The Enclosed Document Is Provided For Your Convenience.

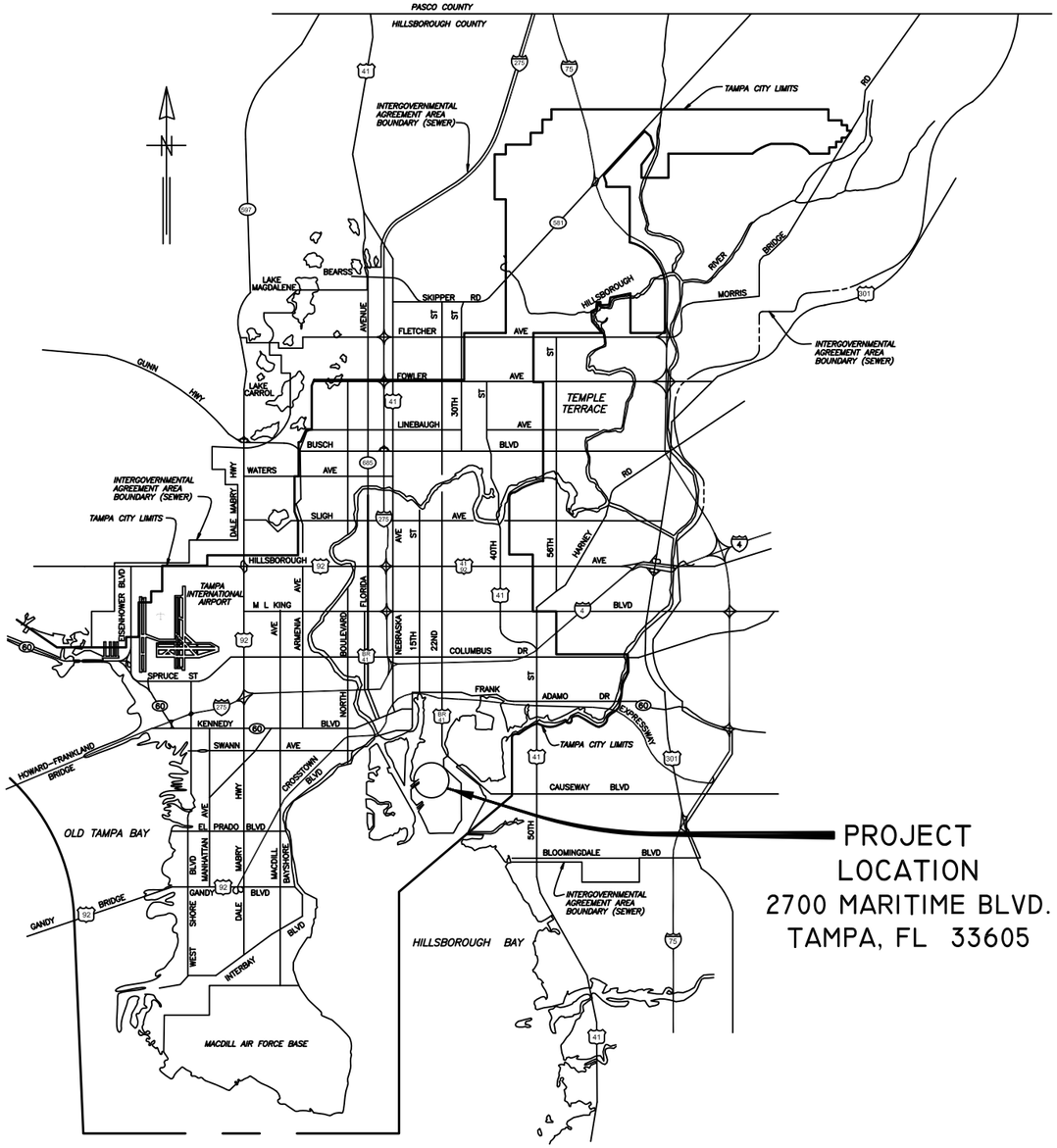
Please Email ALL Questions:

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

LOCATION MAP



PROJECT LOCATION
2700 MARITIME BLVD.
TAMPA, FL 33605

PLANS

FOR

CITY OF TAMPA FLORIDA
WASTEWATER DEPARTMENT

FOR
THE CONSTRUCTION OF THE

HOWARD F. CURREN AWTP
LARGE MOTOR SOFTSTART ADDITIONS
PHASE II

CONTRACT: 15-C-00038

JUNE 2015

TRICON CONSULTING ENGINEERS
777 S. Harbour Island Blvd,
Suite 870
Tampa, FL 33602
813.227.9190
Certificate of Authorization No. 8363

TIMOTHY THOMAS, P.E. No. 47079

DRAWING INDEX

SHEET No.	SHEET TITLE
1	COVER SHEET
2	INDEX, SCHEDULES AND GENERAL NOTES
3	SITE PLAN FOR SOFTSTARTER ADDITIONS
E–1	ELECTRICAL LEGEND AND ABBREVIATIONS
E–2	FILTER BUILDING NO. 2 : PARTIAL FLOOR PLAN
E–3	FILTER BUILDING NO. 2 : MCC–86 PARTIAL ELEVATION
E–4	SOFTSTARTER CABINETS : ELEVATION AND DETAILS
E–5	FILTER BUILDING NO. 2 : MCC–86 ONE–LINE DIAGRAM (SHEET 1 OF 2)
E–6	FILTER BUILDING NO. 2 : MCC–86 ONE–LINE DIAGRAM (SHEET 2 OF 2)
E–7	TYPICAL CONTROL AND MOTOR WIRING DIAGRAMS
E–8	MOTOR FEEDER INFORMATION

SCOPE OF WORK

THE WORK CONSISTS OF FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION, COMMISSIONING AND PERFORMING ALL OPERATIONS REQUIRED TO SUPPORT THE INSTALLATION OF THREE (3) NEW 480V, 310 AMPERE SOFTSTARTERS FOR BACKWASH WATER PUMP FB–BWP–4, BACKWASH WATER PUMP FB–BWP–5 AND BACKWASH WATER PUMP FB–BWP–6 IN FILTER BUILDING NO. 2 AT THE HOWARD F. CURREN AWTP. THE WORK INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

1. SUBMIT WORKING DRAWINGS, PARTS SCHEDULES AND CUT–SHEETS TO THE ENGINEER.
2. FURNISH AND INSTALL ALL EQUIPMENT, CONTROLS AND INSTRUMENTATION AS SHOWN ON THE PLANS AND DESCRIBED IN THE SPECIFICATIONS.

SPECIFICALLY:

A. FURNISH ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION AND PERFORMING ALL OPERATIONS REQUIRED TO SUPPORT THE INSTALLATION AND COMMISSIONING OF THREE (3) NEW 480V, 310 AMPERE SOFTSTARTERS. THE WORK INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING :

1. REMOVE THE EXISTING MOTOR FEEDER CONDUCTORS FROM MOTOR CONTROL CENTER (MCC–86) TO BACKWASH WATER PUMP FB–BWP–4, BACKWASH WATER PUMP FB–BWP–5, AND BACKWASH WATER PUMP FB–BWP–6 RESPECTIVELY.
2. DEMOLISH AND REMOVE THE EXISTING ACROSS–THE–LINE MOTOR STARTERS, ASSOCIATED CONDUCTORS AND ANCILLARY EQUIPMENT AS INDICATED ON THE DRAWINGS FOR BACKWASH WATER PUMP FB–BWP–4, BACKWASH WATER PUMP FB–BWP–5, AND BACKWASH WATER PUMP FB–BWP–6.
3. DEMOLISH AND REMOVE ALL EXISTING CONDUCTORS, ELECTRICAL COMPONENTS, OR OTHER UNNECESSARY ITEMS LOCATED WITHIN THE EXISTING 30" CABINETS TO BE USED TO HOUSE THE NEW SOFTSTARTERS. COVER ALL EXISTING HOLES IN THE EXISTING 30" CABINETS WITH ALUMINUM SHEET METAL.
4. PROVIDE AND INSTALL THREE NEW 480V, 310 AMPERE SOFTSTARTERS WITHIN THE EXISTING 30" CABINETS.
5. PROVIDE AND INSTALL THREE NEW 480V, 40.0 KVAR CAPACITOR BANKS WITH ASSOCIATED CONTACTOR AND FUSING WITHIN THE EXISTING 30" CABINETS.
6. PROVIDE AND INSTALL A MISCELLANEOUS CONTROL CIRCUIT CONDUCTORS.
7. PROVIDE STARTUP AND COMMISSIONING OF NEW SOFTSTARTERS AND CAPACITOR BANKS.

B. OUTAGES

1. THE CONTRACTOR SHALL COORDINATE ALL REQUIRED OUTAGES WITH THE CITY OF TAMPA. REQUESTS FOR OUTAGES SHALL BE MADE IN WRITING AND SUBMITTED TO THE CITY OF TAMPA A MINIMUM OF 14 CALENDAR DAYS PRIOR TO THE REQUESTED DATE OF THE OUTAGE.

C. DEMOLITION

1. VERIFY EXISTING POWER / INSTRUMENTATION / CONTROL CONNECTIONS IN THE FIELD PRIOR TO COMMENCING DEMOLITION WORK. THE CONTRACTOR SHALL REROUTE OR MAKE OTHER ACCOMMODATIONS FOR ANY UNFORESEEN WIRING PASSING THROUGH CONDUITS OR ENCLOSURES, SCHEDULED FOR DEMOLITION, THAT MUST REMAIN IN SERVICE FOR PROPER OPERATION OF OTHER SYSTEMS. COORDINATE INSTRUMENTATION / CONTROL CONNECTIONS WITH CITY PERSONNEL.
2. THE CITY RETAINS THE RIGHT TO SALVAGE SOME, OR ALL, OF THE EQUIPMENT REMOVED BY THE CONTRACTOR. THE CITY WILL INSTRUCT THE CONTRACTOR PRIOR TO DEMOLITION, ON WHAT IS TO BE SALVAGED. EQUIPMENT NOT DESIRED BY THE CITY SHALL BE REMOVED FROM THE PREMISES AND DISPOSED OF PROPERLY BY THE CONTRACTOR.

480V SOFTSTARTER ADDITION SCHEDULE

MOTOR SIZE	VOLTAGE	FULL LOAD AMPS	TYPE OF LOAD	SERVICE	LOCATION	MCC	DESIGNATION
200	480	250	CENTRIFUGAL	BACKWASH WATER PUMP	FILTER BUILDING NO. 2 – 047	MCC–86	FB–BWP–4
200	480	250	CENTRIFUGAL	BACKWASH WATER PUMP	FILTER BUILDING NO. 2 – 047	MCC–86	FB–BWP–5
200	480	250	CENTRIFUGAL	BACKWASH WATER PUMP	FILTER BUILDING NO. 2 – 047	MCC–86	FB–BWP–6

GENERAL NOTES

THE WORK CONSIST OF FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, AND TECHNICAL SUPERVISION TO INSTALL NEW SOFTSTARTERS AND CAPACITORS AS INDICATED AND SHOWN. THE WORK INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO PURCHASING EQUIPMENT OR COMMENCING CONSTRUCTION.
2. ONLY ONE BACKWASH WATER PUMP (BWP) MAY BE TAKEN OUT OF SERVICE AT A TIME TO COMPLETE THIS WORK.
3. AFTER COMPLETION OF WORK ON A SINGLE BWP, THERE SHALL BE A MINIMUM OF A 2–DAY WAITING PERIOD PRIOR TO THE NEXT BWP BEING TAKEN OUT OF SERVICE.
4. MOTOR CONNECTIONS SHALL BE BY BOLTED COMPRESSION LUGS PROPERLY TAPED TO MATCH CONDUCTOR INSULATION CHARACTERISTICS.
5. CONTROL CONDUCTORS SHALL BE STRANDED COPPER, 14 AWG MINIMUM, WITH XHHW INSULATION, UNLESS OTHERWISE NOTED.
6. ALL WIRING SHALL BE IDENTIFIED WITH NUMBERS AT ALL TERMINALS AND ON WIRING DIAGRAMS.
7. FIELD VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTIONS PRIOR TO COMMENCING CONSTRUCTION.
8. ALL NEW EQUIPMENT SHALL BE PERMANENTLY IDENTIFIED WITH A BLACK ON WHITE LAMACOID TAG ENGRAVED WITH MINIMUM 3/16 INCH LETTERING.
9. ALL CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR ROUTED INSIDE EACH CONDUIT WITH POWER CONDUCTORS.
10. ALL CONDUCTOR LENGTHS SHALL BE CONTINUOUS. NO SPLICES OR CONDUCTOR TERMINATIONS SHALL BE PERMITTED UNLESS SPECIFICALLY DESIGNATED IN THE DRAWINGS.
11. ALL EXISTING INSTALLATIONS DENOTED ON THE DRAWINGS ARE FOR THE CONTRACTORS REFERENCE ONLY. ALL EXISTING INSTALLATIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING A BID AND PRIOR TO COMMENCING CONSTRUCTION.
12. CONDUITS SHALL BE RIGID HEAVY WALL ALUMINUM. FLEXIBLE CONDUITS SHALL BE NONMETALLIC LIQUID TIGHT.
13. ALL MOTOR CONDUCTORS SHALL BE REPLACED. THE EXISTING CONDUCTORS SHALL BE REMOVED, AND REPLACED WITH NEW COPPER DLO CONDUCTORS AS INDICATED. PRIOR TO PULLING THE NEW CONDUCTORS, CLEAN THE EXISTING CONDUITS USING A SWAB, AND RUN A PROPERLY SIZED RUBBER SLUG MANDREL THROUGH THEM TO PROVE INTEGRITY AND SPREAD WIRE LUBRICANT. PRIOR TO MAKING FINAL CONNECTIONS, THE CONTRACTOR SHALL USE A MEGGER TO TEST THE INSULATION RESISTANCE OF THE INSTALLED CONDUCTORS (PHASE TO PHASE & PHASE TO GROUND- 1000V FOR ONE MINUTE) AND RECORD VALUES.
14. MAKE MODIFICATIONS TO THE EXISTING MOTOR CONTROL CENTERS AS SHOWN AND SPECIFIED.
15. MAKE MODIFICATIONS TO THE EXISTING 30" CABINETS AS SHOWN AND SPECIFIED.
16. PROVIDE AND INSTALL SOFTSTARTER, CAPACITORS AND ASSOCIATED HARDWARE AS SHOWN AND SPECIFIED.
17. MAKE REQUIRED INTERCONNECTIONS BETWEEN MOTOR CONTROL CENTER COMPONENTS AND NEW SOFTSTARTER AS SHOWN AND SPECIFIED.
18. MAKE FINAL CONNECTIONS TO MOTORS USING NEW POWER COMPRESSION FITTINGS AND NON–METALLIC LIQUID–TIGHT FLEXIBLE CONDUIT AS NECESSARY.
19. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) ADOPTED BY THE FLORIDA BUILDING CODE AND CHAPTER 5 OF THE CITY OF TAMPA CODE.
20. CONTRACTOR SHALL USE THE MOTOR DATA PROVIDED IN THE SPECIFICATIONS TO ESTABLISH THE PROGRAMMABLE PARAMETERS FOR THE NEW SOFTSTARTER. CONTRACTOR SHALL FULLY PROGRAM THE SOFTSTARTER PRIOR TO INITIAL START–UP OF THE SYSTEM TO AVOID UNEXPECTED OR HARMFUL OPERATION OF THE SYSTEM.
21. AFTER COMPLETING THE EQUIPMENT INSTALLATION AND PROGRAMMING TASKS, THE SYSTEM SHALL BE TESTED TO SHOW FUNCTIONALITY. IF NECESSARY, SOFTSTARTER PROGRAM PARAMETERS SHALL BE ADJUSTED TO ACHIEVE THE PROPER MOTOR STARTING AND STOPPING CHARACTERISTICS.
22. TEST AND START–UP REPORTS FOR THE MOTOR STARTER SYSTEM AND WIRE SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE (O&M) MANUALS PROVIDED UNDER THIS CONTRACT. ALL RELAY AND SOFTSTARTER SETTINGS SHALL BE TABULATED AND INCLUDED IN THE O&M MANUAL.

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DATE	08/2015	No.	DATE	BY	APP	REVISION DESCRIPTION

SCALE: NOT TO SCALE

City of Tampa Wastewater Department

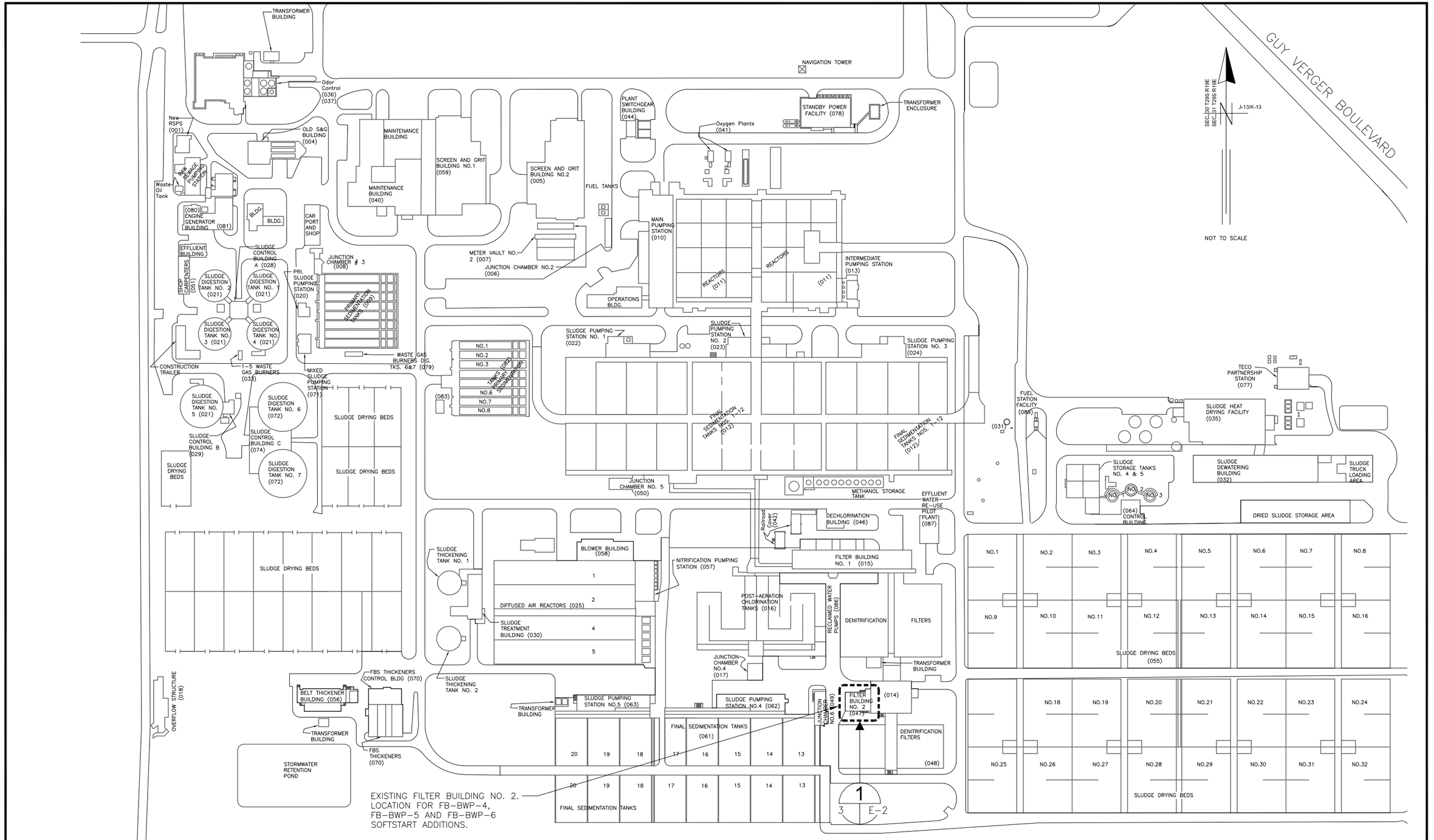
HOWARD F. CURREN AWTP
SOFTSTART ADDITIONS PHASE II

INDEX, SCHEDULES AND GENERAL NOTES

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER: 2

FILE: 171501842



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City of Tampa Wastewater Department

HOWARD F. CURREN AWTP SOFTSTART ADDITIONS PHASE II

SITE PLAN FOR SOFTSTARTER ADDITIONS

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER 3

FILE: 171301342E01

CONDUIT RUN EXPOSED

CONDUIT RUN CONCEALED UNDERGROUND

CONDUIT RUN CONCEALED IN FLOOR OR SLAB

G — G — GROUNDING ELECTRODE CONDUCTOR

CONDUIT STUB OUT AND CAP

GROUND ROD

JUNCTION BOX

JUNCTION BOX WITH FLEXIBLE CONNECTION

480V
15 KVA, 1*
120/240V

TRANSFORMER, 480V INDICATED PRIMARY VOLTAGE, 120/240V INDICATES SECONDARY VOLTAGE, 15 KVA REPRESENTS POWER RATING, AND 1* INDICATES SINGLE PHASE (THREE PHASE IF NOT INDICATED)

3P
30A

THERMAL MAGNETIC CIRCUIT BREAKER WITH NUMBER OF POLES AND AMPERE RATING

XX

COMBINATION MAGNETIC STARTER WITH CONTROL POWER TRANSFORMER (SIZED FOR LOAD). LETTERS INDICATE TYPE :
N – NON–REVERSING
R – REVERSING
2S – TWO–SPEED
C – CONTACTOR
SS – SOLID STATE SOFT START

XXX

XXX DEVICE	DESCRIPTION
HLS	HIGH LEVEL SWITCH
HOA	HAND–OFF–AUTO
LD	LEAK DETECTION
LLS	LOW LEVEL SWITCH
LOR	LOCAL–OFF–REMOTE
PB	PUSH BUTTON
RTU	REMOTE TERMINAL UNIT
SS	SOFT STARTER
SS/B	SOFT START OR BYPASS
TS	TEMPERATURE SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
ZS	POSTION SENSOR (LIMIT SWITCH)

FUSE

XX

MOTOR

THERMAL OVERLOAD

UTILITY METER

TRANSFER SWITCH

ELECTRIC PANELBOARD

DISCONNECT OR SAFETY SWITCH

FLOAT SWITCH. OPENS ON LOW LEVEL.

FLOAT SWITCH. CLOSES ON LOW LEVEL.

NORMALLY OPEN (N.O.) CONTACT

NORMALLY CLOSED (N.C.) CONTACT

GROUND CONNECTION

R

INDICATING PILOT LIGHT LETTER INDICATES COLOR OF LENS

DISCONNECT OR TOGGLE SWITCH

NORMALLY OPEN MOMENTARY CIRCUIT CLOSING PUSH–BUTTON SWITCH. SPRING OPEN. NUMBER OF ELECTRICAL CONTACTS ON SWITCH SHOWN ON CONTROL SCHEMATIC

NORMALLY CLOSED MOMENTARY CIRCUIT OPENING PUSH–BUTTON SWITCH. SPRING CLOSE. NUMBER OF ELECTRICAL CONTACTS ON SWITCH SHOWN ON CONTROL SCHEMATIC

LIMIT SWITCH NORMALLY CLOSED CONTACT. CONTACT OPENS WHEN ACTUATED

TORQUE SWITCH NORMALLY CLOSED CONTACT. CONTACT OPENS WHEN ACTUATED

PUMP THERMAL SENSOR

3–PHASE, 480V CAPACITOR

ABBREVIATIONS:

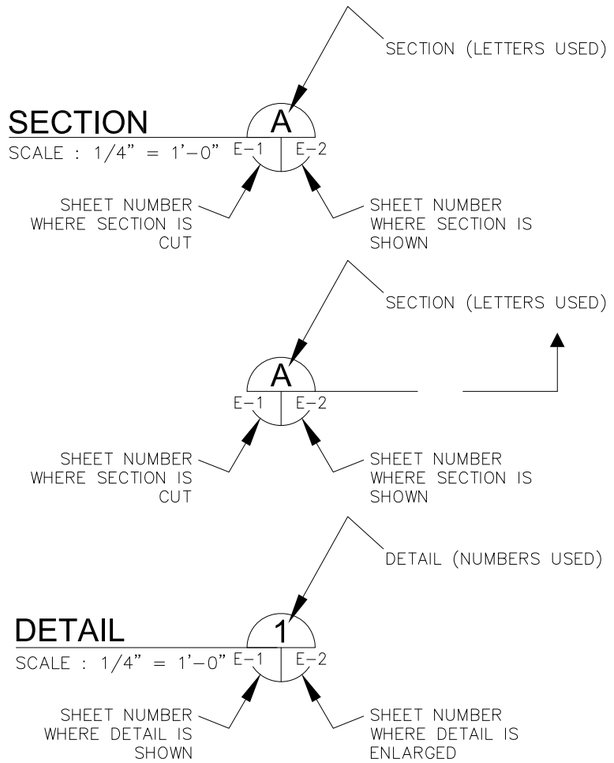
A	AMPS
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ATL	ACROSS–THE–LINE
C	CONDUIT
CU	COPPER
EX	EXISTING
ELEC	ELECTRICAL
EXP	EXPLOSION PROOF
FU	FUSE
GFI	GROUND FAULT INTERRUPTER
GND	GROUNDING CONDUCTOR
HP	HORSEPOWER
HZ	HERTZ
IG	ISOLATED GROUND
KVA	KILOVOLT AMPERES
KW	KILOWATTS
MAX	MAXIMUM
MIN	MINIMUM
N/A	NOT APPLICABLE
PH	PHASE
RECP	RECEPTACLE
RPM	REVOLUTIONS PER MINUTE
RTU	REMOTE TERMINAL UNIT
SPD	SURGE PROTECTION DEVICE
TYP	TYPICAL
V	VOLTS
WP	WEATHERPROOF

V VIBRATION SWITCH

P PRESSURE SWITCH

C CONTROL STATION

EXAMPLE OF SECTION CUT AND DETAIL



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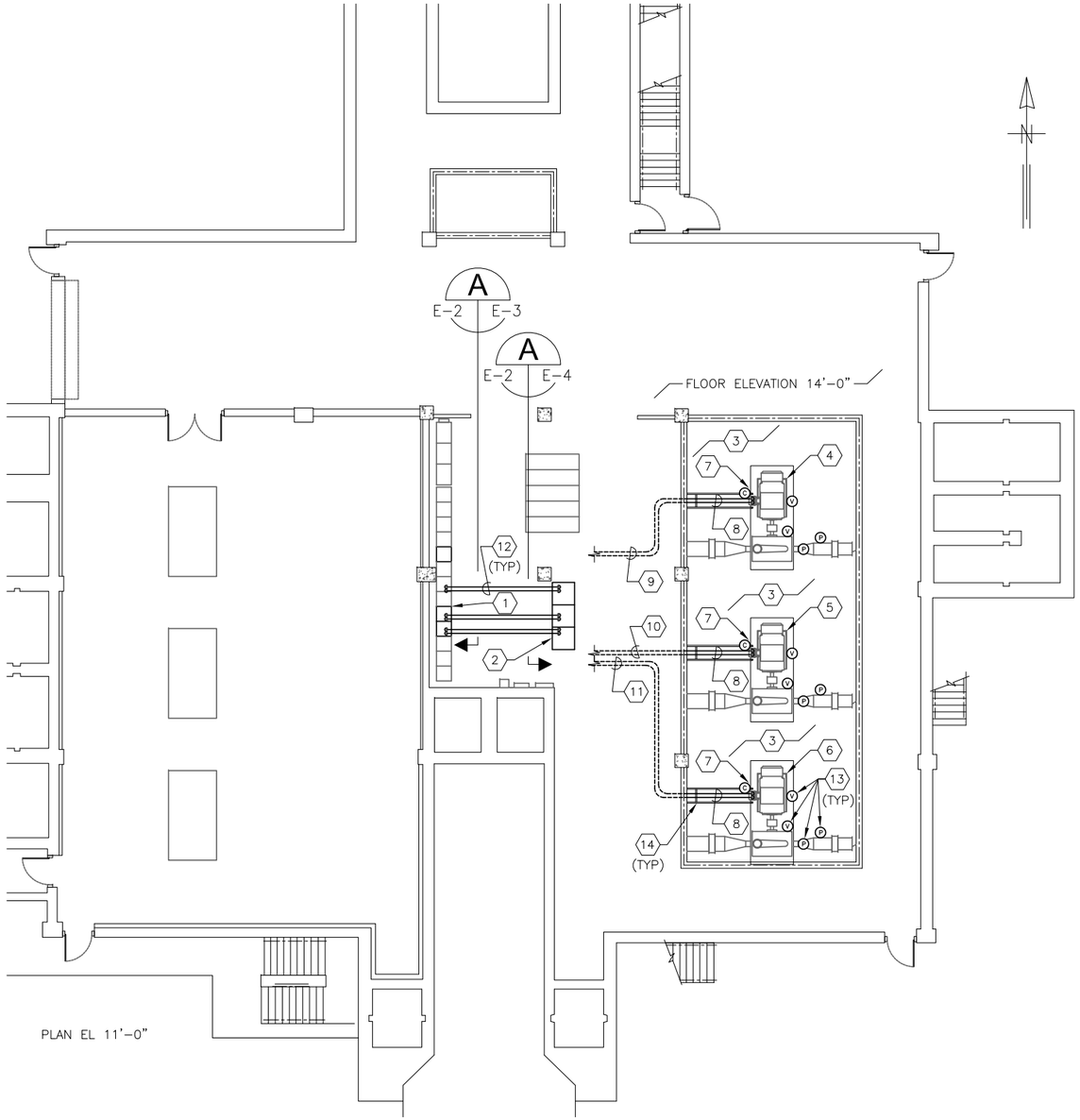
HOWARD F. CURREN AWTP
SOFTSTART ADDITIONS PHASE II

ELECTRICAL LEGEND AND ABBREVIATIONS

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER
E–1

FILE: 171301342E01



KEYED NOTES:

1. EXISTING MOTOR CONTROL CENTER : MCC-86. REFER TO PARTIAL ELEVATION ON SHEET E-3.
2. EXISTING SET OF THREE (3) 30 INCH WIDE CABINETS. CONTRACTOR SHALL REMOVE ANY EXISTING CONDUCTORS AND OR ELECTRICAL COMPONENTS AND THEN INSTALL NEW SOFTSTARTER AND CAPACITOR BANK (ONE EACH PER CABINET). REFER ALSO TO ELEVATION AND DETAILS ON SHEET E-4.
3. THIS AREA IS OPEN TO ABOVE AND IS AT ELEVATION 4'-0".
4. EXISTING BACKWASH WATER PUMP FB-BWP-4.
5. EXISTING BACKWASH WATER PUMP FB-BWP-5.
6. EXISTING BACKWASH WATER PUMP FB-BWP-6.
7. EXISTING MOTOR LOCAL CONTROL STATION AND MOTOR JUNCTION BOX WITH 45 KVAR CAPACITOR INSTALLED BELOW. CONTRACTOR TO REMOVE EXISTING 45 KVAR CAPACITOR BANK AND ASSOCIATED CONDUIT/CONDUCTORS. PROVIDE CONDUIT HOLE SEAL ON MOTOR JUNCTION BOX FOR CAPACITOR BANK CONDUIT (TO BE REMOVED). LOCAL CONTROL STATION TO REMAIN. REFER TO NOTE #8 FOR LOCAL CONTROL STATION CONDUCTORS/CONDUIT. REFER ALSO TO SHEET E-7 FOR TYPICAL CONTROLS WIRING DIAGRAM.
8. EXISTING 1" CONDUIT AND CONTROL CONDUCTORS FROM LOCAL CONTROL STATION TO ASSOCIATED MOTOR STARTER TO REMAIN. CONTRACTOR SHALL REMOVE EXISTING 480V FEEDER CONDUCTORS FROM EXISTING 3" CONDUIT AND INSTALL 3-#373.7 DLO CU + 1-#3 XHHW CU GND IN EXISTING CONDUIT. EXISTING CONNECTION TO MOTOR JUNCTION BOX IS VIA 3" FLEXIBLE SEALTITE CONDUIT. CONTRACTOR SHALL PROVIDE NEW 3" FLEXIBLE SEALTITE CONNECTION TO MOTOR JUNCTION BOX.
9. EXISTING 1" CONDUIT AND EXISTING 3" CONDUIT OF NOTE #8 UNDER SLAB OF ELEVATION 14'-0". CONDUITS CONTINUE TO THE UNDERSIDE OF FB-BWP-4 STARTER IN MCC-86.
10. EXISTING 1" CONDUIT AND EXISTING 3" CONDUIT OF NOTE #8 UNDER SLAB OF ELEVATION 14'-0". CONDUITS CONTINUE TO THE UNDERSIDE OF FB-BWP-5 STARTER IN MCC-86.
11. EXISTING 1" CONDUIT AND EXISTING 3" CONDUIT OF NOTE #8 UNDER SLAB OF ELEVATION 14'-0". CONDUITS CONTINUE TO THE UNDERSIDE OF FB-BWP-6 STARTER IN MCC-86.
12. TWO (2) EXISTING 3" CONDUITS AND ONE (1) EXISTING 1" CONDUIT FROM MCC-86 TO ASSOCIATED 30" WIDE CABINET (TYPICAL OF 3). THE CONTRACTOR SHALL UTILIZE ONE 3" CONDUIT TO INSTALL 3-#373.7 DLO CU + 1-#3 XHHW CU GND FROM THE EXISTING STARTER MOTOR CIRCUIT PROTECTOR TO THE LINE SIDE OF THE NEW SOFTSTARTER. THE CONTRACTOR SHALL UTILIZE ONE 3" CONDUIT TO INSTALL 3-#373.7 DLO CU + 1-#3 XHHW CU GND FROM THE LOAD SIDE OF THE NEW SOFTSTARTER, BACK TO THE ASSOCIATED STARTER CUBICLE AND DOWN TO THE ASSOCIATED MOTOR. THE CONTRACTOR SHALL UTILIZE THE 1" CONDUIT TO INSTALL 6-#12 THWN CU + 1-#12 THWN CU GND FROM THE NEW SOFTSTARTER TO THE EXISTING STARTER MOTOR CONTROL CIRCUIT (2-#12 120V SOFTSTARTER POWER, 2-#12 SOFTSTARTER FAULT SIGNAL, 2-#12 SOFTSTARTER RESET). REFER ALSO TO MOTOR AND CONTROL WIRING DIAGRAMS ON SHEET E-7.
13. EXISTING MOTOR VIBRATION SWITCH, PUMP VIBRATION SWITCH AND PRESSURE SWITCHES TO REMAIN. NO WORK REQUIRED. REFER ALSO TO CONTROL WIRING DIAGRAMS ON SHEET E-7.
14. EXISTING UNISTRUT SUPPORT FRAMING FOR CONDUITS INDICATED IN NOTE #8.

FILTER BUILDING NO. 2 (047)
PLAN ELEVATION 14'-0"

SCALE : 1/16" = 1'-0"

1 / 3 / E-2

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City of Tampa Wastewater Department

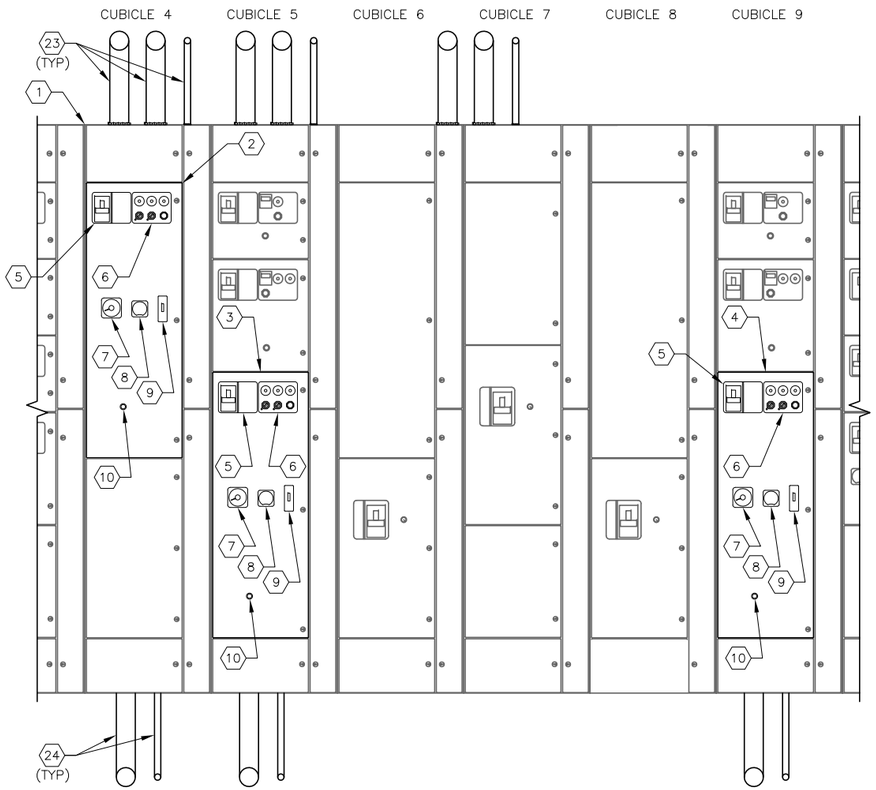
HOWARD F. CURREN AWTP
SOFTSTART ADDITIONS PHASE II

FILTER BUILDING NO. 2
PARTIAL FLOOR PLAN

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER: E-2

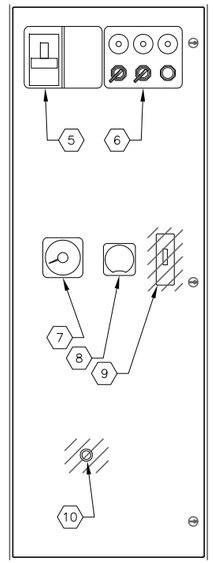
FILE: 171301342E01



MCC-86 EXISTING FRONT ELEVATION

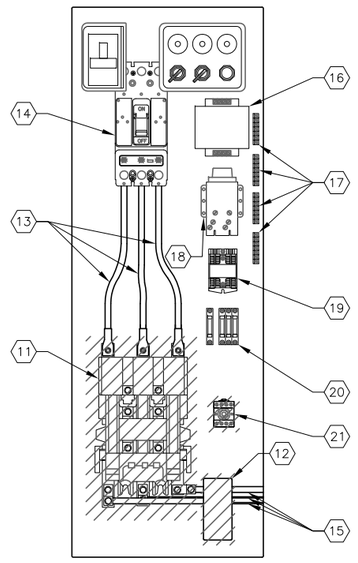
SCALE : N.T.S.

A
E-2 | E-3



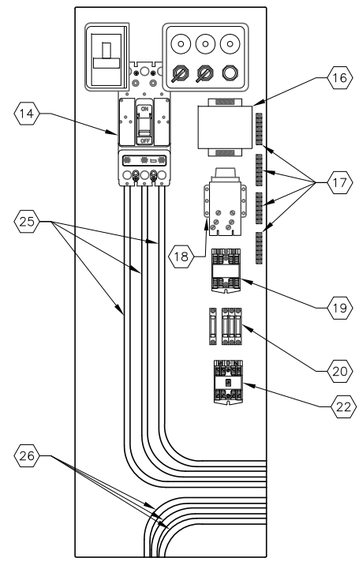
FB-BWP-4 EXTERIOR DOOR MODIFICATIONS

SCALE : N.T.S.
TYPICAL FOR FB-BWP-5 & FB-BWP-6



FB-BWP-4 INTERIOR BUCKET DEMOLITION

SCALE : N.T.S.
TYPICAL FOR FB-BWP-5 & FB-BWP-6



FB-BWP-4 INTERIOR BUCKET NEW WORK

SCALE : N.T.S.
TYPICAL FOR FB-BWP-5 & FB-BWP-6

KEYED NOTES:

1. EXISTING MOTOR CONTROL CENTER : MCC-86.
2. EXISTING STARTER BUCKET FB-BWP-6.
3. EXISTING STARTER BUCKET FOR FB-BWP-5.
4. EXISTING STARTER BUCKET FOR FB-BWP-4.
5. EXISTING 400A, 3-POLE MOTOR CIRCUIT PROTECTOR OPERATING MECHANISM. NO WORK REQUIRED.
6. EXISTING PILOT LIGHTS FOR MOTOR OFF, MOTOR RUNNING, LOR TRIPPED; LOCKOUT RELAY RESET PUSHBUTTON; AND SELECTOR SWITCHES FOR LOCAL-OFF-REMOTE AND MOTOR ON/OFF. REFER TO SHEET E-7 FOR LOR RESET PUSHBUTTON MODIFICATIONS REQUIRED.
7. EXISTING AMMETER TO BE REPLACED. CONTRACTOR TO REMOVE EXISTING AMMETER AND REPLACE WITH NEW SIMPSON 4-1/2" AC ANALOG PANEL METER. MODEL 59, CATALOG # 01440, RANGE 0-300.
8. EXISTING ELAPSED TIME METER. NO WORK REQUIRED.
9. EXISTING GROUNDGARD RELAY TO BE REMOVED. CONTRACTOR TO PROVIDE BLANK COVER.
10. EXISTING RESET PUSHBUTTON FOR EXISTING STARTER. PUSHBUTTON TO BE REMOVED. CONTRACTOR TO PROVIDE BLANK COVER.
11. EXISTING ACROSS-THE-LINE STARTER FOR BACKWASH WATER PUMP TO BE REMOVED.
12. EXISTING GRT SENSOR TO BE REMOVED.
13. EXISTING CONDUCTORS BETWEEN MOTOR CIRCUIT PROTECTOR AND ACROSS-THE-LINE STARTER TO BE REMOVED.
14. EXISTING 400A, 3-POLE MOTOR CIRCUIT PROTECTOR TO REMAIN AND BE REUSED.
15. EXISTING CONDUCTORS TO BACKWASH PUMP MOTOR TO BE REMOVED.
16. EXISTING CONTROL POWER TRANSFORMER TO REMAIN AND BE REUSED.
17. EXISTING TERMINAL BLOCKS TO REMAIN AND BE REUSED.
18. EXISTING AGASTAT TIMING RELAY TO REMIAN AND BE REUSED.
19. EXISTING CONTROL RELAY TO REMAIN AND BE REUSED.
20. EXISTING FUSES TO REMAIN AND BE REUSED.
21. EXISTING RELAY BASE SOCKET (NO RELAY) TO BE REMOVED.
22. CONTRACTOR TO PROVIDE AND INSTALL NEW INDUSTRIAL CONTROL RELAY (SQUARE-D CLASS 8501 TYPE X OR EQUAL). 120V COIL, NUMBER OF CONTACTS AS REQUIRED.
23. TWO (2) EXISTING 3" CONDUITS AND ONE (1) EXISTING 1" CONDUIT FROM MCC-86 TO ASSOCIATED 30" WIDE CABINET (TYPICAL OF 3). THE CONTRACTOR SHALL UTILIZE ONE 3" CONDUIT TO INSTALL 3-#373.7 DLO CU + 1-#3 XHHW CU GND FROM THE EXISTING STARTER MOTOR CIRCUIT PROTECTOR TO THE LINE SIDE OF THE NEW SOFTSTARTER. THE CONTRACTOR SHALL UTILIZE ONE 3" CONDUIT TO INSTALL 3-#373.7 DLO CU + 1-#3 XHHW CU GND FROM THE LOAD SIDE OF THE NEW SOFTSTARTER, BACK TO THE ASSOCIATED STARTER CUBICLE AND DOWN TO THE ASSOCIATED MOTOR. THE CONTRACTOR SHALL UTILIZE THE 1" CONDUIT TO INSTALL 6-#12 THWN CU + 1-#12 THWN CU GND FROM THE NEW SOFTSTARTER TO THE EXISTING STARTER MOTOR CONTROL CIRCUIT (2-#12 120V SOFTSTARTER POWER, 2-#12 SOFTSTARTER FAULT SIGNAL, 2-#12 SOFTSTARTER RESET). REFER ALSO TO PLAN VIEW ON SHEET E-2.
24. EXISTING 1" CONDUIT AND CONTROL CONDUCTORS FROM LOCAL CONTROL STATION TO ASSOCIATED MOTOR STARTER TO REMAIN. CONTRACTOR SHALL REMOVE EXISTING 480V FEEDER CONDUCTORS FROM EXISTING 3" CONDUIT AND INSTALL 3-#373.7 DLO CU + 1-#3 XHHW CU GND IN EXISTING CONDUIT. REFER ALSO TO PLAN VIEW ON SHEET E-2.
25. 3-#373.7 DLO CU + 1-#3 XHHW CU GND FROM THE EXISTING STARTER MOTOR CIRCUIT PROTECTOR TO THE LINE SIDE OF THE NEW SOFTSTARTER.
26. 3-#373.7 DLO CU + 1-#3 XHHW CU GND FROM THE LOAD SIDE OF THE NEW SOFTSTARTER, BACK TO THE ASSOCIATED STARTER CUBICLE AND DOWN TO THE ASSOCIATED MOTOR.

NOTE : 6-#12 THWN CU + 1-#12 THWN CU GND FROM THE NEW SOFTSTARTER TO THE EXISTING STARTER MOTOR CONTROL CIRCUIT NOT SHOWN FOR CLARITY.

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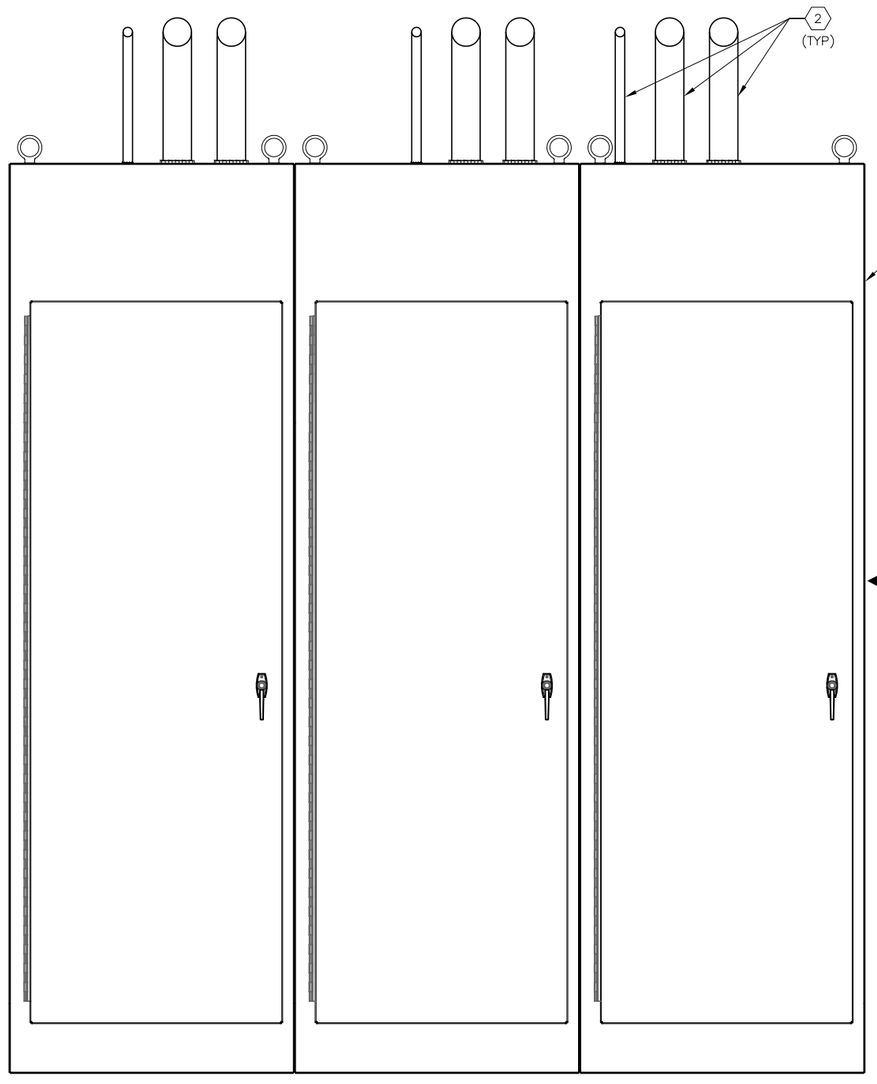
City of Tampa Wastewater Department
HOWARD F. CURREN AWTP
SOFTSTART ADDITIONS PHASE II

FILTER BUILDING NO. 2
MCC-86 PARTIAL ELEVATION

TIMOTHY THOMAS, P.E. No. 47079

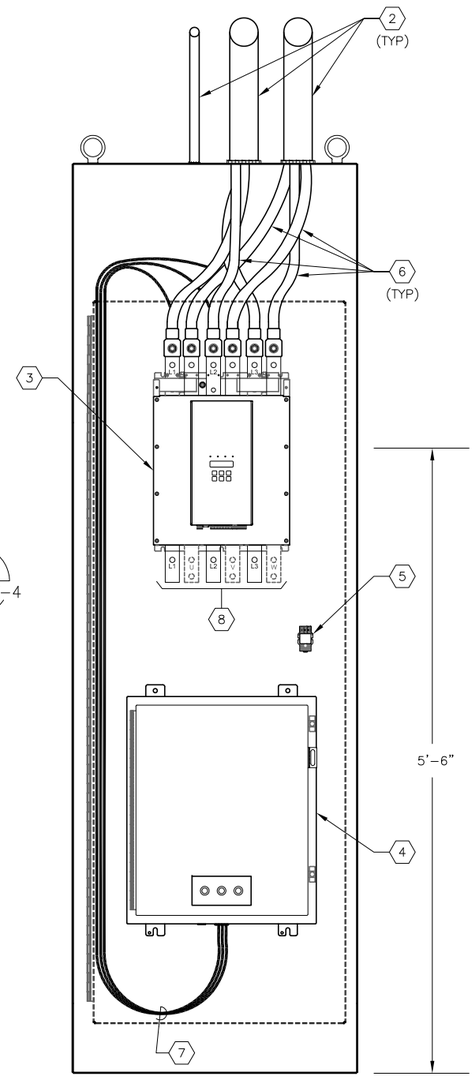
SHEET NUMBER
E-3
FILE: 171501842



EXISTING 30" WIDE CABINETS
FRONT ELEVATION

SCALE : N.T.S.

A
E-2 | E-4



TYPICAL 30" WIDE CABINET
INTERIOR DETAIL

SCALE : N.T.S.

1
E-4 | E-4

KEYED NOTES:

1. EXISTING SET OF THREE (3) 30 INCH WIDE CABINETS. CONTRACTOR SHALL REMOVE ANY EXISTING CONDUCTORS AND OR ELECTRICAL COMPONENTS AND THEN INSTALL NEW SOFTSTARTER AND CAPACITOR BANK (ONE EACH PER CABINET). CONTRACTOR SHALL PROVIDE ALL MATERIALS (BACKPLATES, UNISTRUT, ANGLE BRACKETS, FASTENERS, ETC.) AS REQUIRED FOR MOUNTING NEW SOFTSTARTERS AND CAPACITOR BANKS. CONTRACTOR SHALL PROVIDE NEW COVERPLATES OVER ALL EXISTING OPENINGS. COVERPLATES SHALL BE MADE OF SHEET ALUMINUM TO COVER MULTIPLE OPENINGS (OR THE ENTIRE DOOR (INCLUDES REAR DOORS)). COVERPLATES SHALL BE FINISHED/PAINTED TO MATCH EXISTING.
2. TWO (2) EXISTING 3" CONDUITS AND ONE (1) EXISTING 1" CONDUIT FROM MCC-86 TO ASSOCIATED 30" WIDE CABINET (TYPICAL OF 3). THE CONTRACTOR SHALL UTILIZE ONE 3" CONDUIT TO INSTALL 3-#373.7 DLO CU + 1-#3 XHHW CU GND FROM THE LINE SIDE OF THE NEW SOFTSTARTER TO THE LOAD SIDE OF THE EXISTING MOTOR CIRCUIT PROTECTOR. THE CONTRACTOR SHALL UTILIZE ONE 3" CONDUIT TO INSTALL 3-#373.7 DLO CU + 1-#3 XHHW CU GND FROM THE LOAD SIDE OF THE NEW SOFTSTARTER, BACK TO THE ASSOCIATED STARTER CUBICLE AND DOWN TO THE ASSOCIATED MOTOR. THE CONTRACTOR SHALL UTILIZE THE 1" CONDUIT TO INSTALL 6-#12 THWN CU + 1-#12 THWN CU GND FROM THE NEW SOFTSTARTER TO THE EXISTING STARTER MOTOR CONTROL CIRCUIT (2-#12 120V SOFTSTARTER POWER, 2-#12 SOFTSTARTER FAULT SIGNAL, 2-#12 SOFTSTARTER RESET). REFER ALSO TO PLAN VIEW ON SHEET E-2.
3. CONTRACTOR TO PROVIDE AND INSTALL NEW 480V, 310 AMPERE, 3-POLE SOFTSTARTER. REFER ALSO TO SPECIFICATIONS.
4. CONTRACTOR TO PROVIDE AND INSTALL NEW CAPACITOR. 480V, 3ø, 40 KVAR WITH INTEGRAL CONTACTOR (120V COIL) AND FUSING (14.0" H x 24.0" W x 5.25" D). REFER ALSO TO SPECIFICATIONS.
5. CONTRACTOR TO PROVIDE AND INSTALL NEW INTERPOSING RELAY FOR CAPACITOR CONTACTOR COIL. 2-PDT, 10A, CONTROL RELAY WITH 120V COIL. SQUARE-D CAT# 8501 KU12 V20 OR EQUAL.
6. NEW #373.7 DLO CU LINE AND LOAD CONDUCTORS (#3 XHHW CU GND CONDUCTORS NOT SHOWN FOR CLARITY).
7. CONTRACTOR TO PROVIDE AND INSTALL 3-#4 XHHW CU FOR CAPACITOR (1-#8 XHHW CU GND NOT SHOWN FOR CLARITY).
8. IF CONTRACTOR DOES NOT USE BOTTOM TERMINALS PROVIDE AND APPLY HEAT SHRINK FOR EXPOSED TERMINALS. (NOTE: SOFTSTARTER MAY BE ORDERED WITHOUT BOTTOM TERMINALS).

GENERAL NOTES :

1. ALL EXISTING INSTALLATIONS DENOTED ARE FOR THE CONTRACTOR'S REFERENCE ONLY. ALL EXISTING INSTALLATIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING A BID AND PRIOR TO COMMNECING CONSTRUCTION.
2. COORDINATE THE REMOVAL OF ALL EXISTING EQUIPMENT WITH THE CITY OF TAMPA.
3. THE SOFTSTARTER SPECIFIED FOR THIS PROJECT IS PROVIDED WITH LINE AND LOAD TERMINALS ON BOTH THE TOP AND BOTTOM OF THE SOFTSTARTER. THE CONTRACTOR MAY USE EITHER SET OF TERMINALS, HOWEVER, THE SOFTSTARTER CT'S (USED FOR MOTOR PROTECTION) SHALL MEASURE THE FULL LOAD CURRENT OF THE MOTOR (NOT THE CURRENT CORRECTED BY THE CAPACITOR BANK) AND THE CAPACITOR BANK SHALL BE CONNECTED TO THE LINE SIDE OF THE SOFTSTARTER.
4. CONTROL WIRING FOR CAPACITOR BANK CONTACTOR AND SOFTSTARTER CONTROLS NOT SHOWN FOR CLARITY. REFER TO SHEET E-7 FOR CONTROL WIRING REQUIRED.
5. 120V POWER WIRING FOR SOFTSTARTER NOT SHOWN FOR CLARITY. REFER TO SHEET E-7 FOR WIRING REQUIRED.
6. CONTRACTOR TO PROVIDE AND INSTALL APPROPRIATELY SIZED GROUND LUGS FOR EQUIPMENT GROUNDING CONDUCTORS. CONTRACTOR SHALL BOND ALL CABINET COMPONENTS (DOORS, BACKPLATES, ENCLOSURE, ETC.) TO EQUIPMENT GROUND LUG.
7. PROVIDE BUSHINGS FOR CONDUCTOR ENTRIES ON BOTTOM OF CAPACITOR ENCLOSURE.

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City of Tampa Wastewater Department

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SOFTSTART ADDITIONS PHASE II

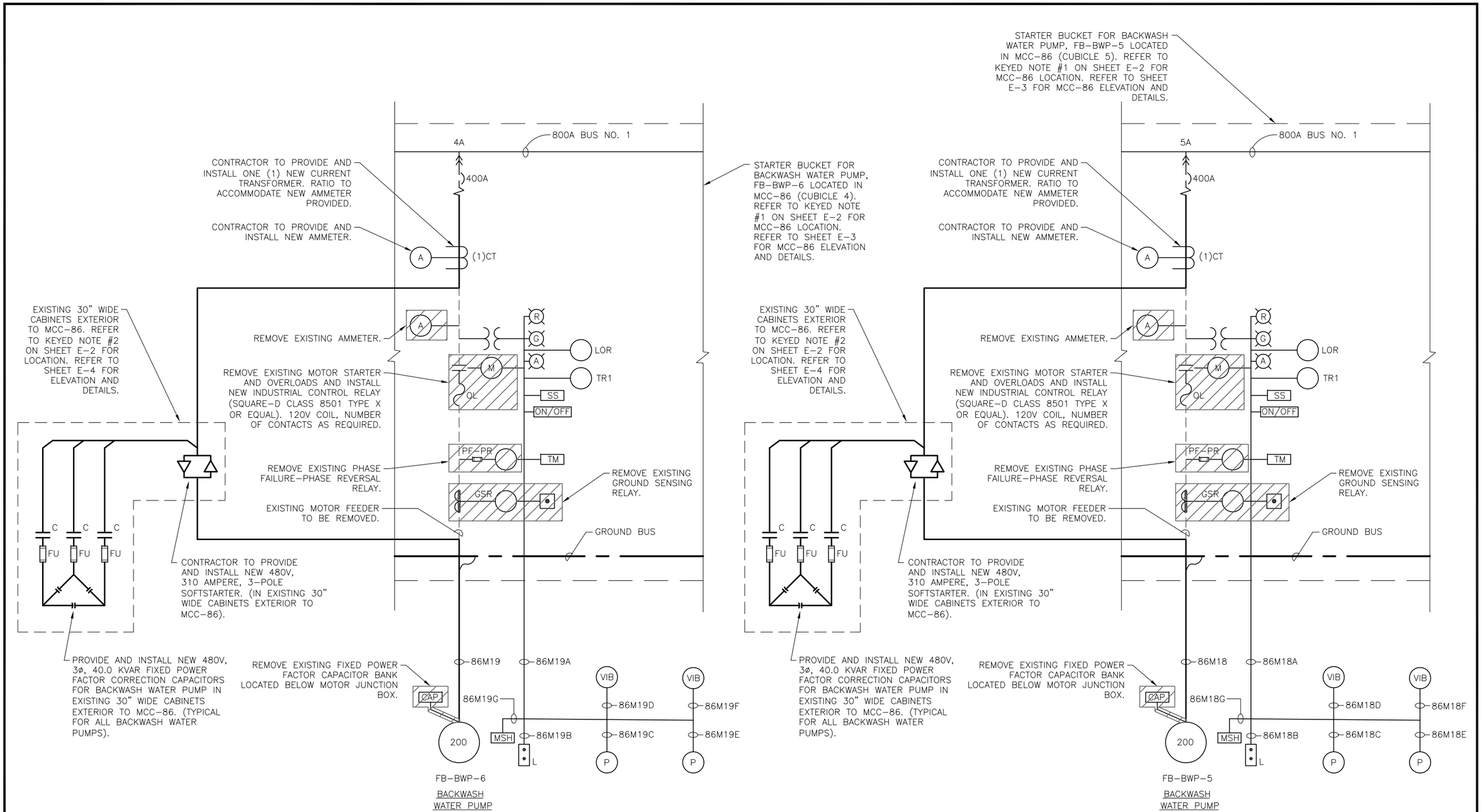
SOFTSTARTER CABINETS : ELEVATIONS AND DETAILS

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER

E-4

FILE: 171301342E01



MCC-86 PARTIAL ONE-LINE DIAGRAM

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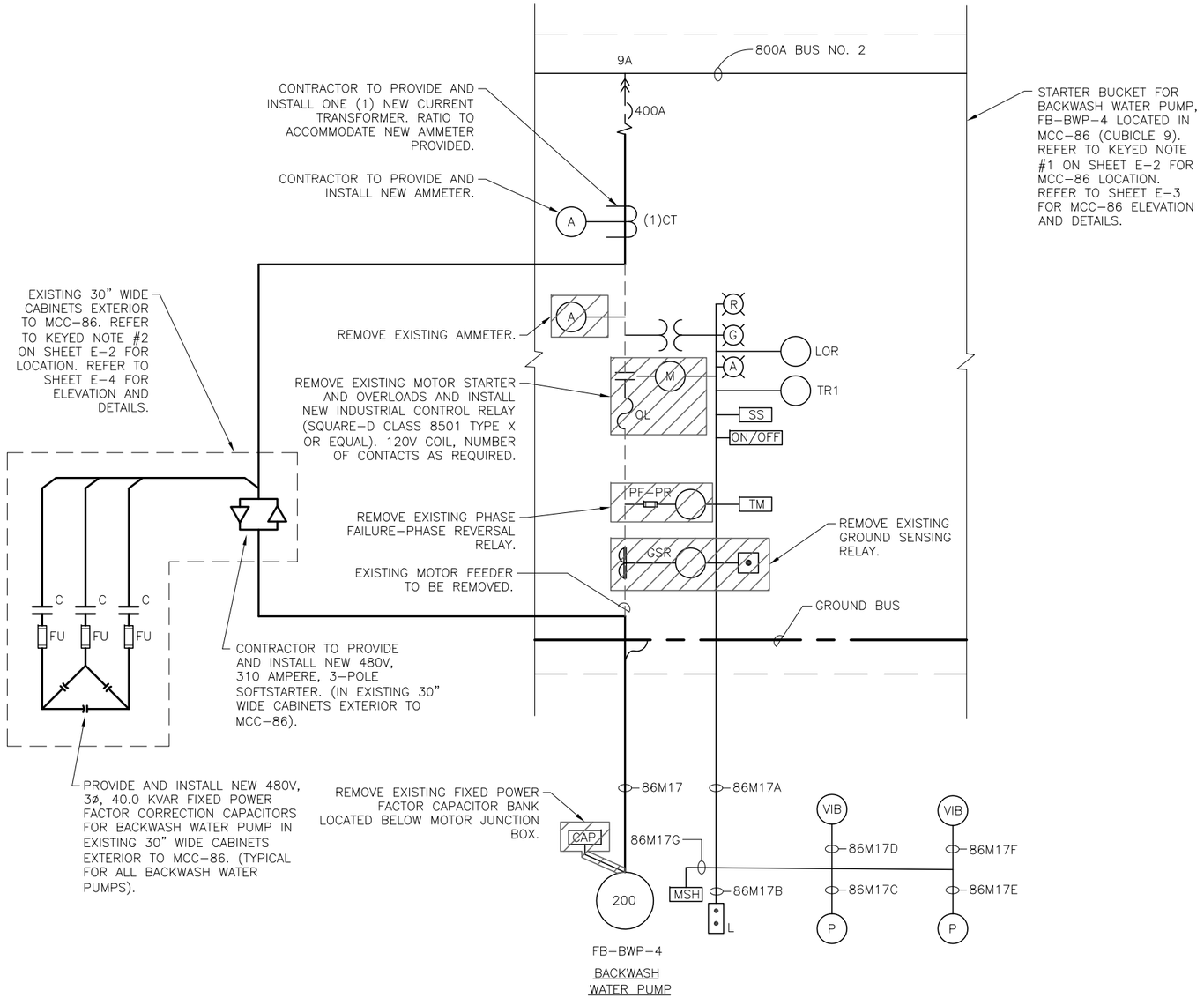
FILTER BUILDING NO. 2
MCC-86 ONE-LINE DIAGRAM
(SHEET 1 OF 2)

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER: E-5

FILE: 171501842



MCC-86 PARTIAL ONE-LINE DIAGRAM

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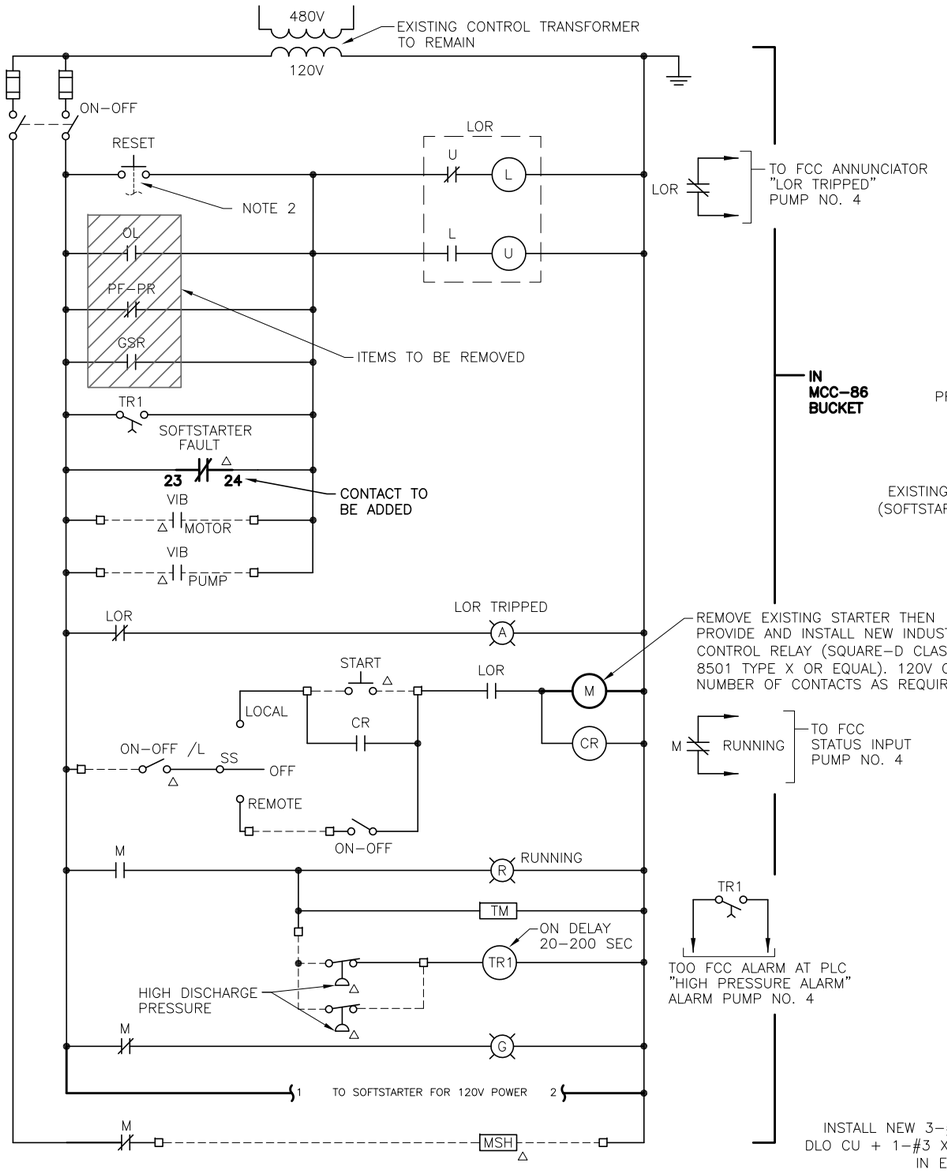
HOWARD F. CURREN AWTP
SOFTSTART ADDITIONS PHASE II

FILTER BUILDING NO. 2
MCC-86 ONE-LINE DIAGRAM
(SHEET 2 OF 2)

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER: E-6

FILE: 171501842



TYPICAL CONTROLS WIRING DIAGRAM (MCC-86 BUCKET)

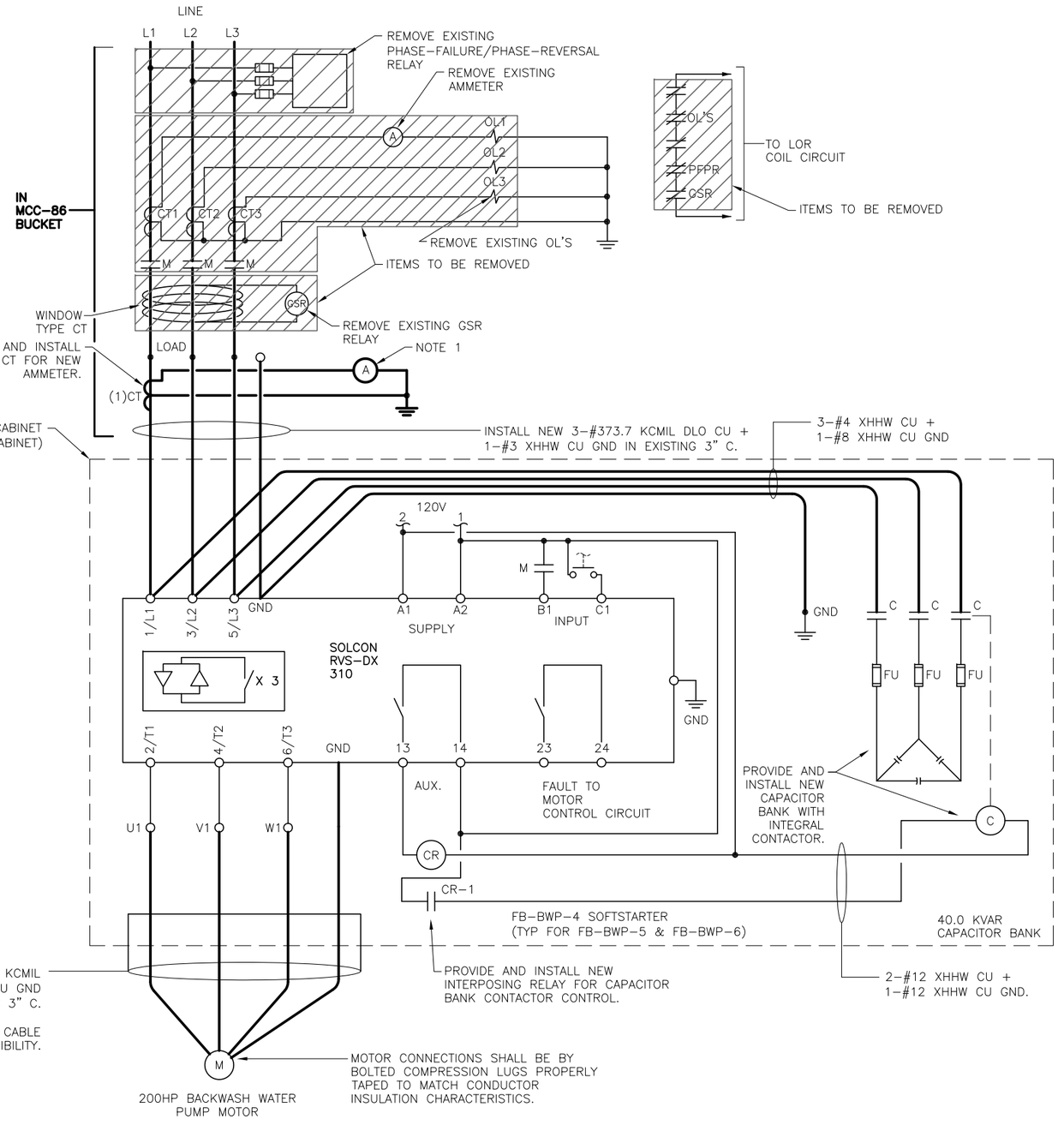
TYPICAL FOR FB–BWP–4, FB–BWP–5 AND FB–BWP–6

CONTROLS LEGEND

△ DEVICE LOCATED REMOTE FROM MCC–86

NOTES :

1. CONTRACTOR TO PROVIDE AND INSTALL NEW AMMETER ON THE CUBICLE DOOR OF STARTER.
2. REVISE EXISTING PUSHBUTTON CONTACT BLOCK AS REQUIRED TO ADD AN ADDITIONAL CONTACT FOR SOFTSTARTER RESET.



TYPICAL MOTOR WIRING DIAGRAM

TYPICAL FOR FB–BWP–4, FB–BWP–5 AND FB–BWP–6

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SOFTSTART ADDITIONS PHASE II

TYPICAL CONTROL AND MOTOR WIRING DIAGRAMS

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER E–7

FILE: 171301342E01

MOTOR FEEDER INFORMATION (LENGTHS ARE APPROXIMATIONS)

1. BACKWASH WATER PUMPS FB–BWP–4, FB–BWP–5, AND FB–BWP–6.

EXISTING MOTOR FEEDERS TO BE REPLACED WITH 3–#373.7 KCMIL DLO CU + 1–#3 XHHW CU GND. CONTRACTOR SHALL REUSE EXISTING 3" C. PROVIDE NEW LIQUID–TIGHT FLEXIBLE CONDUIT CONNECTION TO MOTOR.

APPROXIMATE CONDUCTOR LENGTHS FROM EXISTING MCC–86 TO NEW SOFTSTARTER CABINETS :
FB–BWP–4 :: 30 FEET
FB–BWP–5 :: 30 FEET
FB–BWP–6 :: 30 FEET

APPROXIMATE CONDUCTOR LENGTHS FROM NEW SOFTSTARTER CABINETS TO EXISTING MOTORS :
FB–BWP–4 :: 160 FEET
FB–BWP–5 :: 120 FEET
FB–BWP–6 :: 170 FEET

NOTE THAT CONDUCTOR LENGTHS ARE FROM NEW SOFTSTARTER CABINET TO EXISTING MCC CUBICLE AND THEN TO ASSOCIATED MOTOR.

NOTE :

CONTRACTOR TO FIELD VERIFY CONDUIT LENGTHS AND SIZES PRIOR TO COMMENCING CONSTRUCTION.

SOFTSTARTER SET UP PARAMETERS

UPON START–UP OF EACH SOFTSTARTER, THE CONTRACTOR SHALL DOCUMENT THE INITIAL CONTROL PARAMETERS AND SETTING UTILIZED.

THE SETTINGS FOR EACH SOFTSTARTER SHALL BE PROVIDED ON AN 8" X 11" LAMINATED DOCUMENT AND SHALL BE PLACED ON THE INNER DOOR OF THE ASSOCIATED SOFTSTARTER (OR MOTOR STARTER CUBICLE).

THE MINIMUM PARAMETERS TO BE DOCUMENTED SHALL INCLUDE :

1. SOFTSTARTER FULL LOAD CURRENT
2. MOTOR FULL LOAD CURRENT
3. SOFTSTARTER RATED POWER
4. CONNECTION TYPE (LINE OR INSIDE DELTA)
5. RATED LINE VOLTAGE
6. OVERCURRENT TRIP AS A FUNCTION OF FULL LOAD AMPERES
7. UNDERCURRENT DELAY (IN SECONDS)
8. OVERCURRENT SHEAR PIN (% OF FULL LOAD CURRENT)
9. OVERCURRENT TIME DELAY
10. OVERLOAD CLASS
11. OVERLOAD PROTECT ENABLE WHILE RUN
12. UNDERVOLT TRIP (% OF LINE VOLTAGE)
13. UNDERVOLTAGE TRIP DELAY (IN SECONDS)
14. OVERVOLTAGE TRIP (% OF LINE VOLTAGE)
15. OVERVOLTAGE TRIP DELAY (IN SECONDS)
16. SOFTSTART CURVE
17. PULSE TIME (IN SECONDS)
18. INITIAL VOLTAGE (% OF LINE VOLTAGE)
19. INITIAL CURRENT (% OF FULL LOAD CURRENT)
20. CURRENT LIMIT OF FULL LOAD (% OF FULL LOAD CURRENT)
21. ACCELERATION TIME (IN SECONDS)
22. MAX START TIME (IN SECONDS)
23. NUMBER OF STARTS (NUMBER OF STARTS PERMITTED IN START PERIOD)
24. STARTS PERIOD (1–60 MINUTE PERIOD)
25. START INHIBIT (1–60 MINUTES)
26. SOFT STOP CURVE
27. DECELERATION TIME (IN SECONDS)
28. FINAL TORQUE

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MOTOR FEEDER INFORMATION

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER: E–8

FILE: 171301342E01