April 1, 2019
BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
Addendum No. 2, IFB Y19-744-RC
MAGNOLIA PARK & ECO-TOURISM UTILITY EXTENSION

Bid Opening Date: April 18, 2019

This addendum is hereby incorporated into the bid documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to, and shall take precedence over, the original documents. Underlining indicates additions, deletions are indicated by ~~strikethrough~~.

A. The bid opening date remains April 18, 2019 at 2:00 P.M.

B. Questions and Answers:

1. **Question:** On plan sheet C404, please confirm the uni-strut, caps and posts are to be galvanized and not stainless steel.

   Answer: Please see revised Sheet C404 dated 3/25/2019 and labeled this addendum as noted below in part C

C. Additions:

1. **Addition:** Sheet E001 dated 3/25/2019 has been added to the bid documents.
2. **Addition:** Sheet E301 dated 3/25/2019 has been added to the bid documents.
3. **Addition:** Sheet ES101 dated 3/25/2019 has been added to the bid documents.
4. **Addition:** Sheet C404 dated 3/25/2019 has been added to the bid documents.

D. ACKNOWLEDGEMENT OF ADDENDA

a. The Bidder/Proposer shall acknowledge receipt of this addendum by completing the applicable section in the solicitation or by completion of the acknowledgement information on the addendum. Either form of acknowledgement must be completed and returned not later than the date and time for receipt of the bid or proposal.

b. All other terms and conditions of the IFB remain the same.

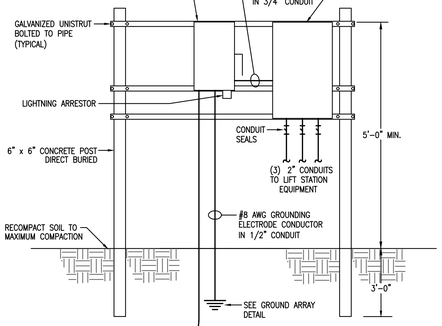
c. **Receipt acknowledged by:**

_____ _____
Authorized Signature Date Signed

_____
Title

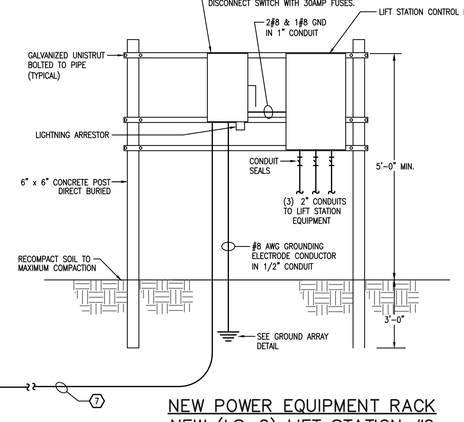
_____
Name of Firm

EXISTING NEMA 3R ELECTRICAL PANEL"D"
EXISTING METER No. 1553498.



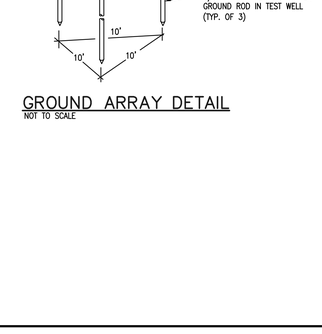
NEW POWER EQUIPMENT RACK
(LS-1) NEW LIFT STATION #1
NOT TO SCALE

EXISTING NEMA 3R ELECTRICAL PANEL"E"
EXISTING METER No. 1093068

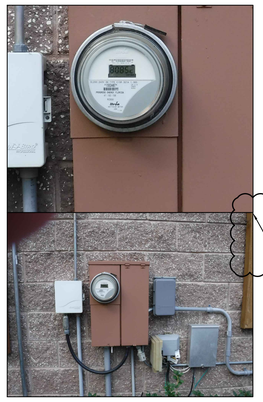


NEW POWER EQUIPMENT RACK
NEW (LS-2) LIFT STATION #2
NOT TO SCALE

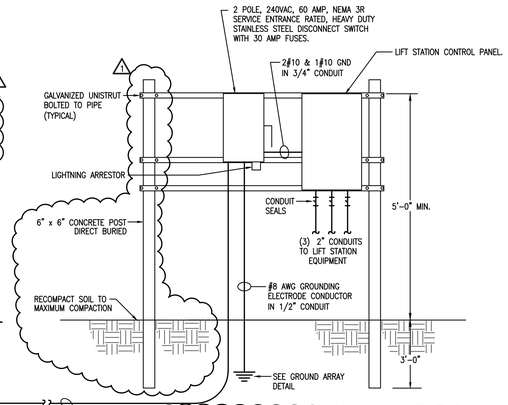
GROUND TEST WELL DETAIL
NOT TO SCALE
NOTE: TYPICAL AT ALL GROUND RODS



GROUND ARRAY DETAIL
NOT TO SCALE

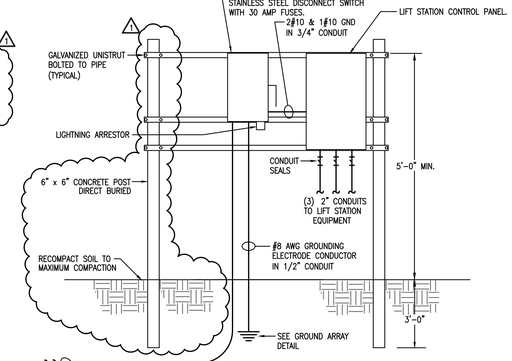


EXISTING NEMA 3R ELECTRICAL PANEL "A"
EXISTING METER No. 1553487.



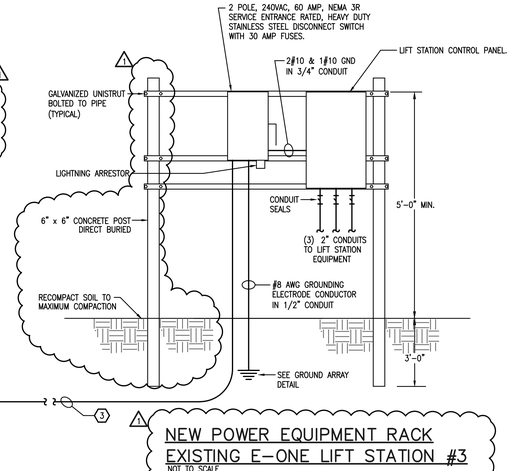
NEW POWER EQUIPMENT RACK
EXISTING E-ONE LIFT STATION #1
NOT TO SCALE

EXISTING NEMA 3R ELECTRICAL PANEL"B"
EXISTING METER No. 1553486.



NEW POWER EQUIPMENT RACK
EXISTING E-ONE LIFT STATION #2
NOT TO SCALE

EXISTING NEMA 3R ELECTRICAL PANEL"C"
EXISTING METER No. 1553519.



NEW POWER EQUIPMENT RACK
EXISTING E-ONE LIFT STATION #3
NOT TO SCALE

ELECTRICAL GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH FLORIDA BUILDING CODE 6th EDITION (2017 FBC), THE 2014 NATIONAL ELECTRICAL CODE (NEC), ALL APPLICABLE LOCAL, COUNTY, AND STATE CODES AND STANDARDS, ALL REQUIREMENTS OF THE SERVICING ELECTRIC UTILITY AND THE AMERICANS WITH DISABILITIES ACT (ADA).
2. PRIOR TO BIDDING THE CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL VERIFY THE LOCATIONS AND CONDITIONS OF ALL ELECTRICAL UTILITIES AND EQUIPMENT IN THE FIELD.
3. ALL BRANCH CIRCUITS FOR 120 VOLT, 20 AMP CIRCUITS EXCEEDING EIGHTY FEET IN LENGTH SHALL BE INCREASED IN SIZE AS REQUIRED TO ALLOW FOR VOLTAGE DROP LOSSES.
4. ALL EMPTY CONDUITS (EC) SHALL BE PROVIDED WITH NYLON PULL WIRES.
5. TYPE AC CABLE AND ELECTRICAL NON-METALLIC TUBING SHALL NOT BE PERMITTED. TYPE MC CABLE IS PERMITTED AS LONG AS IT IS ACCEPTABLE TO THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).
6. ALL CONDUITS ABOVE SLAB, WHETHER EXPOSED OR CONCEALED, SHALL BE EMT, IMC, OR RIGID GALVANIZED STEEL.
7. FLEXIBLE METAL RACEWAYS SHALL NOT EXCEED 6' IN LENGTH.
8. "LIQUID-TIGHT" TYPE FLEXIBLE WEATHERPROOF RACEWAYS SHALL HAVE A METALLIC INTERIOR AND NOT EXCEED 6' IN LENGTH.
9. ALL BOXES, PLASTER RINGS, EXTENSION RINGS, AND BOX COVERS SHALL BE METAL.
10. ALL CONDUITS SHALL BE PARALLEL AND PERPENDICULAR TO STRUCTURAL MEMBERS.
11. ALL BENDS SHALL BE MADE IN CONDUIT USING PROPER EQUIPMENT AND MEET NATIONAL ELECTRICAL CODE (NEC) REQUIREMENTS.
12. ALL WIRE, INCLUDING BUT NOT LIMITED TO FEEDERS AND BRANCH CIRCUIT WIRING, SHALL BE COPPER – #12 AWG THWN MINIMUM EXCEPT FOR LOW-VOLTAGE WIRING FOR COMMUNICATIONS SYSTEMS, WHICH MAY BE SMALLER.
13. ALL DEVICES SHALL BE COMMERCIAL OR SPECIFICATION GRADE.
14. ALL ELECTRICAL EQUIPMENT SHALL BE UL LISTED.
15. CONDUCTORS ARE SIZED FOR VOLTAGE DROP PER N.E.C. ARTICLES 210.19(A) NOTE 4, 215.2(A)(1)NOTE 2 AND THE 2017 F.B.C. ENERGY CONSERVATION CODE C405.6.3. ELECTRICAL CONTRACTOR SHALL PERFORM VOLTAGE DROP CALCULATIONS IN ACCORDANCE WITH N.E.C. ARTICLES 210.19(A)(1)NOTE 4, 215.2(A)NOTE 2 AND THE 2017 F.B.C. ENERGY CONSERVATION CODE C405.6.3 ON ANY CIRCUITS THAT ARE INSTALLED THAT DIFFER FROM THE DESIGN SHOWN IN THESE PLANS. FEEDER CONDUCTORS AND BRANCH CIRCUIT CONDUCTORS SHALL EACH BE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3% AND A COMBINED MAXIMUM VOLTAGE DROP OF 5% TOTAL.
16. TEST RESISTANCE TO GROUND (EARTHING CONNECTION) WITH RESISTANCE TESTER SUBSEQUENT TO FINAL INSTALLATION. WHERE TEST INDICATES RESISTANCE TO GROUND IS OVER 5 OHMS, TAKE APPROPRIATE ACTION TO REDUCE RESISTANCE TO 5 OHMS OR LESS, BY DRIVING ADDITIONAL PROPERLY SPACED GROUND RODS AND TREATING SOIL IN PROXIMITY OF GROUND RODS WITH COMMON SALT, COPPER SULFATE OR MAGNESIUM SULFATE. RETEST TO DEMONSTRATE COMPLIANCE.
17. A GREEN INSULATED COPPER GROUND CONDUCTOR SHALL BE INSTALLED IN ALL RACEWAYS.
18. GROUNDING SYSTEM SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250 AND APPLICABLE REQUIREMENTS OF IEEE STANDARDS 142 AND 241.
19. THE CONTRACTOR SHALL PROVIDE A COMPLETE ELECTRICAL SHOP DRAWING SUBMITTAL TO THE ENGINEER FOR REVIEW AND APPROVAL. THE ELECTRICAL SUBMITTAL SHALL INCLUDE ALL ELECTRICAL PANELS, BREAKERS, DISCONNECTS, DEVICES, RECEPTACLES, CONDUIT, RACEWAYS, SWITCHES, PULL BOXES, WIRING, ETC. CONTRACTOR SHALL NOT ORDER ANY ELECTRICAL EQUIPMENT UNTIL THIS SUBMITTAL IS REVIEWED AND ACCEPTED BY THE ENGINEER OF RECORD. CONTRACTOR SHALL SUBMIT THE SHOP DRAWINGS AS ONE COMPLETE SUBMITTAL AND SHALL NOT PIECE-MEAL THE SUBMITTAL SPREAD OUT OVER THE COURSE OF DAYS AND WEEKS. FAILURE TO SUBMIT A COMPLETE ELECTRICAL SHOP DRAWING SUBMITTAL SHALL RESULT IN AN IMMEDIATE REJECTION OF THE SHOP DRAWING SUBMITTAL.
20. THE CONTRACTOR SHALL PROVIDE A WRITTEN GUARANTEE THAT SHALL WARRANT ALL WORKMANSHIP AND MATERIALS FOR ONE (1) YEAR. DURING THE FIRST YEAR ALL SYSTEM MALFUNCTIONS SHALL BE REPAIRED AT NO EXPENSE TO THE OWNER.
21. OPERATION AND MAINTENANCE MANUALS SHALL INCLUDE AS A SEPARATE SUBMITTAL ITEM, PREVENTATIVE MAINTENANCE REQUIREMENTS ALONG WITH TIME SCHEDULE(S) FOR EACH ITEM.
22. THE CONTRACTOR SHALL PREPARE REDLINED AS-BUILT DRAWINGS OF THE ELECTRICAL SYSTEMS AT THE COMPLETION OF THE PROJECT CONSTRUCTION AND SHALL INCLUDE THOSE AS-BUILT DRAWINGS AT PROJECT CLOSEOUT ALONG WITH THE O&M MANUAL.
23. PRIOR TO ORDERING ANY ELECTRICAL EQUIPMENT, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL FROM THE ENGINEER OF RECORD.

ELECTRICAL KEY NOTES

1. ELECTRICAL CONTRACTOR TO PROVIDE A NEW 2#10,1#10G,3/4"C. AND A 30A, 2-POLE BREAKER TO EXISTING ELECTRICAL PANEL"A". MATCH NEW BREAKERS WITH EXISTING BREAKER AIC RATED. VERIFY EXACT LOCATION OF NEW LIFT STATION PRIOR TO ROUGH-IN.
2. ELECTRICAL CONTRACTOR TO PROVIDE A NEW 2#10,1#10G,3/4"C AND A 30A, 2-POLE BREAKER TO EXISTING ELECTRICAL PANEL"B". MATCH NEW BREAKERS WITH EXISTING BREAKER AIC RATED. VERIFY EXACT LOCATION OF NEW LIFT STATION PRIOR TO ROUGH-IN.
3. ELECTRICAL CONTRACTOR TO PROVIDE A NEW 2#10,1#10G,3/4"C AND A 30A, 2-POLE BREAKER TO EXISTING ELECTRICAL PANEL"C". MATCH NEW BREAKERS WITH EXISTING BREAKER AIC RATED. VERIFY EXACT LOCATION OF NEW LIFT STATION PRIOR TO ROUGH-IN.
4. CONTROL PANEL BY LIFT STATION MANUFACTURE. SEE CIVIL ENGINEERS DRAWING FOR EXACT LOCATION AND SPECIFICATIONS. PRIOR TO ROUGH-IN.
5. PROVIDE GALVANIZED UNISTRUCT FOR ALL LIFT STATION DEVISES. SEE CIVIL ENGINEERING DRAWINGS FOR EXACT LOCATION AND SPECIFICATION. PRIOR TO ROUGH-IN.
6. ELECTRICAL CONTRACTOR TO PROVIDE A NEW 2#10,1#10G,3/4"C AND A 30A, 2-POLE BREAKER TO EXISTING ELECTRICAL PANEL"D". MATCH NEW BREAKERS WITH EXISTING BREAKER AIC RATED. VERIFY EXACT LOCATION OF NEW LIFT STATION PRIOR TO ROUGH-IN.
7. ELECTRICAL CONTRACTOR TO PROVIDE A NEW 2#8,1#8G,1"C AND A 30A, 2-POLE BREAKER TO EXISTING ELECTRICAL PANEL"E". MATCH NEW BREAKERS WITH EXISTING BREAKER AIC RATED. VERIFY EXACT LOCATION OF NEW LIFT STATION PRIOR TO ROUGH-IN.
8. EXISTING POWER PANEL AND METER TO REMAIN AND TO BE REVISED TO FEED NEW AND EXISTING LIFT STATION AFTER BID BUT PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONFIRM AND ESTABLISH THAT ALL OF THE EXISTING CIRCUITS AND CONDUCTORS ARE FUNCTIONAL. THE CONTRACTOR SHALL PROTECT ALL EXISTING FEEDERS AND BREAKERS AND SHALL REPLACE ANY FEEDERS OR BREAKERS DAMAGE BY HIS WORK.

ELECTRICAL SCOPE OF WORK

1. THE ELECTRICAL SCOPE INVOLVES PROVIDING ELECTRICAL POWER TO A TOTAL OF FIVE (5) LIFT STATIONS AT AN EXISTING PARK.
2. TWO (2) OF THE LIFT STATIONS ARE NEW AND AND SHALL UTILIZE EXISTING POWER ON SITE.
3. THREE (3) OF THE LIFT STATIONS ARE EXISTING TO BE REFURBISHED AND SHALL UTILIZE EXISTING POWER ON SITE.

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ORANGE COUNTY GOVERNMENT FLORIDA

ELECTRICAL – GENERAL NOTES AND LEGEND

UTILITY EXTENSION
MAGNOLIA PARK ECO-TOURISM
OC CAPITAL PROJECTS
ORANGE COUNTY, FL

30% DESIGN DEVELOPMENT 2-28-18
60% CONSTRUCTION DOCS 10-22-18
100% PERMIT SET 10-31-18
REVISED PER APOPKA/OC
BID SET JAN 19, 2019
⚠1 ADDENDUM 1 MARCH 25, 2019

Issue Date and Purpose

Project Number: 1733

Drawn by: MB/AR
Checked: ABJr
File No: E001

BOBES ASSOCIATES
CONSULTING ENGINEERS
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TELEPHONE: 407.628.0882
E-MAIL: INFO@BOBESENG.COM
FLORIDA STATE P.E. NUMBER: 5131

PANEL LOCATION: EXTERIOR UNISTRUCT **PANEL DESIGNATION:** EXISTING D **VOLTAGE:** 120/240 **AIC RATING:** EXISTING 10 KA
PANEL FED FROM: EXISTING UTILITY TRANSFORME **PANELBOARD RATING:** 120/240V, 1PH-3W **MANUFACTURER:** SQUARE D **MOUNTING:** SURFACE
MAINS: 100A, MCB **STYLE:** NQ **NEMA TYPE:** NEMA-3R

LOAD TYPE	LOAD DESCRIPTION	KVA PER PHASE PH A	KVA PER PHASE PH B	BKR	POLE	CKT	CKT	POLE	BKR	KVA PER PHASE PH A	KVA PER PHASE PH C	LOAD DESCRIPTION	LOAD TYPE
M	EXISTING OLD SHOP	3.8		40	2	1	2					SPACE	
M	-		3.8	-	-	3	4					SPACE	
L	EXISTING LIGHTS	0.5		20	1	5	6	2	30	2.8		N/S R/R	M
R	EXISTING GFI RECEPTACLES		0.54	20	1	7	8				2.8	-	M
M	EXISTIN 2ND TRAILER	1.2		15	1	9	10	1	20	0.5		EXISTING BREAKER	M
	SPACE					11	12	1	20		0.5	EXISTING BREAKER	M
M	NEW LIFT STATION No.2	1.37		30	2	13	14	1	20			SPACE	
M	-		1.37	-	-	15	16	1	20			SPACE	
	SPACE					17	18					SPACE	
	PANELBOARD SUB-TOTALS	6.9	5.7							3.3	3.3	**PANELBOARD SUB-TOTALS**	

LOAD CALCULATIONS:	CONNECTED LOAD (KW)	DEMAND FACTOR	ESTIMATED DEMAND LOAD (KW)
(L) LIGHTING	0.5	1.25	0.6
(R) RECEPTACLES (FIRST 10 KW)	0.5	1.00	0.5
(R) RECEPTACLES (REMAINDER)	0.0	0.50	0.0
(H) HVAC (WORST CASE)	0.0	1.00	0.0
(W) WATER HEATING	0.0	1.00	0.0
(K) KITCHEN	0.0	0.65	0.0
(M) MISCELLANEOUS	16.8	1.00	16.8
PANELBOARD TOTALS:	17.8 (49A)		17.9 (50A)

NOTES:
1. MAIN BREAKER SHALL BE FURNISHED WITH SHUNT TRIP.
2. PROVIDE CIRCUIT BREAKER WITH HANDLE LOCK.

* THE ELECTRICAL CONSUMPTION LISTED ON THE PANEL FOR EXISTING CONNECTED LOADS IA AN ESTIMATED LOAD BASED ON THE EXISTING PANEL SCHEDULE DATA AND BEST ENGINEERING PRACTICE.

PANEL LOCATION: EXTERIOR UNISTRUT **PANEL DESIGNATION:** EXISTING E **VOLTAGE:** 120/240 **AIC RATING:** EXISTING 10 KA
PANEL FED FROM: EXISTING UTILITY TRANSFORME **PANELBOARD RATING:** 120/240V, 1PH-3W **MANUFACTURER:** GE **MOUNTING:** SURFACE
MAINS: 200A, MCB **STYLE:** EXISTING **NEMA TYPE:** NEMA-3R

LOAD TYPE	LOAD DESCRIPTION	KVA PER PHASE PH A	KVA PER PHASE PH B	BKR	POLE	CKT	CKT	POLE	BKR	KVA PER PHASE PH A	KVA PER PHASE PH C	LOAD DESCRIPTION	LOAD TYPE
M	EXISTING OLD SHOP	4.8		60	2	1	2	1	20	0.9		EXISTING RECEPTACLES	R
M	-		4.8	-	-	3	4	2	40		3.2	EXISTING BATHROOM NORT MAIN DISC.	M
M	EXISTING BREAKER	1.2		20	1	5	6	-	-	3.2		-	M
	SPACE			20	1	7	8					SPACE	
	SPACE			15	1	9	10					SPACE	
	SPACE					11	12					SPACE	
M	NEW LIFT STATION No.1	1.15		30	2	13	14					SPACE	
M	-		1.15	-	-	15	16					SPACE	
	SPACE					17	18					SPACE	
	PANELBOARD SUB-TOTALS	7.2	6.0							4.1	3.2	**PANELBOARD SUB-TOTALS**	

LOAD CALCULATIONS:	CONNECTED LOAD (KW)	DEMAND FACTOR	ESTIMATED DEMAND LOAD (KW)
(L) LIGHTING	0.0	1.25	0.0
(R) RECEPTACLES (FIRST 10 KW)	0.9	1.00	0.9
(R) RECEPTACLES (REMAINDER)	0.0	0.50	0.0
(H) HVAC (WORST CASE)	0.0	1.00	0.0
(W) WATER HEATING	0.0	1.00	0.0
(K) KITCHEN	0.0	0.65	0.0
(M) MISCELLANEOUS	18.4	1.00	18.4
PANELBOARD TOTALS:	19.3 (53A)		19.3 (53A)

NOTES:
1. MAIN BREAKER SHALL BE FURNISHED WITH SHUNT TRIP.
2. PROVIDE CIRCUIT BREAKER WITH HANDLE LOCK.

* THE ELECTRICAL CONSUMPTION LISTED ON THE PANEL FOR EXISTING CONNECTED LOADS IA AN ESTIMATED LOAD BASED ON THE EXISTING PANEL SCHEDULE DATA AND BEST ENGINEERING PRACTICE.

PANEL LOCATION: EXTERIOR WALL. **PANEL DESIGNATION:** EXISTING A **VOLTAGE:** 120/240 **AIC RATING:** EXISTING 10 KA
PANEL FED FROM: EXISTING UTILITY TRANSFORME **PANELBOARD RATING:** 120/240V, 1PH-3W **MANUFACTURER:** SQUARE D **MOUNTING:** SURFACE
MAINS: 100A, MCB **STYLE:** NQ **NEMA TYPE:** NEMA-3R

LOAD TYPE	LOAD DESCRIPTION	KVA PER PHASE PH A	KVA PER PHASE PH B	BKR	POLE	CKT	CKT	POLE	BKR	KVA PER PHASE PH A	KVA PER PHASE PH C	LOAD DESCRIPTION	LOAD TYPE
	SPACE					1	2						
	SPACE					3	4						
	SPACE					5	6						
	SPACE					7	8						
M	EXISTING MAIN SERVICE BREAKER	8		100	2	9	10						
M	-		8	-	-	11	12						
M	EXISTING SUB FEED	3		20	2	13	14						
M	EXISTING GAR		3	-	-	15	16						
M	EXISTING RAIN BIRD CONTROLLER	0.3		20	1	17	18						
M	EXISTING		2	20	1	19	20						
	SPARE			20	1	21	22						
	SPARE			20	1	23	24						
M	E-ONE NEW LIFT STATION No.1	0.96		40	2	25	26						
M	-		0.96	-	-	27	28						
	SPACE					29	30						
	SPACE					31	32						
	SPACE					33	34						
						35	36						
						37	38						
						39	40						
						41	42						
	PANELBOARD SUB-TOTALS	12.3	14.0							0.0	0.0	**PANELBOARD SUB-TOTALS**	

LOAD CALCULATIONS:	CONNECTED LOAD (KW)	DEMAND FACTOR	ESTIMATED DEMAND LOAD (KW)
(L) LIGHTING	0.0	1.25	0.0
(R) RECEPTACLES (FIRST 10 KW)	0.0	1.00	0.0
(R) RECEPTACLES (REMAINDER)	0.0	0.50	0.0
(H) HVAC (WORST CASE)	0.0	1.00	0.0
(W) WATER HEATING	0.0	1.00	0.0
(K) KITCHEN	0.0	0.65	0.0
(M) MISCELLANEOUS	12.3	1.00	12.3
PANELBOARD TOTALS:	12.3 (34A)		12.3 (34A)

NOTES:
1. MAIN BREAKER SHALL BE FURNISHED WITH SHUNT TRIP.
2. PROVIDE CIRCUIT BREAKER WITH HANDLE LOCK.

PANEL LOCATION: EXTERIOR. **PANEL DESIGNATION:** EXISTNG B **VOLTAGE:** 120/240 **AIC RATING:** EXISTING 10 KA
PANEL FED FROM: EXISTING UTILITY TRANSFORME **PANELBOARD RATING:** 120/240V, 1PH-4W **MANUFACTURER:** SQUARE D **MOUNTING:** SURFACE
MAINS: 200A,MCB **STYLE:** NQ **NEMA TYPE:** NEMA-3R

LOAD TYPE	LOAD DESCRIPTION	KVA PER PHASE PH A	KVA PER PHASE PH B	BKR	POLE	CKT	CKT	POLE	BKR	KVA PER PHASE PH A	KVA PER PHASE PH C	LOAD DESCRIPTION	LOAD TYPE
	BLANK					1	2					BLANK	
	BLANK					3	4					BLANK	
L	EXISTING BATHROOMS	4.1		60	2	5	6					BLANK	
L	-		4.1	-	-	7	8					BLANK	
M	E-ONE NEW LIFT STATION No.3	0.96		40	2	9	10					BLANK	
M	-		0.96	-	-	11	12					BLANK	
	PANELBOARD SUB-TOTALS	5.1	5.1							0.0	0.0	**PANELBOARD SUB-TOTALS**	

LOAD CALCULATIONS:	CONNECTED LOAD (KW)	DEMAND FACTOR	ESTIMATED DEMAND LOAD (KW)
(L) LIGHTING	8.2	1.25	10.3
(R) RECEPTACLES (FIRST 10 KW)	0.0	1.00	0.0
(R) RECEPTACLES (REMAINDER)	0.0	0.50	0.0
(H) HVAC (WORST CASE)	0.0	1.00	0.0
(W) WATER HEATING	0.0	1.00	0.0
(K) KITCHEN	0.0	0.65	0.0
(M) MISCELLANEOUS	1.0	1.00	1.0
PANELBOARD TOTALS:	9.2 (25A)		11.2 (31A)

NOTES:
1. MAIN BREAKER SHALL BE FURNISHED WITH SHUNT TRIP.
2. PROVIDE CIRCUIT BREAKER WITH HANDLE LOCK.

* THE ELECTRICAL CONSUMPTION LISTED ON THE PANEL FOR EXISTING CONNECTED LOADS IA AN ESTIMATED LOAD BASED ON THE EXISTING PANEL SCHEDULE DATA AND BEST ENGINEERING PRACTICE.

PANEL LOCATION: EXTERIOR WALL **PANEL DESIGNATION:** EXISTING C **VOLTAGE:** 120/240 **AIC RATING:** EXISTING 10 KA
PANEL FED FROM: EXISTING UTILITY TRANSFORME **PANELBOARD RATING:** 120/240V, 1PH-3W **MANUFACTURER:** SQUARE D **MOUNTING:** SURFACE
MAINS: 100A, MCB **STYLE:** NQ **NEMA TYPE:** NEMA-3R

LOAD TYPE	LOAD DESCRIPTION	KVA PER PHASE PH A	KVA PER PHASE PH B	BKR	POLE	CKT	CKT	POLE	BKR	KVA PER PHASE PH A	KVA PER PHASE PH C	LOAD DESCRIPTION	LOAD TYPE
R	EXISTING BATH	0.72		20	1	1	2	2	20	0.5		EXISTING DOCKLITE/RECEPTACLE	L
L	EXISTING PARKING LIGHTS		1.2	20	1	3	4				0.5	-	L
R	EXISTING GFI RECEPTACLES	0.72		20	1	5	6	1	20			SPARE	
	SPACE					7	8					SPACE	
	SPACE					9	10	2	40	0.96		E-ONE NEW LIFT STATION No.3	M
	SPACE					11	12	-	-		0.96	-	M
	SPACE					13	14					SPACE	
	SPACE					15	16					SPACE	
	SPACE					17	18					SPACE	
	PANELBOARD SUB-TOTALS	1.4	1.2							1.5	1.5	**PANELBOARD SUB-TOTALS**	

LOAD CALCULATIONS:	CONNECTED LOAD (KW)	DEMAND FACTOR	ESTIMATED DEMAND LOAD (KW)
(L) LIGHTING	2.2	1.25	2.8
(R) RECEPTACLES (FIRST 10 KW)	1.4	1.00	1.4
(R) RECEPTACLES (REMAINDER)	0.0	0.50	0.0
(H) HVAC (WORST CASE)	0.0	1.00	0.0
(W) WATER HEATING	0.0	1.00	0.0
(K) KITCHEN	0.0	0.65	0.0
(M) MISCELLANEOUS	1.9	1.00	1.9
PANELBOARD TOTALS:	5.6 (15A)		6.1 (17A)

NOTES:
1. MAIN BREAKER SHALL BE FURNISHED WITH SHUNT TRIP.
2. PROVIDE CIRCUIT BREAKER WITH HANDLE LOCK.

* THE ELECTRICAL CONSUMPTION LISTED ON THE PANEL FOR EXISTING CONNECTED LOADS IA AN ESTIMATED LOAD BASED ON THE EXISTING PANEL SCHEDULE DATA AND BEST ENGINEERING PRACTICE.

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Seal: Majid Kalaghchi P.E. 41046

ORANGE COUNTY GOVERNMENT FLORIDA

ELECTRICAL – PANEL SCHEDULES

UTILITY EXTENSION
MAGNOLIA PARK ECO-TOURISM
OC CAPITAL PROJECTS
ORANGE COUNTY, FL

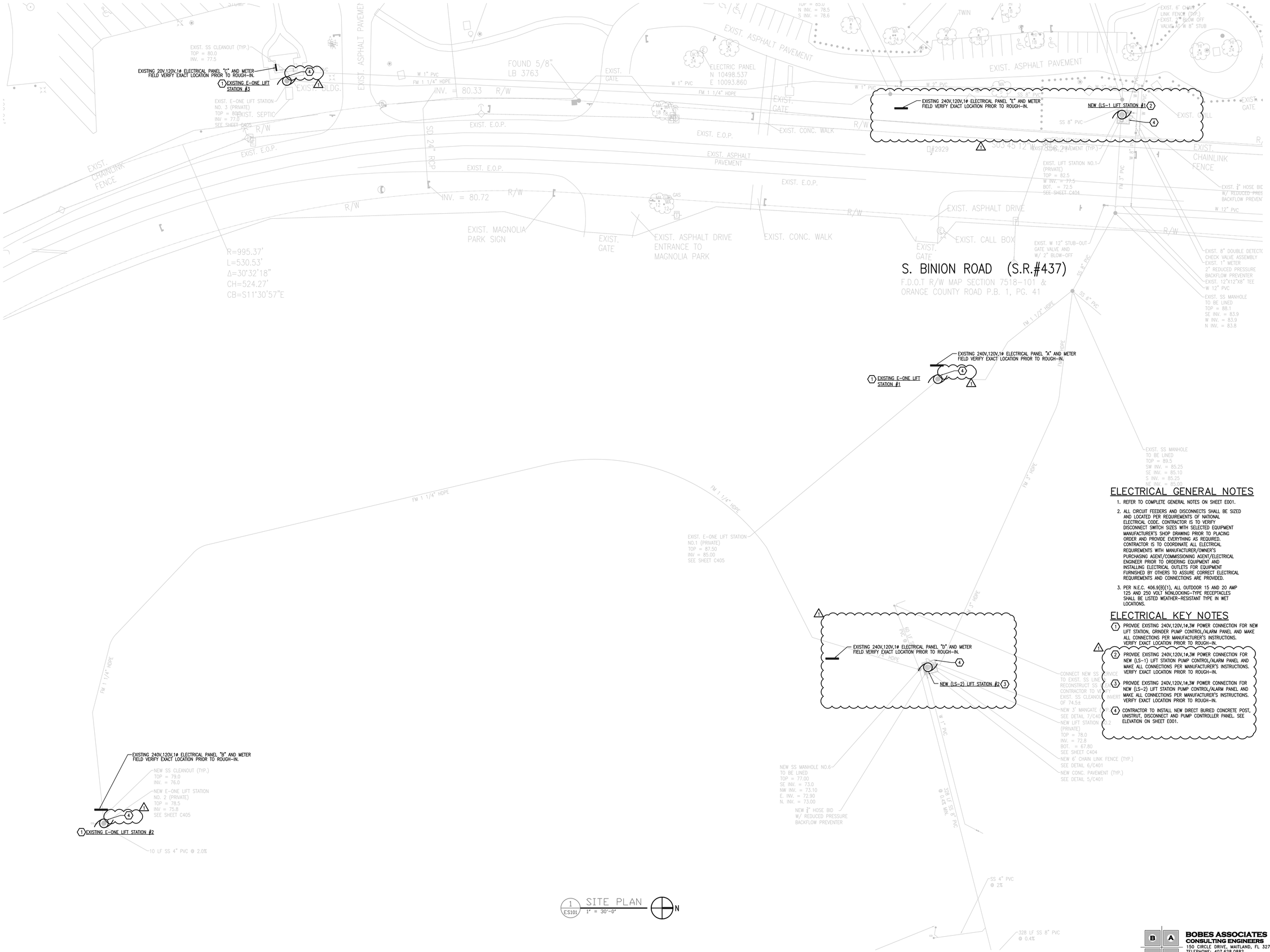
30% DESIGN DEVELOPMENT 2-28-18
60% CONSTRUCTION DOCS 10-22-18
100% PERMIT SET 10-31-18
REVISED PER APOPKA/OC
BID SET JAN 19, 2019
⚠ ADDENDUM 1 MARCH 25, 2019

Issue Date and Purpose

Project Number: 1733

Drawn by: MB/AR
Checked: AB/jr
File No:

E301



1 ES101 SITE PLAN
1" = 30'-0"

N

ELECTRICAL GENERAL NOTES

1. REFER TO COMPLETE GENERAL NOTES ON SHEET E001.
2. ALL CIRCUIT FEEDERS AND DISCONNECTS SHALL BE SIZED AND LOCATED PER REQUIREMENTS OF NATIONAL ELECTRICAL CODE. CONTRACTOR IS TO VERIFY DISCONNECT SWITCH SIZES WITH SELECTED EQUIPMENT MANUFACTURER'S SHOP DRAWING PRIOR TO PLACING ORDER AND PROVIDE EVERYTHING AS REQUIRED. CONTRACTOR IS TO COORDINATE ALL ELECTRICAL REQUIREMENTS WITH MANUFACTURER/OWNER'S PURCHASING AGENT/COMMISSIONING AGENT/ELECTRICAL ENGINEER PRIOR TO ORDERING EQUIPMENT AND INSTALLING ELECTRICAL OUTLETS FOR EQUIPMENT FURNISHED BY OTHERS TO ASSURE CORRECT ELECTRICAL REQUIREMENTS AND CONNECTIONS ARE PROVIDED.
3. PER N.E.C. 406.9(B)(1), ALL OUTDOOR 15 AND 20 AMP 125 AND 250 VOLT NONLOCKING-TYPE RECEPTACLES SHALL BE LISTED WEATHER-RESISTANT TYPE IN WET LOCATIONS.

ELECTRICAL KEY NOTES

1. PROVIDE EXISTING 240V,120V,1ø,3W POWER CONNECTION FOR NEW LIFT STATION, GRINDER PUMP CONTROL/ALARM PANEL AND MAKE ALL CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
2. PROVIDE EXISTING 240V,120V,1ø,3W POWER CONNECTION FOR NEW (LS-1) LIFT STATION PUMP CONTROL/ALARM PANEL AND MAKE ALL CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
3. PROVIDE EXISTING 240V,120V,1ø,3W POWER CONNECTION FOR NEW (LS-2) LIFT STATION PUMP CONTROL/ALARM PANEL AND MAKE ALL CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS. VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
4. CONTRACTOR TO INSTALL NEW DIRECT BURIED CONCRETE POST, UNISTRUT, DISCONNECT AND PUMP CONTROLLER PANEL. SEE ELEVATION ON SHEET E001.

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ORANGE COUNTY GOVERNMENT FLORIDA

SITE PLAN

UTILITY EXTENSION

MAGNOLIA PARK ECO-TOURISM

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RILEY & Company, Inc. (H-20 LP)

SCOPE: Supply and install one complete H-20 GP Pre-Fab Lift Station, per design. Pumps shall be capable of grinding and pumping domestic & commercial sewage.

Complete system shall be supplied by:

RILEY & Company, Inc.
Sanford, FL 32750 (Ph. 407-265-9963)

Due to the structural strength, corrosion resistance, and the leak-proof design of the H-20 GP complete system, concrete wetwells will not be approved. After the H-20 load rated wetwell has been installed, the ASTM Certification Number and Serial Tracking Number must be visible.

Certification of the wetwell H-20 load rating must be supplied with submittals. H-20 certification must be signed and sealed by an engineer registered in the State of Florida.

PUMPS: Submersible grinder pumps shall be HOMA Model GRP. The pumps shall be installed in the H-20 GP FRP wetwell utilizing a dual slide rail system.

The grinder unit shall be capable of macerating materials normally found in domestic and commersial sewage into a fine slurry which will pass through the pump and the Sch.80 PVC discharge piping.

Oil filled motors are not considered equal to air filled motors and therefore will not be considered an equal to the HOMA PUMPS.

Stator winding shall be open type with Class F insulation and shall be heat-shrink fitted into the stator housing. The use of pins, bolts, or other fastening devices is not acceptable.
Stator winding shall be open type with Class F insulation and shall be heat-
A heat sensor theromstat shall be attached to the top end of the motor winding and shall be connected in series with the magnetic contactor coil in the control panel to stop motor if winding temperature exceeds 140 C., but shall automatically reset when the winding temperature returns to normal.
Two heat sensor thermostats shall be used on three phase motors.

The pump motor grinder shaft shall be AISI 430F SS threaded to take the pump impeller and the grinder impeller.
Upper & lower mechanical seals shall be Silicon Carbide vs Silicon Carbide.

DUPLEX CONTROL PANEL:

Control panel shall be assembled and built by a TUV (UL508A CERTIFIED) manufacturing facility.

The Enclosure shall be NEMA 4X, minimum 24" high x 20" wide x 8" deep fiberglass with padlockable draw latches.

The enclosure shall have external mounting feet to allow for wall mounting. All hardware shall be stainless steel. All conduit penetrations shall have approved seal off fittings and shall be properly sealed to prevent wetwell gases from entering enclosure.

The following components shall be mounted through the enclosure:
1- ea. Red Alarm Beacon (Light)
1- ea. Alarm Horn
1- ea. Generator Receptacle w/ weatherproof cover
1- ea. Alarm Silence Pushbutton

The backpanel shall be fabricated from .125, 5052-H32 marine alloy aluminum. All components shall be mounted by machined stainless steel screws.

The following components shall be mounted to backpanel:
2- ea. Motor Contactors
1- ea. Volt Monitor (Single Phase) Phase Monitor (Three Phase)
1- ea. Control Transformer (480 Volt Only)
1- ea. Silence Relay
1- ea. Duplex Alternator
20- ea. Terminals For Field Connections
6- ea. Terminals For Motor Connections (Single Phase Only)
3- ea. Grounding Lugs

The innerdoor shall be fabricated from .080, 5052-H32 marine alloy aluminum. The innerdoor shall have a continuous aluminum piano hinge.

The following components shall be mounted through the innerdoor:
1- ea. Main Circuit Breaker
1- ea. Emergency Circuit Breaker
1- ea. Mechanical Interlock For Emergency And Main Breakers
2- ea. Short Circuit Protectors
1- ea. Control Circuit Breaker
1- ea. Hand-Off-Auto Selector Switches
2- ea. Pump Run Pilot Lights
1- ea. Power On Pilot Light
2- ea. Elapse Time Meters (Non-Resetable)
1- ea. GFI Duplex Convenience Outlet

COMPONENT SPECIFICATIONS:
All circuit breakers shall be molded thermal magnetic.
The mechanical interlock shall prevent the normal and emergency main breakers being energized at the same time.
An emergency generator receptacle shall be supplied in accordance with DEP standards. The generator receptacle shall be adequately sized to meet the equipment operating conditions.
All motor short circuit protection devices must provide for undervoltage release and class 10 overload protection on all three phases. Visable trip indication, test, and reset capability must be provided without opening inner door.
Open frame, across the line, contactors shall be rated per IEC standards and properly sized per the motor requirements.
Contactors shall provide for safe touch power and control terminals.
Lightning Arrestor shall meet or exceed the requirements of ANSI/IEEE Std. C62.21-1984 section 8.6.1. and 8.7.3 shall be supplied by electrician and mounted on the bottom side of the switch disconnect ahead of the pump control panel.
A voltage monitor shall be supplied for single phase service.
A phase monitor shall be supplied for (3) phase service.
A green pilot light shall be supplied for each motor. The pilot light shall illuminate each time the motor is called to run.
Each pump shall have an Elapse Time Meter to record the accumulated run time. The ETM shall be 2" diameter, non-resettable, six digit, totally encapsulated unit.
A Red pilot light shall be supplied for control power. The pilot light shall illuminate when the control power is available inside the control panel.
Relays shall be ice-cube plug in type. Relay contacts shall be rated 10 amp minimum, DPDT.
Twenty (20) terminals shall be supplied for field connections.
The terminals shall be rated 25 amps minimum.
Each motors over-temperature contact shall be connected to the terminal strip and shall open a contact to de-energize the appropriate motor upon a high temperature within the motor.
A 15 Amp GFI duplex receptacle shall be supplied and mounted on the innerdoor.
Ground lugs shall be supplied and appropriately sized for each motor and for service entrance.

Nameplates for the innerdoor and back panel shall be of a graphic design, specifically depicting the intent for each device.

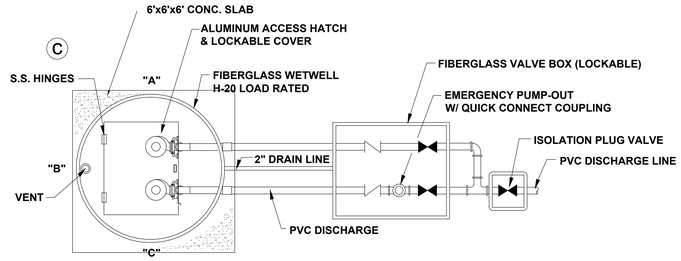
MISCELLANEOUS: All wiring on the backpanel shall be containted within the wiring duct. All wiring between the innerdoor and the backpanel shall be contained with in a plastic spiral wrap.
Each wire shall have a wire number at each end to correspond to the as built drawing for field troubleshooting.
The control panel shall be assembled by a TUV (UL508A Certified) manufacturing facility.

FASTNERS & APPURTANCES: All fasternes, lifting cables, float cable bracket, hinges, and appurtances shall be made of AISI 304SS.
A 304SS slide/latch assembly shall be provided tor holding the doors open on the wetwell and valve box.
Slide rails shall be made of SCH.40 AISI 304SS pipe.
Pump lifting cables shall be made of AISI 304 SS.
Pump lifting bales shall be made of AISI 304 SS.

H-20 LOAD RATED WETWELL WITH LIFTING LUGS:
The fiberglass wetwell must be H-20 load rated with integral lifting lugs, fiberglass slope in bottom of wetwell and valve box.
Certification of the H-20 load rating must be supplied at the time of submittals to Engineer.
The wetwell shall be manufactured of fiberglass reinforced polyester (FRP) of depth and diameter as shown on the lift station elevation detail. The wall thickness shall be adequate for the depth of the wetwell to maintain the H-20 LOAD RATING.

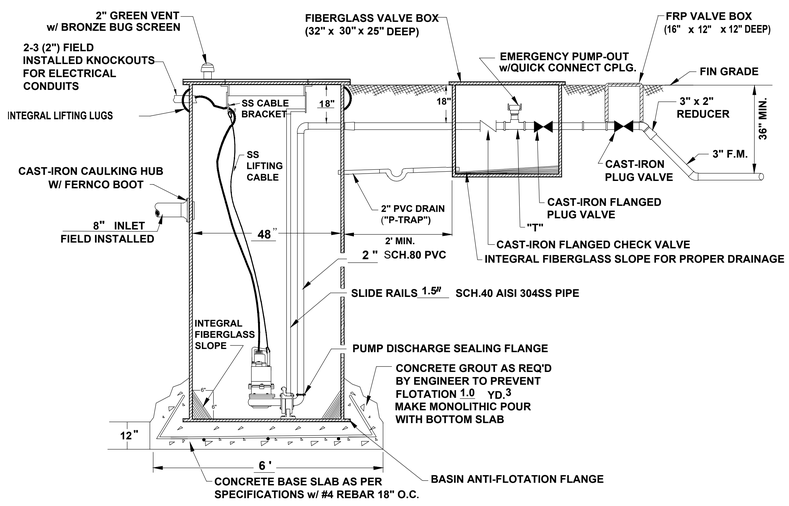
EXECUTION:
Installation shall be in strict accordance with the manufacturer's recommendations in the locations shown on the drawing.

INSPECTION & TESTING: A factory representative shall be provide for a one (1) time start-up and shall have complete knowledge of the proper operation and maintenance of complete system.
Megger the motors. The pump motors shall be megged out prior to the start-up to ensure that the insulation of the pump motor/cable is intact.
The pump controls and pumps shall be checked for mechanical reliability and proper operation.



NOTE: PUMP CONTROL PANEL SHALL BE LOCATED 3 FEET FROM WETWELL PERIMETER OPTIONALLY AT "A", "B", OR "C"

LIFT STATION PLAN



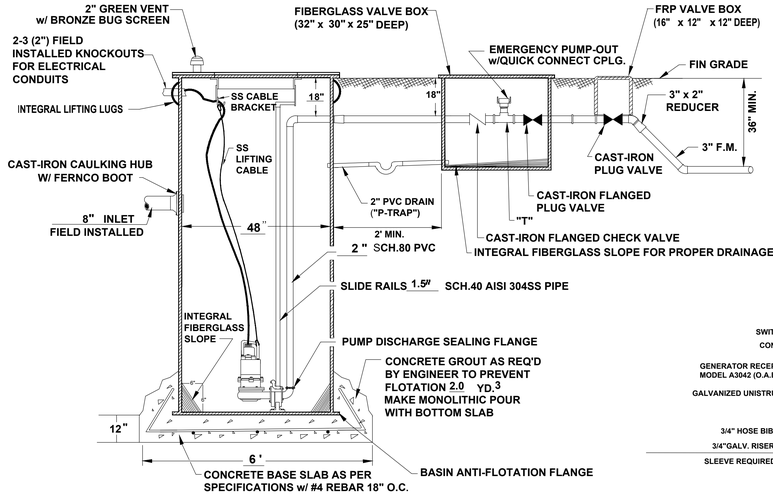
LIFT STATION SECTION
LIFT STATION NO. 1

LIFT STATION NO. 1

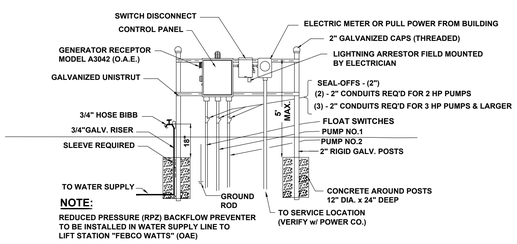
PUMP DATA		ELEVATIONS	
PRIMARY PUMP CAPACITY	96 GPM	TOP OF WETWELL	82.5
PRIMARY TDH	12.5' TDH	LOW INLET INVERT	77.5
PUMP MANUFACTURER	HOMA	HIGH LEVEL ALARM	77.0
PUMP MODEL #	RC 30041	2nd PUMP ON	76.5
R.P.M.	3450	1st PUMP ON	76.0
HORSEPOWER	3.4 HP	PUMPS OFF	74.0
ELECTRICAL/ VOLTS / PHASE	230/380/460	BOTTOM OF WETWELL	72.5
PUMP DISCHARGE SIZE	2.0"	WETWELL DIAMETER	4 FT
IMPELLER DIAMETER	78 mm		

LIFT STATION NO. 2

PUMP DATA		ELEVATIONS	
PRIMARY PUMP CAPACITY	80 GPM	TOP OF WETWELL	78.0
PRIMARY TDH	26' TDH	LOW INLET INVERT	72.8
PUMP MANUFACTURER	HOMA	HIGH LEVEL ALARM	71.8
PUMP MODEL #	RC20071	2nd PUMP ON	71.3
R.P.M.	3450	1st PUMP ON	69.3
HORSEPOWER	2.0 HP	PUMPS OFF	67.8
ELECTRICAL/ VOLTS / PHASE	230/380/460	BOTTOM OF WETWELL	101.9
PUMP DISCHARGE SIZE	2.0"	WETWELL DIAMETER	4 FT
IMPELLER DIAMETER	88 mm		



LIFT STATION SECTION



NOTE:
REDUCED PRESSURE (RPZ) BACKFLOW PREVENTER TO BE INSTALLED IN WATER SUPPLY LINE TO LIFT STATION "FEBCO WATTS" (OAE)

ELECTRICAL RISER

* ELECTRICIAN NOTES:

1. DRAWING NOT TO SCALE
* 2. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES
* 3. ELECTRICIAN SHALL SEAL OFF CONDUIT RUNS
* 4. ELECTRICIAN TO MOUNT LIGHTNING ARRESTOR AT SWITCH DISCONNECT
* 5. CONTRACTOR SHALL VERIFY POWER SOURCE PRIOR TO ORDERING EQUIPMENT

RILEY & CO. / H-20 GP 04-06

LIFT STATION PLAN AND DETAILS

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ORANGE COUNTY GOVERNMENT FLORIDA

ECO-TOURISM

LIFT STATION DETAIL SHEET

UTILITY EXTENSION

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Checked: M. KALAGHCHI
File No:

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