

# CITY OF ORLANDO

# PUBLIC WORKS DEPARTMENT

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## LOW VOLTAGE STANDARDS

PREPARED BY:

WATER RECLAMTION DIVISION,  
INDUSTRIAL AUTOMATION GROUP

DRAWING LAYER COLOR LEGEND:

CYAN - FIBER COMMUNICATIONS  
GREY - NOTES  
BLACK - ELECTRICAL SCHEMATIC WIRING DIAGRAMS AND DEVICES  
BLUE - PART IDENTIFICATION  
PURPLE - WIRE NUMBERS, AND DRAWING LOCATORS  
MAGENTA - PROFIBUS DP COMMUNICATIONS  
GREEN - FIELD DEVICES AND WIRING OUTSIDE ENCLOSURE (DASHED)  
RED - FUTURE DEVICES AND WIRING  
TEAL - DIMENSIONS  
LIGHT GREEN - PROFINET

05-08-2025

# DRAWING INDEX

## PART 1

REFERENCE :

SHT. NO.	DESCRIPTION	Rev. Dates
102	DRAWING INDEX-1	05-08-2025
103	DRAWING INDEX-2	04-06-2023
110	ABBREVIATIONS AND SYMBOL LEGEND	09-21-2017
120	WIRE LABELING CONVENTIONS	01-24-2018
121	CONDUIT / CABLE CONVENTIONS	01-24-2018

ACROSS THE LINE NON REVERSING MOTOR STARTER  
( < 25 HP) (STAND ALONE ENCLOSURE APPLICATION)

SHT. NO.	DESCRIPTION	Rev. Dates
202	FRONT PANEL ELEVATION	10-21-2014
203	INTERIOR PANEL LAYOUT	05-05-2025
204	BILL OF MATERIALS	05-08-2025
205	480 VAC ONE LINE DISTRIBUTION LAYOUT	04-27-2023
206	120 VAC CONTROL WIRING SCHEMATIC PART 1	03-23-2023
207	120 VAC CONTROL WIRING SCHEMATIC PART 2	03-23-2023
208	COMMUNICATION WIRING LAYOUT-PROFINET	04-15-2020
209	FIELD TERMINAL ASSIGNMENTS	05-08-2025

ACROSS THE LINE NON REVERSING MOTOR STARTER  
( < 25 HP) (MOTOR CONTROL CENTER APPLICATION)

SHT. NO.	DESCRIPTION	Rev. Dates
302	FRONT PANEL ELEVATION	06-26-2020
303	INTERIOR PANEL LAYOUT	05-07-2025
304	BILL OF MATERIALS	05-08-2025
305	480 VAC ONE LINE DISTRIBUTION LAYOUT	08-27-2019
306	120 VAC CONTROL WIRING SCHEMATIC PART 1	04-22-2025
307	120 VAC CONTROL WIRING SCHEMATIC PART 2	06-26-2020
308	COMMUNICATION WIRING LAYOUT-PROFINET	04-15-2020
309	FIELD TERMINAL ASSIGNMENTS	05-07-2025

SSRVS  
(STAND ALONE ENCLOSURE APPLICATION)

SHT. NO.	DESCRIPTION	Rev. Dates
402	FRONT AND TOP PANEL ELEVATION	10-06-2020
403	INTERIOR PANEL LAYOUT	10-09-2020
404	BILL OF MATERIALS	01-25-2021
405	480 VAC ONE LINE DISTRIBUTION LAYOUT	10-12-2020
406	120 VAC CONTROL WIRING SCHEMATIC PART 1	10-06-2020
407	120 VAC CONTROL WIRING SCHEMATIC PART 2 AND SSRVS I/O CONTROL	10-12-2020
408	COMMUNICATION WIRING LAYOUT-PROFINET	10-06-2020
409	FIELD TERMINAL ASSIGNMENTS	10-06-2020

SSRVS  
(MOTOR CONTROL CENTER APPLICATION)

SHT. NO.	DESCRIPTION	Rev. Dates
502	FRONT PANEL ELEVATION	10-01-2020
503	INTERIOR PANEL LAYOUT	10-09-2020
504	BILL OF MATERIALS	01-25-2021
505	480 VAC ONE LINE DISTRIBUTION LAYOUT	08-27-2019
506	120 VAC CONTROL WIRING SCHEMATIC PART 1	10-01-2020
507	120 VAC CONTROL WIRING SCHEMATIC PART 2	10-12-2020
508	COMMUNICATION WIRING LAYOUT-PROFINET	10-01-2020
509	FIELD TERMINAL ASSIGNMENTS	03-29-2018

VFD  
(STAND ALONE ENCLOSURE APPLICATION) ≤ 250 HP MOTORS

SHT. NO.	DESCRIPTION	Rev. Dates
602	FRONT PANEL ELEVATION	10-07-2021
603	INTERIOR PANEL LAYOUT	05-07-2025
604	BILL OF MATERIALS	05-07-2025
605	480 VAC ONE LINE DISTRIBUTION LAYOUT	10-30-2024
606A	120 VAC CONTROL WIRING SCHEMATIC PART 1	05-08-2025
606B	120 VAC CONTROL WIRING SCHEMATIC PART 1	05-08-2025
607A	120 VAC CONTROL WIRING SCHEMATIC PART 2	05-08-2025
607B	120 VAC CONTROL WIRING SCHEMATIC PART 2	05-08-2025
608	COMMUNICATION WIRING LAYOUT-PROFINET	03-04-2016
609	FIELD TERMINAL ASSIGNMENTS	05-07-2025



SCALE:	N.T.S.	-	UPDATED DRAWING INDEX	04-06-2023	FH
		-	UPDATED DRAWING INDEX	04-27-2023	FH
DESIGN:	IAG	-	UPDATED DRAWING INDEX	03-29-2024	FH
		-	UPDATED DRAWING INDEX	10-31-2024	JG
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WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
  
CITY OF  
ORLANDO, FLORIDA

TITLE:	LOW VOLTAGE STANDARDS DRAWING INDEX PART1	SHEET <b>102</b>
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# DRAWING INDEX

## PART 2

**VFD  
(MOTOR CONTROL CENTER APPLICATION)**

SHT. NO.	DESCRIPTION	Rev. Dates
702	FRONT PANEL ELEVATION	06-26-2020
703	INTERIOR PANEL LAYOUT	08-27-2019
704	BILL OF MATERIALS	04-22-2025
705	480 VAC ONE LINE DISTRIBUTION LAYOUT	08-27-2019
706	120 VAC CONTROL WIRING SCHEMATIC PART 1	04-06-2023
707	120 VAC CONTROL WIRING SCHEMATIC PART 2	11-19-2021
708	COMMUNICATION WIRING LAYOUT-PROFINET	03-04-2016
709	FIELD TERMINAL ASSIGNMENTS	06-12-2018

**FEEDER BREAKER MONITORING  
(MOTOR CONTROL CENTER APPLICATION)**

SHT. NO.	DESCRIPTION	Rev. Dates
802	FRONT PANEL ELEVATION	10-22-2014
803	INTERIOR PANEL LAYOUT	08-28-2019
804	BILL OF MATERIALS	08-28-2019
805	480 VAC ONE LINE DISTRIBUTION LAYOUT	08-28-2019
806	24 VDC AND 120 VAC CONTROL WIRING SCHEMATICS	08-28-2019
807	COMMUNICATION WIRING LAYOUT-PROFINET	04-22-2025
808	FIELD TERMINAL ASSIGNMENTS	10-13-2014

**MISC. DETAILS**

SHT. NO.	DESCRIPTION	Rev. Dates
902	GROUNDING DETAILS - PART 1	12-18-2015
903	GROUNDING DETAILS - PART 2	03-09-2015
904	GROUNDING DETAILS - PART 3	12-21-2012
905	GROUNDING DETAILS - PART 4	12-21-2012
906	GROUNDING DETAILS - PART 5	12-21-2012
907	GROUNDING DETAILS - PART 6	12-21-2012
908	GROUNDING DETAILS - PART 7	02-05-2013
909	PEDESTAL MOUNTING FOR CONTROL PANELS	04-03-2013
910	UNDERGROUND DUCT BANK DETAILS	12-21-2012
911	UNDERGROUND CONDUIT AND SURFACE / PEDESTAL MOUNT ENCLOSURE DETAILS	12-21-2012
912	PEDESTAL MOUNT DETAILS FOR INSTRUMENT TRANSMITTER	11-17-2020
913	WALL MOUNT DETAILS FOR INSTRUMENT TRANSMITTER	11-17-2020
914	CONDUIT INSTALLATION FOR THROUGH MASONRY WALL DETAILS	12-21-2012
915A	ANTENNA INSTALLATION DETAILS	09-06-2013
916	AREA LIGHTING POLE DETAILS	04-10-2015
917	DEVICE POWER AND / OR SIGNAL INSTALLATION DETAILS	11-17-2020
918	TRANSMITTER ELEMENT INSTALLATION DETAILS	12-21-2012
919	WET WELL "LIT" ELEMENT INSTALLATION DETAILS	12-21-2012
920	INSTRUMENTATION DETAILS PART 1	12-21-2012
921	TRANSFORMER PAD INSTALLATION DETAIL	02-05-2013
922	PAD MOUNT TRANSFORMER COMPONENTS DETAIL	02-05-2013
923	PUMP DISAGREE SWITCH INSTALLATION DETAILS	02-07-2018



SCALE:	N.T.S.	-	UPDATED DRAWING INDEX	10-08-2021	FH
		-	UPDATED DRAWING INDEX	11-19-2021	FH
DESIGN:	IAG	-	UPDATED DRAWING INDEX	11-11-2022	FH
		-	UPDATED DRAWING INDEX	04-06-2023	FH
DRAWN BY:	JG	-	UPDATED DRAWING INDEX	04-22-2025	FH
APPROVED BY:	GM	NO	REVISION	DATE	BY

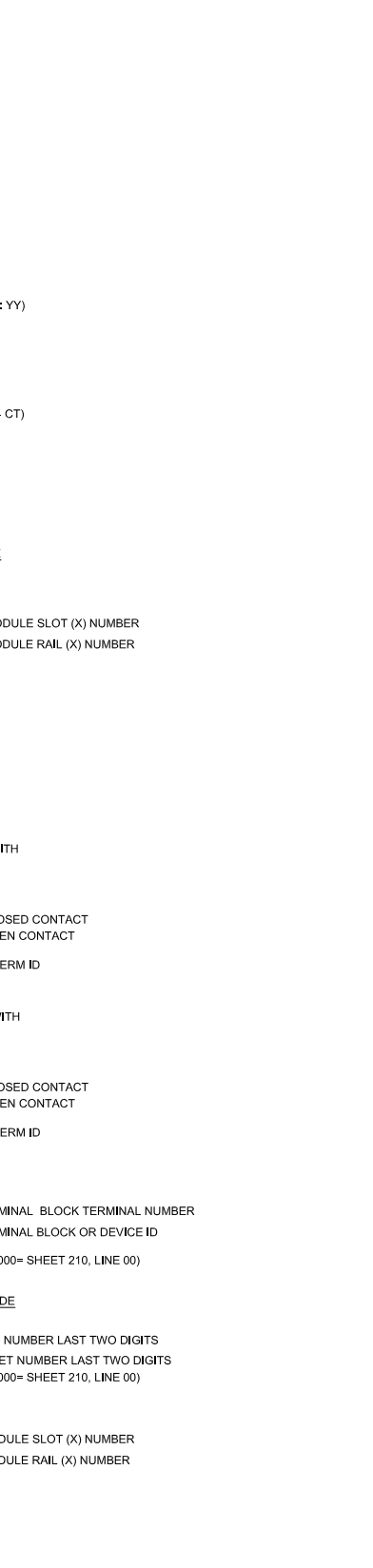
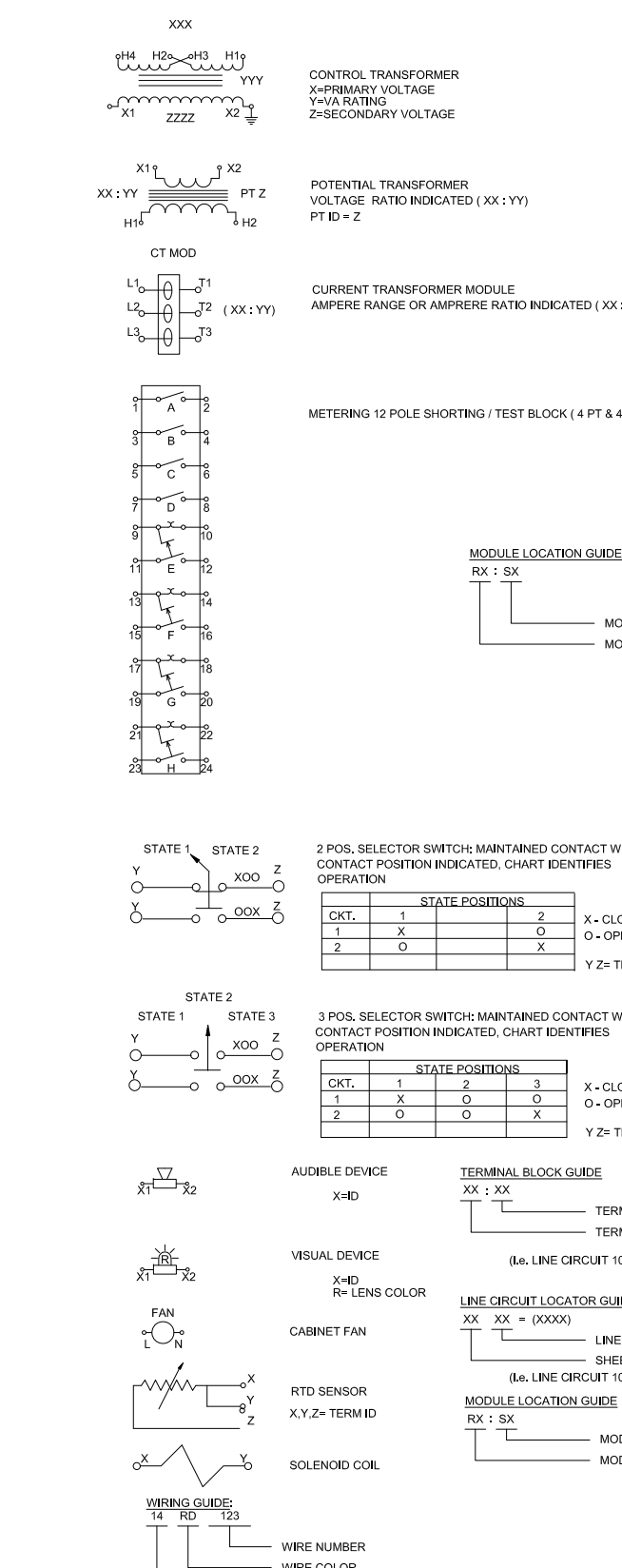
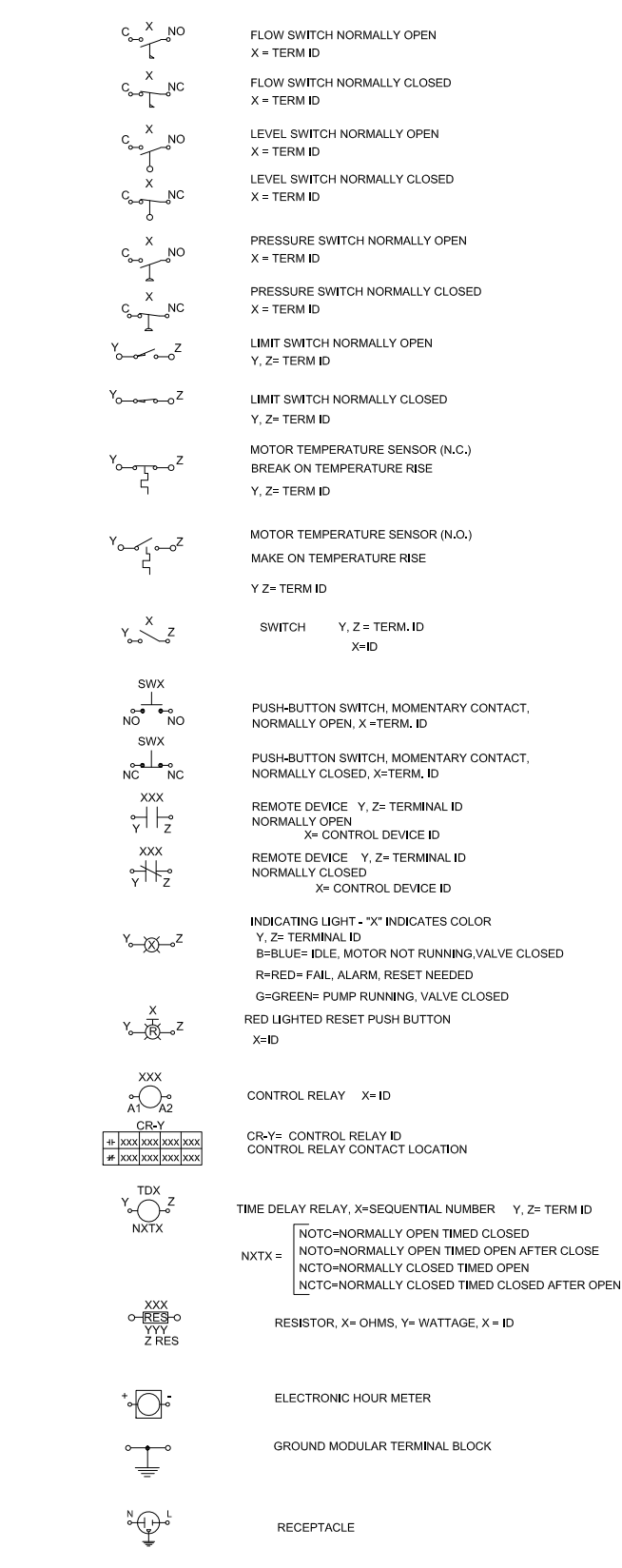
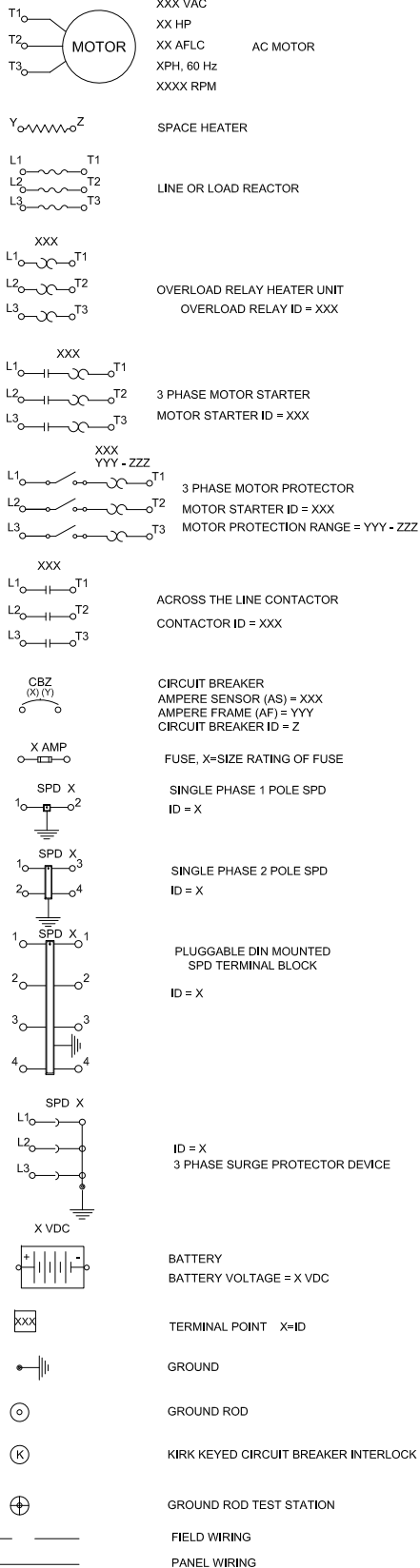
WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
  
CITY OF  
ORLANDO, FLORIDA

TITLE:	OW VOLTAGE STANDARDS DRAWING INDEX PART 2
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A	ACTUATOR OR AMPERE	KIAC	THOUSAND INTERRUPTING AMPERAGE
AC	ALTERNATING CURRENT	L	LINE SUPPLY
ACP	ACCESS CONTROL PANEL	LIT	LEVEL INDICATING TRANSMITTER
AD	AUDIBLE DEVICE	LIU	FIBER OPTIC LIGHT INTERFACE UNIT
AI	ANALOG INPUT	LOR	LOCAL OFF REMOTE
AO	ANALOG OUTPUT	LPB	LIGHTED PUSH BUTTON OPERATOR
AF	AMPERAGE FRAME	LS	LIMIT SWITCH / LEVEL SWITCH
AFB	ABOVE FINISHED FLOOR	LSSW	LIGHTED SELECTOR SWITCH
AFG	ABOVE FINISHED GRADE	LTG	LIGHTING
AM	AMPERE METER	M	MAGNETIC CONTACTOR COIL OR MOTOR
AR	ALARM RELAY	mA	MILLIAMPS
ATL	ACROSS THE LINE	MC	MOTOR CONTACTOR
ATS	AUTOMATIC TRANSFER SWITCH	MCB	MAIN CIRCUIT BREAKER
BAT	BATTERY	MCC	MOTOR CONTROL CENTER
BC	BYPASS CONTACTOR	MDP	MAIN DISTRIBUTION PANEL
BG	BREAK GLASS STATION	MLO	MAIN LUG ONLY
BM	PLC BUFFER MODULE	MOV	MOTOR OPERATED VALVE
BS	BUS	MPR	MOTOR PROTECTION RELAY
BSD	BUS DETAIL	MPZ	MINI POWER ZONE
BYP	BYPASS	MS	MOTOR STARTER
C	CONTACTOR	MTB	MOTOR TERMINAL BLOCK
CB	CIRCUIT BREAKER OR CONTACT BLOCK	MTR	MOTOR
CCU	CABINET COOLER UNIT	MTS	MOTOR TEMPERATURE SENSOR
CE	CONNECTING ELEMENT	N	NEUTRAL GROUNDED SUPPLY
CKT	CIRCUIT	NC	NORMALLY CLOSED
CMH	COMMUNICATIONS MANHOLE	NO	NORMALLY OPEN
CMS	COMBINATION MOTOR STARTER	NP	NAME PLATE
COMM	COMMUNICATIONS	NRMS	NON REVERSING MOTOR STARTER
CPT	CONTROL POWER TRANSFORMER	NTS	NOT TO SCALE
CR	CONTROL RELAY	OL	OVERLOAD RELAY
CS	CONTROL SYSTEM	OLM	OPTICAL LINK MODULE
CSS	COMMON SIGNAL SOURCE	OPTI	OPTICAL TRANSCEIVER
CT	CURRENT TRANSFORMER	OUTPUT	OUTPUT
CTSB	CURRENT TRANSFORMER SHORTING BLOCK	P	POLE
CTLR	CONTROLLER	PB	PUSH BUTTON
CTPT	CURRENT / POTENTIAL TRANSFORMER	PBC	PROFIBUS BUS CONNECTOR
CU	COPPER CONDUCTOR	PC	PHOTOCELL
CV	CHECK VALVE	PDB	POWER DISTRIBUTION BLOCK
DC	DIRECT CURRENT	PDP	PROFIBUS DP
DI	DIGITAL INPUT	PE	POTENTIAL EARTH
DISP	DISPLAY	PFT	PROFIBUS TERMINATOR
DO	DIGITAL OUTPUT	PH	PHASE MONITOR
DPST	DOUBLE POLE SINGLE THROW	PHM	PHASE MONITOR
DS	DOOR SWITCH	PL	PANEL LIGHT
EF	EXHAUST FAN	PLC	PROGRAMMABLE LOGIC CONTROLLER
EG	ELECTRICAL GROUND	PI	PROFIBUS INTERFACE
ES	EMERGENCY STOP	PM	POWER METER OR MODULE
ETPC	ETHERNET PATCH CABLE	PMH	POWER MANHOLE
ETM	ELAPSED TIME METER	PMS	PUMP MONITORING SYSTEM
FAN	FAN MOTOR	PN	PROFINET
FCB	FEEDER CIRCUIT BREAKER	POE	POWER OVER ETHERNET
FU	FUSE	PPR	PUMP PROTECTION RELAY
FUB	FUSE BLOCK	PR	PAIR
FIT	FLOW INDICATOR	PRS	PROXIMITY SENSOR
FLUOR	FLUORESCENT	PS	PRESSURE SWITCH
FM	FLOW METER	PST	POLES SINGLE THROW
FOC	FIBER OPTIC CABLE	PSL	POWER SUPPLY
FOP	FIBER OPTIC PANEL	PT	POTENTIAL TRANSFORMER
FOPC	FIBER OPTIC PATCH CABLE	RCM	RECTIFIER CONTROL MODULE
FPPC	FLEXIBLE PORTABLE POWER CORD	REAC	REACTOR DEVICE
FS	FLOAT SWITCH, FLOW SWITCH	REC	RECEPTACLE
FT	FLOW TRANSMITTER	RES	RESISTOR
FTB	FIELD TERMINAL BLOCK	RTU	REMOTE TELEMETRY UNIT
FVNR	FULL VOLTAGE NON-REVERSING STARTER	SCH	SCHEDULE
GEN	GENERATOR	SCTRL	SPEED CONTROL DEVICE
GFI	GROUND FAULT INTERRUPTER	SH	SPACE HEATER
GFR	GROUND FAULT RELAY	SIMO	SIMOCODE CONTROL MODULE
GND	GROUND	SL	STACK LIGHT INDICATOR
GRB	GROUNDING BAR	SPD	SURGE PROTECTION DEVICE
GRT	GROUNDING TERMINAL	SR	START RELAY
HMI	HUMAN MACHINE INTERFACE	SSF	SOLID STATE FLASHER MODULE
HOA	HAND / OFF / AUTO	SSRV	SOLID STATE REDUCED
HWD	HARDWARE (I.E. BOLTS,NUTS, WASHERS)	SV	VOLTAGE STARTER
I & C	INSTRUMENTATION AND CONTROL	SW	SOLENOID VALVE
IC	INTERLOCK CONTACTOR	SSW	SELECTOR SWITCH
IEC	INDUSTRIAL ETHERNET CABLE	T	TRANSFORMER
IEG	PROFINET TO PROFIBUS DP GATEWAY	TB	TERMINAL BOARD
IEPC	INDUSTRIAL ETHERNET PATCH CORD	TH	THERMOSTAT
IES	INDUSTRIAL ETHERNET SWITCH	TI	TIE BREAKER
ILW	INDUCTANCE LOOP WIRING	TDR	TIME DELAY RELAY
IN	INPUT	TP	TEST POINT
INST	INSTANTANEOUS	TS	THERMAL SWITCH
INT	INTERFACE MODULE	TSP	TWISTED SHIELDED PAIR
K	KEY INTERLOCK	UPS	UNINTERRUPTIBLE POWER SUPPLY
KK	KIRK KEY INTERLOCK	UVR	UNDER VOLTAGE RELAY

CONDUCTOR COLOR ABBREVIATIONS	
AQ = AQUA	PL = PURPLE
BK = BLACK	RD = RED
BL = BLUE	RS = ROSE
BN & BR = BROWN	SH = SHIELD BARE
CL = CLEAR	SL = SLATE
GN = GREEN	VT = VIOLET
GY = GRAY	WT = WHITE
OR = ORANGE	YL = YELLOW
STRIPED CONDUCTOR = CONDUCTOR COLOR / STRIPE COLOR	

XXX VAC	AC MOTOR
XX HP	
XX AFLC	
XPH, 60 Hz	
XXXX RPM	
SPACE HEATER	
LINE OR LOAD REACTOR	
OVERLOAD RELAY HEATER UNIT	OVERLOAD RELAY ID = XXX
3 PHASE MOTOR STARTER	MOTOR STARTER ID = XXX
3 PHASE MOTOR PROTECTOR	MOTOR STARTER ID = XXX
MOTOR PROTECTION RANGE = YYY - ZZZ	
ACROSS THE LINE CONTACTOR	CONTACTOR ID = XXX
CIRCUIT BREAKER	AMPERE SENSOR (AS) = XXX
AMPERE SENSOR (AS) = XXX	AMPERE FRAME (AF) = YYY
CIRCUIT BREAKER ID = Z	
FUSE, X=SIZE RATING OF FUSE	
SINGLE PHASE 1 POLE SPD	ID = X
SINGLE PHASE 2 POLE SPD	ID = X
PLUGGABLE DIN MOUNTED SPD TERMINAL BLOCK	ID = X
BATTERY	BATTERY VOLTAGE = X VDC
TERMINAL POINT	X=ID
GROUND	
GROUND ROD	
KIRK KEYED CIRCUIT BREAKER INTERLOCK	
GROUND ROD TEST STATION	
FIELD WIRING	
PANEL WIRING	
RECEPTACLE	



SCALE:	N.T.S.	1	REVISED TITLE AND LEGEND CONTENT	09-21-2017	JG
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WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP

CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ABBREVIATIONS AND SYMBOL LEGEND

SHEET  
110

## WIRE LABELING CONVENTIONS

TERMINAL	ENTITY IDENTIFIER	PROCESS AND SUB-PROCESS AREA IDENTIFIER WIRING OF PLC OR RIO ORIENTATION OR LIFT STATION RTU NUMBER		SIGNAL TYPE IDENTIFIER		DEVICE / FUNCTIONAL IDENTIFIER		
999:9	BB	XXX		YYY		ZZZZ		
DIs = 100:1-300:4	C1 = Conserv I WRF	20 = EQ	NCC = North Chlorine Contact Chamber	<b>DIGITAL INPUTS</b>	<b>DIGITAL OUTPUTS</b>			
DOs = 301:1-500:4	C2 = Conserv II WRF	40 = RAS	NIR = North IR Pump Station	BA = Fire Alarm Initiation	YBP = Bubbler Purge Output	AB = Air Bay	INF = Inflow	SB = Switchboard
Als = 501:1-800:4	DC = Distribution Center	130 = Service Water Pump Station	NPW = Non-Potable Water Bldg	BF = Fire Alarm Failure/Trouble	YFV = Fuel Valve Relay	ACC = Access Control Communicator	INT = Interface Module	SCR = Bar Screen
AOs = 801_1-999:4	IB = Iron Bridge RWRf	180 = Operations Center	OF = Outfall	CBC = Circuit Breaker Closed	YH = Horn/Buzzer Output	ACP = Access Control Panel	IR = Internal Recycle	SC = Scum
COMs = 1000:1 To 1100:4	OW = Orlando Easterly Wetlands	999 = Lift Station Number	OPS = Operations Bldg	CBO = Circuit Breaker Opened	YL = Clear Lamp Output	ACKP = Access Control Key Pad	JB = Junction Box	SD=Smoke Detector
	LS = Lift Stations	AB = Aeration Basin	PAE = Post Aeration	CN = SPC Normal Status	YLB = Blue Lamp Output	ACT= Actuator or Ampere	LE = Level Element	SE = Secondary Effluent
	RC = Reclaim	ADM = Administration Bldg	PG = Power Generation	ES = ESTOP Indication	YLG = Green Lamp Output	AGI = Agitator	LT = Lighting	SG = Switchgear / Slide Gate
		AER = Aeration	PKL= Parking Lot	FAH = Flow Alarm High	YLR = Red Lamp Output	AIT = Analytical Transmitter	LIT = Level Transmitter	SH = Stator Housing
		BB = Blower Bldg	PH2 = Bardenpho Phase 2	FAL = Flow Alarm Low	YLY = Yellow Lamp Output	AL = Sodium Aluminate	LP = Lighting Panel	SL = Sludge
		BBB = Bardenpho Blower Bldg	PH3 = Bardenpho Phase 3	GBC = Generator Breaker Closed	YR = Reset Command	ALV = Air Lift Valve	LLS = Liquid Level Switch	SLW = Seal Water
		BFP = (Bell Filter) Press Bldg	PRI = Primary Clarification	GBO = Generator Breaker Opened	YRP = Run Permissive Command	AR = Aerator	LS = Limit Switch	SP = Sump Pump or Scum Pump
		BG = Back Gate	RAS = RAS/WAS	GLA = Gas Leak Alarm	YS = Start Command (ON)	ASV = Air Scour Valve	M = Motor	SPD = Sump Pump Discharge
		BPS = Booster Pump Station	RG = Rear Gate	HSA = HOA in AUTO	YSC = Close Command	ALP = Air, Low Pressure	MAI = Maintenance Building	SPD= Surge Protection Device
		CCC = Chlorine Contact Chamber	RBP = Recycle Backwash Pump Station	HSB = Generator Breaker Bypass	YSF = Start Fan Command	ATS = Automatic Transfer Switch	MAS = Monitoring and Status Relay	SS = Softstarter
		CHM = Chemical Bldg	RIN = Reclaim Interconnect	HSB = Generator Breaker Bypass	YSH = Space Heater Relay Output	B = Blower ( Centrifugal, Turbo)	MC = Motor Contactor or Controller	SSM = Secondary Scum
		CL2 = Chlorine Storage Bldg	RPS = Reclaim Pump Station	HSL = HOA In Local	YSO = Open Command	BC = Bypass Contactor	MCC = Motor Control Center	SSW = Selector Switch
		CLR = Clarification	SC = Sludge Conditioning	HSR = HOA In Remote	YSP = Start Pump Command	BFP = Belt Filter Press	MF = Manifold	STC = Smart Touch Gate Controller
		CSB = Chlorine Splitter Box	SCC = South Chlorine Contact Chamber	HSV = Hand Switch VFD	YSR Generator Stop Relay Output	BLDG = Building	MSH=Motor Space Heater	STS = Storm Sewer
		DBB = DBF Blowers Bldg	SEC = Secondary Clarification	JA = ATS Alternate Power Available	YVL = Voltage Lower Command	BRK = Brake	MS = Motor Stator Winding	SV = Solenoid Valve
		DBF = Deep Bed Filters	SCR = Screening Structure	JB = Battery Power Available	YVR = Voltage Raise Command	BRG = Bearing	MSS = Magnetic Switch Sensor	SVR = Server
		DB = Denite Basin	SG = Side Gate	JL = On Line Power	YX = Stop Command (OFF)	BV = Butterfly Valve	MTS = Manual Transfer Switch	SW = Switch OR Seal Water
		DIG = Digesters	SH = Sludge Handling	JP = UPS Available		BS = Basin	MTS = Motor Thermal Switch	SWB = Service Water Bypass
		ECO = Econ River Outfall	SIR = South IR Pump Station	JN = ATS Normal Power Available	<b>ANALOG INPUTS</b>	BW = Backwash	NPW = Non-Potable Water	T = Transformer
		EQ = Equalization	SO2 = Sulfur Dioxide Bldg	JS = Power Supply Voltage Available	AIT = Analytical Indicating Transmitter	BCR = Battery Charger	OA = Odorous Air	TER = Terminator Resistor Device
		ER = Energy Recovery	SS = Sludge Storage	LSH = Level Switch High	CIT = Chlorine Transmitter	BYP = Bypass	OF = Overfill	TI = Tie Breaker
		FG = Front Gate	WELL = Well	LSHH = Level Switch High High	FIT = Flow	CL2= CL2 Residual Analyzer	MIX = Mixer	TIT = Temperature Transmitter
		FCL = Final Clarification	WH = Warehouse	LSL = Level Switch Low	IIT = Amperage	CAM=Camera	OLM = Optical Link Module	TRB= Turbidity
		FLO = Flock Tanks	WPS = Wetlands Pump Station	LSLL = Level Switch Low Low	LIT = Level	CAS = Control and Status Relay	P = Pump	TK = Tank
		GBT = (Gravity Belt) Thickener		MTH = Motor Temperature High	NIT = Turbidity Transmitter	CB = Circuit Breaker	PB = Push Button	TS = Temperature Switch
		GRT = Grit Removal		OBS = Gate Obstruction Active	OIT = ORP Transmitter	CNT = Contactor	PBS = Push Button Station	TX = Transfer
		HPW = High Pressure NPW		PSH = Pressure Switch High	PIT = Pressure	CLG = Chlorine Gas	PDR = Process Drain	V = Valve
		IPS = Intermediate Pump Station		PSL = Pressure Switch Low	SI = Speed	CLL = Chlorine Liquid	PDR = Process Drain Pump	VFD = Variable Frequency Drive
		LAB = Laboratory		QA = Failed		CLS = Chlorine Solution	PE = Primary Effluent	UPS = Uninterruptible Power Supply
		MG = Main Gate		OAM = Belt Motion Sensor Stop	TE = Temperature Element	CPT = Control Power Transformer	PED = Pedestal	VS = Vibration Switch
		MBF = Mixed Bed Filters		QB = Brake Resistor Overheating	TIT = Temperature	CR = Control Relay	PES = Photo Eye Sensor	
		MPS = Master Pump Station		QI = Running	VIT = Vibration	CV = Check Valve	PFR = Power Fail Relay	WAS = Waste Activated Sludge
		MRF = McLeod Rd Maint. Facility		QR = Reset Device	ZIT = Valve Position	DD=Duct Detector	PFT = Profibus DP Terminator	WER= Wireless Ethernet Radio
		MTC = Maintenance Bldg		QRP = Run Permissive		DG = De-grit Machine	pH = pH Meter	WELL = Wet Well
		NA = North Authority		QS = PLC Intrusion (Door Open)	<b>ANALOG OUTPUTS</b>	DWS = Dewatering Screw Machine	PIT = Pressure Transmitter	WCH= Wall Connector Housing
				QY = Start Requested	AIC = Analytical Indicating Control	DR = Drain	PLC = Programmable Logic Controller	WIC = Wall Interconnect Center
				TAH = Temperature Alarm High	CIC = CL2 Output	EF = Exhaust Fan	PM = Power Meter or Module	WW = Washwater
				TAL = Temperature Alarm Low	FIC = Flow Output	EFF = Finished Effluent	PM = Pump Memory	XS = Torque Switch
				TH = Temperature High	SIC = Speed Output	EQ = Equalization	PP = Power Panel	ZIT = Position Transmitter
				TN = Temperature Normal	ZIC = Valve Position Output	FACP= Fire Alarm Control Panel	PS = Polymer Solution	
				VAH = Vibration Alarm High		FACP= Fire Alarm Control Panel	PS = Pressure Switch	
				WS = Torque Trip		FED = Free Exit Detector	PSL = Primary Sludge	<b>Use Direction:</b>
				ZA = ATS Position In Alternate		FIT = Flow Transmitter	PT= Pit	E = East
				ZN = ATS Position In Normal		FM = Force Main	PI = Profibus Interface	W = West
				ZS = Position Switch (Limit/Prox)		FWD = Forward	PV = Plug Valve	N = North
				ZSC = Position Closed		FS = Flow Switch	RAR = Remote Actuator Reset	S = South
				ZSO = Position Opened		GCS = Generator Control System	RAS = Return Activated Sludge	M = Middle
						GRC = Grit Reverse Conveyor	RCM = Rectifier Control Module	
						GEN = Generator	REC = Chart Recorder	<b>Use Numbers:</b>
						GV = Gate Valve	REV = Reverse	1 through 99999
						HT = Hydrostatic Tank	ROA = Roadway	
						HSP = High Service Pump	RIO = Remote I/O	<b>Use Letters:</b>
						IR = Irrigation	RVS = Reduced Voltage Starter	A through Z
						IES = Industrial Ethernet Switch	S = Sump	
						IFS = Infrared System Sensor	SA = Sample	
							SF = Supply Fan	



SCALE:	N.T.S.						
DESIGN:	IAG						
DRAWN BY:	JG						
APPROVED BY:	GM	NO					

REPRINT AND UPDATED

06-18-2018 JG

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
  
CITY OF  
ORLANDO, FLORIDA

TITLE:

LOW VOLTAGE STANDARDS  
WIRE LABELING CONVENTIONS

SHEET  
120

# CONDUIT LABELING CONVENTIONS

(PANEL TO PANEL, DEVICE, ETC.)

TO/FROM	ENTITY	PROCESS AREA OR LIFT STATION RTU NUMBER	DEVICE TYPE IDENTIFIER	DEVICE / FUNCTIONAL IDENTIFIER
AA	BB	XXX	YYY	ZZZZ
Use FROM/TO IDs	Use ANY ENTITY IDENTIFIER	Use ANY PROCESS AREA IDENTIFIER or LIFT STATION RTU NO.	Use ANY DEVICE TYPE IDs From Wiring, Cable or below	Use ANY DEVICE IDs From Wiring, Cable or below
TO = To Device	SEE DRAWING 120	SEE DRAWING 120	CAB = Cabinet	SEE DRAWING 120
FR = From Device			CHH = Communications Handhole	
			CMH = Communications Manhole	
			CP = Control Panel	
			EHH = Electrical Handhole	
			EMH = Electrical Manhole	
			ENC = Enclosure	
			ES = Emergency Stop	
			HOR = Horn	
			LP = Lighting Panel	
			LT = Light Tree	
			LUM = Luminaire	
			MCC = Motor Control Center	
			MCP = Motor Controller Panel	
			PB = Pushbutton	
			PCP = Pump Control Panel	
			PNL = Panel	
			PP = Power Panelboard	
			REC = Receptacle	
			RIO = Remote I/O Panel	
			RIP = Remote Indicator Panel	
			RTU = Remote Terminal Unit	
			T = Transformer	

# CABLE LABELING CONVENTIONS

(FIBER-OPTIC, PROFIBUS DP, MODBUS, CAT 5, CAT 6, ETC.)

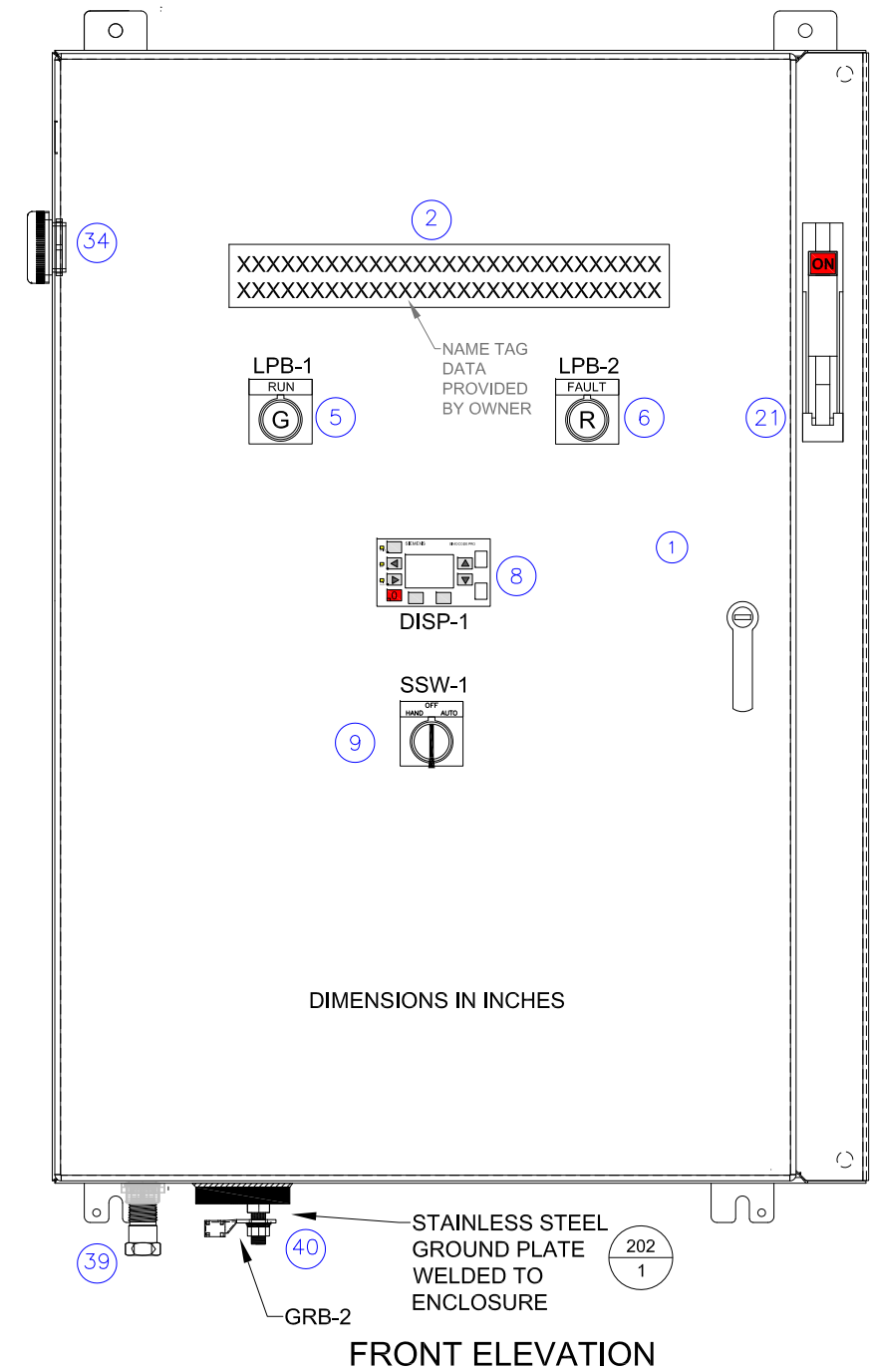
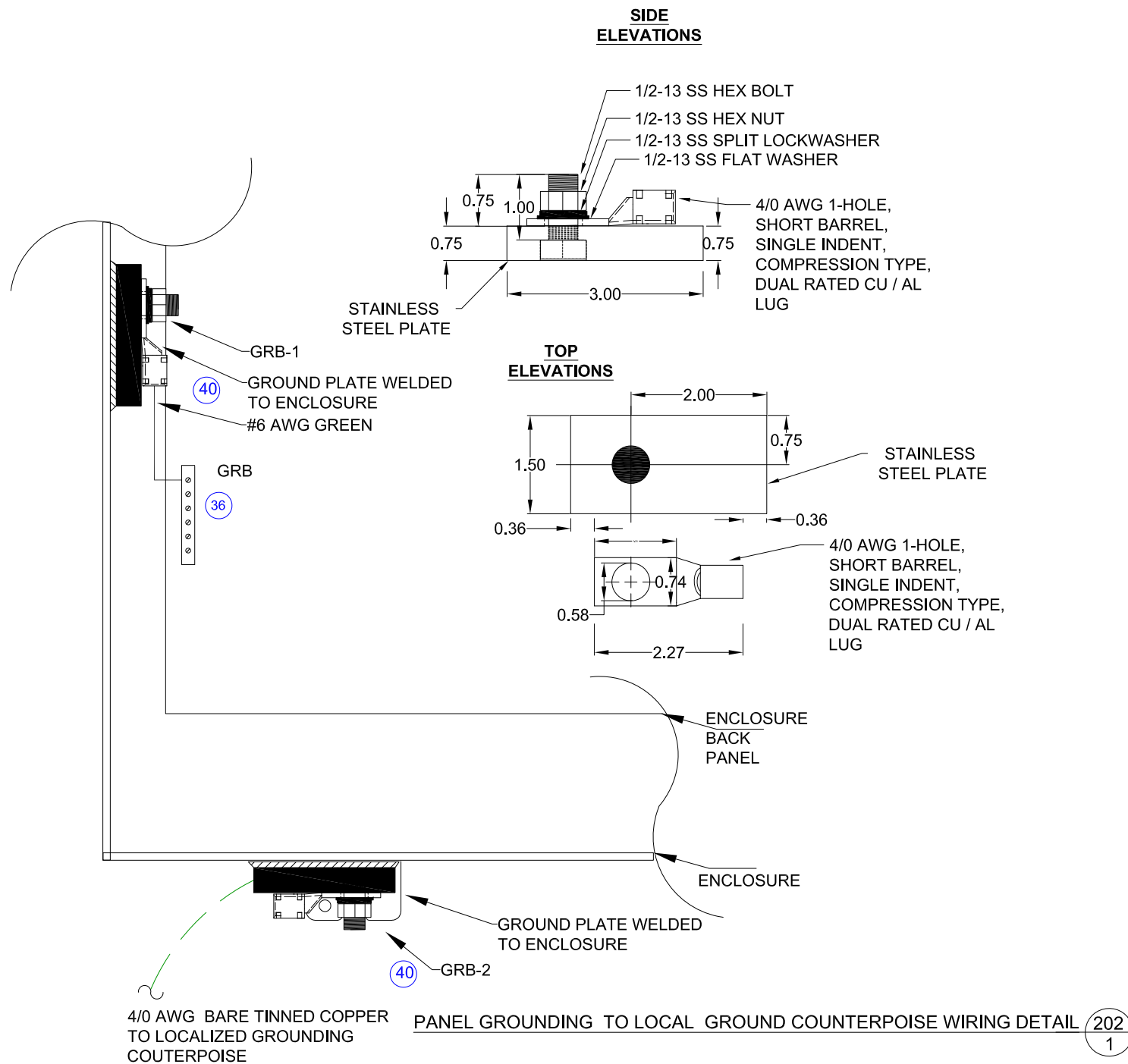
TO/FROM	ENTITY	PROCESS AREA OR LIFT STATION RTU NUMBER	DEVICE TYPE IDENTIFIER	DEVICE / FUNCTIONAL IDENTIFIER
AA	BB	XXX	YYY	ZZZZ
Use FROM/TO IDs	Use ANY ENTITY IDENTIFIER	Use ANY PROCESS AREA IDENTIFIER or LIFT STATION RTU NO.	Use ANY DEVICE TYPE IDs From Wiring, Conduit or below	Use ANY DEVICE IDs From Wiring, Conduit or below
TO = To Device	SEE DRAWING 120	SEE DRAWING 120	ACP= Access Control Panel	ZIT = Position Transmitter
FR = From Device			ACT= Actuator or Ampere	A = WCH Rear Top Panel
			AIT = Analytical Transmitter	B = WCH Rear Bottom Panel
			ATS = Automatic Transfer Switch	C = WCH Middle Top Panel
			B = Blower (Centrifugal, Turbo)	D = WCH Middle Bottom Panel
			CAS = Control And Status Relay	DP = Profibus Port
			CHFL = Channel Flow	E = WCH Front Top Panel
			CPU = Central Processing Unit	F = WIC Front Bottom Panel
			ETPC = Ethernet Patch Cord	PN = Profinet Port
			FOP = Fiber Optic Panel	LT = Left Side
			FOPC = Fiber Optic Patch Cord	PORT = Communications Device Port
			FIT = Flow Transmitter	RAIL = S7-300 Module Collection
			GEN = Generator	RT = Right Side
			IEC = Industrial Ethernet Cable	
			IEG = Profinet to Profibus Gateway	
			IEPC = Industrial Ethernet Patch Cord	
			IES = Industrial Ethernet Switch	
			INT = Interface Module	
			LIT = Level Transmitter	
			M = Motor	
			MAS = Monitoring And Status Relay	
			MCC = Motor Control Center	
			OLE = Overload, Electronic	
			OLM = Optical Link Module	
			P = Pump	
			PM = Power Meter or Module	
			PMS = Pump Monitoring System	
			PBC = Profibus DP Bus Connector	
			PIT = Pressure Transmitter	
			PIAS = Plant Influent Auto Sample	
			PLC = Programmable Logic Controller	
			PFT = Profibus DP Terminator	
			RIO = Remote I/O	
			RVS = Reduced Voltage Starter	
			SVR = Server	
			SWB = Switchboard	
			SWG = Switchgear	
			SWH = Ethernet Switch	
			TER = Terminating Resistor Device	
			TIT = Temperature Transmitter	
			UPS = Uninterruptible Power Supply	
			V = Valve	
			VFD = Variable Frequency Drive	
			WCH = Wall Connector Housing	
			WIC = Wall Interconnect Center	



SCALE:	N.T.S.	REPRINT AND UPDATED	06-18-2018	JG
DESIGN:	IAG			
DRAWN BY:	JG			
APPROVED BY:	WW	NO	REVISION	DATE BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
CONDUIT / CABLE LABELING  
CONVENTIONS



SCALE:	N.T.S.	-	-	10-21-2014	JG
DESIGN:	IAG				
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

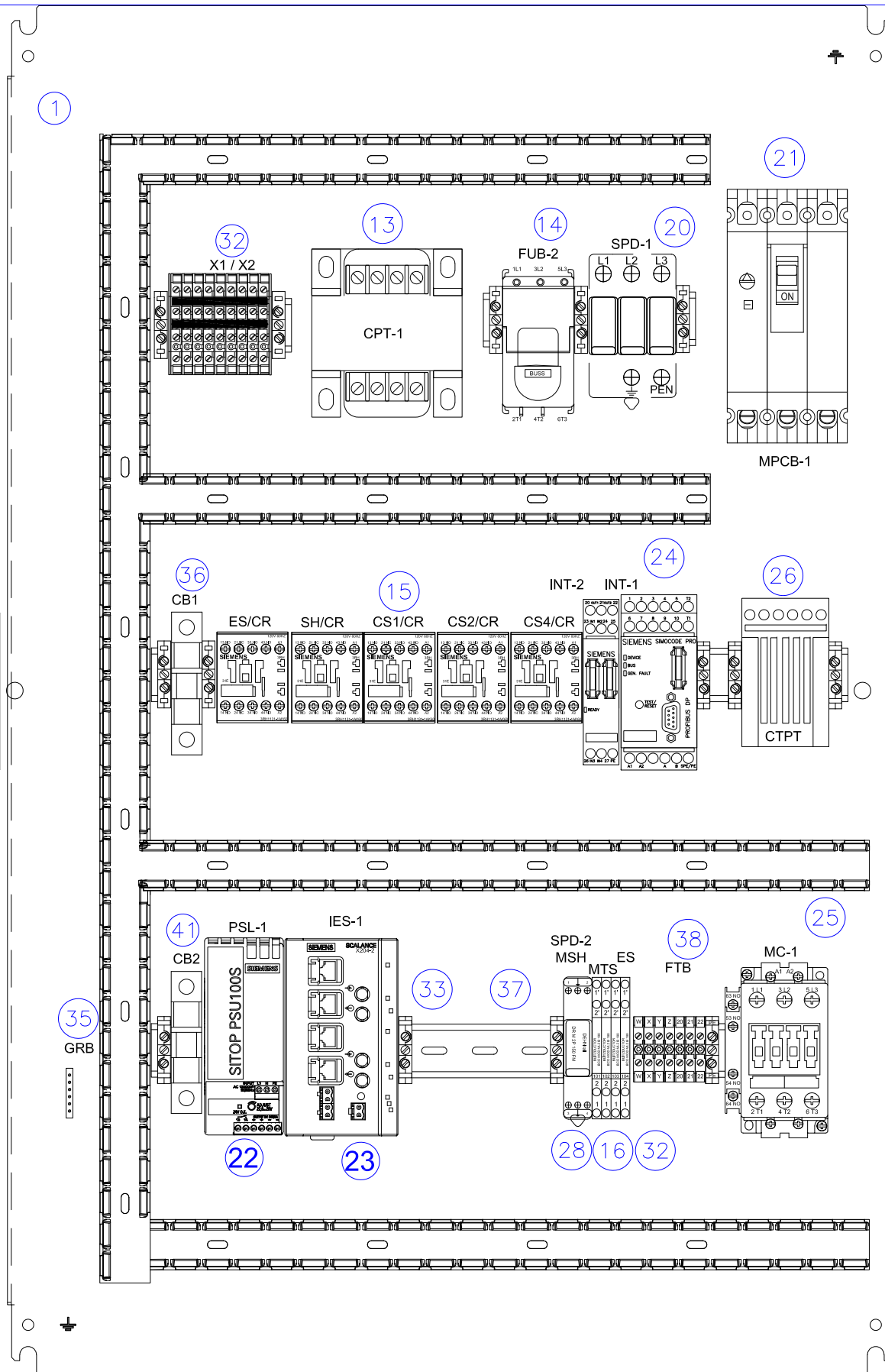
WATER RECLAMATION DIVISION,  
 INDUSTRIAL AUTOMATION GROUP  
 CITY OF  
 ORLANDO, FLORIDA

TITLE:  
 LOW VOLTAGE STANDARDS  
 ACROSS THE LINE NRMS (<25HP)  
 FRONT PANEL ELEVATION

SHEET  
 202

27  
WIC-1

MOUNTED ON  
INTERIOR SIDE OF  
ENCLOSURE WITH 1"  
SPACER STANDOFF



SCALE:	N.T.S.	-	-	10-21-2014	JG
DESIGN:	IAG	-	UPDATED 28 TO SPD-1 MSH	05-31-2018	JG
		-	UPDATED 21 TO MPCB-1	03-23-2023	FH
DRAWN BY:	JG	-	UPDATED 16	04-27-2023	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP

CITY OF  
ORLANDO, FLORIDA

TITLE:

LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
INTERIOR PANEL LAYOUT

SHEET  
203

NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.	NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.
1	1	WALL MOUNTED, STAINLESS STEEL 316, 36.00 H X 26.00 W X 8.00 D	HOFFMAN CDSC36268SS6	21	1	CIRCUIT BREAKER, 3-POLE, 480 VOLT, EIT MOTOR CIRCUIT BREAKER	SIEMENS TYPE ED63
		3 POINT LATCHING, 4X, CONTINUOUS HINGE, DISCONNECT ENCLOSURE			1	CIRCUIT BREAKER ENCLOSURE OPERATOR ASSEMBLY KIT, NEMA 4X	SIEMENS FHOH4, FHOEBO, FHOEC036
	1	PAINTED WHITE STEEL BACK PANEL FOR ENCLOSURE	HOFFMAN CP3624				
				22	1	POWER SUPPLY, 120/230VAC IN, 24VDC/5A	SIEMENS 6EP1 333-2BA20
2	1	NAMEPLATE, 14W X 2H, WHITE W/BLACK LETTERS	CUSTOM ENGRAVED- NAME TAG DATA PROVIDED BY OWNER				
3	-	-	-				
				23	1	INDUSTRIAL ETHERNET SWITCH DEVICE	SIEMENS X204-2, 6GK5 204-2BB10-2AA3
4	-	-	-				
				24	1	SIRIUS SIMOCODE MTR MANAGEMENT CONTROLLER	SIEMENS 3UF7011-1AU00-0 PROFINET
					1	SIRIUS SIMOCODE DIGITAL I/O MODULE	SIEMENS 3UF7300-1AU00-0
5	1	30MM H.D. OILTIGHT ILLUMINATED 120 VAC LED GREEN P. B.	SIEMENS 52BL4M3		2	SIRIUS SIMOCODE MODULE INTERFACE CABLE	SIEMENS 3UF793-*
	2	CONTACT BLOCK N.O. AND N.C. FOR ABOVE OPERATOR	SIEMENS 52BJK				
	1	"MOTOR RUN" NAMEPLATE	SIEMENS 52NL23	25	1	CONTACTOR, 3-POLE, 45 AMP, NEMA 2, 25HP, 460VOLT, 120VAC COIL	SIEMENS 3RT1036-1AK60-0UA0
					1	CONTACTOR, 2-POLE, 2 N.O. AUXILIARY SWITCH BLOCK	SIEMENS 3RH1921-1EA20
6	1	30MM H.D OILTIGHT ILLUMINATED 120 VAC LED RED P. B.	SIEMENS 52BL4M2				
	2	CONTACT BLOCK N.O. AND N.C. FOR ABOVE OPERATOR	SIEMENS 52BJK	26	1	CURRENT VOLTAGE MEASURING MOD	SIEMENS 3UF7112-1AA00-0
	1	"FAULT" "PUSH TO RESET" NAMEPLATE	SIEMENS 52NL23				
				27	1	FIBER OPTIC PATCH PANEL, 12 FIBER CAPACITY	CORNING SPH-01-P
					1	FIBER OPTIC CONNECTOR PANEL, 12-SC CAPACITY	CORNING CCH-CP12-G7
					1	DUPLEX FIBER OPTIC JUMPER, 50/125, SC-ST, 1M	CORNING 505702T5120001M
8	1	SIRIUS SIMOCODE INFO DISPLAY	SIEMENS 3UF7210-1AA00-0				
	1	SIRIUS DISPLAY CONNECTING CABLE	SIEMENS 3UF7 93***	28	1	SURGE SUPPRESSOR PLUG/BASE, DR M 2P 150 FM	DEHN DEHNRail #953-209
9	1	30MM HEAVY DUTY OILTIGHT 3 POSITION SELECTOR SWITCH	SIEMENS 52SW2CAB	29	1	CAT 6, 24AWG, 4 PAIR, BRAIDED SHIELD, FLEXIBLE GREEN JACKET, CABLE	SIEMENS 6XV 1878 2B, PER METER
	2	CONTACT BLOCK NORMALLY OPEN FOR ABOVE OPERATOR	SIEMENS 52BJK				
	1	"HAND OFF AUTO" NAMEPLATE	SIEMENS 52NL37	30	3	RJ45 METAL ENCLOSURE PLUG CONNECTOR	SIEMENS 6GK1 901-1BB11-2AA0
10	-	-	-				
				31	1	SURGE SUPPRESSOR MODULE, ETHERNET	DEHNpatch DPA M CLE RJ45B, 929-121
11	-	-	-				
				32	9	TWO-TIER TERMINAL BLOCK, SINGLE, BEIGE	SIEMENS 8WA1 011-6DG11
					2	TWO-TIER TERMINAL BLOCK END SECTION	SIEMENS 8WA1 817
					1	TWO-TIER TERMINAL LINK RAIL TOP	SIEMENS 8WA1 853
					1	TWO-TIER TERMINAL LINK RAIL BOTTOM	SIEMENS 8WA1 823
					7	THROUGH-TYPE TERMINAL, BEIGE	SIEMENS 8WA1 011-1DG11
13	1	CONTROL TRANSFORMER, 150VA, 480 X 120/240	SIEMENS MT150G				
	1	CONTROL TRANSFORMER, PRIMARY FUSE KIT	SIEMENS KCCFPX2R				
	2	FUSE, CLASS CC, 1A	BUSSMANN FNQ-R-1	33	-	WIREWAY ( SIZE TO BE DETERMINED BY APPLICATION)	PANDUIT PANDUCT Type E, G, PANELMAX TM
	1	FUSE, CLASS M, 2A	BUSSMANN FNM-2				
				34	1	TYPE 4X ENCLOSURE PRESSURE COMPENSATION DEVICE	STEGO DA 28405.0-00
14	1	3 POLE FUSE HOLDER DEAD FRONT 600 VOLT RATED	BUSSMANN OPM-1038				
	3	FUSE, CLASS CC, 1/2 A	BUSSMANN KTK-R-1/2	35	1	6 CIRCUIT GROUNDING BAR	ILSCO D167-06
15	5	CONTROL RELAY, 120VAC COIL,3NO,1NC CONTACTS	SIEMENS 3RH11 31-1AK60	36	1	CIRCUIT BREAKER, SINGLE POLE, *A TRIP, * = SIZE AS PER APPLICATION	SIEMENS 5SJ41**-7HG41
16	4	SURGE SUPPRESSOR WITH BASE, 180 VOLTS	DEHN BLITZDUCTOR BCO MOD ML2 B # 927-210	37	1	PERFORATED SLOTTED MOUNTING RAIL STEEL	SIEMENS 5ST1 145
17	-	-	-				
				38	1	THROUGH - TYPE "PE" TERMINAL	PHOENIX CONTACT USLKG6N
18	-	-	-				
				39	1	TYPE 4X ENCLOSURE BREATHER VENT / DRAIN	HOFFMAN AVDR4SS4
19	-	-	-				
				40	1EA	4/0 AND 6 AWG 1-HOLE, SHORT BARREL, SINGLE INDENT,	ILSCO Y1011C42T
20	1	SURGE SUPPRESSOR, 480VAC	DEHN 908 355 MU 3PD 480 3W+G R	41	1	CIRCUIT BREAKER, SINGLE POLE, 8A TRIP	SIEMENS 5SJ4108-7HG41

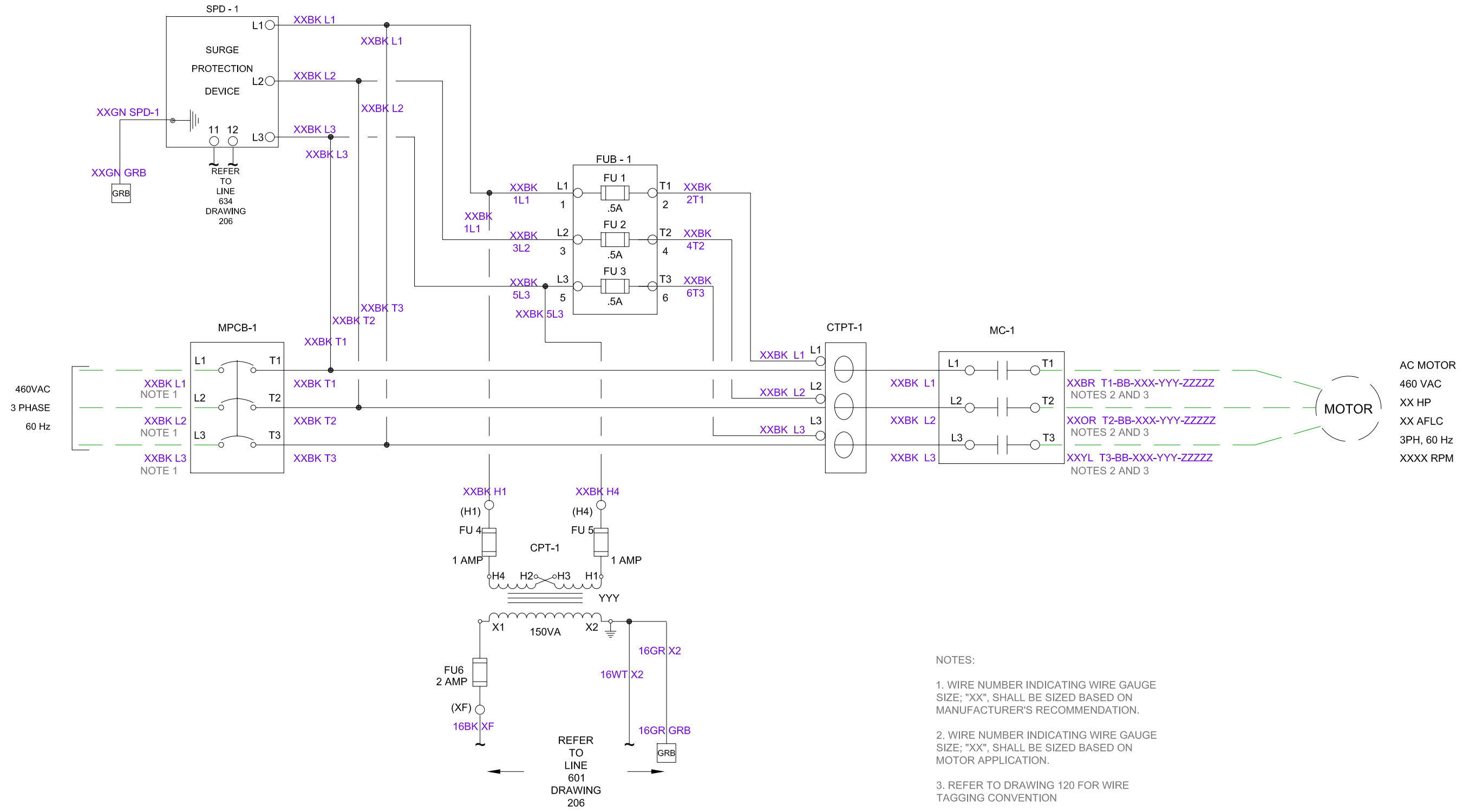
NOTES:  
1. NO SUBSTITUTION OR EQUAL ACCEPTED, PROVIDE AS SPECIFIED.  
2. COO WASTEWATER DIVISION 13 AND/OR DIVISION 16 SPECIFIED EQUAL ONLY



SCALE:	N.T.S.	-	-	06-20-2019	FH
DESIGN:	IAG	-	REVISED ITEMS 34 & 38	09-23-2019	FH
		-	REVISED ITEM 21	12-15-2020	FH
DRAWN BY:	JG	-	REVISED ITEM 16	04-27-2023	FH
		-		05-08-2025	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
BILL OF MATERIALS



- NOTES:
1. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "XX", SHALL BE SIZED BASED ON MANUFACTURER'S RECOMMENDATION.
  2. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "XX", SHALL BE SIZED BASED ON MOTOR APPLICATION.
  3. REFER TO DRAWING 120 FOR WIRE TAGGING CONVENTION

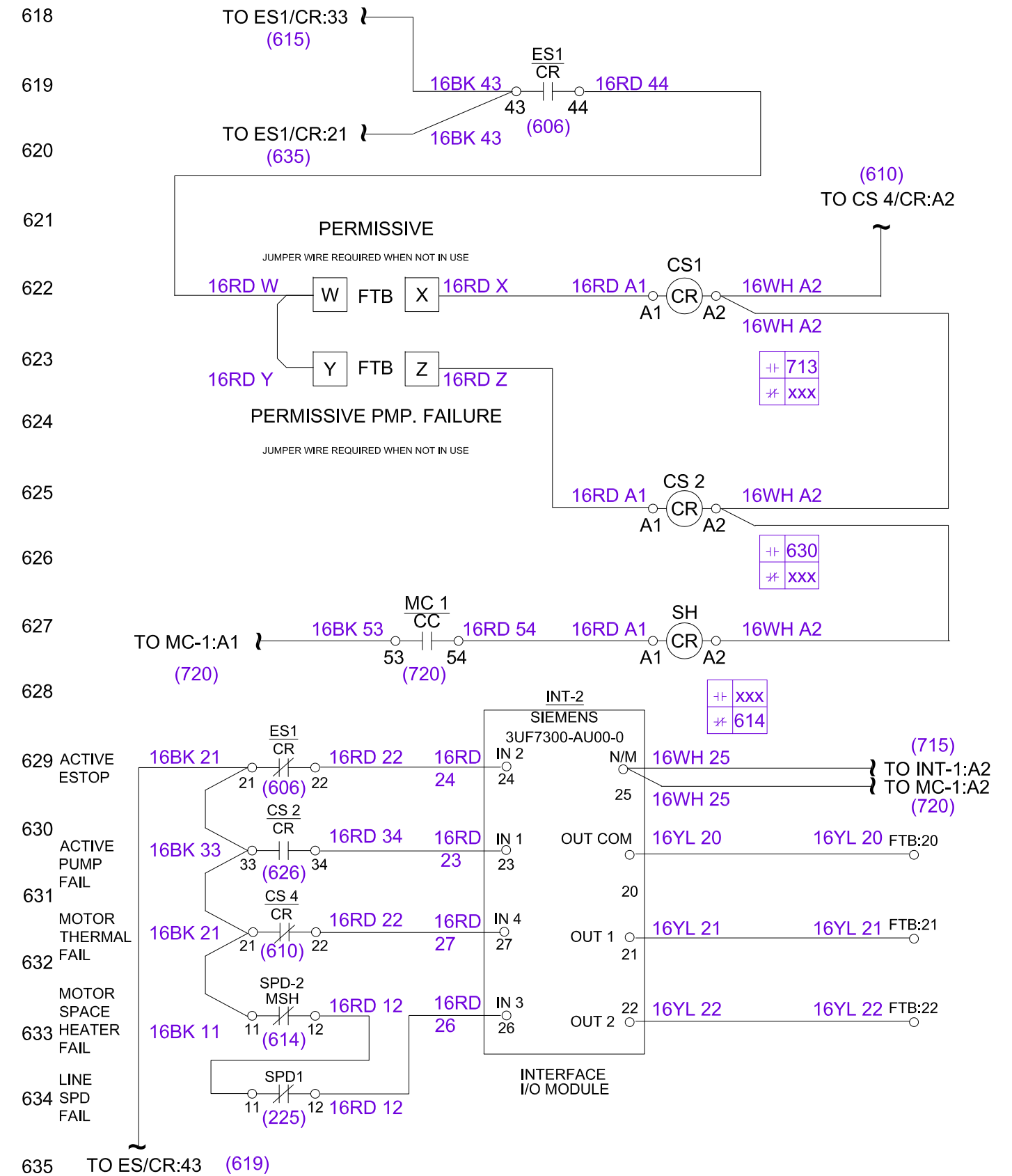
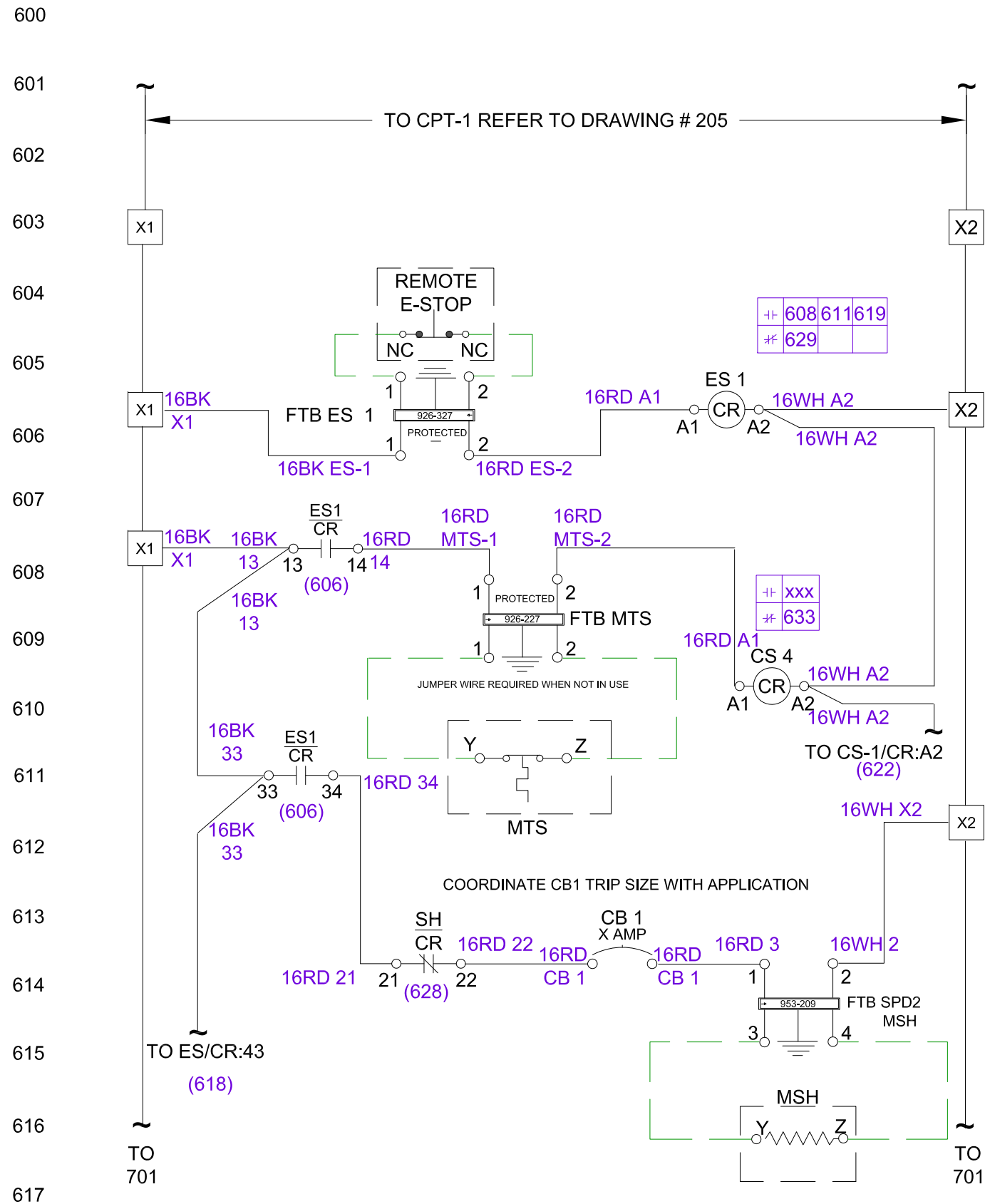


SCALE:	N.T.S.	-	-	10-21-2014	JG
DESIGN:	IAG	-	UPDATED TO MPCB-1	04-27-2023	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
480 VAC ONE LINE DISTRIBUTION LAYOUT

SHEET  
205



SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	UPDATED LINE 614, 616, 627, 633	03-23-2023	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
120 VAC CONTROL WIRING SCHEMATIC  
PART 1

SHEET  
206

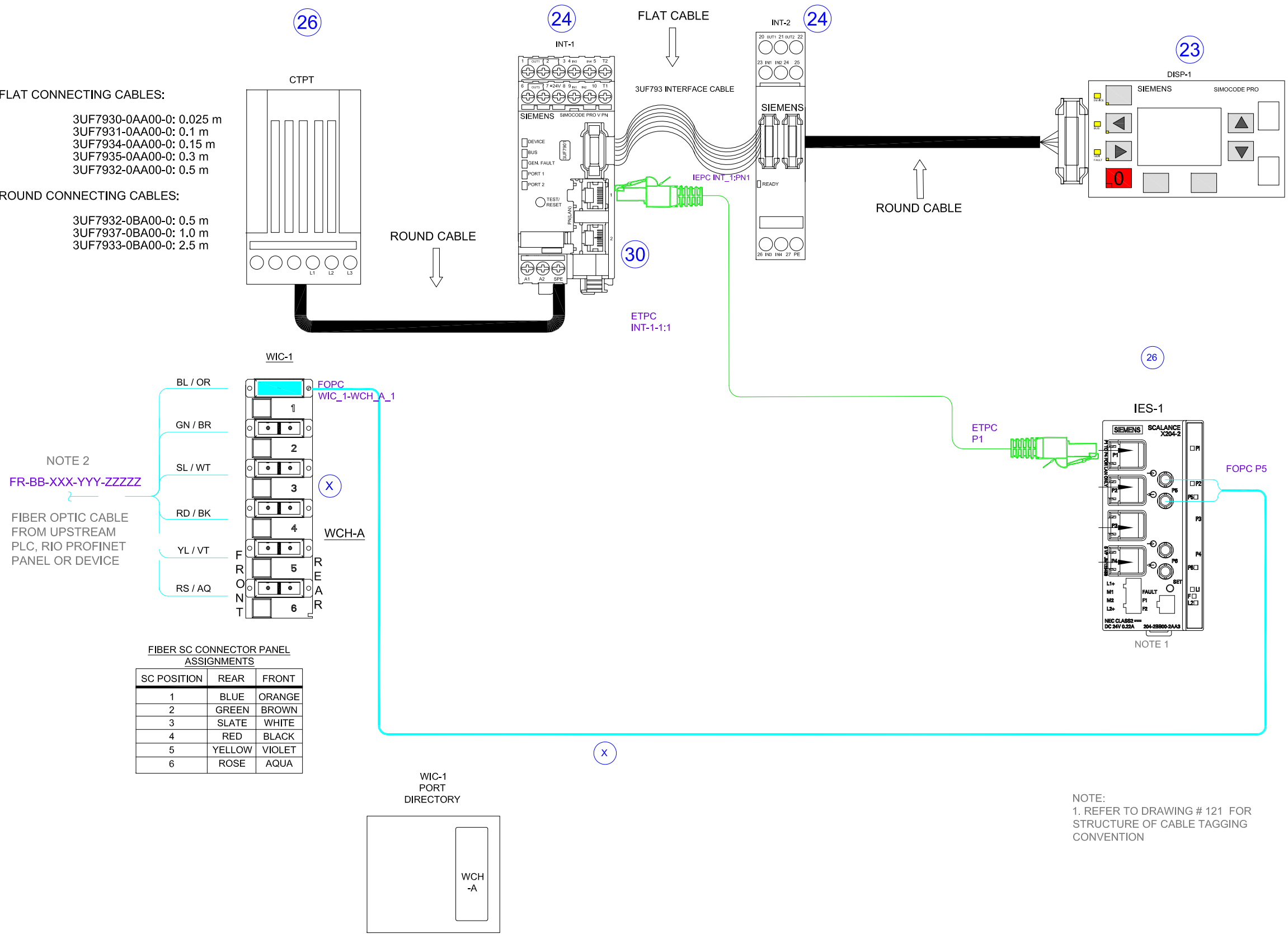


**FLAT CONNECTING CABLES:**

- 3UF7930-0AA00-0: 0.025 m
- 3UF7931-0AA00-0: 0.1 m
- 3UF7934-0AA00-0: 0.15 m
- 3UF7935-0AA00-0: 0.3 m
- 3UF7932-0AA00-0: 0.5 m

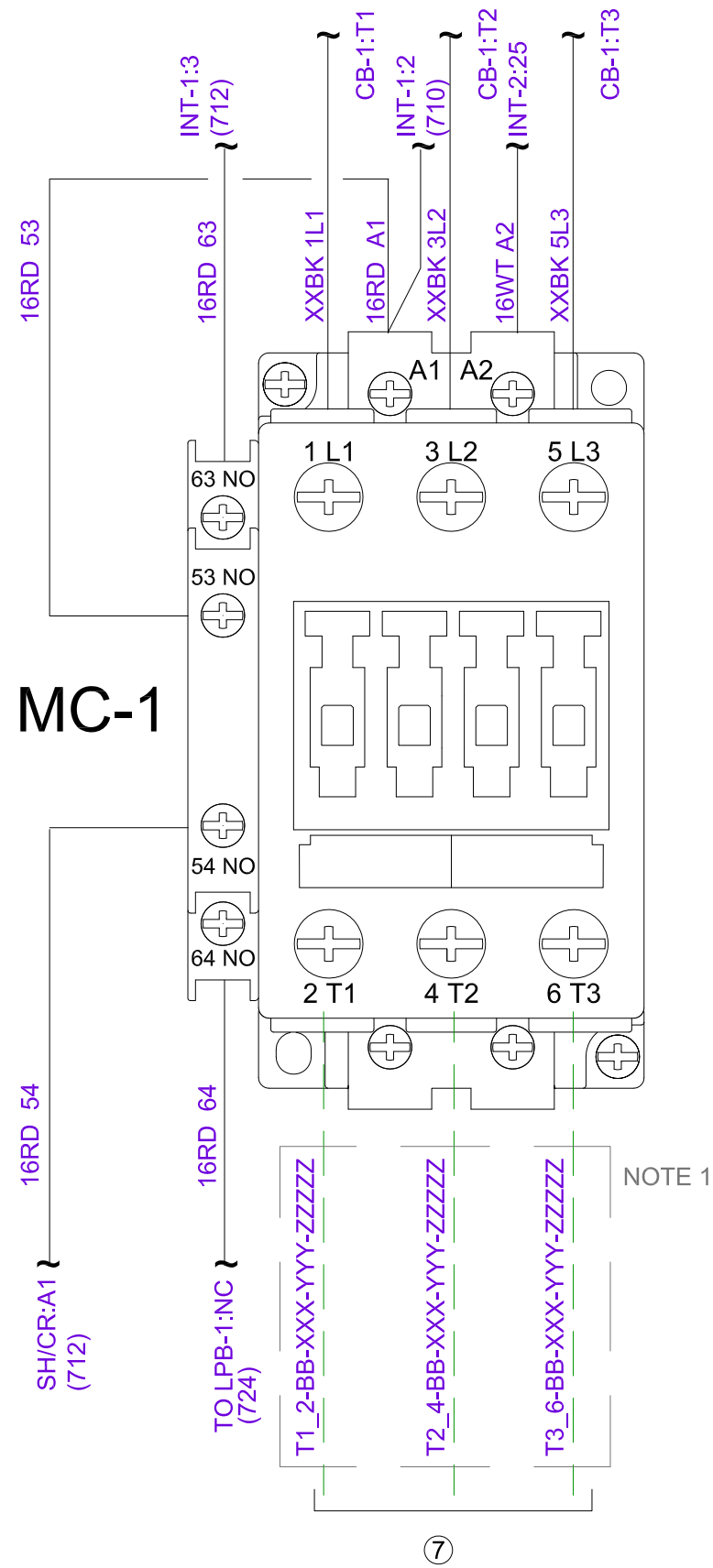
**ROUND CONNECTING CABLES:**

- 3UF7932-0BA00-0: 0.5 m
- 3UF7937-0BA00-0: 1.0 m
- 3UF7933-0BA00-0: 2.5 m



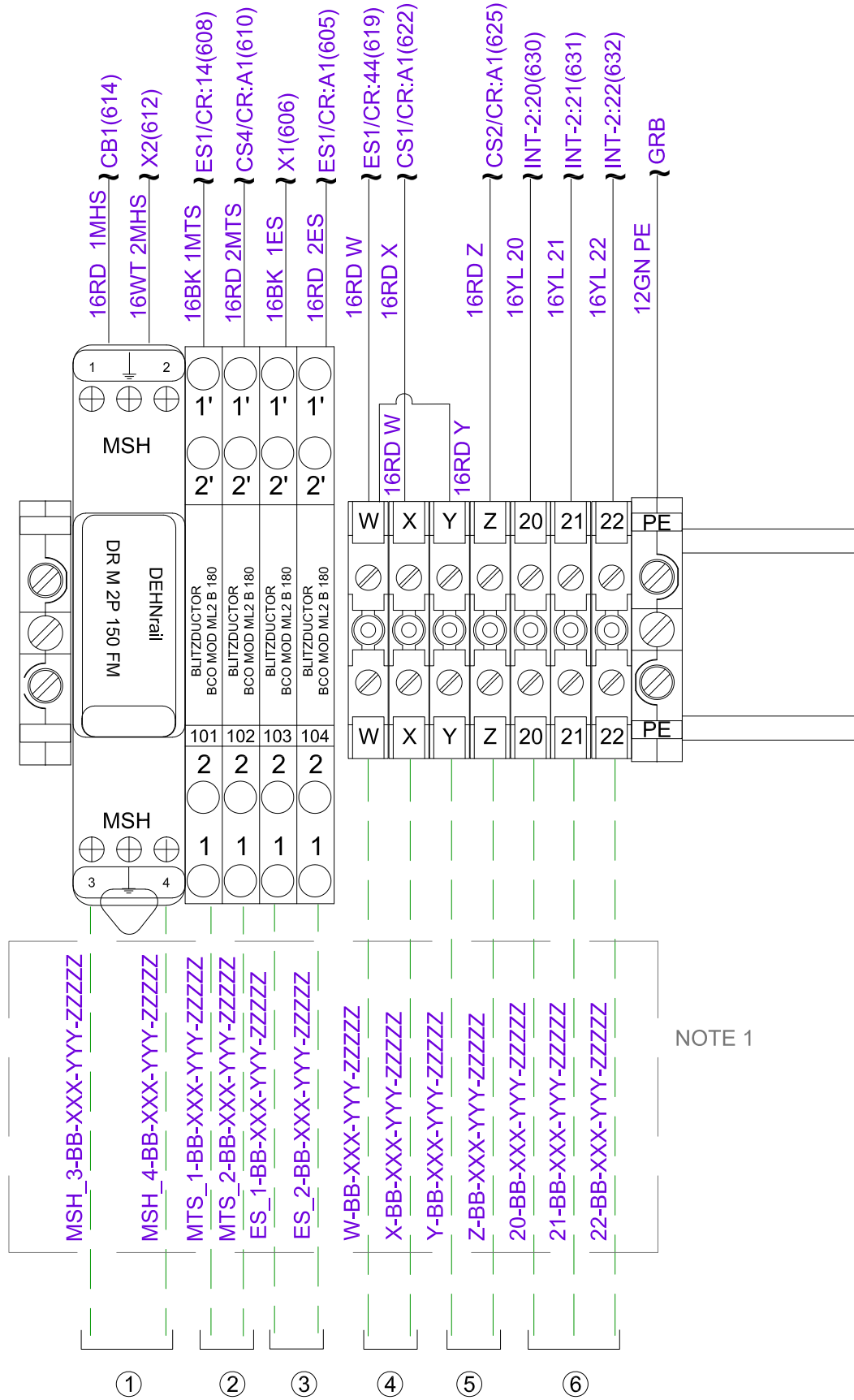
APPROVED BY:	NO	REVISION	DATE	BY
WW	NO			

# MC-1



NOTE 1

⑦



NOTE 1

① ② ③ ④ ⑤ ⑥

# FTB

ID	FIELD DEVICE SCHEDULE
①	MOTOR SPACE HEATER
②	MOTOR THERMAL SWITCH
③	REMOTE E-STOP STATION
④	PUMP PROTECTION PANEL "RUN" PERMISSIVE CONTACT
⑤	PUMP PROTECTION PANEL "FAULT" OUTPUT CONTACT
⑥	SIMOCODE SPARE 2 DIGITAL OUTPUTS FOR FUTURE USE
⑦	MOTOR TERMINALS

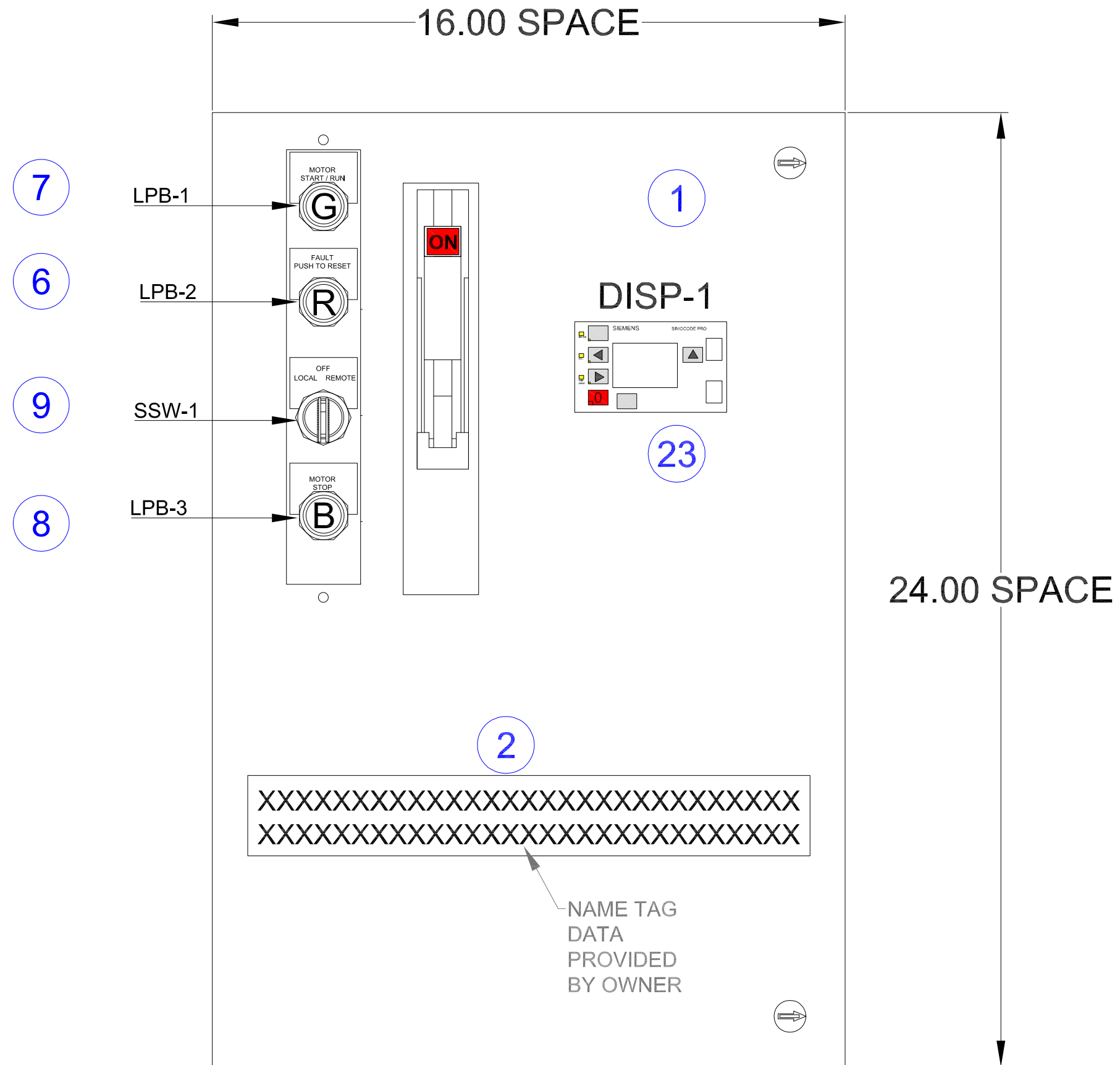
NOTE:  
1. REFER TO DRAWING # 120 FOR STRUCTURE OF WIRE TAGGING CONVENTION.



SCALE:	N.T.S.	DATE	BY
DESIGN:	IAG	10-21-2014	JG
DRAWN BY:	JG	05-31-2018	FH
APPROVED BY:	WW	05-08-2025	FH
NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
FIELD TERMINAL ASSIGNMENTS

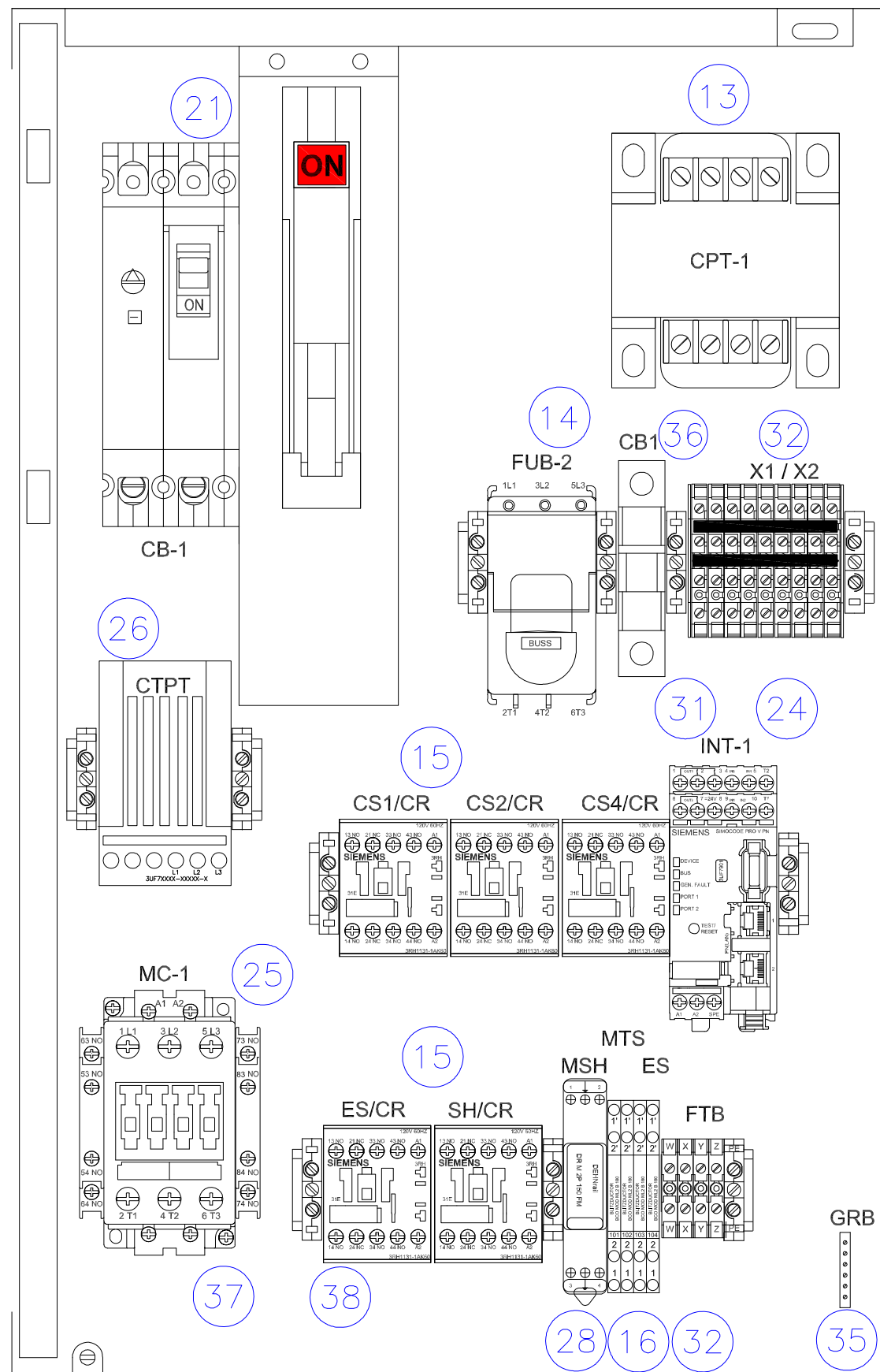


SCALE:	N.T.S.	-	-	02-07-2019	JG
DESIGN:	IAG	-	-	06-26-2020	JG
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
MCC  
FRONT PANEL ELEVATION

SHEET  
302



SCALE:	N.T.S.	-	-	02-07-2019	JG
DESIGN:	IAG	-	UPDATED BLITZDUCTOR NUMBER 16	08-26-2019	FH
DRAWN BY:	JG			05-07-2025	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
MCC  
INTERIOR PANEL LAYOUT

SHEET  
303

NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.	NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.
1	1	MOTOR CONTROL CENTER 48.00 INCH SPACE HEIGHT MODULE	SIEMENS TIASTAR SMART MOTOR CONTROL SERIES	20			
	1	DISCONNECT SWITCH, 3-POLE, 480 VOLT, PANEL MOUNT, FUSIBLE					
	1	MODULAR DOOR MOUNTED AIR EXHAUST FAN		21	1	CIRCUIT BREAKER, 3-POLE, 480 VOLT, 65KAIC, THERMAL MAGNETIC	SIEMENS TYPE ED*****
	1	MODULAR DOOR MOUNTED AIR INTAKE GRILL WITH FILTER ELEMENT			1	BREAKER TIE HANDLE ASSEMBLY	SIEMENS TYPE ED*****
2	1	NAMEPLATE, WHITE W/BLACK LETTERS, .50 HEIGHT, BOLTED	SIEMENS, NAMEPLATE DESIGNATION INFORMATION BY OWNER	22			
3				23	1	ELECTRONIC MOTOR CONTROLLER DISPLAY	SIEMENS 3UF7210-1AA00-0
4					1	DISPLAY CABLE	SIEMENS 3UF 93****
5				24	1	ELECTRONIC MOTOR CONTROLLER, PROFINET COMMS	SIEMENS 3UF7 011-1AU00-0
					1	I/O MODULE	SIEMENS 3UF7 310-1AU00-0
					1	INTERFACE CABLE	SIEMENS 3UF7 93****
6	1	30MM H.D OILTIGHT ILLUMINATED 120 VAC LED RED P .B .	SIEMENS 52BT6E3BY				
		WITH 2 - NO AND 2 - NC CONTACT BLOCK		25	1	CONTACTOR, 3-POLE, 45AMP, NEMA 2, 25HP, 480VOLT, 120 VAC COIL	SIEMENS 3RT1036-1AK60-0UA0
	1	"FAULT" "PUSH TO RESET" NAMEPLATE	SIEMENS 52NL23		2	CONTACTOR, 2-POLE, 2 N.O. AUXILIARY	SIEMENS 3RH1921-1EA20
7	1	30MM H.D. OILTIGHT ILLUMINATED 120 VAC LED GREEN P. B .	SIEMENS 52BT6E3BY	26	1	CURRENT VOLTAGE MEASURING MODULE	SIEMENS 3UF7112-1AA00-0
		WITH 2 - NO AND 2 - NC CONTACT BLOCK					
	1	"START / RUN" NAMEPLATE	SIEMENS 52NL23	27			
8	1	30MM H.D. OILTIGHT RED PUSHBUTTON 1 N.O. & 1 N.C.	SIEMENS 52BM8A1A	28	1	SURGE SUPPRESSOR PLUG/BASE, DR M 2P 150 FM	DEHN DEHNRail 953-209
	1	"STOP" NAMEPLATE	SIEMENS 52NL04				
9	1	30MM HEAVY DUTY OILTIGHT 3 POSITION SELECTOR SWITCH	SIEMENS 52SX2CABA7	29	1	CAT 6 24AWG 4 PAIR BRAIDED SHIELD FLEXIBLE GREEN JACKET CABLE	SIEMENS 6XV 1876 2B, PER METER
		2 NO AND 2 NC CONTACT BLOCK		30	1	RJ45 METAL ENCLOSURE PLUG CONNECTOR	SIEMENS 6GK1 901-1BB11-2AA0
	1	"LOCAL OFF REMOTE NAMEPLATE	SIEMENS 52NL37	31			
10				32	10	TWO TIER TERMINAL BLOCK, SINGLE, BEIGE	SIEMENS 8WA1 011-6DG11
11					2	TWO TIER TERMINAL BLOCK END SECTION	SIEMENS 8WA1 817
12					2	TWO TIER TERMINAL LINK TOP RAIL	SIEMENS 8WA1 853
					2	TWO TIER TERMINAL LINK BOTTOM RAIL	SIEMENS 8WA1 823
					7	THRU TYPE TERMINAL, BEIGE	SIEMENS 8WA1 011-1DG11
13	1	CONTROL TRANSFORMER, 150VA, 480 X 120/240	SIEMENS MT150G				
	1	CONTROL TRANSFORMER, PRIMARY FUSE KIT	SIEMENS KCCFPX2R	33			
	2	FUSE, CLASS CC, 1A	BUSSMANN FNQ-R-3				
	1	FUSE, CLASS M, 2A	BUSSMANN FNM-5	34			
14	1	3 POLE FUSE HOLDER DEAD FRONT 600 VOLT RATED	BUSSMANN OPM-1038	35	1	6 CIRCUIT GROUNDING BAR	ILSCO D167-06
	1	FUSE, CLASS CC, 1/2A	BUSSMANN KTK-R-1/2				
15	5	CONTROL RELAY, 120VAC COIL, 3NO,1NC CONTACTS	SIEMENS 3RH11 3-1AK60	36	1	CIRCUIT BREAKER, SINGLE POLE, "A" TRIP = SIZE AS PER APPLICATION	SIEMENS 5SJ41**7HG41
16	1	SURGE SUPPRESSOR WITH BASE, 180 VOLTS	DEHN BLITZDUCTOR BCO MOD ML2 B # 927-210	37	1	PERFORATED SLOTTED MOUNTING RAIL STEEL	SIEMENS 5ST1 145
17				38	11	THROUGH - TYPE "PE" TERMINAL	PHOENIX CONTACT USLKG6N
18							
19							

NOTE 2

NOTE 1

NOTE 1

NOTE 2

NOTE 1

NOTE 2

NOTE 1

NOTES:  
1. NO SUBSTITUTION OR EQUAL ACCEPTED, PROVIDE AS SPECIFIED.  
2. COO WASTEWATER DIVISION 13 AND/OR DIVISION 16 SPECIFIED EQUAL ONLY

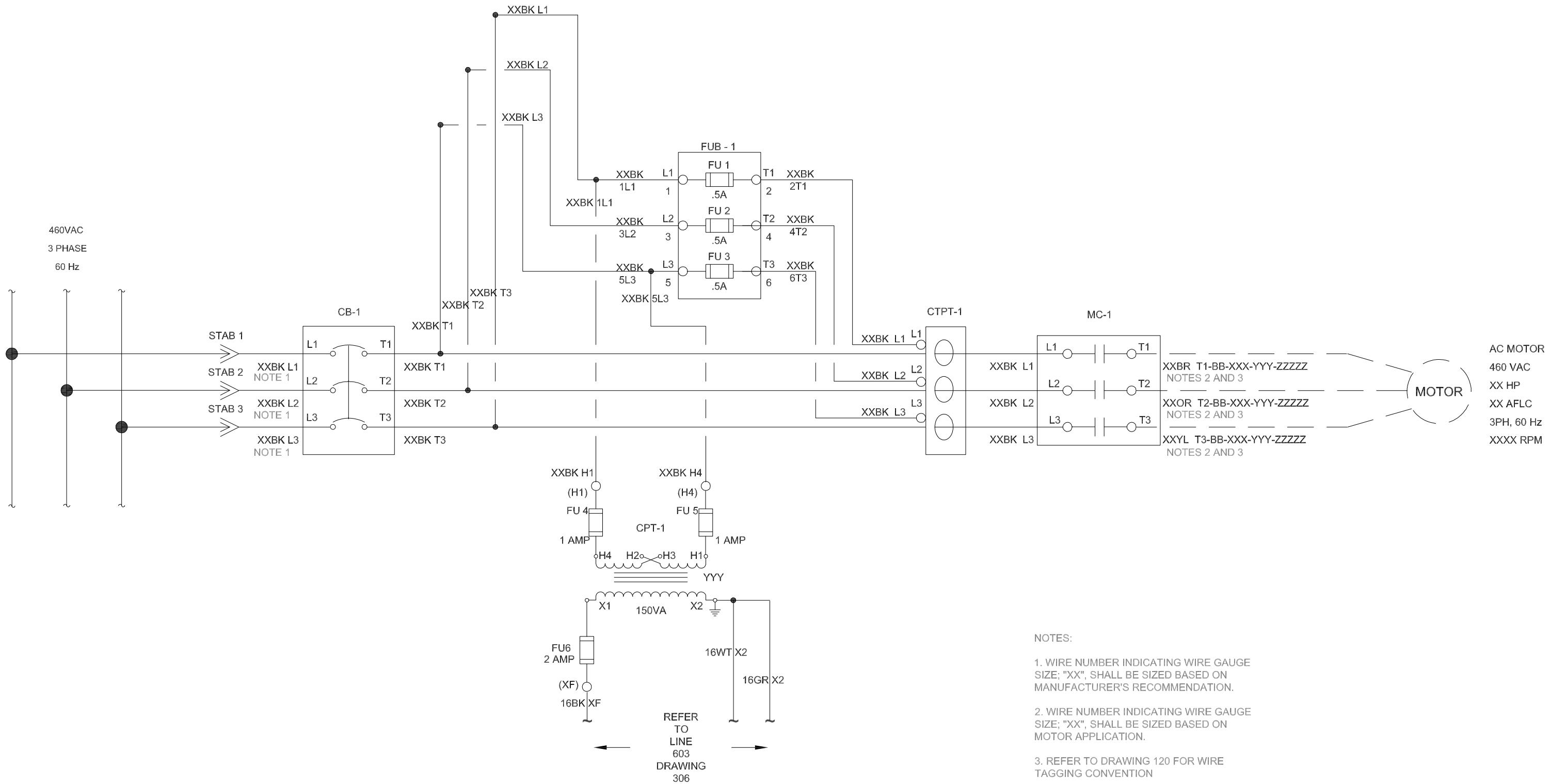


SCALE:	N.T.S.	-	-	02-07-2019	JG
DESIGN:	IAG	-	-	08-26-2019	FH
DRAWN BY:	JG	-	-	06-26-2020	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY
				05-08-2025	FH

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
MCC  
BILL OF MATERIALS

SHEET  
304

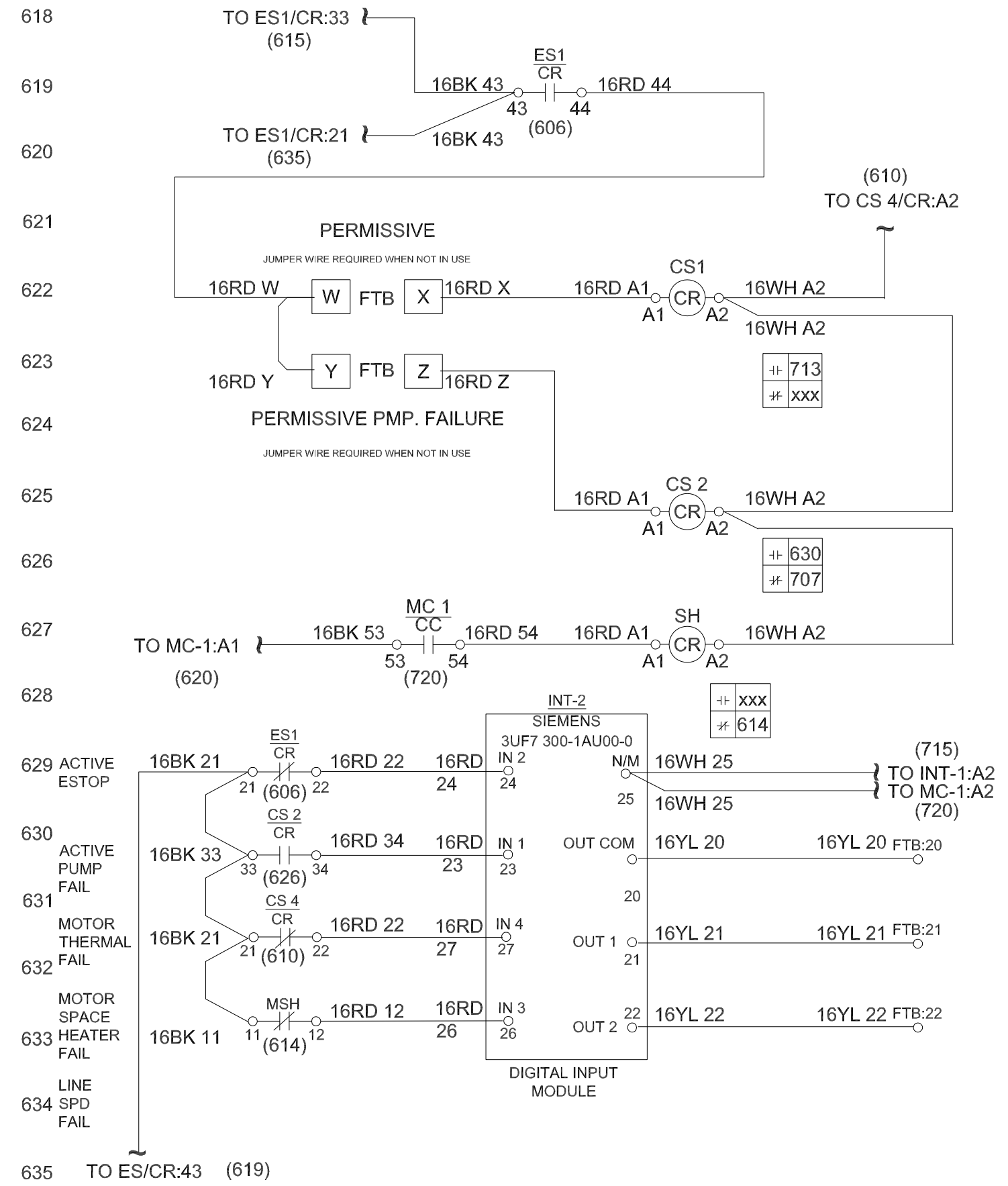
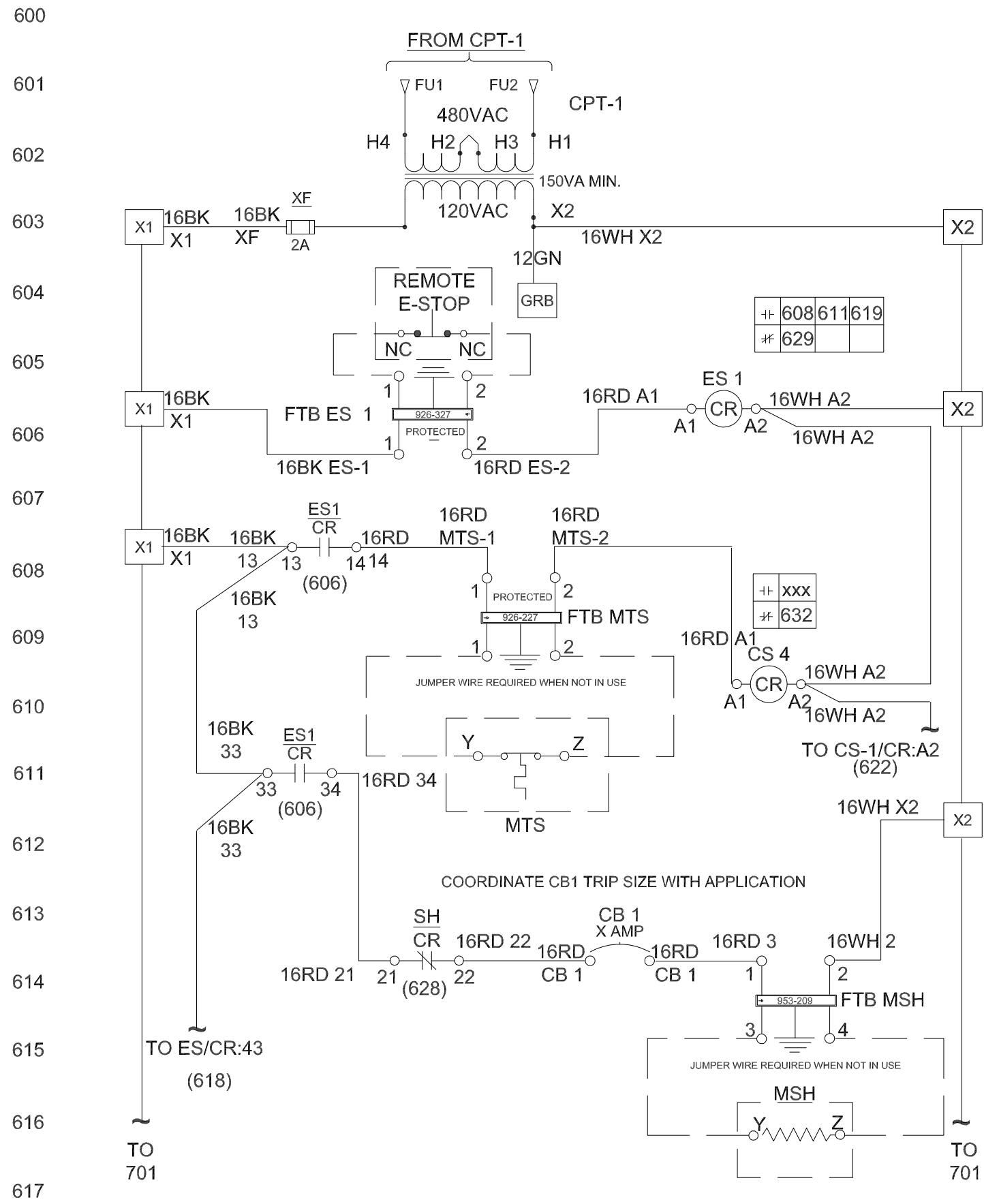


SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	-	08-26-2019	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
MCC  
480VAC ONE LINE DISTRIBUTION LAYOUT

SHEET  
305

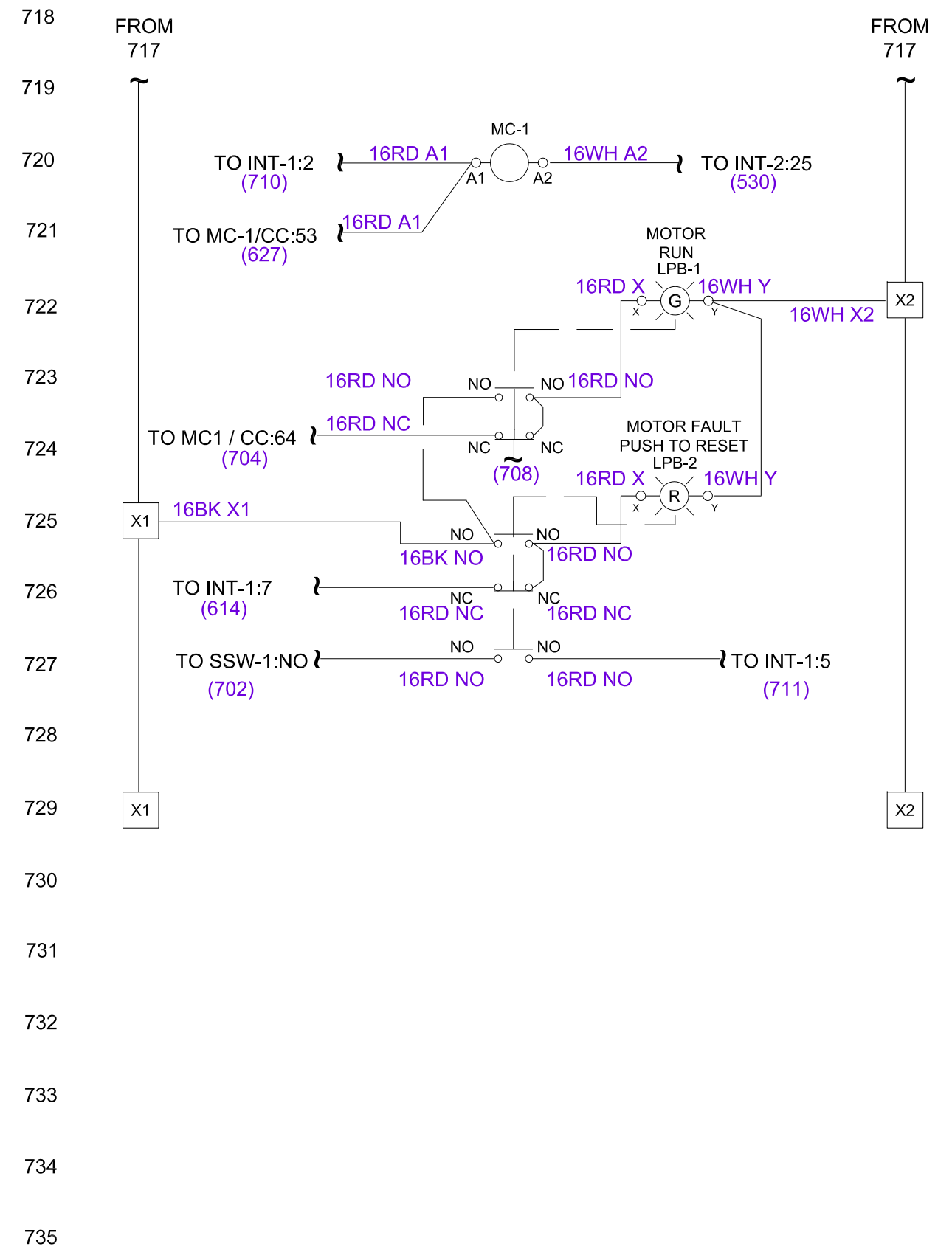
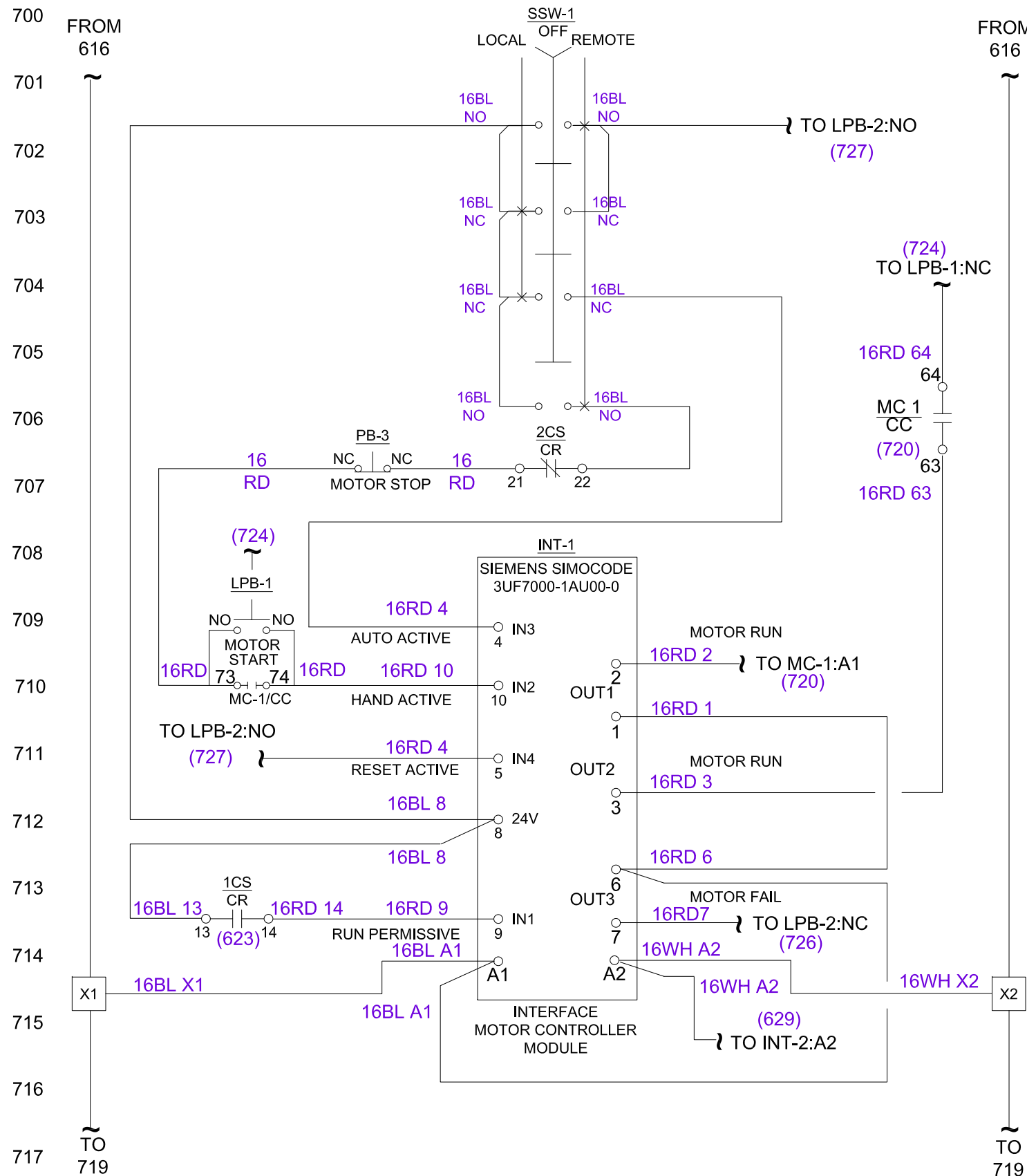


SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	UPDATED PART NUMBER FOR INT-2	08-26-2019	FH
DRAWN BY:	JG			04-22-2025	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE: LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
MCC  
120VAC CONTROL WIRING SCHEMATIC  
PART 1

SHEET  
306

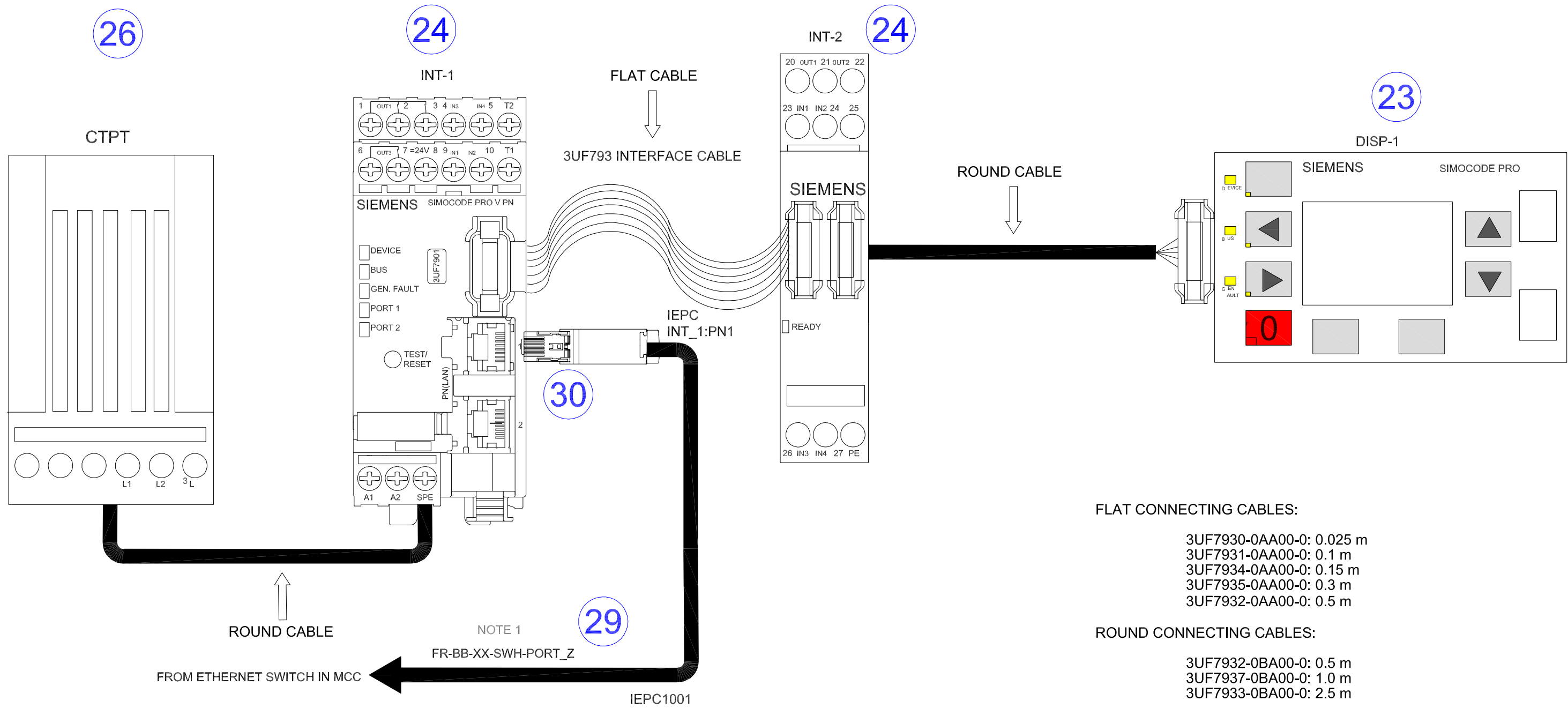


SCALE:	N.T.S.	-	-	02-07-2019	JG
DESIGN:	IAG	-	-	06-26-2020	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE: LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
MCC  
120VAC CONTROL WIRING SCHEMATIC  
PART 2

SHEET  
307



- FLAT CONNECTING CABLES:**
- 3UF7930-0AA00-0: 0.025 m
  - 3UF7931-0AA00-0: 0.1 m
  - 3UF7934-0AA00-0: 0.15 m
  - 3UF7935-0AA00-0: 0.3 m
  - 3UF7932-0AA00-0: 0.5 m
- ROUND CONNECTING CABLES:**
- 3UF7932-0BA00-0: 0.5 m
  - 3UF7937-0BA00-0: 1.0 m
  - 3UF7933-0BA00-0: 2.5 m

NOTE:  
1. REFER TO DRAWING # 121 FOR STRUCTURE OF CABLE TAGGING CONVENTION

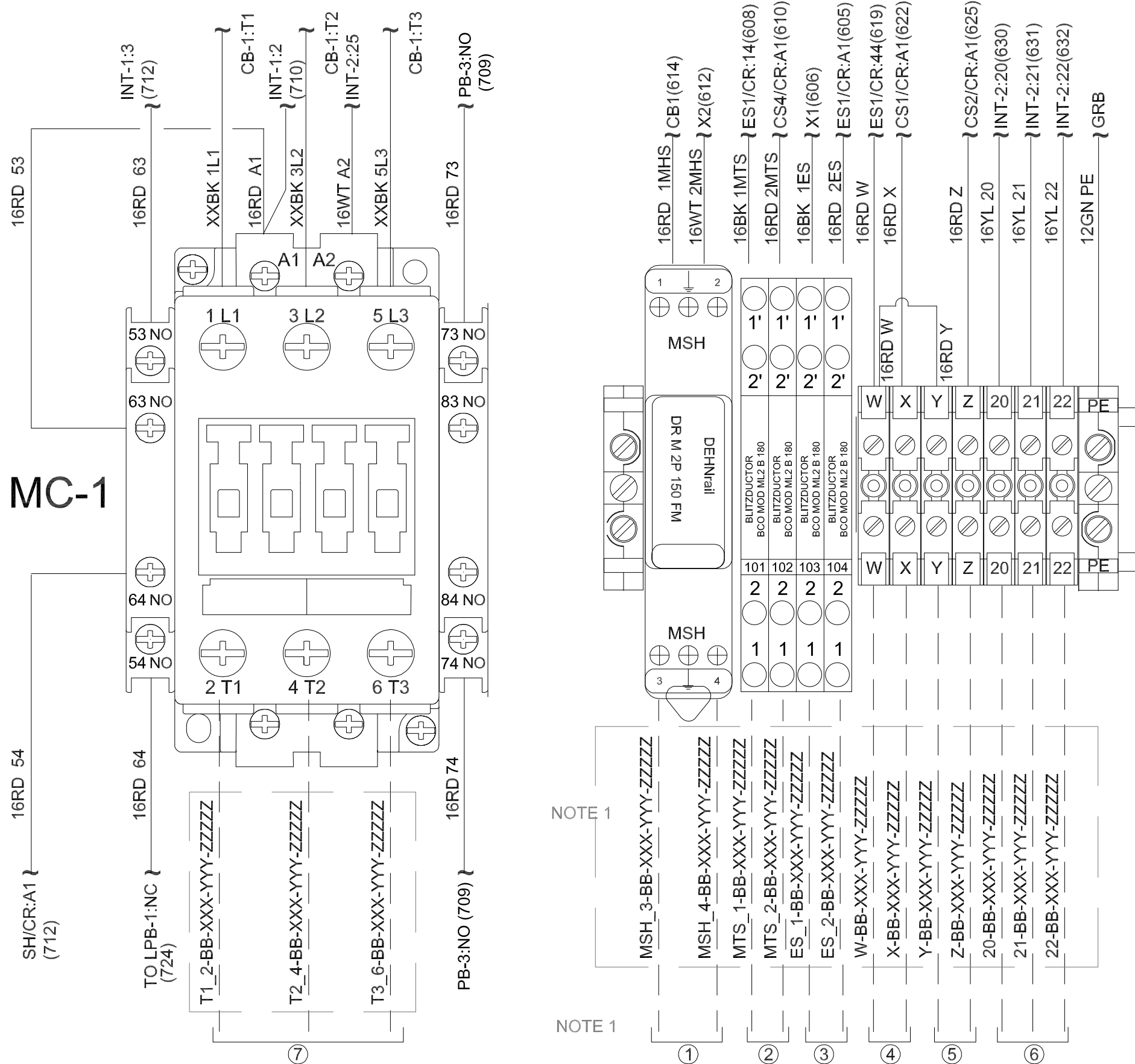


SCALE:	N.T.S.	-	-	02-05-2019	JG
DESIGN:	IAG	-	-	04-14-2020	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
MCC  
COMMUNICATION WIRING LAYOUT

SHEET  
308



ID	FIELD DEVICE SCHEDULE
①	MOTOR SPACE HEATER
②	MOTOR THERMAL SWITCH
③	REMOTE E-STOP STATION
④	PUMP PROTECTION PANEL "RUN" PERMISSIVE CONTACT
⑤	PUMP PROTECTION PANEL "FAULT" OUTPUT CONTACT
⑥	SIMOCODE SPARE 2 DIGITAL OUTPUTS FOR FUTURE USE
⑦	MOTOR TERMINALS

NOTE:  
1. REFER TO DRAWING # 120 FOR STRUCTURE OF WIRE TAGGING CONVENTION

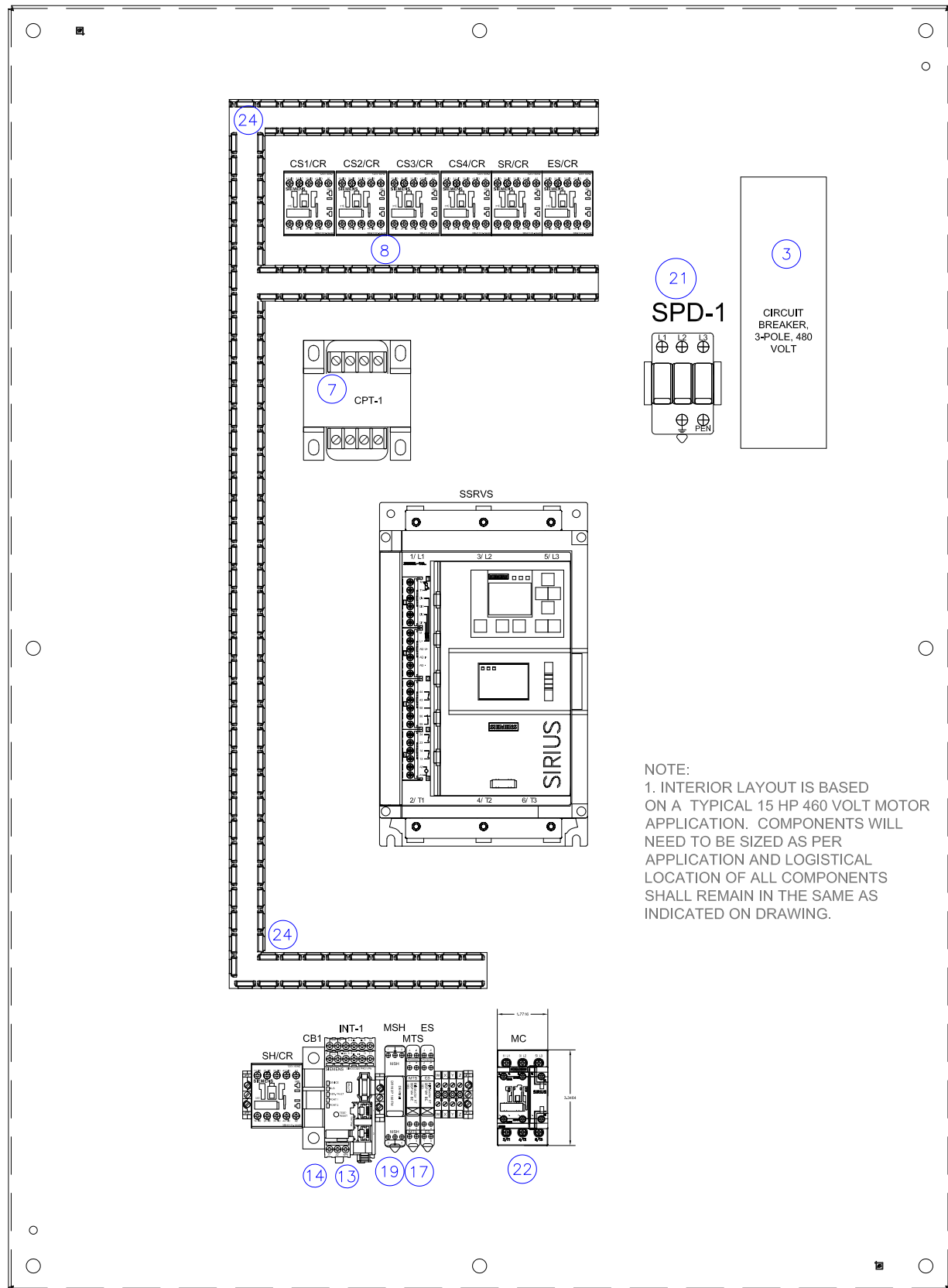


SCALE:	N.T.S.	-	-	02-07-2019	JG
DESIGN:	IAG	-	UPDATED BLITZDUCTORS	05-07-2025	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
ACROSS THE LINE NRMS (<25HP)  
MCC  
FIELD TERMINAL ASSIGNMENTS





NOTE:  
 1. INTERIOR LAYOUT IS BASED ON A TYPICAL 15 HP 460 VOLT MOTOR APPLICATION. COMPONENTS WILL NEED TO BE SIZED AS PER APPLICATION AND LOGISTICAL LOCATION OF ALL COMPONENTS SHALL REMAIN IN THE SAME AS INDICATED ON DRAWING.



SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	-	03-29-2018	FH
DRAWN BY:	JG	-	-	02-07-2019	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
 INDUSTRIAL AUTOMATION GROUP  
 CITY OF  
 ORLANDO, FLORIDA

TITLE:  
 LOW VOLTAGE STANDARDS  
 SSRVS  
 INTERIOR PANEL LAYOUT

SHEET  
 403

NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.	NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.
1	1	WALL MOUNTED, 4X, STAINLESS STEEL 316 ENCLOSURE	AS PER SPECIFICATION 16325	12	1	30MM H.D. OILTIGHT GREEN PUSHBUTTON 1 N.O. & 1 N.C.	SIEMENS 52BM8A3A
	1	WHITE PAINTED STEEL BACK PANEL FOR ABOVE			1	"START" NAMEPLATE	SIEMENS 52NL03
	1	MODULAR DOOR MOUNTED AIR INTAKE GRILL WITH FILTER ELEMENT					
2	1	NAMEPLATE, WHITE W/BLACK LETTERS, .50 HEIGHT, BOLTED	CUSTOM NAMEPLATE DESIGNATION INFORMATION BY OWNER	13	1	SIRIUS SIMOCODE MTR MANAGEMENT CONTROLLER, PROFINET COMM.	SIEMENS 3UF7 011-1AU00-0
3	1	CIRCUIT BREAKER, 3-POLE, 480 VOLT, EXTERNAL PANEL OPERATOR	SIEMENS SIZED AS PER APPLICATION	14	1	CIRCUIT BREAKER, SINGLE POLE, *A TRIP, * = SIZE AS PER APPLICATION	SIEMENS 5SJ41**-7HG41
		MOLDED CASE CIRCUIT BREAKER WITH MAGNETIC TRIP ONLY UNIT.		15	1	RJ45 METAL ENCLOSURE PLUG CONNECTOR	BELDEN R301603
		STANDARD RANGE WITH CURRENT LIMITING		16	1	CAT 6, 23AWG, 4 PAIR, SHIELDED, 60 OV GREEN JACKET, CABLE	BELDEN 7953A
		BREAKING CAPACITY. MEETS UL 489 / IEC 60947-2 STANDARDS.		17	2	SURGE SUPPRESSOR PLUG/BASE, BSP M4 DB180	DEHN BLITZDUCTOR #926-327 / 920-300
4	1	30MM H.D. OILTIGHT ILLUMINATED 120 VAC LED GREEN P. B .	SIEMENS 52BT6E3BY	18	-	-	-
		WITH 2 - NO AND 2 - NC CONTACT BLOCK		19	1	SURGE SUPPRESSOR PLUG/BASE, DR M 2P 150 FM	DEHN DEHNRail #953-209
	1	"MOTOR RUN" NAMEPLATE	SIEMENS 52NL23	20	2	RJ45 METAL ENCLOSURE PLUG 90 DEGREE CONNECTOR	SIEMENS 6GK1901-1BB20-2AA0
5	1	30MM H.D OILTIGHT ILLUMINATED 120 VAC LED RED P . B .	SIEMENS 52BT6E3BY	21	1	SURGE SUPPRESSOR, 480VAC	DEHN 908 355 DG MU 3PD 480 3W+G R
		WITH 2 - NO AND 2 - NC CONTACT BLOCK		22	1	15 HP MOTOR CONTACTOR, 120 V. COIL, 3 POLE, SCREW TERMINALS	SIEMENS 3RT2026-1AK60
	1	"FAULT" "PUSH TO RESET" NAMEPLATE	SIEMENS 52NL23	23	1	6 CIRCUIT GROUNDING BAR	ILSCO D167-06
6	1	30MM HEAVY DUTY OILTIGHT 3 POSITION SELECTOR SWITCH	SIEMENS 52SX2CABA7	24	2	PERFORATED SLOTTED MOUNTING RAIL STEEL	SIEMENS 5ST1 145
		2 NO AND 2 NC CONTACT BLOCK		25	2	1.26 WIDE, 2.12 DEEP WHITE SLOTTED WIREWAY	PANDUIT G1X2WH6 AND C1WH6
	1	"HAND OFF AUTO" NAMEPLATE	SIEMENS 52NL37				
7	1	CONTROL TRANSFORMER, 150VA, 480 X 120 WITH FUSE KIT	SIEMENS US2:KT8150				
	2	FUSE, CLASS CC, 1A	BUSSMANN FNQ-R-1				
	1	FUSE, CLASS M, 2A	BUSSMANN FNM-2				
8	7	CONTROL RELAY, 120VAC COIL,3NO,1NC CONTACTS	SIEMENS 3RH2131-AK60				
9	1	30MM H.D. OILTIGHT BLACK PUSHBUTTON 1 N.O. & 1 N.C.	SIEMENS 52BM8A1A				
	1	"STOP" NAMEPLATE	SIEMENS 52NL04				
10	1	SIRIUS SOFTSTART MOTOR CONTROLLER	SIEMENS 3RW5515-1HA15				
	1	SIRIUS PROFINET PN COMM MODULE, HIGH FEATURE	SIEMENS 3RW5950-0CH00 (HF)				
11	1	SSRVS INFO DISPLAY DOOR KIT	SIEMENS 3RW5980-0HD00				
	1	SSRVS DISPLAY CONNECTING CABLE	SIEMENS 3UF7933-0BA00-0 (2.5M)				

NOTES:

1. NO SUBSTITUTION OR EQUAL ACCEPTED, PROVIDE AS SPECIFIED.
2. COO WASTEWATER DIVISION 13 AND/OR DIVISION 16 SPECIFIED EQUAL ONLY

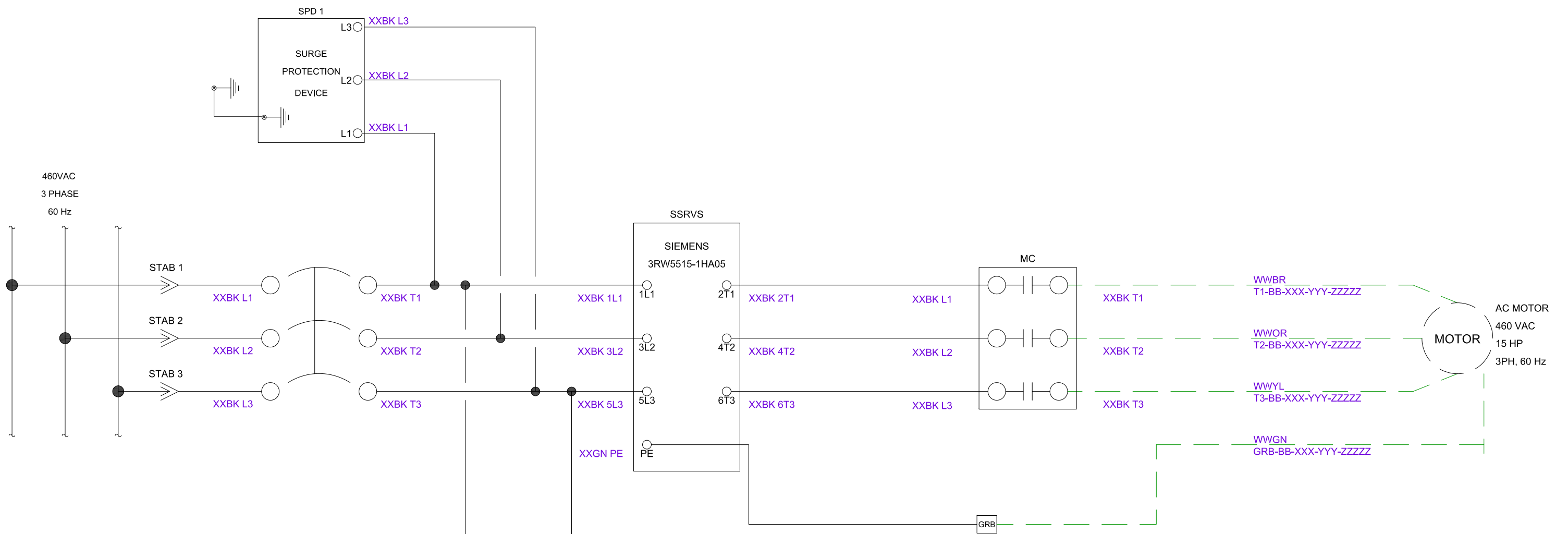


SCALE:	N.T.S.	-	-	10-22-2014	JG
		-	-	04-03-2018	FH
DESIGN:	IAG	-	-	02-08-2019	FH
		-	-	10-02-2020	JG
DRAWN BY:	JG	-	-	01-25-2021	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
  
CITY OF  
ORLANDO, FLORIDA

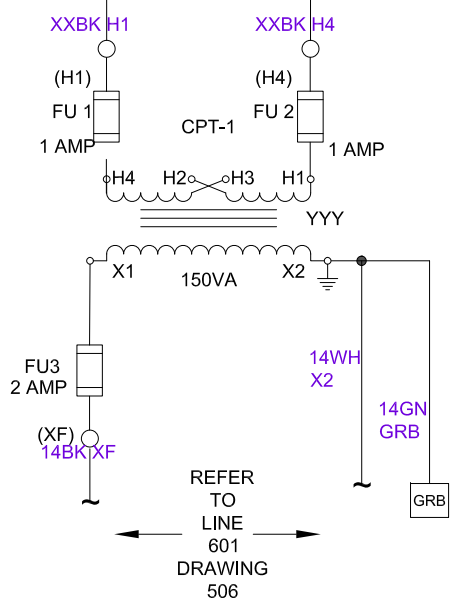
TITLE:  
  
LOW VOLTAGE STANDARDS  
SSRVS  
BILL OF MATERIALS

SHEET  
404



NOTES:

1. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "XX", SHALL BE SIZED BASED ON MANUFACTURER'S RECOMMENDATION.
2. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "WW", SHALL BE SIZED BASED ON MOTOR APPLICATION.
3. REFER TO DRAWING 120 FOR WIRE TAGGING CONVENTION
4. FUSE SIZED BASED MANUFACTURE'S RECOMMENDATION
5. POWER DISTRIBUTION BLOCK SIZE AS PER MANUFACTURER'S RECOMMENDATION

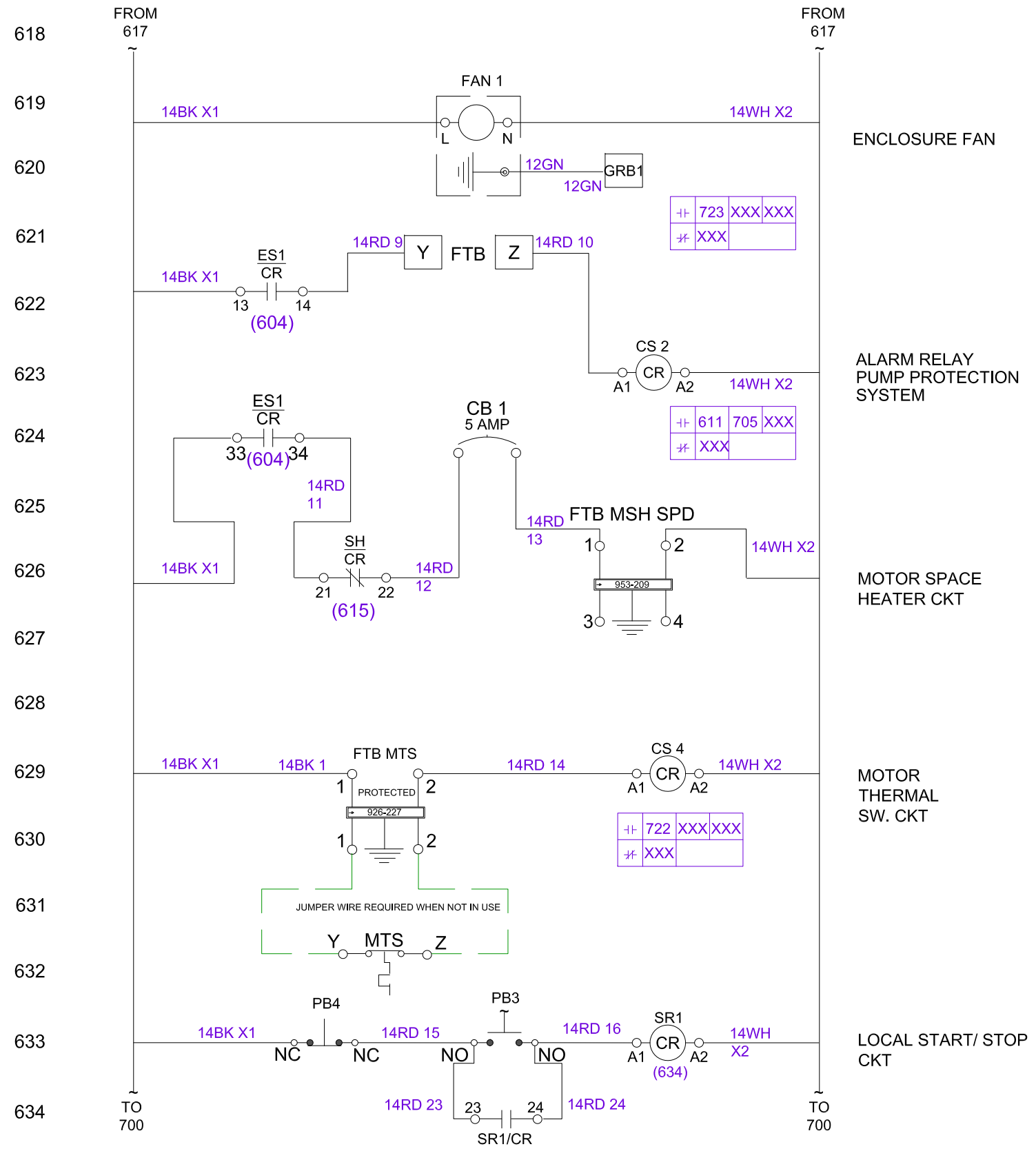
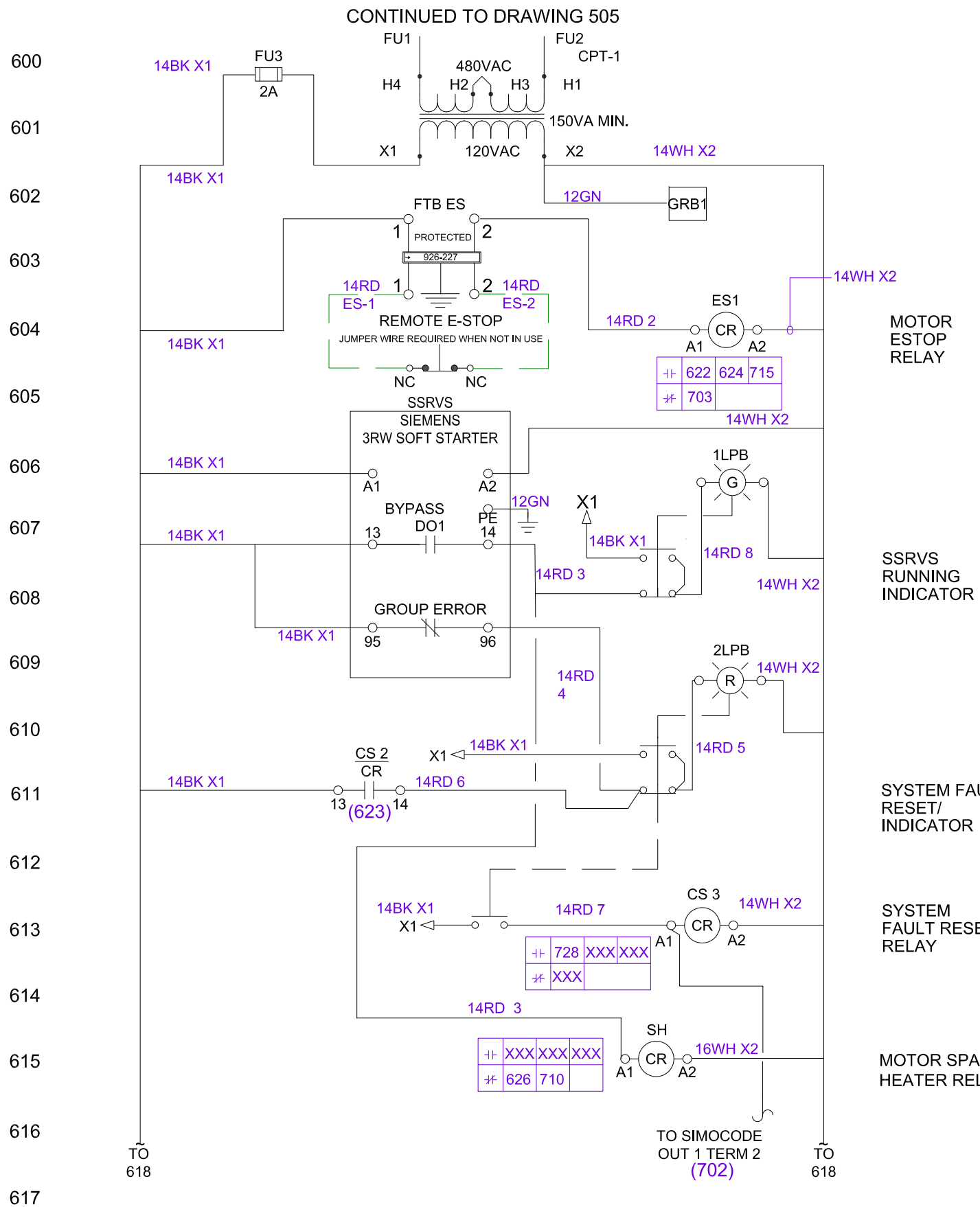


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DESIGN:	IAG	-	-	02-05-2019	FH
DRAWN BY:	JG	-	-	10-12-2020	JG
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
SSRVS  
480VAC ONE LINE DISTRIBUTION LAYOUT

SHEET  
405

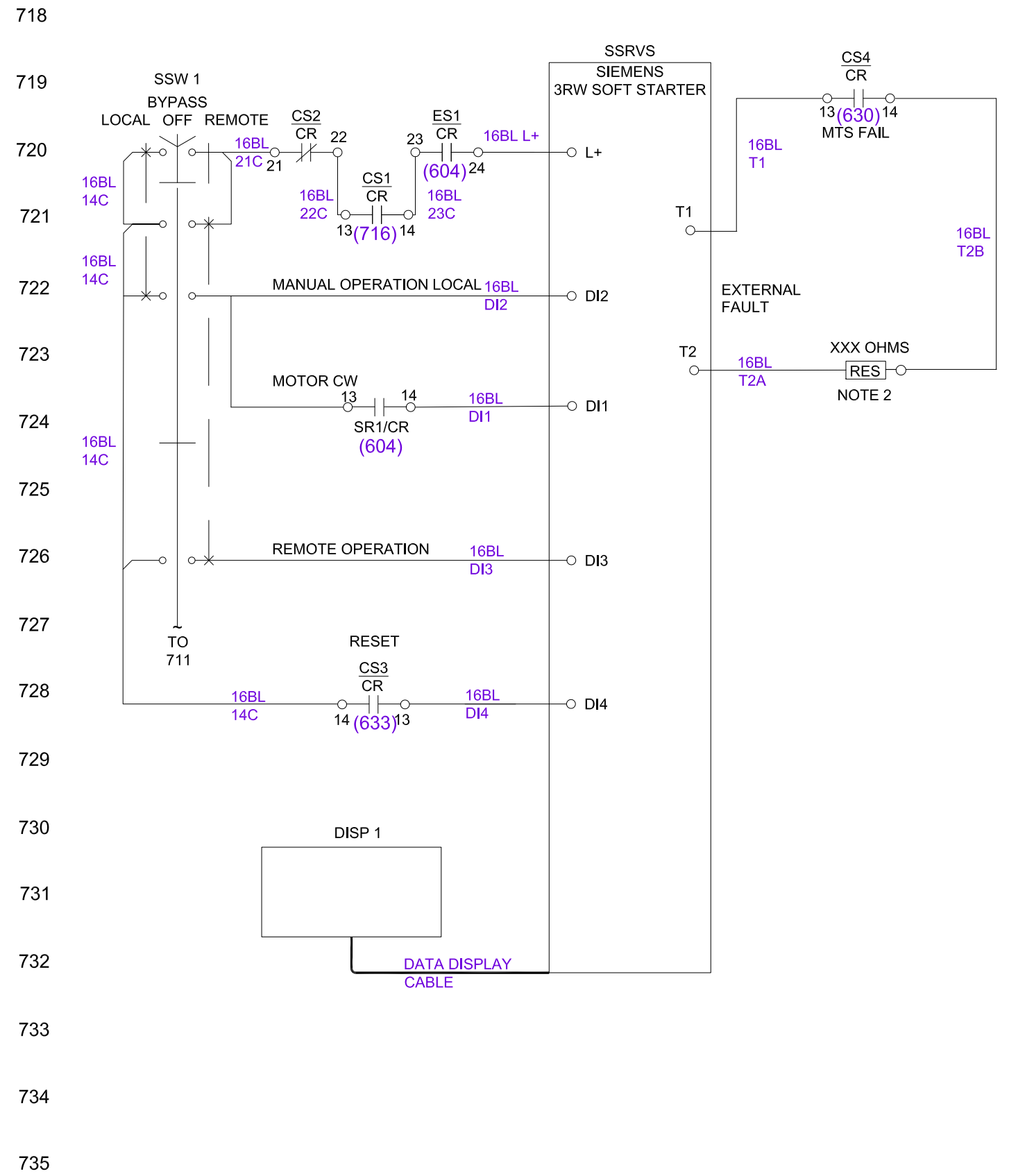
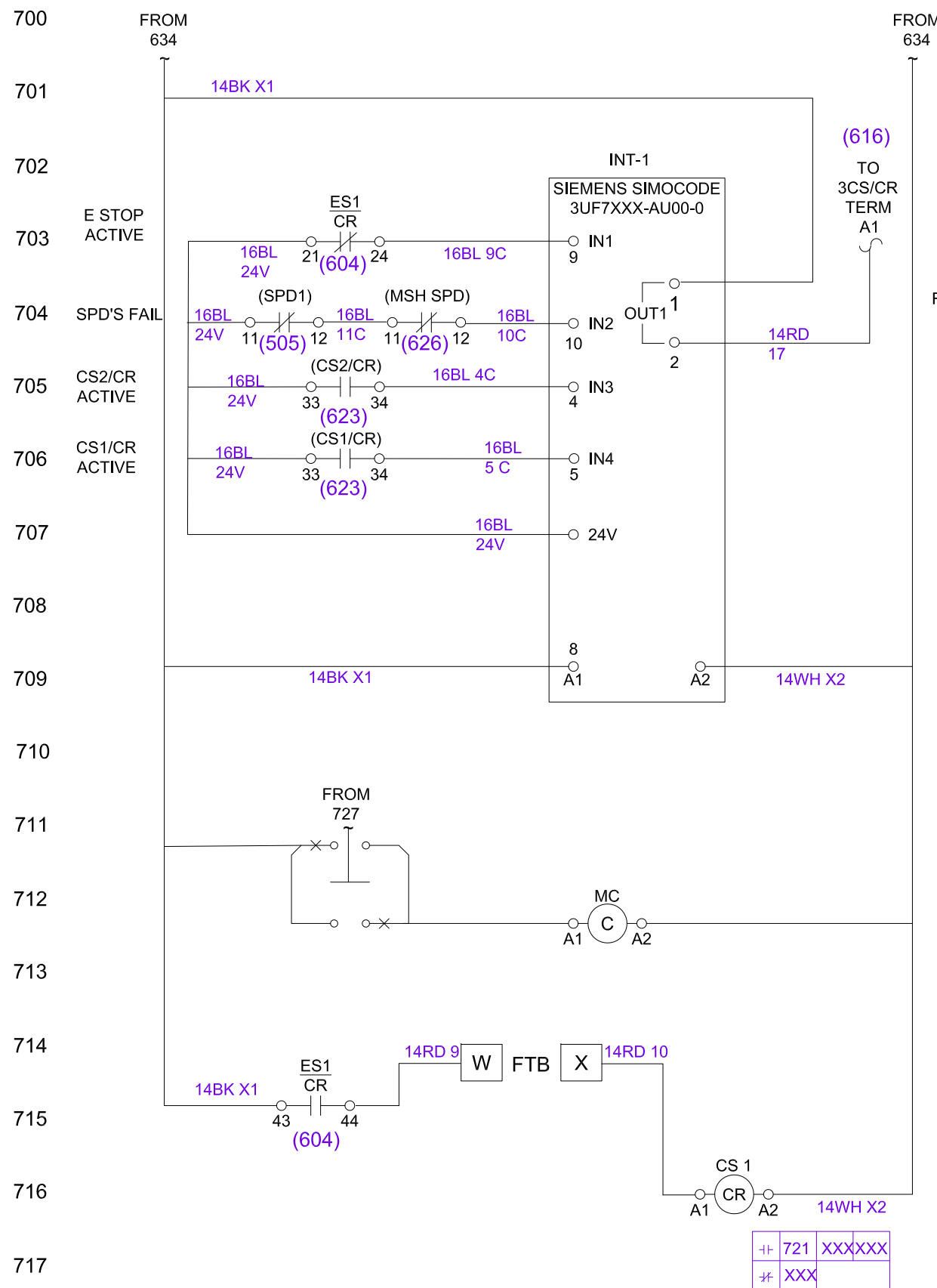


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DESIGN:	IAG	-	-	04-03-2018	FH
DRAWN BY:	JG	-	-	02-07-2019	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
SSRVS  
120 VAC CONTROL WIRING-PART 1

SHEET  
406



SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	-	04-03-2018	FH
DRAWN BY:	JG	-	-	02-07-2019	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

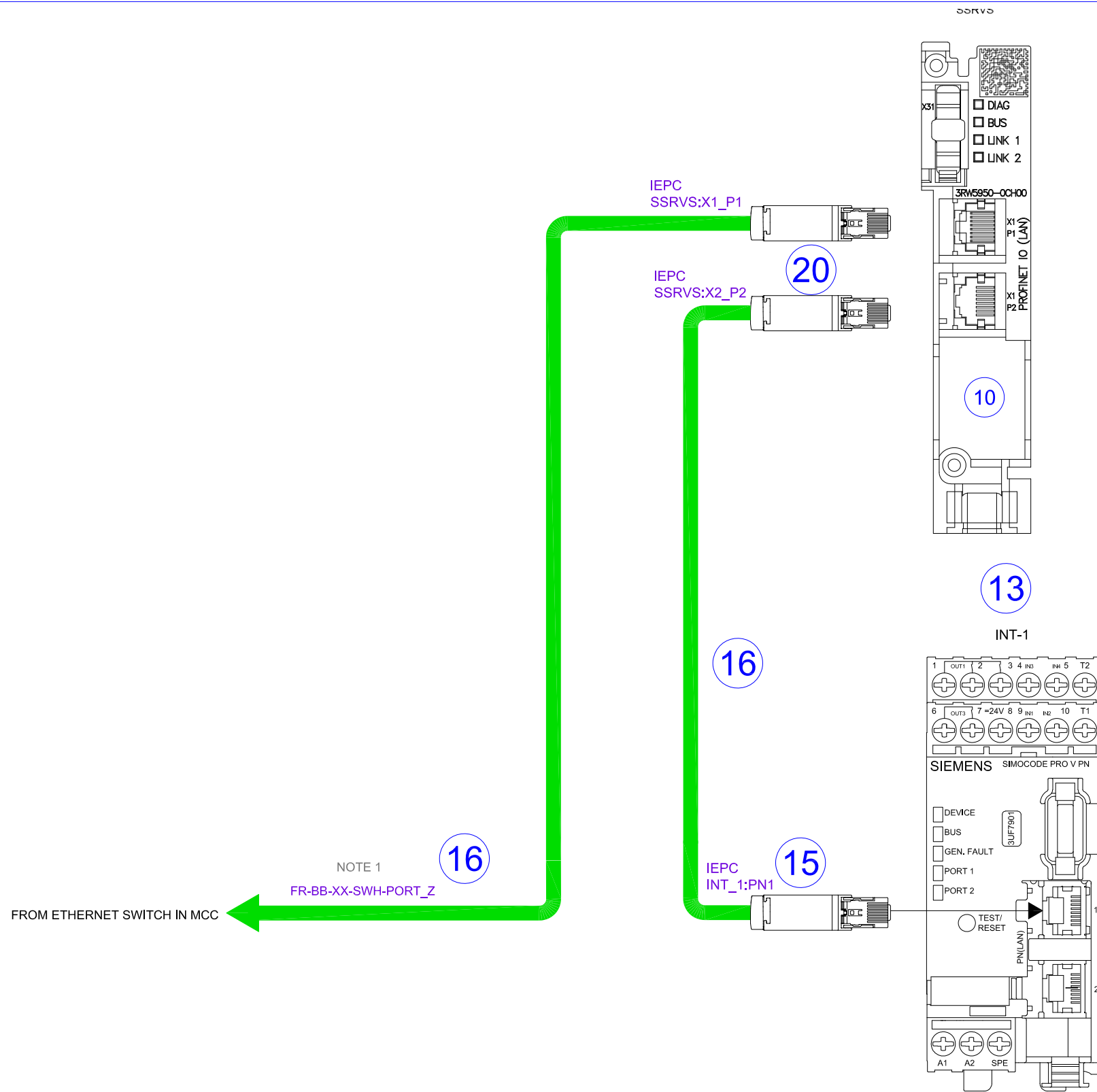
WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP

CITY OF  
ORLANDO, FLORIDA

TITLE:

LOW VOLTAGE STANDARDS  
SSRVS  
120 VAC CONTROL WIRING-PART 2

SHEET  
407



NOTE 1  
FR-BB-XX-SWH-PORT\_Z

FROM ETHERNET SWITCH IN MCC



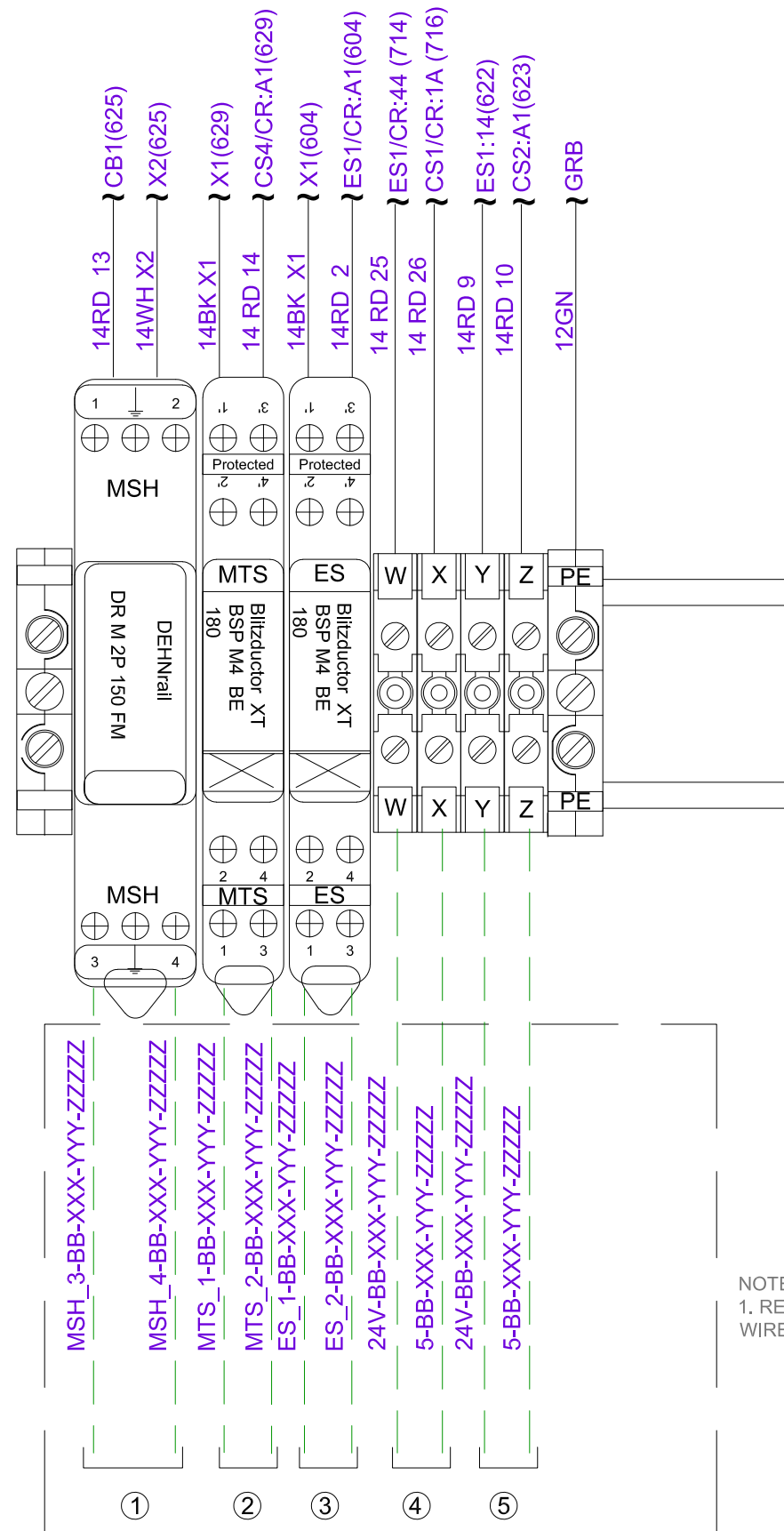
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DESIGN:	IAG	-	-	04-04-2018	FH
DRAWN BY:	JG	-	-	02-07-2019	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
SSRVS  
COMMUNICATIONS WIRING LAYOUT

SHEET  
408

ID	FIELD DEVICE SCHEDULE
①	MOTOR SPACE HEATER
②	MOTOR THERMAL SWITCH
③	REMOTE E-STOP STATION
④	PUMP PROTECTION PANEL "PERMISSIVE" OUTPUT CONTACT
⑤	PUMP PROTECTION PANEL "FAULT" OUTPUT CONTACT



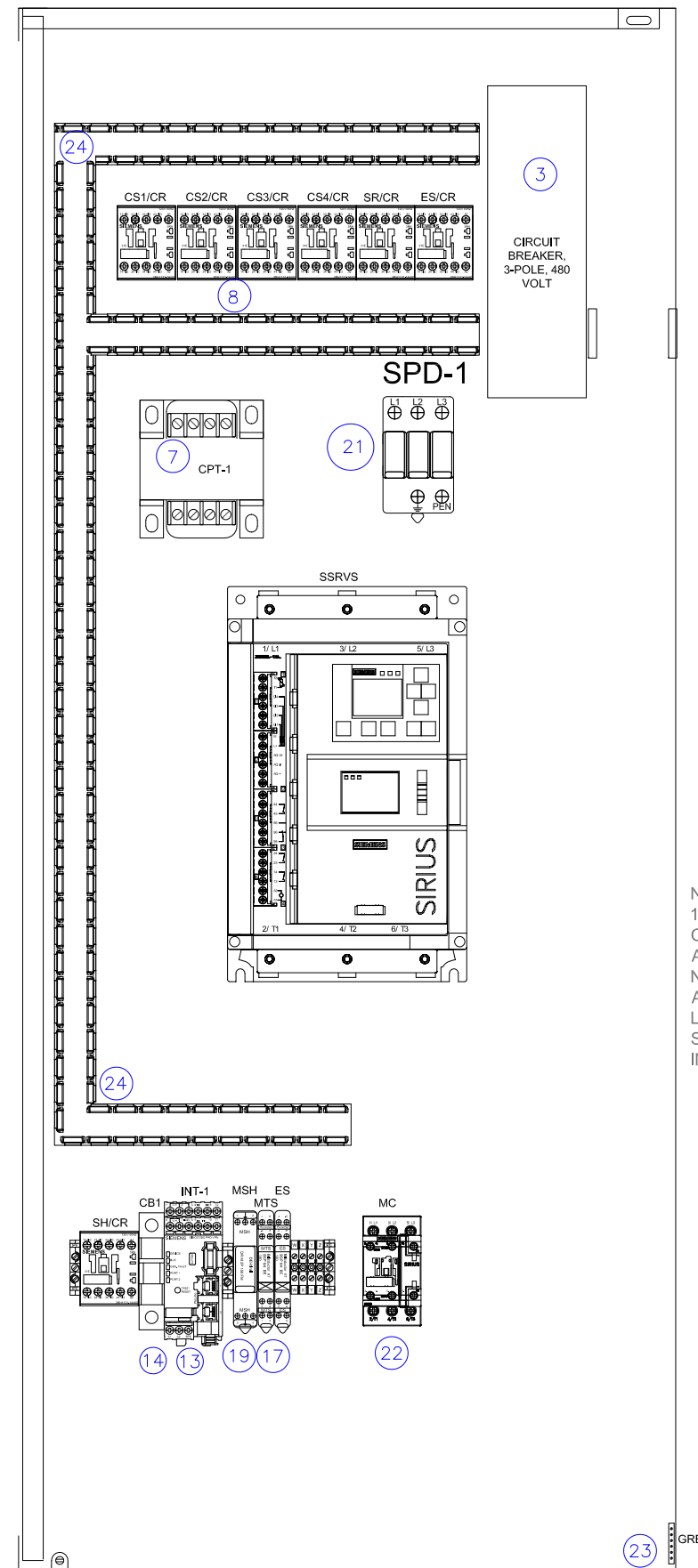
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DESIGN:	IAG	-	-	03-29-2018	FH
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APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
SSRVS  
FIELD TERMINAL ASSIGNMENTS

SHEET  
409





NOTE:  
 1. INTERIOR LAYOUT IS BASED ON A TYPICAL 15 HP 480 VOLT MOTOR APPLICATION. COMPONENTS WILL NEED TO BE SIZED AS PER APPLICATION AND LOGISTICAL LOCATION OF ALL COMPONENTS SHALL REMAIN IN THE SAME AS INDICATED ON DRAWING.



SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	-	03-29-2018	FH
DRAWN BY:	JG	-	-	02-07-2019	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
 INDUSTRIAL AUTOMATION GROUP  
 CITY OF  
 ORLANDO, FLORIDA

TITLE:	LOW VOLTAGE STANDARDS (SSRVS) (MCC) INTERIOR PANEL LAYOUT
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SHEET  
 503

NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.	NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.
1	1	MOTOR CONTROL CENTER 48.00 INCH SPACE HEIGHT MODULE	AS PER SPECIFICATION 16921	12	1	30MM H.D. OILTIGHT GREEN PUSHBUTTON 1 N.O. & 1 N.C.	SIEMENS 52BM8A3A
	1	MODULAR DOOR MOUNTED AIR EXHAUST FAN			1	"START" NAMEPLATE	SIEMENS 52NL03
	1	MODULAR DOOR MOUNTED AIR INTAKE GRILL WITH FILTER ELEMENT					
2	1	NAMEPLATE, WHITE W/BLACK LETTERS, .50 HEIGHT, BOLTED	SIEMENS, NAMEPLATE DESIGNATION INFORMATION BY OWNER	13	1	SIRIUS SIMOCODE MTR MANAGEMENT CONTROLLER, PROFINET COMM.	SIEMENS 3UF7 011-1AU00-0
3	1	CIRCUIT BREAKER, 3-POLE, 480 VOLT	AS PER SPECIFICATION 16921	14	1	CIRCUIT BREAKER, SINGLE POLE, *A TRIP, * = SIZE AS PER APPLICATION	SIEMENS 5SJ41**-7HG41
		MOLDED CASE CIRCUIT BREAKER WITH MAGNETIC TRIP ONLY UNIT.		15	1	RJ45 METAL ENCLOSURE PLUG CONNECTOR	BELDEN R301603
		STANDARD RANGE WITH CURRENT LIMITING		16	1	CAT 6, 23AWG, 4 PAIR, SHIELDED, 60 OV GREEN JACKET, CABLE	BELDEN 7953A
		BREAKING CAPACITY. MEETS UL 489 / IEC 60947-2 STANDARDS.		17	2	SURGE SUPPRESSOR PLUG/BASE, BSP M4 DB180	DEHN BLITZTDUCTOR #926-327 / 920-300
4	1	30MM H.D. OILTIGHT ILLUMINATED 120 VAC LED GREEN P. B .	SIEMENS 52BT6E3BY	18	-	-	-
		WITH 2 - NO AND 2 - NC CONTACT BLOCK		19	1	SURGE SUPPRESSOR PLUG/BASE, DR M 2P 150 FM	DEHN DEHNRail #953-209
	1	"MOTOR RUN" NAMEPLATE	SIEMENS 52NL23	20	2	RJ45 METAL ENCLOSURE PLUG 90 DEGREE CONNECTOR	SIEMENS 6GK1901-1BB20-2AA0
5	1	30MM H.D OILTIGHT ILLUMINATED 120 VAC LED RED P . B .	SIEMENS 52BT6E3BY	21	1	SURGE SUPPRESSOR, 480VAC	DEHN 908 355 DG MU 3PD 480 3W+G R
		WITH 2 - NO AND 2 - NC CONTACT BLOCK		22	1	15 HP MOTOR CONTACTOR, 120 V. COIL, 3 POLE, SCREW TERMINALS	SIEMENS 3RT2026-1AK60
	1	"FAULT" "PUSH TO RESET" NAMEPLATE	SIEMENS 52NL23	23	1	6 CIRCUIT GROUNDING BAR	ILSCO D167-06
6	1	30MM HEAVY DUTY OILTIGHT 3 POSITION SELECTOR SWITCH	SIEMENS 52SX2CABA7	24	2	PERFORATED SLOTTED MOUNTING RAIL STEEL	SIEMENS 5ST1 145
		2 NO AND 2 NC CONTACT BLOCK		25	2	1.26 WIDE, 2.12 DEEP WHITE SLOTTED WIREWAY	PANDUIT G1X2WH6 AND C1WH6
	1	"HAND OFF AUTO" NAMEPLATE	SIEMENS 52NL37				
7	1	CONTROL TRANSFORMER, 150VA, 480 X 120 WITH FUSE KIT	SIEMENS US2:KT8150				
	2	FUSE, CLASS CC, 1A	BUSSMANN FNQ-R-1				
	1	FUSE, CLASS M, 2A	BUSSMANN FNM-2				
8	7	CONTROL RELAY, 120VAC COIL,3NO,1NC CONTACTS	SIEMENS 3RH2131-AK60				
9	1	30MM H.D. OILTIGHT BLACK PUSHBUTTON 1 N.O. & 1 N.C.	SIEMENS 52BM8A1A				
	1	"STOP" NAMEPLATE	SIEMENS 52NL04				
10	1	SIRIUS SOFTSTART MOTOR CONTROLLER	SIEMENS 3RW5515-1HA15				
	1	SIRIUS PROFINET PN COMM MODULE, HIGH FEATURE	SIEMENS 3RW5950-0CH00 (HF)				
11	1	SSRVS INFO DISPLAY DOOR KIT	SIEMENS 3RW5980-0HD00				
	1	SSRVS DISPLAY CONNECTING CABLE	SIEMENS 3UF7933-0BA00-0 (2.5M)				

NOTES:

1. NO SUBSTITUTION OR EQUAL ACCEPTED, PROVIDE AS SPECIFIED.
2. COO WASTEWATER DIVISION 13 AND/OR DIVISION 16 SPECIFIED EQUAL ONLY

NOTE 2

NOTE 1

NOTE 2

NOTE 1

NOTE 2

NOTE 1

NOTE 2



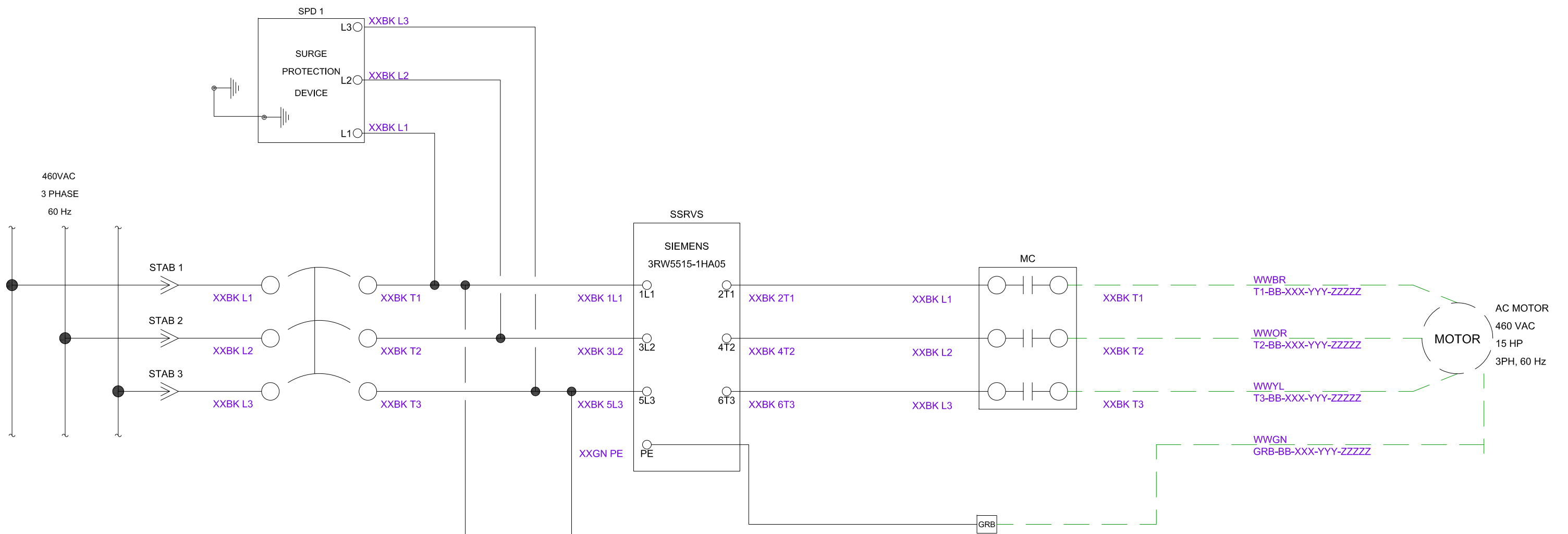
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DESIGN:	IAG	-	-	02-08-2019	FH
		-	-	10-09-2020	JG
DRAWN BY:	JG	-	-	01-25-2021	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:

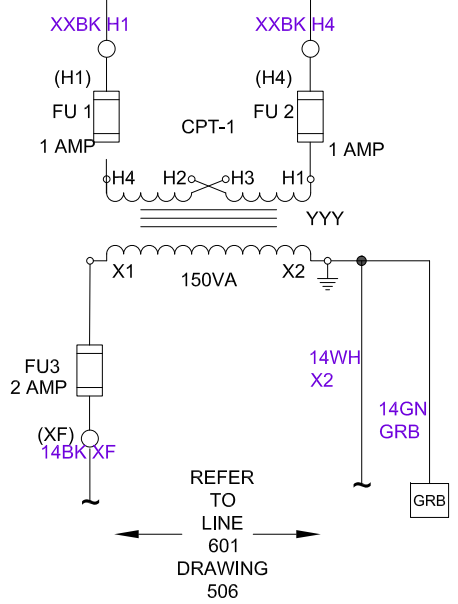
LOW VOLTAGE STANDARDS  
(SSRVS) (MCC)  
BILL OF MATERIALS

SHEET  
504



NOTES:

1. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "XX", SHALL BE SIZED BASED ON MANUFACTURER'S RECOMMENDATION.
2. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "WW", SHALL BE SIZED BASED ON MOTOR APPLICATION.
3. REFER TO DRAWING 120 FOR WIRE TAGGING CONVENTION
4. FUSE SIZED BASED MANUFACTURE'S RECOMMENDATION
5. POWER DISTRIBUTION BLOCK SIZE AS PER MANUFACTURER'S RECOMMENDATION

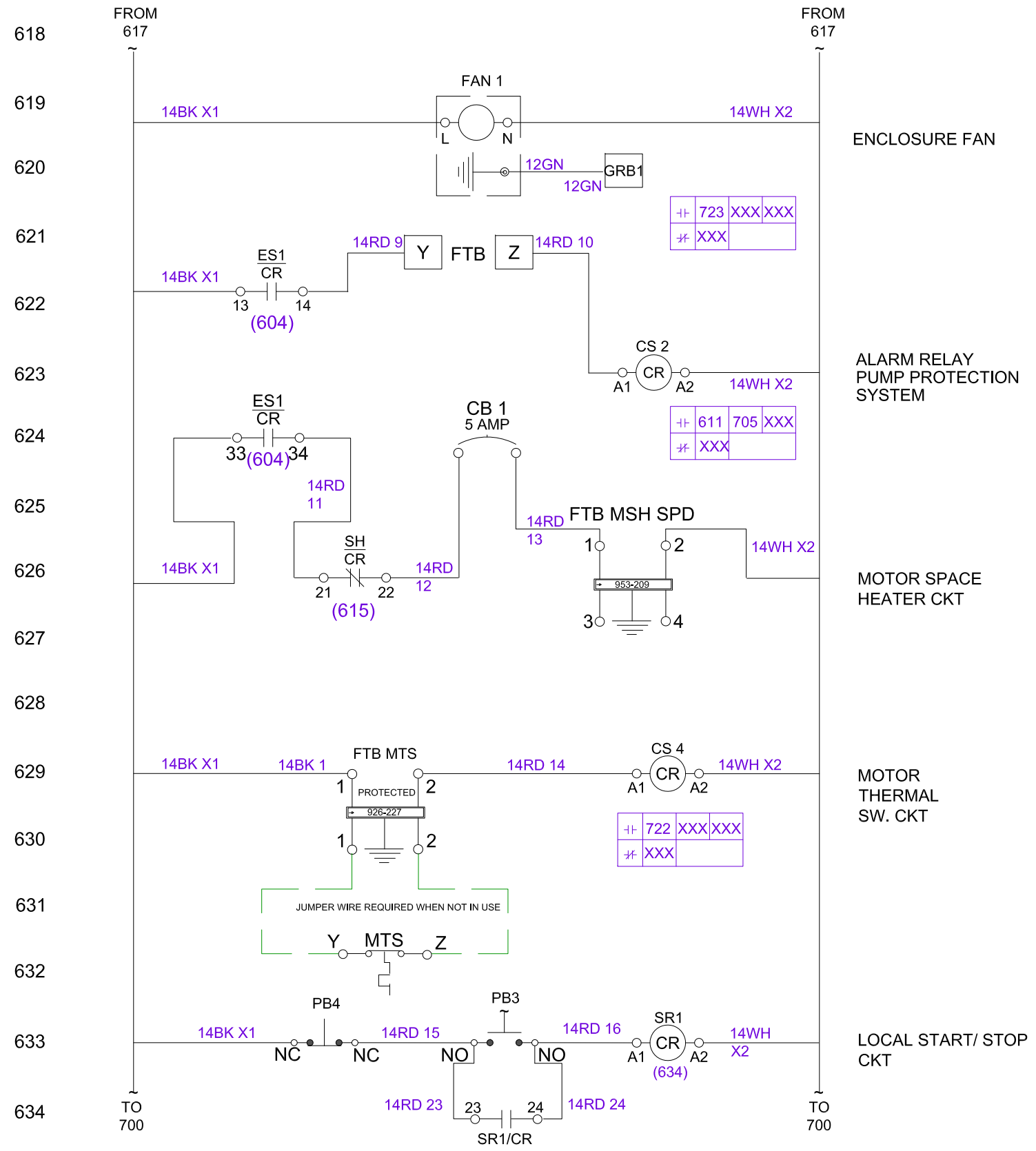
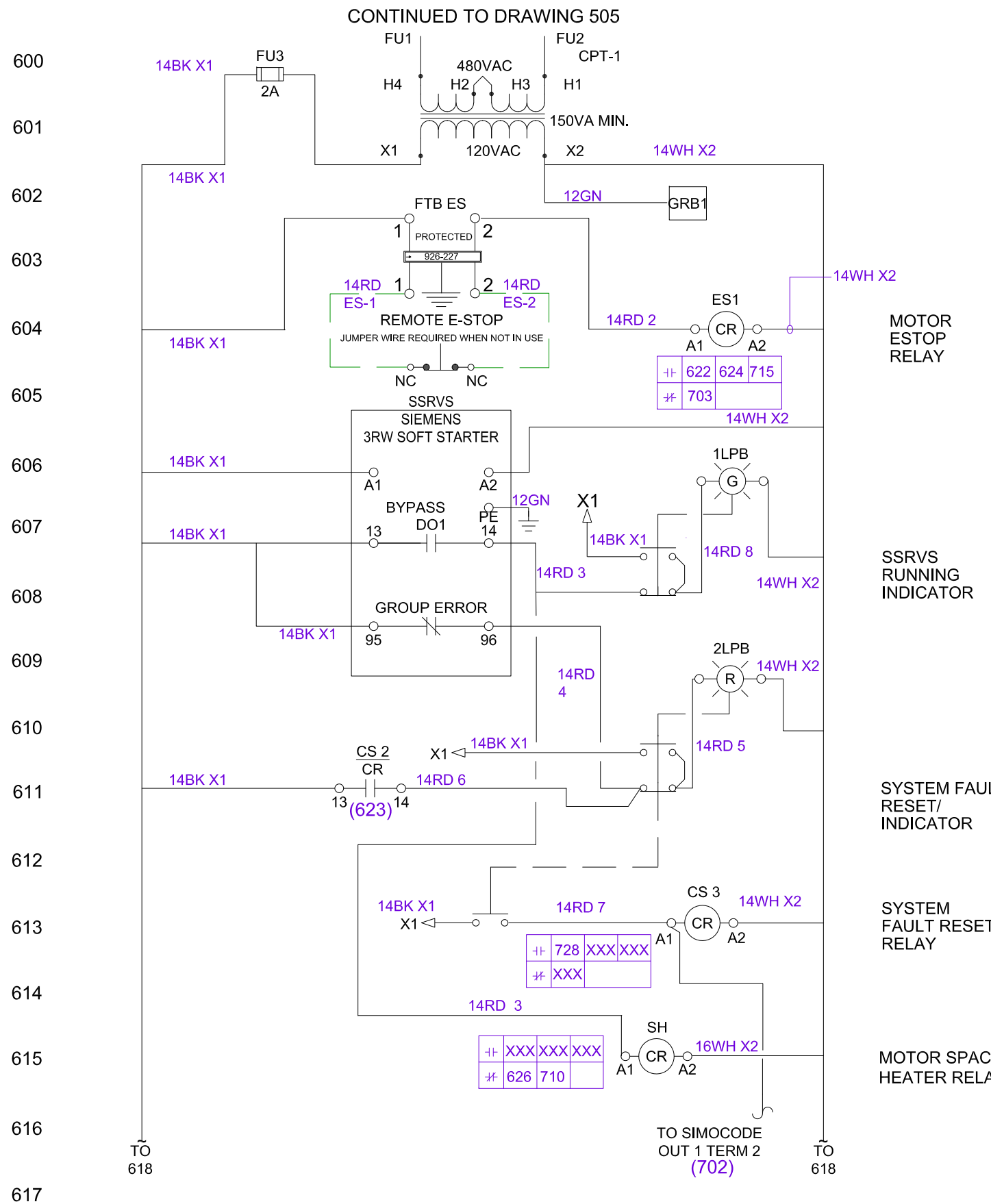


SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	-	02-05-2019	FH
DRAWN BY:	JG	-	-	10-12-2020	JG
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
(SSRVS) (MCC)  
480VAC ONE LINE DISTRIBUTION LAYOUT

SHEET  
505



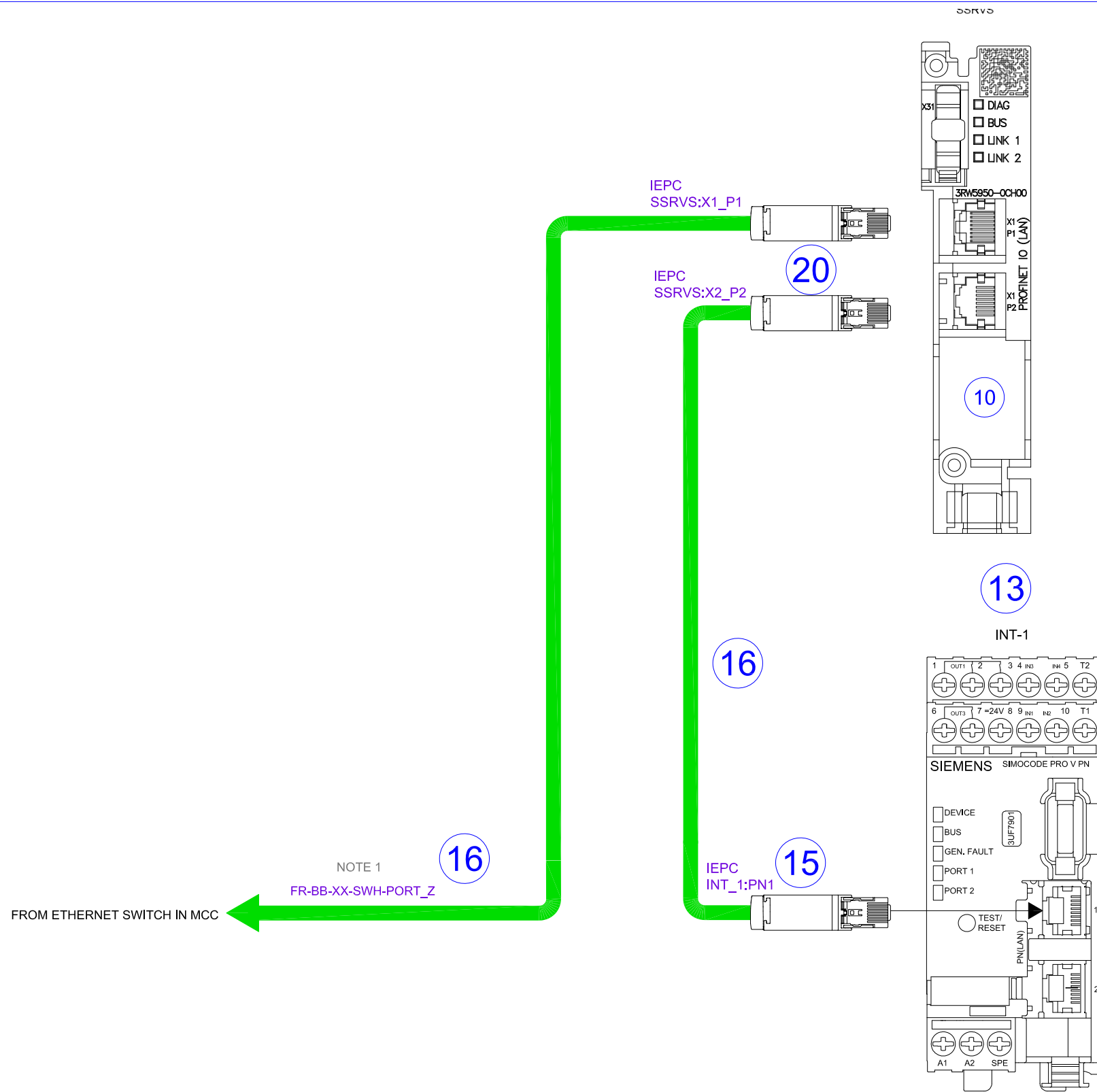
APPROVED BY:	NO	REVISION	DATE	BY
SCALE:	N.T.S.	-	10-22-2014	JG
DESIGN:	IAG	-	04-03-2018	FH
DRAWN BY:	JG	-	02-07-2019	FH
		-	10-01-2020	JG

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
(SSRVS) (MCC)  
120 VAC CONTROL WIRING-PART 1

SHEET  
506



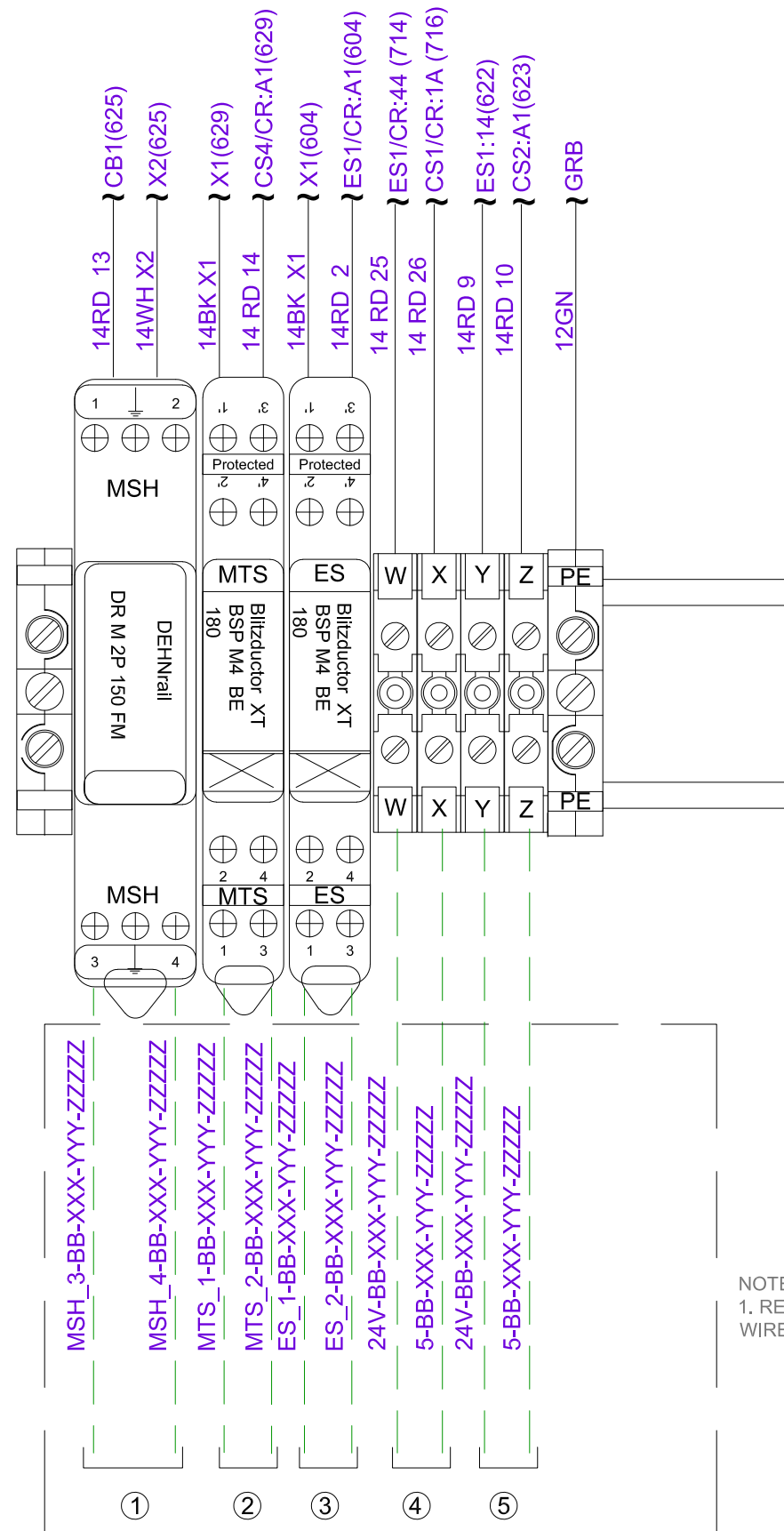


SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	-	04-04-2018	FH
DRAWN BY:	JG	-	-	02-07-2019	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:	LOW VOLTAGE STANDARDS (SSRVS) (MCC) COMMUNICATIONS WIRING LAYOUT
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ID	FIELD DEVICE SCHEDULE
①	MOTOR SPACE HEATER
②	MOTOR THERMAL SWITCH
③	REMOTE E-STOP STATION
④	PUMP PROTECTION PANEL "PERMISSIVE" OUTPUT CONTACT
⑤	PUMP PROTECTION PANEL "FAULT" OUTPUT CONTACT



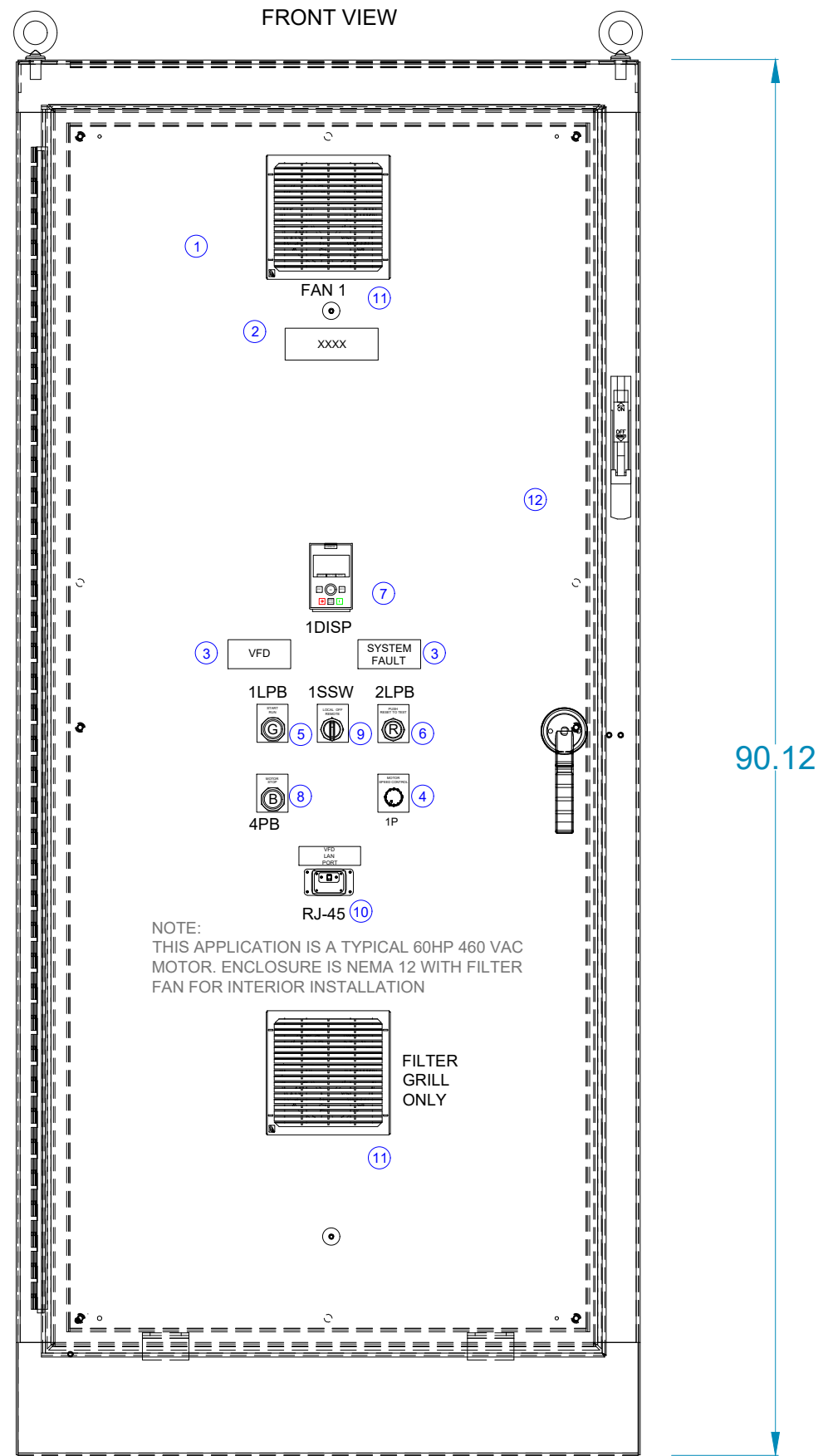
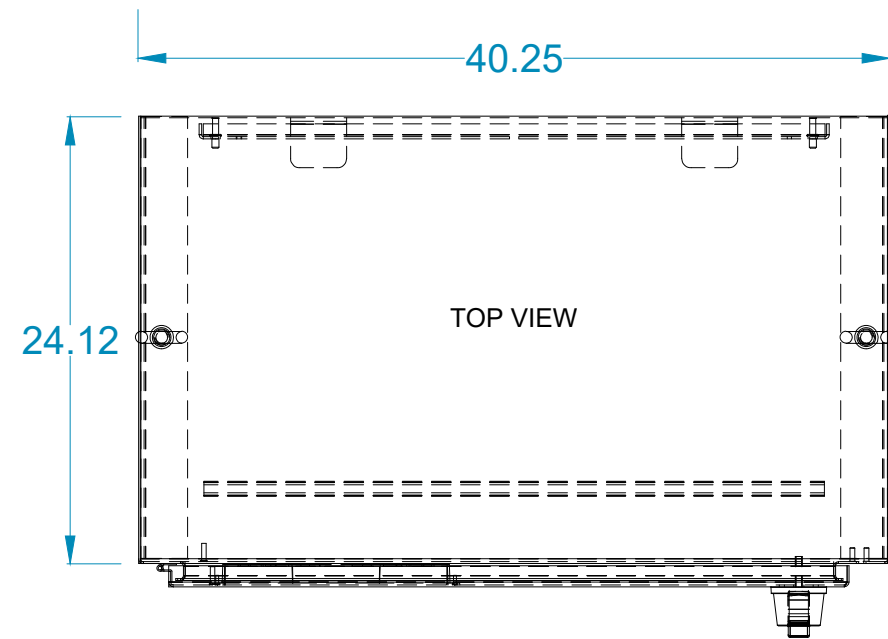
NOTE:  
1. REFER TO DRAWING # 120 FOR STRUCTURE OF  
WIRE TAGGING CONVENTION



SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	-	03-29-2018	FH
DRAWN BY:	JG	-	-	03-29-2018	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:	LOW VOLTAGE STANDARDS (SSRVS) (MCC) FIELD TERMINAL ASSIGNMENTS
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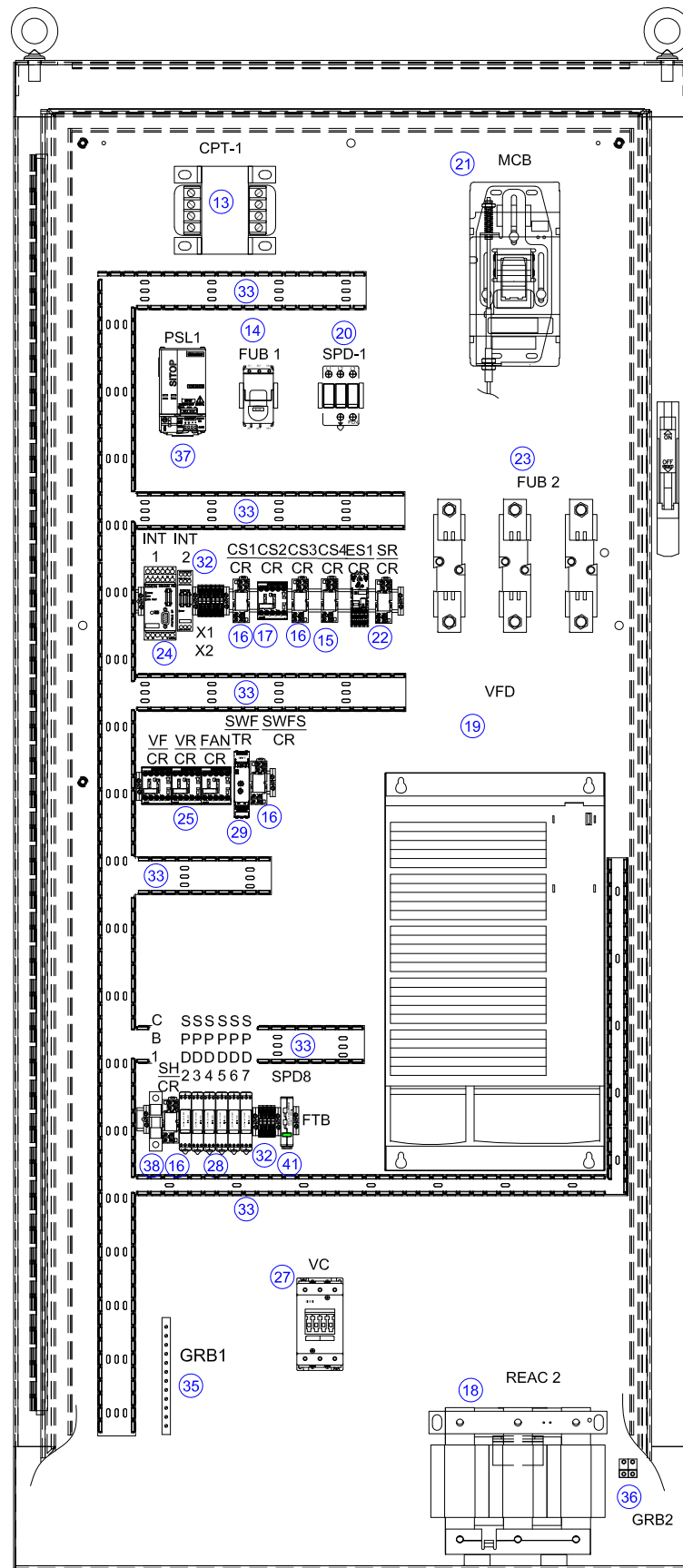
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DESIGN:	IAG	-	REMOVED PUSH BUTTON 3 EDITED PUSH BUTTON 4	04-03-2018	FH
DRAWN BY:	JG			10-07-2021	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP

CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
STAND ALONE ENCLOSURE VFD  
LESS THAN OR EQUAL TO 250HP  
FRONT AND TOP PANEL ELEVATION

SHEET  
602



NOTE:  
 1. INTERIOR LAYOUT IS BASED ON  
 A TYPICAL 60 HP 460 VOLT  
 MOTOR APPLICATION.  
 COMPONENTS WILL NEED TO BE  
 SIZED AS PER APPLICATION AND  
 LOGISTICAL LOCATION OF ALL  
 COMPONENTS SHALL REMAIN IN  
 THE SAME AS INDICATED ON  
 DRAWING.



SCALE:	N.T.S.	-	-	03-18-2015	JG
DESIGN:	IAG	-	UPDATE COMPONENTS AND ADDED SEAL WATER	03-29-2018	FH
		-	UPDATED 41	10-30-2024	JG
DRAWN BY:	JG			05-07-2025	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
 INDUSTRIAL AUTOMATION GROUP  
 CITY OF  
 ORLANDO, FLORIDA

TITLE:  
 LOW VOLTAGE STANDARDS  
 STAND ALONE ENCLOSURE VFD  
 LESS THAN OR EQUAL TO 250HP  
 INTERIOR PANEL LAYOUT

SHEET  
 603

NO.	QTY.	DESCRIPTION	MANUFACTURER PART NO.	NO.	QTY.	DESCRIPTION	MANUFACTURER PART NO.
1	1	DISC. FREE STANDING ENCLOSURE STAINLESS STEEL 316	HOFFMAN A90XM4024SS6N4 / A90PM40	22	1	CONTROL RELAY, 24VDC COIL, 15A, D.P.D.T., 8 PIN, SQUARE PLUG IN RELAY	SIEMENS 3TX7114-5LC03C /3TX7144-4E6
					1	NOISE SUPPRESSION DIODE	SIEMENS 3TX7144-H12
2	1	NAMEPLATE, 6W X 2H, WHITE W/BLACK LETTERS	CUSTOM ENGRAVED				
3	2	NAMEPLATE, 4W X 2H, WHITE W/BLACK LETTERS	CUSTOM ENGRAVED	23	3	1 POLE, FUSE STUD BLOCK, 600VAC, XXXA	SIEMENS 3NH****
					3	FUSE, SITOR LV HRC, XXXA	SIEMENS 3NE****
					4	FUSE BLOCK BARRIERS	SIEMENS 3NX****
4	1	POTENTIOMETER, COMPACT, 22MM, ROUND, PLASTIC, BLACK, 4.7K OHMS	SIEMENS 3SU1200-2PR10-1AA0				
	1	LABELING PLATE, BLACK LABEL, WHITE FONT, DIAMETER 40MM	SIEMENS 3SU1900-0BG16-0SA0	24	1	SIRIUS SIMOCODE MTR MANAGEMENT CONTROLLER DP COMMS	SIEMENS 3UF7 010-1AU00-0
					1	SIRIUS SIMOCODE MTR MANAGEMENT CONTROLLER PN COMMS	SIEMENS 3UF7 011-1AU00-0
5	1	30MM H.D. OILTIGHT ILLUMINATED 120 VAC LED GREEN P. B.	SIEMENS 52BL4M3		1	SIRIUS SIMOCODE DIGITAL I/O MODULE	SIEMENS 3UF7300-1AU00-0
	1	CONTACT BLOCK N.O. AND N.C. FOR ABOVE OPERATOR	SIEMENS 52BJK		1	SIRIUS SIMOCODE MODULE INTERFACE CABLE	SIEMENS 3UF793*-
	1	"START RUN" NAMEPLATE	SIEMENS 52NA02E				
				25	3	CONTROL RELAY, 24VDC COIL,3NO,1NC CONTACTS	SIEMENS 3RH2131-BB40
6	1	30MM H.D OILTIGHT ILLUMINATED 120 VAC LED RED P. B .	SIEMENS 52BL4M2		3	NOISE SUPPRESSION DIODE	SIEMENS 3RT2916-1DG00
	2	CONTACT BLOCK N.O. AND N.C. FOR ABOVE OPERATOR	SIEMENS 52BJK	26	-	-	-
	1	"FAULT" NAMEPLATE	SIEMENS 52NA02E				
				27	1	TYPE SIZE 3, 3 POLE, 60 HP RATED, 120VAC CONTROL COIL	SIEMENS 3RT 1045-1AK60
7	1	VFD OPERATOR PANEL, IOP	SIEMENS 6SL3 255-0AA00-4JA1		1	LATERALLY MOUNTABLE AUXILIARY SWITCH BLOCK, 1NO ,1NC	SIEMENS 3RH1921-1DA11
	1	VFD IOP FRONT PANEL MOUNTING KIT	SIEMENS 6SL3 256-0AP00-0JA0		1	SURGE SUPPRESSOR, VARISTOR, 48-120VAC	SIEMENS 3RT1926-1BC00
8	1	30MM H.D. OILTIGHT BLACK PUSHBUTTON 1 N.O. & 1 N.C.	SIEMENS 52BM8B1A	28	6	SURGE SUPPRESSOR PLUG/BASE, DR M 2P 150 FM	DEHN DEHNRAIL #953-209
	1	"STOP" NAMEPLATE	SIEMENS 52NA04				
				29	1	TIMING RELAY, ELECTRONIC ON-DELAY 2 CHANGE OVER CONTACTS	SIEMENS 3RP2525-1BW30
9	1	30MM HEAVY DUTY OILTIGHT 3 POSITION SELECTOR SWITCH	SIEMENS 52SW2CAB				
	2	CONTACT BLOCK NORMALLY OPEN FOR ABOVE OPERATOR	SIEMENS 52BJK	30	-	-	-
	1	"LOCAL OFF REMOTE" NAMEPLATE	SIEMENS 52NA02E				
				31	-	-	-
10	1	BULK HEAD MOUNT HOUSING, RJ45 PORT, FEMALE TO FEMALE, NEMA 12	GRACE ENGINEERING P-R2-B4 OR EQUAL				
	-	-	-	32	10	DIN RAIL SINGLE TIER TERMINAL 32 AMP BLOCK	PHOENIX CONTACT 3044102
					7	DIN RAIL PE TERMINALS	PHOENIX CONTACT USLKG6N
11	1	8 INCH SQUARE FILTER EXHAUST FAN ASSEMBLY, 120 VAC	HOFFMAN SF0916414		TBD	TERMINALS ID LETTERS AND NUMBERS	PHOENIX CONTACT CUSTOM
					2	DIN RAIL	SIEMENS 5ST1 145
12	1	FLANGE MOUNT CIRCUIT BREAKER OPERATOR	SIEMENS MFKL3R				
				33	3	2.25 WIDE, 2.12 DEEP WHITE SLOTTED WIREWAY	PANDUIT G2X2WH6 AND C2WH6
13	1	CONTROL TRANSFORMER, 1000VA, 480 X 120/240	SIEMENS MT1000A		2	1.26 WIDE, 2.12 DEEP WHITE SLOTTED WIREWAY	PANDUIT G1X2WH6 AND C1WH6
14	1	3 POLE FUSE HOLDER DEAD FRONT 600 VOLT RATED	BUSSMANN OPM-1038	34	-	-	-
	2	FUSE, CLASS CC, 2A	BUSSMANN FNQ-R-2		-	-	-
	1	FUSE, CLASS M, 8A	BUSSMANN FNM-8				
				35	1	12 CIRCUIT GROUNDING BAR	ILSCO D167-12
15	1	CONTROL RELAY, 120VAC COIL, 15A, 4.P.D.T., 14 PIN, SQUARE PLUG IN RELAY	SIEMENS 3TX7117-5PF13 / 3TX7144-4E9				
				36	2	2 PORT BRONZE CAST 1-4 AWG MECHANICAL LUG	ILSCO CL 2-1
16	5	CONTROL RELAY, 120VAC COIL, 15A, D.P.D.T., 8 PIN, SQUARE PLUG IN RELAY	SIEMENS 3TX7114-5LF13 / 3TX7144-4E6				
				37	1	POWER SUPPLY, 120/230VAC IN, 24VDC/5A	SIEMENS 6EP1 333-2BA20
17	1	CONTROL RELAY, 120VAC COIL,3NO,1NC CONTACTS	SIEMENS 3RH2131-AK60				
				38	1	CIRCUIT BREAKER, SINGLE POLE, 5A TRIP	SIEMENS 5SJ4111-7HG41
18	1	OUTPUT REACTOR, 600VAC, XXXAMP	SIEMENS 6SL3000-XXXX-XXXX (SIZE TBD)				
				39	5	RJ45 METAL ENCLOSURE PLUG CONNECTOR	BELDEN R301603
19	1	VARIABLE INVERT. .480VAC, XXXHP, POWER MOD.	SIEMENS 6SL3 224-0XXXX-XXXX (SIZE TBD)				
	1	LINE REACTOR MODULE UNIT	SIEMENS 6SL32030CJ286AA0	40	TBD	CAT 6, 23AWG, 4 PAIR, SHIELDED, 600V GREEN JACKET, CABLE	BELDEN7953A
	1	PROFINET COMMUNICATIONS CONTROL UNIT	SIEMENS 6SL3 244-0BB12-1FA0				
	1	MEMORY CARD	SIEMENS 6SL3 254-0AM00-0AA0	41	1	SURGE SUPPRESSOR INDUSTRIAL ETHERNET DEVICE	DEHN DPA CL8 4PPOE, 929-161
20	1	SURGE SUPPRESSOR, 480VAC	DEHN 908 355 DG MU 3PD 480 3W+G R				
21	1	CIRCUIT BREAKER, 3-POLE, 480 VOLT, 65 KAIC, THERMAL MAGNETIC	SIEMENS TYPE HJG3B300L				
	1	CIRCUIT BREAKER, 3-POLE, LOAD DISTRIBUTION LUG KIT	SIEMENS 3TA12JG04				
	1	CIRCUIT BREAKER, FLANGE MOUNTED OPERATOR KIT	SIEMENS MFKL3R				

NOTE 2

NOTE 1

NOTE 2

NOTE 1

NOTE 2

NOTE 2

NOTE 1

NOTE 2

NOTE 1

NOTE 2

NOTE 2

NOTE 1

NOTE 2

NOTE 1

NOTES:  
1. NO SUBSTITUTION OR EQUAL ACCEPTED, PROVIDE AS SPECIFIED.  
2. COO WASTEWATER DIVISION 13 AND/OR DIVISION 16 SPECIFIED EQUAL ONLY  
3. DEVICES SPECIFIED WITHIN ARE BASED ON A TYPICAL 60 HP 460 VOLT APPLICATION. SOME ITEMS WILL BE SIZED DIFFERENTLY BASED ON APPLICATION OF MOTOR CONTROLLER

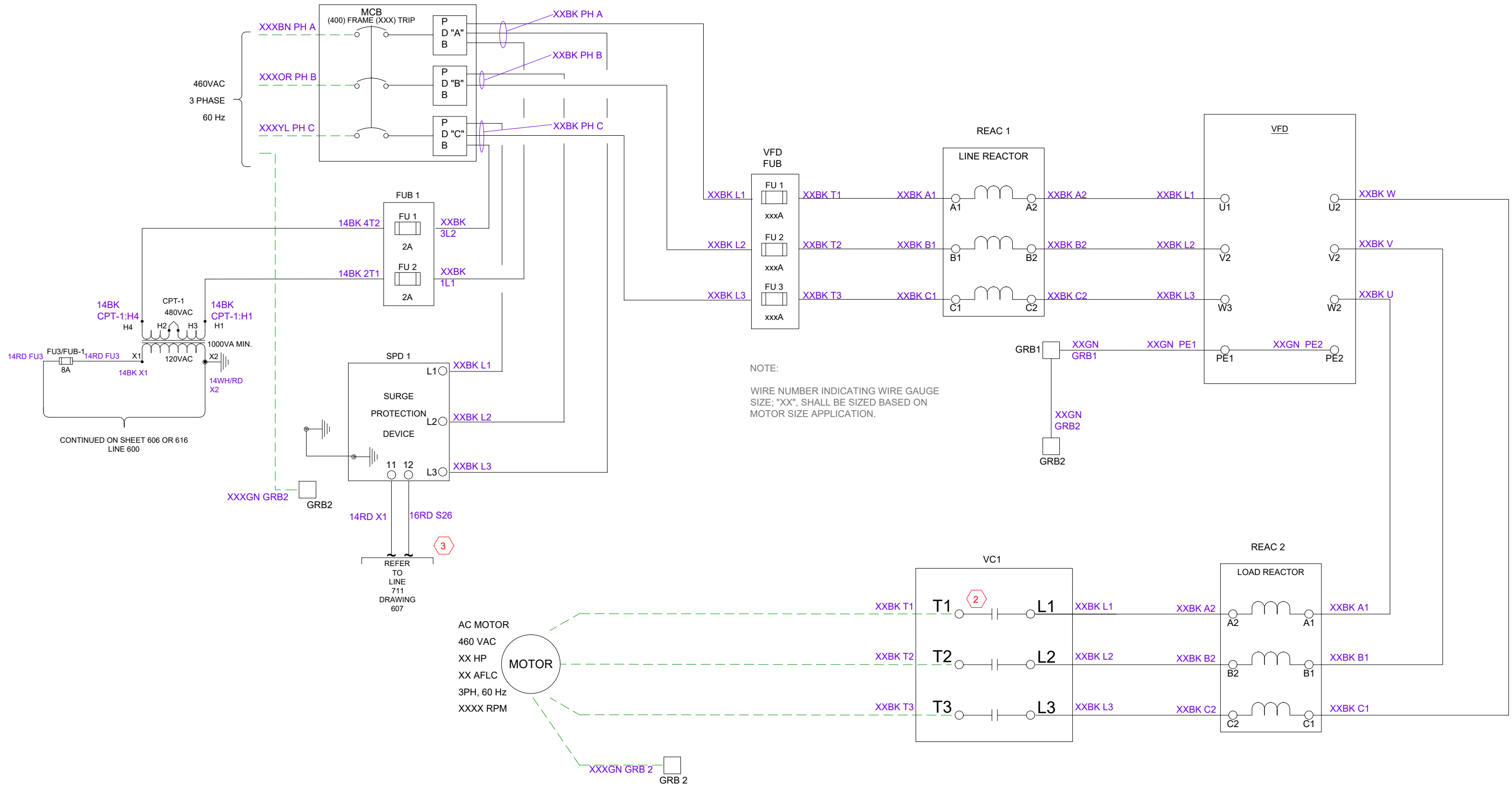


SCALE:	N.T.S.	-	REVISED ITEM 27	12-14-2020	FH
		-	REVISED ITEMS 5,6,8,9	10-07-2021	FH
DESIGN:	IAG	-	REVISED ITEM 4	03-17-2023	FH
		-	REVISED ITEMS 4,15,16,17,22,25,32	10-30-2024	JG
DRAWN BY:	JG	-	REVISED ITEM 41	05-07-2025	FH
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
STAND ALONE ENCLOSURE VFD  
LESS THAN OR EQUAL TO 250HP  
BILL OF MATERIALS

SHEET  
604

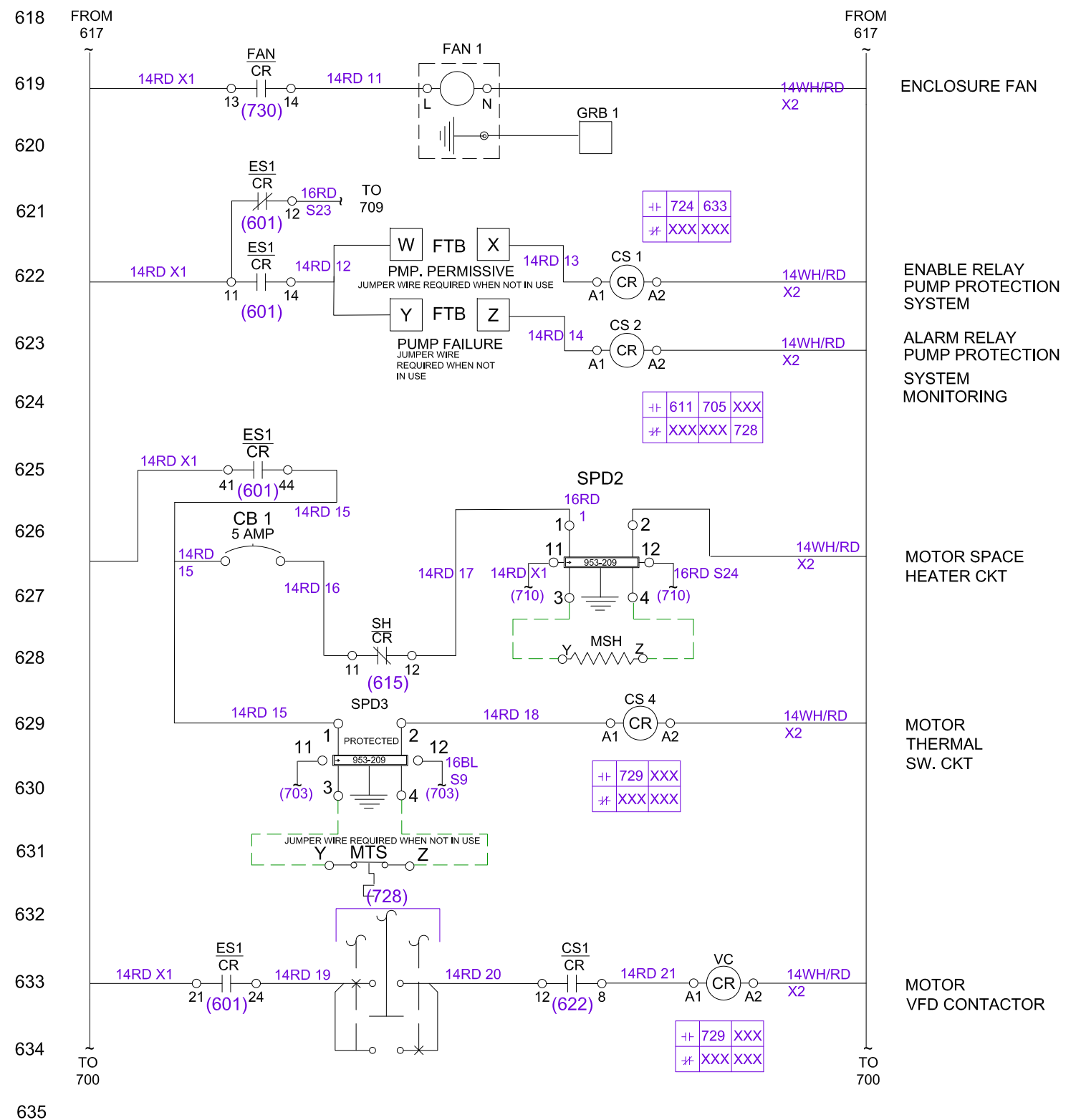
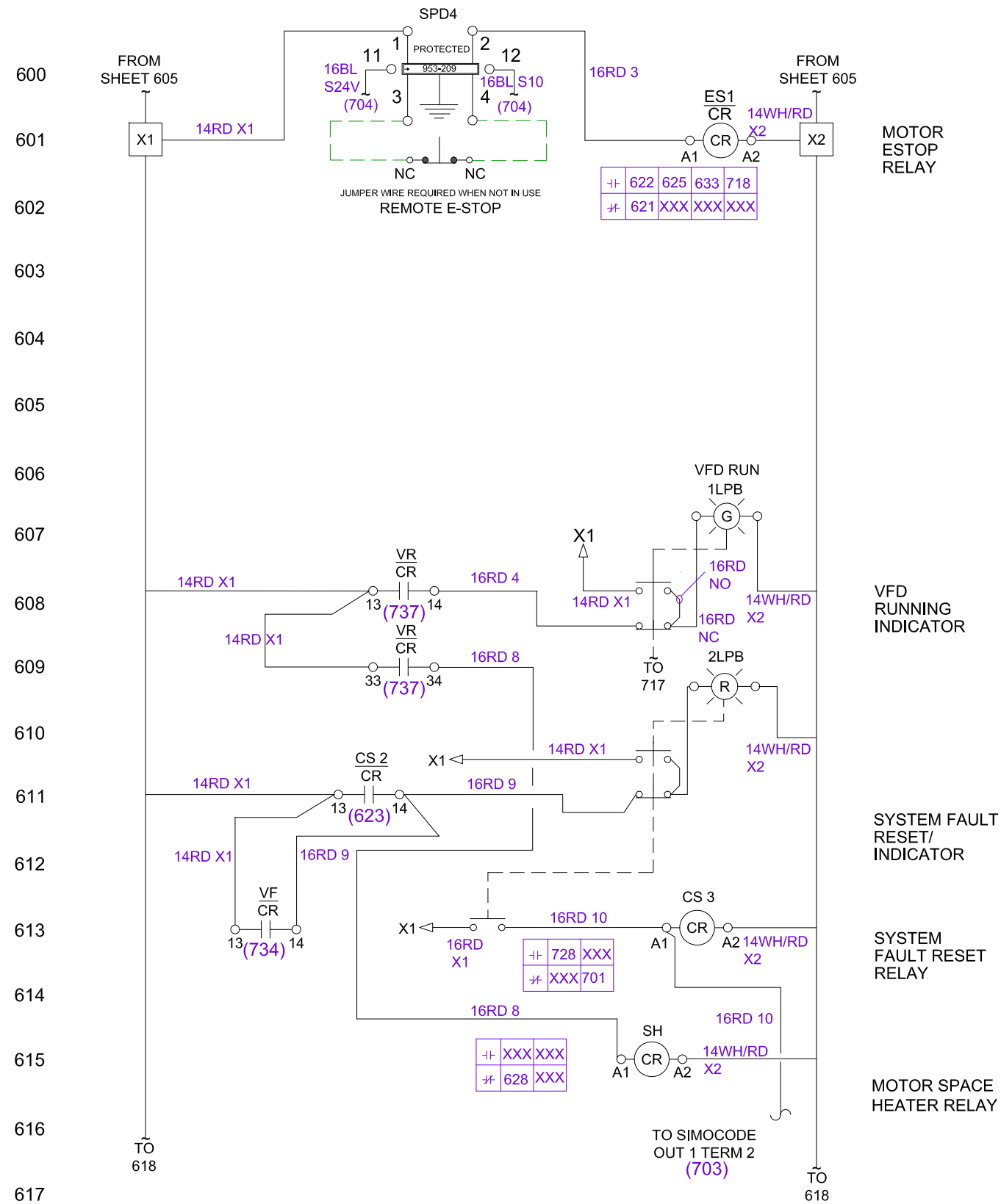


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DESIGN:	IAG	3	ADDED NOTES	05-18-2016	JG
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
STAND ALONE ENCLOSURE VFD  
LESS THAN OR EQUAL TO 250HP  
480 VAC ONE LINE DISTRIBUTION LAYOUT

SHEET  
605



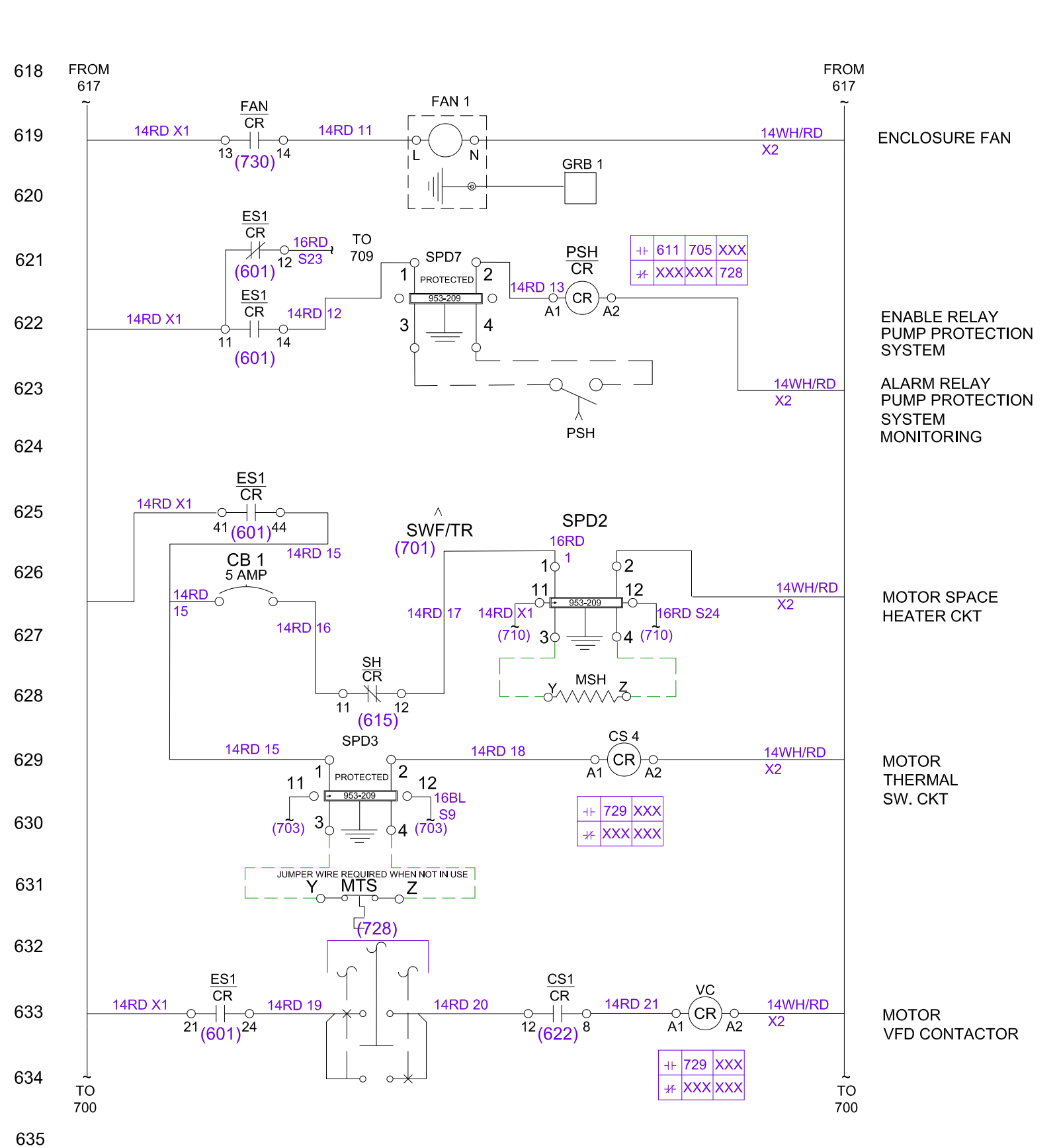
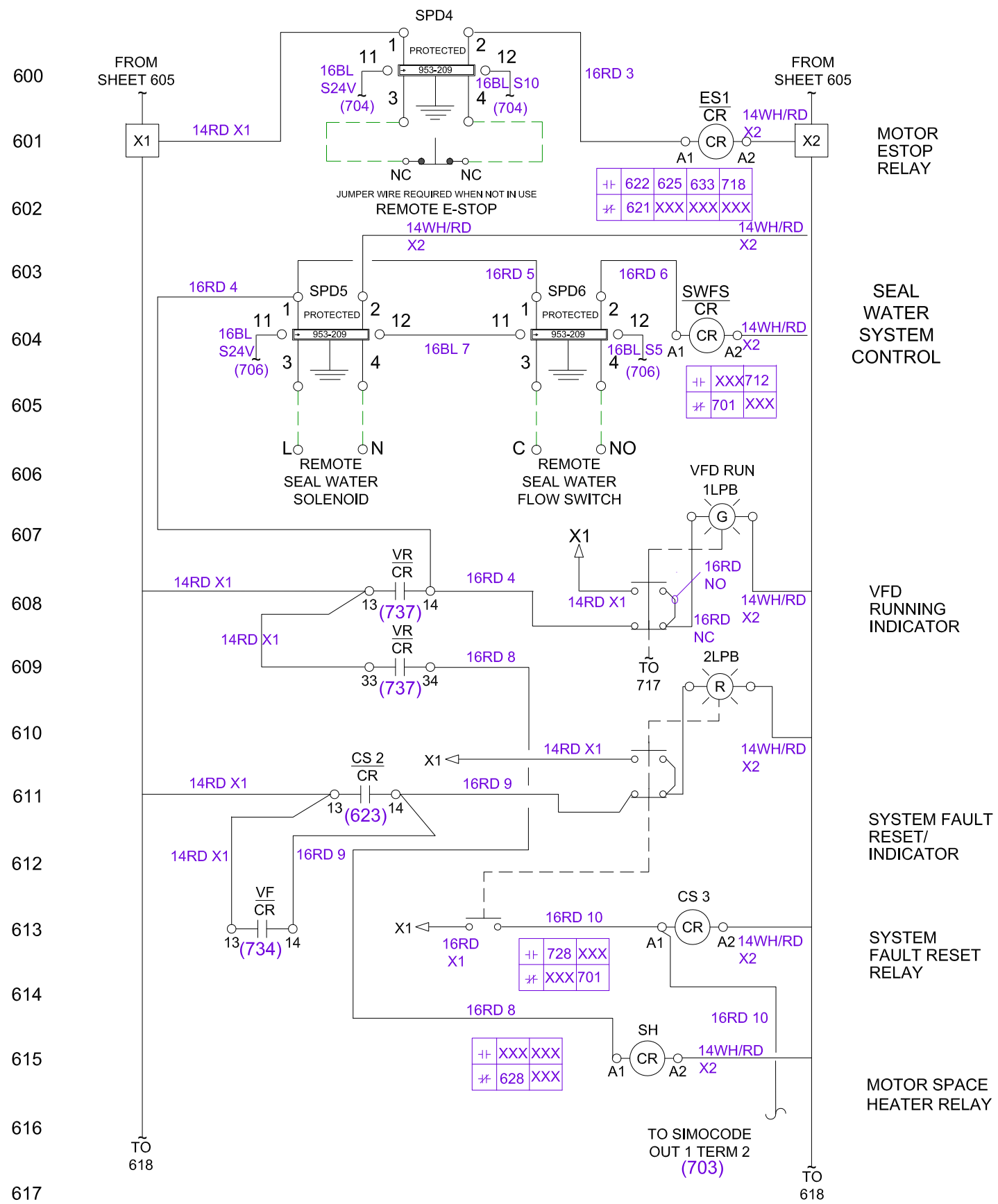
SCALE:	N.T.S.	-	ADDED SEAL WATER CTRL WIRING AND RE-ID ALL WIRING	10-30-2024	JG
DESIGN:	IAG				
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP

CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS STAND ALONE ENCLOSURE VFD LESS THAN OR EQUAL TO 250HP 120 VAC CONTROL WIRING SCHEMATIC PART 1 WITH PUMP PROTECTIVE SYSTEM

SHEET  
606A

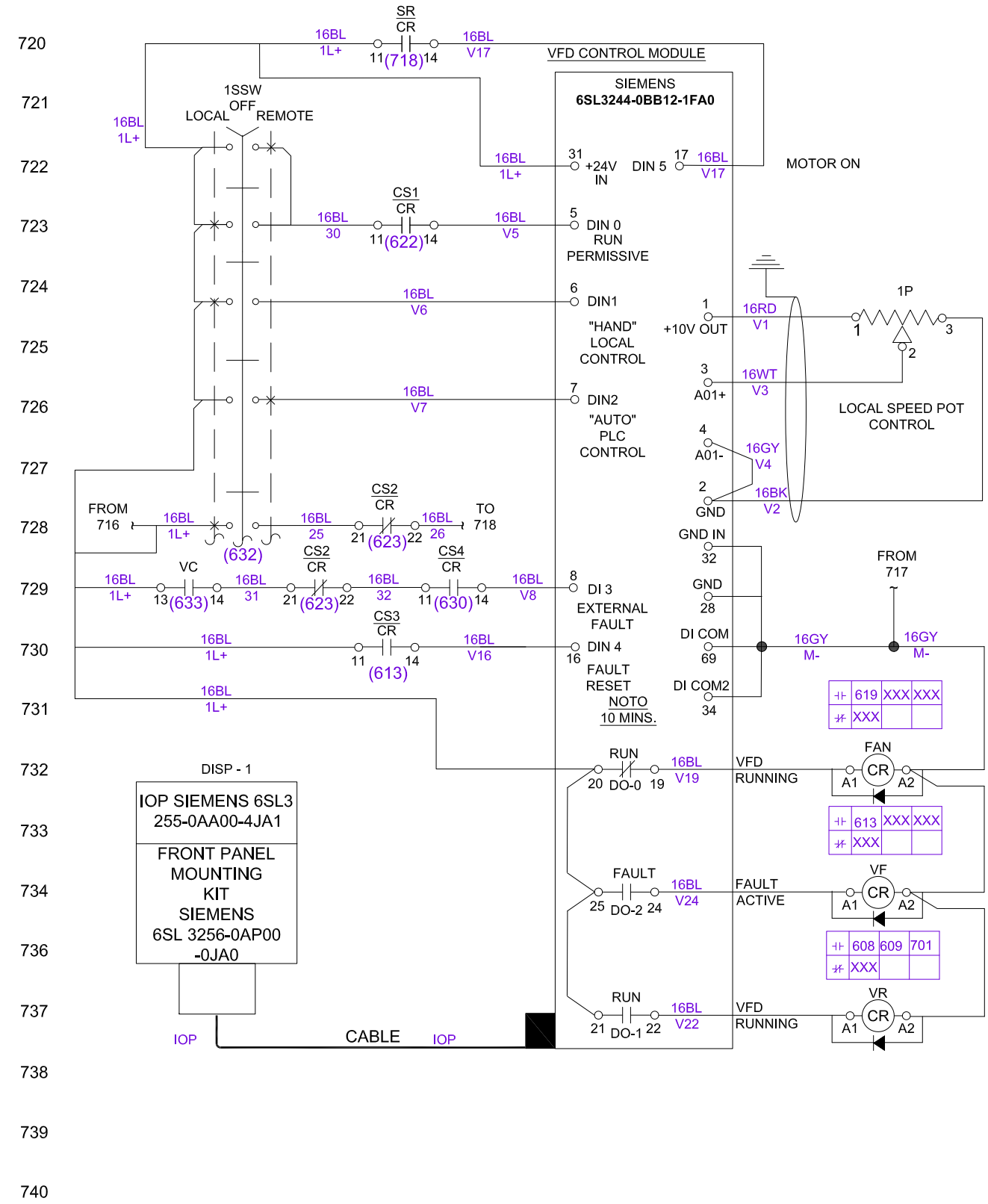
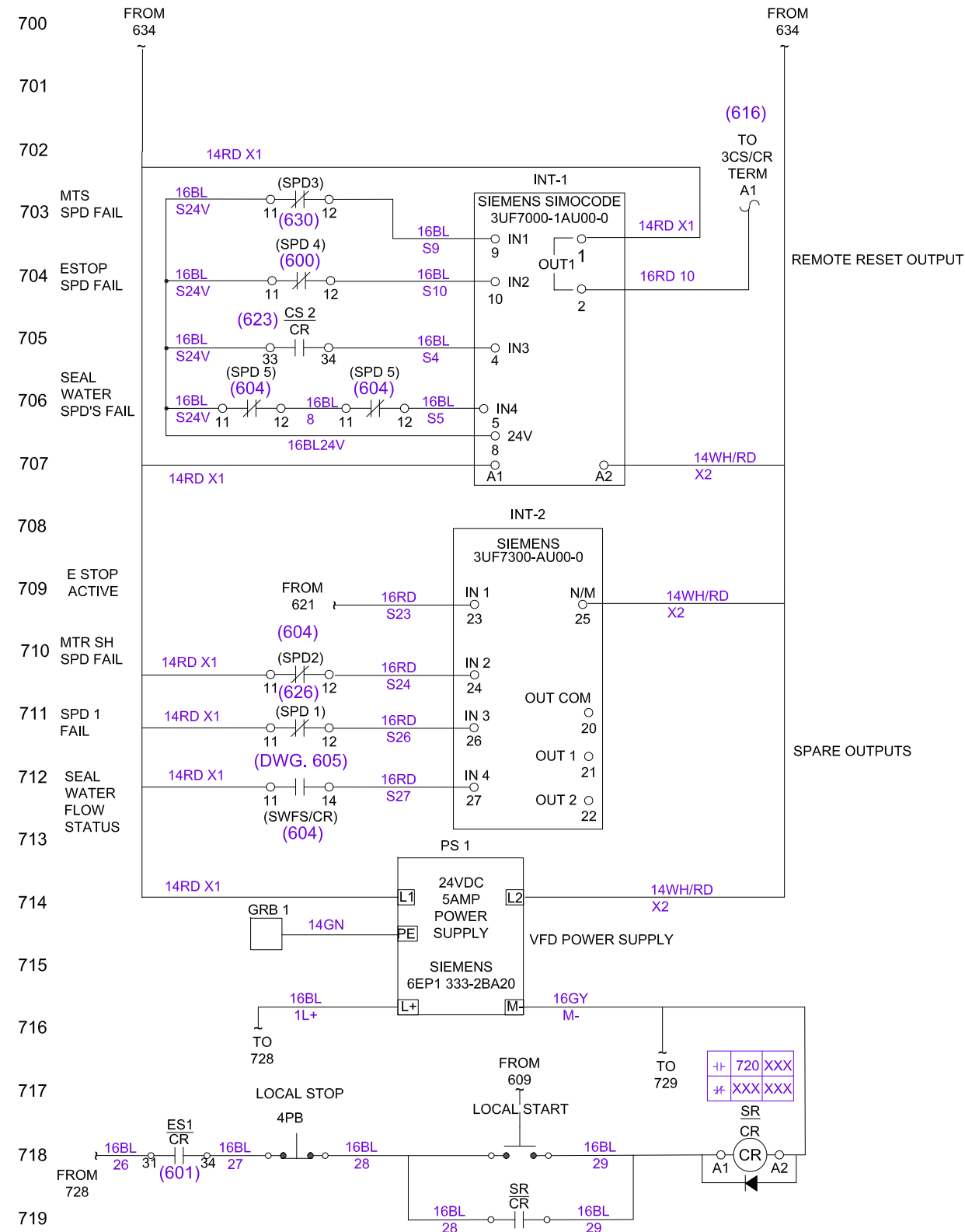


SCALE:	N.T.S.	-	ADDED SEAL WATER CTRL WIRING AND RE-ID ALL WIRING	10-30-2024	JG
DESIGN:	IAG				
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE: LOW VOLTAGE STANDARDS STAND ALONE ENCLOSURE VFD LESS THAN OR EQUAL TO 250HP 120 VAC CONTROL WIRING SCHEMATIC PART 1 WITH SEAL WATER SYSTEM

SHEET  
606B

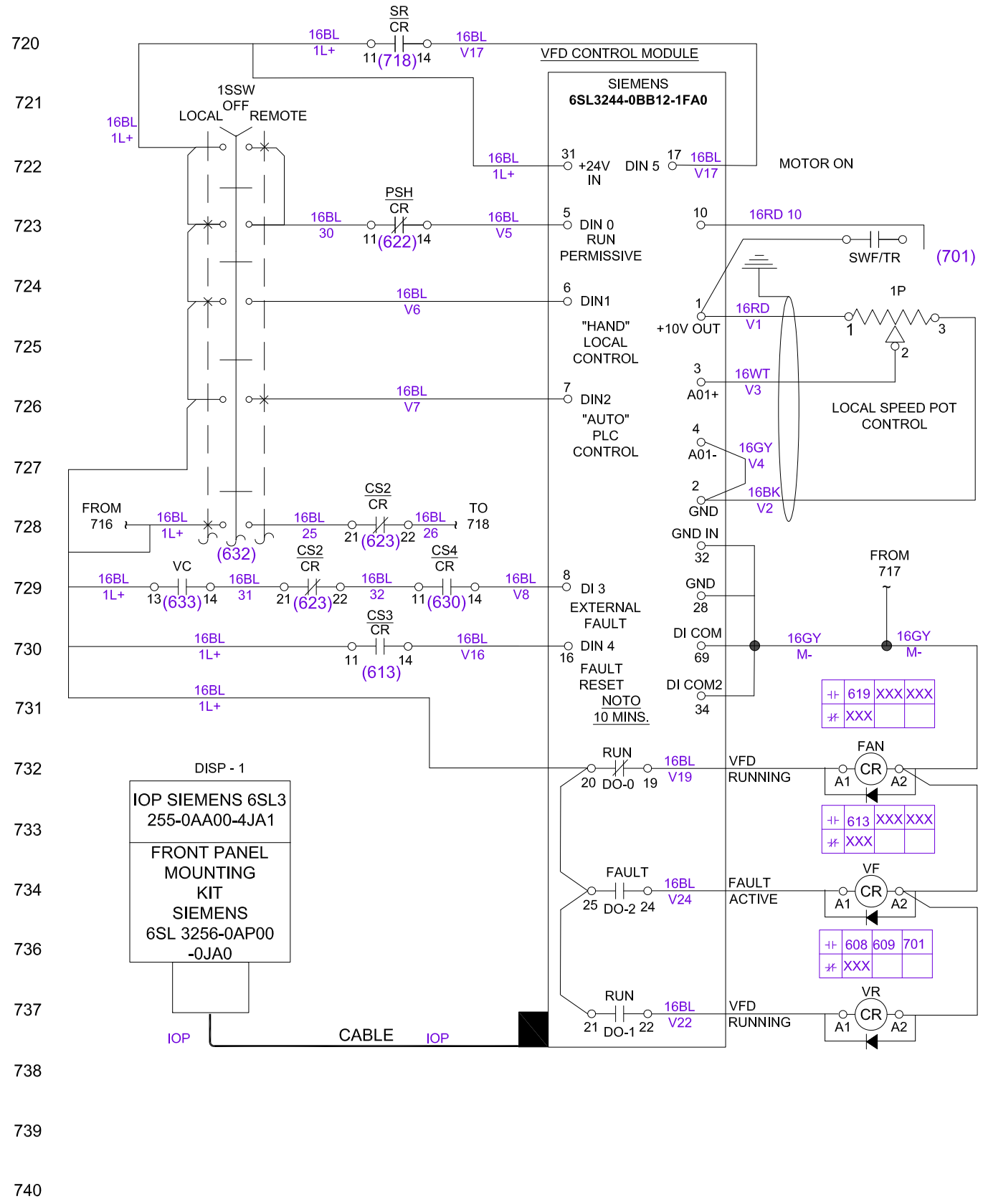
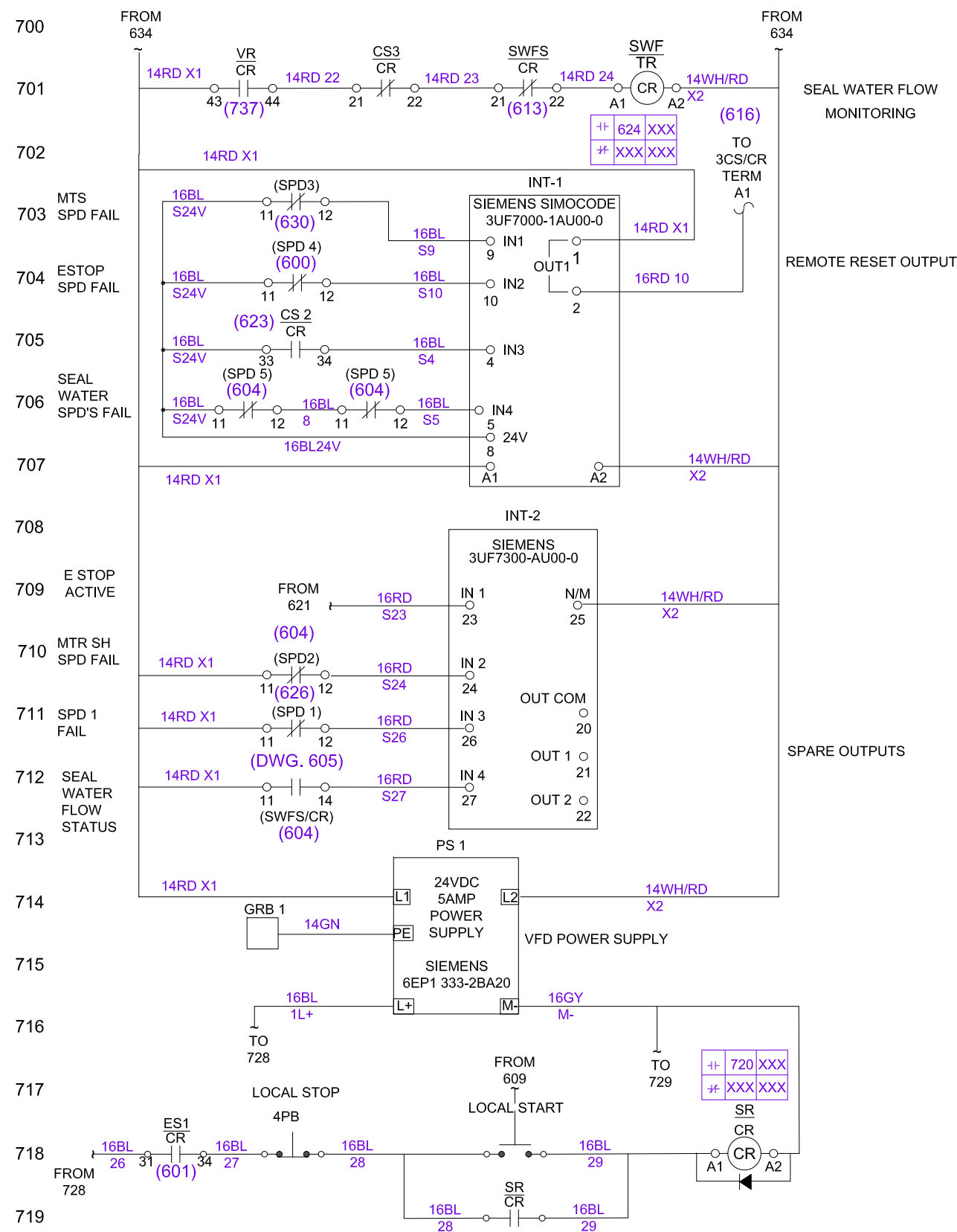


APPROVED BY:	NO	REVISION	DATE	BY	
SCALE:	N.T.S.	-	ADDED SEAL WATER CTRL WIRING AND RE-ID ALL WIRING	10-30-2024	JG
DESIGN:	IAG	-	-	06-01-2021	FH
		-	REVISED LOCAL START ADDED 609	10-07-2021	FH
		-	REVISED RIGHT SIDE	11-10-2022	FH
DRAWN BY:	JG	-	REVISED CS1	03-29-2024	FH

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS STAND ALONE ENCLOSURE VFD LESS THAN OR EQUAL TO 250HP 120 VAC CONTROL WIRING SCHEMATIC PART 2 WITH PUMP PROTECTION SYSTEM

SHEET  
607A



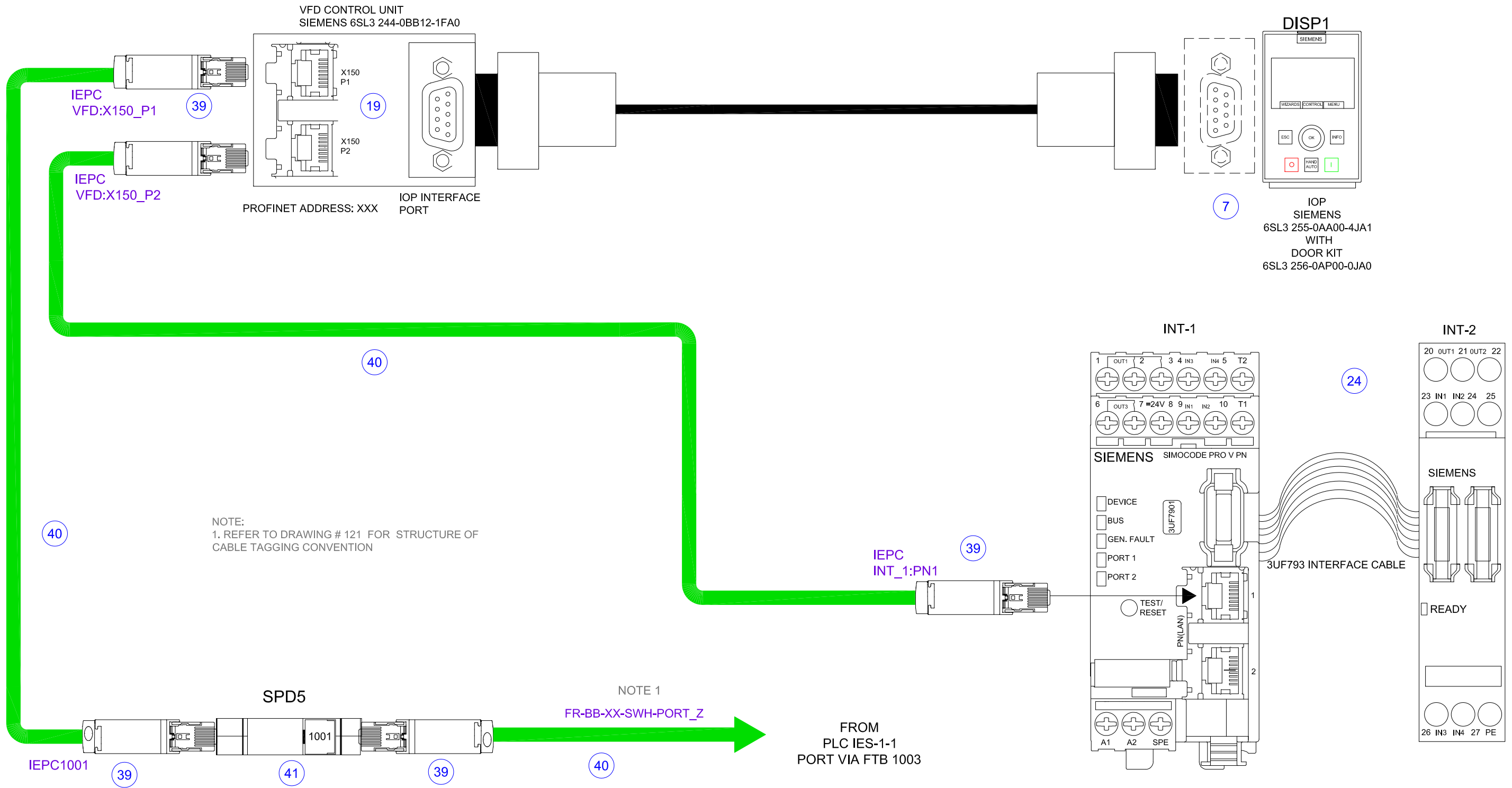
SCALE:	N.T.S.			ADDED SEAL WATER CTRL WIRING AND RE-ID ALL WIRING	10-30-2024	JG
DESIGN:	IAG			REVISED LOCAL START ADDED 609	06-01-2021	FH
DRAWN BY:	JG			REVISED RIGHT SIDE	10-07-2021	FH
APPROVED BY:	WW			REVISED CS1	11-10-2022	FH
		NO		REVISION	03-29-2024	FH

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP

CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS STAND ALONE ENCLOSURE VFD LESS THAN OR EQUAL TO 250HP 120 VAC CONTROL WIRING SCHEMATIC PART 2 WITH SEAL WATER SYSTEM

SHEET  
607B



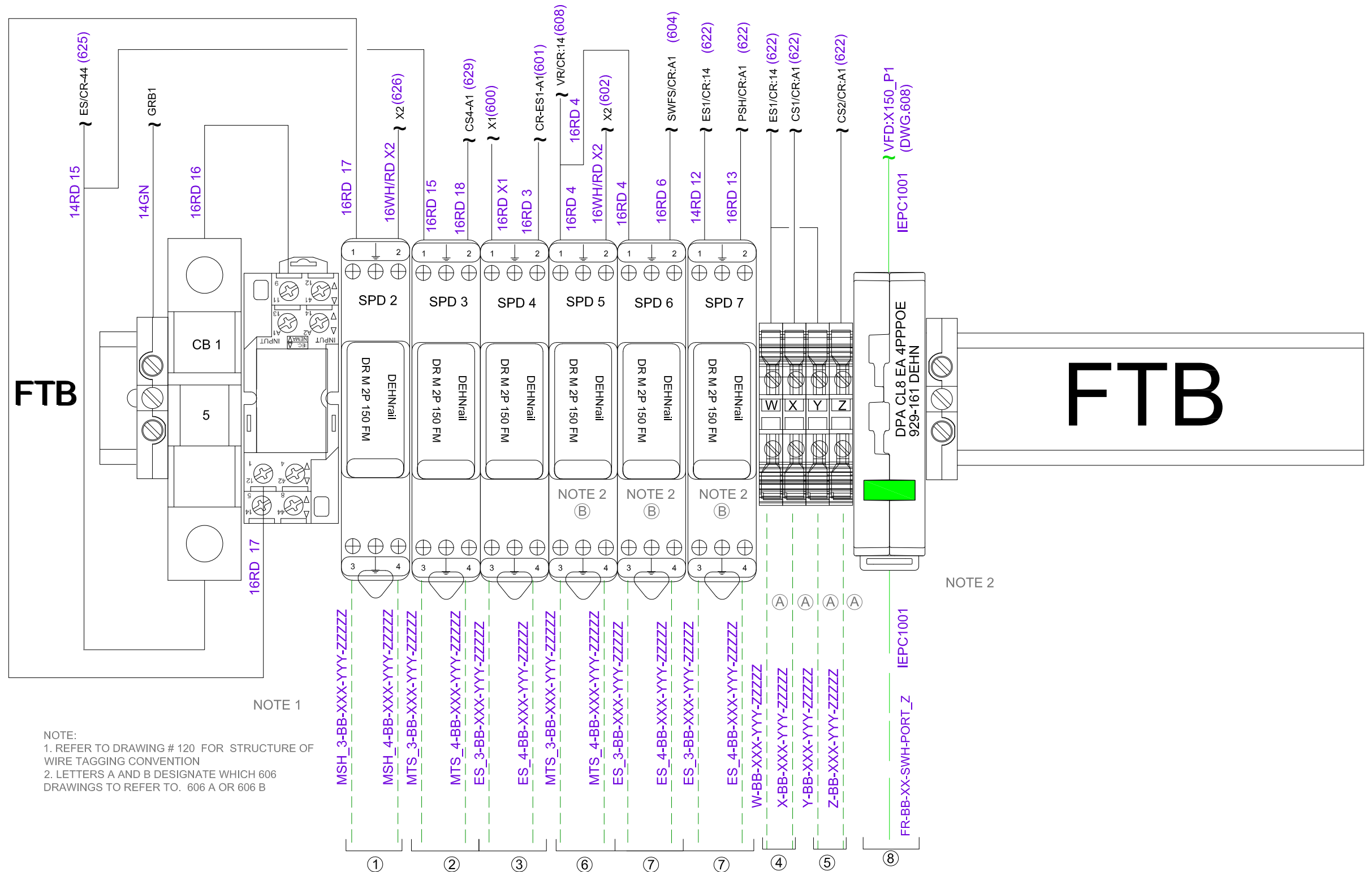
SCALE:	N.T.S.			03-04-2016	JG
DESIGN:	IAG				
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS STAND  
ALONE ENCLOSURE VFD LESS THAN OR  
EQUAL TO 250HP PROFINET  
COMMUNICATION WIRING LAYOUT

SHEET  
608

ID	FIELD DEVICE SCHEDULE
①	MOTOR SPACE HEATER
②	MOTOR THERMAL SWITCH
③	REMOTE E-STOP STATION
④	PUMP PROTECTION PANEL "RUN" PERMISSIVE CONTACT WHEN REQUIRED
⑤	PUMP PROTECTION PANEL "FAULT" OUTPUT CONTACT WHEN REQUIRED
⑥	SEAL WATER VALVE SOLENOID WHEN REQUIRED
⑦	SEAL WATER FLOW SWITCH WHEN REQUIRED
⑧	LOCAL ETHERNET SWITCH



NOTE:  
 1. REFER TO DRAWING # 120 FOR STRUCTURE OF WIRE TAGGING CONVENTION  
 2. LETTERS A AND B DESIGNATE WHICH 606 DRAWINGS TO REFER TO. 606 A OR 606 B

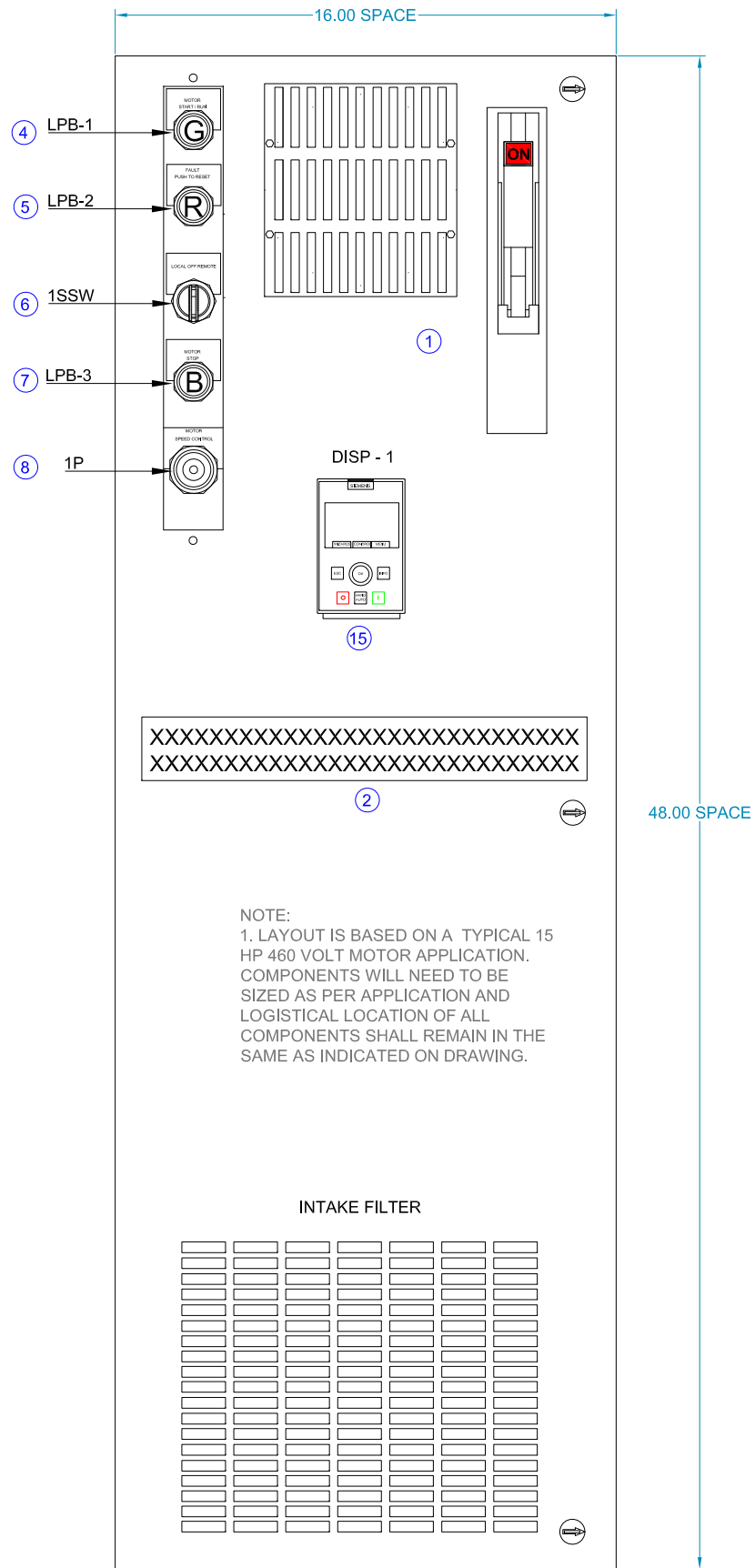


SCALE:	N.T.S.	REVISION	DATE	BY
DESIGN:	IAG			
DRAWN BY:	JG			
APPROVED BY:	WW	NO		

WATER RECLAMATION DIVISION,  
 INDUSTRIAL AUTOMATION GROUP  
 CITY OF  
 ORLANDO, FLORIDA

TITLE:  
 LOW VOLTAGE STANDARDS STAND ALONE ENCLOSURE VFD LESS THAN OR EQUAL TO 250HP FIELD TERMINAL ASSIGNMENTS

SHEET  
 609

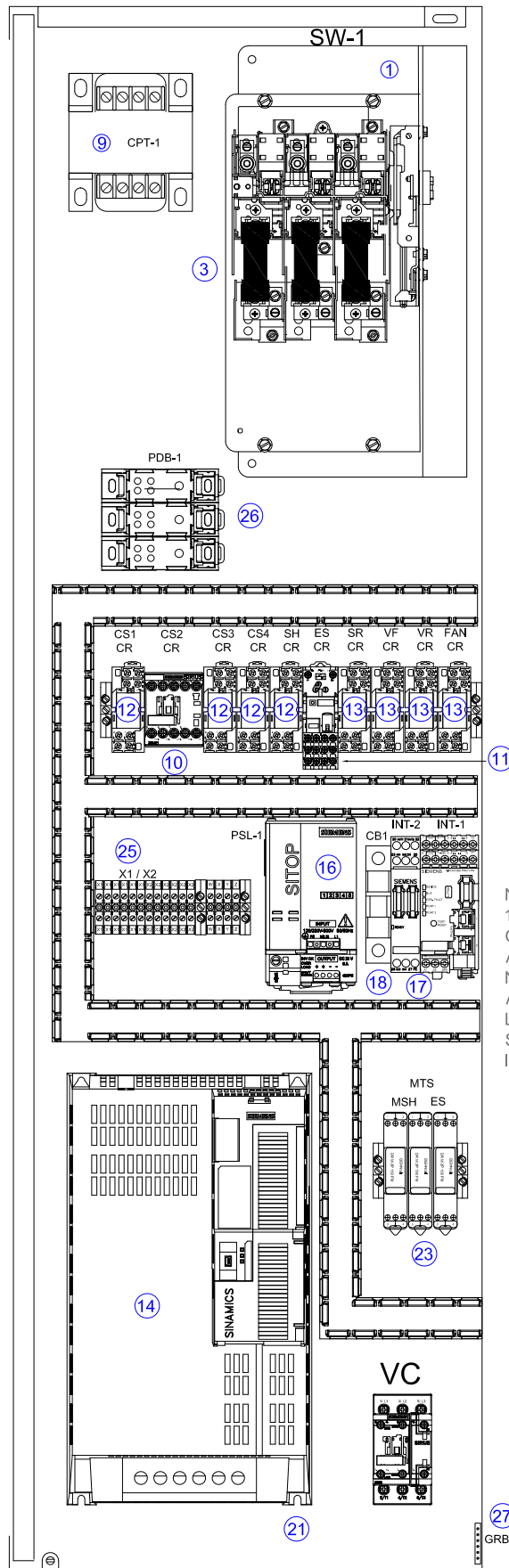


SCALE:	N.T.S.	-	-	02-07-2019	JG
DESIGN:	IAG	-	-	06-25-2020	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
 INDUSTRIAL AUTOMATION GROUP  
 CITY OF  
 ORLANDO, FLORIDA

TITLE:	LOW VOLTAGE STANDARDS VFD (MCC) FRONT PANEL ELEVATION
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SHEET  
 702



NOTE:  
 1. INTERIOR LAYOUT IS BASED ON A TYPICAL 15 HP 460 VOLT MOTOR APPLICATION. COMPONENTS WILL NEED TO BE SIZED AS PER APPLICATION AND LOGISTICAL LOCATION OF ALL COMPONENTS SHALL REMAIN IN THE SAME AS INDICATED ON DRAWING.



SCALE:	N.T.S.	-	-	02-07-2019	JG
DESIGN:	IAG	-	-	08-27-2019	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
 INDUSTRIAL AUTOMATION GROUP  
 CITY OF  
 ORLANDO, FLORIDA

TITLE:  
 LOW VOLTAGE STANDARDS  
 VFD (MCC)  
 INTERIOR PANEL LAYOUT

SHEET  
 703

NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.	NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.
1	1	MOTOR CONTROL CENTER 48.00 INCH SPACE HEIGHT MODULE	SIEMENS TIASTAR SMART MOTOR CONTROL SERIES	14	1	VARIABLE FREQUENCY DRIVE, 480 VAC, 15 HP, POWER MODULE	SIEMENS 6SL3224-0BE31-1UA0
	1	DISCONNECT SWITCH, 3-POLE, 480 VOLT, PANEL MOUNT, FUSIBLE			1	PROFINET COMMUNICATIONS CONTROL UNIT	SIEMENS 6SL3243-0BB30-1FA0
	1	MODULAR DOOR MOUNTED AIR EXHAUST FAN			1	MEMORY CARD	SIEMENS 6SL3254-0AM00-0AA0
	1	MODULAR DOOR MOUNTED AIR INTAKE GRILL WITH FILTER ELEMENT			1	LINE REACTOR BASE MODULE	SIEMENS 6SL3203-0CD23-5AA0
					1	LOAD REACTOR BASE MODULE	SIEMENS 6SL3202-0AJ23-2CA0
2	1	NAMEPLATE, WHITE W/BLACK LETTERS, .50 HEIGHT, BOLTED	SIEMENS, NAMEPLATE DESIGNATION INFORMATION BY OWNER				
				15	1	VFD OPERATOR PANEL, IOP	SIEMENS 6SL3 255-0AA00-4JA1
3	3	CURRENT-LIMITING, HIGH SPEED, 600 VAC, CLASS J FUSE	BUSSMANN DFJ-XXX (SIZE FUSE BASED ON MFG. RECOMMENDATION)		1	VFD IOP FRONT PANEL MOUNTING KIT	SIEMENS 6SL3 256-0AP00-0JA0
4	1	30MM H.D. OILTIGHT ILLUMINATED 120 VAC LED GREEN P. B . WITH 2 - NO AND 2 - NC CONTACT BLOCK	SIEMENS 52BT6E3BY	16	1	POWER SUPPLY, 120/230VAC IN, 24VDC/5A	SIEMENS 6EP1333-2BA20
	1	"START / MOTOR RUN" NAMEPLATE	SIEMENS 52NL23	17	1	SIRIUS SIMOCODE MTR MANAGEMENT CONTROLLER, PROFINET COMM.	SIEMENS 3UF7 011-1AU00-0
					1	SIRIUS SIMOCODE DIGITAL I/O MODULE	SIEMENS 3UF7 300-1AU00-0
5	1	30MM H.D OILTIGHT ILLUMINATED 120 VAC LED RED P .B . WITH 2 - NO AND 2 - NC CONTACT BLOCK	SIEMENS 52BT6E3BY		1	SIRIUS SIMOCODE MODULE INTERFACE CABLE	SIEMENS 3UF7 93****
	1	"FAULT" "PUSH TO RESET" NAMEPLATE	SIEMENS 52NL23	18	1	CIRCUIT BREAKER, SINGLE POLE, *A TRIP, * = SIZE AS PER APPLICATION	SIEMENS 5SJ41**7HG41
6	1	30MM HEAVY DUTY OILTIGHT 3 POSITION SELECTOR SWITCH 2 NO AND 2 NC CONTACT BLOCK	SIEMENS 52SX2CABA7	19	1	CAT 6, 24AWG, 4 PAIR, BRAIDED SHIELD, FLEXIBLE GREEN JACKET, CABLE	SIEMENS 6XV 1878 2B, PER METER
	1	"HAND OFF AUTO" NAMEPLATE	SIEMENS 52NL37	20	3	RJ45 METAL ENCLOSURE PLUG CONNECTOR	SIEMENS 6GK1 901-1BB11-2AA0
7	1	30MM H.D. OILTIGHT BLACK PUSHBUTTON 1 N.O. & 1 N.C.	SIEMENS 52BM8B1A	21	1	TYPE SIZE 0, 3 POLE, 60 HP RATED, 120VAC CONTROL COIL	SIEMENS 3RT 2026-1AK60
	1	"MOTOR STOP" NAMEPLATE	SIEMENS 52NL04		1	LATERALLY MOUNTABLE AUXILIARY SWITCH BLOCK, 1NO ,1NC	SIEMENS 3RH 2921-1DA11
					1	SURGE SUPPRESSOR, VARISTOR, 48-120VAC	SIEMENS 3RT2926-1BC00
8	1	POTENTIOMETER OPERATOR 2W, 500 V, 5K OHMS	SIEMENS 52MA3B12				
				22			
9	1	CONTROL TRANSFORMER, 150VA, 480 X 120/240	SIEMENS MT150G				
	1	CONTROL TRANSFORMER, PRIMARY FUSE KIT	SIEMENS KCCFPX2R	23	3	SURGE SUPPRESSOR PLUG/BASE, DR M 2P 150 FM	DEHN DEHNRail #953-209
	2	FUSE, CLASS CC, 1A	BUSSMANN FNQ-R-1				
	1	FUSE, CLASS M, 2A	BUSSMANN FNM-2	24	-	-	-
10	1	CONTROL RELAY, 120VAC COIL,2NO,2NC CONTACTS	SIEMENS 3RH2122-AK60	25	19	THROUGH-TYPE TERMINAL, BEIGE	SIEMENS 8WA1 011-1DG11
11	1	CONTROL RELAY, 120VAC COIL, 15A, 4.P.D.T., 14 PIN, SQUARE PLUG IN RELAY	SIEMENS 3TX7117-5PF13 / 3TX7144-4E9	26	3	POWER DISTRIBUTION BLOCK , FINGER SAFE, 3 POLE, 600VAC	BUSSMANN PDBFS 220
					2	POWER DISTRIBUTION BLOCK INTERLOCK	BUSSMANN 2A1279
12	4	CONTROL RELAY, 120VAC COIL, 15A, D.P.D.T., 8 PIN, SQUARE PLUG IN RELAY	SIEMENS 3TX7114-5LF13 / 3TX7144-4E6				
				27	1	6 CIRCUIT GROUNDING BAR	ILSCO D167-06
13	4	CONTROL RELAY, 24VDC COIL, 15A, D.P.D.T., 8 PIN, SQUARE PLUG IN RELAY	SIEMENS 3TX7114-5LC03C /3TX7144-4E6				
	4	NOISE SUPPRESION DIODE	SIEMENS 3TX7144-H12	28	2	PERFORATED SLOTTED MOUNTING RAIL STEEL	SIEMENS 5ST1 145
				29	2	1.26 WIDE, 2.12 DEEP WHITE SLOTTED WIREWAY	PANDUIT G1X2WH6 AND C1WH6

NOTE 2

NOTE 1

NOTE 2

NOTE 1

NOTE 2

NOTES:

- NO SUBSTITUTION OR EQUAL ACCEPTED, PROVIDE AS SPECIFIED.
- COO WASTEWATER DIVISION 13 AND/OR DIVISION 16 SPECIFIED EQUAL ONLY

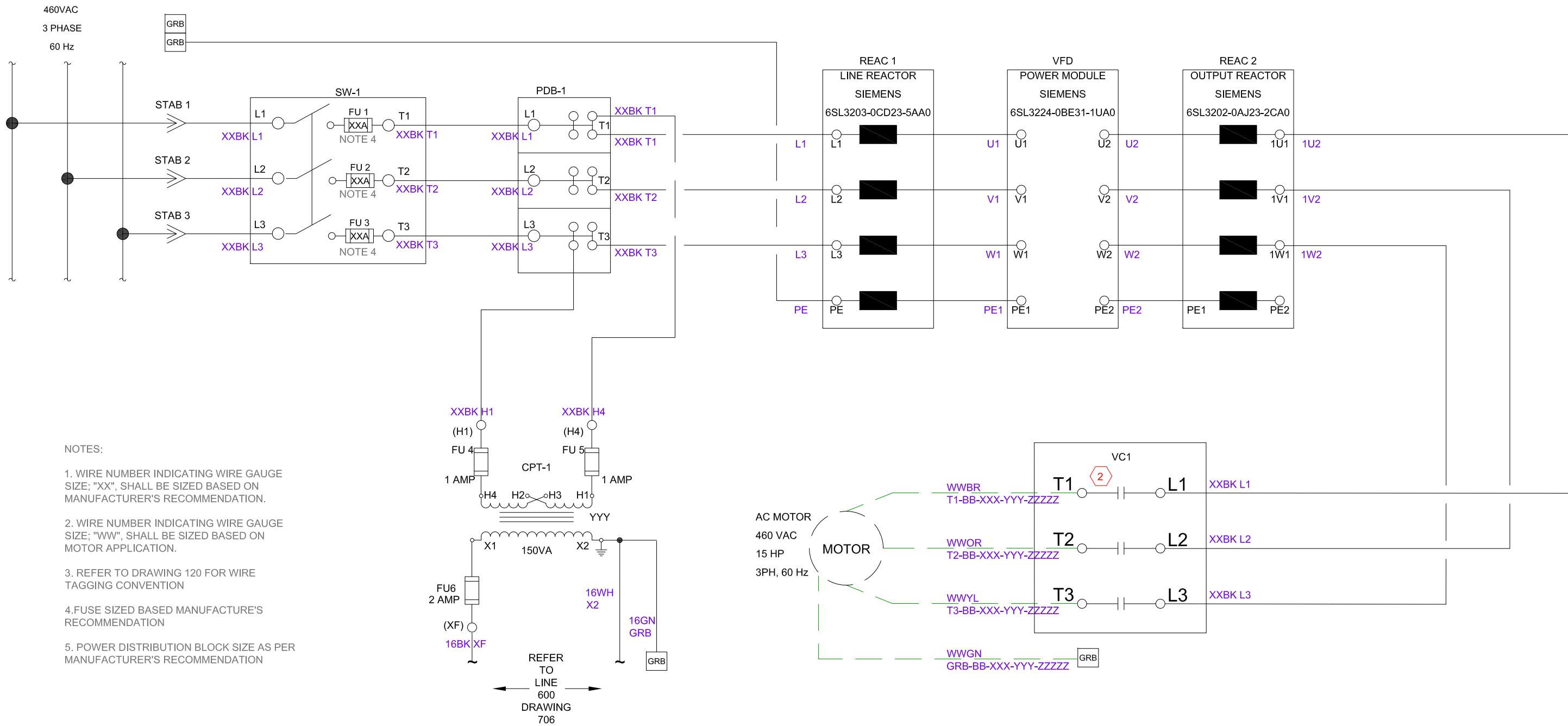


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		-	-	06-25-2020	FH
DESIGN:	IAG	-	REVISED ITEM 21	12-14-2020	FH
		-	REVISED ITEM 17 PART NUMBER	04-22-2025	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
  
CITY OF  
ORLANDO, FLORIDA

TITLE:	LOW VOLTAGE STANDARDS (VFD) (MCC) BILL OF MATERIALS
--------	---

SHEET  
704



NOTES:

1. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "XX", SHALL BE SIZED BASED ON MANUFACTURER'S RECOMMENDATION.
2. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "WW", SHALL BE SIZED BASED ON MOTOR APPLICATION.
3. REFER TO DRAWING 120 FOR WIRE TAGGING CONVENTION
4. FUSE SIZED BASED MANUFACTURE'S RECOMMENDATION
5. POWER DISTRIBUTION BLOCK SIZE AS PER MANUFACTURER'S RECOMMENDATION

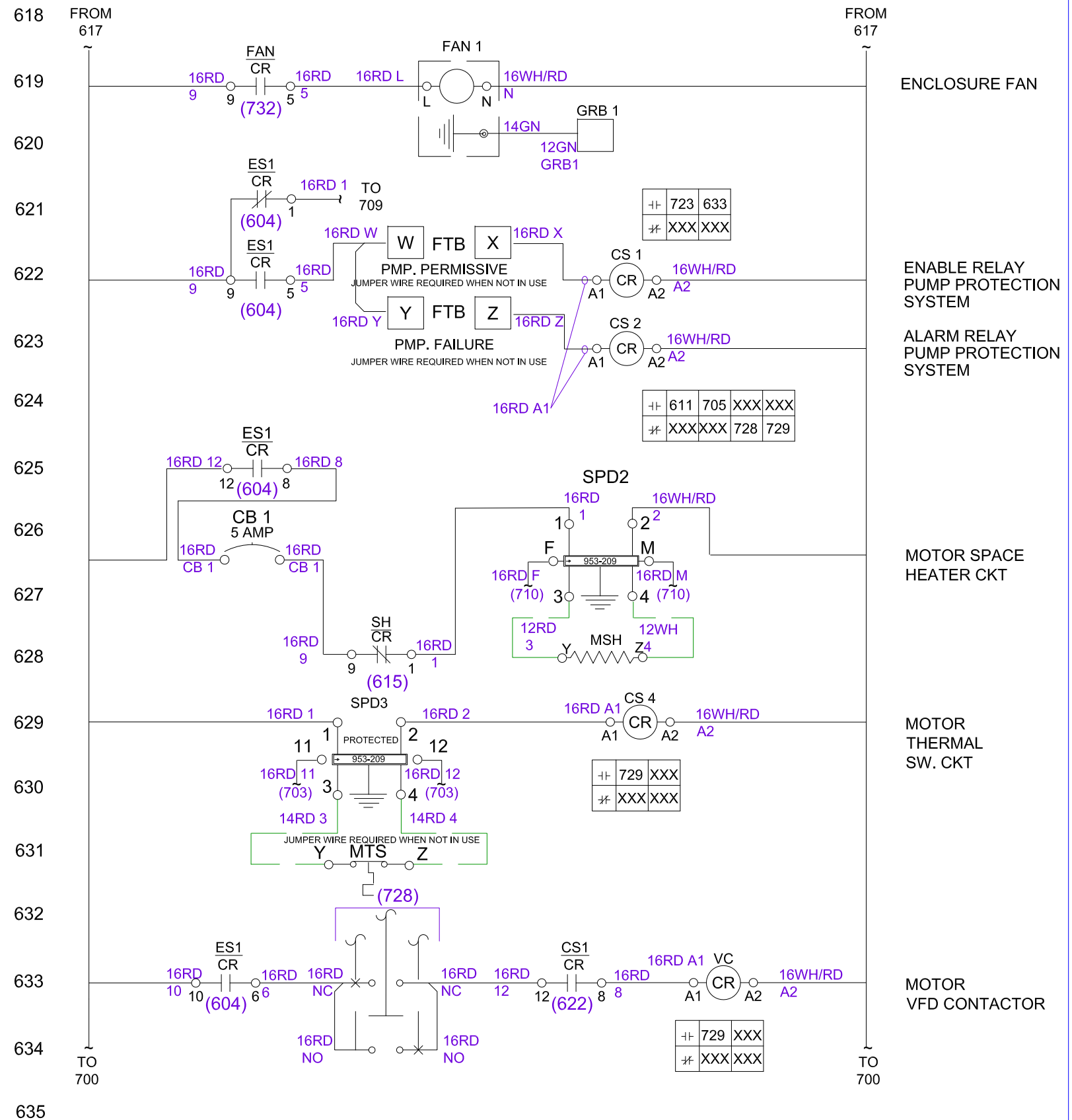
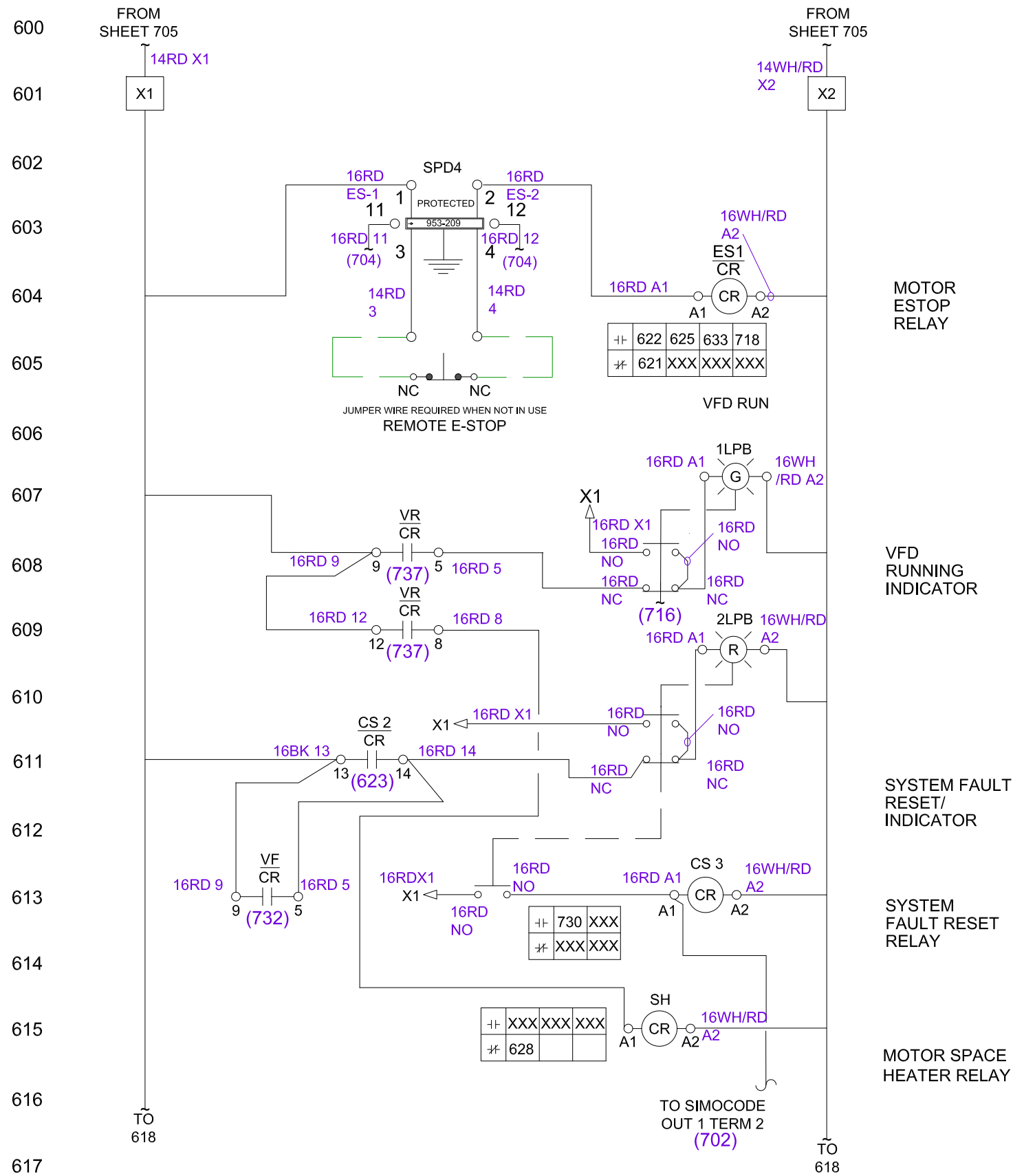


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DESIGN:	IAG	-	-	08-27-2019	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
(VFD) (MCC)  
480VAC ONE LINE DISTRIBUTION LAYOUT

SHEET  
705

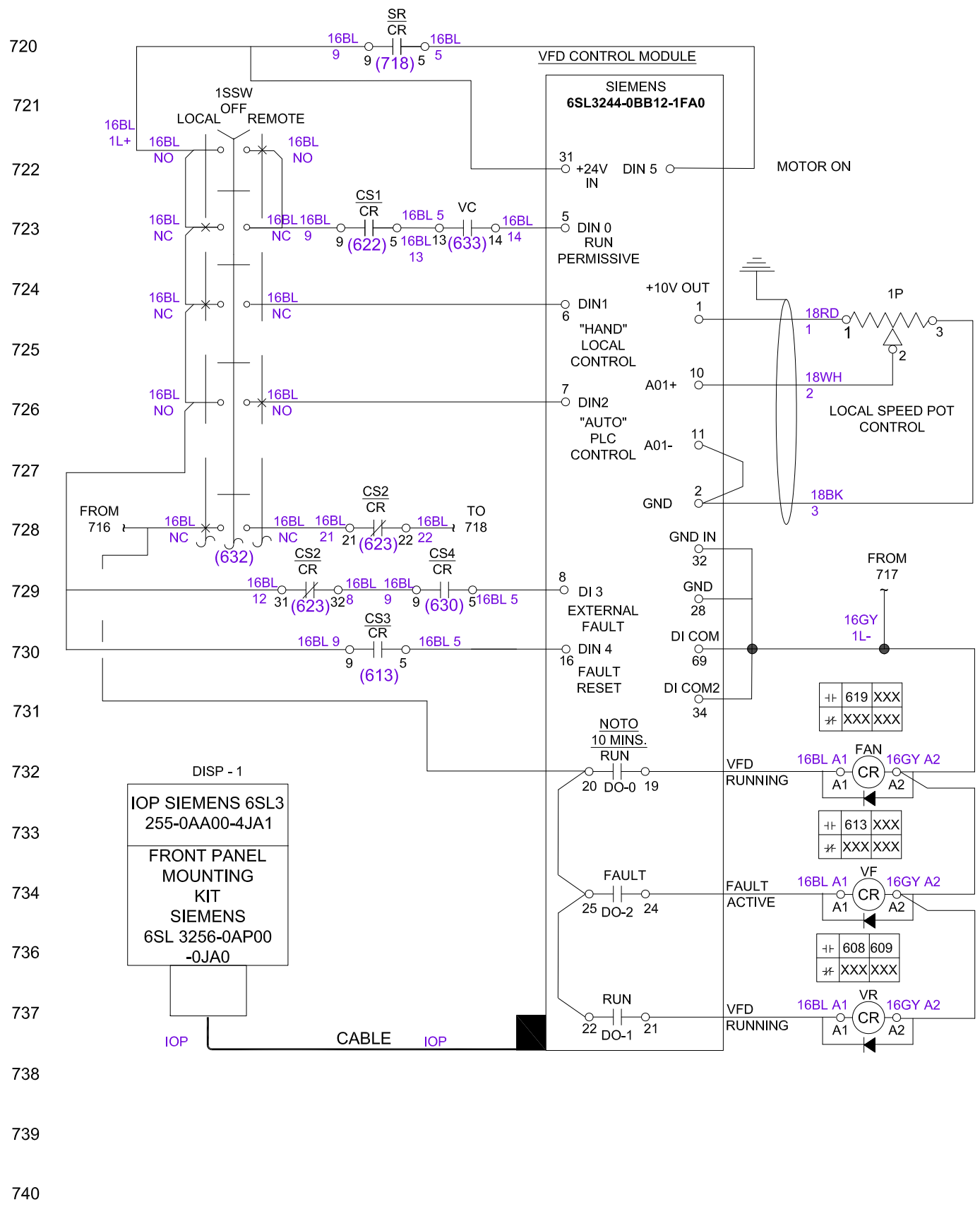
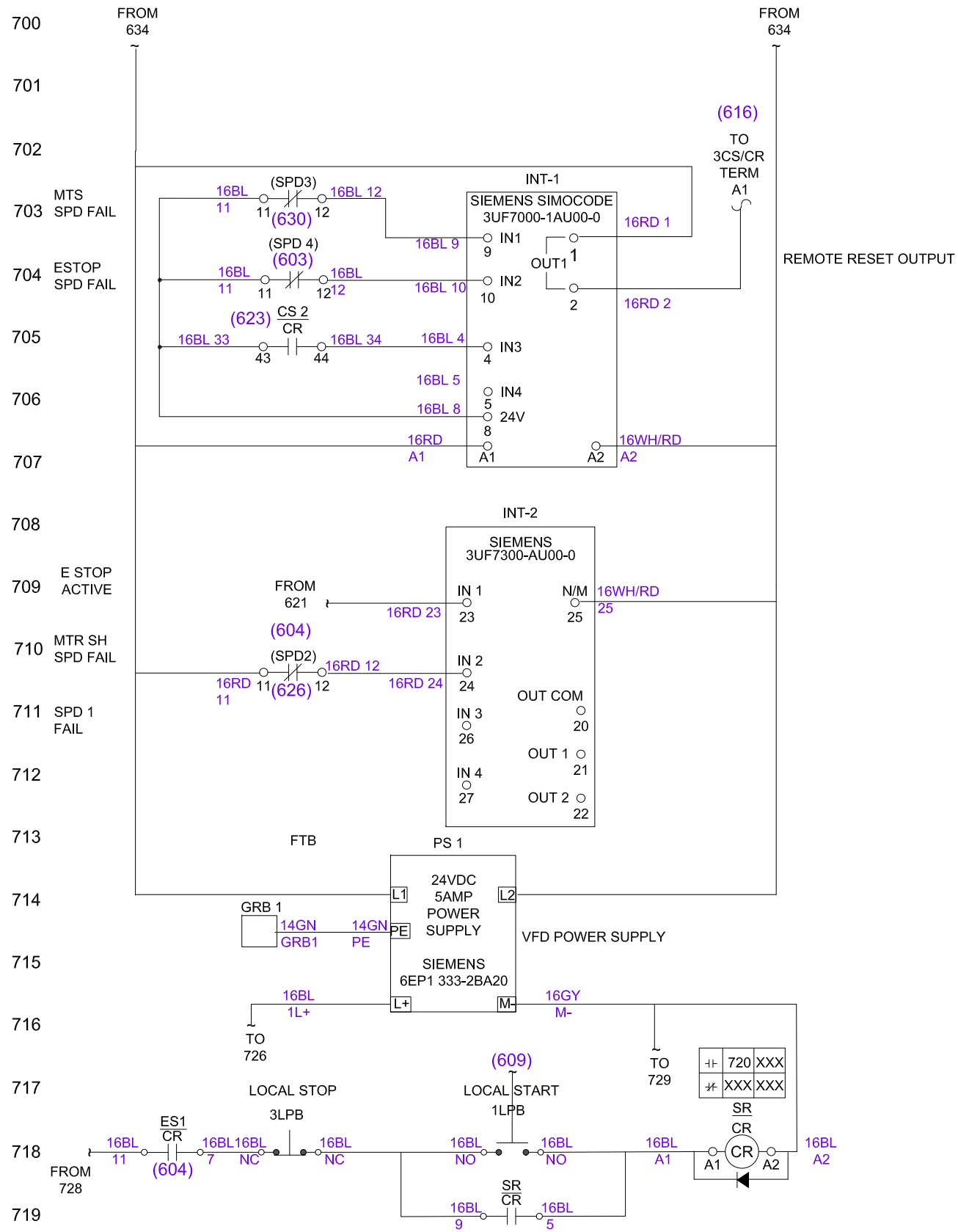


SCALE:	N.T.S.	-	-	02-07-2019	JG
DESIGN:	IAG	-	EDITED VR/CR LINES 608,609, AND 634	06-26-2020	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
(VFD) (MCC)  
120 VAC CONTROL WIRING-PART 1

SHEET  
706

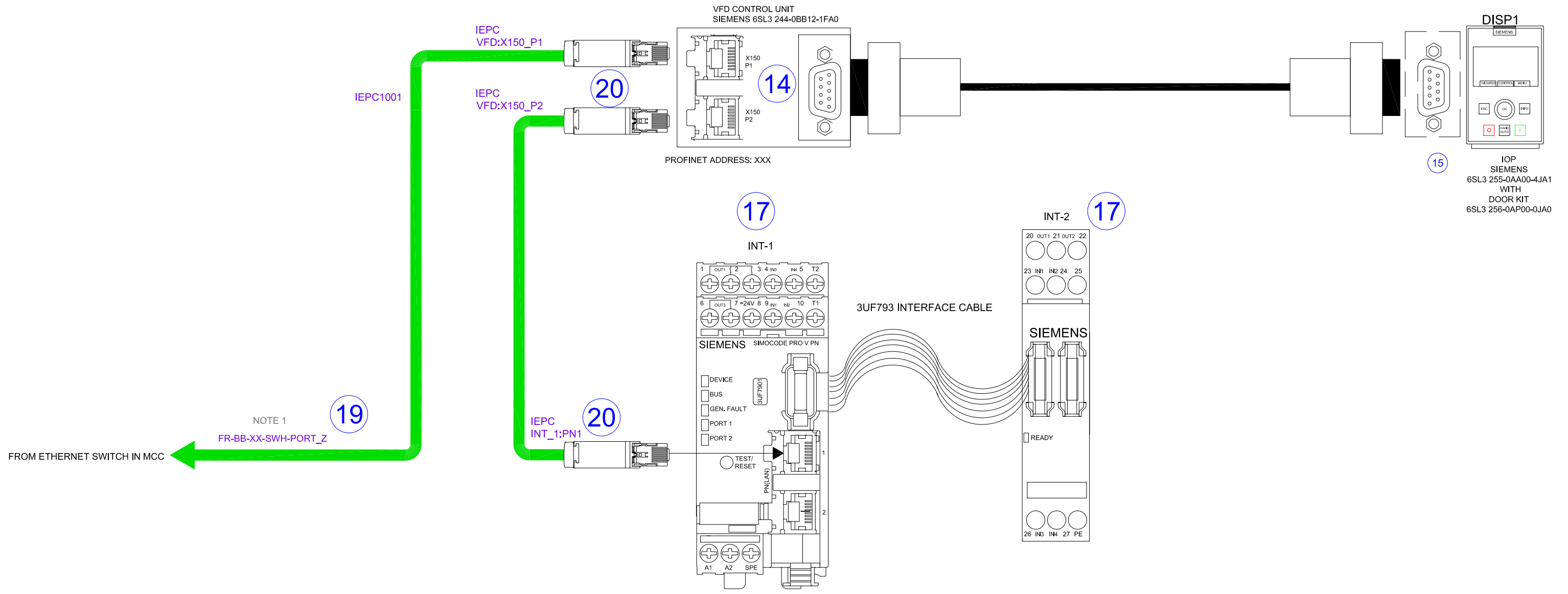


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APPROVED BY:	WW	NO	REVISION	11-19-2021	FH
				11-10-2022	FH

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
(VFD) (MCC)  
120 VAC CONTROL WIRING-PART 2

SHEET  
707



SCALE:	N.T.S.	-	-	02-05-2019	JG
DESIGN:	IAG				
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

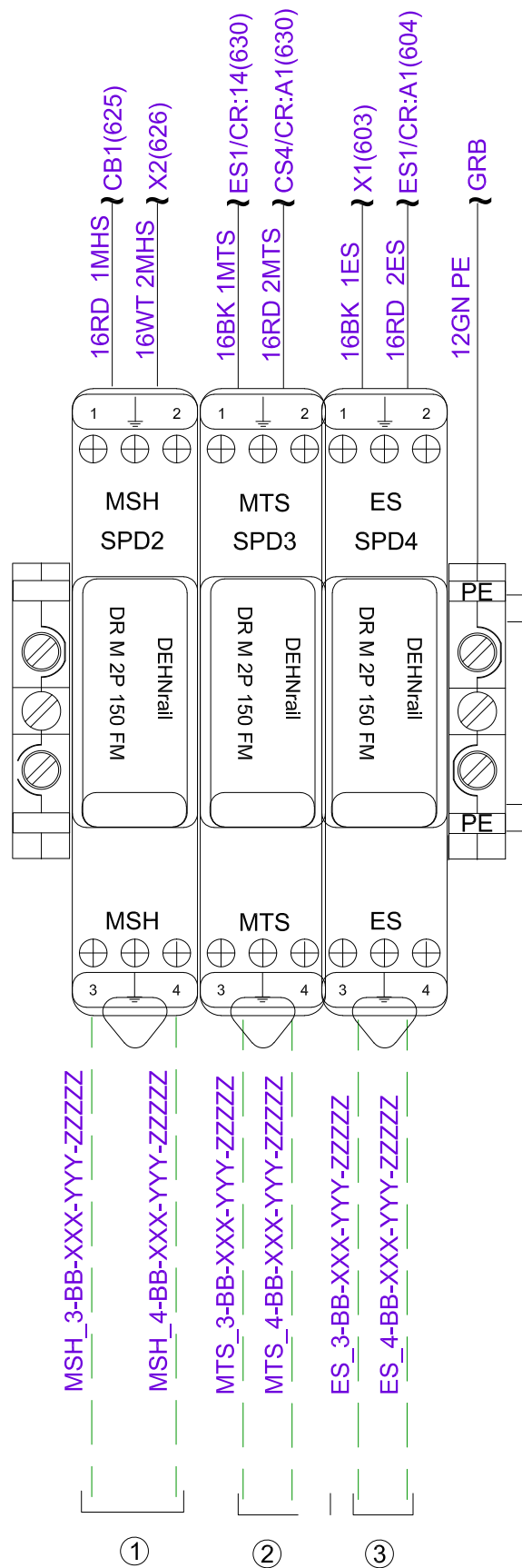
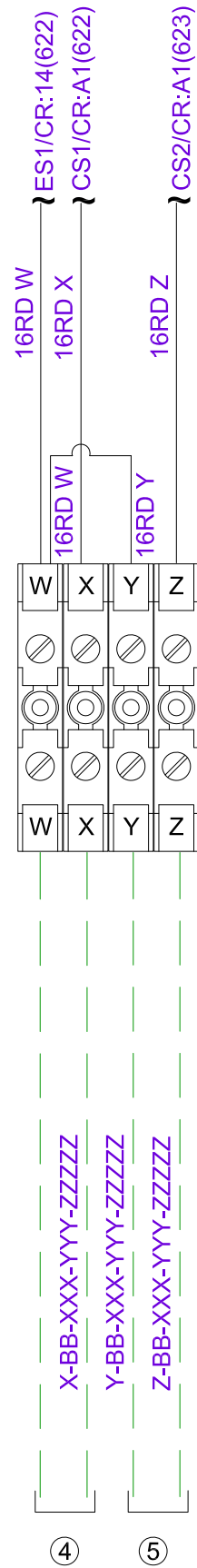
WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP

CITY OF  
ORLANDO, FLORIDA

TITLE:

LOW VOLTAGE STANDARDS  
(VFD) (MCC)  
COMMUNICATIONS WIRING LAYOUT

SHEET  
708



ID	FIELD DEVICE SCHEDULE
①	MOTOR SPACE HEATER
②	MOTOR THERMAL SWITCH
③	REMOTE E-STOP STATION
④	PUMP PROTECTION PANEL "RUN" PERMISSIVE CONTACT
⑤	PUMP PROTECTION PANEL "FAULT" OUTPUT CONTACT

NOTE:  
1. REFER TO DRAWING # 120 FOR STRUCTURE OF WIRE TAGGING CONVENTION



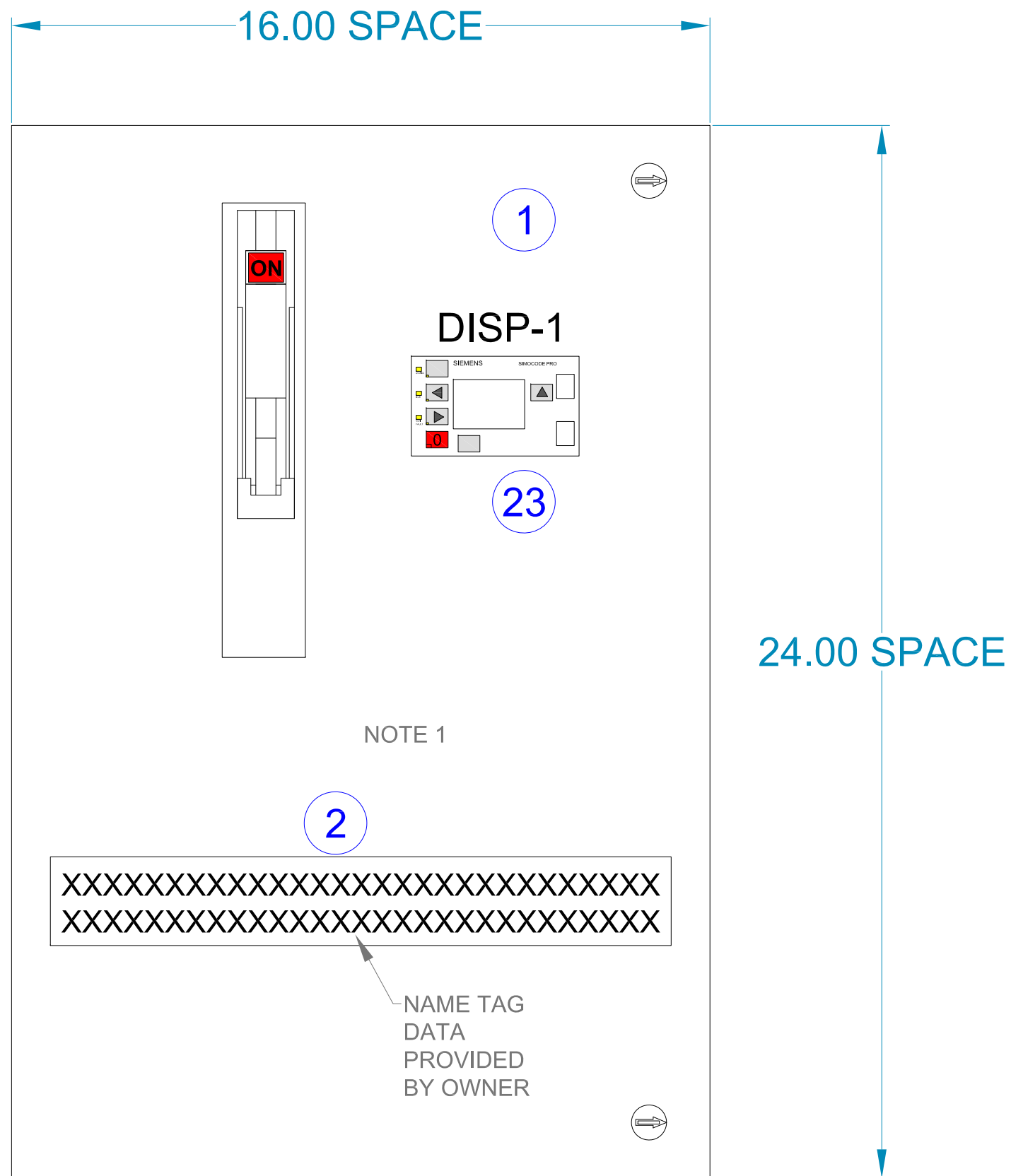
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DESIGN:	IAG				
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
(VFD) (MCC)  
FIELD TERMINAL ASSIGNMENTS

SHEET  
709

NOTE:  
 1. INTERIOR LAYOUT IS BASED ON  
 A TYPICAL 100 AMP 460 VOLT  
 APPLICATION. COMPONENTS WILL  
 NEED TO BE SIZED AS PER  
 APPLICATION AND LOGISTICAL  
 LOCATION OF ALL COMPONENTS  
 SHALL REMAIN IN THE SAME AS  
 INDICATED ON DRAWING.



DIMENSIONS IN INCHES



SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG				
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

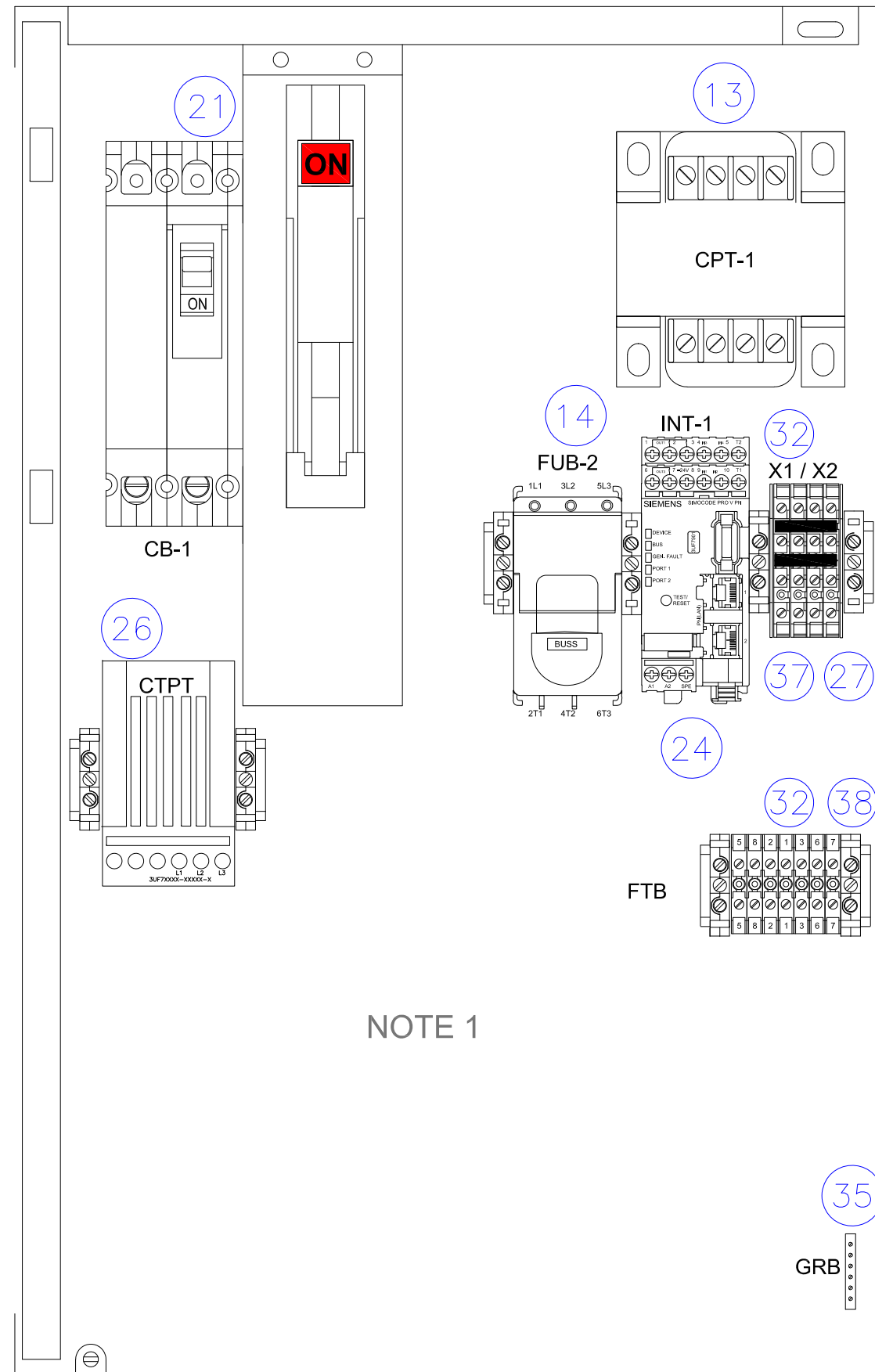
WATER RECLAMATION DIVISION,  
 INDUSTRIAL AUTOMATION GROUP  
 CITY OF  
 ORLANDO, FLORIDA

TITLE:  
 LOW VOLTAGE STANDARDS  
 FEEDER BREAKER MONITORING  
 (MCC) FRONT PANEL ELEVATION

SHEET  
 802

NOTE:

1. INTERIOR LAYOUT IS BASED ON A TYPICAL 100 AMP 460 VOLT APPLICATION. COMPONENTS WILL NEED TO BE SIZED AS PER APPLICATION AND LOGISTICAL LOCATION OF ALL COMPONENTS SHALL REMAIN IN THE SAME AS INDICATED ON DRAWING.



SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	-	08-27-2019	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
FEEDER BREAKER MONITORING  
(MCC) INTERIOR PANEL LAYOUT

SHEET  
803

NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.	NO.	QTY.	DESCRIPTION	MANUFACTURER'S PART NO.
1	1	MOTOR CONTROL CENTER PLUG IN 24.00 INCH SPACE HEIGHT MODULE	SIEMENS TIASTAR MOTOR CONTROL SERIES	19	-	-	-
2	1	NAMEPLATE, 14W X 2H, WHITE W/BLACK LETTERS	CUSTOM ENGRAVED- NAME TAG DATA PROVIDED BY OWNER	20	-	-	-
3	-	-	-	21	1	CIRCUIT BREAKER, 3-POLE, 480 VOLT, 65 KAIC, THERMAL MAGNETIC	SIEMENS TYPE ED*****
4	-	-	-		1	BREAKER HANDLE TIE ASSEMBLY	SIEMENS TYPE ED*****
5	-	-	-	22	-	-	-
6	-	-	-	23	1	SIRIUS SIMOCODE INFO DISPLAY	SIEMENS 3UF7210-1AA00-0
7	-	-	-		1	SIRIUS DISPLAY CONNECTING CABLE	SIEMENS 3UF7 93***
8	-	-	-	24	1	SIRIUS SIMOCODE MTR MANAGEMENT CONTROLLER, PROFINET COMM.	SIEMENS 3UF7 011-1AU00-0
9	-	-	-		1	SIRIUS SIMOCODE MODULE INTERFACE CABLE	SIEMENS 3UF7 93****
10	-	-	-	25	-	-	-
11	-	-	-	26	1	CURRENT VOLTAGE MEASURING MOD	SIEMENS 3UF7112-1AA00-0
12	-	-	-	27	-	-	-
13	1	CONTROL TRANSFORMER, 150VA, 480 X 120/240	SIEMENS MT150G	28	1	SURGE SUPPRESSOR PLUG/BASE, DR M 2P 150 FM	DEHN DEHNRAIL #953-209
	1	CONTROL TRANSFORMER, PRIMARY FUSE KIT	SIEMENS KCCFPX2R	29	1	CAT 6, 24AWG, 4 PAIR, BRAIDED SHIELD, FLEXIBLE GREEN JACKET, CABLE	SIEMENS 6XV 1878 2B, PER METER
	2	FUSE, CLASS CC, 1A	BUSSMANN FNQ-R-3	30	3	RJ45 METAL ENCLOSURE PLUG CONNECTOR	SIEMENS 6GK1 901-1BB11-2AA0
	1	FUSE, CLASS M, 2A	BUSSMANN FNM-5	31	1	SURGE SUPPRESSOR MODULE, ETHERNET	DEHNpatch DPA M CLE RJ45B, 929-121
14	1	3 POLE FUSE HOLDER DEAD FRONT 600 VOLT RATED	BUSSMANN OPM-1038	32	4	TWO-TIER TERMINAL BLOCK, SINGLE, BEIGE	SIEMENS 8WA1 011-6DG11
	3	FUSE, CLASS CC, 1/2 A	BUSSMANN KTK-R-1/2		2	TWO-TIER TERMINAL BLOCK END SECTION	SIEMENS 8WA1 817
15	-	-	-		1	TWO-TIER TERMINAL LINK RAIL TOP	SIEMENS 8WA1 853
16	-	-	-		1	TWO-TIER TERMINAL LINK RAIL BOTTOM	SIEMENS 8WA1 823
17	-	-	-		7	THROUGH-TYPE TERMINAL, BEIGE	SIEMENS 8WA1 011-1DG11
18	-	-	-	33	-	-	-
				34	-	-	-
				35	1	6 CIRCUIT GROUNDING BAR	ILSCO D167-06
				36	-	-	-
				37	1	PERFORATED SLOTTED MOUNTING RAIL STEEL	SIEMENS 5ST1 145
				38	8	THROUGH - TYPE "PE" TERMINAL	PHOENIX CONTACT USLKG6N

NOTE 2

NOTE 1

NOTE 2

NOTE 1

NOTE 2

NOTE 1

NOTES:  
 1. NO SUBSTITUTION OR EQUAL ACCEPTED, PROVIDE AS SPECIFIED.  
 2. COO WASTEWATER DIVISION 13 AND/OR DIVISION 16 SPECIFIED EQUAL ONLY

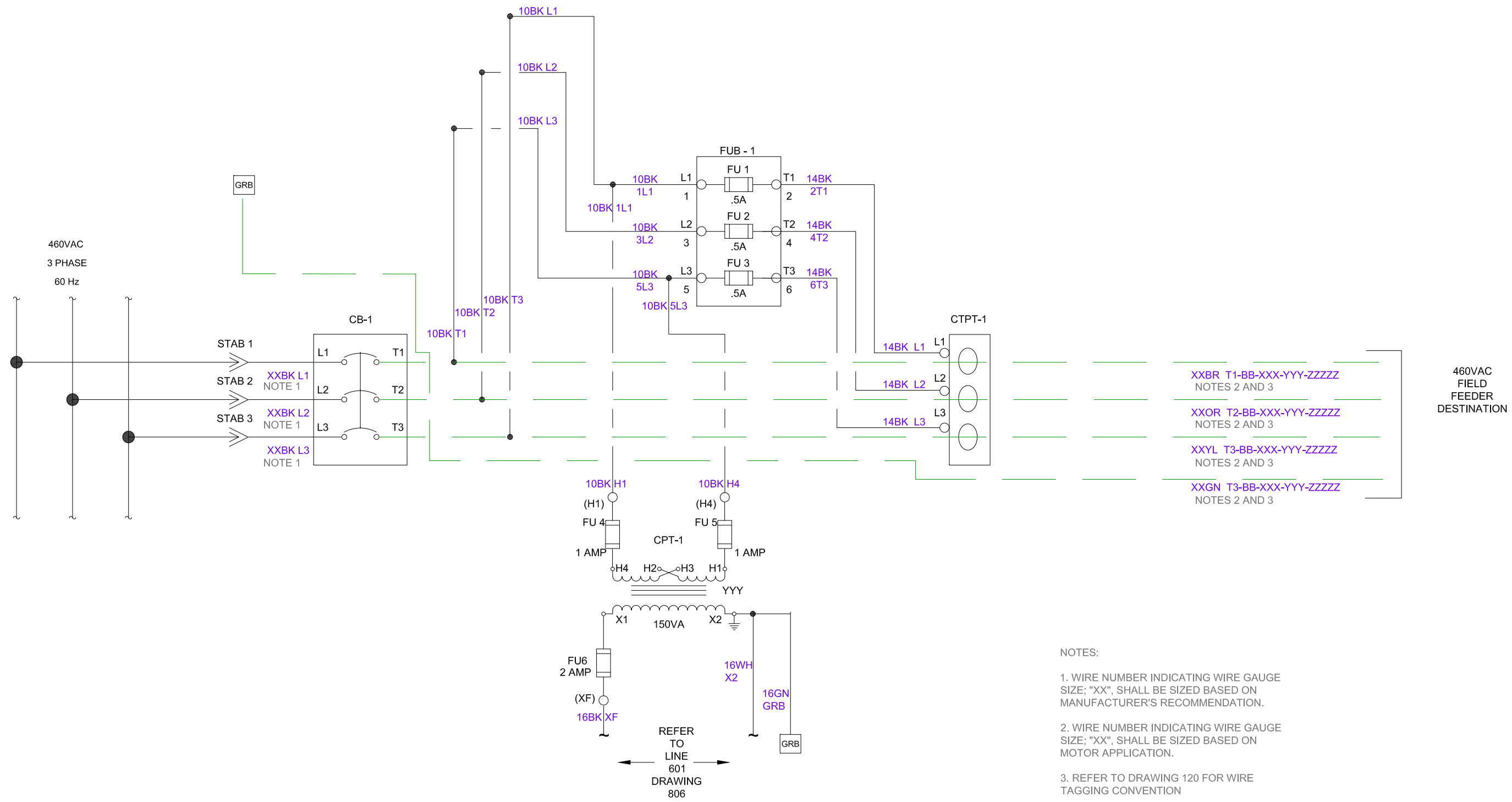


SCALE:	N.T.S.	-	-	10-22-2014	JG
DESIGN:	IAG	-	-	08-27-2019	FH
DRAWN BY:	JG				
APPROVED BY:	WW	NO	REVISION	DATE	BY

WATER RECLAMATION DIVISION,  
 INDUSTRIAL AUTOMATION GROUP  
 CITY OF  
 ORLANDO, FLORIDA

TITLE:  
 LOW VOLTAGE STANDARDS  
 FEEDER BREAKER MONITORING  
 (MCC) BILL OF MATERIALS

SHEET  
 804



- NOTES:
1. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "XX", SHALL BE SIZED BASED ON MANUFACTURER'S RECOMMENDATION.
  2. WIRE NUMBER INDICATING WIRE GAUGE SIZE; "XX", SHALL BE SIZED BASED ON MOTOR APPLICATION.
  3. REFER TO DRAWING 120 FOR WIRE TAGGING CONVENTION



SCALE:	N.T.S.	-	-	10-23-2014	JG
DESIGN:	IAG	-	-	08-27-2019	FH
DRAWN BY:	JG				
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WATER RECLAMATION DIVISION,  
INDUSTRIAL AUTOMATION GROUP  
CITY OF  
ORLANDO, FLORIDA

TITLE:  
LOW VOLTAGE STANDARDS  
FEEDER BREAKER MONITORING  
(MCC) 480VAC ONE LINE DISTRIBUTION  
LAYOUT

SHEET  
805