

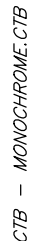
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**Please Email ALL Questions:**  
**[MailTo:ContractAdministration@TampaGov.net](mailto:ContractAdministration@TampaGov.net)**

**Please Let Us Know If You Plan To Bid**

City of Tampa  
Contract Administration Department  
306 E. Jackson St. #280A4N  
Tampa, FL 33602  
(813)274-8456

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CITY of TAMPA



# WASTEWATER DEPARTMENT

## PROJECT LOCATION

2700 MARITIME BLVD.  
TAMPA, FL 33605

# PLANS FOR HOWARD F. CURREN AWTP STANDBY POWER FACILITY PLC REPLACEMENT

CONTRACT No.  
17-C-00012

JACINTO CARLOS FERRAS, P.E., #49454 DESIGN DIVISION HEAD WASTEWATER DEPARTMENT	ROMAN D. KORCHAK, P.E., #42626 ELECTRICAL SECTION HEAD WASTEWATER DEPARTMENT	No.	DATE	REVISIONS	DES: LRG	CITY of TAMPA WASTEWATER DEPARTMENT	HOWARD F. CURREN AWTP STANDBY POWER FACILITY PLC REPLACEMENT COVER SHEET	W.O. 0012
		3			DRN: LRG			SHEET
		2			CKD: RDK			1
		1			DATE: 1/26/17			OF 6

## LOCATION MAP

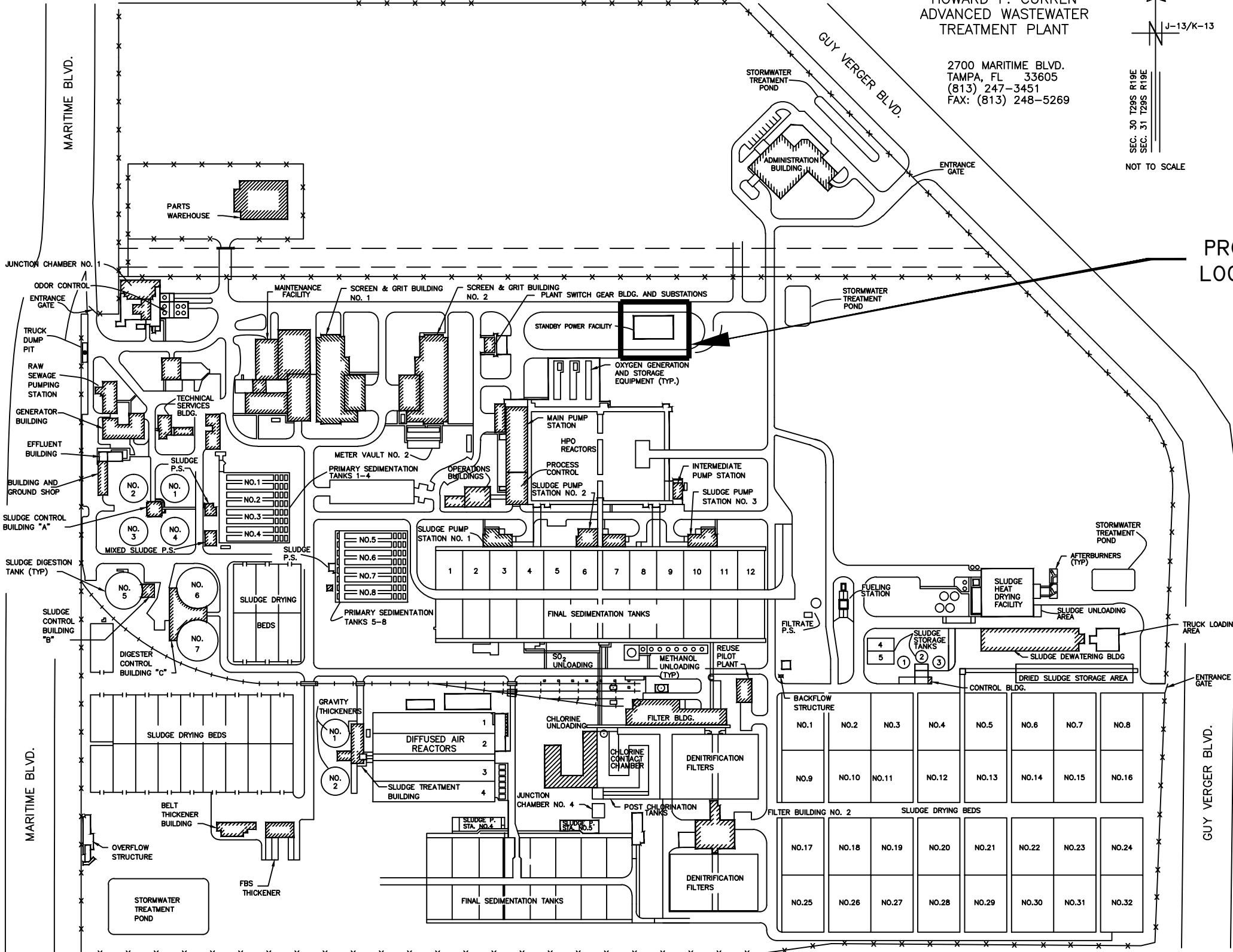
CITY OF TAMPA  
HOWARD F. CURREN  
ADVANCED WASTEWATER  
TREATMENT PLANT

2700 MARITIME BLVD.  
TAMPA, FL 33605  
(813) 247-3451  
FAX: (813) 248-5269

J-13/K-13

SEC. 30 T29S R19E

NOT TO SCALE



## INDEX

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5	GE FANUC DEMOLITION
6	PROPOSED EQUIPMENT AND PARTS LIST

## PROJECT LOCATION

CTB – MONOCHROME.CTB

No.	DATE	REVISIONS
3		
2		
1		

DES: LRG  
DRN: LRG  
CKD: RDK  
DATE: 1/26/2017

CITY of TAMPA  
WASTEWATER DEPARTMENT

# HOWARD F. CURREN AWTP STANDBY POWER FACILITY PLC UPGRADE INDEX & LOCATION MAP

W.O. 0012  
SHEET  
**2**  
E 6

CTB – MONOCHROME.CTB

GENERAL NOTES

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO PURCHASING EQUIPMENT OR COMMENCING CONSTRUCTION.

2. ALL MAIN POWER SUPPLY CONDUCTORS SHALL BE STRANDED COPPER, #12 AWG MIN. W/XHHW-2 INSULATION, UNLESS OTHERWISE NOTED.

3. ALL WIRING SHALL BE IDENTIFIED W/NUMBERS AT ALL TERMINALS AND ON WIRING DIAGRAM.

4. VERIFY ALL MECHANICAL EQUIPMENT SIZES AND RATING PRIOR TO CONNECTING.

5. FIELD VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTIONS PRIOR TO COMMENCING CONSTRUCTION.

6. PLANS ARE DESIGNED IN ACCORDANCE WITH THE 5TH EDITION OF THE FLORIDA BUILDING CODE AND THE 2011 EDITION OF THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL ENSURE THAT ALL ELECTRICAL WORK PERFORMED SHALL ADHERE TO THE SAME ACCORDANCE AND ALL APPLICABLE LOCAL ORDINANCES.

7. ALL THREADED CONNECTIONS SHALL BE COATED W/ ALUMA- SHIELD ANTI-SEIZE COMPOUND MANUFACTURED BY THOMAS & BETTS (T & B) OR EQUAL.

8. ALL PANELS, DISCONNECTS, SWITCHES, AND EQUIPMENT COVERPLATES SHALL BE LABELED W/ NAMEPLATES. NAMEPLATES SHALL BE THREE-PLY PHENOLIC BLACK-WHITE-BLACK ENGRAVED THROUGH THE FIRST BLACK LAYER. LETTERING SHALL BE 0.5 CM (3/16") MIN. EDGE OF NAMEPLATE SHALL BE BEVELED 45 DEG.

9. ALL CONDUIT SHALL BE SUPPORTED AT MAXIMUM 5'-0" INTERVALS.

10. ALL CIRCUITS SHALL HAVE A PROPERLY SIZED GROUNDING CONDUCTOR ROUTED INSIDE EACH CONDUIT W/ POWER CONDUCTORS.

11. ALL CONDUCTOR LENGTHS SHALL BE CONTINUOUS, NO SPLICES OR CONDUCTOR TERMINATIONS SHALL BE PERMITTED UNLESS SPECIFICALLY DESIGNATED IN THE DRAWINGS.

12. NEATLY COIL ALL SPARE CONDUCTORS & TAPE W/ VINYL ELECTRICAL TAPE (SCOTCH 33+).

13. PROVIDE A MINIMUM OF 3'-6" CLEARANCE IN FRONT OF ALL ELECTRICAL EQUIPMENT IN ACCORDANCE W/ ARTICLE 110 OF THE NEC.

14. ALL FASTENING HARDWARE (SCREW, BOLTS, NUTS, ETC.) SHALL BE 316-STAINLESS STEEL. FASTENING HARDWARE CONSTRUCTED OF FERROUS MATERIAL ARE NOT ACCEPTABLE.

15. EXPOSED CONDUITS SHALL BE NON-COATED RIGID ALUMINUM CONDUIT, UNLESS OTHERWISE NOTED (UON). INSTALL PVC COATED RIGID ALUMINUM CONDUIT TO THE WET WELL.

16. DIRECT BURIED AND CONCRETE ENCASED CONDUIT SHALL BE SCHEDULE 80 PVC, UNLESS OTHERWISE NOTED. TRANSITIONS FROM PVC TO ALUMINUM CONDUIT SHOULD OCCUR WHERE DUCTS ENTER BUILDINGS OR AT STUB-UPS TO EQUIPMENT, TRANSITIONS TO ALUMINUM CONDUITS SHALL BE NOTED AND DETAILED. WHERE IT IS NOT OTHERWISE SHOWN, ALL DUCTS ENTERING BUILDINGS AND STRUCTURES, EXCLUSIVE OF MANHOLES, SHALL HAVE TRANSITIONS TO ALUMINUM CONDUIT AT LEAST 5 FEET FROM THE OUTERMOST EDGE OF THE PILE CAP OR FOOTING SUPPORTING THE OUTERMOST VERTICAL WALL OF THE BUILDING OR STRUCTURE. ALL ALUMINUM SURFACES IN CONTACT WITH SOIL, CONCRETE, AND OTHER INCOMPATIBLE MATERIALS SHALL BE COATED WITH TWO COATS OF BITUMASTIC OR OTHER APPROVED INSULATING MATERIAL.

17. ABOVE GRADE INDOOR, AND NON-WASHDOWN AREAS, RIGID ALUMINUM CONDUIT CONNECTIONS TO CONTROL BOXES, ETC. MAY BE MADE WITH ALUMINUM DOUBLE LOCKNUTS AND BUSHINGS. TURN DOWN ON THREADS TO SOLIDLY CONNECT RACEWAY TO BOX OR ENCLOSURE.

18. ALUMINUM WATERTIGHT HUBS (MYERS HUBS) SHALL BE USED FOR CONNECTIONS TO CONTROL BOXES, ETC. MOUNTED OUTDOORS, BELOW GRADE, OR IN WASHDOWN AREAS.
19. A 316-STAINLESS STEEL CHANNEL ERECTOR SYSTEM SHALL BE USED TO SUPPORT ALL CONDUITS, BOXES, ETC. USE 316-STAINLESS STEEL MOUNTING HARDWARE.

20. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY TO EXECUTE THE PROPOSED INSTALLATIONS.

21. ALL EXISTING INSTALLATIONS DENOTED ON THE DRAWINGS ARE FOR THE CONTRACTOR'S REFERENCE ONLY. ALL EXISTING INSTALLATIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING A BID AND PRIOR TO COMMENCING CONSTRUCTION.

22. PULL BOXES SHALL BE INSTALLED AS NECESSARY TO FACILITATE WIRE PULLS AND AVOID EXCESSIVE PULLING TENSION ON WIRING. IN NO CASE SHALL CONDUIT LENGTHS EXCEED 150' OR THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL) WITHOUT A PULL BOX. PULL BOXES SHALL BE SIZED IN ACCORDANCE WITH ARTICLE 314 OF THE NEC.

23. ALL ELECTRICAL WORK SHALL BE PERFORMED WITHIN 2011 NEC AND CITY OF TAMPA/ HILLSBOROUGH COUNTY CODES AND SHALL BE INSPECTED BY CITY OF TAMPA/ HILLSBOROUGH COUNTY ELECTRICAL INSPECTORS AS APPLICABLE.

24. ALL ELECTRICAL COMPONENTS SHALL BE UL LISTED AND AS SPECIFIED, OR AS APPROVED BY THE ENGINEER. THE PANEL BUILDER SHALL BE UL-508A CERTIFIED AND A UL LABEL SHALL BE ATTACHED TO THE INSIDE OF THE ENCLOSURE. THE DOUBLE THROW DISCONNECT SWITCH MUST BE LABELED "SUITABLE FOR USE AS SERVICE EQUIPMENT."

25. ALL COMPONENTS TO BE MOUNTED ON PANEL USING TAPPED HOLES.

26. ALL CONTROL WIRING LOCATED INSIDE ENCLOSURES SHALL BE MINIMUM 14 AWG, 19 STRAND COPPER, TYPE THHN OR MTW, AND HAVE LUG TERMINATIONS.

27. DIMENSIONS, ITEMS, OR ELEVATIONS MARKED '\*' TO BE DETERMINED AFTER EQUIPMENT SELECTION.

28. ALL MECHANICAL CONNECTORS SHALL BE TORQUED PER NEC, UL OR MANUFACTURERS SPECIFICATIONS.

29. INSTALL LAMINATED SCHEMATIC, LAMINATED DATA SHEET AND SETUP PARAMETERS ON BACK FACE OF THE DOOR INSIDE THE ENCLOSURE.

30. CONDUCTORS WITHIN THE ENCLOSURE AND NOT ROUTED IN WIREWAYS, SHALL BE SECURED TO THE BACKPANEL WITH MECHANICAL FASTENERS, FASTENERS SECURED WITH ADHESIVE ARE NOT ACCEPTABLE.

31. ALL HINGED SURFACES SHALL BE GROUNDED WITH A BONDING JUMPER SECURED TO THE ENCLOSURE OR BACKPANEL.

32. PROVIDE 1/4" MINIMUM THICKNESS LEXAN SHIELDS OVER POWER DISTRIBUTION BLOCK AND OTHER EXPOSED CABLE TERMINATIONS.

SCOPE OF WORK

1. THE PLC SHALL BE COMPLETE WITH BACK-UP POWER SUPPLIES, I/O RACKS, INPUT AND OUTPUT CARDS FOR SYSTEM CONTROL AND ALL APPURTENANCES REQUIRED FOR A COMPLETE OPERATION SYSTEM.
2. THE EXISTING PLC SYSTEM'S LADDER LOGIC PROGRAM AND DOCUMENTATION SHALL BE CONVERTED TO THE GE PLATFORM, SPECIFICALLY THE GE PROFICY ME 9.0 SOFTWARE. THE FULL CONVERSION AND DOCUMENTATION SHALL BE FURNISHED AS PART OF THE SYSTEM.
3. AS PART OF A PREVIOUS ATTEMPT TO UPGRADE THE EXISTING PLCs, GE FANUC SERIES 90-70 PLCs WERE INSTALLED IN AN EXISTING CABINET. THE CONTRACTOR SHALL CAREFULLY REMOVE ALL GE FANUC PLCs AND ANY ASSOCIATED MATERIALS AND UTILIZE THE EXISTING CABINET TO INSTALL THE PROPOSED PLCs AND ALL ASSOCIATED EQUIPMENT. ALL REMOVED PLC EQUIPMENT SHALL REMAIN THE PROPERTY OF THE CITY. ADDITIONALLY, THE PREVIOUS ATTEMPT TO UPGRADE INCLUDED TEMPORARY CONNECTIONS OF THE INPUTS AND OUTPUTS THAT WERE PARALLELED WITH THE EXISTING SQUARE D SYMAX 1400s. THE CONTRACTOR MAY UTILIZE THE EXISTING CONNECTIONS; HOWEVER, THE CITY DOES NOT GUARANTEE THE ACCURACY OF SUCH CONNECTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ACCURACY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THERE IS TEMPORARY CONNECTION TO BOTH INPUTS AND OUTPUTS. THE INPUTS AND OUTPUTS, BOTH DIGITAL AND ANALOG, SHALL BE PARALLELED WITH THE EXISTING SQUARE D I/O, FIELD WIRES, AND THE GE I/O. THE SQUARE D I/O WILL BE CONSIDERED TEMPORARY CONNECTIONS AND LANDED ON ONE SIDE OF A TERMINAL BLOCK. THE GE I/O AND THE FIELD WIRES SHALL BOTH BE CONNECTED ON THE OTHER SIDE OF THE TERMINAL BLOCK, SEE SHEET 5 AND SPECIFICATIONS FOR DETAIL. ADDITIONALLY, ALL WIRES SHALL BE TAGGED WITH INPUT AND OUTPUT ADDRESSES OF THE OLD SYSTEM ALL TESTING SHALL BE COMPLETED WITH OUTPUTS DISABLED.
5. A MAPLE SYSTEM HMI SHALL BE INSTALLED AND PROVIDED TO ALLOW OPERATOR ACCESS TO THE PLC CONTROL SETTINGS WITHOUT HAVING TO IMPLEMENT SOFTWARE CHANGES. THE HMI SHALL BE USED TO CHANGE ALL TIMER SETTINGS, LOAD DEMAND AND LOAD CONTROL SETPOINTS, AND LOAD DEMAND GENERATOR SEQUENCE POSITIONS. THE MAPLE HMI WILL ALSO PROVIDE DIGITAL READOUTS THAT SHALL INDICATE THE LOAD DEMAND ENGINE STARTING AND STOPPING SEQUENCE. IF THE GENERATOR IS LOCKED OUT, A LOCKOUT ALARM INDICATOR WILL FLASH FOR THE RESPECTIVE GENERATOR.
6. THE CONVERTED PROGRAM SHALL BE TESTED WITH SIMULATIONS OF THE PROGRAM IN SHORT TESTING CYCLES, LASTING NO MORE THAN FOUR HOURS. THE PROGRAM SHALL MAXIMUM THE USE OF "CALL BLOCKS" TO LABEL AND IDENTIFY THE EQUIPMENT FUNCTIONS; I.E., "INCOMING FEEDER BREAKERS", "TIE BREAKERS", "GENERATOR BREAKERS", ETC. ALL ASSOCIATED LOGIC SHALL BE CONTAINED IN RESPECTIVE BLOCKS FOR EASY PROGRAM MIGRATION.
7. THE CITY SHALL REVIEW AND APPROVE THE PROGRAM, DOCUMENTATION, AND SHOP DRAWINGS PRIOR TO THE CONTRACTOR PROCEEDING WITH TESTING AND ANY SHUTDOWNS. THE CONTRACTOR SHALL ALLOW THE CITY THREE (3) WEEKS TO REVIEW ALL SUBMITTED DOCUMENTATION.
8. ONCE THE CITY HAS APPROVED THE PROGRAM AND DOCUMENTATION, THE CONTRACTOR SHALL PROCEED WITH TESTING AND REQUIRED SHUTDOWNS. APPROVAL OF PROGRAM AND DOCUMENTATION DOES NOT RELIEVE THE CONTRACTOR OF NECESSARY CORRECTIONS REQUIRED TO MAKE THE SYSTEM FULLY FUNCTIONAL.
9. THE CONTRACTOR SHALL PROVIDE THE CITY WITH A SCHEDULE OF TESTING HOURS AND DATES. TESTING SHALL BE COMPLETED BY A QUALIFIED TECHNICIAN AND SHALL ONLY BE COMPLETED ON WEEKDAYS DURING REGULAR WORKING HOURS.
10. ONCE THE CONTRACTOR AND THE CITY ARE IN AGREEMENT THAT TESTING HAS DETERMINED THAT A FULLY FUNCTIONAL SYSTEM HAS BEEN DEVELOPED, THE SYSTEM SHALL REMAIN IN SERVICE FOR SEVEN CONSECUTIVE DAYS PRIOR TO ACCEPTANCE BY THE CITY.
11. AFTER ACCEPTANCE BY THE CITY OF THE SYSTEM, THE CONTRACTOR SHALL COMPLETE A SCHEDULED SHUTDOWN FOR THE PERMANENT INSTALLATION OF THE SYSTEM AND REMOVAL OF ANY TEMPORARY WIRING. THE SHUTDOWN SHALL LAST NO MORE THAN TWELVE (12) HOURS.
12. AFTER ACCEPTANCE BY THE CITY, THE CONTRACTOR SHALL ALSO DISCONNECT AND REMOVE THE TWO EXISTING SQUARE D SYMAX 1400 PLCs AND ALL ASSOCIATED EQUIPMENT, SEE SPECIFICATIONS FOR LIST. THE THREE (3) CHASSIS SHALL REMAIN AS PROPERTY OF THE CITY. ALL OTHER EQUIPMENT SHALL BE DISPOSED OF BY THE CONTRACTOR.
13. NEATLY COVER ANY UNUSED OPENINGS AND FINISH TO MATCH EXISTING SURFACE.
14. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE 5TH EDITION 2014, CHAPTER 5 OF THE CITY OF TAMPA CODE AND THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) SERIES 70/NATIONAL ELECTRICAL CODE (NEC) 2011 EDITION.

ROMAN D. KORCHAK, P.E. #42626 ELECTRICAL SECTION HEAD WASTEWATER DEPARTMENT	No.	DATE	REVISIONS	DES: LRG	CITY of TAMPA WASTEWATER DEPARTMENT	HOWARD F. CURREN AWTP STANDBY POWER FACILITY PLC UPGRADE NOTES	W.O. 0012
	3			DRN: LRG			SHEET
	2			CKD: RDK			3
	1			DATE: 1/27/2017			OF 6

CTB - SHOWN'S .CTB

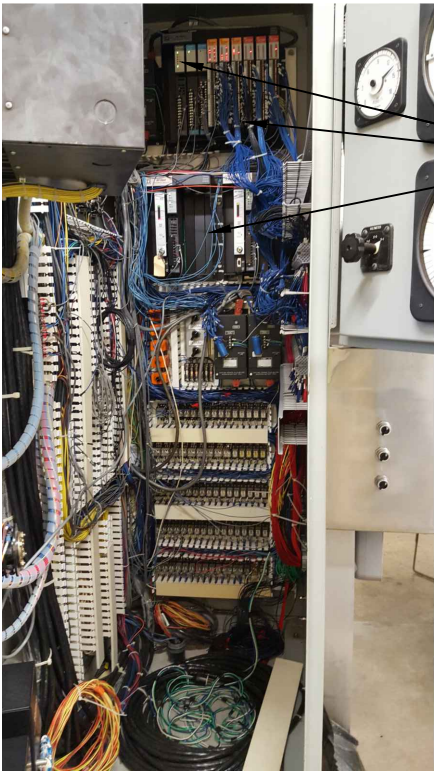


=X. INDICATOR LIGHTS  
SHALL R=MAIN

=X. DIGITAL READOUTS,  
TO B= R=MOV=D (S= SCOP= 0-  
K, SH=T 3, NOT=S 5, 12  
AND 13)

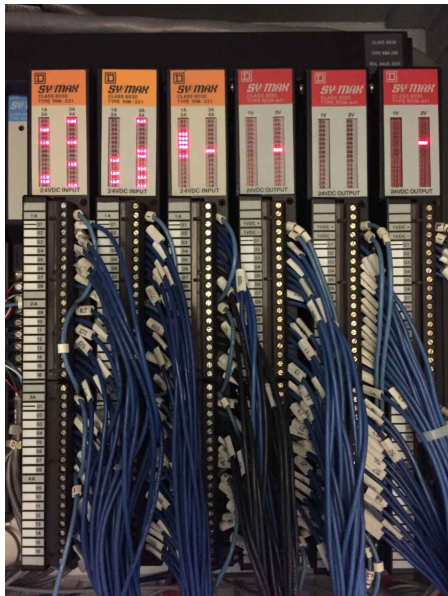
=X. SQUARE D SYMAX PANEL,  
SHALL B= R=MOV=D, (S= SCOP=  
0- K, SH=T 3, NOT= 13)

=X. SQUARE D SYMAX CABINET  
OUTSIDE VIEW



=X. PRIMARY AND  
SECONDARY PLC AND  
ASSOCIATED EQUIPMENT  
(S= SCOP= 0- K,  
NOT=S 12 AND 14)

=X. SQUARE D SYMAX CABINET  
INSIDE VIEW



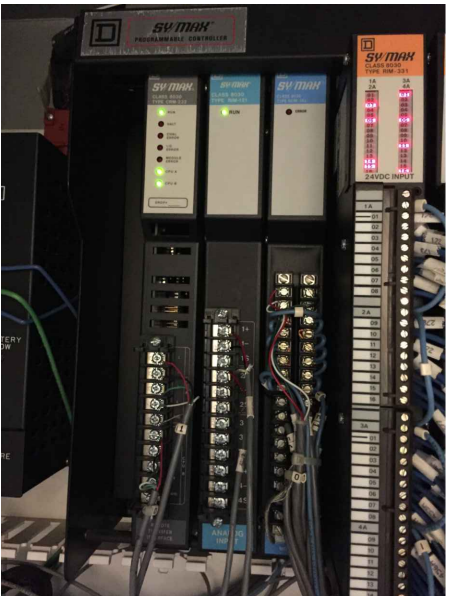
=X. SYMAX PLC  
TO B= R=MOV=D



=X. PRIMARY SYMAX PLC  
TO B= R=MOV=D



=X. SECONDARY SYMAX PLC  
TO B= R=MOV=D



=X. SYMAX ANALOG  
TO B= R=MOV=D

ROM- . KORCH-K, P.. #42626  
=L=CTRIC =CTION H=  
- T=W-T=R D=P- \TM=NT

No.	D-T=
3	
2	
1	

D=S: LRG  
DRN: LRG  
CKD: RDK  
D-T=: 1/27/2017

CITY of TAMPA  
WASTEWATER DEPARTMENT

HOWARD F. CURREN AWTP STANDBY  
POWER FACILITY PLC UPGRADE  
SQUARE D SYMAX PLC DEMOLITION

W.O. 0012  
H=T  
4  
o- 6

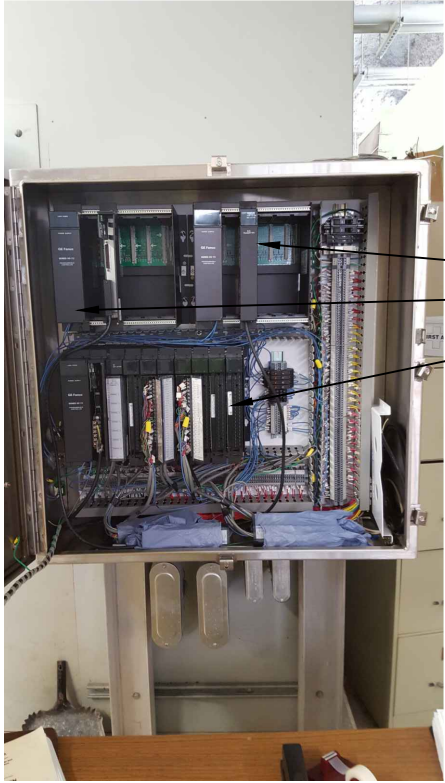


CTB - SHON'S .CTB



=X. G= --NUC CABIN=T  
OUTSID= VI=W

=X. G= --NUC CABIN=T, TO B=  
R=US=D, (S== SCOP= 0- \K,  
SH==T 3, NOT= 3)  
  
=X. G= --NUC PAN=L, R=MOV=  
AND R=PLAC= WITH MAPL= HMI  
(S== SCOP= 0- \K, SH==T 3,  
NOT= 5)

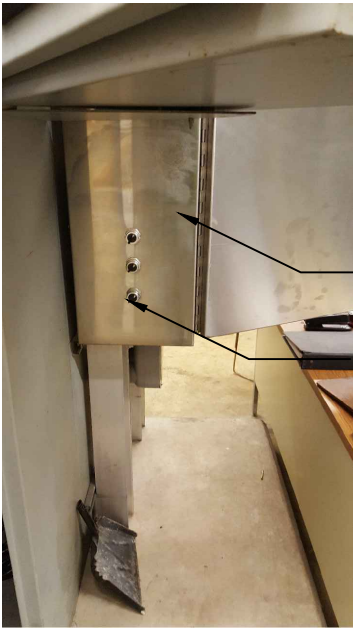


=X. G= --NUC CABIN=T  
INSID= VI=W

=X. G= --NUC PLCs  
AND ASSOCIAT=D  
=QUIPM=NT, TO B=  
R=MOV=D (S== SCOP=  
0- \K, SH==T 3,  
NOT=S 3 AND 4)



=X. G= --NUC & =QUIPM=NT  
TO B= R=MOV=D



=X. G= --NUC CABIN=T, TO B=  
R=US=D, (S== SCOP= 0- \K,  
SH==T 3, NOT= 3)  
  
=X. G= --NUC SWITCH=S (S==  
SCOP= 0- \K, SH==T 3,  
NOT=S 3 AND 4)

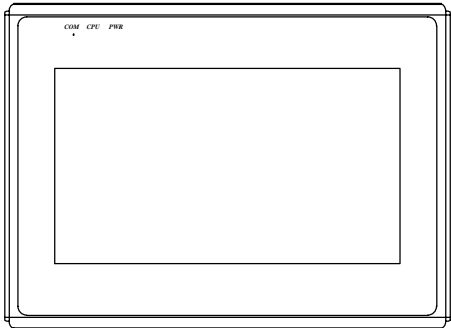
=X. G= --NUC CABIN=T  
SID= VI=W

CTB - SHOWN'S .CTB



PROPOS=D PROGRAMMABL= LOGIC CONTROLL=R (PLC)  
- \ ILLUSTRATIV= PURPOS=S

PROP. PAC SYST=MS RX3I  
CONTROLL=R, (S== SCOP= 0-  
 \K, SH==T 3, NOT= 1 AND  
PARTS SCH=DUL= B=LOW)



Front View

PROP. MAPL= SYST=MS HMI (S==  
SCOP= 0- \K, SH==T 3, NOT=  
5 AND PARTS SCH=DUL= B=LOW)

PROPOS=D HUMAN MACHIN= INT=R--C= (HMI)  
- \ ILLUSTRATIV= PURPOS=S

P- \TS SCH=DUL=				
P- \T NO.	IT=M	D=SCRIPTION	POW=R	QU- TITY
IC695CHS012	I/O R- K	P - ms RX3i 12 SLOT HIGH SP=D CONTROLL=R B = SUPPORTS PCI =RI-		
IC695PS	=R SUPPLY	MULTIPURPOS= POW=R SUPPLY	100-240 V =R SOURC=	3
IC695CPK330	CPU	RX3i WITH BUILT-IN MULTI-TIER COMMUNIC-TION G-T-W- /		2
IC695=TM001	=TH=RN=T C- \D	P - ms RX3i =-herne- TCP/IP 10/100MBITS, TWO RJ-45 PORTS WITH BUILT-IN SWITCH	840 Ma @3.3 VDC; 614 m- INT=RN =R US=D	1
IC695RMX128	R=DUND- T C- \D	RX3i BUMPL=SS R=DUND- T HIGH -IL- ILITY CPU WITH TWO BUILT IN S=RI- \TS	1750 Ma@ 3.3 VDC; 1200 Ma @ 5 VDC INT=RN =R US=D	4
IC695PNC001	PRO-IN=T C- \D	PRO-IN=T CONTROLL=R (PNC) MODUL=	3.3 V INT=RN =R US=D	3
IC694MDL660	DIGIT- INPUT C- \D	P - ms RX3i DC VOLT = INPUT MODUL=	0 - 30 VDC INPUT VOLT =	3
IC694MDL758	DIGIT- TPUT C- \D	P - ms RX3i DC VOLT = OUTPUT MODUL=	12 - 24 VDC OUTPUT VOLT =	3
IC694	- INPUT C- \D	P - ms RX3i - INPUT	27 m- ; 98 m- ISOL-T=D INT=RN =R US=D	1
HMI5070TH	M = SYST=M HMI	7.0" T-T COLOR, 4-WIR= - \SITIV= TOUCH SCR=IN, 32-BIT RISC CPU, 400 MHz	24 VDC. 250 m-	

PROPOS=D PARTS SCH=DUL=