SHEET INDEX

GENERAL

E50 - PROJECT COVER SHEET

E51 - NOTES & SYMBOLS

E52 - WWTP SITE PLAN

MCC-3 AND MCC-4

E53 - MCC-3 SINGLE LINE DIAGRAM

E54 - MCC-4 SINGLE LINE DIAGRAM

E55 - MCC-3 & MCC-4 SITE PLAN

E56 - MCC-3 & MCC-4 ELEVATION

E57 - MCC-3 & MCC-4 NETWORK AND INTERCONNECTION DIAGRAM

E58 - MCC - CONSTRUCTION STAGING PLAN

DETAILS

ED51 - ELECTRICAL DETAILS

REFERENCE

ER51 - (REF) EX. MCC PLC PANEL SCHEMATIC

ER52 - (REF) PHOTOS

CONSTRUCTION PLANS CITY OF NAPLES WWTP MCC REPLACEMENT **FOR**

CITY OF NAPLES

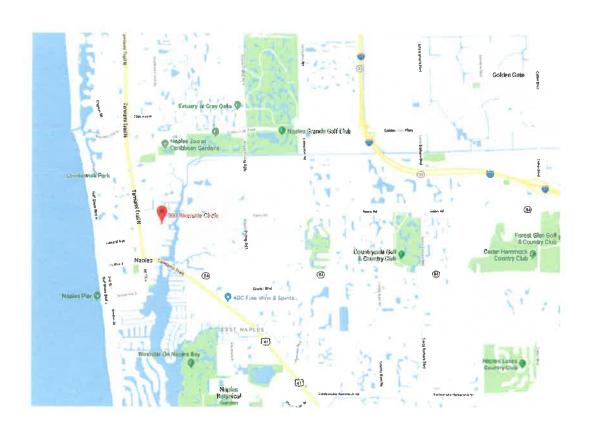
LOCATED IN

SECTION 03, TOWNSHIP 50 SOUTH, RANGE 25 EAST

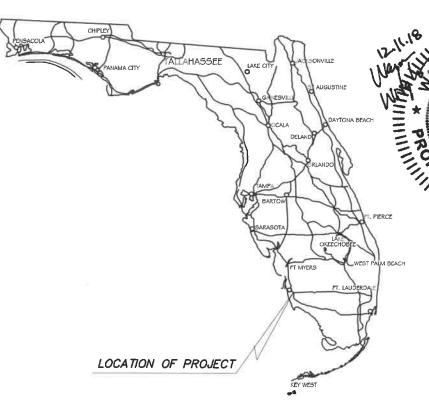
NAPLES, FL

DEC. 2018

CITY OF NAPLES REQUISITION NO. 11014



LOCATION MAP





DESIGN CONSULTANT



SIONAL E



PROJECT COVER SHEET

SHEET NUMBER

E50

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ABBREVIATIONS SYMBOLS AMPERES, AMBER OR ALARM (FIT) DUPLEX RECEPTACLE AH AMP HOUR OR ALARM HORN MAGNETIC FLOW INDICATING TRANSMITTER MAG 2. CONDUCTORS SHALL NOT BE SPLICED. $\dashv\vdash$ NORMALLY OPEN CONTACT. AL ALARM LIGHT 33573 ALM ALARM -JK-NORMALLY CLOSED CONTACT PRESSURE INDICATING TRANSMITTER ASR ALARM STITENCE RELAY FLOW INDICATING TRANSMITTER D. LIMIT SWITCH, NORMALLY OPEN AHU AIR HANDLING UNIT AIC AMPS INTERRUPTING CURRENT FLOW ELEMENT 0-----LIMIT SWITCH, NORMALLY CLOSED ATS AUTOMATIC TRANSFER SWITCH PRESSURE SWITCH, NORMALLY OPEN LEVEL (FLOAT) SWITCH AUXILIARY T PRESSURE SWITCH, NORMALLY CLOSED BAT PRESSURE SWITCH BATTERY BPC BACKUP PUMP CONTROLLER 44.04% FLOW SWITCH BOM BILL OF MATERIAL (MOV) FLOAT SWITCH, NORMALLY CLOSED CB CIRCUIT BREAKER MOTOR OPERATED VALVE (MOV) COUPLINGS. CONDUIT $\overline{\mathbb{A}}$ FLOW SWITCH, NORMALLY OPEN 9. MINIMUM CONDUIT SIZE SHALL BE 3/4". CP CONTROL PANEL FLOW SWITCH, NORMALLY CLOSED SV CPSA CONTROL PANEL SURGE ARRESTOR SOLENOID VALVE (SV) 1414 CT \bowtie TEMP. SWITCH, NORMALLY OPEN CURRENT TRANSFORMER CU COPPER TEMP. SWITCH, NORMALLY CLOSED -1,-SOLENOID VALVE (SV) DISC DISCONNECT 大子 NORMALLY OPEN TIMED TO CLOSE CONTACT DO DIGITAL OUTPUT DIAPHRAGM VALVE DPDT DOUBLE POLE DOUBLE THROW NORMALLY CLOSED TIMED TO OPEN CONTACT 3-PHASE 480Y/277VAC (A/B/C/N/G): DPST DOUBLE POLE SINGLE THROW \bigcirc NORMALLY CLOSED TIMED TO CLOSE CONTACT VOI TMETER EG EQUIPMENT GROUND ETM ELAPSED TIME METER (A) 7. NORMALLY OPEN TIMED TO OPEN CONTACT AC POWER HOT: (S) FLT (GFI) LIMIT SWITCH FAULT GROUND FAULT INTERRUPTER AC SWITCHED: FPL FLORIDA POWER AND LIGHT (XS) DRAW-OUT CIRCUIT BREAKER TORQUE SWITCH **≪□**≫ FMC ELEXIBLE METALLIC CONDUIT (PS) PRESSURE SWITCH FS FLOAT SWITCH GROUND: CIRCUIT BREAKER WITH TRIP RATING Ø GEN GENERATOR VIBRATION SWITCH DC +: BLU, 16 AWG MIN. GFCI GROUND FAULT CIRCUIT INTERRUPTER (AR) HP ALARM RELAY MOTOR WITH HP RATING GND, G TSP (+/-): œ GRS GALVANIZED RIGID STEEL CONTROL RELAY FOLIPMENT GROUND M HIGH MOTOR STARTER HS HAND SWITCH ® TIMING RELAY HOA HAND-OFF-AUTOMATIC ()|| DRIVEN ROD-TYPE GROUNDING ELECTRODE R HOR HAND-OFF-REMOTE INDICATING LIGHT WITH COLOR HMI HUMAN MACHINE INTERFACE NORMALLY OPEN PUSHBUTTON DRIVEN ROD-TYPE GROUNDING ELECTRODE WITH INDICATOR GROUND ACCESS WELL مله I&C INSTRUMENTATION & CONTROL NORMALLY CLOSED PUSHBUTTON INTR INTRUSION MAINTAINED SWITCH JB JUNCTION BOX NON-FUSIBLE DISCONNECT SWITCH, 30A, 3P UNLESS [#] FUSE WITH RATING LEVEL OR LOW OTHERWISE INDICATED LR LINE REACTOR REMOTE TERMINAL POINT NEUT, N NEUTRAL CURRENT TRANSFORMER HORN NTS NOT TO SCALE \bigcup O/C OPEN / CLOSE PUMP TRANSFORMER OIT 0 CONDUIT OR WIRE ROUTING; SHORT HASH MARK = PHASE CONDUCTOR TERMINAL BLOCK MOV MOTOR OPERATED VALVE KEY INTERLOCK MSC MANUFACTURER'S SUPPLIED CABLE LONG HASH MARK = NEUTRAL CONDUCTOR NF NON-FUSIBLE **-**∕x,-MOTOR OVERLOAD (EUTECTIC ALLOY) PRESSURE \sim AC/DC POWER SUPPLY PB PUSHBUTTON o o PLC PROGRAMMABLE LOGIC CONTROLLER SURGE SUPPRESSOR (PROTECTED/UNPROTECTED) PH, Ø 100 FUSED LEVER-TYPE TERMINAL BLOCK WITH LED INDICATOR PC PHOTOCELL PCP PUMP CONTROL PANEL CT SHORTING BAR PM PHASE MONITOR PS POWER SUPPLY PTT PUSH-TO-TEST Q TOTAL IZER RECPT RECEPTACLE RELAY, TREND, RESISTOR RTU REMOTE TELEMETRY UNIT SCCR SHORT CIRCUIT CURRENT RATING SHLD SHIELDED SPD PROJECT ELECTRICAL NOTES SURGE PROTECTION DEVICE SWITCH SS SELECTOR SWITCH SSOL SOLID STATE OVERLOAD ALL DEMOED EQUIPMENT SHALL BE DISPOSED OF BY THE CONTRACTOR. SV SOLENOID VALVE SEE SPECIFICATIONS FOR CONTRUCTION STAGING SCHEDULE, DETAILS, PROCEDURES AND LIMITATIONS ON EQUIPMENT UNAVAILABILTY. ТВ TERMINAL BLOCK TIME DELAY TSP TWISTED SHIELDED PAIR UG UNDERGROUND UPS UNINTERRUPTABLE POWER SUPPLY VFD VARIABLE FREQUENCY DRIVE XFMR TRANSFORMER Z POSITION

GENERAL ELECTRICAL NOTES

- ALL NEW CONSTRUCTION SHALL COMPLY WITH APPLICABLE N.E.C. AND LOCAL CODES.
- 3. ALL MULTICONDUCTOR CONTROL CABLE SHALL BE #14 AWG XHHW-2, OMNICABLE P/N AF114XX, OR EO.
- 4. ALL BELOW GRADE CONDUIT RUNS SHALL BE IN SCHEDULE 80 PVC CONDUIT UNLESS

NOTED OTHERWISE, ALL ABOVE GRADE CONDUIT RUNS SHALL BE IN RIGID ALUMINUM CONDUIT UNI FSS NOTED OTHERWISE, PROVIDE PVC CONDUIT SLEEVE AROUND CONDUIT PENETRATIONS IN CONCRETE FOR PROTECTION.

- ALL BONDING CONDUCTORS SHALL BE ROUTED IN SCHEDULE 80 PVC CONDUIT.
- ALL CONDUIT RACEWAYS SHALL HAVE AN INSULATED COPPER SYSTEM GROUND CONDUCTOR THROUGHOUT THE ENTIRE LENGTH OF THE CIRCUIT INSTALLED PER N.E.C.
- 7. ALL CONDUIT RACEWAYS WHICH ARE INSTALLED FOR FUTURE USE SHALL HAVE A NYLON PULLCORD.
- 8. PVC CONDUIT JOINTS SHALL BE SOLVENT-WELDED, EXCEPT FOR RIGID METALLIC TO PVC
- 10. ALL CONDUIT RACEWAYS SHALL BE RUN IN NEAT AND WORKMANLIKE MANNER AND SHALL BE PROPERLY
- 11. ALL CONNECTIONS TO MOTORS AND OTHER VIBRATING EQUIPMENT OR AT OTHER LOCATIONS WHERE REQUIRED SHALL BE MADE WITH FLEXIBLE LIQUID-TIGHT STEEL CONDUIT 12" TO 36" IN LENGTH.
- 12. ALL FEEDER AND BRANCH CIRCUIT WIRING SHALL BE COLOR CODED AS FOLLOWS:

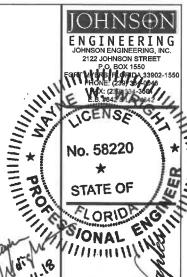
PUR/BRN/YEL/WHT/GRN 3-PHASE 240/120VAC (A/B(HI)/C/N/G): BLK/RED(ORG)/BLU/WHT/GRN

1-PHASE AC POWER: BLK, 12 AWG MIN. BLK, 12 AWG MIN. AC POWER NEUTRAL: WHT, 12 AWG MIN RED, 16 AWG MIN. EXTERNALLY POWERED : YEL, 16 AWG MIN. GRN, 12 AWG MIN.

BLU WITH WHT STRIPE, 16 AWG MIN.

RED/BLK, 16 AWG, MIN., BELDEN 1118A, OR FO.

- 13. ALL CONDUCTORS SHALL BE 600-VOLT RATED, STRANDED COPPER.
- 14. ETHERNET CABLE SHALL BE CAT-5e 600V UL AWM RATED
- 15. ALL WIRES AND CABLES SHALL BE MARKED USING WHITE HEAT SHRINK MARKERS.
- 16. BRANCH CIRCUITS EXCEEDING 75' SHALL BE WIRED WITH MINIMUM #10AWG WIRE.
- 17. COORDINATE ALL SERVICE ENTRANCE WORK WITH THE LOCAL ELECTRIC UTILITY AND ADHERE TO ALL
- 18. CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THE WORK AND FURNISHING ALL MATERIALS. OUTLINED IN THESE PLANS AND ANY OTHER MATERIALS AND WORK NECESSARY FOR A FULLY OPERATIONAL



FLORID SIONAL Virinitial) 12.11.18 LUCKER

CITY OF NAPLES WWTP
MCC REPLACEMENT
CONSTRUCTION PLANS
CITY OF NAPLES
NAPLES, FL

REVISIONS DEC. 2018 PROJECT NO. 20150110-007 FILE NO. 03-50-25 SCALE:

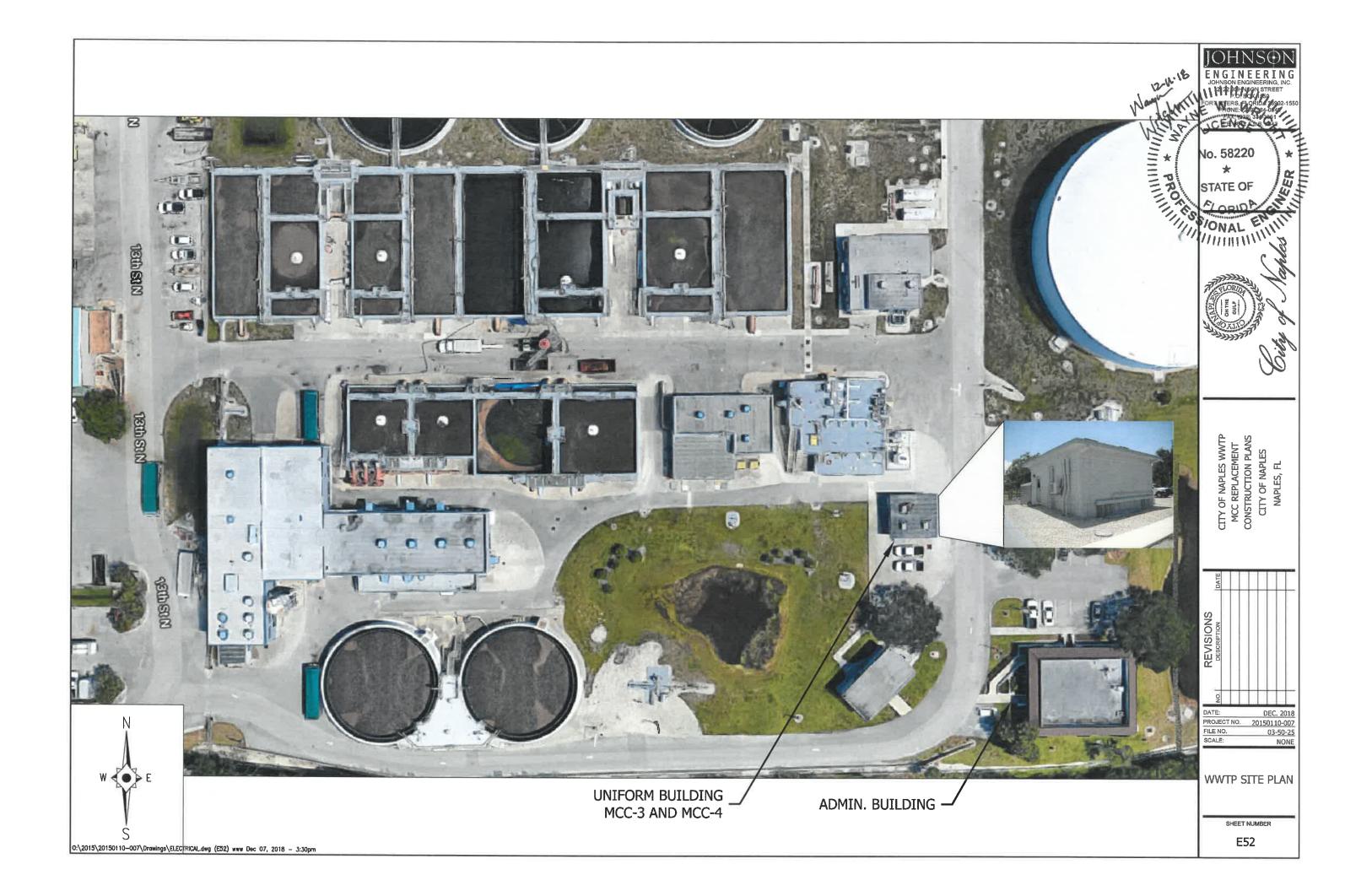
NOTES & SYMBOLS

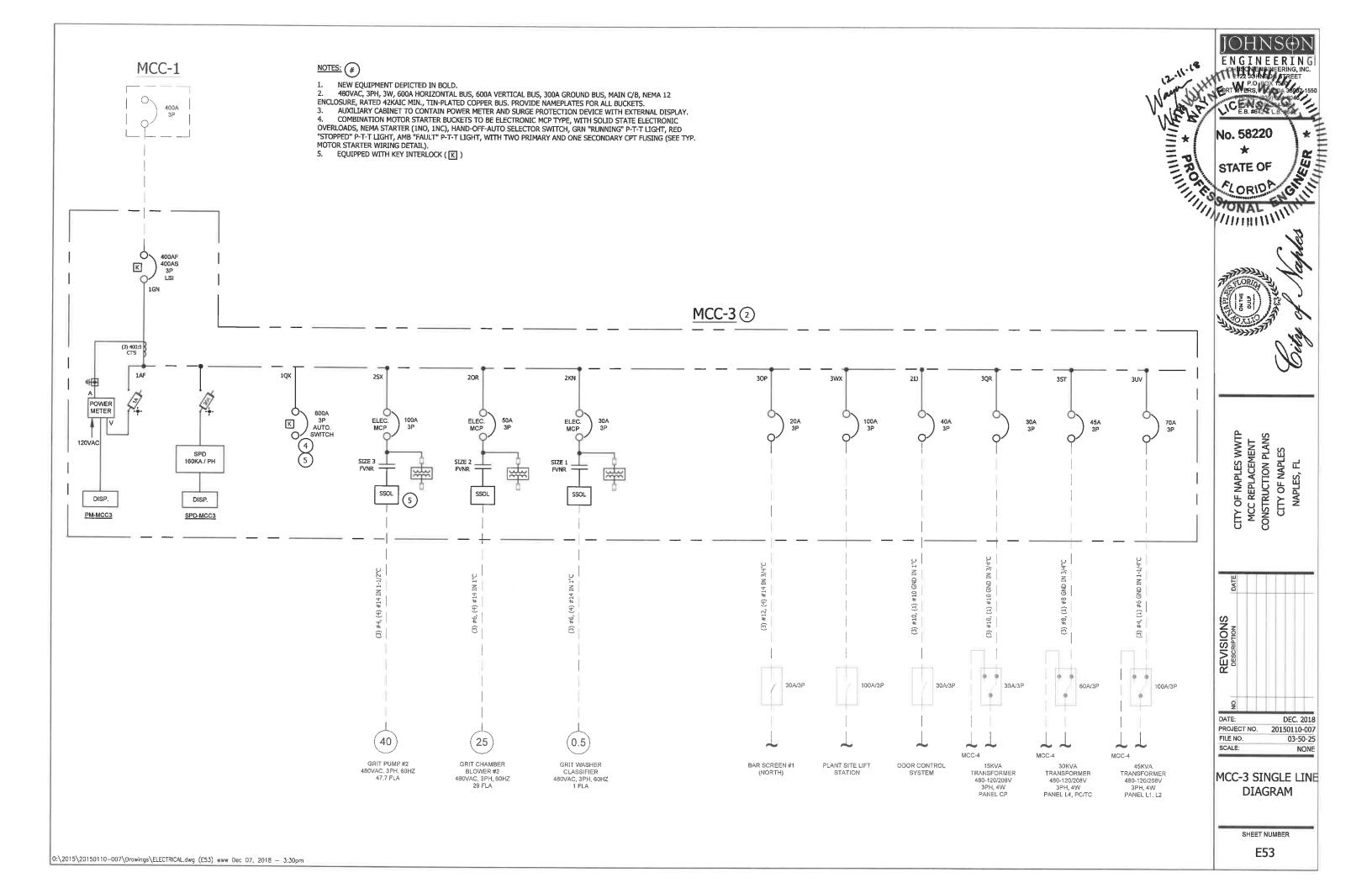
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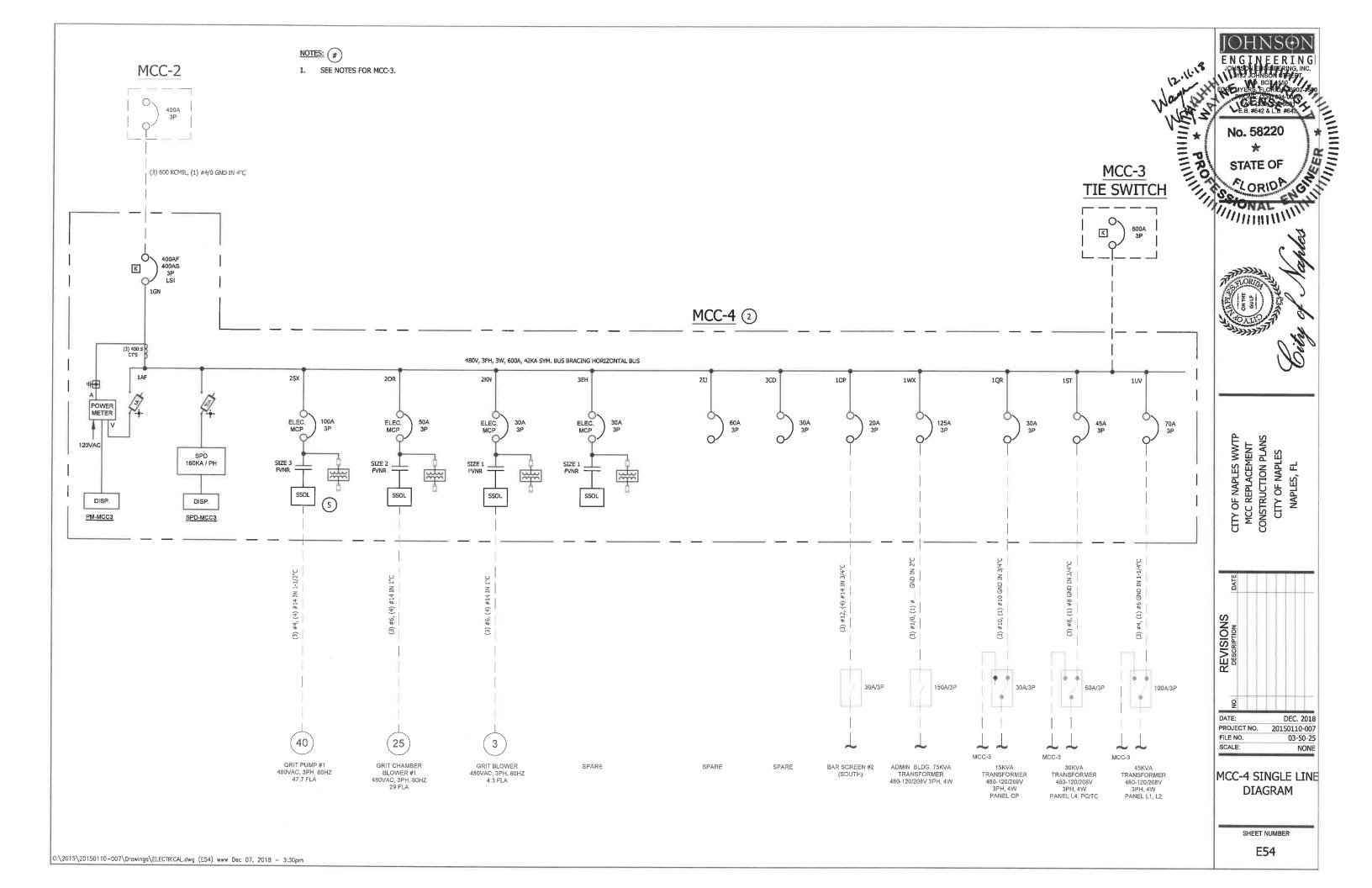
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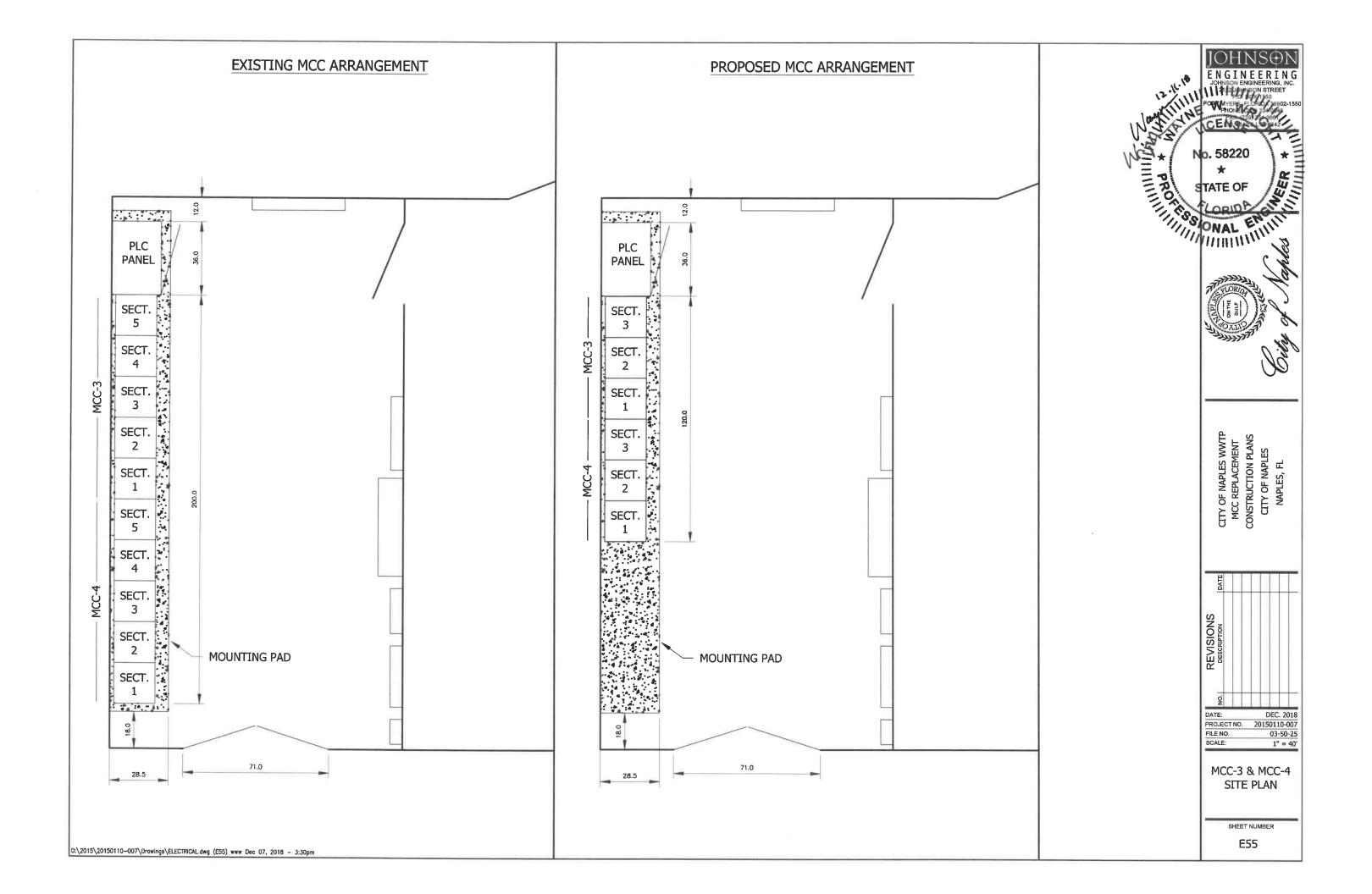
E51

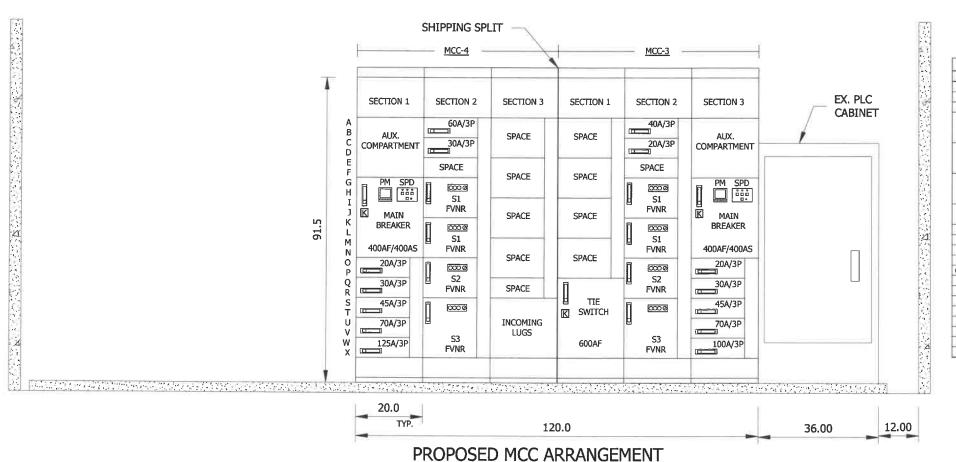
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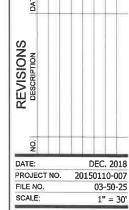
MCC-4				MCC-3			
DEVICE	LOC.	TYPE	RATING	DEVICE	LOC.	TYPE	RATING
MAIN CIRCUIT BREAKER	1AH	MAIN	400A/3P	MAIN CIRCUIT BREAKER	зан	MAIN	400A/3P
AUX. CABINET	1IN	AUX.		AUX, CABINET	3IN	AUX.	-
BAR SCREEN #2 (SOUTH)	10P	FDR	20A/3P	BAR SCREEN #1 (NORTH)	ЗОР	FDR	20A/3P
MAN. TRANSFER SWITCH 15KVA TRANSFORMER (PNL-CP)	1QR	FDR	30A/3P	MAN. TRANSFER SWITCH 15KVA TRANSFORMER (PNL-CP)	3QR	FDR	30A/3P
MAN. TRANSFER SWITCH 30KVA TRANSFORMER (PNL-L4,PC/TC)	1 ST	FDR	45A/3P	MAN. TRANSFER SWITCH 30KVA TRANSFORMER (PNL-L4,PC/TC)	зѕт	FDR	45A/3P
MAN. TRANSFER SWITCH 45KVA TRANSFORMER (PNL-L1,L2)	100	FDR	70A/3P	MAN. TRANSFER SWITCH 45KVA TRANSFORMER (PNL-L1,L2)	зuv	FDR	70A/3P
ADMIN. BLDG. 75KVA TRANSFORMER	1WX	FDR	125A/3P	PLANT SITE LIFT STATION	зwх	FDR	100A/3P
space	2AD		-	space	2AD	-	-
space	2EH			space	2EH	-	-
SPARE C/B	211	FDR	60A/3P	ODOR CONTROL SYSTEM	2IJ	FDR	40A/3P
GRIT BLOWER	2KN	MS	S1 FVNR	GRIT WASHER CLASSIFIER	2KN	MS	S1 FVNR
GRIT CHAMBER BLOWER #1	2OR	MS	S2 FVNR	GRIT CHAMBER BLOWER #2	2OR	MS	S2 FVNR
GRIT PUMP #1	2SX	MS	S3 FVNR	GRIT PUMP #2	2SX	MS	S3 FVNR
SPARE C/B	3AB	FDR	30A/3P	space	1AB	-	
SPARE MS	3CD	MS	S1 FVNR	space	CF	-	_
	3EH			space	1GL		
space	3GL		Ger .	space	1MP		_
space	3MP			TIE SWITCH	1QX	TIE	600A/3P
space	3QR						
INCOMING LUGS	35X	LUGS				l.	

CITY OF NAPLES WWTP MCC REPLACEMENT CONSTRUCTION PLANS CITY OF NAPLES NAPLES, FL No. 58220

*
STATE OF

STATE OF

ONAL ENGINE

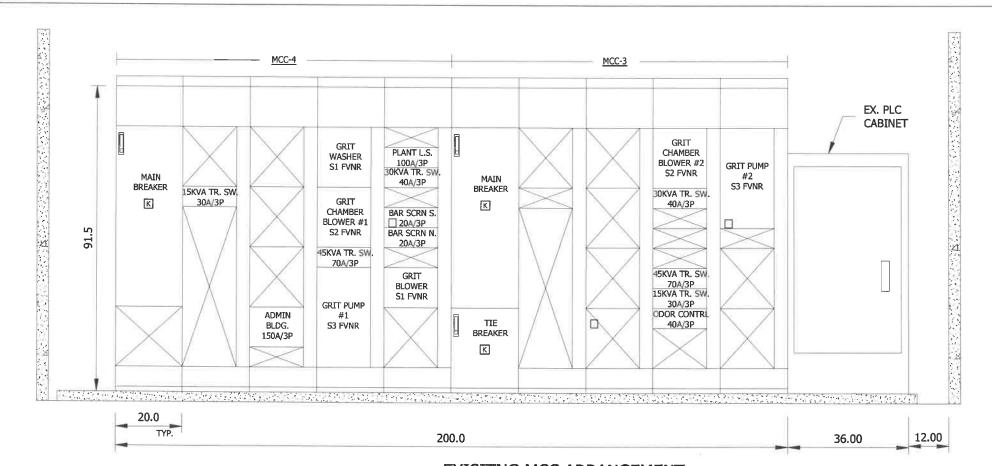


JOHNSON ENGINEERING, INC. 2122 JOHNSON STREET P.O. BOX 155 FORT MYERS, FLORIDA 33902-1550 FORT MYERS, FLORIDA 33902-1550 FAX: (239) 334-3661 E.B. #642 & L.B. #642

MCC-3 & MCC-4 **ELEVATION**

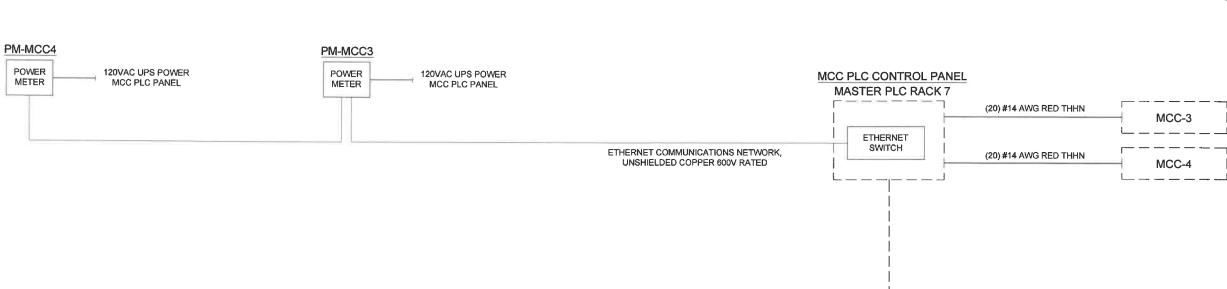
SHEET NUMBER

E56

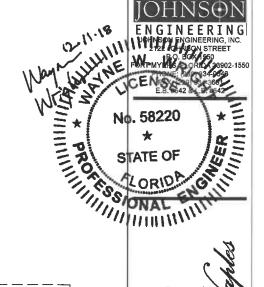


NOTES: ##

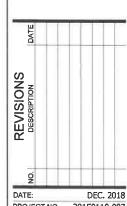
1. ETHERNET CABLES TO BE 600V RATED, CAT 5e, 24AWG, SHIELDED TWISTED BONDED PAIRS, BELDEN #7958A, OR EQ.



FIELD INTERLOCKS



CITY OF NAPLES WWTP
MCC REPLACEMENT
CONSTRUCTION PLANS
CITY OF NAPLES
NAPLES, FL

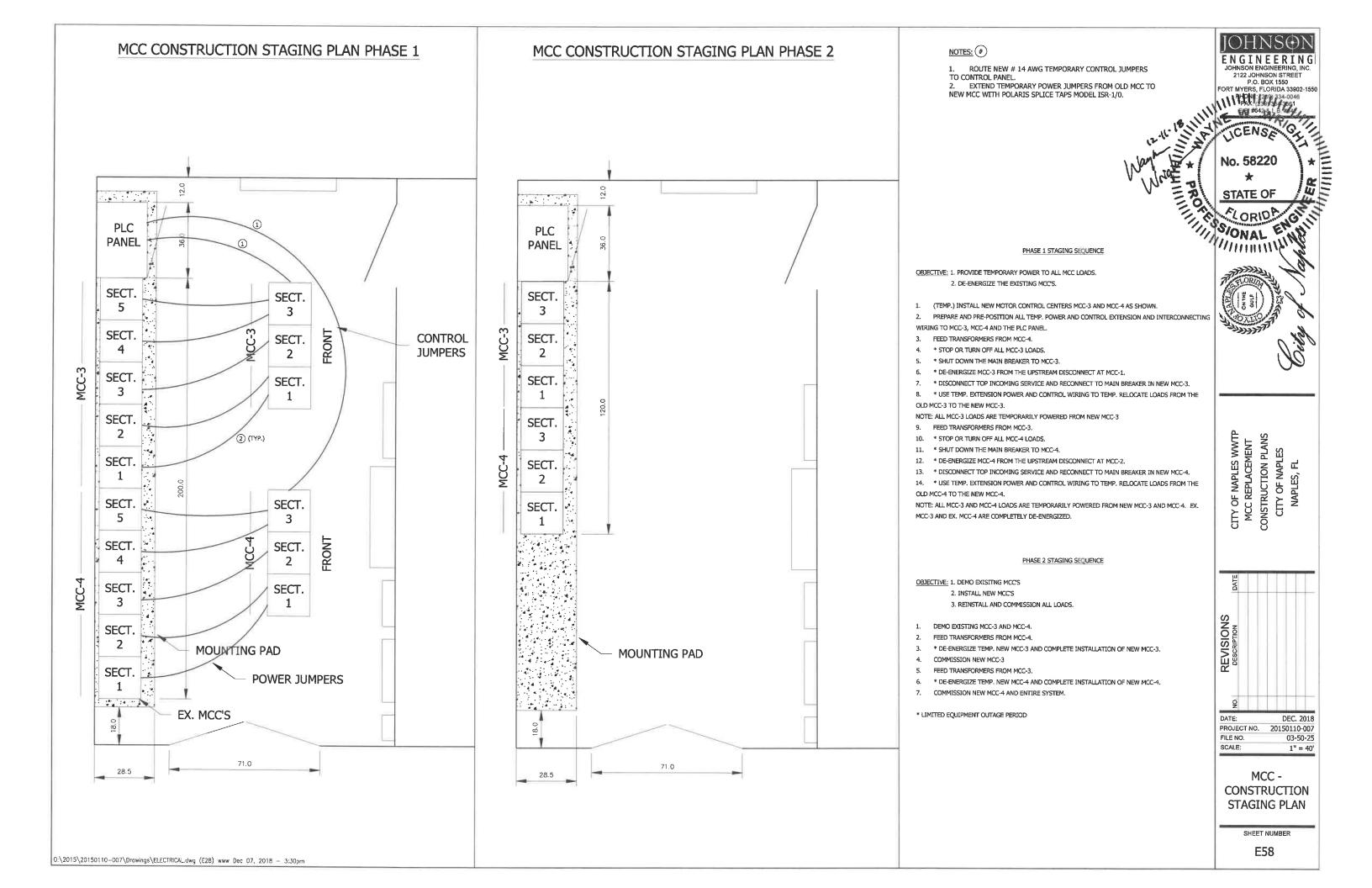


DATE: DEC. 2018
PROJECT NO. 20150110-007
FILE NO. 03-50-25
SCALE: NONE

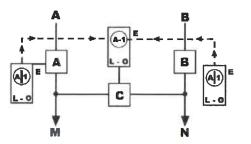
MCC-3 & MCC-4 NETWORK AND INTERCONNECTION DIAGRAM

SHEET NUMBER

E57



To prevent paralleling of lines A and B. Two loads, fed from either source.



Breaker A is closed to supply load M. Breaker B is closed to supply load N. Tie-breater C is apen. Keys A-T are held in interlacks on both breakers A and B. Tie-breaker C cannot be closed unless either A or B.

To transfer load N to breaker A: Open breaker B

- Turn key A-1 in L-O Interlock on breaker B to lock open. Key A-1 is now free.
- insert key A-1 in L-O interlock on tie-breaker C and turn to unlock Key A-1 is now held.
- Close tie-breaker C.

Reverse sequence to restore service.

Load Mican be supplied through breaker B in a similar manner.

TO MCC-3/4 PLC PANEL

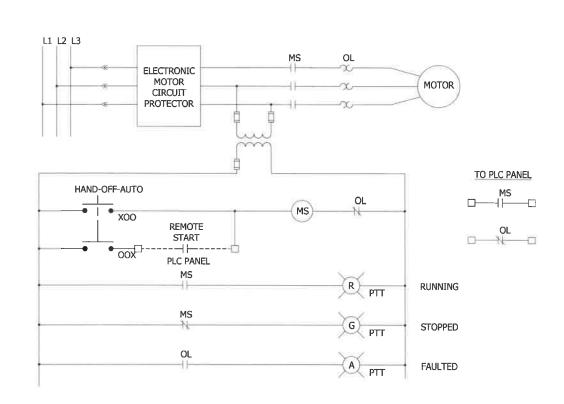
MCC-3 MCB □----| |------□

MCC-4 MCB D----

TIE SWITCH D---

BREAKER STATUS (1 = CLOSED)

MCC-3 AND MCC-4 KEY INTERLOCK K SCHEME

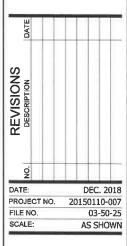


MOTOR CONTROL CENTER FVNR MOTOR STARTER WIRING DIAGRAM (TYP.)

JOHNSON ENGINEERING, INC.
2122 JOHNSON STREET

BOY 1550
FAMILIES FLOOR AS 3902-1550
PHONE: (280) 334-34-55
PHONE: (280) 344-34-55
PHONE: Blub.

CITY OF NAPLES WWTP MCC REPLACEMENT CONSTRUCTION PLANS CITY OF NAPLES NAPLES, FL

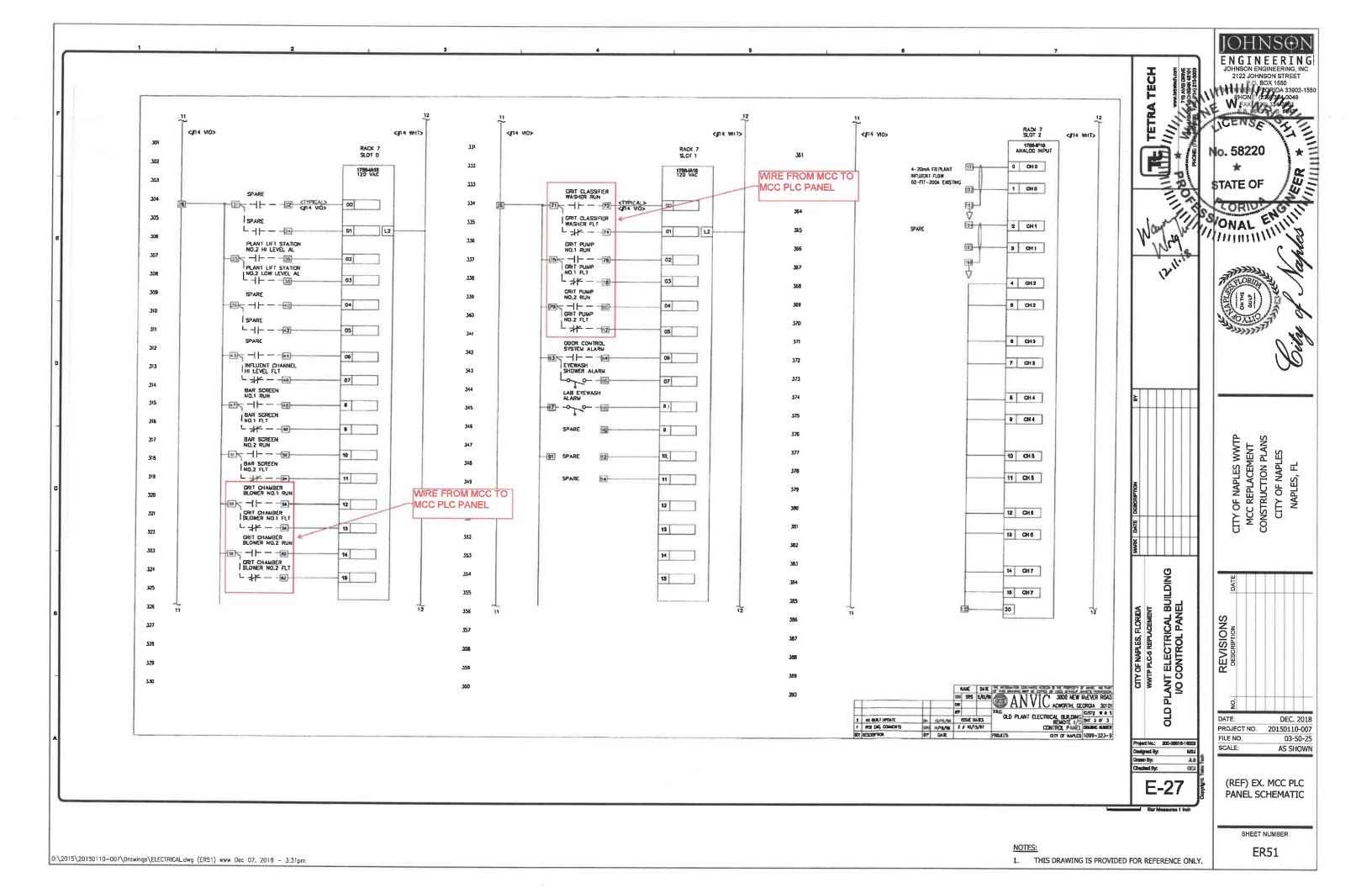


ELECTRICAL DETAILS

SHEET NUMBER

ED51

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EX. MCC-3 AND MCC-4 UNIFORM BLDG.



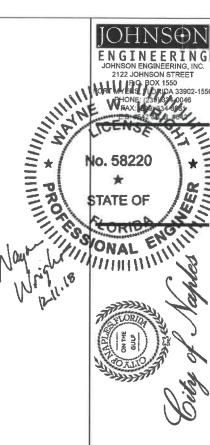
EQUIPMENT ACCESS AND CONDUIT RACEWAY UNIFORM BLDG.

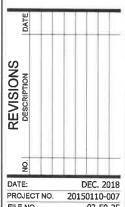


EX. MCC PLC CONTROL PANEL UNIFORM BLDG.



EX MCC-3 INCOMING TOP-ENTRY FEEDER UNIFORM BLDG.





03-50-25 AS SHOWN

(REF) PHOTOS

SHEET NUMBER

ER52