

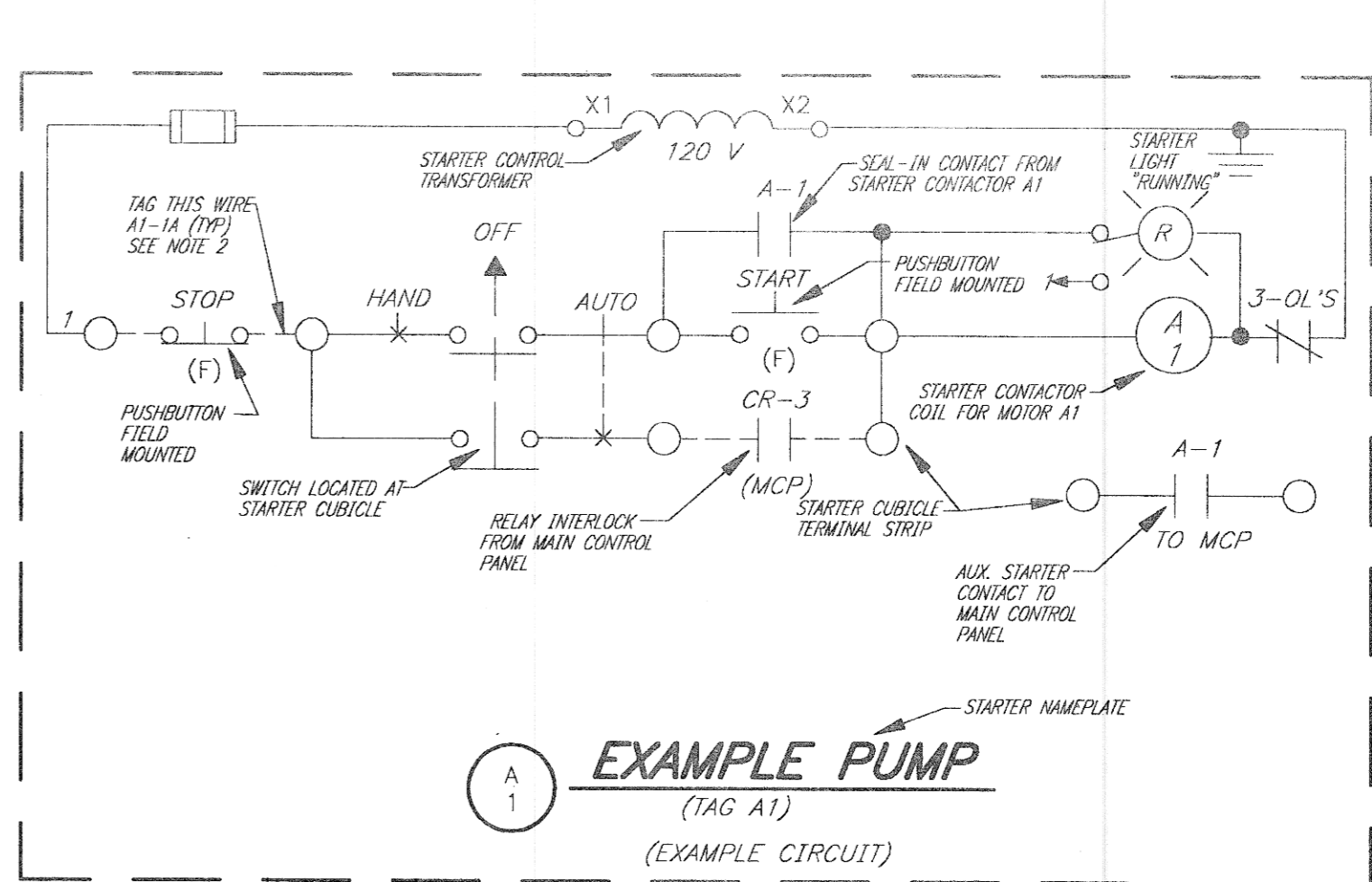
BACKGROUND PLAN AND ONE LINE SYMBOLS	
SYMBOL	DESCRIPTION
	CONTROL SWITCH (SEL OR P.B.) SEE CIRCUITS FOR SPECIFIC TYPE
	SEE CIRCUITS FOR SPECIFIC TYPE FLOAT SWITCH - FLOW SWITCH
	CONDUIT WITH CONDUIT SEAL FITTING
	CONDUIT EXPOSED
	CONDUIT CONCEALED
	DIRECT BURIED CONDUIT
	LOW VOLTAGE DISCONNECT SWITCH
	LOW VOLTAGE FUSE (BELOW 600V)
	ALL STARTERS SHALL BE FULL VOLTAGE NON-REVERSING UNLESS 600V 3 POLE MOLDED CASE CIRCUIT BREAKER, FRAME & RATING AS SHOWN
	SINGLE PHASE, FRACTIONAL HP MOTOR TO LOCATION INDICATED (SEE GEN. NOTE 4)
	THREE PHASE LOAD WITH IDENTIFICATION
	TAG NO. (BALLOON) FOR DEVICE INDICATED
	FOR POWER (SEE GEN. NOTE 4) 3/4" O.D. CP18 SHLD. CONDUIT AND WIRE FROM DEVICES INDICATED TO LOCATION INDICATED
	DISCONNECT SWITCH (F) = FUSED (C) = CIRCUIT BREAKER
	MAGNETIC STARTER (BACKGROUND DRAWINGS ONLY)
	COMBINATION MAGNETIC STARTER FUSED UNLESS NOTED (CIRCUIT BREAKER)
	MANUAL STARTER (R) = REVERSING
	LOW VOLTAGE HOME RUNS, 120/208 V 120/240 V (SEE GEN. NOTE 4)
NEMA 4	WATERTIGHT
NEMA 4X	WATERTIGHT AND CORROSION PROOF
NEMA 7	EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D
NEMA 9	EXPLOSION PROOF - CLASS II, DIVISION 1

GRAPHIC SYMBOL FOR INSTRUMENTATION ITEMS	
SYMBOL	DESCRIPTION
	BOARD OR PANEL MOUNTED DEVICE- DEVICE MOUNTED INSIDE PANEL
	FIELD OR LOCALLY MOUNTED DEVICE
	COMPUTER SYSTEM INPUT OR OUTPUT POINT
	OR
	AND
	MOTOR STARTER
	TERMINAL OR TRANSITION POINT
	FLOAT SWITCH
	PROCESS MACHINERY MOTOR
	PUMP

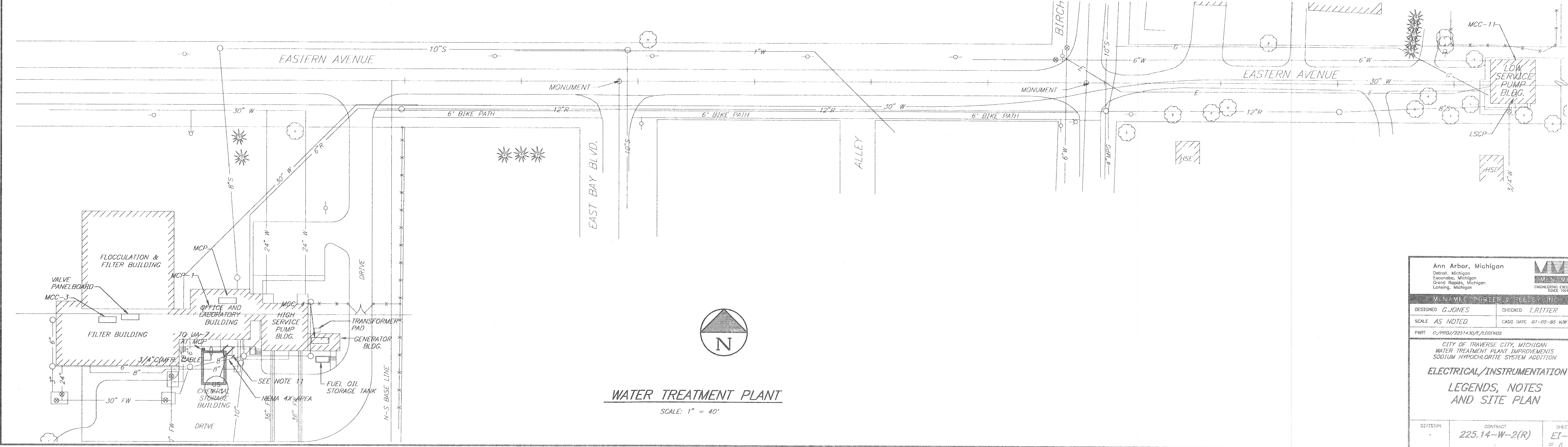
WIRING DEVICE SCHEDULE		
SYMBOL	DESCRIPTION	NEMA TYPE
	125V, 2P, DUPLEX, 3W	5-20 R
	20A, 120/277 V SWITCH	SPST

I.S.A. STANDARD LETTER FUNCTIONS		
SYMBOL	FIRST LETTER	SUCCESSING LETTERS
A	ANALYSIS, ANALOG	ALARM
B	BURNER, FLAME	BATCH
C	CONDUCTIVITY, COMMAND	CONTROL (FEEDBACK TYPE)
D	DENSITY, SPECIFIC GRAVITY	
E	VOLTAGE	PRIMARY ELEMENT
F	FLOW RATE	RATIO
G	GAGING	GLASS
H	HAND, MANUAL	HIGH
I	CURRENT	INDICATE
J	POWER	SCAN
K	TIME, TIME SCHEDULE	CONTROL (NO FEEDBACK)
L	LEVEL, LIGHT	LOW
M	MOISTURE, HUMIDITY	MIDDLE, MODULATE
N		
O	OVERLOAD	ORIFICE
P	PRESSURE, VACUUM	POINT
Q	QUANTITY	TOTALIZE, INTEGRATE
R	RADIOACTIVITY	RECORD, PRINT, RECEIVE
S	SPEED, FREQUENCY, SOLENOID	SWITCH
T	TEMPERATURE, TURBIDITY	TRANSMIT, TRANSFORM
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION, VISCOSITY	VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE	
X		
Y		RELAY, COMPUTE
Z	POSITION	DRIVE, ACTUATE

CONTROL CIRCUIT & PILOT DEVICE LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PRESS. ACTUATED SWITCH		SELECTOR SWITCH OPERATOR WITH FUNCTION SHOWN
	FLOAT ACTUATED SWITCH		MOMENTARY PUSHBUTTON OPERATOR-NORMALLY OPEN
	FLOW ACTUATED SWITCH		MOMENTARY PUSHBUTTON OPERATOR-NORMALLY CLOSED
	TEMP. ACTUATED SWITCH		PUSHBUTTON OPERATOR WITH MUSHROOM HEAD
	LIMIT SWITCH- NORMALLY OPEN		FIELD LOCATED STOP BUTTON
	LIMIT SWITCH- NORMALLY CLOSED		MAINTAINED PUSH-PULL OPERATOR
	LIMIT SWITCH-NORMALLY CLOSED-HELD OPEN		MAINTAINED STOP-START PUSHBUTTON OPERATOR
	LIMIT SWITCH-NORMALLY OPEN-HELD CLOSED		
	LATCHING CABLE SWITCH		
	TIME-DELAY FUSE		SOLENOID OR CLUTCH
	CONTROL RELAY COIL		PUSH-TO-TEST INDICATING LIGHT
	CONTROL RELAY CONTACT-NORMALLY OPEN		MAINTAINED STOP- MOMENTARY START PUSHBUTTON (JOG)
	CONTROL RELAY CONTACT-NORMALLY CLOSED		ZERO SPEED OR ANTI- PLUGGING SWITCH
	TWO COIL LATCHING RELAY		LOCAL TERMINALS WITH EXTERNAL WIRING
	TIMING RELAY COIL		ELAPSED TIME INDICATOR
	TIMED CLOSED CONTACT ON ENERGIZATION		TIMING RELAY INSTANTANEOUS CONTACTS
	TIMED OPEN CONTACT ON ENERGIZATION		
	TIMED OPEN CONTACT ON DE-ENERGIZATION		120 VAC TRANSFORMER
	TIMED CLOSED CONTACT ON DE-ENERGIZATION		



- GENERAL NOTES:**
- ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.
 - ITEMS SHOWN CROSSHATCHED ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED.
 - FOR ITEMS INDICATED AS "FIELD LOCATE" CHECK DRAWINGS OF OTHER TRADES (IN PARTICULAR PIPING AND STRUCTURAL) FOR INTERFERENCE AND FOR LOCATIONS OF MOUNTING FLANGES, CONNECTION POINTS, ETC.
 - INSTALL A SINGLE CONDUCTOR INSULATED (RHW, THHN, OR XHHW) COPPER GROUND WIRE IN EACH CONDUIT, SIZE AS SHOWN ON DRAWINGS OR AS A MINIMUM PER THE NATIONAL ELECTRICAL CODE. THIS GROUND WIRE SHALL BE CONNECTED AT EACH END TO THE EQUIPMENT GROUND.
 - THE FOLLOWING COMPONENT IDENTIFICATION SHALL BE USED AS APPROPRIATE:
(1) FIELD MOUNTED, NOT AT STARTER OR OTHER CONTROL PANELS.
(2) STARTER PANEL MOUNTED.
(3) STARTER PANEL MOUNTED.
(1) AT CONTROL PANEL NO. 1
(2) AT CONTROL PANEL NO. 2
(TCP) AT TEMPERATURE CONTROL PANEL.
 - NEW CONDUIT RUNS SHOWN ON BACKGROUNDS SHALL BE FIELD VERIFIED AND CONDUIT LAYOUT MUST BE REVISED AND APPROVED WITH THE OWNER AND THE ENGINEER BEFORE INSTALLATION OF ANY CONDUIT.
 - REFER TO THE INSTRUMENTATION SHEET, CONTRACTOR TO FURNISH AND INSTALL HARDWARE AND APPURTENANCES I.E.: PIPE TAPS, VALVES, COPPER TUBING, BALL VALVES, ETC. TO INSTALL FIELD DEVICES SHOWN. THIS WORK SHALL BE COORDINATED WITH OTHER TRADES.
 - CONDUIT ROUTINGS SHOWN ON BACKGROUND PLANS ARE ANTICIPATED ROUTINGS ONLY. EXACT CONDUIT ROUTINGS AND LENGTH SHALL BE VERIFIED BY THE CONTRACTOR.
 - NO WIRES SHALL BE TERMINATED TO TERMINAL STRIPS OR OTHER EQUIPMENT WITHOUT FIRST VERIFYING SIGNAL TYPE. DAMAGES RESULTING FROM LACK OF VERIFICATION SHALL BE BORNE BY THE CONTRACTOR. CONTRACTOR SHALL COORDINATE SIGNAL TYPE WITH I/O CARDS.
 - EACH PERSPECTIVE BIDDER SHALL VISIT THE SITE PRIOR TO SUBMITTING THEIR BID FOR WORK UNDER THIS CONTRACT. THE BIDDER SHALL FULLY ACQUAINT ONESELF WITH EXISTING FIELD CONDITIONS. NO CHANGE ORDERS WILL BE AUTHORIZED FOR WORK, DUE TO LACK OF VERIFICATION OF EXISTING SITE CONDITIONS AND WIRING.
 - EXISTING LEAK DETECTOR TO BE RELOCATED. COORDINATE WITH OWNER.



Ann Arbor, Michigan
Detroit, Michigan
Escanaba, Michigan
Grand Rapids, Michigan
Lansing, Michigan

McNAMEE
ENGINEERING EXCELLENCE
SINCE 1994

McNAMEE PORTER & SEE, P.C., INC.

DESIGNED G. JONES
SCALE AS NOTED

CHECKED T. RITTER
CADD DATE 01-05-95 KWW 5

PART 02/PROJ/22514-W-2(R)/LEGENDS

CITY OF TRAVERSE CITY, MICHIGAN
WATER TREATMENT PLANT IMPROVEMENTS
SODIUM HYPOCHLORITE SYSTEM ADDITION

ELECTRICAL/INSTRUMENTATION
LEGENDS, NOTES
AND SITE PLAN

DIVISION

CONTRACT
225.14-W-2(R)

SHEET
EI-1
OF 6