1		2	
5.) Ensure supply-air and return-air ducts have been connected.				
6.) On steam supplied 'Wing coils' inspect adjustment on clam shells to 2mm gap or less,			1	
make sure damper linkage IA installed properly Review if damper fail open or close, if it goes				
off on a safety.	-		-	
7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists	V			
check motor winding by verifying a winding resistance of >6 meg-ohms (if lower, dry out winding and re-test).	V			
8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.	-	55		
Measure for correct incoming voltage on all three legs, check for phasing.	-			
9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.			-	
Measure for correct incoming voltage on all three legs, check for phasing.	V			
10.) Verify damper operation; make sure damper move freely and do not bind and linkage		_		
alignment moves freely.			V	
11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned		,		
within the unit and tight using the correct filter retainers and the filters air flow is in the right	1/			
direction.				
12.) Verify the freeze stat is operational by placing in an ice bath or use of a compatible				
anethod for bringing the temp. down.			V	
13.) All unit drain lines and traps properly installed; (review trap size and static) also check for				
operation and leaks.	-			
14) Check drain pans, opening, and condensate line for obstructions, check upper drain pan			./	
piping so it is hitting lower dan pan.				
15.) Visually inspect all piping and valves for any apparent signs of leakage.		- 3		
16.) When applicable for steam coils, turn steam on full for a minimum of 10 minutes prior to		1000	1	
opening the fresh air.			•	V
17.) All coil fins inspected and straightened.	-			
18.) Verify hold down bolts and channels from fan sections are removed if internally isolated	./			
(if not, notify contractor to correct) Review isolation spring and adjust as needed. Inspect for	-			
tears and loose screw on the flex connection.				
<ol> <li>Inspect all fan wheels to confirm proper rotation direction and move freely by gaining access through removal of wire.</li> </ol>	V	_		
20.) Verify proper torque to the shaft bearings, fan wheel, and drive sheave set screws.	1	_		
21.) Verify all fan belts are properly tensioned after confirming the sheaves are in proper	-			
alignment (see O.M.).			V	
22.) Inspect the fan motor bearings and blower bearings for proper lubrication ensuring no			1	
moisture is present.			V	
23.) (excessive vibration exists ensure unit vibration is tested to not exceed 6% of original				
designed speed.			~	
24.) Prior to start-up, bump-start the unit to confirm fan wheel rotates as indicated by the	-	0.5		
arrow located on fan housing.				
25.) Verify incoming voltage imbalance is <2%.	V			3
26.) Close and secure all access doors.	V			1- mar - 1
27. Eneck mechanical drawing for static operating pressure (if not available, confirm with			/	
associated sales engineer).	-	_		
28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).				



Job Name	
Installation Location	B101 12+ floor
Customer Order Number	
Model Number(s)	000 4750 987.70
G.O. Number(s)	

	Yes	No N/A	Initials
Disconnect and lock-out all power switches			
Remove any foreign objects that are located in the unit			
Check all fasteners, set screws, and locking collars on the fans, bearing	/		
Rotate the fan wheels and energy recovery wheels (if applicable) by hand and			
ensure no part are rubbing.			
Verify that non-motorized dampers open and close properly.			
Check the tightness of all factory wiring connections.			
Verify control wire gauge			
Verify diameter seal settings on the energy recovery wheel		<b>V</b>	
Verify proper drain tap installation			
Check condensing fans for any damage or misalignment.			
Inspect all coils within the unit.			
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with		3/	
the unit for prestart-up information.			
The unit contains a crankcase heater for each compressor which needs power			
supplied to it 24 hours prior to start-up/			
Supply air temperature sensor is installed in ductwork and wired back to unit controller.			
Room temperature and humidity sensor is installed and wired back to unit controller			

Halff Cx Agent	11. 11. Wi	General Contractors Representative	Owners Representative
Signed*:	Wishlam Y	Signed: Marhine L	Signed:
Name:	Wick Day Goth	Name: TRALY Mathuz	Name:
Company: _	WATER	Company: CANS	Company:
Date:	5/20/25	Date: 5/10/25	Date:
Phone/Emails:		Phone/Emails:	Phone/Emails:
"Joshinting Authority			



29.) Start unit.	,,			
30.) Fan amperages within nameplate specs.	14	-		
31.) Inspect for all installing hardware and trim pieces.	1 =			
32.) Verify linkage operation on Wing coils along with piping and piping components.				
33. Verify sequence of operation on Humidiflers and compare existing piping to ecommendations in IOM.			~	
34-Check operation of High Static limit switch and/or relief doors/dampers during startup.	autrova i		V	
<ol> <li>Recheck safety grating over floor opening for correct installation and being secured properly.</li> </ol>				Ĭ
36.) Complete operating log and obtain required signature	37.		100000	
37.) Record all model, serial, and sales number from unit. Record all numbers from motors, wing coils. Record all filter sizes and total numbers	/			
Notes:				

Signed: Name: Company: Date: Signed: Name: Company: Date: Signed: Name: Company: Date: Date: Date: Signed: Name: Company: Date: Date: Date: Signed: Name: Company: Date: Dat	
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Job Name				
Installation Location A (1) 7				
Customer Order Number				
Model Number(s) E034950301500				
G.O. Number(s)				
	Yes	No	N/A	Initials
1.) Make sure the unit is level to the pad and all shims are under each section correctly.				
2.) Disconnect all 460/208 voltage and perform lock-out / tag-out.	-	4		
3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside	V			
trim; check for damage, inspect paint, and that all doors open properly.				
4) check external power outlets for correct polarity.		_	1/	
5.) Ensure supply-air and return-air ducts have been connected.	V			
6.) On steam supplied 'Wing coils' inspect adjustment on clam shells to 2mm gap or less,				
make sure damper linkage IA installed properly Review if damper fail open or close, if it goes	1		V	
off on a safety.			1907	
7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists				
check motor winding by verifying a winding resistance of >6 meg-ohms (if lower, dry out	1974.5		1 1	
winding and re-test).				
8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.	1			
Measure for correct incoming voltage on all three legs, check for phasing.		_		
9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.				
Measure for correct incoming voltage on all three legs, check for phasing.	-			
10.) Verify damper operation; make sure damper move freely and do not bind and linkage	i I		V	
alignment moves freely.				
11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned	1/			
within the unit and tight using the correct filter retainers and the filters air flow is in the right	•			
direction.		1 7		
12.) Verify the freeze stat is operational by placing in an ice bath or use of a compatible				
method for bringing the temp. down.		_		
13.) All unit drain lines and traps properly installed; (review trap size and static) also check for	V			
operation and leaks.				
14.) Check drain pans, opening, and condensate line for obstructions, check upper drain pan			V	
piping so it is hitting lower dan pan.				
15.) Visually inspect all piping and valves for any apparent signs of leakage.		-	-	
16.) When applicable for steam coils, turn steam on full for a minimum of 10 minutes prior to opening the fresh air.			12"	
17.) All coil fins inspected and straightened.	1	/// <u>/</u>		
18.) Verify hold down bolts and channels from fan sections are removed if internally isolated		-		
(if not, notify contractor to correct) Review isolation spring and adjust as needed. Inspect for	V			
tears and loose screw on the flex connection.				
19.) Inspect all fan wheels to confirm proper rotation direction and move freely by gaining		_		
access through removal of wire.		/		
20.) Verify proper torque to the shaft bearings, fan wheel, and drive sheave set screws.	V	1000		_
21.) Verify all fan belts are properly tensioned after confirming the sheaves are in proper			-	
alignment (see O.M.).			2	
22.) Inspect the fan motor bearings and blower bearings for proper lubrication ensuring no			1.2	
moisture is present.			10	
23.) If excessive vibration exists ensure unit vibration is tested to not exceed 6% of original				
designed speed.			5.	
24.) Prior to start-up, bump-start the unit to confirm fan wheel rotates as indicated by the	V		- DE 1	
arrow located on fan housing.		- was		
25.) Verify incoming voltage imbalance is <2%.	0	500.2		
26.) Close and secure all access doors.	V			
27.) Check mechanical drawing for static operating pressure (if not available, confirm with		/	V	
associated sales engineer).				
28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).	V			



Job Name	- ·		
Installation Location	A107	Total	 
Customer Order Number			
Model Number(s)	E0349503	302400	
G.O. Number(s)			

	Yes	No	N/A	Initials
Disconnect and lock-out all power switches	V			
Remove any foreign objects that are located in the unit	-			
Check all fasteners, set screws, and locking collars on the fans, bearing	1			
Rotate the fan wheels and energy recovery wheels (if applicable) by hand and			1	
ensure no part are rubbing.				
Verify that non-motorized dampers open and close properly.				
Check the tightness of all factory wiring connections.				
Verify control wire gauge	1/			
Verify diameter seal settings on the energy recovery wheel			V	
Verify proper drain tap installation	V			
Check condensing fans for any damage or misalignment.				
Inspect all coils within the unit.	1/			
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with				-
the unit for prestart-up information.				
The unit contains a crankcase heater for each compressor which needs power				•
supplied to it 24 hours prior to start-up/				
Supply air temperature sensor is installed in ductwork and wired back to unit	1			
controller.				
Room temperature and humidity sensor is installed and wired back to unit controller				

Halff Cx Agent Signed*: Name: Company:	General Contractors Representative Signed: Name: Company:	Owners Representative Signed: Name: Company:
Date: 6/20/25	Date: 5(10)15	Date:
Phone/Emails:	Phone/Emails:	Phone/Emails:
*Joshining Authority	NEW CONTRACTOR OF THE CONTRACT	



9.) Start unit. D.) Fan amperages within nameplate specs. 1.) Inspect for all installing hardware and trim pieces.	V			
1.) Inspect for all installing hardware and trim pieces.	V	-	1	
			1 1	100000
2.) Verify linkage operation on Wing coils along with piping and piping components.	V			
3.) Verify sequence of operation on Humidifiers and compare existing piping to commendations in IOM.			~	
Check operation of High Static limit switch and/or relief doors/dampers during startup.			V	- 0
5.) Recheck safety grating over floor opening for correct installation and being secured openly.	V			
5.) Complete operating log and obtain required signature	-		$\perp$	
7.) Record all model, serial, and sales number from unit. Record all numbers from motors, ing coils. Record all filter sizes and total numbers	0			
Notes:		-		-

Haiff Cx Agent Signed*:	MIMULIA	General Contractors Representative Signed:	Owners Representative Signed:
Name:	Migul Gartha	Name: FRANK NOVILLE	Name:
Company:	U W FF	Company:	Company:
Date:	6/20/26	Date: 5/70/15	Date:
Phone/Emails:		Phone/Emails:	Phone/Emails:
*Initialina Authority	·····		



Customer Order Number (Model Number(s) G.O. Number(s)  1.) Make sure the unit is level to the pad and all shims are under each section correctly.  2.) Disconnect all 4667/38 Voltage and perform lock-out / tag-out.  3.] Review inside trih make sure that it's done and sealed. Unit exterior; inspected outside trim; check for damage, inspect paint, and that all dons open properly.  3.] Review inside trih make sure that it's done and sealed. Unit exterior; inspected outside trim; check for damage, inspect paint, and that all dons open properly.  3.] Ensure supply- air and return-air ducts have been connected.  6.] On psebm supplied Wing colls inspect adjustment on clam shells to 2mm gap or less, make sure damper linkage IA installed properly Review if damper fail open or close, if it goes of no a safety.  7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists check motor winding by verifying as winding restance of >5 meg-ohms (if lower, dry out winding and re-test).  8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.  Measure for correct incoming voltage on all three legs, check for phasing.  9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.  Measure for correct incoming voltage on all three legs, check for phasing.  10.) Verify amper coperation, make sure damper move freely and do not bind and linkage pigment moves freely.  11.] Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned within the unit and tight using the correct filter retainers and the filters air flow is in the right direction.  12.] Verify the freeze stat is operational by placing in an ice bath or use of a compatible green for the property positioned within the unit and tight using the correct filter retainers and the filters air flow is in the right direction.  12.] Verify the freeze stat is operational by placing in an ice bath or use of a compatible green for the property for the property	Job Name				
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Model Number(s)  G.O. Number(s)  1.) Make sure the unit is level to the pad and all shims are under each section correctly.  2.) Disconnect all 466/rtgs Voltage and perform lock-out/ tag-out.  3.) Review inside trin make sure that it's done and sealed. Unit exterior; inspected outside trin; check for damage, inspect paint, and that all doors open properly.  2.) Disconnect all 466/rtgs Voltage and perform lock-out/ tag-out.  3.) Review inside trin make sure that it's done and sealed. Unit exterior; inspected outside trin; check for damage, inspect paint, and that all doors open properly.  5.) Ensure supply- all rand return-air ducts have been connected.  6.) On jadem supplied Wing coll's inspect adjustment on clam shells to 2mm gap or less, mayle sure damper linkage IA installed properly Review if damper fail open or close, if it goes for a safety.  7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists check motor winding by verifying a winding resistance of >5 meg-ohms (if lower, dry out winding and re-test).  8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.  Measure for correct incoming voltage on all three legs, check for phasing.  10.) Verify an unit wiring connections are tight at the motor, disconnect, and VFDS.  Measure for correct incoming voltage on all three legs, check for phasing.  10.) Verify all air unit filters (including Hepa if equipped) are in place and properly positioned within the unit and tight using the correct filter retainers and the filters air flow is in the right direction.  11.) Further all air unit filters (including Hepa if equipped) are in place and properly positioned within the unit and tight using the correct filter retainers and the filters air flow is in the right direction.  12.) Further all air unit filters flowed in the mass of the proper direction and leaks.  13.) All unit frain pans, opening, and condensate line for obstructions, check upper drain pan phing so it is hitting lower dan pan.	1100		-		
1.) Make sure the unit is level to the pad and all shims are under each section correctly. 2.) Disconnect all 4607-000 voltage and perform lock-out / tag-out. 3.) Review inside trih make sure that it's done and sealed. Unliet exterior; inspected outside trim; check for damage, inspect paint, and that all doors open properly. 4. Check for damage, inspect paint, and that all doors open properly. 5.) Ensure supply-all rand return-air ducts have been connected. 6.) On stam supplied "Vinig coils" inspect adjustment on clam shells to 2mm gap or less, make sure damper limbage is inspect adjustment on clam shells to 2mm gap or less, and saint and that all doors open properly. 7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists check motor winding by verifying a winding resistance of >6 mg-ohms (if lower, dry out winding and retest). 8.) Verify all the unit wining connections are tight at the motor, disconnect, and VFDS. 8.) Verify all the unit wining connections are tight at the motor, disconnect, and VFDS. 8.) Verify all the unit wining connections are tight at the motor, disconnect, and VFDS. 8.) Verify all the unit wining connections are tight at the motor, disconnect, and VFDS. 8.) Verify all the unit wining connections are tight at the motor, disconnect, and VFDS. 8.) Verify all the unit wining connections are tight at the motor, disconnect, and VFDS. 8.) Verify all the unit wining connections are tight at the motor, disconnect, and VFDS. 8.) Verify all the unit wining connections are tight at the motor, disconnect, and VFDS. 8.) Verify all the unit wining connections are tight at the motor, disconnect, and VFDS. 8.) Verify the fittlers (including Hepa if equipped) are in place and properly positioned within the unit and tight using the correct filter retainers and the filters air flow is in the right direction. 8.) Verify the fittlers (including Hepa if equipped) are in place and properly positioned within the unit and tight using the correct filter retainers and the					
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1.) Make sure the unit is level to the pad and all shims are under each section correctly. 2.) Disconnect all 460/218 Voltage and perform lock-out / tag-out. 3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside trim; check for damage, inspect paint, and that all doors open properly. 4. Greek external power outlets for correct polarity. 5.) Ensure supply-alr and return-air ducts have been connected. 6.) On sefam supplied Wing coils inspect adjustment on clam shells to 2mm gap or less, make sure damper linkage IA installed properly Review if damper fail open or close, if it goes of for a safety. 7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists check motor winding by verifying a winding resistance of >5 meg-ohms (if lower, dry out winding and retest). 8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS. Measure for correct incoming voltage on all three legs, check for phasing. 9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS. Measure for correct incoming voltage on all three legs, check for phasing. 10.) Verify all dramper operation; make sure damper move freely and do not bind and linkage infirment moves freely. 11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned within the unit and tight using the correct filter retainers and the filters air flow is in the right direction. 12.) Verify all dramper operational by placing in an ice bath or use of a compatible extended of bringing the temp. down. 13.) All unit drain lines and traps properly installed; (review trap size and static) also check for operation and leaks. 14.) Direck drain pans, opening, and condensate line for obstructions, check upper drain pan perifying so it is thitting lower dam pan. 15.) Visually inspect all piping and valves for any apparent signs of leakage. 16.) Wern applicable for seam coils, turn steam on full for a minimum of 10 minute	G.O. Number(s)				
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27.) Check mechanical drawing for static operating pressure (if not available, confirm with associated sales engineer).					
associated sales engineer).			0.000		
28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).	27.) Check mechanical drawing for static operating pressure (if not available, confirm with		20 2	/	1
28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).	associated sales engineer).				
	28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).			200	



Job Name	
Installation Location	15+ Floor A-108
Customer Order Number	
Model Number(s)	E034950302300
G.O. Number(s)	

	Yes	No	N/A	Initials
Disconnect and lock-out all power switches	~	_		
Remove any foreign objects that are located in the unit	V			
Check all fasteners, set screws, and locking collars on the fans, bearing				
Rotate the fan wheels and energy recovery wheels (if applicable) by hand and			./	
≝hsure no part are rubbing.	,			
Verify that non-motorized dampers open and close properly.				
Check the tightness of all factory wiring connections.				
Verify control wire gauge	V			
Verify diameter seal settings on the energy recovery wheel				
Verify proper drain tap installation	1			
Check condensing fans for any damage or misalignment.			~	
Inspect all coils within the unit.	V			
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with	,		1/	
the unit for prestart-up information.	,			
The unit contains a crankcase heater for each compressor which needs power			/	
supplied to it 24 hours prior to start-up/				
Supply air temperature sensor is installed in ductwork and wired back to unit				
controller.				
Room temperature and humidity sensor is installed and wired back to unit controller				

Halff Cx Agent	General Contractors Representative	Owners Representative
Signed*:	Signed:	Signed:
Name: Miguel Maria	Name: FRANK MORTHUZ	Name:
Company:	Company:CAHS	Company:
Date: 5/20/35	Date: 5/20/25	Date:
Phone/Emails:	Phone/Emails:	Phone/Emails: 7
*Initialing Authority		•



			200 - 100	100 000 0
29.) Start unit.	~	+		
30.) Fan amperages within nameplate specs.	-	1		
31.) Inspect for all installing hardware and trim pieces.	V	/		
32.) Verify linkage operation on Wing coils along with piping and piping components.				
33. Verify sequence of operation on Humidiflers and compare existing piping to		1	/	
recommendations in IOM.				
34/ Check operation of High Static limit switch and/or relief doors/dampers during startup.	02528		V	
35.) Recheck safety grating over floor opening for correct installation and being secured	1/		90 0	
properly.		/		
36.) Complete operating log and obtain required signature	V	/		
37.) Record all model, serial, and sales number from unit. Record all numbers from motors,	1/			
wing coils. Record all filter sizes and total numbers				
Notes:	3,		234216 24236	
1				9

Halff Cx Agent	1. 1545	General Contractors Representative	Owners Representative
Signed*:	Windhis	Signed:	Signed:
Name:	Middle Caleria	Name: FRANK MOTHUZ	_ Name:
Company:	ALA IPP	Company:	Company:
Date:	8/20/25	Date: 5/20/25	Date:
Phone/Emails: _		Phone/Emails:	Phone/Emails:
*Initiating Authority			



Job Name	5-5	30.00		
Installation Location 13+ Hour - BCU-CION				
Customer Order Number				
				200
Model Number(s) =03495030 1400				
G.O. Number(s)				* 10 3
	Yes	No	N/A	Initials
1.) Make sure the unit is level to the pad and all shims are under each section correctly.	V			-
2.) Disconnect all 450/208 voltage and perform lock-out / tag-out.	1/		1	
	V			
3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside	1			
trim; check for damage, inspect paint, and that all doors open properly.				
Archeck external power outlets for correct polarity.			V	
5.) Ensure supply-air and return-air ducts have been connected.	V			
6.) On steam supplied 'Wing coils' inspect adjustment on clam shells to 2mm gap or less,			./	
make sure damper linkage IA installed properly Review if damper fail open or close, if it goes			V	
off on a safety.				
7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists	1		2 11	
check motor winding by verifying a winding resistance of >6 meg-ohms (if lower, dry out	V			
winding and re-test).	- 1			
8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.				
Measure for correct incoming voltage on all three legs, check for phasing.	V	2		
9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.	1/			
Measure for correct incoming voltage on all three legs, check for phasing.				
10.) Verify damper operation; make sure damper move freely and do not bind and linkage			./	
alignment moves freely.			V	
11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned	1			
within the unit and tight using the correct filter retainers and the filters air flow is in the right	VV I			- 1
direction.	1			1
12.) Verify the freeze stat is operational by placing in an ice bath or use of a compatible	_		. /	
method for bringing the temp. down.				
13.) All unit drain lines and traps properly installed; (review trap size and static) also check for		_	-	
operation and leaks.	V			1
14.) Check drain pans, opening, and condensate line for obstructions, check upper drain pan	-			
plang so it is hitting lower dan pan.		1	V	
15.) Visually inspect all piping and valves for any apparent signs of leakage.	V			
16.) When applicable for steam coils, turn steam on full for a minimum of 10 minutes prior to			1	
opening the fresh air.				
17.) All coil fins inspected and straightened.	V			
	V		-	
18.) Verify hold down bolts and channels from fan sections are removed if internally isolated	V			
(if not, notify contractor to correct) Review isolation spring and adjust as needed. Inspect for tears and loose screw on the flex connection.				
19.) Inspect all fan wheels to confirm proper rotation direction and move freely by gaining access through removal of wire.	V			- 1
	/	•		
20.) Verify proper torque to the shaft bearings, fan wheel, and drive sheave set screws.	V			
21.) Verify all fan belts are properly tensioned after confirming the sheaves are in proper all nment (see O.M.).			1	
appriment (see O.W.).			1	
22.) Inspect the fan motor bearings and blower bearings for proper lubrication ensuring no			/	
mosture is present.		- E		
23.) Pexcessive vibration exists ensure unit vibration is tested to not exceed 6% of original			V	1
designed speed.				
24.) Prior to start-up, bump-start the unit to confirm fan wheel rotates as indicated by the	1/			
arrow located on fan housing.	/			
25.) Verify incoming voltage imbalance is <2%.	/			A ANGEL
26.) Close and secure all access doors.	V	1		
27.) Eneck mechanical drawing for static operating pressure (if not available, confirm with	/	(6)272) 18 5	V	
associated sales engineer).				550 - 7413409
28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).	V	Lago and		



Job Name	
Installation Location	12x flour - CV)8
Customer Order Number	1/4 miles at 10 miles
Model Number(s)	E03495 6307300
G.O. Number(s)	

	Yes	No N/	A Initials
Disconnect and lock-out all power switches	V		
Remove any foreign objects that are located in the unit	~		
Check all fasteners, set screws, and locking collars on the fans, bearing			
Rotate the fan wheels and energy recovery wheels (if applicable) by hand and	<b> </b>		
ensure no part are rubbing.		V	
Verify that non-motorized dampers open and close properly.	~		
Check the tightness of all factory wiring connections.	V,		
Verify control wire gauge	1		
Verify diameter seal settings on the energy recovery wheel		V	
Verify proper drain tap installation	<b>V</b>	/	
Check condensing fans for any damage or misalignment.	1	· ·	5
Inspect all coils within the unit.			,
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with		ì	/
the unit for prestart-up information.			
The unit contains a crankcase heater for each compressor which needs power supplied to it 24 hours prior to start-up/		L	
Supply air temperature sensor is installed in ductwork and wired back to unit		7	
controller.	'	/	
Room temperature and humidity sensor is installed and wired back to unit controller			-

Halff Cx Agent Signed*:	General Contractors Representative Signed:	Owners Representative Signed:
Name: Vertual bucca	Name: FRANK Maithuz	Name:
Company:	Company: CAH 5	Company:
Date: 5/25/25	Date: 5/20/25	Date:
Phone/Emails:	Phone/Emails:	Phone/Emails:



29.) Start unit.	-	T		
30.) Fan amperages within nameplate specs.	V			
31.) Inspect for all installing hardware and trim pieces.	V	1		
32.) Verify linkage operation on Wing coils along with piping and piping components.	V			
33.) Verify sequence of operation on Humidifiers and compare existing piping to ecommendations in IOM.			V	0.000
34. Check operation of High Static limit switch and/or relief doors/dampers during startup.			1	
35.) Recheck safety grating over floor opening for correct installation and being secured properly.	1			
36.) Complete operating log and obtain required signature	V			
37.) Record all model, serial, and sales number from unit. Record all numbers from motors, wing coils. Record all filter sizes and total numbers	V			
Notes:				
E I				

Halff Cx Agent Signed*:	alinkani	General Contractors Representative Signed:	Owners Representative Signed:
Name:	Minus GALLIA	Name: FUNK MONTHE	Name:
Company:	HAIFF	Company:	Company:
Date:	5/20/25	Date: 5/20/1.5	Date:
Phone/Emails: *mitialing Authority		Phone/Emails:	Phone/Emails:



Job Name Installation Location # 38 BCU-CIO7 + FDOC Customer Order Number Model Number(s) E034950301300 (Dutter) BC. H.D. 016, I.A. L. N. Y.Y.Y. AYYUV. G.O. Number(s) No N/A Initials 1.) Make sure the unit is level to the pad and all shims are under each section correctly. 2.) Disconnect all 450/208 voltage and perform lock-out / tag-out. 3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside trim; check for damage, inspect paint, and that all doors open properly. 4.) Check external power outlets for correct polarity. 5.) Ensure supply-air and return-air ducts have been connected. 6.) On steam supplied 'Wing coils' inspect adjustment on clam shells to 2mm gap or less, make sure damper linkage IA installed properly Review if damper fail open or close, if it goes off on a safety. 7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists check motor winding by verifying a winding resistance of >6 meg-ohms (if lower, dry out winding and re-test). 8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS. Measure for correct incoming voltage on all three legs, check for phasing. 9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS. Measure for correct incoming voltage on all three legs, check for phasing. 10.) Verify damper operation; make sure damper move freely and do not bind and linkage alignment moves freely. 11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned within the unit and tight using the correct filter retainers and the filters air flow is in the right direction. 12.) Verify the freeze stat is operational by placing in an ice bath or use of a compatible method for bringing the temp, down, 13.) All unit drain lines and traps properly installed; (review trap size and static) also check for operation and leaks. 14.) Check drain pans, opening, and condensate line for obstructions, check upper drain pan piping so it is hitting lower dan pan. 15.) Visually inspect all piping and valves for any apparent signs of leakage. 16.) When applicable for steam coils, turn steam on full for a minimum of 10 minutes prior to opening the fresh air. 17.) All coil fins inspected and straightened. 18.) Verify hold down bolts and channels from fan sections are removed if internally isolated (if not, notify contractor to correct) Review isolation spring and adjust as needed. Inspect for tears and loose screw on the flex connection. 19.) Inspect all fan wheels to confirm proper rotation direction and move freely by gaining access through removal of wire. 20.) Verify proper torque to the shaft bearings, fan wheel, and drive sheave set screws. 21.) Verify all fan belts are properly tensioned after confirming the sheaves are in proper alignment (see O.M.). 22.) Inspect the fan motor bearings and blower bearings for proper lubrication ensuring no moisture is present. 23.) If excessive vibration exists ensure unit vibration is tested to not exceed 6% of original designed speed. 24.) Prior to start-up, bump-start the unit to confirm fan wheel rotates as indicated by the arrow located on fan housing. 25.) Verify incoming voltage imbalance is <2%. 26.) Close and secure all access doors. 27.) Check mechanical drawing for static operating pressure (if not available, confirm with associated sales engineer).

28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).



Job Name		
Installation Location	4 Hour RMC107	
Customer Order Number	The transfer of the transfer o	
Model Number(s)	E034950302400	
G.O. Number(s)	000000000000000000000000000000000000000	

	Yes	No	N/A	Initials
Disconnect and lock-out all power switches	V	,		IIIIII
Remove any foreign objects that are located in the unit				
Check all fasteners, set screws, and locking collars on the fans, bearing	1	-		, .
Rotate the fan wheels and energy recovery wheels (if applicable) by hand and				
ensure no part are rubbing.		ı l	V	
Verify that non-motorized dampers open and close properly.		$\neg$		
Check the tightness of all factory wiring connections.	<i>V</i> .			
Verify control wire gauge	V	-		
Verify diameter seal settings on the energy recovery wheel		$\dashv$		
Verify proper drain tap installation				
Check condensing fans for any damage or misalignment.		-		
Inspect all coils within the unit.		-+	M	<del></del>
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with	<u> </u>		-4	
the unit for prestart-up information.	' I		1/	
The unit contains a crankcase heater for each compressor which needs power		$\rightarrow$		
supplied to it 24 nours prior to start-up/			1/	•
Supply air temperature sensor is installed in ductwork and wired back to unit controller.	V	$\Box$		
Room temperature and humidity sensor is installed and wired back to unit controller		<del>-</del> -		
The back to drik controller				

Name: Number Company: Halff Company: Date: 5/2e/25 D	General Contractors Representative Signed:  Name: Company: Company: Chita	Owners Representative Signed: Name: Company: Date: Phone/Emails:
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29.) Start unit.				
30.) Fan amperages within nameplate specs.	1			
31.) Inspect for all installing hardware and trim pieces.	V			
32.) Verify linkage operation on Wing coils along with piping and piping components.	1			
33.) Verify sequence of operation on Humidifiers and compare existing piping to recommendations in IOM.			V	
34.) Check operation of High Static limit switch and/or relief doors/dampers during startup.			V	
35.) Recheck safety grating over floor opening for correct installation and being secured properly.	/			
36.) Complete operating log and obtain required signature	V	100		
37.) Record all model, serial, and sales number from unit. Record all numbers from motors, wing coils. Record all filter sizes and total numbers	V			
Notes;				
				- 1
				- 1

Halff Cx Agent Signed*:	Wind L. T	General Control	rector Recresentative	Owners Repre	esentative	
Name:	V Might GANITA	Name:	FRANK Maitines	Name:		
Company:	Halff	Company:	CAHS	Company:		
Date:	5/24/26	Date:	5/20/25	Date:		
Phone/Emails: _		Phone/Emails:		Phone/Emails:		



Job Name						
Installation Location \$30.13(U-BIII						
Customer Order Number						
Model Number(s) RCH ADOY ARDO36C3 C2011 BOLOOD A	corre	YOOO!	WOO	2		
G.O. Number(s)			A LATE			
	Yes	No	N/A	Initials		
1.) Make sure the unit is level to the pad and all shims are under each section correctly.	1	107.0				
2.) Disconnect all 460/208 voltage and perform lock-out / tag-out.	V					
116.17	1					
3.) Review inside trim make sure that it's done and sealed. Unit exterior; inspected outside	V					
trim; check for damage, inspect paint, and that all doors open properly.						
4.) Check external power outlets for correct polarity.						
5.) Ensure supply-air and return-air ducts have been connected.	V					
6.) On steam supplied 'Wing coils' inspect adjustment on clam shells to 2mm gap or less,			/			
make sure damper linkage IA installed properly Review if damper fail open or close, if it goes			0			
off on a safety.	. /					
7.) Inspect the entire motor for signs of rust and corrosion. If evidence of rust in motor exists	6					
check motor winding by verifying a winding resistance of >6 meg-ohms (if lower, dry out winding and re-test).						
	1					
8.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.	V					
Measure for correct incoming voltage on all three legs, check for phasing.						
9.) Verify all the unit wiring connections are tight at the motor, disconnect, and VFDS.	V					
Measure for correct incoming voltage on all three legs, check for phasing.						
10.) Verify damper operation; make sure damper move freely and do not bind and linkage	NEI	100	1/			
alignment moves freely.	111.		V			
11.) Ensure all air unit filters (including Hepa if equipped) are in place and properly positioned		1				
within the unit and tight using the correct filter retainers and the filters air flow is in the right				1		
direction.						
12.) Verify the freeze stat is operational by placing in an ice bath or use of a compatible						
method for bringing the temp. down.	4					
13.) All unit drain lines and traps properly installed; (review trap size and static) also check for	. /					
operation and leaks.				- 1		
14.) Check drain pans, opening, and condensate line for obstructions, check upper drain pan	200		. /			
piping so it is hitting lower dan pan.	Mas		V			
15.) Visually inspect all piping and valves for any apparent signs of leakage.	1					
16.) When applicable for steam coils, turn steam on full for a minimum of 10 minutes prior to			1			
opening the fresh air.						
17.) All coil fins inspected and straightened.	V					
18.) Verify hold down bolts and channels from fan sections are removed if internally isolated	1					
(if not, notify contractor to correct) Review isolation spring and adjust as needed. Inspect for	V			1		
tears and loose screw on the flex connection.						
19.) Inspect all fan wheels to confirm proper rotation direction and move freely by gaining	./					
access through removal of wire.	V					
20.) Verify proper torque to the shaft bearings, fan wheel, and drive sheave set screws.	V					
21.) Verify all fan belts are properly tensioned after confirming the sheaves are in proper						
alignment (see O.M.).		- 3	V			
22.) Inspect the fan motor bearings and blower bearings for proper lubrication ensuring no			./			
moisture is present.			V			
23.) If excessive vibration exists ensure unit vibration is tested to not exceed 6% of original			1/			
designed speed.			V			
24.) Prior to start-up, bump-start the unit to confirm fan wheel rotates as indicated by the	./					
arrow located on fan housing.				]		
25.) Verify incoming voltage imbalance is <2%.	1	-				
26.) Close and secure all access doors.	W		The Car			
27.) Check mechanical drawing for static operating pressure (if not available, confirm with			7			
associated sales engineer).						
28.) Listen for vibration, noise, or signs of overheating (bearings may run hot during break-in).						
oreak-in).						



Job Name		
Installation Location	B-III	
Customer Order Number		
Model Number(s)	*F034950302200	
G.O. Number(s)		

	Yes	No	N/A	Initials
Disconnect and lock-out all power switches	V			
Remove any foreign objects that are located in the unit	V			
Check all fasteners, set screws, and locking collars on the fans, bearing	V			
Rotate the fan wheels and energy recovery wheels (if applicable) by hand and			/	
ensure no part are rubbing.	ر ا	_		
Verify that non-motorized dampers open and close properly.				
Check the tightness of all factory wiring connections.	1			
Verify control wire gauge	1			
Verify diameter seal settings on the energy recovery wheel	1		/	
Verify proper drain tap installation	V	-	١	
Check condensing fans for any damage or misalignment.			1	
Inspect all coils within the unit.	V			
If there is an indirect gas-fired furnace in this unit, refer to the manual provided with		1		
the unit for prestart-up information.				
The unit contains a crankcase heater for each compressor which needs power	I			
supplied to it 24 hours prior to start-up/				
Supply air temperature sensor is installed in ductwork and wired back to unit controller.	1			
Room temperature and humidity sensor is installed and wired back to unit controller	V			

Halff Cx Agent	J. 111. 3	→ General Co	ntractors Representative	Owners Represer	itative
Signed+:	Minch y	Signed:	Mille	Signed:	
Name:	Marci Gartia	Name:	FRANK Malbull	Name:	
Company:	HAUTE	Company:	CAHS	Company:	
Date:	5/20/26	Date:	5/10/15	Date:	
Phone/Emails:		Phone/Email	s:	Phone/Emails:	81
Shakkada a sada asa		-			



	/		
29.) Start unit.	V		
30.) Fan amperages within nameplate specs.	1/		
31.) Inspect for all installing hardware and trim pieces.	-		
32.) Verify linkage operation on Wing coils along with piping and piping components.	V		
33.) Verify sequence of operation on Humidifiers and compare existing piping to recommendations in IOM.		V	
34.) Check operation of High Static limit switch and/or relief doors/dampers during startup.		V	
<ol> <li>Recheck safety grating over floor opening for correct installation and being secured properly.</li> </ol>			
36.) Complete operating log and obtain required signature	V	-	
37.) Record all model, serial, and sales number from unit. Record all numbers from motors, wing coils. Record all filter sizes and total numbers	V		
Notes:			,

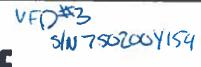
Halff Cx Agent Signed*:	Wight Char	General Cont Signed:	tractors Representative	Owners Repre	sentative	
Name:	Miguel Graveia	Name:	FRANK MARTINE	Name:		_
Company:	H-2161	Company:	CAHS	Company:		_
Date:	8/20/25	Date:	5/20/25	Date:		
Phone/Emails:		Phone/Emails:		Phone/Emails:		



Pre-Functional Checklist – Variable Frequency Drive

Job Name				
				W. A
Customer Order Number			- BIW	035
		/	mortes	V
Model Number(s)	ROZIT	$\mathcal{O}$		3 =2 5 TS
G.D. Number(s) M2-704AC	OZIFAL	· (4)	x 108067	31780
Motor Information	Witnesse	d	N/A	Initials
SF . IS				FM
HP (				FM
Amps 264, 14, 4/12. L				FM
Voltage 230/460				FAI
RPM 1760				FA
PF (). 74				FILI
Electrical/Mechanical	Yes	No	N/A	Initials
All hardware, electrical, and mechanical connections tight				FM
VFD motor rotation check	V/			Fn
Bypass (if no reason)	V			FM
Electrical Stort-Up (measurements at full speed)	Phase A	Phase B	Phase C	Initials
VFD motor rotation check	YE5			
By-pass current	17.7	7.2	12.7.	
Display current	14-5	10.0	16.6	
Voltage	11-12	1243	13-11	Initials
AC Input voltage	484.7	488.8	4087	Fre
Software		Version	100	Initials
Software Version				
Miscellaneous	Yes	No	N/A	Initials
Is the VFD properly fused per the manual	1/			Fy
Is the VFD mounted per Installation Manual instructions	1/			Fu
Are all control wires present and terminated	i			and the same of th
701			Fu	
Notes:	4	17	<del></del>	111

Haiff Cx Agent	12/1/4:	₹General Co	ntractort Representative	Owners Representative	
Signed*:	wight 6 pm	Signed:	Marin	Signed:	
Name:	Michel Garage	Name:	FRANK MARTINIZ	Name:	
Company:	HALFF	Company:	CAHS	Company:	
Date:	5/20/25	Date:	5/20/25	Date:	
Phone/Emails:		Phone/Email	5:	Phone/Emails:	



PUMP#3 CAT# EM 2333T SPEC-69POINTS97G1

Pre-Functional Checklist - Variable Frequency Drive

Job Name	nive			
The state of the s				
Installation Location DIMP YOUM			DOMO?	*7_
Customer Order Number		M	, ,	
Model Number(s) CMZ-204A	007 FA	<i>A</i> 2	CICLINE	T3E215"FS
G.O. Number(s)		411	WITTURK	165
Motor Information	Witness	ed	N/A	Initials
SF 1.15				
HP O				
Amps 24.4/12.2				
Voltage 230 1466				
RPM \7(gO)				
PF O.84				
Electrical/Mechanical	Yes	No	N/A	Initials
All hardware, electrical, and mechanical connections tight				
VFD motor rotation check				
Bypass (if no reason)				
Electrical Start-Up (measurements at full speed)	Phase A	Phase 8	Phase C	Initials
VFD motor rotation check				
By-pass current				
Display current				
Voltage	L1-L2	L2 L3	L3-L1	Initials
AC Input voltage				
Software		Version	e Paul	Initials
Software Version				
Miscellaneous	Yes	No	N/A	Initials
Is the VFD properly fused per the manual				-1
Is the VFD mounted per installation Manual instructions				
Are all control wires present and terminated				
What type of follower: (check one) 0-10 VDC () 4 to 20 mA () PID	() Other () None	e ()		
Notes: Muster has a trag purply 42				

Halff Cx Agent	1. 11. ha	General Contractors Representative	Owners Representative
Signed*:	W1120 0	Signed:	Signed:
Name:	Missel coarera	Name: FCAIX (CITY)	Name:
Company:	Halft	Company:	Company:
Date:	5/20/26	Date: 5 120715	Date:
Phone/Emails:		Phone/Emails:	Phone/Emails:



Pre-Functional Checklist - Variable Frequency	Drive		PUMD	世山
Job Name			/	
Installation Location		CA	T.NO/EM	7777
Customer Order Number	,		7 - 240	
Model Number(s) MOUZUO SIN	750100 YI	54 500	or capa	IT597G1
G.O. Number(s)				HISTICH
Motor Information	Witness	ed	N/A	Initials
SF				
HP				
Amps				-
Voltage				
RPM				
PF				
Electrical/Mechanical	Yes	No	N/A	Initials
All hardware, electrical, and mechanical connections tight				
VFD motor rotation check				
Bypass (if no reason)				
Electrical Start-Up (measurements at full speed)	Phase A	Phase B	Phase C	initials
VFD motor rotation check				
By-pass current				
Display current				
Voltage	11-12	12-13	13-11	Initials
AC Input voltage				
Software		Version		Initials
Software Version				
Miscellaneous	Yes	No	N/A	Initials
Is the VFD properly fused per the manual				
Is the VFD mounted per Installation Manual instructions				
Are all control wires present and terminated				<del></del>
What type of follower: (check one) 0-10 VDC () 4 to 20 mA () PID	() Other () None	e ()		
Notes: NOT WOI King				
700 ( 000 ( 41)				

Halff Cx Agent Signed*: Name:	Winday	General Contractor Representative Signed: Name: FRANK Modified?	Owners Representative Signed: Name:
Company:	HALFF	Company: CAHS	Company:
Date:	8/20/38	Date: SIZVIS	Date:
Phone/Emails:		Phone/Emails:	Phone/Emails:



# Introduction

The purpose of the graphics review is to align the Controls Subcontractor with the Owner's project requirements. The review shall examine the general aesthetics of the BAS system, verification that all the equipment is readily available, and reporting accuracy. The graphics review requires the CxA to receive access to the BAS during and after installation.

### Communication

Documentation for pre-graphics review is attached. The documents after the competition shall be signed by the CxA, Owner's representative, and Contractor representative. An example of a Issues and Resolutions Log is also attached.

## **Procedures**

- 1. Access to the project's BAS
- 2. Analysis shall be performed for any graphical glitches or major issues.
- The individual views shall be compared against the installed schedules to verify if all the proper equipment is on the screen.
- 4. The information on the BAS shall be compared to the information from the installed equipment itself or if available testing instrumentation.
- 5. The alarms shall then be tested to verify proper setup.
- 6. Any identified issues shall be documented in the Issues and Resolutions Log.
- 7. If resolved the building automation system shall be reviewed once more.
- 8. When the review has been completed the document shall be signed by the witnessing parties including up to the CxA, the Owner's representative, and the Contractor's representative.

Notes: The CxA shall need remote access to the BAS during and after the graphics review.



# **Unit Status**

Date:

9/16/2024

AVO:

45813.01

Project:

**BISD Esser Aiken Elementary** 

Contract for:

Brownsville ISD

The following items require the attention of the Contractor for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Unit	LOCATION	FAN COMMAND ( START / STOP )	FIRE ALARM CONTACT (THROUGH RIB RELAY)	CURRENT STATUS (SUPPLY FAN)	OVERFLOW DRAIN PAN (FLOAT SWITCH)	CHILLED WATER CONTROL VALVE COMMAND (0-10VDC)	RE-HEAT ELECTRIC SCR COMMAND (0-10VDC)	ECM FAN COMMAND (0-10VDC) 0 - 100% SPEED	ZONE TEMPERATURE SENSOR (WALL MOUNT) (°F)	ZONE HUMIDITY SENSOR (WALL MOUNT) (%RH)	COOLING COIL TEMPERATURE (PROBE) (°F)	DISCHARGE AIR TEMP (PROBE) (°F)
BCU-A101	1ST FLOOR	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	X	$\times$	X
BCU-A102	1ST FLOOR		$\times$	X	$\times$	$\times$	$\times$	$\times$	$\times$	X	$\times$	X
BCU-A103	1ST FLOOR	$\times$	$\times$	X	X	$\times$	$\times$	X	X	X	X	X
BCU-A104	1ST FLOOR	$\times$	$\times$	X	X	X	$\times$	X	X	X	X	X
BCU-A105	1ST FLOOR	X	$\times$	X	X	X	$\times$	X	X	X	X	X
BCU-A106	1ST FLOOR		X	X	X	X	X	X	X	X	X	X
BCU-A107	1ST FLOOR		X	X	X	X	X	X	X	X	$\times$	X
BCU-A108	1ST FLOOR		X	X	X	X	X	X	X	X	X	X



Unit	LOCATION	FAN COMMAND ( START / STOP )	FIRE ALARM CONTACT (THROUGH RIB RELAY)	CURRENT STATUS (SUPPLY FAN)	OVERFLOW DRAIN PAN (FLOAT SWITCH)	CHILLED WATER CONTROL VALVE COMMAND (0-10VDC)	RE-HEAT ELECTRIC SCR COMMAND (0-10VDC)	ECM FAN COMMAND (0-10VDC) 0 - 100% SPEED	ZONE TEMPERATURE SENSOR (WALL MOUNT) (°F)	ZONE HUMIDITY SENSOR (WALL MOUNT) (%RH)	COOLING COIL TEMPERATURE (PROBE) (°F)	DISCHARGE AIR TEMP (PROBE) (°F)
BCU-B100	1ST FLOOR	X	$\geq$	X	$\times$	X	$\geq$	$\geq$	$\times$	$\times$	$\geq$	$\geq$
BCU-B101	1ST FLOOR	$\boxtimes$	$\times$	X	$\times$	$\times$	$\times$	$\geq$	X	$\times$	$\times$	X
BCU-B102	1ST FLOOR	$\boxtimes$	$\times$	X	$\times$	$\times$	X	$\times$	X	X	$\times$	X
BCU-B103	1ST FLOOR	$\times$	$\times$	X	$\times$	X	$\times$	X	X	$\times$	$\times$	
BCU-B104	1ST FLOOR	$\times$	$\times$	$\boxtimes$	$\geq$	$\boxtimes$	$\times$	$\times$	$\times$	$\times$	$\times$	X
BCU-B105	1ST FLOOR	$\times$	$\geq$	$\times$	$\geq$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	X
BCU-B106	1ST FLOOR	$\times$	$\times$	X	$\times$	X	$\times$	$\times$	$\times$	$\times$	$\times$	$\boxtimes$
BCU-B107	1ST FLOOR	$\times$	$\geq$	X	$\geq$	X	$\times$	$\geq$	$\times$	$\geq$	$\times$	X
BCU-B108	1\$T FLOOR	$\times$	$\geq$	$\times$	$\geq$	$\geq$	$\geq$	$\geq$	$\times$	$\times$	$\times$	$\times$
BCU-B109	1ST FLOOR	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\geq$	$\times$	$\times$	$\times$	$\times$
BCU-B110	1ST FLOOR	$\times$	$\times$	$\times$	$\geq$	$\geq$	$\geq$	$\geq$	$\times$	$\geq$	$\times$	X
BCU-B111	1ST FLOOR	$\times$	X	$\times$	$\times$	$\times$	$\times$	$\times$	X	X	$\times$	X
BCU-B112	1ST FLOOR	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	X	X	$\times$	X
BCU-C101	1ST FLOOR	$\times$	$\times$	$\times$	$\times$	$\boxtimes$	$\times$	X	X	X	$\times$	
BCU-C102	1ST FLOOR	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	X		X	$\times$	X



Unit	LOCATION	FAN COMMAND ( START / STOP )	FIRE ALARM CONTACT (THROUGH RIB RELAY)	CURRENT STATUS (SUPPLY FAN)	OVERFLOW DRAIN PAN (FLOAT SWITCH)	CHILLED WATER CONTROL VALVE COMMAND (0-10VDC)	RE-HEAT ELECTRIC SCR COMMAND (0-10VDC)	ECM FAN COMMAND (0-10VDC) 0 - 100% SPEED	ZONE TEMPERATURE SENSOR (WALL MOUNT) (°F)	ZONE HUMIDITY SENSOR (WALL MOUNT) (%RH)	COOLING COIL TEMPERATURE (PROBE) (°F)	DISCHARGE AIR TEMP (PROBE) (°F)
BCU-C103	1ST FLOOR	$\boxtimes$	$\times$	X	$\times$	$\geq$	$\times$	$\geq$	$\times$	$\geq$	$\times$	$\times$
BCU-C104	1ST FLOOR	$\boxtimes$	$\times$	X	$\times$	$\boxtimes$	$\times$	$\geq$	$\geq$	$\times$	$\times$	$\times$
BCU-C105	1ST FLOOR	$\times$	$\times$	X	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$
BCU-C106	1ST FLOOR	$\times$	$\times$	X	$\times$	X	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$
BCU-C107	1\$T FLOOR	$\times$	$\times$	X	$\times$	$\boxtimes$	$\geq$	$\times$	$\times$	$\times$	$\times$	$\times$
BCU-C108	1ST FLOOR	$\times$	$\times$	X	$\times$	$\boxtimes$	$\times$	$\times$	$\times$	$\geq$	$\times$	$\times$
BCU-LOBBY	1ST FLOOR	X	$\times$	X	$\times$	X	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$
BCU- T.LOUNGE	1\$T FLOOR	$\times$	$\times$	X	$\times$	$\geq$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$
BCU-NURSE	1ST FLOOR	$\times$	$\times$	$\times$	$\times$	$\geq$	$\times$	$\times$	$\times$	$\times$	$\times$	X
BCU-ADMIN	1ST FLOOR	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	X	X
BCU- PRINCIPAL	1ST FLOOR	$\times$	$\times$	$\times$	$\times$	X	$\times$	$\times$	$\times$	$\times$	X	X
BCU- COUNSELORS	1ST FLOOR	$\times$	X		X	X	X	X	X	X	X	X
BCU-OFFICE	1ST FLOOR		X	X	X	X	X	X	X	X	X	X
BCU-DIAG	1ST FLOOR	X	X	X	X	X	X	X	X	X	X	X
BCU-B201	2ND FLOOR	X	X	X	X	X	X	X	X	X	X	X



Unit	LOCATION	FAN COMMAND ( START / STOP )	FIRE ALARM CONTACT (THROUGH RIB RELAY)	CURRENT STATUS (SUPPLY FAN)	OVERFLOW DRAIN PAN (FLOAT SWITCH)	CHILLED WATER CONTROL VALVE COMMAND (0-10VDC)	RE-HEAT ELECTRIC SCR COMMAND (0-10VDC)	ECM FAN COMMAND (0-10VDC) 0 - 100% SPEED	ZONE TEMPERATURE SENSOR (WALL MOUNT) (°F)	ZONE HUMIDITY SENSOR (WALL MOUNT) (%RH)	COOLING COIL TEMPERATURE (PROBE) (°F)	DISCHARGE AIR TEMP (PROBE) (°F)
BCU-B202	2ND FLOOR	X	$\geq$	X	$\geq$	$\geq$	$\times$	$\times$	$\times$	$\geq$	$\times$	$\times$
BCU-B203	2ND FLOOR	$\boxtimes$	$\times$	$\times$	$\geq$	$\geq$	$\times$	$\geq$	$\times$	$\times$	$\times$	$\times$
BCU-B204	2ND FLOOR	$\boxtimes$	$\times$	$\times$	$\times$	$\geq$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$
BCU-B205	2ND FLOOR	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	X	$\times$	$\times$	$\times$
BCU-B206	2ND FLOOR	$\boxtimes$	$\times$	$\boxtimes$	$\geq$	$\times$	$\times$	X	$\times$	$\times$	$\times$	$\times$
BCU-B207	2ND FLOOR	$\boxtimes$	$\geq$	$\times$	$\times$	$\times$	$\times$	$\times$	$\geq$	$\times$	$\times$	$\times$
BCU-B208	2ND FLOOR	$\times$	$\times$	X	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$
BCU-B209	2ND FLOOR	$\boxtimes$	$\geq$	$\geq$	$\times$	$\times$	$\geq$	X	$\times$	$\times$	$\times$	$\times$
BCU-B210	2ND FLOOR	$\times$	$\times$	$\times$	$\geq$	$\times$	$\times$	X	$\times$	$\times$	$\times$	$\times$
BCU-B211	2ND FLOOR	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	X	$\times$	$\times$	$\times$	$\times$
BCU-B212	2ND FLOOR	$\times$	$\geq$	$\boxtimes$	$\times$	$\times$	$\times$	X	$\times$	$\times$	$\times$	X
BCU-B213	2ND FLOOR	$\times$	X	$\times$	$\times$	$\times$	$\times$	X	$\times$	$\times$	$\times$	X
BCU-B214	2ND FLOOR	$\times$	X	$\times$	$\times$	$\times$	$\times$	X	$\times$	X	X	X
BCU-B215	2ND FLOOR		X	X	$\times$	$\times$	X	X	X	X	X	X
BCU-B216	2ND FLOOR	$\times$	X		$\times$	X	X	X	X	X	X	X



Unit	LOCATION	FAN COMMAND ( START / STOP )	FIRE ALARM CONTACT (THROUGH RIB RELAY)	CURRENT STATUS (SUPPLY FAN)	OVERFLOW DRAIN PAN (FLOAT SWITCH)	CHILLED WATER CONTROL VALVE COMMAND (0-10VDC)	RE-HEAT ELECTRIC SCR COMMAND (0-10VDC)	ECM FAN COMMAND (0-10VDC) 0 - 100% SPEED	ZONE TEMPERATURE SENSOR (WALL MOUNT) (°F)	ZONE HUMIDITY SENSOR (WALL MOUNT) (%RH)	COOLING COIL TEMPERATURE (PROBE) (°F)	DISCHARGE AIR TEMP (PROBE) (°F)
BCU-B217	2ND FLOOR	$\times$	$\times$	X	X	$\times$	$\times$	X	X	$\times$	X	X
BCU-B218	2ND FLOOR	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	X	X
BCU-ASST	2ND FLOOR	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$	X	X	$\times$	X	X
BCU- LOUNGE/IT	2ND FLOOR	X	X	X	X	$\times$	$\times$	X	X	X	X	X
BCU-HALL	2ND FLOOR	$\boxtimes$	$\boxtimes$	$\times$	$\times$	$\times$	$\times$	X	$\times$	X	X	X



# **Unit Status**

Date:

9/16/2024

AVO:

45813.01

Project:

**BISD Esser Aiken Elementary** 

Contract for:

**Brownsville ISD** 

The following items require the attention of the Contractor for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

EXAUST FAN	FAN START/STOP COMMAND	FAN STATUS (CURRENT SENSOR SWTICH)	FAN FAIL ALARM
EF-1			
EF-2			
EF-3			
EF-4			
EF-5			
EF-6			
EF-7			
EF-8			



EXAUST FAN	FAN START/STOP COMMAND	FAN STATUS (CURRENT SENSOR SWTICH)	FAN FAIL ALARM
EF-9			
EF-10			
EF-11			
EF-12			
EF-13			
EF-14			
EF-15			
EF-16			
EF-17			
EF-18			
EF-19			
EF-20			



Aik	Aiken Elementary Summary Data							
UNIT	TEMPERATURE (F)	RH %	DEW POINT					
BCU-A101	71.2	66	59.13					
BCU-A102	71.9	60	57.33					
BCU-A103	70	58	54.62					
BCU-A104	70.3	60	55.83					
BCU-A105	75	77	67.33					
BCU-A106	71	68	59.97					
BCU-A107	73.8	62	60.03					
BCU-A108	69.7	63	56.62					
BCU-8100	66	67	54.8					
BCU-8101	67.8	62	54.38					
BCU-8102	70.2	68	59.2					
BCU-8103	66	65	53.97					
BCU-B104	68	64	55.44					
BCU-B105	67	64	54.49					
BCU-B106	65.4	67	54.23					
BCU-B107	66.1	68	55.3					
BCU-B108	65.9	78	58.9					
BCU-B109	68	73	59.08					
BCU-B110	66.4	75	58.3					
BCU-B111	68.5	67	57.18					
BCU-B112	66.9	70	56.86					
BCU-C101	68.6	68	57.68					
BCU-C102	70	57	54.14					
BCU-C103	67.6	62	54.19					
BCU-C104	69.3	67	57.94					
BCU-C105	69.5	66	57.71					
BCU-C106	71.2	62	57.58					
BCU-C107	71.2	65	58.8					
BCU-C108	72.1	61	57.98					
BCU-LOBBY	73.1	71	63.18					
BCU-T.LOUNGE	70.2	67	58.79					
BCU-NURSE	68.7	72	59.37					
BCU-ADMIN	69.5	67	58.13					
BCU-PRINCIPAL	70.5	63	57,36					
BCU-COUNSELORS	70.3	72	60.9					
BCU-OFFICE	69.7	66	57.9					
BCU-DIAG	72.5	56	55.98					
BCU-B201	69.6	67						
BCU-B202	65		58.22					
	71	69	54.65					
BCU-B203		62	57.39					
BCU-B204	67.6	68	56.73					
BCU-B205	69.3	64	56.67					
BCU-B206	70.3	59	55.37					
BCU-B207	68.1	77	60.67					
BCU-B208	71.2	59	56.21					
BCU-B209	67.9	70	57.82					
BCU-B210	69.3	69	58.75					
BCU-B211	68	61	54.12					
BCU-B212	67.4	68	56.54					
BCU-B213	69.7	59	54.81					
BCU-B214	70.7	59	55.74					
BCU-B215	69.7	59	54.81					
BCU-B216	71.1	57	55.17					
BCU-B217	63.5	72	54.38					
BCU-B218	70.5	57	54.61					
BCU-ASST	70.4	60	55.92					
BCU-LOUNGE/IT	65.9	65	53.87					
BCU-HALL	71.7	82	65.95					



# **Graphics Review**

	Yes	No	Initials
Are all the VFD's displayed on the screen?		X	
Are all dedicated outside air systems displayed on the screen?	X		1
Are all pumps displayed on the screen?	X		<del>                                     </del>
Are all chillers displayed on the screen?	Х		
Are the all the fan arrays displayed on the screen?	X		<del></del>
Are all roof top units displayed?	Х		
Are all boilers displayed on the screen?		Х	1
Are all water coils displayed on the screen?	X		<del>                                     </del>
Are all flow rates displayed on the screen?	X		†
Are all pressures displayed on the screen?	Х		
Are all maintenance reminders displayed on the screen?	X		
Do the graphics make sense for the general user?	X		
Do all the alarms display accurately and prominently?	X		<del>                                     </del>
otes:			·ý

Halff Cx Agent	General Contractors Representative	Owners Representative		
Signed*:	Signed:	Signed:		
Name:	Name:	Name:		
Company:	Company:	Company:		
Date:	Date:	Date:		
Phone/Emails:	Phone/Emails:	Phone/Emails:		
*tritialing Authority				



# Sequence of Operations Review and Verification

# Introduction

The purpose of the sequence of operations review is to verify that the equipment functions normally during intended conditions. The SOO review and data logger confirmation must be performed after TAB and controls subcontractors have concluded their work.

# Communication

The documents after the completion shall be signed by the CxA, the Owner's representative, and the Contractor representative. The Issues and Resolution Log is attached.

### **Procedures**

- 1. First, a sample of equipment is taken from the schedule.
- 2. The controls sequences for the selected sample are tested and verified per the Construction Documents.
- 3. The data collected shall span a month after the completion of the SOO review.
- 4. The CxA shall review the data from the BAS and the CxA data loggers for the same areas to ensure the HVAC system stability.



# **Brownsville Independent School District**

Agenda Cate	gory: _	Bids / Proposals	Board of Education	Meeting:	09/13/2022
Item Title:		155 ESSER Aiken ES pgrades, Phase 1 (Packas	ge 2) Project	X Actio	mation
committee mem (CAHS) of Ha Construction Se Construction Se construction pro-	2022, BISD SSER Aikernbers evaluar rlingen, Terervices. Addervices for to bject is sched	Purchasing Department recorded ES HVAC Upgrades, Phase ted the one (1) qualified vertas, which has received the ministration recommends a the project as mentioned about the Notice to Proceed day	of 1 (Package 2) project. On Andor and selected Central A be highest-ranking scores are approving Central Air and sove in the amount not to completion in two hundred for the second sec	August 19, 20 ir and Heatin and is recomm Heating Se exceed \$3,44 ifteen (215) a	22, the ranking ag Service, Inc. nended for the rvice, Inc. for 20,000.00. The lays contingent
<ul><li>The Bid</li><li>The aver</li><li>The bid</li></ul>	Tabulation rage ranking opening repo	nendation Forms Sheet scores for the one (1) competer received from submitted withorization and Delivery me	vendors		
CISCAL IMI ESSER III Fund					
Sentral Wil alto	arding of C Heating Serv	N: SP #23-155 ESSER Aiken vice, Inc. (CAHS) of Harling to enter negotiations, and to	en. Texas in the amount not	to avocad \$2	400 000 00 4-
Ferhando E		Posario Peña	Approved for Submission	to Board of	Education:

When Necessary, Additional Background May Follow This.

Superintendent

commended by: District Architect / CFO

Approved by: Deputy Superintendent

Dr. Nellie Cantu