

Re-use Water Pump Station

MKEC Submittal Review

Switchgear & VFDs – Specification Section 26-0000 - Submittal No. 1 Revision 1

1. No exceptions taken.

MKEC ENGINEERING CONSULTANTS, INC.
411 N. WEBB RD. WICHITA, KS 67206

Reviewed Incomplete
 Reviewed as Noted Revise and Resubmit
 Not Reviewed Rejected

Reviewed for conformance with the design concept of the Project and compliance with the information given in the Contract documents. Contractor is responsible for: dimensions to be confirmed and correlated at the job site; for information that pertains solely to the fabrication process or to techniques of construction; and for coordination of work of all other trades.

BY JRW DATE 7-19-16



Decker Electric, Inc

4500 W Harry Wichita, KS 67209

T: 316-265-8182

Submittal

Job: 1606-037
Wildcat Const-Pump Station
Sewage Treatment Plt 2
2305 E 57th Street S.
Wichita, KS 67213

Spec Section No: 26-0000
Submittal No: 1
Revision No: 1
Sent Date: 7/12/2016
Due Date: 7/19/2016

Spec Section Title:

Submittal Title: Switchgear & VFD's

Submitted by:
Decker Electric, Inc.
Jarret Bergkamp
4500 W Harry St
Wichita, KS 67209-2736

Contractor's Stamp
DECKER ELECTRIC, INC.
Reviewed Jarret Bergkamp
Date 7/12/2016
Submittal No. 1
Rev No. 1
REVIEW OF ITEMS DOES NOT RELIEVE VENDOR
FROM COMPLYING WITH REQUIREMENTS OF
CONTRACT PLANS AND SPECIFICATIONS,
CONTRACT AND CITY, STATE, AND LOCAL CODES .

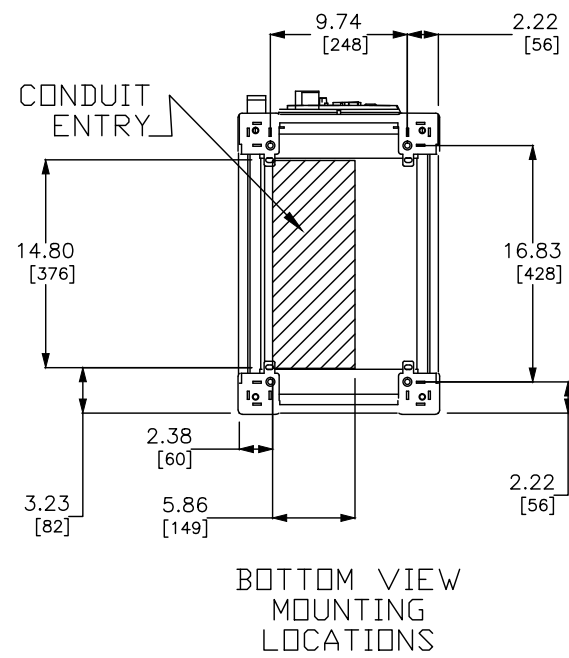
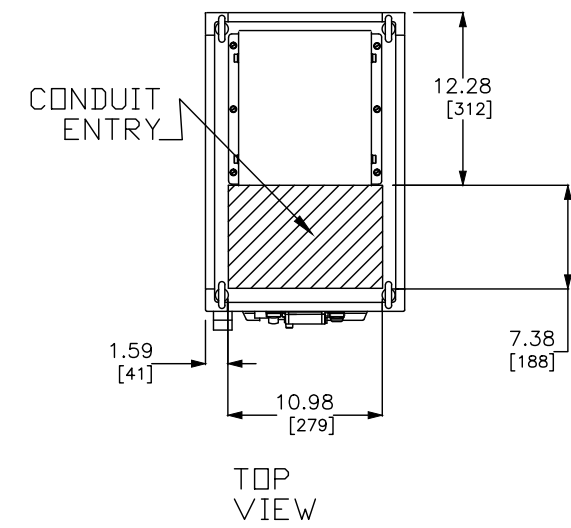
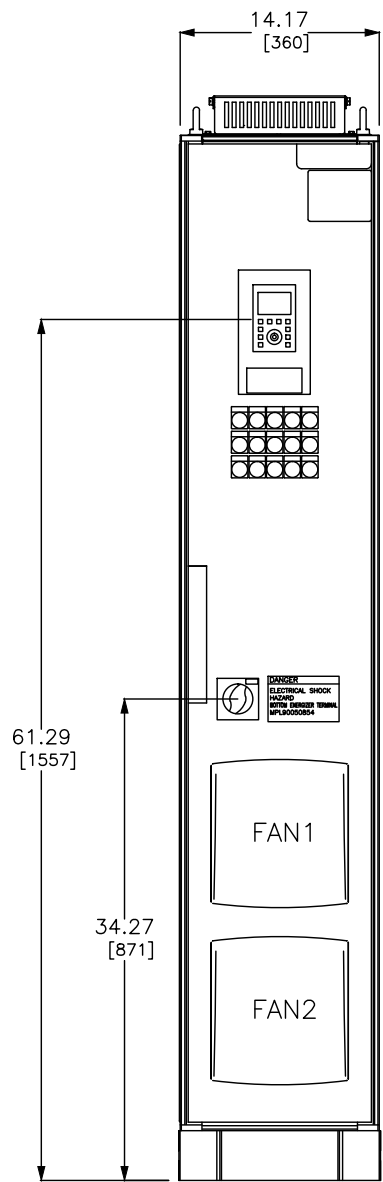
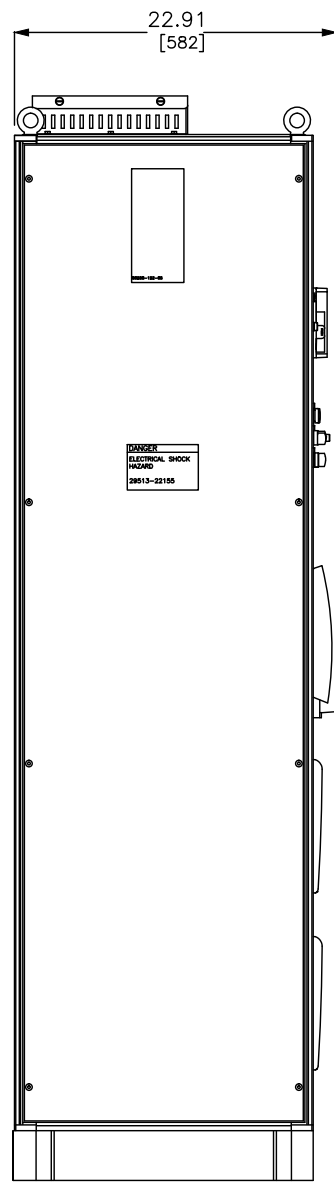
Sent to:
General Contractor:
Wildcat Construction Co Inc
Tyler Dehn
3219 W May
Wichita, KS 67213

General Contractor/Owner's Stamp

Architect's Stamp

Engineer's Stamp

REV	DESCRIPTION	BY	DATE						
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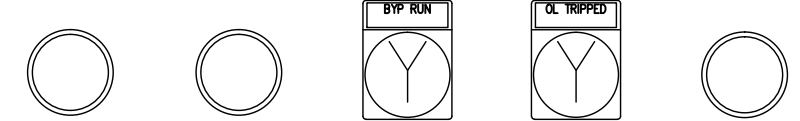


PILOT DEVICE DETAIL

PWR ON TRIPPED AFC RUN

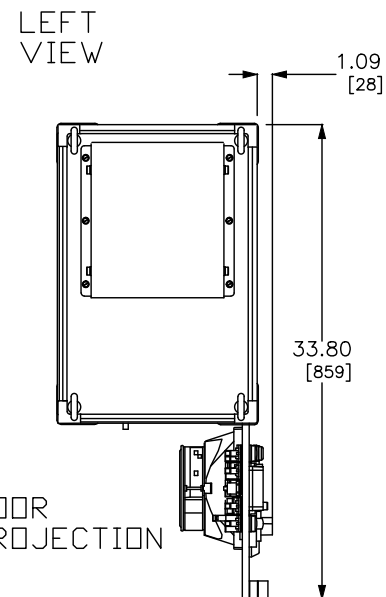


BYP RUN OL TRIP



NOTES:

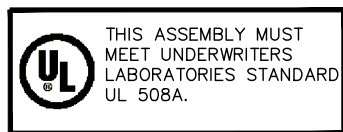
△ REFER TO CONTROLLER NAMEPLATE TO COMPLETE P/N.



ENCLOSURE OUTLINE & GENERAL ARRANGEMENT FOR CONTROLLER P/N

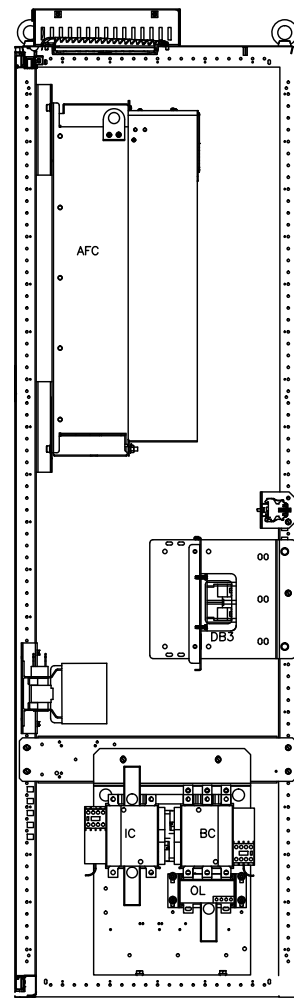
△ ATV660 D75 T4 N G A Y

MAX FLA	KILOWATTS/HP	VOLTAGE/PH	DUTY TYPE	ENCLOSURE TYPE	HARMONIC MITIGATION	POWER CIRCUIT TYPE
124 AMPS	75KW/100HP	460V/3 PH	NORMAL	TYPE 1	5% REACTOR	BYPASS

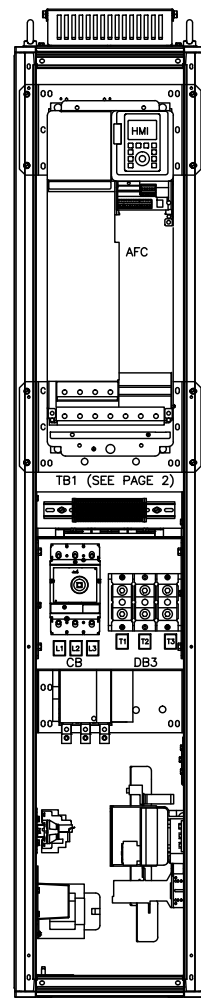


JOB NAME:	RE-USE WATER PUMP STATION	EQUIPMENT DESIGNATION:	VFD-1, VFD-2, VFD-3
JOB LOCATION:	WICHITA KS	EQUIPMENT TYPE:	ALTIVAR PROCESS 660
DRAWN BY:	(Q2C)	DRAWING TYPE:	ELEVATION
ENGR:			
DATE:	July 11 2016		
DRAWING STATUS:	QUOTE	DWG#	F38325400-01

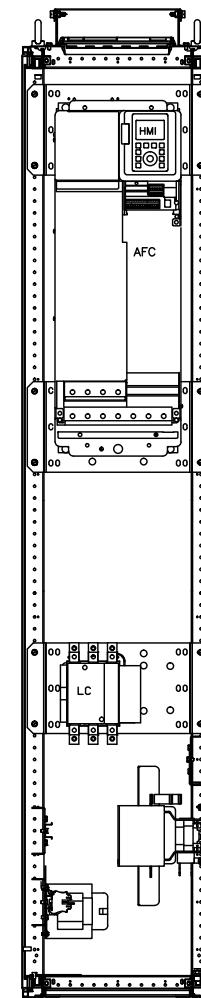
REV	DESCRIPTION	BY	DATE						
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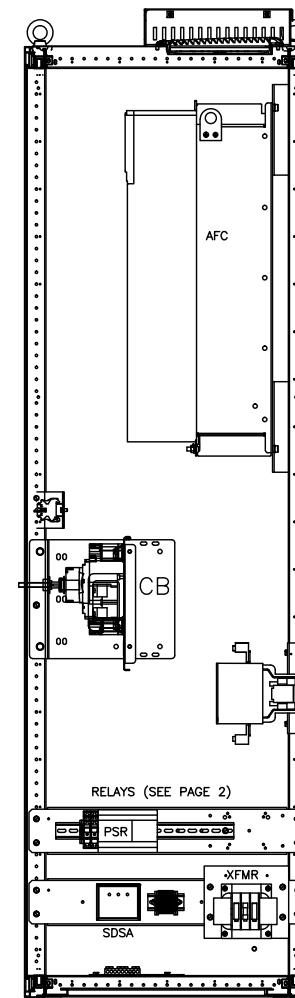
LEFT VIEW



FRONT VIEW




FRONT VIEW (BACK PANEL ONLY)

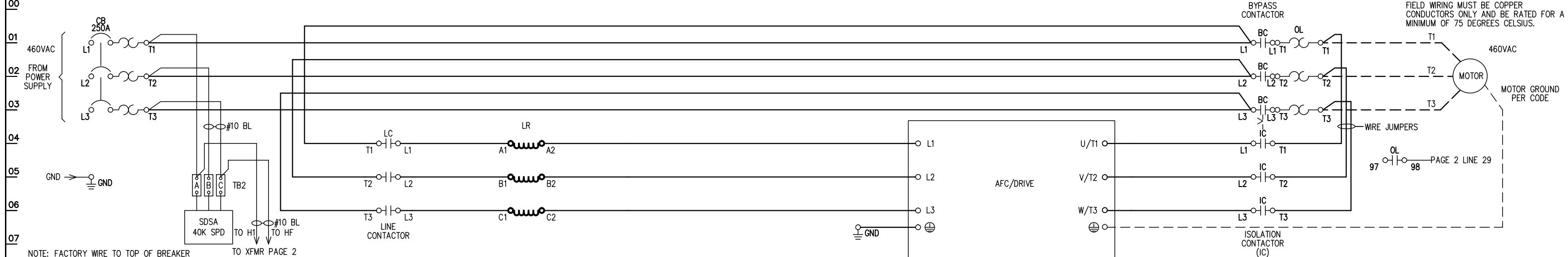


RIGHT VIEW

ENGLISH DIMENSIONS: INCHES

JOB NAME:	RE-USE WATER PUMP STATION	EQUIPMENT DESIGNATION:	VFD-1, VFD-2, VFD-3
JOB LOCATION:	WICHITA KS	EQUIPMENT TYPE:	ALTIVAR PROCESS 660
DRAWN BY:	(Q2C)	DRAWING TYPE:	LAYOUT
ENGR:			
DATE:	July 11 2016	DWG#	R38325400-01
DRAWING STATUS:	QUOTE	PG	1 OF 1 REV -

REV	DESCRIPTION	BY	DATE						
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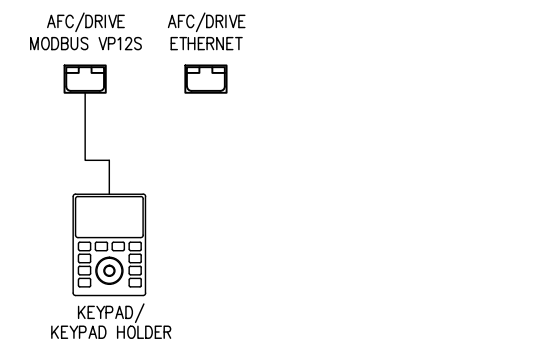
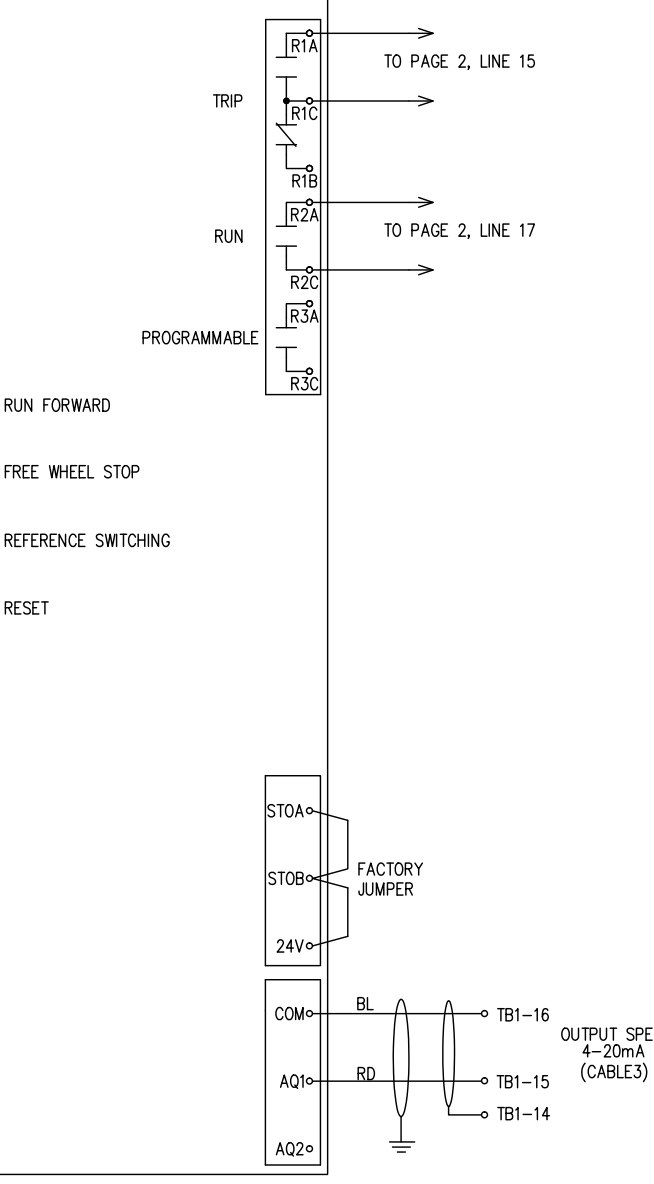
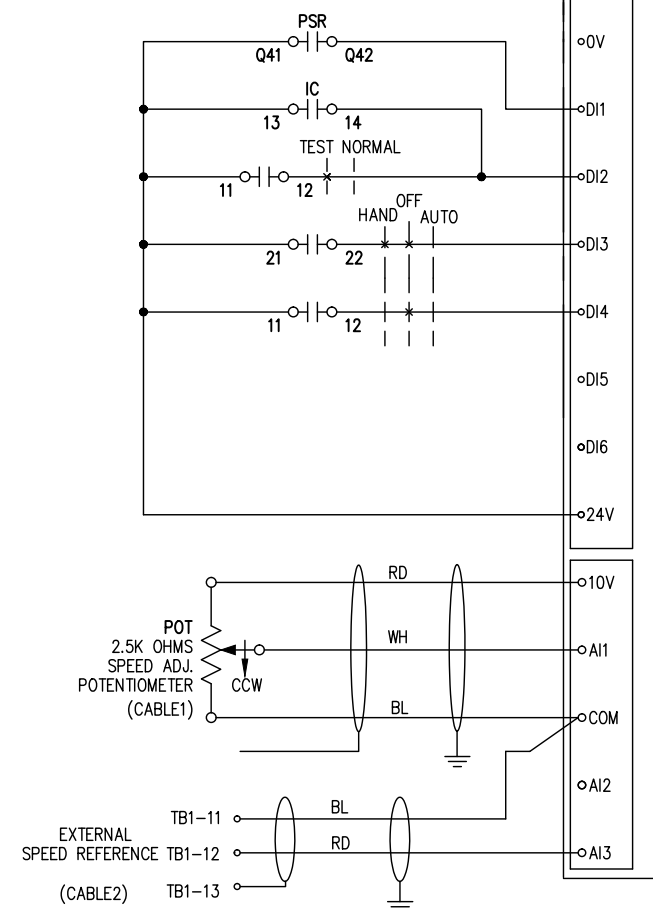


NOTE: FACTORY WIRE TO TOP OF BREAKER INPUT CONNECTION ACCEPTS
J-FRAME: 4-3/0 CABLE PER PHASE
TIGHTENING TORQUE 225 IN-LB (26Nm)

FIELD WIRING MUST BE COPPER CONDUCTORS ONLY AND BE RATED FOR A MINIMUM OF 75 DEGREES CELSIUS.

ATV630/650 FACTORY CONFIGURATION- VARIATIONS FROM DEFAULT						
MENU	TAB	SUBMENU	DESCRIPTION	SETTING	CODE	ADJ
1	S. START	-----	2/3 WIRE CONTROL	2C	TCC	2C
1	S. START	-----	BASIC FREQUENCY	60HZ NEMA	BFR	60
1	S. START	-----	MAX FREQUENCY	60	TFR	60
1	S. START	-----	LOW SPEED	3	LSP	3
1	S. START	-----	ACCELERATION	10	ACC	10
1	S. START	-----	DECELERATION	10	DEC	10
5.2	-----	SWITCHING FREQUENCY	SWITCHING FREQUENCY	2.5	SFR	2.5
5.5	-----	REF. FREQ 1 CONFIG	REF. FREQ 1 CONFIG	AI3	FR1	AI3
5.5	-----	FREQ SWITCH ASSIGN	FREQ SWITCH ASSIGN	DI3	RFC	DI3
5.5	-----	2-WIRE TYPE	2-WIRE TYPE	LEVEL	TCT	LEL
5.5	-----	REF. FREQ 2 CONFIG	REF. FREQ 2 CONFIG	AI1	FR2	AI1
5.5	-----	CONTROL MODE	MIXED MODE CONFIG	CONTROL MODE 1/0 PROFILE	CHCF	IO
5.5	-----	COMMAND SWITCHING	COMMAND SWITCHING	DI3	CCS	DI3
5.5	-----	CMD CHANNEL 1	CMD CHANNEL 1	TERMINAL	CD1	TER
5.5	-----	CMD CHANNEL 2	CMD CHANNEL 2	TERMINAL	CD2	TER
5.11	AI/AQ	AI3 CONFIGURATION	AI3 TYPE	CURRENT	AI3T	0A
5.11	AI/AQ	AI3 CONFIGURATION	AI3 MIN VALUE	4	CRL3	4
5.11	AI/AQ	AQ1 CONFIGURATION	AQ1 ASSIGNMENT	MOTOR FREQUENCY	AO1	OFR
5.11	AI/AQ	AQ1 CONFIGURATION	AQ1 MIN OUTPUT	4	AOL1	4
5.11	RELAY	R1 CONFIGURATION	R1 ASSIGNMENT	OPERATING STATE	R1	FLT
5.11	RELAY	R2 CONFIGURATION	R2 ASSIGNMENT	DRIVE RUNNING	R2	RUN
5.9	-----	STOP CONFIGURATION	FREEWHEEL STOP DI2	FREEWHEEL STOP	NST	DI2
5.12	-----	CATCH ON THE FLY	CATCH ON THE FLY	YES	FLR	YES
5.12	-----	FAULT (TRIP) RESET	FAULT (TRIP) RESET	DI4	RSF	DI4

TABLE FOR POWER WIRING		
POWER WIRING	WIRES/PHASE	EQUIPMENT GROUND
WIRE, 2/0 AWG, BLACK	1	WIRE, 4 AWG, GRN/YEL
UNLESS OTHERWISE NOTED		



24V SEQUENCING AND CONFIGURATION

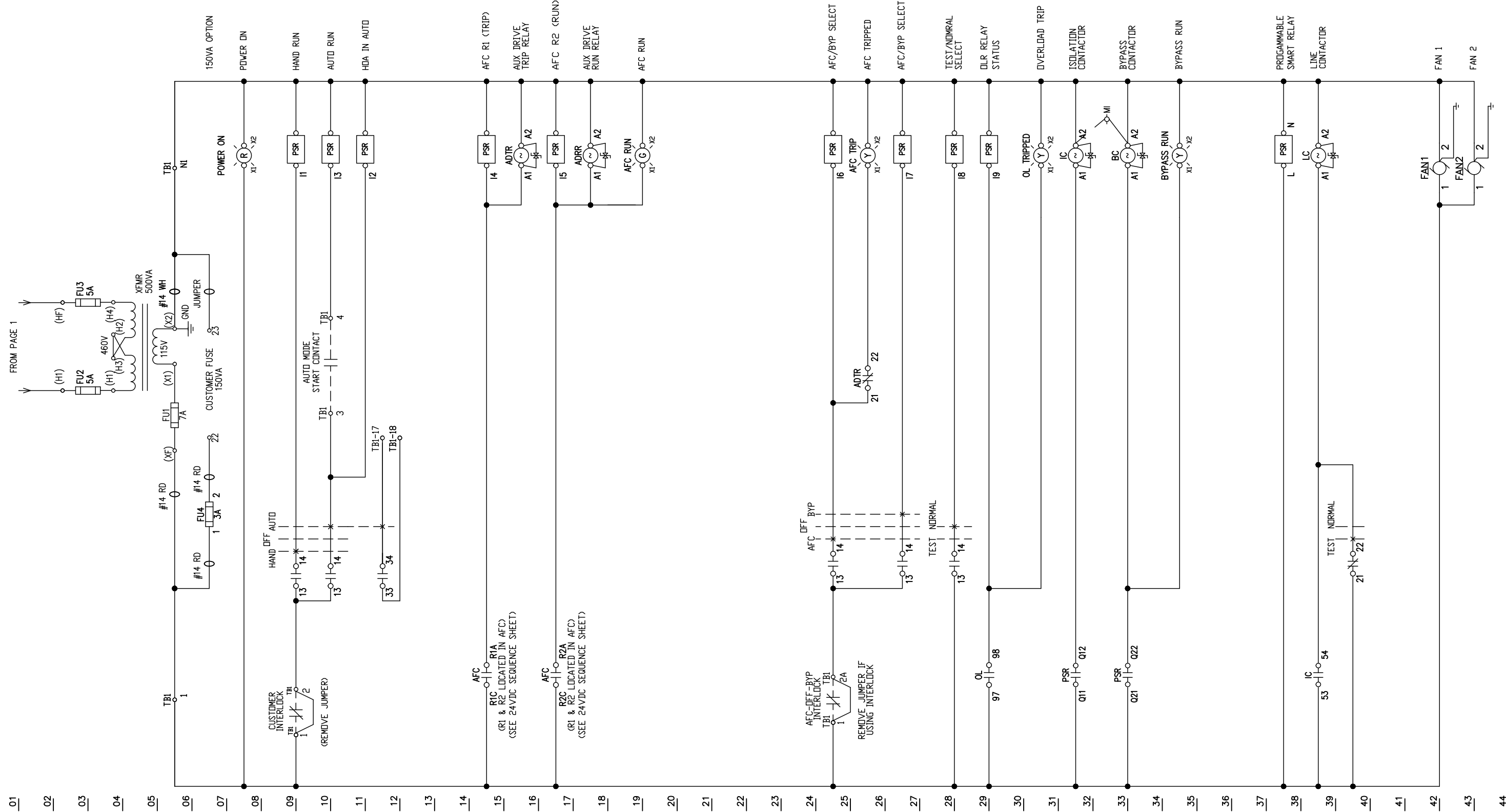
NOTES:

- ALL 24V CONTROL WIRE #16 AWG BLUE.
- ALL 120V LINE CONTROL WIRE #16 AWG RED.
- ALL 120V NEUTRAL CONTROL WIRE #16 AWG WHITE.
- SHIELDED CABLE IS RED/WHITE/BLACK OR RED/BLACK.
- GROUND WIRE TO BE #14 GREEN OR GREEN/YELLOW. (UNLESS OTHERWISE NOTED)

JOB NAME: RE-USE WATER PUMP STATION	EQUIPMENT DESIGNATION: VFD-1, VFD-2, VFD-3
JOB LOCATION: WICHITA KS	EQUIPMENT TYPE: ALTIVAR PROCESS 660
DRAWN BY: (Q2C)	DRAWING TYPE: ELEMENTARY
ENGR:	
DATE: July 11 2016	
DRAWING STATUS: QUOTE	DWG# E38325400-01

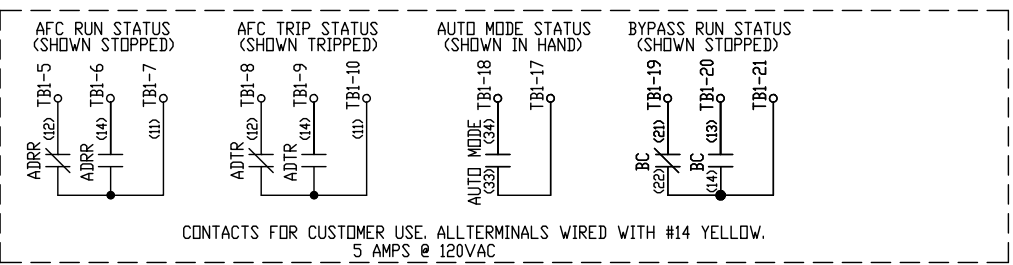


REV	DESCRIPTION	BY	DATE												
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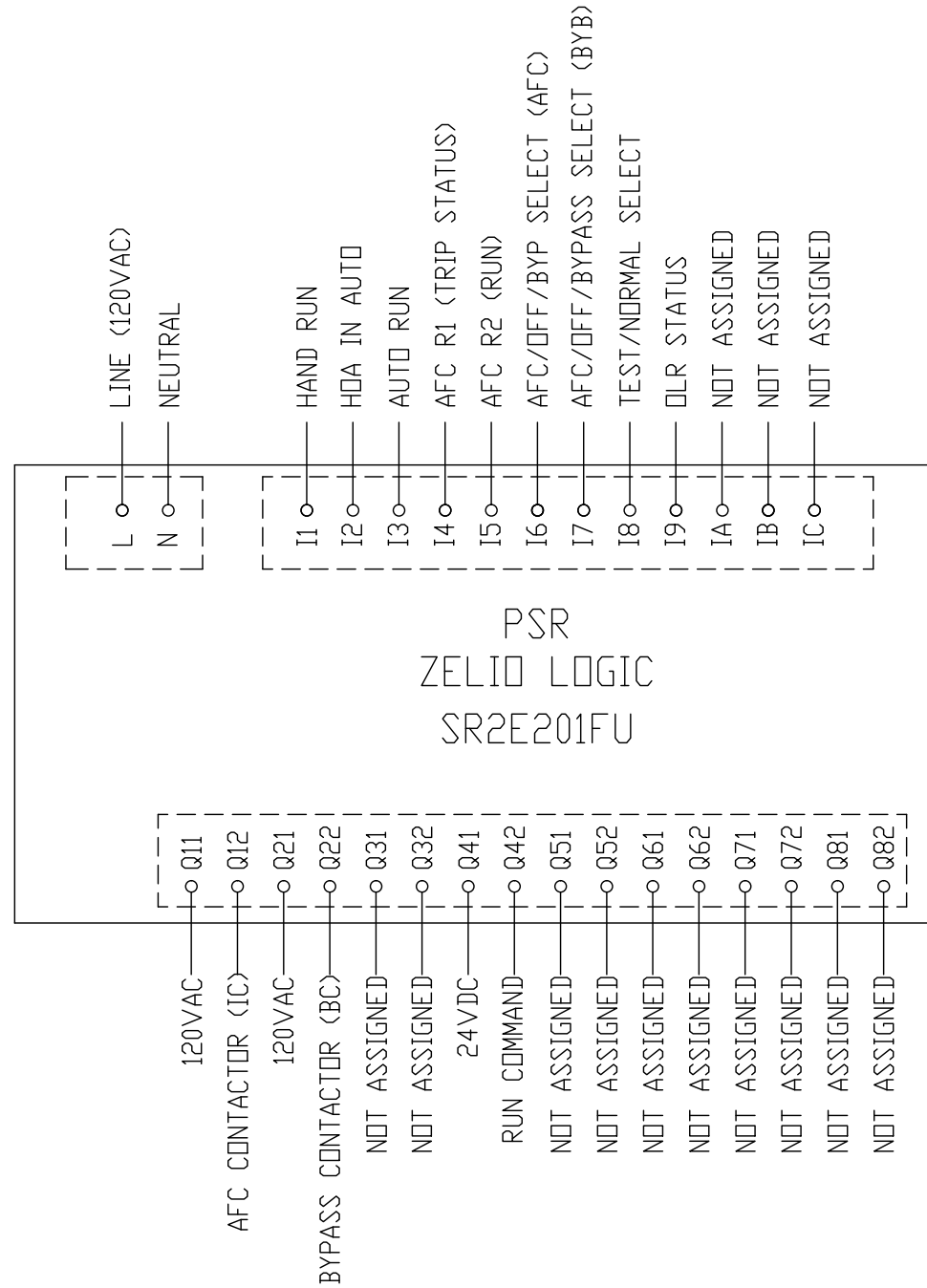
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46


- NOTES:**
- ALL 24V CONTROL WIRE #18 AWG BLUE.
 - ALL 120V LINE CONTROL WIRE #18 AWG RED.
 - ALL 120V NEUTRAL CONTROL WIRE #18 AWG WHITE.
 - SHIELDED CABLE IS RED/WHITE/BLACK OR RED/BLACK.
 - GROUND WIRE TO BE #14 GREEN OR GREEN/YELLOW.
 - (UNLESS OTHERWISE NOTED)



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		PG	2 OF 3
		REV	-

REV	DESCRIPTION	BY	DATE						
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Re-Use Water Pump Station / City of Wichita, Kansas

Switchgear & VFDs – Spec Section 26-000 – Submittal No. 1 Review Notes – Supplier Responses

Items were highlighted in yellow for verification and green for provision, and are so noted below.

Section

8.1.1 Verified the drive system is rated for 40 deg C continuous duty. The VFD is rated for 145 amps output current, but the drive system and bypass is rated for 124 amps at 480 volts.

8.2.7 A 5% impedance line reactor has been added to the bill of material and will be provided.

8.2.8 A UL Type 1 Surge Protective Device for AC Transient Protection has been added to the bill of material and will be provided.

8.3.1 Verified that two PID setpoints are available and can be programmed as required during start-up services.

8.3.4 Three Form C Relays will be wired to the VFD extended relay module, and customer wiring for the Form C contacts will be supplied on the field wiring terminal block.

8.4.1 Verified with Ed McGrath of R E Pedrotti that all interface with the control system will be via hard wiring. Field wiring terminals will be provided for the following signal requirements: an analog input for speed reference, an analog output for speed feedback, three discrete relay outputs for Run / Fail / Auto indication, and one discrete input for the auto start command. An RS485 port is available with Modbus and CAN open comms. Additionally, an Ethernet port is available for communications. Optional networks available are Profibus and DevuceNet.

8.5 The drive includes a Category C3 EMC Filter and RFI shielding to meet IEC 1000: (Electromagnetic Compatibility) and IEC 801-2,-3,-4,-5: (Immunity Tests) standards.

8.6.3 Fast acting fuses are exclusive to the VFD and the bypass circuit is protected by the circuit breaker disconnect. Additionally, an input contactor to the VFD is provided to provide isolation for service during bypass operation.

8.6.6 Additional relays to those found on the drawings or the bill of materials can be provided. In addition to function, please provide the device (ie, VFD, bypass contactor interlock, control power, selector switch) that is expected to provide the function . A wiring diagram or notes added to the drawings in addition to the description is desirable.

8.6.11 Manual or automatic bypass functionality can be provided. **Automatic bypass is not recommended by the drive manufacturer**, because a motor fault that would trip the drive and initiate a transfer to bypass could cause further system damage.

8.6.12 An adjustable current sensor will be provided to detect loss of load when in Bypass mode.