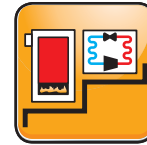


# tekmar® Submittal

## Pump Sequencer 132



Multi-Staging

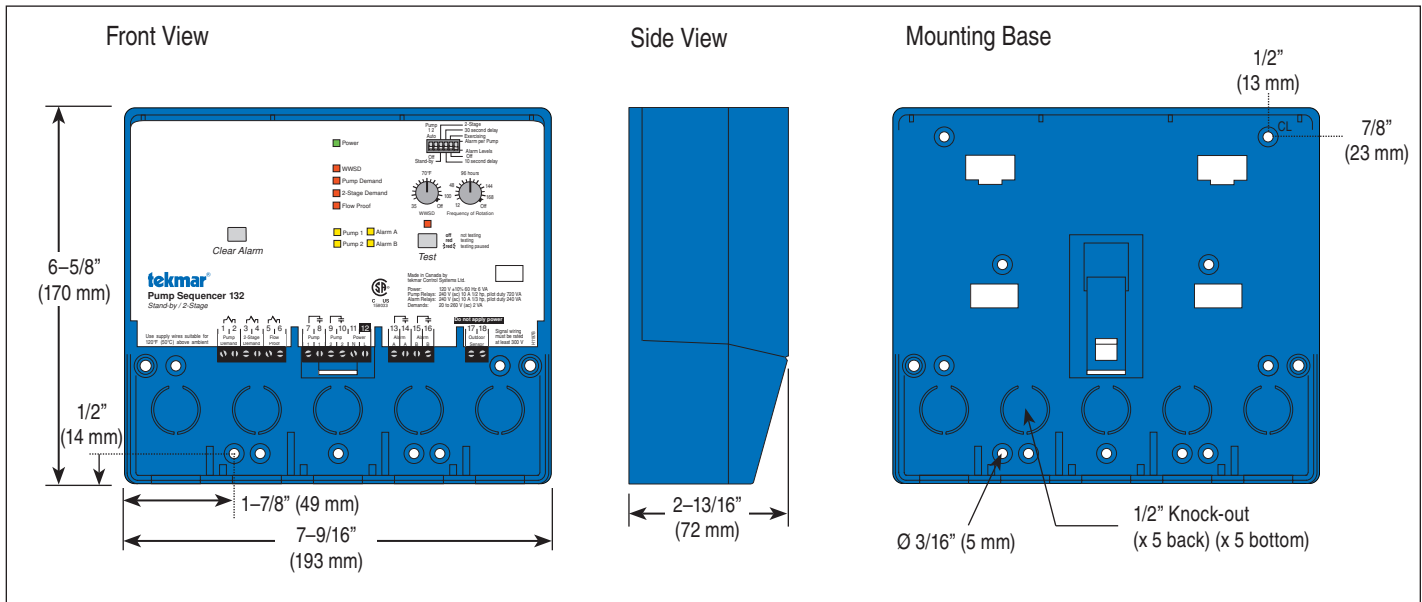
**C 132**

01/11

Replaces: New

Job Park Forest Designer \_\_\_\_\_ Contact \_\_\_\_\_

The Pump Sequencer 132 is designed to operate 2 pumps by providing stand by or staging operation. It can be used in a wide range of applications, including residential installations using a backup system pump to commercial applications that require energizing a second stage for increased flow or head. The main function of the 132 is to provide lead lag capability to a standby pump setup, or to provide staging capability for a dual pump installation. The 132 can energize up to 2 pumps, as well as provide alert contacts that can be used in the event of a failure.



### Specifications

Pump Sequencer 132 Stand-by / 2-Stage	
Literature	D132, A132, D001
Control	Microprocessor control. This is not a safety (limit) control
Packaged weight	2.9 lb. (1320 g)
Dimensions	6-5/8" H x 7-9/16" W x 2-13/16" D (170 x 193 x 72 mm)
Enclosure	Blue PVC plastic, NEMA type 1
Approvals	CSA C US, meets class B: ICES & FCC Part 15
Ambient conditions	Indoor use only, 32 to 120°F (0 to 50°C), RH ≤90% Non-condensing
Power supply	120 V ±10%, 50/60 Hz, 6 VA
Pump relays	240 V (ac) 10 A 1/2 hp
Alert relays	240 V (ac) 10 A 1/3 hp
Demands	20 to 260 V (ac) 2 VA
Sensors	NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C) β=3892
-Optional	Outdoor Sensor 070
Warranty	Limited 3 Year (See D132 for full warranty)

### Energy Saving Features

- Warm Weather Shut Down

### Additional Features

- Equal Run Time Rotation
- Lead lag operation
- 2 Stage capability
- Exercising
- Alert per pump or alert levels
- Adjustable flow proof delay
- Test sequence
- CSA C US certified (approved to applicable UL standards)

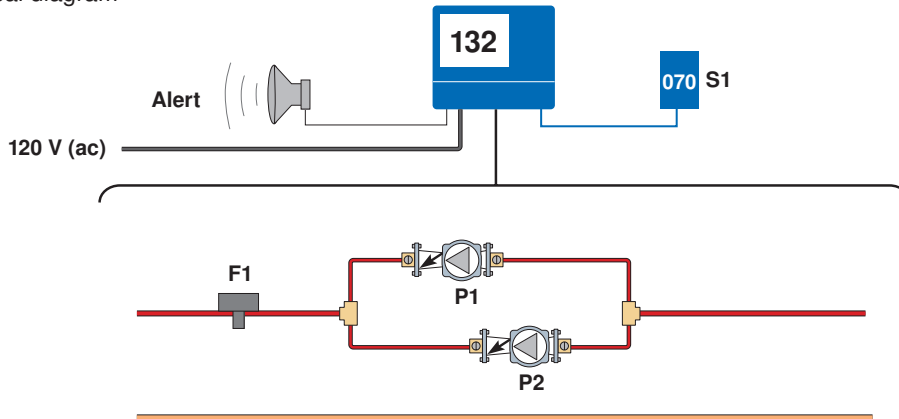
### SPECIAL REQUIREMENTS

N / A

## Sample Application Drawing

Below is a sample application drawing for this product. This application may include other tekmar products that are required for installation. More sample applications can be found at [www.tekmarcontrols.com](http://www.tekmarcontrols.com).

Sample Mechanical diagram

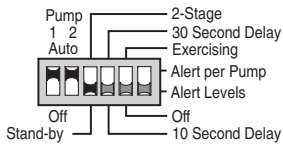


Sample Electrical diagram

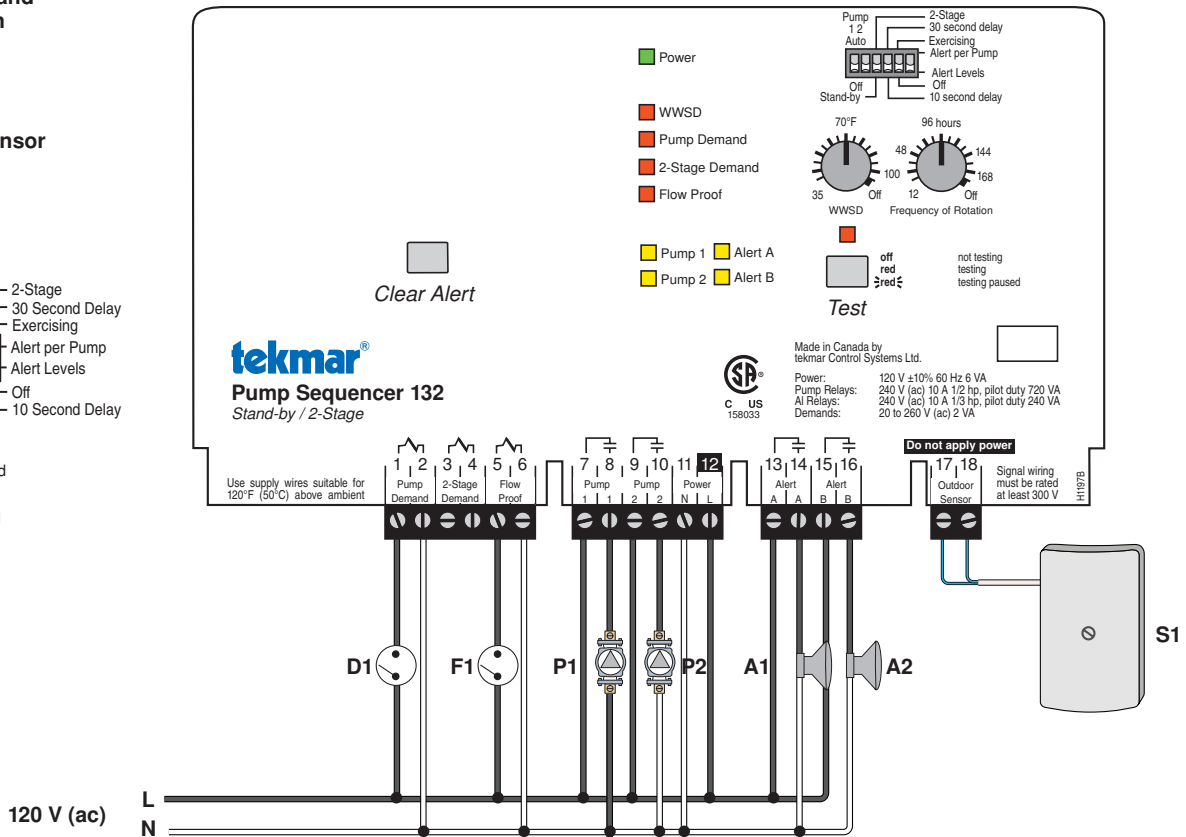
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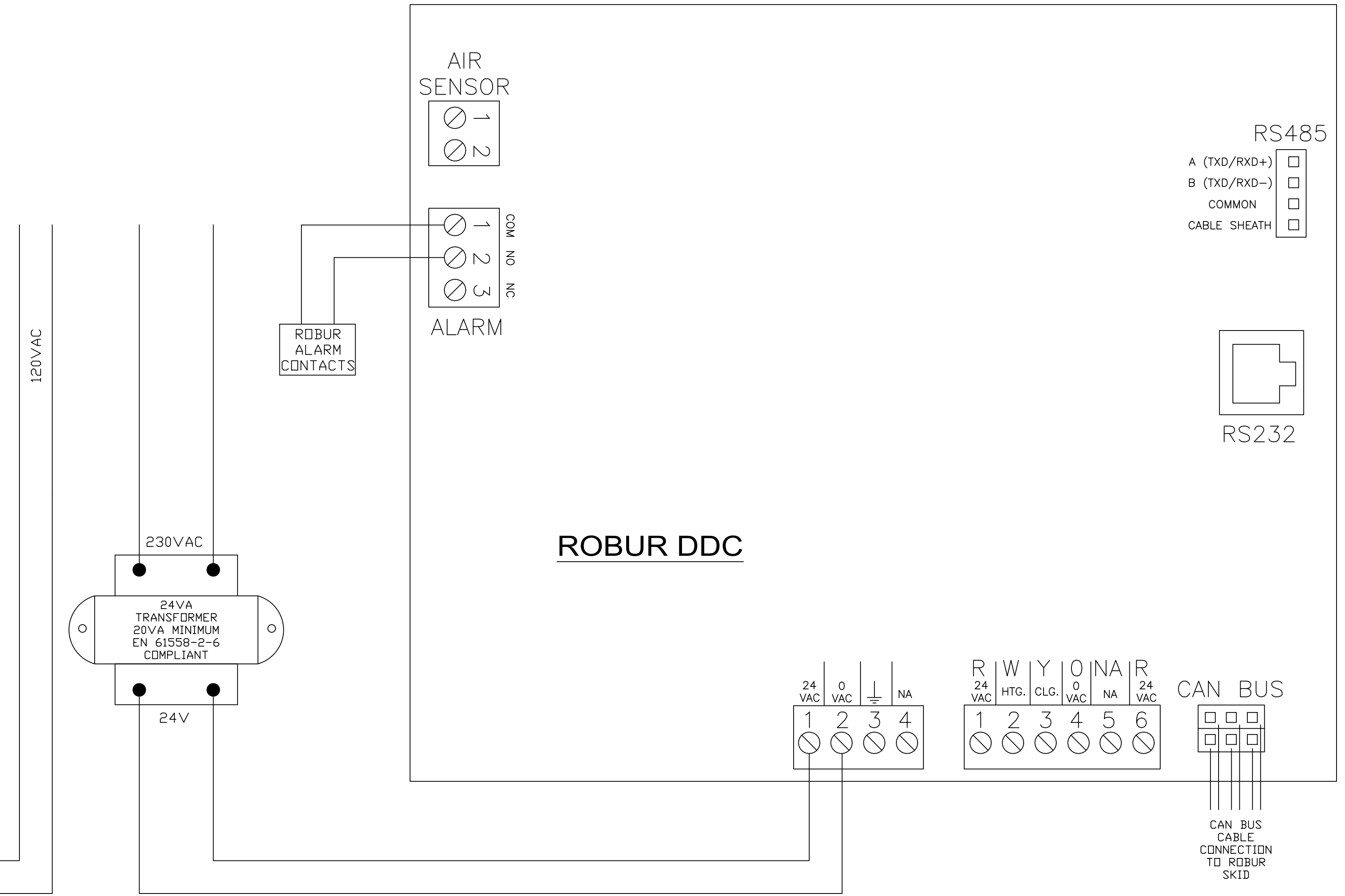
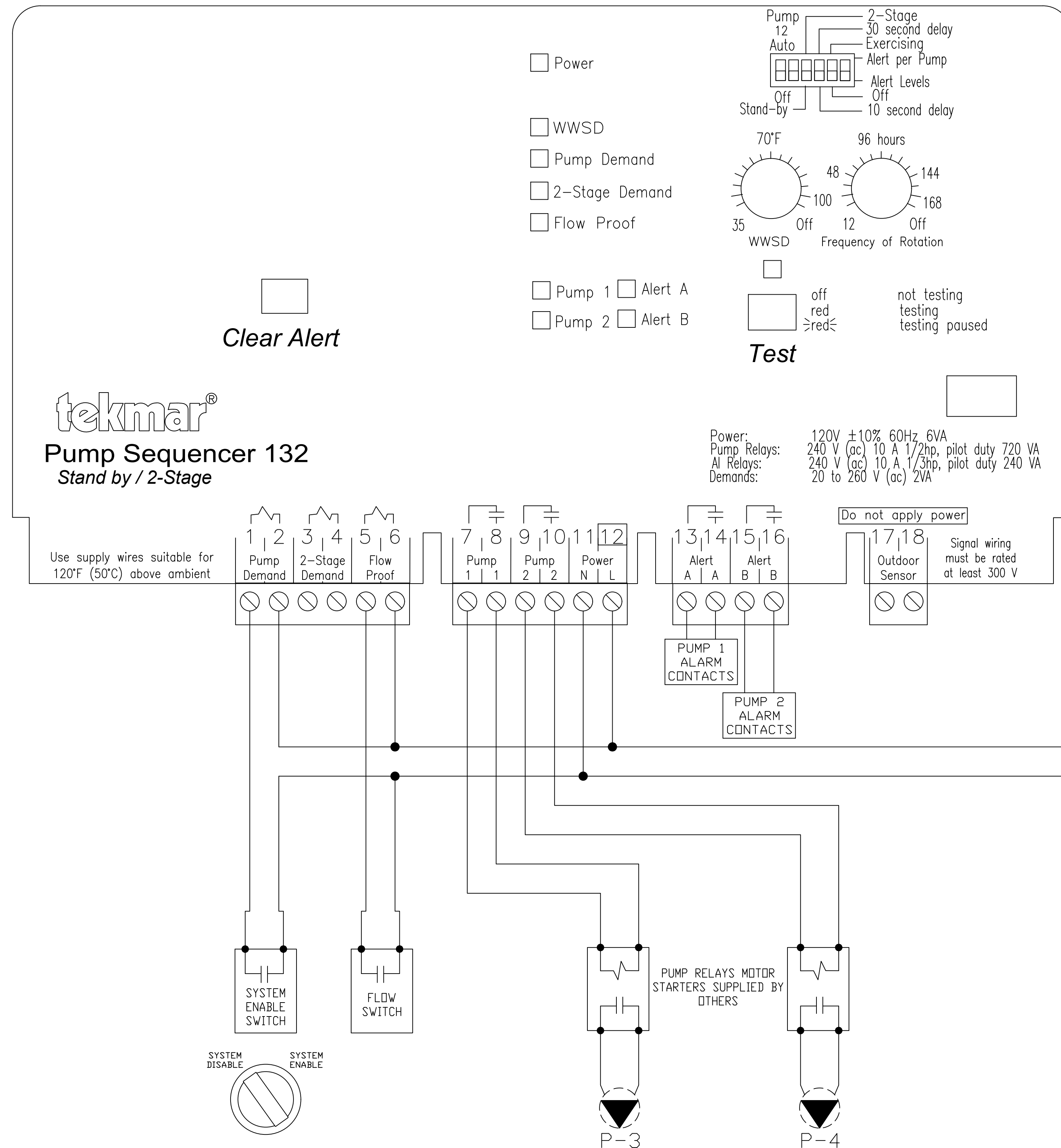
- D1 = Pump Demand**
- F1 = Flow Switch**
- P1 = Pump 1**
- P2 = Pump 2**
- A1 = Alert 1**
- A2 = Alert 2**
- S1 = Outdoor Sensor**

**DIP Setting**



- = Required
- = Optional





# WIRING DIAGRAM HEAT PUMPS

SCALE: NONE

CONSULTANTS:  
**WILLIAM E. WALTER**  
1917 HOWARD AVE  
FLINT MICHIGAN

PROJECT NAME:  
**PARK FOREST APT'S.**  
3300 SPIREA COURT  
JACKSON MICHIGAN

THAW-PAK DISTRIBUTOR:  
**PERFORMANCE**  
engineering group

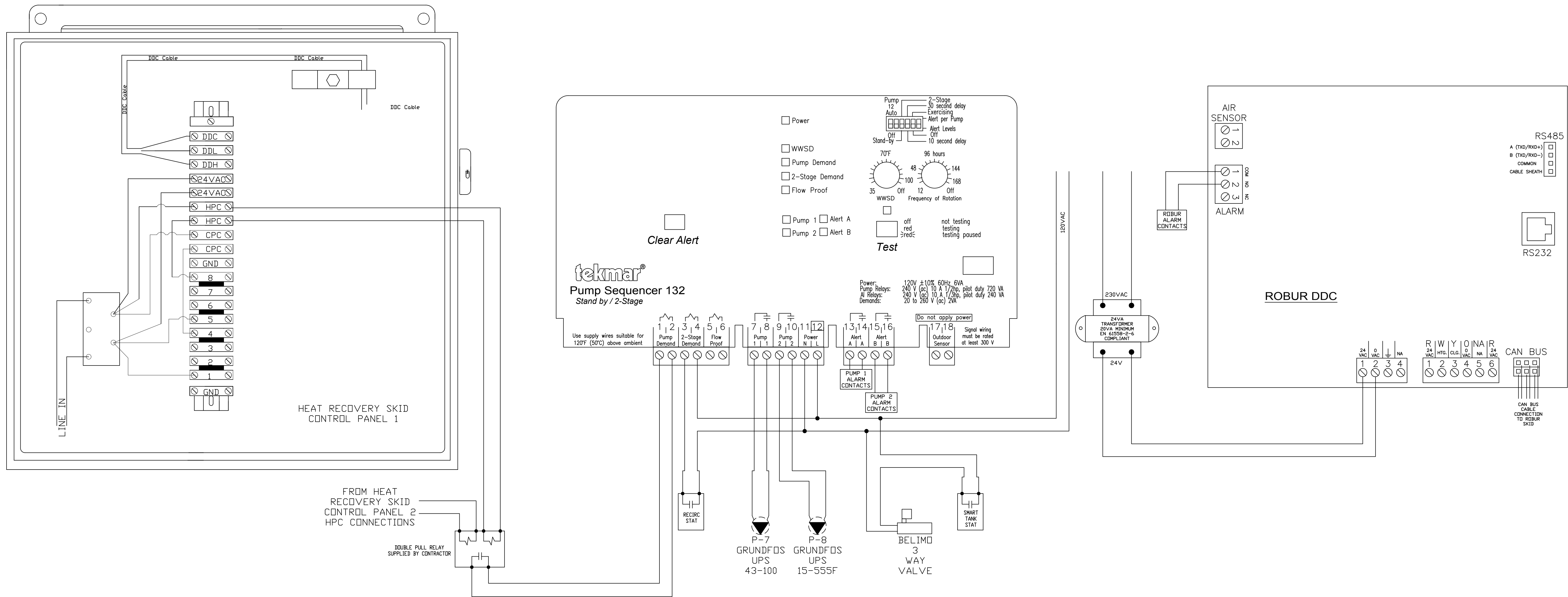
DRAWN BY:  
Gordon Faustich  
REVIEWED BY:  
AD  
APPROVED BY:  
AD  
ISSUED FOR

09/15/16	SUBMITTAL
09/22/16	REARRANGED PER
09/27/16	UPDATED TO FIELD CHANGE
10/06/16	REMOVED REV RET SUPPLY PRINC
11/03/16	REVISED PRINC
11/08/16	REVISED CONTROLS

PROPERTY OF THAW-PAK  
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DRAWING NO.  
**16-009P\_E\_**  
**PARK FOREST**

SHEET NO.  
**E1**



SEQUENCE OF OPERATION:

- 1) UNITS MUST BE IN THE SEASONAL COOLING MODE (SUMMER) FOR HEAT RECOVERY TO FUNCTION AND THE DDC SHOULD BE POWERING REQUIRED UNITS (HEAT RECOVERY CHILLERS).
- 2) HEAT RECOVERY PUMP P7 GETS ENERGIZED VIA THE HPC CONTACTS IN THE HEAT RECOVERY SKID CONTROL PANELS. THE PUMP RUNS CONTINUOUSLY AS LONG AS A SIGNAL IS PRESENT.
- 3) PUMP P7 SUPPLIES HOT WATER TO THE HEAT EXCHANGER IN THE SMART TANK UNTIL IT'S HEAT REQUIREMENTS ARE SATISFIED. AT THIS POINT THE TANK STAT OPENS AND REMOVES POWER TO THE BELIMO DIVERTING VALVE TO DIVERT HOT WATER THRU THE BRAZED PLATE HEAT EXCHANGER.
- 4) IF THE RE-CIRCULATION LOOP NEEDS HEAT THE RE-CIRC STAT WILL SEND A SIGNAL THAT WILL POWER PUMP P8 AND INJECT HOT WATER TO PRE-HEAT THE RETURN WATER ENTERING THE iQ1001
- 5) IF THE DDC SAYS NO HEAT AVAILABLE (HEAT RECOVERY IS OFF). NO PUMPS WILL OPERATE

**WIRING DIAGRAM HEAT RECOVERY (FOR DOMESTIC HW)**

SCALE: NONE

CONSULTANTS:  
**WILLIAM E. WALTER**  
1917 HOWARD AVE  
FLINT MICHIGAN

PROJECT NAME:  
**PARK FOREST APT'S.**  
3300 SPIREA COURT  
JACKSON MICHIGAN

THAW-PAK DISTRIBUTOR:  
**PERFORMANCE**  
engineering group

DRAWN BY:  
Gordon Faustich  
REVIEWED BY:  
AD  
APPROVED BY:  
AD  
ISSUED FOR

09/15/16	SUBMITTAL
09/22/16	REARRANGED PERM
09/27/16	UPDATED TO FIELD CHANGE
10/06/16	REMOVED REV SET SUPPLY PUMPING
11/03/16	REVISED PUMPING
11/08/16	REVISED CONTROLS

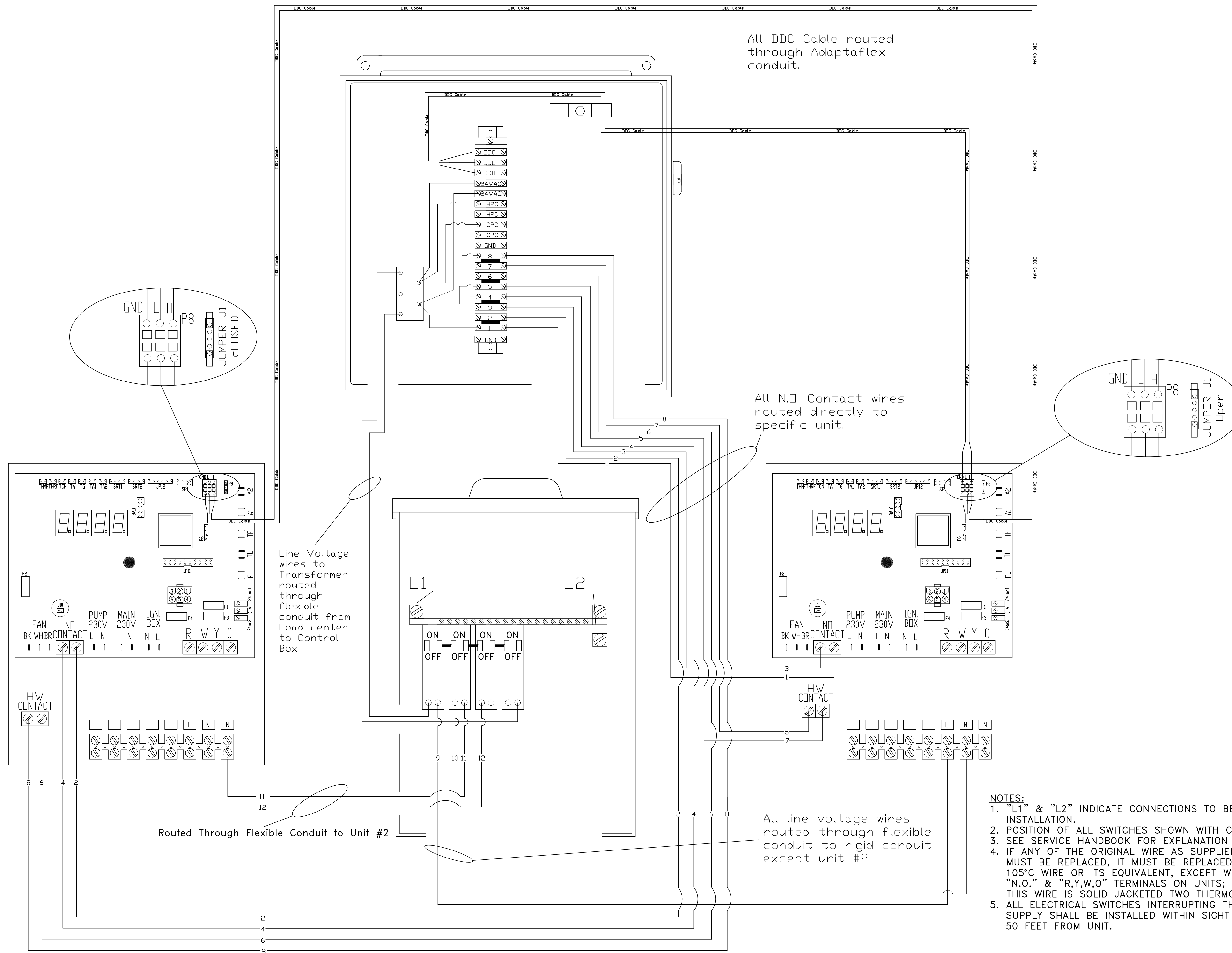
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DRAWING NO.  
**16-009P\_E\_**  
PARK FOREST

SHEET NO.  
**E2**

# HEAT RECOVERY SKID WIRING

SCALE: NONE



- NOTES:**
1. "L1" & "L2" INDICATE CONNECTIONS TO BE MADE AT TIME OF INSTALLATION.
  2. POSITION OF ALL SWITCHES SHOWN WITH CURRENT OFF.
  3. SEE SERVICE HANDBOOK FOR EXPLANATION OF CONTROLS.
  4. IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH THERMOPLASTIC 105°C WIRE OR ITS EQUIVALENT, EXCEPT WIRES RUNNING TO "N.O." & "R,Y,W,O" TERMINALS ON UNITS; THIS WIRE IS SOLID JACKETED TWO THERMOSTAT CABLE.
  5. ALL ELECTRICAL SWITCHES INTERRUPTING THE LINE VOLTAGE SUPPLY SHALL BE INSTALLED WITHIN SIGHT OF AND NOT OVER 50 FEET FROM UNIT.

CONSULTANTS:  
**WILLIAM E. WALTER**  
 1917 HOWARD AVE  
 FLINT MICHIGAN

PROJECT NAME:  
**PARK FOREST APT'S.**  
 3300 SPIREA COURT  
 JACKSON MICHIGAN

THAW-PAK DISTRIBUTOR:  
**PERFORMANCE**  
 engineering group

DRAWN BY:  
Gordon Faustich

REVIEWED BY:  
AD

APPROVED BY:  
AD

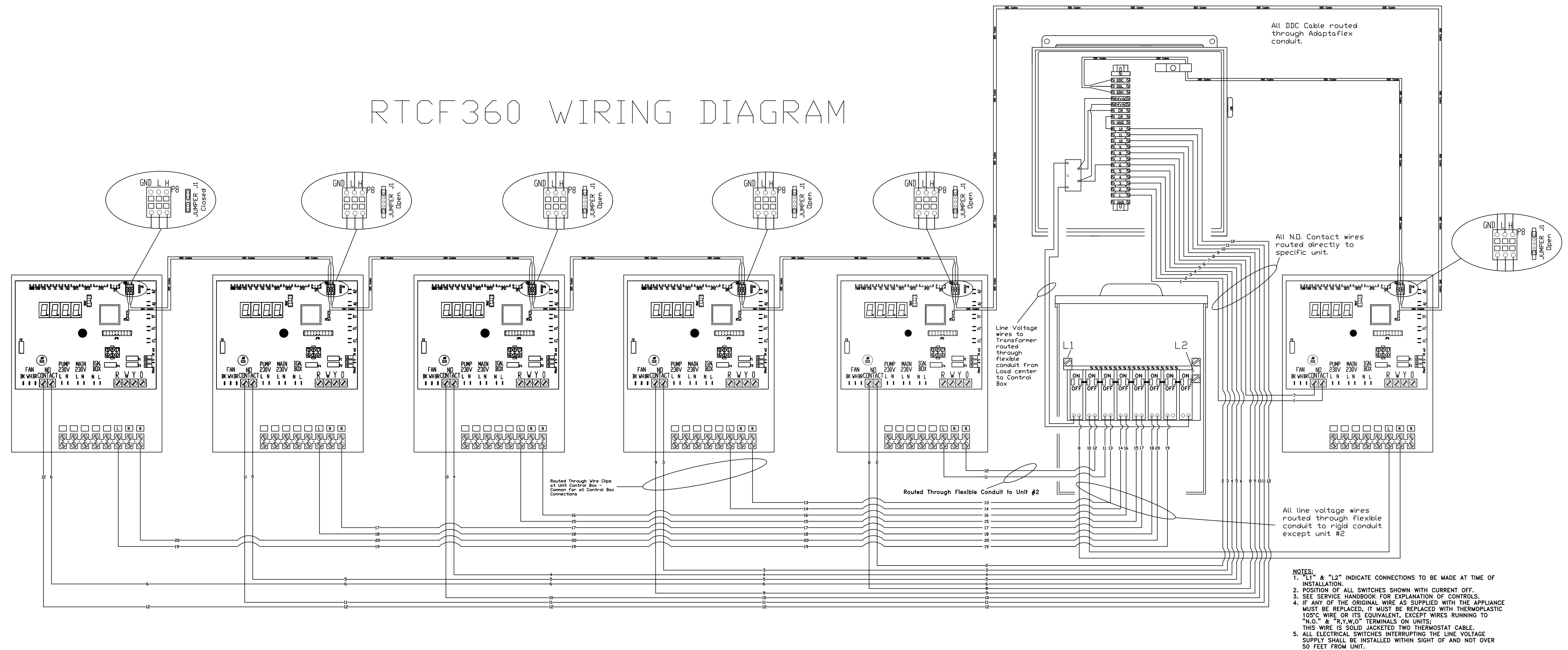
ISSUED FOR	
09/15/16	SUBMITTAL
09/22/16	REARRANGED PERMITS
09/27/16	UPDATED TO FIELD CHANGES
10/06/16	REMOVED REV RET SUPPLY LISTING
11/03/16	REVISED WIRING
11/08/16	REVISED CONTROLS

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DRAWING NO.  
**16-009P\_E\_**  
**PARK FOREST**

SHEET NO.  
**E3**

# RTCF360 WIRING DIAGRAM



- NOTES:**
1. "L1" & "L2" INDICATE CONNECTIONS TO BE MADE AT TIME OF INSTALLATION.
  2. POSITION OF ALL SWITCHES SHOWN WITH CURRENT OFF.
  3. SEE SERVICE HANDBOOK FOR EXPLANATION OF CONTROLS.
  4. IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH THERMOPLASTIC 105°C WIRE OR ITS EQUIVALENT, EXCEPT WIRES RUNNING TO "N.O." & "R,Y,W,O" TERMINALS ON UNITS. THIS WIRE IS SOLID JACKETED TWO THERMOSTAT CABLE.
  5. ALL ELECTRICAL SWITCHES INTERRUPTING THE LINE VOLTAGE SUPPLY SHALL BE INSTALLED WITHIN SIGHT OF AND NOT OVER 50 FEET FROM UNIT.

## 18/2 LOW VOLTAGE WIRE LENGTHS

Unit #	Wire Length
#1	161"
#2	83"
#3	158"
#4	205"
#5	248"
#6	300"
500'spool =	Part# 88301606

## 14 AWG LINE VOLTAGE WIRE LENGTHS

Unit #	Wire #	Wire Length
#1	8 & 10	130"
#2	11 & 12	54"
#3	13 & 14	119"
#4	15 & 16	171"
#5	17 & 18	229"
#6	19 & 20	278"
500' Spool =	P# 88284592	

## DDC CABLE LENGTHS

Between Unit #'s	Wire Length
#1 & Control Box	140"
#1 & #2	161-1/2"
#2 & #3	161-1/2"
#3 & #4	161-1/2"
#4 & #5	161-1/2"
#5 & #6	161-1/2"
P# M-CVO008	

## ADAPTA FLEX CONDUIT LENGTHS

Between Unit #'s	Conduit Length
#1 & Control Box	91"
#1 & #2	114"
#2 & #3	114"
#3 & #4	114"
#4 & #5	114"
#5 & #6	114"
P# = PAFS21/BL1 =	100' COIL

# HEAT PUMP SKID WIRING

SCALE: NONE

CONSULTANTS:  
**WILLIAM E. WALTER**  
1917 HOWARD AVE  
FLINT MICHIGAN

PROJECT NAME:  
**PARK FOREST APT'S.**  
3300 SPIREA COURT  
JACKSON MICHIGAN

THAW-PAK DISTRIBUTOR:  
**PERFORMANCE**  
engineering group

DRAWN BY:  
Gordon Faustich

REVIEWED BY:  
AD

APPROVED BY:  
AD

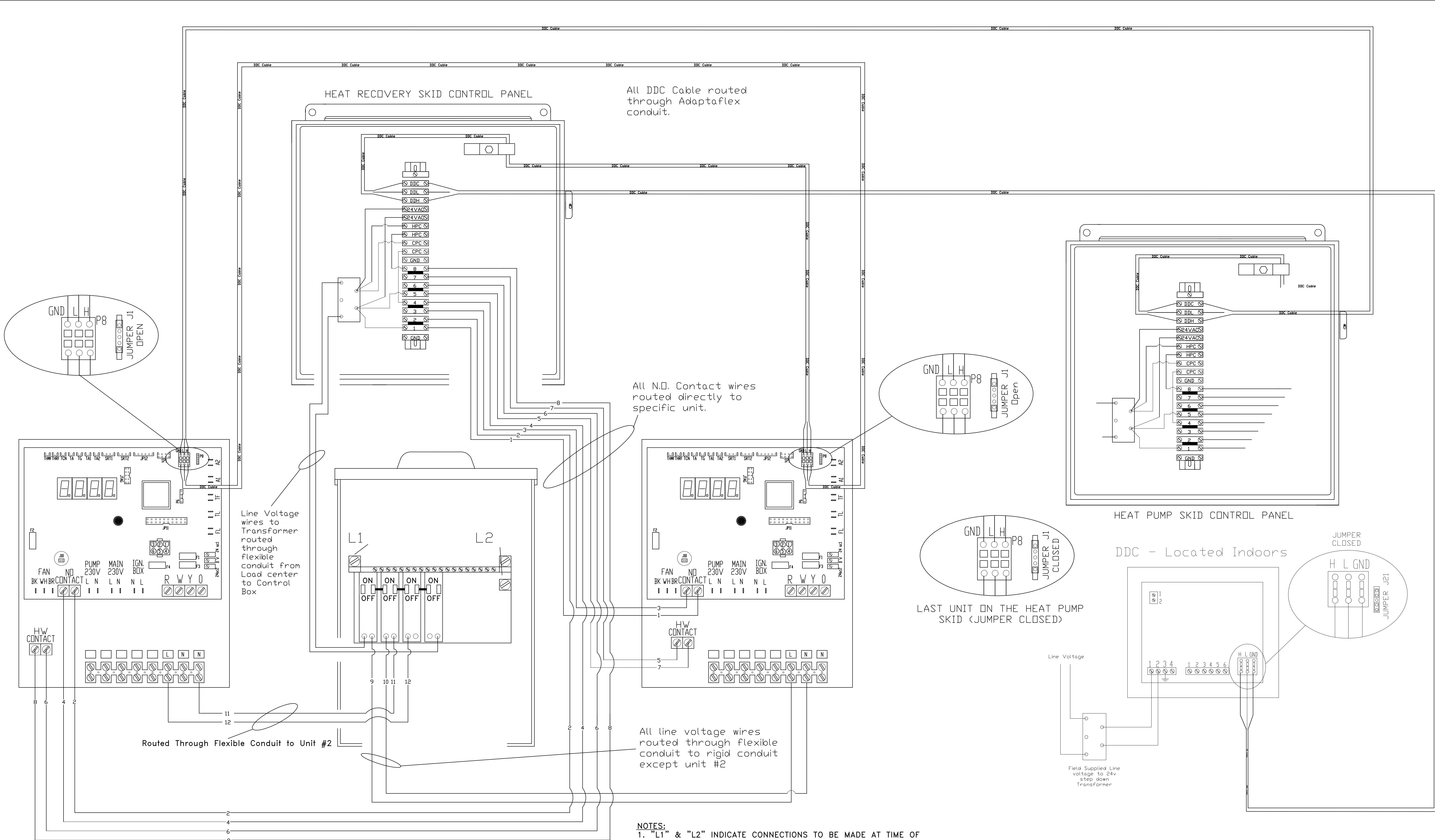
ISSUED FOR

DATE	DESCRIPTION
09/15/16	SUBMITTAL
09/22/16	REARRANGED
09/27/16	UPDATED TO FIELD CHANGE
10/06/16	REMOVED REV RET SUPPLY LISTING
11/03/16	REVISED PIRING
11/08/16	REVISED CONTROLS

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DRAWING NO.  
16-009P\_E\_  
PARK FOREST

SHEET NO.  
**E4**



All DDC Cable routed through Adaptaflex conduit.

All N.O. Contact wires routed directly to specific unit.

Line Voltage wires to Transformer routed through flexible conduit from Load center to Control Box

Routed Through Flexible Conduit to Unit #2

All line voltage wires routed through flexible conduit to rigid conduit except unit #2

- NOTES:**
- "L1" & "L2" INDICATE CONNECTIONS TO BE MADE AT TIME OF INSTALLATION.
  - POSITION OF ALL SWITCHES SHOWN WITH CURRENT OFF.
  - SEE SERVICE HANDBOOK FOR EXPLANATION OF CONTROLS.
  - IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH THERMOPLASTIC 105°C WIRE OR ITS EQUIVALENT, EXCEPT WIRES RUNNING TO "N.O." & "R,Y,W,O" TERMINALS ON UNITS; THIS WIRE IS SOLID JACKETED TWO THERMOSTAT CABLE.
  - ALL ELECTRICAL SWITCHES INTERRUPTING THE LINE VOLTAGE SUPPLY SHALL BE INSTALLED WITHIN SIGHT OF AND NOT OVER 50 FEET FROM UNIT.

# SKID TIE IN WIRING (HEAT PUMP TO HEAT RECOVERY SKID)

SCALE: NONE

CONSULTANTS:  
**WILLIAM E. WALTER**  
1917 HOWARD AVE  
FLINT MICHIGAN

PROJECT NAME:  
**PARK FOREST APT'S.**  
3300 SPIREA COURT  
JACKSON MICHIGAN

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**PERFORMANCE**  
engineering group

DRAWN BY:  
Gordon Faustich

REVIEWED BY:  
AD

APPROVED BY:  
AD

ISSUED FOR

09/15/16	ISSUED FOR
09/22/16	REARRANGED PER PINS
09/27/16	UPDATED TO FIELD CHANGE
10/06/16	REMOVED REV RET SUPPLY PIPING
11/03/16	REVISED PIPING
11/08/16	REVISED CONTROLS

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DRAWING NO.  
16-009P\_E\_

SHEET NO.  
**E5**