

## **Addendum 1 for RFB 941800-01**

Project Name: DNR Honey Creek Resort Building Automation System Improvements

RFB#941800-01

DAS Project #: 9418.00

Date: 11/5/2024

Bids Due: November 19<sup>th</sup>, 2024 @ 2:00 PM

### **Addendum No. 1 Items:**

1. Request for Bid Number for project and located in Project Manual to be changed from RFB941800-00 to RFB941800-01. Attached are updated Project Title page and RFB Notice to Bidder page with updated RFB#.
2. See attached Pre-Bid Meeting Minutes from the Pre-Bid Walk though on 10/30/2024 at 12:00pm and attendee list.
3. See attached questions submitted to [construction.procurement@iowa.gov](mailto:construction.procurement@iowa.gov).

END OF ADDENDUM

# PROJECT MANUAL

**PROJECT NAME:**

## DNR Honey Creek Resort Building Automation System Improvements

**PROJECT ADDRESS:**

12633 Resort Dr  
Moravia, Iowa 52571

**PROJECT DATE:** September 20, 2024

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**OWNER:**

Iowa Department of Administrative Services  
109 Southeast 13<sup>th</sup> Street  
Des Moines, Iowa 50319



**OWNER PROJECT NUMBER:** 9418.00

**OWNER REQUEST FOR BID NUMBER:** RFB 941800-01

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**CONSTRUCTION MANAGER:**

McGough Construction  
217 E. 2<sup>nd</sup> St, Suite 120  
Des Moines, Iowa 50309



**CONSTRUCTION MANAGER PROJECT NUMBER:** 101174.010

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**ARCHITECT:**

Farnsworth Design Firm  
100 Walnut Street Suite 200  
Peoria, IL 61602



**ARCHITECT PROJECT NUMBER:** 0241027.00

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**SECTION 00 1113**

**NOTICE TO BIDDERS**

**RFB #941800-01**

The Iowa Department of Administrative Services will be receiving bids for DDC Control replacement including new front end network manager, graphics and control replacement for various equipment at Honey Creek Resort, Moravia, Iowa 52571.

The Iowa Department of Administrative Services anticipates construction to begin on February 10<sup>th</sup>, 2025 and end on May 15<sup>th</sup>, 2025.

Bids must be received no later than **02:00 pm, Tuesday, November 19, 2024**. Late bids will not be considered. Bids shall be submitted on [IMPACS Electronic Procurement System](#). The Bid shall be accompanied by a Bid Security as set forth in the Instructions to Bidders in the amount of 5% of the total bid amount. Each bid shall be accompanied by a bid bond, cashier's check or a certified check drawn upon a solvent bank chartered under the laws of the United States of America.

**Bid Opening**

The time and place of bid opening will be held at [meet.google.com/rom-ymbt-zxb](https://meet.google.com/rom-ymbt-zxb) and teleconference number (US) [+1 413-438-4530](tel:+14134384530) Pin: 787 306 494# at 3:00 pm on November 19, 2024.

The Iowa Department of Administrative Services reserves the right to reject any and all bids, and to waive irregularities and to accept a bid that is deemed in the best interest of the State of Iowa.

Bidders must comply with all affirmative action/equal employment opportunity provisions of the State of Iowa and the Federal Government.

This project is exempt from Iowa Sales Tax. Davis Bacon Wages **will not** apply to this project.

Questions must be submitted by 2:00 pm, November 04, 2024, to the Issuing Officer.

Bidding documents may stipulate a specific product. Substitute product will be considered if a written request is received by 2:00 pm, November 04, 2024, prior to bid opening. Substitution requests will be considered for all products per Section 01 2500 Substitution Procedures, even if the specification does not include a statement such as "or equal," "equal to," "equivalent to," or "basis of design," unless otherwise noted.

An **optional** Pre-Bid meeting will be held on Wednesday, October 30<sup>th</sup>, 2024 at 12:00pm at Honey Creek Resort at 12633 Resort Drive, Moravia, Iowa 52571. This meeting is not mandatory but is highly recommended.

Bidding Documents, including drawing sheets bearing the project name Honey Creek Lodge Building Automation System Improvements, Dated 09/20/2024 and the Project Manual prepared by Farnsworth Design Firm dated 09/20/2024, may be obtained from Rapids Reproductions by visiting [www.rapidsrepro.com](http://www.rapidsrepro.com) or by calling 515-251-3222 on Friday, October 18<sup>th</sup>, 2025.

For further information regarding this project contact:

Michael Bradbury – Issuing Officer

Phone: (515) 515-823-9327

E-Mail: [construction.procurement@iowa.gov](mailto:construction.procurement@iowa.gov)

**END OF SECTION**

## RFB Pre-Bid Minutes: Meeting #1

<b>Meeting Date</b>	Oct 30, 2024	<b>Meeting Time</b>	12:00 PM - 1:30 PM Central Time (US & Canada)
<b>Meeting Location</b>	Honey Creek Resort		
<b>Overview</b>	Meeting to allow prospective bidders to visit the site, when possible, and learn more about the project.		
<b>Notes</b>			
<b>Attachments</b>	<a href="#">RFB941800-00 Project Manual Final Revised.pdf</a> , <a href="#">DNR-Honey_Creek_BAS_Replacement_100%CD.pdf</a>		

### Scheduled Attendees

Name	Company	Phone Number	Email	Attendance
Nancy Bennett	Achieva Enterprises LLC DBA Honey Creek Resort by Achieva Enterprises LLC	P: (641) 724-1450	nancyb@hcriowa.net	Present
Bob Ridgway	Farnsworth Group	P: (515) 297-8584	bridgway@f-w.com	Absent
Wade Ross	Farnsworth Group	P: (309) 429-6398	wross@f-w.com	Present
Greg Evans	McGough Construction	P: (515) 344-1625	greg.evans@mcgough.com	Present
Noah Thelen	McGough Construction	P: (515) 639-3853	noah.thelen@mcgough.com	Present
Scott Gustafson	State of Iowa - Department of Administrative Services	P: (515) 725-1213	scott.gustafson@iowa.gov	Present

### Introduction

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
1.1	1	Introductions				Open
<b>Description</b> Attendees  <u>McGough: CMA</u>  Noah Thelen - Project Manager Greg Evans - Superintendent  <u>DAS: Owner Rep</u>  Scott Gustafson  <u>HCR:</u>  Nancy Bennett  <u>Farnsworth Group: Designer</u>						



Wade Ross Bob Ridgway
<b>Official Documented Meeting Minutes</b> See Attendance List / Sign In Sheet
McGough Greg Evans Noah Thelen
Farnsworth Wade Ross
HCR Richard Lyons Nathan Grooms Beth Henderson Nancy Bennet
Trane Tom Peters
Automated Logic Hunter Brunsvold
DAS Scott G.

## Project Overview

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
2.1	1	Project Description				Open
<b>Description</b> Direct Digital Control Replacement including new front end network manager, graphics and control replacement for various equipment at Honey Creek Resort. This includes but no limited to the Main Resort, Lobby, Event Halls & Dinning Space/Kitchen. <ul style="list-style-type: none"> <li>• Base bid - DDC Control Replacement complete for all plans and specifications</li> <li>• Alternates - None</li> <li>• Unit prices - None</li> </ul>						
<b>Official Documented Meeting Minutes</b> The project was discussed regarding the controls replacement to the whole facility.  Current system was installed by Johnston Controls.						

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
2.2	1	Project Schedule				Open
<b>Description</b> <ul style="list-style-type: none"> <li>• Contract(s) Issued: Week of 11/25 (Thanksgiving Holidays) following bid opening on 11/19.</li> <li>• Submittals: December 2024</li> <li>• Construction: February 2025 (Or earlier following procurement of materials)</li> <li>• Closeout: April 2025</li> </ul>						

A pull-plan session will be held with the successful bid package contractors to finalize the construction schedule.

State Holidays: New Year's Day, Martin Luther King Day, Memorial Day, 4th of July, Labor Day, Veterans Day, Thanksgiving and day after Thanksgiving, Christmas Day

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
2.3	1	Site Rules				Open
<b>Description</b> <ul style="list-style-type: none"> <li>Onsite supervision by Prime Contractor is required at all times when work by that contractor or their subcontractors/suppliers is taking place.</li> <li>Contractors shall provide daily logs for each day they are on site.</li> <li>Construction progress meeting will be established once construction starts (Bi-weekly).</li> <li>It is of the utmost importance to show respect and courtesy to all staff at all times.</li> <li>Clean all debris, materials, and bring all finishes back to existing conditions in the area they were working in prior to moving to the next area.</li> <li>No smoking, vaping or smokeless tobacco use onsite unless in designated areas.</li> <li>Contractor parking and staging will be decided by facility and locations will be designated prior to starting work.</li> </ul> <p>Site Specific:</p> <ul style="list-style-type: none"> <li>Temporary facilities by prime for worker. <i>(Coordinate with facilities if onsite locations are available)</i></li> <li>Dumpsters will need to be provided by contractor for debris or trash.</li> <li>Tool control - Not required, But contractor shall provide all equipment and tools for Contractors own cleanup. Clean up shall be done at end of every shift or more frequently if required for the Contractor to perform their work, for other Contractors to perform their work, as required by the Owner's operations, and at the discretion of the Construction Manager.</li> <li>Background checks - N/A</li> <li>PREA - N/A</li> <li>Cell Phones - No restrictions</li> <li>Work hours - 7am-5pm, Monday through Friday unless arrangements are made in advance. <ul style="list-style-type: none"> <li>Season Times and dates for Resort may result in modifications to areas being available for work.</li> <li>Hotel Rooms are limited to 1 floor at a time to occupy.</li> </ul> </li> <li>View Specification 01 1200 - Contract Summary for more information.</li> </ul>						
<b>Official Documented Meeting Minutes</b> <p>HCR is OK with allowing construction workers to use public facilities. Due to the off season parking should not be an issue. Working hours from 7-5 are not restricted if 4/10 hour days are requested from contractors. HCR will work with the contractors to get scheduling regarding some large events taking place. Spring Break around March 15th is a busy week. Work can be shifted from the hotel rooms to the corridor or other areas of the facility.</p>						

## RFB Overview

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
3.1	1	Bid Submission				Open
<b>Description</b> <ul style="list-style-type: none"> <li>Bids are due <b>November 19th, 2024 at 2:00pm</b></li> <li>The Bid shall be submitted to the Issuing Officer through the IMPACS Electronic Procurement System. <ul style="list-style-type: none"> <li>Link and information is in the project manual</li> <li>Contractors will need to register prior to bidding</li> <li>Bidders will need to register regardless of whether it has already done business with the State of Iowa.</li> </ul> </li> </ul>						

- Bidders should complete the registration process and ensure the ability to log in as soon as possible to ensure Bids can be submitted on the due date.
- Please make sure the electronic documents submitted contain any required signatures. Digital signatures will be accepted.
- Bid Opening will be held via conference call on **November 19th, 2024 at 3:00pm**
- Contractor shall reference section 00 0116 for the bid submittal checklist
  - Bid Proposal Information
  - Non Discrimination Clause Information
  - Contractor Targeted Small Business Enterprise Pre-Bid Contract Information
  - Bid Security – 5% of total Bid amount
- Apparent low bidder will be required to submit subcontractor/supplier list 48hrs after the bid opening

**Official Documented Meeting Minutes**

Bidding group was ok with these dates.

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
3.2	1	Bid Schedule				Open
<b>Description</b> <ul style="list-style-type: none"> <li>• Questions/Substitutions Due in Writing to <a href="mailto:Construction.Procurement@iowa.gov">Construction.Procurement@iowa.gov</a>: <b>November 4th by 2:00pm</b></li> <li>• Addendum Issued: <b>Week of 11/4 pending questions.</b></li> <li>• Bids Due: <b>November 19th, 2024 by 2:00pm</b></li> <li>• Tentative NOI Issued: <b>November 21st, 2024 (DAS To Confirm)</b></li> </ul>						
<b>Official Documented Meeting Minutes</b> Bidders will submit questions to Procurement from today.						

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
3.3	1	Administrative Details				Open
<b>Description</b> <ul style="list-style-type: none"> <li>• Contractors will sign a modified ConsensusDocs 802. Example in the project manual.</li> <li>• Project-specific Certificate of Insurance must be provided prior to contract execution. Follow example in the project manual and limits in the 802.</li> <li>• Project-specific P&amp;P bonds must be provided prior to contract execution.</li> <li>• Successful contractor must turn in their list of subcontractors and suppliers within 48 hours of the bid.</li> <li>• DAS will provide tax exempt certificates upon request.</li> <li>• Procore will be used for all project management, at no cost to the trade contractor.               <ul style="list-style-type: none"> <li>◦ Submittals, Invoicing, RFIs, ASIs, PRs, RFQs</li> <li>◦ Contracts, Change Orders and Certificates of Substantial and Final Completion will also use Docusign</li> </ul> </li> <li>• Contractor Schedule of Values shall be broken out as specified in the project manual.               <ul style="list-style-type: none"> <li>◦ SOV must contain a closeout line item for at least 1% of the total contract value.</li> <li>◦ This line item can only be invoiced once the certificate of final completion has been signed by all parties.</li> </ul> </li> </ul>						
<b>Official Documented Meeting Minutes</b> Group was familiar with the DAS requirements and Procore.						

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
3.4	1	Pre-Bid Site Visits				Open
<b>Description</b> <i>Review site with HCR Staff to areas of the facility.</i>						
<b>Official Documented Meeting Minutes</b> Site walk included some mechanical rooms, main data closet and a look into one of the resort rooms. It was discussed in the resort rooms some allowance or cost to get above the ceiling might need to be considered to run wires back to hallways or into mechanical closet in rooms.						

## Questions

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
4.1	1	Questions				Open
<b>Description</b> Submit all questions in writing to <a href="mailto:construction.procurement@iowa.gov">construction.procurement@iowa.gov</a> .						
<b>Official Documented Meeting Minutes</b> Is there an electrician on site or staff? Not currently Joe Winger was someone who is familiar with the facility.  No VFD being replaced? This is correct.  Additional Questions submitted via Procurement are attached in Addendum.						

These meeting minutes are believed to be an accurate reflection of those items discussed and the conclusions that were reached during the referenced meeting.  
Please contact State of Iowa - Department of Administrative Services if there are any discrepancies or questions with the content of these minutes.





# McGough

## Meeting Sign-In Sheet

**Project Name/#:** 9418.00 HCE BAS Improvement

**Date:** 10/30/24

**Meeting Type:** Pre-Bid Meeting

**Time:** 12:00 pm - 1:30 pm

**Prepared By:** Noah T.

**Location:** Honey Creek Resort

*Please print informaton below:*

[illegible]



- Air Source HPs have a smoke detector on the controls drawings. Is this existing?
  - They are existing to remain.
- Can we reuse existing sensors/control devices unless noted otherwise? What if existing sensors do not read accurately or are failed?
  - Sensors and control devices shall generally be replaced.
- Can we reuse existing panels and power supplies?
  - Yes
- All valves and valve actuators are existing, not to be replaced?
  - Correct.
- Can we use mounting plates for the room thermostats instead of patching and painting to cover the existing hole if our new thermostats will not cover the existing hole?
  - Yes
- Controls drawings for the Air Source HPs show a filter pressure sensor (AI) and below it call out a filter differential pressure switch, which can be interpreted as a BI. Which is required? filter pressure sensor (AI) or a filter pressure switch (BI).
  - Remove requirement for filter alarms in the air to air heat pumps in the rooms. The rest of the filters to be BI filter pressure switch.
- After reviewing filter locations on the existing air to air heat pumps, because they are mounted on the outside of the units it may be difficult to install the high port of the DP sensor on the incoming side of the filter. Recommend adding a CT sensor to the heat pump fan and then doing a runtime alarm to replace filters in lieu of the DP.
  - Remove requirement for air to air heat pumps in the rooms.
- 23-0923 page 6 calls for Application Specific controllers to be mounted in enclosures. This is not required by local code. Does the owner want the Air Source Heat Pumps in the hotel rooms to have enclosures?
  - Enclosures are not required.
- 23-0923 page 2 calls for a 5 year warranty on controllers – standard is 1 or 2 year, is 5 year a requirement? Is the project warranty 1 year from substantial completion, we did not find that defined in the specifications.
  - A 1-year warranty is acceptable for controllers & 1 year workmanship warranty from established substantial completion date on project.
- Specifications call out BACnet MS/TP communication, is BACnet IP communication acceptable?
  - BACnet IP is acceptable.
- RTU-1 and ERF-2-5 have Demand limiting on the SOO, but we did not see where we are monitoring energy consumption with the BAS. Is Demand limiting applicable?
  - Demand Limiting requirement can be removed.
- Under the miscellaneous monitoring SOO are there currently contacts that monitor the dryer status's?
  - It is assumed there are currently contacts that monitor the dryer status.
- ERV-1 has a BACnet interface card per the SOO. Are there any hardwire points to the new BAS controller or is this only a BACnet connection? Who is responsible for hiring the ERV vendor to change any configuration in the BACnet card to ensure communication with the new controls?
  - Attached is the shop drawing for the new ERV-1 with the information on the controls and supplier if questions are required to be answered and any discuss any configuration revisions needed to ensure communication.
- CX spec calls out ERV's to be Cx'd and also the "control system". Can you explain the expectation as to what will be Cx'd? Will a percentage of the heat pumps be Cx'd or any of the other

systems?

- Expectation is for the sequences for all of the equipment will be commissioned and all points will be confirmed in the BAS.
- 10% of heat pumps to be Commissioned.
- The existing controls system appears to the 2 IP drops to the owners network, will these IP's be available to the new BAS? Will the new BAS have remote access to it so we can assist regarding future warranty calls?
  - The expectation is that the owner will assign the IP drops as required for this project and remote access will be allowed and required.
- We are not anticipating any permitting would be required for this work. Is there any permitting required?
  - The HCR BAS Project has been approved for exemption and will only require a fire code inspection once the project is completed.
- Can we use the public restrooms in the lodge? Temporary facilities would not be required?
  - HCR will allow public restrooms use.
- Does the owner wish to keep the existing controls equipment or shall it be discarded?
  - HCR does not plan on keeping existing controls from the old system.

# SUBMITTAL

**Date:** 7/9/2024  
**Project:** Honey Creek Resort DHU Replacement

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<b>Specification:</b> Pool Dehumidification Unit	<b>Architect:</b> N/A
<b>Revision:</b> Rev1	<b>Engineer:</b> N/A
	<b>Contractor:</b> Winger Companies
	<b>Sales Engineer:</b> Tim Conrad

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Innovent	Pool Dehumidification Unit	BASIS OF DESIGN
Qty: 1	Tag(s): ERV-1	

- 460V / 60 Hz / 3 Ph
- Coated for pool application
- Fused disconnect switch w/ 5 kAIC SCCR
- Thermally broken double wall construction w/ 2" foam injected insulation
- Outside and exhaust air dampers w/ weather hoods and aluminum bird screens
- 2" MERV 8 filters w/ magnehelic filter gauges (2 total sets)
- Access doors w/ piano type hinges, windows, and full size handle assemblies
- 22 Ga galvanized steel pre-paint outer skin, 22 Ga galvanized steel inner liner
- 0.063" aluminum inner liner, 0.072" aluminum walk-on surface
- Welded steel structural base w/ lifting lugs
- Direct drive exhaust fan w/ spring isolation, shaft grounding ring, and variable frequency drive
- Aluminum flat plate heat exchanger w/ aluminum drain pan
- Evaporator coil w/ 0.016" Cu tubes, 0.008" Al fins, galvanized steel casing, and stainless steel drain pan
- Modulating HGRH w/ 0.016" Cu tubes, 0.008 Al fins, and galvanized steel casing (epoxy coated)
- Modulating indirect gas-fired heater (6:1 turndown; LP)
- Direct drive supply fan w/ spring isolation, shaft grounding ring, and variable frequency drive
- Low sound condenser fans w/ EC motor on lead condenser fan
- Aluminum micro-channel condenser coil (454B refrigerant)
- Carel controls w/ BACnet IP interface
- Phase failure monitor
- 1-yr entire unit parts only warranty
- Start-up & owner training

Exclusions: Storage, rigging, installation, roof curb, power wiring, remote controls wiring, gas regulators/manifolds, condensate piping, insulation, condensate trap, spare parts, and warranties not listed.



***Date***

***Job***

***Location***

***Rep***

***Engineer***

***Contractor***

7/8/2024

Honey Creek Resort

Moravia, IA

MECHANICAL SALES INC  
(JOHNSTON)

N/A

Winger Companies



<i><b>Tag</b></i>	<i><b>Innovent Model #</b></i>
ERV-1	NDHU-OU-PL-18800-AC-HG-IF-460

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Power Electrical Schematic

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Components Provided By Innovent

Innovent Standard Warranty

Terms and Conditions

# Performance Data Summary

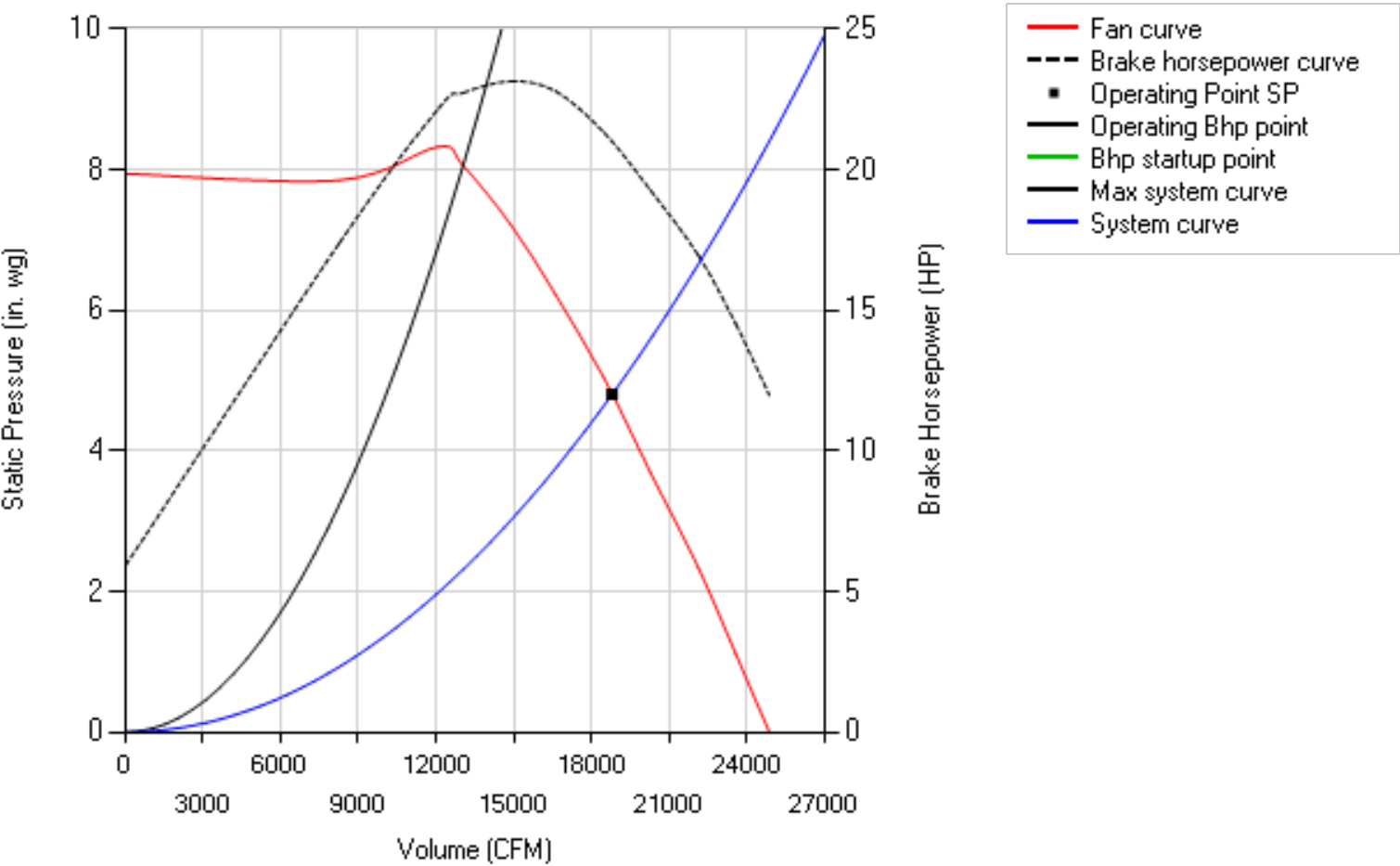
## ERV-1

MODEL										ALTITUDE (Ft)		
NDHU-OU-PL-18800-AC-HG-IF-460										0.00		
OUTSIDE FILTER										OUTSIDE		
CFM	TYPE	DEPTH (in)	FACE VEL. (FPM)		MERV	QTY	WIDTH (in)	HEIGHT (in)	CLEAN PD	TOTAL PD		
10000	Pleated	2	500		8	4	20	16	0.24	0.24		
						4	20	20				
PLATE HEAT EXCHANGER										SUPPLY & RETURN		
	OUTSIDE AIR DATA				RETURN AIR DATA							
MODE	CFM	EAT (DB/WB)(°F)	LAT (DB/WB)(°F)		PD	CFM	EAT (DB/RH)(°F/%)	LAT (DB/RH)(°F/%)		PD		
Cooling	10000	94.0/76.0	89.0/74.7		0.60	11880	86.0/60.0	90.2/52.6		0.79		
Heating	6160	-8.0/-9.0	60.2/39.1		0.23	8040	86.0/50.0	53.5/100.0		0.40		
MODEL: H-1-50C-1500												
DX COIL										SUPPLY		
CFM	FPM	EAT (DB/WB)(°F)		LAT (DB/WB)(°F)		MBH (T/S)		CIRCUITS	SST (°F)	ROWS	FPI	PD
10000	495	89.0/74.7		53.9/53.7		710.2/379.3		2	44.7	6	12	1.01
SUPPLY FAN										SUPPLY		
QTY	CFM	CLASS	SIZE (in)	TYPE	TSP (°WC)	BHP	MHP	RPM	MOTOR RPM	VFD Hz	MOTOR TYPE	
1	18800	III	30	Plenum	4.80	21.0	25.0	1679	1800	57.6	TEFC	
TSP CALCULATION												
SA ESP (°WC)		1.50	Outside Filter Clean PD (°WC)		0.24	DX Coil (°WC)		1.01	Indirect Fired Furnace (°WC)		0.75	
Casing Loss (°WC)		0.30	Plate Heat Exchanger (°WC)		0.60	Hot Gas Reheat (°WC)		0.40	TSP:		4.80 °WC	
HOT GAS REHEAT										SUPPLY		
CFM	FPM	EDB/WB (°F)		LDB/WB (°F)		MBH		CIRCUITS	ROWS	FPI	PD	
18800	733	69.0/64.7		87.6/70.5		379		2	2	12	0.41	
INDIRECT FIRED FURNACE										SUPPLY		
CFM	EDB (°F)		LDB (°F)	MBH IN		MBH OUT		FUEL TYPE		GAS PRESSURE		PD
18800	76.1		100.0	600		486		LP		11-14"WC		0.75
RETURN FILTER										RETURN		
CFM	TYPE	DEPTH (in)	FACE VEL. (FPM)		MERV	QTY	WIDTH (in)	HEIGHT (in)	CLEAN PD	TOTAL PD		
20680	Aluminum	2	497		N/A	12	20	25	0.14	0.57		
EXHAUST FAN										EXHAUST		
QTY	CFM	CLASS	SIZE (mm)	TYPE	TSP (°WC)	BHP	MHP	RPM	MOTOR RPM	VFD Hz	MOTOR TYPE	
1	11880	N/A	630	Plenum	2.16	7.2	10.0	1639	1800	56.2	TEFC	
TSP CALCULATION												
RA ESP (°WC)		0.50	Return Filter Clean PD (°WC)				0.14	Plate Heat Exchanger (°WC)				0.79
Casing Loss (°WC)		0.30	Return Filter Loading PD (°WC)				0.43	TSP:				2.16 °WC
AIR-COOLED REFRIGERATION										NONAIRSTREAM		
TONS		AMBIENT (°F)				CIRCUITS		# OF STAGES		REF. EER		
59.2		95.0				2		4		10.1		
ELECTRICAL INFORMATION										UNIT POWER		
COMPONENT				VOLTS		PHASE		FREQ. (Hz)		MOP	MCA	
Electrical Enclosure				460		3		60		200	162.3	
AMP SUMMARY												
Air-Cooled Refrigeration				1.6 x 6		Exhaust Fan		12.5		--	--	
Air-Cooled Refrigeration				24.0 x 4		Supply Fan		31.0		Total:	154.5	

ERV-1 Supply Fan

APH-30-4-90-III-250

Volume Per Fan (CFM)	18,800	Total Volume (CFM)	18,800	Drive Loss (%)	-
External SP (In. wg)	1.50	Total SP (In. wg)	4.80	Static Efficiency (%)	67.75
Elevation (ft.)	0	Brake Horsepower (bhp)	20.97	Fan Manufacturer	Greenheck
Airstream Temp. (F)	68.0	Fan RPM	1679	Fan Size (In.)	30
Motor Horsepower (hp)	25.0	Max Class RPM	2221		



Sound Power by Octave Band

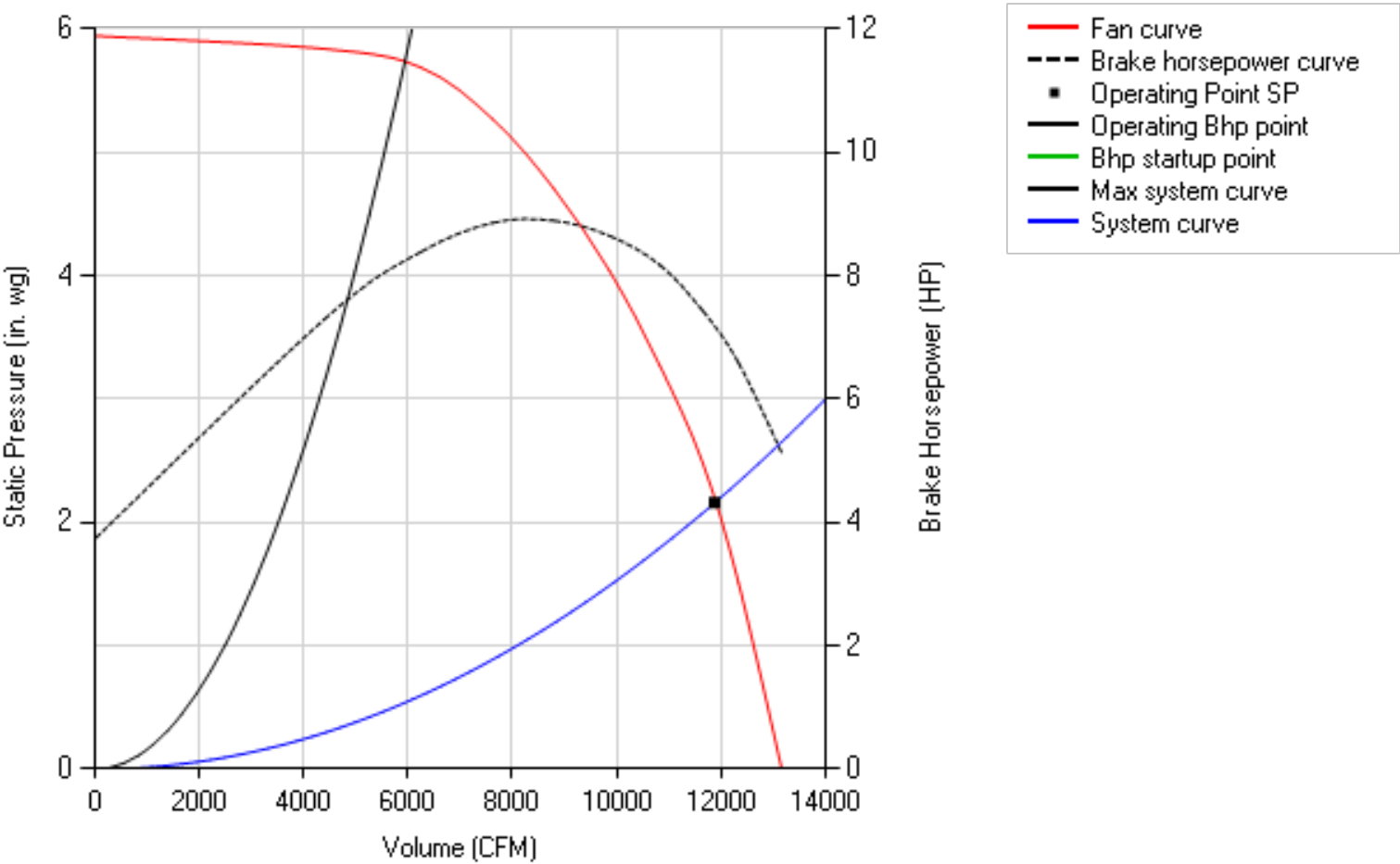
Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA
Inlet	86	90	95	95	89	85	81	77	95	84
Outlet	91	95	99	101	97	91	86	81	102	90

Fan arrays display sound data for the array.

ERV-1 Exhaust Fan

APD-630

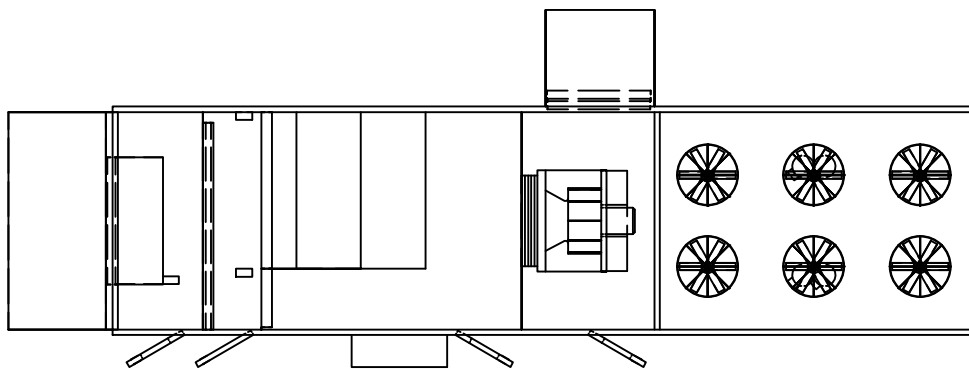
Volume Per Fan (CFM)	11,880	Total Volume (CFM)	11,880	Drive Loss (%)	-
External SP (In. wg)	0.50	Total SP (In. wg)	2.16	Static Efficiency (%)	56.43
Elevation (ft.)	0	Brake Horsepower (bhp)	7.15	Fan Manufacturer	Greenheck
Airstream Temp. (F)	68.0	Fan RPM	1639	Fan Size (mm)	630
Motor Horsepower (hp)	10.0	Max Fan Speed (RPM)	1780		



Sound Power by Octave Band

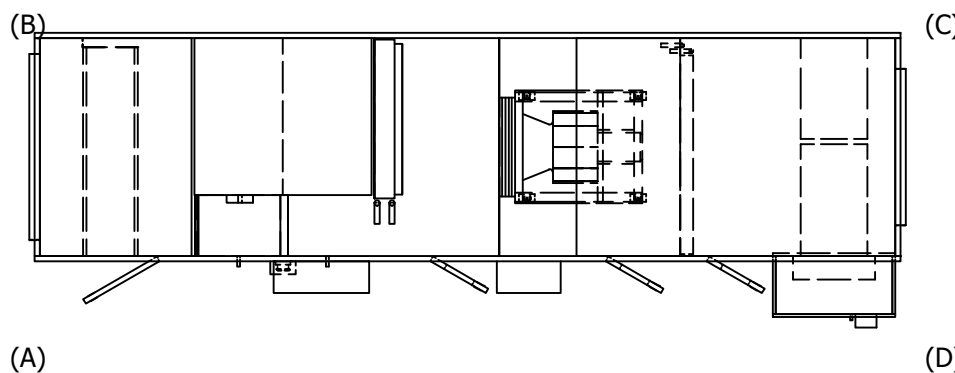
Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA
Inlet	81	86	95	89	84	85	84	75	93	81
Outlet	87	90	97	98	94	95	93	81	101	90

Fan arrays display sound data for the array.



PLAN VIEW (UPPER)

- COMPONENTS:**
- 1) OUTSIDE AIR INLET HOOD W/ DAMPER
  - 2) 2" MERV 8 FILTERS
  - 3) PLATE HEAT EXCHANGER (1.00" MPT DRAIN)
  - 4) MAGNEHELIC GAUGE
  - 5) ELECTRICAL ENCLOSURE
  - 6) EXHAUST FAN
  - 7) EXHAUST AIR OUTLET HOOD W/ DAMPER
  - 8) AIR-COOLED REFRIGERATION
  - 9) RETURN AIR INLET (55.00" X 70.00")
  - 10) 2" ALUMINUM FILTERS
  - 11) DX COIL (1.25" MPT DRAIN)
  - 12) VFD ENCLOSURE
  - 13) SUPPLY FAN
  - 14) HOT GAS REHEAT
  - 15) INDIRECT FIRED FURNACE
  - 16) SUPPLY AIR OUTLET (53.00" X 59.00")



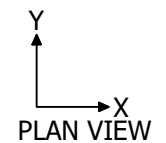
PLAN VIEW (LOWER)

**WEIGHT:** 12900 LBS.

**CENTER OF GRAVITY:**

CGx: 178"

CGy: 43"



**CORNER WEIGHTS:**

A: 2900 LBS.

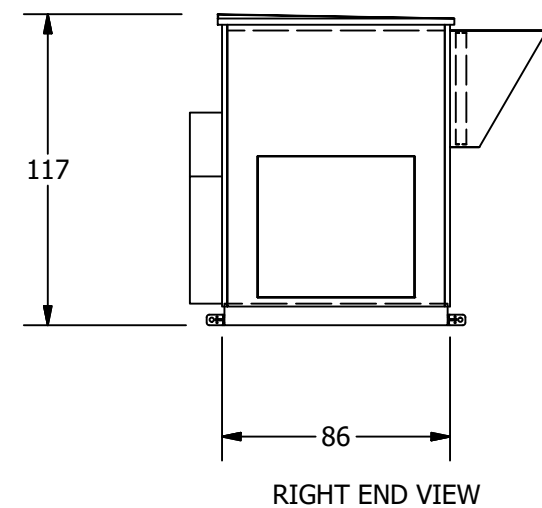
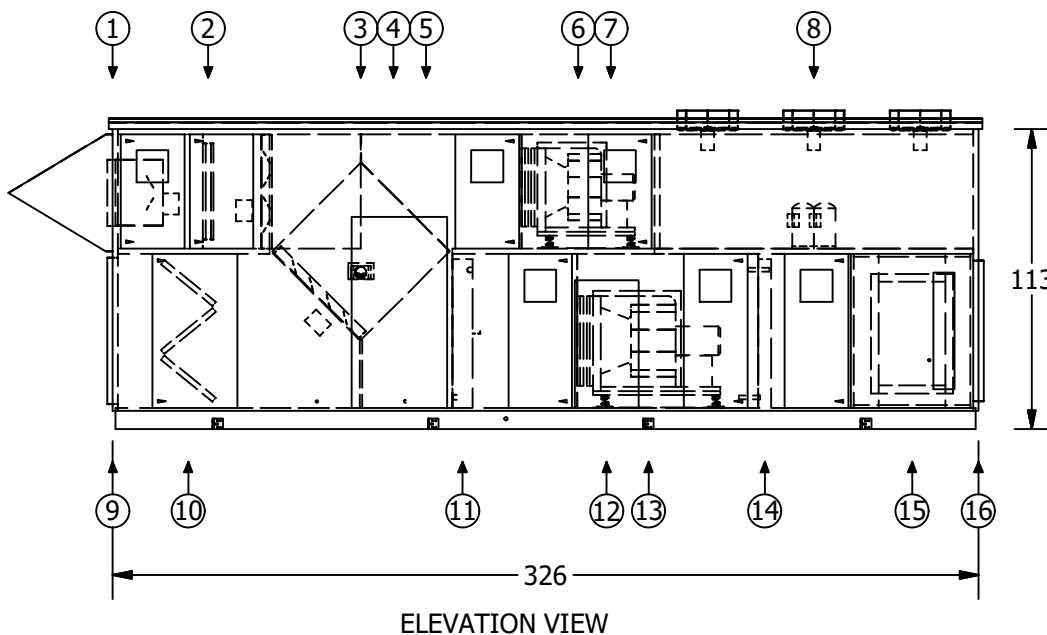
B: 2962 LBS.

C: 3556 LBS.

D: 3482 LBS.

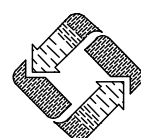
**NOTE(S):**

- HOODS MAY SHIP LOOSE FOR FIELD INSTALLATION BY OTHERS.
- EXHAUST AIR OUTLET HOOD IS APPROXIMATELY 36" DEEP.
- OUTSIDE AIR INLET HOOD IS APPROXIMATELY 39" DEEP.



### RECOMMENDED CLEARANCES

- MINIMUM 12" IN FRONT OF ALL HOODS.
- MINIMUM 40" IN FRONT OF ALL SERVICE ACCESS LOCATIONS.
- MINIMUM 36", OR AS LOCAL CODES DICTATE, IN FRONT OF ALL ELECTRICAL PANELS. EXTERNALLY MOUNTED PANEL DEPTH CAN VARY FROM 8" - 16". 52" OF CLEAR SPACE IS RECOMMENDED AT EVERY ELECTRICAL PANEL LOCATION SHOWN.
- COMPONENT REMOVAL MAY REQUIRE MORE SPACE THAN LISTED RECOMMENDED CLEARANCES.



**Innovent**  
Air Handling Equipment

DESCRIPTION:  
UNIT DRAWING

MODEL #:  
NDHU-OU-PL-18800-AC-HG-IF-460

TAG #  
ERV-1

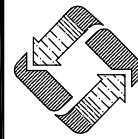
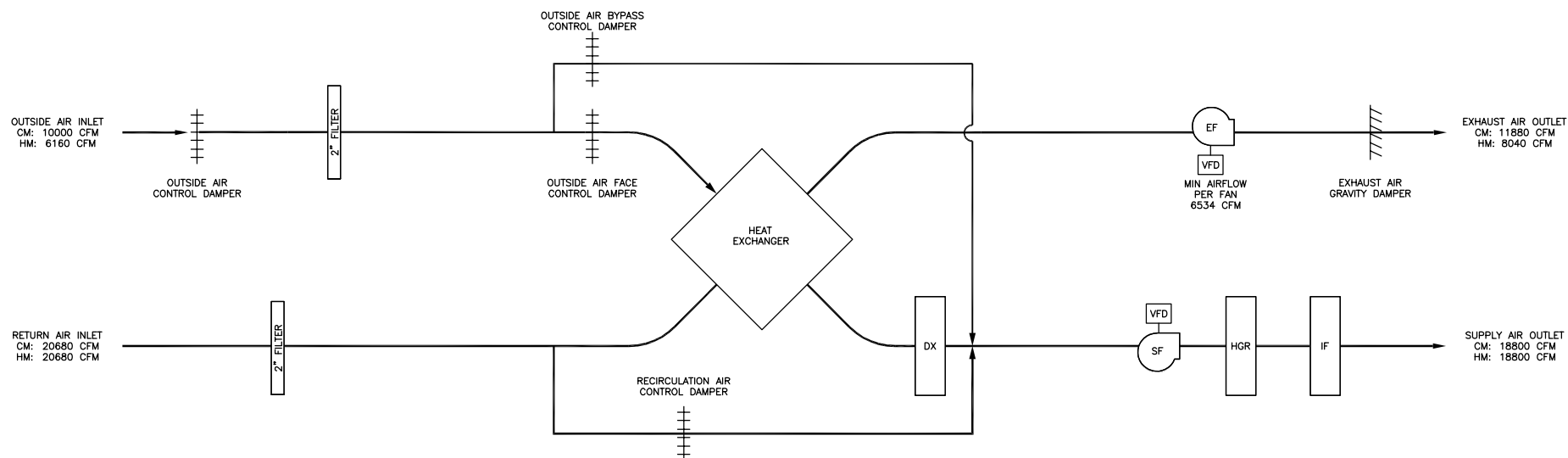
PROJECT:  
Honey Creek Resort

PROJECT #  
2300633

DATE:  
7/9/2024

ENGINEER:  
M. FORD

REV #  
8



**Innovent**  
*Air Handling Equipment*

ENGINEER:		DESCRIPTION:	
M. FORD		AIRFLOW SCHEMATIC	
DRAWN BY:		PROJECT:	
MAF		Honey Creek Resort	
JOB #		TAG #	
2300633		ERV-1	
FILE NAME:		MODEL #	
DATE:		SEE UNIT DRAWING FOR MODEL # REFERENCE	
5/23/24			
REV #:			

NOTE: SENSORS THAT ARE SHIPPED LOOSE  
AND INSTALLED IN THE FIELD BY OTHERS.

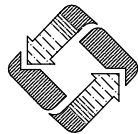
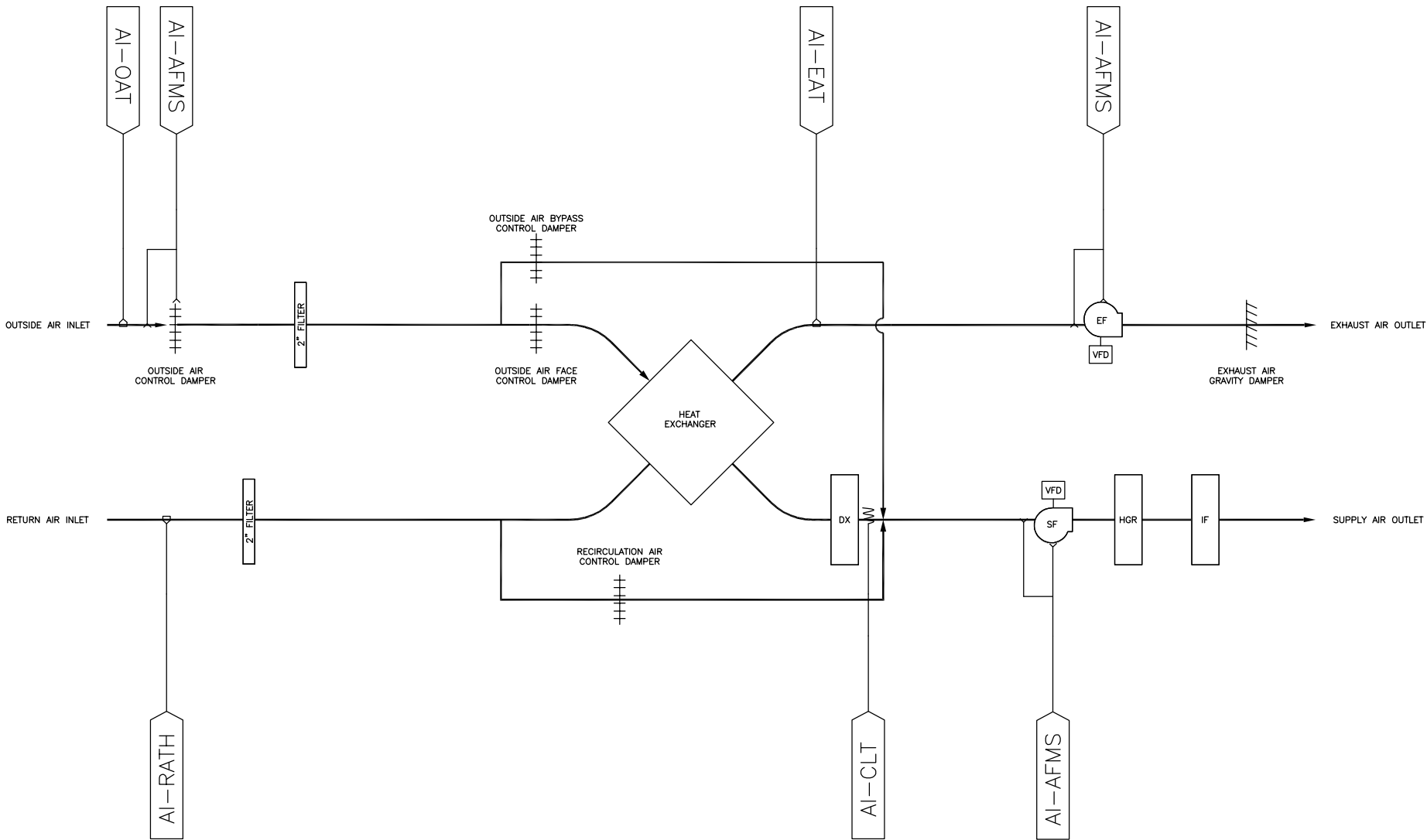
AI-SAT

AI-SPDP

LEGEND

AFMS - AIRFLOW MEASURING STATION  
OAT - OUTSIDE AIR TEMPERATURE  
RATH - RETURN AIR TEMPERATURE AND HUMIDITY  
EAT - EXHAUST AIR TEMPERATURE AND HUMIDITY  
SAT - SUPPLY AIR TEMPERATURE  
CLT - COIL LEAVING TEMPERATURE  
SPDP - SPACE DIFFERENTIAL PRESSURE

AI - ANALOG INPUT  
DI - DIGITAL INPUT



**Innovent**  
*Air Handling Equipment*

ENGINEER:		DESCRIPTION:	
M. FORD		SENSOR SCHEMATIC	
DRAWN BY:		PROJECT:	
MAF		Honey Creek Resort	
JOB #		TAG #	
2300633		ERV-1	
FILE NAME:		MODEL #	
DATE:		SEE UNIT DRAWING FOR MODEL # REFERENCE	
5/23/24			
		REV #:	



# Specification

## ERV-1

### CONSTRUCTION

#### CASING

- SMACNA leakage class rating of 5.0
- Maximum panel deflection shall not exceed L/250 at design total static pressure
- Minimum R-13 insulation value for walls, ceilings, and flooring
- 2" thick double wall thermal-break panels, 22 gauge high performance polyester painted steel (Innovent standard gray) outer wall, 0.040" aluminum inner wall
- 2 lb/ft3 polyurethane foam injected insulation in the walls and ceiling
- Designed for outdoor installation
- 22 gauge high performance polyester painted steel (Innovent standard gray) pitched roof
- Unit shall ship in one piece

#### FLOOR

- Floor shall be 2" thick paneled construction with 0.072" aluminum treadplate walk-on surface and 22 gauge galvanized steel welded to bottom of base (not exposed to air stream)
  - Shelf floor in top air tunnel shall be 0.063" flat aluminum
- 2 lb/ft3 polyurethane foam injected insulation

#### FRAME & STRUCTURAL BASE

- Frame and panel construction provided with aluminum structural tube framing members
- 10 ga coated welded steel structural base
- Lifting lugs mounted on unit base

#### ACCESS

- Double wall insulated access doors with stainless steel hinges, corrosion resistant compression latches
- Doors shall be tool lockable
- Doors shall have 12"x12" double pane wire glass windows (all doors except side access filter doors)
- Doors shall have pressure relief safety latches (doors that open with pressure)

#### UNIT INLETS/OUTLETS

- Return air inlet with duct connection
- Supply air outlet with duct connection
- Outside air inlet with weather hood and aluminum bird screen
- Exhaust air outlet with weather hood and aluminum bird screen

### COMPONENTS

#### PLATE HEAT EXCHANGER

- Aluminum sensible cross flow flat plate heat exchanger
- Smooth aluminum plates separated by formed ribs
- Aluminum frame and end plates
- Aluminum drain pan
- Accessories:
  - Magnehelic pressure gauge (2)

#### DX COIL

- Rated in accordance with AHRI 410-2001 DX Coil with galvanized steel casing, 0.016 thick copper tubes, and 0.008 thick aluminum fins
- Aluminum IAQ drain pan

#### HOT GAS REHEAT

- Hot gas reheat coil with galvanized steel casing, 0.016 thick copper tubes, and 0.008 thick aluminum fins
- A baked epoxy corrosion resistant coating is provided
- Modulating control valve

#### SUPPLY FAN

- Airfoil plenum fan, welded aluminum wheel
- AMCA certified ratings for sound and performance
- Direct drive assembly
- 1" spring isolated unitary fan/motor base, flex connectors provided at fan inlet
- Fan airflow probes provided, (see controls section of specification)
- A baked Hi-Pro polyester corrosion resistant coating is provided
- TEFC premium efficiency motors
  - VFD-rated with class F insulation
  - Shaft grounding is provided on each motor

#### EXHAUST FAN

- Aluminum wheel, aluminum inlet cone with galvanized drive frame that is coated with an acrylic urethane
- AMCA certified ratings for sound and performance
- Direct drive assembly
- 1" spring isolated unitary fan/motor base, flex connectors provided at fan inlet
- Fan airflow probes provided, (see controls section of specification)
- TEFC premium efficiency motors
  - VFD-rated with class F insulation
  - Shaft grounding is provided on each motor

#### OUTSIDE FILTER

- 2" pleated MERV 8 filter
- Side access filter rack construction to be aluminum
- 1 spare set(s) of filters provided

#### RETURN FILTER

- 2" aluminum filter
- Side access filter rack construction to be aluminum
- 1 spare set(s) of filters provided

#### DAMPERS

- Outside air inlet: aluminum airfoil blade, galvanized steel frame airflow monitoring, modulating actuator
- Exhaust air outlet: aluminum extruded blade, aluminum frame gravity
- Plate heat exchanger face and bypass: galvanized steel formed blade, galvanized steel frame, modulating actuator
- Recirculation: aluminum airfoil blade, aluminum frame, modulating actuator
- Motorized dampers:
  - AMCA certified performance
  - Leakage rating of 3 CFM/ft2 at 1" wg
  - Synthetic bearings
- Airflow monitoring dampers:
  - Tested in accordance with AMCA standard 500-D
  - Integral airflow straightener
  - Leakage rating of 3 CFM/ft2 at 1" wg
  - Synthetic bearings
- Gravity Dampers:
  - Tested in accordance with AMCA standard 500-D
  - 0.125" aluminum blade

# Specification

## INDIRECT FIRED FURNACE

- Indirect fired inshot gas furnace
- ETL listed per ANSI Z83.8 standards
- 409SS heat exchanger tubes
- 6:1 modulating control valve
- One gas connection per burner, any gas line manifolding by others

## AIR-COOLED REFRIGERATION

- Integral air cooled refrigeration system provided with hermetic scroll compressor(s), condenser coil(s) and prop condenser fan(s).
- All refrigeration circuits tested, dehydrated and charged with refrigerant.

## ELECTRICAL

- Unit ETL listed as a complete package, unit factory wired to unit mounted NEMA 3R control panel
- Major electrical components UL listed (fused disconnect switch, control circuit fusing, control circuit transformer, fan motor starters, and overloads as applicable)
- Power wiring enclosed in conduit
- Single point power connection
- Unit shall have a short circuit current rating (SCCR) of 5 kA
- A supply fan VFD is provided by Innovent and factory installed by Innovent
  - No manual bypass included
  - Variable frequency drive enclosure shall have a strip heater and ventilation fan
- A exhaust fan VFD is provided by Innovent and factory installed by Innovent
  - No manual bypass included
  - Variable frequency drive enclosure shall have a strip heater and ventilation fan
- Electrical Accessories:
  - Unit has phase/voltage protection

## CONTROLS

- A fully-programmed Carel DDC controller is provided.
  - A standard Innovent sequence of operation will be provided. Any customization of the standard sequence will require factory approval.
- BACnet IP interface is included
- Pressure transducer provided by Innovent and wired directly to main unit DDC controller (CFM readout viewable at DDC controller)
- Sensors/transducers/switches are provided and installed by Innovent.

## ADDITIONAL UNIT DETAILS

### EQUIPMENT MOUNTING

- Unit to be mounted on a solid non-curb surface that supports the entire perimeter of the unit

### ETL Listing

- UL 1995 or 60335-2-40. All major components listed by a Nationally Recognized Testing Laboratory.

## WARRANTIES

- All Innovent warranties begin at equipment start up or 6 months from shipment, whichever occurs first. If the warranties need to be extended from what is shown, please contact the factory for pricing.
- 1 year PARTS ONLY unit warranty is provided per Innovent's standard warranty terms

## FACTORY TESTING/REPORTS

- Standard run testing done (consult factory for more details)

## Control Application Summary:

- This P-Series unit is a heat/cool air handling unit with energy recovery. Key components include; flat plate heat exchanger, supply fan, exhaust fan, direct expansion coil (cooling), indirect gas furnace (heating), hot gas reheat (reheating), and a unit controller.
- The unit controller provides control of temperature, ventilation, as well as, unit status, component safeties, alarm and diagnostic information.
- The unit supply temperature set point is reset up and down based on return temperature. In dehumidification mode, the unit is controlled to maintain the return air dew point. The first stage modulates the unit outdoor air damper and in the second stage, mechanical cooling is used to maintain a direct expansion coil leaving air temperature. Reheat is controlled to maintain the unit supply temperature. The supply fan provides a constant air volume set through the unit controller. The exhaust fan is controlled to maintain a negative natatorium space pressure.
- This unit contains a system utilizing a refrigerant classified by ASHRAE 34 as an A2L. In accordance with UL standard 60335-2-40, the unit includes a refrigerant leak mitigation control sequence to provide the required airflow in the event of a leak detected within the air tunnel. This control will override any mode of operation with the only exception being building fire and smoke function(s).

## Operating Sequences

### Occupied

- Supply Fan on, 100% auto-balanced airflow.
- Exhaust Fan on, control per sequence.
- Economizer enabled.
- Dehumidification enabled.
- Heating enabled.
- Cooling enabled.
- All dampers are enabled.

### Supply Fan Control

- The supply fan speed shall be auto-balanced, at start-up, to a constant speed that delivers the design supply airflow. During unit operation, the recirculation air damper shall modulate to maintain the supply fan airflow set point, 18800 CFM, adjustable.

### Exhaust Fan Control

- The exhaust fan shall modulate to maintain a negative differential pressure between the pool space and an adjacent space. Set Point: -0.04" W.C., adjustable.
- The exhaust fan variable speed will be limited by an offset calculation based on the current outdoor airflow.

### Outside Air Damper Min/Max Positions

- The unit outside airflow monitoring damper will maintain minimum and maximum outdoor airflow limits, per the set points below:
  - Minimum outdoor airflow: 6160 CFM, adjustable
  - Maximum outdoor airflow: 10000 CFM, adjustable

### Refrigerant Leak Mitigation Safety Control

- Upon detection of a refrigerant leak, a unit controller shall execute the following safety measures:
  - Fan(s) enabled
  - Compressor(s) disabled
  - Ignition source(s) disabled
  - Activate an alarm, available to the building, if additional safety measure(s) are required

## **Operating Modes**

### Heating

- The indirect gas furnace is controlled to maintain the supply temperature set point.
- Outside air damper at minimum position.

### Cooling

- Stage 1: Economizer Mode (energy recovery reduction type) active only if the outside air temperature < return air temperature.
  - The outside air heat exchanger face/bypass dampers modulate (bypassing outside air around the heat exchanger) to maintain the supply temperature set point.
- Stage 2: Mechanical Cooling
  - The direct expansion coil is controlled to maintain the unit supply temperature set point.
  - The outside air damper will maintain the maximum airflow set point, while the cooling coil is energized.
  - The heat exchanger outside air face/bypass damper is open to face at its maximum position.
  - Mechanical Cooling Lockout: The cooling coil will be locked out when the outside air is < 50°F, adjustable.

## Dehumidification

- Stage 1
  - The outside air damper modulates, between its minimum and maximum airflow limits, to maintain the return dew point set point: 70.5°F, adjustable.
  - The heat exchanger outside air face & bypass damper is open to face at its maximum open position.
- Stage 2
  - The outside air damper modulates to maintain the maximum airflow set point.
  - The cooling coil is energized for return dew point control.
  - The heat exchanger outside air face/bypass damper is open to face at its maximum open position.
  - The mechanical cooling is controlled to maintain the cooling coil leaving air temperature set point, which is reset up and down between the values listed below, to maintain the return dew point set point, 70.5°F, adjustable.
    - Dehumidification coil leaving minimum set point 53.9°F, adjustable
    - Dehumidification coil leaving maximum set point °F
  - Hot Gas Reheat is controlled to maintain the supply temperature set point.
- If heating is active and unable to maintain the unit supply temperature set point, the dehumidification damper control loop shall be limited to its minimum position.

## Supply Temperature Set Point

- The unit controller will reset the supply temperature set point up & down between the values listed below, in order to maintain the return temperature set point.
  - Return Temperature Set Point Heating Mode 86°F, adjustable.
    - Supply heating minimum set point: 70°F, adjustable.
    - Supply heating maximum set point: 110°F, adjustable.
  - Return Temperature Set Point Cooling Mode 86°F, adjustable.
    - Supply cooling minimum set point: equal to the current return dew point + 2°F.
    - Supply cooling maximum set point equal to the current return air temperature set point - 2°F.

## Air to Air Heat Exchanger Defrost Sequence

- The heat exchanger outside air face & bypass dampers modulate (bypassing outside air around the heat exchanger) to maintain its leaving exhaust air temperature above the defrost set point: 38°F, adjustable.

# Unit Shutdown Safeties

## Supply Temperature Low Limit

- If the unit supply temperature drops below 35°F (adjustable), the unit controller shall shut down the unit after an adjustable time delay.

## Supply Temperature High Limit

- If the unit supply temperature rises above 120°F (adjustable), the unit controller shall shut down the unit after an adjustable time delay.

## Phase/Voltage Monitor

- A phase/voltage protection relay shall be provided for each unit. Upon sensing a loss of phase or voltage, the unit shall immediately shut down.

## Smoke Detector(s)

- Return and/or supply smoke detector(s), provided, installed and field wired in series, by others. Upon detecting smoke, the smoke detector(s) shall send a single binary signal to the unit controller to immediately shut down the unit.

# Sequence Required Sensors

## Analog (Factory)

- Supply Air Temperature
- Outside Air Temperature
- Return Air Temperature
- Return Air Humidity
- Exhaust Air Temperature
- Direct Expansion Coil Leaving Air Temperature
- Supply Air Flow Monitoring
- Exhaust Air Flow Monitoring
- Outside Air Damper Airflow Monitoring
- Space Differential Pressure Sensor

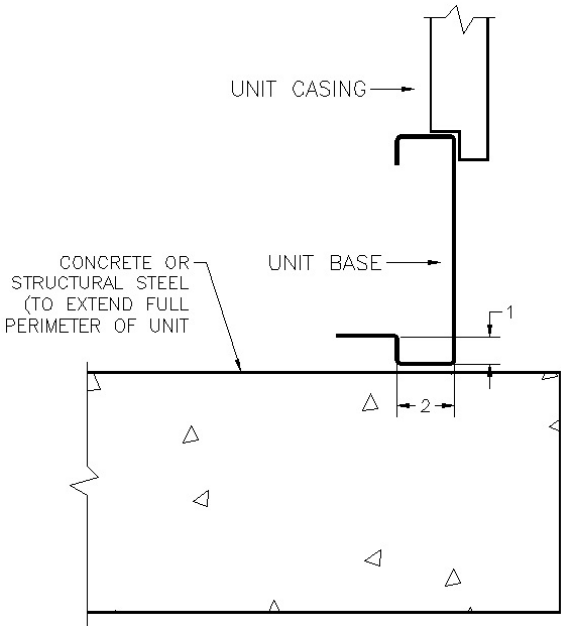
## Digital (Factory)

- Supply Fan Status
- Exhaust Fan Status
- Phase/Voltage Protection Relay
- Refrigerant Leak Detection Monitoring

Base Detail

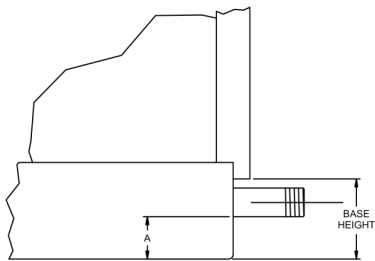
ERV-1

TAG(S)	O.D. UNIT	O.D. BASE
ERV-1	326"L x 86"W	324"L x 84"W



Drain Connection/Trap Detail

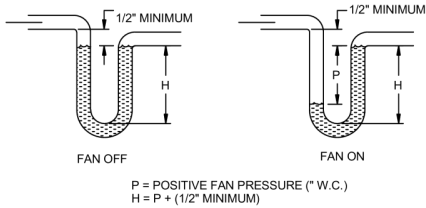
SIDE DRAIN CONNECTION



DRAIN	DRAIN SIZE (MPT)	BASE VISUAL HEIGHT	"A"
DX	1 1/4"	7"	MINIMUM 1.5"
HX	1"	7"	2"

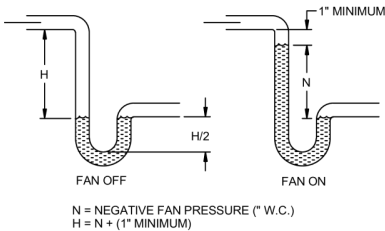
RECOMMENDED DRAIN TRAP DESIGN  
(TRAP BY OTHERS)

POSITIVE PRESSURE TRAP\*  
(BLOW THRU FAN)



P = POSITIVE FAN PRESSURE (" W.C.)  
H = P + (1/2" MINIMUM)

NEGATIVE PRESSURE TRAP\*  
(DRAW THRU FAN)



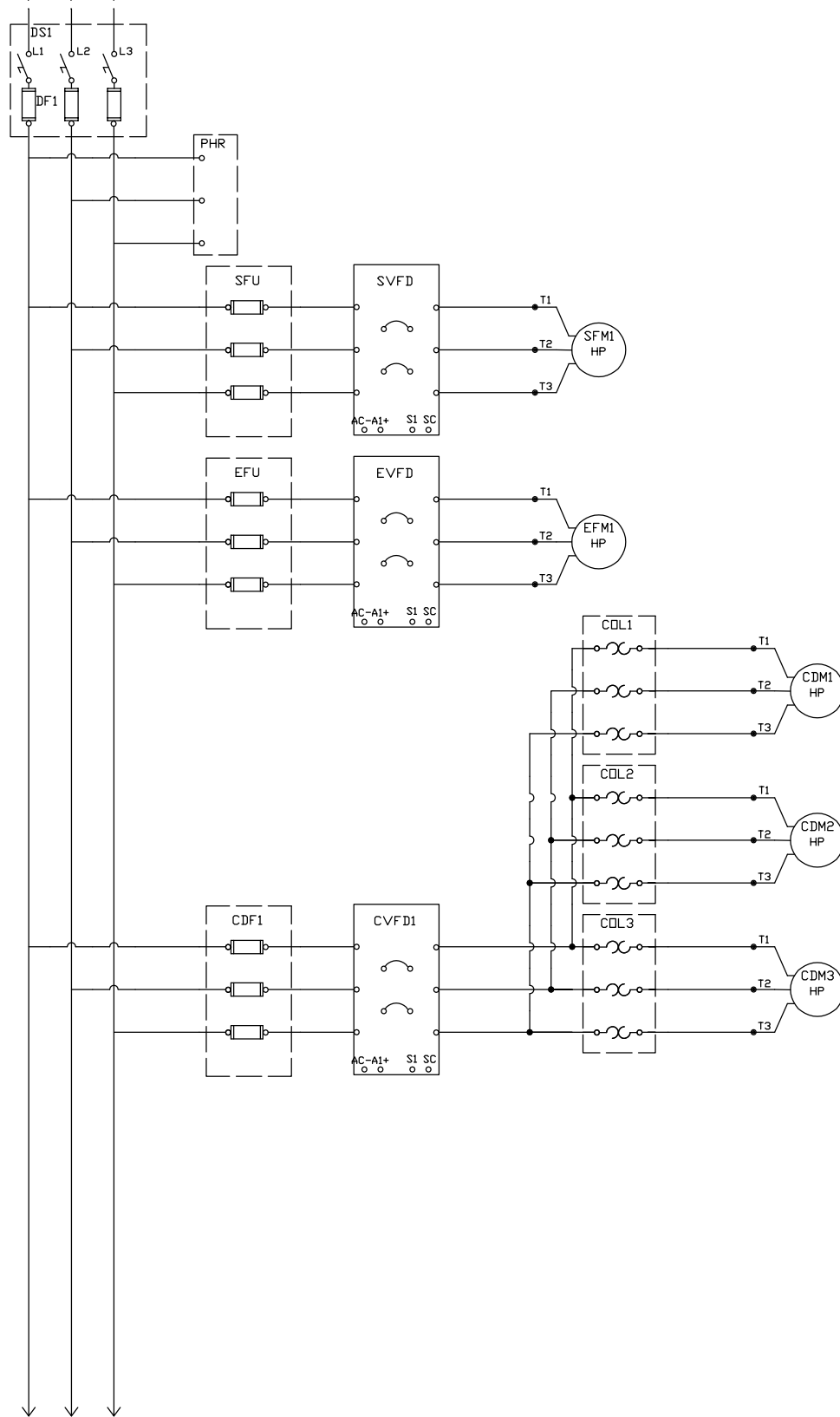
N = NEGATIVE FAN PRESSURE (" W.C.)  
H = N + (1" MINIMUM)

\*NOTE: A CONSERVATIVE METHOD OF TRAP HEIGHT DESIGN IS TO SET N=TSP AND P=TSP (TSP=TOTAL STATIC PRESSURE)



DESCRIPTION: DRAIN TRAP DETAIL	MODEL #: NDHU-OU-PL-18800-AC-HG-IF-460
TAG # ERV-1	
PROJECT: Honey Creek Resort	PROJECT # 2300633
DATE: 7/8/2024	ENGINEER: M. FORD
	REV # 7





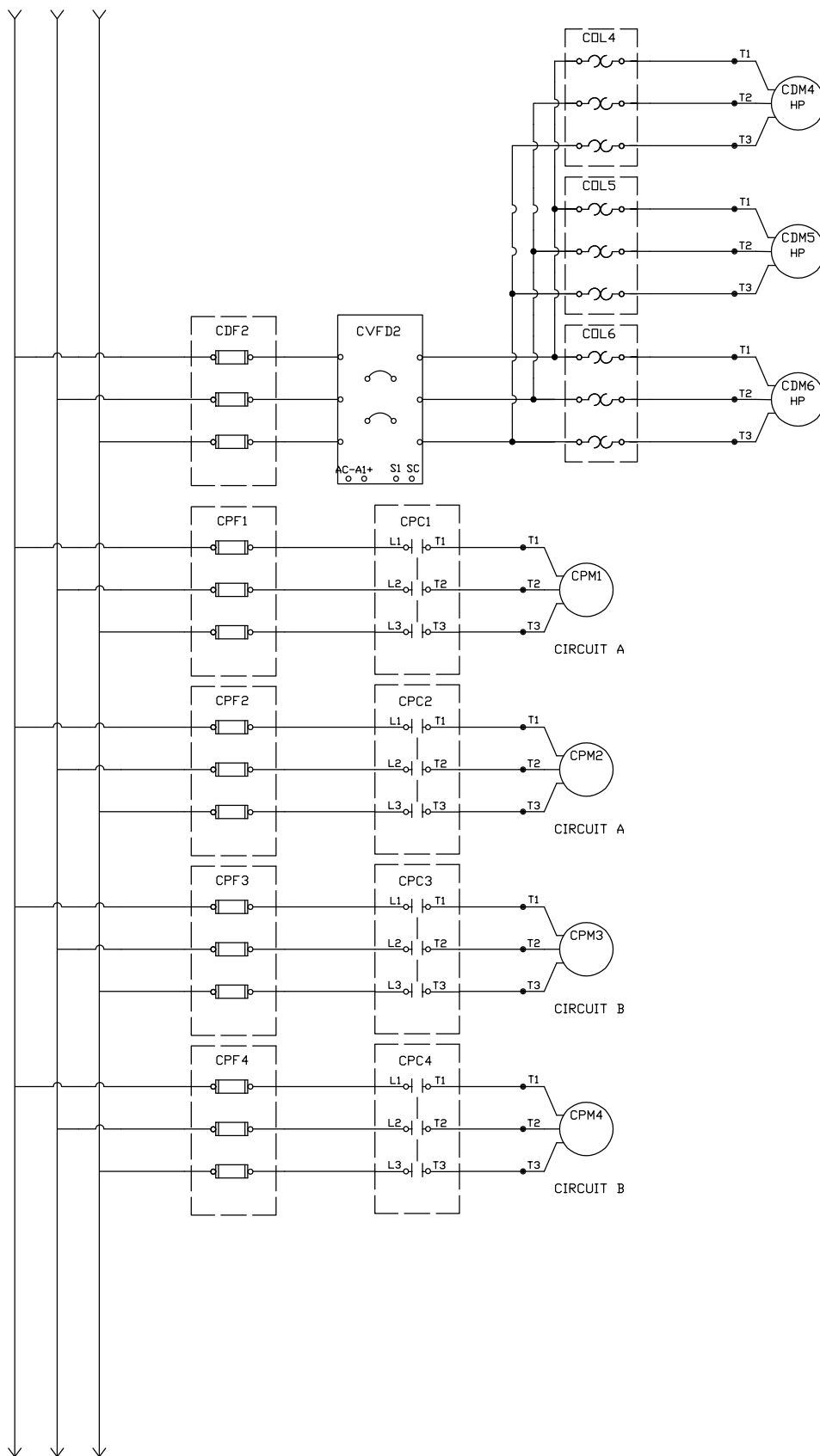
— FACTORY WIRING  
 ..... FIELD WIRING  
 NOTE:  
 CONTROL SCHEME SHOWN

- WIRE NUT
- SCREW TERMINAL
- TERMINAL POINT IN UNIT CONTROL PANEL
- △ TERMINAL POINT IN REMOTE CONTROL PANEL
- TERMINAL POINT BY OTHERS



**Innovent**  
 Air Handling Equipment

ENGINEER M. FORD		DESCRIPTION: POWER ELECTRICAL SCHEMATIC 1	
DRAWN BY: MAF		PROJECT: Honey Creek Resort	
JOB # 2300633		TAG # ERV-1	
FILE NAME:	DATE: 7/9/2024	MODEL #	REV #:
SEE UNIT DRAWING FOR MODEL #			



— FACTORY WIRING  
 ..... FIELD WIRING  
 NOTE:  
 CONTROL SCHEME SHOWN

- WIRE NUT
- SCREW TERMINAL
- TERMINAL POINT IN UNIT CONTROL PANEL
- △ TERMINAL POINT IN REMOTE CONTROL PANEL
- TERMINAL POINT BY OTHERS

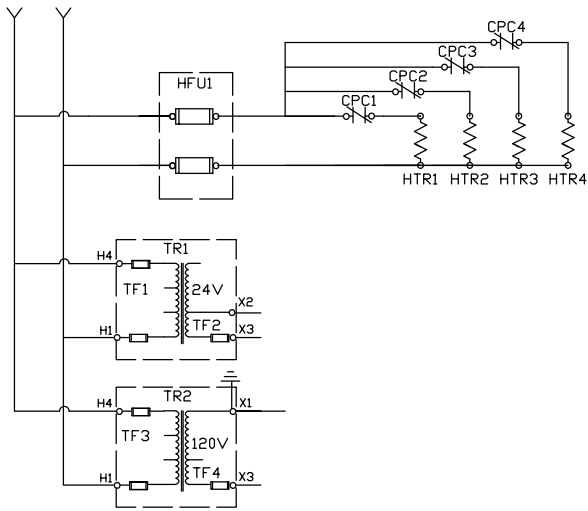


**Innovent**  
 Air Handling Equipment

ENGINEER  
 M. FORD  
 DRAWN BY:  
 MAF  
 JOB #  
 2300633  
 FILE NAME: DATE:  
 7/9/2024


DESCRIPTION:  
 POWER ELECTRICAL SCHEMATIC 2  
 PROJECT:  
 Honey Creek Resort  
 TAG #  
 ERV-1  
 MODEL #  
 SEE UNIT DRAWING FOR MODEL #

REV #:



— FACTORY WIRING  
 ..... FIELD WIRING  
 NOTE:  
 CONTROL SCHEME SHOWN

- WIRE NUT
- SCREW TERMINAL
- TERMINAL POINT IN UNIT CONTROL PANEL
- △ TERMINAL POINT IN REMOTE CONTROL PANEL
- TERMINAL POINT BY OTHERS

	ENGINEER M. FORD		DESCRIPTION: POWER ELECTRICAL SCHEMATIC 3	
	DRAWN BY: MAF		PROJECT: Honey Creek Resort	
	JOB # 2300633		TAG # ERV-1	REV #:
	FILE NAME:	DATE: 7/9/2024	MODEL # SEE UNIT DRAWING FOR MODEL #	

# ***Components Provided By Innovent***

## ***Field Installed by Others***

### **ERV-1**

- Spare Outside Air Filters
- Spare Return Air Filters
- Exhaust Air Hood(s)

## UNISON COMFORT TECHNOLOGIES LIMITED WARRANTY & DISCLAIMER POLICY

(Please read the Unison Comfort Technologies terms and conditions of sale Section 9 for additional details, conditions and exclusions.)

### PRODUCT WARRANTY

Unison warrants that at the time of delivery and for a period of twelve (12) months from the initial startup or eighteen (18) months from the date of shipment, whichever is less, its products will be free from defects in materials and manufacture, provided that the products have been installed properly, maintained and operated under normal conditions and serviced in accordance with Unison's instructions, and are operating within capacities and ratings set forth in design specifications. **Labor or consumable parts are not included in this limited standard product warranty.** Consumable parts include, but are not limited to, refrigerant, belts and filters.

### START-UP LABOR LIMITED WARRANTY

While labor is not included in the Unison standard product warranty, Unison offers a limited labor warranty, for a period beginning on the start-up date and continuing for sixty (60) days, with the completion and documentation of a qualified start-up. The limited labor warranty will not be available if the product warranty has expired.

Start-up services are included on all Innovent compressorized products, and may be available as an option on other Innovent products. These services must be performed by a Factory Certified Technician ("FCT"). Startup services include verifying proper operation of the unit, including proper refrigerant charge and repair of minor refrigerant leaks outside the coil. At the completion of start-up, an approved start-up record must be submitted to the Innovent service department for processing. Once the start-up record is received, the (60) day limited labor warranty, from date of start-up, will be activated. Labor associated with the diagnosis, validation and repair of warranty parts failures will be covered outside of the start-up, at a negotiated labor rate.

### CONSIDERATIONS REGARDING PARTS-SUPPLIED-BY-OTHERS

Unison may supply equipment at a customer's request which has components, like controls, sensors, drives, which are engineered, provided, programmed or configured by other non-Unison parties. Unison does not provide a warranty for these parts or components. These components can be mounted in the factory or at the jobsite. In these instances, Unison's support is limited to verification of basic functionality of the components and not the overall operation or integration of the equipment within the overall building HVAC system. As stated in the Unison Terms & Conditions – *No warranty herein extended shall apply to repair or correction of conditions arising from improper or incorrectly connected air duct, piping, wiring, power supply, blown fuses, freezing, improper Product control when programmed by non-Seller controls, or personnel, or by anyone other than Seller employee or its representative.* In these situations, Unison will assist in the diagnosis of issues and provide support to the customer provided the customer issues a purchase order to cover Unison's expenses in doing so.

## UNISON COMFORT TECHNOLOGIES TERMS & CONDITIONS OF SALE

ALL SALES ARE SUBJECT TO THESE UNISON COMFORT TECHNOLOGIES TERMS AND CONDITIONS OF SALES ("TERMS") AND AS CONTAINED IN UNISON'S INVOICE AND ARE ALSO SUBJECT TO UNISON'S CREDIT AND OTHER POLICIES AND PROCEDURES, WHICH ARE HEREBY INCORPORATED BY REFERENCE AND SUBJECT TO CHANGE.

**1. TERMS TO GOVERN:** These Terms shall be binding upon Unison Comfort Technologies, LLC and its subsidiaries and affiliates ("Seller") and the buyer ("Buyer"). No modification, amendment or change, whether in Buyer's purchase order, shipping release forms or otherwise shall obligate Seller, unless authorized in writing by Seller. Any different or inconsistent terms and conditions of sale contained in Buyer's forms, contracts or invoices are hereby superseded by these Terms.

**2. ACCEPTANCE & PRICES:** Any proposal offered by Seller to Buyer is valid for sixty (60) days. Upon the expiration of sixty (60) days, the proposal shall expire. Pricing shall remain valid for Seller's products ("Products") shipped within one hundred and twenty (120) days from the date of Seller's acceptance. Thereafter, prices are subject to change. Prices include transportation charges predicated on a single shipment and any partial shipments may result in additional cost to Buyer. Seller reserves the right, at any time, to withdraw a bid, quote or a price that contains an error.

**3. PAYMENT & TAXES:** Upon credit approval, payment terms for Products shipped hereunder or labor performed will be thirty (30) days net with no retainages unless contrary terms appear on the face hereof or otherwise expressly agreed to in writing by Seller. Should Buyer default in the timely payment to Seller of sums due on an order, Seller is entitled to any remedies provided in these Terms or by law. If Buyer fails to pay any amounts when due, Buyer shall pay Seller interest thereon at a periodic rate of the lesser of one and one-half percent (1.5%) per month or the maximum allowable legal interest rate, along with all costs and expenses (including without limitation reasonable attorneys' fees and disbursements and Court costs) incurred by Seller. Buyer is responsible for all sales, customs, or use tax imposed by any governmental agency, including, but not limited to, Federal, State, Local or international agencies payable on the transaction under any applicable statute, except those taxes due as a result of Seller's gross profits.

**4. PERFORMANCE:** Seller shall be obligated to furnish only the Products or labor described in the applicable purchase order or acknowledgement and agreed to in writing. The duty to perform under any order on the part of Seller and the price thereof is subject to the approval of its Credit Department, and is contingent upon the absence of strikes, accidents, floods, act(s) of terrorism, war, fires, fuel shortages, the inability to procure materials from the usual sources of supply, the requirements of the US Government (through the use of priorities or preference or any other manner) that Seller divert either the material or the furnished Product to the direct or indirect benefit of the US Government, or upon any like or unlike cause beyond the reasonable control of Seller. Upon disapproval of the Credit Department or upon the occurrence of any such event, Seller may delay performance or, at its option, renegotiate prices and terms and conditions of sale with Buyer. If Seller elects to renegotiate and Seller and Buyer are unable to agree on revised prices or terms, Seller may cancel without any liability.

**5. SHIPMENT & RISK OF LOSS:** Shipment dates are estimates only. Shipment shall be FOB factory with title passing to Buyer upon delivery to the carrier by Seller. Seller specifically rejects any order containing a time is of the essence clause or liquidated damages penalties for late shipments. Risk of loss, including but is not limited to loss of goods from shortages, damages or transit delays, shall pass to Buyer when the Products have been delivered to any transportation carrier (excluding proprietary transportation facilities of Seller). Any claims for damage to, or loss or misdelivery or damage of the Products shall be filed with Seller.

**6. CHANGES, CANCELLATION & RETURNS:** Changes requested by Buyer following Seller's acceptance of order must be approved by Seller in writing and may result in an increase in price deemed appropriate by Seller to recover all associated labor and material costs, including normal overhead and profit. If any portion of a Seller accepted order is cancelled by Buyer without default on the part of Seller or without Seller's written consent, Buyer shall be liable to Seller for cancellation charges including, but not limited to, Seller's incurred costs and such profit as would have been realized by Seller from the transaction had the agreement not been breached by Buyer. Products shall not be returned except by written permission of Seller pursuant to Seller's return policy.

**7. AUTHORITY OF AGENTS:** No agent, employee or representative of Seller has the authority to bind Seller to any affirmation, representation or warranty concerning the Product or labor sold, except for Seller's authorized agents, employees or representatives.

**8. INDEMNITY:** Seller shall protect and indemnify Buyer from and against all claims, damages, judgments and loss arising from infringement or alleged infringement of any United States patent by any of the articles or material delivered hereunder, provided that in the event of suit or threat of suit for patent infringement, Seller shall promptly be notified and given full opportunity to negotiate a settlement. Seller does not warrant against infringement by reason of Buyer's design of the articles or the use thereof in combination with other materials, or in the operation of any process. In the event of litigation, Buyer agrees reasonably to cooperate with Seller. All parties concerned shall be entitled, in connection with any proceeding under the provisions of this Article, to be represented by counsel at their own expense. Seller shall also defend, indemnify and hold harmless Buyer from any third party personal injury, wrongful death or property damage caused solely by Seller's negligent act(s). Buyer shall defend, indemnify and hold Seller harmless from any personal injury, wrongful death or property damage caused by Buyer's negligent or intentional act(s).

**9. LIMITED WARRANTY AND DISCLAIMER:** Seller warrants that at the time of delivery and for a period of twelve (12) months from the initial startup ("Start-Up") or eighteen (18) months from date of shipment, whichever is less, Products will be free from defects in material and manufacture provided that Products have been installed with proper Start-Up, maintained and operated under normal conditions for service in accordance with the instructions of Seller, and that Products have the capacities and ratings set forth in Seller's design specifications. No warranty is made against corrosion, erosion or deterioration. At Seller's option, Seller's obligations and liabilities under this warranty are limited to repair of Products or replacement of components for Products not conforming to this warranty. Limited warranty does not cover labor for component replacement. Once Seller's service department has been notified and approved any warranty related service work, Seller will repair or replace components as needed and ship FOB factory. Seller shall not be obligated to pay for the cost of lost refrigerant. Consumable parts and Products that are consumable in nature are explicitly excluded from this warranty. Consumables include, but are not limited to, belts, filters, and refrigerant. No warranty or liability whatever shall attach to Seller until full payment has been received. No warranty herein extended shall apply to repair or correction of conditions arising from improper or incorrectly connected air duct, piping, wiring, power supply, blown fuses, freezing, improper Product control when programmed by non-Seller controls, or personnel, or by anyone other than Seller employee or its representative. Operation of Products for temporary conditioning of a building during construction without the written consent of an officer of the Seller immediately voids any warranty coverage. If the Product is replaced, the replacement may not be new, but will be in good working order and at least functionally equivalent to the item or Product replaced. The replacement assumes the warranty status of the replaced Product. The warranty period does not start over. **THIS LIMITED WARRANTY IS IMMEDIATELY VOIDED AND CANCELLED BY ANY MISUSE, NEGLIGENCE, FAILURE TO FOLLOW INSTRUCTIONS, OR MANUALS OF INSTALLATION OR MAINTENANCE REPAIR, SERVICE, RELOCATION OR ALTERATION TO OR OF, OR OTHER TAMPERING WITH, THE PRODUCTS PERFORMED BY ANY PERSON OR ENTITY OTHER THAN SELLER WITHOUT SELLER'S PRIOR WRITTEN APPROVAL OR ANY USE OF REPLACEMENT PARTS NOT SUPPLIED BY SELLER WITH RESPECT TO THE AFFECTED PRODUCTS. BACK CHARGES RESULTING FROM CLAIMS UNDER THE WARRANTY SHALL BE RECOGNIZED ONLY WHEN PREVIOUSLY AUTHORIZED IN WRITING BY SELLER. THE WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES WHETHER IN CONTRACT, TORT, OR IN NEGLIGENCE, EXPRESSED OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE. SELLER PROVIDES NO INDEPENDENT WARRANTY FOR THIRD PARTY PRODUCTS OR COMPONENTS SOLD TOGETHER OR INCORPORATED WITH SELLER'S PRODUCT(S).**

**10. LIABILITY DISCLAIMER:** TO THE MAXIMUM EXTENT PERMITTED BY LAW, SELLER'S TOTAL LIABILITY FOR CLAIMS, REGARDLESS OF THE FORM OF ACTION OR THEORY OF LIABILITY (INCLUDING CONTRACT, TORT OR WARRANTY), SHALL BE LIMITED TO THE FEES PAID TO SELLER BY BUYER FOR THE PRODUCTS OR LABOR ALLEGED TO CAUSE THE DAMAGE. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, PUNITIVE, OR INDIRECT DAMAGES OF ANY KIND (INCLUDING, WITHOUT LIMITATION, LOST PROFITS, LOSS OF USE, OR CLAIMS OF THIRD PARTIES) THAT MIGHT OCCUR AS A RESULT OF THE PERFORMANCE OR BREACH OF THE AGREEMENT OR IN ANY WAY ARISING OUT OF OR IN CONNECTION WITH THE AGREEMENT.

**11. ASSIGNMENT:** No right or interest may be assigned by Buyer, nor may any obligation or performance delegated by Buyer without Seller's written permission. Any attempted assignment or delegation shall be void and ineffective for all purposes. Seller may assign its rights or obligations under this Agreement in the event of a merger or change of control of Seller.

**12. GOVERNING LAW:** This agreement shall be governed and construed in accordance with the laws State of Minnesota. Buyer consents to jurisdiction in the Circuit Court of Hennepin County, Minnesota.

**13. EXPORT CONTROLS:** Buyer shall comply with the export laws and regulations of the United States and other applicable jurisdictions with regard to Products and labor. Buyer agrees it shall not export or enter into an agreement for the export any goods from Seller to any prohibited or embargoed country or to any denied, blocked or restricted person or entity including those so designated by the US Dept. of Commerce or Treasury.

**14. MISCELLANEOUS:** In the event that any provision of this Agreement is held invalid by the final judgment of any court of competent jurisdiction, the remaining provisions shall remain in full force and effect as if such invalid provision had not been included herein. The waiver or failure of either party to enforce the terms of this Agreement in one or multiple instances shall not constitute a waiver of that party's rights under this Agreement with respect to other violations. The titles and headings used herein are for convenience only and do not constitute any part of this Agreement. Those sections of this Agreement, which by their nature are intended to survive, shall survive termination of this Agreement. The prevailing party may recover their attorney fees and reasonable out-of-pocket expenses.