MANATEE COUNTY

August 27, 2010

All Interested Bidders:

SUBJECT: Invitation for Bid (IFB #10-3050-OV)
Construction of Wastewater - PS 428 Booster Pump Station
(Project Number 6055480)

ADDENDUM #1

Bidders are hereby notified that this Addendum shall be acknowledged on page 00300-1 of the Bid Form and made a part of the above named bidding and contract documents. Bids submitted without acknowledgement of the Addendum will be considered incomplete.

The following items are issued to add to, modify, and clarify the bid and contract documents. These items shall have the same force and effect as the original bidding and contract documents, and cost involved shall be included in the bid prices. Bids to be submitted on the specified bid date, shall conform to the additions and revisions listed herein.

Bidders Note: The deadline for clarification of questions is **September 17, 2010 at 2:00 pm.** This deadline had been established to maintain fair treatment of all potential bidders, while maintaining the expedited nature of the Economic Stimulus that the contracting of this work may achieve **When** submitting questions please include a reference to the page and / or sheet number of the plans, and / or specification sections when requesting clarification to ensure your specific question is properly addressed. This deadline has been established to maintain fair treatment for all potential bidders, while maintaining the expedited nature of the Economic Stimulus that the contracting of this work may achieve. **Questions received after close of business September 17, 2010 shall not be considered.**

This addendum is issued to replace the previously submitted plans. The conversion to 11" x 17"skewed some of the scale plan integrity.

Please replace the previously submitted plans with the plans provided (uploaded) on 8/27/2010.

Correct file name to download is: File name 103050OV_Addendum 1_Drawings_27AUG10.PDF.

END OF ADDENDUM #1

Bids will be received at the **Manatee County Purchasing Division, 1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205 until 2:00 P.M. on October 7, 2010.**

Sincerely,

R. C. "Rob" Cuthbert, CPM, CPPO
Purchasing Division Manager

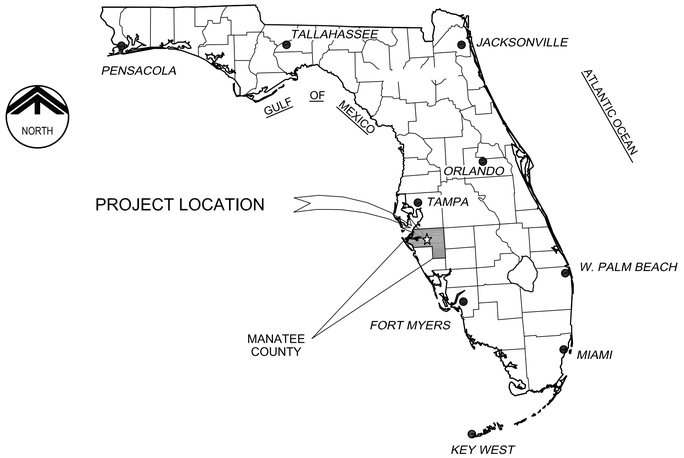
ds

Financial Management Department – Purchasing Division
1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205
Phone: 941-708-7527 – Fax: 941-708-7544

MANATEE COUNTY GOVERNMENT
PUBLIC WORKS DEPARTMENT
(MANATEE COUNTY, FLORIDA)
PS428 BOOSTER PUMP STATION
MANATEE COUNTY PROJECT NO. 6055480

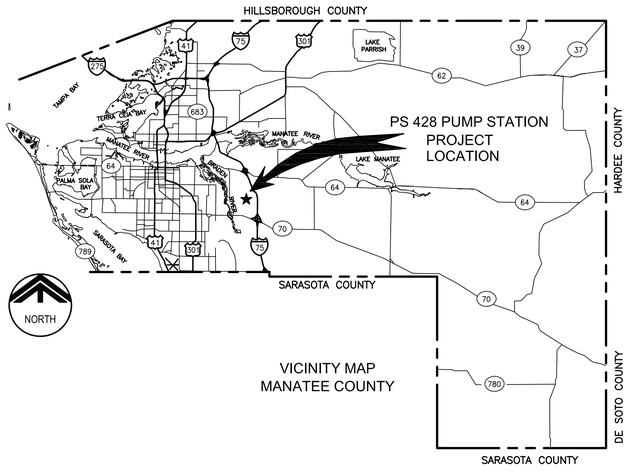
JUNE 2010

FINAL

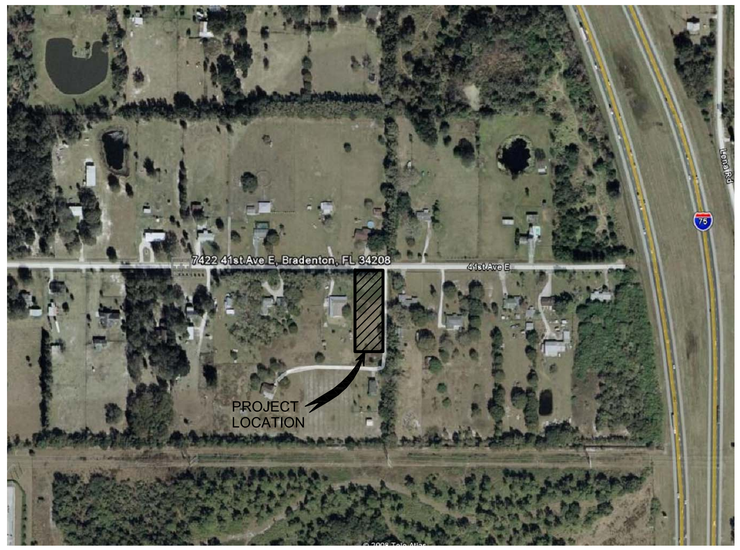


LOCATION MAP

PROJECT LOCATION: SEC. 2, TWP. 35S, RNG. 18E



VICINITY MAP
MANATEE COUNTY



DWG NO	TITLE
	GENERAL
G-01	TITLE SHEET
G-02	ABBREVIATION SHEET
G-03	GENERAL NOTES
G-04	SURVEY CONTROL PLAN
	CIVIL
C-01	SITE PLAN AND EROSION CONTROL PLAN
	MECHANICAL
M-01	PUMP STATION PLAN AND SECTION
	STRUCTURAL
S-01	PUMP STATION PLAN, SECTION AND DETAIL
S-02	ELECTRICAL BUILDING PLAN AND ELEVATIONS
S-03	ELECTRICAL BUILDING OVERALL SECTION AND DETAILS
S-04	EMERGENCY GENERATOR AND FUEL TANK PLAN AND SECTION
	ELECTRICAL
E-01	ELECTRICAL GENERAL NOTES AND LEGEND
E-02	ELECTRICAL SINGLE LINE DIAGRAM
E-03	POWER AND PHASE MONITOR SCHEMATICS AND SINGLE LINE DIAGRAM NOTES
E-04	ELECTRICAL INCOMING UTILITY SITE PLAN
E-05	ELECTRICAL POWER SITE PLAN
E-06	ELECTRICAL BUILDING LIGHTING AND RECEPTACLE PLAN
E-07	ELECTRICAL LIGHTING AND GROUNDING SITE PLAN
E-08	ELECTRICAL SCHEDULES AND MISCELLANEOUS DETAILS
E-09	BOOSTER PUMP STATION TRANSFORMER GROUNDING AND MISCELLANEOUS DETAILS
E-10	BOOSTER PUMP STATION ANTENNA DETAILS
E-11	ELECTRICAL VFD SCHEMATIC DIAGRAM FOR PUMP MOTORS M301, M302 & M303
E-12	ELECTRICAL VFD WIRING DIAGRAM FOR PUMP MOTORS M301, M302 & M303
E-13	BOOSTER PUMP STATION MOTOR OPERATED VALVE SCHEMATIC DIAGRAM FOR FCV MOV VALVES
E-14	MOTORIZED VALVES POWER & CONTROL PANEL PCPMOV100 LAYOUT AND DETAILS
E-15	MOTORIZED VALVES POWER & CONTROL PANEL PCPMOV100 TERMINAL BLOCKS - LAYOUTS AND DETAILS
E-16	ELECTRICAL CABLE AND CONDUIT SCHEDULE
E-17	ELECTRICAL AREA LIGHTING CALCULATIONS
E-18	ELECTRICAL BUILDING ELEVATION
	INSTRUMENTATION AND CONTROL
N-01	MAIN CONTROL PANEL MCP PANEL LAYOUT AND DETAILS
N-02	MAIN CONTROL PANEL MCP BILL OF MATERIALS AND NAMEPLATE SCHEDULE
N-03	MAIN CONTROL PANEL MCP TERMINAL BLOCKS - LAYOUTS AND DETAILS
N-04	MAIN CONTROL PANEL MCP PLC I/O SCHEMATIC DIAGRAM - 1 OF 4
N-05	MAIN CONTROL PANEL MCP PLC I/O SCHEMATIC DIAGRAM - 2 OF 4
N-06	MAIN CONTROL PANEL MCP PLC I/O SCHEMATIC DIAGRAM - 3 OF 4
N-07	MAIN CONTROL PANEL MCP PLC I/O SCHEMATIC DIAGRAM - 4 OF 4
N-08	PRESSURE TRANSMITTERS INSTRUMENT LOOP SHEETS AND DETAIL
	HVAC
AC-01	ELECTRICAL BUILDING HVAC PLAN AND DETAILS
	TYPICAL DETAILS
T-01	TYPICAL DETAILS
T-02	TYPICAL DETAILS
T-03	TYPICAL DETAILS
T-04	TYPICAL DETAILS

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Last Opened by: 6-25-10 04:38pm DPerry

FILENAME: Last Saved By: SMF_DENL 6-25-10 10:26am C:\Documents and Settings\DPerry\Desktop\ps428\7880C10-01-G-01 XREFS: 7880C10-01-000-103; 7880C10-01-000-100 PS 428 Aerial;

PIPE SERVICE ABBREVIATIONS

ABBREVIATION	DESCRIPTION
A:	
AA	AERATION or AIR
AC	ASPHALTIC CONCRETE
AHP	AIR, HIGH PRESSURE
AIS	AIR, INSTRUMENT SUPPLY
ALM	ALUM
ALP	AIR, LOW PRESSURE PROCESS
AS	ANTISCALENT
B:	
BW	FILTER BACKWASH DRAINAGE
BWR	FILTER BACKWASH RETURN
C:	
CA	COMPRESSED AIR
CAUSTIC	CAUSTIC SOLUTION (CONCENTRATED OR DILUTE)
CD	CONDENSATE DRAIN
CDL	CHEMICAL DRAIN LINE
CEN	CENTRATE
CH	CHEMICAL
CHDR	CHEMICAL DRAIN
CIP	HYDROCHLORIC ACID (5-10%)
CLG	CHLORINE GAS
CLGV	CHLORINE GAS (VACUUM)
CLS	CHLORINE SOLUTION WATER
CM	CONCENTRATE MAKEUP
CR	CONCENTRATE RECYCLE
CRJ	CONCENTRATE REJECT
CSDL	CHEMICAL SUMP DRAIN LINE
CW	COLD WATER
CWR	COOLING WATER RETURN
CWS	COOLING WATER SUPPLY
D:	
DCT	DECANT
DL	DRAIN LINE
DRN or D	DRAIN
DR - 1	PLANT DRAIN
DR - 2	PLANT DRAIN
DR - 3	PLANT DRAIN
DR - 4	PLANT DRAIN
DW	DOMESTIC WATER (POTABLE)
DW - 2	DOMESTIC WATER (POTABLE)
DW - 3	DOMESTIC WATER (POTABLE)
E:	
ECIP	HYDROCHLORIC ACID (20%)
EFF	EFFLUENT
EXG	EXHAUST GAS
EUG	ELECTRICAL CONDUIT or DUCT BANK
EXH	EXHAUST
F:	
FA	FOUL AIR DUCT
FE	FILTER EFFLUENT
FF	FILTER FEED
FI	FILTER INFLUENT
FIW	FINISHED WATER
FLT	FILTRATE
FLW	FILTER WASH WATER
FM	FORCE MAIN
FOF	FUEL LINE FILL
FOO	FUEL LINE OVERFLOW
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL LINE VENT
FP	FIRE PROTECTION EXTERIOR
FR	FILTER RINSE TO WASTE
FS	FINISH SURFACE
FW	FLUSHING WATER
G:	
G	GAS
GR	GRIT GREASE
GS	GRAVITY SEWER
H:	
HCL	HYDROCHLORIC ACID
HG	HYDROGEN GAS
HPW	HIGH PRESSURE WATER
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
I:	
INF	INFLUENT
IRR	IRRIGATION WATER
L:	
LO	LUBRICATION OIL
LPA	LOW PRESSURE AIR
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
N:	
NH_3 - 1	AMMONIA (NH_3) GAS
NH_3 - 2	AMMONIA (NH_3 GAS LOW PRESS.)
NaOCl	SODIUM HYPOCHLORITE
NaOH	SODIUM HYDROXIDE SOLUTION
NTDR	NEUTRALIZATION TANK DRAIN LINE
O:	
OF	OVERFLOW
OSW	OFF - SPEC WATER
OSW - 1	OFF - SPEC WATER

ABBREVIATION	DESCRIPTION
P:	
PA	PROCESS AIR
PF	PROCESS FEED
PD	PLANT DRAIN
PRW	PEACE RIVER WATER
PW	POTABLE WATER
PS	POLYMER SOLUTION
R:	
RAW	RAW WATER
RCY	RECIRCULATION - NEUTRALIZATION TANK
REC	RECYCLE
RD	ROOF DRAIN
RJW	REJECT WATER
RW	RAW WATER
S:	
S	SANITARY SEWER
SA-1	SAMPLING
SA-2	SAMPLING
SAN	SANITARY SEWER
SCM	SCUM
SD	STORM DRAIN
SDL	SUMP DRAIN LINE
SEW	SETTLED WATER
SFT	SOFT WATER
SLW	SEAL WATER LINE
SMP	SAMPLE
SPD	SUMP PUMP DISCHARGE
SPW	SAMPLE WATER or SPRAY WATER
SRL	SCRUBBER RECIRCULATION LIQUID (CAUSTIC)
SRW	SERVICE WATER
SOF	SOFTENED WATER
STW	STORM WATER
SUB	SUBNATANT
SUP	SUPERNATANT
SW	SURFACE WASH
T:	
TSL	THICKENED SLUDGE
U:	
UD	UNDERDRAIN
V:	
VT or V	VENT
VTR	VENT THROUGH ROOF
W:	
W	POTABLE WATER
WAW	WASH WATER
WE	WELL WATER
WPS	WATER, PLANT SERVICE
WW	WASHWATER (FILTER BACKWASH)
W2-1	SERVICE WATER (NON POTABLE)
W2-2	SERVICE WATER (NON POTABLE)
W2-3	SERVICE WATER (NON POTABLE)
W2-4	SERVICE WATER (NON POTABLE)
W2-5	SERVICE WATER (NON POTABLE)

ABBREVIATION	DESCRIPTION
A:	
&	AND
@	AT (MEASUREMENT)
A	AMPERE or AIR
AB	ANCHOR BOLT or AERATION BASIN
ABS	ACRYLONITRILE BUTADIENE STYRENE
AC	ASPHALTIC CONCRETE
ACB	AIR CIRCUIT BREAKER
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
ADD'L	ADDITIONAL
ADJ	ADJACENT
AED	AREA EQUIPMENT DRAIN
AER	AERATION
AF	AMPERE FRAME
AIL	AIR INTAKE LOUVER
AL	ALUMINUM
ALT	ALTERNATE
AM	AMMETER
ANNUN	ANNUNCIATOR
APPROX	APPROXIMATELY
ARV	AIR RELEASE VALVE
AS	AMMETER SWITCH
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
AWTP	ADVANCED WASTEWATER TREATMENT PLANT
B:	
BAS	BASIN
BC	BACK OF CURB
BC	BOLT CIRCLE OR BRASS CAP
BD	BOARD
BF	BLIND FLANGE
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BKR	CIRCUIT BREAKER
BL	BITUMINOUS LINING
BLDG	BUILDING
BLKHD	BULKHEAD
BLO	BLOWER
BM	BEAM
BM	BENCH MARK
BOC or BC	BEGINNING OF CURVE
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BPV	BACK PRESSURE VALVE
BPRV	BACK PRESSURE REGULATOR VALVE
BRG	BEARING
BS	BELL AND SPIGOT
BSMT	BASEMENT
BSP	BLACK STEEL PIPE
BU	BELL UP
BV	BALL VALVE
BW	BOTH WAYS
C:	
C	CLOSE, CHANNEL OR CONDUIT
C&G	CURB & GUTTER
CA	CONCRETE ANCHOR or COMBUSTION AIR
CAB	CABINET
CB	CATCH BASIN
CBC & C	CIRCUIT BREAKER, CONTROLS & CONTACTORS
CC	CENTER OF CURVATURE
CC	CENTER TO CENTER
CEF	CEILING EXHAUST FAN
CEM	CEMENT
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CI	CAST IRON
CJ	CONTROL JOINT
CKD PL	CHECKERED PLATE
CKV	CHECK VALVE
CL or ℄	CENTER LINE
CL or C.L.	CHAIN LINK
CLG	CEILING
CLR	CLEAR, CLEARANCE
CM	CONCRETE MORTAR
CML&C	CEMENT MORTAR LINED AND COATED
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
COMM	COMMUNICATIONS
CON	CONCENTRIC
CONC	CONCRETE
CONC REINF	CONCRETE REINFORCING
CONN	CONNECT OR CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS OR CONTINUATION
CP	CONTROL PANEL
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CQ	COUNTER
CR	CONTROL RELAY
CS	CARBON STEEL or CHLORINE GAS
CSK	COUNTERSINK (COUNTERSUNK)
CT	CURRENT TRANSFORMER
CTB	CONCRETE THRUST BLOCK
CTL	CONTROL
CTM	CURRENT TRANSMITTER
CTR	CENTER, CENTERED
CUP	COPPER PIPE
CV	CHECK VALVE
D:	
D	DIGITAL OR DISCRETE
D/W	DRIVEWAY
DAFT	DISSOLVED AIR FLOTATION THICKENER
DAM	DAMPER
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DEG or °	DEGREE
Delta or △	CENTRAL ANGLE
DEMO	DEMOLITION
DET	DETAIL
DF	DRINKING FOUNTAIN
DI	DUCTILE IRON

ABBREVIATION	DESCRIPTION
DIA or Ø	DIAMETER
DIAG	DIAGONAL
DIF	DIFFUSER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DIST	DISTRIBUTION
DL	DEAD LOAD OR DRAIN LINE
DLV	DOOR LOUVER
DMS	DIAPHRAGM SEAL
DN	DOWN
DPV	DIAPHRAGM VALVE
DR	DOOR
DRN	DRAIN
DRV	DRIVE
DS	DOWNSPOUT
DW	DEWATERING
DWG	DRAWING
E:	
E	EAST
EA	EACH
EBF	EMBANKMENT FILL
EC	ELECTRICAL CONDUIT OR DUCT BANK
ECC RED	ECCENTRIC REDUCER
ECO	EXPOSED CLEANOUT
EF	EACH FACE
EFU	EXHAUST FAN UNIT
EG	EXHAUST GRILLE
EI	ELECTRICAL INTERLOCK
EJ	EXPANSION JOINT
ELEC	ELECTRICITY, ELECTRIC (AL)
ELEV or EL	ELEVATION
ELL	ELBOW
EMBED	EMBEDMENT
EMH	ELECTRICAL MANHOLE
EOC	END OF CURVE
EP	EDGE OF PAVEMENT
EQ SP	EQUAL SPACING
EQ	EQUAL
EQUIP	EQUIPMENT
ER	EXHAUST REGISTER
ES	EACH SIDE
ESEW	EMERGENCY SHOWER AND EYE WASH
ET	ELECTRICALLY TRACED
EW	EACH WAY
EWEF	EACH WAY EACH FACE
EXH	EXHAUST
EXIST or EX	EXISTING
EXP	EXPANSION
EXPO	EXPOSED
EXT	EXTERIOR
F:	
F	FACTORY FINISH
FACP	FIRE ALARM CONTROL PANEL
FC	FACE OF CURB
FCA	FLEXIBLE COUPLING ADAPTER or FLANGED COUPLING ADAPTER
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN, FUSABLE LINK, or FIRE DAMPER
FDL	FLOOR DRAIN LINE
FDR	FEEDER
FEXT	FIRE EXTINGUISHER
FF	FINISHED FLOOR
FG	FINISH GRADE
FHT	FEMALE HOSE THREAD
FHY	FIRE HYDRANT
FI	FLOW INDICATOR
FIN	FINISH
FL	FLOOR, FILTRATE OR FLOW LINE
FLA	FULL LOAD AMPS
FLASH	FLASH OR FLASHING
FLEX	FLEXIBLE
FLG	FLANGE OR FLANGED
FM	FLOW METER
FO	FACE OF
FPM	FEET PER MINUTE
FPP	FLEXIBLE PLASTIC PIPE
FRP	FIBERGLASS REINFORCED PIPE
FRS	FROTH SPRAY
FS	FLOOR SINK
FSW	FIRE SUPPLY WATER
FT or '	FEET
FTG	FOOTING
FUT	FUTURE
FXC	FIRE EXTINGUISHER CABINET
G:	
G	GUTTER or GROUND
GA	GAGE or GAUGE
GAL	GALLONS
GALV	GALVANIZED
GAV	GRAVITY VENTILATOR
GB	GRADE BREAK
GC	GAS COCK, GROOVED COUPLING or GEL COAT
GE	GROOVED END JOINT
GEL	GRAVITY EXHAUST LOUVER
GFI	GROUND FAULT INTERRUPTER
GHU	GAS HEATING UNIT
GL	GLASS
GLO	GOVERNMENT LAND OFFICE
GLV	GLOBE VALVE
GM	GAS METER
GND	GROUND
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GPH	GALLONS PER HOUR
GR	GRADE
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GTV	GATE VALVE
GW	GRIT WASHER
GWB	GYPSUM WALL BOARD
H:	
H1E	HOOKED ONE END
H2E	HOOKED TWO ENDS
HB	HOSE BIB
HD	HEADER

STANDARD ABBREVIATIONS

ABBREVIATION	DESCRIPTION
HDG	HOT-DIP GALVANIZED
HDW	HARDWARE
HERCP	HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE
HF	HOSE FAUCET
HGT	HEIGHT
HH	HAND HOLE
HK	HOOK
HM	HOLLOW METAL
HMC	HARNESSED MECHANICAL COUPLING
HORIZ	HORIZONTAL
HP	HORSEPOWER or HIGH PRESSURE
HR	HANDRAIL
HTR	WALL HEATER
HTX	HEAT EXCHANGER
HV	HOSE VALVE
HVAC	HEATING, VENTILATION & AIR CONDITIONING
HWL	HIGH WATER LEVEL
HXW	HEIGHT BY WIDTH
HZ	HERTZ
I:	
IC	INSTRUMENTATION CONDUIT
ID	INSIDE DIAMETER or INSIDE DIMENSION
IE	INVERT ELEVATION
IF	INSIDE FACE
IN or "	INCH(S)
INJ	INJECTOR
INST	INSTRUMENTATION
INSUL	INSULAT(E)(ED)(ING)(ION)
INV	INVERT
IP	IRON PIPE
ISR	INTRINSICALLY SAFE RELAY
J:	
JB	JUNCTION BOX
JST	JOIST
JT	JOINT
K:	
KGV	KNIFE GATE VALVE
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KW	KILOWATT
KWH	KILOWATT-HOUR
L:	
L	ANGLE (STRUCTURAL)
LAV	LAVATORY
LBS	POUNDS
LF	LINEAL FEET
LG	LONG
LL	LIVE LOAD
LLV	LONG LEG VERTICAL
LP	LOW POINT or LOW PRESSURE
LP	LIGHT POLE
LPA	LOW PRESSURE AIR
LR	LONG RADIUS
LS	LIMIT SWITCH
LSG	LOW VOLTAGE SWITCHGEAR
LT	LAUNDRY TUBE
LTG	LIGHTING
LVP	LOW VOLTAGE PROTECTION
LWL	LOW WATER LEVEL
M:	
MACH	MACHINED
MATL	MATERIAL
MAX	MAXIMUM
MC	MECHANICAL COUPLING
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MET	METAL
MFG	MANUFACTURING
MFRS	MANUFACTURER
MGD	MILLIONS OF GALLONS PER DAY
MG/L	MILLIGRAMS PER LITER
MH	MANHOLE
MI	MALLEABLE IRON
MIN	MINIMUM
MISC	MISCELLANEOUS
MIX	MIXER
MJ	MECHANICAL JOINT
MJDIP	DUCTILE IRON PIPE, MECHANICAL JOINT
MK	MARK
MO	MASONRY OPENING
MON	MONUMENT
MS	MOP SINK
MSG	MEDIUM VOLTAGE SWITCHGEAR
MTR	METER
MULL	MULLION
N:	
N	NORTH
NAT	NATURAL
NCHO	NORMALLY CLOSED; HELD OPEN
NDV	NEEDLE VALVE
NEC	NATIONAL ELECTRICAL CODE
NF	NEAR FACE
NIC	NOT IN CONTACT
NO. or #	NUMBER
NOHC	NORMALLY OPEN; HELD CLOSED
NOM	NOMINAL
NP	NATIONAL PIPE THREAD
NPS	NOMINAL PIPE SIZE
NTS	NOT TO SCALE
NWB	NON WATER BEARING
O:	
O/H	OVERHEAD
OA	OUTSIDE AIR
OBVD	OPPOSITE BLADE VOLUME DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER or OUTSIDE DIMENSION
OF	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE

ABBREVIATION	DESCRIPTION
P:	
P	PAVEMENT, POLE or PAINTED
PA	PIPE ANCHOR
PB	PULL BOX
PC	POINT OF CURVATURE
PCC	PORTLAND CEMENT CONCRETE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PD	POSITIVE DISPLACEMENT or PUMPED DRAIN
PE	PLAIN END or POLYETHYLENE WRAPPED
PERP	PERPENDICULAR
PF	POWER FACTOR
PFC	POWER FACTOR CAPACITOR
PFM	POWER FACTOR METER
PG	PRESSURE GAUGE
PI	PRESSURE INDICATOR or POINT OF INTERSECTION
PL	PLATE or PROPERTY LINE
PLAS	PLASTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLCS	PLACES
PLM	POWER LOGIC MONITOR
PLWD	PLYWOOD
PNL	PANEL
PO	POLYURETHANE
POC	POINT OF CONNECTION
POJ	PUSH ON JOINT
POS	POSITION
PR	PAIR
PRC	POINT OF REVERSE CURVE
PRI	PRIMARY
PRV	PRESSURE REGULATION VALVE
PRV	PRESSURE RELIEF VALVE
PS	PRESSURE SWITCH OR PRESSURE SEWER
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	POINT, POINT OF TANGENCY, POTENTIAL TRANSFORMER OR PRESSURE TREATED
PV	PLUG VALVE
PVC	POLYVINYL-CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
Q:	
QTY	QUANTITY
R:	
R	REGISTER
RA	RETURN AIR
RAD	RADIUS
R/D	RADIUS TO DIAMETER
R/F	REACTOR AND/OR FILTER
R/W	RIGHT-OF-WAY
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
RDWD	REDWOOD
REC	RECEPTACLE, RECYCLE
RECIRC	RECIRCULATING
REF	REFERENCE
REINF	REINFORCING
REJ	RUBBER EXPANSION JOINT
REQD	REQUIRED
RESIL	RESILIENT
REV	REVISION
RG	RUBBER GASKET
RM	ROOM
RMJ	RESTRAINED MECHANICAL JOINT
RP	RADIUS POINT
RPL	RECYCLE PRESSURIZATION LINE
RPM	REVOLUTIONS PER MINUTE
RR	RETURN REGISTER
RTM	RUNNING TIME METER
RWS	ROTARY WALL SWITCH
S:	
S	SLOPE, SOUTH or SWITCH
S/W	SIDEWALK
SA	SAMPLE or SUPPLY AIR
SC	SCORING JOINT OF CONCRETE POUR or SCREWED
SCD	SCUM DRAIN
SCFM	STANDARD CUBIC FEET PER MINUTE
SCG	SLUICE GATE
SCH	SCHEDULE
SD	DUCT MOUNTED SMOKE DETECTOR
SEC	SECONDARY
SEC	SECOND
SECT	SECTION
SEPP	SEPTAGE PUMP
SF	SUPPLY FAN
SG	SUPPLY GRILLE
SH or SHR	SHOWER
SHT	SHEET
SIM	SIMILAR
SK	SKIMMINGS
SLSUC	SLUDGE SUCTION
SMP	SAMPLER
SO	SOUTH
SOL	SOLUTION
SP	SET POINT
SPC	SPARE CONDUIT
SPEC	SPECIFICATION
SPL	SPLASH
SQ	SQUARE
SQ FT	SQUARE FEET
SQ INS	SQUARE INCHES
SR	SUPPLY REGISTER
SSBS	SOLID STATE BYPASS STARTER
SST, SS or ST STL	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIFF	STIFFENER
STIR	STIRRUPS
STL	STEEL
STR	STRAINER
STRUCT	STRUCTURAL
SUC	SUCTION
SUPP	SUMP PUMP
SUPT	PIPE SUPPORT or SUPPORT
SUSP	SUSPENDED
SV	SOLENOID VALVE

ABBREVIATION	DESCRIPTION
SW	SOLVENT WELD
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
SYN	SYNTHETIC
T:	
T	TELEPHONE SERVICE OR TREAD
T&B	TOP AND BOTTOM
T/	TOP OF
TB	TERMINAL BOX or TELEPHONE BOX
TC	TOP OF CURB
TCC	TELEPHONE/COMMUNICATION CONDUIT
TD	TIME DELAY RELAY
TDH	TOTAL DYNAMIC HEAD
TEL	TELEPHONE
TEMP	TEMPERATURE
TEMPG	TEMPERATURE GAUGE
TF	TOP FLAT
TFMR	TRANSFORMER
TG	TRANSFER GRILLE
THK	THICK OR THICKENER
TMH	TELEPHONE MANHOLE
TMP	TEMPERATURE
TOC	TOP OF CONCRETE
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TOS	TOP OF SLAB, TOP OF STEEL
TOW	TOP OF WALL
TRANS	TRANSOM
TS	TUBE STEEL
TSTAT	THERMOSTAT
TWV	THREE WAY VALVE
TYP	TYPICAL
U:	
UC	UNDERCUT
UH	UNIT HEATER
UN	UNLESS NOTED
UNO	UNLESS NOTED OTHERWISE
URN	URINAL
V:	
V	VOLT or VENT
VA	VALVE
VAC	VACUUM or VOLT-AC
VB	VALVE BOX
VC	GROOVED COUPLING
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VG	VACUUM GAUGE
VIT	VITRIFIED
VM	VOLTMETER
VOL	VOLUME
VPI	VERTICAL POINT OF INTERSECTION
VS	VARIABLE SPEED or VOLTMETER SWITCH
VSD	VARIABLE SPEED DRIVE
VTR	VENT THRU ROOF
W:	
W	WEST, WASHER, or WELDED
W/	WITH
W/O	WITHOUT
WA	WATTS
WB	WATER BEARING
WC	WATER CLOSET
WCO	WALL CLEANOUT
WD	WOOD
WDW	WINDOW
WEF	WALL EXHAUST FAN
WFPU	WATER FEATURE PUMP
WH	WATER HEATER or WALL HYDRANT
WI	WROUGHT IRON
WL	WALL LOUVER or WATER LEVEL
WM	WATER METER
WP	WEATHERPROOF or WORKING POINT
WS	WATER SURFACE or WATER STOP
WSE	WATER SURFACE ELEVATION
WT	WALK THROUGH, WATER TIGHT or WARNING TAPE
WWF	WELDED WIRE FABRIC
X:	
XFMR	TRANSFORMER
XP	EXPLOSION-PROOF
Y:	
YH	YARD HYDRANT
YP	YARD PIPE

REV	DATE	BY	DESCRIPTION

DESIGNED JMF
DRAWN DVP
CHECKED EP
DATE APRIL 2010
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ABBREVIATION SHEET

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. G-02

Last Opened by: E-04-10 04:00pm DPerry
FILENAME: Last Saved By: SMF_DENL 5-28-10 11:58am C:\Documents and Settings\DPerry\Desktop\ps428\7880C10-01-G-02 XREFS: 7880C10-01-000-102; 3624bdr

GENERAL NOTES:

1. NOTES APPLY TO ALL SHEETS.

2. LOCATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY VERTICAL AND HORIZONTAL LOCATIONS AND TO NOTIFY THE RESPECTIVE UTILITY COMPANIES FOR VERIFICATION PRIOR TO ANY CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES BEFORE PROCEEDING WITH THE WORK.

3. CONTRACTOR SHALL UNCOVER ALL EXISTING LINES BEING TIED INTO TO VERIFY LOCATIONS. THE CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND STRUCTURES IN ADVANCE OF CONSTRUCTION AND SHALL ELIMINATE ALL CONFLICTS PRIOR TO START OF CONSTRUCTION. ALL EXISTING UTILITIES EXPOSED DURING CONSTRUCTION SHALL BE ACCURATELY RECORDED ON THE RECORD DRAWINGS.

4. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF DISCREPANCIES BETWEEN THE INFORMATION SHOWN ON THESE DRAWINGS AND THE CONDITIONS EXISTING IN THE FIELD.

5. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO PROJECT AND THESE LOCATIONS SHALL BE INCLUDED IN PRE-CONSTRUCTION VIDEO TAPING.

6. ANY NECESSARY SYSTEM SHUTDOWNS SHALL BE STRICTLY COORDINATED WITH THE OWNER. IT IS POSSIBLE THAT THE TIE-IN WORK MAY HAVE TO OCCUR DURING OFF-HOURS. PROVIDE A MINIMUM 48 HOURS NOTICE TO OWNER.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING ROADS, BUILDINGS, OR OTHER STRUCTURES RESULTING FROM CONTRACTOR'S CONSTRUCTION ACTIVITIES. REPAIRS SHALL BE MADE TO THE SATISFACTION OF THE OWNER AND THE ENGINEER AT NO COST TO THE OWNER.

8. THE CONTRACTOR'S ACTIVITIES SHALL BE CONFINED WITHIN THE LIMITS OF CONSTRUCTION. ABSOLUTELY NO FOOT TRAFFIC, CONSTRUCTION VEHICLE TRAFFIC, ETC. SHALL TAKE PLACE IN WETLANDS AREAS, WITHIN LINES OF ADJACENT PROPERTIES OR OUTSIDE OF THE LIMITS OF CONSTRUCTION.

9. ANY WORK PERFORMED WITHOUT APPROVAL OF MANATEE COUNTY OR ENGINEER AND/OR ALL WORK AND MATERIAL NOT IN CONFORMANCE WITH THE SPECIFICATIONS IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

10. CONTRACTOR TO INSTALL SAFETY FENCE AROUND OPEN EXCAVATIONS IN ACCORDANCE WITH OSHA.

11. CONTRACTOR TO RESTORE AREA EQUAL TO OR BETTER THAN EXISTING AND IN ACCORDANCE WITH SITE PLAN.

12. ALL ANCHOR BOLTS SHALL BE EMBEDDED IN CONCRETE. UNLESS OTHERWISE STATED, ALL ANCHORS, BOLTS, NUTS, WASHERS, EXPANSION SLEEVES AND OTHER FASTENERS SHALL BE 316L STAINLESS STEEL.

13. HANDRAILS, GUARDRAILS, POSTS, BRACKETS, MOUNTINGS, AND LADDERS SHALL COMPLY WITH THE FLORIDA STANDARD BUILDING CODE, AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) LOADING REQUIREMENTS.

14. STAINLESS STEEL BOLTS 1/2-INCH AND LARGER SHALL BE THREAD PROTECTED DURING SHIPMENT.

15. CONTRACTOR TO COORDINATE THE LOCATION OF SLEEVES AND WALL PIPE THROUGH WALLS, SLABS AND CEILINGS. REFER TO MECHANICAL, ELECTRICAL, STRUCTURAL, AND PROCESS DRAWINGS FOR SPECIFIED REQUIREMENTS.

16. A VERTICAL CLEARANCE OF AT LEAST 18 INCHES AND A HORIZONTAL SEPARATION OF TEN (10) FEET SHALL BE MAINTAINED BETWEEN CROSSINGS OF POTABLE WATER AND SEWER LINES OR OTHER NON-POTABLE WATER LINES.

17. ALL BELOW GROUND DUCTILE IRON PIPE AND VALVES TO BE RESTRAINED JOINT. ALL ABOVE GROUND VALVES TO BE FLANGED.

18. PROVIDE MINIMUM OF 36-INCH COVER FROM GRADE FOR UNDERGROUND PIPING TO TOP OF PIPE, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

19. ALL PIPING AND/OR APPURTENANCES CONNECTING TO ADJACENT CONSTRUCTION SHALL BE PLUGGED IF ADJACENT WORK HAS BEEN COMPLETED.

20. WHERE PIPING CONNECTS TO EQUIPMENT, IT SHALL BE SUPPORTED BY A PIPE SUPPORT AND NOT THE EQUIPMENT.

21. DIMENSIONS FOR ALL EQUIPMENT SHALL BE VERIFIED BY CONTRACTOR PER MANUFACTURER'S SHOP DRAWINGS, AND REVISED AS NECESSARY PRIOR TO CONSTRUCTION. INFORM ENGINEER OF ANY DISCREPANCY.

22. SIZE AND FINAL LOCATION OF ALL OPENINGS AND CONNECTIONS SHALL BE COORDINATED WITH EQUIPMENT MANUFACTURER/SUPPLIER. ALL EQUIPMENT PAD DIMENSIONS INDICATED ON THE DRAWINGS SHALL BE VERIFIED WITH MANUFACTURER FOR ACTUAL SIZE OF EQUIPMENT SELECTED. REFER TO STRUCTURAL DRAWING DETAILS FOR EQUIPMENT PAD DESIGN DETAILS.

23. ALUMINUM EMBEDDED IN CONCRETE MUST BE PAINTED WITH ONE SHOP COAT OF ZINC CHROMATE FOLLOWED BY ONE HEAVY COAT OF ALUMINUM PIGMENTED ASPHALT PAINT. ALUMINUM SHAPES IN CONTACT WITH CONCRETE MUST BE ISOLATED FROM THE CONCRETE BY A 1/32 INCH NEOPRENE GASKET. ALSO ANY CASE WHERE TWO DIFFERENT METALS ARE IN CONTACT, A NEOPRENE GASKET MUST BE PROVIDED ALONG WITH BOLT ISOLATION KITS FOR FLANGES.

24. PUMP STATION MANUFACTURER SHALL SUPPLY AND INSTALL ALL NECESSARY TAPS AND BLIND FLANGES AS NECESSARY FOR ALL PRESSURE, VACUUM AND LEAK TESTS AND CLEANING. ALL TAPS SHALL HAVE BALL VALVES AND MATCH PIPING MATERIAL. VALVES SHALL BE PER THE TECHNICAL SPECIFICATIONS.

25. CONTRACTOR TO PROVIDE TEMPORARY PIPING, BLIND FLANGES, PUMPS FOR BYPASSING EQUIPMENT FOR CLEANING, TESTING AND START UP ACTIVITIES.

26. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ADHERE TO ALL CONDITIONS AND REQUIREMENTS OF ALL PERMITS WHICH HAVE BEEN OBTAINED.

27. CONTRACTOR SHALL TAKE CARE TO PROVIDE PROPER GRADE, ELEVATIONS, AND ALIGNMENT FOR PROPOSED AND FUTURE CONNECTIONS AS SHOWN ON THE DRAWINGS.

28. ALL DISTURBED AREAS SHALL BE SODDED AT THE END OF CONSTRUCTION, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

29. EROSION AND SEDIMENT CONTROL BMPS IN ADDITION TO THOSE PRESENTED ON THE PLANS AND SHALL BE IMPLEMENTED AS NECESSARY TO PREVENT TURBID DISCHARGES FROM FLOWING ONTO ADJACENT PROPERTIES OR ROADWAYS, OFFSITE STORMWATER CONVEYANCES, OR OFFSITE RECEIVING WATERS. BMPs SHALL BE DESIGNED, INSTALLED AND MAINTAINED BY THE CONTRACTOR TO ENSURE THAT OFFSITE SURFACE WATER QUALITY REMAINS CONSISTENT WITH STATE AND LOCAL REGULATIONS.

30. THE CONTRACTOR SHALL ENSURE THAT ADJACENT PROPERTIES ARE NOT IMPACTED BY WIND EROSION OR EMISSIONS OF UNCONFINED PARTICULATE MATTER IN ACCORDANCE WITH RULE 62-296.320(4) (c) 1, F.A.C., BY TAKING APPROPRIATE MEASURES TO STABILIZE AFFECTED AREAS.

31. CONTRACTOR SHALL DISPOSE ALL EXCESS FILL AND ANY VEGETATION FROM CLEARING/GRUBBING OFF-SITE.

32. MANATEE COUNTY OWNS THE SITE AND EXERCISES UNIFIED CONTROL OVER THIS FACILITY.

33. SOIL REPORT PREPARED BY TIERRA, INC. (DATED MARCH 17, 2009) IS AVAILABLE ON REQUEST.

34. ALL SOIL EXPLORATION WORK PERFORMED BY TIERRA, INC. TAMPA, FLORIDA. SOIL EXPLORATION WORK IS SOLELY TO ASSIST BIDDERS IN ASSESSING THE NATURE AND EXTENT OF TESTING PROCEDURES REQUIRED MAKING THEIR OWN DETERMINATION OF ACTUAL CONDITIONS, WHICH WILL BE ENCOUNTERED DURING THE COURSE OF THE WORK. NO REPRESENTATION IS MADE OR WILL BE GIVEN CONCERNING ACTUAL CONDITIONS WHICH WILL BE ENCOUNTERED DURING THE COURSE OF THIS WORK. BIDDERS ARE DIRECTED PRIOR TO BIDDING, TO CONDUCT WHAT INVESTIGATION THEY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSION REGARDING SUCH CONDITIONS.

35. CLOSURE PLAN: IN THE EVENT THIS PROJECT IS ABANDONED PRIOR TO COMPLETION, THE SITE SHALL BE RESTORED TO A CLEAN AND DEBRIS FREE CONDITION. ALL CONSTRUCTION MATERIALS SHALL BE REMOVED FROM THE SITE AND STORED IN AN APPROPRIATE MANNER. ALL STOCKPILED VEGETATIVE DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF ACCORDINGLY.

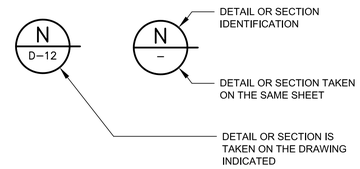
36. CONTRACTOR SHALL PROVIDE SILT FENCES PER DETAILS ON THE DRAWINGS AROUND ANY VEGETATION OR SOIL STOCKPILE AREAS.

37. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR 41ST AVENUE EAST IN ACCORDANCE WITH SPECIFICATIONS. A MAXIMUM OF ONE LANE CAN BE SHUT DOWN AT A TIME.

CIVIL LEGEND

NEW SPOT ELEVATION	1325.46
ELEVATION	1325.00
POINT OF CURVATURE	PC = 10+00.00
POINT OF TANGENT	PT = 10+00.00
INVERT ELEVATION	INV = 1325.00

DRAWING CROSS REFERENCE



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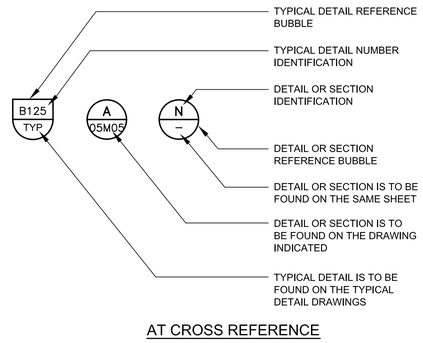

AT CROSS REFERENCE

REV	DATE	BY	DESCRIPTION

DESIGNED JMF
DRAWN DVP
CHECKED EP
DATE APRIL 2010
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
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PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
GENERAL NOTES

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. G-03

Last Opened by: 6-04-10 04:00pm DPerry

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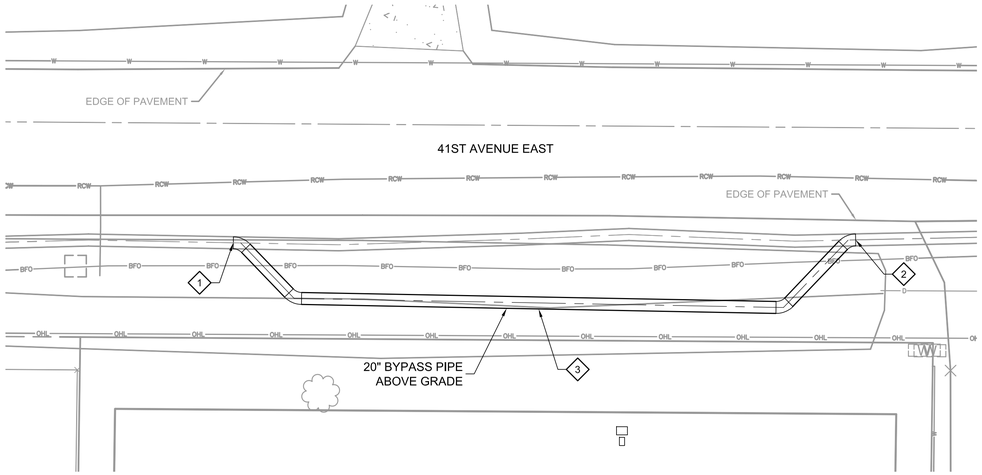


A BYPASS PLAN

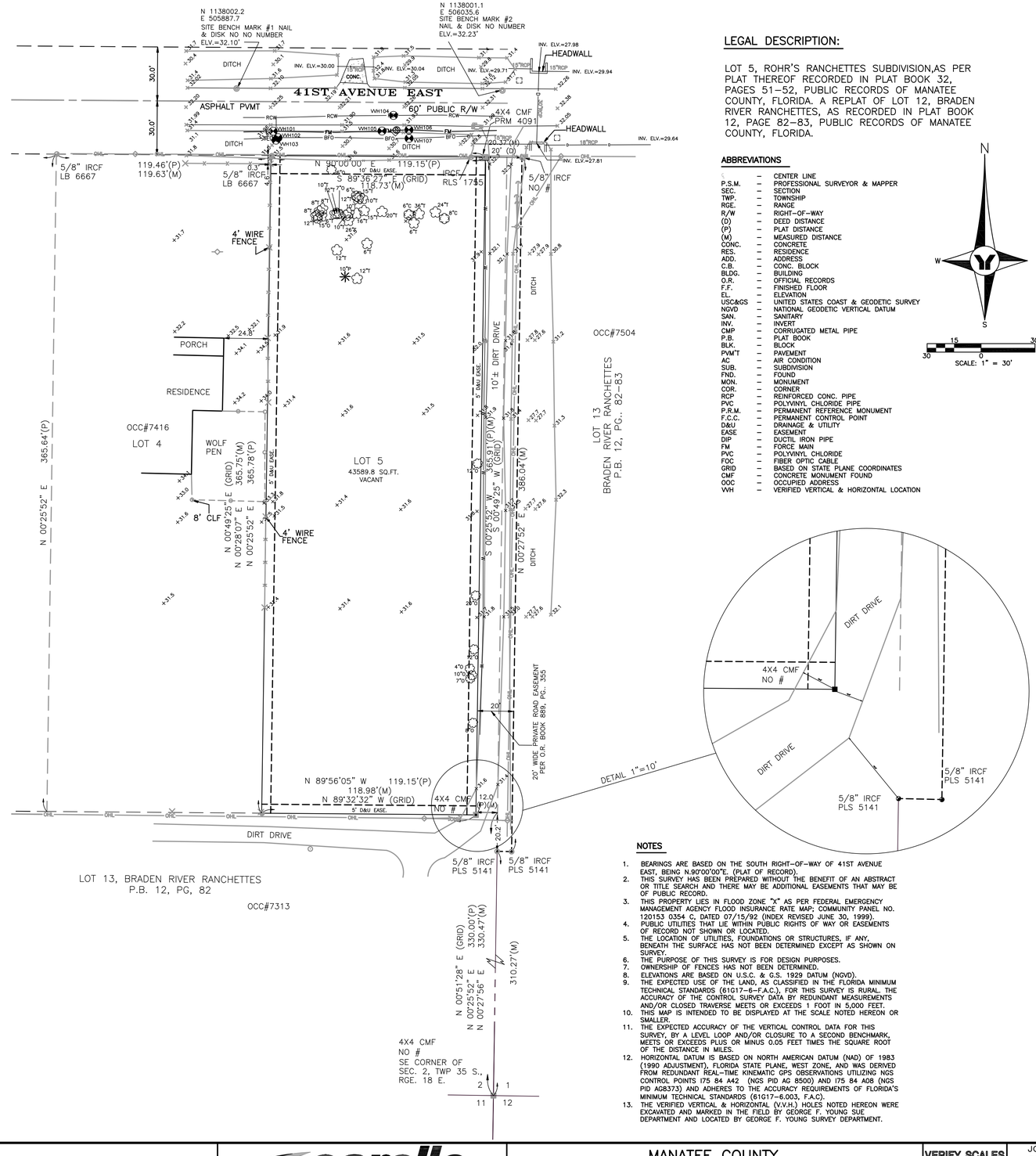
SCALE: 1" = 10'

GENERAL NOTES:

1. CONTRACTOR SHALL SUBMIT A BYPASS PLAN FOR APPROVAL BY OWNER AT LEAST 14 DAYS BEFORE BYPASS INSTALLATION.
2. CONTRACTOR SHALL COORDINATE WITH OWNER ON BYPASS SCHEDULE. SHUTDOWN PERIOD FOR BYPASS INSTALLATION WILL BE LIMITED TO THE HOURS BETWEEN 3 A.M. TO 5 A.M.
3. BYPASS PIPE SHALL BE 20" HDPE SDR-11. RESTRAIN BYPASS PIPE AND PROTECT FROM DAMAGE BY VEHICLES, EQUIPMENT, ETC.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING BYPASS PIPE FOR ANY LEAKS OR DAMAGE.

KEY NOTES:

1. CONNECT 20" HDPE SDR-11 BYPASS PIPE TO EXISTING 20" DUCTILE IRON FORCE MAIN AT NORTHING 1137978.04, EASTING 505928.32
2. CONNECT 20" HDPE SDR-11 BYPASS PIPE TO EXISTING 20" DUCTILE IRON FORCE MAIN AT NORTHING 1137978.45, EASTING 506015.28
3. PLACE BYPASS PIPE ABOVE GRADE WITH TEMPORARY AIR RELEASE VALVE AT HIGH POINT. SEE US-25 MC FOR AIR RELEASE VALVE.



LEGAL DESCRIPTION:

LOT 5, ROHR'S RANCHETTES SUBDIVISION,AS PER PLAT THEREOF RECORDED IN PLAT BOOK 32, PAGES 51-52, PUBLIC RECORDS OF MANATEE COUNTY, FLORIDA. A REPLAT OF LOT 12, BRADEN RIVER RANCHETTES, AS RECORDED IN PLAT BOOK 12, PAGE 82-83, PUBLIC RECORDS OF MANATEE COUNTY, FLORIDA.

ABBREVIATIONS

℄	–	CENTER LINE
P.S.M.	–	PROFESSIONAL SURVEYOR & MAPPER
SEC.	–	SECTION
TWP.	–	TOWNSHIP
RGE.	–	RANGE
R/W	–	RIGHT-OF-WAY
(D)	–	DEED DISTANCE
(P)	–	PLAT DISTANCE
(M)	–	MEASURED DISTANCE
CONC.	–	CONCRETE
RES.	–	RESIDENCE
ADD.	–	ADDRESS
C.B.	–	CONC. BLOCK
BLDG.	–	BUILDING
O.R.	–	OFFICIAL RECORDS
F.F.	–	FINISHED FLOOR
EL.	–	ELEVATION
USC&GS	–	UNITED STATES COAST & GEODETIC SURVEY
NGVD	–	NATIONAL GEODETIC VERTICAL DATUM
SAN.	–	SANITARY
INV.	–	INVERT
CMP	–	CORRUGATED METAL PIPE
P.B.	–	PLAT BOOK
BLK.	–	BLOCK
PVM'T	–	PAVEMENT
AC	–	AIR CONDITION
SUB.	–	SUBDIVISION
FND.	–	FOUND
MON.	–	MONUMENT
COR.	–	CORNER
RCP	–	REINFORCED CONC. PIPE
PVC	–	POLYVINYL CHLORIDE PIPE
P.R.M.	–	PERMANENT REFERENCE MONUMENT
P.C.C.	–	PERMANENT CONTROL POINT
D&U	–	DRAINAGE & UTILITY
EASE	–	EASEMENT
DIP	–	DUCTIL IRON PIPE
FM	–	FORCE MAIN
PVC	–	POLYVINYL CHLORIDE
FOC	–	FIBER OPTIC CABLE
GRID	–	BASED ON STATE PLANE COORDINATES
CMF	–	CONCRETE MONUMENT FOUND
OOC	–	OCCUPIED ADDRESS
VVH	–	VERIFIED VERTICAL & HORIZONTAL LOCATION

SYMBOL LEGEND

- NAIL & DISK FOUND
- 4X4 CONC. MONUMENT FOUND
- IRON PIPE FOUND
- IRON ROD & CAP FOUND
- IRON PIPE & CAP FOUND
- IRON ROD FOUND
- 4X4 CONC. MONUMENT FOUND
- IRON ROD & CAP SET
- WOOD POWER POLE
- GUY WIRE
- BARB WIRE FENCE
- CHAIN LINK FENCE
- WIRE PULL BOX
- OAK TREE – SIZE DENOTED WITH "O" – (12"O)
- UNIDENTIFIED TREE– SIZE DENOTED WITH "T" – (12"T)
- CITRUS TREE– SIZE DENOTED WITH "C" – (12"C)
- PALM TREE– SIZE DENOTED WITH "P" – (12"P)
- SANITARY MANHOLE
- MAIL BOX
- WATER METER
- RCW – RECLAIMED WATER LINE – 30" DIP
- FM – BURIED FIBER OPTIC CABLE – 1 1/4" SUBDUCT X2
- BFO – SANITARY FORCE MAIN – 20" DIP
- W – WATER LINE – SIZE AND MATERIAL NOT DETERMINED
- VERIFIED VERTICLE & HORIZONTAL LOCATION (VVH)

Name	Northing	Easting	Surface	MD	TOP	Comment
VVH101	1137978.42	505908.08	GROUND	2.99	28.58	20" DIP FM - MANATEE COUNTY
VVH102	1137974.82	505910.79	GROUND	2.45	28.82	1 1/4" SUBDUCT FOC X2 - VERIZON
VVH103	1137973.45	505909.67	GROUND	0.87	30.33	2" PVC - MANATEE COUNTY
VVH104	1137987.20	505974.99	ASPHALT	3.05	29.05	30" DIP - MANATEE COUNTY
VVH105	1137978.55	505968.61	GROUND	2.73	29.12	20" DIP FM - MANATEE COUNTY
VVH106	1137979.20	505983.60	GROUND	3.37	28.55	20" DIP FM - MANATEE COUNTY
VVH107	1137974.41	505983.66	GROUND	2.25	29.23	1 1/4" SUBDUCT FOC X2 - VERIZON

1. The surveyor has located subsurface utilities physically exposed by vacuum excavation. Electronically designated points may deviate from the actual utility location and should be considered approximate.
2. Subsurface Utilities were located by utilizing the Vacmaster System for vacuum excavation with the benefit of electronic designation and ground penetrating radar (GPR).
3. Utilization of the above equipment and methods is the industry recognized procedure for finding and locating underground utilities. Although effective and reliable, there is the possibility that all utilities may not be detected due to environmental conditions, soil conditions, water table, excessive depth and/or feature makeup.
4. Utility size reflects the approximate outside diameter unless otherwise specified.
5. Utility size and material composition were collected by field observation under adverse conditions and should be considered approximate.
6. Utility owners names used in this report reflect information obtained from field observations, field meetings and utility research.

NOTES

1. BEARINGS ARE BASED ON THE SOUTH RIGHT-OF-WAY OF 41ST AVENUE EAST, BEING N.90°00'00"E. (PLAT OF RECORD).
2. THIS SURVEY HAS BEEN PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OR TITLE SEARCH AND THERE MAY BE ADDITIONAL EASEMENTS THAT MAY BE OF PUBLIC RECORD.
3. THIS PROPERTY LIES IN FLOOD ZONE "X" AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP; COMMUNITY PANEL NO. 120153 0354 C, DATED 07/15/92 (INDEX REVISED JUNE 30, 1999).
4. PUBLIC UTILITIES THAT LIE WITHIN PUBLIC RIGHTS OF WAY OR EASEMENTS OF RECORD NOT SHOWN OR LOCATED.
5. THE LOCATION OF UTILITIES, FOUNDATIONS OR STRUCTURES, IF ANY, BENEATH THE SURFACE HAS NOT BEEN DETERMINED EXCEPT AS SHOWN ON SURVEY.
6. THE PURPOSE OF THIS SURVEY IS FOR DESIGN PURPOSES.
7. OWNERSHIP OF FENCES HAS NOT BEEN DETERMINED.
8. ELEVATIONS ARE BASED ON U.S.C. & G.S. 1929 DATUM (NGVD).
9. THE EXPECTED USE OF THE LAND, AS CLASSIFIED IN THE FLORIDA MINIMUM TECHNICAL STANDARDS (61G17-6-F.A.C.), FOR THIS SURVEY IS RURAL. THE ACCURACY OF THE CONTROL SURVEY DATA BY REDUNDANT MEASUREMENTS AND/OR CLOSED TRAVERSE MEETS OR EXCEEDS 1 FOOT IN 5,000 FEET.
10. THIS MAP IS INTENDED TO BE DISPLAYED AT THE SCALE NOTED HEREON OR SMALLER.
11. THE EXPECTED ACCURACY OF THE VERTICAL CONTROL DATA FOR THIS SURVEY, BY A LEVEL LOOP AND/OR CLOSURE TO A SECOND BENCHMARK, MEETS OR EXCEEDS PLUS OR MINUS 0.05 FEET TIMES THE SQUARE ROOT OF THE DISTANCE IN MILES.
12. HORIZONTAL DATUM IS BASED ON NORTH AMERICAN DATUM (NAD) OF 1983 (1990 ADJUSTMENT), FLORIDA STATE PLANE, WEST ZONE, AND WAS DERIVED FROM REDUNDANT REAL-TIME KINEMATIC GPS OBSERVATIONS UTILIZING NGS CONTROL POINTS I75 84 A42 (NGS PID AG 8500) AND I75 84 A08 (NGS PID AG8373) AND ADHERES TO THE ACCURACY REQUIREMENTS OF FLORIDA'S MINIMUM TECHNICAL STANDARDS (61G17-6.003, F.A.C).
13. THE VERIFIED VERTICAL & HORIZONTAL (V.V.H.) HOLES NOTED HEREON WERE EXCAVATED AND MARKED IN THE FIELD BY GEORGE F. YOUNG SUE DEPARTMENT AND LOCATED BY GEORGE F. YOUNG SURVEY DEPARTMENT.

REV	DATE	BY	DESCRIPTION

DESIGNED JMF
DRAWN DVP
CHECKED EP
DATE APRIL 2010
PROJECT ENGINEER

George F. Young, Inc.
10540 PORTAL CROSSING, SUITE 105 BRADENTON, FLORIDA 34211
PHONE (941) 747-2981 FAX (941) 747-7234
BUSINESS ENTITY LB21
ARCHITECTURE•ENGINEERING•ENVIRONMENTAL• LANDSCAPE•PLANNING•SURVEYING•UTILITIES
GAINESVILLE•LAKEWOOD RANCH•ORLANDO• PALM BEACH GARDENS • ST. PETERSBURG•TAMPA
Since 1919

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
SURVEY CONTROL PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. G-04

Last Opened by:IF-04-10 04:00pm DPerry

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NORTH

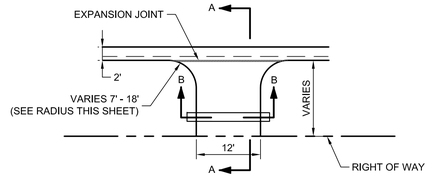
0 5' 10' 20'

GENERAL NOTES:

1. ALL TREES AND SHRUBS WITHIN LIMITS OF CONTSTRUCTION SHALL BE CLEARED. CLEARED VEGETATION AND TREES FROM CONSTRUCTION AREA CAN BE MULCHED AND SPREAD ON SITE. DO NOT CLEAR BEYOND LIMITS OF CONSTRUCTION SHOWN.
2. SEE DRAWING G-04 FOR BYPASS PLAN. COORDINATE WITH OWNER ON SHUT DOWN CONSTRAINTS FOR BYPASS INSTALLATION.

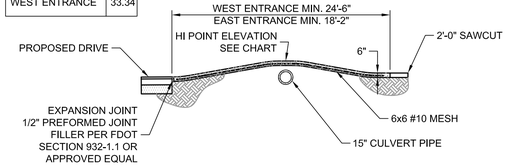
KEY NOTES:

- A — LIMITS OF CONSTRUCTION. INSTALL SILT FENCE PER C304 TYP
- B — SOIL TRACKING PREVENTION DEVICE PER FDOT INDEX 106



PLAN VIEW

HI POINT ELEVATIONS	
EAST ENTRANCE	32.94
WEST ENTRANCE	33.34

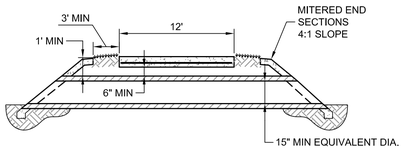


SECTION A-A

NOTES:

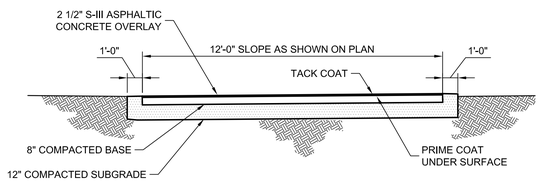
A. DRIVE APPROACH WITH 6" CONCRETE WITH 6"x6" MESH #10, 3000 PSI AT 28 DAYS.

B. EXPANSION JOINT 1/2" PREFORM JOINT FILLER PER FDOT SECTION 932-1.1 OR APPROVED ALTERNATE.



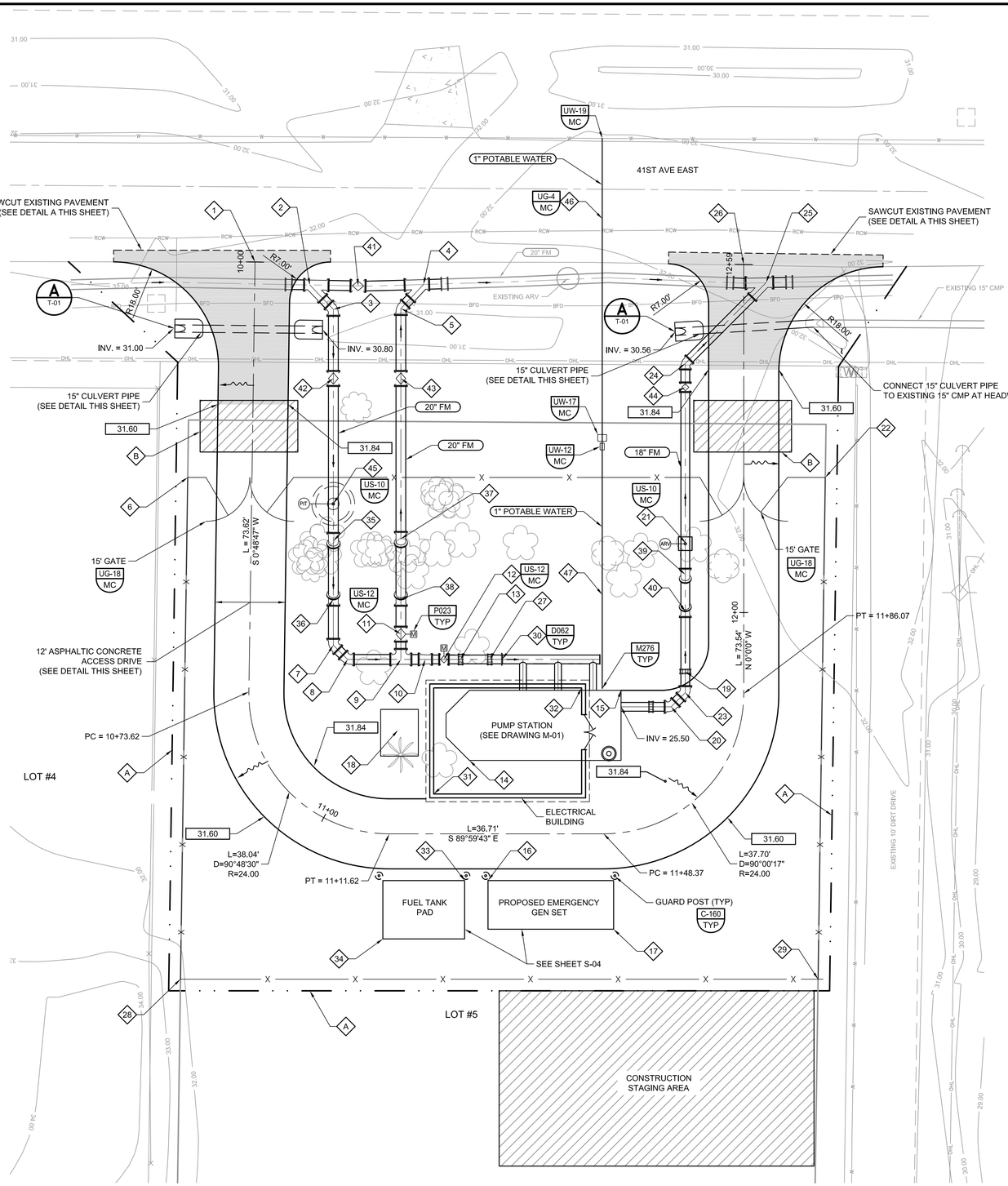
SECTION B-B

A DRIVE APPROACH DETAIL



B DRIVE PAVEMENT SECTION (TYP)

N.T.S.



KEY NOTES:

1. BEGIN ACCESS DRIVE STATIONING. NORTHING: 1137981.80 EASTING: 505923.19
2. 20" WYE (MJ) NORTHING: 1137977.96 EASTING: 505932.56 INV : 26.98
3. 20" x 45° BEND (MJ) NORTHING: 1137973.77 EASTING: 505936.59 INV : 26.98
4. 20" WYE (MJ) NORTHING: 1137978.04 EASTING: 505952.03 INV : 27.16
5. 20" x 45° BEND (MJ) NORTHING: 1137973.93 EASTING: 505948.15 INV : 27.16
6. NW FENCE CORNER NORTHING: 1137945.00 EASTING: 505911.66
7. 20" x 45° BEND (MJ) NORTHING: 1137916.27 EASTING: 5059336.59 INV : 17.62
8. 20" x 45° BEND (MJ) NORTHING: 1137913.84 EASTING: 505939.03 INV : 17.62
9. 20" TEE (MJ x MJ) NORTHING: 1137913.84 EASTING: 505948.15 INV : 17.62
10. 20" x 18" REDUCER (MJ) NORTHING: 1137913.84 EASTING: 505952.33 INV : 17.62
11. 20" PLUG VALVE MOTOR OPERATED (MJ) NORTHING: 1137918.16 EASTING: 505948.15
12. 18" PLUG VALVE MOTOR OPERATED (MJ) NORTHING: 1137913.84 EASTING: 505955.53
13. 18" FLEX COUPLING NORTHING: 1137913.84 EASTING: 505957.87
14. SW CORNER PUMP STATION NORTHING: 1137896.55 EASTING: 505959.89
15. NE CORNER PUMP STATION NORTHING: 1137908.55 EASTING: 505985.85
16. NW CORNER GEN SET CONCRETE PAD NORTHING: 1137865.97 EASTING: 505963.07
17. SE CORNER GEN SET CONCRETE PAD NORTHING: 1137867.64 EASTING: 505984.57
18. AIR CONDITIONING EQUIPMENT PAD
19. 18" FLEX COUPLING NORTHING: 1137911.77 EASTING: 505996.85
20. 18" x 45° BEND (MJ) NORTHING: 1137905.72 EASTING: 505994.42
21. AIR RELEASE VALVE (SEE DRAWING T-02) NORTHING: 1137933.64 EASTING: 505996.85
22. NE FENCE CORNER NORTHING: 1137945.00 EASTING: 506020.82
23. 18" x 45° BEND (MJ) NORTHING: 1137908.15 EASTING: 505996.85
24. 18" x 45° BEND (MJ) NORTHING: 1137964.52 EASTING: 505996.85 INV : 26.75
25. 20" x 18" WYE NORTHING: 1137978.35 EASTING: 506010.69 INV : 26.75
26. END ACCESS DRIVE STATIONING NORTHING: 1137981.35 EASTING: 506006.85
27. 18" FLEX COUPLING NORTHING: 1137913.84 EASTING: 505963.37
28. SW FENCE CORNER NORTHING: 1137859.09 EASTING: 505910.42
29. SE FENCE CORNER NORTHING: 1137859.09 EASTING: 506019.58
30. PIPE FLANGE INSULATION NORTHING: 1137913.84 EASTING: 505965.50
31. SW CORNER ELECTRICAL BUILDING NORTHING: 1137890.80 EASTING: 505953.77
32. NE CORNER ELECTRICAL BUILDING NORTHING: 1137908.97 EASTING: 505979.10
33. NE CORNER FUEL TANK PAD NORTHING: 1137875.97 EASTING: 505959.07
34. SW CORNER FUEL TANK PAD NORTHING: 1137865.97 EASTING: 505945.07
35. 20" x 45° BEND (MJ) NORTHING: 1137934.36 EASTING: 505936.59 INV = 26.98
36. 20" x 45° BEND (MJ) NORTHING: 1137924.14 EASTING: 505936.59 INV = 17.62
37. 20" x 45° BEND (MJ) NORTHING: 1137934.54 EASTING: 505948.15 INV = 27.16
38. 20" x 45° BEND (MJ) NORTHING: 1137924.14 EASTING: 505948.15 INV = 17.62
39. 18" x 11.25° BEND (MJ) NORTHING: 1137928.35 EASTING: 505996.85 INV = 26.75
40. 18" x 11.25° BEND (MJ) NORTHING: 1137922.10 EASTING: 506006.85 INV = 25.50
41. 20" PLUG VALVE (MJ) NORTHING: 1137977.81 EASTING: 505940.82 INV = 27.07
42. 20" PLUG VALVE (MJ) NORTHING: 1137961.95 EASTING: 505936.59 INV = 27.07
43. 20" PLUG VALVE (MJ) NORTHING: 1137961.93 EASTING: 505948.15 INV = 27.16
44. 18" PLUG VALVE (MJ) NORTHING: 1137960.45 EASTING: 505996.85 INV = 26.75
45. PRESSURE TRANSMITTER (SEE DRAWING N-08) NORTHING: 1137940.47 EASTING: 505936.58
46. 1" WATER SERVICE TO BE A MIN OF 18" BELOW EXISTING FORCEMAINS AND UTILITIES UP TO METER BOX
47. 3' MINIMUM COVER FROM METER BOX TO YARD HYDRANT

REV	DATE	BY	DESCRIPTION

DESIGNED JMF
DRAWN DVP
CHECKED EP
DATE APRIL 2010
PROJECT ENGINEER

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CA 00008571

MANATEE COUNTY

PS 428 BOOSTER PUMP STATION

SITE AND EROSION CONTROL PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10

DRAWING NO. C-01

Last Opened by: 6-04-10 04:09pm DPerry

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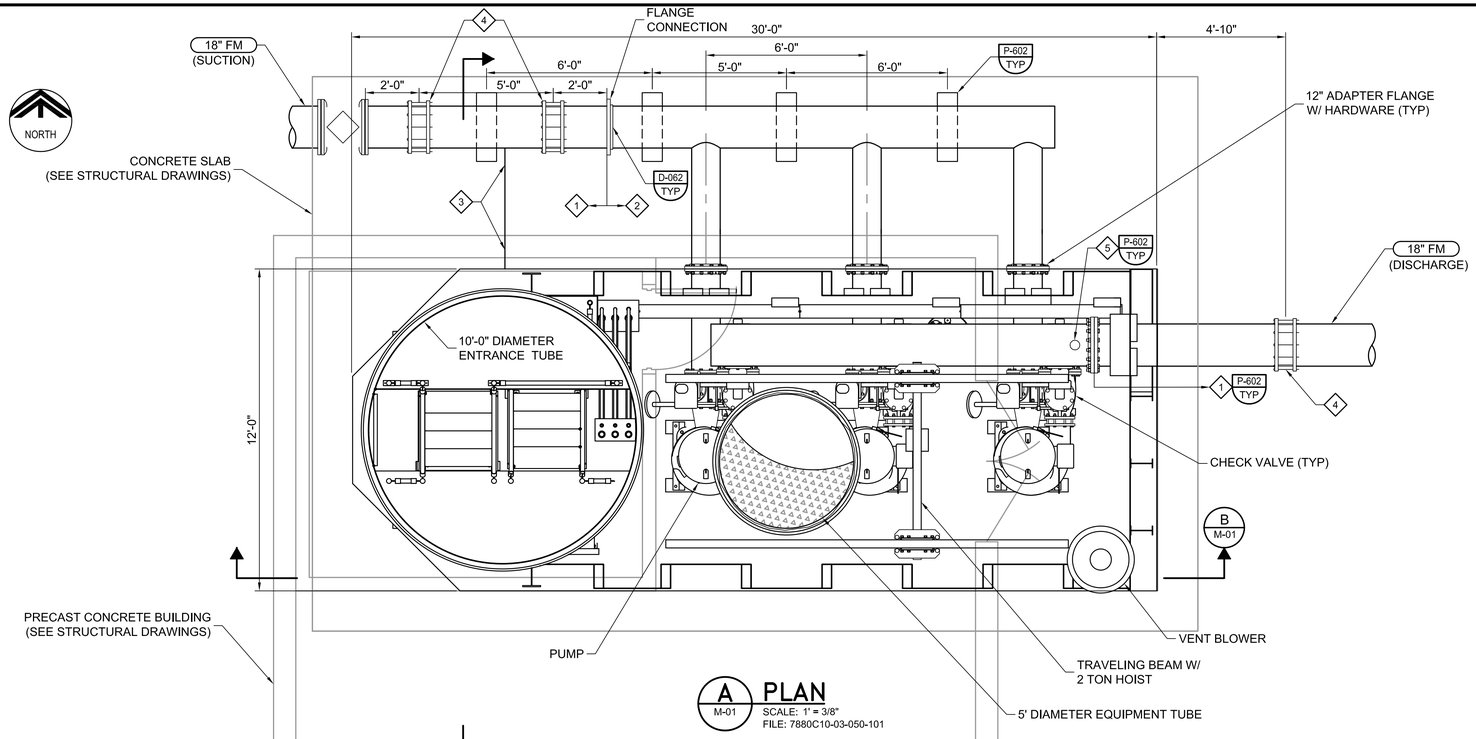
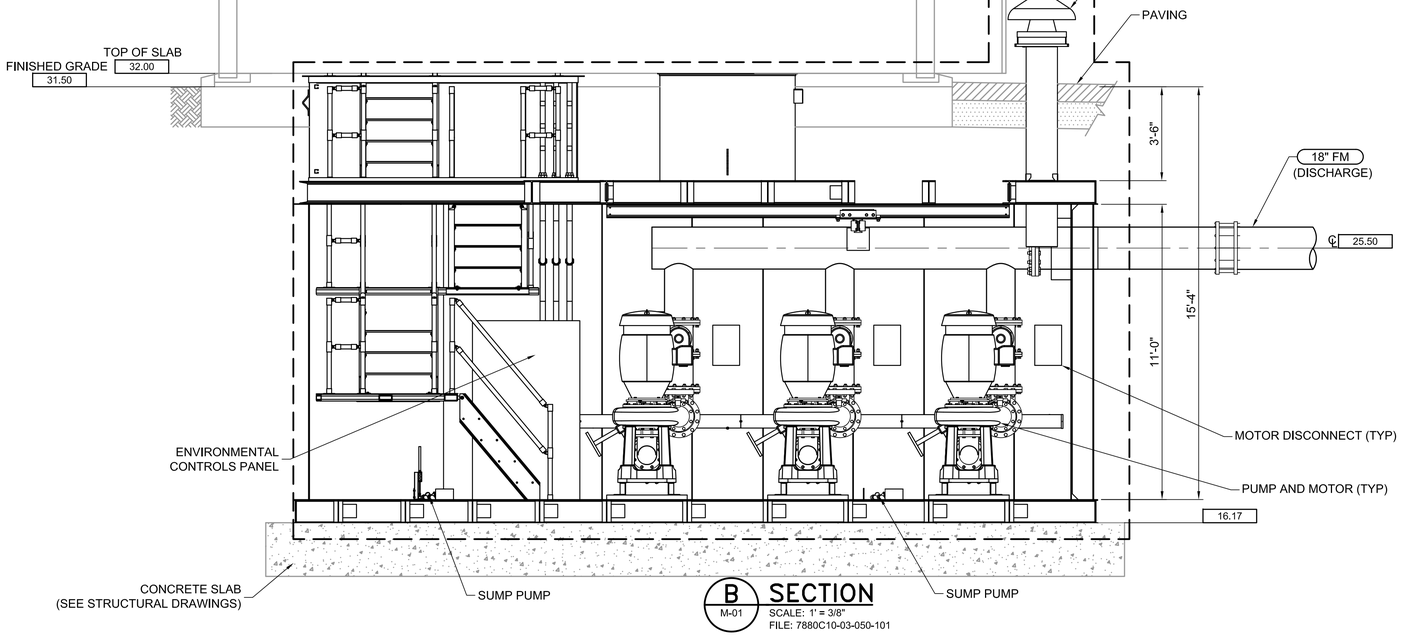


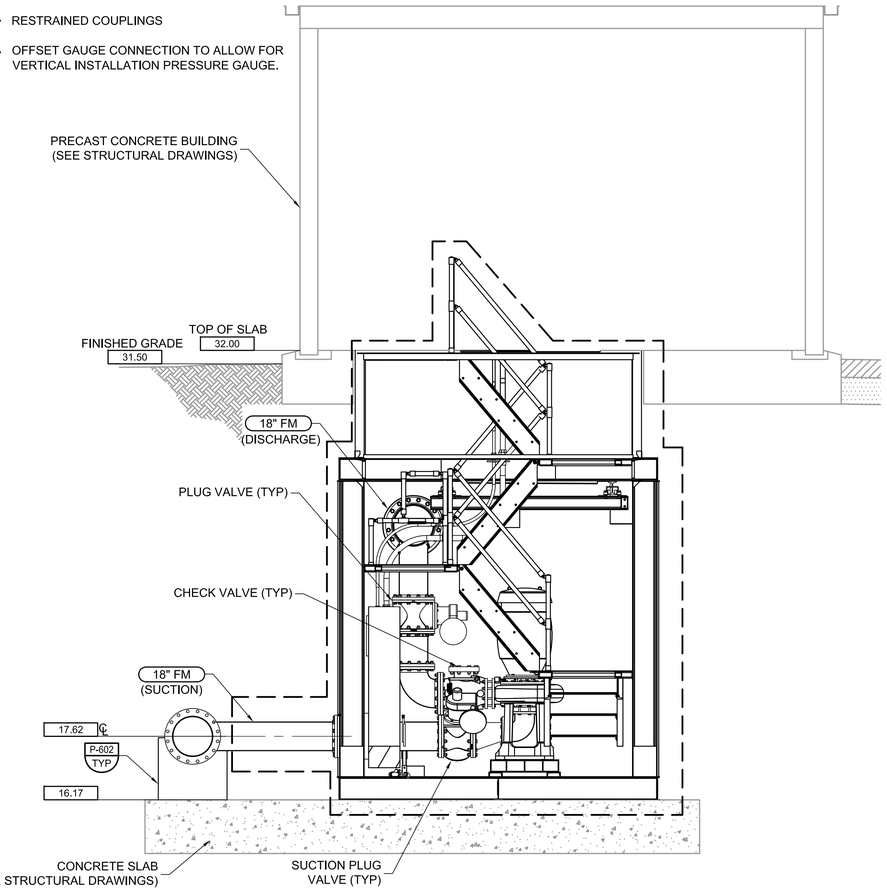
A PLAN
M-01
SCALE: 1' = 3/8"
FILE: 7880C10-03-050-101



B SECTION
M-01
SCALE: 1' = 3/8"
FILE: 7880C10-03-050-101

KEY NOTES:

1. PIPE PROVIDED BY CONTRACTOR (DUCTILE IRON).
2. PIPE PROVIDED BY PUMP MANUFACTURER (STEEL).
3. COORDINATE WITH PUMP STATION MANUFACTURER ON LOCATION OF 1" HDPE SUMP PUMP DISCHARGE. TAP 18" SUCTION HEADER FOR SUMP DISCHARGE CONNECTION. PUMP STATION MANUFACTURER TO ROUTE DISCHARGE FROM BOTH SUMP PUMPS TO ONE COMMON 1" HDPE DISCHARGE PIPE. PROVIDE CONNECTION WITH A SMITH-BLAIR DOUBLE BALE SERVICE SADDLE (MODEL NO. 323) WITH A THREADED TRANSITION FITTING ON THE 1" HDPE SUMP DISCHARGE.
4. RESTRAINED COUPLINGS
5. OFFSET GAUGE CONNECTION TO ALLOW FOR VERTICAL INSTALLATION PRESSURE GAUGE.



C SECTION
M-01
SCALE: 1' = 3/8"
FILE: 7880C10-03-050-101

PUMP DATA AND DESIGN CHARACTERISTICS	
NUMBER OF PUMPS	3
DESIGN CAPACITY PER PUMP, G.P.M.	2600
STATION FIRM CAPACITY, GPM	5200
TOTAL DYNAMIC HEAD, FT.	80
MIN. EFF. AT DESIGN CAPACITY %	75%
HORSEPOWER PER PUMP, H.P.	100
MAX. SIZE SOLIDS, IN.	3
DISCHARGE SIZE, IN.	10
PUMP MANUF. & MODEL NUMBER	S&L 8D5A
PUMP R.P.M.	1170
ELECT. SVC - VOLTAGE & PHASE	460/3

LIMITS OF PACKAGE
PUMP STATION

REV	DATE	BY	DESCRIPTION

DESIGNED JMF
DRAWN DVP
CHECKED EP
DATE APRIL 2010
PROJECT ENGINEER

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MANATEE COUNTY

PS 428 BOOSTER PUMP STATION

PUMP STATION PLAN AND SECTION

VERIFY SCALES
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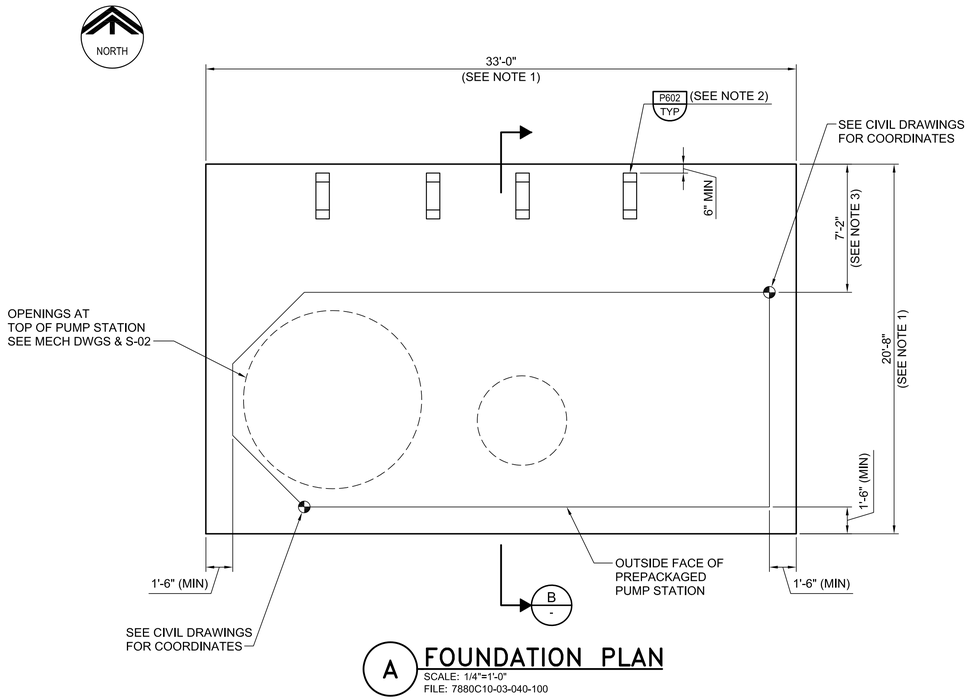
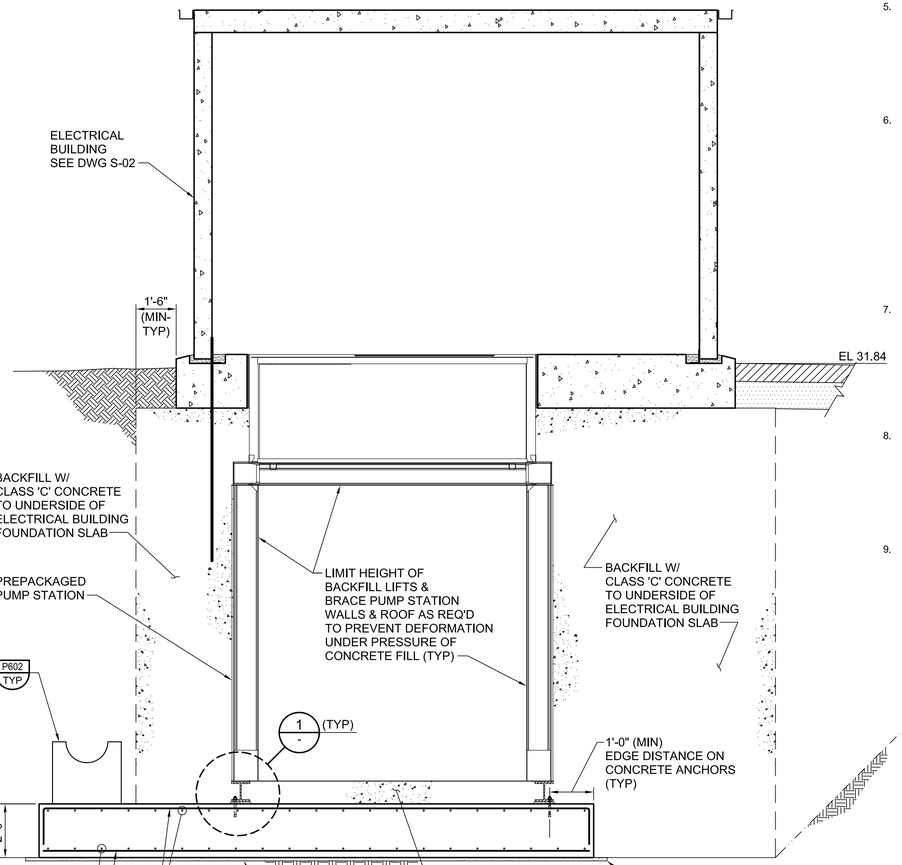


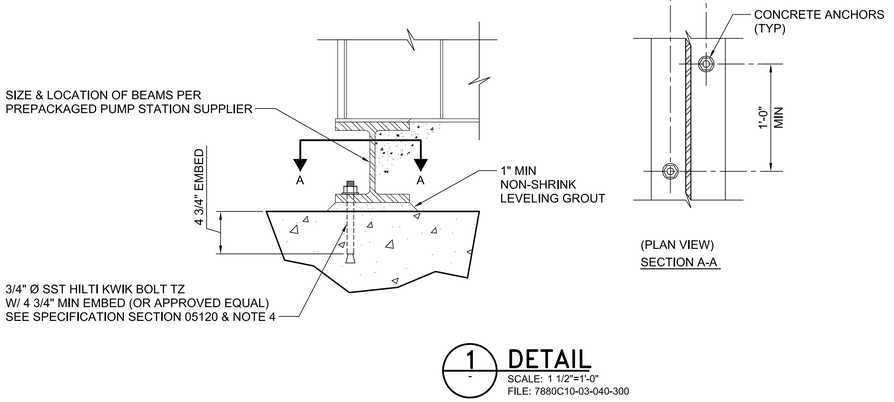
A FOUNDATION PLAN

SCALE: 1/4"=1'-0"
FILE: 7880C10-03-040-100



B SECTION

SCALE: 3/8"=1'-0"
FILE: 7880C10-03-040-100



1 DETAIL

SCALE: 1 1/2"=1'-0"
FILE: 7880C10-03-040-300

NOTES:

1. COORDINATE THE SIZE OF THE PAD WITH THE SIZE OF THE PREPACKAGED PUMP STATION. PROVIDE 18" MINIMUM DISTANCE FROM THE EDGE OF THE PUMP STATION BEAMS TO THE EDGE OF THE CONCRETE SLAB (TYP 3 SIDES).
2. REFER TO MECHANICAL DRAWINGS FOR LOCATION OF EXTERIOR PIPE SUPPORTS.
3. PROVIDE 6" DISTANCES BETWEEN EDGES OF PIPE SUPPORT CRADLES AND EDGE OF CONCRETE FILL AND CONCRETE SLAB. COORDINATE THE SIZE OF THE PAD WITH THE LOCATION OF THE PIPES.
4. PROVIDE 60 (SIXTY) CONCRETE ANCHORS BETWEEN THE CAST-IN-PLACE CONCRETE SLAB AND THE PREPACKAGED PUMP STATION STRUCTURAL BEAMS. LOCATE ANCHORS AT TYPICAL GAGE FOR BEAMS PROVIDED AT MINIMUM 12" SPACING. LOCATE THE ANCHORS AT UNIFORM SPACING SYMMETRICALLY AROUND THE PERIMETER BEAMS. PREPACKAGED PUMP STATION MANUFACTURER SHALL SUBMIT PROPOSED LOCATIONS FOR PREDRILLED HOLES IN SHOP DRAWING SUBMITTAL.
5. PREPACKAGED PUMP STATION DESIGN CRITERIA:
   - GROUND WATER AT GRADE
   - LATERAL SOIL PRESSURE = 90 PSF
   - LATERAL PRESSURE DUE TO PLASTIC CONCRETE FILL = 150 PSF
   - UNIFORM LATERAL SURCHARGE = 300 PSF
   - VERTICAL LOAD TO THE ROOF = 1200 PSF (SOIL AND ELECTRICAL BUILDING ABOVE ROOF)
6. REMOVE TREES AND VEGETATION. DEWATER EXCAVATION AREA TO 3'-0" BELOW BOTTOM OF SLAB. CONTRACTOR, OBTAIN NECESSARY PERMITS TO DEWATER EXCAVATION SITE. DISCHARGE WATER AS DIRECTED BY CLIENT OR PERMIT-ISSUING AUTHORITY. ADJUST MOISTURE CONTENT IN SOIL PER ENGINEER'S RECOMMENDATIONS & PROOF ROLL/COMPACT TO 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY. COMPACT 12-INCH SOIL DEPTH SOIL DIRECTLY BELOW FOUNDATIONS TO A 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY. PLACE 1 1/2" LEAN CONCRETE SEAL SLAB BELOW CAST-IN-PLACE CONCRETE SLABS.
7. BACKFILL STRUCTURES WITH SAND FILL PLACED IN 12-INCH LIFTS EXCEPT AGAINST WALLS WHERE LOOSE 6-INCH LIFTS ARE RECOMMENDED. ACCEPTABLE FILL SHALL BE FINE TO MEDIUM SAND WITH LESS THAN 12% PASSING THE NO. 200 SIEVE, FREE OF RUBBLE, ORGANICS, CLAY, AND DEBRIS. COMPACT SOIL DIRECTLY BELOW FOUNDATIONS TO A 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY.
8. FACTOR OF SAFETY (FS) AGAINST UPLIFT DUE TO BUOYANCY = 1.50 MINIMUM = STRUCTURE DEAD LOAD DIVIDED BY UPLIFT ON STRUCTURE. (STRUCTURE DEAD LOAD = PUMP STATION ROOF, WALLS, FLOOR PLATES, BASE SLAB, SOIL ABOVE PUMP STATION AND SURCHARGE FROM ELECTRICAL BUILDING SLAB)
9. APPLY TERMITE CONTROL AS SPECIFIED IN SECTION 02362.

REV	DATE	BY	DESCRIPTION

DESIGNED PAS
DRAWN DMS
CHECKED GLS
DATE APRIL 2010
PROJECT ENGINEER

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CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
PUMP STATION
PLAN, SECTION AND DETAIL

VERIFY SCALES
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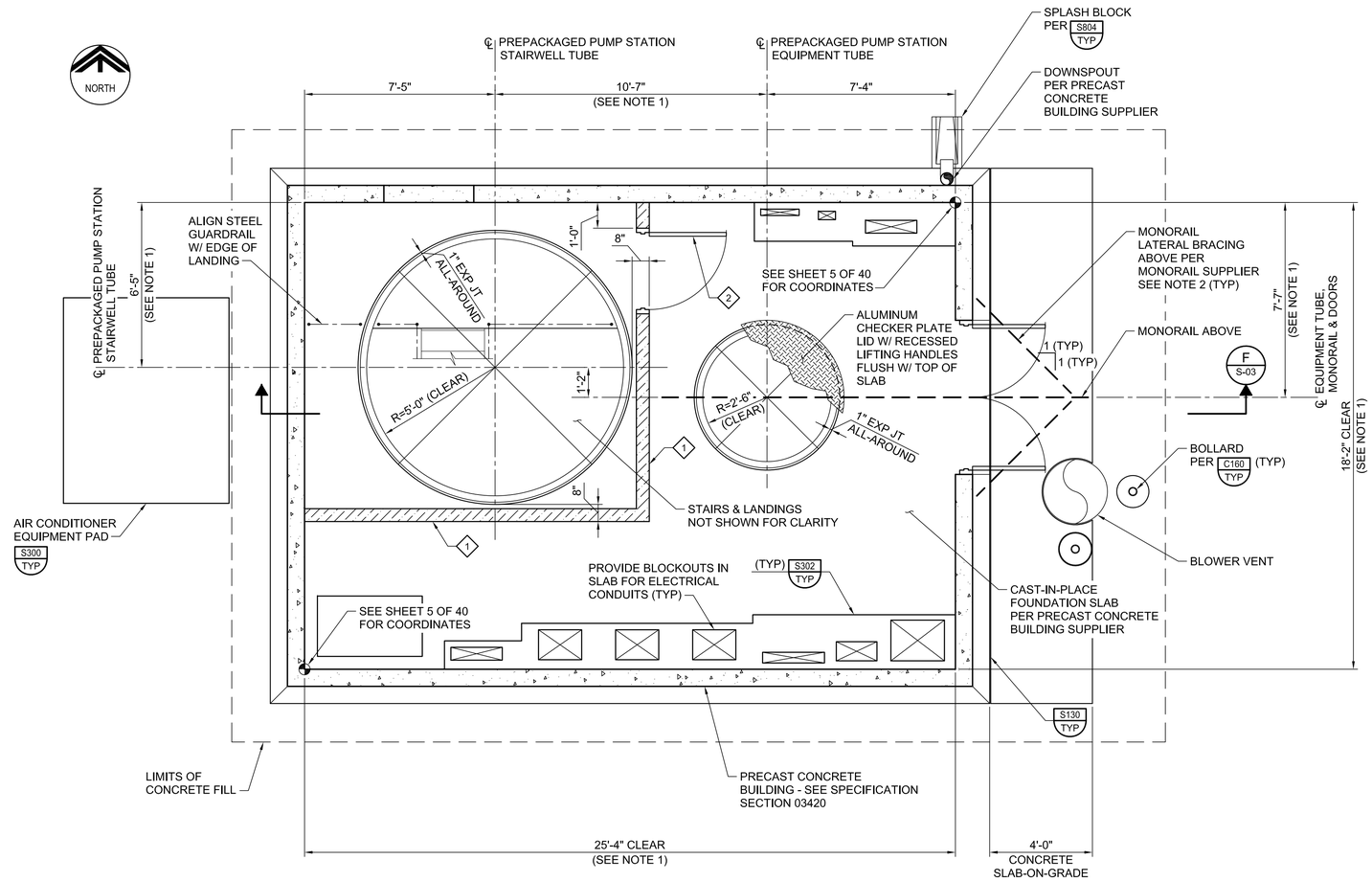

A FLOOR PLAN

SCALE: 3/8"=1'-0"
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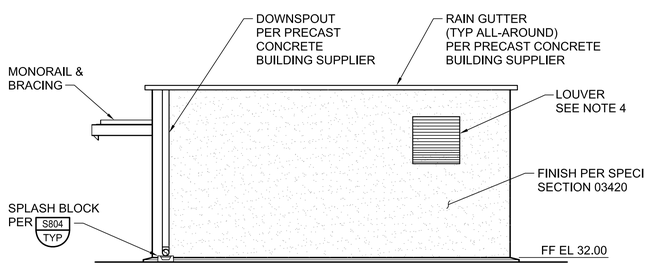

B NORTH ELEVATION

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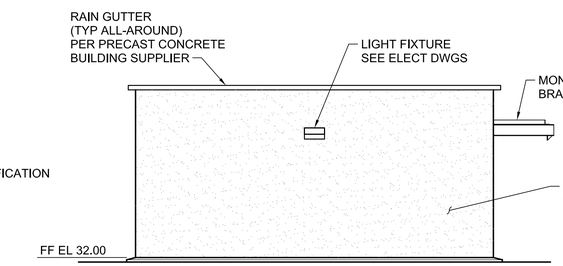

C SOUTH ELEVATION

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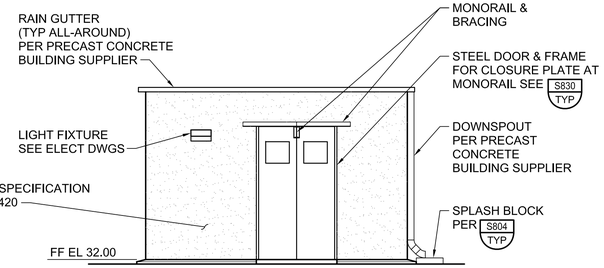

D EAST ELEVATION

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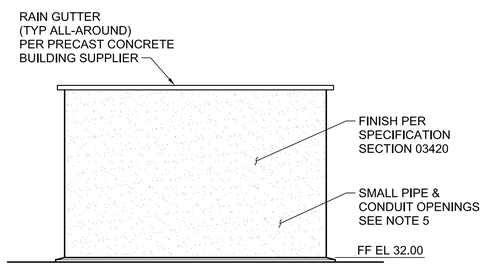

E WEST ELEVATION

SCALE: 3/16"=1'-0"
FILE: 7880C10-04-040-500

NOTES:

1. CENTER THE PAIR OF DOORS ON THE CENTER OF THE EQUIPMENT HATCH OPENING AND THE MONORAIL. CONTRACTOR SHALL COORDINATE THE DOOR LOCATION WITH PREPACKAGED PUMP STATION SUPPLIER AND THE PRECAST CONCRETE BUILDING SUPPLIER. CONTRACTOR SHALL COORDINATE DIMENSIONS BETWEEN PREPACKAGED PUMP STATION AND PRECAST SUPPLIERS.
2. CONTRACTOR SHALL COORDINATE CONNECTIONS BETWEEN THE MONORAIL SUPPLIER AND THE PRECAST CONCRETE BUILDING SUPPLIER.
3. SEE NOTES 5 AND 6 ON DRAWING S-03 FOR EXCAVATION AND BACKFILL REQUIREMENTS.
4. CONTRACTOR SHALL COORDINATE REQUIRED SIZE AND LOCATION OF LOUVER WITH PREPACKAGED PUMP STATION SUPPLIER AND PRECAST CONCRETE BUILDING SUPPLIER. SEE SECTION 15954.
5. CONTRACTOR SHALL COORDINATE SIZES AND LOCATIONS OF OPENINGS BETWEEN THE HVAC EQUIPMENT SUPPLIER AND THE PRECAST CONCRETE BUILDING SUPPLIER.

KEY NOTES

1 REFER TO STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) PRODUCT TECHNICAL INFORMATION (PUBLICATION ICBO ER-4943P) FOR ADDITIONAL INFORMATION.

WALLS:
APPLY BASE LAYER 5/8" MR (GREEN) GYPBD BOTH SIDES PARALLEL TO 362S200-68 STEEL STUDS @ 24" O.C. AND TRACK WITH 1-5/8" TYPE S-12 DRYWALL SCREWS 12" O.C., STAGGER JOINTS 24" O.C. EACH SIDE. STUDS ATTACHED TO EACH SIDE OF TOP AND BOTTOM TRACKS WITH 1/2" TYPE S-12 PAN HEAD SCREWS, TRACKS ATTACHED TO CONCRETE SLAB AND ROOF WITH 0.145"Ø HILTI POWDER ACTUATED FASTENER X 0'-1-1/2" EMBEDMENT @ 12" O.C.. STUD TRACKS SHALL BE SET IN SEALANT BEAD PRIOR TO FASTENING TO SUBSTRATE. SET STUD AGAINST WALLS IN SIMILAR MANNER.

TAPE AND MUD GYPBD JOINTS SMOOTH. PERIMETER SEAL AGAINST ALL ADJACENT SURFACES. TIGHTLY SEAL ALL CONDUIT AND DUCT PENETRATIONS. KEEP ANNULAR SPACE AT ALL CONDUIT AND DUCT PENETRATIONS TO A MINIMUM. COORDINATE WITH ELECTRICAL AND HVAC DRAWINGS.

CEILING:
APPLY FACE LAYER 1/2" CDX PLYWOOD TO 600S250-97 FLOOR JOISTS AT 12" O.C.. ATTACH TO TOP RUNNER TRACK WITH 1" TYPE S-12 DRYWALL SCREWS 12" O.C. TERMINATE PLYWOOD AT WALL OFFSET ABOVE. JOINTS SHALL BE TIGHTLY FIT.

PERIMETER SEAL ALL PLYWOOD EDGES AT WALLS WITH ELASTOMERIC SEALANT. PROVIDE BASE TRIM AT BOTTOM OF WALLS. PRIME AND PAINT EXPOSED GYPBD AND PLYWOOD WITH LATEX ENAMEL PAINT.

2 INTERIOR DOOR AND FRAME:
NEW 3'-0"W x 6'-8"H HOLLOW METAL DOOR AND FRAME PER SPECIFICATION SECTION 03240.

REV	DATE	BY	DESCRIPTION

DESIGNED PAS
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PROJECT ENGINEER

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MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL BUILDING PLAN AND ELEVATIONS

VERIFY SCALES
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JOB NO. 7880C.10
DRAWING NO. S-02

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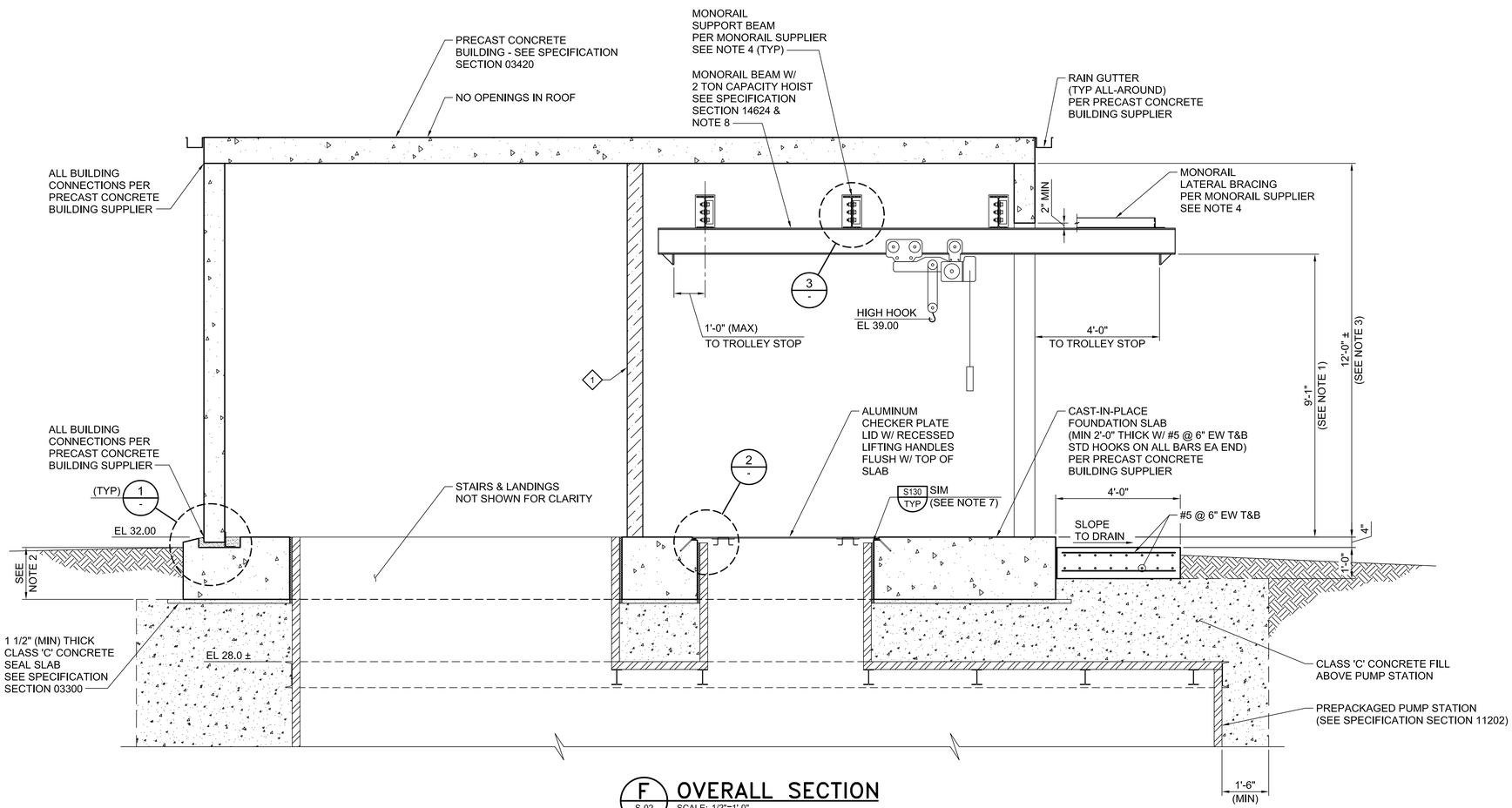

F S-02 OVERALL SECTION

SCALE: 1/2"=1'-0"
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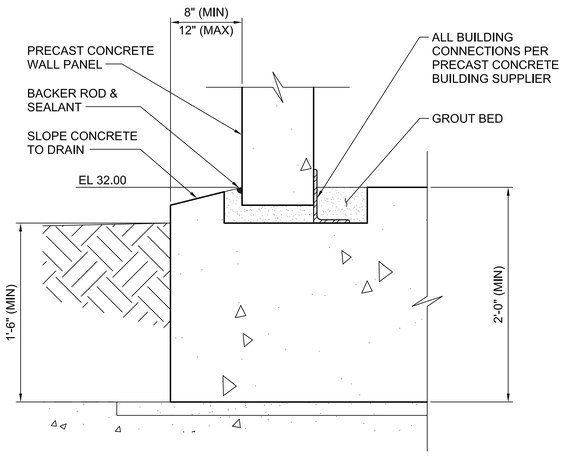
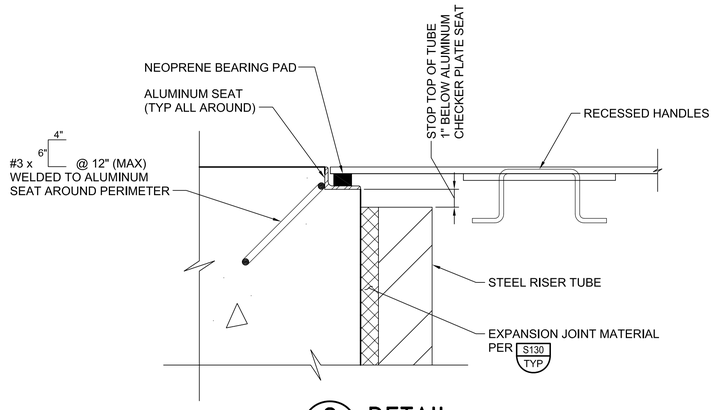


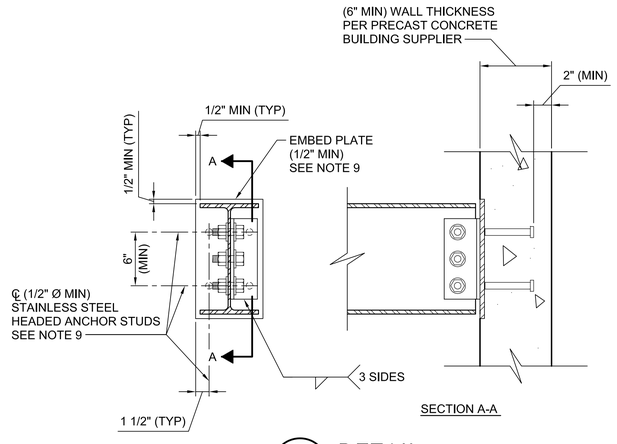
1 - SLAB EDGE DETAIL

SCALE: 1 1/2"=1'-0"
FILE: 7880C10-04-040-300



2 - DETAIL

SCALE: 3"=1'-0"
FILE: 7880C10-04-040-300



3 - DETAIL

SCALE: 1 1/2"=1'-0"
FILE: 7880C10-04-040-300

NOTES:

1. CONTRACTOR SHALL COORDINATE DOOR HEIGHT REQUIRED WITH MONORAIL SUPPLIER AND PREPACKAGED PUMP STATION SUPPLIER. INCREASE HEIGHT IF THE LARGEST LIFTED ITEM EXCEEDS 55" IN HEIGHT. PROVIDE A CUT OUT SHAPE TO FIT THE MONORAIL BEAM SO THAT WHEN THE DOOR CLOSES, THE MONORAIL BEAM IS ENCLOSED WITHIN THE CUT OUT SHAPE IN THE DOOR. PROVIDE A MEANS TO MINIMIZE THE AMOUNT OF RAIN AND WIND FROM ENTERING THE BUILDING THROUGH THE MONORAIL BEAM OPENING IN THE DOOR. CONTRACTOR, COORDINATE THE SHAPE OF THE CUT OUT REQUIRED WITH THE MONORAIL SUPPLIER AND THE PRECAST CONCRETE BUILDING SUPPLIER.
2. PROVIDE MINIMUM 18" SOIL COVER ON FOUNDATION SLAB ALL AROUND THE BUILDING.
3. CONTRACTOR TO VERIFY CLEAR HEIGHT REQUIRED. COORDINATE WITH PRECAST CONCRETE BUILDING SUPPLIER.
4. CONTRACTOR SHALL COORDINATE CONNECTIONS BETWEEN THE MONORAIL SUPPLIER AND THE PRECAST CONCRETE BUILDING SUPPLIER.
5. REMOVE TREES AND VEGETATION. DEWATER EXCAVATION AREA TO 3'-0" BELOW BOTTOM OF SLAB. CONTRACTOR, OBTAIN NECESSARY PERMITS TO DEWATER EXCAVATION SITE. DISCHARGE WATER AS DIRECTED BY CLIENT OR PERMIT-ISSUING AUTHORITY. ADJUST MOISTURE CONTENT IN SOIL PER ENGINEER'S RECOMMENDATIONS & PROOF ROLL/COMPACT TO 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY. COMPACT 12-INCH SOIL DEPTH SOIL DIRECTLY BELOW FOUNDATIONS TO A 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY. PLACE 1 1/2" LEAN CONCRETE SEAL SLAB BELOW CAST-IN-PLACE CONCRETE SLABS.
6. BACKFILL STRUCTURES WITH SAND FILL PLACED IN 12-INCH LIFTS EXCEPT AGAINST WALLS WHERE LOOSE 6-INCH LIFTS ARE RECOMMENDED. ACCEPTABLE FILL SHALL BE FINE TO MEDIUM SAND WITH LESS THAN 12% PASSING THE NO. 200 SIEVE, FREE OF RUBBLE, ORGANICS, CLAY, AND DEBRIS. COMPACT SOIL DIRECTLY BELOW FOUNDATIONS TO A 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY
7. EXPANSION JOINT DETAIL S130 SHOWS CONCRETE EACH SIDE OF THE JOINT. PROVIDE EXPANSION JOINT MATERIAL BETWEEN CONCRETE SLAB AND STEEL RISER TUBES ONLY.
8. DESIGN THE MONORAIL AND CONNECTIONS. MONORAIL SUPPORT BEAMS AND MONORAIL SUPPORT BEAM CONNECTIONS FOR 125% OF MONORAIL'S RATED CAPACITY.
9. DESIGN THE ANCHORS AND THE EMBEDDED PLATE TO RESIST 6200 LB VERTICAL DOWNWARD LOAD OR 1700 LB VERTICAL UPWARD LOAD. LOADS ARE UNFACTORED.

KEY NOTES

1 REFER TO STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) PRODUCT TECHNICAL INFORMATION (PUBLICATION ICBO ER-4943P) FOR ADDITIONAL INFORMATION.

WALLS:
APPLY BASE LAYER 5/8" MR (GREEN) GYPBD BOTH SIDES PARALLEL TO 362S200-68 STEEL STUDS @ 24" O.C. AND TRACK WITH 1-5/8" TYPE S-12 DRYWALL SCREWS 12" O.C., STAGGER JOINTS 24" O.C. EACH SIDE. STUDS ATTACHED TO EACH SIDE OF TOP AND BOTTOM TRACKS WITH 1/2" TYPE S-12 PAN HEAD SCREWS, TRACKS ATTACHED TO CONCRETE SLAB AND ROOF WITH 0.145"Ø HILTI POWDER ACTUATED FASTENER X 0'-1-1/2" EMBEDMENT @ 12" O.C.. STUD TRACKS SHALL BE SET IN SEALANT BEAD PRIOR TO FASTENING TO SUBSTRATE. SET STUD AGAINST WALLS IN SIMILAR MANNER.

TAPE AND MUD GYPBD JOINTS SMOOTH. PERIMETER SEAL AGAINST ALL ADJACENT SURFACES. PROVIDE BASE TRIM AT BOTTOM OF WALLS. TIGHTLY SEAL ALL CONDUIT AND DUCT PENETRATIONS. KEEP ANNULAR SPACE AT ALL CONDUIT AND DUCT PENETRATIONS TO A MINIMUM. COORDINATE WITH ELECTRICAL AND HVAC DRAWINGS.

REV	DATE	BY	DESCRIPTION

DESIGNED PAS
DRAWN DMS
CHECKED GLS
DATE APRIL 2010
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY

PS 428 BOOSTER PUMP STATION

ELECTRICAL BUILDING OVERALL SECTION AND DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. S-03

Last Opened by:6-04-10 04:01pm DPerry
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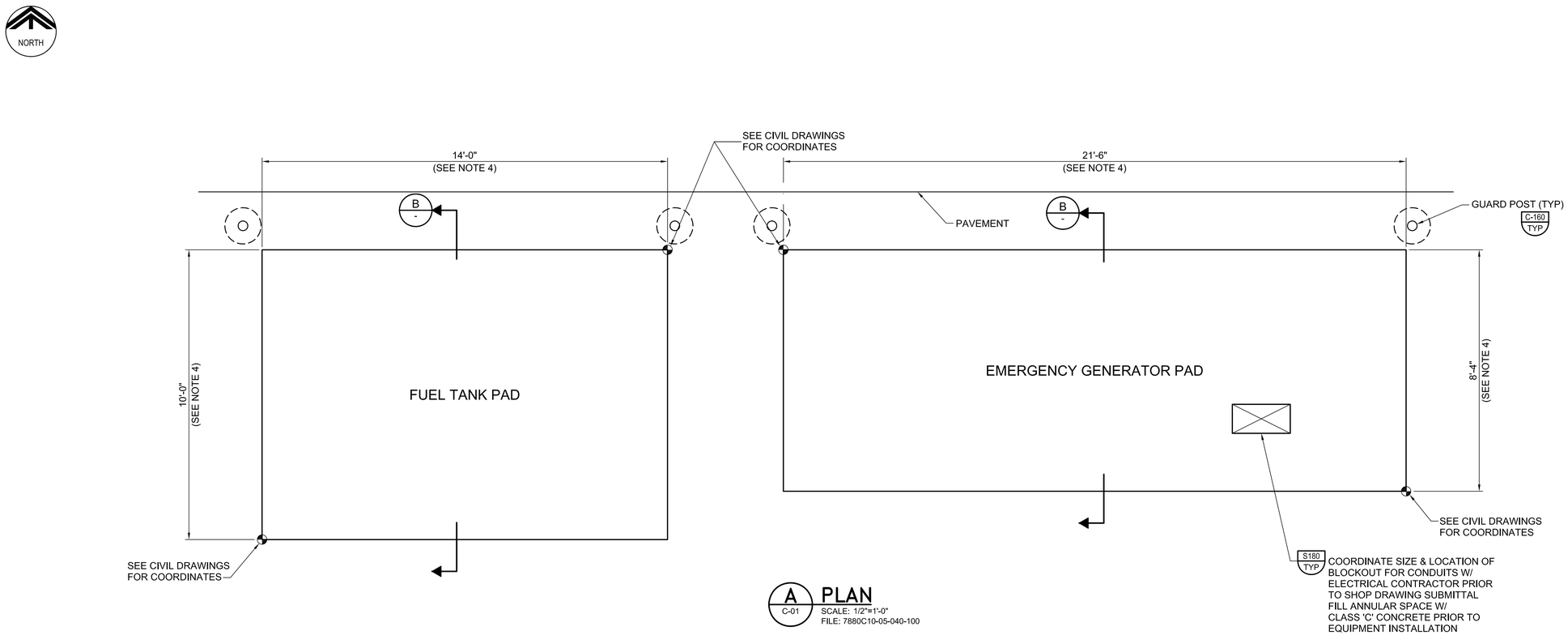
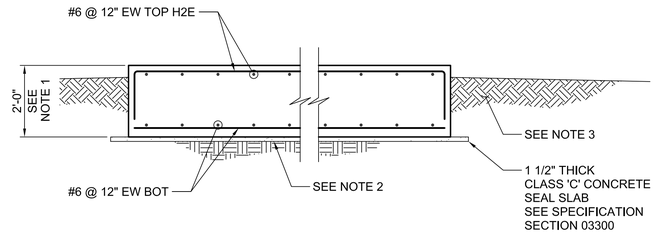


A C-01 **PLAN**
SCALE: 1/2"=1'-0"
FILE: 7880C10-05-040-100

NOTES:

1. PROVIDE 18" MINIMUM SOIL COVER. IF TOP OF SLAB IS MORE THAN 6" ABOVE GRADE, INCREASE SLAB THICKNESS TO MAINTAIN 18" MINIMUM SOIL COVER.
2. REMOVE TREES AND VEGETATION, DEWATER EXCAVATION AREA TO 3'-0" BELOW BOTTOM OF SLAB. CONTRACTOR, OBTAIN NECESSARY PERMITS TO DEWATER EXCAVATION SITE. DISCHARGE WATER AS DIRECTED BY CLIENT OR PERMIT-ISSUING AUTHORITY. PROOF ROLL AS DIRECTED BY THE ENGINEER. ADJUST MOISTURE CONTENT IN SOIL PER ENGINEER'S RECOMMENDATIONS, COMPACT 12-INCH SOIL DEPTH SOIL DIRECTLY BELOW FOUNDATIONS TO A 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY. PLACE 1 1/2" LEAN CONCRETE SEAL SLAB BELOW CAST-IN-PLACE CONCRETE SLABS.
3. BACKFILL STRUCTURES WITH SAND FILL PLACED IN 12-INCH LIFTS EXCEPT AGAINST WALLS WHERE LOOSE 6-INCH LIFTS ARE RECOMMENDED. ACCEPTABLE FILL SHALL BE FINE TO MEDIUM SAND WITH LESS THAN 12% PASSING THE NO. 200 SIEVE, FREE OF RUBBLE, ORGANICS, CLAY, AND DEBRIS. COMPACT SOIL DIRECTLY BELOW FOUNDATIONS TO A 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY.
4. EXTEND PAD 12" BEYOND GENERATOR ENCLOSURE AND FUEL TANK ON ALL 4 SIDES. CONTRACTOR SHALL COORDINATE SIZE OF PAD WITH GENERATOR SUPPLIER AND FUEL TANK SUPPLIER.



B - **SECTION**
SCALE: 1/2"=1'-0"
FILE: 7880C10-05-040-300

Last Opened by: 6-04-10 04:01pm DPerry

REV	DATE	BY	DESCRIPTION

DESIGNED PAS
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CHECKED GLS
DATE APRIL 2010
PROJECT ENGINEER

carollo
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SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
EMERGENCY GENERATOR AND FUEL TANK PLAN AND SECTION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. S-04

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GROUNDING NOTES

1. 3/4" DIA. x 10' LONG COPPERWELD SECTIONAL GROUND ROD(S) COUPLED TOGETHER AS REQUIRED TO GIVE A MAXIMUM SYSTEM RESISTANCE OF 5 OHMS TO GROUND.
2. GROUNDING INSTALLATION SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND SUCH LOCAL CODES WHICH HAVE PRECEDENCE.
3. LOCATION OF GROUNDING LOOP IS SHOWN SCHEMATICALLY. EXACT LOCATION TO MAINTAIN CLEARANCE FROM FOOTERS SHALL BE DETERMINED IN THE FIELD.
4. TOP OF GROUNDING RODS SHALL BE 30" BELOW GRADE.
5. NO.4/0 AWG BARE STRANDED COPPER GROUND WIRE IS TO BE USED FOR THE MAIN GROUND LOOPS, AND WHEN RUN UNDERGROUND, SHALL BE BURIED A MINIMUM OF 30" BELOW GRADE. NO.2/0 AWG BARE STRANDED COPPER GROUND WIRE IS TO USED FOR THE TAPS. UNLESS NOTED OTHERWISE.
6. GROUND WIRE RUNS, BETWEEN POINTS OF CONNECTIONS, SHALL BE AS SHORT AND STRAIGHT AS POSSIBLE.
7. ALL SURFACES TO BE GROUNDED SHALL BE THOROUGHLY CLEANED TO BARE METAL BEFORE ATTACHING GROUND CONNECTION.
8. GROUND RESISTANCE SHALL NOT EXCEED 5 OHMS. THE RESISTANCE TO GROUND SHALL BE MEASURED BY A LOW RESISTANCE TYPE OF MEGGER. MEASUREMENTS SHALL BE MADE BY FALL-OF-POTENTIAL OR 3-POINT METHOD AS DESCRIBED IN JAMES G. BIDDLE PUBLICATION NO. 25-J-3. THE 5 OHMS SHALL BE MEASURED WITH THE GROUND POINT ISOLATED AND NO OTHER GROUND WIRES OR POINTS TIED INTO THE GROUND RODS UNDER TEST. THERE SHALL BE NO TREATMENT OF THE SOIL AROUND THE GROUND RODS TO IMPROVE THE RESISTANCE.
9. IF THE MEASURED RESISTANCE TO GROUND DOES NOT MEET THE REQUIRED VALUE, EXTENSIONS SHALL BE COUPLED TO THE ROD OR ADDITIONAL RODS SPACED 10' APART SHALL BE DRIVEN AND CONNECTED BY NO. 4/0 AWG STRANDED BARE COPPER CABLE.
10. GROUNDING CONDUCTORS SHALL BE SUPPORTED FROM STEEL AND MASONRY, WHERE NO OTHER SUPPORT IS AVAILABLE. GROUNDING CONDUCTORS SHALL BE SUPPORTED ON CONDUIT. GROUNDING CONDUCTORS SHALL NOT BE FASTENED TO PIPING.
11. WHERE GROUNDING WIRE RISES TO ELECTRICAL EQUIPMENT, COLUMNS, VESSELS, ETC. THROUGH EARTH OR CONCRETE SLABS, THE WIRE SHALL BE PROTECTED BY SCHEDULE 80 PVC CONDUIT.
12. ALL DETAILS CALL FOR CADWELD TYPE CONNECTIONS, SUCH AS TYPE HA, HS, HC OR HT FOR HORIZONTAL TAPS TO STRUCTURAL STEEL, TYPE VB, VL, VN, VS, VV, VX AND VT FOR VERTICAL TAPS TO STRUCTURAL STEEL AND TYPE RR, DR, RW, RH, RT OR RC FOR CABLE TO REBAR TAPS.
13. NO.3/0 AWG BARE COPPER FROM GROUND GRID TO AIR TERMINALS ON THE ROOF OR STRUCTURE AS REQUIRED FOR A BONDED LIGHTNING PROTECTION SYSTEM. PROVIDE A MASTER LABELED LIGHTNING PROTECTION SYSTEM PER THE LIGHTNING PROTECTION SPECIFICATION SECTION. THE RISER CABLES WILL BE ENCASED IN THE WALLS OR INSIDE THE BUILDING IN 1" SCH. 80 PVC CONDUIT. WHEN EXPOSED, THERE SHALL BE NO BARE CABLE RISERS ON THE WALLS OR ROOF THAT WILL BLEED WHEN EXPOSED TO WATER OR MOISTURE.

GROUNDING SYMBOLS

- CADWELD TYPE TA, SC OR PA CONNECTION FOR HORIZONTAL TEE (TA) OR SPLICE (SC) OF THREE (3) CABLES OR PARALLEL, HORIZONTAL TAP (PA) OF SIDE BY SIDE CABLES.
- CADWELD TYPE GR CONNECTION FOR HORIZONTAL CABLE TO VERTICAL DOWN GROUND ROD.
- CADWELD TYPE GY OR GT CONNECTION FOR VERTICAL ROD TO HORIZONTAL LAPPED, UNCUT CABLE (GY) OR HORIZONTAL CABLE TEE TO VERTICAL ROD (GT).
- BELOW GRADE GROUND CABLE

LEGEND

- CIRCUIT BREAKER PANELBOARD
- A / b — LIGHTING FIXTURE, CEILING MOUNTED
- B / c — LIGHTING FIXTURE, WALL MOUNTED
- C / d — LIGHTING FIXTURE, FLUORESCENT
- CEL / b — LIGHTING FIXTURE, FLUORESCENT WITH EMERGENCY BALLAST

  (UPPER CASE LETTER DESIGNATES FIXTURE TYPE IN FIXTURE SCHEDULE, LOWER CASE LETTER DESIGNATES CONTROLLING SWITCH)
- EMERGENCY LIGHTING UNIT
- EMERGENCY EXIT LIGHT
- SINGLE LAMP WALL MOUNT FLOOD LIGHT
- POLE MOUNTED DUAL FLOOD LIGHT
- DUPLEX WALL RECEPTACLE
- WP — WEATHERPROOF DUPLEX RECEPTACLE
- GFI — GROUND FAULT INTERRUPTER DUPLEX WALL RECEPTACLE
- SINGLE WALL RECEPTACLE, 208V, 20A, 3W
- WELDING OUTLET RECEPTACLE
- J — JUNCTION BOX
- $d — WALL MOUNTED TUMBLER LIGHT SWITCH
- $3a — 3-WAY WALL MOUNTED TUMBLER LIGHT SWITCH
- $4b — 4-WAY WALL MOUNTED TUMBLER LIGHT SWITCH

  (LOWER CASE LETTER DESIGNATES FIXTURE CONTROLLED)
- PE — PHOTOCELL
- T — THERMOSTAT
- NON-FUSED DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- CONDUIT CONCEALED IN CEILING OR WALL
- CONDUIT IN/OR UNDER FLOOR OR UNDERGROUND
- CONDUIT EXPOSED

  (SHORT MARK INDICATES PHASE WIRE; LONG MARK INDICATES NEUTRAL; LONG MARK W/PERPENDICULAR LINES INDICATES GROUND WIRE)
- XXXXX — CONDUIT/CIRCUIT NUMBER, DESCRIPTION SHOWN ON CONDUIT AND WIRE SCHEDULE DRAWINGS

GENERAL INSTALLATION NOTES

1. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NEMA 4X 316 S.S. J-BOXES AT COMMON CONTROL, INSTRUMENTATION, POWER AND LIGHTING JUNCTION BOXES FOR SPLITS TO INDIVIDUAL CONDUITS. BOXES SHALL BE EQUAL TO HOFFMAN NO. A-12106CHNFSS6 (316 S.S.) AS A MINIMUM. ALL SPARE CABLES SHALL BE COILED UP IN THE BOXES. CABLES SHALL BE PULLED WITHOUT SPLICES THROUGH ANY JUNCTION BOX.
2. ALL FITTINGS SHALL BE THREADED ALUMINUM WITH ALUMINUM COVERS, STAINLESS STEEL SCREWS AND SOLID NEOPRENE GASKETS. ALL FITTINGS SHALL BE CAST ALUMINUM. THE FITTINGS SHALL BE EQUAL TO CROUSE HINDS FORM 7-SA FOR SAND CAST ALUMINUM OR FORM 9 DIE CAST FROM 3/4" TO 2" AND SAND CAST ABOVE 2".
3. ALL INSTRUMENTATION CONDUITS NOTED AS RGS/CONC. SHALL BE RIGID GALVANIZED STEEL ENCASED IN CONCRETE WITH GROUNDING BUSHINGS CONNECTED WITH NO.6 AWG MINIMUM STRANDED COPPER TYPE THW GREEN INSULATED WIRE. THE TRANSITION FOR ALL CONDUITS FROM THE UNDERGROUND CONDUIT TO THE ABOVE GRADE SHALL BE MADE WITH RIGID GALVANIZED STEEL WITH THE EXTERIOR SURFACE PAINTED WITH TWO (2) COATS (6 MILS EACH MINIMUM) OF COAL TAR EPOXY OR AN ENGINEER APPROVED EQUAL, OR A 40mil PVC COATING. THE COATING SHALL COVER THE RGS A MINIMUM OF 6" ABOVE AND BELOW FINISHED GRADE OR CONCRETE SLAB. THERE SHALL NOT BE ANY RIGID GALVANIZED CONDUIT IN DIRECT CONTACT WITH THE GROUND.
4. ALL ABOVE AND BELOW GRADE CONDUITS SHALL BE SCHEDULE 80 PVC WITH THE EXCEPTION OF INSTRUMENT CONDUITS DESCRIBED IN NOTE 3. ALL BELOW GRADE CONDUITS THAT ARE NOT UNDER A SLAB SHALL BE ENCASED IN CONCRETE WITH POWER AND CONTROL CONDUITS USING PVC AND INSTRUMENTATION CONDUITS USING ONLY RIGID GALVANIZED STEEL.
5. THE CONTRACTOR SHALL REVIEW WITH THE SELECTED VFD AND INVERTER DUTY MOTOR SUPPLIER, THE SPECIFICS OF THE INSTALLATION TO FIND OUT AND MAKE PROVISIONS FOR ANY SPECIAL REQUIREMENTS FOR MOTOR LEAD FEEDER CABLES AND CONDUITS FOR THE VFD OPERATED MOTOR INSTALLATIONS. THE CONTRACTOR SHALL SUPPLY ALL SPECIAL SIZED OR TYPE OF MOTOR LEAD FEEDER CABLES IF REQUIRED BY THE VFD OR INVERTER DUTY MOTOR SUPPLIERS.
6. THE DEPTH OF ALL ELECTRICAL AND INSTRUMENTATION CONDUITS IS CRITICAL TO NOT INTERFERE WITH PROCESS PIPING. ALL ELECTRICAL AND INSTRUMENTATION CONDUITS SHALL BE COORDINATED WITH THE PROCESS PIPING, THE CONTRACTOR(S) MUST REVIEW ALL STRUCTURAL, PIPING AND MECHANICAL DRAWINGS TO DETERMINE THE DEPTH REQUIREMENTS OF THE CONDUITS WITH THE PROCESS PIPING AND TRENCHES, AND FURNISH CONDUITS AT THE REQUIRED DEPTHS. THE CONTRACTOR(S) WILL FURNISH ALL LABOR REQUIRED TO MODIFY THE CONDUIT RUNS THAT ARE NOT AT THE CORRECT DEPTH AND INTERFERE WITH THE PROCESS PIPING.
7. THE EXACT OR FINAL LOCATION OF ALL CONDUIT PENETRATIONS THROUGH THE SLAB, ACTIVE OR EMPTY FOR CABLES, CONTROL SWITCH LOCATIONS, SUPPORTS FOR INSTRUMENT TRANSMITTERS AND PROCESS TAPS TO THE INSTRUMENTATION WILL BE VERIFIED WITH THE ENGINEER AND GENERAL CONTRACTOR BEFORE INSTALLATION. THE CONTRACTOR(S) WILL FURNISH ALL MATERIAL AND LABOR REQUIRED TO MODIFY THE LOCATIONS THAT ARE INCORRECT AND WERE NOT APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
8. ALL ELECTRICAL EQUIPMENT LOCATED OUTDOORS SHALL BE STAINLESS STEEL, ALUMINUM OR NON-METALIC EXCEPT THAT THE HVAC UNIT AND GENERATOR SHALL BE AS SPECIFIED. ALL ELECTRICAL EQUIPMENT MOUNTED ON MASONARY WALLS WHETHER INDOOR OR OUTDOOR SHALL BE MOUNTED ON SPACERS, 5/8" UNISTRUT CHANNEL OR APPROVED EQUAL. ALL UNISTRUT MOUNTED ON WALLS BEHIND EQUIPMENT SHALL BE RUN VERTICALLY SO THAT MOISTURE AND DIRT CANNOT BE TRAPPED ABOVE THE UNISTRUT. UNISTRUT SHALL NOT EXTEND ABOVE OR BELOW THE EQUIPMENT ENCLOSURE UNLESS NEEDED TO ATTACH EQUIPMENT MOUNTING EARS TO THE UNISTRUT. ALL EQUIPMENT SUPPORTS, SPACERS, MOUNTING HARDWARE, UNISTRUT, ANCHORS, BOLTS, NUTS, WASHERS, ETC INSTALLED OUTDOORS SHALL BE STAINLESS STEEL.
9. RIGID PVC CONDUITS ABOVE GRADE SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 352 AND TABLE 352-30(B) BOTH HORIZONTALLY AND VERTICALLY.
10. ALL STAND ALONE FLOOR MOUNTED ELECTRICAL CABINETS SHALL BE INSTALLED ON A 4" HIGH CONCRETE EQUIPMENT PAD AND SHALL BE SPACED AWAY FROM THE WALLS A MINIMUM OF 1".

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN DLA
CHECKED RG
DATE AUGUST 2009

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA,FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL
GENERAL NOTES AND LEGEND

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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JOB NO. 7880C.10
DRAWING NO. E-01

Last Opened by: 6-04-10 04:06pm DPerry

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600 AMP, 480/277 VOLT PARALLEL SERVICE, (4) 350Kcmil THHN/THWN AND 1-NO.1 AWG THHN/THWN GND IN EACH OF (2) 3" SCH.80 PVC BELOW GRADE AND RIGID ALUM. ABOVE GRADE ALL BY THE CONTRACTOR

S2 (2)

INCOMING LUGS FOR (2) 350Kcmil AWG MIN. COPPER CABLE PER PHASE ON MAIN BREAKER BUS

AN ALTERNATE TO INDIVIDUAL METERS, SWITCHES AND WATT TRANSDUCER IS A MULTI-METERING AND ANALOG OUTPUT UNIT EQUAL TO A SQUARE D POWER LOGIC POWER MONITOR W/ VOLTAGE MODULE. EATON CUTLER HAMMER IQ ANALYZER 6000 SERIES UNIT OR A GE MULTILIN SR750. THE THREE (3) PHASE TOTAL WATTS AND METERING OUTPUT SIGNALS SHALL RUN TO A PLC ANALOG INPUT IN PANEL MCP.

FDR/MCB/ATS (2)

AUTOMATIC TRANSFER SWITCH

FDR/ATS/SWBD1 (2)

SWBD1
MAIN SWITCHBOARD W/600 AMP, 3 PHASE, 3 WIRE COPPER BUS, 65 KAIC AT 480V, NOTE 17

1A

MPST1
480/277VAC WYE SECONDARY POLE MOUNT TRANSFORMERS FURNISHED BY THE POWER COMPANY AND INSTALLED ON THE POLE WITH THE SECONDARY CONDUITS, STUB-OUTS NOTE 1

LIGHTNING ARRESTER
L/SA
NOTE 3

600A FRAME
600A TRIP
TM
100% RATED

600 AMP FEED THROUGH METER
NOTE 1

S/N

SOLID NEUTRAL BUS
NOTE 2

BONDING PER NEC 250-28

GROUND BUS

NO.4/0 AWG BARE COPPER GROUNDING ELECTRODE CONDUCTOR

5 OHM MAXIMUM GROUNDING GRID SYSTEM AROUND TRANSFORMER PAD

S1 (2)

POWER COMPANY HAND HOLE NEAR THE BASE OF THE POLE
NOTE 1

SPD

SURGE PROTECTOR
NOTE 4

600/5 CT'S (2)
NOTE 5

AM
AS

PT'S (2) 480/120V
NOTE 5

BUSS TYPE KTK (3) 1A 600V

BUSS TYPE FNM (3) 2A 250V

VM
VS

WATT TRANS. JTMCB

PMMCB
PHASE MONITOR

SEE SCHEMATIC ON DWG. E-03

SEE SCHEMATIC ON DWG. E-03
NOTE 6

GROUND ROD(S) FOR 5 OHM MAXIMUM GROUNDING ELECTRODE SYSTEM

MAIN CIRCUIT BREAKER
65 KAIC AT 480V
NOTE 16

C/MCB/MCP

TO MCP

I/MCB/MCP

OPERATING MECHANISM

CONTROL PANEL GEN. START

ATS
600 AMP, 600VAC AUTOMATIC TRANSFER SWITCH, 3 PHASE, 3 WIRE, 3 POLE OPEN TRANSITION 65 KAIC WITH STAND RATING AT 480V PER SPECIFICATION 16231

C/GEN/ATS

C/ATS/MCP

S/STANDBY (2)
3-350Kcmil AWG THHN/THWN AND 1-NO.1 AWG THHN/THWN GND PER PHASE IN EACH OF (2) 3" SCH.80 PVC BELOW GRADE

480V, 3 PHASE, 3 WIRE STANDBY POWER GENERATOR WITH INTEGRAL FUEL OIL TANK IN BASE AND JACKET WATER HEATER WITH A THERMOSTAT. ENTIRE UNIT WILL BE IN A WEATHERPROOF SOUND ATTENUATED ENCLOSURE, PER SPECIFICATION 16231.
NOTE 14

600A FRAME
600A TRIP
TM
80% RATED

STANDBY 300KW 0.8PF

GEN

CONTROL PANEL SECTION OF GENERATOR

C/GEN/MCP

I/GEN/MCP

TO LP1

P/GEN

BUSS TYPE KTK (3) 1A 600V

150A FRAME
30A TRIP
TM

SWBD1/PM

SEE SCHEMATIC ON DWG. E-03

SWBD1 PHASE MONITOR

150A FRAME
30A TRIP
TM

SWBD1/SPD

NOTE 15

SPD

SURGE PROTECTOR

150A FRAME
15A TRIP
TM

P/AH-1

DSAH1
30 AMP
NOTE 13

AH-1

A/C AIR HANDLING UNIT

150A FRAME
30A TRIP
TM

P/CU-1

DSCU1
30 AMP
NOTE 13

CU-1

A/C COMPRESSOR UNIT

150A FRAME
30A TRIP
TM

P/PCPMOV100

MOTORIZED VALVE POWER AND CONTROL PANEL

C/FCV101
P/FCV101
DS101
CJB101
MOV

FCV101

C/FCV102
P/FCV102
DS102
CJB102
MOV

FCV102

MOTORIZED VALVES

150A FRAME
45A TRIP
TM

P/LT1

LT1
TRANSFORMER 480-208/120V 3 PHASE, 4 WIRE 30KVA
NOTE 19

LP1
NOTE 20

150A FRAME
20A TRIP
TM

P/HOIST

J

M

MONORAIL HOIST

CONTINUED BELOW LEFT

C/SWBD1/MCP

C/PCPMOV100

ANTENNA

TELEMETRY SYSTEM
NOTE 18

MCP/ANTENNA

MCP
PUMP STATION MAIN CONTROL PANEL WITH PLC, CONTROL RELAYS, ETC. AND TELEMETRY

TO LP1

P/MCP

C/MCP/ENV

I/MCP/ENV

C/VFD1/MCP
C/VFD2/MCP
C/VFD3/MCP

I/VFD1/MCP
I/VFD2/MCP
I/VFD3/MCP

CONTINUED ABOVE RIGHT

SWBD1
MAIN SWITCHBOARD

250A FRAME
225A TRIP
TM

3 POLE SPACE 4-1/2"

FDR/M301
FDR/M302
FDR/M303

FILTERS
NOTE 9

250A FRAME
200A TRIP
TM

BYPASS

SERVICE SWITCH

VFD FUSES

HMI301
HOA301
BYP301

HMI302
HOA302
BYP302

HMI303
HOA303
BYP303

LINE REACTORS
NOTE 9

VFD1
162 FULL LOAD AMPS CONSTANT TORQUE VFD 125 HP ACS800 DRIVE

VFD2
162 FULL LOAD AMPS CONSTANT TORQUE VFD 125 HP ACS800 DRIVE

VFD3
162 FULL LOAD AMPS CONSTANT TORQUE VFD 125 HP ACS800 DRIVE

OUTPUT

SEE PLANS FOR CONDUITS

NOTE 10

P/MH300
P/M301
P/M302
P/M303

NOTE 11

DS301
DS302
DS303
200 AMP
NOTE 12

MTS301 MOTOR TEMP SWITCH
PSH301 PRESSURE SWITCH
ZS301 CHECK VALVE LIMIT SWITCH

MTS302 MOTOR TEMP SWITCH
PSH302 PRESSURE SWITCH
ZS302 CHECK VALVE LIMIT SWITCH

MTS303 MOTOR TEMP SWITCH
PSH303 PRESSURE SWITCH
ZS303 CHECK VALVE LIMIT SWITCH

100

MH301 MOTOR HEATER
MH302 MOTOR HEATER
MH303 MOTOR HEATER

BOOSTER PUMP NO.1
MOTOR M301

BOOSTER PUMP NO.2
MOTOR M302

BOOSTER PUMP NO.3
MOTOR M303

PUMP STATION CHAMBER ENVIRONMENTAL CONTROL PANEL

P/ENV2

TO LP1

TO MCP

P/ENV1

C/M304

PJB304

P/M304

DS304

M

PUMP STATION CHAMBER ENVIRONMENTAL BLOWER MOTOR M304 120VAC

480VAC, 3 PHASE SERVICE LOAD CALCULATIONS				
EQUIPMENT DESCRIPTION	HP	KVA	KW	AMPS
125% CONTINUOUS MOTORS AT 480VAC	202			303
NON-CONTINUOUS MOTORS AT 480VAC	100			144
HVAC, LIGHTING AND MISC. LOAD			30	36
CALCULATED LOAD - AMPS				483
SERVICE CONDUCTORS RATING AT 75°C				620
SERVICE MAIN BREAKER SIZE				600

CIRCUIT BREAKER LEGEND

FRAME SIZE FOR TM
CONT. AMPS FOR MAG
TRIP FOR MAG OR TM

NA = NON-AUTOMATIC
TM = THERMAL MAGNETIC
MAG = MAGNETIC TRIP ONLY

FOR SINGLE LINE NOTES SEE DWG. E-03

NOT FOR CONSTRUCTION

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN DLA
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL
SINGLE LINE DIAGRAM

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. E-02

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NOTES:

1. THE CONTRACTOR SHALL COORDINATE ALL SERVICE INSTALLATION REQUIREMENTS WITH THE POWER COMPANY AND FURNISH ALL MATERIAL AND LABOR NOT FURNISHED BY THE POWER COMPANY TO COMPLETE THE SERVICE. THIS WORK WILL INCLUDE THE KWH METERING, AND ALL ELECTRICAL CONSTRUCTION WORK REQUIRED FOR THE INSTALLATION OF A NEW POWER COMPANY POLE AND 3 PHASE POLE MOUNT TRANSFORMER BANK. THE SCOPE OF THIS WORK IS FROM THE POWER COMPANY POLE MOUNTED TRANSFORMERS, TO THE SECONDARY METERING, CONDUITS AND CABLES, THE FIVE (5) OHMS MAXIMUM GROUND GRID AND TAPS TO THE METER AND MAIN CIRCUIT BREAKER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SITE PREPARATION. ALL THIS WORK SHALL BE IN STRICT ACCORDANCE WITH THE POWER COMPANY REQUIREMENTS FOR ELECTRIC SERVICE AND METER INSTALLATIONS. THE EXACT LOCATION OF THE POLE AND HAND HOLE WILL BE DETERMINED IN THE FIELD WHEN SITE PREPARATION AND TREE REMOVAL WORK HAS BEEN ESTABLISHED. THE CONTRACTOR SHALL FURNISH AND INSTALL THE 600 AMP, 3 PHASE, 4 WIRE METER BASE IN AN ALUMINUM ENCLOSURE, AND MEETING ALL POWER COMPANY REQUIREMENTS. THE METER BASE SHALL BE EQUAL TO MILBANK CAT. NO. UA4667-XT-9527 WITH POWER COMPANY APPROVAL.

2. THE 350Kcmil THHN/THWN GROUNDED CONDUCTORS OR NEUTRAL OF THE 480/277VAC WYE SECONDARY WILL TERMINATE ON A NEUTRAL BUS BAR IN THE 600 AMP MAIN BREAKER. THE GROUNDED CONDUCTORS OR NEUTRAL OF THE 480/277VAC WYE SECONDARY WILL NOT BE EXTENDED TO THE ATS OR SWBD1. THERE ARE NO 277 VOLT LOADS IN THE PUMP STATION.

3. THE CONTRACTOR WILL CONFIRM WITH THE POWER COMPANY THE TYPE OF SERVICE THAT WILL POWER THESE PANELS TO INSURE COMPATIBILITY WITH THE LIGHTNING ARRESTER AS IT MUST BE UL APPROVED FOR THE APPLICATION. THE CONTRACTOR WILL FURNISH AND INSTALL THE LIGHTNING ARRESTOR FOR THE 3 PHASE, 480VAC, 4 WIRE SERVICE ENTRANCE. THE ARRESTOR SHALL BE EQUAL TO A SQUARE D CLASS 6671, CAT. NO. SDSA3650.

4. THE CONTRACTOR WILL CONFIRM WITH THE POWER COMPANY THE TYPE OF SERVICE THAT WILL POWER THESE PANELS TO ASSURE COMPATIBILITY WITH THE SPD UNIT, AS IT MUST BE UL APPROVED FOR THE APPLICATION. THE CONTRACTOR WILL FURNISH AND INSTALL THE SPD UNIT IN A NEMA 4 ENCLOSURE TO MOUNT INSIDE OR OUTSIDE THE MCB ENCLOSURE. THE UNIT SHALL BE 3 PHASE, 480VAC, 4 WIRE PLUS A GROUND, 300KA/PHASE PEAK SURGE CURRENT TRANSIENT VOLTAGE SURGE SUPPRESSOR FOR LINE TO LINE, LINE TO GROUND, LINE TO NEUTRAL AND NEUTRAL TO GROUND PROTECTION WITH LESS THAN 1 NANOSECOND RESPONSE TIME. EATON, INNOVATION TECHNOLOGY, INC. MODEL PTX300Y201-D. NO SPLICING OF SPD LEADS PERMITTED. THE FACTORY REPRESENTATIVE IS ALPHA POWER SYSTEMS PHONE NO. (813) 805-9506 AND THE FACTORY NO. IS (800) 647-8877.

5. IN THE METERING SECTION OF MAIN CIRCUIT BREAKER METAL ENCLOSURE MCB THERE SHALL BE TWO (2) INCOMING LINE CT'S FOR THE AMMETER AND KW TRANSMITTER THAT ARE 5 ANSI METERING CLASS B0.1 (0.3) TO B1.8 (0.6) WINDOW TYPE WITH 2.0" DIA. MINIMUM WINDOW, TYCO ELECTRONICS CROMPTON INSTRUMENTS MODEL 65-601. THE TWO (2) PT'S FOR THE VOLTMETERS ARE 480/480Y, 4:1 RATIO, 120V SECONDARY METERING CLASS 150VA AT 30°C, TYCO ELECTRONICS CROMPTON INSTRUMENTS CAT. NO. 460-480.

6. JTMCB IS A 3 PHASE, 3 WIRE UNBALANCED LOAD WATT TRANSDUCER WITH 3 PHASE, 3 WIRE 120VAC INPUTS FROM THE TWO (2) OPEN DELTA 480 TO 120VAC POTENTIAL TRANSFORMERS THE TWO (2) 600/5 CT'S, SELF POWERED AND A 4-20MADC OUTPUT. TYCO ELECTRONICS, CROMPTON INSTRUMENTS CAT. NO. 256-TWM-120VAC FROM 4:1 PT'S - 600/5 CT'S AND 4-20MADC OUTPUT = 0-498.83 KW.

7. THE METERING SECTIONS OF MCB SHALL HAVE THE DETAILED TERMINAL BLOCKS FOR THE INTERCONNECTION OF THE WATT TRANSDUCER JTMCB AND PHASE MONITORS TO THE METERING SECTION DOORS AND THE REMOTE PLC IN MCP.

8. CONDUIT AND CONTROL WIRING FOR ALL CONTROL CONNECTIONS AND INTERLOCKS BETWEEN ATS, GENERATOR, MCP, SWBD1 AND ALL PUMP CONTROL PANELS TO BE FURNISHED BY ELECTRICAL CONTRACTOR FOR A COMPLETE AND OPERABLE SYSTEM.

9. THE VFD MANUFACTURER SHALL FURNISH AND INSTALL LINE REACTORS BETWEEN THE VFD CIRCUIT BREAKER AND THE LINE SIDE OF 6-PULSE VFD'S TO MEET IEEE 519 STANDARD FOR BOTH CURRENT AND VOLTAGE DISTORTION. IF THE VFD MANUFACTURER'S VFD CANNOT MEET THE REQUIREMENTS OF UL519 AS IDENTIFIED IN VFD SPECIFICATION 16370 WITH LINE SIDE REACTORS ONLY, THE CONTRACTOR / VFD MANUFACTURER SHALL FURNISH AND INSTALL EXTERNALLY MOUNTED LINE SIDE HARMONIC FILTERS, WALL MOUNTED ABOVE EACH VFD CABINET HARMONIC FILTERS SHALL BE MIRUS LINEATOR HARMONIC FILTERS CAT. NO. AUHF-125-480-60-D-EI-O OR APPROVED EQUAL FILTER THAT HAS BEEN TESTED TO FUNCTION PROPERLY WITH THE MANUFACTUER'S VFD.

10. THE ELECTRICAL CONTRACTOR SHALL REVIEW WITH THE VFD MANUFACTURER THE PROPOSED INSTALLATION OF THE VFD AND MOTOR TO DETERMINE IF THE DISTANCE FROM THEIR VFD TO THE MOTOR REQUIRES THE ADDITION OF FILTERS, REACTORS OR REFLECTED WAVE TRAPS ON THE LOAD SIDE OF THE VFD TO PROTECT A STANDARD MOTOR FROM VFD GENERATED VOLTAGE SPIKES. THE SELECTED VFD MANUFACTURER AND ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ANY FILTERS, REACTORS OR REFLECTED WAVE TRAPS REQUIRED TO MATCH THE VFD TO A STANDARD MOTOR AT THE DISTANCE SHOWN FOR EACH VFD OPERATED MOTOR. THE OUTPUT FILTERS SHALL BE EQUAL TO TCI PART NO. KLCUL (AMPS) SIZED FOR THE OUTPUT AMPERES OF THE VFD. THE SELECTED VFD MANUFACTURER AND ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ANY HARMONIC REDUCTION EQUIPMENT THAT IS NOT AN INTEGRAL PART OF THE VFD IF REQUIRED BY THE VFD MANUFACTURER. THIS IS REQUIRED TO PROTECT THE MOTOR CONNECTED TO THE VFD AND ANY EQUIPMENT CONNECTED TO THE COMMON MAIN SWBD BUS, FROM EXCESSIVE HARMONICS THAT IS PRODUCED BY THE VFD.

11. ALL ELECTRICAL MOTORS, LIGHTS, DEVICES, ETC LOCATED IN THE SUB-GRADE PUMP STATION CHAMBER SHALL BE FURNISHED AND INSTALLED BY THE PUMP STATION CHAMBER MANUFACTURER AS PART OF THE PREASSEMBLED PACKAGE PUMP STATION. ALL ELECTRICAL CONDUCTORS SERVING EQUIPMENT IN THE CHAMBER WILL TERMINATE IN THE ENVIRONMENTAL PANEL IN THE SUB-GRADE CHAMBER. THE CONTRACTOR SHALL COORDINATE WITH THE CHAMBER MANUFACTURER FOR CONDUCTOR TERMINATION LOCATIONS AND CONDUIT TERMINATIONS IN THE ENVIRONMENTAL PANEL BELOW GRADE. SEE SECTION "A" ON DWG. E-18 FOR REFEREZNCE.

12. BOOSTER PUMP MOTOR DISCONNECTS SHALL BE FURNISHED AND INSTALLED BY THE SUB-GRADE PUMP STATION CHAMBER MANUFACTURER AS PART OF THE PREASSEMBLED PACKAGE.

13. HVAC DISCONNECTS SHALL BE NON-FUSED NEMA 1 INDOOR AND NEMA 4X S.S. ENCLOSED OUTDOOR, SQUARE D CLASS 3110 WITH GROUNDING LUG. DSAH1 INDOOR UNIT, NEMA 1, 30 AMP, CAT. NO. HU361. DSCU1 OUTDOOR UNIT, NEMA 4X, 30 AMP, CAT. NO. HU361DS.

14. THE GENERATOR AND GENERATOR ENCLOSURE WILL BE FURNISHED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE ALL HANDLING, AND INSTALLATION OF THE GENERATOR INCLUDING A CRANE TO OFF LOAD THE GENERATOR AND ENCLOSURE FROM THE DELIVERY TRUCK, AND SETTING THE GENERATOR IN ITS FINAL LOCATION. THE CONTRACTOR SHALL PROVIDE DUNNAGE TO SET THE NEW GENERATOR AND ENCLOSURE IN A TEMPORARY LOCATION AT THE PUMP STATION DURING CONSTRUCTION OF THE CONCRETE PAD.

15. THE CONTRACTOR SHALL FURNISH AND INSTALL THE SPD UNIT IN A NEMA 4 ENCLOSURE TO MOUNT ABOVE SWBD1. THE UNIT SHALL BE 3 PHASE, 480VAC, 3 WIRE PLUS GROUND WITH NO NEUTRAL. 160KA/PHASE PEAK SURGE CIRCUIT TRANSIENT VOLTAGE SURGE SUPPRESSOR FOR LINE TO LINE AND LINE TO GROUND PROTECTION WITH LESS THAN 1 NANOSECOND RESPONSE TIME. EATON, INNOVATIVE TECHNOLOGY, INC. MODLE PTX160NN400. NO SPLICING OF SPD LEADS PERMITTED. THE FACTORY REPRESENTATIVE IS ALPHA POWER SYSTEMS, PHONE NO. (813) 805-9506 AND FACTORY IS (800) 647-8877.

16. THE CONTRACTOR SHALL FURNISH AND INSTALL THE SERVICE ENTRANCE RATED MAIN CIRCUIT BREAKER, 100% RATED, 600 AMP, 3 PHASE, 65KAIC INTERRUPTING RATING WITH NEUTRAL BUS AND GROUND BUS. THE CIRCUIT BREAKER SHALL BE HOUSED IN A SWITCHBOARD STYLE, FREE STANDING CABINET, WITH POWER MONITORING EQUIPMENT AS SHOWN AND NOTED ON DWGS E-02 AND E-03. THE MAIN CIRCUIT BREAKER SHALL BE AS MANUFACTURED BY SCHNEIDER/SQUARE D IN A SQUARE D QED SWITCHBOARD STYLE ENCLOSURE OR APPROVED EQUAL.

17. THE CONTRACTOR SHALL FURNISH AND INSTALL THE MAIN SERVICE SWITCHBOARD ON THE LOAD SIDE OF THE AUTOMATIC TRANSFER SWITCH. THE SWITCHBOARD SHALL BE 65KAIC RATED. AND THE CIRCUIT BREAKERS AND FUSABLE DISCONNECT SHALL BE RATED 65KAIC. WITH CIRCUIT BREAKER PADLOCKING ATTACHMENTS ON ALL CIRCUIT BREAKERS. SWITCHBOARD SWBD1 SHALL BE A SCHNEIDER/SQUARE D, I-LINE PANELBOARD TYPE HCM, SURFACE MOUNTED, 600 AMP, 480V, 3 PHASE, 3 WIRE, COPPER BUS WITH GROUND BUS WITH A LOCKABLE DOOR. PER SPEC. 16160. THE SWITCHBOARD SHALL HAVE 18" OF FUTURE BREAKER MOUNTING SPACE AVAILABLE, SUITABLE FOR FOUR (4) 3-POLE, 4-1/2" I-LINE CIRCUIT BREAKERS.

18. THE CONTRACTOR SHALL FURNISH AND INSTALL THE ENTIRE NEW TELEMETRY SYSTEM FOR THE BOOSTER PUMP STATION. THE CONTRACTOR SHALL CONTRACT DATA FLOW SYSTEMS (DFS), THE MANATEE COUNTY TELEMETRY PROVIDER, FOR THE COMPLETE SYSTEM DESIGN AND INSTALLATION. THE CONTRACTOR SHALL INCLUDE ALL COSTS FOR THE DFS TELEMETRY SYSTEM IN THE CONTRACTOR'S BID PRICE FOR THE PROJECT. THE TELEMETRY SYSTEM INCLUDES, BUT IS NOT NECESSARILY LIMITED TO, THE FOLLOWING:

    a) TELEMETRY SYSTEM DESIGN AND ENGINEERING.

    b) TELEMETRY EQUIPMENT INCLUDING ANTENNA, REMOTE TERMINAL UNIT (RTU) AND ALL CABLES, WIRING AND CONNECTIONS.

    c) FCC RADIO FREQUENCY STUDY AND LICENSING.

    d) CONNECTIONS AND PROGRAMMING WITH THE BOOSTER PUMP STATION MAIN CONTROL PANEL (MCP).

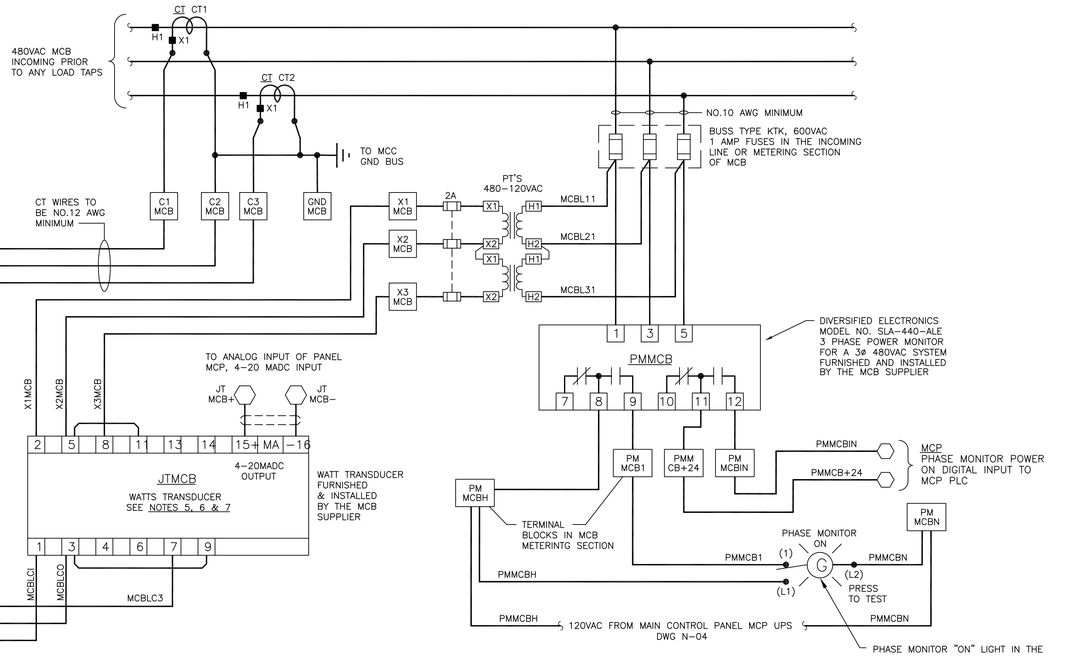
    e) PROGRAMMING AND COMMUNICATIONS WITH MANATEE COUNTY WASTEWATER PUMP STATION PS428.

    f) PROGRAMMING AND COMMUNICATIONS WITH MANATEE COUNTY TELEMETRY CENTRAL STATION.

    DFS MAY BE CONTACTED AT PHONE 321-259-5009.

19. THE CONTRACTOR SHALL FURNISH AND INSTALL TRANSFORMER LT1, WALL MOUNTED AT 8'-0" ABOVE FINISHED FLOOR. THE TRANSFORMER SHALL BE COPPER WOUND WITH SIX (6) FULL CAPACITY TAPS. TAPS SHALL BE 2-1/2% WITH TWO (2) ABOVE AND FOUR (4) BELOW NOMINAL. THE TRANSFORMER SHALL BE SCHNEIDER/SQUARE D CLASS 7400, CAT NO. EE30T3HCU.

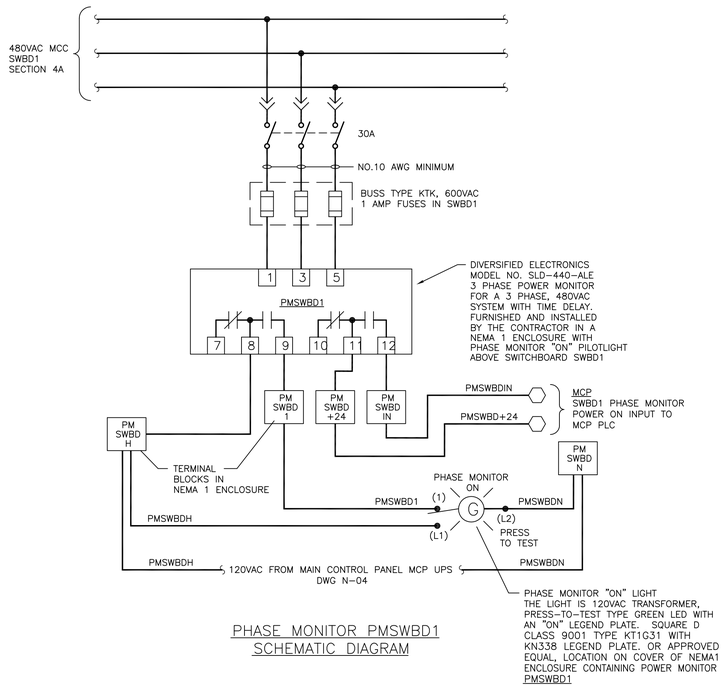
20. THE CONTRACTOR SHALL FURNISH AND INSTALL 208/120V PANELBOARD LP1 PER PANELBOARD SCHEDULE LP1 ON DWG E-08. PANELBOARD LP1 SHALL BE SCHNEIDER/SQUARE D TYPE NQOD PER SPEC. 16160.



WATT TRANSDUCER JTMCB SCHEMATIC DIAGRAM

PHASE MONITOR PMMCB SCHEMATIC DIAGRAM

MAIN CIRCUIT BREAKER MCB POWER AND PHASE MONITOR



PHASE MONITOR PMSWBD1 SCHEMATIC DIAGRAM

LEGEND:

⬡ ITEMS LOCATED IN THE MCP MAIN CONTROL PANEL

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN DLA
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
POWER AND PHASE MONITOR SCHEMATICS AND SINGLE LINE DIAGRAM NOTES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. E-03

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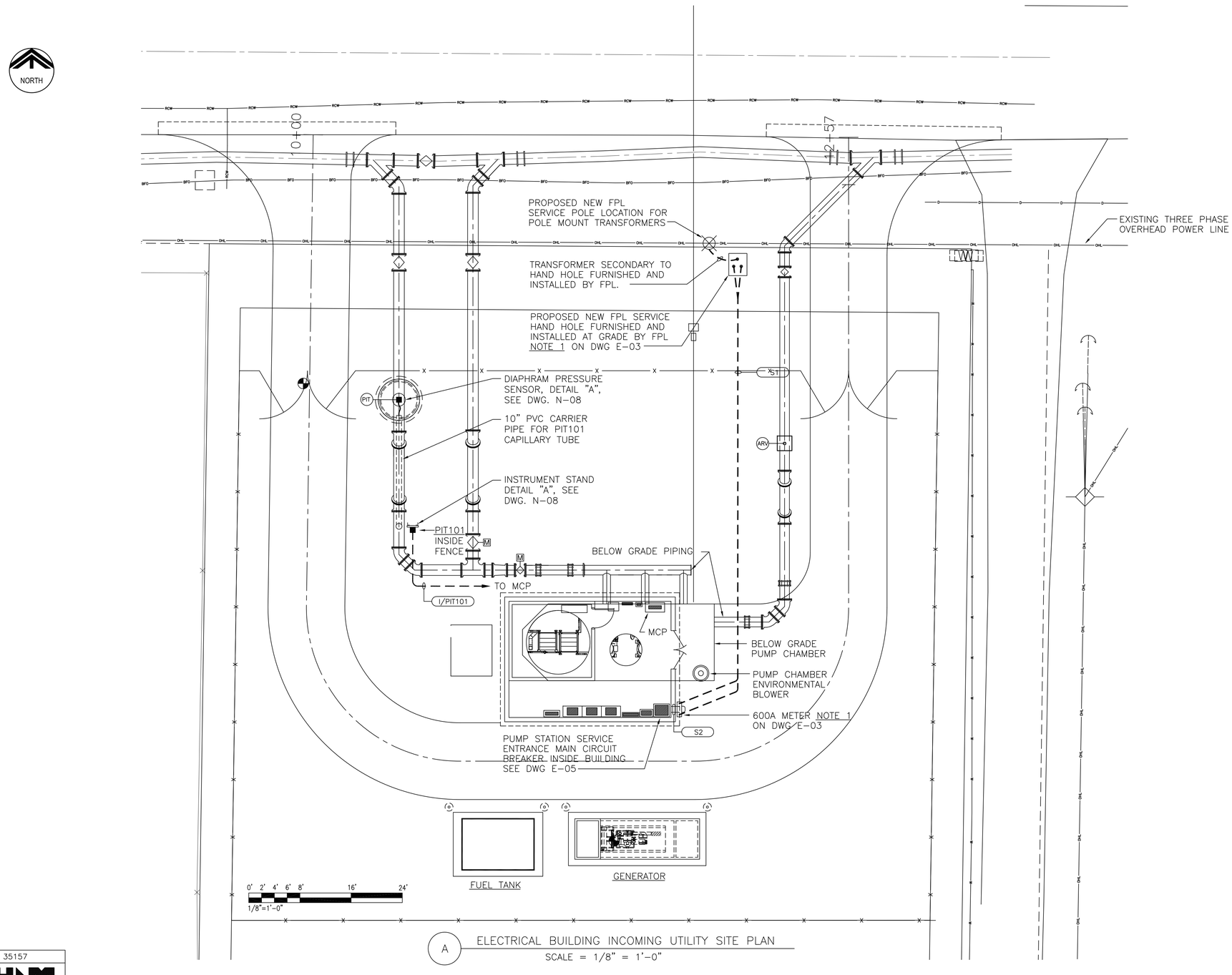
FILENAME: Last Saved By: SMF_DENL 5-28-10 01:13pm C:\Documents and Settings\DPerry\Desktop\ps428\E-03 XREFS: 3624bdr



A ELECTRICAL BUILDING INCOMING UTILITY SITE PLAN
SCALE = 1/8" = 1'-0"

NOTES :

1. SEE DWG E-02 FOR SERVICE SINGLE LINE DIAGRAM.
2. SEE DWG E-03 FOR SERVICE NOTES.
3. SEE DWG N-08 FOR INSTRUMENT DETAILS.

JOB NO. 35157

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P.O. BOX 5106 LAKELAND, FLORIDA 33807

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MANATEE COUNTY

PS 428 BOOSTER PUMP STATION

ELECTRICAL
INCOMING UTILITY SITE PLAN

VERIFY SCALES
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JOB NO. 7880C.10

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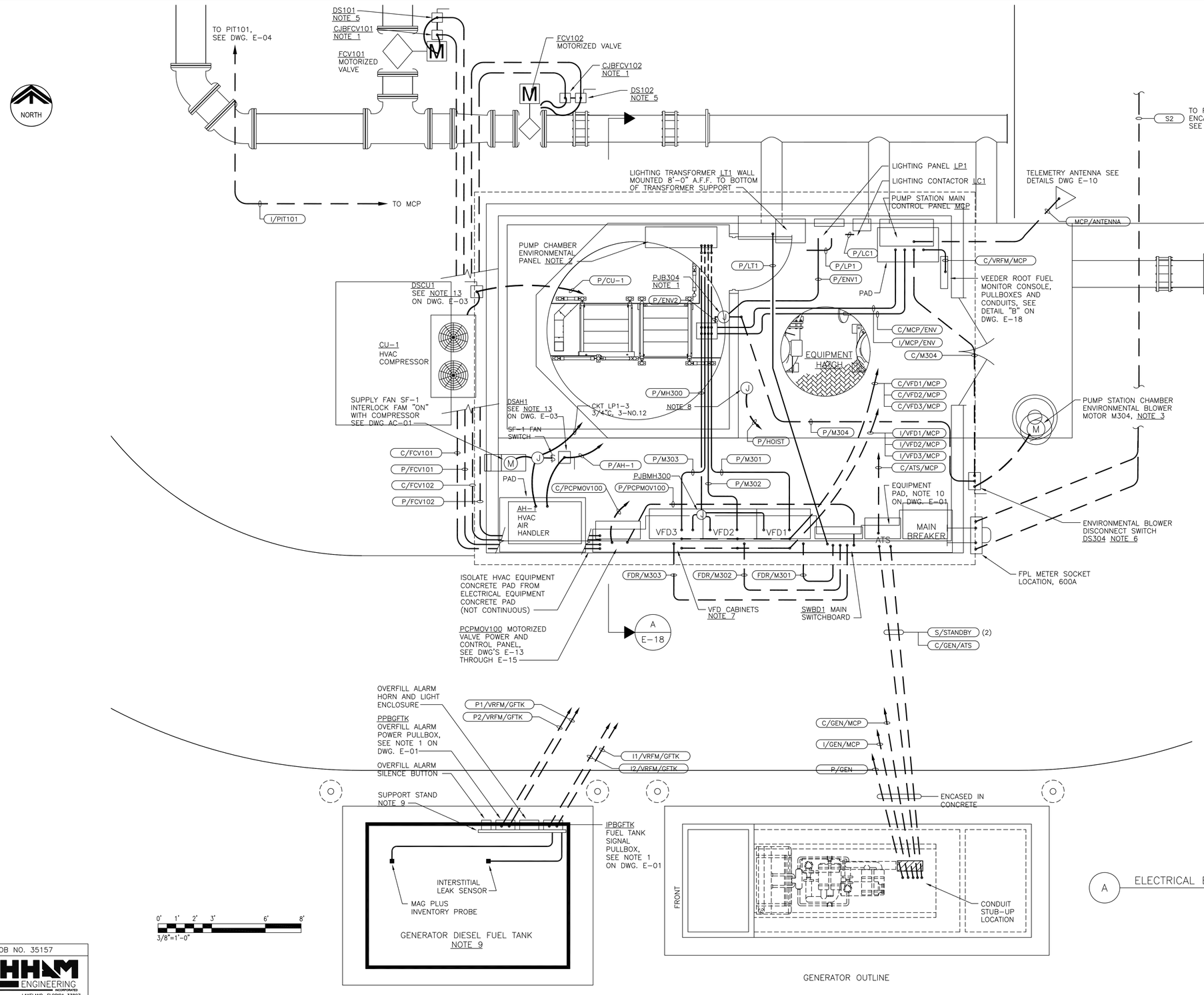

NOTES :

1. FOR GENERAL ELECTRICAL NOTES SEE DWG E-01.
2. THE BELOW GRADE PUMP STATION CHAMBER WILL BE PREWIRED BY THE PUMP STATION CHAMBER MANUFACTURER. THIS WILL INCLUDE THE BOOSTER PUMPS, BOOSTER PUMP DISCONNECT SWITCHES, SUMP PUMPS, INSTRUMENTS, CONTROLS, LIGHTING AND RECEPTACLES IN THE BELOW GRADE CHAMBER. CONDUITS AND WIRING WHICH SERVE THE BELOW GRADE EQUIPMENT FROM THE ELECTRICAL ROOM ABOVE WILL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. CONDUIT WILL ROUTE FROM THE ELECTRICAL ROOM EQUIPMENT INTO THE STAIRWELL ENCLOSURE, DOWN THROUGH THE STAIRWELL ENCLOSURE TO THE FINISHED FLOOR ELEVATION OF THE BUILDING AT THE TOP OF THE CHAMBER STAIR TUBE. THE CHAMBER MANUFACTURER WILL EXTEND THE CONDUITS FROM BUILDING FLOOR ELEVATION DOWN TO THE CHAMBER TERMINATION CABINET CALLED THE ENVIRONMENTAL PANEL. ALL WIRE AND CABLE FROM THE ELECTRICAL EQUIPMENT IN THE BUILDING ABOVE TO THE ENVIRONMENTAL PANEL BELOW SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. ALL CONDUIT AND WIRE BRANCHING OUT FROM THE ENVIRONMENTAL PANEL INTO THE PUMP CHAMBER WILL BE FURNISHED AND INSTALLED BY THE BELOW GRADE CHAMBER MANUFACTURER. SEE DWG E-18 FOR CLARIFICATION.
3. THE PUMP STATION CHAMBER ENVIRONMENTAL AIR BLOWER WILL BE LOCATED ABOVE GRADE OUTSIDE THE EAST END OF THE ELECTRICAL ROOM. THE ELECTRICAL CONTRACTOR SHALL WIRE THIS BLOWER AND PROVIDE ALL CONDUITS, CONDUCTORS AND THE BLOWER DISCONNECT SWITCH TO MAKE THE BLOWER FULLY OPERATIONAL FROM THE ENVIRONMENTAL PANEL IN THE BELOW GRADE CHAMBER. THE BLOWER RUN TIMER AND CONTROLS WILL BE LOCATED IN THE ENVIRONMENTAL PANEL.
4. FOR AIR HANDLER AND COMPRESSOR NOTES SEE DWG AC-01.
5. FLOW CONTROL VALVES FCV101 AND FCV102 DISCONNECT SWITCHES DS101 AND DS102 SHALL BE NEMA 4X STAINLESS STEEL, 600V, 30 AMP, 4 POLE WITH AUXILIARY INTERLOCK CONTACTS, 1 N.O. AND 1 N.C. SQUARE D CLASS 3110, CAT. NO. HU461DS WITH CAT. NO. EIK1 AUXILIARY CONTACT KIT, OR APPROVED EQUAL.
6. ENVIRONMENTAL BLOWER DISCONNECT SWITCH DS304 SHALL BE NEMA 4X NON-METALLIC, 120VAC, 30A, WITH AUXILIARY INTERLOCK CONTACT AND GROUND BLOCK, HUBBELL CAT. NO. HBLDS3AC WITH GROUND BLOCK CAT. NO. HBL30RGB. SWITCH TO BE PROVIDED WITH ENGRAVED NAMEPLATE AS FOLLOWS :
"PUMP CHAMBER FAN
LEAVE ON AT ALL TIMES"
7. VFD CABINETS ARE STAND ALONE UNITS. MAKE ALL CONNECTIONS TO THE TOP AND BOTTOM OF EACH CABINET INDIVIDUALLY SO THAT ANY ONE CABINET COULD BE REMOVED AND REPLACED WITHOUT DISTURBING THE WIRING IN THE ADJACENT CABINET. DO NOT FEED THROUGH ANY CABINET WITH POWER, CONTROL ON INSTRUMENT WIRING FOR ANOTHER VFD CABINET.
8. THE CONTRACTOR SHALL FURNISH AND INSTALL A JUNCTION BOX FOR THE TERMINATION ON THE MONORAIL HOIST ELECTRIFICATION SYSTEM CONDUCTORS.
9. THE CONTRACTOR SHALL FURNISH AND INSTALL A SUPPORT STAND FOR THE FUEL TANK OVERFILL ALARM AND PULLBOXES. THE STAND SHALL BE FABRICATED FROM STAINLESS STEEL WITH ALL STAINLESS STEEL HARDWARE. THE STAND SHALL BE MOUNTED ON THE FUEL TANK FOUNDATION AND NOT ATTACHED TO THE FUEL TANK. THE CONTRACTOR SHALL COORDINATE WITH THE FUEL TANK ARRANGEMENT AND LOCATE THE SUPPORT STAND WHERE IT IS NOT AN INTERFERENCE TO THE OPERATION OR FILLING OF THE FUEL TANK.

A ELECTRICAL BUILDING POWER DISTRIBUTION ROUTING PLAN
SCALE 3/8" = 1'-0"

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
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MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL POWER SITE PLAN

VERIFY SCALES
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0 1"
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JOB NO. 7880C.10
DRAWING NO. E-05

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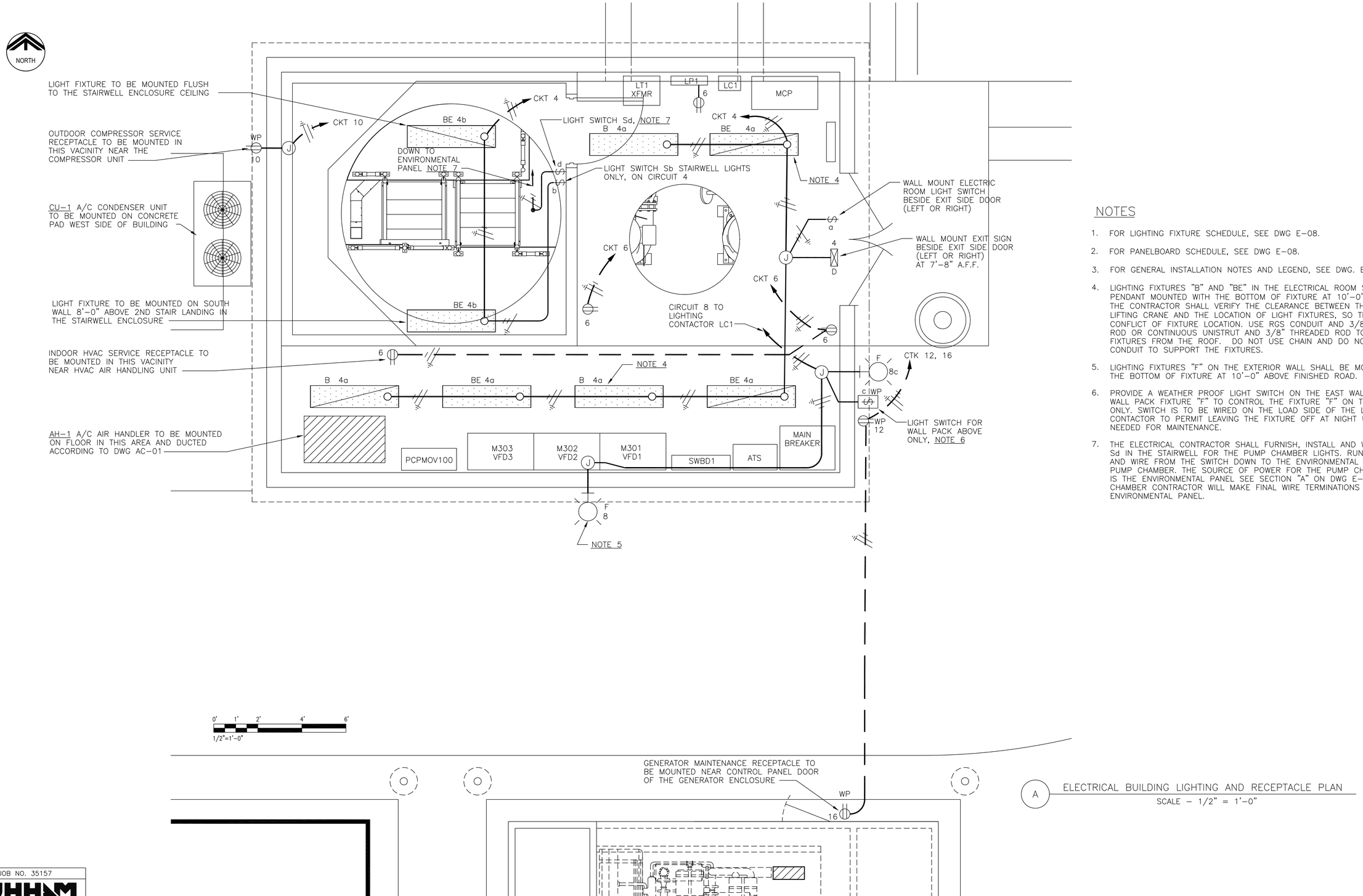

A ELECTRICAL BUILDING LIGHTING AND RECEPTACLE PLAN
SCALE – 1/2" = 1'-0"

NOTES

1. FOR LIGHTING FIXTURE SCHEDULE, SEE DWG E-08.
2. FOR PANELBOARD SCHEDULE, SEE DWG E-08.
3. FOR GENERAL INSTALLATION NOTES AND LEGEND, SEE DWG. E-01.
4. LIGHTING FIXTURES "B" AND "BE" IN THE ELECTRICAL ROOM SHALL BE PENDANT MOUNTED WITH THE BOTTOM OF FIXTURE AT 10'-0" A.F.F. THE CONTRACTOR SHALL VERIFY THE CLEARANCE BETWEEN THE MONORAIL LIFTING CRANE AND THE LOCATION OF LIGHT FIXTURES, SO THAT NO CONFLICT OF FIXTURE LOCATION. USE RGS CONDUIT AND 3/8" THREADED ROD OR CONTINUOUS UNISTRUT AND 3/8" THREADED ROD TO SUSPEND FIXTURES FROM THE ROOF. DO NOT USE CHAIN AND DO NOT USE PVC CONDUIT TO SUPPORT THE FIXTURES.
5. LIGHTING FIXTURES "F" ON THE EXTERIOR WALL SHALL BE MOUNTED WITH THE BOTTOM OF FIXTURE AT 10'-0" ABOVE FINISHED ROAD.
6. PROVIDE A WEATHER PROOF LIGHT SWITCH ON THE EAST WALL BELOW THE WALL PACK FIXTURE "F" TO CONTROL THE FIXTURE "F" ON THE EAST WALL ONLY. SWITCH IS TO BE WIRED ON THE LOAD SIDE OF THE LIGHTING CONTACTOR TO PERMIT LEAVING THE FIXTURE OFF AT NIGHT UNLESS NEEDED FOR MAINTENANCE.
7. THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND WIRE SWITCH Sd IN THE STAIRWELL FOR THE PUMP CHAMBER LIGHTS. RUN CONDUIT AND WIRE FROM THE SWITCH DOWN TO THE ENVIRONMENTAL PANEL IN THE PUMP CHAMBER. THE SOURCE OF POWER FOR THE PUMP CHAMBER LIGHTING IS THE ENVIRONMENTAL PANEL SEE SECTION "A" ON DWG E-18. THE PUMP CHAMBER CONTRACTOR WILL MAKE FINAL WIRE TERMINATIONS IN THE ENVIRONMENTAL PANEL.

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN DLA
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
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PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL BUILDING LIGHTING AND RECEPTACLE PLAN

VERIFY SCALES
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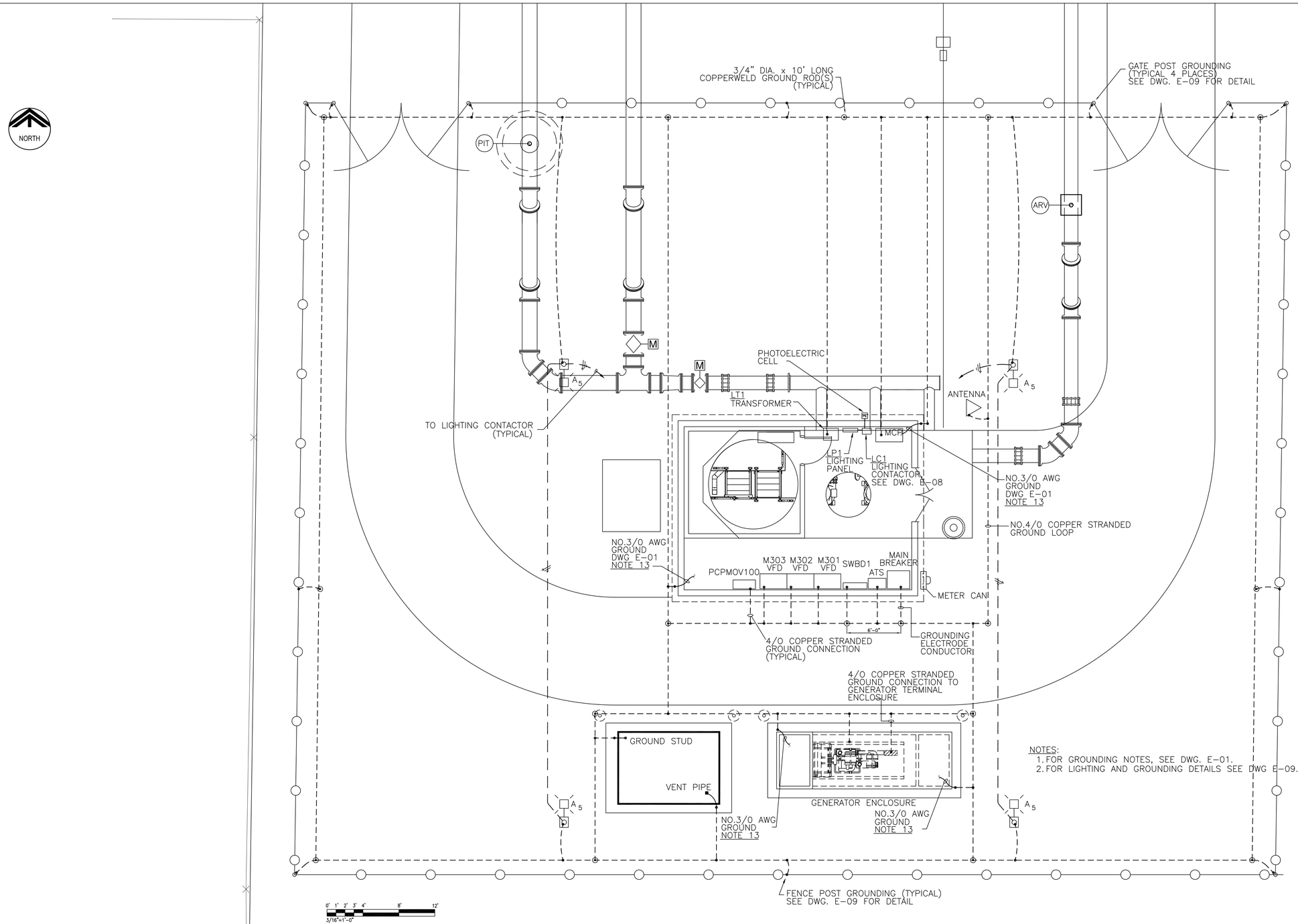

NOTES:
1. FOR GROUNDING NOTES, SEE DWG. E-01.
2. FOR LIGHTING AND GROUNDING DETAILS SEE DWG E-09.

A ELECTRICAL BUILDING, GENERATOR, EXTERIOR LIGHTING AND GROUNDING PLAN
SCALE 3/16" = 1'-0"

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ELECTRICAL LIGHTING AND GROUNDING SITE PLAN

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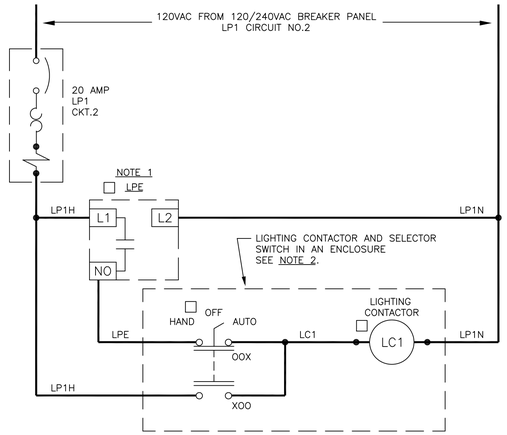

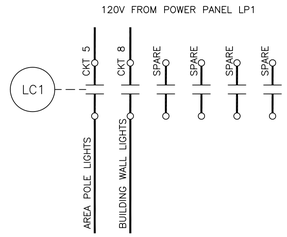

LIGHTING
CONTACTOR CONTROLS

LIGHTING CONTACTOR NOTES:

THE FOLLOWING TAGGED ITEMS ARE FURNISHED & INSTALLED BY THE ELECTRICAL CONTRACTOR:

1. PHOTOCELL IS EQUAL TO CROUSE HINDS NO. DS60 IN A 3/4" CAST ALUMINUM, DEEP TYPE FD BOX, CROUSE HINDS NO. FD2-SA.

2. THE LIGHTING CONTACTOR, SELECTOR SWITCH AND ENCLOSURE SYSTEM IS MADE UP OF THE FOLLOWING ITEMS, ALL FURNISHED AND INSTALLED BY THE ELEC. CONTRACTOR:

   A. ONE (1), 30 AMPERES, 600VAC, SIX (6) POLE ELECTRICALLY HELD LIGHTING CONTACTOR WITH 120VAC, 60HZ COIL, SQUARE D CLASS 8903 TYPE LO60V02.

   B. ONE (1) THREE (3) POSITION, MAINTAINED, OIL TIGHT SELECTOR SWITCH WITH A BLACK LEVER OPERATOR, A CONTACT BLOCK AND A "HAND-OFF-AUTO" LEGEND PLATE. SQUARE D CLASS 9001 TYPE KS43BH1 AND KN360 LEGEND PLATE.

   C. ONE (1) NEMA 1 ENCLOSURE CONTINUOUS HINGE CLAMP COVER WITH BACK PANEL 14" x 12" x 8"D HOFFMAN ENG. CAT. NO. A-14128CH WITH A-14P12 BACK PANEL.

   D. ONE (1) 1" x 2-3/4" BLACK LAMINATED PHENOLIC NAMEPLATE ENGRAVED WITH WHITE LETTERS AS DETAILED BELOW

AREA LIGHTING CONTACTOR

FIXTURE SCHEDULE

SYMBOL	MANUFACTURER	CATALOG NO.	DESCRIPTION	LAMP	MOUNTING	VOLTAGE	MOUNTING HEIGHT	REMARKS
A	AMERICAN	AME-2-T3-150S -1-BOA6- BZ-SF120	HIGH PRESSURE SODIUM	150W	POLE NOTE 1	120	SEE DETAIL	SHIELDS - NOTE 2 6" ARM SEE DETAIL ON DWG. E-09.
B	LITHONIA	AF102321 20 GLR	FLUORESCENT INDUSTRIAL	(2) 32W SPX41K	PENDANT	120	SEE PLAN	ENERGY SAVING BALLAST, LAMPS, INTERNAL FUSE
BE	LITHONIA	AF102321 20 GLR-EL14	FLUORESCENT INDUSTRIAL WITH EMERGENCY BATTERY PACK	(2) 32W SPX41K	PENDANT	120	↓	ENERGY SAVING BALLAST, LAMPS, INTERNAL FUSE, 2 LAMP BATTERY PACK
D	LITHONIA	LEPW1R120ELNSD	LED RED EXIT SIGN W/WHITE HOUSING	LED	UNIVERSAL	120	↓	MAINTENANCE FREE NICKEL CADMIUM BATTERY W/AUTO SOLID STATE CHARGER
E	LITHONIA	DM232120GEB- GLR-EL140W	DAMP LOCATION FLUORESCENT	(2) 32W SPX41K	WALL	120	↓	ENERGY SAVING BALLAST, LAMPS, INTERNAL FUSE, 2 LAMP BATTERY PACK
F	VISIONARE SILHOUETTE	SIL-2T3-100S-1 DL-BZ-SF100	HIGH PRESSURE SODIUM	100W	WALL DOWN LIGHT	120	↓	HIGH POWER FACTOR, BALLAST, SINGLE FUSE, BRONZE

FIXTURE SCHEDULE NOTES:

1. AREA LIGHTING POLE SHALL BE HAPCO CATALOG NO. SSA12D4-4-BM. SQUARE STRAIGHT ALUMINUM POLE WITH FULL BASE COVER HARDWARE PACK 3/4" x 17" x 3" ANCHOR BOLTS, AND STAINLESS STEEL HARDWARE THAT MUST SHOW CERTIFICATION FOR SUPPORTING THE FIXTURE "A" IN 130 MPH OR THE SOUTHERN BUILDING CODE WIND LOAD REQUIREMENTS.

2. FIXTURE TYPE "A" SHALL HAVE CUTOFF SHIELDS ON ALL 4 SIDES OF THE FIXTURE MEETING THE REGULATIONS OF MANATEE COUNTY LAND DEVELOPMENT CODE (LDC) SECTION 709 FOR LIGHTING. THE LIGHTING FOR PUMP STATION FENCED AREA SHALL MEET REGULATIONS OF LCD709 WITH LIGHTING CUTOFF WITHIN THE PROPERTY LINES, SEE DWG E-17 FOR LIGHTING PHOTOMETRICS AND CUTOFF SHIELD DETAILS.

DISTRIBUTION PANEL SCHEDULE
LP1

SERVICE: 208/120V - 3 PHASE - 4 WIRE
TYPE: NEMA 1 SURFACE MOUNT (20W x 5-3/4"D)

150 AMP MAIN CIRCUIT BREAKER
BOLT ON BRANCH BREAKERS

CKT NO.	SERVING	CONN. LOAD (KW)	AMPS	AMPS	CONN. LOAD (KW)	SERVING	CKT NO.
1	MCP CABINET	-	30	20	-	ELECTRICAL ROOM LIGHTING CONTACTOR CONTROL	2
3	HVAC SUPPLY FAN SF-1	-	20	20	-	ELECTRICAL ROOM INDOOR LIGHTING	4
5	PUMP STATION AREA LIGHT POLES	-	20	20	-	ELECTRICAL ROOM INDOOR RECEPTACLES	6
7	ENVIRONMENTAL PANEL 120/208V SUPPLY NOTE 1	-	3P 50	20	-	ELECTRICAL BUILDING OUTDOOR WALL LIGHTING	8
9		-		20	-	ELECTRICAL ROOM HVAC SERVICE RECEPTACLES	10
11		-		20	-	ELECTRICAL ROOM OUTDOOR RECEPTACLES	12
13	VEEDER ROOT FUEL MONITOR CONSOLE	-	15	20	-	GENERATOR BATTERY CHARGER	14
15	VEEDER ROOT FUEL OVERFILL ALARM HORN/LIGHT	-	15	20	-	GENERATOR MAINTENANCE RECEPTACLE	16
17	SPARE	-	20	30	2.5	GENERATOR ENGINE BLOCK HEATER	18
19	SPARE	-	20	20	-	SPARE	20
21	SPACE	-	-	-	-	SPACE	22
23	SPACE	-	-	-	-	SPACE	24
25	SPACE	-	-	-	-	SPACE	26
27	SPACE	-	-	-	-	SPACE	28
29	SPACE	-	-	-	-	SPACE	30

TOTAL CONNECTED LOAD: ϕ_A = KW ϕ_B = KW ϕ_C = KW

PANELBOARD LP1 NOTES :

1. THE CONTRACTOR SHALL VERIFY THE FINAL POWER REQUIREMENTS OF THE PUMP CHAMBER ENVIRONMENTAL PANEL AND ADJUST THE CIRCUIT BREAKER(S) SIZE AND NUMBER OF POLES TO SUIT.

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CHECKED RG
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FL. REG. NO.: 31103
PROJECT ENGINEER

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CA 00008571

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ELECTRICAL SCHEDULES AND MISCELLANEOUS DETAILS

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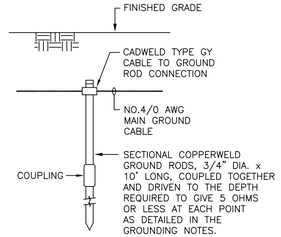
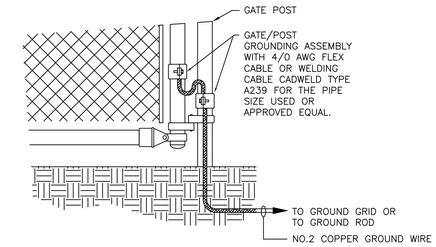
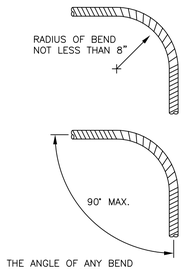


GROUND ROD DETAIL
N.T.S.

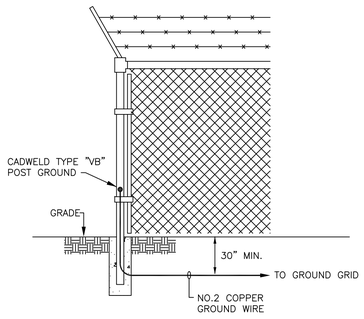


TYPICAL GATE GROUNDING DETAIL
N.T.S.

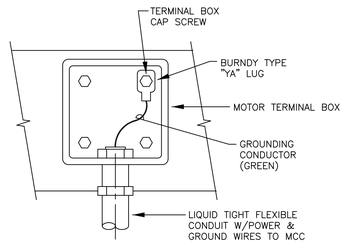
GROUND LOOP
CONNECTION DETAIL
N.T.S.



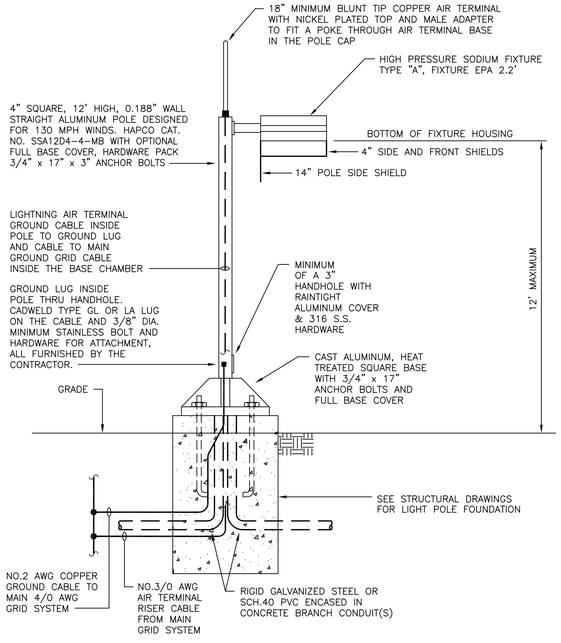
LIGHTNING
PROTECTION CONDUCTOR
N.T.S.



CHAIN LINK FENCE
POST GROUNDING DETAIL
N.T.S.



MOTOR TERMINAL BOX
GROUND CONNECTION DETAIL
N.T.S.



FREE-STANDING FIXTURE TYPE "A" DETAIL
N.T.S.

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MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
BOOSTER PUMP STATION TRANSFORMER GROUNDING AND MISCELLANEOUS DETAILS

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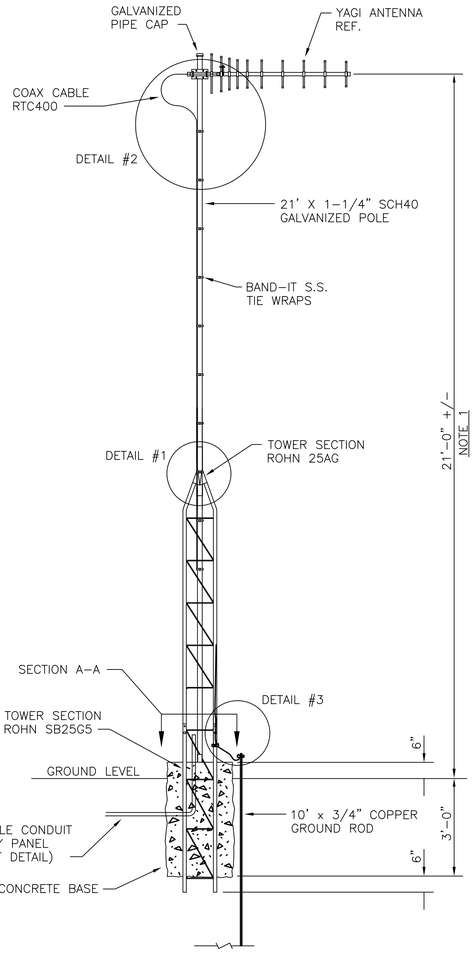
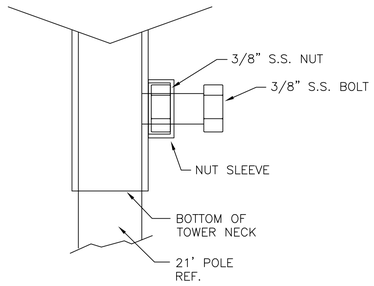


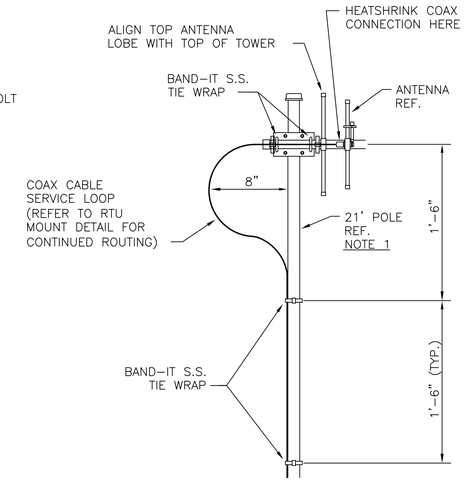
ANTENNA ELEVATION

N.T.S.



DETAIL NO.1 POLE SWIVEL BOLT SIDE VIEW

N.T.S.



DETAIL NO.2 COAX CABLE MOUNTING AND ROUTING

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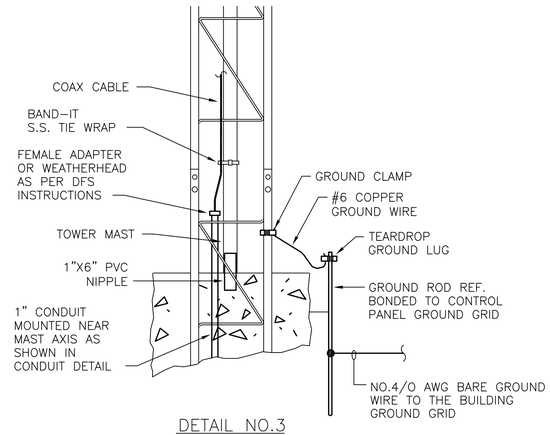
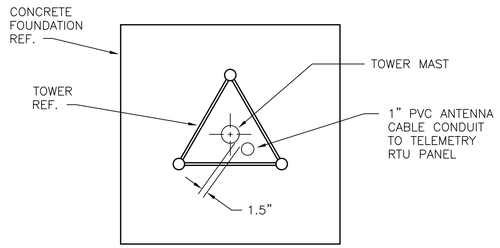


DETAIL NO.3 GROUNDING DETAIL

N.T.S.



CONDUIT DETAIL TOP VIEW

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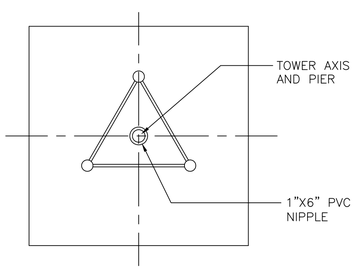

SECTION A-A

N.T.S.

STRUCTURAL DESIGN CODES

1. ASCE 7-02
2. ANSI/TIA/F/A-222-F-1996

NOTES:

1. THE FINAL ANTENNA TOWER REQUIREMENTS SHALL BE BASED ON DFS RADIO STUDY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE TOWER LOCATION WITH THE OWNER/ENGINEER. TOWER PLACEMENT IS RECOMMENDED WITHIN 15' OF THE PUMP CONTROL PANEL. A 1" PVC CONDUIT IS REQUIRED FROM THE CONTROL PANEL TO THE ANTENNA TOWER WHEN RUNNING COAX CABLE UNDERGROUND. A FEMALE ADAPTER OR WEATHERHEAD IS REQUIRED ON THE TOWER SIDE OF THE CONDUIT. ALL REQUIRED CONDUIT SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
3. GROUNDING AND BONDING OF THE ANTENNA TOWER, TOWER GROUND ROD, PUMP CONTROL PANEL AND POWER UTILITIES GROUND ROD ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE GROUND LUGS AND TAPS FOR ALL LOCATIONS MUST BE BONDED TOGETHER USING A CONTINUOUS SINGLE 6 AWG SOLID BARE COPPER WIRE MINIMUM.

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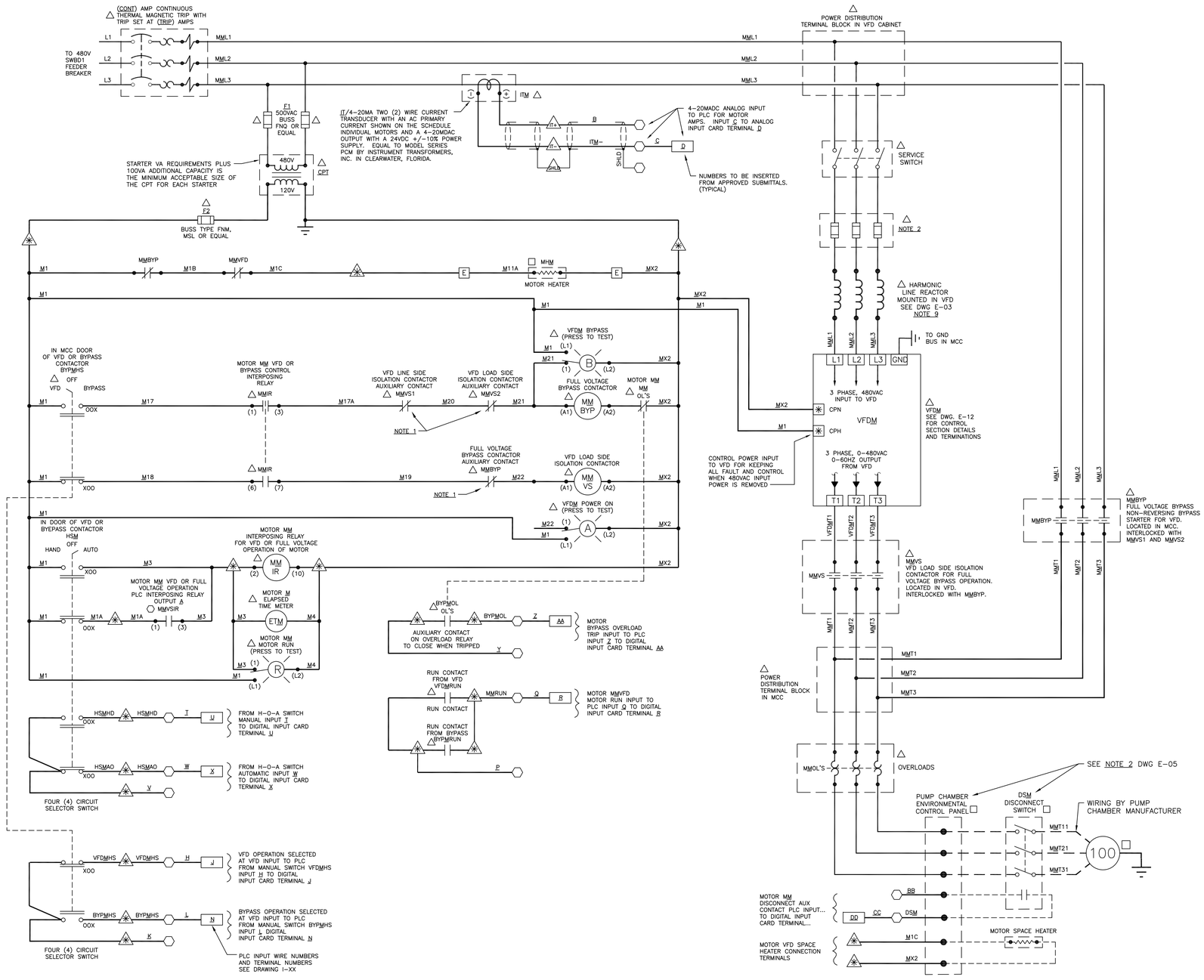

MOTORS M301, M302 AND M303
VFD WITH A
FULL VOLTAGE BYPASS
TYPICAL SCHEMATIC DIAGRAM

LEGEND:

- ⬡ ITEMS OR DEVICES LOCATED IN MASTER CONTROL PANEL (MCP)
- □ ITEMS OR DEVICES LOCATED IN THE FIELD, REMOTE TO ANY PANELS
- △ ITEMS LOCATED IN THE VFD CABINET
- ✳ DESIGNATES TERMINAL NUMBERS OR INFORMATION THAT WILL BE PUT ON THE DRAWINGS FROM THE SUBMITTALS BY THE PLC, OR VFD SUPPLIER THAT IS SELECTED AND APPROVED.
- M DESIGNATES THE MOTOR NUMBER CONTROLLED BY THE VFD THAT WILL BE INSERTED WHERE INDICATED TO COMPLETE THE WIRE AND DEVICE NUMBERS SHOWN IN THE TYPICAL DIAGRAM, M301, M302 AND M303.

NOTES:

1. NORMALLY CLOSED AUXILIARY CONTACTS ON CONTACTOR WILL BE LATE CLOSING OR DELAYED CLOSING AFTER ALL POWER POLES OF THE ACTUATING CONTACTOR ARE OPENED TO PREVENT THE ISOLATION AND BYPASS CONTACTORS FROM BEING ENERGIZED AT THE SAME TIME.
2. CONTRACTOR TO COORDINATE WITH THE VFD SUPPLIER TO SEE IF LINE SIDE SEMICONDUCTOR TYPE FAST ACTING FUSES SUCH AS BUS TYPE JLS TYPE J FUSES ARE REQUIRED TO MEET U.L. AND V.F.D. MANUFACTURER REQUIREMENTS.

WIRE AND DEVICE NUMBERS SCHEDULE

EQUIPMENT NO. & DESCRIPTION	M	HP	VFD	CONT	TRIP	CPT	IT	DS	A	B	C	D	F1	F2	G	H	J	K	L	N	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD
BOOSTER PUMP NO.1 MOTOR M301	301	100	1	250	225	✳	0-150	200A	–	–	–	–	✳	✳	NOT USED	–	–	–	–	–	–	–	–	NOT USED	–	–	–	–	–	–	–	–	–	–
BOOSTER PUMP NO.2 MOTOR M302	302	100	2	250	225	✳	0-150	200A	–	–	–	–	✳	✳	NOT USED	–	–	–	–	–	–	–	–	NOT USED	–	–	–	–	–	–	–	–	–	–
BOOSTER PUMP NO.3 MOTOR M303	303	100	3	250	225	✳	0-150	200A	–	–	–	–	✳	✳	NOT USED	–	–	–	–	–	–	–	–	NOT USED	–	–	–	–	–	–	–	–	–	–

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MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL VFD SCHEMATIC DIAGRAM FOR PUMP MOTORS M301, M302 & M303

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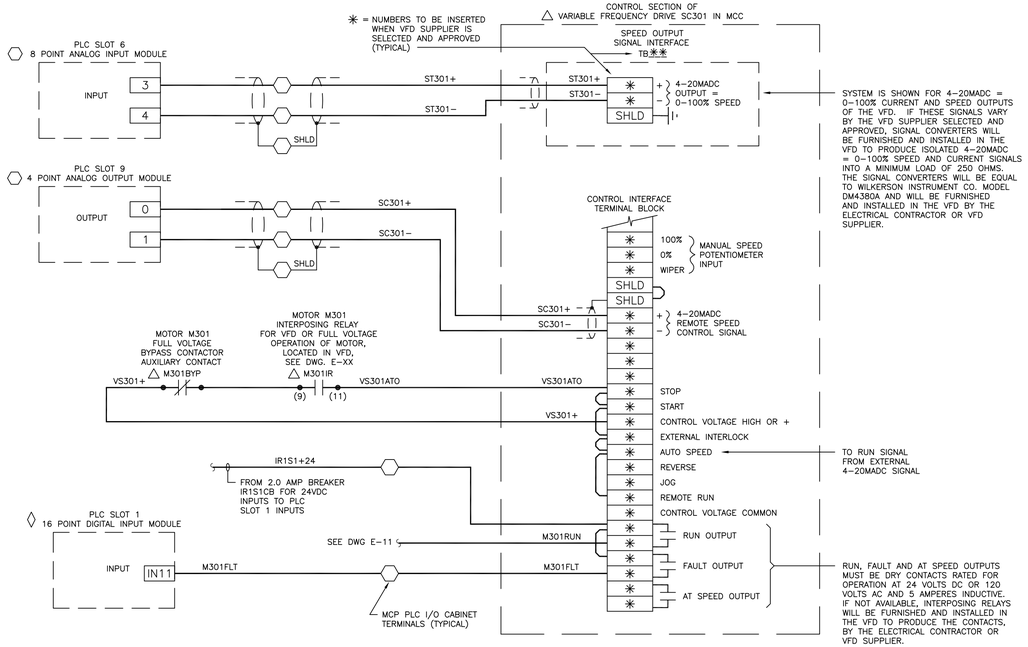
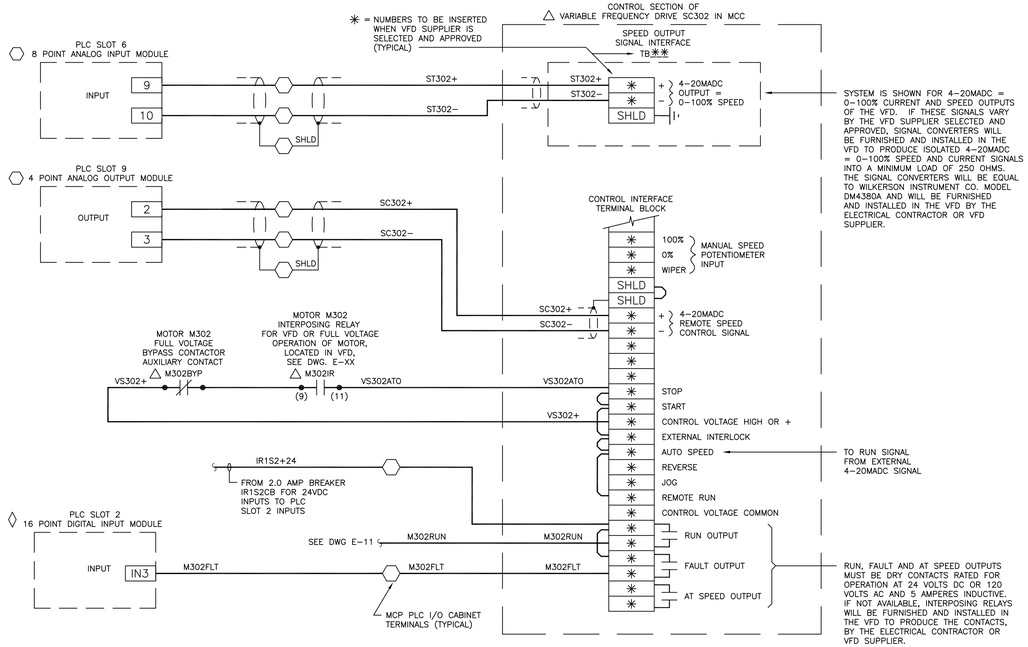
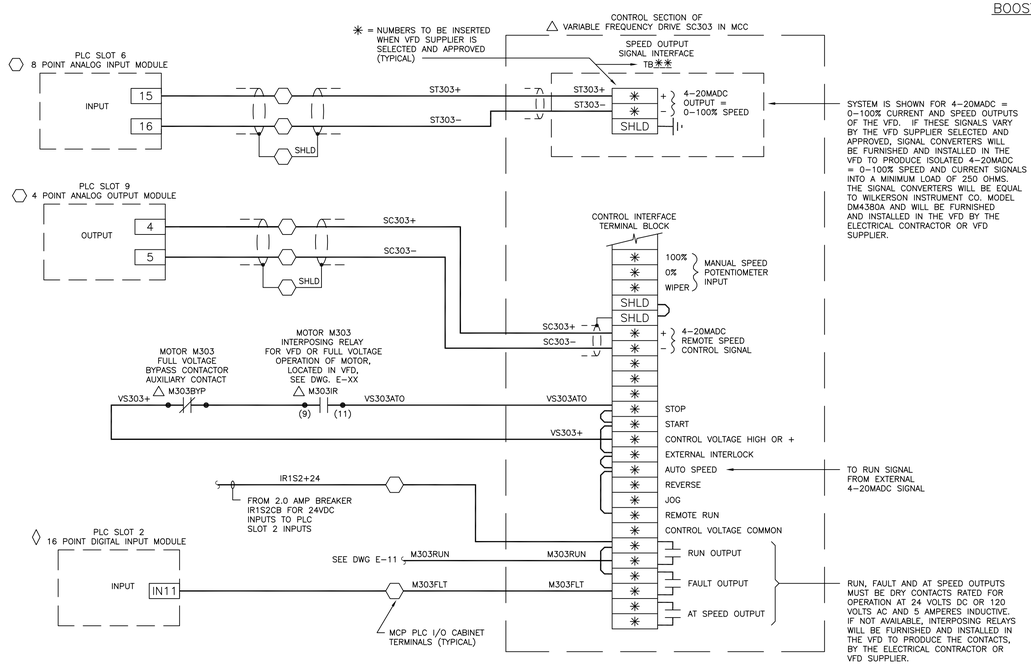


CONTROL INPUT AND OUTPUT
SCHEMATIC FOR NO.1
BOOSTER PUMP VFD MOTOR M301



CONTROL INPUT AND OUTPUT
SCHEMATIC FOR NO.2
BOOSTER PUMP VFD MOTOR M302



CONTROL INPUT AND OUTPUT
SCHEMATIC FOR NO.3
BOOSTER PUMP VFD MOTOR M303

LEGEND:

- ⬡ ITEMS OR DEVICES LOCATED IN MASTER CONTROL PANEL (MCP) IN THE ELECTRICAL ROOM
- □ ITEMS OR DEVICES LOCATED IN THE FIELD, REMOTE TO ANY PANELS
- △ ITEMS OR DEVICES LOCATED IN THE VARIABLE FREQUENCY DRIVE IN THE ELECTRICAL ROOM
- ✳ DESIGNATES TERMINAL NUMBERS THAT WILL BE PUT ON THE DRAWINGS FROM THE SUBMITTALS BY THE PLC, THE MCC OR VFD SUPPLIER THAT IS SELECTED AND APPROVED.

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN DLA
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL VFD WIRING DIAGRAM FOR PUMP MOTORS M301, M302 & M303

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. E-12

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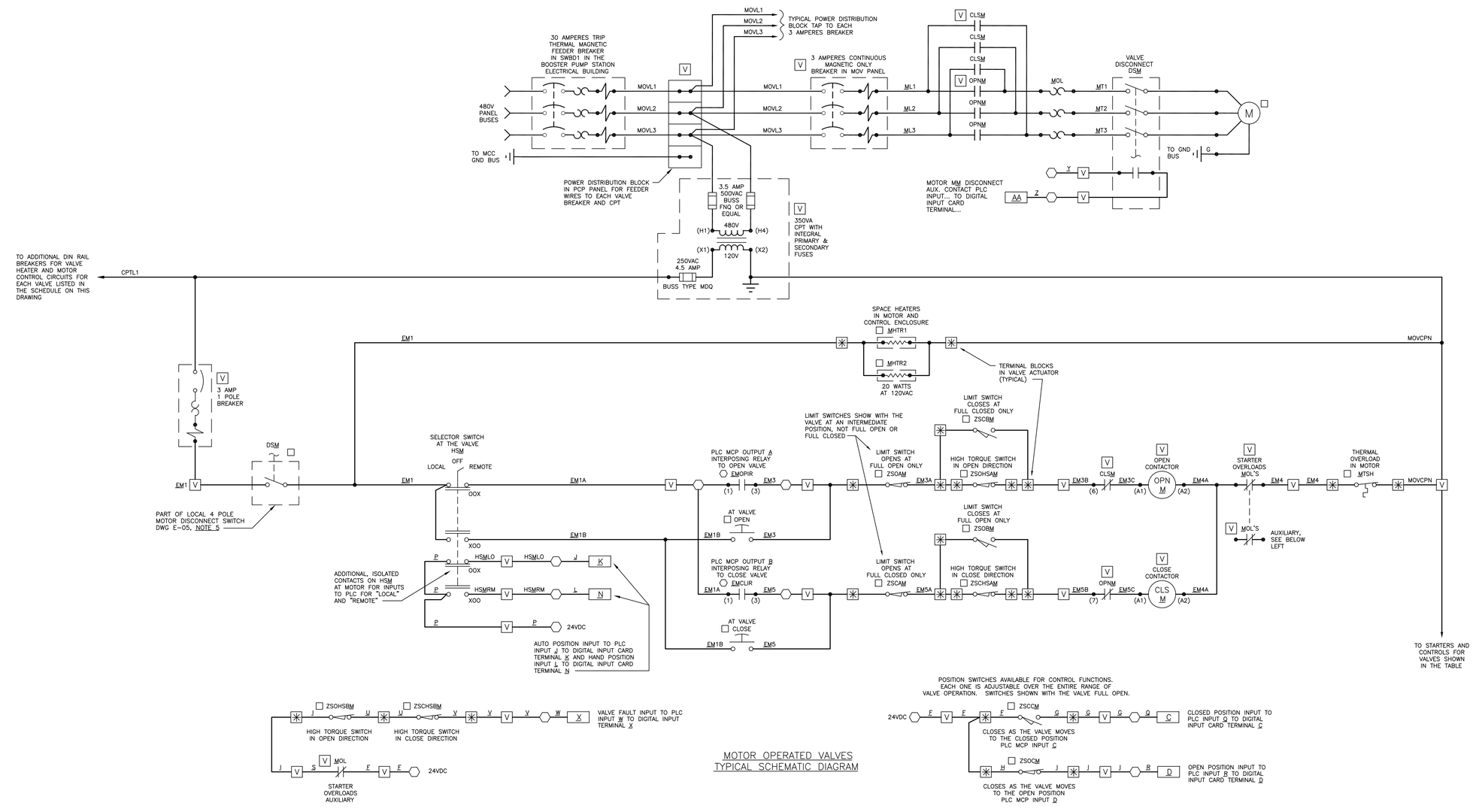
POWER AND CONTROL PANEL PCPMOV100 WIRE AND DEVICE NUMBERS SCHEDULE																											
EQUIPMENT NO. & DESCRIPTION	M	PCP	OUTPUT A	OUTPUT B	INPUT C	INPUT D	E	F	G	H	I	J	K	L	N	P	Q	R	S	T	U	V	W	X	Y	Z	AA
FCV101	101	–	–	–	–	–	FCV	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
FCV102	102	–	–	–	–	–	FCV	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

LEGEND:

- ☐ ITEMS LOCATED IN THE FIELD
- ⬡ ITEMS OR TERMINAL LOCATED IN MAIN PLC I/O CONTROL PANEL
- [V] ITEMS IN MOTOR OPERATED VALVE (MOV) POWER AND CONTROL PANEL PCPMOV100
- [✳] TERMINALS IN VALVE ACTUATOR ASSEMBLY. TERMINAL NUMBERS TO BE INSERTED WHEN THE VALVE SUPPLIER IS SELECTED AND APPROVED.



MOTOR OPERATED VALVES
TYPICAL SCHEMATIC DIAGRAM

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
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ENGINEER: ROBERT GARCIA, P.E.
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MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
BOOSTER PUMP STATION MOTOR OPERATED VALVE SCHEMATIC DIAGRAM FOR FCV MOV VALVES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. E-13

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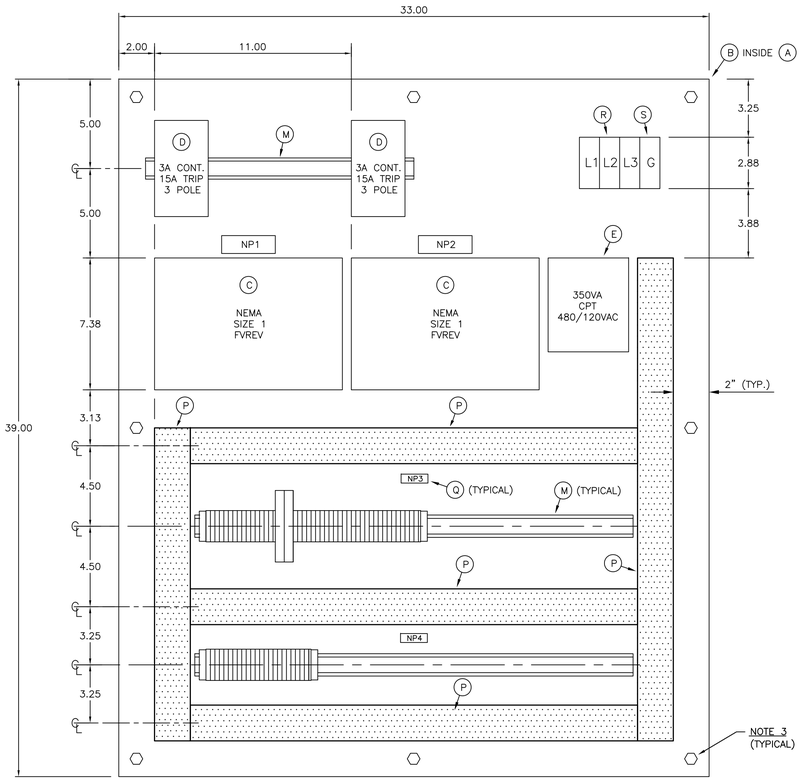

MOTOR OPERATED VALVES
CONTROL PANEL PCPMOV100
INTERNAL BACK PANEL LAYOUT

SCALE: 1 : 4

BILL OF MATERIALS

ITEM	QTY	DESCRIPTION
A	1	NEMA 12, SINGLE DOOR, 14 GAUGE STEEL ENCLOSURE WITH OUTSIDE DIMENSIONS OF 42" HIGH, 36" WIDE AND 12" DEEP. THE ENCLOSURE IS HOFFMAN CAT. NO. A423612LP.
B	1	WHITE ENAMEL PAINTED STEEL PANEL TO GO IN ITEM "A" THAT IS 39" HIGH AND 33" WIDE. HOFFMAN CAT. NO. A42P36.
C	2	SEIMENS NEMA SIZE 1, 3 PHASE, MAGNETIC, FULL VOLTAGE, REVERSING, 460VAC MAXIMUM OPEN TYPE STARTER WITH 120VAC OPERATING COILS. STARTER IS CAT. NO. 22DSB32AF WITH NO. ESP100 SOLID STATE OVERLOAD ADJUSTABLE FROM 0.75 TO 3.0 AMPERES FOR A 1 HP 480VAC MOTOR, FLA = 2.1. CONTRACTOR TO MATCH OVERLOADS TO THE FINAL APPROVED MOTOR.
D	2	SEIMENS 3 AMPERES CONTINUOUS, 3 POLE, 480VAC, TYPE ED6 UL LISTED MOTOR CIRCUIT PROTECTOR WITH AN ADJUSTABLE RANGE OF 10 TO 30 AMPERES AND AN EXTERNAL LOCKING MECHANISM. THIS BREAKER SHALL BE UL APPROVED IN A UL508A PANEL AS AN ASSEMBLY WITH THE ITEM "C" STARTER. SEIMENS CAT. NO. ED63A003 WITH A CAT. NO. ED2HPL PADLOCKING DEVICE.
E	1	CUTLER HAMMER 350VA CONTINUOUS, 240/480VAC PRIMARY TO 120VAC SECONDARY, OPEN TYPE CONTROL POWER TRANSFORMER WITH TWO (2) PRIMARY AND ONE (1) SECONDARY FUSE BLOCKS AND FINGER SAFE TERMINALS. CATALOG NO. C0350E2AFBQFS CATALOG NO. C0350E2AFBQFS WITH SIX (6) BUSS TYPE FNQ-R-3 1/2, 500VAC, 3.5 AMPERES TIME DELAY PRIMARY FUSES AND FOUR (4) BUS TYPE MDQ-4 1/2, 250VAC, 4.5 AMPERES TIME DELAY SECONDARY FUSES AND FINGER SAFE FUSE BLOCK COVERS CATALOG NO. FSKFB
F	54	PHOENIX TYPE UK5N, PART NO. 3004362 COMPRESSION CLAMP TERMINAL BLOCK, 6.2mm WIDE, NO.10-24 AWG WIRE, GRAY BODY. THE TERMINALS WILL BE MARKED AS PER THE DRAWINGS WITH COMPUTER PRINTED, VERTICAL MARKED TYPE ZBM6-CMS MARKERS.
G	6	PHOENIX TYPE UK5NBU, PART NO. 3004388 COMPRESSION CLAMP TERMINAL BLOCK, 6.2mm WIDE, NO.10-24 AWG WIRE, BLUE BODY. SAME MARKERS AS ITEM "P".
H	6	PHOENIX TYPE USLKG5, PART NO. 0441504 COMPRESSION CLAMP GROUNDING TERMINAL BLOCK, 6.2mm WIDE, NO.10-24 AWG WIRE, GREEN AND YELLOW BODY. SAME MARKERS AS ITEM "P".
J	4	PHOENIX TYPE E/UK, PART NO. 12014422 END STOP.
K	3	PHOENIX TYPE D-UK4/10, PART NO. 3003020 GRAY END SECTION FOR TYPE UK5N TERMINALS.
L	3	PHOENIX TYPE ISSB1106, 10 POLE JUMPER BAR WITH TEN (10) SCREWS FOR TYPE UK5N TERMINALS. PART NO. 0301505.
M	3 (3M)	ONE METER LENGTH OF ALUMINUM DIN, 2-3/4", ALLEN-BRADLEY CAT. NO. 1492-DR6. ELEVATED TOP HAT RAIL. ELEVATE ALL DIN RAIL TO PUT T-BLOCKS NEAR TOP OF WIRING DUCT.
N	2	3 AMP, 240VAC MAXIMUM, SINGLE POLE, THERMAL MAGNETIC, DIN RAIL MOUNT CIRCUIT BREAKER WITH A TRIP RESET BUTTON AND "OFF-ON" BUTTON. E.T.A. NO. 201-3A
P	2	2" WIDE x 3" HIGH, 6' LONG, WHITE PVC, SLOTTED SIDE WIRING DUCT WITH 2" WIDE SOLID PVC COVER. THE WIRING DUCT IS PANDUIT NO. G2X3WH6 AND THE COVER IS NO. C2WH6.
Q	5	LAMINATED PHENOLIC BLACK NAMEPLATES WITH WHITE CORE ENGRAVED TO SHOW WHITE LETTERS AS PER THE NAMEPLATE SCHEDULE ON THIS DRAWING.
R	1	3 POLE POWER DISTRIBUTION TERMINAL BLOCK WITH MAIN TERMINALS FOR ONE (1) NO.14 – 2/0 AND BRANCH TERMINALS FOR SIX (6) NO.14 – 4 CABLES. SQUARE D CLASS 9080 TYPE LBA362106.
S	1	1 POLE POWER DISTRIBUTION TERMINAL BLOCK WITH A MAIN TERMINAL FOR ONE (1) NO.14-2/0 AND BRANCH TERMINAL FOR FOUR (4) NO.14-4 CABLES. SQUARE D CLASS 9080 TYPE LBA162104.

PANEL NAMEPLATE SCHEDULE

N.P. NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE
1	FLOW CONTROL VALVE	FCV101	PUMP STATION BYPASS	1" x 3"
2	FLOW CONTROL VALVE	FCV102	PUMP STATION INFLUENT	1" x 3"
3	TB1			1/2" x 1-1/2"
4	CTB			1/2" x 1-1/2"
NOTE 2 5	MOTOR OPERATED VALVES	POWER & CONTROL PANEL	PCPMOV100	2" x 4"

NOTES

1. ALL BILL OF MATERIAL QUANTITIES WILL BE VERIFIED BY THE PANEL FABRICATOR AS ALL MATERIAL REQUIRED TO COMPLETE THE PANEL AS DETAILED ON THE DRAWINGS WILL BE FURNISHED AND INSTALLED BY THE PANEL FABRICATOR.
2. THE NAMEPLATE SHALL BE ON THE FRONT OF THE PANEL.
3. BOTTOM OF WIREWAY SHALL HAVE CUTOUTS FOR BACK PANEL MOUNTING BOLTS AS REQUIRED.
4. FOR TERMINAL BLOCK DETAILS, SEE DWG. E-15.
5. FURNISH A 11" x 17" LAMINATED PANEL WIRING SCHEMATIC PERMANENTLY ATTACHED TO THE INTERIOR OF THE PANEL DOOR.
6. ALL CONTROL PANELS SHALL BE UL508 LISTED AND LABELED AS A COMPLETED ASSEMBLY. THE PANEL FABRICATOR SHALL FURNISH AND INSTALL ALL ITEMS NOT SPECIFICALLY DETAILED IN THE DRAWINGS REQUIRED TO HAVE THE PANELS UL LISTED AND LABELED. ALL INSPECTIONS, APPROVALS AND MODIFICATIONS REQUIRED TO HAVE THE COMPLETED PANEL LABELED AND LISTED BY UL SHALL BE FURNISHED BY, AND THE RESPONSIBILITY OF, THE PANEL FABRICATOR AND CONTRACTOR.
7. WHITE INSULATION ON THE WIRE SHALL BE USED ONLY FOR NEUTRAL CONDUCTORS AND GREEN SHALL BE USED ONLY FOR GROUND CONDUCTORS.
8. ALL CONTROL WIRE SHALL BE NO.16 AWG TYPE TFF OR MTW UNLESS NOTED AS LARGER IN THE NOTES OR ON THE DRAWINGS. ALL POWER WIRING SHALL BE A MINIMUM OF NO.12 AWG TYPE THHN/THWN AND AS SIZED ON THE CONDUIT AND CABLE SCHEDULE.
9. WIREWAY TO BE FILLED TO ONLY 50% CAPACITY INSIDE THE PANEL.
10. ALL WIRE SHALL BE MARKED ON BOTH ENDS WITH WHITE HEAT SHRINK MARKERS PRINTED IN BLACK WITH A MACHINE. NO HAND WRITTEN OR EXPANDED DOT MATRIX MARKERS WITH HAND WRAPPED CLEAR LAMINATION SHALL BE ACCEPTABLE. THE NUMBERS AND LETTERS MUST BE LETTER QUALITY WHERE ALL LINES AND SHAPES APPEAR AS SOLID.

JOB NO. 35157

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P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
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ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
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MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
MOTORIZED VALVES POWER & CONTROL PANEL
PCPMOV100 LAYOUT AND DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
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JOB NO. 7880C.10
DRAWING NO. E-14

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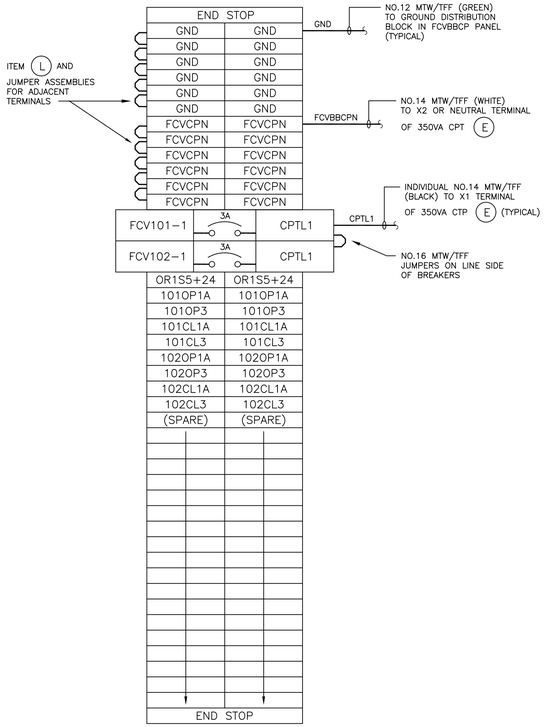
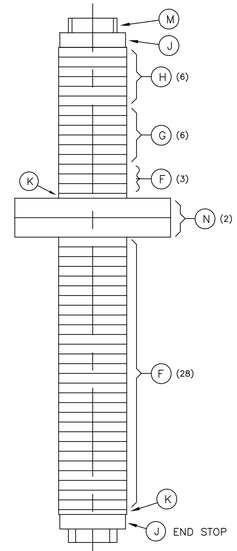


LAYOUT AND MARKING FOR TERMINAL BLOCK TB1 ON INTERNAL BACK PANEL OF PANEL PCPMOV100

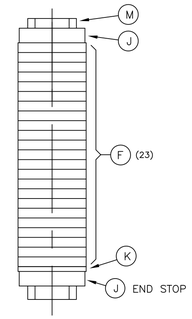
END STOP	
IR1S3+24	IR1S3+24
ZSCC101	ZSCC101
ZSOC101	ZSOC101
ZSCC102	ZSCC102
ZSOC102	ZSOC102
(SPARE)	(SPARE)
(SPARE)	(SPARE)
HS101LOC	HS101LOC
HS101RMT	HS101RMT
HS102LOC	HS102LOC
HS102RMT	HS102RMT
(SPARE)	(SPARE)
(SPARE)	(SPARE)
ZSHSB101	(SPARE)
1010L	(SPARE)
ZSHSB102	(SPARE)
1020L	(SPARE)
(SPARE)	(SPARE)
(SPARE)	(SPARE)
(SPARE)	(SPARE)
(SPARE)	(SPARE)
(SPARE)	(SPARE)
(SPARE)	(SPARE)
END STOP	

LAYOUT AND MARKING FOR TERMINAL BLOCK CTB ON INTERNAL BACK PANEL OF PANEL PCPMOV100



TERMINAL BLOCK TB1 ON INTERNAL BACK PANEL OF PANEL PCPMOV100

APPROX. HALF SCALE



TERMINAL BLOCK CTB ON INTERNAL BACK PANEL OF PANEL PCPMOV100

APPROX. HALF SCALE

TERMINAL BLOCK ITEM DIMENSIONS

FOR ITEM DESCRIPTION SEE B.O.M. DWG. E-95

(F) (G) (H) 1.67"W (42.5mm) x 0.24" THICK (6.2mm)

(J) 1.67"W (42.5mm) x 0.37" THICK (9.5mm)

(K) 1.67"W (42.5mm) x 0.07" THICK (1.8mm)

(N) 3.15"W (80mm) x 0.49" THICK (12.5mm)

WIRE NOTES:

1. ALL WIRE WILL BE NO.16 AWG TYPE MTW(UL)/TEW/TFF UNLESS NOTED OTHERWISE IN THE NOTES OR ON THE DRAWINGS.
2. ALL WIRE WILL BE MARKED ON BOTH ENDS WITH WHITE HEAT SHRINK MARKERS PRINTED IN BLACK WITH A MACHINE. NO HAND WRITTEN OR EXPANDED DOT MATRIX MARKERS OR HAND WRAPPED CLEAR LAMINATION WILL BE ACCEPTABLE. THE NUMBERS AND LETTERS MUST BE LETTER QUALITY WHERE ALL LINES AND SHAPES APPEAR AS SOLID.
3. WHITE INSULATION ON THE WIRE WILL BE USED ONLY FOR NEUTRAL CONDUCTORS AND GREEN WILL BE USED ONLY FOR GROUND CONDUCTORS.
4. MOTOR CIRCUIT PROTECTOR "D" AND STARTER "C" MUST BE UL508 APPROVED AS AN ASSEMBLY BY THE CONTRACTOR. ANY MODIFICATIONS TO BREAKER MANUFACTURER OR TYPE TO HAVE THE BREAKER AND STARTER UL508 APPROVED SHALL BE FURNISHED BY THE CONTRACTOR.

NOTES:

1. ALL TERMINALS SHOWN WITHOUT MARKERS SHALL HAVE A BLANK PHOENIX TYPE ZBM6-CMS MARKER FOR FUTURE MARKING. TYPICAL FOR ALL TERMINAL BLOCKS.

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MANATEE COUNTY

PS 428 BOOSTER PUMP STATION

MOTORIZED VALVE POWER & CONTROL PANEL PCPMOV100
TERMINAL BLOCKS - LAYOUTS AND DETAILS

VERIFY SCALES
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CONDUIT & WIRE SCHEDULE

CONDUIT NO.	SIZE	TYPE	FROM	TO	USE	REMARKS	WIRE OR CABLE NO. REQ'D/SIZE	INSULATION TYPE	INSULATION VOLTS
S1 (2)	3" (2)	PVC 80	POWER COMPANY SERVICE POLE AND HAND HOLE	POWER COMPANY METER AT BUILDING	SERVICE ENTRANCE 480V POWER, 3 PHASE, 4 WIRE	ENCASED IN CONCRETE	4–350Kcmil 1–NO.1 GND IN EA. CONDUIT	THHN/ THWN	600
S2 (2)	3" (2)	↓	POWER COMPANY METER AT BUILDING	MCB MAIN CIRCUIT BREAKER INCOMING LUGS	SERVICE ENTRANCE 480V POWER, 3 PHASE, 4 WIRE	ENCASED IN CONCRETE	4–350Kcmil 1–NO.1 GND IN EA. CONDUIT	↓	↓
FDR/MCB/ ATS (2)	3" (2)	PVC 80	MCB MAIN CIRCUIT BREAKER 600A BREAKER	NORMAL FEED AUTOMATIC TRANSFER SWITCH	480V POWER 3 PHASE 3 WIRE		3–350Kcmil 1–NO.1 GND IN EA. CONDUIT		
FDR/ATS/ SWBD1 (2)	3" (2)	↓	LOAD SIDE AUTOMATIC TRANSFER SWITCH	SWBD1 MAIN SWITCHBOARD 600 AMP	480V POWER 3 PHASE 3 WIRE		3–350Kcmil 1–NO.1 GND IN EA. CONDUIT		
P/MCP	3/4"	↓	MCP MAIN CONTROL PANEL	LP1 LIGHTING PANEL	120VAC POWER TO MCP		2–NO.10 1–NO.10 GND	↓	↓
P/GEN	1"	↓	GENERATOR CONTROL PANEL	LP1 LIGHTING PANEL	120VAC POWER TO GENERATOR HEATERS AND BATTERY CHARGER	ENCASED IN CONCRETE	2–NO.10 4–NO.12 1–NO.10 GND	↓	↓
I/GEN/MCP	1"	RGS/ CONC.	↓	MCP MAIN CONTROL PANEL	GENERATOR INSTRUMENTATION SIGNALS – SPARE CONDUIT	↓	CONDUIT ONLY W/PULL STRING	–	–
C/GEN/MCP	3/4"	PVC 80	↓	MCP MAIN CONTROL PANEL	24VDC DIGITAL INPUTS	↓	8–NO.14	THHN/ THWN	600
S/STANDBY (2)	3" (2)	↓	GENERATOR 600 AMP BREAKER	STANDBY FEED AUTOMATIC TRANSFER SWITCH	480V POWER, 3 PHASE, 3 WIRE	↓	3–350Kcmil 1–NO.1 GND IN EA. CONDUIT	↓	↓
C/GEN/ATS	3/4"	↓	GENERATOR CONTROL PANEL	AUTOMATIC TRANSFER SWITCH	GENERATOR CONTROLS START–STOP–STATUS	↓	10–NO.14 1–NO.14 GND	↓	↓
C/ATS/MCP	3/4"	↓	MCP MAIN CONTROL PANEL	AUTOMATIC TRANSFER SWITCH	24VDC DIGITAL INPUTS ATS STATUS		6–NO.14	↓	↓
I/MCB/MCP	3/4"	RGS	MCB MAIN CIRCUIT BREAKER	MCP MAIN CONTROL PANEL	MCB INSTRUMENTATION SIGNALS 4–20MADC KWH INPUT		(2) 2/C NO.18 SHLD TC, HWC HW1010180 AND 1–NO.14 GND	PVC/PVC THHN/ THWN	300 600
C/MCB/MCP	3/4"	PVC 80	MCB MAIN CIRCUIT BREAKER	MCP MAIN CONTROL PANEL	24VDC DIGITAL INPUTS PHASE MONITOR STATUS		4–NO.14	THHN/ THWN	600
SWPD1/PM	3/4"	↓	SWBD1 MAIN SWITCHBOARD 30A FUSIBLE SWITCH	SWBD1 MAIN SWITCHBOARD POWER MONITOR, PM	480V 3 PHASE POWER		3–NO.12 1–NO.12 GND	↓	↓
C/SWBD1/ MCP	3/4"	↓	SWBD1 PHASE MONITOR	MCP MAIN CONTROL PANEL	24VDC DIGITAL INPUT PHASE MONITOR STATUS		4–NO.14		
SWBD1/SPD	3/4"	↓	SWBD1 MAIN SWITCHBOARD 30A BREAKER	SWBD1 MAIN SWITCHBOARD SURGE PROTECTOR, SPD	480V 3 PHASE POWER		3–NO.10 1–NO.10 GND	↓	↓
P/LT1	1"	↓	SWBD1 MAIN SWITCHBOARD 45A BREAKER	LT1 LIGHTING TRANSFORMER	480V 3 PHASE POWER		3–NO.8 1–NO.10 GND	↓	↓
P/LP1	1–1/4"	FLEX METAL COND.	LT1 LIGHTING TRANSFORMER	LP1 LIGHTING PANEL	208/120VAC POWER		4–NO.2 1–NO.8 GND	↓	↓
P/LC1	1"	PVC 80	LP1 LIGHTING PANEL CIRCUITS	LC1 LIGHTING CONTACTOR	120VAC POWER		6–NO.12 1–NO.12 GND	↓	↓
MCP/ ANTENNA	1"	PVC 80	MCP MAIN CONTROL PANEL RTU SECTION	TELEMETRY ANTENNA	COAX ANTENNA CABLE		BY TELEMETRY CONTRACTOR		
P/AH–1	3/4"	PVC 80	SWBD1 MAIN SWITCHBOARD 20A BREAKER	A/C AIR HANDLER DSAH1 DISCONNECT SWITCH, THEN TO AH1	480V 3 PHASE POWER		3–NO.12 1–NO.12 GND	THHN/ THWN	600
P/CU–1	3/4"	↓	SWBD1 MAIN SWITCHBOARD 30A BREAKER	A/C COMPRESSOR UNIT DSCU1 DISCONNECT SWITCH, THEN TO CU1	480V 3 PHASE POWER		3–NO.10 1–NO.10 GND	THHN/ THWN	600
P/ENV1	1"	PVC 80	LP1 LIGHTING PANEL	PJB304 JUNCTION BOX IN STAIRWELL	120VAC POWER TO ENVIRONMENTAL PANEL		4–NO.8 1–NO.8 GND	THHN/ THWN	600
P/ENV2	1"	↓	PJB304 JUNCTION BOX IN STAIRWELL	ENVIRONMENTAL CONTROL PANEL	120VAC POWER TO ENV. PANEL AND 120VAC POWER TO ENVIRONMENTAL BLOWER M304		4–NO.8 1–NO.8 GND 3–NO.12	↓	↓
C/MCP/ENV	1"	↓	MCP MAIN CONTROL PANEL	↓	24VDC DIGITAL INPUTS ENVIRONMENTAL CONTROLS PUMP STATION STATUS		24–NO.14	↓	↓
I/MCP/ENV	1"	RGS	MCP MAIN CONTROL PANEL	↓	ENV. INSTRUMENTATION SIGNALS PIT401 DISCHARGE PRESSURE	(2) CABLES SPARE	(3) 2/C NO.18 SHLD TC, HWC HW1010180 AND 1–NO.14 GND	PVC/PVC THHN/ THWN	300 600
P/VRFM	1"	PVC 80	LP1 LIGHTING PANEL	VEEDER ROOT FUEL MONITOR POWER PULLBOX VRFMPB	120VAC POWER	NO.12 GND, DEDICATED BARRIER GROUNDING IN VRFM CONSOLE	4–NO.14 1–NO.14 GND 1–NO.12 GND	THHN/ THWN	600
P/VRFM/ CONSOLE	3/4"	↓	VEEDER ROOT FUEL MONITOR POWER PULLBOX VFFMPB	VEEDER ROOT FUEL MONITOR CONSOLE	120VAC POWER		2–NO.14 1–NO.14 GND 1–NO.12 GND	↓	↓
P1/VRFM/ GFTK	1"	↓	↓	FUEL TANK OVERFILL ALARM POWER PULLBOX PPBGFTK	120VAC POWER TO ALARMS AND ALARM RELAY TO CONSOLE		4–NO.14 1–NO.14 GND	↓	↓
P2/VRFM/ GFTK	1"	↓	↓	FUEL TANK OVERFILL ALARM POWER PULLBOX PPBGFTK	SPARE CONDUIT		PULL STRING ONLY	–	–
C/VRFM/ MCP	3/4"	↓	VEEDER ROOT FUEL MONITOR CONSOLE	MCP MAIN CONTROL PANEL	24VDC DIGITAL INPUT TO MCP PLC GENERATOR FUEL LEVEL LOW		2–NO.14 PLUS ONE PULL STRING	THHN/ THWN	600
I1/VRFM	1"	↓	↓	VEEDER ROOT FUEL MONITOR SIGNAL PULLBOX IPBVRFM	MAG PLUS INVENTORY PROBE AND INTERSTATIAL LEAK SENSOR CABLES		(2) 2/C NO.18 SHLD TC, HWC HW1010180 AND 1–NO.14 GND	PVC/PVC THHN/ THWN	300 600
I2/VRFM	1"	↓	↓	VEEDER ROOT FUEL MONITOR SIGNAL PULLBOX IPBVRFM	SPARE CONDUIT		PULL STRING ONLY	–	–
I1/VRFM/ GFTK	1"	↓	VEEDER ROOT FUEL MONITOR SIGNAL PULLBOX IPBVRFM	GENERATOR FUEL TANK SIGNAL PULLBOX IPBGFTK	MAG PLUS INVENTORY PROBE AND INTERSTATIAL LEAK SENSOR CABLES	(2) SPARE CABLES TO COIL UP IN BOXES IPBVRFM AND IPBGFTK	(4) 2/C NO.18 SHLD TC, HWC HW1010180 AND 1–NO.14 GND	PVC/PVC THHN/ THWN	300 600
I2/VRFM/ GFTK	1"	↓	VEEDER ROOT FUEL MONITOR SIGNAL PULLBOX IPBVRFM	GENERATOR FUEL TANK SIGNAL PULLBOX IPBGFTK	SPARE CONDUIT		PULL STRING ONLY	–	–

CONDUIT & WIRE SCHEDULE

CONDUIT NO.	SIZE	TYPE	FROM	TO	USE	REMARKS	WIRE OR CABLE NO. REQ'D/SIZE	INSULATION TYPE	INSULATION VOLTS
FDR/M301	2–1/2"	PVC 80	SWBD1 MAIN SWITCHBOARD 225A BREAKER	VFD1 CABINET IN ELECTRICAL ROOM	480V POWER 3 PHASE		3–NO.4/0 1–NO.4 GND	THHN/ THWN	600
P/M301	3"	↓	VFD1 CABINET IN ELECTRICAL ROOM	PUMP CHAMBER ENVIRONMENTAL CONTROL PANEL FOR PUMP M301	480V POWER 3 PHASE	NOTE 3	3–NO.2/0 1–NO.4 GND	EPR/ HYPALON THHN/THWN	2000 600
C/VFD1/MCP	1"	↓	↓	MCP MAIN CONTROL PANEL	PUMP MOTOR M301 CONTROLS DIGITAL INPUTS AND OUTPUTS		20–NO.14	THHN/ THWN	600
I/VFD1/MCP	1"	RGS	↓	MCP MAIN CONTROL PANEL	INSTRUMENTATION SIGNALS ANALOG SPEED AND CURRENT		(4) 2/C NO.18 SHLD TC, HWC HW1010180 AND 1–NO.14 GND	PVC/PVC THHN/ THWN	300 600
FDR/M302	2–1/2"	PVC 80	SWBD1 MAIN SWITCHBOARD 225A BREAKER	VFD2 CABINET IN ELECTRICAL ROOM	480V POWER 3 PHASE		3–NO.4/0 1–NO.4 GND	THHN/ THWN	600
P/M302	3"	↓	VFD2 CABINET IN ELECTRICAL ROOM	PUMP CHAMBER ENVIRONMENTAL CONTROL PANEL FOR PUMP M302	480V POWER 3 PHASE	NOTE 3	3–NO.2/0 1–NO.4 GND	EPR/ HYPALON THHN/THWN	2000 600
C/VFD2/MCP	1"	↓	↓	MCP MAIN CONTROL PANEL	PUMP MOTOR M302 CONTROLS DIGITAL INPUTS AND OUTPUTS		20–NO.14	THHN/ THWN	600
I/VFD2/MCP	1"	RGS	↓	MCP MAIN CONTROL PANEL	INSTRUMENTATION SIGNALS ANALOG SPEED AND CURRENT		(4) 2/C NO.18 SHLD TC, HWC HW1010180 AND 1–NO.14 GND	PVC/PVC THHN/ THWN	300 600
FDR/M303	2–1/2"	PVC 80	SWBD1 MAIN SWITCHBOARD 225A BREAKER	VFD3 CABINET IN ELECTRICAL ROOM	480V POWER 3 PHASE		3–NO.4/0 1–NO.4 GND	THHN/ THWN	600
P/M303	3"	↓	VFD3 CABINET IN ELECTRICAL ROOM	PUMP CHAMBER ENVIRONMENTAL CONTROL PANEL FOR PUMP M303	480V POWER 3 PHASE	NOTE 3	3–NO.2/0 1–NO.4 GND	EPR/ HYPALON THHN/THWN	2000 600
C/VFD3/MCP	1"	↓	↓	MCP MAIN CONTROL PANEL	PUMP MOTOR M303 CONTROLS DIGITAL INPUTS AND OUTPUTS		20–NO.14	THHN/ THWN	600
I/VFD3/MCP	1"	RGS	↓	↓	INSTRUMENTATION SIGNALS ANALOG SPEED AND CURRENT		(4) 2/C NO.18 SHLD TC, HWC HW1010180 AND 1–NO.14 GND	PVC/PVC THHN/ THWN	300 600
P/M304	3/4"	PVC 80	ENVIRONMENTAL BLOWER M304 JUNCTION BOX PJB304 IN THE STAIRWELL	ENVIRONMENTAL BLOWER M304 DISCONNECT SWITCH DS304 THEN TO BLOWER MOTOR	480V POWER 3 PHASE		3–NO.12 1–NO.12 GND	THHN/ THWN	600
C/M304	3/4"	PVC 80	MCP MAIN CONTROL PANEL	ENVIRONMENTAL BLOWER DS304 DISCONNECT SWITCH	BLOWER MOTOR M304 DISCONNECT AUX. CONTACT DIGITAL INPUT		2–NO.14	THHN/ THWN	600
P/PCP MOV100	3/4"	PVC 80	SWBD1 MAIN SWITCHBOARD 30A BREAKER	MOTORIZED VALVE POWER AND CONTROL PANEL PCPMOV100	480V POWER 3 PHASE		3–NO.10 1–NO.10 GND	THHN/ THWN	600
C/PCP MOV100	1–1/4"	↓	MOTORIZED VALVE POWER AND CONTROL PANEL PCPMOV100	MCP MAIN CONTROL PANEL	PCPMOV100 CONTROLS FOR FCV101 AND FCV102		26–NO.14 1–NO.14 GND	↓	↓
P/FCV101	3/4"	↓	↓	FCV101 DISCONNECT SWITCH THEN TO MOTORIZED VALVE FCV101	480V POWER 3 PHASE		3–NO.12 1–NO.12 GND	↓	↓
C/FCV101	1"	↓	↓	CONTROL JUNCTION BOX CJBFCV101 THEN TO MOTORIZED VALVE FCV101 AND DISCONNECT DS101	FCV101 CONTROLS AND MOTOR HEATER		20–NO.14 1–NO.14 GND	↓	↓
P/FCV102	3/4"	↓	↓	FCV102 DISCONNECT SWITCH THEN TO MOTORIZED VALVE FCV102	480V POWER 3 PHASE		3–NO.12 1–NO.12 GND	↓	↓
C/FCV102	1"	↓	↓	CONTROL JUNCTION BOX CJBFCV102 THEN TO MOTORIZED VALVE FCV102 AND DISCONNECT DS102	FCV102 CONTROLS AND MOTOR HEATER		20–NO.14 1–NO.14 GND	↓	↓
C/LSL/LD /MCP	3/4"	PVC 80	MCP MAIN CONTROL PANEL	CJBFUEL CONTROL JUNCTION BOX AT GENERATOR FUEL TANK	LSL/LPS GENERATOR FUEL TANK LOW LEVEL SWITCH/ LEAK DETECTOR SWITCH		8–NO.14 1–NO.14 GND	THHN/ THWN	600
P/HOIST	3/4"	PVC 80	SWBD1 MAIN SWITCHBOARD 20A BREAKER	MONORAIL HOIST TERMINATION JUNCTION BOX	480V POWER 3 PHASE		3–NO.12 1–NO.12 GND	THHN/ THWN	600
P/MH300	3/4"	PVC 80	ENVIRONMENTAL PANEL	PJBMH300 POWER J–BOX ABOVE CABINET FOR SPLIT TO VFD301, VFD302 AND VFD303	120VAC POWER TO BOOSTER PUMP MOTOR HEATERS VIA ENVIRONMENTAL PANEL		6–NO.12 1–NO.12 GND	THHN/ THWN	600
P/MH301	3/4"	↓	PJBMH300 POWER J–BOX ABOVE CABINET FOR SPLIT TO VFD301, VFD302 AND VFD303	VFD1 CABINET IN ELECTRICAL ROOM	↓		2–NO.12 1–NO.12 GND	↓	↓
P/MH302	3/4"	↓	↓	VFD2 CABINET IN ELECTRICAL ROOM	↓		2–NO.12 1–NO.12 GND	↓	↓
P/MH303	3/4"	↓	↓	VFD3 CABINET IN ELECTRICAL ROOM	↓		2–NO.12 1–NO.12 GND	↓	↓
I/PIT101	1"	PVC 80	MCP MAIN CONTROL PANEL	BOOSTER PUMP STATION SUCTION LINE PRESSURE TRANSMITTER PIT101	4–20mA SIGNAL TO MCP ANALOG INPUT	(1) CABLE SPARE	(2) 2/C NO.18 SHLD TC, HWC HW1010180 AND 1–NO.14 GND	PVC/PVC THHN/ THWN	300 600

NOTES :

1. ALL WIRING INCLUDING LOW VOLTAGE CONTROL, DATA AND INSTRUMENTATION CABLES SHALL BE LISTED SUITABLE FOR USE IN WET LOCATIONS, AS DEFINED BY THE NEC, WHERE INSTALLED IN RACEWAYS BELOW GRADE. ALL CABLES USED IN NEC DEFINED WET LOCATIONS MUST BE ACCEPTABLE TO THE MANATEE COUNTY BUILDING DIVISION AND THE CITY OF BRADENTON. ALL WIRING INSTALLED BY THE CONTRACTOR THAT IS NOT ACCEPTABLE TO THE MANATEE COUNTY BUILDING DIVISION AND THE CITY OF BRADENTON, SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE FOR LABOR AND MATERIAL.
2. THE MAIN CONDUIT AND CABLE RUNS ONLY ARE SHOWN ON THIS DRAWING SCHEDULE. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL INTERCONNECTION POWER, CONTROL AND INSTRUMENTATION CABLES AND CONDUITS REQUIRED TO COMPLETE THE INSTALLATION AND MAKE IT AN INTEGRATED OPERATING SYSTEM. THE INTERCONNECTION CONDUITS AND CABLES SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE DETAILED ON EQUIPMENT, CONTROL, POWER AND INSTRUMENTATION SUBMITTALS PRESENTED BY THE CONTRACTOR DURING CONSTRUCTION, THAT ARE NOT SHOWN ON THE DRAWINGS.
3. THE CONTRACTOR SHALL FURNISH AND INSTALL 2000 VOLT INSULATED CABLE FOR THE BOOSTER PUMP MOTOR FEEDERS. THE PHASE CONDUCTORS SHALL BE NO.2/0 AWG DLO CABLE, ANIXTER PART NO. 5N–2021 OR APPROVED EQUAL. THE GROUNDING CONDUCTOR MAY BE 600V, TYPE THHN/THWN.

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN DLA
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY

PS 428 BOOSTER PUMP STATION

ELECTRICAL
CABLE AND CONDUIT SCHEDULE

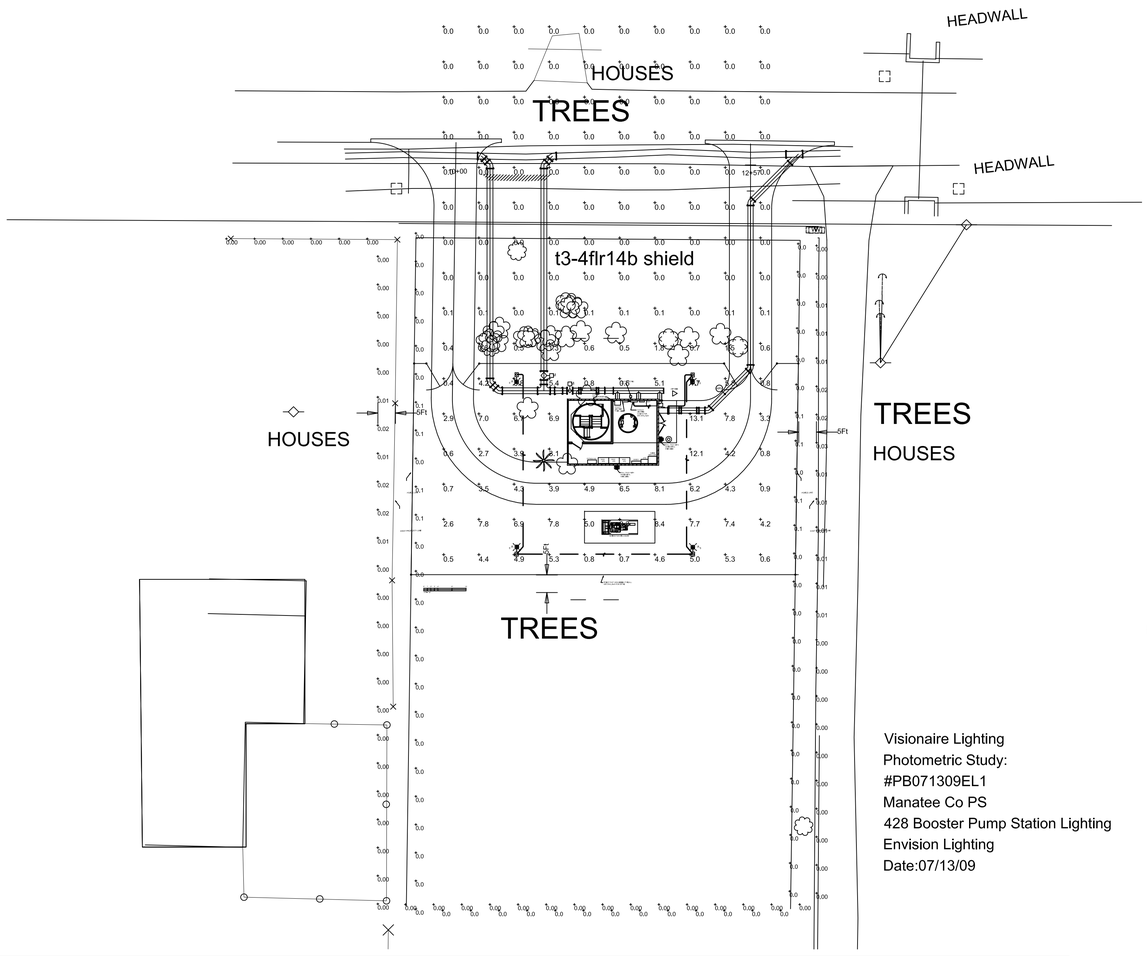
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

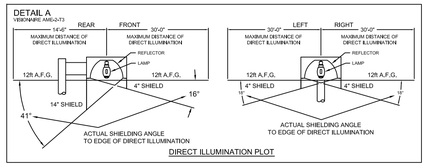
JOB NO. 7880C.10

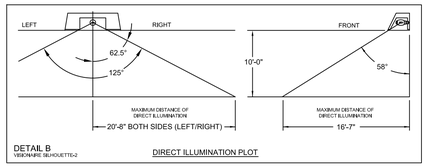
DRAWING NO. E-16

Last Opened by: 6-04-10 04:07pm DPerry

FILENAME: Last Saved By: cad 5-28-10 01:32pm C:\Documents and Settings\DPerry\Desktop\ps428\E-16 XREFS: 3624bdr







SITE PLAN

SCALE

THE FIXTURES ON THIS LAY-OUT HAVE BEEN APPROVED BY THE IDA.

BASED ON THE INFORMATION PROVIDED, ALL DIMENSIONS AND LUMINAIRE LOCATIONS SHOWN REPRESENT RECOMMENDED POSITIONS. THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING OR FUTURE FIELD CONDITIONS.

THIS LIGHTING PATTERN REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY CONDITIONS TAKEN UNDER CONTROLLED CONDIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY OF AMERICA APPROVED METHODS. ACTUAL PERFORMANCE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERENCE IN LAMPS, AND OTHER VARIABLE CONDITIONS. It is the responsibility of the owner to ensure compliance to all standards in effect

VISIONAIRE LIGHTING
Performance In A Whole New Light

Visionaire Lighting
Photometric Study:
#PB071309EL1
Manatee Co PS
428 Booster Pump Station Lighting
Envision Lighting
Date:07/13/09

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Lumens	LLF	Description
	4	A	SINGLE	16000	1.000	Visionaire American AME-2 T3-150PS-Single @ 12' mtg. ht. 14_3-sided sh
	2	B	SINGLE	9500	1.000	Visionaire Silhouette SIL-2 T3-100HPS-WALL MOUNT @ 10' mtg ht.

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts	Illuminance	Fc	1.65	13.1	0.0	N.A.	N.A.
Leeds Line	Illuminance	Fc	0.01	0.01	0.00	N.A.	N.A.
Property Line	Illuminance	Fc	0.01	0.1	0.0	N.A.	N.A.

File name: PB071309EL2

www.visionairelighting.com
Phone: (310) 512-6480 Fax: (310) 512-6486
19645 Rancho Way-Rancho Domiguez, CA. 90220

POINT-BY-POINT CALCULATION
Illuminance at Grade (Footcandles)

VISIONAIRE LIGHTING
Performance In A Whole New Light

PROJECT NAME: Manatee Co PS 428 Booster Pump Station Lighting

LIGHTING APPLICATION BY:
DAVID L. ALDWORTH
Email: pbaldwin@visionairelighting.com

REV:

DRAWING: PB071309EL2

DATE: 13July09

NOTE :

THE ELECTRICAL ENGINEER OF RECORD DOES NOT CERTIFY THIS DRAWING OR THE LIGHTING CALCULATIONS DEPICTED. THE INFORMATION ON THIS SHEET IS PROPRIATARY TO VISIONAIRE LIGHTING AND IS INCLUDED WITH THE PROJECT DRAWINGS FOR REVIEW BY THE MANATEE COUNTY PLANNING DEPARTMENT

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN DLA
CHECKED RG
DATE APRIL 2010
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL
AREA LIGHTING CALCULATIONS

VERIFY SCALES
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0 1"
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JOB NO. 7880C.10
DRAWING NO. E-17

Last Opened by: 6-04-10 04:07pm DPerry

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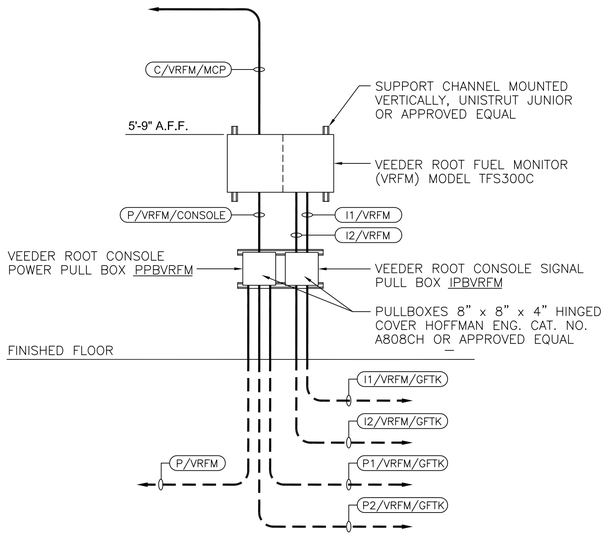
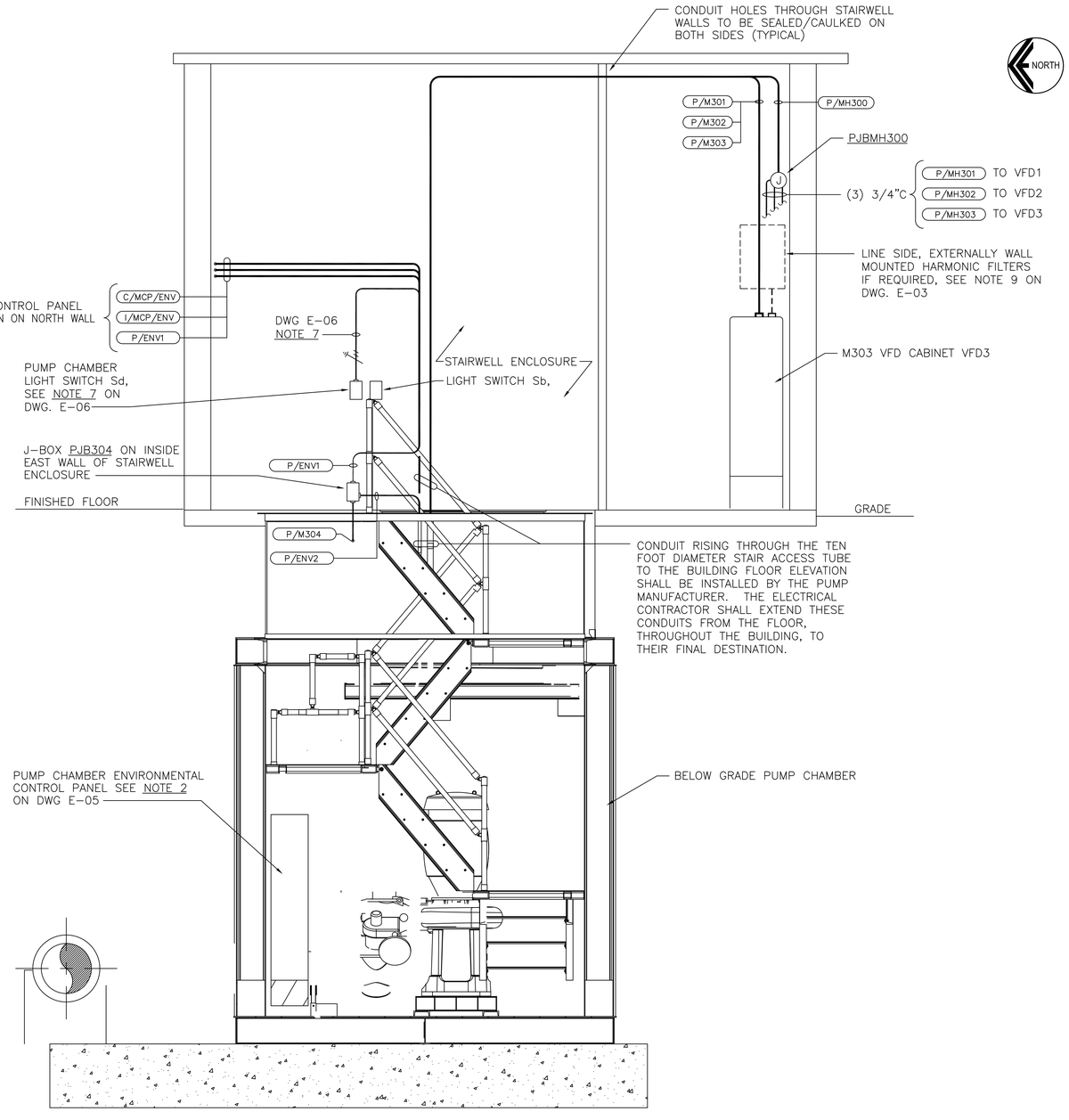


B VEEDER ROOT FUEL MONITOR MOUNTING DETAIL
DRAWING E–05 N.T.S.



A ELECTRICAL BUILDING AND PUMP CHAMBER SECTION LOOKING EAST
SCALE ½" = 1'–0"

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN DLA
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
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PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL
BUILDING ELEVATION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. E-18

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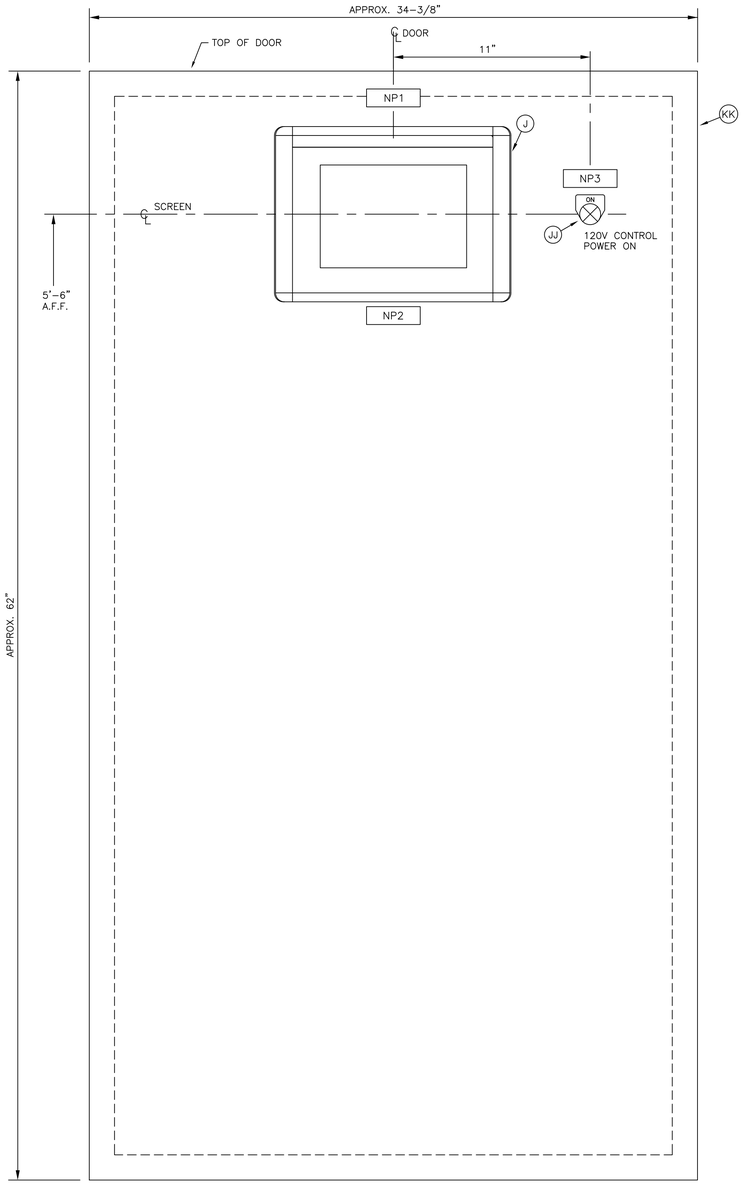
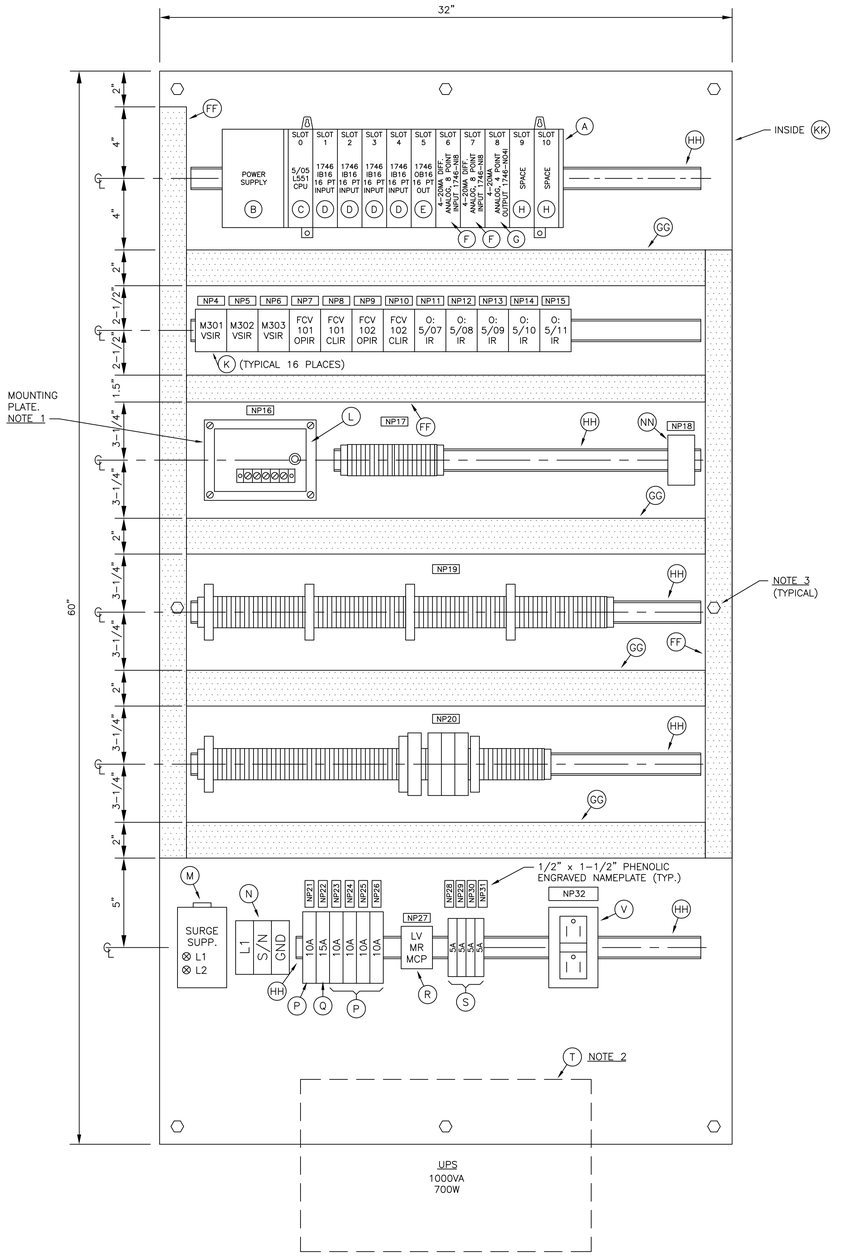


MCP DOOR FRONT LAYOUT
SCALE: 1/4" = 1'-0"



MCP INTERNAL BACK PANEL LAYOUT
SCALE: 1/4" = 1'-0"

NOTES:

1. PANEL FABRICATOR WILL FURNISH AND INSTALL A 4-1/2" x 6-1/4" x 1/8" ALUMINUM PLATE TO THE BACK OF ITEM "L" POWER SUPPLY FOR MOUNTING THE POWER SUPPLY TO THE BACK PLATE WITH FRONT ACCESSIBLE SCREWS.
2. UPS POWER SUPPLY SHALL BE LOCATED ON THE INSIDE BOTTOM OF THE ENCLOSURE. THE UPS UNIT IS 9.6" HIGH, 6.2" WIDE, 16.2" LONG AND WEIGHS 35 LBS.
3. BOTTOM OF WIREWAY SHALL HAVE CUTOUTS FOR BACK PANEL MOUNTING BOLTS AS REQUIRED.
4. FOR TERMINAL BLOCK DETAILS, SEE DWG. N-03.
5. FOR BILL OF MATERIALS AND NAMEPLATE SCHEDULE, SEE DWG. N-02.
6. FURNISH A 11" x 17" LAMINATED PANEL WIRING SCHEMATIC PERMANENTLY ATTACHED TO THE INTERIOR OF THE PANEL DOOR.
7. ALL CONTROL PANELS SHALL BE UL508 LISTED AND LABELED AS A COMPLETED ASSEMBLY. THE PANEL FABRICTOR SHALL FURNISH AND INSTALL ALL ITEMS NOT SPEICIFICALLY DETAILED IN THE DRAWINGS REQUIRED TO HAVE THE PANELS UL LISTED AND LABELED. ALL INSPECTIONS, APPROVALS AND MODIFICATIONS REQUIRED TO HAVE THE COMPLETED PANEL LABELED AND LISTED BY UL SHALL BE FURNISHED BY, AND THE RESPONSIBILITY OF, THE PANEL FABRICATOR AND CONTRACTOR.
8. WHITE INSULATION ON THE WIRE SHALL BE USED ONLY FOR NEUTRAL CONDUCTORS AND GREEN SHALL BE USED ONLY FOR GROUND CONDUCTORS.
9. ALL CONTROL WIRE SHALL BE NO.16 AWG TYPE TFF OR MTW UNLESS NOTED AS LARGER IN THE NOTES OR ON THE DRAWINGS. ALL POWER WIRING SHALL BE A MINIMUM OF NO.12 AWG TYPE THHN/THWN AND AS SIZED ON THE CONDUIT AND CABLE SCHEDULE.
10. WIREWAY TO BE FILLED TO ONLY 50% CAPACITY INSIDE THE PANEL.
11. ALL WIRE SHALL BE MARKED ON BOTH ENDS WITH WHITE HEAT SHRINK MARKERS PRINTED IN BLACK WITH A MACHINE. NO HAND WRITTEN OR EXPANDED DOT MATRIX MARKERS WITH HAND WRAPPED CLEAR LAMINATION SHALL BE ACCEPTABLE. THE NUMBERS AND LETTERS MUST BE LETTER QUALITY WHERE ALL LINES AND SHAPES APPEAR AS SOLID.

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN JP
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
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PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
MAIN CONTROL PANEL MCP
PANEL LAYOUT AND DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
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JOB NO. 7880C.10
DRAWING NO. N-01

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BILL OF MATERIALS

ITEM	QTY	DESCRIPTION
(A)	1	PLC I/O CHASSIS ASSEMBLY FOR I/O MODULES WITH CHASSIS INTERCONNECT CABLE IF REQUIRED.
(B)	1	POWER SUPPLY FOR PLC.
(C)	1	PROCESSOR MODULE WITH 64K WORDS MEMORY.
(D)	6	12 POINT, 24 VOLTS DC, (10–30VDC) INPUT MODULE.
(E)	1	12 POINT, 24 VOLTS DC (10–50VDC) OUTPUT MODULE.
(F)	3	4 POINT, +/–10VDC OR +/–20MADC, ANALOG INPUT MODULE.
(G)	2	4 POINT, 0–20MADC ANALOG OUTPUT MODULE.
(H)	AS REQ'D	EMPTY SLOT FILLER.
(J)	1	OPERATOR INTERFACE TERMINAL (OIT), COLOR TOUCH SCREEN WITH COMMUNICATION CABLE TO PLC.
(K)	12	24VDC COIL, DPDT RELAY WITH A LIGHT ACROSS THE COIL, AN EIGHT (8) PIN ROUND PLUG–IN BASE AND A COLOR CODED ENCAPSULATED COIL. SQUARE D CLASS 8501 TYPE KPD12P14–V53 WITH AN OMRON NO. PF083A SOCKET. (OR APPROVED EQUAL)
(L)	1	24 VOLT DC, 10 AMPERE OUTPUT, 120 VOLT, 50–400HZ INPUT POWER SUPPLY WITH SCREW TERMINALS FOR INPUT & OUTPUT CONNECTIONS AND A SURFACE MOUNTING CASE. ACOPIAN NO. U24Y1000. (OR APPROVED EQUAL)
(M)	1	SINGLE PHASE, 120/240VAC, FAIL–SAFE AND FUSED, STATUS INDICATING, SOLID STATE, UL LISTED, LESS THAN 5 NANOSECONDS RESPONSE TIME SURGE PROTECTOR WITH 40K AMPS MAXIMUM SURGE CAPACITY, 360 JOULES MAXIMUM ENERGY ABSORPTION, MAXIMUM ALLOWABLE L–N VOLTAGE OF 150V RMS AND AN INTIAL CLAMPING VOLTAGE OF 240 VOLTS NOMINAL. EDCO MODEL EMC–240B. (OR APPROVED EQUAL)
(N)	1	3 POLE POWER DISTRIBUTION TERMINAL BLOCK WITH MAIN TERMINALS FOR ONE (1) NO.14–2/0 AND BRANCH TERMINALS FOR SIX (6) NO.14–4 CABLES. SQUARE D CLASS 9080 TYPE LBA362106. (OR APPROVED EQUAL)
(P)	5	10 AMP, 240VAC MAXIMUM, SINGLE POLE, THERMAL MAGNETIC, DIN RAIL MOUNT CIRCUIT BREAKER. SQUARE D CLASS 720, CAT. NO. QOU110. (OR APPROVED EQUAL)
(Q)	1	15 AMP, 240VAC MAXIMUM, SINGLE POLE, THERMAL MAGNETIC, DIN RAIL MOUNT CIRCUIT BREAKER. SQUARE D CLASS 720, CAT. NO. QOU115. (OR APPROVED EQUAL)
(R)	1	SINGLE PHASE VOLTAGE BAND, UNDER AND OVER VOLTAGE LIMIT MONITOR RELAY FOR 120VAC NOMINAL SYSTEM. UNDER VOLTAGE RANGE OF 90–120VAC, AND OVER VOLTAGE OF 120–150VAC, OCTAL BASE, AND LOCKNUT ADJUSTMENT. DIVERSIFIED ELECTRONICS MODEL VBA–120–ALA WITH AN OMRON NO. PF083A SOCKET. (OR APPROVED EQUAL)
(S)	4	5 AMP, 240VAC MAXIMUM, SINGLE POLE, THERMAL MAGNETIC, DIN RAIL MOUNT CIRCUIT BREAKER WITH A TRIP RESET BUTTON AND "OFF–ON" BUTTON. E.T.A. NO. 42–01–5A. (OR APPROVED EQUAL)
(T)	1	1000VA/700W, 120VAC, 8.3 AMPS, LINE–INTERACTIVE UPS WITH HOT–SWAPPABLE SEALED, MAINTENANCE–FREE, LEAD–ACID BATTERY. POWERWARE NO. PW9120–1000 (OR APPROVED EQUAL)
(U)	32	BLACK PHENOLIC NAMEPLATES ENGRAVED TO SHOW WHITE LETTERS, THE SIZE AND ENGRAVING AS SHOWN ON THE SCHEDULES.
(V)	1	15 AMP, 125 VOLT, GROUND FAULT INDICATION (GFI) RECEPTACLE IN A DIN RAIL UTILITY BOX. THE RECEPTACLE IS HUBBELL NO. DRUBGF115. (OR APPROVED EQUAL)
(W)	AS REQ'D	PHOENIX TYPE UK5N, PART NO. 3004362 COMPRESSION CLAMP TERMINAL BLOCK, 6.2mm WIDE, NO.10–24 AWG WIRE, GRAY BODY. THE TERMINALS WILL BE MARKED AS PER THE DRAWINGS WITH COMPUTER PRINTED, VERTICAL MARKED TYPE ZBM6–CMS MARKERS. (OR APPROVED EQUAL)
(X)	AS REQ'D	PHOENIX TYPE UK5NBU, PART NO. 3004388 COMPRESSION CLAMP TERMINAL BLOCK, 6.2mm WIDE, NO.10–24 AWG WIRE, BLUE BODY. SAME MARKERS AS ITEM "W". (OR APPROVED EQUAL)
(Y)	AS REQ'D	PHOENIX TYPE USLKG5, PART NO. 0441504 COMPRESSION CLAMP GROUNDING TERMINAL BLOCK, 6.2mm WIDE, NO.10–24 AWG WIRE, GREEN AND YELLOW BODY. SAME MARKERS AS ITEM "W". (OR APPROVED EQUAL)
(Z)	AS REQ'D	PHOENIX TYPE E/UK, PART NO. 1201442 END STOP. (OR APPROVED EQUAL)

BILL OF MATERIALS

ITEM	QTY	DESCRIPTION
(AA)	9	PHOENIX TYPE D–UK4/10, NO. 3003020 GRAY END SECTION FOR TYPE UK5N TERMINALS. (OR APPROVED EQUAL)
(BB)	6	PHOENIX TYPE FBI10–6, 10 POLE JUMPER BAR WITH TEN (10) SCREWS FOR TYPE UK5N TERMINALS, PART NO. 0203250. (OR APPROVED EQUAL)
(CC)	4	PHOENIX PLUGGABLE SURGE PROTECTOR FOR TWO (2) 4–20MADC SIGNALS, MCR–PLUGTRAB PT SERIES, CAT. NO. 2838228, TYPE PR2X2–24DC–ST AND CAT. NO. 2639208, TYPE PT2X2–BE BASE. (OR APPROVED EQUAL)
(DD)	AS REQ'D	2 AMP, 240VAC MAXIMUM, SINGLE POLE, THERMAL MAGNETIC, DIN RAIL MOUNT CIRCUIT BREAKER WITH A TRIP RESET BUTTON AND "OFF–ON" BUTTON. E.T.A. NO. 42–01–2A. (OR APPROVED EQUAL)
(EE)	AS REQ'D	8 AMP, SAME AS ITEM "DD". E.T.A. CAT. NO. 42–01–8A. (OR APPROVED EQUAL)
(FF)	2	1–1/2" WIDE x 3" HIGH, 6' LONG, WHITE PVC, SLOTTED SIDE WIRING DUCT WITH 1–1/2" WIDE SOLID PVC COVER. THE WIRING DUCT IS PANDUIT NO. E1.5X3WH6 AND THE COVER IS NO. C1.5WH6. (OR APPROVED EQUAL)
(GG)	2	2" WIDE x 3" HIGH, 6' LONG, WHITE PVC, SLOTTED SIDE WIRING DUCT WITH 2" WIDE SOLID PVC COVER. THE WIRING DUCT IS PANDUIT NO. E2X3WH6 AND THE COVER IS NO. C2WH6. (OR APPROVED EQUAL)
(HH)	6	3' LENGTH OF ALUMINUM DIN RAIL, PRE–DRILLED, 2–1/4" ELEVATED TOP HAT RAIL FOR OMRON TYPE PF SERIES RELAY SOCKETS. ALLEN–BRADLEY CAT. NO. 1492–DR6. (OR APPROVED EQUAL)
(JJ)	1	NEMA TYPE 4X/13, CORROSION RESISTANT, 120VAC, TRANSFORMER TYPE, 30mm INDICATING LIGHT WITH A GREEN GLASS LENS AND A "POWER ON" LEGEND PLATE. INDICATING LIGHT IS SQUARE D CLASS 9001 TYPE KT1G31 AND THE LEGEND IS NO. KN338. (OR APPROVED EQUAL)
(KK)	1	ENCLOSURE, NEMA 12, FREE STANDING, SINGLE ACCESS WITH HINGED FRONT DOOR WITH LOCKABLE 3–POINT LATCH, SUITABLE FOR FUTURE SIDE PANEL MOUNTING, HOFFMAN ENGINEERING CAT. NO. A–723618FS WITH 60" x 32" BACK PANEL CAT. NO. A–72P36F1, 6" HIGH FLOOR STANDING KIT CAT. NO. A–FK0618 AND LIGHTING PACKAGE CAT. NO. A–LF16D24. (OR APPROVED EQUAL)
(LL)	1	FLUORESCENT LAMP FOR ITEM A–LF16D24 NO. F20T12/CW. (OR APPROVED EQUAL)

NAMEPLATE SCHEDULE

N.P. NO.	FIRST LINE	SECOND LINE	THIRD LINE	SIZE
1	PUMP STATION	MAIN CONTROL PANEL	MCP	1" x 3"
2	OPERATOR INTERFACE	TERMINAL OIT		↓
3	CONTROL POWER			↓
4	M301VSIR			1/2" x 1–1/2"
5	M302VSIR			↓
6	M303VSIR			↓
7	FCV101OPIR			↓
8	FCV101CLIR			↓
9	FCV102OPIR			↓
10	FCV102CLIR			↓
11	O:4/07IR			↓
12	O:4/08IR			↓
13	O:4/09IR			↓
14	O:4/10IR			↓
15	O:4/11IR			↓
16	24VDCPS			↓
17	24VDC TB			↓
18	ETHERNET SWITCH			↓
19	TB1			↓
20	TB2			↓
21	MLB	MAINTENANCE LIGHT		↓
22	CCB	CONTROL POWER		↓
23	GFRB	PANEL RECEPTACLE		↓
24	SPARE			↓
25	SPARE			↓
26	FUEL ALARMS			↓
27	LVMRMCP	LOW VOLTAGE MONITOR		↓
28	24VDCPS			↓
29	PLC			↓
30	PMMCB	MCB POWER MONITOR		↓
31	PMSWBD1	SWBD1 POWER MONITOR		↓
32	15A GFCI	120VAC RECEPTACLE		1" x 3"

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN JP
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
MAIN CONTROL PANEL MCP
BILL OF MATERIALS AND NAMEPLATE SCHEDULE

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
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JOB NO. 7880C.10
DRAWING NO. N-02

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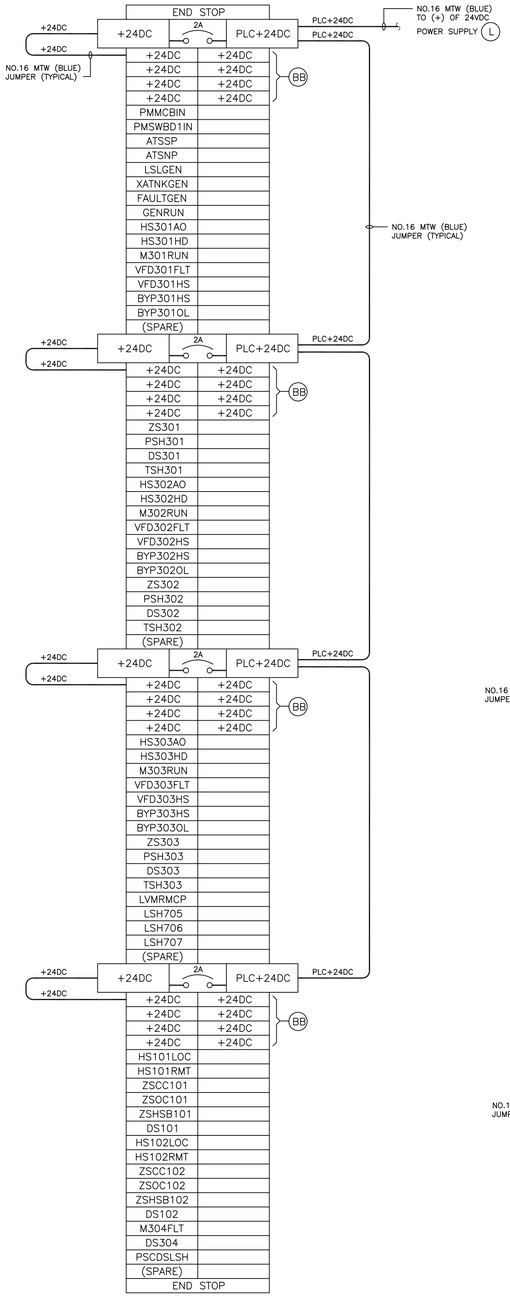
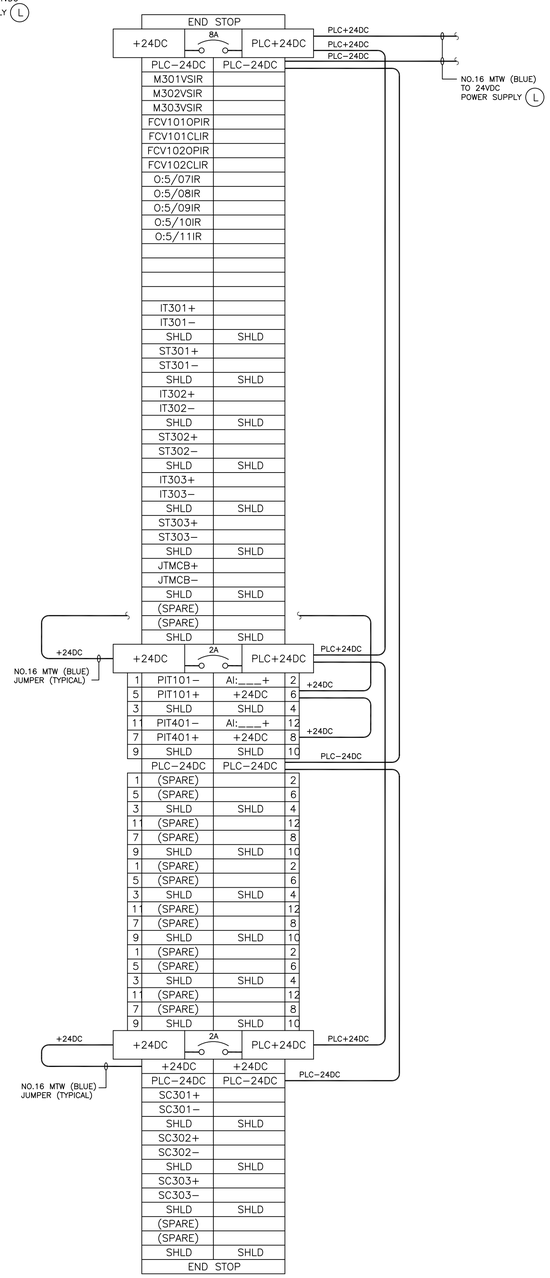
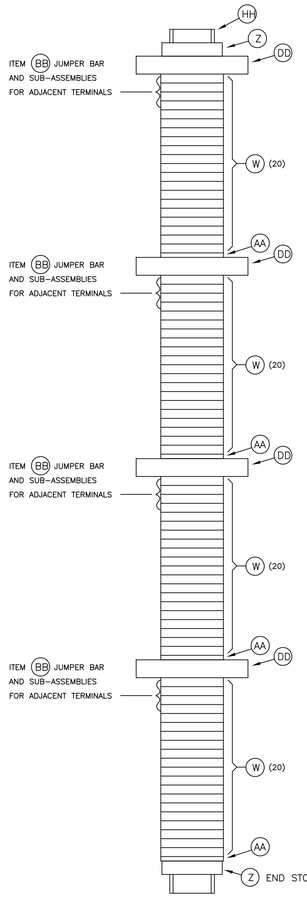


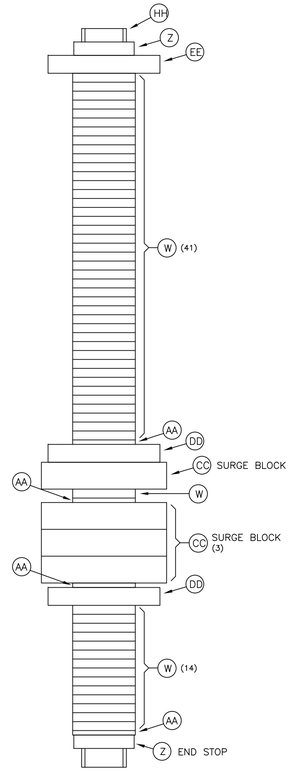
LAYOUT AND MARKING FOR
TERMINAL BLOCK TB1
ON INTERNAL BACK PANEL
OF MCP PANEL



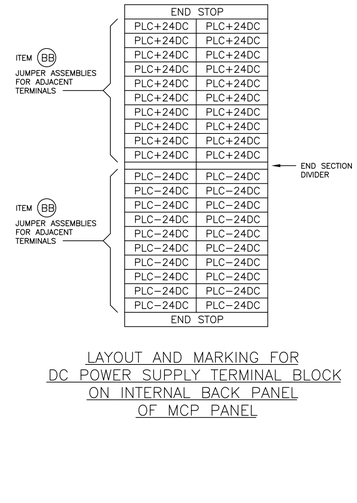
LAYOUT AND MARKING FOR
TERMINAL BLOCK TB2
ON INTERNAL BACK PANEL
OF MCP PANEL



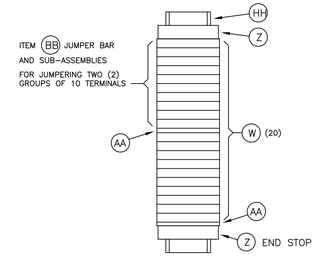
TERMINAL BLOCK TB1
ON INTERNAL BACK PANEL
OF MCP PANEL
APPROX. HALF SCALE



TERMINAL BLOCK TB2
ON INTERNAL BACK PANEL
OF MCP PANEL
APPROX. HALF SCALE



LAYOUT AND MARKING FOR
DC POWER SUPPLY TERMINAL BLOCK
ON INTERNAL BACK PANEL
OF MCP PANEL
APPROX. HALF SCALE



DC POWER SUPPLY TERMINAL BLOCK
ON INTERNAL BACK PANEL
OF MCP PANEL
APPROX. HALF SCALE

TERMINAL BLOCK
ITEM DIMENSIONS

(W) (X) (Y)	1.67"W (42.5mm) X 0.24" THICK (6.2mm)
(Z)	1.67"W (42.5mm) X 0.37" THICK (9.5mm)
(AA)	1.67"W (42.5mm) X 0.07" THICK (1.8mm)

NOTES:

1. ALL TERMINALS SHOWN WITHOUT MARKERS SHALL HAVE A BLANK PHOENIX TYPE ZBM6−CMS MARKER FOR FUTURE MARKING. TYPICAL FOR ALL TERMINAL BLOCKS.

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN JP
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
MAIN CONTROL PANEL MCP
TERMINAL BLOCKS - LAYOUTS AND DETAILS

VERIFY SCALES
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0 1"
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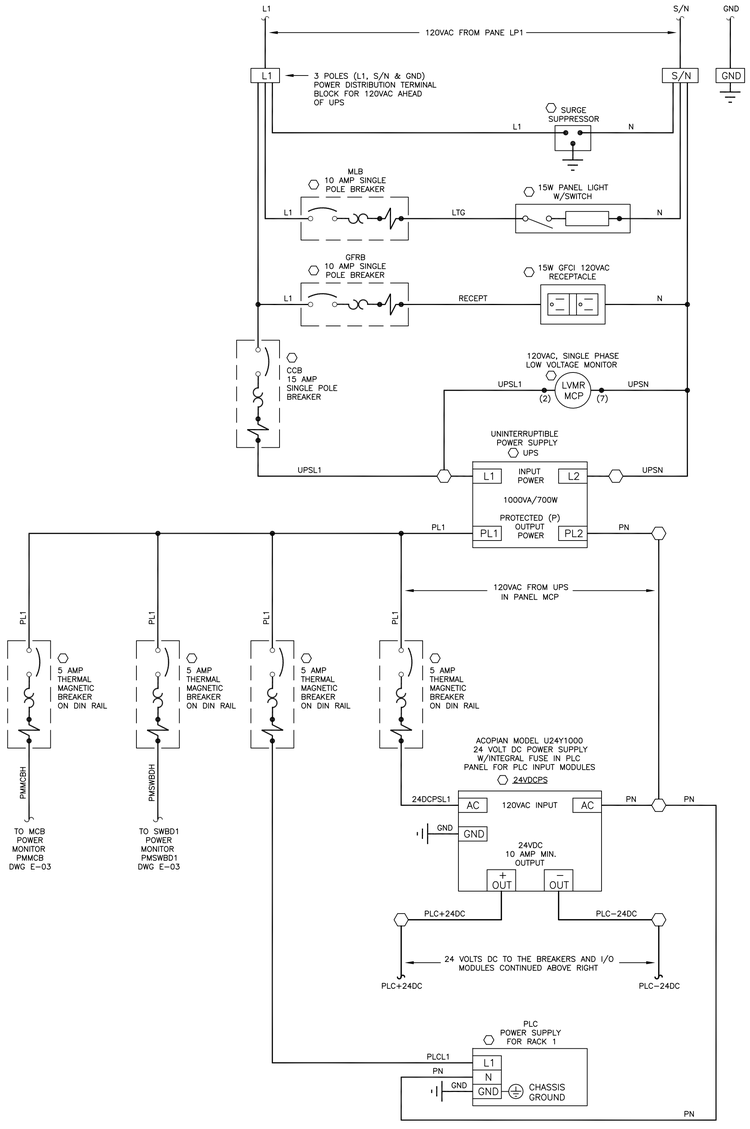
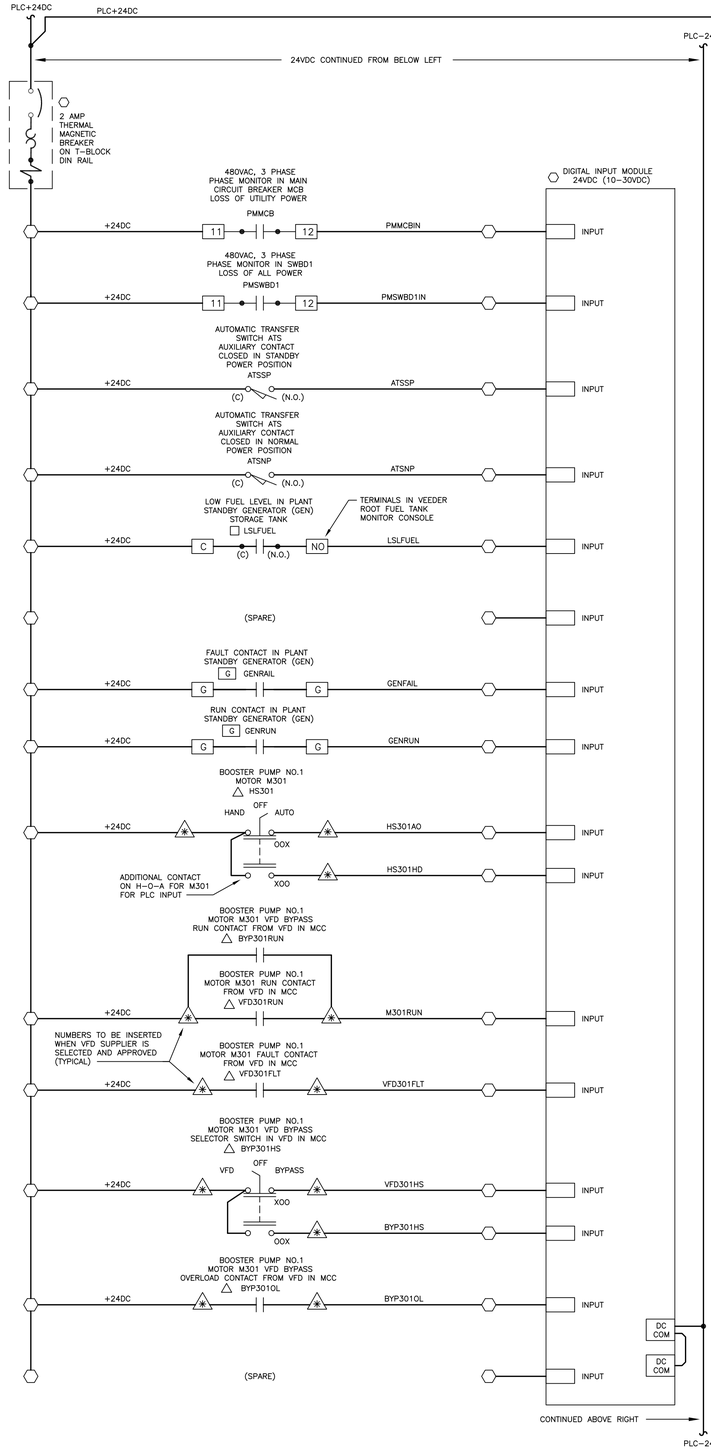
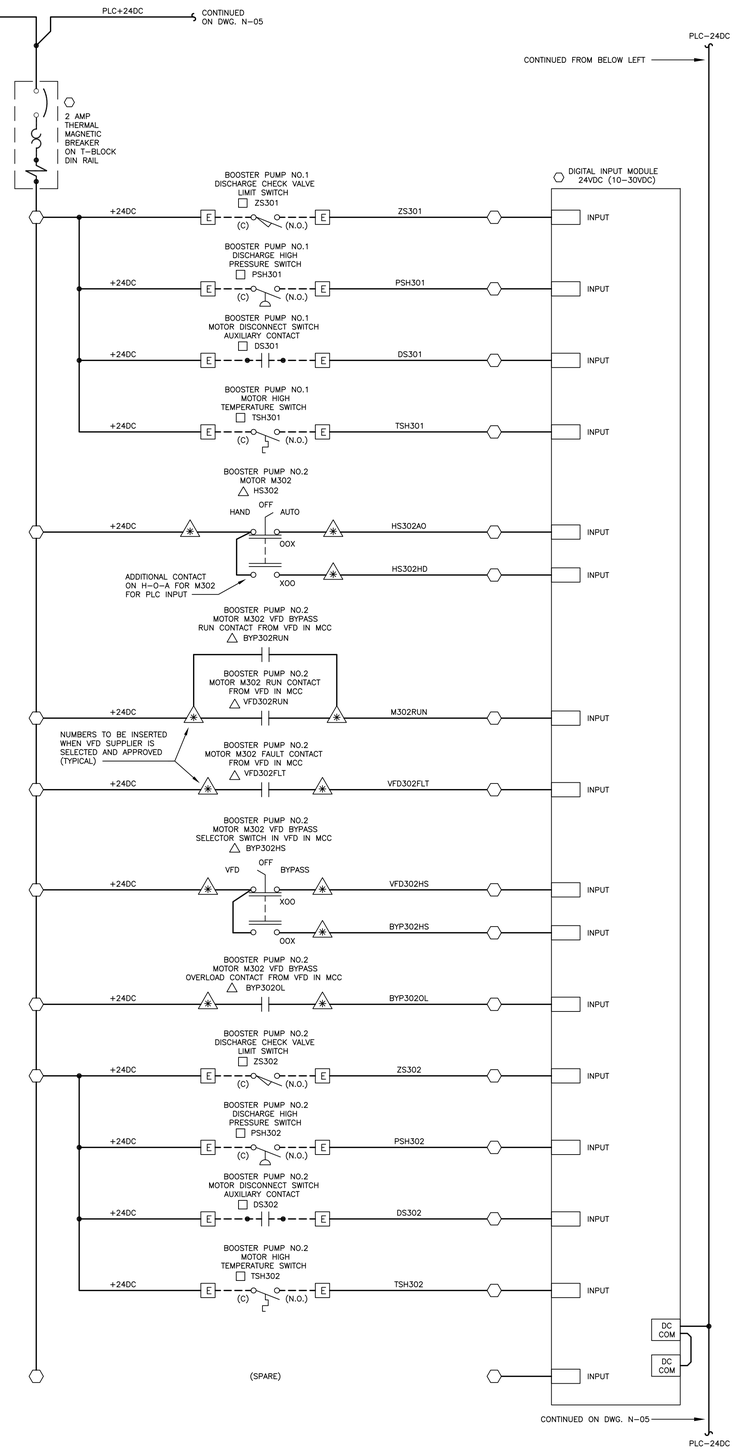


120VAC SCHEMATIC DIAGRAM
FOR PLC SECTION OF PANEL MCP

LEGEND:

- ☐ ITEMS OR DEVICES LOCATED IN THE FIELD, REMOTE TO A PANEL
- △ ITEMS OR DEVICES LOCATED IN VARIABLE FREQUENCY DRIVES
- ⬡ ITEMS OR DEVICES LOCATED IN PLC SECTION OF PANEL MCP
- G ITEMS LOCATED IN THE STANDBY GENERATOR (GEN) SYSTEM
- E ITEMS OR DEVICES LOCATED IN THE PUMP STATION CHAMBER ENVIRONMENTAL CONTROL PANEL
- ---- CONDUIT AND/OR WIRING IN THE PUMP STATION CHAMBER FURNISHED AND INSTALLED BY THE PUMP STATION CHAMBER MANUFACTURER





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ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

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REV	DATE	BY	DESCRIPTION

DESIGNED W. LAHEY
DRAWN JP
CHECKED RG
DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
FL. REG. NO.: 31103
PROJECT ENGINEER

carollo
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PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
MAIN CONTROL PANEL MCP
PLC I/O SCHEMATIC DIAGRAM - 1 OF 4

VERIFY SCALES
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0 1"
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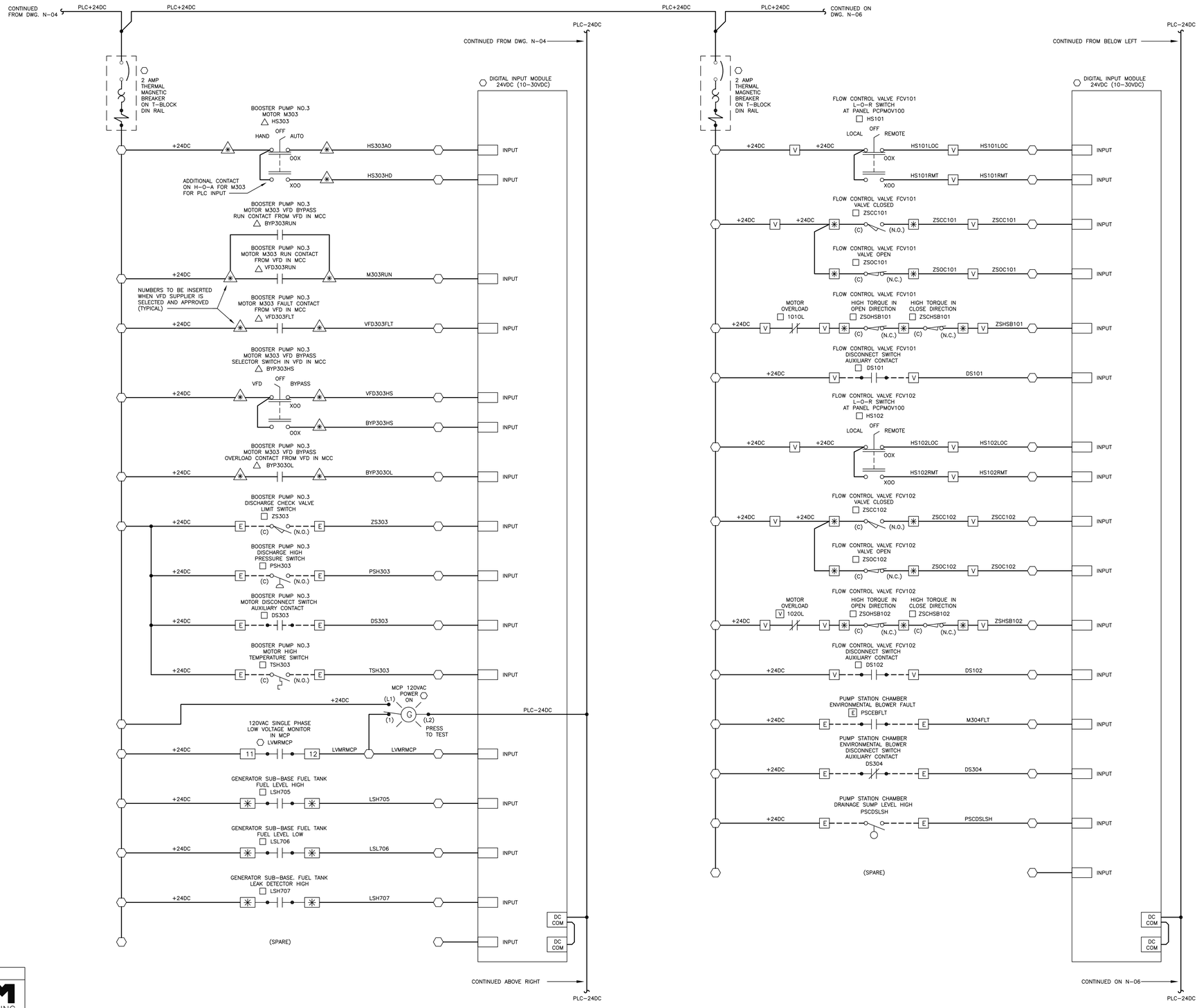

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P.O. BOX 5106 LAKELAND, FLORIDA 33807

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MANATEE COUNTY

PS 428 BOOSTER PUMP STATION

MAIN CONTROL PANEL MCP PLC I/O SCHEMATIC DIAGRAM - 2 OF 4

VERIFY SCALES
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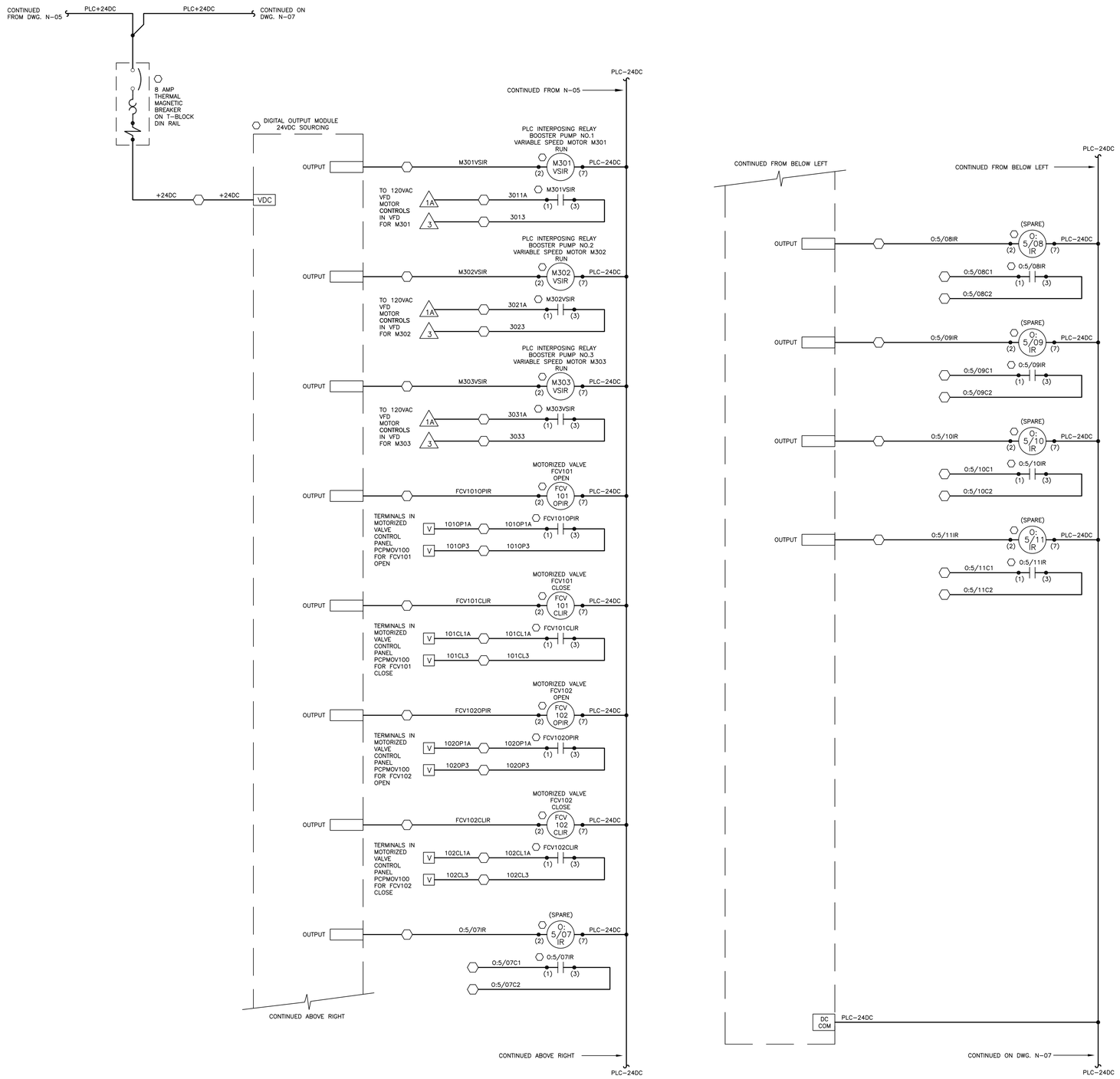

LEGEND:

- □ ITEMS OR DEVICES LOCATED IN THE FIELD, REMOTE TO A PANEL
- △ ITEMS OR DEVICES LOCATED IN VARIABLE FREQUENCY DRIVES
- ⬡ ITEMS OR DEVICES LOCATED IN PLC SECTION OF PANEL MCP
- [V] ITEMS OR DEVICES LOCATED IN MOTORIZED VALVE POWER AND CONTROL PANEL PCPMOV100

JOB NO. 35157

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MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
MAIN CONTROL PANEL MCP
PLC I/O SCHEMATIC DIAGRAM - 3 OF 4

VERIFY SCALES
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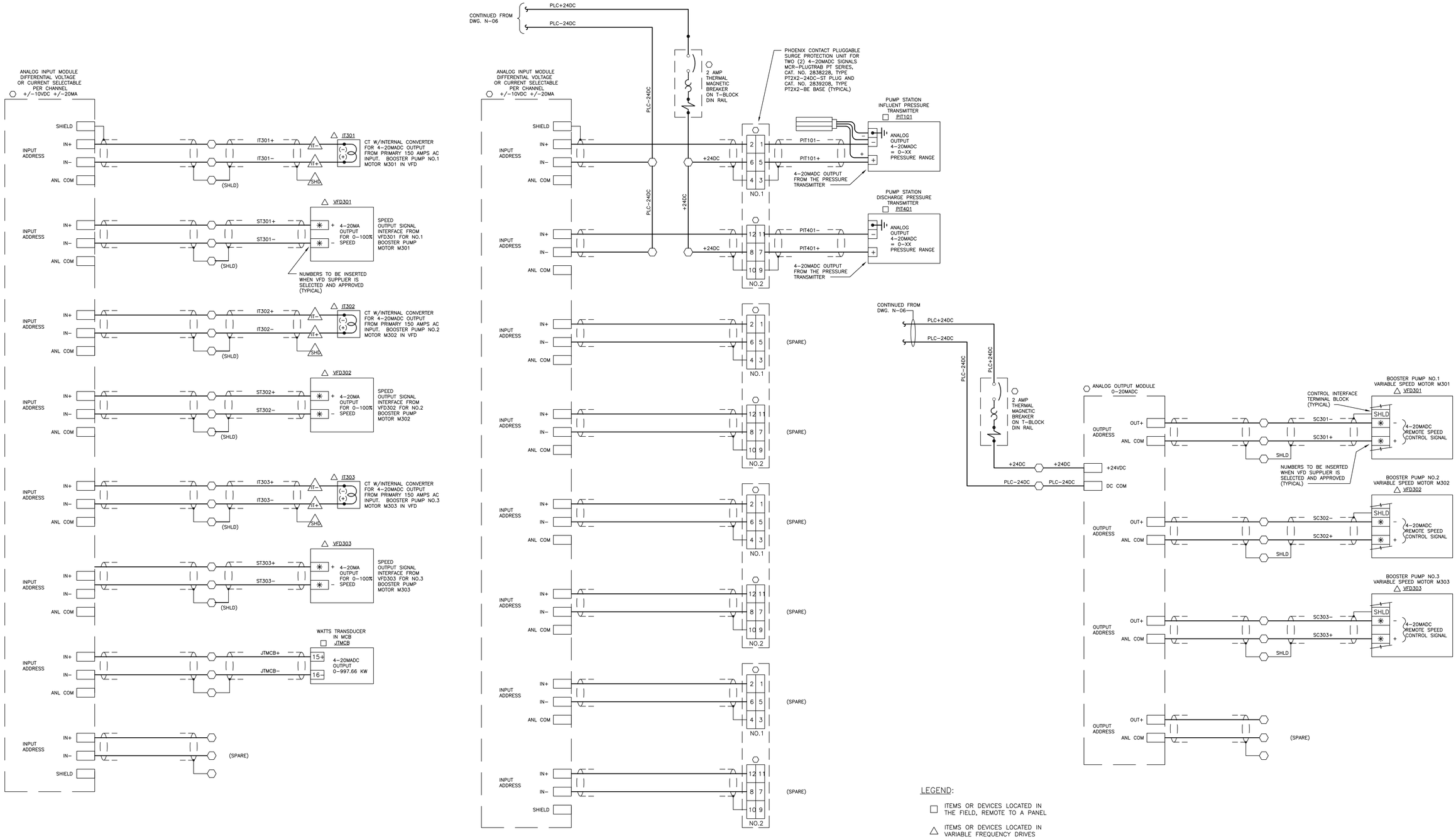

LEGEND:

- □ ITEMS OR DEVICES LOCATED IN THE FIELD, REMOTE TO A PANEL
- △ ITEMS OR DEVICES LOCATED IN VARIABLE FREQUENCY DRIVES
- ⬡ ITEMS OR DEVICES LOCATED IN PLC SECTION OF PANEL MCP

JOB NO. 35157

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P.O. BOX 5106 LAKELAND, FLORIDA 33807

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MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
MAIN CONTROL PANEL MCP
PLC I/O SCHEMATIC DIAGRAM - 4 OF 4

VERIFY SCALES
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JOB NO. 7880C.10
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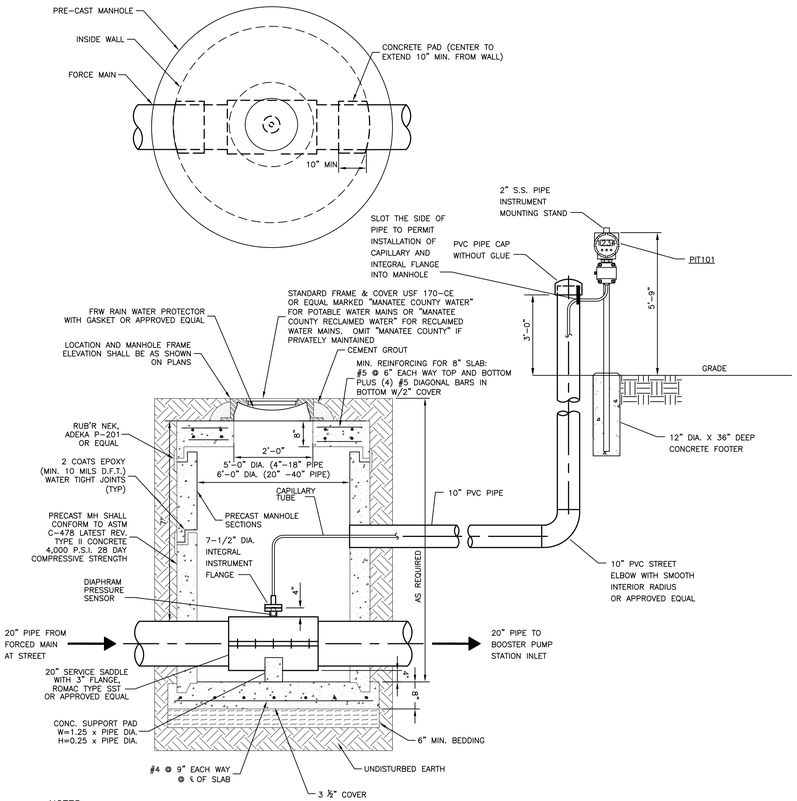
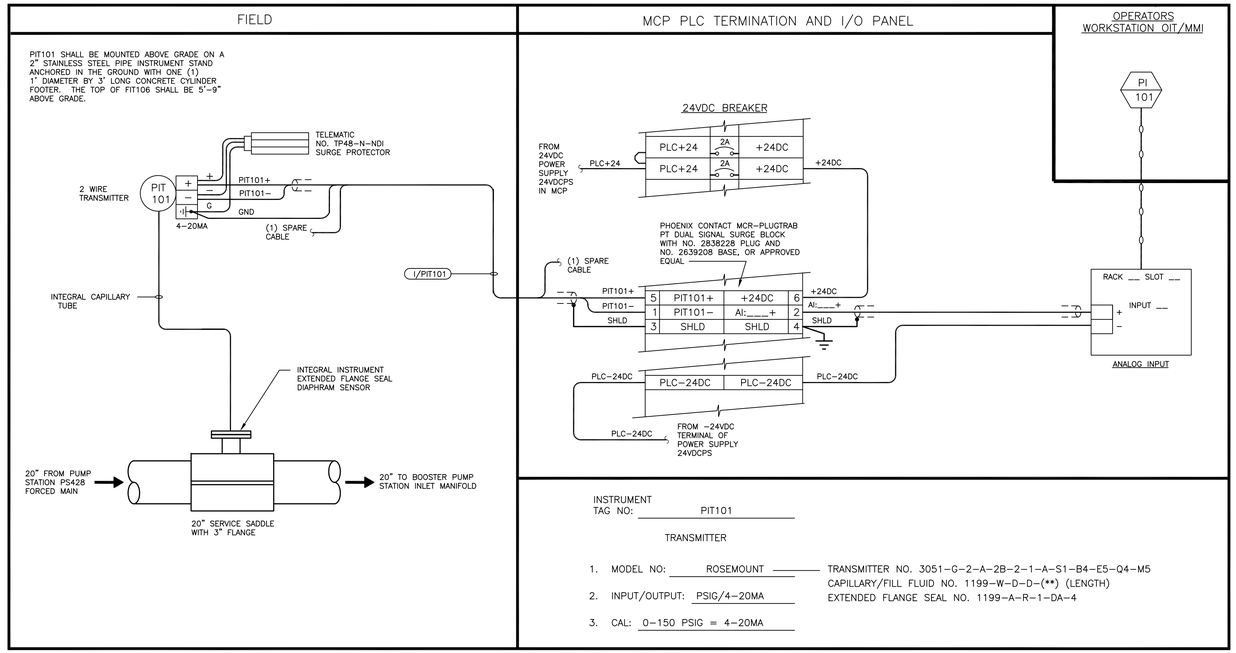


NOTES:

1. FOR MANHOLES WITH LESS THAN 44 INCHES OF COVER FROM TOP-OF-PIPE TO TOP-OF-FRAME, FRAME & COVER TO BE 32-INCH PAMREX WITH 32-INCH OPENING. MINIMUM ALLOWABLE COVER IS 36 INCHES.
2. ALL PIPE PENETRATING MANHOLE SHALL HAVE RESILIENT PIPE TO MANHOLE SEALS PER ASTM C-923.
3. FINAL GRADE TO BE SLOPED AWAY FROM MANHOLE.

(A) PUMP STATION SUCTION PIT101 INSTALLATION DETAIL

SCALE: APPROX. 3/8" = 1'-0"
SEE PLAN DWG. E-04

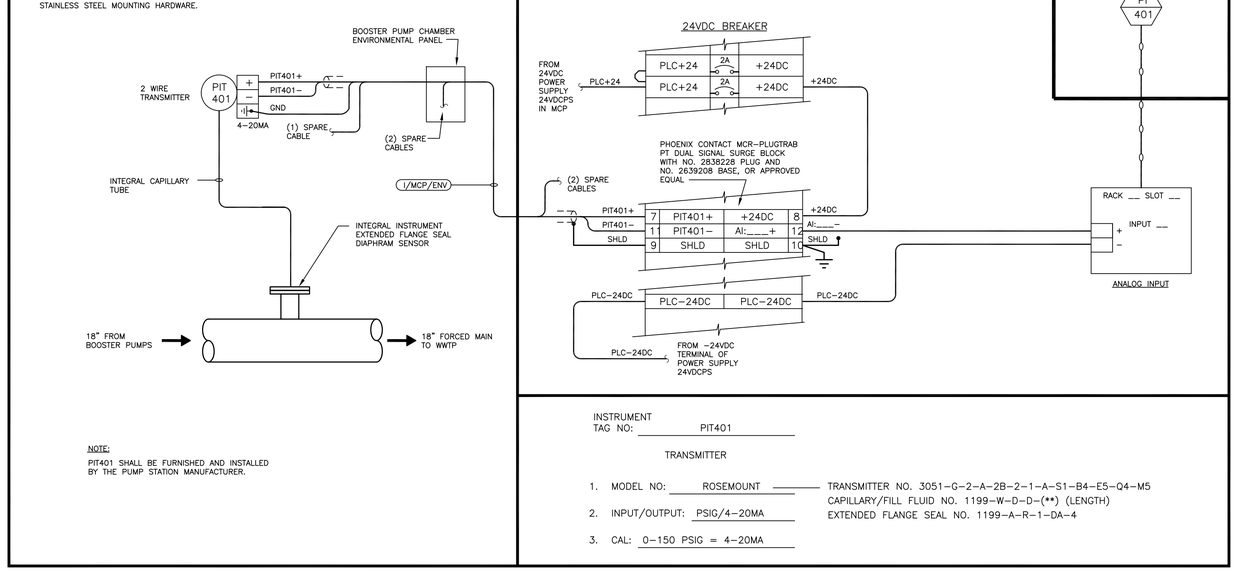


INSTRUMENT TAG NO: PIT101

TRANSMITTER

1. MODEL NO: ROSEMOUNT — TRANSMITTER NO. 3051-G-2-A-2B-2-1-A-S1-B4-E5-Q4-M5 CAPILLARY/FILL FLUID NO. 1199-W-D-D-(**) (LENGTH) EXTENDED FLANGE SEAL NO. 1199-A-R-1-DA-4
2. INPUT/OUTPUT: PSIG/4-20MA
3. CAL: 0-150 PSIG = 4-20MA

BOOSTER PUMP STATION SUCTION PRESSURE LOOP PIT101



INSTRUMENT TAG NO: PIT401

TRANSMITTER

1. MODEL NO: ROSEMOUNT — TRANSMITTER NO. 3051-G-2-A-2B-2-1-A-S1-B4-E5-Q4-M5 CAPILLARY/FILL FLUID NO. 1199-W-D-D-(**) (LENGTH) EXTENDED FLANGE SEAL NO. 1199-A-R-1-DA-4
2. INPUT/OUTPUT: PSIG/4-20MA
3. CAL: 0-150 PSIG = 4-20MA

BOOSTER PUMP STATION DISCHARGE PRESSURE LOOP PIT401

JOB NO. 35157

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JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

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DATE APRIL 2010

ENGINEER: ROBERT GARCIA, P.E.
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MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
PRESSURE TRANSMITTERS
INSTRUMENT LOOP SHEETS AND DETAIL

VERIFY SCALES
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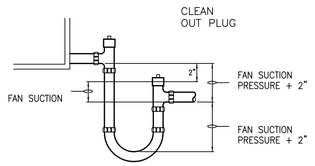
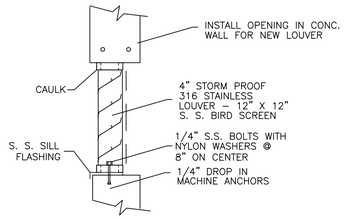
GENERAL HVAC NOTES

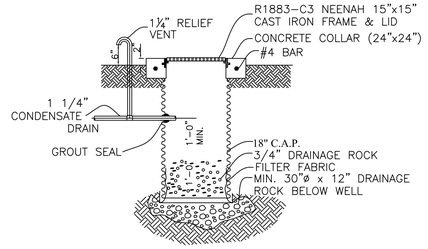
1. DRAWINGS ARE DIAGRAMMATIC. DO NOT SCALE DRAWINGS FOR THE EXACT LOCATION OF EQUIPMENT, PIPING, DUCTWORK, ETC.
2. THESE DRAWINGS ARE NOT INTENDED TO SHOW EVERY MINOR DETAIL, BUT THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS REQUIRED FOR A COMPLETE ACCEPTABLE WORKING INSTALLATION.
3. ALL WORK SHALL BE PERFORMED BY A LICENSED CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEM SHALL BE FULLY OPERATIVE AND ACCEPTANCE BY THE ARCHITECT AND/OR ENGINEER MUST BE A CONDITION OF THE CONTRACT.
4. CONTRACTOR SHALL PAY FOR ALL PERMITS, FEES, INSPECTIONS AND TESTS.
5. CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS.
6. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES TO AVOID INTERFERENCE WITH THE PROGRESS OF CONSTRUCTION.
7. ALL REQUIRED INSURANCE SHALL BE PROVIDED BY THIS CONTRACTOR FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THE WORK.
8. ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE NATIONAL, STATE AND LOCAL CODES, RULES AND ORDINANCES.
9. INSTALLATIONS SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE LATEST ASHRAE GUIDE.
10. ALL MATERIALS SHALL BE NEW AND SHALL BEAR UNDERWRITER'S LABEL WHERE APPLICABLE.
11. ALL DUCTWORK SHALL CONFORM TO S.M.A.C.N.A. STANDARDS. ALL DUCTWORK SIZES ARE INSIDE DIMENSIONS. ALL SUPPLY AND RETURN DUCT SHALL BE SHEETMETAL.
12. LOW PRESSURE FLEXIBLE DUCT SHALL BE THERMAFIN INSULATED ALUMINIUM. INSTALL HIGH PRESSURE DUCT SEAL AND BAND CLAMPS AT ALL CONNECTIONS. SUPPORT DUCT AT 6 FT. CENTERS.
13. SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT AND OBTAIN APPROVAL PRIOR TO INSTALLATION.
14. CONTRACTOR SHALL ADJUST, TEST AND BALANCE ALL SYSTEMS; SUBMIT COPY OF WORKSHEET TO ENGINEER.
15. CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN 3 YEARS FROM THE DATE OF ACCEPTANCE, UNLESS OTHERWISE NOTED.
16. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENTS OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED OR IS NOT OPERATING PROPERLY.
17. ARCHITECTURAL AND/OR ENGINEERING EXPENSES THAT ARE INCURRED DUE TO REVISIONS OR SUBSTITUTIONS REQUESTED BY THE CONTRACTOR SHALL BE PAID FOR BY THAT CONTRACTOR.
18. LOW PRESSURE DUCT SHALL BE 24 GA SHEET METAL WITH 1" DUCT WRAP. WHERE DUCT WORK EXPOSED IN MECHANICAL ROOM INSULATE WITH 1 INCH KNAFF DUCT BOARD.



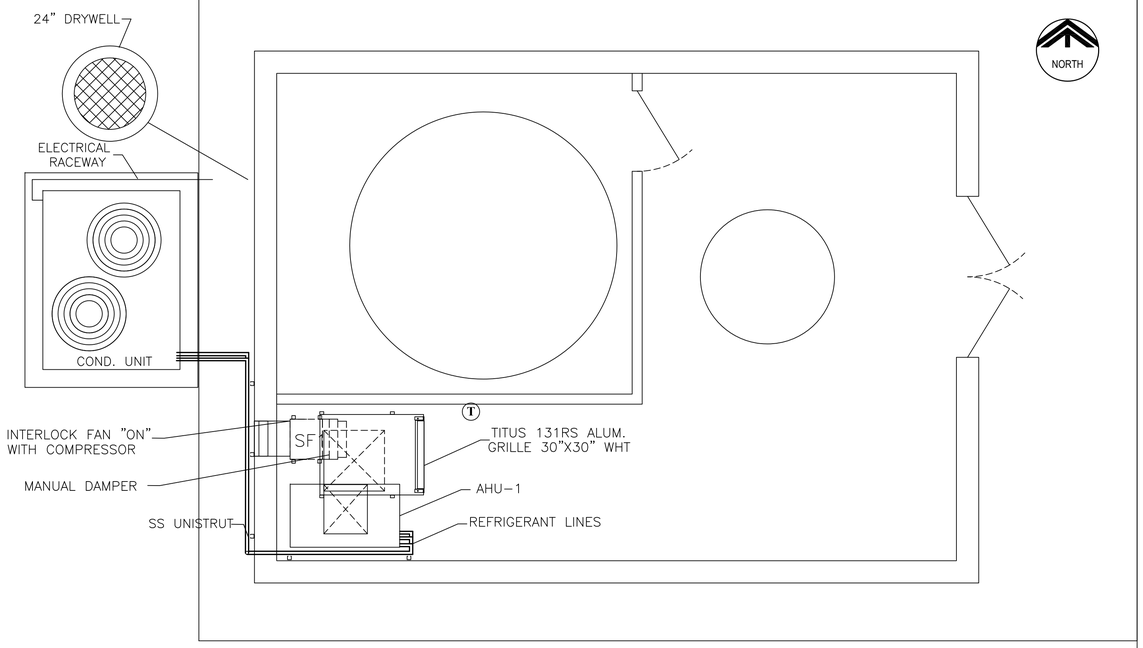
AHU CONDENSATE DRAIN
NOT TO SCALE



STAINLESS INTAKE WALL LOUVER
NOT TO SCALE



CONDENSATE DRYWELL
SCALE: NONE



HVAC PLAN
SCALE: 3/8" = 1'-0"

SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

AIR HANDLING UNIT									CONDENSING UNIT														
DESIG.	CAP. (BUTH)		MODEL	C.F.M.	H.P.	E.S.P.	ELECT.			DESIG.	MODEL	COMPRESSOR		ELECT.			COND. FAN		ELECT.			MCA	MOP	SEER	REMARKS
	SENS.	TOTAL					V.	PH.	CY.			NO.	R.L.A.	V.	PH.	CY.	NO.	F.L.A.	V.	PH.	CY.				
AHU–1	63M	85M	CARRIER 40RM008	3000	2.0	0.25	480	3	60	CU–1	CARRIER 38AUZ–08	1	12.2	460	3	60	1	.8	460	3	60	18.2	30	11.5	

1. PROVIDE FACE SPLIT COIL IN AHU

AIR DISTRIBUTION DEVICE SCHEDULE

MARK	SELECTION BASED ON		SIZE	SHAPE	MATERIAL	FRAME	DAMPER	THROW PATTERN	FINISH	REMARKS
	MAKE	MODEL								
A	TITUS	131 RS	30"X30"	SQ	ALUM.	TYPE–1	NO	2–WAY	WHT.	

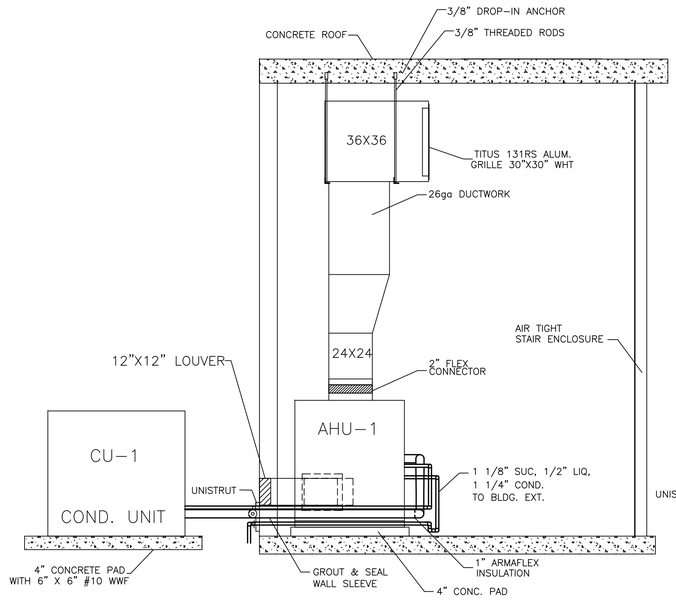
ASHRAE–62 VENTILATION

BUILDING OCCUPANCY – ELECTRIC ROOM UN–OCCUPIED

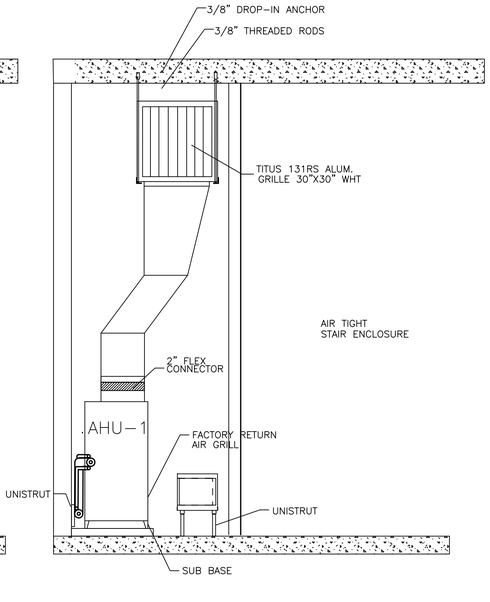
VENTILATION PROVIDED:
ELECTRIC ROOM 120 CFM

FAN SCHEDULE

MARK	SELECTION BASED ON		TYPE	C.F.M.	TSP W G	R.P.M.	MOTOR H.P.	VOLTS	PH
	MAKE	MODEL							
SF–1	GREENHECK	SQ–060G	INLINE BOX FAN	120	.15	1300	1/80	120	1



AHU ELEVATION
SCALE: 3/8" = 1'-0"



AHU SECTION
SCALE: 3/8" = 1'-0"

JOB NO. 35157

ENG. BUS. NO. 1567
JHHM ENGINEERING INCORPORATED
P.O. BOX 5106 LAKELAND, FLORIDA 33807

JOB NO. 09033

FOUR JAYS Consulting, Inc.
1173 Old Dixie Highway Lake Park, Florida 33403
Tel : (561) 844-7508 Fax : (561) 844-7510

REV	DATE	BY	DESCRIPTION

DESIGNED JOHN A. PETREIKIS
DRAWN DLA
CHECKED JAP
DATE APRIL 2010

JOHN A. PETREIKIS P.E.
FL. REG. NO.: 23782
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
ELECTRICAL BUILDING
HVAC PLAN AND DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. AC-01

Last Opened by:6-04-10 04:07pm DPerry

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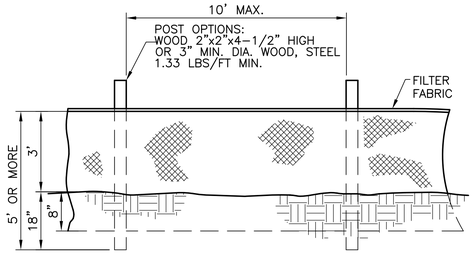
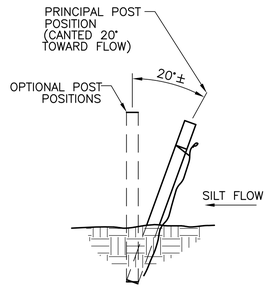
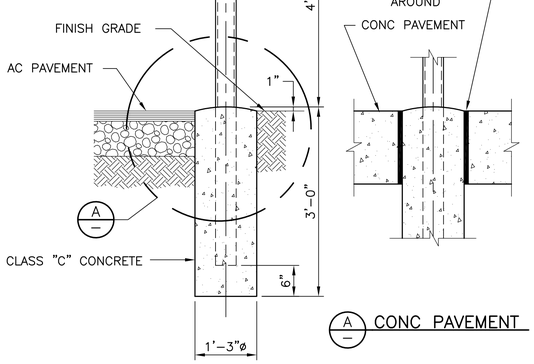


ELEVATION



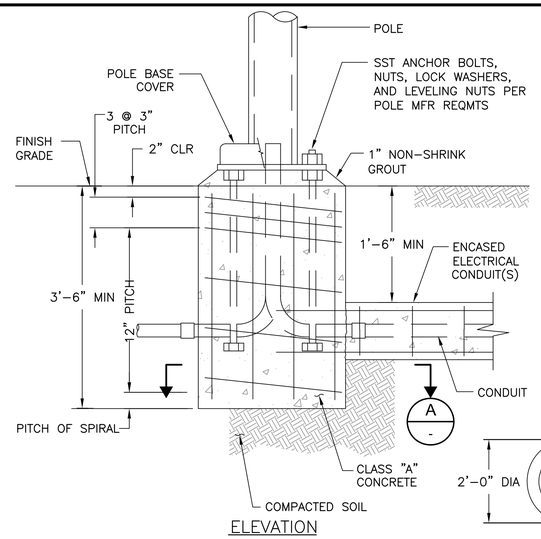
SECTION

C304 TYP J — TYPICAL SILT FENCE — 9-26-06



AC PAVEMENT AND FINISH GRADE

C160 TYP N — GUARD POST — 08-01-05



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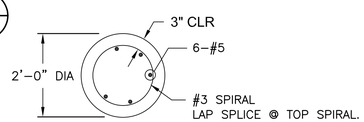
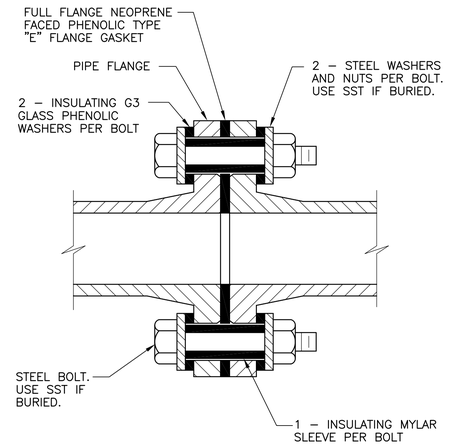


A SECTION

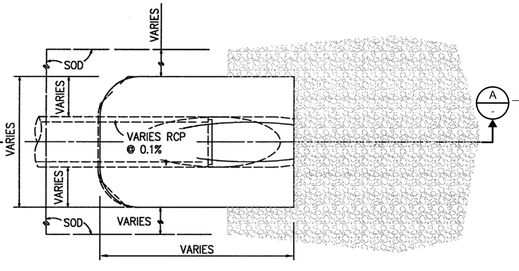
C250 TYP S — LUMINAIRE FOUNDATION



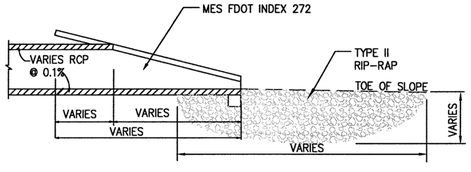
NOTE:

1. COAT ENTIRE ASSEMBLY WITH PETROLATUM SATURATED FABRIC TAPE WRAP SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

D062 TYP N — PIPE FLANGE INSULATION — 08-01-05



PLAN



A SECTION

A C-01 — MITERED END SECTION
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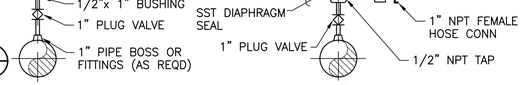
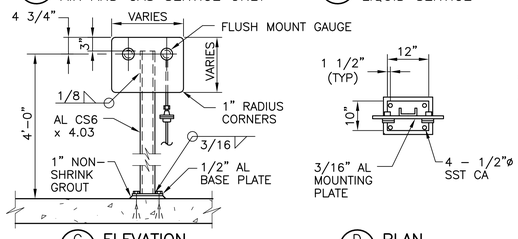
FILE: 7880C10-01-C-001



A DETAIL — AIR AND GAS SERVICE ONLY

B DETAIL — LIQUID SERVICE



C ELEVATION

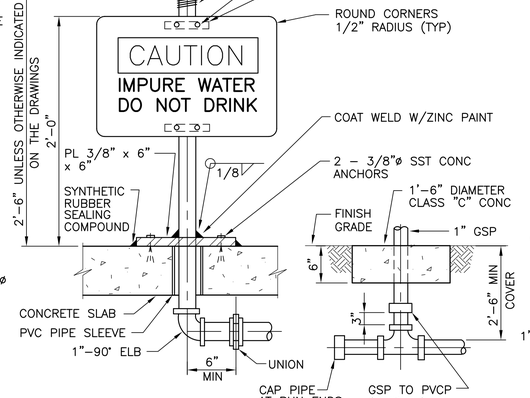
D PLAN

GAUGE STAND

NOTES:

1. ALL GAUGES SHALL BE DUAL SCALE. SCALES ON THE GAUGE FACE SHALL BE MARKED IN PSIG AND FEET OF WATER (FOR POSITIVE READINGS) OR INCHES OF MERCURY (FOR VACUUM READINGS).
2. MOUNTING PLATE DIMENSIONS VARY ACCORDING TO SIZE AND NUMBER OF GAUGES REQUIRED.
3. AT GAUGE STAND, DIAPHRAGM SHALL BE LOCATED BELOW THE MOUNTING PLATE. ONE INCH PIPE SHALL BE ROUTED BETWEEN DIAPHRAGM AND SERVICE PIPE PLUG VALVE. CROSSES WITH THREADED PLUGS SHALL BE USED IN LIEU OF 90° ELBOWS, WITH AT LEAST ONE UNION PER CROSS.
4. COAT ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.

M294 TYP S — PRESSURE GAUGE DETAILS — 08-01-05



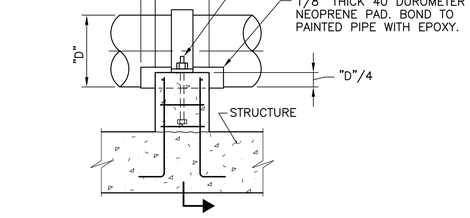
STRUCTURE INSTALLATION

YARD INSTALLATION

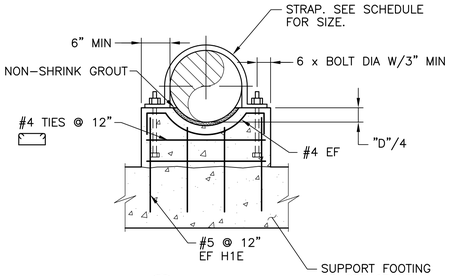
NOTES:

1. SIGN SHALL BE 3/8" THICK PLASTIC RESISTANT TO SUNLIGHT (ULTRAVIOLET) DETERIORATION.
2. SIGN SHALL BE 7" x 10" AND SHALL CONFORM TO THE SPECIFICATIONS.
3. SIGN AS SHOWN IS ROTATED 90° OFF TRUE POSITION. SIGN SHALL BE MOUNTED TO PERMIT EASY READING.
4. INSTALL HOSE RACK, M280 TYP, AT EACH HOSE VALVE.

M276 TYP NS — 1" HOSE VALVE AND SIGN — 08-01-05

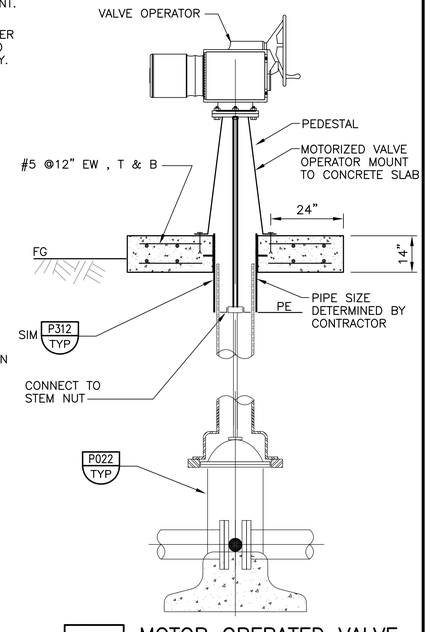


A SECTION-SUPPORT AT STRUCTURE



B SECTION

P602 TYP N — CONCRETE PIPE SUPPORT — SHEET 1 OF 2 — 07-31-08



P023 TYP S — MOTOR OPERATED VALVE INSTALLATION DETAIL

REV	DATE	BY	DESCRIPTION

DESIGNED JMF
DRAWN DVP
CHECKED EP
DATE APRIL 2010
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
TYPICAL DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. T-01

Last Opened by: E-04-10 04:01pm DPerry

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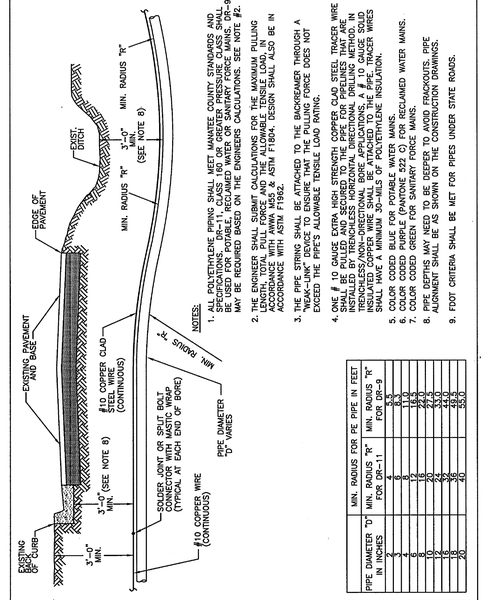


NOTES:

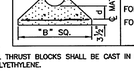
1. ALL POLYETHYLENE PIPING SHALL MEET MANATEE COUNTY STANDARDS AND SPECIFICATIONS. DR-11, CLASS 160, OR GREATER PRESSURE CLASS SHALL BE USED FOR POTABLE WATER MAINS. PRESSURE CLASS 200 PIPE MAY BE REQUIRED BASED ON THE ENGINEERS CALCULATIONS. SEE NOTE #2.
2. THE ENGINEER SHALL SUBMIT CALCULATIONS FOR THE MAXIMUM PULLING LENGTH, TOTAL PULL FORCE, AND THE ALLOWABLE TENSILE LOAD, IN ACCORDANCE WITH ASTM D638, & ASTM F1804. DESIGN SHALL ALSO BE IN ACCORDANCE WITH NOTE #3.
3. THE PIPE STRING SHALL BE ATTACHED TO THE BACKREAMER THROUGH A "WEAK-LINK" DEVICE TO ENSURE THAT THE PULLING FORCE DOES NOT EXCEED THE PIPE'S ALLOWABLE TENSILE LOAD RATING.
4. ONE # 10 GAUGE EXTRA HIGH STRENGTH COPPER CLAD STEEL TRACER WIRE SHALL BE PULLED AND SECURED TO THE PIPE FOR PIPELINES THAT ARE INSTALLED BY DIRECTIONAL BORING METHODS. THIS WIRE SHALL ALSO BE USED IN TRENCHLESS/NON-DIRECTIONAL BORE APPLICATIONS. A # 10 GAUGE SOLID INSULATED COPPER WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRES SHALL BE CONTINUOUS AND NOT BROKEN.
5. COLOR CODED BLUE FOR POTABLE WATER MAINS.
6. COLOR CODED PURPLE (PANTONE 522 c) FOR RECLAIMED WATER MAINS.
7. COLOR CODED GREEN FOR SANITARY FORCE MAINS.
8. PIPE DEPTHS MAY NEED TO BE DEEPER TO AVOID FROGPOINTS. ADDITIONAL DEPTH SHALL BE AS SHOWN ON CONSTRUCTION DRAWINGS.
9. FDOT CRITERIA SHALL BE MET FOR PIPES UNDER STATE ROADS.

PIPE DIAMETER "D" IN INCHES	MIN. RADIUS "R" FOR DR-11	MIN. RADIUS "R" FOR DR-17
2	4	8.5
3	6	13
4	8	18.5
6	12	27.5
8	20	44.0
10	25	55.0
12	30	66.0
16	40	88.0
18	45	99.0

MIN. RADIUS FOR PE PIPE IN FEET

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		DIRECTIONAL BORE ROADWAY CROSSING	UG-4
REV.BY / DATE: CLB/KE 9/05; JAA/KE 10/08; JAA/JB 2/09	MARCH 17, 2009 DATE OF APPROVAL		

THRUST BLOCK DIMENSIONS B ft. x d inches											
PIPE SIZE (IN.)	90°BEND		45°BEND		22.5°BEND		11.25°BEND		DEAD END & TEE		45° WYE	
	B	d	B	d	B	d	B	d	B	d	B	d
4	1.5	3½	1.1	3½	0.8	3½	0.6	3½	1.3	3½	1.1	3½
6	2.2	5¼	1.6	3¾	1.2	3½	0.8	3½	1.9	4½	1.6	3¾
8	2.9	7	2.1	5	1.5	3½	1.1	3½	2.4	5¾	2.0	4¾
10	3.5	8½	2.6	6¼	1.9	4½	1.3	3½	3.0	7¼	2.5	6
12	4.2	10	3.1	7½	2.2	5¼	1.6	3¾	3.5	8½	3.0	7¼
14	4.9	11¾	3.6	8¾	2.6	6¼	1.8	4¼	4.1	9¾	3.4	8¼
16	5.5	13¼	4.1	9¾	2.9	7	2.1	5	4.7	11¼	3.9	9¼
18	6.2	15	4.6	11	3.3	8	2.3	5½	5.2	12½	4.4	10½
20	6.9	16½	5.0	12	3.6	8¾	2.6	6¼	5.8	14	4.9	11¾
24	8.2	19¾	6.0	14½	4.3	10¼	3.1	7½	6.9	16½	5.8	14
30	10.1	24¼	7.5	18	5.3	12¾	3.8	9	8.5	20½	7.2	17¼
36	12.1	29	8.9	21¼	6.4	15¼	4.5	10¾	10.2	24½	8.6	20¾



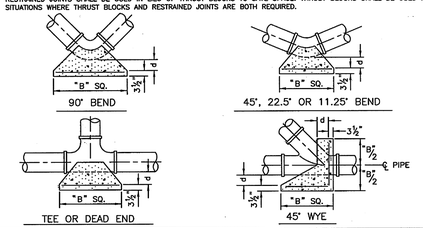
REINFORCEMENT MAT SCHEDULE

FOR DIM."B"BETWEEN 5.75' & 12.5' USE #4 @ 8" EACH WAY

FOR DIM."B"LESS THAN 5.75' USE #3 @ 8" EACH WAY

NOTES:

1. ALL THRUST BLOCKS SHALL BE CAST IN PLACE. FITTINGS ADJACENT TO THRUST BLOCKS SHALL BE WRAPPED IN POLYETHYLENE.
2. THIS TABLE IS BASED ON WATER PRESSURE=180 PSI WITH AN ALLOWABLE SOIL BEARING PRESSURE=2000 PSF, CONCRETE STRENGTH f_c=3000 PSI, REINFORCEMENT f_y=60.0 KSI.THRUST BLOCK SHALL BE CAST AGAINST FIRM UNDISTURBED SOIL.
3. FOR LARGER"B"DIMENSIONS IT IS NECESSARY TO CHECK THAT PIPE IS SUFFICIENTLY DEEP TO ALLOW 15" MIN. SOIL COVER OVER TOP EDGE OF THRUST BLOCK.
4. RESTRAINED JOINTS SHALL BE USED IN LIEU OF THRUST BLOCKS TO SAVE SPACE. THRUST BLOCKS SHALL BE USED IN SITUATIONS WHERE THRUST BLOCKS AND RESTRAINED JOINTS ARE BOTH REQUIRED.



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		CONCRETE THRUST BLOCKS	UG-7
REV.BY / DATE: CLB/KE 2/05; JAA/JB 2/09	MARCH 17, 2009 DATE OF APPROVAL		

REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (POLY-WRAPPED)

MAIN PIPE SIZE	HORIZ. BENDS			TEES						REDUCERS						PLUGS	VALVES
	90°	45°	22.5°	SIZE	LENGTH					SIZE	LENGTH						
36	142	59	28	x36 x30 493	x30 x24 418	x24 x20 332	x20 x16 265	x18 x12 84	1	x30 x24 437	x24 x20 347	x20 x16 309	359			453	227
30	124	51	25	x30 x24 353	x24 x20 282	x20 x16 189	x16 x12 115	x12 x10 23	1	x24 x20 276	x20 x16 213	x16 x12 176				391	196
24	106	44	21	x24 x20 210	x20 x16 143	x16 x12 61	x12 x10 10	x10 x8 1		x20 x16 241	x16 x12 178	x12 x10 141				327	164
20	92	38	18	x20 x16 151	x16 x12 89	x12 x10 38	x10 x8 1			x16 x12 227	x12 x10 163	x10 x8 129				280	140
16	77	32	15	x16 x12 107	x12 x10 65	x10 x8 19	x8 x6 1			x12 x10 189	x10 x8 136	x8 x6 94				231	116
12	61	25	12	x12 x10 89	x10 x8 50	x8 x6 1				x10 x8 96	x8 x6 131					181	91
10	52	22	10	x10 x8 64	x8 x6 11					x8 x6 94	x6 x4 125					153	77
8	44	18	9	x8 x6 30	x6 x4 1					x6 x4 92						128	64
6	34	14	7	x6 x4 1						x4 50						98	49
4	24	10	5	x4 19												69	35

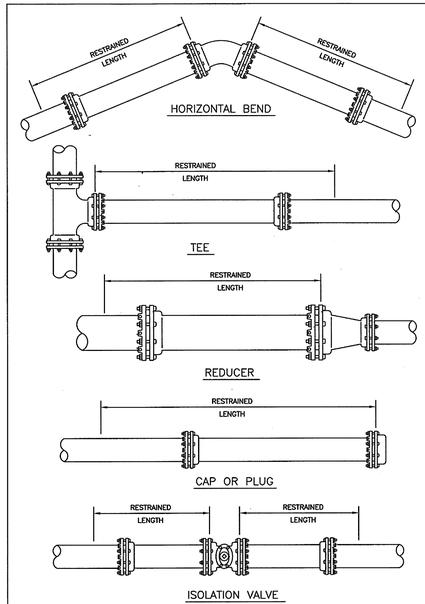
REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (NON-WRAPPED)

MAIN PIPE SIZE	HORIZ. BENDS			TEES						REDUCERS						PLUGS	VALVES
	90°	45°	22.5°	SIZE	LENGTH					SIZE	LENGTH						
36	100	42	20	x36 x30 163	x30 x24 99	x24 x20 58	x20 x16 35	x18 x12 1		x30 x24 57	x24 x20 103	x20 x16 128	149			188	94
30	88	37	18	x30 x24 104	x24 x20 78	x20 x16 48	x16 x12 10	x12 x10 1		x24 x20 88	x20 x16 114					162	81
24	75	31	15	x24 x20 87	x20 x16 59	x16 x12 25	x12 x10 4	x10 x8 1		x20 x16 74	x16 x12 100					135	68
20	65	27	13	x20 x16 62	x16 x12 35	x12 x10 16	x10 x8 1			x16 x12 73	x12 x10 94					116	58
16	54	22	11	x16 x12 44	x12 x10 27	x10 x8 8	x8 x6 1			x12 x10 68	x10 x8 70					96	48
12	43	18	8	x12 x10 27	x10 x8 21	x8 x6 1				x10 x8 56	x8 x6 54					75	38
10	37	15	7	x10 x8 42	x8 x6 5					x8 x6 39	x6 x4 52					63	32
8	30	13	6	x8 x6 32	x6 x4 1					x6 x4 22	x4 38					53	27
6	24	10	5	x6 x4 19						x4 21						41	21
4	17	7	3	x4 8												29	15

NOTE:

SEE "RESTRAINED LENGTHS FOR PVC PIPE" DETAIL FOR NOTES 1 THROUGH 8 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR DIP.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		RESTRAINED LENGTHS FOR DIP	UG-9
REV.BY / DATE: CLB/KE 8/05; JAA/JB 10/08	MARCH 17, 2009 DATE OF APPROVAL		



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		RESTRAINED LENGTHS FOR PIPE	UG-10
REV.BY / DATE: CLB/KE 8/05; JAA/JB 10/08	MARCH 17, 2009 DATE OF APPROVAL		

NOTES:

1.) USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

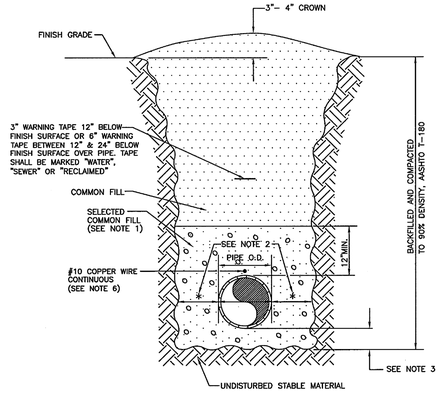
2.) 10" MAX. FOR PIPE DIAMETER LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.

3.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX FOR PIPE 42" DIAMETER AND LARGER.

4.) PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

5.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES FOR SELECTED COMMON FILL AND NOT TO EXCEED 12 INCHES FOR COMMON FILL. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 98% AASHTO T-180 DENSITY.

6.) TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH UNIMPROVED SURFACE TYPE A-1 PIPE BEDDING	UG-11
REV.BY / DATE: CLB/KE 02/05; JAA/JB 10/08; JAA/JEA 02/09	MARCH 17, 2009 DATE OF APPROVAL		

NOTES:

1.) USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

2.) 10" MAX. FOR PIPE DIAMETERS LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.

3.) 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX. FOR PIPE 42" DIAMETER AND LARGER.

4.) PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

5.) ASPHALTIC CONCRETE FRICTION COURSE WITH PRIME COAT SHALL BE THE SAME DEPTH AND TYPE AS EXISTING OR A MINIMUM OF ONE INCH, WHICHEVER IS GREATER.

6.) SNEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.

7.) BASE SHALL BE 8" MINIMUM THICKNESS CRUSHED CONCRETE. SAND ASPHALT BASE WILL BE AN ACCEPTABLE ALTERNATIVE.

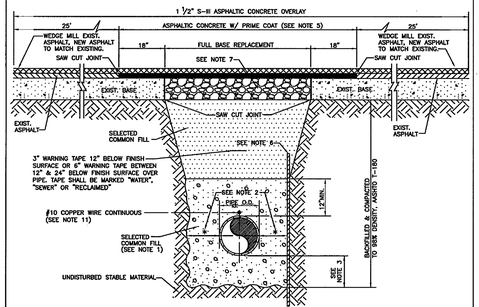
8.) BACKFILL AASHTO M-145 SHALL BE PLACED IN LAYERS NOT TO EXCEED 6 INCHES. EACH LAYER SHALL BE THOROUGHLY TAMPED AND/OR ROLLED TO 98% AASHTO T-180 DENSITY.

9.) TEMPORARY PATCHES WILL BE INSTALLED TO PROVIDE A SMOOTH ALL WEATHER SURFACE AT ALL TIME. PERMANENT REPLACEMENT TO BE MADE AS SOON AS POSSIBLE.

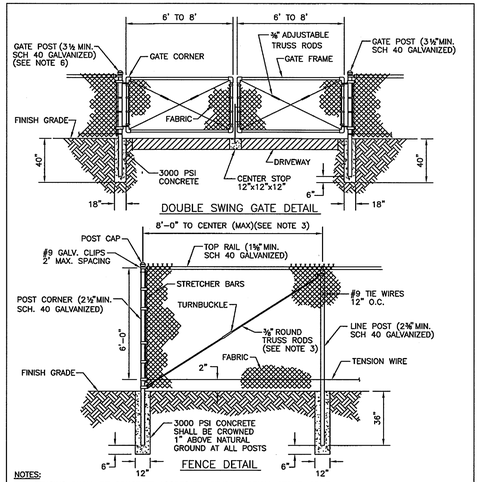
10.) RESTORE SIGNAGE & MARKING WITH THERMOPLASTIC PER FDOT STANDARDS, LATEST EDITION.

11.) TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.

12.) NOTES 5.) THRU 11.) ARE MINIMUM REQUIREMENTS. REFER TO MANATEE COUNTY HIGHWAY AND TRAFFIC STANDARDS FOR ADDITIONAL REQUIREMENTS.



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH ASPHALT PAVEMENT SURFACE TYPE A-1 PIPE BEDDING	UG-12
REV.BY / DATE: CLB/KE 02/05; JAA/JB 10/08; JAA/JEA 02/09	MARCH 17, 2009 DATE OF APPROVAL		

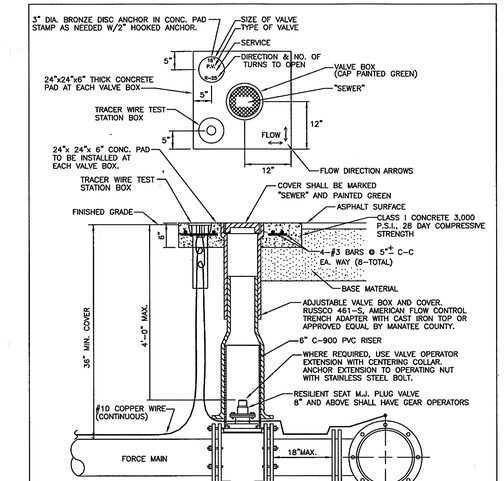


NOTES:

1. FENCING SHALL BE CONCRETE AGGREGATE, STUCCO, BRICK, STONE, SPLIT FACE CONCRETE MASONARY, OR CHAIN LINK.
2. CHAIN LINK FENCING SHALL BE #9 GAUGE, GALVANIZED STEEL WITH VINYL COATING.
3. TRUSS BARS ON CHAIN LINK FENCES ARE REQUIRED FOR THE FIRST SPAN ON EACH SIDE OF THE CORNER POST AND FOR EACH GATE SECTION.
4. LANDSCAPE SCREENING SHALL BE LOCATED ON THE EXTERIOR OF LIFT STATION FENCING.
5. SWING GATES SHALL BE CAPABLE OF SWINGING BOTH INWARDS AND OUTWARDS. CANTILEVER SLIDE GATES AND ROLL SLIDE GATES MEETING FDOT DESIGN STANDARDS MAY BE USED AS AN OPTION TO SWING GATES.
6. GATE POSTS AND TRACK LIINE POSTS SHALL BE 4 INCH SCHEDULE 40 FOR CANTILEVER SLIDE GATES AND ROLL SLIDE GATES.

END & CORNER POST TOP OPTIONS		TOP & BOTTOM FABRIC OPTIONS	
STANDARD	DOME	TIGHT	KNUCKLE

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		SECURITY FENCING	UG-18
REV.BY / DATE: JAA/KE 02/09	MARCH 17, 2009 DATE OF APPROVAL		



NOTES:

1. "SV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH DISTANCE IN FEET TO THE VALVE. IF NO CURB, INSTALL A GREEN DISC WITH "SV" AND A 1/8"x1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE DISTANCE (FT.) FROM THE DISC TO THE VALVE.
2. ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS ESTABLISHED IN THE FIELD.
3. SEWER VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
4. PRECAST CONCRETE PADS SHALL NOT BE USED.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. PLUG VALVES SHALL NOT BE USED AS A TAPPING VALVE. A SEPARATE TAPPING GATE VALVE AND TAPPING SLEEVE IS REQUIRED IN ADDITION TO PLUG VALVE. SEE STANDARD DETAIL UW-4.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT		PLUG VALVE, BOX, COVER AND TAG	US-12
REV.BY / DATE: CLB/KE 08/05; JAA/JB 10/08; JAA/JEA 02/09	MARCH 17, 2009 DATE OF APPROVAL		

REV	DATE	BY	DESCRIPTION

DESIGNED JMF
DRAWN DVP
CHECKED EP
DATE APRIL 2010
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY

PS 428 BOOSTER PUMP STATION

TYPICAL DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. T-02

Last Opened by: 6-28-10 04:43pm DPerry

FILENAME: Last Saved By: SMF_DENL 5-28-10 01:56pm C:\Documents and Settings\DPerry\Desktop\ps428\7880C10-01-T-02 XREFS: 3624bdr: 7880C10-01-110-400 UG-10; UG-11; UG-12; UG-18; UG-4; UG-7; UG-9; US-12; US-25; UW-12; UW-17; UW-19;

1. CONCRETE CONSTRUCTION SHALL COMPLY WITH ACI "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" (ACI 318) AND "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI 350-06) AND COMMENTARY (ACI 350R-06)."
2. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, MINIMUM REINFORCEMENT OF CONCRETE WALLS OR SLABS SHALL BE:
   10" THICK OR LESS – USE #6 @ 12" EW
   MORE THAN 10" THICK – USE #6 @ 12" EWEF
3. WALL REINFORCEMENT AT CORNERS OR JUNCTIONS OF WALLS SHALL BE CONTINUOUS, LAP SPLICED, OR TERMINATED IN AN ACI STANDARD 90 DEGREE HOOK. LAP SPLICES SHALL CONFORM WITH NOTE 12.
4. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, BARS SHALL BE DOWELED. DOWELS SHALL BE THE SAME SIZE AND SPACING AS THE REINFORCEMENT WHICH IS SPLICED TO THE DOWELS.
5. SLABS, BEAMS AND COLUMN REINFORCING BARS SHALL HAVE A MINIMUM EXTENSION OR ANCHORAGE INTO SUPPORTS IN ACCORDANCE WITH ACI 318 AND ACI 350.
6. STIRRUP SUPPORT BARS SHALL BE PROVIDED TO SECURE TOP BARS AGAINST DISPLACEMENT AS REQUIRED.
7. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, CONCRETE COVER OVER #11 AND SMALLER REINF BARS SHALL BE AS FOLLOWS:
   A. SLABS AND JOISTS:
      FORMED CONCRETE SURFACES AND UNFORMED TOP SURFACES FOR DRY CONDITIONS:
         #7 BARS AND SMALLER.....1"
         #8 BARS AND LARGER.....1 1/2"
      FORMED CONCRETE SURFACES AND UNFORMED TOP SURFACES EXPOSED TO WEATHER, IN CONTACT WITH SOIL OR WATER, OR LOCATED OVER WATER.....2"
   B. BEAMS AND COLUMNS:
      FORMED CONCRETE SURFACES FOR DRY CONDITIONS:
         STIRRUPS, SPIRALS, AND TIES.....1 1/2"
         PRINCIPAL REINFORCEMENT.....2"
      FORMED CONCRETE SURFACES EXPOSED TO WEATHER, IN CONTACT WITH SOIL OR WATER, OR BEAMS LOCATED OVER WATER:
         STIRRUPS AND TIES.....2"
         PRINCIPAL REINFORCEMENT.....2 1/2"
   C. WALLS:
      FORMED CONCRETE SURFACES FOR DRY CONDITIONS:
         #7 BARS AND SMALLER.....1"
         #8 BARS AND LARGER.....1 1/2"
      FORMED CONCRETE SURFACES EXPOSED TO WEATHER, OR IN CONTACT WITH SOIL OR WATER.....2"

S101 TYP S REINFORCED CONCRETE NOTES — SHEET 1 OF 3 — 08-31-07

   D. FOOTINGS AND BASE SLABS:
      FORMED VERTICAL CONCRETE SURFACES.....2"
      AT UNFORMED CONCRETE SURFACES CAST AGAINST THE SOIL OR CONCRETE WORK MATS.....3"
      TOP SURFACE OF FOOTINGS AND BASE SLABS.....SAME AS SLABS
8. KEYWAYS AND WATERSTOP SHALL END 3" BELOW THE TOP OF WALLS, UNLESS THERE IS A SLAB ON TOP OF THE WALL, IN WHICH CASE IT SHALL END AT THE BOTTOM OF THE SLAB. IN JOINTS WHERE WATERSTOP TERMINATES AT ADJOINING SLAB OR WALL, WATERSTOP SHALL BE EMBEDDED IN ADJOINING SLAB OR WALL A MINIMUM OF 6".
9. CONCRETE CURING SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. WHERE WATER CURING IS REQUIRED, MEMBRANE CURING IS NOT ALLOWED. THE CONTRACTOR IS WARNED THAT WATER CURING IS DIFFICULT AT TIMES DUE TO WIND AND DRY CONDITIONS. THE CONTRACTOR SHALL STUDY REQUIREMENTS AND SHALL FURNISH ADEQUATE SYSTEMS TO PROVIDE WATER CURING WHERE REQUIRED. TOP OF WALLS SHALL BE KEPT VISIBLY MOIST AT ALL TIMES AND SHALL BE FLOODED NOT LESS THAN THREE TIMES DAILY.
10. WATERSTOP SHALL BE PLACED IN CONSTRUCTION, AND EXPANSION JOINTS IN WATERBEARING SLABS AND WALLS UNLESS OTHERWISE INDICATED ON THE DRAWINGS, AND IN WALLS AND SLABS SUBJECTED TO GROUNDWATER. WATERSTOP IN THE WALLS SHALL BE CARRIED INTO SLABS AND SHALL BE SPLICED WITH THE WATERSTOP IN THE SLABS.
11. NO BACKFILL SHALL BE PLACED AGAINST WALLS UNTIL:
   A. WALLS HAVE BEEN CAST FULL HEIGHT OF STRUCTURE AND CONCRETE HAS REACHED THE SPECIFIED STRENGTH
   B. CONNECTING SLABS AND BEAMS HAVE BEEN CAST AND CONCRETE HAS REACHED THE SPECIFIED STRENGTH.
12. LAP SPLICES:
   A. WHEN MULTIPLE BARS ARE SPLICED AT THE SAME SECTION, THE CLEAR BAR SPACING IS THE MINIMUM CLEAR DISTANCE BETWEEN THE BARS OUTSIDE THE SPLICE LENGTH LESS ONE BAR DIAMETER.
   B. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, THE BARS AT A LAP SPLICE SHALL BE IN CONTACT WITH EACH OTHER.
   C. FOLLOWING TABULATED VALUES ARE CALCULATED FOR:
      FY = 60,000 PSI FOR REINFORCING BARS
      F'C = 4,000 PSI FOR CONCRETE
   D. TOP BARS ARE HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.

S101 TYP S REINFORCED CONCRETE NOTES — SHEET 2 OF 3 — 08-31-07

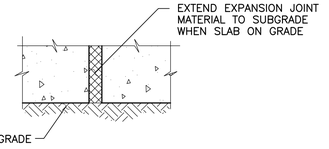
   E. HORIZONTAL BARS IN CIRCULAR WALLS OF HYDRAULIC STRUCTURES SHALL BE SPLICED WITH TOP BAR LAP SPLICES. ADJACENT LAP SPLICES SHALL BE STAGGERED HORIZONTALLY BY NOT LESS THAN ONE LAP LENGTH NOR 3 FEET FROM CENTER OF LAP BELOW TO ADJACENT CENTER OF LAP ABOVE, AND SHALL NOT COINCIDE IN VERTICAL ARRAYS MORE FREQUENTLY THAN EVERY THIRD BAR.

REINFORCING BAR LAP SPLICE

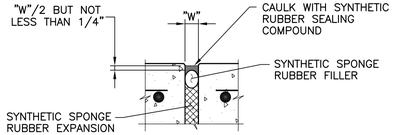
BAR SIZE	MINIMUM COVER (BAR DIA)	MINIMUM CLEAR BAR SPACING (BAR DIA)	LAP SPLICE LENGTH (INCHES)	
			TOP BARS	OTHER BARS
#4	MORE THAN 1	MORE THAN 2	32 *	25 *
	MORE THAN 2	MORE THAN 4	20	15
#5	MORE THAN 1	MORE THAN 2	40 *	31 *
	MORE THAN 2	MORE THAN 4	26	20
#6	MORE THAN 1	MORE THAN 2	48 *	37 *
	MORE THAN 2	MORE THAN 4	30	24
#7	MORE THAN 1	MORE THAN 2	70 *	54 *
	MORE THAN 2	MORE THAN 4	43	33
#8	MORE THAN 1	MORE THAN 2	81 *	62 *
	MORE THAN 2	MORE THAN 4	50	38
#9	MORE THAN 1	MORE THAN 2	90 *	70 *
	MORE THAN 2	MORE THAN 4	56	42
#10	MORE THAN 1	MORE THAN 2	104 *	81 *
	MORE THAN 2	MORE THAN 4	62	48
#11	MORE THAN 1	MORE THAN 2	114 *	88 *
	MORE THAN 2	MORE THAN 4	69	54

NOTES:
1. THE SPLICE LENGTH SHALL BE SELECTED ONLY WHEN BOTH REQUIREMENTS OF THE COVER AND BAR SPACING ARE SATISFIED.
2. * IF THE CLEAR SPACING IS LESS THAN OR EQUAL TO TWO BAR DIAMETERS OR THE COVER IS LESS THAN OR EQUAL TO ONE BAR DIAMETER, THE LAP SPLICE LENGTH SHALL BE INCREASED BY 50 PERCENT.

S101 TYP S REINFORCED CONCRETE NOTES — SHEET 3 OF 3 — 08-31-07



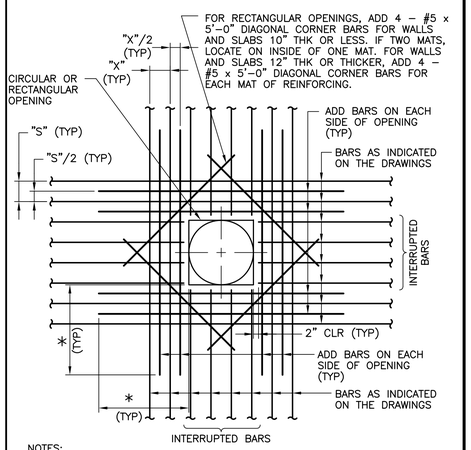
A/1 DETAIL – SLAB ON GRADE



B/1 DETAIL

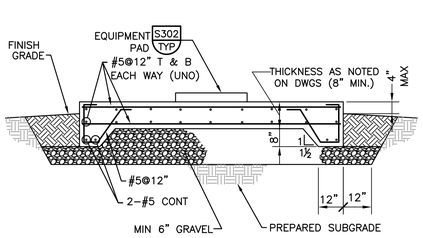
NOTES:
1. FOR WALLS, FORM ALL JOINT EDGES AT 1/4" CHAMFER.
2. FOR SLABS, EDGE TOP OF EXPOSED SLAB JOINT EDGES AT 1/4" RADIUS.
3. FOR UNDERSIDE OF EXPOSED SLABS, FORM JOINT EDGES AT 1/4" CHAMFER.
4. "W" = 1" THICK UNLESS OTHERWISE INDICATED ON THE DRAWINGS. MIN JOINT WIDTH = 3/8".
5. USE A/– AT UNDERSIDE OF SLABS ON GRADE ONLY. USE B/– AT ALL OTHER LOCATIONS.

S130 TYP NS EXPANSION JOINT — 02-13-09



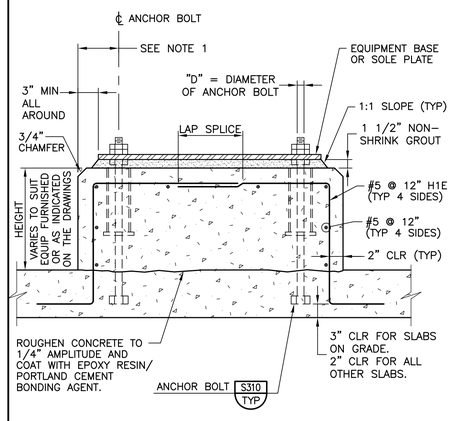
NOTES:
1. AREA OF ADD BARS AT EACH EDGE OF OPENING IN EACH DIRECTION SHALL MATCH 1/2 THE CROSS SECTIONAL AREA OF THE INTERRUPTED BARS.
2. PROVIDE STANDARD ACI HOOKS ON BARS IF STRAIGHT EXTENSION, PAST THE OPENING, CANNOT BE ACHIEVED.
3. PLACE ADD BARS IN SAME PLANES AS INTERRUPTED REINFORCING.
4. PLACE #5 DIAGONAL BARS UNDER INTERRUPTED REINFORCING.
5. * – DIMENSION EQUALS OPENING DIMENSION MEASURED PERPENDICULAR TO ADD BARS PLUS LAP SPLICE LENGTH.

S180 TYP NS ADDITIONAL REINFORCING AT OPENINGS IN CONCRETE SLABS OR WALLS — 07-31-08



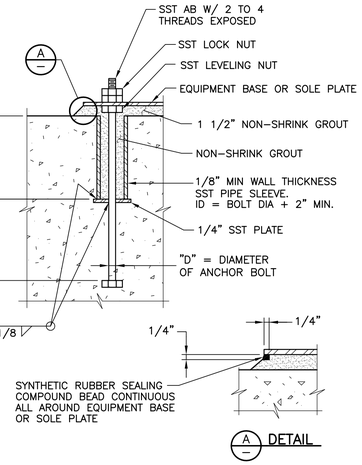
NOTE:
1. DIM REQD TO SUIT EQUIPMENT OR AS NOTED ON DRAWINGS.

S300 TYP EQUIPMENT SLAB DETAIL — 02-12-04



NOTES:
1. THE EDGE DISTANCE ON THE ANCHOR BOLTS SHALL NOT BE LESS THAN 6" OR 8 x "D".
2. WHERE CONCRETE SLAB OR BEAM THICKNESS WILL NOT ACCOMMODATE THE ANCHOR BOLT, PROVIDE EXTRA THICKNESS OF SLAB OR BEAM.

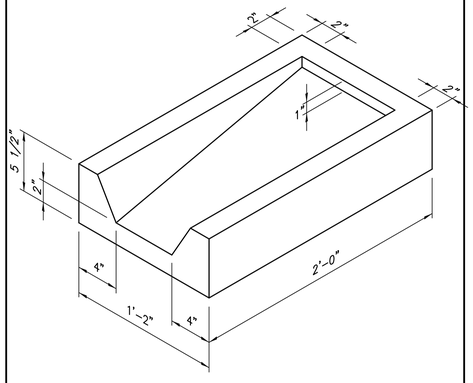
S302 TYP N EQUIPMENT BASE — 04-30-07



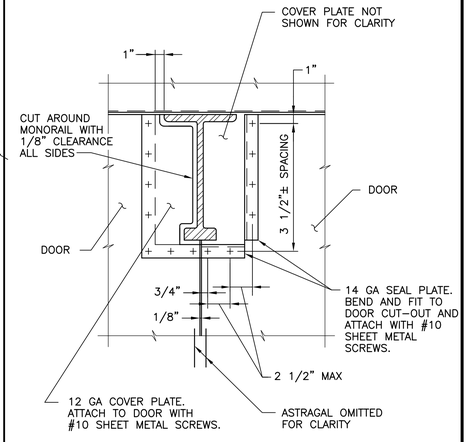
A/– DETAIL

NOTES:
1. ANCHOR BOLT DIAMETER AS INDICATED ON THE DRAWINGS. IF NOT INDICATED ON THE DRAWINGS, THE ANCHOR BOLT SIZE SHALL BE AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
2. WHERE CONCRETE SLAB OR BEAM THICKNESS WILL NOT ACCOMMODATE THE ANCHOR BOLT, PROVIDE EXTRA THICKNESS OF SLAB OR BEAM.
3. PREFABRICATED PLASTIC ANCHOR BOLT SLEEVE OPTIONAL.
4. DO NOT USE ALL THREAD RODS AS A SUBSTITUTE FOR BOLTS WITH A BOLT HEAD. SMOOTH RODS THREADED AT THE ENDS MAY BE USED IF ACCEPTABLE TO THE ENGINEER. DO NOT WELD NUTS TO THE THREADED RODS.

S310 TYP N ANCHOR BOLT — 07-31-08



S804 TYP CONCRETE SPLASH BLOCK — 07-14-09



S830 TYP J DOOR CLOSURE PLATE AT MONORAIL — 07-14-09

REV	DATE	BY	DESCRIPTION

DESIGNED PAS
DRAWN DMS
CHECKED GLS
DATE APRIL 2010
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

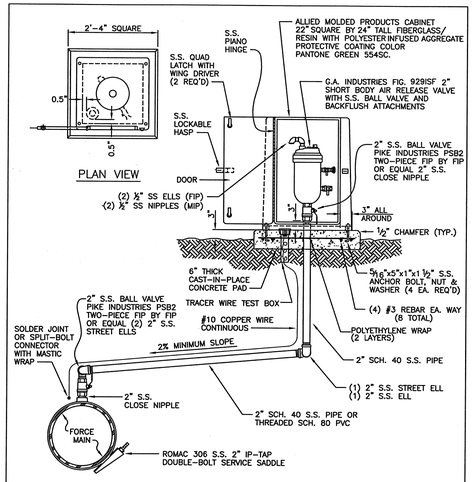
MANATEE COUNTY
PS 428 BOOSTER PUMP STATION
TYPICAL DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10
DRAWING NO. T-03

Last Opened by:E-84-10 04:01pm DPerry

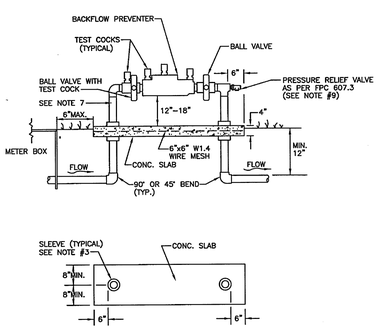
FILENAME: Last Saved By: SMF_DENL 5-28-10 02:01pm C:\Documents and Settings\DPerry\Desktop\ps428\7880C10-01-T-03 XREFS: 3624bdr



NOTES:

1. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS, OR WHERE AIR WOULD BE ENTRAPPED, ALONG 4" AND LARGER FORCE MAINS.
2. FORCE MAIN VERTICAL ALIGNMENT TO BE DESIGNED SUCH THAT THE MINIMUM NUMBER OF REQUIRED AIR RELEASE VALVES ARE INSTALLED.
3. ALL INCIDENTAL FITTINGS AND HARDWARE TO BE STAINLESS STEEL.
4. ALL PIPE THREADS TO BE SEALED AIR TIGHT.
5. VENT PIPE TO BE LAID ACCURATELY ON SLOPE, WITHOUT HIGH OR LOW POINTS.
6. AIR RELEASE VALVES TO BE IN BELOW-GRADE INSTALLATIONS PER DETAIL US-10 UNLESS IMPRACTICAL THEN, INSTALLATIONS MAY BE ABOVE-GROUND ONLY WHERE APPROVED AND SPECIFICALLY INDICATED ON THE PLAN.
7. CONCRETE PAD SHALL BY TYPE I CONCRETE W/ 3,000 P.S.I., 28 DAY COMPRESSIVE STRENGTH.

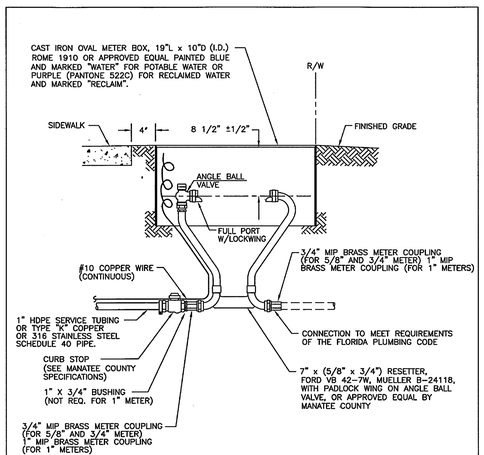
MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	ABOVE-GROUND AIR RELEASE VALVE ASSY. FOR FORCE MAINS	US-25
JAA/JEA	02/09		
		MARCH 17, 2009 DATE OF APPROVAL	



NOTES:

1. BACKFLOW DEVICE MUST BE INSTALLED IMMEDIATELY DOWNSTREAM OF METER, AS SHOWN ABOVE.
2. COPPER PIPE TYPE "K" OR BRASS PIPE MINIMUM SCHEDULE 40 SHALL BE USED TO A MINIMUM DEPTH OF 12" BELOW GRADE.
3. PIPES PASSING THROUGH OR ENCASED IN CONCRETE MUST BE PROPERLY PROTECTED AND SLEEVED.
4. THE SYSTEM MUST MEET ALL REQUIRMENTS OF THE FLORIDA PLUMBING CODE (LATEST EDITION) AND THE MANATEE COUNTY BACKFLOW PREVENTION ORDINANCE (LATEST EDITION).
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. BACKFLOW PREVENTER SHALL BE TESTED AT THE TIME OF INSTALLATION.
7. PRESSURE REDUCING VALVE REQUIRED UPSTREAM OF BACKFLOW IF SYSTEM PRESSURE EXCEEDS 80 PSI.
8. 3' MINIMUM CLEARANCE FROM LANDSCAPING PLANTS TO EDGE OF CONCRETE SLAB AND CLEAR OPENING FOR ACCESS FROM STREET.
9. IN ADDITION TO THE PRV, THE BUILDING DEPT. MAY REQUIRE AN APPROVED DEVICE FOR THERMAL EXPANSION CONTROL.
10. REFER TO STANDARD DETAIL US-15 FOR LIFT STATIONS.

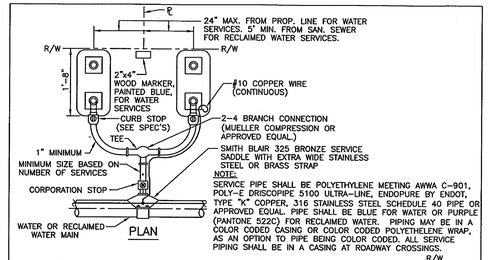
MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	3/4" & 1" BACKFLOW PREVENTER	UW-12
CLB/KE	03/08		
JAA/JB	10/08	MARCH 17, 2009 DATE OF APPROVAL	
JAA/JEA	02/09		



NOTES:

1. FORD 40 SERIES RESETTERS VB43 AND VB44 OR EQUAL FOR 3/4" OR 1" METERS ALSO ALLOWED.
2. METER BOX AND RESETTER ARE TO BE INSTALLED BY THE INFRASTRUCTURE CONTRACTOR AND SHALL NOT BE SET IN DRAINAGE SWALES, SIDEWALKS OR DRIVEWAYS.
3. SEE TYPICAL SERVICE CONNECTION STANDARD DETAIL UW-19.
4. RESETTER IS NOT REQUIRED ON EXISTING SERVICE LINE REPLACEMENT THAT INITIALLY DID NOT HAVE A RESETTER, UNLESS THE EXISTING SERVICE LINE IS TO BE RELOCATED.
5. WHEN THE DISTANCE BETWEEN THE EDGE OF THE SIDEWALK AND THE R/W IS ONE FOOT (CUL-DE-SAC W/ MEDIAN) A 10 FOOT PUBLIC UTILITY EASEMENT SHALL BE LOCATED IN THE FRONT OF THE LOTS, ADJACENT TO THE R/W.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	METER BOX ASSEMBLY FOR 5/8" x 3/4", 3/4" & 1" METERS	UW-17
MH/KE	3/07		
JAA/JB	10/08	MARCH 17, 2009 DATE OF APPROVAL	



NOTES:

1. ALL SERVICE TAPS TO BE LOCATED IN THE FIELD. TAPS SHALL BE NO CLOSER THAN 2'-0" STAGGERED INTERVALS OR WITHIN 2'-0" FROM BELL OR SPIGOT ENDS.
2. METER BOXES & RESETTERS ARE TO BE INSTALLED BY THE INFRASTRUCTURE CONTRACTOR AND SHALL NOT BE SET IN DRAINAGE SWALES, SIDEWALKS OR DRIVEWAYS.
3. "WM" OR "RWM" TO BE IMPRESSED INTO THE NEWLY POURED CONCRETE CURB ALONG WITH DISTANCE IN FEET TO THE METER. IF NO CURB, INSTALL A BLUE DISC WITH "WM" OR A PURPLE DISC WITH "RWM" AND A 1/8"x 1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE DISTANCE (IN FEET) FROM THE DISC TO THE METER.
4. #10 COPPER WIRE SHALL BE INSTALLED WITH WATER AND RECLAIMED MAIN AND ALL SERVICES. SERVICE WIRE SHALL BE CONNECTED TO THE TRACER WIRE ALONG THE MAIN.
5. WATER AND RECLAIMED WATER SERVICE LINES TO BE 5' MINIMUM FROM SEWER SERVICE PIPES.
6. FOR 2" SERVICES REPLACE CORPORATION STOP WITH 2" RESILIENT WEDGE GATE VALVE W/BOX, LID & TAG. SEE STANDARD DETAIL UW-2. MJ GATE VALVE IN DETAIL UW-2 SHALL BE SUBSTITUTED WITH THREADED FIP GATE VALVE AND BRASS NIPPLE. CENTERING COLLAR NOT REQUIRED ON 2" GATE VALVES.
7. WHEN THE DISTANCE BETWEEN THE EDGE OF THE SIDEWALK AND THE R/W IS ONE FOOT (CUL-DE-SAC W/ MEDIAN) A 10 FOOT PUBLIC UTILITY EASEMENT SHALL BE LOCATED IN THE FRONT OF THE LOTS, ADJACENT TO THE R/W.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT			
REV.BY	DATE	TYPICAL SERVICE CONNECTION	UW-19
MH/KE	09/06		
JAA/KE	10/08	MARCH 17, 2009 DATE OF APPROVAL	
JAA/KE	02/09		

REV	DATE	BY	DESCRIPTION

DESIGNED JMF
DRAWN DVP
CHECKED EP
DATE APRIL 2010
PROJECT ENGINEER

carollo
Engineers...Working Wonders With Water ™
401 NORTH CATTLEMEN ROAD, SUITE 306
SARASOTA, FL. 34232
PHONE: (941) 371-9832 FAX: (941) 371-9873
CA 00008571

MANATEE COUNTY

PS 428 BOOSTER PUMP STATION

TYPICAL DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 7880C.10

DRAWING NO. T-04

Last Opened by:6-25-10 04:25pm DPerry

FILENAME: Last Saved By: DPerry 6-01-10 03:43pm C:\pw_working\projectwise\dperry\dms76681\7880C10-01-T-04 XREFS: 3624bdr; 7880C10-01-110-400 UG-10; UG-11; UG-12; UG-18; UG-4; UG-7; UG-9; US-12; US-25; UW-12; UW-17; UW-19;