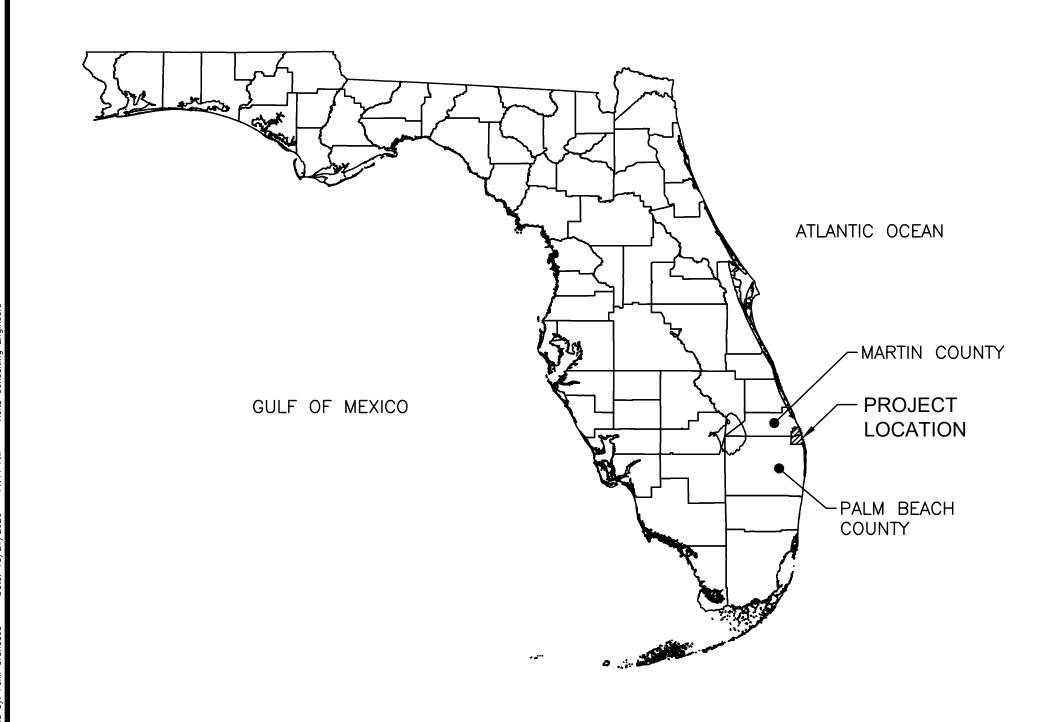
LIFT STATION #163 EMERGENCY GENERATOR PROJECT

PREPARED FOR LOXAHATCHEE RIVER DISTRICT

PALM BEACH COUNTY, FLORIDA SECTION 27, TOWNSHIP 40S, RANGE 42E





VICINITY MAP

SHEET INDEX

SHEET No. SHEET TITLE

COVER

GENERAL NOTES AND LEGEND LIFT STATION #163 SITE PLAN

ELECTRICAL NOTES & LEGEND

LIFT STATION #163 ELECTRICAL PLAN

LOXAHATCHEE RIVER DISTRICT GOVERNING BOARD

CHAIRMAN VICE CHAIRMAN TREASURER SECRETARY ASST. SEC'Y/TREAS. STEPHEN B. ROCKOFF GORDON M. BOGGIE HARVEY M. SILVERMAN JAMES D. SNYDER DR. MATT ROSTOCK

SEPTEMBER 2020

100% SUBMITTAL

License No: 60906



G-1

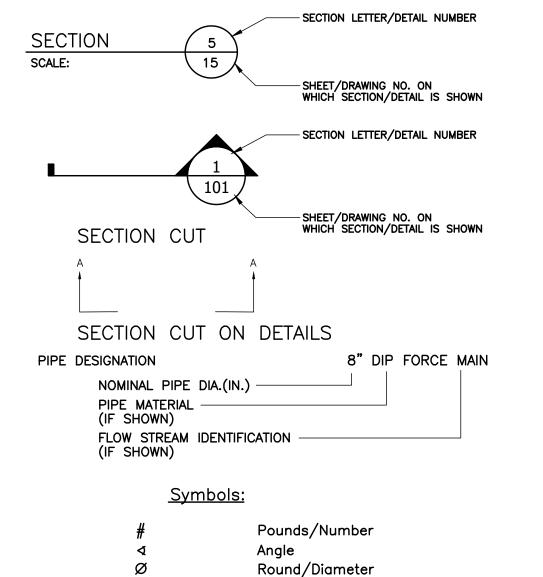
GENERAL ABBREVIATIONS LINETYPES ABND Abandon or Abandoned Maximum **EXISTING*** PROPOSED* ACP MB Asbestos Cement Pipe Mailbox MECH ADD'L Additional Mechanical CABLE TV Manhole Aluminum AL, Alum MIN Minimum CENTER LINE **APPROX Approximate** MISC ARV Air Release Valve Miscellaneous DRAIN —— DR ——— DR ——— ASP, Asph Mechanical Joint ——— DR ———— DR ——— Asphalt **EASEMENT** N/D Nail and Disk BFP Backflow Preventer BFV No NTS Butterfly Valve Number **ELECTRIC** _____ E ____ E ____ Not to Scale B/L Base Line **FENCE** BĹDG ____x___x___ Building ____ x ____ x ____ 00,0/0 BM BO BOP On Center Benchmark FIBER OPTIC —--FOC---FOC — OD OHW ORB Outside Diameter Blowoff Bottom of Pipe Overhead Wire FIRE MAIN ------ FIRE ------—— FIRE ——— FIRE ——— Official Records Book Cable Television CATV FORCE MAIN ——— FM ———— FM ——— PB PGL Plat Book CB Catch Basin Profile Grade Line GAS CO Cleanout Center Line PVC Polyvinyl Chloride/Polyvinyl Chloride Pipe CL GUARDRAIL CLF ______ Chain Link Fence RC Reinforced Concrete CIP Cast Iron Pipe / Cast in Place IRRIGATION ------ IRR ------- IRR ------RCP Reinforced Concrete Pipe CMP Corrugated Metal Pipe RCW RED CONC Reclaimed Water Concrete OVERHEAD UTILITIES —— ОНИ ——— ОНИ ——— CONST Reducer Construct/Construction REINF RAILROAD TRACK Reinforce/Reinforced Restrained Joint Drainage Easement RAW WATER MAIN ----- RWM -----RWM Raw Water Main DI Ductile Iron DIP Ductile Iron Pipe R/W,ROW Right of Way RECLAIMED WATER MAIN _____ RCW _____ DIA Diameter DR RIGHT-OF-WAY Dimensional Ratio/Drainage Slope (FT/FT)/(Rise/Run) S= _____ SAN DWY Driveway Sanitary SANITARY SEWER ---s--s--s-— - - s - - - s - - - s — SCH/SCHED Schedule SEC SF EL Elevation Section SANITARY SEWER SERVICE Edge of Pavement EOP Silt Fence **ESMT** SP Easement Sample Point SILT FENCE —— SF ——— SF —— Edge of Water Existing EOW SS STA Sanitary Sewer EX, EXIST STORM DRAINAGE --- ST --- ST --- ST -—— - - ST - - - ST - - -Station TELEPHONE — — — T — — T — — T — FDOT Florida Department of Transportation TBM TEMP Temporary Benchmark FH Fire Hydrant Temporary TOP OF BANK _____ _____ Force Main FM TOB TON TOP TOS TYP Top of Bank FND Found Top of Nut TOE OF SLOPE FNPT Female Nominal Pipe Thread Top of Pipe Florida Power and Light FPL TRAFFIC SIGNAL ---TS---TS---TS-——--TS---TS-Toe of Slope FW Finished Water Typical TURBIDITY BARRIER —— TB ——— TB —— GPS UE UEC UGE UGT Global Positioning System Utility Easement UNKNOWN --- – UNK -- – UNK --GV Gate Valve Underground Electric Conduit Underground Electric VACUUM SEWER --- \vee S --- \vee S --- \vee S -HB Hose Bibb Underground Telephone HDD Horizontal Directional Drill UNK WATER MAIN Unknown ----- WM ------ WM -----HDPE High Density Polyethylene WATER SERVICE HYD ----- WS ------ WS -----Hydrant With (Combined Form) Wood Fence WOOD FENCE —— WF ——— WF ——— ID Identification Water Main or Water Meter INV Invert/Invert Elevation Wire Pullbox IRC Iron Rod & Cap Water Treatment Plant IRR Irrigation Water Valve * DEPICTS ABOVE GRADE —— TEXT ——— TEXT ——— TEXT ——— Waste Water Treatment Plant LAE LF Limited Access Easement * DEPICTS BELOW GRADE --- TEXT Linear Feet Light Pole Lift Station LP LS LSA Landscape Area

PIPING	SYMBOI	LOGY
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
	—— ——	UNION
	──	BALL VALVE (BV)
	$-\!$	GATE VALVE (GV)
	─/	BUTTERFLY VALVE (BFV)/ ODOR CONTROL DAMPENE
		PLUG VALVE (PV)
		CHECK VALVE (CV)
	<u> </u>	PLUG/CAP
	— 	CLEAN OUT
		TAPPING VALVE
4		LINE STOP
	$\longrightarrow\!$	HOSE BIBB
		EXISTING PIPE
		EXISTING BURIED PIPE
		PROPOSED PIPE
		PROPOSED PIPE
		MECHANICAL JOINT
		FLANGE JOINT
		FLEXIBLE COUPLING
	→	FLEXIBLE COUPLING WITH THRUST TIES
	0 	ELBOW UP
	c 	ELBOW DOWN
	+	90° ELBOW
		TEE UP
		TEE DOWN
		TEE
	 +	CROSS

CIVIL SYMBOLOGY

			<u> </u>				
CONSTRUCTION BASE LI	NE		0+	00			
DIRECTION OF FLOW			_	~~►			
EXIST. SPOT ELEVATION			x 19 ^{.5}				
PROP. SPOT ELEVATION			-0.0				
BENCHMARK		• E	L. 20.90				
NEW CONTOUR ELEV.		~~	√ 79.5∕	~~~			
EXIST. UTILITY POLES	UTILITY -	POWER	TELEPHONE				
NEW UTILITY POLES	UTILITY	POWER	TELEPHONE	LIGHT			
PIPING CONFLICT LOCATION C-1							
SAMPLE POINT		(SP	D				
WATER SURFACE	PLAN SECTION		<u>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</u>	EL.48,00			
FIRE HYDRANT			NEW	EXIST.			
EXIST. MANHOLE, DRAIN	AGE STRUCT	URE	\bigcirc				
NEW MANHOLE, DRAINAG	SE STRUCTU	RE	0				
TO BE REMOVED/DEMOL	ISHED		/////				

SECTION/DETAIL SYMBOL



Know what's below. Call before you dig.

SURVEY ABBREVIATIONS & LEGEND

=LIGHT POLE

E =ELECTRIC BOX

=WATER METER

-Ó-=FIRE HYDRANT

=TELEPHONE

=CABLE TV

=BENCHMARK

=SIGN

= IRRIGATION CONTROL VALVE

S) = SANITARY MANHOLE

=CONCRETE POWER POLE

(C) = CALCULATED C.B.S. = CONCRETE BLOCK STRUCTURE

CMH = CONFLICT MANHOLE

LB = LICENSE BUSINESS

 $\dot{M}.\dot{H}.W. = MEAN HIGH WATER$

R.P.B. = ROAD PLAT BOOK (S) = SURVEY SLP = STOP LIGHT POLE

SMH = SANITARY MANHOLE

STMH = STORM MANHOLE

TLP = TRAFFIC LIGHT POLE

WUP = WOOD UTILITY POLE

TB = TRAFFIC BOX

TV = TELEVISION WP = WOOD POLE

D.B. = DEED BOOK

I.P. = IRON PIPE

I.R. = IRON ROD

(M) = MEASURED

MON. = MONUMENT

C.M.B. = COMMISSIONERS' MINUTES BOOK

(P) = PLAT P.R.M. = PERMANENT REFERENCE MONUMENT

SBTMH = SOUTHERN BELL TELEPHONE MANHOLE

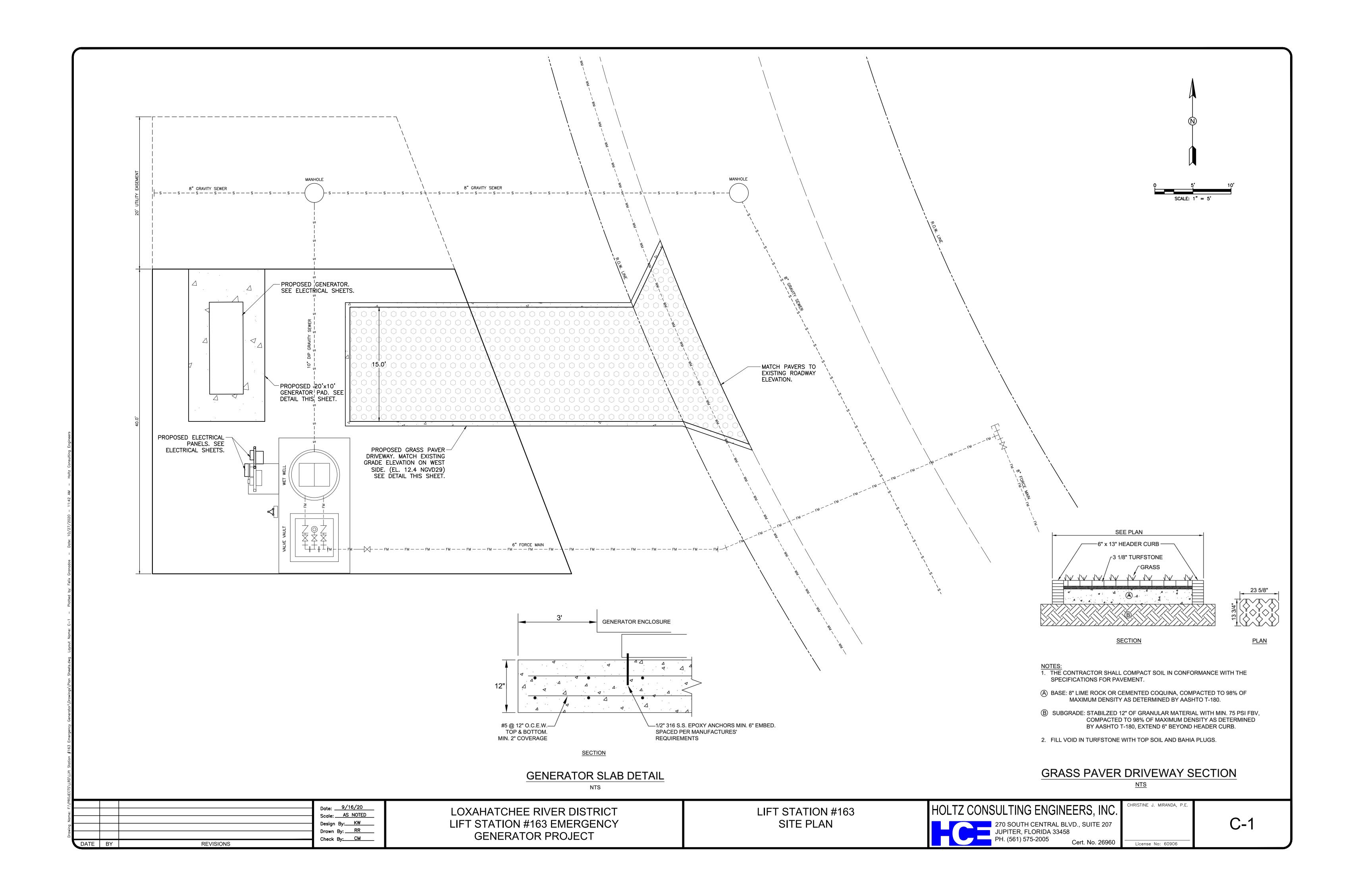
LOXAHATCHEE RIVER DISTRICT LIFT STATION #291 GENERATOR IMPROVEMENTS





CHRISTINE J. MIRANDA, P.E.

License No: 60906



GENERAL ELECTRICAL NOTES

1. <u>SCHEMATIC NATURE</u> PLAN VIEWS ARE SCHEMATIC IN NATURE AND MEANT TO SHOW THE SCHEMATIC ARRANGEMENT OF EQUIPMENT AND CONDUIT.

2. APPROVED SHOP DRAWINGS

USE APPROVED SHOP DRAWINGS FOR LAY OUT OF EQUIPMENT. THE CONTRACT DOCUMENTS WILL VARY FROM THE SHOP DRAWINGS. INFORM THE ENGINEER IMMEDIATELY IF THERE ARE LAY OUT ISSUES OR INADEQUATE SPACE FOR EQUIPMENT OR CLEARANCES. LAND CONDUITS IN OPENINGS OF ENCLOSURES PER THE APPROVED SHOP DRAWINGS, DO NOT USE THE CONTRACT DRAWINGS.

3. <u>CLEARANCES</u>

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MEET N.E.C. CLEARANCES ABOUT EQUIPMENT. THE SAME APPLIES TO RACEWAY SUPPORTS.

4. <u>ROUTING</u>
CONDUIT ROUTING IS SCHEMATIC IN NATURE. CONDUIT ROUTING IS SHOWN FOR CLARITY ON THE CONTRACT DRAWINGS. ROUTE CONDUITS AS MAY BE REQUIRED. PROVIDE PULL BOXES AS REQUIRED PER NEC.

5. <u>FUTURES FACILITIES</u>

WHERE FUTURE FACILITIES ARE INDICATED. CONDUIT ROUTING SHALL ACCOUNT FOR SUCH FACILITIES.

6. <u>RESPONSIBILITIES</u>

BIDDERS, SUPPLIERS, EQUIPMENT VENDORS, GENERAL CONTRACTOR, SUB CONTRACTORS AND OTHER SIMILAR ENTITIES ARE REQUIRED TO READ ALL THE CONTRACT DOCUMENTS INCLUDING DRAWINGS AND SPECIFICATIONS.

CONTRACTOR SHALL COORDINATE HOME RUNS BETWEEN PLAN VIEWS. WHERE ANY CONDUIT IS SHOWN IN ANY PLAN VIEW IT SHALL BE INSTALLED THE

ENTIRE LENGTH AS MAY BE REQUIRED. 8. <u>FIELD VERIFICATIONS</u> FIELD VERIFY ALL EXISTING CONDITIONS. MAKE MINOR ADJUSTMENTS AS

NEEDED. INFORM OWNER/ENGINEER OF INCONSISTENCIES IMMEDIATELY IF PROBLEMS OR CONFLICTS EXIST.

9. <u>COMPLETE AND FUNCTIONAL SYSTEMS</u> PROVIDE ALL LABOR AND MATERIAL FOR A COMPLETE AND FUNCTIONAL

SYSTEM. DEMONSTRATE SYSTEM OPERATION TO THE OWNER/ENGINEER.

10. GROUNDING

DATE BY

PROVIDE GROUNDING SYSTEM AS INDICATED ON DRAWINGS AND BY NEC. ALL POWER RACEWAYS REQUIRE GROUNDING CONDUCTORS. BONDING THROUGH RACEWAY SYSTEMS SHALL BE CONTINUOUS FROM MAIN SWITCH GROUND BUSES TO PANEL GROUND BARS, FROM PANEL GROUND BARS TO BRANCH CIRCUIT OUTLETS, MOTORS, LIGHTS, ETC. THESE GROUND CONDUCTORS ARE REQUIRED THROUGHOUT THE PROJECT REGARDLESS OF WHETHER CONDUIT RUNS SHOW GROUND CONDUCTORS ON DRAWINGS.

11. CONTRACTOR MINIMUM REQUIREMENTS

PROVIDE AND INSTALL A COMPLETE ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS. ITEMS NOT SHOWN BUT OBVIOUSLY NECESSARY FOR A COMPLETE SYSTEM SHALL BE INCLUDED.

THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, INSPECTIONS AND APPROVALS.

ALL WORK SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE, NFPA, AND THE LOCAL BUILDING CODES. ALL COMPONENTS SHALL BE U.L. APPROVED.

CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL CONCEALED FACILITIES BEFORE ANY WORK BEGINS.

12. SCOPE OF WORK

A. COORDINATE NEW ELECTRICAL EQUIPMENT. B. DEMO EXISTING EQUIPMENT. C. INSTALL NEW EQUIPMENT. D. RESTORE AREAS TO ORIGINAL CONDITION.

13. <u>CONDUIT</u>
CONDUIT SIZES AS SHOWN ON THE DRAWINGS ARE MINIMUM. THE CONTRACTOR MAY INCREASE AS REQUIRED FOR EASE OF PULLING.

ALL EXPOSED CONDUIT SHALL BE NEATLY INSTALLED AND RUN PARALLEL OR PERPENDICULAR TO STRUCTURAL ELEMENTS. SUPPORTS AND MOUNTING HARDWARE SHALL BE 316 SS. CONDUITS SHALL HAVE BURRS REMOVED WITH A REAMER. CONDUITS ENTERING CABINETS SHALL HAVE LOCK NUTS INSIDE AND OUT UNLESS ENTRANCE IS THREADED. NYLON INSULATED BUSHING SHALL BE USED ON ALL CONDUIT TERMINATIONS.

ALL UNDERGROUND CONDUITS SHALL BE INSTALLED 24" BELOW FINAL

ALL BURIED CONDUIT SHALL BE PVC UNLESS INDICATED; SERVICE CONDUIT SHALL BE PVC SCHEDULE 80 OR RIGID GALVANIZED STEEL.

14. JUNCTION BOXES OUTSIDE.

MINIMUM GAUGE.

PROVIDE ADDITIONAL BOXES AS MAY BE REQUIRED. PROVIDE NEMA 3R

GROUNDING CONDUCTORS SHALL BE TINNED COPPER 600V RATED #6

CONDUCTORS SHALL BE COPPER STRANDED TYPE THWN WITH 75°C RISE

MULTICONDUCTOR LABELS SHALL BE STRANDED 14 GAUGE, 600V, THWN INSULATED WITH PVC JACKET.

16. SHUT DOWNS

CONTRACTOR SHALL COORDINATE ANY POWER DOWNTIME WITH FPL AND THE OWNER. ANY POWER DOWN TIME SHALL BE APPROVED BY THE OWNER.

17. RESTORATION CONTRACTOR SHALL RESTORE TO ORIGINAL CONDITION ALL FACILITIES HE DISTURBS. CONTRACTOR SHALL PROVIDE CLEANUP, AND PROPER DISPOSAL, AND PAY ALL FEES FOR ALL DEMOLISHED MATERIALS AND THE LIKE.

18. <u>WARRANTY</u>

CONTRACTOR SHALL WARRANT LABOR AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE OWNER'S ACCEPTANCE OF THE COMPLETED PROJECT.

19. STATION CONTROL PANEL & RTU EXISTING LSCP & RTU SHALL REMAIN, PROVIDE TEMP. POWER TO KEEP STATION OPERATIONAL AS REQUIRED.

ELECTRICAL ABBREVIATIONS

COMPRESSOR CONTROL RELAY

CONTROL PANEL DISCONNECT SWITCH

ETM ELAPSED TIME METER **FUSE** FSA FIELD SURGE ARRESTOR

GFI GROUND FAULT INTERRUPTER HAND-OFF-AUTO HAND-OFF-REMOTE

INST. PULL BOX LIGHTNING ARRESTER MARTIN COUNTY UTILITIES OVER LOAD RELAY

PUSH BUTTON POWER DIST. PANEL

POWER MONITOR R,G,A RED, GREEN, AMBER PILOT LIGHT

SURGE ARRESTER SELECTOR SWITCH OR

316 STAINLESS STEEL TS TEST SWITCH

WEATHER PROOF POSITION SWITCH CLOSED ZS0 POTION SWITCH OPEN

MATERIAL SCHEDULE

LOCATION	CONDUIT	ENCLOSURE MATERIALS	ENCLOSURE NEMA RATING	FASTENERS, STRUT, THREADED ROD, ETC.	REMARKS
EXTERIOR					
BELOW GRADE	PVC SCHED. 40	CONCRETE BOXES	N/A	316 SS	
ABOVE GRADE	PVC SCHED. 80	316 SS	4X	316 SS	

GENERAL NOTES

- 1. THE SCHEDULE SHALL ESTABLISH THE MINIMUM LEVEL OF QUALITY FOR MATERIALS. UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR IN THE SPECIFICATIONS
- 2. THE SCHEDULE SHALL NOT APPLY TO POWER TRANSFORMERS, LIGHT FIXTURES AND THE LIKE, THOSE ELEMENTS ARE NOTED OR INDICATED ELSEWHERE

LEGEND

N/A NOT APPLICABLE 316 STAINLESS STEEL

ELECTRICAL LEGEND

REVISIONS

	EXIST. LINETYPE		DUPLEX, 14" AFF	J	JUNCTION BOX
	RACEWAY EXPOSED LIGHTING RACEWAY CONCEALED	o To	LEVEL SWITCH, FLOAT SWITCH		PANELBOARD, ELECTRICAL EQUIP. ENCL
	RACEWAY CONCEALED RACEWAY TURNED UP/DOWN	E	THERMAL SWITCH	М	MOTOR OPERATED VALVE
•	THE WAT TOTALED OF JOHN		HEATER	[141]	
5	MOTOR	G	PILOT LIGHT	مَاه	RED, MAINTAINED PUSH BUTTON
	TRANSFORMER	RTM	RUN TIME METER	\searrow	TIMING CONTACT
	FUSE	\forall		·	
	CIRCUIT BREAKER	0 0	SELECTOR SWITCH	———	CONTROL RELAY, MOTOR STARTER, ETC.
$\dashv \leftarrow$	CAPACITOR		DUOU DUTTON	(C01)	DENOTES CONDUIT TAG 01
 0 0	LIGHTNING ARRESTER	0 0	PUSH BUTTON ON-OFF SWITCH	((01	BENOTES CONDOIT THE CT
	SAFETY DISCONNECT SWITCH, HP RATED	0 ∕0 — ⊢	NORMALLY OPEN CONTACT	C01 C02	DENOTES SEPARATE CONDUITS WITH SEPARATE WIRE
	GROUND	-}	NORMALLY CLOSED CONTACT	(A-1)	DENOTES PANELBOARD A, CIRCUIT 3

Date: 9/16/20

Scale: AS NOTED

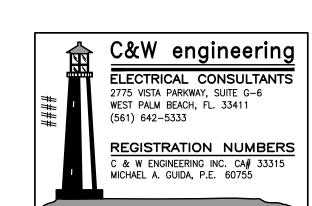
Design By: KW

Drawn By: RR

Check By: CM



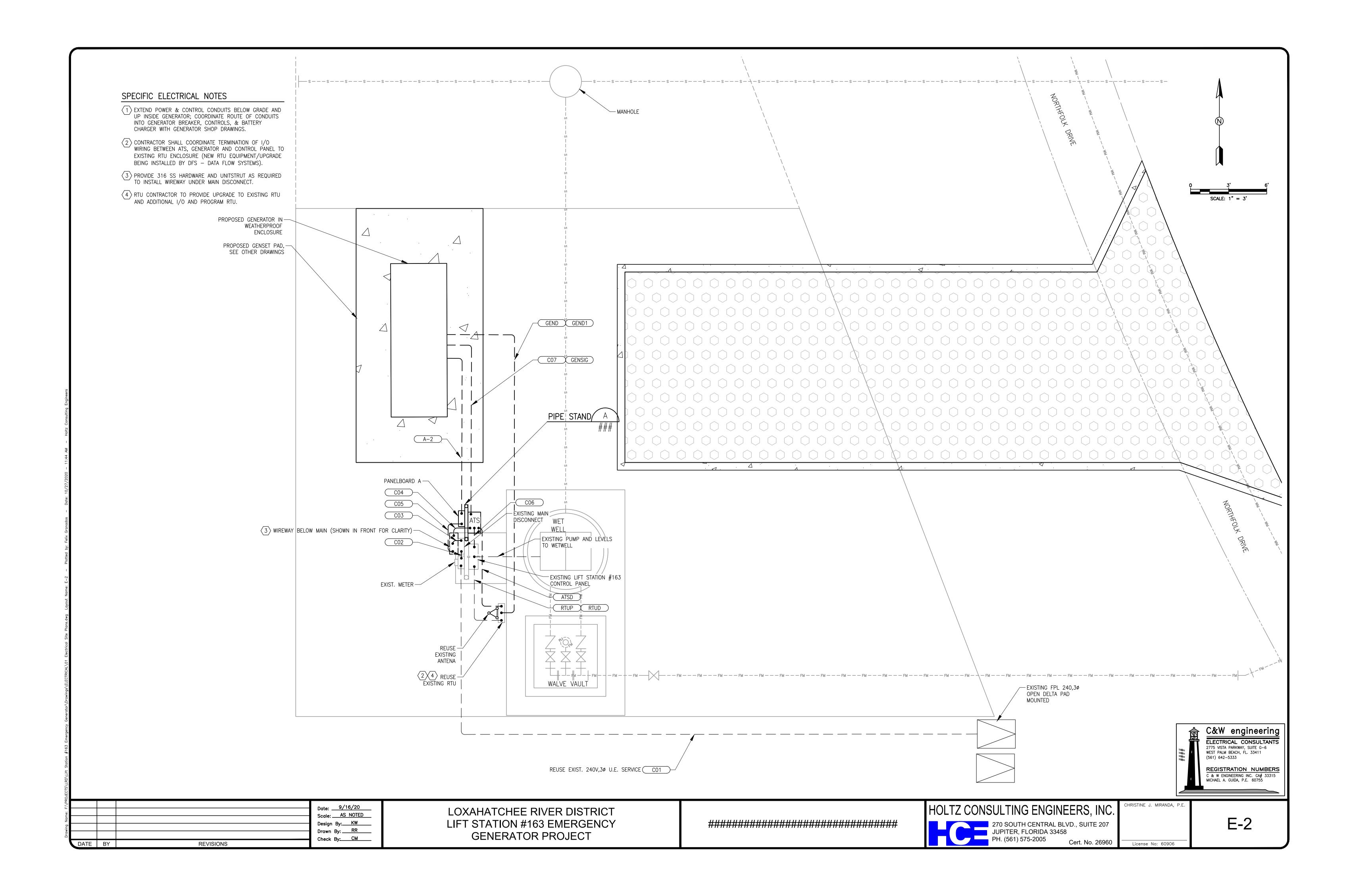
LS #163 AERIAL PLAN



HOLTZ CONSULTING ENGINEERS, INC. 270 SOUTH CENTRAL BLVD., SUITE 207 JUPITER, FLORIDA 33458

License No: 60906

E-1



SPECIFIC ELECTRICAL NOTES

- 1 THE CONTRACTOR SHALL INSTALL OWNER FURNISHED GENERATOR AND SHALL BE RESPONSIBLE FOR COORDINATION WITH GENERATOR MANUFACTURER FOR
- $\overline{\langle 2 \rangle}$ DEMO EXISTING CONDUIT AND WIRES ABOVE GROUND BETWEEN MAIN AND LSCP. REPLACE W/BURIED CONDUITS AS CALLED OUT IN DRAWINGS.
- CONTRACTOR SHALL PROVIDE I/O SIGNALS TO EXISTING RTU. RTU MODIFICATIONS AND PROGRAMING TO INCORPORATE GENERATOR AND ATS SIGNALS INTO EXISTING DFS TELEMETRY. ALL WORK ASSOCIATED WITH THE RTU IS TO BE PERFORMED BY: DATA FLOW SYSTEMS, INC. OF MELBOURNE, FL.

HARDWIRED SIGNALS

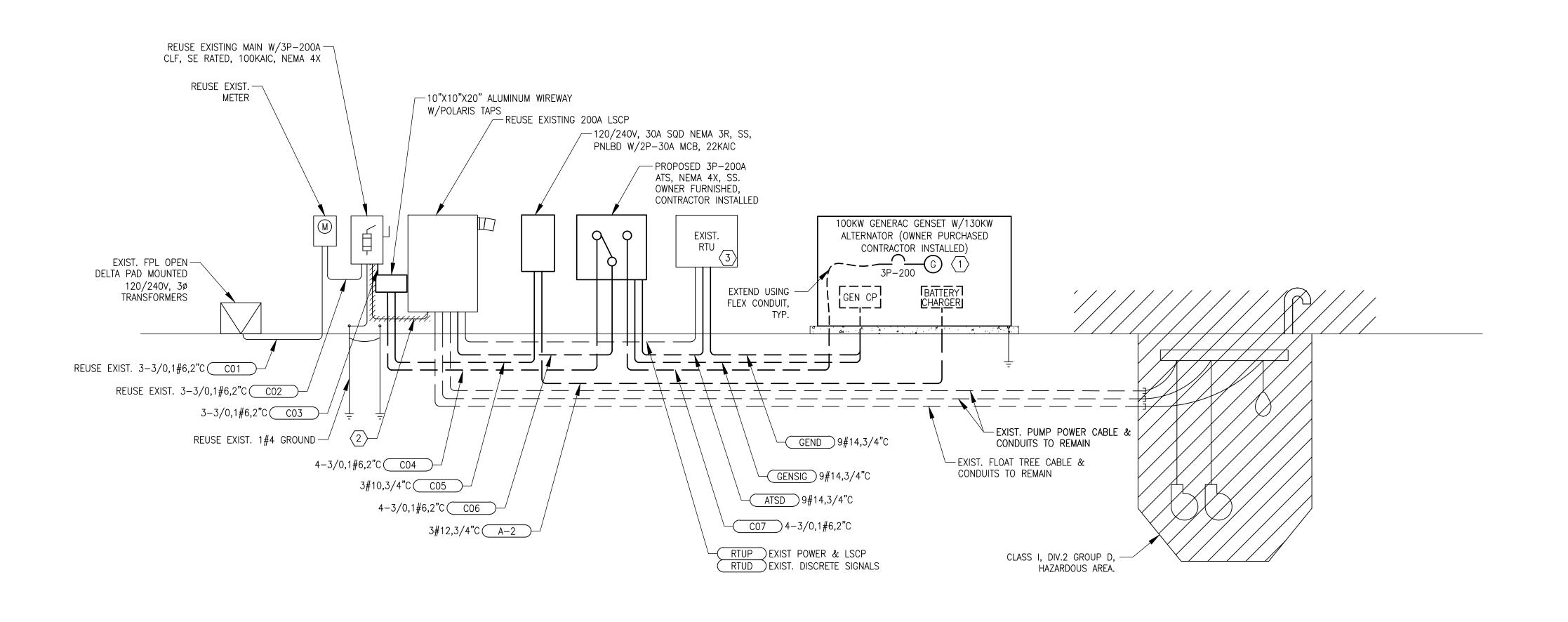
ATSD: ATS ON COMMERCIAL POWER ATS ON GENERATOR POWER

GEND: GENERATOR FAIL TO START GENERATOR GENERAL ALARM GENERATOR LOW FUEL GENERATOR LOW COOLANT

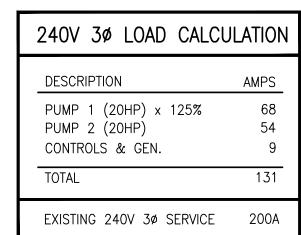
PANELBOARD A SCHEDULE (LS#163)

COND	WIRE	BUS	AMPS	LOAD	חסו דכ	, I AMDG	BUS	IS AMPC	S POLES	LOAD	BUS AMPS		WIRE	COND
SIZE	SIZE	Α	В	LOAD	POLES	AMPS	АВ	AMP5	PULES	EOAD	Α	В	SIZE	SIZE
							1 1 2	20	1	GENSET BATT. CHGR	7		3#12	3/4
							3 4	20	1	SPARE	<u> </u>		0,,,,,	
							5 + 6	20	1	SPARE				
							7 + 8	20	1	SPARE				

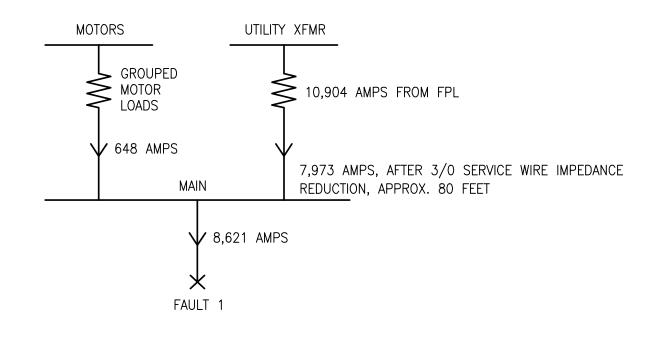
RATED VOLTAGE: ■120/240	BRANCH POLES: ■8 □12	APPROVED MF'RS. CUTLER HAMMER, SQD ONLY					
RATED AMPS: ■ 100	CABINET: ■ SURFACE ☐ FLUSH	NEMA ☐ 1 ■ 3R ☐ 4X					
☐ MAIN LUGS ONLY MAIN 40 AMPS ■ BREAKER ☐ FUSED SWITCH	■ HINGED DOOR	KEYED DOOR LATCH					
☐ FUSED ■ CIRCUIT BREAKER (BOLT-IN) BRANCH DEVICES	☐ TO BE GFI BREAKERS	FULL NEUTRAL BUS GROUND BUS					
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 22,000 AMPS SYMMETRICAL.							



LS163 240V 3Ø ELECTRICAL RISER DIAGRAM, CLASS 1, DIV. 2, GROUP D HAZARDOUS AREA



EXISTING 240V SERVICE IS LESS THAN 2% VOLTAGE DROP



FAULT 1 = GROUPED MOTOR + UTILITY

GROUPED MOTOR LOADS = (2 @ 20HP) X 6.0

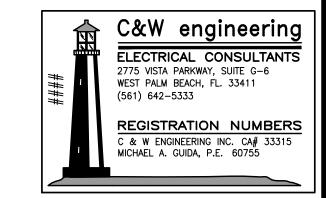
 $= (2 \times 54A) \times 6.0$

= 648 AMPS OF MOTOR CONTRIBUTION

UTILITY = 7,973 AMPS

FAULT = 7,973 AMPS + 648 AMPS = 8,621 AMPS

FAULT CURRENT CALCULATION



Date: <u>9/16/20</u>
Scale: <u>AS NOTED</u> Design By: KW Drawn By: RR Check By: CM DATE BY REVISIONS

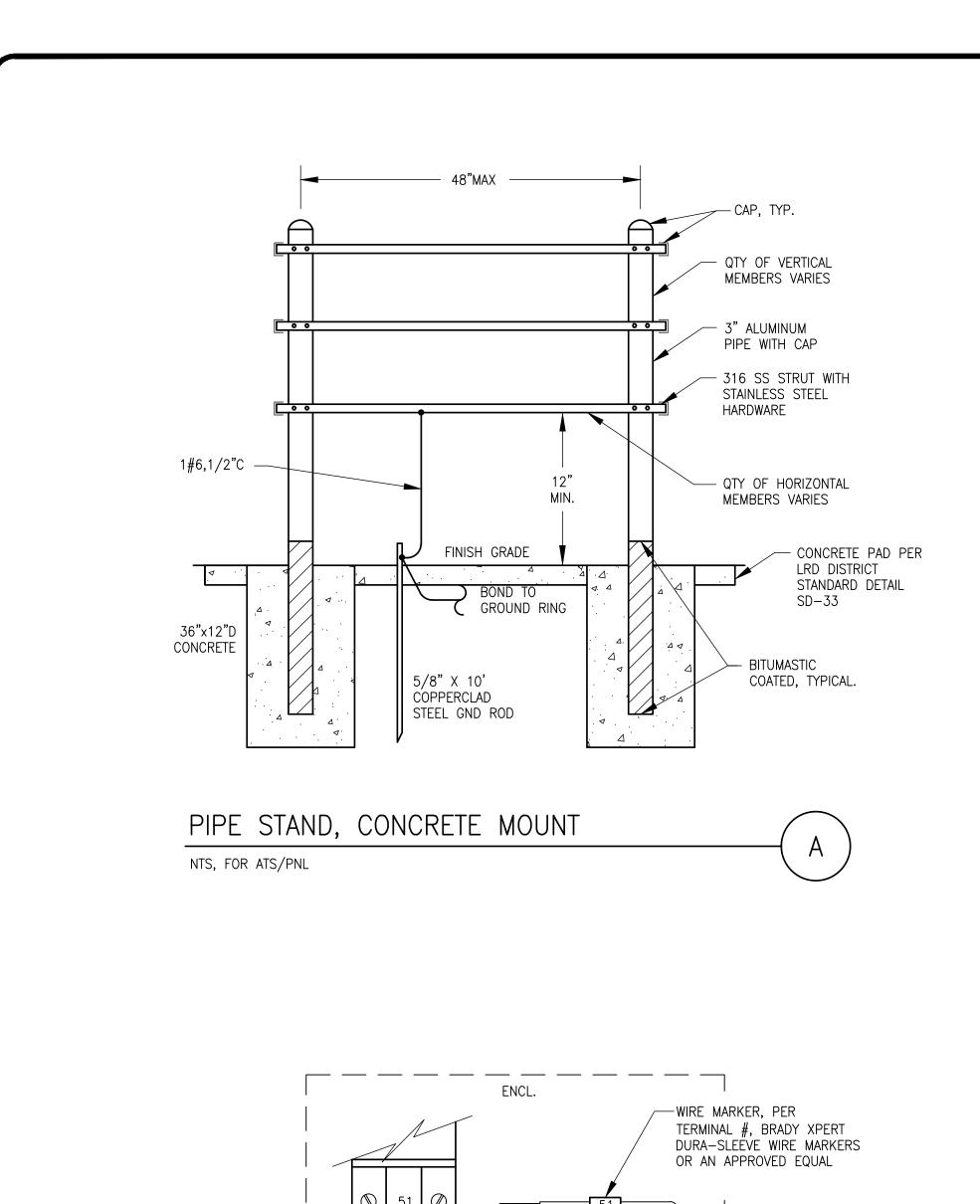
LOXAHATCHEE RIVER DISTRICT LIFT STATION #163 EMERGENCY **GENERATOR PROJECT**

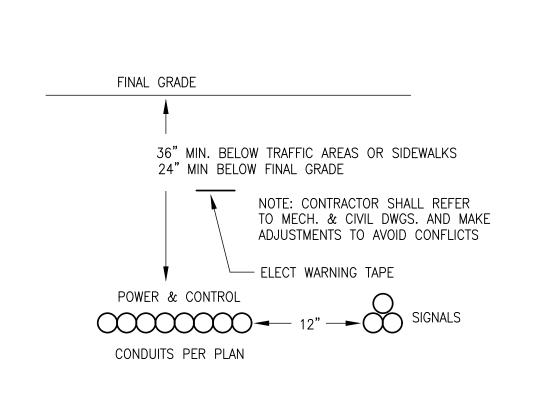
AND PANEL SCHEDULES

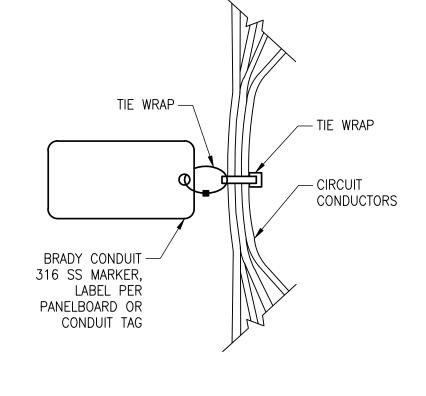


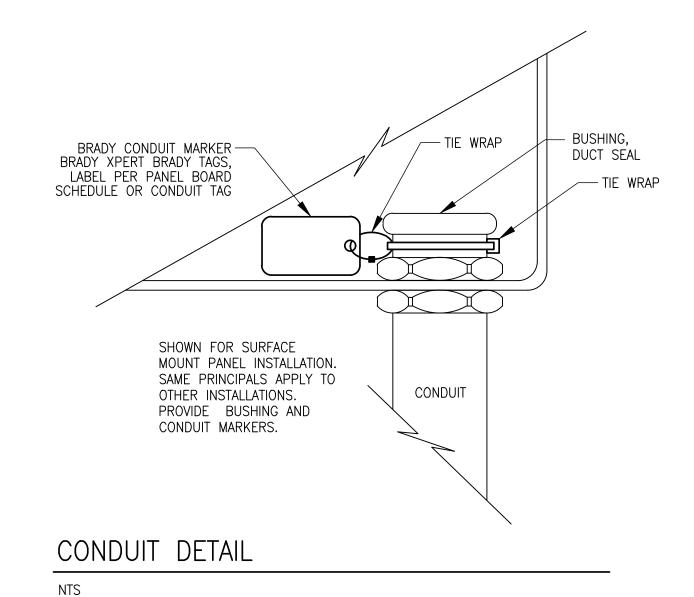
CHRISTINE J. MIRANDA, P.E. License No: 60906

E-3





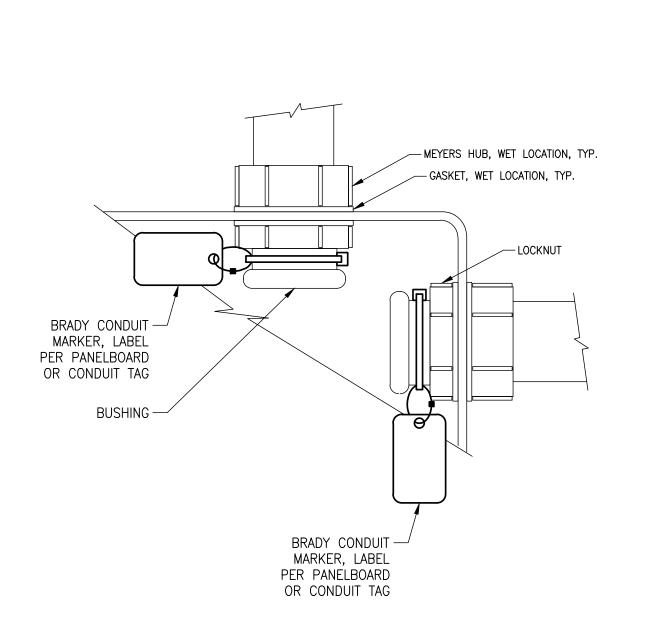


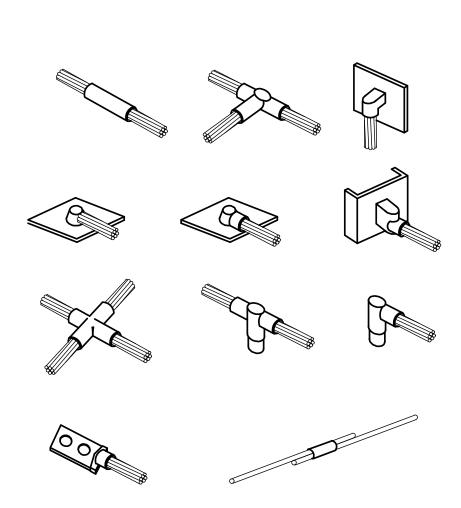


DIRECT BURIED CONDUIT

CIRCUIT MARKER DETAIL

NTS





TERMINATION EXAMPLE DETAIL

54

— TIEWRAP, TYP.

— CABLE MARKER PER CONDUIT TAG, BRADY XPERT BRADY TAGS OR AN APPROVED EQUAL

NTS

CONDUIT TERMINATION DETAIL

NTS

CADWELD DETAILS

NTS



| Date: ___9/16/20 | | Scale: __AS_NOTED | | Design By: __KW | Drawn By: __RR | Check By: __CM | Check By: _

LOXAHATCHEE RIVER DISTRICT LIFT STATION #163 EMERGENCY GENERATOR PROJECT



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