

DRAWING TRANSMITTAL SHEET



JOB NO. DK9631(TS1200)

DATE April 11, 2023

**CINCINNATI
SALES OFFICE**
4355 FERGUSON DRIVE, SUITE 220
CINCINNATI OHIO
45245
(513) 528-9570

**HEAD OFFICE
& FACTORY**
DESOTO KANSAS

**OTHER USA
SALES OFFICES**
AUSTIN, CHARLOTTE, CHICAGO, CLEVELAND, COLUMBUS,
DALLAS, DENVER, DESOTO, HOUSTON, INDIANAPOLIS,
KANSAS CITY, OMAHA, ORLANDO, PITTSBURGH,
PORTLAND, RICHMOND, ST LOUIS, WASHINGTON

CONTRACTOR	GREAT OAKS INSTITUTE OF TECH
ADDRESS	& CAREER DEVELOP CENTERS
	3254 E Kemper Rd
	Cincinnati OH 45241-6421
ENGINEER	HEAPY ENGINEERING
JOB NAME	SCARLET OAKS 2023

THIS ORDER IS SUBJECT TO APPROVAL. MANUFACTURING IS HELD PENDING RETURN OF ONE APPROVED COPY OF THESE FORMS TO THE INDICATED OFFICE.

THIS ORDER IS NOT SUBJECT TO APPROVAL AND IS BEING MANUFACTURED ACCORDING TO THE ATTACHED FORMS.

COPIES ENCLOSED	DESCRIPTION
1	EngA Submittal Revision Summary
1	EngA Submittal Record RTU-10
1	EngA Mechanical Drawing DK9631M-10-1
1	EngA Mechanical Drawing DK9631Z-10-1
1	EngA Internal Wiring Diagram DK9631E-10-1
1	EngA Internal Wiring Diagram DK9631E-10-2
1	EngA Electrical Data Sheet RTU-10
1	EngA Field Wiring Diagram DK9631F-10-1
1	EngA Submittal Record RTU-11
1	EngA Mechanical Drawing DK9631M-11-1
1	EngA Mechanical Drawing DK9631Z-11-1
1	EngA Internal Wiring Diagram DK9631E-11-1
1	EngA Internal Wiring Diagram DK9631E-11-2
1	EngA Electrical Data Sheet RTU-11
1	EngA Field Wiring Diagram DK9631F-11-1
1	EngA Submittal Record RTU-12
1	EngA Mechanical Drawing DK9631M-12-1
1	EngA Mechanical Drawing DK9631Z-12-1
1	EngA Internal Wiring Diagram DK9631E-12-1
1	EngA Internal Wiring Diagram DK9631E-12-2
1	EngA Electrical Data Sheet RTU-12
1	EngA Field Wiring Diagram DK9631F-12-1

DRAWING TRANSMITTAL SHEET



JOB NO. DK9631(TS1200)

DATE April 11, 2023

COPIES ENCLOSED	DESCRIPTION
1	EngA Submittal Record RTU-13
1	EngA Mechanical Drawing DK9631M-13-1
1	EngA Mechanical Drawing DK9631Z-13-1
1	EngA Internal Wiring Diagram DK9631E-13-1
1	EngA Internal Wiring Diagram DK9631E-13-2
1	EngA Electrical Data Sheet RTU-13
1	EngA Field Wiring Diagram DK9631F-13-1
1	EngA Submittal Record RTU-14
1	EngA Mechanical Drawing DK9631M-14-1
1	EngA Mechanical Drawing DK9631Z-14-1
1	EngA Internal Wiring Diagram DK9631E-14-1
1	EngA Internal Wiring Diagram DK9631E-14-2
1	EngA Electrical Data Sheet RTU-14
1	EngA Field Wiring Diagram DK9631F-14-1
1	EngA Submittal Record RTU-15
1	EngA Mechanical Drawing DK9631M-15-1
1	EngA Mechanical Drawing DK9631Z-15-1
1	EngA Internal Wiring Diagram DK9631E-15-1
1	EngA Internal Wiring Diagram DK9631E-15-2
1	EngA Electrical Data Sheet RTU-15
1	EngA Field Wiring Diagram DK9631F-15-1
1	EngA Submittal Record RTU-16
1	EngA Mechanical Drawing DK9631M-16-1
1	EngA Mechanical Drawing DK9631Z-16-1
1	EngA Internal Wiring Diagram DK9631E-16-1
1	EngA Internal Wiring Diagram DK9631E-16-2
1	EngA Electrical Data Sheet RTU-16
1	EngA Field Wiring Diagram DK9631F-16-1
1	EngA Submittal Record RTU-17
1	EngA Mechanical Drawing DK9631M-17-1
1	EngA Mechanical Drawing DK9631Z-17-1
1	EngA Internal Wiring Diagram DK9631E-17-1
1	EngA Internal Wiring Diagram DK9631E-17-2
1	EngA Electrical Data Sheet RTU-17
1	EngA Field Wiring Diagram DK9631F-17-1
1	EngA Submittal Record RTU-18
1	EngA Mechanical Drawing DK9631M-18-1

DRAWING TRANSMITTAL SHEET



JOB NO. DK9631(TS1200)

DATE April 11, 2023

COPIES ENCLOSED	DESCRIPTION
1	EngA Mechanical Drawing DK9631Z-18-1
1	EngA Internal Wiring Diagram DK9631E-18-1
1	EngA Internal Wiring Diagram DK9631E-18-2
1	EngA Electrical Data Sheet RTU-18
1	EngA Field Wiring Diagram DK9631F-18-1
1	EngA Submittal Record RTU-19
1	EngA Mechanical Drawing DK9631M-19-1
1	EngA Mechanical Drawing DK9631Z-19-1
1	EngA Internal Wiring Diagram DK9631E-19-1
1	EngA Internal Wiring Diagram DK9631E-19-2
1	EngA Electrical Data Sheet RTU-19
1	EngA Field Wiring Diagram DK9631F-19-1
1	EngA Submittal Record RTU-20
1	EngA Mechanical Drawing DK9631M-20-1
1	EngA Mechanical Drawing DK9631Z-20-1
1	EngA Internal Wiring Diagram DK9631E-20-1
1	EngA Internal Wiring Diagram DK9631E-20-2
1	EngA Electrical Data Sheet RTU-20
1	EngA Field Wiring Diagram DK9631F-20-1
1	EngA Submittal Record RTU-21
1	EngA Mechanical Drawing DK9631M-21-1
1	EngA Mechanical Drawing DK9631Z-21-1
1	EngA Internal Wiring Diagram DK9631E-21-1
1	EngA Internal Wiring Diagram DK9631E-21-2
1	EngA Electrical Data Sheet RTU-21
1	EngA Field Wiring Diagram DK9631F-21-1
1	EngA Submittal Record RTU-25
1	EngA Mechanical Drawing DK9631M-25-1
1	EngA Mechanical Drawing DK9631Z-25-1
1	EngA Internal Wiring Diagram DK9631E-25-1
1	EngA Internal Wiring Diagram DK9631E-25-2
1	EngA Electrical Data Sheet RTU-25
1	EngA Field Wiring Diagram DK9631F-25-1
1	EngA Submittal Record RTU-26
1	EngA Mechanical Drawing DK9631M-26-1
1	EngA Mechanical Drawing DK9631Z-26-1
1	EngA Internal Wiring Diagram DK9631E-26-1

DRAWING TRANSMITTAL SHEET



JOB NO. DK9631(TS1200)

DATE April 11, 2023

COPIES ENCLOSED	DESCRIPTION
1	EngA Internal Wiring Diagram DK9631E-26-2
1	EngA Electrical Data Sheet RTU-26
1	EngA Field Wiring Diagram DK9631F-26-1
1	EngA Submittal Record RTU-27
1	EngA Mechanical Drawing DK9631M-27-1
1	EngA Mechanical Drawing DK9631Z-27-1
1	EngA Internal Wiring Diagram DK9631E-27-1
1	EngA Internal Wiring Diagram DK9631E-27-2
1	EngA Electrical Data Sheet RTU-27
1	EngA Field Wiring Diagram DK9631F-27-1
1	EngA Submittal Record RTU-28
1	EngA Mechanical Drawing DK9631M-28-1
1	EngA Multizone Discharge Head RTU-28
1	EngA Internal Wiring Diagram DK9631E-28-1
1	EngA Internal Wiring Diagram DK9631E-28-2
1	EngA Electrical Data Sheet RTU-28
1	EngA Field Wiring Diagram DK9631F-28-1
1	EngA Submittal Record RTU-29
1	EngA Mechanical Drawing DK9631M-29-1
1	EngA Mechanical Drawing DK9631Z-29-1
1	EngA Internal Wiring Diagram DK9631E-29-1
1	EngA Internal Wiring Diagram DK9631E-29-2
1	EngA Electrical Data Sheet RTU-29
1	EngA Field Wiring Diagram DK9631F-29-1
1	EngA Submittal Record RTU-41
1	EngA Mechanical Drawing DK9631M-41-01
1	EngA Internal Wiring Diagram DK9631E-41-1
1	EngA Internal Wiring Diagram DK9631E-41-2
1	EngA Electrical Data Sheet RTU-41
1	EngA Field Wiring Diagram DK9631F-41-1
1	EngA Submittal Record RTU-42
1	EngA Mechanical Drawing DK9631M-42-01
1	EngA Internal Wiring Diagram DK9631E-42-1
1	EngA Internal Wiring Diagram DK9631E-42-2
1	EngA Electrical Data Sheet RTU-42
1	EngA Field Wiring Diagram DK9631F-42-1



SUBMITTAL REVISIONS

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

CUSTOMER: GREAT OAKS INSTITUTE OF TECH

ENGINEER: HEAPY ENGINEERING

REVISION DATE: Apr 11, 2023

CHANGES AND/OR REVISIONS MADE TO THIS ORDER:

April 11 2023

RTU-15,-16,-17,-18,-19,-20

-Changed disconnects to shipped loose, field installed.

March 20 2023

RTU-15

-Corrected MCA for 2hp VFD

RTU-7-21, 25-28, 41-42

-Added VFD subfusing

FEB 21 2023

RTU-9

-Corrected multizone transformer size.

RTU-10

-Corrected multizone transformer size.

RTU-11

-Corrected multizone transformer size.

RTU-13

-Corrected multizone transformer size.

RTU-14

-Corrected multizone transformer size.

RTU-15

-Corrected multizone transformer size.

JAN 23 2023

RTU-16

-Updated Exhaust air fan

RTU-21

-Updated Exhaust air fan

-RTU-28

-Updated Exhaust air fan

(Continued on second page)

SUBMITTED BY: BRADLEY MILLER / CWJ



SUBMITTAL REVISIONS

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

CUSTOMER: GREAT OAKS INSTITUTE OF TECH

ENGINEER: HEAPY ENGINEERING

REVISION DATE: Apr 11, 2023

CHANGES AND/OR REVISIONS MADE TO THIS ORDER:

RTU-42

-Updated Exhaust air fan

JAN 13 2023

All Units

-Released to Production

RTU-7

-Upgrade SCCR to 10KA

RTU-8

-Upgrade SCCR to 8KA

RTU-9

-Upgrade SCCR to 10KA

-Upgrade Burner to 400/320MBH

RTU-10

-Upgrade SCCR to 10KA

-Upgrade Burner to 400/320MBH

RTU-11

-Upgrade SCCR to 10KA

-Upgrade Burner to 500/400MBH

RTU-12

-Upgrade SCCR to 10KA

RTU-13

-Upgrade SCCR to 10KA

RTU-14

-Upgrade SCCR to 10KA

RTU-15

-Upgrade SCCR to 10KA

RTU-16

-Upgrade SCCR to 10KA

-Upgrade Burner to 600/480MBH

RTU-17

(Continued on third page)

SUBMITTED BY: BRADLEY MILLER / CWJ



SUBMITTAL REVISIONS

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

CUSTOMER: GREAT OAKS INSTITUTE OF TECH

ENGINEER: HEAPY ENGINEEREING

REVISION DATE: Apr 11, 2023

CHANGES AND/OR REVISIONS MADE TO THIS ORDER:

-Upgrade SCCR to 10KA

-Updated cooling performance

-Updated cooling performance

RTU-18

-Upgrade SCCR to 10KA

-Updated cooling performance

RTU-19

-Upgrade SCCR to 10KA

-Updated cooling performance

RTU-20

-Upgrade SCCR to 10KA

-Upgrade Burner to 400/320MBH

-Updated cooling performance

RTU-21

-Upgrade SCCR to 10KA

-Upgrade Burner to 400/320MBH

RTU-25

-Upgrade SCCR to 10KA

-Upgrade Burner to 400/320MBH

-Updated cooling performance

RTU-26

-Upgrade SCCR to 10KA

RTU-27

-Upgrade SCCR to 10KA

-Upgrade Burner to 500/400MBH

RTU-28

-Upgrade SCCR to 14KA

RTU-29

-Upgrade SCCR to 14KA

-Upgrade Burner to 600/400MBH

-Revised Exhaust Air to 8500CFM

RTU-41

-Upgrade SCCR to 14KA

(Continued on fourth page)

SUBMITTED BY: BRADLEY MILLER / CWJ



SUBMITTAL REVISIONS

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

CUSTOMER: GREAT OAKS INSTITUTE OF TECH

ENGINEER: HEAPY ENGINEEREING

REVISION DATE: Apr 11, 2023

CHANGES AND/OR REVISIONS MADE TO THIS ORDER:

-Upgrade Burner to 400/320MBH

RTU-42

-Upgrade SCCR to 10KA

-Upgrade Burner to 400/320MBH

Multiple horizontal lines for additional revisions.



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-10

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6400 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6250 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>7,200 CFM</u>	FAN SIZE (2) <u>150A Alum EPFN</u>	TSP <u>4.1 in w.c.</u>	RPM <u>2893</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (3475)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>3.69 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 50 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>6,120 CFM</u>	FAN SIZE (1) <u>24B105/WPD 25°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1668</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.76 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 55.6 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-10

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

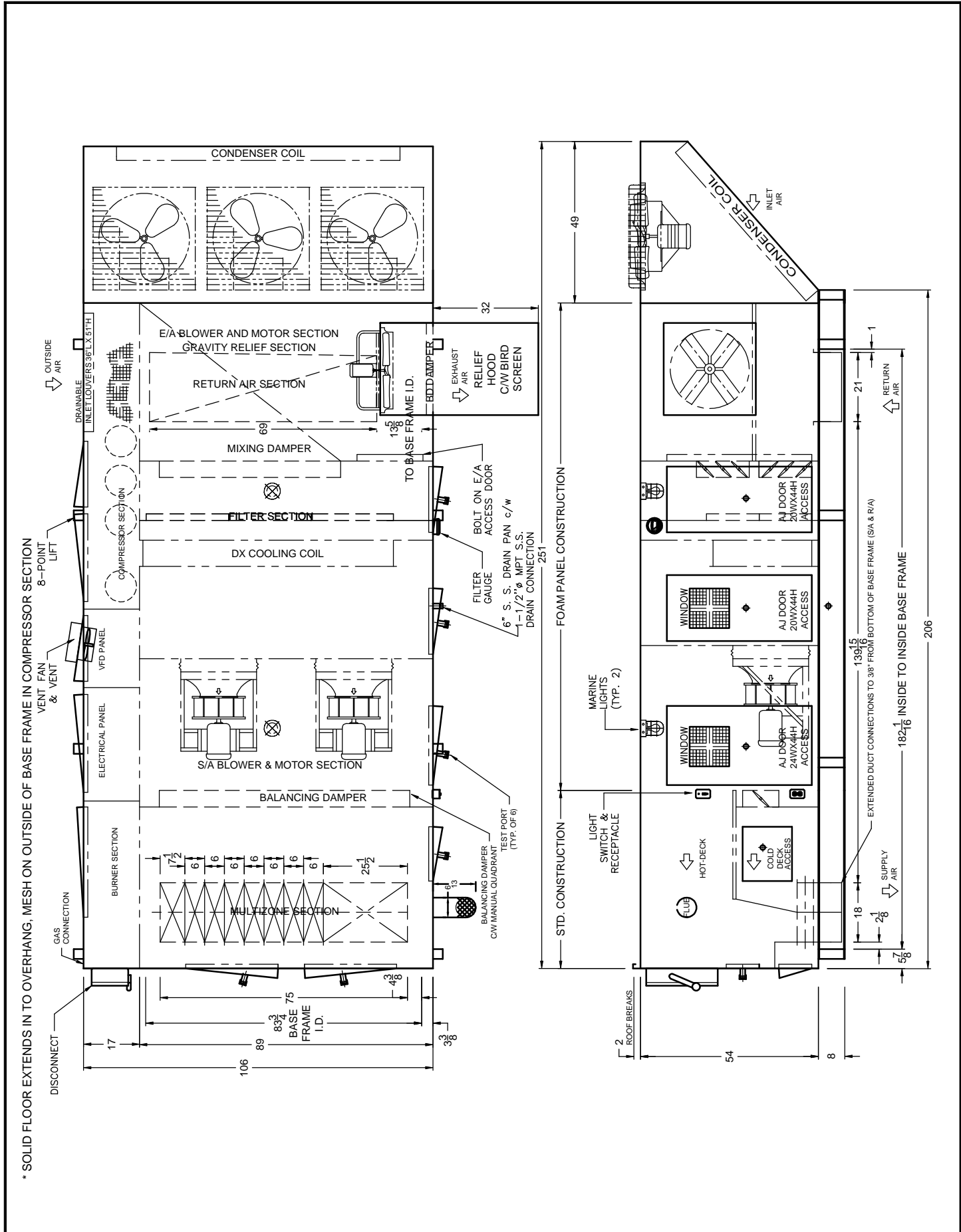
AIR COOLED DX SYSTEM DATA

COIL SIZE <u>30 x 76 x 6R x 12 FPI</u>	VELOCITY <u>444 FPM</u>	
TOTAL CAPACITY <u>262,000 Btuh</u>	AIR P.D. <u>0.77 in.wc.</u>	
SENSIBLE CAPACITY <u>194,000 Btuh</u>	MOISTURE REMOVAL <u>59.4 lb/hr</u>	
ENTERING AIR DB / WB <u>78.7°F / 65.5°F</u>	LEAVING AIR DB / WB <u>53.7°F / 53.4°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>47.8°F / 124°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP61KCE-TFD-250</u>	QUANTITY <u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

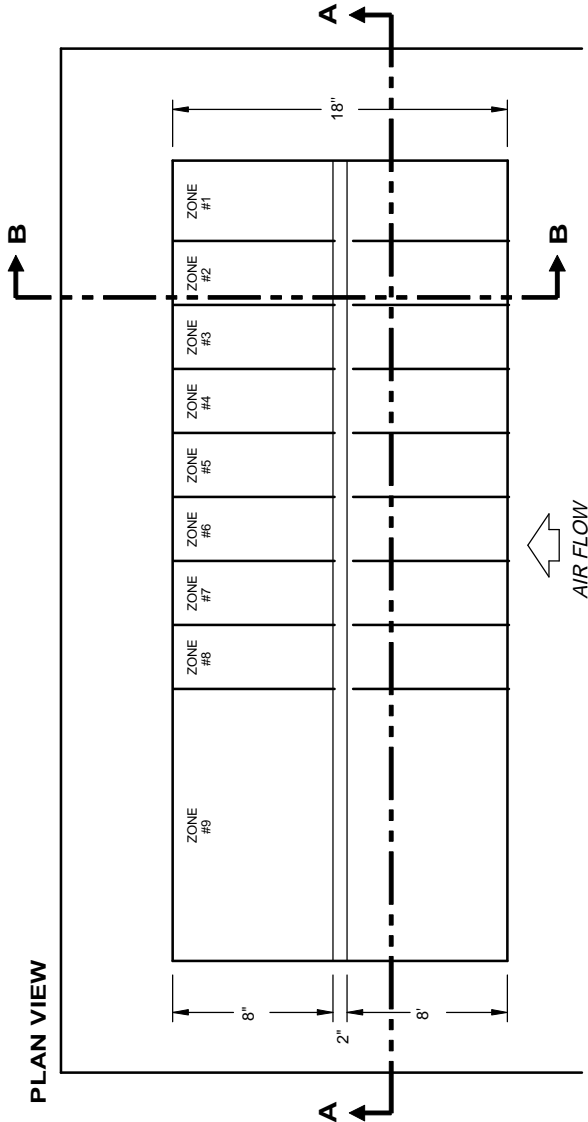
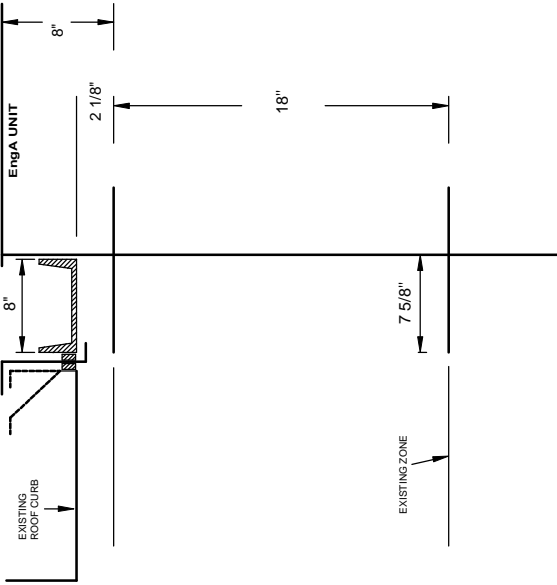
DK9631
TAG: RTU-10

FWE224/DJE40/O/M/MV/R
HEAT/COOL UNIT

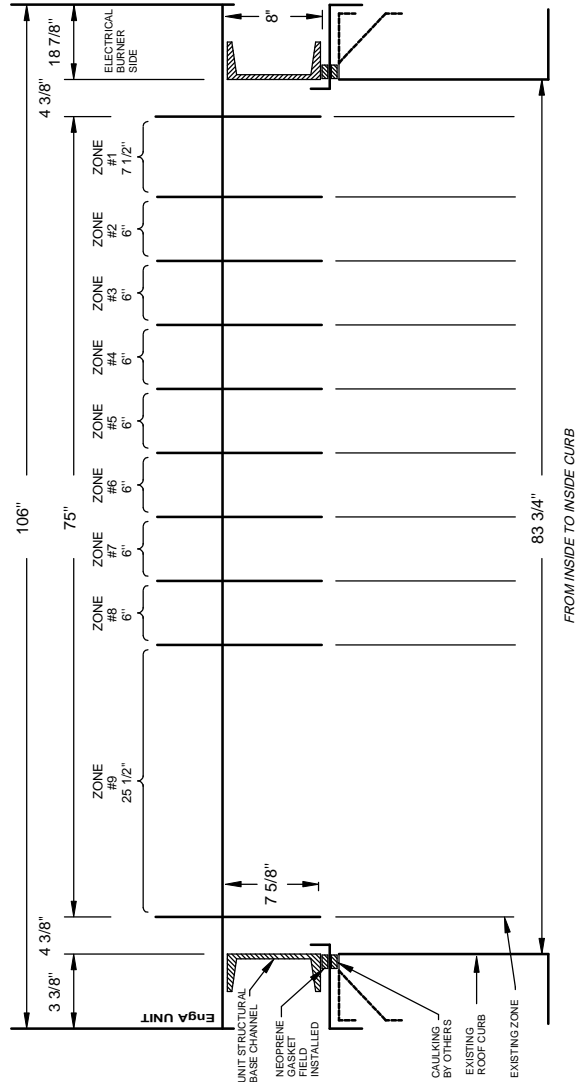


REVISIONS:			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-10-1

CROSS-SECTION VIEW B-B



CROSS-SECTION VIEW A-A



DK9631
TAG: RTU-10

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



ENGINEERED AIR



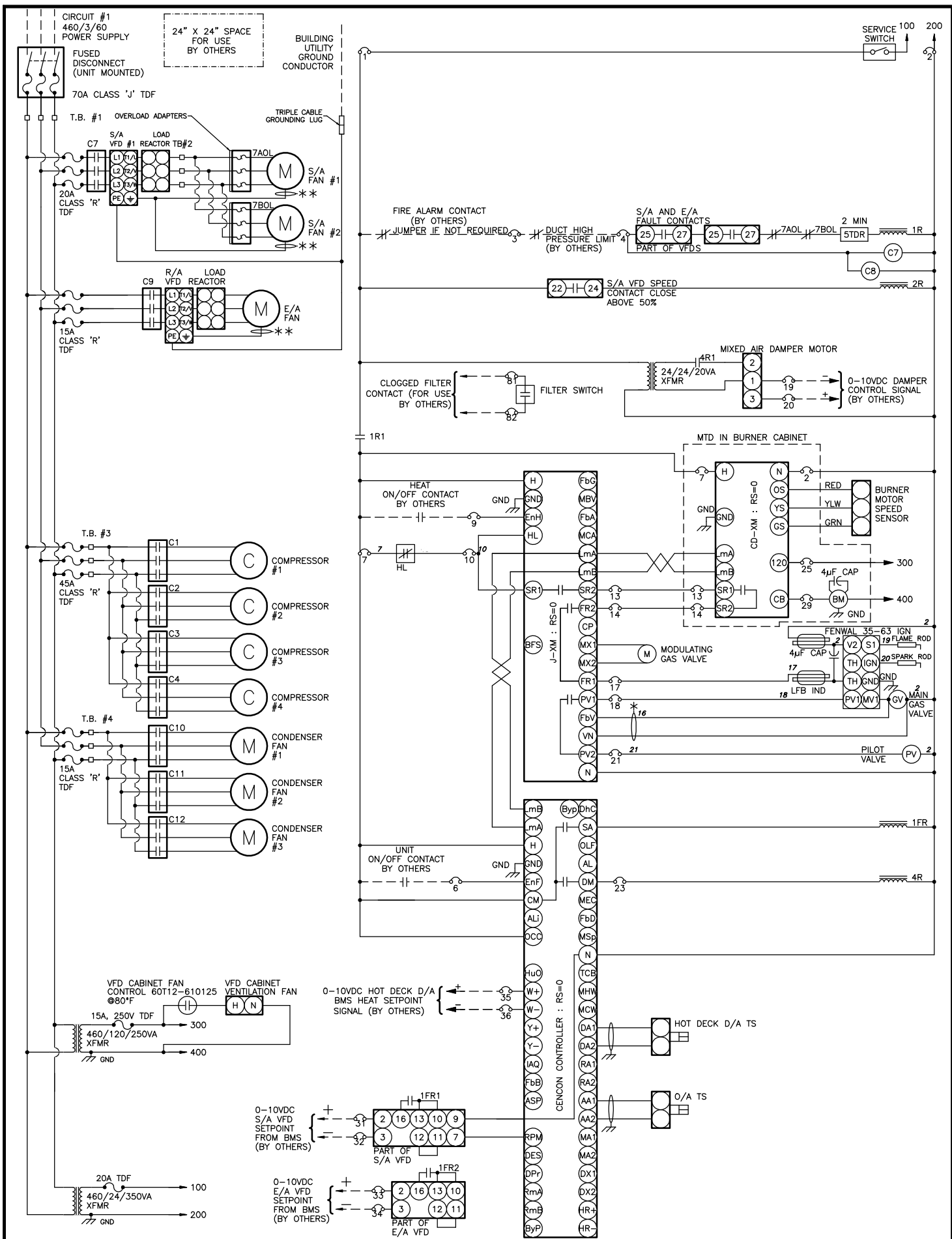
REVISIONS: DEC 20 2022

DATE:
OCT 19 2022

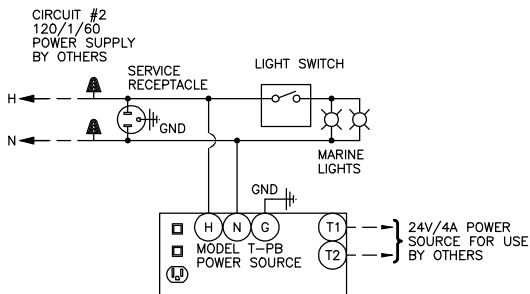
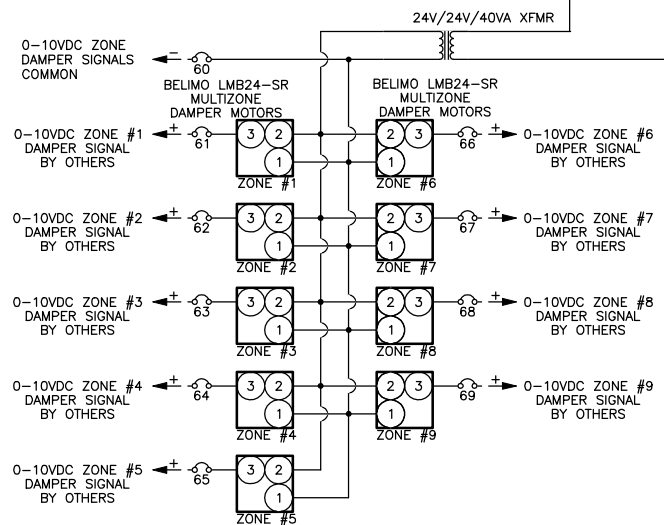
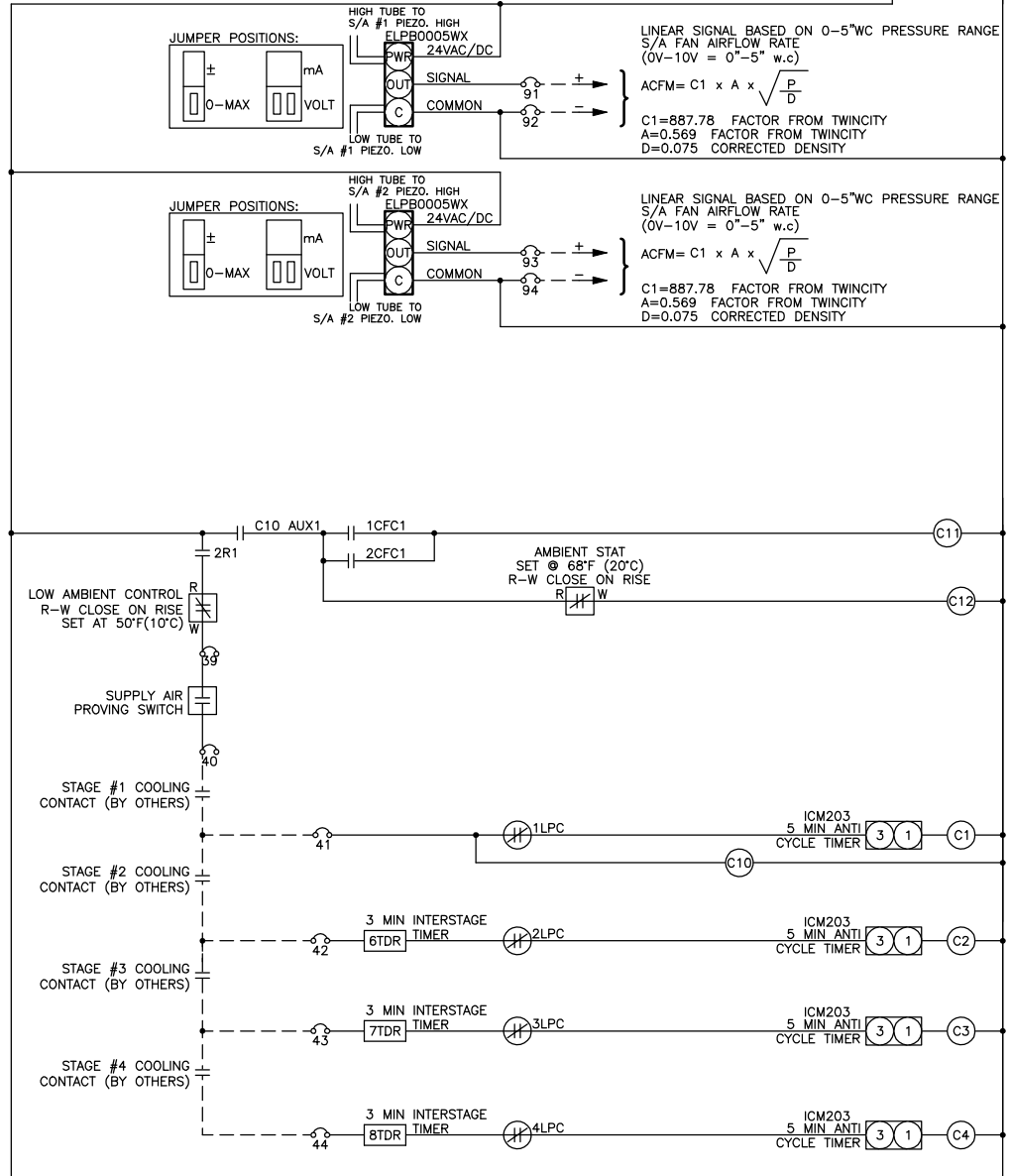
DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-10-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-10

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	65.6 AMPS	4 Awg	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #4	1	ZP61KCE-TFD-250	14 Awg	9.7 / 62.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (3475) 5 HP	14 Awg	6.3	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-70SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-10

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

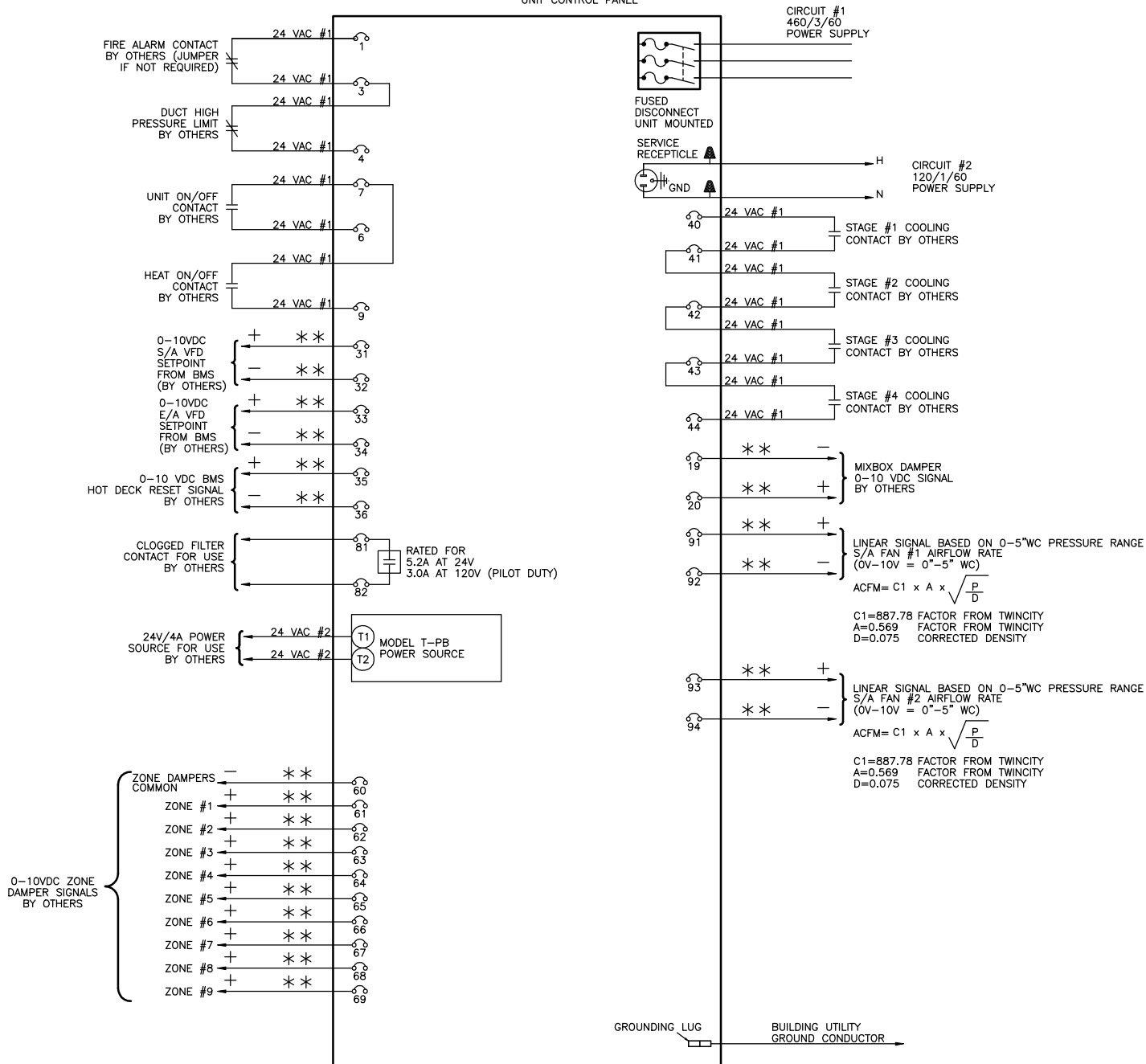
Note 1: S/A blower design speed is 2893 rpm (50Hz). speed range: 80%-110% of designed rpm. (40-54.9Hz)

Note 2: E/A blower design speed is 1668 rpm (55.6Hz). speed range: 80%-110% of designed rpm. (44.5-61.2Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-10

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 20 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-10-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE263/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-11

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>7250 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>7100 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>8,500 CFM</u>	FAN SIZE (2) <u>182 Alum EPFN</u>	TSP <u>4.3 in w.c.</u>	RPM <u>2109</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>4.14 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 72.3 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>7,225 CFM</u>	FAN SIZE (1) <u>30E4/WPD 30°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1124</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.84 BHP</u>

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 56.2 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE263/DJE60/O/M/MV/R QTY: 1 TAG: RTU-11

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-11 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	80.3 AMPS	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '14A' supply air and '3.5A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 20 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>20.83 SQ.FT.</u>	FACE VELOCITY <u>408 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-60)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>500,000 Btuh</u>	HEAT OUTPUT <u>400,000 Btuh</u> TEMP. RISE <u>44.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE263/DJE60/O/M/MV/R QTY: 1 TAG: RTU-11

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

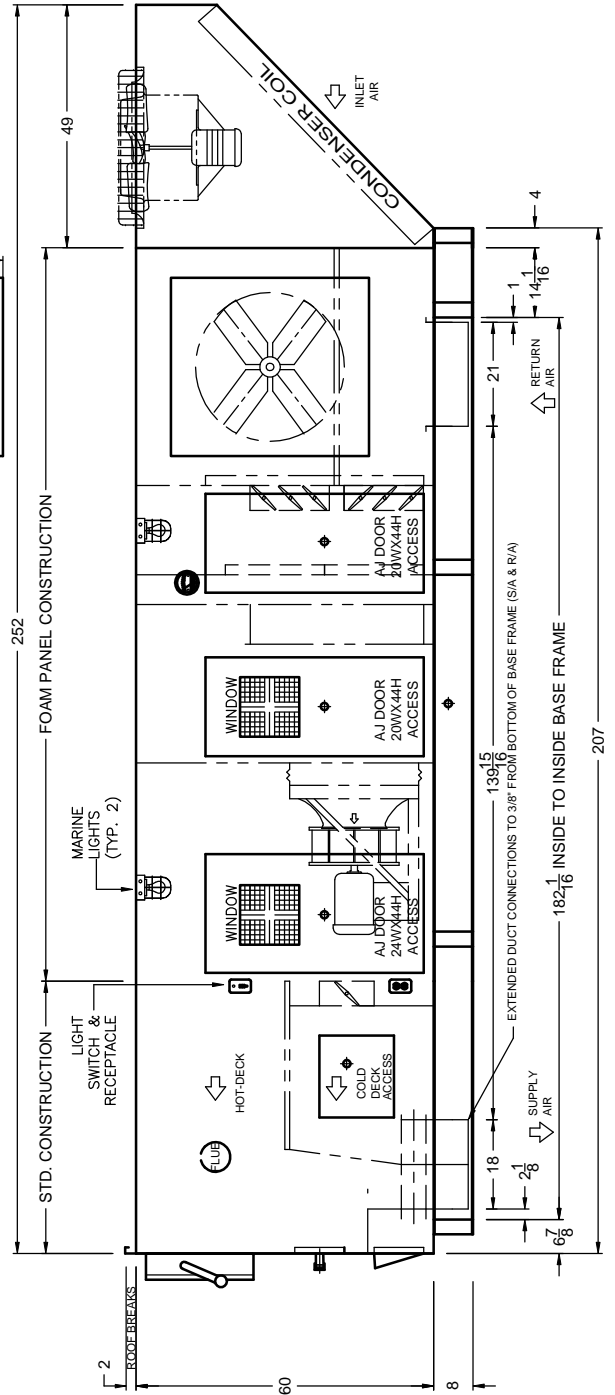
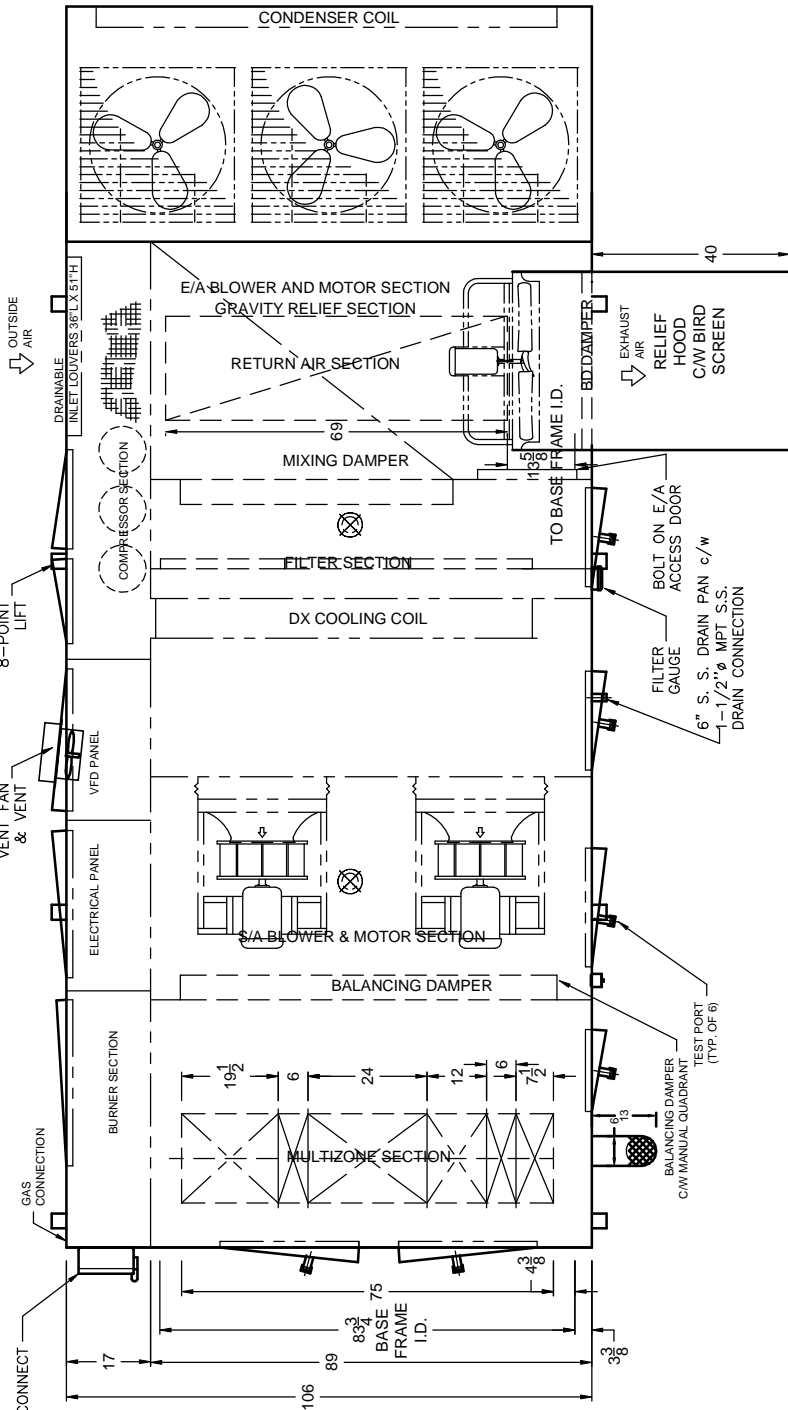
COIL SIZE	<u>35 x 76 x 6R x 10 FPI</u>	VELOCITY	<u>448 FPM</u>
TOTAL CAPACITY	<u>313,000 Btuh</u>	AIR P.D.	<u>0.72 in.wc.</u>
SENSIBLE CAPACITY	<u>226,000 Btuh</u>	MOISTURE REMOVAL	<u>76.6 lb/hr</u>
ENTERING AIR DB / WB	<u>76.9°F / 64.3°F</u>	LEAVING AIR DB / WB	<u>52.3°F / 51.7°F</u>
DESIGN AMBIENT TEMP	<u>95°F</u>	SST/SCT	<u>45°F / 125.1°F</u>
COMPRESSOR TYPE	<u>Hermetic Scroll</u>	REFRIGERANT TYPE	<u>R-410A</u>
	MODEL	QUANTITY	<u>3</u>
	<u>ZP103KCE-TFD-455</u>		

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, low pressure control and high pressure control.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.

* SOLID FLOOR EXTENDS IN TO OVERHANG. MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631

TAG: RTU-11

FWE263/DJE60/O/M/MV/R
HEAT/COOL UNIT



generated by
ProUnit

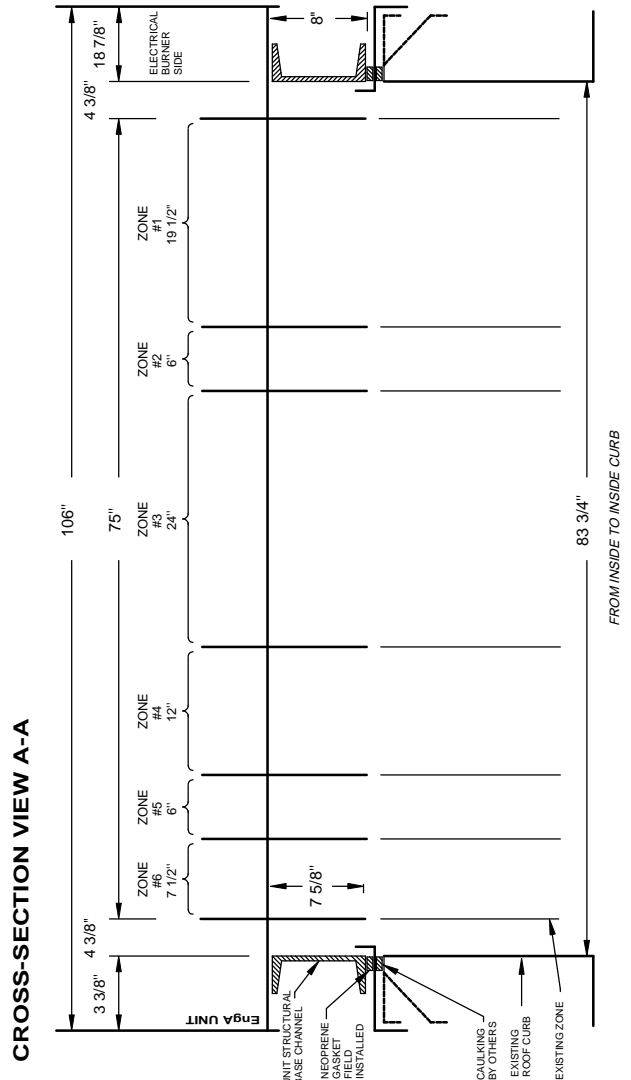
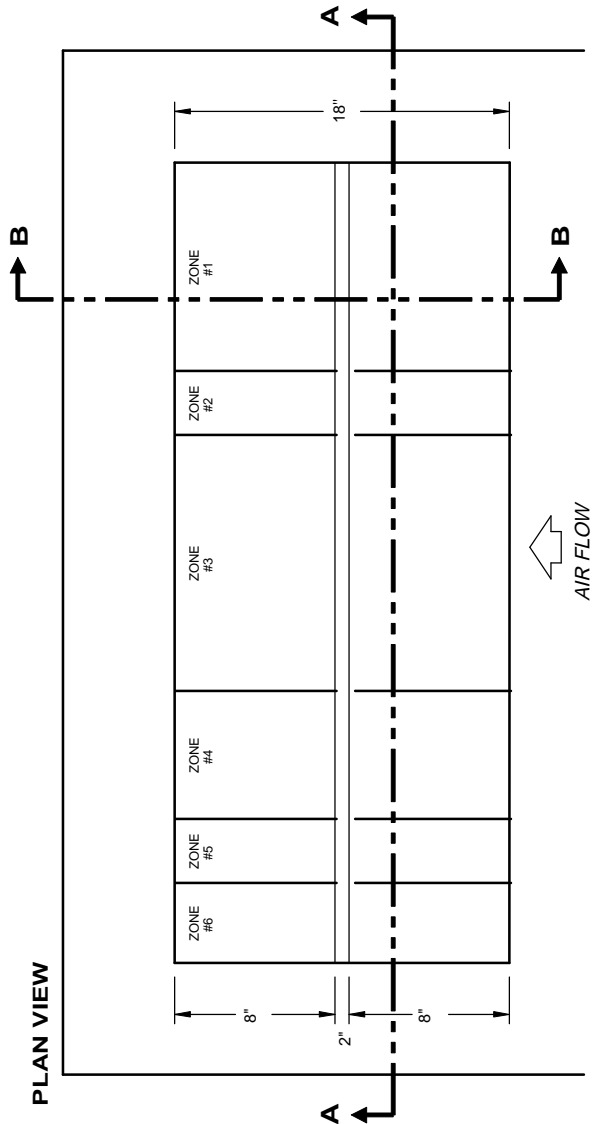
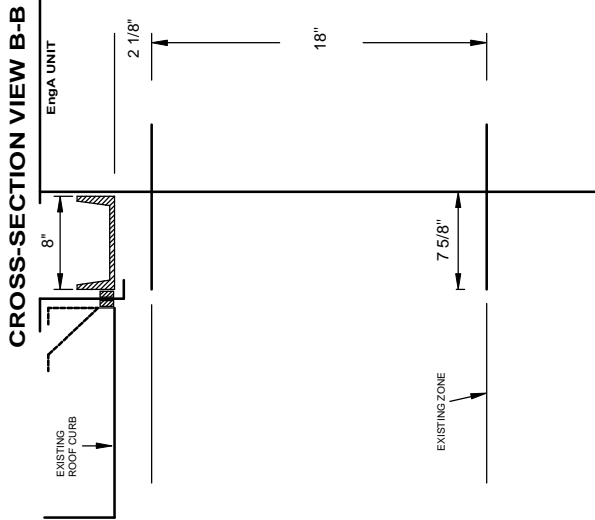
REVISIONS:

DATE:
OCT 04 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631M-11-1



DK9631
TAG: RTU-11

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



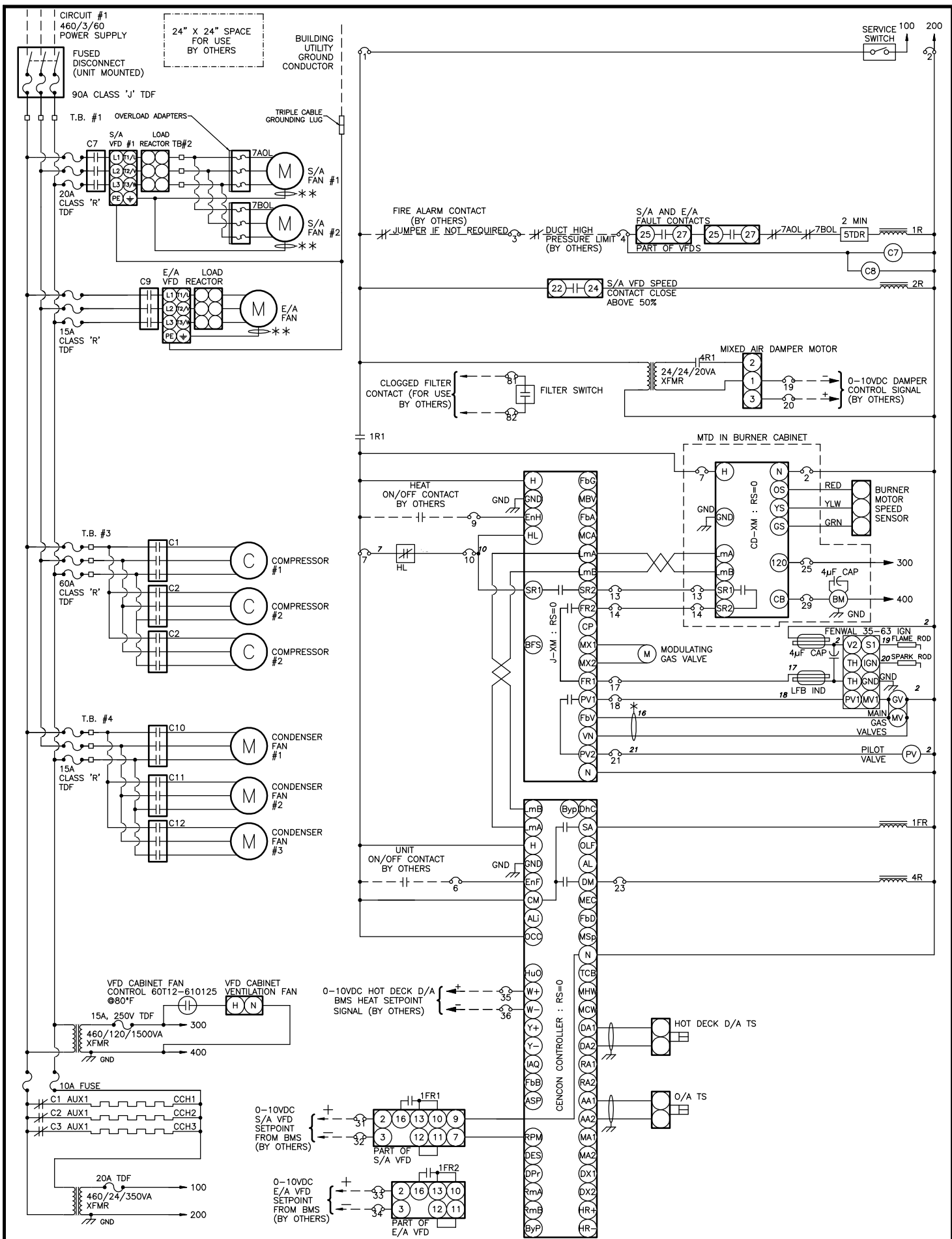
REVISIONS: DEC 20 2022

DATE:
OCT 25 2022

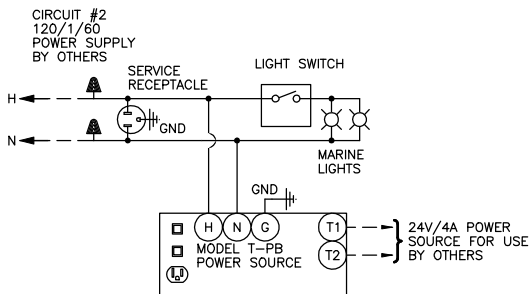
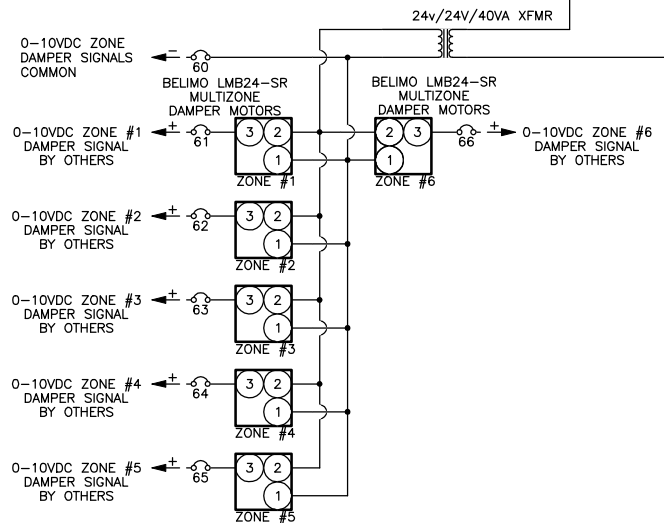
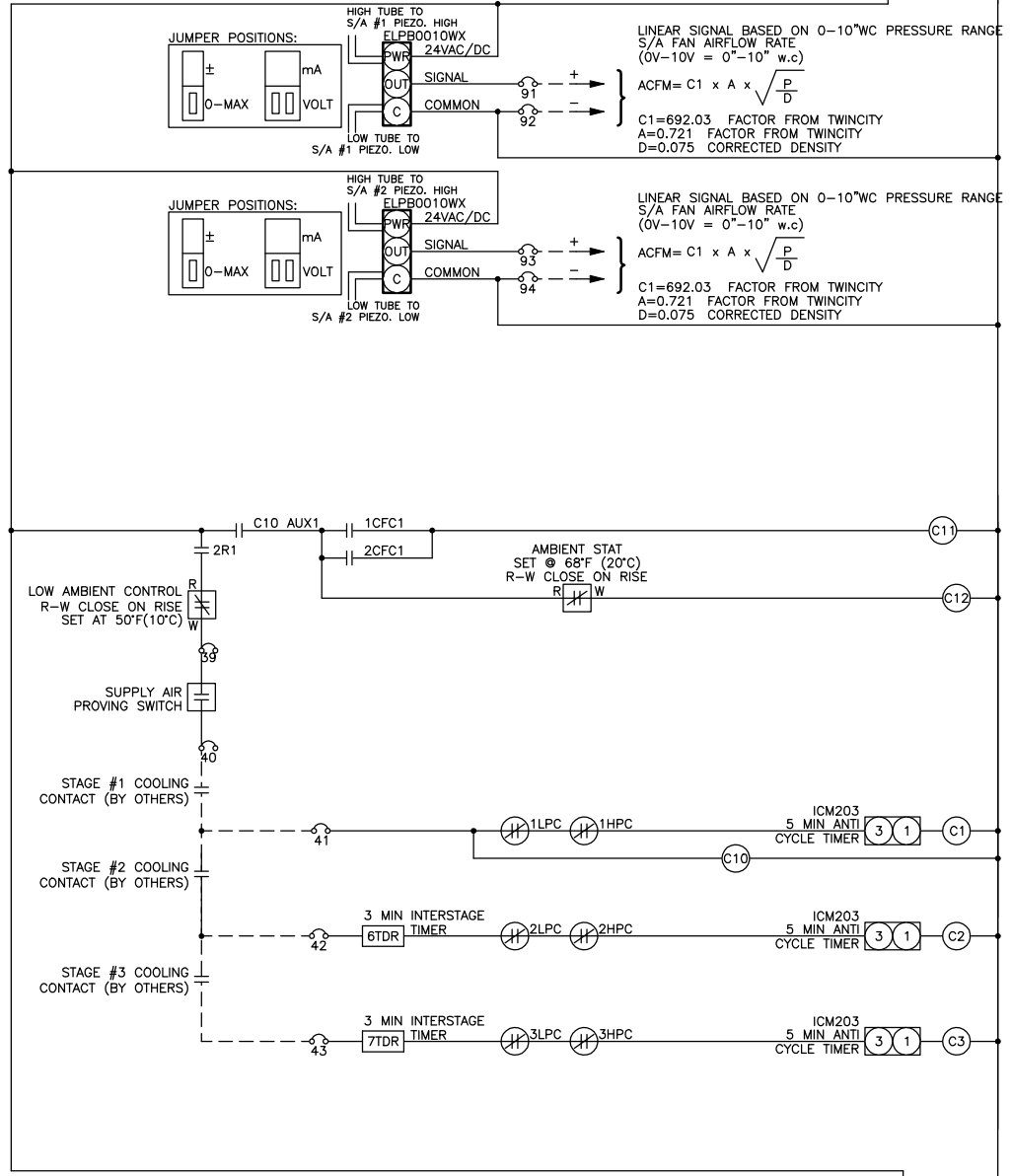
DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-11-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE263/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-11

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	80.3 AMPS	4 Awg	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/2 HP	14 Awg	8 @ 120/1/60			
Crankcase Heater (3 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	3.3			
Compressor #1 to #3	1	ZP103KCE-TFD-455	10 Awg	16.7 / 114.0	1	60	4 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-90SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contactor	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE263/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-11

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 3 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

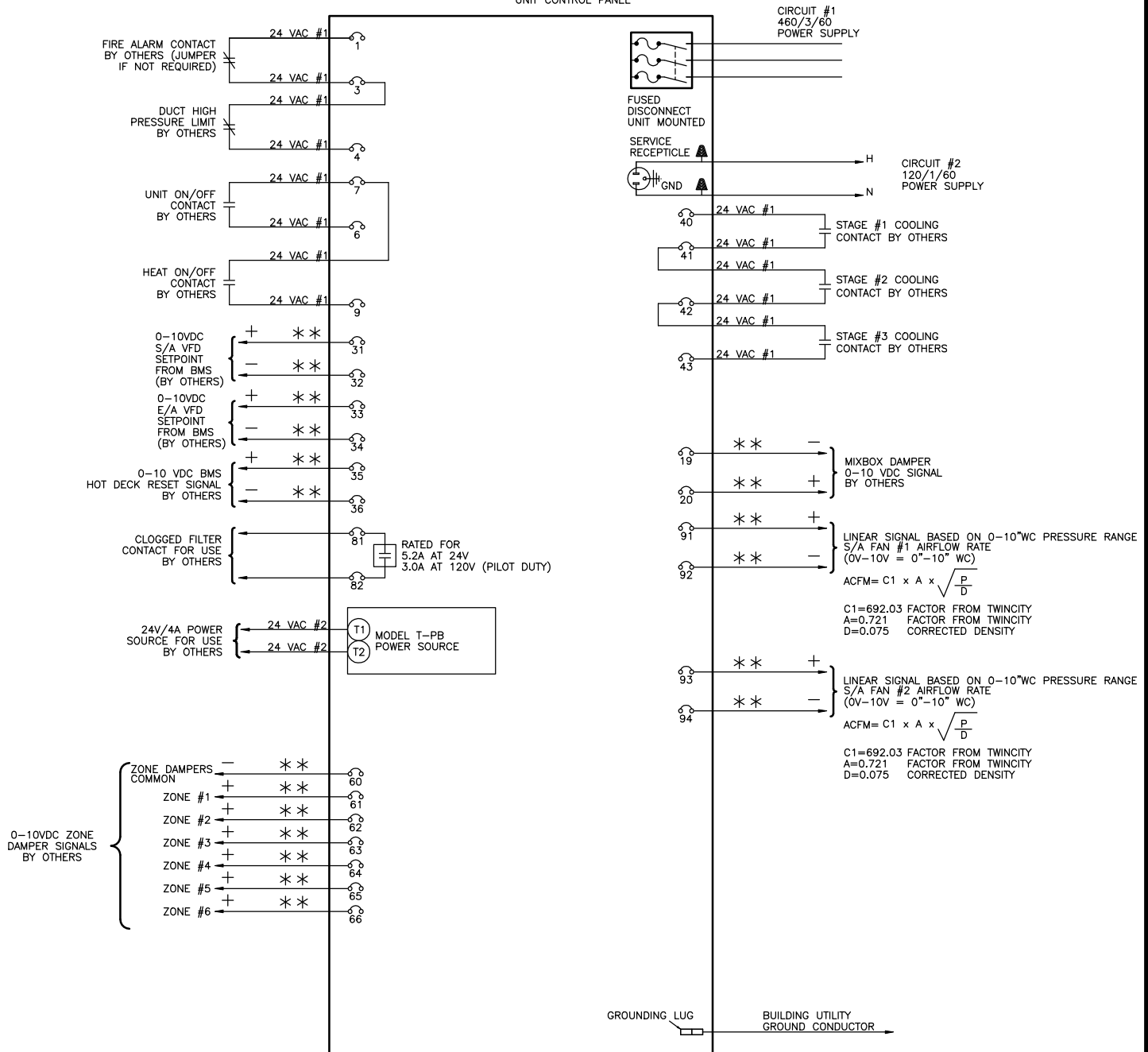
Note 1: S/A blower design speed is 2109 rpm (72.3Hz). speed range: 80%-110% of designed rpm. (57.8-79.5Hz)

Note 2: E/A blower design speed is 1124 rpm (56.2Hz). speed range: 80%-110% of designed rpm. (45-61.8Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-11

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 20 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-11-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE252/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-12

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6350 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6200 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>6,600 CFM</u>	FAN SIZE (2) <u>165A Alum EPFN</u>	TSP <u>4.0 in w.c.</u>	RPM <u>2307</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>3.1 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 79.1 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>5,610 CFM</u>	FAN SIZE (1) <u>24B105/WPD 20°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1735</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.48 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 57.8 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)
 EngA MODEL: FWE252/DJE40/O/M/MV/R QTY: 1 TAG: RTU-12

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-12 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit. 	

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	75.3 AMPS	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '14A' supply air and '3.5A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE	Pleated Filter with MERV 8 rating		
QTY/SIZE	6 - 25 x 16 x 2"	QTY/SIZE	
TOTAL GROSS AREA	16.67 SQ.FT.	FACE VELOCITY	396 FPM
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 			

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER	EngA 'HT' Series	HEAT EXCH. MATERIAL	Stainless Steel
FUEL	Natural Gas	INLET PRESSURE	14 in wc.
HEAT INPUT	400,000 Btuh	GAS FIELD CONN.	0.75"
HEAT OUTPUT	320,000 Btuh	TEMP. RISE	45.0 °F
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 			



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-12

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

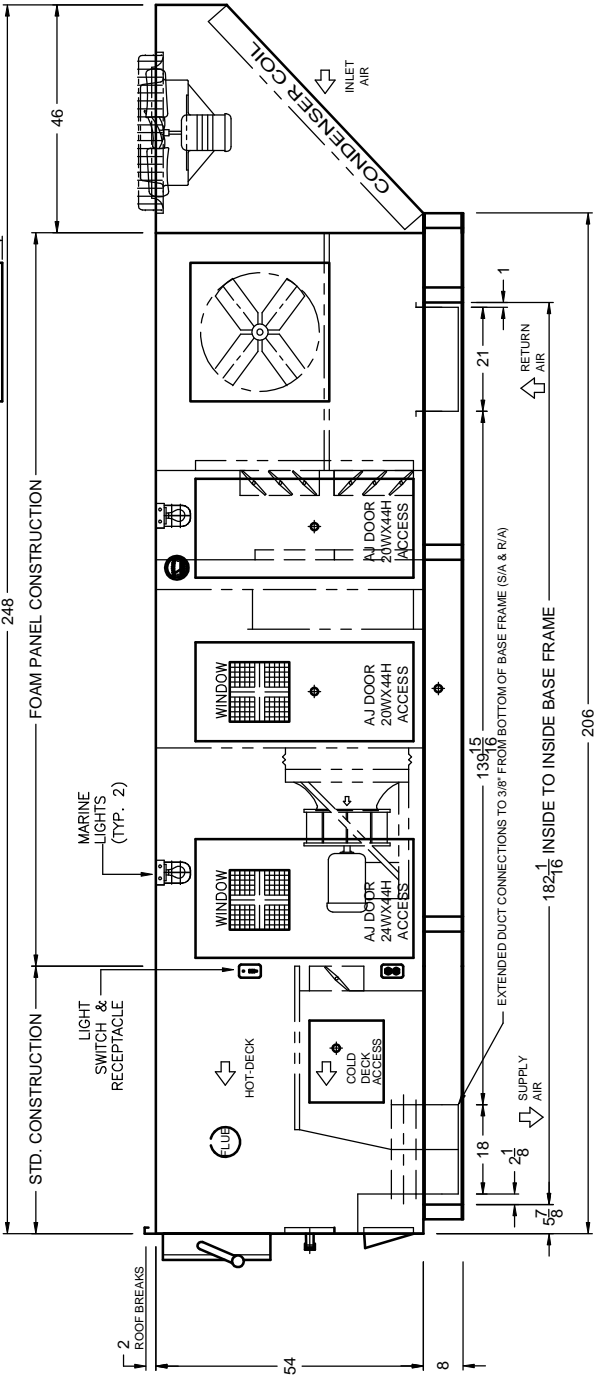
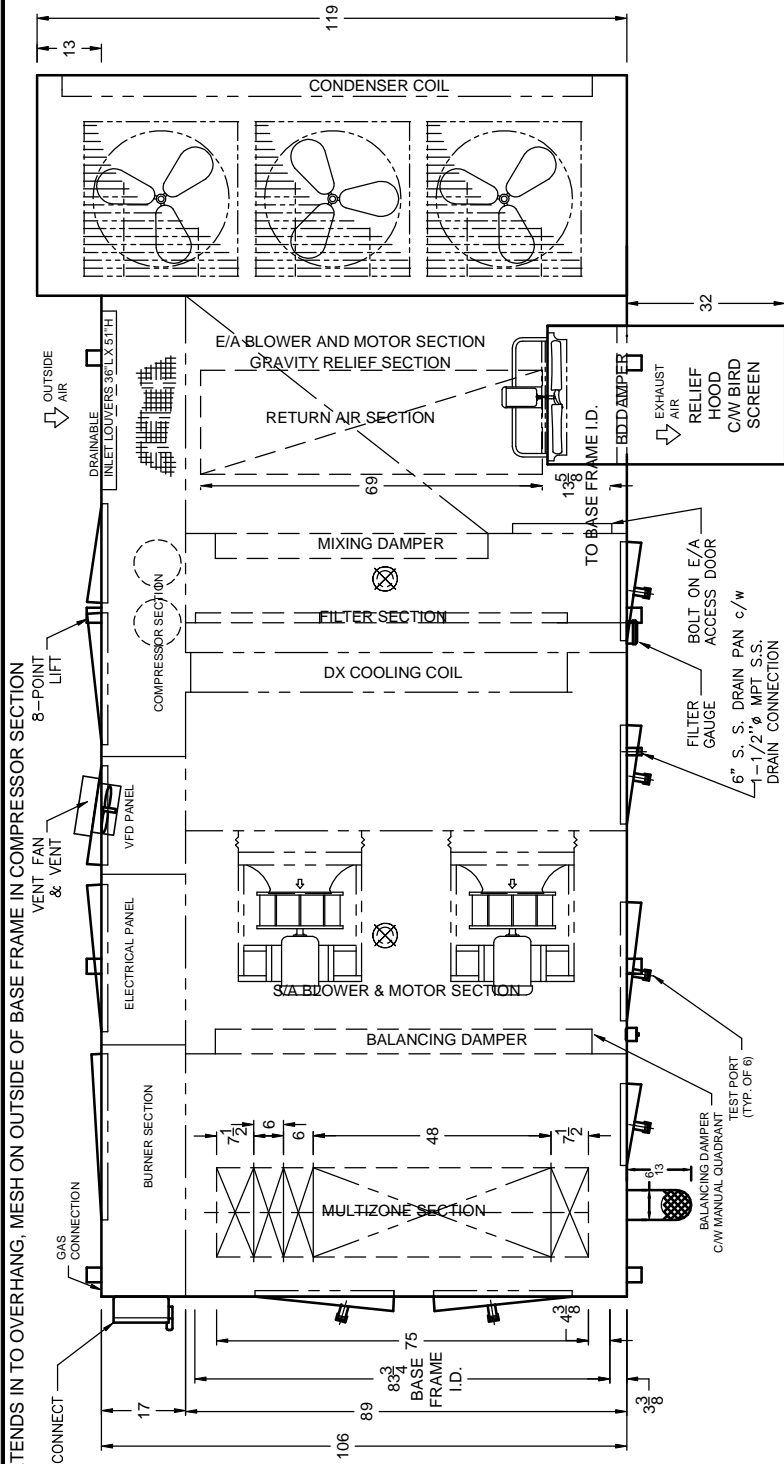
AIR COOLED DX SYSTEM DATA

COIL SIZE <u>32.5 x 76 x 6R x 14 FPI</u>	VELOCITY <u>374 FPM</u>	
TOTAL CAPACITY <u>319,000 Btuh</u>	AIR P.D. <u>0.72 in.wc.</u>	
SENSIBLE CAPACITY <u>215,000 Btuh</u>	MOISTURE REMOVAL <u>92.2 lb/hr</u>	
ENTERING AIR DB / WB <u>82.5°F / 68.0°F</u>	LEAVING AIR DB / WB <u>52.3°F / 52.1°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>47°F / 125.9°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP154KCE-TED-455</u>	QUANTITY <u>2</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, compressor protection module, low pressure control and high pressure control.
- Mechanical cooling has 2 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.



* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION

DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

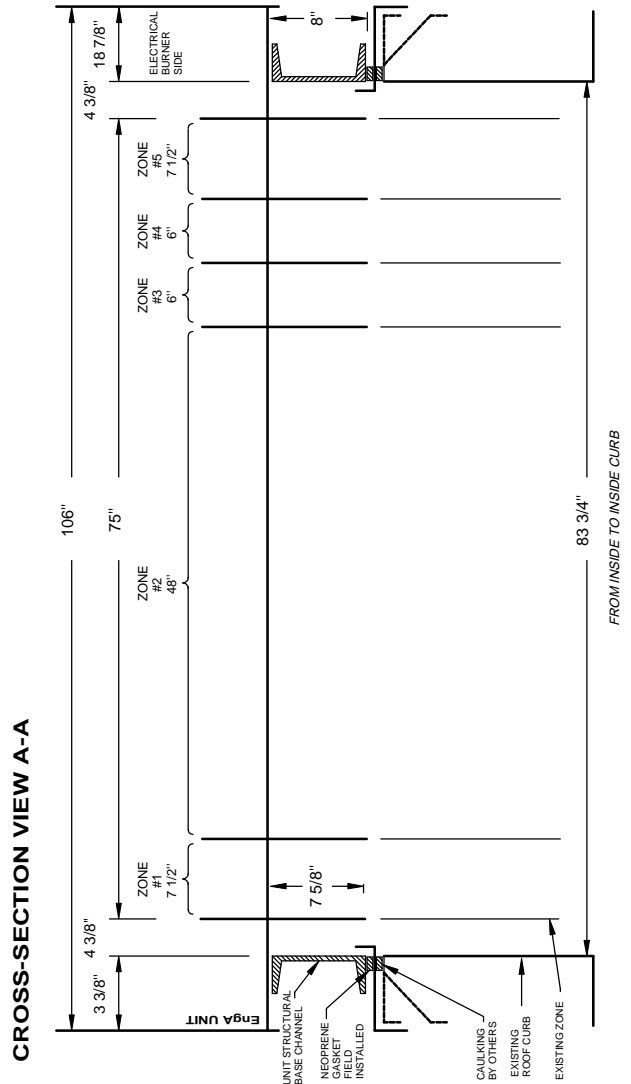
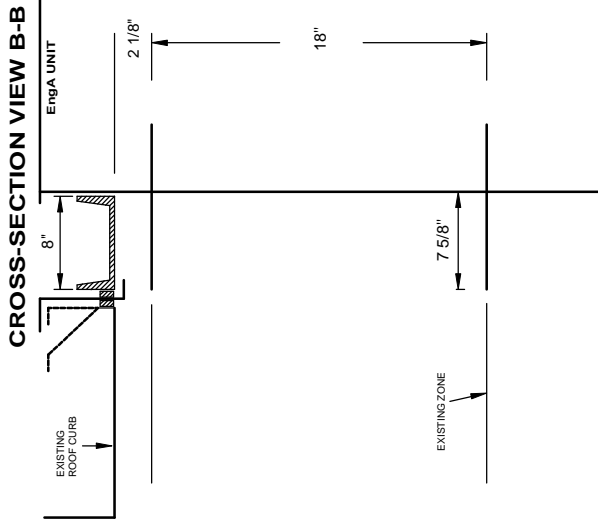
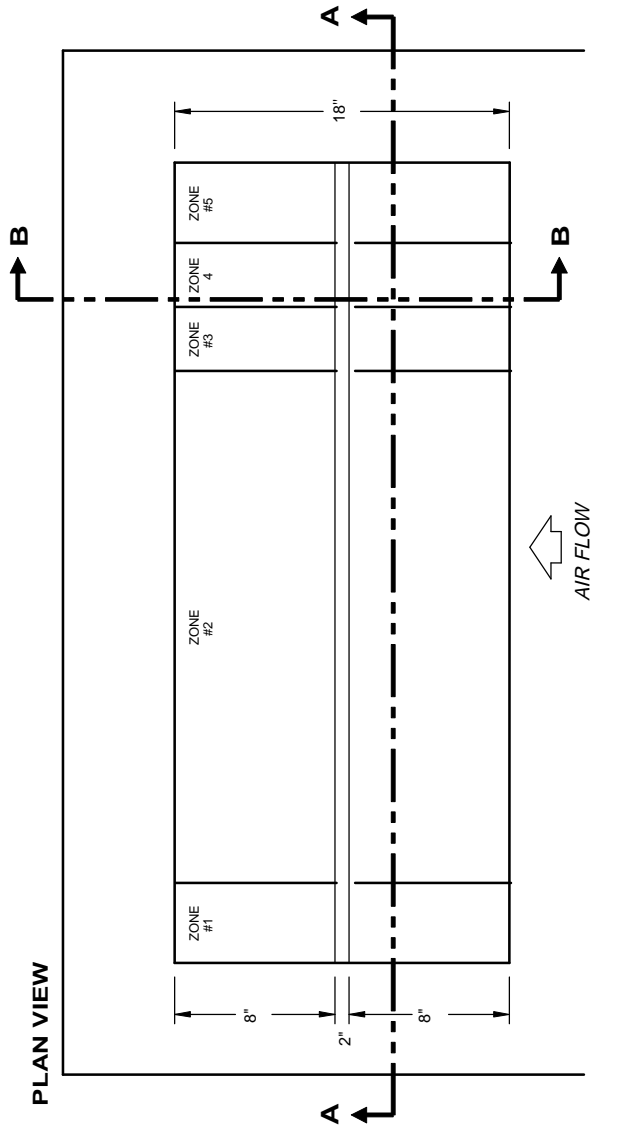
DK9631
TAG: RTU-12

FWE252/DJE40/O/MM/MV/R
HEAT/COOL UNIT



generated by
ProUnit

REVISIONS:			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-12-1



DK9631
TAG: RTU-12

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



ENGINEERED AIR



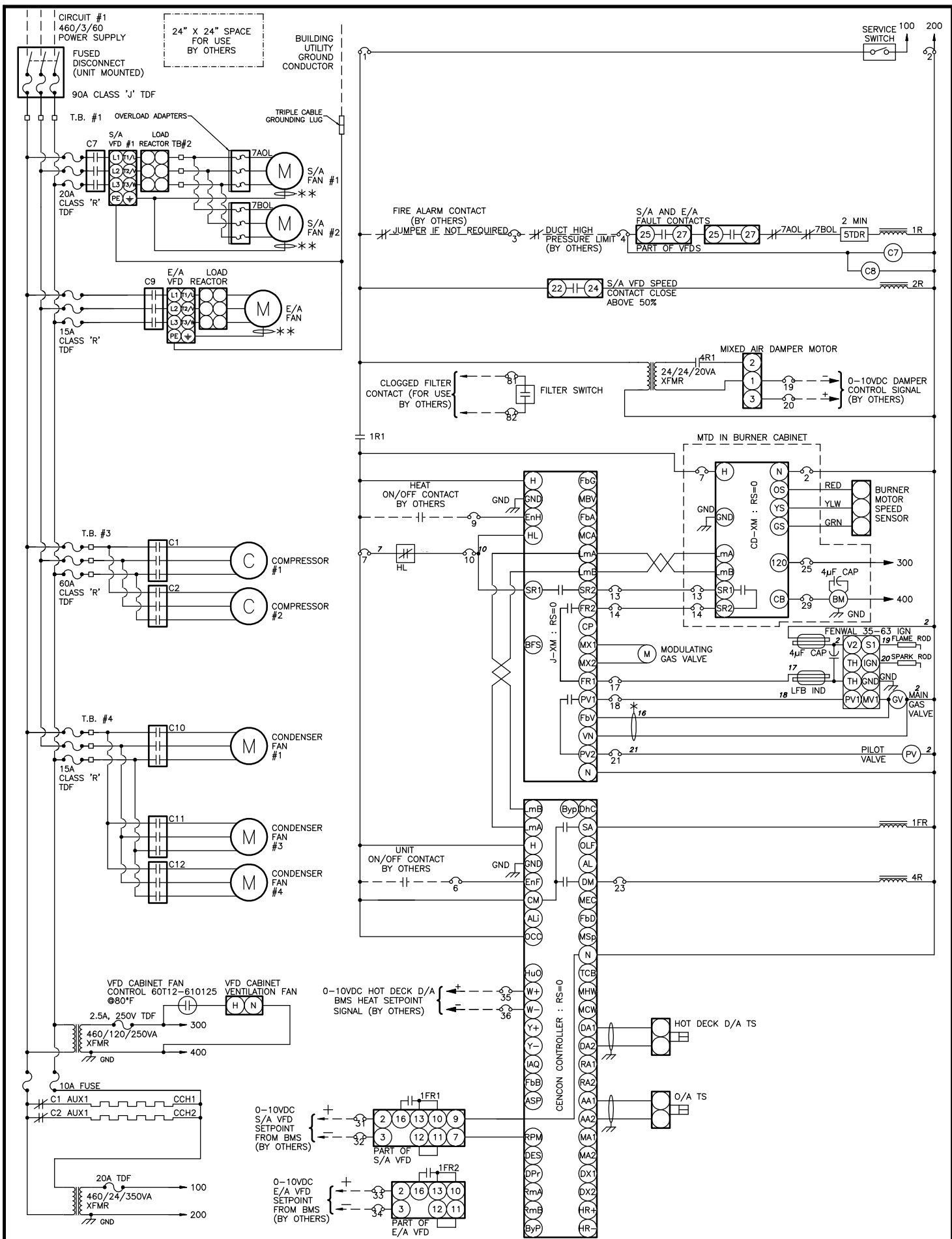
REVISIONS: DEC 20 2022

DATE:
OCT 24 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-12-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE



TAG: RTU-12

INTERNAL WIRING DIAGRAM (PAGE 1 OF 2)
FW/DJ SERIES

REVISION: MAR 20 2023

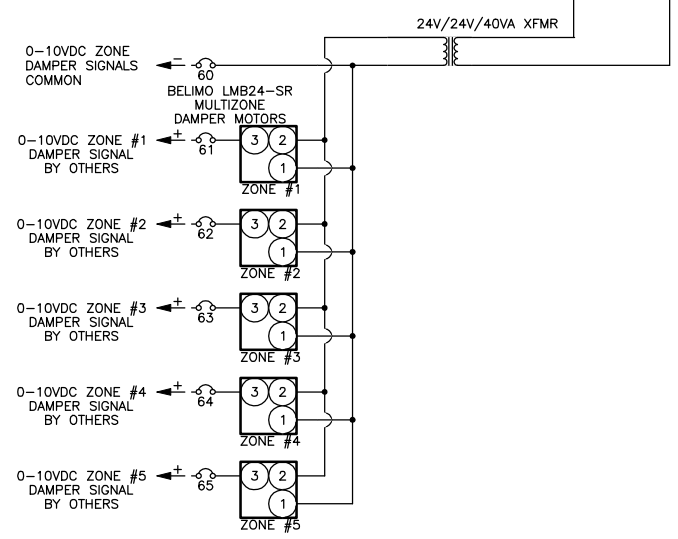
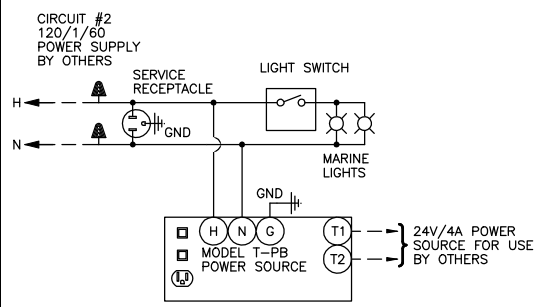
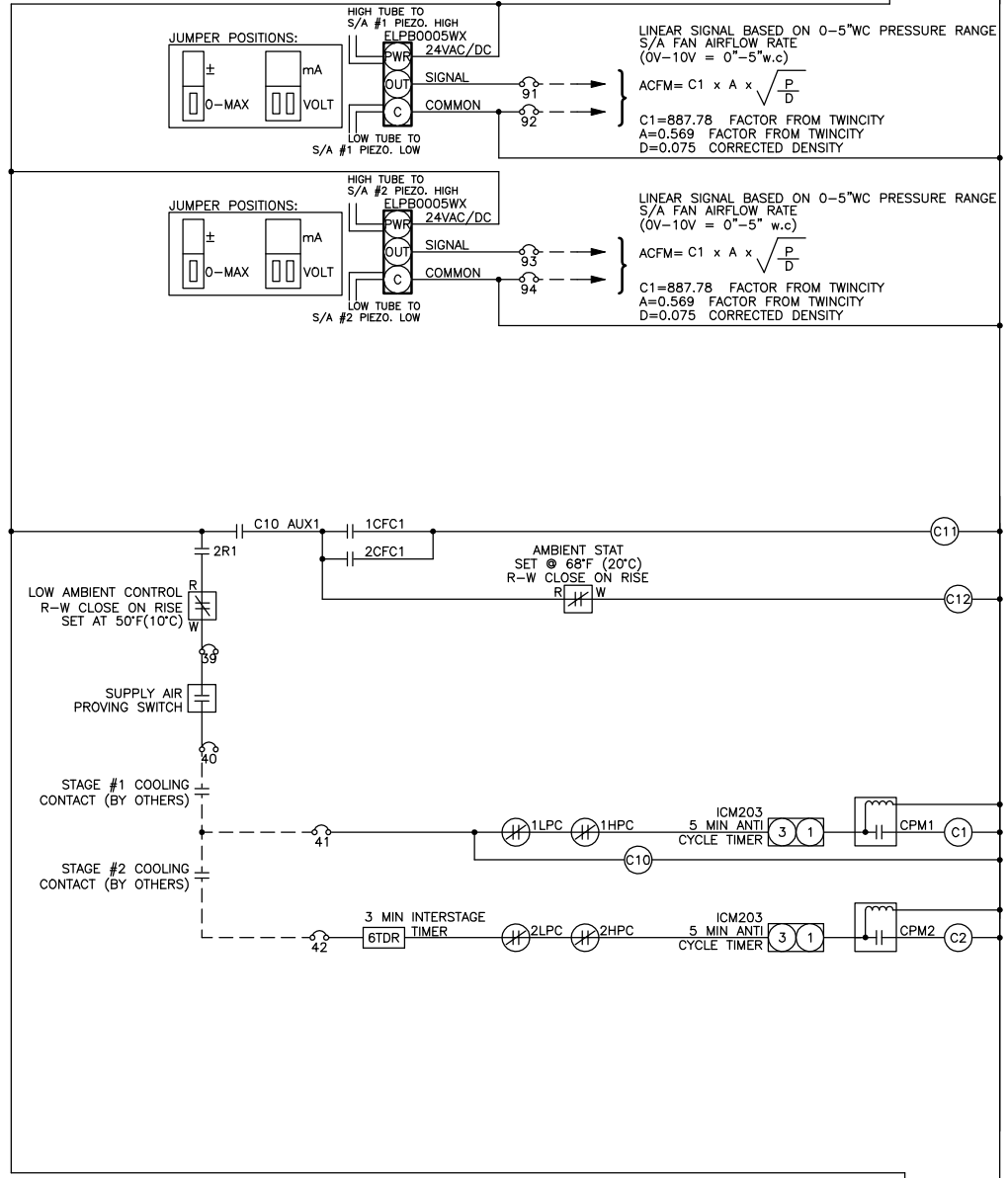
DRN.BY: CWJ

DWG.NO:

DK9631E-12-1

DATE: OCT 18 2022

CHKD.BY: JLC





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-12

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	75.3 AMPS	4 Awg	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Crankcase Heater (2 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 and #2	1	ZP154KCE-TED-455	10 Awg	23.1 / 150.0	1	60	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.7	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-90SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-12

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 2 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

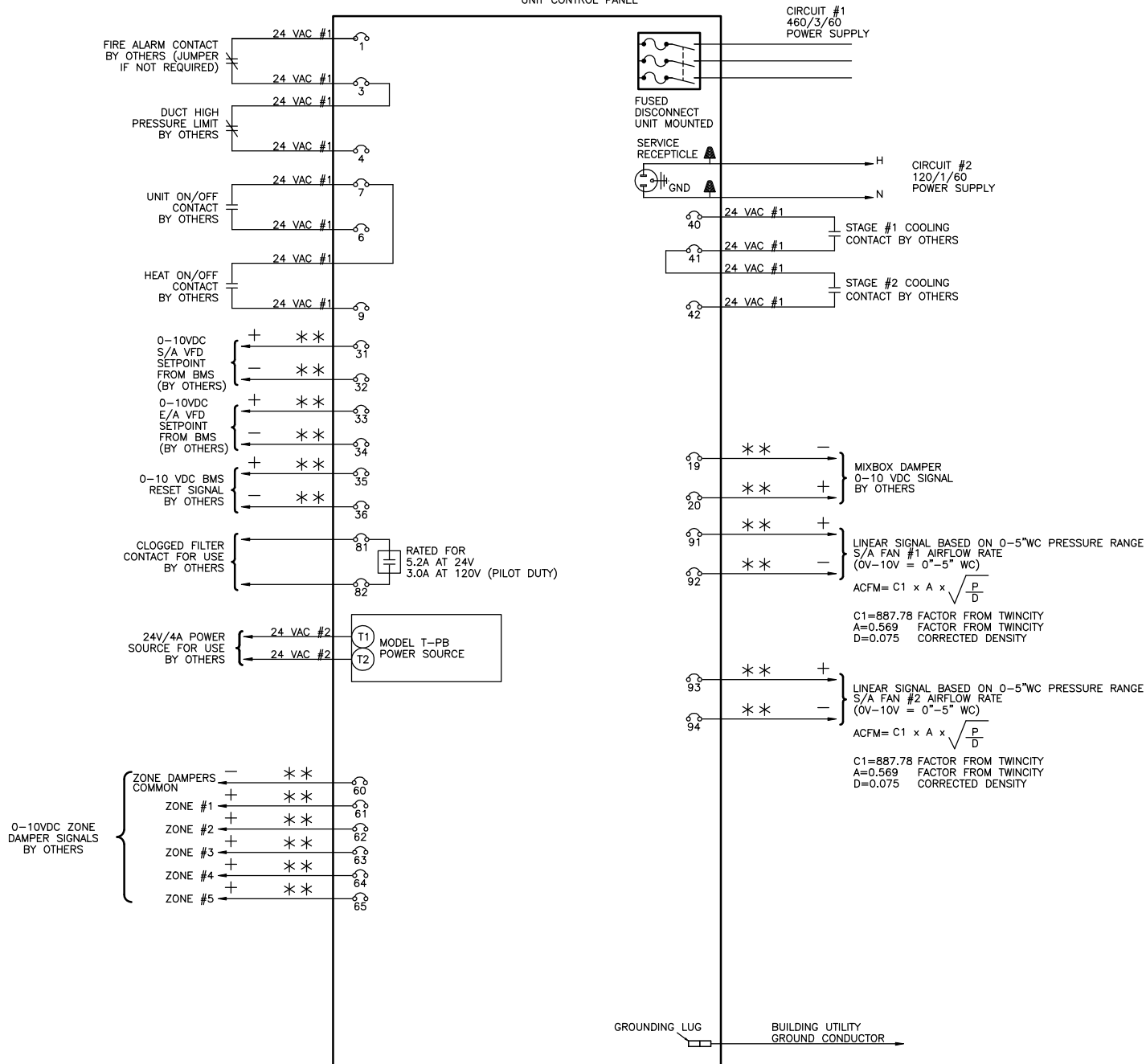
Note 1: S/A blower design speed is 2307 rpm (79.1Hz). speed range: 80%-110% of designed rpm. (63.3-87Hz)

Note 2: E/A blower design speed is 1735 rpm (57.8Hz). speed range: 80%-110% of designed rpm. (46.3-63.6Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-12

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 20 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-12-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE354/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-13

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>7800 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>7650 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>10,000 CFM</u>	FAN SIZE (2) <u>182 Alum EPFN</u>	TSP <u>4.5 in w.c.</u>	RPM <u>2256</u>
MOTOR SIZE (2) <u>7 1/2 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1770)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>5.09 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 76.5Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>8,500 CFM</u>	FAN SIZE (1) <u>36E4/WPD 20°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1130</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.68 BHP</u>

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 56.5 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE354/DJE60/O/M/MV/R QTY: 1 TAG: RTU-13

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-13 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	109.1 AMPS	125 AMPS	125 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '23A' supply air and '3.5A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 20 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>20.83 SQ.FT.</u>	FACE VELOCITY <u>480 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-60)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>600,000 Btuh</u>	HEAT OUTPUT <u>480,000 Btuh</u> TEMP. RISE <u>44.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE354/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-13

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

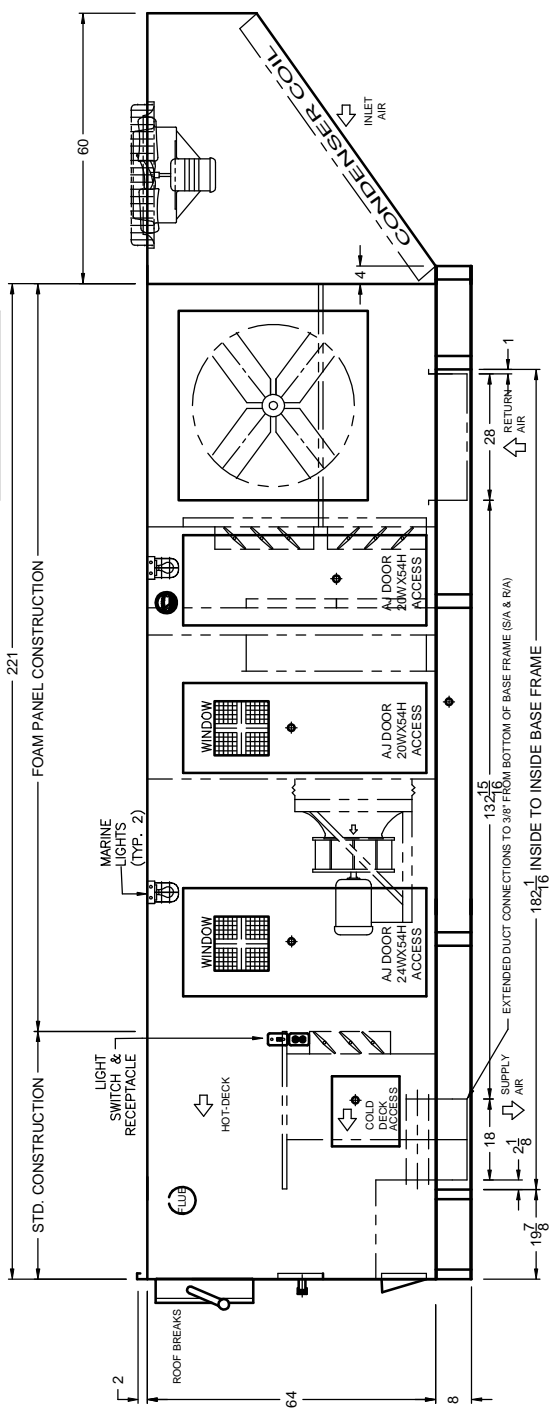
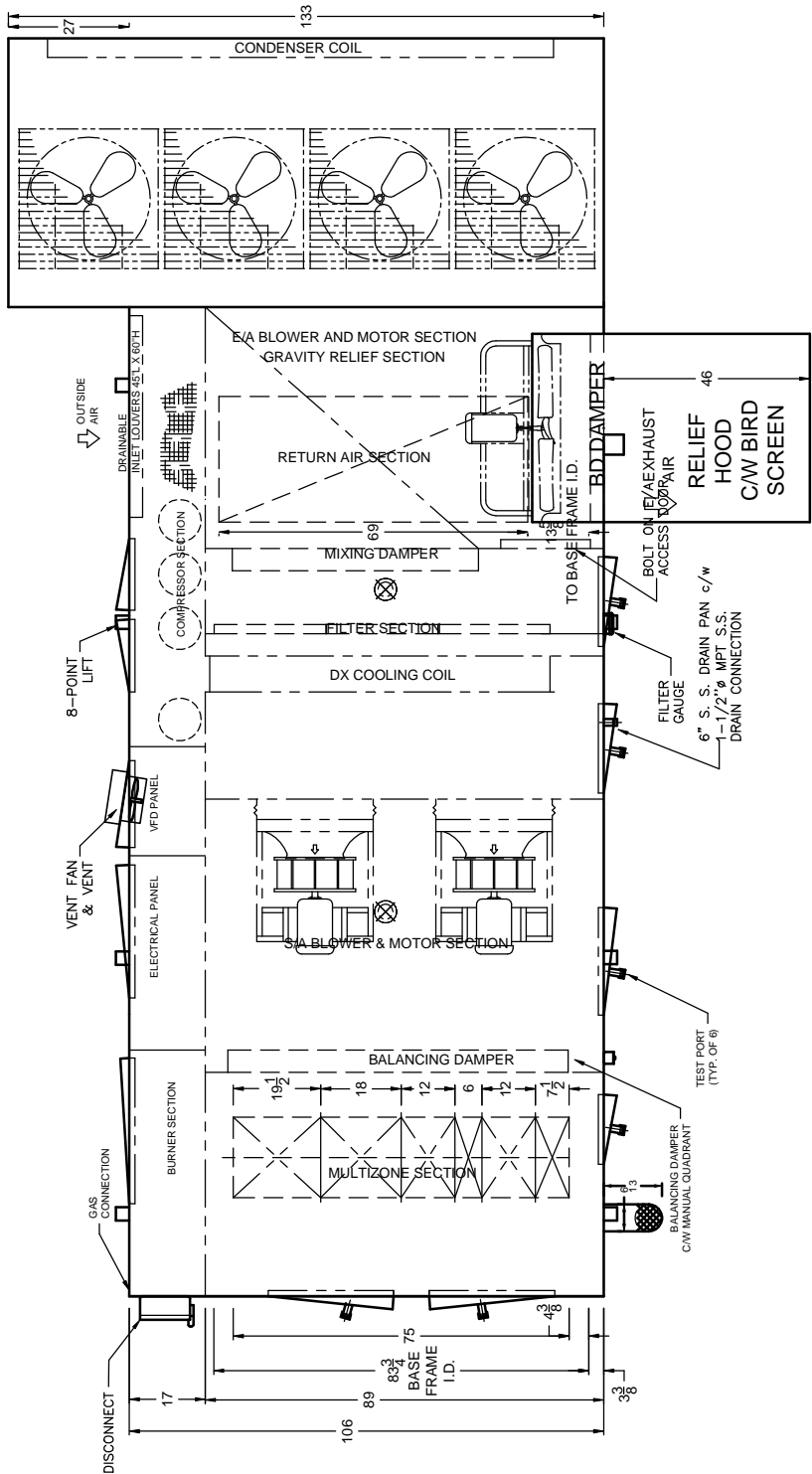
AIR COOLED DX SYSTEM DATA

COIL SIZE <u>40 x 76 x 6R x 14 FPI</u>	VELOCITY <u>463 FPM</u>	
TOTAL CAPACITY <u>437,000 Btuh</u>	AIR P.D. <u>0.97 in.wc.</u>	
SENSIBLE CAPACITY <u>306,000 Btuh</u>	MOISTURE REMOVAL <u>114.6 lb/hr</u>	
ENTERING AIR DB / WB <u>82.4°F / 67.9°F</u>	LEAVING AIR DB / WB <u>54.0°F / 53.8°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>47.7°F / 125.7°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP103KCE-TFD-455</u>	QUANTITY <u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, low pressure control and high pressure control.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

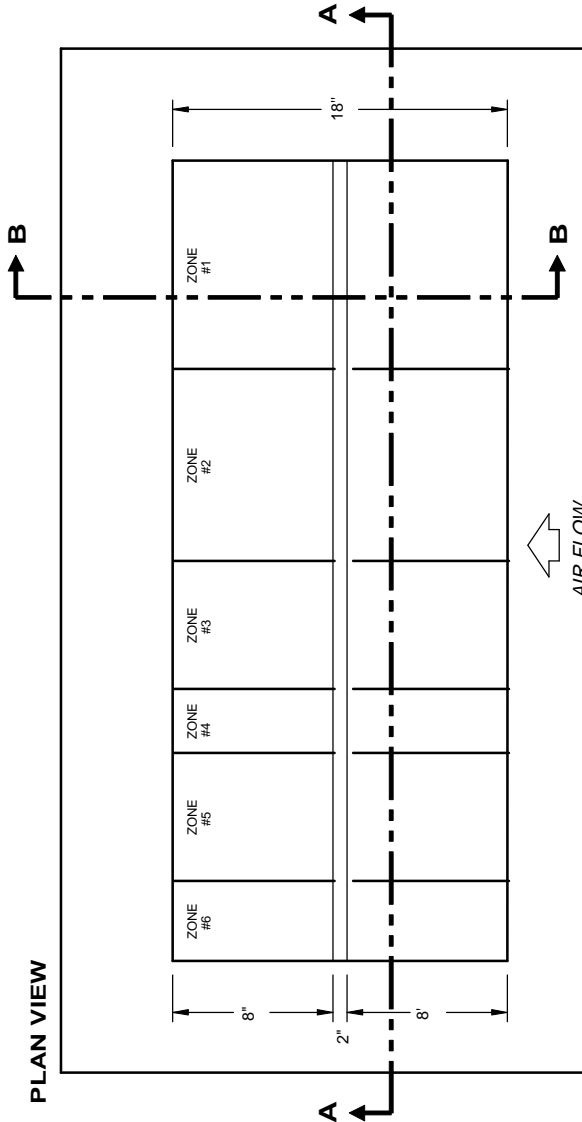
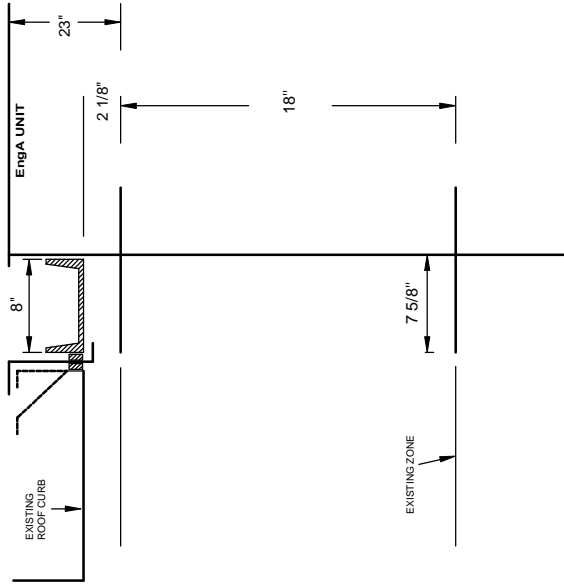
DK9631
TAG: RTU-13

FWE354/DJE60/O/M/MV/R
HEAT/COOL UNIT

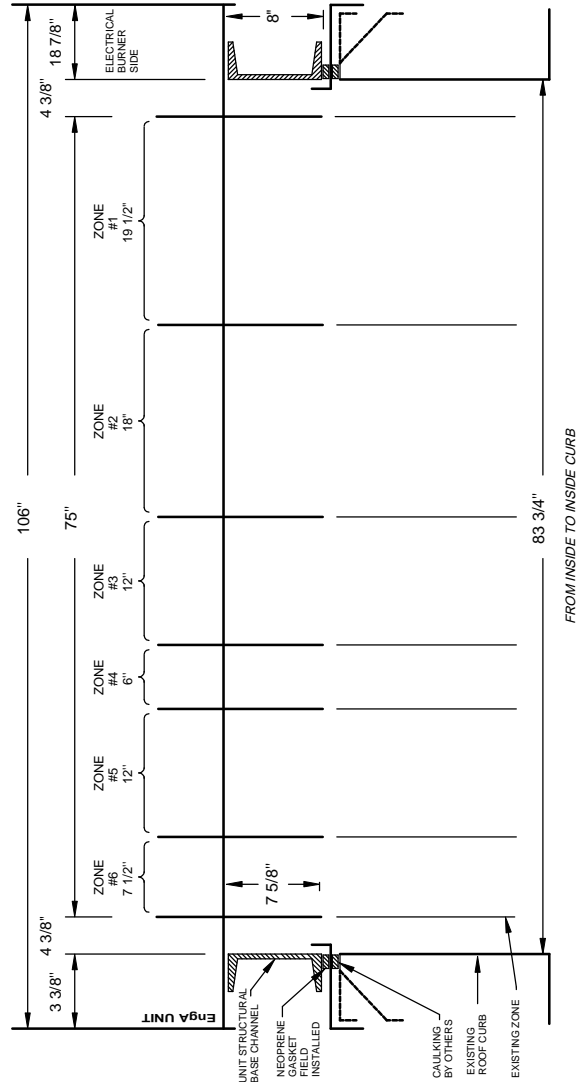


REVISIONS:			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-13-1

CROSS-SECTION VIEW B-B



CROSS-SECTION VIEW A-A



DK9631
TAG: RTU-13

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



ENGINEERED AIR



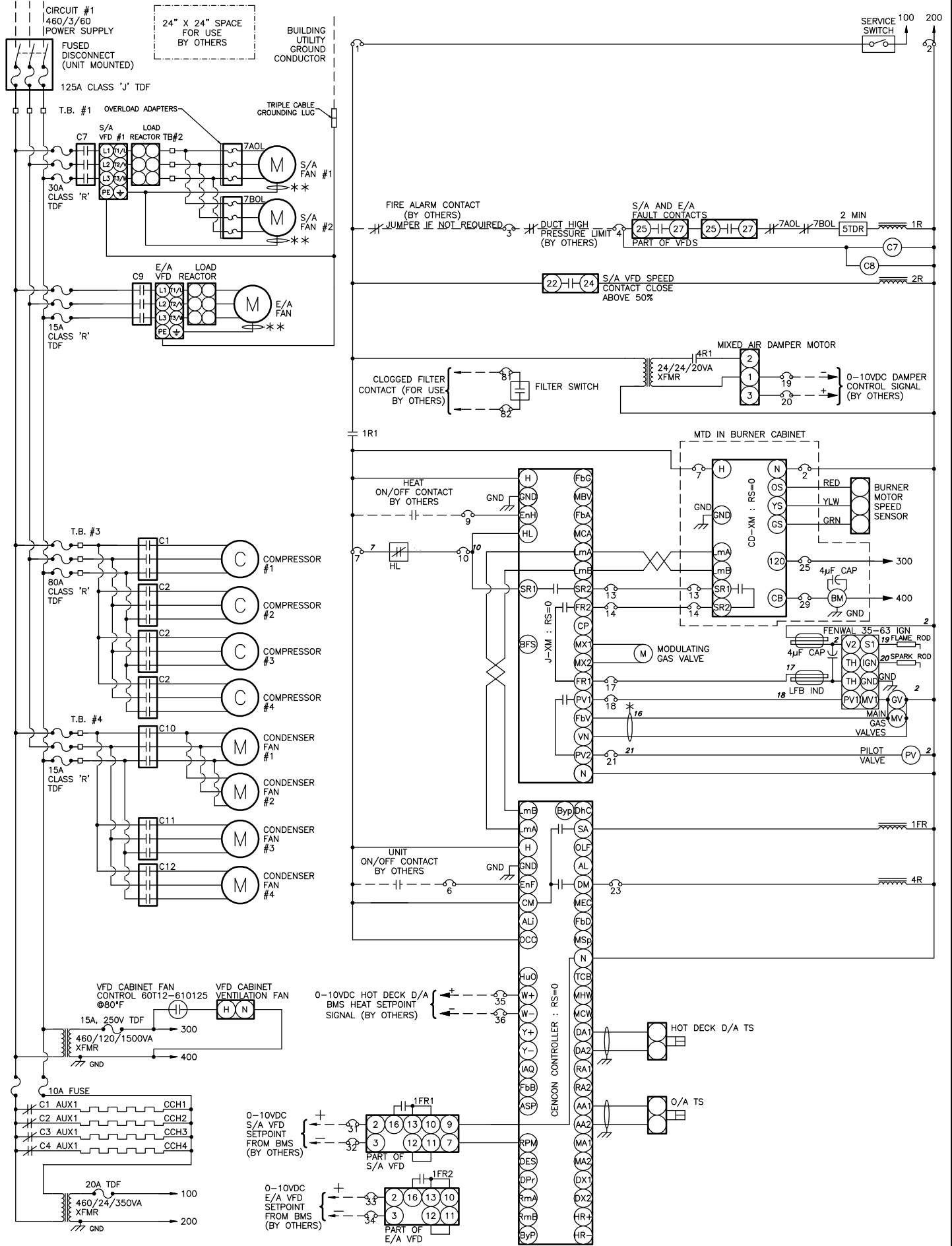
REVISIONS: DEC 20 2022

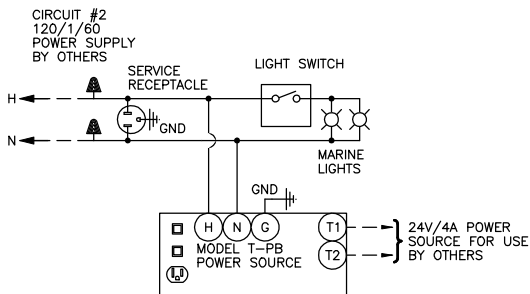
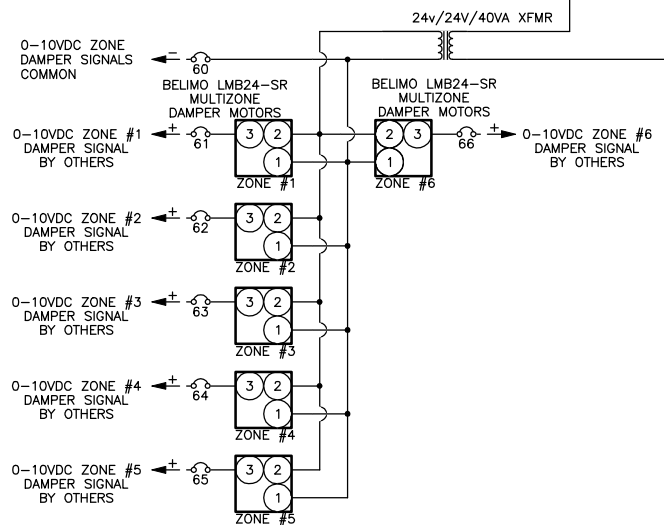
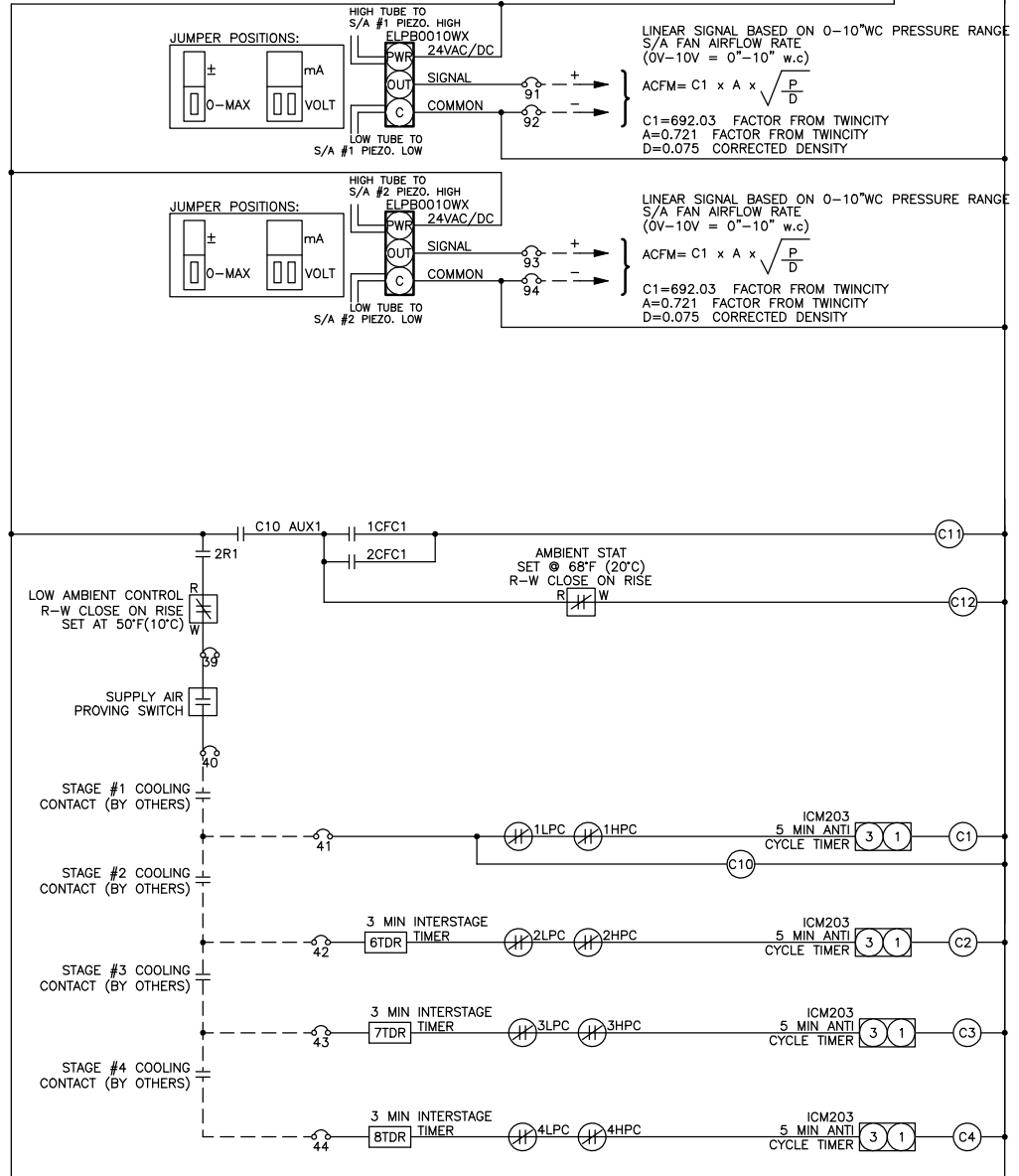
DATE:
OCT 25 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-13-1







ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE354/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-13

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	109.1 AMPS	2 Awg	125 AMPS	125 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/2 HP	14 Awg	8 @ 120/1/60			
Crankcase Heater (4 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	3.3			
Compressor #1 to #4	1	ZP103KCE-TFD-455	8 Awg	16.7 / 114.0	1	80	2 Awg
Condenser Fan Motor #1 to #4	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1770) 7 1/2 HP	14 Awg	9.5	4	30	8 Awg
Supply Fan Motor VFD	1		14 Awg	23.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-125SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contactor	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE354/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-13

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

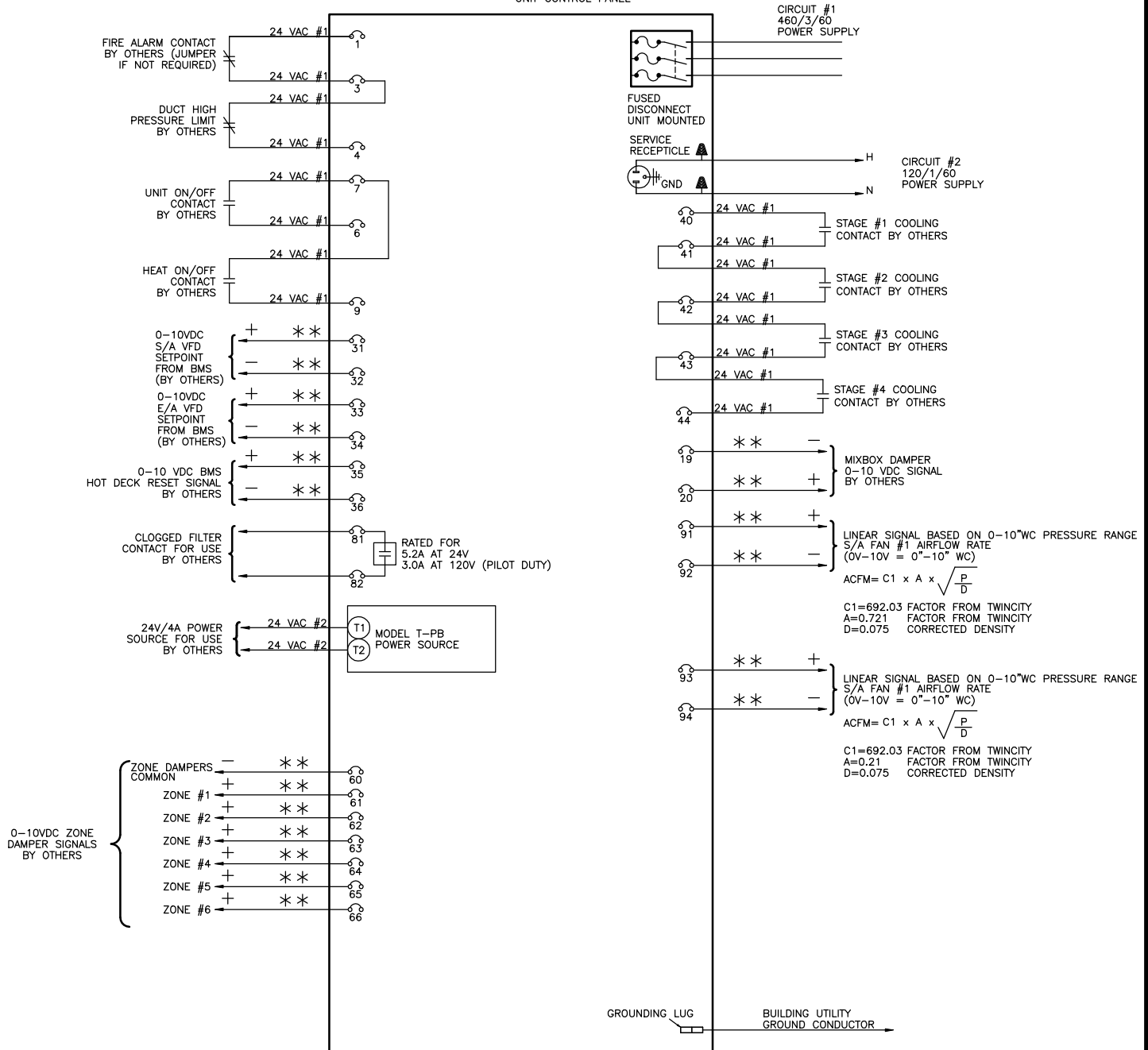
Note 1: S/A blower design speed is 2256 rpm (76.5Hz). speed range: 80%-110% of designed rpm. (61.2-84.1Hz)

Note 2: E/A blower design speed is 1130 rpm (56.5Hz). speed range: 80%-110% of designed rpm. (45.2-62.2Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-13

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 20 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-13-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-14

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>7700 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>7550 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>8,300 CFM</u>	FAN SIZE (2) <u>182 Alum EPFN</u>	TSP <u>4.1 in w.c.</u>	RPM <u>2059</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>3.85 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 70.6 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>7,055 CFM</u>	FAN SIZE (1) <u>30E4/WPD 30°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1114</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.79 BHP</u>

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 55.7 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-14

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-14 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	85.7 AMPS	100 AMPS	100 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '14A' supply air and '3.5A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	QTY/SIZE _____
QTY/SIZE <u>6 - 25 x 20 x 2"</u>	FACE VELOCITY <u>398 FPM</u>
TOTAL GROSS AREA <u>20.83 SQ.FT.</u>	
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-60)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>500,000 Btuh</u>	HEAT OUTPUT <u>400,000 Btuh</u> TEMP. RISE <u>45.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-14

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

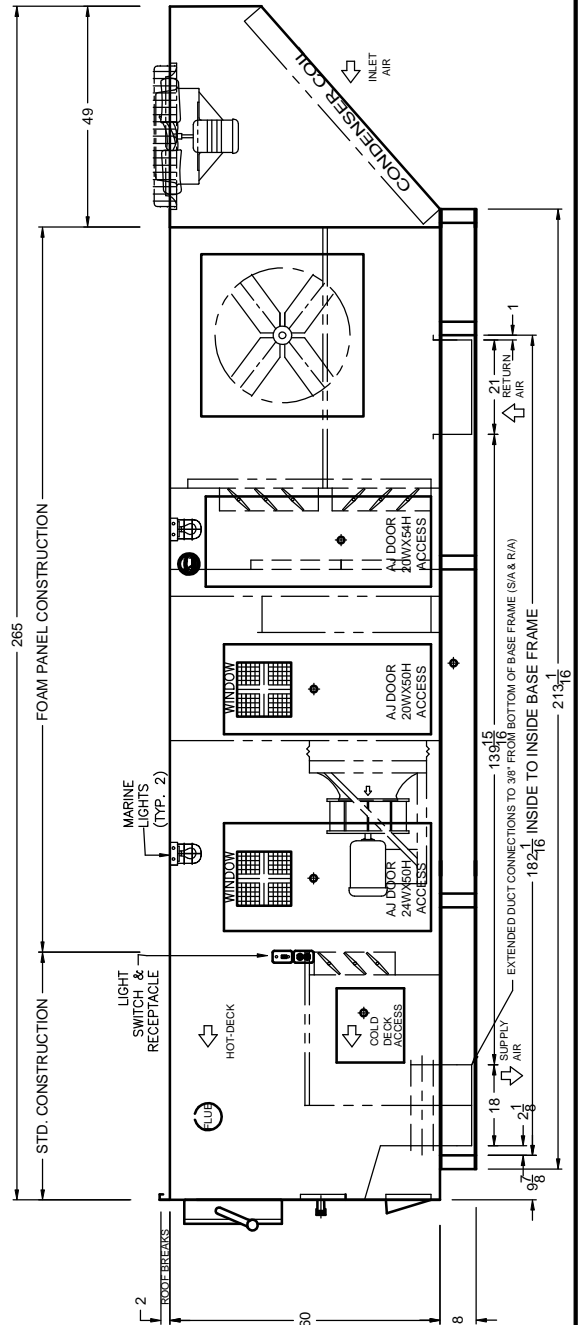
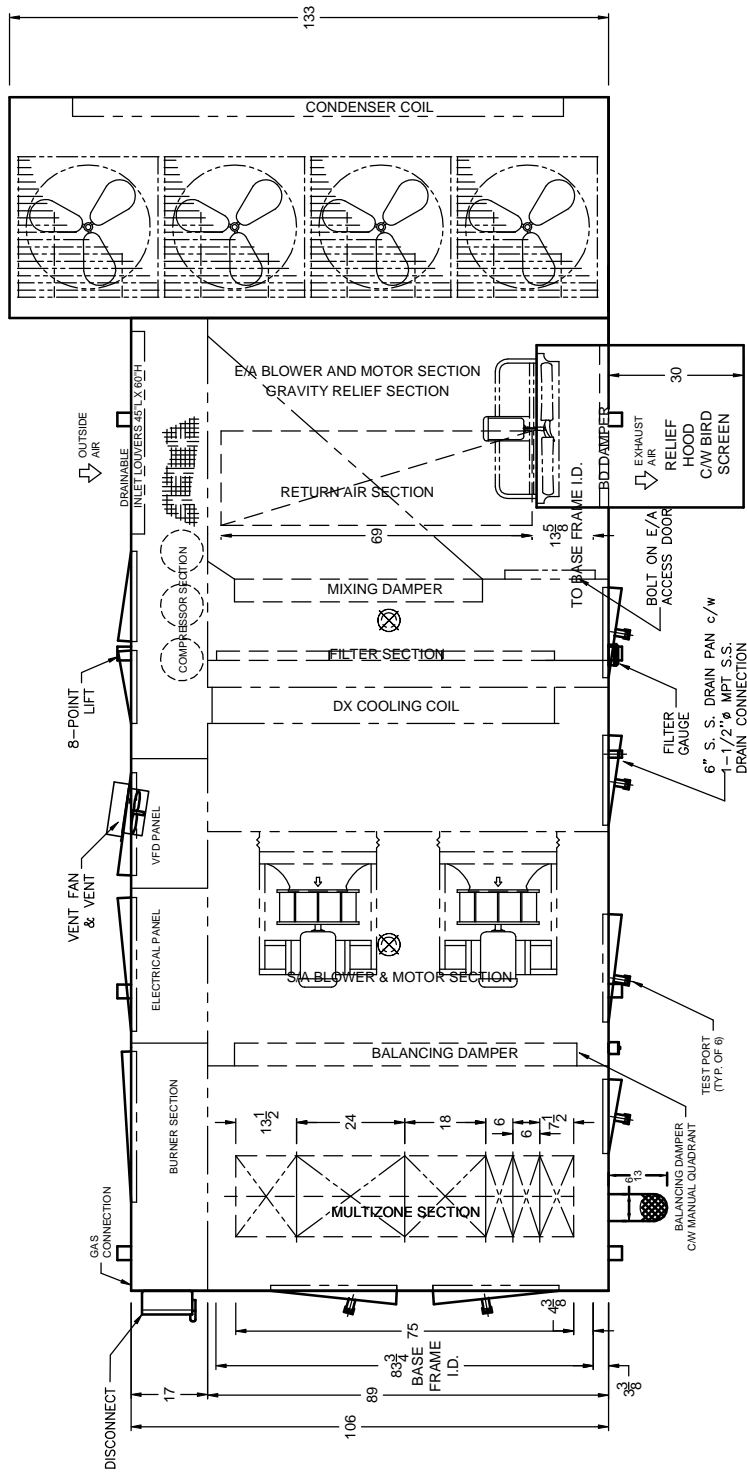
COIL SIZE <u>37.5 x 76 x 6R x 14 FPI</u>	VELOCITY <u>408 FPM</u>	
TOTAL CAPACITY <u>375,000 Btuh</u>	AIR P.D. <u>0.81 in.wc.</u>	
SENSIBLE CAPACITY <u>259,000 Btuh</u>	MOISTURE REMOVAL <u>102.9 lb/hr</u>	
ENTERING AIR DB / WB <u>81.2°F / 67.1°F</u>	LEAVING AIR DB / WB <u>52.3°F / 52.1°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>46.7°F / 126.6°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP120KCE-TFD-455</u>	QUANTITY <u>3</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, low pressure control and high pressure control.
- Mechanical cooling has 3 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.

* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631
TAG: RTU-14

FWE313/DJE60/O/M/MV/R
HEAT/COOL UNIT



generated by
ProUnit

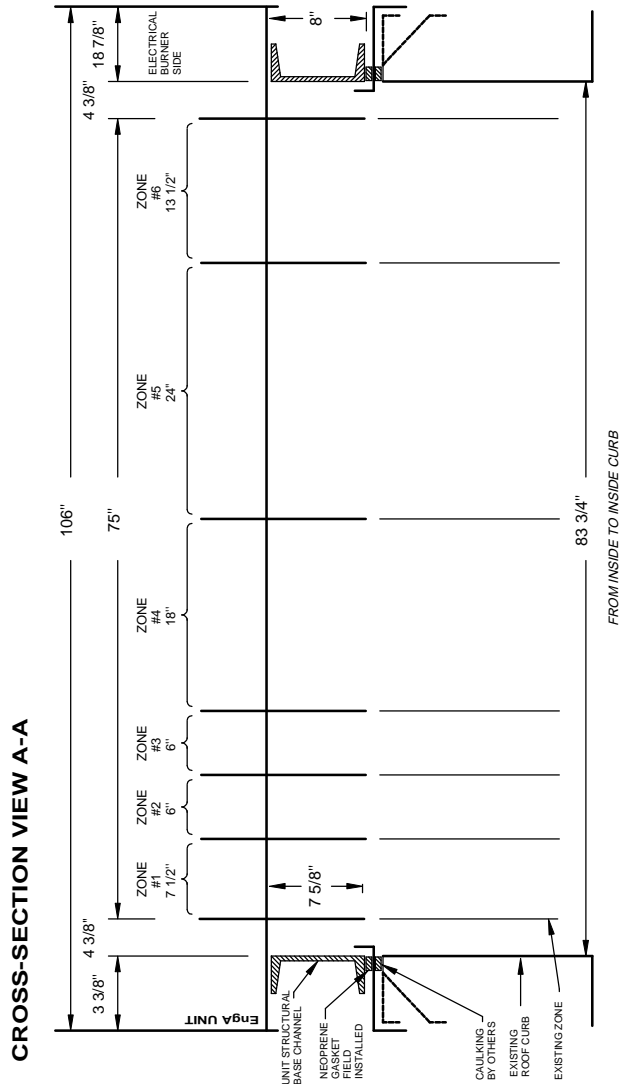
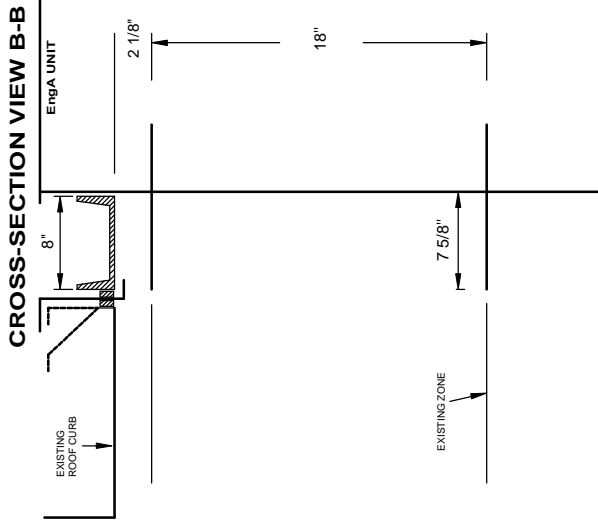
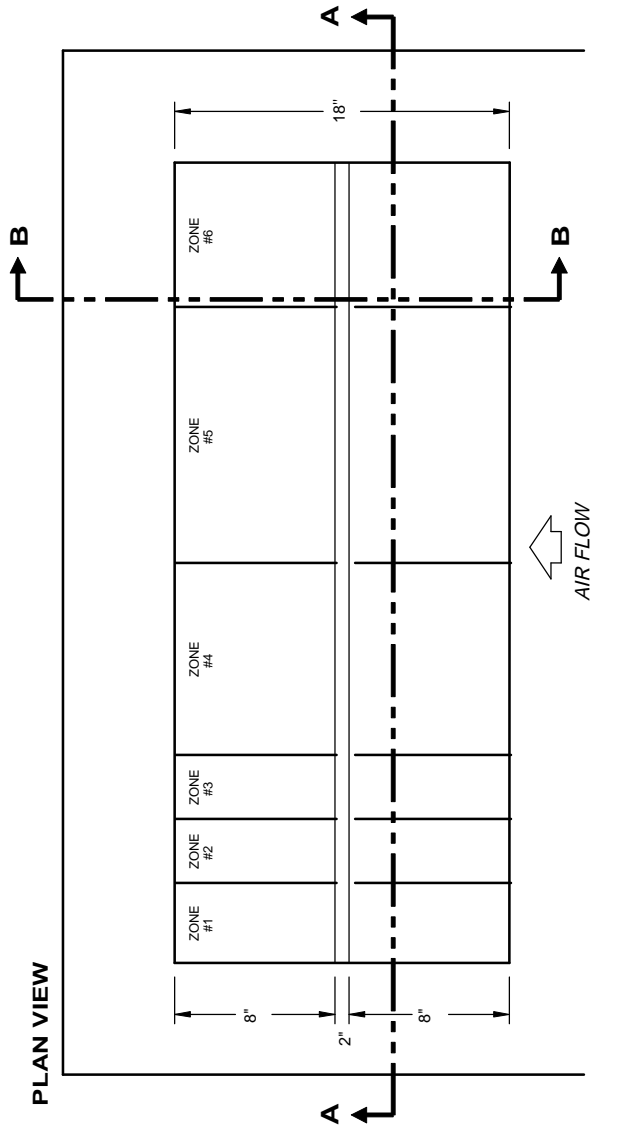
REVISIONS:

DATE:
OCT 04 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631M-14-1



DEC 20 2022
TAG: RTU-14

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



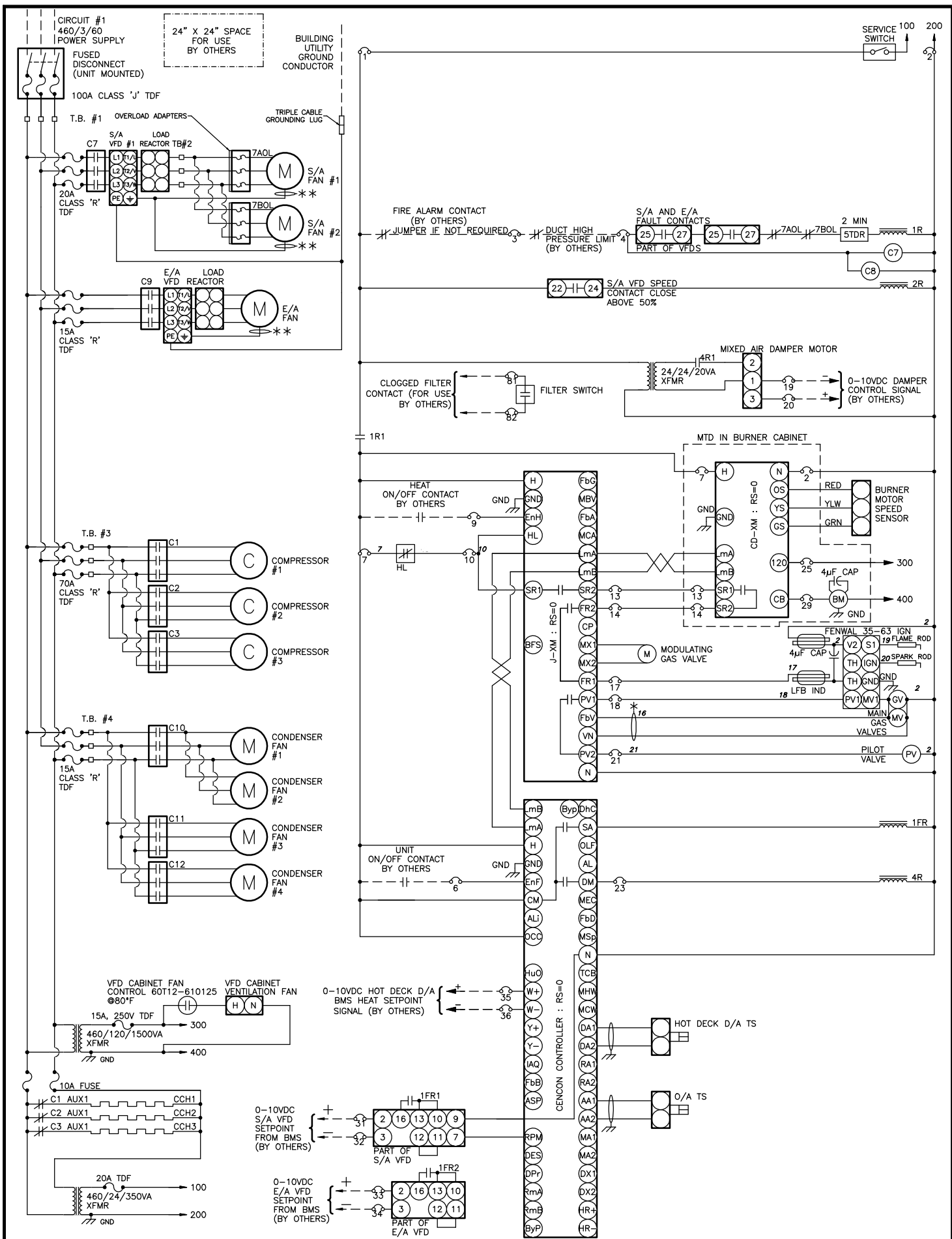
REVISIONS: DEC 20 2022

DATE:
OCT 21 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-14-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE



TAG: RTU-14

INTERNAL WIRING DIAGRAM (PAGE 1 OF 2)
FW/DJ SERIES

REVISION: MAR 20 2023

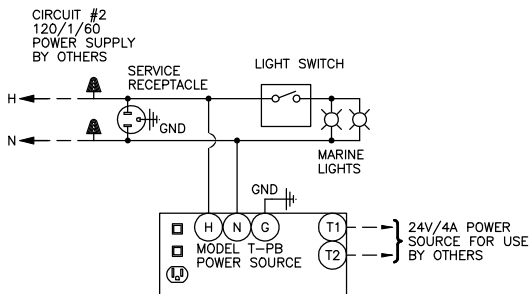
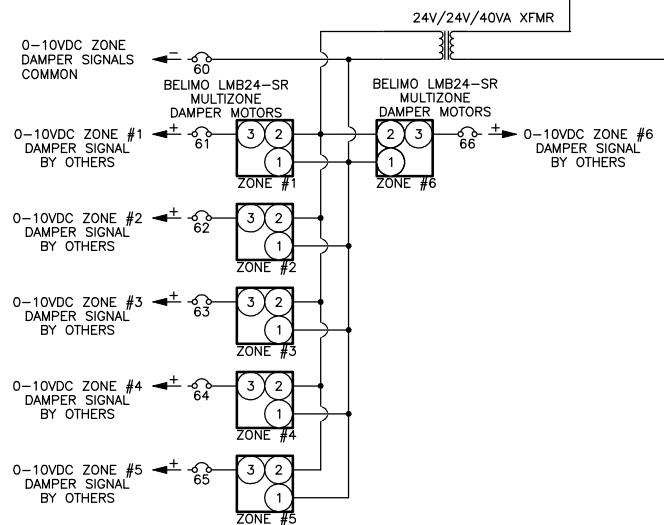
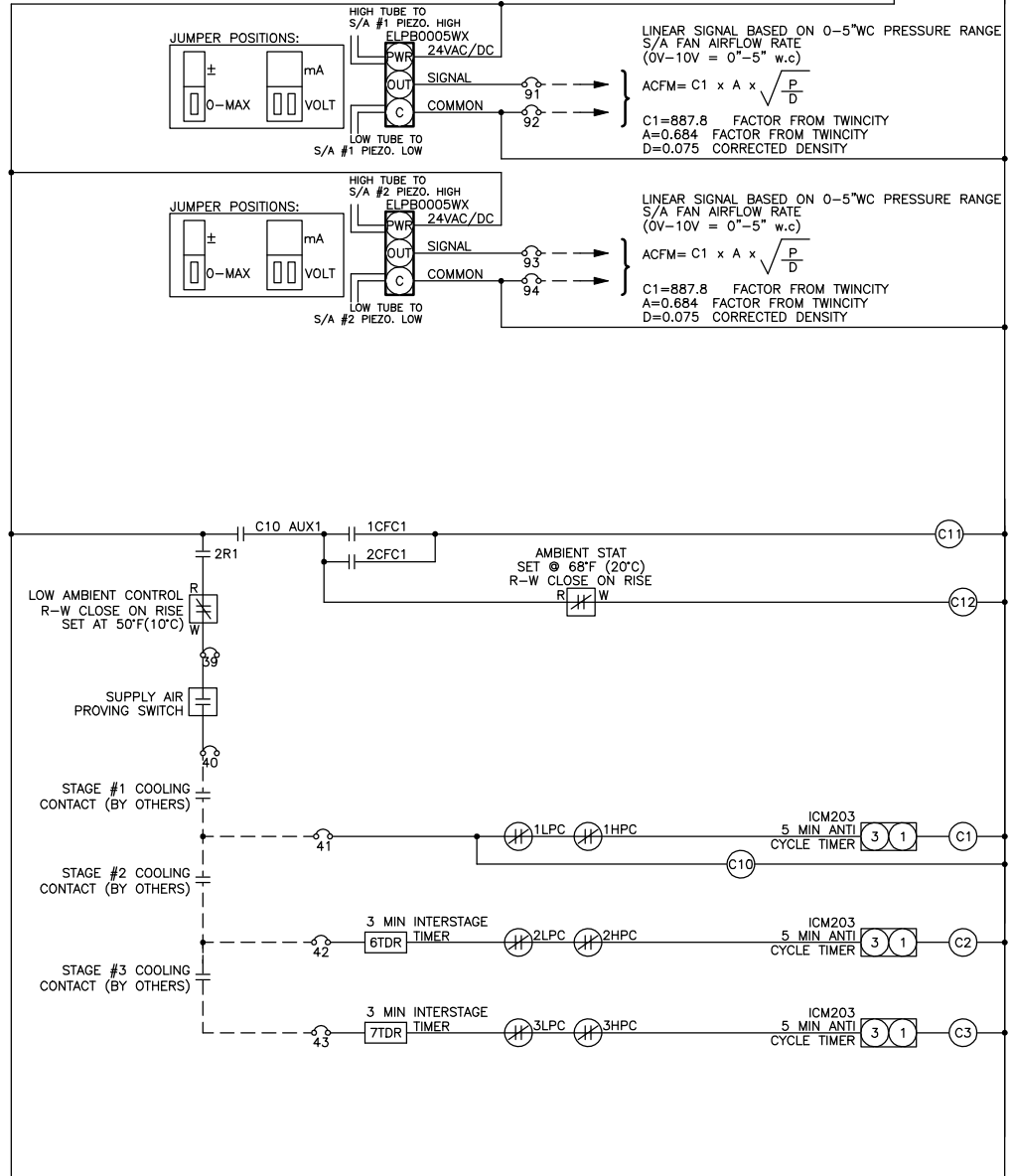
DRN.BY: CWJ

DWG.NO:

DK9631E-14-1

DATE: OCT 18 2022

CHKD.BY: JLC





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-14

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	85.7 AMPS	2 Awg	100 AMPS	100 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/2 HP	14 Awg	8 @ 120/1/60			
Crankcase Heater (3 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	3.3			
Compressor #1 to #3	1	ZP120KCE-TFD-455	10 Awg	17.9 / 125.0	1	70	4 Awg
Condenser Fan Motor #1 to #4	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-100SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contactor	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-14

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 3 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

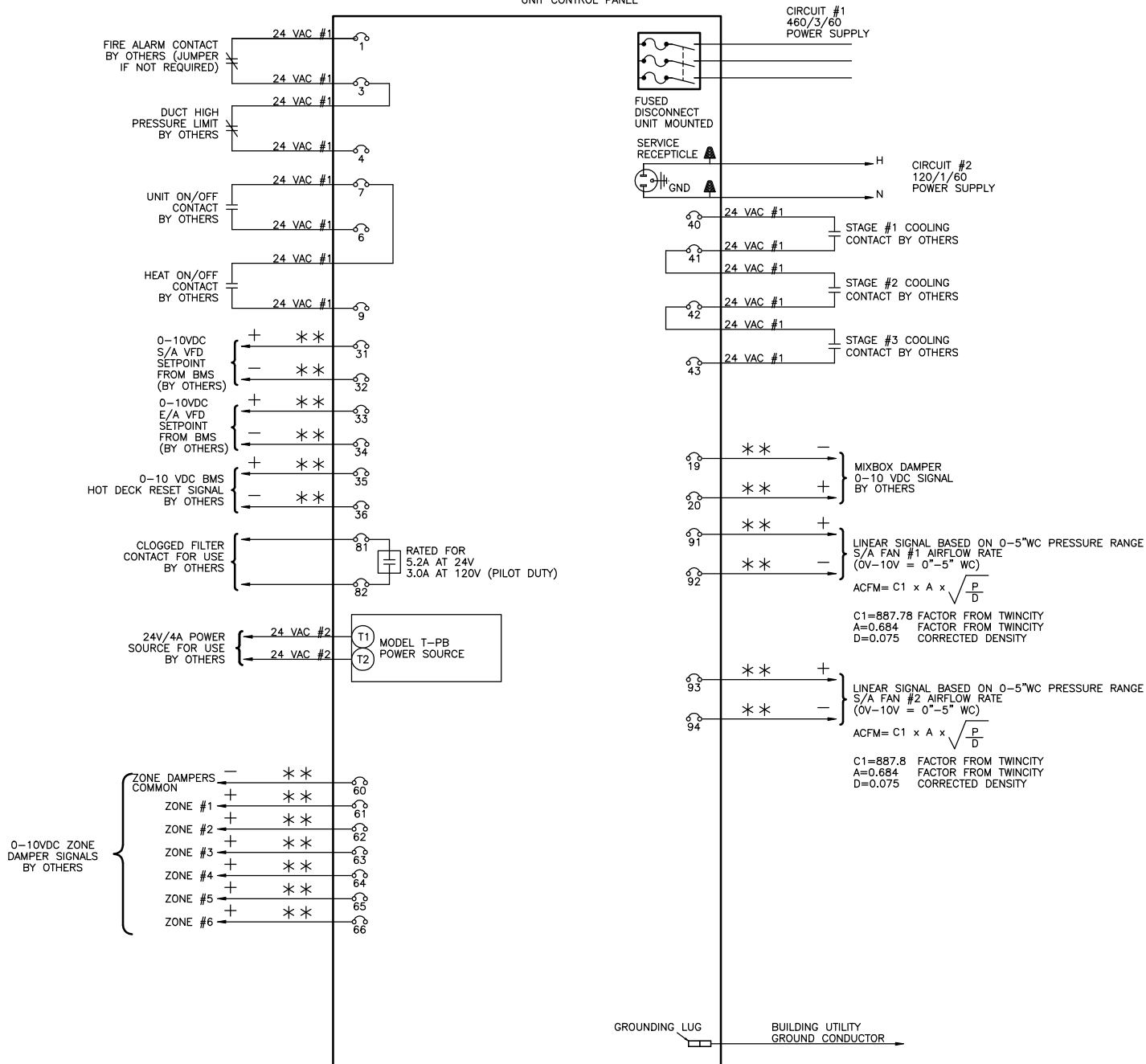
Note 1: S/A blower design speed is 2059 rpm (70.6Hz). speed range: 80%-110% of designed rpm. (56.5-77.7Hz)

Note 2: E/A blower design speed is 1114 rpm (55.7Hz). speed range: 80%-110% of designed rpm. (44.6-61.3Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-14

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 20 2022

DRN.BY: CWJ

DWG.NO:

DK9631F-14-1

DATE: OCT 18 2022

CHKD.BY: JLC



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE252/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-15

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6450 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6350 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>7,200 CFM</u>	FAN SIZE (2) <u>165A Alum EPFN</u>	TSP <u>4.0 in w.c.</u>	RPM <u>2386</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>3.42 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 81.8 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>6,120 CFM</u>	FAN SIZE (1) <u>24B105/WPD 25°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1668</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.76 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 55.6 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R QTY: 1 TAG: RTU-15

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-15 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	75.3 AMPS	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.(shipped loose)
- MCA is based on '14A' supply air and '3.5A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 16 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>16.67 SQ.FT.</u>	FACE VELOCITY <u>432 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>400,000 Btuh</u>	HEAT OUTPUT <u>320,000 Btuh</u> TEMP. RISE <u>41.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-15

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Double wall uninsulated vertical style vent.

AIR COOLED DX SYSTEM DATA

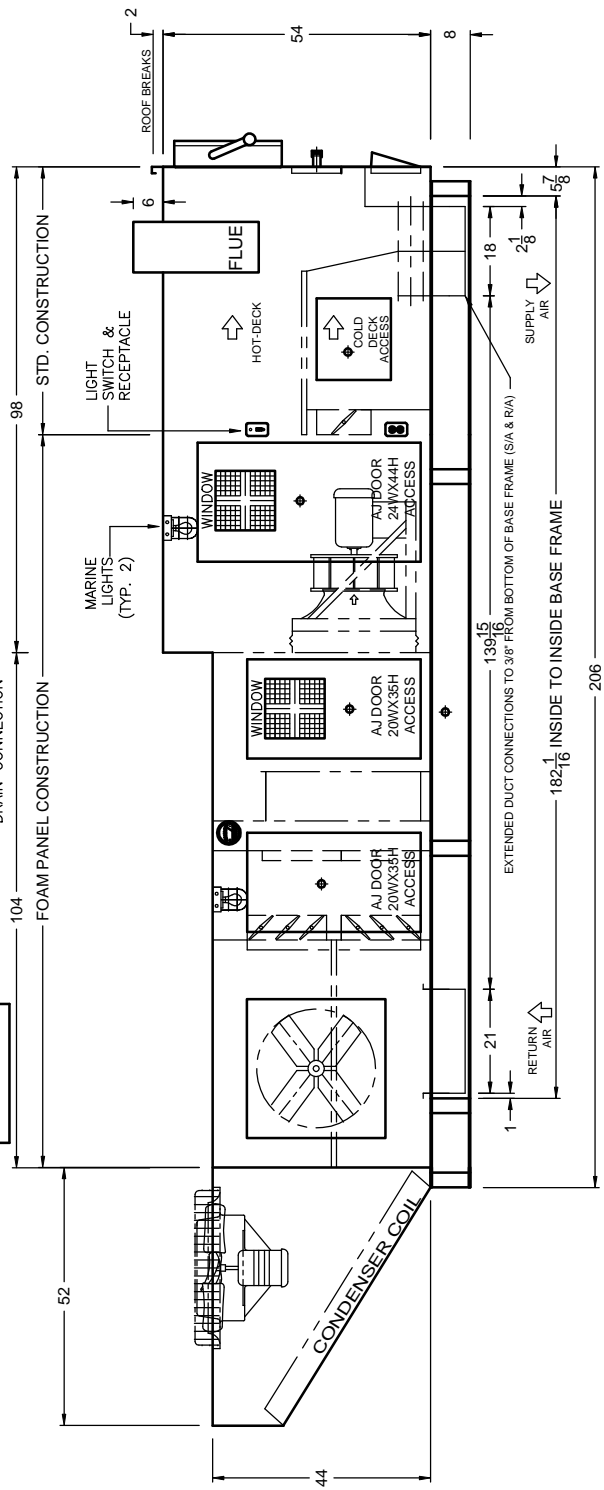
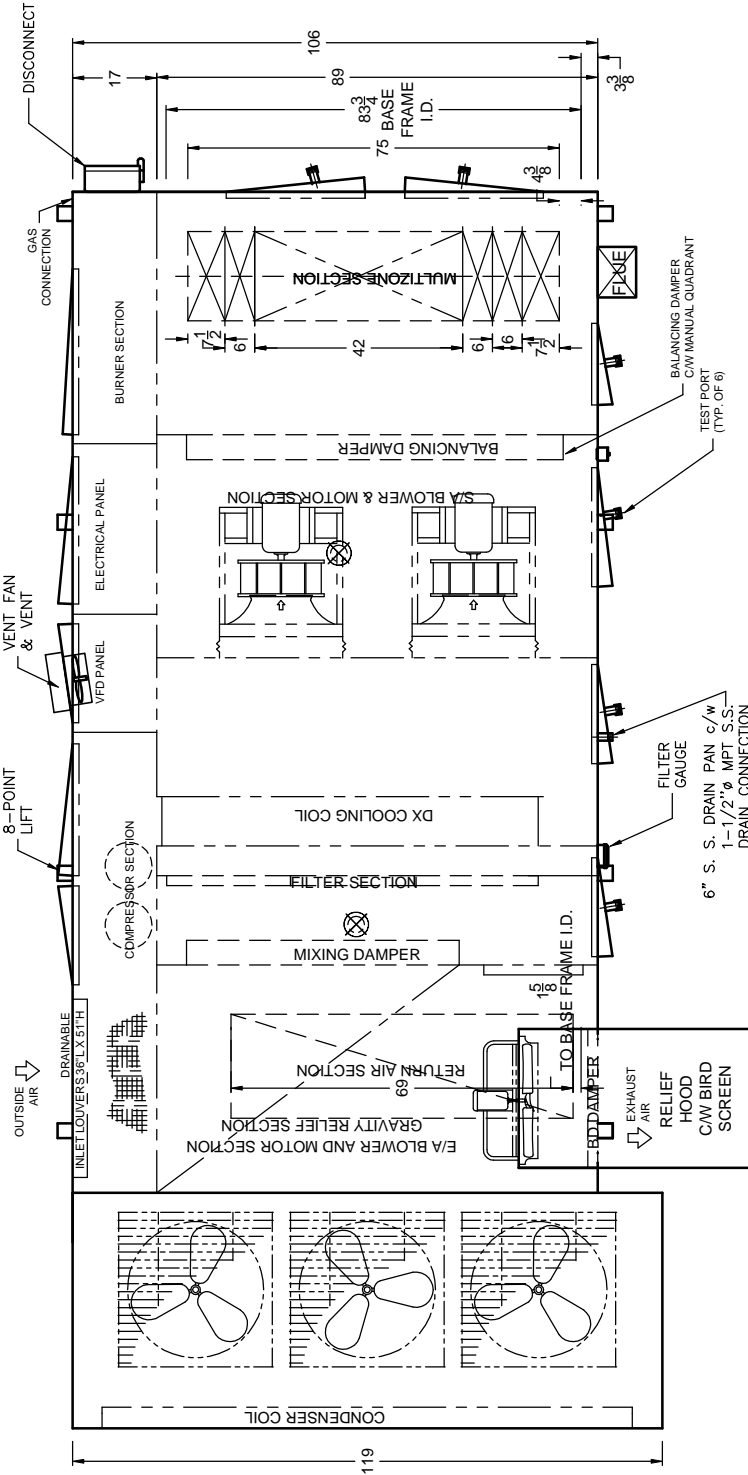
COIL SIZE <u>31.25 x 76 x 8R x 8 FPI</u>	VELOCITY <u>424 FPM</u>	
TOTAL CAPACITY <u>316,000 Btuh</u>	AIR P.D. <u>0.67 in.wc.</u>	
SENSIBLE CAPACITY <u>217,000 Btuh</u>	MOISTURE REMOVAL <u>87.4 lb/hr</u>	
ENTERING AIR DB / WB <u>79.9°F / 66.3°F</u>	LEAVING AIR DB / WB <u>51.9°F / 51.5°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>46.4°F / 125.6°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP154KCE-TED-455</u>	QUANTITY <u>2</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, compressor protection module, low pressure control and high pressure control.
- Mechanical cooling has 2 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Double wall uninsulated vertical style vent.
- 1 - DH363FRK Disconnect Switch Fusible 100A 600V Nema 3R Raintight (field installed on unit)

* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631
TAG: RTU-15

FWE252/DJE40/O/MMV/R
HEAT/COOL UNIT



generated by
ProUnit

REVISIONS:

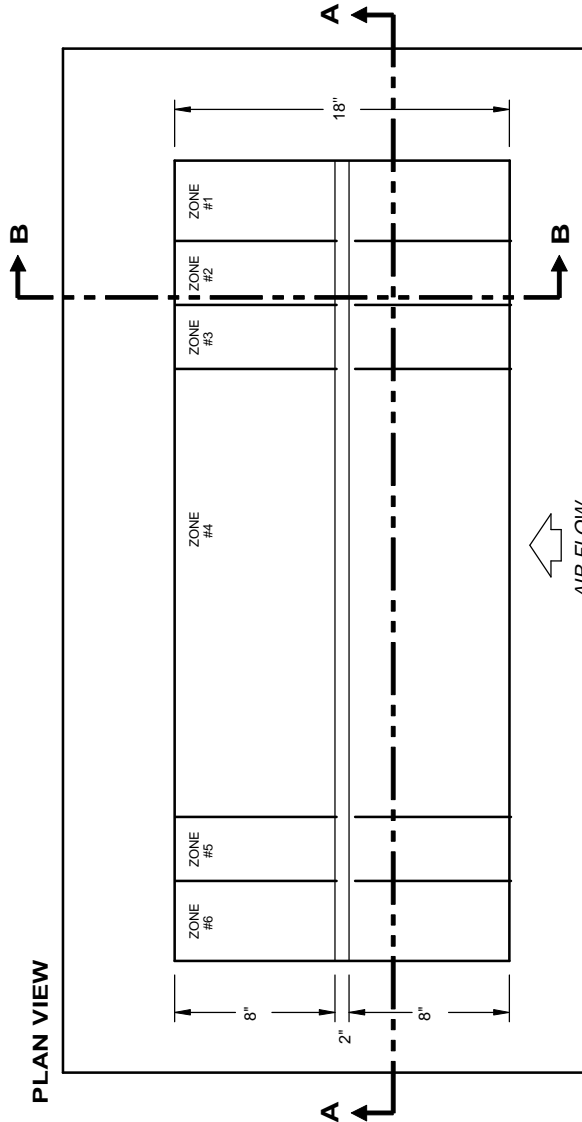
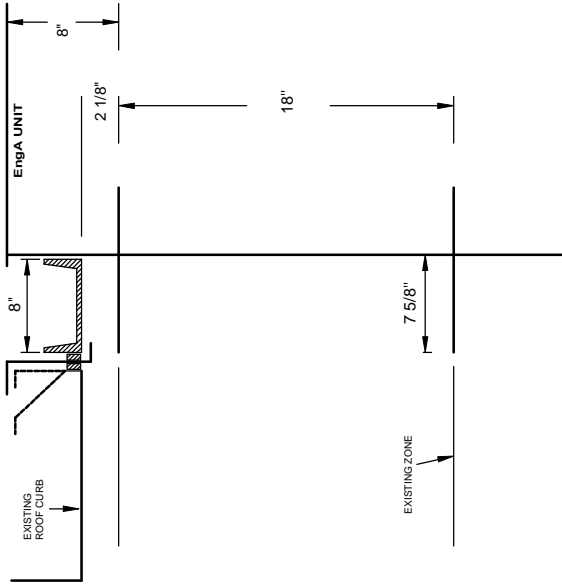
DATE:
OCT 04 2022

DRWN BY:
CWJ

CHKD BY:
JLC

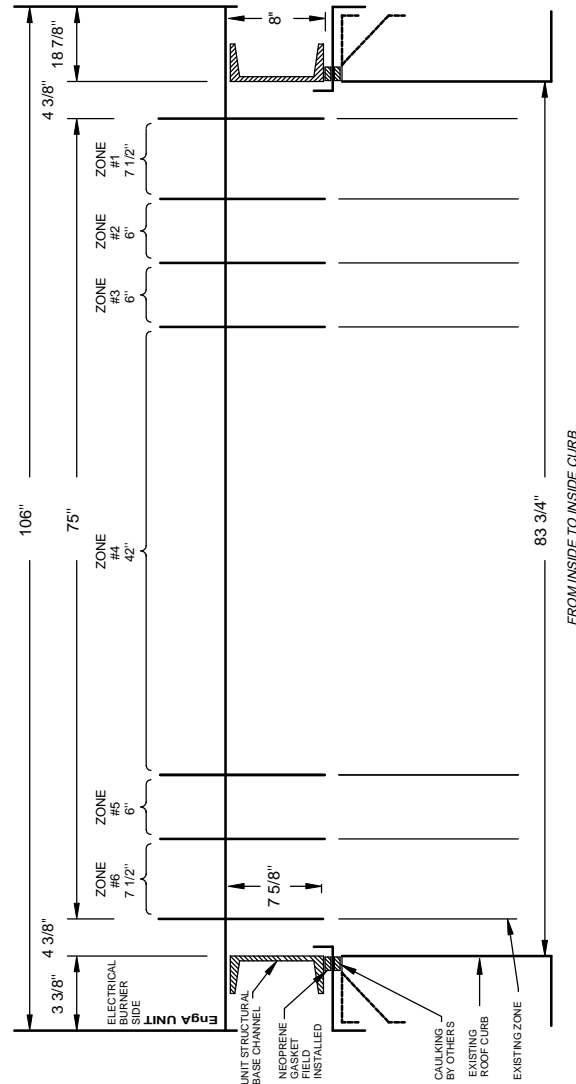
DRWG NO.:
DK9631M-15-1

CROSS-SECTION VIEW B-B



AIR FLOW

CROSS-SECTION VIEW A-A



DK9631
TAG: RTU-15

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



ENGINEERED AIR



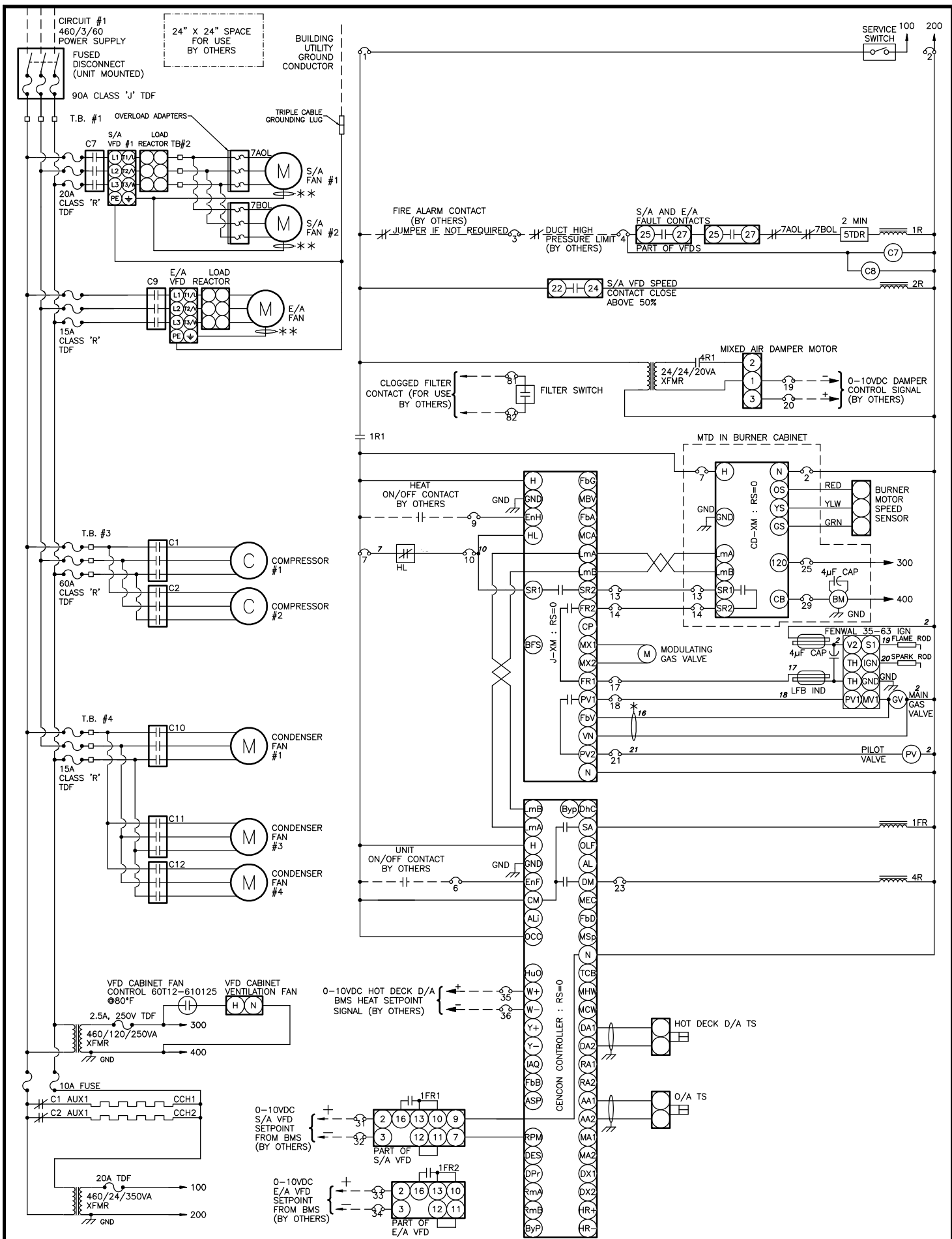
REVISIONS: DEC 20 2022

DATE:
OCT 24 2022

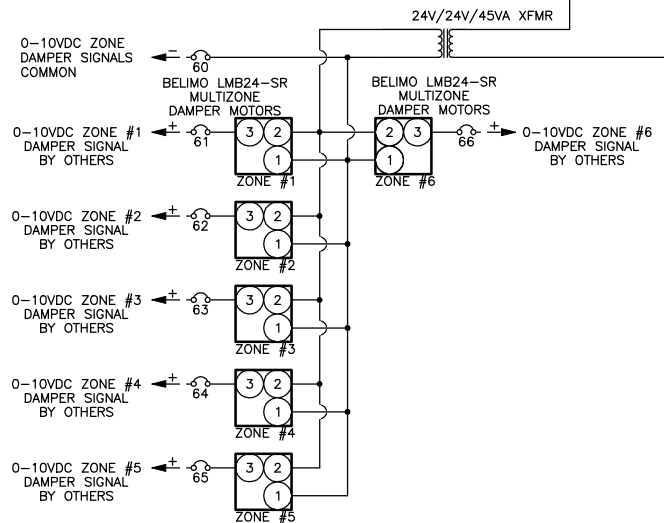
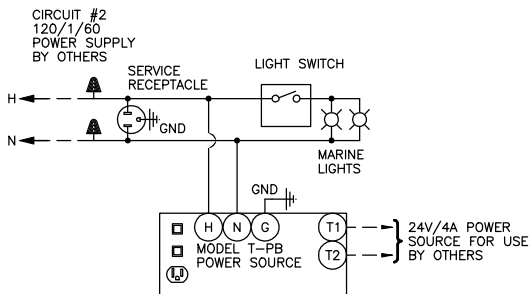
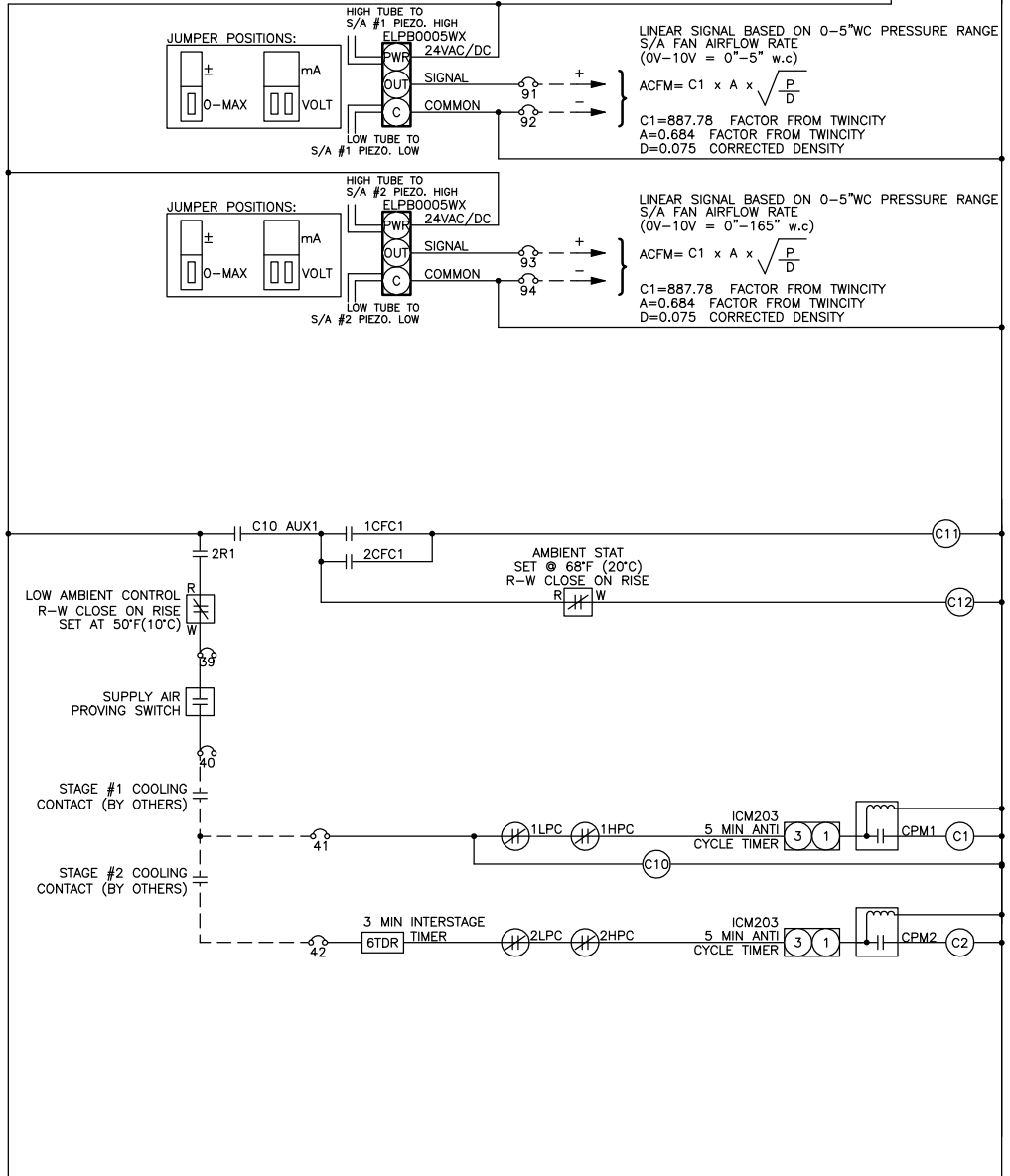
DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-15-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-15

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	75.3 AMPS	4 Awg	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Crankcase Heater (2 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 and #2	1	ZP154KCE-TED-455	10 Awg	23.1 / 150.0	1	60	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-90SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-15

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 2 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

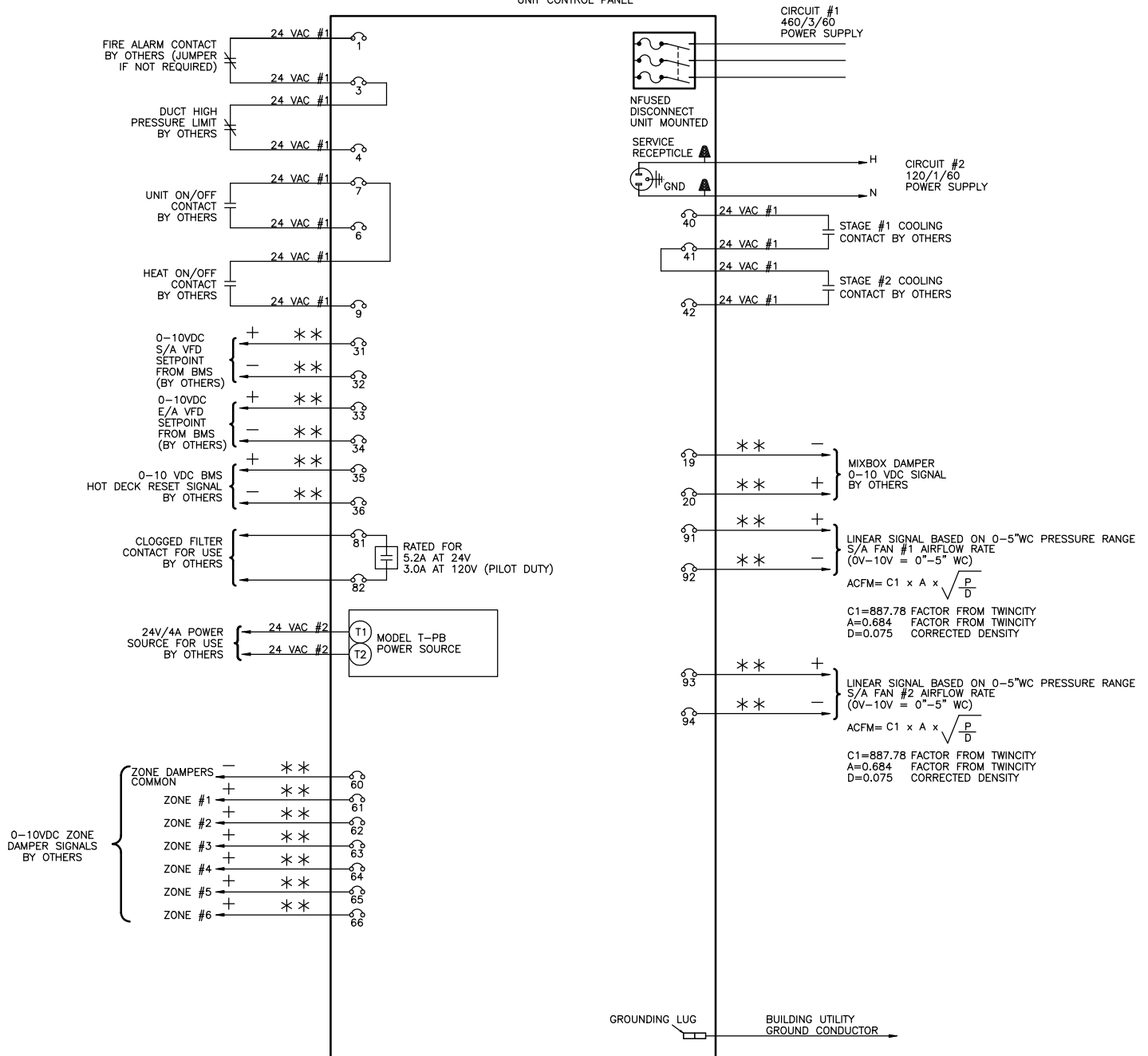
Note 1: S/A blower design speed is 2386 rpm (81.8Hz). speed range: 80%-110% of designed rpm. (65.4-90Hz)

Note 2: E/A blower design speed is 1668 rpm (55.6Hz). speed range: 80%-110% of designed rpm. (44.5-61.2Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-15

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 20 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-15-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE285/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-16

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>7450 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>7300 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>9,500 CFM</u>	FAN SIZE (2) <u>182 Alum EPFN</u>	TSP <u>4.2 in w.c.</u>	RPM <u>2167</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>4.51 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 74.3Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>8,050 CFM</u>	FAN SIZE (1) <u>24E8/WPD 30°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1696</u>
MOTOR SIZE <u>3 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>2.88 BHP</u>

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 55.2 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE285/DJE60/O/M/MV/R QTY: 1 TAG: RTU-16

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-16 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	79.3 AMPS	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.(shipped loose)
- MCA is based on '14A' supply air and '4.8A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE	Pleated Filter with MERV 8 rating		
QTY/SIZE	6 - 25 x 20 x 2"	QTY/SIZE	
TOTAL GROSS AREA	20.83 SQ.FT.	FACE VELOCITY	456 FPM

- Filters may be shipped loose or mounted in the tracks
- 1 spare set of filters - shipped loose
- Dwyer series 2000 magnehelic gauge 0-2" wc across filter section

BURNER HEATING DATA - INDIRECT FIRED (DJE-60)

POWER BURNER	EngA 'HT' Series	HEAT EXCH. MATERIAL	Stainless Steel
FUEL	Natural Gas	INLET PRESSURE	14 in wc.
HEAT INPUT	600,000 Btuh	HEAT OUTPUT	480,000 Btuh
		GAS FIELD CONN.	1"
		TEMP. RISE	47.0 °F

- EngA (15 : 1) high turndown burner
- Three pass heat exchanger c/w condensate drain connection.
- Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE285/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-16

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Double wall uninsulated vertical style vent.

AIR COOLED DX SYSTEM DATA

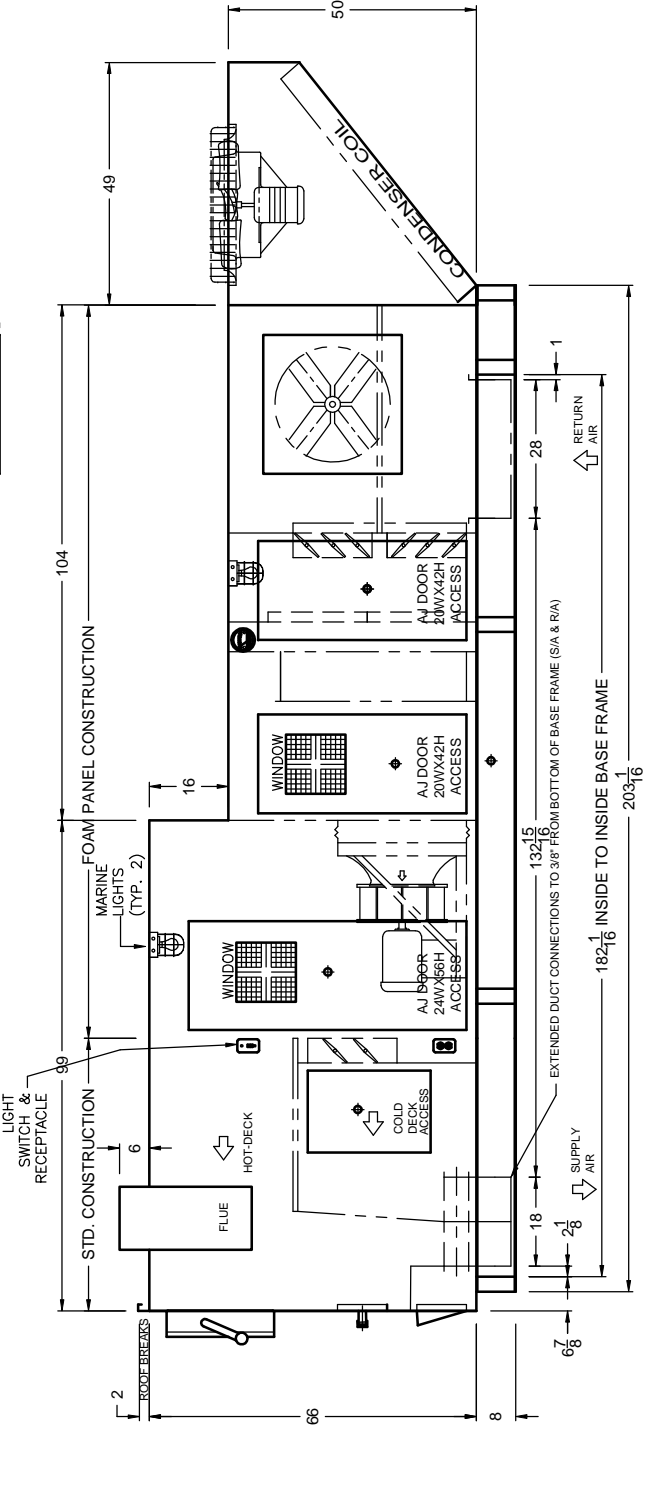
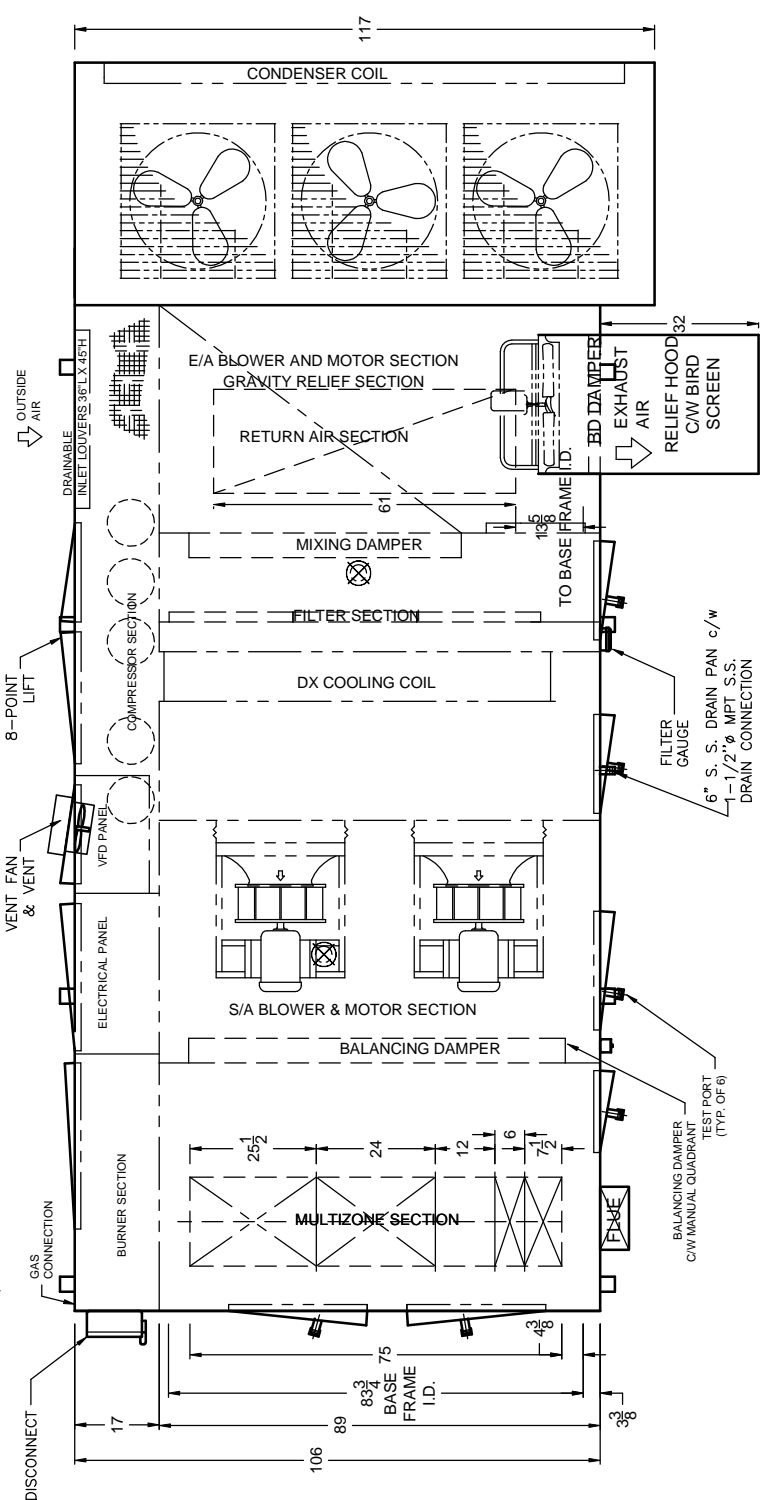
COIL SIZE <u>37.5 x 78 x 8R x 8 FPI</u>	VELOCITY <u>455 FPM</u>	
TOTAL CAPACITY <u>320,000 Btuh</u>	AIR P.D. <u>0.69 in.wc.</u>	
SENSIBLE CAPACITY <u>241,000 Btuh</u>	MOISTURE REMOVAL <u>70.1 lb/hr</u>	
ENTERING AIR DB / WB <u>76.2°F / 63.9°F</u>	LEAVING AIR DB / WB <u>52.7°F / 52.3°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>47.6°F / 125.9°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP61KCE-TFD-250</u>	QUANTITY <u>5</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- Mechanical cooling has 5 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Double wall uninsulated vertical style vent.
- 1 - DH363FRK Disconnect Switch Fusible 100A 600V Nema 3R Raintight (field installed on unit)

* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

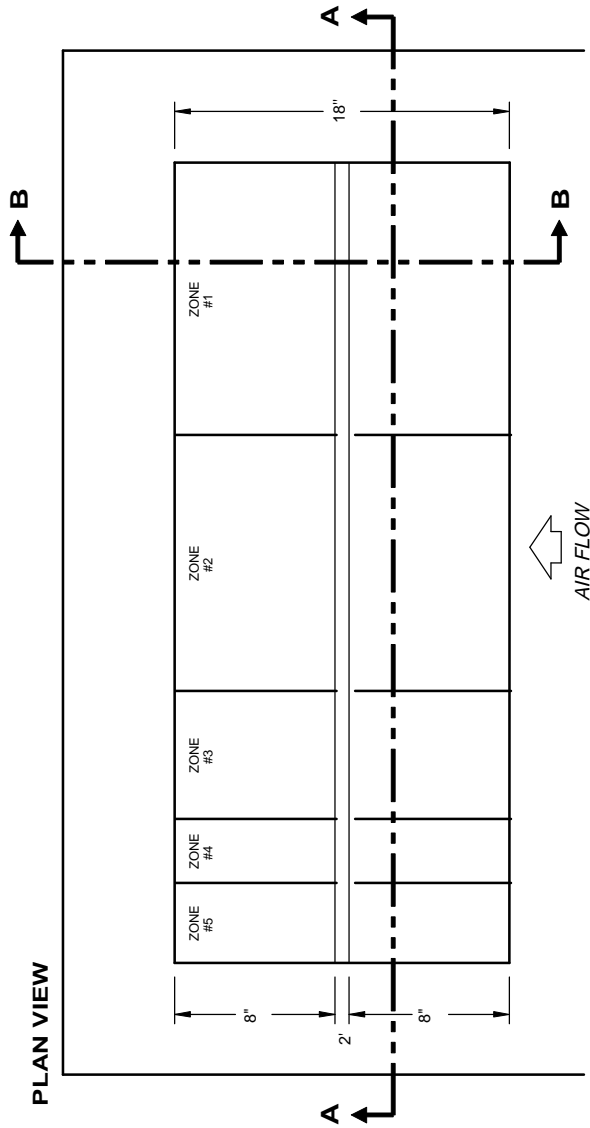
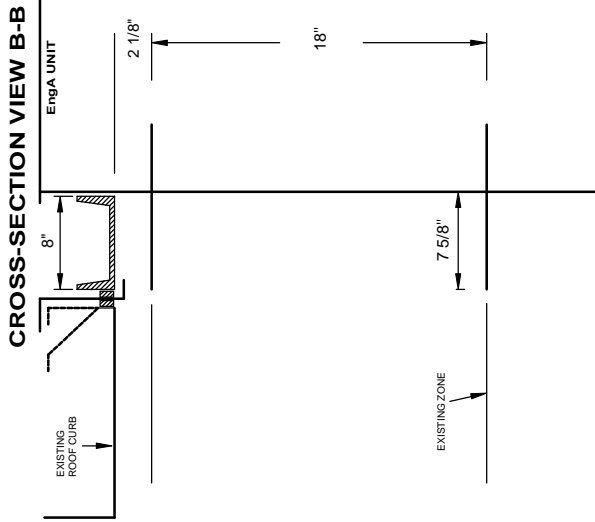
DK9631
TAG: RTU-16

FWE285/DJE60/O/M/MV/R
HEAT/COOL UNIT



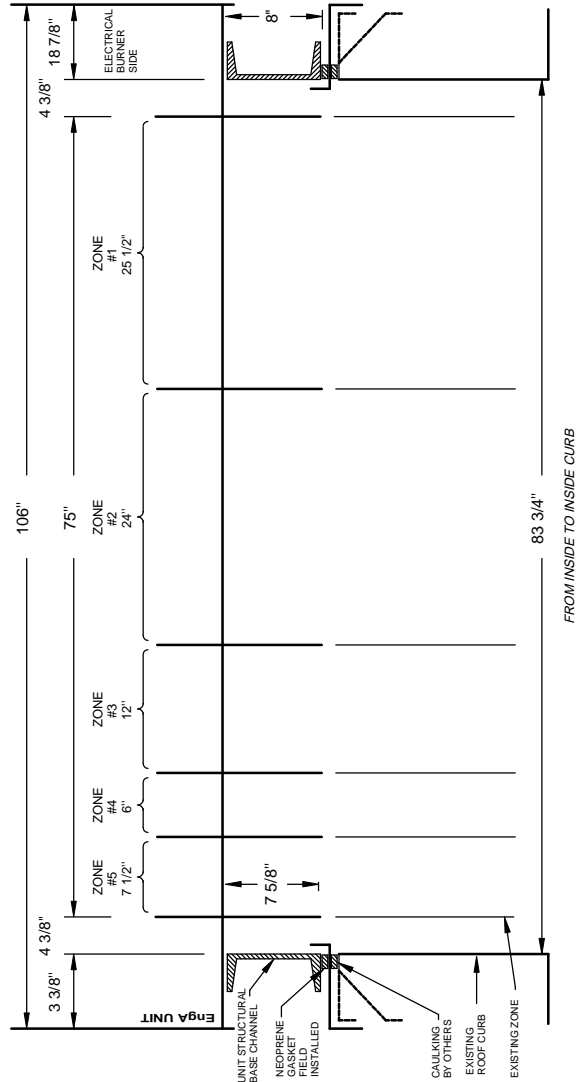
generated by
ProUnit

REVISIONS: JAN 23 2023			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-16-1



AIR FLOW

CROSS-SECTION VIEW A-A



DK9631
TAG: RTU-16

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



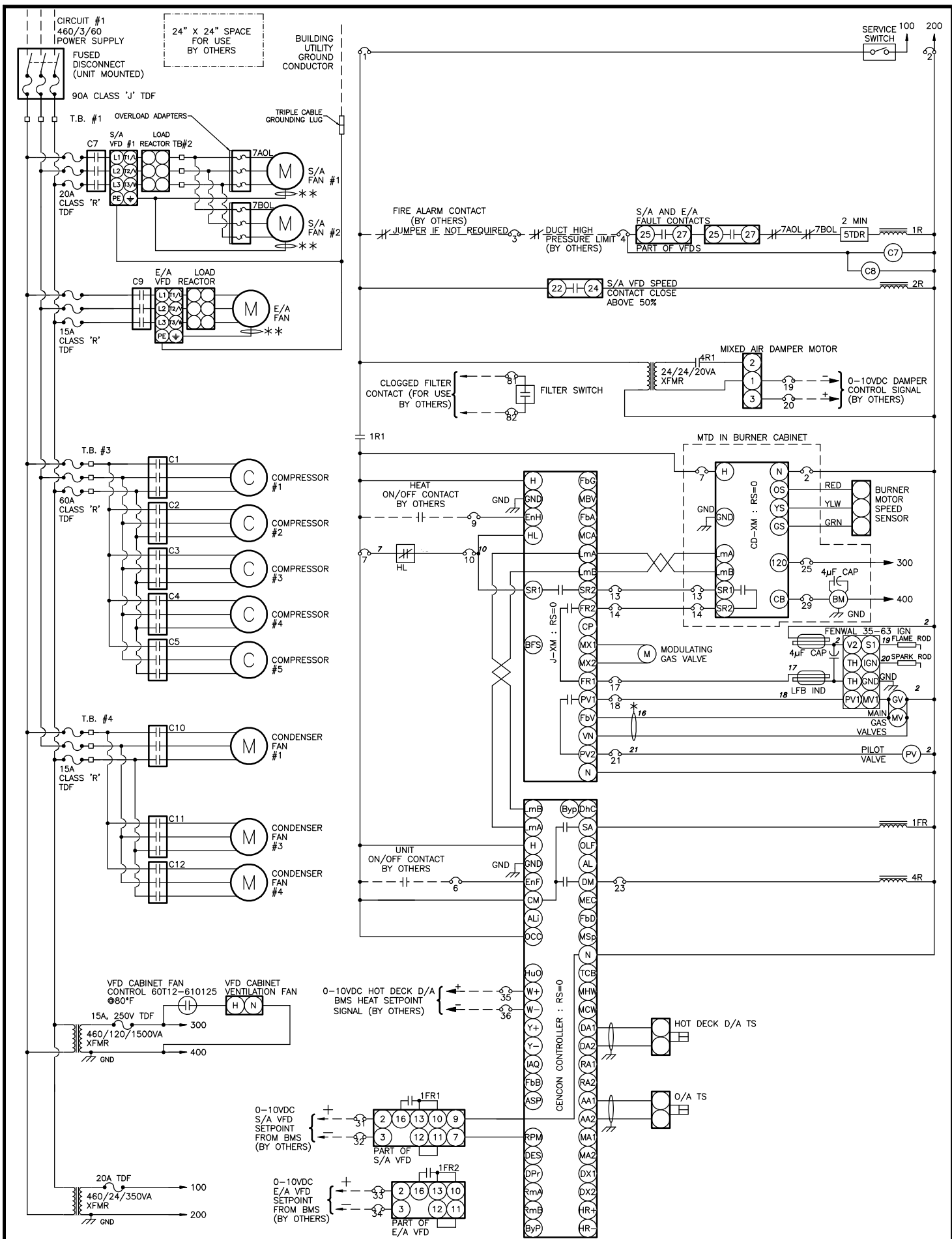
REVISIONS: DEC 20 2022

DATE:
OCT 25 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-16-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE



TAG: RTU-16

INTERNAL WIRING DIAGRAM (PAGE 1 OF 2)
FW/DJ SERIES

REVISION: MAR 20 2023

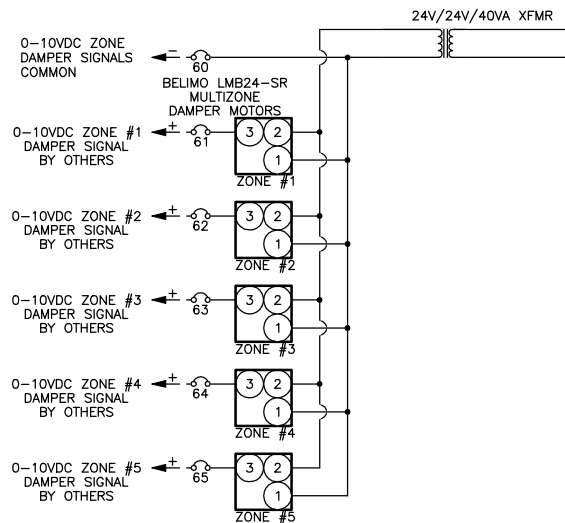
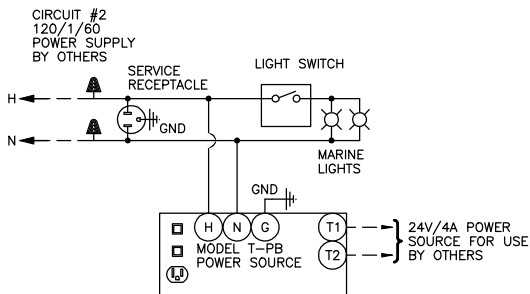
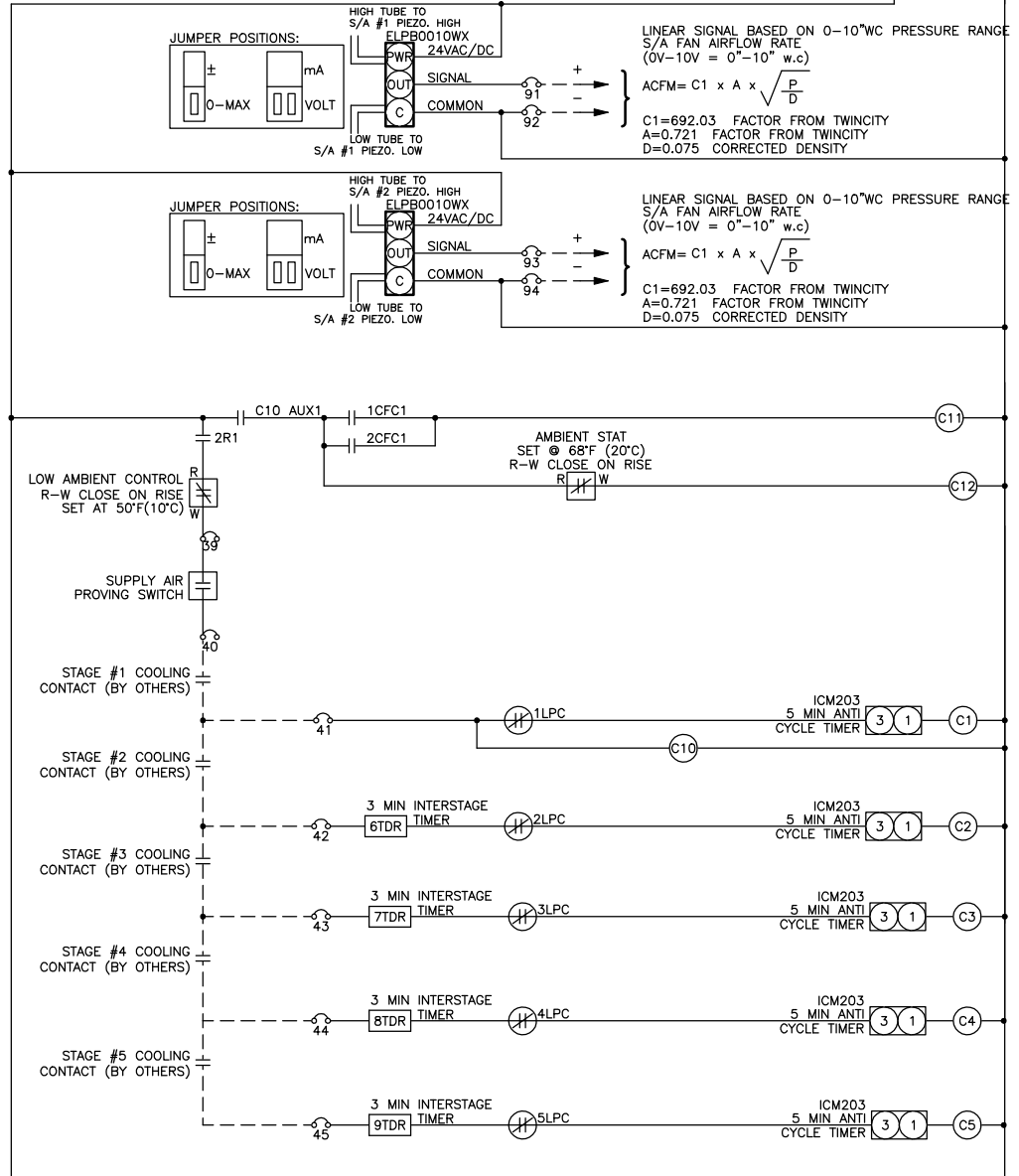
DRN.BY: CWJ

DWG.NO:

DK9631E-16-1

DATE: OCT 18 2022

CHKD.BY: JLC





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE285/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-16

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	79.3 AMPS	4 Awg	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/2 HP	14 Awg	8 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	3.3			
Compressor #1 to #5	1	ZP61KCE-TFD-250	10 Awg	9.7 / 62.0	1	60	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 3 HP	14 Awg	3.85	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	4.8			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-90SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contactor	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE285/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-16

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 5 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

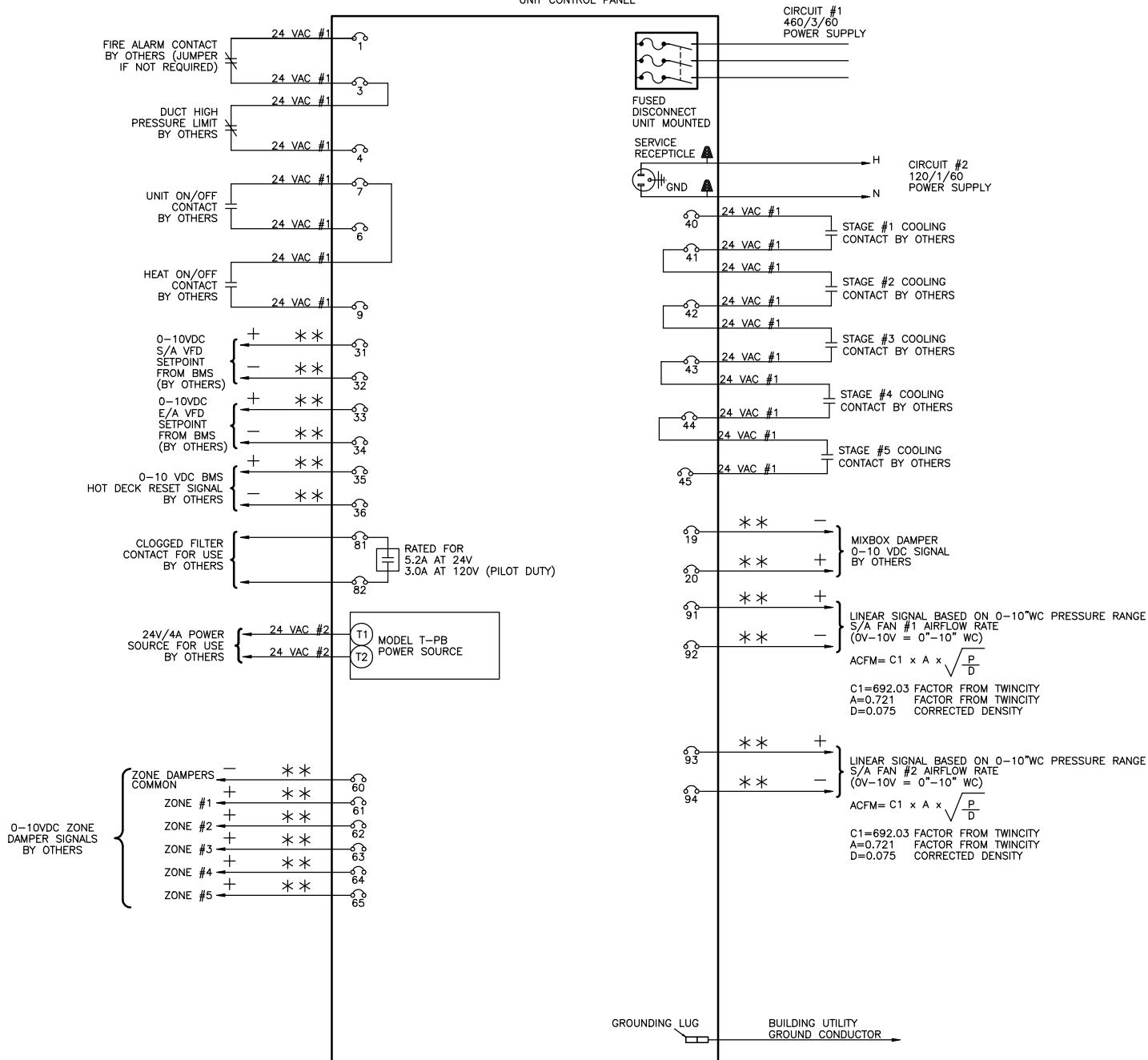
Note 1: S/A blower design speed is 2167 rpm (74.3Hz). speed range: 80%-110% of designed rpm. (59.4-81.7Hz)

Note 2: E/A blower design speed is 1696 rpm (55.2Hz). speed range: 80%-110% of designed rpm. (44.2-60.8Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-16

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 20 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-16-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-17

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6350 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6250 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>7,500 CFM</u>	FAN SIZE (2) <u>150A Alum EPFN</u>	TSP <u>4.1 in w.c.</u>	RPM <u>2958</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (3475)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>3.91 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 51.1 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>6,380 CFM</u>	FAN SIZE (1) <u>24B105/WPD 25°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1713</u>
MOTOR SIZE <u>3 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.9 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 57.1 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R QTY: 1 TAG: RTU-17

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-17 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	66.9 AMPS	80 AMPS	80 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.(shipped loose)
- MCA is based on '14A' supply air and '4.8A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others.

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 16 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>16.67 SQ.FT.</u>	FACE VELOCITY <u>450 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>400,000 Btuh</u>	HEAT OUTPUT <u>320,000 Btuh</u> TEMP. RISE <u>40.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-17

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

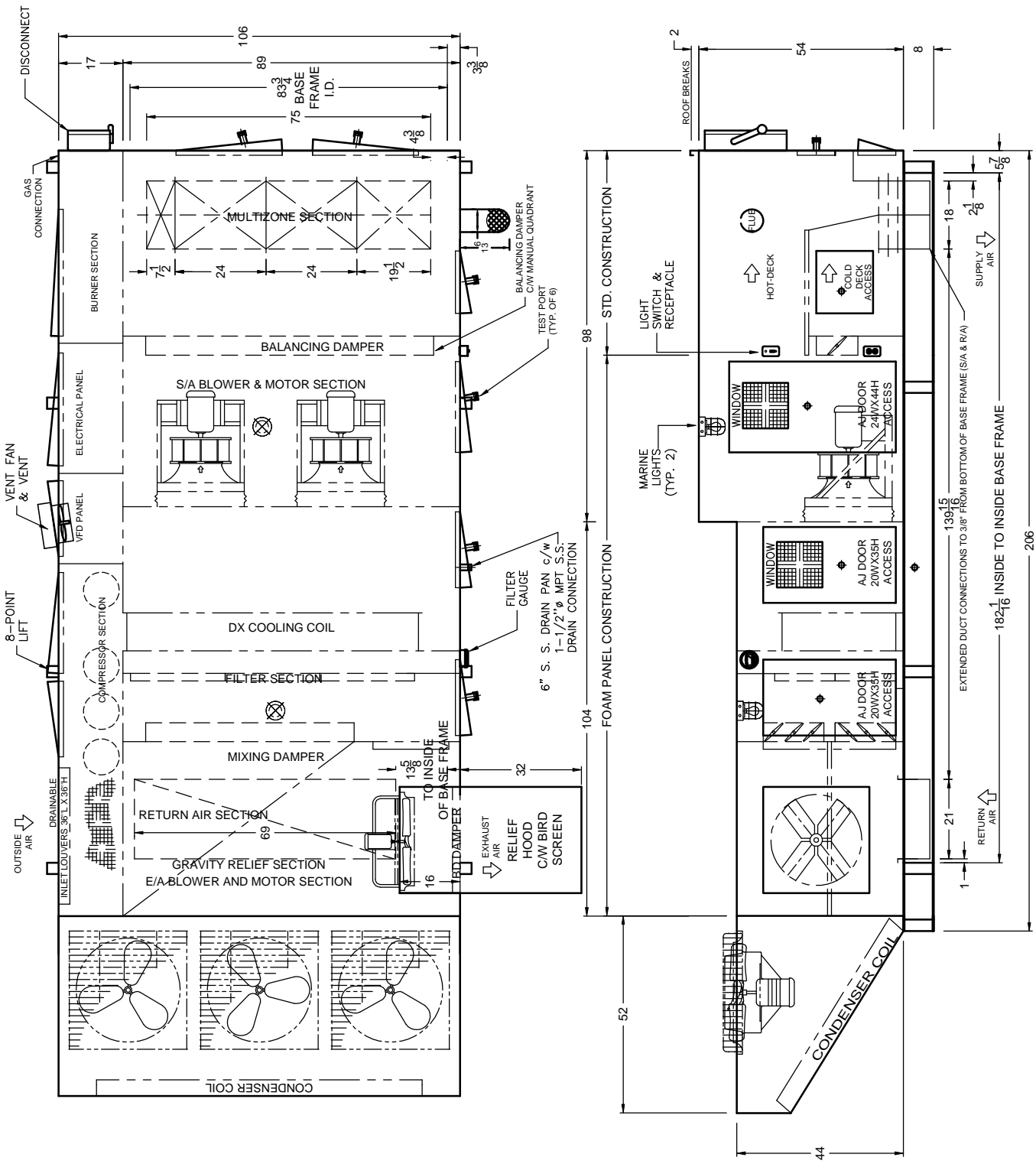
COIL SIZE <u>30 x 77 x 8R x 8 FPI</u>	VELOCITY <u>455 FPM</u>	
TOTAL CAPACITY <u>260,000 Btuh</u>	AIR P.D. <u>0.68 in.wc.</u>	
SENSIBLE CAPACITY <u>197,000 Btuh</u>	MOISTURE REMOVAL <u>54.7 lb/hr</u>	
ENTERING AIR DB / WB <u>76.9°F / 64.0°F</u>	LEAVING AIR DB / WB <u>52.5°F / 52.1°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>47.3°F / 123.8°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP61KCE-TFD-250</u>	QUANTITY <u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- The hot gas bypass line must be connected to the 5/8" OD spigot provided on the top of the DX coil header.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.
- 1 - DH363FRK Disconnect Switch Fusible 100A 600V Nema 3R Raintight (field installed on unit)

* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631
TAG: RTU-17

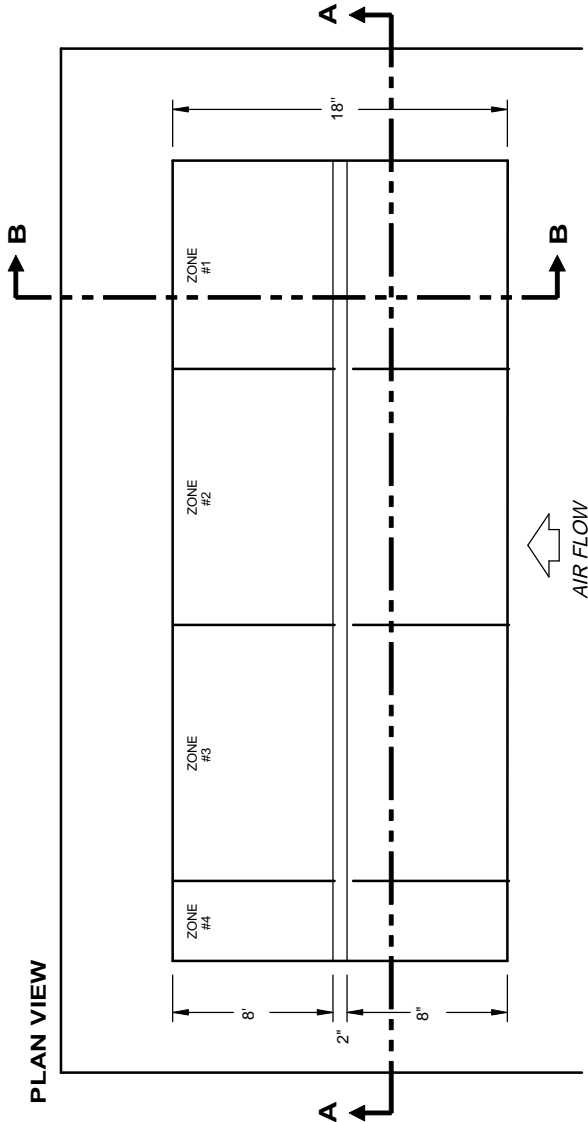
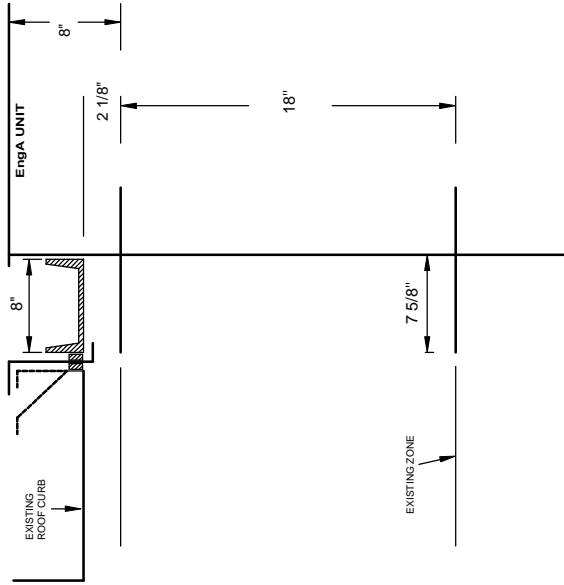
FWE224/DJE40/O/M/MV/R
HEAT/COOL UNIT



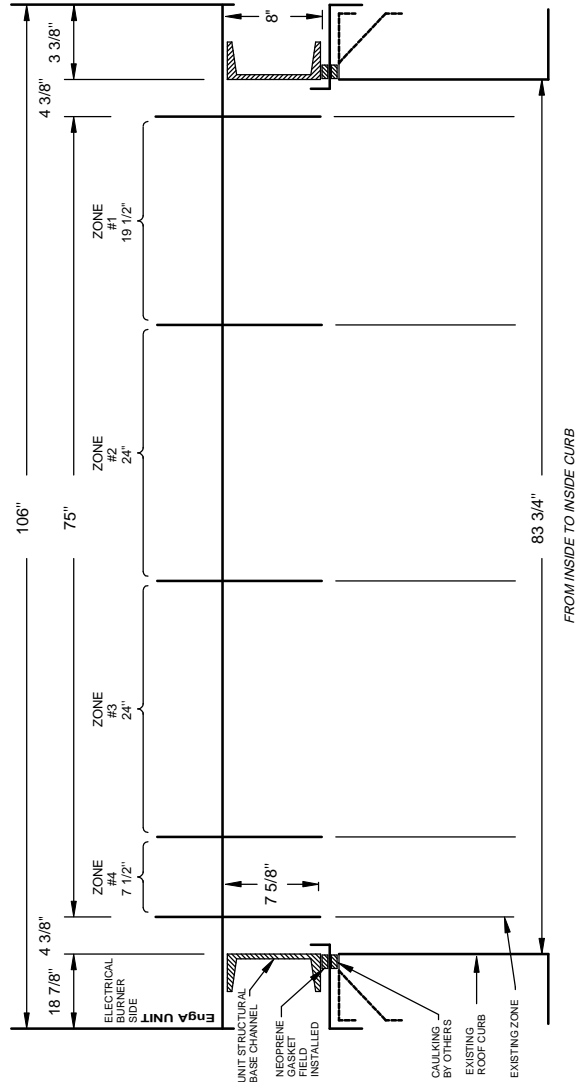
generated by
ProUnit

REVISIONS: DEC 20 2022			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-17-1

CROSS-SECTION VIEW B-B



CROSS-SECTION VIEW A-A



DK9631
TAG: RTU-17

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



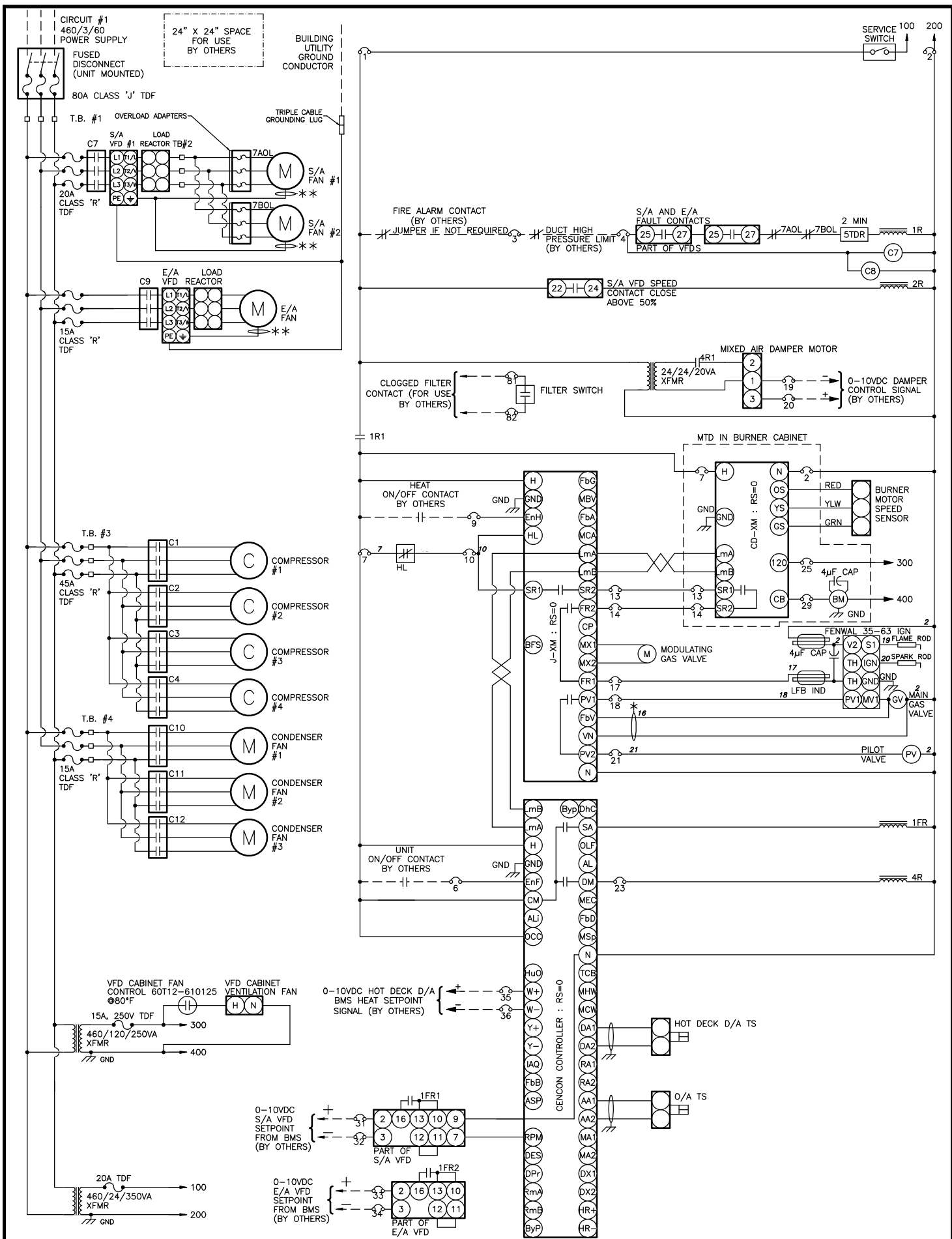
REVISIONS: DEC 20 2022

DATE:
OCT 19 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-17-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE



TAG: RTU-17

INTERNAL WIRING DIAGRAM (PAGE 1 OF 2)
FW/DJ SERIES

REVISION: MAR 20 2023

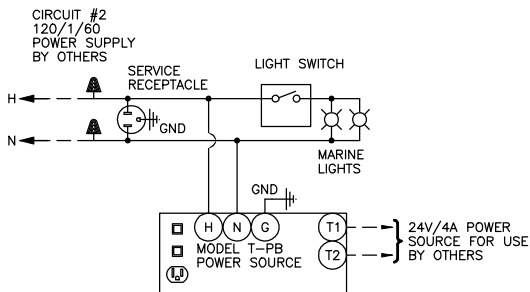
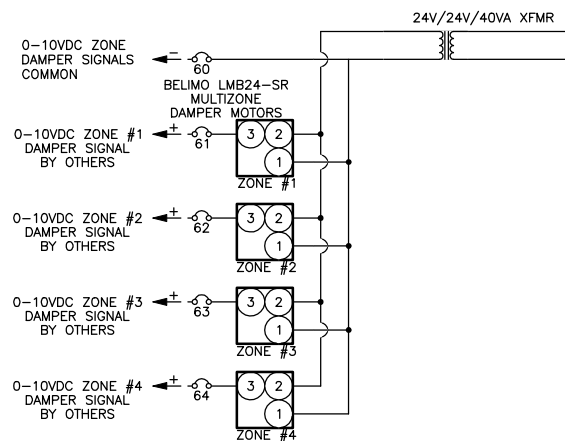
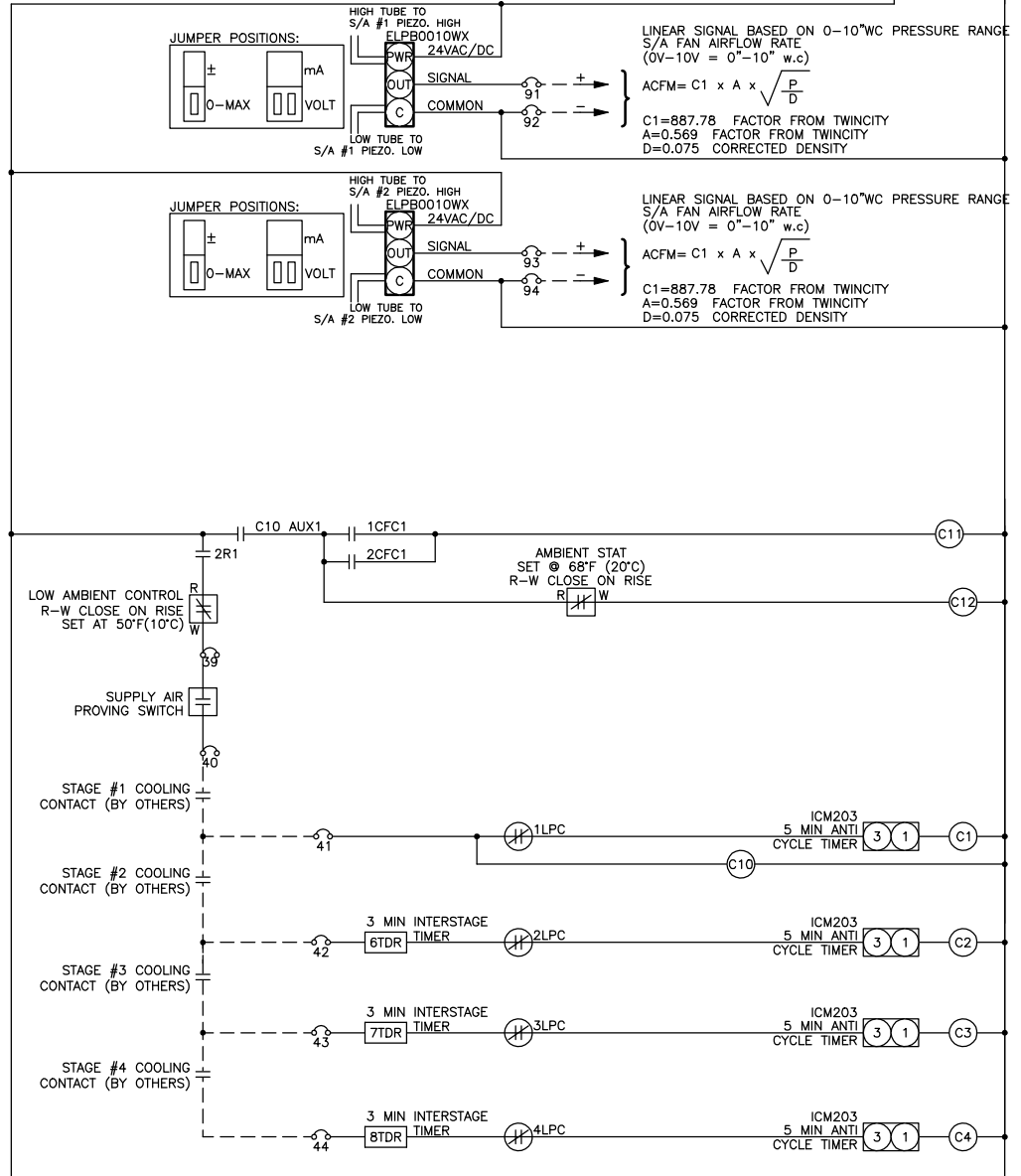
DRN.BY: CWJ

DWG.NO:

DK9631E-17-1

DATE: OCT 18 2022

CHKD.BY: JLC





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-17

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	66.9 AMPS	4 Awg	80 AMPS	80 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #4	1	ZP61KCE-TFD-250	14 Awg	9.7 / 62.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 3 HP	14 Awg	3.85	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	4.8			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (3475) 5 HP	14 Awg	6.3	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-80SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-17

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

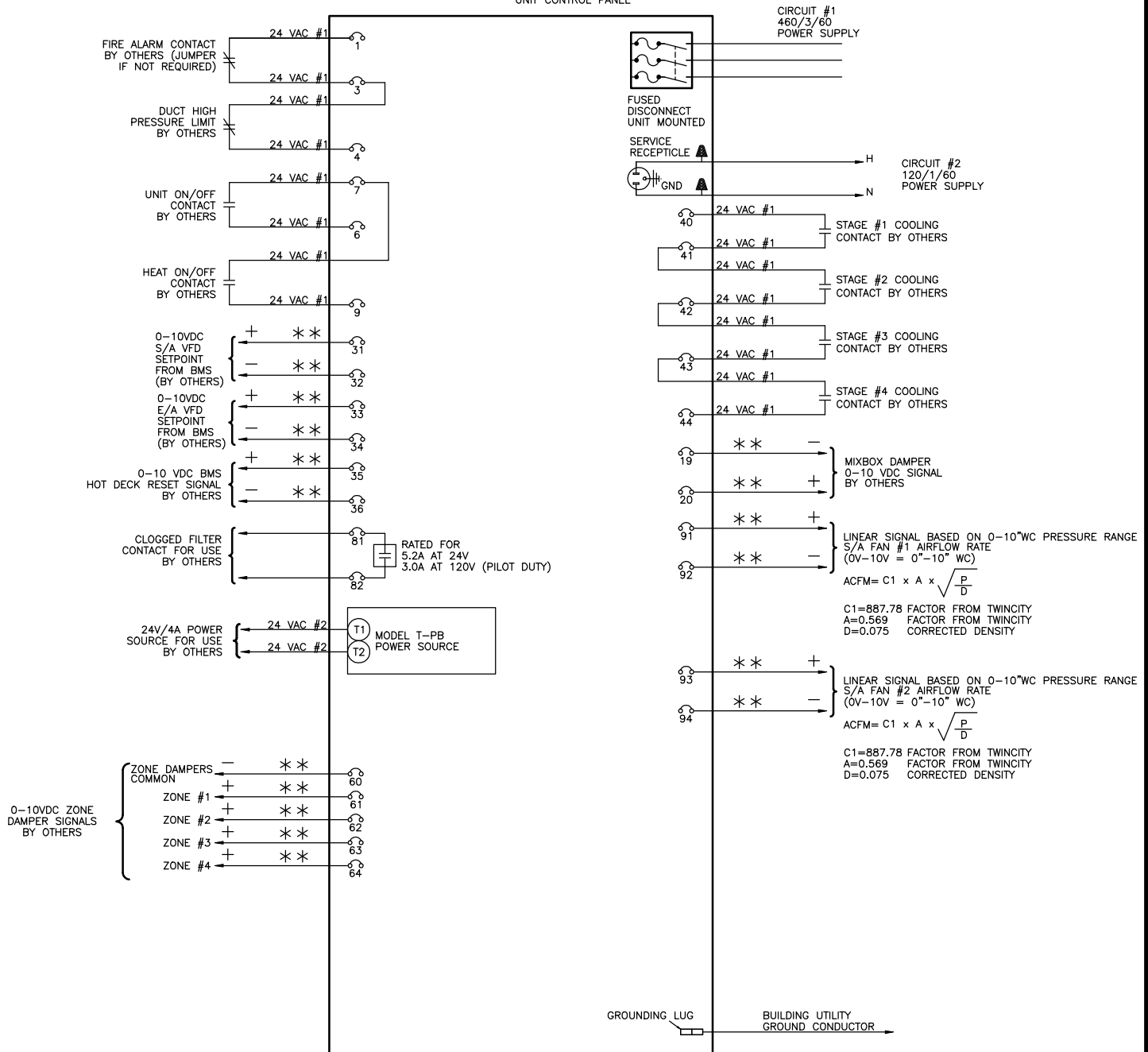
Note 1: S/A blower design speed is 2958 rpm (51.1Hz). speed range: 80%-110% of designed rpm. (40.9-56.2Hz)

Note 2: E/A blower design speed is 1713 rpm (57.1Hz). speed range: 80%-110% of designed rpm. (45.7-62.8Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-17

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 20 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-17-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-18

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6400 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6300 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>7,200 CFM</u>	FAN SIZE (2) <u>150A Alum EPFN</u>	TSP <u>4.0 in w.c.</u>	RPM <u>2876</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (3475)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>3.61 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 49.7 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>6,090 CFM</u>	FAN SIZE (1) <u>24B105/WPD 25°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1663</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.74 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 55.4 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R QTY: 1 TAG: RTU-18

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-18 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	65.6 AMPS	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch. (shipped loose)
- MCA is based on '14A' supply air and '3.5A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 16 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>16.67 SQ.FT.</u>	FACE VELOCITY <u>432 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>400,000 Btuh</u>	HEAT OUTPUT <u>320,000 Btuh</u> TEMP. RISE <u>41.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-18

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Double wall uninsulated vertical style vent.

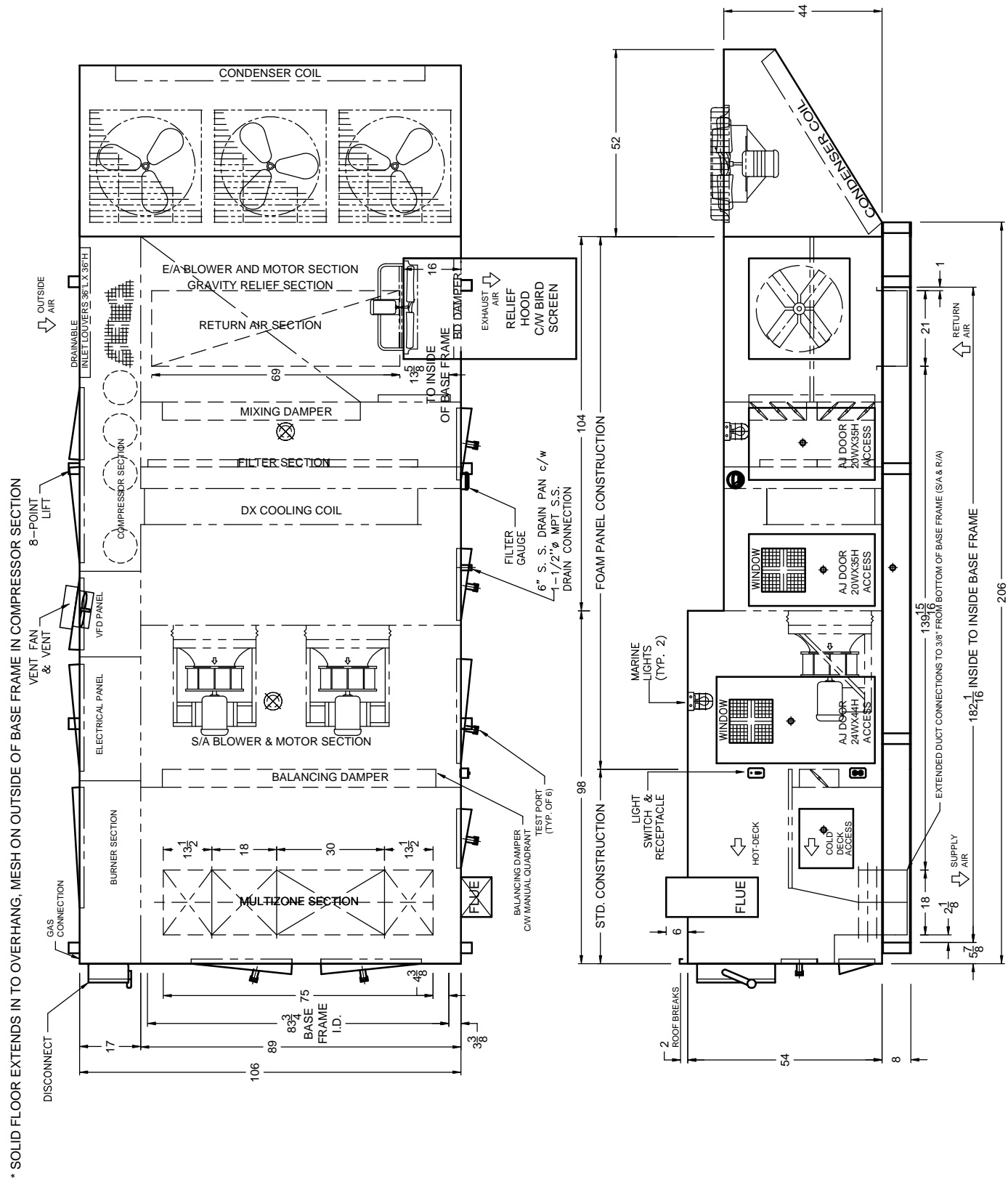
AIR COOLED DX SYSTEM DATA

COIL SIZE <u>30 x 76 x 8R x 8 FPI</u>	VELOCITY <u>442 FPM</u>	
TOTAL CAPACITY <u>256,000 Btuh</u>	AIR P.D. <u>0.66 in.wc.</u>	
SENSIBLE CAPACITY <u>191,000 Btuh</u>	MOISTURE REMOVAL <u>56.4 lb/hr</u>	
ENTERING AIR DB / WB <u>76.4°F / 63.7°F</u>	LEAVING AIR DB / WB <u>51.8°F / 51.4°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>46.5°F / 123.5°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP61KCE-TFD-250</u>	QUANTITY <u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- The hot gas bypass line must be connected to the 5/8" OD spigot provided on the top of the DX coil header.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Double wall uninsulated vertical style vent.
- 1 - DH363FRK Disconnect Switch Fusible 100A 600V Nema 3R Raintight (field installed on unit)

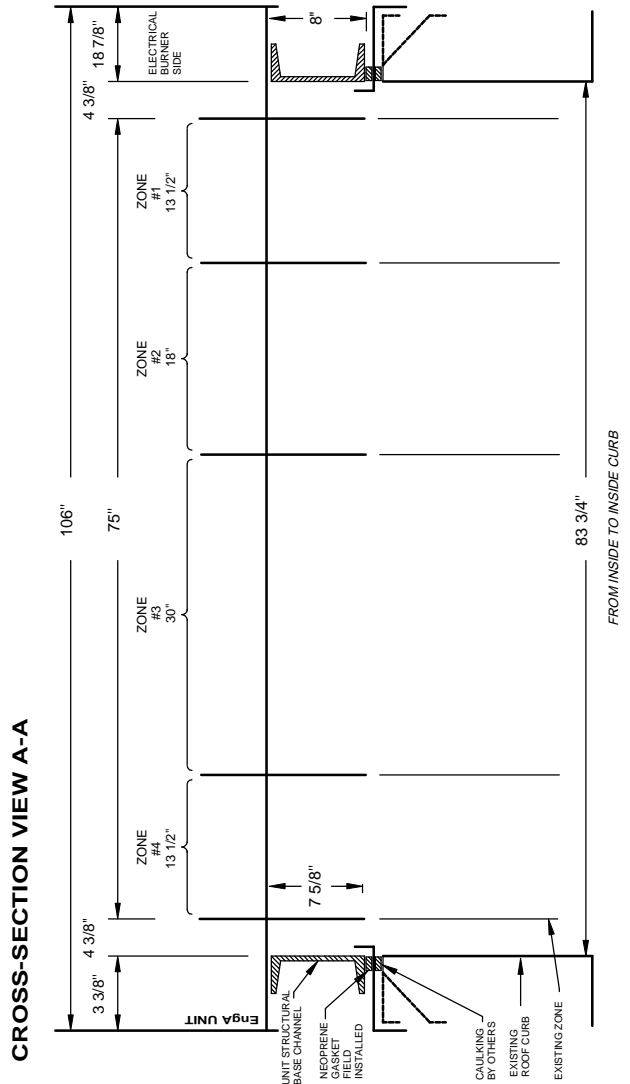
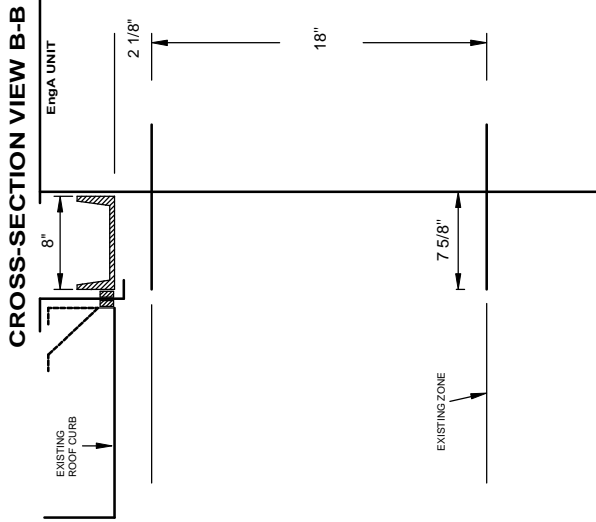
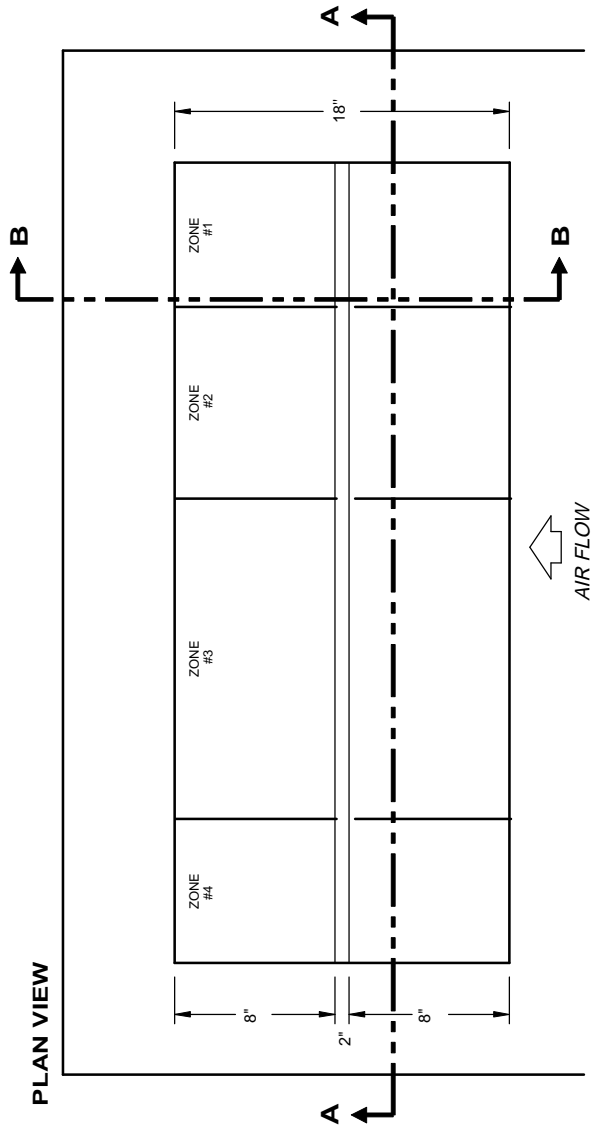


* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION

DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631 TAG: RTU-18 FWE224/DJE40/O/M/MV/R HEAT/COOL UNIT

		generated by 	REVISIONS: DEC 21 2022			
			DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-18-1



DEC 21 2022
TAG: RTU-18

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



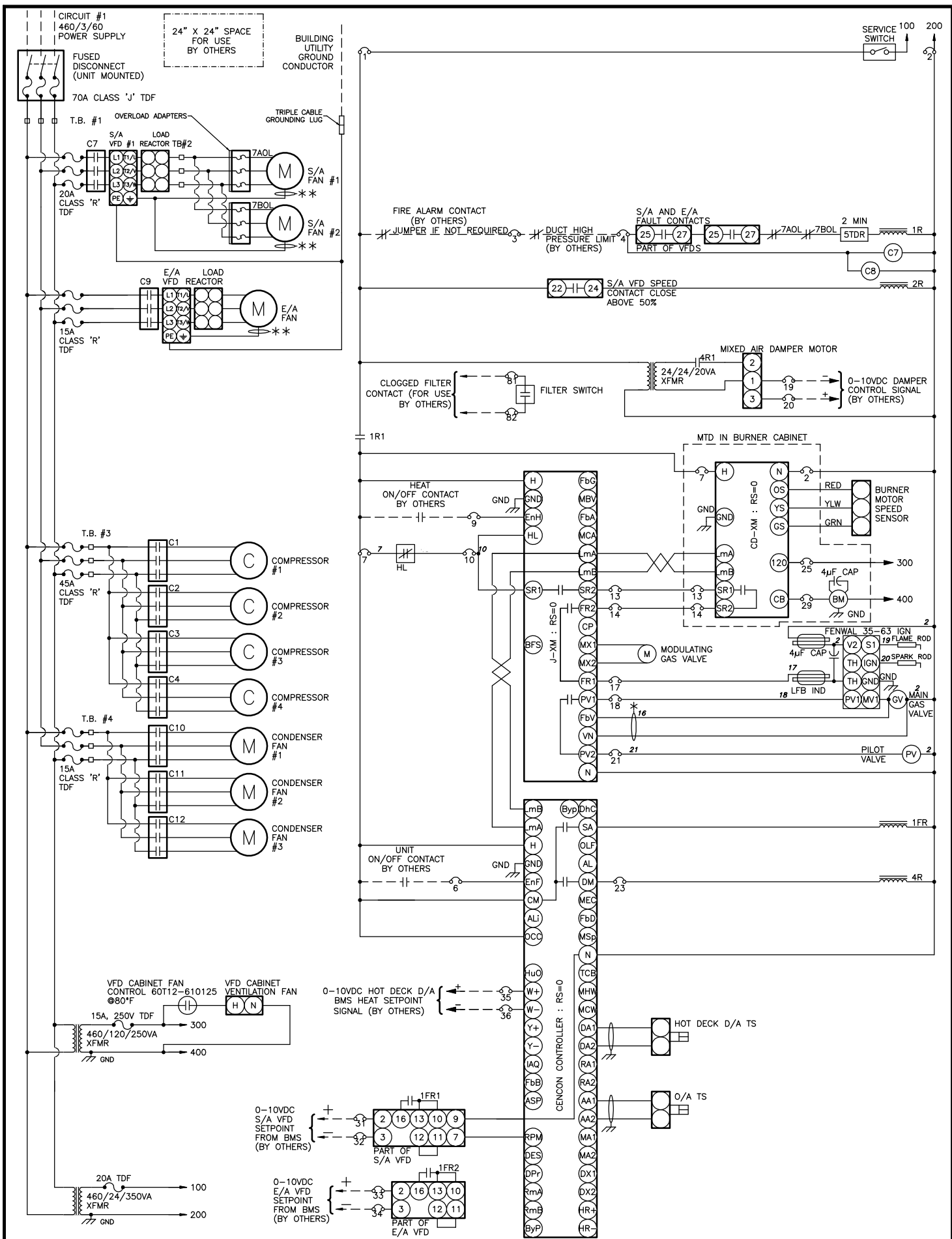
REVISIONS:

DATE:
OCT 19 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-18-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE



TAG: RTU-18

INTERNAL WIRING DIAGRAM (PAGE 1 OF 2)
FW/DJ SERIES

REVISION: MAR 20 2023

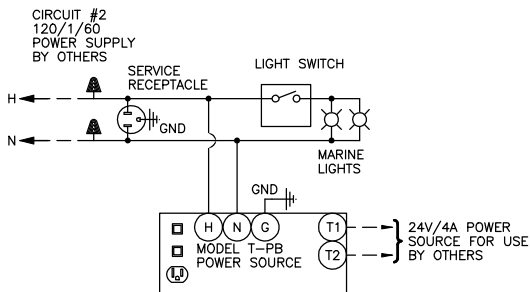
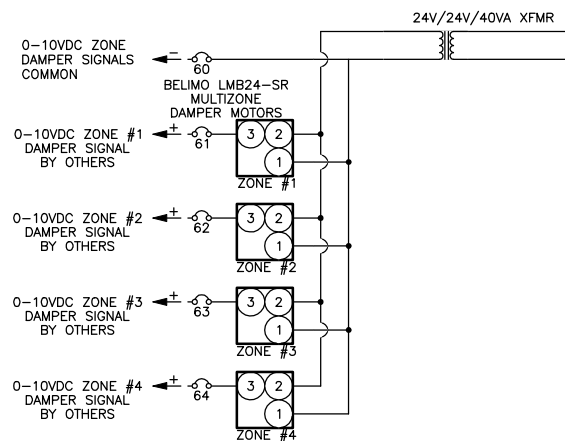
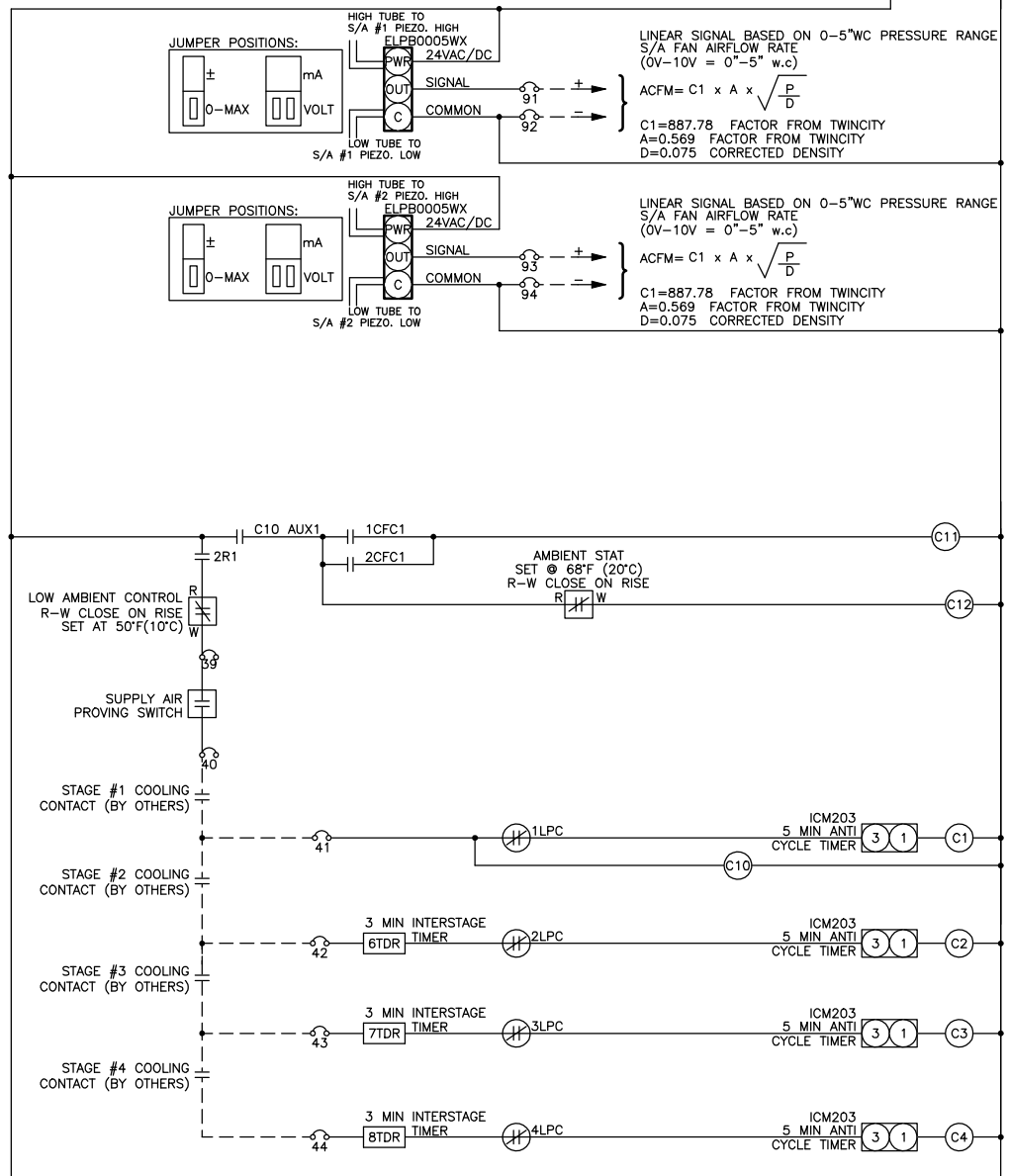
DRN.BY: CWJ

DWG.NO:

DK9631E-18-1

DATE: OCT 18 2022

CHKD.BY: JLC





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-18

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	65.6 AMPS	4 Awg	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #4	1	ZP61KCE-TFD-250	14 Awg	9.7 / 62.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (3475) 5 HP	14 Awg	6.3	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-70SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-18

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2) The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

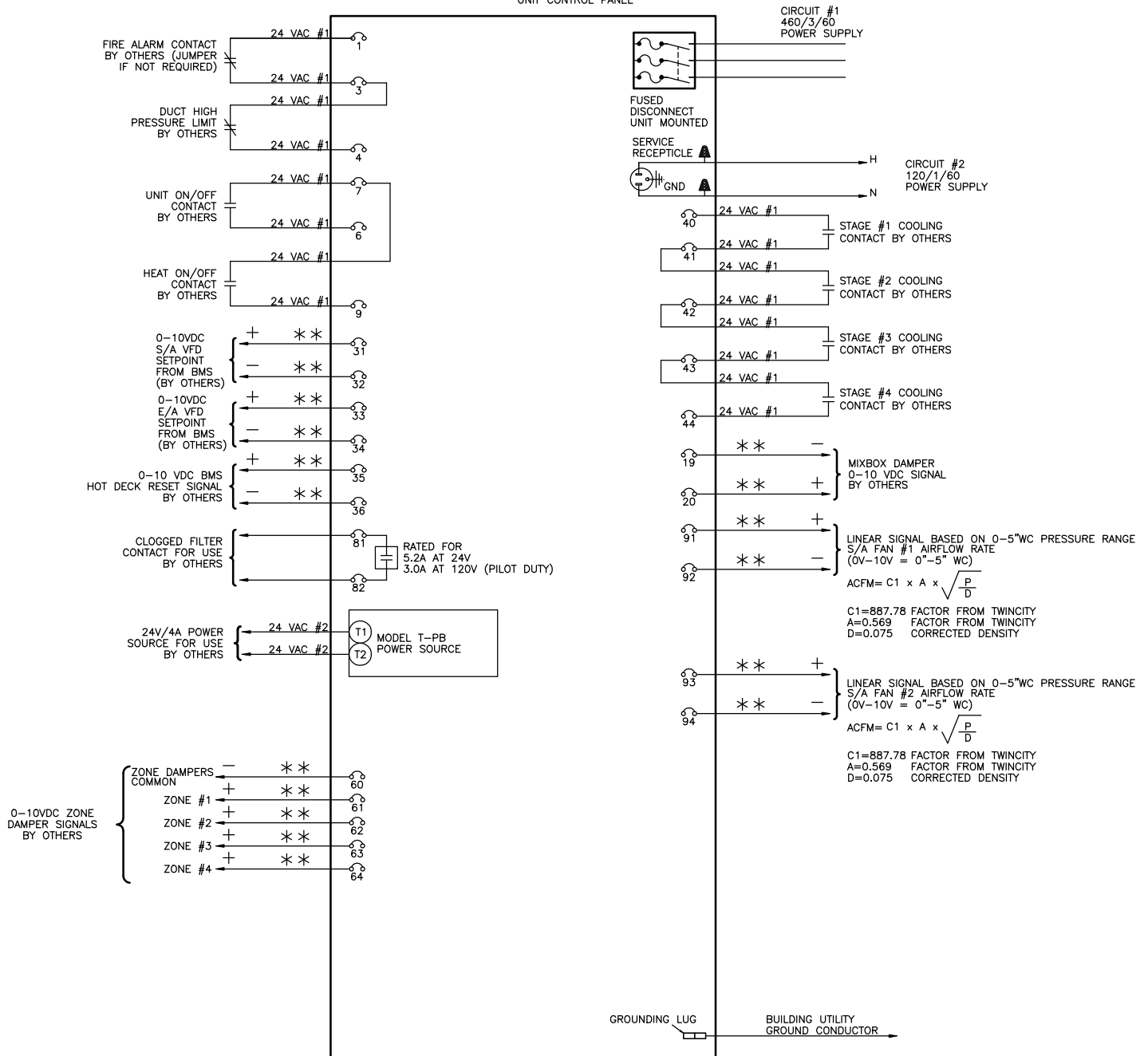
Note 1: S/A blower design speed is 2876 rpm (49.7Hz). speed range: 80%-110% of designed rpm. (39.7-54.6Hz)

Note 2: E/A blower design speed is 1663 rpm (55.4Hz). speed range: 80%-110% of designed rpm. (44.3-61Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-18

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 21 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-18-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-19

SHIPPING AND APPROVAL INFORMATION

MOUNTING Outdoor Base Mounted on Existing Roof Curb **ACCESS** As Per Drawing
UNIT MINIMUM AMBIENT -20°F **SHIPPING WEIGHT** 6400 lb **OPERATING WEIGHT** 6300 lb
NO. OF PIECES 2 (Unit + Hood)

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW 7,600 CFM **FAN SIZE (2)** 165A Alum EPFN **TSP** 4.1 in w.c. **RPM** 2460
MOTOR SIZE (2) 5 HP **TYPE (RPM)** Super 'E' TEFC (1750) **ESP** 1.5 in w.c. **BHP (2)** 3.74 BHP

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 84.3 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW 6,440 CFM **FAN SIZE (1)** 24B105/WPD 25° **TSP** 0.6 in w.c. **RPM** 1724
MOTOR SIZE 3 HP **TYPE (RPM)** See Below [1] **ESP** 0.5 in w.c. **BHP** 1.93 BHP

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 57.5 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET 2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.

UNIT LINER 22 gauge satin coat galvanized solid liner throughout HTX section.

UNIT UNDERSIDE 0.040"(18 gauge) 3003 series aluminum sheet metal liner.

UNIT FLOOR 1/8" 3003 series aluminum checker plate on entire unit floor.

EXTERIOR PAINT Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R QTY: 1 TAG: RTU-19

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-19 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	66.9 AMPS	80 AMPS	80 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.(shipped loose)
- MCA is based on '14A' supply air and '4.8A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 16 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>16.67 SQ.FT.</u>	FACE VELOCITY <u>456 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>400,000 Btuh</u>	HEAT OUTPUT <u>320,000 Btuh</u> TEMP. RISE <u>39.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-19

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Double wall uninsulated vertical style vent.

AIR COOLED DX SYSTEM DATA

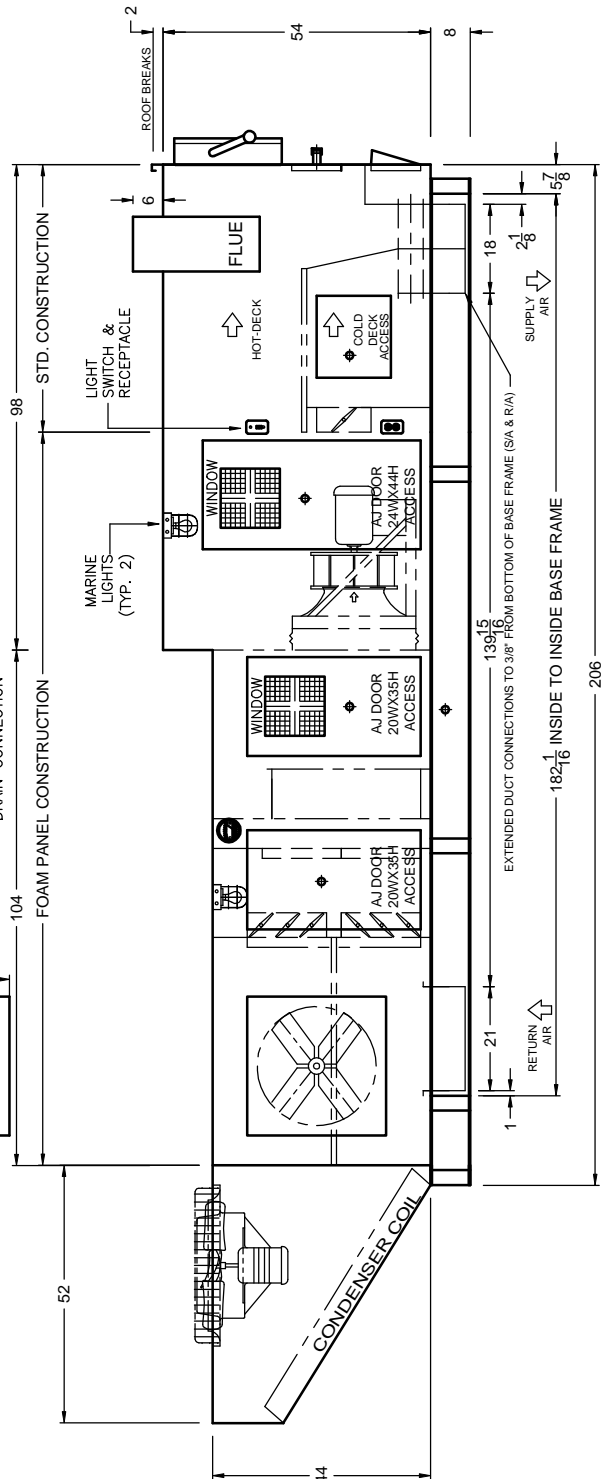
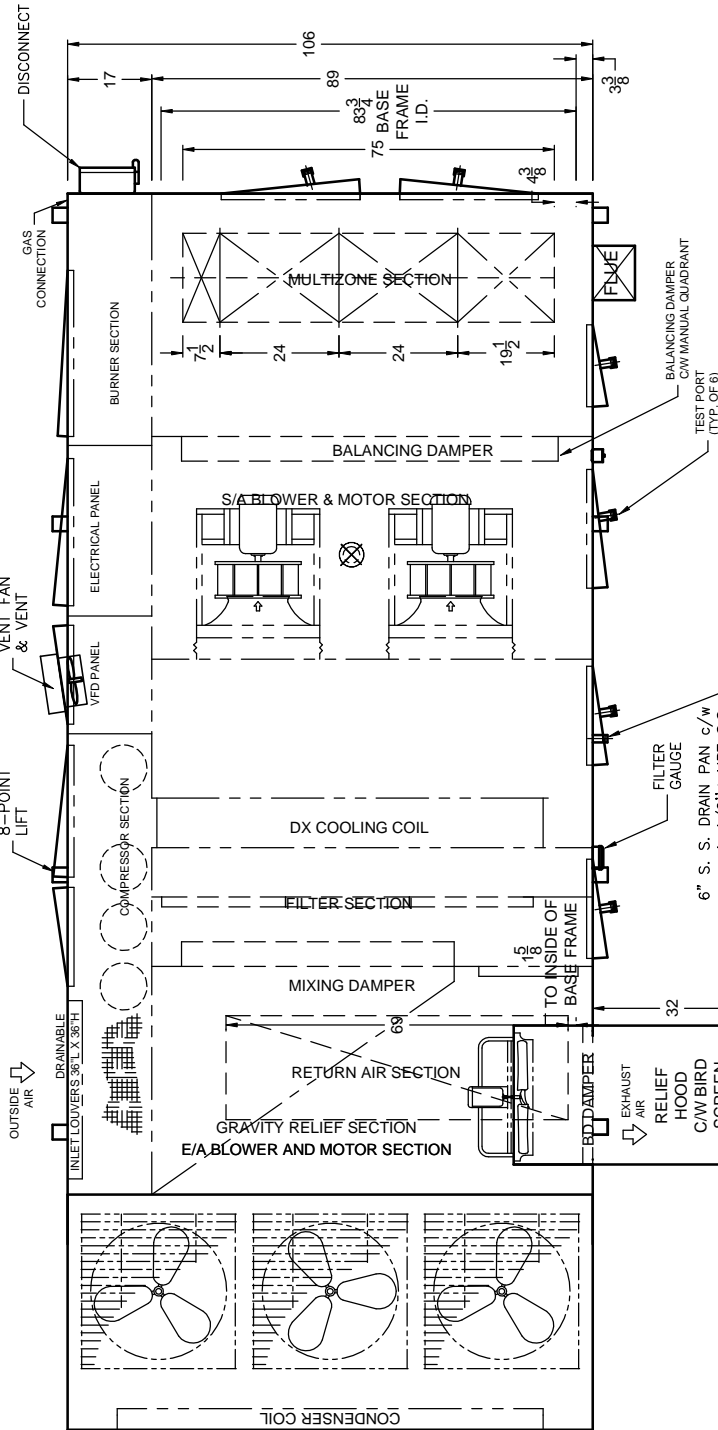
COIL SIZE <u>30 x 78 x 8R x 8 FPI</u>	VELOCITY <u>455 FPM</u>	
TOTAL CAPACITY <u>260,000 Btuh</u>	AIR P.D. <u>0.69 in.wc.</u>	
SENSIBLE CAPACITY <u>197,000 Btuh</u>	MOISTURE REMOVAL <u>55.1 lb/hr</u>	
ENTERING AIR DB / WB <u>76.7°F / 64.0°F</u>	LEAVING AIR DB / WB <u>52.7°F / 52.3°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>47.5°F / 123.8°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP61KCE-TFD-250</u>	QUANTITY <u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Double wall uninsulated vertical style vent.
- 1 - DH363FRK Disconnect Switch Fusible 100A 600V Nema 3R Raintight (field installed on unit)

* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

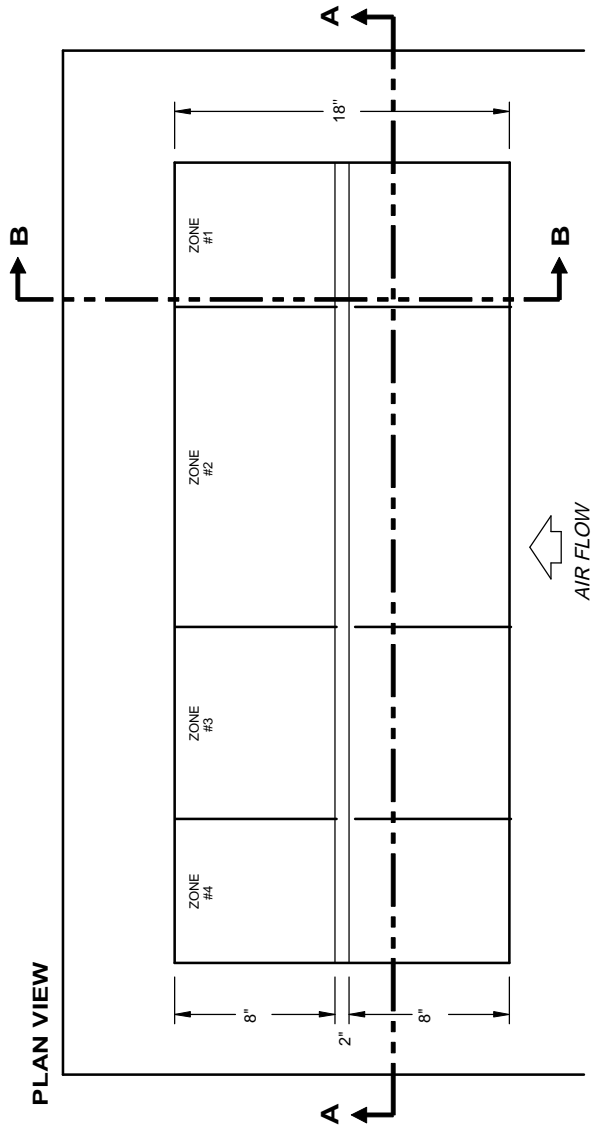
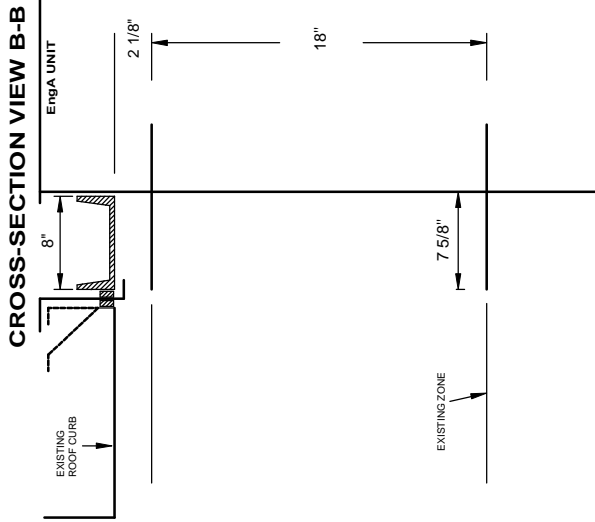
DK9631
TAG: RTU-19

FWE224/DJE40/O/MMV/R
HEAT/COOL UNIT



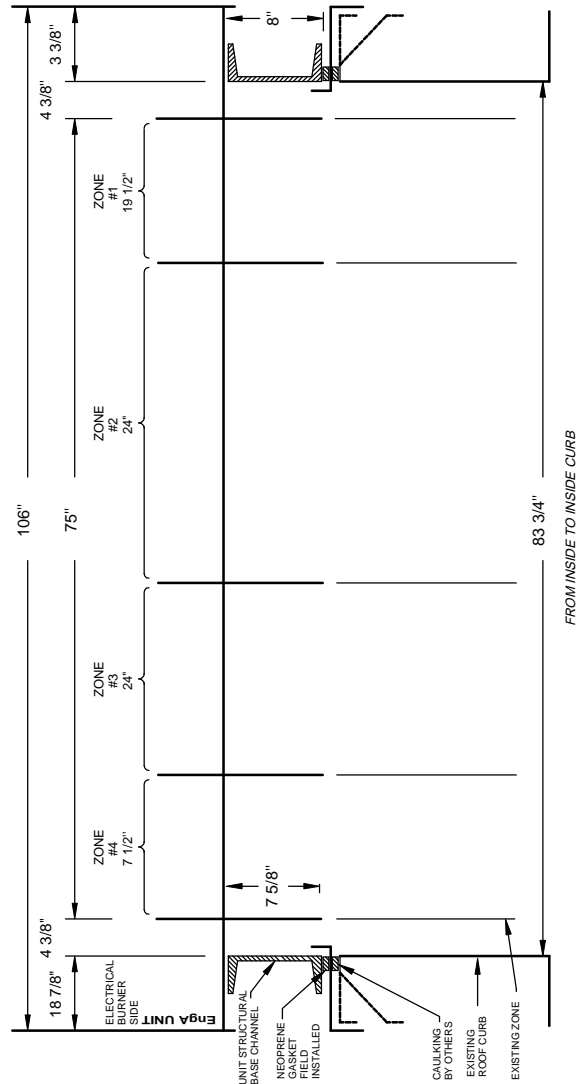
generated by
ProUnit

REVISIONS: DEC 21 2022			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-19-1



AIR FLOW

CROSS-SECTION VIEW A-A



DK9631
TAG: RTU-19

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



ENGINEERED AIR



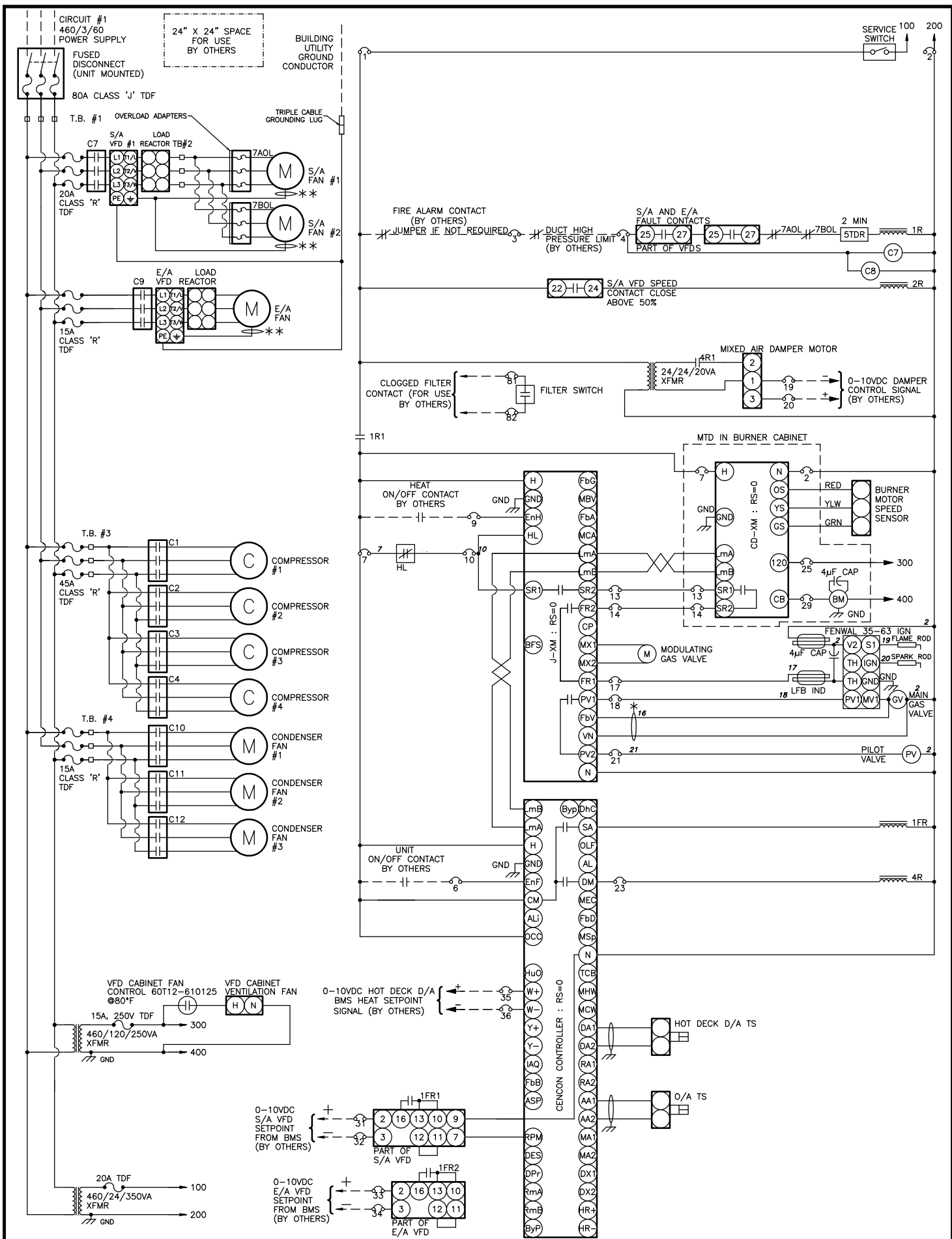
REVISIONS: DEC 21 2022

DATE:
OCT 19 2022

DRWN BY:
CWJ

CHKD BY:
JLC

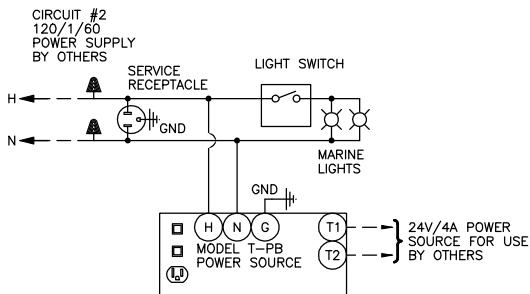
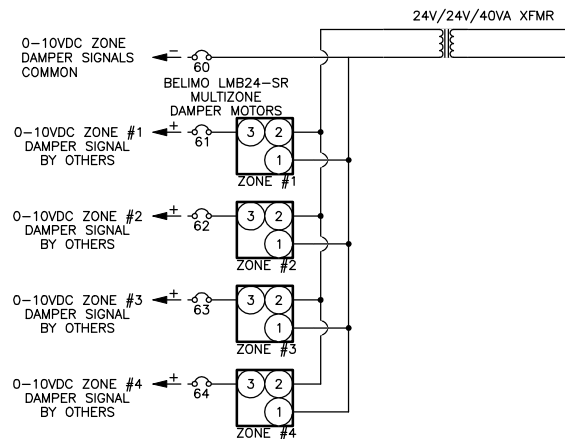
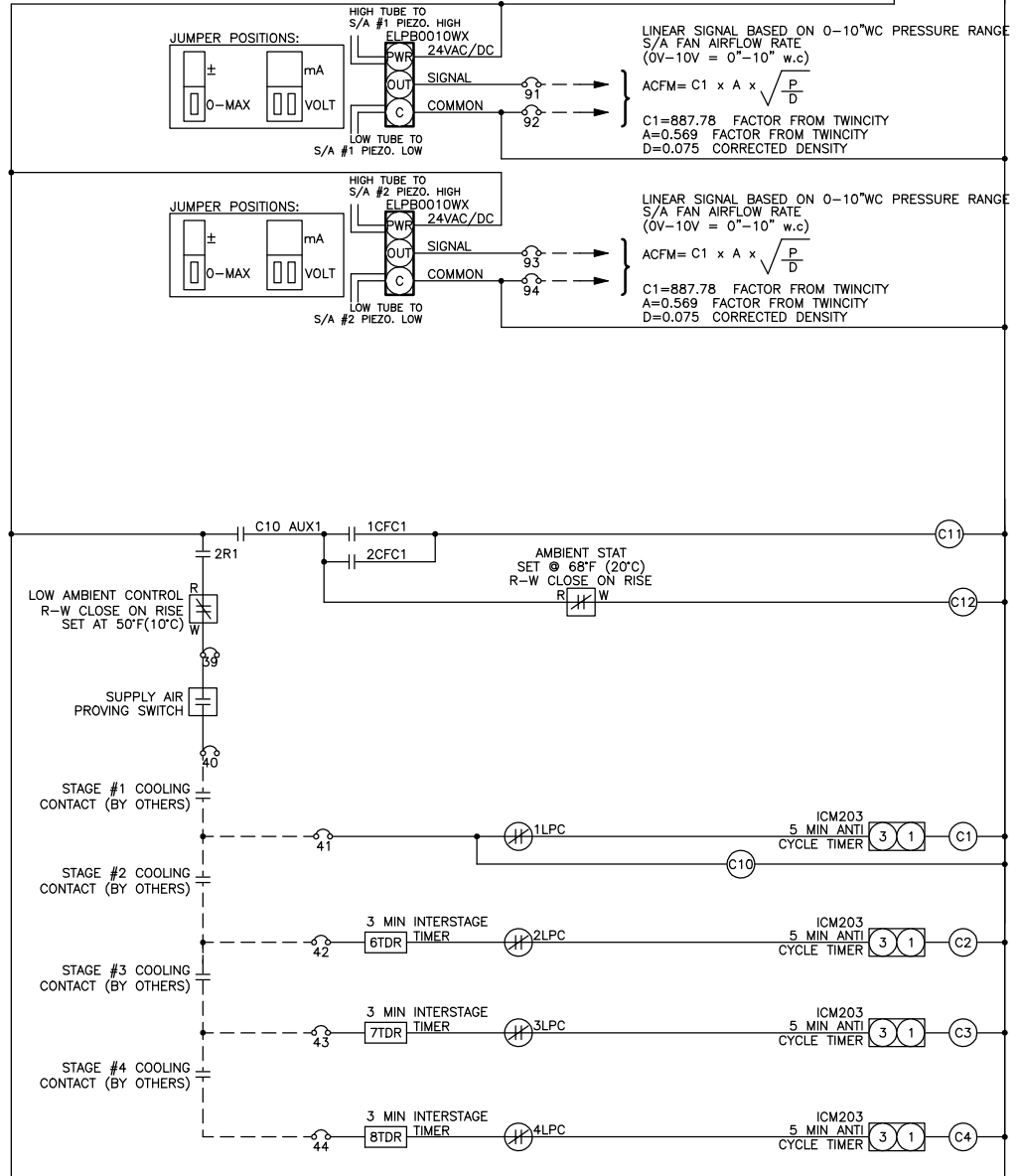
DRWG NO.:
DK9631Z-19-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE



TAG: RTU-19		INTERNAL WIRING DIAGRAM (PAGE 1 OF 2)	
REVISION: MAR 20 2023		DRN.BY: CWJ	DWG.NO: DK9631E-19-1
DATE: OCT 18 2022		CHKD.BY: JLC	





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-19

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	66.9 AMPS	4 Awg	80 AMPS	80 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #4	1	ZP61KCE-TFD-250	14 Awg	9.7 / 62.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 3 HP	14 Awg	3.85	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	4.8			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-80SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R QTY: 1 TAG: RTU-19

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

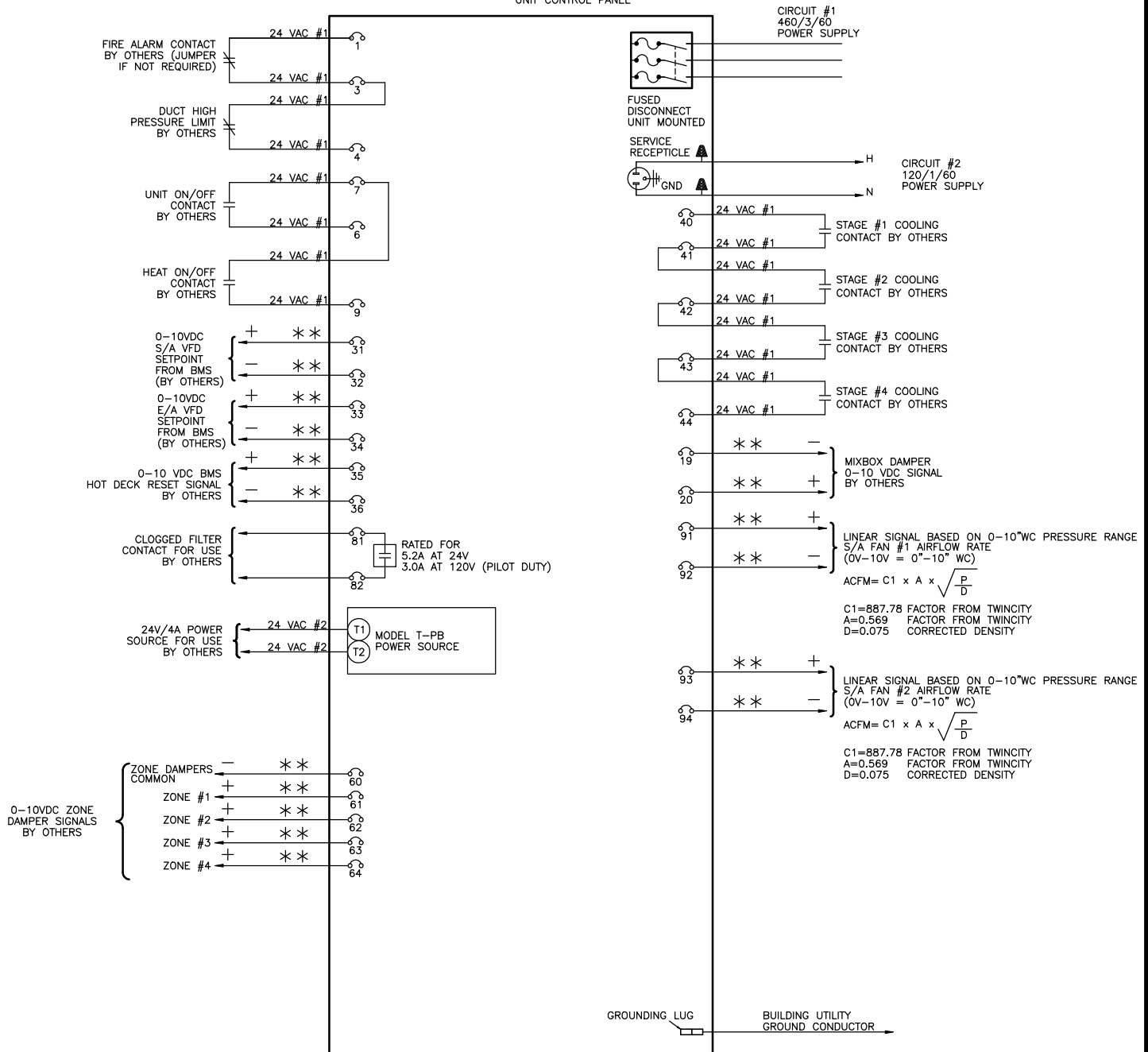
Note 1: S/A blower design speed is 2460 rpm (84.3Hz). speed range: 80%-110% of designed rpm. (67.5-92.8Hz)

Note 2: E/A blower design speed is 1724 rpm (57.5Hz). speed range: 80%-110% of designed rpm. (46-63.2Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-19

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 21 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-19-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-20

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6350 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6250 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>6,200 CFM</u>	FAN SIZE (2) <u>150A Alum EPFN</u>	TSP <u>4.0 in w.c.</u>	RPM <u>2672</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>2.97 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 91.6 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>5,260 CFM</u>	FAN SIZE (1) <u>24B105/WPD 20°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1667</u>
MOTOR SIZE <u>1.5 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.32 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 55.6 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R QTY: 1 TAG: RTU-20

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-20 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	65.1 AMPS	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch. (shipped loose)
- MCA is based on '14A' supply air and '3A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 16 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>16.67 SQ.FT.</u>	FACE VELOCITY <u>372 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>400,000 Btuh</u>	HEAT OUTPUT <u>320,000 Btuh</u> TEMP. RISE <u>48.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-20

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Double wall uninsulated vertical style vent.

AIR COOLED DX SYSTEM DATA

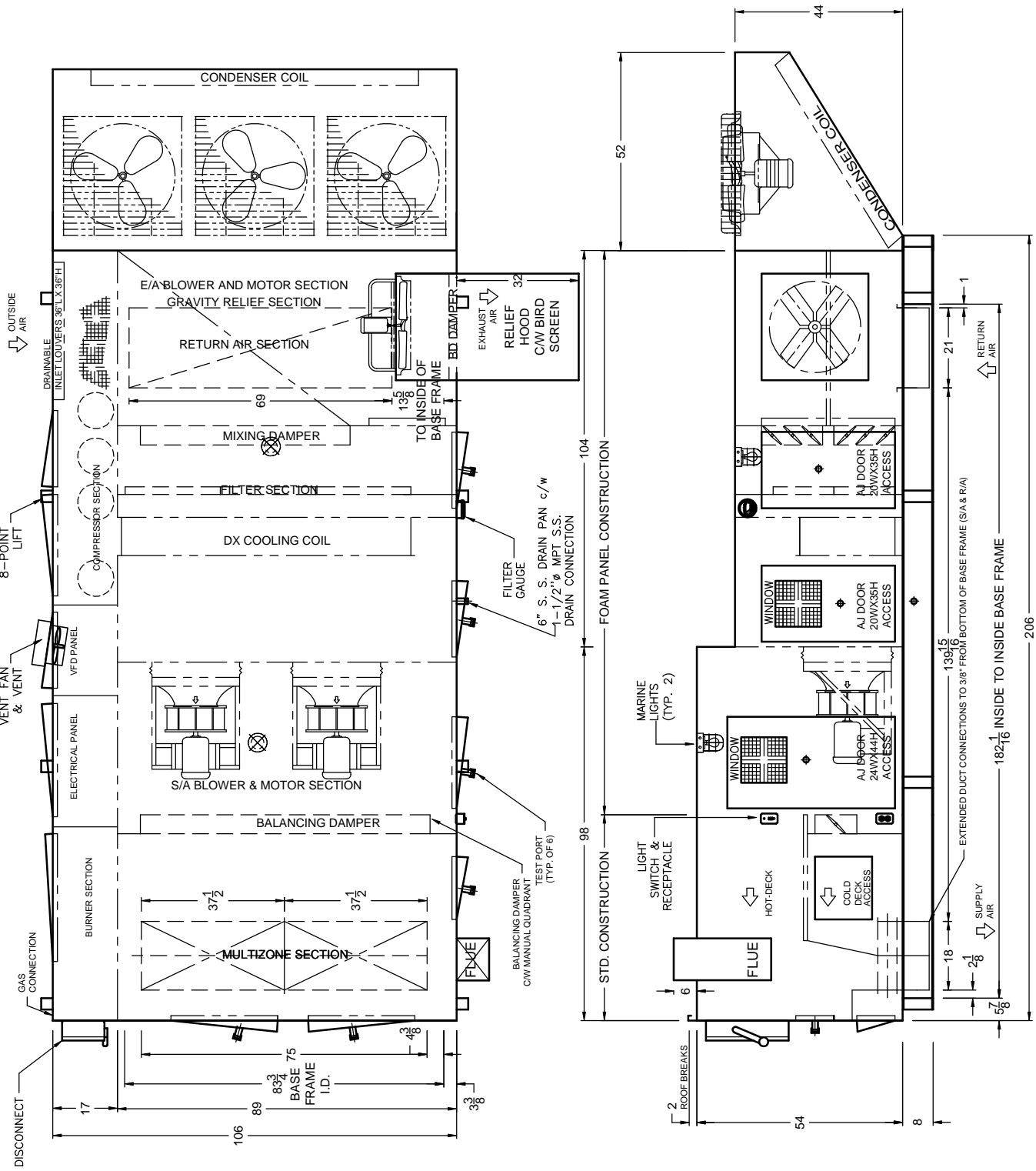
COIL SIZE <u>25 x 76 x 8R x 8 FPI</u>	VELOCITY <u>456 FPM</u>	
TOTAL CAPACITY <u>253,000 Btuh</u>	AIR P.D. <u>0.74 in.wc.</u>	
SENSIBLE CAPACITY <u>178,000 Btuh</u>	MOISTURE REMOVAL <u>65.6 lb/hr</u>	
ENTERING AIR DB / WB <u>78.1°F / 65.0°F</u>	LEAVING AIR DB / WB <u>51.5°F / 51.0°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>45.8°F / 123.2°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP61KCE-TFD-250</u>	QUANTITY <u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Double wall uninsulated vertical style vent.
- 1 - DH363FRK Disconnect Switch Fusible 100A 600V Nema 3R Raintight (field installed on unit)

* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631

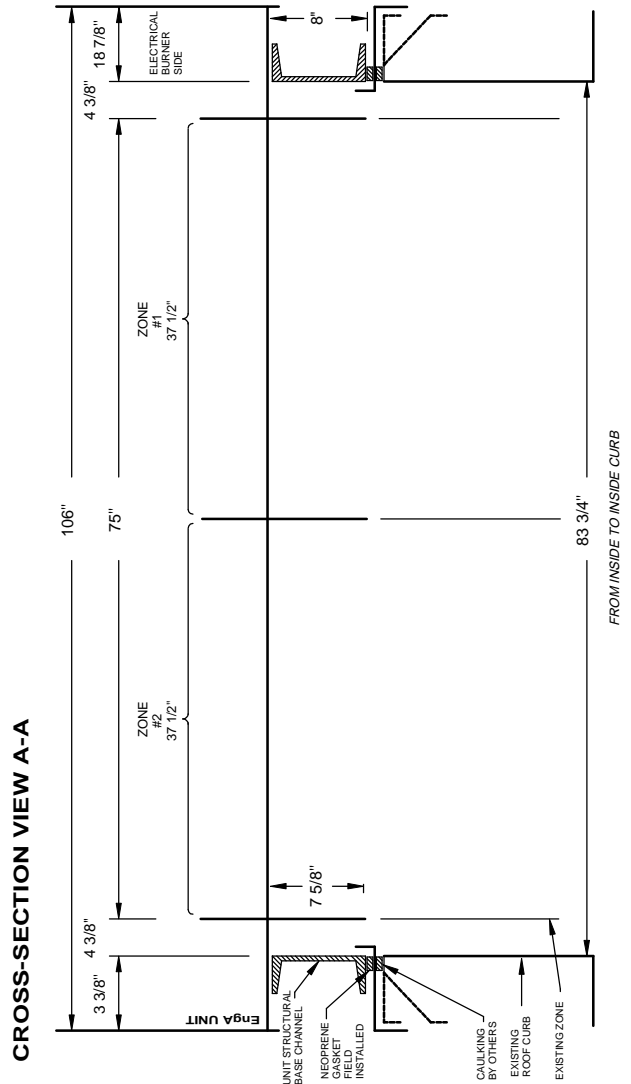
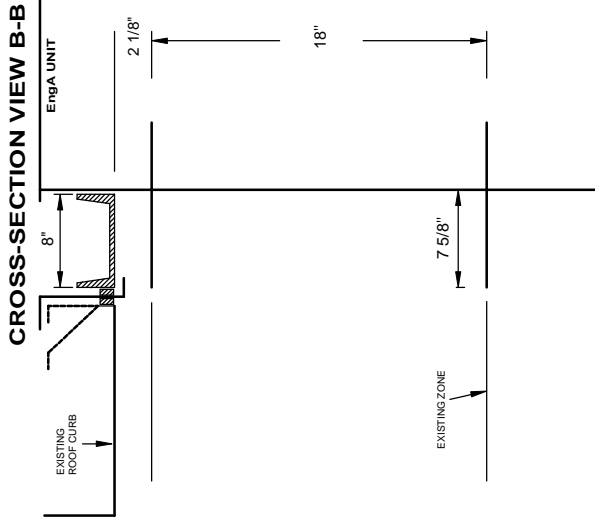
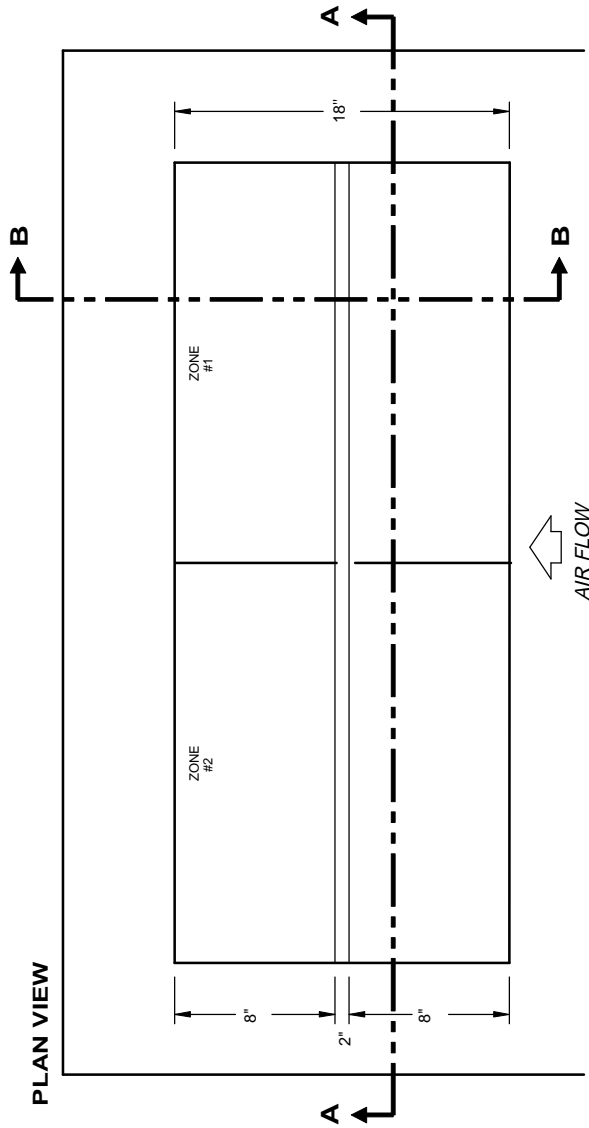
TAG: RTU-20

FWE224/DJE40/O/M/MV/R
HEAT/COOL UNIT



generated by
ProUnit

REVISIONS: DEC 21 2022			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-20-1



DK9631
TAG: RTU-20

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



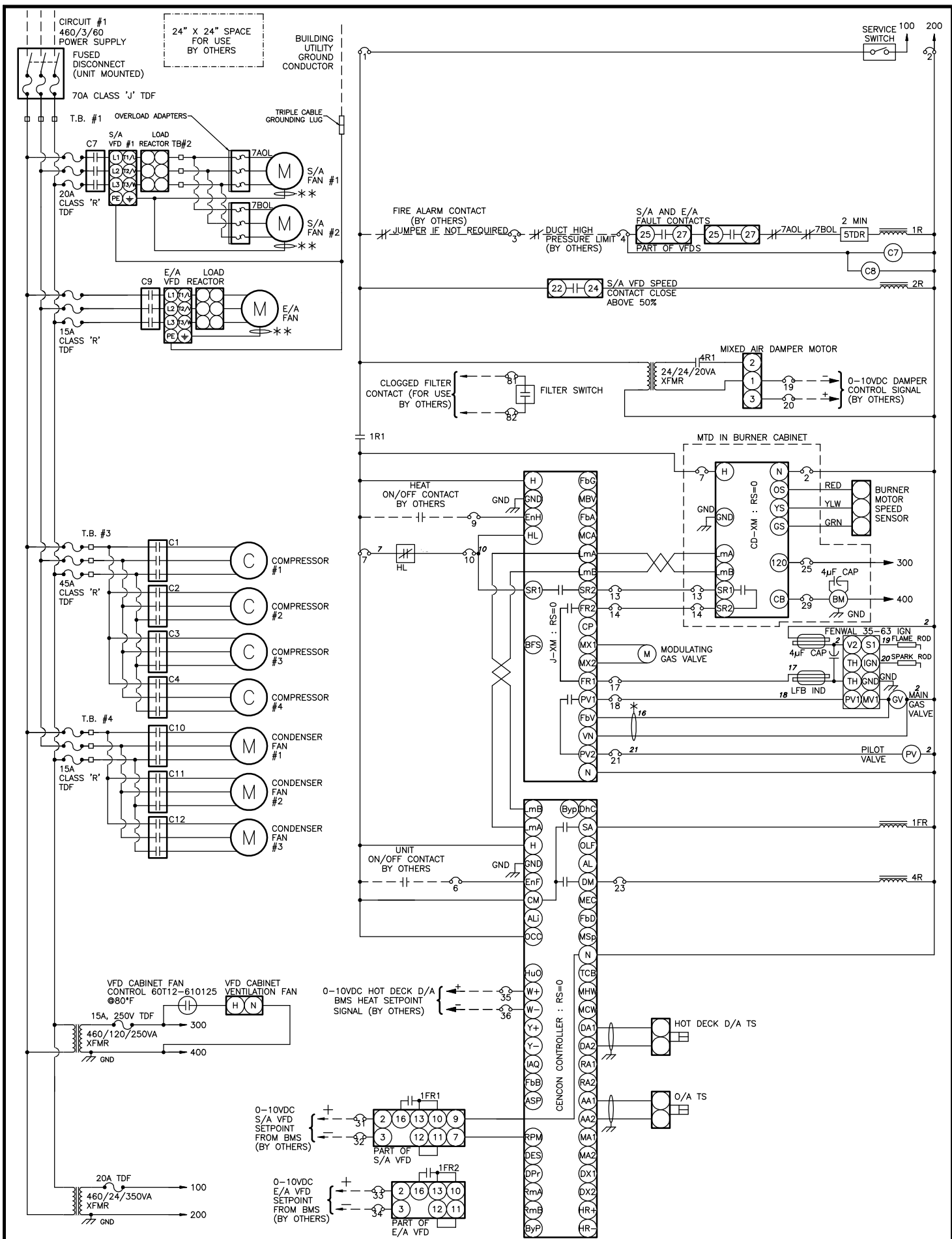
REVISIONS: DEC 21 2022

DATE:
OCT 20 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-20-1



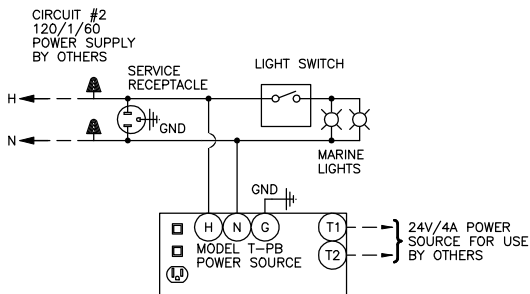
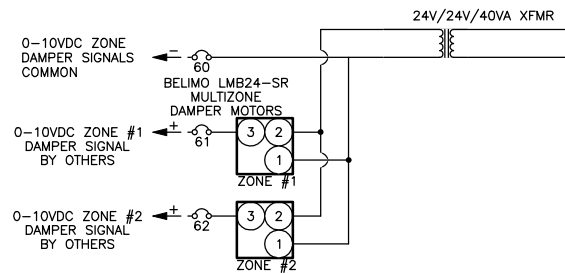
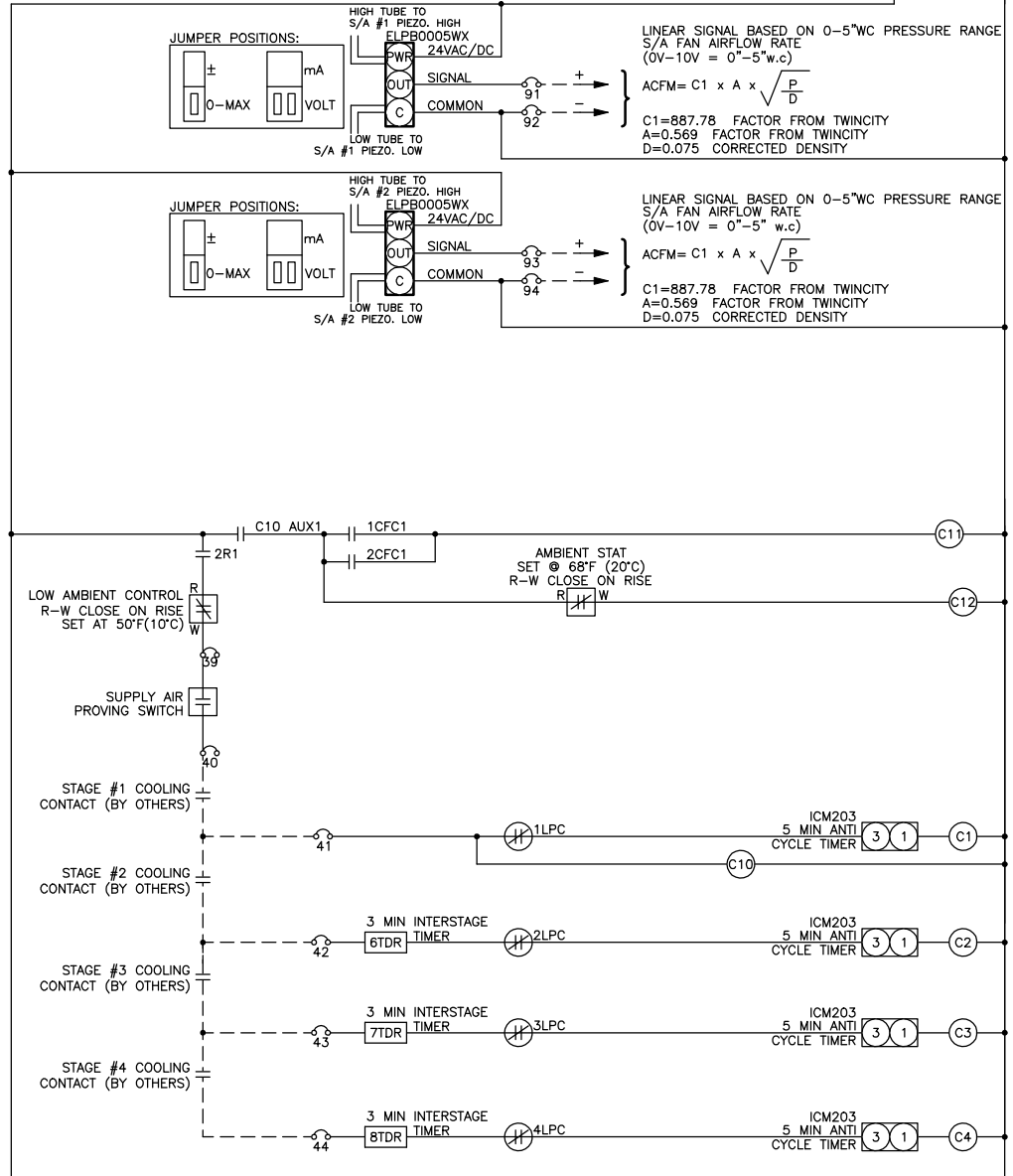
* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE



TAG: RTU-20

INTERNAL WIRING DIAGRAM (PAGE 1 OF 2)
FW/DJ SERIES

REVISION: DEC 21 2022	DRN.BY: CWJ	DWG.NO:
DATE: OCT 18 2022	CHKD.BY: JLC	DK9631E-20-1





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-20

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	65.1 AMPS	4 Awg	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #4	1	ZP61KCE-TFD-250	14 Awg	9.7 / 62.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 1.5 HP	14 Awg	2.08	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.0			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-70SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-20

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

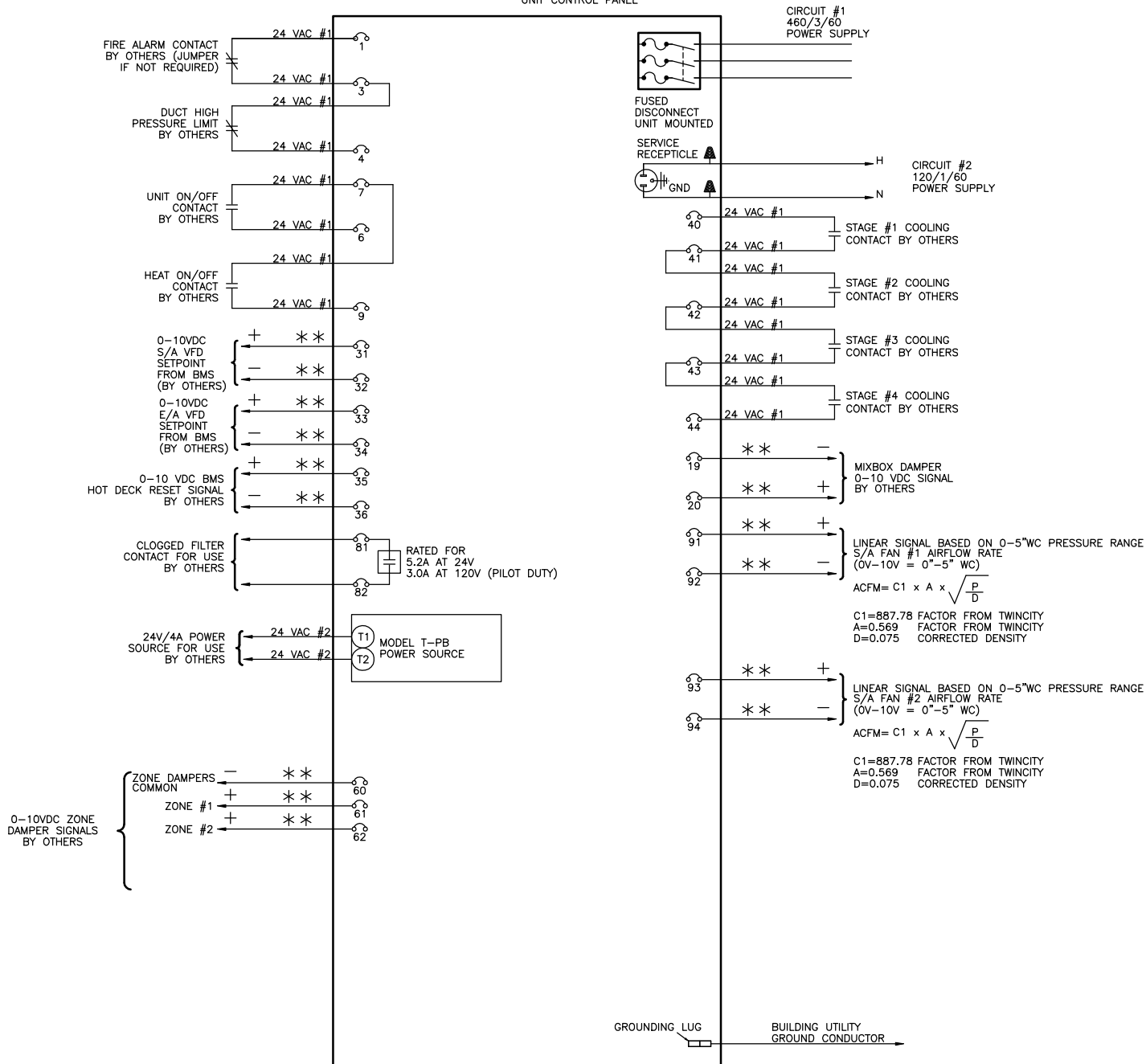
Note 1: S/A blower design speed is 2672 rpm (91.6Hz). speed range: 80%-110% of designed rpm. (73.3-100.8Hz)

Note 2: E/A blower design speed is 1667 rpm (55.6Hz). speed range: 80%-110% of designed rpm. (44.5-61.1Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-20

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 21 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-20-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE183/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-21

SHIPPING AND APPROVAL INFORMATION

MOUNTING Outdoor Base Mounted on Existing Roof Curb **ACCESS** As Per Drawing
UNIT MINIMUM AMBIENT -20°F **SHIPPING WEIGHT** 6400 lb **OPERATING WEIGHT** 6250 lb
NO. OF PIECES 2 (Unit + Hood)

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW 6,300 CFM **FAN SIZE (2)** 150A Alum EPFN **TSP** 4.0 in w.c. **RPM** 2692
MOTOR SIZE (2) 5 HP **TYPE (RPM)** Super 'E' TEFC (1750) **ESP** 1.5 in w.c. **BHP (2)** 3.04 BHP

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 92.3 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW 5,355 CFM **FAN SIZE (1)** 24B105/WPD 25° **TSP** 0.6 in w.c. **RPM** 1537
MOTOR SIZE 2 HP **TYPE (RPM)** See Below [1] **ESP** 0.5 in w.c. **BHP** 1.39 BHP

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 76.9 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET 2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.

UNIT LINER 22 gauge satin coat galvanized solid liner throughout HTX section.

UNIT UNDERSIDE 0.040"(18 gauge) 3003 series aluminum sheet metal liner.

UNIT FLOOR 1/8" 3003 series aluminum checker plate on entire unit floor.

EXTERIOR PAINT Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE183/DJE40/O/M/MV/R QTY: 1 TAG: RTU-21

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

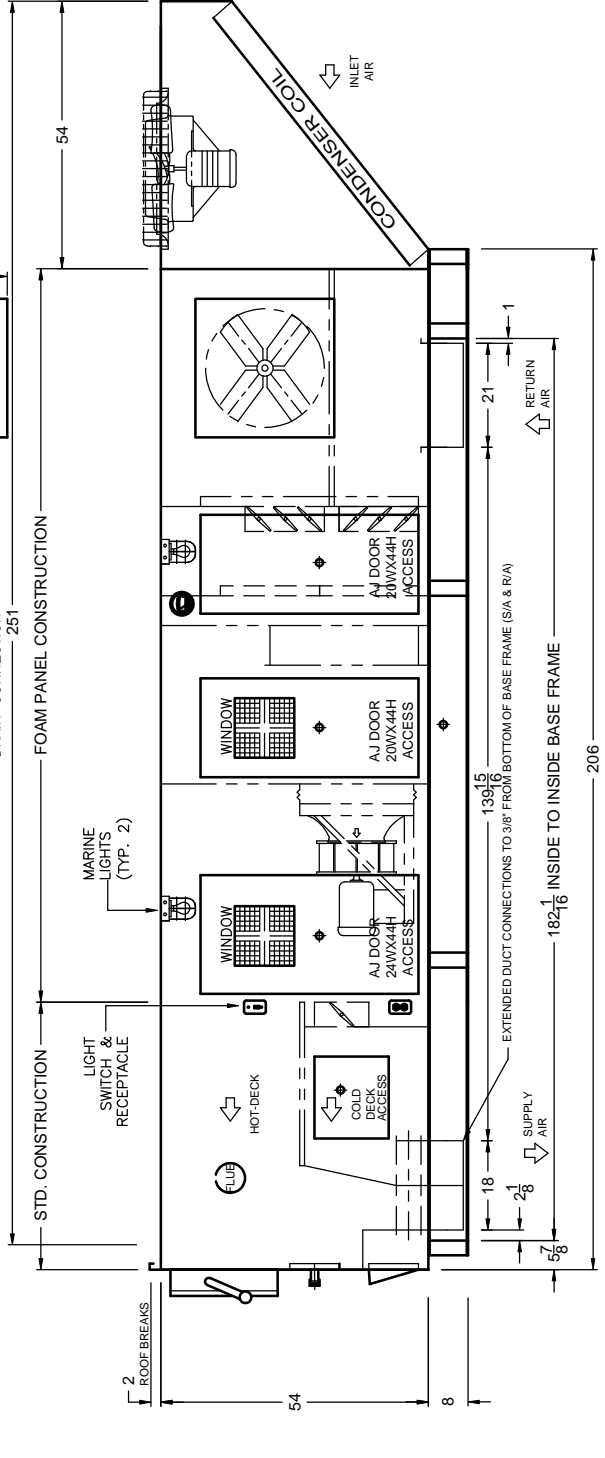
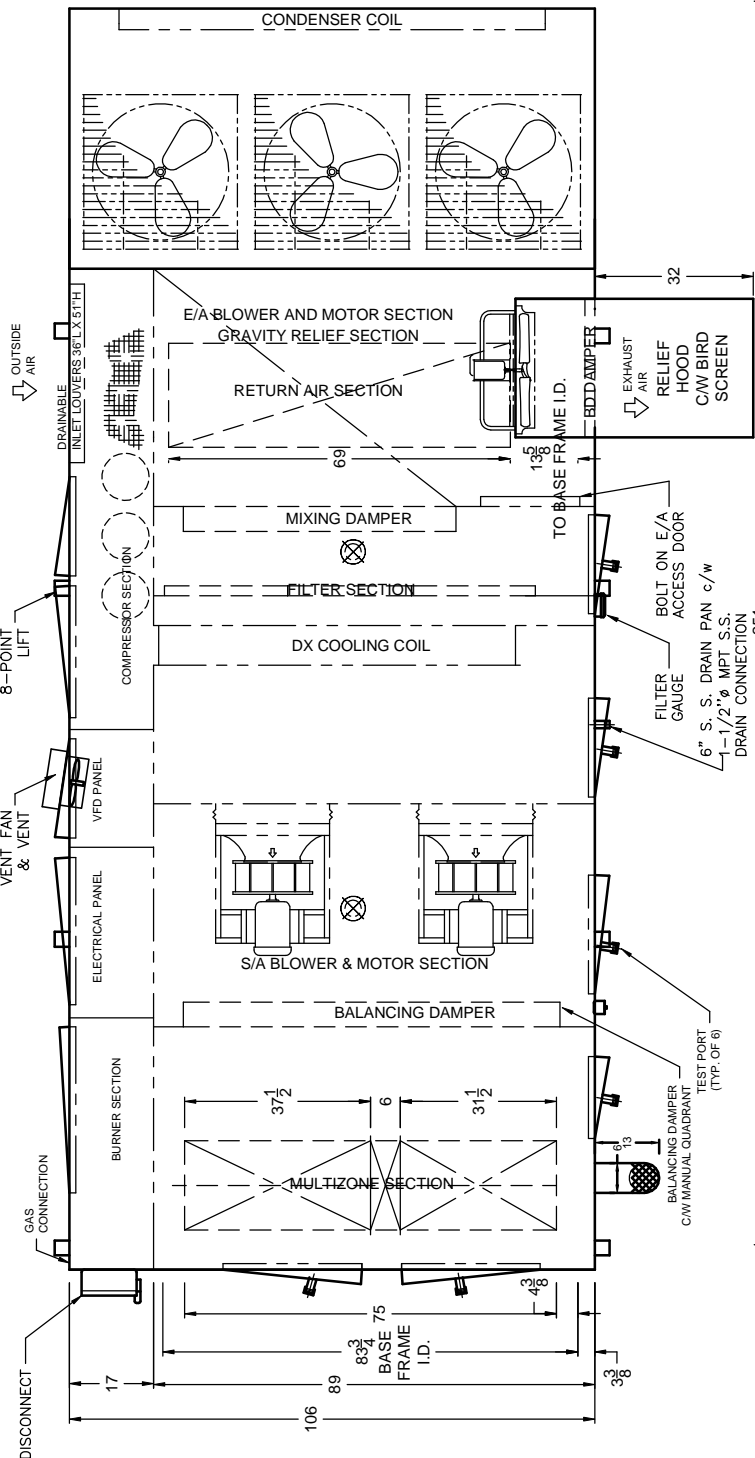
COIL SIZE	<u>30 x 72 x 6R x 12 FPI</u>	VELOCITY	<u>408 FPM</u>
TOTAL CAPACITY	<u>232,000 Btuh</u>	AIR P.D.	<u>0.7 in.wc.</u>
SENSIBLE CAPACITY	<u>167,000 Btuh</u>	MOISTURE REMOVAL	<u>57.6 lb/hr</u>
ENTERING AIR DB / WB	<u>76.2°F / 64.1°F</u>	LEAVING AIR DB / WB	<u>51.7°F / 51.4°F</u>
DESIGN AMBIENT TEMP	<u>95°F</u>	SST/SCT	<u>46.1°F / 118°F</u>
COMPRESSOR TYPE	<u>Hermetic Scroll</u>	REFRIGERANT TYPE	<u>R-410A</u>
	MODEL	QUANTITY	<u>3</u>
	<u>HLJ072T4</u>		

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- Mechanical cooling has 3 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.

* SOLID FLOOR EXTENDS IN TO OVERHANG; MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631

TAG: RTU-21

FWE183/DJE40/O/M/MV/R
HEAT/COOL UNIT



generated by
ProUnit

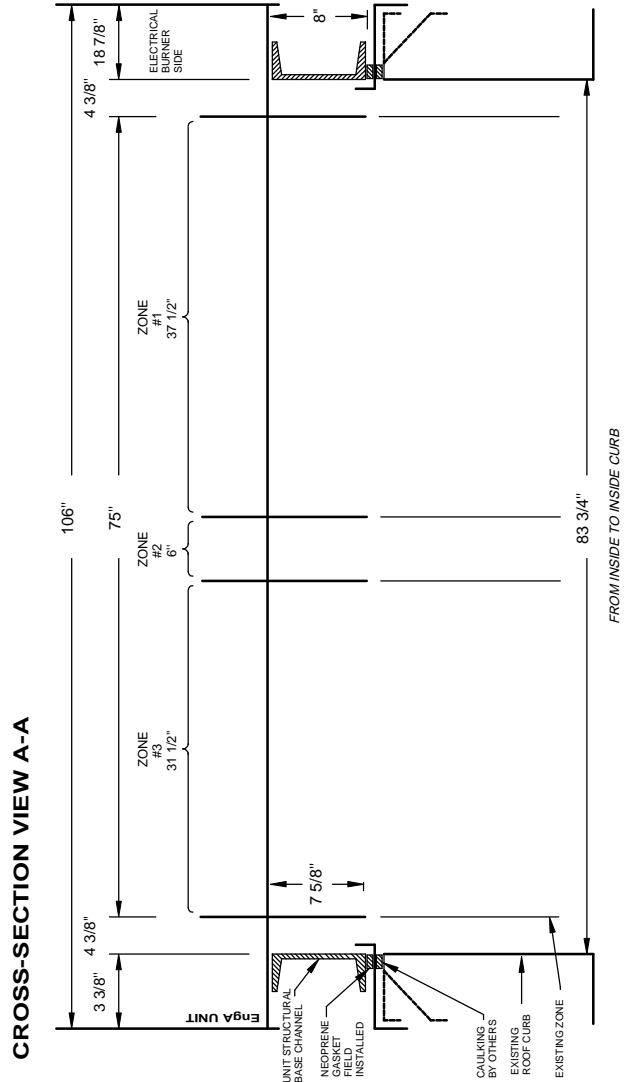
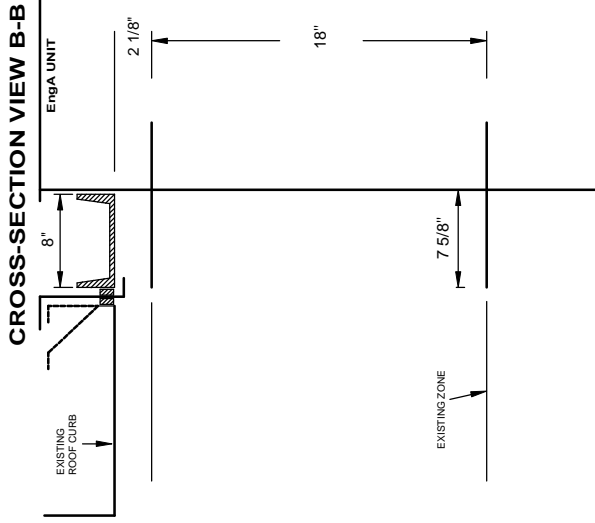
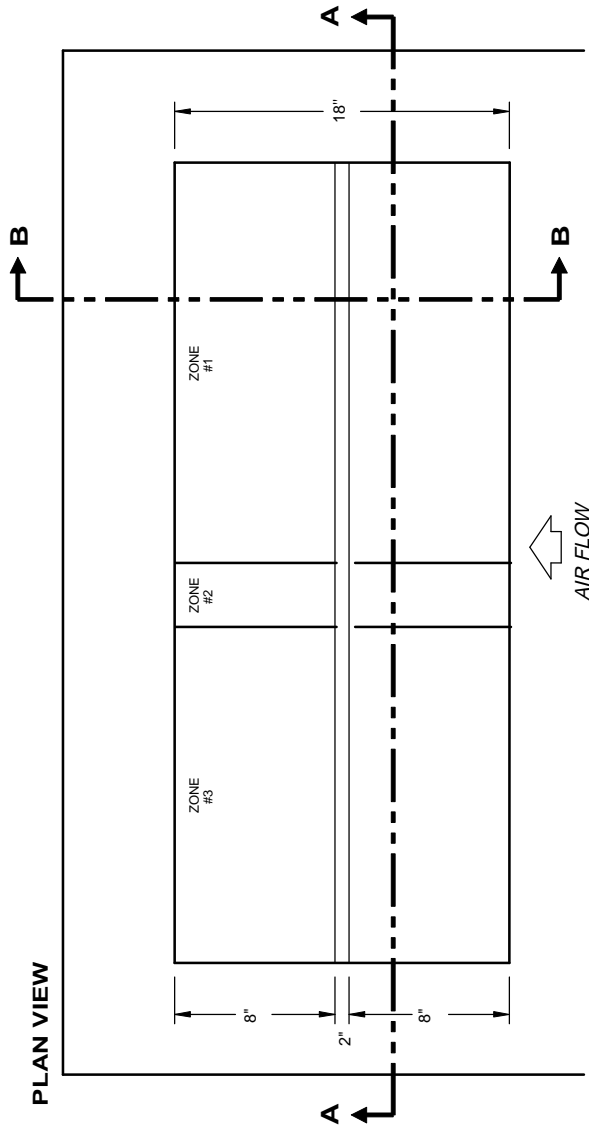
REVISIONS:

DATE:
OCT 04 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631M-21-1



DK9631
TAG: RTU-21

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



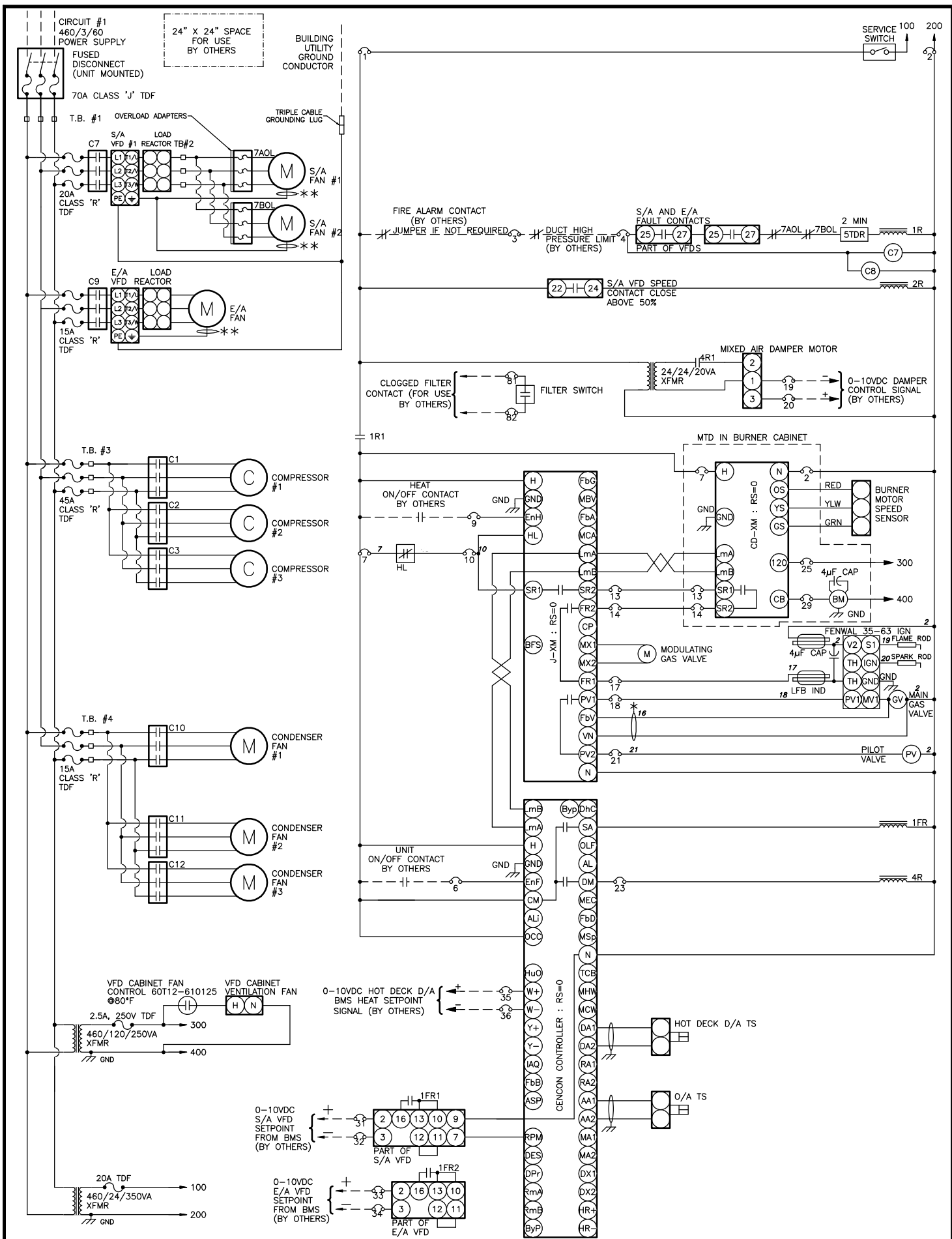
REVISIONS: DEC 21 2022

DATE:
OCT 25 2022

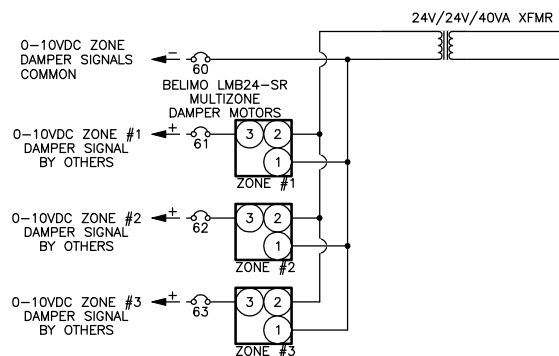
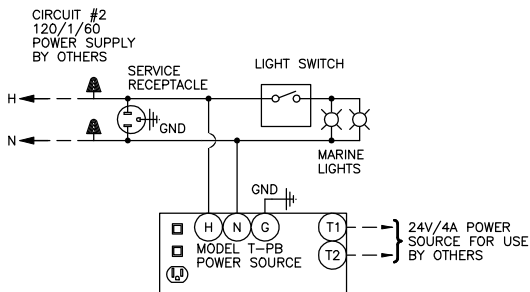
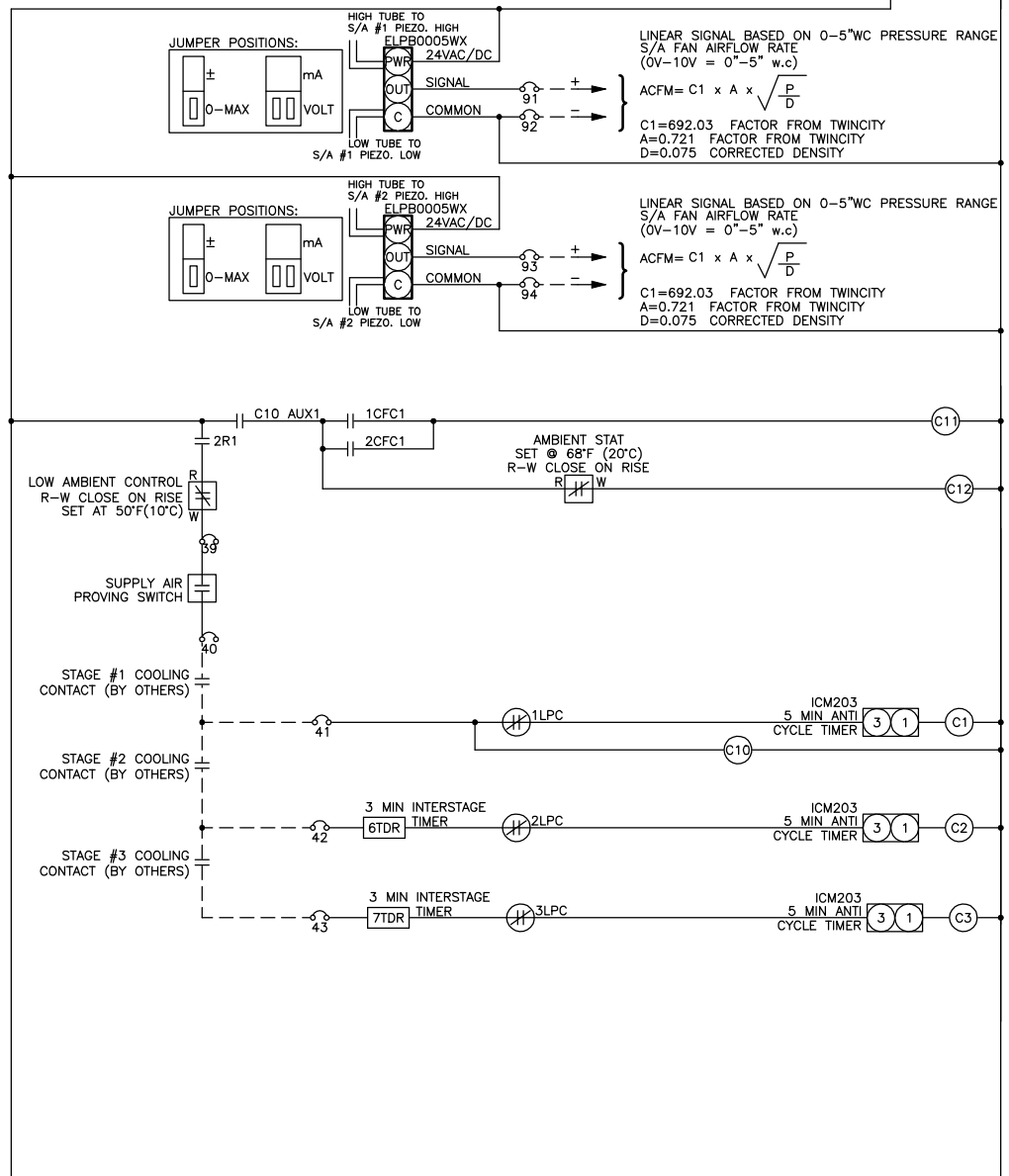
DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-21-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE183/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-21

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	63.4 AMPS	6 Awg	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #3	1	HLJ072T4	14 Awg	12.2 / 87.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-70SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE183/DJE40/O/M/MV/R QTY: 1 TAG: RTU-21

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 3 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

Note 1: S/A blower design speed is 2692 rpm (92.3Hz). speed range: 80%-110% of designed rpm. (73.8-102Hz)

Note 2: E/A blower design speed is 1537 rpm (51.2Hz). speed range: 80%-110% of designed rpm. (41-56.4Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-25

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6450 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6300 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>6,300 CFM</u>	FAN SIZE (2) <u>150A Alum EPFN</u>	TSP <u>3.9 in w.c.</u>	RPM <u>2673</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>2.97 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 91.6 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>5,355 CFM</u>	FAN SIZE (1) <u>24B105/WPD 20°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1685</u>
MOTOR SIZE <u>1.5 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.36 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 56.2 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R QTY: 1 TAG: RTU-25

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-25 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	65.1 AMPS	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '14A' supply air and '3A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 16 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>16.67 SQ.FT.</u>	FACE VELOCITY <u>378 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>400,000 Btuh</u>	HEAT OUTPUT <u>320,000 Btuh</u> TEMP. RISE <u>47.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-25

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

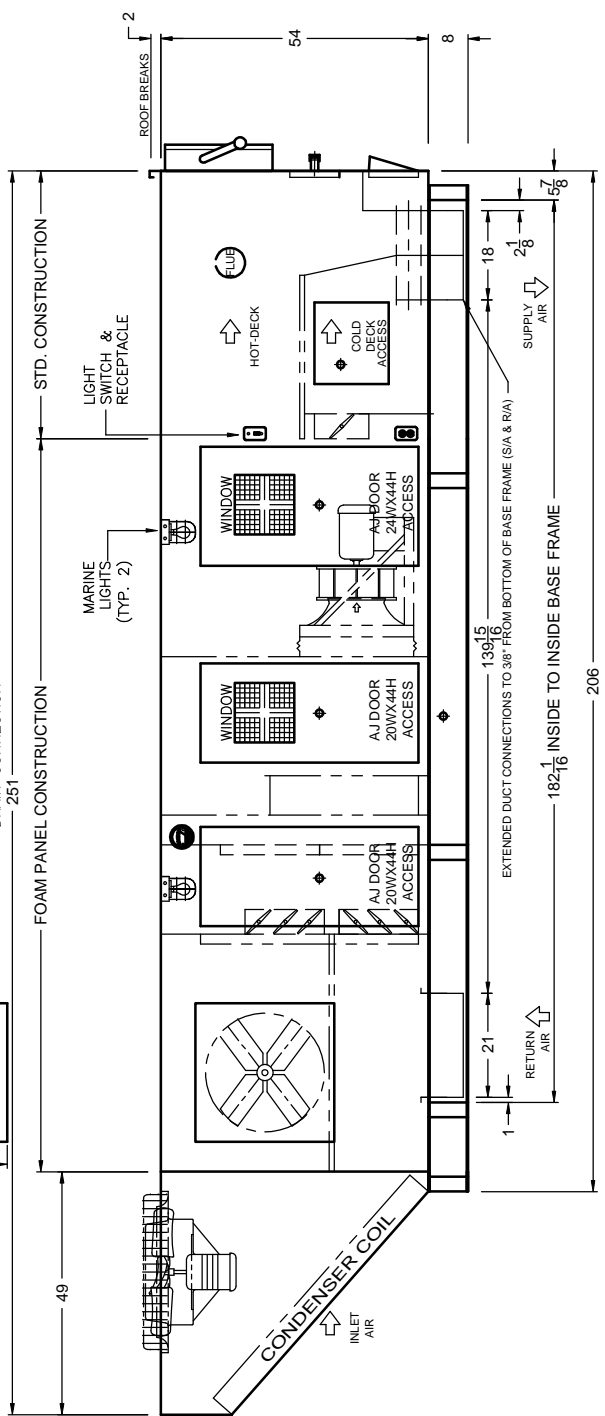
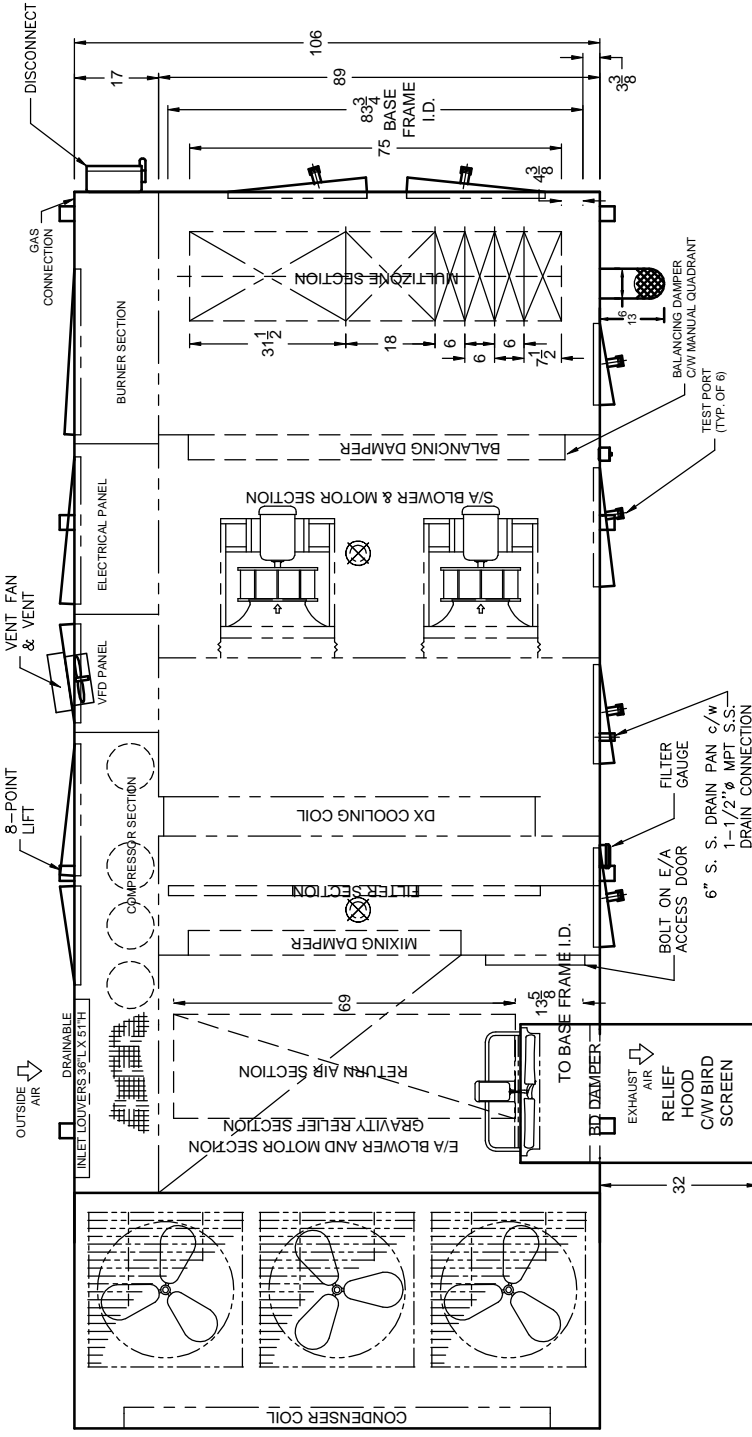
COIL SIZE <u>30 x 75 x 8R x 8 FPI</u>	VELOCITY <u>406 FPM @ 6500 CFM</u>	
TOTAL CAPACITY <u>277,000 Btuh</u>	AIR P.D. <u>0.63 in.wc.</u>	
SENSIBLE CAPACITY <u>187,000 Btuh</u>	MOISTURE REMOVAL <u>79.3 lb/hr</u>	
ENTERING AIR DB / WB <u>80°F / 67.0°F</u>	LEAVING AIR DB / WB <u>53.4°F / 53.0°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>48.2°F / 118°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP61KCE-TFD-250</u>	QUANTITY <u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.

* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631
TAG: RTU-25

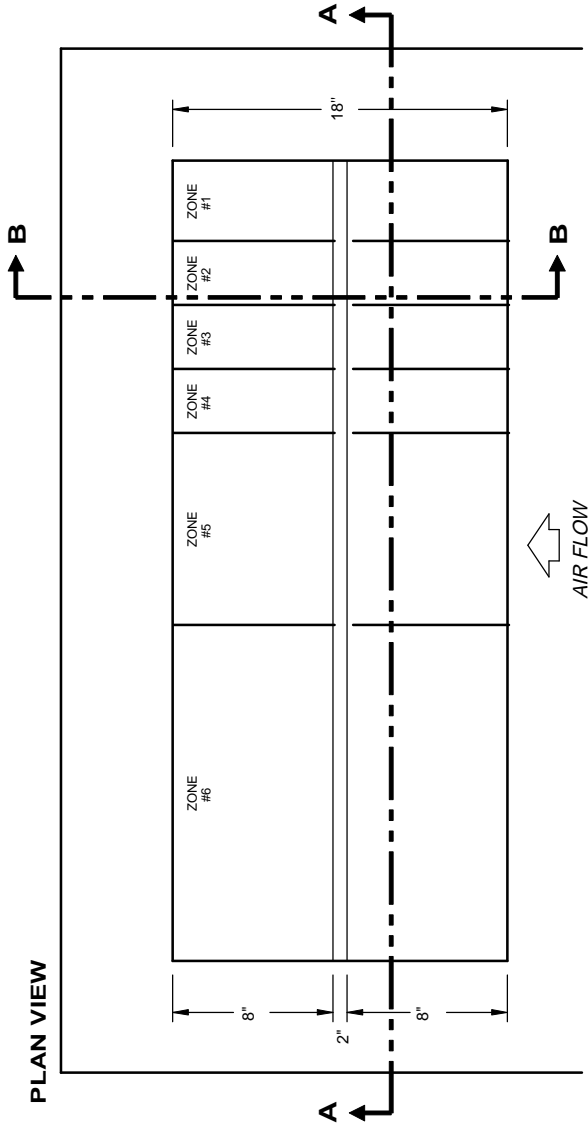
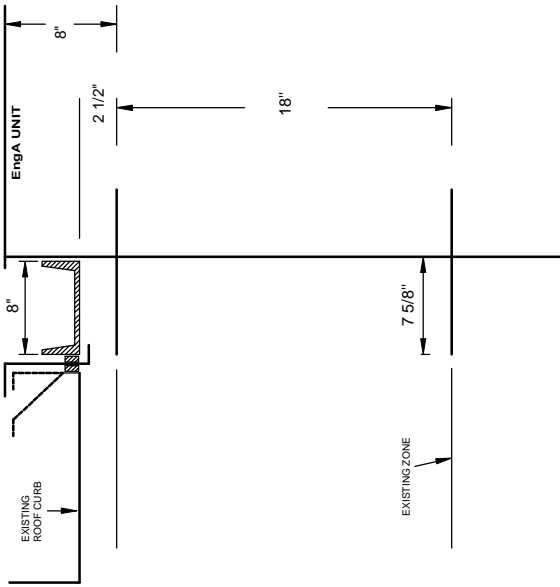
FWE224/DJE40/O/MMV/R
HEAT/COOL UNIT



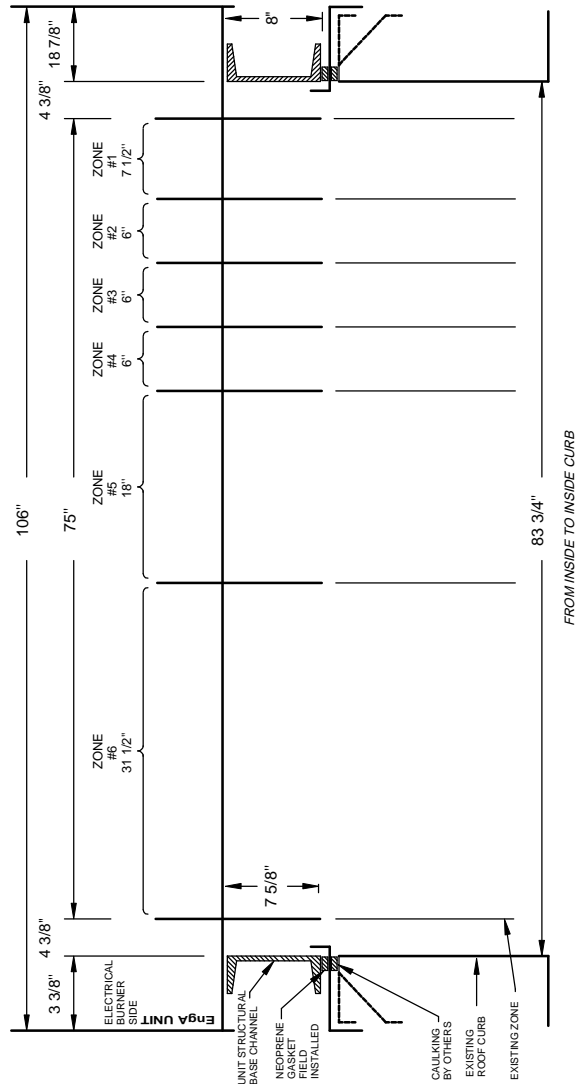
generated by
ProUnit

REVISIONS: DEC 21 2022			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-25-1

CROSS-SECTION VIEW B-B



CROSS-SECTION VIEW A-A



DK9631
TAG: RTU-25

DRAWING NOT TO SCALE

FW/DJ

MULTIZONE DISCHARGE HEAD



ENGINEERED AIR



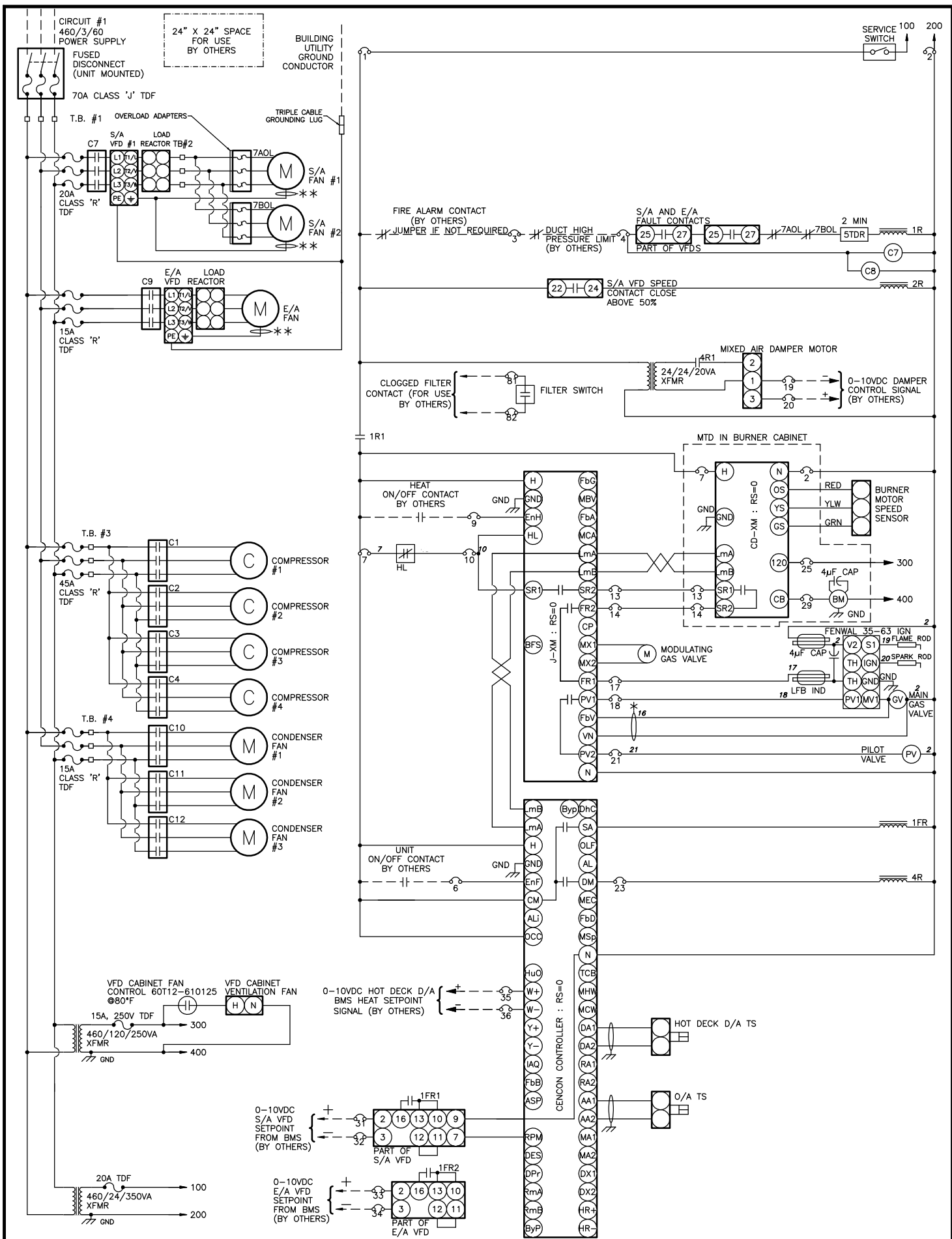
REVISIONS: DEC 21 2022

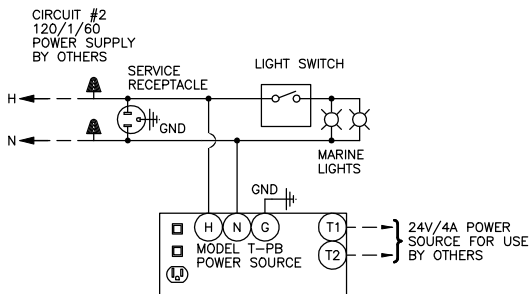
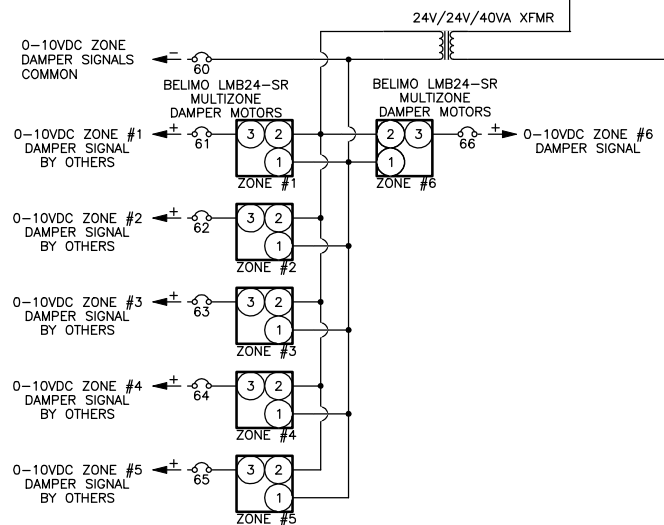
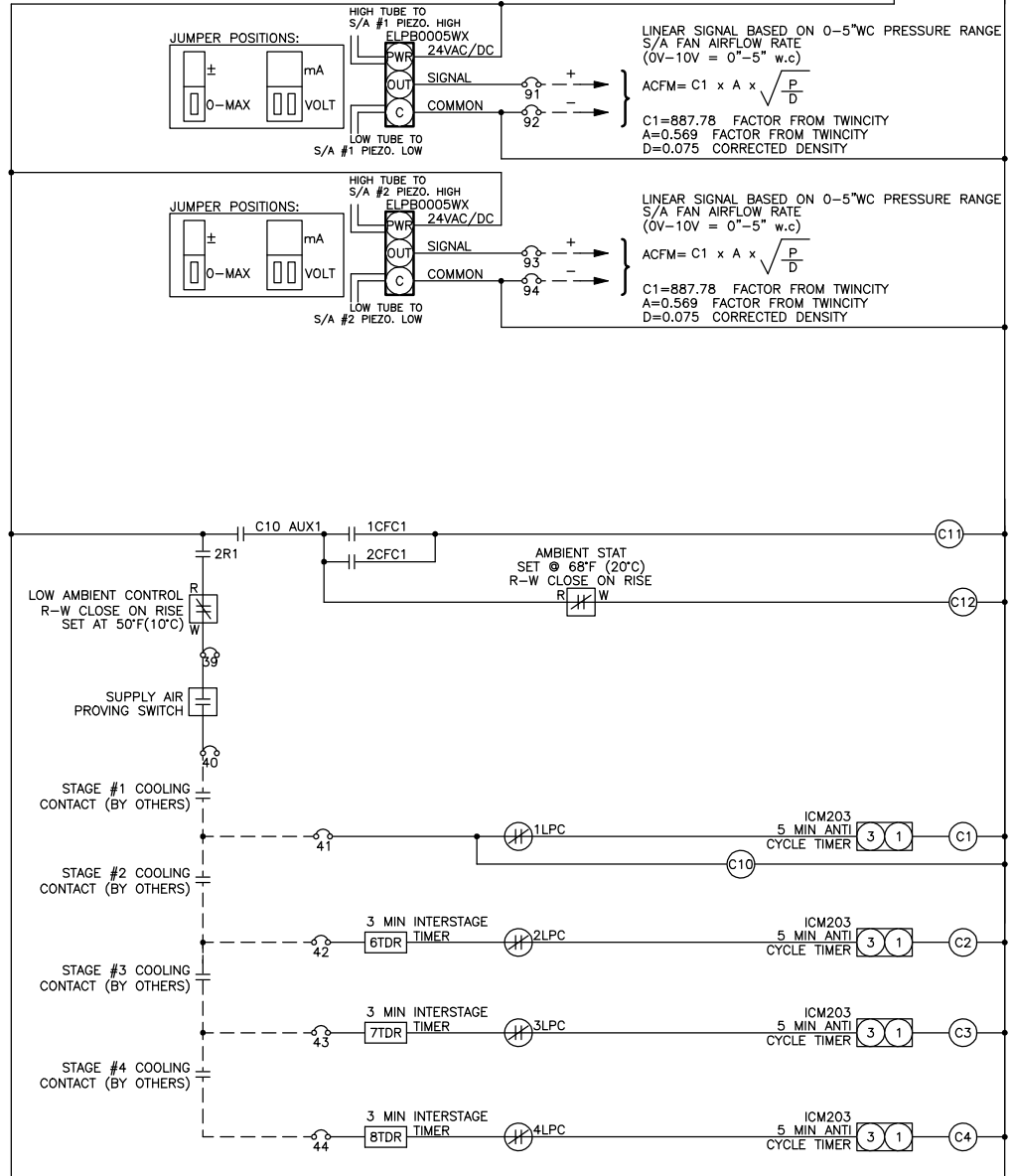
DATE:
OCT 20 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-25-1







ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-25

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	65.1 AMPS	4 Awg	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #4	1	ZP61KCE-TFD-250	14 Awg	9.7 / 62.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 1.5 HP	14 Awg	2.08	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.0			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-70SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-25

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

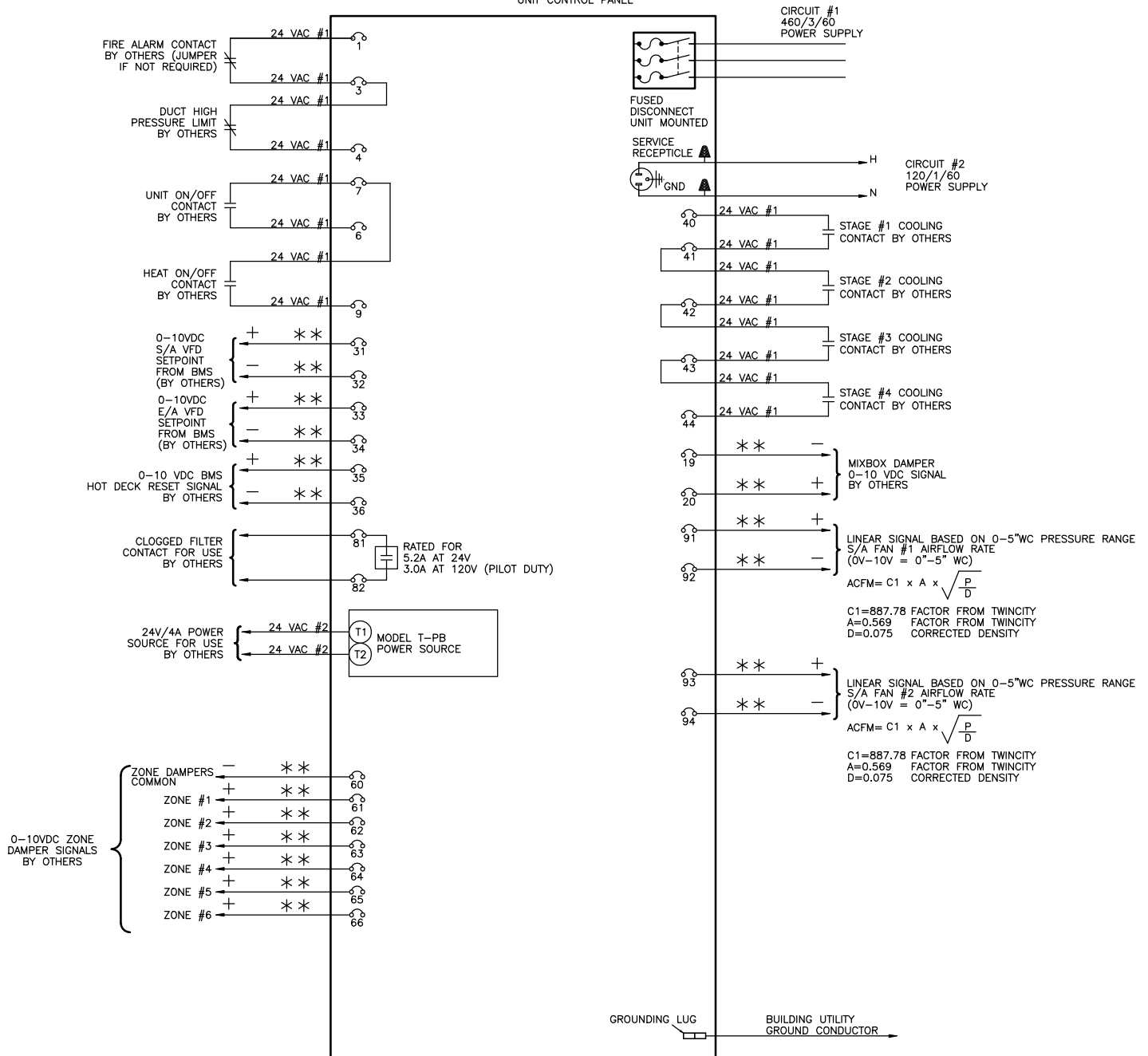
Note 1: S/A blower design speed is 2673 rpm (91.6Hz). speed range: 80%-110% of designed rpm. (73.3-100.8Hz)

Note 2: E/A blower design speed is 1685 rpm (56.2Hz). speed range: 80%-110% of designed rpm. (44.9-61.8Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-25

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 21 2022

DRN.BY: CWJ

DWG.NO:

DATE: OCT 18 2022

CHKD.BY: JLC

DK9631F-25-1



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE252/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-26

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6900 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6750 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>8,300 CFM</u>	FAN SIZE (2) <u>165A Alum EPFN</u>	TSP <u>4.1 in w.c.</u>	RPM <u>2565</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>4.18 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 87.9 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>7,055 CFM</u>	FAN SIZE (1) <u>24E8/WPD 30°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1551</u>
MOTOR SIZE <u>3 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>2.21 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 51.7 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R QTY: 1 TAG: RTU-26

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-26 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	76.6 AMPS	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '14A' supply air and '4.8A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 16 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>16.67 SQ.FT.</u>	FACE VELOCITY <u>498 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>400,000 Btuh</u>	HEAT OUTPUT <u>320,000 Btuh</u> TEMP. RISE <u>36.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-26

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

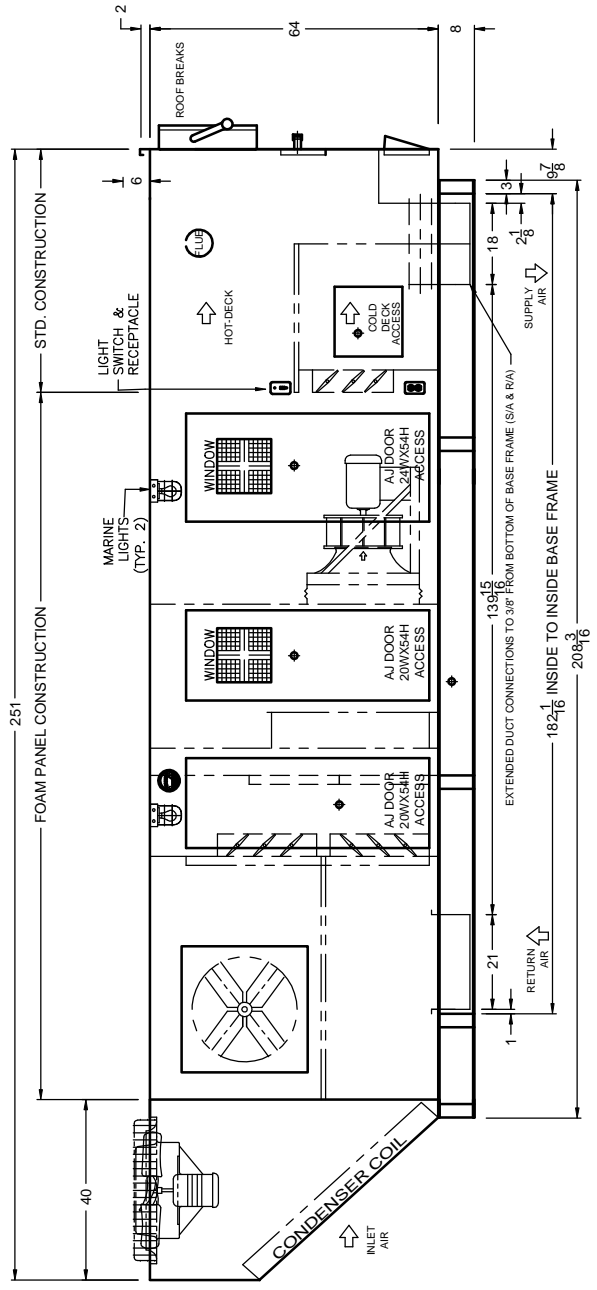
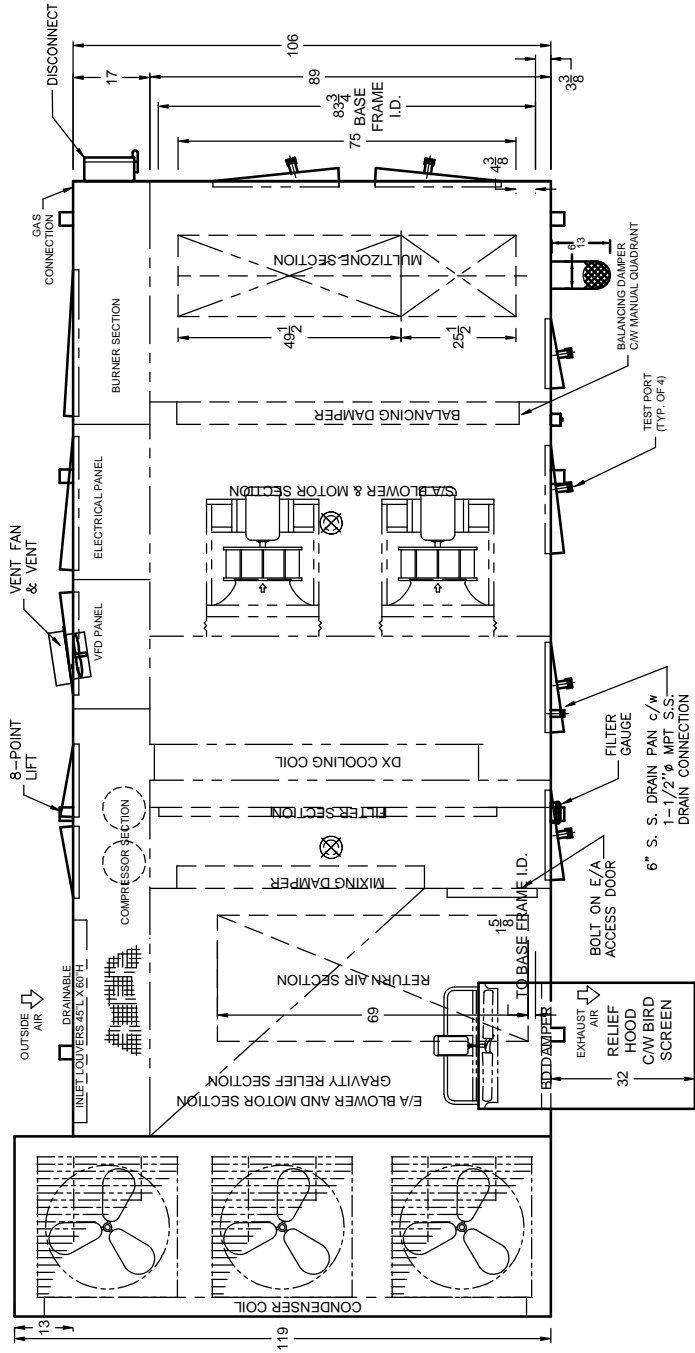
COIL SIZE <u>35 x 72 x 6R x 10 FPI</u>	VELOCITY <u>462 FPM</u>	
TOTAL CAPACITY <u>309,000 Btuh</u>	AIR P.D. <u>0.75 in.wc.</u>	
SENSIBLE CAPACITY <u>223,000 Btuh</u>	MOISTURE REMOVAL <u>78.5 lb/hr</u>	
ENTERING AIR DB / WB <u>76.8°F / 64.5°F</u>	LEAVING AIR DB / WB <u>52.6°F / 51.9°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>45°F / 125°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP154KCE-TED-455</u>	QUANTITY <u>2</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, compressor protection module, low pressure control and high pressure control.
- Mechanical cooling has 2 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.

* SOLID FLOOR EXTENDS IN TO OVERHANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

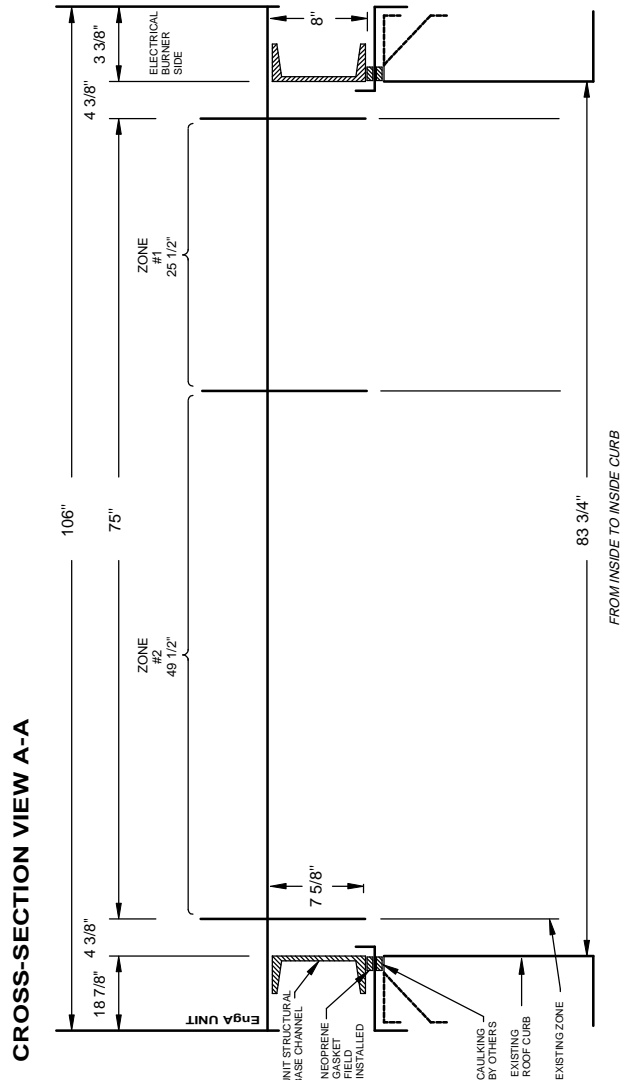
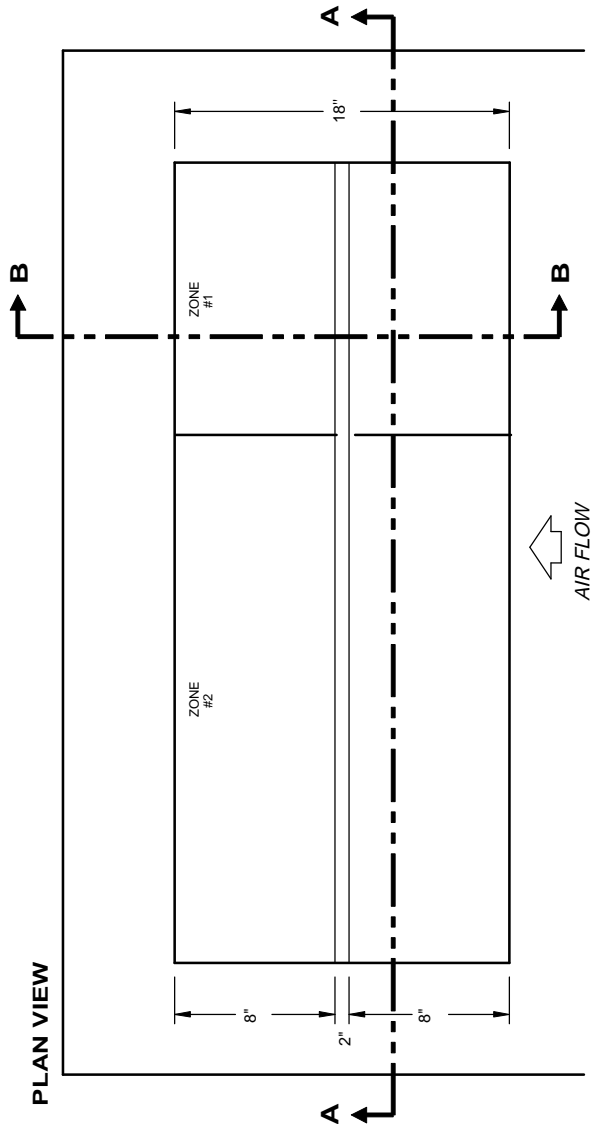
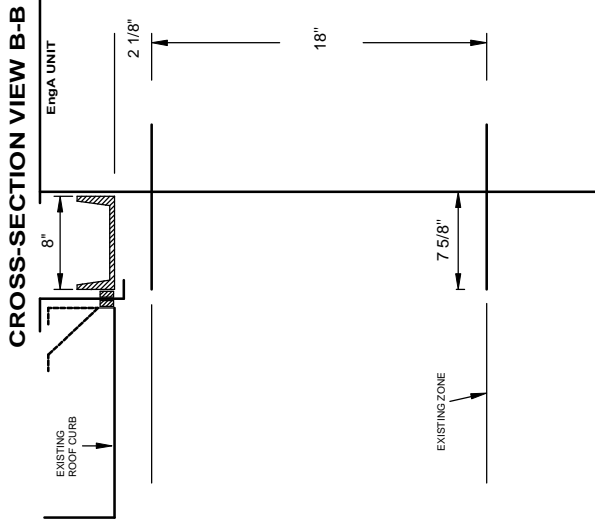
DK9631
TAG: RTU-26

FWE252/DJE40/O/MMV/R
HEAT/COOL UNIT



generated by
ProUnit

REVISIONS:			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-26-1



DK9631
TAG: RTU-26

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



ENGINEERED AIR



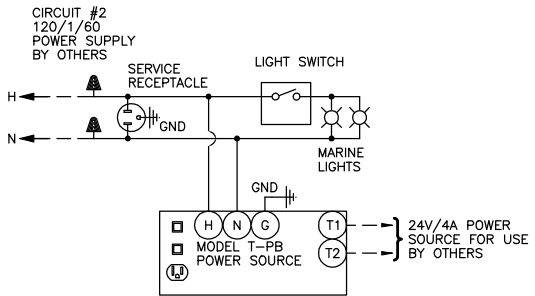
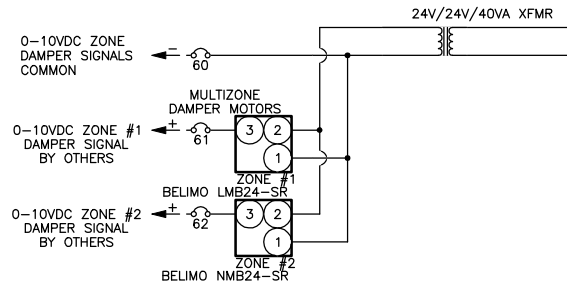
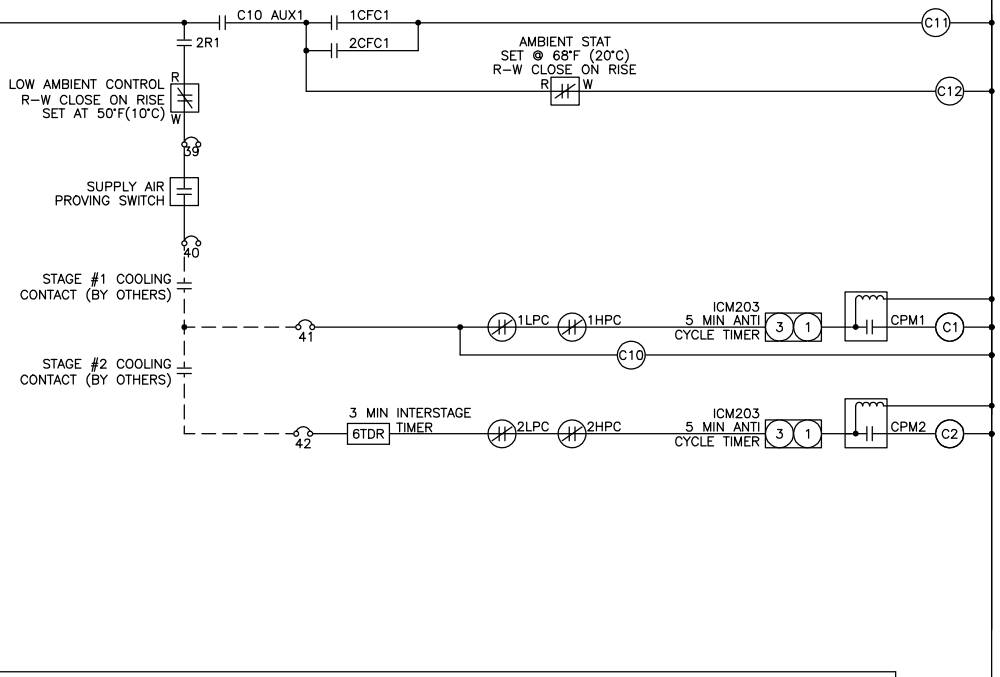
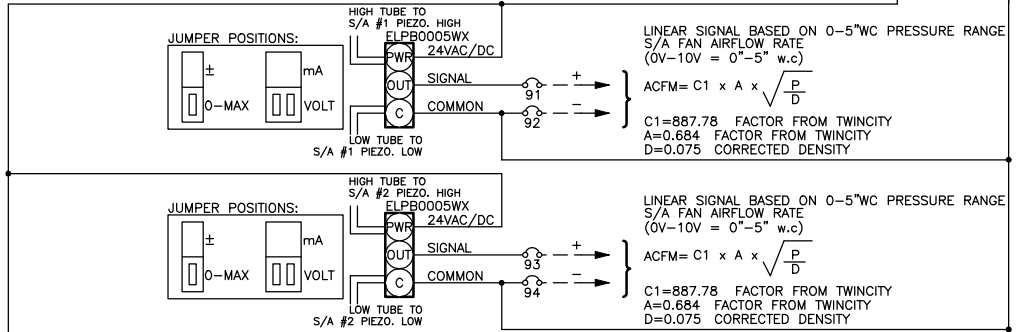
REVISIONS: DEC 21 2022

DATE:
OCT 24 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-26-1





ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-26

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	76.6 AMPS	4 Awg	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Crankcase Heater (2 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 and #2	1	ZP154KCE-TED-455	10 Awg	23.1 / 150.0	1	60	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 3 HP	14 Awg	3.85	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	4.8			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-90SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE252/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-26

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 2 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

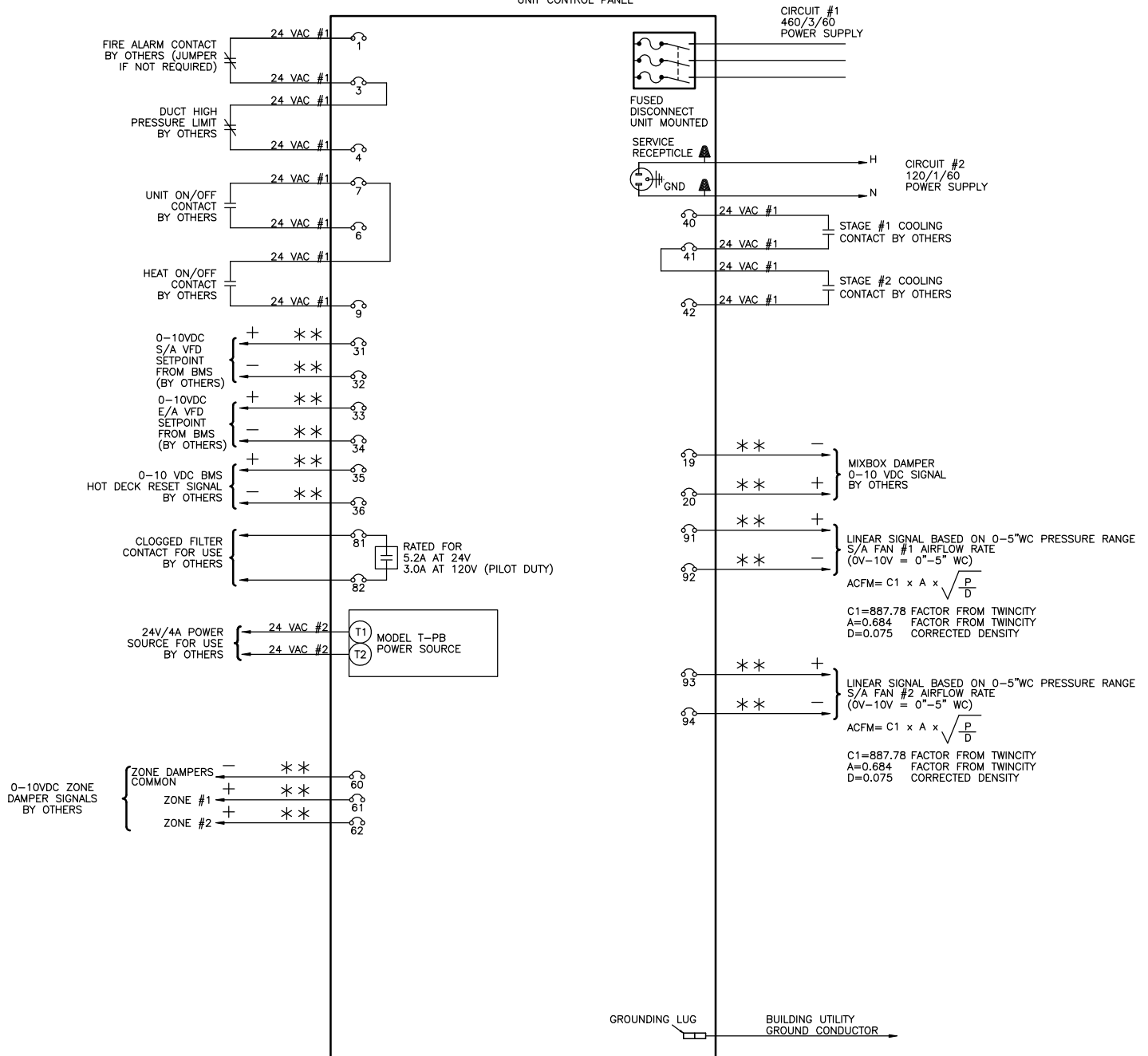
Note 1: S/A blower design speed is 2565 rpm (87.9Hz). speed range: 80%-110% of designed rpm. (70.4-96.7Hz)

Note 2: E/A blower design speed is 1551 rpm (51.7Hz). speed range: 80%-110% of designed rpm. (51.4-56.9Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1
 MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2
 * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
 ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
 TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
 TAPE THE ENDS OF ALL UNUSED WIRES.
 ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
 SIGNAL ISOLATION MAY BE REQUIRED.
 REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-26		FIELD WIRING DIAGRAM FW/DJ SERIES	
REVISION: DEC 21 2022	DRN.BY: CWJ	DWG.NO:	DK9631F-26-1
DATE: OCT 18 2022	CHKD.BY: JLC		



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE252/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-27

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6600 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6500 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>8,600 CFM</u>	FAN SIZE (2) <u>182 Alum EPFN</u>	TSP <u>4.2 in w.c.</u>	RPM <u>2098</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>4.08 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 71.9 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>7,310 CFM</u>	FAN SIZE (1) <u>30E8/WPD 20°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1132</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.8 BHP</u>

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 56.6 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE252/DJE60/O/M/MV/R QTY: 1 TAG: RTU-27

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-27 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	78.0 AMPS	100 AMPS	100 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '14A' supply air and '3.5A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 20 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>20.83 SQ.FT.</u>	FACE VELOCITY <u>413 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-60)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>500,000 Btuh</u>	HEAT OUTPUT <u>400,000 Btuh</u> TEMP. RISE <u>43.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE252/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-27

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

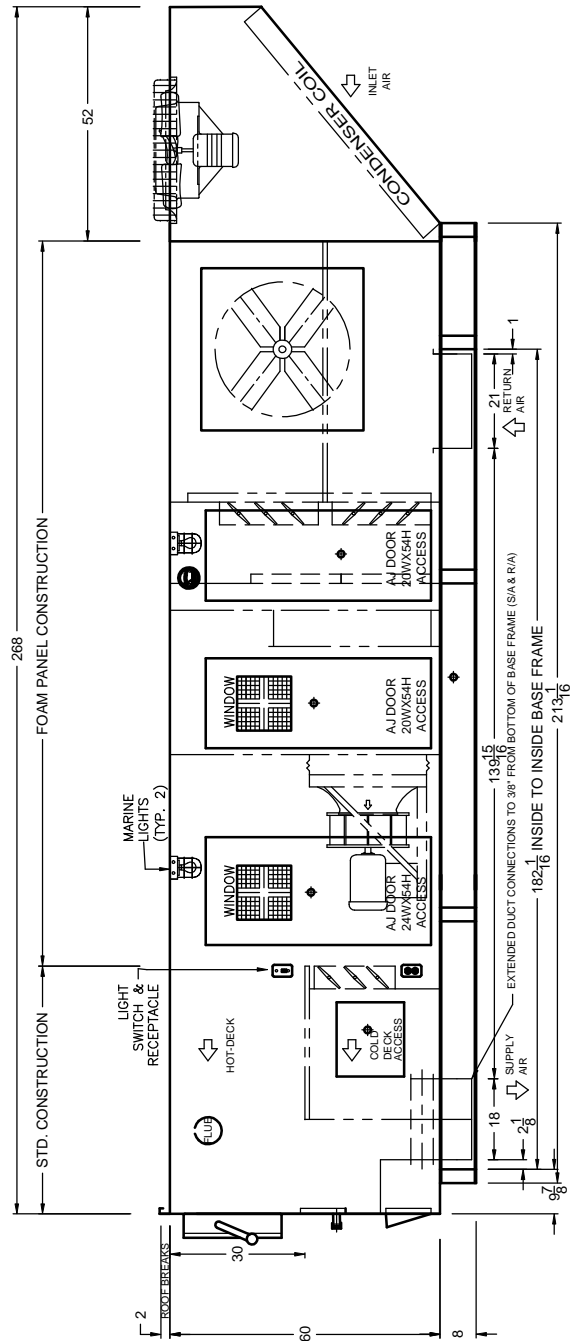
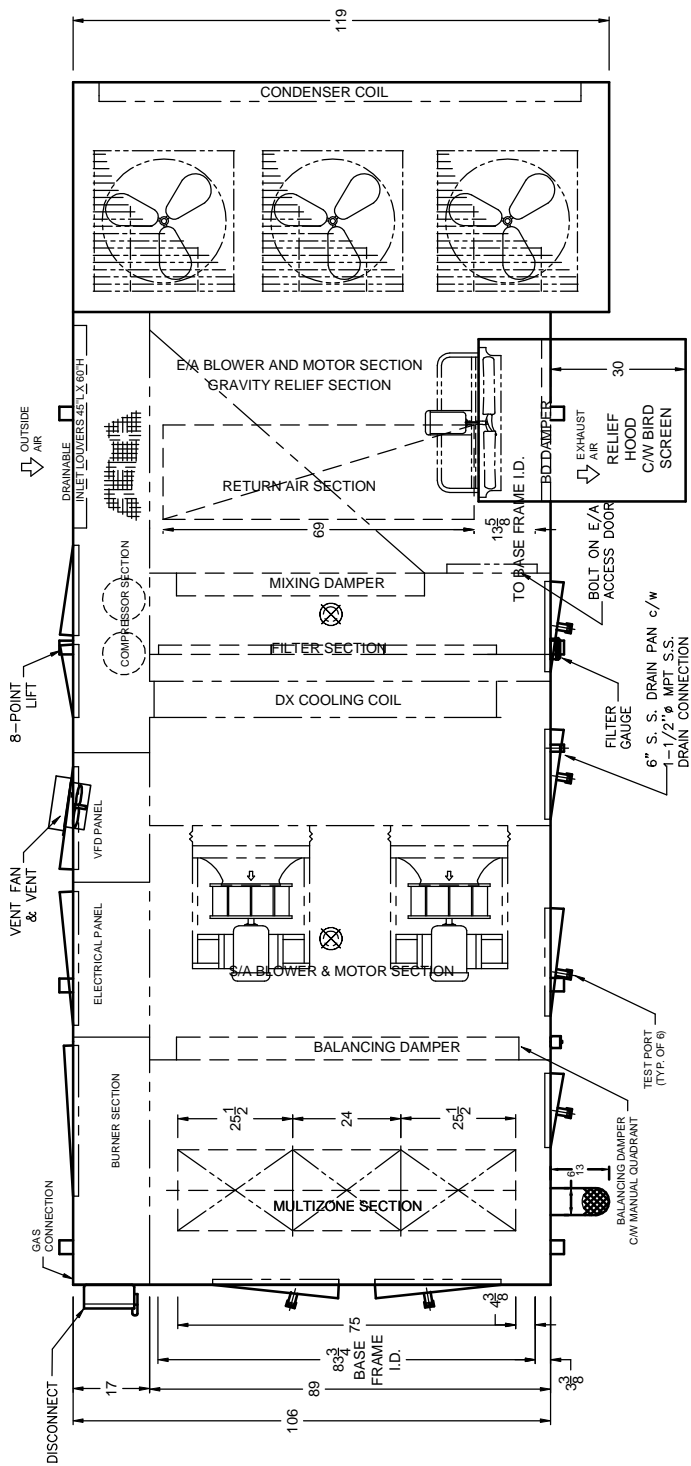
COIL SIZE <u>35 x 76 x 6R x 12 FPI</u>	VELOCITY <u>453 FPM</u>	
TOTAL CAPACITY <u>316,000 Btuh</u>	AIR P.D. <u>0.82 in.wc.</u>	
SENSIBLE CAPACITY <u>229,000 Btuh</u>	MOISTURE REMOVAL <u>76.9 lb/hr</u>	
ENTERING AIR DB / WB <u>77.2°F / 64.7°F</u>	LEAVING AIR DB / WB <u>52.6°F / 52.2°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>46.3°F / 125.6°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP154KCE-TED-455</u>	QUANTITY <u>2</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, compressor protection module, low pressure control and high pressure control.
- Mechanical cooling has 2 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.

* SOLID FLOOR EXTENDS IN TO OVERHANG. MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631

TAG: RTU-27

FWE252/DJE60/O/M/MV/R
HEAT/COOL UNIT



generated by
ProUnit

REVISIONS:

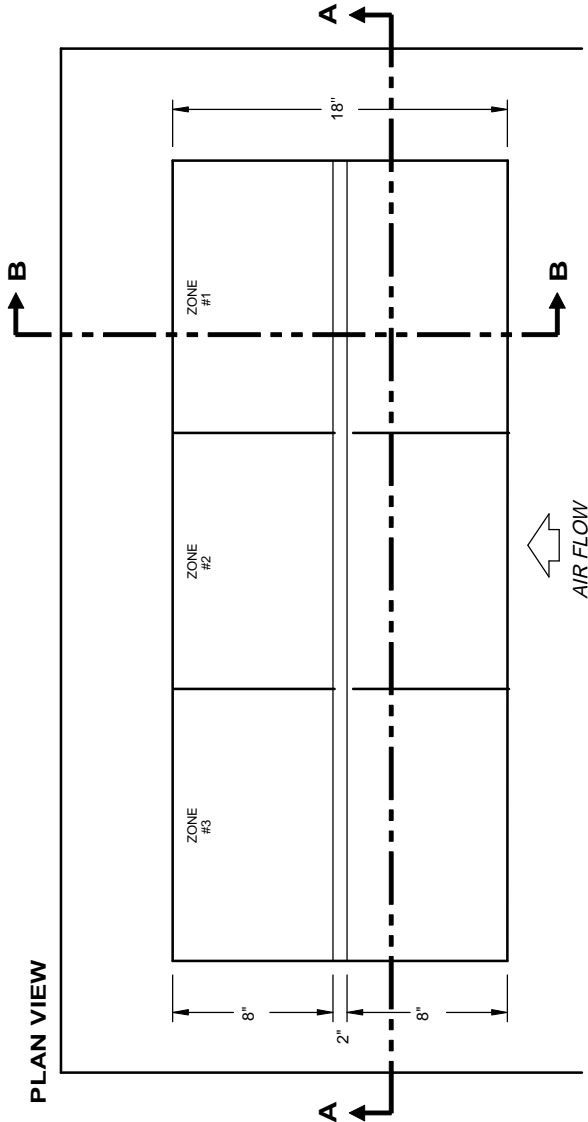
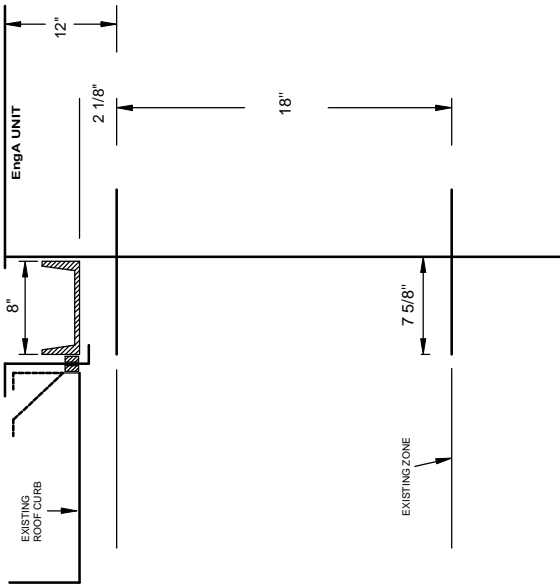
DATE:
OCT 04 2022

DRWN BY:
CWJ

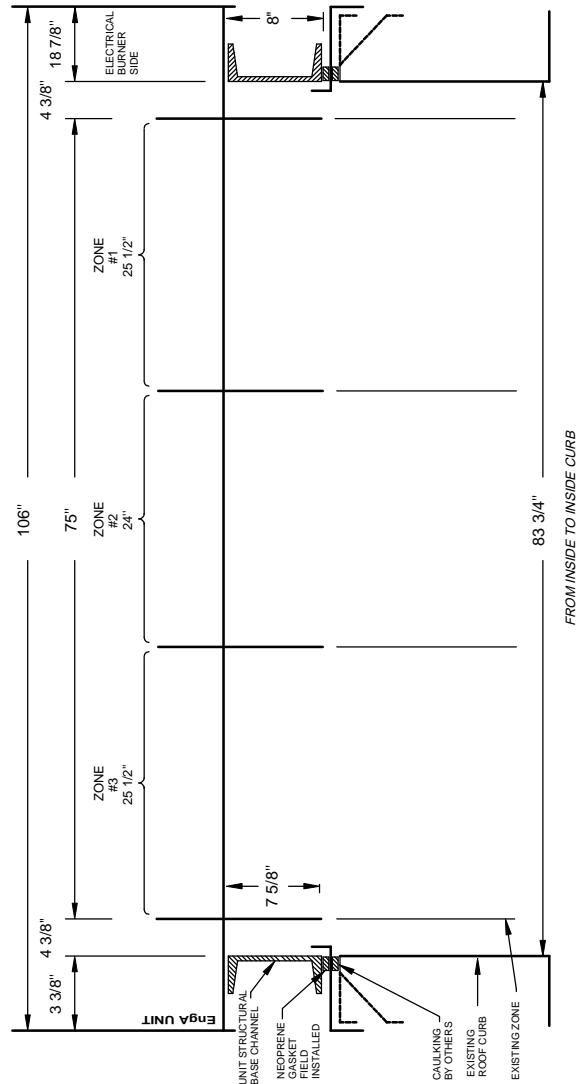
CHKD BY:
JLC

DRWG NO.:
DK9631M-27-1

CROSS-SECTION VIEW B-B



CROSS-SECTION VIEW A-A



DK9631
TAG: RTU-27

DRAWING NOT TO SCALE

FW/DJ
MULTIZONE DISCHARGE HEAD



ENGINEERED AIR



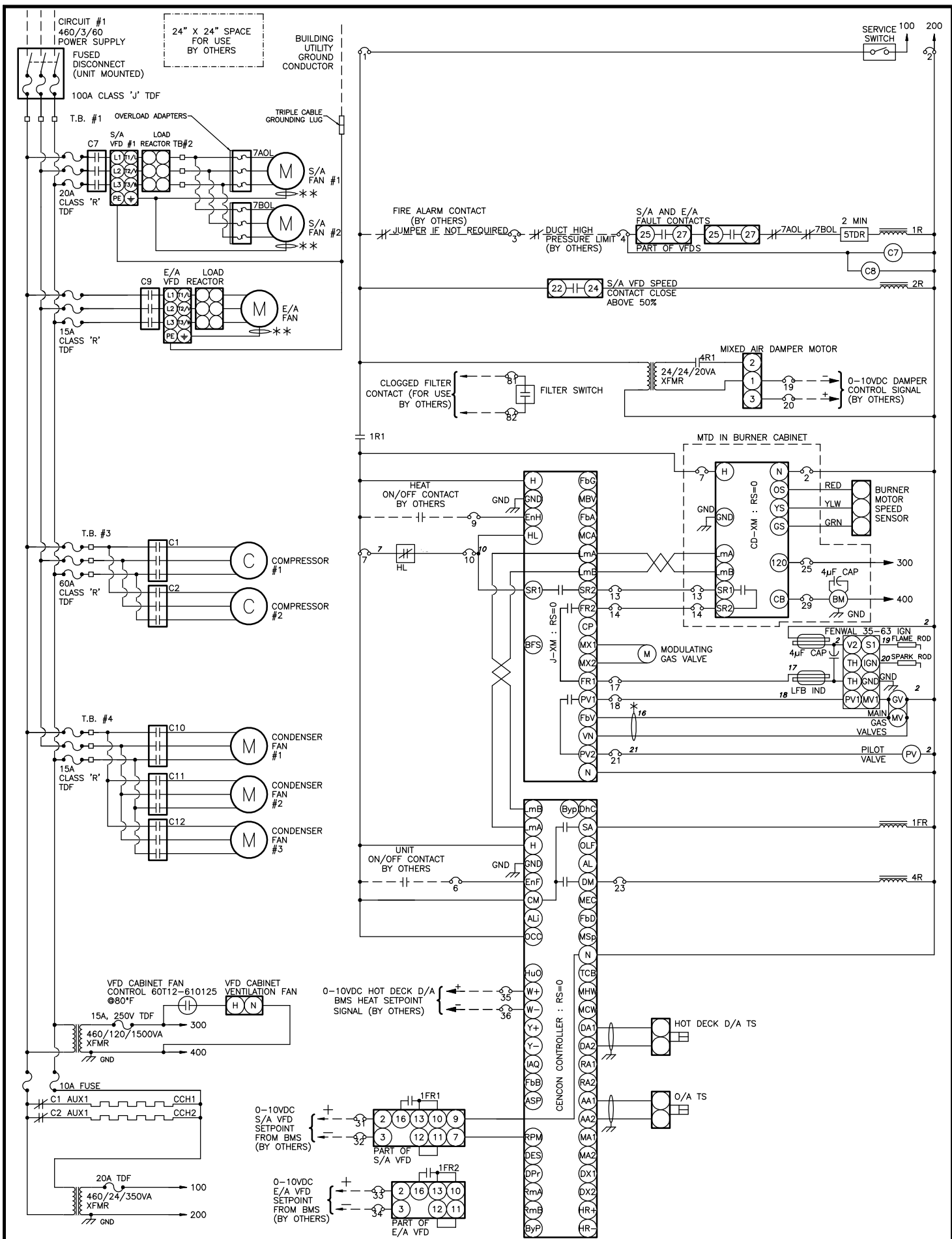
REVISIONS: DEC 21 2022

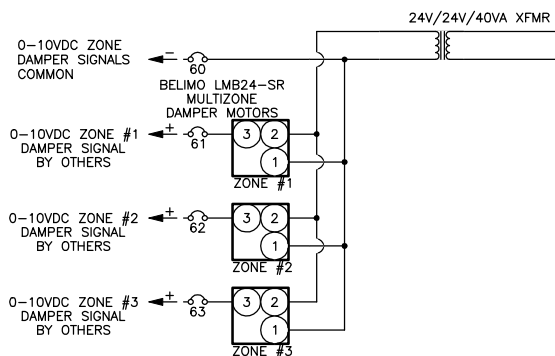
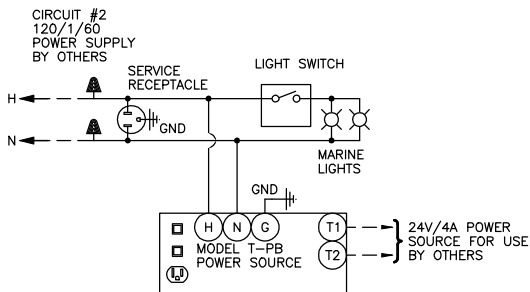
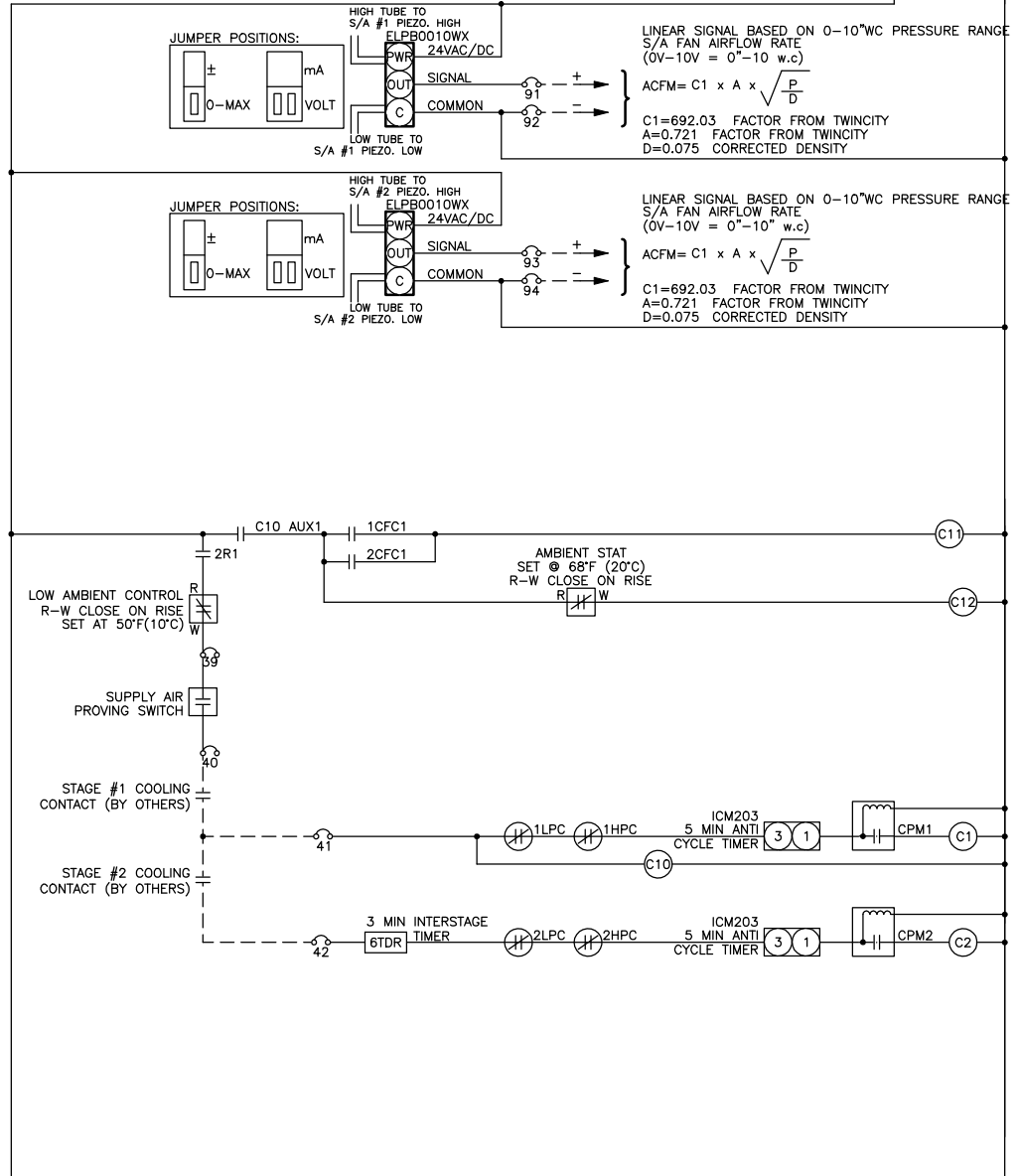
DATE:
OCT 26 2022

DRWN BY:
CWJ

CHKD BY:
JLC

DRWG NO.:
DK9631Z-27-1







ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE252/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-27

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	78.0 AMPS	4 Awg	100 AMPS	100 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/2 HP	14 Awg	8 @ 120/1/60			
Crankcase Heater (2 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	3.3			
Compressor #1 and #2	1	ZP154KCE-TED-455	10 Awg	23.1 / 150.0	1	60	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-100SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE252/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-27

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 2 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

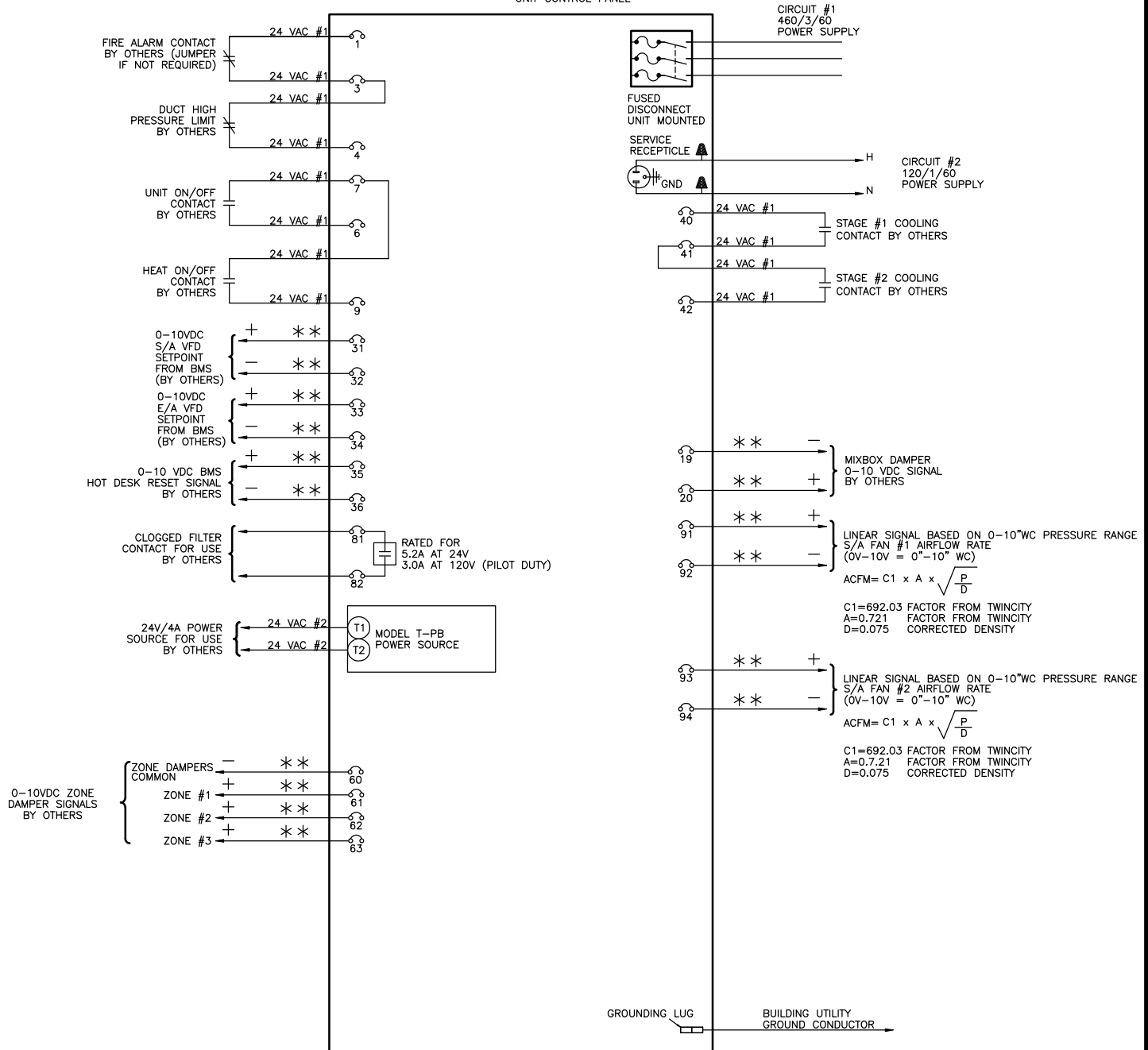
Note 1: S/A blower design speed is 2098 rpm (71.9Hz). speed range: 80%-110% of designed rpm. (57.5-79.1Hz)

Note 2: E/A blower design speed is 1132 rpm (56.6Hz). speed range: 80%-110% of designed rpm. (45.3-62.3Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details

UNIT CONTROL PANEL



MAXIMUM CONTROL CIRCUIT AMPACITY 14.58 AMPS AT 24 VAC #1

MAXIMUM CONTROL CIRCUIT AMPACITY 4 AMPS AT 24 VAC #2

- * SHIELDED WIRE IS REQUIRED WITH ELECTRONIC COMPONENTS.
- ** SHIELDED WIRE IS REQUIRED WITH BMS ANALOG SIGNALS.
- TAPE THE GROUND WIRE AND SHIELD TO PREVENT GROUNDING.
- TAPE THE ENDS OF ALL UNUSED WIRES.
- ANALOG BMS SIGNALS ARE SUBJECT TO GROUND LOOP INTERFERENCE.
- SIGNAL ISOLATION MAY BE REQUIRED.
- REFER TO THE OPERATION MANUAL OF THE SPECIFIC CONTROLLER.

1. FIELD WIRING VOLTAGE DROP NOT TO EXCEED 10%.
2. ALL WIRING SHOWN SHALL BE COMPLETED BY INSTALLER.
3. ALL FIELD WIRING MUST COMPLY WITH ALL NATIONAL AND LOCAL ELECTRICAL CODES.



TAG: RTU-27

FIELD WIRING DIAGRAM
FW/DJ SERIES

REVISION: DEC 21 2022

DRN.BY: CWJ

DWG.NO:

DK9631F-27-1

DATE: OCT 18 2022

CHKD.BY: JLC



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-28

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>7600 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>7450 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>9,200 CFM</u>	FAN SIZE (2) <u>182 Alum EPFN</u>	TSP <u>4.3 in w.c.</u>	RPM <u>2160</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>4.47 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 74.1 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>7,820 CFM</u>	FAN SIZE (1) <u>36E4/WPD 20°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1095</u>
MOTOR SIZE <u>3 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.51 BHP</u>

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 52 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R QTY: 1 TAG: RTU-28

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-28 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	87.0 AMPS	100 AMPS	100 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '14A' supply air and '4.8A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE Pleated Filter with MERV 8 rating	
QTY/SIZE 6 - 25 x 20 x 2"	QTY/SIZE _____
TOTAL GROSS AREA 20.83 SQ.FT.	FACE VELOCITY 442 FPM
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-60)

POWER BURNER EngA 'HT' Series	HEAT EXCH. MATERIAL Stainless Steel
FUEL Natural Gas	INLET PRESSURE 14 in wc. GAS FIELD CONN. 0.75"
HEAT INPUT 500,000 Btuh	HEAT OUTPUT 400,000 Btuh TEMP. RISE 40.0 °F
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-28

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

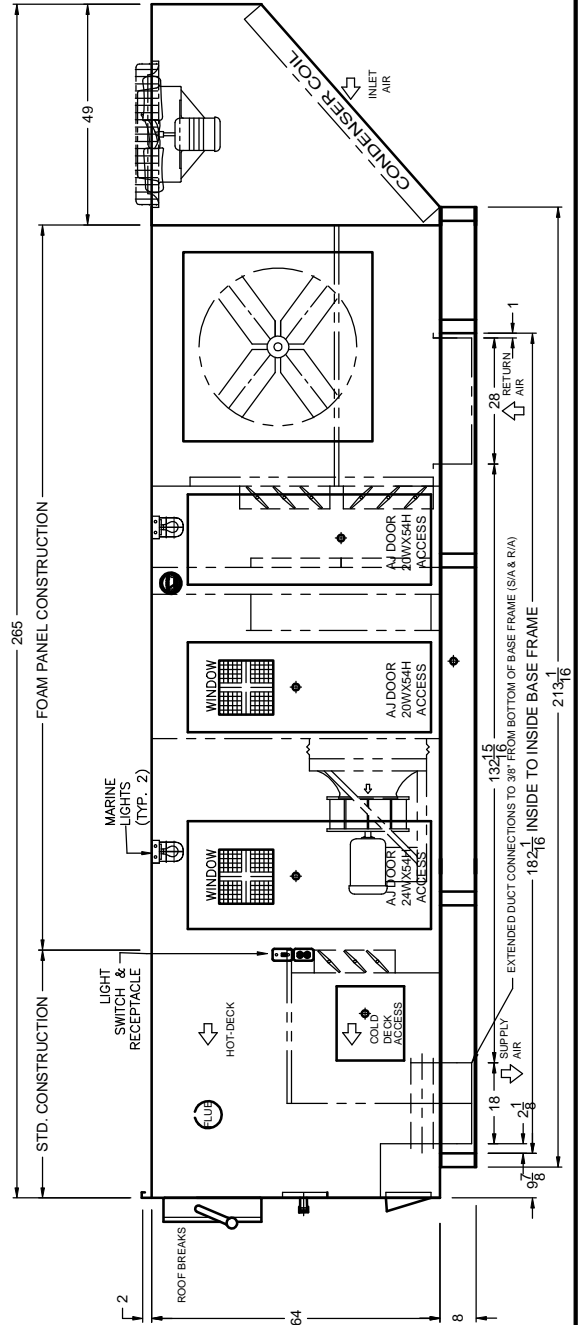
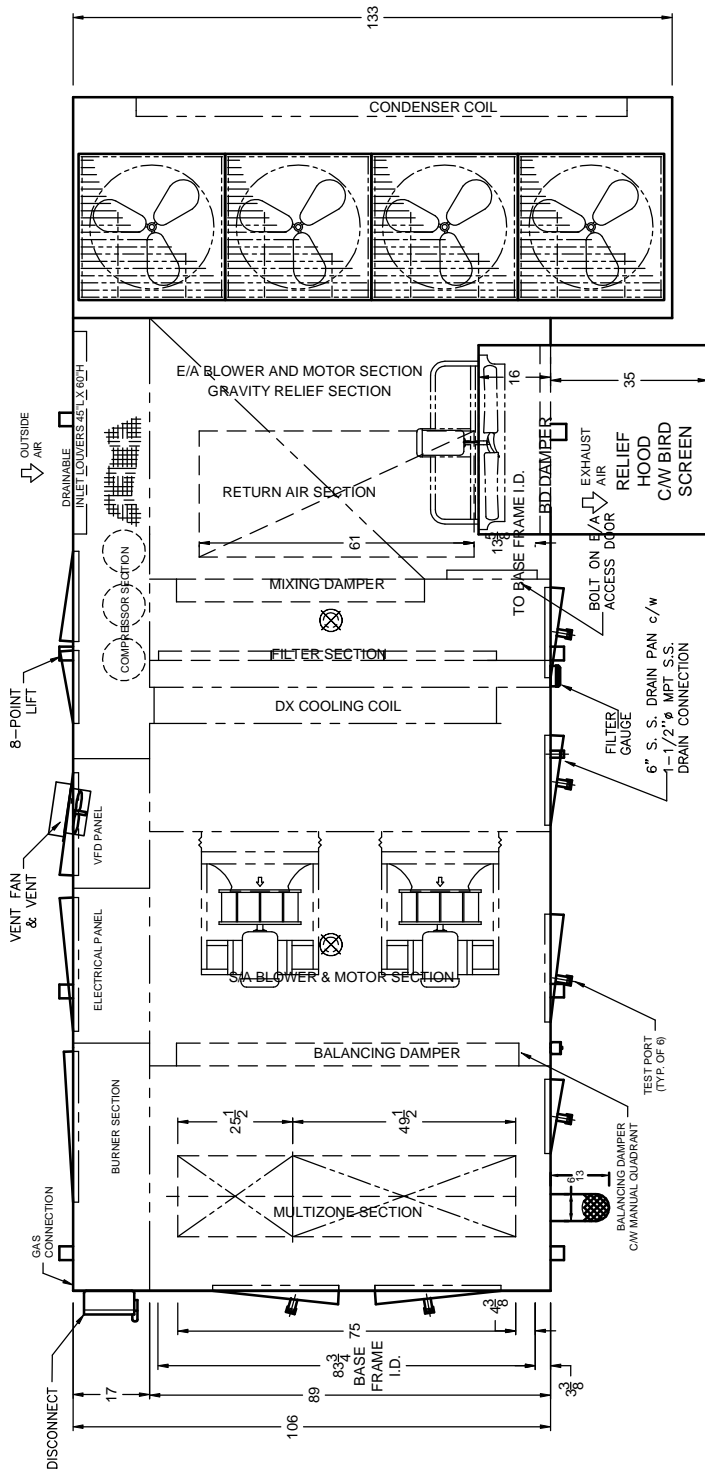
COIL SIZE <u>40 x 76 x 6R x 14 FPI</u>	VELOCITY <u>424 FPM</u>	
TOTAL CAPACITY <u>380,000 Btuh</u>	AIR P.D. <u>0.84 in.wc.</u>	
SENSIBLE CAPACITY <u>268,000 Btuh</u>	MOISTURE REMOVAL <u>98.9 lb/hr</u>	
ENTERING AIR DB / WB <u>79.7°F / 66.3°F</u>	LEAVING AIR DB / WB <u>52.8°F / 52.5°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>47.4°F / 126.9°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP120KCE-TFD-455</u>	QUANTITY <u>3</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, low pressure control and high pressure control.
- The hot gas bypass line must be connected to the 5/8" OD spigot provided on the top of the DX coil header.
- Mechanical cooling has 3 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.

* SOLID FLOOR EXTENDS IN TO OVER HANG, MESH ON OUTSIDE OF BASE FRAME IN COMPRESSOR SECTION



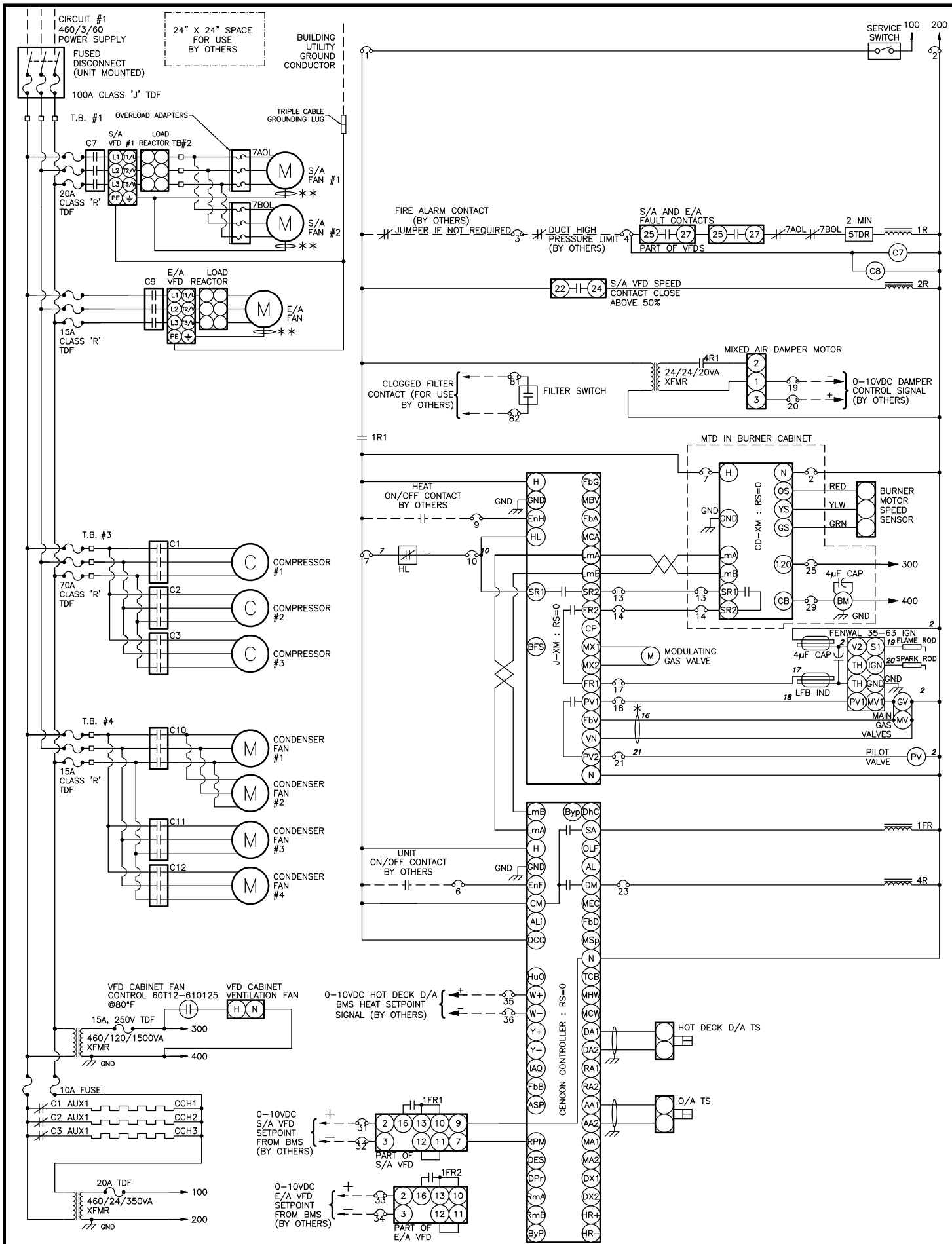
DOOR SIZES AND INTERNAL COMPONENTS ARE APPROX. VALUES. DIMENSIONS SHOWN IN INCHES ONLY UNLESS OTHERWISE NOTED.

DK9631
TAG: RTU-28

FWE313/DJE60/O/M/MV/R
HEAT/COOL UNIT



REVISIONS: JAN 23 2023			
DATE: OCT 04 2022	DRWN BY: CWJ	CHKD BY: JLC	DRWG NO.: DK9631M-28-1



* RED FEEDBACK CABLE HOOKED DIRECTLY TO MAIN GAS VALVE



TAG: RTU-28		INTERNAL WIRING DIAGRAM (PAGE 1 OF 2)	
REVISION: MAR 20 2023		DRN.BY: CWJ	DWG.NO: DK9631E-28-1
DATE: OCT 18 2022		CHKD.BY: JLC	



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-28

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	87.0 AMPS	2 Awg	100 AMPS	100 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/2 HP	14 Awg	8 @ 120/1/60			
Crankcase Heater (3 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	3.3			
Compressor #1 to #3	1	ZP120KCE-TFD-455	10 Awg	17.9 / 125.0	1	70	4 Awg
Condenser Fan Motor #1 to #4	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 3 HP	14 Awg	3.85	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	4.8			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 14 kA rms symmetrical, 460 V maximum With LPJ-100SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contactor	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R QTY: 1 TAG: RTU-28

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 3 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

Note 1: S/A blower design speed is 2160 rpm (74.1Hz). speed range: 80%-110% of designed rpm. (59.2-81.5Hz)

Note 2: E/A blower design speed is 1159 rpm (52Hz). speed range: 80%-110% of designed rpm. (41.6-57.2Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-29

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>7650 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>7500 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>10,000 CFM</u>	FAN SIZE (2) <u>165A Alum EPFN</u>	TSP <u>4.4 in w.c.</u>	RPM <u>2887</u>
MOTOR SIZE (2) <u>7 1/2 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1770)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>5.74 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 97.9 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>8,500 CFM</u>	FAN SIZE (1) <u>36E4/WPD 20°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1130</u>
MOTOR SIZE <u>3 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.68 BHP</u>

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 56.5 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R QTY: 1 TAG: RTU-29

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-29 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	97.3 AMPS	110 AMPS	110 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '14A' supply air and '4.8A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 20 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>20.83 SQ.FT.</u>	FACE VELOCITY <u>480 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-60)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>1"</u>
HEAT INPUT <u>600,000 Btuh</u>	HEAT OUTPUT <u>480,000 Btuh</u> TEMP. RISE <u>44.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-29

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

COIL SIZE <u>40 x 76 x 6R x 12 FPI</u>	VELOCITY <u>461 FPM</u>	
TOTAL CAPACITY <u>374,000 Btuh</u>	AIR P.D. <u>0.85 in.wc.</u>	
SENSIBLE CAPACITY <u>268,000 Btuh</u>	MOISTURE REMOVAL <u>92.5 lb/hr</u>	
ENTERING AIR DB / WB <u>77.7°F / 65.1°F</u>	LEAVING AIR DB / WB <u>52.9°F / 52.5°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>46.5°F / 126.5°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP120KCE-TFD-455</u>	QUANTITY <u>3</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, low pressure control and high pressure control.
- Mechanical cooling has 3 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-29

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	97.3 AMPS	2 Awg	110 AMPS	110 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1770) 7 1/2 HP	8 Awg	9.5			
Supply Fan Motor VFD	1		8 Awg	23.0			
Burner Motor	1	PSC(Use Xfmr) 1/2 HP	14 Awg	8 @ 120/1/60			
Crankcase Heater (3 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	3.3			
Compressor #1 to #3	1	ZP120KCE-TFD-455	10 Awg	17.9 / 125.0	1	70	4 Awg
Condenser Fan Motor #1 to #4	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 3 HP	14 Awg	3.85	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	4.8			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 14 kA rms symmetrical, 460 V maximum With LPJ-110SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contactor	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R QTY: 1 TAG: RTU-29

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 3 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

Note 1: S/A blower design speed is 2887 rpm (97.9Hz). speed range: 80%-110% of designed rpm. (78.3-107.7Hz)

Note 2: E/A blower design speed is 1130 rpm (56.5Hz). speed range: 80%-110% of designed rpm. (45.2-62.2Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE224/DJE40/O/MV/R **QTY:** 1 **TAG:** RTU-41

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6200 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6100 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>7,200 CFM</u>	FAN SIZE (2) <u>165A Alum EPFN</u>	TSP <u>4.2 in w.c.</u>	RPM <u>2421</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>3.58 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 83 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>6,120 CFM</u>	FAN SIZE (1) <u>30E4/WPD 25°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1115</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.4 BHP</u>

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 55.8 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]		
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/MV/R QTY: 1 TAG: RTU-41

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

COIL SIZE	<u>30 x 76 x 6R x 12 FPI</u>	VELOCITY	<u>443 FPM</u>
TOTAL CAPACITY	<u>260,000 Btuh</u>	AIR P.D.	<u>0.78 in.wc.</u>
SENSIBLE CAPACITY	<u>190,000 Btuh</u>	MOISTURE REMOVAL	<u>60.5 lb/hr</u>
ENTERING AIR DB / WB	<u>77.7°F / 65.0°F</u>	LEAVING AIR DB / WB	<u>53.2°F / 52.9°F</u>
DESIGN AMBIENT TEMP	<u>95°F</u>	SST/SC	<u>47.3°F / 123.8°F</u>
COMPRESSOR TYPE	<u>Hermetic Scroll</u>	REFRIGERANT TYPE	<u>R-410A</u>
MODEL	<u>ZP61KCE-TFD-250</u>	QUANTITY	<u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/MV/R

QTY: 1

TAG: RTU-41

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	65.6 AMPS	4 Awg	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #4	1	ZP61KCE-TFD-250	14 Awg	9.7 / 62.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 14 kA rms symmetrical, 460 V maximum With LPJ-70SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/MV/R

QTY: 1

TAG: RTU-41

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Note 1: S/A blower design speed is 2421 rpm (83Hz). speed range: 80%-110% of designed rpm. (66.4-91.3Hz)

Note 2: E/A blower design speed is 1115 rpm (55.8Hz). speed range: 80%-110% of designed rpm. (44.6-61.3Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE263/DJE40/O/MV/R **QTY:** 1 **TAG:** RTU-42

SHIPPING AND APPROVAL INFORMATION

MOUNTING Outdoor Base Mounted on Existing Roof Curb **ACCESS** As Per Drawing
UNIT MINIMUM AMBIENT -20°F **SHIPPING WEIGHT** 6150 lb **OPERATING WEIGHT** 6050 lb
NO. OF PIECES 2 (Unit + Hood)

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW 9,100 CFM **FAN SIZE (2)** 182 Alum EPFN **TSP** 4.5 in w.c. **RPM** 2186
MOTOR SIZE (2) 5 HP **TYPE (RPM)** Super 'E' TEFC (1750) **ESP** 1.5 in w.c. **BHP (2)** 4.62 BHP

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 74.9 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW 7,735 CFM **FAN SIZE (1)** 24E8/WPD 30° **TSP** 0.6 in w.c. **RPM** 1649
MOTOR SIZE 3 HP **TYPE (RPM)** See Below [1] **ESP** 0.5 in w.c. **BHP** 2.65 BHP

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 53.7 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]		
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Parallel Blade	Gravity

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET 2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section.
18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.

UNIT LINER 22 gauge satin coat galvanized solid liner throughout HTX section.

UNIT UNDERSIDE 0.040"(18 gauge) 3003 series aluminum sheet metal liner.

UNIT FLOOR 1/8" 3003 series aluminum checker plate on entire unit floor.

EXTERIOR PAINT Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE263/DJE40/O/MV/R QTY: 1 TAG: RTU-42

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-42 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit. 	

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	78.9 AMPS	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS
<ul style="list-style-type: none"> See Electrical Data Sheet for details. Unit mounted fused disconnect switch. MCA is based on '14A' supply air and '3.5A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used. (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others. 24" x 24" free space provided on the electrical panel for use by others 				

FILTER SECTION DATA - Side Loaded

FILTER TYPE	<u>Pleated Filter with MERV 8 rating</u>	QTY/SIZE	<u>3 - 25 x 16 x 2"</u>	QTY/SIZE	<u>3 - 25 x 20 x 2"</u>
TOTAL GROSS AREA	<u>18.75 SQ.FT.</u>	FACE VELOCITY	<u>485 FPM</u>		
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 					

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER	<u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL	<u>Stainless Steel</u>		
FUEL	<u>Natural Gas</u>	INLET PRESSURE	<u>14 in wc.</u>	GAS FIELD CONN.	<u>0.75"</u>
HEAT INPUT	<u>400,000 Btuh</u>	HEAT OUTPUT	<u>320,000 Btuh</u>	TEMP. RISE	<u>33.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner F.M. conforming gas manifold. Heating is controlled by CENCON controller and BMS interface. 					



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE263/DJE40/O/MV/R QTY: 1 TAG: RTU-42

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

COIL SIZE	<u>35 x 76 x 6R x 12 FPI</u>	VELOCITY	<u>478 FPM</u>
TOTAL CAPACITY	<u>309,000 Btuh</u>	AIR P.D.	<u>0.88 in.wc.</u>
SENSIBLE CAPACITY	<u>226,000 Btuh</u>	MOISTURE REMOVAL	<u>72.9 lb/hr</u>
ENTERING AIR DB / WB	<u>74.1°F / 62.7°F</u>	LEAVING AIR DB / WB	<u>51.1°F / 50.7°F</u>
DESIGN AMBIENT TEMP	<u>95°F</u>	SST/SC	<u>44.3°F / 124.9°F</u>
REFRIGERANT TYPE	<u>R-410A</u>		
COMPRESSOR TYPE	<u>Hermetic Scroll</u>	MODEL	<u>ZP103KCE-TFD-455</u>
QUANTITY	<u>3</u>		

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, low pressure control and high pressure control.
- Mechanical cooling has 3 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE263/DJE40/O/MV/R

QTY: 1

TAG: RTU-42

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	78.9 AMPS	4 Awg	90 AMPS	90 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Crankcase Heater (3 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #3	1	ZP103KCE-TFD-455	10 Awg	16.7 / 114.0	1	60	4 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 3 HP	14 Awg	3.85	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	4.8			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 5 HP	14 Awg	6.6	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-90SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contactor	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE263/DJE40/O/MV/R

QTY: 1

TAG: RTU-42

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 3 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Note 1: S/A blower design speed is 2186 rpm (74.9Hz). speed range: 80%-110% of designed rpm. (60-82.4Hz)

Note 2: E/A blower design speed is 1153 rpm (53.7Hz). speed range: 80%-110% of designed rpm. (43-59.1Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-7

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6350 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6200 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>6,100 CFM</u>	FAN SIZE (2) <u>150A Alum EPFN</u>	TSP <u>3.9 in w.c.</u>	RPM <u>2634</u>
MOTOR SIZE (2) <u>3 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1750)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>2.85 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 90.3 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>5,185 CFM</u>	FAN SIZE (1) <u>24B105/WPD 20°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1652</u>
MOTOR SIZE <u>1.5 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.28 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 55.1 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R QTY: 1 TAG: RTU-7

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-7 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	62.6 AMPS	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '12A' supply air and '3A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE <u>Pleated Filter with MERV 8 rating</u>	
QTY/SIZE <u>6 - 25 x 16 x 2"</u>	QTY/SIZE _____
TOTAL GROSS AREA <u>16.67 SQ.FT.</u>	FACE VELOCITY <u>366 FPM</u>
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-40)

POWER BURNER <u>EngA 'HT' Series</u>	HEAT EXCH. MATERIAL <u>Stainless Steel</u>
FUEL <u>Natural Gas</u>	INLET PRESSURE <u>14 in wc.</u> GAS FIELD CONN. <u>0.75"</u>
HEAT INPUT <u>400,000 Btuh</u>	HEAT OUTPUT <u>320,000 Btuh</u> TEMP. RISE <u>49.0 °F</u>
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-7

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

COIL SIZE <u>30 x 76 x 6R x 12 FPI</u>	VELOCITY <u>375 FPM</u>	
TOTAL CAPACITY <u>256,000 Btuh</u>	AIR P.D. <u>0.62 in.wc.</u>	
SENSIBLE CAPACITY <u>179,000 Btuh</u>	MOISTURE REMOVAL <u>67.9 lb/hr</u>	
ENTERING AIR DB / WB <u>79.1°F / 65.8°F</u>	LEAVING AIR DB / WB <u>51.9°F / 51.6°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>46.5°F / 123.5°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP61KCE-TFD-250</u>	QUANTITY <u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-7

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	62.6 AMPS	6 Awg	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #4	1	ZP61KCE-TFD-250	14 Awg	9.7 / 62.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1750) 3 HP	14 Awg	4.2	3	15	14 Awg
Supply Fan Motor VFD	1		14 Awg	12.0			
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 1.5 HP	14 Awg	2.08	4	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-70SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-7

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anti-cycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

Note 1: S/A blower design speed is 2634 rpm (90.3Hz). speed range: 80%-110% of designed rpm. (72.2-99.3Hz)

Note 2: E/A blower design speed is 1652 rpm (55.1Hz). speed range: 80%-110% of designed rpm. (44.1-60.6Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-8

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>7600 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>7450 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>10,000 CFM</u>	FAN SIZE (2) <u>200 Alum EPFN</u>	TSP <u>4.4 in w.c.</u>	RPM <u>1931</u>
MOTOR SIZE (2) <u>7 1/2 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (1770)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>5.0 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 65.5 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>8,500 CFM</u>	FAN SIZE (1) <u>36E4/WPD 20°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1130</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.68 BHP</u>

- [1] - TECO MAX-PE TEFC(1200 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 56.5 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section. 18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R QTY: 1 TAG: RTU-8

CONSTRUCTION DATA (CONTINUED)

AIRSIDE DOOR	Filter access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles and test port. Coil access - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , test port and double pane glass window. Fan access - (Positive pressure door) - extruded aluminum non-thermal break frame, EPDM gasket AJ doors c/w lever type door handles , door safety catches, warning label, test port and double pane glass window. Hot & cold deck access - (Positive pressure door) - deluxe welded steel framed hinged c/w lever type door handles , door safety catches, warning label, test port and bulb seal gasket.
SERVICE DOOR	All access - hinged c/w lever type door handles
DRAIN PAN	18 gauge 304 stainless steel drain pan c/w floor drain connection through base frame on DX coil section.
	<ul style="list-style-type: none"> Unit to be built with . <ul style="list-style-type: none"> - 2" Spray foam insulation(R12) on unit underside - Pressure test ports on each section - Aluminum association base channel EngA drainable weather louver(s) c/w 1" bird screen. Replacement for unit EngA 30804 RTU-8 to match existing roof curb and air openings . Unit tag lamicoïd label on (3) sides of unit. 'S' lamicoïd label on supply end of unit.

ELECTRICAL DATA

CIRCUIT NO	POWER SUPPLY	MINIMUM CIRCUIT AMPACITY	MAXIMUM FUSE(D.E.)	MAXIMUM BREAKER
1	460 / 3 / 60	96.0 AMPS	110 AMPS	110 AMPS
2	120 / 1 / 60	12.0 AMPS	15 AMPS	15 AMPS

- See Electrical Data Sheet for details.
- Unit mounted fused disconnect switch.
- MCA is based on '23A' supply air and '3.5A' exhaust air rated adjustable speed drive amps and installed supply and exhaust air motor amps is not used.
- (2) marine light with 10 Watt LED screw in light bulb c/w an on/off switch, 24V/4A power supply for use by others and (1) 15A service receptacle unit mounted on unit exterior - 120V/1PH/ 60HZ power supply by others.
- 24" x 24" free space provided on the electrical panel for use by others

FILTER SECTION DATA - Side Loaded

FILTER TYPE Pleated Filter with MERV 8 rating	
QTY/SIZE 6 - 25 x 20 x 2"	QTY/SIZE _____
TOTAL GROSS AREA 20.83 SQ.FT.	FACE VELOCITY 480 FPM
<ul style="list-style-type: none"> Filters may be shipped loose or mounted in the tracks 1 spare set of filters - shipped loose Dwyer series 2000 magnehelic gauge 0-2" wc across filter section 	

BURNER HEATING DATA - INDIRECT FIRED (DJE-60)

POWER BURNER EngA 'HT' Series	HEAT EXCH. MATERIAL Stainless Steel
FUEL Natural Gas	INLET PRESSURE 14 in wc. GAS FIELD CONN. 0.75"
HEAT INPUT 500,000 Btuh	HEAT OUTPUT 400,000 Btuh TEMP. RISE 37.0 °F
<ul style="list-style-type: none"> EngA (15 : 1) high turndown burner Three pass heat exchanger c/w condensate drain connection. Heat exchanger section has 1" 1.5 lb/ft³ insulation with 22 gauge solid liner 	



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-8

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

COIL SIZE <u>40 x 76 x 6R x 12 FPI</u>	VELOCITY <u>462 FPM</u>	
TOTAL CAPACITY <u>378,000 Btuh</u>	AIR P.D. <u>0.83 in.wc.</u>	
SENSIBLE CAPACITY <u>277,000 Btuh</u>	MOISTURE REMOVAL <u>87.7 lb/hr</u>	
ENTERING AIR DB / WB <u>79.2°F / 65.7°F</u>	LEAVING AIR DB / WB <u>53.5°F / 53.1°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>47.1°F / 126.8°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP120KCE-TFD-455</u>	QUANTITY <u>3</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier, low pressure control and high pressure control.
- Mechanical cooling has 3 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R

QTY: 1

TAG: RTU-8

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	96.0 AMPS	2 Awg	110 AMPS	110 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/2 HP	14 Awg	8 @ 120/1/60			
Crankcase Heater (3 total)	1	Fuse with main xfmr 93 VA	14 Awg	.2			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	3.3			
Compressor #1 to #3	1	ZP120KCE-TFD-455	10 Awg	17.9 / 125.0	1	70	4 Awg
Condenser Fan Motor #1 to #4	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1200 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (1770) 7 1/2 HP	14 Awg	9.5	4	30	8 Awg
Supply Fan Motor VFD	1		14 Awg	23.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 14 kA rms symmetrical, 460 V maximum With LPJ-110SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contactor	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE313/DJE60/O/M/MV/R **QTY:** 1 **TAG:** RTU-8

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 3 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

Note 1: S/A blower design speed is 1931 rpm (65.5Hz). speed range: 80%-110% of designed rpm. (52.4-72Hz)

Note 2: E/A blower design speed is 1130 rpm (56.5Hz). speed range: 80%-110% of designed rpm. (45.2-62.2Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)
CUSTOMER: GREAT OAKS INSTITUTE OF TECH **ENGINEER:** HEAPY ENGINEERING
EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-9

SHIPPING AND APPROVAL INFORMATION

MOUNTING <u>Outdoor Base Mounted on Existing Roof Curb</u>	ACCESS <u>As Per Drawing</u>
UNIT MINIMUM AMBIENT <u>-20°F</u>	SHIPPING WEIGHT <u>6400 lb</u>
NO. OF PIECES <u>2 (Unit + Hood)</u>	OPERATING WEIGHT <u>6250 lb</u>

- Intertek ETL_{us} approval.
- Unit will be shrink wrapped for transportation.

SUPPLY AIR DATA

AIR FLOW <u>7,100 CFM</u>	FAN SIZE (2) <u>150A Alum EPFN</u>	TSP <u>4.1 in w.c.</u>	RPM <u>2872</u>
MOTOR SIZE (2) <u>5 HP</u>	TYPE (RPM) <u>Super 'E' TEFC (3475)</u>	ESP <u>1.5 in w.c.</u>	BHP (2) <u>3.62 BHP</u>

- Supply air fan/motors c/w spring vibration isolation, Piezometer ring and pressure transducers, aluminum wheel and thrust restraint isolators.
- (1) Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 49.6 Hz under design conditions for the rated air flow.

EXHAUST AIR DATA

AIR FLOW <u>6,035 CFM</u>	FAN SIZE (1) <u>24B105/WPD 25°</u>	TSP <u>0.6 in w.c.</u>	RPM <u>1653</u>
MOTOR SIZE <u>2 HP</u>	TYPE (RPM) <u>See Below [1]</u>	ESP <u>0.5 in w.c.</u>	BHP <u>1.71 BHP</u>

- [1] - TECO MAX-PE TEFC(1800 Direct Drive)
- Exhaust air fan/motor c/w backdraft damper and protective inlet guard.
- Unit mounted ABB adjustable speed drive c/w integral DC link reactors, load reactors and vented control cabinet. Adjustable speed drive is designed for constant volume air balancing controlled by 0-10vdc signal by others. Adjustable speed drive is used for direct fan motor operates at 55.1 Hz under design conditions for the rated air flow.

AIR OPENING DATA

AIR OPENING	LOCATION	DAMPER TYPE	OPERATION
SUPPLY AIR	See Below [1]	TAMCO 1000MZ Parallel Blade	Modulating
RETURN AIR	See Below [1]	See Below [2]	Modulating
OUTSIDE AIR	See Below [1]	See Below [2]	Modulating
EXHAUST AIR	See Below [1]	Twin City Backdraft	Gravity
BALANCING	See Below [1]	See Below [2]	Manual

- [1] - See Mechanical Drawing
- [2] - TAMCO Series 1000 Low Leakage Aluminum Air-foil Parallel Blade

CONSTRUCTION DATA

UNIT CABINET	<u>2" foam panel construction c/w 26 gauge satin coat galvanized interior sheet metal, 26 gauge satin coat galvanized exterior sheet metal and R16 polyurethane insulation on entire unit floor except HTX section.</u> <u>18 gauge satin coat galvanized sheet metal c/w 1" 1.5 lb/ft³ insulation on HTX casing.</u>
UNIT LINER	<u>22 gauge satin coat galvanized solid liner throughout HTX section.</u>
UNIT UNDERSIDE	<u>0.040"(18 gauge) 3003 series aluminum sheet metal liner.</u>
UNIT FLOOR	<u>1/8" 3003 series aluminum checker plate on entire unit floor.</u>
EXTERIOR PAINT	<u>Two component Epoxy c/w Polyurethane topcoat in Aluminum Gray color - Level 3 on all exterior surface but not including unit underside.</u>



SUBMITTAL RECORD

JOB NAME: SCARLET OAKS 2023 **JOB NO:** DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R **QTY:** 1 **TAG:** RTU-9

BURNER HEATING DATA - INDIRECT FIRED (CONTINUED)

- F.M. conforming gas manifold.
- Heating is controlled by CENCON controller and BMS interface.
- Low limit auto bypass; set @ 40°F.
- Wedge style vent.

AIR COOLED DX SYSTEM DATA

COIL SIZE <u>30 x 76 x 6R x 12 FPI</u>	VELOCITY <u>437 FPM</u>	
TOTAL CAPACITY <u>260,000 Btuh</u>	AIR P.D. <u>0.76 in.wc.</u>	
SENSIBLE CAPACITY <u>192,000 Btuh</u>	MOISTURE REMOVAL <u>59.9 lb/hr</u>	
ENTERING AIR DB / WB <u>78.4°F / 65.3°F</u>	LEAVING AIR DB / WB <u>53.4°F / 53.0°F</u>	
DESIGN AMBIENT TEMP <u>95°F</u>	SST/SCT <u>47.5°F / 123.8°F</u>	REFRIGERANT TYPE <u>R-410A</u>
COMPRESSOR TYPE <u>Hermetic Scroll</u>	MODEL <u>ZP61KCE-TFD-250</u>	QUANTITY <u>4</u>

- Multizone DX cooling coil c/w 304 stainless steel casing, alternate tube circuiting and hot gas bypass on lead compressor circuit.
- Each DX coil compressor circuit c/w TX valve, sight glass, liquid line filter/drier and low pressure control.
- Mechanical cooling has 4 control stages by others.
- Mechanical cooling operates down to 50°F ambient temperature.

SHIPPED LOOSE ITEMS (See filter section for filters and spare filters)

- 1 - Exhaust hood c/w 1" birdscreen.
- 1 - Wedge style vent.



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-9

Circuit No	Power Supply	Minimum Circuit Ampacity	Terminal Block to Accept	Maximum Fuse (Dual Element)	Maximum Breaker
1	460 / 3 / 60	65.6 AMPS	4 Awg	70 AMPS	70 AMPS
2	120 / 1 / 60	12.0 AMPS	14 Awg	15 AMPS	15 AMPS

Components	Circuit No	Model	Minimum Conductor Size	Ampacity FLA / LRA	SubFuse Group	Subfuse Group Fuse Size	Terminal Block to Subfuse
Burner Motor	1	PSC(Use Xfmr) 1/12 HP	14 Awg	1.32 @ 120/1/60			
Main Control Xfmr	1		14 Awg	.8			
Control Xfmr	1		14 Awg	.5			
Compressor #1 to #4	1	ZP61KCE-TFD-250	14 Awg	9.7 / 62.0	1	45	6 Awg
Condenser Fan Motor #1 to #3	1	OPAO 0.75 HP	14 Awg	1.5	2	15	14 Awg
Exhaust Fan Motor	1	TECO MAX-PE TEFC(1800 Direct Drive) 2 HP	14 Awg	2.78	3	15	14 Awg
Exhaust Fan Motor VFD	1		14 Awg	3.5			
Supply Fan Motor #1 and #2	1	Super 'E' TEFC (3475) 5 HP	14 Awg	5.9	4	20	12 Awg
Supply Fan Motor VFD	1		14 Awg	14.0			
Convenience Circuit	2		14 Awg	12.0			

UNIT CONTROL PANEL(S) SHORT CIRCUIT CURRENT RATING (SCCR)

Short circuit current 10 kA rms symmetrical, 460 V maximum With LPJ-70SP Fuses in Disconnect Switch

WIRING DRAWING LEGEND

APS	Air Proving Switch	DM	Damper Motor	NFD	Non Fused Disconnect
ASF	Auto Fan Switch	FR	Fan Relay	OL	Thermal Overload
AUX	Auxiliary Contact	GND	Ground	PS	Pressure Sensor
BM	Burner Motor	GV	Gas Valve	PV	Pilot Gas Valve
C	Contact	HL	High Limit	R	Relay
CCH	Compressor Crankcase Heater	HPC	High Pressure Control	RevHL	Reverse Airflow High Limit
CFC	Condenser Fan Control	HR	Heating Relay	TB	Terminal Block
CLC	Compressor Loading Control	IGN	Ignition Control	TDF	Time Delay Fuse
CPM	Compressor Protection Module	ITP	Internal Thermo Protection	TDR	Time Delay Relay
CR	Cooling Relay	LPC	Low Pressure Control	TS	Temperature Sensor
CS	Current Sensor	M	Motor	VFD	Variable Frequency Drive
DHSS	Draft Hood Spill Switch	MV	Main Gas Valve	XFMR	Transformer



ELECTRICAL DATA

JOB NAME: SCARLET OAKS 2023

JOB NO: DK9631(TS1200)

EngA MODEL: FWE224/DJE40/O/M/MV/R

QTY: 1

TAG: RTU-9

UNIT FUNCTION

Unit mounted fused disconnect switch 'on', service switch 'on', fire alarm contacts (by others) 'closed' (jumper if not required) , duct high pressure limit (by others) 'closed', S/A & E/A VFD fault contacts 'closed' .

Unit on/off contact (by others) 'closed', Mix box controlled by 0-10VDC signal (by others). S/A & E/A Blower will delay on and run continuously. VFD is for air balancing & filter loading only controlled by 0-10VDC signal (by others)(see note 1 & 2). The CENCON controller, with a 0-10VDC setpoint signal (by others), will modulate heating to maintain the required hot deck discharge air temperature.

HEAT MODE

If there is a call for heating and the CENCON is in heating mode, the J-XM controller module will begin modulating the gas heating. The discharge air temperature control band is from 55°F to 90°F.

COOLING MODE

Ambient temperature above 50°F, Cooling contacts (by others) cycle 4 stages of cooling with anticycle & interstage timers.

Unit on/off contact (by others) 'open', outside air damper closes, and S/A & E/A blowers shut down. Unit is off.

If the fire alarm contacts 'open', equipment operation is disabled immediately. If the discharge air temperature falls below 40° F, the CENCON will shut down the S/A & E/A blowers, close dampers and indicate alarm.

Multizone dampers controlled by 0-10VDC signals (by others)

Note 1: S/A blower design speed is 2872 rpm (49.6Hz). speed range: 80%-110% of designed rpm. (39.7-54.5Hz)

Note 2: E/A blower design speed is 1653 rpm (55.1Hz). speed range: 80%-110% of designed rpm. (44.1-60.6Hz)

Note - Refer to manuals shipped with unit for more detailed explanation of maintenance, components and controls.

Note - Go to <http://www.engineeredair.com/index.php/manuals/> for online manual details