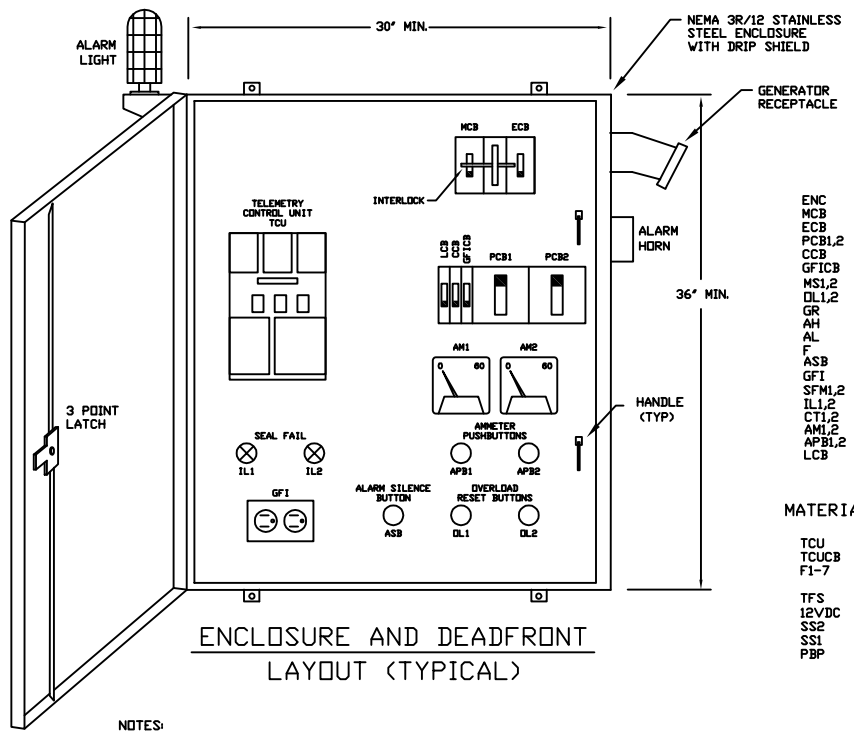
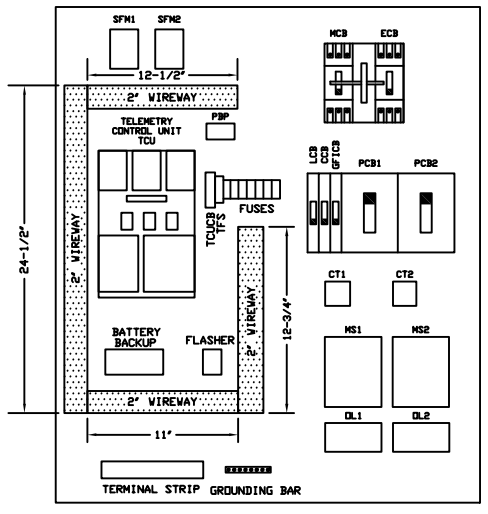


ENCLOSURE AND DEADFRONT LAYOUT (TYPICAL)

NOTES:

1. OUTER BOX SIZE WILL BE A MINIUM OF 30"W X 36"H X 12"D.
2. DEAD FRONT DOOR SHALL HAVE A MINIMUM OF TWO LATCHES



ENCLOSURE BACKPLATE LAYOUT (TYPICAL)

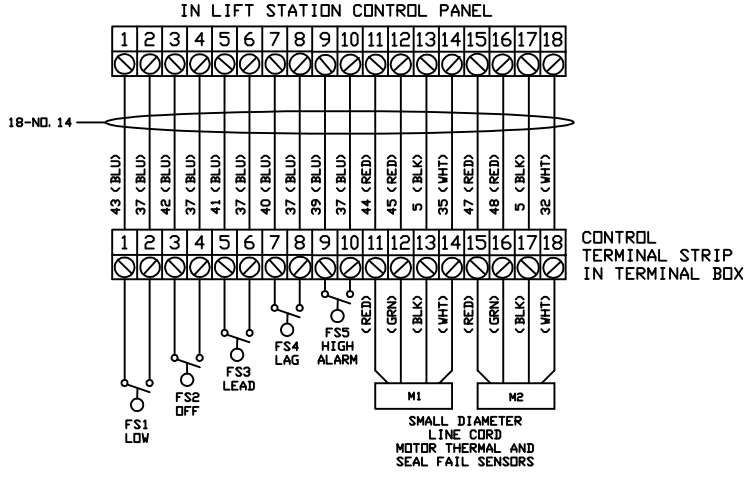
BILL OF MATERIALS

ENC	ENCLOSURE,304SS	HOFFMAN, A-36H3012SSLP W/3PT LATCH
MCB	MAIN CIRCUIT BREAKER	SQ-D, QOU, FAL, FHL (DEPENDING ON AIC)
ECB	EMERGENCY CIRCUIT BREAKER	SQ-D, QOU, FAL (DEPENDING ON AIC)
PCB1,2	PUMP CIRCUIT BREAKER	SQ-D, FAL
CCB	CONTROL CIRCUIT BREAKER	SQ-D, QOU120
GFICB	GFI CIRCUIT BREAKER	SQ-D, QOU120
MS1,2	MOTOR STARTER	SQ-D, 8536
DL1,2	OVERLOAD UNIT	SQ-D, MOTOR LOGIC SSOLR TYPE SF OR ST W/GROUND FAULT
GR	GENERATOR RECEPTACLE	RUSSELL STOLL, JRSB1044FR (100A) OR JRSB2044FR (200A)
AH	ALARM HORN	FEDERAL, 350-WB-120
AL	ALARM LIGHT	RAB, VBR1/GD100DG/GL100R
F	FLASHER	INGRAM, SSF150W
ASB	ALARM SILENCE BUTTON	SQ-D, 9001 SKR1BH5
GFI	CONVIENENCE RECEPTACLE	LEVITON, 8898-I
SFM1,2	SEAL FAIL MODULE	SSAC, LLC54BA
IL1,2	INDICATING LIGHT	SQ-D, 9001 SKP38R9
CT1,2	CURRENT TRANSFORMER	INST. TRANSFORMERS, INC. 2SFT-___
AM1,2	AMMETER	YOKOGAWA, YE-250-340-LS__
APB1,2	AMMETER PUSH BUTTON	SQ-D, 9001 SKR1BH13
LCB	LIGHTING CIRCUIT BREAKER	SQ-D, QOU120

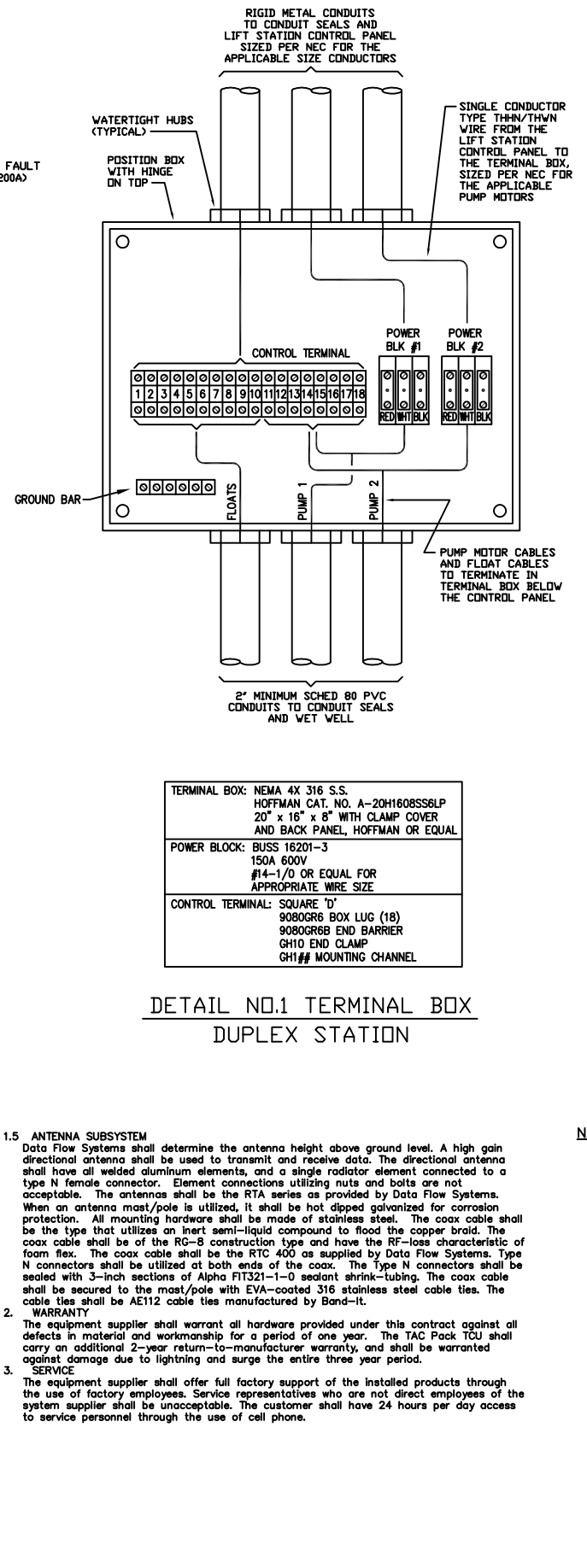
MATERIAL ITEMS TO BE INCLUDED WITH DFS TCU001 CONTROLLER

TCU	TELEMETRY CONTROL UNIT	DATA FLOW, DFS TCU001 W/TAC PAC
TCUCB	RTU CIRCUIT BREAKER	E-T-A, ETA-42-01, 10AMP.
F1-7	FUSE AND HOLDER	WAGO, DFS-00271-008-9 SLOW BLOW
	FUSE HOLDER END	WAGO, 281-309
TFS	TRASIENT FILTER SHIELD	DATA FLOW TFS001-02
12VDC	BATTERY BACKUP	YUASA, NP2.6-12 12 VDC @ 2.6AM
SS2	230V SURGE SUPRESSDR (TPS001)	DITEK, DFS PN# 005-0062
SS1	120V SURGE SUPRESSDR (SPS001)	DITEK, DFS PN# 005-0061
PBP	POLYPHASER BROADBAND PROTECTOR	POLYPHASER, IS-B50LN-C2-MA

CONTROL TERMINAL STRIP IN LIFT STATION CONTROL PANEL

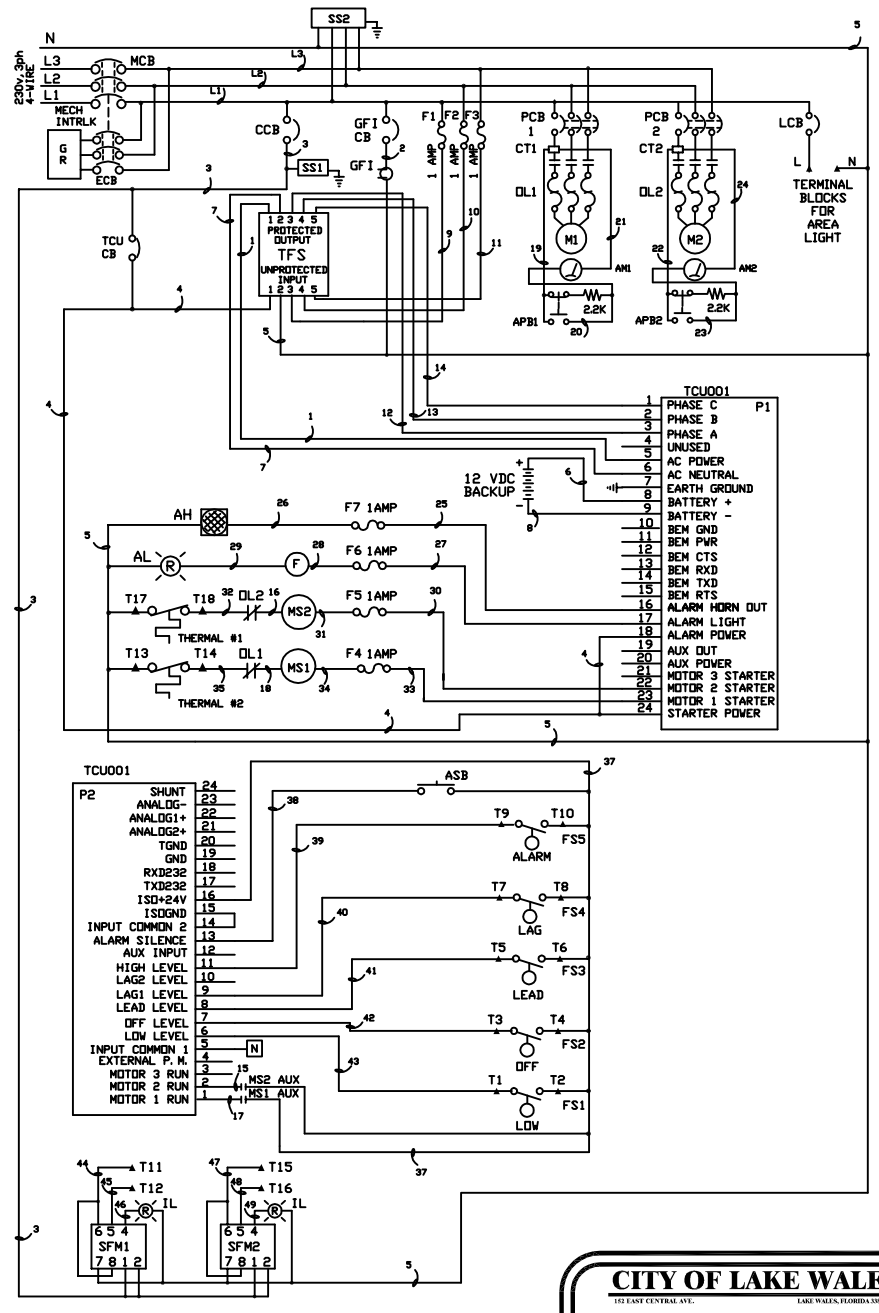


DETAIL NO.2 TERMINAL BOX CONNECTIONS DUPLEX STATION



TERMINAL BOX:	NEMA 4X 316 S.S. HOFFMAN CAT. NO. A-20H1608SS6LP 20" x 16" x 8" WITH CLAMP COVER AND BACK PANEL, HOFFMAN OR EQUAL
POWER BLOCK:	BUSS 16201-3 150A 600V #14-1/0 OR EQUAL FOR APPROPRIATE WIRE SIZE
CONTROL TERMINAL:	SQUARE 'D' 9080GR6 BOX LUG (18) 9080GR6B END BARRIER GH10 END CLAMP GH1## MOUNTING CHANNEL

DETAIL NO.1 TERMINAL BOX DUPLEX STATION



SCHEMATIC DIAGRAM

TECHNICAL SPECIFICATION "TAC PACK TCU"

1. TAC PACK TCU

1.1 TELEMETRY CONTROL UNIT

The Telemetry Control Unit (TCU) shall be a microprocessor-based multi-pump controller module designed for automatic pump station control. The TCU shall include an integrated radio as specified in paragraph 1.2. The TCU shall incorporate the following features:

a) On-Board 12-button operator interface keypad and 4x20-character LCD display. Configuration parameters shall be adjustable via the 12-button operator interface keypad or required RS-232 service port.

b) The LCD display shall provide the elapsed runtime of each pump, the average runtime of each pump, the flow of each pump, the flow of the station and the time of day.

c) Triplex/Duplex/Simplex configurable. The device shall have the capability of easily being configured for one, two or three pumps via the on-board keypad.

d) Three (3) on-board HOA switches. Local manual control provided by the HOA switches. Each HOA switch shall be fail safe and operate in the OFF and HAND position without power. Alarms shall indicate that an HOA switch has been left in the HAND or OFF position.

e) Integrated pump alternation. The pump alternation function will operate based on the number of pumps configured. Automatic alternation around non-operational pumps shall be provided.

f) Pumps/Starter/Breaker Fault alarms shall be determined by the unit automatically. These alarms shall be activated when a pump is called to run, but fails to run, or if the pump is turned off by the TCU, but continues to run.

g) Multiple level control input options. The unit shall provide local automatic level control from float, bubbler, transducer, or ultrasonic inputs. Redundancy of level control input shall be supported. An alarm shall be generated when floats are operating out of sequence.

h) On-board 240 / 480 VAC three-phase-power monitor. The phase monitor shall be transformer-isolated and detect loss of phase, phase reversal, low phase and high phase faults. All phase monitor adjustments shall be adjustable from the keyboard. Phase voltages from phase A to B and from phase A to C shall be transmitted to the central site computer.

i) Integrated Alarm Light output and Alarm Horn output, each capable of driving 120 VAC loads to ½ amp. An input shall be supplied for external alarm silence button, which shall be used to silence the Alarm Horn.

j) The unit's internal power supply shall keep the backup battery at a float charge. The backup battery shall not be damaged by deep discharges.

k) All inputs and outputs shall be optically or magnetically isolated and surge suppressed.

l) A local RS-232 service port shall provide local access to all the functions of the unit.

m) The TCU shall be easily removed/replaced by removing two industry standard wire terminal connectors.

n) Wire terminals shall be used as an interface between the TCU and field wiring. Fuses and voltage reducing resistors shall be used where required by the manufacturer. Wire terminals shall be housed in the same enclosure as the TCU.

o) Supply voltage shall be 115 VAC. Ambient operating temperature shall be -100C to 600C (140F to 1400F). The upper temperature limit is 500C (1220F) when using the backup battery. Unit shall be UL Listed and surge tested for EMI Susceptibility to IEC 61000-4-5 Surge immunity Tests.

1.2 INTEGRATED RADIO

The Integrated Radio shall function as the interface between the TCU and TAC II central site. The Integrated Radio shall incorporate a radio transceiver and associated electronics. The Integrated Radio shall be mounted inside the TCU radio compartment. The combination of the TCU / Integrated Radio is referred to as model TAC Pack TCU. The Integrated Radio shall have the following features:

a) Surge protected radio power.

b) On board communications and functional firmware.

c) Watchdog Timer.

d) On board voltage regulation and radio power supply control.

e) Radio current, receiver sensitivity and operating temperature are monitored for system diagnostics.

1.3 BACKUP BATTERY

The TAC Pack TCU shall be provided with a 3.0 AHr backup battery. The unit's internal power supply shall keep the backup battery at a float charge. The backup battery shall not be damaged by deep discharges.

1.4 SURGE PROTECTION

Multiple staged surge protection shall be provided for all power supply and power monitoring circuits. One stage of protection shall be equipped with both energy limiting and clamping circuits with slow blow fuses designed for overload conditions. This design shall provide a very high level of non-destructive transient immunity. With the exception of a direct lightning strike, the device shall protect the TCU power supply and power monitoring circuits from damage due to voltage transients. The unit shall provide circuit protection to withstand multiple transients in excess of 6,500 volts, 3,250 amps, without damage. Damage shall be limited to a blown fuse when exposed to larger transients. The device shall be transient-tested to ANSI standard C62.41. The unit shall be the Transient Filter Shield TFS001 as manufactured by Data Flow Systems. The AC power input protection shall be the Single Phase Suppresser SPS001 as supplied by Data Flow Systems. Three phase power input protection shall be the Three Phase Suppresser, TPS001 as supplied by Data Flow Systems. 480V three phase power applications shall include the required 480V component assembly. The RTU shall be protected from electrical surge or transients entering through the coaxial cable by use of a coaxial cable surge protector. The coaxial cable surge protector shall be model IS-B50LN-C2 manufactured by Polyphaser. This specified surge protection is required by the manufacturer for warranty purposes and must be properly installed with the TAC Pack TCU.

1.5 ANTENNA SUBSYSTEM

Data Flow Systems shall determine the antenna height above ground level. A high gain directional antenna shall be used to transmit and receive data. The directional antenna shall have all welded aluminum elements, and a single radiator element connected to a type N female connector. Element connections utilizing nuts and bolts are not acceptable. The antennas shall be the RTA series as provided by Data Flow Systems. When an antenna mast/pole is utilized, it shall be hot dipped galvanized for corrosion protection. All mounting hardware shall be made of stainless steel. The coax cable shall be the type that utilizes an inert semi-liquid compound to flood the copper braid. The coax cable shall be of the RG-8 construction type and have the RF-loss characteristic of foam flex. The coax cable shall be the RTC 400 as supplied by Data Flow Systems. Type N connectors shall be utilized at both ends of the coax. The Type N connectors shall be sealed with 3-inch sections of Alpha FIT321-1-0 sealant shrink-tubing. The coax cable shall be secured to the mast/pole with EVA-coated 316 stainless steel cable ties. The cable ties shall be AE112 cable ties manufactured by Band-It.

2. WARRANTY

The equipment supplier shall warrant all hardware provided under this contract against all defects in material and workmanship for a period of one year. The TAC Pack TCU shall carry an additional 2-year return-to-manufacturer warranty, and shall be warranted against damage due to lightning and surge the entire three year period.

3. SERVICE

The equipment supplier shall offer full factory support of the installed products through the use of factory employees. Service representatives who are not direct employees of the system supplier shall be unacceptable. The customer shall have 24 hours per day access to service personnel through the use of cell phone.

NOTES:

1. WIRING SHOWN IS FOR A DUPLEX LIFT STATION WITH 230/120V, 3 PHASE, 4 WIRE SERVICE CONNECTION. LIFT STATIONS WITH 480V, 3 PHASE SERVICE CONNECTIONS SHALL HAVE A 1.5KVA, 480-120VAC CONTROL POWER TRANSFORMER WITH TWO PRIMARY AND ONE SECONDARY CONTROL POWER FUSES TO SERVE THE 120VAC CIRCUIT BREAKERS IN THE PANEL.
2. MAIN AND EMERGENCY CIRCUIT BREAKERS MCB AND ECB SHALL BE MECHANICALLY INTERLOCKED TO PREVENT BOTH CIRCUIT BREAKERS FROM BEING ON AT THE SAME TIME.
3. THREE PHASE POWER MONITOR IS CONTAINED IN THE DFS TCU TELEMETRY CONTROL UNIT.
4. MOTOR OVERLOAD DEVICES SHALL BE PROVIDED WITH GROUND FAULT PROTECTION FOR PUMP MOTOR CABLES.
5. THE CONTRACTOR SHALL CONTACT DATA FLOW SYSTEMS (DFS) AT PHONE 321-259-5009 FOR THE COMPLETE TELEMETRY CONTROL SYSTEM INCLUDING TCU TAC PACK EQUIPMENT AND ANTENNA. DFS SHALL PERFORM THE REQUIRED FCC SURVEY FOR THE TELEMETRY CONTROL SYSTEM. THE CONTRACTOR SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE DFS WORK IN THE CONTRACTOR'S BID PRICE INCLUDING ANY MISCELLANEOUS MATERIAL REQUIRED BY DFS TO COMPLETE THE INSTALLATION.
6. THE CONTRACTOR SHALL FURNISH AND INSTALL THE COMPLETE LIFT STATION CONTROL PANEL AND ASSOCIATED EQUIPMENT. THE CONTROL PANEL SHALL INCLUDE ALL ENGINEERING, FABRICATION AND TESTING PER UL 508A. THE CONTROL PANEL SHALL BE UL508A LISTED AND LABELED AS A COMPLETE ASSEMBLY FOR INDUSTRIAL CONTROL PANELS.

ISSUE CODE

CITY OF LAKE WALES
172 EAST CENTRAL AVE. LAKE WALES, FLORIDA 33859-3320

REV. NO.	CODE	LOCATION	DATE
REV. BY			

NOTE:
1. The information on this map is provided by the department of UTILITIES.
2. The location of UTILITIES are to be located by a city employee. With a minimum 48 hour notice.
3. For more information call UTILITIES at 863-678-4189 or fax 863-678-4074

ISSUE CODE		A PRELIMINARY	B DESIGN
C BIDS		D CONSTRUCTION	E APPROVAL

DESIGN: AND CHK'D BY: SCALE: N.T.S.
DATE: 9/1/07
DRAWN BY: JHH-34243 ENGR. APPR.

DRAWING TITLE
LIFT STATION CONTROL PANEL
JOB NO.
WASTEWATER CONTROL PANEL

AREA: CITY-OF-LAKE-WALES REV. 0